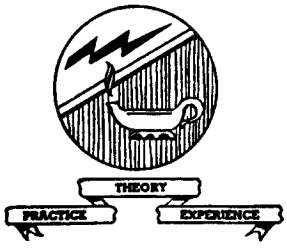
Most - Often - Needed

1946 RADIO DIAGRAMS

and Servicing Information

Compiled by

M. N. BEITMAN

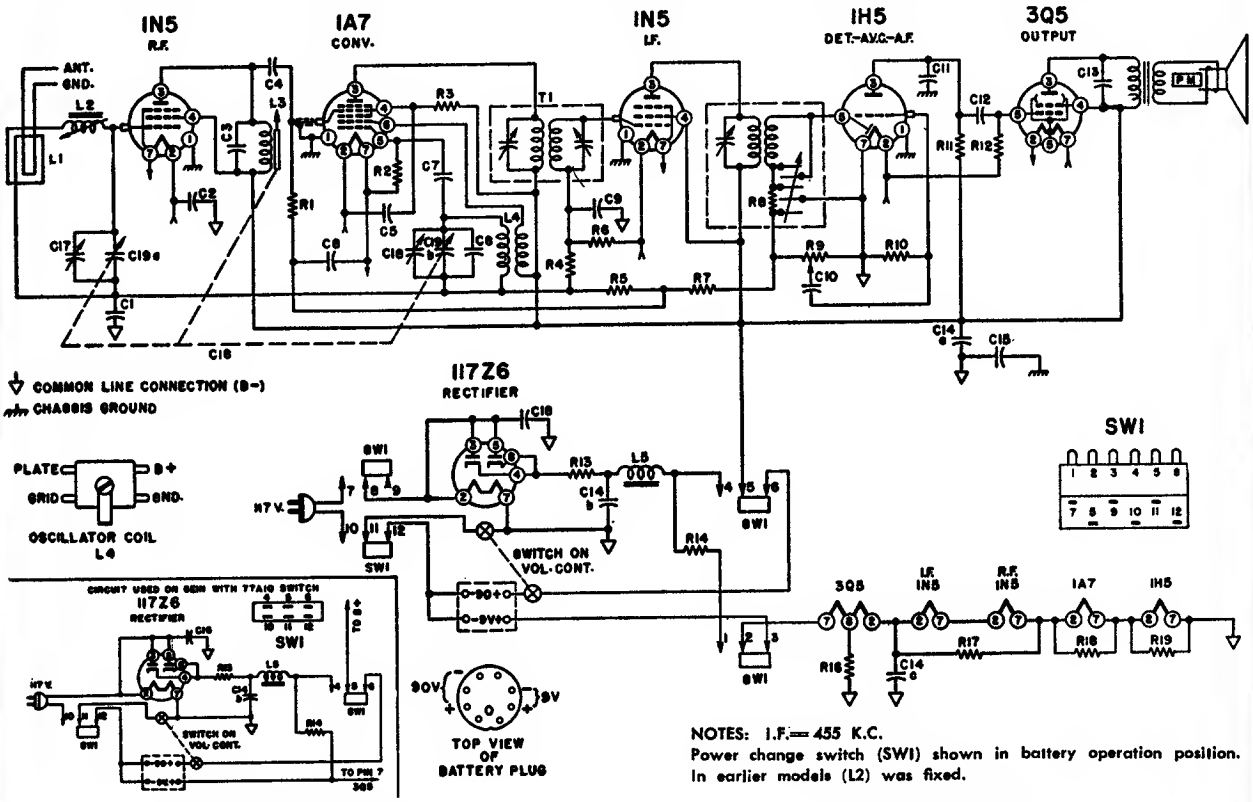


Supreme Publications

PUBLISHERS OF RADIO BOOKS AND DIAGRAM MANUALS

MANUAL OF 1946 MOST POPULAR SERVICE DIAGRAMS

INDEX

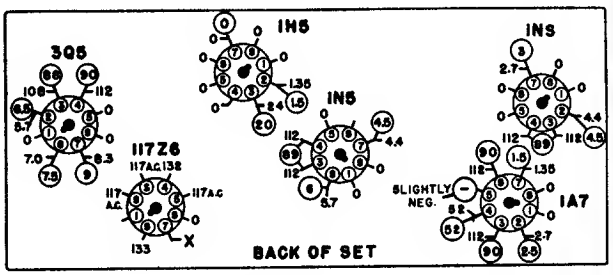


NOTES: I.F.= 455 K.C.
Power change switch (SWI) shown in battery operation position.
In earlier models (L2) was fixed.

VOLTAGE DATA

1. Voltage readings circled (O) are for Battery Operation.
2. All reading made between Tube Socket Terminals and Terminal No. 7 on the 117Z6 (Point (X) on Voltage Chart).
3. A.C. Voltages measured on a 117 Volt A.C. line.
4. Battery Voltages measured with a fresh battery.
5. Dial turned to low frequency end, no signal.
6. All Voltages measured with a 1000 ohm per volt meter.

VOLTAGE CHART



REPLACEMENT PARTS

CONDENSERS

Symbol	Description	Part No.
C1	.05 Mfd. 200 Volt Paper	64B1-32
C2	.25 Mfd. 200 Volt Paper	64B1-28
C3	.00042 Mfd. Mica	65B1-9
C4-C11	.00025 Mfd. Mica	65B5-22
C5, C6, C9, C10, C12	.01 Mfd. 400 Volt Paper	64B1-25
C7	.00005 Mfd. Mica	65B5-11
C8	.000015 Mfd. Mica	65B5-3
C13	.002 Mfd. 600 Volt Paper	64B1-9
C14a	50 Mfd. 150 Volt Elect.	67C7-42
C14b	30 Mfd. 150 Volt Elect.	
C14c	100 Mfd. 25 Volt Cond.	
C15	.2 Mfd. 400 Volt Paper	64A2-1
C16	.05 Mfd. 400 Volt Paper	64B1-22
C17	Antenna Trimmer	66A12-5
C18	Oscillator Trimmer (Part of Gang)	
C19 (C19a, C19b)	Condenser Gang	68B4

RESISTORS

R1	100,000 Ohms ½ Watt Carbon	60B8-104
R2	220,000 Ohms ½ Watt Carbon	60B8-224
R3	47,000 Ohms ½ Watt Carbon	60B8-473
R4, R5	4.7 Megohms ½ Watt Carbon	60B2-475

RESISTORS

Symbol	Description	Part No.
R6	4.7 Megohms ½ Watt Carbon	60B2-475
R7	3.3 Megohms ½ Watt Carbon	60B2-335
R8	50,000 Ohms ½ Watt Carbon	60B8-503
R9	1 Megohm Volume Control	75B1-100
R10	15 Megohms ½ Watt Carbon	60B2-156
R11	1 Megohm ½ Watt Carbon	60B2-105
R12	2.2 Megohms ½ Watt Carbon	60B2-225
R13	22 Ohms Wire Wound ½ watt	61A2-2
R14	2,450 Ohms Wire Wound 5 watt	61A3-5
R16	1,500 Ohms ½ Watt Carbon	60B8-152
R17	560 Ohms ½ Watt Carbon	60B8-561
R18	220 Ohms ½ Watt Carbon	60B8-221
R19	120 Ohms ½ Watt Carbon	60B8-121

COILS & TRANSFORMERS

L2	Coil, Loop Loading, (fixed) (early)	AA114
	Coil, Loop Loading, (variable) (late)	AA115
L3	Iron Slug for plate coil	71B1-3
	Coil, Plate	70A1-30
L4	Oscillator Coil	69A7
L5	Choke Filter	74A5
T1	1st I.F. Transformer	72B9-2

Admiral

CHASSIS—**6EI-6EIN**

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

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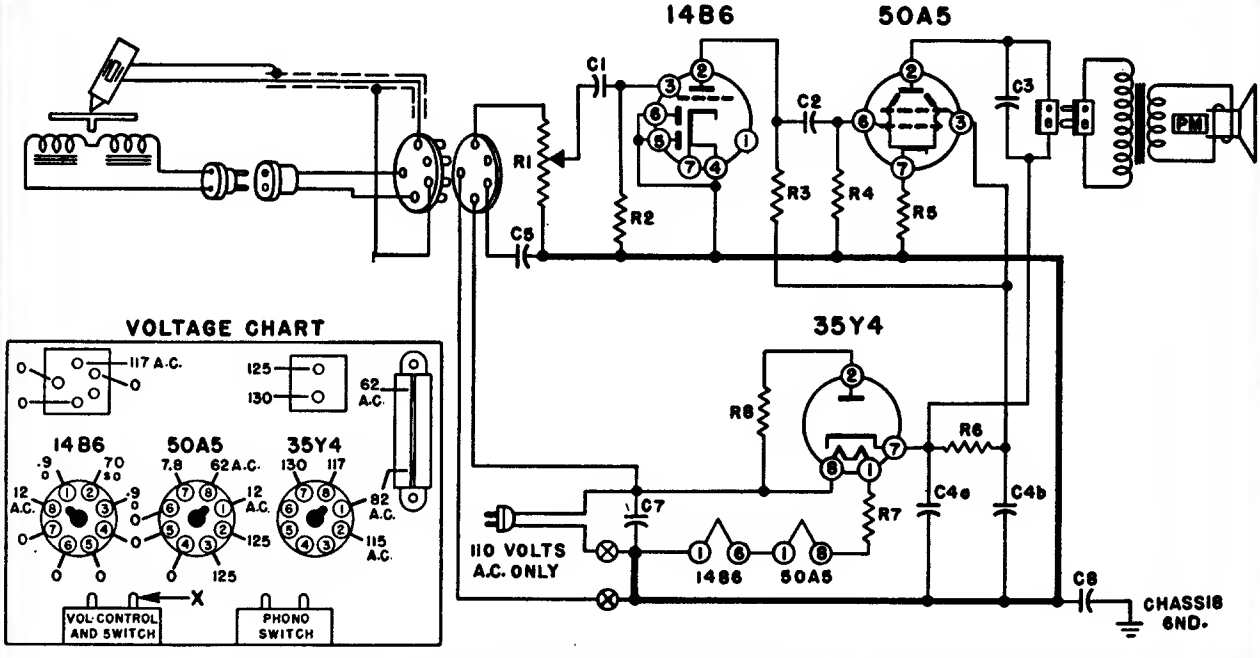
CHASSIS—3A1



REPLACEMENT PARTS

PAPER CONDENSERS

Part No.	Symbol	Description
64B1-12	C1	.005 Mfd. 600 V.D.C.
64B1-25	C2	.01 Mfd. 400 V.D.C.
64B1-24	C3	.02 Mfd. 400 V.D.C.
64B1-20	C5 & C6	.1 Mfd. 400 V.D.C.
64B1-22	C7	.05 Mfd. 400 V.D.C.

ELECTROLYTIC CONDENSERS

67A10	C4A	50 Mfd. 150 V.
	C4B	30 Mfd. 150 V.

RESISTORS

6088-106	R2	10 Megohms ½ Watt
6088-274	R3	270,000 ohms ½ Watt
6088-474	R4	470,000 ohms ½ Watt
60B14-151	R5	150 ohms 1 Watt
60B14-152	R6	1,500 ohms 1 Watt
61A3-4	R7	130 ohms 5 Watt
60B14-330	R8	33 ohms 1 Watt

VARIABLE RESISTORS

Part No.	Symbol	Description
75B1-9	R1	1 Megohm Volume Control & Switch

MISCELLANEOUS

Part No.	Description
34D3-15	Cobinet (Bottom part only) for 6RP48 (Ivory Plostic)
34D3-12	Cobinet (Bottom port only) for 6RP48 (Mohogony Plostic)
34D3-13	Cover for Cobinet, for 6RP48 (Ivory Plostic)
34D3-10	Cover for Cobinet, for 6RP48 (Mohogony Plostic)
37A7-1	Cover Support (Mohogony)
37A7-2	Cover Support (Ivory)
12A3-3	Feet, Rubber
23D2-2	Grill, Speaker (Ivory)
23D2-4	Grill, Speaker (Mohogony)
33A11-1	Knob, On-Off
33A11-2	Knob, Volume
88A8-1	Plug for A.C. Motor (2 prong)
88A3-5	Plug for Phono Input (5 prong)
88A3-4	Cover for 5 prong Plug

MISCELLANEOUS (Cont'd)

Part No.	Description
88A5-4	Plug for Speaker (2 prong)
88A5-1	Cover for Speaker Plug
88A8-2	Socket for A.C. Motor (2 prong)
87A4-4	Socket for Phono Input (5 prong)
88A5-6	Socket for Speaker (2 prong)
87A12-1	Socket, Tube
78B9-2	Speaker ond Output Transformer
———	Output Transformer. (When ordering, specify oll of the numbers on the transformer ond speaker.)
77A5-2	Switch, On-Off (Phono)

PHONOGRAPH PARTS

(See Record Chonger Service Monual for Detoiled List.)

G400A12	Centerpost
409A1	Crystol Cartridge
G400A23	Idler Wheel (407B3 Motor)
G400A52	Idler Wheel (407B2 Motor)
G400A53	Idler Wheel (407B1 Motor)
407B3	Motor, 60 cycle 115 volt, A.C. (Types 407B1 & 407B2 olso used.)

VOLTAGE DATA

Voltage measured from socket terminal to point marked "X". Large numerals indicate readings with vacuum tube voltmeter. Small numerals indicate readings with 1000 ohm-per-volt meter.

★ ★ ★

POWER SUPPLY

Operation on 110-120 volts, 60-cycles, alternating current only. Power consumption: 45 watts.

RECORD CHANGER

Complete service information and parts list are covered by a separate service manual. Check record changer for model number since different record changers may be used from time to time.

RESISTORS			CONDENSERS		
SYMBOL	OHMS	WATTS	SYMBOL	CAPACITY	VOLTS
R1	1,000,000	V. C.	C1	.005 Mfd.	600
R2	10,000,000	½	C2	.01 Mfd.	400
R3	270,000	½	C3	.02 Mfd.	400
R4	470,000	½	C4a	50. Mfd.	150
R5	150	1	C4b	30. Mfd.	150
R6	1,500	1	C5	.1 Mfd.	400
R7	130	5	C6	.1 Mfd.	400
R8	33	1	C7	.05 Mfd.	400

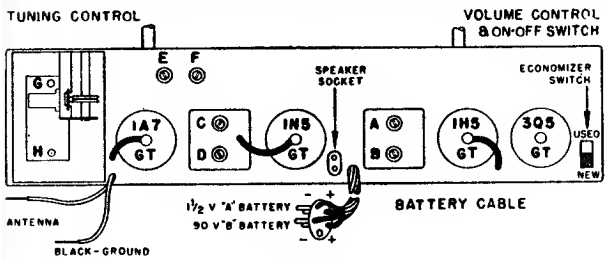
ALIGNMENT PROCEDURE

1. IMPORTANT—Check to see thot dial pointer reaches each end of dial scale when Station Selector Control is turned from one end to the other.
2. Volume control—Maximum for all adjustments.
3. Connect radio chassis to ground post of signal generator with a short heavy lead.
4. Connect output meter across voice coil of speaker.
5. Connect dummy antenna value in series with generator output lead, when needed (see below).
6. Allow chassis and signal generator to "heat up" for several minutes.
7. Use lowest Output setting of Signal Generator capable of producing adequate Output Meter indication and then proceed in the following sequence.

BAND	SIGNAL GENERATOR		Connection to Radio	Receiver Dial Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Type of Adjustment
	Frenquency Setting	Dummy Antenna					
I.F.	455 KC.	.1 mfd.	Grid of 1A7 (Cap)	High Frequency end of dial	C-D—2nd I.F.	Output I.F.	Adjust to maximum output
I.F.	455 KC.	.1 mfd.	Grid of 1A7 (Cap)	High Frequency end of dial	A-B—1st I.F.	Input I.F.	Adjust to maximum output
Broad-cast	1630 KC.	.00025 mfd. Mica	Antenna Lead	High Frequency end of dial	E-(See note below) F-(See note below)	Oscillator Antenna	Adjust to maximum output
Broad-cast	1300 KC.	.00025 mfd. Mica	Antenna Lead	1300 KC.	G H	Oscillator Antenna	Adjust to maximum output

NOTE: Before adjusting trimmers "E" and "F," make sure that each iron core is 1⅛" or more outside of its coil form. If necessary, turn adjustments "G" and "H" to accomplish this.

TUBE AND TRIMMER LOCATION



CIRCUIT

Battery operated 4 Tube Superheterodyne with Single Tuning Range 535 KC. to 1630 KC. Covers standard broadcast bond, using antenna and ground. Permeability tuning on Ant. and Osc. circuits. I.F. 455 KC.

POWER SUPPLY

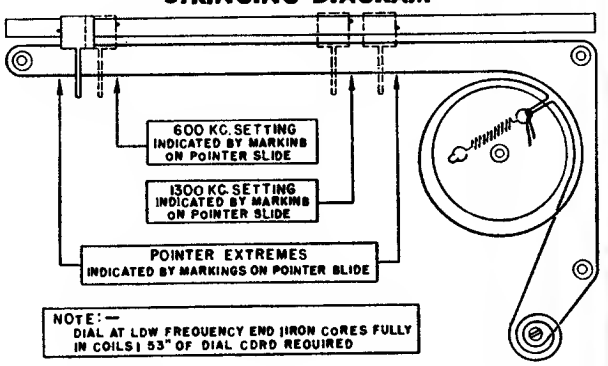
Single unit "AB" battery pock. 90 volt "B" 1½ volt "A." Plug in connection. Use Ensign AB48, Burgess 17G-D60, Eveready 748, General 60DL-11L, Ray-O-Vac AB-82, or Bond 0528 Battery or Equivalent.

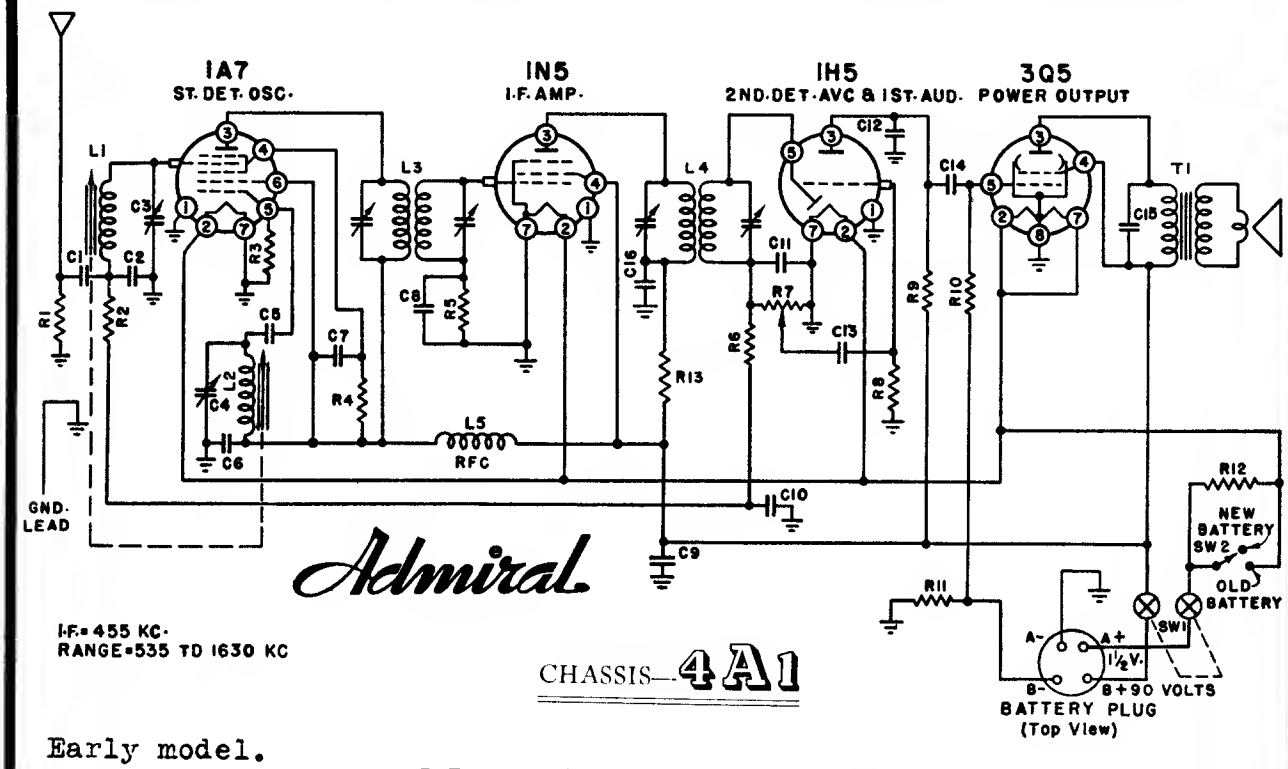
ECONOMIZER SWITCH

The battery economizer switch is located on the top of the chassis, right side.

Always have this Economizer Switch in the "NEW" battery position when first placing radio in operation or when installing a new battery.

STRINGING DIAGRAM





Admiral

I.F.=455 KC.
RANGE=535 TO 1630 KC

CHASSIS—4A1

Early model.

REPLACEMENT PARTS

CONDENSERS

Symbol	Description	Part No.
C15	.002 mfd. 600 Volt	64B1-14
C1, C7	.005 mfd. 600 Volt	64B1-12
C10	.01 mfd. 400 Volt	64B1-25
C5	.05 mfd. 200 Volt	64B1-32
C11, C12	.0001 mfd.	65B7-17
C2, C6	.00025 mfd.	65B7-22
C8	.0008 mfd.	64B5-31
C9	4. mfd. 150 Volt	67A4-2
C3, C4	Dual trimmer	66A9-1
C13, C16	.01 mfd. 400 Volt	64B1-25

RESISTORS

R12	.75 ohm ¼ w (wire)	61A2-1
R11	390. ohm ¼ w	60B2-301
R13	2200 ohm ¼ w	60B2-222
R1	15,000 ohm ½ w	60B8-153
R4	33,000 ohm ½ w	60B8-333
R3	220,000 ohm ½ w	60B8-224
R2	470,000 ohm ¼ w	60B2-474
R9, R10	1,000,000 ohm ¼ w	60B2-105
R6	2,200,000 ohm ¼ w	60B2-225
R5, R8	4,700,000 ohm ¼ w	60B2-475

TRANSFORMERS and COILS

Symbol	Description	Part No.
L1	Antenna Coil	AC105-1
L2	Oscillator Coil	AB104-4
L3	1st I.F. Transformer	72B5
L4	2nd I.F. Transformer	72B6
L5	Choke Coil (RF)	AB103-1
T1	Output Transformer (specify full speaker part no. including mfg. code when ordering.)	

MISCELLANEOUS

Description	Part No.
Background, Dial	22C5-1
Cabinet, R643-W	35C25
Cable, Battery (complete with plug)	A1026
Cap, Grid	90A1-4
Cord, Dial (5" on tuner). (53" on dial drive)	50A1-1
Drum and Hub, Tuning	A1035
Escutcheon	23A8-1
Iron Core, with wire (Osc.)	71B1-3
Iron Core, with wire (Ant.)	71B1-4
Knob	A1028
Permeability Tuner Assembly, complete	33A7-2

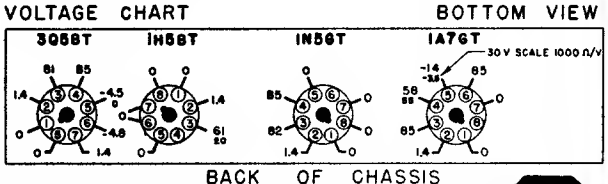
MISCELLANEOUS

Description	Part No.
Plug, Battery 5 Prong	88A4-4
Pointer, Dial	25A9-1
Pulley, Fibre Dial	17A1-3
Scale, Glass Dial	21B13
Screw studs (for iron cores)	27A4
Shield, Tube	87A8
Shaft, Tuning	28A11-1
Shaft and pulley (Tuner)	A1040
Socket, octal tube	87A10-2
Speaker and output Transformer (specify all numbers appearing on Output Trans. as well as speaker when ordering.)	78B5
Spring, Dial Drum Cord Tension	19A1-3
Spring, Tuner slide cord tension	19A1-4
Spring, Tuner slide pressure	18A1
Spring, Tuner, front bearing takeup	19A5
Spring, Tuner, back bearing takeup	19A6
Spring, Hairpin (To hold Ant-Osc. coils)	19A3-1
Switch, SPST (Economizer) SW2	88A1-6
Terminal, Tuner slide cord	9A8-1
Washer, C	4A4-1
Washer, spring (shaft)	4A6-3-0
Washer, spring (coils)	4A6-5-0

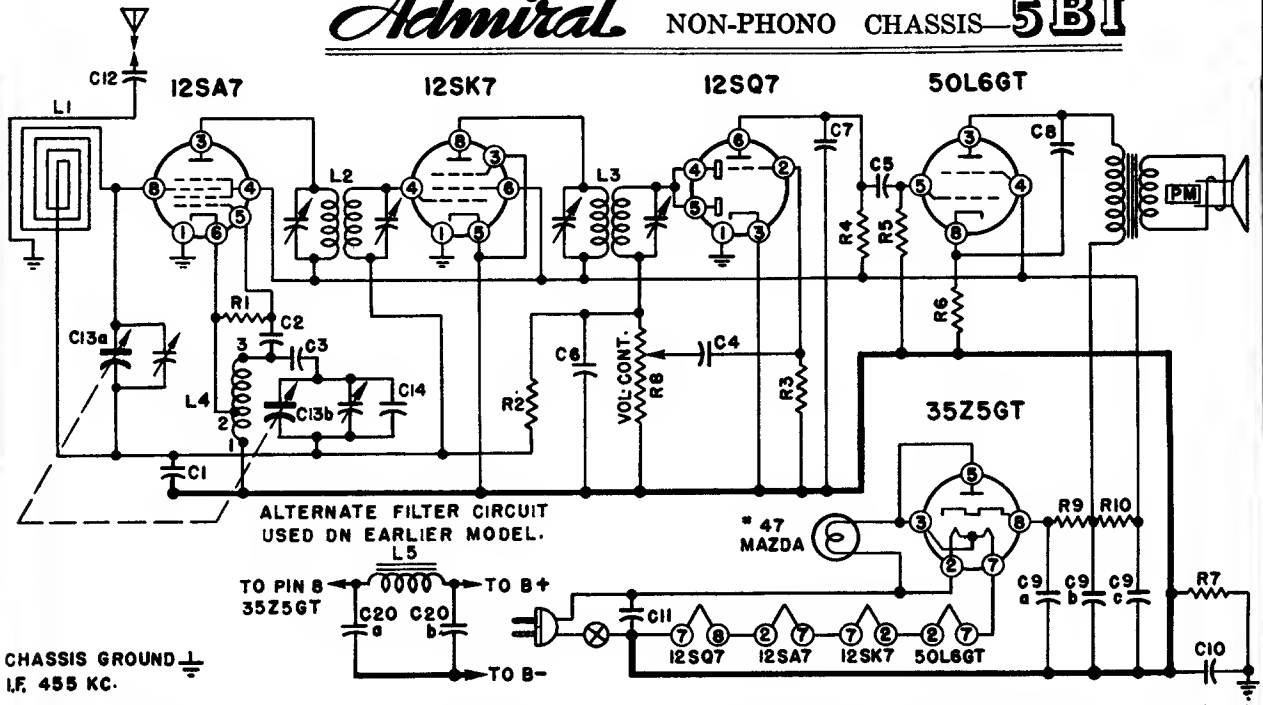
VOLTAGE DATA

All readings made between tube socket terminals and chassis. Voltages indicated have been obtained using a Vacuum Tube Voltmeter. A second voltage reading is shown made with a 1000 ohm per voltmeter, when use of this instrument would result in appreciably lower readings. Measured with a fresh battery, volume control full on, dial at the high frequency end, no signal.

VOLTAGE CHART — BOTTOM VIEW



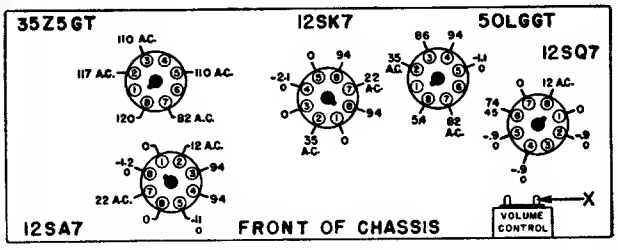
Admiral NON-PHONO CHASSIS—5BI



NOTE: 1. In later production R9 and C9a are disconnected from pin No. 8 of the 35Z5 and a 33-ohm 1-watt resistor (R11) is connected between pin No. 8 and the junction of R9 and C9a.

2. The jumper between pins 4 and 5 on the 12SQ7 is removed and one pin is connected to the secondary of the second I.F. (L3) and the other pin is connected directly to the junction point of R2 and the secondary of the 1st I.F. (2).

VOLTAGE DATA:—



Bottom View of Chassis, Showing Voltages

—All readings made between Tube Socket Terminals and Switch Lug on volume control (Point "X" on drawing).

—Measured on a 117 Volt A.C. line.

—Volume control full on.

—Dial tuned to low frequency end, no signal.

—Voltages indicated obtained on Vacuum Tube voltmeter.

—A second voltage reading is shown made with a 1000 ohm-per-volt meter when use of this instrument would result in appreciably lower readings.

POWER SUPPLY:—

110-120 Volts A.C. or D.C. U.L. approved.
Frequency—50 to 60 cycles
Power consumption—30 watts

CONDENSERS

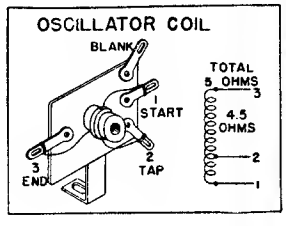
Symbol	Capacity	Type
C1	.1 mfd.	200 V.
C2	.00005 mfd.	Mica
C3	.02 mfd.	400 V.
C4	.01 mfd.	400 V.
C5	.01 mfd.	400 V.
C6	.00025 mfd.	Mica
C7	.0005 mfd.	Mica
C8	.02 mfd.	400 V.
C9a	.30. mfd. (Elect.)	150 V.
C9b	.30. mfd. (Elect.)	150 V.
C9c	.20. mfd. (Elect.)	150 V.
C10	.2 mfd.	400 V.
C11	.05 mfd.	400 V.
C12	.005 mfd.	600 V.
C13a	.00042 mfd. (max.)	Var.
C13b	.00018 mfd. (max.)	Var.
C14	.00002 mfd.	Mica
C20a	.30. mfd. (Elect.)	150 V.
C20b	.50. mfd. (Elect.)	150 V.

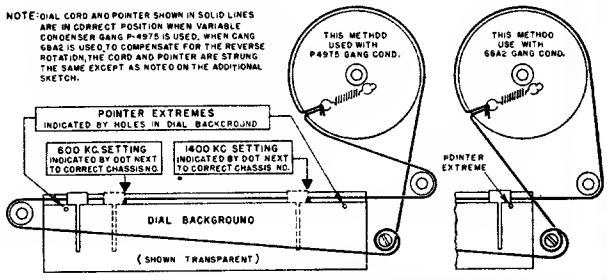
RESISTORS

Symbol	Resistance	Type
R1	22,000 ohms	C½W
R2	470,000 ohms	C½W
R3	10 meg ohms	C½W
R4	220,000 ohms	C½W
R5	470,000 ohms	C½W
R6	150 ohms	C½W
R7	150,000 ohms	C½W
R8	1 meg ohm Volume Control	
R9	150 ohms	C1W
R10	1,000 ohms	C1W
R11	33 ohms	C1W

COILS

Symbol	Description
L1	Loop
L2	1st I. F. Trans.
L3	2nd I. F. Trans.
L4	Osc. Coil
L5	Choke, Filter





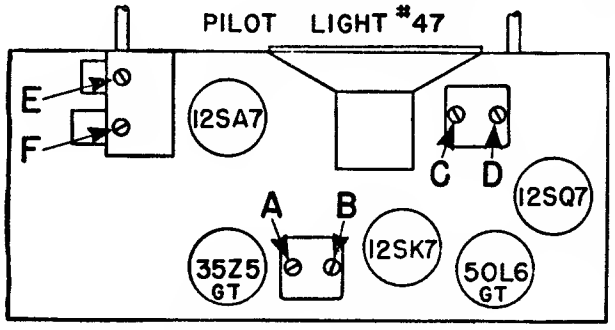
5BI—CHASSIS NON-PHONO Admiral

Connect Signal Generator to—	Dummy Antenna Between Radio and Generator	Set Generator Frequency to—	Set Receiver Dial Frequency to—	Adjust Following Trimmers	Type of Adjustment
Tuning Condenser Antenna Stator	250 mmfd. Condenser	455 KC.	High frequency end of Dial	C—D 2nd I. F. A—B 1st I. F.	Adjust to maximum Output
Tuning Condenser Antenna Stator	250 mmfd. Condenser	1630 KC.	High frequency end of Dial	E—Osc.	Adjust to maximum Output
Loop radiator (or place pickup lead from gen. close to loop of set to obtain adequate signal).	No actual connection between set and generator.	1400 KC.	Tune in generator signal	F—Ant.	Adjust to maximum Output

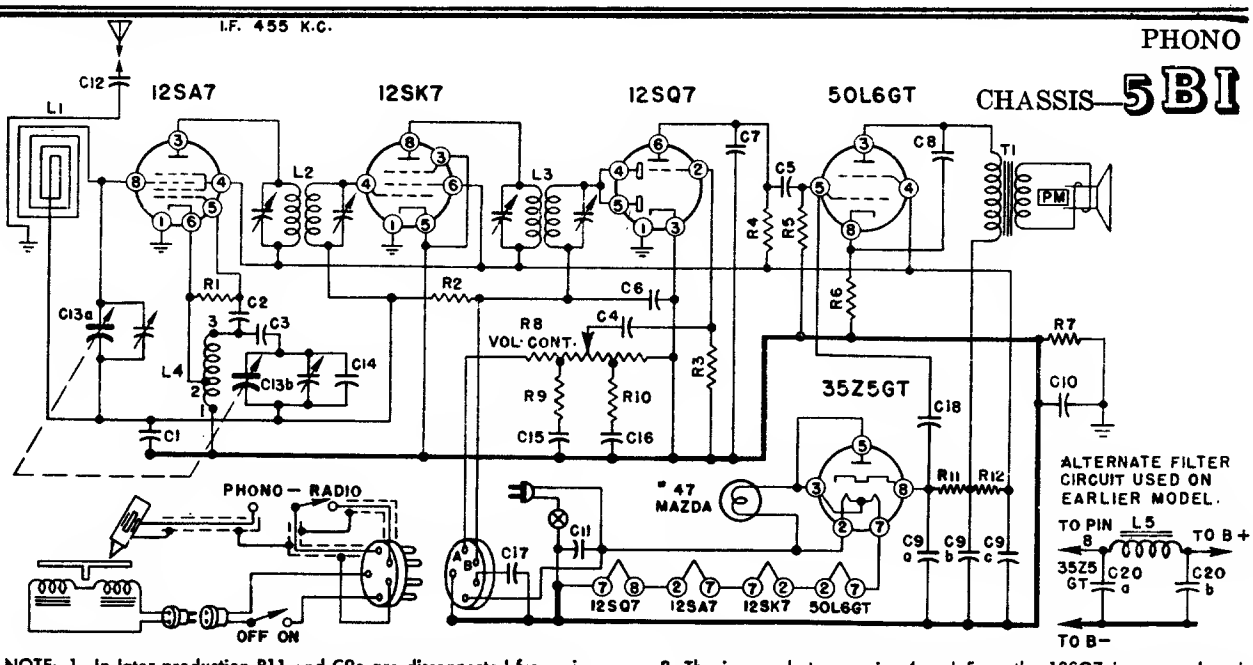
ALIGNMENT PROCEDURE

1. Be sure Radio Receiver and Signal Generator are thoroughly warmed up before starting alignment procedure.
2. Check setting of Pointer Extremes and note correct 600 K.C. and 1400 K.C. positions on Dial Background. (See Dial Diagram on reverse side.)
3. Connect Output Meter across Voice Coil.
4. Turn Receiver Volume Control full on.
5. Use lowest Output setting of Signal Generator capable of producing adequate Output Meter indication and then proceed as outlined in chart below.
6. Repeat adjustments to insure final overall maximum results.

TOP VIEW — TUBE & TRIMMER LOCATION



PHONO CHASSIS—5BI

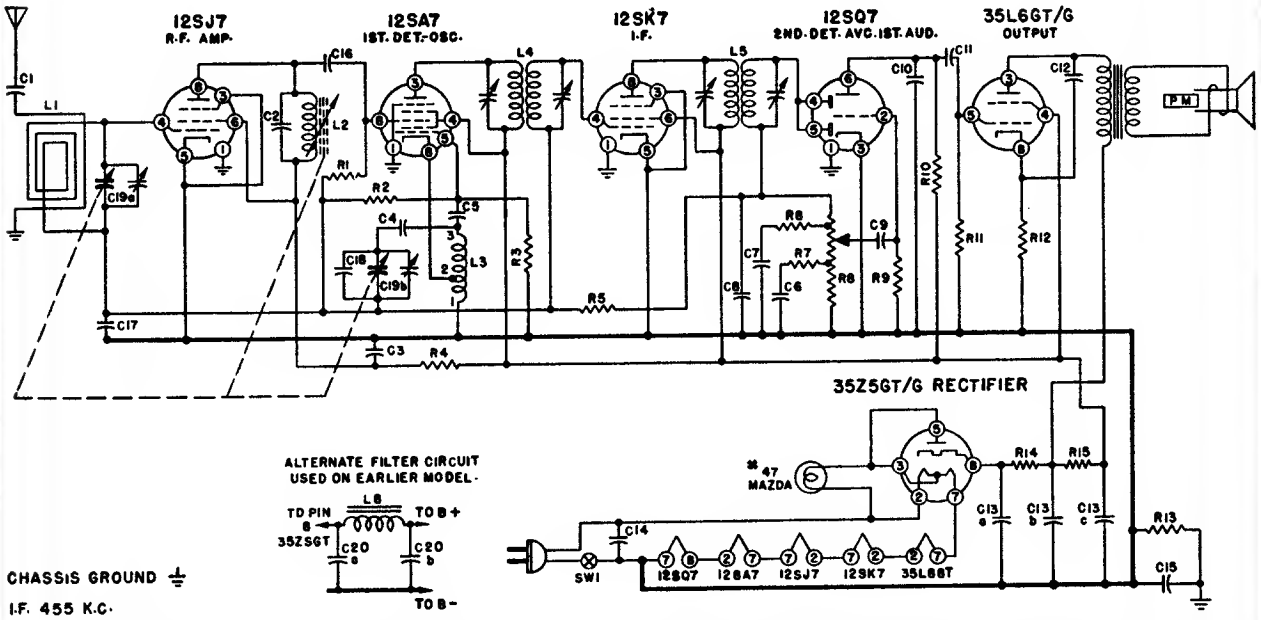


NOTE: 1. In later production R11 and C9a are disconnected from pin No. 8 of the 35Z5 and a 33-ohm 1-watt resistor (R13) is connected between pin No. 8 and the junction of R11 and C9a. In these sets, condenser C18 was deleted.

2. The jumper between pins 4 and 5 on the 12SQ7 is removed and one pin is connected to the secondary of the second I.F. (L3) and the other pin is connected directly to the junction point of R2 and the secondary of the 1st I.F. (L2).

NOTE: Connect points "A" and "B" with jumper when testing chassis with phono plug removed.

Admiral — CHASSIS—6A1



NOTE: 1. In later production R14 and C13a are disconnected from pin #8 of the 35Z5 and a 33-ohm 1W resistor (R16) is connected from pin #8 to the junction of R14 and C13a.

2. The jumper between pins 4 and 5 on the 12SQ7 is removed and one pin is connected to the secondary of the second I.F. (L5) and the other pin is connected directly to the junction point of R5 and the secondary of the 1st I.F. (L4).

CONDENSERS

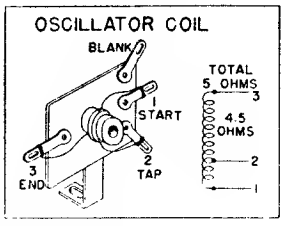
Symbol	Capacity	Type
C-1	.005 mfd	600 V.
C-2	785. mmfd	Mica
C-3	.05 mfd	400 V.
C-4	.02 mfd	400 V.
C-5	50. mmfd	Mica
C-6	250. mmfd	Mica
C-7	.01 mfd	400 V.
C-8	.01 mfd	400 V.
C-9	.01 mfd	400 V.
C-10	500. mmfd	Mica
C-11	.01 mfd	400 V.
C-12	.02 mfd	400 V.
C-13a	30. mfd	Elect. 150 V.
C-13b	30. mfd	Elect. 150 V.
C-13c	20. mfd	Elect. 150 V.
C-14	.05 mfd	400 V.
C-15	.2 mfd	400 V.
C-16	250. mmfd	Mica
C-17	.1 mfd	200 V.
C-18	20. mmfd	Mica
C-19a	420. mmfd	(max.) Var.
C-19b	180. mmfd	(max.) Var.
C-20a	30. mfd	Elect. 150 V.
C-20b	50. mfd	Elect. 150 V.

COILS

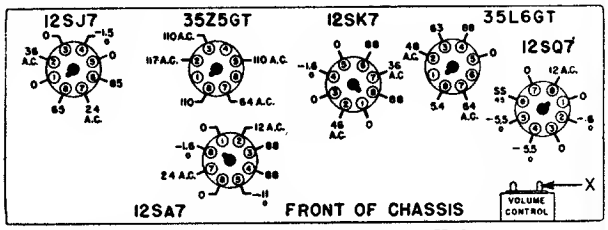
Symbol	Description
L-1	(Sec. 2.3 ohms) Loop
L-2	(2.5 ohms) R. F. Coil
L-3	Osc. Coil
L-4	1st I. F. Trans.
L-5	2nd I. F. Trans.
L-6	(325 ohms) Choke, Filter

RESISTORS

Symbol	Resistance	Type
R-1	10,000 ohms	C½W
R-2	10 meg ohm	C½W
R-3	22,000 ohms	C½W
R-4	100 ohms	C½W
R-5	1 meg ohm	C½W
R-6	47,000 ohms	C½W
R-7	27,000 ohms	C½W
R-8	500,000 ohm Volume Control, (Topped at 1/3 and 2/3 of Rotation which is 100,000 ohms and 200,000 ohms from the start, due to the taper).	
R-9	5 meg ohm	C½W
R-10	270,000 ohms	C½W
R-11	470,000 ohms	C½W
R-12	150 ohms	C½W
R-13	150,000 ohms	C½W
R-14	150 ohms	C1W
R-15	1,000 ohms	C1W
R-16	33 ohms	C1W



VOLTAGE DATA:—



Bottom View of Chassis, Showing Voltages.

—All readings made between Tube Socket Terminals and Switch Lug on volume control (Point "X" on drawing).

—Measured on a 117 Volt A.C. line.

—Volume control full on.

—Dial tuned to low frequency end, no signal.

—Voltages indicated obtained on Vacuum Tube voltmeter.

—A second voltage reading is shown made with a 1000 ohm-per-volt meter when use of this instrument would result in appreciably lower readings.

CIRCUIT:—

Chassis 6A1 A.C.—D.C. 6 Tube Superheterodyne, with R.F. stage; Single tuning range, 540 Kc. to 1630 Kc., covering standard broadcast band; built-in AEROSCOPE loop antenna, with provision for connecting an external antenna.

SPECIFICATIONS

POWER SUPPLY:—

110-120 Volts A.C. or D.C.
Frequency 50-60 cycles.
Power Consumption—30 watts.

COMPILED BY M. N. BEITMAN SUPREME PUBLICATIONS

6A1—CHASSIS

Admiral

DIAL DRUM POSITION

If the dial drum position is disturbed, it should be carefully re-positioned to insure correct tuning of the permeability tuned coil. When the gang condenser is fully open, the drum will be properly positioned if the center of the condenser shaft and the dial cable hole on the drum are in a straight line parallel to the chassis base. Note that the dial cable hole should be on the left side (looking at front) of the chassis.

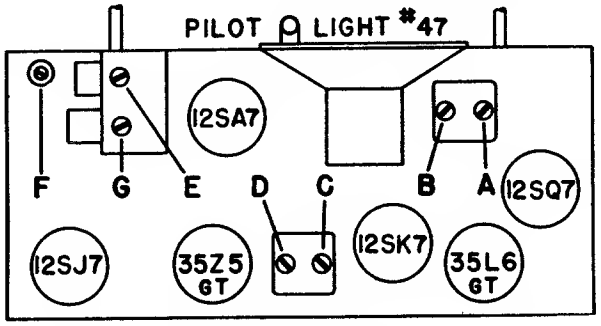
ALIGNMENT PROCEDURE

1. Be sure Radio Receiver and Signal Generator are thoroughly warmed up before starting alignment procedure.
2. Check setting of Pointer Extremes and note correct 600 K.C. and 1400 K.C. positions on Dial Background. (See Dial Diagram on reverse side.)
3. Connect Output Meter across Voice Coil.
4. Turn Receiver Volume Control full on.
5. Use lowest Output setting of Signal Generator capable of producing adequate Output Meter indication and then proceed as outlined in chart below.
6. Repeat adjustments to insure final overall maximum results.

R. F. SLUG POSITION

If the tuned coil slug needs replacing or re-positioning, first see that the dial drum is in its proper position. Then with the threaded stud half-way through the bakelite, note that the top of the slug is flush with the top of coil form. Then re-align.

TOP VIEW — TUBE & TRIMMER LOCATION



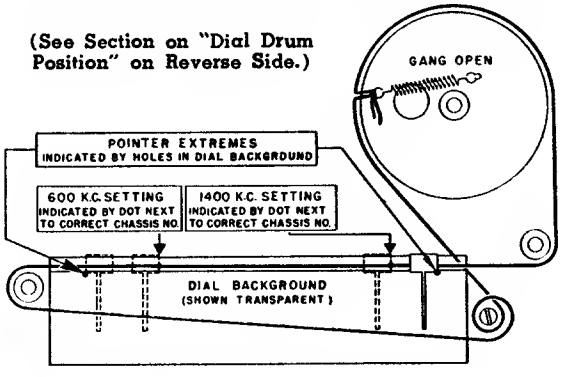
BACK OF CHASSIS

Connect Signal Generator To—	*Dummy Antenna Between Radio and Generator*	*Set Generator Frequency To—*	*Set Receiver Dial Frequency To—*	*Adjust Following Trimmers*	*Type of Adjustment*
12SA7 Control Grid	250 mmfd. Mica Condenser	455 KC.	High frequency end of Dial	A and B—2nd I. F. C and D—1st I. F.	Adjust to maximum Output
External Antenna Wire on Loop	250 mmfd. Mica Condenser	1630 KC.	High frequency end of Dial	E—Osc.	Adjust to maximum Output
External Antenna Wire on Loop	250 mmfd. Mica Condenser	1400 KC.	Tune in Generator signal	F—R. F. (Iron Core)	See Note Below
Loop radiator (or place pickup lead from gen. close to loop of set to obtain adequate signal).	No actual connection between set and generator.	1400 KC.	Tune in Generator signal	G—Ant.	Adjust to maximum Output

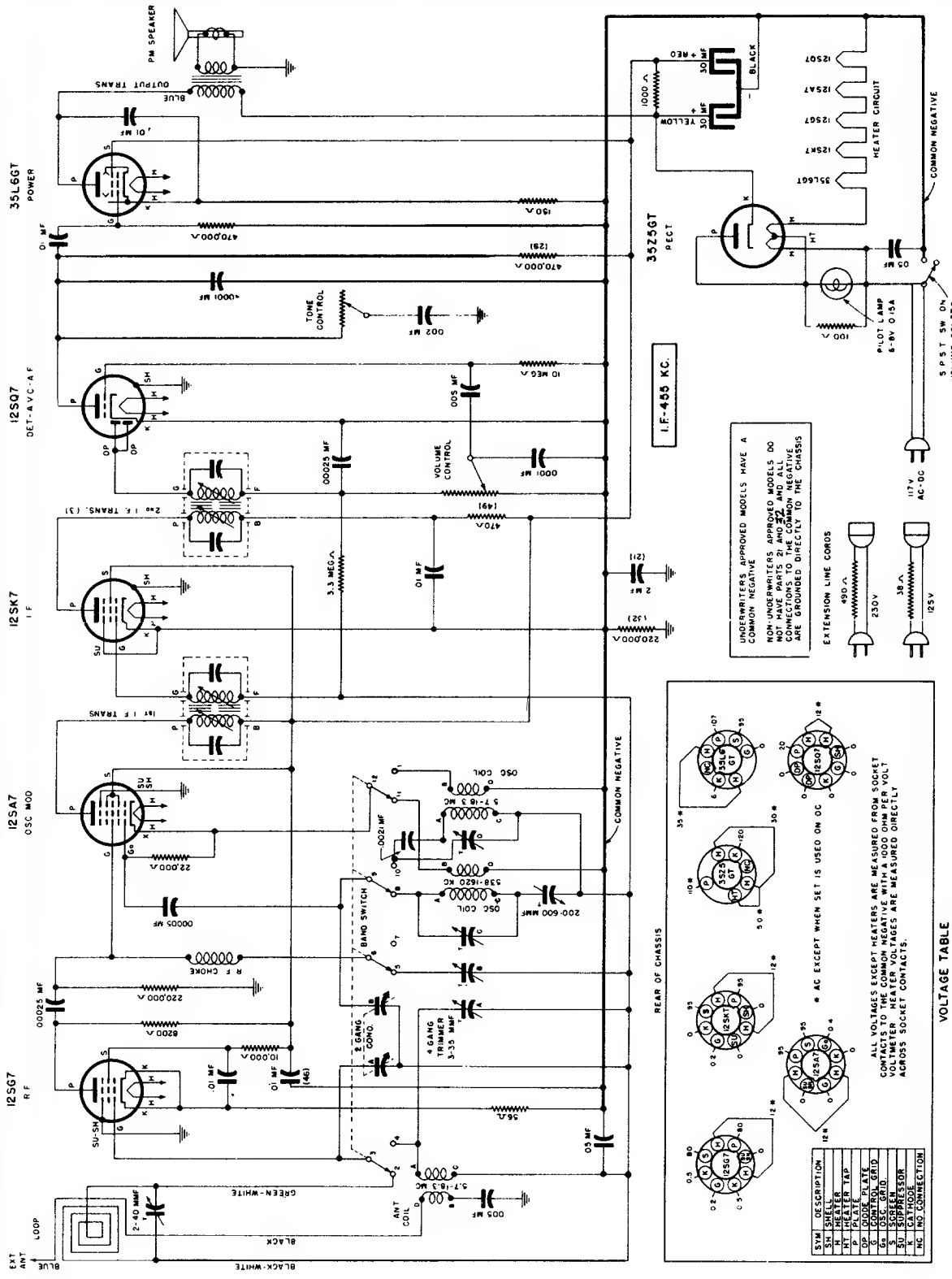
NOTE: Adjustment F is the threaded stud at the top end of the slug wire. Screw stud up or down in the bakelite for maximum output. Alignment is correct if the output is reduced when the position of the lever arm is changed slightly in either direction (up or down).

POINTER SETTINGS AND DIAL CORD STRINGING

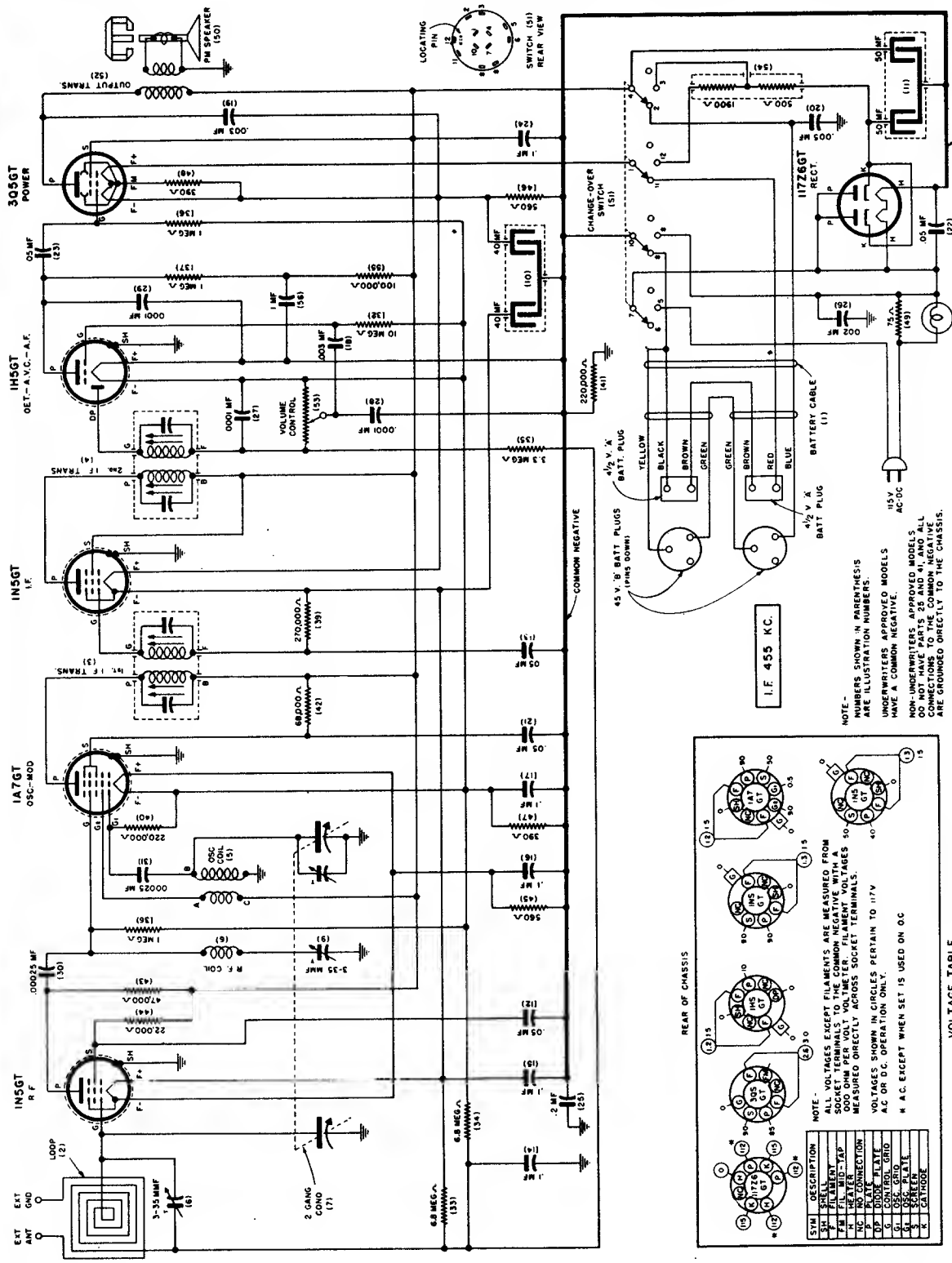
(See Section on "Dial Drum Position" on Reverse Side.)



Admiral Corporation
3800 CORTLAND STREET
CHICAGO 47, ILL.

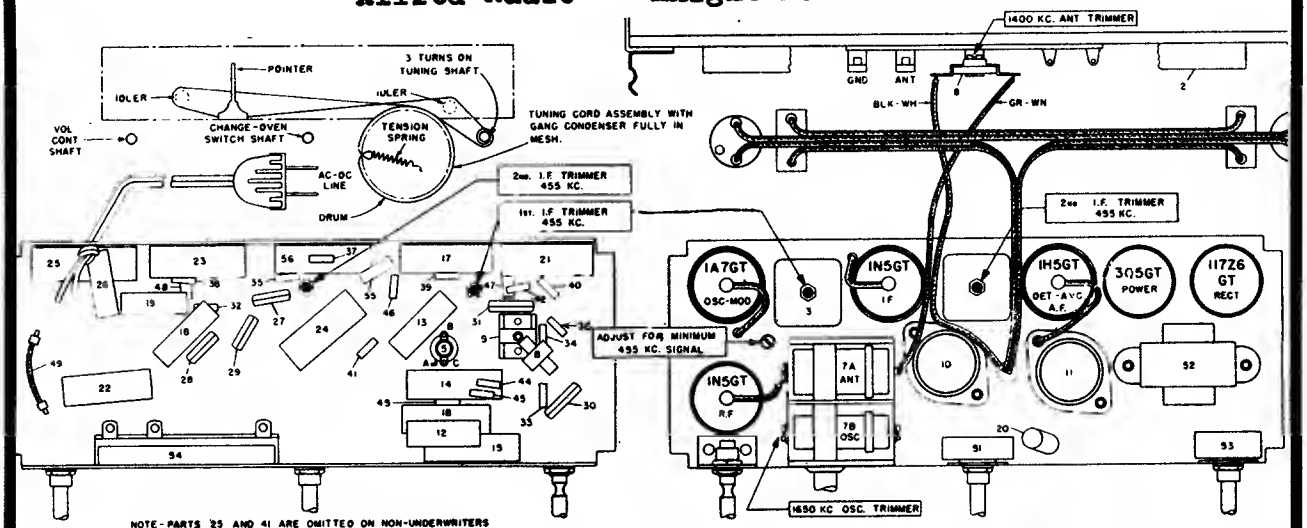


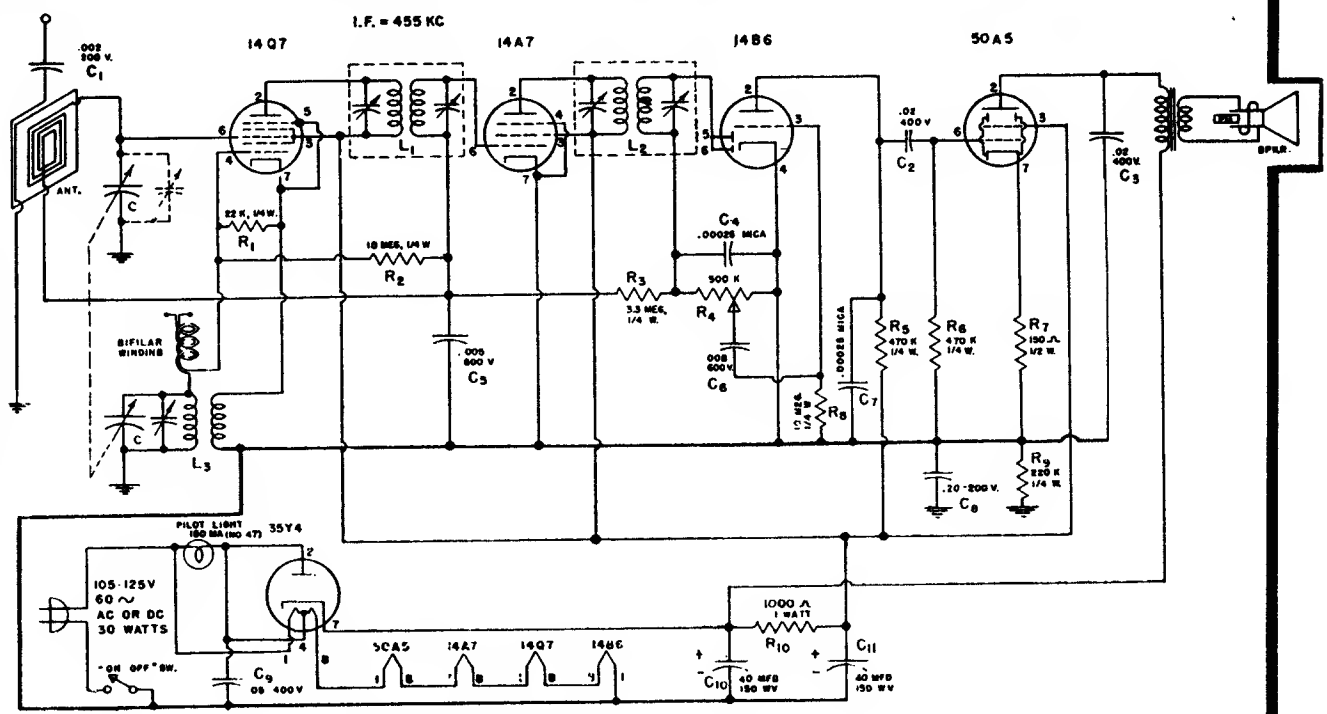
Allied Radio -- Knight Model 6A-122



Allied Radio -- Knight Model 6A-127

Allied Radio -- Knight Model 6A-127





Alignment Procedure

Allied Radio

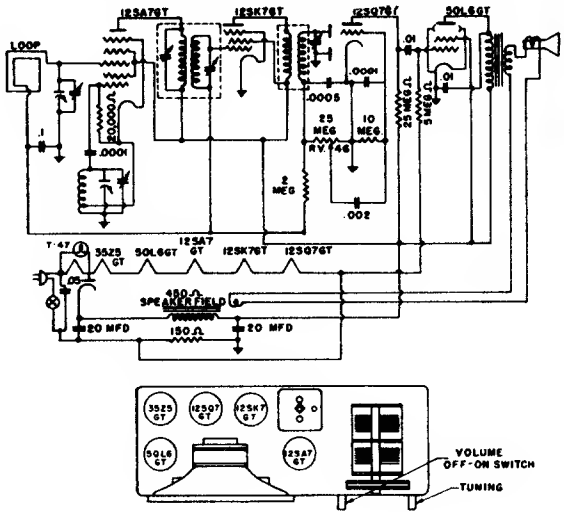
Knight Models

5A-150
5A-152
5A-154
5A-163

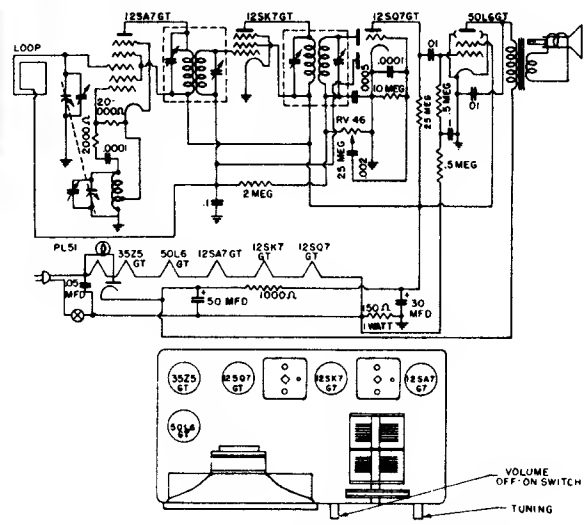
Steps	Connect output of oscillator to	Tune osc. to	Tune radio dial to	Adjust the following for max. peak output
1.	Tuning condenser stator (ant.) in series with .01 mfd.	455	Quiet point at high frequency end of dial.	1st and 2nd I. F. Transformers
2.	Antenna term. of Ant. loop in series with 100 mmf.	1720	Full clockwise (out of mesh)	Osc. trimmer
3.	Antenna term. of Ant. loop in series 100 mmf.	1500	1500	Ant. trimmer

Output meter is connected across voice coil. Receiver volume is turned to maximum.

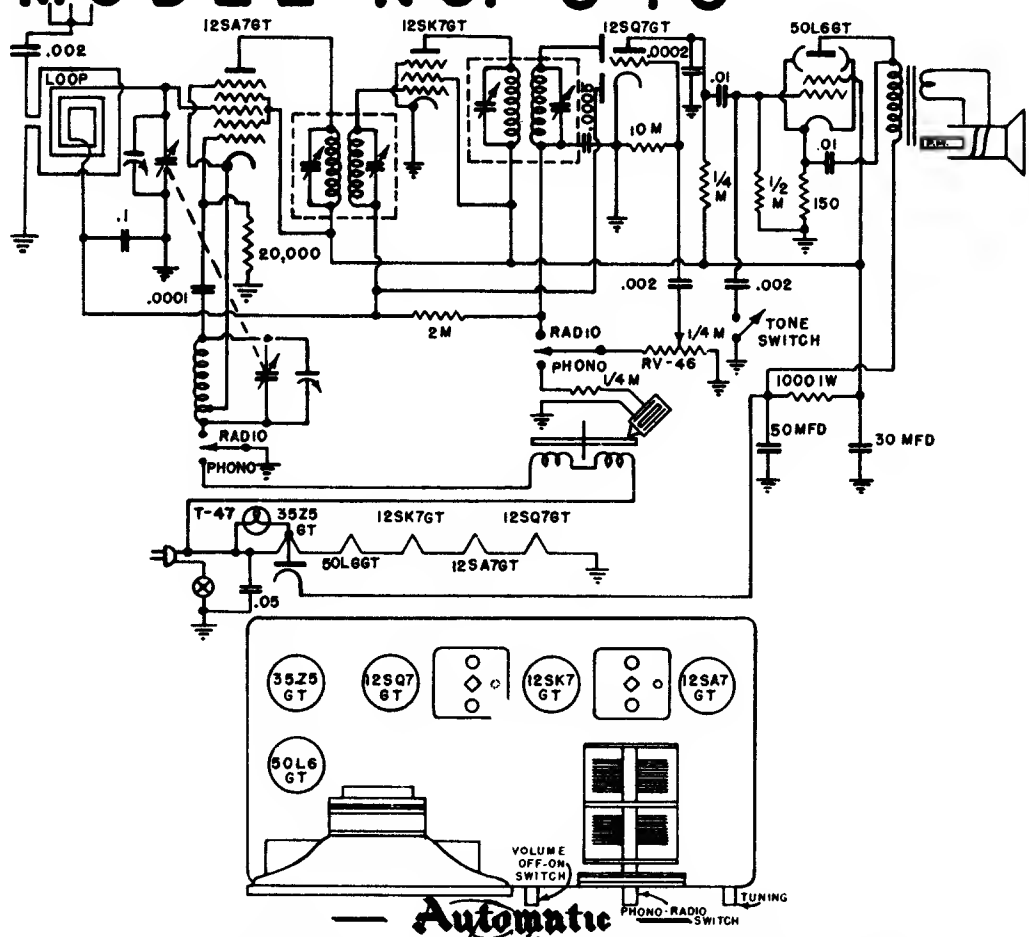
Automatic Radio 601-602



Automatic Radio Model 611



MODEL NO. 640



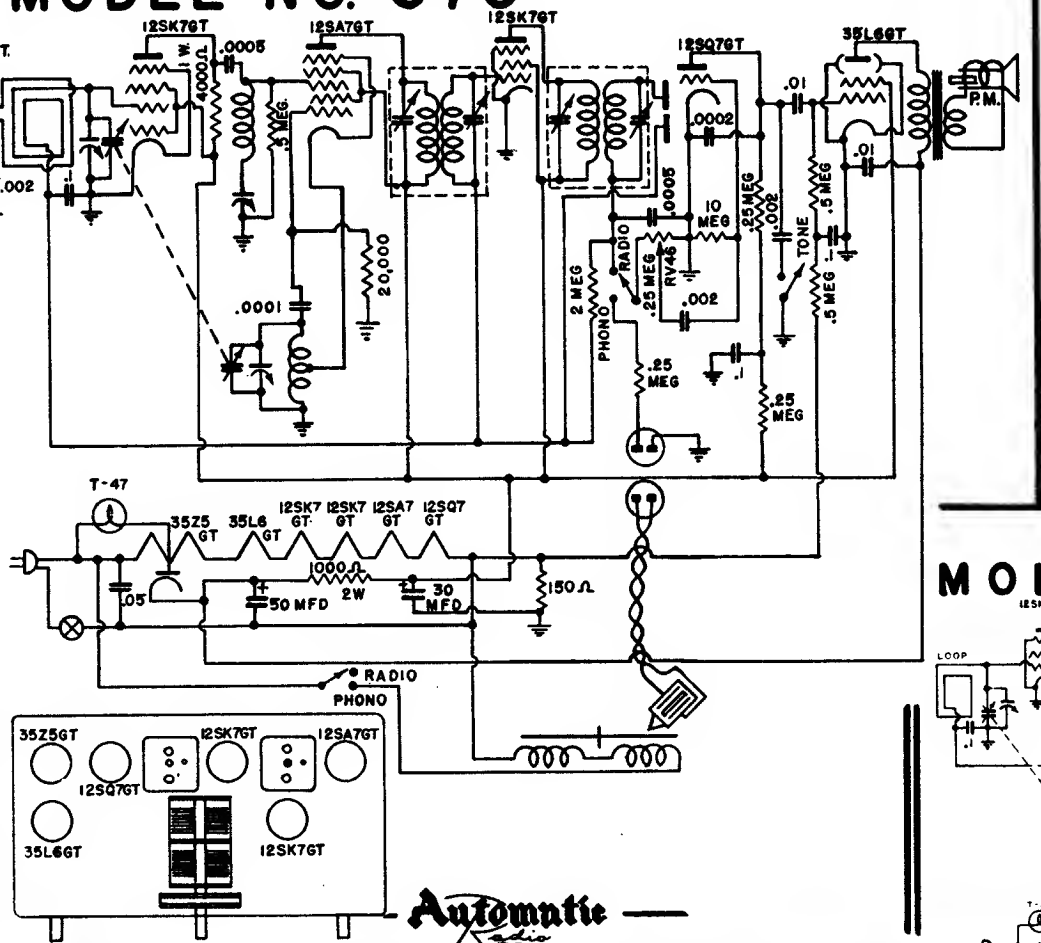
— Automatic Radio

AUTOMATIC RADIO MFG. CO., INC.

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

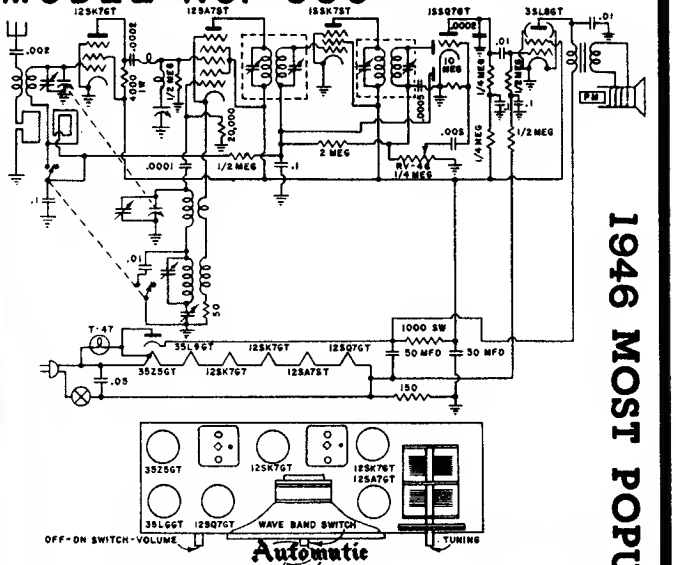
— Automatic —
AUTOMATIC RADIO MFG. CO., INC.
122 BROOKLINE AVE., BOSTON, 15, MASS.

MODEL NO. 670



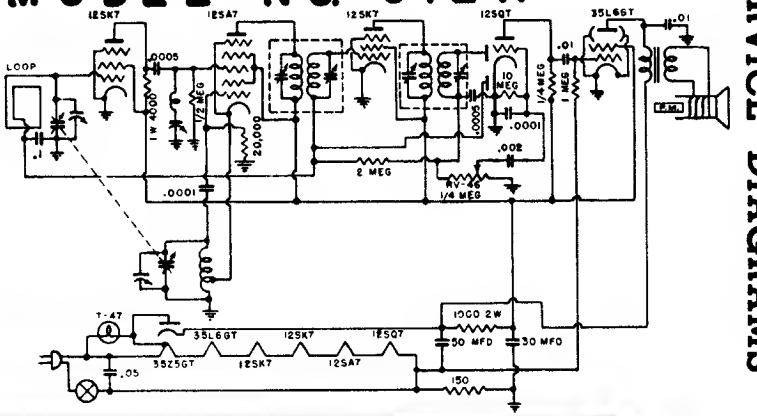
Automatic Radio
AUTOMATIC RADIO MFG. CO., INC.
122 BROOKLINE AVE., BOSTON, 15, MASS.

MODEL NO. 660



Automatic Radio
AUTOMATIC RADIO MFG. CO., INC.
122 BROOKLINE AVE., BOSTON, 15, MASS.

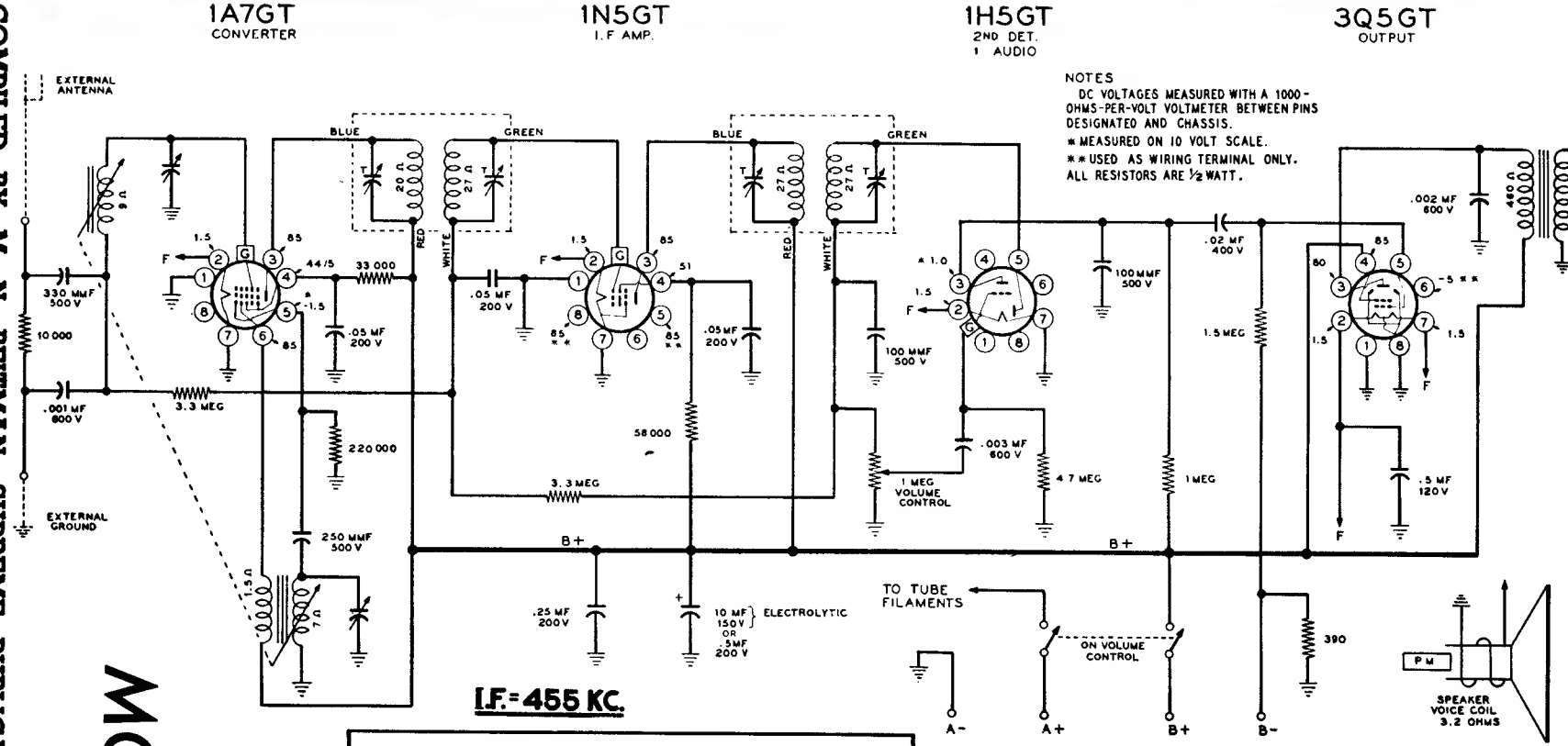
MODEL NO. 612X

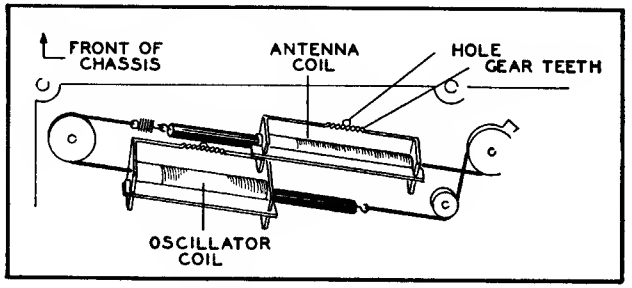


COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

1946 MOST POPULAR SERVICE DIAGRAMS

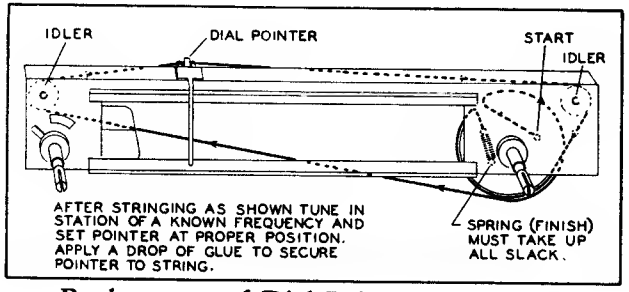
Belmont MODEL 4B17





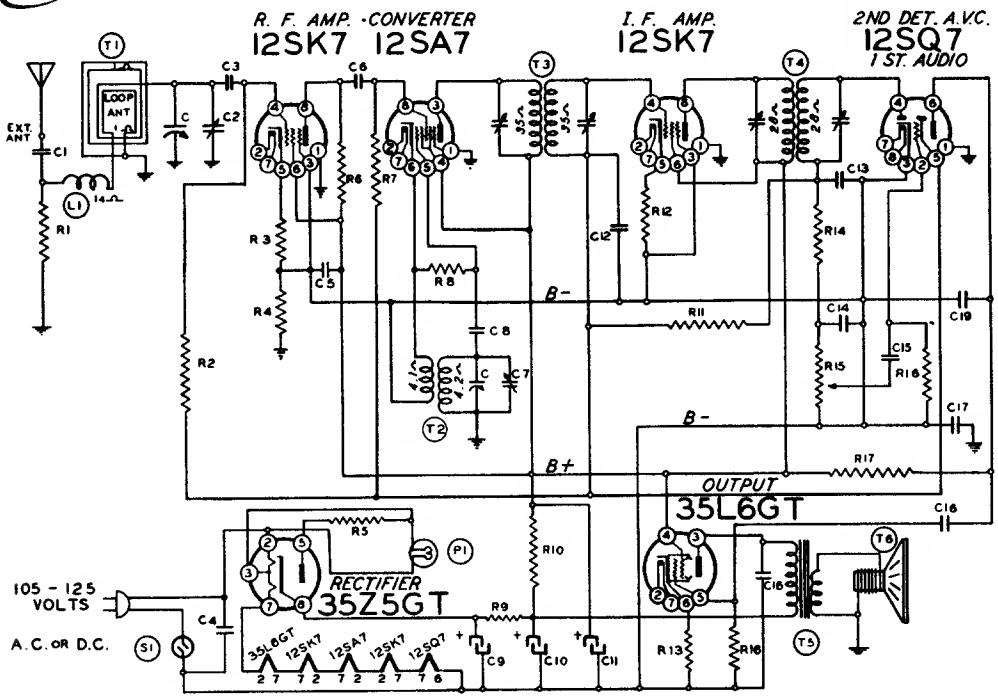
View of Coil Assembly

The antenna coil assembly is movable left or right. When making the adjustment as required in the alignment procedure, move the coil assembly very slowly, either by hand or by pivoting one edge of a screwdriver blade in the hole and engaging the blade in the gear teeth of the coil form.



Replacement of Dial Pointer Drive Cord

Belmont Radio MODEL 6D111



RESISTORS

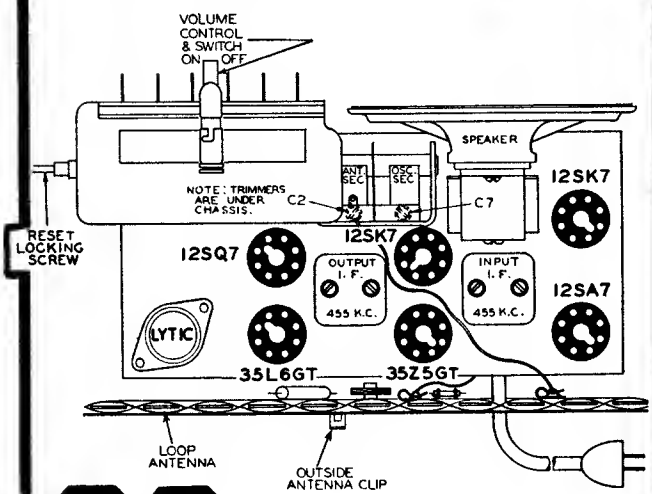
R1	4700 ohms, ½ w., ±10%
R2	1 megohm, ½ w., ±20%
R3	100 ohms, ½ w., ±10%
R4	150,000 ohms, ½ w., ±20%
R5	22 ohms, ½ w., ±10%
R6	4700 ohms, ½ w., ±20%
R7	100,000 ohms, ½ w., ±20%
R8	47,000 ohms, ½ w., ±20%
R9	180 ohms, 1 w., ±10%
R10	1200 ohms, 1 w., ±10%
R11	3.3 megohms, ½ w., ±20%
R12	390 ohms, ½ w., ±10%
R13	150 ohms, ½ w., ±10%
R14	47,000 ohms, ½ w., ±20%
R15	Volume control, 1 megohm
R16	470,000 ohms, ½ w., ±20%
R17	220,000 ohms, ½ w., ±20%
R18	4.7 megohms, ½ w., ±20%

CONDENSERS

C	2 gang variable
C1	.002 x 600 volts
C2	Antenna trimmer on gang
C3	.0005 mica
C4	.1 x 400 volts
C5	.25 x 200 volts
C6	.0001 mica
C7	Oscillator trimmer on gang
C8	.0001 mica
C9	40 mfd lytic x 150 w.v.
C10	20 mfd lytic x 150 w.v.
C11	20 mfd lytic x 150 w.v.

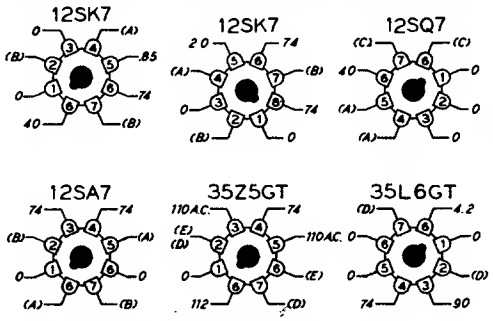
NOTE: C9, C10, C11 are in same unit. In 25-cycle sets, values are 60 mfd., 40 mfd., 40 mfd.

C12	.05 x 200 volts
C13	.0001 mica
C14	.0001 mica
C15	.002 x 600 volts
C16	.02 x 400 volts
C17	.2 x 400 volts
C18	.004 x 600 volts
C19	.0001 mica



A - CANNOT BE MEASURED WITH VOLTMETER.
B - 12 VOLTS A.C. MEASURED ACROSS PINS 2 & 7.
C - 12 VOLTS A.C. MEASURED ACROSS PINS 7 & 8.
D - 30 VOLTS A.C. MEASURED ACROSS PINS 2 & 7.
E - 117 VOLTS A.C. MEASURED ACROSS PINS 2 & 8.

VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS & B- LINE VOLTAGE 117 VOLTS AC. VOLUME CONTROL AT MINIMUM.



BOTTOM VIEW OF CHASSIS

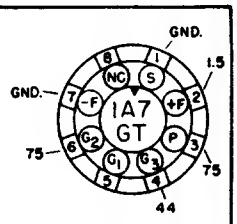
VOLTAGES AT TUBE SOCKET TERMINALS

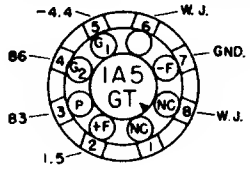
Crosley Corp. Model 46FA, 46FB

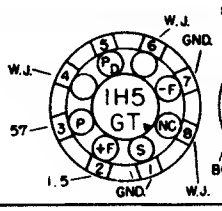
SOCKET VOLTAGE CHART

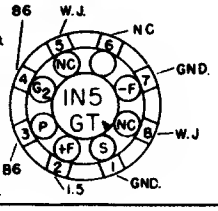
NOTES:-

1. THESE ARE BOTTOM VIEWS OF SOCKETS.
2. MEASURE VOLTAGES FROM SOCKET LUGS TO CHASSIS (-B,-A, GROUND).
3. THESE VOLTAGES MEASURED USING AN ELECTRONIC VOLTMETER.
4. W.J. - WIRING JUNCTION.
5. NC - NO CONNECTION.
6. SOCKET VOLTAGE TOLERANCE, 10%.









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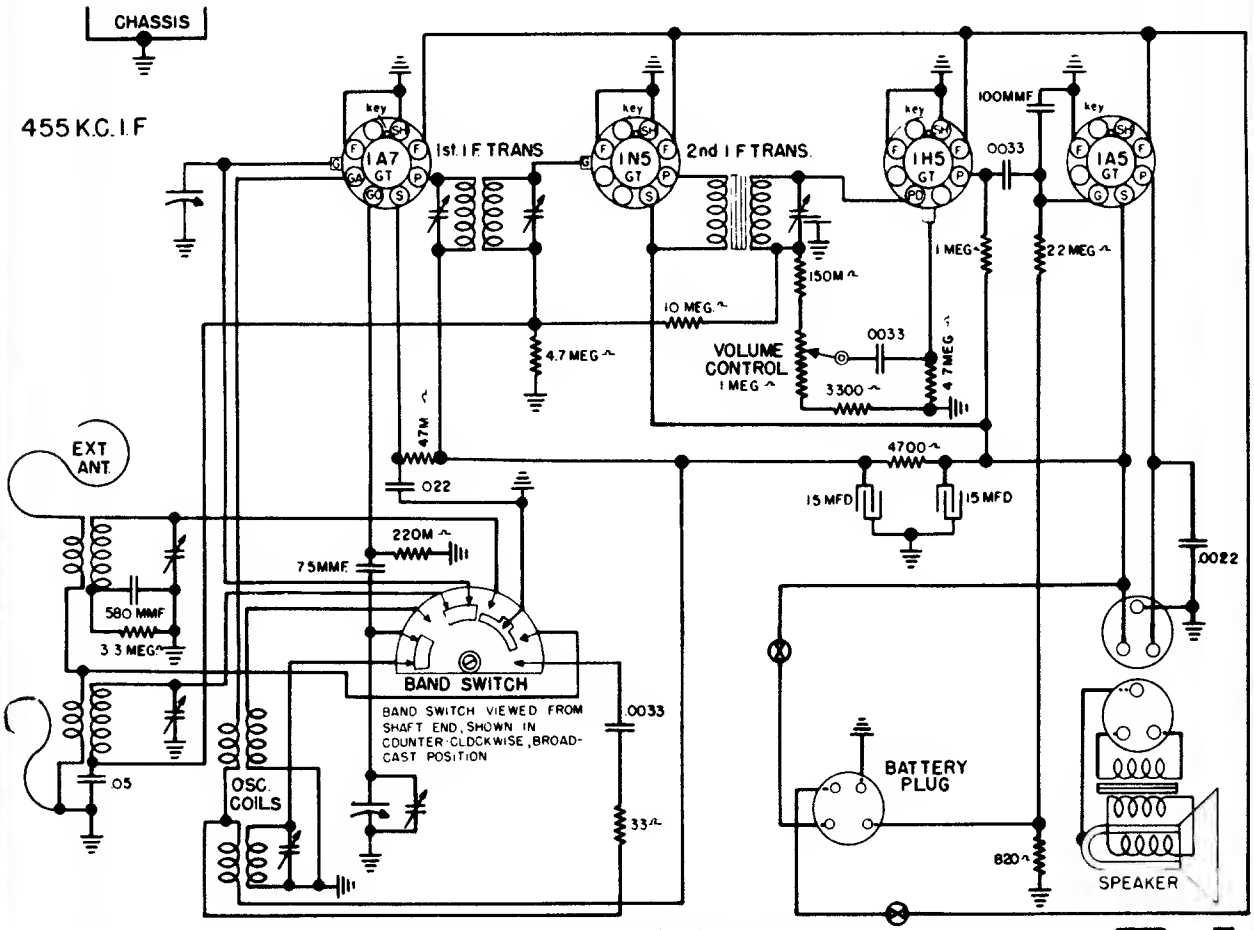
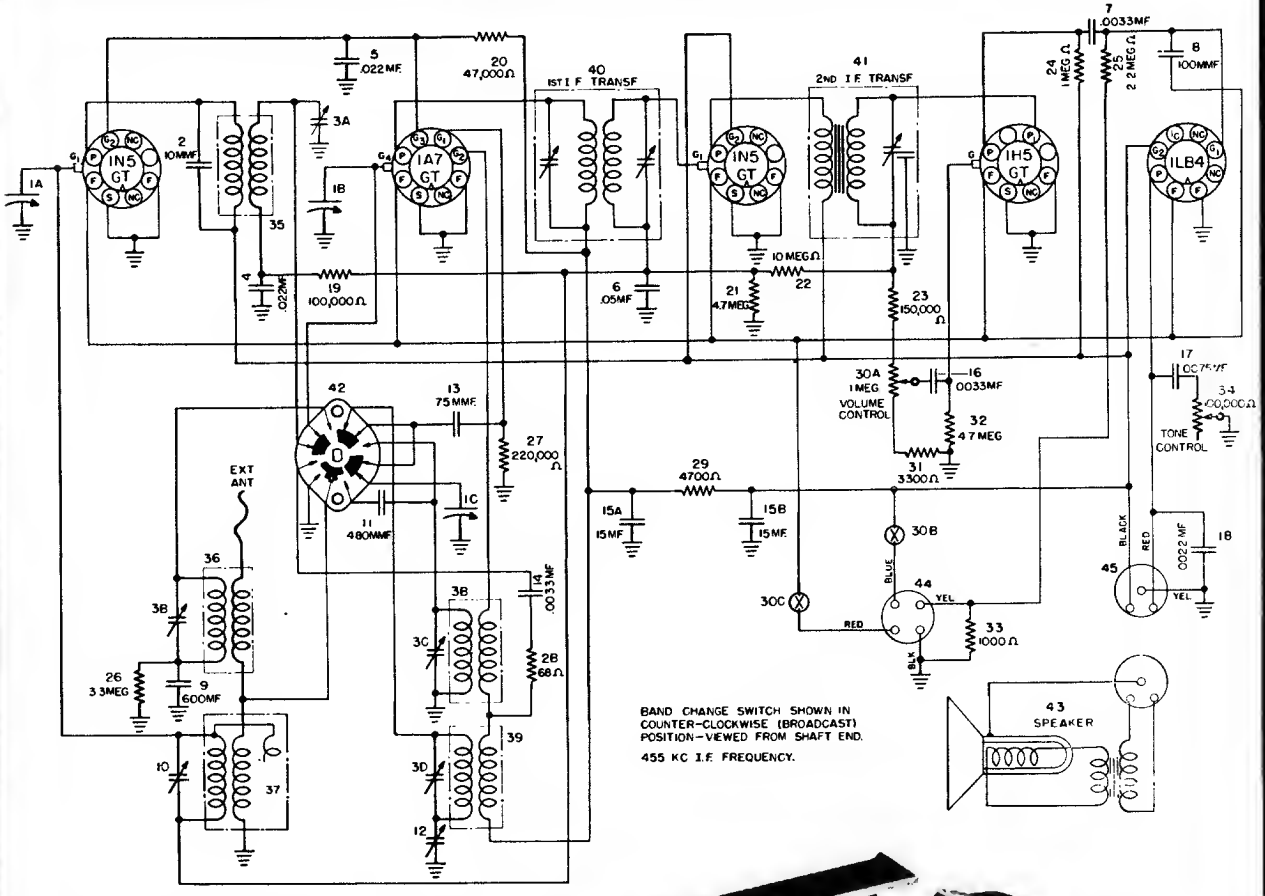


SCHEMATIC DIAGRAM— MODELS 46FA and 46FB



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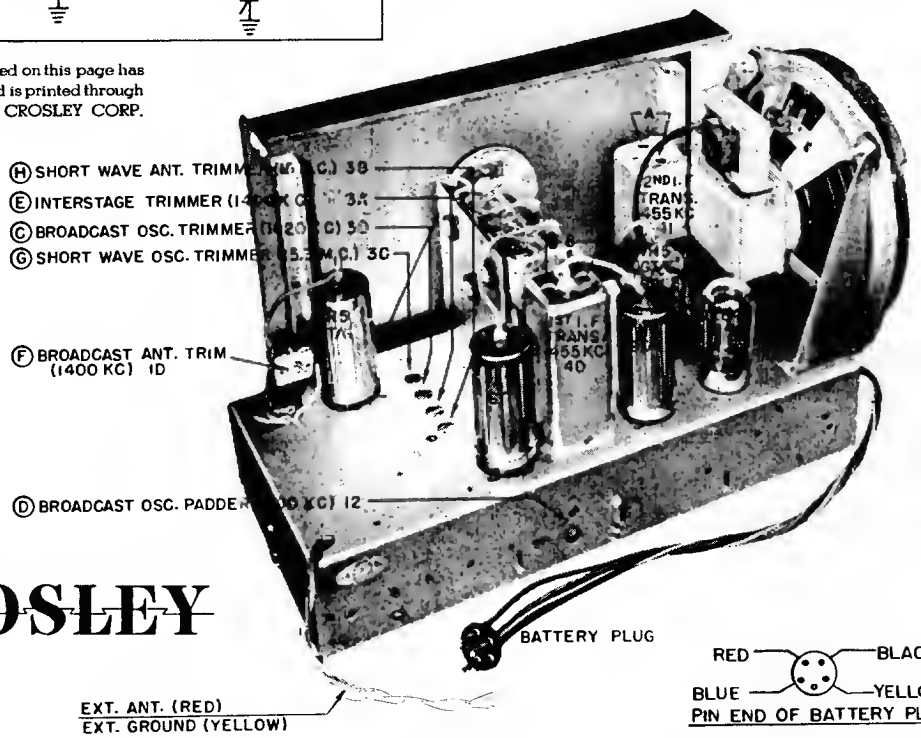


CROSLEY

Speaker mounted on cabinet on Model 56FB

CHASSIS REAR VIEW—MODELS 56FA and 56FB

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

Crosley Corp. Model 56FA, 56FB

Alignment adjustment locations are shown on page 22, Chassis, Rear View—Models 56FA and 56FB

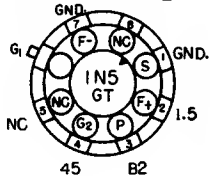
Alignment Sequence	Signal Generator Output			Position of		Adjust for Maximum Output
	Frequency in kc.	In Series with	To	Band Switch	Tuning Dial	
1	455	200 mmf.	Ant.	A	1,620	A & B
2	1,620	200 mmf.	Ant.	A	1,620	C
3	600	200 mmf.	Ant.	A	600	D
4	1,620	200 mmf.	Ant.	A	1,620	C
5	1,400	200 mmf.	Ant.	A	1,400	E & F
6	600	200 mmf.	Ant.	A	600	D
7	15,300	400 ohms	Ant.	O	15,300	G*
8	15,000	400 ohms	Ant.	O	15,000	H

SOCKET VOLTAGE CHART

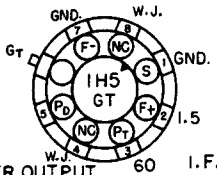
The material presented on this page has been prepared by and is printed through the courtesy of THE CROSLEY CORP.

1. THESE ARE BOTTOM VIEWS OF SOCKETS
2. MEASURE VOLTAGE FROM SOCKET LUG TO CHASSIS (GROUND).
3. THESE VOLTAGES MEASURED USING AN ELECTRONIC VOLTMETER.
4. WJ - WIRING JUNCTION.
5. NC - NO CONNECTION.
6. SOCKET VOLTAGE TOLERANCE, 10%.

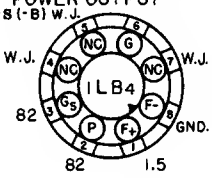
R. F. AMPLIFIER



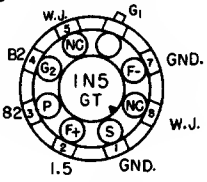
DET. A.V.C. 1ST A.F.



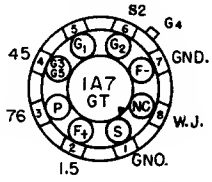
POWER OUTPUT



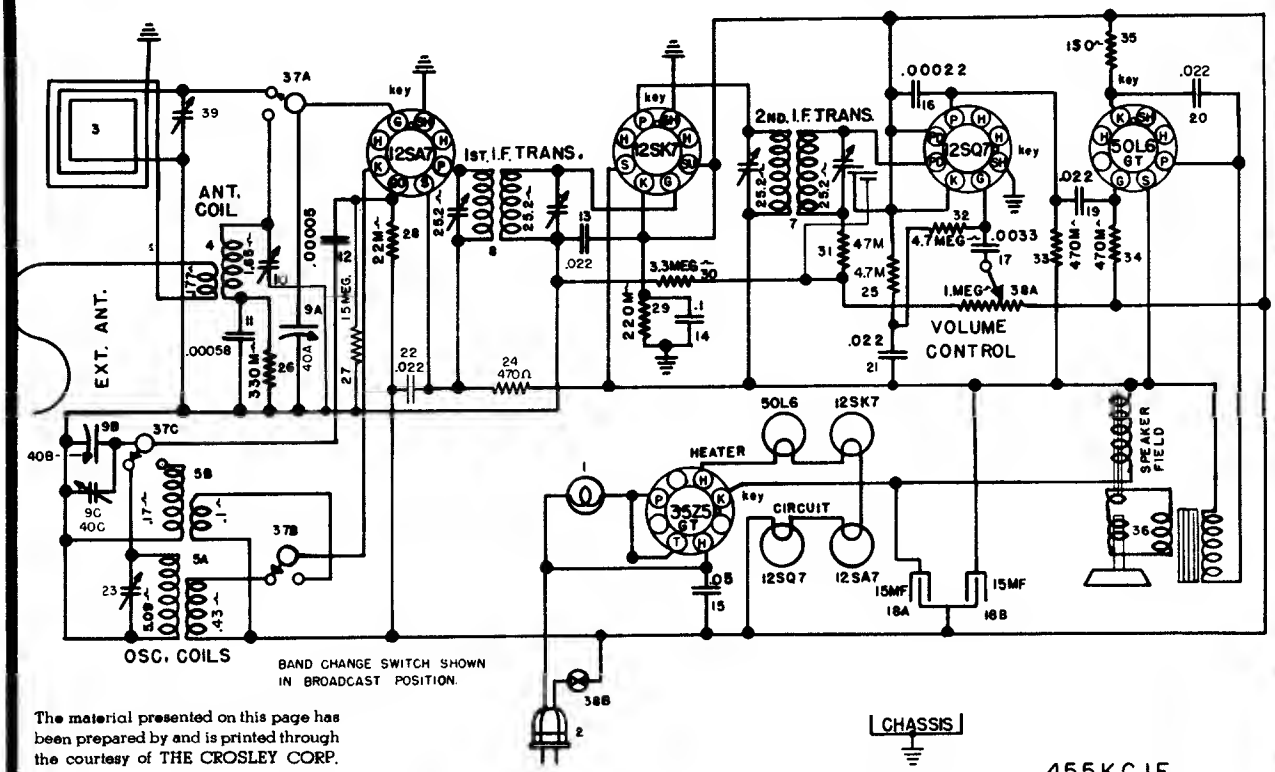
I. F. AMPLIFIER



MIXER



Crosley Corp. MODELS: 56TA, 56TW, 56TC



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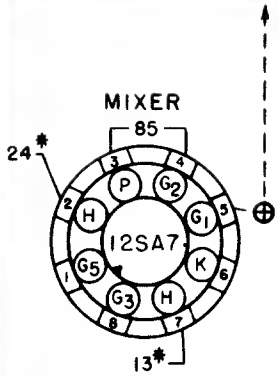
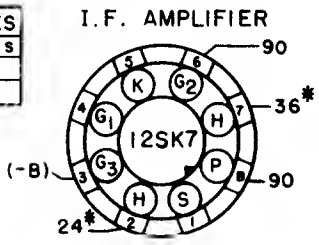
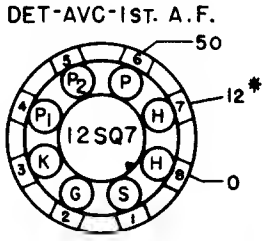
SCHEMATIC DIAGRAM—MODELS 56TA, 56TW, 56TC

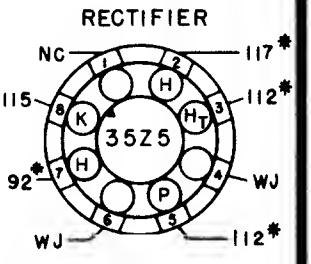
SOCKET VOLTAGE CHART

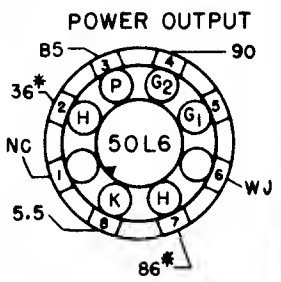
⊕ OSCILLATOR GRID VOLTAGES		
BAND	FREQUENCY	VOLTS
AMERICAN	540 KC	−4.6
OVERSEAS	5.7 MC	−2.8











NOTES:
1. THESE ARE BOTTOM VIEWS OF SOCKETS.
2. MEASURE VOLTAGES FROM SOCKET LUGS TO −8 (PIN 3 ON THE 12SK7)
3. THESE VOLTAGES MEASURED USING AN ELECTRONIC VOLTMETER.
4. WJ − WIRING JUNCTION.
5. NC − NO CONNECTION.
6. * − 60 CYCLE AC VOLTAGE.
7. SOCKET VOLTAGE TOLERANCE, 10%

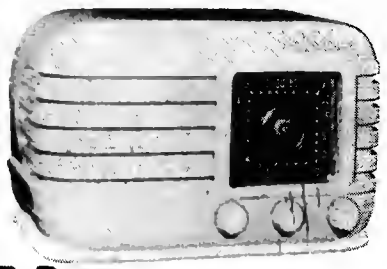
RESISTANCE OF SPEAKER FIELD: 450 ohms.

SPEAKER FIELD CURRENT: 60 ma.

56TA

56TC

56TW



ALIGNMENT PROCEDURE

1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r.f. signal input from the signal generator should be connected to the external antenna lead. Connect the signal generator ground through a 0.1 mfd. condenser to —B (pin 3 on 12SK7 tube socket).
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

The material presented on this page has been prepared by and is printed through the courtesy of THE CROSLEY CORP.

ALIGNMENT CHART

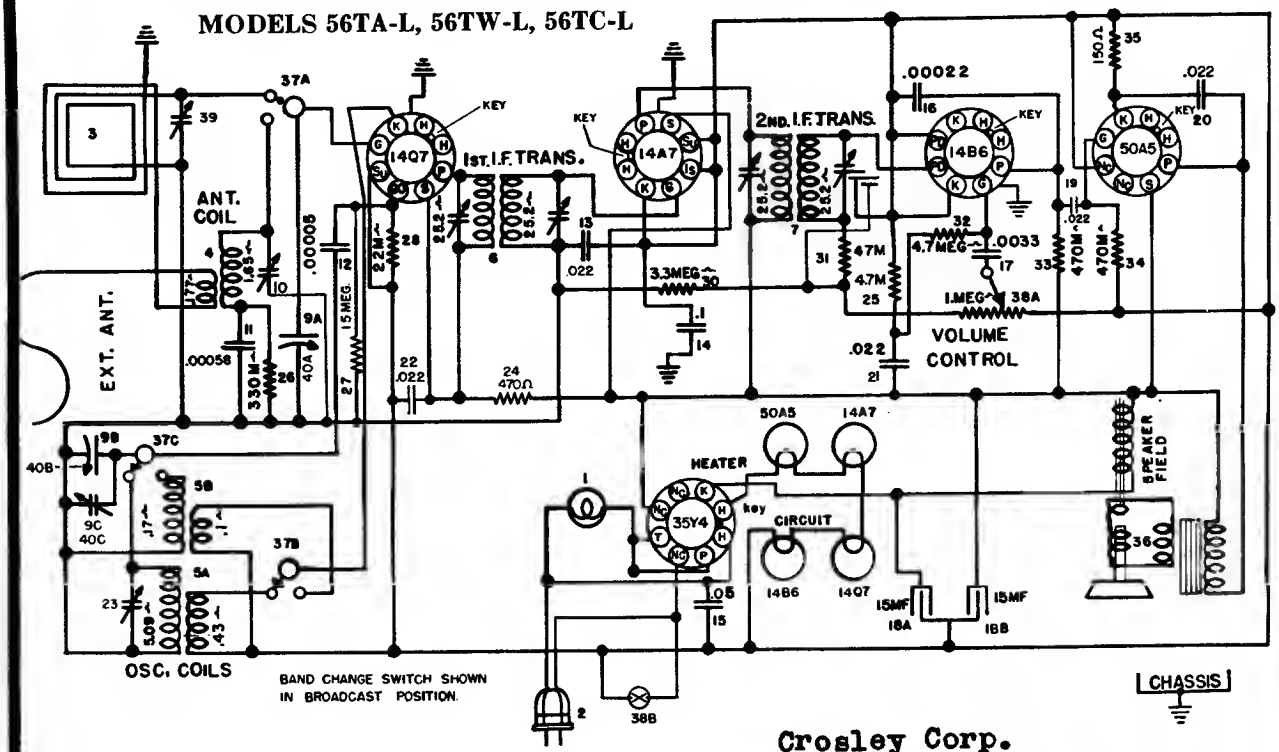
CROSLEY

Models 56TA, 56TW, 56TC

Alignment Sequence	Signal Generator Output			Position of		Adjust for Maximum Output
	Frequency in kc.	In Series with	To	Band Switch	Tuning Dial	
1	455	200 mmf.	Ant.	A	1,620	A & B
2	15,300	400 ohms	Ant.	O	15,300	C
3	15,000	400 ohms	Ant.	O	15,000	D
4	1,400	200 mmf.	Ant.	A	1,400	E & F

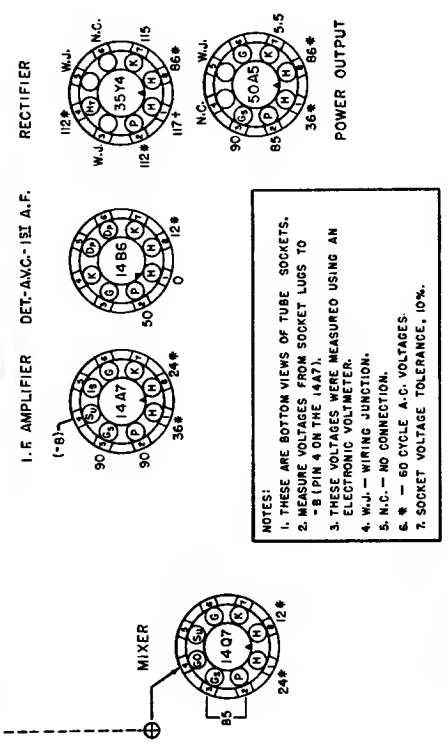
NOTE: When aligning the short-wave oscillator trimmer (C), be sure that the circuit is aligned at the correct frequency and not at the image frequency which is 910 kilocycles lower as indicated by the receiver dial. To check: Tune in the generator frequency, then increase the generator output and tune in the image frequency. The image frequency should be weaker than the fundamental and audible 910 kilocycles lower on the receiver dial. If the image cannot be tuned in, the oscillator trimmer is adjusted to the wrong peak; i.e., the oscillator trimmer may be adjusted to the image or one of the harmonics instead of the fundamental frequency. The correct peak is the second one heard as the trimmer adjustment screw is opened from the completely closed position.

MODELS 56TA-L, 56TW-L, 56TC-L



Crosley Corp.

SOCKET VOLTAGE CHART

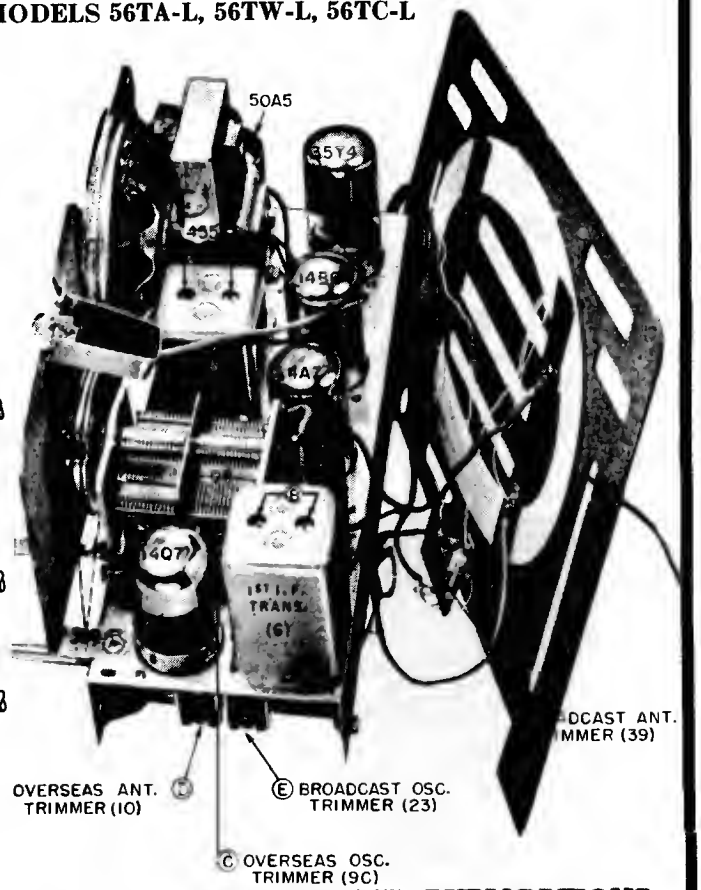


NOTES:
1. THESE ARE BOTTOM VIEWS OF TUBE SOCKETS.
2. MEASURE VOLTAGES FROM SOCKET LUGS TO -B (PIN 4 ON THE 14A7).
3. THESE VOLTAGES WERE MEASURED USING AN ELECTRONIC VOLTMETER.
4. W.J. — WIRING JUNCTION.
5. N.C. — NO CONNECTION.
6. * — 60 CYCLE A.C. VOLTAGES.
7. SOCKET VOLTAGE TOLERANCE, 10%.

OSCILLATOR GRID VOLTAGES		
BAND	FREQUENCY	VOLTS
AMERICAN	550 KC	-4.6
OVERSEAS	5.8	-2.8

455 K.C. I.F.

MODELS 56TA-L, 56TW-L, 56TC-L



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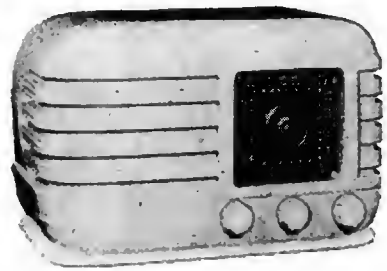
56TA-L

56TC-L

56TW-L



ALIGNMENT PROCEDURE

1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r.f. signal input from the signal generator should be connected to the external antenna lead. Connect the signal generator ground through a 0.1 mfd. condenser to —B (pin 4 on 14A7 tube socket).
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

ALIGNMENT CHART

Alignment Adjustment Locations are shown on page 26.

MODELS: 56TA-L, 56TW-L, 56TC-L

Alignment Sequence	Signal Generator Output			Position of		Adjust for Maximum Output
	Frequency in kc.	In Series with	To	Band Switch	Tuning Dial	
1	455	200 mmf.	Ant.	A	1,620	A & B
2	15,300	400 ohms	Ant.	O	15,300	C
3	15,000	400 ohms	Ant.	O	15,000	D
4	1,400	200 mmf.	Ant.	A	1,400	E & F

NOTE: When aligning the short-wave oscillator trimmer (C), be sure that the circuit is aligned at the correct frequency and not at the image frequency which is 910 kilocycles lower as indicated by the receiver dial. To check: Tune in the generator frequency, then increase the generator output and tune in the image frequency. The image frequency should be weaker than the fundamental and audible 910 kilocycles lower on the receiver dial. If the image cannot be tuned in, the oscillator trimmer is adjusted to the wrong peak; i.e., the oscillator trimmer may be adjusted to the image or one of the harmonics instead of the fundamental frequency. The correct peak is the second one heard as the trimmer adjustment screw is opened from the completely closed position.

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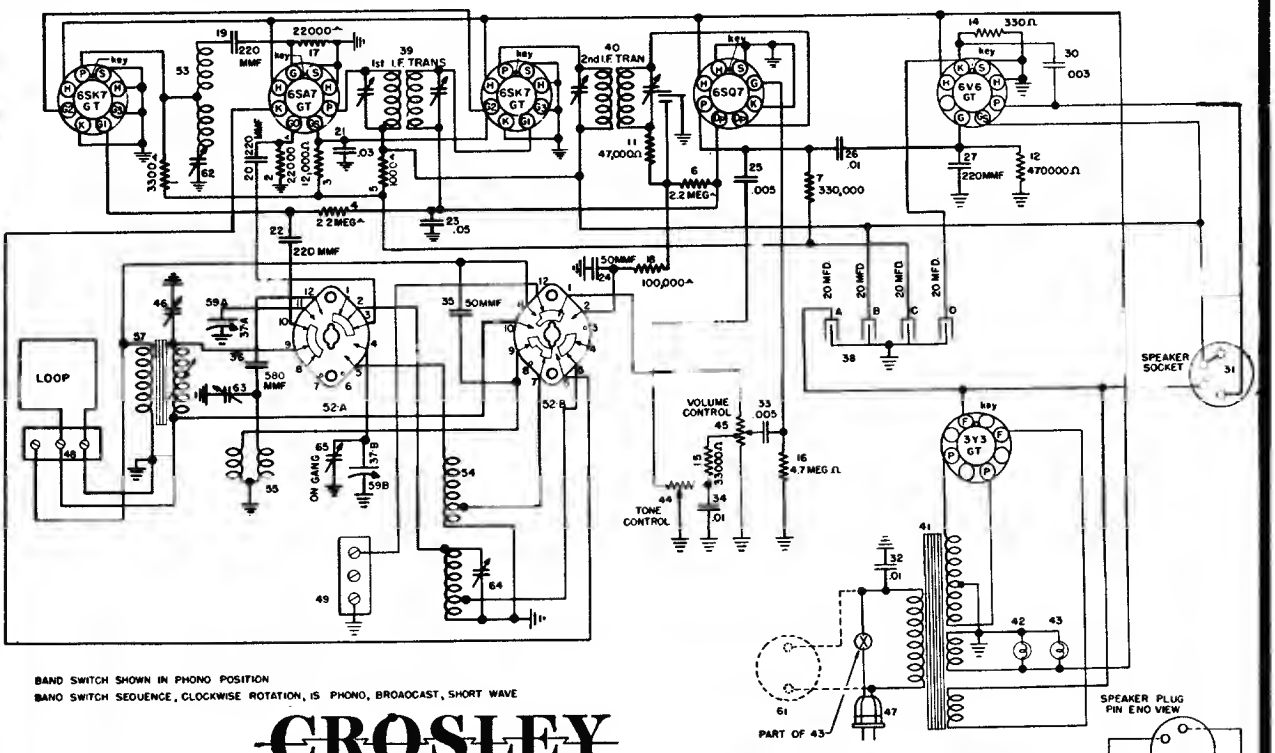

CROSLEY

MODELS 66CA, 66CP, 66CQ

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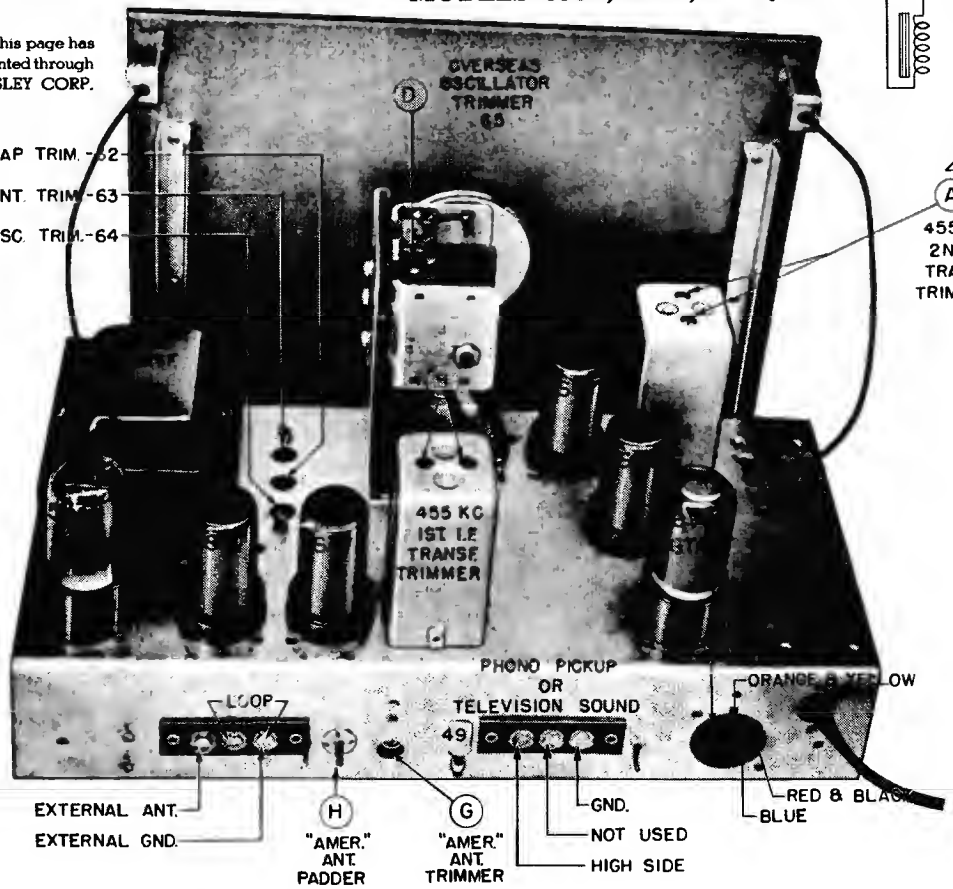


- (C) WAVE TRAP TRIM.-62
- (E) "OVERSEAS" ANT. TRIM.-63
- (F) "AMERICAN" OSC. TRIM.-64
- (A) 455 KC 2ND. I.F TRANSF. TRIMMER
- EXTERNAL ANT.
- EXTERNAL GND.
- (H) "AMER." ANT. PADDER
- (G) "AMER." ANT. TRIMMER

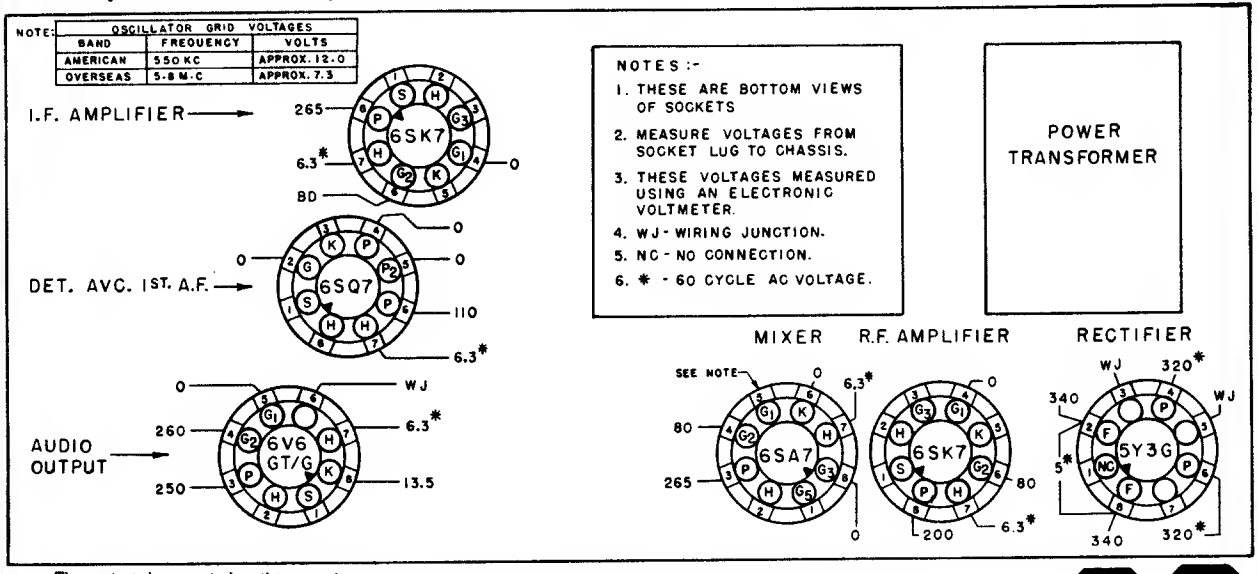
ALIGNMENT PROCEDURE, CROSLEY CORP. MODELS 66CA, 66CP, 66CQ

1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r.f. signal input from the signal generator should be connected to the external antenna post as indicated in the alignment chart. Connect the low side (ground) of the signal generator to the chassis.
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain the signal generator output as low as possible to prevent AVC action.

