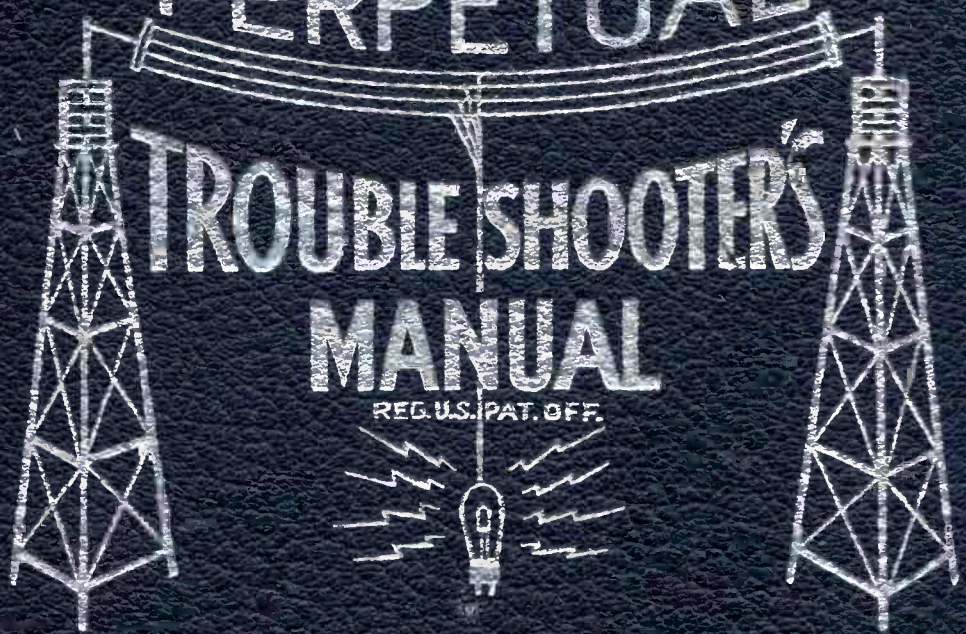
VOLUME XIII

PERPETUAL TROUBLE SHOOTER'S MANUAL

REG. U.S. PAT. OFF.



JOHN F. RIDER

WALGREEN CO.

MODEL Lovlitone
MODEL P5, XP5

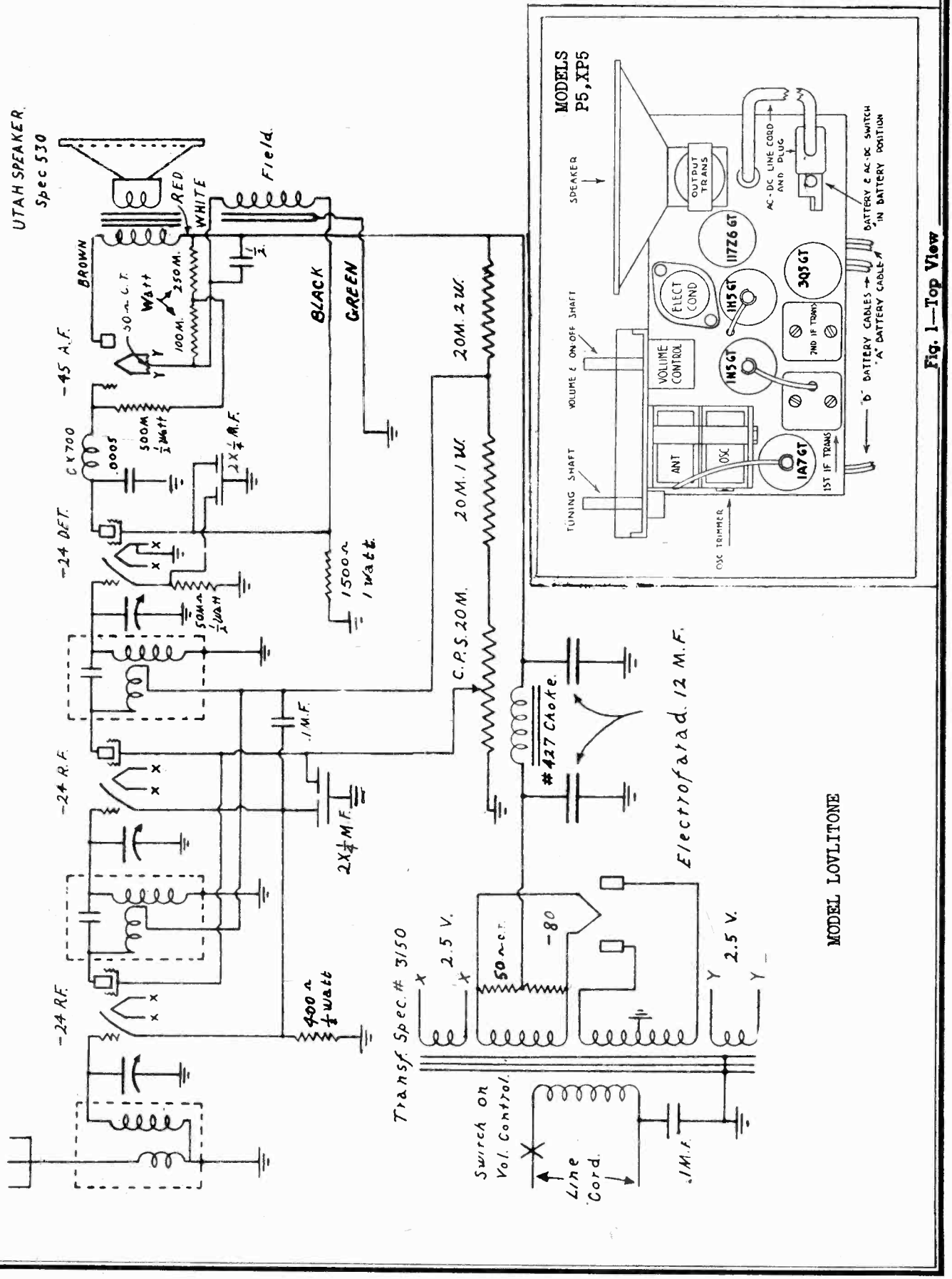
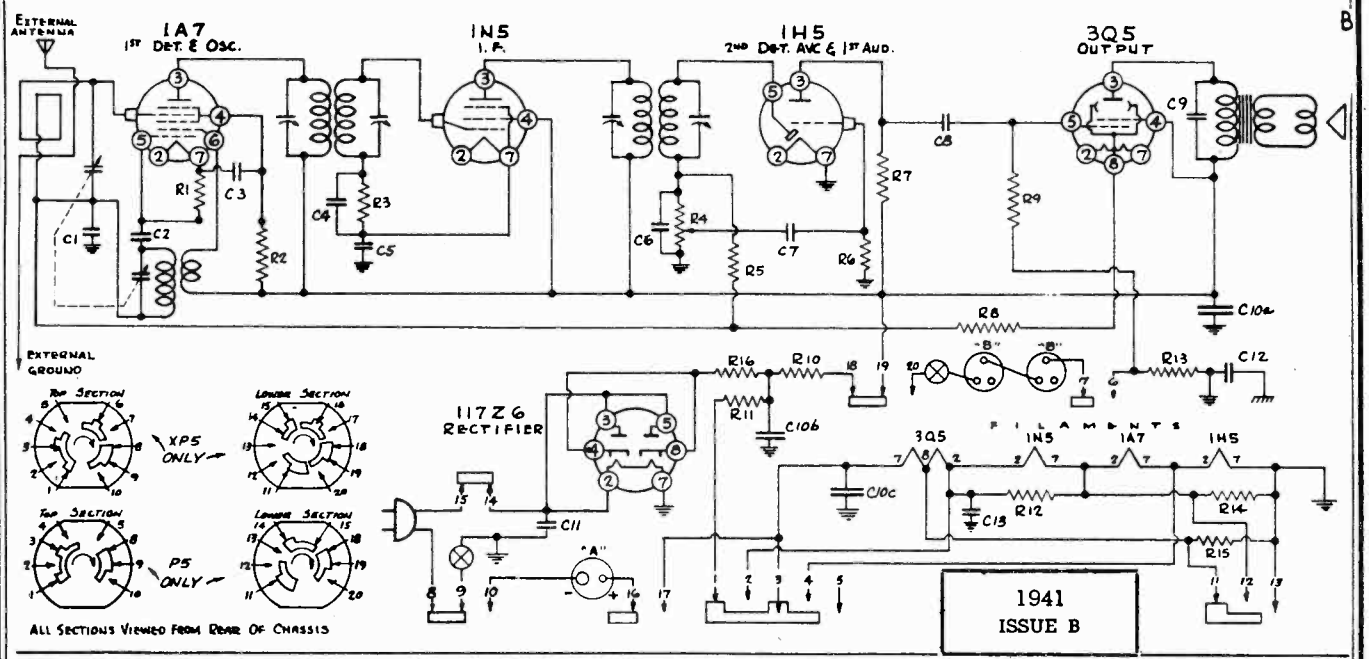


Fig. 1—Top View

MODEL LOVLITONE

MODELS P5, XP5

WALGREEN CO.



In Model P5 only, switch points 6, 7, 16 and 17 are not used. Switch point 5 is not used in either model.

RESISTORS

No.	Ohms	Watts	No.	Ohms	Watts
R1	200,000	½	R9	2,000,000	½
R2	50,000	½	R10	3,500—10%	½
R3	5,000,000	½	R11	2,600—10%	5
R4	1,000,000	V.C.	R12	300—10%	½
R5	3,000,000	¼	R13	440—10%	½
R6	15,000,000	½	R14	300—10%	½
R7	1,000,000	½	R15	3,000—10%	½
R8	10,000,000	¼	R16	30	½

CONDENSERS

No.	Capacity (Mfd.)	Volts
C1	.05	200
C2	.00005	Mica
C3	.01	400
C4	.001	Mica
C5	.1	200
C6	.00025	Mica
C7	.001	200
C8	.001	400
C9	.002	600
C10a	50. Elect.	150
C10b	30. Elect.	150
C10c	100. Elect.	25
C11	.05	400
C12	.05	400
C13	100. Elect.	10

I.F. Sig.Gen. at 455 Kc. thru .05 cond. Align I.F. trim. to peak on output meter.

B.C. Sig.Gen. at 1600Kc. Set gang. cond. to min., adj. osc. trim. to receive signal. When using external ant. conn., max. sensitivity will be found at H.F. end.

FIRST I.F. TRANSFORMER (Part no. P4859)

Pri.-Red white, B+; blue White, plate-Res..7.5ohms.
Sec. white, grid; black white, AVC-Res..17.3ohms.

SEC. I.F. Transformer

Pri.-Blue White, plate; red white B+-Res..17.8 ohms
Sec.-white, grid; black white, AVC-Res..13.1 ohms

SPEAKER(P4829)5"PM Type

D.C. voice coil res.3.2 ohms. Voice coil imped. at 400 cycles..3.5 ohms.

Oscillator Coil (Part No. P5020)

Looking at the connection end in a clockwise direction starting at the chassis the terminals are No. 1, grid; No. 2, plate; No. 3, B+; No. 4, ground.

Primary—No. 2 and No. 3—Resistance.....2.2 ohms
Secondary—No. 4 and No. 1—Resistance.....4.9 ohms

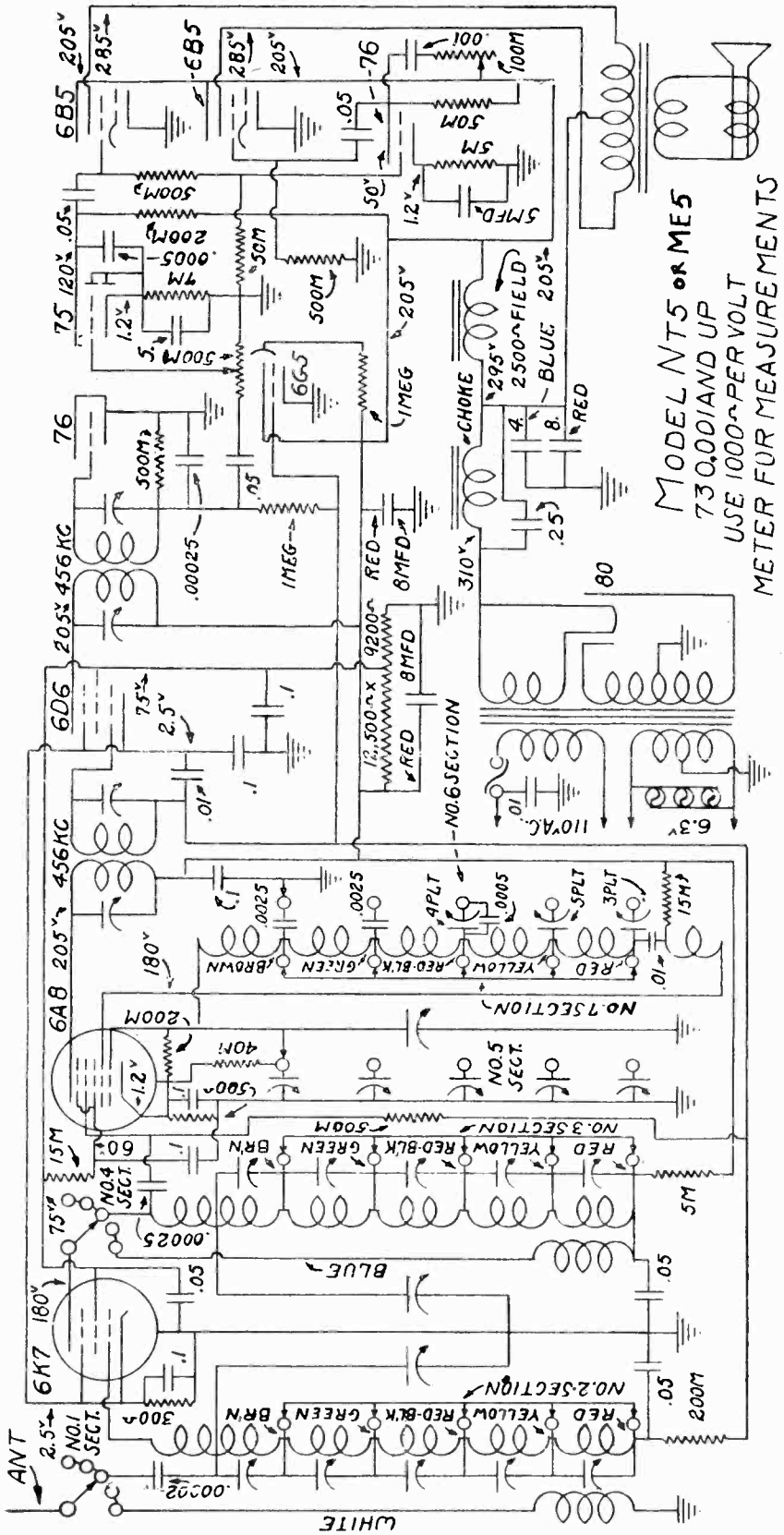
SERVICE INFORMATION

Voltages—Line 117.5 Volts AC—Power Consumption 25 Watts.

Volume control maximum and no signal tuned in. Meter 1000 ohms per volt, 150 volt scale.

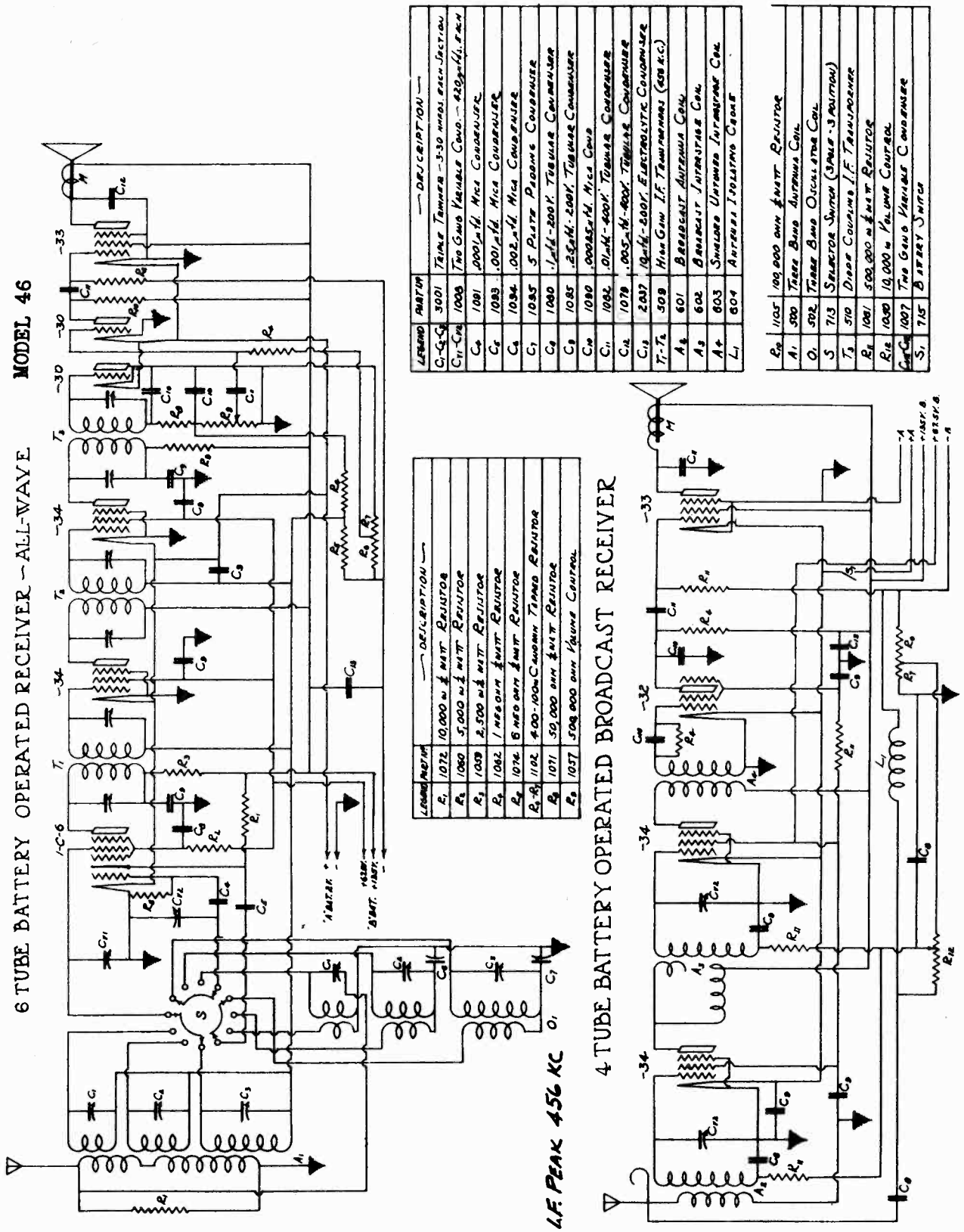
Plate (3) of 1A7 tube to common ground	100	volts
Screen (4) of 1A7 tube to common ground	62	volts
Anode grid (6) of 1A7 tube to common ground	100	volts
Filament (2) to (7) of 1A7 tube	1.35	volts
Plate (3) of 1N5 tube to common ground	100	volts
Screen (4) of 1N5 tube to common ground	102	volts
Filament (2) to (7) of 1N5 tube	1.3	volts
Plate (3) of 1H5 tube to common ground	38	volts
Filament (2) to (7) of 1H5 tube	1.35	volts
Plate (3) of 3Q5 tube to common ground	98	volts
Screen (4) of 3Q5 to common ground	102	volts
Filament (7) to (8) of 3Q5 tube	1.3	volts
Filament (2) to (8) of 3Q5 tube	1.35	volts
Plate (3) or (5) of 117Z6 tube to common ground	117.5v.	(AC)
Cathode (4) or (8) of 117Z6 tube to common ground	128	volts
Filament (2) to (7) of 117Z6 tube	117.5v.	(AC)

WALGREEN CO.



MODEL 46
MODEL 4-Tube Battery

WALGREEN CO.



LEGEND	PART NO.	DESCRIPTION
C_1-C_5-C_9	3001	Triple Tuners -3-30 mmfd. each Section
C_{11}-C_{12}	1005	Two Gang Variable Cond. - 420 $\mu\mu$fd. each
C_4	1091	.0001 μfd. Mica Condenser
C_6	1089	.001 μfd. Mica Condenser
C_8	1034	.002 μfd. Mica Condenser
C_7	1035	.5 Plate Padding Condenser
C_8	1080	.1 μfd.-200 V. Tubular Condenser
C_9	1085	.25 μfd.-200 V. Tubular Condenser
C_{10}	1090	.00025 μfd. Mica Cond.
C_{11}	1092	.01 μfd.-400 V. Tubular Condenser
C_{12}	1078	.005 μfd.-400 V. Tubular Condenser
C_{13}	2017	10 μfd.-200 V. Electrolytic Condenser
T_1-T_2	309	High Gain I.F. Transformers (456 K.C.)
A_2	601	Broadcast Antenna Coil
A_3	602	Broadcast Interstage Coil
A_4	603	Shielded Universal Interstage Coil
L_1	604	Antenna Isolating Choke

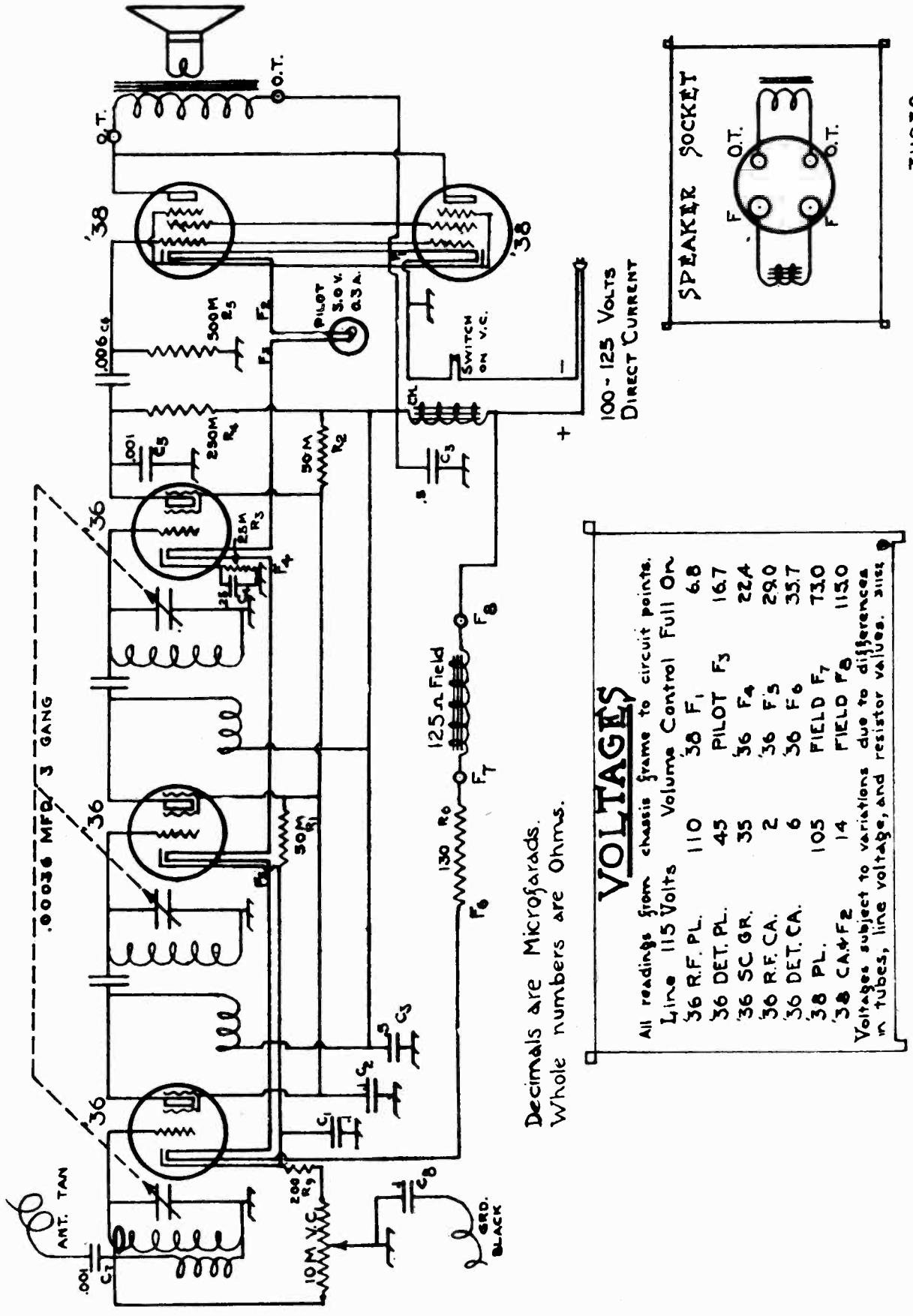
LEGEND	PART NO.	DESCRIPTION
R_1	1072	10,000 ω ½ Watt Resistor
R_2	1060	5,000 ω ½ Watt Resistor
R_3	1059	2,500 ω ½ Watt Resistor
R_5	1062	1 Meg ohm ½ Watt Resistor
R_4	1074	6 Meg ohm ½ Watt Resistor
R_6-R_9	1102	400-100 Ω Universal Tapped Resistor
R_{10}	1071	50,000 ohm ½ Watt Resistor
R_{11}	1057	500,000 ohm Volume Control

LEGEND	PART NO.	DESCRIPTION
R_{12}	1105	100,000 ohm ½ Watt Resistor
A_1	300	Tuned Band Antenna Coil
O_1	302	Tuned Band Oscillator Coil
S	713	Selector Switch (3 Pole - 3 Position)
T_3	310	Diode Coupling I.F. Transformer
R_{13}	1081	500,000 ω ½ Watt Resistor
R_{14}	1030	10,000 ω Volume Control
C_{14}-C_{15}	1007	Two Gang Variable Condenser
S_1	715	Battery Switch

MODEL 500 DC

WALGREEN CO.

MODEL 500



Decimals are Microfarads.
Whole numbers are Ohms.

VOLTAGES

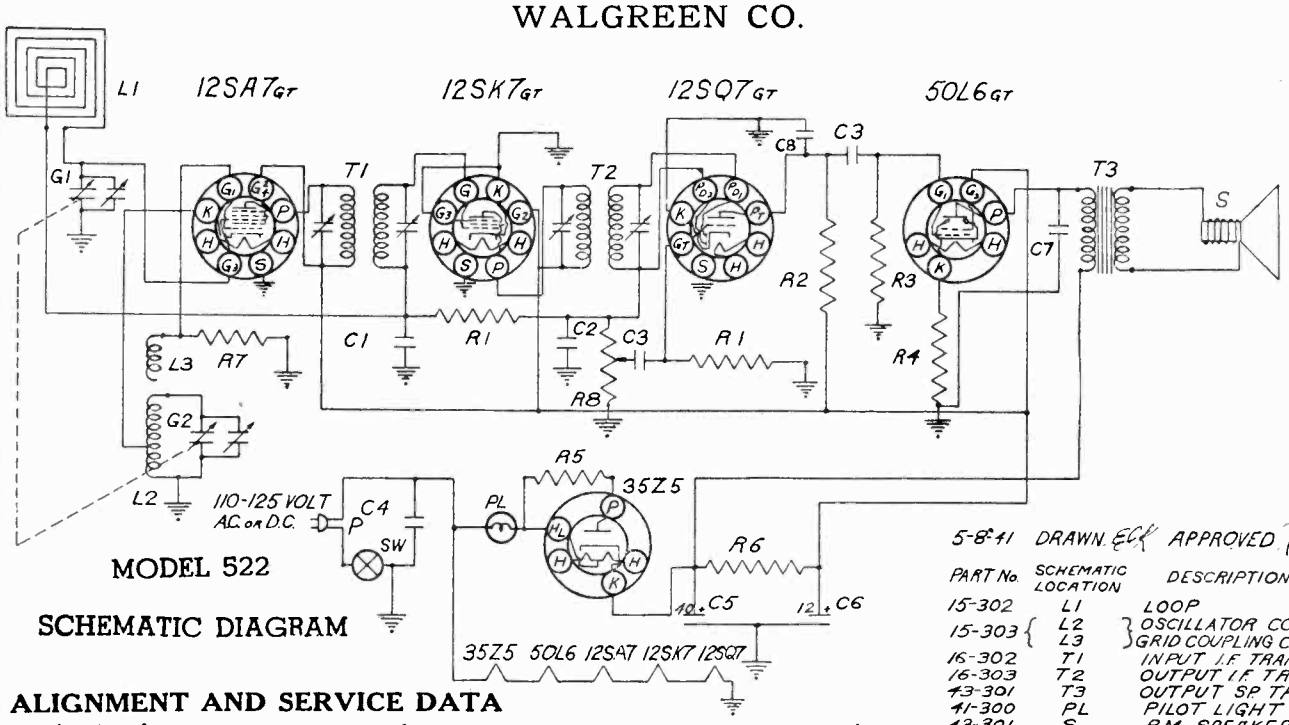
All readings from chassis frame to circuit points.
Line 115 Volts Volume Control Full On

'36 R.F. PL.	110	'38 F_1	6.8
'36 DET. PL.	45	PILOT F_3	16.7
'36 SC GR.	35	'36 F_4	22.4
'36 R.F. CA.	2	'36 F_5	29.0
'36 DET. CA.	6	'36 F_6	35.7
'38 PL.	105	FIELD F_7	73.0
'38 CA. F_2	14	FIELD F_8	115.0

Voltages subject to variations due to differences in tubes, line voltage, and resistor values.

MODEL 522

WALGREEN CO.



MODEL 522

SCHEMATIC DIAGRAM

5-8-41 DRAWN ECK APPROVED [illegible]

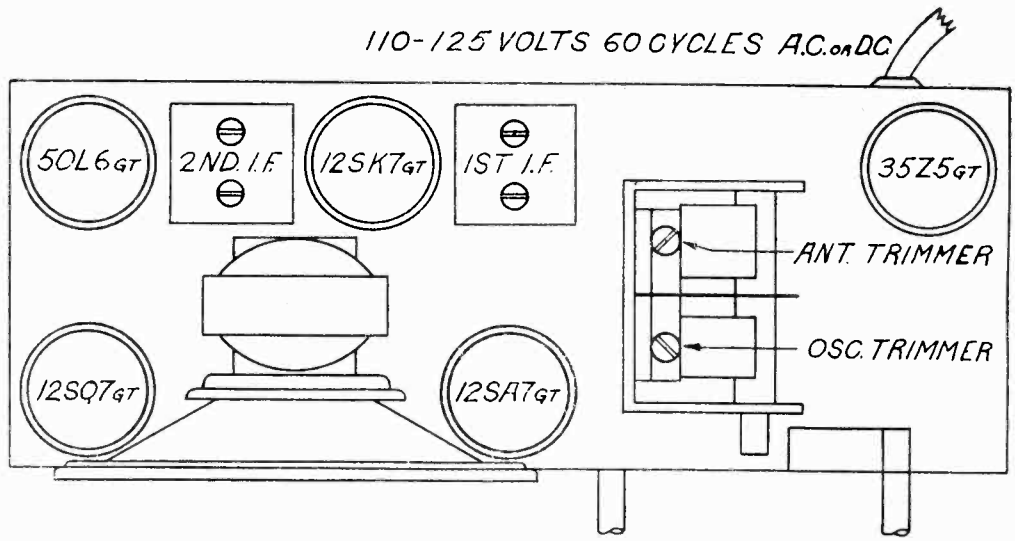
PART No.	SCHEMATIC LOCATION	DESCRIPTION
15-302	L1	LOOP
15-303	L2	OSCILLATOR COIL
	L3	GRID COUPLING COIL
16-302	T1	INPUT I.F. TRANS
16-303	T2	OUTPUT I.F. TRANS.
43-301	T3	OUTPUT SP. TRANS.
41-300	PL	PILOT LIGHT #47
43-301	S	P.M. SPEAKER
40-301	12SA7GT	OSCILLATOR MIXER
	12SK7GT	I.F. AMPLIFIER
	12SQ7GT	DETECTOR-AUDIO
	50L6GT	AUDIO AMPLIFIER
	35Z5GT	RECTIFIER
34-5	P	LINE CORD
5-301	SW	SWITCH ON VOL. CON.

3-2	R1	2 MEGOHM RESISTOR ½W 20%
3-6	R2	1 MEGOHM " ½W 20%
3-1	R3	.5 MEGOHM " " "
3-31	R4	200 OHMS " " "
3-174	R5	50 OHMS " " "
3-120	R6	5000 OHMS " " "
3-26	R7	30,000 OHMS " " "
5-301	R8	1 MEG. VOL. CON. & SWITCH
10-301	G1, G2	GANG CONDENSER
6-12	C1	.05 MFD. 200V. COND.
6-8	C2	.0001 MFD. MICA "
6-3	C3	.01 MFD. 400V. "
6-14	C4	.05 MFD. 400V. "
7-301	C5	40 MFD. ELECTROLYTIC
	C6	12 MFD. ELECTROLYTIC
6-306	C7	.005 MFD. 600V. COND.
6-305	C8	.0006 MFD. 400V. "

ALIGNMENT AND SERVICE DATA

A signal generator is required having the following frequencies: 456KC, 1400KC, 1720KC.

First Step: Connect the generator lead through a .1 mfd. condenser to the terminal lug next to the Antenna trimmer on top of the tuning condenser. The ground lead from the generator may be connected to any convenient spot on the metal chassis. Adjust generator to 456KC and adjust IF trimmer screws until a maximum reading is noted on the output meter which has been connected across the speaker. The tuning condenser should be turned out to complete minimum capacity when aligning the IF. With generator lead still connected to antenna trimmer terminal, adjust generator frequency to 1720KC, and with tuning condenser still at minimum, adjust oscillator trimmer till the 1720KC signal is tuned in. Next, remove generator leads from set and connect both to a transmitting loop. This loop can be made with 2 turns of wire about 6 inches in diameter. Adjust generator frequency to 1400KC. Turn tuning condenser until the signal is tuned in and adjust antenna trimmer until a maximum reading is noted. 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 so as to insure proper alignment at the lower frequency end of the dial.



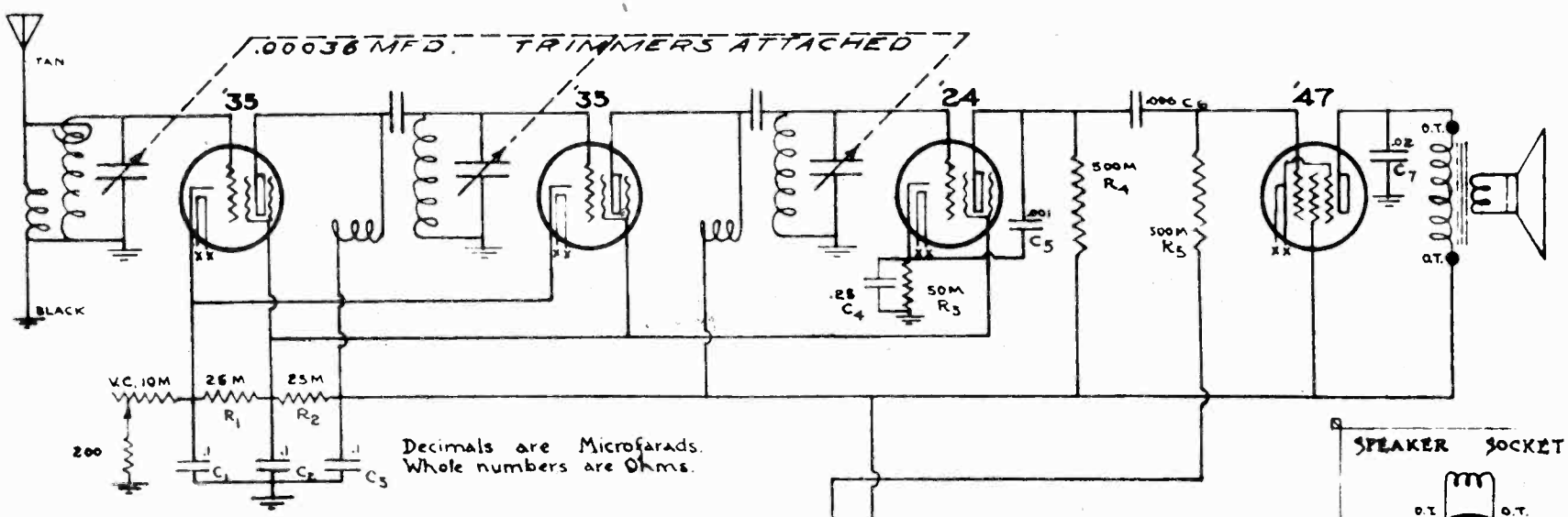
TUBE AND TRIMMER LOCATION

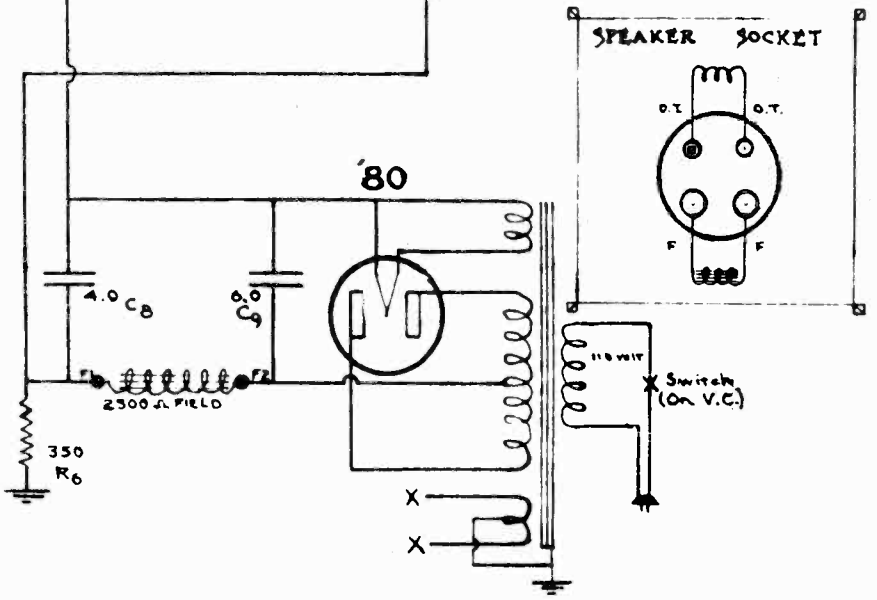
VOLUME CONTROL & OFF-ON SWITCH

TUNING SHAFT

MODEL 560 AND MODEL 525.

60 cycle — 25 cycle





VOLTAGES

All readings from chassis frame to circuit points.

'35 PL.	220
'24 PL.	110
'47 PL.	210
'35 S.G.	95
'24 S.G.	95
'35 CA.	2
'24 CA.	6
FIELD 2	140
FIELD 1	15

Volume Control Full On.

Voltages subject to variations due to differences in tubes, line voltage and resistor values.

311016 B
32112

Taken with volume control on full -- Dial set at 100.

MODELS AC 560 and AC 525.

TYPE TUBE	TUBE POSIT.	"A" VOLTS	"B" VOLTS	"C" VOLTS	SCREEN VOLTS	SCREEN CURR. A.M.	CATHODE VOLTS	NORMAL VOLTS	GRID TEST M.A.
235	1st. Radio Freq.	2.15	220	2.0	95	.85	2.25	5.2	9
235	2nd Radio Freq.	2.15	220	2.0	95	.85	2.25	5.4	9.1
224	Detect	2.15	90	6.0	60	.05	7.	.1	.3
247	1st. Audio Freq.	2.15	210	-1.	220	-5.	3.	24	42.
280	Rect.	4.7						25.per	anode

MODEL 525 AC - 110 volts 25 cycle alternating current.
Tubes - 2 - #235, 1 - #224, 1 - 247,
1 - #280

MODEL 560 AC - 110 volts 60 cycle alternating current.
Tubes - 2 - #235, 1 - #224, 1 - #247
1 - #280

MODEL DC 500.

TYPE TUBE	TUBE POSIT.	"A" VOLTS	"B" VOLTS	"C" VOLTS	SCREEN VOLTS	SCREEN CURR. A.M.	CATHODE VOLTS	NORMAL M.A.	GRID TEST M.A.
236	1st Radio Freq.	6.1*	110	60	45	.5	-31.5	2.2	3.2
236	2nd radio Freq.	6.2*	110	59	45	.5	-25	2.2	3.2
236	Detect.	5.9*	60	52	45	.05	-18	.12	.37
238	Audio Freq.	6.3*	100	100	110	1.35		4.4	11.5
238	Audio Freq.	6.4*	100	100	110	1.35		4.4	11.5

* Filament readings taken by leads from D.C. meter separate from any chassis connection.

MODEL 500 DC - 110 volts direct current.
Tubes - 3 - #236, 2 - #238

Antenna ----------Tan
Ground ----------Black
Resistors ----------The standard R.M.A. code has been used throughout. The values and colors below are the ones used in the receivers.

Resistance	Body Color	End Color	Dot Color
25000 ohms	Red	Black	Orange
50000 ohms	Green	Black	Orange
250000 ohms	Red	Black	Yellow
500000 ohms	Green	Black	Yellow

By-pass condenser block ----one white--.25MFD to cathode of Detector.
two blue--.1 MFD each, one to RF cathodes and one to RF screen grids.
one red --.1 MFD to B plus terminal on back of variable condenser.

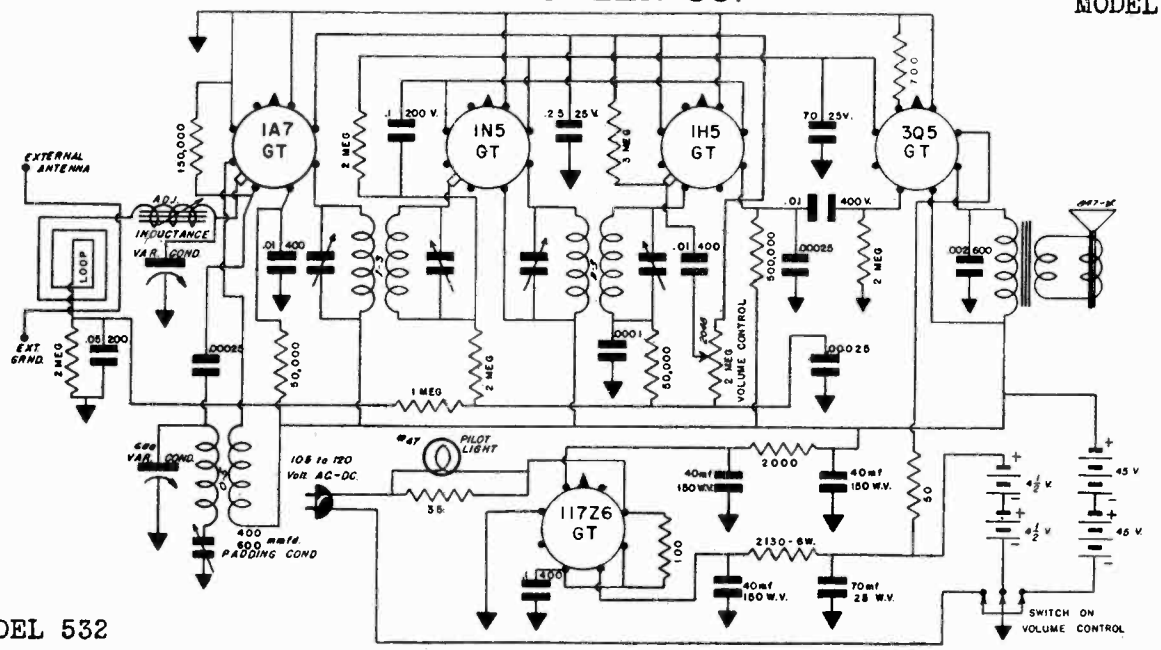
Electrolytic filter condenser-
Long leads ----------Yellow to speaker socket and C.T. of power transformer s econdary.
Red to B plus in 80 socket.
Short leads ----------Black to resistor strip and speaker socket
Red to B plus in 80 socket.

COUPLING CONDENSERS: capacities printed directly on covers.

Voltages other than those shown, within the limits specified, will indicate the probable source of trouble. After the necessary repairs or replacements have been made we want to caution the service man not to realign the condenser trimmers as this has been carefully performed at the factory with calibrated precision equipment. However, in rare cases where the radio frequency coils have been replaced, realignment will be found necessary. This can best be done with a calibrated oscillator and an output meter, preferably not on a broadcast signal, however, where an oscillator is not available a weak broadcast signal around 1400 KC on the dial should be used to check by.

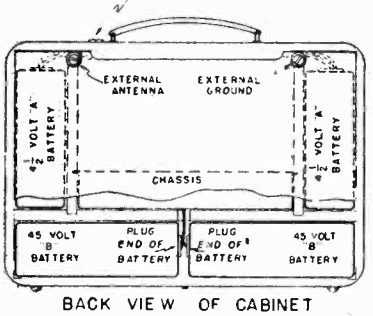
WALGREEN CO.

MODEL 532
MODEL 300T



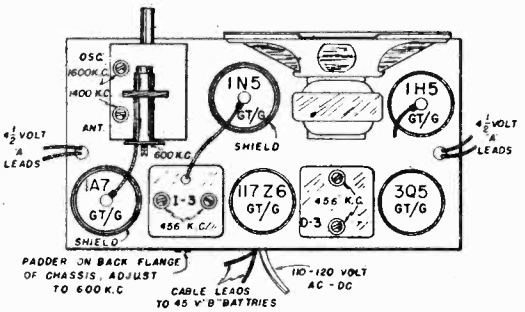
MODEL 532

HOLE ON TOP THROUGH WHICH ANT & OSC CAN BE TUNED WHEN SET IS IN THE CABINET

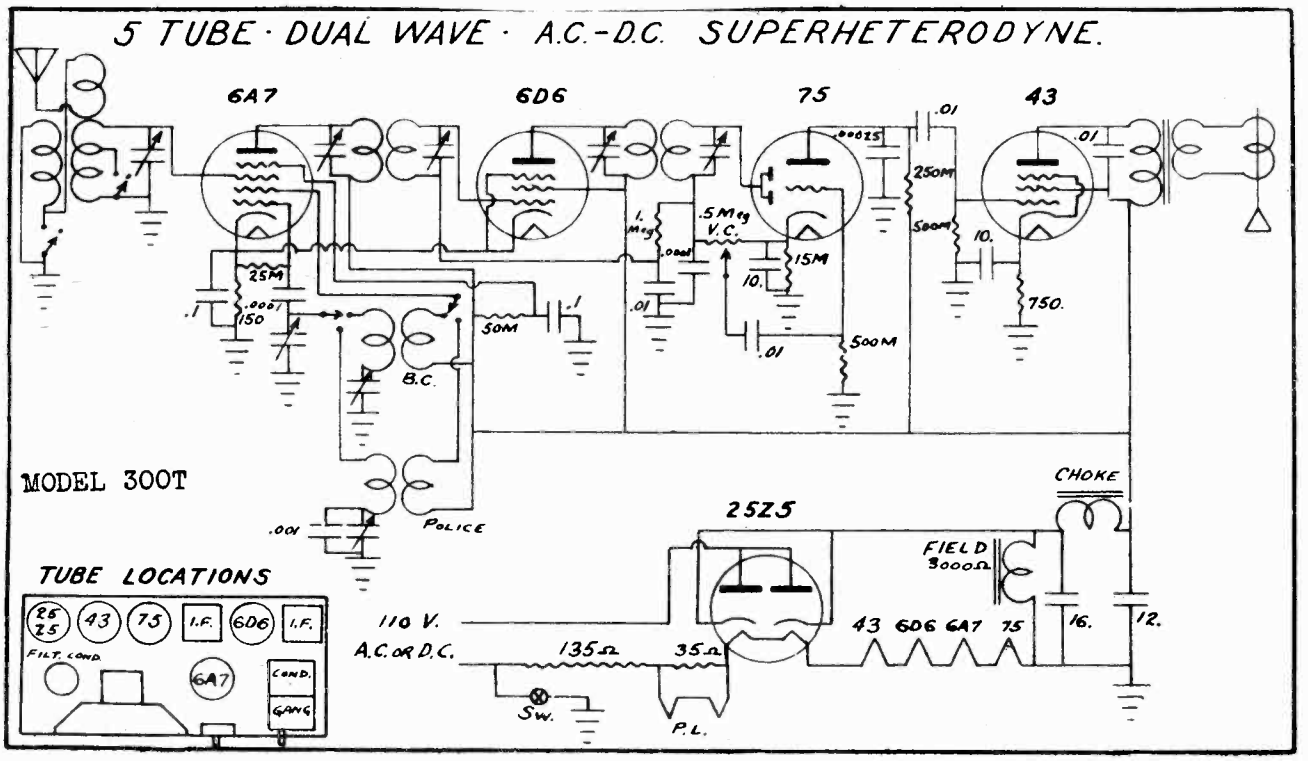


BACK VIEW OF CABINET

CHASSIS LAYOUT & TUBE LOCATION



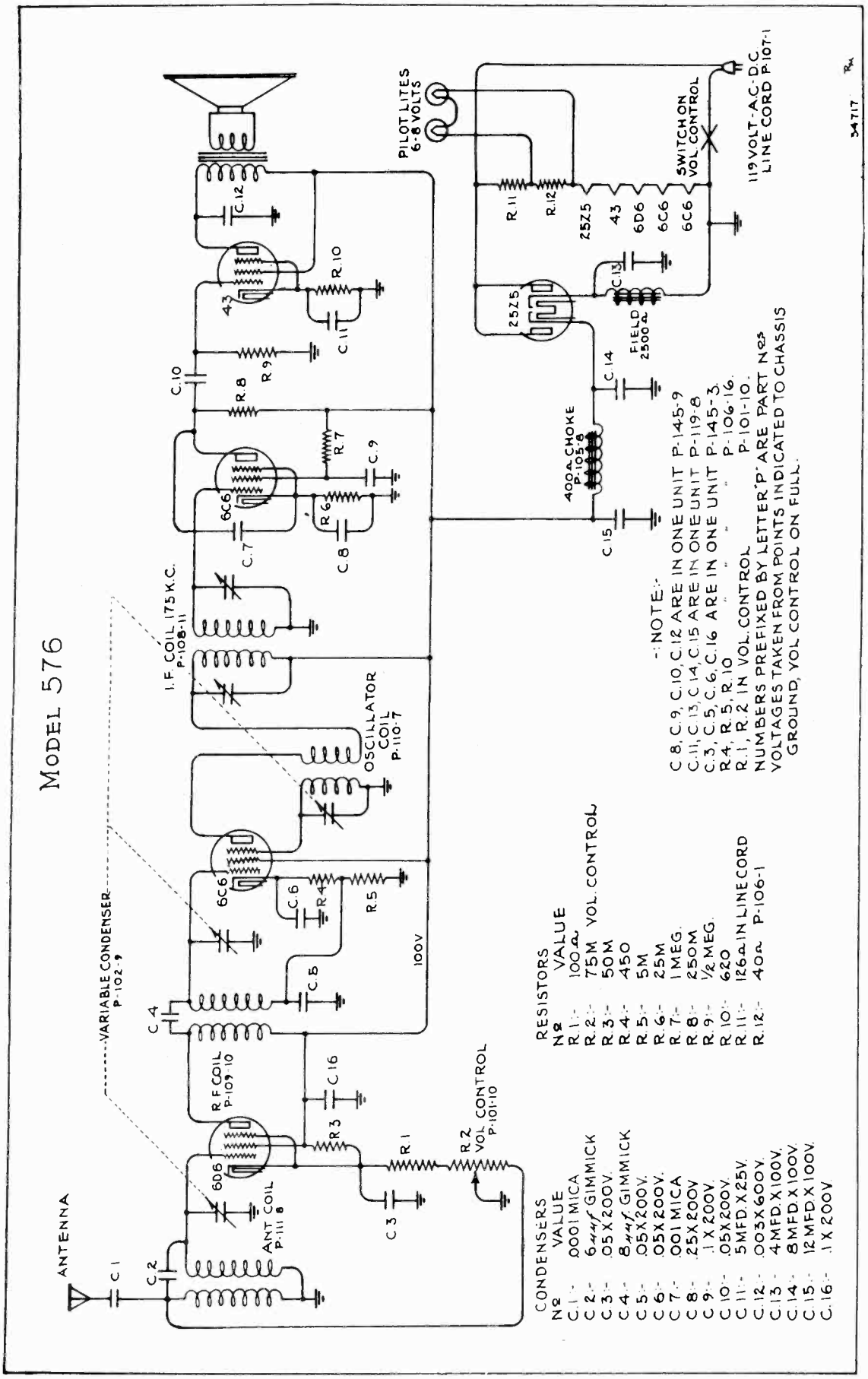
5 TUBE · DUAL WAVE · A.C.-D.C. SUPERHETERODYNE.



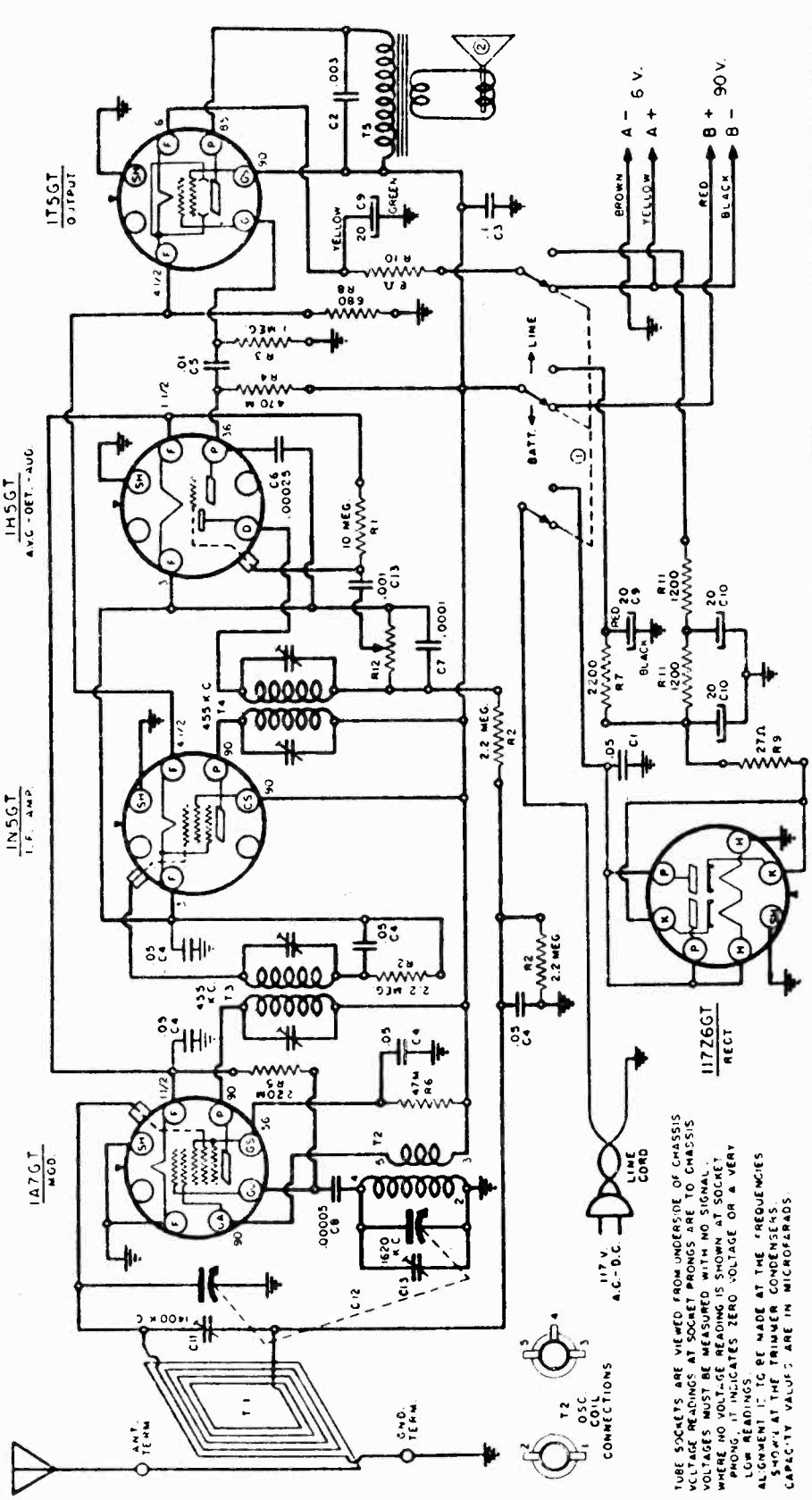
MODEL 300T

TUBE LOCATIONS

MODEL 576



WARWICK MFG. CORP.



CODE	PART NO	DESCRIPTION
C1	1607	.05 MFD. 400 V. TUBULAR COND
C2	16-139	.003 " " " "
C3	16-115	.1 " 200 V " "
C4	1622	.05 " " " "
C5	16-121	.01 " " " "
C6	1504	.00025 MFD. MICA CONDENSER
C7	1501	.0001 " " "
C8	1503	.00005 " " "
C9	18-263	20 X 20 " 150 W.V. ELECTROLYTIC
C10	18-262	20 X 20 " 150 W.V. "
C11	20-129	TRIMMER ON LOOP
C12	19-172	2 GANG VARIABLE COND. ALSO C13
C13	16-124	.001 MFD. 400 V TUBULAR COND.

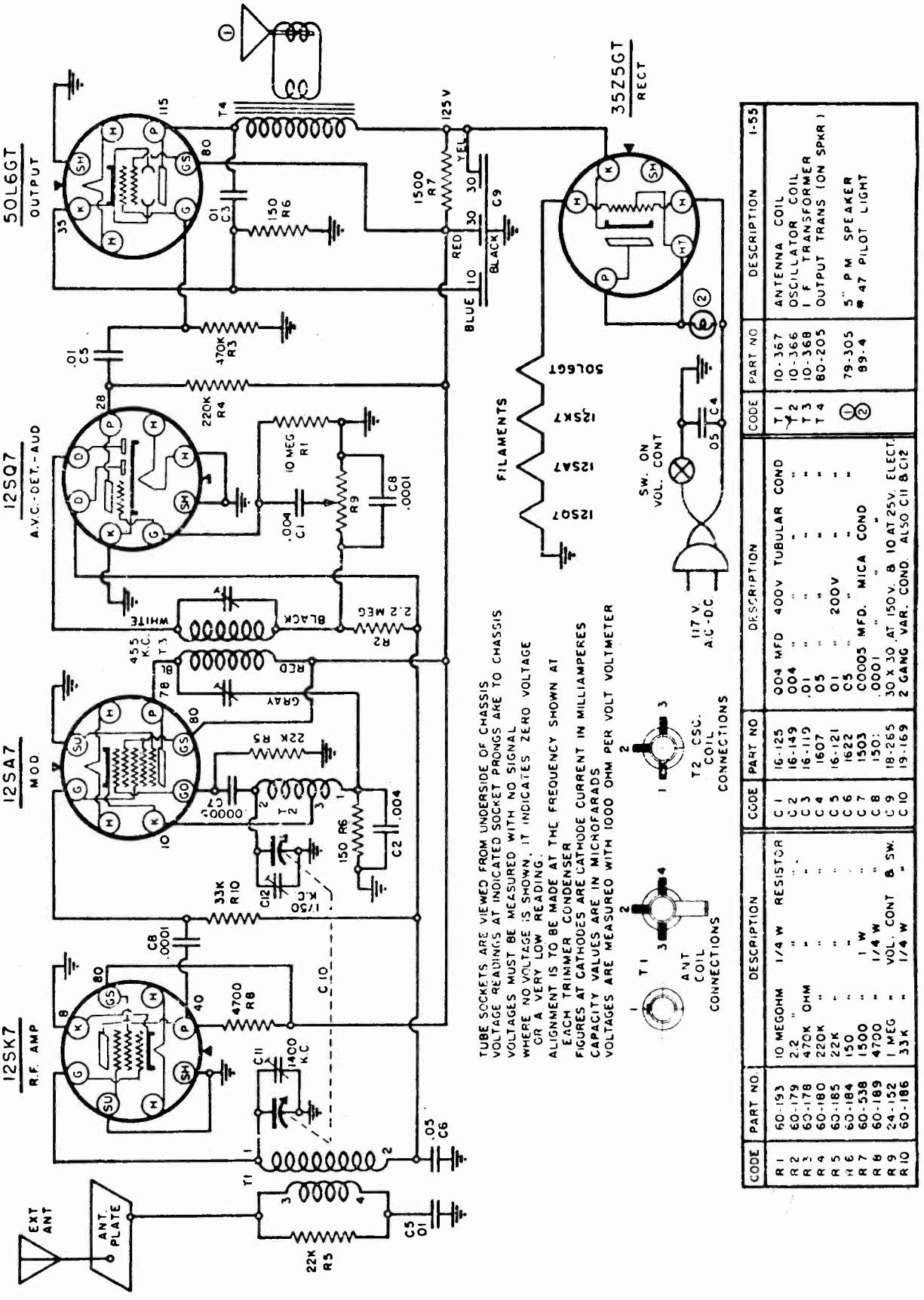
CODE	PART NO	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W. RESISTOR
R2	60-179	2.2 " " " "
R3	60-195	1 " " " "
R4	60-178	470 M OHM " " "
R5	60-180	220 M " " " "
R6	60-177	47 M " " " "
R7	60-383	2200 " " " "
R8	60-379	680 " " " "
R9	60-220	27 " " " "
R10	60-128	8 " 1/2 W "
R11	60-692	1200 " 3 W. "
R12	24-130	1 MEGOHM VOLUME CONTROL

CODE	PART NO	DESCRIPTION
T1	82-25	LOOP ANTENNA
T2	10-310	OSCILLATOR COIL
T3	10-379	1 ST. I.F. TRANSFORMER
T4	10-343	2 ND " " "
T5	------	OUTPUT TRANSFORMER
1	69-151	POWER SWITCH
2	79-314	5" P.M. SPEAKER

FOR OTHER DATA SEE INDEX

MODELS 1-550 to
1-559 incl. Ch.1-55

WARWICK MFG. CORP.



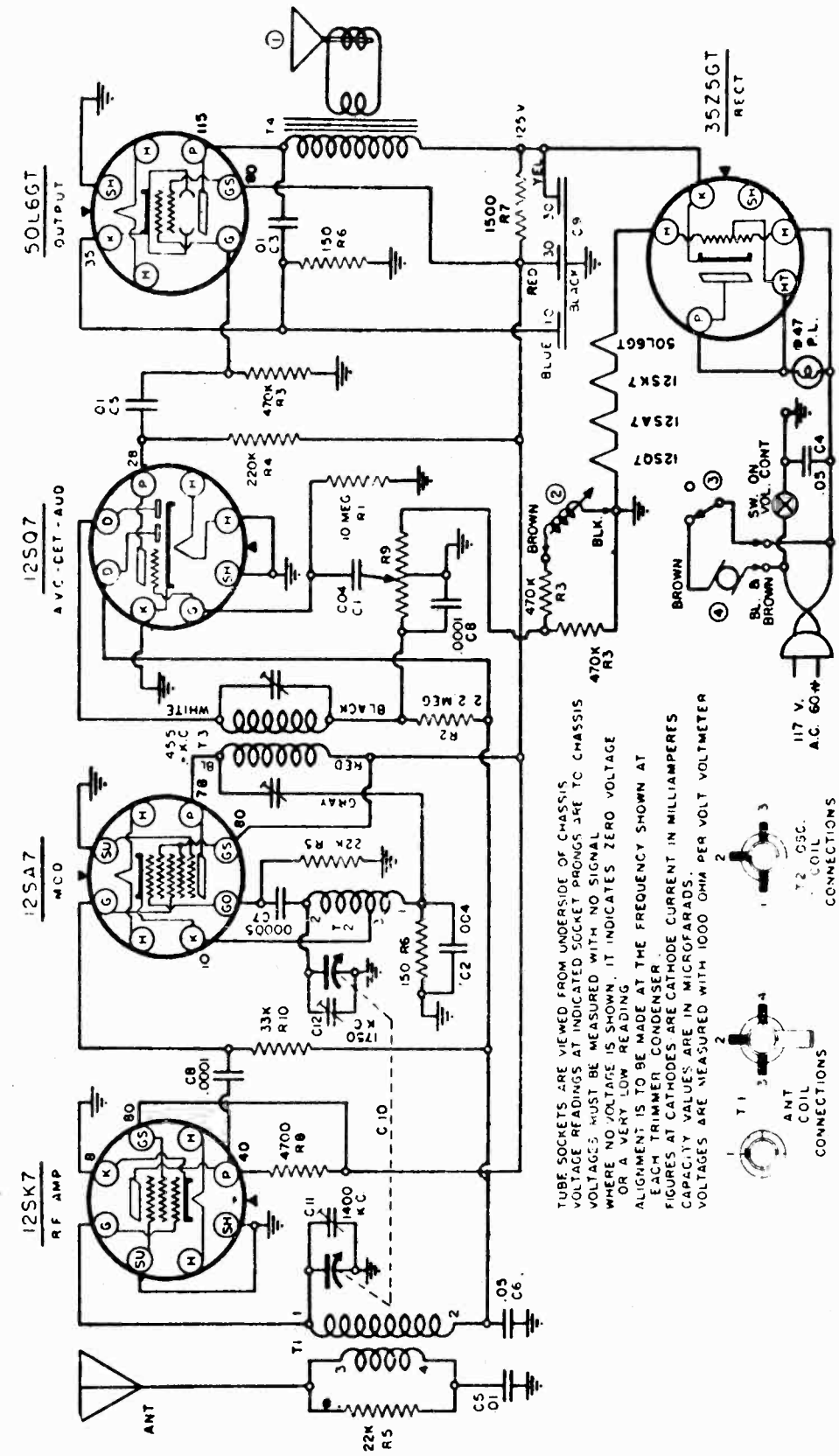
CODE	PART NO.	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 W RESISTOR
R 2	60-179	2.2 " " "
R 3	60-178	470K OHM " "
R 4	60-180	220K " " "
R 5	60-185	22K " " "
R 6	60-184	150 " " "
R 7	60-538	1500 " 1 W "
R 8	60-189	4700 " 1/4 W "
R 9	24-152	1 MEG " VOL. CONT & SW.
R 10	60-186	33K " 1/4 W "

CODE	PART NO	DESCRIPTION
C 1	16-125	.004 MFD 400V TUBULAR COND
C 2	16-149	.004 " " " "
C 3	16-119	.01 " " " "
C 4	1607	.05 " " " "
C 5	16-121	.01 " " 200V "
C 6	1622	C5 " " " "
C 7	1503	C0005 MFD. MICA COND
C 8	1501	.0001 " " "
C 9	18-265	30 X 30 MFD AT 150 V. & 10 AT 25V. ELECT.
C 10	19-169	2 GANG VAR. COND. ALSO C11 & C12

CODE	PART NO	DESCRIPTION
T 1	10-367	ANTENNA COIL
T 2	10-366	OSCILLATOR COIL
T 3	10-368	I F TRANSFORMER
T 4	80-205	OUTPUT TRANS (ON SPKR)
① ②	79-305	5" P M SPEAKER
	99-4	#47 PILOT LIGHT

FOR OTHER DATA SEE INDEX

WARWICK MFG. CORP



CODE	PART NO	DESCRIPTION
R 1	60-153	10 MEGOHM 1/4 W RESISTOR
R 2	60-175	2.2 " " "
R 3	60-178	470K OHM " "
R 4	60-160	220K " "
R 5	60-185	22K " "
R 6	60-184	150 " "
R 7	60-538	1500 " 1 W. "
R 8	60-189	4700 " 1/4 W "
R 9	24-156	2 MEG. " VOL. CONT & SW.
R 10	60-186	33K " 1/4 W "

CODE	PART NO	DESCRIPTION
C 1	16-125	.004 MFD 400V TUBULAR COND
C 2	16-149	.004 " " "
C 3	16-119	.01 " " "
C 4	1607	.05 " " "
C 5	16-121	.01 " 200V "
C 6	1622	.05 " " "
C 7	1503	.00005 MFD M.C.A. COND
C 8	1501	.0001 " " "
C 9	18-265	30 X 30 AT 150 V & 10 AT 25V ELECT
C 10	19-169	2 GANG VAR. COND ALSO CII & C12

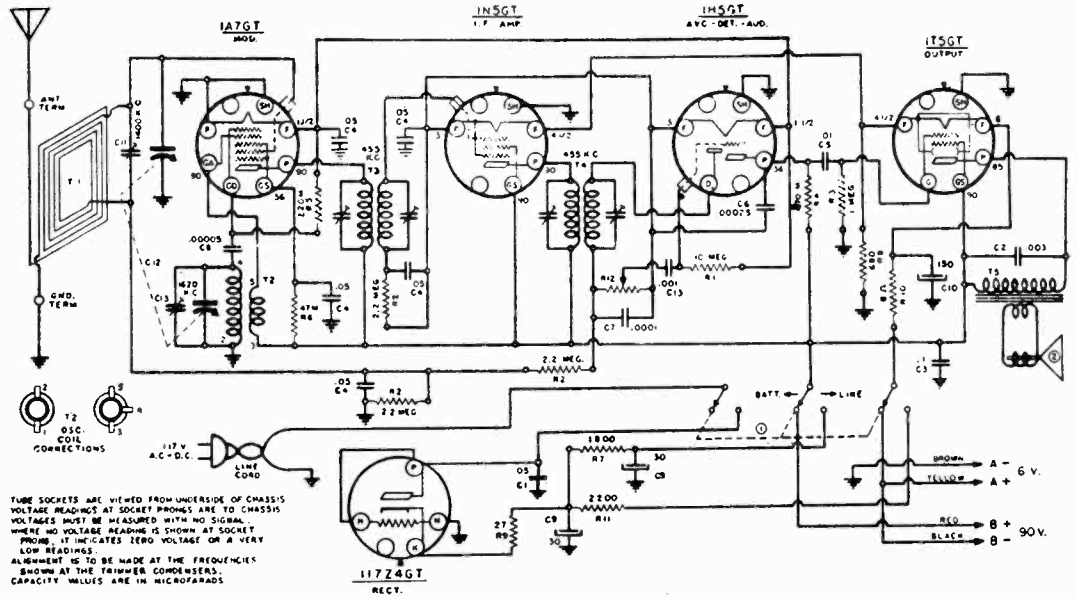
CODE	PART NO	DESCRIPTION
T 1	10-367	ANTENNA COIL
T 2	10-366	OSCILLATOR COIL
T 3	10-368	I F TRANSFORMER
T 4	80-205	OUTPUT TRANSFORMER (SPKR)
	79-305	5 P M SPEAKER
	83-216	PHONO PICKUP
	69-153	MOTOR SWITCH
	39-4	PHONO MOTOR

FOR OTHER DATA SEE INDEX

CHASSIS 2-54
CHASSIS 2-70

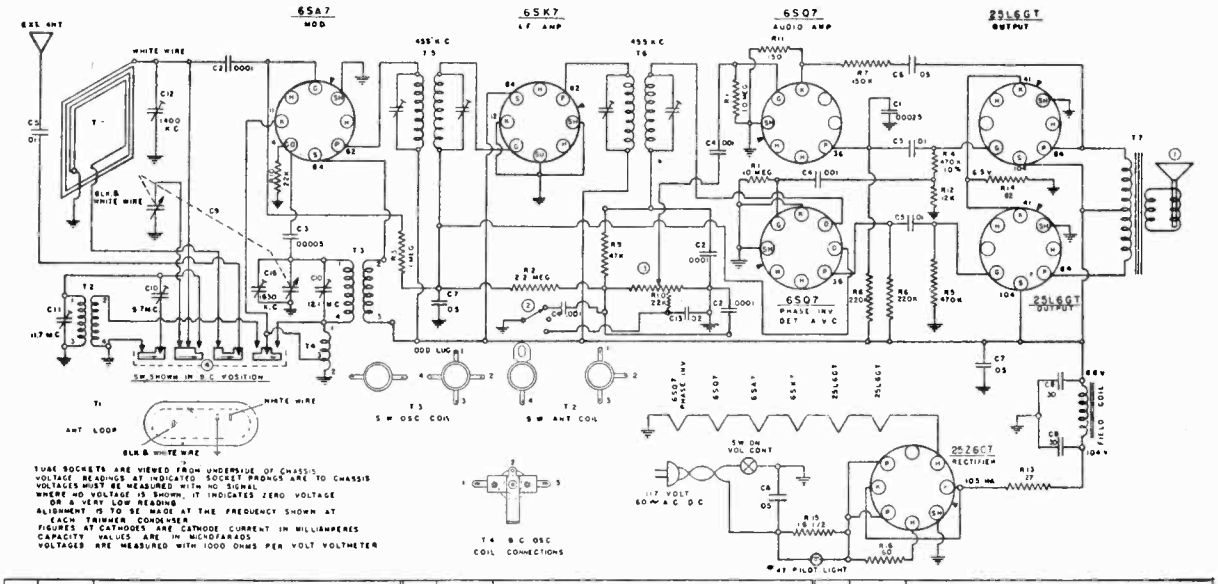
WARWICK MFG. CORP.

CHASSIS 2-54



CODE	PART NO	DESCRIPTION	CODE	PART NO	DESCRIPTION	CODE	PART NO	DESCRIPTION 2-54
C1	1607	.05 MFD 400 V. TUBULAR COND.	R1	60-193	10 MEGOHM 1/4 W RESISTOR	T1	82-25	LOOP ANTENNA
C2	16-139	.003 " " " "	R2	60-179	2.2 " " "	T2	10-310	OSCILLATOR COIL
C3	16-115	.1 " 200 V. " "	R3	60-195	1 " " "	T3	10-379	1 ST. I.F. TRANSFORMER
C4	1622	.05 " " " " "	R4	60-178	470K OHM "	T4	10-343	2 ND " " "
C5	16-121	.01 " " " " "	R5	60-190	220K " "	T5	.....	OUTPUT TRANSFORMER
C6	1504	.00025 MFD MICA CONDENSER	R6	60-177	47K " "			
C7	1501	.0001 " " "	R7	60-257	1800 " "	J1	69-151	POWER SWITCH
C8	1503	.00005 " " "	R8	60-179	680 " "	J2	79-316-A	5" P.M. SPEAKER
C9	18-866	30-30 " 150 W.V. ELECTROLYTIC	R9	60-651	27 " "			
C10	18-271	150 " 25 W.V.	R10	60-128	8 " 1/2 W "			
C11	20-129	TRIMMER ON LOOP	R11	60-652	2200 " 1 W "			
C12	19-178	8 GANG VARIABLE COND. ALSO C13	R12	74-150	1 MEGOHM VOLUME CONTROL			
C13	16-120	.001 MFD. 400 V. TUBULAR COND.						

CHASSIS 2-70



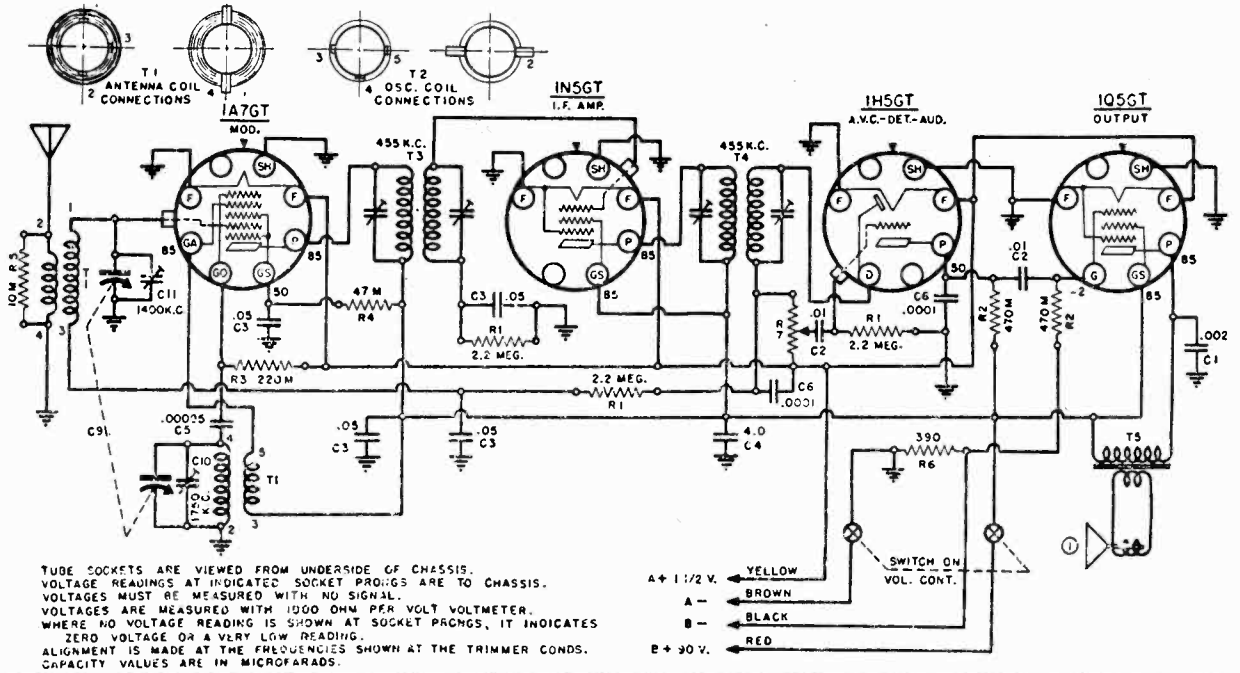
CODE	PART NO	DESCRIPTION	CODE	PART NO	DESCRIPTION	CODE	PART NO	DESCRIPTION 2-70
R1	60-193	10 MEGOHM 1/4 WATT RESISTOR	C 1	1504	.00025 MFD MICA CONDENSER	T 1	82-33	LOOP ANTENNA
R2	60-179	2.2 " "	C 2	1501	.0001 " "	T 2	10-368	ANTENNA COIL S.W.
R3	60-195	1 " "	C 3	1503	.00005 " "	T 3	10-388	OSCILLATOR COIL S.W.
R4	60-407	470K OHM "	C 4	18-106	.001 MFD 600 V. TUBULAR CONDENSER	T 4	10-397 " P.C.
R5	60-178	" "	C 5	16-118	.01 " 400 V. " "	T 5	10-401	1ST. I.F. TRANSFORMER
R6	60-190	220K " "	C 6	1607	.05 " " " "	T 6	10-402	2ND I.F. " "
R7	60-402	1500 " "	C 7	1622	.05 " 200 V. " "	T 7		OUTPUT TRANSFORMER (1 OR SPKR.)
R8			C 8	18-266	30 & 30 MFD 150 W.V. ELECTROLYTIC			
R9	60-177	47K " "	C 9	95-16	2 GANG VARIABLE CONDENSER (ALSO C10)	J	79-383	4" x 6" DYNAMIC SPEAKER
R10	60-185	2.2K " "	C 10	20-131	TRIMMER BANK (2 SECTIONS)	2	69-160	TONE CONTROL
R11	60-184	150 " "	C 11	20-133	TRIMMER	3	24-160	VOLUME CONTROL
R12	60-390	12K " "	C 12	20-129	TRIMMER ON LOOP	4	69-155	BAND SWITCH
R13	60-651	27 " "	C 13	16-103	.02 MFD 200 V. TUBULAR CONDENSER			
R14	60-426	82 " 1/2 WATT	C 14					
R15	60-654	14 1/2 " "	C 15					
R16	60-653	60 " "						

FOR OTHER DATA SEE INDEX

WARWICK MFG. CORP.

MODELS 2-400 to 2-409
MODELS 2-500 to 2-509

MODELS 2-400 TO 2-409



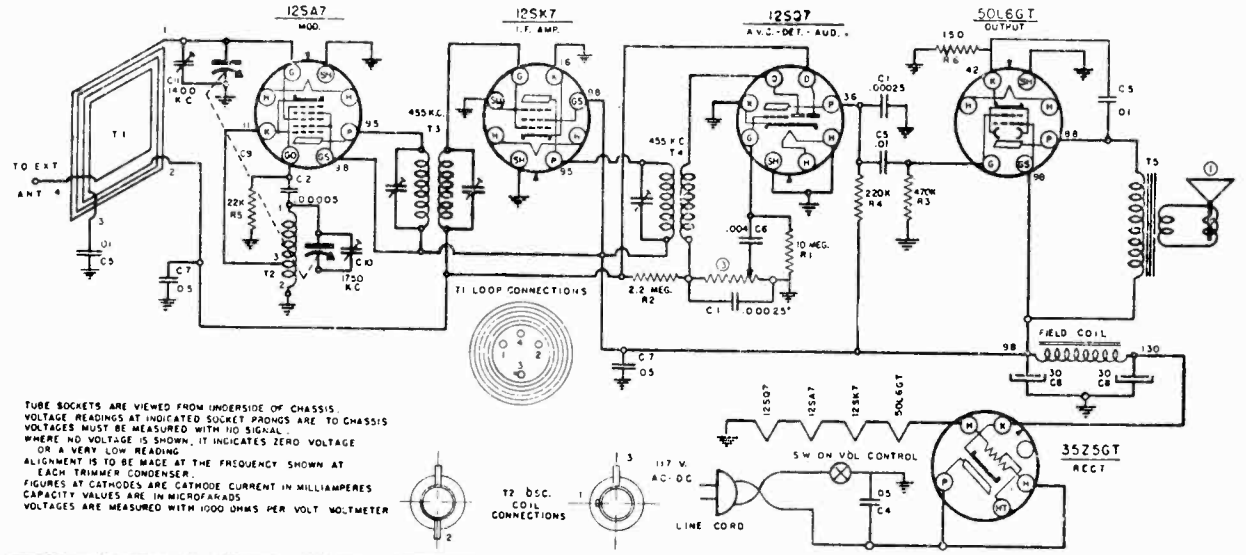
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONGS, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDS.
CAPACITY VALUES ARE IN MICROFARADS.

CODE	PART NO.	DESCRIPTION
R1	60-179	2.2 MEGOHM 1/4 W. RESISTOR
R2	60-178	470M OHM " " "
R3	60-180	220M " " "
R4	60-177	47M " " "
R5	60-215	10M " " "
R6	60-221	390 " " "
R7	24-154	1 MEGOHM VOLUME CONTROL

CODE	PART NO.	DESCRIPTION
C1	16-138	.002 MFD. 400V. TUBULAR COND.
C2	16-121	.01 " 200V. " "
C3	1622	.05 " " " "
C4	18-250	4.0 " 150 W.V. ELECTROLYTICS
C5	1503	.00025 MFD. MICA CONDENSER
C6	1501	.0001 " " "
C9	19-177	2 GANG VAR. COND. ALSO C10 & C11

CODE	PART NO.	DESCRIPTION 2-40
T1	10-396	ANTENNA TRANSFORMER
T2	10-395	OSCILLATOR " "
T3	10-342	1 ST. I.F. "
T4	10-343	2 ND. I.F. "
T5	------	OUTPUT TRANS. (ON SPKR.)
1	79-322	" P.M. SPEAKER

MODELS 2-500 TO 2-509



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ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES
CAPACITY VALUES ARE IN MICROFARADS
VOLTAGES ARE MEASURED WITH 1000 OHMS PER VOLT VOLTMETER

CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 WATT RESISTOR
R2	60-179	2.2 " " "
R3	60-178	470K OHM " "
R4	60-180	220K " "
R5	60-185	22K " "
R6	60-184	150 " "
R7		
R8	60-	
R9	60-	
R10		

CODE	PART NO	DESCRIPTION
C1	1504	.00025 MFD. MICA CONDENSER
C2	1503	.00005 " " "
C3		
C4	1607	.05 MFD. 400 V TUBULAR CONDENSER
C5	16-119	.01 " " " "
C6	16-125	.004 " " " "
C7	1622	.05 " 200 V. " "
C8	76-266	30 & 30 MFD 150 W.V. ELECTROLYTIC
C9	19-173	2 GANG VARIABLE CONDENSER ALSO C10

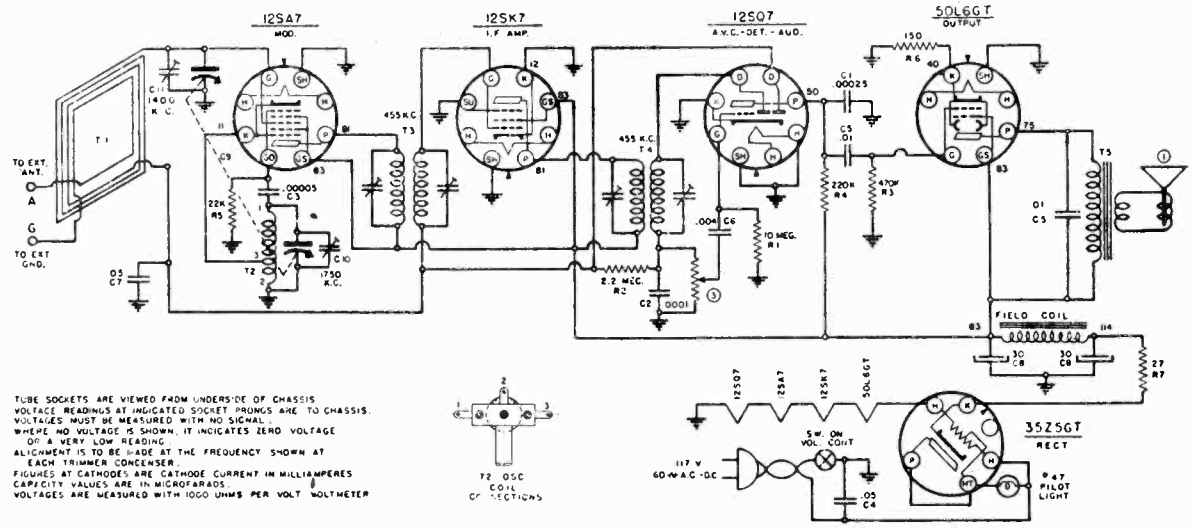
CODE	PART NO	DESCRIPTION 2-50
T1	82-31	LOOP ANTENNA
T2	10-381	OSCILLATOR COIL
T3	10-382	1ST I.F. TRANSFORMER
T4	10-356	2ND I.F. TRANSFORMER
T5		OUTPUT TRANS. (ON SPEAKER)
f	79-321	4" DYN SPEAKER
β	24-157	1 MEGOHM VOLUME CONTROL (WITH SW)

FOR OTHER DATA SEE INDEX

MODELS 2-530 to 2-539
Chassis 2-53
MODELS 2-550 to 2-559
Chassis 2-55

WARWICK MFG. CORP.

MODELS 2-530 TO 2-539



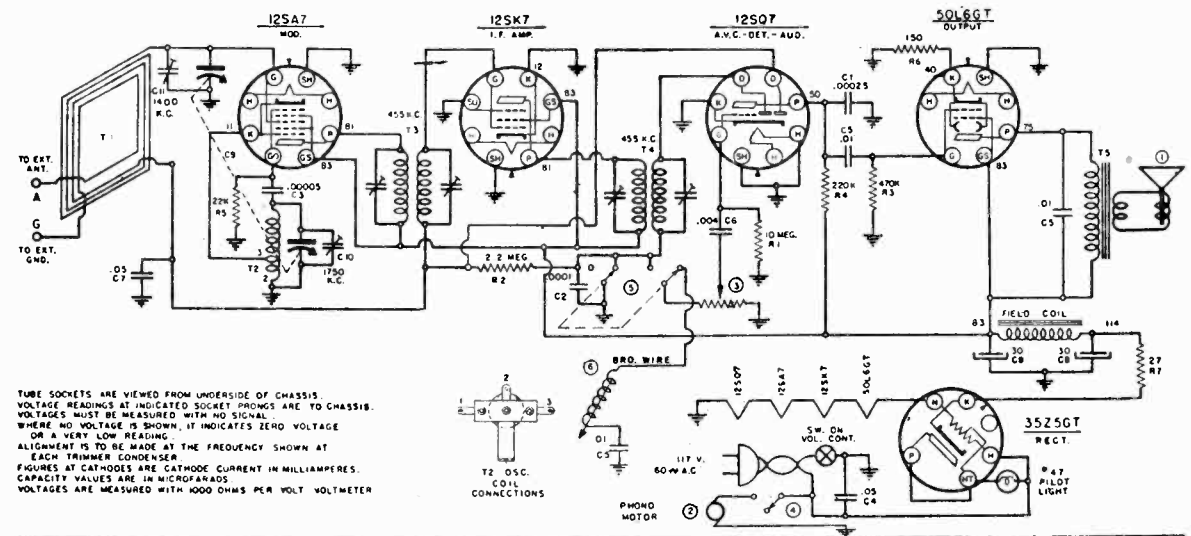
CODE	PART NO.	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 WATT RESISTOR
R 2	60-179	2.2 " " "
R 3	60-178	470K OHM " "
R 4	60-180	220K " " "
R 5	60-185	22K " " "
R 6	60-184	150 " " "
R 7	60-651	27 " " "

CODE	PART NO.	DESCRIPTION
C 1	1504	.00025 MFD. MICA CONDENSER
C 2	1501	.0001 " " "
C 3	1503	.00005 " " "
C 4	1607	.05 MFD. 400 V. TUBULAR CONDENSER
C 5	16-119	.01 " " "
C 6	16-125	.004 " " "
C 7	1622	.05 " 200 V. "
C 8	18-266	30 - 30 MFD. 150 W.V. ELECTROLYTIC
C 9	19-177	2 GANG VARIABLE CONDENSER (ALSO C10 & C11)

CODE	PART NO.	DESCRIPTION
T 1	82-30	LOOP ANTENNA
T 2	10-394	OSCILLATOR COIL
T 3	10-369	1ST I.F. TRANSFORMER
T 4	10-370	2ND I.F. TRANSFORMER
T 5		OUTPUT TRANSFORMER (ON SPKR.)
1	79-319	5" DYN. SPEAKER
2		
3	24-153	500K OHM VOLUME CONTROL (WITH SW.)

2-53

MODELS 2-550 TO 2-559



CODE	PART NO.	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 WATT RESISTOR
R 2	60-179	2.2 " " "
R 3	60-178	470K OHM " "
R 4	60-180	220K " " "
R 5	60-185	22K " " "
R 6	60-184	150 " " "
R 7	60-651	27 " " "

CODE	PART NO.	DESCRIPTION
C 1	1504	.00025 MFD. MICA CONDENSER
C 2	1501	.0001 " " "
C 3	1503	.00005 " " "
C 4	1607	.05 MFD. 400 V. TUBULAR CONDENSER
C 5	16-119	.01 " " "
C 6	16-125	.004 " " "
C 7	1622	.05 " 200 V. "
C 8	18-266	30 X 30 MFD. 150 W.V. ELECTROLYTIC
C 9	19-177	2 GANG VARIABLE CONDENSER (ALSO C10 & C11)
⑥	83-216	PHONO PICK-UP

CODE	PART NO.	DESCRIPTION
T 1	82-32	LOOP ANTENNA
T 2	10-394	OSCILLATOR COIL
T 3	10-369	1ST. I.F. TRANSFORMER
T 4	10-370	2ND. I.F. TRANSFORMER
T 5		OUTPUT TRANSFORMER (ON SPKR.)
1	79-319	5" DYN. SPEAKER
2	59-4	PHONO MOTOR
3	24-153	500K OHM VOLUME CONTROL (WITH SW.)
4	69-153	MOTOR SWITCH
5	69-162	PHONO SWITCH

2-55

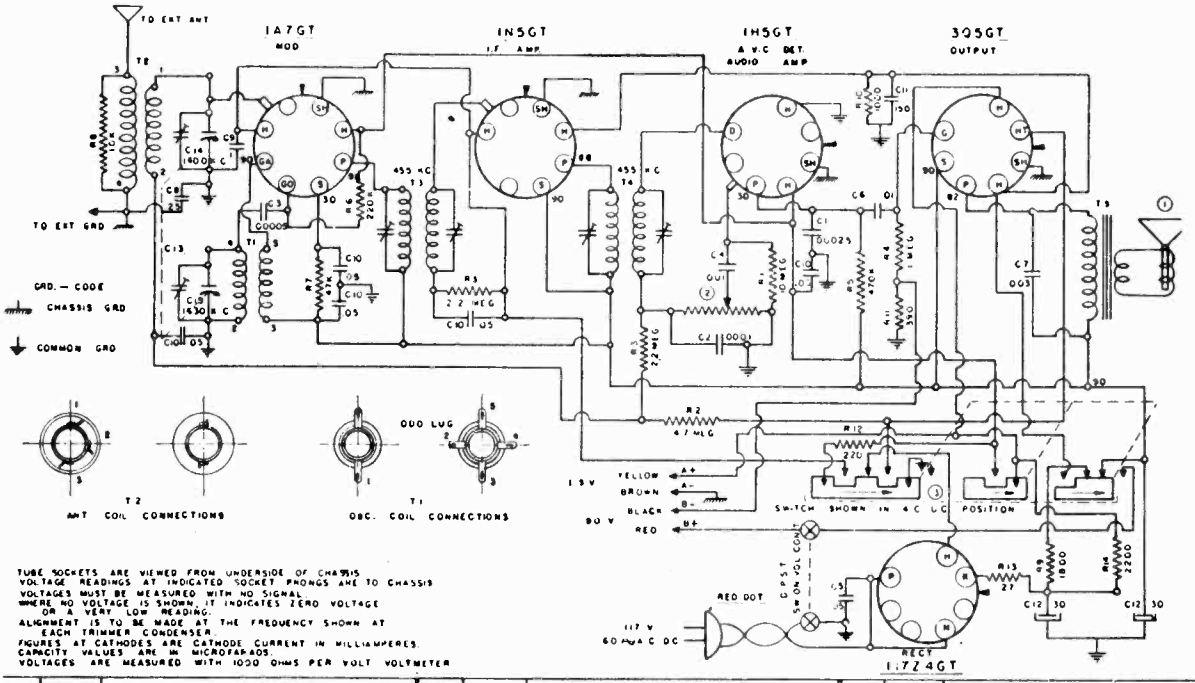
FOR OTHER DATA SEE INDEX

MODEL 2-553 USES NEW PRODUCTS 301 RECORD CHANGER. FOR DATA SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

WARWICK MFG. CORP.

MODELS 2-560 TO 2-569

MODELS 2-560 to 2-569
Chassis 2-56
MODELS 2-610 to 2-619
Chassis 2-61



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FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
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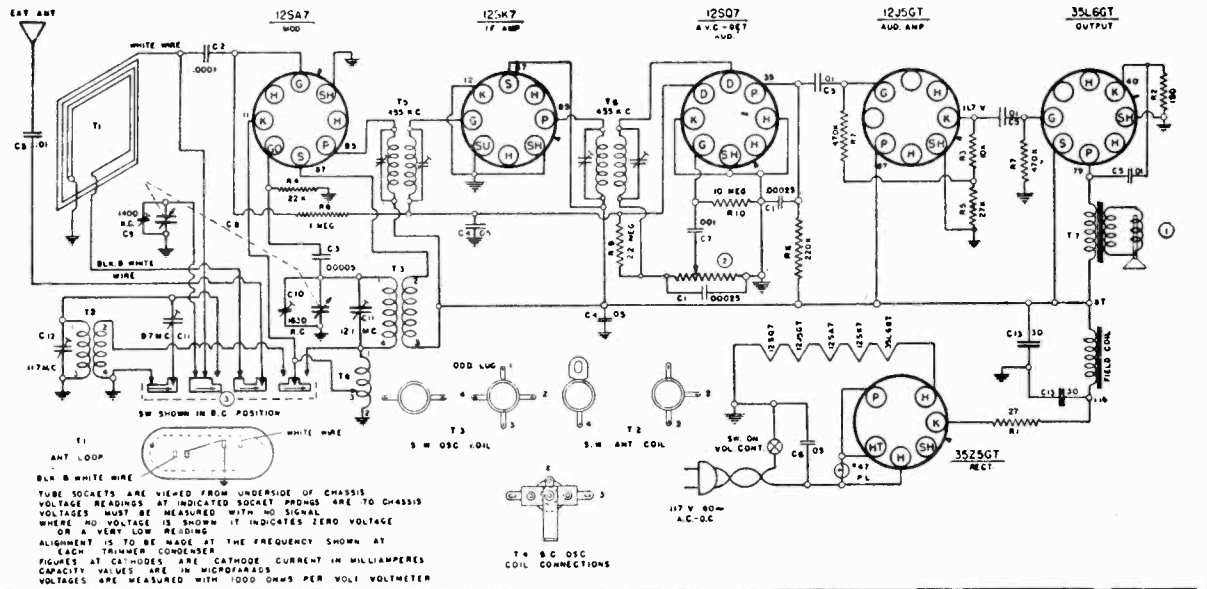
VOLTAGES ARE MEASURED WITH 1000 OHMS PER VOLT VOLTMETER

CODE	PART NO.	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 WATT RESISTOR
R 2	60-269	4.7 " " "
R 3	60-179	2.2 " " "
R 4	60-195	1 " " "
R 5	60-178	470K OHM " "
R 6	60-180	220K " " "
R 7	60-177	47K " " "
R 8	60-215	10K " " "
R 9	60-257	1800 " " "
R 10	60-381	1000 " " "
R 11	60-221	390 " " "
R 12	60-190	220 " " "
R 13	60-651	27 " " "
R 14	60-652	2200 OHM 1 WATT RESISTOR

CODE	PART NO	DESCRIPTION
C 1	1504	.00025 MFD MICA CONDENSER
C 2	1501	.0001 " " "
C 3	1503	.00005 " " "
C 4	1607	.05 " 400V TUBULAR CONDENSER
C 5	1607	.05 " 400V " "
C 6	16-119	.01 " " " "
C 7	16-139	.003 " " " "
C 8	16-120	.25 " 200V " "
C 9	16-115	.1 " " " "
C 10	1622	.05 " " " "
C 11	18-271	150 MFD 25 W.V. ELECTROLYTIC
C 12	18-266	30 & 30 " 150 W.V. ELECTROLYTIC
C 13	19-178	2 GANG VARIABLE CONDENSER (ALSO C14 & C15)

CODE	PART NO	DESCRIPTION
T 1	10-395	OSCILLATOR COIL
T 2	10-396	ANTENNA COIL
T 3	10-342	1ST I.F. TRANSFORMER
T 4	10-405	2ND I.F. TRANSFORMER
T 5		OUTPUT TRANSFORMER (ON SPKR.)
1	79-326	5" P.M. SPEAKER
2	24-162	1 MEGOHM VOLUME CONTROL (WITH SW.)
3	69-159	SWITCH (A.C.-D.C.-BATTERY)

MODELS 2-610 TO 2-619



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FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES
CAPACITY VALUES ARE IN MICROFARADS.
VOLTAGES ARE MEASURED WITH 1000 OHMS PER VOLT VOLTMETER

CODE	PART NO	DESCRIPTION
R 1	60-651	27 OHM 1/4 WATT RESISTOR
R 2	60-184	150 " " "
R 3	60-188	10 K " " "
R 4	60-185	22 K " " "
R 5	60-356	27 K " " "
R 6	60-180	220 K " " "
R 7	60-178	470 K " " "
R 8	60-195	1 MEG. " " "
R 9	60-175	2.2 MEG. " " "
R 10	60-153	10 MEG " " "

CODE	PART NO	DESCRIPTION
C 1	1504	.00025 MFD MICA CONDENSER
C 2	1501	.0001 " " "
C 3	1503	.00005 " " "
C 4	1622	.05 " 200 V
C 5	16-119	.01 " 400 V
C 6	1607	.05 " 400 V
C 7	16-106	.001 " 600 V
C 8	19-178	VARIABLE CONDENSER (ALSO C9 & C10)
C 11	20-121	TRIMMER (DOUBLE)
C 12	20-133	TRIMMER
C 13	18-266	30 & 30 MFD 150 V ELECTROLYTIC

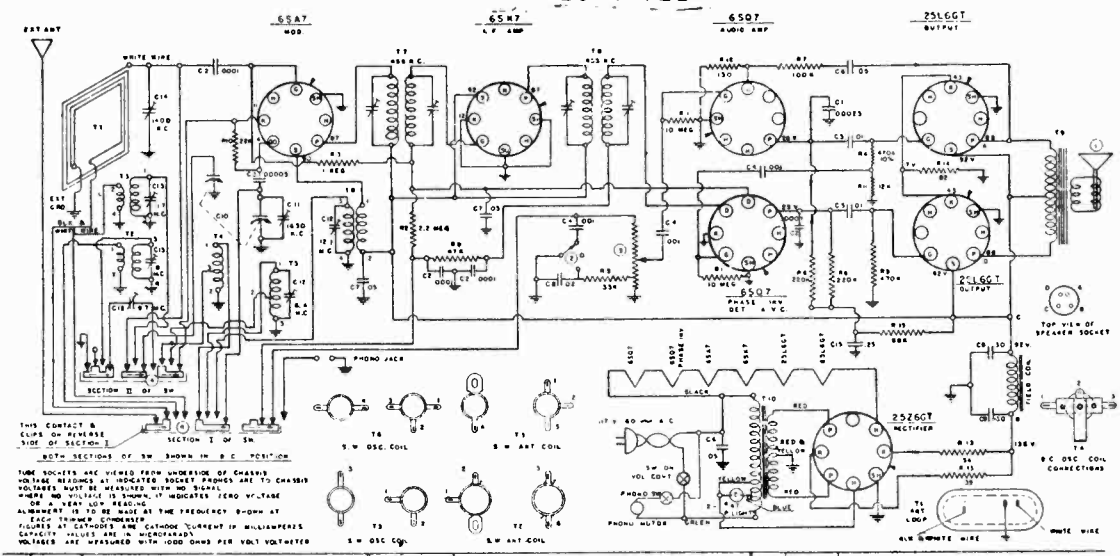
CODE	PART NO	DESCRIPTION
T 1	82-32	ANTENNA LOOP
T 2	10-398	S.W. ANTENNA COIL
T 3	10-399	S.W. OSCILLATOR COIL
T 4	10-400	B.C. " "
T 5	10-369	1ST I.F. TRANSFORMER
T 6	10-370	2 ND. " "
T 7		OUTPUT TRANSFORMER (ON SPKR.)
1	79-324	5" DYN. SPEAKER
2	24-161	VOLUME CONTROL 500 K OHMS
3	69-161	BAND SWITCH

FOR OTHER DATA SEE INDEX

MODELS 2-711 to 2-714
CHASSIS 10-72

WARWICK MFG. CORP.

MODELS 2-711 TO 2-714



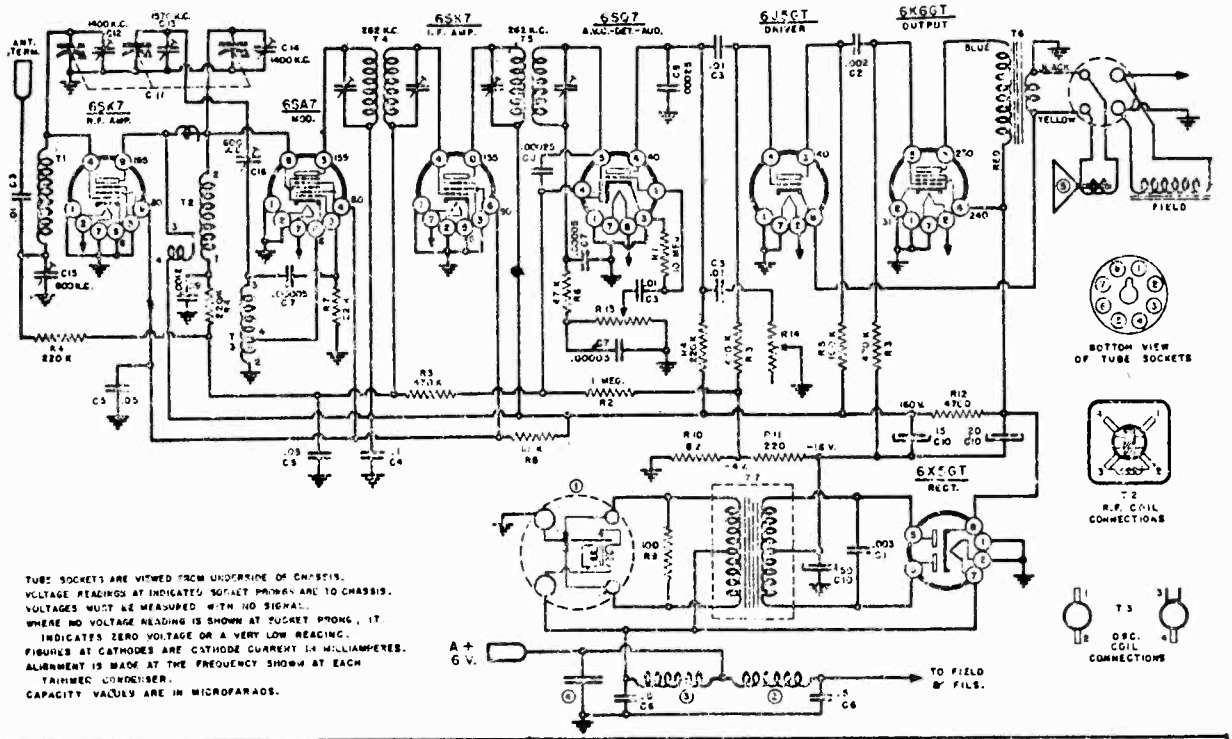
CODE	PART NO	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 WATT RESISTOR
R 2	60-195	1 " " " "
R 3	60-178	470K OHM " " "
R 4	60-180	220K " " " "
R 5	60-186	100K " " " "
R 6	60-167	47K " " " "
R 7	60-353	82K " " " "
R 8	60-205	10K " " " "
R 9	60-162	100 " 1/2 WATT "
R 10	60-483	82 " " "
R 11	60-531	820 " 1 WATT "
R 12	60-848	4700 " 2 WATT "
R 13	24-103	500K " VOLUME CONTROL
R 14	28-103	500K " TONE CONTROL

CODE	PART NO	DESCRIPTION
C 1	16-104	.00025 MFD. MICA CONDENSER
C 2	16-101	.0001 " " "
C 3	1503	.00005 " " "
C 4	16-108	.01 " 600 V. TUBULAR CONDENSER
C 5	16-113	.05 " 400 V. " "
C 6	1607	.03 " " " "
C 7	1623	.05 " 200 V. " "
C 8	16-103	.05 " " " "
C 9	16-134	30-30-150 MFD. 150 W.V. ELECTROLYTIC
C 10	23-117	3 GANG VARIABLE CONDENSER (ALSO C12 & C14)
C 11	20-116	TRIMMER BLOCK (3 SECTIONS)
C 12	20-133	TRIMMER
C 13	20-133	TRIMMER (ON LOOP)
C 15	16-130	.25 MFD 200 V. TUBULAR CONDENSER

CODE	PART NO	DESCRIPTION
T 1	85-38	LOOP ANTENNA
T 2	10-406	ANT. COIL 4.7 TO 8.4 M.C.
T 3	10-405	ANT. COIL 8.8 TO 12.1 M.C.
T 4	10-387	OSCILLATOR COIL S.W. "
T 5	10-407	" 4.7 TO 8.8 M.C.
T 6	10-409	" 8.8 TO 12.1 M.C.
T 7	10-388	1ST. I.F. TRANSFORMER
T 8	10-410	2ND. " "
T 9		OUTPUT " (ION SPKR.)
T 10	60-215	POWER "
	79-358	6"x9" DYNAMIC SPEAKER
	79-388	10" " "
	28-103	TONE CONTROL
	24-103	VOLUME CONTROL
	80-183	BAND SWITCH

2-71

CHASSIS 10-72



CODE	PART NO.	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 WATT RESISTOR
R 2	60-195	1 " " "
R 3	60-178	470K OHM " "
R 4	60-180	220K " " "
R 5	60-186	100K " " "
R 6	60-167	47K " " "
R 7	60-353	82K " " "
R 8	60-205	10K " " "
R 9	60-162	100 " 1/2 WATT "
R 10	60-483	82 " " "
R 11	60-531	820 " 1 WATT "
R 12	60-848	4700 " 2 WATT "
R 13	24-103	500K " VOLUME CONTROL
R 14	28-103	500K " TONE CONTROL

CODE	PART NO.	DESCRIPTION
C 1	16-147	.003 MFD. 1600 V. BUFFER COND.
C 2	16-138	.002 " 400 V. TUBULAR COND.
C 3	16-112	.01 " " " "
C 4	16-118	.1 " " " "
C 5	1622	.05 " 200 V. " "
C 6	16-112	.5 " " OVAL CONDENSER
C 7	1503	.00005 " MICA CONDENSER
C 8	1504	.00025 " " "
C 9	15-108	.0012 " " "
C 10	18-264	20 " 450 W.V. ELECTROLYTIC
		15 " 300 W.V. "
		150 " 25 W.V. "
C 11	19-102	3 GANG VARIABLE COND. (ALSO C12, C13, & C14)
C 15	20-116	PADDING CONDENSER 600 - 1200 MMFD.
C 16	20-130	PADDING CONDENSER 350 - 650 MMFD.

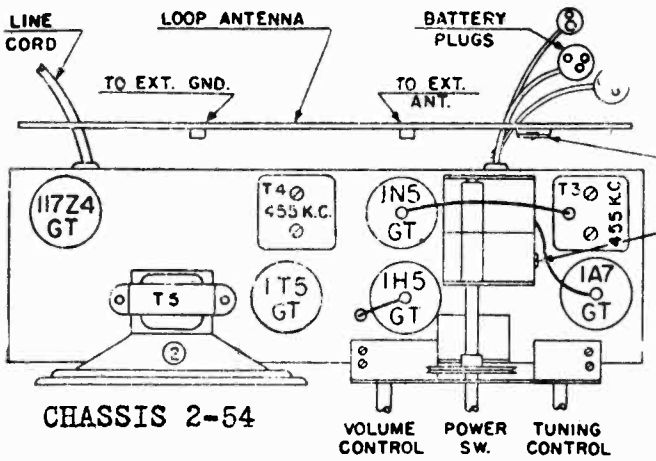
CODE	PART NO.	DESCRIPTION
T 1	10-208	ANTENNA COIL
T 2	10-361	R. F. COIL
T 3	10-359	OSCILLATOR COIL
T 4	10-360	1ST. I.F. TRANSFORMER
T 5	10-212	2ND. I.F. "
T 6	60-201	OUTPUT TRANSFORMER
T 7	80-202	VIBRATOR TRANSFORMER
		"
1	34-104	VIBRATOR
2	33-210	FILAMENT CHOKE
3	33-211	VIBRATOR CHOKE
4	89-1	SPARK PLATE
5	T9-302	8" DYNAMIC SPEAKER

10-72

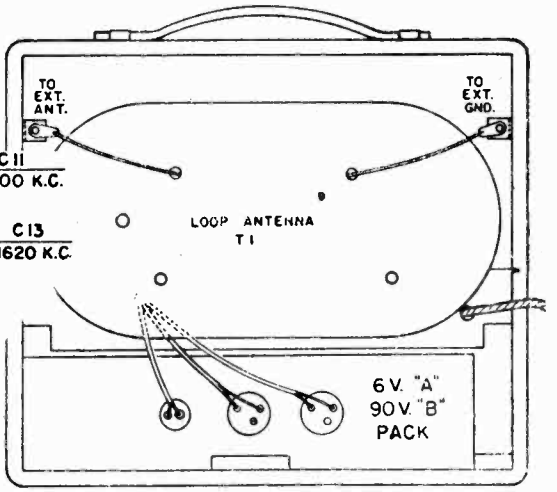
FOR OTHER DATA SEE INDEX

MODELS SEE BELOW

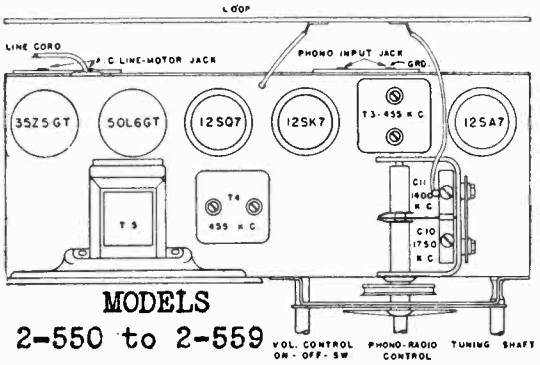
WARWICK MFG. CORP.



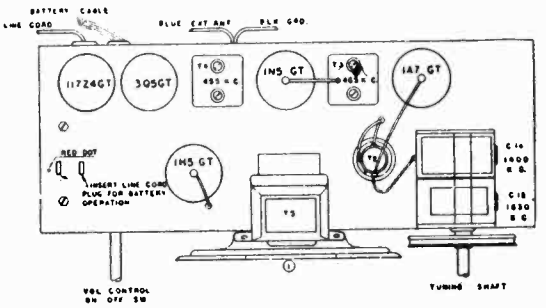
CHASSIS 2-54



CHASSIS 2-54

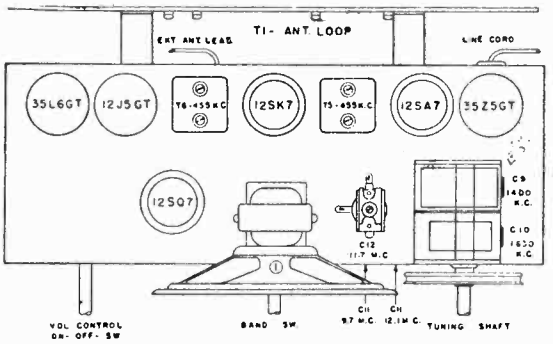


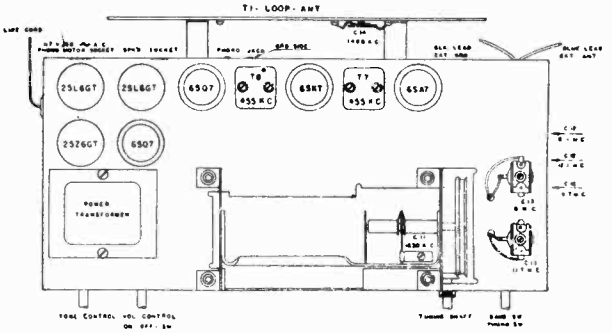
MODELS
2-550 to 2-559



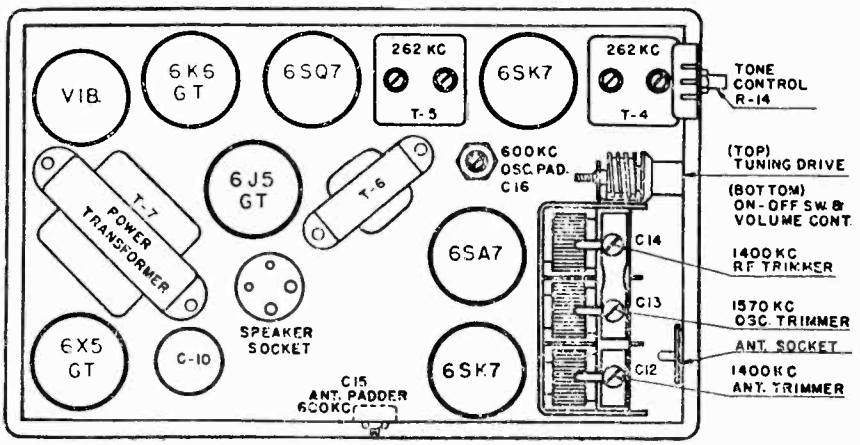
MODELS 2-560 to 2-569

MODELS 2-610 to 2-619





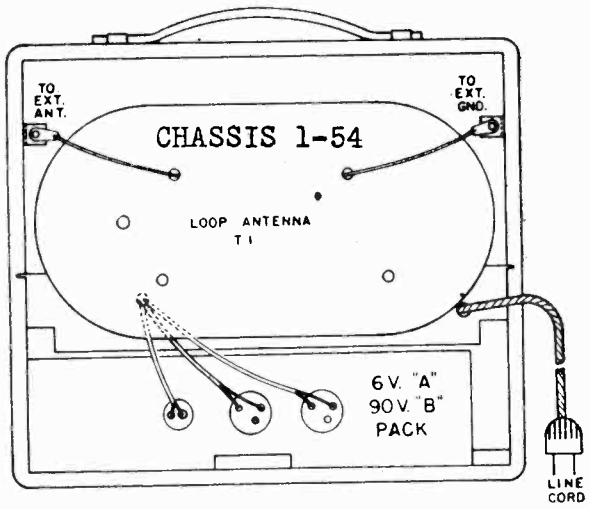
MODELS
2-711 to 2-714

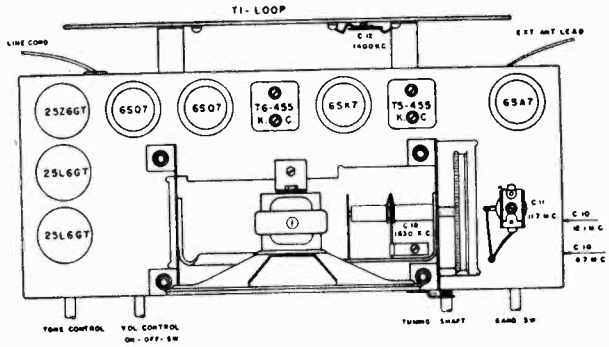


CHASSIS 10-72

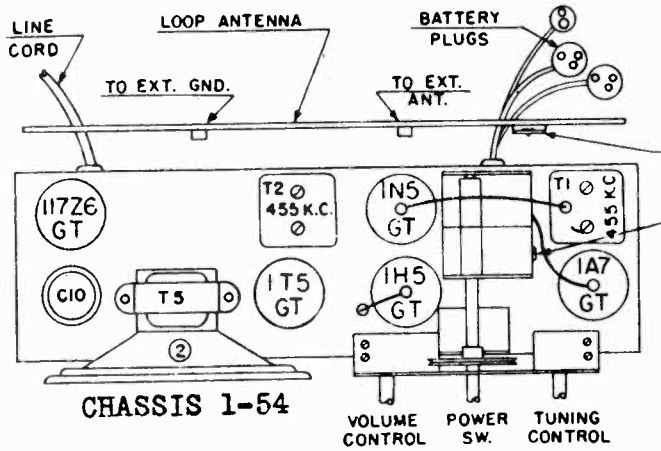
MODELS SEE BELOW

WARWICK MFG. CORP.

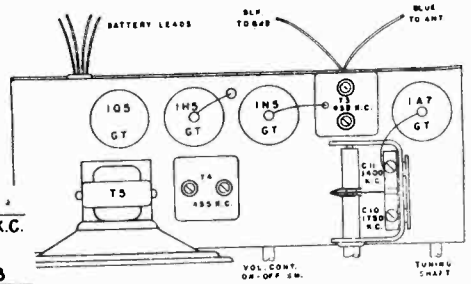




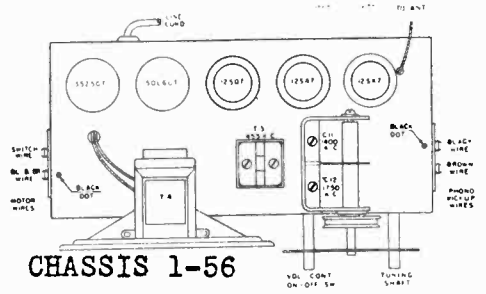
2-70 CHASSIS



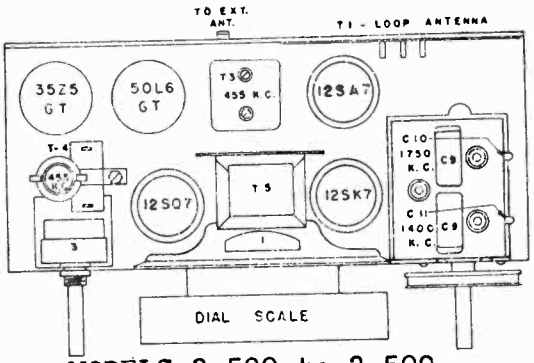
CHASSIS 1-54



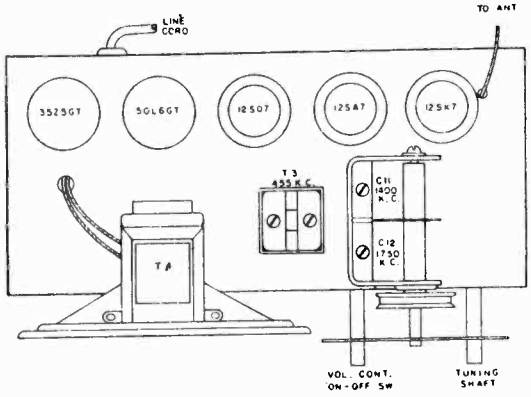
MODELS 2-400 to 2-409



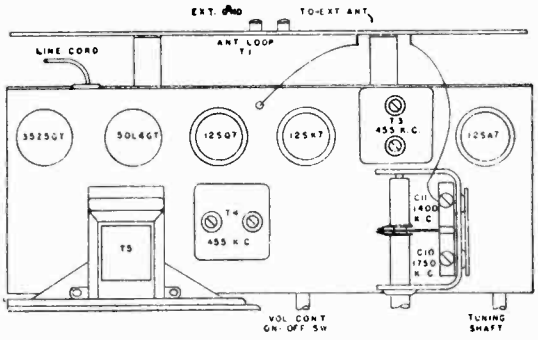
CHASSIS 1-56



MODELS 2-500 to 2-509



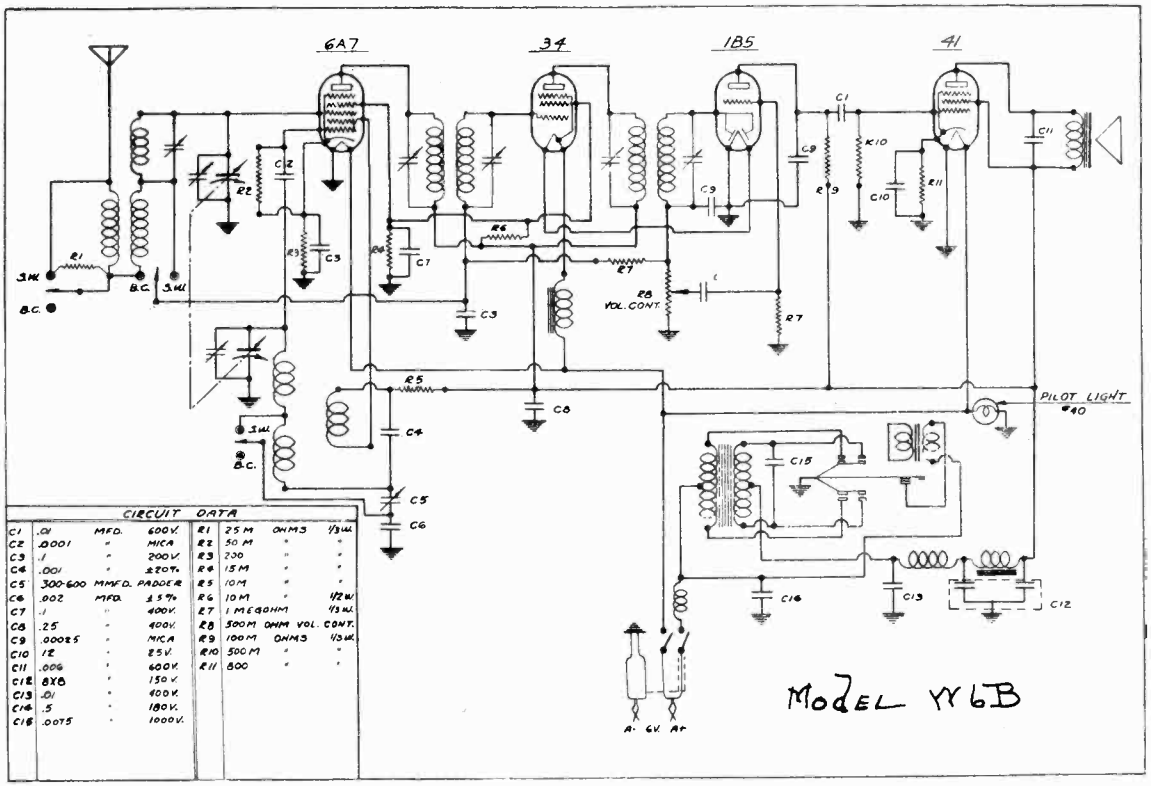
MODELS 1-550 to 1-559



MODELS 2-530 to 2-539

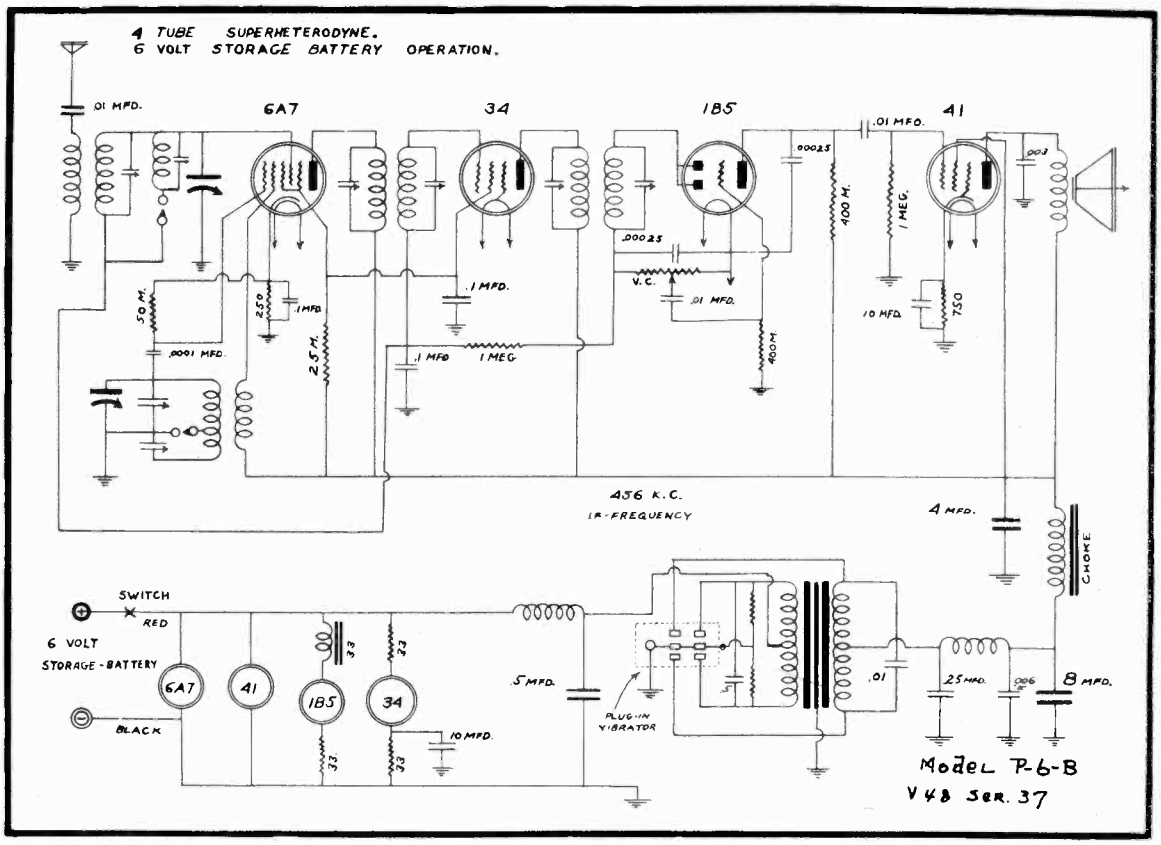
MODEL W6B
MODEL P6B

WATTERSON RADIO MFG. CO.



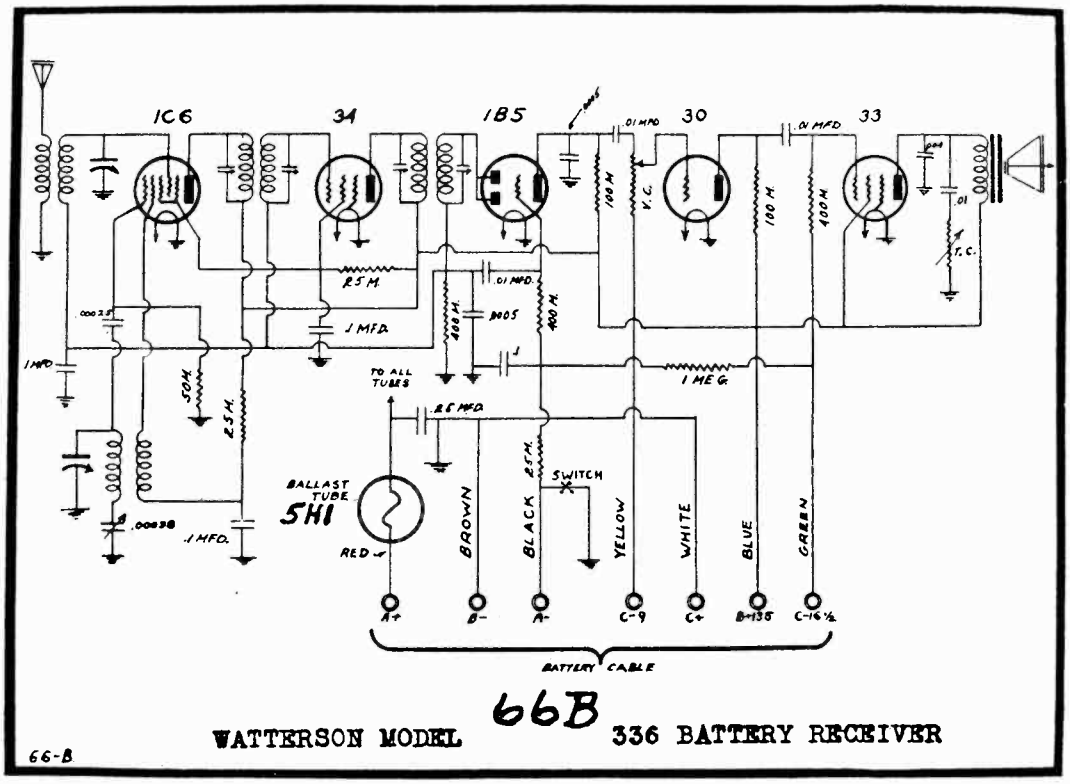
CIRCUIT DATA

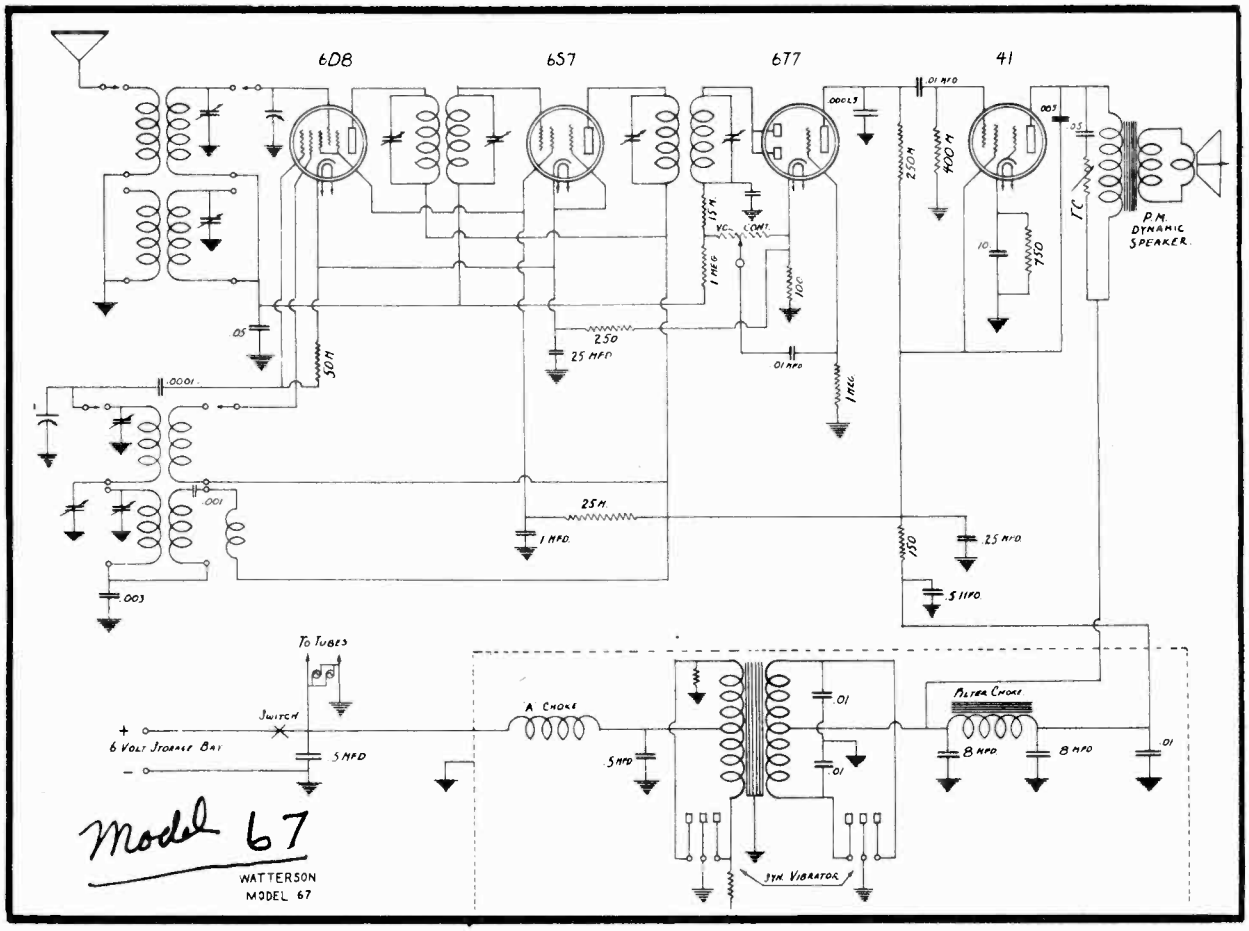
C1	.01	MFD.	600V.	R1	25 M	OHMS	1/3W.
C2	.0001	"	MICA	R2	50 M	"	"
C3	.1	"	200V.	R3	200	"	"
C4	.001	"	±20%	R4	1.5M	"	"
C5	300-600	MMFD.	PADDER	R5	10M	"	"
C6	.002	MFD.	±5%	R6	10 M	"	1/2W.
C7	.1	"	400V.	R7	1 MEGOHM		1/3W.
C8	.25	"	400V.	R8	500M OHM	VOL. CONT.	
C9	.00025	"	MICA	R9	100M	OHMS	1/3W.
C10	.12	"	25V.	R10	500M	"	"
C11	.006	"	600V.	R11	800	"	"
C12	8X8	"	150V.				
C13	.01	"	400V.				
C14	.5	"	180V.				
C15	.0075	"	1000V.				



MODEL 66B
MODEL 67

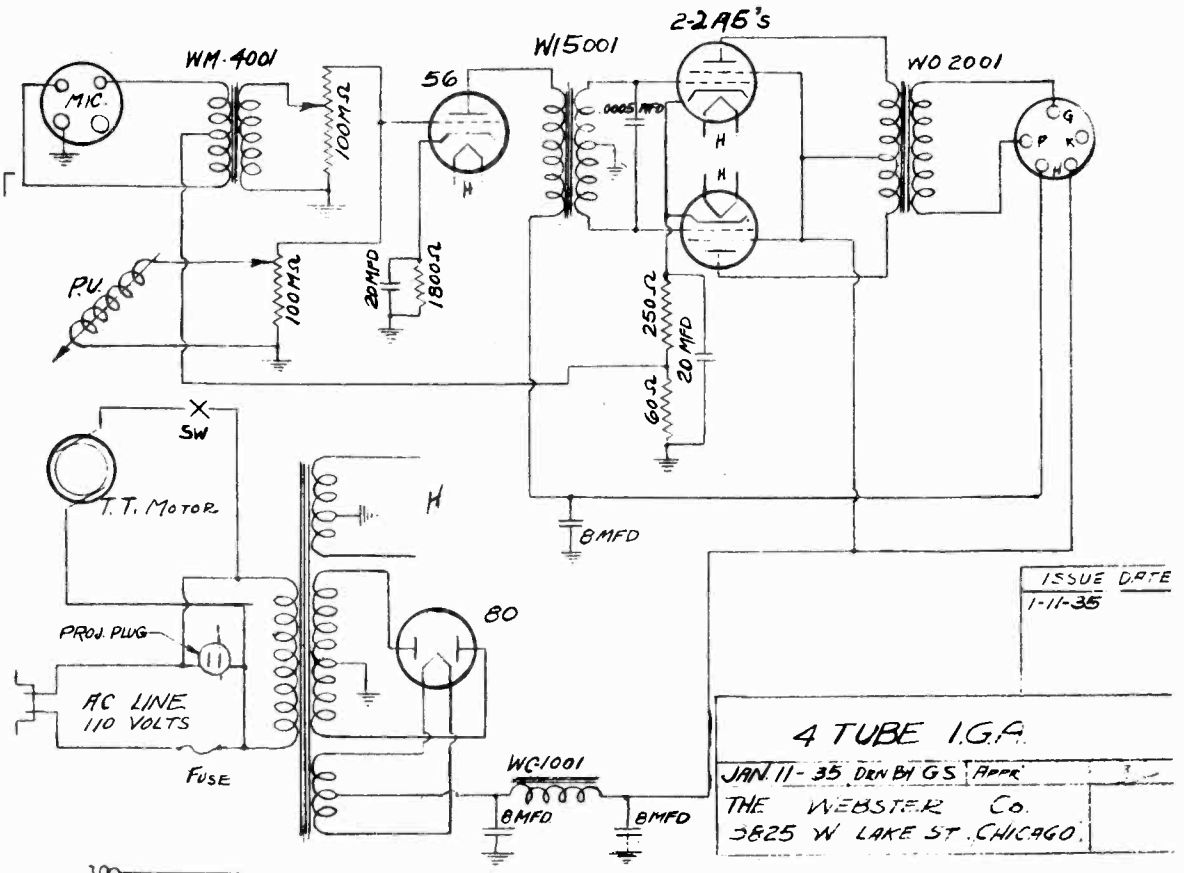
WATTERSON RADIO MFG. CO.

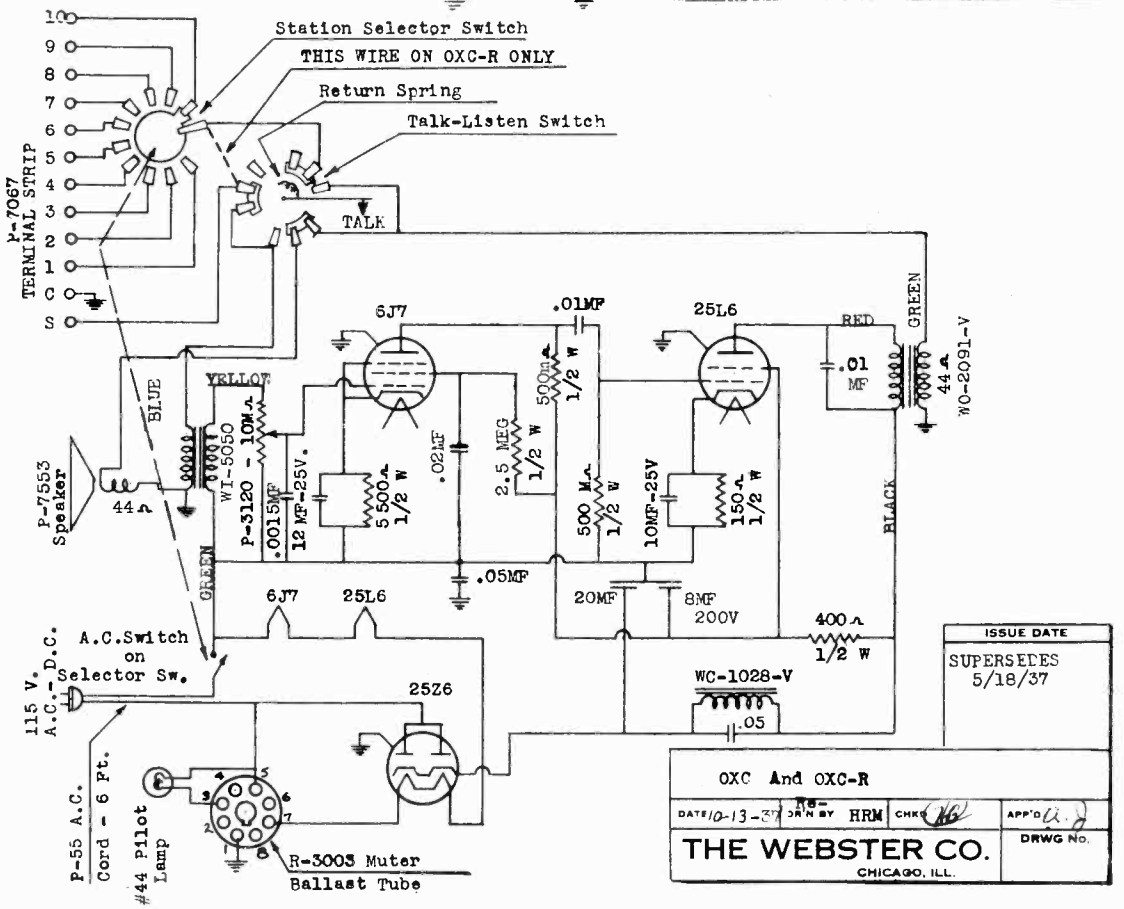




MODEL 4-Tube IGA
MODELS OXC, OXC-R

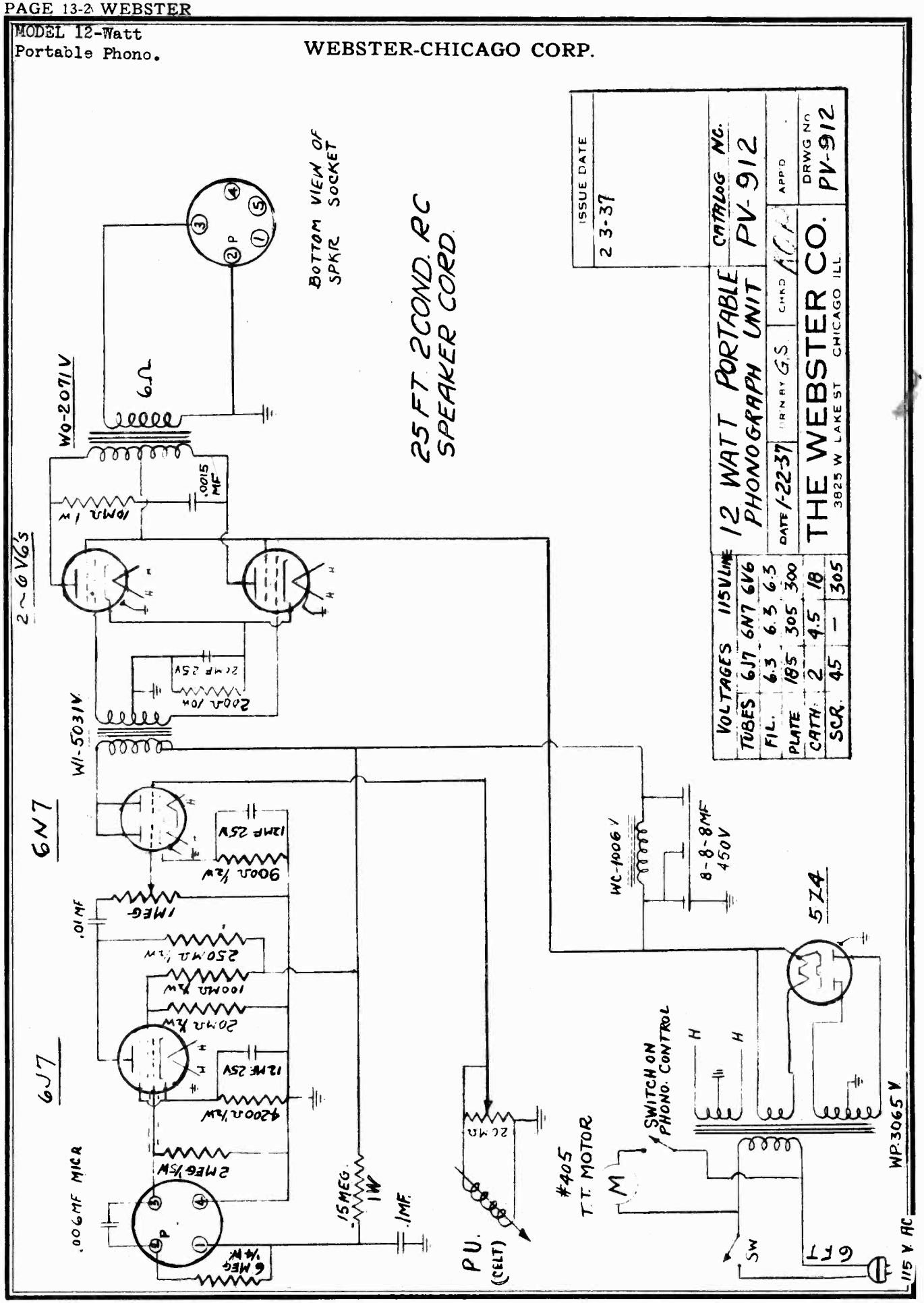
WEBSTER-CHICAGO CORP.





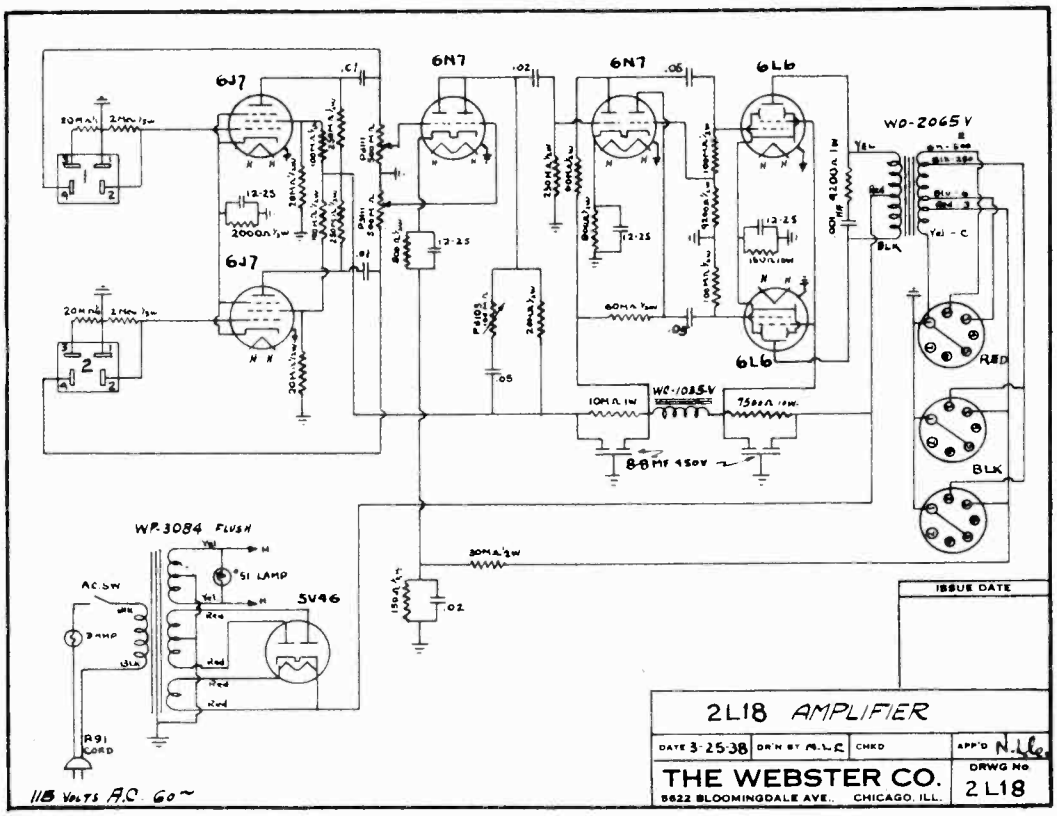
MODEL 12-Watt
Portable Phono.

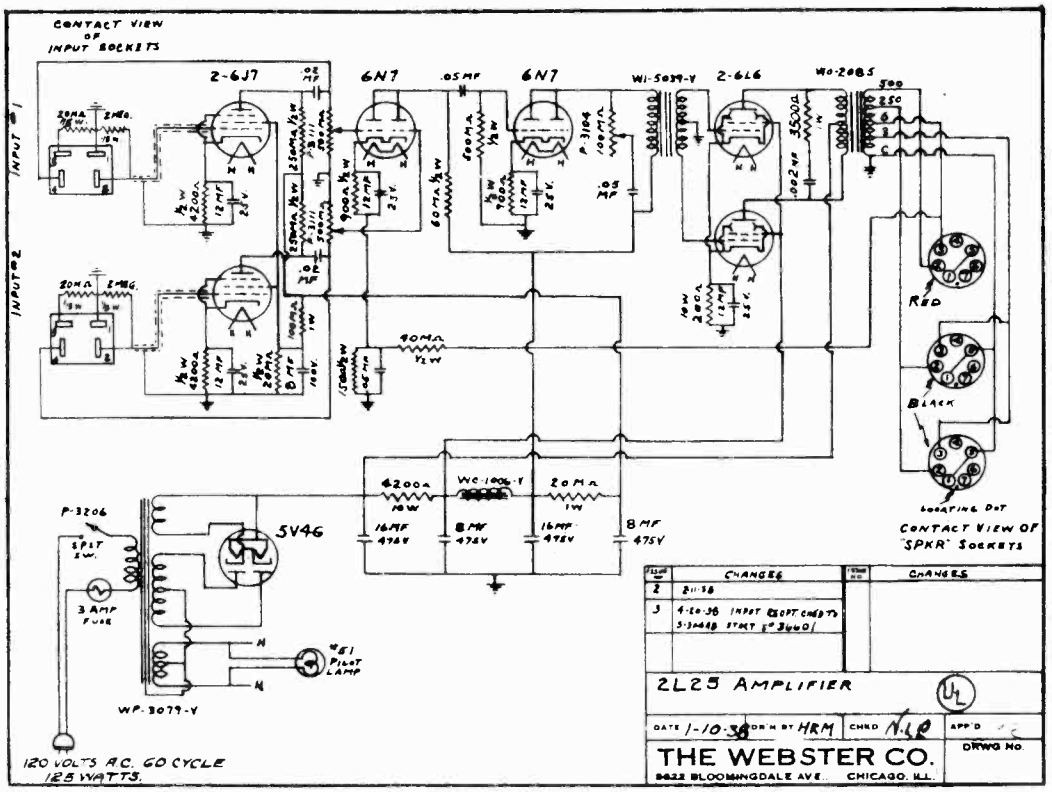
WEBSTER-CHICAGO CORP.



MODEL 2L18
MODEL 2L25

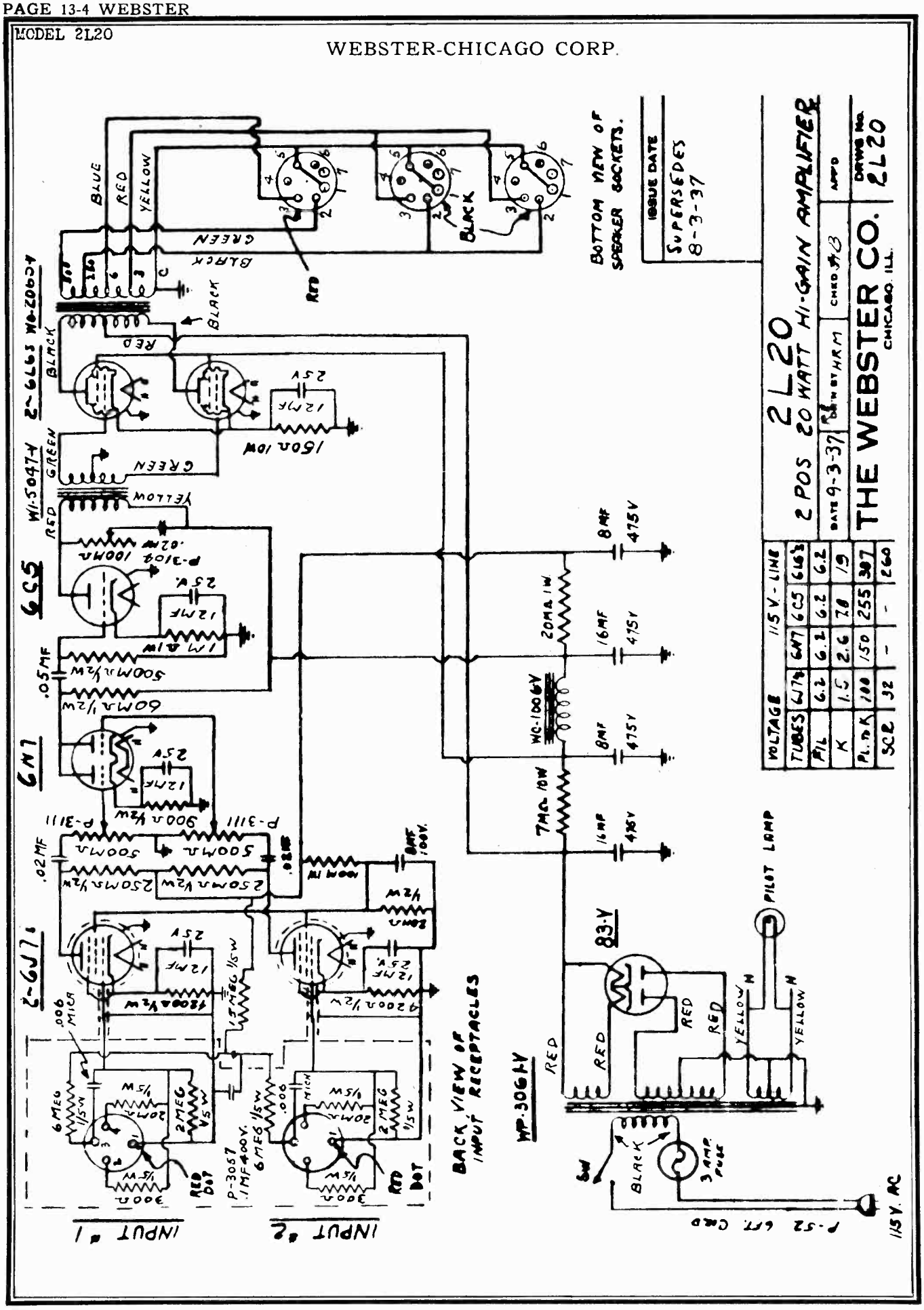
WEBSTER-CHICAGO CORP.





MODEL 2L20

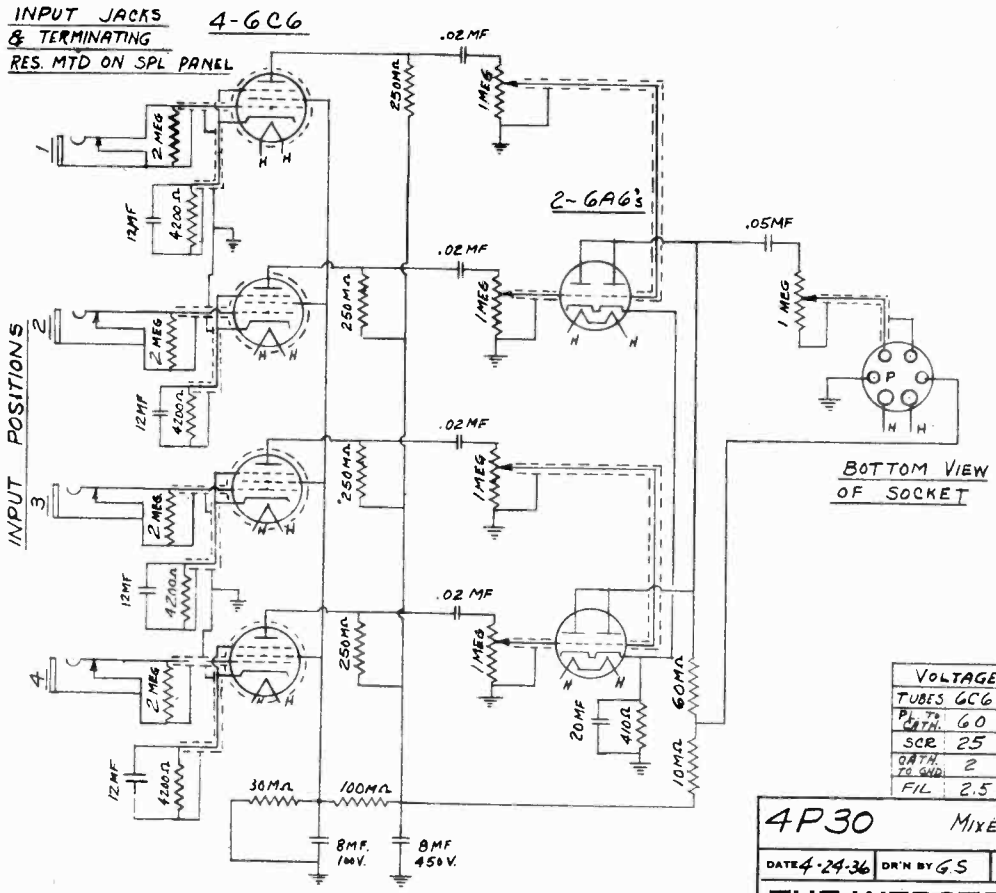
WEBSTER-CHICAGO CORP.



VOLTAGE 115 V. - LINE					
TUBES	6J7	6N7	6C5	6L6	
P/L	6.2	6.2	6.2	6.2	
K	1.5	2.6	7.0	19	
PL. DK	100	150	255	307	
SCR	32	-	-	260	

WEBSTER-CHICAGO CORP.

MODEL 4P30
Mixer, Amplifier



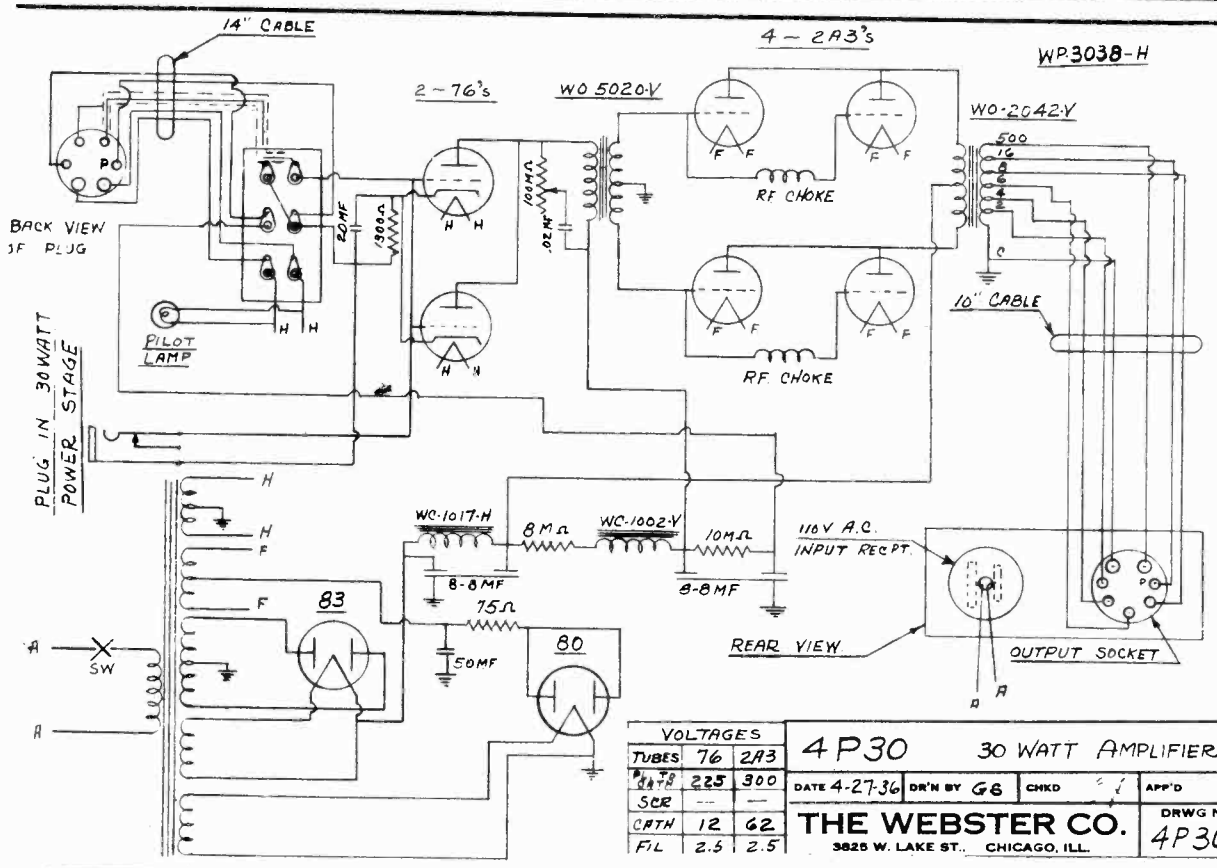
VOLTAGES			ISSUE DATE
TUBES	6C6	6A6	4-29-36
PLATE TO CATH.	60	40	
SCR	25	—	
CATH TO GND	2	1.5	
FIL	2.5	2.5	

4P30 MIXER CIRCUIT

DATE 4-24-36 | DR'N BY G.S | CHKD | APP'D

THE WEBSTER CO.
3825 W. LAKE ST., CHICAGO, ILL.

DRWG No. 4P30-1



VOLTAGES			
TUBES	76	2A3	
PLATE TO CATH	225	300	
SCR	—	—	
CATH	12	62	
FIL	2.5	2.5	

4P30 30 WATT AMPLIFIER

DATE 4-27-36 | DR'N BY GB | CHKD | APP'D

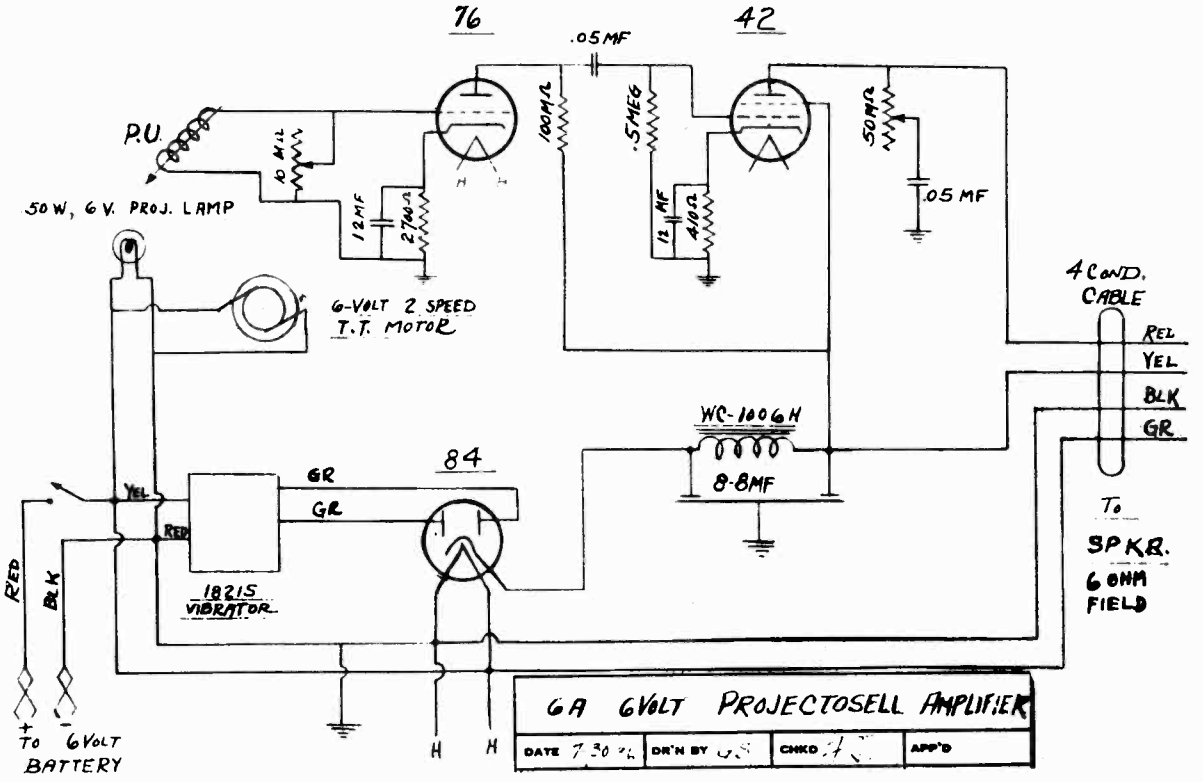
THE WEBSTER CO.
3825 W. LAKE ST., CHICAGO, ILL.

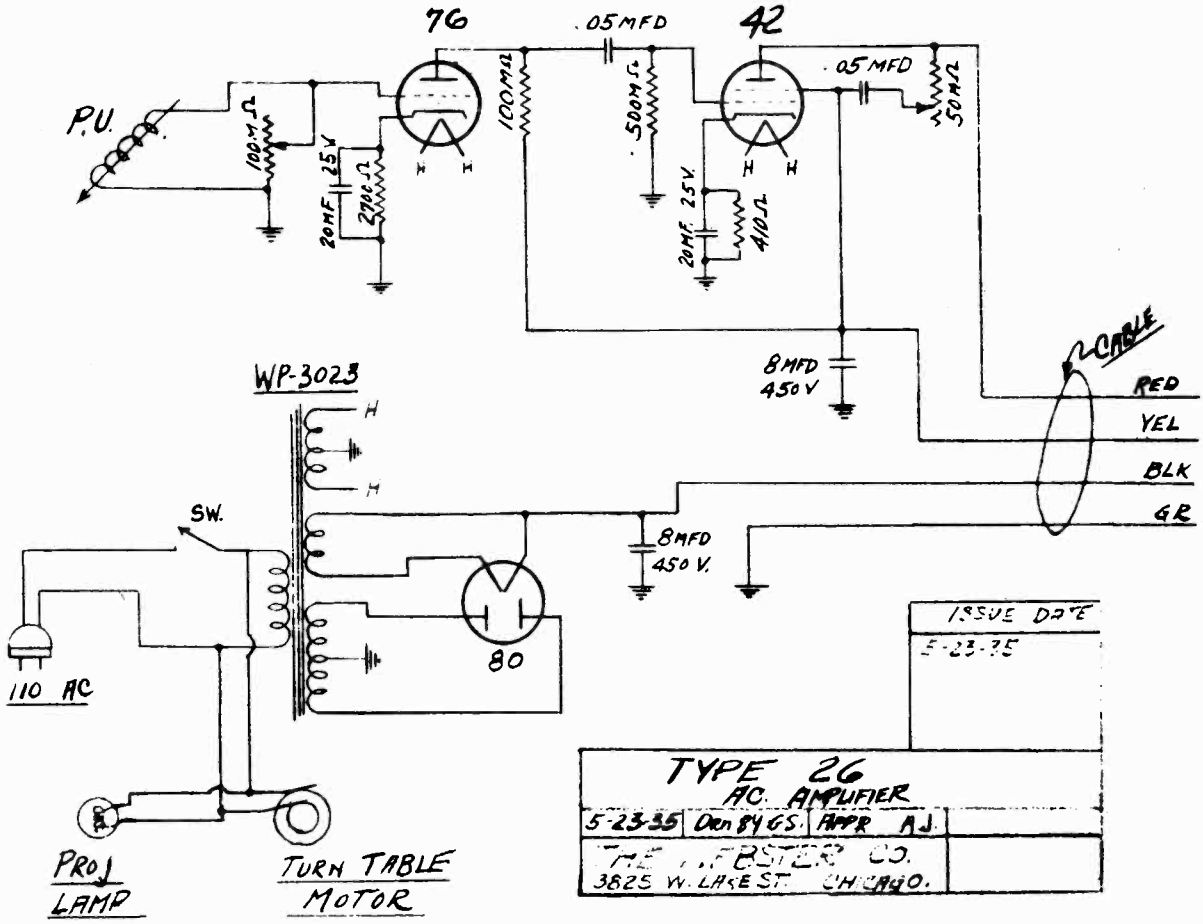
DRWG No. 4P30-2

MODEL 6A,6V
Projectosell Ampl.

WEBSTER-CHICAGO CORP.

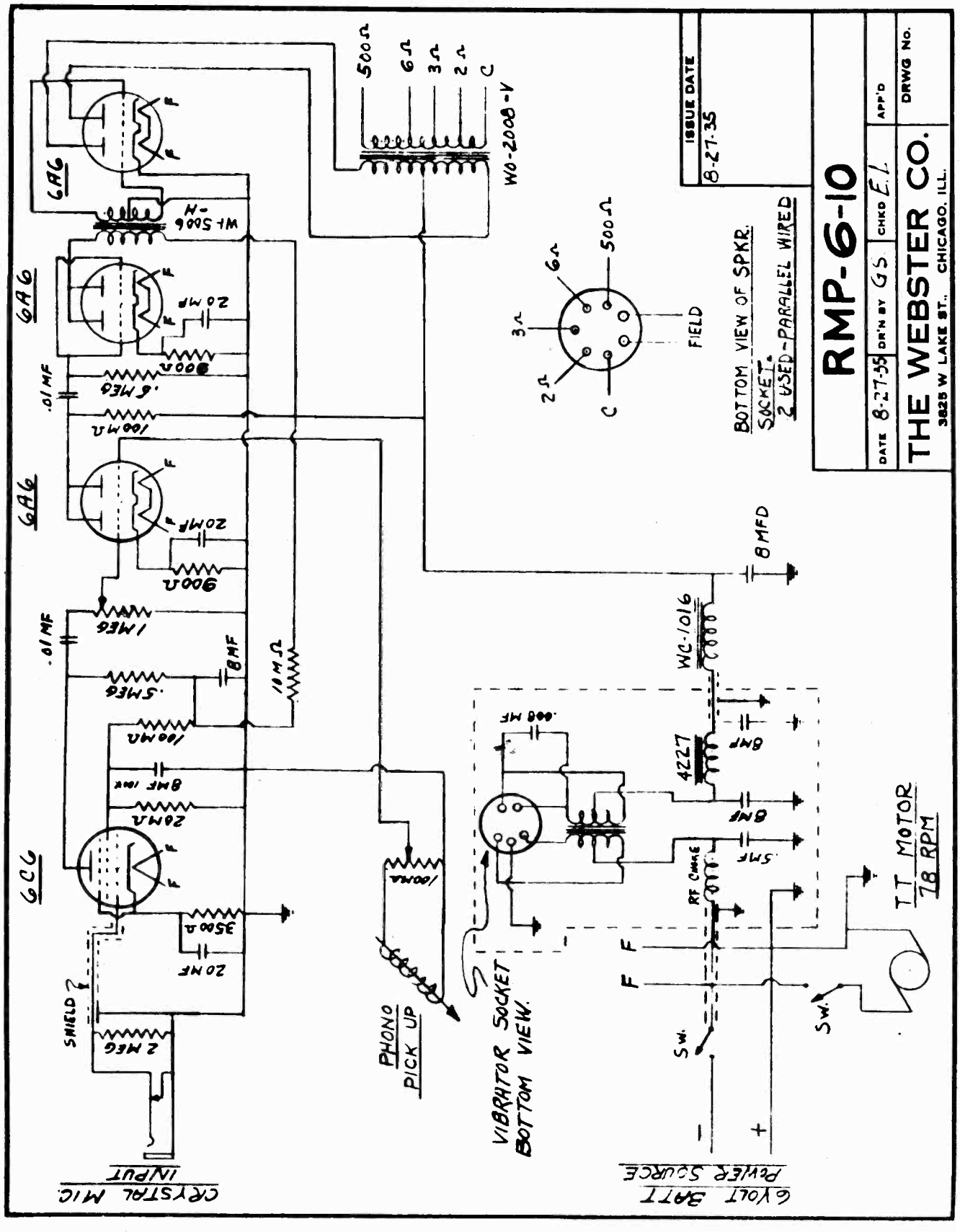
MODEL 26 A-C
Amplifier





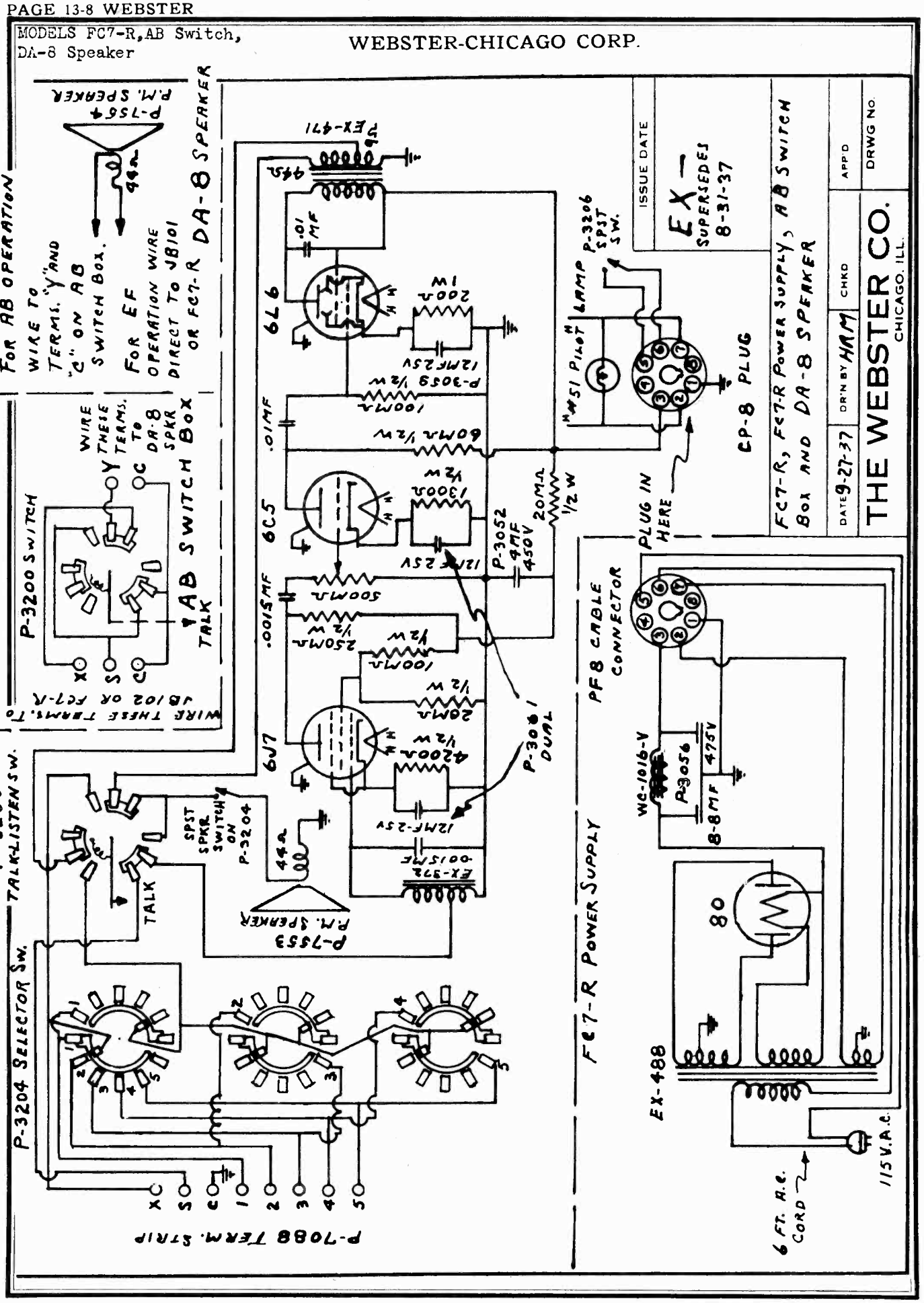
MODEL. RMP-6-10

WEBSTER-CHICAGO CORP.



MODELS FC7-R, AB Switch, DA-8 Speaker

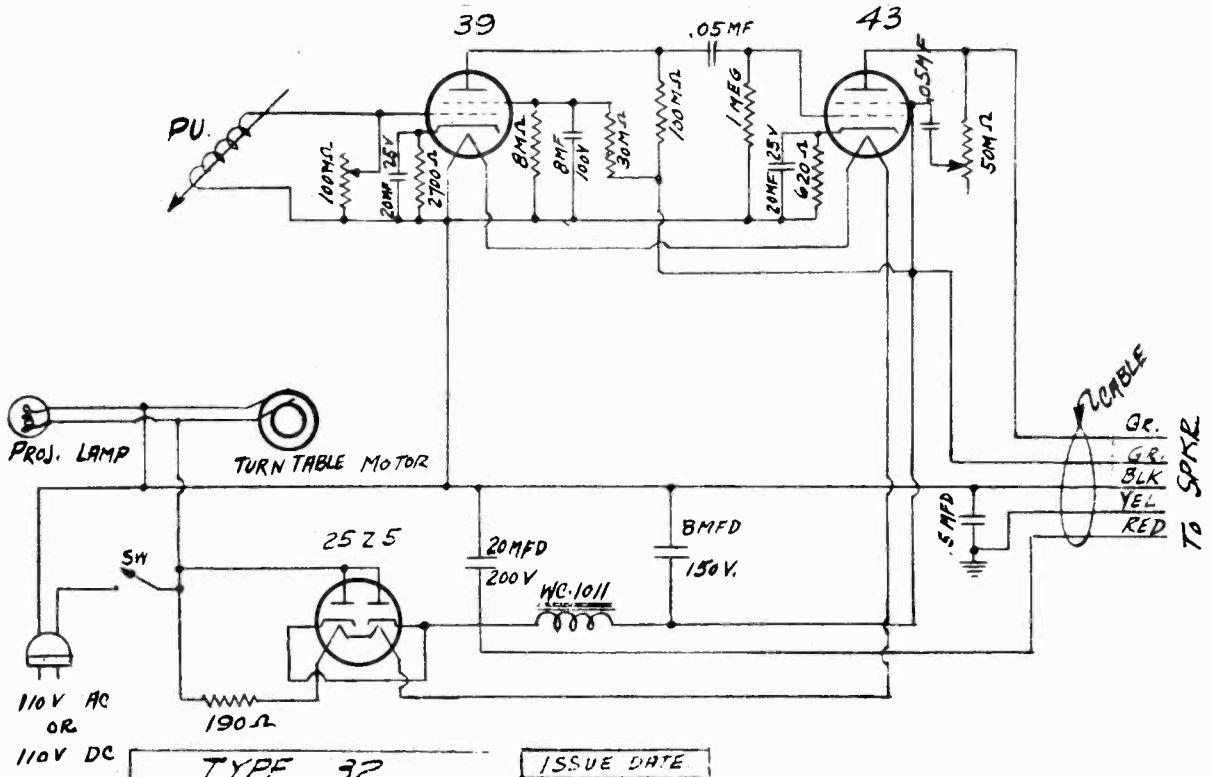
WEBSTER-CHICAGO CORP.



MODEL 32 AC-DC
Amplfier

WEBSTER-CHICAGO CORP.

MODEL AP-32 AC-DC
Amplifier

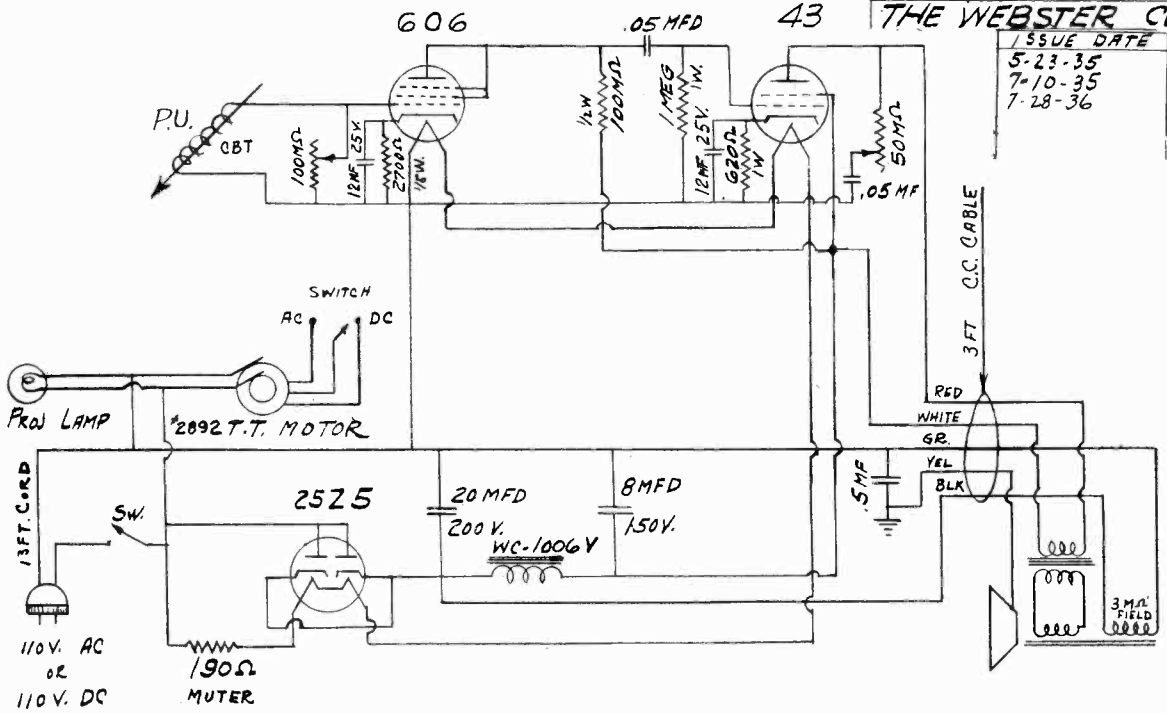


TYPE 32 AC-DC AMPLIFIER		
5-23-35	DRN BY GS	APPR. A.J.
THE WEBSTER Co. 3825 W. LAKE ST., CHICAGO.		