Alignment adjustment locations are shown on page 28 Chassis, Rear View—Models 66CA, 66CP, 66CQ

Alignment Sequence	Signal Generator Output			Position of		Adjust for Maximum Output
	Frequency in kc.	In Series With	To	Band Switch	Tuning Dial	
1	455	200 mmf.	Ant.	A	1620	A & B
2	455	200 mmf.	Ant.	A	1620	C*
3	15,300	400 ohms	Ant.	O	15,300	D
4	15,000	400 ohms	Ant.	O	15,000	E
5	1620	200 mmf.	Ant.	A	1620	F
6	1400	200 mmf.	Ant.	A	1400	G
7	600	200 mmf.	Ant.	A	600	H
8	1400	200 mmf.	Ant.	A	1400	Recheck G

*Adjust for Minimum Output (Wave Trap).



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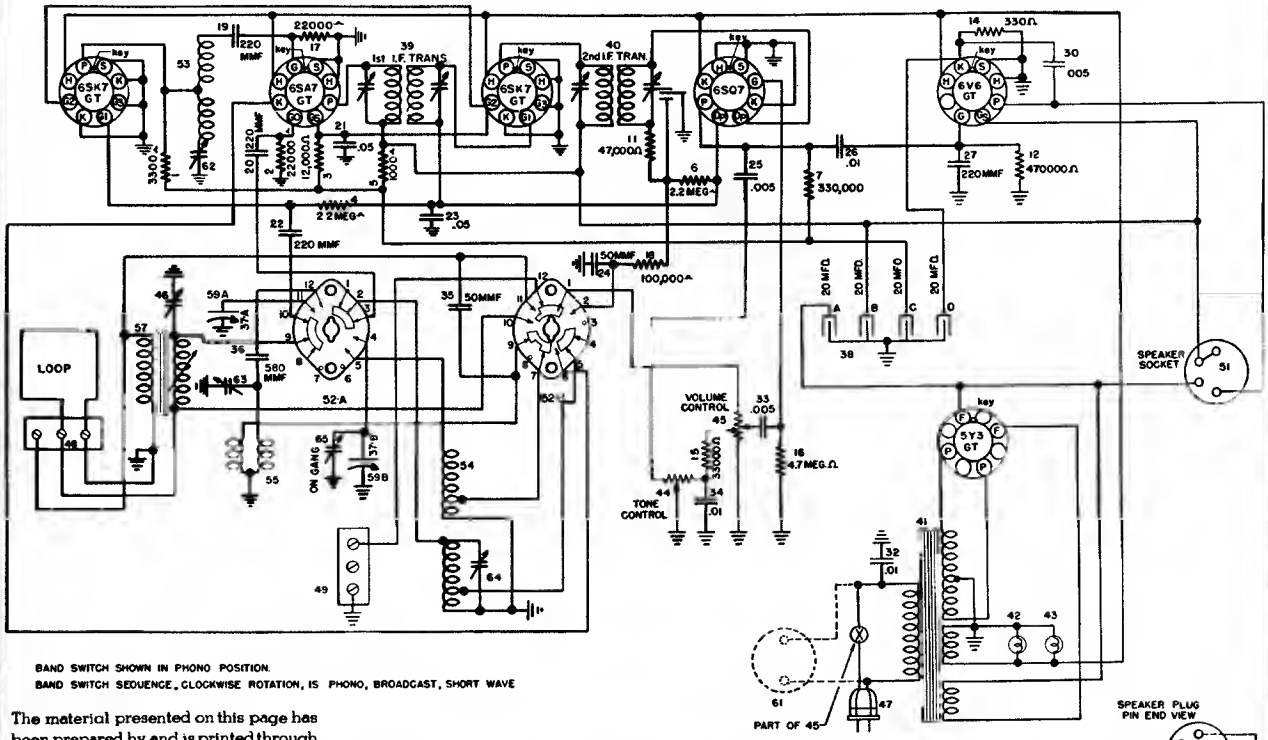
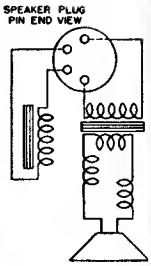
SOCKET VOLTAGE TOLERANCE: 10%



BAND SWITCH SHOWN IN PHONO POSITION.
BAND SWITCH SEQUENCE, CLOCKWISE ROTATION, IS PHONO, BROADCAST, SHORT WAVE



The material presented on this page has been prepared by and is printed through the courtesy of THE CROSLEY CORP.

Crosley Corp. MODELS 66TA, 66TW, 66TC

ALIGNMENT PROCEDURE

1. Turn the tuning capacitor to the completely closed position against the stop, and set the dial pointer to the reference line at the end of the dial scale.
2. Turn the tone control to the high or treble position.
3. Connect the output meter across the speaker voice coil.
4. The r.f. signal input from the signal generator should be connected to the external antenna post. Connect the signal generator ground to the chassis.
5. Turn the volume control on full, and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

ALIGNMENT CHART

Alignment Sequence	Signal Generator Output			Position of		Adjust for Maximum Output
	Frequency in kc.	In Series with	To	Band Switch	Tuning Dial	
1	455	200 mmf	Ant.	A	1620	A & B
2	455	200 mmf	Ant.	A	1620	C*
3	15,300	400 ohms	Ant.	O	15,300	D
4	15,000	400 ohms	Ant.	O	15,000	E
5	1620	200 mmf	Ant.	A	1620	F
6	1400	200 mmf	Ant.	A	1400	G
7	600	200 mmf	Ant.	A	600	H

*Adjust for minimum output (wavetrap).

NOTE: When aligning the short-wave oscillator trimmer (D), be sure that the circuit is aligned at the correct frequency and not at the image frequency which is 910 kilocycles lower as indicated by the receiver dial. To check: Tune in the generator frequency, then increase the generator output and tune in the image frequency. The image frequency should be weaker than the fundamental and audible 910 kilocycles lower on the receiver dial. If the image cannot be tuned in, the oscillator trimmer is adjusted to the wrong peak; i.e., the oscillator trimmer may be adjusted to the image or one of the harmonics instead of the fundamental frequency. The correct peak is the second one heard as the trimmer adjustment screw is opened from the completely closed position.

FREQUENCY RANGE: American Broadcast Band: 540 to 1600 kc. (Selector switch at A.)

Overseas Short-wave Band: 5.8 to 15 mc. (Selector switch at 0.)

INTERMEDIATE FREQUENCY: 455 kc.

POWER SUPPLY: 60 cycle a.c. only.

VOLTAGE RATING: 110-120 volts.

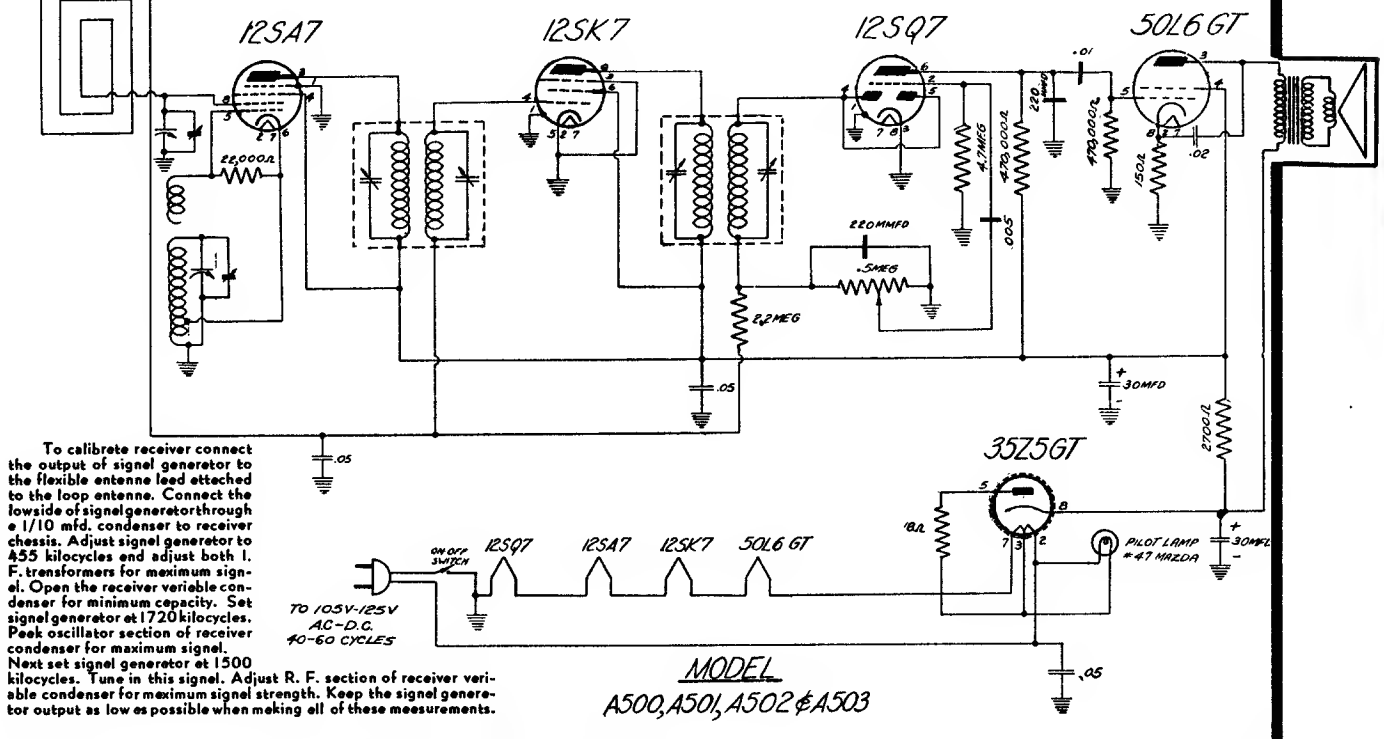
POWER CONSUMPTION: 60 watts maximum.

POWER OUTPUT: 4.5 watts minimum.

CROSLEY

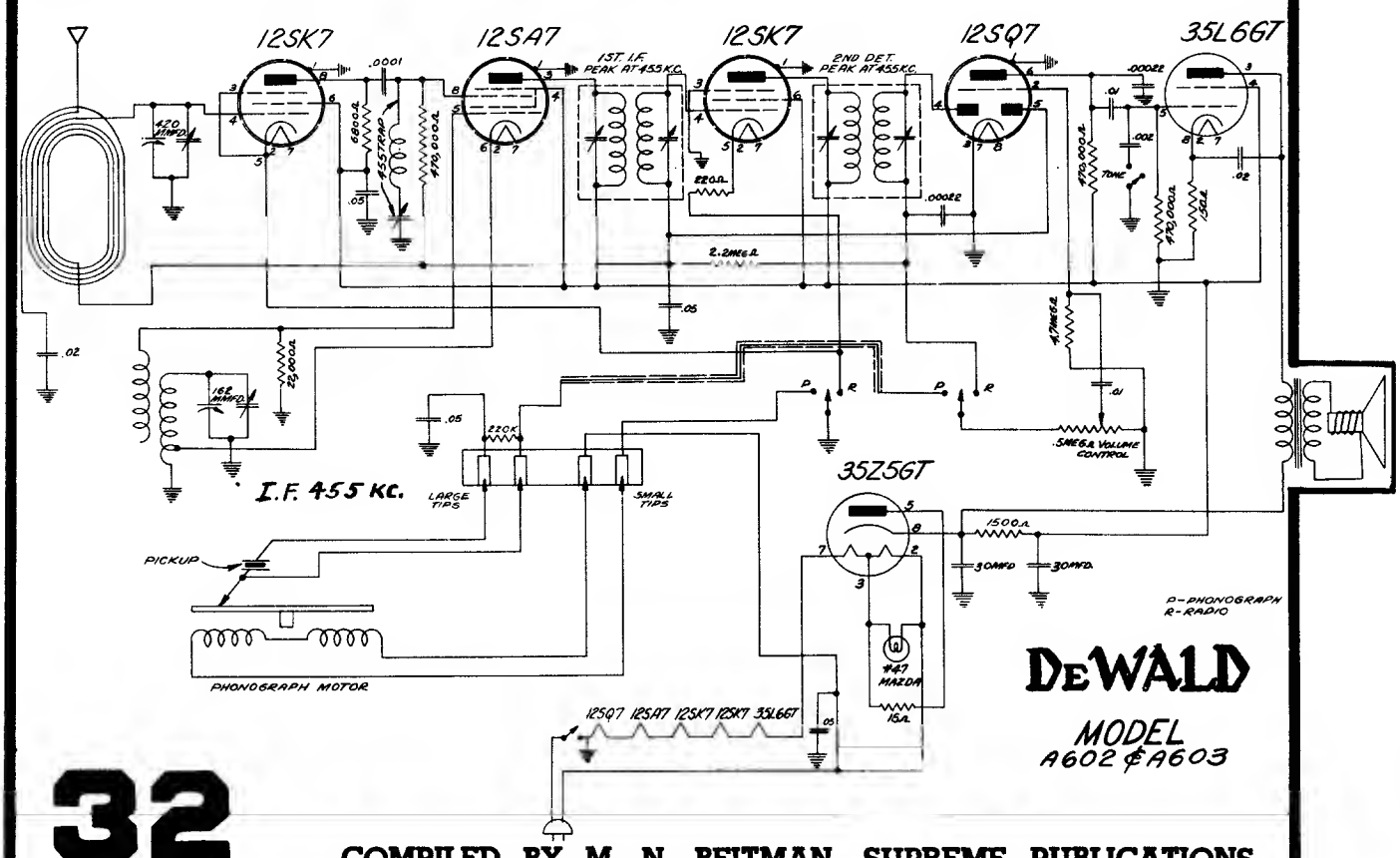
MODELS: 66TA, 66TW, 66TC

DEWALD RADIO MFG. CORP.



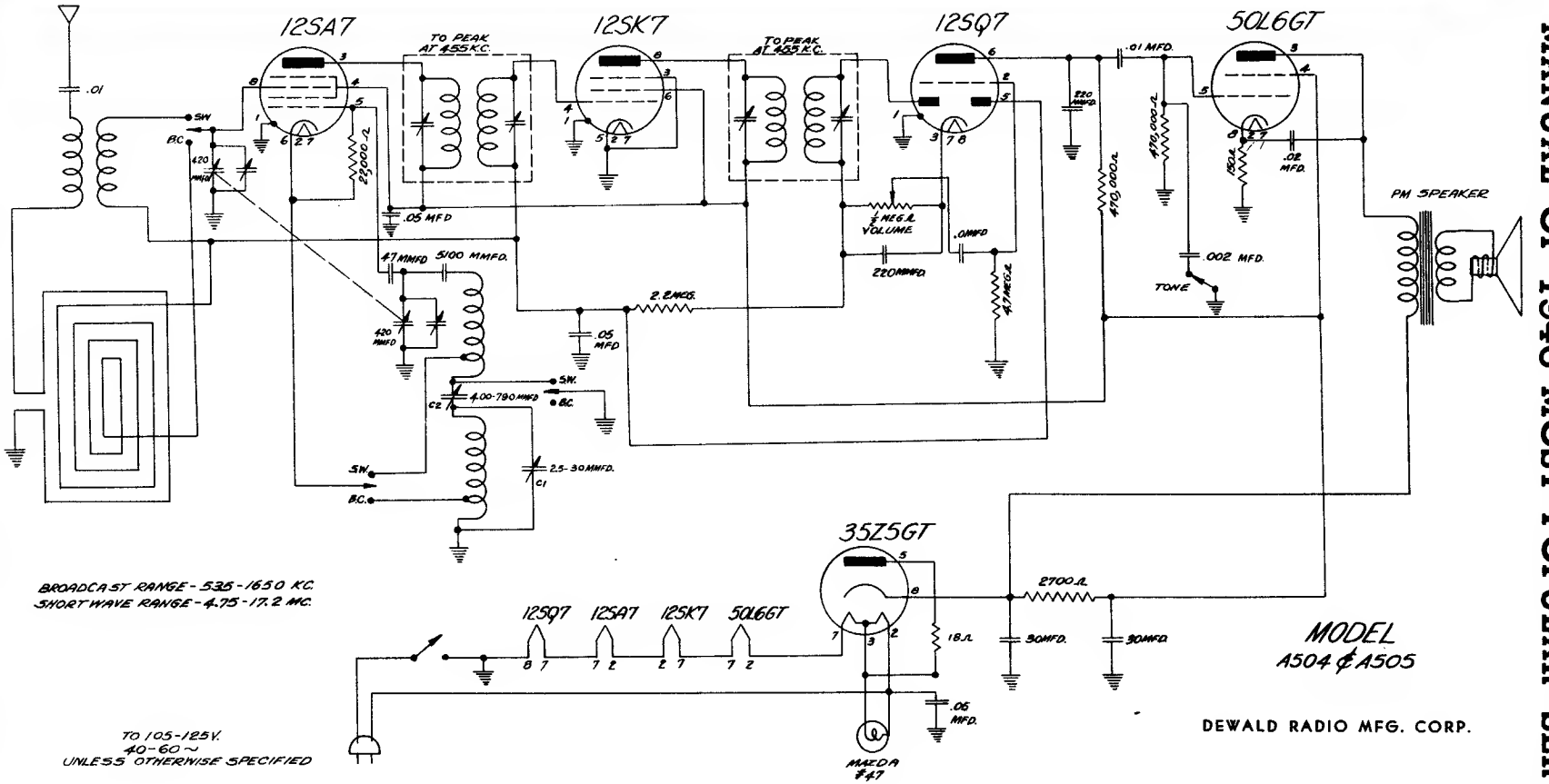
To calibrate receiver connect the output of signal generator to the flexible antenne leed attached to the loop antenne. Connect the lowside of signal generator through a 1/10 mfd. condenser to receiver chassis. Adjust signal generator to 455 kilocycles and adjust both I. F. transformers for maximum signal. Open the receiver variable condenser for minimum capacity. Set signal generator at 1720 kilocycles. Peak oscillator section of receiver condenser for maximum signal. Next set signal generator at 1500 kilocycles. Tune in this signal. Adjust R. F. section of receiver variable condenser for maximum signal strength. Keep the signal generator output as low as possible when making all of these measurements.

MODEL A500, A501, A502 & A503



DeWALD

MODEL A602 & A603



MODEL A504 & A505

DEWALD RADIO MFG. CORP.

The models A-504 and A-505 are superheterodyns receivers with full automatic volume control. A Loop-tenna is incorporated which makes the use of an antenna unnecessery, in most localities, for broadcast reception. Thess receivers will function from 105-125 volts, 40-60 cycles A.C. or D.C. power supply. A renge of 535-1650 kilocycles end 4.75-17.2 megecycles,(17½-63M) is covsred by these receivers.

The knob on the extreme right is ths wave band switch control. When the knob is in the counterclockwiee position, standard broadcest stations may bs tuned in. To receive short wave stations, turn the knob to clockwiss position. (Right)

SHORT WAVE TUNING:

On short waves the rsceiver is very selective and etations may be tuned in and out by a very emall movement of the dial. Therefors greater care must be exsrcised when tuning ehort wave stations than would ordinarily be used for broadcast tuning. In many instences, there may be several short wave stations within a single division of the dial. A listing of short wave stations would be a great help when desiring to tune in any particular statione.

To calibrete recsiver connect the output of signel generator in seriss with e 200 MMFD fixed condenser to the flexible antenna leed attachsd to the loop antenna. Connect the low side of signal gensrator through a 1/10 mfd. condepeer to receiver chassis. The wave band switch should be in the broadcast position. Adjuet signal generator to 455 Kilocycles and adjust both I.F. transformers for maximum signal. Open the receiver variable condenser for minimum capecity. Turn the band switch to short wave position. Set signal generator at 17.2 Megacycles. Psak oscillator ssction of receiver condsnser for maximum signal. Next set signal generator at 16 Megacycles. Tune in this signal. Adjust R.F. section of receiver varieble condenser for maximum signel strength. The low frequency end of the dial is automatically adjustsd by a fixed padder condenser. Next turn band ewitch to broadcast position. Rotate drive shaft until variable condenser is in minimum capacity position. Adjuet signal generator to 1650 Kilocycles. Adjust the broadcaet oscillator trimmsr screw (C-1) until maximum signal from generator is heard. To adjust the low frequency, set the signal generator and recsiver to 600 Kilocycles. Peak the broadcast padder (C-2) for maximum output. The variable condenser should be rocked during the operation. Keep the signal generator output as low es possible when making all of these measurements. It is extremely necessary in making the short wave adjustments, that the fundamental oscillator signal be tuned in and not the image frequency, which will fall below ths fundamental.

EMERSON RADIO

Models 501, 502, 503, and 504.

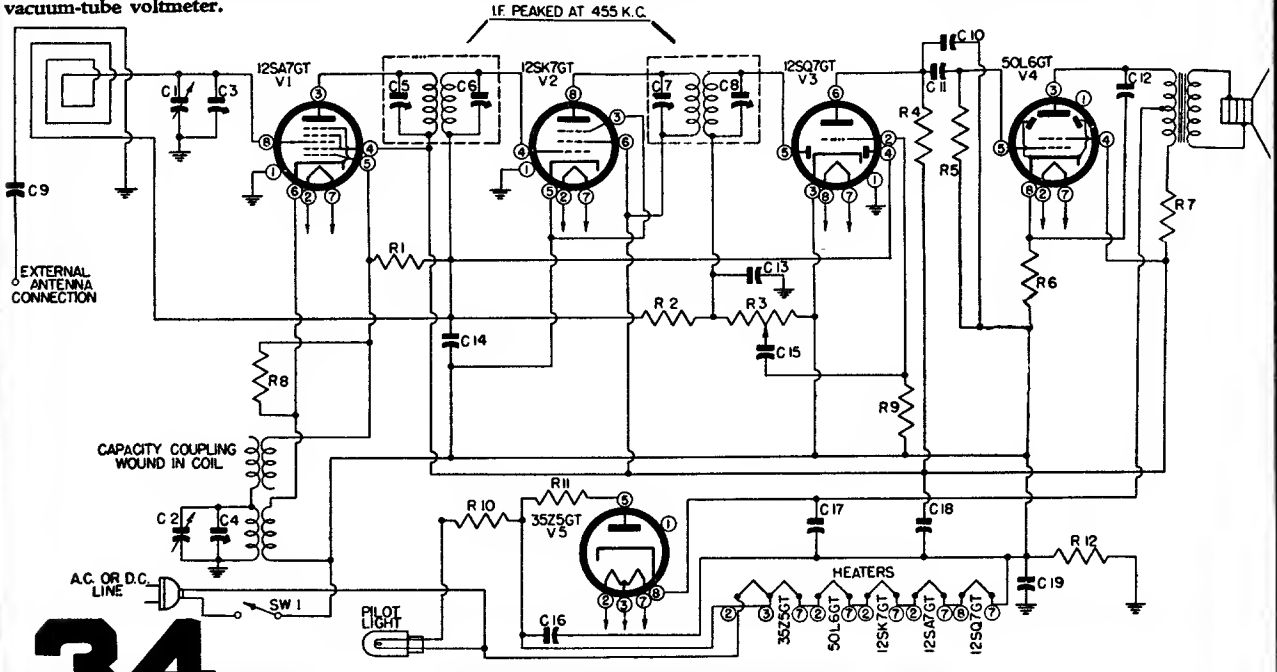
CHASSIS MODELS: 120000, 120029

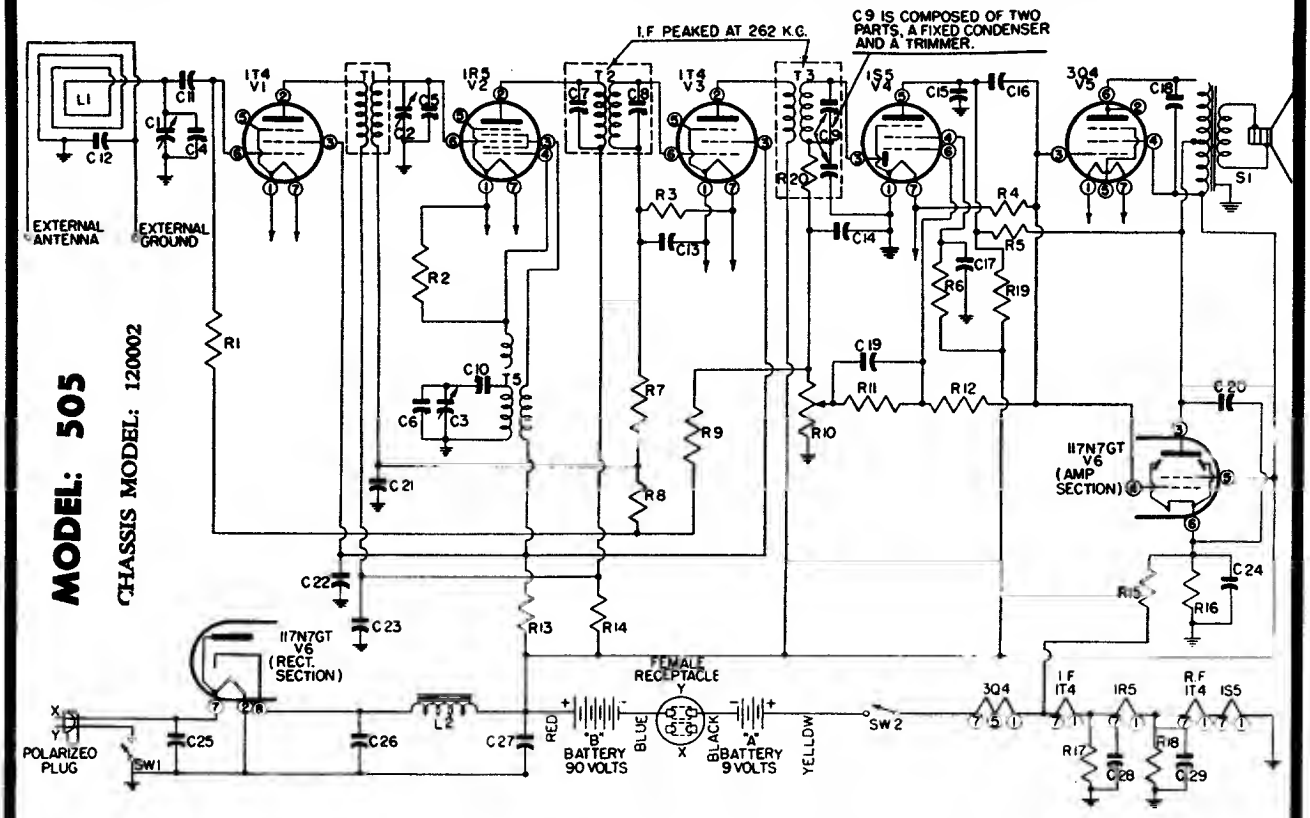
Schematic Symbol	Part No.	DESCRIPTION
C1, C2	900160	Two-gang variable condenser (120029 chassis)
C3		Trimmer, part of variable condenser
C4		Trimmer, part of variable condenser
C5, C6		Trimmers, part of first i-f transformer
C7, C8		Trimmers, part of second i-f transformer
C9, C15	920010	0.002 mfd., 600 volt condenser
C10	920170	0.001 mfd., 600 volt condenser
C11, C12	920020	0.02 mfd., 400 volt condenser
C13	910000	0.00022 mfd. mica condenser
C14	920040	0.1 mfd., 200 volt condenser
C16	920030	0.05 mfd., 400 volt condenser
C17, C18	925000	30-50 mfd., 150 V. dual dry-electrolytic condenser; C17—30 mfd., C18—50 mfd.
C19	920050	0.2 mfd., 200 volt condenser
L1	700000	Loop antenna, or
L1	700200	Loop antenna
R1, R9	397000	15 meg., ¼ watt resistor
R2	321330	3.3 meg., ¼ watt resistor
R3	390010	0.5 meg. volume control
R4, R5	321130	470,000 ohms, ¼ watt resistor
R6	340290	150 ohms, ½ watt resistor
R7	370490	1000 ohms, 1 watt resistor
R8	310810	22,000 ohms, ¼ watt resistor
R10	340010	10 ohms, ½ watt resistor
R11	397040	15 ohms, 1 watt wire-wound resistor
R12	321050	220,000 ohms, ¼ watt resistor

Models: 510, 519, 520, and Chassis: 120030, are similar.

	PIN NUMBER							
TUBE	1	2	3	4	5	6	7	8
12SA7			89	89	*-10			*-1.6
12SK7				*-1.6		89		89
12SQ7		*-0.7		*-1.6	-0.5	37.5		
50L6GT			110	89				6.2
35Z5GT				116		116		117

The following voltage readings are d-c measurements taken from B— (line switch) in the indicated tube-socket pin. 1000 ohms-per-volt meter should be used for all readings except those indicated by an asterisk (*), which should be taken with a vacuum-tube voltmeter.

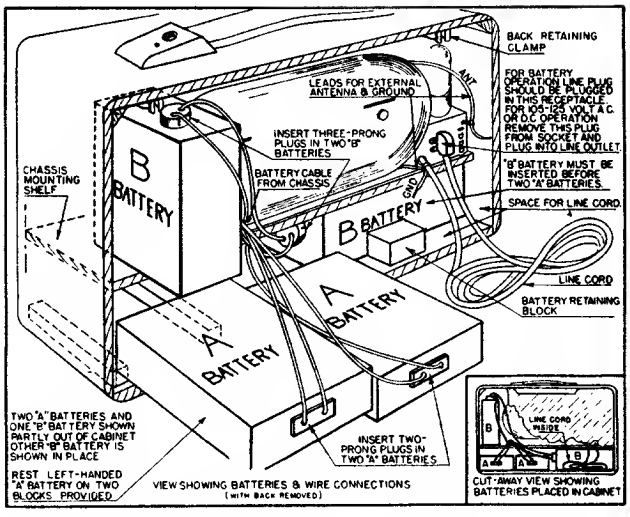




MODEL: 505

CHASSIS MODEL: 120002

Schematic Symbol	DESCRIPTION
C1, C2, C3	Three-gang variable condenser
*C4	Trimmer part of C1
*C5	Trimmer, part of C2
*C6	Trimmer, part of C3
*C7, C8	Trimmers, part of T2
*C9	Trimmer and fixed condenser, part of T3
C10	Padding condenser
C11, C13	0.05 mfd., 200 V. condenser
C12, C18	0.002 mfd., 600 V. condenser
C14	110 mmfd., mica condenser
C15	400 mmfd., mica condenser
C16, C19, C21, C22, C29	0.02 mfd., 200 V. condenser
C17, C20	0.01 mfd., 400 V. condenser
C23	0.02 mfd., 400 V. condenser
C24	100 mfd., 25 V. electrolytic condenser
C25	0.05 mfd., 400 V. condenser
C26, C27	20-40 mfd., 135 V. dual electrolytic cond
C28	0.25 mfd., 100 V. condenser
L1	Loop antenna
L2	Filter choke
R1, R3, R5, R6, R7, R8	3.3 meg., ¼ watt resistor
R2	100,000 ohms, ¼ watt resistor
R4, R19	470,000 ohms, ¼ watt resistor
R9	2.2 meg. ¼ watt resistor
R10	Volume control, 500,000 ohms
R11	5.6 meg., ¼ watt resistor
R12	10 meg., ¼ watt resistor
R13	15,000 ohms, ½ watt resistor
R14	3,900 ohms, ½ watt resistor
R15	33 ohms, ¼ watt resistor
R16	3,300 ohms, ¼ watt resistor
R17	2,200 ohms, ¼ watt resistor
R18	680 ohms, ¼ watt resistor
*R20	47,000 ohms, ¼ watt resistor, part of T4



1. The color coding of the i-f transformer leads is as follows:
   Grid—green — Plate—blue
   Grid return—black — B+—red

2. The color coding of the battery cable is as follows:
   Red—B+, 90 Volts — Yellow—A+, 9 Volts
   Blue—B— — Black—A—

Emerson Radio

MODEL: 505

Model 523 is similar.

CHASSIS MODEL: 120002

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

EMERSON RADIO

MODEL: 506

CHASSIS MODEL: 120003

FREQUENCY RANGE: 540-1620 kc.

NUMBER OF TUBES: Six.

TYPE OF TUBES:
- 2—6SS7, r-f and a-f amplifiers
- 1—12SA7, pentagrid oscillator-modulator
- 1—12SF7, diode detector, i-f amplifier, a.v.c.
- 1—50L6GT, beam power output
- 1—35Z5GT, half-wave rectifier

POWER SUPPLY: A.C. only, 60 cycles.

VOLTAGE RATING: 105-125 volts.

POWER CONSUMPTION:
- 30 watts for the receiver.
- 20 watts for the phono motor.

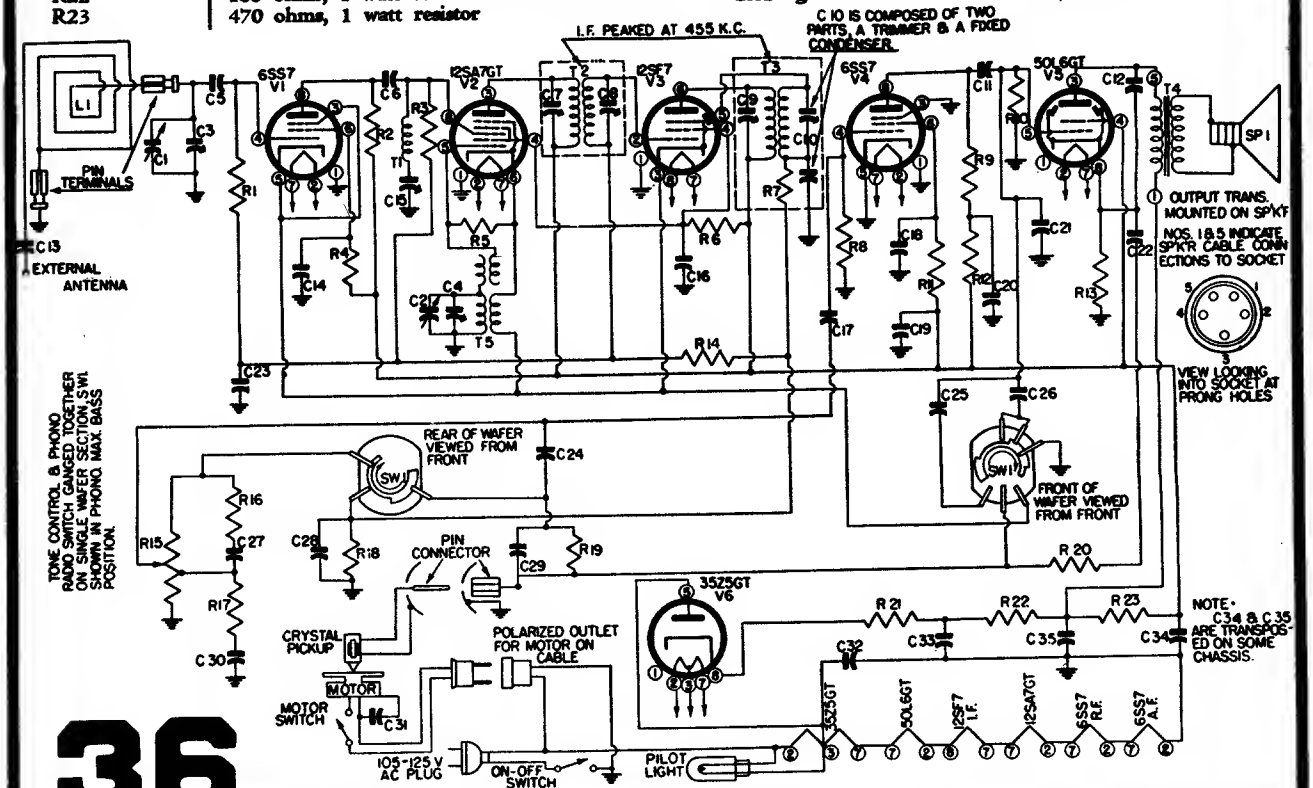
C1, C2	Two-gang variable condenser
C3	1.6 - 12 mmfd. trimmer
C4	Trimmer, part of C2
C5, C28	0.00022 mfd. mica condenser
C6, C29	0.00011 mfd. mica condenser
C7, C8	Trimmers, part of T2
C9	Trimmer, part of T3
C10	Trimmer and fixed condenser, part of T3
C11	0.02 mfd., 400 V. condenser
C12, C25	0.005 mfd., 400 V. condenser
C13, C17	0.002 mfd., 600 V. condenser
C14, C18, C19, C20, C22	0.05 mfd., 200 V. condenser
C15	Trimmer, part of T1
C16	8 mfd. 150 V. electrolytic condenser
C21	0.0004 mfd. mica condenser
C23	0.1 mfd., 200 V. condenser
C24	0.000026 mfd. mica condenser
C26	0.002 mfd., 600 V. condenser
C27	0.00025 mfd. mica condenser
C30	0.001 mfd., 600 V. condenser
C31	0.05 mfd., 200 V. condenser
C32	0.05 mfd., 400 V. condenser
C33, C34, C35	20, 40, 80 mfd., 150 V. multiple electrolytic cond C33—40 mfd., C34—20 mfd., C35—80 mfd.
R1	1 meg., ¼ watt resistor
R2	10,000 ohms, ¼ watt resistor
R3, R5	22,000 ohms, ¼ watt resistor
R4	33,000 ohms, ¼ watt resistor
R6	1,000 ohms, ½ watt resistor
R7	47,000 ohms, ¼ watt resistor, part of T3
R8	10 meg., ¼ watt resistor
R9	220,000 ohms, ¼ watt resistor
R10, R16, R18, R19	470,000 ohms, ¼ watt resistor
R11, R20	2.2 meg., ¼ watt resistor
R12	47,000 ohms, ¼ watt resistor
R13	150 ohms, ½ watt resistor
R14	3.3 meg., ¼ watt resistor
R15	2.5 meg. volume control and switch
R17	100,000 ohms, ¼ watt resistor
R21	15 ohms, ¼ watt resistor
R22	180 ohms, 1 watt ceramic resistor
R23	470 ohms, 1 watt resistor

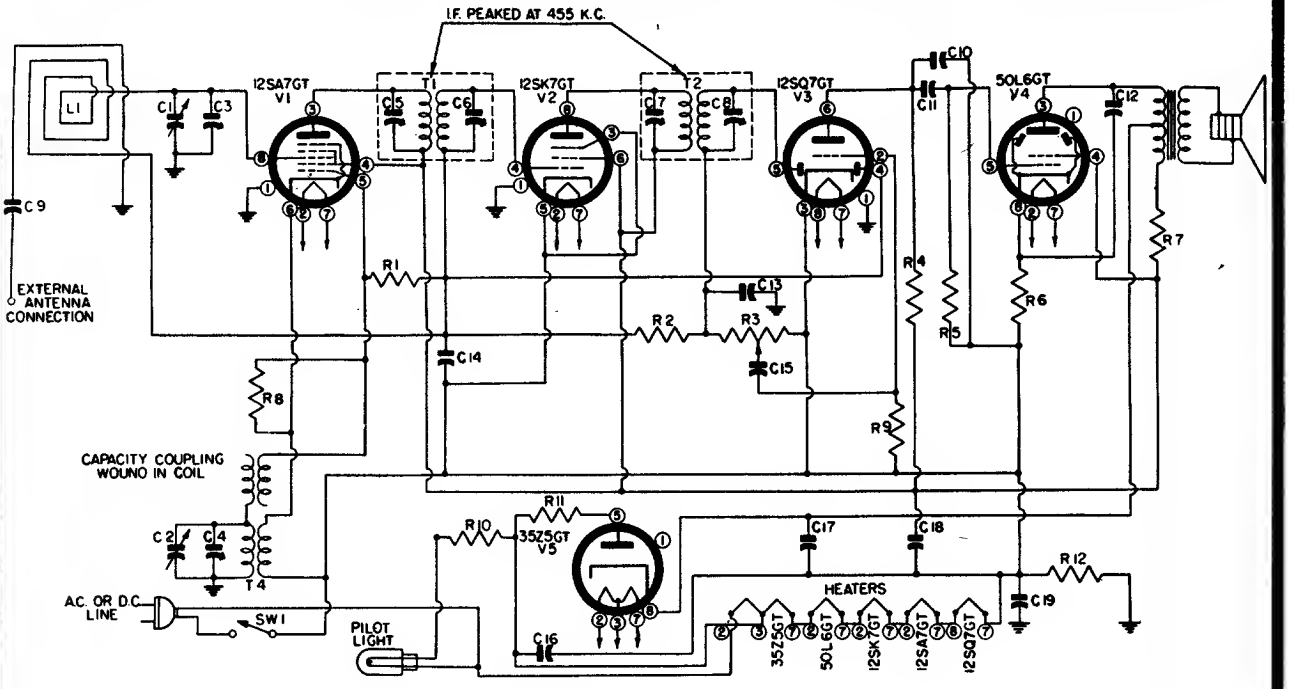
The receiver has a self-contained antenna and does not require additional antenna connections. For permanent home installations, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be used. For this purpose a lead has been brought out of the rear near the line cord.

The self-contained loop antenna has directional properties. It is important, therefore, once the station is tuned in, that the cabinet be rotated on its base back and forth through a quarter of a circle (90 degrees), and left at the position where the station is received with maximum volume.

The color coding of the i-f transformer leads is as follows:

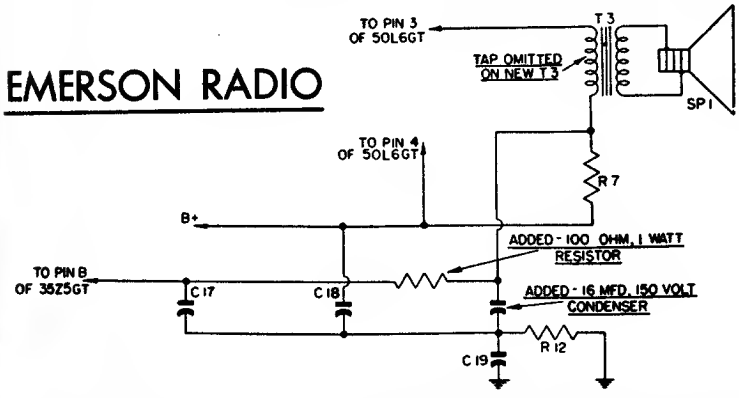
Grid return—black	Plate—blue
Grid—green	B+—red





Schematic Symbol	Part No.	DESCRIPTION
C1, C2	900160	Two-gang variable condenser
*C3, C4		Trimmers, part of variable condenser
*C5, C6, C7, C8		Trimmers, part of i-f transformers
C9, C15	920010	0.002 mfd., 600 V. paper condenser
C10	920240	500 mmfd., 600 V. paper condenser
C11, C12	920020	0.02 mfd., 400 V. paper condenser
C13	910000	220 mmfd., 600 V. mica condenser
C14	920040	0.1 mfd., 200 V. paper condenser
C16	920030	0.05 mfd., 400 V. paper condenser
C17, C18	925000	Dual electrolytic condenser, 150 V.; C20—30 mfd., C21—50 mfd.
C19	920050	0.2 mfd., 200 V. paper condenser
L1	700000	Loop antenna assembly, or
L1	700200	Loop antenna assembly
R1, R9	397000	15 meg., ¼ watt carbon resistor
R2	321330	3.3 meg., ¼ watt carbon resistor
R3	390000	Volume control with line switch
R4, R5	321130	470,000 ohms, ¼ watt carbon resistor
R6	340290	150 ohms, ½ watt carbon resistor
R7	370490	1000 ohms, 1 watt carbon resistor
R8	310810	22,000 ohms, ¼ watt carbon resistor
R10	340010	6.8 ohms, ¼ watt carbon resistor
R11	397040	15 ohms, 1 watt wire-wound resistor
R12	321050	220,000 ohms, ¼ watt carbon resistor

EMERSON RADIO



MODELS: 507, 509, 518

(Model 522, Chassis 120004, is similar to these models).

CHASSIS MODEL: 120005

Some 120005 chassis have a modified filter circuit and untapped output transformer. The partial schematic circuit diagram et the left indicates the revision.

Emerson Radio

Models: 507, 509, 518
Chassis: 120005

ADJUSTMENTS

An oscillator with frequencies of 455, 600, and 1425 kc. is required.

An output meter should be connected across the primary or secondary of the output transformer for observing maximum response.

Plug the receiver into the power supply outlet in such a way that the ground side of the power line is connected to the receiver B—.

Always use as weak a test signal as possible, turning down the output of the test oscillator as the alignment of the receiver progresses.

Location of Coils and Trimmer Adjustments

The first i-f transformer (T2) is mounted on top of the chassis deck to the right of the variable condenser. The trimmers (C6, C7) are accessible through holes in the top of the can.

The second i-f transformer (T3) is mounted on top of the chassis between the variable condenser and the speaker. The trimmers (C8, C9) are accessible through holes in the top of the can.

The trimmer for the antenna (C5) and the trimmer for the oscillator coil (C11) are located on the variable condenser. The trimmer on the front section is for the oscillator coil.

The oscillator coil (T4) is located underneath the chassis. The loop antenna acts as the antenna coil.

I-F Alignment

1. Rotate the variable condenser to the minimum capacity position.
2. Feed 455 kc. to the converter grid (stator of the r-f section of the variable condenser) and adjust the four i-f trimmers for maximum response.

R-F Alignment

1. Connect the oscillator to a coil composed of three to four turns of wire wound in a circle approximately 12" in diameter. This coil should be held parallel to and in line with the loop antenna of the receiver at a distance of 15 to 20 inches.
2. Radiate a signal at 1425 kc., set the dial indicator to 1425 kc., and adjust the trimmers on the variable condenser (C5, C11) for maximum response.
3. Radiate a 600 kc. signal and tune in the signal on the receiver. Adjust the loose outside turn of the loop antenna for maximum response. This loose turn may be moved to either side of the center. Fasten it in the position which gives maximum response.
4. Repeat steps (2) and (3) until no further improvement is evident.

FREQUENCY RANGE: 540-1620 kc.

VOLTAGE ANALYSIS

	PIN NUMBER							
TUBE	1	2	3	4	5	6	7	8
12SA7			89	89	*-10			*-1.6
12SK7				*-1.6		89		89
12SQ7		*-0.7		*-1.6	*-0.5	37.5		
50L6			110	89				6.2
35Z5				116		116		117

The voltage readings are d-c measurements taken from B- (line switch) to the indicated tube-socket pin. A 1000 ohm-per-volt meter should be used for all readings except those indicated by an asterisk (*), which should be taken with a vacuum-tube voltmeter (adjusted to measure d-c). These readings were obtained with a power input of 117 volts, 60 cycles a.c. Measurements made with 117 volts d.c. input will be lower than those given above. Take readings with the volume control set at minimum and the variable condenser in the closed (maximum capacity) position.

EMERSON RADIO

MODEL: 508

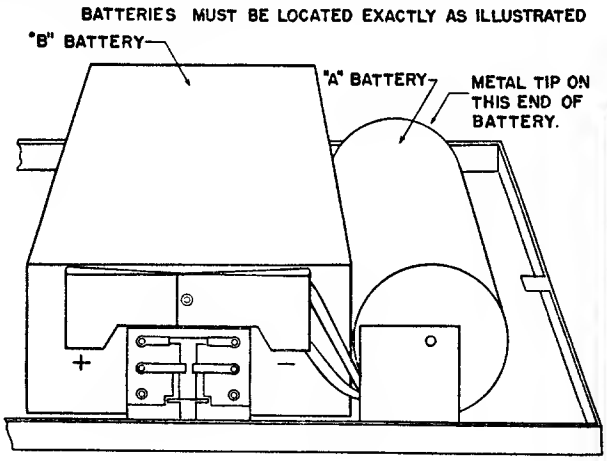
CHASSIS MODEL: 120008

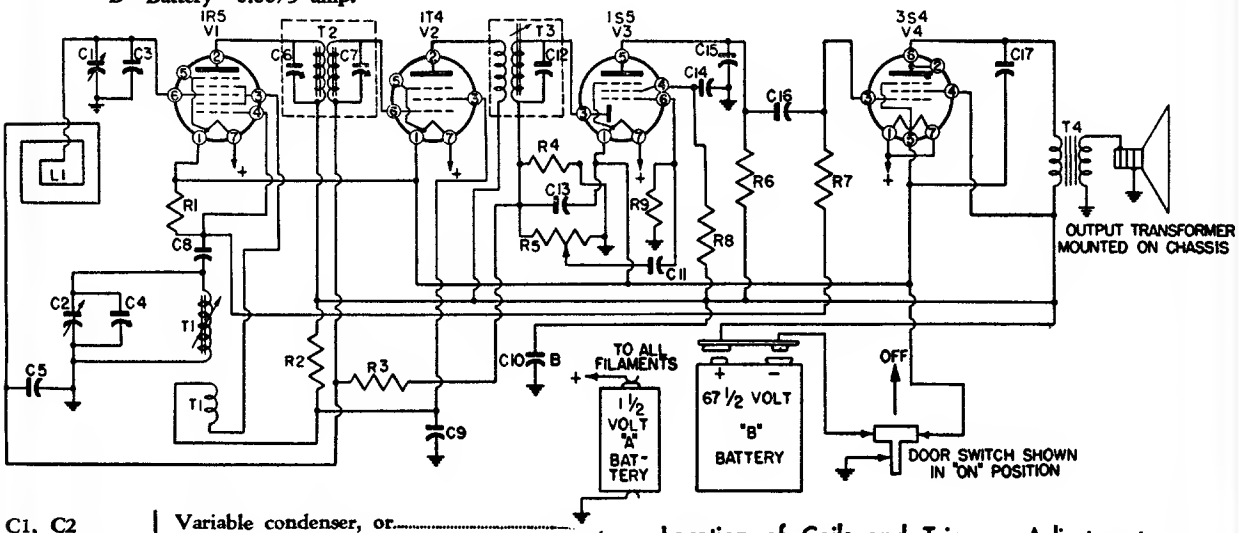
TYPE OF TUBES:
1—1R5, oscillator-modulator
1—1T4, i-f amplifier
1—1S5, 2nd detector, a.v.c., a-f amplifier
1—3S4, pentode output

POWER SUPPLY: "A" and "B" batteries.

VOLTAGE RATING:
"A" Battery—1.5 volts
"B" Battery—67.5 volts

CURRENT DRAIN:
"A" Battery—0.25 amp.
"B" Battery—0.0075 amp.





C1, C2	Variable condenser, or
C1, C2	Variable condenser
C3, C4	Trimmers, part of C1, C2
C5, C9, C14	0.02 mfd., 100 V. roll-type condenser
C6, C7	Trimmers, part of T2
C8	0.0002 mfd. mica condenser, or
C8	0.0002 mfd. ceramic condenser
C10	8 mfd., 100 V. dry electrolytic condenser
C11, C17	0.003 mfd., 150 V. roll-type condenser
C12	Condenser, part of T3
C13, C15	0.0001 mfd., ceramic condenser
C16	0.001 mfd., 100 V. flat roll-type condenser
L1	Loop assembly
R1	100,000 ohms, ¼ watt resistor
R2	10,000 ohms, ¼ watt resistor
R3	3.3 meg., ¼ watt resistor
R4, R7	1 meg., ¼ watt resistor
R5	Volume control
R6	0.47 meg., ¼ watt resistor
R8	4.7 meg., ¼ watt resistor
R9	10 meg., ¼ watt resistor

Location of Coils and Trimmer Adjustments

The first i-f transformer (T2) is located next to the output transformer (T4). The trimmers (C6, C7) are accessible through holes in the top of the can.

The second i-f transformer (T3) is located between the 1T4 and 1S5 tubes. The single trimming core screw (C12) extends from the end of the can.

The oscillator coil (T1) is located next to the first i-f transformer. The trimmer for the oscillator (C4) is located on the smaller variable condenser section. The 600 kc oscillator core adjustment is the brass screw protruding from the end of the oscillator coil.

The loop antenna acts as the antenna coil. The trimmer for the loop (C3) is located on the larger section of the variable condenser.

	PIN NUMBER						
TUBE	1	2	3	4	5	6	7
1R5		67.5	40	*-7.0		*-0.3	1.5
1T4		67.5	40			*-0.3	1.5
1S5			*-0.35	*16.5	*39	*-0.3	1.5
3S4	1.5	65	*-7.0	67.5		65	1.5

Voltages marked (*) are taken with vacuum-tube voltmeter.

RECORD CHANGER PART No. 819003

EMERSON RADIO

AUTOMATIC OPERATION

Loading

1. Turn the set on and the volume up and set the selector knob in the position for phonograph operation.
2. Turn the Spindle Cap (2) until is is as completely OUT OF LINE with the Spindle (3) as possible.
3. If ten-inch records are to be played, rotate the Record Support (4) to the left, and for twelve-inch record operation rotate the Record Support to the extreme right.
4. Insert a maximum of 12 ten-inch records or 10 twelve-inch records on the Spindle shoulder and Record Support.
5. Swing the Hold-Down Finger (5) so that it rests on the top record.

Starting

To start operation, push the Starting Switch (6) to the ON position, then depress the switch button as indicated for reject.

Reject Records

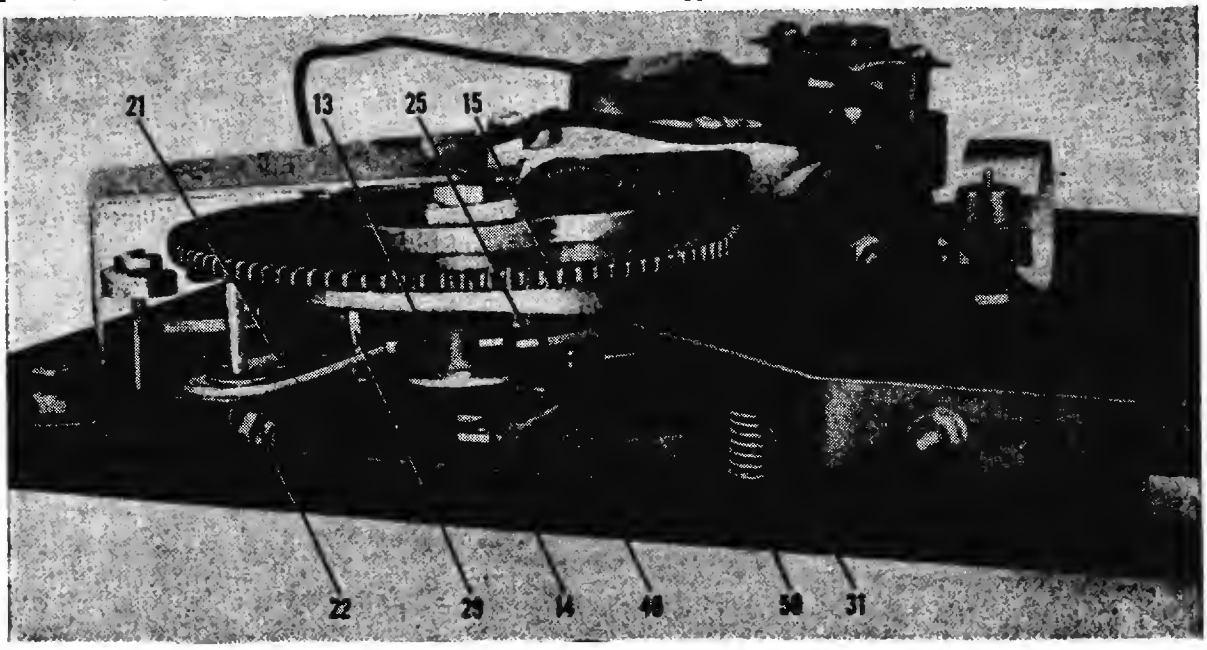
To reject a record, depress the Starting Switch button as indicated on the switch housing.

Shut Off

1. Remove any records remaining on the Record Support.
2. Depress the Starting Switch as indicated for reject and allow the Pickup Arm (1) to reset on the record.
3. Gently lift the Pickup Arm and return it to the Rest Post (8).
4. Push the Starting Switch to the OFF position.

Unloading

1. Rotate the Spindle Cap until it is aligned with the Spindle.
2. Turn the Hold-Down Finger aside.
3. Lift the records, tilting them slightly to clear the Record Support.



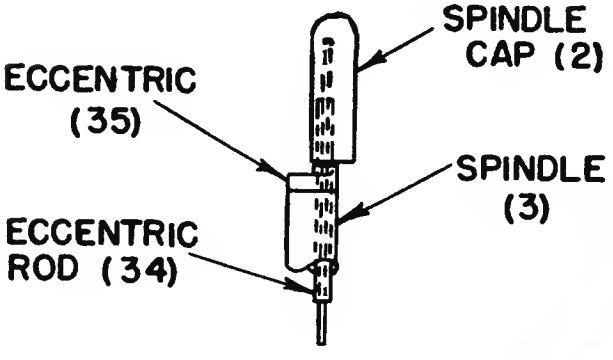
MANUAL OPERATION

Starting

1. Turn the set on and the volume up and set the selector knob in the position for phonograph operation.
2. Make sure the Spindle Cap is aligned with the Spindle and place the record over the Spindle and on the Turntable.
3. Push the switch to the ON position.
4. Place the Pickup Arm on the outer edge of the record to start operation.

Shut Off

1. Allow Pickup Arm to complete its cycle and reset on the record. Gently lift the Pickup Arm and return it to the Rest Post.
2. Push the Starting Switch to the OFF position.
3. Do not overload the changer. The maximum load is either 12 ten-inch or 10 twelve-inch records. Use modern records in good condition.



SPINDLE ASSEMBLY

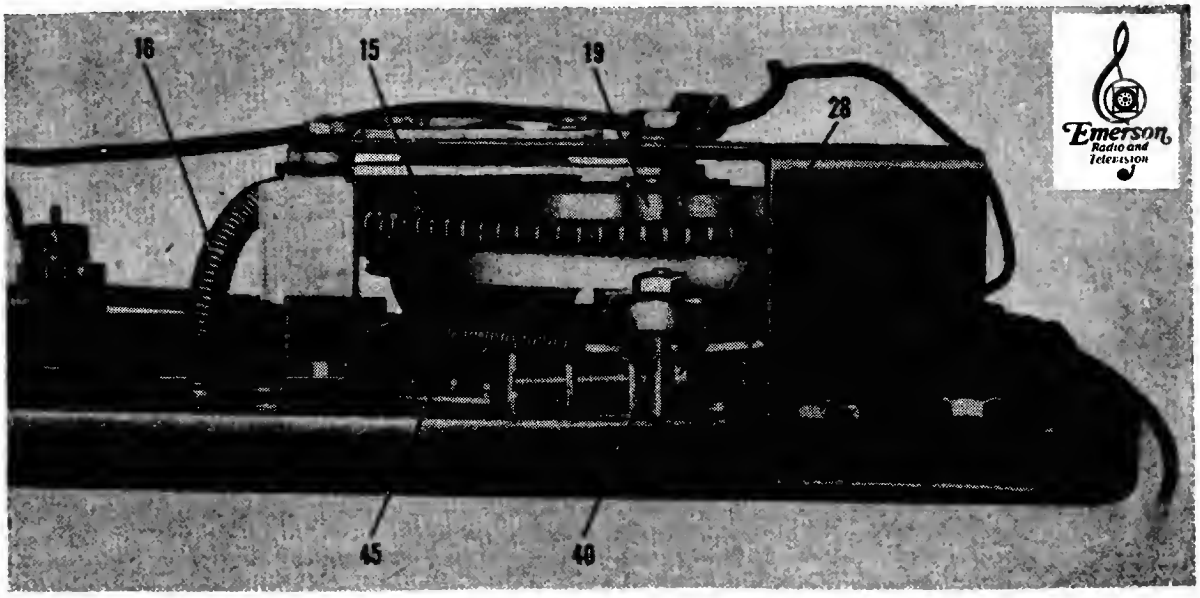
COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

OPERATING DESCRIPTION

This record changer is an automatic cam-type changer, featuring single-button control and eccentric-spindle record selection.

Starting

After the Single Control Button (6) has been turned ON, thus supplying power to rotate the turntable, automatic cycling may be started by depressing the button. This movement pushes the Trip Bar (31) forward, causing engagement with the Carrier Lever (14) and its attached cycling Drive Wheel (10). The latter thus contacts the rim of the turntable and rotates with it. This motion is transmitted through the Flexible Coupling (16) to the Worm Drive (17), which in turn drives the Main Cam (15).



Cycling

A single revolution of the Main Cam results in complete automatic cycling of the changer. This includes selection of a record from the stack, lifting the Pickup Arm from its rest, and setting the needle on the edge of the record. Upon completion of the revolution, the Automatic Trip Cam (13) engages with the block on the Trip Lever and pulls the Carrier Lever (14) back to its original position so that the cycling Drive Wheel (10) is no longer engaged with the turntable rim.

Record Feed

The lower side of the Main Cam (15) controls record selection. Motion of the Feed Cam Roller (19) about the cam results in a backward and forward movement of the Feed Sector Lever (18), thus engaging the Record Feed Pinion (20). This in turn causes the Eccentric (35) to first rotate to the proper position for record selection and to then return, allowing the record to drop over the Spindle.

Pick-Up Arm Movement

The upper side of the Main Cam (15) controls Pick-Up Arm (1) movement. LIFT is imparted by motion of the Lift Pin along the vertical edge of the cam as the latter rotates. DIRECTION is controlled by engagement of the Main Cam with the Sweep Lever Pinion (29). The Sweep Lever (21) is attached to the Pick-Up Arm by means of a clamp (22) around the Pick-Up Arm Pivot Sleeve (23). A boss projecting from the upper side of the Main Cam displaces the Stop Lever (25) at the end of the change cycle, thus permitting the Pick-Up Arm to proceed across the record.

Positive Trip Action

As the Pick-Up Arm approaches the Spindle, the Sweep Lever (21) hits the Positive Trip Screw (28) mounted on the Trip Lever. This action reengages the drive wheel with the turntable rim and starts a new cycle.

Ten-Inch or Twelve-Inch Operation

Adjusting the Record Support (4) to the ten-inch or twelve-inch position lowers the Selector Rod (40) a definite degree. The length of the extension of this rod determines the positioning of the Stop Lever (25). The latter is the means of regulating the distance the Sweep Lever (21) and its attached Pick-Up Arm travel before the arm is lowered to the edge of the record.

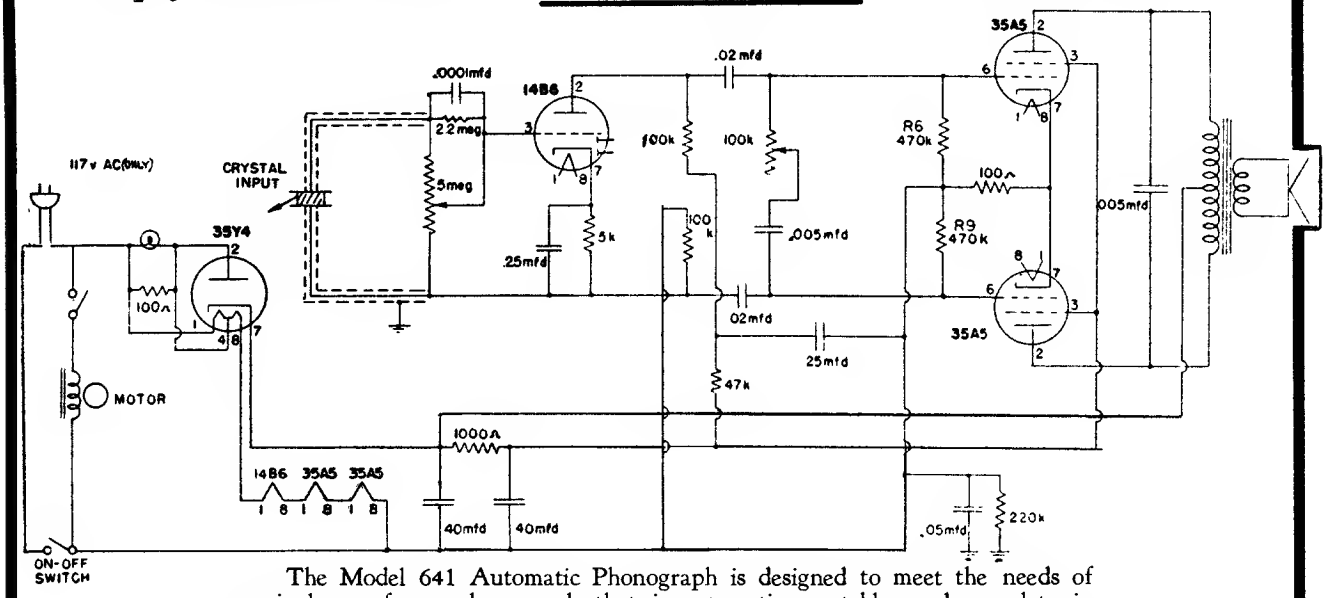
Positive Trip

The tripping point of the changer may be readjusted by positioning of the Positive Trip Screw (28). Turn the screw clockwise to delay tripping and counter-clockwise to trip earlier in the playing cycle.

Pick-Up Arm Drop Point

An external strain exerted on the Pick-Up Arm may alter the drop point. To adjust, loosen the screw on the Sweep Lever Clamp (22) slightly and reposition the Pick-Up Arm with respect to the Sweep Lever (21).

Espey Manufacturing Co. Models 641, 642, Amplifier FJ-91A

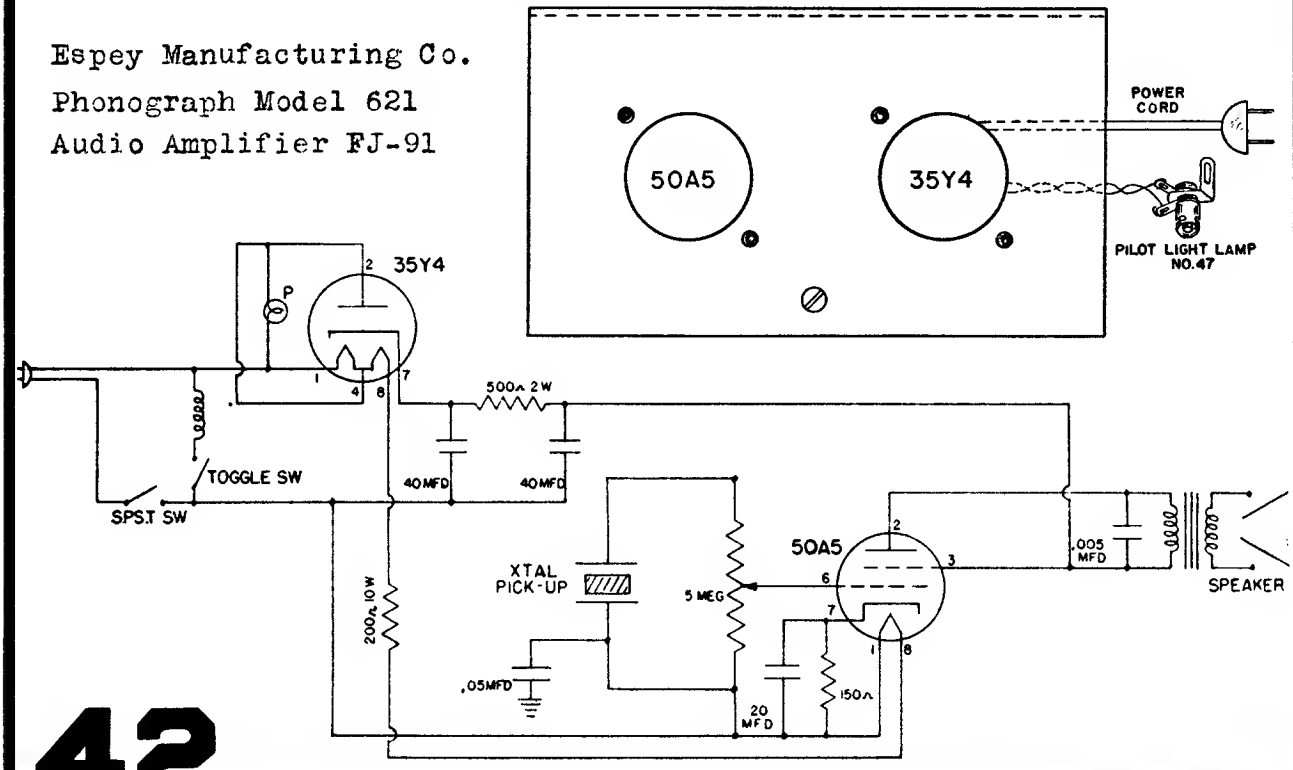


The Model 641 Automatic Phonograph is designed to meet the needs of music lovers for a phonograph that is automatic, portable, and complete in itself. The record changer is manufactured by the J. P. Seeburg Corp. It is the most sturdy, foolproof record changer of its type. The changer will play both 10" and 12" records automatically or manually. The tone arm is a feather-light crystal pick up.

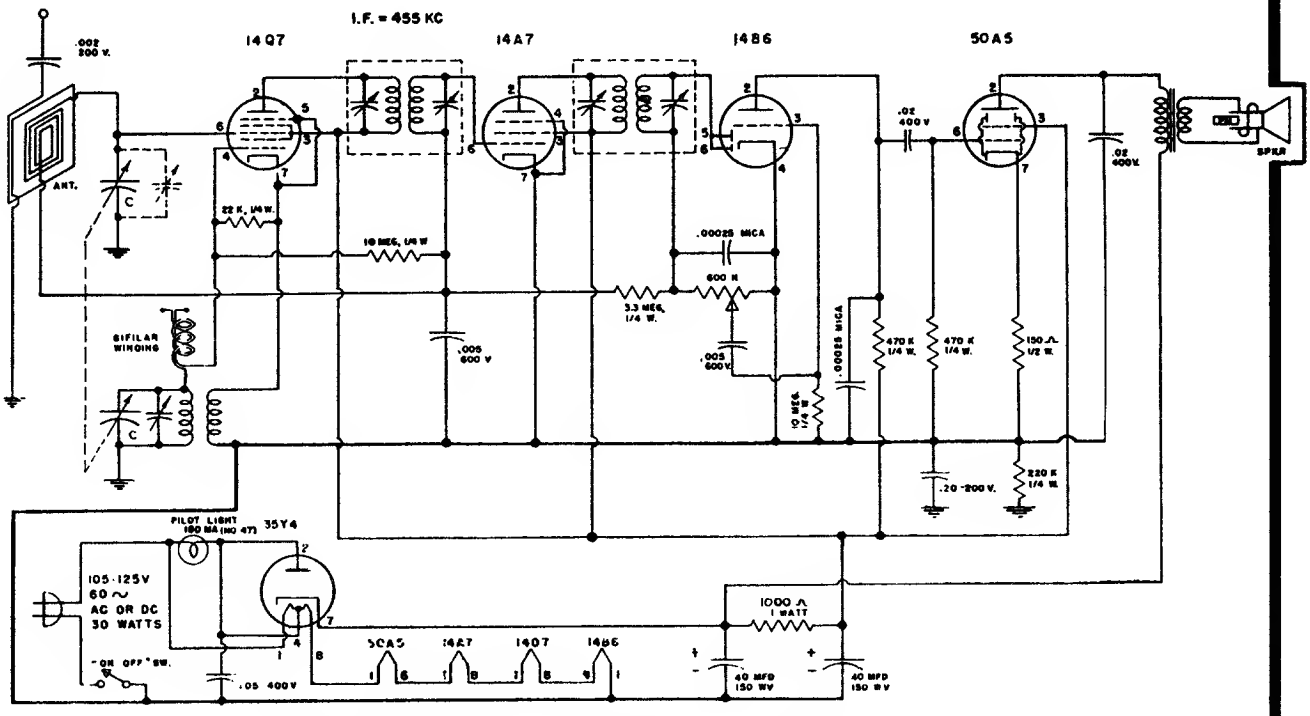
The Model 642 Phonograph (non-automatic) incorporates the same features as the Model 641 except that records must be changed manually after each side is played.

The Type FJ-91A Push-Pull Amplifier (used in Models 641 and 642) employs four of the latest type loctal base tubes in a circuit designed to give high fidelity reproduction with more than enough volume to fill a large size room.

Espey Manufacturing Co.
Phonograph Model 621
Audio Amplifier FJ-91

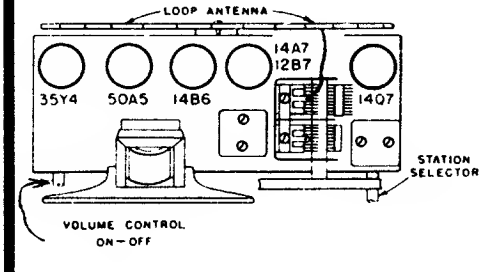


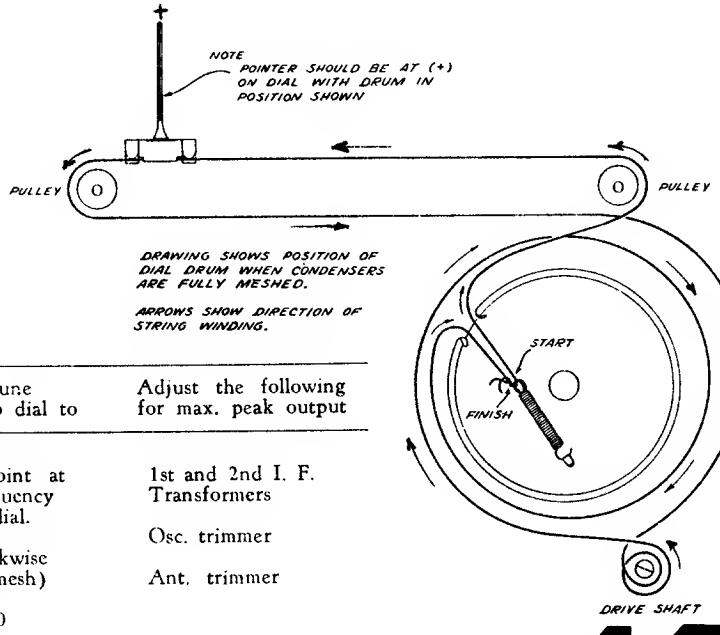
Espey Manufacturing Company, Inc.



Chassis Modcl Fj-97 is used in the following complcte set Model Nos.:

651	6521	6514	6531
652	6522	6516	6532
653	6511	6520	6533

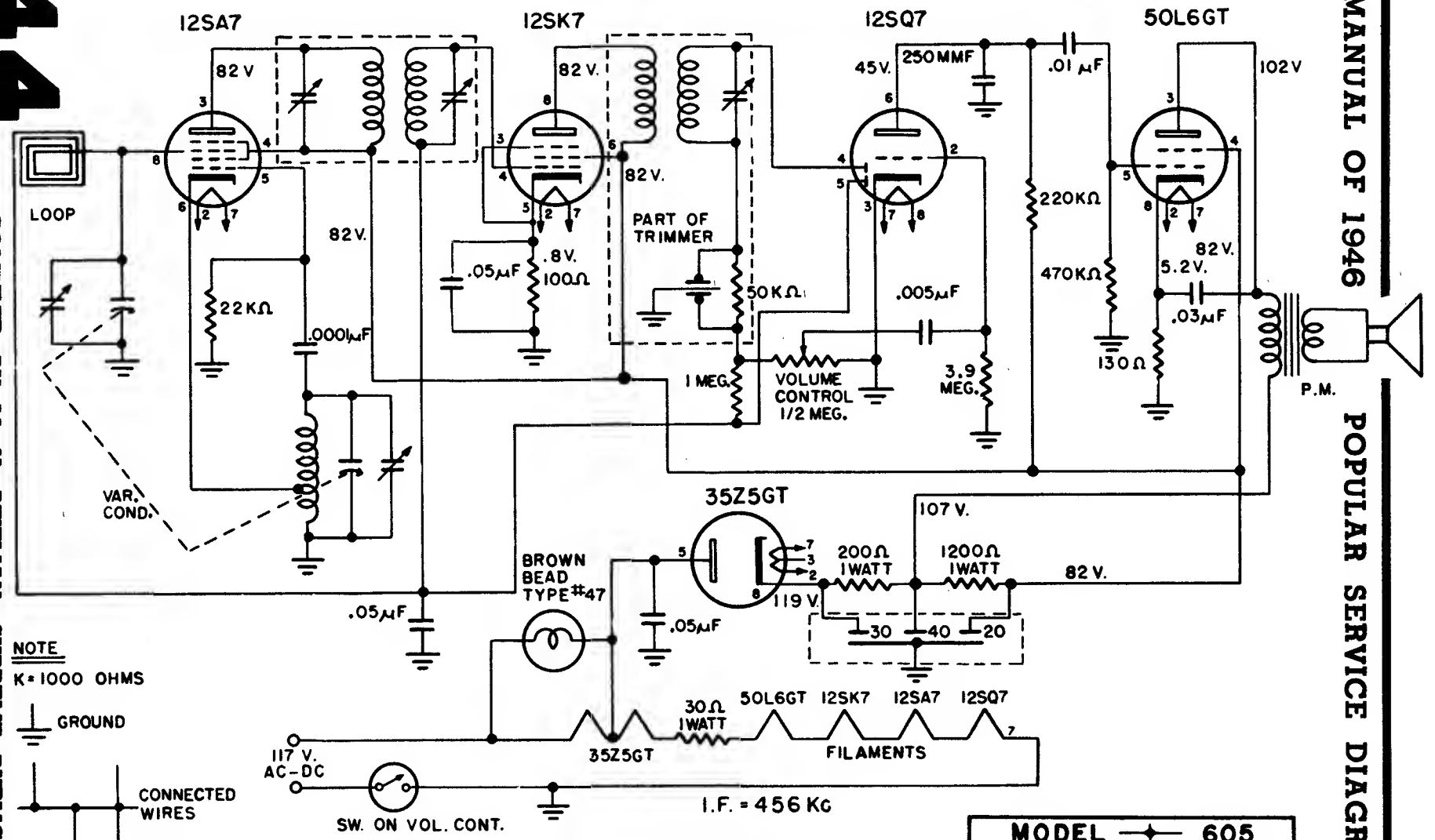




Alignment Procedure

Steps	Connect output of oscillator to	Tune osc. to	Tune radio dial to	Adjust the following for max. peak output
1.	Tuning condenser stator (ant.) in series with .01 mfd.	455	Quiet point at high frequency end of dial.	1st and 2nd I. F. Transformers
2.	Antenna term. of Ant. loop in series with 100 mmf.	1720	Full clockwise (out of mesh)	Osc. trimmer
3.	Antenna term. of Ant. loop in series 100 mmf.	1500	1500	Ant. trimmer

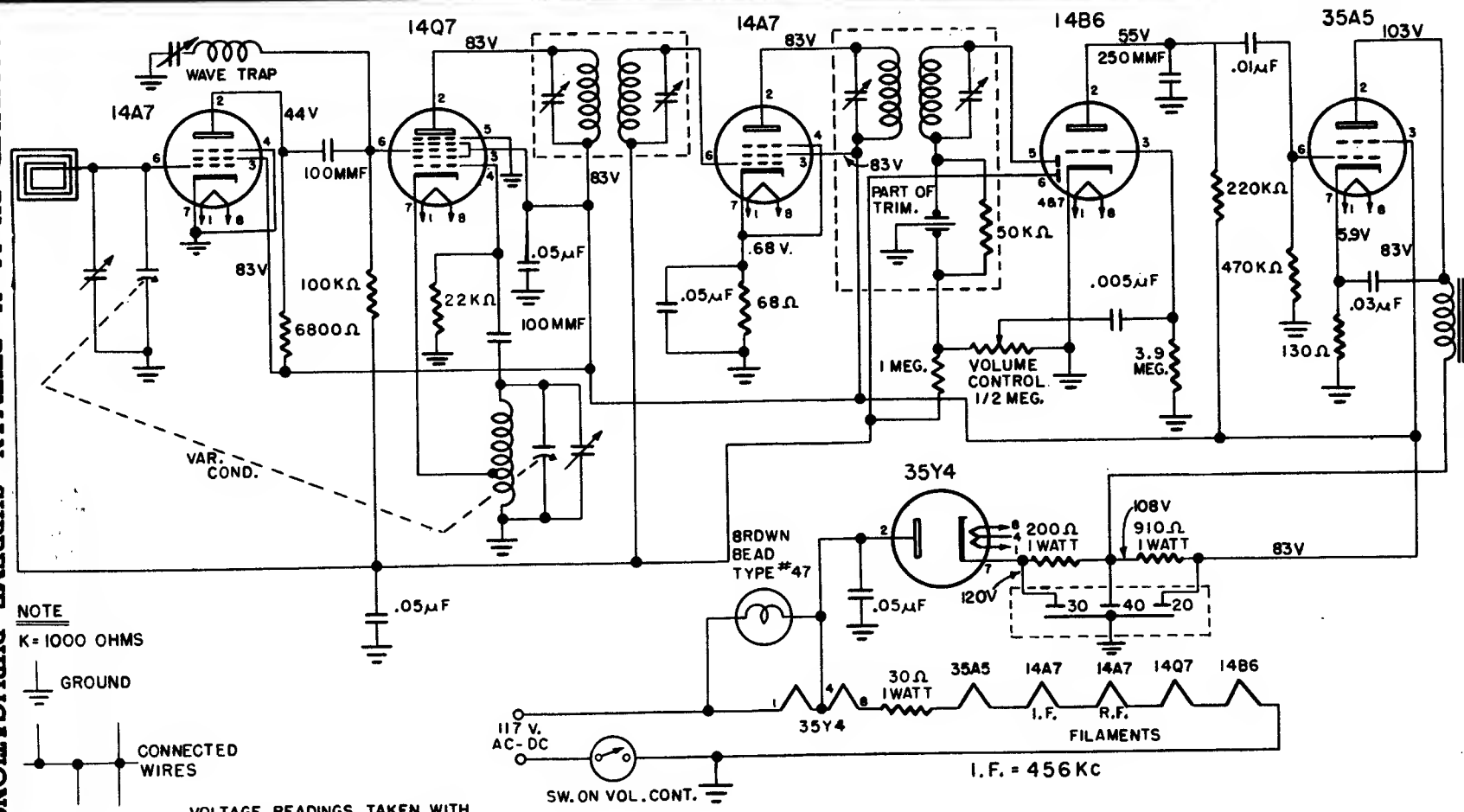
Output meter is connected across voice coil. Receiver volume is turned to maximum.



VOLTAGE READINGS TAKEN WITH
20,000 OHMS PER VOLT METER
117 VOLT 60 CYCLE LINE.
TUNING RANGE 528-1680 Kc

Fada Radio Model 609
Circuit is similar to 605.

MODEL 605
SCHEMATIC
FADA RADIO & ELECTRIC CO. INC.
LONG ISLAND CITY, N.Y. U.S.A.



NOTE

K = 1000 OHMS

GROUND

CONNECTED WIRES

VOLTAGE READINGS TAKEN WITH
20,000 OHMS PER VOLT METER
117 VOLT 60 CYCLE LINE
TUNING RANGE 528-1680 Kc

MODEL 652

SCHEMATIC

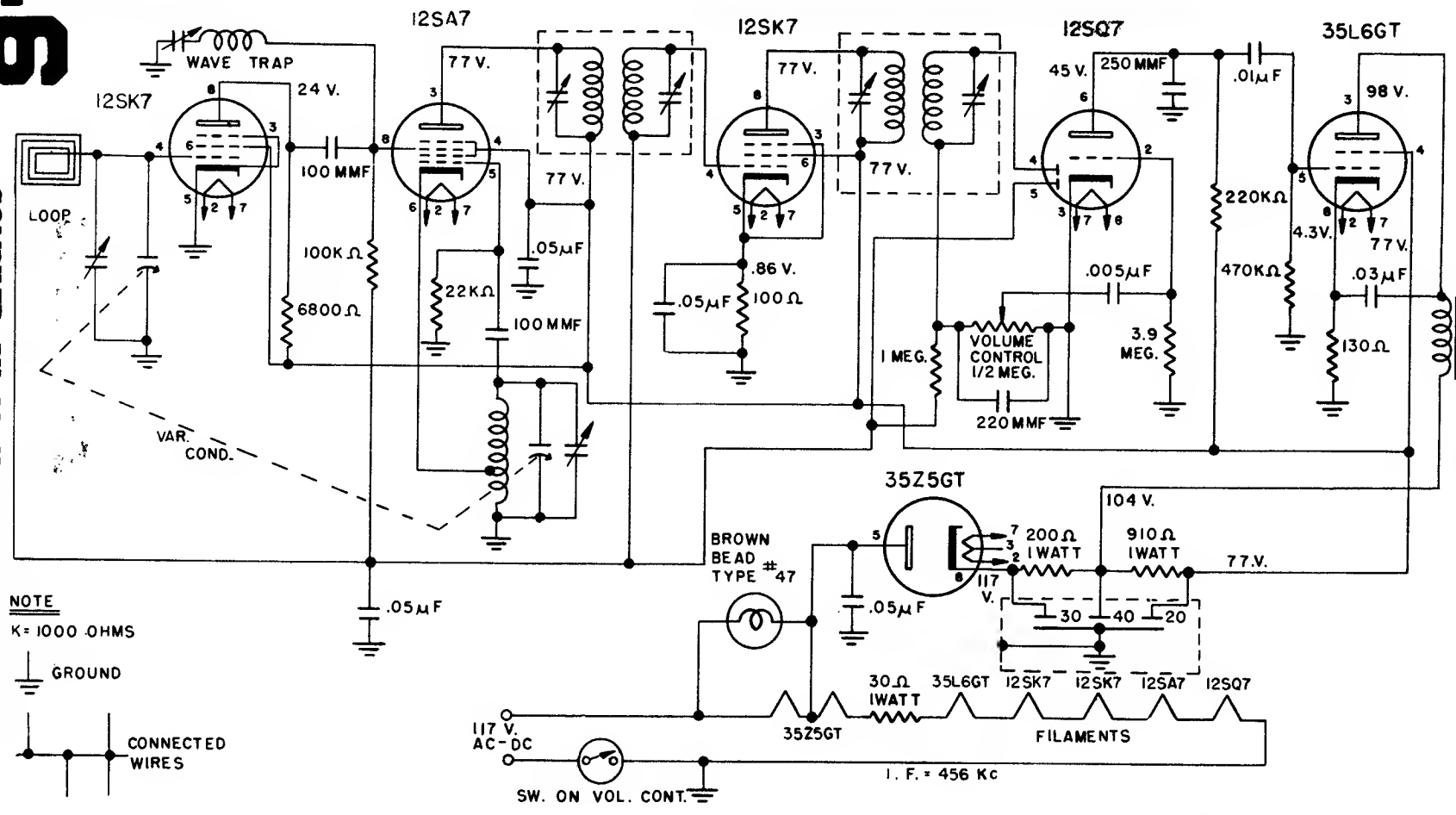
FADA RADIO & ELECTRIC CO., INC.
LONG ISLAND CITY, N.Y. U.S.A.

45

Power supply (25-60 cycles AC) 95-125V AC-DC

Power consumption 30 Watts

Frequency Range 1680-530 KC



NOTE
K = 1000 OHMS

GROUND

CONNECTED WIRES

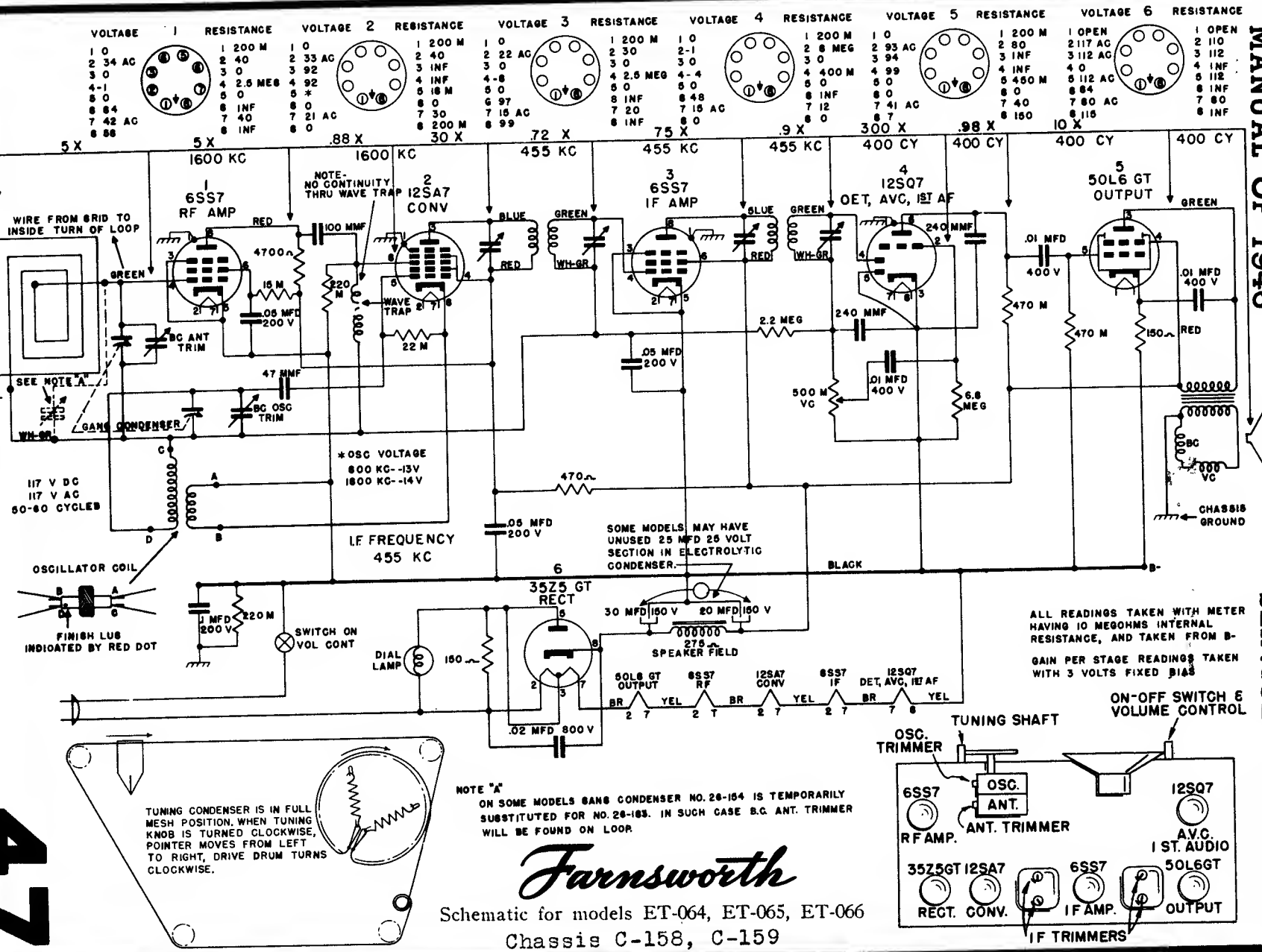
VOLTAGE READINGS TAKEN WITH
20,000 OHMS PER VOLT METER
NO SIGNAL CONDITION
117 VOLT 60 CYCLE LINE
TUNING RANGE 528 – 1680 Kc

Power supply (25-60 cycles AC) 95-125V AC-DC

Power consumption 30 Watts

Frequency Range 1680-528 KC

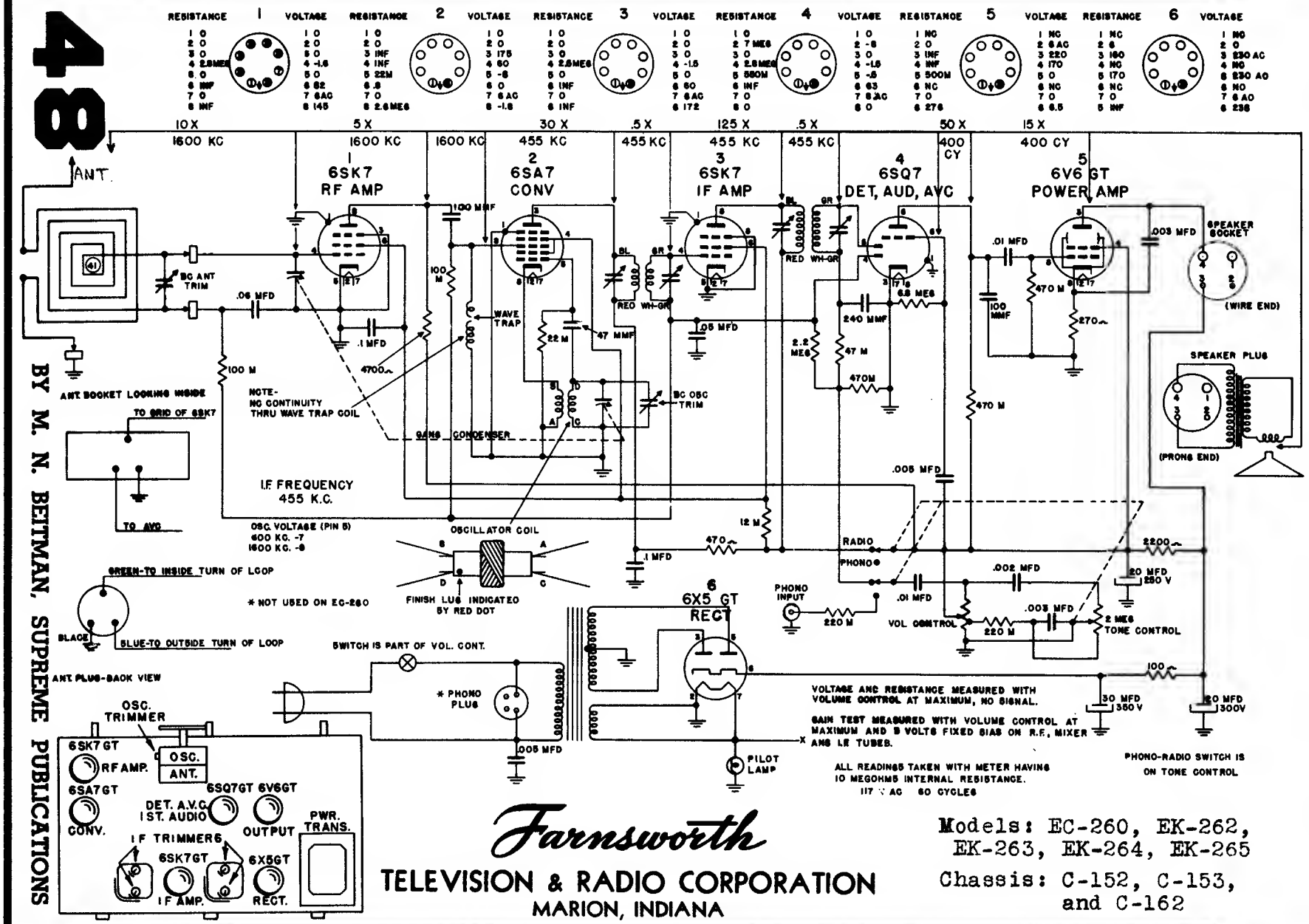
MODEL 1000
SCHEMATIC
FADA RADIO & ELECTRIC CO., INC.
LONG ISLAND CITY, N.Y. U.S.A.



Farnsworth

Schematic for models ET-064, ET-065, ET-066

Chassis C-158, C-159



Farnsworth

TELEVISION & RADIO CORPORATION

MARION, INDIANA

Models: EC-260, EK-262, EK-263, EK-264, EK-265

Chassis: C-152, C-153, and C-162

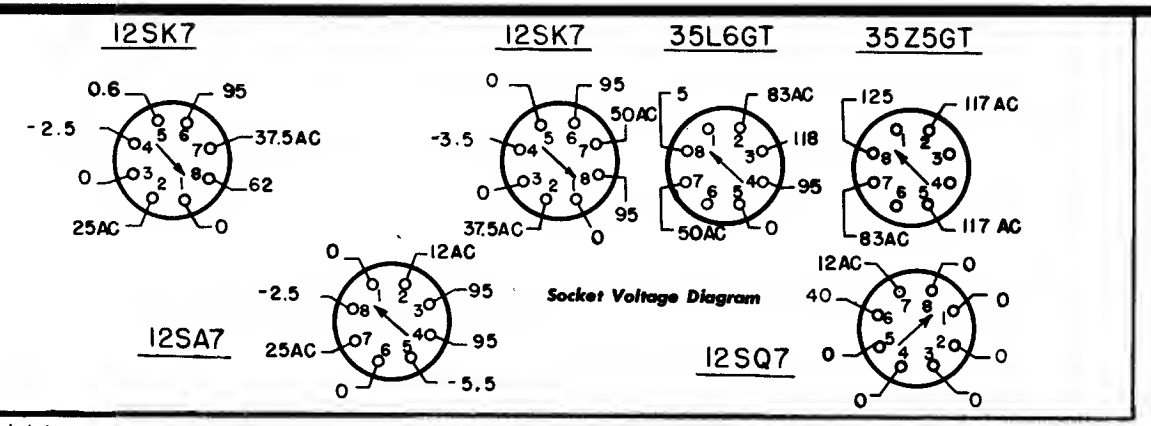
MANUAL OF 1946 MOST POPULAR SERVICE DIAGRAMS

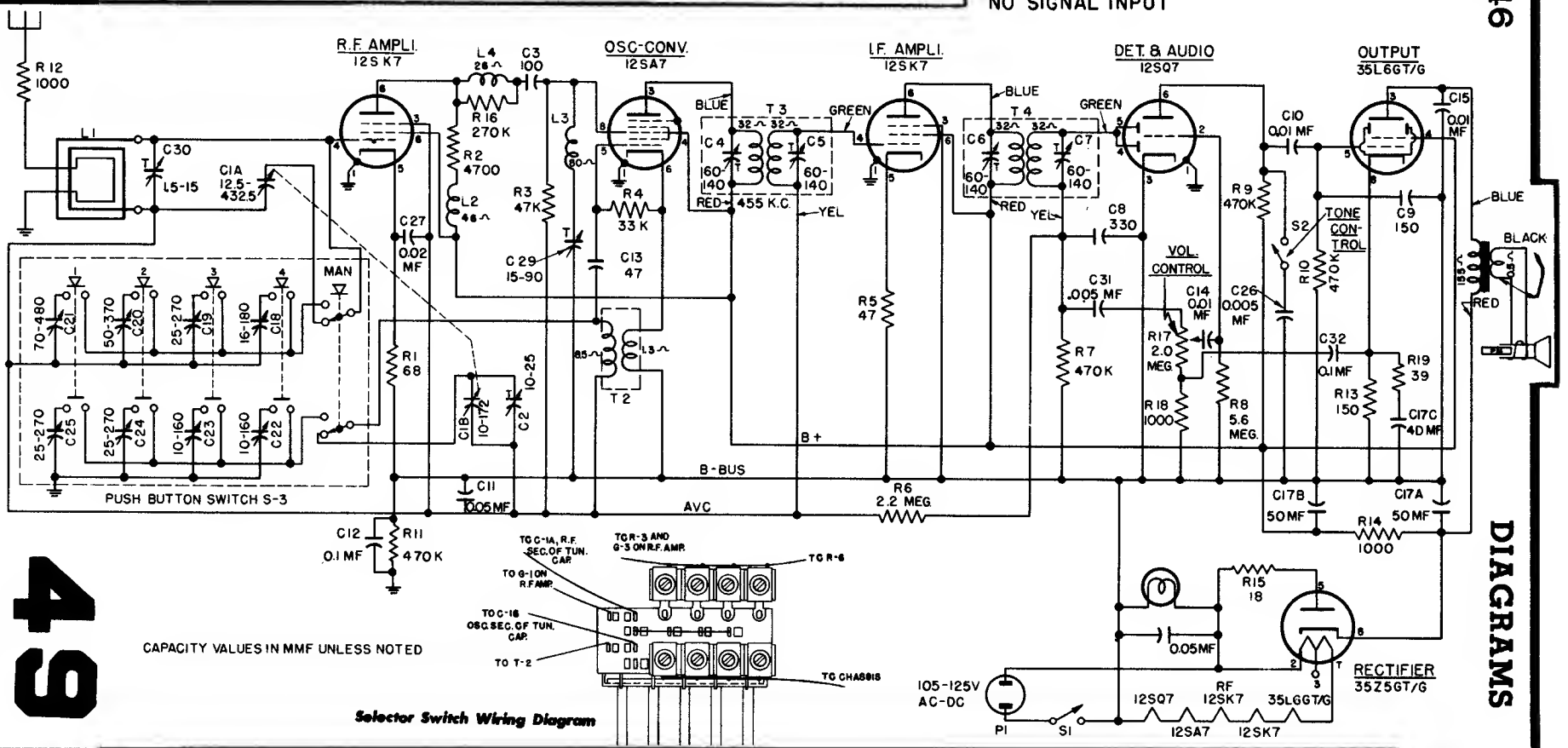
BY M. N. BEITMAN, SUPREME PUBLICATIONS

General Electric Model 321

CONDITIONS OF TEST

MEASURED AT 117 VOLTS LINE ON A 20,000 OHMS PER VOLT METER.
READINGS TAKEN BETWEEN TUBE PIN TERMINALS AND B-BUS.
NO SIGNAL INPUT





ALIGNMENT PROCEDURE

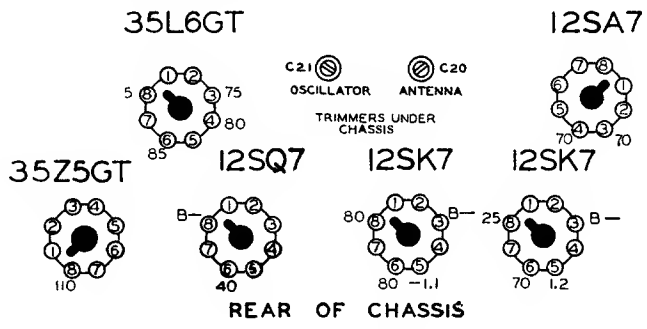
- Volume control—Maximum all adjustments.
- Connect B— of radio chassis to ground post of signal generator through .1 Mfd. condenser.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted to Maximum
I. F.	455 Kc.	.1 MFD.	Grid of 12SK7 2nd I. F.	Rotor full open (Plates out of mesh)	Two trimmers on top of Output I. F.
	455 Kc.	.1 MFD.	Grid of 12SA7 Converter	Rotor full open (Plates out of mesh)	Two trimmers on top of Input I. F.
BROAD-CAST BAND	1720 Kc.	.1 mmf.	Grid of 12SA7	Rotor full open (Plates out of mesh)	Osc. trimmer C21 See voltage chart view
	1400 Kc.	200 mmf.	External Antenna and B—	Set Dial at 1400 K. C.	Ant. trimmer C20 See voltage chart view

The loop antenna should be connected to the radio and in its proper position when making all adjustments.

BOTTOM VIEW OF CHASSIS

MEASUREMENTS TAKEN WITH A HIGH RESISTANCE VOLTMETER FROM "B—" TO DESIGNATED POINTS.



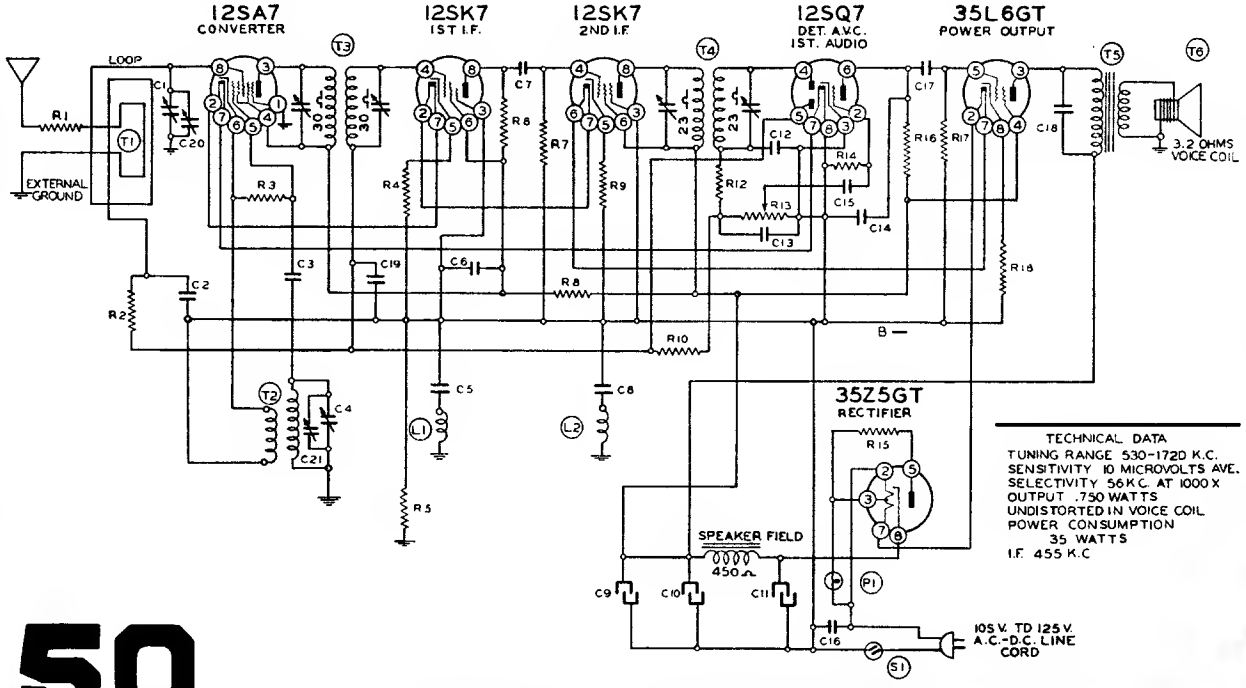
CONDENSERS

C1, C4, C20, C21	Two Gang Condenser Complete with Tuner Assembly and Ant. and Osc. Trimmers	1
C8, C17, C18	.02 x 400 Volt Tubular Condenser	3
C15	.002 x 600 Volt Tubular Condenser	1
C2, C19	.05 x 200 Volt Tubular Condenser	2
C6	.1 x 200 Volt Tubular Condenser	1
C5	.2 x 400 Volt Tubular Condenser	1
C16	.1 x 400 Volt Tubular Condenser	1
C9, C10, C11	Electrolytic Filter Condenser. 20 Mfd. x 150 V.; 20 Mfd. x 150 V.; 40 Mfd. x 150 V.	1
C3, C7, C12, C13, C14	.0001 Mica Type Condenser—20%	5

RESISTORS

R13, S1	Volume Control and Switch (1 Megohm)	1
R6	10M Ohm—½ Watt Resistor—10%	1
R10	3 Megohm—½ Watt Resistor—20%	1
R3	20M Ohm—½ Watt Resistor—20%	1
R18	150 Ohm—½ Watt Resistor—10%	1
R11	200 Ohm—1 Watt Resistor—10%	1
R15	25 Ohm—½ Watt Resistor—10%	1
R17	1 Megohm—½ Watt Resistor—20%	1
R14	5 Megohm—½ Watt Resistor—25%	1
R12	100M Ohm—½ Watt Resistor—20%	1
R16	200M Ohm—½ Watt Resistor—20%	1
R4	100 Ohm—½ Watt Resistor—10%	1
R7	500M Ohm—½ Watt Resistor—20%	1
R9	200 Ohm—½ Watt Resistor—10%	1
R1, R8	1M Ohm —½ Watt Resistor—10%	1
R2, R5	150M Ohm—½ Watt Resistor—20%	2

Coronado Models 43-8351 & 43-8352



TECHNICAL DATA
TUNING RANGE 530-1720 K.C.
SENSITIVITY 10 MICROVOLTS AVE.
SELECTIVITY 56 K.C. AT 1000 X
OUTPUT .750 WATTS
UNDISTORTED IN VOICE COIL
POWER CONSUMPTION 35 WATTS
I.F. 455 K.C.

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

GARROD RADIO

MODEL 5A2

ALIGNMENT: Should it become necessary at any time to check the alignment of this receiver, proceed as follows:

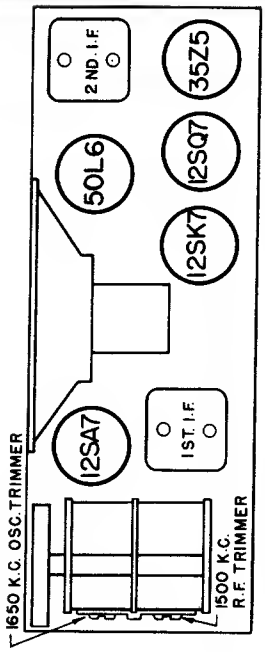
(1) Set the Signal Generator to 455 KC and connect to the stator lug on the rear section of the Variable Capacitor. Connect the Signal Generator Ground lead to the chassis. Connect a suitable output meter across the Speaker Voice Coil Connections. Turn the Volume Control to the maximum position. Turn the Variable Capacitor to the extreme clockwise position.

(2) Adjust the trimmers located at the top of the first and second I. F. Transformers for maximum output as indicated on the Output Meter.

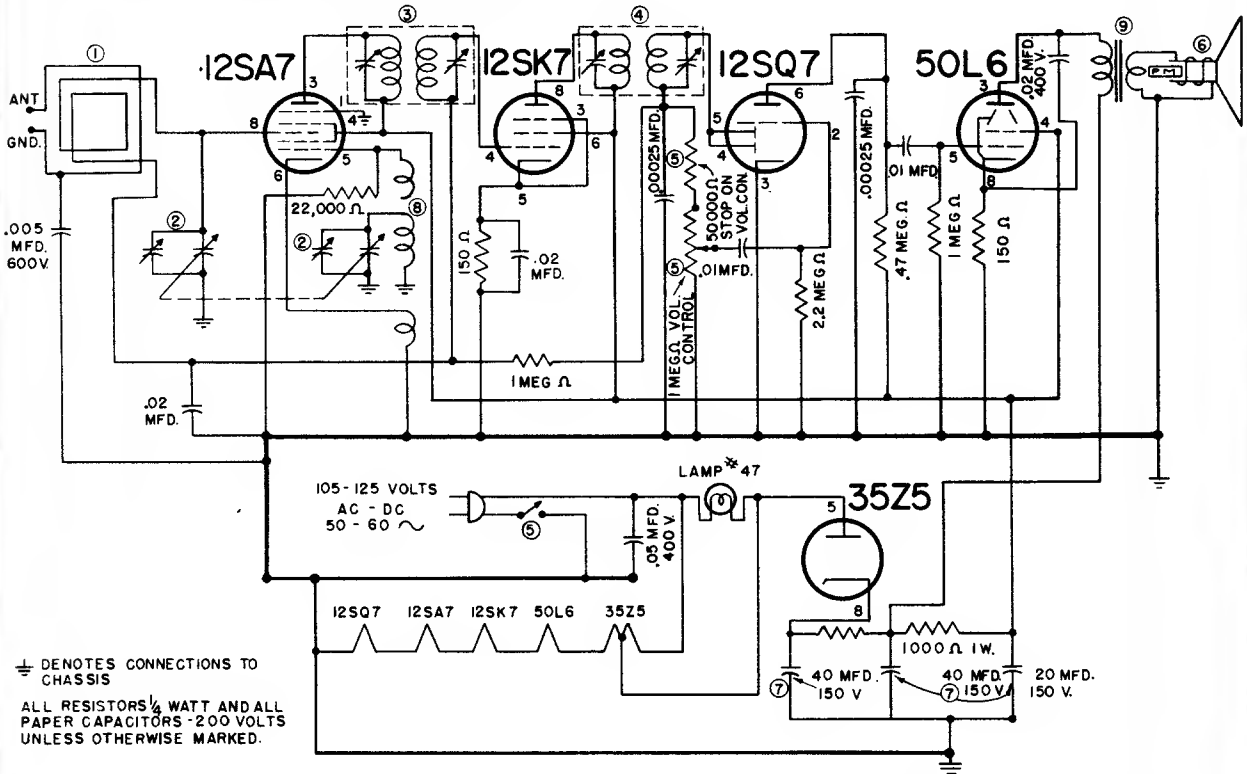
(3) Loosely couple the Signal Generator lead to the Loop and set to 1650 KC.

(4) With the Variable Capacitor set at the extreme clockwise position, tune in the 1650 KC signal by means of the Oscillator Trimmer on the Variable Capacitor (front section).

(5) Set the Signal Generator to 1500 KC and turn the Tuning Control so that this frequency is indicated on the dial. Adjust the Antenna Trimmer on the Variable Capacitor (rear section) for maximum output. No other adjustments are necessary.



TRIMMER AND TUBE LOCATION DIAGRAM



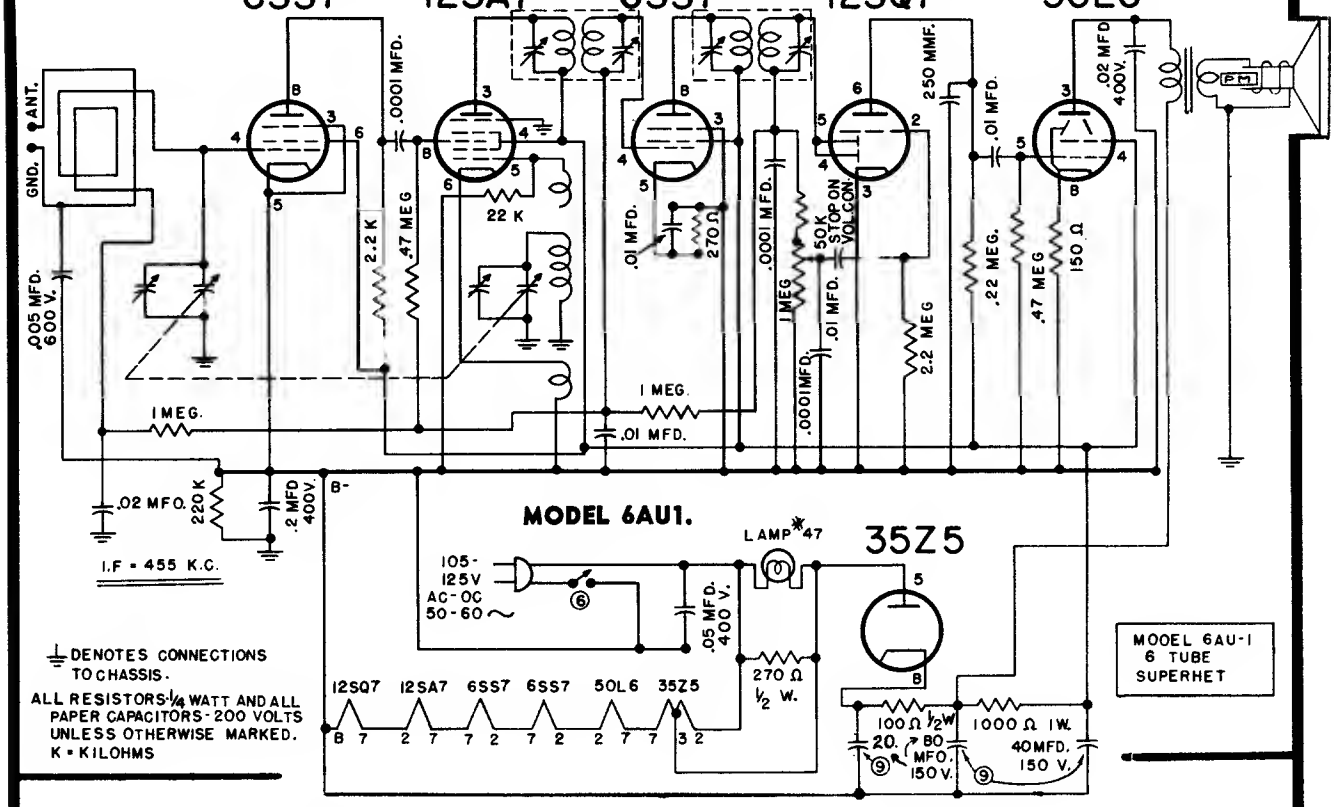
⏚ DENOTES CONNECTIONS TO CHASSIS

ALL RESISTORS 1/4 WATT AND ALL PAPER CAPACITORS - 200 VOLTS UNLESS OTHERWISE MARKED.

I.F. = 455 K.C.

① 1.403 LOOP ASSEMBLY
② 2.163 2 GANG VARIABLE COND.
③ 1.259 1 ST. I.F. TRANSFORMER
④ 1.409 2 ND. I.F. TRANSFORMER
⑤ 8.200-1 VOLUME CONTROL & SWITCH
⑥ 30,300 P.M. 5" SPEAKER
⑦ 5.400-8 ELECTROLYTIC CAP. 40-40-20 MFD.
⑧ 1.402 OSCILLATOR COIL
⑨ 9.200 OUTPUT TRANSFORMER

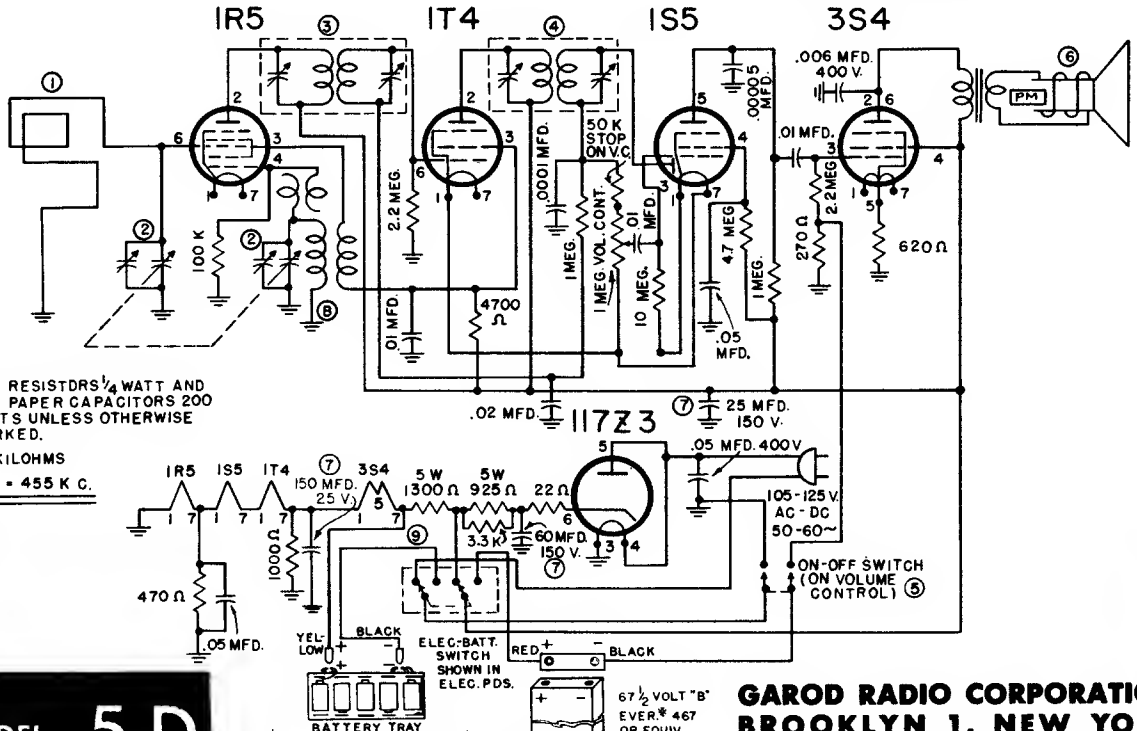
MANUAL OF 1946 MOST POPULAR SERVICE DIAGRAMS



⏚ DENOTES CONNECTIONS TO CHASSIS.

ALL RESISTORS 1/4 WATT AND ALL PAPER CAPACITORS - 200 VOLTS UNLESS OTHERWISE MARKED.
K = KILOHMS

MOOEL 6AU-1
6 TUBE
SUPERHET



ALL RESISTORS 1/4 WATT AND ALL PAPER CAPACITORS 200 VOLTS UNLESS OTHERWISE MARKED.
K = KILOHMS
I.F. = 455 K.C.

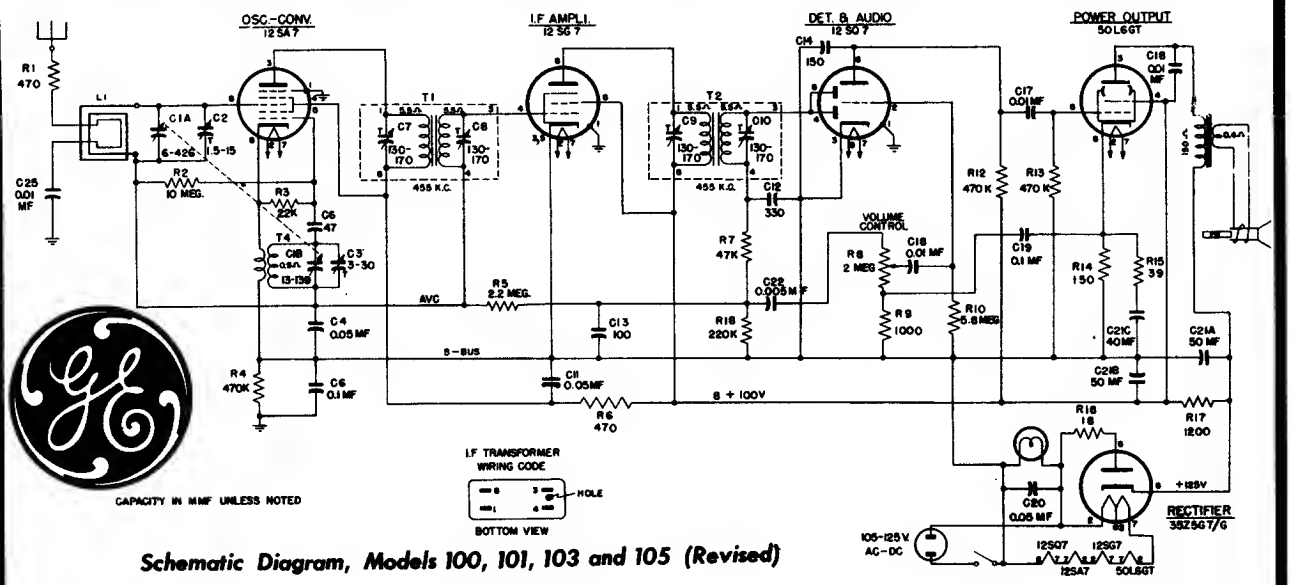
MODEL 5 D

52

GAROD RADIO CORPORATION
BROOKLYN 1, NEW YORK

① 1.437 LOOP ANTENNA
② 2.203 2 GANG VARIABLE CONDENSER
③ 1.412 1ST I.F. TRANSFORMER
④ 1.413 2ND I.F. TRANSFORMER
⑤ B 200-2 VOLUME CONTROL & SWITCH
⑥ 30313 4" P.M. SPEAKER
⑦ 5.400-3 ELECTROLYTIC CAP. 60-25-150 MFD.
⑧ 1.414 OSCILLATOR COIL
⑨ 11.207 ELECTRIC-BATTERY SWITCH

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS



Schematic Diagram, Models 100, 101, 103 and 105 (Revised)

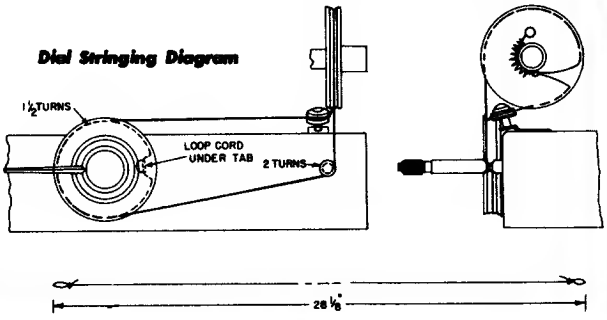
Stage gain measurements by vacuum tube voltmeter or similar measuring devices may be used to check circuit performance and isolate trouble. The gain values listed may have tolerances of 20%. Readings taken with low signal input so that AVC is not effective.

(1) R-F Stage Gains.

Antenna post to 12SA7 grid	4 @ 1000 kc
12SA7 grid to 12SG7 grid	30 @ 455 kc
12SG7 grid to 12SQ7 diode plate	150 @ 455 kc

(2) Audio Gain.
0.06 volt at 400 cycles across volume control (R8) with control set at maximum will give approximately ½-watt output across speaker voice coil.

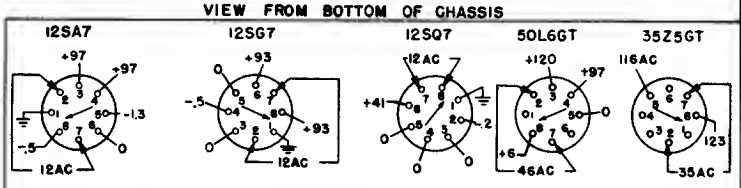
Dial Stringing Diagram



ALIGNMENT CHART

Connect test oscillator to	Test osc. setting	Pointer setting on radio	Adjustment for maximum output
12SG7 grid in series with 0.05 mf. cap.	455 kc	1,500 kc	2nd I-F Trans. Trimmers
12SA7 grid in series with 0.05 mf. cap.	455 kc	1,500 kc	1st and 2nd I-F Trans. Trimmers
Ant. Post in series with 50 mmf.	1,500 kc	1,500 kc	C3 (Osc.)
Ant. Post in series with 50 mmf.	1,500 kc	1,500 kc	C2 (R-F)

VIEW FROM BOTTOM OF CHASSIS



CONDITION OF TEST

MEASUREMENTS TAKEN ON 20,000 OHMS PER VOLT METER
MEASURED FROM PIN TO S-BUS UNLESS SHOWN OTHERWISE
117 VOLTS LINE
VOLUME CONTROL – CLOCKWISE
NO SIGNAL INPUT

MODELS 100, 101, 103 AND 105

Production changes were made to all Models 100, 101, 103 and 105 radios having serial Nos. 5000 and over.

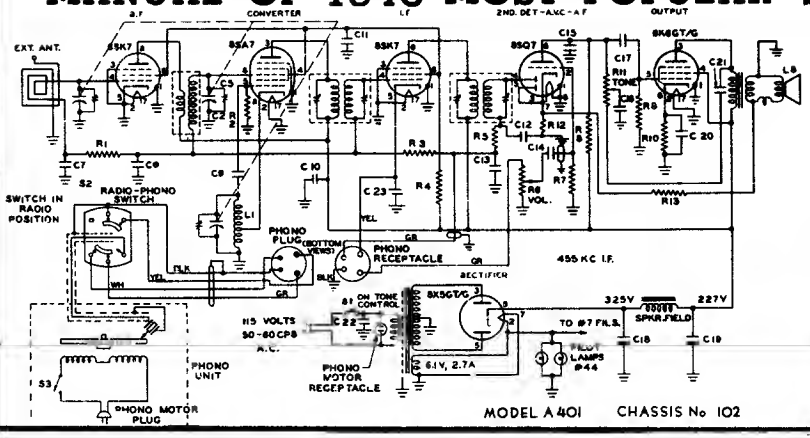
(SCHEMATIC DIAGRAM)—A corrected schematic is printed. Changes were made as follows:

(1) C18 connects between the output plate and screen instead of between plate and ground.

(2) The plate and screen filter (C11, R6) is moved from the IF amplifier circuit to the converter plate and screen circuit.

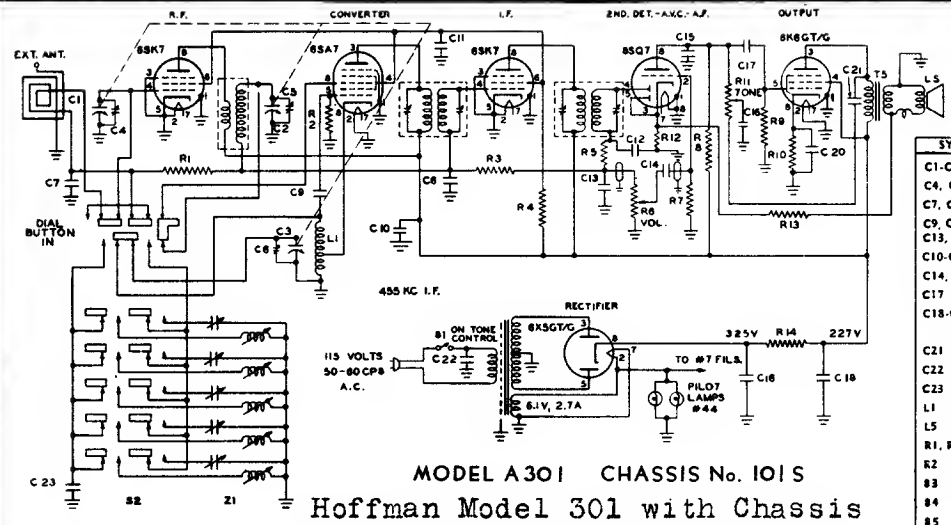
(3) The filament connections (Pins 2 and 7) to the 12SA7 converter tube are interchanged.

GENERAL ELECTRIC



MODEL A401 CHASSIS No. 102

C7, C8	.05 Mfd, 200 Volt, Tubular Paper	4100
C9, C12, C13, C15	100 Mmf ±20%, Mica	4000
C10, C11, C23	.05 Mfd, 400 Volt, Tubular Paper	4101
C14, C16	.005 Mfd, 600 Volt, Tubular Paper	4102
C17	.01 Mfd, 600 Volt, Tubular Paper	4103
C18-C19-C20	Dry Electrolytic Condenser (20-20-20 Mfd 450-450-25 Volt)	4200
C21	.001 Mfd, 600 Volt, Tubular Paper	4104
C22	.01 Mfd, 600 Volt, Tubular Paper (Metal Can)	4105
L1	Oscillator Coil	5200
L5	Loudspeaker, 4" x 6" (1500-Ohm Field)	9000
R1, R8	.22 Megohm ±20%, ½ Watt	4500
R2	22,000 Ohm ±20%, ½ Watt	4501
R3	2.2 Megohm ±20%, ½ Watt	4502
R4	10,000 Ohm ±10%, 2 Watt	4503
R5	47,000 Ohm ±20%, ½ Watt	4504
R6	.5 Megohm Potentiometer (Voluma)	4804
R7	10 Megohm ±20%, ½ Watt	4505
R9	.47 Megohm ±20%, ½ Watt	4506
R10	560 Ohm ±10%, ½ Watt	4507
R11	.25 Megohm Potentiometer With Switch (Tone)	4805
R12	47 Ohm ±20%, ½ Watt	4508
R13	330 Ohm ±20%, ½ Watt	4509



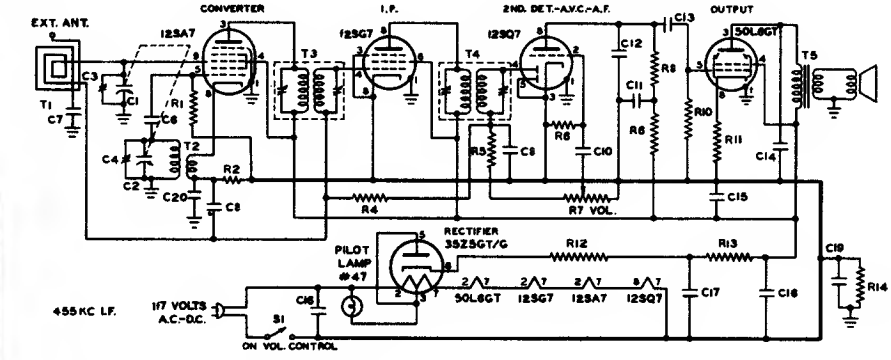
MODEL A301 CHASSIS No. 101S

Hoffman Model 301 with Chassis 101S is electrically identical to Chassis 100, except for the speaker used and the use of a 1500 ohm resistor instead of the 1500 ohm speaker field winding.

Hoffman
RADIO CORP.
LOS ANGELES, CALIFORNIA

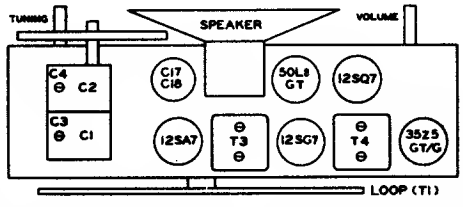
Hoffman
RADIO CORP.
LOS ANGELES, CALIFORNIA

SYMBOL	DESCRIPTION
C1-C2-C3	Three-Section Variable (388-388-180 Mmf.)
C4, C5, C6	Trimmers; Part of Variable Condenser
C7, C8	.05 Mfd. 200 Volt, Tubular Paper
C9, C12, C13, C15	100 Mmf ±20%, Mica
C10-C11	.05 Mfd, 400 Volt, Tubular Paper
C14, C16	.005 Mfd, 600 Volt, Tubular Paper
C17	.01 Mfd, 600 Volt, Tubular Paper
C18-C19-C20	Dry Electrolytic Condenser (20-20-20 Mfd 450-450-25 Volt)
C21	.001 Mfd, 600 Volt, Tubular Paper
C22	.01 Mfd, 600 Volt, Tubular Paper (Metal Can)
C23	500 Mmf 5%, Silver Mica
L1	Oscillator Coil
L5	Loudspeaker, 5" P.M.
R1, R8	.22 Megohm ±20%, ½ Watt
R2	22,000 Ohm 20%, ½ Watt
R3	2.2 Megohm ±20%, ½ Watt
R4	10,000 Ohm ±10%, 2 Watt
R5	47,000 Ohm ±20%, ½ Watt
R6	.5 Megohm Potentiometer (Voluma)
R7	10 Megohm 20%, ½ Watt
R9	.47 Megohm ±20%, ½ Watt
R10	560 Ohm ±10%, ½ Watt
R11	.25 Megohm Potentiometer With Switch (Tone)
R12	47 Ohm ±20%, ½ Watt
R13	330 Ohm ±20%, ½ Watt
R14	1500 Ohm ±5%, 6½ Watt



MODEL A200
CHASSIS NO. 103

MODEL A302
CHASSIS NO. 103



Hoffman
RADIO CORP.
LOS ANGELES, CALIFORNIA

SYMBOL	DESCRIPTION	HOFFMAN NO.
C1-C2	Two-Section Variable (388-180 Mmf.)	4401
C3, C4	Trimmers; Part of Variable Cond.	
C6	100 Mmf. ±20%, Mica	4000
C7, C10, C13	.005 Mfd., 600 Volt, Tubular Paper	4102
C8, C11, C15	.05 Mfd., 200 Volt, Tubular Paper	4100
C9, C12	270 Mmf. ±20%, Mica	4001
C14	.02 Mfd., 400 Volt, Tubular Paper	4106
C16	.01 Mfd., 600 Volt, Tubular Paper	4103
C17-C18	Dry Electrolytic (30-50 Mfd/150V)	4201
C19, C20	.1 Mfd, 200 Volt, Tubular Paper	4111
L5	5" PM Loudspeaker	9003
R1	22,000 Ohm ±20%, ½ Watt	4501
R2	68 Ohm ±20%, ½ Watt	4524
R4	2.2 Megohm ±20%, ½ Watt	4502
R5	47,000 Ohm ±20%, ½ Watt	4504
R6	10 Megohm ±20%, ½ Watt	4505
R7	.5 Megohm Pot. with Switch (Voluma)	4802
R8	.1 Megohm ±20%, ½ Watt	4511
R9	.22 Megohm ±20%, ½ Watt	4500
R10, R14	.47 Megohm ±20%, ½ Watt	4506
R11	150 Ohm ±20%, ½ Watt	4510
R12	47 Ohm, ±20%, ½ Watt	4508
R13	500 Ohm ±10%, 5 Watt, W.W.	4700
S1	On-Off Switch (On Volume Control)	
T1	Antenna Loop	5207
T2	Oscillator Coil	5208
T3	Input I.F. Transformer (455 K.C.)	5205
T4	Output I.F. Transformer (455 K.C.)	5206
T5	Audio Output Transformer	5101

HOWARD RADIO COMPANY

MODEL - 901

SOCKET VOLTAGE READINGS:

All voltages taken from the back of the AC switch to the socket contacts with a 20,000 ohm per volt D.C. meter and the line voltage fixed at 117 volts A.C.

TUBE	FUNCTION	CATH-ODE	SCR. GRID	PLATE	OSC. PLATE
12SA7	Mixer		92	92	92
12SK7	I.F.Amp.	3	92	92	
12SQ7	Det.			44	
50L6GT	Output	5.8	92	85	

ALIGNMENT INFORMATION

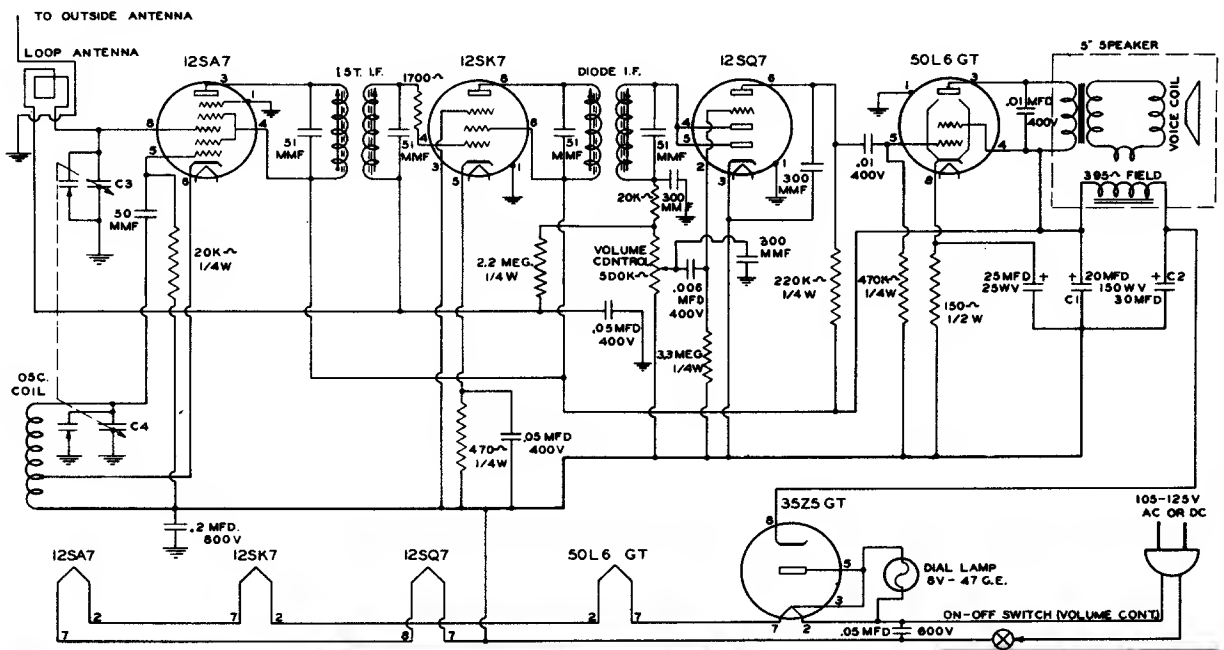
Each 455 KC I. F. coil has an Iron Core adjustment protruding from the top and the bottom of the I. F. can. Look beneath the chassis to reach the lower I. F. adjustments. Repeat the I. F. alignment operation several times to insure accuracy.

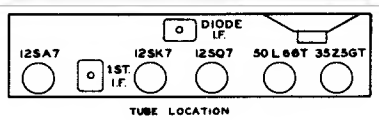
Add or remove resistance in the cathode circuit of the 12SK7 tube as the I. F. gain indicates.

The wire lead running from the loop aerial between the I. F. coils and the gang is important in its placement. Dress this wire tightly to the chassis.

Set dial at 1400 KC. and adjust oscillator trimmer which is located on back of variable condenser, then peak antenna stage trimmer on front section of condenser to 1400 KC. No adjustment is required at the low frequency end.

The filter condenser has a common negative, but note it does not return to ground and is insulated from the chassis.



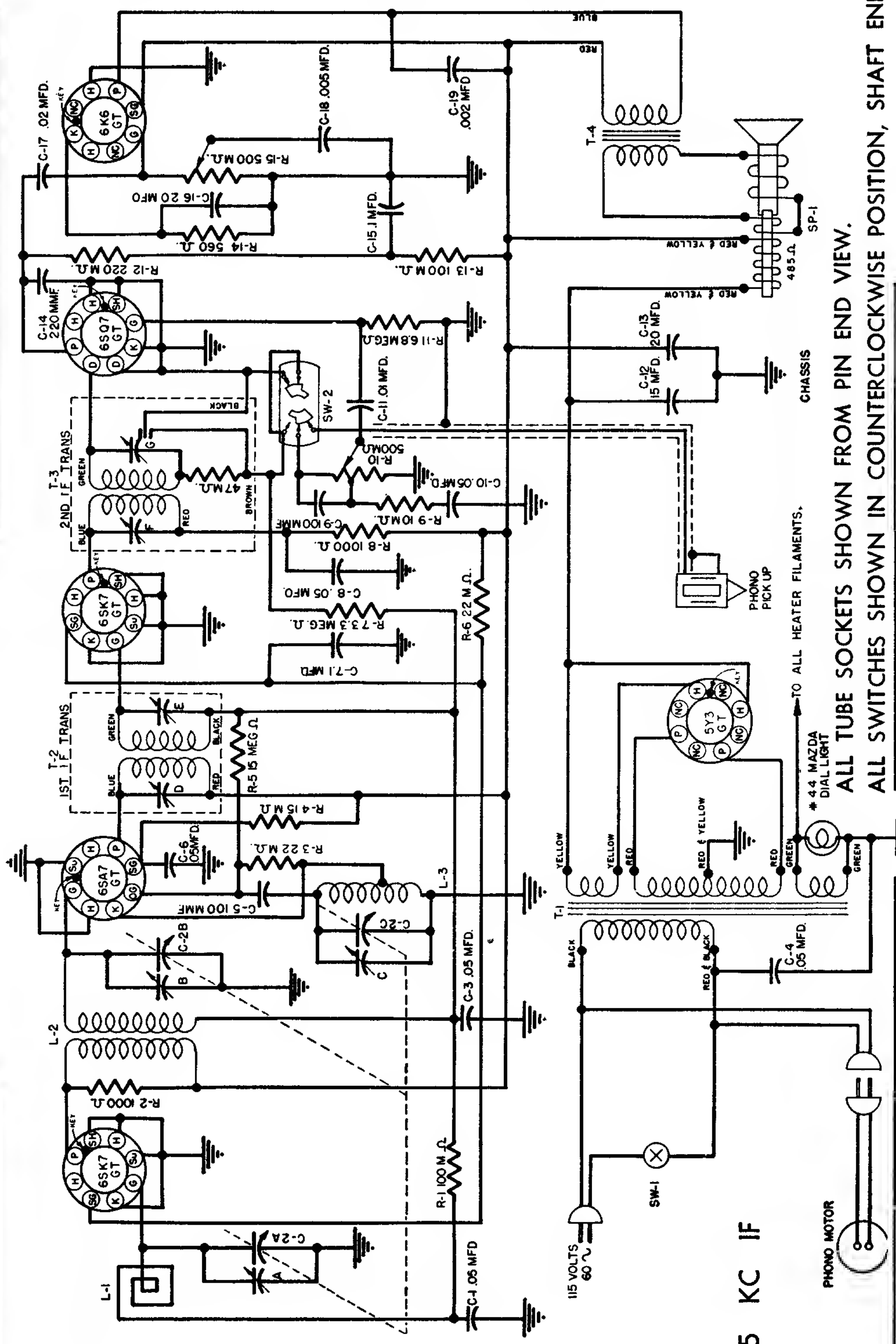


I.F. 455K C

HOWARD RADIO CO.
MODEL 601

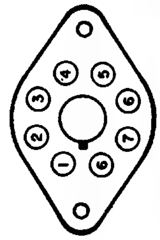
International Detrola Corp. ** Chassis Model 554

(See page 57 for additional material).



ALL TUBE SOCKETS SHOWN FROM PIN END VIEW.

ALL SWITCHES SHOWN IN COUNTERCLOCKWISE POSITION, SHAFT END VIEW.



455 KC IF

CONNECT GENERATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	BAND	SET DIAL AT	TRIMMERS	PURPOSE
6SA7GT grid	.1 mfd	455 kc.	Broadcast	HF end	D E F G	Align IF
6SK7GT RF grid	.1 mfd	1620 kc.	Broadcast	HF end	C	Set limit of band
6SK7GT RF grid	.1 mfd	1400 kc.	Broadcast	1400 kc.	B	Align RF
RMA loop	Through loop	1400 kc.	Broadcast	1400 kc.	A	Align antenna

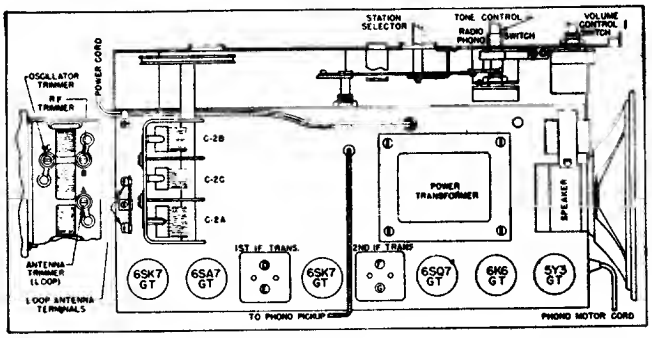
Chassis Model 554

(RMA PRODUCTION SOURCE CODE No. 2136)

International Detrola Corp.

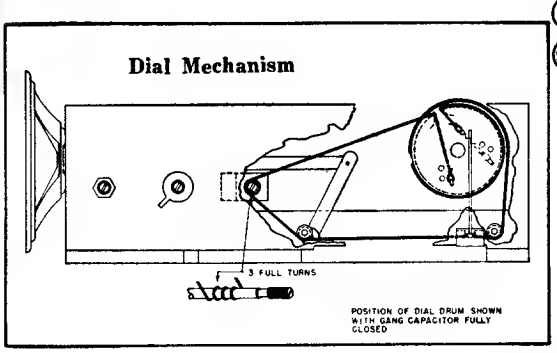
(Schematic on page 56).

Chassis Model 554

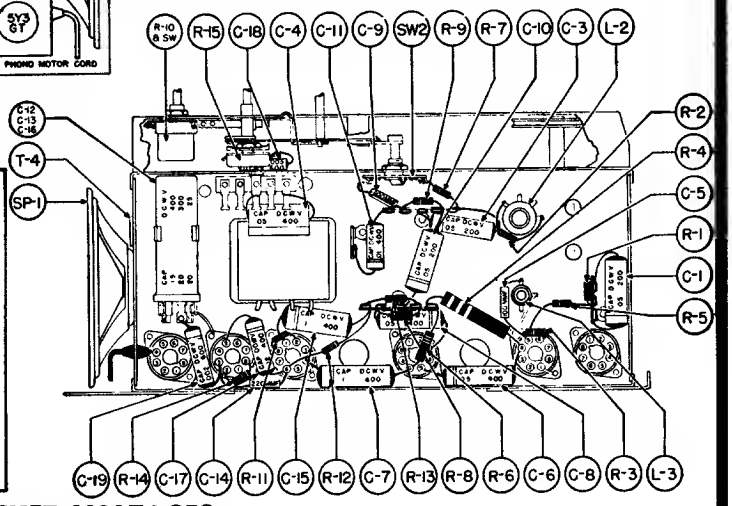


Tube Layout

Dial Mechanism



Parts Layout
Chassis Model 554



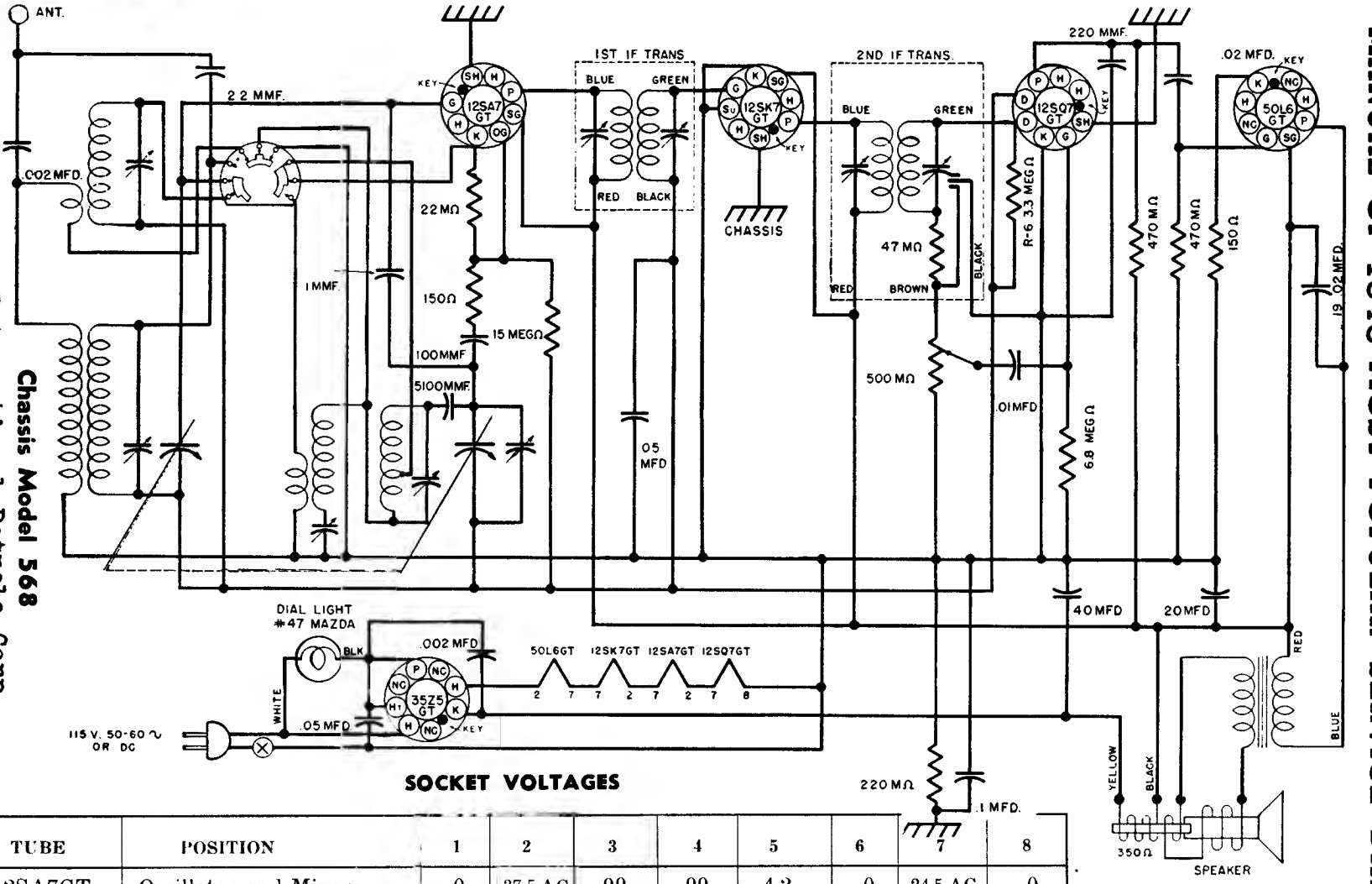
SOCKET VOLTAGES

TUBE	POSITION	1	2	3	4	5	6	7	8
6SK7GT	RF Amplifier	0	0	0	0	0	93	6.3 AC	270
6SA7GT	Converter	0	6.3 AC	270	113	-7.5	0	0	0
6SK7GT	IF Amplifier	0	0	0	0	0	93	6.3 AC	260
6SQ7GT	Detector—AVC—1st Audio	0	0	0	0	0	88	6.3 AC	0
6K6GT	Power Output	0	0	250	270	0	175	6.3 AC	19
5Y3GT	Rectifier	0	310	0	290 AC	0	290 AC	0	310

SERVICE PARTS LIST

Symbol	Part No.	Description
C-4	BC31B503	Cap., Molded, .05 mfd., 400 v.
C-1, 3, 10	BD210503	Cap., Paper, .05 mfd., 200 v.
C-11	BD410103	Cap., Paper, .01 mfd., 400 v.
C-7, 15	BD410104	Cap., Paper, .1 mfd., 400 v.
C-17	BD410203	Cap., Paper, .02 mfd., 400 v.
C-6, 8	BD410503	Cap., Paper, .05 mfd., 400 v.
C-19	BD610202	Cap., Paper, .002 mfd., 600 v.
C-18	BD610502	Cap., Paper, .005 mfd., 600 v.
C-5, 9	BM78A101	Cap., Mica, 100 mmf.
C-14	BM78A221	Cap., Mica, 220 mmf.
R-14	BR16E561	Resistor, 560 ohm, 1 w.
R-2, 8	BR17B102	Resistor, 1000 ohm, ⅓ w.
R-9	BR17B103	Resistor, 10M ohm, ⅓ w.
R-1, 13	BR17B104	Resistor, 100M ohm, ⅓ w.
R-5	BR17B156	Resistor, 15 meg., ⅓ w.
R-3	BR17B223	Resistor, 22M ohm, ⅓ w.
R-12	BR17B224	Resistor, 220M ohm, ⅓ w.
R-7	BR17B335	Resistor, 3.3 meg., ⅓ w.
R-11	BR17B685	Resistor, 6.8 meg., ⅓ w.
R-6	BR17E223	Resistor, 22M ohm, 1 w.
R-4	BR17G153	Resistor, 15M ohm, 2 w.

Symbol	Part No.	Description
	A-2163	Cable, Dial
	A-3123	Clamp, Cable
	A-9285	Lamp, Pilot, Mazda No. 44
	A-51160-3	Cord, Power, 6 ft.
	A-51163	Clip, Spring
C-12, 13	A-51356	Cap., Electro., 15-20-20 mfd.
C-2	C-51501-1	Capacitor, Variable, 3-section
T-1	C-51502	Transformer, Power
L-2	B-51511	Coil, Assembly, RF
SP-1	C-51512	Speaker, 5" Dynamic, 485 ohm
L-3	B-51522	Coil Assembly, Osc.
	A-51531	Shaft, Drive
T-2	B-51416-2	Trans. Assembly, 1st IF
T-3	B-51417-2	Trans. Assembly, 2nd IF
SW-2	B-55500-1	Switch (Radio-Phono)
R-15	B-55550-1	Potentiometer, 500M ohm
R-10	B-55575-1	Potentiometer & Switch, 500M ohm



Chassis Model 568

International Detrola Corp.

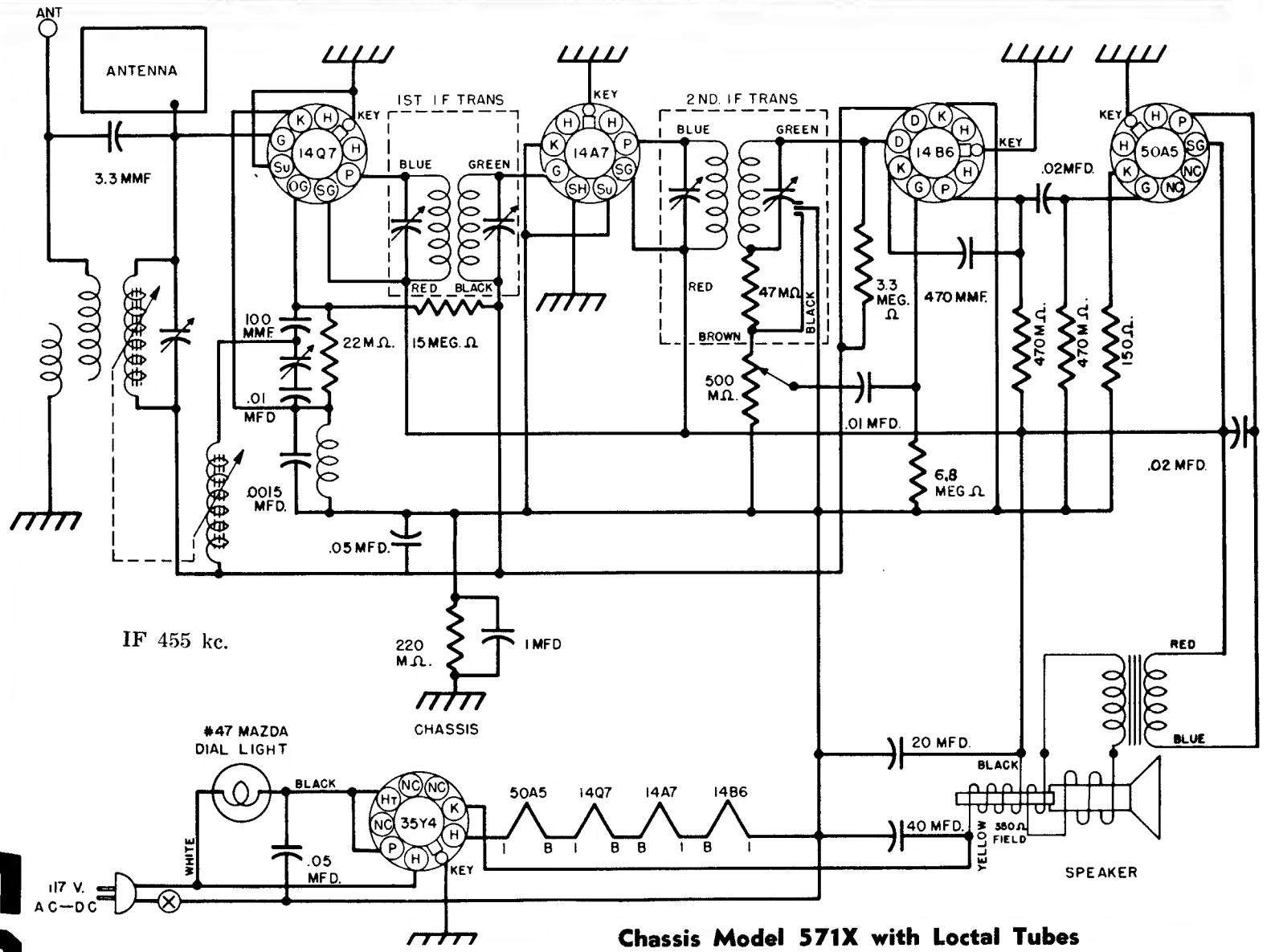
(RMA PRODUCTION SOURCE CODE No. 2135)

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

SOCKET VOLTAGES

TUBE	POSITION	1	2	3	4	5	6	7	8
12SA7GT	Oscillator and Mixer	0	37.5 AC	99	99	–4.2	0	24.5 AC	0
12SK7GT	IF Amplifier	0	24.5 AC	0	0	0	99	12.5 AC	99
12SQ7GT	2nd Det.—1st Audio	0	0	0	0	0	16	12.5 AC	0
50L6GT	Power Output	0	85 AC	91.5	99	0	0	37.5 AC	5.9
35Z5GT	Rectifier	0	117 AC	112 AC	0	112 AC	0	85 AC	112

455 KC IF



IF 455 kc.

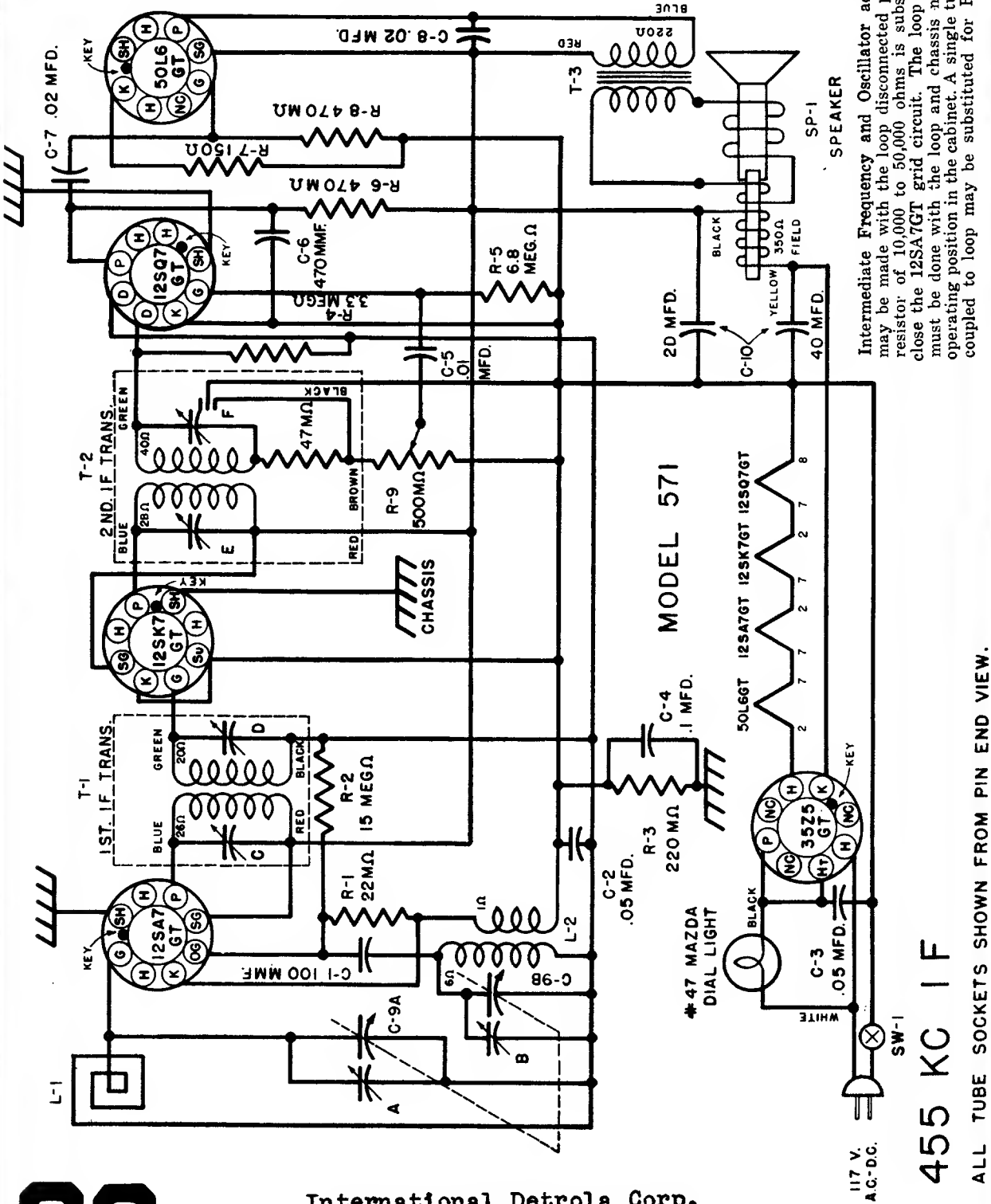
Chassis Model 571X with Loctal Tubes

International Detrola Corp.

(RMA PRODUCTION SOURCE CODE No. 213)

Chassis Models 571A and 571B

(RMA PRODUCTION SOURCE CODE No. 2135)



International Detrola Corp.

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

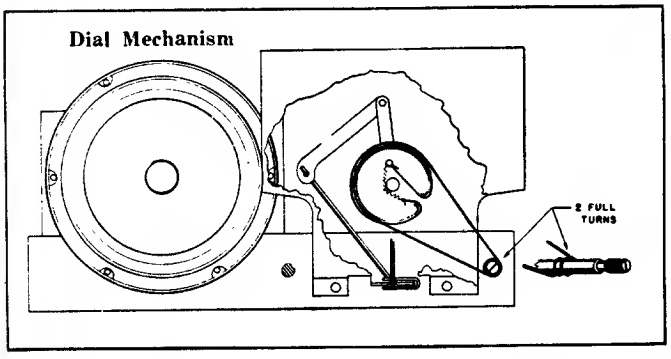
ALIGNMENT PROCEDURE — Chassis Models 571A and 571B — International Detrola

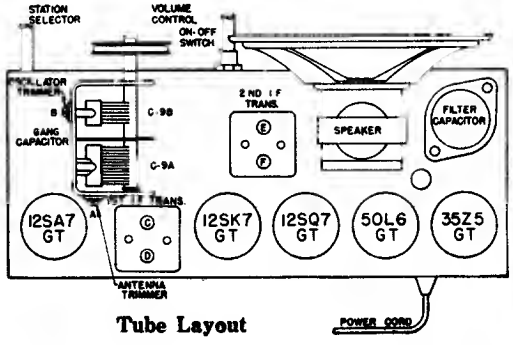
GENERATOR	CONNECTION AT RADIO	DUMMY ANTENNA	DIAL	TO TUNE TRIMMERS	REMARKS
IF 455 kc.	12SA7GT grid	.1 mfd.	HF end	IF trimmers C D E F	Tune to max.
1620 kc.	Through loop	RMA loop	HF end	Osc. trimmer B	Set limit of band
1400 kc.	Through loop	RMA loop	1400 kc.	Ant. trimmer A	Tune to max

SOCKET VOLTAGES

TUBE	POSITION	1	2	3	4	5	6	7	8
12SA7GT	Osc. and Mixer	0	37.5 AC	99	99	–4.2	0	24.5 AC	0
12SK7GT	IF Amplifier	0	24.5 AC	0	0	0	99	12.5 AC	99
12SQ7GT	2nd Det.—1st Audio	0	0	0	0	0	16	12.5 AC	0
50L6GT	Power Output	0	85 AC	91.5	99	0	0	37.5 AC	5.9
35Z5GT	Rectifier	0	117 AC	112 AC	0	112 AC	0	85 AC	112

NOTE: All DC voltages measured with a 1000 ohm per volt meter from ON-OFF switch (—B) to socket contact indicated. All AC voltages are measured from ON-OFF switch (—B) to socket contact indicated.





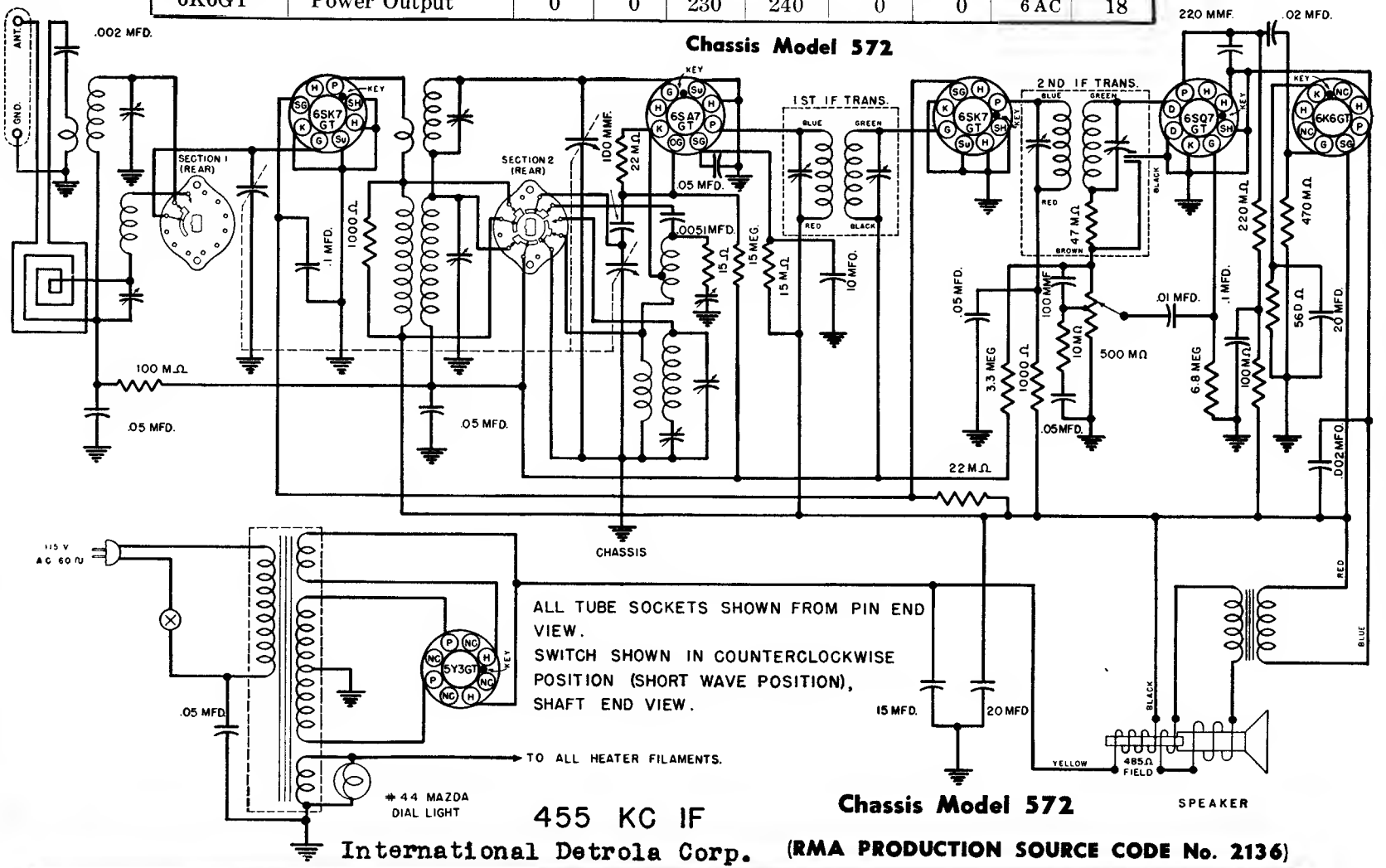
Tube Layout

SERVICE PARTS LIST

Symbol	Part No.	Description
C-1	BM78A101	Cap., Mica, 100 mmf.
C-2	BD210503	Cap., Paper, .05 mfd., 200 v.
C-3	BC31B503	Cap., Mold., Paper, .05 mfd.
C-4	BD410104	Cap., Paper, .1 mfd., 400 v.
C-5	BD410103	Cap., Paper, .01 mfd., 400 v.
C-6	BM78A471	Cap., Mica, 470 mmf.
C-7, 8	BD410203	Cap., Paper, .02 mfd., 400 v.
C-9	C-51155-1	Cap., Variable, 2 Section
C-10	A-8948	Cap., Electro., 40-20 mfd., 150 v.
L-1	B-51243	Loop, Antenna
L-2	B-51159	Coil, Osc. Assembly
R-1	BR17B223	Resistor, 22M ohm 1/3 w.
R-2	BR17B156	Resistor, 15 meg. 1/3 w.
R-3	BR17B224	Resistor, 220M ohm 1/3 w.
R-4	BR17B335	Resistor, 3.3 meg. 1/3 w.
R-5	BR17B685	Resistor, 6.8 meg. 1/3 w.
R-6, 8	BR17B474	Resistor, 470M ohm 1/3 w.
R-7	BR16C151	Resistor, 150 ohm. 1/2 w.
R-9	B-9051-1	Control, Vol. & Sw. 500M ohm.
T-1	B-51010	Trans., Assembly, 1st IF
T-2	B-51011	Trans., Assembly, 2nd IF
SP-1	C-51014	Speaker, 5" Dynamic, 350 ohm.
	A-2163	Cable, Drive
	A-6158	Lamp, Pilot No. 47 Mazda 6.3 v.
	A-51160-1	Cord, AC-DC Line, 6 ft.
	B-51162-1	Shaft, Drive
	A-51163	Clip, Spring
	B-51177	Bracket Assembly, Dial
	A-51202	Link, Insulating
	B-51204-1	Pointer
	A-51206	Arm, Dial Drive
	A-51237-1	Paper Back, Dial
	D-51240-1	Cabinet (571-1)
	A-51241-2	Knob
	C-51242-1	Dial, Glass Indicator

TUBE	POSITION	1	2	3	4	5	6	7	8
6SK7GT	RF Amplifier	0	0	0	0	0	107	6 AC	255
6SA7GT	Converter	0	6 AC	250	103	0	0	0	0
6SK7GT	IF Amplifier	0	0	0	0	0	105	6 AC	237
6SQ7GT	Det.—AVC—Audio	0	0	0	0	0	34	6 AC	0
6K6GT	Power Output	0	0	230	240	0	0	6 AC	18

Chassis Model 572



ALL TUBE SOCKETS SHOWN FROM PIN END VIEW.
SWITCH SHOWN IN COUNTERCLOCKWISE POSITION (SHORT WAVE POSITION), SHAFT END VIEW.

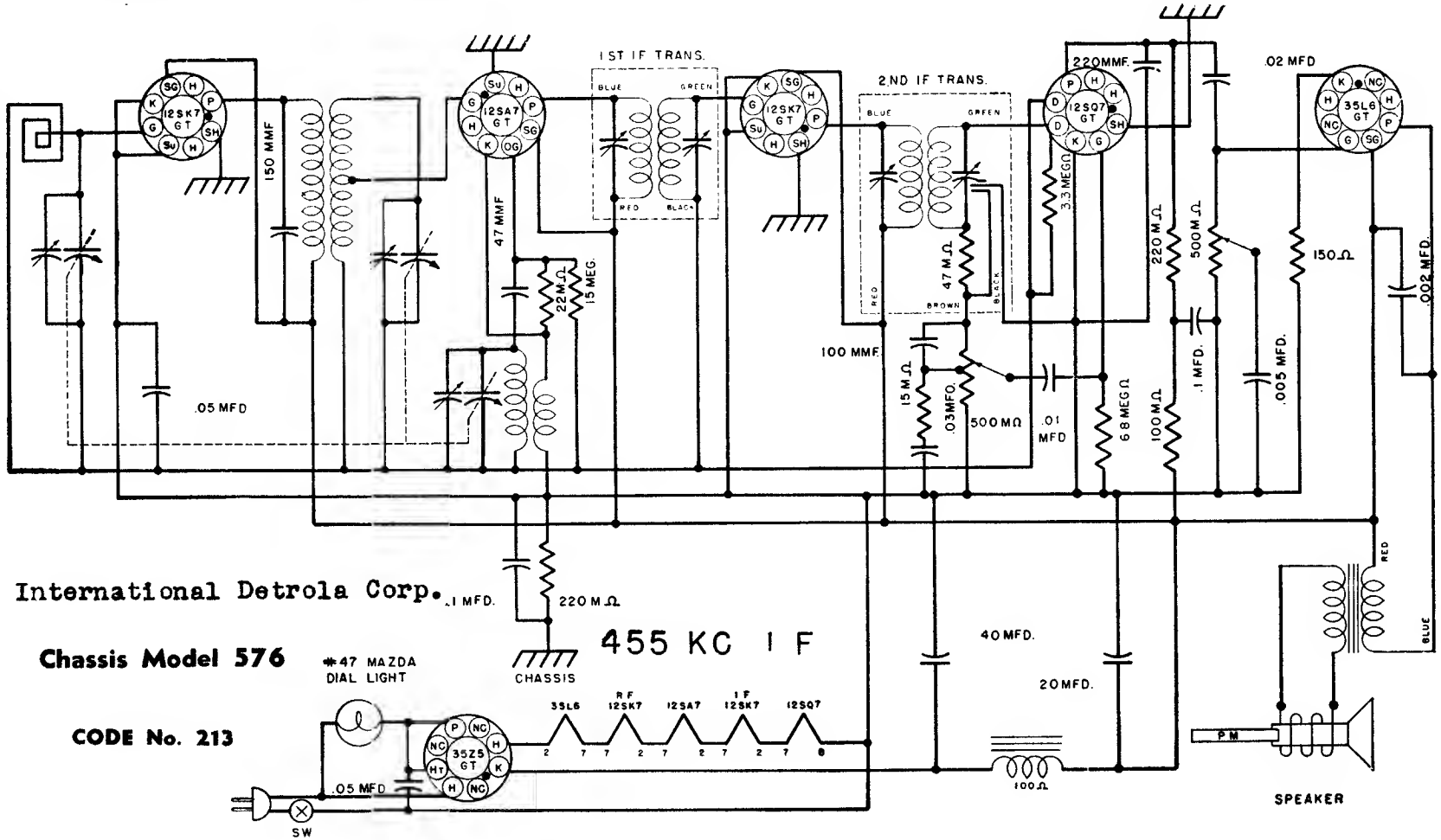
455 KC IF

International Detrola Corp.

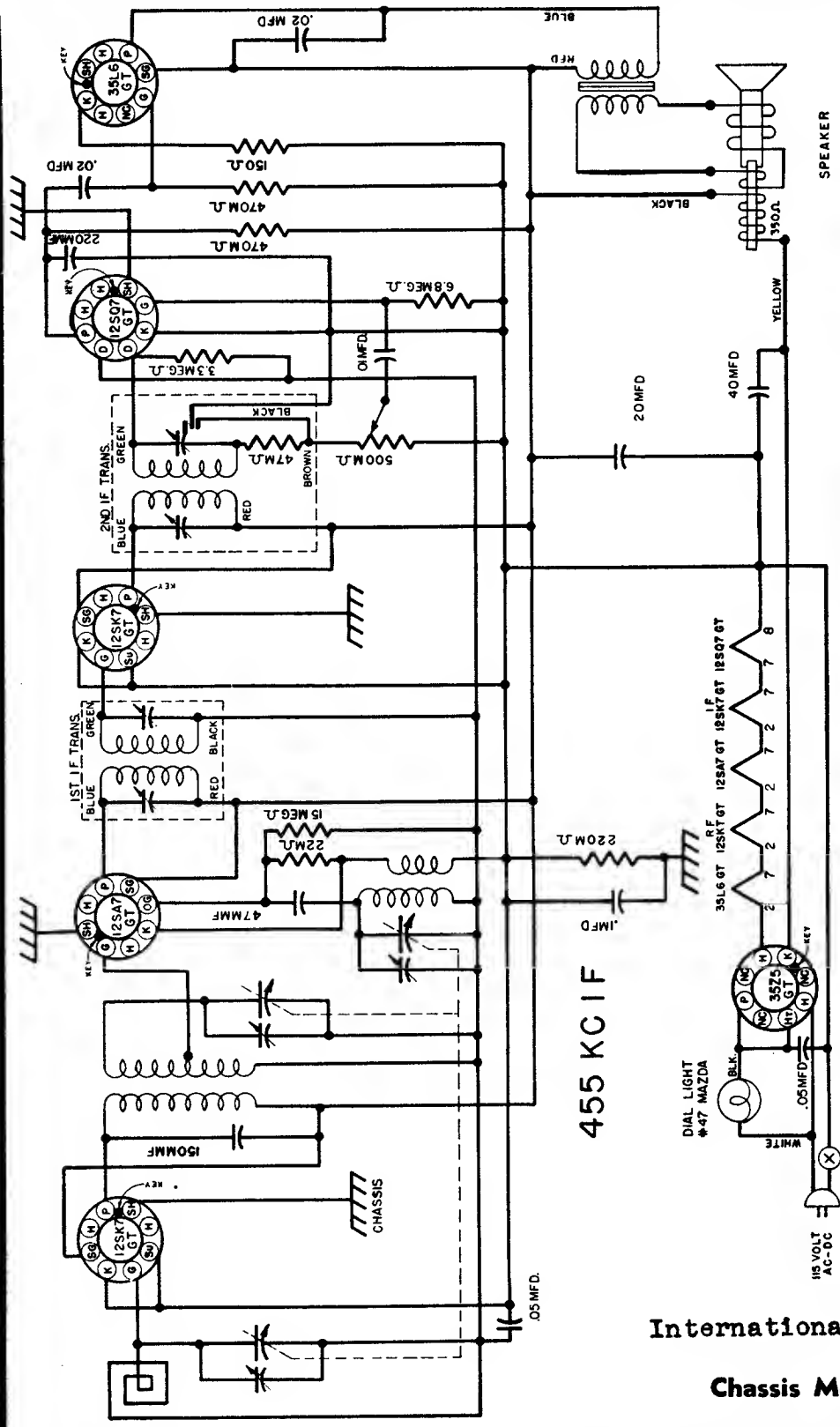
Chassis Model 572

(RMA PRODUCTION SOURCE CODE No. 2136)

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS



GENERATOR	CONNECTION AT RADIO	DUMMY ANTENNA	DIAL	TO TUNE TRIMMERS	REMARKS
IF 455 kc.	12SA7GT grid	.1 mfd.	HF end	IF trimmers D E F G	Tune to max.
1620 kc.	Through loop	RMA loop	HF end	Osc. trimmer C	Set limit of band
1400 kc.	Through loop	RMA loop	1400 kc.	RF trimmer B	Tune to max.
1400 kc.	Through loop	RMA loop	1400 kc.	Ant. Trimmer A	Tune to max.



ALIGNMENT PROCEDURE

CONNECT TEST OSCILLATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
12SA7GT grid	.1 mfd.	455 kc.	HF end	D E F G	Align IF
12SK7GT RF grid	.1 mfd.	1620 kc.	HF end	C	Set limit of band
12SK7GT RF grid	.1 mfd.	1400 kc.	1400 kc.	B	Align RF
RMA loop	Through loop	1400 kc.	1400 kc.	A	Align antenna

International Detrola Corp.

Chassis Model 579

(RMA PRODUCTION SOURCE CODE No. 213)

International Detrola Corp.

AUTOMATIC RECORD CHANGER AND AMPLIFIER MODELS 626A and 626B

(RMA PRODUCTION SOURCE CODE No. 213)

SOCKET VOLTAGES

TUBE	POSITION	1	2	3	4	5	6	7	8
12SQ7GT	AF Amplifier	0	0	0	0	0	40	12 AC	0
50L6GT	Power Output	0	54 AC	118	125	0	0	12 AC	9.0
35Z5GT	Rectifier	0	85 AC	0	0	117 AC	125	54 AC	127

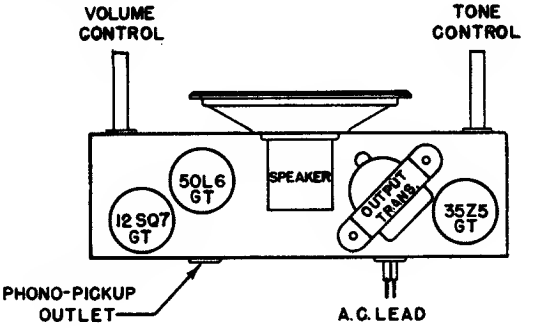
NOTE: All DC voltages measured with a 1000 ohm-per-volt meter from B- to socket contact indicated. All voltages are positive DC unless otherwise marked.
Volume control full on. Zero input.
Tone control in clockwise position.
Line voltage 117 volts AC.

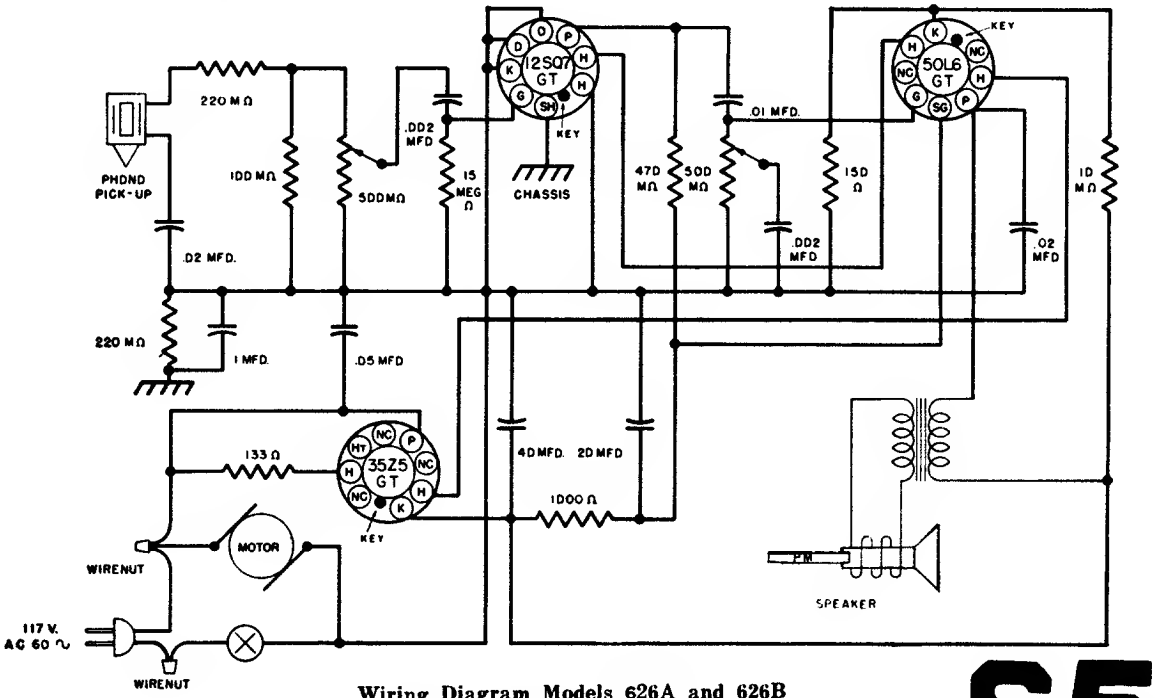
TUBE COMPLEMENT

1—12SQ7GT AF Amplifier tube

1—50L6GT Power Output tube

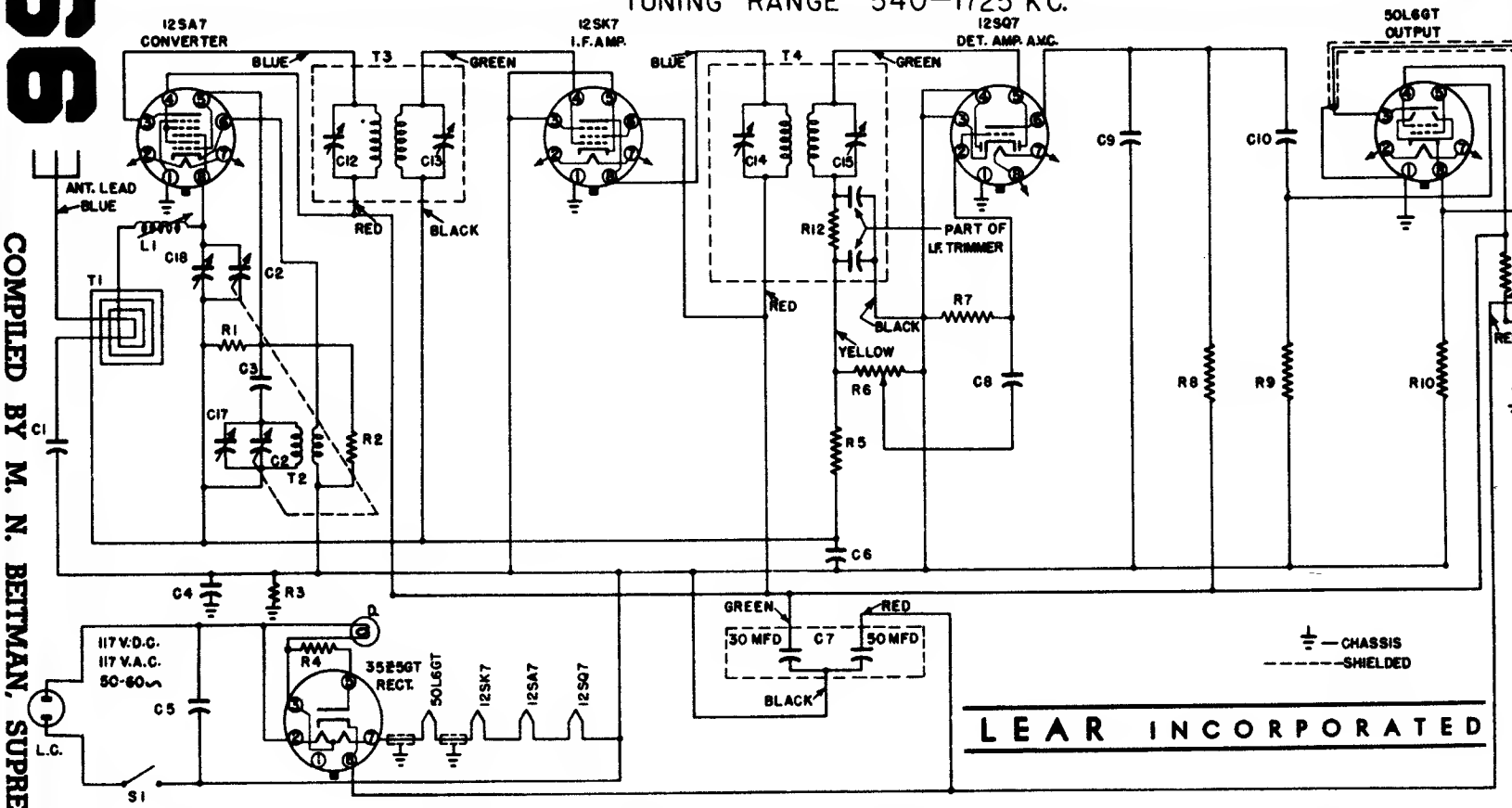
1—35Z5GT Rectifier tube





Wiring Diagram Models 626A and 626B

LEAR SUPERHETERODYNE MODELS 561, 562, 563
INTERMEDIATE FREQUENCY 455 K.C.
TUNING RANGE 540—1725 K.C.



LEAR INCORPORATED

DWG. SYM.	PART NO.	DESCRIPTION
T1	652570	LOOP ANTENNA ASSEMBLY
T2	665015	OSCILLATOR COIL "
T3	653350	NO.1 I.F. TRANSFORMER "
T4	653361	" 2 " " "
T5	652531	OUTPUT " "
L1	A52697	ANT. LOAD COIL
C1	C56565	.001 MFD. 200V. PAPER CAPACITOR
C2	A52452	2 GANG VARIABLE "
C3	656055	47 MMFD. MICA "
C4	C56631	0.1 MFD. 400V. PAPER "
C5	C56656	.05 " 600V. " "
C6	C56600	" " 200V. " "
C7	652326	30-50 MFD. 150V. ELECTROLYTIC

DWG. SYM.	PART NO.	DESCRIPTION
C8	C56596	.02 MFD. 200V. PAPER CAPACITOR
C9	656059	220 MMFD. MICA "
C10	C56569	.004 MFD. 200V. PAPER "
C11	C56626	.05 " 400V. " "
C12,C13		NO.1 I.F. TRIMMERS (PART OF ASS'Y.)
C14,C15		NO.2 " " (" " ")
C16		ART. TRIMMER ON VARIABLE CAPACITOR
C17		OSC. " " " "
R1	655496	15 MEG. 1/2 W. CARBON RESISTOR
R2	655479	22,000 OHM " " "
R3	655465	220,000 " " " "
R4	655460	15 " " " "
R5	655461	2.2 MEG. " " "

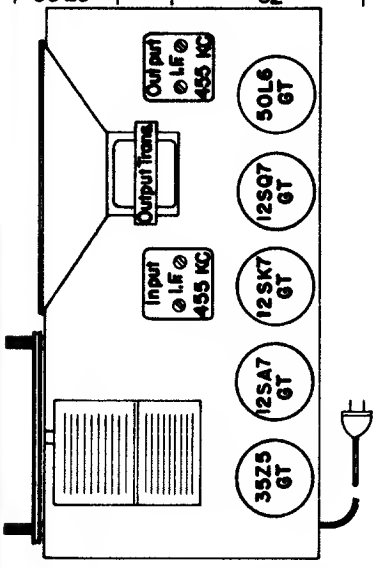
DWG. SYM.	PART NO.	DESCRIPTION
R6,S1	D56340	500,000 OHM VOL. CONTROL & LINE SW.
R7	655494	6.6 MEG. 1/2 W. CARBON RESISTOR
R8	655497	470,000 OHM " " "
R9	655467	470,000 " " " "
R10	655466	150 " " " "
R11	655674	1200 " 1 W. " "
R12		47,000 " 1/2 W. " "
P.M.S.	D53450	5" PERMANENT MAGNET SPEAKER
L.C.	A53091	LINE CORD
D.L.	A70535	DIAL LIGHT, TYPE 47

I.F. ALIGNMENT: The step-by-step routine given below should be carefully followed after reading the preceding instructions:

1. The modulated oscillator must be tuned to 455 K.C.
2. Connect the high side of the oscillator output to the lug on the R.F. section of the gang condenser. The low side of the oscillator is connected to the chassis through a .01 condenser.
3. Set the gang condenser of the radio to 1720 on the dial and turn the volume control on full.
4. Adjust the four I.F. trimmers tuning each carefully to get the maximum deflection of the output meter. Reduce the oscillator output if the output meter goes off scale.
5. Repeat all four adjustments since the adjustment of each I.F. trimmer may effect the others to a certain extent.

VOLTAGE TABLE - Use high resistance voltmeter of 1000 ohms per volt

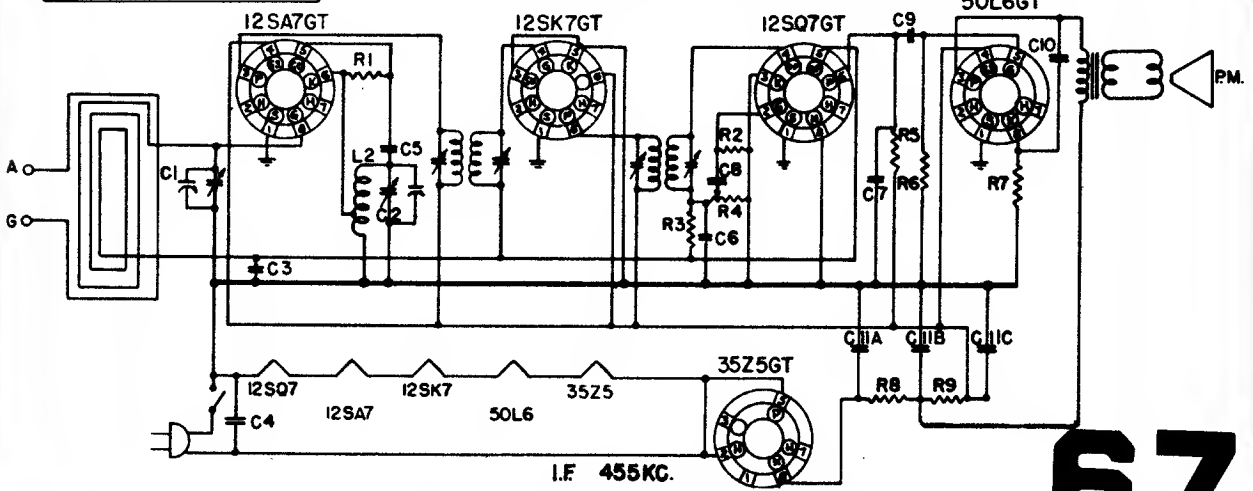
Type tube	1	2	3	4	5	6	7	8
12SA7	0	24AC	78	78	-7 to-12	0	12AC	-.65 to-1.2
12SK7	0	36AC	0	-.8 to-1.2	0	78	24AC	78
12SQ7	0	-.9 to-1.2	0	0	-.8 to-1.2	55	12AC	0
50L6	0	--	95	78	0	--	36AC	4 to 5
35Z5	-	82	--	78	115 AC	100	115 AC	110



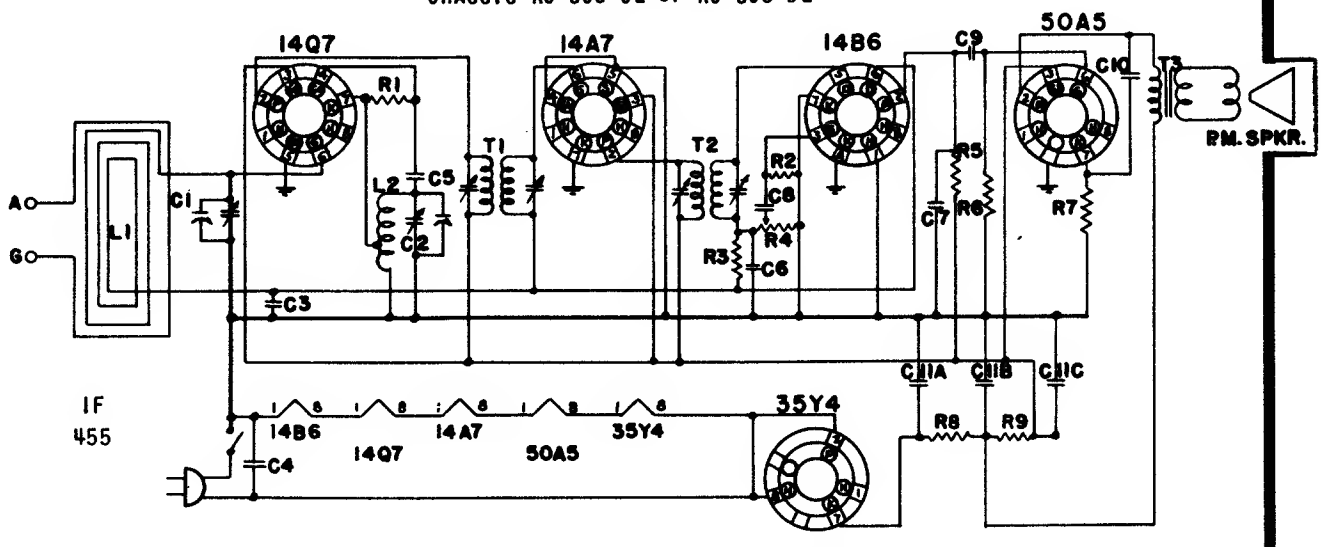
Circuit Symbol	Part Number	Description
C1,C2	CV-10002	Condenser-Variable, with pulley
C1,C2	CV-10002-A	Condenser-Variable, with pulley
C1,C2	CV-10002-B	Condenser-Variable, with pulley
C1,C2	CV-10002-C	Condenser-Variable, with pulley
C3,C4,C10	CP-14503	Condenser-Paper, 0.05mfd. 400V
C5	CM-15500	Condenser-Mica, 0.00005mfd.
C6,C7	CM-15251	Condenser-Mica, 0.00025mfd.
C8,C9	CP-14103	Condenser-Paper, 0.01mfd. 400V
C11A,C11B,C11C	CL-10001	Condenser-Electrolytic 20/20/20 mfd 150V
R1	RC-32002	Resistor-Carbon, 20,000 ohms ½watt
R2	RC-31005	Resistor-Carbon, 10 megohms ½watt
R3	RC-32004	Resistor-Carbon, 2 megohms ½watt
R4	VC-10103	Control-Volume, with switch, 1 megohm
R5	RC-32503	Resistor-Carbon, 250,000 ohms ½watt
R6	RC-35003	Resistor-Carbon, 500,000 ohms ½watt
R7	RC-31500	Resistor-Carbon, 150 ohms ½watt
R8	RC-32000	Resistor-Carbon, 200 ohms ½watt
R9	RC-31001	Resistor-Carbon, 1000 ohms ½watt

CIRCUIT DIAGRAM

MODELS RC-5C5; RC-5C5-A; RC-5C5-B and RC-5C5-C

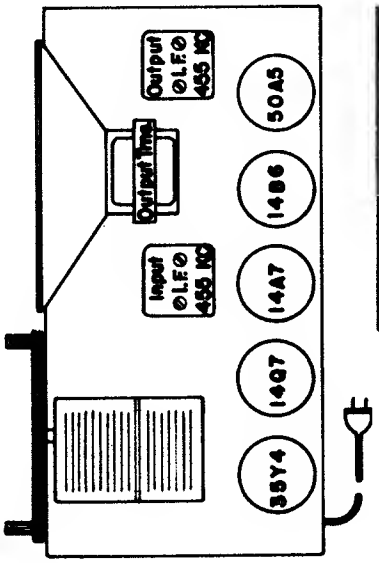


CIRCUIT DIAGRAM
CHASSIS RC-5C5-CL or RC-5C5-DL

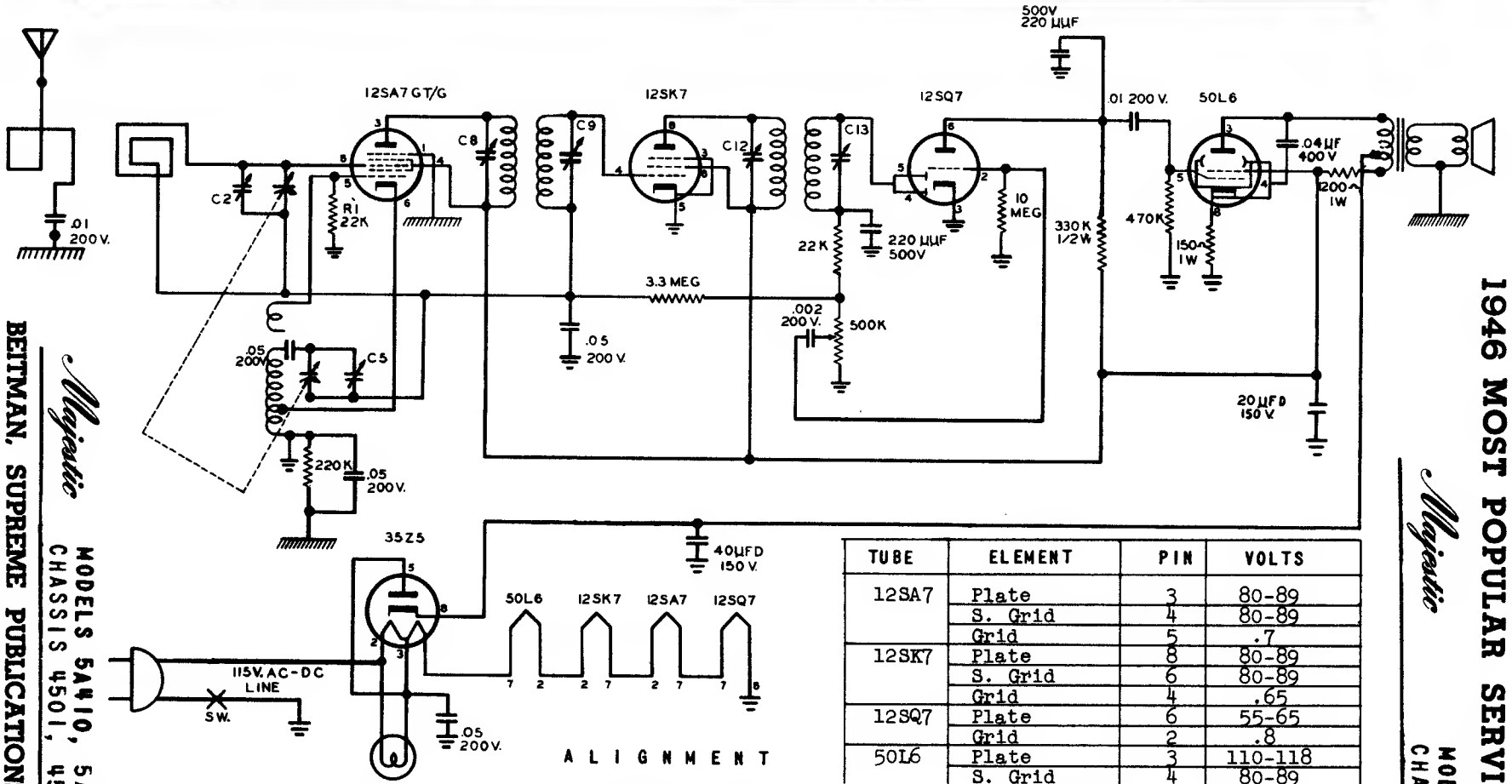


VOLTAGE TABLE - Use high resistance voltmeter of 1000 ohms per volt

Type tube	1	2	3	4	5	6	7	8
14Q7	24AC	78	78	-7 to-12	0	-.65 to-1.2	0	12AC
14A7	36AC	78	78	0	0	-.8 to-1.2	0	24AC
1486	0	55	-.9 to-1.2	0	-.8 to-1.2	0	0	12AC
50A5	82AC	95	78	--	---	0	4 to 5	36AC
35Y4	115AC	115AC	78	--	100	--	110	82AC



Circuit Symbol	Part Number	Description	Model
C1,C2	CV-10002-C	Condenser-Variable, with pulley	RC-5C5-CL
C1,C2	CV-10002-D	Condenser-Variable, with pulley	RC-5C5-DL
C3,C4,C10	CP-14503	Condenser-Paper, 0.05mfd. 400V	All
C5	CM-15500	Condenser-Mica, 0.00005mfd.	All
C6,C7	CM-15251	Condenser-Mica, 0.00025mfd.	All
C8,C9	CP-14103	Condenser-Paper, 0.01mfd. 400V	All
C11A,C11B,C11C	CL-10001	Condenser-Electrolytic 20/20/20 mfd 150V	All
R1	RC-32002	Resistor-Carbon, 20,000 ohms ½watt	All
R2	RC-31005	Resistor-Carbon, 10 megohms ½watt	All
R3	RC-32004	Resistor-Carbon, 2 megohms ½watt	All
R4	VC-10105	Control-Volume, with switch, 1 megohm	All
R5	RC-32503	Resistor-Carbon, 250,000 ohms ½watt	All
R6	RC-35003	Resistor-Carbon, 500,000 ohms ½watt	All
R7	RC-31500	Resistor-Carbon, 150 ohms ½watt	All
R8	RC-32000	Resistor-Carbon, 200 ohms ½watt	All
R9	RC-31001	Resistor-Carbon, 1000 ohms ½watt	All
L1	AL-10000-D	Antenna-Loop,	RC-5C5-DL
L1	AL-10001-C	Antenna-Loop	RC-5C5-CL
L2	TRC-10000	Coil-Oscillator	RC-5C5-DL
L2	TRC-10000-C	Coil-Oscillator	RC-5C5-CL
T1	TS-10000	Transformer-1st I.F.	All
T2	TS-10001	Transformer-2nd I.F.	All
T3	TO-10000	Transformer-Output	All
SPKR	SR-10001	Speaker-P.M. 4" round, with T3	All



TUBE	ELEMENT	PIN	VOLTS
12SA7	Plate	3	80-89
	S. Grid	4	80-89
	Grid	5	.7
12SK7	Plate	8	80-89
	S. Grid	6	80-89
	Grid	4	.65
12SQ7	Plate	6	55-65
	Grid	2	.8
50L6	Plate	3	110-118
	S. Grid	4	80-89

ALIGNMENT

STEP	DUMMY ANT.	TEST OSC. CONNECTION	TEST OSC. FREQUENCY	RECEIVER DIAL	ADJUST	REMARKS
1	.01 mfd.	12SA7 grid (pin No.5)	455 kc. modulated	Any quiet spot	C13,C12,C9,C8 for max. output	Repeat in reverse order
2	--------	Loop*	1500 kc. modulated	150	C5 for maximum output	
3	--------	Loop*	1500 kc. modulated	150	C2 for maximum output	Rock gang while adjusting
4	REPEAT COMPLETE ALIGNMENT PROCEDURE CAREFULLY					

* Make a two or three turn loop about 12 inches in diameter. Connect to output terminals of the signal generator. Place this loop in a plane parallel to the receiver loop antenna and about a foot away from the receiver loop.

	Plate	Screen	Grid
6SA7	240-265	85-98	0
6SK7	282-296	106-122	2.1 - 2.5
6SQ7	72-84	-	0
6J5 (Ph. Inv.)	208-220	-	6.0 - 7.5
6K6 (Out)	270-280	280-285	22.5 - 24

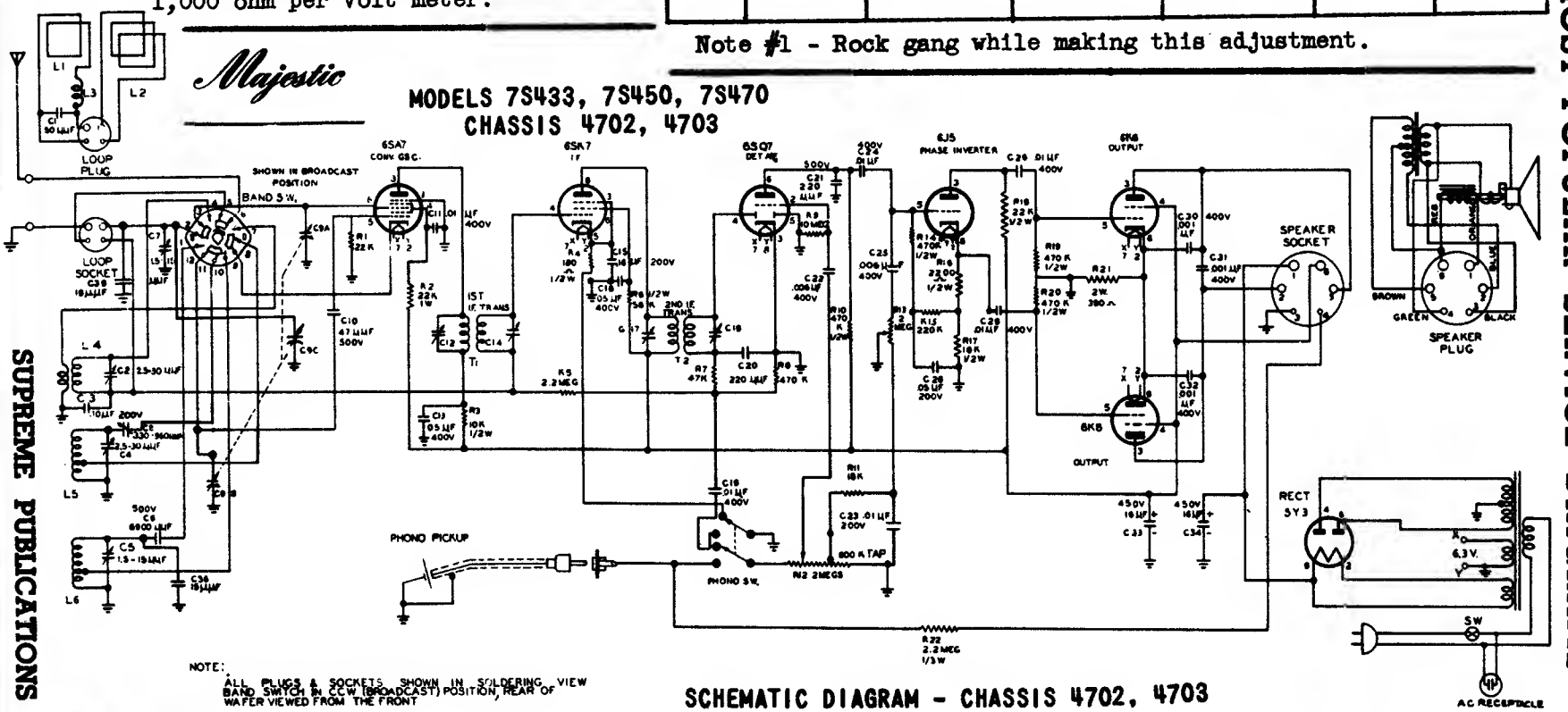
All voltages measured to ground with 1,000 ohm per volt meter.

Step	Dummy Antenna	Test Oscillator Connection	Test Oscillator Frequency	Receiver Bandswitch	Receiver Dial	Adjust for Maximum
1	.01 mfd	6SA7 grid	455 kc	B.C.	Any quiet spot	C18,C17 C14,C12
2	Loop	-	1500 kc	B.C.	150	C4,C7
3	Loop	-	600 kc	B.C.	60	C8
4	400 ohms	Receiver antenna post	17 mc	S.W.	17	C2,C5

Note #1 - Rock gang while making this adjustment.

Majestic

MODELS 7S433, 7S450, 7S470
CHASSIS 4702, 4703



NOTE:
ALL PLUGS & SOCKETS SHOWN IN SOLDERING VIEW
BAND SWITCH IN CCW (BROADCAST) POSITION, REAR OF WAFER VIEWED FROM THE FRONT

SCHEMATIC DIAGRAM - CHASSIS 4702, 4703

SUPREME PUBLICATIONS

MONTGOMERY WARD

MODEL 54BR-1505A
MODEL 54BR-1506A

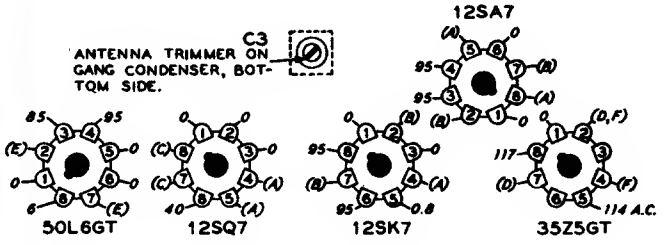
- Volume control setting—Maximum (extreme clockwise) for all adjustments.
- Connect ground lead of signal generator to B— of radio chassis through a 0.1 mfd. condenser.
- The loop antenna should be connected to the radio and in its proper position when making all adjustments.

ALIGNMENT	Signal Generator Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmer Adjusted to Maximum
I. F.	455 Kc.	.1 mfd.	Grid of 12SK7 I. F.	Rotor full open (Plates out of mesh)	Two trimmers on top of Output I. F.
	455 Kc.	.1 mfd.	Grid of 12SA7 Mixer	Rotor full open (Plates out of mesh)	Two trimmers on top of Input I. F.
BROADCAST	1600 Kc.	200 mmf.	Grid of 12SA7	Rotor full open (Plates out of mesh)	B.C. Osc. trimmer C2 on Gang
	1400 Kc.	200 mmf.	External Antenna and B—	Set Dial at 1400 K. C.	B.C. Ant. trimmer C3 under Gang

A-CANNOT BE MEASURED BY VOLTMETER
B-11 VOLTS A.C. ACROSS PINS 2 AND 7
C-11 VOLTS A.C. ACROSS PINS 7 AND 8
D-33 VOLTS A.C. ACROSS PINS 2 AND 7
E-48 VOLTS A.C. ACROSS PINS 2 AND 7
F-117 VOLTS A.C. ACROSS PINS 2 AND 4

ALL VOLTAGES MEASURED WITH A 1000-OHMS/VOLT VOLTMETER BETWEEN TERMINAL INDICATED AND B-. LINE VOLTAGE 117 VOLTS A.C.

ANTENNA TRIMMER ON GANG CONDENSER, BOTTOM SIDE. C3



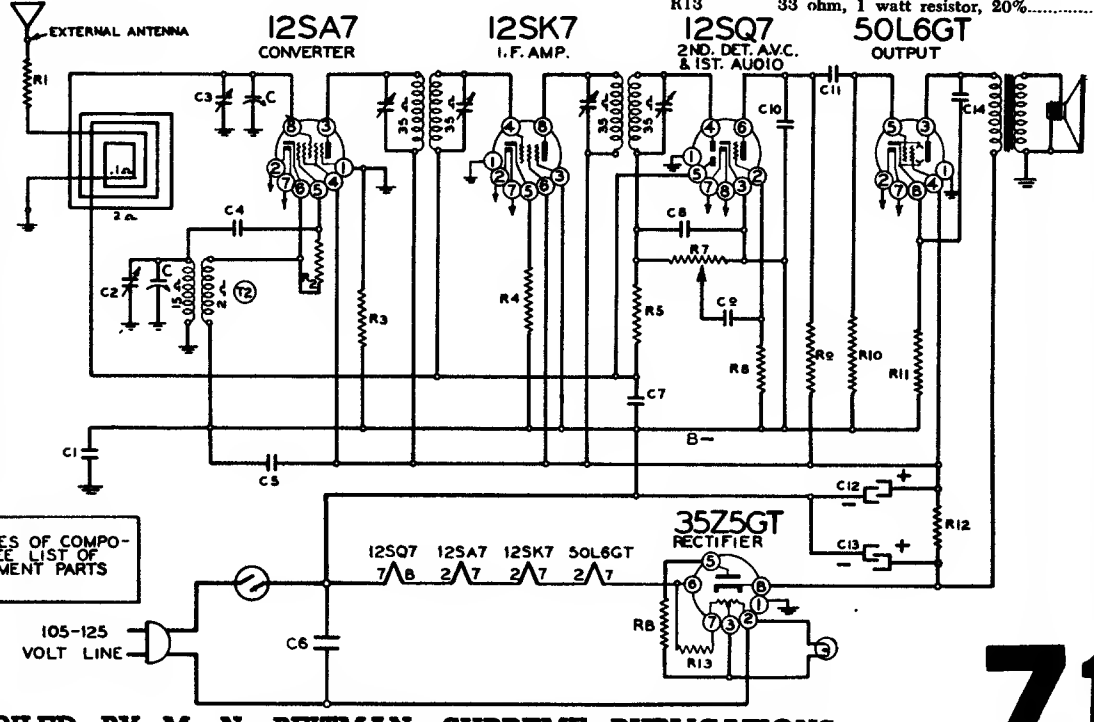
BOTTOM VIEW OF CHASSIS

CONDENSERS

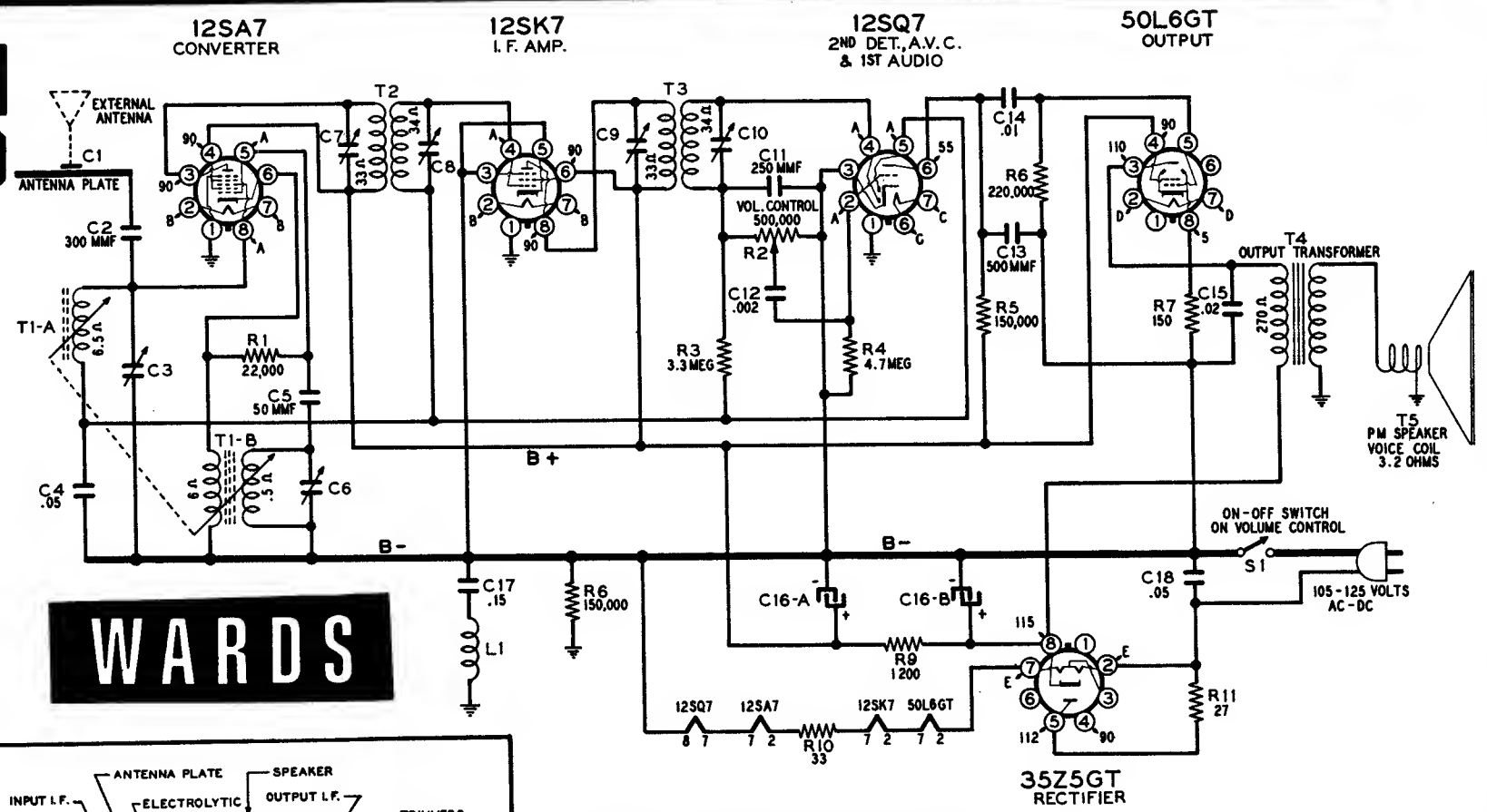
C1	.2 x 400 volt tubular condenser
C4	.0002 mica type condenser, 20%
C5, C7	.05 x 200 volt tubular condenser
C6	.1 x 400 volt tubular condenser
C8	.0001 mica type condenser, 20%
C9	.002 x 600 volt tubular condenser
C10	.00025 mica type condenser, 20%
C11	.004 x 600 volt tubular condenser
C12, C13	Electrolytic filter condenser, 50 to 60 cycles, 20 mfd.—40 mfd. x 150 volts
C12, C13	Electrolytic filter condenser, 25 cycles, 40 mfd.—60 mfd. x 150 volts
C14	.02 x 400 volt tubular condenser

RESISTORS*

R1	1.000 ohm, ½ watt resistor, 20%
R2	47,000 ohm, ½ watt resistor, 10%
R3	220,000 ohm, ½ watt resistor, 20%
R4	47 ohm, ½ watt resistor, 10%
R5	3.3 megohm, ½ watt resistor, 20%
R6	22 ohm, ½ watt resistor, 10%
R8	4.7 megohm, ½ watt resistor, 20%
R9	470,000 ohm, ½ watt resistor, 20%
R10	680,000 ohm, ½ watt resistor, 20%
R11	150 ohm, ½ watt resistor, 10%
R12	1200 ohm, 1 watt resistor, 10%
R13	33 ohm, 1 watt resistor, 20%

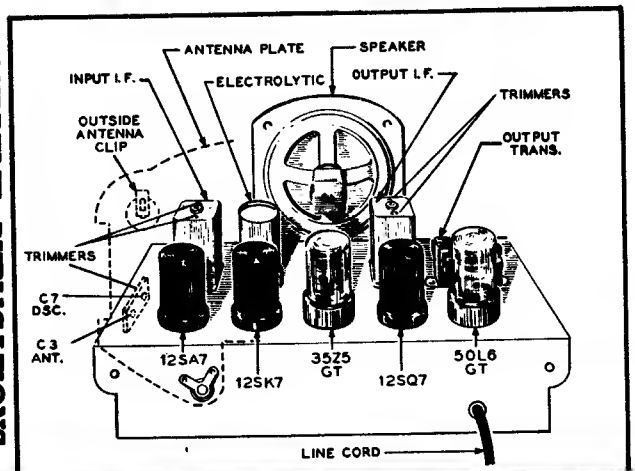


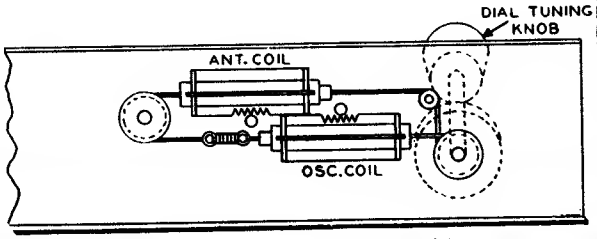
FOR VALUES OF COMPONENTS SEE LIST OF REPLACEMENT PARTS



WARDS

MODELS 54BR-1501A, 1502A





View of Tuning Coil Assembly

NOTES

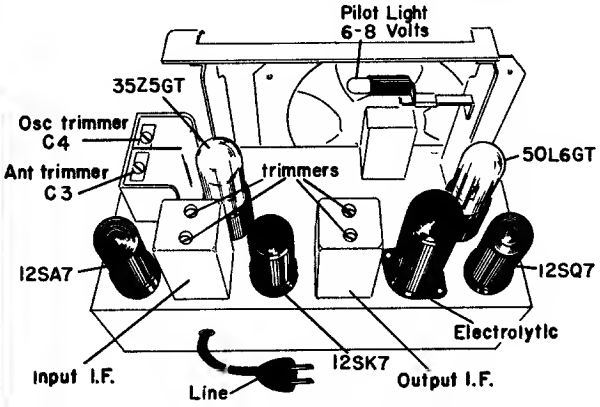
FIGURES AND LETTERS OPPOSITE SOCKET PIN NUMBERS ARE VOLTAGE READINGS TAKEN WITH A 5,000-OHMS-PER-VOLT METER BETWEEN SOCKET TERMINALS AND B- . LINE VOLTAGE 117 V. AC.

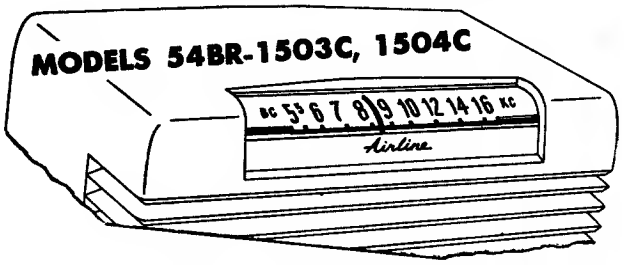
A - CANNOT BE MEASURED WITH VOLTMETER.
B - 12 VOLTS AC BETWEEN PINS 2 AND 7
C - 12 VOLTS AC BETWEEN PINS 7 AND 8
D - 45 VOLTS AC BETWEEN PINS 2 AND 7
E - 32 VOLTS AC BETWEEN PINS 2 AND 7

RESISTOR AND COIL VALUES SHOWN IN OHMS.

CAPACITOR VALUES SHOWN IN MFD UNLESS OTHERWISE INDICATED.

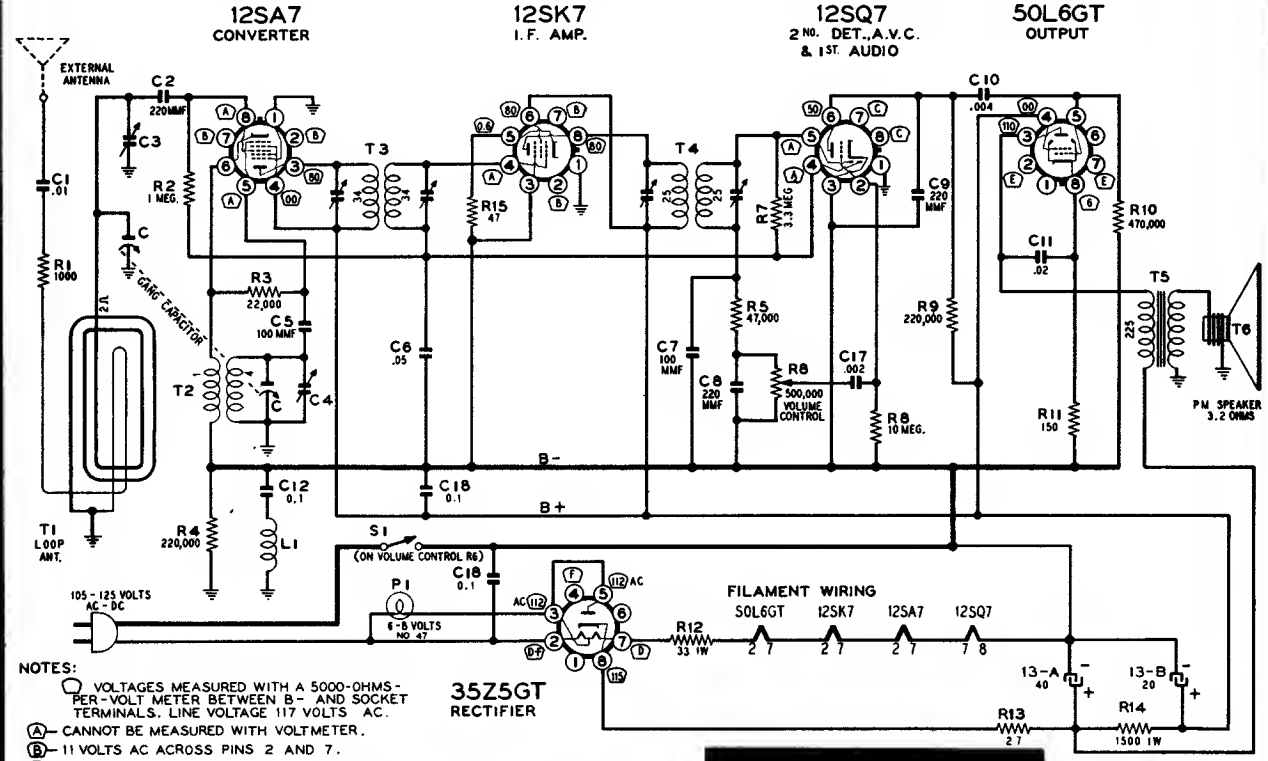
MONTGOMERY WARD





Replace a defective metal 12SK7 tube with another metal tube. Replace a glass 12SK7 tube with a metal tube or with an exact duplicate of the tube now in the set.

SIGNAL GENERATOR				TUNER SETTING	ADJUST TRIMMERS TO MAXIMUM OUTPUT in order shown
Frequency	Coupling Capacitor	Connection to Radio	Ground Connection		
455 kc	0.1 mf	Grid (pin 4) of 12SK7	Pin 3 of 12SK7 (B- of set)	Capacitor full open (plates out of mesh)	2 trimmers on output IF can
455 kc	0.1 mf	Grid (pin 8) of 12SA7	Pin 3 of 12SK7 (B- of set)	Capacitor full open (plates out of mesh)	2 trimmers on input IF can
1630 kc	0.1 mf	Grid (pin 8) of 12SA7	Pin 3 of 12SK7 (B- of set)	Capacitor full open (plates out of mesh)	Oscillator trimmer C4 on gang
1400 kc	200 mmf	External antenna clip	Pin 3 of 12SK7 (B- of set)	Set dial pointer at 1400 kc	Antenna trimmer C3 on gang



NOTES:

VOLTAGES MEASURED WITH A 5000-OHMS-PER-VOLT METER BETWEEN B- AND SOCKET TERMINALS. LINE VOLTAGE 117 VOLTS AC.

(A)— CANNOT BE MEASURED WITH VOLTMETER.
(B)— 11 VOLTS AC ACROSS PINS 2 AND 7.
(C)— 11 VOLTS AC ACROSS PINS 7 AND 8.
(D)— 35 VOLTS AC ACROSS PINS 2 AND 7.
(E)— 49 VOLTS AC ACROSS PINS 2 AND 7.
(F)— 117 VOLTS AC ACROSS PINS 2 AND 4.

WHERE NO READING IS INDICATED VOLTAGE IS *ZERO*.

CAPACITOR VALUES IN MFD UNLESS OTHERWISE INDICATED.
RESISTOR AND COIL VALUES IN OHMS.
WHERE VALUE OF COIL IS NOT SHOWN, RESISTANCE IS LESS THAN ONE OHM.

WARDS 73

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

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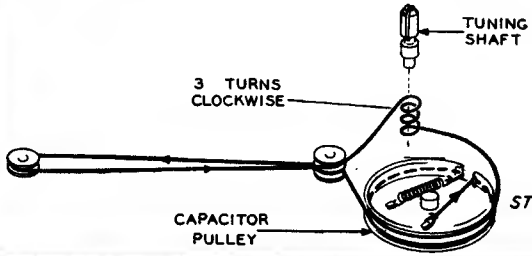
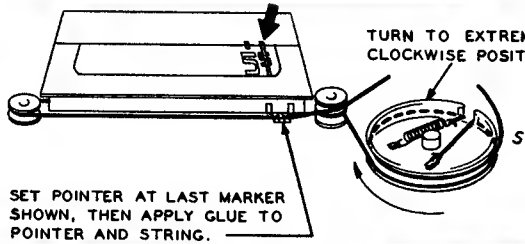
WARDS

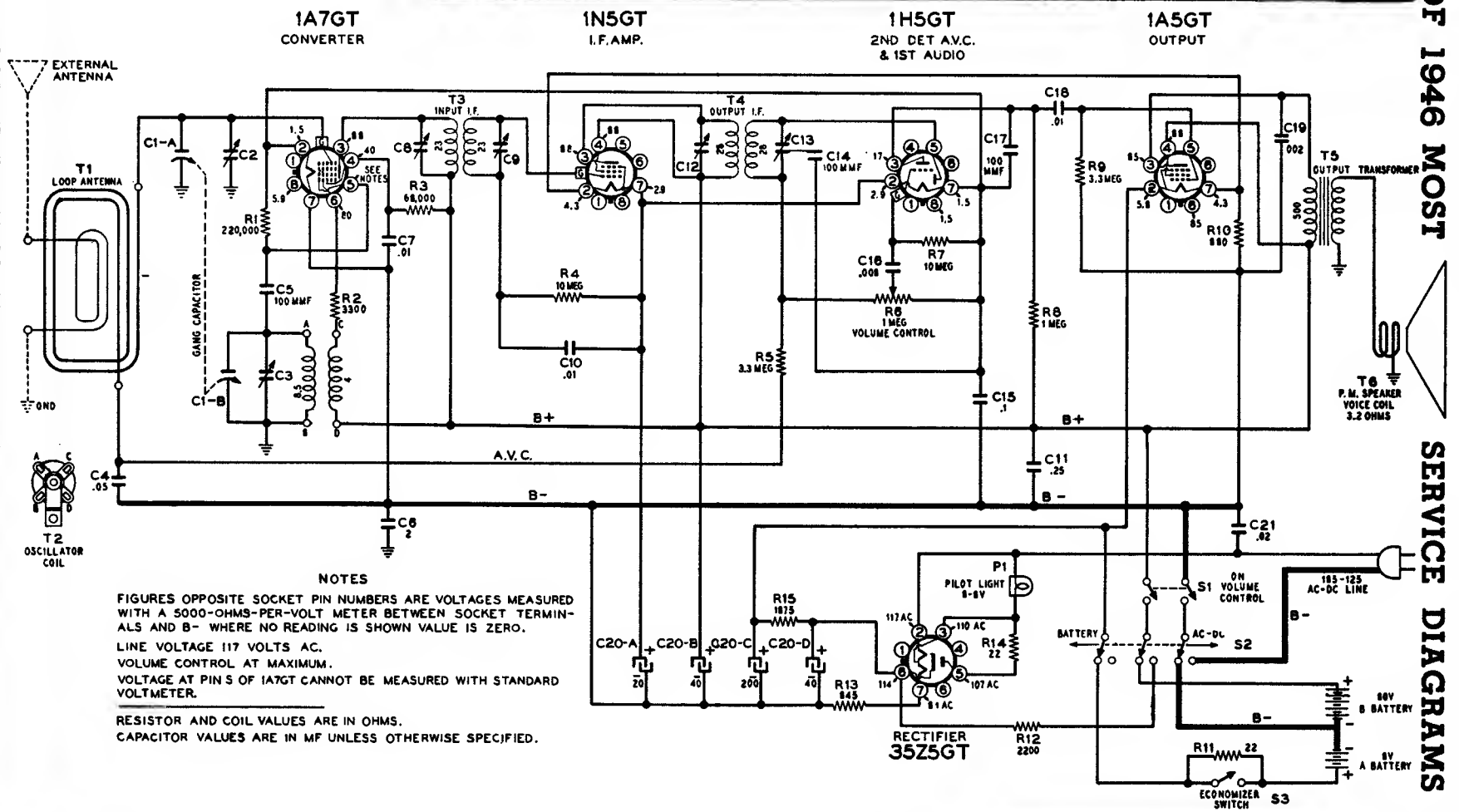
MODEL 64BR-1051A





MANUAL OF 1946 MOST SERVICE DIAGRAMS

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS



NOTES

FIGURES OPPOSITE SOCKET PIN NUMBERS ARE VOLTAGES MEASURED WITH A 5000-OHMS-PER-VOLT METER BETWEEN SOCKET TERMINALS AND B- WHERE NO READING IS SHOWN VALUE IS ZERO.