ISSUE DATE
5-23-35

TYPE AP-32 AC-DC AMPLIFIER		
5-23-35	DRN BY GS	APPR.
THE WEBSTER Co.		

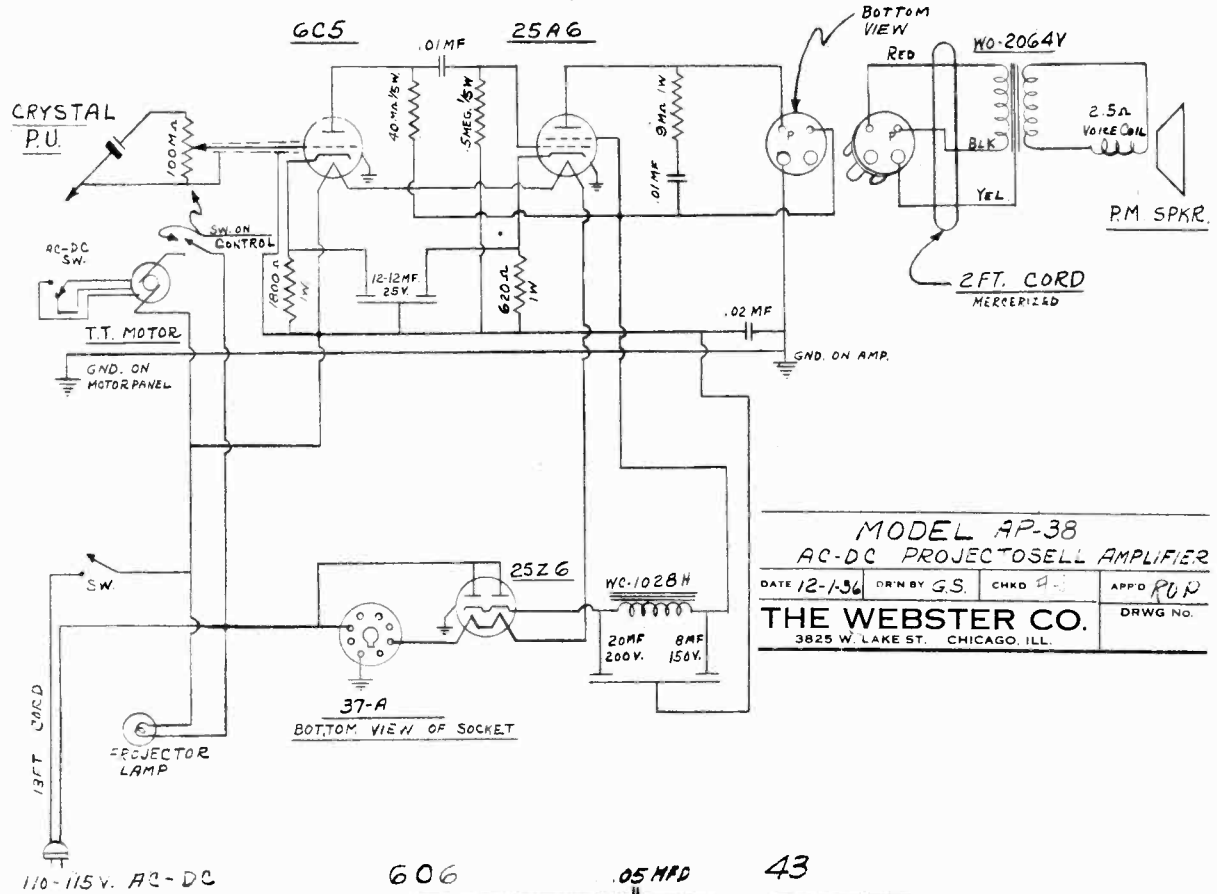
ISSUE DATE
5-23-35
7-10-35
7-28-36



MODEL AP-38 AC-DC
Projectosell Ampl.

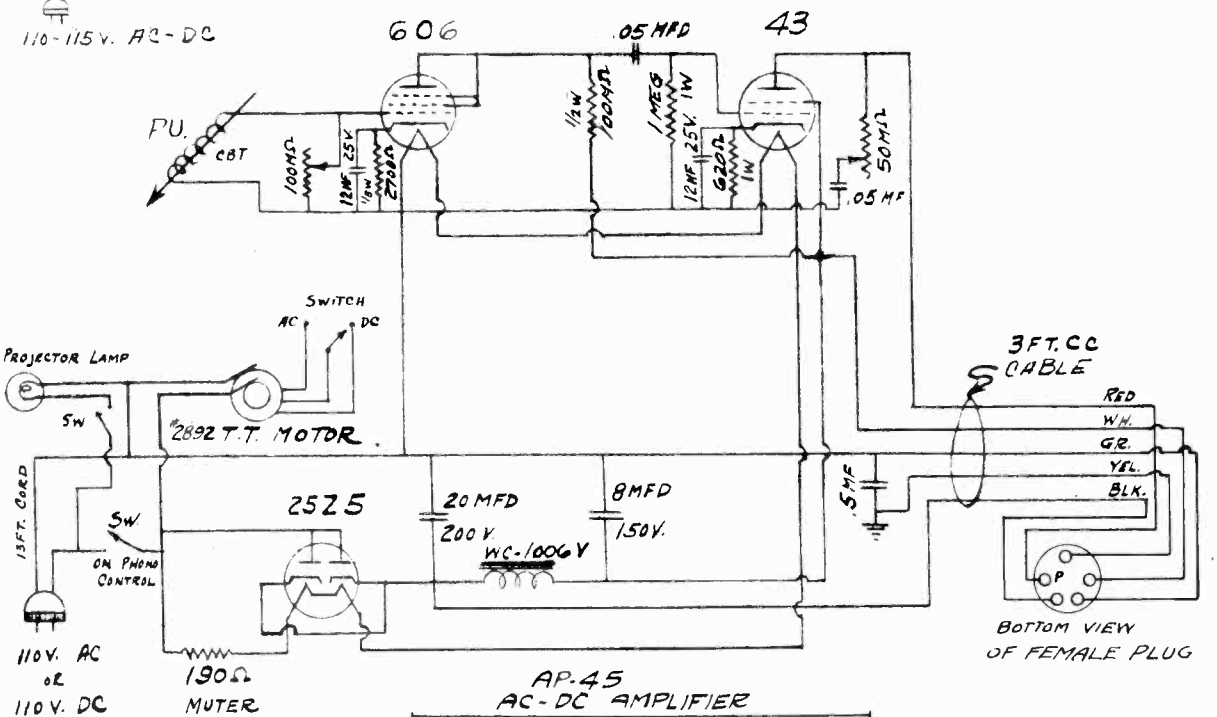
WEBSTER-CHICAGO CORP.

MODEL AP-45 AC-DC
Amplifier



MODEL AP-38
AC-DC PROJECTOSELL AMPLIFIER

DATE 12-1-36	DR'N BY G.S.	CHK'D A.	APP'D RUP
THE WEBSTER CO. 3825 W. LAKE ST. CHICAGO, ILL.			DRWG NO.

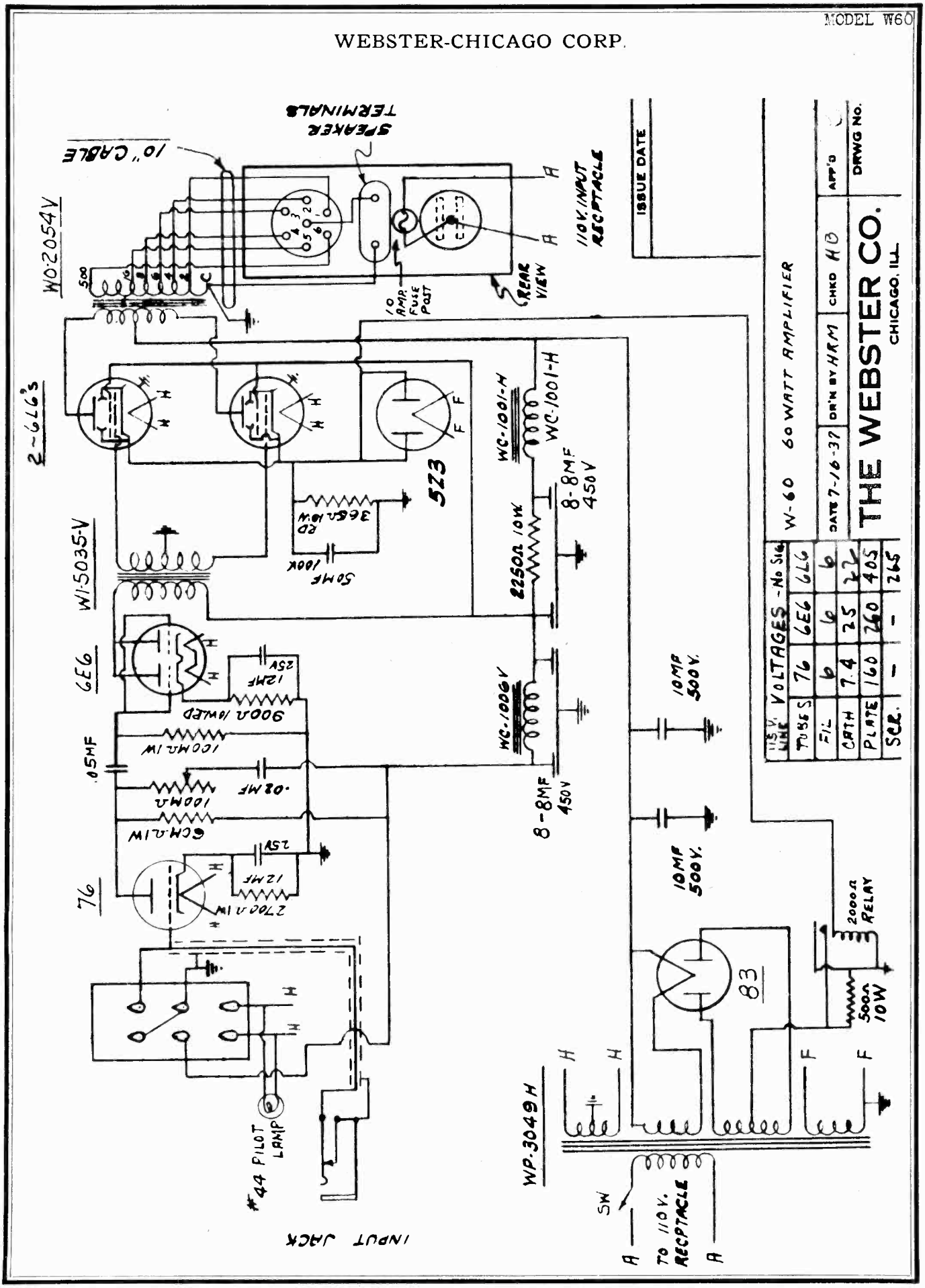


AP-45
AC-DC AMPLIFIER

1-20-36	DR'N BY-G.S.		
THE WEBSTER CO. 3825 W LAKE ST. CHICAGO.			

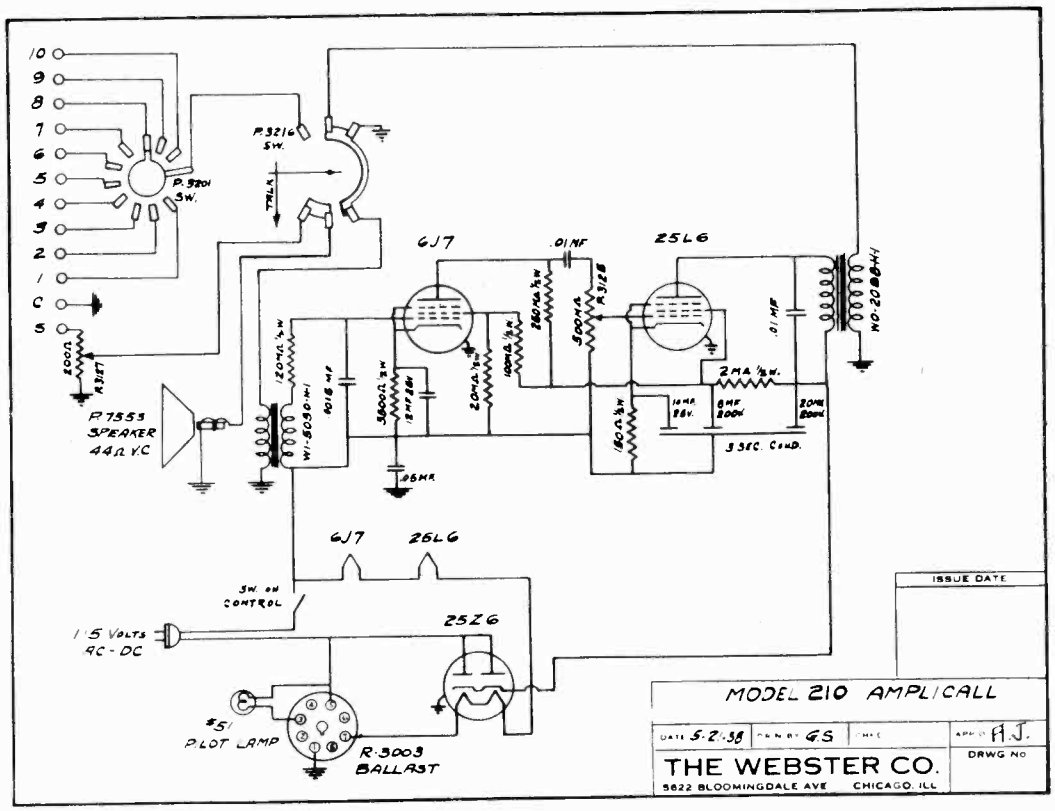
MODEL W60

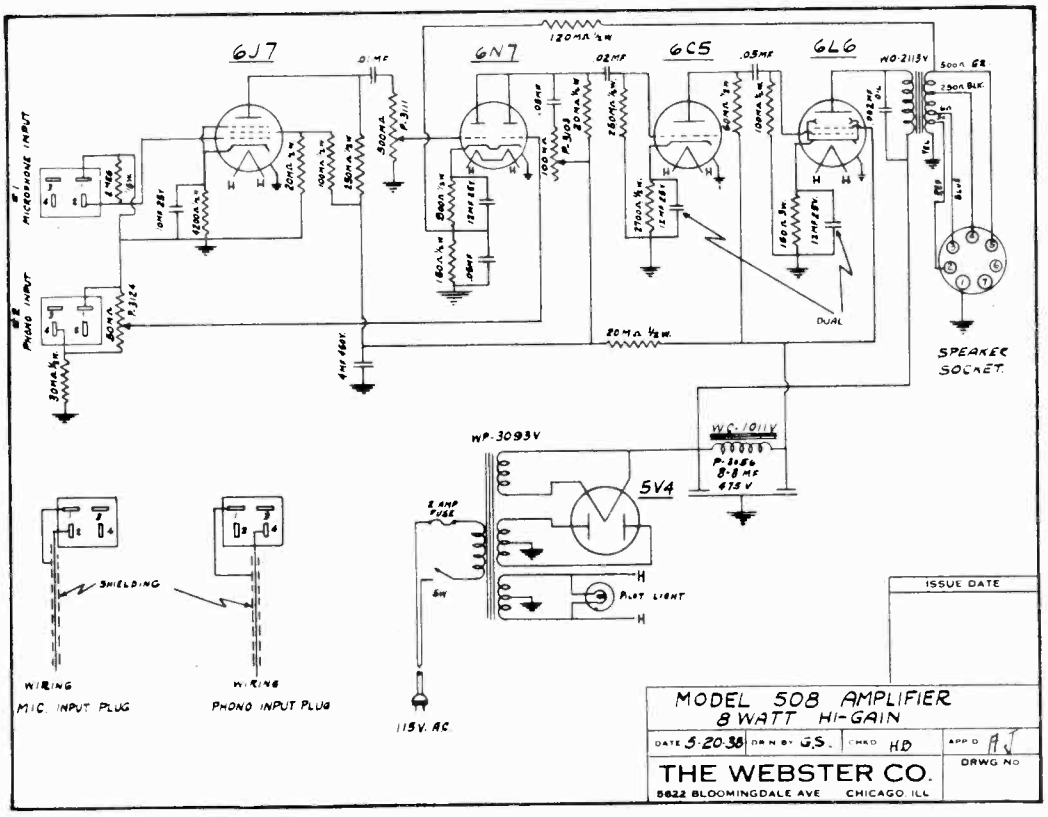
WEBSTER-CHICAGO CORP.



MODEL 210 Amplicall
MODEL 508 Amplifier

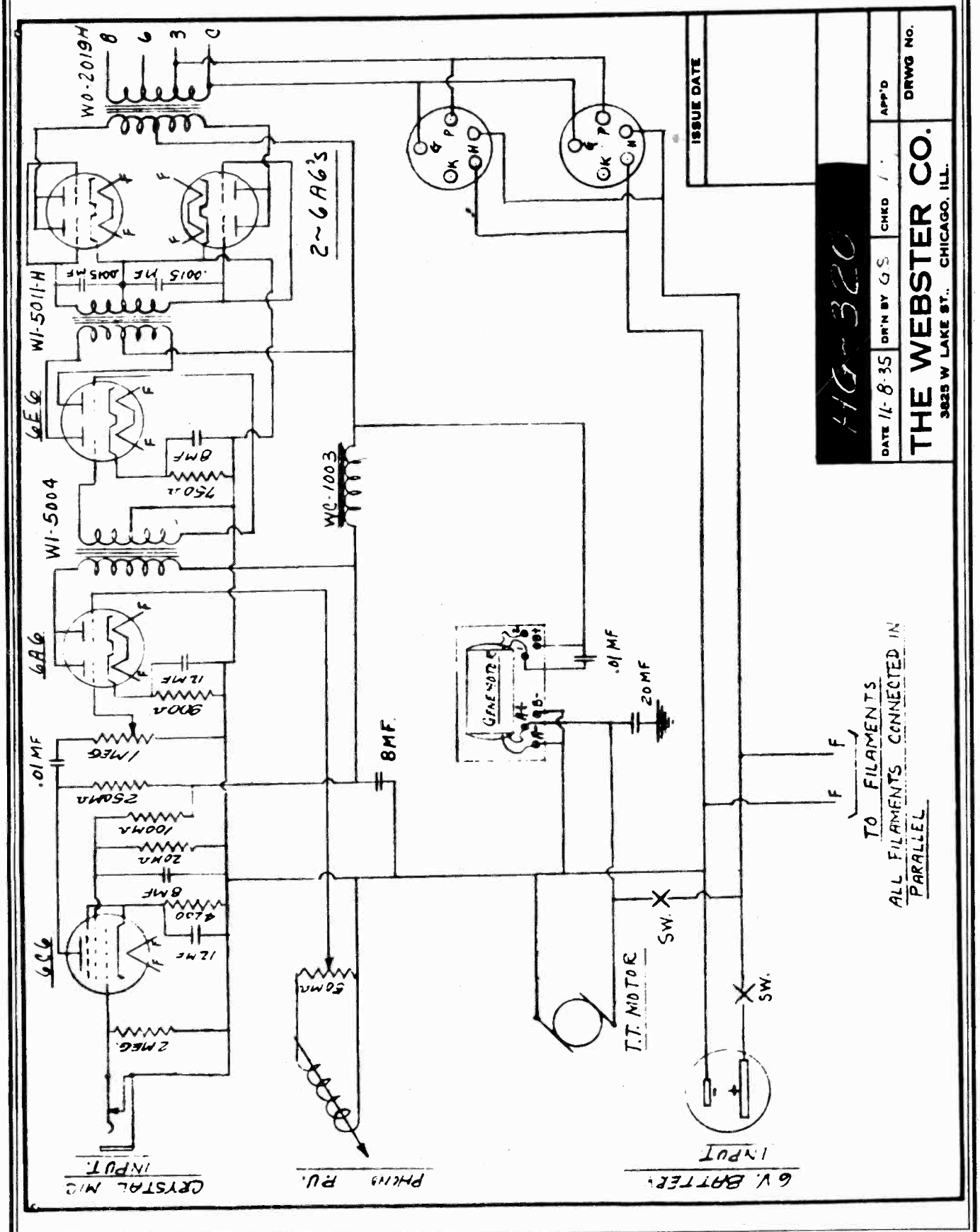
WEBSTER-CHICAGO CORP.





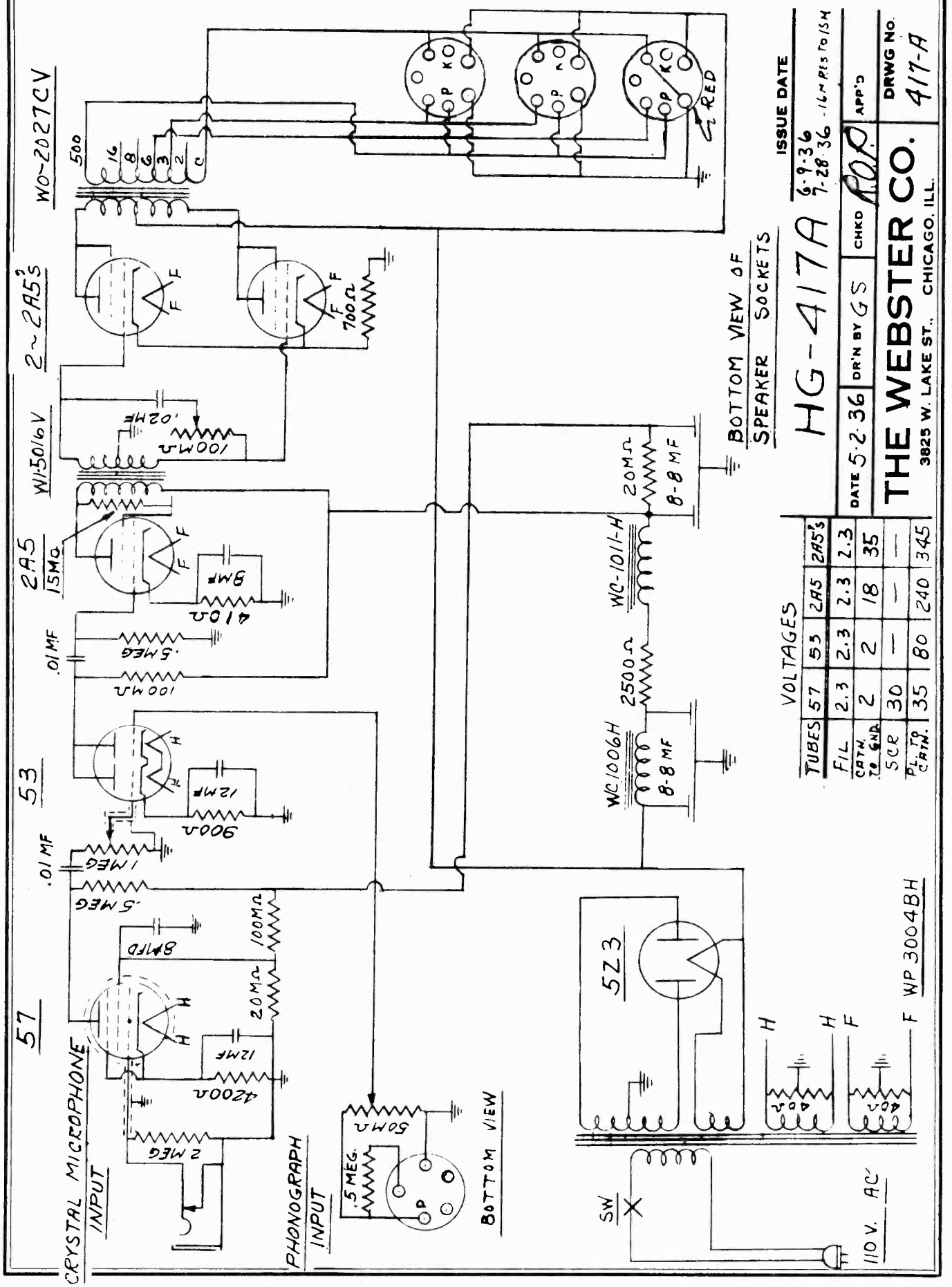
MODEL HG-320

WEBSTER-CHICAGO CORP.



MODEL HG-417A

WEBSTER-CHICAGO CORP.



VOLTAGES					
TUBES	57	53	2A5	2A5's	
FIL	2.3	2.3	2.3	2.3	
CATH. TO GND.	2	2	18	35	
SCR	30	—	—	—	
PL. TO CATH.	35	80	240	345	

ISSUE DATE 6-9-36 7-28-36 - ILM PES TO ISM

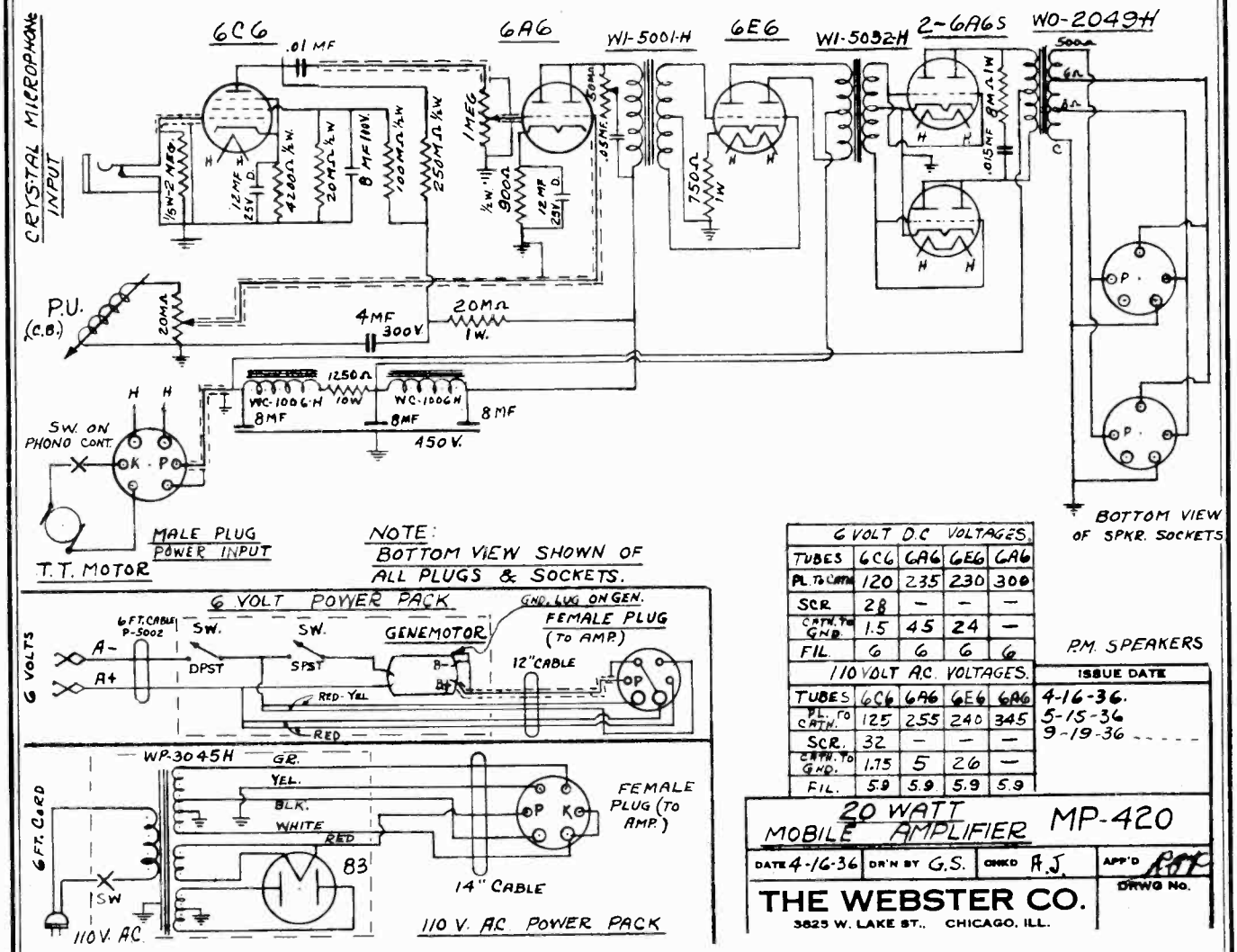
DATE 5-2-36 | DR'N BY G S | CHKD | APP'D

THE WEBSTER CO. 3825 W. LAKE ST., CHICAGO, ILL.

HG-417A

DRWG NO. 417-A

WEBSTER-CHICAGO CORP.



6 VOLT D.C VOLTAGES.				
TUBES	6C6	6A6	6E6	6A6
PL. TO CATH.	120	235	230	300
SCR.	28	—	—	—
CATH. TO GND.	1.5	45	24	—
FIL.	6	6	6	6

110 VOLT A.C. VOLTAGES.				
TUBES	6C6	6A6	6E6	6A6
PL. TO CATH.	125	255	240	345
SCR.	32	—	—	—
CATH. TO GND.	1.75	5	26	—
FIL.	5.9	5.9	5.9	5.9

P.M. SPEAKERS

ISSUE DATE
4-16-36.
5-15-36
9-19-36

20 WATT MOBILE AMPLIFIER MP-420

DATE 4-16-36	DR'N BY G.S.	CHK'D A.J.	APP'D

THE WEBSTER CO.
3825 W. LAKE ST., CHICAGO, ILL.
DRWG No.

REPLACEMENT PARTS

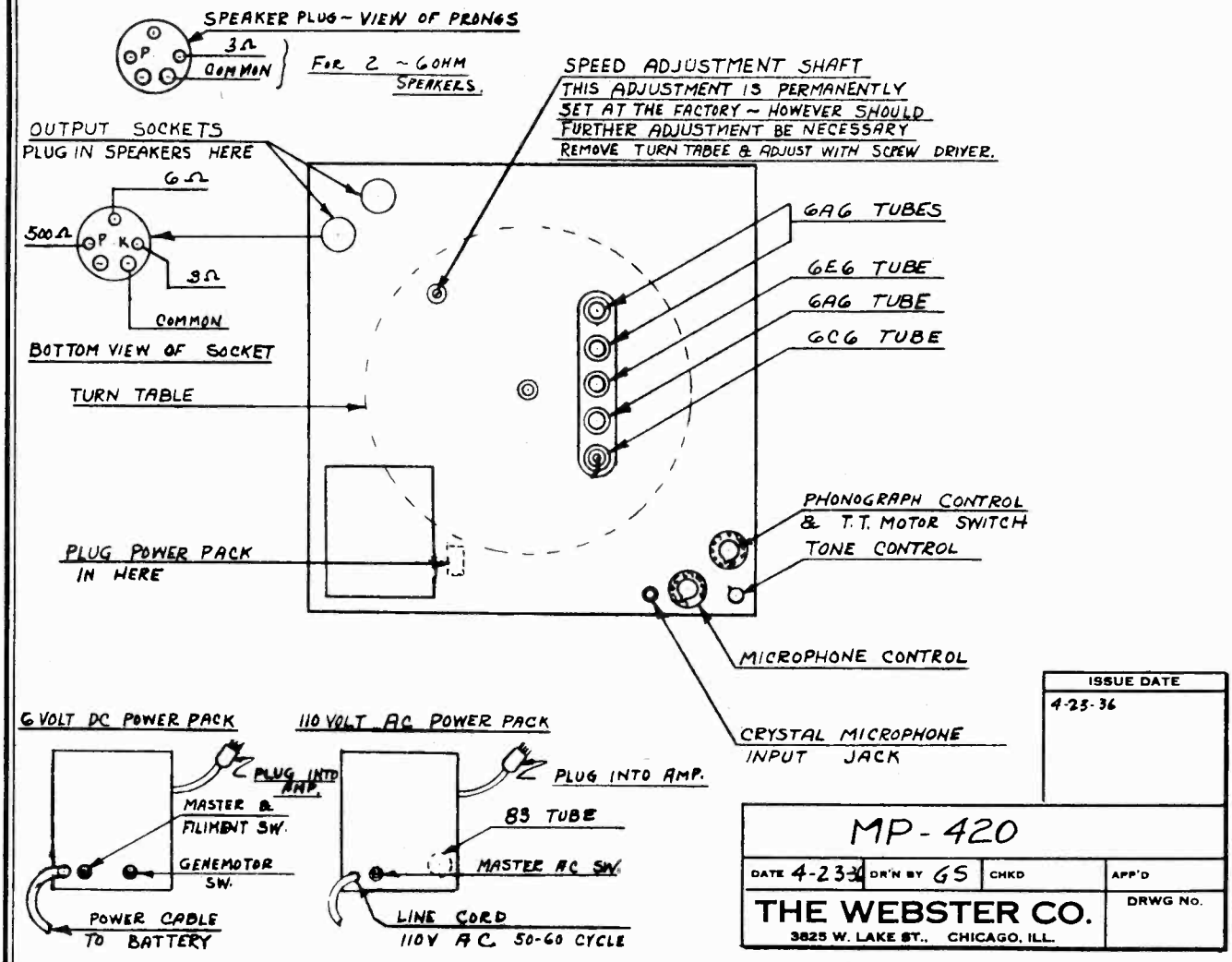
Part		List Price	Part		List Price
WO-2049H	Output Transformer	$5.20	20 M	Resistor 1 W Carbon	$ .20
WI-5001H	Coupling Transformer	5.70	8 M	Resistor 1 W Carbon	.20
WI-5032H	Coupling Transformer	4.65	1250	Resistor 10 W RD	.50
WP-3045H	Power Transformer	9.90	8-8-8 MF	450V Condenser 3 Sec.	3.85
WC-1006H	Choke	2.30	12-12 MF	25V Condenser Dual	1.10
20 M	Phono Control W/Switch	1.60	8 MF	100V Condenser	1.10
1 Meg	Microphone Control	1.20	4 MF	300V Condenser	1.10
50 M	Tone Control	1.20	.015 MF	600V Condenser	.25
750	Resistor 1 W Carbon	.20	.05 MF	600V Condenser	.30
100 M	Resistor ½ W Carbon	.20	.01 MF	600V Condenser	.25
250 M	Resistor ½ W Carbon	.20	2 A	Jack (Carter)	.72
900	Resistor ½ W Carbon	.20	#411	Turntable Motor	
4200	Resistor ½ W Carbon	.20		Genemotor (E-2)	40.00
20 M	Resistor ½ W Carbon	.20		Phono Pickup	7.50
2 Meg	Resistor 1/5 W Carbon	.15			

In ordering Replacement Parts give Model and Serial Number of Amplifier.

THE WESTER COMPANY
3825 WEST LAKE STREET,
CHICAGO, ILLINOIS.

MODEL MP-420

WEBSTER-CHICAGO CORP.



ISSUE DATE
4-25-36

MP-420

DATE 4-23-36	DR'N BY GS	CHK'D	APP'D
THE WEBSTER CO. 3825 W. LAKE ST., CHICAGO, ILL.			DRWG No.

Two plug-in power packs are available for the Model MP-420 adaptable for either 6 volts dc or 110 volts ac, requiring 66 watts for the former and 98 watts for the latter.

6-volt power pack: Two switches are mounted on this pack, one marked "Gen On" and the other "Fil". The former controls the genemotor, which should be on only when equipment is in operation. The other switch controls the filaments and acts also as master switch. With all other switches "off" this switch may be left "on keeping the filaments heated for intermittent work where instant response is required. This arrangement effects a saving of battery current.

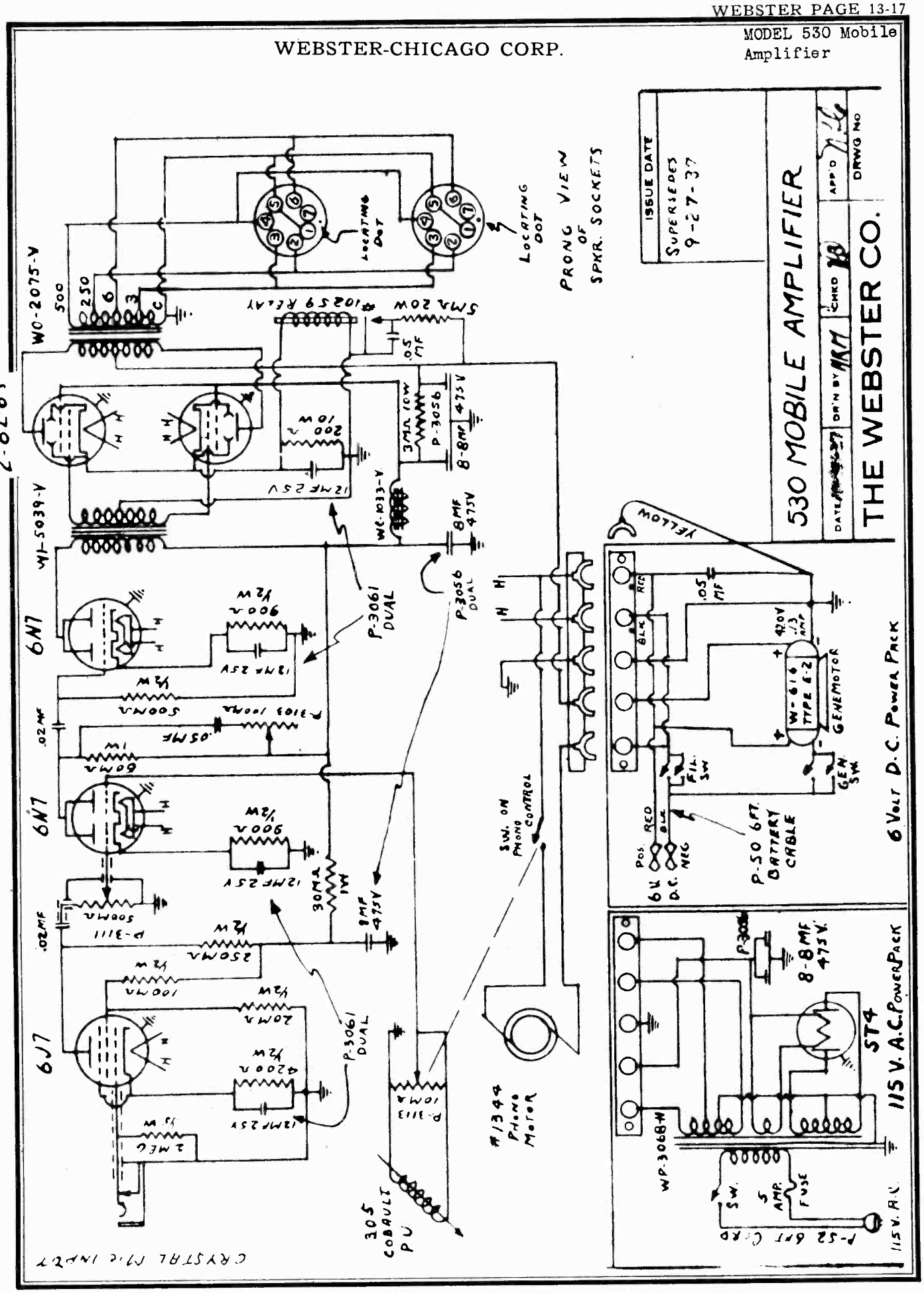
110-volt a-c power pack: One a-c switch controls the entire amplifier and acts also as a master switch. The change from one pack to another is accomplished as follows: remove phonograph turntable, remove 4 screws holding pack in place, lift out and remove plug. Plug-in other pack, slide back into place and replace the 4 mounting screws.

When used on ac the steel case of the amplifier should be grounded to assure stable operation; likewise when it is used in an automobile it is sometimes necessary to connect the steel case of the amplifier to the frame of the car.

Note from the schematic that the output transformer has 3,6, and 500-ohm taps. This system is normally supplied with two 6-ohm speakers, which connect to the 3-ohm tap. If only one 6-ohm speaker is used, it should be connected to the 6-ohm tap. The 500-ohm tap is provided for use when the speakers are located more than 50 feet from the amplifier, in which case a matching transformer should be used at the speaker location.

WEBSTER-CHICAGO CORP.

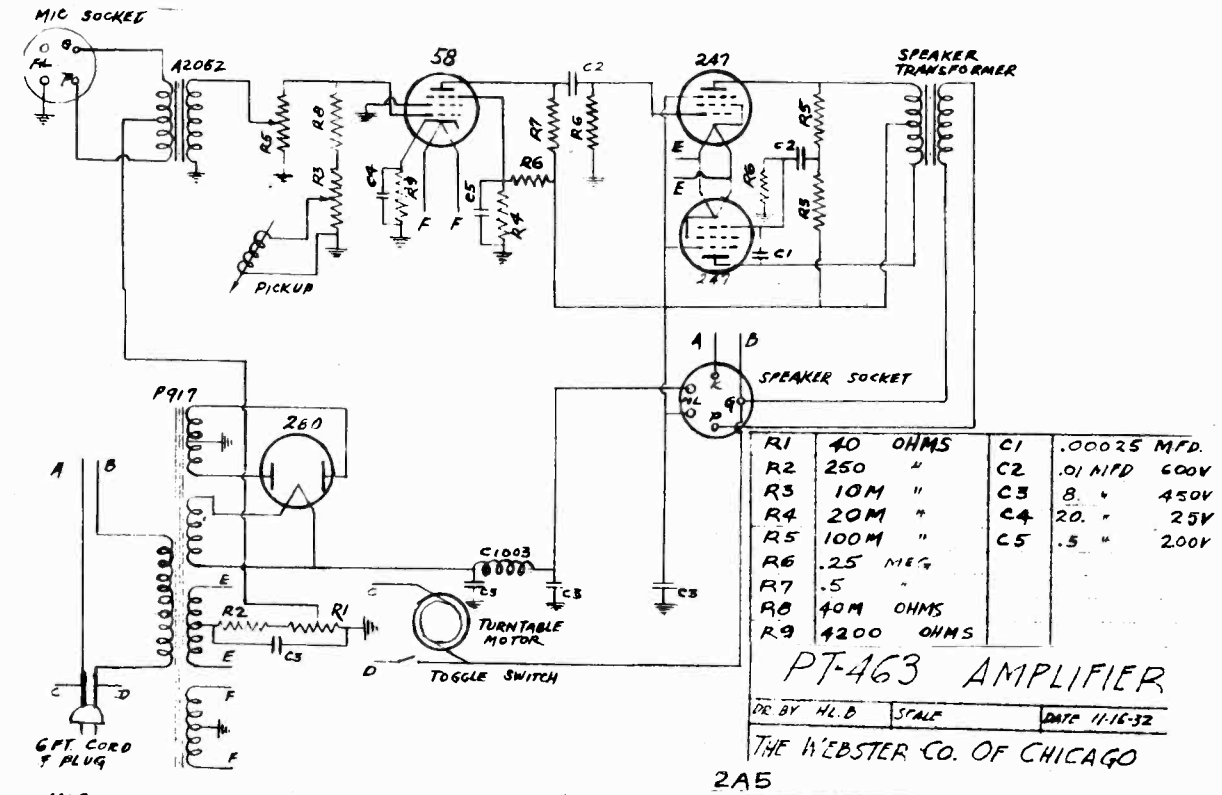
MODEL 530 Mobile Amplifier



MODEL PT-463

WEBSTER-CHICAGO CORP.

MODEL PA-566

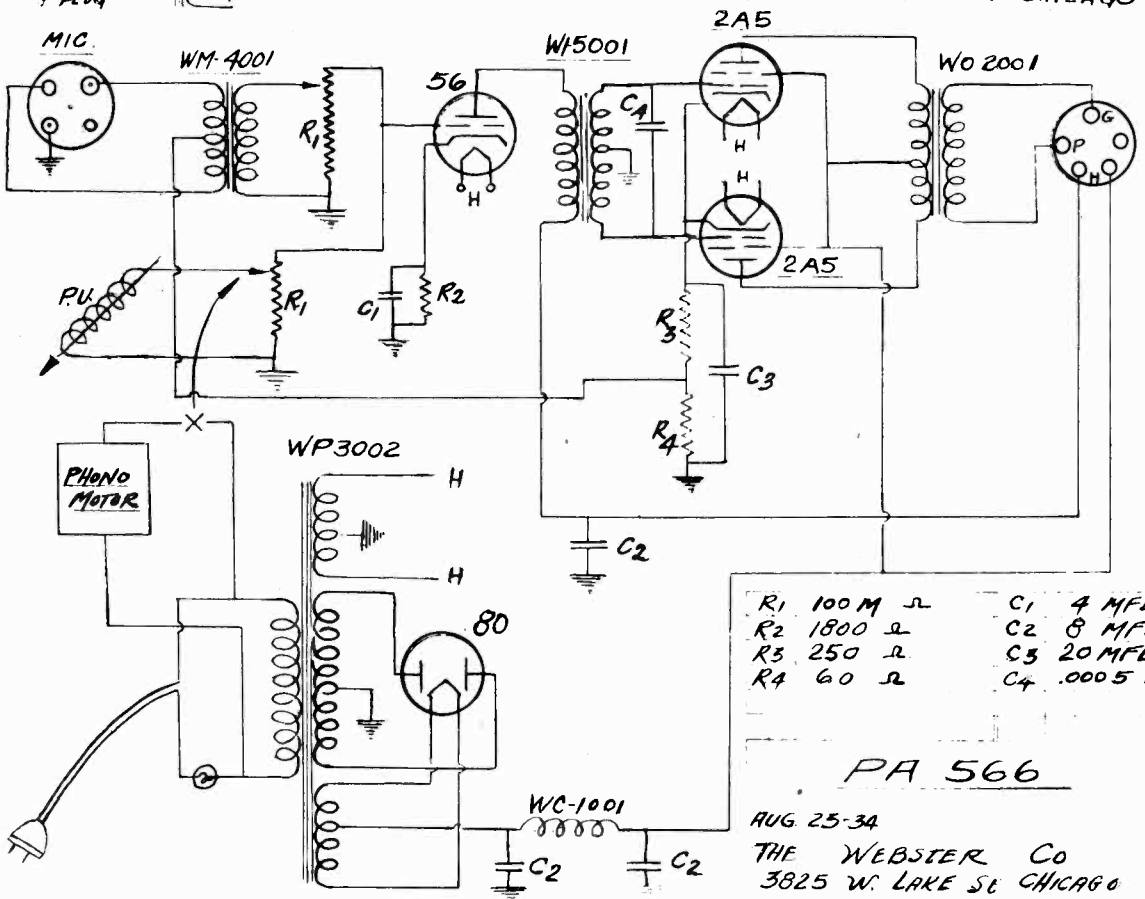


R1	40	OHMS	C1	.00025	MFD.
R2	250	"	C2	.01	MFD 600V
R3	10M	"	C3	8	" 450V
R4	20M	"	C4	20.	" 25V
R5	100M	"	C5	.5	" 200V
R6	.25	MEG			
R7	.5	"			
R8	40M	OHMS			
R9	4200	OHMS			

PT-463 AMPLIFIER

DR BY H.L.B | SCALE | DATE 11-16-32

THE WEBSTER CO. OF CHICAGO



R1	100M Ω	C1	4 MFD.
R2	1800 Ω	C2	8 MFD.
R3	250 Ω	C3	20 MFD.
R4	60 Ω	C4	.0005 MF

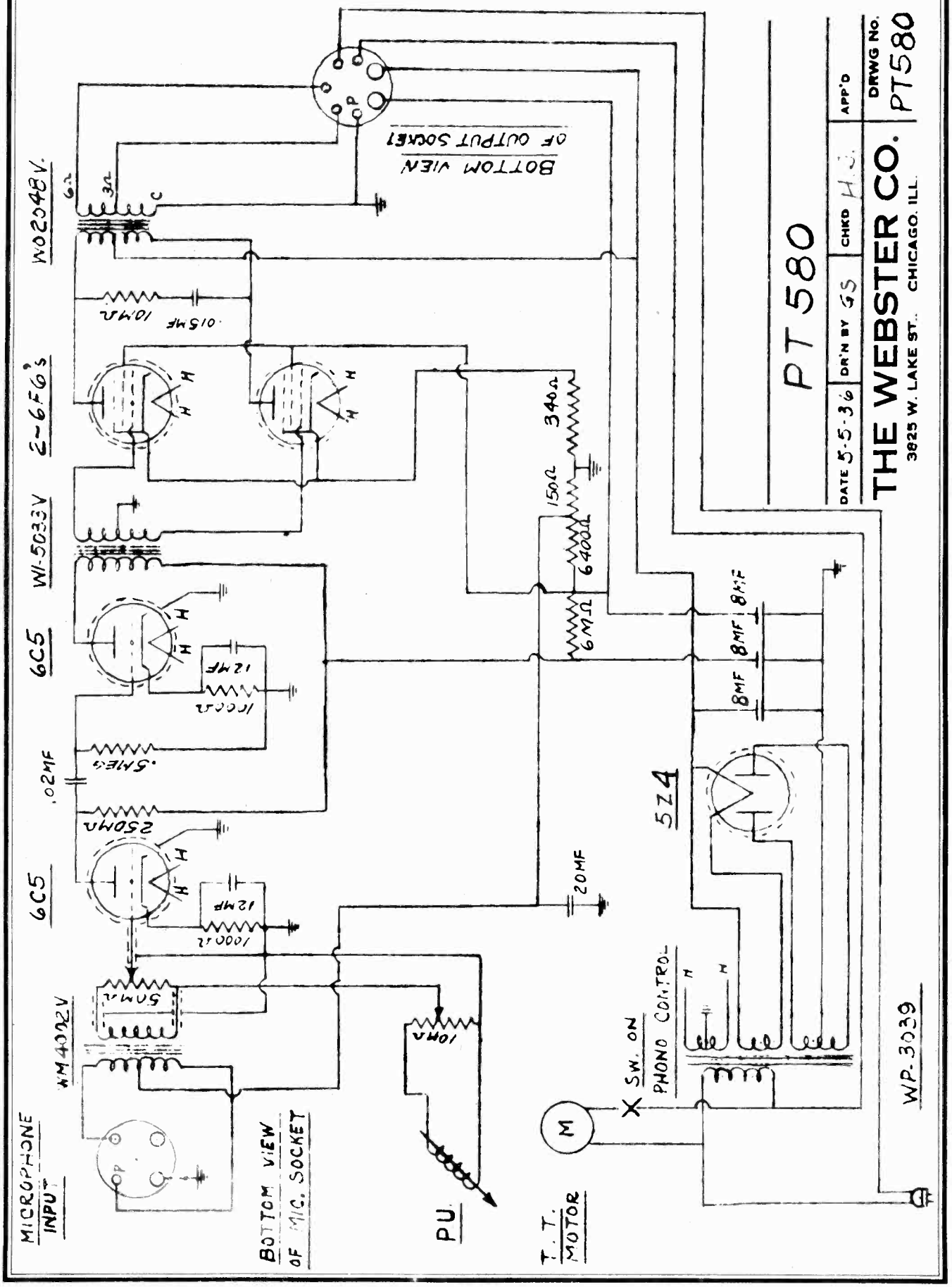
PA 566

AUG 25-34

THE WEBSTER CO
3825 W. LAKE ST CHICAGO

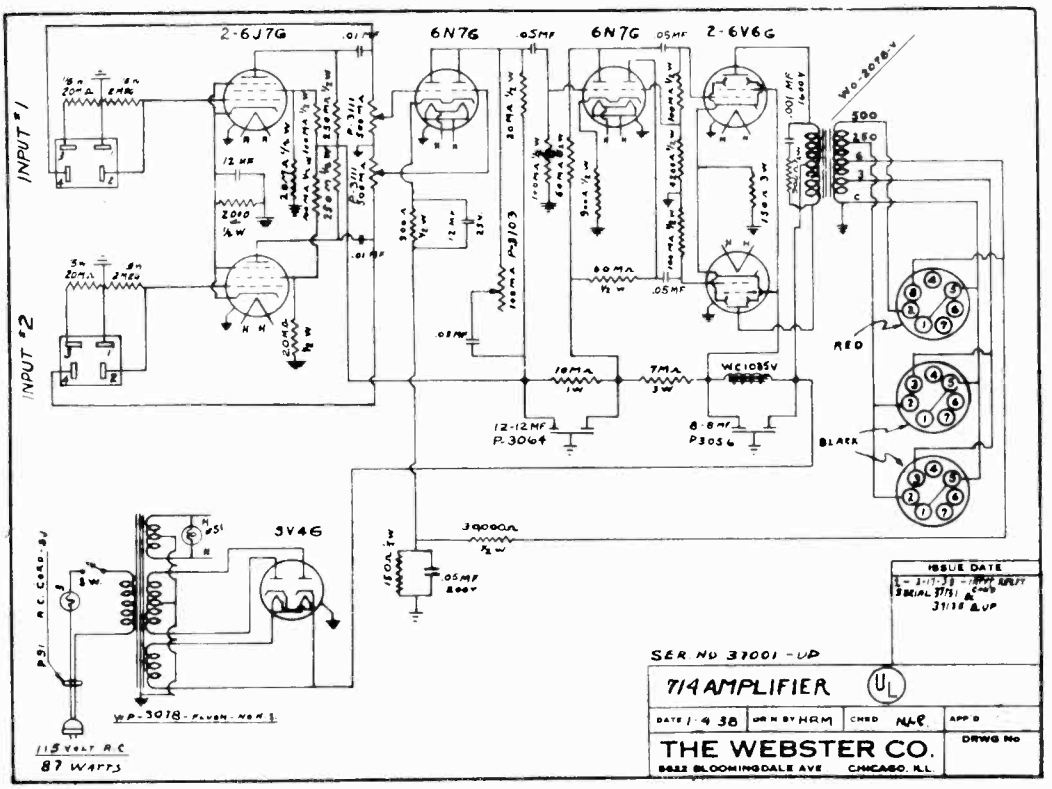
MODEL PT-580

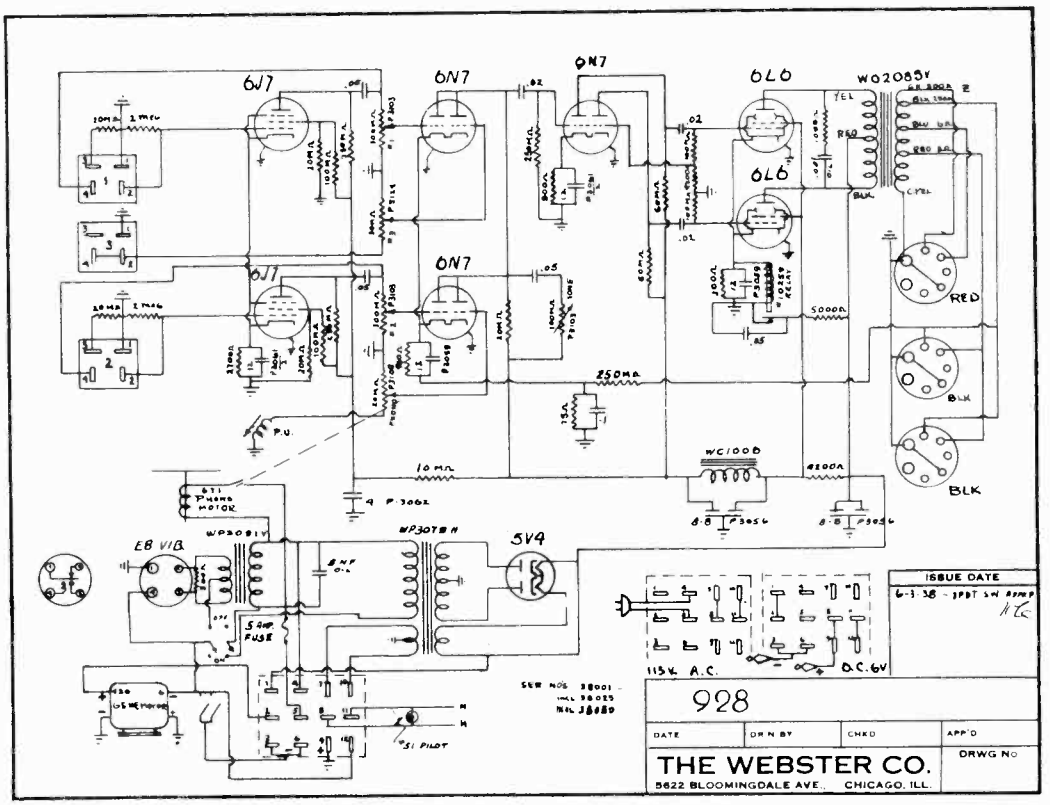
WEBSTER-CHICAGO CORP.



MODEL 714 Ampl.
MODEL 928

WEBSTER-CHICAGO CORP.



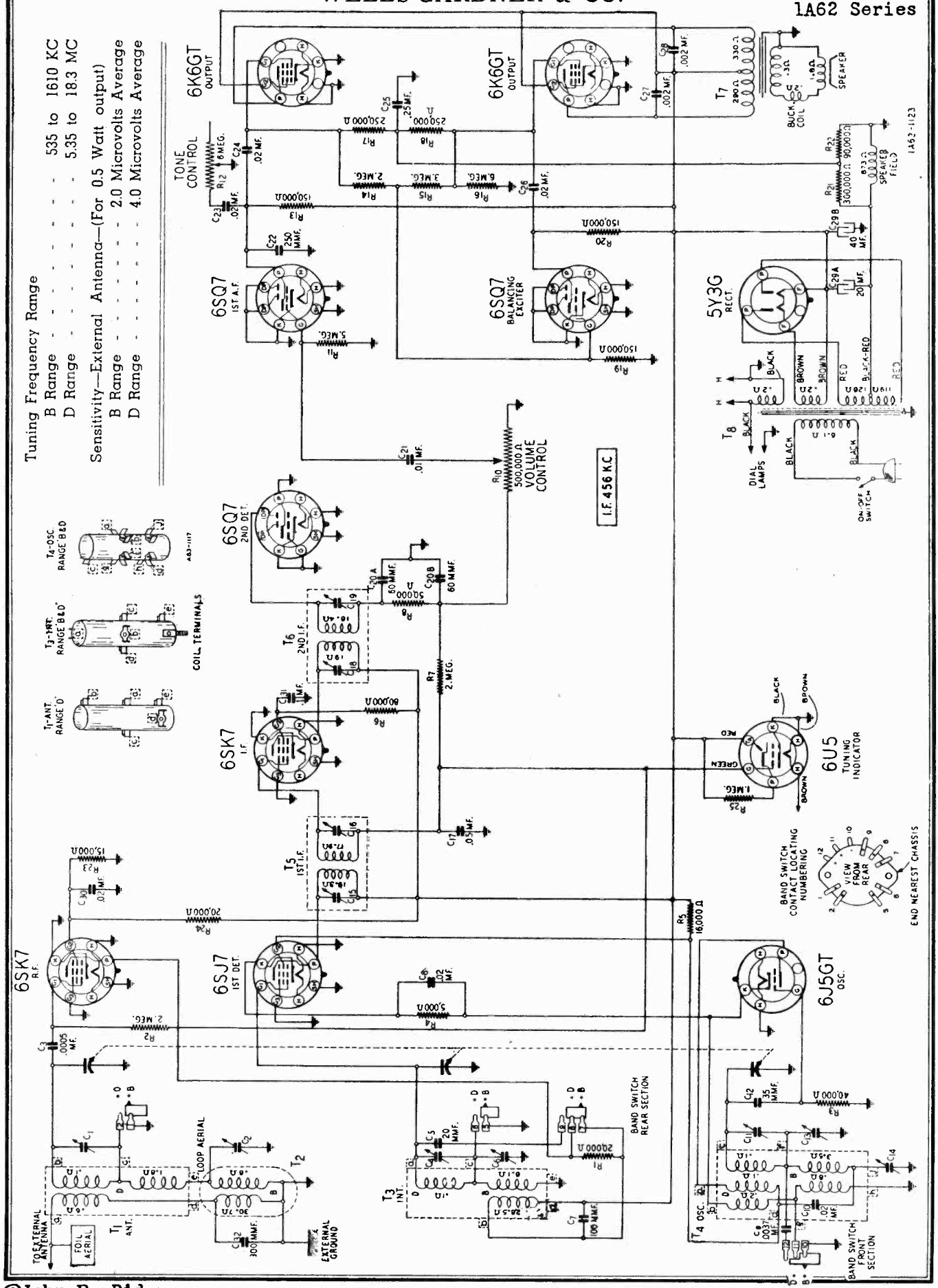


WELLS-GARDNER & CO.

MODEL 1A62-4
1A62 Series

Tuning Frequency Range
B Range - - - - - - - - - - 535 to 1610 KC
D Range - - - - - - - - - - 5.35 to 18.3 MC

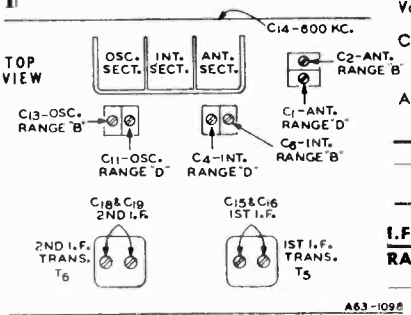
Sensitivity—External Antenna—(For 0.5 Watt output)
B Range - - - - - - - - - - 2.0 Microvolts Average
D Range - - - - - - - - - - 4.0 Microvolts Average



MODEL 1A62-4
1A62 Series

WELLS-GARDNER & CO.

SERVICE DATA



NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

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

ALIGNMENT PROCEDURE

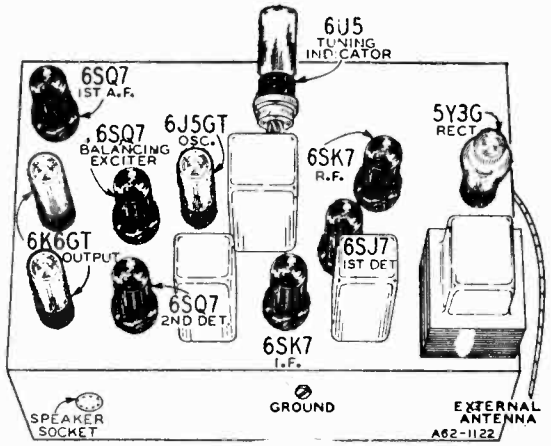
Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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 Antennas—.1 mf., 100 mmf., and 400 ohms.

	SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.	456 KC	Signal Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C15) & (C16) 2nd I.F. (C18) & (C19)
RANGE D	18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C11)
	17,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Int. Range D (C4) Rock Rotor—See Note B
RANGE B	1610 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C13)
	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC—See Note A	Ant. Range B (C2) Int. Range B (C6)
	600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C14) Rock Rotor—See Note B
LOOP RANGE B	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C2)



TUBES AND DIAL LAMPS

The type and position of each tube are shown in the illustration.

The dial lamps are the bayonet pin type (bulb No. 51)

Power Consumption - 85 Watts (At 117 volts 60 cycles)

Power Output - - - - - - - - 4 Watts Undistorted
5.5 Watts Maximum

Selectivity - - - 35 KC Broad at 1000 times Signal

Intermediate Frequency - - - - - - - - - - 456 KC

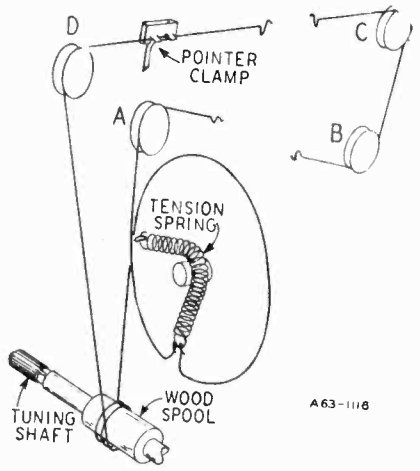
Speaker - - - - - - - - - - 10" Electro-Dynamic

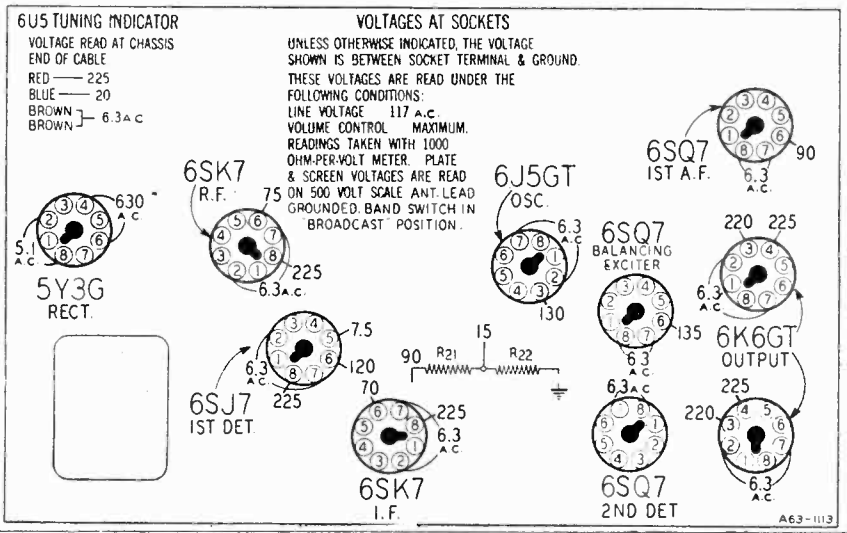
DRIVE CORD REPLACEMENT

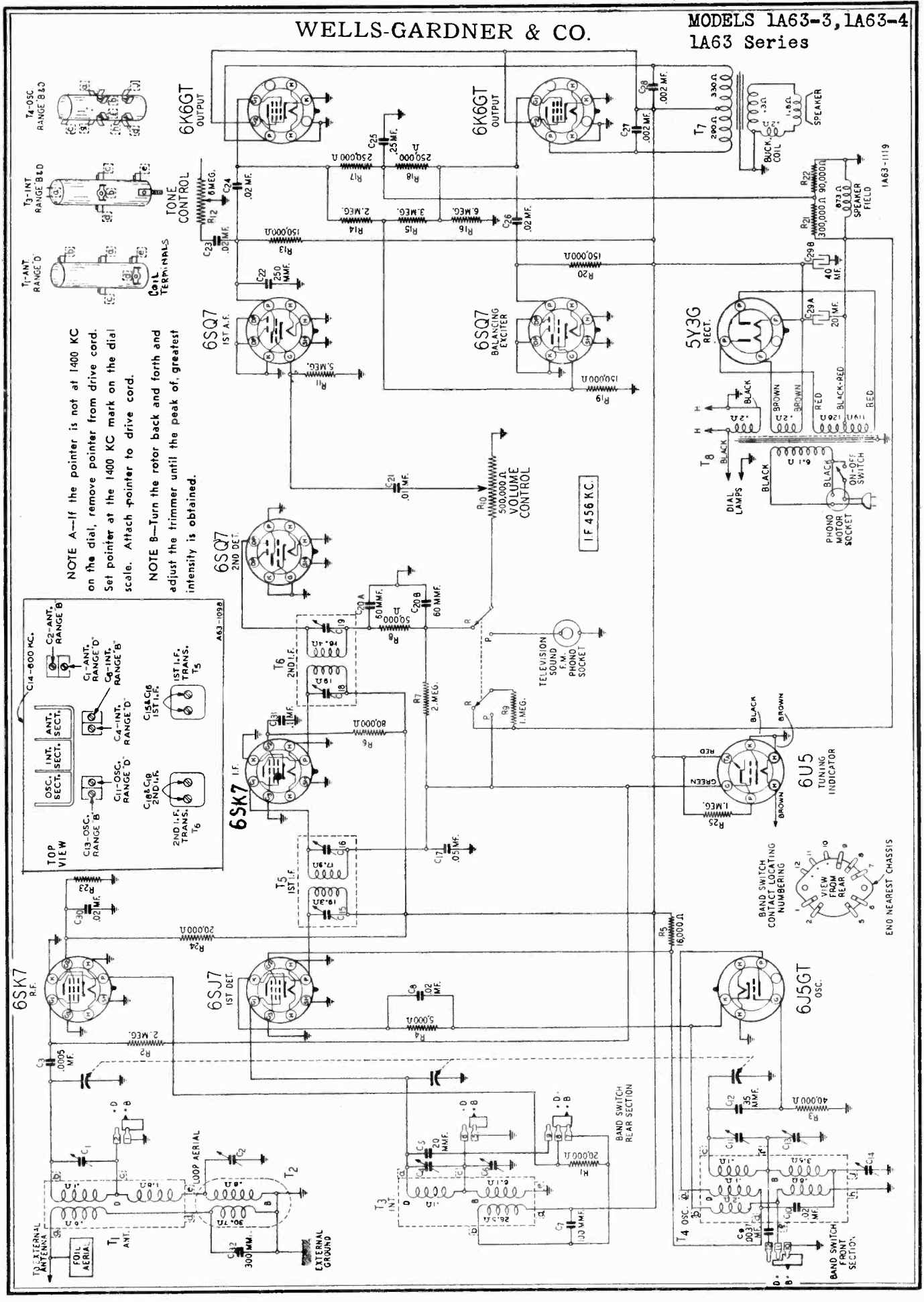
11 TUBE AC 2 BANDS

Turn gang condenser to open position. Use new drive cord 55" in length.

Secure one end of tension spring to hook on drive pulley. Bend spring around drive pulley shaft —see illustration. Pass cord through slot in pulley rim. Wind cord ¼ turn clockwise (from drive pulley end of chassis) around drive pulley. Pass cord around idler pulleys A, B, C and D as in illustration. Then wind cord 2½ turns clockwise (from front of chassis) around tuning shaft spool. These turns should progress away from chassis. Pass cord over top of drive pulley for ¾ turn clockwise (from drive pulley end of chassis) and through slot in pulley rim. Fasten cord to tension spring—see illustration.







MODELS 1A63-3, 1A63-4
1A63 Series

WELLS-GARDNER & CO.

ALIGNMENT PROCEDURE

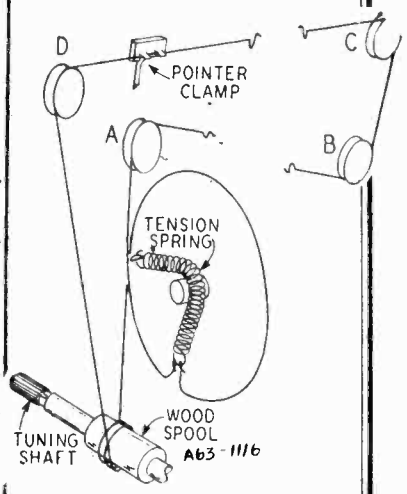
Volume Control—Maximum All Adjustments.

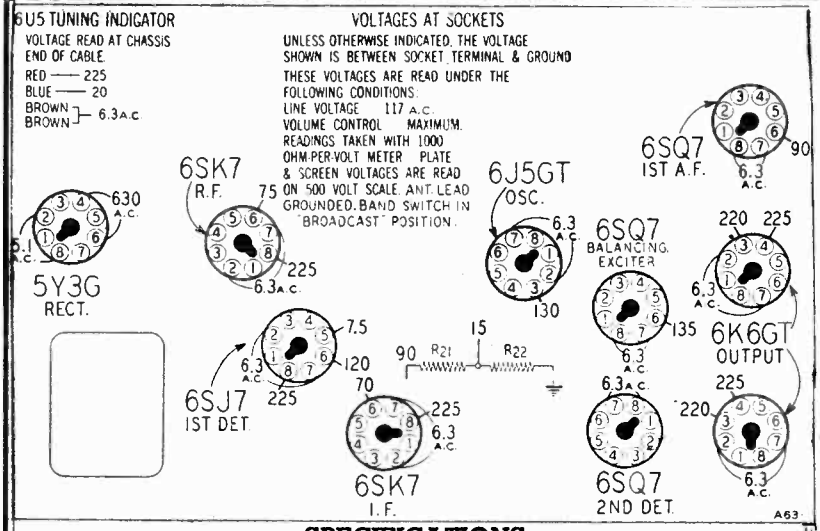
Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

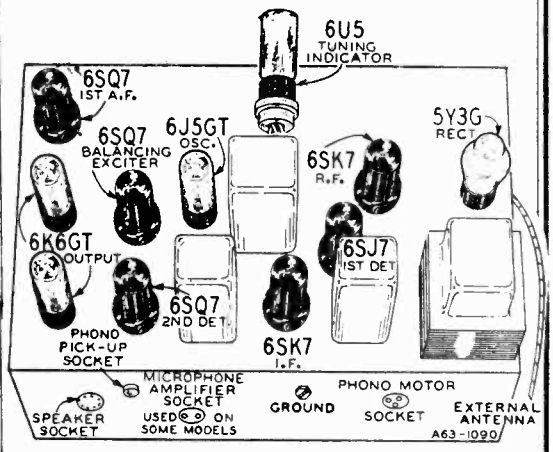
Allow Chassis and Signal Generator to "Heat Up" for several minutes.

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 Screw driver.
Dummy Antennas—.1 mf., 100 mmf., and 400 ohms.

	SIGNAL GENERATOR FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.	456 KC	Signal Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C15) & (C16) 2nd I.F. (C18) & (C19)
RANGE D	18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C11)
	17,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Int. Range D (C4) Rock Rotor—See Note B
RANGE B	1610 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C13)
	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC— See Note A	Ant. Range B (C2) Int. Range B (C6)
	600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C14) Rock Rotor—See Note B
LOOP RANGE B	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C2)







SPECIFICATIONS

Speaker - - - - - - - - 8", 10" or 12" Electro-Dynamic

Tuning Frequency Range
B Range - - - - - - - - - 535 to 1610 KC
D Range - - - - - - - - - 5.35 to 18.3 MC

Sensitivity—External Antenna—(For 0.5 Watt output)
B Range - - - - - - - 2.0 Microvolts Average
D Range - - - - - - - 4.0 Microvolts Average

Power Consumption - 85 Watts (At 117 volts 60 cycles) 105 Watts (Phonograph Operating on Phono-Radio Combinations)

Power Output - - - - - - - - - 4 Watts Undistorted 5.5 Watts Maximum

Selectivity - - - 35 KC Broad at 1000 times Signal

Intermediate Frequency - - - - - - - - - - - - - 456 KC

FOR GENERAL RECORD CHANGER DATA SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS"

Turn gang condenser to open position. Use new drive cord 55" in length.

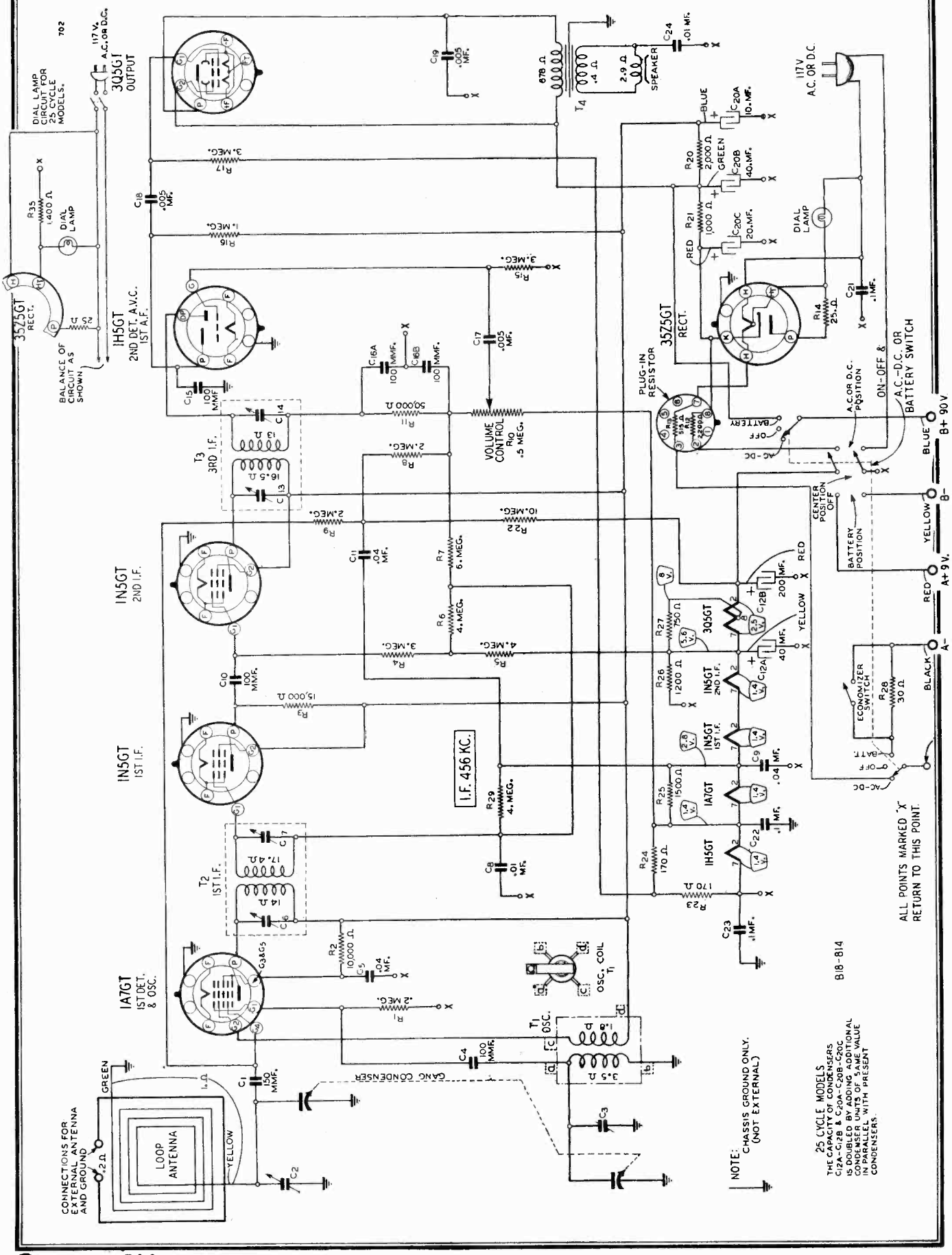
Secure one end of tension spring to hook on drive pulley. Bend spring around drive pulley shaft—see illustration. Pass cord through slot in pulley rim. Wind cord ¼ turn clockwise (from drive pulley end of chassis) around drive pulley. Pass cord around idler pulleys A, B, C and D as in illustration. Then wind cord 2½ turns clockwise (from front of chassis) around tuning shaft spool. These turns should progress away from chassis. Pass cord over top of drive pulley for ¾ turn clockwise (from drive pulley end of chassis) and through slot in pulley rim. Fasten cord to tension spring—see illustration.

PROCEDURE FOR SETTING THE STATION BUTTONS

Grasp left-handed nutton at sides(depress adjacent button) and pull it out as far as it will go. A click will be heard. If it is impossible to depress button which is adjacent to button you are setting, rotate tuning knob a few turns. Now lock mechanism by pushing button all the way in until felt to lock into place. Proceed in same manner to set stations on any of remaining buttons. Any button may be used for any station you can receive, although it will be more convenient to set station so that the Kc. numbers will increase from left to right. Changing setting of one button will not affect setting of any others.

MODEL 6B18

WELLS-GARDNER & CO.



MODEL 6B18

WELLS-GARDNER & CO.

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

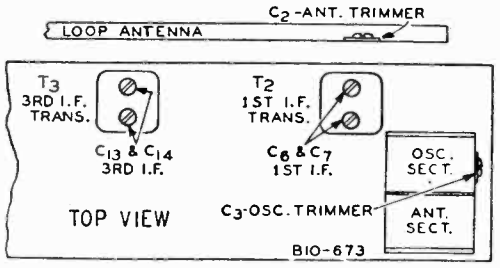
Allow Chassis and Signal Generator to "Heat Up" for several minutes.

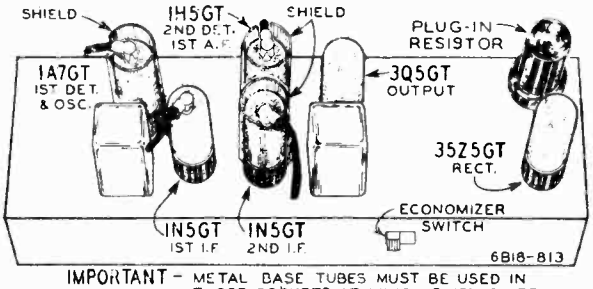
The following equipment is required for aligning:
A Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antennas—.1 mf., 50 mmf.

SIGNAL GENERATOR					
FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration below)
456 KC	External Antenna Clip on Loop	External Ground Clip on Loop	.1 mf.	Turn Rotor to full open	1st I.F. (C6) & (C7) 3rd I.F. (C13) & (C14)
1600 KC	External Antenna Clip	External Ground Clip	.1 mf.	Turn Rotor to full open	Oscillator (C3)
1400 KC	External Antenna Clip See Note A	External Ground Clip	50 mmf.	Turn Rotor to max. output	Antenna (C2)

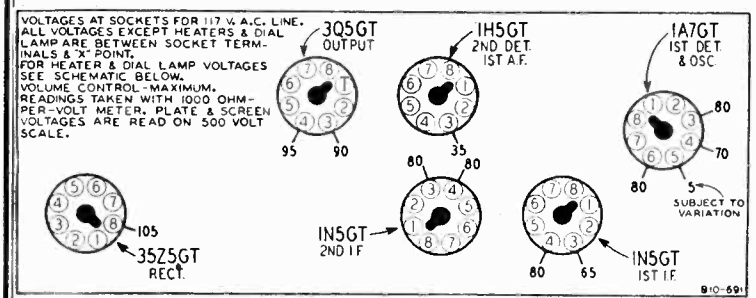
NOTE A—Re-assemble chassis in cabinet. Close back on cabinet.

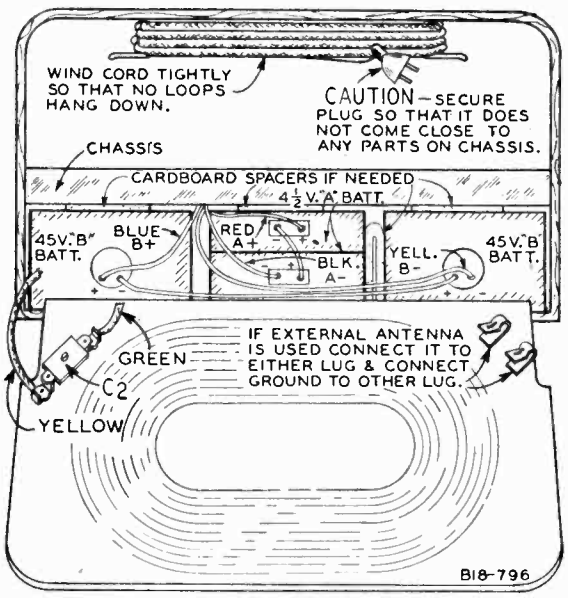
CALIBRATION—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, set the pointer at the 800 KC mark. Retighten set screw.





IMPORTANT - METAL BASE TUBES MUST BE USED IN THOSE SOCKETS AT WHICH SHIELDS ARE SHOWN.





Input Voltages and Currents—Battery Operation

"A" Batteries..... 9 Volts—50 Ma.
"B" Batteries.....90 Volts—11.5 Ma.

Power Consumption (At 117 volts AC Supply) 28 Watts

Power Output

Battery Operation - - - - 150 Mw. Undistorted, 350 Mw. Maximum
AC Operation - - - - - 200 Mw. Undistorted, 400 Mw. Maximum

Selectivity - 50 KC Broad at 1000 Times Signal

Intermediate Frequency - - - - - - 456 KC

Speaker - - - - - - - - - 6" P.M. Dynamic

Tuning Frequency Range - - 540 to 1600 KC

Sensitivity (For .05 Watt Output)
External Antenna - - - 10 Microvolts Average

MODEL 6C17

WELLS-GARDNER & CO.

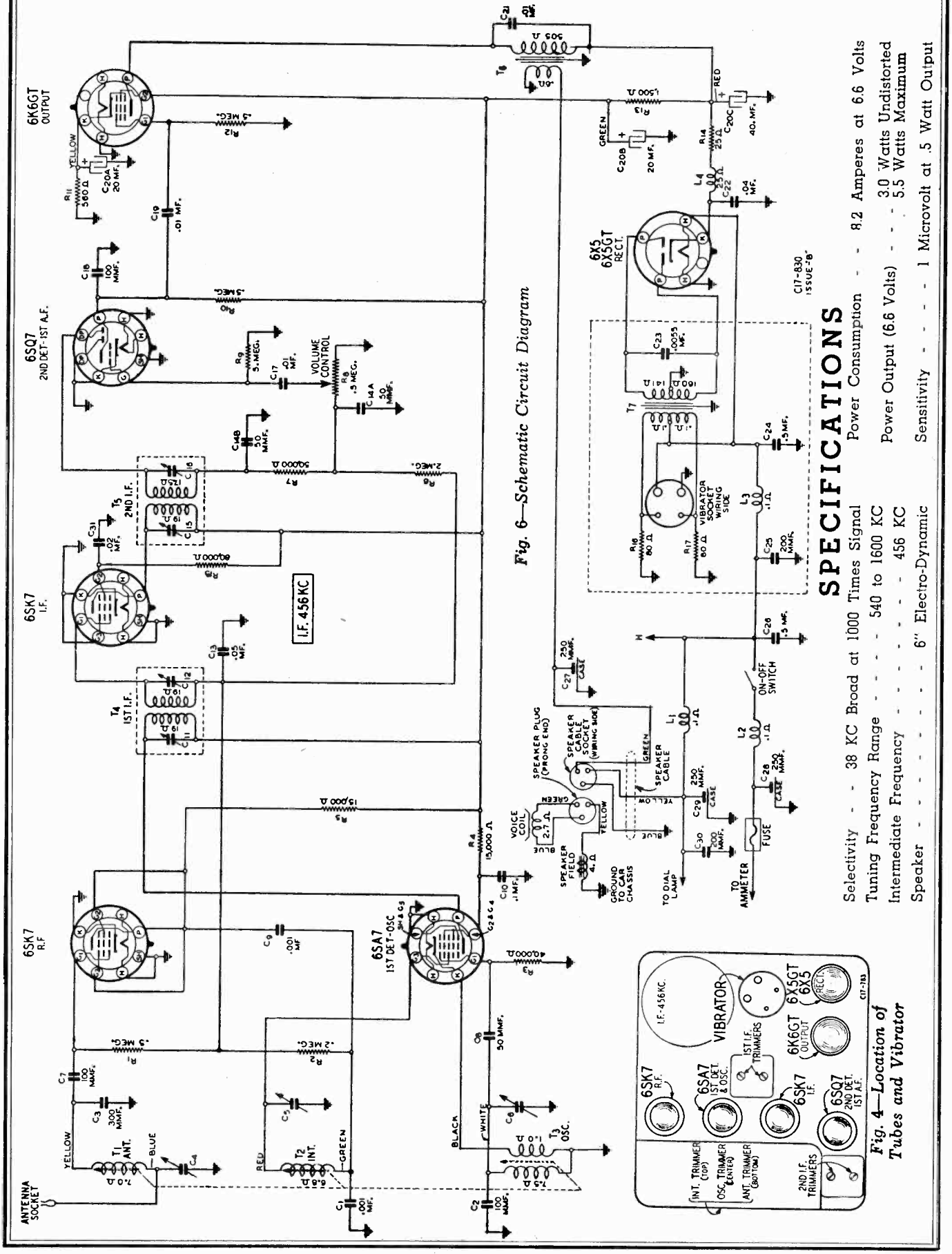


Fig. 6—Schematic Circuit Diagram

SPECIFICATIONS

C17-830 ISSUE-B

Selectivity - -	38 KC Broad at 1000 Times Signal
Tuning Frequency Range - - - - -	540 to 1600 KC
Intermediate Frequency - - - - - - -	456 KC
Speaker - - - - - - - - -	6" Electro-Dynamic
Power Consumption - -	8.2 Amperes at 6.6 Volts
Power Output (6.6 Volts) - - -	3.0 Watts Undistorted 5.5 Watts Maximum
Sensitivity - - - - -	1 Microvolt at .5 Watt Output

Fig. 4—Location of Tubes and Vibrator

MODEL 6C17
MODEL 6C18

WELLS-GARDNER & CO.

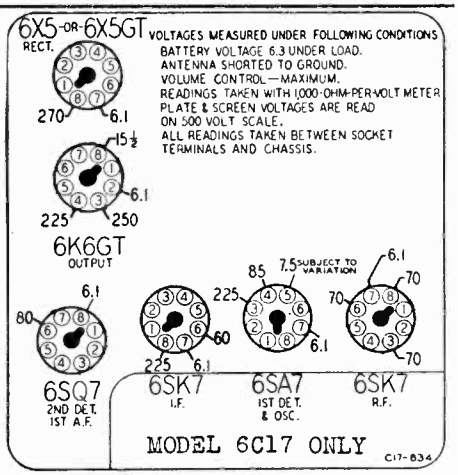
SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	IRON CORE SETTING	ADJUST TRIMMERS TO MAXIMUM (See Figs. 3 and 4)
I.F.				
456 KC	Control Grid (prong No. 8) 6SA7 1st Det. Tube	.05 mf.	Extreme Position out of Coil	1st I.F. (C11) & (C12) 2nd I.F. (C15) & (C16)
OSCILLATOR				
1600 KC	Antenna Cable See Note A	See Note A	Extreme Position out of Coil	Oscillator (C6)
1400 KC ADJUSTMENT				
1400 KC	Antenna Cable	See Note A	Tune to Max. Output with Tuning Knob	Int. (C5) Ant. (C4)

Reassemble Radio—Install in Car—Connect Car Antenna to Radio.

Car Antenna Readjustment—Tune in weak signal near 1400 KC—Readjust Antenna Trimmer C4 for maximum output.

SERIES B CHANGES

To secure improved performance, the following changes are made in issue "B" chassis: The oscillator grid resistor is increased from 20,00 ohms to 40,000 ohms. The R.F. plate resistor is decreased from 20,000 ohms to 15,000 ohms. The R.F. screen is disconnected from the modulator screen and connected to the R.F. plate. In the Series 6C18 only, the modulator screen resistor is increased from 10,000 ohms to 12,000 ohms. To permit easier installation, the issue "B" chassis use a socket and plug arrangement for the speaker connection. Issue "A" chassis used pin tips and clips to connect cable to speaker.