LINE VOLTAGE 117 VOLTS AC.

VOLUME CONTROL AT MAXIMUM.

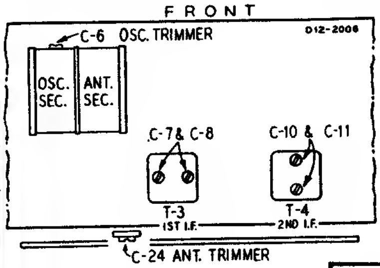
VOLTAGE AT PIN 5 OF 1A7GT CANNOT BE MEASURED WITH STANDARD VOLTMETER.

RESISTOR AND COIL VALUES ARE IN OHMS.

CAPACITOR VALUES ARE IN MF UNLESS OTHERWISE SPECIFIED.

MONTGOMERY WARD
CHICAGO, U. S. A.

MODEL 64 WG-1804A

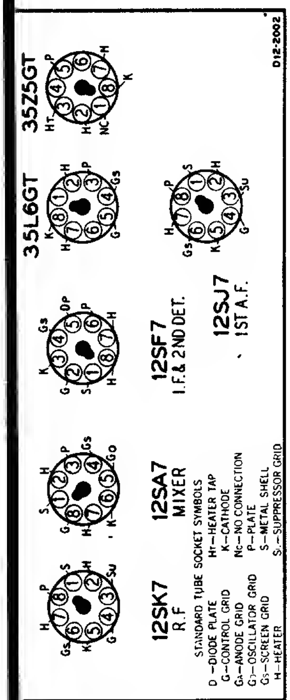


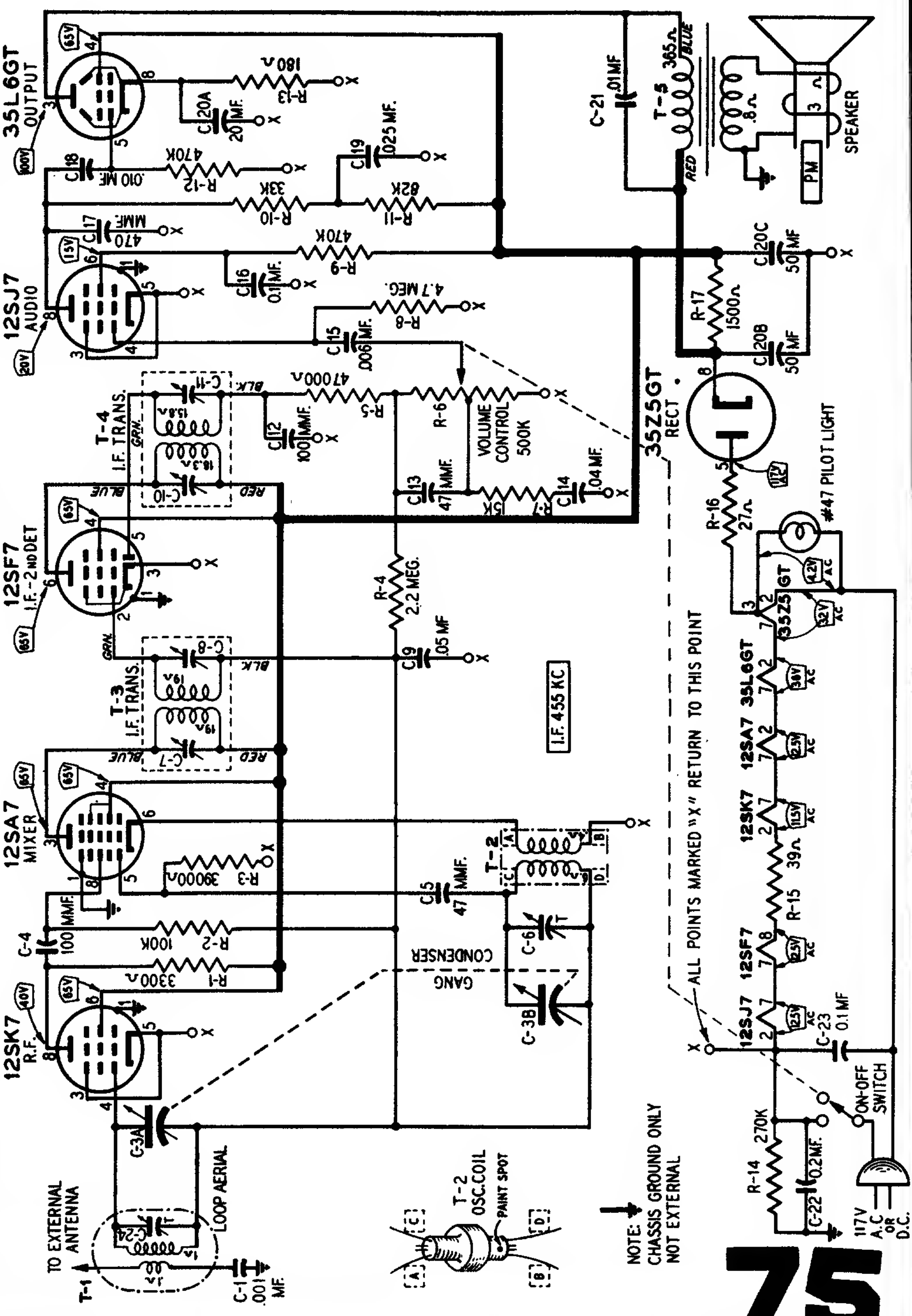
Socket voltages are shown on the schematic diagram at the tube socket terminals. All voltages except those for the heater and dial lamp are between the socket terminal and "X" point.

The readings were taken with a 1000 ohm-per-volt meter and all plate and screen voltages read on a 500 volt scale.

Conditions of measurement are:

Line voltage . . . . 117 volts AC
Volume control . . . . maximum
Signal input . . . . none

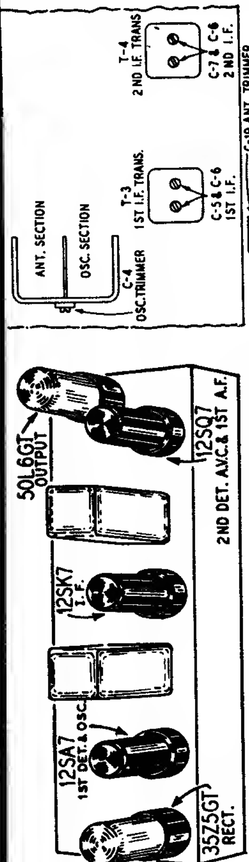


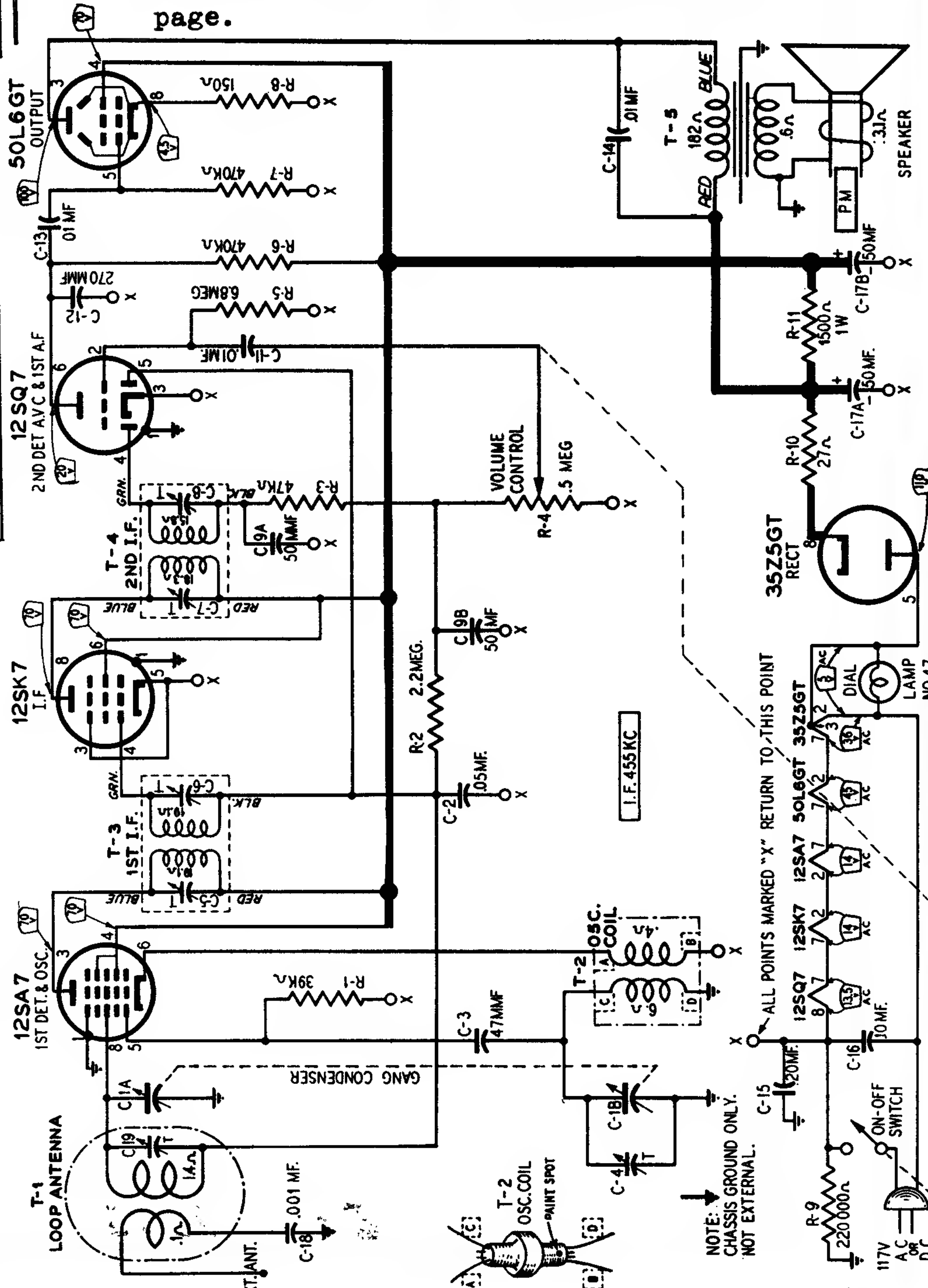


WARDS

MODEL 54 WG-1801A

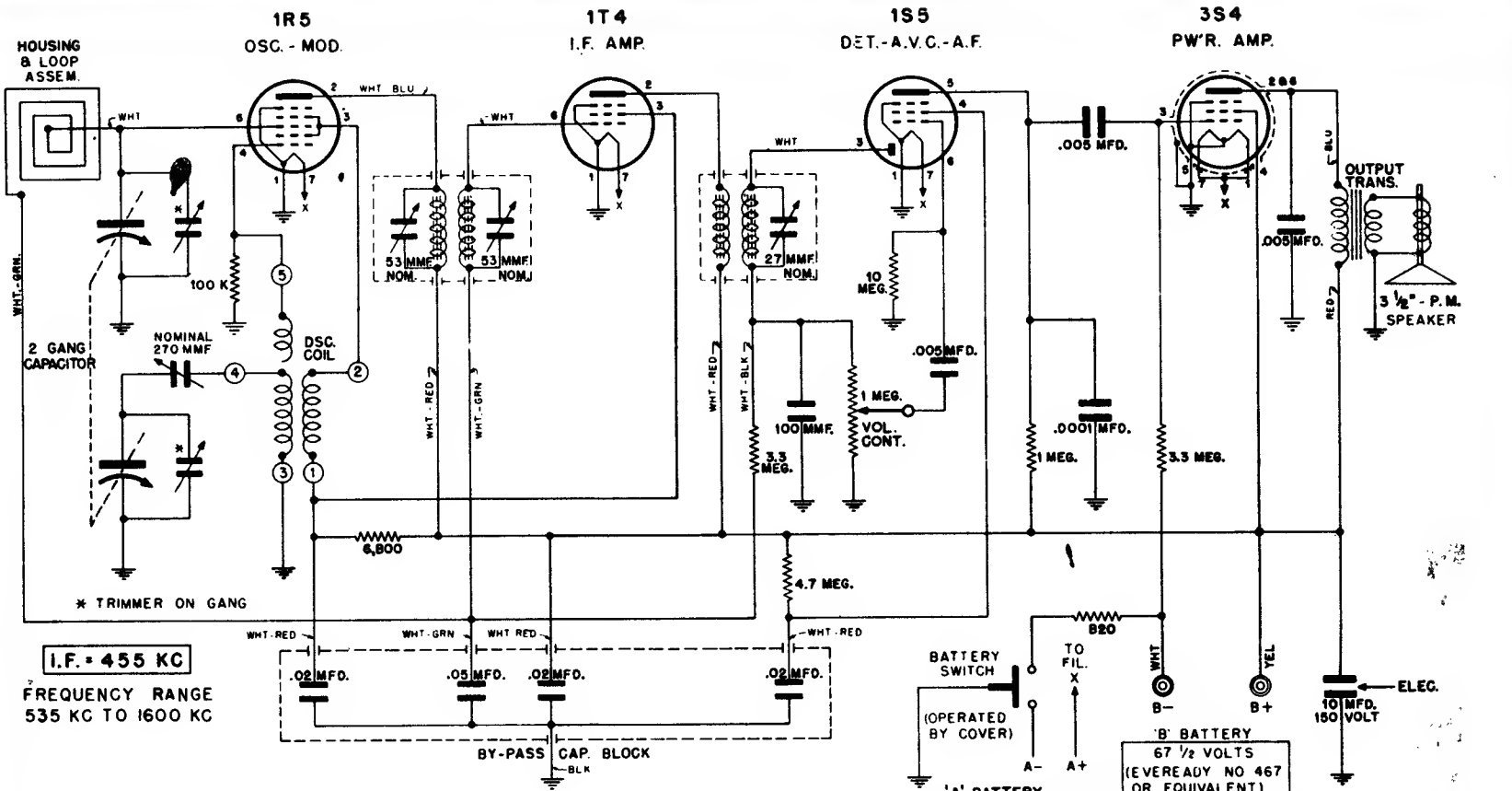
Model 54 WG-2007, a four tube (plus rectifier tube) A.C. receiver with a single record player, has the chassis similar to Model 54 WG-1801 described on this page.

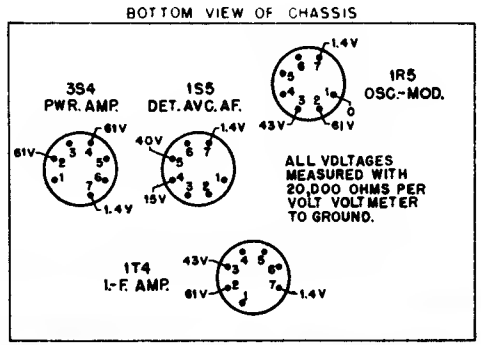


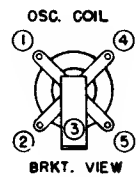


TUBE SOCKET VOLTAGES

Socket voltages are shown on the schematic diagram at the tube socket terminals. All voltages except those for the heater and dial lamp are between the socket terminal and "X" point.

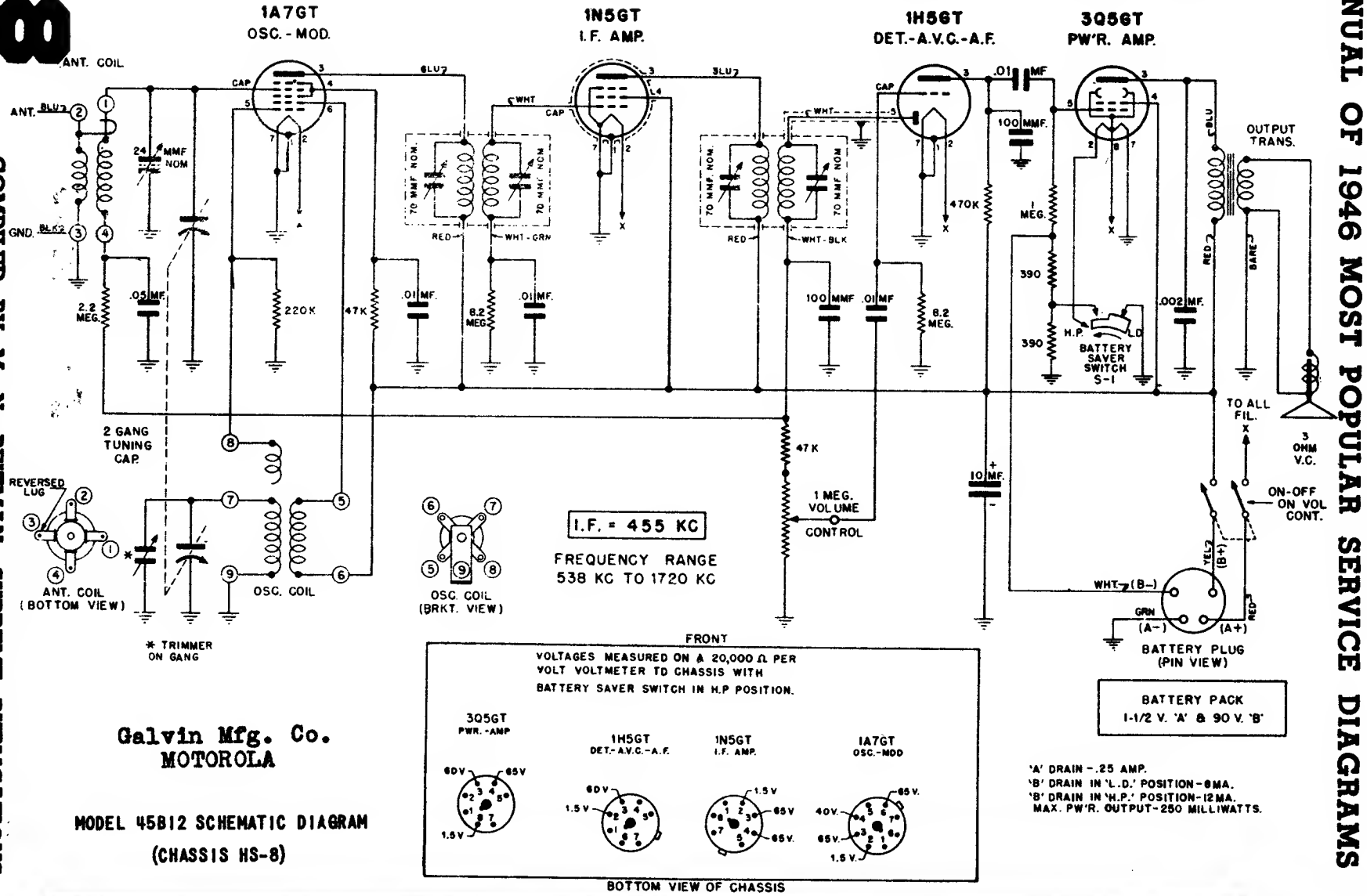






Galvin Mfg. Co.
MOTOROLA

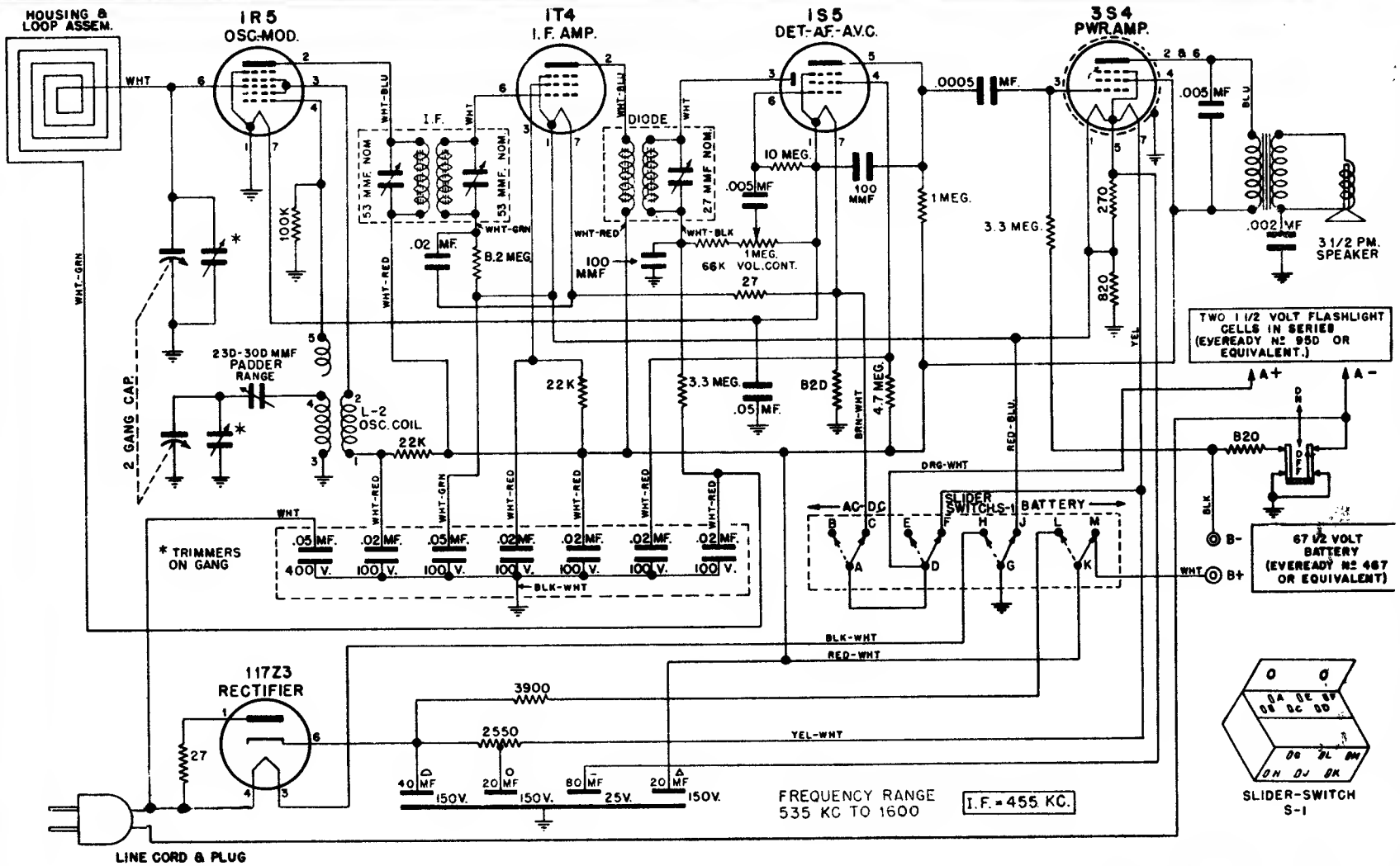
MODEL 5A1 SCHEMATIC DIAGRAM
(CHASSIS HS-6)



Galvin Mfg. Co.
MOTOROLA

MODEL 45B12 SCHEMATIC DIAGRAM

(CHASSIS HS-8)

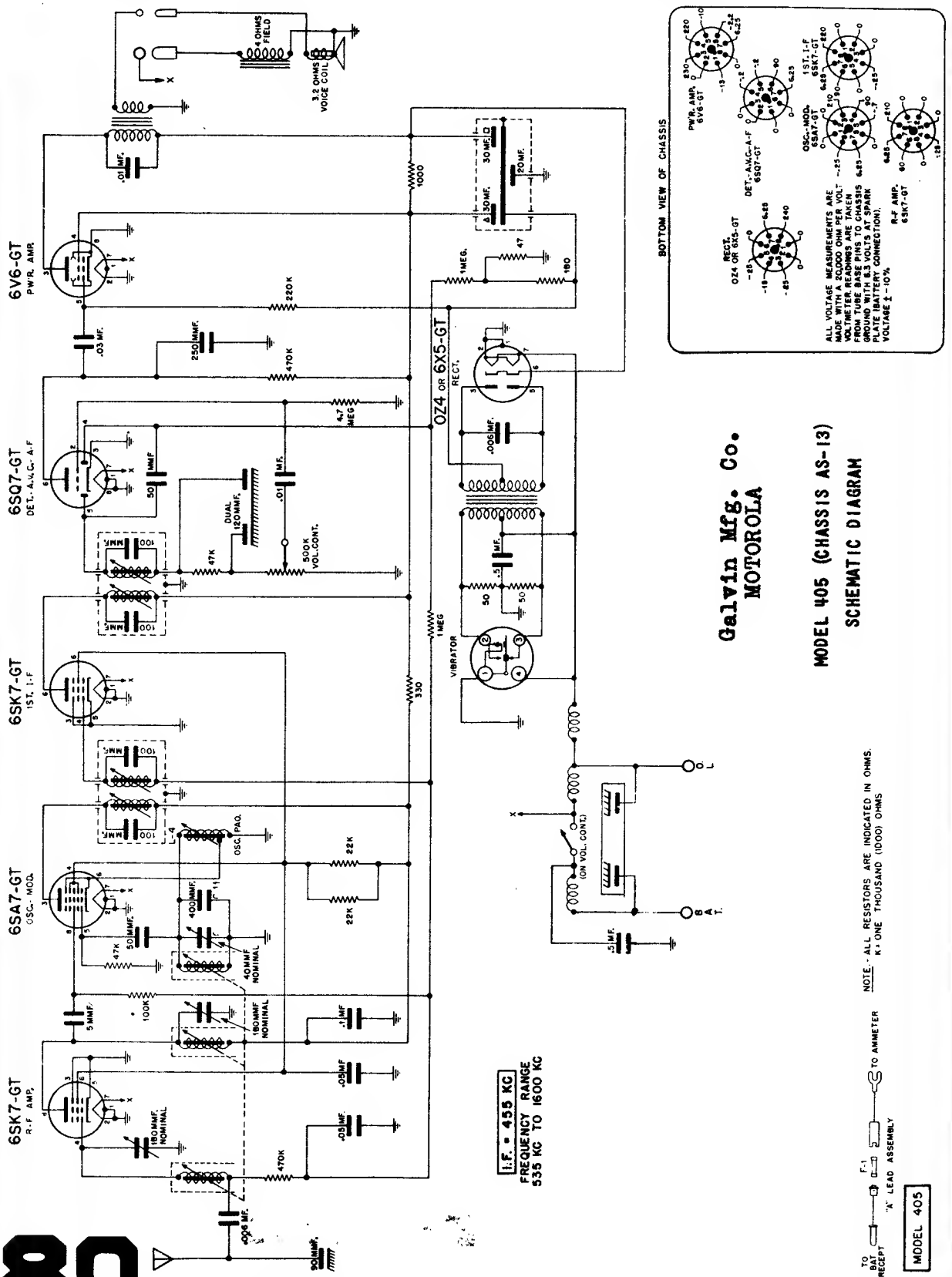


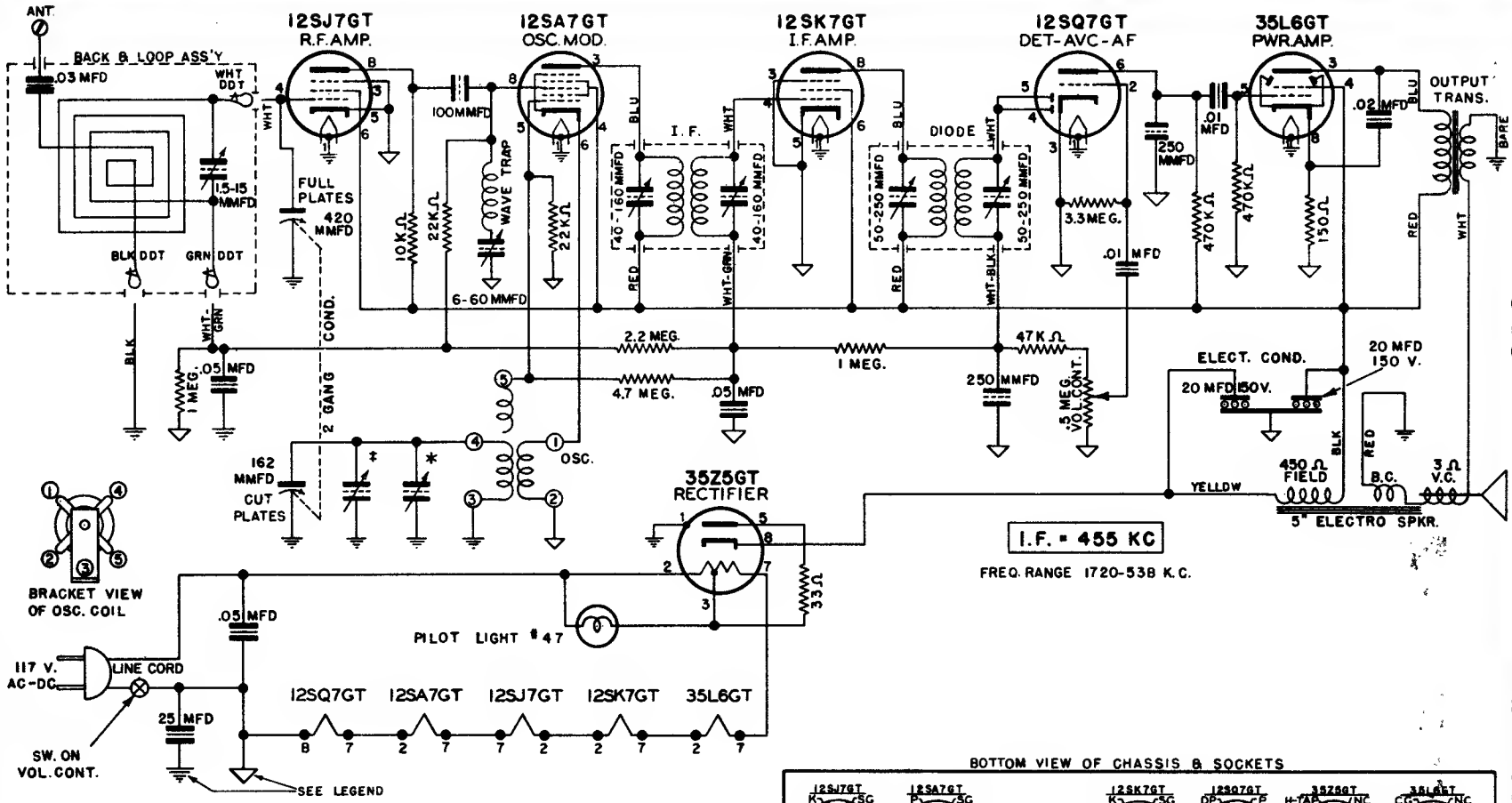
Galvin Mfg. Co.
MOTOROLA

MODEL 5A5 SCHEMATIC DIAGRAM

(CHASSIS HS-15)

"A" BATTERY DRAIN = 150 MA AT 2.8 VOLTS.
"B" BATTERY DRAIN = 9.2 MA AT 67.5 VOLTS.
⏚ = RECEIVER CHASSIS.
POWER SUPPLY CHASSIS FLOATING.

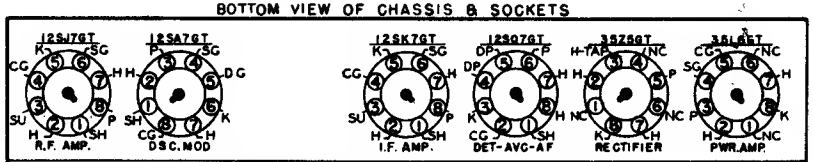

Galvin Mfg. Co.
MOTOROLA
MODEL 405 (CHASSIS AS-13)
SCHEMATIC DIAGRAM
6V6-GT PWR. AMP.
6SQ7-GT DET.-A.V.C.-A-F
6SK7-GT 1ST. I-F
6SA7-GT OSC.-MOD.
6SK7-GT R-F AMP.
0Z4 OR 6X5-GT RECT.
VIBRATOR
4 OHMS FIELD
3.2 OHMS VOICE COIL
I.F. = 455 KC
FREQUENCY RANGE
535 KC TO 1600 KC
BOTTOM VIEW OF CHASSIS
PWR. AMP. 6V6-GT
DET.-A.V.C.-A-F 6SQ7-GT
OSC.-MOD. 6SA7-GT
1ST. I-F 6SK7-GT
R-F AMP. 6SK7-GT
RECT. 0Z4 OR 6X5-GT
ALL VOLTAGE MEASUREMENTS ARE MADE WITH A 20,000 OHM PER VOLT VOLTMETER. READINGS ARE TAKEN FROM TUBE BASE PINS TO CHASSIS GROUND WITH 8.5 VOLTS AT SPARK PLATE BATTERY CONNECTION. VOLTAGE ± -10%
NOTE - ALL RESISTORS ARE INDICATED IN OHMS. K = ONE THOUSAND (1000) OHMS
TO AMMETER
"A" LEAD ASSEMBLY
TO BAT RECEPT
MODEL 405



I.F. = 455 KC

FREQ. RANGE 1720-538 K.C.

BOTTOM VIEW OF CHASSIS & SOCKETS



VOLTAGE CHART				
TUBE		PLATE TO B-	SCREEN TO B-	CATH. TO B-
12SJ7GT	R.F. AMP.	40 V.	85 V.	0
12SA7GT	OSC.MOD.	85 V.	85 V.	0
12SK7GT	I.F. AMP.	85 V.	85 V.	0
12SQ7GT	DET-AVC-AF	30 V.	—	0
35L6GT	PWR.AMP.	80 V.	85 V.	4.5 V.
35Z5GT	RECT.	A.C.	—	105 V.

LEGEND

- ⏚ GROUND TO CHASSIS
- ▽ GROUND TO B-
- * TRIMMER ON GANG (TOP)
- ‡ TRIMMER ON GANG (BOTTOM, DO NOT ADJUST)

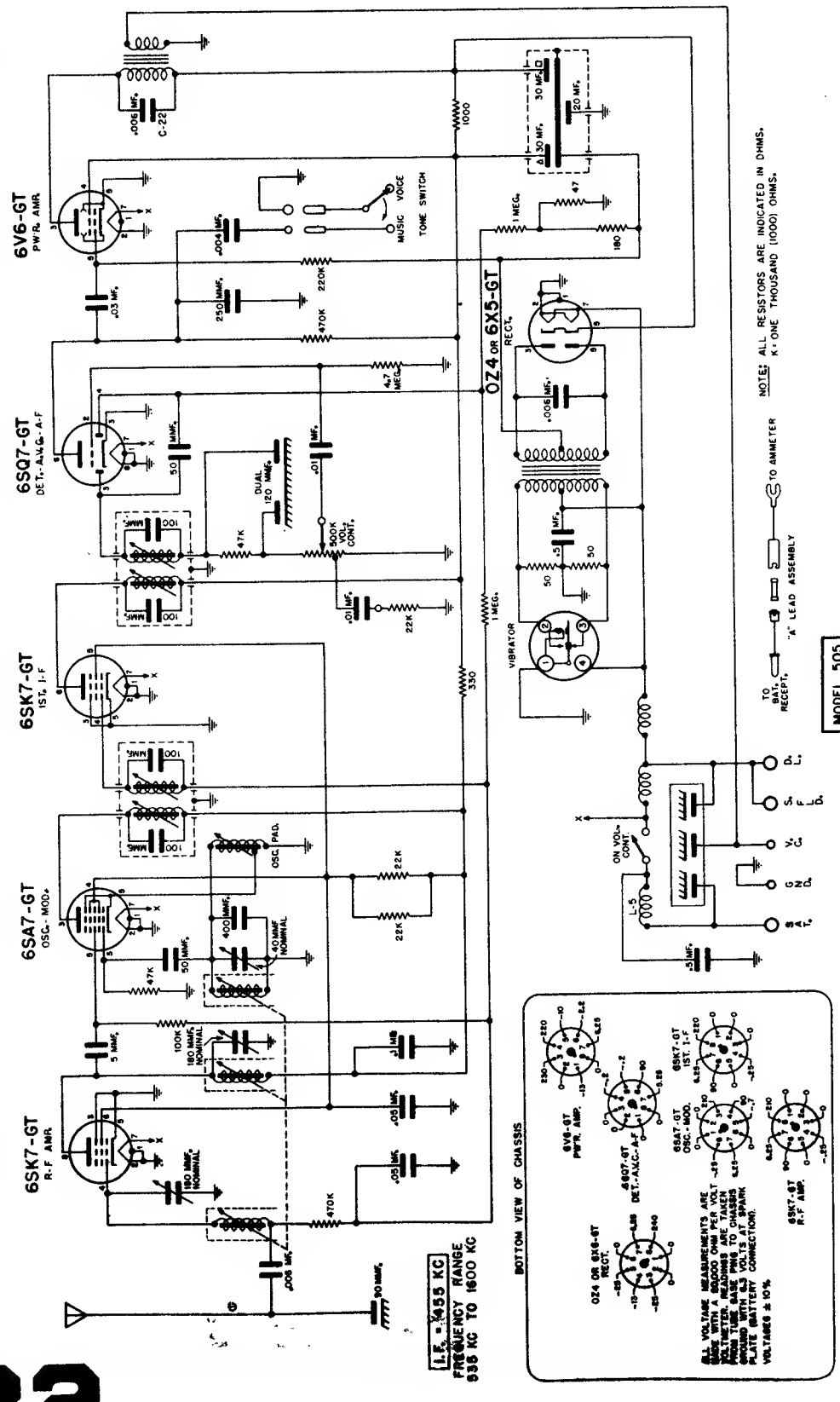
INPUT: 117 V. A.C.

OUTPUT: MAX. POWER 1.75 WATTS

NOTE: ALL VOLTAGES MEASURED ON A 1000 OHMS PER VOLT VOLTMETER

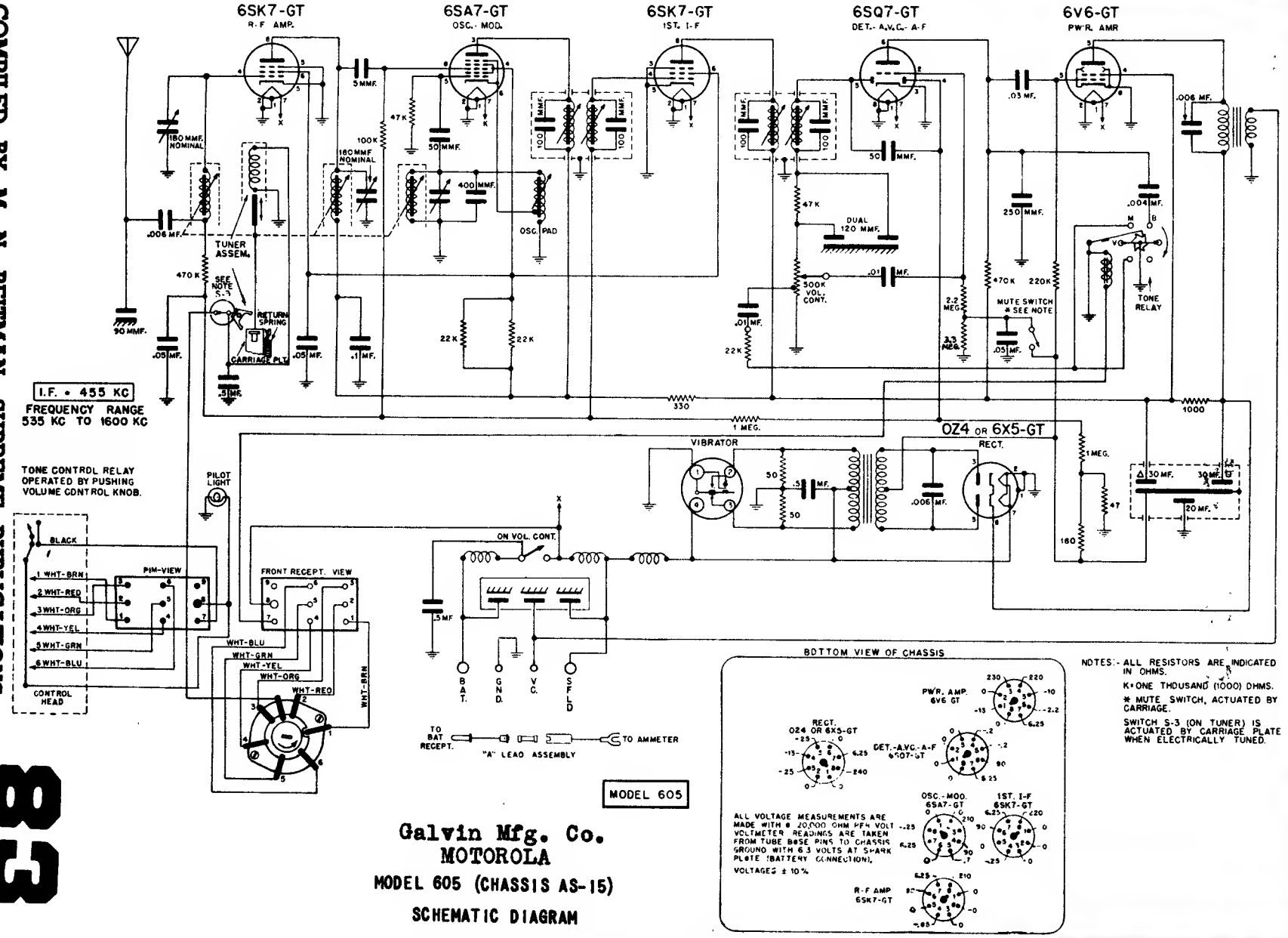
Galvin Mfg. Co.
MOTOROLA

MODELS 65X11, 65X12, AND 65X13
(CHASSIS HS-2) SCHEMATIC DIAGRAM



MODEL 505 (CHASSIS AS-14)
SCHEMATIC DIAGRAM

Galvin Mfg. Co.
MOTOROLA



Galvin Mfg. Co.
MOTOROLA
MODEL 605 (CHASSIS AS-15)
SCHEMATIC DIAGRAM

CAPACITORS

Symbol	Type	Rating
C1	Paper	0.1 mfd., 400 VDCW
C2A	Air	365 mmf. max.
C2B	Air	365 mmf. max.
C3	Paper	0.01 mfd., 400 VDCW
C4	Mica	See Note #1
C5	Air	See Note #1
C6	Air	See Note #1
C7	Mica	0.0047 mfd., 500 VDCW
C8	Paper	0.1 mfd., 400 VDCW
C9	Mica	100 mmf., 500 VDCW
C10	Paper	0.1 mfd., 400 VDCW
C11	Paper	1 mfd., 200 VDCW
C12	Paper	0.1 mfd., 400 VDCW
C13	Paper	0.01 mfd., 400 VDCW
C14	Paper	0.1 mfd., 400 VDCW
C15	Paper	0.01 mfd., 400 VDCW
C16	Paper	0.1 mfd., 400 VDCW
C17	Paper	0.01 mfd., 400 VDCW
C18	Paper	0.1 mfd., 400 VDCW
C19	Paper	0.01 mfd., 400 VDCW
C20	Paper	0.1 mfd., 400 VDCW
C21	Ceramic	50 mmf., 500 VDCW
C22	Mica	270 mmf., 500 VDCW
C23	Paper	0.1 mfd., 400 VDCW
C24	Paper	0.01 mfd., 400 VDCW
C25	Electrol	25 mfd., 50 VDCW
C26	Paper	0.01 mfd., 400 VDCW
C27	Paper	0.01 mfd., 400 VDCW
C28	Paper	0.02 mfd., 400 VDCW
C29	Paper	0.1 mfd., 400 VDCW
C30	Paper	0.1 mfd., 400 VDCW
C31	Electrol	40 mfd., 200 VDCW
C32	Electrol	40 mfd., 200 VDCW
C33	Paper	0.1 mfd., 400 VDCW
C34	Mica	270 mmf., 500 VDCW
C35	Mica	270 mmf., 500 VDCW
C36	Paper	0.1 mfd., 400 VDCW
C37	Paper	0.1 mfd., 400 VDCW
C38	Mica	0.001 mfd., 500 VDCW
C39	Mica	510 mmf., 500 VDCW
C40	Mica	510 mmf., 500 VDCW
C41	Mica	510 mmf., 500 VDCW
C42	Mica	510 mmf., 500 VDCW
C43	Mica	510 mmf., 500 VDCW
C44	Mica	510 mmf., 500 VDCW
C45	Paper	0.01 mfd., 400 VDCW
C46	Paper	0.1 mfd., 400 VDCW
C47	Bakelite	1 mmf., 400 VDCW
C48	Paper	0.1 mfd., 400 VDCW
C49	Ceramic	270 mmf., 500 VDCW

Note #1. Capacitor ratings differ for each coil range and definite ratings cannot be listed.

RESISTORS

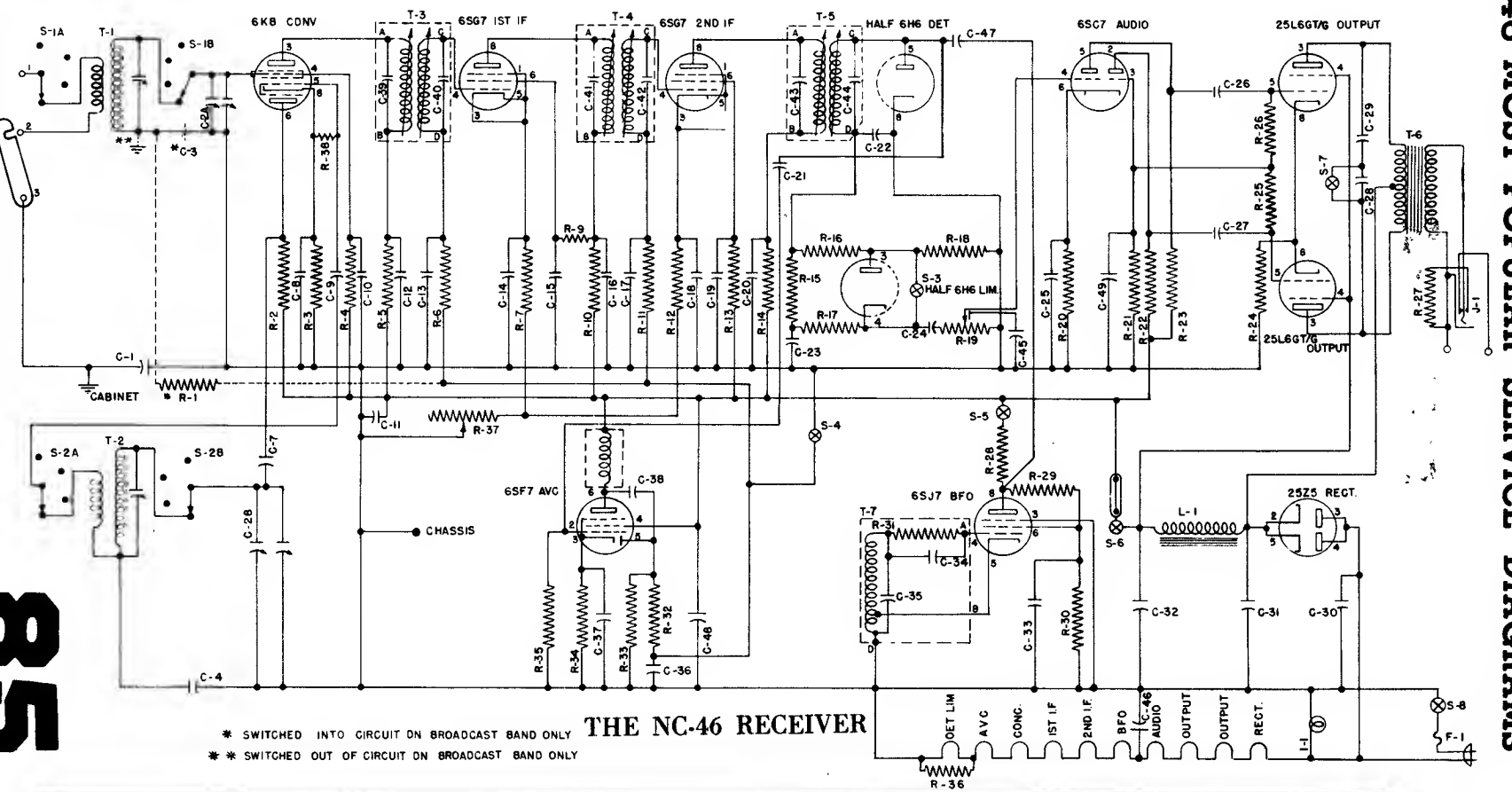
Symbol	Type	Rating
R1	Fixed	470,000 Ohms, 1/2 w
R2	Fixed	10,000 Ohms, 1/2 w
R3	Fixed	220 Ohms, 1/2 w
R4	Fixed	1,000 Ohms, 1/2 w
R5	Fixed	1,000 Ohms, 1/2 w
R6	Fixed	470,000 Ohms, 1/2 w
R7	Fixed	560 Ohms, 1/2 w
R8	Not Used	
R9	Fixed	22,000 Ohms, 1/2 w
R10	Fixed	1,000 Ohms, 1/2 w
R11	Fixed	470,000 Ohms, 1/2 w
R12	Fixed	560 Ohms, 1/2 w
R13	Fixed	22,000 Ohms, 1/2 w
R14	Fixed	2,200 Ohms, 1/2 w
R15	Fixed	1,000,000 Ohms, 1/2 w
R16	Fixed	470,000 Ohms, 1/2 w
R17	Fixed	1,000,000 Ohms, 1/2 w
R18	Fixed	470,000 Ohms, 1/2 w
R19	Variable	500,000 Ohms, 1 w
R20	Fixed	3,900 Ohms, 1/2 w
R21	Fixed	270 000 Ohms, 1/2 w
R22	Fixed	270,000 Ohms, 1/2 w
R23	Fixed	270,000 Ohms, 1/2 w
R24	Fixed	68 Ohms, 1/2 w
R25	Fixed	270,000 Ohms, 1/2 w
R26	Fixed	270,000 Ohms, 1 2 w
R27	Fixed W.W.	5 Ohms, 5 w
R28	Fixed	100,000 Ohms, 1/2 w
R29	Fixed	100,000 Ohms, 1/2 w
R30	Fixed	100,000 Ohms, 1/2 w
R31	Fixed	50,000 Ohms, 1/2 w
R32	Fixed	470,000 Ohms, 1/2 w
R33	Fixed	470,000 Ohms, 1/2 w
R34	Fixed	22,000 Ohms, 1/2 w
R35	Fixed	2,200,000 Ohms, 1/2 w
R36	Fixed	100 Ohms, 1/2 w
R37	Variable	10,000 Ohms, 1½ w
R38	Fixed	22,000 Ohms, 1/2 w
R39	Fixed	33,000 Ohms, 1/2 w

NATIONAL MODEL
NC-46
RECEIVER

Band A	11.5	-	30 0 MC
Band B	4.4	-	12.0 MC
Band C	1.55	-	4.6 MC
Band D	0.54	-	1.6 MC

The following bands in the short wave ranges are tunable by the bandspread capacitor and are spread as follows:

3.5 - 4.0 MC	65 Divisions
7.0 - 7.3 MC	50 Divisions
14.0 - 14.4 MC	56 Divisions
28.0 - 30.0 MC	40 Divisions

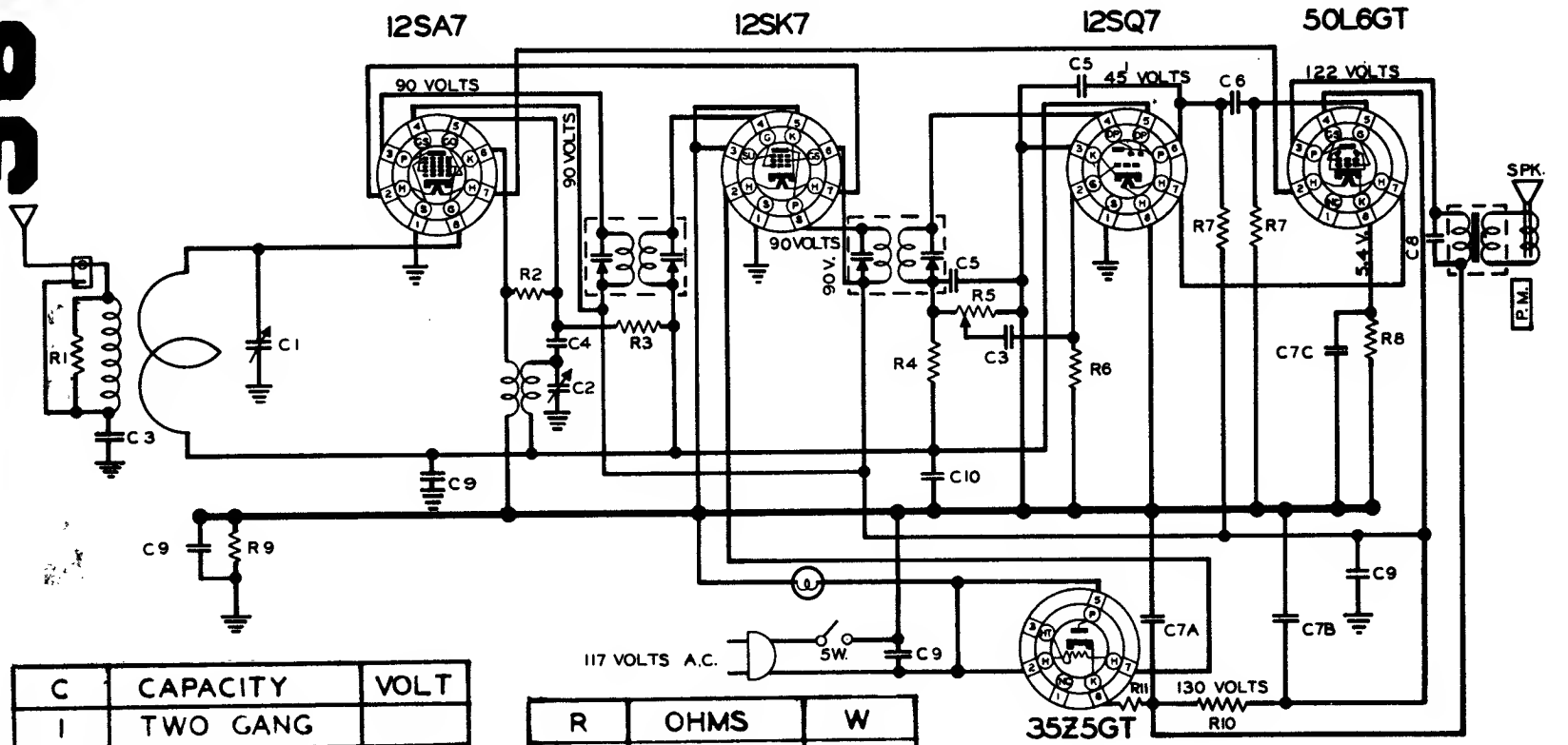


* SWITCHED INTO CIRCUIT ON BROADCAST BAND ONLY

* * SWITCHED OUT OF CIRCUIT ON BROADCAST BAND ONLY

THE NC-46 RECEIVER

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS



C	CAPACITY	VOLT
1	TWO GANG	
2	VARIABLE	
3	.01	400
4	.00005	500
5	.0005	500
6	.002	500
7A	40	150
7B	20	150
7C	20	25
8	.03	400
9	.05	400
10	.05	200

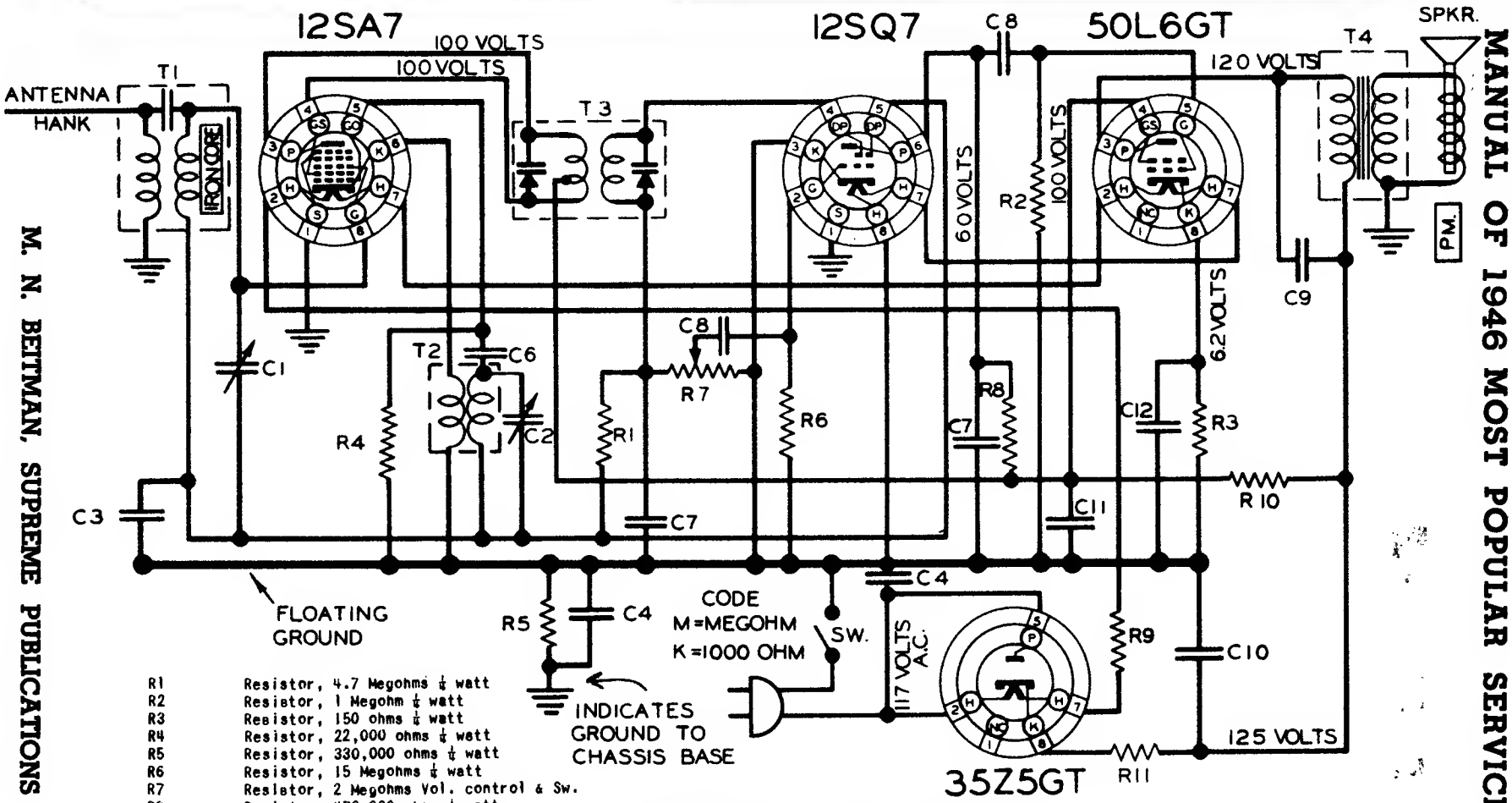
R	OHMS	W
1	10 K	1/4
2	22 K	1/4
3	15 MEG	1/4
4	2.2MEG	1/4
5	1 MEG	V. C.
6	4.7MEG	1/4
7	470 K	1/4
8	150	1/4
9	330 K	1/4
10	1500	1
11	15	1/4

Noblitt-Sparks Industries, Inc.

ARVIN RADIOS

MODELS 544, 544A

Chassis RE-201



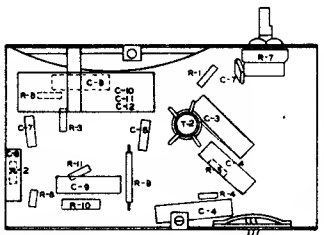
R1	Resistor, 4.7 Megohms ½ watt
R2	Resistor, 1 Megohm ½ watt
R3	Resistor, 150 ohms ½ watt
R4	Resistor, 22,000 ohms ½ watt
R5	Resistor, 330,000 ohms ½ watt
R6	Resistor, 15 Megohms ½ watt
R7	Resistor, 2 Megohms Vol. control & Sw.
R8	Resistor, 470,000 ohms ½ watt
R9	Resistor, 47 ohms 1 watt
R10	Resistor, 2,200 ohms 1 watt
R11	Resistor, 15 ohms ½ watt
C1, Cw	Condenser, variable
C3	Condenser, .05 mfd, 200 volt
C4	Condenser, .05 mfd, 400 volt
C6	Condenser, .00005 mfd, 500 volt
C7	Condenser, .0001 mfd, 500 volt
C8	Condenser, .002 mfd, 500 volt
C9	Condenser, .01 mfd, 400 volt
C10	Condenser, 40 mfd, 150 volt
C11	Condenser, 20 mfd, 150 volt
C12	Condenser, 20 mfd, 25 volt
C5	Condenser, .005 mfd, 400 volt

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO FLOATING GROUND AND ARE TAKEN WITH NO SIGNAL. A C LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.

ARVIN RADIOS - MODELS 444 & 444A

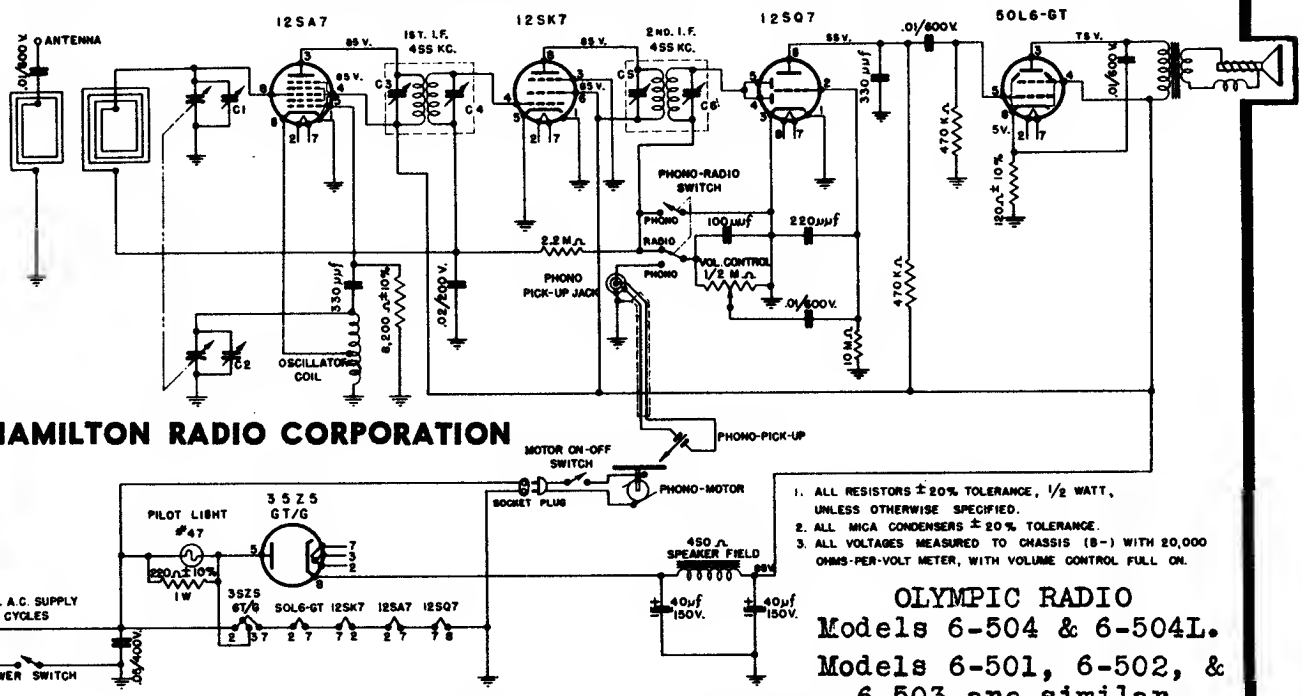
CHASSIS RE-200-4 TUBE AC-DC

MANUFACTURED BY NOBLITT-SPARKS INDUSTRIES, INC., COLUMBUS, IND.



LOCATION OF PARTS UNDER CHASSIS

M. N. BEITMAN, SUPREME PUBLICATIONS



HAMILTON RADIO CORPORATION

1. ALL RESISTORS ±20% TOLERANCE, 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL MICA CONDENSERS ± 20% TOLERANCE.
3. ALL VOLTAGES MEASURED TO CHASSIS (B-) WITH 20,000 OHMS-PER-VOLT METER, WITH VOLUME CONTROL FULL ON.

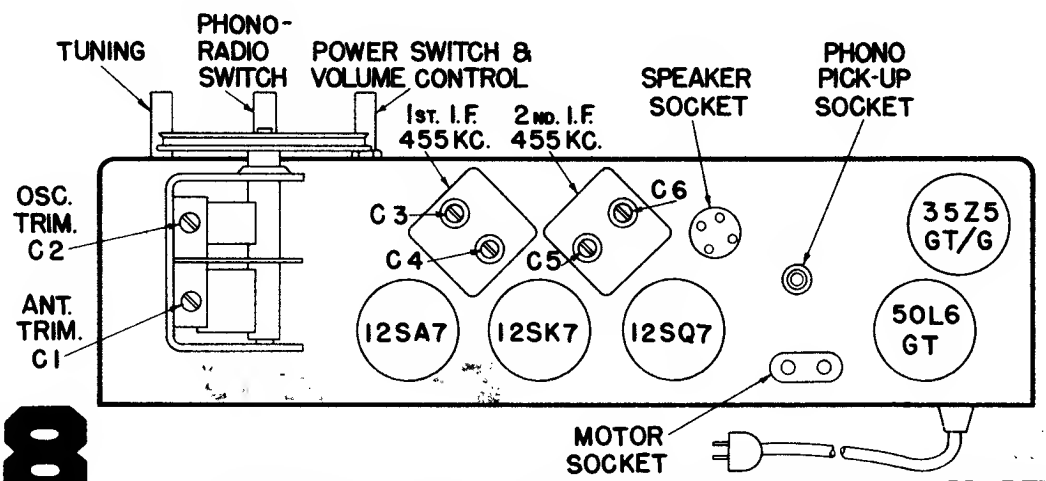
OLYMPIC RADIO

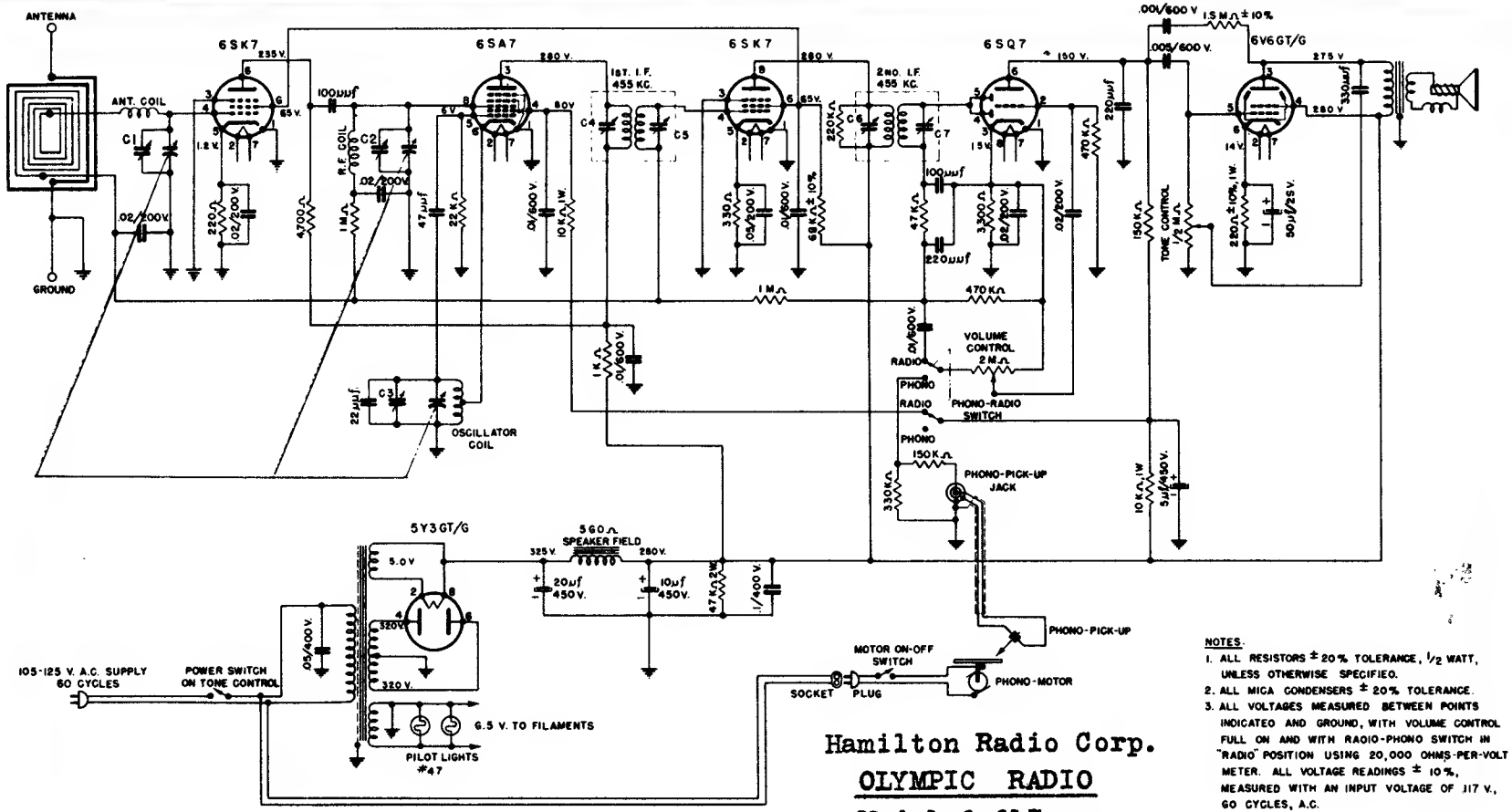
Models 6-504 & 6-504L.

Models 6-501, 6-502, & 6-503 are similar.

ALIGNMENT PROCEDURE CHART

CONNECT HIGH SIDE OF SIGNAL GENERATOR TO -	SET SIGNAL GENERATOR TO -	TURN RECEIVER DIAL TO -	ADJUST THE FOLLOWING FOR MAXIMUM (KEEP SIGNAL FROM SIGNAL GENERAT, AS LOW AS POSSIBLE.)
ANTENNA SECTION TUNING CONDENSER IN SERIES WITH .1 MFD. COND.	455 KC.	FULL CLOCKWISE POSITION. (CONDENSER PLATES FULLY OPEN.)	C6, C5, C4, C3 AND REPEAT IN SAME ORDER (1ST. AND 2ND. I.F. TRANSFORMERS.)
ANTENNA TERMINAL OF ANTENNA LOOP IN SERIES WITH 50 MMFD. COND.	1700 KC.	1700 KC. (170 ON DIAL)	C 2 (OSCILLATOR)
	1400 KC.	MAXIMUM SIGNAL (APPROX. 140 ON DIAL)	C1 (ANTENNA)
	REPEAT STEPS 2 AND 3		





Hamilton Radio Corp.

OLYMPIC RADIO

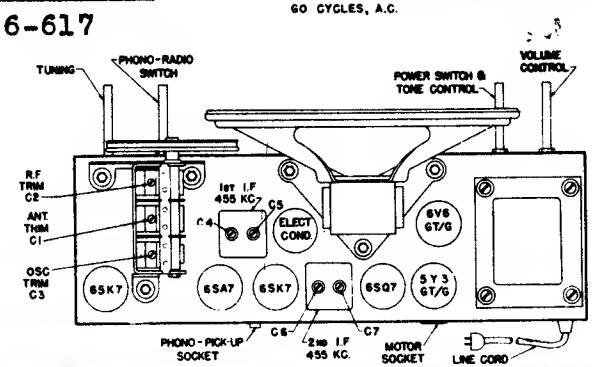
Model 6-617

NOTES.

1. ALL RESISTORS ± 20% TOLERANCE, 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL MICA CONDENSERS ± 20% TOLERANCE.
3. ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND GROUND, WITH VOLUME CONTROL FULL ON AND WITH RADIO-PHONO SWITCH IN "RADIO" POSITION USING 20,000 OHMS-PER-VOLT METER. ALL VOLTAGE READINGS ± 10%, MEASURED WITH AN INPUT VOLTAGE OF 117 V., 60 CYCLES, A.C.

ALIGNMENT PROCEDURE CHART

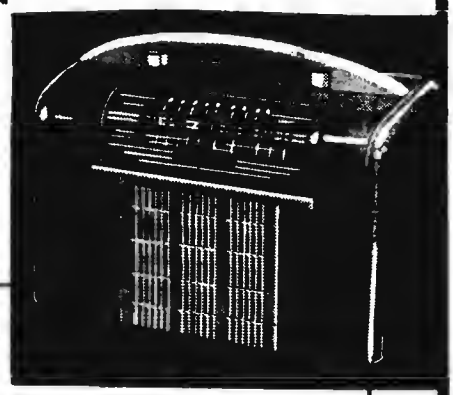
STEP	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO-	SET SIGNAL GENERATOR TO-	TURN POINTER TO-	ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT. (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE.)
1	R.F. SECTION OF THE VARIABLE CONDENSER.	455 KC.	EXTREME RIGHTHAND POSITION. (CONDENSER PLATES FULLY OPEN.)	C7, C6, C5, C4 AND REPEAT IN SAME ORDER (1ST. AND 2ND. I.F. TRANSFORMERS.)
2	ANTENNA TERMINAL OF ANTENNA LOOP IN SERIES WITH 50 MMFD. COND.	1400 KC.	1400 KC. CALIBRATION POINT	C3, C2, C1.
3		600 KC.	RESONANCE	CHECK THAT POINTER EDGE AT RESONANCE COINCIDES WITH 600 KC. CALIBRATION POINT. IF DEVIATION IS TOO LARGE REPEAT STEP 2.

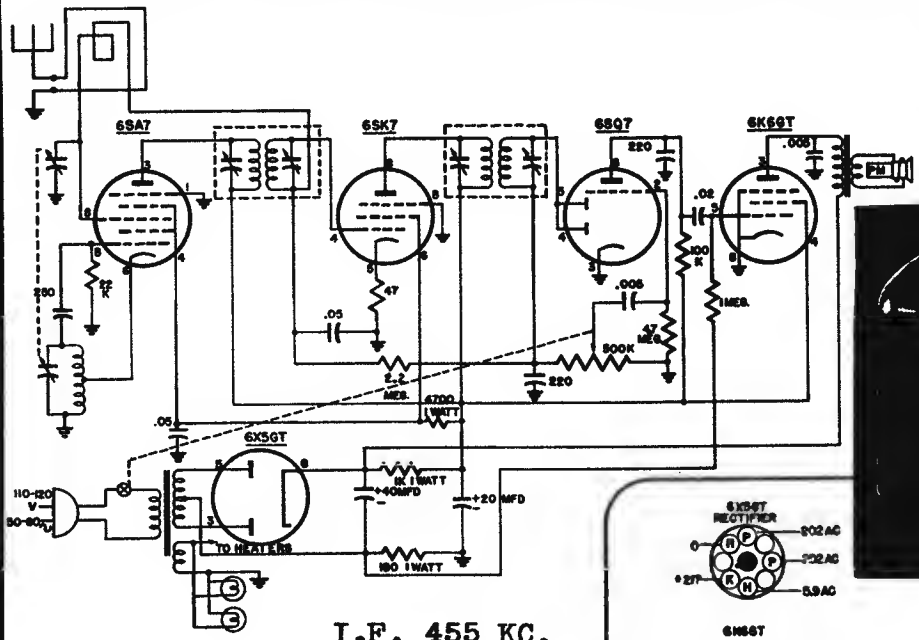


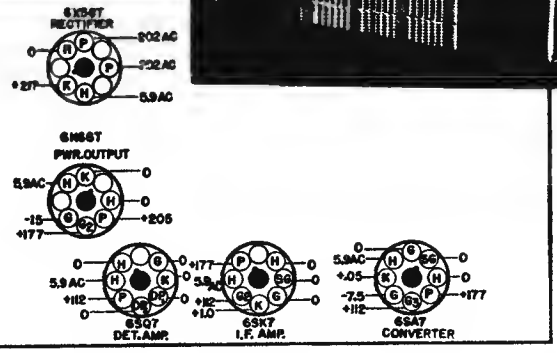
Packard-Bell

SERVICE BULLETIN

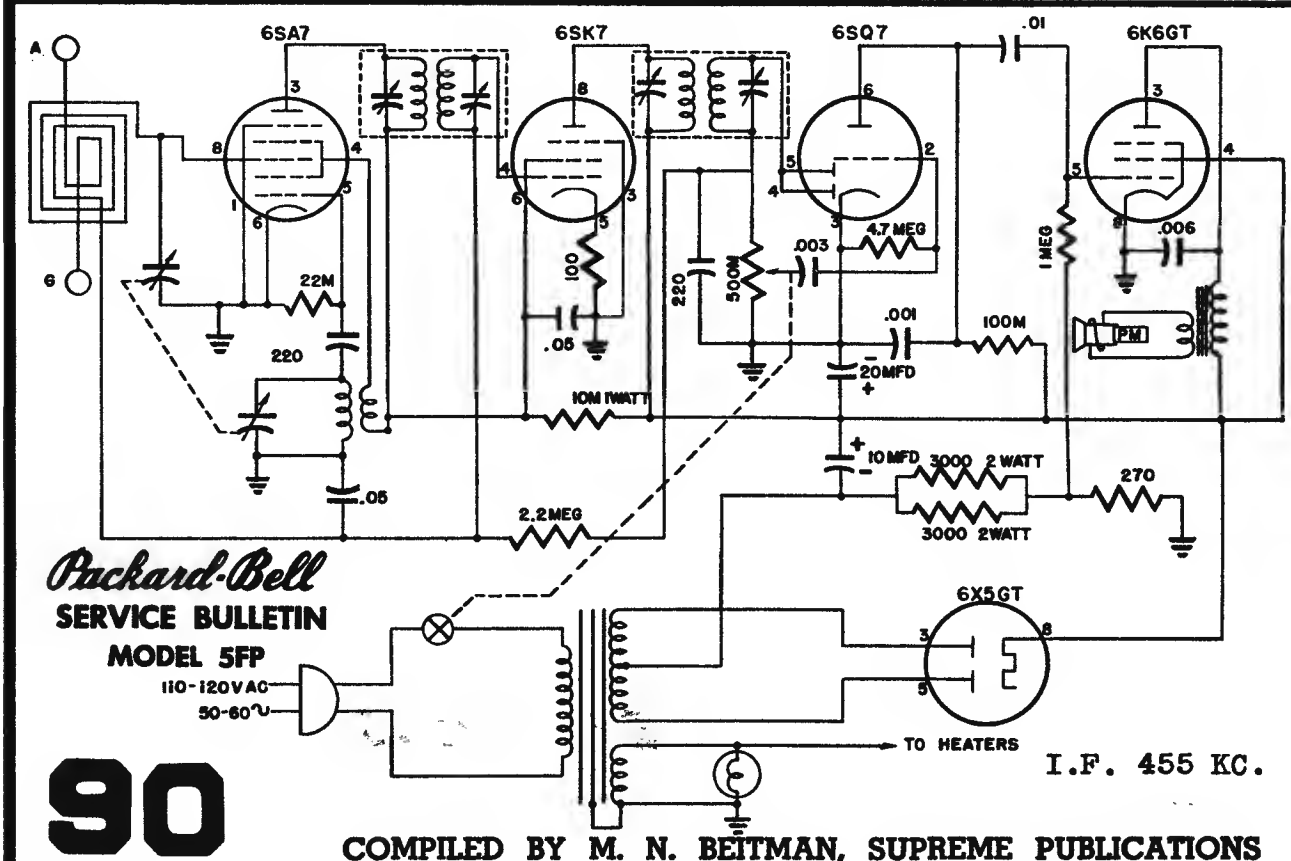
MODEL 551







All D.C. voltages measured with a vacuum tube voltmeter from socket contacts to chassis. A.C. voltages measured with a 1000 ohm per volt A.C. meter from socket contacts to chassis. Volume control fully advanced. No signal. 117 A.C. line voltage. All voltages shown are positive D.C. unless otherwise noted.



Packard-Bell

SERVICE BULLETIN

MODEL 5FP

110-120VAC
50-60~

ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAXIMUM OUTPUT
1	Mixer grid & Grd. .01 Mfd. Dummy Load	455 KC	550 KC	Trimmers No. F, G, H & I
2	Mixer grid & Grd. .01 Mfd. Dummy Load	455 KC	550 KC	Trimmer No. A Minimum Output
3	Standard Test Loop*	1750 KC	1750 KC	Trimmer No. C to 1750 KC
4	Standard Test Loop*	600 KC	600 KC	Trimmer No. D to 600 KC
5	Standard Test Loop*	Repeat Steps 3 and 4		
6	S.W. Antenna thru 400 ohms	16.2 MC	16.2 MC	Trimmer No. B to 16.2 MC
7	S.W. Antenna thru 400 ohms	15.0 MC	15.0 MC	Trimmer No. K

*REMARKS: Hazeltine Test Loop No. 1150.

Packard-Bell

MODEL 651

D.C. RESISTANCE MEASUREMENTS

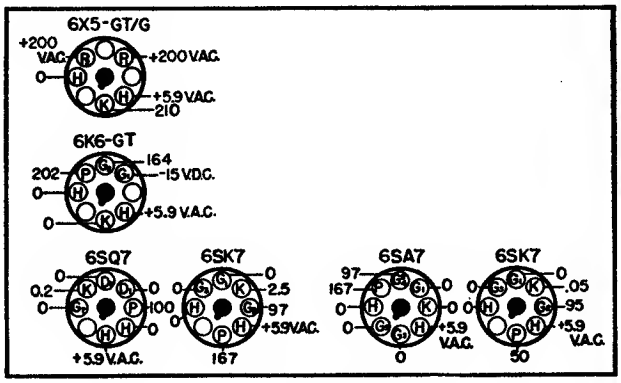
1st I.F. Coil
- primary . . . 14.5 ohms
- secondary . . . 14.5 ohms

2nd I.F. Coil
- primary . . . 14.5 ohms
- secondary . . . 15 ohms

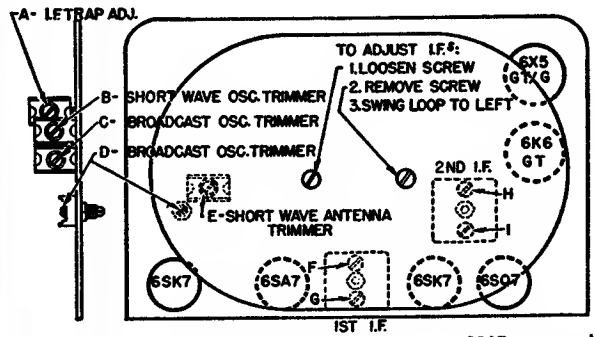
Oscillator Coil: (Short Wave and Standard Broadcast wound on same form.)

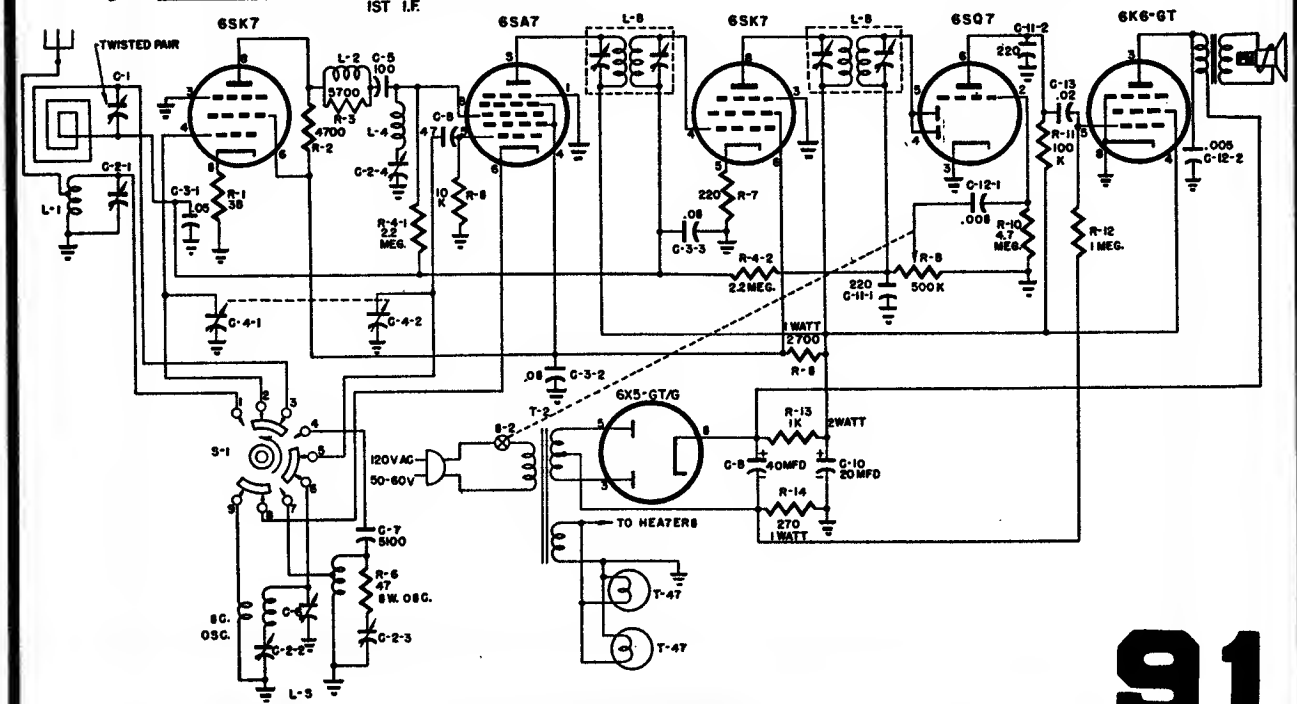
Short Wave:
- Start to finish . . . 2 ohms
- Start to tap . . . 1 ohm

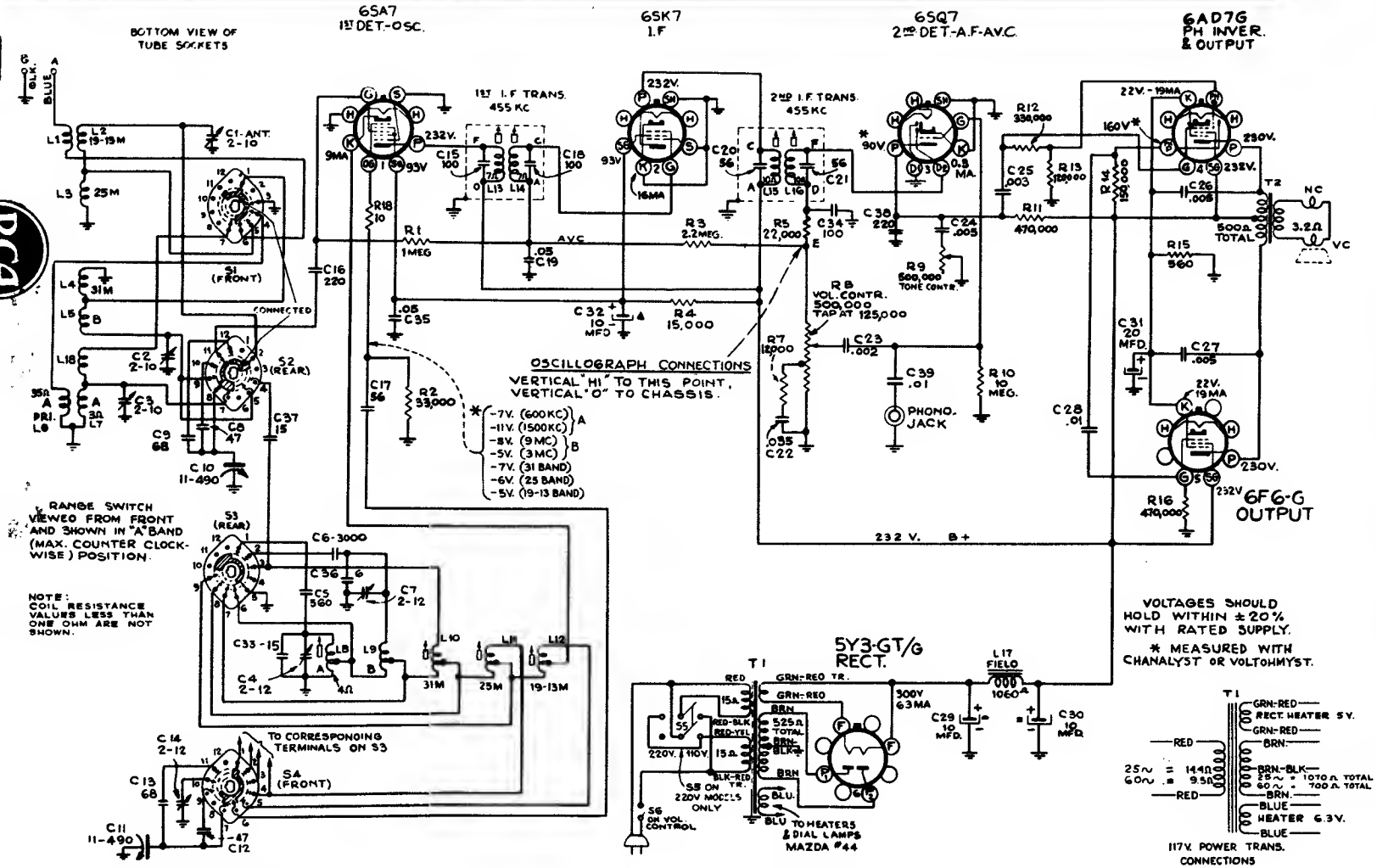
Broadcast:
- Primary . . . 2 ohms
- Secondary . . . 9 ohms



VOLTAGE CHART







Precautionary Lead Dress.—

1. All leads between antenna coils and switch must be as short as possible and kept away from oscillator coil, leads and switches.
2. All oscillator coil leads must be kept apart from each other and other leads and parts.
3. Blue plate lead of 2nd I-F transformer should be dressed under other leads and against chassis.

NOTE.—On some sets C23 may be .0015 mf., C25 may be .0025 mf.

Loudspeaker.—

To center the loudspeaker voice coil, first remove the dust cover. Then loosen the center suspension by thoroughly soaking the outer edge of this suspension with repeated applications of acetone.

(Caution: Keep acetone from flowing to other parts of the loudspeaker.)

Keep the outer edge of the suspension soaked, and lift the cone, near the voice coil, up and down until the suspension is pulled away from the cone housing.

Insert 3 feelers, equally spaced, between the voice coil and the pole piece, and allow the center suspension to re-cement itself. Additional cement should be applied if necessary.

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

R.C.A. Models Q22A & Q32, Chassis RC-507

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

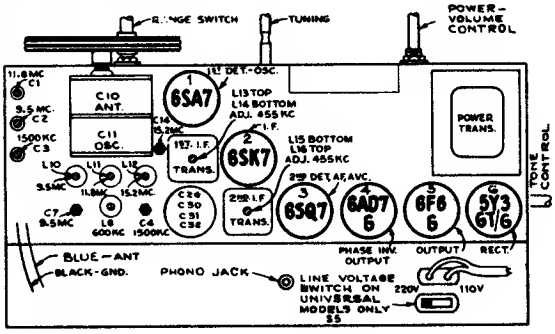
Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark (the first mark on "A" band to the left of "550"), and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each spread-band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillaor, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal-controlled oscillator, or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be retouched so that the stations come in at the correct points on the dial.



RCA MODELS 022A & 032

Chassis No. RC-507—Mfr. No. 274

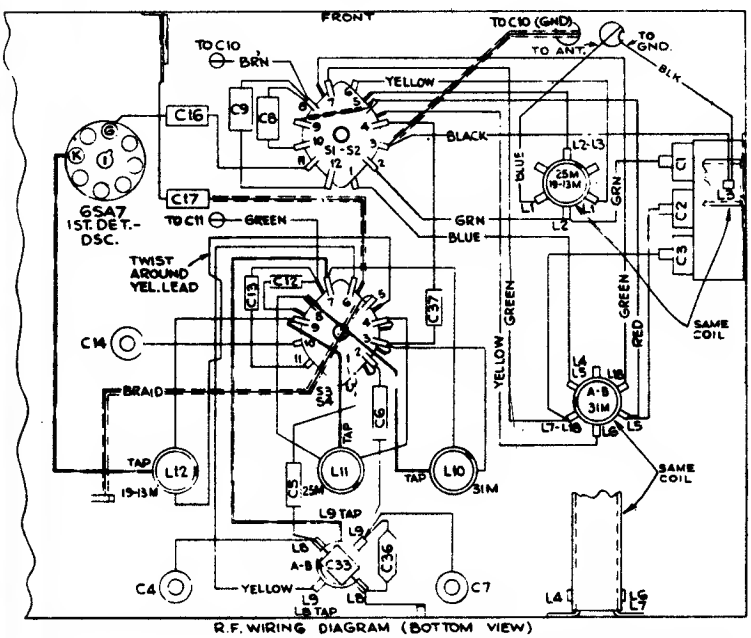
Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Range switch	Turn radio dial to—	Adjust the following for max. peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	A	Quiet Point near 180°	L15 and L16 2nd I-F Trans.
2	6SA7 1st Det. grid in series with .01 mfd.				L13 and L14 1st I-F Trans.
3	Ant. lead in series with 300 ohms	11.8 mc	25 M	138.5°	L11 (osc.)** C1 (ant.)
4		15.2 mc		17°	C14 (osc.)*
5		Repeat steps 3 and 4			
6		15.2 mc	19-13 M	156°	L12 (osc.)**
7		9.5 mc	31 M	158°	L10 (osc.)** C2 (ant.)
8		9.5 mc	B	11.5°	C7 (osc.)***
9	Ant. lead in series with 200 mmf.	1.500 kc	A	28°	C4 (osc.) C3 (ant.)
10		600 kc		150°	L8 (osc.) (Rock gang)
11		Repeat steps 9 and 10			

* Use minimum capacity peak if two can be obtained. Check image to determine that C14 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

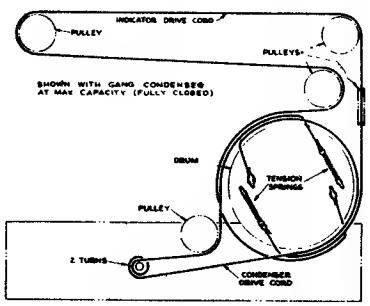
** If two peaks can be obtained use the one obtained when the core screw is farthest out (counter-clockwise).

*** Peak at minimum capacity if two peaks can be obtained.

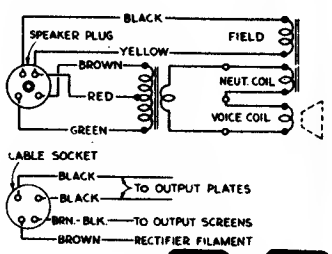
NOTE: Oscillator tracks above signal on all bands.



R.F. WIRING DIAGRAM (BOTTOM VIEW)



Dial-Indicator and Drive Mechanism



RCA VICTOR

VICTROLA Phonograph
Models—52E and 52HE Series

POWER SUPPLY

105-125 volts, 60 cycle.....40 watts

IMPORTANT—Do not plug chassis into a d.c. power supply.

POWER OUTPUT RATING

Undistorted.....0.8 watts (approx.)
Maximum.....1.2 watts (approx.)

SERVICE HINTS

To Remove Turntable:

Remove spring clip from turntable spindle and lift turntable straight up.

Irregular Turntable Speed:

(1) Oil or grease on rubber tire of turntable drive wheel or on motor spindle. Remove turntable and clean spindle, drive wheel tire, and inside edge of turntable with naphtha or carbon-tetrachloride.
(2) Insufficient tension in drive wheel tension spring.
(3) Friction between drive wheel plate and motor mounting plate.
(4) Lack of lubrication.

LUBRICATION

Motor

The bearings of the motors furnished in these instruments are lubricated at the factory and should require no further lubrication for a period of at least one year. When lubrication is required, apply a few drops of any good grade of S.A.E. #10 oil to the bearing felts.

Turntable Spindle

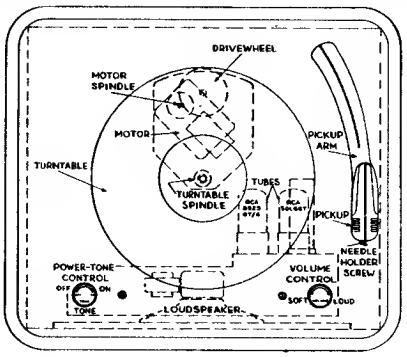
When lubrication is required, apply one or two drops of Gargoyle 600W to the bearing.

Drive Wheel

Apply one or two drops of any good grade of S.A.E. #10 oil to the bearing.

CAUTION:

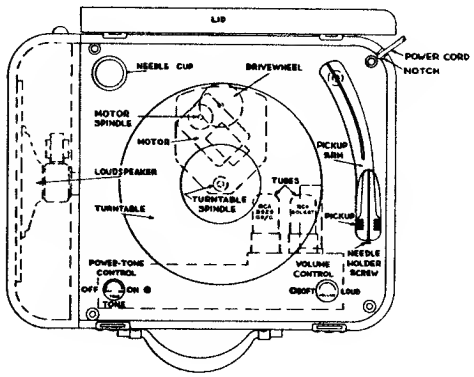
Exercise extreme care to prevent getting any oil on the rubber tire or on the motor shaft. Oil on these parts will cause slippage with resultant irregular turntable speed.



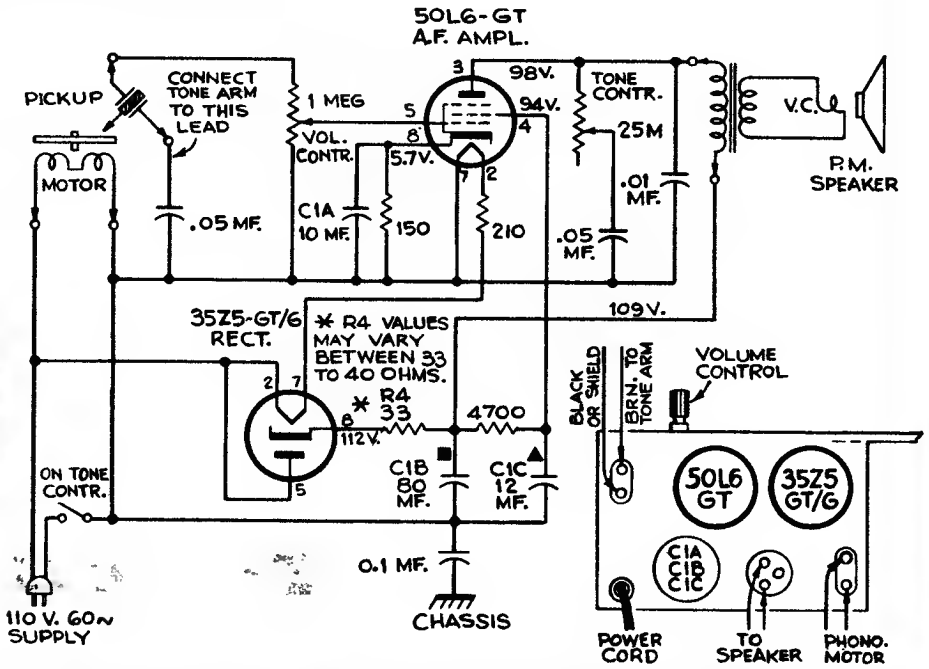
60 TO 50 CYCLE CONVERSION

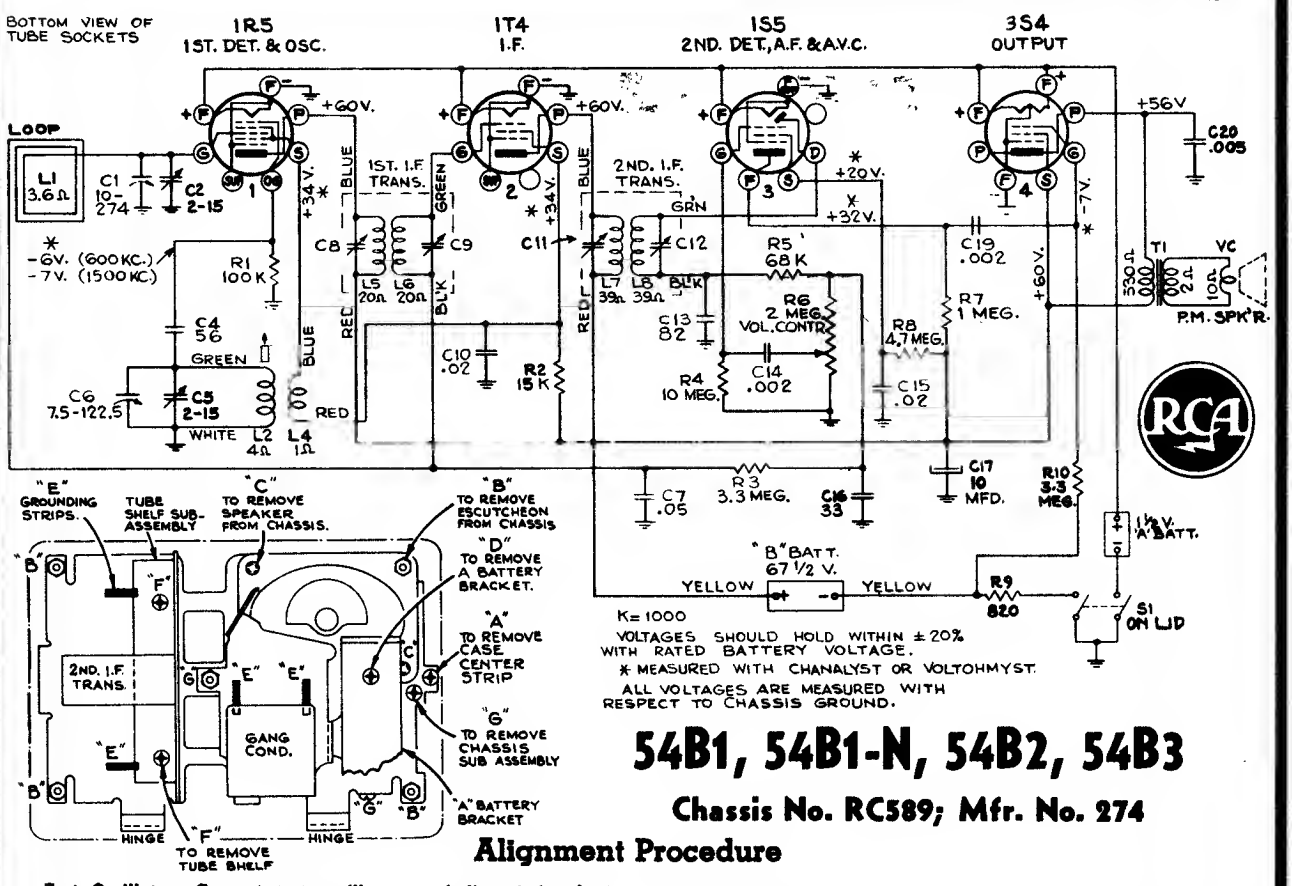
A spring sleeve or bushing is used to increase the diameter of the motor drive spindle, to compensate for the slower speed of the motor when used on a 50 cycle line.

Spring sleeves and bushings are available as follows:
For motors marked "M-1", use Stock No. 71275.
For motors marked "M-3", use Stock No. 71276.
For motors marked "M-4", use Stock No. 71277.



Model 52E





54B1, 54B1-N, 54B2, 54B3

Chassis No. RC589; Mfr. No. 274

Alignment Procedure

Test Oscillator.—Connect test oscillator as indicated in chart keeping the output as low as possible to avoid A V C action.

Output Meter.—Connect meter from top lug of TB1 (plate of 3S4) to ground. Turn volume control to maximum position.

Fig. 1 shows the modifications necessary to convert the center strip portion of a case into a convenient shield to be used as a substitute for the regular case center strip in the RF, Osc. alignment.

Steps	Connect the high side of test osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Connection lug of C2, located on rear of gang in series with .01 mf.	455 kc	Quiet point near 1,600 kc	C11, C12 2nd I-F trans.
2		455 kc	Quiet point near 1,600 kc	C8, C9 1st I-F trans.
3	*Antenna coupling loop thru 200 mmf. capacitor	1,600 kc	1,600 kc	C5 (osc.)
4		1,500 kc	1,500 kc	C2 (ant.)
5		600 kc	600 kc	L2 (osc.)
6	Repeat steps 4 and 5 for final adjustments.			

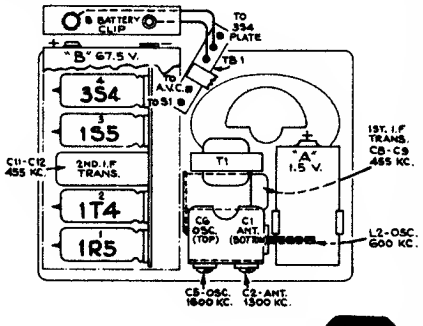
* Steps 3, 4 and 5 require a coupling loop from the signal generator to feed a signal into the receiver loop located in the lid. This loop should be approximately one turn of 6 x 3½ inches coupled to the signal generator through a 200 mmf. capacitor, and loosely coupled to the receiver loop antenna at about 1¾ inches distance, so as not to disturb the receiver loop inductance. Ground test oscillator through .1 mf. capacitor to receiver chassis.

Tools required:

1. One Phillips No. 1 screwdriver.
2. One small neutralizing alignment tool.

CRITICAL LEAD DRESS

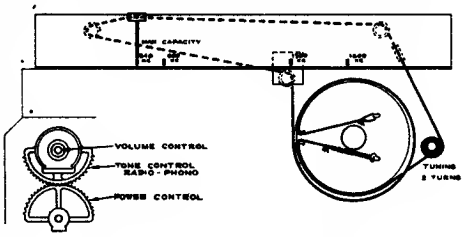
1. Dress blue, green and black leads of second I-F transformer as direct as possible. If excess lead exists, dress down side of socket and flat against chassis to transformer opening.
2. Cross the green and the black leads inside the first I-F transformer can, keeping the green lead to the outside. Keep the blue and the green leads separated as far as possible throughout their length.
3. Dress audio coupling capacitor (C14; .002 mf.) and the lead to the volume control up and underneath the shelf supporting the output transformer.
4. Dress the three capacitors pyramided behind the speaker, parallel to the complete assembly and with enough room behind the battery holder to allow the holder to move when a battery is installed or removed.
5. Dress the "B" battery leads behind the gang frame and over the top of the output transformer.
6. Observe the outside foil connections on all paper capacitors, also the polarity of the electrolytic capacitor (C17).
7. Keep blue and red leads of output transformer above the mounting shelf.



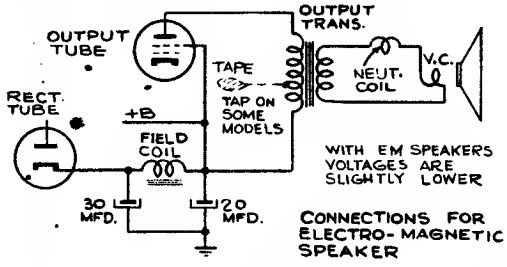
RCA VICTOR

55U, 55AU

Chassis No. RC1017; Mfr. No. 274



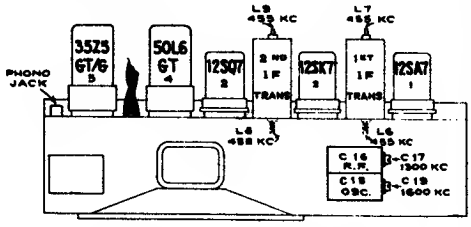
Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise plates (fully meshed). Adjust indicator pointer to left (max. cap.) mark on dial back plate.



Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf capacitor to common "—B". Keep the output signal as low as possible to avoid a.v.c. action.

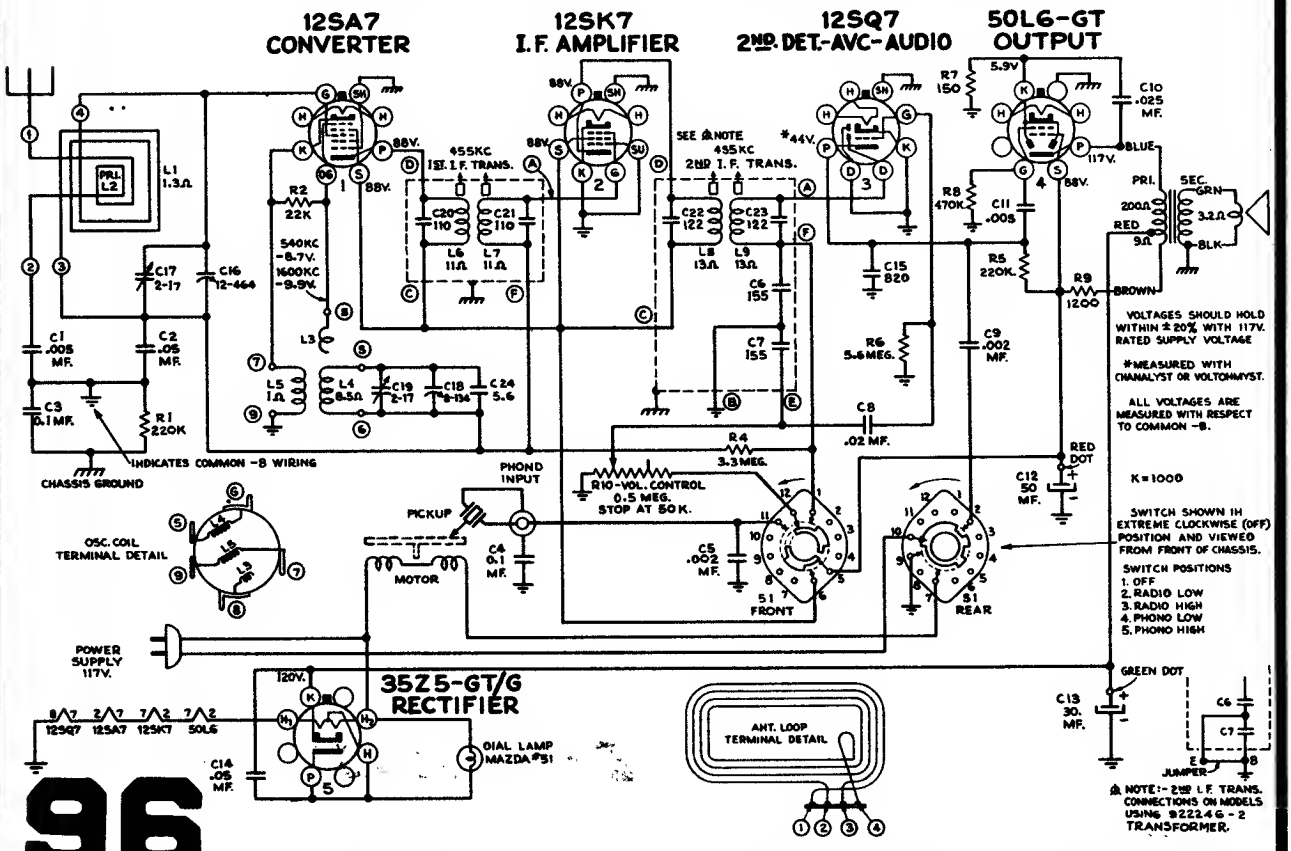
Output Meter.—Connect meter across speaker voice coil. Turn volume control clockwise to radio maximum high position (3) for alignment.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak ontput
1	I.F. grid, in series with .01 mfd.	455 kc	Quiet poiut 1,600 kc end of dial	L8 and L9 2nd I.F. tranoformer
2	1st Det. grid in series with .01 mfd.			L6 and I.7 1st I.F. tranoforme:
NOTE.—ANTENNA LOOP MUST BE IN CABINET				
3	Antenna terminal in series with 220 mmfd.	1600 kc	Gang at minimum	C19 (osc.)
4	Radiated signal 1300 kc		Signal Frequency	C17 (ant.)
5	Repeat steps 3 and 4.			



Power Supply.—Although this model employs an ac-dc chassis, it is not suitable for use on d.c., as this would damage the motor.

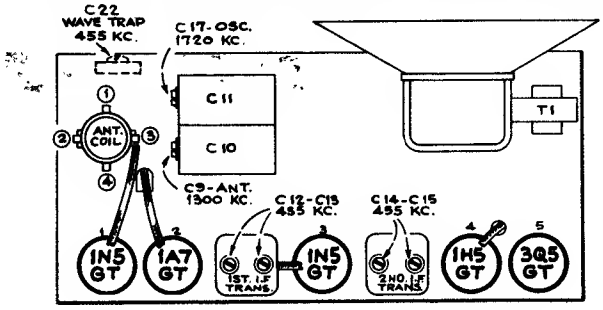
Reversal of plug in outlet receptacle may reduce hum.



RCA VICTOR

55F and CV-42 Electrifier

Chassis No. RC-1004E; Mfr. No. 274



Alignment Procedure

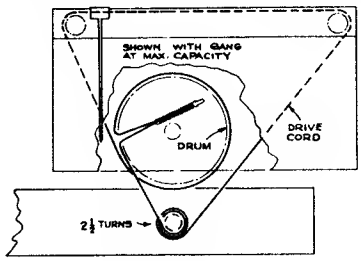
Cathode Ray Alignment is the preferable method. Connections for the oscillograph are shown in the diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil and turn the receiver volume control to maximum.

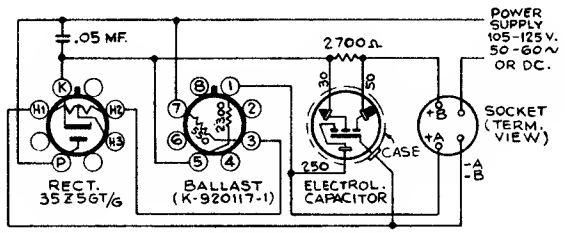
Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the output as low as possible to avoid AVC action.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be set at the left-hand end dial calibration mark.

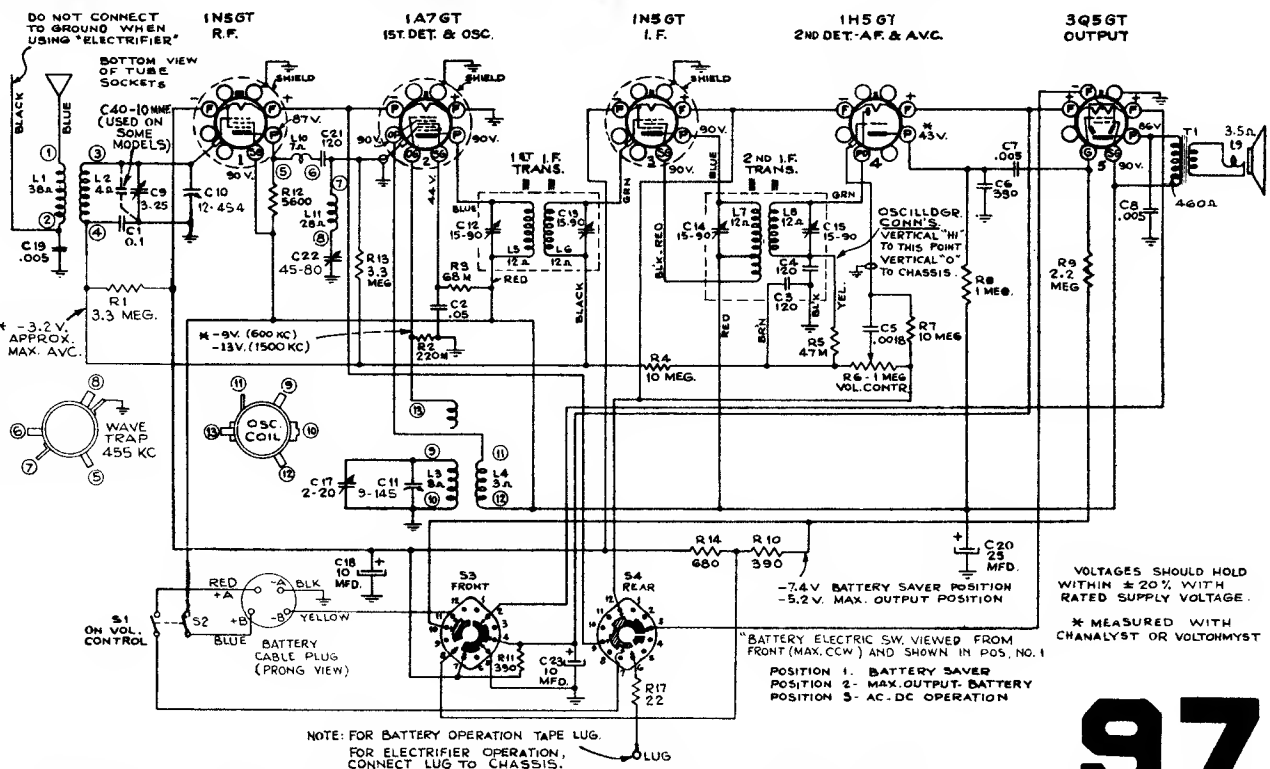
Step	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I-F grid in series with .01 mfd.	455 kc	Quiet point between 550 and 750 kc	C14, C15. (2nd I-F Trans.)
2	1A7GT grid in series with .01 mfd.			C12, C13 (1st I-F Trans.)
3	Antenna terminal in series with 200 mmfd.	1,720 kc	Tuning condenser rotor plates all out	C17 (osc.)
4		1,300 kc	1,300 kc signal	C9 (ant.)
5		455 kc	Quiet point between 550 and 750 kc	Adjust C22 for minimum output on strong 455 kc signal



Dial Cord Assembly



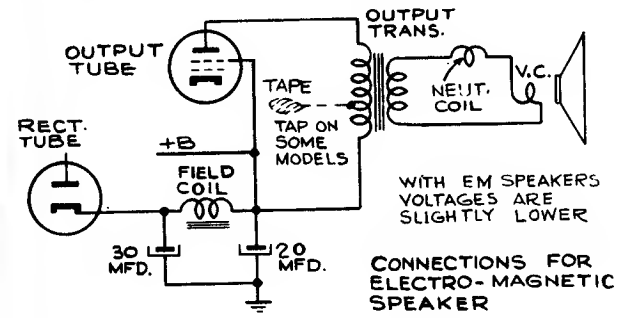
Electrifier Schematic



RCA VICTOR

56X, 56X2, 56X3

Chassis No. RC-1011—Mfr. No. 274

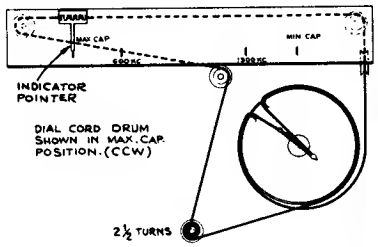


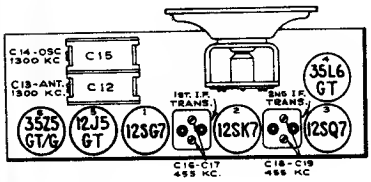
Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf capacitor to common "-B." Keep the output signal as low as possible to avoid AVC action.

Output Meter.—Connect leads between speaker voice coil and chassis. Turn volume control to maximum clockwise, tone control to maximum highs (clockwise).

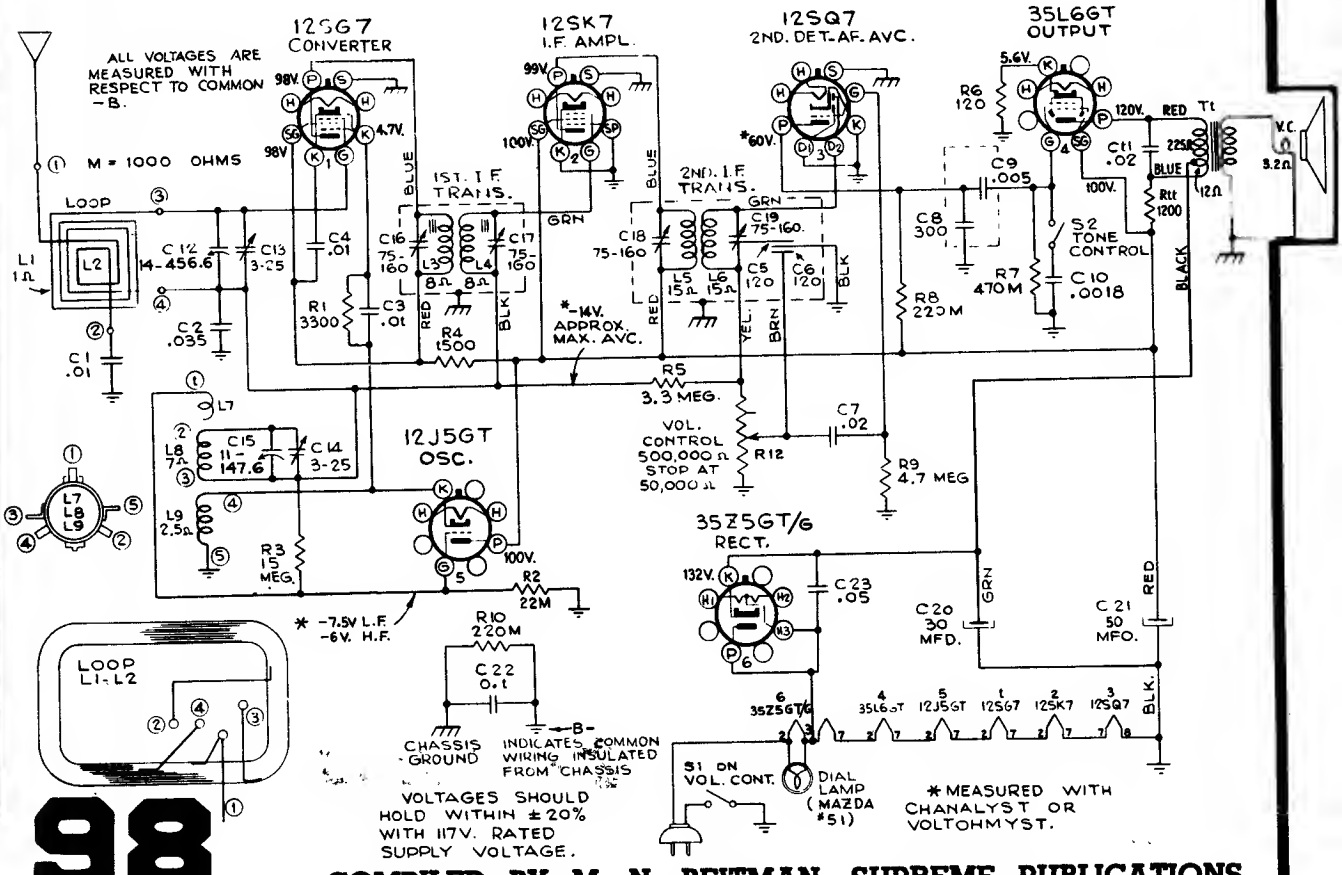
Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise (plates closed). Adjust indicator pointer to left (max. Cap.) mark on dial back plate.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	Stator of C-12 in series with .01 mfd.	455 kc	Quiet-point 1,800 kc end of dial	C18 and C19 2nd I-F transformer
2				C18 and C17 1st I-F transformer
3	Ant. lead in series with 200 mmfd.	1,300 kc	1,300 kc	C14 (osc.) C13 (ant.)
4	Repeat step 3.			





Radiola Models 61-1, 61-2, 61-3 are similar to models illustrated.



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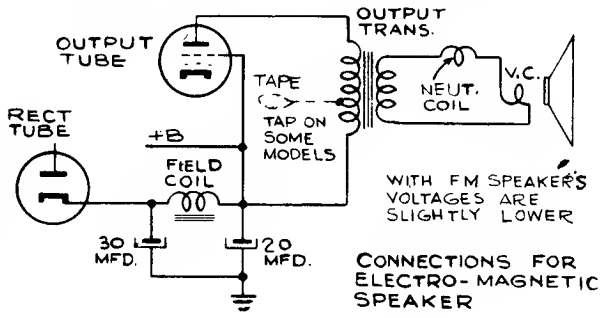


CONNECTIONS FOR ELECTRO-MAGNETIC SPEAKER

Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Pin #8 of 12SA7 in series with 0.1 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C25, C26 2nd I-F trans.
2				C23, C24 1st I-F trans.
3	Ant. terminal in series with 220 mmf.	600 kc	600 kc "A" Band	C30 (osc.) Rock gang
4		1300 kc	1300 kc "A" Band	C28 (osc.) C20 R-F)
5		Repeat 3 Rocking gang		
6		Repeat 3, 4 and 5 for exact cal.		
7	Ant. terminal in series with 0.1 mid.	11.8 mc	11.8 mc	C29 (osc.)* Rock gang
8	Ant. terminal in series with 47 mmf.	11.8 mc	11.8 mc	C22 (R-F) Rock gang
9	Repeat steps 7 and 8			

* Use minimum capacity peak if two can be obtained. Check for selection of correct peak by tuning receiver to approximately 10.9 mc where a weaker signal should be received.

RCA VICTOR
56X5

Chassis No. RC-1023—Mfr. No. 274

R.C.A. Victor Model 56X10 and Radiola Models 61-5, 61-10 are similar to Model 56X5.

CHASSIS GROUND

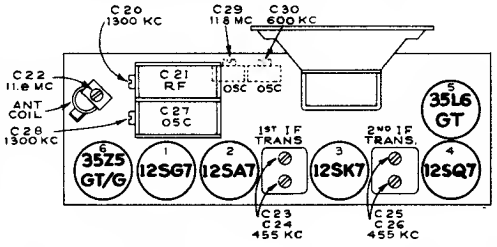
INDICATES COMMON WIRING INSULATED FROM CHASSIS

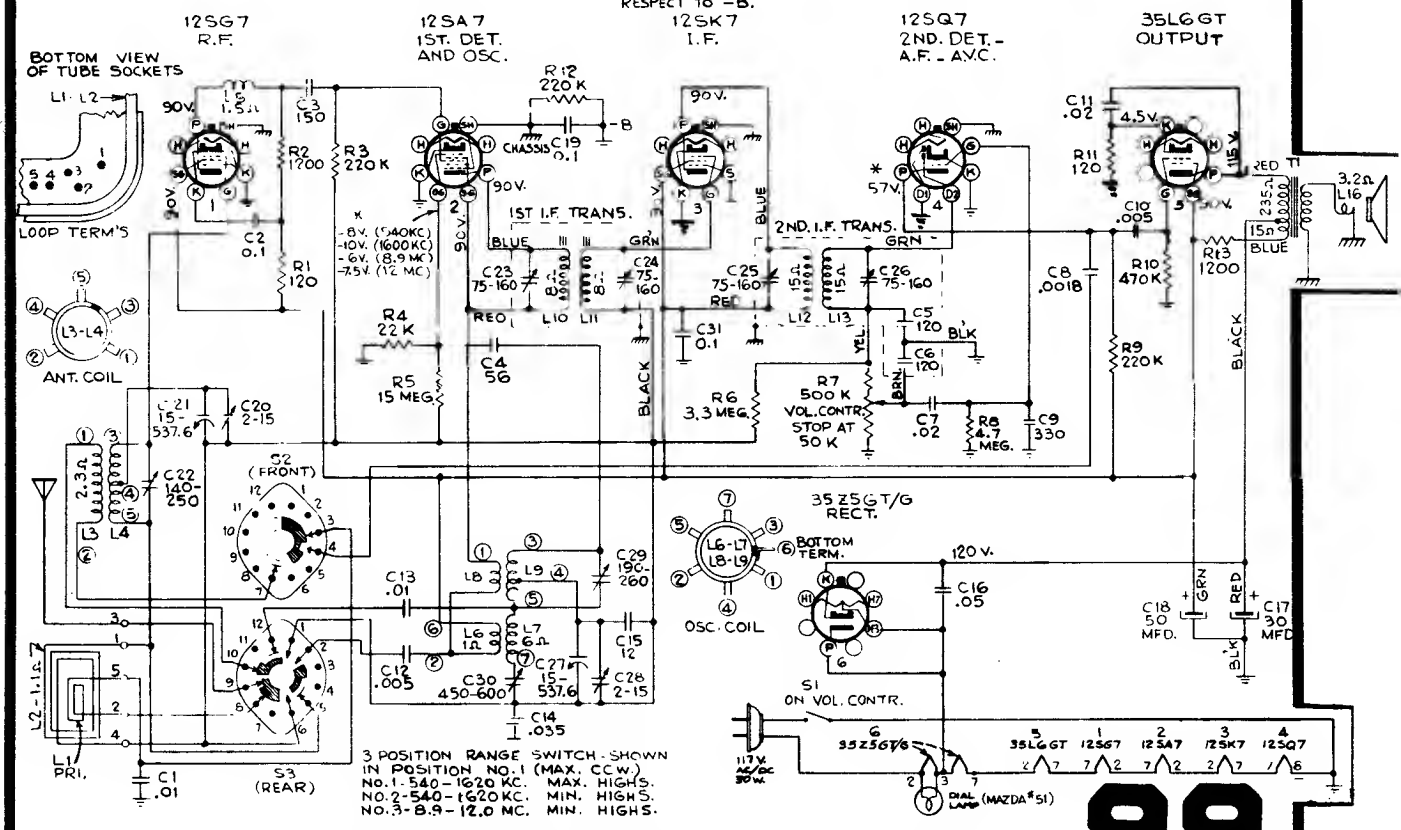
K=1000

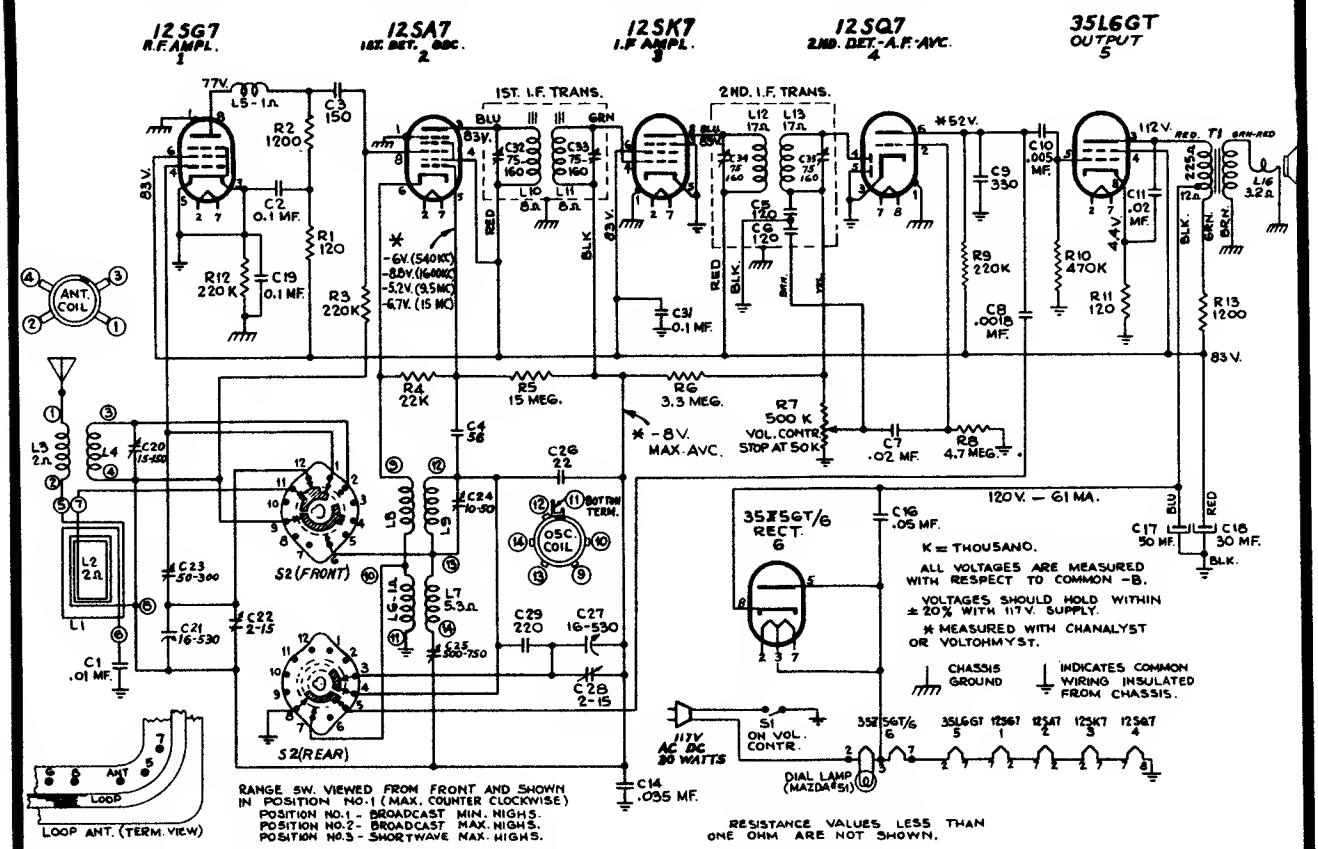
* MEASURED WITH CHANALYST OR VOLTOHMYST.

VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 VOLT A.C. SUPPLY.

ALL VOLTAGES ARE MEASURED WITH RESPECT TO -B.







On some models, electrolytic capacitor (C17, C18) may be 20 Mfd./30 Mfd. The AVC bypass capacitor, (C14) may be .030 Mf.

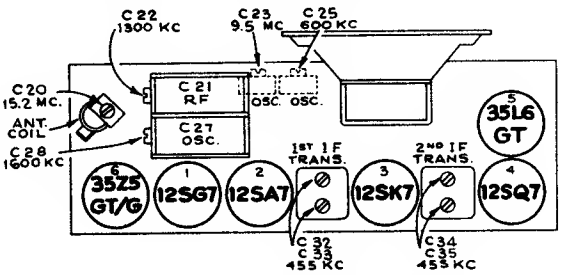
Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I.F. grid in series with .01 mfd.	455 kc	'A' Band Quiet point at 1600 kc end of dial	C34, C35 2nd I-F trans.
2	12SA7 grid in series with .01 mfd.			C32, C33 1st I-F trans.
3	Antenna terminal on loop in series with 220 mmf.	600 kc	'A' Band rock gang near 600 kc	C25 (BC trimmer)
4		1600 kc	1600 kc	C28 (Osc.)
5		600 kc	Rock gang near 600 kc	Recheck C25
6		1300 kc	1300 kc	C22 (r.f.)
7	Antenna terminal on loop in series with 22 mmf.	15.2 mc.	'C' Band rock gang near 15.2 mc.	C20 (ant.) on top of S.W. ant. coil
8			15.2 mc. center of "M"—"19M"	C24 (Osc.)*
9		9.5 mc.	9.5 mc.	C23 (r.f.)
10		15.2 mc.	15.2 mc.	Recheck C20

*Use minimum capacity peak, if two peaks can be obtained.
Note.—Oscillator tracks 455 kc above signal on both bands.

RCA VICTOR

56X11

Chassis No. RC-1023A; Mfr. No. 274



Alignment Procedure

Test Oscillator.—For all alignment operations, keep the output as low as possible to avoid a.v.c. action.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate for quick reference during alignment.

Power Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

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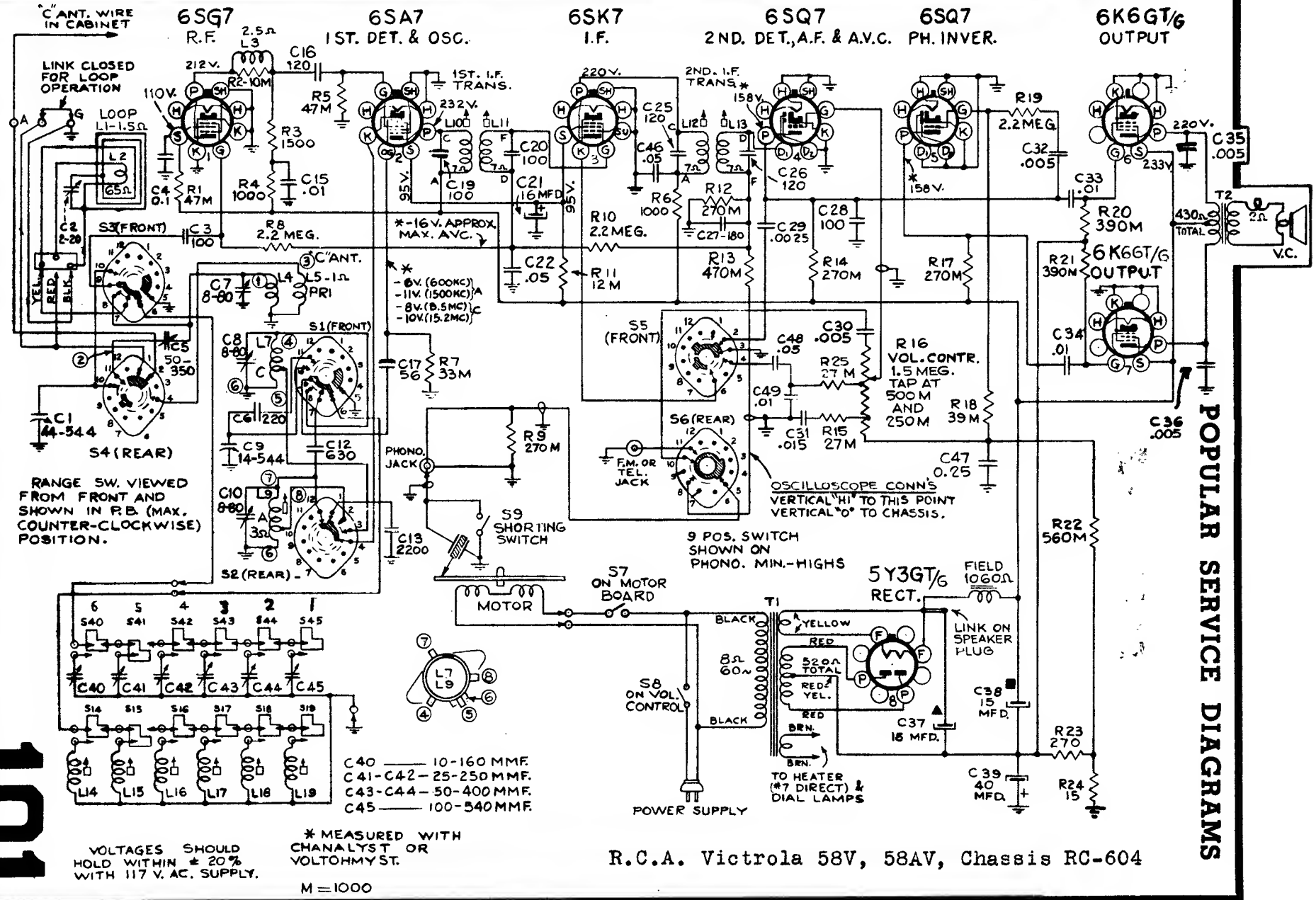


R.C.A. Victrola 58V, 58AV, Chassis RC-604

Cathode-Ray Alignment is the preferable method. Connections for the oscilloscope are shown in the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the full size scale printed in this service note can be used for reference.

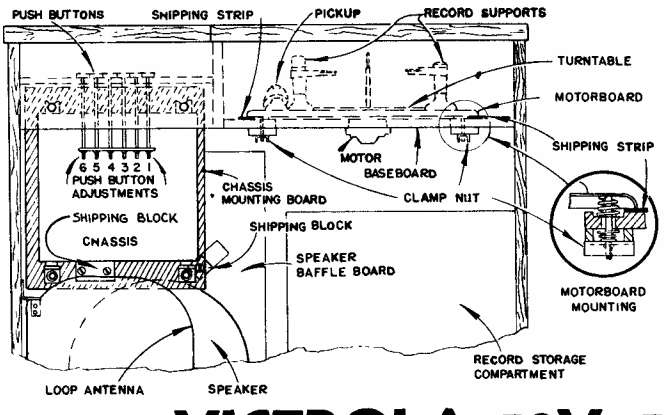
Using Tuning Dial.—

1. Remove glass dial from the cabinet.
2. With gang in full mesh, the dial pointer should be set to a point 1/16 inch to left of reference mark at left hand end of the dial backing plate.
3. Support the glass dial over the pointer with spacers so that the extreme left scale graduation coincides with the pointer. Use scotch tape to hold the glass dial in place.

"C" Band Reception.—For best reception on "C" band with an outside antenna, adjust the trimmer screw of C5 on the antenna coil. Turn screw carefully with an insulated screwdriver (RCA Stock No. 31031) while the receiver is tuned to a station in the 31-meter band. If returning to internal antenna at any time, close the link on the center terminal and readjust "C" band antenna trimmer (C5) for best reception on 31-meter band.

Steps	Connect test-osc. output to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid in series with .01 mfd.	455 kc	"A" band 540 kc	L13-L12 (2nd I-F trans.)
2	1st Det. grid in series with .01 mfd.			L11-L10 (1st I-F trans.)
3	A-Terminal in series with 47 mmfd. (link closed)	15.2 mc	"C" band 15.2 mc	C8 (osc.)* C7 (ant.)
4		9.5 mc	"C" band 9.5 mc	C5 (ant.) (Rock gang)
5		Repeat steps 3 and 4		
6	Yellow loop lead in series with 200 mmfd. (link closed)	1,500 kc	"A" band 1,500 kc	C10 (osc.)
7		600 kc	"A" band 600 kc	L9 (osc.)
8		Repeat steps 6 and 7.		
9	Install and connect chassis in cabinet with antenna link closed. Tune in a radiated oscillator signal at 1,500 kc. and peak the "A" band trimmer C2 (on loop). Rock in L9 for peak output at 600 kc.			

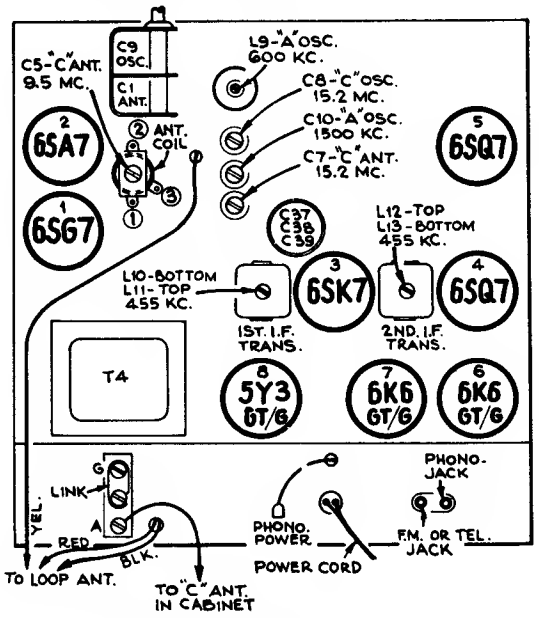
*Use minimum capacity peak if two peaks can be obtained. Oscillator tracks 455 kc. above signal on all bands.



Critical Lead Dress:

1. Bus from "C" oscillator coil to range switch must be held to length and dressed close to coil.
2. C30 (audio coupling capacitor to volume control) should be dressed close to front apron.
3. A.C. cord and motor leads must be dressed away from phono and F.M. jack.
4. Excess trans. leads to be dressed between trans. and rectifier socket.
5. Keep R5, C16 bus (in grid circuit of 6SA7 tube) as short as possible.
6. Dress C28 (in plate circuit of 1st A.F.) close to socket.
7. Keep R21 (grid resistor) and C34 (coupling capacitor of output tube) close to socket.
8. Keep R25, C48 (in tone compensating circuit) close to front apron.
9. Dress green lead from osc. coil to trimmer close to oscillator coil.
10. Dress red A.C. leads away from I.F. trans. and 6SQ7 socket.
11. RF choke in plate of 6SG7 must be dressed toward back apron.

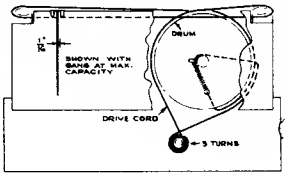
For Information on Automatic Mechanism refer to Service Data for Model 960001-1 Mechanism.

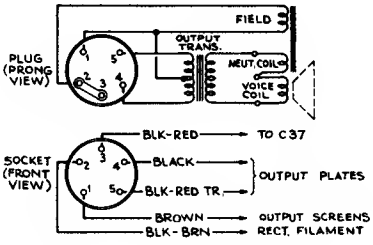


TUBE AND TRIMMER LOCATIONS

CATHODE CURRENTS

(1)	6SG7	10.5 MA.
(2)	6SA7	9.9 MA.
(3)	6SK7	16.0 MA.
(4)	6SQ7	0.3 MA.
(5)	6SQ7	0.3 MA.
(6)	6K6GT	22.0 MA.
(7)	6K6GT	22.0 MA.
(8)	TOTAL RECT.	81.0 MA.





SPEAKER CONNECTIONS

VICTROLA 58V, 58AV

Radio-Phonograph Combination

Chassis No. RC-604

102

RCA

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Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the full size calibration scale printed in this service note can be used for reference.

Using Tuning Dial.—

1. Remove the dial glass from the cabinet.
2. With gang at full mesh the pointer should be set to a point (1/16) inch to the left of the reference mark at the left hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in place.

Using Dial Scale Printed In This Service Note.—

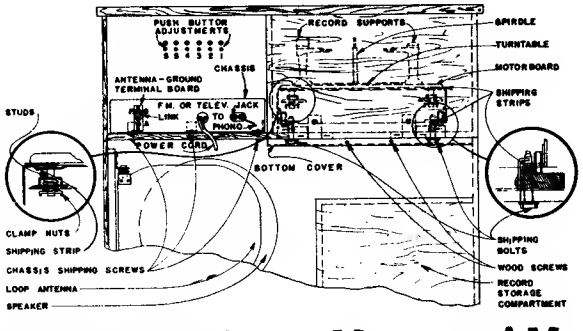
Follow the procedure above, substituting the dial scale printed in this service note for the glass dial in the cabinet.

"C" Band Reception.—For best reception on "C" band with an outside antenna, adjust the trimmer screw of C4 on the antenna coil. Turn screw carefully with an insulated screwdriver (RCA Stock No. 31031) while the receiver is tuned to a station in the 31-meter band. If returning to internal antenna at any time, close the link on the center terminal and readjust "C" band antenna trimmer (C4) for best reception on 31-meter band.

Steps	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid in series with .01 mfd.	455 kc	"A" Band 540 kc	L12, L11 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			L10, L9 (1st I-F Trans.)
3	Yellow loop lead in series with 200 mmf. (link closed)	1,500 kc	"A" Band 1,500 kc	C9 (osc.)
4		600 kc	"A" Band 600 kc	L8 (osc.)
5		Repeat steps 3 and 4		
6	Ant. terminal in series with 47 mmf. (link closed)	6.1 mc	"B" Band 6.1 mc	C8 (osc.)* C2 (ant.)
7		15.2 mc	"C" Band 15.2 mc	C7 (osc.)* C6 (ant.)
8		9.5 mc	"C" Band 9.5 mc	C4 (ant.)
9		Repeat steps 7 and 8		
10	Install and connect chassis in cabinet, with link closed. Tune in a radiated oscillator signal at 1,500 kc and peak the "A" band ant. trimmer C3 (on loop). Rock in L8 for peak output at 600 kc.			

*Use minimum capacity peak if two peaks can be obtained.

Oscillator tracks 455 kc above signal on all bands.



VICTROLA 59V1, 59AV1

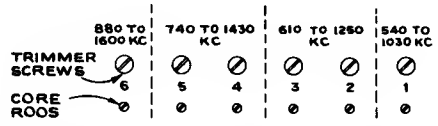
Radio-Phonograph Combination

Chassis No. RC 605

Critical Lead Dress

1. Push button, R.F. and oscillator leads should be separated as much as possible to reduce degeneration on push button reception.
2. R.F. choke in plate circuit of 6SG7 should be dressed towards the back apron.
3. Dress green push button lead under clamp and away from "C" band series capacitor.
4. Dress heater leads away from grids and diodes.
5. Dress phono. cables up and away from all wiring.
6. Dress all excess leads from transformer back towards transformer.
7. Keep output plate leads short and dressed close to chassis.
8. Dress green lead from 6SA7 screen to electrolytic down close to chassis.
9. Dress "C" band coil lead from oscillator coil to range switch down toward green lead.
10. Keep yellow loop lead clear of all wiring.
11. Dress ground bus of large electrolytic away from mounting lug.
12. Remove all excess slack from pilot light assembly and dress it close to chassis base away from volume control.
13. Dress oscillator grid capacitor (56 mmfd.) up and away from the screen and plate of 6SA7 socket.
14. A-C leads to "off-on" switch should be kept away from tone control cable to reduce hum.
15. Peaking coil should be dressed away from R-F grid resistor to reduce degeneration in R-F stage.
16. Dress oscillator push button lead in weld clamp on front apron away from 220 mmf. series condenser.
17. Keep all leads away from Phono.-FM jack to prevent audio oscillation and hum. Dress underneath the shield provided.

Push Button Adjustment



The push buttons connect to separate magnetite-core oscillator coils and separate loop circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

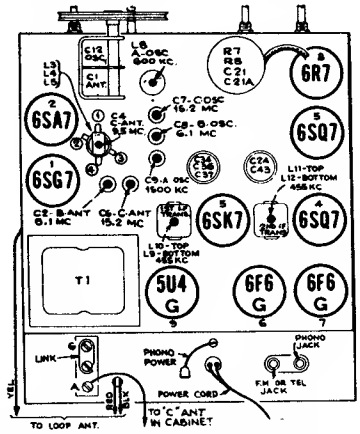
The procedure is as follows:

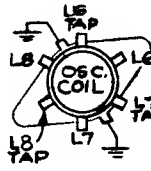
1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range switch to the broadcast position and manually tune in the first station on the list.
3. Turn range switch to push-button position and press in the left-hand button.
4. Adjust core rod No. 1 to receive the first station. To secure the best adjustment, rotate the loop for least pickup, and adjust core rod No. 1 for peak output.
5. Adjust trimmer screw No. 1 for peak output on the first station.
6. Proceed in the same manner to adjust for the remaining stations.
7. Repeat adjustments for best results.

On the 880 to 1,600 kc push-button, the higher frequency stations may be received with core rod No. 6 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

SERVICE HINT:—If unable to reach 550-540 KC on No. 1 push button —Connect a Stock No. 33111 Capacitor-Ceramic-33 mmf across L19 (between switch contact which connects to high side of L19, and switch frame).





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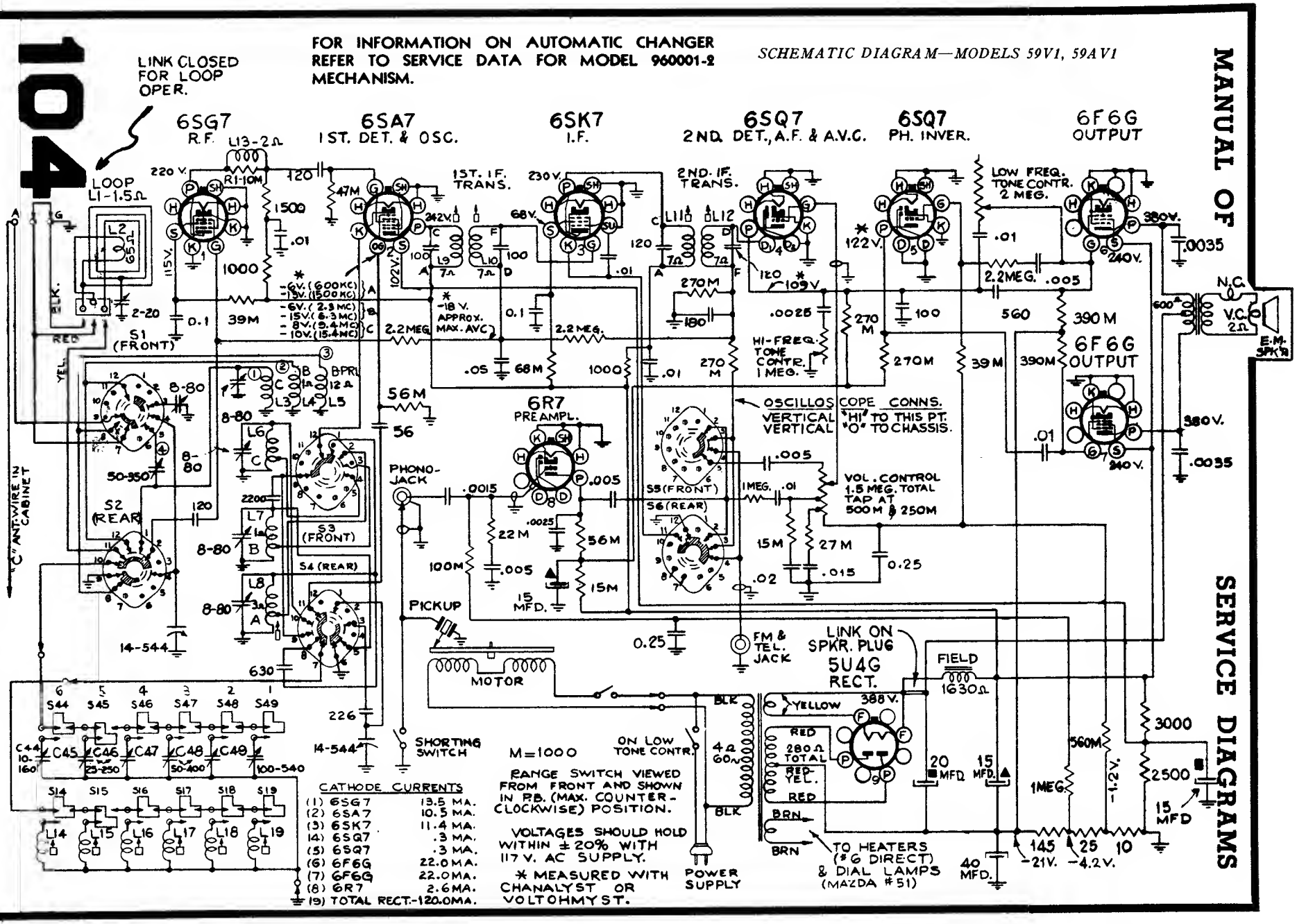
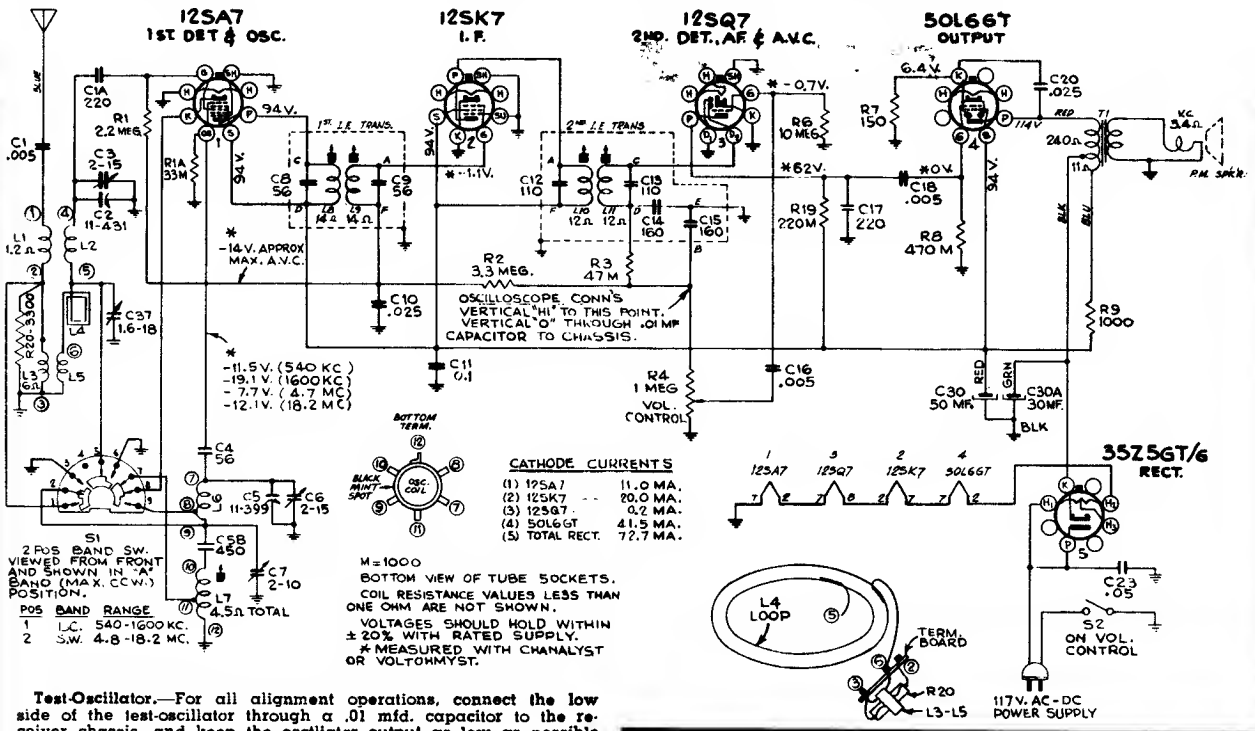
SCHEMATIC DIAGRAM—MODELS 59V1, 59AV1





Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator through a .01 mfd. capacitor to the receiver chassis, and keep the osctillator output as low as possible to avoid a-v-c action.

Steps	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust following for max. output—
1	12SK7 I-F grid through 0.1 mfd. capacitor	455 kc	B. C.; 1600 kc quiet point	L11-L10 (2nd I-F Trans.)
2	Stator of gang cond. C2 (rear) through 0.1 mfd.			L9-L8* (1st I-F Trans.)
3	Antenna lead through 300 ohm resistor	18.2 mc	S. W.; gang condenser open	C8 (osc.)**
4		15.2 mc	S. W.; maximum signal rock gang	C3 (ant.)***
5	Antenna lead through 200 mmf. capacitor	600 kc	B. C.; 600 kc	L7 (osc.)
6		1300 kc	B. C.; rock gang at 1300 kc	C37 (ant.) C7 (osc.)
7		600 kc	B. C.; rock gang at 600 kc	L7 (osc.)
8	Repeat steps 6 and 7			

* Do not readjust L10 or L11 when test oscillator is connected to C2.

** Use minimum capacity peak if two peaks can be obtained.

*** Image signal of lesser amplitude should occur at 14.3 mc.

NOTE.—Oscillator tracks above signals on both bands.

Radiola

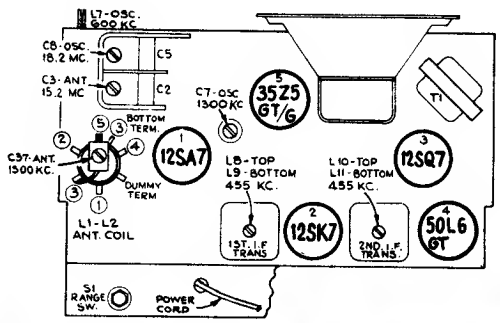
61-6 and 61-7

Chassis No. RC-594D

RADIO CORPORATION OF AMERICA

Cathode-Ray Alignment is the preferable method. Connections for the oscilloscope are shown in the schematic drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.



Tube and Trimmer Locations

RCA VICTOR

Model Nos. 960001-1, 960001-2, 960001-3

Automatic Record Changer

Model	Cartridge
960001-1	39851
960001-2	70332
960001-3	39851

96000-2 and 96000-3 have an additional pickup shorting switch which contacts roller on tone arm lever (17) and shorts out pickup while tone arm is in the rest position.

Features

1. This record changer is a two post drop type, non-intermixing mechanism designed to play automatically a series of twelve 10-inch or ten 12-inch records of the standard 78 RPM type.
2. The mechanism uses a light weight, low noise, crystal pickup cartridge, equipped with a long life sapphire point.
3. The tone arm is automatically returned to the rest position and the power removed from the drive motor, after the mechanism has finished playing the last selection of the stack.
4. The changer is equipped with an eccentric and closed circle tripping device.
5. A pickup shorting switch is incorporated which shorts out the pickup during record change cycle. This prevents noise from gears, cams and other moving parts from being amplified through the reproducing system.
6. The mechanical linkage between record support posts makes possible a single and simple operation on the part of the operator to change from 10 to 12-inch records or vice versa.
7. The changer can be used on either a 50 or 60 cycle power supply by the use of the proper spring sleeve slipped over the shaft of the drive motor.
8. All gears and cams are disconnected while the records are being played. This removes the load on the motor and eliminates excessive friction and noise from moving parts which otherwise have a tendency to produce wow or rumble.

Automatic Operation

1. Lift and turn the selector arm #1 in the front right-hand corner of the changer panel to a position engaging the slots in the selector sleeve. In so doing the arrows and numbers designating record size should be pointing toward the turntable spindle.
2. Load the records to be played on the separator arms with the desired selections upward and in the proper sequence. The last record should be on top.
3. Move control knob to "reject" position and release it. The changer will play the selections in the entire stack at which time the control knob will return to "off" position automatically.
4. Lift and turn the selector arm to facilitate the removal of records on turntable.

Note: To stop mechanism before the selections in the entire stack have been played, move the control knob to "off" position, remove records on selector arms and lift and move the tone arm to rest position.

Manual Operation

Old, odd sized and home recording records should be played in "Manual" position.

1. Lift and turn selector arm until selector arms point outward as for unloading records.
2. Place records to be played on turntable and move control knob to "Manual" position.
3. Place pickup on record.
4. When selection is finished playing, return the tone arm to rest position and move control knob to "off" position.

Note: Do not move control knob to "off" position before placing tone arm in rest position, or cycling will result. If this should occur do not handle tone arm. Place control knob in automatic position and allow cycle to continue until tone arm comes to rest before continuing with manual operation.

Cautions

1. Never use force to stop or rotate turntable or any other part of the mechanism.
2. Do not play a chipped or cracked record as damage to sapphire may result.
3. Warped records may slide upon one another while playing and cause unsatisfactory reproduction.
4. Do not attempt to handle tone arm while mechanism is in cycle.
5. Do not allow records to remain on selector arms when not in use, particularly in warm climate.
6. Do not allow oil or grease to come in contact with the rubber tire on drive idler or any other rubber parts.
7. Do not attempt to move the tone arm horizontally when in the rest position, unless control knob is in the manual position.

Lubrication

1. **GREASE**—Gears, all cams on large gear, tapered end of tone arm latch and tone arm lever with LUBRIPLATE #105 (Lubriplate Corp., 3211 South Wood St., Chicago).
2. **OIL**—All shafts before inserting into bearing and all moving parts, except those to be greased, with AIRCRAFT INSTRUMENT AND MACHINE GUN OIL, SPEC. 2-27E (Delta Oil Products, Milwaukee, Wis.).

Note: Keep grease and oil away from rubber parts such as drive idler, bumpers, etc.

Do not oil or grease clutch engagement lever.

Continued, RCA Victor Automatic Record Changer Models 960001-1, -2, -3.

Functions of Main Parts

I. Motor

The function of the motor is to serve as a power source for the changer. Power is transmitted from motor to turntable through the rubber-tired idler wheel.

II. Control slide and associate parts

A. General function is to provide a single knob control for the various operations shown on the escutcheon plate through its interaction with the changer mechanism.

B. The power switch is mechanically operated by the control slide through a linkage to correspond to the various positions on the escutcheon plate.

C. **Manual Reject Slide (27), fig. (3)**

1. Manual position—With the control slide in the "manual" position the formed end of the reject slide (27) fig. (16) engages the clutch engagement lever (33) and holds it in an up position so that the trip mechanism is inoperative.
2. Reject position—The short formed end of the reject slide (27), near the mid-section, contacts part of trip lever (28) and trips the mechanism.

D. **Tone Arm Latch (14), fig. (3)**

1. Functions as a positive lock, fig. (12), for the tone arm whenever the latter is moved to the outside of the panel in all positions of the control slide other than "manual".
2. Also functions as a partial lock, fig. (12), or detent, for the tone arm lever (17) while the control slide is in "manual".

E. **Manual Lock Out (4), fig. (3)**

Function is to engage and retain the tone arm locator (16), fig. (15), in its outermost position while the control slide is set in the "manual" position.

F. **10 and 12-Inch Set Lever (19), fig. (3)**

Function is to index the tone arm properly for 10 or 12-inch records, fig. (19).

III. Spindle Housing, Gear Assembly, and Associated Parts

These two main castings are assembled with other component parts into a major sub-assembly, which includes a spindle and pinion. The assembly operates only in a counter-clockwise direction (viewed from bottom side) and provides a clutching and driving action for all automatic operation.

A. **Pinion Gear (37), fig. (5)**

1. Operates as part of the clutch.
2. Operates as a gear to drive the main gear through a change cycle.
3. Serves as a vertical stop for the spindle to which it is pinned.

B. **Clutch Engagement Lever (33), fig. (5)**

1. Function is to engage projection on pinion gear to start change cycle.

C. **Trip Lever Assembly (28), fig. (4)**

1. Function is to hold the clutch engagement lever (33), fig. (4) in a position such that it clears the pinion gear (37), fig. (5), except when tripping for cycling.

IV. Selector Arm and Blades

1. Function is to support the records and, together with the selector blades, to separate the lowest record of the stack and allow it to drop to the turntable during the change cycle.

V. Tone Arm Lever and Associated Parts

A. **Tone Arm Lever (17), fig. (3)**

Controls the horizontal movement of the tone arm.

B. **Tone Arm Locator Lever (16), fig. (3)**

Function is to control the tone arm lever in determining landing position of the pickup, fig. (8).

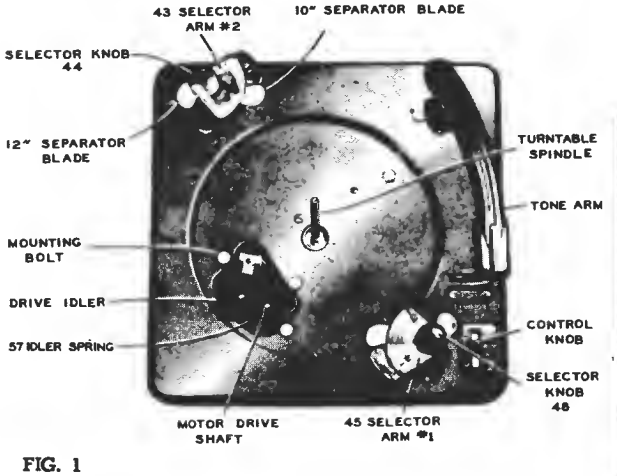


FIG. 1

C. **Booster Spring (67), fig. (3)**

A small piece of round spring wire which provides a limited amount of spring tension inward, tending to push the pickup into the starting groove.

VI. Tone Arm Lift Pin (51), fig. (24)

Function is to control vertical motion of tone arm.

VII. Selector or Support Arm Gears (35), (36), fig. (3)

Function is to transmit energy from drive mechanism to selector arm and knives.

VIII. Trip Plate (Knurled) (30), fig. (3)

Contacts trip dog (31), fig. (4), for eccentric tripping.

IX. Trip Shoe (29), fig. (3)

Functions as part of the closed circle tripping device.

X. Segments (23), (25) and Tie Plate (24), fig. (3)

Constitute the mechanical linkage between separator arms.

XI. Drive Gear Stop Lever (34), fig. (6)

Functions to stop and position drive gear after cycling.

XII. Tone Arm Retard Lever (26), fig. (4)

Stabilizes horizontal movement of tone arm while in cycle.

Miscellaneous Service Hints

1. Rumble

A. Remove turntable by lifting straight up and inspect the drive mechanism for a defective idler wheel. (Rough rubber tire or very sloppy bearing.)

B. Inspect the mounting of the changer to determine whether or not the mounting clamp nuts have been loosened.

C. Check and replace any microphonic tubes in the reproducing system.

Continued, RCA Victor Automatic Record Changer Models 960001-1, -2, -3.

2. "Wow" or Speed Variation

A. Make certain the turntable is free to rotate and not rubbing on motor board or portion of drive mechanism.

B. With the mechanism out of cycle remove the turntable by lifting straight up. The spindle being disengaged from all portions of the drive mechanism should rotate freely when turned by hand.

C. Check for badly worn idler as described in Item (1A).

D. Check for presence of grease on rubber tire of drive idler and the inner rim of the turntable. (Naphtha or carbontetrachloride will remove harmful grease.)

E. Bent turntable spindle.

F. Insufficient tension of drive idler spring (57), fig. (1).

3. Continuous Tripping (see sketches below)

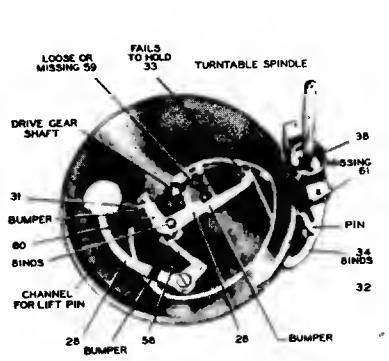
A. Trip lever (28) fails to hold clutch engagement lever (33).

a. Loose or missing trip lever spring (59).
b. Bind in trip lever bearing.
c. Formed edge on manual reject slide (27) touching trip dog (31) (bend away).

B. Bind in stop lever (34), fig. (2).

C. Missing stop lever spring (61).

D. Control knob fails to return to automatic position due to bind in control slide, and associated parts. Missing spring (64), fig. (3).



4. Feed-back or Howl

This condition is caused by sound from the speaker getting back into the input of the amplifier.

A. Inspect motor board mounting to determine whether the clamp nuts have been loosened.

B. Make certain no portion of the mechanism is touching the cabinet. The mechanism should be free floating on mounting springs.

C. Check and replace any microphonic tube in reproducing system.

5. Failure to Trip (see sketches below)

A. Pickup jumping grooves due to improper pickup pressure, or foreign material clogging up sapphire guard.

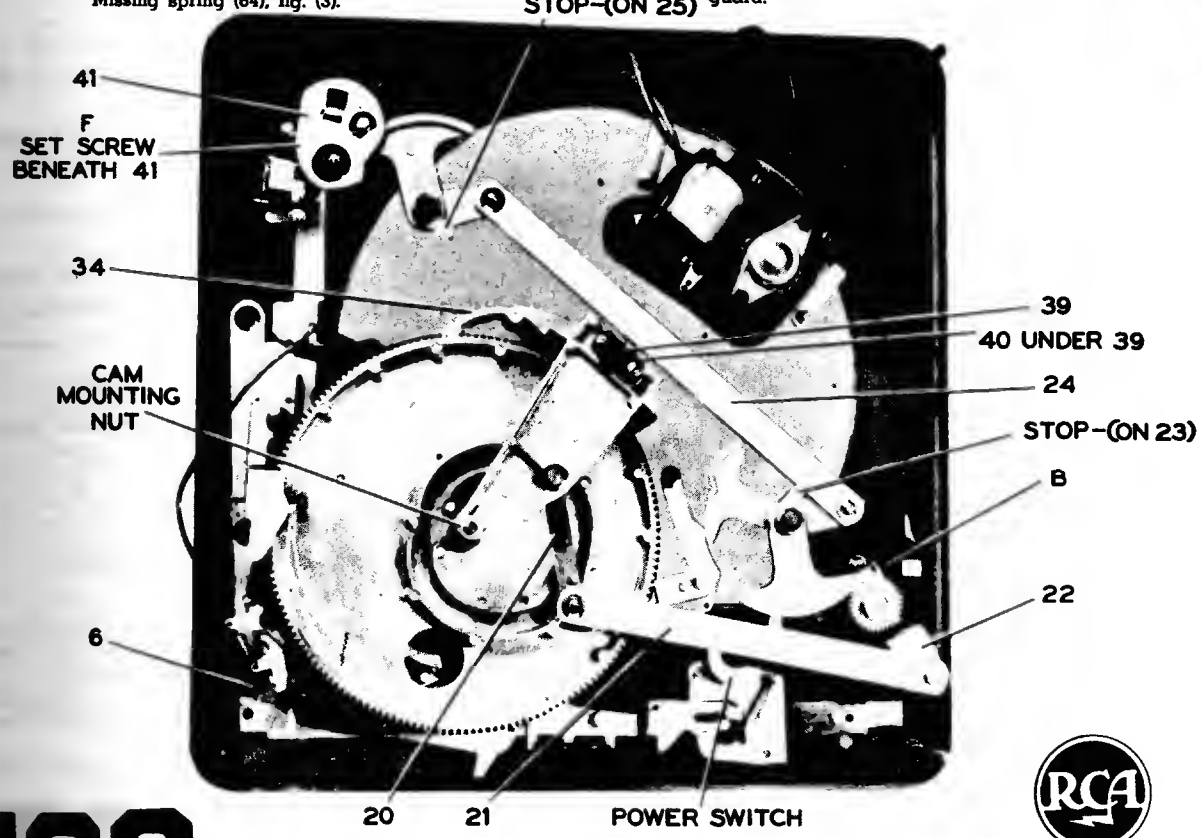


FIG. 2

Continued, RCA Victor Automatic Record Changer Models 960001-1, -2, -3.

B. Bind in trip dog (31), bearing or missing spring (60).

C. Tripping adjustments improperly set.

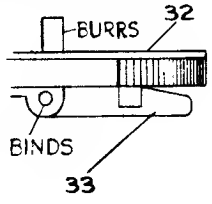
D. Trip lever spring (59) having too much tension.

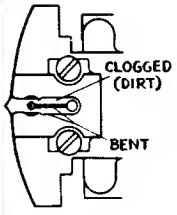
E. Burrs on trip lever (28).

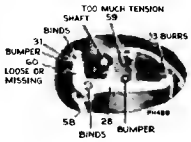
F. Bind in trip lever bearing.

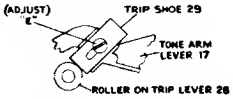
G. Bind in tone arm bearing.

H. Clutch engagement lever (33) bent or binding. (It should be free to drop under its own weight when disengaged from trip lever.)









6. Insufficient power to complete cycle.

A. Grease or oil on inner rim of turntable and rubber tire idler.

B. Insufficient tension of spring (57), fig. (1), on drive idler.

C. Defective drive motor.

D. Binding in series of levers, pivots, etc.

a. Drive link assembly (20), fig. (2).

b. Selector arm shaft assembly, fig. (1).

c. Drive gear (32), fig. (4), shaft.

d. Poor gear mesh due to misalignment or defective teeth.

e. Bent record separator blades causing a jam, fig. (1).

7. Records do not drop properly.

A. Separator arms improperly timed. (See timing adjustments.)

B. Bent separator blades.

C. Bent turntable spindle.

8. Improper pickup landing (adjacent sketches)

A. Landing adjustment improperly set.

B. Bind in tone arm bearing.

C. Bind of slide (18) and lever (19) on studs.

D. Missing spring (65) or (66).

E. Bent or improperly shaped lever (16).

F. Missing or loose spring (68).

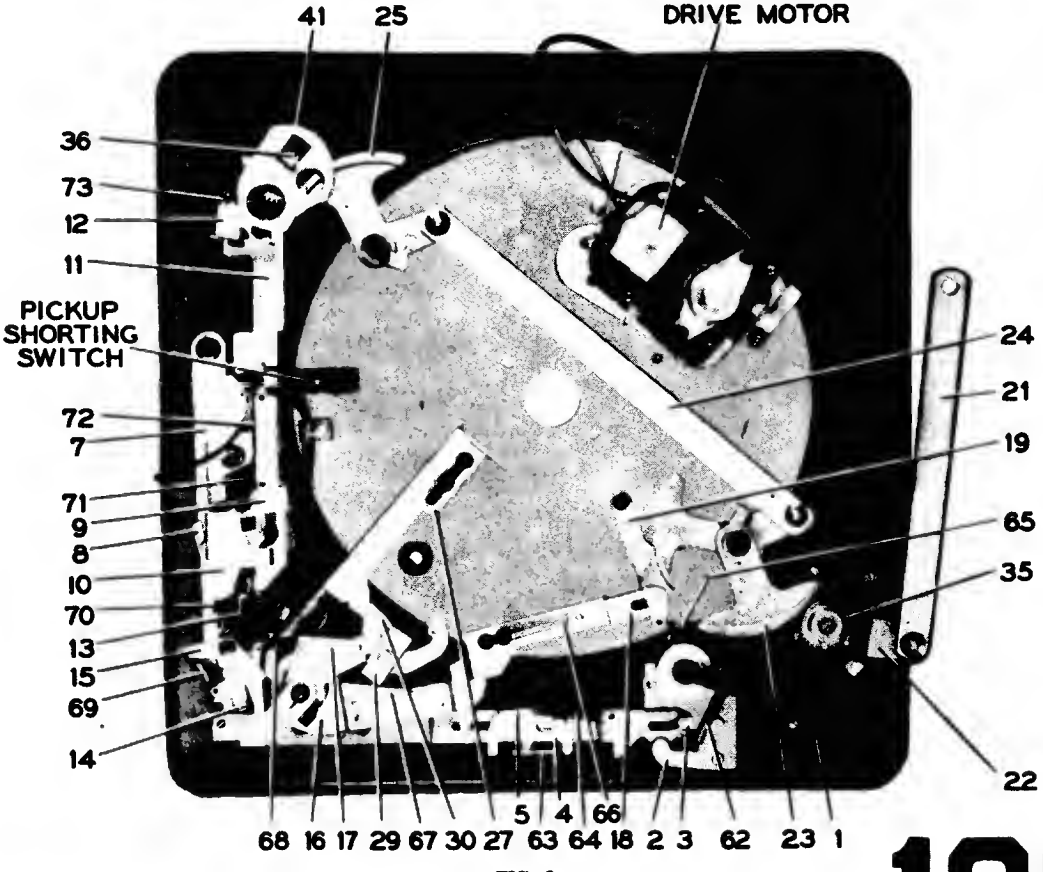


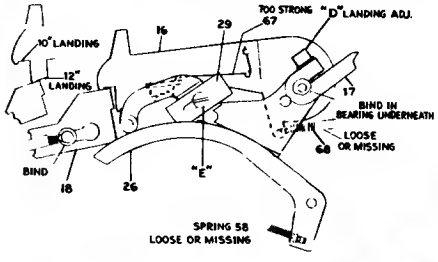
FIG. 3

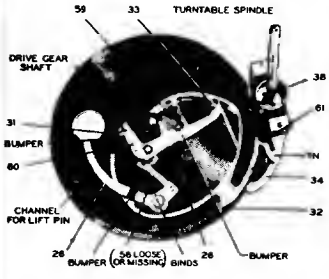
Continued, RCA Victor Automatic Record Changer Models 960001-1, -2, -3.

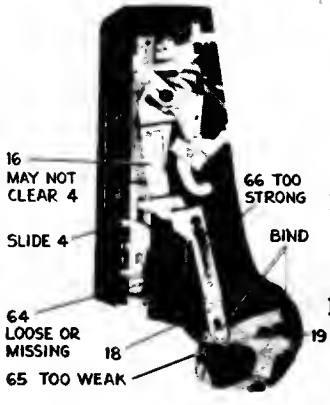
G. Spring (66) having more tension than spring (65).

H. Spring (67) out of position causing false edge on lever (16).

I. Tone arm fails to move in because of bind in slide (4), or missing spring (64) keeping lever (16) latched.





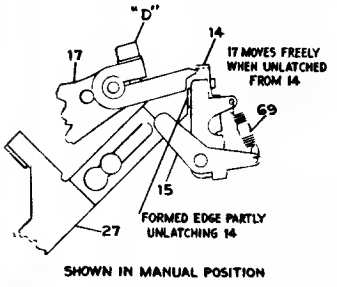


9. Repeating grooves (see sketches below)

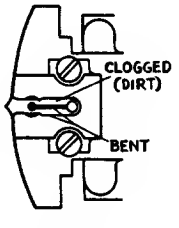
A. Insufficient pickup pressure.

B. Bind in tone arm pivot.
Place control knob in "manual" position and move tone arm in toward spindle and back. After the end of the tone arm lever (17) (functioning as a detent) leaves latch (14) the tone arm should have free and smooth action.
(If latch (14) is too positive, bend formed edge on manual reject slide (27) which contacts latch (14).)

C. Check for bind in tone arm lift pin (51).

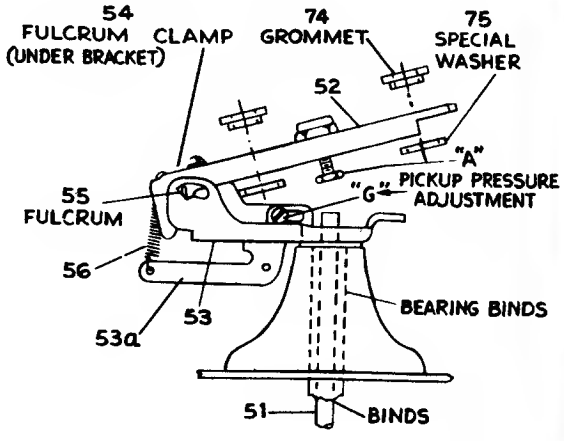


SHOWN IN MANUAL POSITION



D. Sapphire shield filled with foreign material, preventing sapphire from setting into grooves.

E. Bent sapphire mounting thereby allowing sapphire guard to ride on record.



10. Premature tripping.

A. Defective record.
B. Trip shoe (29), fig. (3), improperly set.
C. Trip lever spring (59), fig. (4), insufficient tension.
D. Bind in trip dog (31), fig. (4), pivot.

11. Noise coming from speaker during record change cycle.

Pickup shorting switch failing to short out pickup.

12. No output.

A. Defective crystal cartridge.
B. Broken or bent sapphire mounting.
C. Broken or shorted pickup cable.
D. Pickup shorting switch making contact.
E. Inoperative reproducing system.

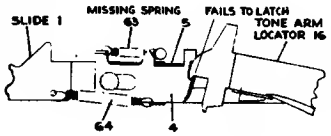
13. Distorted output.

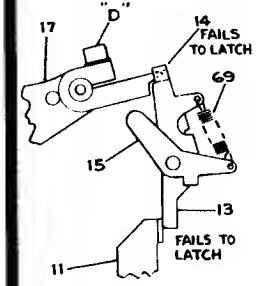
A. Defective pickup cartridge.
B. Bent or loose sapphire mounting, allowing sapphire to ride irregular in groove.
C. Sapphire guard filled with foreign material such as dust and lint which accumulates on the records while in storage.
(Remove with small brush.)

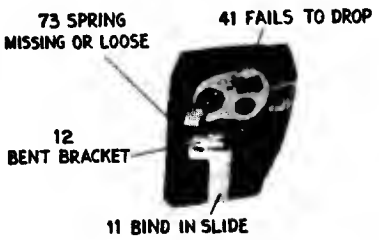
14. Tone arm fails to go to rest position at the finish of the last selection (see sketches below)

A. Control knob fails to return automatically to "off" position.
1. Cam (41) fails to drop down, thereby preventing stud on stop bracket (12) from contacting it.
2. Missing stop bracket spring (73).
3. Missing stud on bracket (12).
4. Bind in shut off dog (8), fig. (3), and trip (9).
5. Formed edge on slide (11) not locking tone arm latch (13).
6. Tone arm latch (14) bent thereby not locking tone arm and allowing it to be pushed in by lever (16).

Continued, RCA Victor Automatic Record Changer Models 960001-1, -2, -3.

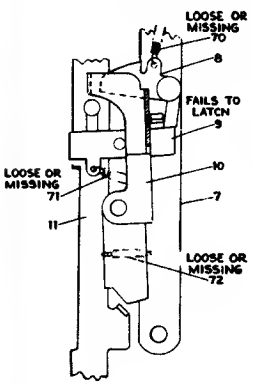


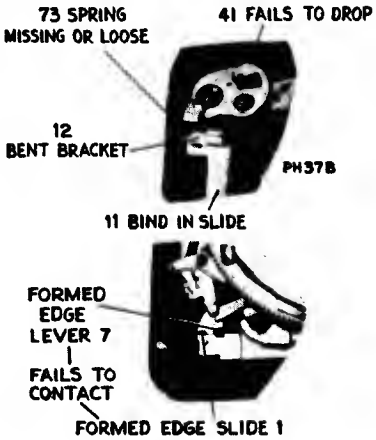


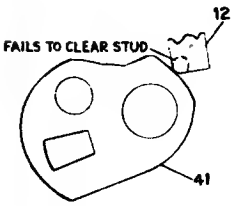


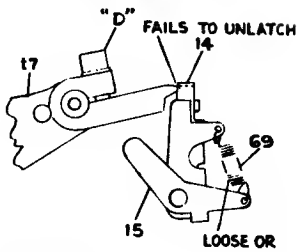
15. Turntable fails to stop at the end of the last selection (see sketches below)

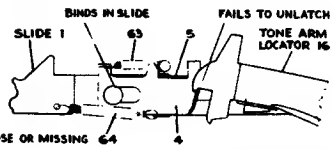
A. Defective motor switch.
B. Bind in levers actuating drive motor power switch, fig. (2).
C. Control lever fails to move automatically to "off" position as described in 14A—one to five.
D. Small formed edge on lever (7) may fail to contact formed edge on slide (1) thereby not pulling slide (1) and not moving control to "off" position.











16. Pickup fails to move in for landing (see sketches below)

A. Tone arm locator (16) lever fails to unlatch from slide (4).
B. Tone arm lever (17) fails to unlatch from tone arm latch (14).
C. Missing spring (69).
D. Bent shut off slide bracket (12) which may allow cam (41) to contact at incorrect time.
E. Weak or missing spring (73), fig. (3), thus allowing slide (11) to move in and lock latch (13).

17. Power is removed from motor as pickup lands on record.

A. Shut off slide bracket (12), fig. (3), may be bent.
B. Low tension or missing spring (73), fig. (3).

Removing Main Assemblies

Removing Turntable

To remove turntable, lift straight up with a rotary motion.

Removing Separator Arms

To remove separator arm, loosen set screws and lift off.

Removing 12 in. Separator Blade

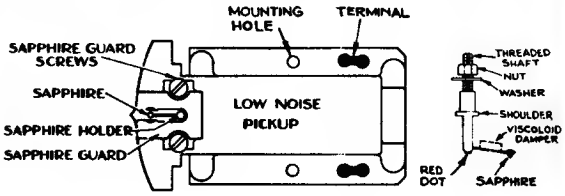
Remove Separator arm and by the use of a small screw driver remove the small screw up inside the separator sleeve (see fig. (21)). This removes the knob and 12 in. blade. The 10 in. blade is not removable.

Removing Sub-assembly

To remove the large gear sub-assembly, remove the turntable and remove the two small screws on either side of the turntable spindle. Also remove the large nut holding the gear shaft. The entire gear bracket, etc., can be removed easily.

Removing Tone Arm

To remove the tone arm from the mounting bracket, it is necessary to remove the two screws located under the pivot end of the tone arm. These screws are more accessible if the bracket and shaft are removed by loosening bolt "D" as indicated in fig. (16).



LOW NOISE PICKUP

Note: Stock #39851 has red dot on bottom of sapphire holder, 13.5 mil. dia. sapphire mounting wire, but no viscoloid damper. Stock #70332 has viscoloid damper on sapphire mounting wire.

Repalcement of Sapphire

Caution: Never bend the sapphire support wire.
The nut on the sapphire holder assembly is locked by a light cement (such as Glyptal). Extreme care should be used when loosening the nut so that the twisting motion does not break the crystal.

Remove the two screws holding the sapphire guard in place and remove guard. Remove the small nut and washer on the threaded shaft of the sapphire holder and push the shaft through the hole in the mounting until the sapphire holder assembly comes free.

Automatic Cycle of Operation

Function	Explanation
Lift and turn selector arm as required for 10- or 12-inch records. Place stack of records on arms.	1. The rotation of selector arm #1 moves selector arm #2 through the mechanical linkage of gear (35), fig. (19), segment (23), tie plate (24), segment (25) and gear (36). 2. Portion of segment (23), fig. (19), slides against set lever (19) thereby determining the point of contact of slide (18), fig. (8), with tone arm locator (16), which in turn governs the pickup landing position.
Push control lever to reject position and release.	1. Control slide (1), fig. (3), actuates manual reject slide (27) through coupling link (6), fig. (2). 2. Manual reject slide (27), fig. (3), pushes against stud above small roller on trip lever (28), fig. (4). 3. The action of trip lever (28), fig. (4), unlatches clutch engagement lever (33) allowing it to drop and engage projection on pinion gear (37), fig. (5). This engagement between lever (33) and pinion gear (37) causes the teeth of drive gear (32) to engage the teeth of pinion gear (37) starting cycle.
Drive gear (32) rotates.	1. Gear (32), fig. (6), rotates with stop lever (34), leaving notch and at the same time pickup shorting switch leaving raised portion of gear causing it to close, shorting out the pickup. 2. Roller on drive link (20), fig. (19), follows channel in drive cam. 3. Energy is transferred from drive link (20) to separator arm #1 through drive link (21), arm (22) and sleeve (47), fig. (17). 4. Separator arm #1 connected to gear (35), fig. (19), starts rotating. 5. Separator arm #2 mechanically linked through gear (35), segment (23), tie plate (24), segment (25) and gear (36) follows in rotation.
Tone arm moves out.	1. As the channel cut in rotating gear (32), fig. (9), moves, lift pin (51) raises contacting adjustment screw "A", fig. (24), on tone arm and raising tone arm. 2. Roller located on end of tone arm lever (17), fig. (8), comes in contact with portion of cam on gear (32), fig. (4), and is pushed outward and against tone arm locator lever (16), fig. (8), which is held under tension of spring (68). 3. Tone arm is locked by tone arm latch (14), fig. (12), and held from being pushed in by locator lever (16), fig. (8). 4. As drive gear continues to rotate, clutch engagement lever (33), fig. (5), is returned to normal position by sliding against edge of tone arm lever (17), fig. (8), as gear supporting it passes by.
Separator arms rotate and drop record to turntable.	1. Blades separate lower record from stack and support the stack while the record is being dropped. 2. Record drops. 3. Tone arm lever (17) is unlatched from latch (14), fig. (7), due to latch (15) making a momentary contact with raised portion of gear.
Tone arm moves in.	1. Tone arm lever (17), fig. (8), which is connected to tone arm is being moved in by locator lever (16) which is working under the tension of spring (68). During this motion tone arm lever (17) is stabilized by tone arm retard lever (26) until locator lever (16) engages slide (18) to determine 10- or 12-inch landing position. 2. Pickup is lowered to the record by lift pin (51), fig. (9), moving into channel in gear. 3. An instant before rotating gear comes to the rest position and stop lever (34), fig. (4), engages notch in gear (32), the pickup shorting switch is opened due to the blade coming in contact with raised portion of gear (32). 4. As pickup is landing and gear is returning to normal position the stud located on underside of gear (32) pushes shut-off bracket (10), fig. (13), outward. The action at this point is not transferred since shut-off dog (8), fig. (10), and shut-off trip (9) are not latched thereby allowing shut-off bracket (10) to slip by over the curved portion of the shut-off dog (8). If shut-off

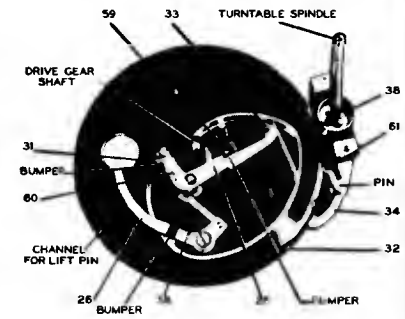


FIG. 4

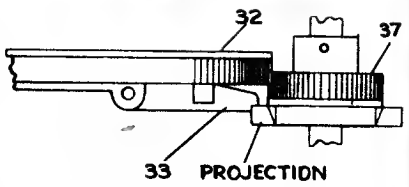


FIG. 5

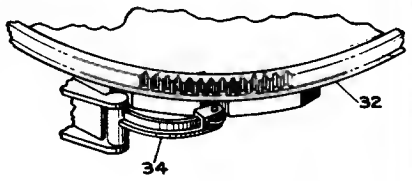


FIG. 6

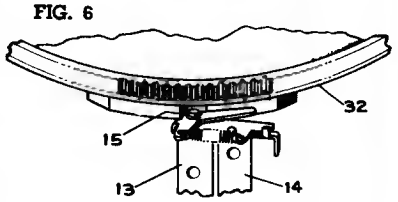


FIG. 7

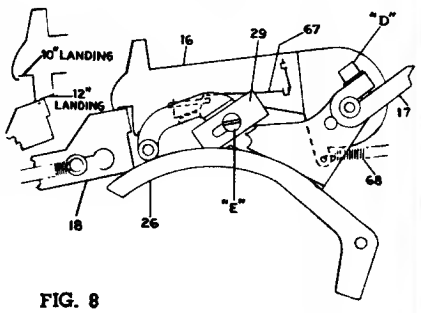


FIG. 8

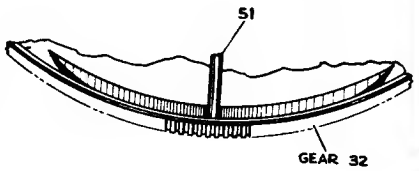


FIG. 9

	bracket (10) should contact straight edge of shut-off dog (8) as it does when latched to shut-off trip (9), shut-off lever (7) would pull slide (1), fig. (3), and remove power from drive motor. 5. The instant pickup lands, feed-in spring (67), fig. (8), pushes pickup into starting groove.
Record plays.	1. Pickup moves toward center of record and into trip groove. 2. In the case of an eccentric groove the tone arm lever (17), fig. (3), moves in and the trip plate (30), fig. (4), engages trip dog (31) moving trip lever (28) and starting cycle. 3. In the case of a record with a closed circle trip the trip shoe (29), fig. (23), pushes against roller on trip lever (28), fig. (4), thus starting cycle.
Mechanism plays entire stack automatically.	Separating and dropping records, tripping, etc.
Last record has dropped and record plays.	1. Up to this time shut-off cam (41), fig. (21), located on bottom end of selector arm #2 has been held up by weight of records on selector arm applying pressure on the small raised portion of shut-off selector bracket (50), fig. (20), which is protruding through selector arm. 2. Pickup moves into trip, and drive gear (32), fig. (4), starts rotating. 3. Since cam (41), fig. (11), has dropped and is rotating with selector arm #2 its surface contacts stud on shut-off slide bracket (12). This transmits energy to shut-off slide (11), fig. (14), which permits shut-off dog (8) and shut-off trip (9) to latch. 4. Shut-off slide (11), fig. (12), locks tone arm latch (13) during the time, portion of the rotating drive gear is contacting tone arm latch (15), fig. (7), and tending to unlatch it. The tone arm remaining latched, prevents it from being pushed in by locator lever (16), fig. (8). 5. Tone arm is lowered to rest as lift pin (51), fig. (9), goes into channel in gear (32). 6. As gear (32) comes to rest stud, fig. (13), located on underside of gear (32) contacts and pushes shut-off bracket (10) outward. Since shut-off dog (8), fig. (14), and shut-off trip (9) are latched, shut-off bracket (10) contacts flat surface of shut-off dog (8) pushing shut-off lever (7) outward. 7. Shut-off lever (7) in its outward movement contacts lip on slide (1), fig. (3), pulling control knob to "off" position, cutting off the power to the drive motor. During this action, shut-off dog (8), fig. (14), and shut-off trip (9) are unlatched.

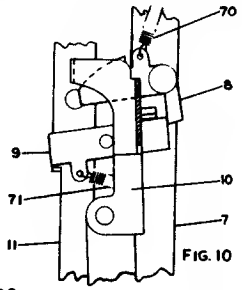


FIG. 10

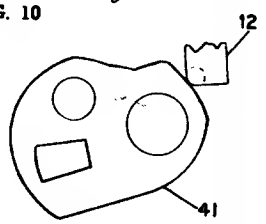


FIG. 11

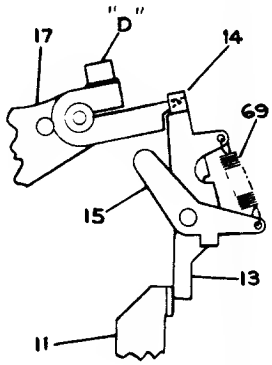


FIG. 12

Manual Cycle

Function	Explanation
Push control knob to manual.	1. Slide (1), fig. (3), supporting control knob moves and positions "manual" lock-out slides (4) and (5), fig. 15), so as to have slide (4) engage and hold tone arm locator (16) and prevent it from pushing tone arm lever (17), fig. (8), in for pickup landing. 2. Slide (1), fig. (3), also energizing manual reject slide (27), fig. (16), so as to have the lip on slide (27) push against tone arm latch (14), moving the point of contact on tone arm lever (17) to the very edge. This permits tone arm lever (17) to slip by when tone arm is moved manually. 3. The movement of manual reject slide (27) has so positioned the slide so as to lock the clutch engagement lever (33) and prevent it from engaging offset in pinion gear (37), fig. (5), when trip lever (28), fig. (16), is moved.

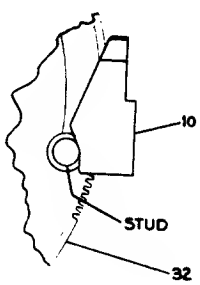


FIG. 13

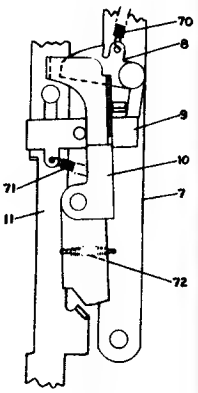


FIG. 14

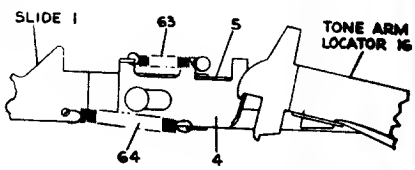


FIG. 15

Allen wrenches required for adjustments.	3/32 in. between flats, for Allen wrenches required for adjustments on set screws #10 and 12, stock #22111. 5/32 in. between flats, for 5/16 in. set screws, stock #22113. 3/16 in. between flats, for ⅜ in. set screws, stock #26581.

Continued, RCA Victor Automatic Record Changer Models 960001-1, -2, -3.

4. All portions of the cycling mechanism are locked during manual operation and remain stationary with the pickup shorting switch in the off position at all times, excepting Models –2 and –3 which have an additional switch, shorting out pickup when tone arm is in the rest position.

Note: When operating manually the tone arm should always be returned to rest position before moving control knob to the off position. If this procedure is not followed the trip lever (28) may not hold the clutch engagement lever (33) allowing it to drop and start cycle.

Check on Timing Adjustments

A quick check for correct timing of mechanism can be made by:

1. Have mechanism out of cycle.
2. Lift and turn separator arm #1 to 10 in. position and place a 10 in. record on arms.
3. The 10 in. separator blade should have a definite relation to record as illustrated in fig. (18) when segment (23) is against tie plate (24) as illustrated in fig. (19). If so, selector arm #1 is correctly timed.
4. If the 10 in. blades of both arms have the same distance from the record, remove record and lift and turn selector arm #1 counterclockwise as far as it will go (viewed from top).
5. Segment (25) should be against tie plate (24) when the teeth of segment (25) and gear (36) are meshed as shown in fig. (22). If this exists, timing of selector arm #2 is correct.

Timing Adjustments for Record Separators

1. Make certain mechanism is out of cycle and all parts in their proper place by comparing the mechanism with sketches and photographs.
2. Remove "C" washer on bearing of segment (23), fig. (19), and disengage the teeth of segment (23) and selector arm gear (35).

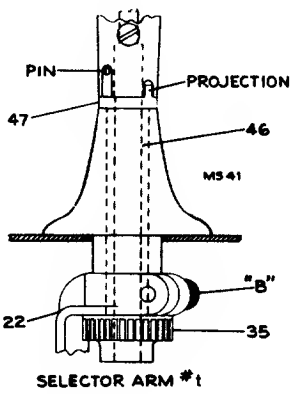


FIG. 17

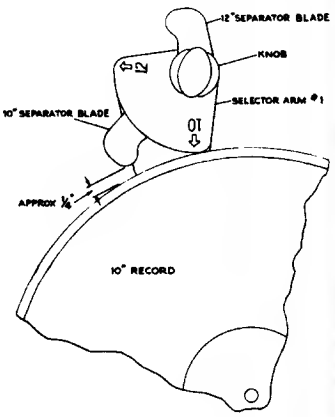


FIG. 18

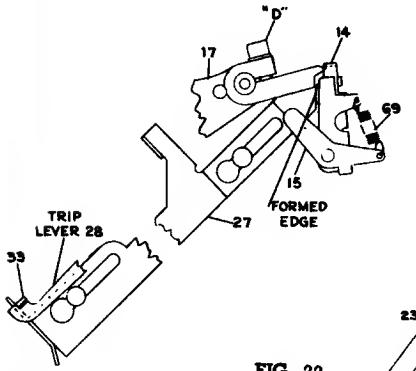


FIG. 18

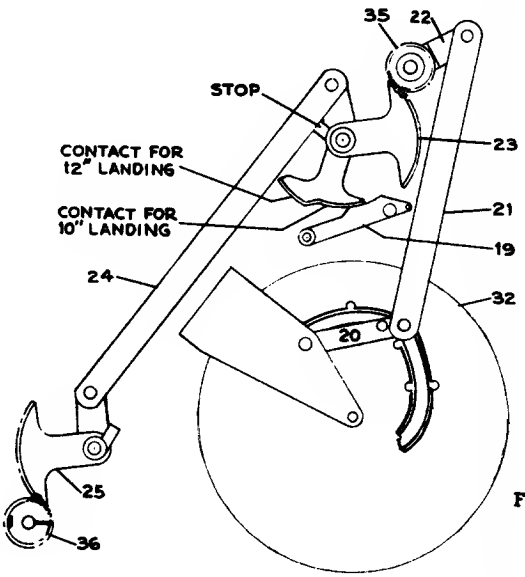


FIG. 19

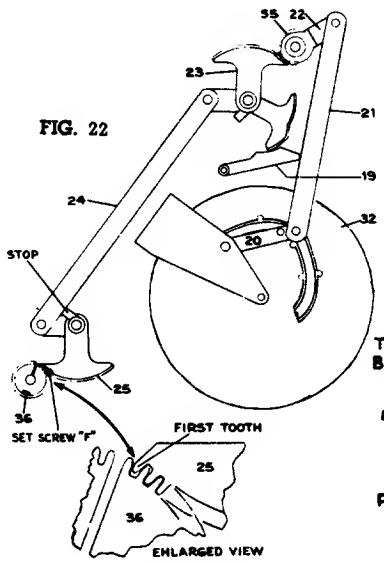


FIG. 22

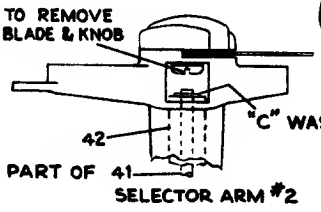


FIG. 21

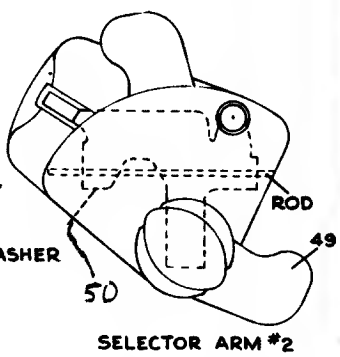


FIG. 20

Continued, RCA Victor Automatic Record Changer Models 960001-1, -2, -3.

3. Selector arm #1, fig. (17), should be in place with the pin of selector shaft engaged in the large slot of selector arm and the small projection of selector arm sleeve (47) engaged in the small slot of the selector arm. Arm (22), fig. (19), should also be in place and connected to the drive link (20) and drive link connecting rod (21).
4. Loosen set screw "B", fig. (17), and wedge some object such as a screw driver in the clamp of arm (22) so as to allow free movement of selector arm sleeve (47).
5. Place 10-inch record on selector arms and turn selector arm #1, fig. (18), until the 10-inch blade is approximately ¼ inch from the edge of the record.
6. Tighten set screw "B", fig. (17).
7. Rotate the disengaged segment (23), fig. (19), clockwise until tie plate (24) comes against stop on segment (23). Hold in this position while engaging teeth of segment (23) and teeth of gear (35).
8. Replace "C" washer on segment (23).
9. Remove "C" washer on rod (41), fig. (21) (under selector arm #2) and remove cam and rod (41).
10. Remove "C" washer on bearing of segment (25), fig. (22), and disengage teeth of segment (25) and gear (36).
11. Lift and rotate selector arm #1, fig. (22), counter-clockwise until stop on segment (25) is against tie plate (24).
12. Engage teeth of segment (25) and gear (36) so as to have the first tooth of segment gear (25) engage the gear (36) between the first and second tooth next to slot as shown in sketch, fig. (22). Replace "C" washer or bearing of segment (25).
13. Loosen set screw "F" and rotate selector arm #2 until ten-inch separator blade is the same distance from the edge of the record as selector arm #1, fig. (18).
14. Tighten set screw "F", fig. (22).

    Note: Do not try to position separator arm #2 by loosening small set screws on arm proper. The factory has countersunk the shaft, seating the set screws.

15. Replace cam (41), fig. (21), with the end going up through hole in plate (50), fig. (20). Insert "C" washer, fig. (21), to hold in place.

Tripping Adjustment

No eccentric tripping adjustment is necessary. It is automatically adjusted when landing adjustment is made.

For closed circle trip, loosen set screw "E", fig. (23), and set trip shoe (29) so as to contact roller on trip lever (28) when the sapphire is approximately 1⅝" from side of turntable spindle.

Tone Arm Height Adjustment

1. The height of the tone arm while in the rest position is that which will allow the bottom edge of the tone arm and cartridge to clear the turntable surface by 1/16".

   The height is adjusted by bending the formed edge on lower half of tone arm bracket fig. (24).
2. Tone arm height adjustment screw "A", fig. (24), should be so adjusted to allow a clearance of 1/16 inch between tone arm and record on selector arm while mechanism is in cycle.

Pickup Pressure Adjustment

By the use of a pocket postal scale hooked on the sapphire end of the tone arm, loosen set screw "G", fig. (24), and move slide until tension of spring (56) allows 1 to 1¼ oz. pickup force for model 960001-2 and 1½ to 1¾ oz. for models 960001-1 and 960001-3.

Landing Adjustment

1. With the power removed from the mechanism, place a 10-inch record on the turntable and turn the selector cam to 10-inch position.
2. Push selector knob to reject and release.
3. Push down on the small section of lever (50), fig. (20), which protrudes through selector arm #2 and rotate turntable by hand until the pickup is about to land.
4. Loosen set screw "D", fig. (25).
5. Hold tone arm lever (17) against tone arm locator (16) with just enough force so as not to have tone arm locator (16) move away from slide (18).
6. While holding the position as stated in "5," move pickup to the landing point on the record. Leave very little vertical play in tone arm bearing but just enough to have free motion of tone arm. Tighten set screw "D".
7. Apply power to mechanism and test by playing through a stack of records.

Note: Twelve-inch record landing will automatically be adjusted while adjusting 10-inch landing.

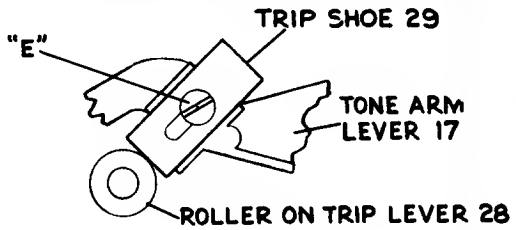


FIG. 23

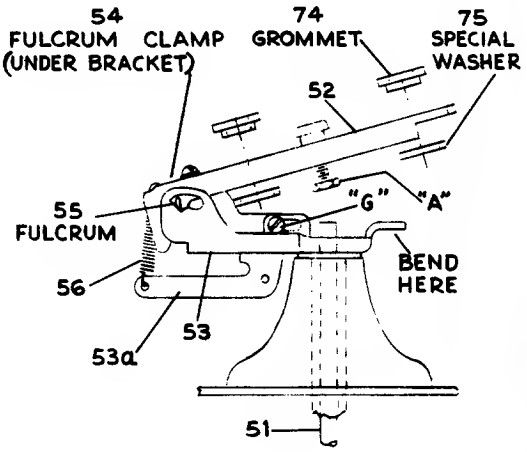


FIG. 24

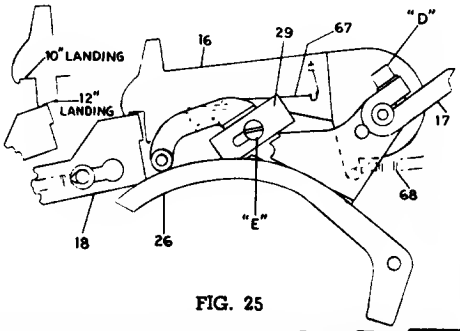
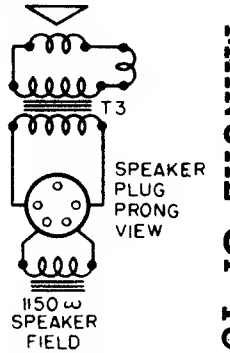
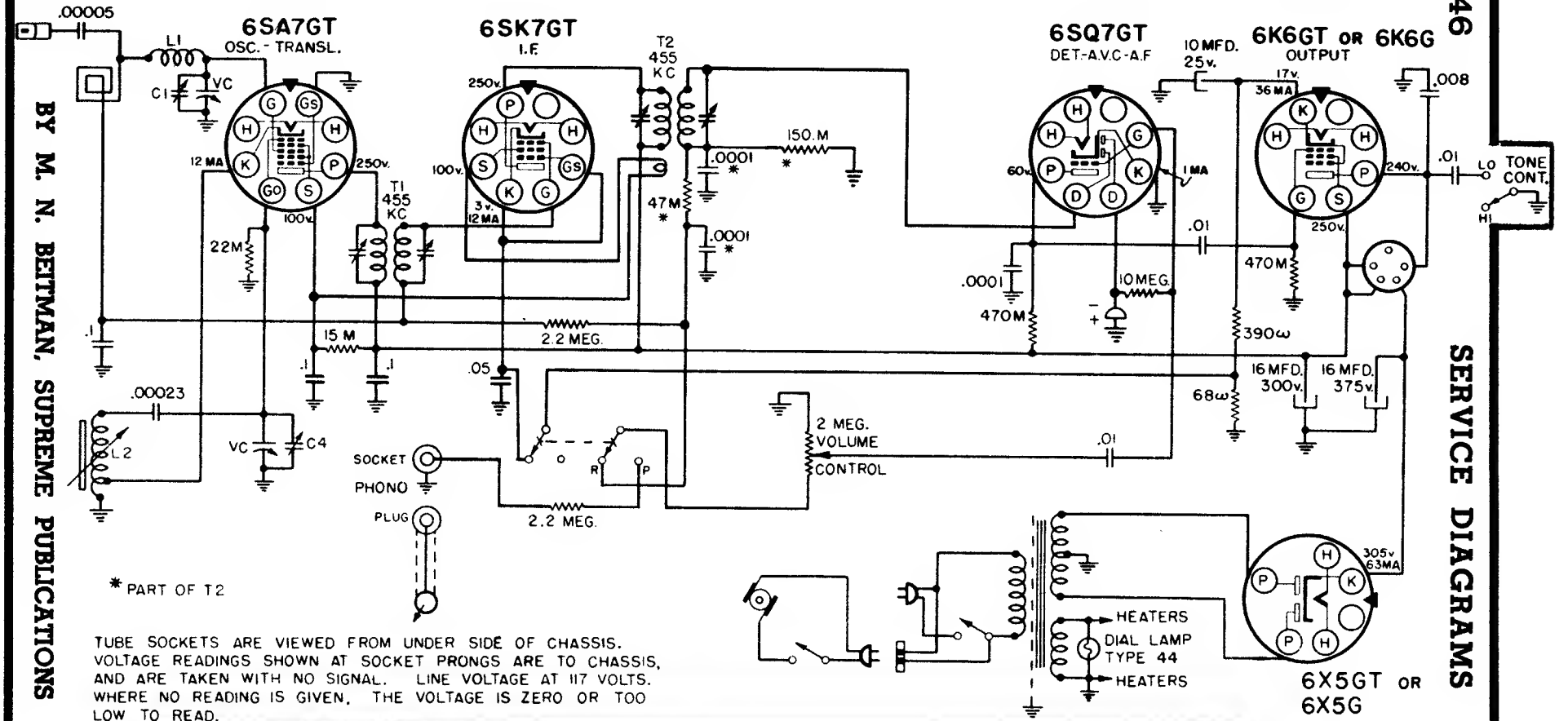


FIG. 25

Sears, Roebuck & Co. Chassis 101.660-1A

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 kc	.1 mfd	6SA7 Grid	T2, T1	IF
Fully open	1620 kc	.00005 mfd.	Ant. Clip	C4	Oscillator
1410 kc	1410 kc	.00005 mfd.	Ant. Clip	C1	Translator
600 kc(rock)	600 kc	.00005 mfd.	Ant. Clip	L2	Padder
Fully open	1620 kc	.00005 mfd.	Ant. Clip	C4	Oscillator

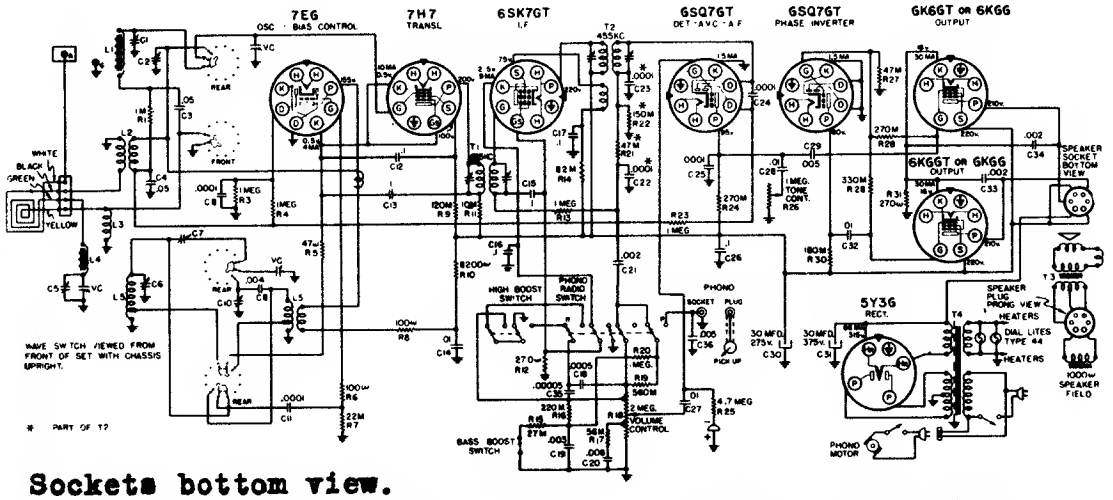




* PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

SEARS, ROEBUCK AND CO. Chassis 101.662-2B, and -2D



Sockets bottom view.
Voltage readings socket prongs to chassis, wave switch in "Broadcast," no signal, line 117 volts A.C.

PARTS LIST FOR CHASSIS

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R17998	Board - Antenna
	R45512	Board - Terminal - Loop
	R57285	Buttons - Push (High Boost, Bass Boost, Phono-Tel.-Freq. Mod.) (Cat. #6104A)
	R57205	Buttons - Push (High Boost, Bass Boost, Phono-Tel.-Freq. Mod.) (Cat. #6105A)
	R57284	Buttons - Push Stations (Cat. #6104A)
	R57204	Buttons - Push Stations (Cat. #6105A)
C30,C31	R45829	Capacitor - Elec. 30 mfd. 275 V; 30 mfd. 375 V.
C1,C2,C5 C6,C7,C10	R47199	Capacitor - Trimmer - 6 Gang
C15,C16		Capacitor - .1 mfd. 200 V.
C12,C13 C17,C26		Capacitor - .1 mfd. 400 V.
C14,C28		Capacitor - .01 mfd. 400 V.
C27,C32		Capacitor - .01 mfd. 600 V.
C3,C4		Capacitor - .05 mfd. 200 V.
C21,C33,C34		Capacitor - .002 mfd. 600 V.
C19		Capacitor - .003 mfd. 400 V.
C29		Capacitor - .005 mfd. 400 V.
C20		Capacitor - .008 mfd. 400 V.
C9		Capacitor - .004 mfd. Mica
C8,C11 C24,C25		Capacitor - .0001 mfd. Mica
C18		Capacitor - .0005 mfd. Mica
C35		Capacitor - .00005 mfd. Mica
	R17915	Cell - Bias
	R57203	Clip - Pilot Light
L4	R47193	Coil - Ant. Loop Loading
L5	R47192	Coil - BC. & S.W. Oscillator
L1	R47194	Coil - BC. Trnsistor
L3	R57187	Coil - Preselector Coupling
L2	R47195	Coil - S.W. Antenna
R26	R47235	Control - On-Off and Tone - 1 meg.
R18	R47240	Control - Volume - 2 meg.
	R57273	Cord - Line (Phono)
	R18395	Cord - Line (Power)
	R42673	Cover - Push Button Tabs
	R57206	Dial - Station
	R57271	Escutcheon - Dial (Cat. #6104A)
	R57231	Escutcheon - Dial (Cat. #6105A)
	R49940	Knob - On-Off and Tone
	R49939	Knob - Tuning
	R49941	Knob - Volume
	R49943	Knob - Wave Switch
	R14914	Lamp - Dial, Type #44
	R59047	Leaflet - Instruction

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R59053	Log - BC. & S.W. Stations
	R57216	Loop - Complete
	R18112	Mounting - Bias Cell
	R57192	Needle - Phono
	R16039	Pin - Loop Lead
	R57207	Pointer - Dial
	R18477	Pulley - Wood, large
	R43416	Pulley - Wood, small
R3,R4,R13 R20,R23		Resistor - 1 megohm, 1/3 Watt
R25		Resistor - 4.7 megohm, 1/3 Watt
R1		Resistor - 1M ohms, 1/3 Watt
R11		Resistor - 10M ohms, 1/3 Watt
R7		Resistor - 22M ohms, 1/3 Watt
R15		Resistor - 27M ohms, 1/3 Watt
R21, R27		Resistor - 47M ohms, 1/3 Watt
R17		Resistor - 56M ohms, 1/3 Watt
R14		Resistor - 82M ohms, 1/3 Watt
R9		Resistor - 120M ohms, 1/3 Watt
R30		Resistor - 180M ohms, 1/3 Watt
R16,R24		Resistor - 220M ohms, 1/3 Watt
R28		Resistor - 270M ohms, 1/3 Watt
R29		Resistor - 330M ohms, 1/3 Watt
R19		Resistor - 560M ohms, 1/3 Watt
R5		Resistor - 47 ohms, 1/3 Watt
R6,R8		Resistor - 100 ohms, 1/3 Watt
R12		Resistor - 270 ohms, 1/3 Watt
R31		Resistor - 270 ohms, 2 Watt
R10		Resistor - 8200 ohms, 1 Watt
	R47262	Shaft - Drive
	R44897	Socket - Phono-Tel.-Freq. Mod.
	R16958	Socket - Rectifier
	R17983	Socket - Speaker
	R17987	Socket - Tube
		WHEN ORDERING SPEAKER PARTS, ALWAYS GIVE THE PART NUMBER APPEARING ON THE SPEAKER.
	R57221	Speaker - 10" Dynamic
	R45836	Cone and Voice Coil
	R45838	Field Coil
T3	R45837	Output Transformer
	R18251	Spring - Drive Tension
	R45844	Switch - Tone and Phono-Tel.-Freq. Mod.
	R47191	Switch - Wave
	R45995	Tab - Base Boost
	R45994	Tab - High Boost
	R45996	Tab - Phono-Tel.-Freq. Mod.
	R42879	Tabs - Call Letter
T1	R45305	Transformer - #1 I.F.
T2	R45306	Transformer - #2 I.F.
T4	R45953	Transformer - Power - 60 cycle
VC	R47259	Tuner - Push Button with Variable Capacitor

Alignment information on page 118.

Alignment for Sears, Roebuck & Co. Chassis 101.662-2B, and -2D

PRELIMINARY:

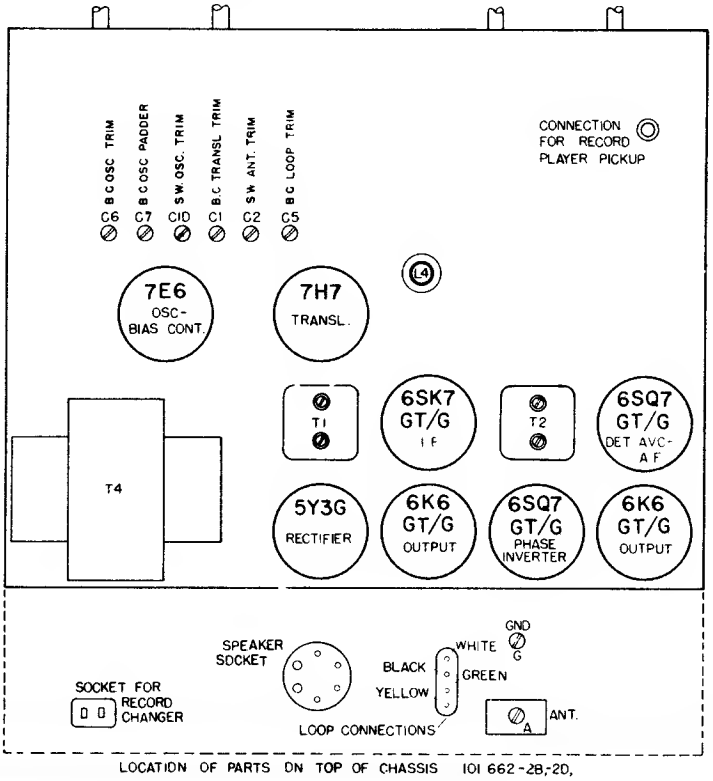
Output Meter Connection.....Across loud speaker voice coil
Generator ground lead connection.....Receiver chassis
Dummy Antenna value to be in series with generator output.....See chart below
Connection of generator output lead.....See chart below
Generator Modulation.....30%, 400 cycles
Position of Volume Control.....Fully on
Position of Tone Control.....Treble
Position of pointer with tuner fully closed.....Last line below 540 calibration mark

WAVE BAND SWITCH POSITION	POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
BC	Closed	455 KC	.1 mfd.	7H7 Transl. grid	T2, T1	IF
BC	Open	1750 KC	.0002 mfd.	Ant. Terminal	C6	Oscillator
BC	1410	1410 KC	.0002 mfd.	Ant. Terminal	C5, C1	Ant. Transl.
BC	600 (rock)	600 KC	.0002 mfd.	Ant. Terminal	C7	Padder
SW	Open	18.3 MC	400 ohms	Ant. Terminal	C10	SW Oscillator
SW	15 (rock)	15 MC	400 ohms	Ant. Terminal	C2	Transl.

The Antenna Alignment Procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

During alignment of the Band "BC" Padder and the Band "SW" Translator Trimmers, the Tuner should be rocked through resonance to assure alignment.



LOCATION OF PARTS ON TOP OF CHASSIS 101 662-2B,-2D,

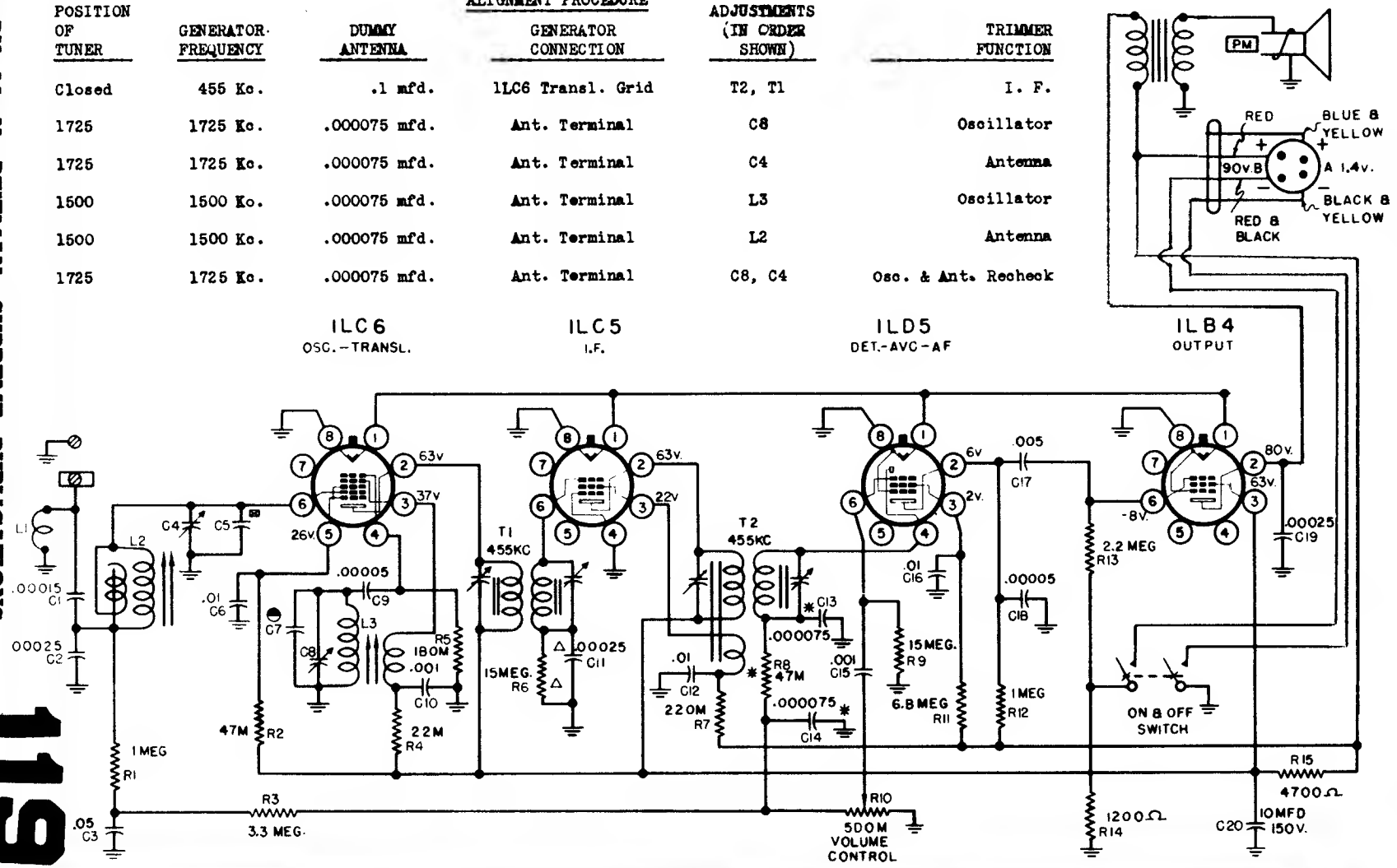
Circuit diagram on page 117.

△ PART OF T1 ⊠ PART OF C 4
✱ PART OF T2 ◓ PART OF C 8

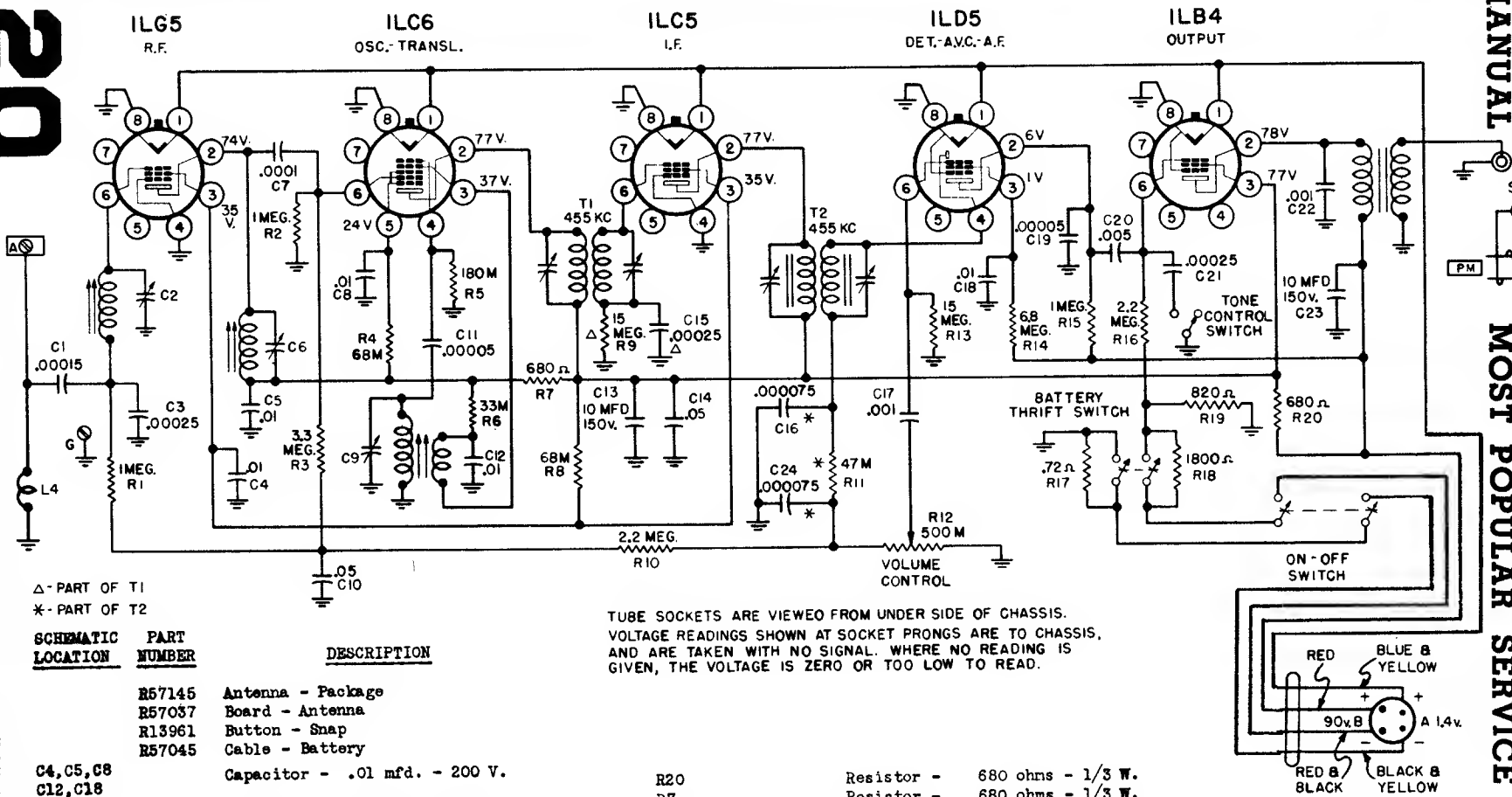
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

Sears, Roebuck & Co.
Chassis 101.800

POSITION OF TUNER	ALIGNMENT PROCEDURE: GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 Kc.	.1 mfd.	1LC6 Transl. Grid	T2, T1	I. F.
1725	1725 Kc.	.000075 mfd.	Ant. Terminal	C8	Oscillator
1725	1725 Kc.	.000075 mfd.	Ant. Terminal	C4	Antenna
1500	1500 Kc.	.000075 mfd.	Ant. Terminal	L3	Oscillator
1500	1500 Kc.	.000075 mfd.	Ant. Terminal	L2	Antenna
1725	1725 Kc.	.000075 mfd.	Ant. Terminal	C8, C4	Osc. & Ant. Recheck



Sears, Roebuck & Co. Chassis 101.801



Δ - PART OF T1
* - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R57145	Antenna - Package
	R57037	Board - Antenna
	R13961	Button - Snap
	R57045	Cable - Battery
C4,C5,C8 C12,C18		Capacitor - .01 mfd. - 200 V.
C10,C14		Capacitor - .05 mfd. - 200 V.
C22,C17		Capacitor - .001 mfd. - 600 V.
C20		Capacitor - .005 mfd. - 400 V.
C19,C11		Capacitor - Mica - 50 mmfd.
C7		Capacitor - Mica - 100 mmfd.
C1		Capacitor - Mica - 150 mmfd.
C21		Capacitor - Mica - 250 mmfd.
C3		Capacitor - Silver Mica - 250 mmfd.
C13,C23	R57128	Capacitor - Dry Elect. - 10X10 mfd.
C2,C6,C9	R57081	Capacitor - Trimmer - 3 Gang
	R57010	Clip - Drive Cord Anchor
L4	R45255	Coil - Choke - Antenna
R12	R57071	Control - On-Off, Volume & Tone
R20		Resistor - 680 ohms - 1/3 W.
R7		Resistor - 680 ohms - 1/3 W.
R19		Resistor - 820 ohms - 1/3 W.
R18		Resistor - 1800 ohms - 1/3 W.
R6		Resistor - 33000 ohms - 1/3 W.
R4		Resistor - 68000 ohms - 1/3 W.
R8		Resistor - 68000 ohms - 1/3 W.
R5		Resistor - 180000 ohms - 1/3 W.
R1,R2,R15		Resistor - 1 megohm - 1/3 W.
R16,R10		Resistor - 2.2 megohm - 1/3 W.
R3		Resistor - 3.3 megohm - 1/3 W.
R14		Resistor - 6.8 megohm - 1/3 W.
R13		Resistor - 15 megohm - 1/3 W.
R17	R45254	Resistor - Flexohm - 0.72 ohm -

Sears, Roebuck & Co. Chassis 132.818

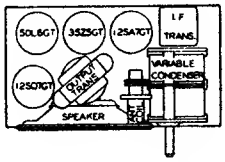
Schematic Location	*Part No.*	*Description*
R1		Resistor, 4.7 Megohms, ¼ watt
R2		Resistor, 1 Megohm, ¼ watt
R3		Resistor, 150 ohms, ¼ watt
R4		Resistor, 22,000 ohms, ¼ watt
R5		Resistor, 330,000 ohms, ¼ watt
R6		Resistor, 15,000 ohms, ¼ watt
R7	N18587	Resistor, 2 Megohms Vol. Control & Switch
R8		Resistor, 470,000 ohms, ¼ watt
R9	N19177	Resistor, 47 ohms, 1 watt
R10		Resistor, 2,200 ohms, 1 watt
R11		Resistor, 15 ohms, ¼ watt
C1, C2	N17115	Condenser, Variable 2-gang
C3		Condenser, .05 mfd., 200 volt
C4		Condenser, .05 mfd., 400 volt
C6		Condenser, .00005 mfd., 500 volt
C7		Condenser, .0001 mfd., 500 volt
C8		Condenser, .002 mfd., 500 volt
C9		Condenser, .01 mfd., 400 volt
C10		Condenser, 40 mfd., 150 volt
C11	N19176	Condenser, 20 mfd., 150 volt
C12		Condenser, 20 mfd., 25 volt
T1	N18255	Coil, antenna
T2	N18256	Coil, oscillator
T3	N19649	Transformer, i-f
Spk.	N17209	Speaker less output transformer
T4	N18258	Transformer output
	N19122	Dial scale emblem
	N18577	Cabinet, ivory

Tuning range 540-1600 Kc. Intermediate frequency, 455 Kc. Measurements made at 200 milliwatts output—approximately .8 volt on a rectifier type voltmeter connected across the voice coil. Dummy load for i-f .05 mfd. condenser in series with generator lead. For r-f 50 mmfd. condenser in series with generator lead. Connect generator ground to receiver floating ground.