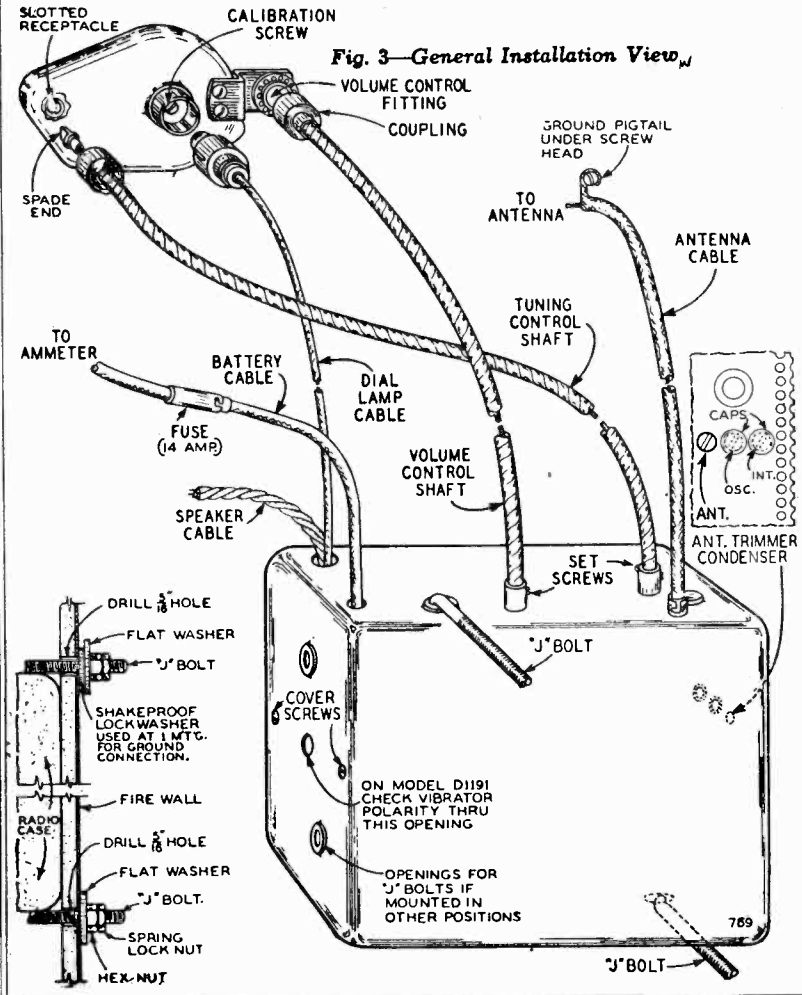


Fig. 3—General Installation View

CALIBRATION—To calibrate the radio, tune in a station of known frequency. At the back of the control unit is the calibration screw. Remove the dial lamp assembly. Insert a fine bladed screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received.

capacity of the antenna cable and dummy antenna should be 60 mmf. If the cable, for example, has a capacity of 30 mmf., use a 30 mmf. condenser for a dummy antenna. Connect the other end of the antenna cable through the dummy antenna capacity to the output of the signal generator.

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

NOTE A—Insert the antenna cable plug in the antenna socket on the chassis. The total

Alignment Procedure:Vol.Cont.Max. all adj.Connect Radio Chassis to ground post of Sig.Gen. with short heavy lead. Allow chassis and Sig. Gen. to "Heat Up" for few minutes. Following equipment is required for alignment: A sig. Gen. which will provide accurately calibrated sig. at the test frequencies. Output indicating meter-Non-metalic Screwdriver.Dummy antenna-.05mf.

WELLS-GARDNER & CO.

Power Consumption - - 8.2 Amperes at 6.6 Volts
Power Output (6.6 Volts) - - 8.0 Watts Undistorted
10.0 Watts Maximum
Sensitivity - - - - - 1 Microvolt at .5 Watt Output

Selectivity - - 38 KC Broad at 1000 Times Signal
Tuning Frequency Range - - - - - 540 to 1600 KC
Intermediate Frequency - - - - - - 456 KC
Speaker - - - - - - - - 6" Electro-Dynamic

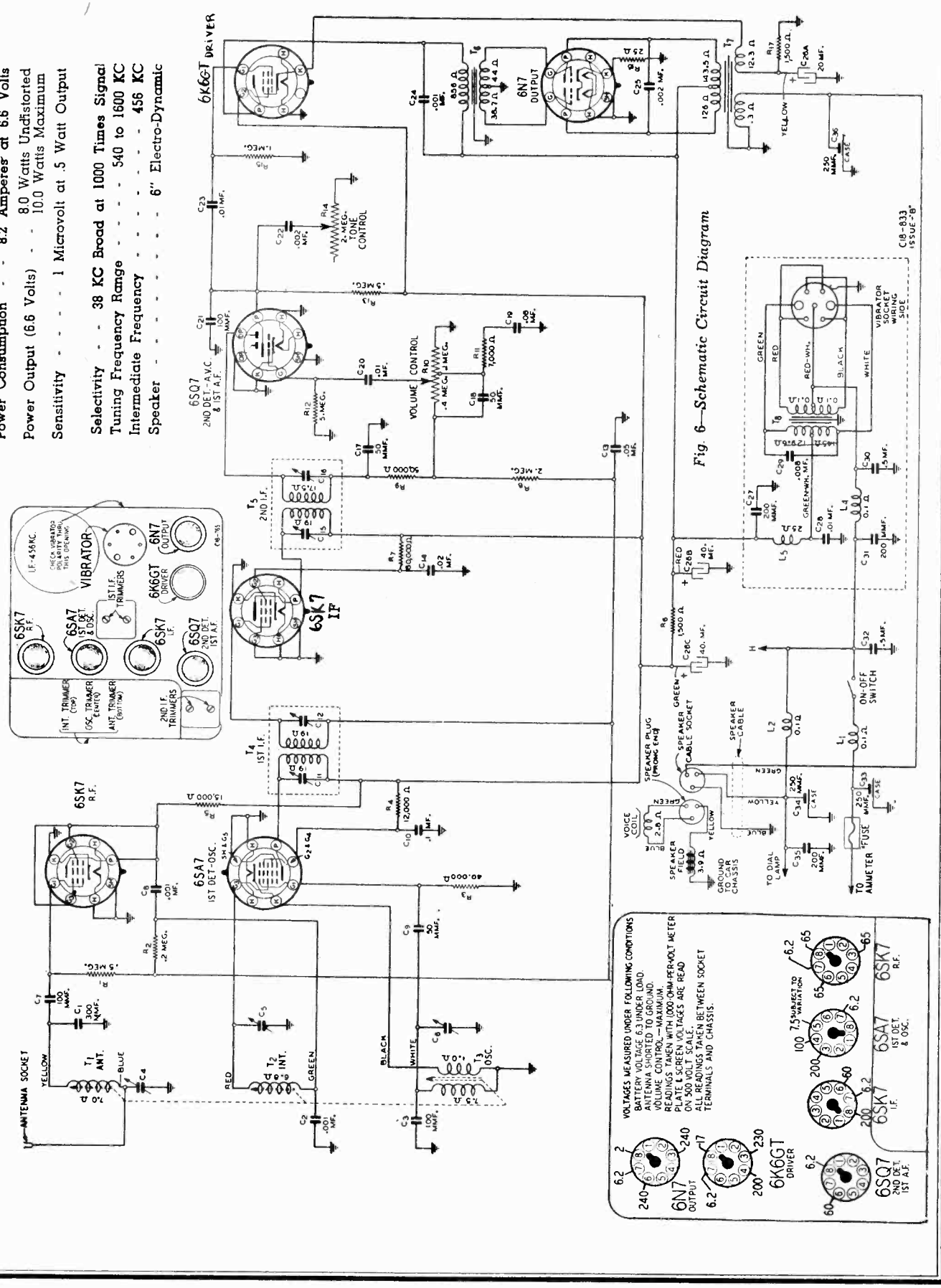
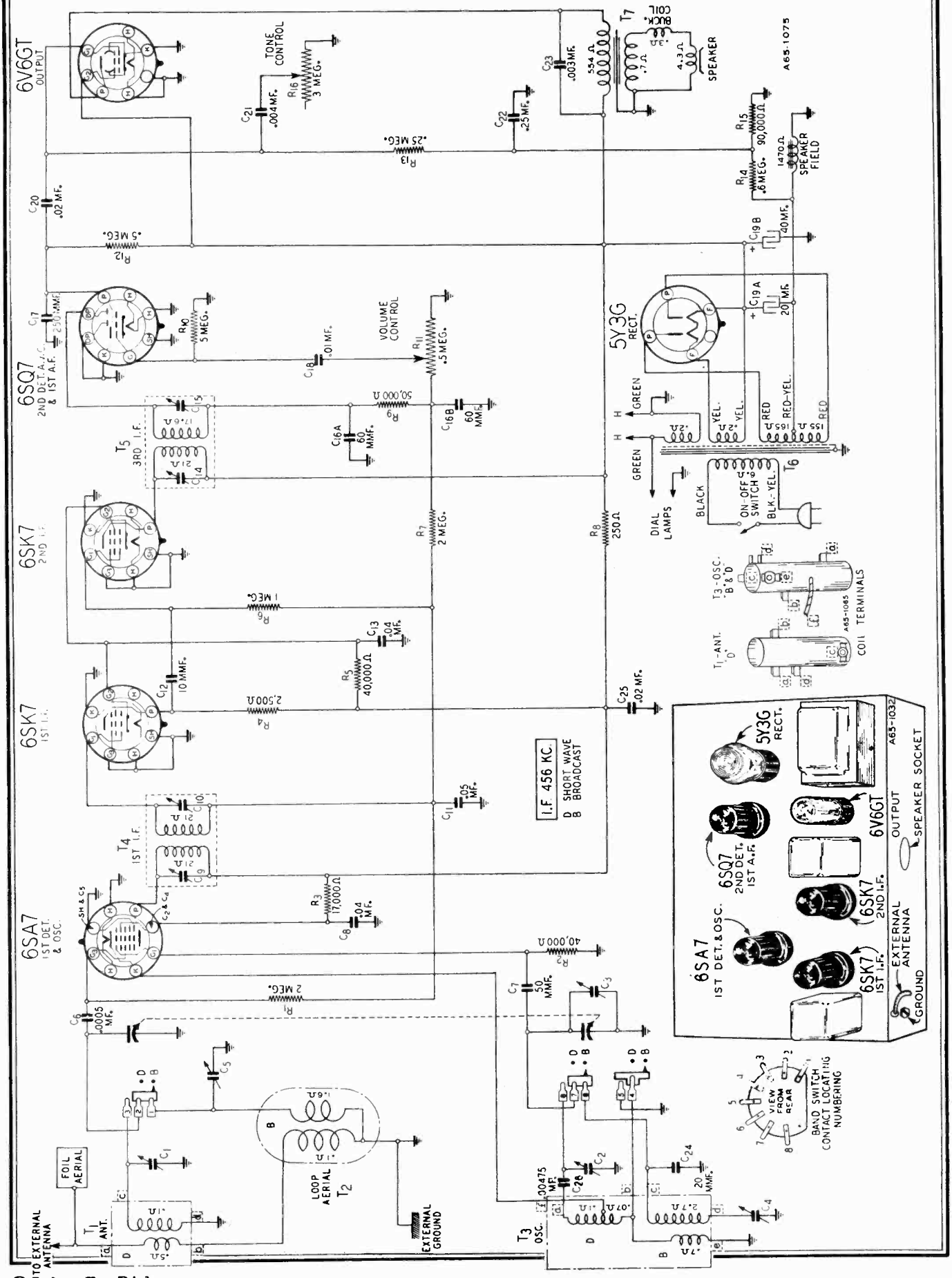


Fig. 6—Schematic Circuit Diagram

MODELS 6A65-3, 6A65-4
6A65 Series

WELLS-GARDNER & CO.



MODELS 6A65-3, 6A65-4
6A65 Series

WELLS-GARDNER & CO.

ALIGNMENT PROCEDURE

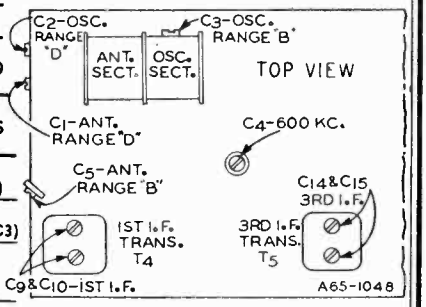
Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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

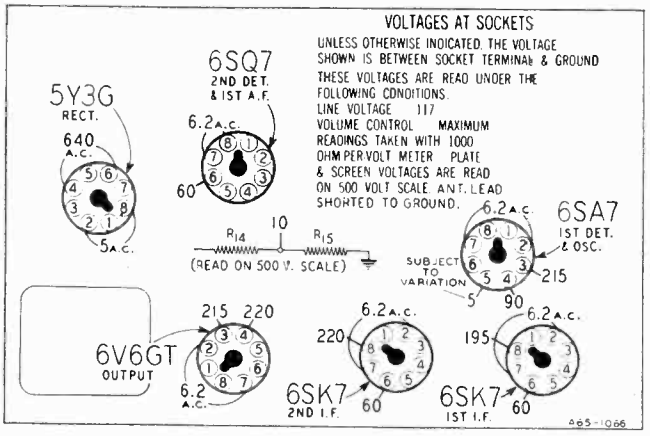
The following equipment is required for aligning: An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antennas—.1 mf., 100 mmf., and 400 ohms.

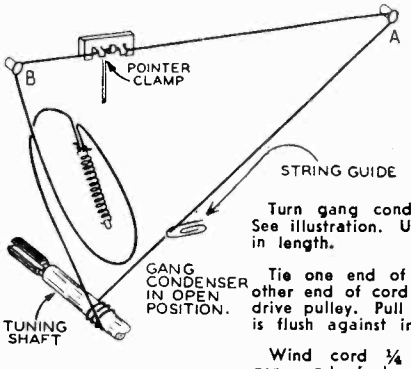
	SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.	456 KC	Signal Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C9) & (C10) 3rd I.F. (C14) & (C15)
RANGE B	1600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C3)
	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC— See Note A	Ant. Range B (C5)
	600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C4) Rock Rotor—See Note B
RANGE D	18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C2)
	17,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Rock Rotor—See Note B
LOOP RANGE B	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C5)



NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

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





DRIVE CORD REPLACEMENT

Turn gang condenser to full open position—See illustration. Use a new drive cord 37 inches in length.

Tie one end of cord to tension spring. Pass other end of cord up through hole in groove of drive pulley. Pull cord through hole until spring is flush against inside of pulley rim.

Wind cord ¼ turn counter-clockwise (from gang end of chassis) around drive pulley. Then wind 3½ turns clockwise (from front of chassis) around tuning control shaft. These turns should progress away from chassis. Pass cord through wire string guide and over idler studs A and B as shown, then wind cord ¾ turn counter-clockwise (from gang end of chassis) around drive pulley. This turn should be on right side (from front of chassis) of pulley groove.

Pass cord through hole in groove of drive pulley. Tie cord to tension spring. Fasten other end of spring to hook on drive pulley.

ANTENNA AND GROUND

Two built-in aerials are incorporated in the cabinet.

One of these, the loop aerial, is used for broadcast band reception. The other, a counterpoise foil aerial, is used for reception on the short wave band. For the reception of local or nearby stations, an outside antenna and ground are usually not required.

In general, however, more stations will be heard by using an outside antenna and ground. To receive distant short wave stations, an outside antenna is essential.

If an outside antenna is used, it should be 50 to 60 feet long, including the lead-in.

A good ground connection is recommended if an outside antenna is used. A ground connection may be obtained by connecting to a water pipe, radiator, or a pipe driven into the ground.

Avoid using gas pipes or electrical conduits for grounds.

The ground connection is made under the screw (marked GND) on the back panel of the chassis base.

A wire with an antenna marker will be found coming out of the chassis. If it is desired to operate the radio using the loop and counterpoise foil antennas, do not connect this wire to anything. If it is desired to operate the radio using an outside antenna, connect this wire to the lead from the outside antenna.

The wire which is connected to the counterpoise foil antenna should never be disconnected.

SPECIFICATIONS

Power Consumption - - - - 60 Watts (At 117 volts 60 cycles)

Power Output - - - - - 2.5 Watts Undistorted
3.5 Watts Maximum

Selectivity - - 40 KC Broad at 1000 times Signal

Intermediate Frequency - - - - - - 456 KC

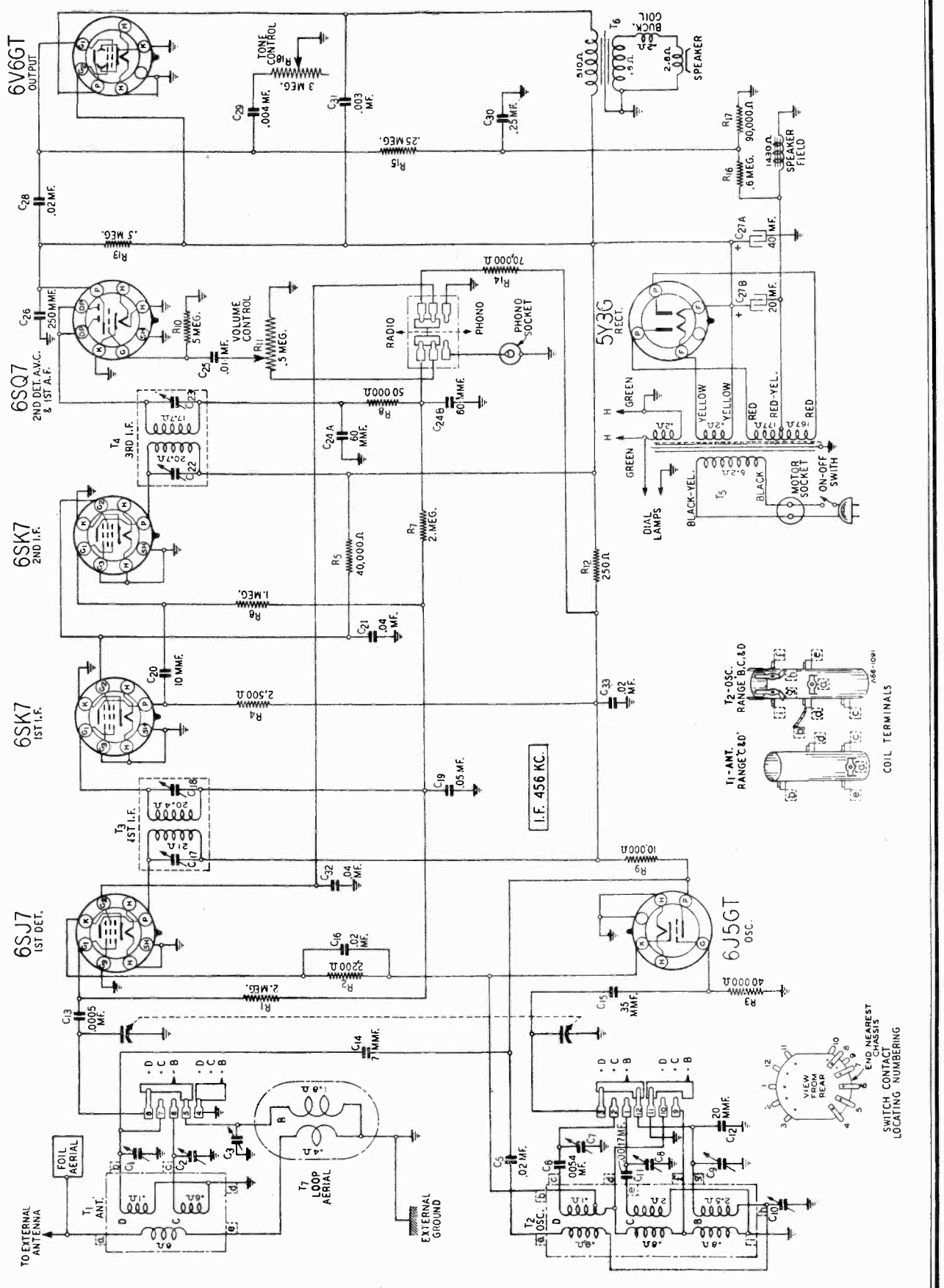
Speaker - - - - - - - - 8" Electro-Dynamic

Tuning Frequency Range
B Range - - - - - - - 528 to 1600 KC
D Range - - - - - - - 5750 to 18300 KC

Sensitivity—External Antenna—For 0.5 Watt output
B Range - - - - 4.0 Microvolts Average
D Range - - - - - 10 Microvolts Average

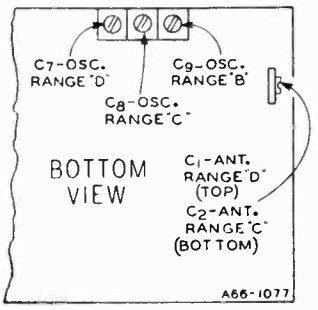
MODEL 7A66-2
7A66 Series

WELLS-GARDNER & CO.



MODEL 7A66-2
7A66 Series

WELLS-GARDNER & CO.



ALIGNMENT PROCEDURE

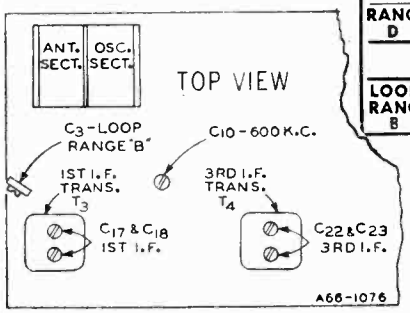
Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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 Antennas—.1 mf., 100 mmf., and 400 ohms.

	SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.	456 KC	Signal Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C17) & (C18) 3rd I.F. (C22) & (C23)
RANGE B	1600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C9)
	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC— See Note A	Ant. Range B (C3)
	600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C10) Rock Rotor—See Note B
RANGE C	7000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C8)
	6000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Ant. Range C (C2) Rock Rotor—See Note B
RANGE D	22,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C7)
	18,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Rock Rotor—See Note B
LOOP RANGE B	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C3)

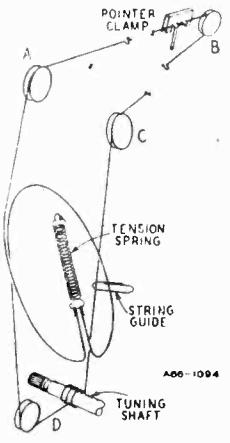


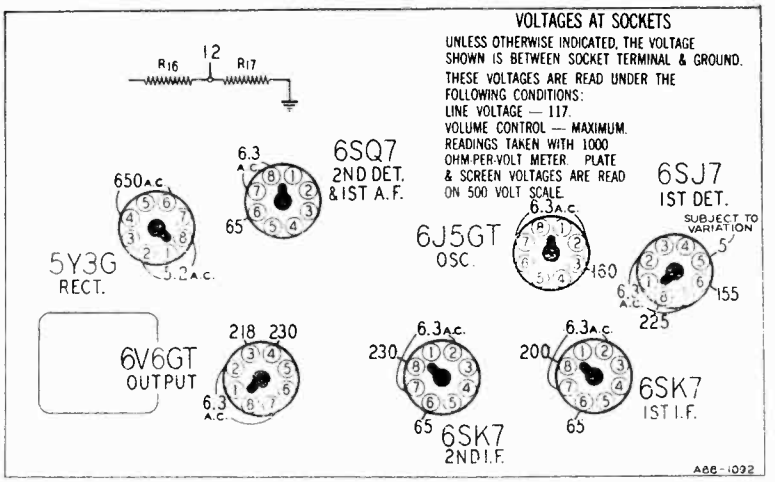
NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

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

DRIVE CORD REPLACEMENT

Turn gang condenser to full closed position. Using a new drive cord 57" in length, tie one end to tension spring. Fasten other end of tension spring to hook on drive pulley. Pass cord through slot in pulley rim. Wind cord 1/3 turn clockwise (from gang end of chassis) around drive pulley; continue around idler pulleys A, B, and C as shown. Pass cord through wire string guide and wind 3 turns counter-clockwise (from front of chassis) around tuning shaft. These turns should progress away from chassis. Continue cord around idler pulley D and wind ¾ turn clockwise (from gang end of chassis) around drive pulley. Turn should be on left side of pulley groove (from front of chassis). Pass cord through slot in pulley rim. Stretch tension spring and attach free end of cord.





SPECIFICATIONS

Power Consumption - - - - 60 Watts (At 117 volts 60 cycles)

Power Output - - - - - 2.5 Watts Undistorted
3.5 Watts Maximum

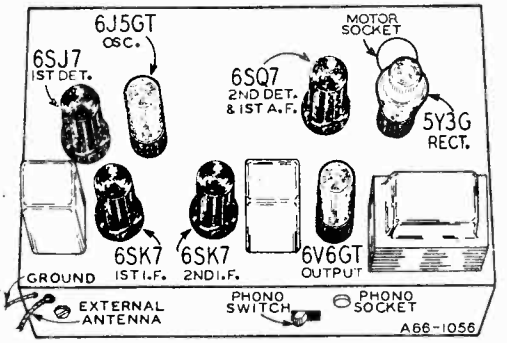
Selectivity . . 40 KC Broad at 1000 Times Signal

Intermediate Frequency - - - - - 456 KC

Speaker - - - - - - - 6" Electro-Dynamic

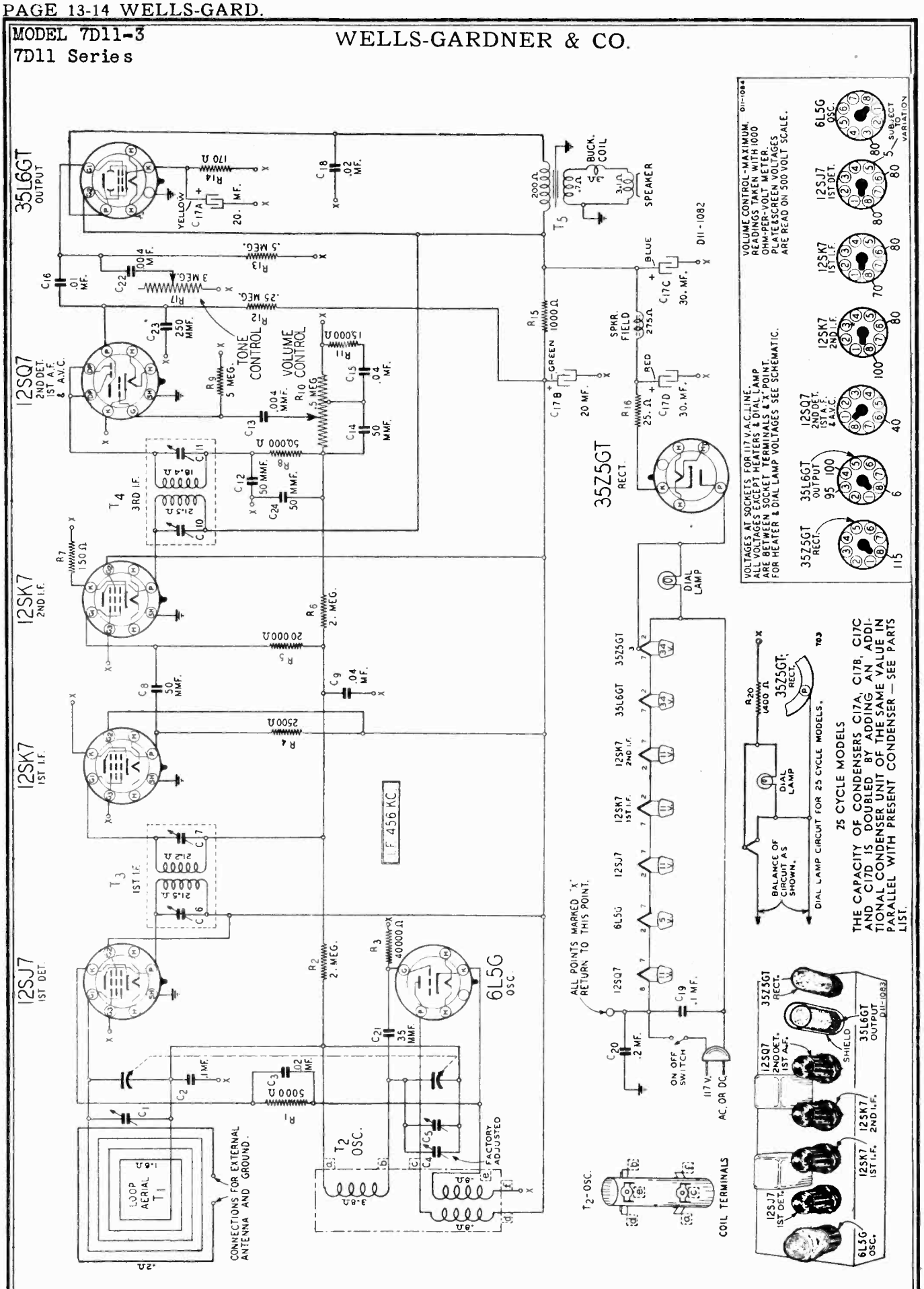
Tuning Frequency Range
B Range - - - - - - - - 528 to 1600 KC
C Range - - - - - - - - - 2.2 to 7.0 KC
D Range - - - - - - - - 7.0 to 22.0 MC

Sensitivity—External Antenna—For 0.5 Watt output
B Range - - - - - - 4 Microvolts Average
C Range - - - - - - 7 Microvolts Average
D Range - - - - - - 8 Microvolts Average



MODEL 7D11-3
7D11 Series

WELLS-GARDNER & CO.



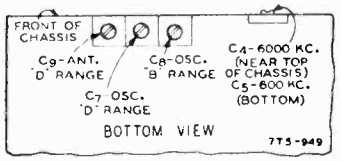
WELLS-GARDNER & CO.

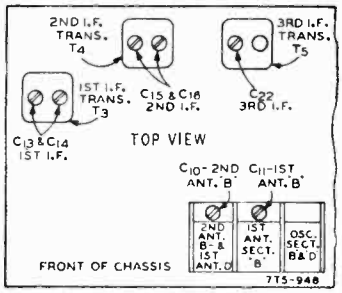
MODEL 7D11-3
7D11 Series
MODEL 7T5-4

SPECIFICATIONS

Power Consumption - - - - - 1.60 Amperes at 36 Volts DC
Power Output - - - - - - - - .17 Watt Undistorted
.40 Watt Maximum
Selectivity - - - - - 30 KC Broad at 1000 times Signal
Sensitivity (For .05 watt output)
B Range - - - - - - - 6.0 Microvolts Average
D Range - - - - - - - 8.0 Microvolts Average

Intermediate Frequency - - - - - - - - - 456 KC
Speaker - - - - - - - 6" or 8" Electro-Dynamic
Tuning Frequency Range
B Range - - - - - 535 to 1610 KC (Kilocycles)
D Range - - - - - 5750 to 18300 KC (Kilocycles)





ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.
Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.
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 Antennas—.1 mf., 200 mmf., and 400 ohms.

	SIGNAL GENERATOR FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.	456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C13) & (C14) 2nd I.F. (C15) & (C16) 3rd I.F. (C22)
RANGE B	1610 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C8)
	1500 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note A	1st Ant. Range B (C11) 2nd Ant. Range B (C10)
	600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C5) Rock Rotor—See Note B
RANGE D	18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C7)
	16,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C9) Rock Rotor—See Note B
	6000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	6000 KC (C4) Rock Rotor—See Note B

After each range is completed, repeat the procedure as a final check.

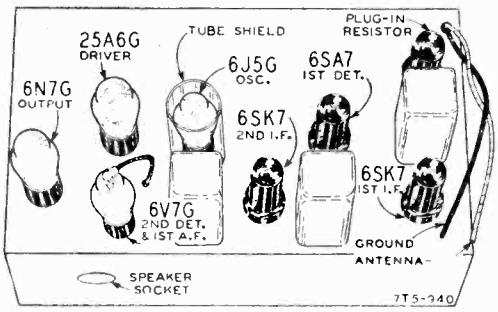
NOTE A—If the pointer is not at 1500 KC on the dial remove pointer from drive cord. Set pointer at the 1500 KC mark on the dial scale. Attach pointer to drive cord.

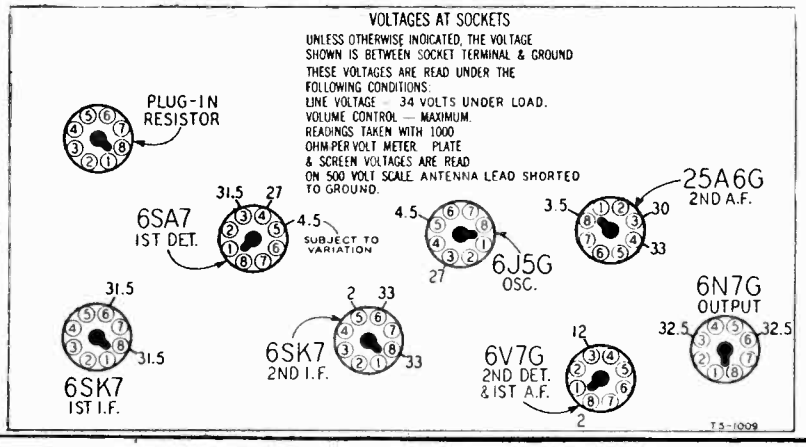
NOTE B—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

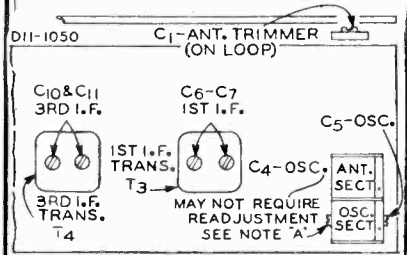
LINE VOLTAGE RANGE

The radio will operate satisfactorily within a line voltage range of 25 to 42 volts. If the line voltage is higher than 42, it will be necessary to use a series resistor to cut it down. If the voltage varies, a variable resistor may be required.

7T5-4







ALIGNMENT PROCEDURE

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.

SIGNAL GENERATOR FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)
I.F. 456 KC	Signal Grid of 1st Det. Connect at Stator of Large Gang Section.	Point "X" 12SQ7—1st A.F. Prong No. 3	.1 mf.	Turn Rotor to Full Open	1st I.F. (C6) & (C7) 3rd I.F. (C10) & (C11)
1610 KC	Signal Grid of 1st Det.	Point "X"	.1 mf.	Turn Rotor to Full Open	Oscillator (C5) See Note A
1400 KC	External Antenna Clip	External Ground Clip	200 mmf.	Turn Rotor to Max. Output Set Indicator to 1400 KC— See Note B	Antenna (C1)

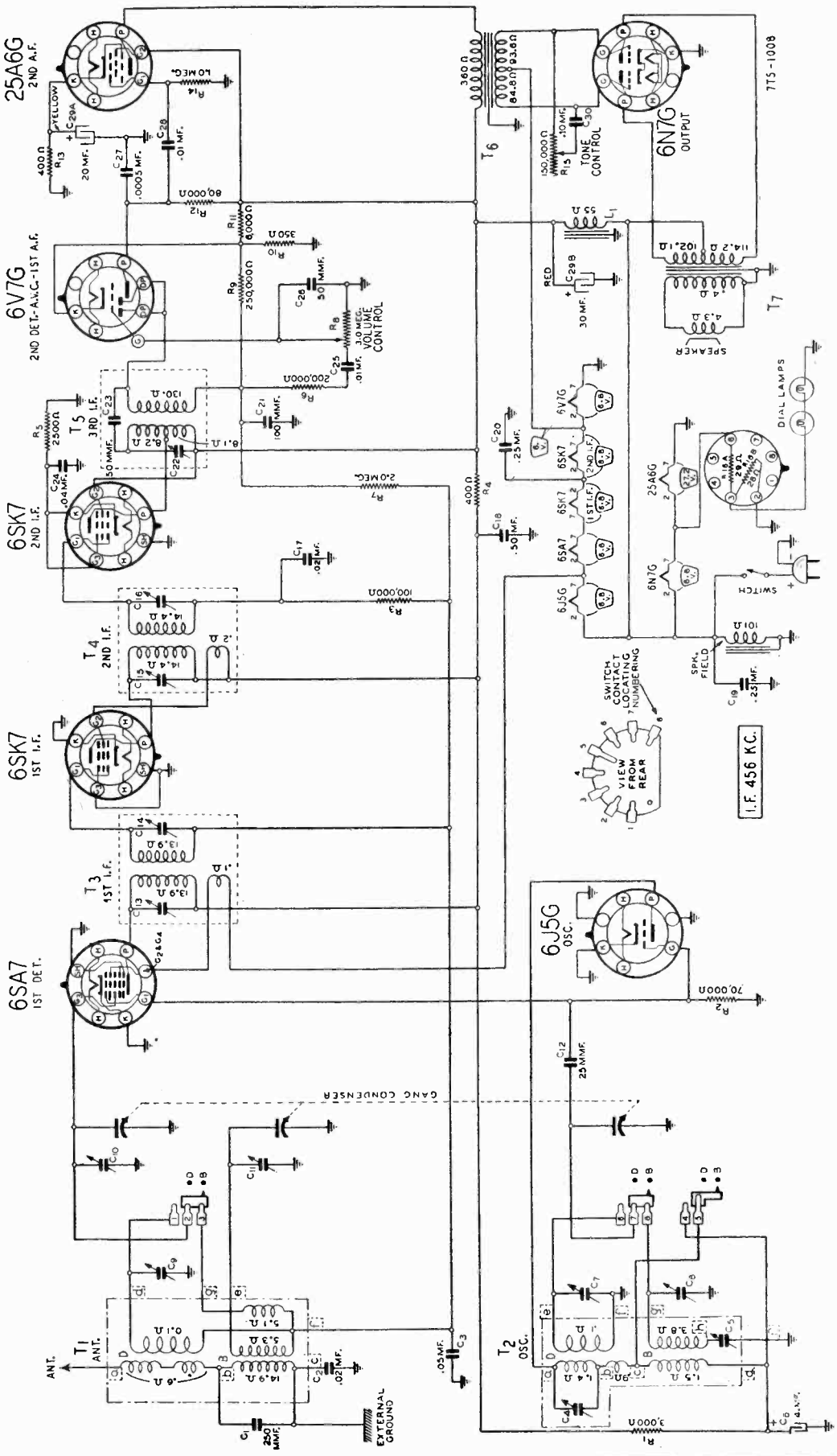
SPECIFICATIONS

Power Consumption ..... 28 Watts
(At 117 volts AC Supply)
Power Output ..... .75 Watt Undistorted
1.3 Watts Maximum
Selectivity .49 KC Broad at 1000 times Signal
Intermediate Frequency ..... 456 KC
Speaker ..... 5" Electro-Dynamic
Tuning Frequency Range 528 to 1610 KC
Sensitivity (For .05 watt output)—External Ant. 9 Microvolts Average

7D11, 7D11-3

MODEL 7T5-4

WELLS-GARDNER & CO.



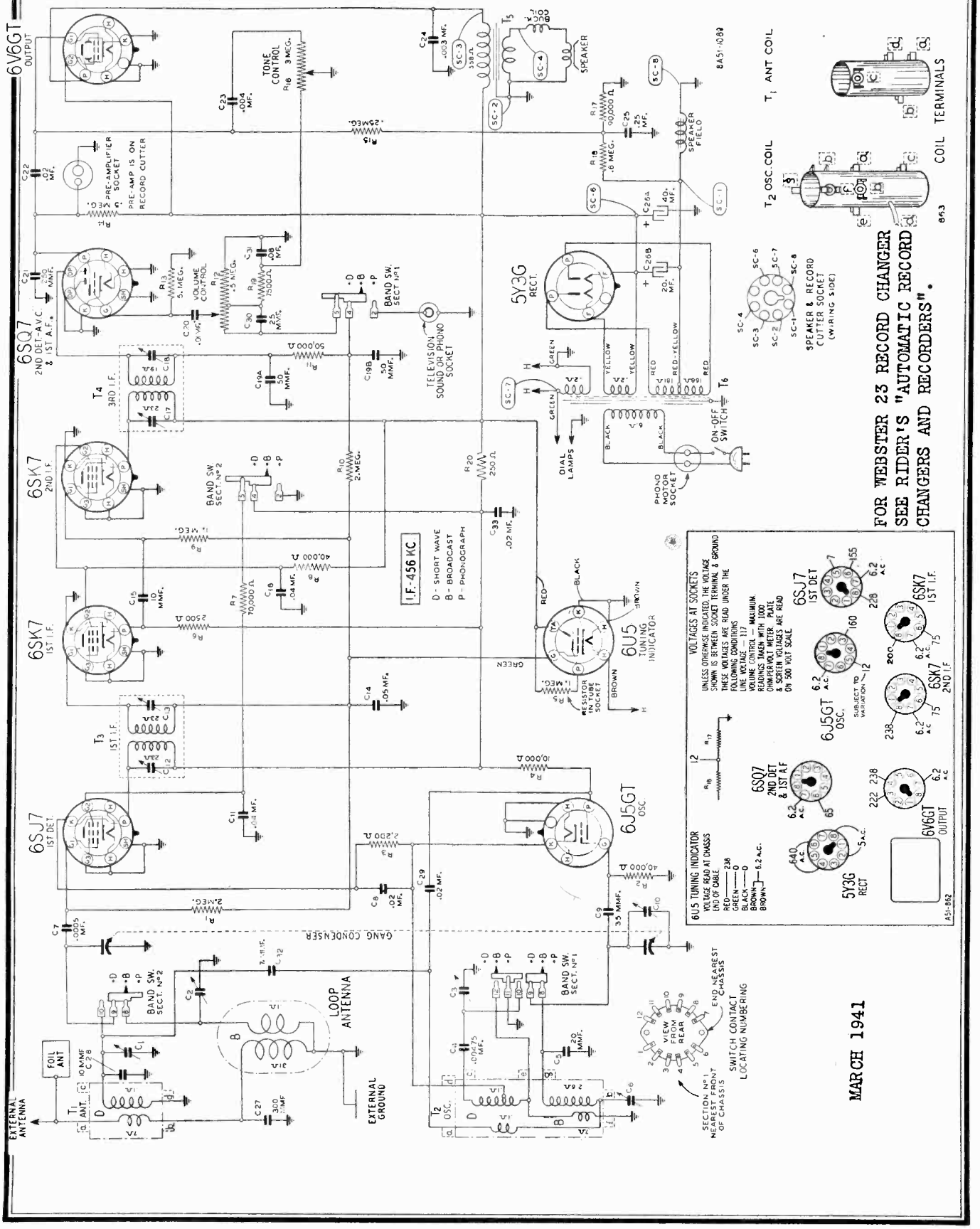
32 VOLT POWER SUPPLY

This radio is designed for use on farms and in those places where the power supply consists of a 32 volt direct current generating plant. The radio may not be satisfactory on plants which do not use storage batteries.

Polarity of 32 Volt Power Supply—Insert plug so that prong on same side as *ribbed* side of cord is on the positive side of the line.

If the polarity of the line is not known, insert plug. If the tubes light but no sounds are heard from the speaker after the plug has been in one minute, reverse the plug.

WELLS-GARDNER & CO.



MODELS 8A51-3, 8A51-4

WELLS-GARDNER & CO.

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.
Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.
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 Antennas—.1 mf., 100 mmf., and 400 ohms.

	SIGNAL GENERATOR			BAND SWITCH		
	FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.	456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C12) & (C13) 3rd I.F. (C17) & (C18)
RANGE B	1600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C10)
	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC See Note A	Ant. Range B (C2)
	600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C6) Rock Rotor—See Note B
RANGE D	18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C3)
	17,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Rock Rotor—See Note B
LOOP RANGE B	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C2)

After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

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

SPECIFICATIONS

Power Consumption - 60 Watts (At 117 volts 60 cycles)
80 Watts (Phonograph Operating)

Power Output - - - - - - - - 2.5 Watts Undistorted
3.5 Watts Maximum

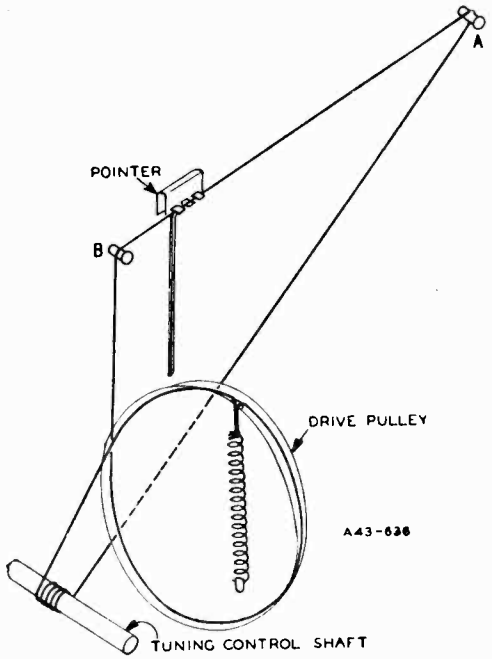
Selectivity - - - - 40 KC Broad at 1000 times Signal

Intermediate Frequency - - - - - - - - - - 456 KC

Speaker - - - - - - - 10" or 12" Electro-Dynamic

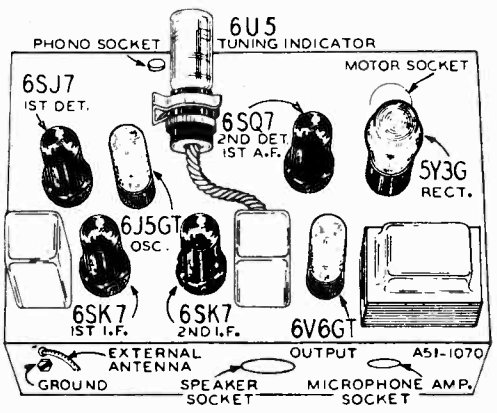
Tuning Frequency Range
B Range - - - - - - - - - 528 to 1600 KC
D Range - - - - - - - - - 5750 to 18300 KC

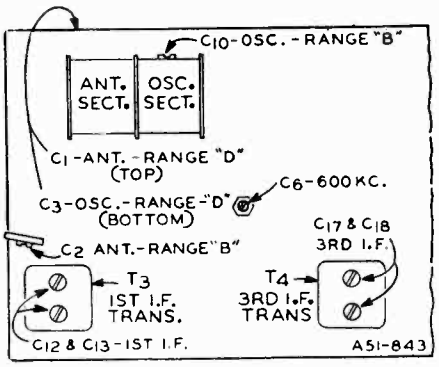
Sensitivity—External Antenna—(For 0.5 Watt output)
B Range - - - - - - - 2.0 Microvolts Average
D Range - - - - - - - 4.0 Microvolts Average

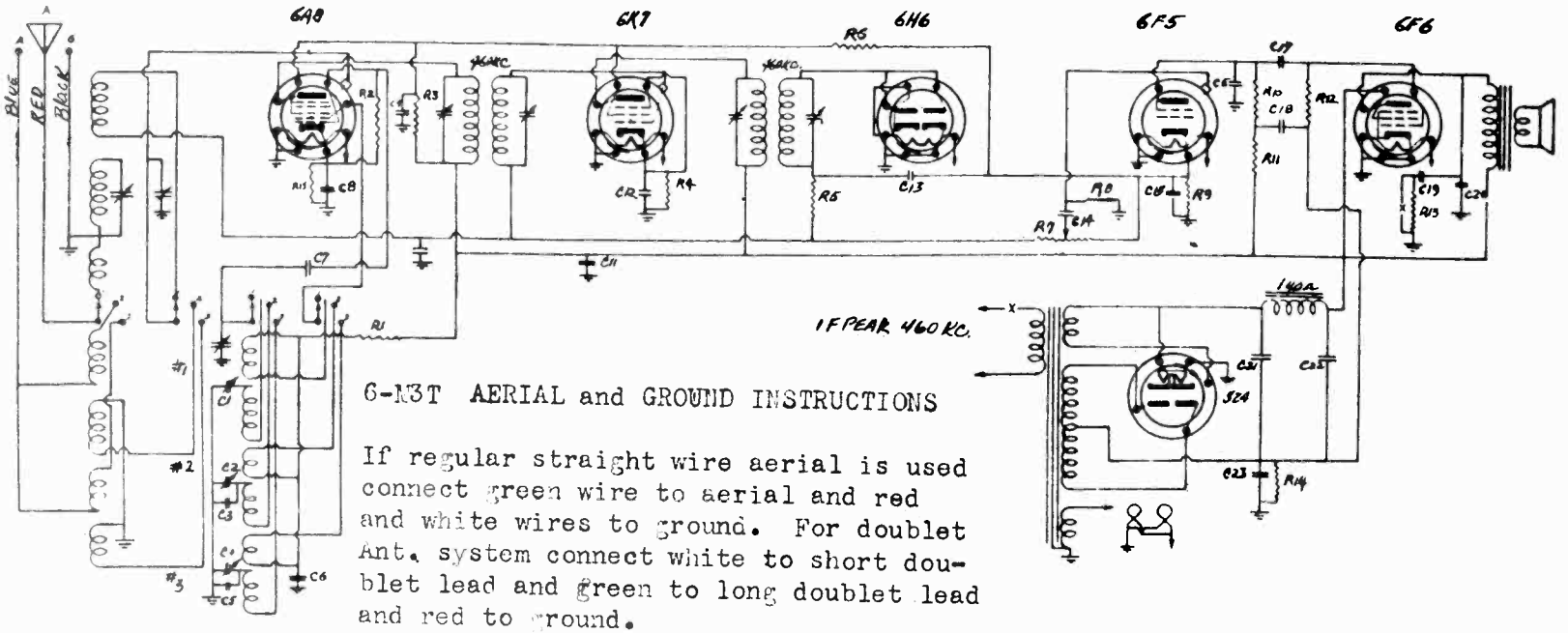


DRIVE CORD REPLACEMENT

Turn gang condenser to full open position — See illustration. Use a new drive cord 42 inches in length.







6-M3T AERIAL and GROUND INSTRUCTIONS

If regular straight wire aerial is used connect green wire to aerial and red and white wires to ground. For doublet Ant. system connect white to short doublet lead and green to long doublet lead and red to ground.

CONDENSERS

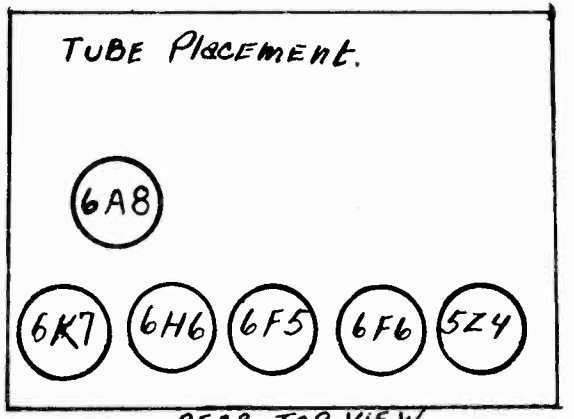
C6-C9-C11	1	MFD.	400volts
C10	.1	"	200V
C14-C17	.02	"	600V
C8-C12	.05	"	200V
C18	.25	"	400V
C23	.10	"	30V
C20	.006	"	800V
C15	.01	"	200V
C19	.03	"	600V
C3	.00075	"	Mica 3%
C5	.002	"	" 3%
C7	.0001	"	" 10%
C13	.00025	"	" 10%
C16	.001	"	" 10%

C21-C22 8Mfd.450V filter cond.
C1-C2 500 Mfd.Variable padder.
C4 1000 " " "

RESISTORS

R1, R13	20,000 ~	1/2Watt carbon
R3	10,000 ~	2watt carbon
R4, R15	200 ~	wire wound
R8	100,000 ~	1/3 watt carbon
R2	40,000 ~	" " "
R5	500000 ~	1/2 " "
R6	12,000 ~	1 " "
R7	200000 ~	Vol. Control
R9	100 ~	wire wound
R10, R11	70,000 ~	1/3 watt carbon
R12	1Meg.1/2	
R14	250 condohm	2 watt.

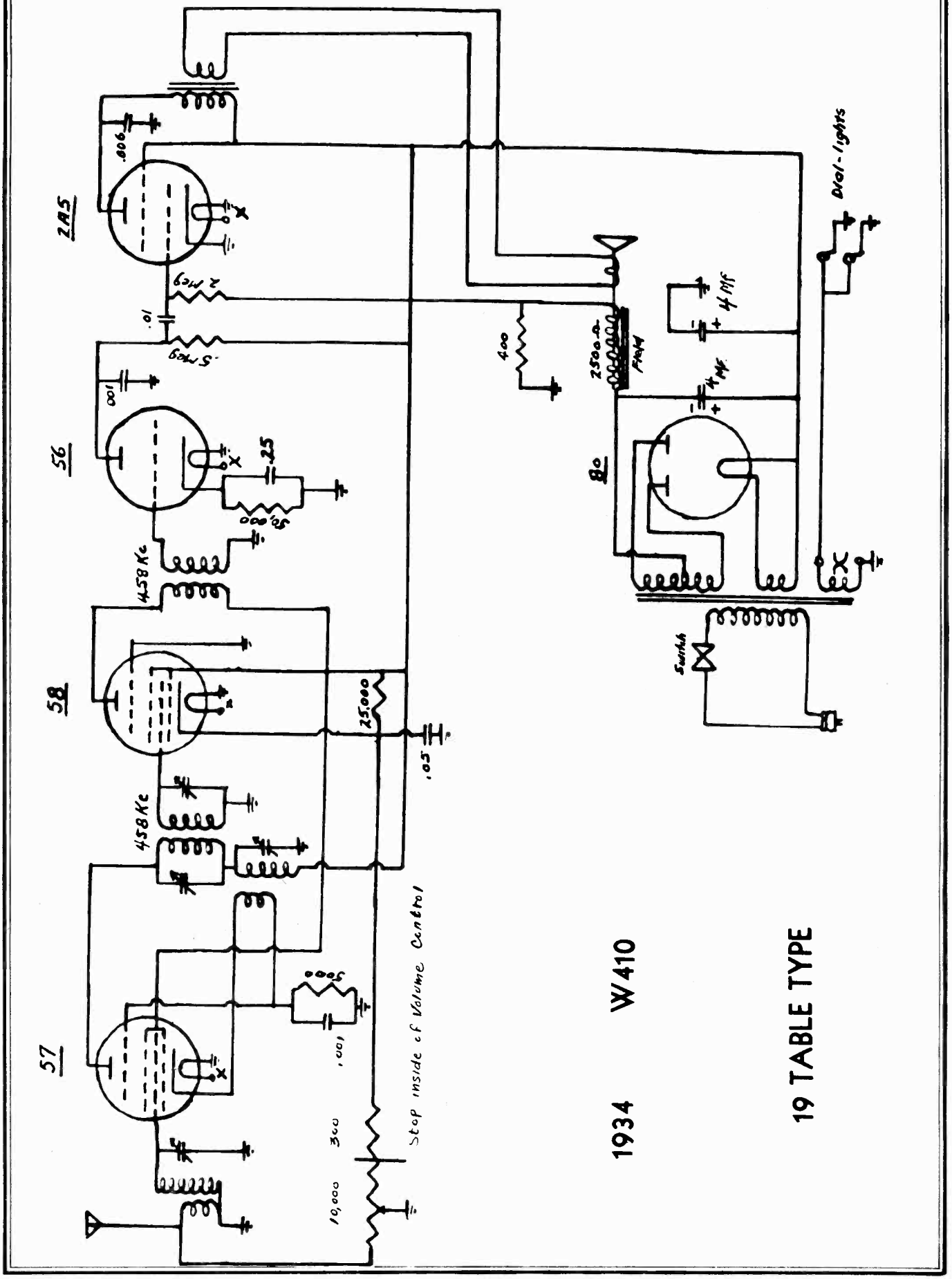
TUBE PLACEMENT.



REAR TOP VIEW.

MODEL 19 Table
Chassis W140

WESTERN AIR PATROL

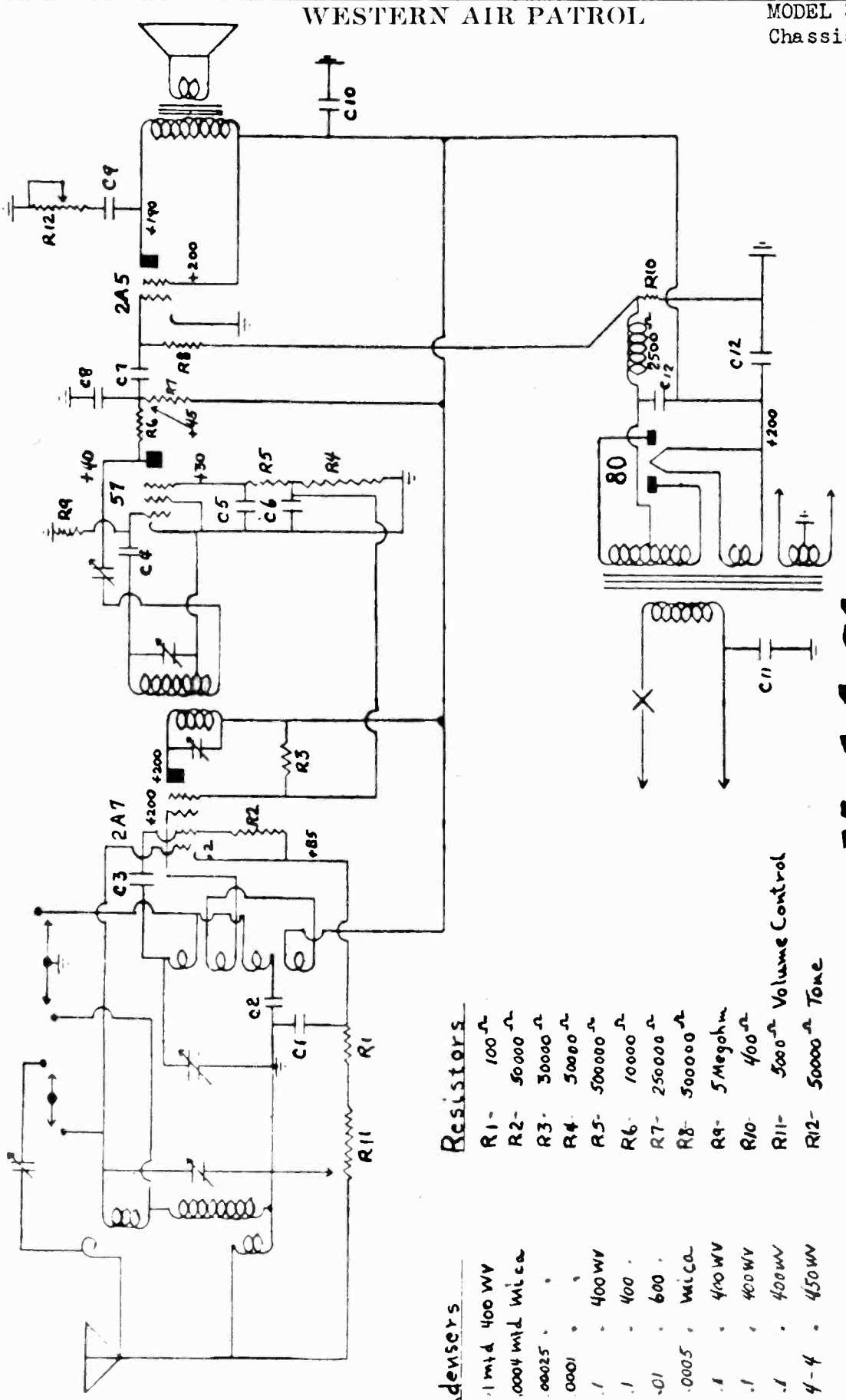


1934 W410

19 TABLE TYPE

WESTERN AIR PATROL

MODEL 31 Super
Chassis W220



Model 31 1933

Condensers

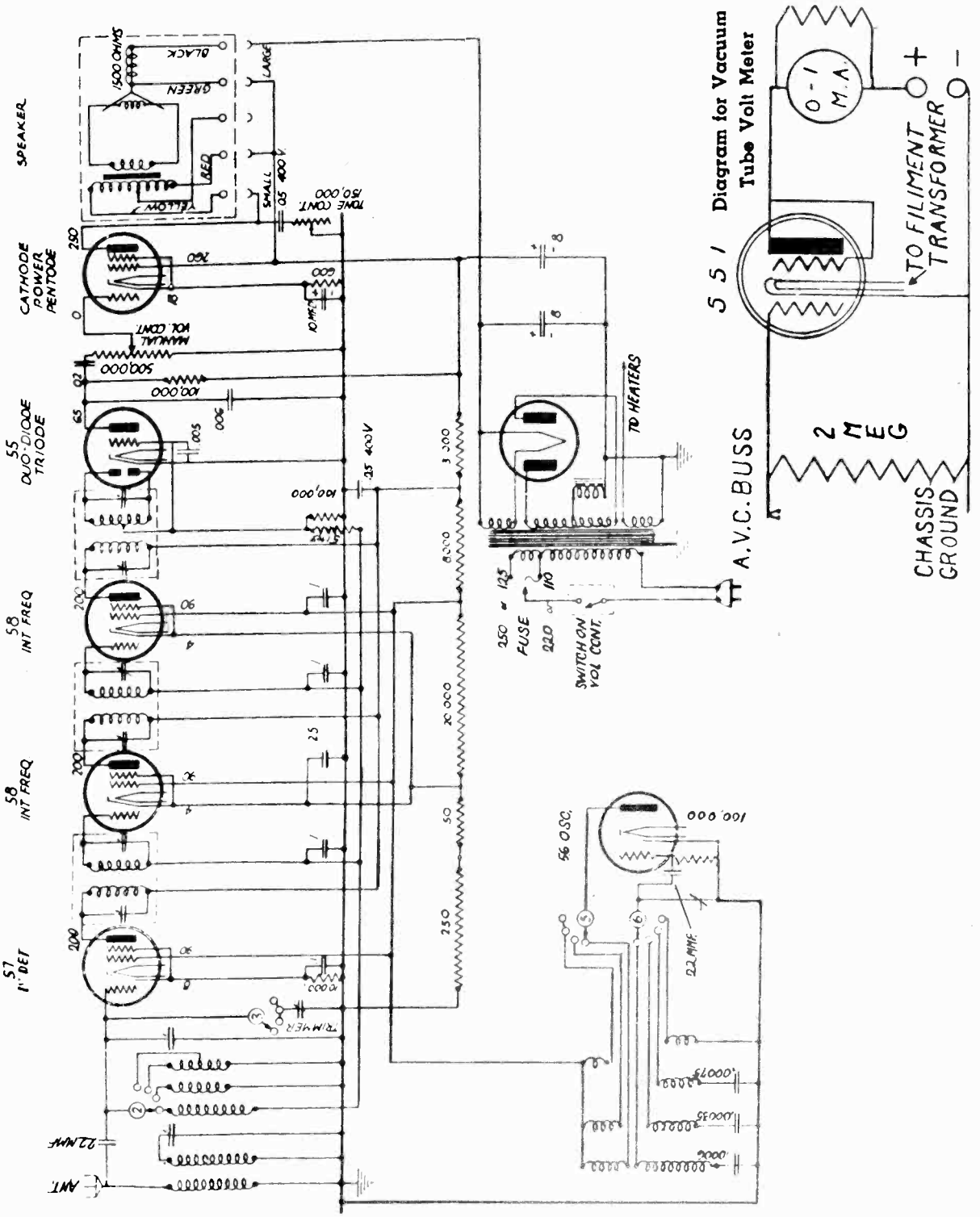
C1- .1 mfd 400 WV
C2- .0004 mfd Mica
C3- .00025 " "
C4- .0001 " "
C5- .1 " 400 WV
C6- .1 " 400 "
C7- .01 " 600 "
C8- .0005 " Mica
C9- .1 " 400 WV
C10- .1 " 400 WV
C11- .1 " 400 WV
C12- .1-.1 " 450 WV

Resistors

R1- 100Ω
R2- 50000Ω
R3- 30000Ω
R4- 50000Ω
R5- 500000Ω
R6- 10000Ω
R7- 250000Ω
R8- 500000Ω
R9- .5 Megohm
R10- 400Ω
R11- 5000Ω Volume Control
R12- 50000Ω Tone

MODEL 44 Table
Chassis W157

WESTERN AIR PATROL



WESTERN AIR PATROL

MODEL 46
Chassis W151

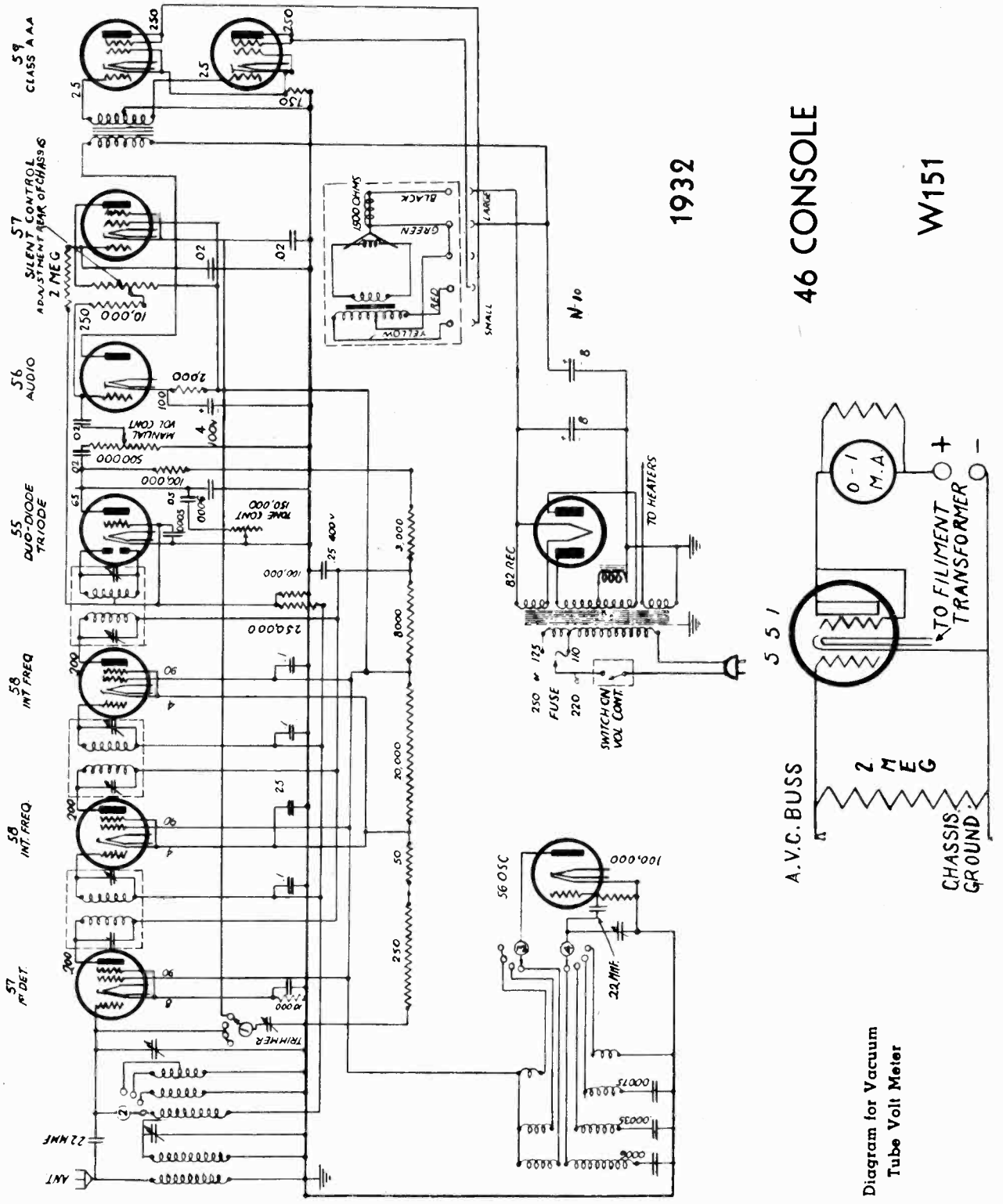
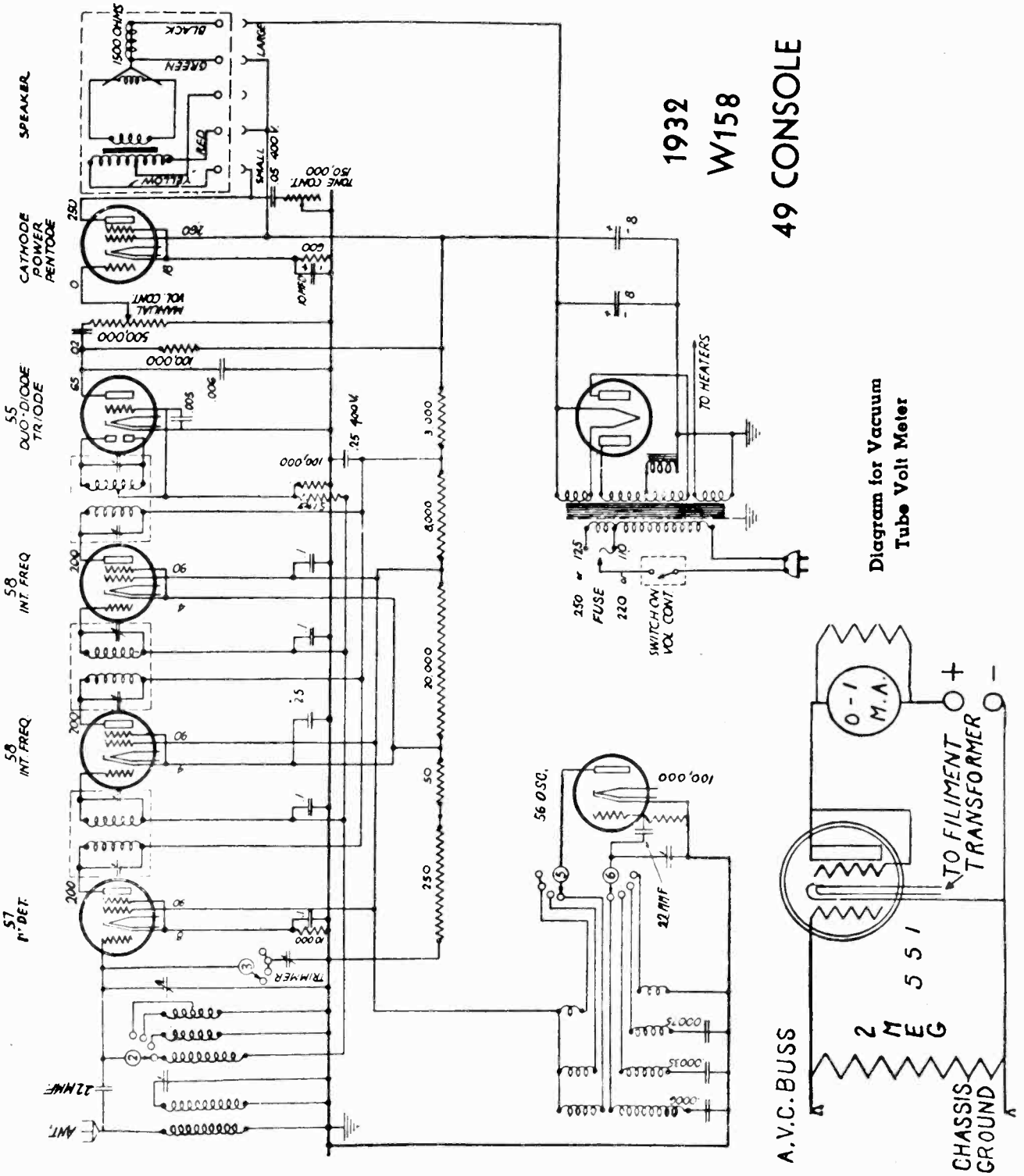


Diagram for Vacuum Tube Volt Meter

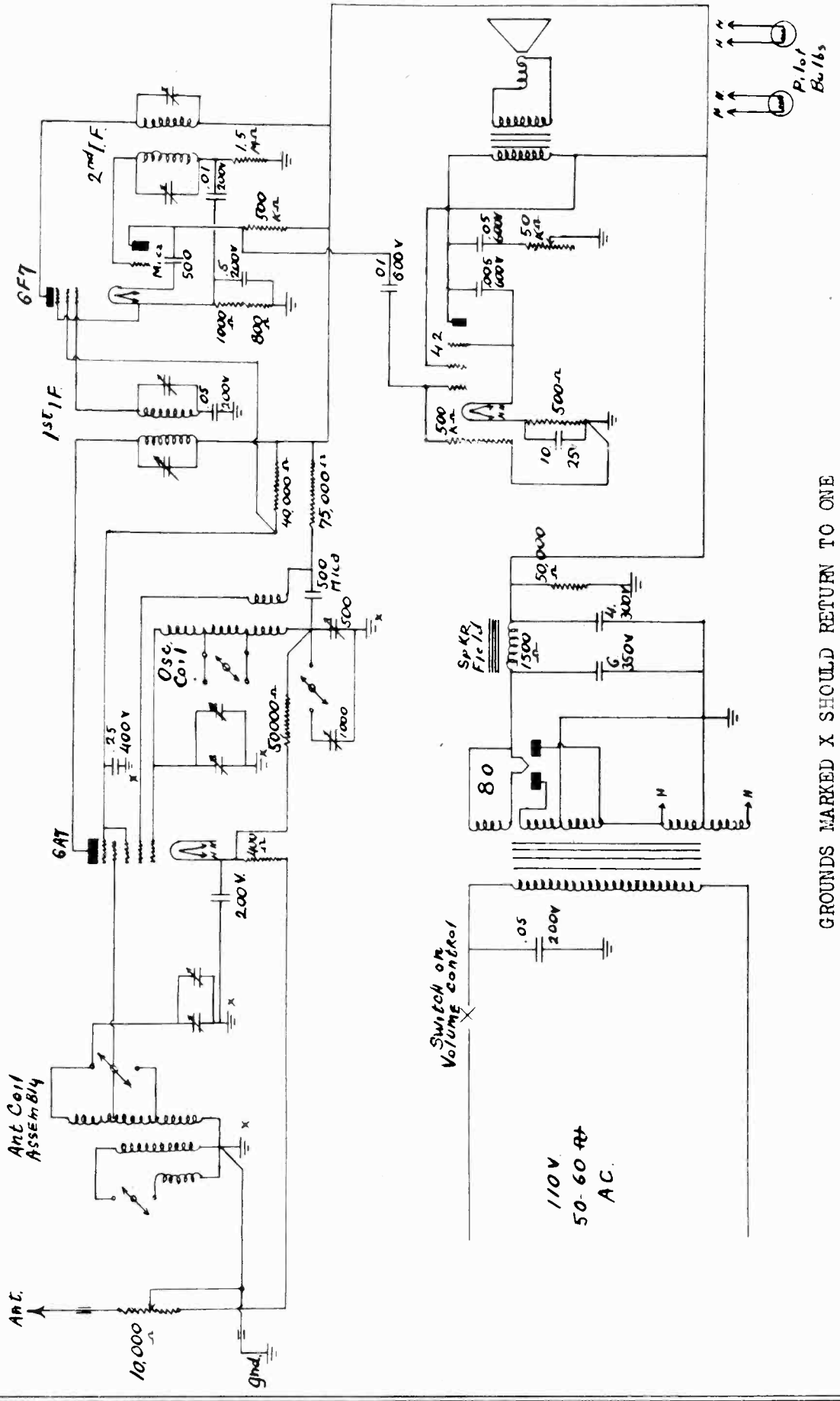
MODEL 49 Console
Chassis W158

WESTERN AIR PATROL



WESTERN AIR PATROL

MODEL 51
Chassis W404



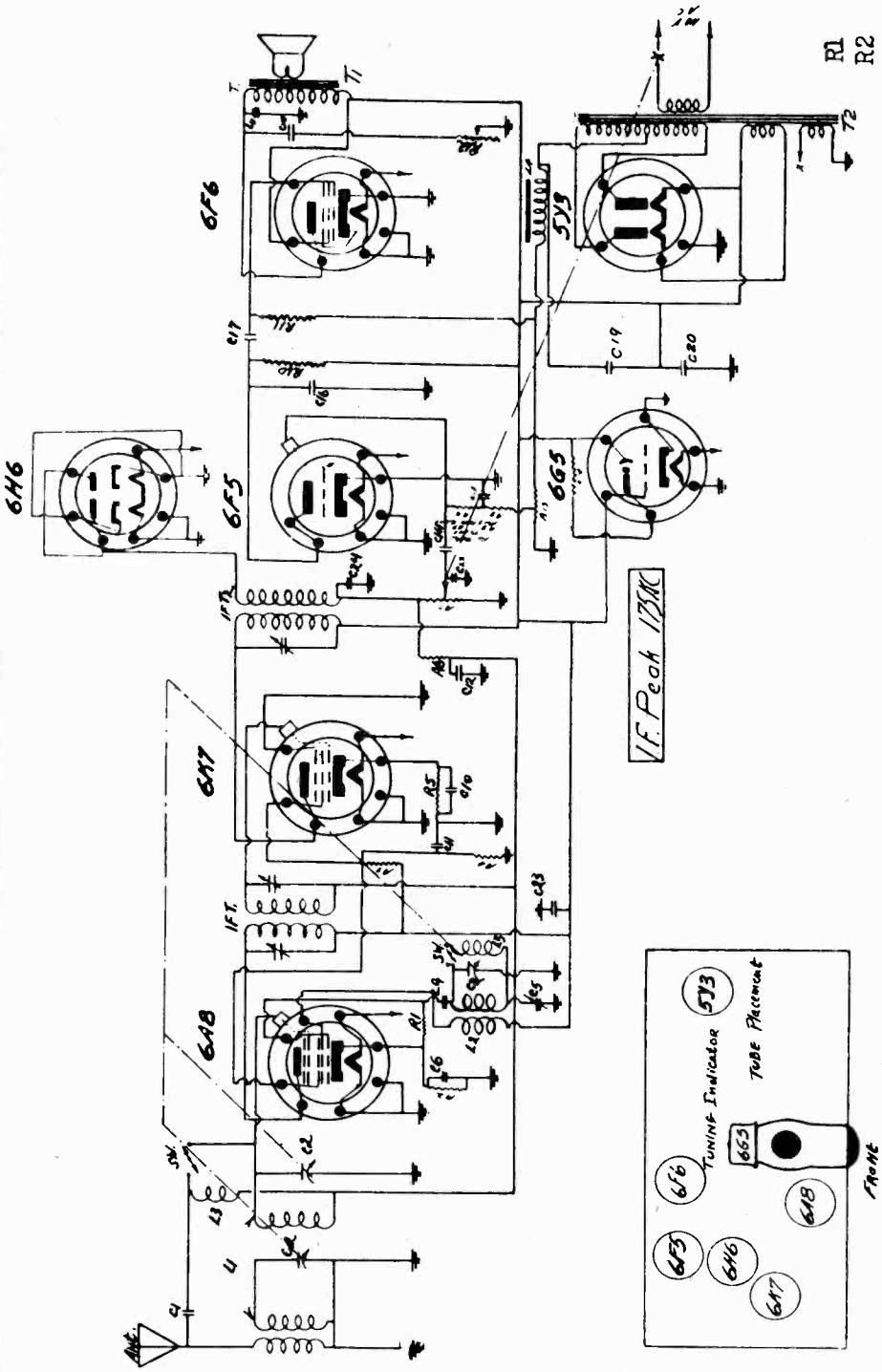
GROUNDS MARKED X SHOULD RETURN TO ONE POINT ON THE CHASSIS SHORTWAVE SWITCH SHOWN ON BROADCAST POSITION.

MODEL 66
Chassis W486

WESTERN AIR PATROL

CONDENSERS	
C1	.000022 MFD
C2	Variable Cond.
C4	.00005 MFD
C5	500 MMFD
C6	.1 MFD
C10	.1MFD
C11	.1 MFD
C12	.1MFD
C14	.02 MFD
C15	.1 MFD
C16	.0003 MFD
C17	.02 MFD
C18	.05 MFD
C19	8 MFD }
C20	4 MFD }
C21	.006 MFD
C22	.00025 MFD
C23	.25 MFD
C24	.001 MFD

RESISTORS	
R1	60,000Ω wire wound
R2	100 Ω
R3	30,000 Ω
R4	50,000 Ω
R5	100 Ω
R6	50,000 Ω
R7	500,000 Ω
R8	1 Meg.
R9	100,000 Ω
R10	250,000 Ω
R11	1 Meg.
R12	50,000Ω tone Cont.
R13	360.40 Ω
R14	1 Meg.(in tube socket)

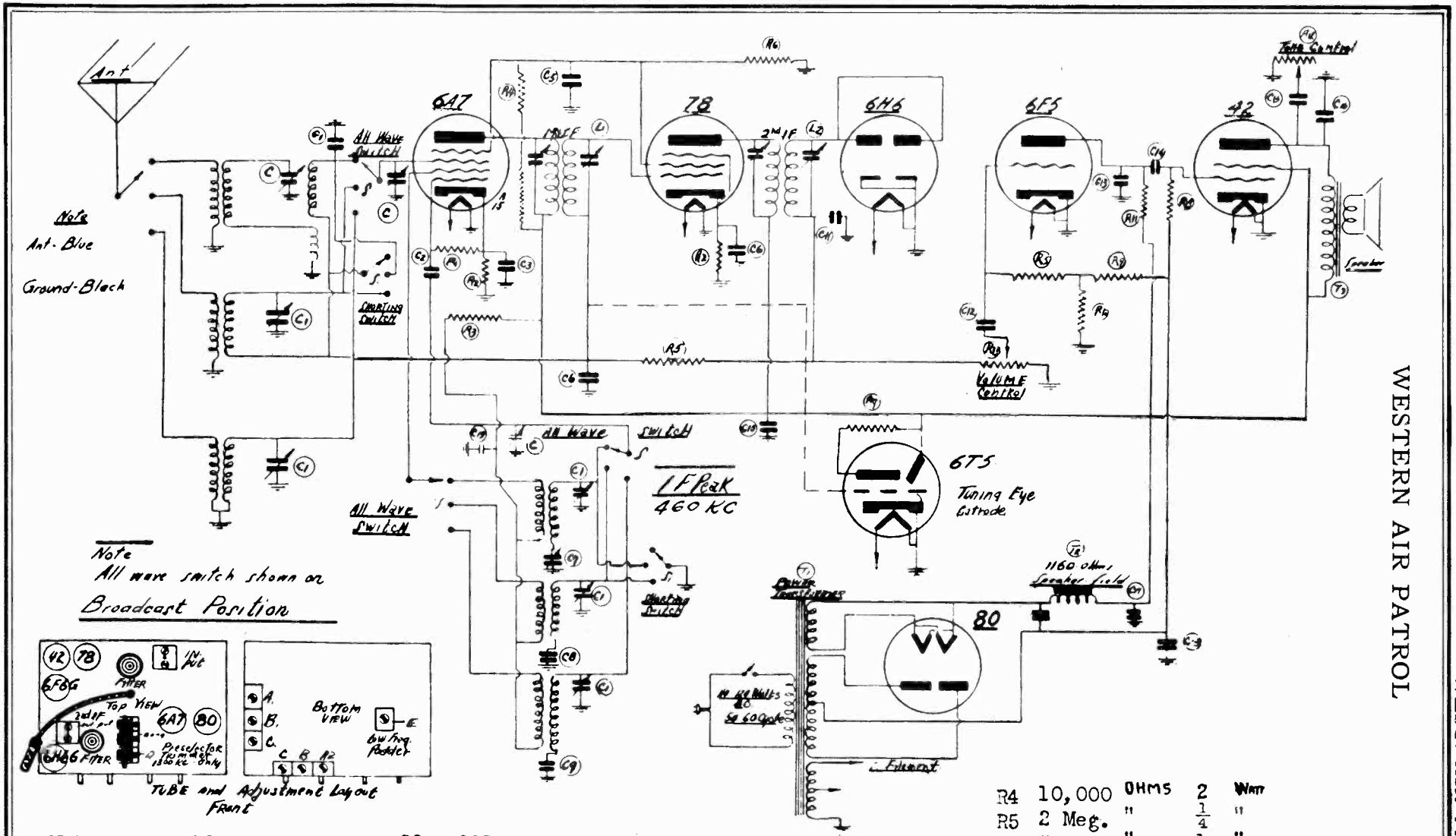


KNOB LAYOUT

1 - Band Selector
2 - Station Selector
3 - Volume Control
4 - Tone Control
Blue Wire - Antenna
Black Wire - Ground

WESTERN AIR PATROL

MODEL 77 Chassis W481



CODE	CONDENSERS																	
C1	3-30	MMF.		C8	.003	MFD.	400V	C16	.01	MFD.	600V	R4	10,000	OHMS	2	Watt		
C2	.00005	MFD.		C9	.003	"	600V	C17	8	"	450WV	R5	2 Meg.	"	$\frac{1}{4}$	"		
C3	.05	"	200V	C10	.25	"	400V	C18	10	"		R6	50,000.	"	1	"		
C4	.0005	"		C11	.00025	"		C	Variable 3 gang. cond			R7	1 Meg.	"	$1\frac{1}{4}$	"	(in 6T5socket)	
C5	.1	"	400V	C12	.01	"	400V	C19	.05		400V	R8	1 Meg.	"	$1\frac{1}{4}$	"		
C6	.05	"	200V	C13	.0001	"		R1	60,000	Ohms	$\frac{1}{4}$ watt	R9	350	"	$1\frac{1}{2}$	"		
C7	500	MMF.		C14	.01	"	800V	R2	200	"	" "	R10	30	"	$1\frac{1}{2}$	"		
				C15	.02	"	"	R3	15,000	"	" "	R11	250	"				
												R12	50,000	"			Tone Control	
												R13	500000	"			Volume Cont.	

MODEL 77
Chassis W481

WESTERN AIR PATROL

ALIGNMENT AND CALIBRATION

This radio was properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment.

A signal generator that will provide an accurately calibrated signal at 460, 1715, 1300, 600, 5400, 9000, 14400, 16200, 17400 and 18000 K.C. and an output indicating meter or V.T. volt meter are required. It will be practically impossible to align the receiver if unsatisfactory apparatus is used.

Use a non-metallic screwdriver for the adjustments. The complete proceedure is as follows:

I.F. AMPLIFYER ADJUSTMENT

Adjust signal generator to give proper output at 460 K.C. Connect the output of the signal generator to the antenna of the receiver.

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

Turn the band switch to Range A. position (Standard wave band). Connect the vacuum tube volt meter to the A.V.C. buss of the receiver and adjust trimmers in the I.F. stage to resonance.

RANGE A ALIGNMENT
525 to 1750 K.C.

Turn the rotor of the tuning condenser to full maximum position. Set both ends of pointer to true horizontal line.

1.

Turn pointer to 1712 K.C. and set signal generator output to 1712 K.C. and adjust oscillator high frequency trimmer "A1" for maximum output.

2.

Turn pointer to 600 K.C. and adjust signal generator to 600 K.C. output.

Then use low frequency trimmer "E" and adjust for maximum output.

3.

Turn pointer to 1300 K.C. and set signal generator output to 1300 K.C. and adjust modulator high frequency trimmer "A2" and "D" pre-selector stage for maximum output.

Then turn pointer to 600 K.C. and readjust trimmer E but do not adjust A2 and D at this point.

RANGE B ALIGNMENT
1700 to 5800 K.C.

1. Turn pointer to 5400 and set signal generator at 5400 K.C. and adjust high frequency trimmer "B1" to resonance of 5400 K.C. on the dial.

RANGE C ALIGNMENT
18000 to 5400 K.C.

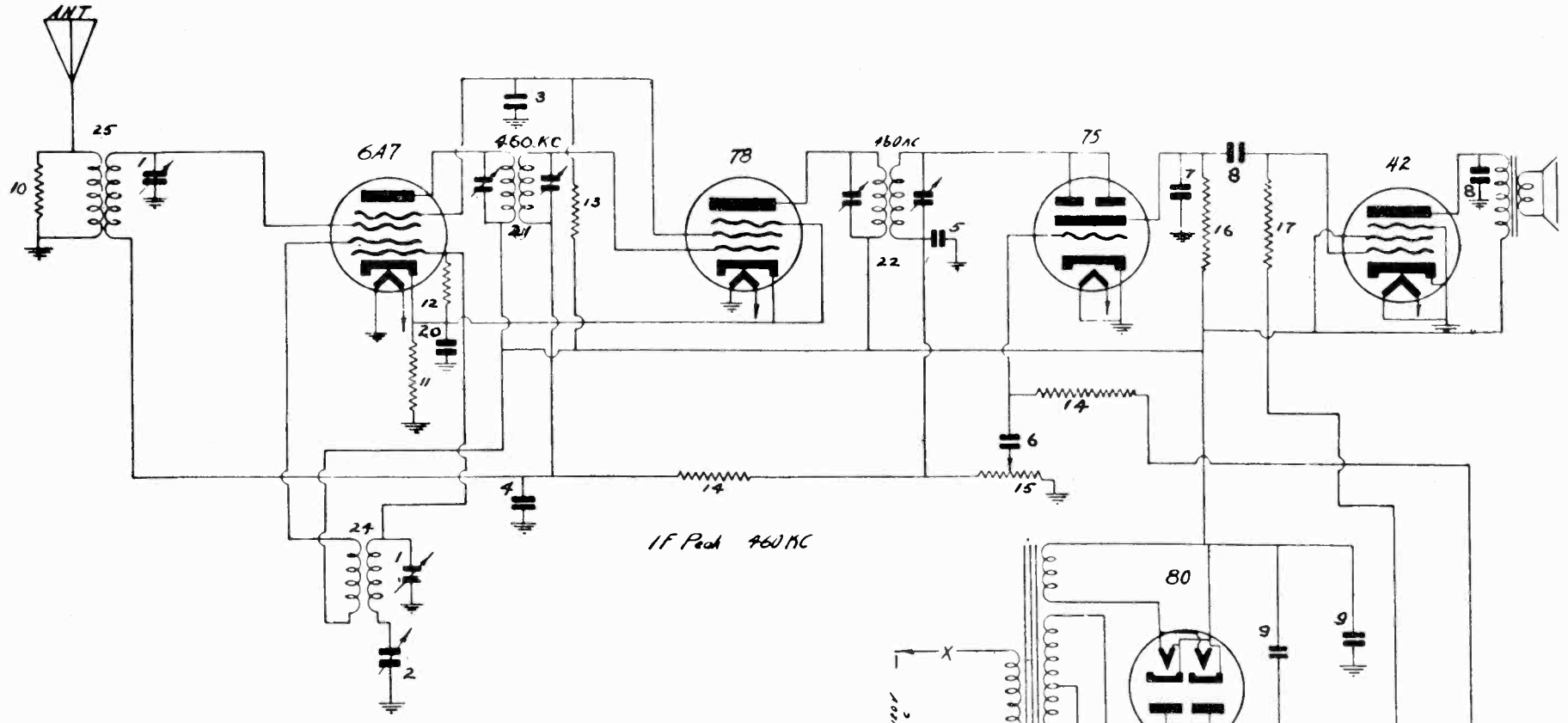
1. Turn pointer to 18 Meg. and set signal generator at 18 Meg. and adjust high frequency trimmer "C1" to resonance at 18 Meg. on dial. Then adjust trimmer C for maximum output.

CAUTION

During this procedure it is very easy to set the oscillator high-frequency trimmer on the image side of signal which will give incorrect alignment. The oscillator trimmers are always turned to a frequency that is higher than that of the true signal that the receiver is receiving.

WESTERN AIR PATROL

MODEL 557M
Chassis W496

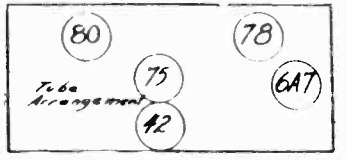


CONDENSERS

NO.	VALUE	PARTS NO.
1	Variable Condensor	A-8005
2	500 MMF	A-18005
3	.05 MFD	A-14057
4	.05 MFD	A-14056
5	.00025 MFD	A-16078
6	.01 MFD	A-14027
7	.001 MFD	A-14078
8	.01 MFD	A-14028
9	8x8 MFD	A-10005
20	.1 MFD	A-14001

RESSISTORS

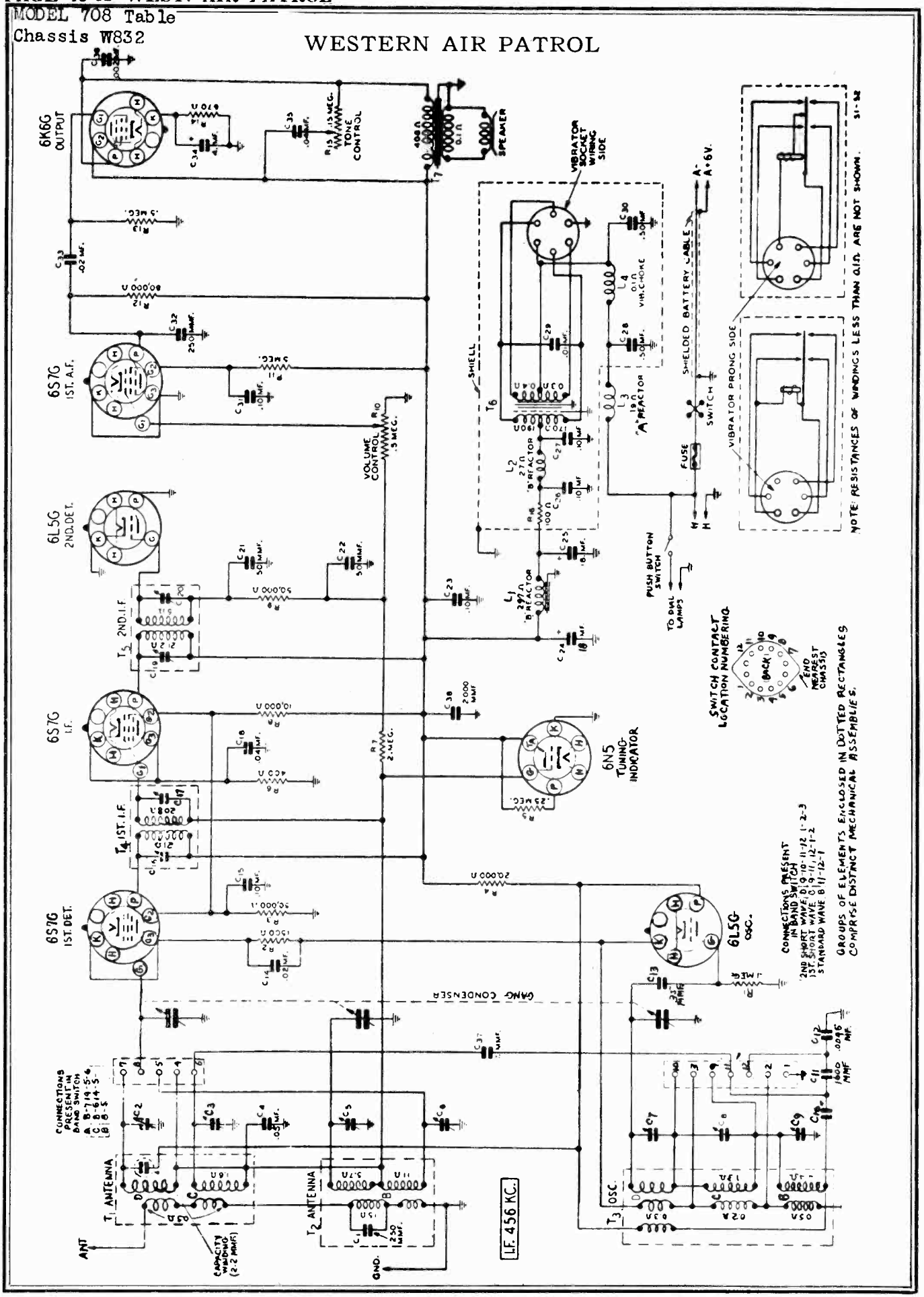
NO.	VALUE	PARTS NO.
10	25,000 ohms	A-20216
11	300 "	A-20073
12	100,000 "	A-20299
13	15,000 "	A-20502
14	2 Meg	A-20402
15	500,000 "	A-33005
16	250,000 "	A-20337
17	1 Meg.	A-20361
18	350 "	A-20479
19	30 "	A-2001Z-I



1938

MODEL 708 Table
Chassis W832

WESTERN AIR PATROL

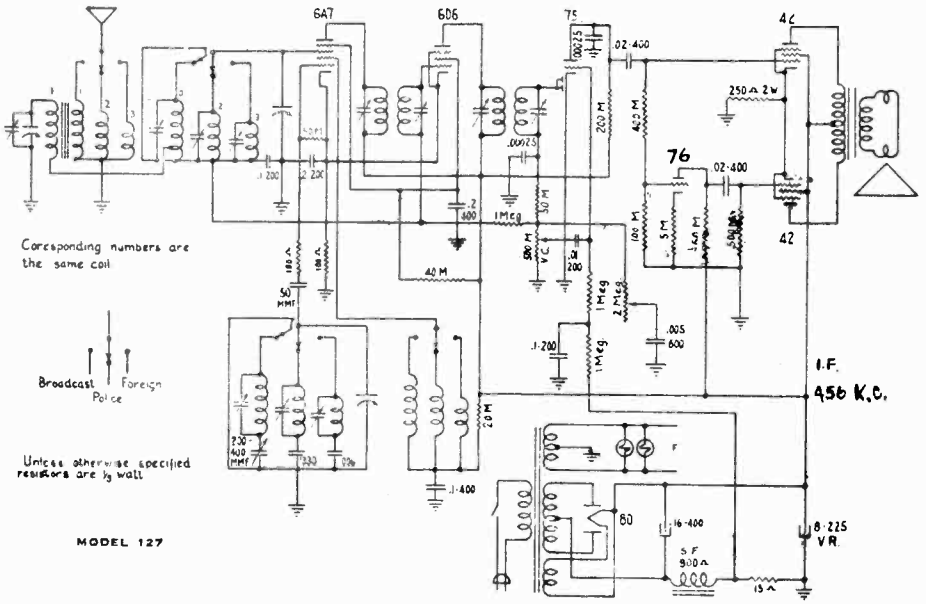


WESTERN AUTO SUPPLY CO.

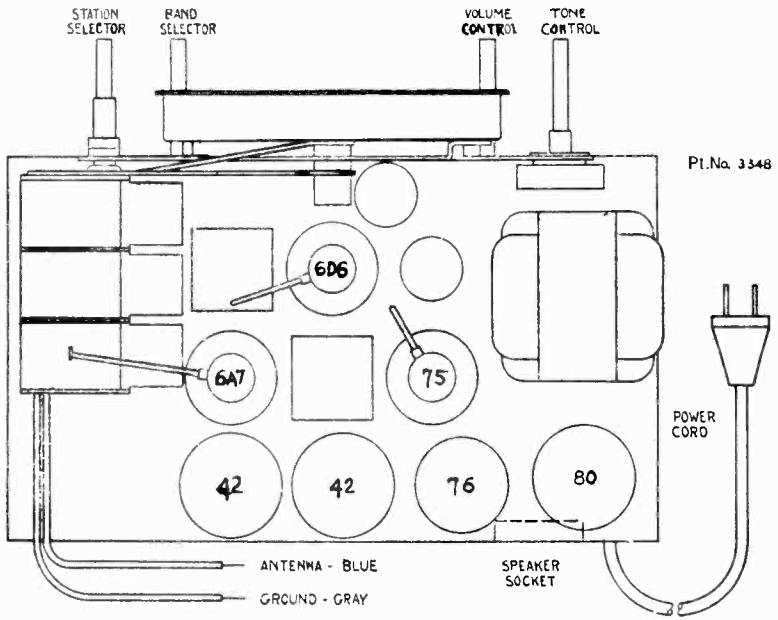
MODELS D-700, D-723 (1937)

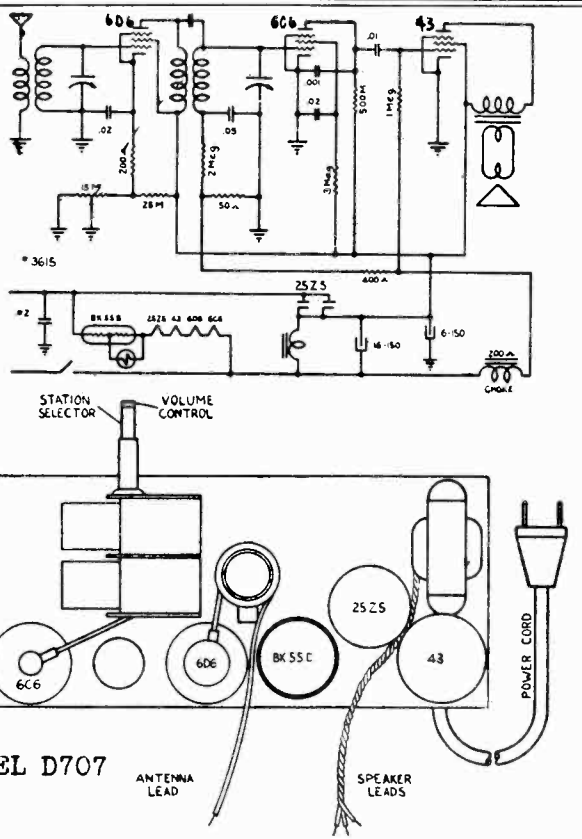
MODEL D-707

CIRCUIT DIAGRAM MODELS D700, D723



TUBE LAYOUT





MODEL D707

OPERATION INSTRUCTIONS

This receiver is designed to operate on 105 to 125 volts, direct or alternating current. Do not connect to any other source unless designated on instruction card. Connect attachment plug to light socket. See that all tubes are properly inserted in sockets as per chart showing top view of chassis. The aerial furnished with the receiver should be strung around a picture molding or under the edge of a rug. Turn operating switch on by turning the volume knob to the right. Continue to turn volume control in clock-wise direction as far as it will go and allow an interval of time for tubes to become heated. Turn the station selector knob slowly until station is heard clearly and reduce volume to desired intensity by turning volume control knob to the left.

This receiver covers a continuous range from 540 to 1725 KC. Standard and experimental broadcast stations will be received between 540 and 1600 KC. Many police stations can be received near 1700 KC.

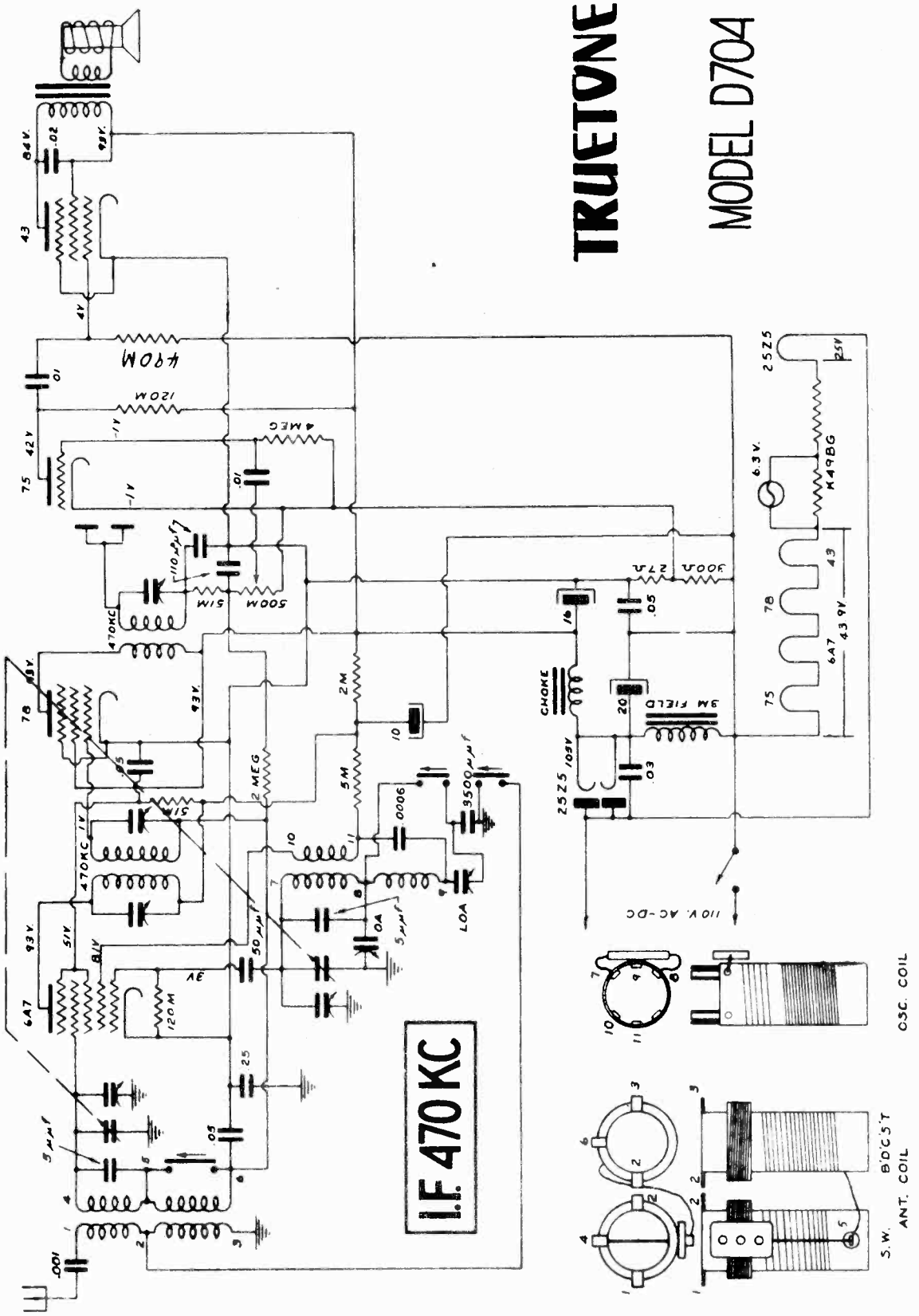
The following tubes are used in this receiver:

1—No. 6D6 R. F. Amplifier
1—No. 6C6 Detector
2—No. 43 Power Output
1—No. 25Z5 Rectifier
1—BK 55B Regulator

If this receiver should fail to operate when connected to direct current, reverse the attachment plug in the light socket.

MODEL D704

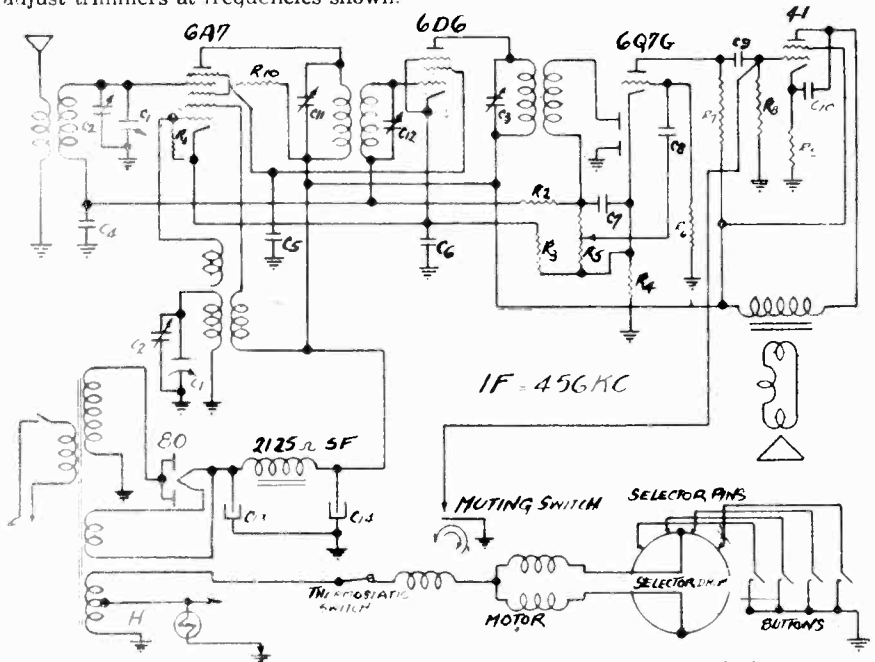
WESTERN AUTO SUPPLY CO.



Connect a high impedance AC voltmeter across loud-speaker terminals. Volume control should be set a few degrees back of maximum volume position. Use a weak signal from generator, strong signals tend to cause improper adjustments.

I.F.: Connect the generator ground to receiver chassis. Using .1 mfd. condenser in series with high side of generator, apply 456 kc. signal to grid of 6D6 I.F. amplifier tube, and aline transformer No. 2. Connect generator to grid of 6A7 tube and aline transformer No. 1.

R.F. Using a 200 MMF. condenser in series with the high side of the generator, adjust trimmers at frequencies shown.

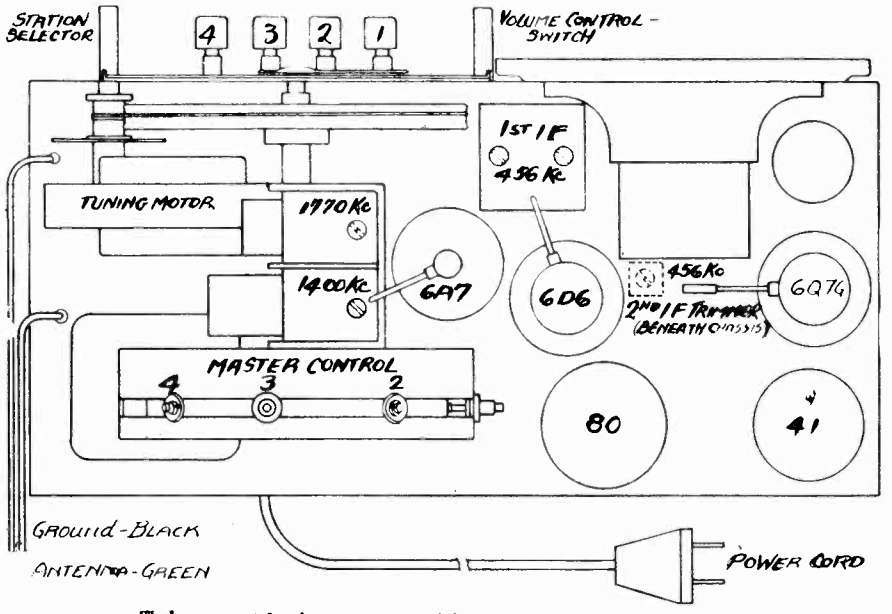


Symbol	Part No.	Description
C1	4974	345-160 mmfd Variable
C2		Trimmer on variable
C3	1611	I.F. Trimmer
C4,5	580	.05 200 V.
C6	2792	.2 200 V.
C7	4810	.0005 400 V.
C8,9	568	.01 400 V.
C10	2601	.01 600
C13)	5006	10 mfd 300 W.V.
C14)		6 mfd 250 W.V.
R1	631	50M 1/3 Watt
R2,6	624	1 meg. 1/3 Watt
R3	2605	200 Ohm 1/3 Watt
R4	2689	100 Ohm 1/3 Watt
R5	4982	500M Volume Control and Switch
R7	599	150M 1/3 Watt
R8	615	500M 1/3 Watt
R9	634	500 Ohm 1/3 Watt
R10	636	40M 1/3 Watt
	4975	Power Transformer
	4979	Motor Assembly
	4976	Speaker
	4875	Oscillator Coil
	5005	Antenna Coil
	5004	Second I.F. Transformer

Tubes required are:

1—6A7 Oscillator-Translator
1—6D6 Intermediate Frequency Amplifier
1—6Q7G Detector-Automatic Volume Control—First Audio
1—41 Power Output
1—80 Rectifier

TUBE LAYOUT and CONNECTION DIAGRAM



Tubes must be in proper position and connected as shown.

How to set up the Automatic Tuner: On the tube location chart, observe the relative positions of the push buttons and the MASTER CONTROL; button No. 1 controls selector pin No. 1, etc. The selector pins on the Master Control may be moved around the drum by sliding them along the slot—no tools are necessary. Note that there is a paint dot on the rim of the bakelite drum directly opposite the break between the contact ribbons.

List four favorite local stations, calling the highest frequency station (the one nearest the 1700 kc. end of the dial) the No. 1 station, the next lowest No. 2, etc.

Using the manual station selector, tune in the No. 1 station, then move the No. 1 selector pin opposite the paint dot so that the contact rests between the two ribbons. As a means of checking the accuracy of this setting, a spring clip is provided on one of the pilot light leads so that the lead may be disconnected from the chassis and attached to the selector pin. With the clip fastened to the pin, the lamp will glow until the contact is properly set. DO NOT LEAVE THE PILOT LIGHT LEAD CONNECTED TO THE PIN. As soon as the station has been set up, RECONNECT THE PILOT LIGHT LEAD TO THE CHASSIS so that the lamp glows normally.

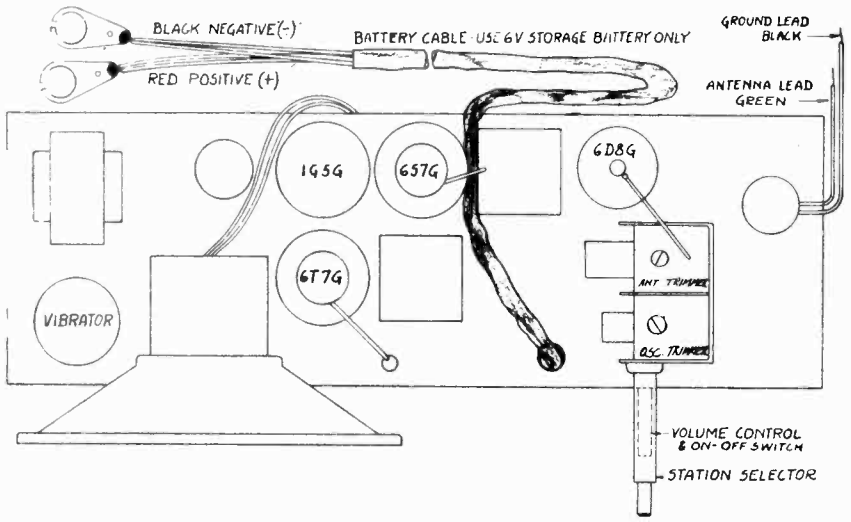
Using similar procedure, set up the other three stations.

When all four stations are set up, locate their call letters on the sheets furnished, punch out the tabs and insert in proper buttons. Thereafter any of the four stations may be tuned in by merely pressing the button bearing the call letters of the desired station.

Be sure that your stations are listed in the proper order according to frequency or position on the dial. Do not confuse frequency (kilocycles) with wave length (meters).

Be sure that your stations are tuned in exactly before setting the contact pins.

Do not set up weak stations, or distant stations too weak to afford clear receptior at all times.



TUBE LAYOUT *and* CONNECTION DIAGRAM

Model D-719

For models D-719, D-900, D-901

Connect a high impedance AC voltmeter across loud-speaker terminals. Volume control should be set a few degrees back of maximum volume position. Use a weak signal from generator, strong signals tend to cause improper adjustments.

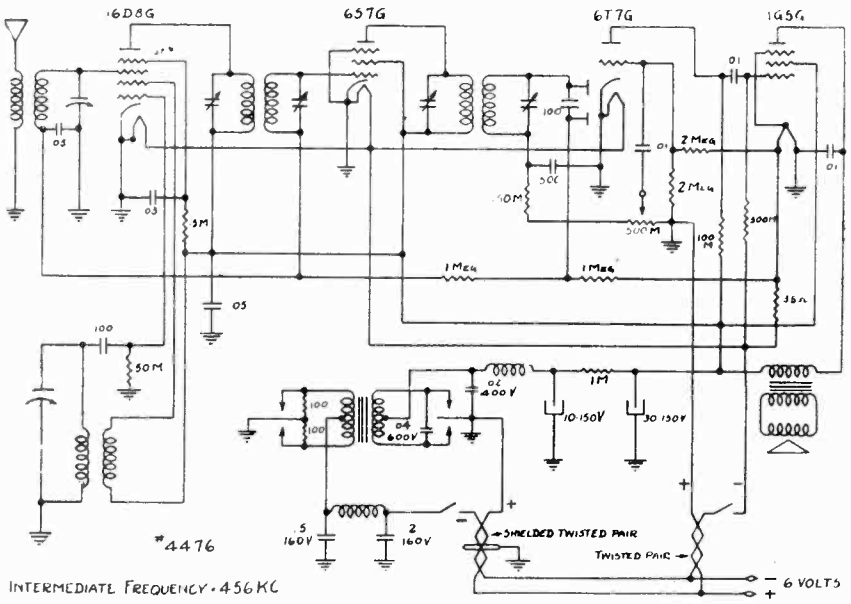
IF. Connect generator ground to receiver ground. Using .1 mfd condenser in series with "high" side of generator, apply 456 kc signal to grid of *6S7G and adjust second IF transformer; same for first IF, applying signal to grid of 6D8G.+ (See diagram for location of tubes and transformers.)

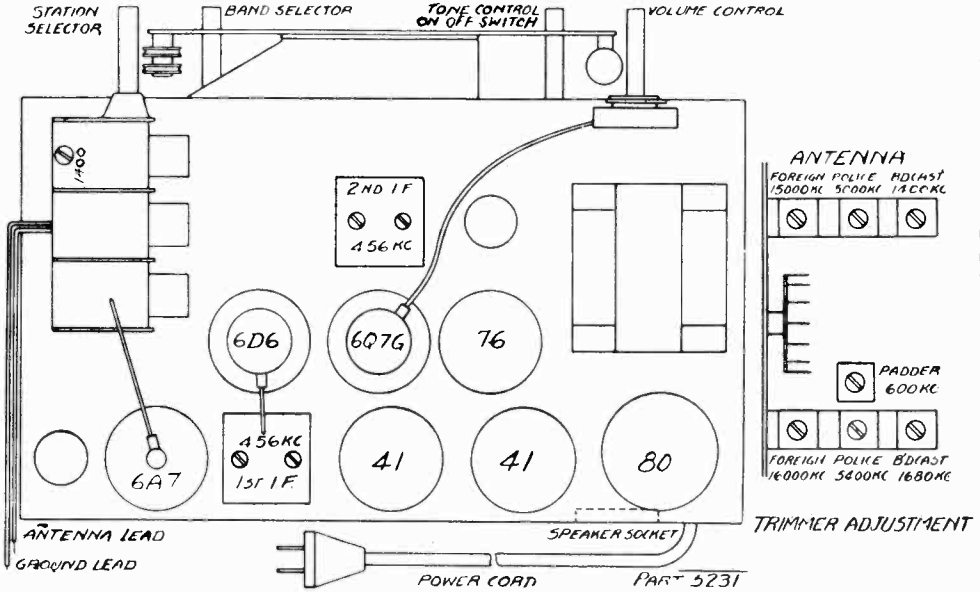
RF. Using 200 mmf condenser in series with generator, feed 1725 kc signal to antenna lead and adjust oscillator top frequency. Set generator at 1400 kc, tune receiver to signal and adjust antenna trimmer.

* 6D6 for models D-900, D-901

\+ 6A7 " " " "

△ 1680 " " " "

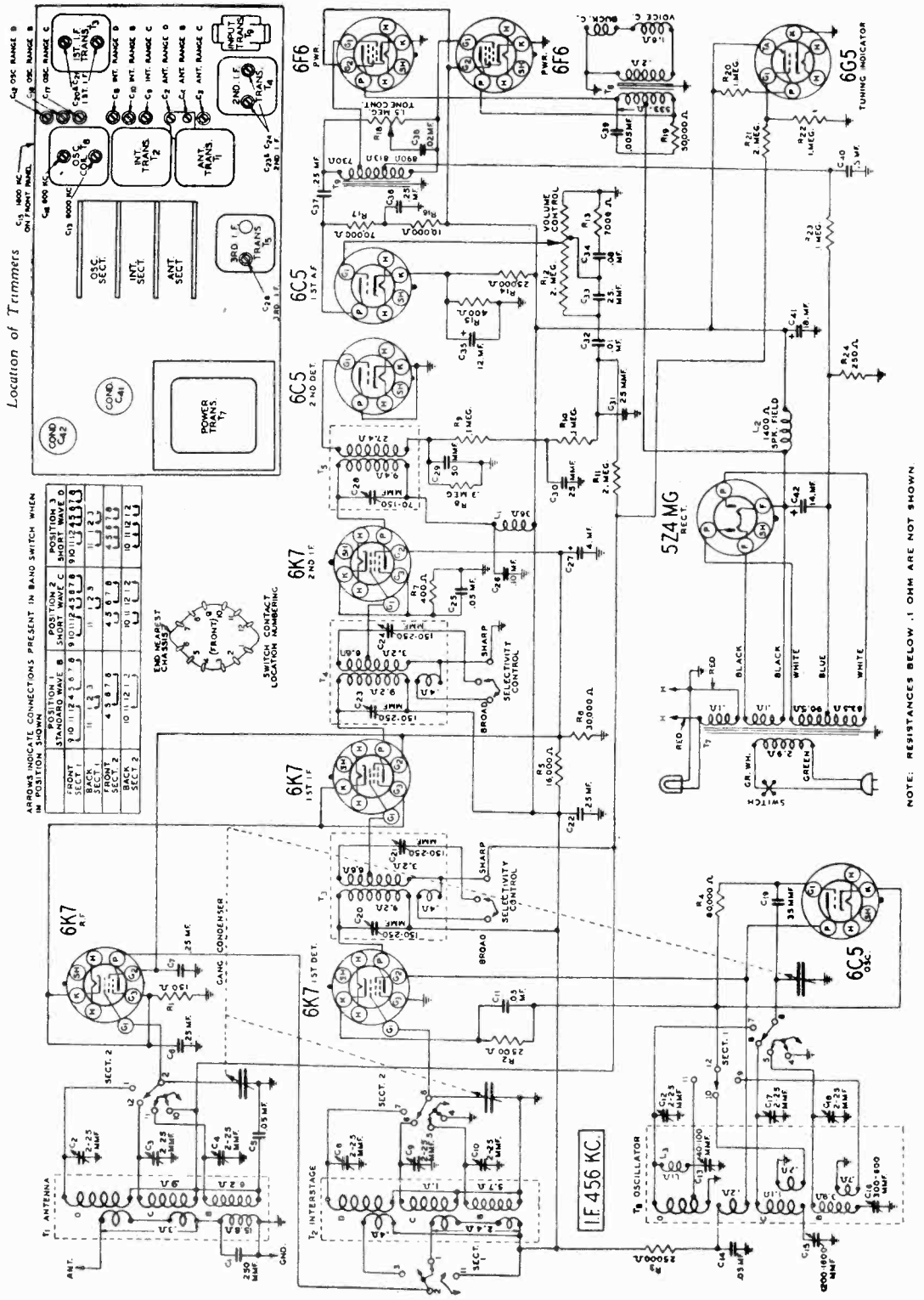




Socket layout for Model D-900 only.

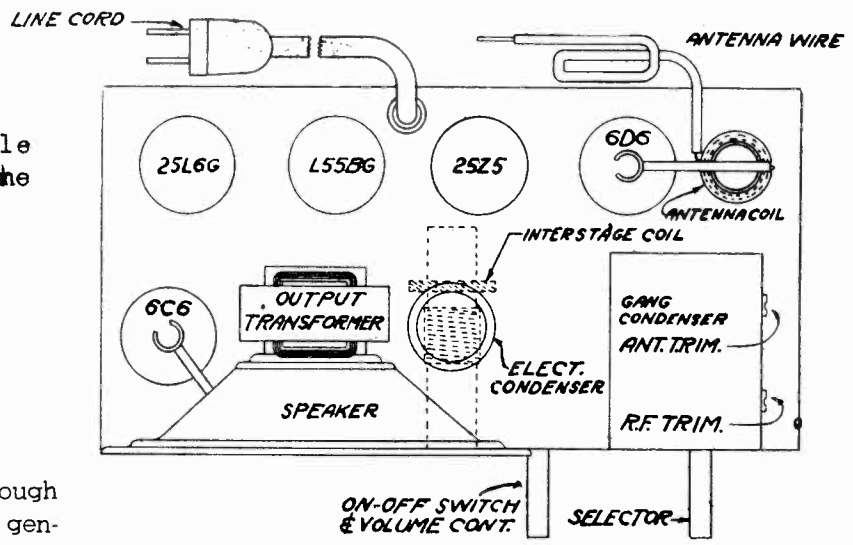
MODEL D722

WESTERN AUTO SUPPLY CO.



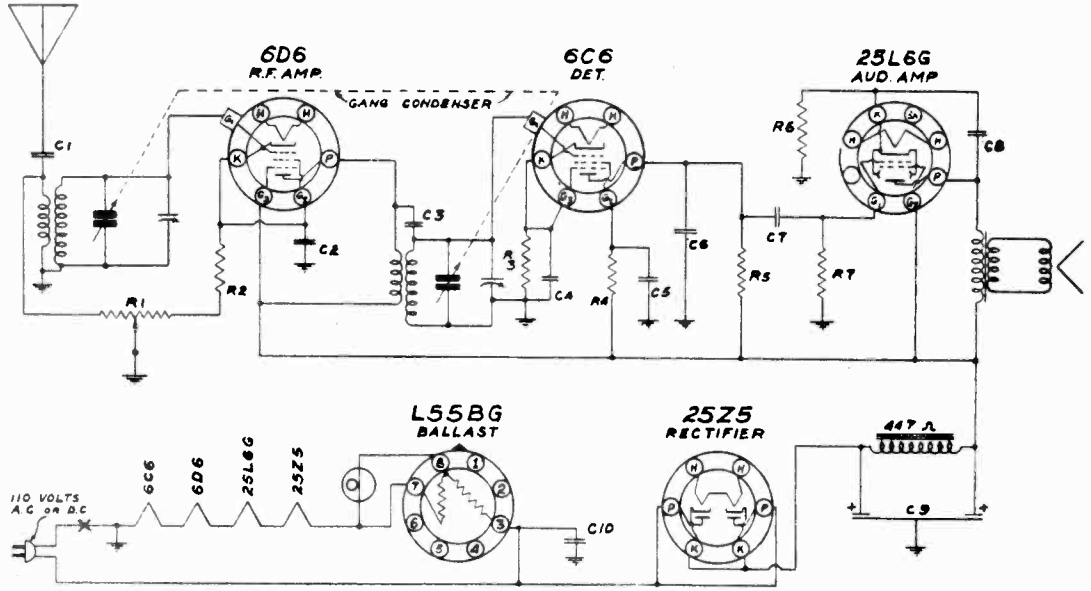
POWER SUPPLY: This receiver is designed to operate from any AC (alternating current) or D.C.(Direct current) power supply main of 105-125 volts,60 cycle If tme receiver fails to operate on D.C. reverse the power line plug.

FOR CONVENTIONAL ALIGNMENT SEE
SPECIAL SECTION RIDER'S VOL.VIII



ALIGNMENT DATA AND SERVICING

Connect a signal generator to the antenna lead of the receiver through a 100 Mmf. condenser. Set the dial pointer at 1400 KC. Set the generator at 1400 KC. Now adjust the antenna and RF trimmers of the gang condenser to maximum output.



This receiver is designed operate over three tuning ranges. The broadcast range which extends from 540 to 1700 Kc. (175 to 550 meters), Police and Aviation Band which extends from 1700 to 5000 Kc. (52 to 175 meters) and the international short wave band which extends from 5800 to 15,200 Kc. (18.5 to 52 meters). This short wave range is the one which includes the four internationally assigned bands-the 19, 25, 31 and 49 meter bands.

CONDENSERS

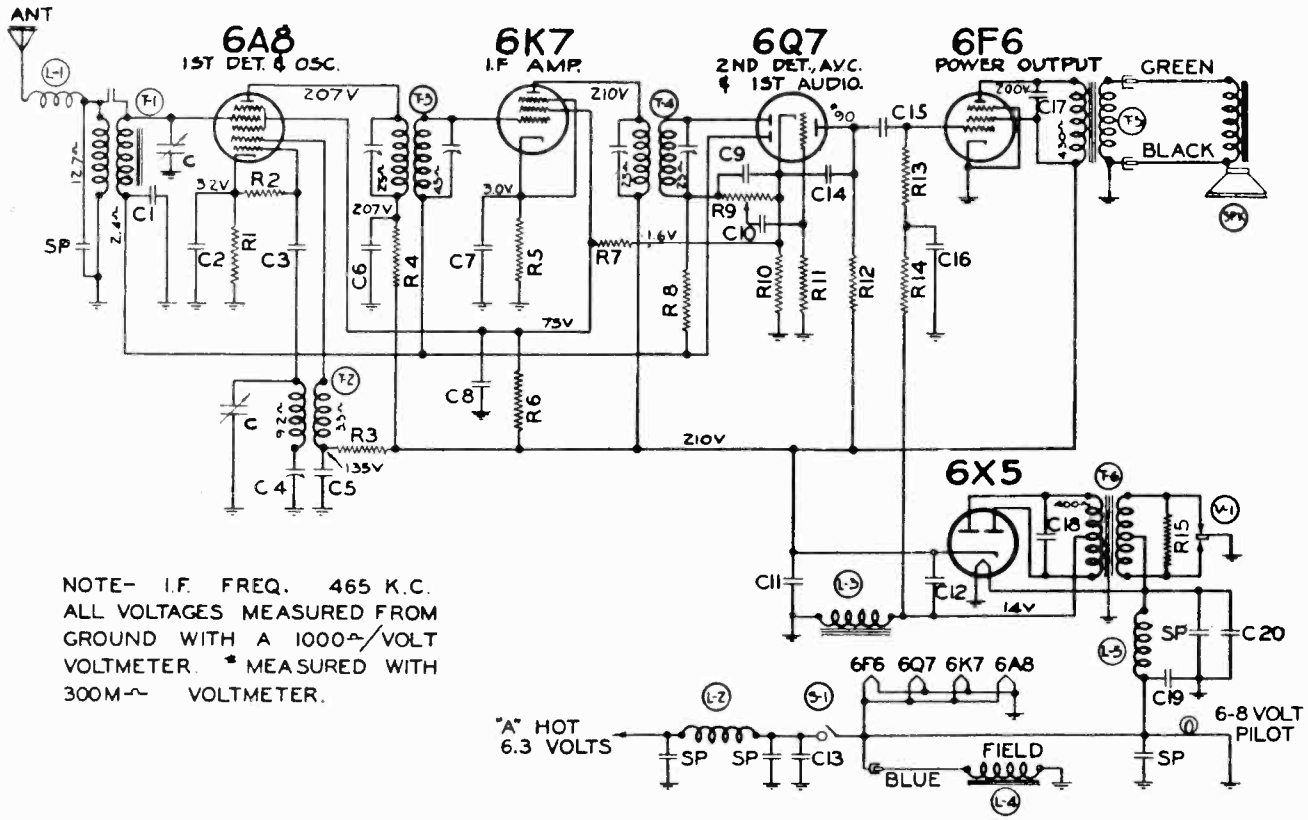
No	CAPACITY	TYPE
C1	.002 MFD.	400 V.
C2	.1 "	200 V.
C3	1.5 MMF.	GIMMIK
C4	.25 MH	200 V.
C5	.1 "	200 V.
C6	.0002 "	600 V.
C7	.01 "	400 V.
C8	.02 "	400 V.
C9	16.0-16.0-	150 V. ELECT.

RESISTORS

No	OHMS R.	WATTS	
R1	75,000		VOL. CONT.
R2	250	1/4	
R3	25,000	1/4	
R4	2,000,000	1/4	
R5	500,000	1/4	
R6	110	1/2	WIRE WOUND
R7	500,000	1/4	

C10 .1 Mfd. 400 V.

WESTERN AUTO SUPPLY CO.



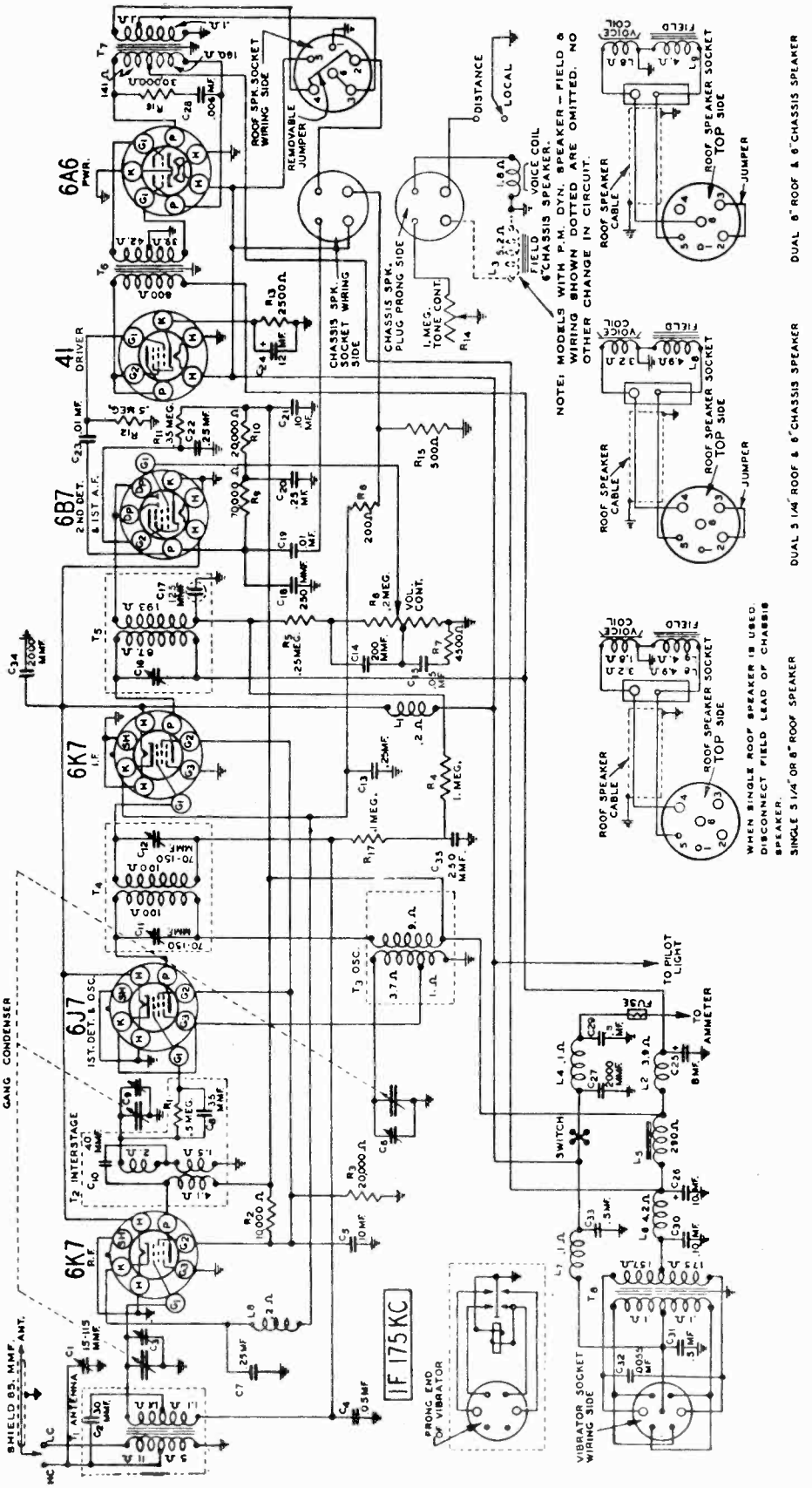
NOTE- I.F. FREQ. 465 K.C.
ALL VOLTAGES MEASURED FROM GROUND WITH A 1000Ω/VOLT VOLTMETER. * MEASURED WITH 300MΩ VOLTMETER.

TRUETONE MODEL D734

No.	Part No.	Description
		CONDENSERS
C	102-27	2 Gang Variable Condenser
C1	100-59	.05 x 200 25%
C2	116-21	.05 x 200 (Yellow lead) 20%
C3	129-12	.00025 Mica 20%
C4	124-37	Series Pad 350 mmf. w. v.
C5	116-21	.1 x 400 (Red lead) 20%
C6	116-21	.1 x 400 (Green lead) 20%
C7	116-21	.05 x 200 (Black lead) 20%
C8	100-60	.25 x 200 25%
C9	129-12	.00025 Mica 20%
C10	100-55	.01 x 400 25%
C11	119-33	8 mfd. Lytic 300 w. v.
C12	119-33	4 mfd. Lytic 300 w. v.
C13	100-31	.5 x 120 10 - 50%
C14	129-5	.0001 Ceramicon 20%
C15	100-11	.01 x 400 25%
C16	100-60	.25 x 200 25%
C17	100-54	.006 x 600 v. 25%
C18	100-58	.005 x 1200 - 20 - 10%
C19	100-31	.5 x 120 10 - 50%
C20	100-31	.5 x 120 10 - 50%
		4 Spark Plates
		C2, C5, C6 and C7 in same block
		C11, C12 in same block
		C8, C16 in same block
		RESISTORS
R1	103-54	500 ohm—1/3 w.—20%
R2	130-162	50M ohm—1/3 w.—20%
R3	130-164	30M ohm—⅓ w.—20%
R4	130-137	1500 ohm—1/3 w.—20%
R5	130-24	400 ohm—1/3 w.—20%
R6	130-30	25M ohm—1 w.—20%
R7	130-139	40M ohm—1/3 w.—20%
R8	130-142	1 meg ohm—1/3 w.—20%
R9	101-41	500 M ohm Volume Control
R10	130-153	700 ohm—1/3 w.—20%
R11	130-19	1 meg ohm—1/3 w.—20%
R12	130-141	250M ohm—1/3 w.—20%
R13	130-5	300M ohm—1/3 w.—20%
R14	130-11	250M ohm—1/3 w.—20%
R15	130-84	200 ohm—1/3 w.—20%
		PARTS
T1	111-70	Antenna Coil Complete
T2	110-57	Oscillator Coil Complete
T3	108-96	Input I.F. Complete
T4	108-95	Output I.F. Complete
T5	105-37	Output Transformer
T6	104-82	Power Transformer
L1	111-76	Antenna filter choke
L2	105-26	"A" Choke
L3	105-39	"B" Filter choke (335 ohms)
L4	114-59	Speaker field—4 ohm
L5	105-19	"A" Choke
Spkr.	114-59	Speaker
S1		Switch on Volume Control
V1	126-1	Vibrator

MODEL D745

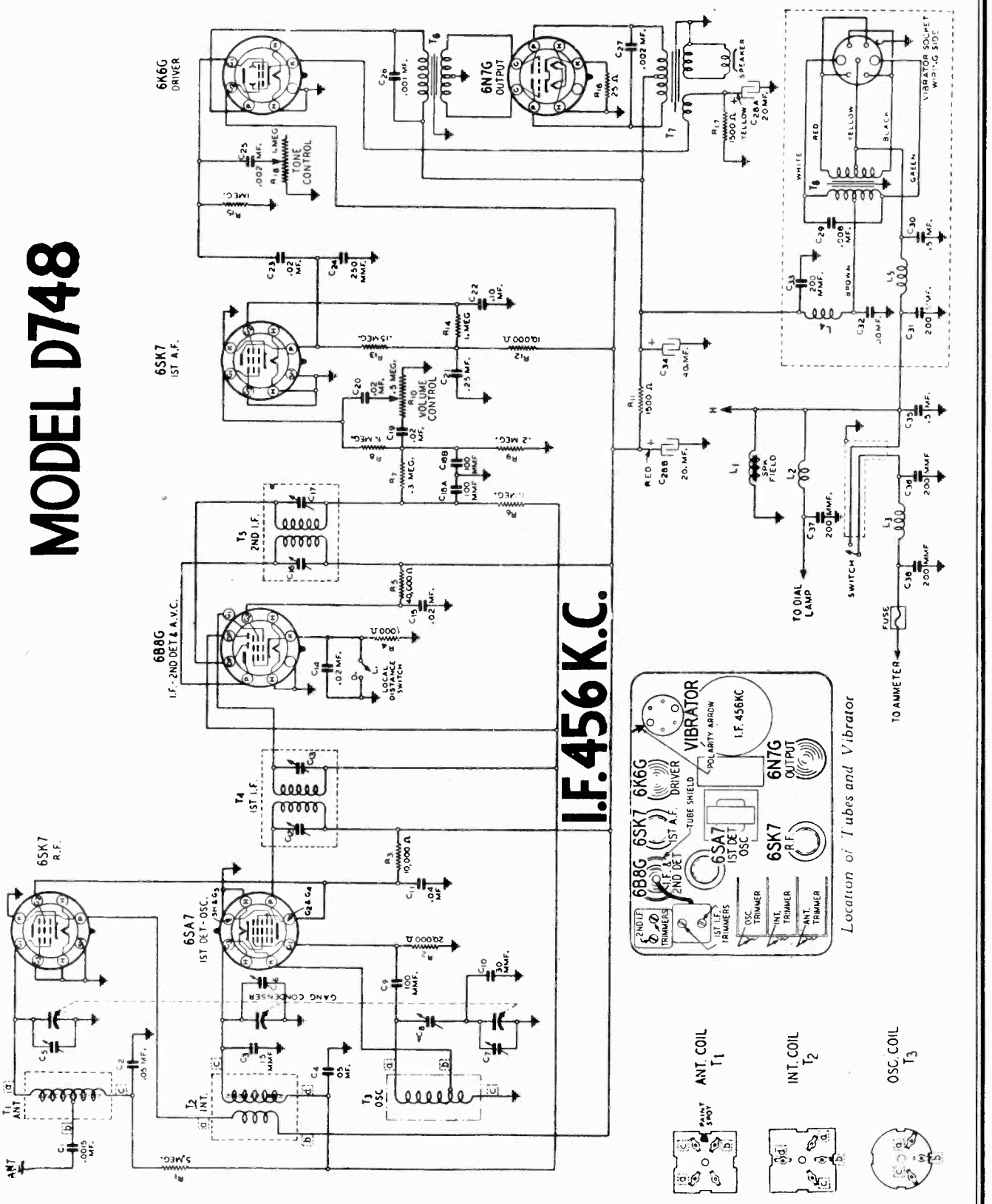
WESTERN AUTO SUPPLY CO.



TRUETONE MODEL D745

MODEL D748

WESTERN AUTO SUPPLY CO.



MODEL D748
MODEL D1091

WESTERN AUTO SUPPLY CO.

ALIGNMENT PROCEDURE D-1091

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	IRON CORE SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.				
456 KC	Control Grid (prong No. 8) 6SA7 1st Det. Tube	.05 mf.		1st I.F. (C11) & (C12) 2nd I.F. (C15) & (C16)
OSCILLATOR				
1560 KC	Antenna Cable See Note A	See Note A	Extreme Position out of Coil	Oscillator (C6)
1000 KC ADJUSTMENT				
1000 KC	Antenna Cable	See Note A	Tune to Max. Output with Tuning Knob	Int. (C5) Ant. (C4)

Reassemble Radio—Install in Car—Connect Car Antenna to Radio.

Car Antenna Readjustment—Tune in weak signal near 1000 KC—Readjust Antenna Trimmer C4 for maximum output.

Remove Grille, Speaker, Trimmer Caps and Rear Cover From Chassis Case—

Volume Control—Maximum All Adjustments.

Local-Distance Switch—"Distance" Position.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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

The following equipment is required for aligning:

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

Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antenna—.05 mf., See Note A.

NOTE A—Insert the antenna cable plug in the antenna socket on the chassis. The total capacity of the antenna cable and dummy antenna should be 60 mmf. If the cable, for example, has a capacity of 30 mmf., use a 30 mmf. condenser for a dummy antenna. Connect the other end of the antenna cable through the dummy antenna capacity to the output of the signal generator.

CALIBRATION—To calibrate the radio, tune in a station of known frequency. At the back of the control unit is the calibration screw. Remove the dial lamp assembly. Hold the tuning knob. Insert a fine bladed screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received.

Alignment Procedure D-748

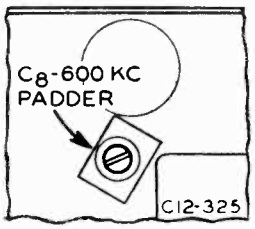


Fig. 7—600 KC Padder

Set the signal generator for 456 KC and connect the output of the signal generator through a .05 mf. condenser to the stator of the interstage section (middle) of the tuning condenser. Connect the ground lead of the signal generator to the chassis. Set the volume control at maximum and the L-D switch in the distance position. Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC. Then adjust the 4 I.F. trimmers until maximum output is obtained—See Fig. 4.

Insert the antenna cable plug in the antenna socket on the chassis. The total capacity of the antenna cable and dummy antenna should be 60 mmf. If the cable, for example, has a capacity of 30 mmf., use a 30 mmf. condenser for a dummy antenna. Connect the other end of the antenna cable through the dummy antenna capacity to the output of the signal generator.

Set the signal generator for 1560 KC. Turn the rotor of the tuning condenser to the full open position. Adjust the trimmer of the oscillator section of the gang condenser until maximum output is obtained. See Fig. 4 for location of this trimmer.

Set the signal generator for 1400 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained. Adjust the interstage and antenna 1400 KC trimmers for maximum output. Do not change the setting of the oscillator trimmer.

Set the signal generator for 600 KC.

Turn the tuning condenser rotor until maximum output is obtained. Then turn the tuning condenser rotor back and forth, at the same time adjusting the 600 KC padder (see Fig. 7) until the peak of greatest intensity is obtained.

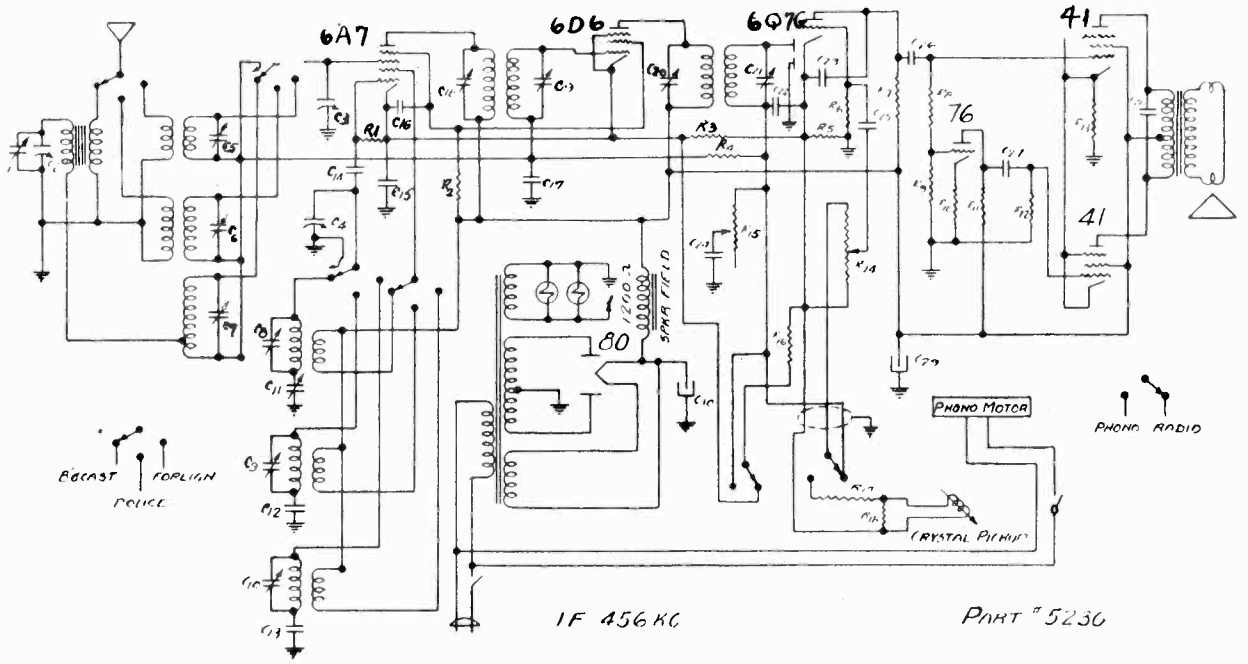
Readjusting Antenna 1400 KC Trimmer—After the radio is installed and the car antenna is connected, it will be necessary to readjust the antenna 1400 KC (Fig. 3) trimmer. This trimmer can be reached through an opening in the chassis case. Tune in a weak signal at approximately 1400 KC with the volume control about three-fourths on. Turn the adjusting screw of the antenna 1400 KC trimmer up or down until maximum output is obtained.

If a distinct peak cannot be reached, it may be due to the fact that the antenna capacity is not properly matched to the antenna input circuit of the radio. An extension adapter cable may be required or if one is being used it may not be required—see article on antenna in this instruction manual.

Calibration—To calibrate the radio, first turn the tuning knob 9 complete turns in either direction. Then tune in a station of known frequency. Remove the dial lamp assembly from the back of the dial unit. The calibration screw is at the bottom of the dial lamp tube. Hold the tuning knob. Insert a fine blade screwdriver and turn this screw until the pointer is at the frequency of the station being received.

WESTERN AUTO SUPPLY CO.

MODEL D900



FOR ALIGNMENT SEE INDEX

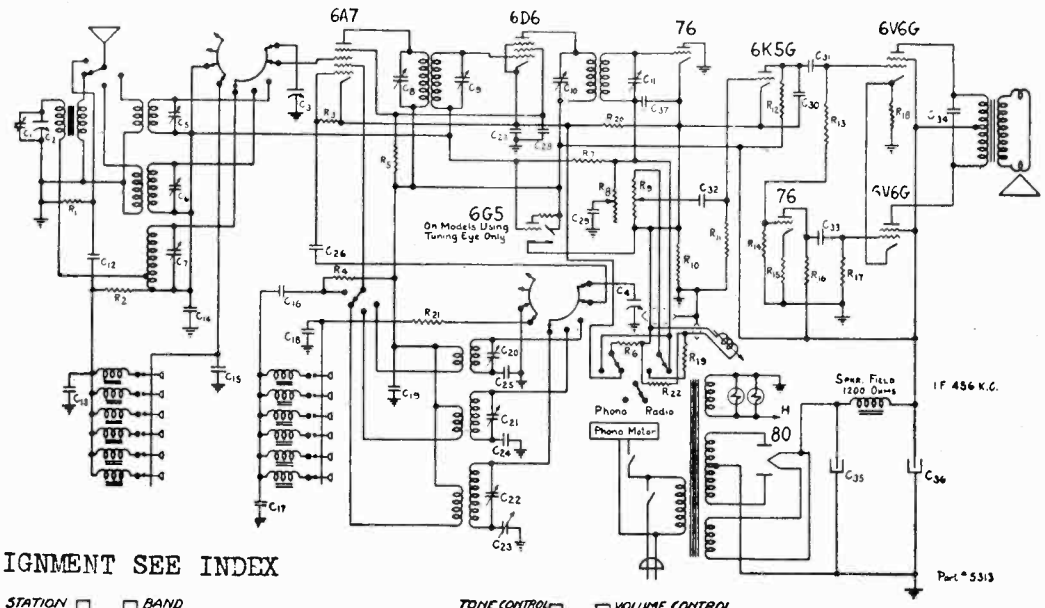
PARTS LIST

No orders for parts will be accepted unless part number, description and chassis model number are given.

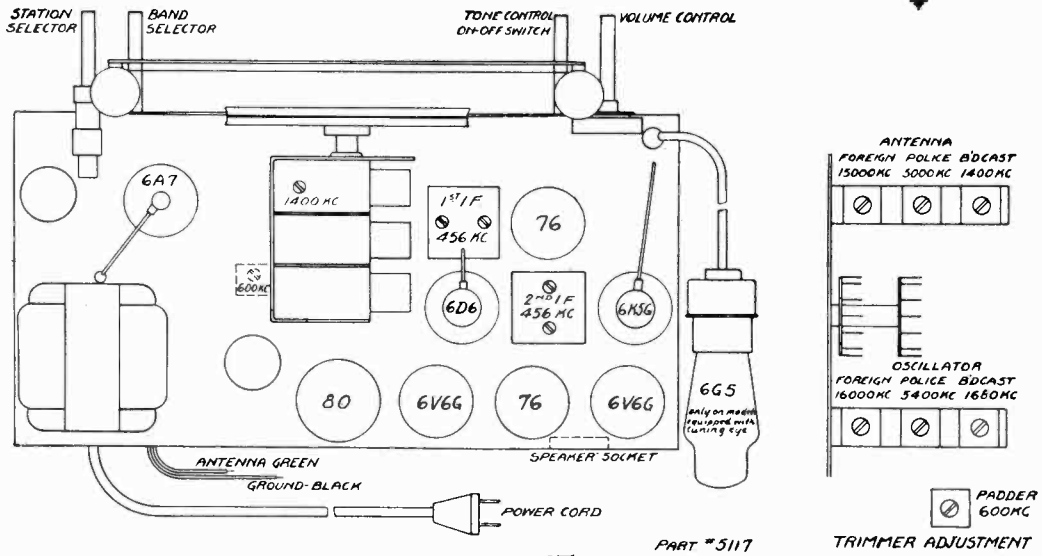
Part No.	Description	Symbol
2883	5M 1/3 W 10%	C1
2731	500M 1/3 W 10%	C2, 3, 4
5184	310 Ohm 1 W 5%	C5, 8, 10
5100	500M Volume Control	C6, 7, 9
5099	2 Meg. Tone control	C11
2605	200 Ohm 1/3 W 10%	C12
5091	Power Transformer	C13
3463-8	1st I.F. Transformer	C14
3463-9	2nd I.F. Transformer	C15
2724	Band Switch	C16, 17
2771	Antenna Coil	C18, 19, 20, 21
2772	Oscillator Coil	C22, 23
2845	Broadcast Antenna Coil	C24
5026	Pointer	C25
5228	Dial Chart	C26, 27
5034	Escutcheon	C28
5240	Radio-Phono Switch	C29
5232	Phonograph Motor	C30
5233	Turn Table	R1, 11, 18
5234	Phono Pick Up	R2
5185	8" Speaker	R3
3391	Tuning Knob	R4, 6
3392	Volume control knob	R5
3661	Tone control knob	R7
3393	Band switch knob	R8
3466	Radio-Phono knob	R9
	Trimmer on tuning condenser	R10
5227	Variable condenser	R12, 17
1611	3-35 MMF trimmer	R13
2597	1-10 MMF trimmer	R14
2560	200-500 MMF padder	R15
2741	1330 MMF Mica 5%	R16
2793	.006 5% 600 V.	
2780	50 MMF Mica	
2792	.2 200 V.	
572	.1 200 V.	
	I F trimmer	
4810	.0005 400 V.	
2695	.003 600 V.	
568	.01 400 V.	
576	.02 400 V.	
824	.002 600 V.	
5101	16 MF 225 V. Electrolytic	
3285	16 MF 350 V. Electrolytic	
631	50M 1/3 W	
636	40M 1/3 W	
4529	10M 1/3 W	
624	1 Meg 1/3 W	
2689	100 Ohm 1/3 W 10%	
2730	100M 1/3 W 10%	
2881	400M 1/3 W 10%	
2880	100M 1/3 W 10%	

MODEL D901

WESTERN AUTO SUPPLY CO.



FOR ALIGNMENT SEE INDEX

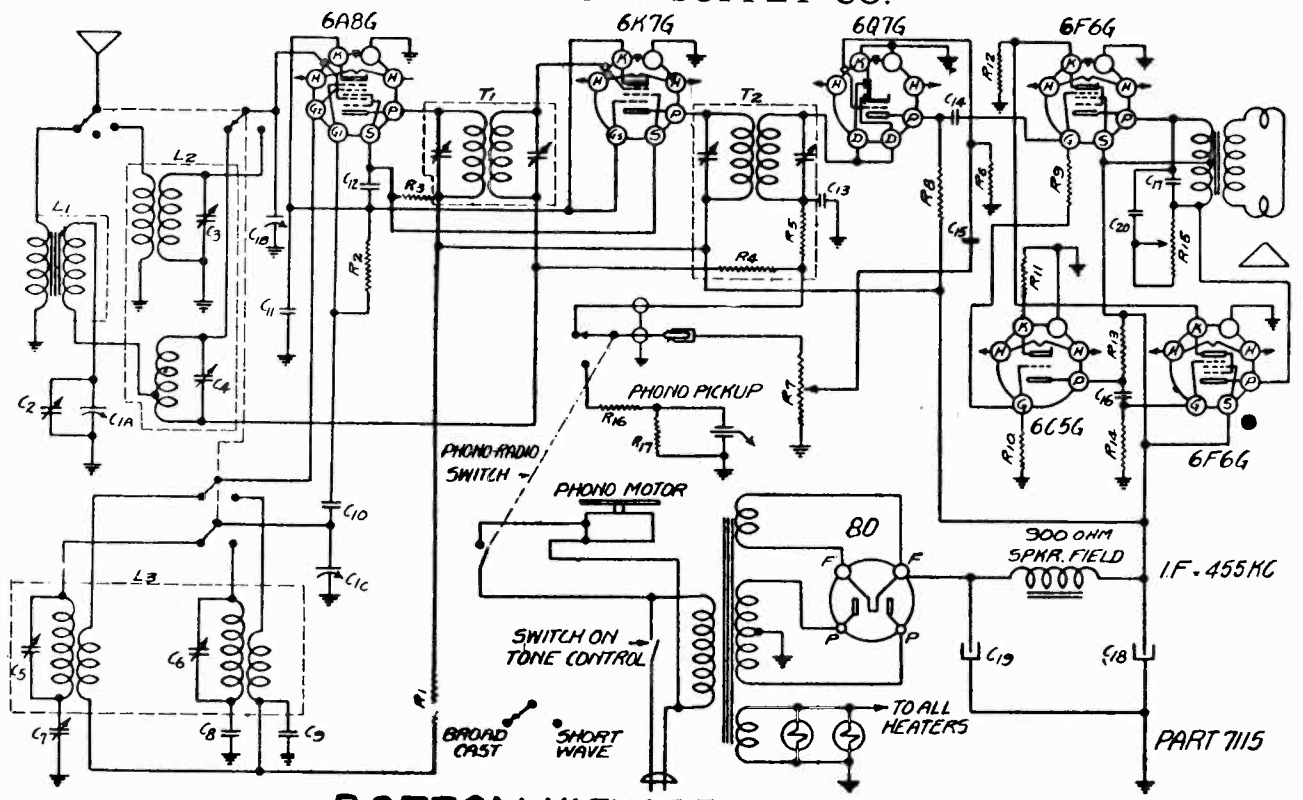


PARTS LIST

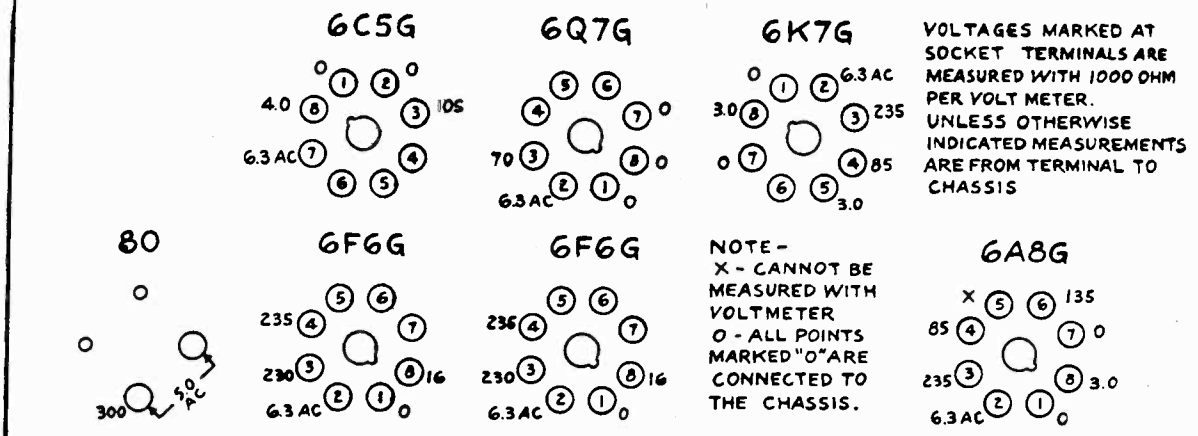
Symbol	Part No.	Description
C1		Trimmer on variable
C2, 3, 4	5092	3-gang 362 mmfd. variable
C5, 20, 22	1611	3-35 mmfd. trimmer
C6, 7, 21	2597	1-10 mmfd. trimmer
C8, 9, 10, 11		I.F. Trimmers
C12, 30, 37	4810	.0005 400 V.
C13	5193	.002 Special 5%
C14, 28	572	.1 200 V.
C15		492 mmfd. Special 1%
C16, 31, 33	576	.02 400 V.
C17	5192	.001 Special 5%
C18		285 mmfd. Special 1%
C19	563	.05 400 V.
C23	2560	350 mmfd. Var. Padder
C24	2741	1330 mmfd. Mica
C25	2793	.006 600 V.
C26	2780	50 mmfd. Mica
C27	2792	.2 200 V.
C29	2695	.003 600 V.
C32	568	.01 400 V.
C34	824	.002 600 V.
C35	3285	16 mfd. 350 W.V. Elect.
C36	5101	16 mfd. 225 W.V. Reg. Elect.
R1	617	20M 1/3 W.
R2, 7, 11	624	1 meg. 1/3 W.
R3, 16	631	50M 1/3 W.
R4, 20	4529	10M 1/3 W.
R5	636	40M 1/3 W.
R6, 21	2605	200 ohms 1/3 W.
R8	5099	2 meg. tone control
R9	5100	500M Volume Control
R10	2689	100 ohm 1/3 W.
	2647	50 ohm 1/3 W. on models using tuning eye
R12	2730	200M 1/3 W.
R13	2881	400M 1/3 W. 10%
R14	2880	100M 1/3 W. 10%
R15	2883	5M 1/3 W. 10%
R17, 22	2731	500M 1/3 W.
R18	3353	250 ohm 5% Flexohm
	5091	Power Transformer
	3463-5	1st I.F. Transformer
	3463-6	2nd I.F. Transformer
	5096	Oscillator Coils
	5095	Antenna Coils
	2845	B.C. Antenna Coil
	2163	Drive Cable
	5312	Speaker 12"
	5097	Push Button Tuning Assembly Complete. (Replacement of individual component parts not recommended.)
	5240	Radio-Phono Switch

MODEL D904

WESTERN AUTO SUPPLY CO.



BOTTOM VIEW OF CHASSIS



REAR OF CHASSIS

Part Number	Circuit Diagram Location	Description	List Price Each
		CONDENSERS	
7114	C1a,b,c, C2	Variable Condenser	$2.00
		Trimmer on Variable Condenser	
1611	C3,4,5,6	3-35 mmf Trimmer	.20
2560	C7	B. C. Oscillator Padder 250-500 mmf	.35
2793	C8	.006 600 Volt 10% tolerance	.20
568	C9,15	.01 400 Volt	.20
2780	C10	50 mmf Mica	.20
2792	C11	.2 mf. 200 Volt	.25
3352	C12	.2 mf. 400 Volt	.25
1286	C13	250 mmf. Mica	.25
576	C14,16	.02 mf. 400 Volt	.20
824	C17	.002 mf. 600 Volt	.20
7113	C18,19	16 MF. 400 V Electrolytic	.75
2600	C20	.02 mf. 600 Volt	.20

		RESISTORS	
7121	R1	20 M 1-3 Watt	.15
6720	R2,5	50 M 1-3 Watt	.15
7120	R3	40 M 1-3 Watt	.15
6723	R4	1 Meg 1-3 Watt	.15
6724	R6	5 Meg 1-3 Watt	.15
5100	R7	Volume Control	.75
6721	R8	200 M 1-3 Watt	.15
7123	R9	400M 1-3 Watt 10%	.15
7124	R10	60 M 1-3 Watt 10%	.15
7125	R11	5 M 1-3 Watt 10%	.15
3353	R12	250 Ohm 1 Watt wire wound	.25
7122	R13	100 M 1-3 Watt 10%	.15
6722	R14	500 M 1-3 Watt	.15
5511	R15	Tone Control & Switch	1.00
6722	R16	500 M 1-3 Watt	.15
6721	R17	200 M 1-3 Watt	.15

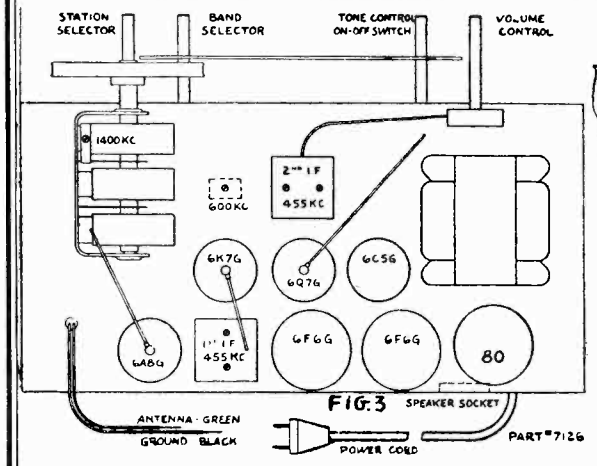


FIG. 3

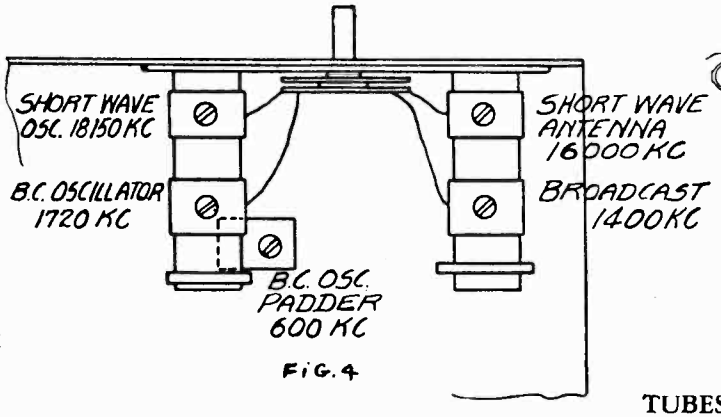
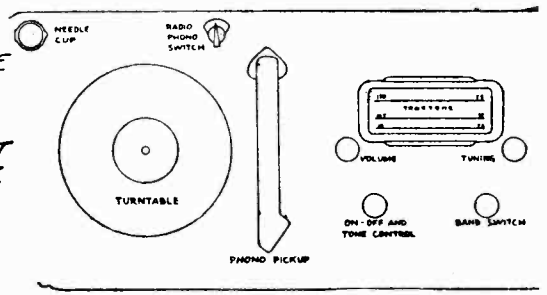


FIG. 4



TRIMMER ADJUSTMENTS

ALIGNMENT PROCEDURE

The diagrams below should be studied carefully as they show the location of all trimming and padding condensers. The following equipment is necessary to properly align this chassis:

1. An all Wave Signal Generator which will provide an accurately calibrated signal at the frequencies listed.
2. An Output Meter.
3. A non-metalic screwdriver.
4. Dummy Antenna— .1mfd., 200 mmf., 400 ohms.

Set the volume control near the maximum volume position, Connect the signal generator ground to the receiver chassis, Connect the proper value of dummy antenna in series with the generator output. Connect the output meter either across the primary of the output transformer or across the speaker voice coil. Allow the signal generator and the chassis to heat up for several minutes.

TUBES:

1—6A8G Converter (Oscillator and First Detector).
1—6K7G I. F. Amplifier.
1—6Q7G Detector-First Audio Amplifier.
1—6C5G Phase Inverter.
2—6F6G Push Pull Power Output.
1—80 Rectifier.

BAND	SIGNAL GENERATOR FREQUENCY SETTING	DUMMY ANTENNA	BAND SWITCH POSITION	VARIABLE CONDENSER SETTING	TRIMMER LOCATON	TRIMMER FUNCTON	CONNECTION	ADJUSTMENT
I. F.	455 kc.	.1 mfd.	Broadcast	Minimum Capacity	Trimmers on top see Fig. 3.	2nd I. F.	grid of 6K7G	Adjust to maximum output
I. F.	455 kc.	.1 mfd.	Broadcast	Minimum Capacity	Trimmers on top see Fig. 3.	1st I. F.	grid of 6A8G	Adjust to maximum output
BROAD-CAST BAND	1720 kc.	200 mmf.	Broadcast	Minimum Capacity	See Fig. 4.	Broadcast oscillator	Antenna lead	Adjust to maximum output
	1400 kc. approx.	200 mmf.	Broadcast	Tune in signal	Trimmer on Ant. coil. (Fig. 4.)	Broadcast pre-selector	Antenna lead	Adjust to maximum output
	1400 kc. approx.	200 mmf.	Broadcast	Tune in signal	Trimmer on Var. Condenser. (Fig. 4).	Broadcast Antenna	Antenna lead	Adjust to maximum output
	600 kc.	200 mmf.	Broadcast	Tune in signal	See Figs. 3 & 4.	Broadcast osc. pad.	Antenna lead	Rock thru signal adjust for Max. output
REPEAT ABOVE PROCEDURE AS FINAL CHECK.								
SHORT WAVE BAND	18150 kc.	400 ohm.	Short Wave	Minimum Capacity	Trimmer on Osc. coil. (Fig. 4).	Short Wave Oscillator	Antenna lead	Adjust to maximum output
	17000 kc.	400 ohm.	Short Wave	Tune in signal	Trimmer on Ant. coil. (Fig. 4).	Short Wave Antenna	Antenna lead	Rock back and forth thru signal & adjust for Max. output.
REPEAT ABOVE PROCEDURE AS FINAL CHECK.								

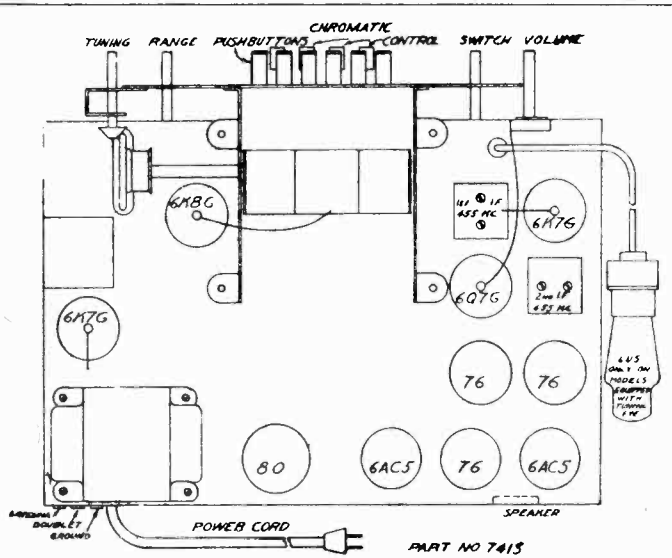
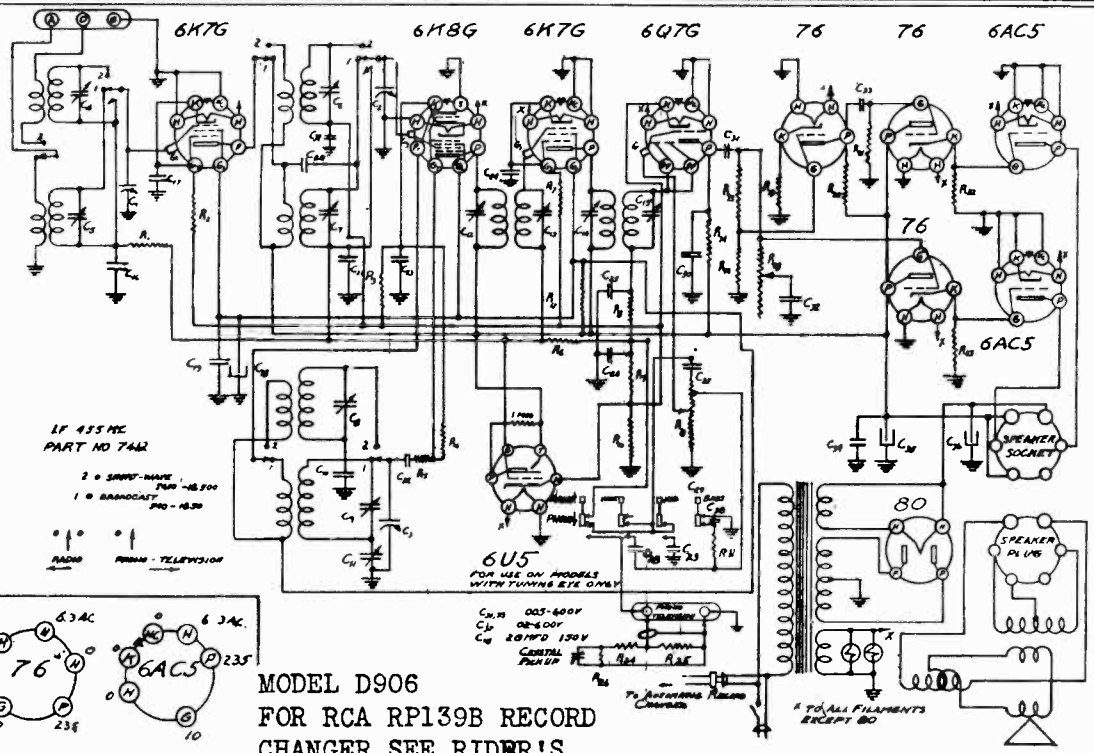


Fig. 2



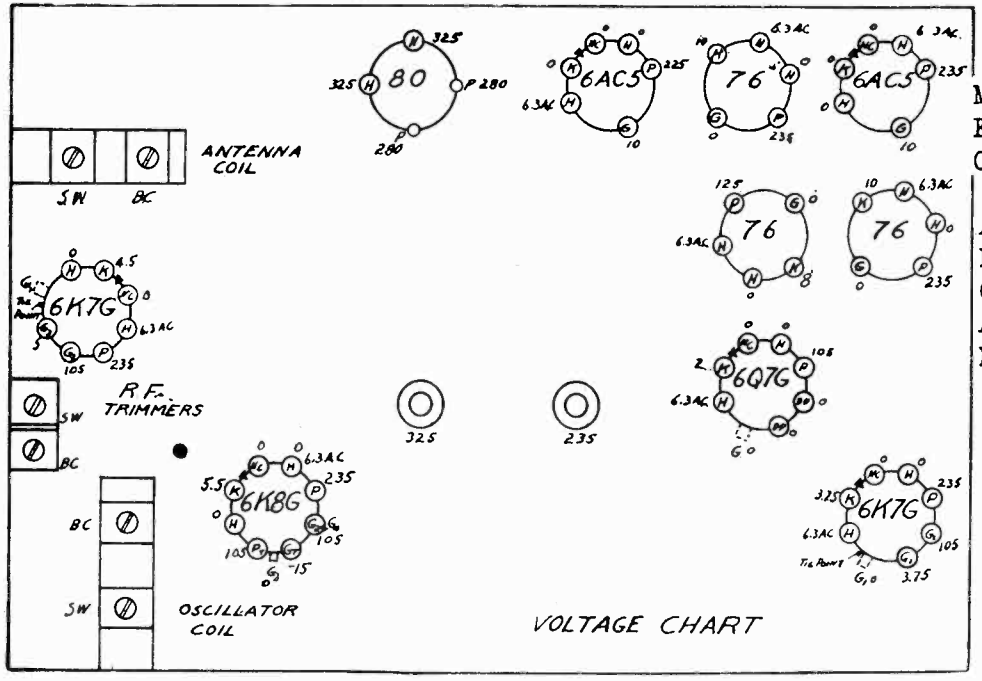
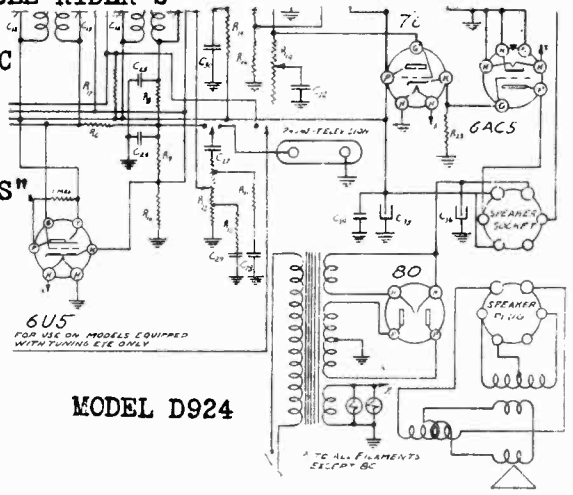


Fig. 6 Voltage Chart & Coil Trimmers Location

MODEL D906
FOR RCA RP139B RECORD CHANGER SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS"



MODEL D924

Model 924 is same as Model 906 with the exceptions shown in the accompanying partial schematic.

MODEL D906
MODEL D924

WESTERN AUTO SUPPLY CO.

PARTS LIST AND PRICE

MODELS D906 and D924

7177		Bracket—Cond. Support (left hand)	$0.15
7155		Bracket—Cond. Support (right hand)	.15
7156		Bracket—Indicator Drive Pulley	.15
7157		Bracket—Tuning Shaft	.15
2719		Bracket—Vol. Control	.15
7281		Bracket—Chassis Mounting	.10
2163		Cable—Drive Approx. 50" Tot.	.15
7407		Can—Coil RF	.25
7283		Coil—Antenna	1.50
7284		Coil—R. F.	1.50
7285		Coil—Oscillator	1.50
7196	R13	Control Volume	.90
1286	C28	Condenser—Mica, .00025	.20
7257	C1, 2,3	Condenser—Var. (Mech. Tuner)	5.50
572	C23, 24	Condenser—Paper, .1-200v	.20
1285	C30	Condenser—Mica, .0001	.20
575	C19, 34	Condenser— Paper, .1-400v	.20
580	C16, 17, 21	Condenser—Paper, .05-200v	.20
7197	C4, 5, 6, 7, 8, 9	Condenser—Trimmer	.25
7313	C10	Condenser—Padder, 3300 M.M.F.	.35
7314	C11	Condenser—Padder	.35
7400	C35, 36	Condenser—16 MFD, Elec.	1.00
824	C29, 38	Condenser—Elec., 20 M.F.D. 150v	.60
5780	C18	Condenser—Elec., 20 M.F.D 150v	.60
2780	C22	Condenser—Mica, .00005	.20
7167		Disc—Friction Drive	.05
7170		Drum—Drive	.15
7176		Drum—Indicator Drive	.40
2782	1	Condenser, .005-600	.20
7154		Frame—Indicator	.40
7209	4	Grommet—Cond. Mtg.	.05
7161		Hub—Drive Pulley	.10
6158		Lamp—Pilot	.10
7199		Plate—Diffusing Celluloid	.40
6243		Pointer	.20
7166		Pulley—Friction Drive	.15
7165		Pulley—Idler (Wood)	.10
1207		Retainer	.01
7318	R10	Resistor—1/3w, 70r + or — 10%	.15
6721	R11, 14, 26	Resistor—1/3w, 200M, + or — 20%	.15
7123	R15	Resistor—1/3w, 400M, + or — 10%	.15
7240	R12,,22, 23	Resistor—1/3w, 25M, + or — 10%	.15
6723	R6	Resistor—1/3w, 1 Meg., + or — 20%	.15
6722	R21, 24, 25	Resistor—1/3w, 500 M, + or — 10%	.15
7122	R16	Resistor—1/3w, 100M + or — 10%	.15
6718	R5	Resistor—1/3w, 100r +or M 20%	.15
6720	R4, 20	Resistor—1/3w, 50M + or — 10%	.15
6890	R4, 20	Resistor—1/3w, 300r + or — 10%	.15
7125	R19	Resistor—1/3w, 5M + or — 10%	.15
7408	R7	Resistor—1/3w, 400r + or — 10%	.15
6719	R1	Resistor—1/3w, 10M + or — 10%	.15
7290	R17	Resistor—3 w, 10 M + or — 10%	.25
7160		Shaft—Drive	.05
2541		Shield—Tube	.10
2562		Shield—Grid	.05
7201		Socket—Pilot Lamp	.15
5619		Spring—Drive	.05
7255		Spring—Drive Shaft	.02
7203		Strip—Phono-Television	.15
2711		Studs—Cond. Mounting	.05
6247		Stud—Idler Pulley	.05
7292		Switch—Band	2.00
7259		Switch—Tone	1.25
7416		Switch—On-Off	.40
7293		Transformer 1st I. F.	1.75
7294		Transformer 2nd I. F.	2.00
7295		Transformer, Power	4.00
7425		Book—Instruction	.20
4313		Bracket—Tuning Tube	.02
7146		Buttons	.10
7417		Button—"Phono"	.05
7418		Button—"Voice"	.05
7419		Button—"Med."	.05
7420		Button—"Bass"	.05
7263	1	Cabinet	
4314		Clamp—Tapped	.02
4315		Clamp—Plain	.02
2981		Cable—Tuning Eye	.60
7040		Escutcheon—Dial	1.30
7252		Indicator—Dial	.80
7183		Escutcheon—Button	.50
5573		Escutcheon—Tuning Tube	.10
3839		Knob—Tuning	.15
3848		Knob—Volume	.15
7423		Knob—Switch, On-Off	.15
7299		Knob—Band Switch	.15
7087	1	Record Changer (complete with turntable)	45.00
4316		Screw—Wing	.05
7426		Sheet—Record Changer Instr.	.10
7190		Sheet—Call Letter	.20
7300		Speaker—10" Dynamic	7.00
6721	1	Resistor—1/3w, 200M + or — 20%	.15

TUBES:

1—6K7G RF Amplifier.
1—6K8G Converter (Oscillator and First Detector).
1—6K7G IF Amplifier.
1—6O7G Second Detector and First Audio Amplifier.
2—76 Driver Tubes.
1—76 Phase Inverter.
2—6AC5 Output Tubes.
1—80 Rectifier.
1—6U5 Tuning Indicator.