Balance at 1400 Kc. by rocking variable condenser while adjusting oscillator trimmer for maximum output. Check sensitivity at 600 Kc. If low, adjust antenna section plates for maximum output at 600 Kc.

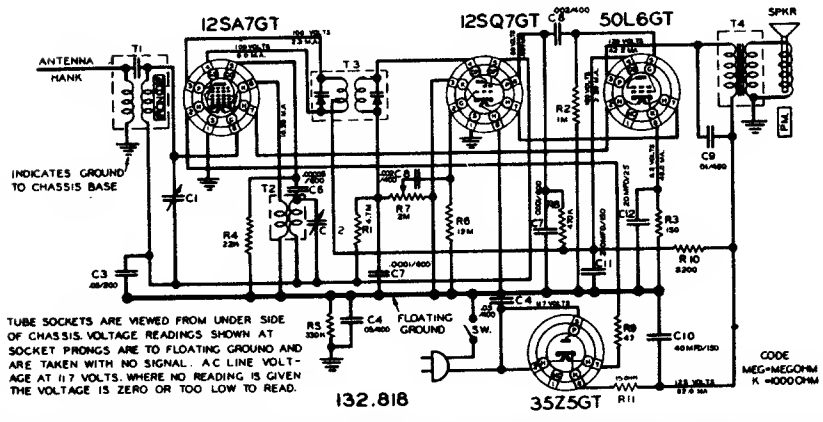
Approximate inputs for 200 MW output: I-f, 3000 uv. R-f at 1400 Kc., 360 uv; at 1000 Kc., 360 uv; at 600 Kc., 500 uv.

TUBE LOCATION



CAUTION: Remove the electric or power cord from the wall or floor outlet before replacing tubes, removing, adjusting or cleaning the chassis, or while connecting an aerial.

SCHEMATIC DIAGRAM FOR SILVERTONE CHASSIS NUMBER 132.818



SILVERTONE POWR SHIFTR

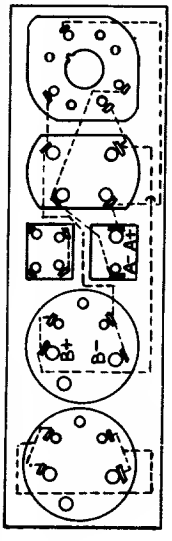
Sears, Roebuck & Co. Chassis 139.150

IMPORTANT - READ CAREFULLY

The "A" supply of this power unit is supplied through a dry disc rectifier. If the radio ceasee to operate or drops off in performance, it may be due to a chemical change in this rectifier. This may cauee the "B" voltage to drop low enough to affect the performance of the receiver.

To reactivate the rectifier it is only necessary to short (connect together) the "A" plua end "A" minus of plug or terminals of socket for a period of 4 minutea. The high temperature developed in the rectifier during this period hae the tendency to reetore the disce to their normal rectifying capacity. The unit will not be harmed by this process.

This deactivated conditon is more likely to occur in the rectifier when the power unit has been out of service for some length of time (4 months or more).

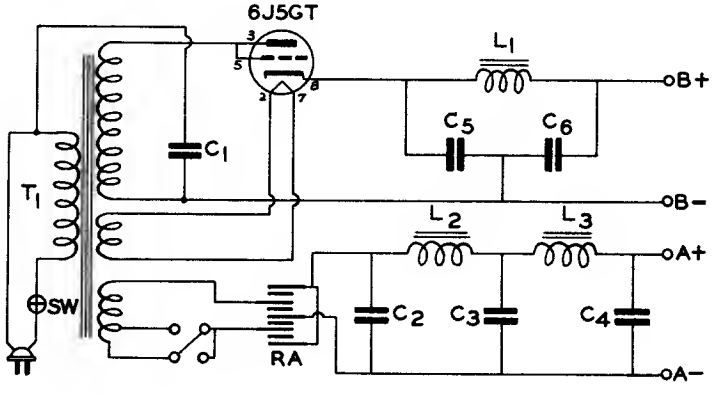


WIRING DIAGRAM OF SOCKET ASSEMBLY (Back)

PARTS LIST

PART NO.	SCHEMATIC LOCATION	DESCRIPTION
J 1059	T1	POWER TRANSFORMER
J 1060	C1	LINE COND. .01 MFD. 400V
J 2933	RA	RECTIFIER
J 1061	L1	"B" CHOKE
J 1435	L2 L3	"A" CHOKE
J 2036	C2 C3 C4	"A" FILTER CONDENSER 1500 MFD. - 3V
J 2037	C5 C6	"B" FILTER CONDENSER DUAL 8 MFD. - 150V
J 5538	SW	CORD, SWITCH & PLUG
J 1841		COMBINATION PANEL SOCKET
J 1062		TUBE SOCKET
J 5442		TAP CHANGE PLUG

SEARS, ROEBUCK AND CO.



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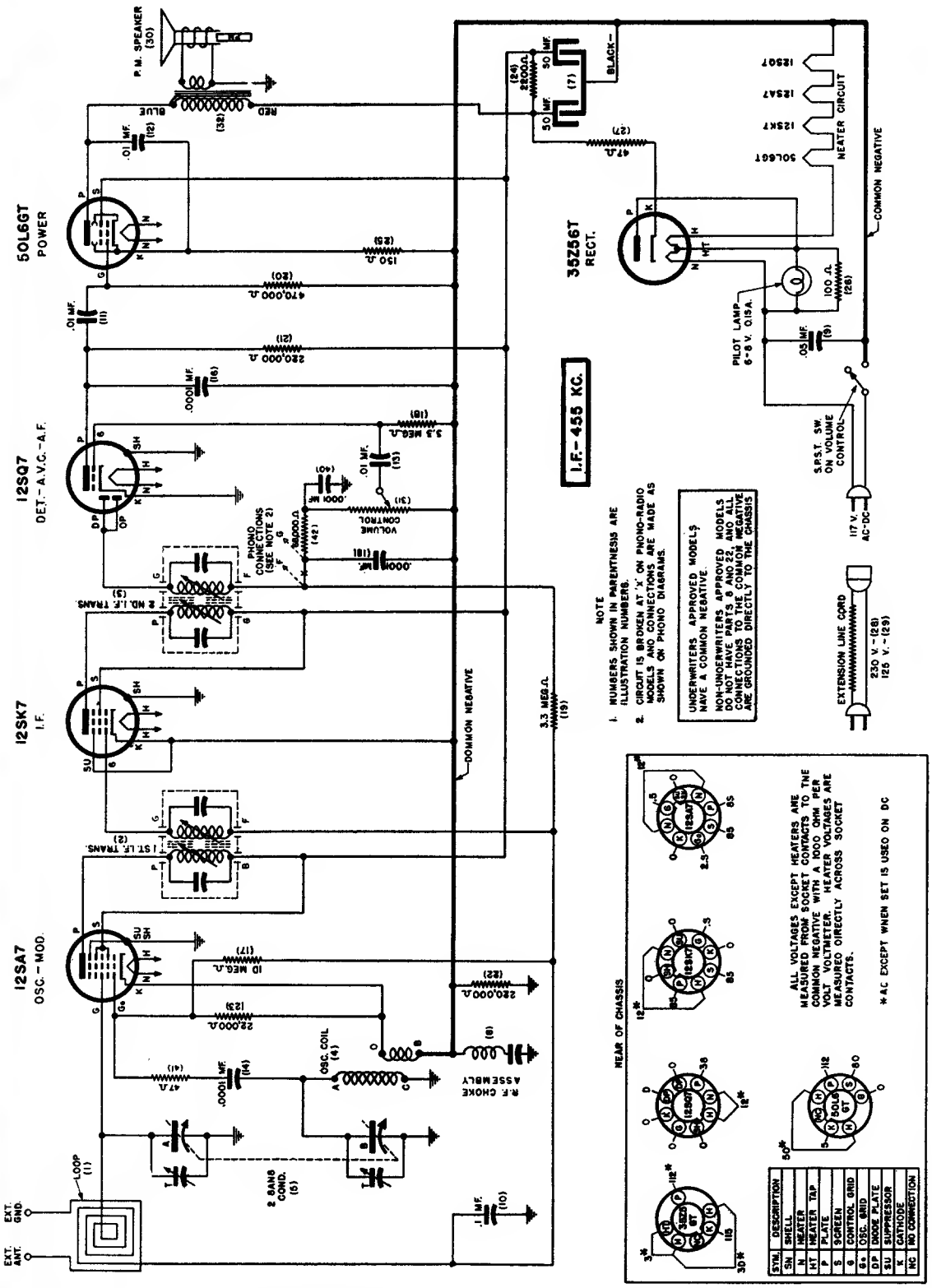

More service information and alignment on page 124.

Sentinel Radio Models 284W, 284I, 284NI, 284NA,
1U-284W, 1U-284I, 1U-284NI, 1U-284NA

See page 123 for circuit diagram and voltage chart.

Sentinel Radio 124

MODELS 284W, 284I, 284NI, 284NA, 1U-284W, 1U-284I, 1U-284NI, 1U-284NA,

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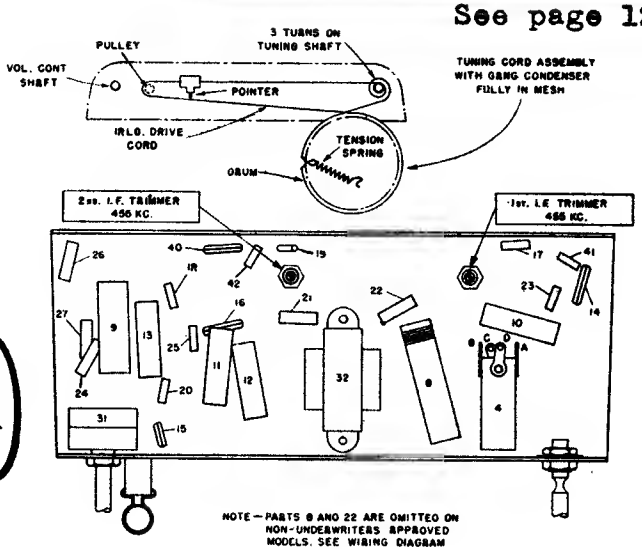
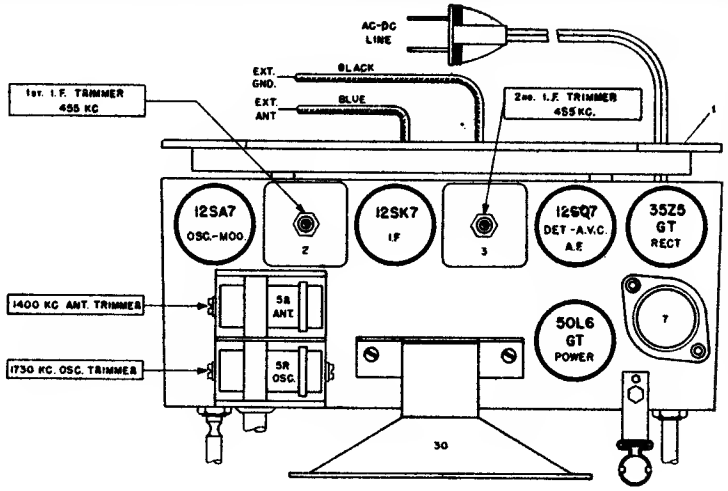




For alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third.

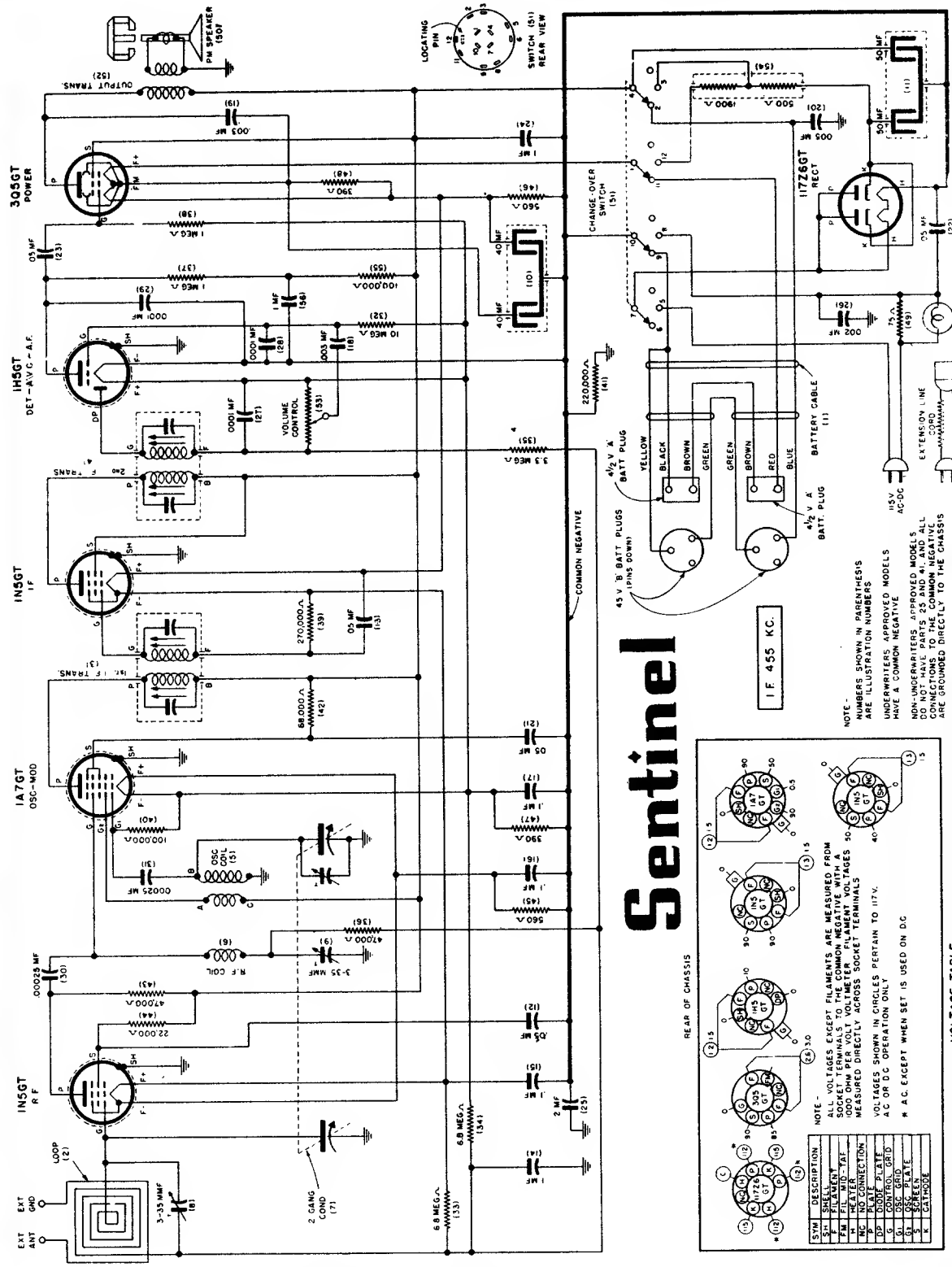
Before starting alignment:

(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
1	Any point where no interfering signal is received.	455 K. C.	.02 MFD. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through a .02 Mfd. blocking condenser.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
2	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
3	Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.



MODEL 285P and IU-285P

Sentinel

MODEL 285P and IU-285P

See page 125 for circuit diagram.

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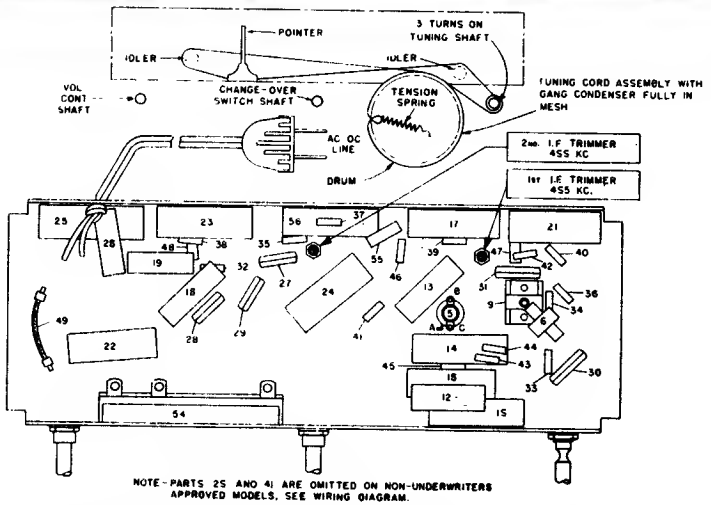
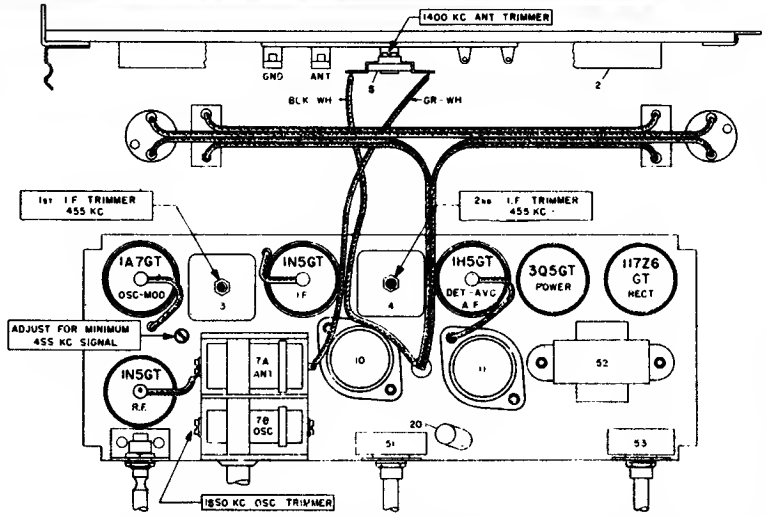




Before starting alignment:

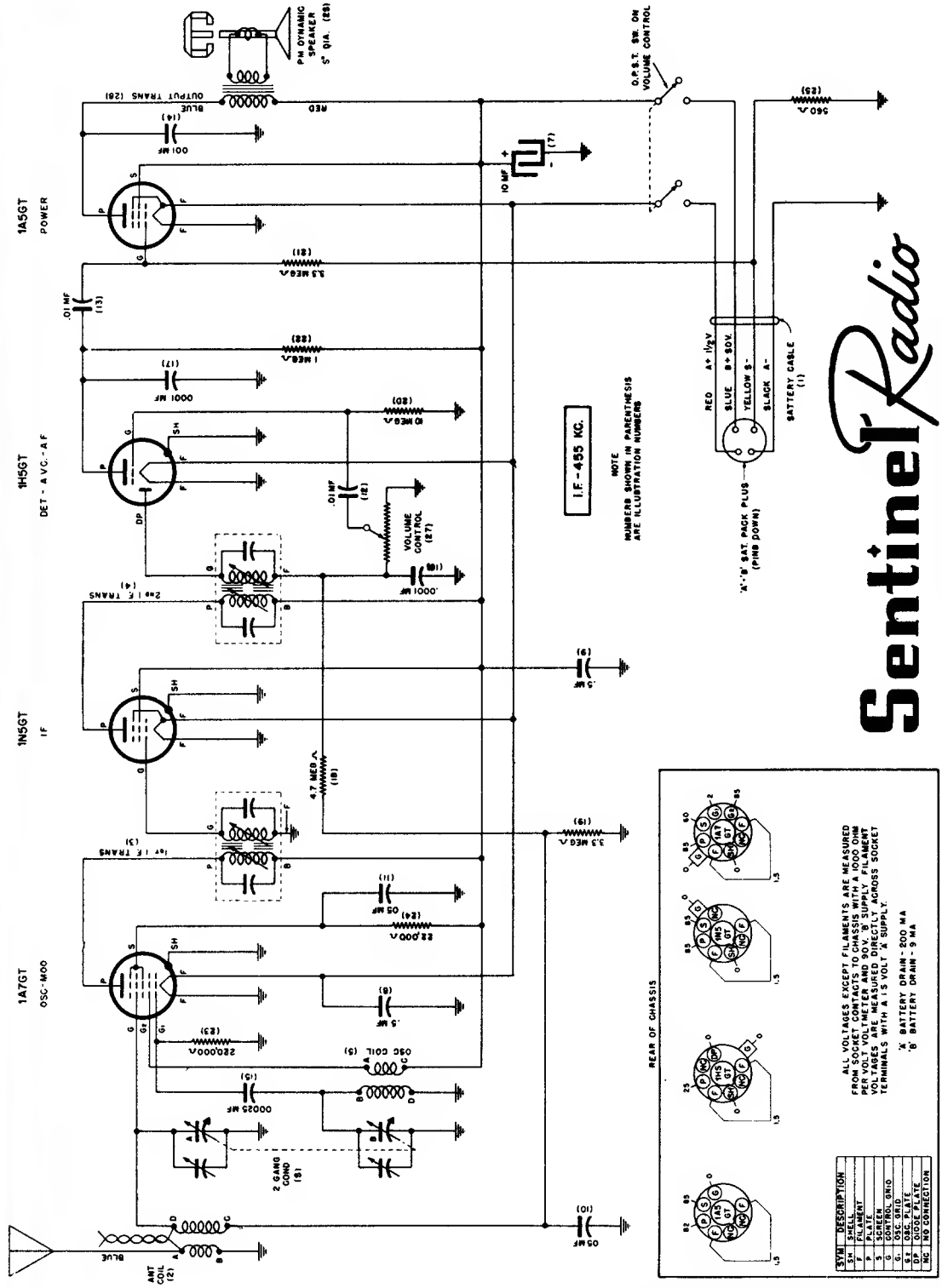
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) WHEN ADJUSTING 1650 KC OSCILLATOR TRIMMER AND 455 KC TRIMMER remove chassis from cabinet and disconnect the white-green and white-black loop connection wires from the 1400 KC loop antenna trimmer. Attach a 1 megohm resistor across these wires and feed output of test oscillator across the 1 megohm resistor.

(d) THE 1400 KC LOOP ANTENNA TRIMMER is accessible through hole in cabinet back. It should be adjusted only after all other adjustments have been made and with the set mounted in the cabinet and the back IN CLOSED position. When aligning the 1400 KC trimmer connect test oscillator output to the "ANT" and "GND" clips that are attached to the inside of the cabinet back.

Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to	
1	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	High side to grid of 1A7GT tube, Low side to chassis (if non-Underwriter Approved) or Common Negative (if Underwriter Approved).	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
2	Rotate gang condenser to maximum capacity	Exactly 455 K. C.	See paragraph (C) above	See paragraph (C) above	Adjust R. F. coil trimmer for minimum 455 K. C. signal.
3	Rotate gang condenser to minimum capacity	Exactly 1650 K. C.			Adjust 1650 K. C. oscillator trimmer for maximum output.
4	Approximately 1400 K. C.	Approx. 1400 K. C.	See paragraph (D) above	See paragraph (D) above	Adjust 1400 K. C. antenna trimmer for maximum output.



See page 128 for additional service material and alignment data.

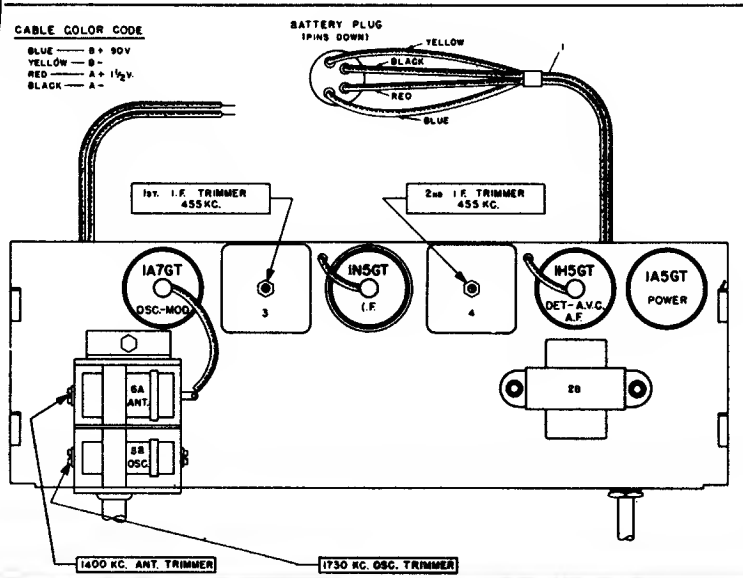
Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, etc.

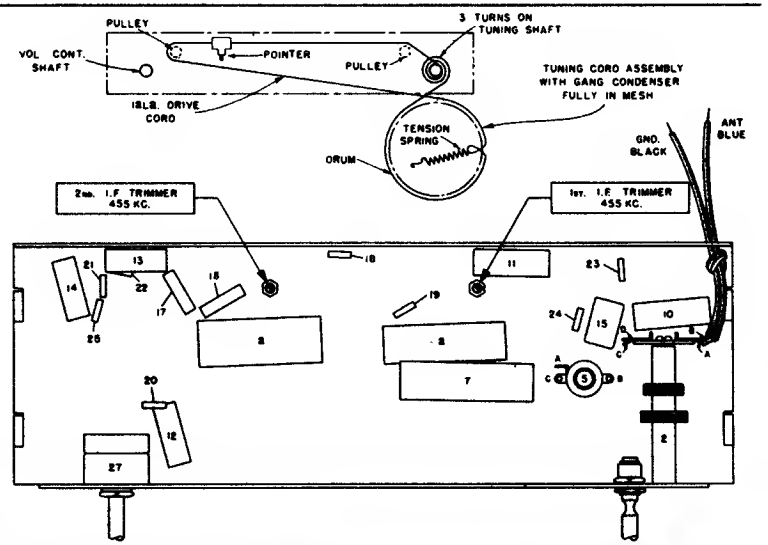
Before starting alignment:

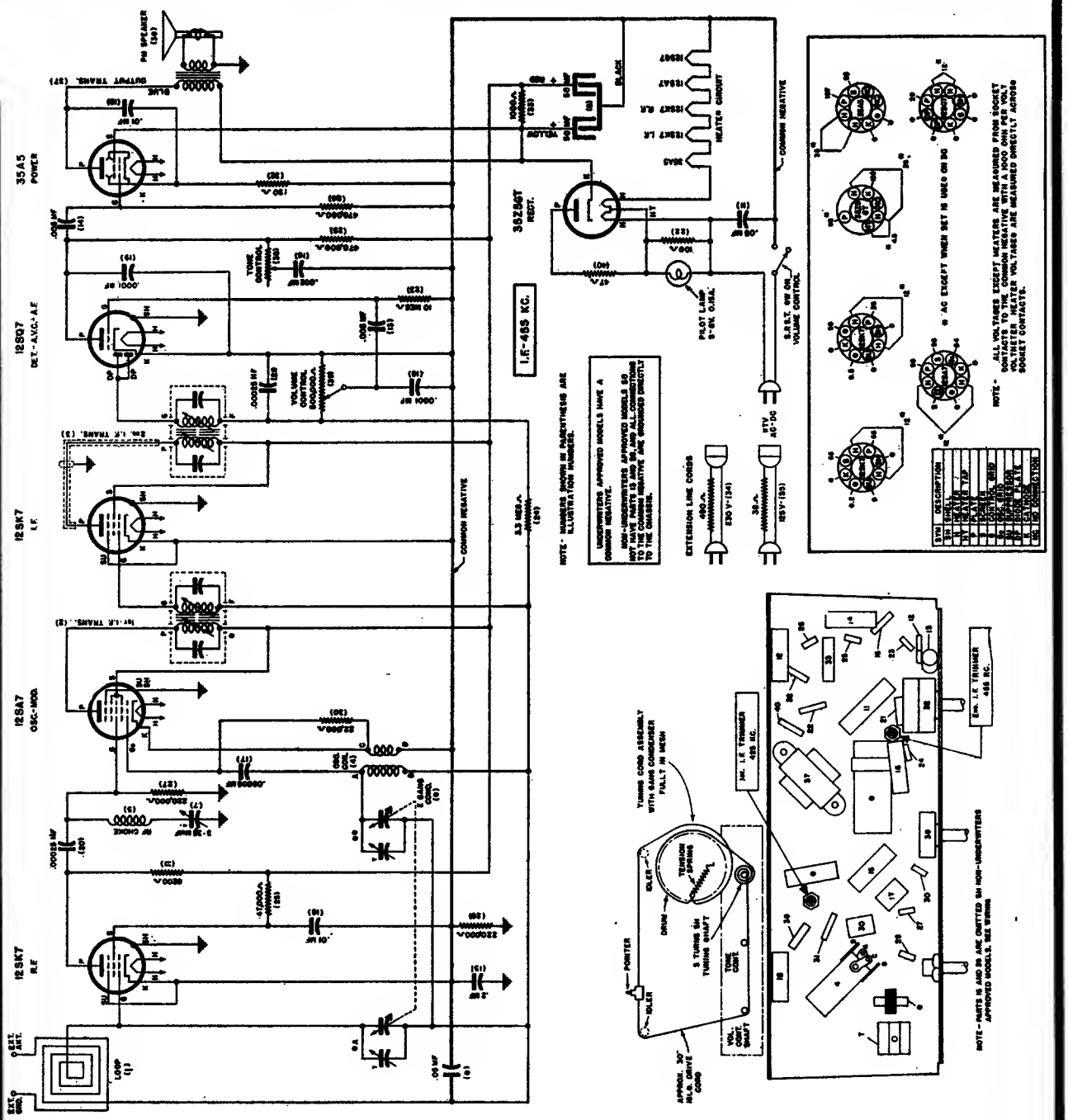
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
1	I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD. condenser	High side to grid terminal of 1A7GT tube DO NOT REMOVE CAP. Low side to receiver black ground lead.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
2	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
3	Exactly 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.







MODELS 293W, 293I, 293T
1U-293W, 1U-293I, 1U-293T
SIX TUBE
AC-DC SUPERHETERODYNE RADIO

Sentinel Radio

129

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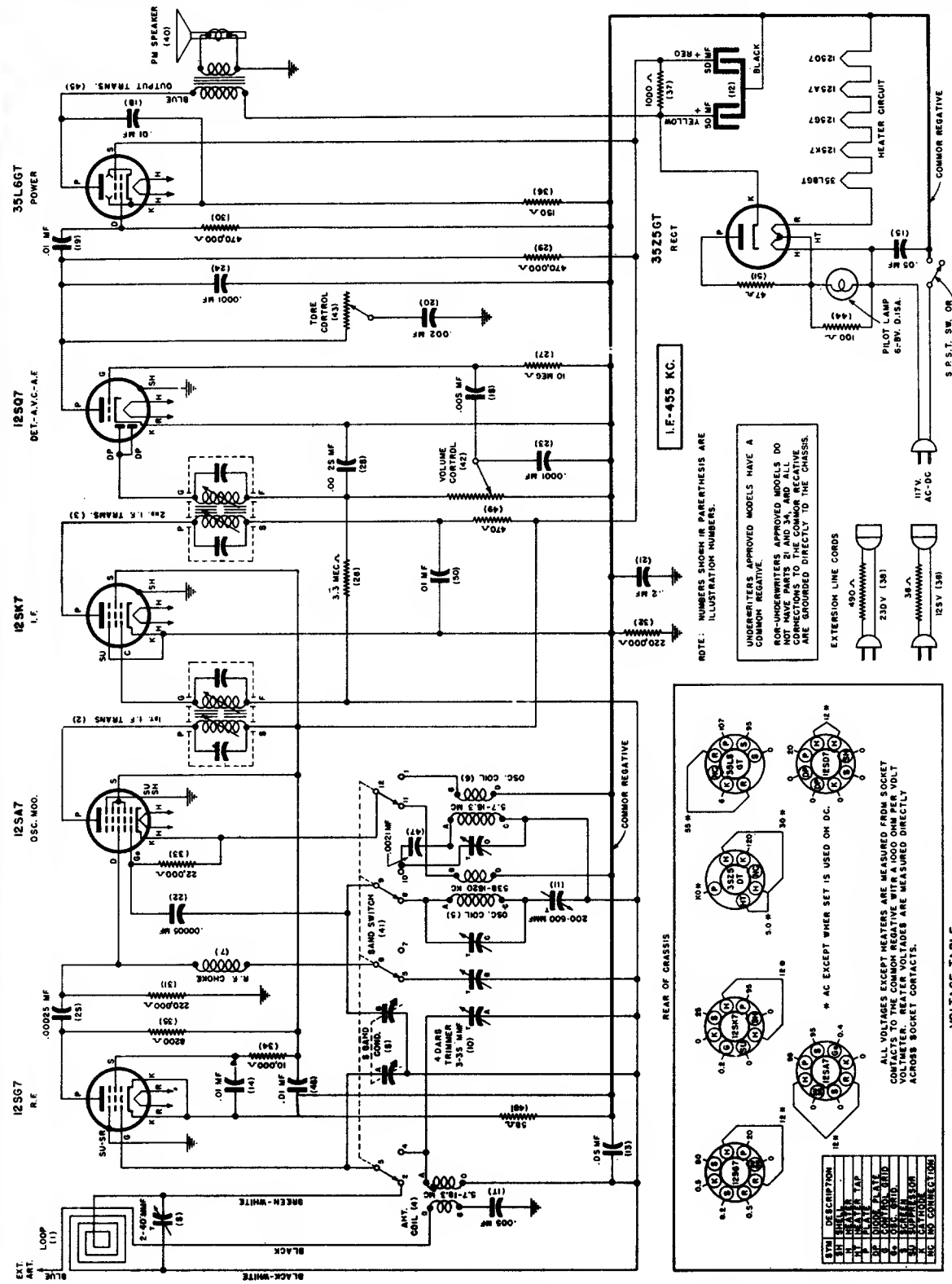

See page 131 for additional service material and alignment data.

MODELS 294N, 294I, 294T,
1U-294W, 1U-294I, 1U-294T,
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Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. Make the adjustment marked (1) first, (2) next, (3) third, etc.

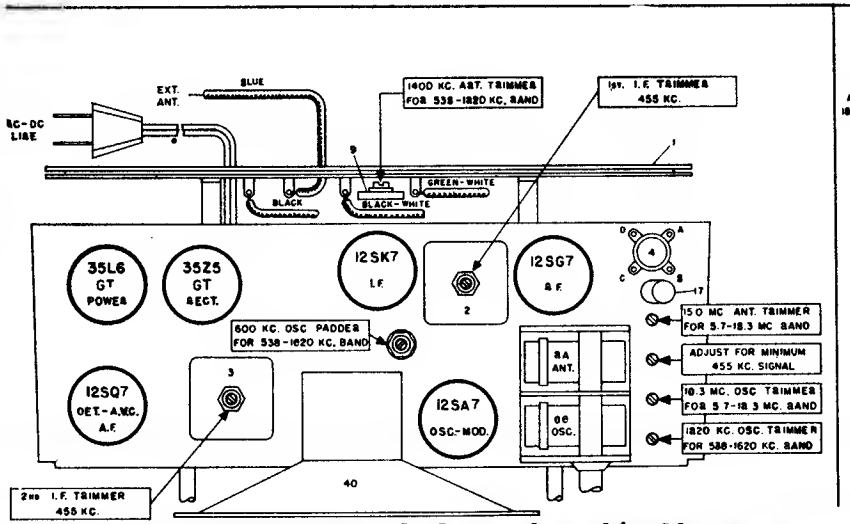
Before starting alignment:

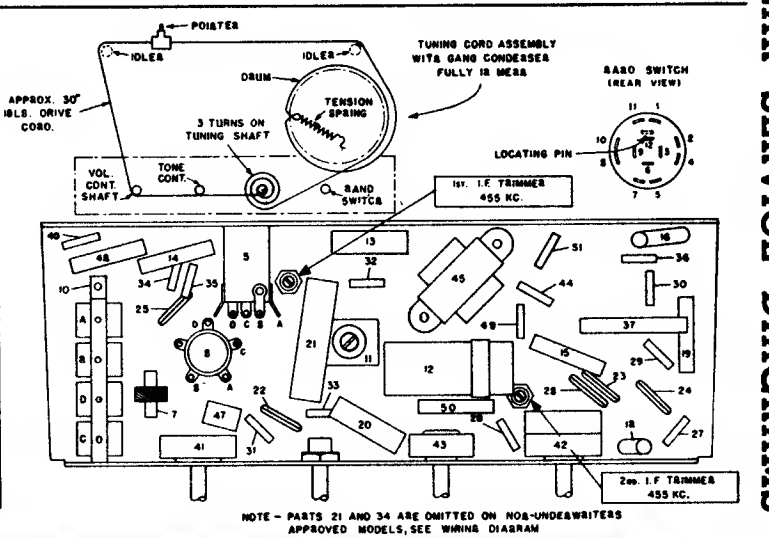
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Place loop antenna in the same position it will be in when set is in the cabinet.

Steps	Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
1	I.F. alignment use any band position.	Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through .01 Mfd. condenser	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
2	1620 to 538 K.C. Band	Rotate gang condenser to Maximum Capacity	Exactly 455 K.C.	.00025 Condenser	High side to BLUE Antenna Lead. Low side to chassis through a .01 mfd. condenser.	Adjust R.F. coil trimmer for <u>maximum</u> 455 K.C. signal.
		Exactly 1620 K.C.	Exactly 1620 K.C.			Adjust 1620 K.C. oscillator trimmer for maximum outpnt.
		Approx. 1400 K.C.	Approx. 1400 K.C.			While rocking gang condenser adjust 1400 K.C. loop trimmer for maximum output.
		Approx. 600 K.C.	Approx. 600 K.C.			While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
3	5.7 to 18.3 M.C. Band	Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor		Adjust 18.3 M.C. oscillator trimmer for maximum output.
		Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm carbon resistor		While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

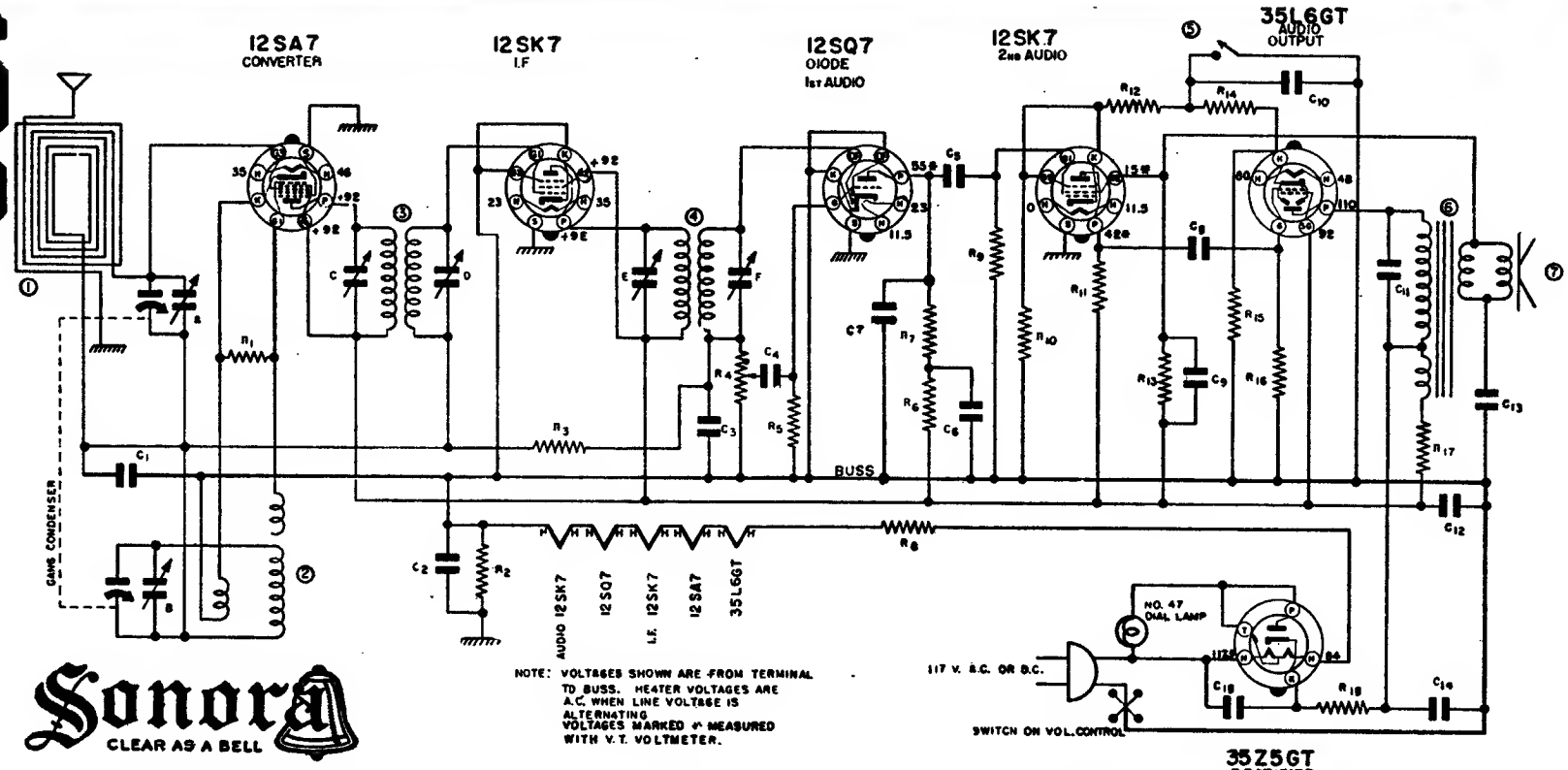




NOTE - PARTS 21 AND 34 ARE OMITTED ON NON-UNDERWRITERS APPROVED MODELS, SEE WIRING DIAGRAM

See page 130 for circuit diagram.

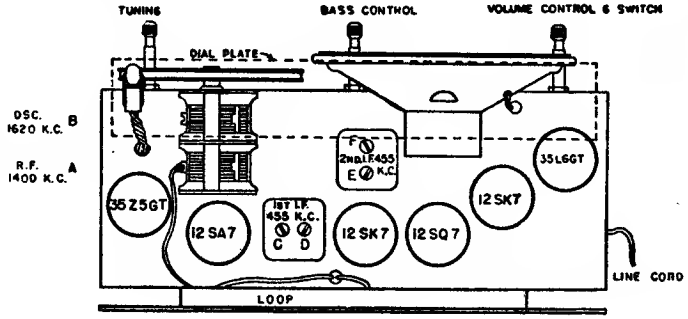
Sentinel MODELS 294N, 294I, 294T, 1U-294W, 1U-294I, 1U-294T, COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS



NOTE: VOLTAGES SHOWN ARE FROM TERMINAL TO BUSS. HEATER VOLTAGES ARE A.C. WHEN LINE VOLTAGE IS ALTERNATING. VOLTAGES MARKED * MEASURED WITH V.T. VOLTMETER.

Sonora
CLEAR AS A BELL

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C1	N-1345	.05 MFD. 200 V. 20%	R8	N-4088	33 OHM 1.0 W. 20%
C2	N-4957	.09 MFD. 200 V. -10%+10%	R9	N-4061	4.7 MEGOHM .5 W. 20%
C3	N-1374	100 MMFD. MICA 500V. 20%	R10	N-4896	2200 OHM .5 W. 10%
C4	N-4894	.005 MFD 600 V -15%+40%	R11	N-4899	220,000 OHM .5 W. 10%
C5	N-2063	.003 MFD. 600 V. -15%+40%	R12	N-5029	22,000 OHM .5 W. 5%
C6	N-1367	6 MFD. 150 W.V. ELECTROLYTIC	R13	N-4470	1.2 MEGOHM .5 W. 10%
C7	N-4890	.0005 MFD. 600 V. -25%+80%	R14	N-4897	8,200 OHM .5 W. 10%
C8	N-1344	.01 MFD. 400 V. 20%	R15	N-4067	120 OHM .5 W. 10%
C9	N-1376	.02 MFD. 400 V. 20%	R16	N-4027	470,000 OHM .5 W. 20%
C10	N-1351	.1 MFD. 200 V. -10%+20%	R17	N-4900	1200 OHM 1. W. 10%
C11	N-1376	.02 MFD 400 V. 20%	R18	N-4068	33 OHM 1. W. 20%
C12	N-3658	40 MFD. 150 W.V. ELECTROLYTIC			
C13	N-1345	.05 MFD. 200 V. 20%	1	N-4912	LOOP COIL
C14	N-3658	40 MFD. 150 W.V. ELECTROLYTIC	2	N-4810	OSCILLATOR COIL
C15	N-1346	.05 MFD. 400 V. 20%	3	N-4872	1ST. I.F. COIL
			4	N-4873	2ND I.F. COIL
R1	N-4025	22,000 OHM .5 W. 20%	5	N-4942	TONE SWITCH
R2	N-4026	220,000 OHM .5 W. 20	6	N-4875	OUTPUT TRANSFORMER
R3	N-4062	3.3 MEGOHM .5 W 20%	7	N-4868	5 PM DYNAMIC SPEAKER
R4	N-4889	0.5 MEGOHM VOLUME CONTROL			
R5	N-4081	4.7 MEGOHM .5W 20%		N-4907	2 GANG CONDENSER
R6	N-1778	100,000 OHM .5 W 20%			
R7	N-4895	10,000 OHM .5W. 10%			



TUBE AND TRIMMER LOCATIONS

I.F.—455 K.C.

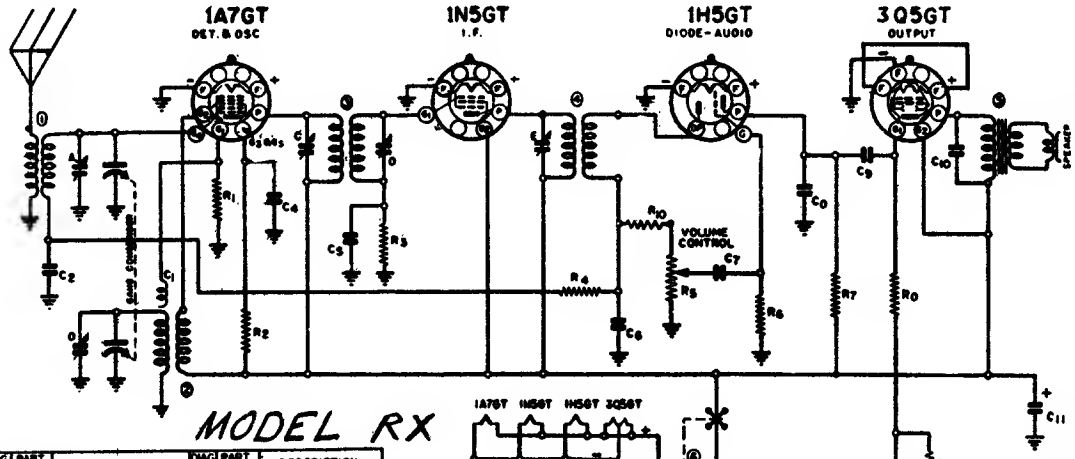
6 TUBE A.C.—D.C.
SUPERHETERODYNE
SINGLE BAND

DRAWN L. S. APPROVED

DATE-9-27-1945

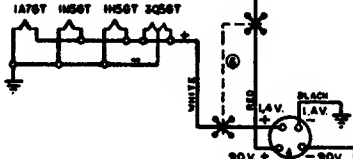
MODEL RDU

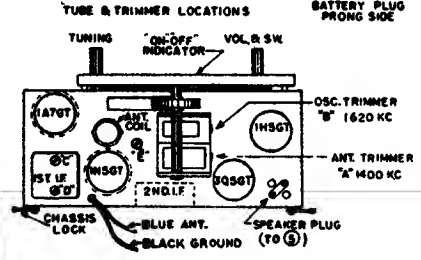
6-TUBE AC-DC SUPERHETERODYNE



MODEL RX

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R-1	N-4085	220,000 OHM 20%	C-10	N-2712	.005 MFD. 600V.
R-2	N-4823	56,000 OHM 10%	C-11	N-1367	8MFD. 150 V. ELECT.
R-3	N-1063	10 MEGOHM 20%			
R-4	N-4277	2.2 MEGOHM 20%			
R-5	N-3411	1 MEG. VOL. CONTROL	1	N-4834	ANTENNA COIL
R-6	N-4277	2.2 MEGOHM 20%	2	N-4835	OSCILLATOR COIL
R-7	N-1262	1 MEGOHM 20%	3	N-3410	1ST. I.F. TRANS.
R-8	N-4277	2.2 MEGOHM 20%	4	N-2648	2ND. I.F. TRANS.
R-9	N-4086	470 OHM 10%	5	N-3408	6" PM SPEAKER
R-10	N-4083	47,000 OHM 20%			OUTPUT TRANS.
		(ALL RESISTORS ARE .5 WATT SIZE.)	6	——	BATTERY SW. ON VOL. CONTROL
C-1		CAPACITY IN OSCILLATOR COIL		N-4824	GANG CONDENSER
C-2	N-1345	.05 MFD. 200 V.			
C-A	N-1345	.05 MFD. 200 V.			
C-3	N-1376	.02 MFD. 400 V.		N-1526	BATTERY CABLE
C-B	N-1342	50 MMFD. MICA			
C-7	N-2712	.005 MFD. 600 V.			
C-8	N-1342	50 MMFD. MICA			
C-9	N-1344	.01 MFD. 400 V.			





Sonora — Clear as a Bell

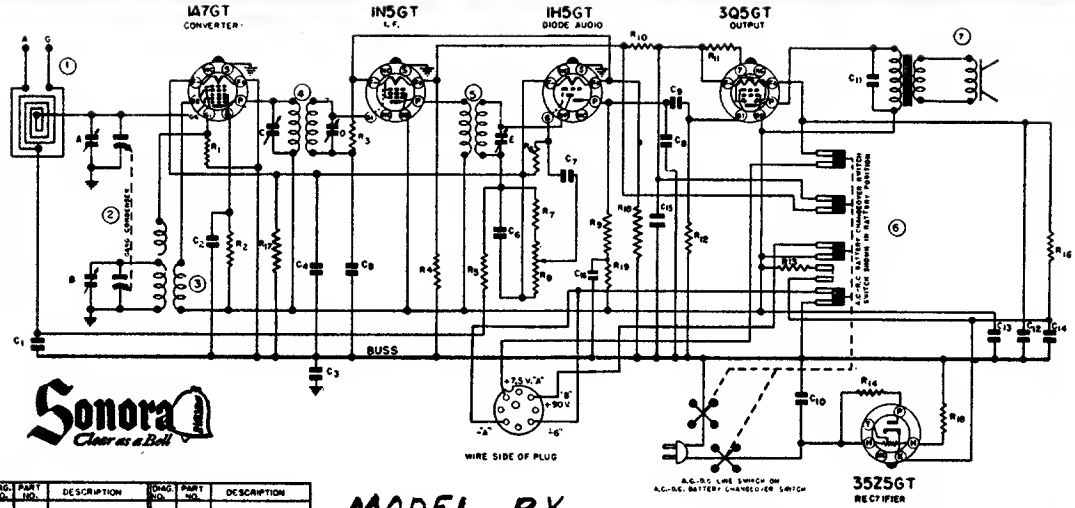
I.F. 455 K.C.

NOTE: TUBE SOCKETS SHOWN FROM WIRING SIDE

4 TUBE - 1½ VOLT
SUPERHETERODYNE
SINGLE BAND

DRAWN CS APPROVED
AUGUST 1946

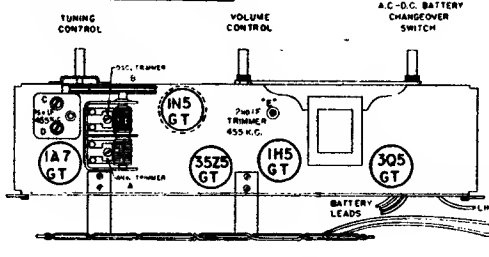
RX



Sonora — Clear as a Bell

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C-1	N-1345	.05 MFD. 200 WV. 20%	R-1	N-4085	220,000 OHM .5 W. 20%
C-2	N-1345	.05 MFD. 200 WV. 20%	R-2	N-4820	68,000 OHM .5 W. 20%
C-3	N-1360	.2 MFD. 200 WV. 10%	R-3	N-1265	10 MEGOHM .5 W. 20%
C-4	N-1351	.1 MFD. 200 WV. 20%	R-4	N-4280	5.6 OHM .5 W. 10%
C-5	N-1376	.02 MFD. 400 WV. 20%	R-5	N-4277	2.2 MEGOHM .5 W. 20%
C-6	N-1374	.0001 MFD. MICA 20%	R-6	N-4277	2.2 MEGOHM .5 W. 20%
C-7	N-4894	.005 MFD. 600 WV. 20%	R-7	N-4083	47,000 OHM .5 W. 20%
C-8	N-1374	.0001 MFD. MICA 20%	R-8	N-3940	1 MEG. VOLUME CONT.
C-9	N-1344	.01 MFD. 400 WV. 20%	R-9	N-1262	1 MEGOHM .5 W. 20%
C-10	N-1346	.05 MFD. 400 WV. 20%	R-10	N-5055	1E. OHM .5 W. 10%
C-11	N-2663	.003 MFD. 600 WV.	R-11	N-4420	33.0 OHM .5 W. 10%
		-15 +40%	R-12	N-4277	2.2 MEGOHM .5 W. 20%
C-12		400 MFD. 7.5 V. ELECTR.	R-13	N-1776	1,500 OHM .5 W. 20%
C-13	N-2748	40 MFD. 150 V. DLYTIC	R-14	N-1692	100 OHM 1 W. 10%
C-14		40 MFD. 150 V. COND.	R-15	N-5342	850 OHM 12.5 W. 10%
C-15	N-5232	200 MFD. 7.5 V. ELECT.	R-16	N-5054	2,150 OHM 5.5 W. 5%
C-16	N-1351	.1 MFD. 200 WV. 20%	R-17	N-1776	1,500 OHM .5 20%
1	N-5084	LOOP ANTENNA COIL	R-18	N-5052	2,200 OHM .5 20%
2	N-4812	TWO GANG COND.	R-19	N-4986	220,000 OHM .5 20% 1MS
3	N-5122	OSCILLATOR COIL			
4	N-2647	FIRST I.F. TRANS.			
5	N-5088	SECOND I.F. TRANS.			
6	N-4149 N-3833	CHANGEOVER SWITCH			
7	N-5168	5" P.M. SPEAKER & TRANS.			

MODEL RY



I.F. 455 K.C.

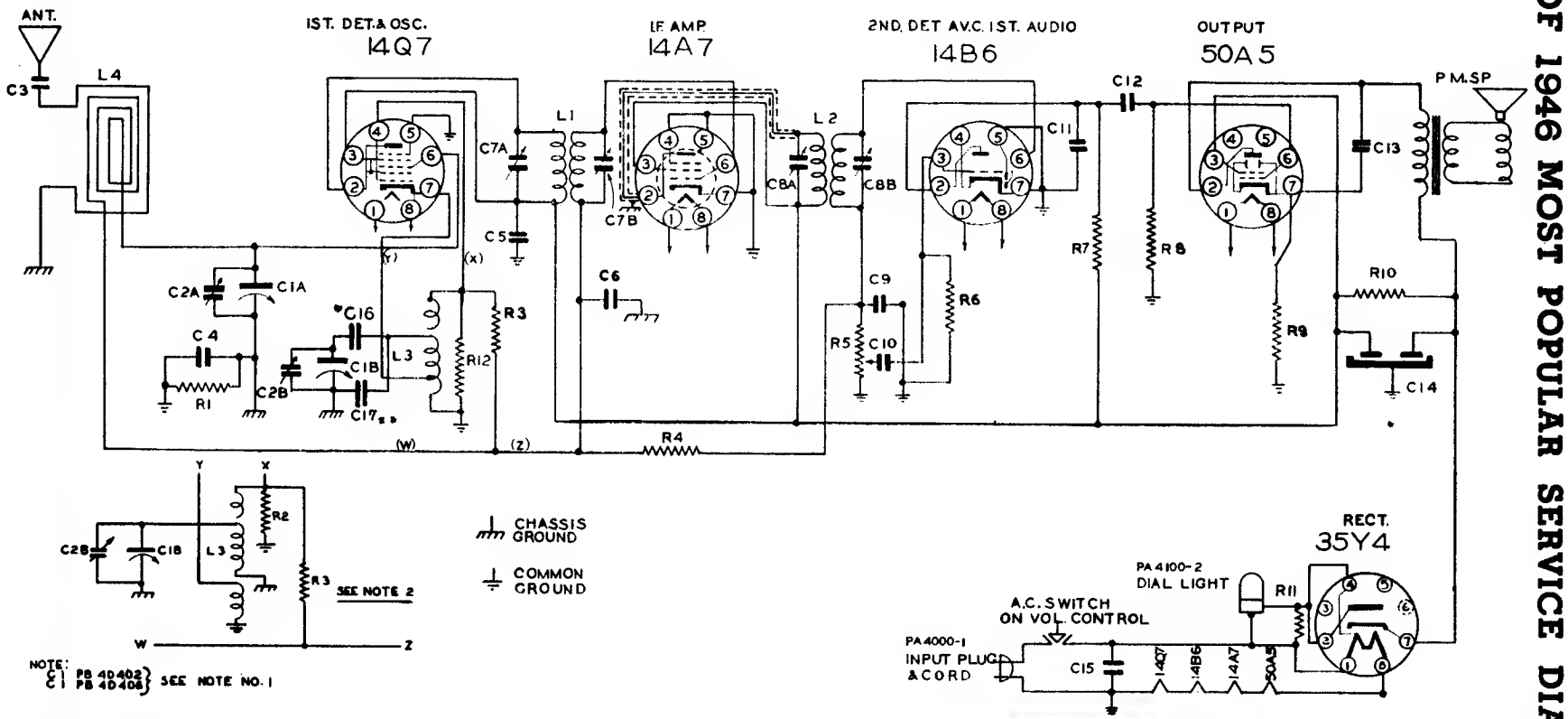
5 TUBE
BATTERY & 110-120 V. A.C.-D.C.
SUPERHETERODYNE

DRAWN LB APP.
NOVEMBER, 1945

SPARTON SUPERHETERODYNE MODEL 5-06
INTERMEDIATE FREQUENCY 456K.C.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

L1 NO.1 I.F. COIL ASSEMBLY AA6800-1
L2 NO.2 I.F. COIL ASSEMBLY AA6800-2
L3 B.C.OSCILLATOR COIL ASSEMBLY AB42200-1 (SEE NOTE NO. 2)
L4 LOOP ASSEMBLY AB43015-1 } SEE NOTE NO. 1
L4 LOOP ASSEMBLY AB43024-1 }

NOTE NO.1. THE FIRST 4,000 UNITS WILL BE ASSEMBLED USING C1 AS PB 40402 AND L4 AS AB 43015-1. AFTER FIRST 4000, C1 WILL BE PB40408 MOUNTED ON SPECIAL BRACKET PB41913 AND USING L4 AS AB 43024-1 ELIMINATING USE OF C17 (15 MMF. CONDENSER.)
NOTE NO.2 AFTER 15,000 UNITS USE L3 AS AA6752-3 AND HOOK UP AS SHOWN IN SECTIONAL DRAWING ELIMINATING C16 CONDENSER.



NOTE:
C1 PB 40402 } SEE NOTE NO. 1
C1 PB 40408 }

C1A&B	VARIABLE CONDENSER [SEE NOTE]		
C2A&B	TRIMMERS ON VARIABLE		
C3	.001 MFD. 400 V.	PC 40GL-102	
C4	.15 MFD. 400 V.	PC 40GL-154	
C5	.05 MFD. 200 V.	PC 40GK-503	
C6	.05 MFD. 200 V.	PC 40GK-503	
C7A&B	NO.1 I.F. TRIMMERS	AB 43500-1	
C8A&B	NO.2 I.F. TRIMMERS	AB 43500-2	

C9	270 MMF. MICA	MC 80G-271	
C10	.01 MFD. 400 V	PC 40GL-103	
C11	510 MMF. MICA	MC 60G-511	
C12	.002 MFD. 400 V.	PC 40GL-202	
C13	.01 MFD 400 V.	PC 40GL-103	
C14	ELECT. CONDENSER RED 30 MFD.	PA 4301 YELLOW 40 MFD.	
C15	.05 MFD. 400 V.	PC 40GL-503	
*C16	.05 MFD. 200 V.	PC 40FK-503	
± *C17	15 MMF.	PA 4328-1	

* SEE NOTE NOTE NO. 2
± SEE NOTE NOTE NO. 1

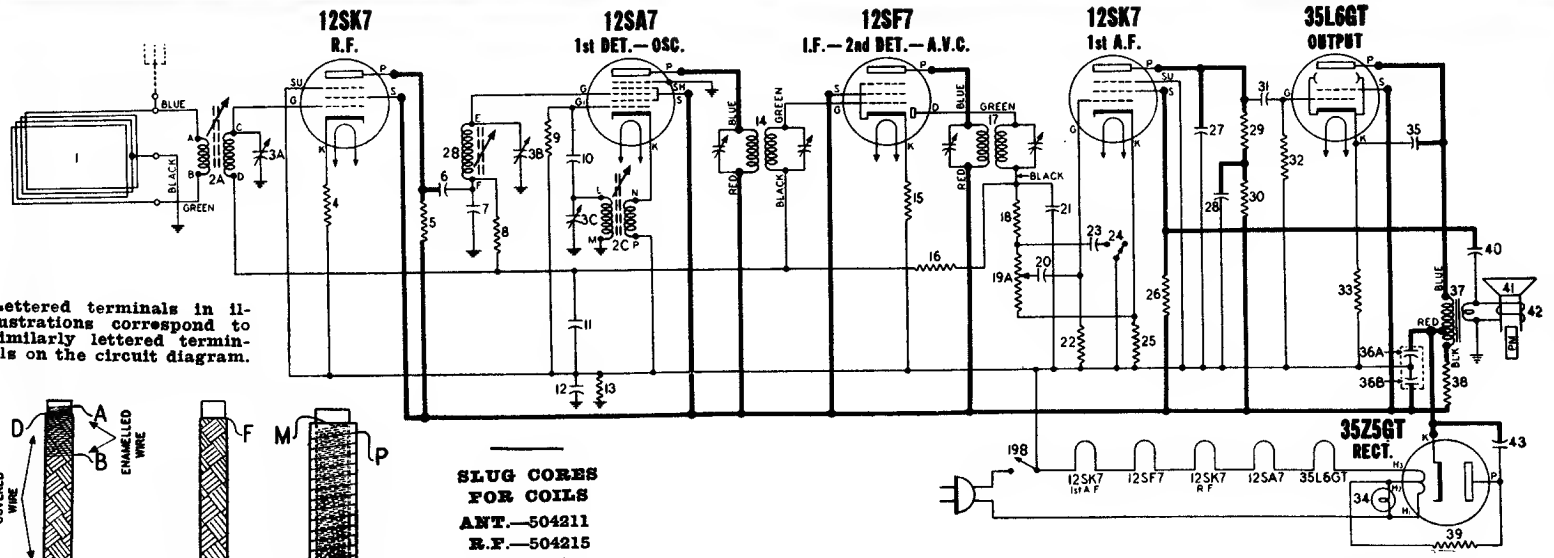
R1	150,000 Ω	.5W	BR12N-154
R2	22,000 Ω	.5W.	BR12S-223
R3	15 MEGOHM	.5W	BR12S-156
R4	2.2 MEGOHM	.5W	BR12N-225
R5	.5 MEG. VOL. CONT. & SW.		PA 4400-2
R6	5.6 MEGOHM	.5W	BR12S-565
R7	220,000 Ω	.5W	BR12N-224
R8	470,000 Ω	.5W	BR12N-474
R9	150 Ω	.5W	BR12S-151
R10	1200 Ω	.1W.	CR12S-122
R11	82 Ω	.5W	BR12S-820
R12	47,000 Ω	.5W.	BR12S-473

THE SPARKS-WITHINGTON COMPANY
RADIO AND APPLIANCE DIVISION
Service Department
Jackson, Michigan, U. S. A.

MANUAL OF 1946 MOST POPULAR SERVICE DIAGRAMS

STEWART-WARNER MODELS 61T16 AND 61T26

Alignment on page 136.



Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

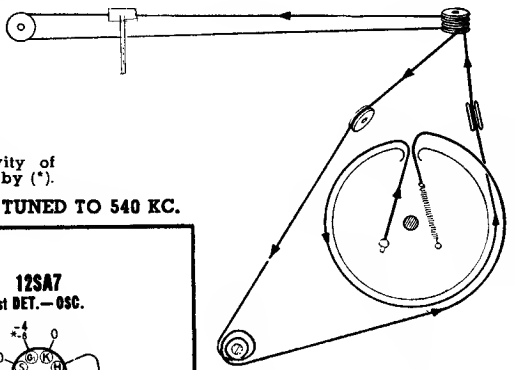
ANTENNA COUPLING COIL 504210

R.F. COIL 504214

OSCILLATOR COIL 504212

SLUG CORES FOR COILS

ANT.—504211
R.F.—504215
OSC.—504213



DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, turn the main drive drum to maximum **counter - clockwise** position and use following parts:

114955	Clip on end of cord
117057	Cord (55 inches)
119087	Ring for dial cord
161384	Tension Spring

SOCKET VOLTAGES

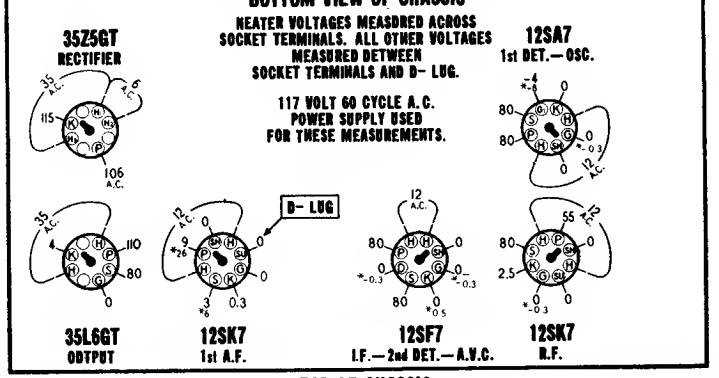
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL **DIAL TUNED TO 540 KC.**

BOTTOM VIEW OF CHASSIS

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND B- LUG.

117 VOLT 60 CYCLE A.C. POWER SUPPLY USED FOR THESE MEASUREMENTS.



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

CONDENSERS

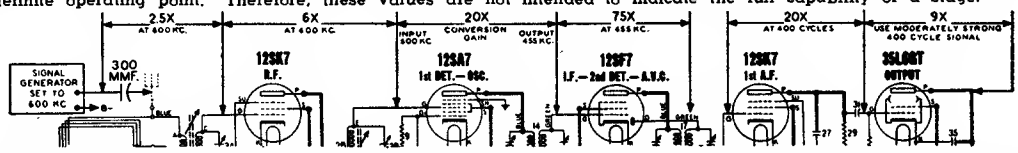
1-A, B, C	504086	Condenser—trimmer assembly A—10 to 160 Mmfd. B—20 to 270 Mmfd. C—20 to 270 Mmfd.
6	502271	Condenser—mica 260 Mmfd. 500 volt
7	502165	Condenser—mica 1,000 Mmfd. 500 volt
10	502159	Condenser—mica 50 Mmfd. 500 volt
11	502155	Condenser—.1 Mfd. 200 volt
12	502158	Condenser—.2 Mfd. 400 volt
20	502453	Condenser—.002 Mfd. 400 volt
21	502160	Condenser—mica 110 Mmfd. 500 volt
23	502470	Condenser—.0008 Mfd. 400 volt
27	502160	Condenser—mica 110 Mmfd. 500 volt
28	502153	Condenser—.05 Mfd. 200 volt
31	502156	Condenser—.004 Mfd. 400 volt
35	502151	Condenser—.01 Mfd. 400 volt
36-A, B	500256	Condenser—electrolytic A—40 Mfd. 150 volt B—20 Mfd. 150 volt
40	502152	Condenser—.02 Mfd. 400 volt
43	502157	Condenser—.05 Mfd. 400 volt

RESISTORS

4	502140	Resistor—carbon 390 ohms ¼ watt
5	502291	Resistor—carbon 4700 ohms ¼ watt
8	502134	Resistor—carbon 470,000 ohms ¼ watt
9	502130	Resistor—carbon 22,000 ohms ¼ watt
13	502133	Resistor—carbon 220,000 ohms ¼ watt
15	502264	Resistor—carbon 47 ohms ¼ watt
16	502269	Resistor—carbon 3.3 Meg. ¼ watt
18	502131	Resistor—carbon 47,000 ohms ¼ watt
19-A, B	502145	Volume control 500,000 ohms (with switch)
22	502136	Resistor—carbon 10 Meg. ¼ watt
25	502128	Resistor—carbon 2200 ohms ¼ watt
26	502135	Resistor—carbon 2.2 Meg. ¼ watt
29, 30	502133	Resistor—carbon 220,000 ohms ¼ watt
32	502134	Resistor—carbon 470,000 ohms ¼ watt
33	502138	Resistor—carbon 130 ohms ½ watt
38	502469	Resistor—carbon 1500 ohms 1 watt
39	502574	Resistor—carbon 33 ohms ½ watt

STEWART-WARNER MODELS 61T16 AND 61T26

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

ALIGNMENT PROCEDURE

Remove chassis and loop from cabinet. Solder approximately 8" of insulated wire to any B— connection (see voltage chart on opposite side for convenient B— location). Then reinstall chassis and loop in cabinet. The B— lead should extend from under the chassis at the back.

Connect ground lead of signal generator to B— lead.

Connect output meter across the speaker voice coil (terminals at back of speaker.)

Turn the tuning control knob clockwise as far as it will go (tuner mechanism is now in maximum open position with tuning slugs almost completely withdrawn from coils). Dial pointer should then point to 1600 Kc mark on scale. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT

Set tuner mechanism to maximum open position by turning the tuning control knob clockwise as far as it will go (Dial pointer at 1600 Kc). Then check whether the positions of the tuning slugs correspond to the positions shown in Fig. 1 below. If settings are incorrect, rotate the individual core and threaded stem until desired position is reached. Note that threaded stem is prevented from moving by a dab of speaker cement at top.

.1 MFD. Condenser	Ungrounded terminal of trimmer No. 6 (see Fig. 2 below for location of trimmer.)	455 KC	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	1600 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
				7	Broadcast Antenna	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Tune to 1400 KC generator signal	Ant. coil tuning slug		Adjust position of slug for maximum output.
				R.F. coil tuning slug		Adjust position of slug for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	6	Broadcast R.F.	Recheck adjustment for maximum output.
				7	Broadcast Antenna	Recheck adjustment for maximum output.

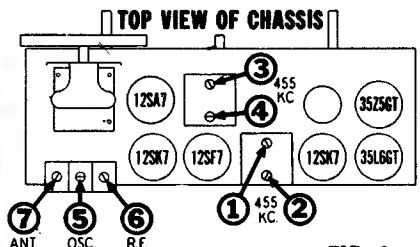


FIG. 2

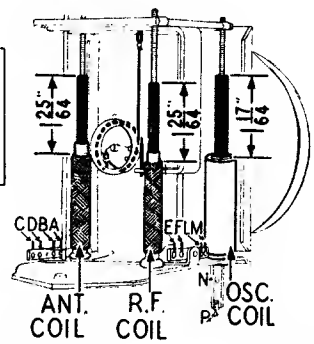


FIG. 1

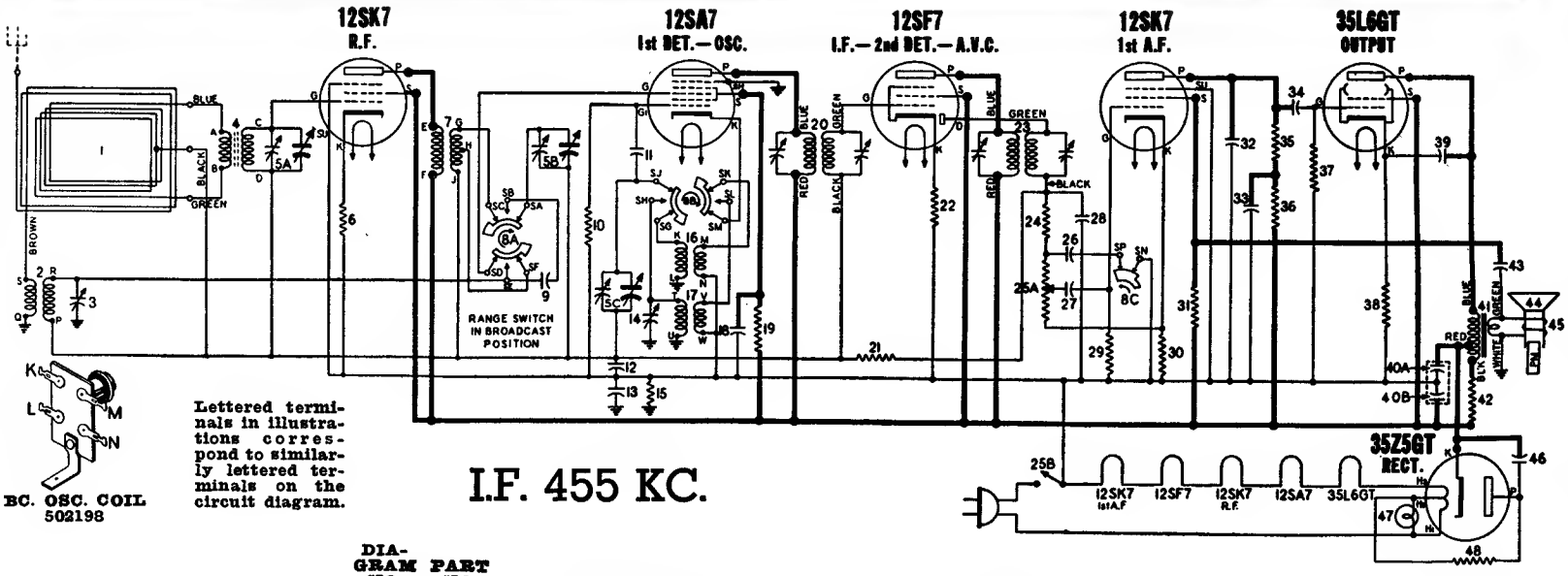
SLUG TUNER ASSEMBLY
(Drive Parts)

117057 Cord (8")
114955 Clip on cord
504012 Spring

AUDIO OSCILLATION

The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and, should it ever be necessary to replace the speaker or output transformer, it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the secondary of the output transformer.

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS



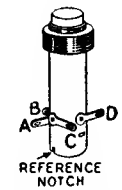
I.F. 455 KC.

BC. OSC. COIL 502198

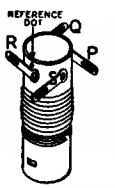
Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

See page 138 for alignment data.

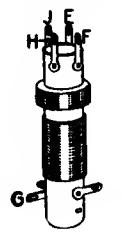
DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
3	502172	Condenser—trimmer; 25 to 100 Mmfd.
5A-5B-5C	502123	Condenser—variable gang (with drum).
9	502162	Condenser—315 Mmfd. 500 volt.
11	502159	Condenser—mica—50 Mmfd. 500 volt.
12	502155	Condenser—.1 Mfd. 200 volt.
13	502158	Condenser—.2 Mfd. 200 volt.
14	502172	Condenser—trimmer; 25 to 100 Mmfd.
18	502262	Condenser—.25 Mfd. 200 volt.
26	502470	Condenser—.0008 Mfd. 400 volt.
27	502453	Condenser—.002 Mfd. 400 volt.
28	502160	Condenser—mica—110 Mmfd. 500 volt.
32	502160	Condenser—mica—110 Mmfd. 500 volt.
33	502153	Condenser—.05 Mfd. 200 volt.
34	502156	Condenser—.004 Mfd. 400 volt.
39	502151	Condenser—.01 Mfd. 400 volt.
40A-40B	500256	Condenser—electrolytic A-40 Mfd. 150 volt B-20 Mfd. 150 volt
43	502152	Condenser—.02 Mfd. 400 volt.
46	502157	Condenser—.05 Mfd. 400 volt.
		RESISTORS
6	502140	Resistor—carbon 390 ohms ¼ watt.
10	502130	Resistor—carbon 22,000 ohms ¼ watt.
15	502133	Resistor—carbon 220,000 ohms ¼ watt.
19	502291	Resistor—carbon 4700 ohms ¼ watt.
21	502269	Resistor—carbon 3.3 Meg. ¼ watt.
22	502264	Resistor—carbon 47 ohms ¼ watt.
24	502131	Resistor—carbon 47,000 ohms ¼ watt.
25A-25B	502145	Volume control 500,000 ohms (with switch)
29	502136	Resistor—carbon 10 Meg. ¼ watt.
30	502128	Resistor—carbon 2200 ohms ¼ watt.
31	502135	Resistor—carbon 2.2 Meg. ¼ watt.
35-36	502133	Resistor—carbon 220,000 ohms ¼ watt.
37	502134	Resistor—carbon 470,000 ohms ¼ watt.
38	502138	Resistor—carbon 130 ohms ¼ watt.
42	502469	Resistor—carbon 1500 ohms 1 watt.
48	502574	Resistor—carbon 33 ohms ½ watt.



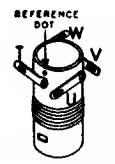
BC. ANTENNA COUPLING COIL 502121



S.W. ANTENNA COIL 502740



R.F. COIL 502142



S.W. OSC. COIL 502197

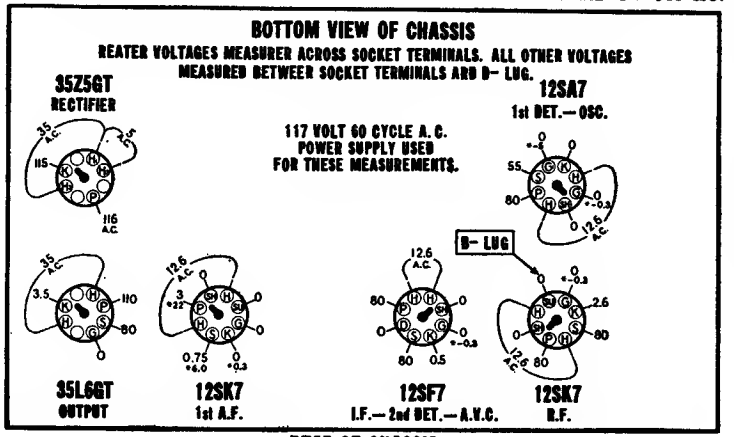
SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.

BOTTOM VIEW OF CHASSIS

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND B— LUG.

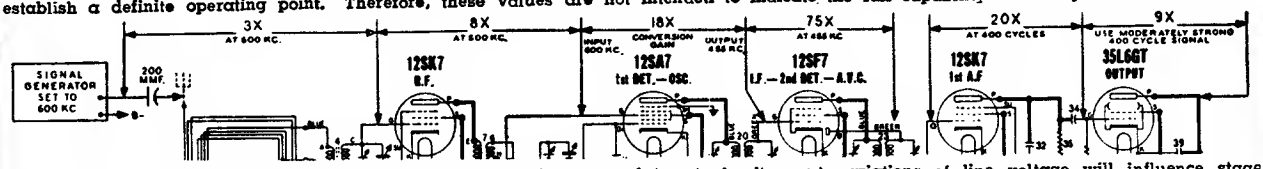


REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

STEWART-WARNER MODEL 9000-B

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

ALIGNMENT PROCEDURE

Remove chassis and loop antenna from cabinet (do not remove loop of wire stapled to cabinet). After chassis has been removed, replace loop antenna in cabinet. Stand the chassis on one end and space it approximately same distance from loop as when installed in cabinet. Then reconnect all leads to loop antenna and to loop of wire stapled on cabinet.

Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.

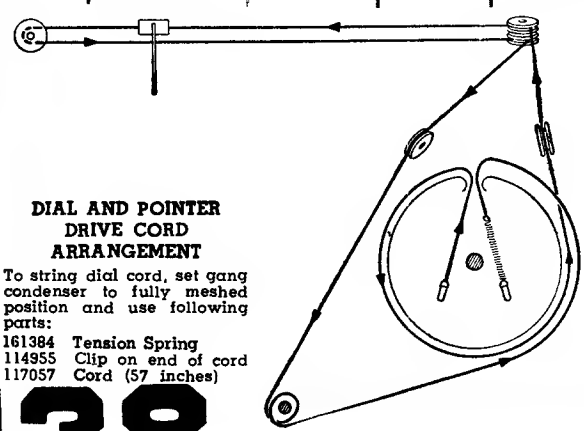
Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).

Connect ground lead from signal generator to B— through a .25 Mfd. condenser.

Set volume control at maximum volume position and use a weak signal from the signal generator.

Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave band.

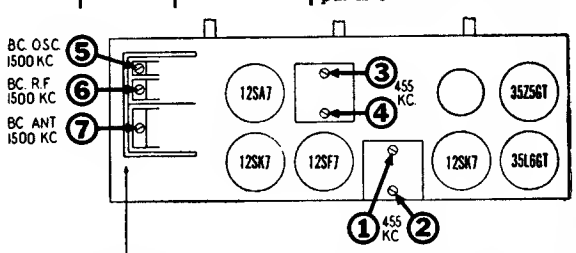
DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Broadcast	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Set pointer to 12 MC. Reference line stamped into metal dial plate (second line from the right)	8	Short Wave Oscillator	Adjust to bring in signal. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC. with trimmer screw farther out. Recheck image.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Tune to 12 MC generator signal	9	Short Wave Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

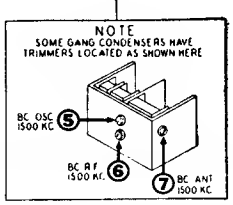


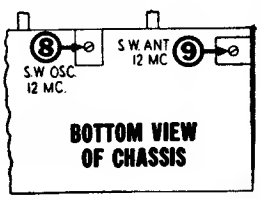
DIAL AND POINTER DRIVE CORD ARRANGEMENT

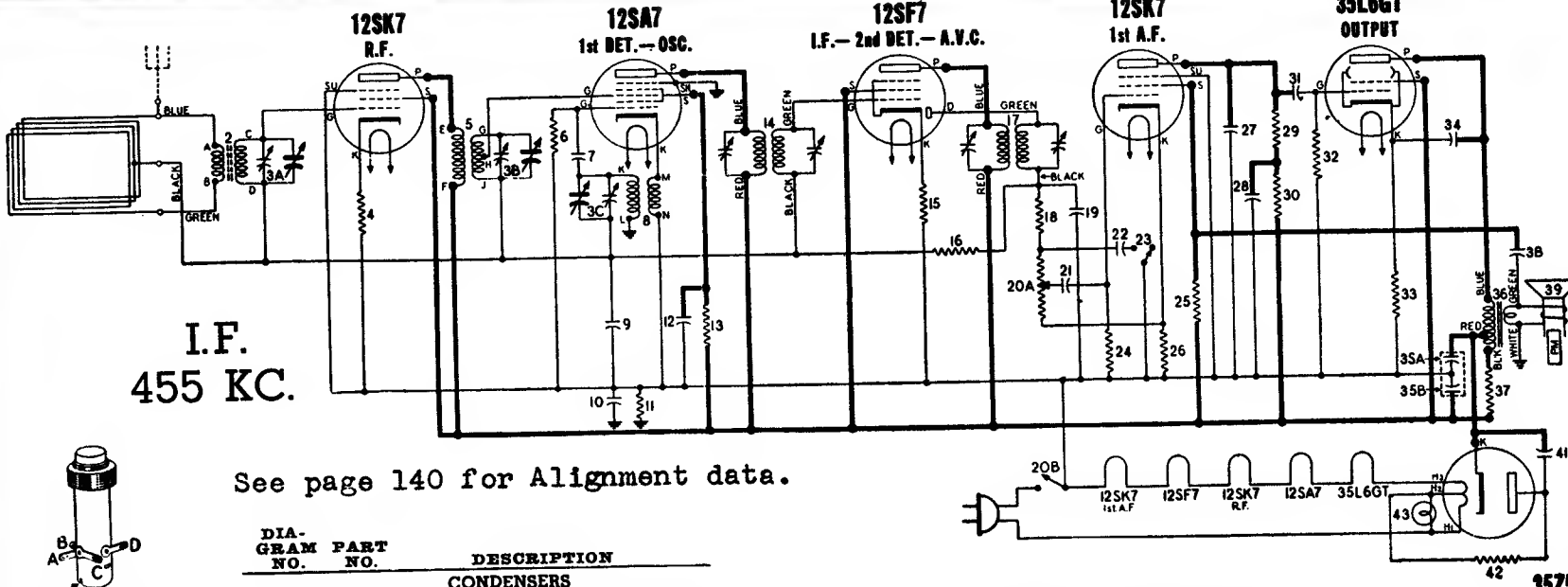
To string dial cord, set gang condenser to fully meshed position and use following parts:

161384 Tension Spring
114955 Clip on end of cord
117057 Cord (57 inches)





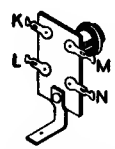




See page 140 for Alignment data.

ANT. COUPLING COIL 502121

R. F. COIL 502142



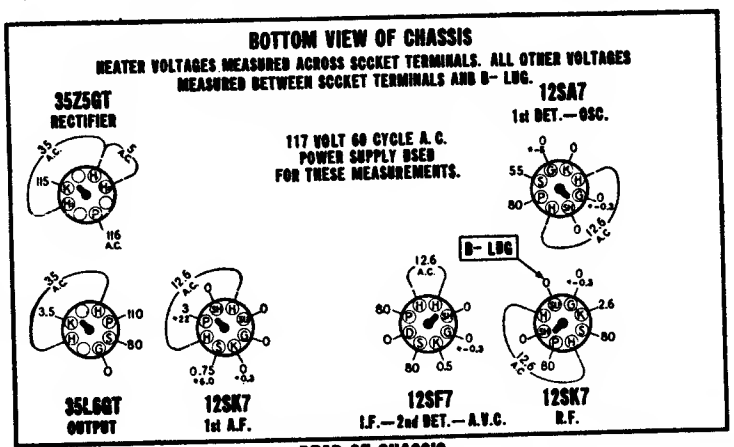
OSC. COIL 502198

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
3A-3B-3C	502123	Condenser variable gang (with drum)...
7	502159	Condenser mica .50 Mmfd. 500 Volt....
9	502155	Condenser .1 Mfd. 200 Volt.....
10	502158	Condenser .2 Mfd. 200 Volt.....
12	502262	Condenser .25 Mfd. 200 Volt.....
19	502160	Condenser mica .110 Mmfd. 500 Volt....
21	502453	Condenser .002 Mfd. 400 Volt.....
22	502470	Condenser .0008 Mfd. 400 Volt.....
27	502160	Condenser Mica .110 Mmfd. 500 Volt....
28	502153	Condenser .05 Mfd. 200 Volt.....
31	502156	Condenser .004 Mfd. 400 Volt.....
34	502151	Condenser .01 Mfd. 400 Volt.....
35A-35B	500256	Condenser electrolytic A-40 Mfd. 150 Volt / B-20 Mfd. 150 Volt .....
38	502152	Condenser .02 Mfd. 400 Volt.....
41	502157	Condenser .05 Mfd. 400 Volt.....
		RESISTORS
4	502140	Resistor carbon 390 Ohms ¼ Watt.....
6	502130	Resistor carbon 22,000 Ohms ¼ Watt....
11	502133	Resistor carbon 220,000 Ohms ¼ Watt..
13	502291	Resistor carbon 4700 Ohms, ¼ Watt....
15	502264	Resistor carbon 47 Ohms ¼ Watt.....
16	502269	Resistor carbon 3.3 Meg. ¼ Watt.....
18	502131	Resistor carbon 47,000 Ohms ¼ Watt...
20A-20B	502145	Volume control 500,000 Ohms (with switch)
24	502136	Resistor carbon 10 Meg. ¼ Watt.....
25	502135	Resistor carbon 2.2 Meg. ¼ Watt.....
26	502128	Resistor carbon 2200 Ohms ¼ Watt.....
29-30	502133	Resistor carbon 220,000 Ohms ¼ Watt..
32	502134	Resistor carbon 470,000 Ohms ¼ Watt..
33	502138	Resistor carbon 130 Ohms ¼ Watt.....
37	502469	Resistor carbon 1500 Ohms 1 Watt....
42	502574	Resistor carbon 33 Ohms ½ Watt.....

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.



*—Measured with vacuum tube voltmeter

STEWART-WARNER MODELS 9002-A, B, P, R.

Remove chassis and loop antenna from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.

Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.

Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).

Connect ground lead from signal generator to B— through a .25 Mfd. condenser.

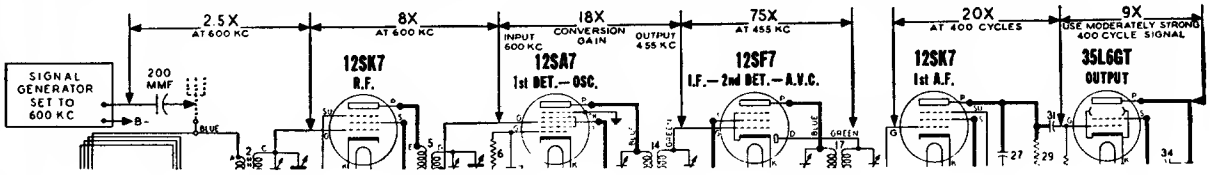
Set volume control at maximum volume position and use a weak signal from the signal generator.

APPROXIMATE STAGE GAIN DATA

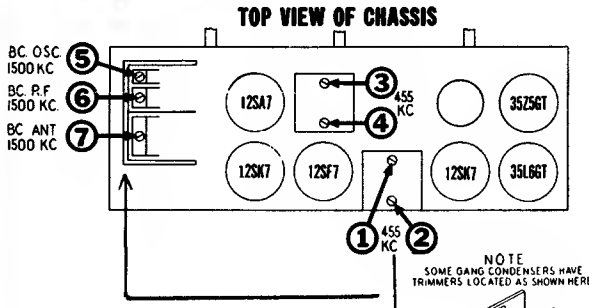
A vacuum tube voltmeter may be used for audio gain measurements. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. Observe following precautions:

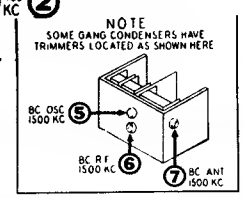
1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

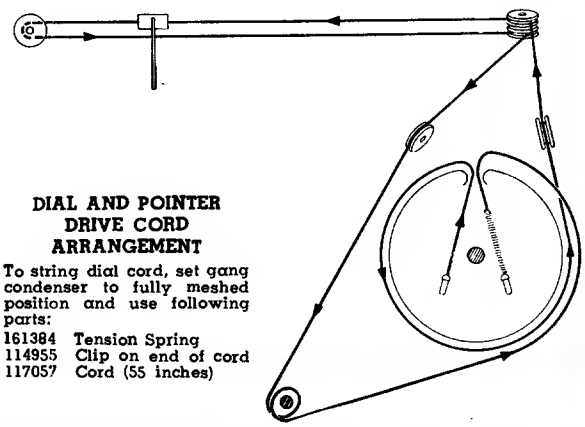
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECTION OF SIG. GENERATOR OUTPUT TO RECEIVER	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.





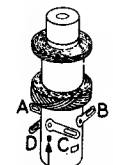


DIAL AND POINTER DRIVE CORD ARRANGEMENT

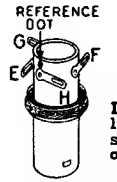
To string dial cord, set gang condenser to fully meshed position and use following parts:

161384 Tension Spring
114955 Clip on end of cord
117057 Cord (55 inches)

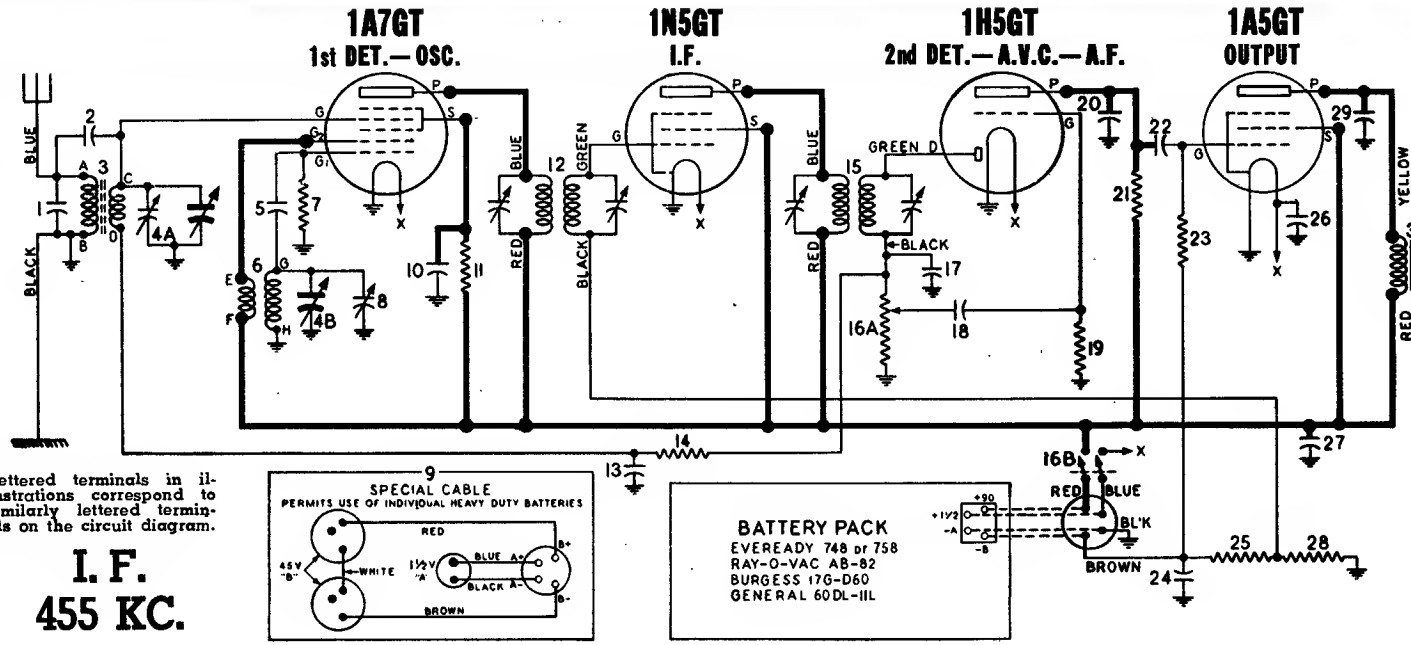
Alignment on page 142, over.



ANTENNA COIL 502277



OSCILLATOR COIL 502278



Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

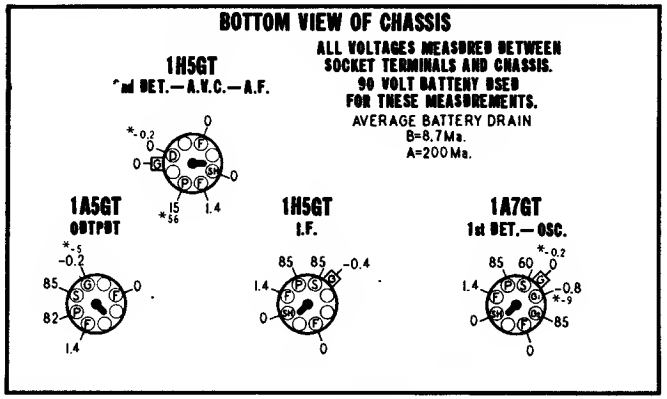
I. F. 455 KC.

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
1	502159	Condenser—mica—50 Mmfd. 500 volt
2	502411	Condenser—2 Mmfd. 500 volt
4A, B	119528	Condenser—variable gang
5	502159	Condenser—mica—50 Mmfd. 500 volt
8	119719	Condenser—trimmer 5 to 50 Mmfd.
10	502157	Condenser—.05 Mfd. 400 volt
13	502157	Condenser—.05 Mfd. 400 volt
17	502160	Condenser—mica—110 Mmfd. 500 volt
18	502151	Condenser—.01 Mfd. 400 volt
20	502271	Condenser—mica—260 Mmfd. 500 volt
22	502151	Condenser—.01 Mfd. 400 volt
24	502286	Condenser—electrolytic 10 Mfd. 25 volt
26	502263	Condenser—.5 Mfd. 150 volt
27	502262	Condenser—.25 Mfd. 200 volt
29	502260	Condenser—.002 Mfd. 600 volt
		RESISTORS
7	502133	Resistor—carbon—220,000 ohms ¼ watt
11	502266	Resistor—carbon—15,000 ohms ¼ watt
14	502269	Resistor—carbon—3.3 Meg. ¼ watt
16A, B	161325	Volume control (with switch) 500,000 ohms
19	502269	Resistor—carbon—3.3 Meg. ¼ watt
21	502267	Resistor—carbon—680,000 ohms ¼ watt
23	502268	Resistor—carbon—1 Meg. ¼ watt
25	502127	Resistor—carbon—560 ohms ¼ watt
28	502264	Resistor—carbon—47 ohms ¼ watt

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC.



*—Measured with vacuum tube voltmeter

STEWART-WARNER MODELS 9005-A, B.

When gang condenser is fully meshed, dial pointer should be in the position indicated by the 54 mark on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.

Connect an output meter across speaker voice coil or from the plate of the 1A5GT tube to chassis through a 0.1 Mfd. condenser.

Connect the ground lead of the signal generator to the receiver ground lead (black) or to the chassis.

Set volume control to maximum volume position and use a weak signal from the signal generator.

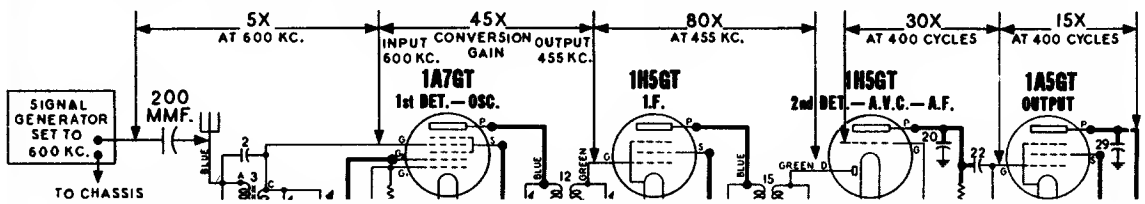
DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Grid cap on 1A7GT tube	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External antenna lead (blue)	1500 KC	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External antenna lead (blue)	1500 KC	Tune to 1500 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.

APPROXIMATE STAGE GAIN DATA

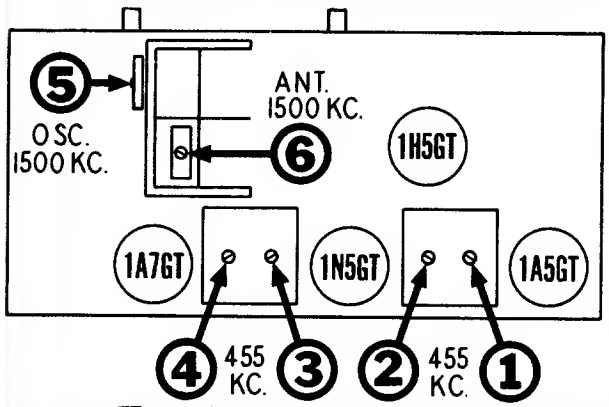
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions.

1. For all gain measurements connect signal generator as shown. Use 600 KC signal with 400 cycles modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 1½-volt battery to A.V.C. lead and positive terminal to chassis. This provides a definite operating point.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 1½ volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



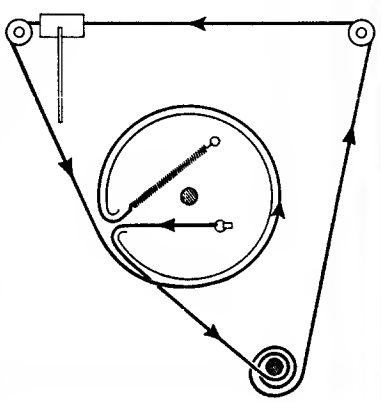
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

114955 Clip on end of cord
117057 Cord (36 inches)
119087 Ring for dial cord
114968 Tension Spring



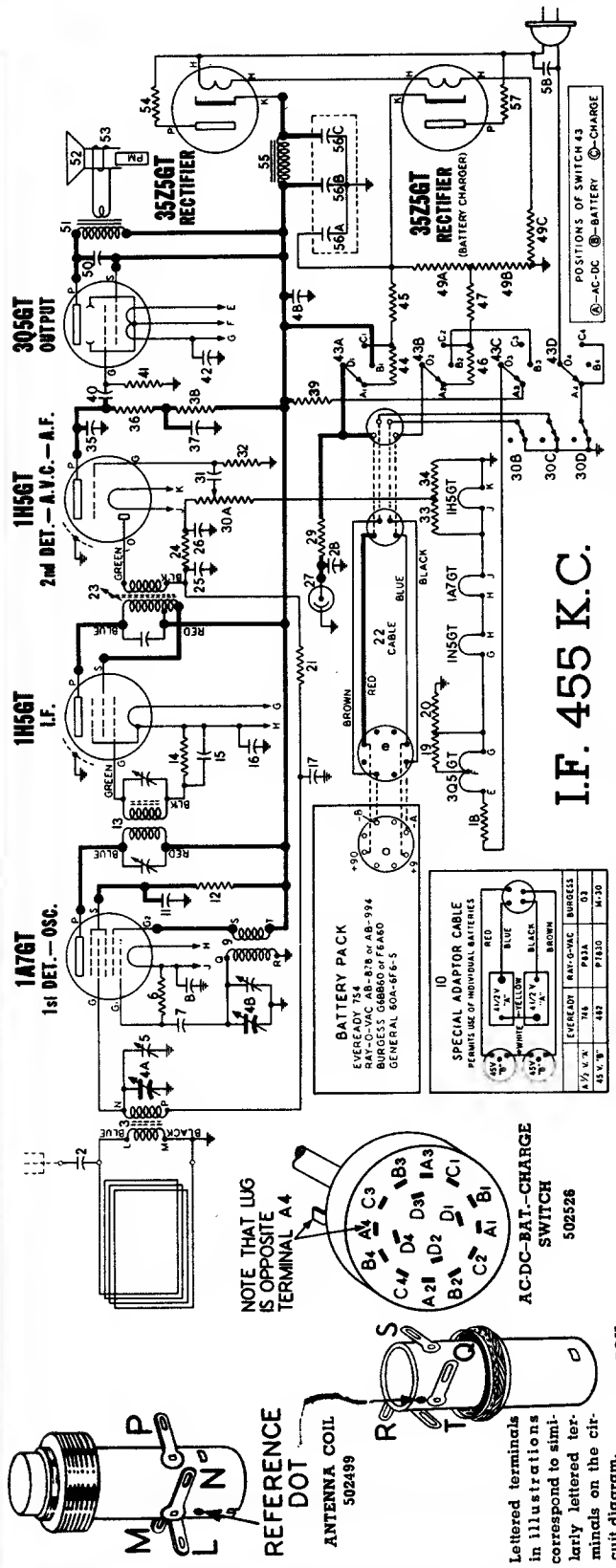
POWER LINE OPERATION

The following power pack may be used to operate this set on 110 volt 50-60 cycle A.C. power lines.

Porta-Power Model "H"

This unit is manufactured by the General Transformer Corp., 1250 W. Van Buren St., Chicago, Ill.

STEWART-WARNER MODELS 9007-A,F,G.



See page 144 for alignment data.

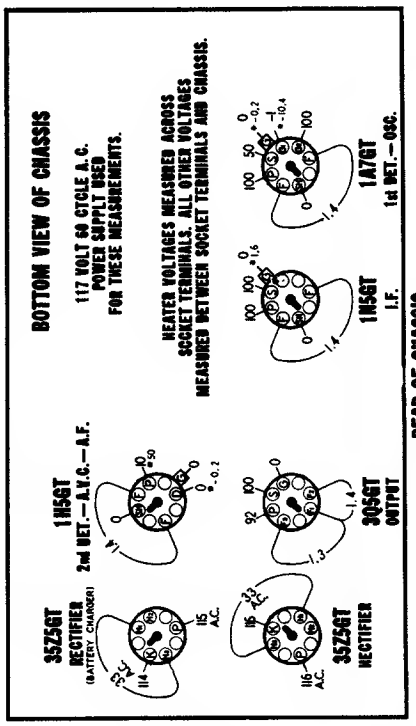
Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.

"AC-DC—BAT.—CHARGE" SWITCH IN "AC-DC" POSITION



*—Measured with vacuum tube voltmeter.

RESISTORS

6	502133	Resistor—carbon 220,000 ohms ¼ watt
12	502131	Resistor—carbon 47,000 ohms ¼ watt
14	502136	Resistor—carbon 10 Meg. ¼ watt
18	502455	Resistor—carbon 27 ohms ¼ watt
19	502457	Resistor—carbon 330 ohms ¼ watt
20	502458	Resistor—carbon 430 ohms ¼ watt
21	502269	Resistor—carbon 3.3 Meg. ¼ watt
24	502132	Resistor—carbon 100,000 ohms ¼ watt
29	502269	Resistor—carbon 3.3 Meg. ¼ watt
30-A,B,C,D	502525	Volume control (with switch) 1 Meg.
32	502269	Resistor—carbon 3.3 Meg. ¼ watt
33, 34	502456	Resistor—carbon 220 ohms ¼ watt
36	502268	Resistor—carbon 1 Meg. ¼ watt
38	502134	Resistor—carbon 470,000 ohms ¼ watt
39	500712	Resistor—wire wound 1830 ohms 5 watt
41	502135	Resistor—carbon 2.2 Meg. ¼ watt
44	502266	Resistor—carbon 15,000 ohms ¼ watt
45	502459	Resistor—carbon 6800 ohms ¼ watt
46	502457	Resistor—carbon 330 ohms ¼ watt
47	502455	Resistor—carbon 27 ohms ¼ watt
49-A,B,C	500715	Resistor—wire wound A—1460 ohms 10 watt B—155 ohms 1 watt C—310 ohms 10 watt
54	502454	Resistor—wire wound 47 ohms 1 watt
57	502454	Resistor—wire wound 47 ohms 1 watt

CONDENSERS

2	502150	Condenser—.004 Mfd. 600 volt
4-A, B	502494	Condenser—variable gang
5	119132	Condenser—trimmer 2 to 15 Mmfd.
7	502159	Condenser—mica 50 Mmfd. 500 volt
8	502153	Condenser—.05 Mfd. 200 volt
11	502547	Condenser—electrolytic 4 Mfd. 150 volt
15	502153	Condenser—.05 Mfd. 200 volt
16	502155	Condenser—.1 Mfd. 200 volt
17	502153	Condenser—.05 Mfd. 200 volt
25, 26	502159	Condenser—mica 50 Mmfd. 500 volt
28	502155	Condenser—.1 Mfd. 200 volt
31	502156	Condenser—.004 Mfd. 400 volt
35	502160	Condenser—mica 110 Mmfd. 500 volt
37	502155	Condenser—.1 Mfd. 200 volt
40	502151	Condenser—.01 Mfd. 400 volt
42	502527	Condenser—electrolytic 50 Mfd. 25 volt
48	502155	Condenser—.1 Mfd. 200 volt
50	502453	Condenser—.002 Mfd. 400 volt
56-A,B,C	500714	Condenser—electrolytic A—20 Mfd. 150 volt B—20 Mfd. 200 volt C—20 Mfd. 200 volt
58	502153	Condenser—.05 Mfd. 200 volt

STEWART-WARNER MODELS 9007-A,F,G.

ALIGNMENT PROCEDURE

Slide chassis partially out of cabinet by removing staples at each side of wood shelf and pulling entire shelf back about 2 inches. Do not disturb connections to loop antenna.

Connect an output meter across the voice coil of the speaker or between the plate of the 3Q5GT output tube and chassis through a .1 mfd. condenser.

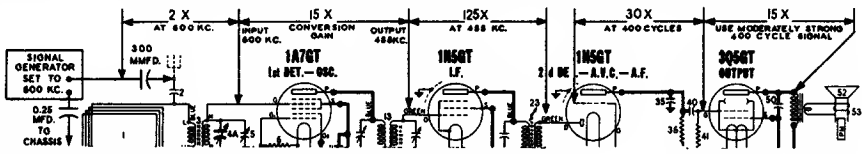
Connect the ground lead of the signal generator to chassis through a .25 mfd. condenser.

Set the volume control in the maximum position and use a weak signal from the generator.

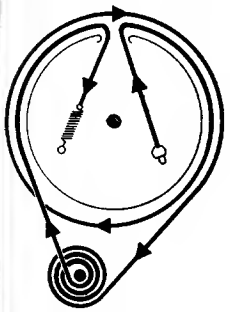
Set "AC-DC—BAT.—CHARGE" Switch in "AC-DC" position.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
300 MMFD. Condenser	Grid Cap of 1A7GT Tube	455 KC.	Any Point Where It Does Not Affect Signal	1	2nd I.F.	Loosen lock nut. Adjust screw for maximum output.
				2-3	1st I.F.	Adjust for maximum output. Recheck 1, 2 and 3 for maximum output and tighten lock nut on 1.
300 MMFD. Condenser	Center Terminal on Antenna Terminal Strip at bottom of cabinet.	1500 KC.	1500 KC. (Slide set into cabinet and replace pointer to set dial.)	4	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
300 MMFD. Condenser	Center Terminal on Antenna Terminal Strip at bottom of cabinet.	1500 KC.	Tune to 1500 KC. Generator Signal	5	Broadcast Antenna	Adjust for maximum output. Slide chassis all the way into cabinet when making this adjustment.

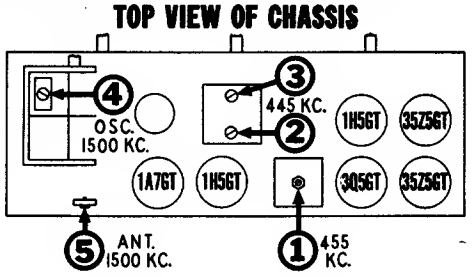
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 1½ volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



TOP VIEW OF CHASSIS



DIAL DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position

INDICATOR LAMP

The flashing neon lamp on the dial face indicates condition of batteries. This lamp is included in an oscillating (R-C) circuit which is designed to oscillate at approximately 3 pulses per second when batteries are in a fully charged condition. As the battery voltage decreases with use, number of pulses per second decreases.

When battery voltage is low (approximately 72 volts) the lamp flashes more slowly (about once per second). The set should not be operated from battery power after this point is reached and batteries should be recharged immediately. Charge for at least twice the time they were used and as soon as possible after they are run down. As batteries age it is necessary to charge for a longer period. For longest battery life, charge immediately after using.

IMPORTANT:

1. Completely dead batteries cannot be recharged.
2. When set is connected to a DC line, check for correct polarity by operating it before attempting to charge the batteries.
3. Batteries will be discharged if ON-OFF switch is left ON when power cord is not connected to wall outlet.

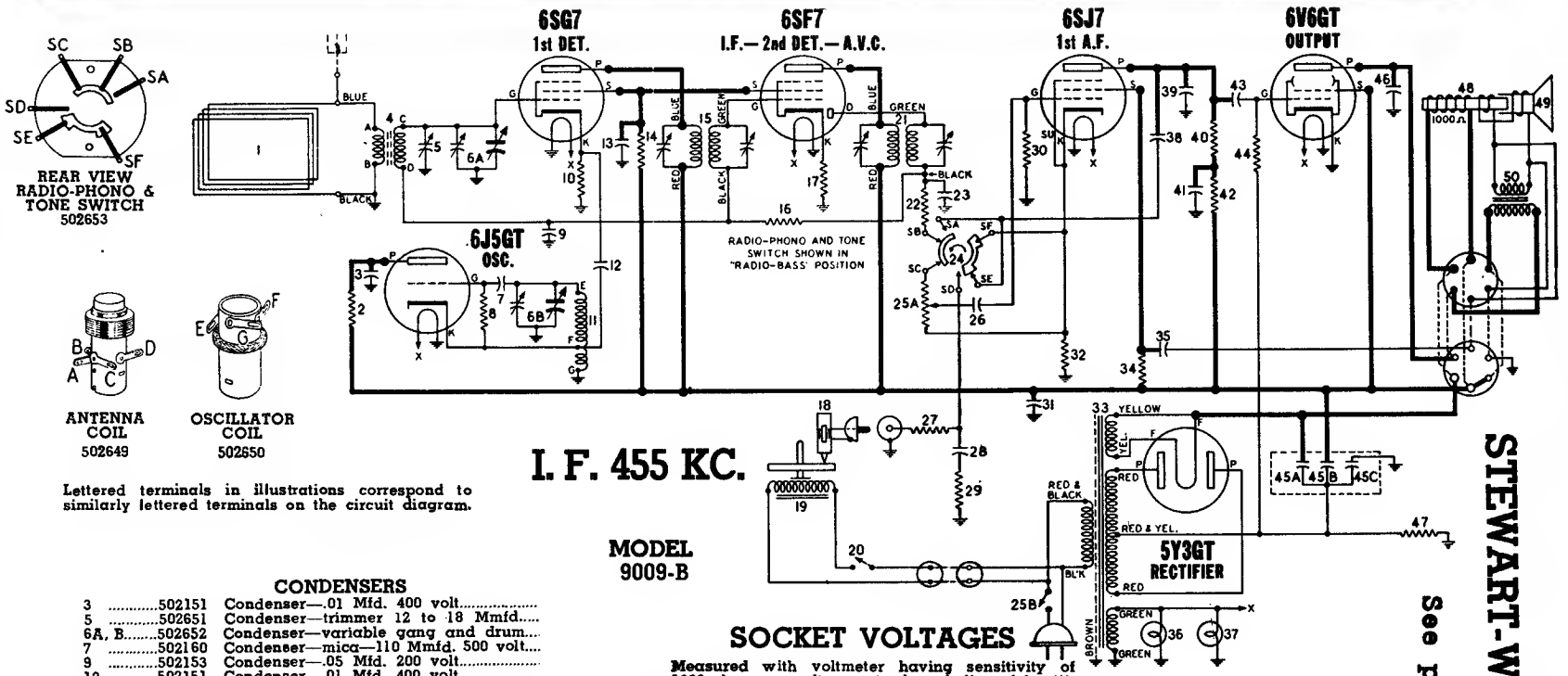
This lamp will only show the true condition of the batteries when the Selector Switch is in the "Battery" position. Lamp flashes more rapidly during charging or "AC-DC" operation.

CHARGING CIRCUIT

The battery charging circuit consists of a 35Z5GT rectifier and a suitable resistor voltage dividing network. This circuit provides a very low charging current when the receiver is operated on AC-DC and is just enough to maintain the batteries but will not charge them. A separate charging position is provided for the regular charging operation. A charging rate of approximately ⅓ the discharge rate is used to give best results.

STEWART-WARNER MODEL 9009-B

See page 146 for alignment data.



Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

I. F. 455 KC.

MODEL 9009-B

CONDENSERS

3	502151	Condenser—.01 Mfd. 400 volt
5	502651	Condenser—trimmer 12 to 18 Mmfd.
6A, B	502652	Condenser—variable gang and drum
7	502160	Condenser—mica—110 Mmfd. 500 volt
9	502153	Condenser—.05 Mfd. 200 volt
12	502151	Condenser—.01 Mfd. 400 volt
13	502157	Condenser—.05 Mfd. 400 volt
23	502160	Condenser—mica 110 Mmfd. 500 volt
26	502156	Condenser—.004 Mfd. 400 volt
28	502479	Condenser—.006 Mfd. 600 volt
31	502157	Condenser—.05 Mfd. 400 volt
35	502405	Condenser—.25 Mfd. 400 volt
38	502150	Condenser—.004 Mfd. 600 volt
39	502271	Condenser—mica—260 Mmfd. 500 volt
41	502410	Condenser—.1 Mfd. 400 volt
43	502152	Condenser—.02 Mfd. 400 volt
45A, B, C	502207	Condenser—electrolytic A — 20 Mfd. 400 volt B — 10 Mfd. 400 volt C — 20 Mfd. 25 volt
46	502156	Condenser—.004 Mfd. 400 volt

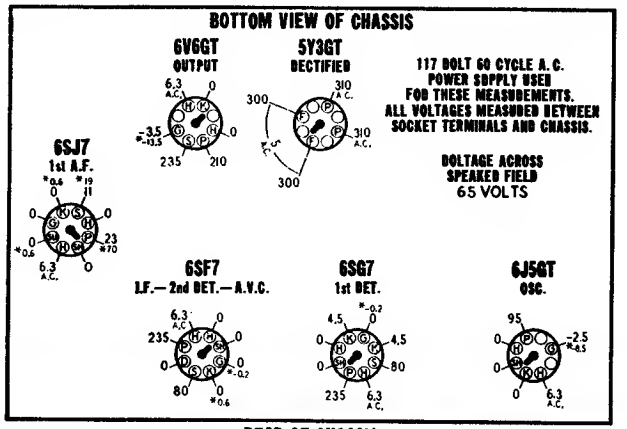
RESISTORS

2	502466	Resistor—carbon—33,000 ohms 1 watt
8	502131	Resistor—carbon—47,000 ohms ¼ watt
10	502514	Resistor—carbon—3,300 ohms ¼ watt
14	502288	Resistor—carbon—47,000 ohms 1 watt
16	502269	Resistor—carbon—3.3 Meg. ¼ watt
17	502264	Resistor—carbon—47 ohms ¼ watt
22	502131	Resistor—carbon—47,000 ohms ¼ watt
25A, B	502654	Volume control—with switch; 1 Meg.
27	502133	Resistor—carbon—220,000 ohms ¼ watt
29	502408	Resistor—carbon—68,000 ohms ¼ watt
30	502468	Resistor—carbon—4.7 Meg. ¼ watt
32	502406	Resistor—carbon—1,500 ohms ¼ watt
34	502135	Resistor—carbon—2.2 Meg. ¼ watt
40	502133	Resistor—carbon—220,000 ohms ¼ watt
42	502133	Resistor—carbon—220,000 ohms ¼ watt
44	502134	Resistor—carbon—470,000 ohms ¼ watt
47	502293	Resistor—wire wound—200 ohms 2 watt

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

RADIO-PHONO-TONE SWITCH IN "RADIO-BASS" POSITION
VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC.