ADDITIONAL PARTS FOR MODEL D924 ONLY

7195	R18	Control—Tone and Switch	1.00
7357	R13	Control—Volume	.90
2601	C32	Condenser—Paper, .01-660v	.20
7257	C1,2,3	Condenser—Var. (Mech. Tuner)	5.50
3285	C36	Condenser—Elec. Wet., 16 mfd	.80
5101	C35	Condenser—Elec. Wet., regulator	.80
7409	R11	Resistor—1/3 w., 300M + or — 20%	.15
7122	R16	Resistor—1/3 w., 100M + or — 10%	.15
7318	R11	Resistor—/3 w., 70r + or — 10%	.15
572	C23,24	Condenser—Paper, .1-200v	.20
1285	C30	Condenser—Mica .0001	.20
575	C19,34	Condenser—Paper, .1-400 v.	.20
580	C16,17,21	Condenser—Paper, .05-200 v.	.20
7197	C4,5,6,7,8,9	Condenser—Trimmer	.25
7313	C10	Condenser—Padder, 3300 mmf	.35
7314	C11	Condenser—Padder, 450 mmf., adjustable	.35
5780	C18	Condenser—Elec., 20 mfd., 150v	.60
4072	C29	Condenser—Paper, .03-200v	.20
824	C27,28	Condenser—Paper, .002-600v	.20

MODEL D906
MODEL D924
MODEL D924C

WESTERN AUTO SUPPLY CO.

ALIGNMENT PROCEDURE

The following equipment is necessary to properly align this chassis:

1. An all Wave Signal Generator which will provide an accurately calibrated signal at the frequencies listed.
2. An Output Meter.
3. A non-metallic screwdriver.
4. Dummy Antenna—.1 mfd., 200 mmf., 400 ohms.

Set the volume control near the maximum volume position, connect the signal generator ground to the receiver chassis, connect the proper value of dummy antenna between the high side of the generator output and the point in the receiver indicated in the table below. Connect the output meter either across the primary of the output transformer or across the speaker voice coil. Allow the signal generator and the the chassis to heat for several minutes.

BAND	SIGNAL FREQUENCY SETTING	GENERATOR CONNECTED TO	DUMMY ANTENNA	BAND SWITCH POSITION	VARIABLE CONDENSER SETTING	TRIMMER LOCATION	TRIMMER FUNCTION	ADJUSTMENT
I. F.	455 kc.	Grid of 6K7G (I.F.)	.1 mmfd.	Short wave	Minimum capacity	On top. See Fig. 2	2nd I. F.	Adjust to maximum output
I. F.	455 kc.	Grid of 6K8G	.1 mmfd.	Short wave	Minimum capacity	On top. See Fig. 2	1st I. F.	Adjust to maximum output
BROAD-CAST BAND	1400 kc. exact	Antenna terminal	200 mmf.	Broadcast	Set pointer to indicate 1400 kc.	Underneath chassis on oscillator coil See Fig. 6	Broadcast oscillator	Adjust to maximum output
BROAD-CAST BAND	1400 kc. exact	Antenna terminal	200 mmf.	Broadcast	As above	Underneath chassis on RF coil See Fig. 6	Broadcast RF amplifier	Adjust to maximum output
BROAD-CAST BAND	1400 kc.	Antenna terminal	200 mmf.	Broadcast	As above	Underneath chassis on Ant. coil See Fig. 6	Broadcast antenna	Adjust to maximum output
BROAD-CAST BAND	600 kc. approx.	Antenna terminal	200 mmf.	Broadcast	Tune in signal	Under chassis See Fig. 6	Broadcast padder	Adjust to maximum output while rocking gang condenser

REPEAT ABOVE BROADCAST ALIGNING PROCEDURE AT LEAST ONCE MORE

SHORT WAVE BAND	16,000 kc. exact	Ant. Terminal	400 ohms	Short wave	Set pointer to indicate 16,000 kc.	Underneath chassis on osc. coil See Fig. 6	Short wave oscillator	Adjust to maximum output. *See note 1
	16,000 kc. exact	Ant. Terminal	400 ohms	Short wave	As above	Underneath chassis on RF. coil See Fig. 6	Short wave RF. amplifier	Adjust to maximum output while rocking the tuning-condenser slightly.
	16,000 kc. exact	Ant. Terminal	400 ohms	Short wave	As above	Underneath chassis on Ant. coil See Fig. 6	Short wave Antenna	Adjust to maximum output while rocking the tuning-condenser slightly.

REPEAT ABOVE PROCEDURE AS FINAL CHECK

NOTE 1.—Exercise care to see that the oscillator is tuned to a frequency higher than the signal since it is very easy to mistakenly set the oscillator on the wrong side of the signal at this high frequency.

BAND SWITCH:

The Band Switch, lower right hand knob, serves to make the necessary changes in connections so that reception may be obtained on the short wave band instead of the broadcast band or vice versa as desired.

In the left hand, or counterclockwise position, connections are made for receiving stations in the range 540 to 1800 KC., which range includes the American broadcast band (540 to 1670 KC.) a large number of municipal police stations (1600 to 1712 KC.) and a number of amateur stations (above 1712 KC.).

In the right hand, or clockwise position, connections are made for reception of short wave stations in the range 5500 to 18,000 KC. (5.5 to 18 megacycles). An extra scale has been provided for the short wave range, calibrated in meters (54.5 to 17) for the convenience of the user.

There are 6 buttons on the automatic tuning dial by means of which 6 stations may be set for quick tuning.

Make a list of your favorite stations, those which you tune in regularly

It is better to list the station with the lowest kilocycle number first, the station with the next higher kilocycle number next, and so on.

Any button may be used for any station you can receive, although it will be better to set the stations so that the kilocycle numbers increase from left to right.

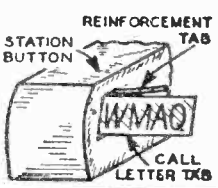
SETTING A STATION BUTTON:

Pull the button at the extreme left off the shaft. When this is done, the locking screw under the shaft will be exposed.

Loosen this screw with a small screwdriver by turning several turns in a counterclockwise direction. Continue to press in firmly on the screwdriver, thus holding the station button shaft depressed. Select the first station from the lis you have prepared and carefully tune in this station by means of the manual tuning knob.

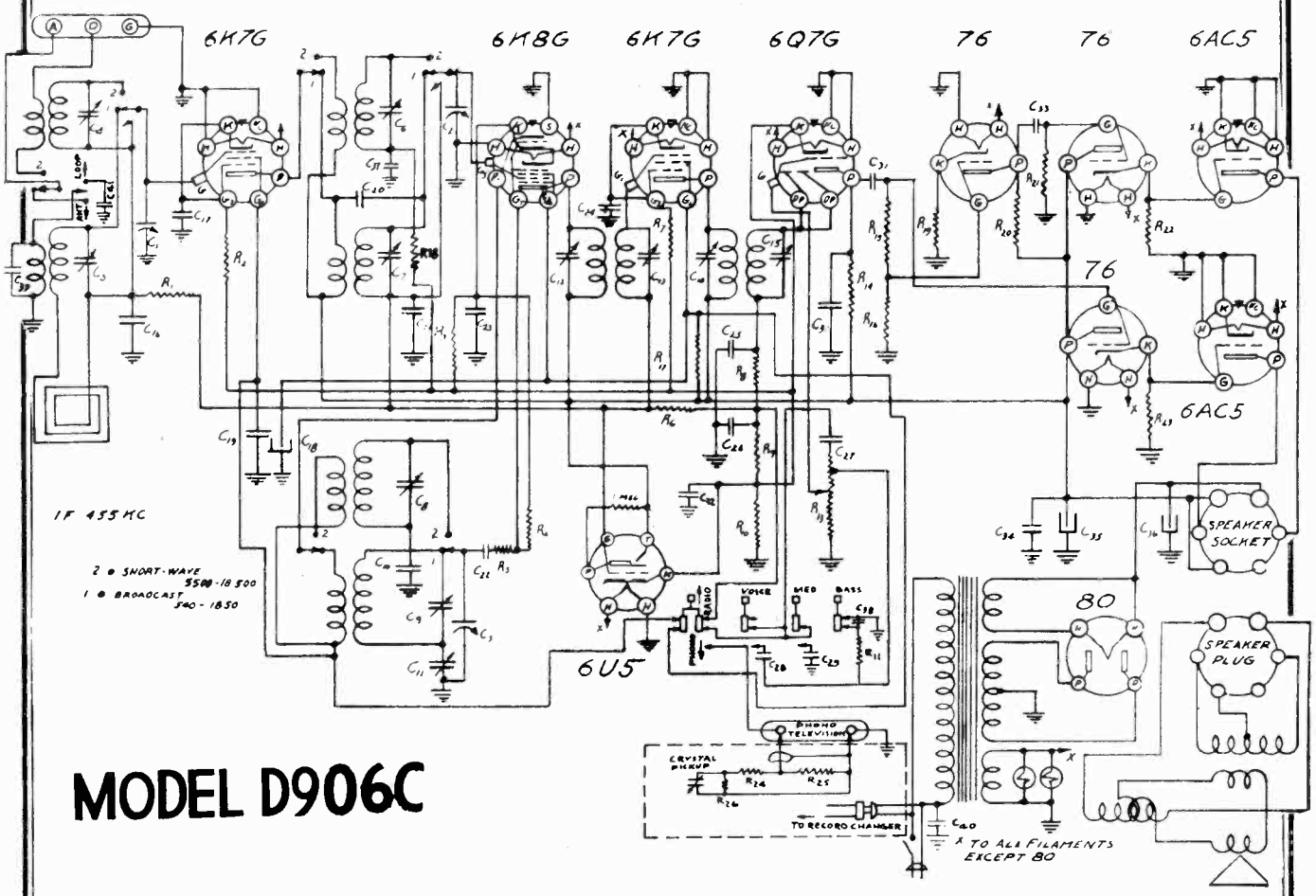
Continue to press in firmly on the screwdriver and lock the mechanism by turning the locking screw in a clockwise direction until it is tight. The station is now set on this button.

Proceed in the same manner to set any additional stations on your list on the remaining station buttons.



MODEL 906C

WESTERN AUTO SUPPLY CO.



MODEL D906C

6719	R1	Resistor, 1/3W 10,000	
6890	R2,3	Resistor, 1/3W 300	
6720	R4,20	Resistor, 1/3 W 50,000	
7139	R5	Resistor, 1/3W 200	
6725	R6	Resistor, 1/3W 1,000,000	
7308	R7	Resistor, 1/3W 400	
	R8	Resistor, 1/3W 50,000 in IF Trans.	
	R9	Resistor, 1/3W 1,000,000 in IF	
7318	R10	Resistor, 1/3W 70	
7196	R13	Volume Control, 1/3W 3,000,000	
6721	R14,29	Resistor, 1/3W 200,000	
7123	R15	Resistor, 1/3W 400,000	
7122	R16	Resistor, 1/3W 100,000	
7290	R17	Resistor, 3W 10,000	
7253	R18	Resistor, 1/3W 75,000	
7125	R19	Resistor, 1/3W 5,000	
6722	R21,24,25	Resistor, 1/3W 500,000	
7240	R22,23	Resistor, 1/3W 25,000	
C1,2,3,		Condenser, Mech. Tuner	
C4,5,6,7,8,9		Condenser Trimmer 3-20 MMF	
C10		Condenser Padder 3300 MMF	
C11		Condenser Adj. Padder	
C12,13,14,15		Condenser, I.F. Trimmer	
C16,17,21		Condenser .05-200	
C18		Condenser Electrolytic 20 MFD 150	
C19		Condenser paper .1-400	
C20		Condenser (Wire) 2.5 MMF	
C22,39		Condenser, Mica 50 MMF	
C23,24		Condenser, paper .1-200	
C25,26		Cond. Mica, 100 MMF in I.F.	
C27,29,38		Condenser, paper .002-600	
C28,41		Condenser, Mica, 250 MMF	
C30		Condenser, Mica 100 MMF	
C31,33		Condenser, paper .005-600	
C32		Condenser, Electrolytic 250 MFD 2 volt	
C34		Condenser, paper .2-400	
C35,36		Condenser, Electrolytic 16 MFD-400	
C37		Condenser, paper, .02-600	
C40		Condenser, Mica .001 to .002	

BAND	SIGNAL FREQUENCY SETTING	GENERATOR CONNECTED TO	DUMMY ANTENNA	BAND SWITCH POSITION	VARIABLE CONDENSER SETTING	TRIMMER LOCATION	TRIMMER FUNCTION	ADJUSTMENT
I. F.	455 kc	Grid of 6K7G (I.F.)	.1 mmfd.	Short wave	Minimum capacity	On top.	2nd I. F.	Adjust to maximum output
I. F.	455 kc.	Grid of 6K8G	.1 mmfd.	Short wave	Minimum capacity	On top.	1st I. F.	Adjust to maximum output
BROAD-CAST BAND	1400 kc. exact	Antenna terminal	200 mmf.	Broadcast	Set pointer to indicate 1400 kc.	Underneath chassis on oscillator coil	Broadcast oscillator	Adjust to maximum output
BROAD-CAST BAND	1400 kc. exact	Antenna terminal	200 mmf.	Broadcast	As above	Underneath chassis on RF coil	Broadcast RF amplifier	Adjust to maximum output
BROAD-CAST BAND	1400 kc.	Antenna terminal	200 mmf.	Broadcast	As above	Underneath chassis on Ant. coil	Broadcast antenna	Adjust to maximum output
BROAD-CAST BAND	600 kc. approx.	Antenna terminal	200 mmf.	Broadcast	Tune in signal	Under chassis	Broadcast padder	Adjust to maximum output while rocking gang condenser

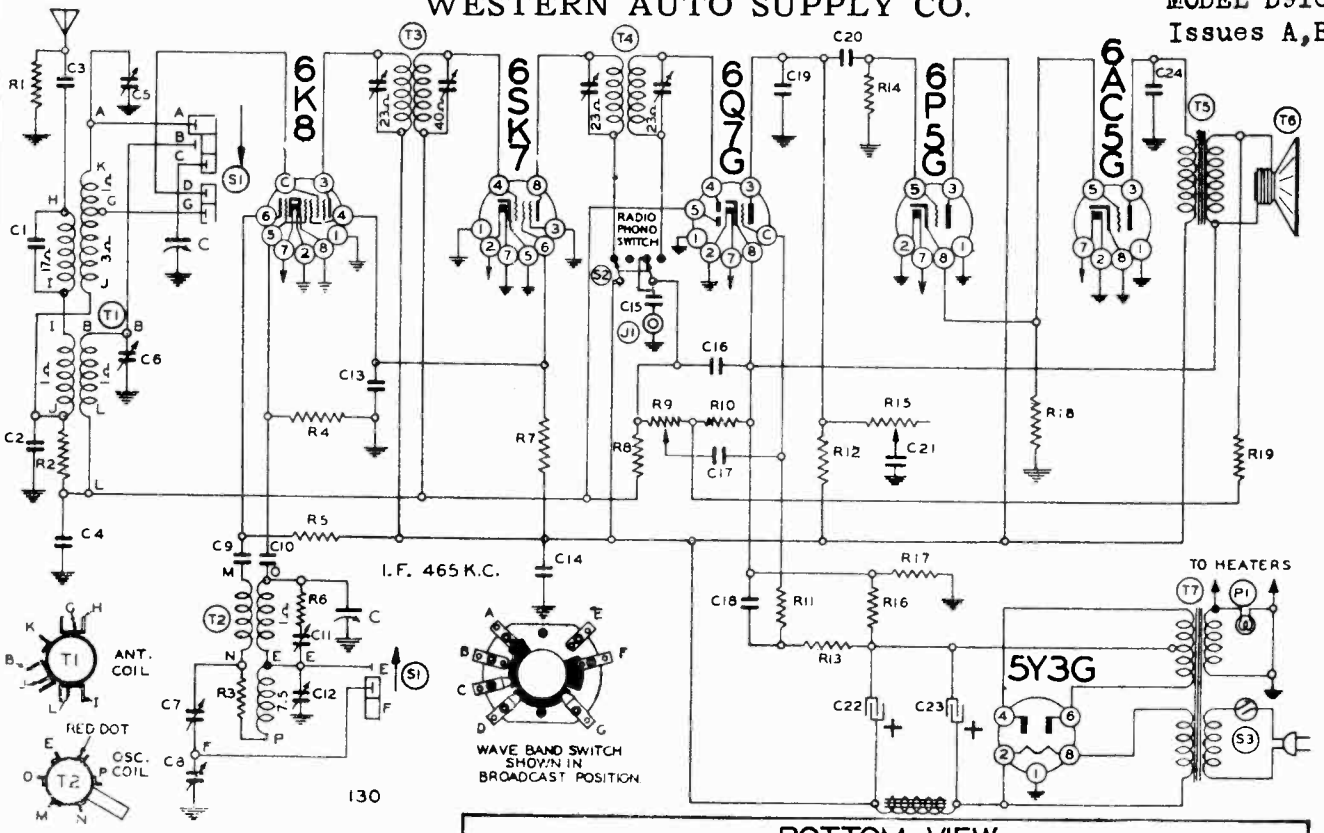
REPEAT ABOVE BROADCAST ALIGNING PROCEDURE AT LEAST ONCE MORE

SHORT WAVE BAND	16,000 kc. exact	Ant. Terminal	400 ohms	Short wave	Set pointer to indicate 16,000 kc.	Underneath chassis on osc. coil	Short wave oscillator	Adjust to maximum output.
	16,000 kc. exact	Ant. Terminal	400 ohms	Short wave	As above	Underneath chassis on RF. coil	Short wave RF. amplifier	Adjust to maximum output while rocking the tuning-condenser slightly.
	16,000 kc. exact	Ant. Terminal	400 ohms	Short wave	As above	Underneath chassis on Ant coil	Short wave Antenna	Adjust to maximum output while rocking the tuning-condenser slightly.

REPEAT ABOVE PROCEDURE AS FINAL CHECK

WESTERN AUTO SUPPLY CO.

MODEL D910
Issues A,B



Circuit Diagram Ref. No. | **Part No.** | **Description**

RESISTORS

R1	13017	10M ohm—⅓ w.
R2	13011	250M ohm—⅓ w.
R3	130174	50 ohm—⅓ w.
R4	13012	50M ohm—⅓ w.
R5	130243	25M ohm—1 watt
R6	130174	50 ohm—⅓ w.
R7	13065	30M ohm—1 watt
R8	1304	3 megohm—⅓ w.
R9	101187	Volume Control (1 Megohm)
R10	130272	10 ohm—⅓ w.
R11	13019	1 megohm—⅓ w.
R12	1309	200M ohm—⅓ w.
R13	1303	500M ohm—⅓ w.
R14	13019	1 megohm—⅓ w.
R15	101189	Tone Control (1 Megohm)
R16	130203	40 ohm—⅓ w.
R17	130203	40 ohm—⅓ w.
R18	1301	25M ohm—⅓ w.
R19	130168	100 ohm—⅓ w.

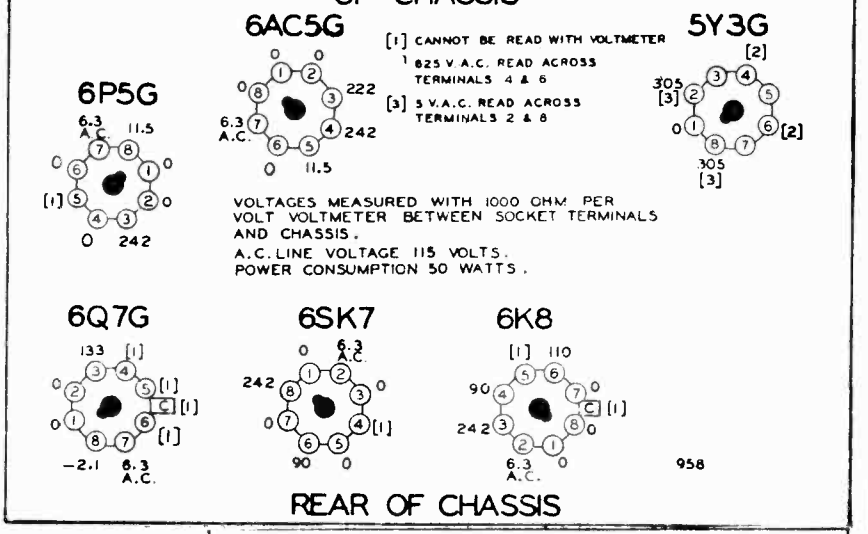
CONDENSERS

C	102115	2 gang variable condenser
C1	129132	.000125 Mica
C2	129131	.002775 Mica
C3	10011	.01 x 400 v.
C4	1009	.05 x 200 v.
C5	12475	B.C. Antenna Trimmer
C6	12475	S.W. Antenna Trimmer
C7	124101	B.C. Series Pad
C8	124101	S.W. Series Pad
C9	10025	.002 x 600 v.
C10	12939	.00005 Mica
C11	124102	S.W. Oscillator Trimmer
C12	124102	B.C. Oscillator Trimmer
C13	1001	.1 x 400 v.
C14	1001	.1 x 400 v.
C15	10020	.1 x 200 v.
C16	1295	.0001 Mica
C17	10011	.01 x 400 v.
C18	10020	.1 x 200 v.
C19	1292	.0005 Mica
C20	10011	.01 x 400 v.
C21	*10026	.02 x 400 v.
C22	11980	12 mfd.—450 w.v. lytic
C23	11980	12 mfd.—450 w.v. lytic
C24	*100113	.0025 x 600 v.

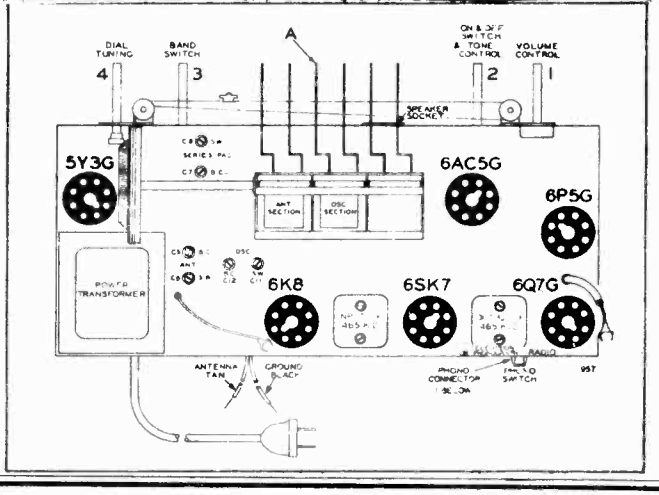
C5 and C6 in same unit C7 and C8 in same unit
C11 and C12 in same unit

*issue A only C21-10071 .004M.F.-600V.
C24-10019 .006M.F. 600 V.

BOTTOM VIEW OF CHASSIS



REAR OF CHASSIS



ALIGNMENT PROCEDURE

- 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.
- 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 frequencie as listed.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antennas—.1 mf., 200 mmf. and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6SK7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6K8	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1750 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Trimmer (C12) (See Fig. 4)	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 1400 Kc.	Trimmer (C5) (See Fig. 4)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 600 Kc.	Trimmer (C7) (See Fig. 4)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
SHORT WAVE BAND	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Set Dial at 17 MC.	Trimmer (C11) (See Fig. 4)	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Dial Set at 17 MC.	Trimmer (C6) (See Fig. 4)	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Set Dial at 6 MC.	Trimmer (C8) (See Fig. 4)	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "A")

NOTE "A." Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

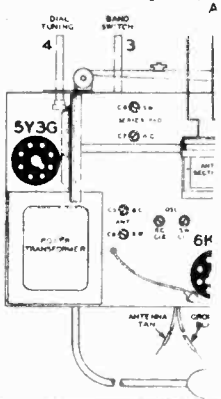
After each band is completed, repeat the procedure as a final check.

BAND SWITCH	BAND	FREQUENCY RANGE
Extreme right rotation	Short Wave	5.2 to 18.3 MC.
Extreme left rotation	Broadcast	540 to 1750 KC.

Power Consumption.....60 Watts (At 115 volts 50-60 cycles)

Power Output.....3 Watts Undistorted, 5 Watts Maximum

INTERMEDIATE FREQUENCY.....**465 KC.**



TUBES:

The tube complement of this chassis consists of the following octal base glass and metal tubes:

The type and function of each tube is as follows:

1—Type 6K8 Converter (Oscillator and First Detector).

1—Type 6SK7 Remote Cut-Off Pentode, I. F. Amplifier (465 K. C.).

1—Type 6Q7G Duplex Diode Triode Second Detector, A.V.C. and First Audio.

1—Type 6P5G Driver Amplifier.

1—Type 6AC5G Positive Grid Triode Output Amplifier.

1—Type 5Y3G High Vacuum Rectifier.

Transformers are available and chassis are sometimes equipped with universal transformers for operation on 25, 40 and 60 cycles and with primary taps for 110, 130, and 230 volts, (see parts list.)

PROCEDURE FOR SETTING THE AUTOMATIC STATION PUSHBUTTONS:

Press any one of the automatic pushbuttons all the way in. Hold the push button in firmly and with a screw driver inserted through the opening in the escutcheon loosen the locking screw directly above the pushbutton which is being held in (See "C" Fig. 3). Three or four complete turns will be sufficient.

Now, while **still holding** the pushbutton in **firmly**, tune in very carefully by means of the dial tuning knob the station you wish this pushbutton to represent. You will note that in order to tune the station, the dial tuning knob will have to **be pressed in.** The knob is equipped with a spring which partially disengages the control from the drive mechanism when dial tuning knob is not being used.

Turn the dial tuning knob back and forth very slowly until the station is heard clearly and with maximum volume.

Now, while **still holding** the pushbutton in **firmly**, tighten the locking screw above this pushbutton. Turn the screw until it is **just tight.** Do not use force. **Release** the pushbutton. This pushbutton is now **set up** and **locked.**

Press in another pushbutton and holding it in firmly, loosen the locking screw above this pushbutton. Carefully tune in another station while **still holding** the pushbutton in **firmly.** After the station has been tuned in, tighten the locking screw above the pushbutton which is being **held in.**

Follow this procedure until you have selected all of your favorite stations.

It is very important that the locking screw for each pushbutton is tightened, otherwise the stations will not remain set up accurately for pushbutton tuning.

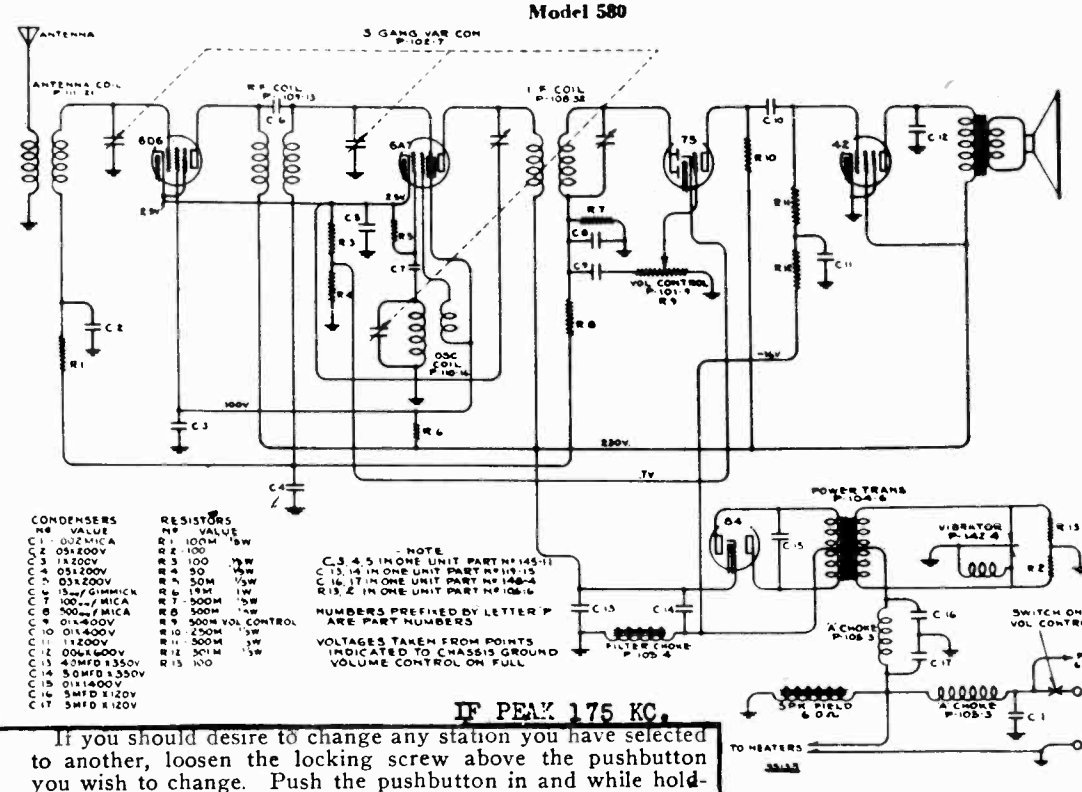
If you find you have made an error in setting a station or a station is not accurately tuned due to the pushbutton not being held in firmly while tightening the locking screw for this particular pushbutton, repeat the setting procedure for this pushbutton again.

Each pushbutton has its own locking screw and the pushbuttons are entirely independent of one another.

Punch out from the set of station call letter tabs supplied, the call letters of the stations you have set up for pushbutton tuning.

Insert the call letter tabs in the rectangular openings above each of the pushbuttons over the pushbutton locking screws. One of the small celluloid tabs supplied should be snapped into place over each of the station call letter tabs, (See "B", Fig. 2).

Model 580



If you should desire to change any station you have selected to another, loosen the locking screw above the pushbutton you wish to change. Push the pushbutton in and while holding it in firmly tune in the new station by means of the dial tuning knob. After the station is carefully tuned in, tighten the locking screw while still holding the pushbutton in. Insert the new station call letter tab and the celluloid protective cover. The radio is now set up for automatic tuning.

ALIGNING INSTRUCTIONS:

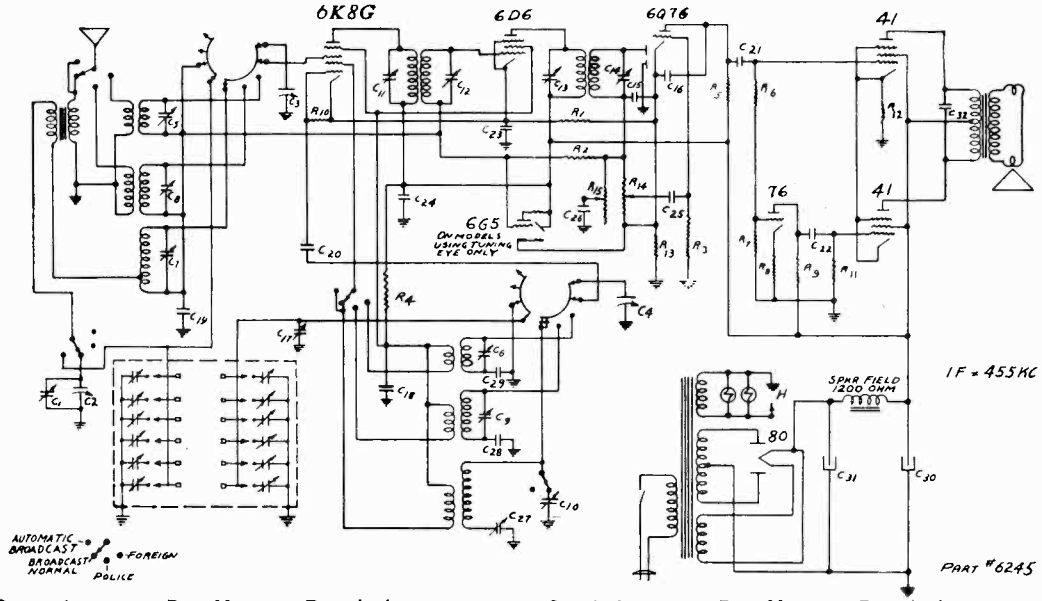
CAUTION:—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltages, defective tubes, condensers and resistors. In order to properly align this chassis, an oscillator (generator) is absolutely necessary. No aligning adjustments should be attempted with the chassis in the cabinet.

To remove the chassis from the cabinet, remove the four chassis mounting bolts which are used to hold the chassis to the cabinet bottom; take the knobs off their shafts, the tuning knob is held on by means of a set screw; the volume control, tone control and band switch knobs are of the push-on type.

Model D-910
Issue A, and B

MODEL D911

WESTERN AUTO SUPPLY CO.



Symbol	Part No.	Description
C1		Trimmer on variable
C2, 3, 4	5092	3-gang 362 mmfd. variable
C5, 6	1611	3-35 mmfd. trimmer
C7, 8, 9, 10	2597	1-10 mmfd. trimmer
C11, 12, 13, 14		I.F. Trimmers
C15, 16	4810	.0005 mfd. 400 V. paper
C17	3157	1-10 mmfd. isolantite trimmer
C18, 19	572	.1 mfd. 200 V. paper
C20	2780	50 mmfd. Mica
C21, 22	576	.02 mfd. 400 V.
C23, 24	2792	.2 mfd. 200 V.
C25	568	.01 mfd. 400 V.
C26	2695	.003 mfd. 600 V.
C27	2560	350 mmfd. Var. padder
C28	2741	1330 mmfd. padder
C29	2793	.006 mfd. 600 V. padder
C30	5101	16 mfd. 225 W.V. reg. elect.
C31	3285	16 mfd. 350 W.V. elect.
C32	824	.002 mfd. 600 V. paper
R1	2605	200 ohm 1/3 W.
R2, 3	624	1 meg. 1/3 W.

Symbol	Part No.	Description
R4	6299	10M ohm 1 W.
R5	2730	200M ohm 1/3 W.
R6	2881	400M ohm 1/3 W.
R7	2880	100M ohm 1/3 W.
R8	2883	5M ohm 1/3 W.
R9, 10	631	50M ohm 1/3 W.
R11	2731	500M ohm 1/3 W.
R12	5184	315 ohm 1 W. 5% Flexohm
R13	2689	100 ohm 1/3 W.
	2647	(50 ohm 1/3 W. in models equipped with tuning eye)
R14	5100	500M ohm volume control
R15	5099	2 meg. tone control
	5091	Power transformer
	3463-5	1st I.F. transformer
	3463-6	2nd I.F. transformer
	2845	Broadcast antenna coil
	5095	Short wave antenna coils
	5096	Oscillator coils
	5185	8-inch speaker
	6249	Push button trimmer tuner
	2163	Drive cable
	5121	Call letter sheet

Model 277

ANTENNA

For best results, it is recommended that a good outdoor antenna be installed. Do not use an old antenna as most of the older installations were not intended for reception of short waves, and many are not suitable for good broadcast reception.

The average length of a single wire antenna, including lead-in, should be not less than fifty feet. In locations near powerful broadcast stations, this length may be shortened to thirty-five feet. In more favorable locations, seventy-five feet should be used.

Regardless of its length, the antenna and lead-in should be spaced well away from the roof, sides of the building, trees, and power lines. Stand-off insulators should be used to hold the lead-in wire at least six inches from the building, and the lead should be brought into the building through a porcelain tube insulator. The receiver should be located as near to the point where the lead-in is brought through the wall as is conveniently possible.

Indoor antennae will give good broadcast reception except in steel frame buildings. However, foreign reception will not be satisfactory unless an outdoor antenna is provided.

When a lightning arrestor is used, it must be of a special low-capacity type so that foreign reception will not be impaired.

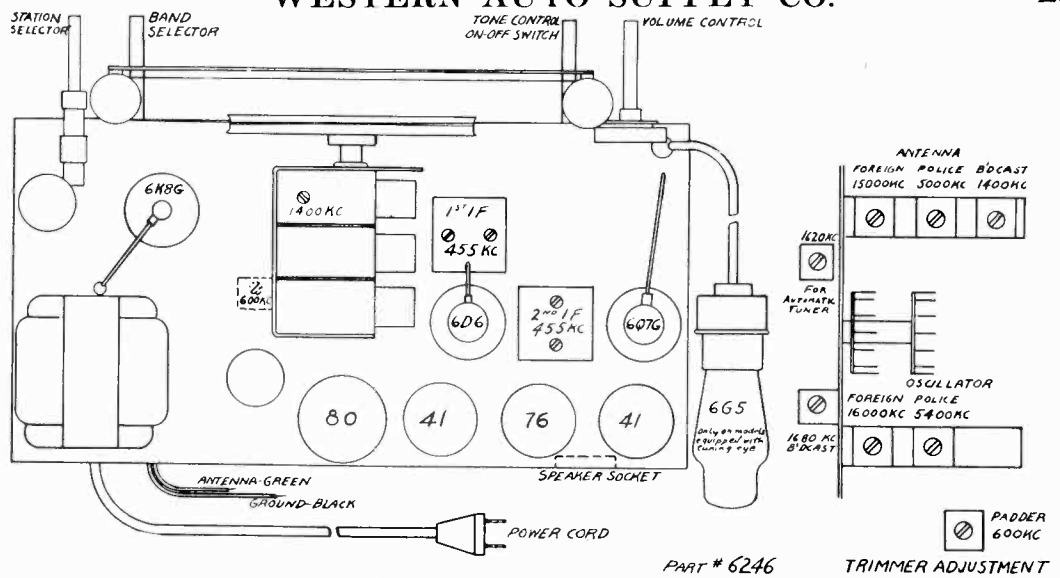
TUBES

Tubes required are:

1—6K8G Oscillator-translator
1—6D6 Intermediate Frequency Amplifier
1—6Q7G Detector AVC—First Audio Amplifier
1—76 Driver—Phase Inverter
2—41 Power Output
1—80 Rectifier
1—6G5 Cathode Ray Tuning Tube (on models equipped with "eye" tuning indicator)

WESTERN AUTO SUPPLY CO.

MODEL D911



PART # 6246 TRIMMER ADJUSTMENT

Connect a high impedance AC voltmeter across the loudspeaker terminals. Volume control should be set a few degrees back of maximum volume position. Use a weak signal from the generator, strong signals tend to cause improper adjustments.

IF. Connect the generator ground to receiver chassis. Using .1 mfd. condenser in series with high side of the generator, apply 455 kc. signal to the grid of the 6D6 IF amplifier tube and aline second IF transformer trimmers. Repeat for first IF transformer, applying signal to grid of the 6K8G tube. (See above diagram for location of tubes and transformers.)

RF. (See above diagram for location of trimmers.) Using a 200 mmf. condenser in series with the high side of the generator, turn band selector switch to position "B," tuning condenser to minimum capacity, feed 1680 kc. signal to antenna terminal and adjust broadcast oscillator trimmer for top frequency. Set generator frequency at some point around 1400-1500 kc., and adjust broadcast antenna and RF trimmers. Set generator for 600 kc., tune receiver to signal and adjust the padder. The tuning condenser should be rocked back and forth through the signal while varying the padder in order to assure perfect alinement.

A 400 ohm resistor must be used in series with the generator as a "dummy" antenna for proper alignment of the two short wave bands. Set the band selector switch in the "P" position, adjust the oscillator top frequency for 5400 kc., then aline the antenna trimmer at about 5000 kc. With the band selector in the extreme right position, adjust the top frequency of the high frequency band to 16,000 kc., and aline the antenna trimmer at about 15,000 kc. In order to make sure that the top end of the last band is set properly, it is best to screw the oscillator trimmer down tight, then unscrew to the second peak. The antenna trimmer should be screwed down tight, then unscrewed to the first peak. This procedure must be followed in order that the oscillator and RF circuits will be set in the correct relation to each other, otherwise a "dead" spot at a lower frequency will result, and the dial calibration will not be correct. Usually, it is best to rock the tuning condenser back and forth slightly while making these adjustments at high frequencies.

Turn the wave switch to the extreme left or automatic tuning position and depress the extreme left push button. Apply a signal at 1620 kc. to the receiver antenna lead through a 200 mmfd. condenser and unscrew the adjustment screw of the depressed push button to within about one turn of its limit in this direction. Then adjust the isolantite trimmer on the wave switch bracket, shown in the above drawing, until the signal is heard. This is the only service alinement necessary for the automatic tuner and stations may now be set up according to the instructions given elsewhere in this book.

Setting Up the Push Button Station Selector

First select six favorite local or strong nearby stations, listing them according to frequency or position on the dial. Setting up weak or distant stations is not recommended. Call the station nearest the left hand end of the dial (nearest 1600 kc.) the No. 1 station and number the other five stations consecutively as they are tuned in on the dial, tuning from left to right. For example assume your selected stations operate on frequencies of 1500 kc., 1300 kc., 1100 kc., 900 kc., 700 kc., and 600 kc. The 1500 kc. station should be listed as No. 1, the 1300 kc. station would be No. 2, and so on through the list with the 600 kc. station becoming No. 6. In setting up the buttons, the 1500 kc. station should be set up on No. 1 button, or the first button from the left, the 1300 kc. station on the second button from the left, and so on until the 600 kc. station is finally set up on the button farthest to the right.

With the band selector set at "B", or the second position from the left, tune in station No. 1. Observe the program in progress, then turn the band selector knob to the extreme left position (A). Push the No. 1 button in as far as it will go: when the proper operating position is reached the button will lock in. Then insert the screw driver through the opening directly above the No. 1 button and turn the larger headed screw until the same program is heard. ***Do not force this screw. It should turn very easily and if the station is not heard when the screw is turned all the way in one direction, reverse the direction of rotation until the station is found.*** When the station is located, turn the screw back and forth through the station slowly and observe when the station is accurately tuned in, indicated by a minimum of noise or hiss, or by watching the tuning eye on the models so equipped. Inserted in one side of the larger screw head is a smaller screw. This screw is for fine adjustment, and should be turned in and out until position of least hiss is found, or until the tuning eye, on models so equipped, shows the least shadow. It will not be necessary to turn this small screw more than one full turn from the factory adjusted position.

ALIGNMENT PROCEDURE

- 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.
- 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-metalic screwdriver.
- Dummy antennas—.1 mf., 200 mmf., and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Pushbutton Indicated Below Pushed "In"	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	1 MFD.	Grid of 6K7 I.F Tube	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6K8G	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND	17 Mc.	400 ohms	Antenna lead	Short Wave	Set dial at 17 MC	Trimmer (C22) (See Fig. 1)	Short wave oscillator	Adjust to maximum output
	17 Mc.	400 ohms	Antenna lead	Short Wave	Set dial at 17 MC	Trimmer (C10) (See Fig. 1)	Short wave antenna	Adjust to maximum output
MEDIUM WAVE BAND	5 Mc.	400 ohms	Antenna lead	Med. Wave	Set dial at 5 MC	Trimmer (C23) (See Fig. 1)	Medium wave oscillator	Adjust to maximum output
	5 Mc.	400 ohms	Antenna lead	Med. Wave	Dial set at 5 MC	Trimmer (C11) (See Fig. 1)	Medium wave antenna	Adjust to maximum output
BAND BROAD-CAST	1600 Kc.	200 mmf.	Antenna lead	Broadcast	Rotor full open (Plates out of mesh)	Trimmer (C24) (See Fig. 1)	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast	Set dial at 1400 Kc.	Trimmer (C12) (See Fig. 1)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast	Set dial at 600 Kc.	Trimmer (C18) (See Fig. 4)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
IMAGE REJECTION ADJUST-MENTS	1930 Kc.	200 mmf.	Antenna lead	Broadcast	Pick up signal at 1000 Kc. on dial	Trimmer (C9) (See Fig. 1)	Image rejection	Adjust for minimum output (See note "B")

NOTE "A". Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

NOTE "B". 1930 Kc. is the image frequency of 1000 Kc. Adjust Trimmer (C9) until a minimum output is obtained.

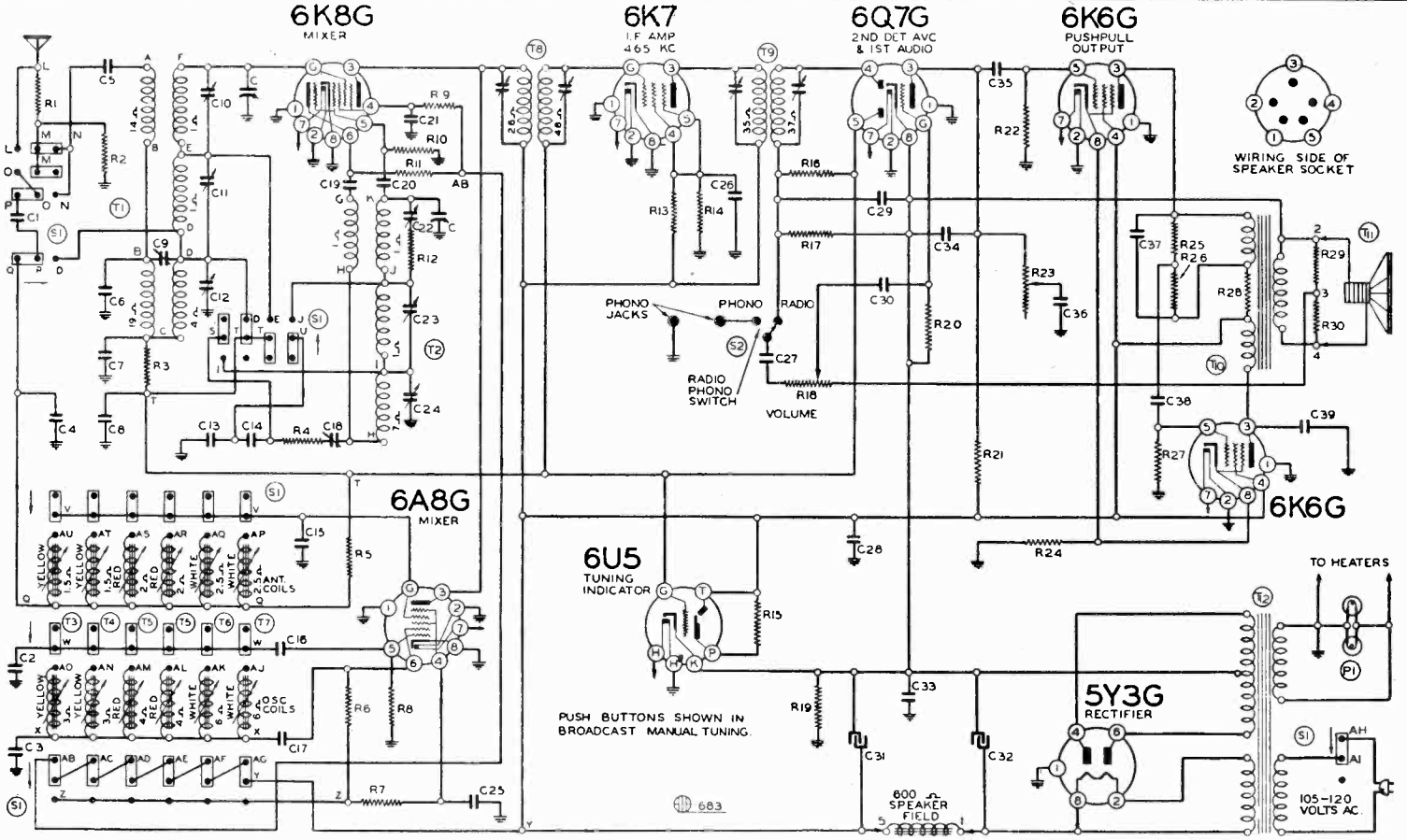
Attentuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each band is completed, repeat the procedure as a final check.

BAND	FREQUENCY RANGE
Broadcast	535 to 1600 Kc.
Medium Wave	1.58 to 5.5 MC.
Short Wave	5.0 to 18.3 MC.

Power Consumption—75 Watts (At 115 volts 50-60 cycles)
Power Output—4.5 Watts Undistorted, 6.5 Watts Maximum
Intermediate Frequency—465 KC.

BAND	DIAL SCALE	FREQUENCY RANGE
Broadcast	Lower Scale "BC"	535 to 1600 KC. (Kilocycles)
Medium Wave	Center Scale "MW"	1.58 to 5.5 MC. (Megacycles)
Short Wave	Upper Scale "SW"	5.0 to 18.3 MC. (Megacycles)



Cir. Dia. Ref. No.	Part No.	Description
		RESISTORS
R1	13041	800 ohm—⅓ w.
R2	13017	10M ohm—⅓ w.
R3	130103	100M ohm—⅓ w.
R4	130231	75 ohm—⅓ w.
R5	1309	200M ohm—⅓ w.
R6	130149	15M ohm—⅓ w.
R7	13012	50M ohm—⅓ w.
R8	13012	50M ohm—⅓ w.
R9	13057	35M ohm—⅓ w.
R10	13012	50M ohm—⅓ w.
R11	13065	30M ohm—1 watt
R12	130174	50 ohm—⅓ w.
R13	130103	100M ohm—⅓ w.
R14	13012	50M ohm—⅓ w.
R15	130110	1 megohm—in tuning indicator socket
R16	1304	3 megohm—⅓ w.
R17	1303	500M ohm—⅓ w.
R18	101133	1 megohm volume control
R19	130240	30 ohm—⅓ w.
R20	130225	15 megohm—⅓ w.
R21	1309	200M ohm—⅓ w.
R22	1303	500M ohm—⅓ w.
R23	101134	300M ohm tone control
R24	130220	300 ohm—1 watt
R25	1303	500M ohm—⅓ w.
R26	13064	3500 ohm—⅓ w.
R27	1303	500M ohm—⅓ w.
R28	130255	500 ohm—1 watt
R29	130215	25 ohm—⅓ w.
R30	130168	100 ohm—⅓ w.
		CONDENSERS
C	10283	2 gang variable
C1	10025	.002 x 600 v.
C2	129110	.000307 mica (0-Temperature Coefficient)
C3	129123	.0008 mica (0-Temperature Coefficient)
C4	12971	.002 mica
C5	12987	.000105 mica
C6	129126	.00007 mica
C7	10077	.00304 x 600 v.
C8	10093	.05 x 200 v.
C9	12459	Image rejection trimmer
C10	12459	S. W. Antenna trimmer
C11	12459	M. W. Antenna trimmer
C12	12459	B. C. Antenna trimmer
C13	129125	.00422 compression type mica
C14	129124	.00125 compression type mica
C15	129111	.000484 mica (0-Temperature Coefficient)
C16	12912	.00025 mica
C17	10025	.002 x 600 v.
C18	12444	Series Pad
C19	10025	.002 x 600 v.
C20	12939	.00005 mica
C21	10013	.05 x 400 v.
C22	12458	S. W. Oscillator trimmer
C23	12458	M. W. Oscillator trimmer
C24	12458	B. C. Oscillator trimmer
C25	10013	.05 x 400 v.
C26	10013	.05 x 400 v.
C27	10026	.02 x 400 v.
C28	1001	.1 x 400 v.
C29	12921	.0002 mica
C30	10071	.004 x 600 v.
C31	11964	10 mfd lytic—350 v.
C32	11964	15 mfd. lytic—400 v.
C33	10020	.1 x 200 v.
C34	1292	.0005 mica
C35	10026	.02 x 400 v.
C36	10013	.05 x 400 v.
C37	10012	.003 x 600 v.
C38	10026	.02 x 400 v.
C39	10012	.003 x 600 v.
		C31 and C32 in same unit

IF PEAK
465 KC

PROCEDURE FOR SETTING THE AUTOMATIC STATION PUSHBUTTONS:

Important: Allow the radio to "warm up" for about 15 minutes before setting the station adjustment screws for the pushbuttons.

Only a single adjustment for each station is required in setting up your favorite stations for automatic pushbutton operation. These adjustments are located at the front of the chassis shown in Fig. 3 and are accessible through the station call letter tab holes. The only equipment needed is a small screw driver to make the adjustments.

Make a list of your favorite local stations, those which you tune in regularly. Put down the frequency (kilocycle number) of these stations. There may be 2, 3, 5 or any number up to and including six in this list.

If you do not know the broadcasting frequencies, consult your local newspaper or a radio log book. They can also be obtained by pressing the button marked "Broadcast" on the right hand side of the pushbutton assembly and tuning in the stations manually, noting the numbers on the dial at which they are received.

The automatic station pushbuttons are grouped to cover specific frequency ranges.

The range of the frequencies covered by each button are given below and are also shown in Fig. 3. Only stations within the frequency ranges given can be obtained on a particular button. Counting the station buttons from left to right, looking at the front of the set, the frequency ranges are as follows:

1. 1600 to 1050 Kilocycles.
2. 1600 to 1050 Kilocycles.
3. 1100 to 750 Kilocycles.
4. 1100 to 750 Kilocycles.
5. 800 to 530 Kilocycles.
6. 800 to 530 Kilocycles.

This means that any station which has a kilocycle number lying between 1600 and 1050 K.C. can be set up on either Button 1 or Button 2. Any station which has a kilocycle number lying between 1100 and 750 K.C. can be set on either Button 3 or Button 4. Any station which has a kilocycle number lying between 800 and 530 K.C. can be set on either Button 5 or Button 6.

After you have made up your list of stations, press button marked "Broadcast" and tune set manually until station selected having the highest frequency is tuned in and the program noted. Press button covering frequency range in which station is located (See Fig. 3). Adjust screw through station tab opening above button pressed until the same station is heard clearly and tuning indicator indicates that it is correctly tuned.

Press pushbutton marked "Broadcast" and tune in next station selected. Press button covering frequency range in which station is located. Adjust screw through station tab opening above button pressed until the same station is heard clearly and with maximum volume.

Follow this procedure for each button until you have selected all of your stations. The automatic buttons are now set up for quick tuning and no further adjustment is necessary.

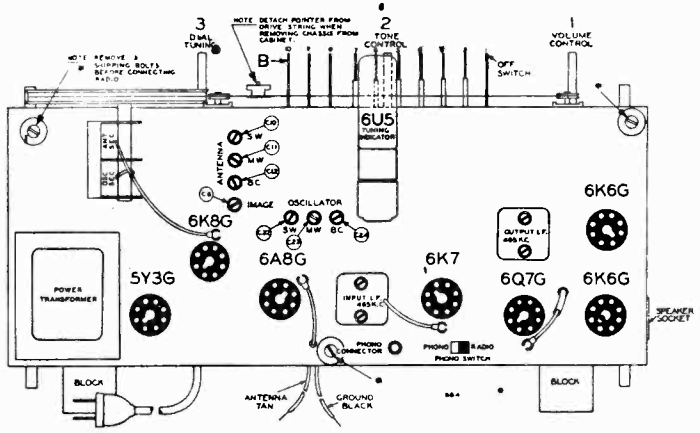


FIG. 1—TOP VIEW

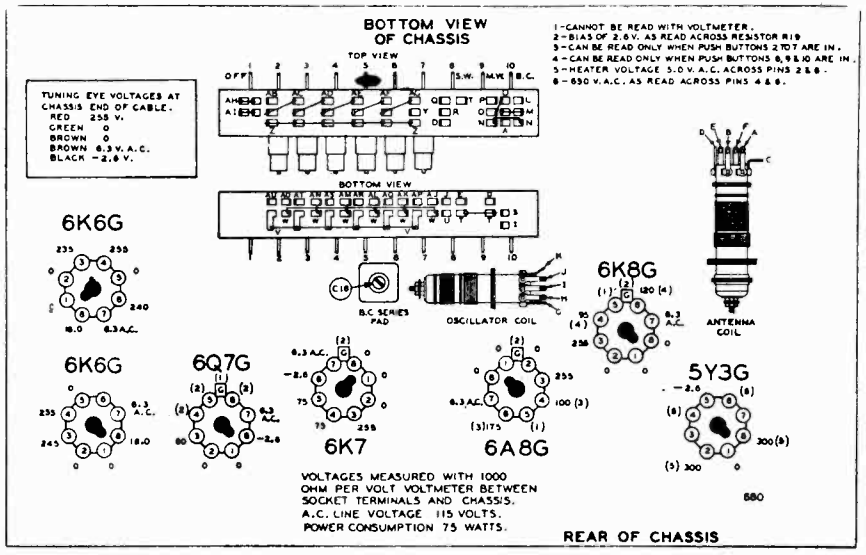
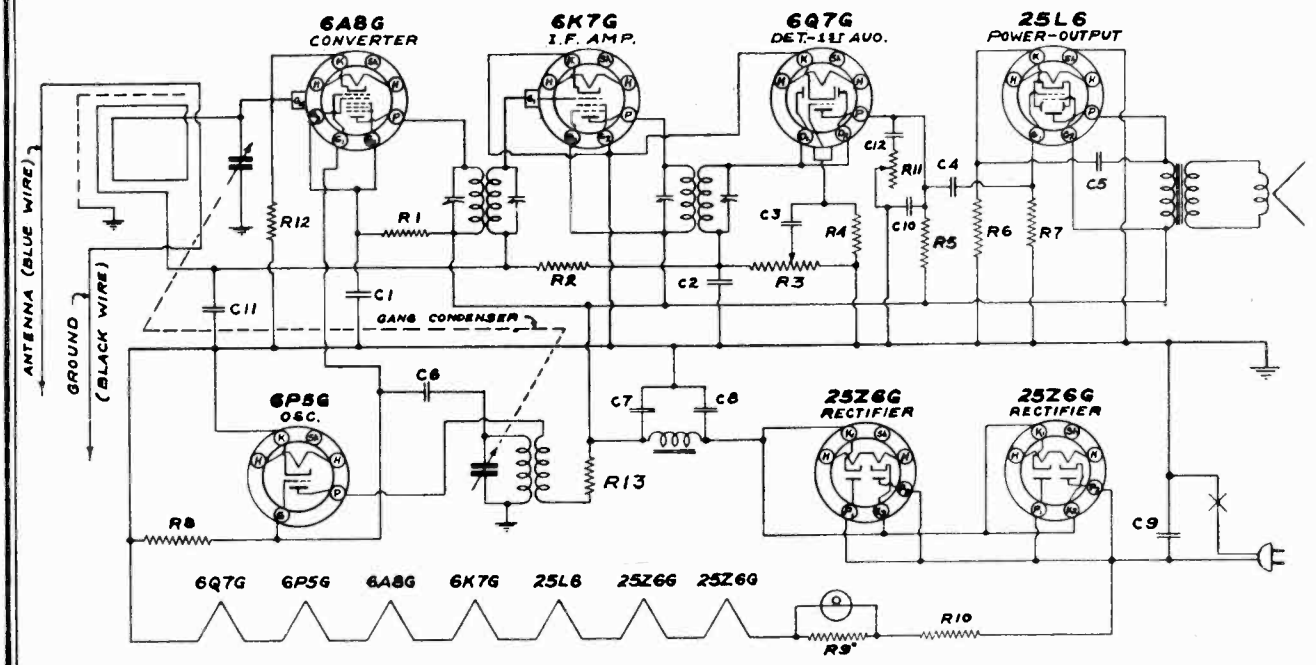


FIG. 4

MODELS D913,
D913, Issue C

WESTERN AUTO SUPPLY CO.



CAPACITORS

No	Mfds.	Volts	No	Mfds.	Volts
C1	.01	400	C8	20.0	150
C2	.00025	MICA	C9	.05	400
C3	.01	400	C10	.0005	MICA
C4	.01	400	C11	.05	200
C5	.005	600	C12	.005	600
C6	.00005	MICA			
C7	20.0	150			

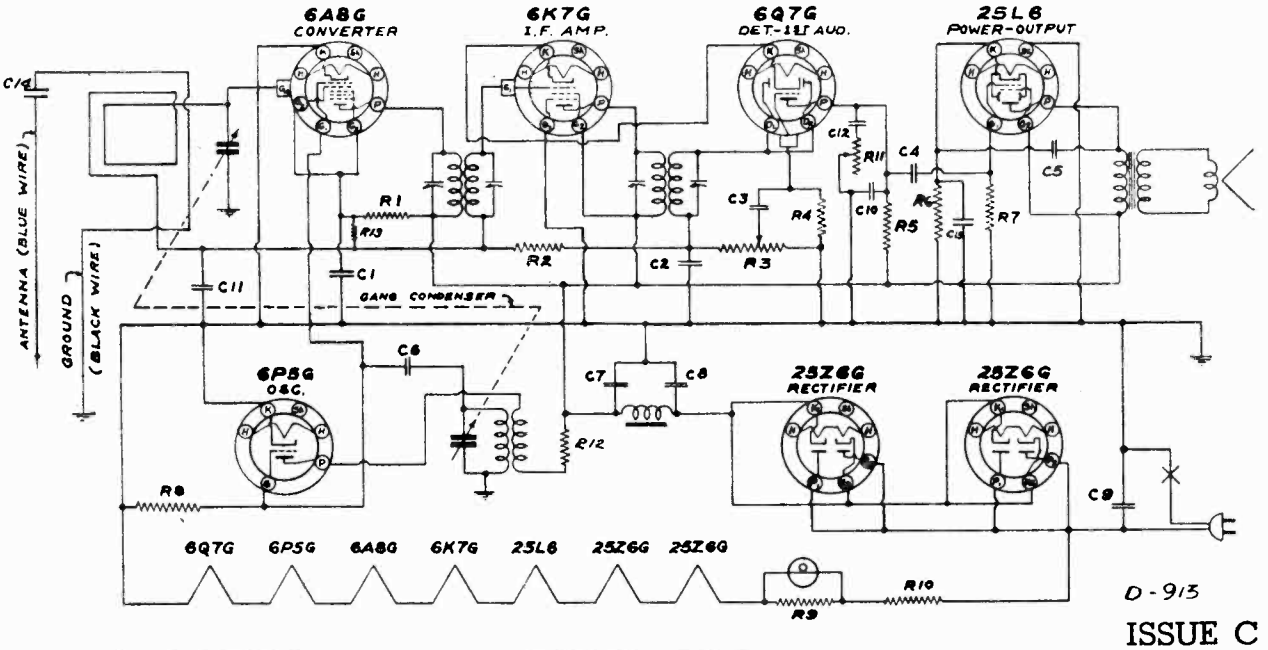
RESISTORS

No	Ohms	Watts	No	Ohms	Watts
R1	20,000.	1/2	R7	1/2 MEG	1/2
R2	2 MEG.	1/2	R8	50,000	1/2
R3	1/2 MEG.	VOL.CONT.	R9	42	7
R4	5 MEG.	1/2	R10	42	7
R5	250,000.	1/2	R11	500,000	TONE C.
R6	150	1/2	R12	60	1/2
			R13	2000	1/2

I.F. - 455 K.C.

D - 913

SCHEMATIC DIAGRAM



D-913

ISSUE C
OCT. 1939

CAPACITORS

No	Mfds.	Volts	No	Mfds.	Volts
C1	.01	400	C8	20.0	150
C2	.00025	MICA	C9	.05	400
C3	.01	400	C10	.0005	MICA
C4	.01	400	C11	.05	200
C5	.005	600	C12	.005	600
C6	.00005	MICA	C13	20.0	25
C7	20.0	150	C14	.001	400

RESISTORS

No	Ohms	Watts	No	Ohms	Watts
R1	10,000	1/2	R7	1/2 MEG	1/2
R2	2 MEG.	1/2	R8	50,000	1/2
R3	1/2 MEG.	VOL.CONT.	R9	30	7
R4	5 MEG.	1/2	R10	42	7
R5	250,000.	1/2	R11	500,000	TONE C.
R6	150	1/2	R12	1000	1/2
			R13	13 MEG	1/2

I.F. - 455 K.C.

SCHEMATIC DIAGRAM

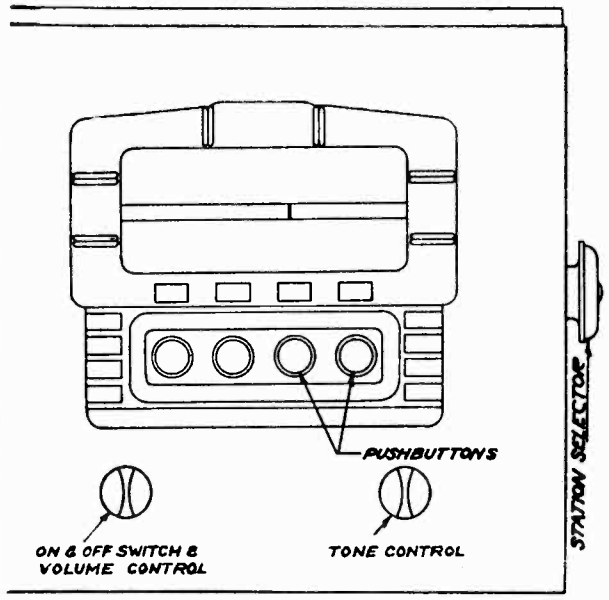


Fig. 1—Front View

PROCEDURE FOR SETTING UP PUSH BUTTONS

There are four push buttons by means of which four stations may be selected Make a list of four stations tuned in regularly. Loosen one of the push buttons by turning the push button knob counter clockwise a half turn or less and push it in; while holding the button in, tune in a desired station by means of the station selector wheel. Turn the selector very slowly back and forth until the signal is clearest. Now while holding the push button in, tighten it by turning clockwise. Release the push button and turn the station selector to one end of the dial; then check the button by pushing it in and if the station is tuned to the center of the area on the dial covered by the station the adjustment is correct.

Release the push button and loosen another push button and repeat the above procedure, doing this for the remaining buttons.

If it is desired to change a button to a different station simply loosen the push button and re-set.

Punch the correct station call letter tabs from the set of sheets supplied and insert them into the recesses above the push buttons.

The dial is now set up for quick tuning and all that is necessary is to push the button under the desired station all the way in and then release.

POWER SUPPLY

This receiver is designed to operate from any AC (Alternating Current) or DC (Direct Current) power supply main of 105-125 volts, 60 cycle. If the receiver fails to operate on DC (Direct Current), reverse the power line plug.

SERVICE DATA

SERVICE NOTES MODEL D-913, D-914

Voltages taken from the different points of the circuit to chassis are measured with volume control in maximum position, all tubes in their sockets and with a volt meter having a resistance of 1000 ohms per volt, on the 150 volt scale. These voltages are clearly indicated on the voltage chart.

In order to prevent signal from acting upon A.V.C. and affecting accuracy of voltage measurements, aerial and ground leads should be short circuited while making measurements.

SERVICE NOTES MODEL D-915

Voltages taken from the different points of the circuit to chassis are measured with volume control in maximum position, all tubes in their sockets and with a volt meter having a resistance of 20,000 ohms per volt. These voltages are clearly indicated on the voltage chart.

All voltages should be measured with 117.5 volts A.C. input to receiver. Resistance and actual connections of coils and transformers, electrolytic condenser information and speaker data are given under Service Information.

To check for open by pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating, which is known to be good until the defective unit is located.

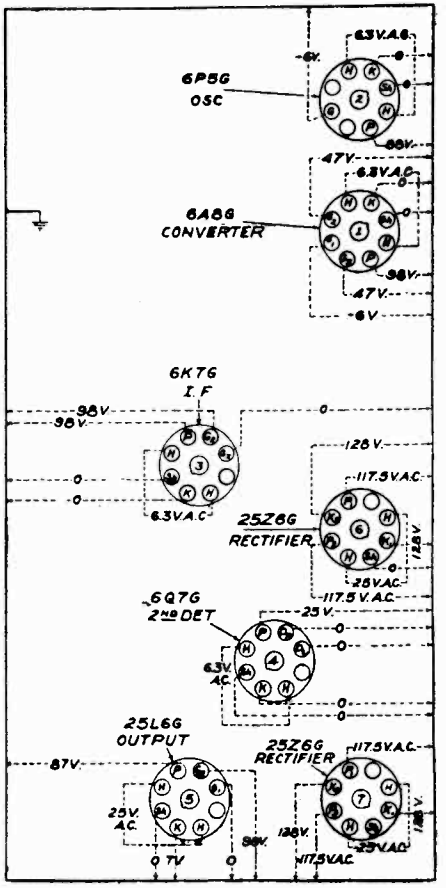
Failure to operate, noisy or weak reception is usually due to defective tubes, the tubes making poor contact with sockets or grid clips making poor contact with the caps of the tubes. Tubes may be checked very easily by replacing with other tubes which are known to be good.

ALIGNING INSTRUCTIONS

All of the adjustments have been very carefully set with signal generators at the factory and require no further adjustment, unless it becomes necessary to replace a coil or transformer, or if the adjustments have been tampered with in the field. Under no circumstances attempt any adjustments without first making certain that adjustment is necessary and only after voltages, tubes and condensers have been checked and found to be normal. To properly re-align this receiver, a signal generator as well as an output meter, must be used.

VOLTAGE FOR
MODEL D-913
D-914

VOLTAGES AT SOCKETS



Bottom View of Chassis

MODELS D913,D913
Issue C

WESTERN AUTO SUPPLY CO.

SERVICE INFORMATION

Oscillator Coil (Part No. P3205) (Red Dot) MODEL D913

Looking at the connection end (with dot) in a clockwise direction starting at the chassis the terminals are No. 1, grid; No. 2, plate; No. 3, B+; No. 4, ground.

Speaker (Part No. P3284)

Field resistance	450 ohms
D.C. voice coil resistance	4.6 ohms
Voice coil impedance at 400 cycles	5 ohms

Oscillator Coil (Part No. P3682) MODEL D913,Issue C

Looking at the connection end (with dot) in a clockwise direction starting at the chassis the terminals are No. 1, grid;

Primary—No. 2 and No. 3—Resistance 1.5 ohms.

Secondary—No. 4 and No. 1—Resistance 4.5 ohms.

First I.F. Transformer (Part No. P3282)

Primary—Blue white, plate; red white B+—Resistance 24.2 ohms.

Secondary—White, grid; black white, AVC—Resistance 23.6 ohms.

Second I.F. Transformer (Part No. P3283)

Primary—Blue white, plate; red white, B+—Resistance 11.9 ohms.

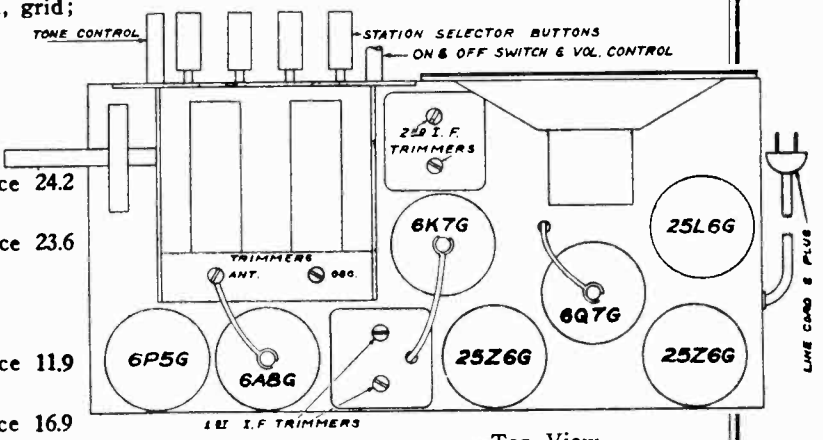
Secondary—White, grid; black white, AVC—Resistance 16.9 ohms.

Electrolytic Condenser (Part No. P3531)

Red, 20 mfd., 150 volt; green, 20 mfd., 150 volt; yellow, 20 mfd., 25 volt; black, negative for all three sections.

Loop Antenna

Since the loop antenna acts also as the antenna coil the set will not operate with the loop antenna disconnected.



–Top View

ALIGNMENT PROCEDURE

- 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.
- 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 antennas—.1 mfd., 200 mmf.

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.	Grid of 6K7G I.F. tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Output I.F.	Adjust to maximum output
	455 KC.	.1 MFD.	Grid of 6A8G tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Input I.F.	Adjust to maximum output
BROAD-CAST	1730 KC.	200 mmf.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Top of Left section of gang (See Fig. 2)	Oscillator	Adjust to maximum output
	1400 KC.	200 mmf.	Antenna lead	Set dial at 1400 KC.	Trimmer—Top of Right section of gang (See Fig. 2)	Antenna	Adjust to maximum output

This is all that is necessary for the alignment unless the plates of the gang have been bent out of shape. In case of bent plates, set the signal generator and receiver to 600 KC and bend the plates into the position for maximum output.

Attenuate the signal from the signal generator to prevent the leveling off-action of the AVC. After each band is completed, repeat the procedure as a final check.

FREQUENCY RANGE

540 to 1630 KC

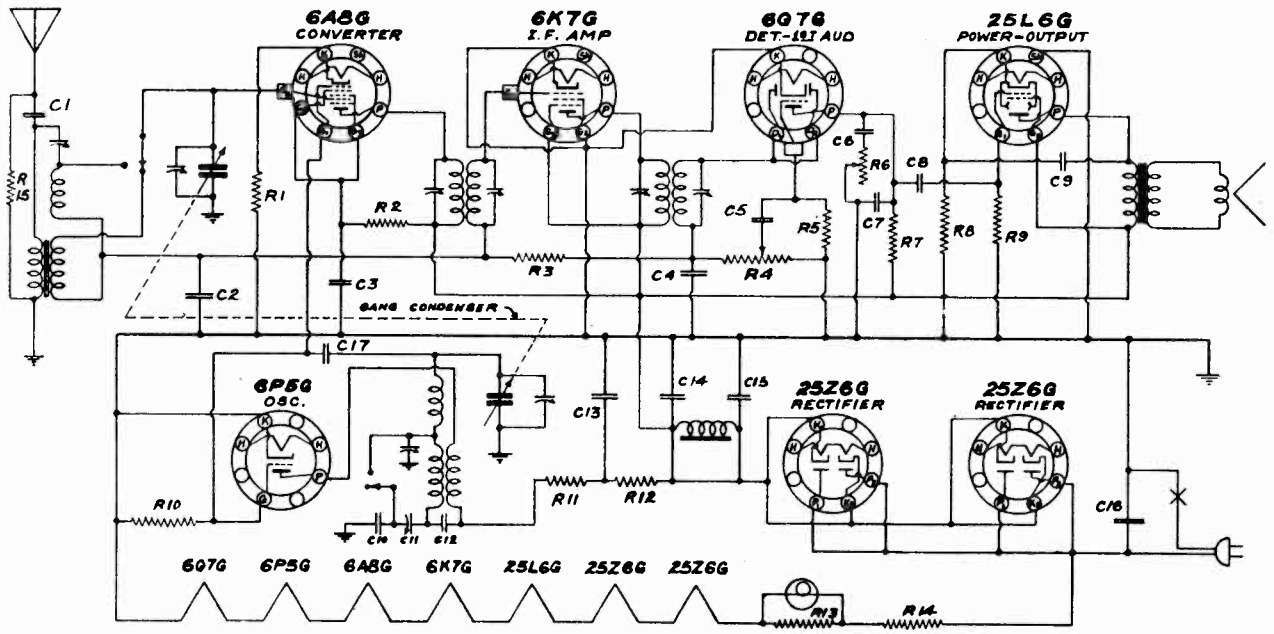
Power output 1 watt undistorted—1.7 watts maximum.

Intermediate Frequency 455 KC.

Power Consumption—50 watts.

MODEL D914
MODEL D914,
Issue C

WESTERN AUTO SUPPLY CO.



CAPACITORS

№	Mfds	VOLTS	№	Mfds	VOLTS
C1	.002	600	C10	.0022 ±5%	MICA
C2	.05	400	C11	.00062	VAR. PAD.
C3	.01	400	C12	.005	600
C4	.00025	MICA	C13	8.0	150
C5	.01	400	C14	25.0	150
C6	.005	600	C15	25.0	150
C7	.0005	MICA	C16	.05	400
C8	.01	400	C17	.00005	MICA
C9	.005	600			

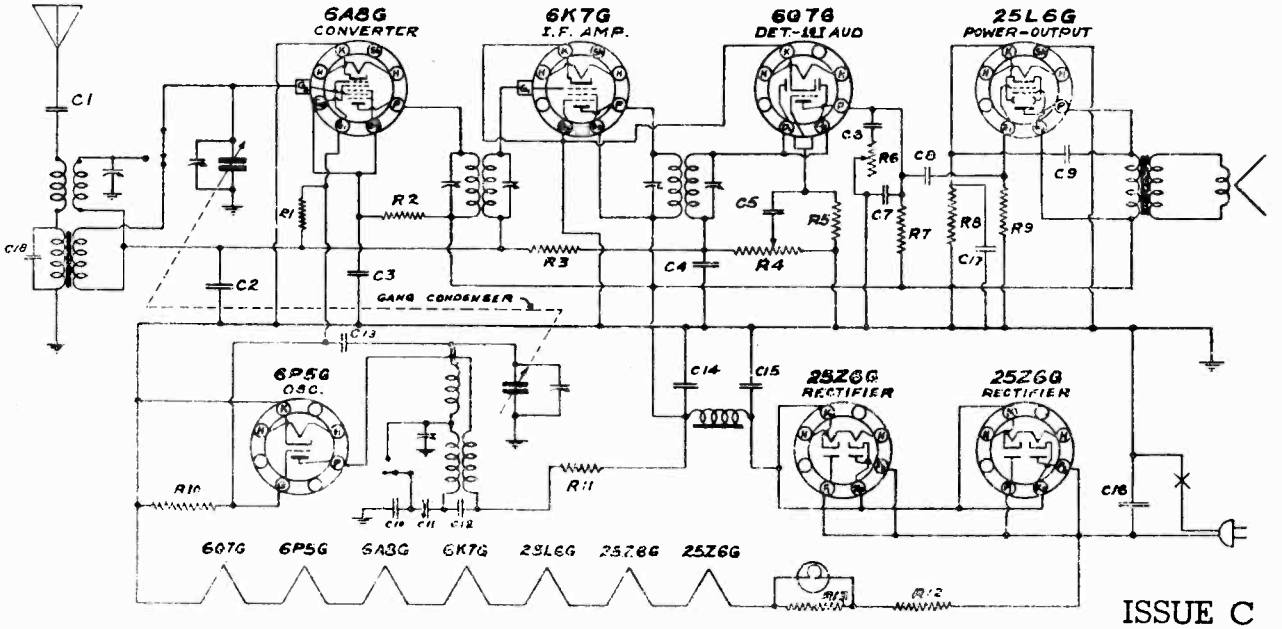
RESISTORS

№	OHMS	WATTS	№	OHMS	WATTS
R1	60	1/2	R8	150	1/2
R2	20,000	1/2	R9	1/2 MEG.	1/2
R3	2 MEG.	1/2	R10	50,000	1/2
R4	1/2 MEG.	V.C	R11	10,000	1/2
R5	5 MEG	1/2	R12	10,000	1/2
R6	1/2 MEG.	T.C.	R13	42	7
R7	1/4 MEG.	1/2	R14	42	7
			R15	25.000	1/2

SWITCHES IN BROADCAST POSITION

I.F. 455 K.C.

SCHEMATIC DIAGRAM



ISSUE C
OCT. 1939

CAPACITORS

№	Mfds	VOLTS	№	Mfds	VOLTS
C1	.002	600	C10	.0022 ±5%	MICA
C2	.05	400	C11	.00062	VAR. PAD.
C3	.01	400	C12	.005	600
C4	.00025	MICA	C13	.00005	Mica
C5	.01	400	C14	25.0	150
C6	.005	600	C15	25.0	150
C7	.0005	MICA	C16	.05	400
C8	.01	400	C17	20.0	25
C9	.005	600	C18	.00005	Mica

RESISTORS

№	OHMS	WATTS	№	OHMS	WATTS
R1	15 Meg.	1/2	R8	150	1/2
R2	10 K.	1/2	R9	1/2 Meg.	1/2
R3	2 Meg.	1/2	R10	50K	1/2
R4	1/2 Meg.	V.C.	R11	10K	1/2
R5	5 Meg.	1/2	R12	42	7
R6	1/2 Meg.	T.C.	R13	30	7
R7	1/4 Meg.	1/2			

SWITCHES IN BROADCAST POSITION

I.F. 455 K.C.

SCHEMATIC DIAGRAM

ALIGNMENT PROCEDURE

- 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.
- 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 antennas—.1 mfd., 200 mmf., 400 ohms.

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.	Grid of 6K7G I.F. tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Output I. F.	Adjust to maximum output
	455 KC.	.1 Mfd.	Grid of 6A8G tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Input I. F.	Adjust to maximum output
SHORT WAVE	18,100 KC.	400 ohms	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Top of left section of gang (See Fig. 2)	Short Wave Oscillator	Adjust to receive signal
	16,000 KC.	400 ohms	Antenna lead	Tune signal	Trimmer—On right side of chassis, 3rd from front	Short Wave Antenna	Adjust to maximum output
BROAD-CAST	1730 KC.	200 Mmf.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—On right side of chassis, 2nd from front	Broadcast Oscillator	Adjust to maximum output
	1400 KC.	200 Mmf.	Antenna lead	Set dial at 1400 KC.	Trimmer—Top of right section of gang (See Fig. 2)	Broadcast Antenna	Adjust to maximum output
	600 KC.	200 Mmf.	Antenna lead	Set dial at 600 KC.	Trimmer—On right side of chassis, 1st from front	Oscillator Series Pad.	Adjust to maximum rock dial See Note 'A

Note "A"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of intensity is obtained.

Attenuate the signal from the signal generator to prevent the leveling-off action of the A.V.C.

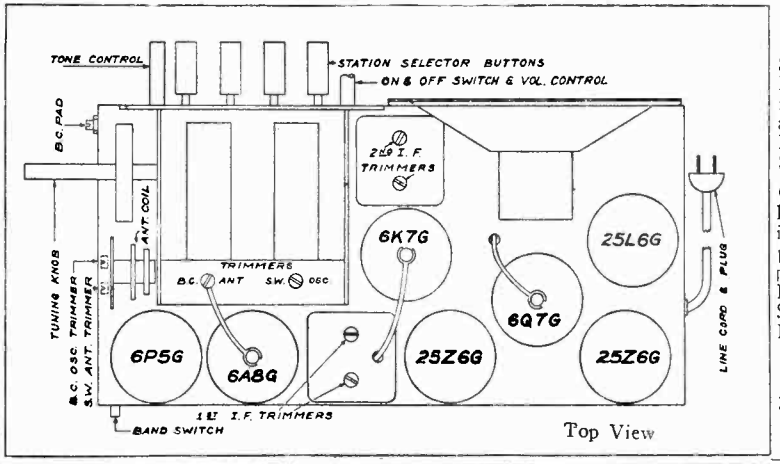
Do not bend variable condenser to correct tracking.

Frequency Range — 535 to 1730 and 5,700 to 18,100 K.C.

Power output 1 watt undistorted—1.7 watts maximum.

Intermediate Frequency 455 K.C.

Power Consumption—50 watts.



Top View

SERVICE INFORMATION

Speaker (Part No. P3284) Model D-914

Field resistance	450 ohms
D.C. voice coil resistance	4.6 ohms
Voice coil impedance at 400 cycles	5 ohms

Antenna Coil (Part No. G5960).

Looking at the connection end starting at the mounting strip in a clockwise direction the terminals are: No. 1, (not used); No. 2, AVC; No. 3, grid; No. 4, antenna; No. 5, ground (grounded directly to mounting strip).

Primary—No. 4 and No. 5—Resistance 26 ohms.

Secondary—No. 2 and No. 3—Resistance 2 ohms.

Short Wave Antenna Coil (Part No. 3294).

Resistance—.1 ohm.

Oscillator Coil (Part No. P3293).

Looking at the end with mounting strip, starting at the mounting strip in a clockwise direction the terminals are: No. 1, padder; No. 2, B+; No. 3, (not used); No. 4, switch; No. 5, plate; No. 6, grid.

Primary—No. 2 and No. 5—Resistance .85 ohm
Short Wave Secondary—No. 4 and No. 6—Resistance .07 ohm
Broadcast Secondary—No. 1 and No. 4—Resistance 5.1 ohms.

First I.F. Transformer (Part No. P3282)

Primary—Blue, white, plate; red white B+—Resistance 24.2 ohms.

Secondary—White, grid; black white, AVC—Resistance 23.6 ohms.

Second I.F. Transformer (Part No. P3283)

Primary—Blue white, plate; red white, B+—Resistance 11.9 ohms.

Secondary—White, grid; black white, AVC—Resistance 16.9 ohms.

Electrolytic Condenser (Part No. P3169)
Red, 25 mfd., 150 volt; red and white, 25 mfd., 150 volt; blue, 5 mfd., 150 volt; black, negative for all three sections.

SERVICE INFORMATION

Short Wave Antenna Coil (Part No. P3702)
Looking at the connection end starting at the mounting strip in a clockwise direction the terminals are: No. 1, grid; No. 2, ant.; No. 3, ground; No. 4 (on other end), AVC.
Primary—No. 2 and No. 3—Resistance .03 ohm
Secondary—No. 1 and No. 4—Resistance .1 ohm

Oscillator Coil (Part No. P3700)
Looking at the end with mounting strip, starting at the mounting strip in a clockwise direction the terminals are: No. 1, padder; No. 2, B+; No. 3, (not used); No. 4, switch; No. 5, plate; No. 6, grid.
Primary—No. 2 and No. 5—Resistance .85 ohm
Short Wave Secondary—No. 4 and No. 6—Resistance .07 ohm
Broadcast Secondary—No. 1 and No. 4—Resistance 5.1 ohms.

Electrolytic Condenser (Part No. P3531)
Red, 20 mfd., 150 volt; green, 20 mfd., 150 volt; yellow, 20 mfd., 25 volt; black, negative for all three sections.

Speaker (Part No. P3638)

Field resistance	300 ohms
D.C. voice coil resistance	4.6 ohms
Voice coil impedance at 400 cycles	5 ohms

SPECIAL SERVICE INFORMATION FOR MODEL D-914 (Issue C)

WESTERN AUTO SUPPLY CO.

TRUETONE PAGE 13-31

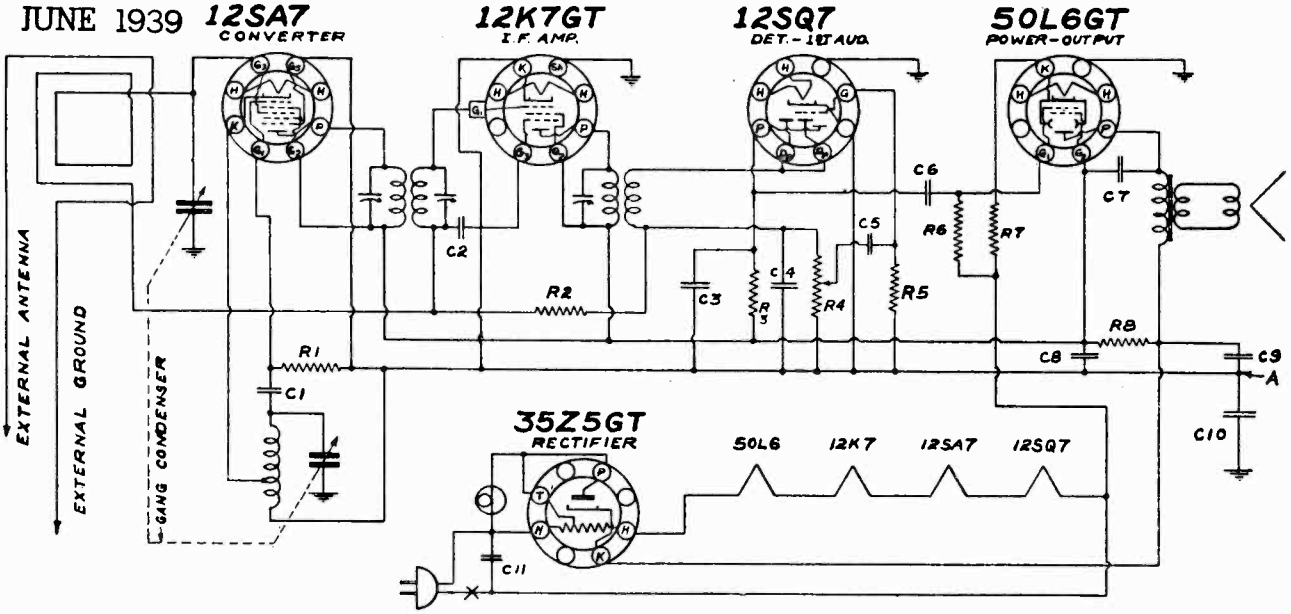
MODEL D914
MODEL D914
Issue C

MODEL D915
Issues A,B,
MODEL D915
Issue C

WESTERN AUTO SUPPLY CO.

ISSUE A
JUNE 1939

ISSUE B
OCT. 1939



MODEL D915, Issues A and B

RESISTORS

№	OHMS	WATTS	№	OHMS	WATTS
R1	20,000	½	R6	500,000	½
R2	2 MEG.	½	R7	150 ± 10%	½
R3	250,000	½	R8	1,000	1
R4	500,000	V.C.			
R5	5 MEG.	½			

CAPACITORS

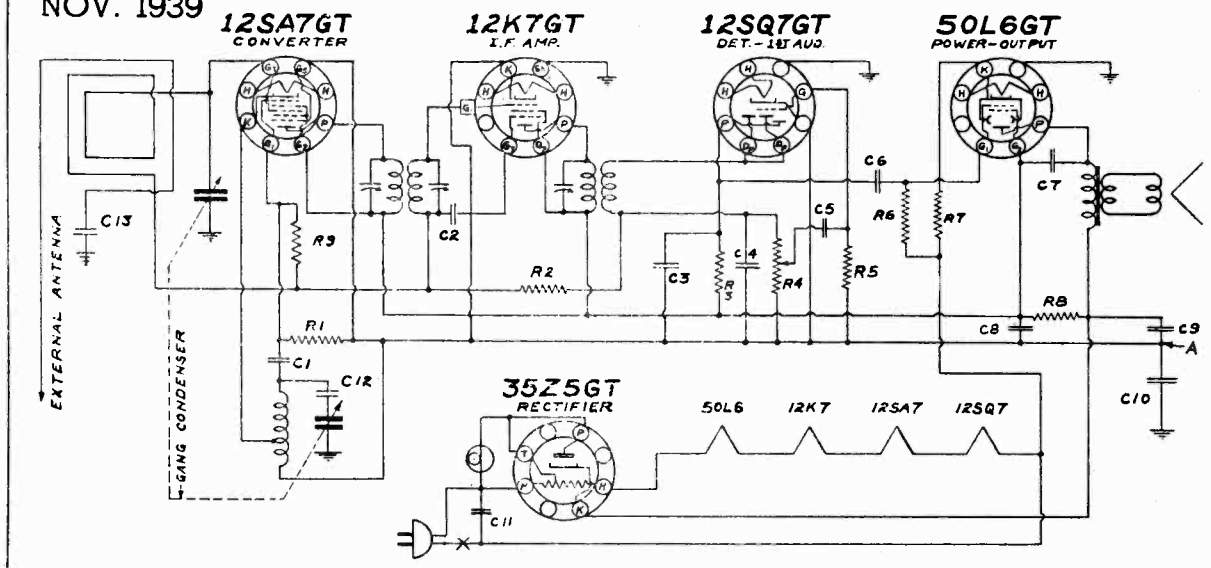
№	MFD.	VOLTS	№	MFD.	VOLTS
C1	.0001	MICA	C7	.01	400
C2	.02	400	C8	20.0	150
C3	.0005	MICA	C9	30.0	150
C4	.00025	MICA	C10	.25	200
C5	.01	400	C11	.05	400
C6	.002	600			

I.F. 455 K.C.

TUBES SHOW BOTTOM VIEW

C10 USED ON MODEL 5QL ONLY. ON MODEL 5Q, POINT "A" IS CONNECTED TO CHASSIS.