*—Measured with vacuum tube voltmeter.

STEWART-WARNER MODEL 9009-B

Remove chassis and loop antenna (cabinet back) from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.

With the gang condenser fully meshed, the dial pointer should be in the position indicated by the last mark below 55 on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.

Connect an output meter across the speaker voice coil or from the plate of the 6V6GT tube to chassis through a .1 Mfd. condenser.

Connect the ground lead of signal generator to the receiver chassis.

Set volume control at maximum volume position and use a weak signal from the signal generator.

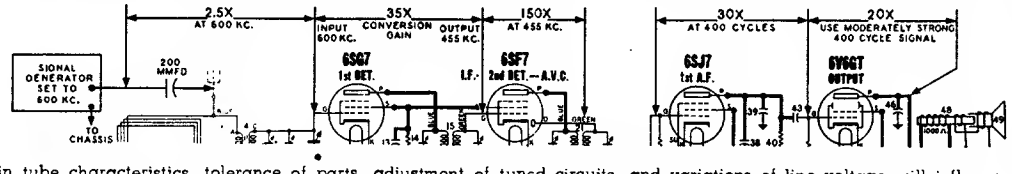
DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Trimmer on top section of gang.	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Antenna	1500 KC	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Antenna	1500 KC	Tune to 1500 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.

APPROXIMATE STAGE GAIN DATA

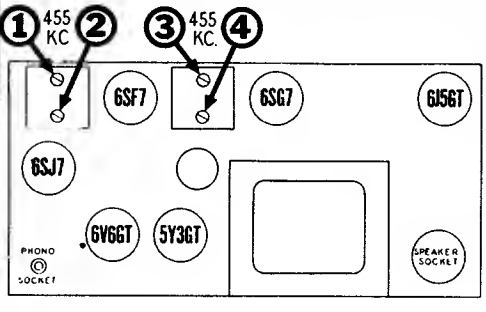
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 K.C. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to chassis. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



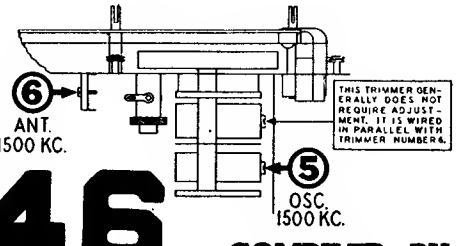
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

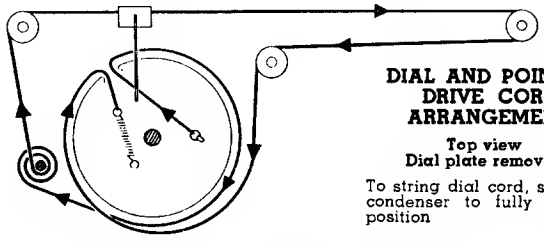


The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the speaker or output transformer it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the primary of the output transformer.

IMPORTANCE OF MAINTAINING FIXED POSITIONS FOR LEADS AT TOP OF CHASSIS

The shielded leads which are routed to the "Radio-Phono" switch and volume control should be tied to the upright bracket which supports the dial assembly. Grounded shields on these leads must not be allowed to contact electrolytic condenser case. If case of condenser is grounded it will short out bias voltage for 6V6GT tube.

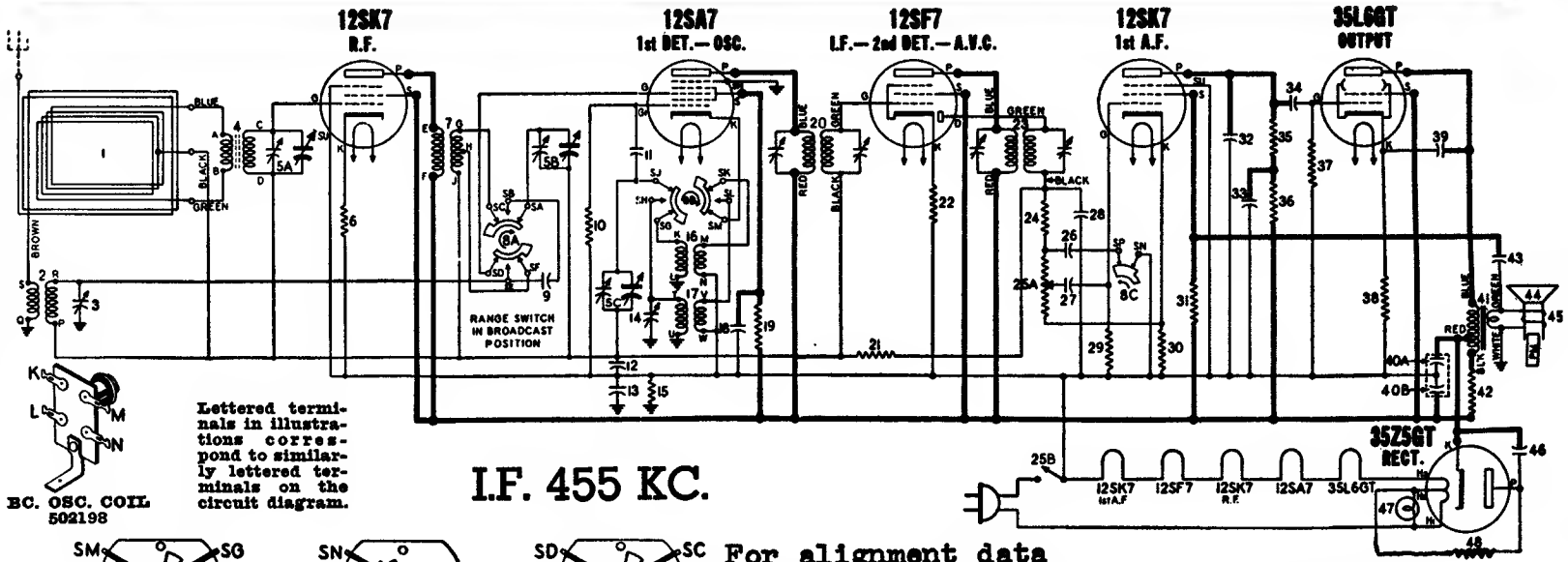




DIAL AND POINTER DRIVE CORD ARRANGEMENT

Top view
Dial plate removed

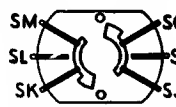
To string dial cord, set gang condenser to fully meshed position



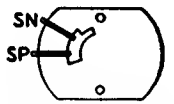
BC. OSC. COIL
502198

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

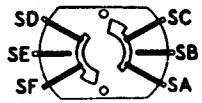
I.F. 455 KC.



FRONT DECK
FRONT VIEW



FRONT DECK
REAR VIEW

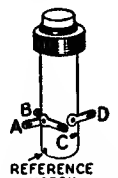


REAR DECK
FRONT VIEW

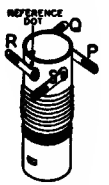
For alignment data see page 148, over.

BAND AND TONE SWITCH

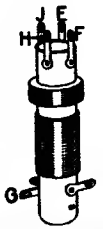
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).



BC. ANTENNA COUPLING COIL 502121



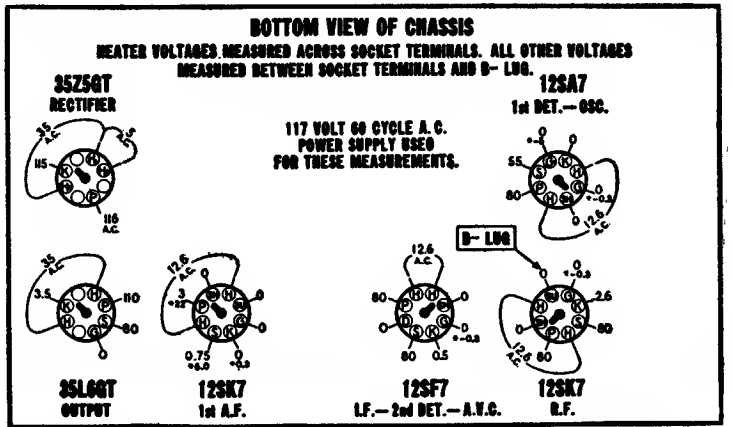
S.W. ANTENNA COIL 502740



R.F. COIL
502142

S.W. OSC. COIL
502197

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

CONDENSERS

3	502172	Condenser—trimmer; 25 to 100 Mmfd.
5A-5B-5C	502123	Condenser—variable gang (with drum).
9	502162	Condenser—315 Mmfd. 500 volt.
11	502159	Condenser—mica—50 Mmfd. 500 volt.
12	502155	Condenser—.1 Mfd. 200 volt.
13	502158	Condenser—.2 Mfd. 200 volt.
14	502172	Condenser—trimmer; 25 to 100 Mmfd.
18	502262	Condenser—.25 Mfd. 200 volt.
26	502470	Condenser—.0008 Mfd. 400 volt.
27	502453	Condenser—.002 Mfd. 400 volt.
28	502160	Condenser—mica—110 Mmfd. 500 volt.
32	502160	Condenser—mica—110 Mmfd. 500 volt.
33	502153	Condenser—.05 Mfd. 200 volt.
34	502156	Condenser—.004 Mfd. 400 volt.
39	502151	Condenser—.01 Mfd. 400 volt.
40A-40B	500256	Condenser—electrolytic: A-40 Mfd. 150 volt; B-20 Mfd. 400 volt.
43	502152	Condenser—.02 Mfd. 400 volt.
46	502157	Condenser—.05 Mfd. 400 volt.

RESISTORS

6	502140	Resistor—carbon 390 ohms ¼ watt.
10	502130	Resistor—carbon 22,000 ohms ¼ watt.
15	502133	Resistor—carbon 220,000 ohms ¼ watt.
19	502291	Resistor—carbon 4700 ohms ¼ watt.
21	502269	Resistor—carbon 3.3 Meg. ¼ watt.
22	502264	Resistor—carbon 47 ohms ¼ watt.
24	502131	Resistor—carbon 47,000 ohms ¼ watt.
25A-25B	502145	Volume control 500,000 ohms (with switch)
29	502136	Resistor—carbon 10 Meg. ¼ watt.
30	502128	Resistor—carbon 2200 ohms ¼ watt.
31	502135	Resistor—carbon 2.2 Meg. ¼ watt.
35-36	502133	Resistor—carbon 220,000 ohms ¼ watt.
37	502134	Resistor—carbon 470,000 ohms ¼ watt.
38	502138	Resistor—carbon 130 ohms ¼ watt.
42	502469	Resistor—carbon 1500 ohms 1 watt.
48	502574	Resistor—carbon 33 ohms ½ watt.

Stewart-Warner Alignment Procedure for Model 9014-E

Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.

Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).

Connect ground lead from signal generator to B— through a .25 Mfd. condenser.

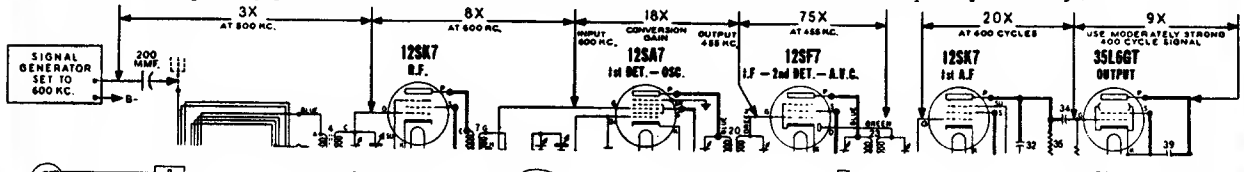
DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Broadcast	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Set pointer to 12 MC. Reference line stamped into metal dial plate (second line from the right)	8	Short Wave Oscillator	Adjust to bring in signal. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC. with trimmer screw farther out. Recheck image.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Tune to 12 MC generator signal	9	Short Wave Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

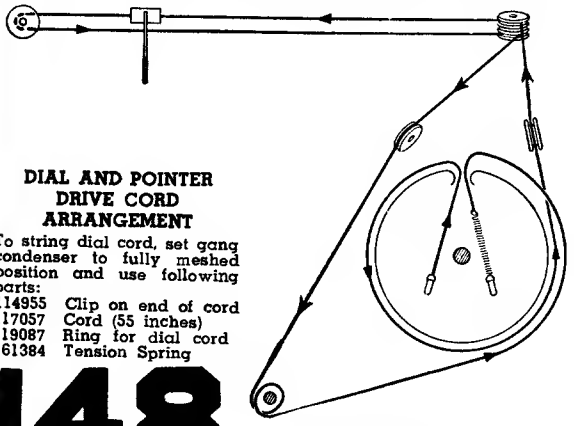
APPROXIMATE STAGE GAIN DATA

A vacuum tube voltmeter may be used for audio gain measurements. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel", type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.

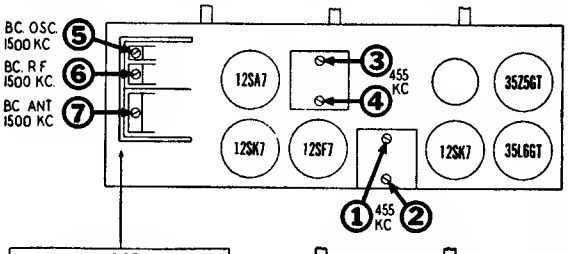


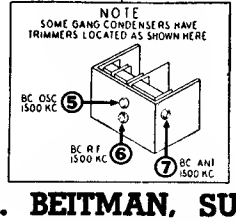


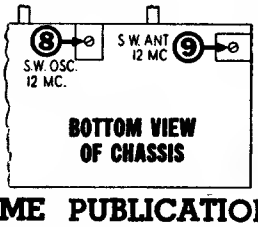
DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

114955 Clip on end of cord
117057 Cord (55 inches)
119087 Ring for dial cord
161384 Tension Spring







STROMBERG-CARLSON NO. 1100 AC-DC RADIO RECEIVERS

NORMAL VOLTAGE READINGS

Use a good voltmeter having a resistance of at least 1000 ohms per volt. See chart below if electronic voltmeter is used.

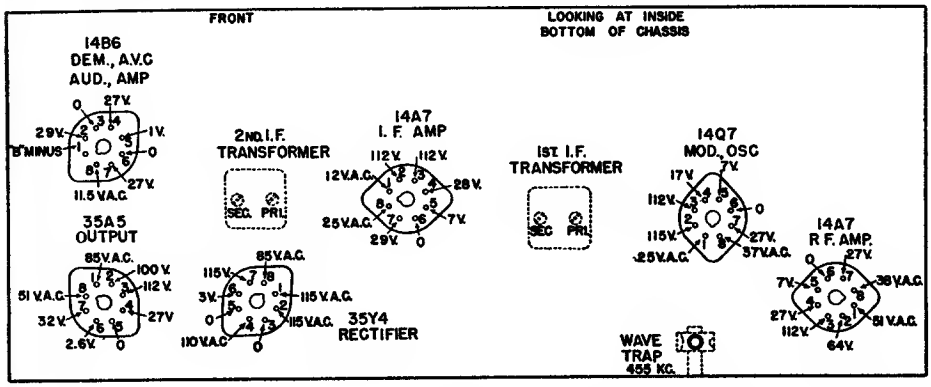
Take all readings with chassis operating and tuned to approximately 1000 Kc.—no input signal.

Use a line voltage of 117 volts or make allowance for the variation.

Read from indicated socket terminals to B minus. A convenient point is terminal No. 1 of the 14B6 Dem. A.V.C. Socket.

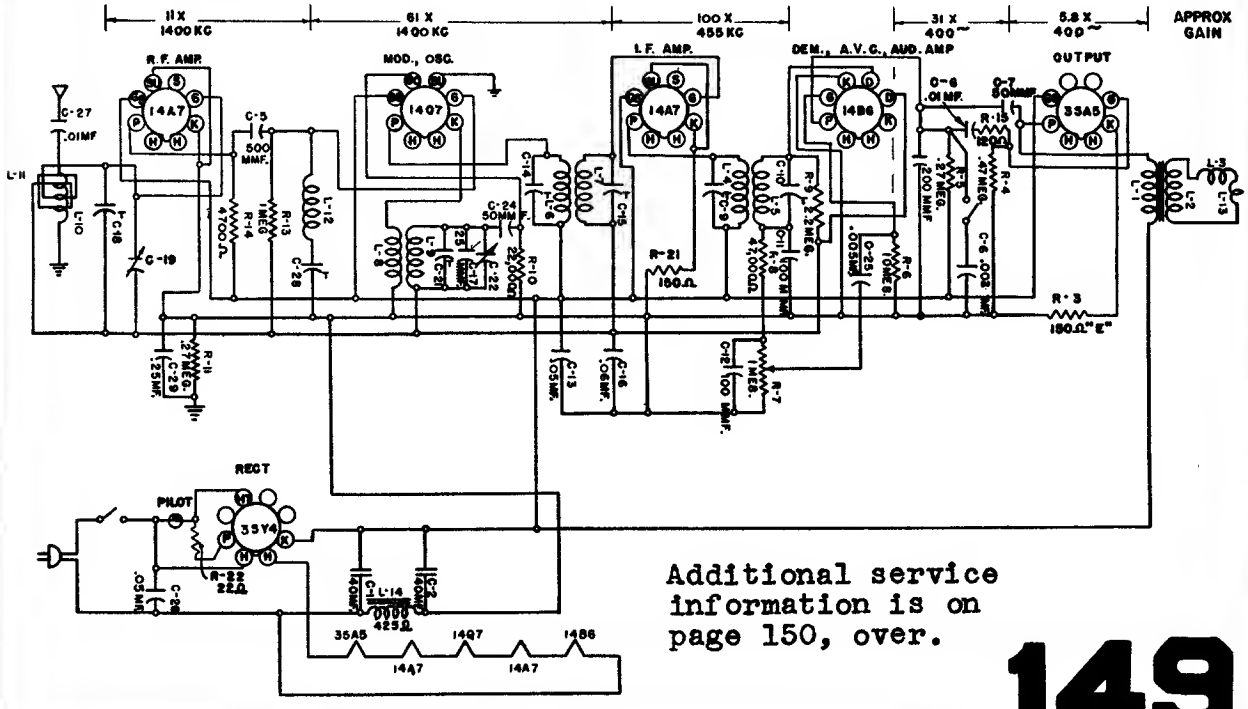
See Location Chart for position of terminals.

A. C. Voltages are indicated as A. C.; when the receiver is operated from a D. C. power supply, D. C. voltages will be obtained in place of A. C. voltages shown.



VOLTAGE CHART FOR ELECTRONIC VOLTMETER

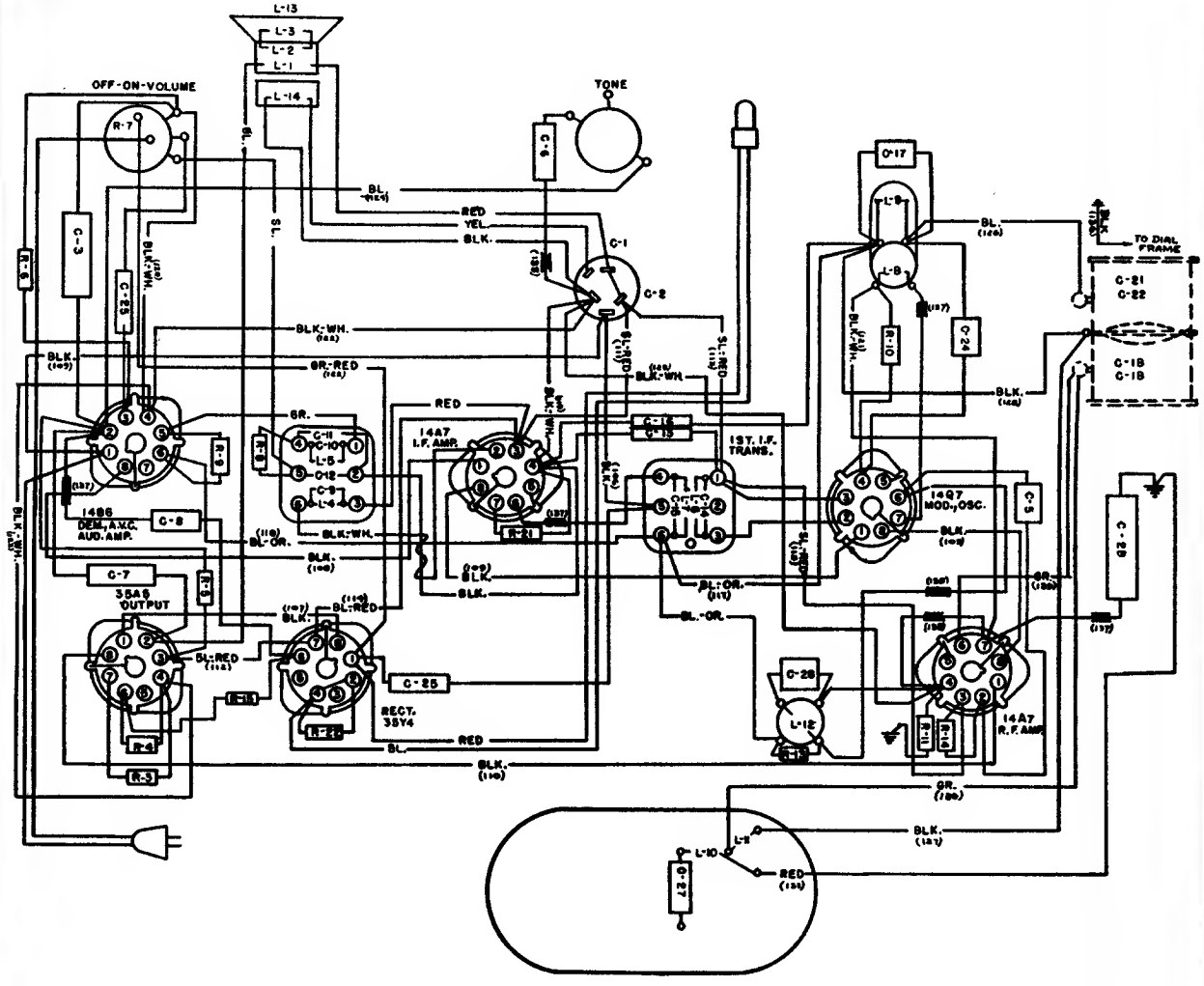
Tube	Circuit	1	2	3	4	5	6	7	8
14B6	Dem. A.V.C. Audio Amp.	—B	81	14	26.5	23.5	18	27	12AC
14A7	I. F. Amp.	11.5AC	105	105	36.5	26	18.4	27.6	24AC
14A7	R. F. Amp.	47AC	69	105	26.7	26	18.4	26.7	35AC
35A5	Output	82.5AC	100	105	26.5	0	25	32	49AC
14Q7	Mod. Osc.	27.5AC	105	105	18	26	17.2	26.5	36AC
35Y4	Rect.	105AC	117AC	0	117AC	0	25.8	105	85AC



Additional service information is on page 150, over.

STROMBERG-CARLSON NO. 1100 AC-DC RADIO RECEIVERS

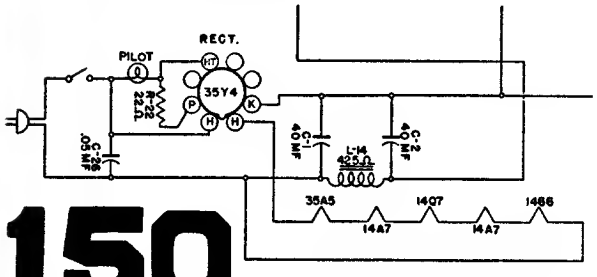
(Continued from page 149).



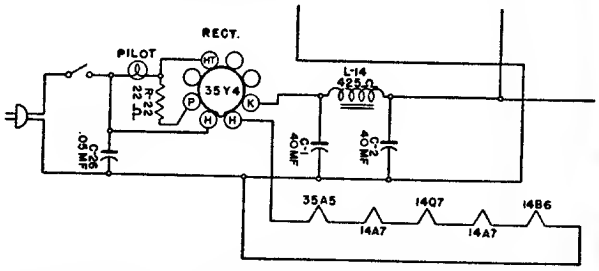
1100 RECEIVER—CHANGE IN RECTIFIER CIRCUIT

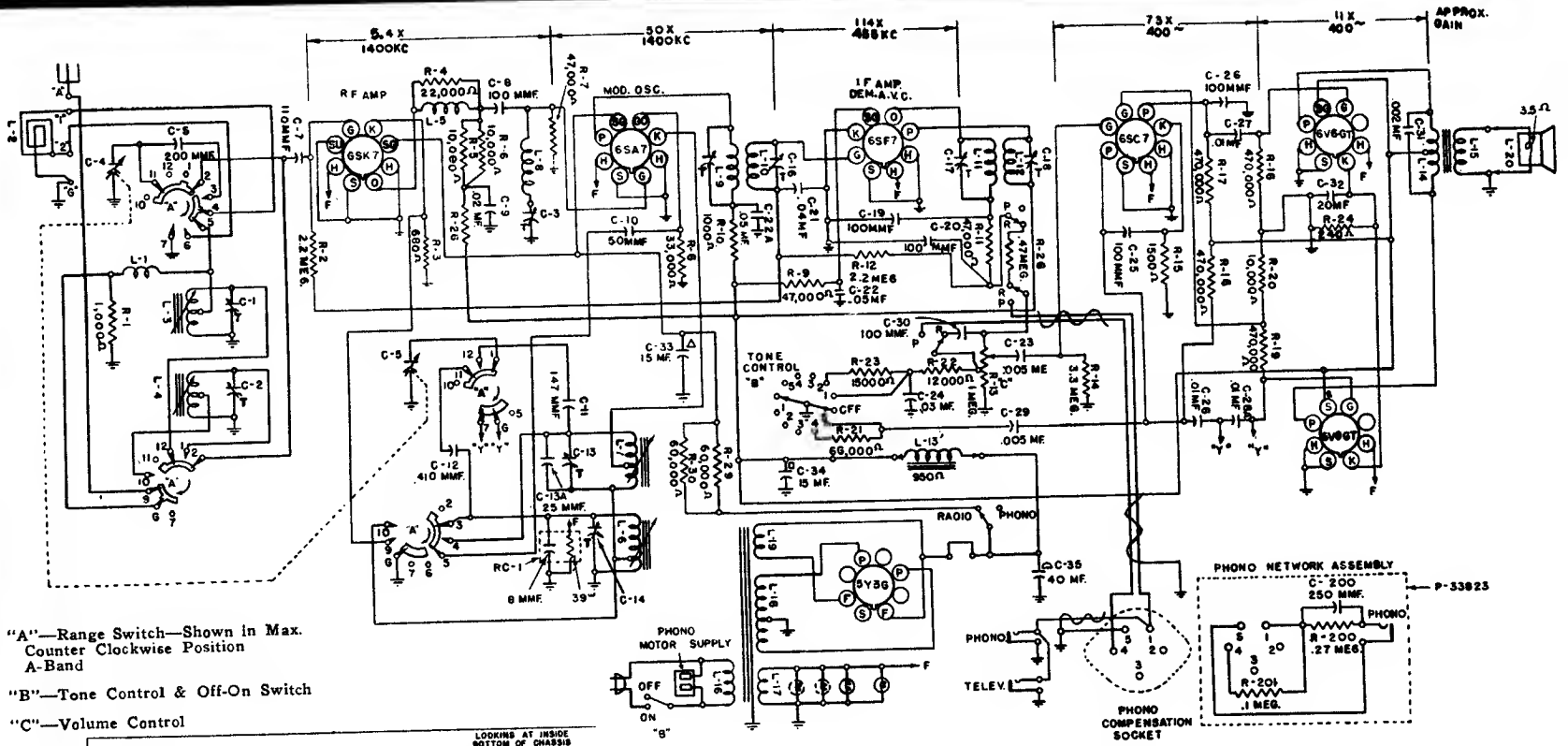
Field Coil of Speaker has been removed from negative side of Rectifier Circuit to positive side.

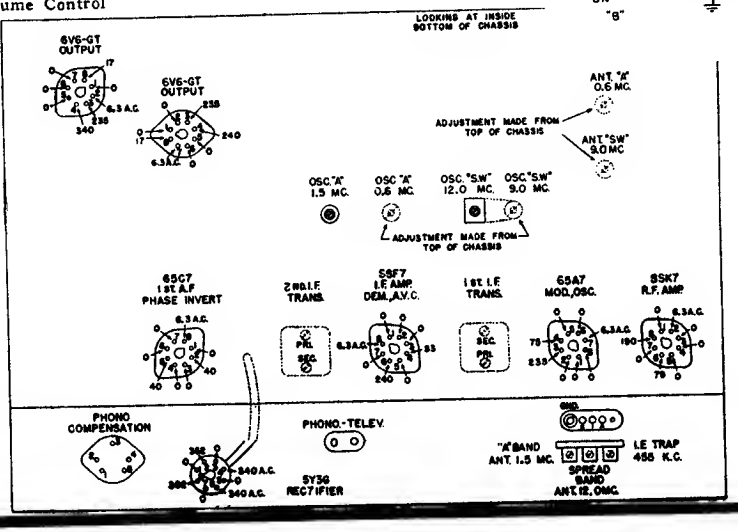
CIRCUIT BEFORE CHANGE
Using Capacitor 34506 C-1, C-2



CIRCUIT AFTER CHANGE
Using Capacitor 111001 C-1, C-2







NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned to 1000 kc.—No signal. Use a line voltage of 117 ±5 volts or make allowance for the variations. Voltages on location chart are taken with a 1000 ohm per voltmeter.

Stromberg-Carlson
No. 1020-1120
Radio Receivers

Alignment information on page 152.

STROMBERG-CARLSON NO. 1020-1120 RADIO RECEIVERS

Voltage Rating ---------- A.C. 105 to 130 Volts
Type of Circuit ---------- Superheterodyne with Push Button Tuning
Tuning Ranges ---------- A—540 to 1600 Kc., C—8.8 to 12 Mc.
Number and Type of Tubes—7

1—6SK7 R. F. Amplifier
1—6SA7 Modulator and Oscillator
1—6SF7 I. F. Amplifier, Demodulator and A. V. C.
1—6SC7 Audio Amplifier and Inverter
2—6V6GT Output
1—5Y3G Rectifier

Input Power Rating ---------- 96-115 Watts
Intermediate Frequency ---------- 455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles ---------- Approximately 3.5 Ohm
Speaker Field Coil Resistance ---------- 950 Ohms
Power Output ---------- 10 Watts 10% Distortion, 12 Watts Maximum

ALIGNING INFORMATION

Never re-align unless absolutely necessary.

Use a good modulated signal generator (test oscillator with variable output voltage and a sensitive output meter across the voice coil of the speaker).
Always align using the smallest possible input from the signal generator. A strong signal makes adjustments inaccurate.

Always have the volume control "full on".

ALIGNING PROCEDURE (follow this order exactly).

I. Intermediate Frequency Adjustments.

1. Set range switch to Standard Broadcast position (loop).
2. Turn the tuning control to extreme low frequency end of dial.
3. Connect the ground terminal of the signal generator to the gronnd terminal of the chassis.
4. Introduce a modulated signal of 455 kilocycles to the grid of the 6SA7 Modulator and Oscillator tube (terminal No. 8) using a 0.1 microfarad capacitor in series with the output lead of the signal generator.
5. Adjust the I. F. aligners for maximum output in the following order:
   A. Secondary of second I. F. Transformer.
   B. Primary of second I. F. Transformer.
   C. Secondary of first I. F. Transformer.
   D. Primary of first I. F. Transformer.

II. Dial Pointer Adjnstment.

With the plates of the gang tuning capacitor fully engaged, check to be sure that the dial pointer is in a vertical position directly on the calibration marks located at the low frequency end of the dial scale. Adjust the dial pointer if necessary.

III. Radio Frequency Adjustments.

Short Wave Range

1. Remove the output lead of the signal generator and the 0.1 microfarad capacitor from the grid of the 6SA7 tube.
2. Disconnect the output lead from the signal generator and replace with a few turns of wire connected to the signal generator output terminals.
3. Placc the signal generator two or three feet from the receiver's loop.
4. Set the range switch to the short-wave range position.
5. Set the signal generator frequency and the receiver tuning dial to 9 megacycles.
6. Adjust the 9 megacycle oscillator and loop aligners (iron cores) for maximum signal.
7. Set the signal generator frequency and the receiver tnning dial to 12 megacycles.
8. Adjust the 12 megacycle oscillator aligning capacitors for maximum signal. Then rock the tuning gang capacitor slowly through resonance and adjnst the 12 megacycle antennae aligning capacitor for maximum signal.
9. Repeat operations 5 and 6.
10. Repeat operations 7 and 8.

Standard Broadcast Range

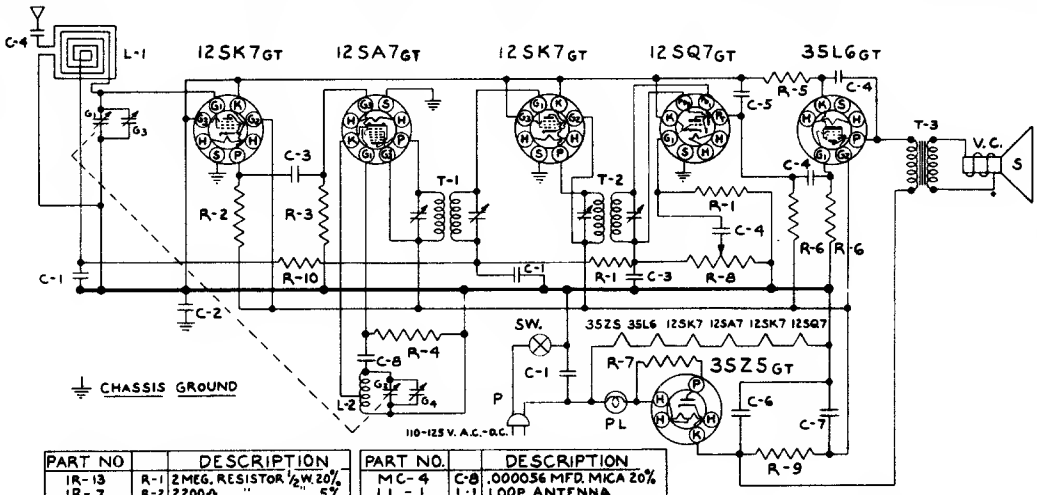
1. Set the range switch to the "Loop" position.
2. Set the signal generator frequency and the receiver tuning dial to 600 kilocycles.
3. Adjust the 600 K. C. oscillator and antennae aligner (iron cores) for maximum signal.
4. Set the signal generator frequency and the receiver tuning dial to 1400 kilocycles.
5. Adjust the 1400 K. C. oscillator and antennae aligning capacitors for maximum signal.
6. Repeat operations 2 and 3.
7. Repeat operations 4 and 5.

IV. Wave Trap Adjustment.

1. Tune the receiver to 1000 kc.
2. Set the signal generator frequency to 455 kc. Increase signal generator output until audible in speaker.
3. Adjust the wave trap aligning capacitor for minimum signal.

VOLTAGE TABLE FOR ELECTRONIC VOLTMETER

Tube		1	2	3	4	5	6	7	8
6V6	Output	0	6.3AC	245	251	0	0	0	16
6V6	Output	0	0	245	251	0	0	6.3AC	16.
6SC7	1st A.F. Conv.	0	93	0	0	93	1.1	0	6.3AC
6SA7	Mod. Osc.	0	0	246	80	7.5	0	6.3AC	0
5Y3	Rect.	0	360	0	340AC	0	340AC	0	360
6SF7	I.F. Det. A.V.C.	0	.6	0	92	0	250	0	6.3AC
6SK7	R.F. Amp.	0	6.3AC	0	.6	0	80	0	196



PART NO		DESCRIPTION
IR-13	R-1	2 MEG. RESISTOR ½ W. 20%
IR-7	R-2	2200Ω " 5%
IR-10	R-3	47000Ω " 20%
IR-16	R-4	33,000Ω " "
IR-5	R-5	220Ω " "
IR-11	R-6	470 MΩ " "
IR-4	R-7	47Ω " "
VC-3	R-8	1 MEG VOLUME CONTROL
IR-15	R-9	2200Ω RESISTOR ½ W. 20%
IR-12	R-10	1 MEG. " " "
PC-5	C-1	.05 MFD. COND. 400 V.
PC-8	C-2	.1 MFD. COND. 400 V.
MC-2	C-3	.0001 MFD. MICA 20%
PC-7	C-4	.01 MFD. COND. 400 V.
MC-5	C-5	.0005 MFD. MICA 20%
EC-3	C-6	40 MFD 150 V. ELECTROLYTIC
	C-7	20 MFD

PART NO.		DESCRIPTION
MC-4	C-8	.000056 MFD. MICA 20%
LL-1	L-1	LOOP ANTENNA
LO-2	L-2	OSC. COIL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. "
	T-3	OUTPUT SPK. "
SPK-4	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	*47 PILOT BULB
GC-2	G-1 G-2	GANG COND.
TC-7	G-3	ANT. TRIMMER COND.
TC-6	G-4	OSC. TRIMMER COND.
CO-1	P	LINE CORD
TU-4	—	12SK7GT 12SA7GT 12SK7GT 12SQ7GT 35L6GT 35Z5GT

CHASSIS Nº 102

TRAV-LER RADIO CORP.

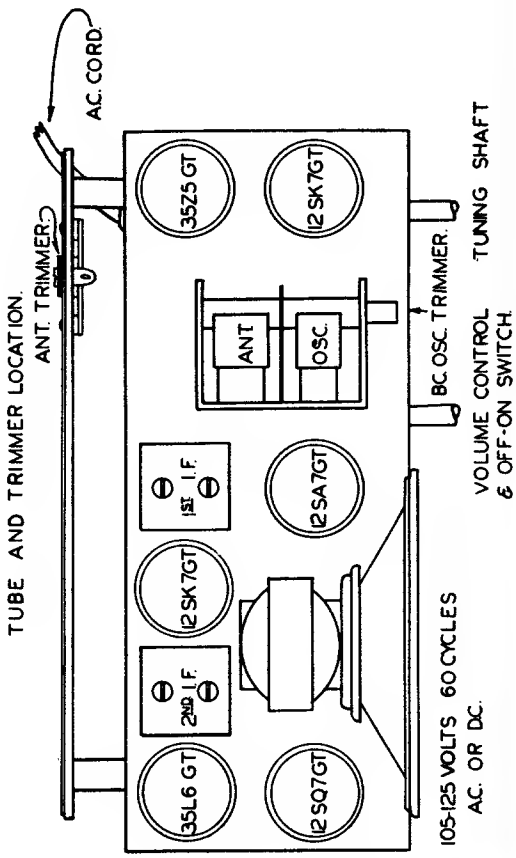
Model 5002

The receiver volume control should be turned to moximum during the I.F. and all subsequent alignments to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

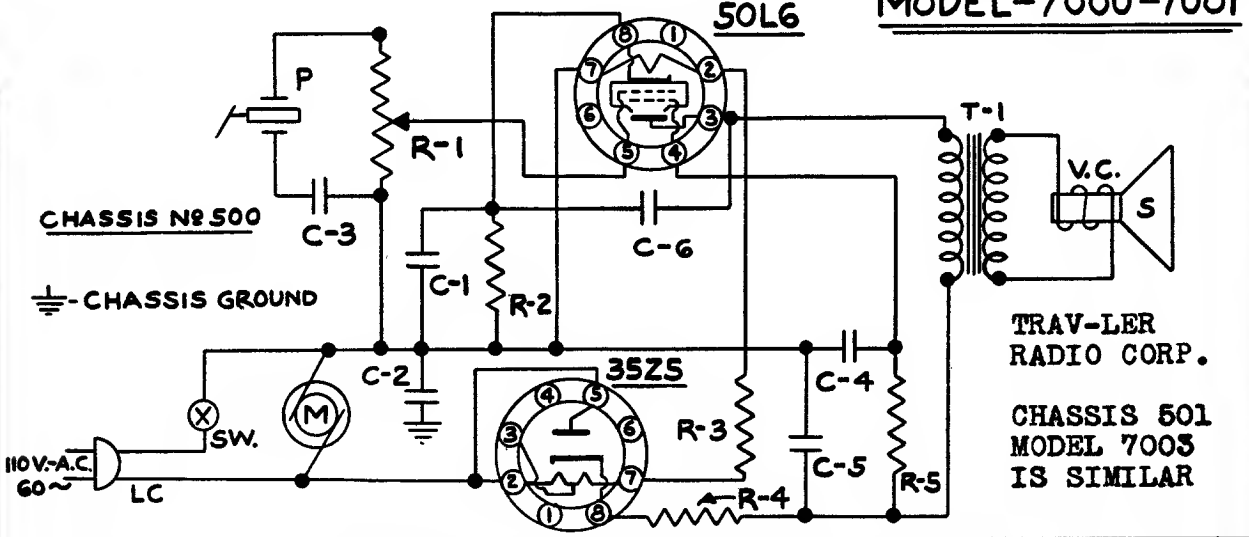
FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the metal frame of the gang condenser. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455 KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis between the volume and tuning controls. Adjust this trimmer until the 1720 KC signal is tuned in.

THIRD STEP: Remove the hot lead of the generotor from the ANT. section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT. trimmer is located on the back of the loop antenna. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

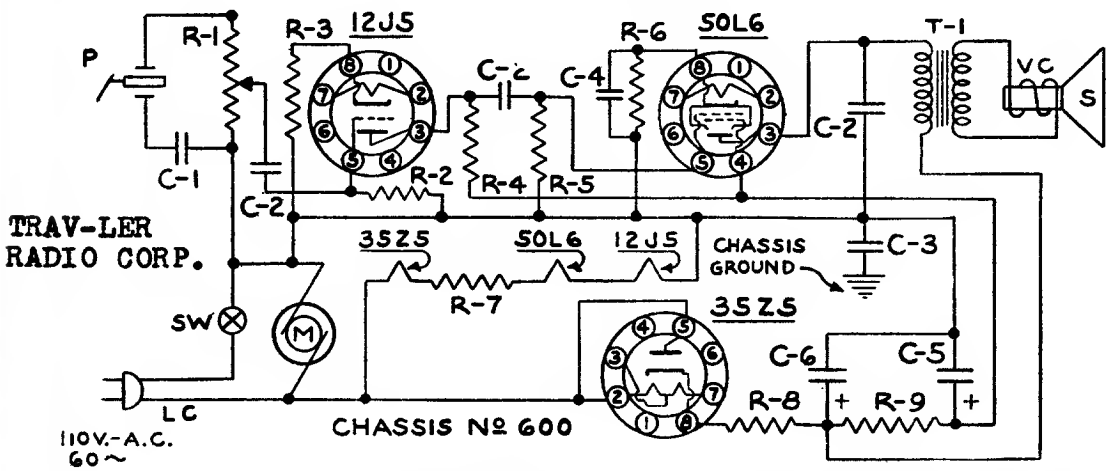


MODEL-7000-7001



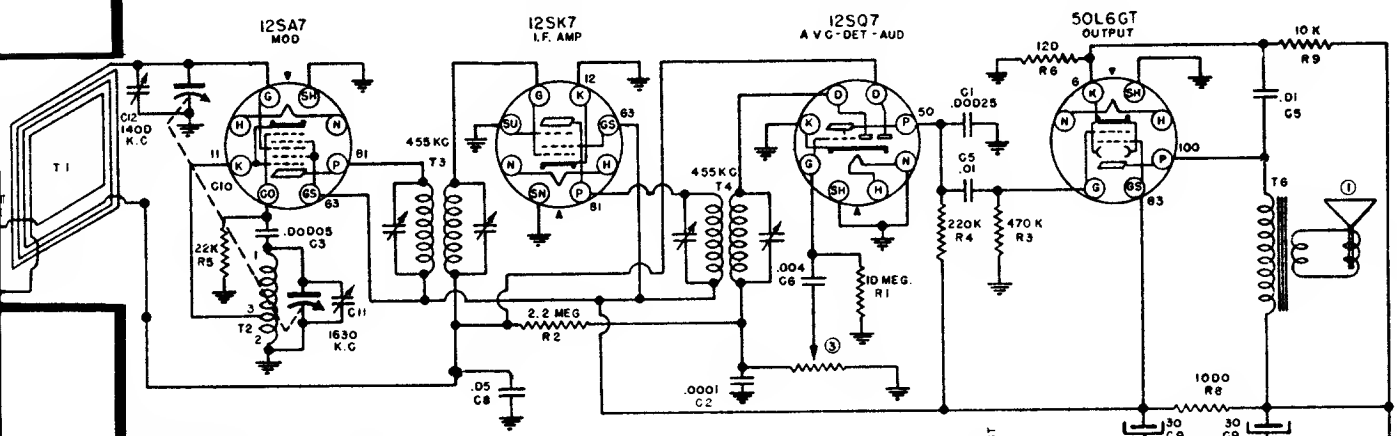
PART NO.		DESCRIPTION	PART NO.		DESCRIPTION
VC-3	R-1	1 MEG. VOLUME CONTROL	CO-2	LC	POWER CORD
CR-11	R-2	150 Ω ½ W.-20% RESISTOR	RC-1	C-6	.01 MFD. 400 W.V. PAPER COND.
WR-1	R-3	210 Ω .5 W.-5% WIRE WOUND	PC-8	C-2	.1 MFD. 400 W.V. PAPER COND.
CR-1	R-4	33 Ω ½ W.-20% RESISTOR	PC-5	C-3	.05 MFD. 400 W.V. PAPER COND.
CR-15	R-5	5000 Ω ½ W. 20% RESISTOR		SW.	A.C. SWITCH ON VOLUME CONTROL
PU-2	P	L-72 CRYSTAL CARTRIDGE		T-1	OUTPUT TRANSFORMER
EC-5	C-1	10 MFD. 25 V.	SP-2	V.C.	VOICE COIL
	C-4	12 MFD. 150 V. ELECTROLYTIC		S.	P.M. SPEAKER
	C-5	80 MFD. 150 V.	TU-2		50L6 - 35Z5
M-1	M	MOTOR-110 V.-60~ 9" TURNTABLE			

MODEL-7005



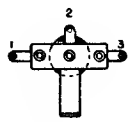
PART NO.		DESCRIPTION	PART NO.		DESCRIPTION
VC-3	R-1	1 MEG. VOLUME CONTROL		C-4	10 MFD. 25 V.
C.R.-16	R-2	220 M Ω RESISTOR ½ W. 20%	EC-5	C-5	12 MFD. 150 V. ELECTROLYTIC
CR-15	R-3	5000 Ω RESISTOR " "		C-6	80 MFD. 150 V. CONDENSER
CR-17	R-4	100 M Ω RESISTOR " "	PU-3	P	L-75 CRYSTAL CARTRIDGE
CR-8	R-5	470 M Ω RESISTOR " "	RC-3	M	RECORD CHANGER MOTOR
CR-11	R-6	150 Ω RESISTOR " "	CO-2	LC	LINE CORD
WR-2	R-7	130 Ω 3 W. 5% WIRE WOUND		SW	A.C. SWITCH ON VOL. CONTROL
CR-1	R-8	33 Ω RESISTOR 1/2 W. 20%		T-1	OUTPUT TRANSFORMER
CR-15	R-9	4700 Ω RESISTOR ½ W 20%	SP-2	VC	VOICE COIL
PC-5	C-1	.05 MFD. CONDENSER 400 V.		S	P.M. SPEAKER
PC-7	C-2	.01 MFD. CONDENSER 400 V.	TU-7		12J5 GT 50L6 GT 35Z5 GT
PC-8	C-3	.1 MFD. CONDENSER 400 V.			

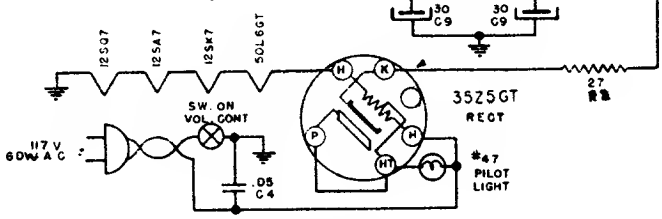
WARWICK MANUFACTURING CORPORATION



MODEL C100

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS
VOLTAGE READINGS INDICATED AT SOCKET TERMINAL ARE TO CHASSIS WITH 1000 OHM PER VOLT METER, WITH NO SIGNAL ON 117 VOLT LINE.
WHERE NO VOLTAGE IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER
CAPACITY VALUES ARE IN MICROFARADS.

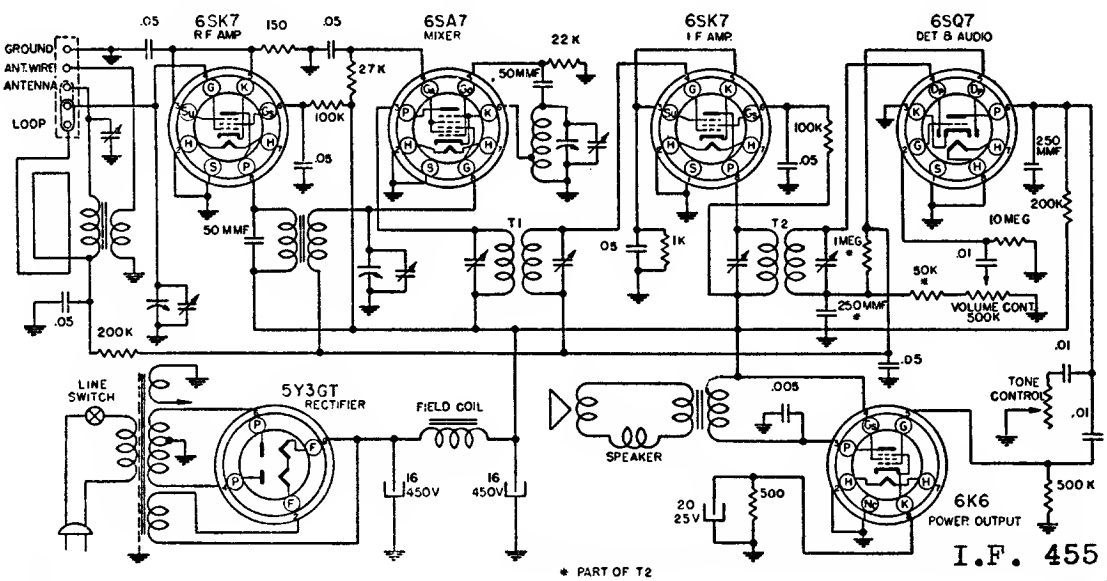




CODE	PART NO.	DESCRIPTION	CODE	PART NO	DESCRIPTION
R 1		10 MEGOHM 1/4 WATT RESISTOR	C 1		.00025 MFD MICA CONDENSER
R 2		2.2 " " "	C 2		.0001 " " "
R 3		470K " "	C 3		.00005 " " "
R 4		220K " "	C 4		.05 MFD. 400V TUBULAR CONDENSER
R 5		22 K " "	C 5		.01 " " "
R 6		120 " "	C 6		.004 " " "
R 7		27 " "	C 7		
R 8		1000 1/2 WATT "	C 8		.05 " 200 V "
R 9		10 K 1 WATT "	C 9	18-266	30 X 30 MFD 150 W.V. ELECTROLYTIC
			C 10	19-177	2 GANG VARIABLE CONDENSER (ALSO C1 & C12)

Model C101 is similar to C100, but uses a record player.

WARWICK MANUFACTURING CORPORATION MODEL C104



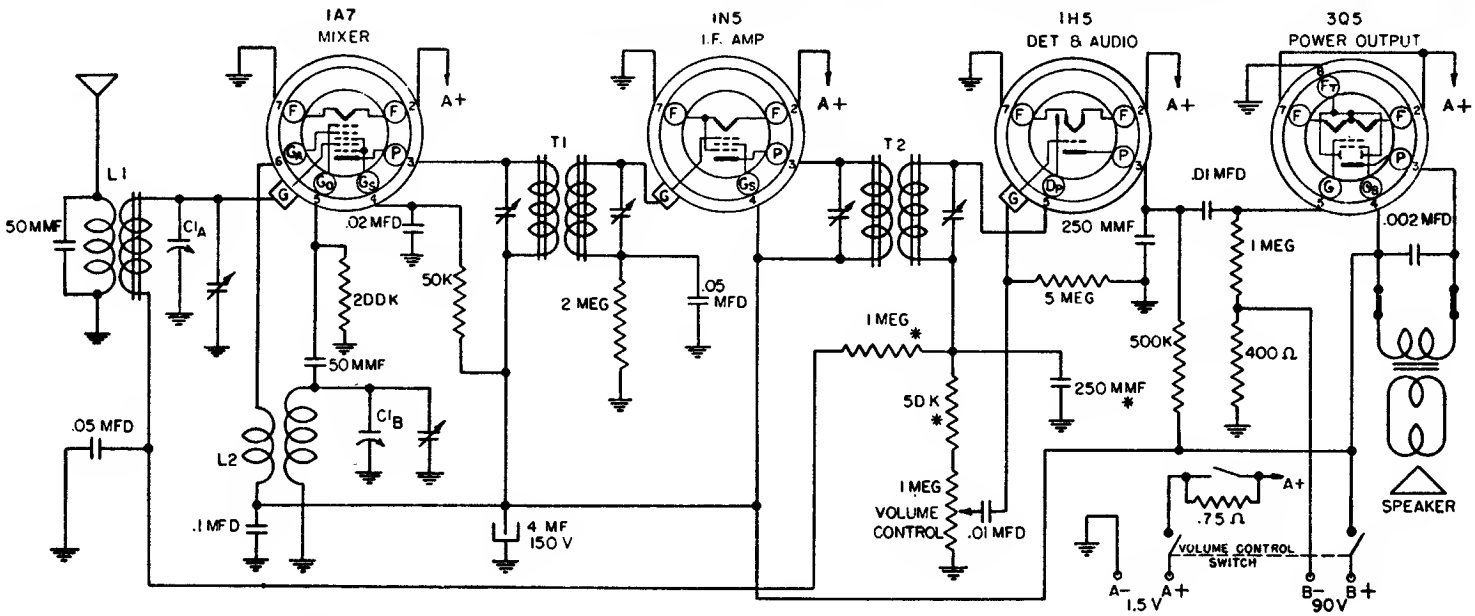
* PART OF T2

I.F. 455 KC.

Model C105 is similar to C104, but uses a record player

WARWICK MANUFACTURING CORPORATION

MODEL C108

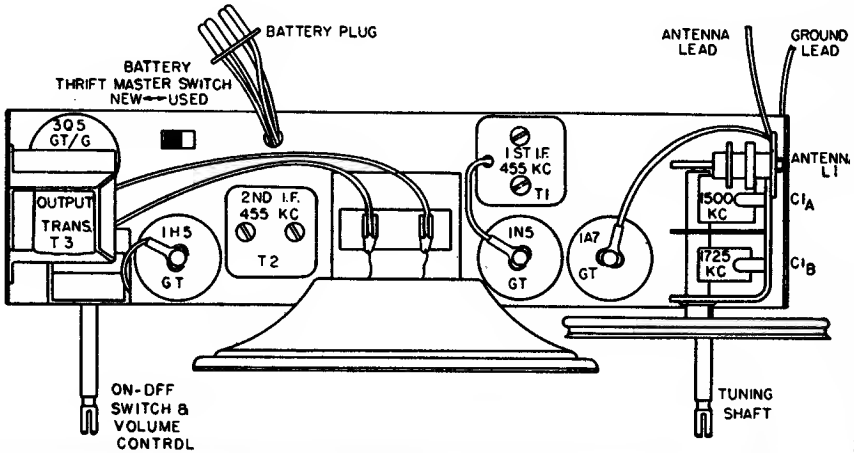


ALIGNMENT PROCEDURE

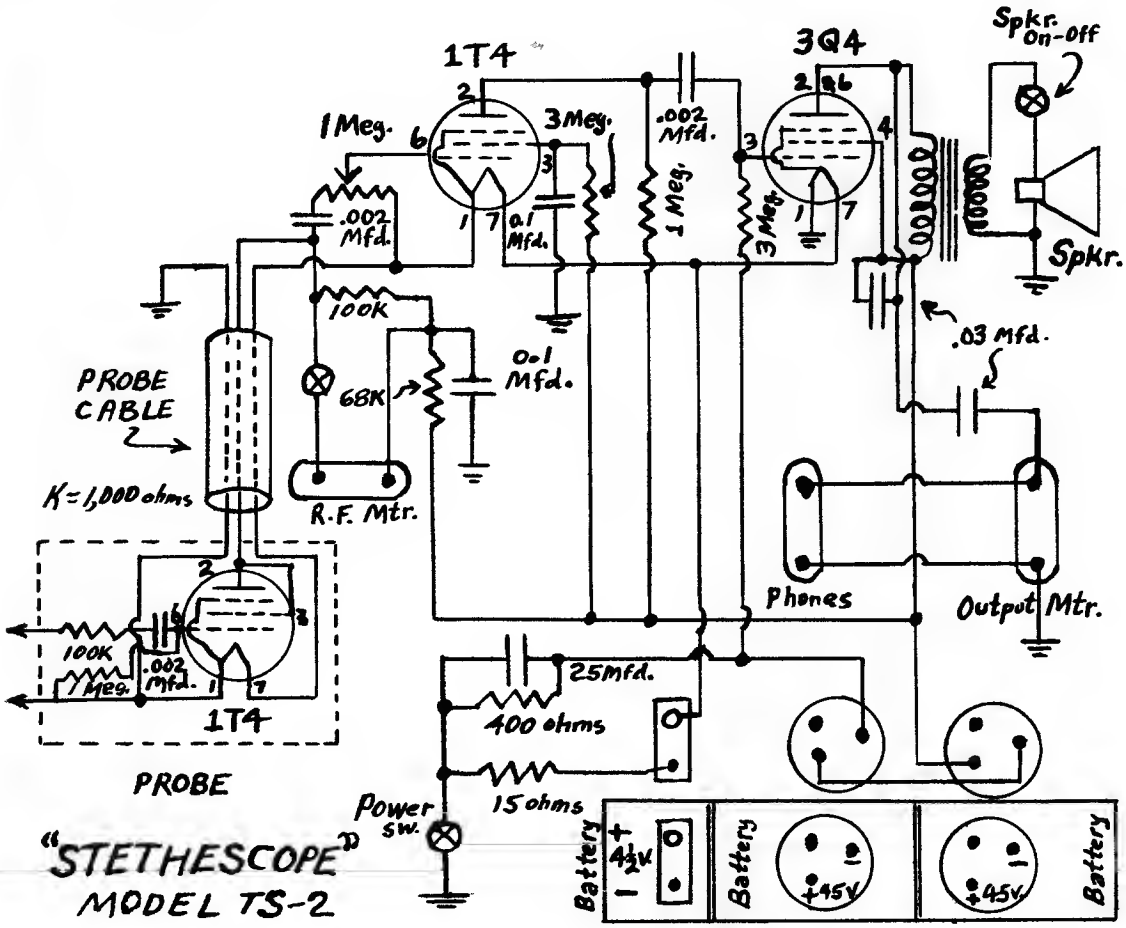
With an output meter connected across the voice coil of the speaker, the output meter reading for 50 milliwatts is .4 volts using a signal which is modulated 30% at 400 c.p.s. Follow through the procedure as outlined below for proper alignment.

Connect the signal generator to the grid cap of the 1A7 GT Tube through a .1 MFD. Condenser. Connect the ground lead of the generator to the chassis. Adjust the signal generator to 455 K.C. and set the variable condenser of the receiver to minimum capacity (fully opened). With the volume control full on and minimum output from the signal generator adjust the two trimmers on top of the first and second I.F. transformers for maximum output.

Now connect the signal generator to the antenna connection of the receiver through a .00025 condenser. Adjust the signal generator frequency to 1725 K. C. and set the variable condenser to minimum capacity (fully opened), and adjust the oscillator trimmer (C1B) for maximum output. Set signal generator to 1500 K. C. and tune receiver to signal. Adjust the antenna trimmer (C1A) on the variable condenser for maximum output.

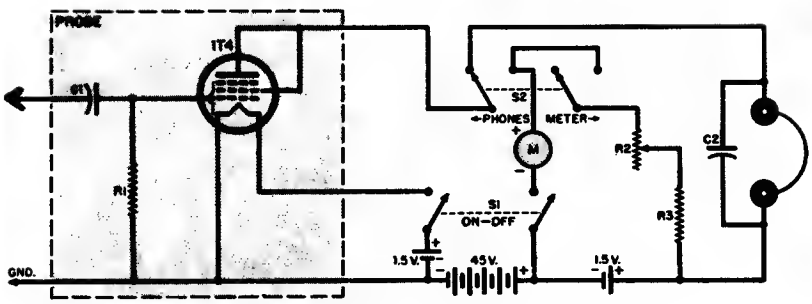


FEILER ENGINEERING CO.



SUPERIOR INSTRUMENTS CO.

Model CA-11

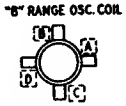


R_1—20 megohm, ½ w. res.
R_2—300 ohm rheostat
R_3—600 ohm, ½ w. res.
C_1—300 μμfd mica cond.
C_2—.002 μfd cond.
S_1—D.p.s.t. sw.
S_2—D.p.d.t. sw.
M—1 ma., 150 ohm meter

Schematic diagram of the single-tube signal tracer. The unit is constructed in two separate parts, a detector probe and the battery and meter box.

ALIGNMENT NOTES

T-4
"B" RANGE OSC. COIL

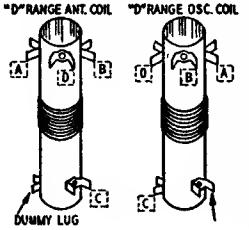


NOTE A—Adjust Oscillator Range B (C9) trimmer on side of chassis. Oscillator Range B (C6) auxiliary trimmer on gang condenser is adjusted at factory and ordinarily need not be readjusted in the field.

NOTE B—Index line is on dial background strip. See DIAL CALIBRATION paragraph.

T-1
"D" RANGE ANT. COIL

T-3
"D" RANGE OSC. COIL

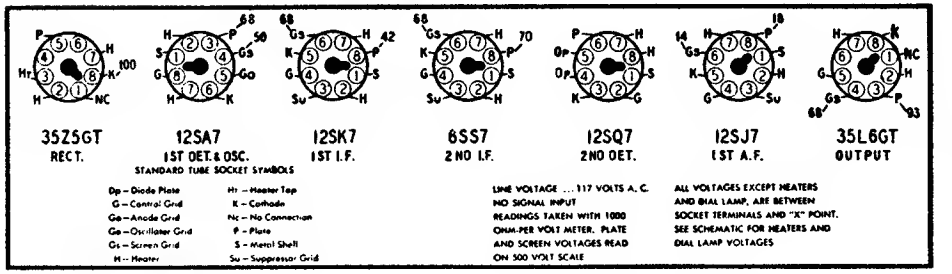


NOTE C—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

NOTE D—A "gimmick" capacity is used on the loop antenna in place of a trimmer. This normally requires no adjustment. However, if a new loop is installed it may be necessary to adjust the "gimmick" by increasing or decreasing the number of turns in the "gimmick." Complete the oscillator adjustment (C9) at 1400 KC, then adjust the "gimmick" at the same frequency.

Wells-Gardner & Co.

Series 37D14-600



ALIGNMENT PROCEDURE

Check Dial Pointer position, see DIAL CALIBRATION paragraph.

Volume Control—Maximum All Adjustments.

Allow Chassis and Signal Generator to "Heat Up" for several minutes.

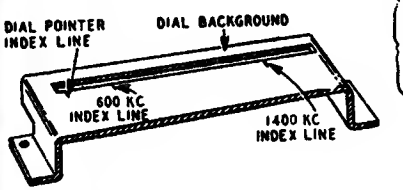
The equipment in column at right is required for Aligning:

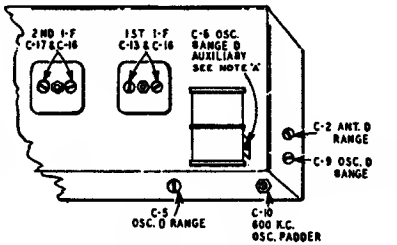
Signal Generator which will provide an accurately calibrated signal at test frequencies as listed.

Output Indicating Meter; Non-Metallic Screwdriver.

Dummy Antennas—.1 mf., 200 mmf., and 400 ohm.

SIGNAL GENERATOR						ADJUST TRIMMERS
FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	TO MAXIMUM (See Trimmer Illustration)
I.F. 455 KC	Signal Grid of 1st. Det. Connect at Stator of Large Gang Section.	Point "X" 12SK7—1st I.F Prong No. 3	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C13) & (C14) 2nd I.F. (C17) & (C18)
RANGE B 1400 KC	External Antenna Clip	Point "X"	200 mmf.	B Range	Turn Rotor to 1400 KC Index Line. See Note B	Oscillator Range B (C9) See Note A
			SEE NOTE D			
600 KC	External Antenna Clip	Point "X"	200 mmf.	B Range	Turn Rotor to Max. Output and Rock	600 KC Padder (C10) Rock Rotor See Note C
1400 KC	External Antenna Clip	Point "X"	200 mmf.	B Range	Turn Rotor to 1400 KC Index Line. See Note B	Oscillator Range B (C8)
Repeat above steps at 1400 and 600 KC until readjusting the oscillator Range B Trimmer (C8) causes no further improvement of output.						
RANGE D 16 MC	External Antenna Clip	Point "X"	400 Ohm	D Range	Turn Rotor to 1400 KC Index Line. See Note B	Oscillator Range D (C5)
15 MC	External Antenna Clip	Point "X"	400 Ohm	D Range	Turn Rotor to 1400 KC Index Line. See Note B	Ant. Range D (C2)





CAPACITORS

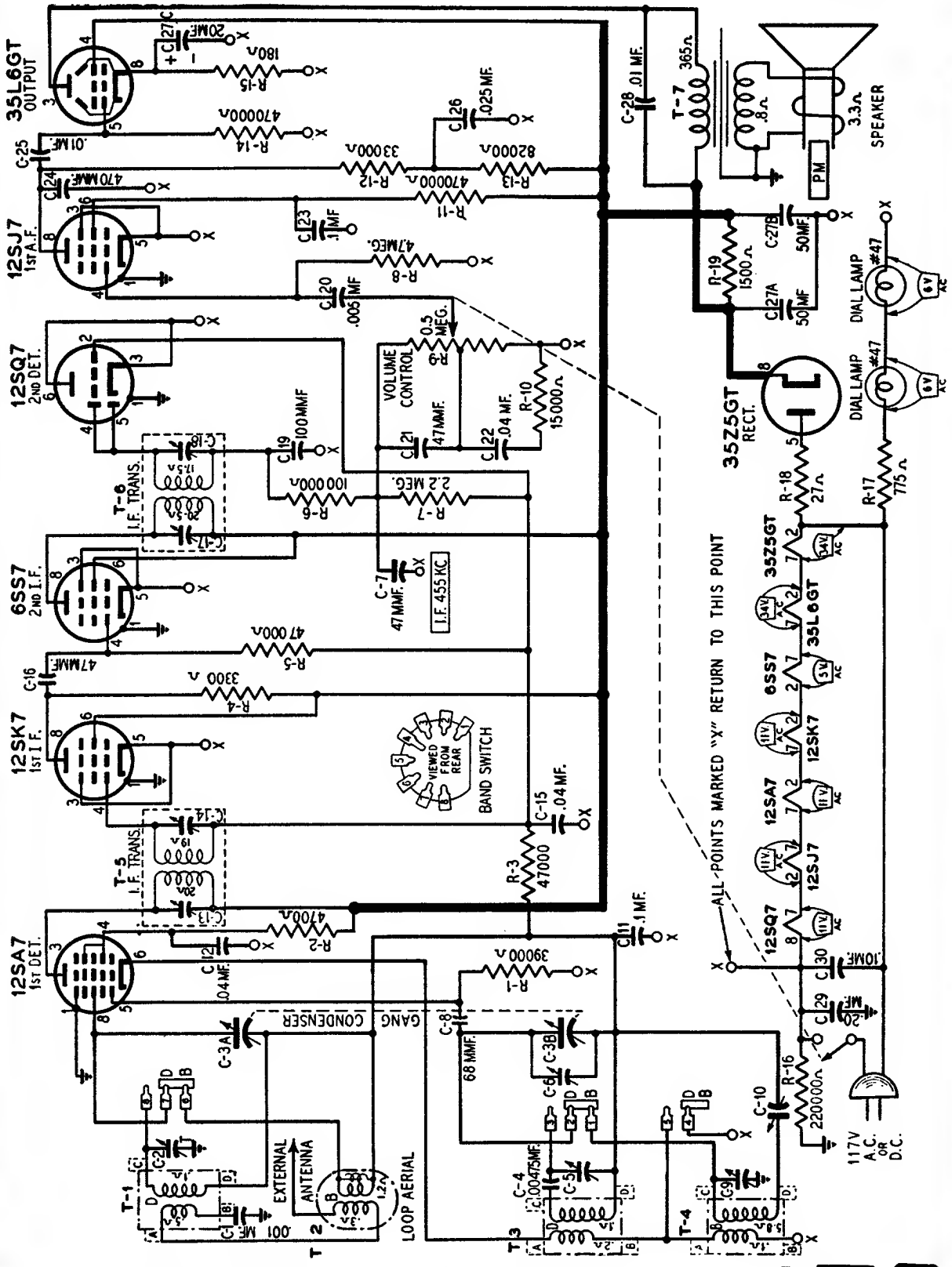
B66102	C-1	.801 mf	200 V	Tubular
17A152	C-2	2-25 mmf Ant. Range "B"		Trimmer
	C-9	2-25 mmf Osc. Range "D"		
14A148	C-3A	Gang coedenser and pulley		
	C-3B			
48X289	C-4	.00475 mf	180 V	Tubular
17A174	C-5	2-25 mmf Osc. Range "D"		Trimmer
	C-6	Part of C-5		
47X483	C-7	47 mmf		Molded
47X465	C-8	68 mmf		Molded
17A234	C-10	250-525 mmf		600 K.C. Padder
B66104	C-11, C-23	.1 mf	200 V	Tubular
B66403	C-12, C-15, C-22	.04 mf	200 V	Tubular
	C-13, C-14 Part of T-5 (1st I-F coil assembly)			
47X446	C-16, C-21	47 mmf		Molded
	C-17, C-18 Part of T-6 (2nd I-F coil assembly)			
47X476	C-19	180 mmf		Molded
B66502	C-20	.685 mf	200 V	Tubular
47X487	C-24	476 mmf		Molded
B66103	C-25, C-26	.01 mf	200 V	Tubular
B64253	C-20	.025 mf	268 V	Tubular
48X342	C-27A	50 mf	150 V	Or Electrolytic filter condenser
	C-27B	50 mf	150 V	
	C-27C	20 mf	25 V	
D66204	C-29	.20 mf	465 V	Tubular
D66104	C-39	.10 mf	430 V	Tubular

RESISTORS

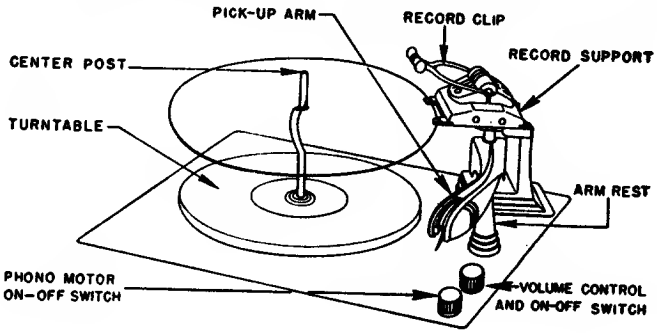
		OHMS	WATTS	
B84393	R-1	39,080	0.5	Carbon
B84472	R-2	4780	0.5	Carbon
B85473	R-3, R-5	47,000	0.5	Carbon
B84332	R-4	3380	0.5	Carbon
B05104	R-6	100,000	0.5	Carbon
B85225	R-7	2.2 meg	0.5	Carbon
B85475	R-8	4.7 meg	0.5	Carbon
36X309	R-9	Volume control and switch		
	0.5	megohms		
B04153	R-10	15,000	0.5	Carbon
B85474	R-11	470,000	0.5	Carbon
B84333	R-12	33,000	0.5	Carbon
B84823	R-13	82,000	0.5	Carbon
B85474	R-14	470,000	0.5	Carbon
B04181	R-15	180	0.5	Carbon
B85224	R-16	220,000	0.5	Carbon
43X214	R-17	775	28.	Wire wound
B04270	R-18	27	0.5	Carbon
C85152	R-19	1500	1.0	Carbon

DIAL AND DRIVE ASSEMBLY

57X176	Mounting plate	Mounting gang condenser
6X21	Rubber grommet	
29X329	Cond. cushion stud	
15A128	Color disc assembly	
58X628	Dial scale	
58X587	Dial background	
26A384	Pointer bracket assembly complete with pulleys and studs	
15X220	Pointer	
28X113	Drive cord tension spring	
	5 ft. Drive cord (22 lb. test)	
25X580	Drive shaft bracket	
20X465	Drive shaft	
19X192	"C" Washer (far drive shaft)	
24X564	Drive shaft spool	
7A193	Pilot light socket assembly	
	No. 47 Pilot light	



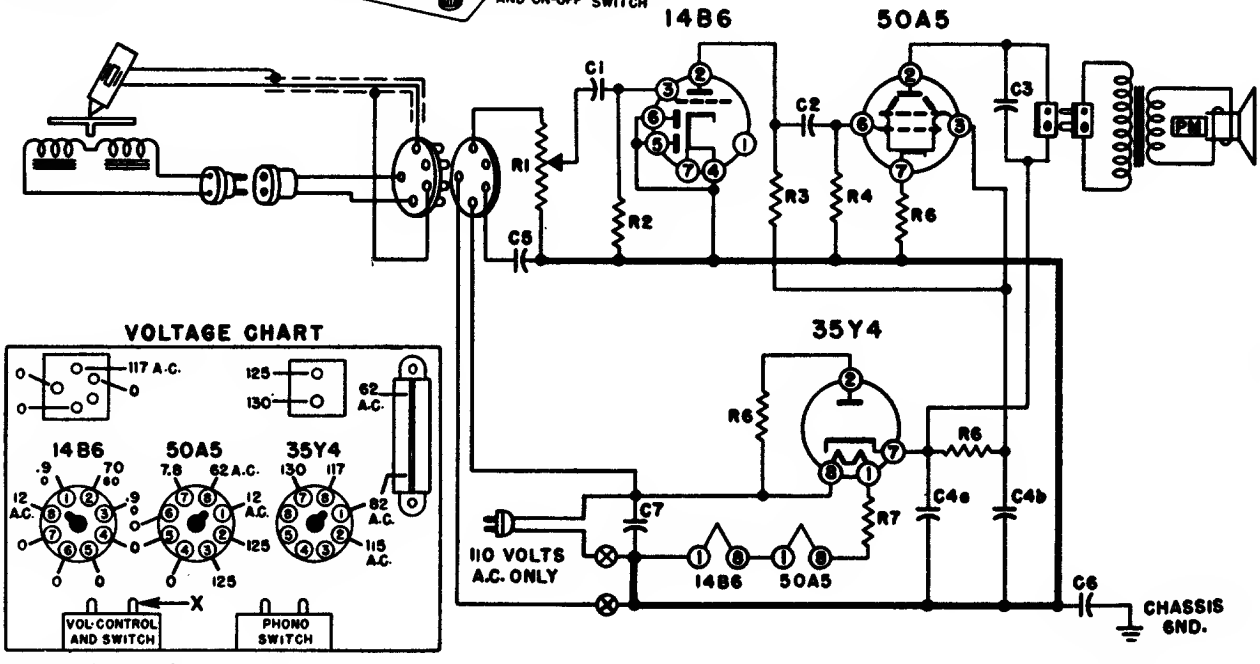
Wells-Gardner & Co. Model 37D14-600



TRUETONE

MODEL D2604

Western Auto



VOLTAGE DATA

Voltage measured from socket terminal to point marked "X". Large numerals indicate readings with vacuum tube voltmeter. Small numerals indicate readings with 1000 ohm-per-volt meter.

★ ★ ★

POWER SUPPLY

Operation on 105-125 volts, 60-cycle, alternating current only. Power consumption: 45 watts.

RECORD CHANGER

Complete service information and parts list are covered by a separate service manual. Check record changer for model number since different record changers may be used from time to time.

RESISTORS			CONDENSERS		
SYMBOL	OHMS	WATTS	SYMBOL	CAPACITY	VOLTS
R1	1,000,000	V. C.	C1	.005 Mfd.	000
R2	10,000,000	½	C2	.01 Mfd.	400
R3	270,000	½	C3	.02 Mfd.	400
R4	470,000	½	C4a	50. Mfd.	150
R5	150	1	C4b	30. Mfd.	150
R6	1,500	1	C5	.1 Mfd.	400
R7	130	5	C6	.1 Mfd.	400
R8	33	1	C7	.05 Mfd.	400

TRUETONE TUBES USED

14B6—Driver (audio) 50A5—Power Output 35Y4—Rectifier

VARIABLE RESISTORS

Part No.	Symbol	Description
75B1-9	R1	1 Megohm Volume Control & Switch

MISCELLANEOUS

Part No.	Description
12A3-3	Feet, Rubber
23D2-2	Grill, Speaker (Ivory)
23D2-4	Grill, Speaker (Mahogany)
33A11-1	Knob, On-Off
33A11-2	Knob, Volume
88A8-1	Plug for A.C. Motor (2 prong)
88A3-5	Plug for Phono Input (5 prong)
88A3-4	Cover for 5 prong Plug
88A5-4	Plug for Speaker (2 prong)

PAPER CONDENSERS

Part No.	Symbol	Description
64B1-12	C1	.005 Mfd. 600 V.D.C.
64B1-25	C2	.01 Mfd. 400 V.D.C.
64B1-24	C3	.02 Mfd. 400 V.D.C.
64B1-20	C5 & C6	.1 Mfd. 400 V.D.C.
64B1-22	C7	.05 Mfd. 400 V.D.C.

ELECTROLYTIC CONDENSERS

67A10	C4A	50 Mfd. 150 V.
	C4B	30 Mfd. 150 V.

RESISTORS

60B8-106	R2	10 Megohms ½ Watt
6088-274	R3	270,000 ohms ½ Watt
60B8-474	R4	470,000 ohms ½ Watt
60B14-151	R5	150 ohms 1 Watt
60B14-152	R6	1,500 ohms 1 Watt
61A3-4	R7	130 ohms 5 Watt
60B14-330	R8	33 ohms 1 Watt

MISCELLANEOUS (Cont'd)

Part No.	Description
87A12-1	Socket, Tube
78B9-2	Speaker and Output Transformer
———	Output Transformer. (When ordering, specify all of the numbers on the transformer and speaker.)
77A5-2	Switch, On-Off (Phono)

PHONOGRAPH PARTS

(See Record Changer Service Manual for Detailed List.)

G400A12	Centerpost
409A1	Crystal Cartridge
G400A23	Idler Wheel (407B3 Motor)
G400A52	Idler Wheel (407B2 Motor)
G400A52	Idler Wheel (407B1 Motor)
407B3	Motor, 60 cycle 115 volt, A.C. (Types 407B1 & 407B2 also used.)

WESTERN AUTO SUPPLY COMPANY

MODEL D2615

Factory Model 6D110

RESISTORS

R1	150,000 ohms, 20%, ½ w.
R2	100 ohms, 10%, ½ w.
R3	150,000 ohms, 20%, ½ w.
R4	4700 ohms, 10%, ½ w.
R5	100,000 ohms, 20%, ½ w.
R6	47,000 ohms, 10%, ½ w.
R7	22 ohms, 10%, ½ w.
R8	220 ohms, 10%, 1 w.
R9	1200 ohms, 10%, 1 w.
R10	150 ohms, 10%, ½ w.
R11	3.3 megohms, 20%, ½ w.
R12	150 ohms, 10%, ½ w.
R13	470,000 ohms, 20%, ½ w.
R14	220,000 ohms, 20%, ½ w.
R15	Volume control, 1 megohm
R16	47,000 ohms, 20%, ½ w.
R17	4.7 megohms, 20%, ½ w.

CONDENSERS

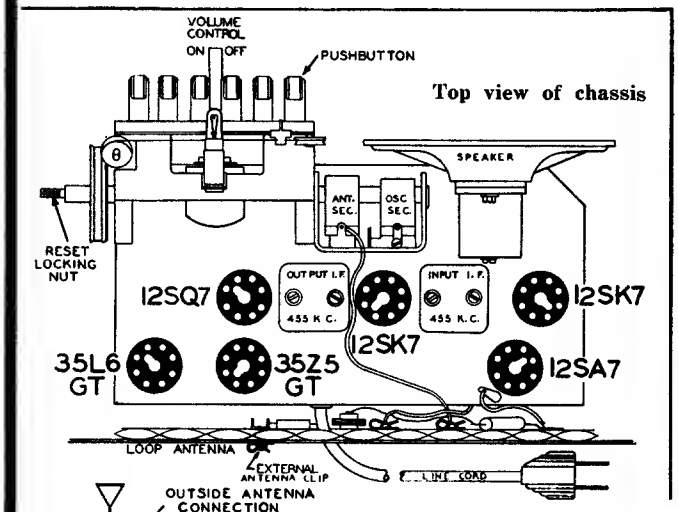
C	2-gang variable
C1	.01 x 400 volts
C2	.000125 mica
C3	.02 x 400 volts
C4	Antenna trimmer on gang
C5	.1 x 400 volts
C6	.25 x 200 volts
C7	Oscillator trimmer on gang
C8	.0001 mica
C9	.0001 mica
C10	40 mfd. lytic x 150 w.v.
C11	20 mfd. lytic x 150 w.v.
C12	20 mfd. lytic x 150 w.v.

NOTE: C10, C11, C12 are in same unit. In 25-cycle sets values are 60 mfd., 40 mfd., 40 mfd.

C13	.05 x 200 volts
C14	.02 x 400 volts
C15	.004 x 600 volts
C16	.00005 mica
C17	.0001 mica
C18	.002 x 600 volts
C19	.2 x 400 volts
C20	.0001 mica

MISCELLANEOUS

T1	Loop antenna assembly
T2	Loading coil
T3	Oscillator coil
T4	Input I.F. coil
T5	Output I.F. coil

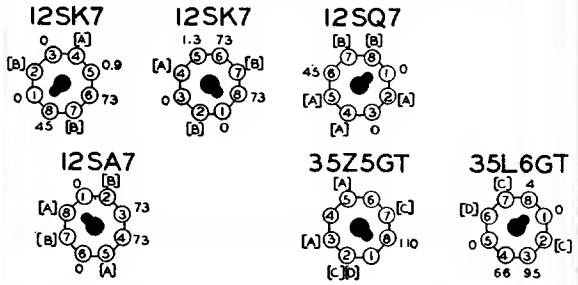


Top view of chassis

BOTTOM VIEW OF CHASSIS

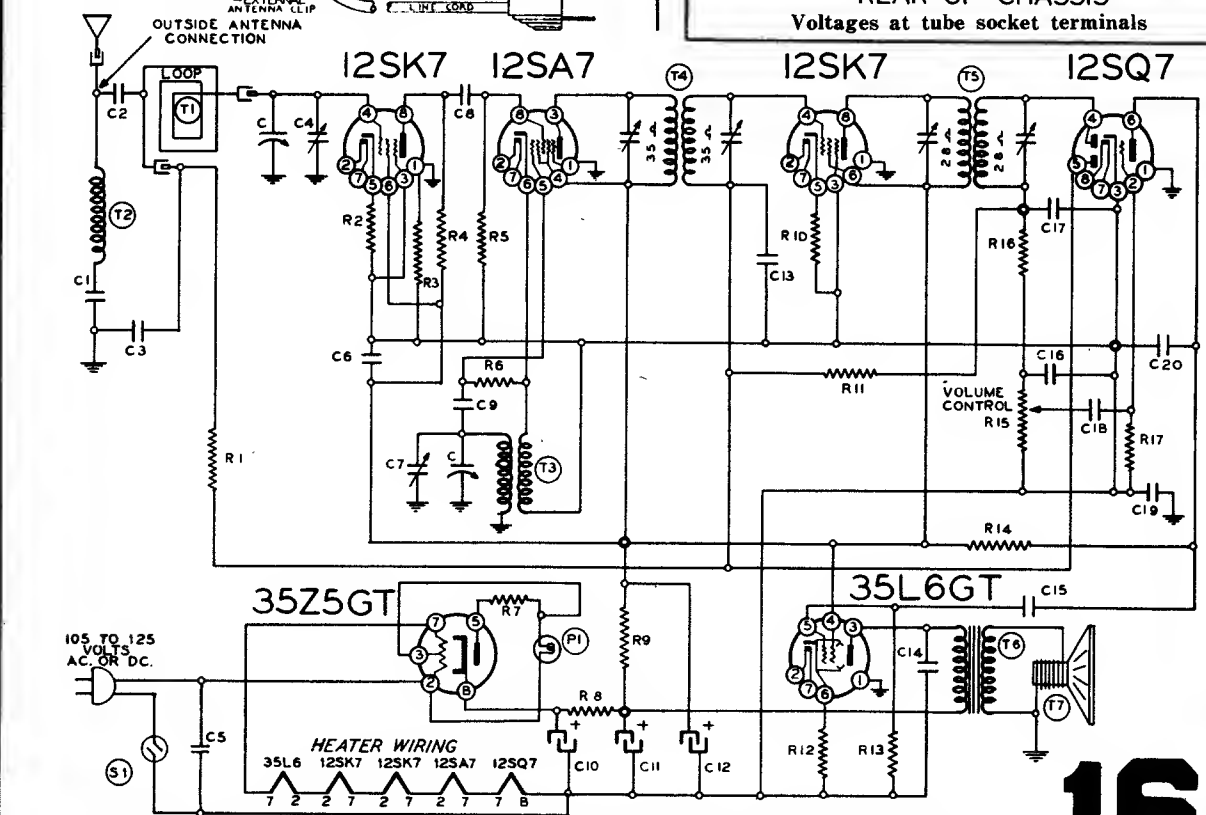
VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND B— WITH A LINE VOLTAGE OF 117 VOLTS A.C.

[A] CANNOT BE READ WITH VOLTMETER
[B] 12 VOLTS A.C. BETWEEN PINS MARKED B
[C] 32 VOLTS A.C. BETWEEN PINS 2 & 7
[D] 117 VOLTS A.C. BETWEEN PINS MARKED D



REAR OF CHASSIS

Voltages at tube socket terminals

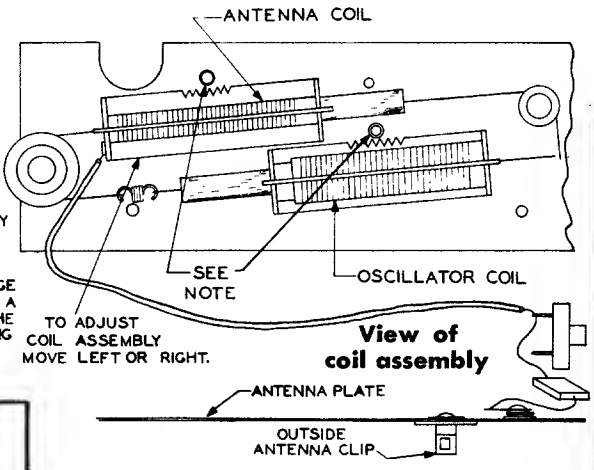


WESTERN AUTO SUPPLY

MODEL D2610 or D2611

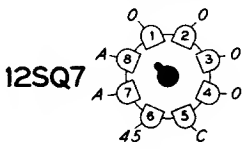
Factory Model 5D116 or 5D120

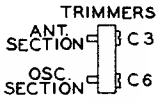
NOTE: THE ANTENNA COIL ASSEMBLY IS MADE SO THAT IT IS MOVABLE LEFT OR RIGHT. WHEN MAKING THE ADJUSTMENT AS GIVEN IN THE ALIGNMENT PROCEDURE, MOVE THE COIL ASSEMBLY VERY SLOWLY. IT CAN BE MOVED BY HAND OR BY PIVOTING ONE EDGE OF THE BLADE OF A SCREWDRIVER IN THE HOLE AND ENGAGING THE BLADE IN THE GEAR TEETH OF THE COIL FORM.

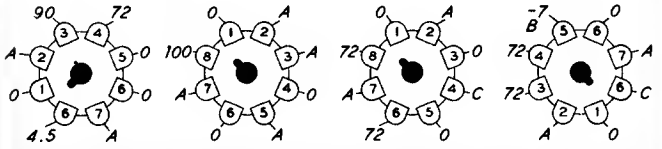


NOTES - VOLTAGES MEASURED WITH A 1000-OHM-PER-VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND NEGATIVE B SUPPLY.
A - CANNOT BE MEASURED WITH VOLTMETER.
B - OSCILLATOR VOLTAGE MEASURED WITH R.F. CHOKE IN SERIES WITH VOLTMETER LEAD.
C - DIODE VOLTAGE, LESS THAN ONE VOLT NEGATIVE, CANNOT BE MEASURED ACCURATELY.

Voltages at tube sockets







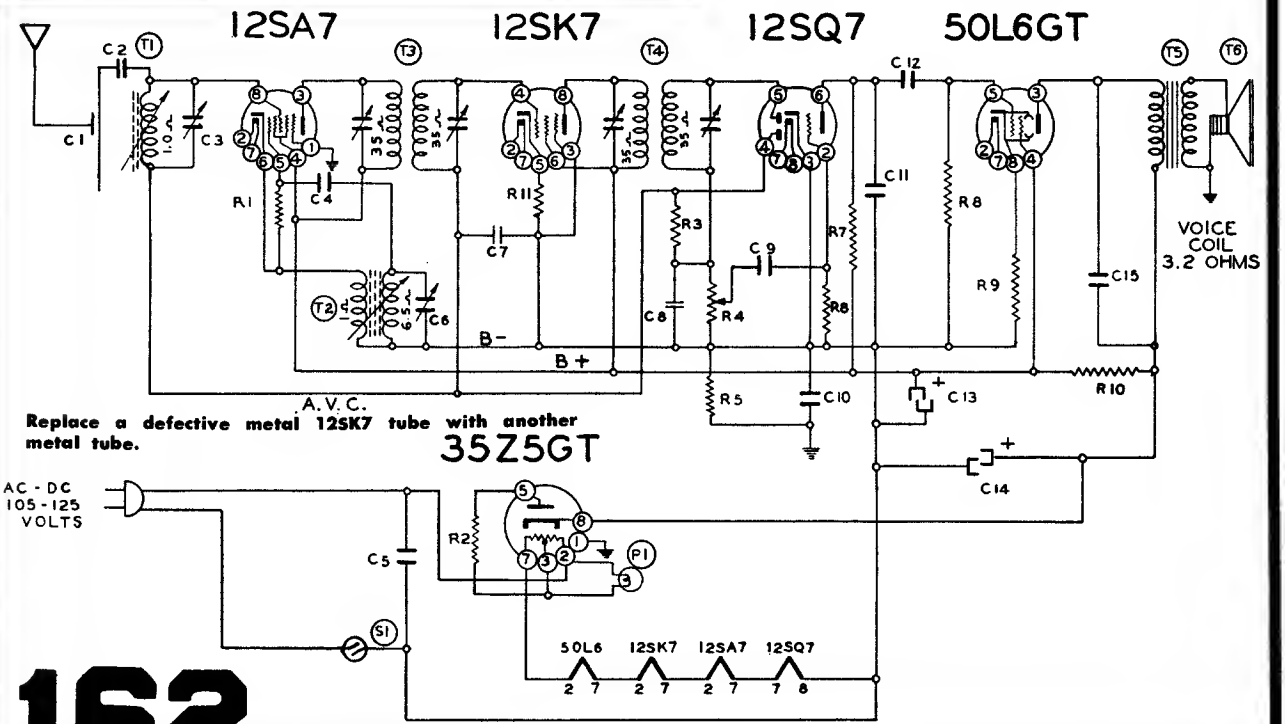
BOTTOM VIEW OF CHASSIS

CONDENSERS

C1	See "Antenna plate" under "Miscellaneous"
C2, C8	.00025 mfd., mica, 20%
C3, C6	Dual trimmer, antenna and oscillator
C4	.00005 mfd., mica, 10%
C5	.1 mfd., 400 volts, +50%-10%
C7	.05 mfd., 200 volts, 25%
C9	.002 mfd., 600 volts, 25%
C10	.15 mfd., 400 volts, 25%
C11	.0004 mfd., mica, 20%
C12	.01 mfd., 200 volts, 25%
C13, C14	Electrolytic, for 60-cycle sets, 20 mfd. x 150 volts, 40 mfd. x 150 volts
or	
C13, C14	Electrolytic, for 25-cycle sets, 60 mfd. x 150 volts, 60 mfd. x 150 volts
C15	.01 mfd., 400 volts, 25%

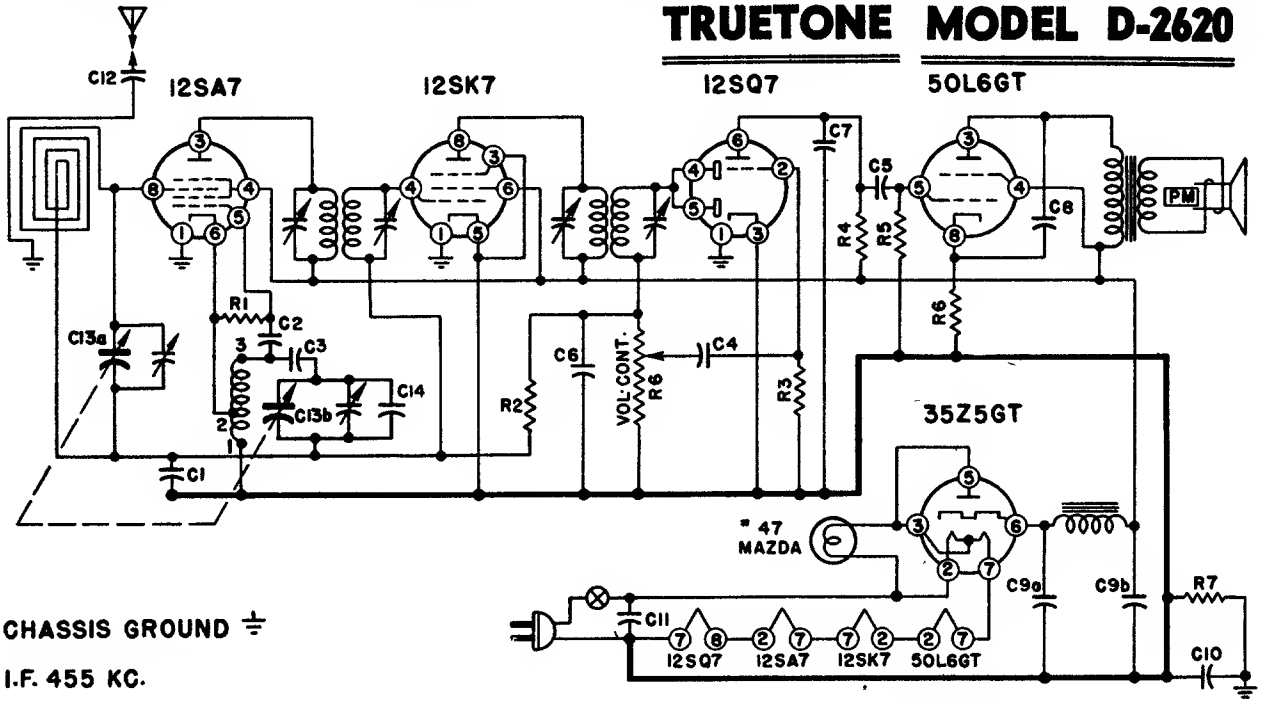
RESISTORS *

R1	22,000 ohms, 10%, ½ watt
R2	22 ohms, 20%, ½ watt
R3	3.3 megohms, 20%, ½ watt
R4	Volume control, 500,000 ohms
R5, R7	150,000 ohms, 10%, ½ watt
R6	4.7 megohms, 20%, ½ watt
R8	330,000 ohms, 20%, ½ watt
R9	150 ohms, 10%, ½ watt
R10	1500 ohms, 10%, 1 watt
R11	100 ohms, 10%, ½ watt



Replace a defective metal 12SK7 tube with another metal tube.

TRUETONE MODEL D-2620



CONDENSERS

Symbol No.	Capacity		Type
C-1	.1	mfd	200 V.
C-2	.00005	mfd	Mica
C-3	.02	mfd	400 V.
C-4	.01	mfd	400 V.
C-5	.01	mfd	400 V.
C-6	.00025	mfd	Mica
C-7	.0005	mfd	Mica
C-8	.02	mfd	400 V.
C-9a	30.	mfd (Elect.)	150 V.
C-9b	50.	mfd (Elect.)	150 V.
C-10	.2	mfd	900 V.
C-11	.05	mfd	400 V.
C-12	.005	mfd	600 V.
C-13a	.00042	mfd (max.)	Variable
C-13b	.00018	mfd (max.)	Variable
C-14	.00002	mfd	Mica

RESISTORS

Symbol No.	Ohms	Type
R-1	22,000 ohms	C ½ W
R-2	1 meg ohm	C ½ W
R-3	10 meg ohms	C ½ W
R-4	220,000 ohms	C ½ W
R-5	470,000 ohms	C ½ W
R-6	150 ohms	C ½ W
R-7	150,000 ohms	C ½ W
R-8	1 meg ohm	Volume Control

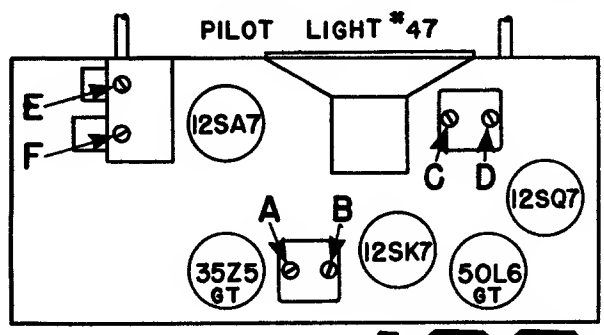
BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 KC.	.1 MFD.	Gang Condenser Ant. Stator	Rotor full open (Plates out of mesh)	C, D	Output I.F.	Adjust to maximum output
	455 KC.	.1 MFD.	Gang Condenser Ant. Stator	Rotor full open (Plates out of mesh)	A, B	Input I.F.	Adjust to maximum output
BROAD-CAST	1630 KC.	.1 MFD.	Gang Condenser Ant. Stator	Rotor full open (Plates out of mesh)	E gang-front	Oscillator	Adjust to maximum output
	1400 KC.	Inductive Coupling—Use a loop or place Gen. lead close to Rec. loop. No connection bet. Receiver and Generator		Set dial to tune in Generator Signal	F gang-rear	Antenna	Adjust to maximum output

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead, when needed (see below).
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

The following equipment is required for aligning:

- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-metallic screwdriver.

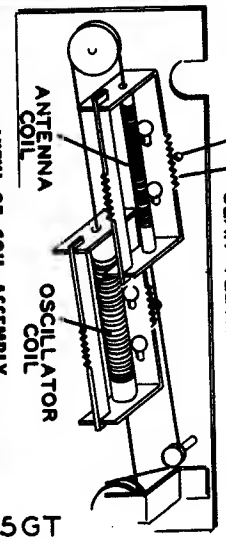
Dummy antenna—.1 mf.



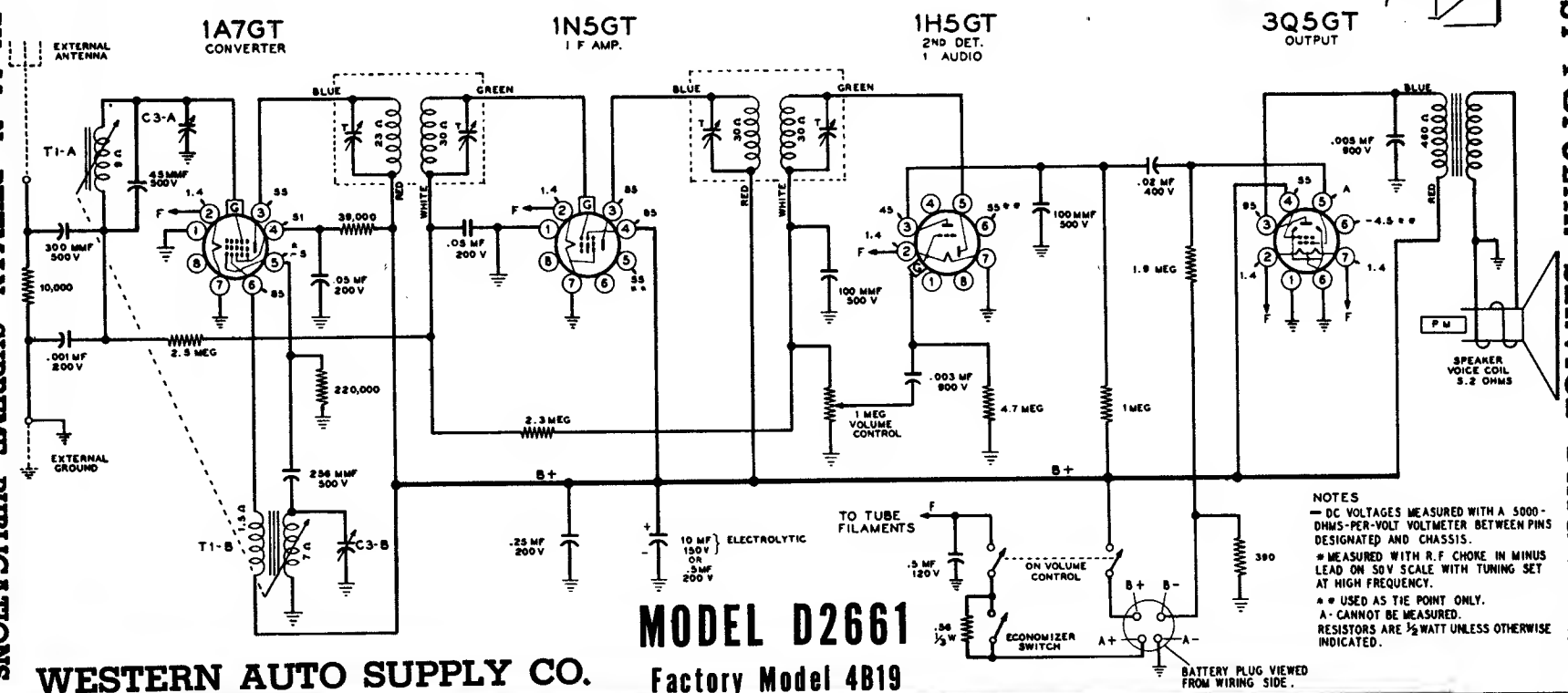
- Output meter across 3.2-ohm output load.
- Align for maximum output. Reduce input as needed to keep output near 0.4 volts.
- Volume control at maximum for all adjustments.
- Connect ground post of signal generator to radio chassis.

SIGNAL GENERATOR			TUNER SETTING	ADJUST FOR MAXIMUM OUTPUT (in order shown)
Frequency	Dummy Antenna	Connection to Radio		
455 kc	.1 mf	Grid (top cap) of 1A7GT	Iron cores all the way out	Trimmers on output and input I.F. cans
1700 kc	.1 mf	Grid (top cap) of 1A7GT	Iron cores all the way out	Oscillator trimmer C3-B
1700 kc	200 mmf	Antenna lead	Iron cores all the way out	Antenna trimmer C3-A
1400 kc	200 mmf	Antenna lead	Turn dial to 1400 kc	Adjust position of antenna coil (see coil view)*

*This adjustment and the previous adjustment are interlocking; therefore repeat the two adjustments alternately for best results.



VIEW OF COIL ASSEMBLY



NOTES

— DC VOLTAGES MEASURED WITH A 5000-OHMS-PER-VOLT VOLTMETER BETWEEN PINS DESIGNATED AND CHASSIS.

* MEASURED WITH R.F CHOKE IN MINUS LEAD ON 50V SCALE WITH TUNING SET AT HIGH FREQUENCY.

* * USED AS TIE POINT ONLY.

A - CANNOT BE MEASURED.

RESISTORS ARE 1/2 WATT UNLESS OTHERWISE INDICATED.

MODEL D2661

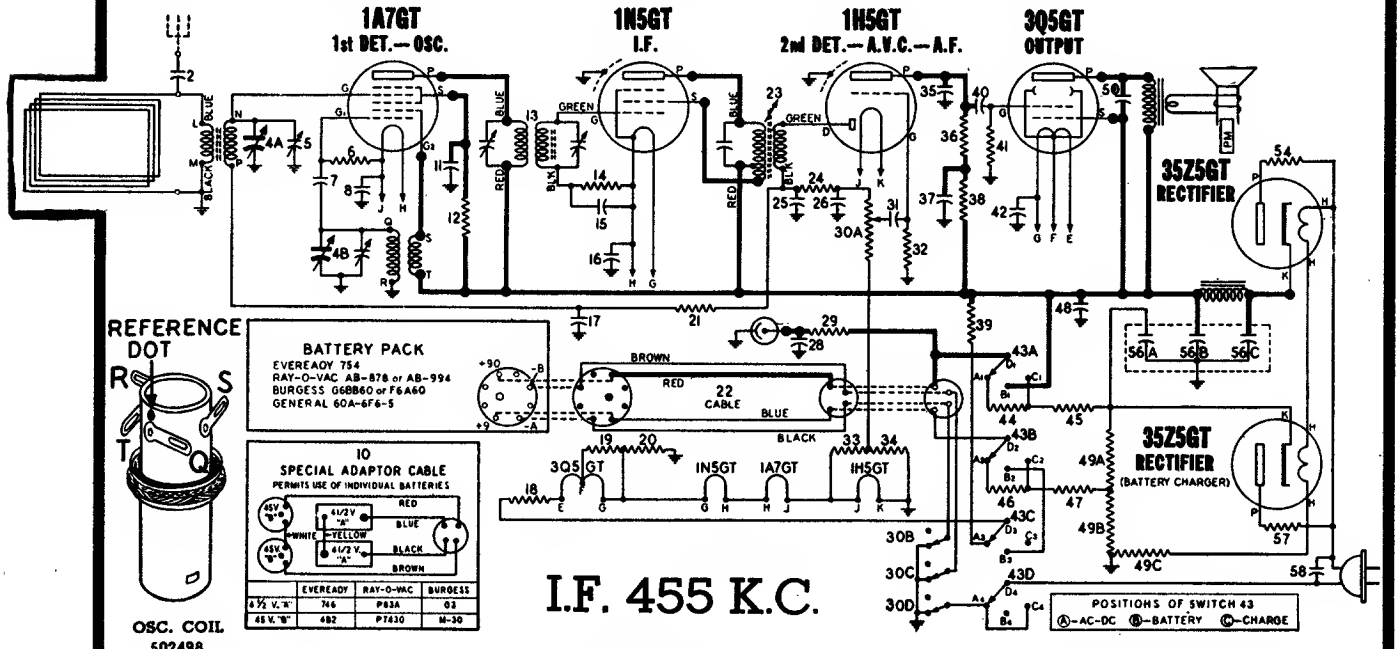
Factory Model 4B19

WESTERN AUTO SUPPLY CO.

TRUETONE MODEL D3635

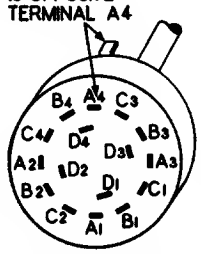
CODE No. SW-9007-C

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
300 MMFD. Condenser	Grid Cap of 1A7GT Tube	**455 KC.**	Any Point Where It Does Not Affect Signal	**1**	2nd I.F.	Loosen lock nut. Adjust screw for maximum output.
				2-3	1st I.F.	Adjust for maximum output. Recheck 1, 2 and 3 for maximum output and tighten lock nut on 1.
300 MMFD. Condenser	Center Terminal on Antenna Terminal Strip at bottom of cabinet.	**1500 KC.**	1500 KC. (Slide set into cabinet and replace pointer to set dial.)	**4**	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
300 MMFD. Condenser	Center Terminal on Antenna Terminal Strip at bottom of cabinet.	**1500 KC.**	Tune to 1500 KC. Generator Signal	**5**	Broadcast Antenna	Adjust for maximum output. Slide chassis all the way into cabinet when making this adjustment.



OSC. COIL
502498

NOTE THAT LUG IS OPPOSITE TERMINAL A4



AC-DC-BAT.-CHARGE SWITCH
502526

RESISTORS

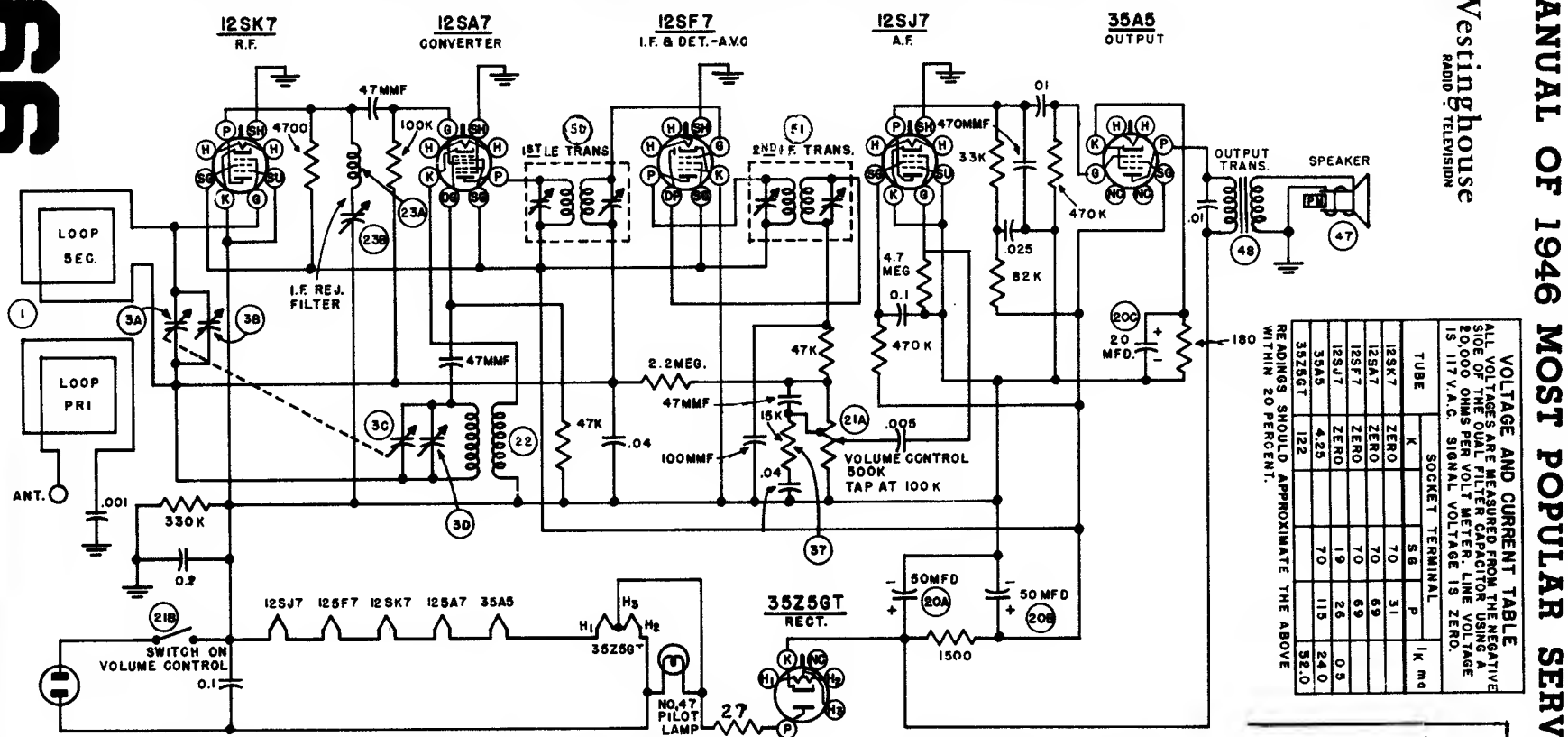
6	502133	Resistor—carbon 220,000 ohms 1/4 watt
12	502131	Resistor—carbon 47,000 ohms 1/4 watt
14	502136	Resistor—carbon 10 Meg. 1/4 watt
18	502455	Resistor—carbon 27 ohms 1/4 watt
19	502457	Resistor—carbon 330 ohms 1/4 watt
20	502458	Resistor—carbon 430 ohms 1/4 watt
21	502269	Resistor—carbon 3.3 Meg. 1/4 watt
24	502132	Resistor—carbon 100,000 ohms 1/4 watt
29	502269	Resistor—carbon 3.3 Meg. 1/4 watt
30-A,B,C,D	502525	Volume control (with switch) 1 Meg.
32	502269	Resistor—carbon 3.3 Meg. 1/4 watt
33, 34	502456	Resistor—carbon 220 ohms 1/4 watt
36	502268	Resistor—carbon 1 Meg. 1/4 watt
38	502134	Resistor—carbon 470,000 ohms 1/4 watt
39	500712	Resistor—wire wound 1830 ohms 5 watt
41	502135	Resistor—carbon 2.2 Meg. 1/4 watt
44	502266	Resistor—carbon 15,000 ohms 1/4 watt
45	502459	Resistor—carbon 6800 ohms 1/4 watt
46	502457	Resistor—carbon 330 ohms 1/4 watt
47	502455	Resistor—carbon 27 ohms 1/4 watt
49-A,B,C	500715	Resistor—wire wound A—1460 ohms 10 watt B—155 ohms 1 watt C—310 ohms 10 watt
54	502454	Resistor—wire wound 47 ohms 1 watt
57	502454	Resistor—wire wound 47 ohms 1 watt

CONDENSERS

2	502150	Condenser—.004 Mfd. 600 volt
4-A, B	502494	Condenser—variable gang
5	119132	Condenser—trimmer 2 to 15 Mmfd.
7	502159	Condenser—mica 50 Mmfd. 500 volt
8	502153	Condenser—.05 Mfd. 200 volt
11	502547	Condenser—electrolytic 4 Mfd. 150 volt
15	502153	Condenser—.05 Mfd. 200 volt
16	502155	Condenser—.1 Mfd. 200 volt
17	502153	Condenser—.05 Mfd. 200 volt
25, 26	502159	Condenser—mica 50 Mmfd. 500 volt
28	502155	Condenser—.1 Mfd. 200 volt
31	502156	Condenser—.004 Mfd. 400 volt
35	502160	Condenser—mica 110 Mmfd. 500 volt
37	502155	Condenser—.1 Mfd. 200 volt
40	502151	Condenser—.01 Mfd. 400 volt
42	502527	Condenser—electrolytic 50 Mfd. 25 volt
48	502155	Condenser—.1 Mfd. 200 volt
50	502453	Condenser—.002 Mfd. 400 volt
56-A,B,C	500714	Condenser—electrolytic A—20 Mfd. 150 volt B—20 Mfd. 200 volt C—20 Mfd. 200 volt
58	502153	Condenser—.05 Mfd. 200 volt

Westinghouse
RADIO TELEVISION

MODELS H-125 & H-126



VOLTAGE AND CURRENT TABLE

ALL VOLTAGES ARE MEASURED FROM THE NEGATIVE SIDE OF THE DUAL FILTER CAPACITOR USING A 20,000 OHMS PER VOLT METER. LINE VOLTAGE IS 117 V.A.C. SIGNAL VOLTAGE IS ZERO.

TUBE	SOCKET TERMINAL K	S.G.	P	1K ma
12SK7	ZERO	70	31	
12SA7	ZERO	70	69	
12SJ7	ZERO	70	69	
12SF7	ZERO	70	69	
35A5	4.25	19	25	0.5
35Z5GT	122	115	240	52.0

READINGS SHOULD APPROXIMATE THE ABOVE WITHIN 20 PERCENT.