ISSUE C
NOV. 1939



RESISTORS

№	OHMS	WATTS	№	OHMS	WATTS
R1	20,000	½	R6	500,000	½
R2	2 MEG.	½	R7	150 ± 10%	½
R3	250,000	½	R8	1,000	1
R4	500,000	V.C.	R9	15 MEG.	½
R5	5 MEG.	½			

CAPACITORS

№	MFD.	VOLTS	№	MFD.	VOLTS
C1	.0001	MICA	C7	.01	400
C2	.02	400	C8	20.0	150
C3	.0005	MICA	C9	30.0	150
C4	.00025	MICA	C10	.25	200
C5	.01	400	C11	.05	400
C6	.002	600	C12	.02	400
			C13	.001	600

I.F. 455 K.C.

TUBES SHOW BOTTOM VIEW

MODEL D915, Issue C

C10 and C12 used in model 5QL only. On model 5Q point "A" is connected to chassis.

WESTERN AUTO SUPPLY CO.

MODELS D915, Issues A,B,C

VOLTAGE CHART

All voltages measured with a 20,000 ohm per volt meter on the 150 volt scale. Line voltage 117½ volts A.C.

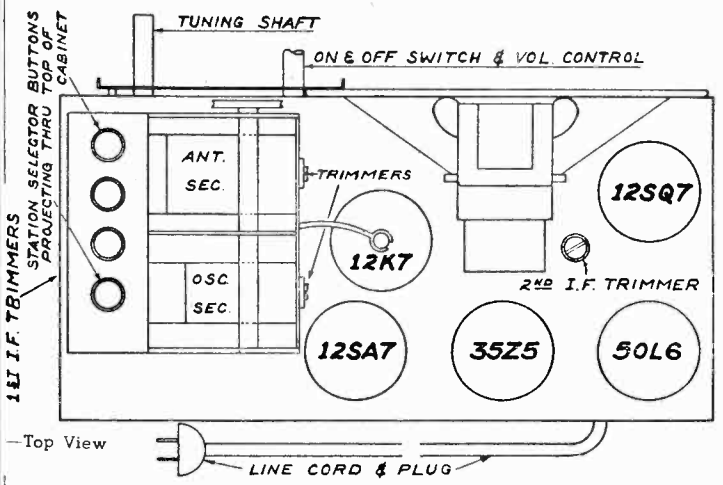
12SA7 Tube	Volts
Plate—P—to ground	87
Screen—G2—to ground	87
Osc. grid—G1—to ground	—5
Cathode—K—to ground	0
Control grid—G3—to ground	—1
Suppressor grid—G5—to ground	0

12K7GT Tube	
Plate—P—to ground	87
Screen—G—to ground	87
Suppressor grid—G3—to ground	0
Control grid—G1—to ground	—1

12SQ7 Tube	
Plate—P—to ground	54
Grid—G—to ground	—1

50L6GT Tube	
Plate—P—to ground	102
Screen—G2—to ground	86
Cathode—K—to ground	—2
Grid—G1—to ground	0

35Z5GT Tube	
Cathode—K—to ground	107



—Top View

SERVICE INFORMATION

(Spkr. Part no. P 3553) only on Model D-915

Speaker (Part No. P3356) 5" PM Type (issue C)

D.C. voice coil resistance.....3.4 ohms
Voice coil impedance at 400 cycles.....3.8 ohms

Oscillator Coil (Part No. P3347)

Looking at the connection end in a clockwise direction starting at the chassis the terminals are No. 1, end of winding; No. 2, start of winding; No. 3 tap.

No. 2 and No. 1—Resistance 4.8 ohms.
No. 3 and No. 1—Resistance 4.2 ohms.

First I.F. Transformer (Part No. P3345)

Primary—Blue, plate; red, B+—Resistance 32.1 ohms.
Secondary—White, grid; black, AVC—Resistance 33.2 ohms.

Second I.F. Transformer (Part No. P3364)

Primary—Blue, plate; red B+—Resistance 24.2 ohms.
Secondary—White, grid; black, AVC—Resistance 24.1 ohms.

Electrolytic Condenser (Part No. P3355)

Red, 30 mfd., 150 volt; green, 20 mfd., 150 volt; black, negative for both sections.

Loop Antenna

Since the loop antenna acts also as the antenna coil the set will not operate with the loop antenna disconnected.

ALIGNMENT PROCEDURE

- 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.
- 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 antennas—.1 mf., 100 mmf.

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.	Grid of 12K7 I.F. tube	Rotor full open (Plates out of mesh)	One trimmer on top (See Fig. 1)	Output I.F.	Adjust to maximum output
	455 KC.	.1 MFD.	Grid of 12SA7 tube	Rotor full open (Plates cut of mesh)	Two trimmers on side (See Fig. 1)	Input I.F.	Adjust to maximum output
BROAD-CAST	1730 KC.	100 mmf.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Side of rear section of gang (See Fig. 1)	Oscillator	Adjust to maximum output
	1400 KC.	100 mmf.	Antenna lead	Set dial at 1400 KC.	Trimmer—Side of front section of gang (See Fig. 1)	Antenna	Adjust to maximum output

This is all that is necessary for the alignment unless the plates of the gang have been bent out of shape. In case of bent plates, set the signal generator and receiver to 600 KC and bend the plates into the position for maximum output.

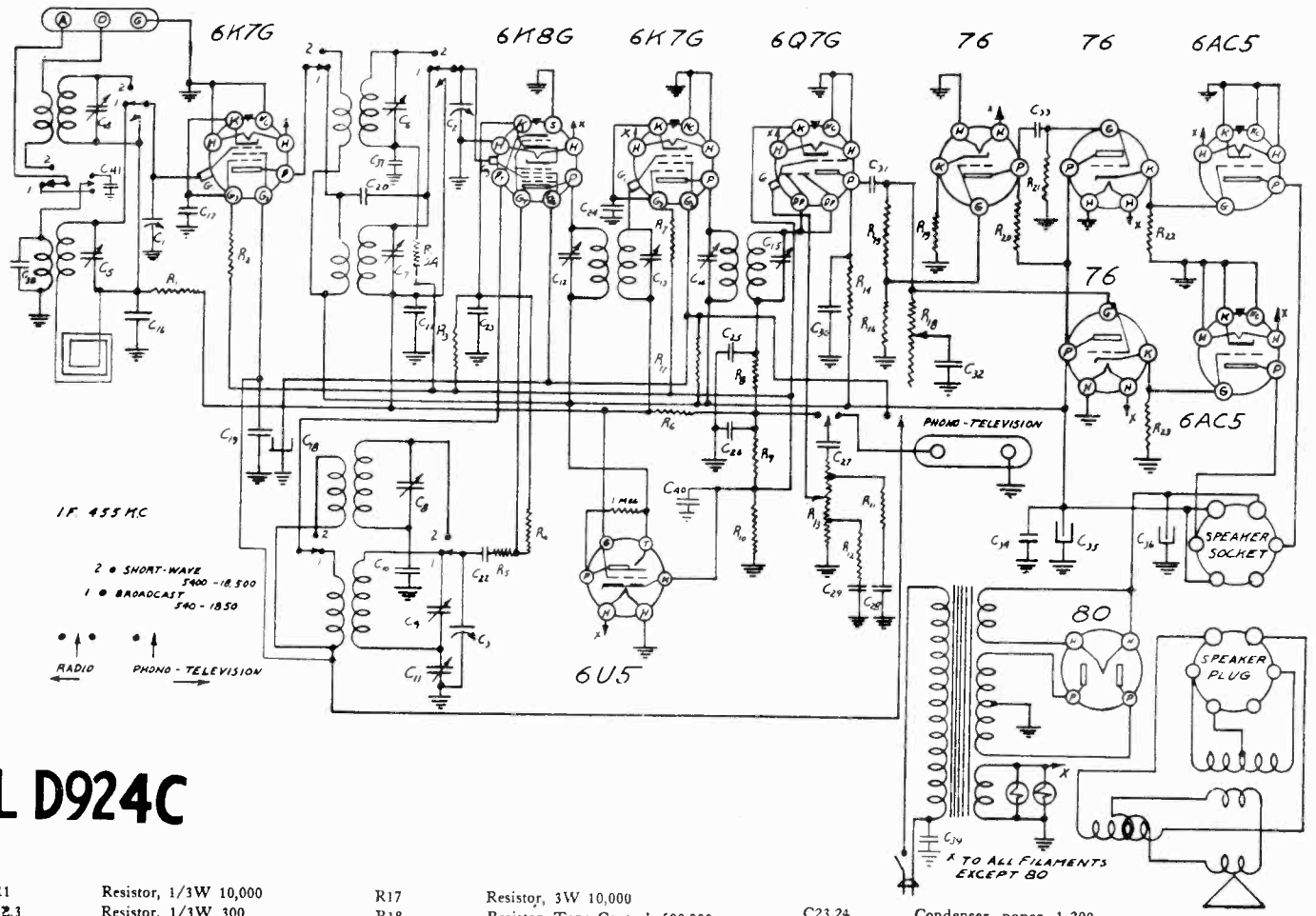
Attenuate the signal from the signal generator to prevent the leveling off-action of the AVC. After each band is completed, repeat the procedure as a final check.

Frequency Range

540 to 1730 K.C.

Power output 1.2 watts undistorted—2 watts maximum.

Intermediate Frequency 455 K.C.—Power Consumption 30 watts.



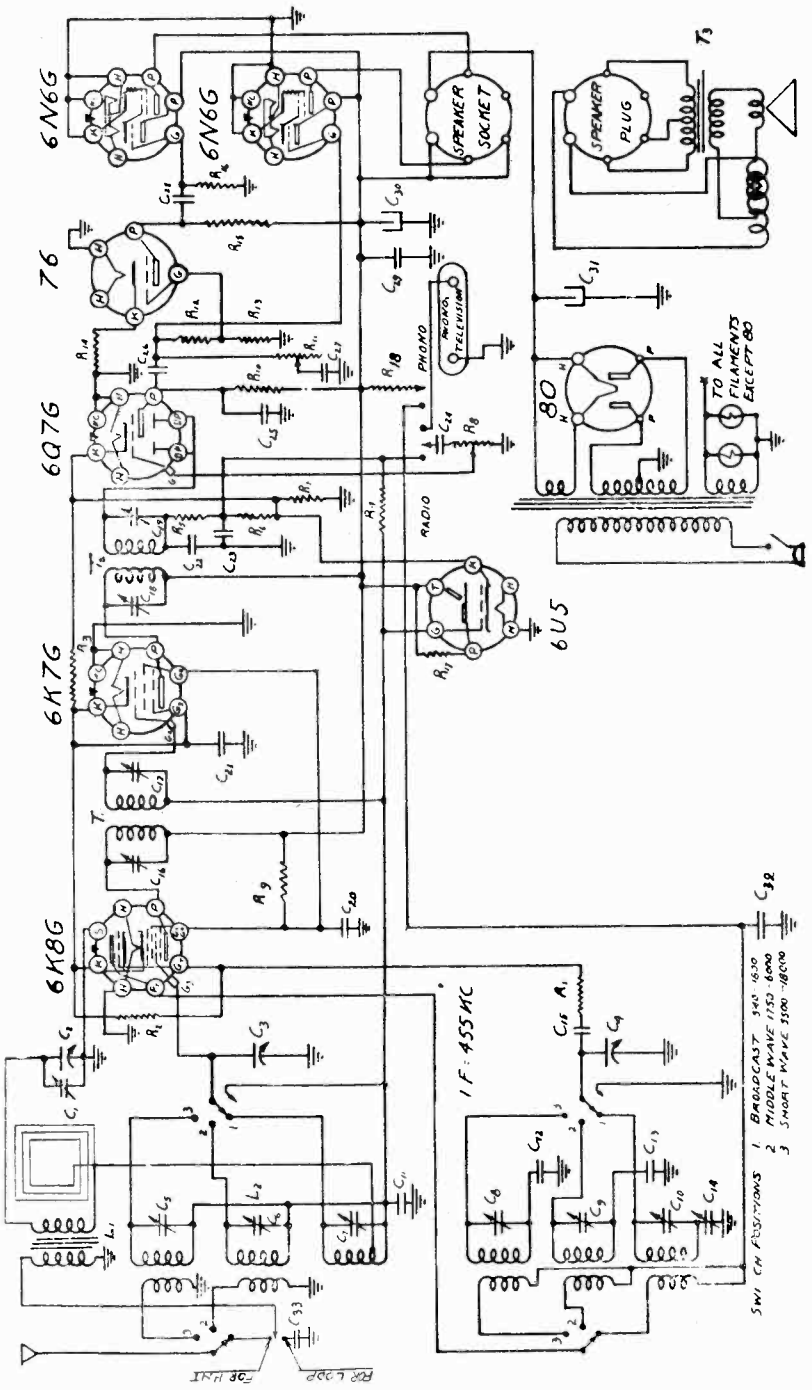
MODEL D924C

R1	Resistor, 1/3W 10,000
R2,3	Resistor, 1/3W 300
R4,20	Resistor, 1/3W 50,000
R5	Resistor, 1/3W 200
R6	Resistor, 1/3W 2,000,000
R7	Resistor, 1/3W 400
R8	Resistor, 1/3W 50,000 in IF
R9	Resistor, 1/3W 1,000,000 in IF
R10	Resistor, 1/3W 70
R11	Resistor, 1/3W 300,000
R12,22,23	Resistor, 1/3W 25,000
R13	Volume Control, 1/3W 3,000,000
R14	Resistor, 1/3W 200,000
R15	Resistor, 1/3W 400,000
R16	Resistor, 1/3W 100,000
R17	Resistor, 3W 10,000
R18	Resistor, Tone Control, 500,000
R19	Resistor, 1/3W 5,000
R21	Resistor, 1/3W 500,000
R24	Resistor, 1/3W 75,000
C1,2,3,	Condenser, Mech. Tuner
C4,5,6,7,8,9	Condenser Trimmer 3-20 MMF
C10	Condenser Padder 3300 MMF
C11	Condenser Adj. Padder
C12,13,14,15	Condenser, I.F. Trimmer
C16,17,21	Condenser .05-200
C18	Condenser Electrolytic 20 MFD 150
C19	Condenser paper .1-400
C20	Condenser (Wire) 2.5 MMF
C22,38	Condenser, Mica 50 MMF
C23,24	Condenser, paper .1-200
C25,26	Cond. Mica, 100 MMF in I.F.
C27,28	Condenser, paper .002-600
C29	Condenser, paper .03-200
C30	Condenser, Mica 100 MMF
C31,33	Condenser, paper .005-600
C32	Condenser, paper, .01-600
C34	Condenser, paper .2-400
C35	Condenser, Elect. Wet 16 MFD
C36	Condenser Elect. Wet. regulator
C37	Condenser, paper, .02-600
C39	Condenser, Mica, .0012
C40	Condenser, Elect. Dry, 250 MFD 2V
C41	Condenser, Elect. Dry, 250 MFD 2V

WESTERN AUTO SUPPLY CO.

MODEL D925
Issue B

C1	Trimmer	C22,23	100 MMF Mica	R1	100 1/3 Watt
C2,3,4	Gang Condenser & Mechanical Turner	C24	.002-600 Volt	R2,15	50,000 1/3 Watt
C5,6,7,8,9,10	Trimmers	C24	100 MMF Mica	R3	200 1/3 Watt
C11	.05 MFD—200 volt	C26,28	.005-600 Volt	R4	1,000,000 1/3 Watt
C12	3300 MMF Tubular Padder	C27	.01-400 Volt	R5	50,000 1/3 Watt
C13	1440 MMF Tubular Padder	C30	16 MFD—225 Volt Regulating Wet Electrolytic	R6	1,000,000 1/3 Watt
C14	400 MMF Adjustable Padder			R7	100 1/3 Watt
C15	50 MMF Mica	C31	16 MFD—350 Volt Wet Electrolytic	R8	3,000,000 Volume Control
C16,17,18,19	IF Trimmer	C32	.02-600 Volt	R9	15,000 1 Watt
C20,29	.1 MFD 400 Volt	C33	250 MMF Mica	R10	200,000 1/3 Watt
C21	.2MFD 200 Volt			R11	500,000 Tone Control and Switch
				R12	400,000 1/3 Watt
				R13	100,000 1/3 Watt
				R14	5,000 1/3 Watt
				R16	500,000 1/3 Watt
				R17	1,000,000 1/3 Watt



MODEL D925
Issue A

WESTERN AUTO SUPPLY CO.

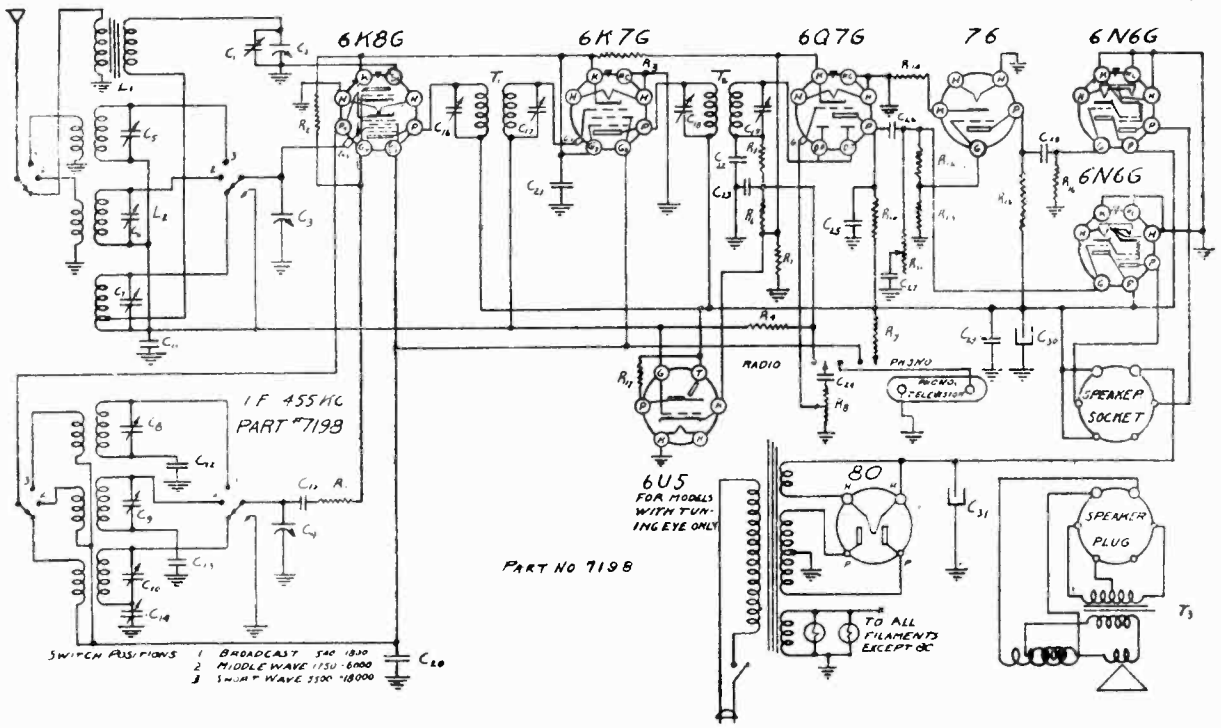
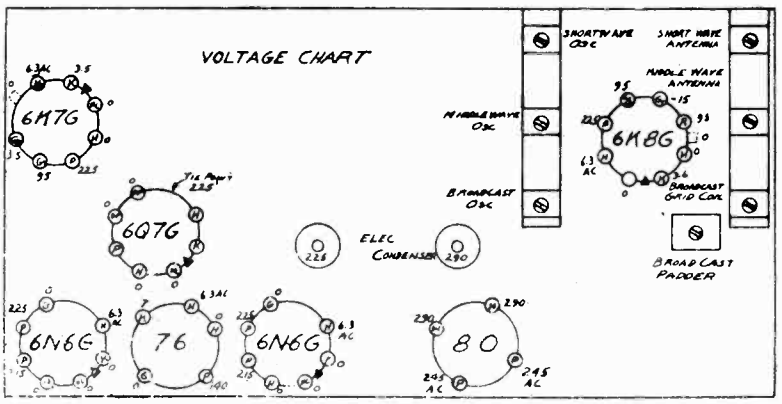


Fig. 4. Circuit Diagram

Schematic D-925 Issue A



FOR SIMILAR PUSH BUTTON DATA SEE Vol. X11 D-934 TRUETONE.

PARTS

	C	Trimmer	On Gang Cond.				
7171	C2,3,4	Gang Condenser & Mechanical Turner	$5.75				
7197	C5,6,7,8,9,10	Trimmers	.20			RESISTORS	
580	C11	.05 MFD—200 volt	.20	6718	R1	100 1/3 Watt	.15
7313	C12	3300 MMF Tubular Padder	.25	6720	R2,15	50,000 1/3 Watt	.15
7312	C13	1440 MMF Tubular Padder	.25	7119	R3	200 1/3 Watt	.15
7314	C14	400 MMF Adjustable Padder	.25	6723	R4	1,000,000 1/3 Watt	.15
2780	C15	50 MMF Mica	.20		R5	50,000 1/3 Watt...in IF Trans.	
	C16,17,18,19	IF Trimmer...in IF Trans.			R6	1,000,000 1/3 Watt...in IF Trans.	
575	C20,29	.1 MFD 400 Volt	.20	7318	R7	70 1/3 Watt	.15
2792	C21	.2 MFD 200 Volt	.25	7196	R8	3,000,000 Volume Control	.75
	C22,23	100 MMF Mica...in IF Trans.		7317	R9	15,000 1 Watt	.20
2600	C24,26,28	.02-600 Volt	.20	7262	R10	200,000 1/3 Watt	.15
1285	C25	100 MMF Mica	.20	7195	R11	500,000 Tone Control and Switch	1.00
568	C27	.01—400 Volt	.20	7123	R12	400,000 1/3 Watt	.15
5101	C30	16 MFD—225 Volt Regulating		7122	R13	100,000 1/3 Watt	.15
		Wet Electrolytic	.70	7125	R14	5,000 1/3 Watt	.15
3285	C31	16 MFD—350 Volt Wet Electrolytic	.80	6722	R16	500,000 1/3 Watt	.15

WESTERN AUTO SUPPLY CO.

ALIGNMENT PROCEDURE

MODELS D925
Issues A,B

The diagrams below should be studied carefully as they show the location of all trimming and padding condensers. The following equipment is necessary to properly align this chassis:

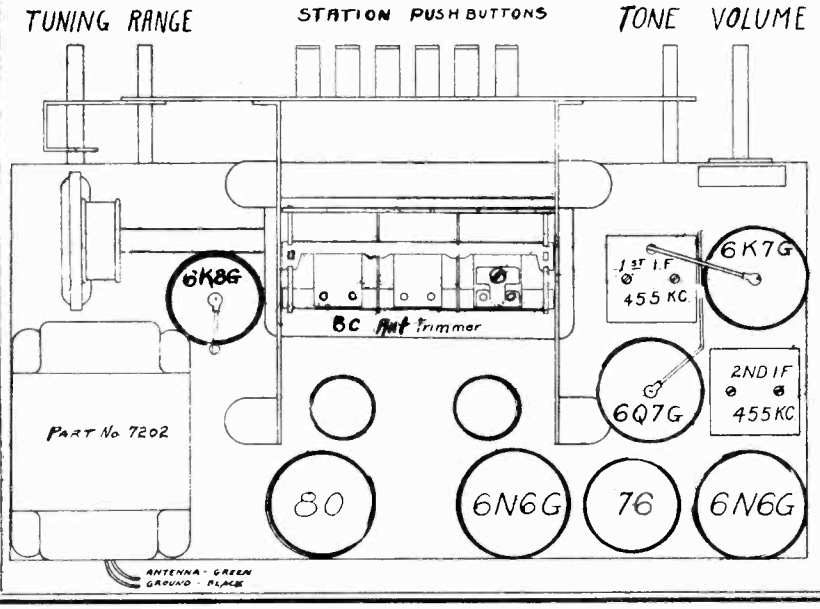
1. An all Wave Signal Generator which will provide an accurately calibrated signal at the frequencies listed.
2. An Output Meter.
3. A non-metallic screwdriver.
4. Dummy Antennae—.1 mfd., 200 mmf., 400 ohms.

Set the volume control near the maximum volume position, connect the signal generator ground to the receiver chassis, connect the proper value of dummy antennae in series with the generator output. Connect the output meter either across the primary of the output transformer or across the speaker voice coil. Allow the signal generator and the chassis to heat up for several minutes.

BAND	SIGNAL FREQUENCY SETTING	GENERATOR CONNECTED TO	DUMMY ANTENNA	BAND SWITCH POSITION	VARIABLE CONDENSER SETTING	TRIMMER LOCATION	TRIMMER FUNCTION	ADJUSTMENT
I. F.	455 kc.	Grid of 6K7G	.1 mfd.	Short wave	Minimum capacity	On top.	2nd I. F.	Adjust to maximum output
I. F.	455 kc.	Grid of 6K8G	.1 mfd.	Short wave	Minimum capacity	On top.	1st I. F.	Adjust to maximum output
BROAD-CAST BAND	1400 kc. exact	Antenna lead	200 mmf.	Broadcast	Set pointer to indicate 1400 kc.	Underneath chassis on oscillator coil	Broadcast oscillator	Adjust to maximum output
BROAD-CAST BAND	1400 kc. exact	Antenna lead	200 mmf.	Broadcast	As above	Underneath chassis on ant. coil	Broadcast Translator	Adjust to maximum output
BROAD-CAST BAND	1400 kc.	Antenna lead	200 mmf.	Broadcast	As above	On gang condenser	Preselector coil	Adjust to maximum output
BROAD-CAST BAND	600 ks. approx.	Antenna lead	200 mmf.	Broadcast	Tune in signal	Under chassis	Broadcast padder	Adjust to maximum output while rocking gang condenser

REPEAT ABOVE BROADCAST ALIGNING PROCEDURE AT LEAST ONCE MORE

MIDDLE WAVE BAND	5,000 kc. exact	Ant. Lead	400 ohms	Middle wave	Set pointer to indicate 5000 kc.	Under chassis on osc. coil	Middle wave oscillator	Adjust to maximum output
	5,000 kc. exact	Ant. Lead	400 ohms	Middle wave	As above	Underneath chassis on Ant. coil	Middle wave Antenna	Adjust to maximum output while rocking the tuning condenser slightly
SHORT WAVE BAND	16,000 kc. exact	Ant. Lead	400 ohms	Short wave	Set pointer to indicate 16,000 kc.	Underneath chassis on osc. coil	Short wave oscillator	Adjust to maximum output.
	16,000 kc. exact	Ant. Lead	400 ohms	Short wave	As above	Underneath chassis on ant. coil.	Short wave Antenna	Adjust to maximum output while rocking the tuning condenser slightly.



TRUETONE MODEL D925

TUBES: 1—6K8G converter (Oscillator and First Detector).
1—6K7G IF amplifier.
1—6Q7G Detector—First Audio Amplifier.
1—76 Phase inverter.
2—6N6 Push Pull Power Output.
1—80 Rectifier.

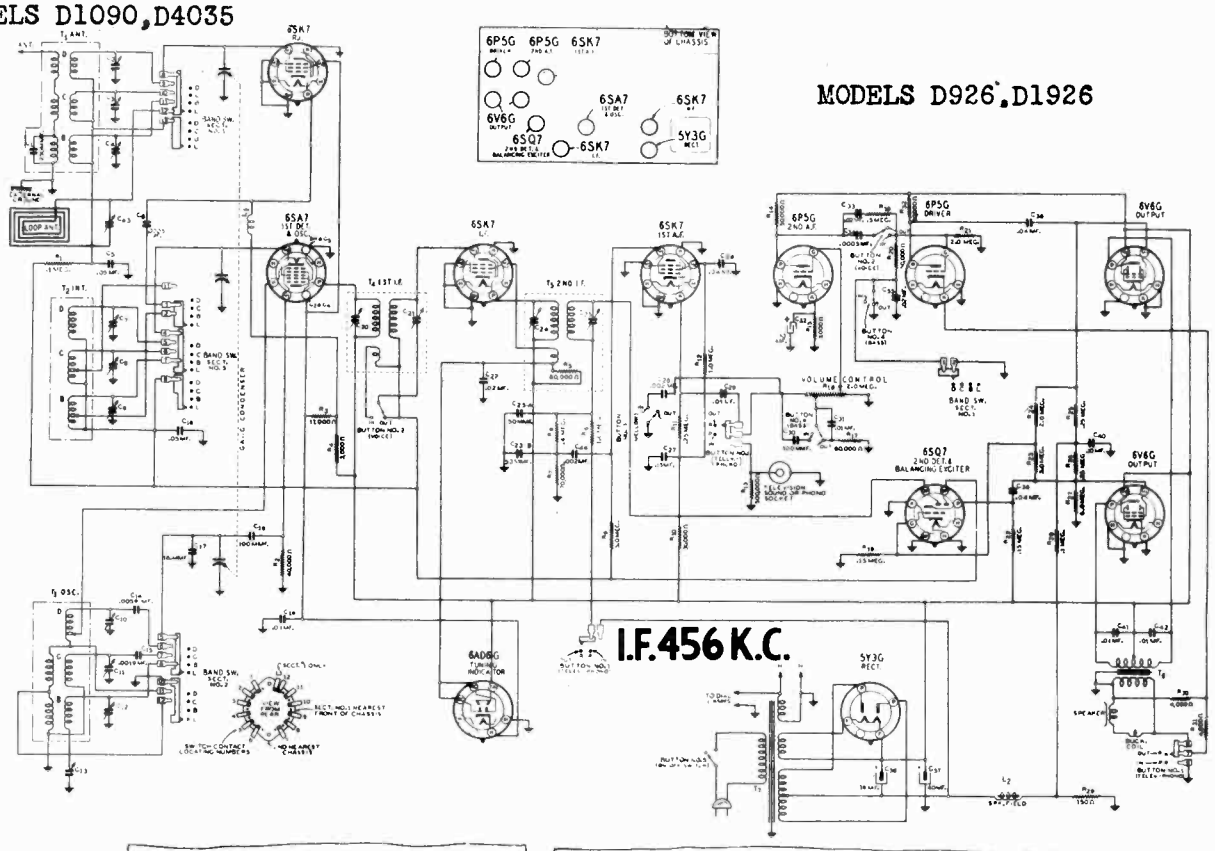
POWER TRANSFORMERS: Power transformers are available and receivers are sometives equipped with them for operation on 25 or 40 cycles.

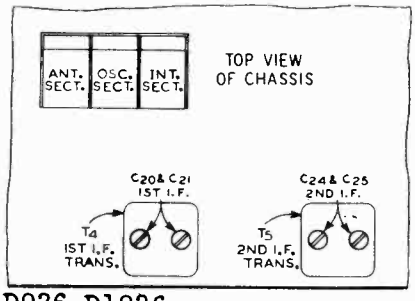
ISSUE A

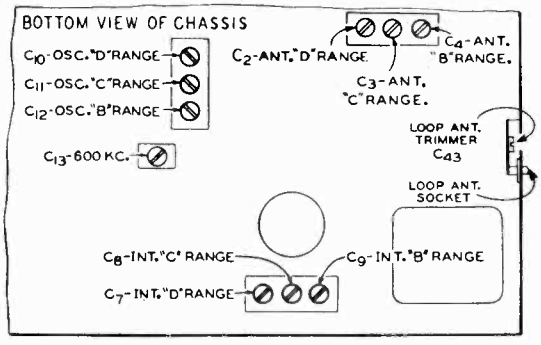
September 1939

MODELS D926,D1926
MODELS D926,D1926
Issues A,B
MODELS D1090,D4035

WESTERN AUTO SUPPLY CO.







MODELS D926,D1926; D926,D1926,Issues A,B

Power Consumption - 103 Watts (At 117 volts 60 cycles)

Power Output - - - - - - - 8 Watts Undistorted
9 Watts Maximum

Selectivity - 29.5 KC Broad at 1000 times Signal (Sharp)

Intermediate Frequency - - - - - - - 456 KC

Speaker - - - - - - - - 12" Electro-dynamic

Tuning Frequency Range

B Range	528 to 1730 KC
C Range	2200 to 7000 KC
D Range	7000 to 22000 KC

Sensitivity (For 0.5 Watt output)

B Range	1.0 Microvolt Average
C Range	1.0 Microvolt Average
D Range	3.0 Microvolts Average

MODELS D1090,D4035

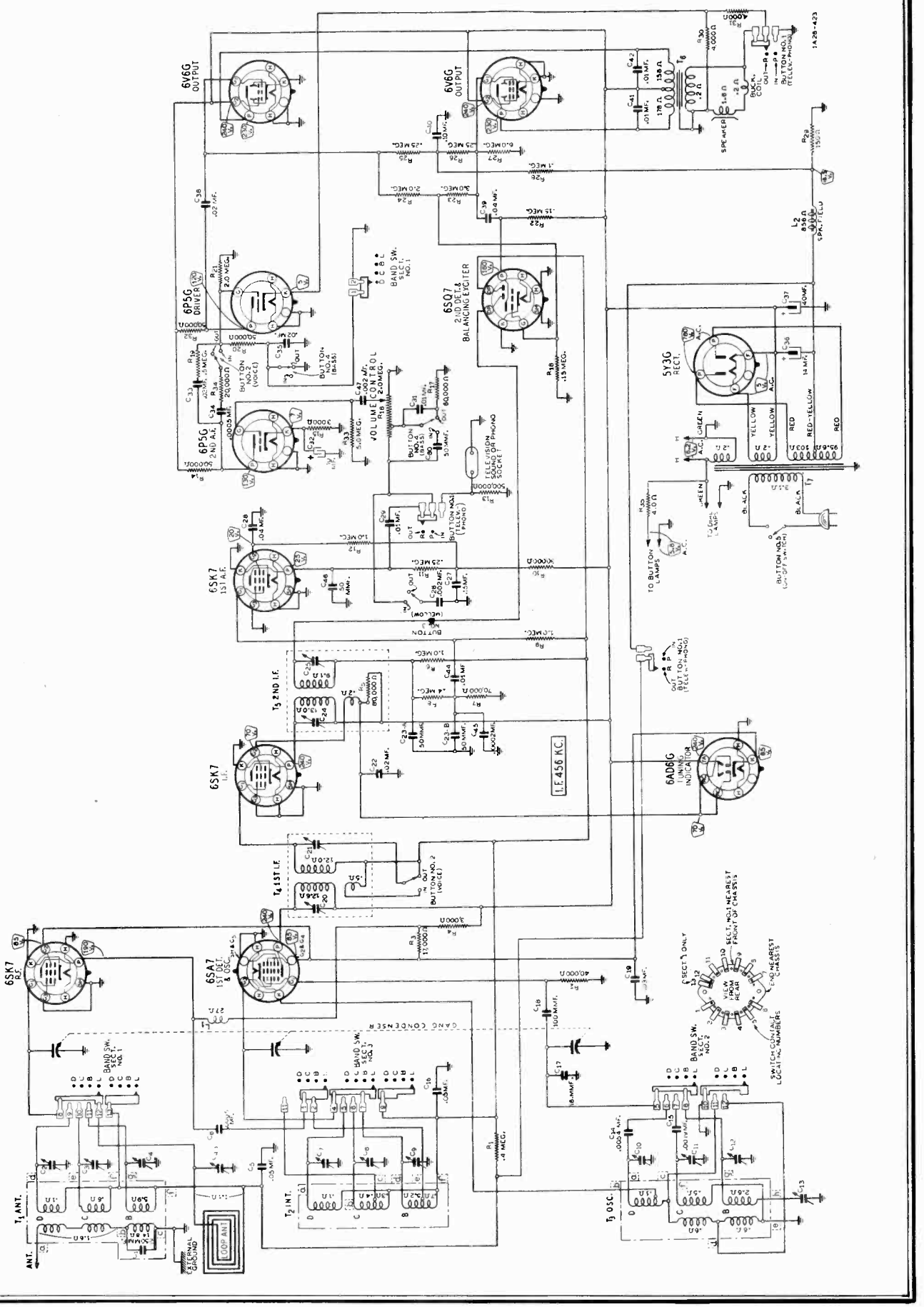
SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	IRON CORE SETTING	ADJUST TRIMMERS TO MAXIMUM (See Figs. 3 and 5)
I.F.				
456 KC	Control Grid (prong No. 8) 6SA7 1st Det. Tube	.05 mf.		1st I.F. (C11) & (C12) 2nd I.F. (C15) & (C16)
OSCILLATOR				
1560 KC	Antenna Cable See Note A	See Note A	Extreme Position out of Coil	Oscillator (C6)
1000 KC ADJUSTMENT				
1000 KC	Antenna Cable	See Note A	Tune to Max. Output with Tuning Knob	Int. (C5) Ant. (C4)

Reassemble Radio—Install in Car—Connect Car Antenna to Radio.

Car Antenna Readjustment—Tune in weak signal near 1000 KC—Readjust Antenna Trimmer C4 for maximum output.

WESTERN AUTO SUPPLY CO.

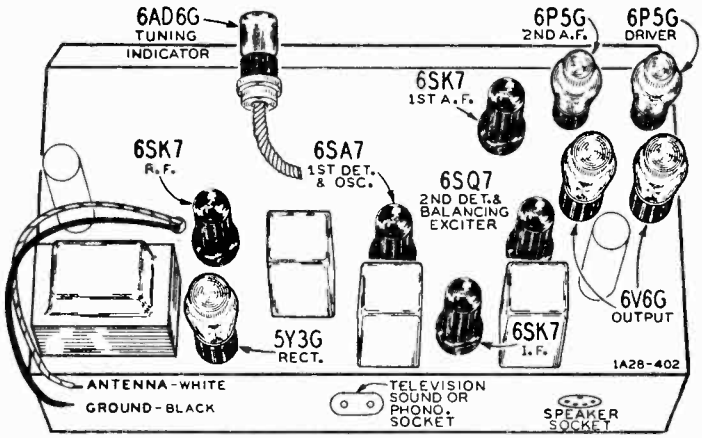
MODELS D926, D1926
Issue A



MODELS D926,D1926,
Issues A,B

WESTERN AUTO SUPPLY CO.

Model D 926, D 1926



Power Supply

CAUTION—Unless otherwise marked, this radio must be operated on a 105-125 volt, 50 to 60-cycle AC supply only. Do not insert the plug of the power cord in the receptacle unless all tubes and the speaker plug are in their proper sockets. The power rating of this radio is shown on the tube arrangement label. Receivers of this model which are to be used on 25 cycle, 230 volt, or other service are so marked on this label. If there is any doubt regarding the voltage and frequency of the power supply, consult the local power company before inserting the plug.

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Button No. 2 (Voice)—pulled out all adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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 Antennas—.1 mf., 200 mmf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.					
456 KC	Grid of 1st I.F. Tube	.1 mf.	B Range	Turn Rotor to Full Open	2nd I.F. (C24) & (C25)
456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C20) & (C21)
RANGE B					
1730 KC	Antenna Lead	200 mmf.	B Range Ext. Ant.	Turn Rotor to Full Open	Oscillator Range B (C12)
1500 KC	Antenna Lead	200 mmf.	B Range Ext. Ant.	Turn Rotor to Max. Output	Ant. Range B (C4) Int. Range B (C9)
600 KC	Antenna Lead	200 mmf.	B Range Ext. Ant.	Turn Rotor to Max. Output	600 KC (C13) Rock Rotor—See Note A
RANGE C					
7000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C11)
6000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Antenna Range C (C3) Int. Range C (C8)
RANGE D					
22,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C10)
21,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C2) Int. Range D (C7)
LOOP RANGE B					
1500 KC See Note B	None—See Note B		Loop	Turn Rotor to Max. Output	See Note C Loop Trimmer (C43)
RANGE "D" MODEL D926, ISSUE A					
22,000 KC	Antenna Lead	400 Ohm	D Range	Keep rotor at full open position	Ant. Range D (C2) Int. Range D (C7)

ISSUE A JULY 1939

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

CALIBRATION—Chassis must be in cabinet. If it is necessary to re-calibrate the radio, remove pointer from drive cord—See drive cord illustration. Tune in a 1500 KC signal. Set pointer at the 1500 KC mark on the dial scale. Attach pointer to drive cord.

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

NOTE B—Re-install set in cabinet. Connect a loop approximately one foot in diameter across the antenna and ground posts of the signal generator. Place signal generator so that this loop is between 3 and 10 feet from Stratoscope loop in cabinet.

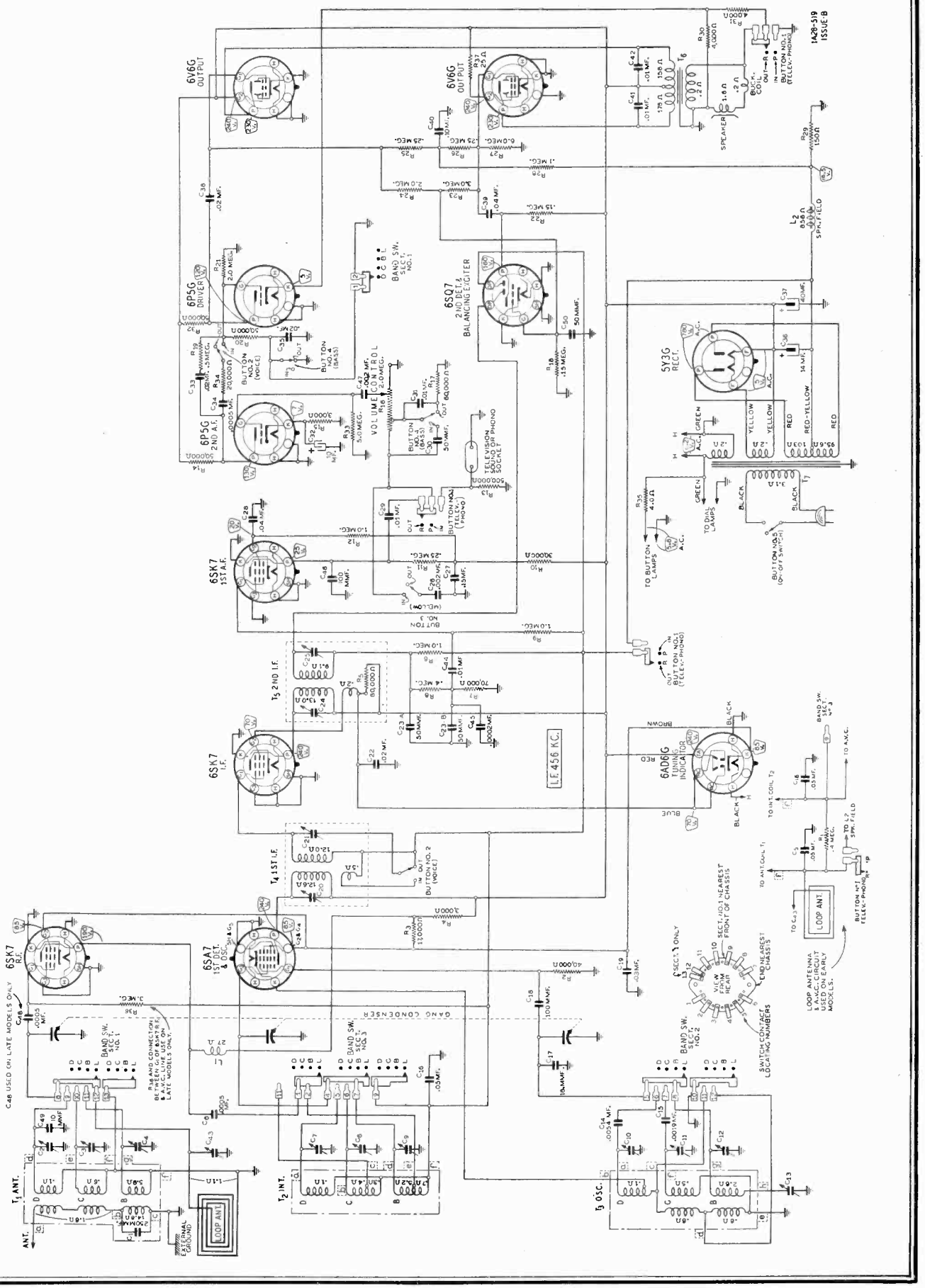
NOTE C—Turn knob of Stratoscope loop until output is maximum.

ISSUE B NOVEMBER 1939

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC on the dial. It may be necessary to increase the input signal to hear the image.

MODELS D926, D1926
ISSUE B

WESTERN AUTO SUPPLY CO.



MODELS D926,D1926
Issue B

WESTERN AUTO SUPPLY CO.

CHANGES FOR "B" ISSUE

The following Electrical Changes are made in the "B" issue of this series:
The AVC line is now connected through a 3 megohm resistor directly to the control grid of the 6SK7 R.F. tube.

The loop antenna and the common lead of the antenna secondary coils are now grounded.

Condenser C5 (.05 mf.), Resistor R1 (.40 megohm), and the connecting wire between them have been removed.

The radio-phono switch remains connected to the AVC line.

A .0005 mf. condenser has been added between the control grid of the 6SK7 R.F. tube and the band switch.

The following mechanical change is made in the "B" issue of this series:
A new type of retainer spring is employed to hold the lower row of push buttons on the plunger shafts. In order to replace the tone scale lamps or to remove the chassis from the cabinet, it is necessary to remove the lower row of push buttons in the manner described in the instruction manual for this series and issue.
The 50 mmf. condenser (C46), from the plate of the 6SK7 1st A.F. tube to ground, was changed to 100 mmf.

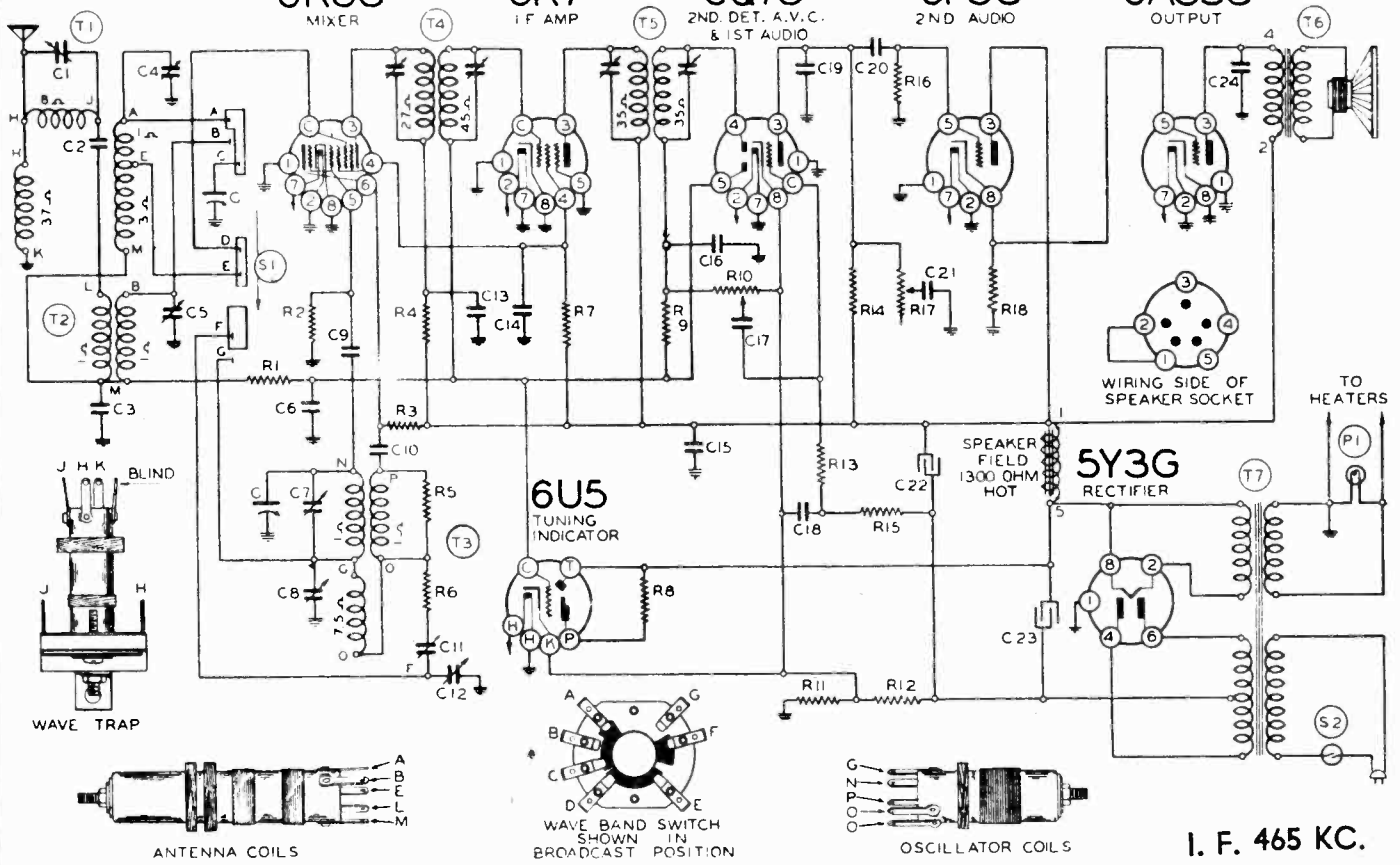
A 50 mmf. condenser (C50) was added between the grid of the 6SQ7 Balancing Exciter tube and ground.

A 25 ohm resistor was connected in series with the screen grid of the 6V6G Output tube. This is the output tube which is driven by the 6SQ7 Balancing Exciter tube.
The following additional NEW PARTS are used in issue "B" chassis:

NO.	CODE	DESCRIPTION	PRICE
47X57	C46	100 mmf., Molded Condenser.....	$0.10
47X56	C50	50 mmf., Molded Condenser.....	.10
A85250	R37	25 Ohm, Carbon Resistor.....	.10
9A1207	T1	Antenna Transformer Assembly.....	$2.10
46X282	C48	.0005 mf., 360 volt, Tubular Condenser....	.10
A85305	R36	3 Megohm, 0.2 Watt, Carbon Resistor.....	.10
7A108		Lamp Socket Assembly for Tone Scale (2 Sockets with Wire).....	.20
28X262		Retainer Springs for Tone, On-Off, and Phono-Television Sound Buttons.....Doz	.10
26A202		Bracket Assembly complete with 2 Tone Scale Lamps.....	.60

The following parts are NOT used in issue "B" chassis:

47X56	C46	50 mmf., Molded Condenser.....	$0.10
9A1138	T1	Antenna Transformer Assembly.....	$2.10
46X253	C5	.05 mf., 180 Volt, Tubular Condenser.....	.10
A85404	R1	400,000 Ohm, 0.2 Watt, Carbon Resistor....	.15
7A98		Lamp Socket Assembly for Tone Scale (2 Sockets with Bracket and Wire).....	.25
28X259		Retainer Springs for Tone, On-Off, and Phono-Television Sound Buttons.....Doz	.25
25X634		Bracket for Semi Drum.....	.20

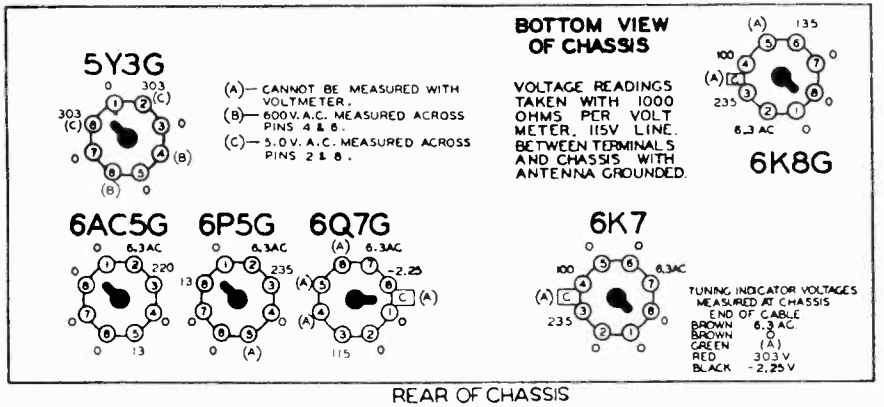


ANTENNA COILS

WAVE BAND SWITCH
SHOWN IN
BROADCAST POSITION

OSCILLATOR COILS

I. F. 465 KC.



REAR OF CHASSIS

CONDENSERS

C	10285	2 gang variable condenser
C1	12451	Wave Trap adjustable trimmer
C2	10011	.01 x 400 v.
C3	129129	.0025 mica
C4	12473	B.C. Antenna Trimmer
C5	12473	S.W. Antenna Trimmer
C6	1009	.05 x 200 v.
C7	12472	S.W. Oscillator Trimmer
C8	12472	B.C. Oscillator Trimmer
C9	12939	.00005 mica
C10	10025	.002 x 600 v.
C11	12466	B. C. Oscillator Series Pad
C12	12466	S.W. Oscillator Series Pad
C13	10026	.02 x 400 v.
C14	1001	.1 x 400 v.
C15	10013	.05 x 400 v.
C16	1295	.0001 mica
C17	10019	.006 x 600 v.
C18	10020	.1 x 200 v.
C19	1292	.0005 mica
C20	10011	.01 x 400 v.
C21	10019	.006 x 600 v.
C22	11980	12 mfd. lytic—450 w. v.
C23	11980	12 mfd. lytic—450 w. v.
C24	10019	.006 x 600 v.

RESISTORS

R1	13011	250M ohm—⅓ w.
R2	13012	50M ohm—⅓ w.
R3	1301	25M ohm—⅓ w.
R4	13023	2000 ohm—⅓ w.
R5	130235	1500 ohm—⅓ w.
R6	130240	30 ohm—⅓ w.
R7	13076	30M ohm—⅓ w.
R8	130110	1 megohm—in tuning indicator socket
R9	1304	3 megohm—⅓ w.
R10	101137	1 megohm volume control
R11	130203	40 ohm—⅓ w.
R12	130203	40 ohm—⅓ w.
R13	13019	1 megohm—⅓ w.
R14	1309	200M ohm—⅓ w.
R15	1303	500M ohm—⅓ w.
R16	13019	1 megohm—⅓ w.
R17	101157	250M ohm tone control
R18	1301	25M ohm—⅓ w.

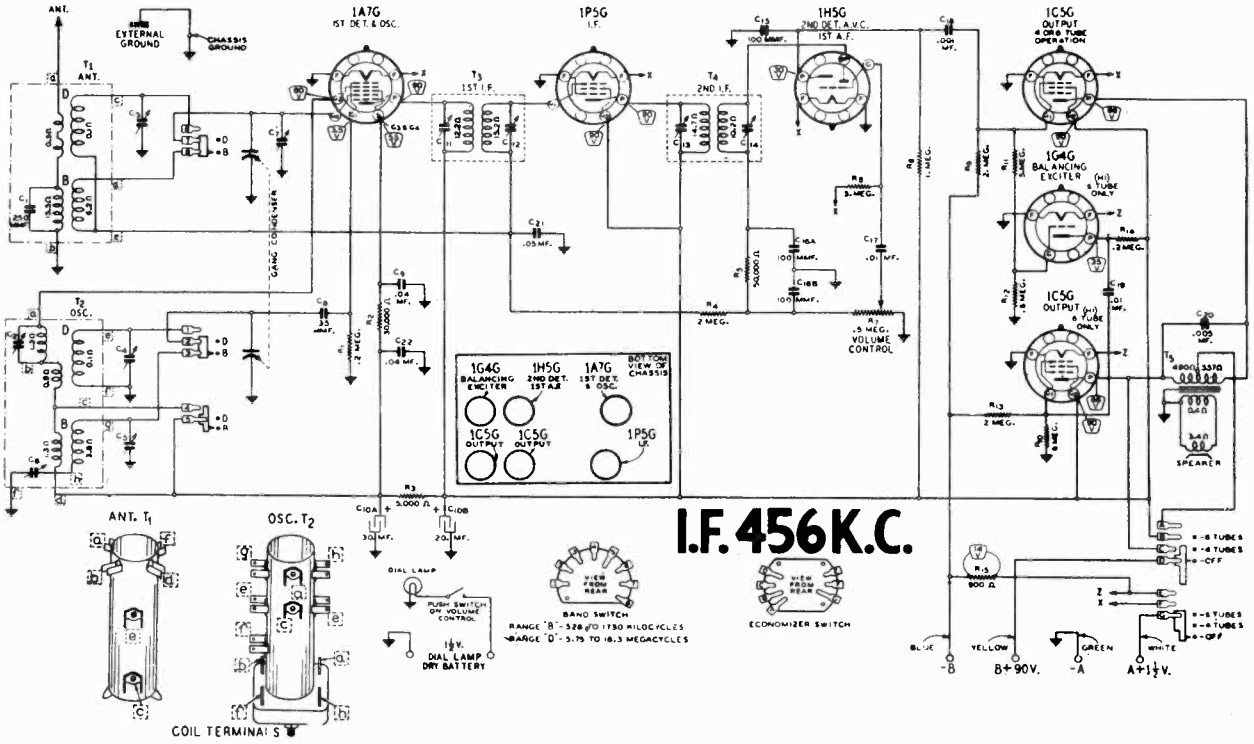
PARTS

T1	108124	Wave Trap
T2	111115	Antenna Coils
T3	110104	Oscillator Coils
T4	108122	Input I. F.—465 kc.
T5	108106J	Output I. F.—465 kc.
T6	114148	10 in. Dynamic Speaker (Field Resis. 1300 ohms)
T7	104139B	Power Transformer
S1	12569	Wave Band Switch
S2		Off-on switch on tone control
P1	10794	6-8 v. pilot light

WESTERN AUTO SUPPLY CO.

MODEL D929

WESTERN AUTO SUPPLY CO.



ALIGNMENT PROCEDURE

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER OR DIAL SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F. 456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	2nd I.F. (C13) & (C14) 1st I.F. (C11) & (C12)
RANGE B 1730 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C5)
1500 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC—See Note A	Ant. Range B (C7)
600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C6) Rock Rotor—See Note B
RANGE D 18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C4)
17,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C3) Rock Rotor—See Note B
6000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	6000 KC (C2) Rock Rotor—See Note B

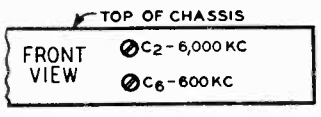
Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

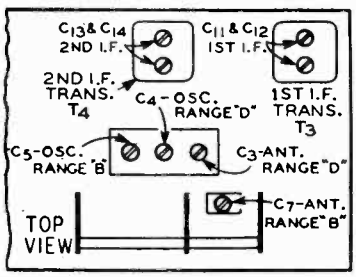
After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1500 KC on the dial, slip the drive cord out from under one of the end clamps on the pointer head. Move pointer to 1500 KC on the dial and replace drive cord under end clamp.

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

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.

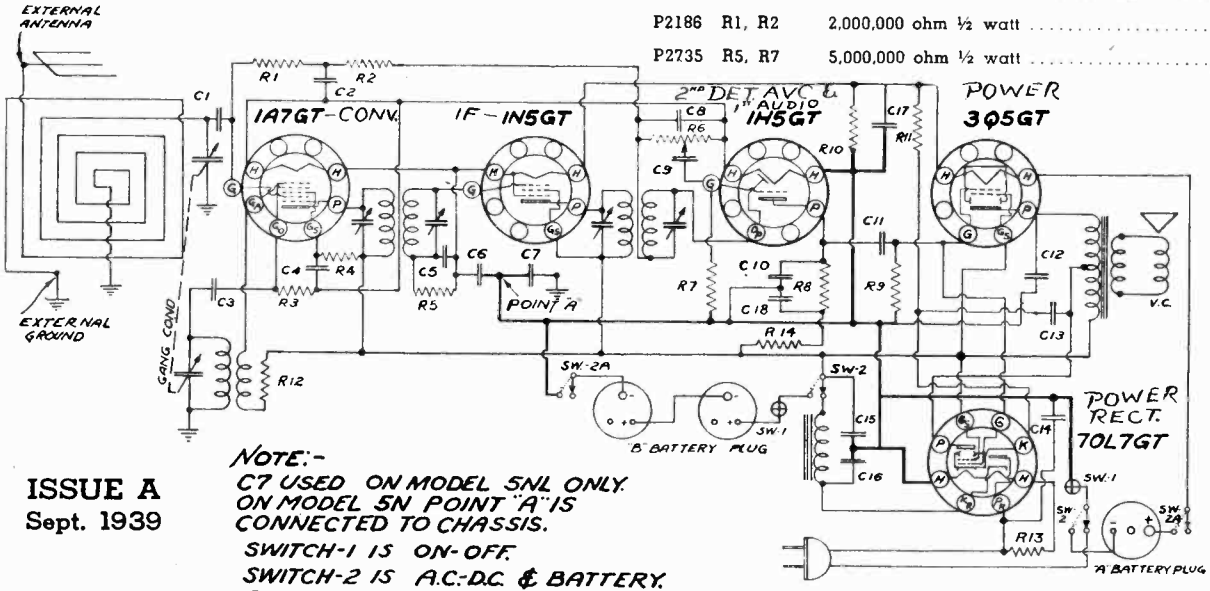




WESTERN AUTO SUPPLY CO.

MODEL D940
Issues A, B

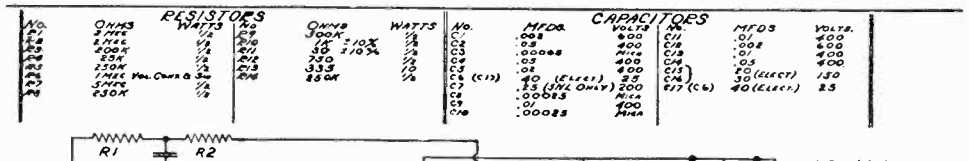
Part No.	Circuit Reference	Description	List Price
		PAPER CONDENSERS	
P1193	C1, C5, C12	.002 mfd. 600 volt	$ .15
P164	C9, C11, C13	.01 mfd. 400 volt	.25
P334	C2, C4, C14	.05 mfd. 400 volt	.30
P142	C18	.1 mfd. 200 volt	.20
		MICA CONDENSERS	
P1382	C3	.00005 mfd.	.15
P817	C8, C10	.00025 mfd.	.15
		ELECTROLYTIC CONDENSERS	
P3562	C6	40 mfd., 25 volt	.95
	C17	40 mfd., 25 volt	
P3563	C15,	20 mfd., 150 volt	1.15
	C16	30 mfd., 150 volt	
		VARIABLE CONDENSERS	
P3554		Gang Condenser	2.90
P3330		Trimmer Condenser	.40
		RESISTORS	
P2436	R11	30 ohm ½ watt 10% (wire wound)	.15
P3658	R13	335 ohm 10 watt	.50
P376	R12	750 ohm ½ watt	.15
P1973	R10	1,000 ohm ½ watt 10%	.15
P2731	R4	25,000 ohm ½ watt	.15
P1305	R14	100,000 ohm ½ watt	.15
P2187	R3	200,000 ohm ½ watt	.15
P2344	R8	250,000 ohm ½ watt	.15
P137A	R9	500,000 ohm ½ watt	.15
P2186	R1, R2	2,000,000 ohm ½ watt	.15
P2735	R5, R7	5,000,000 ohm ½ watt	.15

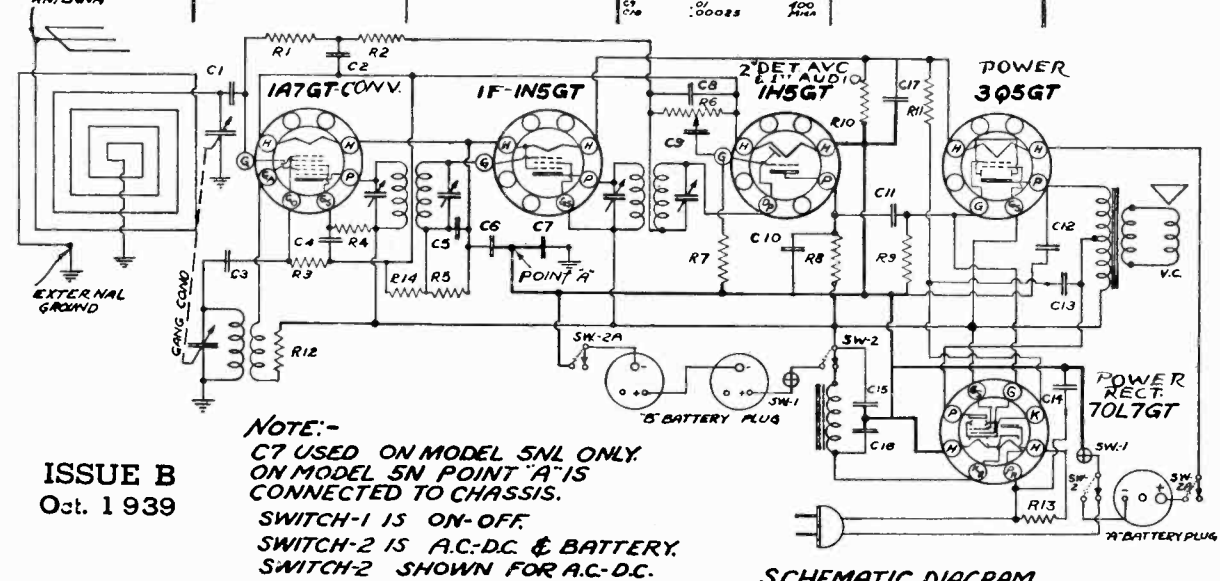


ISSUE A
Sept. 1939

NOTE:-
C7 USED ON MODEL 5NL ONLY.
ON MODEL 5N POINT "A" IS CONNECTED TO CHASSIS.
SWITCH-1 IS ON-OFF.
SWITCH-2 IS A.C.-D.C. & BATTERY.
SWITCH-2 SHOWN FOR A.C.-D.C.
I.F. 455 K.C.
ON MODEL 5N SWITCH, SWITCH 2A NOT USED.

SCHEMATIC DIAGRAM





ISSUE B
Oct. 1939

NOTE:-
C7 USED ON MODEL 5NL ONLY.
ON MODEL 5N POINT "A" IS CONNECTED TO CHASSIS.
SWITCH-1 IS ON-OFF.
SWITCH-2 IS A.C.-D.C. & BATTERY.
SWITCH-2 SHOWN FOR A.C.-D.C.
I.F. 455 K.C.
ON MODEL 5N SWITCH, SWITCH 2A NOT USED.

SCHEMATIC DIAGRAM

SERVICE INFORMATION

Speaker (Part No. P3564) 5" PM Type

D.C. voice coil resistance.....2.3 ohms
Voice coil impedance at 400 cycles.....2.7 ohms

Oscillator Coil (Part No. P3318) (Brown Dot)

Looking at the connection end (with dot) starting at the chassis in a clockwise direction the terminals are: No. 1, grid; No. 2, plate; No. 3, B+; No. 4, ground.
Primary—No. 2 and No. 3—Resistance 1.7 ohms.
Secondary—No. 4 and No. 1—Resistance 4.9 ohms.

First I.F. Transformer (Part No. P3559)

Primary—Red white, B+; blue white, plate—Resistance 12.1 ohms.
Secondary—White, grid; black white, AVC—Resistance 24.9 ohms.

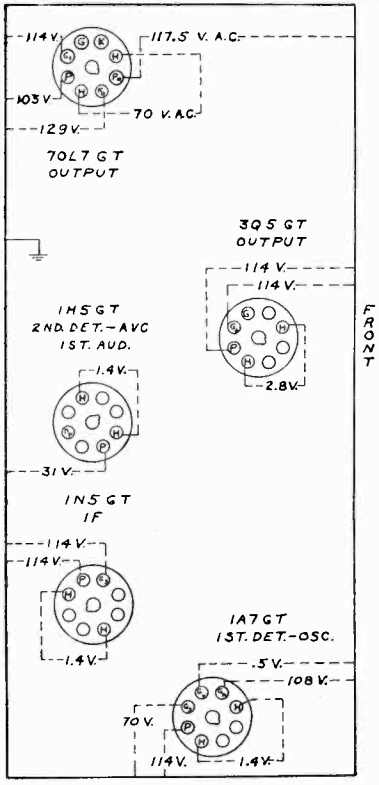
Second I.F. Transformer (Part No. P2606)

Primary—Blue white, plate; red white, B+—Resistance 15.1 ohms.
Secondary—White, grid; black white, AVC—Resistance 11.8 ohms.

Loop Antenna Since the loop antenna acts also as the antenna coil the set will not operate with the loop antenna disconnected.

POWER SUPPLY

This receiver is designed to operate from the self contained batteries or from any AC (Alternating Current) or DC (Direct Current) power supply main of 105 to 125 volts, 60 cycle. To operate this receiver from a power line of 115 volts 60 cycle AC or 115 volts DC, open the door in the back of the cabinet, extend the power line cord and plug it into the nearest outlet. Then turn the center knob on the front of the cabinet to the left (counter-clockwise). The radio will then operate from the power line after warming up for about one minute. If the radio fails to operate after a few minutes on DC, reverse the power line plug.



Bottom view of chassis

ALIGNMENT PROCEDURE

- 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.
- 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 antennas—.1 mf., 200 mmf.

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.	Grid of 1N5GT tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I.F.	Adjust to maximum output
See Note "A"	455 KC.	.1 MFD.	Grid of 1A7GT tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I.F.	Adjust to maximum output
BROAD-CAST	1550 KC.	200 mmf.	Antenna Connection	Rotor full open (Plates out of mesh)	Trimmer—Left rear of chassis	Oscillator	Adjust to maximum output
See Note "B"	1400 KC.	200 mmf.	Antenna Connection	Set dial at 1400 KC.	Trimmer—Next to AVC clip	Antenna	Adjust to maximum output

This is all that is necessary for the alignment unless the plates of the gang have been bent out of shape. In case of bent plates, set the signal generator and receiver to 600 KC and bend the plates into the position for maximum output.

Attenuate the signal from the signal generator to prevent the leveling off-action of the AVC. After each band is completed, repeat the procedure as a final check.

NOTE "A"—Use battery operation for all adjustments.

NOTE "B"—Align broadcast band with chassis in cabinet and loop antenna connected.

Frequency Range
540 to 1550 K.C.

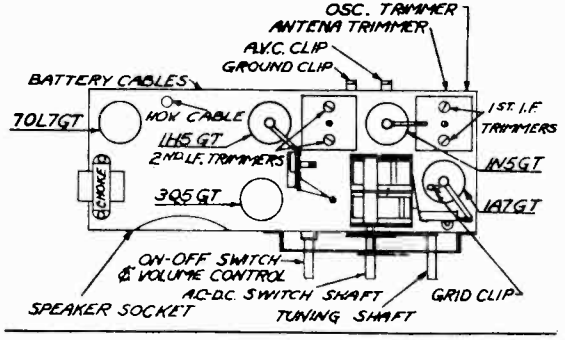
Power output (on batteries) .27 watt undistorted—.35 watt maximum.

Power output (AC-DC) 1 watt undistorted—1.7 watts maximum.

Intermediate Frequency 455 K.C. Power consumption 26 watts.

VOLTAGE CHART

All voltages measured with a 1,000 ohm per volt meter on 150 volt scale. Line voltage 117.5 volts AC.



—Top View

WESTERN AUTO SUPPLY CO.

12SA7 12SK7 12J5GT 12SQ7 35L6GT

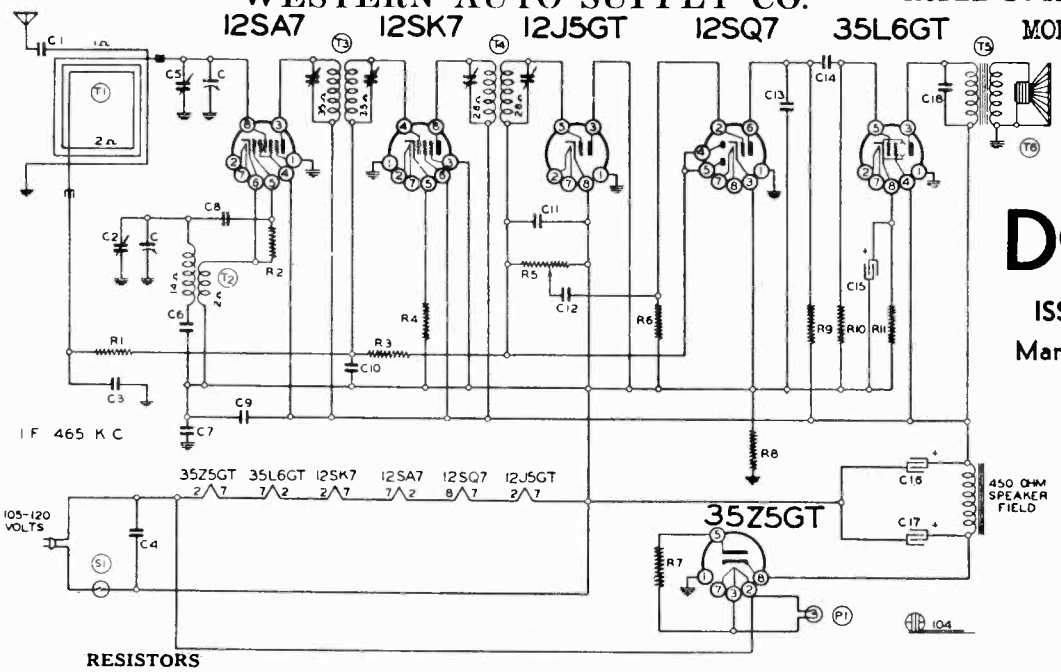
MODEL D941, Issue A

MODEL D941, Issue B

D941

ISSUE A

March 1939



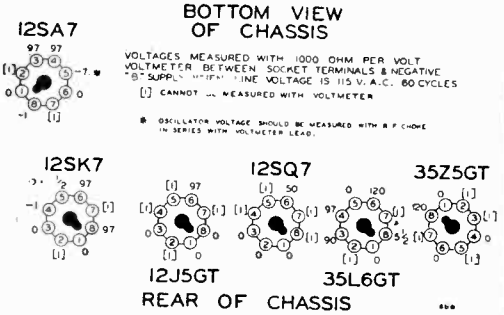
RESISTORS

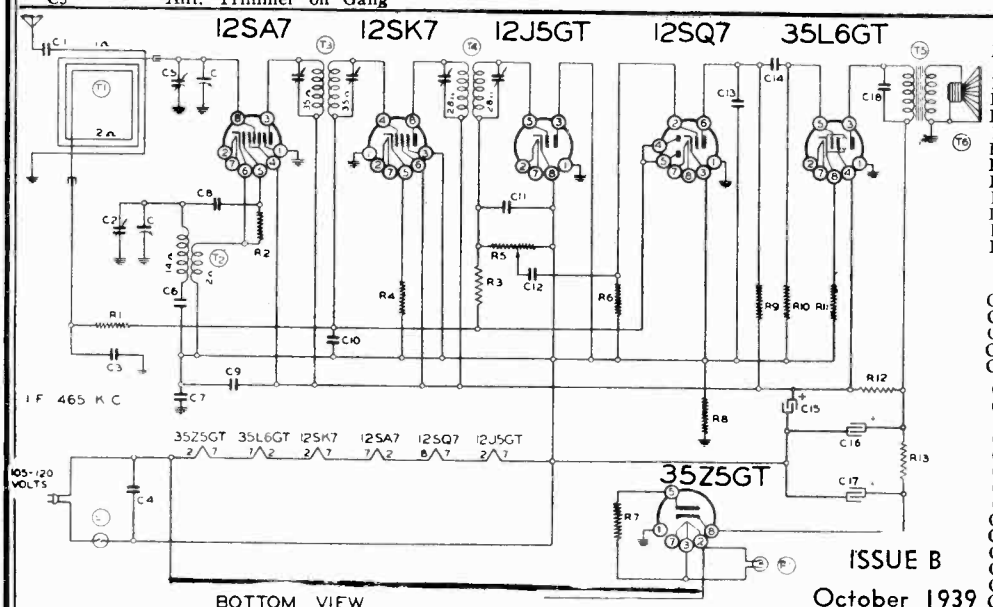
R1	130100	150M ohm—⅓ w.
R2	130176	20M ohm—⅓ w.
R3	1304	3 megohm—⅓ w.
R4	130174	50 ohm—⅓ w.
R5	101108	1 megohm volume control
R6	130225	15 megohm—⅓ w.
R7	130215	25 ohm—½ w.
R8	1309	200M ohm—⅓ w.
R9	1309	200M ohm—⅓ w.
R10	1305	300M ohm—⅓ w.
R11	130166	150 ohm—⅓ w.

CONDENSERS

C	102105	2 gang Variable Condenser
C1	1295	.0005 mfd. mica
C2		Osc. Trimmer on Gang
C3	1009	.05 x 200 v.
C4	1001	.1 x 400 v.
C5		Ant. Trimmer on Gang
C6	100105	.02 x 400 v.
C7	10091	.15 x 400 v.
C8	12912	.00025 mfd. Mica
C9	1009	.05 x 200 v.
C10	1009	.05 x 200 v.
C11	1295	.0001 mica
C12	10025	.002 x 600 v.
C13	12912	.00025 mfd. Mica
C14	10011	.01 x 400 v.
C15	11953D	40 mfd. x 25 w. v. lytic
C16	11953D	30 mfd. lytic
C17	11953D	30 mfd. lytic
C18	10026	.02 x 400

C15, C16 and C17 in same unit





RESISTORS

R1	130100	150M ohm—⅓ w.
R2	13094	50M ohm—⅓ w.
R3	1304	3 megohm—⅓ w.
R4	130174	50 ohm—⅓ w.
R5	101108	1 megohm volume control
R6	130257	5 megohm—⅓ w.
R7	130215	25 ohm—½ w.
R8	1309	200M ohm—⅓ w.
R9	1309	200M ohm—⅓ w.
R10	1303	500M ohm—⅓ w.
R11	130166	150 ohm—⅓ w.
R12	130287	1200 Ohm—1 Watt
R13	130296	200 Ohm—1 Watt

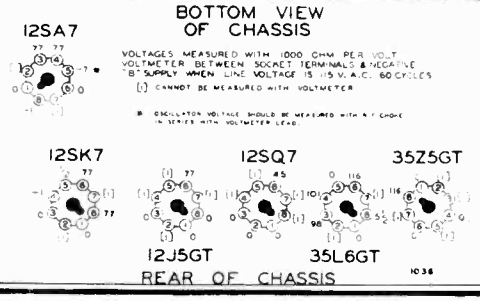
CONDENSERS

C	102105	2 gang Variable Condenser
C1	1292	.0005 mfd. mica
C2		Osc. Trimmer on Gang
C3	1009	.05 x 200 v.
C4	1001	.1 x 400 v.
C5		Ant. Trimmer on Gang
C6	100105	.02 x 400 v.
C7	10091X	.15 x 400 v.
C8	12912	.00025 mfd. Mica
C9	1009	.05 x 200 v.
C10	1009	.05 x 200 v.
C11	1295	.0001 mica
C12	10025	.002 x 600 v.
C13	12912	.00025 mfd. Mica
C14	10011	.01 x 400 v.
C15	11994	20 mfd. x 150 w. v. lytic
C16	11994	20 mfd. lytic
C17	11994	40 mfd. lytic
C18	10026	.02 x 400

C15, C16 and C17 in same unit

ISSUE B

October 1939



SERVICE NOTES:

Resistances of coils and transformer windings are indicated in ohms on schematic circuit diagram.

To check for open by-pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating which is known to be good, until the defective unit is located.

Excessive hum, stuttering, low volume and a reduction in all D. C. voltages is usually caused by a shorted electrolytic condenser; open by-pass condensers frequently cause oscillation and distorted tone.

MODELS D941, Issues A,B

WESTERN AUTO SUPPLY CO.

MODELS D976 Issues A,B

TUBES:

DESCRIPTION:

The tube complement of this chassis consists of the following octal base glass and metal tubes.

The type and function of each tube is as follows:

1—Type 12SA7 Mixer, First Detector-oscillator.
1—Type 12SK7 I. F. Amplifier.
1—Type 12J5GT Second Detector, A.V.C.
1—Type 35L6GT Beam Output Amplifier.
1—Type 35Z5GT High Vacuum Rectifier.

ALIGNMENT PROCEDURE

IMPORTANT:—See alignment instructions on page 3.

- Volume control—Maximum all adjustments.
- Connect B - of radio chassis to ground post of signal generator through .1 Mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- 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.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antennas—.1 Mfd.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 12SA7	Rotor full open (Plates out of mesh)	Four Trimmers on Top (See Fig. 1)	Output and Input I.F.	Adjust to maximum output
BROAD-CAST BAND	1650 Kc.	.1 MFD.	Grid of 12SA7	Rotor full open (Plates out of mesh)	Trimmer bottom of front section of gang. (See bottom of radio)	Broadcast Oscillator	Adjust to maximum output
	1400 Kc.	See Note "A"		Set dial at 1400 Kc.	Trimmer bottom of rear section of gang. (See bottom of radio)	Broadcast Antenna	Adjust to maximum output

NOTE "A" Lay the output lead from the generator in back of the loop antenna. Turn up the output of the generator, picking up the energy in the loop antenna without any electrical connection from the generator.

FREQUENCY RANGE
530 to 1650 K.C.

Power Consumption.....40 Watts
Power Output.....850 Milliwatts Undistorted, 1.4 Watts Maximum
Intermediate Frequency.....465 K.C.

For general P.B. Data see
D-723 Western Auto

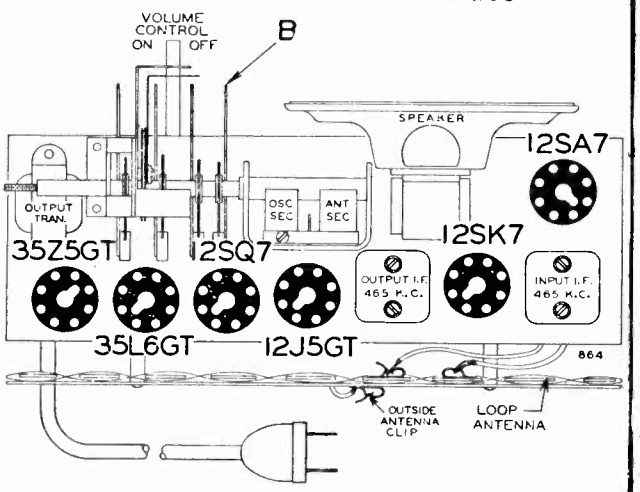


FIG. 1—TOP VIEW

Model 941 A & B

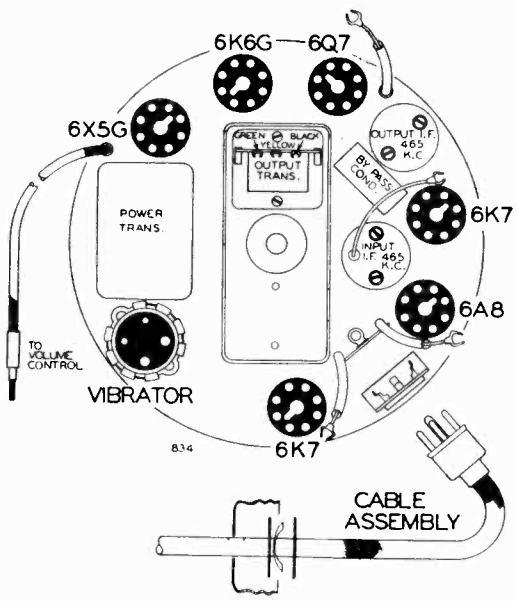
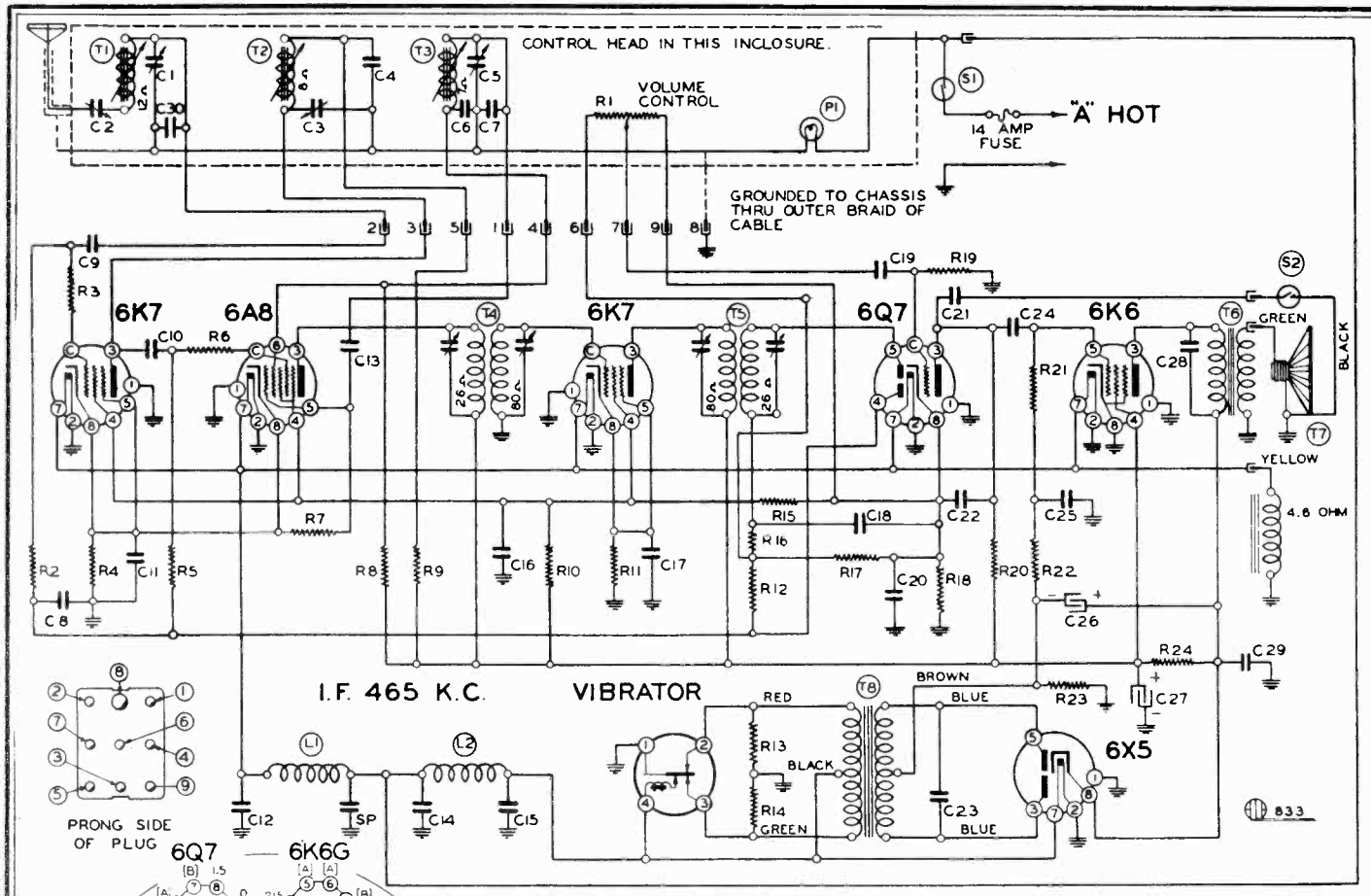
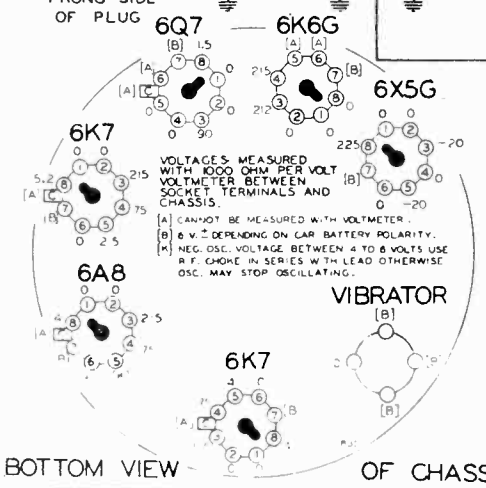


Fig. 3—Top View of Chassis

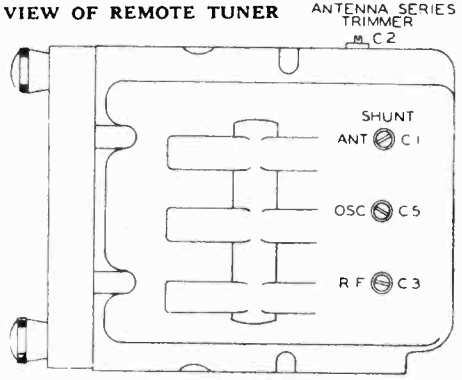
Model 976 A and B

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Remote Tuner Dial Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7 I. F. Tube	Set dial at 1400 Kc.	Two trimmers on top (See Fig. 3)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6A8	Set dial at 1400 Kc.	Two trimmers on top (See Fig. 3)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1565 Kc.	125 mmf.	Antenna lead	Set dial at 1565 Kc.	Trimmer C5 (See Fig. 4)	Oscillator	Adjust to maximum output
	1400 Kc.	125 mmf.	Antenna lead	Set dial at 1400 Kc.	Trimmers C1, C3 (See Fig. 4)	Antenna and R. F.	Adjust to maximum output
	600 Kc.	125 mmf.	Antenna lead	Set dial at 600 Kc.	Trimmer C2 (See Fig. 4)	Antenna series adj.	See note "A"





BOTTOM VIEW OF REMOTE TUNER



No.	Part No.	Description
		RESISTORS
R1	101161	1.2 megohm volume control
R2	13019	1 megohm—⅓ w.
R3	13054	500 ohm—⅓ w.
R4	13054	500 ohm—⅓ w.
R5	13019	1 megohm—⅓ w.
R6	13054	500 ohm—⅓ w.
R7	13012	50M ohm—⅓ w.
R8	13012	50M ohm—⅓ w.
R9	13021	20M ohm—⅓ w.
R10	13065	30M ohm—1 watt
R11	130235	1500 ohm—⅓ w.
R12	13019	1 megohm—⅓ w.
R13	13056	100 ohm—⅓ w.
R14	13056	100 ohm—⅓ w.
R15	130208	40M ohm—⅓ w.
R16	13020	100M ohm—⅓ w.
R17	130118	600M ohm—¼ w.
R18	130101	600 ohm—⅓ w.
R19	13019	1 megohm—⅓ w.
R20	13011	250M ohm—⅓ w.
R21	1305	300M ohm—⅓ w.
R22	13011	250 ohm—⅓ w.
R23	130274	360 ohm—1 watt
R24	130273	900 ohm—1 watt
		CONDENSERS
C1	12480	Antenna Shunt Trimmer
C2	12481	Antenna Series Trimmer
C3	12480	R. F. Shunt Trimmer
C4	100102	.15 x 400 v.
C5	12480	Oscillator Shunt Trimmer
C6	129137	.0005 Mica
C7	129136	.00017 Mica
C8	10022	.05 x 200 v.
C9	12939	.00005 Mica
C10	1292	.0005 Mica
C11	10022	.05 x 200 v.
C12	1296	.002 Mica
C13	12912	.00025 Mica
C14	10031	.5 x 120 v.
C15	10031	.5 x 120 v.
C16	11626	.25 x 400 v.
C17	1009	.05 x 200 v.
C18	1295	.0001 Mica
C19	10011	.01 x 400 v.
C20	10026	.02 x 400 v.
C21	10037	.003 x 600 v.
C22	1295	.0001 Mica
C23	100100	.008 x 1600 v.
C24	10011	.01 x 400 v.
C25	11626	.25 x 200 v.
C26	11981	16 mfd.
C27	11981B	16 mfd.
C28	10089	.008 x 800 v.
C29	10074	.1 x 400 v.
C30	12997	.00005 Mica—5%

C1 12483 Antenna Shunt Trimmer
R4 13079 400 ohm—⅓ w.