INTERMEDIATE FREQUENCY : 455 KC

Steps	Connect Signal Generator to—	Adjust Signal Generator to—	Tune Radio Dial to—	Adjust for Maximum Output
1	12SF7 grid in series with a .01 mfd. capacitor	455 kc	quiet point near 1600 kc.	primary and secondary 2nd i-f transformer
2	12SA7 grid in series with a .01 mfd. capacitor	455 kc	quiet point near 1600 kc.	primary and secondary 1st i-f transformer
3	12SA7 grid in series with a .01 mfd. capacitor	455 kc	quiet point near 1600 kc.	repeat 1 and 2
4	antenna terminal	455 kc	600 kc	adjust i-f rejection trimmer for minimum
5	antenna terminal in series with a 50 mmfd. capacitor	1615 kc	gang at minimum	oscillator trimmer
6	radiated signal from signal generator	1400 kc	1400 kc	adjust antenna trimmer

RESISTANCE TABLE

ITEM	PRIMARY OHMS	SECONDARY OHMS	REMARKS
1		2	
22	1/2	7	
23A	50		
50	27	26	
51	27	23	
47		2.95	VOICE COIL DISCONNECTED
48	375	3/4	VOICE COIL DISCONNECTED

Westinghouse Electric Corporation

MODELS H-122 & H-130

Frequency Range:

Standard Broadcast ..... 550 to 1600 kc
Intermediate Frequency ..... 455 kc

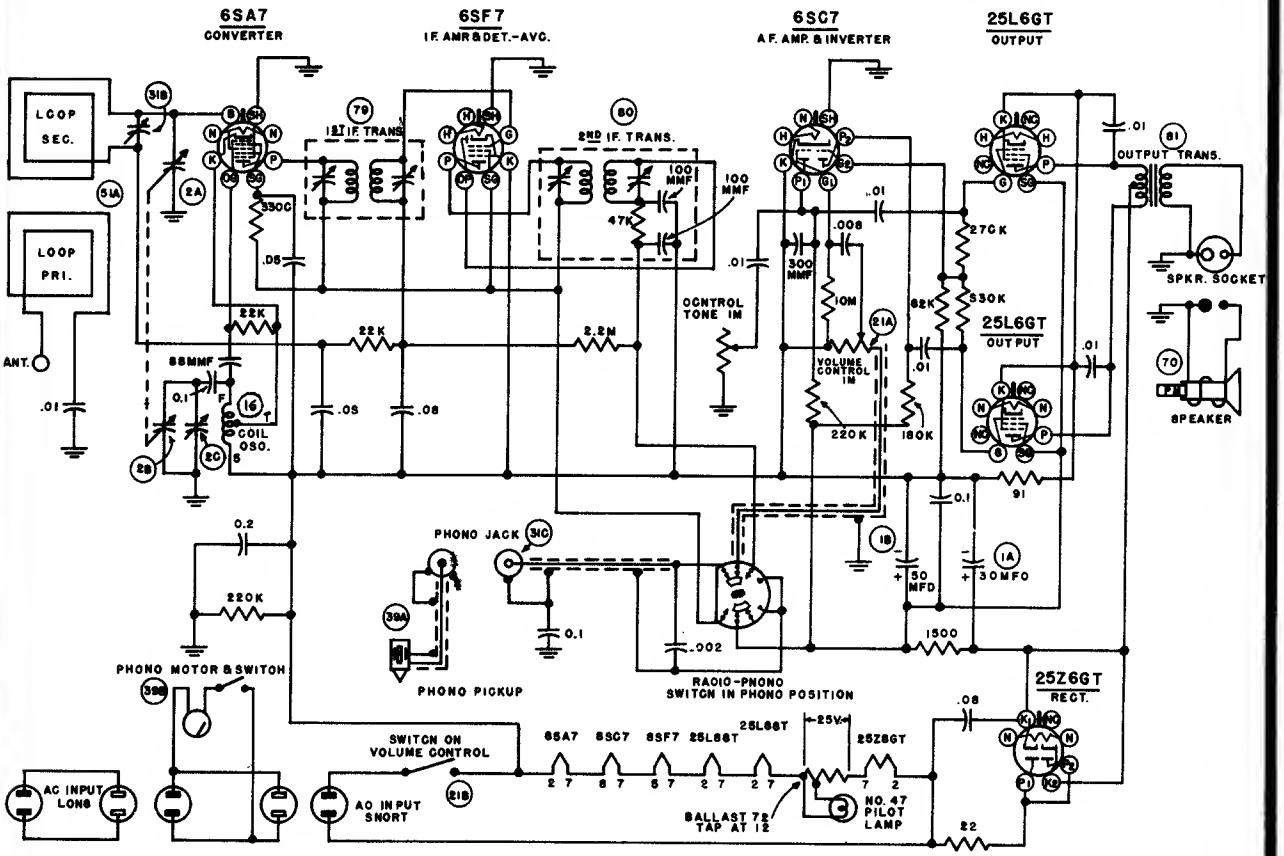
Power Output:

Undistorted (radio) ..... 3 watts
Undistorted (phonograph) ..... 3.5 watts
Maximum ..... 5 watts

Loudspeaker:

Type ..... 6⅝" dia. P.M. dynamic
Voice Coil Impedance ..... 3.2 ohms

When replacing tubes remove the snap-on fastners or screws which hold the rear cover-loop assembly in place and carefully swing the loop around to give access to the chassis. Turn the tuning dial to 550 kc to prevent damage to the tuning capacitor plates when removing the 6SA7 tube. This will allow removal or insertion of the tubes without difficulty.



VOLTAGE AND CURRENT TABLE

ALL VOLTAGES ARE MEASURED FROM THE NEGATIVE SIDE OF THE DUAL FILTER CAPACITOR USING A 20,000 OHMS PER VOLT METER. ALL CURRENTS ARE MEASURED FROM TOP OF TUBE SOCKETS USING A BREAK-IN ADAPTER. LINE VOLTAGE 117 V.A.C. SIGNAL VOLTAGE ZERO.

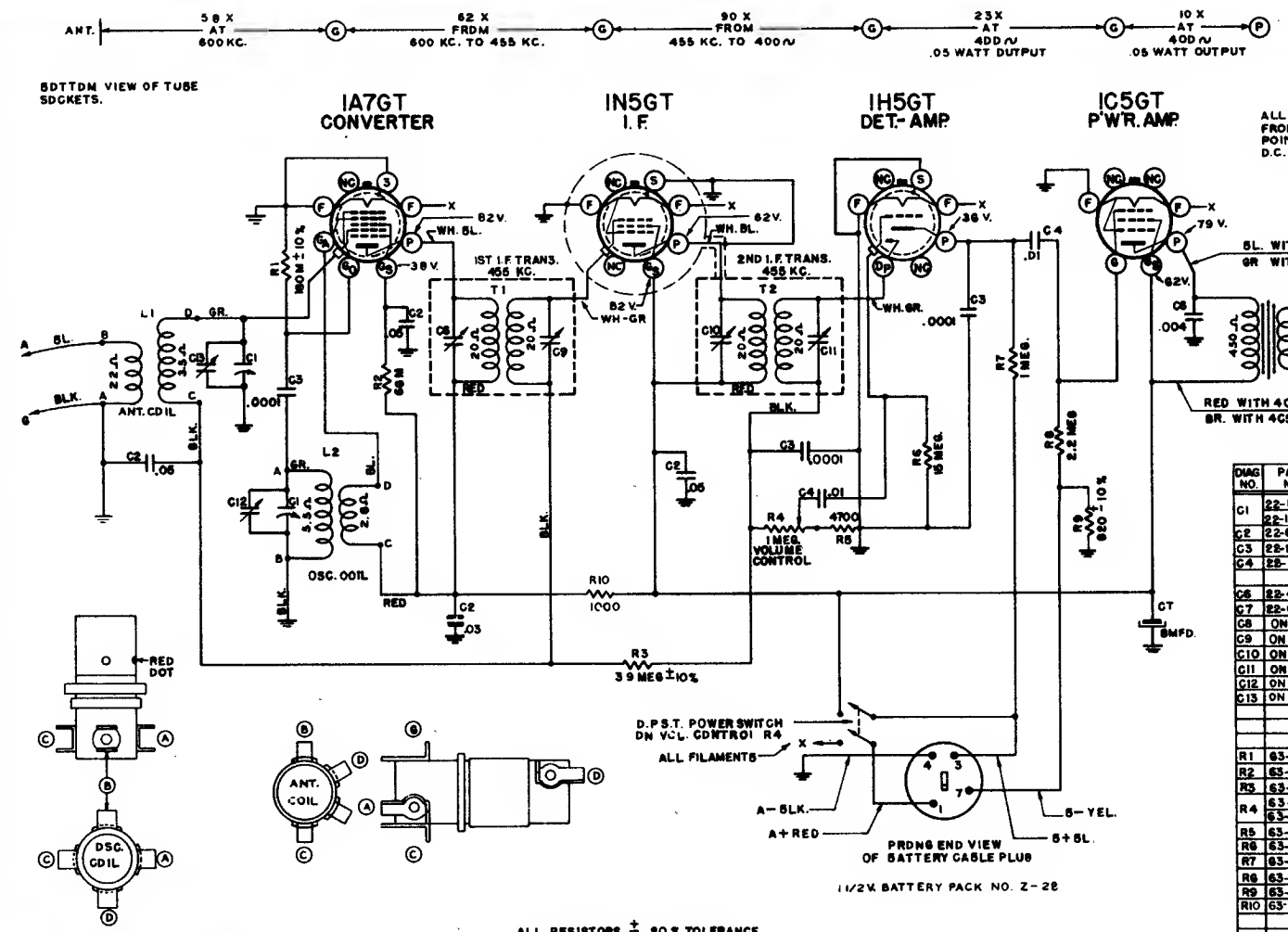
TUBE	SOCKET TERMINAL K		S6	P	I_K ma.
6SA7	ZERO		G5	B2	
6SC7	ZERO			NO.1-46 NO.2-30	
6SF7	ZERO		B2	B2	
25L6GT	5.4		B2	120	60
25Z6GT	125			B4	

READINGS SHOULD APPROXIMATE THE ABOVE WITHIN 20 PERCENT.

RESISTANCE TABLE

ITEM	PRIMARY OHMS	SECONDARY OHMS	REMARKS
31A	⅛	½	
18	"F" TO "S" - ½	"F" TO "F" - 3½	"F" TO "S" - 4¼ OHMS
79	28	28	
80	19	19	
80		47,000	INCLUDES INTERNAL RESISTOR IN SERIES WITH SECONDARY.
81	285		PLATE TO PLATE
81		½	PLUGS REMOVED FROM SPEAKER SOCKET
70		5.2	PLUGS REMOVED FROM SPEAKER SOCKET

Westinghouse
RADIO TELEVISION



DIAG NO.	PART NO.	DESCRIPTION
C1	22-1453	TWO GANG VARIABLE (4C53)
	22-1454	TWO GANG VARIABLE (4C52)
C2	22-829	.05 MFD. 200V.
C3	22-162	.0001 MFD. 600V.
C4	22-196	.01 MFD. 600V.
C6	22-448	.004 MFD. 600V.
C7	22-884	8 MFD. ELECTRO 150 V.
C8	ON T1	1ST I.F. TRANS. PRI.
C9	ON T1	1ST I.F. TRANS. SEC.
C10	ON T2	2ND I.F. TRANS. PRI.
C11	ON T2	2ND I.F. TRANS. SEC.
C12	ON C1	BROADCAST OSC. (ON GANG)
C13	ON C1	BROADCAST ANT. (ON GANG)
R1	63-654	180M OHM 1/4 W.
R2	63-594	68M OHM 1/4 W.
R3	63-669	3.9 MEG. 1/4 W.
R4	63-1236	VOLUME CONTROL (4C53)
	63-1551	VOLUME CONTROL (4C52)
R5	63-597	4700 OHM 1/4 W.
R6	63-976	15 MEG. 1/4 W.
R7	63-271	1 MEG. 1/4 W.
R8	63-600	2.2 MEG. 1/4 W.
R9	63-634	820 OHM 1/4 W.
R10	63-583	1000 OHM 1/4 W.
L1	312024	ANTENNA COIL
L2	312014	OSC. COIL ASS'Y.
T1	95-814	1ST I.F. TRANSFORMER
T2	95-839	2ND I.F. TRANSFORMER
SP1	49-519	5" SPEAKER (WITH 4C52)
SP2	49-460	6½" SPEAKER (WITH 4C53)

ZENITH

MODELS 4K016—4K035

CHASSIS Nos. 4C52—4C53

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

Alignment data on page 169.

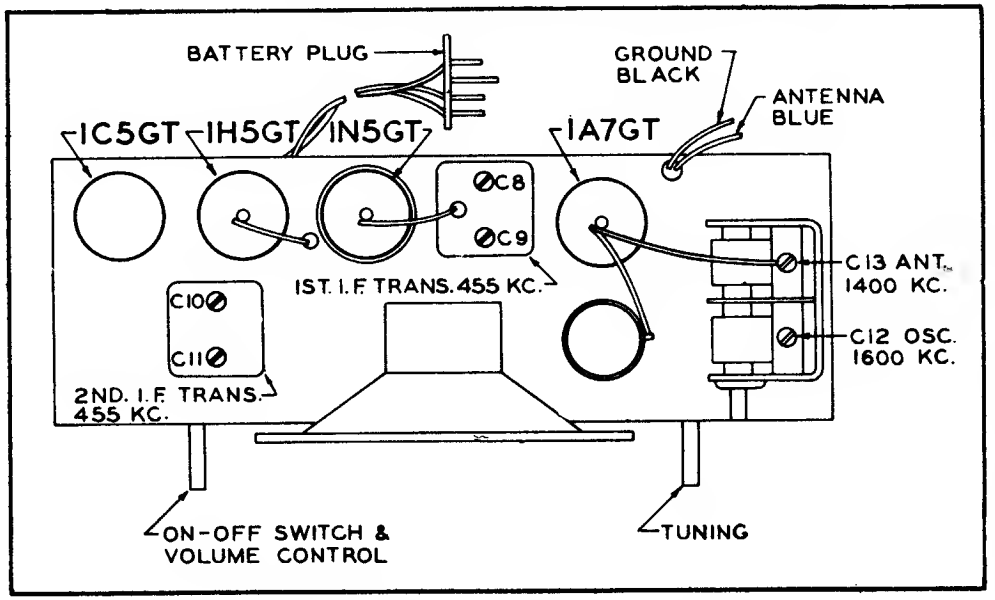
MODELS 4K016—4K035
CHASSIS Nos. 4C52—4C53

Zenith Radio Corp. Continued from page 168.

The alignment of this chassis is conventional.

A 4700 ohm resistor R5 between the low end of the volume control and ground allows some audio output with normal signal input when the volume control is in counter clockwise positions. This is the Guardian Reminder circuit.

If the audio output is objectionably high (with the volume control in counter clockwise position) resistor R5 may be reduced in value to 2500 ohms or removed from the circuit and the low end of the control grounded.



TUBE AND TRIMMER LOCATION

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.	C-8,C-9, C-10,C-11	Align I. F.
2	Antenna and Ground	200 mmfd.	1600 Kc.	1600 Kc.	C-12	Set Oscillator to Dial Scale.
3	Antenna and Ground	200 mmfd.	1400 Kc.	1400 Kc.	C-13	Align antenna stage.

ZENITH

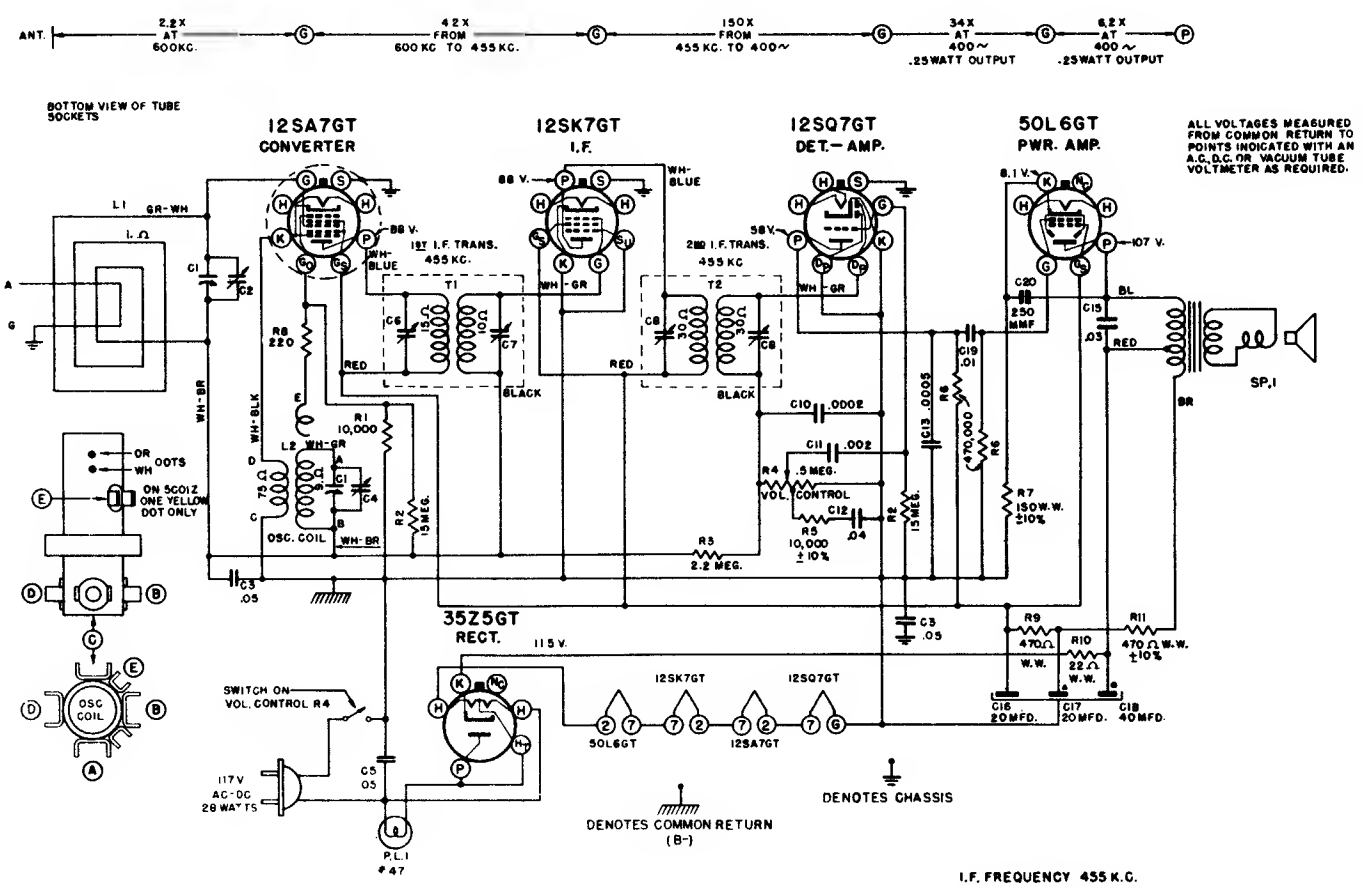
MODELS 5D011—5D027
CHASSIS No. 5C01

Alignment data on page 171.

DIAG NO	PART NO	DESCRIPTION ON 5C01 PARTS	
C1 #	22-1556	2-GANG VARIABLE	SEE NOTE
C2	ON C1	BROADCAST ANT. TRIMMER	
C3	22-829	.05 MFD.	200 V.
C4	ON C1	BROADCAST OSC TRIMMER	
C5	22-1047	.05 MFD.	200 V.
C6	ON T1	1ST I.F. TRANS. PRI. TRIMMER	
C7	ON T1	1ST I.F. " SEC. "	
C8	ON T2	2ND I.F. " PRI. "	
C9	ON T2	2ND I.F. " SEC. "	
C10	22-953	.0002 MFD	600 V.
C11	22-492	.002 MFD.	600 V.
C12	22-1202	.04 MFD.	200 V.
C13	22-854	.0005 MFD.	600 V.
C14	22-243	.01 MFD.	400 V.
C15	22-1049	.05 MFD	400 V.
C16		20 MFD. ELECTRO	150 V.
C17	22-1519	20 MFD. "	150 V.
C18		40 MFD. "	150 V.
C19	22-196	.01 MFD.	600 V.
#	26-531	DIAL SCALE	
C20	22-182	.00025 MFD.	600 V.
R1	63-589	10M OHM	1/4 W.
R2	63-976	15 MEGOHM	1/4 W.
R3	63-600	2.2 MEGOHM	1/4 W.
R4	63-1557	.5 MEG. VOLUME CONTROL	
R5	63-641	10M OHM	1/4 W.
R6	63-597	470M OHM	1/4 W.
R7	65-696	150 OHM WIREWOUND	1/2 W.
R8	63-578	220 OHM	1/4 W.
R9	65-1449	470 OHM WIREWOUND	1 W.
R10	63-450	22 OHM "	1 W.
R11	63-1222	470 OHM "	1 W.
L1 #	5-11099	WAVEMAGNET ASSEMBLY	
L2 #	5-11156	OSC. COIL "	
T1	95-905	1ST I.F. TRANSF. "	
T2	95-906	2ND I.F. TRANSF. "	
P.L.1	100-67	PILOT LIGHT 6.5V. 15A.	
SP.1	49-547	4" P.M. SPEAKER	

NOTE: ON 5C01Z ALL PARTS MARKD WITH # CHANGE TO THE FOLLOWING.

C1	22-1516	2 GANG VARIABLE
L1	5-12466	WAVE MAGNET ASS'Y
L2	5-12491	OSC. COIL
	26-364	DIAL SCALE

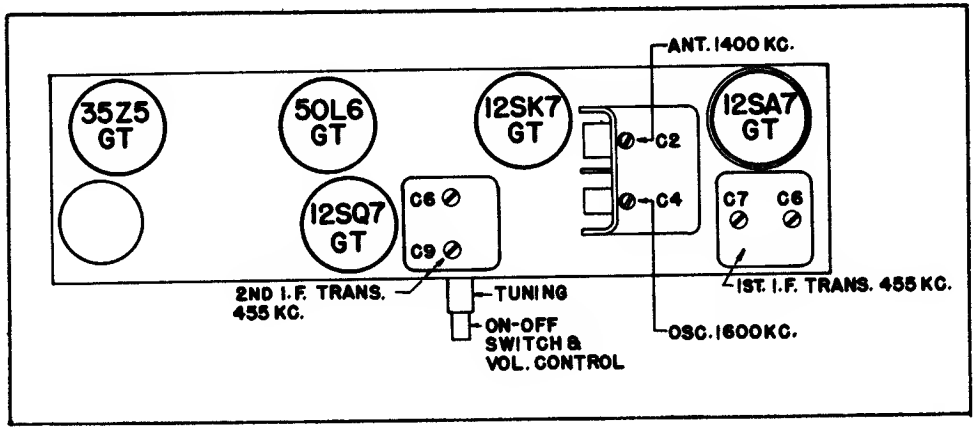


ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	C-6,C-7, C-8,C-9	Align I. F.
2	One turn loop Coupled loosely to wave magnet	--	1600 Kc.	1600 Kc.	C-4	Set Oscillator to Dial Scale.
3	"	--	1400 Kc.	1400 Kc.	C-2	Align Antenna Stage

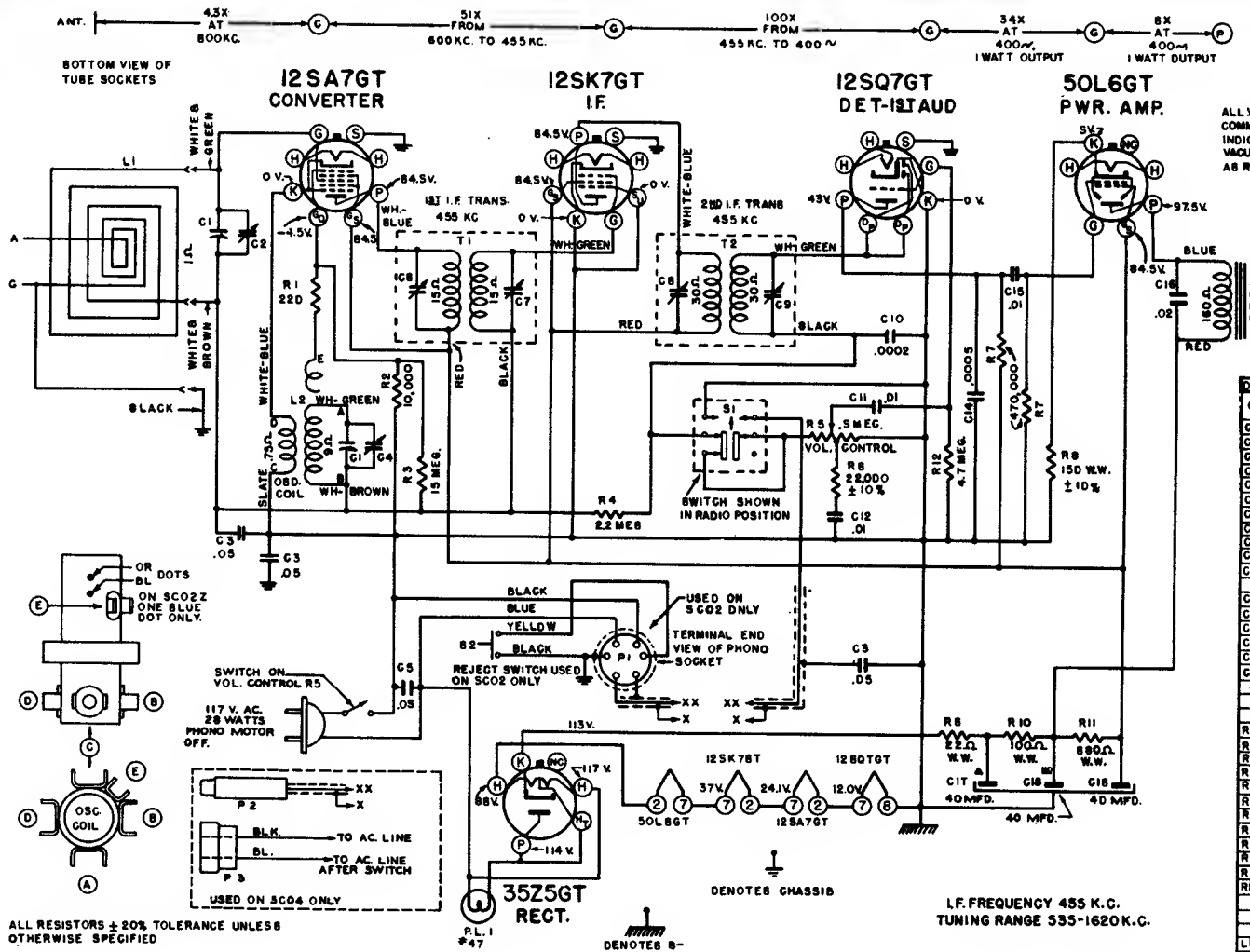
ZENITH

MODELS 5D011—5D027
CHASSIS No. 5C01



TUBE AND TRIMMER LOCATION

Circuit diagram on page 170.



DIAG.	PART	DESCRIPTION
C1*	22-1419	2-GANG VARIABLE (SC02)
	22-1356	2-GANG VARIABLE (SC04) *
C2	ON C1	BROADCAST ANT. TRIMMER
C3	22-829	.05 MFD. 200 V.
C4	ON C1 *	BROADCAST OSC. TRIMMER
C5	22-1017	.05 MFD. 200 V.
C6	ON T1 *	1ST I.F. TRANS. PRI. TRIMMER
C7	ON T1	1ST I.F. " SEC. "
C8	ON T2	2ND I.F. " PRI. "
C9	ON T2	2ND I.F. " SEC. "
C10	22-953	.0002 MFD. 600 V.
C11	22-889	.01 MFD. 600 V.
C12	22-826	.01 MFD. 200 V.
C14	22-854	.0005 MFD. 600 V.
C13	22-196	.01 MFD. 600 V.
C15	22-1379	.02 MFD. 400 V.
C17	22-1381	40 MFD. ELECTRO. 150 V.
C18		40 MFD. " 150 V.
C19		40 MFD. " 150 V.
*	28-354	DIAL SCALE
R1	63-579	220 OHM ½ W.
R2	63-589	10 M OHM ½ W.
R3	63-596	15 MEGOHM ½ W.
R4	63-600	2.2 MEGOHM ½ W.
R5	63-1348	.5 MEG. VOLUME CONTROL
R6	63-644	22 M OHM ½ W.
R7	63-597	470 M OHM ½ W.
R8	63-686	150 OHM WIREWOUND 2 W.
R9	63-1218	22 OHM WIREWOUND ½ W.
R10	63-1220	100 OHM WIREWOUND 1 W.
R11	63-1221	680 OHM WIREWOUND 1 W.
R12	63-602	4.7 MEGOHM ½ W.
L1*	S11296	WAVEMAGNET ASSEMBLY
L2*	S11284	OSC. COIL "
T1	95-919	1ST I.F. TRANS. "
T2	95-908	2ND I.F. TRANS. "
P.L.1	100-87	PILOT LIGHT 6.3 V. .15A.
S1	85-337	PHONO-RADIO SWITCH
S2	85-338	REJECT SWITCH USED ON SC02 & SC02Z
P1	S11283	PHONO CABLE USED ON SC02 & SC02Z
P2	S11287	PHONO CABLE USED ON SC04 ONLY
P3	52-188	A.C. RECEPTACLE USED ON SC04 ONLY
SP.1	49-518	5" SPEAKER P.M.

NOTE: ON SC02Z ALL PARTS MARKED WITH * CHANGE TO THE FOLLOWING.

C1	22-1527	2 GANG VARIABLE
L1	S12877	WAVE MAGNET ASSEM.
L2	S12652	OSC. COIL "
	26-367	DIAL SCALE

MODELS 5R080—5R086

CHASSIS Nos. 5C02—5C04

Alignment on page 173.

MODELS 5R080—5R086
CHASSIS Nos. 5C02—5C04

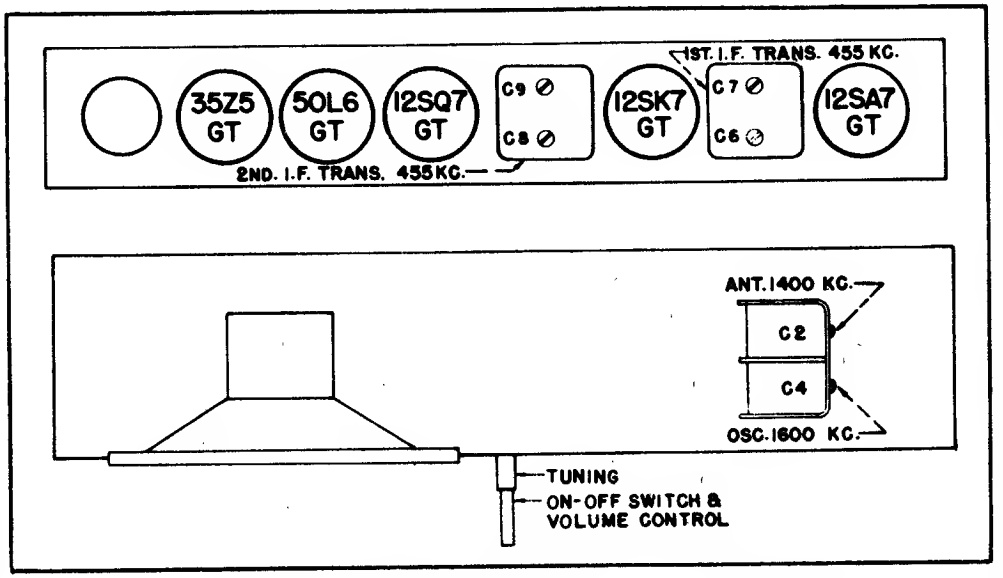
Zenith Radio Corp. Continued from page 172.

The 5C02 and 5C04 chassis are identical electrically. Chassis 5C02 has a Record Reject push button switch on the receiver control panel to reject records.

The socket P1 is used to connect the automatic record changer to the receiver.

The Phono-Radio switch is a two position double acting push-button switch and when in the "in" position connects the changer for playing records.

Chassis 5C04 has the same Phono-Radio switch arrangement. However, the 5C04 does not have socket P1 and the Record Reject switch. The record player is connected to the receiver by a shielded cable and socket arrangement.



TUBE AND TRIMMER LOCATION

ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1 1	Converter Grid	.5 Mfd.	455 Kc.	1600 KC.	C-6,C-7, C-8,C-9	Align I. F.
2	Single Turn Loop Loosely Coupled to Wave magnet		1600 Kc.	1600 Kc.	C-4	Set Oscillator to Dial Scale.
3			1400 Kc.	1400 Kc.	C-2	Align Ant

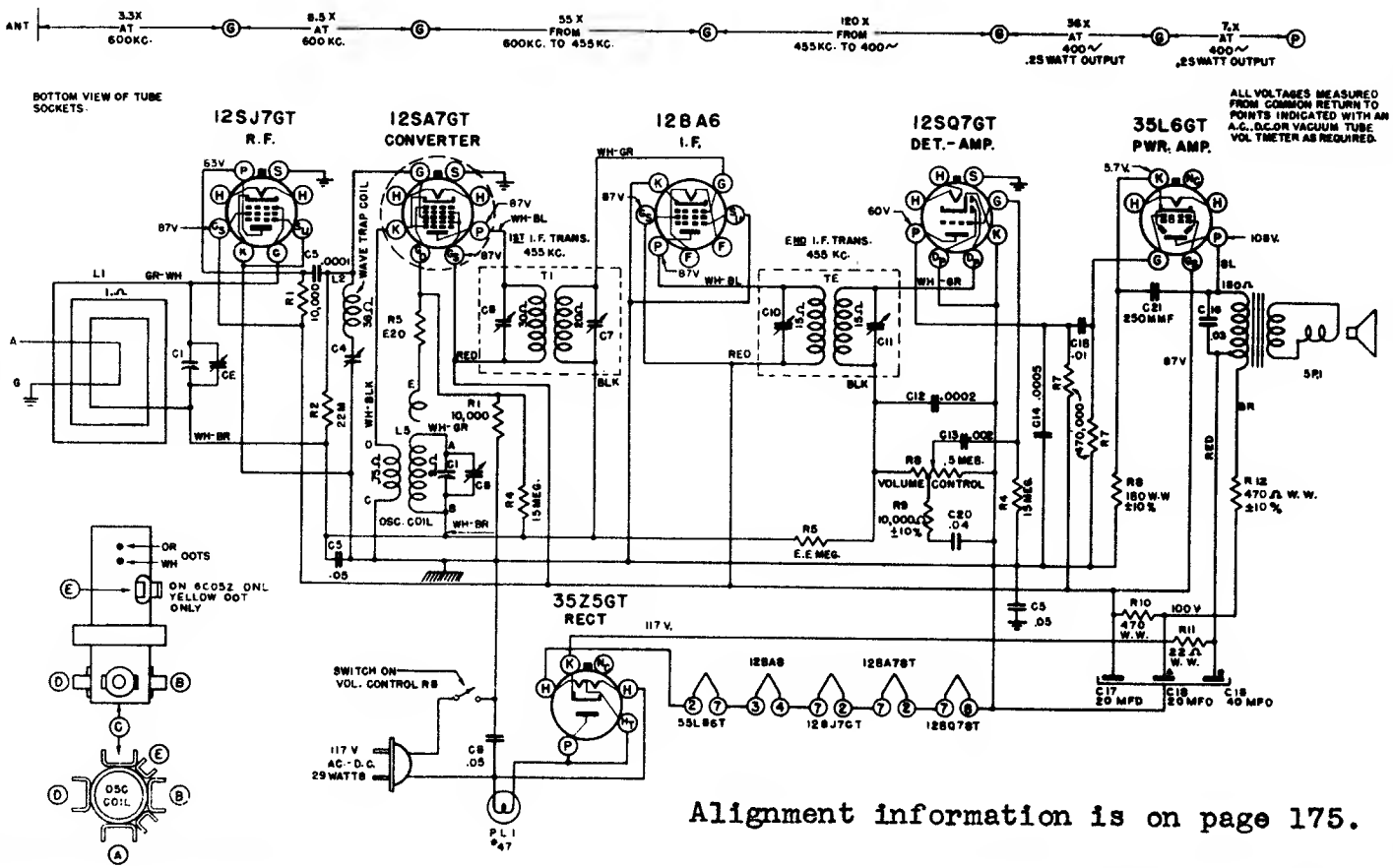
ZENITH

MODELS 6D015—6D030
CHASSIS No. 6C05

DIAG NO	PART NO	DESCRIPTION OF 6C05 PARTS
C1@	22-1418	2-GANG, VAR-SEE NOTE
C2	ON C1	BROADCAST ANT. TRIMMER
C5	22-162	.0001 MFD. 600 V.
C4	22-1015	WAVE TRAP TRIMMER
C5	22-829	.05 MFD 200 V.
C6	ON T1	1ST I.F. TRANS. PRI. TRIMMER
C7	ON T1	1ST I.F. " SEC. "
C8	ON C1	BROADCAST OSC. "
C9	EE-1017	.05 MFD. 200 V.
C10	ON T2	2ND I.F. TRANS. PRI. TRIMMER
C11	ON T2	2ND I.F. " SEC. "
C12	22-953	.0002 MFD. 600 V.
C13	22-492	.002 MFD. 600 V.
C14	22-854	.0005 MFD. 600 V.
C15	22-196	.01 MFD. 600 V.
C16	22-1048	.05 MFD. 400 V.
C17		20 MFD. ELECTRO. 150 V.
C18	22-1518	20 MFD. " 150 V.
C19		40 MFD. 150 V.
C20	22-1202	.04 MFD. 200 V.
R12	63-1222	470 OHM WIRE WD. 1 W.
R1	63-589	10M OHM 1/4 W.
R2	63-591	22M OHM 1/4 W.
R3	63-579	220 OHM 1/4 W.
R4	63-578	15 MEGOHM 1/4 W.
R5	63-600	2.2 MEGOHM 1/4 W.
R6	63-1337	.5 MEG. VOLUME CONTROL
R7	63-597	470M OHM 1/2 W.
R8	63-686	150 OHM WIREWOUND 1/2 W.
R9	63-641	10 M OHM 1/4 W.
R10	63-1449	470 OHM WIRE WD. 1 W.
R11	63-1450	22 OHM " 1 W.
L1@	S 11089	WAVE MAGNET ASSEMBLY
L2	S 8526	WAVE TRAP COIL "
L3@	S11136	OSC. COIL "
T1	95-969	1ST I.F. TRANSFORMER
T2	95-930	2ND I.F. "
PL1	100-67	PILOT LIGHT 6.3V. .15A
SP1	49-547	4" P.M. SPEAKER
@	26-348	DIAL SCALE
C21	22-182	250 MMF 600 V.

NOTE - ON 6C05Z ALL PARTS WITH @ CHANGE TO THE FOLLOWING

C1	22-1521	2 GANG VARIABLE
L1	S-12486	WAVE MAGNET ASS'Y.
L3	S-12491	OSC. COIL "
	26-385	DIAL SCALE



Alignment information is on page 175.

ALL RESISTERS ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

DENOTES COMMOR RETURN (B-)

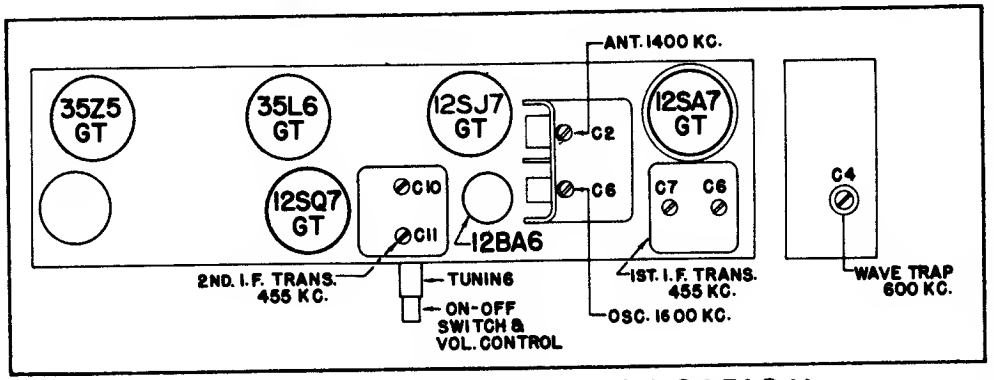
DENOTES CHASSIS

I.F. FREQUENCY 455 K.C.
TUNING RANGE 535-1620 K.C.

MODELS 6D015—6D030
CHASSIS No. 6C05

Zenith Radio Corp.

Continued from page 174.



TUBE AND TRIMMER LOCATION

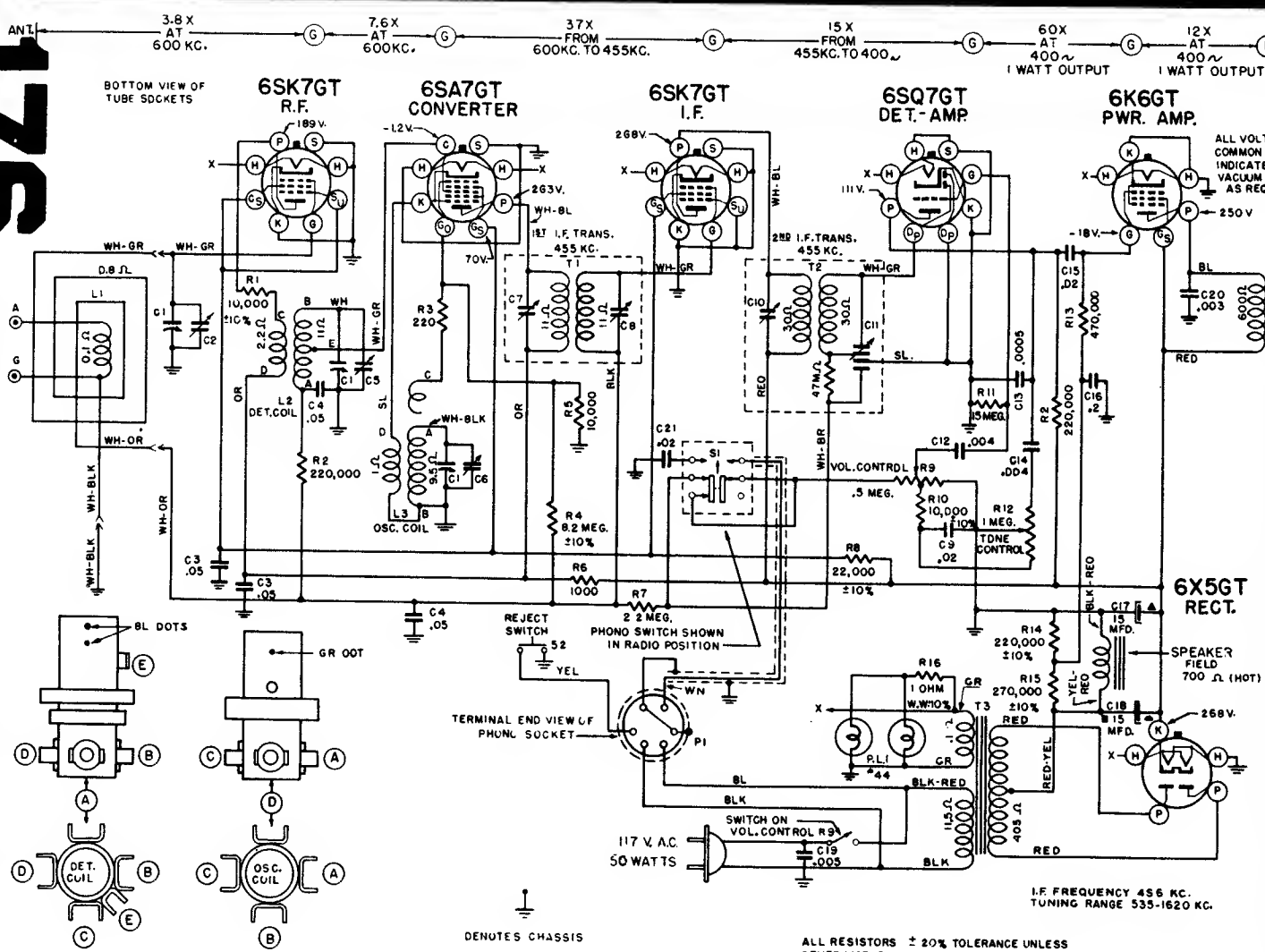
The filter circuits of chassis 6C05 incorporate new features that should be well understood by the service man. An examination of the schematic drawing will show the output transformer tapped slightly off center. This tap is the B + connection from filter resistor R11 and capacitor C19 off the cathode of the rectifier 35Z5 to the 35L6 plate. The lower connection of the output transformer feeds B + to the rest of the tubes in the receiver. Current flowing through the upper windings of the output transformer to the 35L6 produces a magnetic field which is 180° out of phase with the magnetic field produced by current flowing in the opposite direction through the output transformer to the rest of the receiver, therefore, most of the AC hum is cancelled. Further reduction of hum is accomplished by filtering through resistor R10 and 12 and capacitors C17 and 18.

This development in filtering systems allows a higher effective plate voltage on the 35L6 for increased power output.

NOTE: The output transformer must be replaced with an exact duplicate, Part No. 206-547. Be sure to add the speaker code letter to the transformer part number.

ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR	DUMMY TO ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	C-6, C-7, C-10, C-11	I.F. Alignment
2	Single Turn Loosely Coupled to Wave Magnet		455 Kc.	600 Kc.	C-4	Adjust Wave Trap to minimum.
3			1600 Kc.	1600 Kc.	C-8	Set Oscillator to Dial Scale.
4			1400 Kc.	1400 Kc.	C-2	Antenna Alignment



DIAG NO.	PART NO.	DESCRIPTION
C1	22-1569	3-GANG VARIABLE
C2	DN C1	BROADCAST ANT. TRIMMER
C3	22-171	.05 MFD. 600 V.
C4	22-829	.05 MFD. 200 V.
C5	DN C1	BROADCAST DET. TRIMMER
C6	DN C1	BROADCAST OSC. TRIMMER
C7	DN T1	1ST I.F. TRANS. PRI. TRIMMER
C8	DN T1	1ST I.F. " SEC. "
C9	22-527	.02 MFD. 200 V.
C10	DN T2	2ND I.F. TRANS. PRI. TRIMMER
C11	DN T2	2ND I.F. " SEC. "
C12	22-1362	.004 MFD. 600 V.
C13	22-834	.0005 MFD. 600 V.
C14	22-448	.004 MFD. 600 V.
C15	22-630	.02 MFD. 600 V.
C16	22-136	.2 MFD. 200 V.
C17	22-1372	15 MFD. ELECTRO 330 V.
C18	22-1372	15 MFD. " 430 V.
C19	22-1041	.005 MFD. 400 V.
C20	22-266	.003 MFD. 600 V.
C21	22-1368	.02 MFD. 200 V.
R1	63-136	10M OHM 1 W.
R2	63-296	220 M OHM 1/4 W.
R3	63-379	220 OHM 1/4 W.
R4	63-675	8.2 MEGOHM 1/4 W.
R5	63-589	10 M OHM 1/4 W.
R6	63-603	1000 OHM 1/2 W.
R7	65-600	2.2 MEGOHM 1/4 W.
R8	63-1036	22 M OHM 2 W.
R9	63-1340	.5 MEG VOLUME CONTROL
R10	63-641	10 M OHM 1/4 W.
R11	63-976	15 MEGOHM 1/4 W.
R12	65-1541	1 MEG. TONE CONTROL
R13	63-397	470 M OHM 1/4 W.
R14	63-635	220 M OHM 1/4 W.
R15	63-656	270 M OHM 1/4 W.
R16	63-1223	1 OHM WIREWOUND 1/2 W.
L1	S-11382	WAVEMAGNET
L2	S-11165	DET. COIL ASSEMBLY
L3	S-11164	OSC. " "
T1	93-909	1ST I.F. TRANSFORMER
T2	93-910	2ND I.F. "
T3	93-911	PWR. TRANS. 117V. 50-60~
P.L.1	100-56	DIAL LIGHT 6.3V. .23A.
S1	63-337	PHONO-RADIO SWITCH
S2	86-349	REJECT SWITCH
SP1	49-616	5" DYNAMIC SPEAKER
P1	S-11167	PHONO CABLE ASSEMBLY

ZENITH

MODELS 6R084

CHASSIS Nos. 6C21

Alignment information is on page 177.

MODELS 6R084
CHASSIS Nos. 6C21

A feature of chassis 6C21 is a high gain tuned R.F. stage ahead of the conventional superheterodyne circuit.

When making repairs or adjustments on the chassis be sure to have the Phono-Radio switch in Radio position (button out).

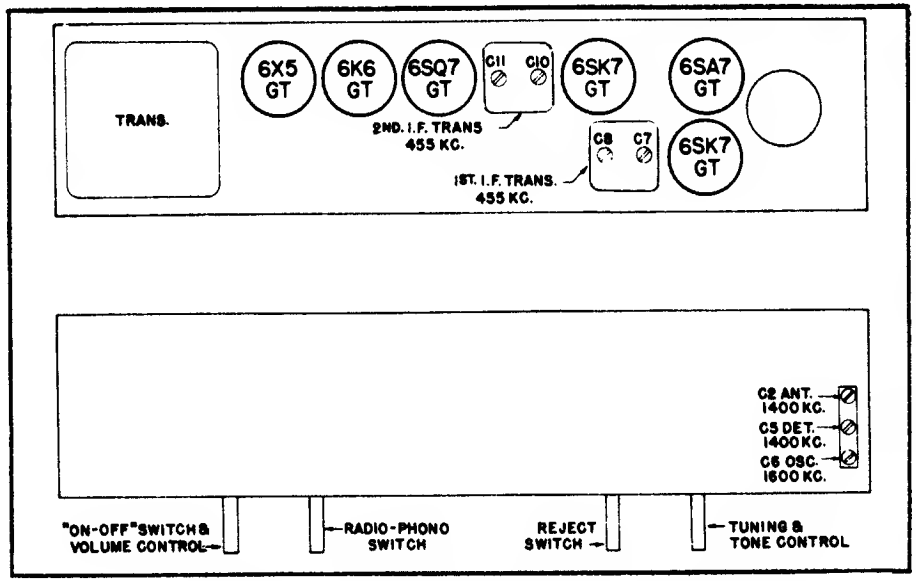
The Tone Control circuit used in chassis 6C21 is unusual. Attenuation or control occurs in both the grid and plate circuit of the triode section of the 6SQ7 tube. To increase the bass response Resistor R10 and Capacitor C9 boost the bass in the grid circuit.

Capacitor C14 and the Variable Tone Control R12 attenuate the highs in the plate circuit.

When the tone control R12 is in the treble position attenuation to highs are greatly reduced in the plate circuit and minimum bass boost takes place in the grid circuit.

When the tone control is in bass position, attenuation to the highs takes place in the plate circuit with maximum bass boost in the grid circuit.

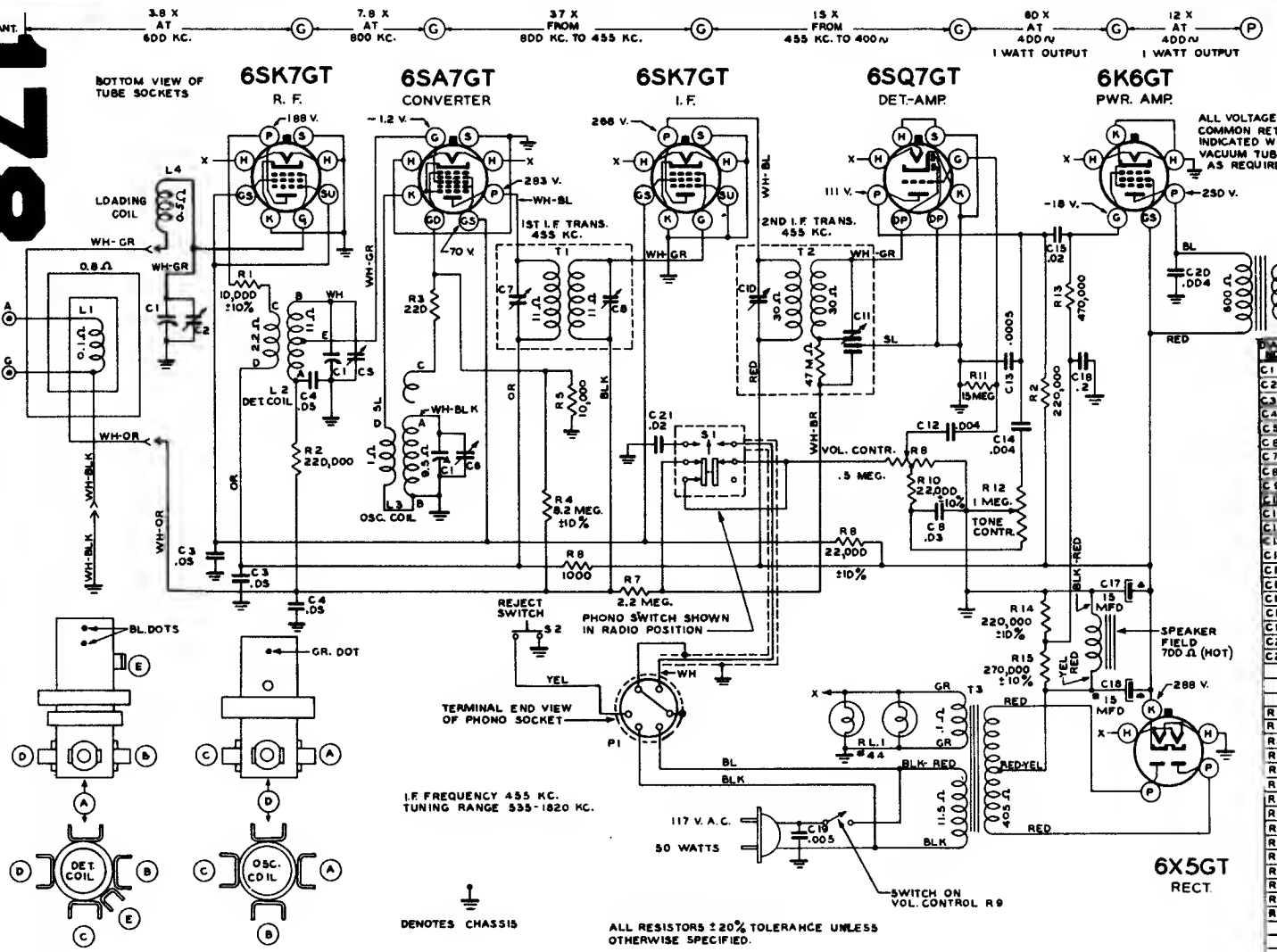
The result of this arrangement allows a smooth tone control over the audio frequency range.



TUBE AND TRIMMER LOCATION

ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	0.5 Mfd.	455 Kc.	600 Kc.	C-7-, C-8, C-10, C-11	Align I F
2	One Turn Loop Coupled Loosely to Wave Magnet	--	1600 Kc	1600 Kc	C-6	Set Oscillator to Dial Scale
3		--	1400 Kc.	1400 Kc.	C-5	Align det.
4		--	1400 Kc.	1400 Kc.	C-2	Align Ant.



DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1369	3-GANG VARIABLE
C2	ON C1	BROADCAST ANT. TRIM.
C3	22-171	.05 MFD 600 V.
C4	22-828	.05 MFD 200 V.
C5	ON C1	BROADCAST DET. TRIM.
C6	ON C1	BROADCAST OSC. TRIM.
C7	ON T1	1ST I.F. TRANS. PRIM. TR.
C8	ON T1	1ST I.F. " SEC. TRIM.
C9	22-1157	.05 MFD 200 V.
C10	ON T2	2ND I.F. TRANS. PRI. TRIM.
C11	ON T2	2ND I.F. " SEC. TRIM.
C12	22-1362	.004 MFD 600 V.
C13	22-854	.0005 MFD 600 V.
C14	22-446	.004 MFD 600 V.
C15	22-830	.02 MFD 600 V.
C16	22-138	.2 MFD 200 V.
C17	22-1372	15 MFD ELECTRO. 350 V.
C18	22-1372	15 MFD " 450 V.
C19	22-1041	.005 MFD 400V.
C20	22-446	.004 MFD 600V.
C21	22-1386	.02 MFD 200 V.
R1	83-156	10 M OHM 1 W.
R2	83-298	220 M OHM ½ W.
R3	83-979	220 OHM ½ W.
R4	83-673	8.2 MEGOHM ½ W.
R5	83-589	10 M OHM ½ W.
R6	83-805	1000 OHM ½ W.
R7	83-600	2.2 MEGOHM ½ W.
R8	83-1038	22 M OHM 2 W.
R9	83-1340	.5 MEG. VOL. CONTR.
R10	83-581	22M OHM ½ W.
R11	83-978	15 MEGOHM ½ W.
R12	83-1341	1 MEG. TONE CONTR.
R13	83-587	470 M OHM ½ W.
R14	83-655	220 M OHM ½ W.
R15	83-858	270 M OHM ½ W.
L4	3-11898	LOADING COIL
L1	3-11450	WAVEMAGNET
L2	3-11183	DET. COIL ASS'Y.
L3	3-11184	OSC. " "
T1	95-908	1ST. I.F. TRANS.
T2	85-810	2ND I.F. "
T3	85-811	PWR. TRS. 117 V. 50-80 ∿
PL.1	100-38	DIAL LIGHT 6.3 V. .25 A.
S1	85-337	PHONO-RADIO SW.
S2	85-349	REJECT SWITCH
SP1	40-528	10" DYNAMIC SPEAKER
P1	78-823	PHONO SOCKET

ZENITH RADIO CORPORATION
CHICAGO, ILLINOIS

MODELS 6R087
CHASSIS Nos. 6C22

Alignment information is on page 179.

MODEL 6R087
CHASSIS No. 6C22

Zenith Radio Corp.

Continued from page 178.

A feature of chassis 6C22 is a high gain tuned R.F. stage ahead of the conventional superheterodyne circuit.

When making repairs or adjustments on the chassis be sure to have the Phono-Radio switch in Radio position (button out).

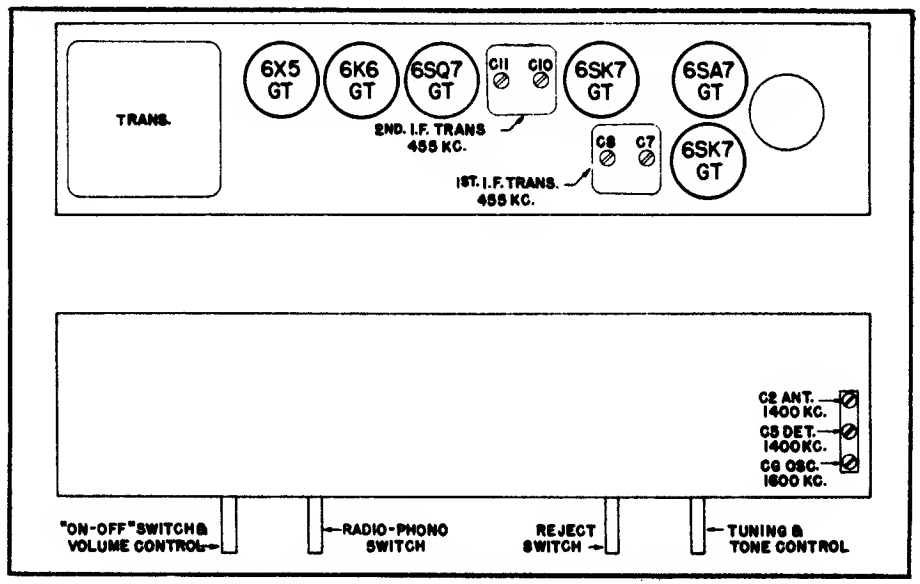
The Tone Control circuit used in chassis 6C22 is unusual. Attenuation or control occurs in both the grid and plate circuit of the triode section of the 6SQ7 tube. To increase the bass response Resistor R10 and Capacitor C9 boost the bass in the grid circuit.

Capacitor C14 and the Variable Tone Control R12 attenuate the highs in the plate circuit.

When the tone control R12 is in the treble position attenuation to highs are greatly reduced in the plate circuit and minimum bass boost takes place in the grid circuit.

When the tone control is in bass position, attenuation to the highs takes place in the plate circuit with maximum bass boost in the grid circuit.

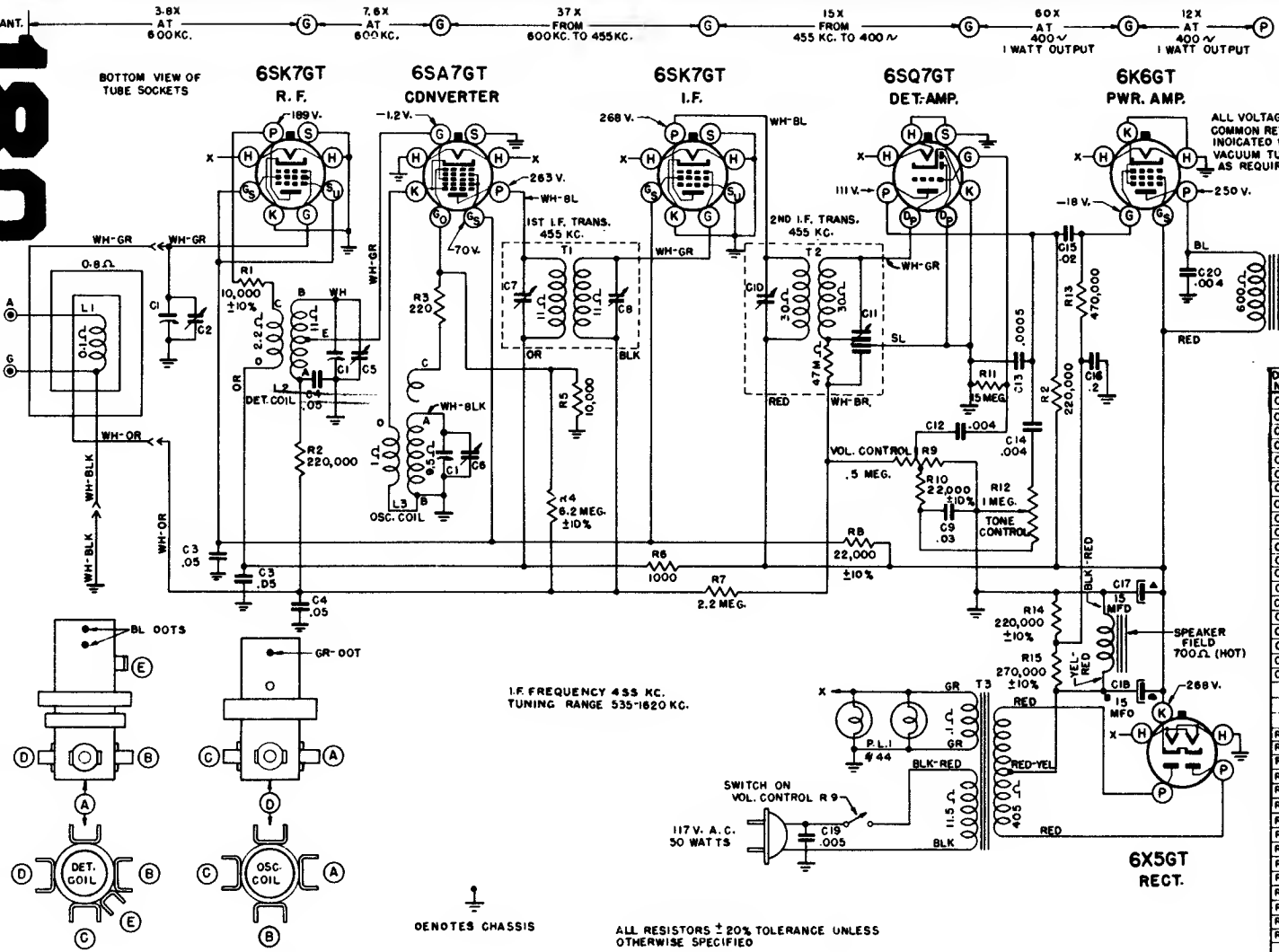
The result of this arrangement allows a smooth tone control over the audio frequency range.



TUBE AND TRIMMER LOCATION

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.	C-7-, C-8, C-10, C-11	Align I. F.
2	One Turn Loop Coupled Loosely to Wave Magnet	--	1600 Kc	1600 Kc	C-6	Set Oscillator to Dial Scale.
3		--	1400 Kc.	1400 Kc.	C-5	Align det.
4		--	1400 Kc.	1400 Kc.	C-2	Align Ant.



DIAG NO	PART NO	DESCRIPTION
C1	22-1369	3-GANG VARIABLE
C2	ON C1	BROADCAST ANT. TRIM.
C3	22-171	.05 MFD. 600 V.
C4	22-829	.05 MFD. 200 V.
C5	ON C1	BROADCAST DET. TRIM.
C6	ON C1	BROADCAST OSC. TRIM.
C7	ON T1	1ST I.F. TRANS. PRI. TRIM.
C8	ON T1	1ST I.F. " SEC. TRIM.
C9	22-1157	.03 MFD. 200 V.
C10	ON T2	2ND I.F. TRANS. PRI. TRIM.
C11	ON T2	2ND I.F. " SEC. TRIM.
C12	22-1362	.004 MFD. 600 V.
C13	22-854	.0005 MFD. 600 V.
C14	22-448	.004 MFD. 600 V.
C15	22-850	.02 MFD. 600 V.
C16	22-138	.2 MFD. 200 V.
C17	22-1372	15 MFD. ELECTRO. 350 V.
C18	22-1372	15 MFD. " 450 V.
C19	22-1041	.005 MFD. 400 V.
C20	22-446	.004 MFD. 600 V.
R1	63-156	10M OHM 1 W
R2	63-296	220 M OHM 1/4 W
R3	63-579	220 OHM 1/4 W
R4	63-873	6.2 MEGOHM 1/4 W
R5	63-589	10 M OHM 1/4 W
R6	63-605	1000 OHM 1/2 W
R7	63-600	2.2 MEGOHM 1/4 W
R8	63-1058	22 M OHM 2 W
R9	63-1340	.5 MEG. VOL. CONTROL
R10	63 591	22M OHM 1/4 W
R11	63-976	15 MEGOHM 1/4 W
R12	63-1341	1 MEG. TONE CONTROL
R13	63-597	470M OHM 1/4 W
R14	63-655	220 M OHM 1/4 W
R15	63-656	270M OHM 1/4 W
L1	S-12088	WAVEMAGNET
L2	S-11163	DET. COIL ASSEMBLY
L3	S-11164	OSC. " "
T1	95-909	1ST I.F. TRANS.
T2	95-910	2ND I.F. "
T3	95-911	PWR. TRANS. 117 V. 50-60~
PL1	100-36	DIAL LIGHT 6.3 V. .25 A.
SPI	49-526	10" DYNAMIC SPEAKER

MODELS 6R060

CHASSIS Nos. 6C23

Alignment data is on page 181.

MODELS 6R060
CHASSIS Nos. 6C23

A feature of chassis 6C23 is a high gain tuned R.F. stage ahead of the conventional superheterodyne circuit.

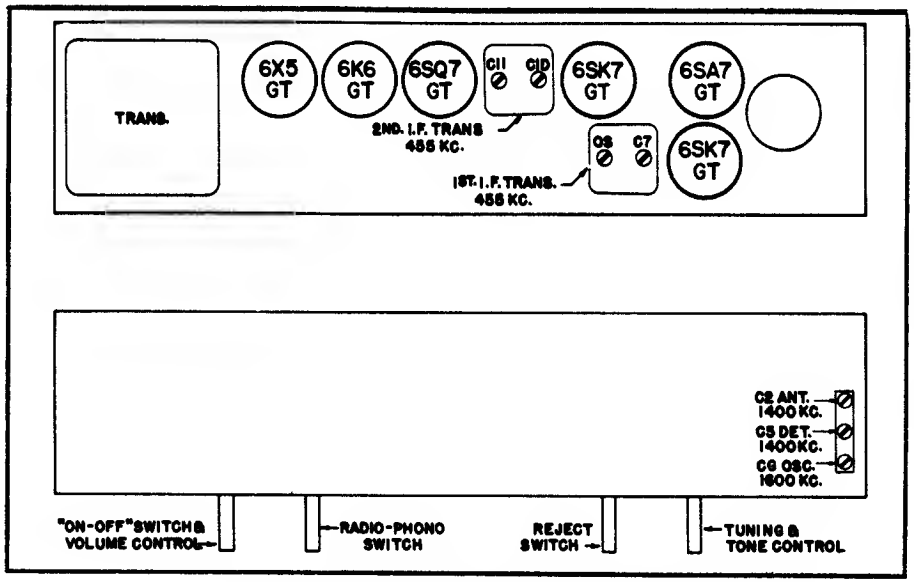
The Tone Control circuit used in chassis 6C23 is unusual. Attenuation or control occurs in both the grid and plate circuit of the triode section of the 6SQ7 tube. To increase the bass response Resistor R10 and Capscitor C9 boost the bass in the grid circuit.

Capacitor C14 and the Variable Tone Control R12 attenuate the highs in the plate circuit.

When the tone control R12 is in the treble position attenuation to highs are greatly reduced in the plate circuit and minimum bass boost takes place in the grid circuit.

When the tone control is in bass position, attenuation to the highs takes place in the plate circuit with maximum bass boost in the grid circuit.

The result of this arrangement allows a smooth tone control over the audio frequency range.



TUBE AND TRIMMER LOCATION

ALIGNMENT PROCEDURE

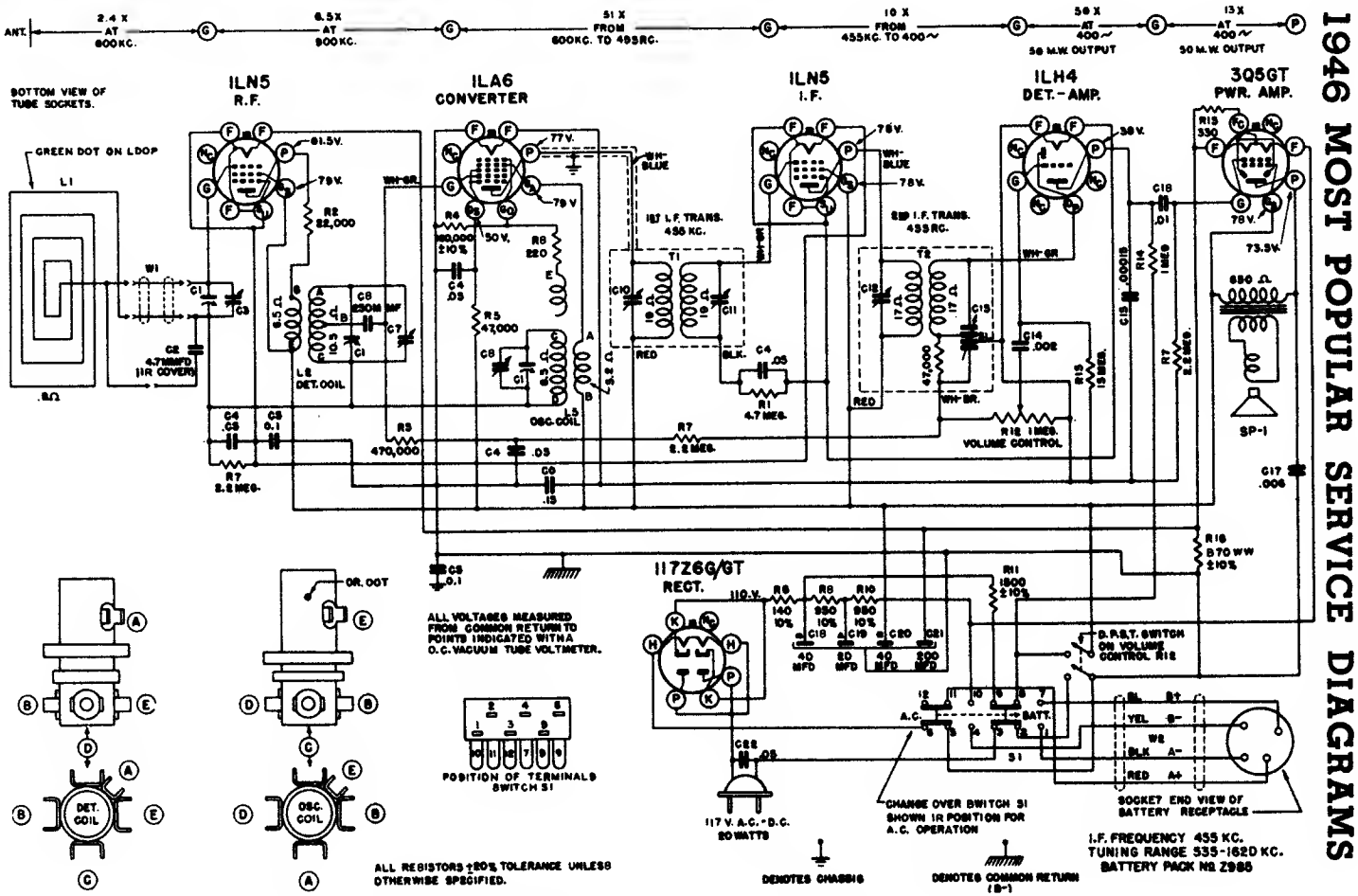
OPERATOR	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	C-7-,C-8, C-10,C-11	Align I. F.
2	One Turn Loop Coupled Loosely to Wave Magnet	--	1600 Kc.	1600 Kc.	C-6	Set Oscillator to Dial Scale.
3		--	1400 Kc.	1400 Kc.	C-5	Align detector
4		--	1400 Kc.	1400 Kc.	C-2	Align antenna stage

ZENITH

MODEL 6G001
CHASSIS No. 6C40

Alignment information is on page 183.

DIAG NO	PART NO	DESCRIPTION	
C1	22-1332	3-GANG VARIABLE	
C2	22-1344 OR 22-1345	4.7 MMFD. (IN COVER)	600 V.
C3	ON C1	BROADCAST ANT. TRIMMER	
C4	22-829	.05 MFD.	200 V.
C5	22-827	.1 MFD.	200 V.
C6	22-182	250 MMFD.	600 V.
C7	ON C1	BROADCAST DET. TRIMMER	
C8	22-1226	BROADCAST OSC. TRIMMER	
C9	22-1025	.13 MFD.	200 V.
C10	ON T1	1ST I.F. TRANS. PRI. TRIMMER	
C11	ON T1	1ST I.F. " SEC. "	
C12	ON T2	2ND I.F. " PRI. "	
C13	ON T2	2ND I.F. " SEC. "	
C14	22-498	.002 MFD.	600 V.
C15	22-470	.00015 MFD.	600 V.
C16	22-198	.01 MFD.	600 V.
C17	22-458	.006 MFD	600 V.
C18	22-1443	40 MFD. ELECTRO	150 V.
C19		20 MFD "	150 V.
C20		40 MFD "	150 V.
C21		200 MFD "	10 V.
C22	22-1017	.05 MFD	200 V.
R1	63-802	4.7 MEG. OHM	½ W.
R2	63-844	22 M OHM	½ W.
R3	63-719	470M OHM	½ W.
R4	65-775	160M OHM	½ W.
R5	63-715	47 M OHM	½ W.
R6	63-579	220 OHM	½ W.
R7	63-900	2.2 MEGOHM	½ W.
R8	63-1366	140 OHM	2 W.
R9	63-1362 OR 63-1363	950 OHM	5 W.
R10		950 OHM	5 W.
R11	63-416	1500 OHM	½ W.
R12	65-1231	1 MEG. VOLUME CONTROL	
R13	63-979	15 MEGOHM	½ W.
R14	63-271	1 MEGOHM	½ W.
R15	63-580	330 OHM	½ W.
R16	93-1097	870 OHM WIREWOUND	1 W.
L1	910857	WAVE MAGNET ASSEM.	
L2	910884	DETECTOR COIL "	
L3	910693	OSCILLATOR "	
T1	95-604	1ST I.F. TRANSFORMER	
T2	95-903	2ND I.F. "	
SP1	49-512	6½ P.M. SPEAKER	
S1	83-311	CHANGEOVER SWITCH	
W1	910892	WAVE MAGNET CABLE	
W2	911019	BATTERY CABLE	
B.P.1	5-27	BATTERY PACK Z965	

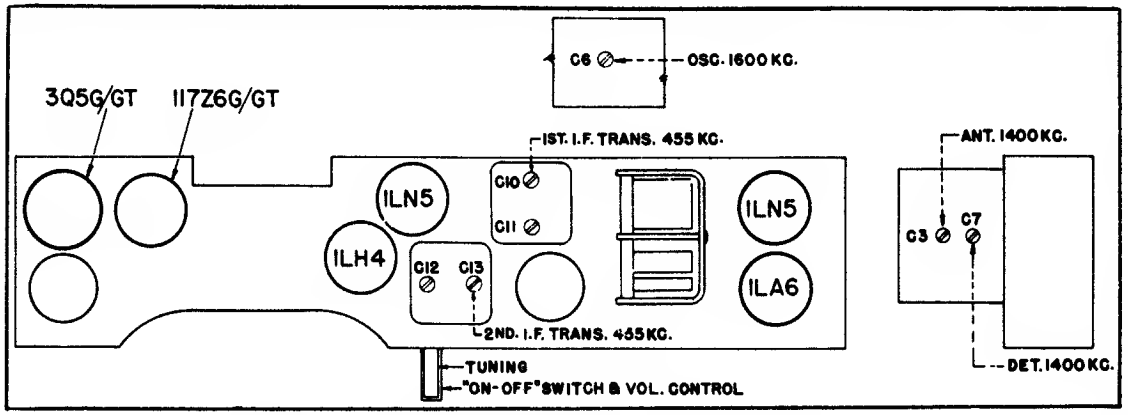


MODEL 6G001
CHASSIS No. 6C40

Zenith Radio Corp. Continued from page 182.

The 6C40 chassis is an AC, DC or battery operated superheterodyne circuit with a stage of RF amplification. The chassis is isolated from the DC circuit, and all measurements must be made from a common negative point. The most convenient place to reach this negative point is the terminal strip to which C5 is connected. The DC resistance from chassis to any circuit must be almost infinite. If any circuit becomes grounded a hum will appear. Microphonic tubes will cause audio howl. Check 1LA6.

The wavemagnet is connected to the chassis through the hinges in the cabinet, snaps and flexible leads. If the RF becomes weak or dead, check resistance of wavemagnet at condenser gang. The DC resistance across the two leads should be approximately 1 ohm. If the circuit is open, remove the two screws that hold the handle and top panel. When the top is removed, the wavemagnet connecting leads will be visible for inspection. Also loosen the snap-on socket and check for shorted or broken leads.



TUBE AND TRIMMER LOCATION

IF Alignment: Remove the chassis from the cabinet and arrange the units so that the wavemagnet can be plugged in. All the connections and adjustments can be made from the top of the chassis. Connect a signal generator, through a .1 mfd. dummy antenna, to the lug on top of the center section of the gang condenser (converter grid) and condenser gang frame. Connect an output meter across the voice coil of the speaker (two lugs provided). Set the signal generator to 455Kc. and adjust C10, C11, C12 and C13 for maximum indication on the output meter. Always keep the signal output from the generator just high enough to get an indication, otherwise excessive loading may result. Remove the signal generator leads from the gang.

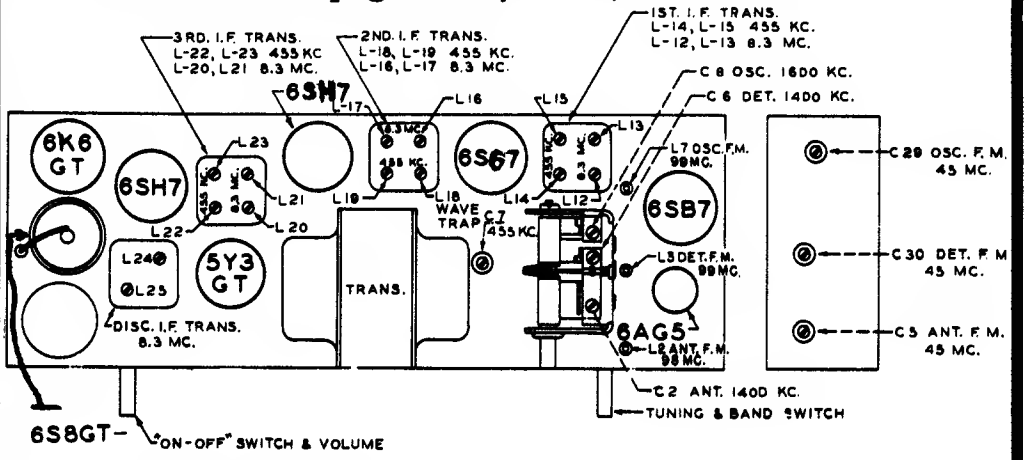
RF Alignment: Connect a two turn loop across the leads of the signal generator, loosely couple this loop to the wavemagnet. Set the signal generator and the dial pointer of the receiver to 1600 Kc. and adjust C8 to resonance. Set the signal generator and dial pointer to 1400 and adjust C7 (detector) and C3 (RF) to resonance. These trimmers are on the side of gang condenser. Check operation and re-install set in cabinet. Tune in a weak station near 1400 Kc. or use background noise and readjust C3 through the hole in the side of the cabinet for maximum sensitivity.

ALIGNMENT PROCEDURE

Operation	Connect Osc. To	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Trimmers	Purpose
1	Converter Grid	.1 MFD	455KC	BC	600KC	C-10-11-12 13	IF alignment
2	Two turns loosely coupled to Wave Magnet		1600KC	BC	1600KC	C8	Set oscillator to scale
3	Two turns loosely coupled to Wave Magnet		1400KC	BC	1400KC	C7	Align Det.
4	Two turns loosely coupled to Wave Magnet		1400KC	BC	1400KC	C3	Align Wave magnet

DIAG NO	PART NO	DESCRIPTION
C1	22-1368	3-GANG VARIABLE
C2	DN C1	BROADCAST ANT. TRIM.
C3	22-829	.05 MFD. 200 V.
C4	27-87	475 MMFD. MICA DISC.
C5	22-1465	90 MMF TRIMMER
C6	ON C1	BROADCAST DET. TRIM.
C7	ON L5	WAVETRAP TRIMMER
C8	22-1431	.001 MFD. 600 V.
C9	DN C1	BROADCAST OSC. TRIM
C10	22-1367	50 MMFD. 500 V.
C11	22-1492	50 MMFD. CER.
C12	22-470	150 MMFD. 600 V.
C13	22-830	.02 MFD 600 V.
C14	22-1136	500 MMF. 600 V.
C15	22-1445	.002 MFD. 600 V.
C16	22-288	.003 MFD 600 V.
C17	22-827	.1 MFD. 200 V.
C18	22-448	.004 MFD. 600 V.
C19		40 MFD. ELECTRD 25 V.
C20	22-1362	40 MFD. " 450 V.
C21		40 MFD. " 450 V.
C22	22-162	100 MMFD. 600 V.
C23	22-1041	.005 MFD. 400 V.
C24	22-182	250 MMFD. 600 V.
C25	22-1491	20 MMFD. CER.
C26	22-1488	100 MMFD. 300 V.
C27	22-1489	10 MMFD. CER.
C28	22-1490	18 MMFD. CER.
C28	22-1487	55 MMF TRIMMER
C30	22-1488	70 MMF "
C31	22-1365	.01 MFD. 200 V.
C32	22-1137	150 MMFD 600 V.
C33	22-196	.01 MFD. 600 V.
C34	22-188	.02 MFD. 400 V.
C35	22-1135	.005 MFD 600 V.

Zenith Radio, Chassis 8C20,
Models 8H032, 8H033, 8H050, 8H051, 8H052.
(Continued on pages 185, 186.)



TUBE AND TRIMMER LOCATION

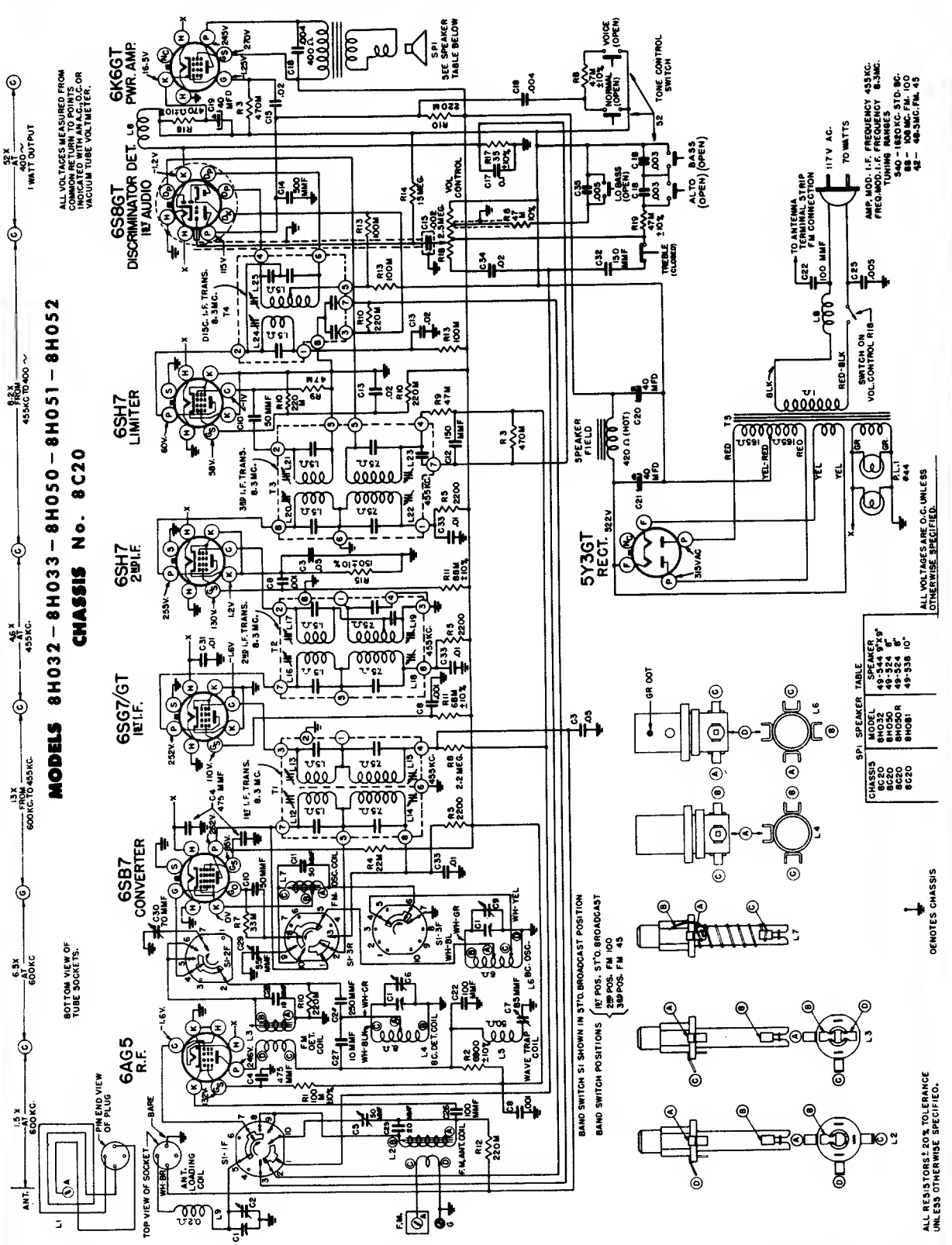
AM Alignment: The alignment of this chassis on the standard broadcast band is conventional. The alignment slugs in the IF transformers are threaded and screw into the coil forms. The slugs are slotted for a small-size fiber screw driver. Do not press hard on the aligning tool (fiber screw driver) or the threads in the coil forms will strip and adjustment will be impossible.

FM RF Alignment: The same coil slug arrangement which tunes the 100 MC FM band also tunes the 45 MC band. However, on 45 MC the band switch connects trimmer condensers in parallel and padding wires in series with the 100 MC coils. The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustments the shafts must be secured with a drop of speaker cement.

FM IF Alignment: The same type of tuning slugs for aligning the AM IF Amplifier are used for the FM I.F.'s. The second 8.3 Mc IF stage is overcoupled. When an overcoupled stage is aligned with an unmodulated signal, the stage must be loaded. A 300 ohm carbon resistor soldered across the secondary of the second IF transformer provides a satisfactory load for this circuit.

When aligning a loaded stage, it will be found that considerable signal from the generator will be required.

FM Discriminator Alignment: When the secondary of the discriminator is aligned (operation 6) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when this meter starts to go to the left (negative) of zero will give the same results. See table on page 186.



See also additional material on pages 184, and 186.

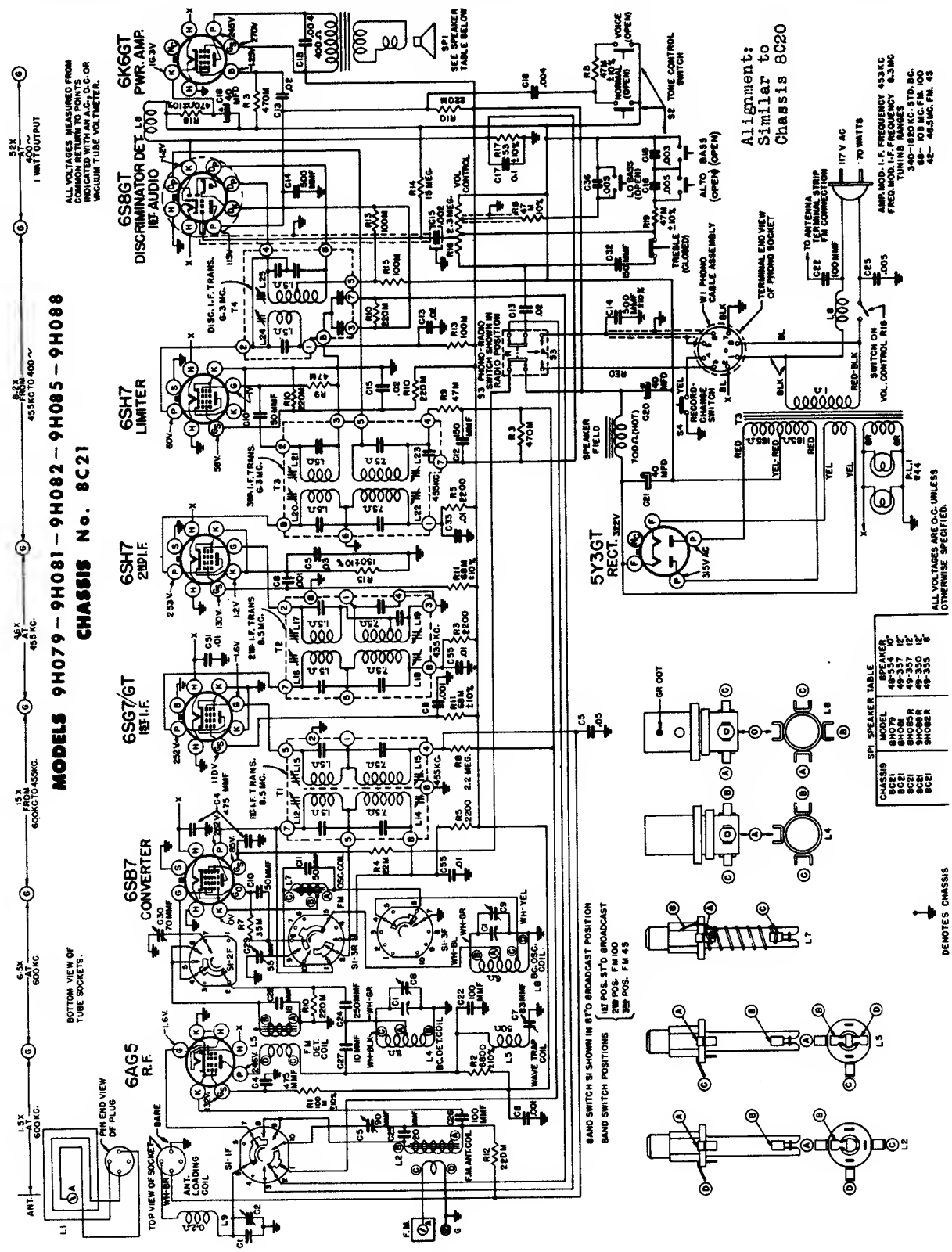
ALIGNMENT PROCEDURE — MODELS 8H032 – 8H033 – 8H050 – 8H051 – 8H052

CHASSIS No. 8C20

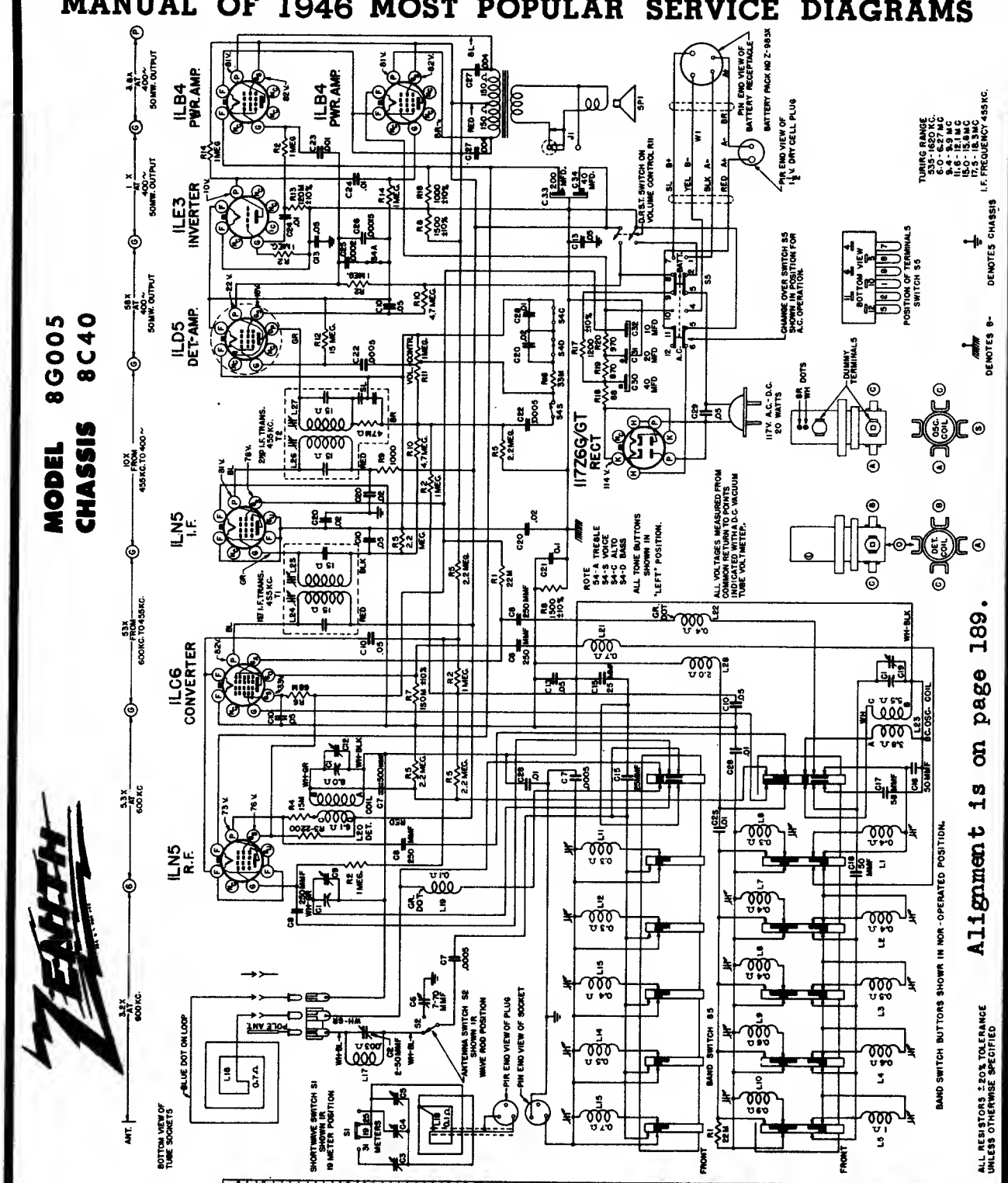
The signal generator output should be kept just high enough to get an indication on the meter.

(a) Vacuum Tube Voltmeter pin 5 on discriminator transformer to chassis (half discriminator load.)
(b) Vacuum Tube Voltmeter pin 7 on discriminator transformer to chassis (full discriminator load.)
(c) Vacuum Tube Voltmeter 6SH7 limiter grid (pin 4) to chassis.
(d) 300 ohm ⅓ watt carbon resistor soldered across the secondary L17 (pin 2 and 3 of 2nd, IF trans.).

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 8 on Converter Tube 6SB7 Socket	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	L-14,15,18,19 22 and 23	Align I.F. channel for maximum output
2	Pin 1 on R.F.tube 6AG5 socket	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	C7	Adjust wavetrap for minimum output
3	2 turns loosely cpld. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc.	C9	Set oscillator to dial scale
4	2 turns loosely cpld. to wavemagnet		1400 Kc. Modulated	BC.	1400 Kc.	C2 & C6	Align det. and ant. stages.
5(a)	Pin 4(grid)on 6SH7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L24 coil slug Primary discr.	Align primary of discriminator for maximum reading
6(b)	Pin 4(grid)on 6SH7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L25 coil slug sec. of disc.	Adjust secondary of discriminator for zero reading
7(c)	Pin 4 (grid) on 6SH7 2nd IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L20 & L21 Prim.&sec. of 3rd IF trans.	Align 3rd IF transformer for maximum reading
8(c)(d)	Pin 4 (grid) on 6SG7 1st IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L16 & L17 primary and sec. of 2nd IF transformer	Align 2nd IF transformer for maximum reading
9(c)(d)	Pin 8(grid)on 6SB7 converter tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L12 & L13 Primary & Sec. of 1st IF transformer	Align 1st IF transformer for maximum reading
10(c)	Antenna Post (Remove line ant.)	270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L7 Osc. Coil slug	Set oscillator to dial scale
11(c)	Antenna Post (Remove line ant.)	270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L2 & L3 Det. and RF coil slugs	Align det. and ant. stages to maximum reading
12(c)	Antenna Post (Remove line ant.)	270 ohms	45 Mc. Unmodulated	FM 45	45 Mc.	C29	Set oscillator to dial scale
13(c)	Antenna Post (Remove line ant.)	270 ohms	45 Mc. Unmodulated	FM 45	45 Mc.	C5 and C30	Align detector & ant. stages for maximum reading


MODELS 9H079 – 9H081 – 9H082 – 9H085 – 9H088
CHASSIS No. 8C21
Alignment: Similar to Chassis 8C20
6AG5 R.F.
6SB7 CONVERTER
6SG7/GT 1ST I.F.
6SH7 2ND I.F.
6SH7 LIMITER
6S8GT DISCRIMINATOR DET. 1ST AUDIO
6K6GT PWR. AMP.
5Y3GT RECT.
SPEAKER TABLE
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
BOTTOM VIEW OF TUBE SOCKETS.
TOP VIEW OF SOCKET
PIN END VIEW OF PLUG
DENOTES CHASSIS

MODEL 8G005
CHASSIS 8C40



Alignment is on page 189.

TO THE SERVICE MAN:

Chassis 8C40 features a high gain tuned RF stage ahead of a conventional superheterodyne circuit with band spread tuning on the 49, 31, 25, 19 and 16 meter bands.

The audio amplifier used in chassis 8C40 features phase inversion and push-pull power output.

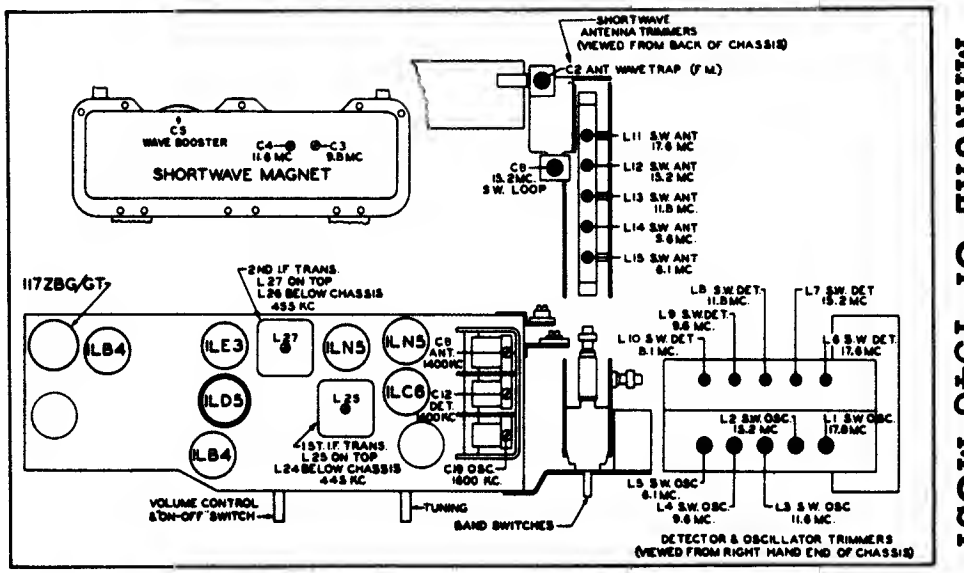
If removal of the chassis from the cabinet ever becomes necessary this should be done with care.

The alignment of chassis 8C40 is conventional. However, care must be exercised when making adjustments, and the alignment procedure must be followed exactly. Set the chassis over a metal plate approximately the same distance the battery pack is from the bottom of the chassis when it is in the cabinet. This procedure will introduce the approximate amount of metal in the field of the RF and oscillator coils as when the chassis is in the cabinet. A signal generator of reasonable accuracy and good attenuation must be used. An output meter (AC) of the copper oxide rectifier type with a range of 1 to 30 volts in several steps is necessary to get accurate output readings. Alignment wrenches should be of the non-metallic type, especially when making adjustments at the higher frequencies.

Zenith Radio Corp.

MODEL 8G005
CHASSIS 8C40

(Continued from page 188.)



TUBE AND TRIMMER LOCATION

ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	BAND	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.1 mfd.	455 Kc.	BC	600 Kc.	L-24,25, 26,27	Align I.F.
2	One Turn Loop Coupled Loosely to Broadcast Wavemagnet		1600 Kc.	BC	1600 Kc.	C-19	Set Oscillator to Scale
3			1400 Kc.	BC	1400 Kc.	C-12	Alignment of Detector Sec.
4			1400 Kc.	BC	1400 Kc.	C-9	Alignment of B.C. Wavemagnet
5*	3 Feet of wire Approx. 1 foot from Extended Waverod		6.1 Mc.	49 Met.	6.1 Mc.	L-5,L-10, L-15	Alignment of S.W. Antenna, Detector and Oscillator
6*			9.6 Mc.	31 Met.	9.6 Mc.	L-4,L-9, L-14	
7*			11.8 Mc.	25 Met.	11.8 Mc.	L-3,L-8, L-13	
8*			15.2 Mc.	19 Met.	15.2 Mc.	L-2,L-7, L-12	
9*			17.8 Mc.	16 Met.	17.8 Mc.	L-1,L-6, L-11	
10	One Turn Loop Coupled Loosely to Shortwave Magnet, Waverod Collapsed		15.2 Mc.	19 Met.	15.2 Mc.	C-5,C-6	Alignment of Shortwave Magnet
11			11.8 Mc.	25 Met.	11.8 Mc.	C-4	
12			9.6 Mc.	31 Met.	9.6 Mc.	C-3	
13	When Receiving Normal Transmissions On The 49, 31, 25, 19 or 16 Meter Bands, if FM Interference is Experienced Adjust Wave Trap Trimmer C-2 for Minimum Response of The Interfering Signal.						

*Note: Rock Tuning Condenser When Making Alignment Under Operations 5,6,7,8 and 9

ZENITH

MODELS 12H090 – 12H091 – 12H092 – 12H093 – 12H094

CHASSIS No. 11C21

(Continued on pages 191, 192.)

The 11C21 chassis incorporates a superheterodyne circuit with three stages of IF, and one stage of RF amplification on all bands.

AM Alignment: The alignment of this chassis on the short wave and standard broadcast band is conventional. The alignment slugs in the IF transformers are threaded and screw into the coil forms. The slugs are slotted for a small size fiber screw driver. Do not press hard on the aligning tool (fiber screw driver) or the threads in the coil forms will strip and adjustment will be impossible.

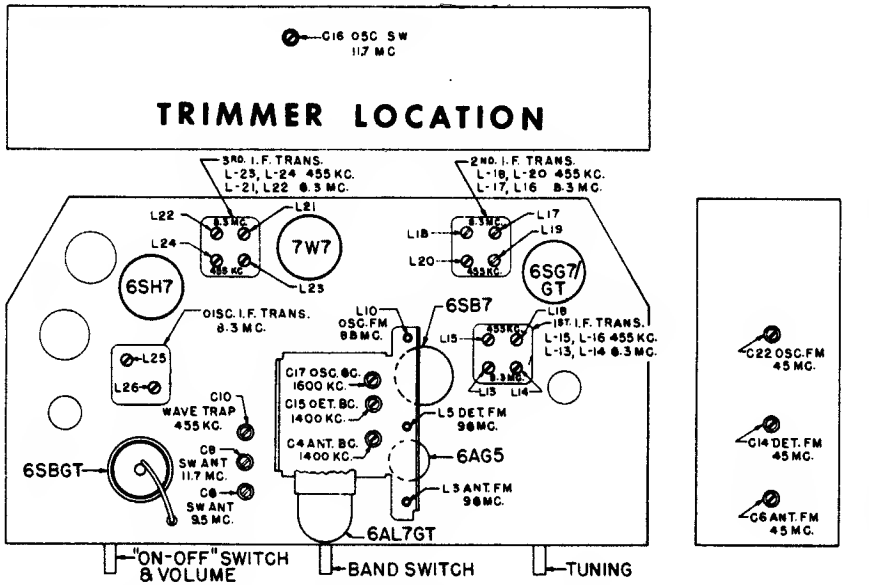
FM RF Alignment: The same coil slug arrangement which tunes the 100 MC FM band also tunes the 45 MC band. However, on 45 MC the band switch connects trimmer condensers in parallel and padding wires in series with the 100 MC coils. The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustments the shafts must be secured with a drop of speaker cement.

FM IF Alignment: The same type of tuning slugs for aligning the AM IF Amplifier are used for the FM I.F.'s. Observe the same precautions when making adjustments. The second 8.3 Mc IF stage is overcoupled. Overcoupling gives a wide band pass with good sensitivity. When an overcoupled stage is aligned with an unmodulated signal, the stage must be loaded. A 300 ohm carbon resistor soldered across the secondary of the second IF transformer provides a satisfactory load for this circuit. The resistor leads must be kept short to reduce the distributed capacity of the circuit.

When aligning a loaded stage, it will be found that considerable signal from the generator will be required, and that it will tune broadly. THE LOAD RESISTOR MUST BE REMOVED AFTER ALIGNMENT.

If the signal generator used does not have sufficient output to overcome the temporary loss caused by the load resistor, the load resistance may be increased or the signal fed into the preceding stage.

FM Discriminator Alignment: When the secondary of the discriminator is aligned (operation 9) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when this meter starts to go to the left (negative) of zero will give the same results.



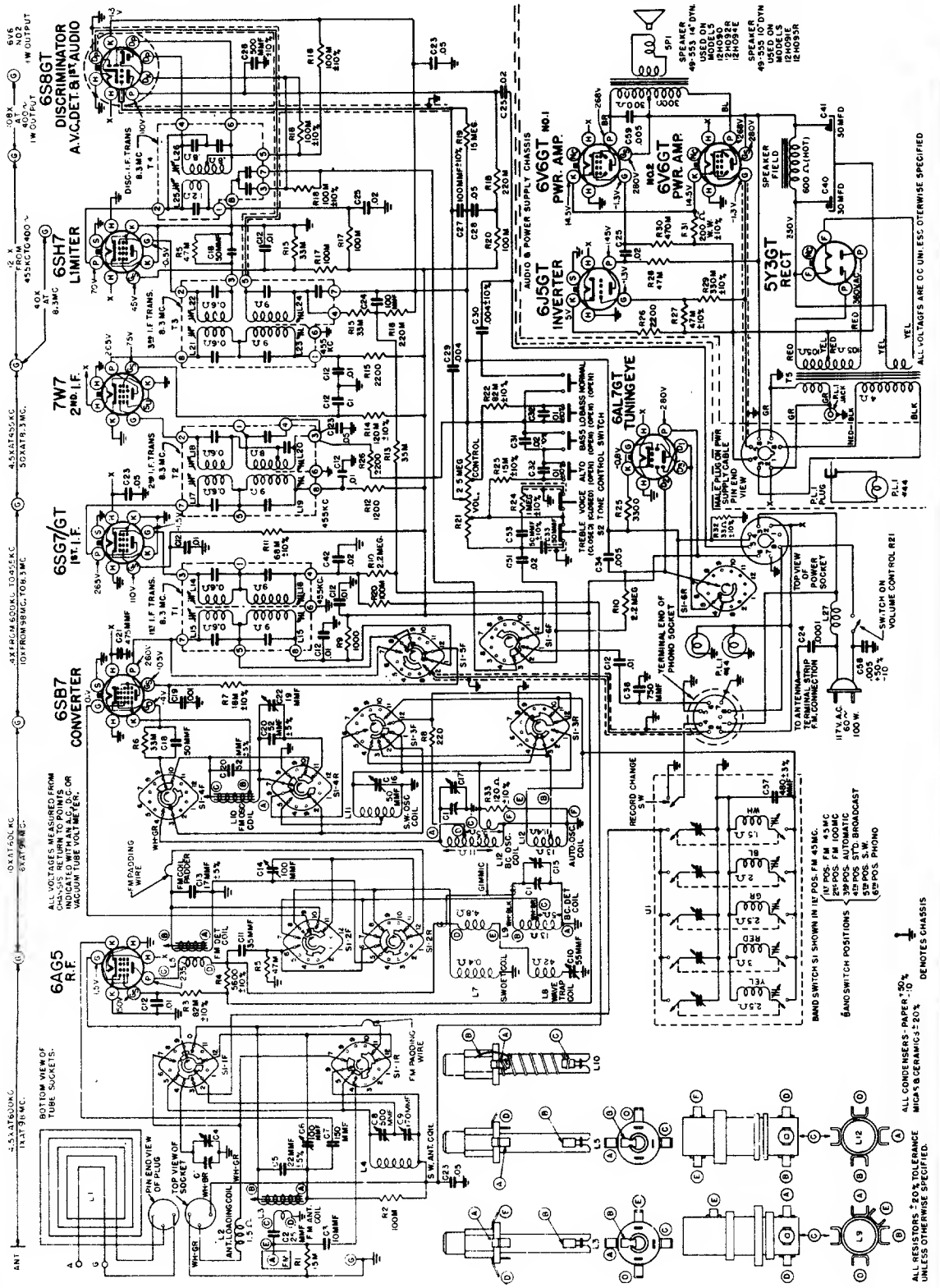
DIAG NO	PART NO.	DESCRIPTION
C1	22-1363	3-GANG VARIABLE
C2	22-1307	25 MMFD. CER. 500 V.
C3	22-1304	10 MMFD. CER. 500 V.
C4	ON C1	BROADCAST ANT. TRIM
C5	22-1306	22 MMFD CER. 500 V.
C6	22-1493	FM ANTENNA TRIM.
C7	22-1503	130 MMFD. 500V.
C8	22-1497	S.W. ANT. TRIM
C9		S.W. ANT. TRIM.
C10		WAVE TRAP TRIMMER
C11	22-1308	33 MMFD CER. 500V.
C12	22-196	.01 MFD. 600V.
C13	22-1505	17 MMFD CER. 500V.
C14	22-1494	FM DET. TRIMMER
C15	ON C1	BROADCAST DET. TRIM.
C16	22-1302	S.W. OSC. TRIMMER
C17	ON C1	BROADCAST OSC. TRIM.
C18	22-1367	30 MMFD. CER. 500 V.
C19	22-1169	.001 MFD. MICA 600 V.
C20	22-1309	52 MMFD CER. 500 V.
C21	27-87	475 MMFD. MICA DISC.
C22	22-1314	F.M. OSC. TRIMMER
C23	22-878	.05 MFD. 200 V.
C24	22-162	100 MMFD. MICA 600 V
C25	22-630	.02 MFD. 600 V.
C25	22-1138	300 MMFD MICA 600 V.
C27	22-363	100 MMFD MICA 600 V.
C28	22-171	.05 MFD 600 V.
C29	22-1362	.004 MFD. 800 V.
C30	22-448	.004 MFD ±10% 600 V.

C31	22-1127	.02 MFD.	400 V.
C32	22-1126	.01 MFD.	400 V.
C33	22-288	30 MMFD MICA	600 V.
C34	22-319	.003 MFD	200 V.
C36	22-242	750 MMFD MICA	500 V.
C37	22-868	480 MMFD SILVER MICA	
C38	22-1041	.005 MFD	400 V.
C39	22-1237	.003 MFD	1000 V.
C40	22-1496	50 MFD. ELECTRO	450 V.
C41		30 MFD. "	450 V.
C42	22-1388	.02 MFD.	200 V.
R1	63-607	15M OHM	½ W.
R2	63-715	100M OHM	¼ W.
R3	63-883	82M OHM	½ W.
R4	63-1448	3600 OHM	½ W.
R5	63-393	47M OHM	¼ W.
R6	63-712	33M OHM	¼ W.
R7	63-310	16M OHM	2 W.
R8	63-379	220 OHM	¼ W.
R9	63-605	1000 OHM	½ W.
R10	63-600	2.2 MEGOHM	¼ W.
R11	63-960	66 M OHM	½ W.
R12	63-1446	1200 OHM	½ W.
R13	63-392	33M OHM	¼ W.
R14	63-1447	120 M OHM	½ W.
R15	63-805	2200 OHM	½ W.
R16	63-296	220M OHM	¼ W.
R17	63-380	100M OHM	1 W.

R18	63-960	100M OHM	¼ W.
R19	65-976	15 MEGOHM	¼ W.
R20	63-583	100M OHM	¼ W.
R21	63-1349	2.5 MEG-VOL. CONTROL	
R22	65-651	62M OHM	¼ W.
R23	63-503	13 M OHM	¼ W.
R24	65-441	1 MEGOHM	¼ W.
125	83-588	3300 OHM	¼ W.
R26	63-583	2200 OHM	¼ W.
R27	63-648	47M OHM	¼ W.
R28	63-1187	47 M OHM	1 W.
R29	63-687	330 M OHM	¼ W.
R30	65-387	470M OHM	¼ W.
R31	63-1188	200 OHM WIREWOUND	2 W.
R32	83-620	33 OHM	¼ W.
R33	63-826	120 OHM	¼ W.

MODELS 12H090—12H091—12H092—12H093—12H094

CHASSIS No. 11C21



See pages 190 and 192 for additional service material and alignment data on these models.

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 8 on Converter Tube 6SB7 socket	.05 Mfd.	455 Kc. Modulated	BC	600 Ko.	L15,16,19,20,23 and 24	Align I.F. channel for maximum output
2	Pin 1 on R.F. tube 6AG5 socket	.05 Mfd.	455 Kc. Modulated	Aut.	Press any button on Auto.	C10	Adjust wavetrap to minimum
3	2 Turns loosely coupled to wavemag.		1600 Ko. Modulated	BC	1600 Kc.	C17	Set oscillator to dial scale
4	2 turns loosely coupled to wavemag.		1400 Ko. Modulated	BC	1400 Kc.	C15 & C4	Align det. and ant. stages.
5	Antenna Post (Remove line ant.)	400 ohms	11.7 Mo. Modulated	SW	11.7 Mo.	C16	Set osoillator to dial scale
6	Antenna Post (Remove line ant.)	400 ohms	11.7 Mo. Modulated	SW	11.7 Mo.	C9	Align ant. stage
7	Antenna Post (Remove line ant.)	400 ohms	9.7 Mo. Modulated	SW	9.7 Mo.	C8	Align ant. stage Repeat Oper. 6 for maximum output
8 (a)	Pin 4 grid on 6SH7 limiter sooket	.05 Mfd.	8.3 Mo. Unmodulated	FM 45		L25 ooil slug primary diso.	Align primary of disoriminator for maximum reading
9 (b)	Pin 4 grid on 6SH7 limiter socket	.05 Mfd.	8.3 Mo. Unmodulated	FM 45		L26 ooil slug seo. of disor.	Adjust seoondary of discr. for zero reading
10 (o)	Pin 4 (grid) on 7W7 2nd IF tube sooket	.05 Mfd.	8.3 Mo. Unmodulated	FM 45		L21 & L22 prim. & seo. of 3rd IF transformer	Align 3rd IF transformer for maximum reading
11 (o) (d)	Pin 4 (grid) on 6SG7 1st IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L17 & L18 prim. & seo. of 2nd IF transformer	Align 2nd IF transformer for maximum reading
12 (o) (d)	Pin 8(grid)on 6SB7 ooverter tube sooket	.05 Mfd.	8.3 Mo. Unmodulated	FM 45		L13 & L14 prim. & seo. of 1st IF transformer	Align 1st IF transformer for maximum reading
13 (o)	Antenna Post (remove line ant.)	270 ohms	98 Mo. Unmodulated	FM 100	98 Mo.	L10 Osc. coil Slug	Set oscillator to dial soale
14 (o)	Antenna Post (Remove line ant.)	270 ohms	98 Mo. Unmodulated	FM 100	98 Mo.	L5 and L3 Det. and RF ooil slugs	Align det. and Ant. stage to maximum reading
15 (o)	Antenna Post (remove line ant.)	270 ohms	45 Mo. Unmodulated	FM 45	45 Mo.	C22	Set oscillator to dial soale
16 (o)	Antenna Post (remove line ant.)	270 ohms	45 Mo. Unmodulated	FM 45	45 Mo.	C14 and C6	Align detector and ant. stages for maximum reading

The signal generator output should be kept just high enough to get an indioation on the meter.
(a) Vaouum Tube Voltmeter pin 5 on disoriminator transformer to ohassis (half discriminator load.)
(b) Vaouum Tube Voltmeter pin 7 on disoriminator transformer to ohassis (full disoriminator load).
(o) Vacuum Tube Voltmeter 6SH7 limiter grid (pin 4 to ohassis).
(d) 300 ohm ½ watt carbon resistor soldered aoross the seoondary L18 (pin 2 and 3 of 2nd IF trans.). The leads to the resistor must be as short as possible and the resistor removed before operation 13 is started.

Zenith Radio
Chassis 11C21