Issue B only

TUBES:

1—Type No. 6K7—R. F. Amplifier.

1—Type No. 6A8—Pentagrid Converter (composite first detector and oscillator).

1—Type No. 6K7—Remote Cut-off Pentode as an I. F. Amplifier (465 K. C.)

1—Type No. 6Q7—Duplex Diode Triode Second Detector, A.V.C. and First Audio.

1—Type No. 6K6G—Output Amplifier.

1—Type No. 6X5G—Rectifier.

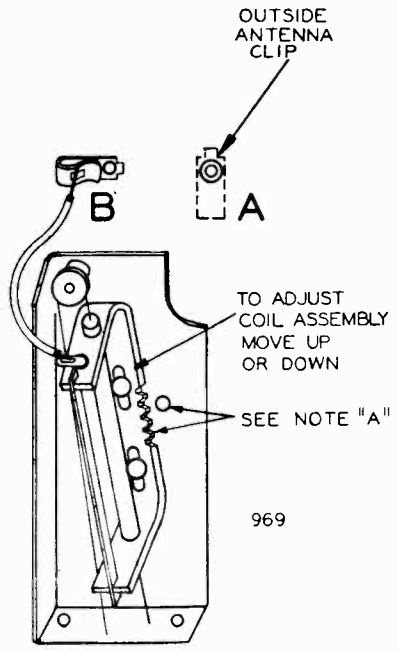
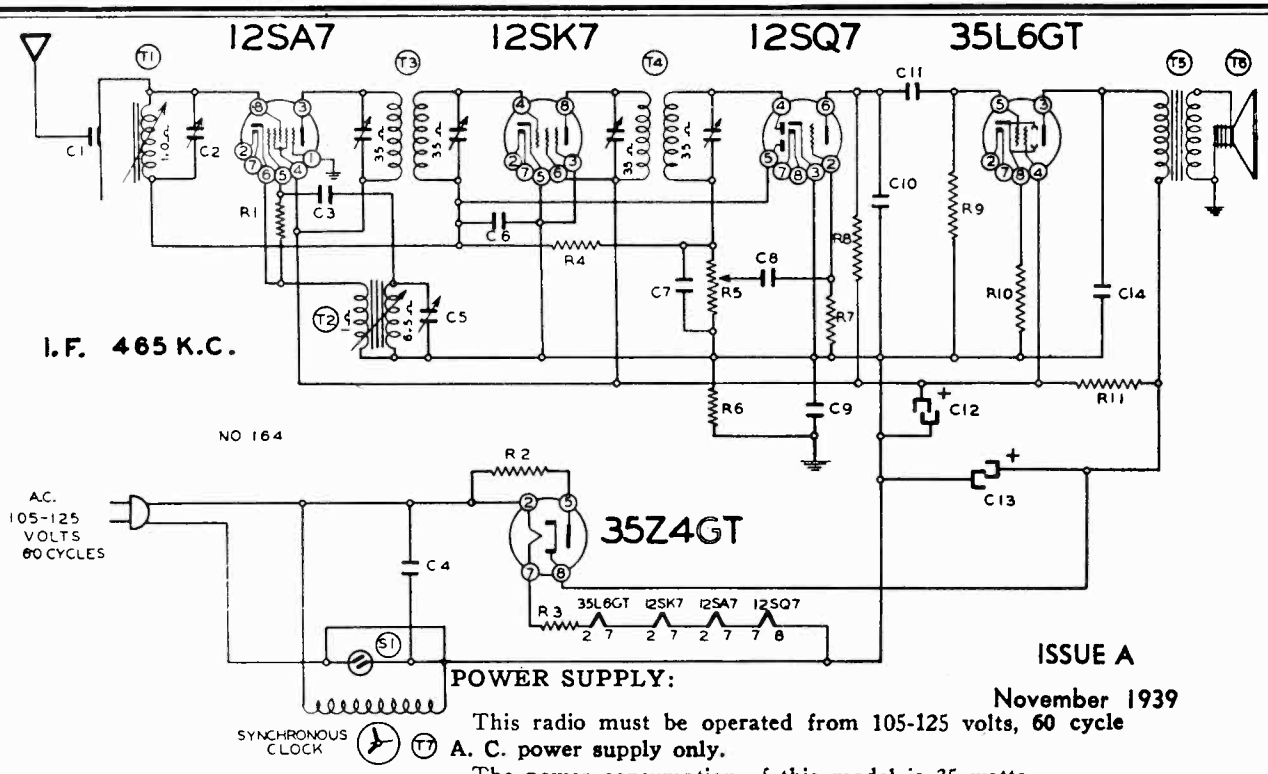


FIG. 4



POWER SUPPLY:

This radio must be operated from 105-125 volts, 60 cycle A. C. power supply only.

The power consumption of this model is 35 watts.

ISSUE A

November 1939

WESTERN AUTO SUPPLY CO.

BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS & NEGATIVE "B" SUPPLY.

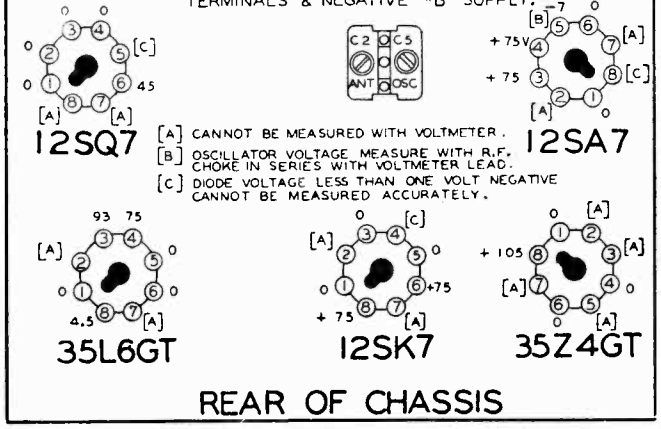


FIG. 3—BOTTOM VIEW

Circuit Diagram Ref. No.	Part No.	Description
		RESISTORS
R1	130176	20M ohm—⅓ w.
R2	130215	25 ohm—½ w.
R3	130288	50 ohm—1½ w.
R4	1304	3 Megohm—⅓ w.
R5	101209	Volume Control—½ Meg.
R6	130100	150M ohm—⅓ w.
R7	130257	5 Megohm—⅓ w.
R8	130100	150M ohm—⅓ w.
R9	13011	250M ohm—⅓ w.
R10	130166	150 ohm—⅓ w.
R11	130199	1500 ohm—1 w.
		CONDENSERS
C1	131262	.0002 Washer Condenser (Ant. Clip on Ant. Plate)
C2	124100	Ant. Section Dual Trimmer
C3	12939	.00005 Mica
C4	1001	.1 x 400 v.
C5	124100	Osc. Section Dual Trimmer
C6	10013	.05 x 400 v.
C7	1295	.0001 Mica
C8	10025	.002 x 600 v.
C9	10091	.15 x 400 v.
C10	1292	.0005 Mica
C11	10071	.004 x 600 v.
C12	11992	20 Mfd. 'Lytic
C13	11992	40 Mfd. 'Lytic.
C14	10011	.01 x 400 v.
		C2 and C5 in one unit.
		C12 and C13 in one unit.
		PARTS
T1	111136	Antenna Coil Complete
T2	110126	Oscillator Coil
T3	108157D	Input I. F. Coil—465 Kc.
T4	108157E	Output I. F. Coil—465 Kc.
T5	105106	Output Transformer
T6	114187	4" Speaker—PM.
T7	104188	Electric Clock Complete
S1		On-Off Switch on Volume Control

ALIGNMENT PROCEDURE

IMPORTANT: See Aligning Instructions on Page 4.

- Volume control—Maximum all adjustments.
- Connect —B of radio chassis to ground post of signal generator through .1 Mfd. Condenser.
- Connect dummy antenna value in series with generator output lead.
- 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 antennas—.1 mfd. and 200 mmf.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Iron Cores (Dial Setting)	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Connect to Terminal "B" (See Fig. 4)	Iron Cores All the way out	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Connect to Terminal "B" (See Fig. 4)	Iron Cores All the way out	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1720 Kc.	.1 MFD.	Connect to Terminal "B" (See Fig. 4)	Iron Cores All the way out	Trimmer (C5) (See bottom of Radio, Fig. 3)	Oscillator	Adjust to maximum output
	1720 Kc.	200 MMF.	Connect to Terminal "A" (See Fig. 4)	Iron Cores All the way out	Trimmer (C2) (See bottom of Radio, Fig. 3)	Antenna	Adjust to maximum output
	1400 Kc.	200 MMF.	Connect to Terminal "A" (See Fig. 4)	Turn Dial to 1400 Kc.	Adjust position of antenna coil up or down (see Fig. 4)	Antenna Coil Adjustment	Adjust to maximum output (See Note "A")
	1720 Kc.	200 MMF.	Connect to Terminal "A" (See Fig. 4)	Turn Dial to 1720 Kc.	Adjust trimmer (C2) (See Fig. 3)	Antenna	Check for tracking (See Note "B")

NOTE "A"—The antenna coil assembly is made so that it is movable up or down. 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.

NOTE "B"—After the antenna coil has been tracked at 1400 Kc. it is necessary to check the antenna trimmer (C2) adjustment again at 1720 Kc. If no appreciable change in trimmer adjustment is made the coil is in track; if the trimmer requires considerable change, it will be necessary to again adjust the position of the antenna coil at 1400 Kc. These two adjustments should be tried several times until no change of trimmer adjustment is required at 1720 Kc.

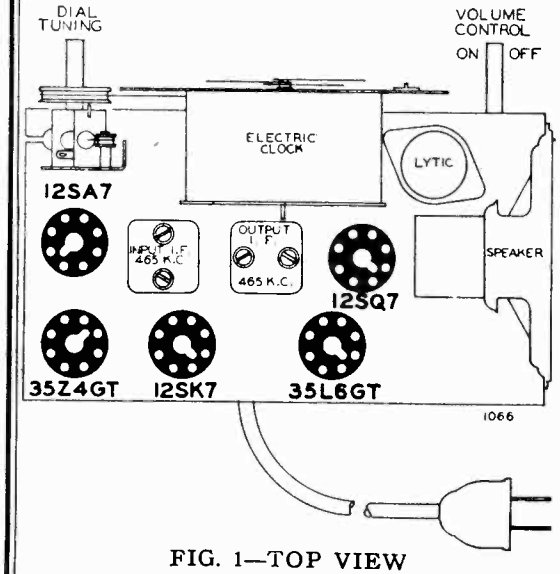


FIG. 1—TOP VIEW

FREQUENCY RANGE
540 to 1720 K.C.

Power Consumption	35 Watts
Power Output	800 Milliwatts Undistorted, 1.2 Watts Maximum
Intermediate Frequency	465 K.C.

TUBES:

The tube complement of this chassis consists of the following octal base glass and metal tubes.

The type and function of each tube is as follows:

1—Type 12SA7 Mixer, First Detector-oscillator.

1—Type 12SK7 I. F. Amplifier.

1—Type 12SQ7 Second Detector, A.V.C. and First Audio.

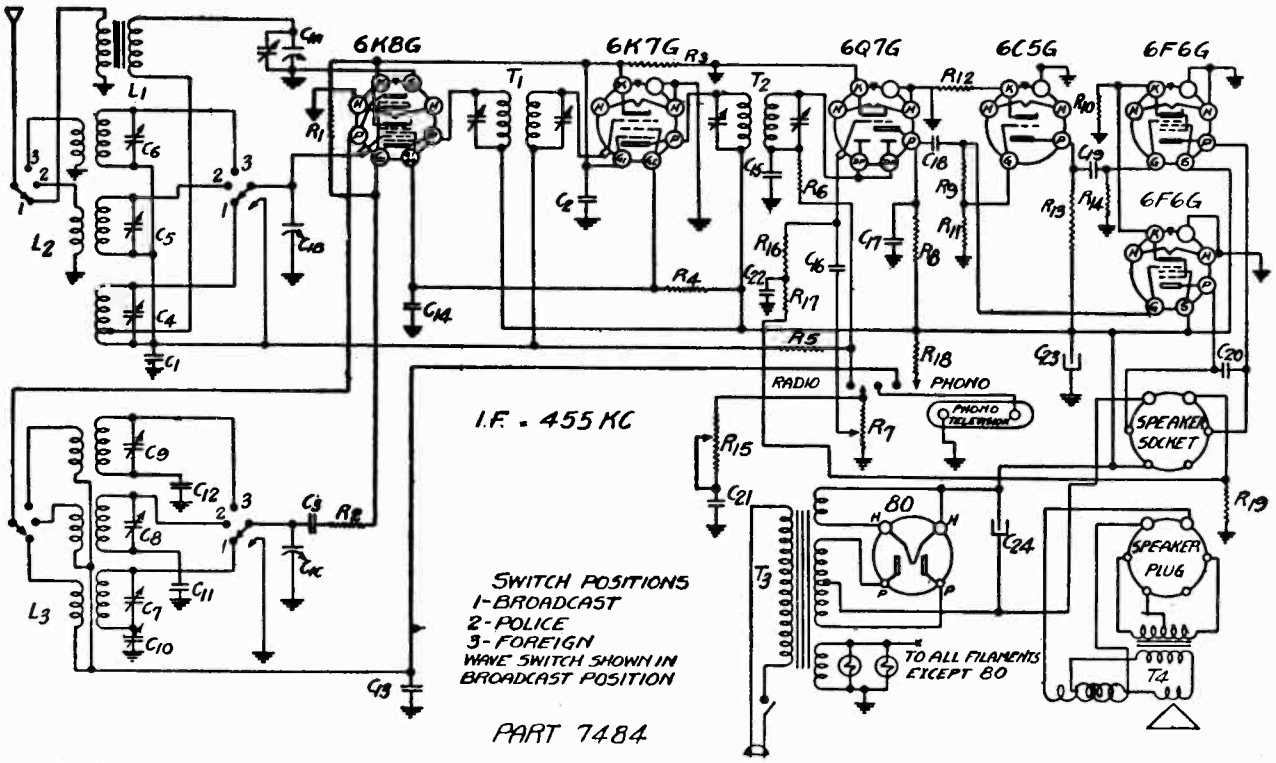
1—Type 35L6GT Beam Output Amplifier.

1—Type 35Z4GT Rectifier.

Voltages from points of Ckt.to -B are measured with tubes in sockets and Spk.conn.with volt meter having res.of 1000 ohms per volt. Voltages on chart measured with 117V.A.C. line. To check open by-pass cond. shunt each cond.with another cond.of same cap,and good volt. rating,'til defective unit is found.Excessive hum, stutterin low vol.and reduction in D.C. volt.is caused by shorted electl.cond;open by-pass cond. cause osc.and distorted tone.

MODEL D1002

WESTERN AUTO SUPPLY CO.



Part No.	Circuit Diagram Location	Description	List Price Each
		CONDENSERS	
7483	Cla,b,c	Variable Condenser	$2.00
572	C1,22	.1 mf. 200 Volt	.20
2792	C2	.2 mf. 200 Volt	.20
2780	C3	50 mmf Mica	.20
2597	C4,5,8	1-10 mmf Trimmer	.20
1611	C6,9	3-35 mmf. Trimmer	.20
3157	C7	2-25 mmf Trimmer	.25
2560	C10	200-500 mmf B.C. Osc Padder	.35
2741	C11	1330 mmf 5% Mica	.30
2793	C12	.006 600 Volt 10%	.20
575	C13	.1 mf. 400 Volt	.20
3352	C14	.2 mf. 400 Volt	.25
1286	C15,17	250 mmf Mica	.25
565	C16	.01 mf. 200 Volt	.20
576	C18,19	.02 mf. 400 Volt	.20
824	C20	.002 mf. 600 Volt	.20
591	C21	.005 mf. 600 Volt	.20
7113	C23,24	16 mf. 450 Volt Electrolytic	.75
		RESISTORS	
6720	R1,6,13	50 M 1/3 Watt	.15
6718	R2,3	100 Ohm 1/3 Watt	.15
6299	R4	10 M 1 Watt	.25
6723	R5,16,17	1 Meg 1/3 Watt	.15
2726	R7	500 M Volume Control and Switch	1.00
7262	R8	200 M 1/3 Watt	.15
7123	R9	400 M 1/3 Watt	.15
3353	R10	250 Ohm 2 Watt	.25
7122	R11	100 M 1/3 Watt	.15
7125	R12	5 M 1/3 Watt	.15
6722	R14	500 M 1/3 Watt	.15
2737	R15	2 Meg Tone Control	.75
7121	R18	20 M 1/3 Watt	.15
2882	R19	15 Ohm 1/3 Watt	.15

TUBES:
1-6K8G Converter (Osc. and first Detector)
1-6K7G I.F. Amplifier
1-6Q7G Det.-first Audio Amplifier.
1-6C6G Phase Inverter.
2-6F6G Push Pull Power Output
1-80 Rectifier.

POWER TRANSFORMERS
Power Transformers are available and these receivers are sometimes equipped with them for operation on 25,40 or 60 cycles.

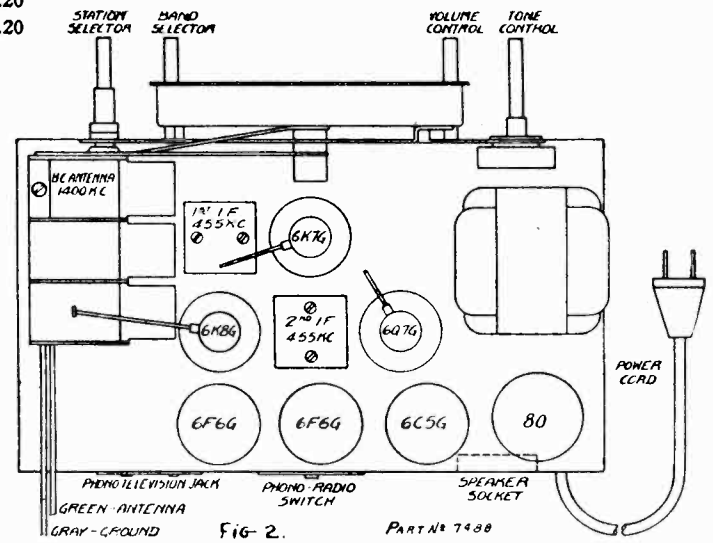


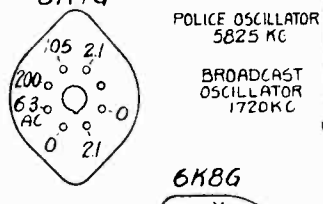
Fig. 2. PART No. 7488

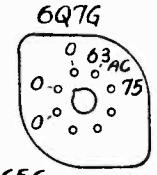
BAND	SIGNAL GENERATOR FREQUENCY SETTING	DUMMY ANTENNA	BAND SWITCH POSITION	VARIABLE CONDENSER SETTING	TRIMMER LOCATION	TRIMMER FUNCTION	CONNECTION	ADJUSTMENT
I. F.	455 kc.	.1 mfd.	Broadcast "B" (Extreme Left)	Minimum Capacity	Trimmers on top see Fig. 3.	2nd I. F.	grid of 6K7G	Adjust to maximum output
I. F.	455 kc.	.1 mfd.	Broadcast "B" (Extreme Left)	Minimum Capacity	Trimmers on top see Fig. 3.	1st I. F.	grid of 6K8G	Adjust to maximum output
BROADCAST BAND	1720 kc.	200 mmf.	Broadcast "B" (Extreme Left)	Minimum Capacity	See Fig. 4.	Broadcast oscillator	Antenna lead	Adjust to maximum output
	1400 kc. approx.	200 mmf.	Broadcast "B" (Extreme Left)	Tune in signal	Trimmer on Ant. coil. (Fig.4.)	Broadcast pre-selector	Antenna lead	Adjust to maximum output
	1400 kc. approx.	200 mmf.	Broadcast "B" (Extreme Left)	Tune in signal	Trimmer on Var. Condenser. (Fig. 4.)	Broadcast Antenna	Antenna lead	Adjust to maximum output
	600 kc.	200 mmf.	Broadcast "B" (Extreme Left)	Tune in signal	See Figs. 3 & 4.	Broadcast osc. pad.	Antenna lead	Rock thru signal adjust for Max. output
REPEAT ABOVE PROCEDURE AS FINAL CHECK.								
POLICE BAND	5825 kc.	400 ohm.	"P" (Center)	Minimum Capacity	Trimmer on Osc. coil. (Fig. 4.)	Short Wave Oscillator	Antenna lead	Adjust to maximum output
	5000 kc.	400 ohm.	"P" (Center)	Tune in signal	Trimmer on Ant. coil. (Fig. 4.)	Short Wave Antenna	Antenna lead	Rock back and forth thru signal & adjust for Max output.
REPEAT ABOVE PROCEDURE AS FINAL CHECK.								
FOREIGN BAND	18125 kc.	400 ohm.	"F" (Extreme Right)	Minimum Capacity	Trimmer on Osc. coil. (Fig. 4.)	Short Wave Oscillator	Antenna lead	Adjust to maximum output
	1700 kc.	400 ohm.	"F" (Extreme Right)	Tune in signal	Trimmer on Ant. coil. (Fig. 4.)	Short Wave Antenna	Antenna lead	Rock back and forth thru signal & adjust for Max. output.
REPEAT ABOVE PROCEDURE AS FINAL CHECK.								

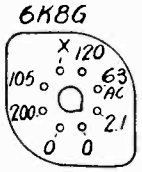
BOTTOM VIEW OF CHASSIS

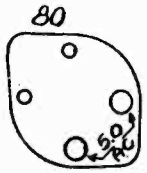
VOLTAGES MARKED AT SOCKET TERMINALS ARE MEASURED WITH 1000 OHM PER VOLT METER, ON 117 VOLT LINE WITH NO SIGNAL (ANTENNA LEAD SHORTED TO CHASSIS)

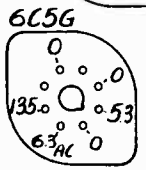
NOTE - X - CANNOT BE MEASURED WITH VOLTMETER POINTS MARKED "0" ARE CONNECTED TO CHASSIS

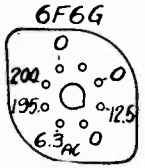


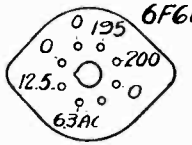












REAR OF CHASSIS

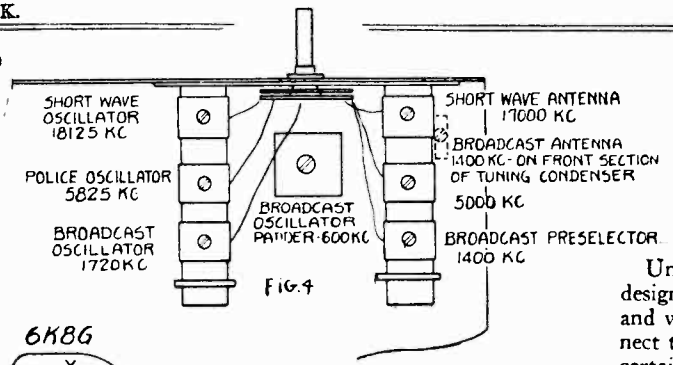


FIG. 4

TRIMMER ADJUSTMENTS

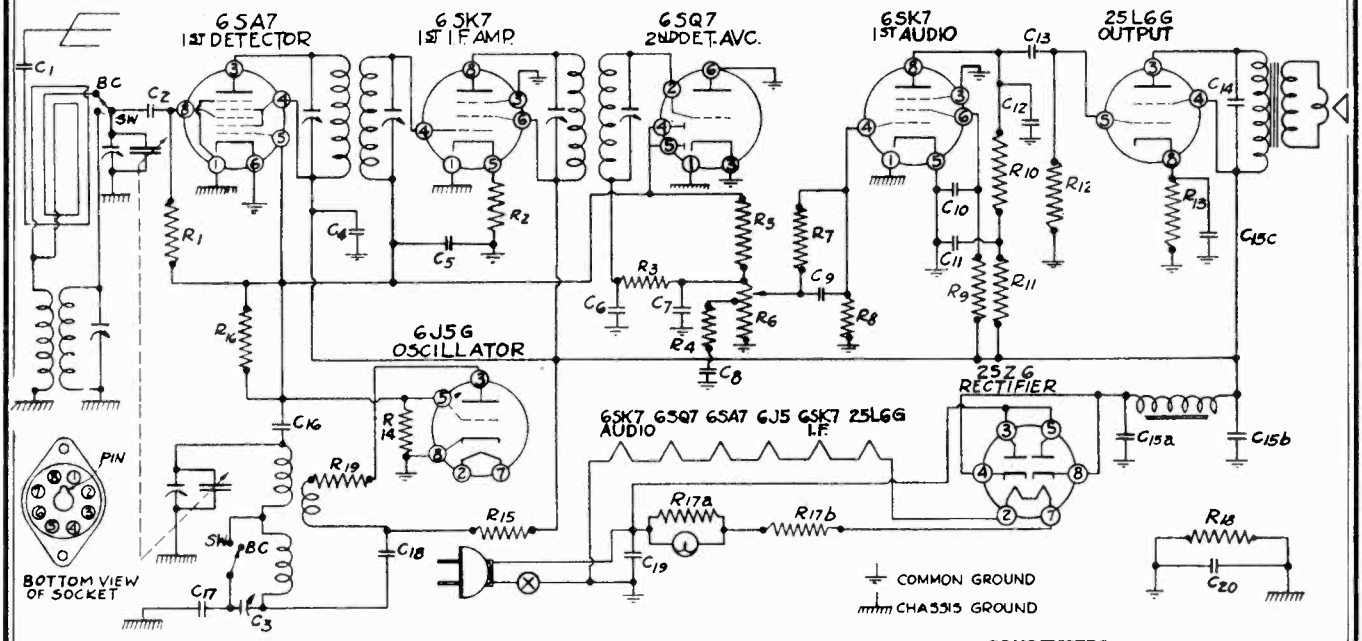
POWER SUPPLY:

Unless specifically stated otherwise these receivers are designed to operate on 117 volts 60 cycle alternating current and will operate properly on 105 to 125 volts. Do not connect the power cord to any receptacle until it has been made certain that the voltage and frequency of the power available is the same as that called for on the license plate on the rear of the chassis. A telephone call to the local power company will eliminate all doubt as to the nature of the power supply.

BAND	DIAL SCALE	FREQUENCY RANGE
Broadcast	Upper	540 to 1720 KC.
Police	Center	1670 to 5825 KC.
Foreign	Lower	5560 to 18125 KC.

MODELS D1013, D1014
Issue A

WESTERN AUTO SUPPLY CO.



RESISTORS

No.	Ohms	Watts	No.	Ohms	Watts
R1	500,000	1/4	R11	50,000	1/4
R2	100	1/4	R12	500,000	1/4
R3	50,000	1/4	R13	200—10%	1/4
R4	8,000	1/4	R14	20,000	1/4
R5	2,000,000	1/4	R15	5,000	1/4
R6	500,000	V.C.	R16	10,000,000	1/4
R7	1,000,000	1/4	R17a	30—10%	3
R8	1,000,000	1/4	R17b	106—10%	9
R9	1,000,000	1/4	R18	150,000	1/4
R10	200,000	1/4	R19	200	1/4

CONDENSERS

No.	Capacity (Mfd.)	Volts	No.	Capacity (Mfd.)	Volts
C1	.001	600	C12	.0005	Mica
C2	.0001	Mica	C13	.01	400
C3	.00035 to .0006	Pad	C14	.02	400
C4	.1	200	C15a	30.	150
C5	.05	200	C15b	30.	150
C6	.0001	Mica	C15c	20.	25
C7	.00025	Mica	C16	.00005	Mica
C8	.05	200	C17	.003—5%	Mica
C9	.01	400	C18	.005	400
C10	.1	200	C19	.05	400
C11	.1	200	C20	.2	200

ALIGNMENT PROCEDURE

- 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.
- 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 antennas—.1 mfd., 200 mmf., 400 ohms.

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.	Grid of 6SK7 I.F. tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	455 KC.	.1 Mfd.	Grid of 6SA7 tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
BROADCAST	1,630 KC.	200 Mmf.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Top of left section of gang (See Fig. 1)	Oscillator	Adjust to maximum output
	1,400 KC.	200 Mmf.	Antenna lead	Set dial at 1400 KC.	Trimmer—Top of right section of gang (See Fig. 1)	Broadcast Antenna	Adjust to maximum output
	600 KC.	200 Mmf.	Antenna lead	Set dial at 600 KC.	Trimmer—Right top chassis nearest gang (See Fig. 1)	Oscillator Series Pad.	Adjust to maximum rock dial See Note 'A'
SHORT WAVE	16,000 KC.	400 ohms	Antenna lead	Tune signal	Trimmer—Top of chassis nearest right side (See Fig. 1)	Short Wave Antenna	Adjust to maximum output

Note "A"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of intensity is obtained.
Attenuate the signal from the signal generator to prevent the leveling-off action of the A.V.C.
Do not bend variable condenser to correct tracking.

Frequency Range — 535 to 1630 and 5,450 to 17,100 K.C.
Power output 1 watt undistorted — 1.7 watts maximum.
Intermediate Frequency 455 KC.
Power Consumption—55 watts.

ISSUE A
APRIL 1940

POWER SUPPLY

This receiver is designed to operate from any AC (Alternating Current) power supply main of 105 to 125 volts, 60 cycles or DC (Direct Current) power supply main of 105-125 volts. If the receiver fails to operate on DC (Direct Current), reverse the power line plug.

On AC only the line plug should be tried both ways and left in the position that gives minimum hum.

SERVICE INFORMATION

Speaker (Part No. P4107) 5 inch Dynamic

Field resistance	300 ohms
D. C. voice coil resistance	4.6 ohms
Voice coil impedance at 400 cycles	5 ohms

Short Wave Antenna Coil (Part No. P3786)

Starting with the mounting end (nearest chassis) the connections are: No. 1, ground; other end in a clockwise direction starting at the mounting lug side, No. 2, grid; No. 3, ant.
Primary—No. 3 and No. 1—Resistance .26 ohm
Secondary—No. 2 and No. 1—Resistance .07 ohm

Oscillator Coil (Part No. P3789)

Starting at the mounting bracket in a clockwise direction the connections are: No. 1, sec. tap; No. 2, open; No. 3, B+; No. 4, pad; on other end No. 5, grid; No. 6, plate.

Primary—No. 3 and No. 6—Resistance	.92 ohm
S.W. Secondary—No. 1 and No. 5—Resistance	.07 ohm
B.C. Secondary—No. 1 and No. 4—Resistance	5.1 ohms

First I.F. Transformer (Part No. P4108)

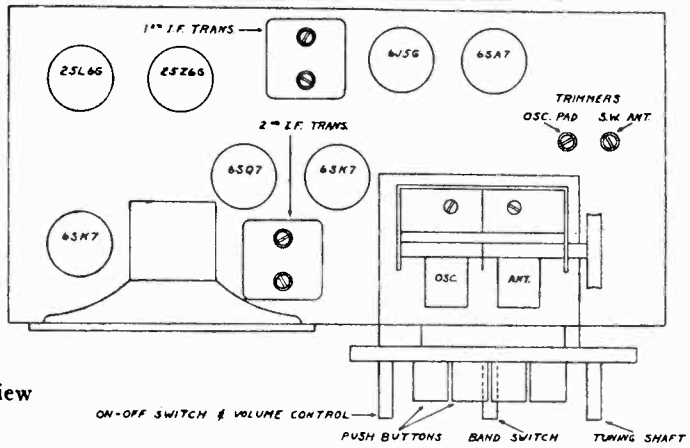
Primary—Blue, plate; red, B+—Resistance	18.2 ohms
Secondary—White, grid; black, AVC—Resistance	15.1 ohms

Second I.F. Transformer (Part No. P4109)

Primary—Blue, plate; red B+—Resistance	20.8 ohms
Secondary—White, diode; black, AVC—Resistance	17.4 ohms

Electrolytic Condenser (Part No. P4106)

Red, 30 mfd., 150 volt; green, 30 mfd., 150 volt; yellow, 20 mfd., 25 volt; black, negative for all three sections.

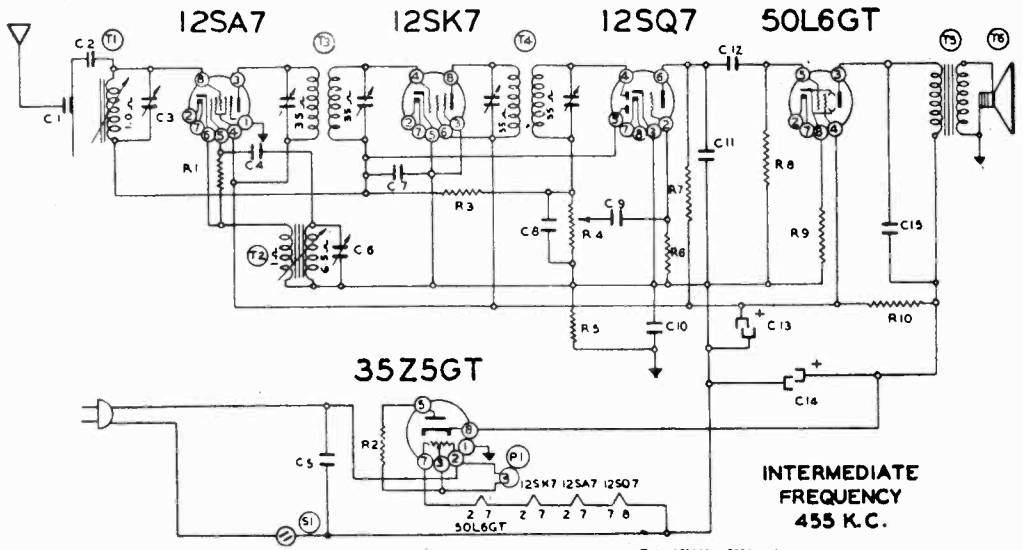


—Top View

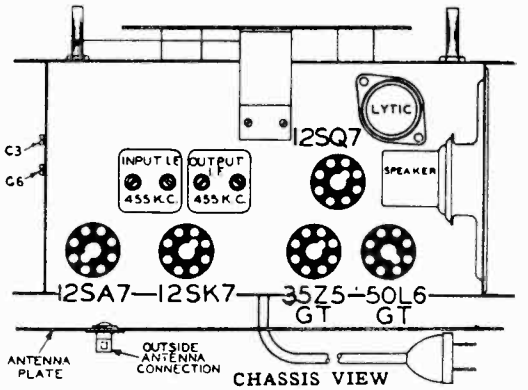
VOLTAGE CHART

All voltages measured with a 1,000 ohm per volt meter on the 150 volt scale. Line voltage 117½ volts A.C. Volume control maximum and no signal tuned in.

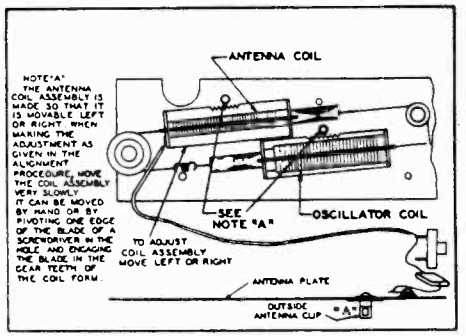
	Volts
6SA7 TUBE	
Plate (3) to common ground	108
Screen (4) to common ground	110
6J5G TUBE	
Plate (3) to common ground	90
6SK7 (IF) TUBE	
Plate (8) to common ground	108
Screen (6) to common ground	110
6SK7 (AF) TUBE	
Plate (8) to common ground	9
Screen (6) to common ground	6½
25L6G TUBE	
Plate (3) to common ground	101
Screen (4) to common ground	110
Cathode (8) to common ground	7
25Z6G TUBE	
Plate (3) or (5) to common ground	117½ (AC)
Cathode (4) or (8) to common ground	130



INTERMEDIATE FREQUENCY 455 K.C.



CHASSIS VIEW



COIL ASSEMBLY VIEW

RESISTORS

R1	130232	25M ohm—½ w.
R2	130284	25 ohm—½ w.
R3	130170	3 megohm—½ w.
R4	101230	Volume Control—½ megohm
R5	13080	150M ohm—½ w.
R6	130257	5 megohm—½ w.
R7	13080	150M ohm—½ w.
R8	1805	300M ohm—½ w.
R9	130166	150 ohm—½ w.
R10	130199	1500 ohm—1 w.

CONDENSERS

C1	131262	.00001 washer cond. (ant. clip on ant. plate)
C2	12912	.00025 mica
C3	124136	Antenna section dual trimmer
C4	12938	.00005 mica
C5	1001	.1 x 400 v.
C6	124136	Osc. Section dual trimmer
C7	1009	.05 x 200 v.
C8	12912	.00025 mica
C9	10025	.002 x 600 v.
C10	10091	.15 x 400 v.
C11	129160	.0004 mica
C12	10078	.01 x 200 v.
C13	11992	20 mfd. lytic
C14	11992	40 mfd. lytic
C15	10011	.01 x 400 v.

C13 and C14 in one unit C3 and C6 in one unit

PARTS

T1, T2	112827	Antenna and Oscillator Coil Assembly (Permeability Tuning)
T3	108157J	Input I.F. Coil—455 kc.
T4	108157K	Output I.F. Coil—455 kc.
T5	105117	Output Transformer
T6	114213	4 in. speaker—P. M.
S1		On-off switch on volume control
P1	107249	Pilot light bulb T47

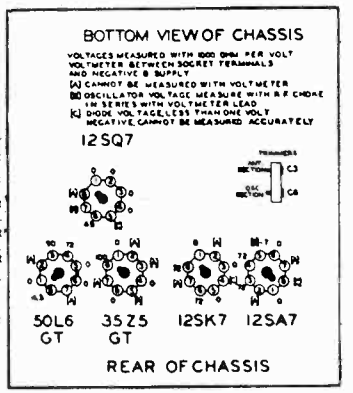
ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect B— of radio chassis to ground post of signal generator through .1 Mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- 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 antennas—.1 Mfd., and 200 Mmf.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Iron Cores (Dial Setting)	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD.	Connect to Grid of 12SA7	Iron Cores All the way out	Two trimmers on top of output I. F. can	Output I. F.	Adjust to maximum output
	455 Kc.	.1 MFD.	Connect to Grid of 12SA7	Iron Cores All the way out	Two trimmers on top of input I. F. can	Input I. F.	Adjust to maximum output
BROADCAST BAND	1720 Kc.	.1 MFD.	Connect to Grid of 12SA7	Iron Cores All the way out	Trimmer (C6) (See chassis view)	Oscillator	Adjust to maximum output
	1720 Kc.	200 MMF.	Connect to Outside Antenna Clip	Iron Cores All the way out	Trimmer (C3) (See chassis view)	Antenna	Adjust to maximum output
	1400 Kc.	200 MMF.	Connect to Outside Antenna Clip	Turn Dial to 1400 Kc.	Adjust position of antenna coil (See coil assembly view)	Antenna Coil Adjustment	Adjust to maximum output (See Note "A")
	1720 Kc.	200 MMF.	Connect to Outside Antenna Clip	Turn Dial to 1720 Kc.	Adjust trimmer (C3) (See chassis view)	Antenna	Check for tracking (See Note "B")

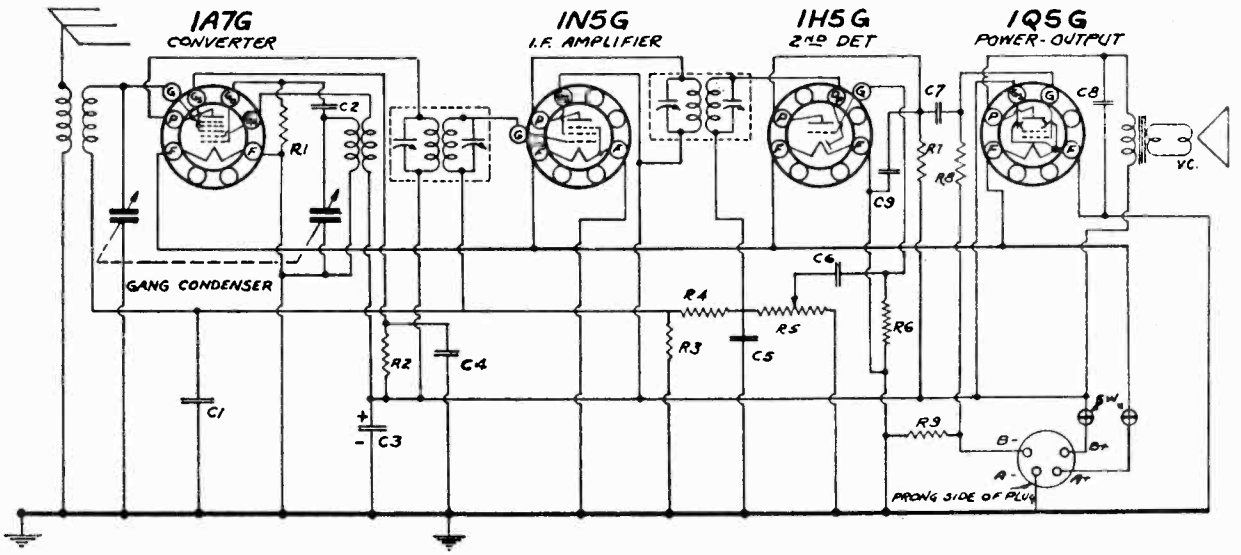


NOTE "A"—The antenna coil assembly is made so that it is movable. When making the adjustment as given in the alignment procedure move the coil assembly very slowly. It can be moved by hand or by pivoting one edge of the blade of a screwdriver in the hole and engaging the blade in the gear teeth of the coil form.

NOTE "B"—After the antenna coil has been tracked at 1400 Kc. it is necessary to check the antenna trimmer (C3) adjustment again at 1720 Kc. If no appreciable change in trimmer adjustment is made the coil is in track, if the trimmer requires considerable change it will be necessary to again adjust the position of the antenna coil at 1400 Kc. These two adjustments should be tried several times until no change of trimmer adjustment is required at 1720 Kc.

MODEL D1020
Issue A

WESTERN AUTO SUPPLY CO.



CAPACITORS					
NO.	MFDS	VOLTS	NO.	MFDS	VOLTS
C1	.05	200	C6	.01	400
C2	.00005	MICA	C7	.01	400
C3	4.0 (ELECT.)	150	C8	.002	400
C4	.05	200	C9	.00025	MICA
C5	.00025	MICA			

RESISTORS					
NO.	OHMS	WATTS	NO.	OHMS	WATTS
R1	200,000	1/2	R6	2,000,000	1/2
R2	70,000	1/2	R7	300,000	1/2
R3	2,000,000	1/2	R8	1,000,000	1/2
R4	2,000,000	1/2	R9	440	1/2
R5	500,000	V.C.			

I.F. 455 K.C.

ALIGNMENT PROCEDURE

- 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.
- 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 antennas—.1 mf., 200 mmf.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 K.C.	.1 MFD.	Grid of 1N5G tube	Rotor full open (Plates out of mesh)	Two Trimmers on top (See Fig. 1)	Output I.F.	Adjust to maximum output
	455 K.C.	.1 MFD.	Grid of 1A7G tube	Rotor full open (Plates out of mesh)	Two Trimmers on top (See Fig. 1)	Input I.F.	Adjust to maximum output
BROAD-CAST	1610 KC.	200 mmf.	Antenna Lead	Rotor full open (Plates out of mesh)	Trimmer—Left rear of chassis	Oscillator	Adjust to maximum output
	1400 KC.	200 mmf.	Antenna Lead	Set dial at 1400 KC.	Trimmer—Next to Osc. trimmer	Antenna	Adjust to maximum output

This is all that is necessary for the alignment unless the plates of the gang have been bent out of shape. In case of bent plates, set the signal generator and receiver to 600KC and bend the plates into the position for maximum output.

Attenuate the signal from the signal generator to prevent the leveling off-action of the AVC. After each band is completed, repeat the prccedure as a final check.

Frequency Range

535 to 1730 K.C.

Power output .27 watt undistorted—.35 watt maximum.

Intermediate Frequency 455 K.C.

POWER SUPPLY

This receiver is designed to operate on a single unit Wizard D235, Ray-O-Vac No. AB-82, Burgess 17G-D60, Eveready 748 or General 60DL-11L Battery. No other batteries are required as this battery is a combination 90 volt "B" battery and a 1½ volt "A" battery.

(Note: There is a battery compartment in the rear of the cabinet which will house the power supply unit.)

SERVICE INFORMATION

Speaker (Part No. P3465) 5" PM Type

D.C. voice coil resistance.....4.5 ohms
Voice coil impedance at 400 cycles.....5 ohms

Antenna Coil (Part No. G6041)

Looking at the connection end starting at the chassis in a clockwise direction the terminals are: No. 1, AVC; No. 2, grid; No. 3, Ant.; No. 4, ground. No. 4 is grounded to the mounting bracket.

Primary—No. 3 and No. 4—Resistance 24.6 ohms.

Secondary—No. 1 and No. 2—Resistance 2.1 ohms.

A gimmik coil of 5.5 mmfd. connects to terminals No. 2 and No. 3.

Oscillator Coil (Part No. P3575)

Looking at the connection end starting at the chassis in a clockwise direction the terminals are:

No. 1, grid; No. 2, plate; No. 3, B+; No. 4, ground.

Primary—No. 2 and No. 3—Resistance 1.7 ohms.

Secondary—No. 4 and No. 1—Resistance 4.9 ohms.

First I.F. Transformer (Part No. P3048)

Primary—Red white, B+; blue white, plate—Resistance 12.1 ohms.

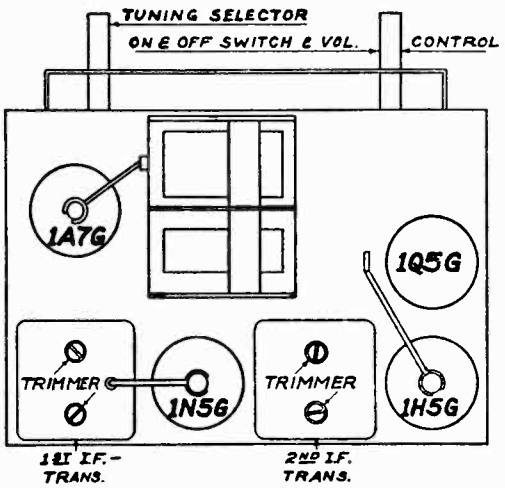
Secondary—White, grid; black white, AVC—Resistance 24.9 ohms.

Second I.F. Transformer (Part No. P2606)

Primary—Blue white, plate; red white, B+—Resistance 15.1 ohms.

Secondary—White, grid; black white, AVC—Resistance 11.8 ohms.

—Top View



ISSUE A
OCT. 1939

VOLTAGE CHART

All voltages measured with a 1,000 ohm per volt meter on 150 volt scale. For the following voltages the "B" section of the battery should read 93½ volts under load.

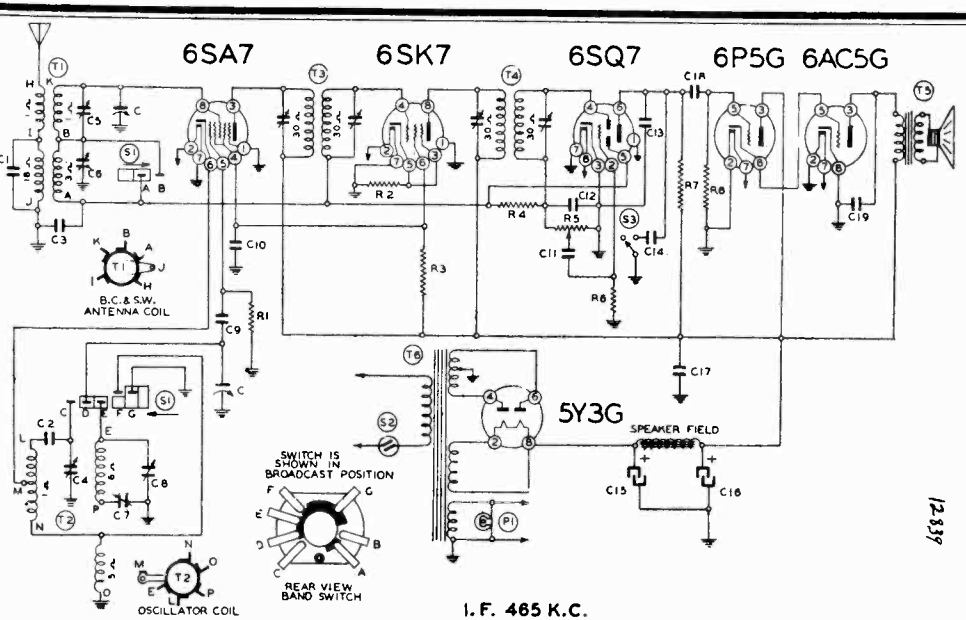
1A7 TUBE	Volts
Plate—P—to ground	88
Screen—G3 & G5—to ground	33½
Grid—G1—to ground	—2½
Grid—G2—to ground	88

1N5G	
Plate—P—to ground	88
Screen—G2—to ground	88

1H5G	
Plate—P—to ground	15½

1Q5G	
Plate—P—to ground	82
Screen—G2—to ground	88
Grid—G—to ground	—1

WESTERN AUTO SUPPLY CO.



I. F. 465 K.C.

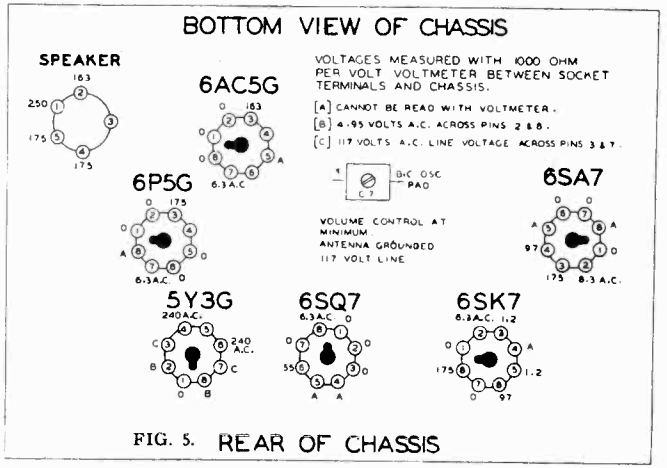


FIG. 5. REAR OF CHASSIS

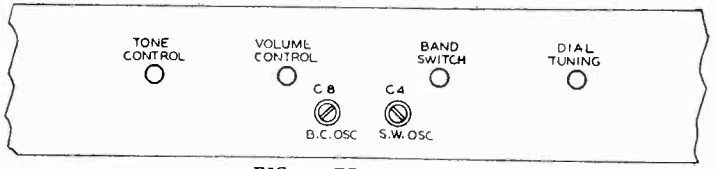


FIG. 4.—FRONT OF CHASSIS

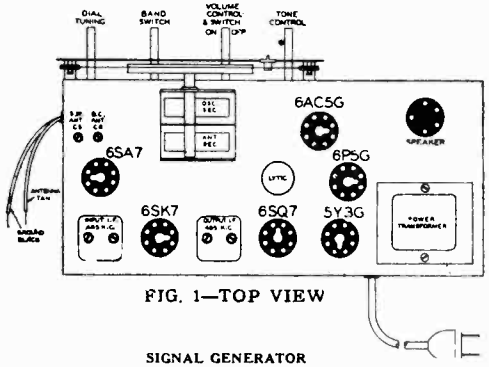


FIG. 1—TOP VIEW

CONDENSERS

C	102124	2 gang variable condenser
C1	1295	.0001 mica
C2	12964	.00275 mica
C3	10022	.05 x 200 v.
C4	124121	Dual Adjustable Condenser (S.W. Osc.)
C5	124122	Dual Adjustable Condenser (S.W. Ant.)
C6	124122	Dual Adjustable Condenser (Bc. Ant.)
C7	129151	.000468 comp. condenser (Bc. Osc. Pad)
C8	124121	Dual Adjustable Condenser (Bc. Osc.)
C9	12939	.00005 mica
C10	10013	.05 x 400 v.
C11	10071	.004 x 600 v.
C12	1295	.0001 mica
C13	1292	.0005 mica
C14	10012	.003 x 600 v.
C15	119102	10 mfd. lytic condenser
C16	119102	30 mfd. lytic condenser
C17	1001	.1 x 400 v.
C18	10026	.02 x 400 v.
C19	10012	.003 x 600 v.

C5 and C6 in one unit
C4 and C8 in one unit
C15 and C16 in one unit

R1	130208	40M ohm—½ w.
R2	130168	100 ohm—½ w.
R3	130306	7500 ohm—1 watt
R4	1304	3 megohm—½ w.
R5	101208	Volume Control and Switch (1 Megohm)
R6	130257	5 megohm—½ w.
R7	13011	250M ohm—½ w.
R8	13019	1 megohm—½ w.

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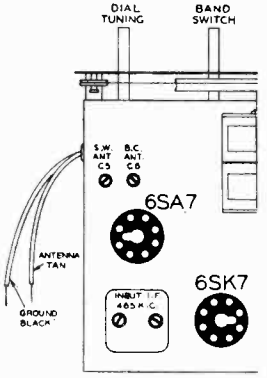


FIG. 3. TOP VIEW

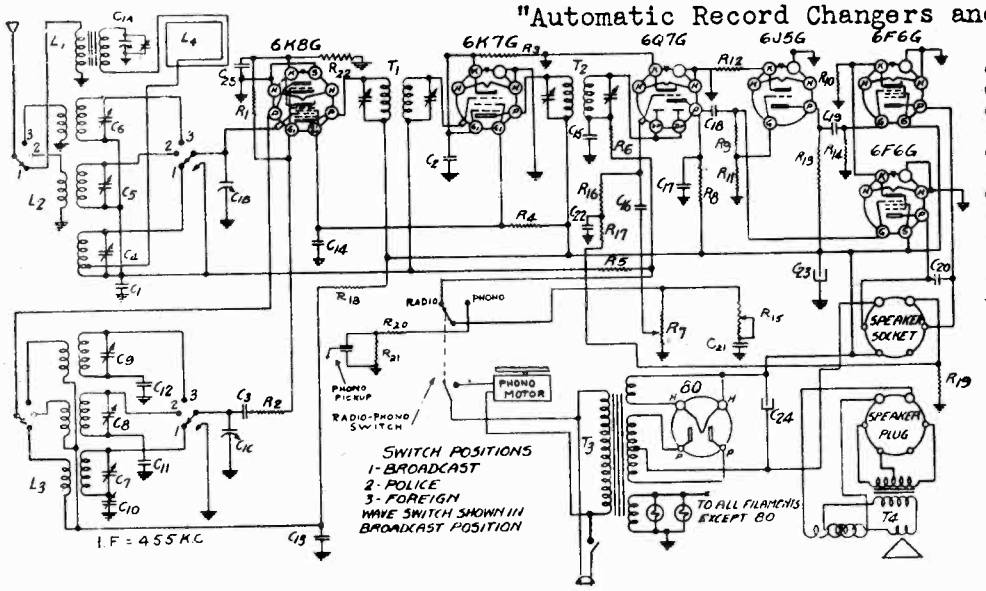
SIGNAL GENERATOR

BAND	Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6SK7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6SA7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND	18.3 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Rotor full open (Plates out of mesh)	Trimmer (C4) (See Fig. 4)	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Dial Set at 17 MC.	Trimmer (C5) (See Fig. 3)	Short Wave antenna	Adjust to maximum output
BROAD-CAST BAND	1720 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Trimmer (C8) (See Fig. 4)	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 1400 Kc.	Trimmer (C6) (See Fig. 3)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 600 Kc.	Trimmer (C7) (See Fig. 5)	Broadcast oscillator series pad (Bottom of chassis)	Adjust to maximum rock dial.

MODEL D1075 DC

WESTERN AUTO SUPPLY CO.

FOR RCA RP139B Record changer, see Rider's "Automatic Record Changers and Recorders".

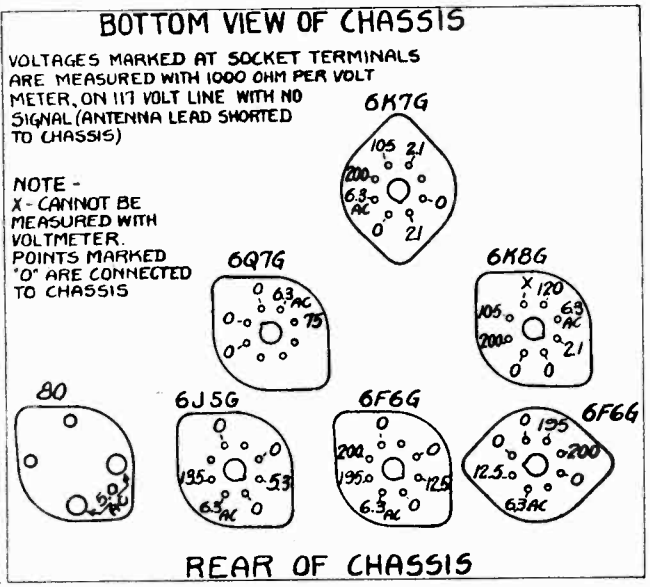


C1a,b,c	Variable Condenser
C1,22	.1 mf. 200 Volt
C2	.2 mf. 200 Volt
C3	50 mmf Mica
C4,5,8	1-10 mmf Trimmer
C6,9	3-35 mmf. Trimmer
C7	2-25 mmf Trimmer
C10	200-500 mmf B.C. Osc Padder
C11	1330 mmf 5% Mica
C12	.006 600 Volt 10%
C13	.1 mf. 400 Volt
C14	.2 mf. 400 Volt
C15,17	250 mmf Mica
C16	.01 mf. 200 Volt
C18,19	.02 mf. 400 Volt
C20	.002 mf. 600 Volt
C21	.005 mf. 600 Volt
C23,24	16 mf. 450 Volt Electrolytic
C25	.05 mf. 200 Volt

BOTTOM VIEW OF CHASSIS

VOLTAGES MARKED AT SOCKET TERMINALS ARE MEASURED WITH 1000 OHM PER VOLT METER, ON 117 VOLT LINE WITH NO SIGNAL (ANTENNA LEAD SHORTED TO CHASSIS)

NOTE - X - CANNOT BE MEASURED WITH VOLTMETER. POINTS MARKED "0" ARE CONNECTED TO CHASSIS



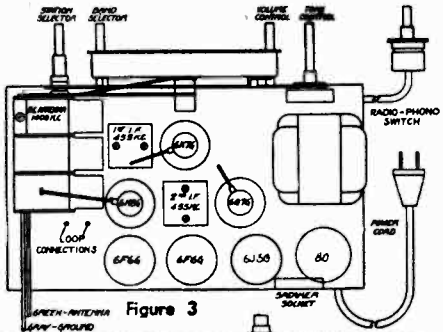


Figure 3

	RESISTORS
R1,6,15	50 M 1/3 Watt
R2,3	100 Ohm 1/3 Watt
R4	10 M 1 Watt
R5,16,17	1 Meg 1/3 Watt
R7	500 M Volume Control
R8,20,21	200 M 1/3 Watt
R9	400 M 1/3 Watt
R10	300 Ohm 2 Watt
R11	100 M 1/3 Watt
R12	5 M 1/3 Watt
R14	500 M 1/3 Watt
R15	2 Meg Tone Control
R18	20 M 1/3 Watt
R19	15 Ohm 1/3 Watt

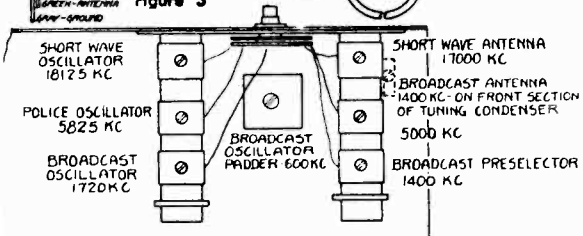
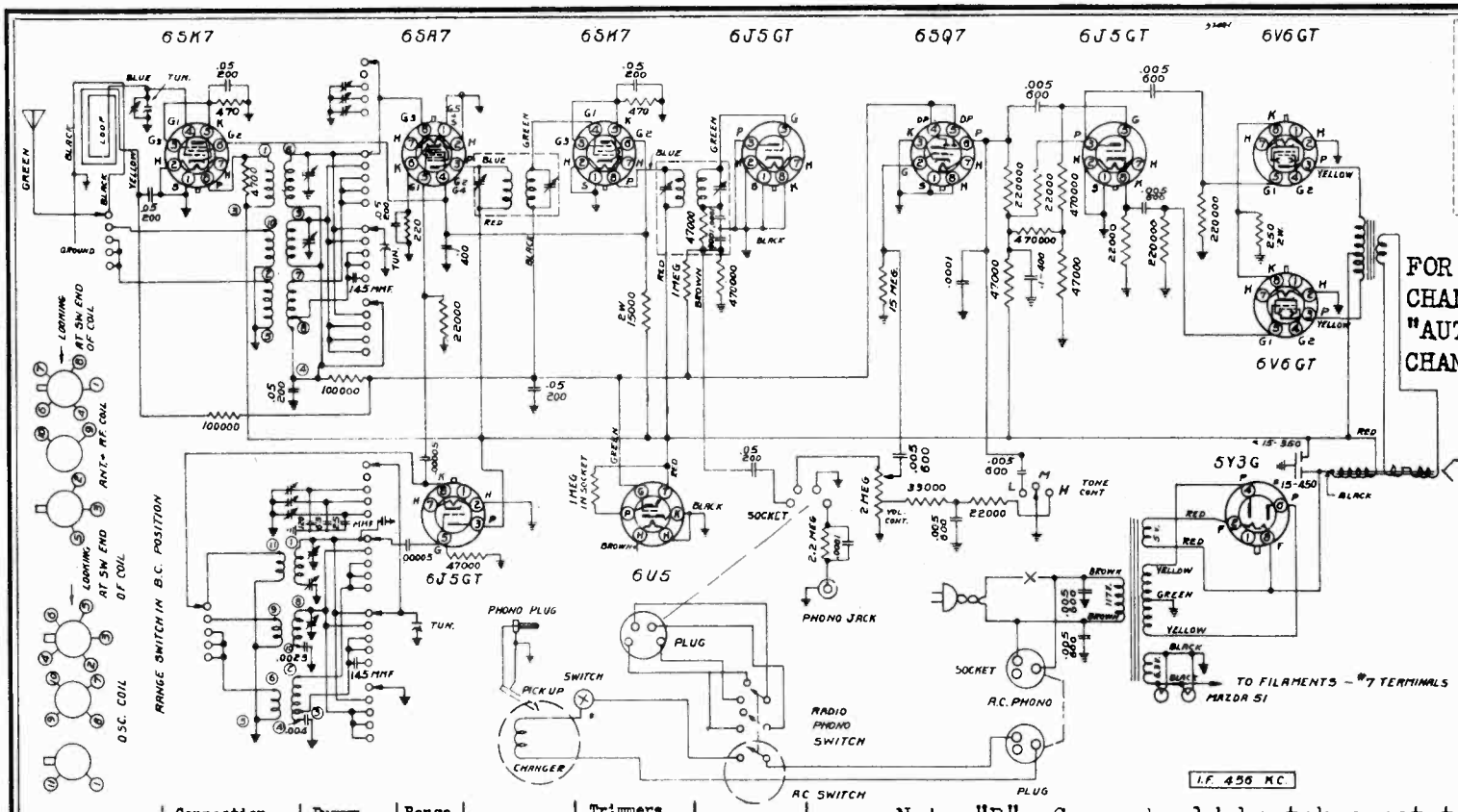


Figure 4

BAND	SIGNAL GENERATOR FREQUENCY SETTING	DUMMY ANTENNA	BAND SWITCH POSITION	VARIABLE CONDENSER SETTING	TRIMMER LOCATION	TRIMMER FUNCTION	CONNECTION	ADJUSTMENT
I. F.	455 kc.	.1 mfd.	Broadcast "B" (Extreme Left)	Minimum Capacity	Trimmers on top see Fig. 3.	2nd I. F.	grid of 6K7G	Adjust to maximum output
I. F.	455 kc.	.1 mfd.	Broadcast "B" (Extreme Left)	Minimum Capacity	Trimmers on top see Fig. 3.	1st I. F.	grid of 6K8G	Adjust to maximum output
BROADCAST BAND	1720 kc.	200 mmf.	Broadcast "B" (Extreme Left)	Minimum Capacity	See Fig. 4.	Broadcast oscillator	Antenna lead	Adjust to maximum output
	1400 kc. approx.	200 mmf.	Broadcast "B" (Extreme Left)	Tune in signal	Trimmer on Ant. coil. (Fig.4.)	Broadcast pre-selector	Antenna lead	Adjust to maximum output
	1400 kc. approx.	200 mmf.	Broadcast "B" (Extreme Left)	Tune in signal	Trimmer on Var. Condenser. (Fig. 4.)	Broadcast Antenna	Antenna lead	Adjust to maximum output
	600 kc.	200 mmf.	Broadcast "B" (Extreme Left)	Tune in signal	See Figs. 3 & 4.	Broadcast osc. pad.	Antenna lead	Rock thru signal adjust for Max. output
REPEAT ABOVE PROCEDURE AS FINAL CHECK.								
POLICE BAND	5825 kc.	400 ohm.	"P" (Center)	Minimum Capacity	Trimmer on Osc. coil. (Fig. 4.)	Short Wave Oscillator	Antenna lead	Adjust to maximum output
	5000 kc.	400 ohm.	"P" (Center)	Tune in signal	Trimmer on Ant. coil. (Fig. 4.)	Short Wave Antenna	Antenna lead	Rock back and forth thru signal & adjust for Max output.
REPEAT ABOVE PROCEDURE AS FINAL CHECK.								
FOREIGN BAND	18125 kc.	400 ohm.	"F" (Extreme Right)	Minimum Capacity	Trimmer on Osc. coil. (Fig. 4.)	Short Wave Oscillator	Antenna lead	Adjust to maximum output
	1700 kc.	400 ohm.	"F" (Extreme Right)	Tune in signal	Trimmer on Ant. coil. (Fig. 4.)	Short Wave Antenna	Antenna lead	Rock back and forth thru signal & adjust for Max. output.



FOR SEEBURG J RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS"

Note "A"- If the pointer is not at 1400 KC with a 1400 KC sig. it may be loosened from the dial cord and moved to correct the calibration. This should be checked across the band to arrive at the optimum condition.

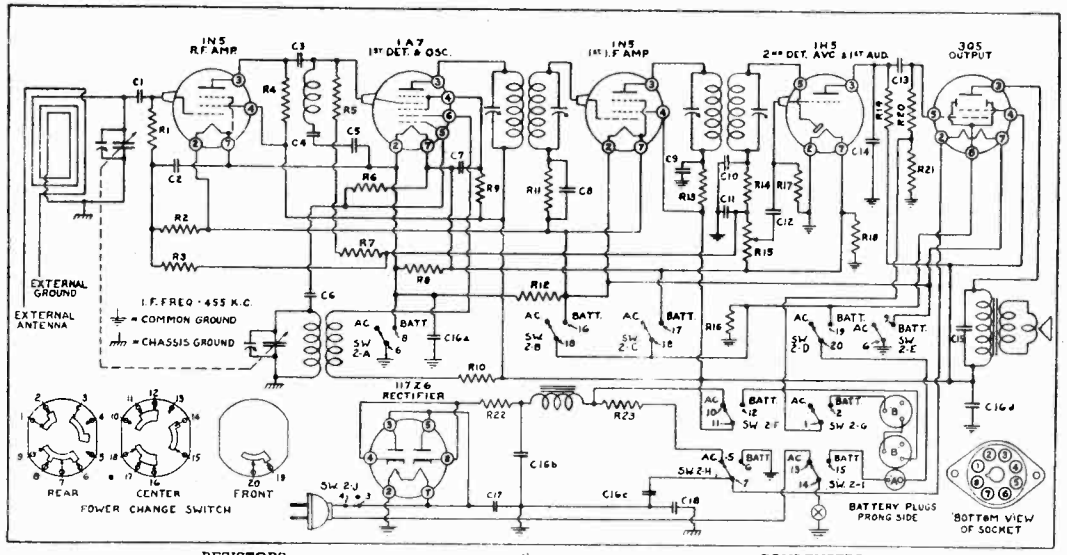
Note "B"- Care should be taken not to align on the image frequency. This may be checked by rotating the dial of the signal generator. Another signal should be heard at dial frequency plus 912 KC. This signal should be checked carefully on all short wave bands, making sure the lowest frequency signal agrees with the dial setting in frequency and that it is strongest of two.

Generator	Connection at Radio	Dummy Antenna	Range Switch	Dial	Trimmers to Tune	Sensitivity	Remarks
I.F. 456 K.C.	Center Stator of Variable	.1 MFD.	A	H.F. End	I.F. Transformers	65-70MV.	Tune to Max.
B.C. 1725 K.C.	Antenna	200 MMF.	A	H.F. Limit of Travel	B.C. Oscillator		Set Band Limit
1400 K.C.	Antenna	200 MMF.	A	1400	B.C. Antenna and Loop	3-5 MV.	See Note A
600 K.C.	Antenna	200 MMF.	A	Rock Rotor	Padder	3-5 MV.	
P.B. 6.0 M.C.	Antenna	400 Ohm	B	6.0 M.C.	P.B. Osc. P.B. Ant.	25 MV.	See Note B
2.2 M. C.	Antenna	400 Ohm	B	2.2 M.C.	Check	40 MV.	See Note B

Generator	Connection at Radio	Dummy Antenna	Range Switch	Dial	Trimmers to Tune	Sensitivity	Remarks
31M. 9.6 M.C.	Antenna	400 Ohm	C	9.6 M.C.	31M. Ant. 31M. Osc.	25MV.	See Note B
25M. 11.6 M.C.	Antenna	400 Ohm	D	11.6 M.C.	25M. Ant. 25M. Osc.	30 MV.	See Note B
19M. 15.2 M.C.	Antenna	400 Ohm	E	15.2 M.C.	19M. Ant. 19M. Osc.	40 MV.	See Note B

WESTERN AUTO SUPPLY CO.

MODEL D1077



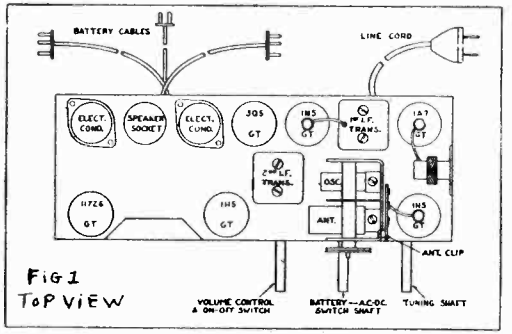


FIG 1 TOP VIEW

RESISTORS

No.	Ohms	Watts	No.	Ohms	Watts
R1	1,000,000	½	R13	5,000	½
R2	5,000,000	½	R14	70,000	½
R3	5,000,000	½	R15	1,000,000	V.C.
R4	10,000	½	R16	1,500	½
R5	250,000	½	R17	5,000,000	½
R6	200,000	½	R18	150	½
R7	1,000,000	½	R19	250,000	½
R8	300	½	R20	1,000,000	½
R9	30,000	½	R21	400—10%	½
R10	500	½	R22	30	½
R11	15,000,000	½	R23	1,950	5
R12	700	½			

CONDENSERS

No.	Capacity (Mfd.)	Volts	No.	Capacity (Mfd.)	Volts
C1	.00025	Mica	C12	.01	400
C2	.01	200	C13	.01	400
C3	.00005	Mica	C14	.00025	Mica
C4	.00006	Mica	C15	.002	400
C5	.01	200	C16a	40.	25
C8	.00005	Mica	C16b	20.	150
C7	.01	400	C16c	40.	25
C8	.01	200	C16d	30.	150
C9	.05	200	C17	.05	400
C10	.00005	Mica	C18	.2	200
C11	.00005	Mica			

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.	Grid of 1N5GT I.F. tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I.F.	Adjust to maximum output
See Note "A"	455 KC.	.1 MFD.	Grid of 1A7GT tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I.F.	Adjust to maximum output
BROAD-CAST	1550 KC.	200 mmf.	Antenna Connection	Rotor full open (Plates out of mesh)	Trimmer—Top of gang-rear	Oscillator	Adjust to maximum output
See Note "B"	1400 KC.	200 mmf.	Antenna Connection	Set dial at 1400 KC.	Trimmer—Top of gang-front	Antenna	Adjust to maximum output

This is all that is necessary for the alignment unless the plates of the gang have been bent out of shape. In case of bent plates, set the signal generator and receiver to 600 KC and bend the plates into the position for maximum output.

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC. After each band is completed, repeat the procedure as a final check.

NOTE "A"—Use battery operation for all adjustments.

NOTE "B"—Align broadcast band with chassis in cabinet and loop antenna connected.

Frequency Range
540 to 1550 K.C.

Power output (on batteries) .27 watt undistorted—.35 watt maximum.

Power output (AC-DC) .27 watt undistorted—.35 watts maximum.

Intermediate Frequency 455 K.C. Power consumption 25 watts.

VOLTAGE CHART

All voltages measured with a 1,000 ohm per volt meter on the 150 volt scale. Line voltage 117½ volts A.C. Volume control maximum and no signal tuned in.

	Volts
1N5 (RF) TUBE	
Plate (3) to common ground	94
Screen (4) to common ground	102
Filament (2) to (7)	1.4
1A7 TUBE	
Plate (3) to common ground	100
Screen (4) to common ground	62
Anode grid (6) to common ground	100
Filament (2) to (7)	1.4
1N5 (IF) TUBE	
Plate (3) to common ground	95
Screen (4) to common ground	102
Filament (2) to (7)	1.38
1H5 TUBE	
Plate (3) to common ground	38
Filament (2) to (7)	1.4
3Q5 TUBE	
Plate (3) to common ground	98
Screen (4) to common ground	102
Filament (7) to (8)	1.38
Filament (2) to (8)	1.33
117Z6 TUBE	
Plate (3) or (5) to common ground	117.5 (AC)
Cathode (4) or (8) to common ground	128
Filament (2) to (7)	117.5 (AC)

Second I.F. Transformer (Part No. P4420)

Primary—Blue white, plate; red white B+—
Resistance 15.1 ohms.

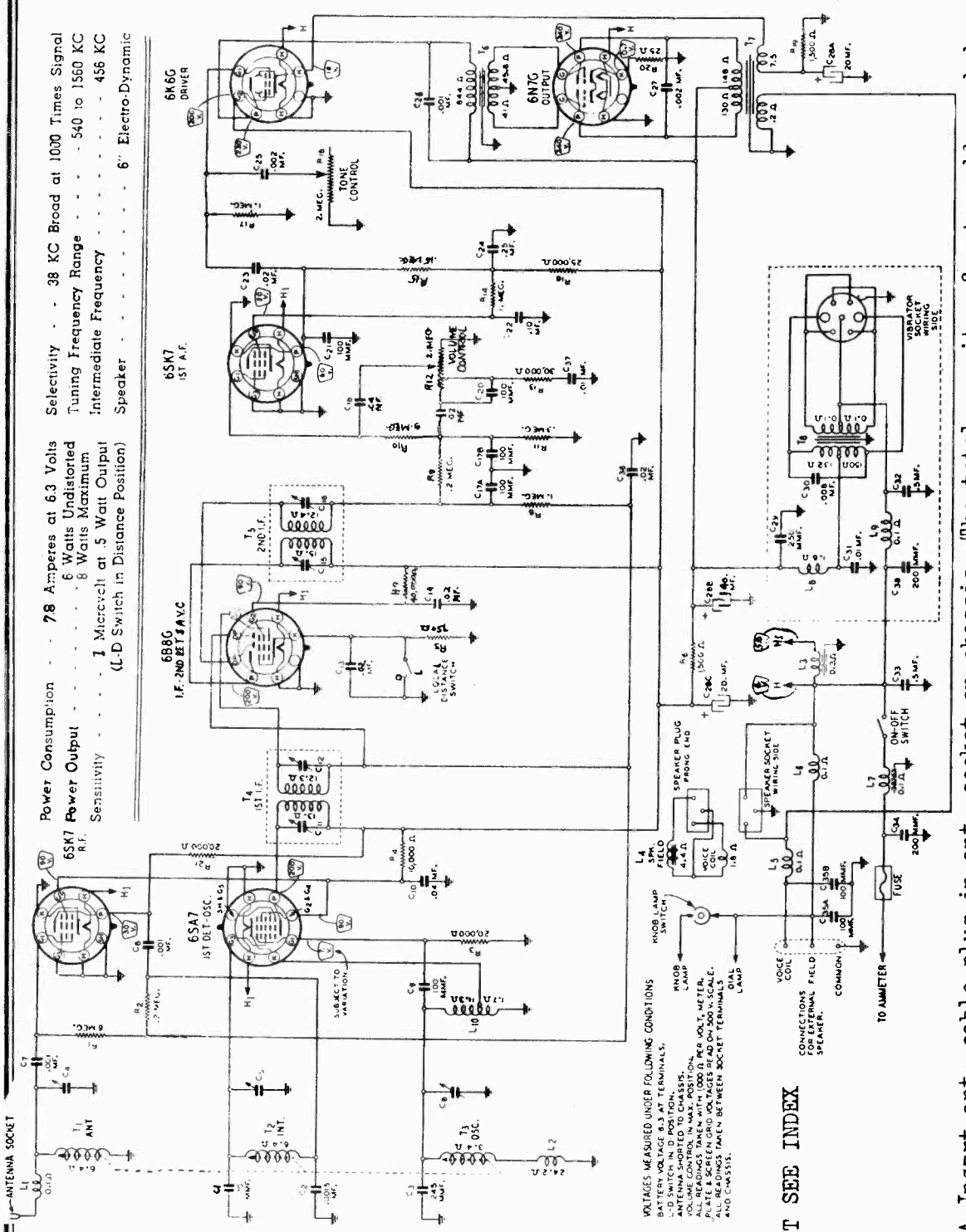
Secondary—White, grid; black white, AVC—
Resistance 11.8 ohms.

Power Change Switch

The power change switch connects the tube filaments in series (9 volt) on AC-DC operation and parallel (1½ volt) on battery operation.

MODELS D1090
D4035

WESTERN AUTO SUPPLY CO.



FOR ALIGNMENT SEE INDEX

Note A-Insert ant. cable plug in ant. socket on chassis. The total capcity of ant. cable and dummy ant. should be 60mmf. If cable, for example, has a capacity of 30mmf; use a 30mmf. cond. for dummy ant. connect other end of ant. cable thru dummy ant. capacity to output of signal generator.
CALIBRATION:-To calibrate radio, tune in a station of known frequency. At back of cont. unit is the calibration screw. Remove dial lamp assembly. Hold tuning knob, insert fine bladed screwdriver and turn until pointer on dial scale is at frequency of station being received.

MODELS D1090,D4035
Issues A,C

WESTERN AUTO SUPPLY CO.

SPECIFICATIONS

Power Consumption - -	7.8 Amperes at 6.3 Volts	Selectivity - -	38 KC Broad at 1000 Times Signal
Power Output - - - -	6 Watts Undistorted 8 Watts Maximum	Tuning Frequency Range - - -	540 to 1560 KC
Sensitivity - - - -	1 Microvolt at .5 Watt Output (L-D Switch in Distance Position)	Intermediate Frequency - - - -	456 KC
		Speaker - - - - - - - - -	6" Electro-Dynamic

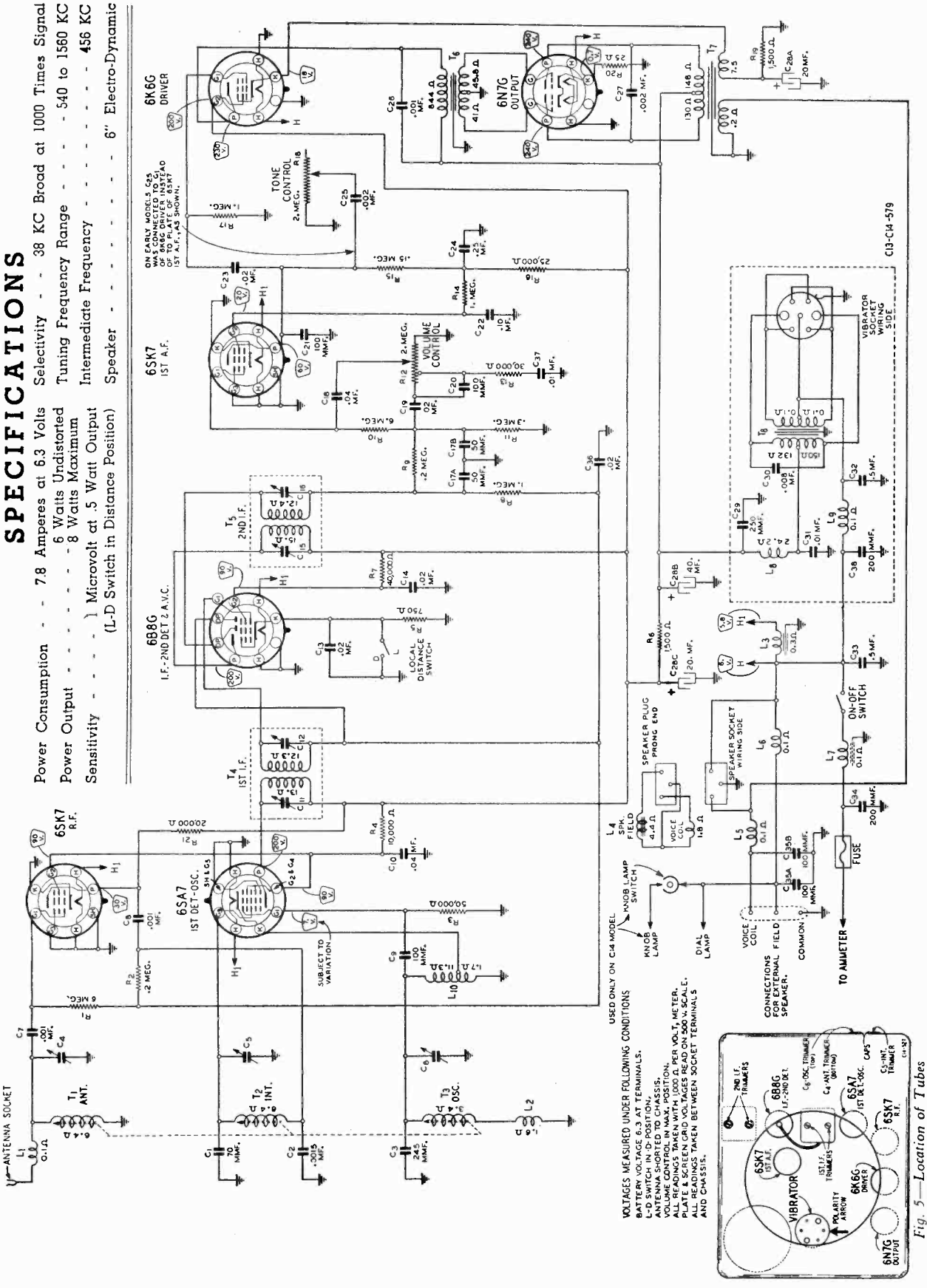
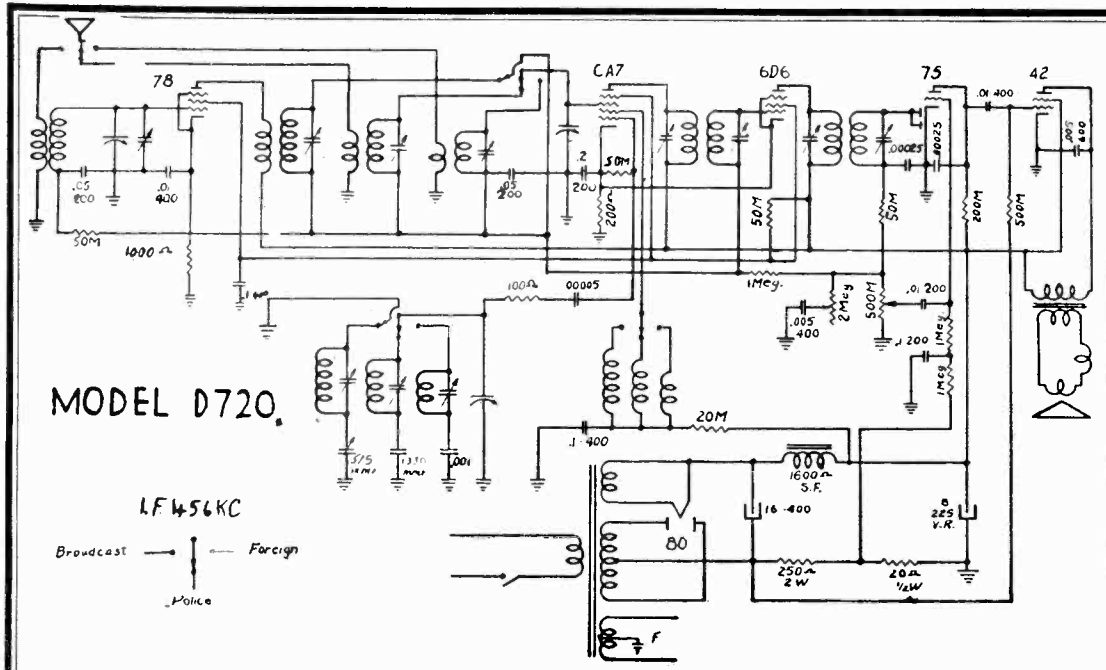
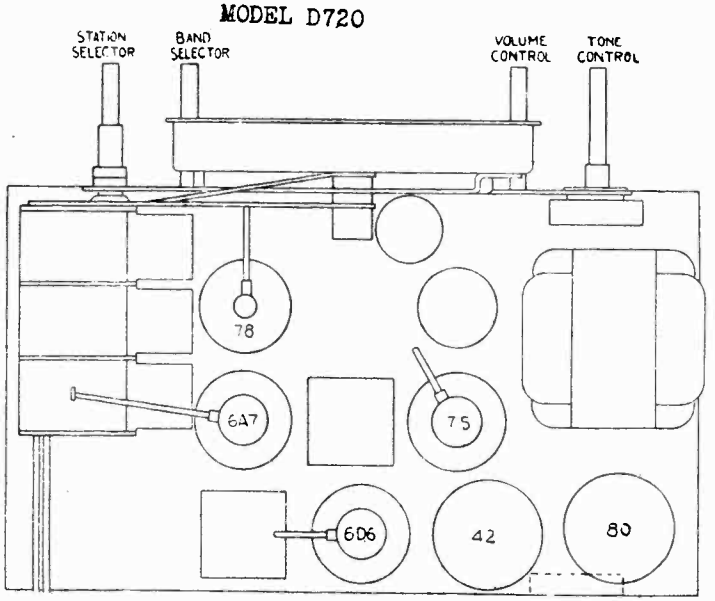


Fig. 5—Location of Tubes and Vibrator





NOTE A—Insert the antenna cable plug in the antenna socket on the chassis. The total capacity of the antenna cable and dummy antenna should be 60 mmf. If the cable, for example, has a capacity of 30 mmf., use a 30 mmf. condenser for a dummy antenna. Connect the other end of the antenna cable through the dummy antenna capacity to the output of the signal generator.

CALIBRATION—To calibrate the radio, tune in a station of known frequency. At the back of the control unit is the calibration screw. Remove the dial lamp assembly. Hold the tuning knob. Insert a fine bladed screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received.

Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antenna—.05 mf., See Note A.

ALIGNMENT FOR MODELS D1090,D4035(A,C)D1191,D4140(A,B),D4240

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	IRON CORE SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.	Control Grid (prong No. 8)		*MODEL D-1191* Extreme Position	1st I.F. (C11) & (C12)
456 KC	6SA7 1st Det. Tube	.05 mf.	out of Coil	2nd I.F. (C15) & (C16)
OSCILLATOR *FOR MODEL D-1191*				
1600 KC	Antenna Cable		Extreme Position	
1560 KC	See Note A	See Note A	out of Coil	Oscillator (C6)
1000 KC ADJUSTMENT				
1400 KC For Model D-4240 & D-1191			Tune to Max. Output	Int. (C5)
1000 KC	Antenna Cable	See Note A	with Tuning Knob	Ant. (C4)

Reassemble Radio—Install in Car—Connect Car Antenna to Radio.

Car Antenna Readjustment—Tune in weak signal near 1000 KC—Readjust Antenna Trimmer C4 for maximum output.
1400 KC for Model D-4240 & D-1191

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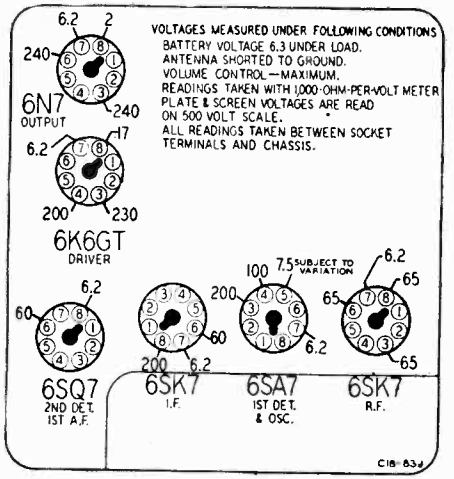
MODELS 1191,D4140,Issue B only



WESTERN AUTO SUPPLY CO.

MODELS D1090,D4035 Issues A,C
MODEL D720
MODELS D1191,D4140 Issues A,B

MODELS D1091, D4040
Issue A

WESTERN AUTO SUPPLY CO.

WG&C SERIES 6C14

SPECIFICATIONS

Power Consumption - -	7.8 Amperes at 6.3 Volts	Selectivity - -	38 KC Broad at 1000 Times Signal
Power Output - - - - - - - -	6 Watts Undistorted	Tuning Frequency Range - - - -	540 to 1560 KC
	8 Watts Maximum	Intermediate Frequency - - - - - - - - - -	456 KC
Sensitivity - - - -	1 Microvolt at .5 Watt Output	Speaker - - - - - - - - - -	6" Electro-Dynamic
	(L-D Switch in Distance Position)		

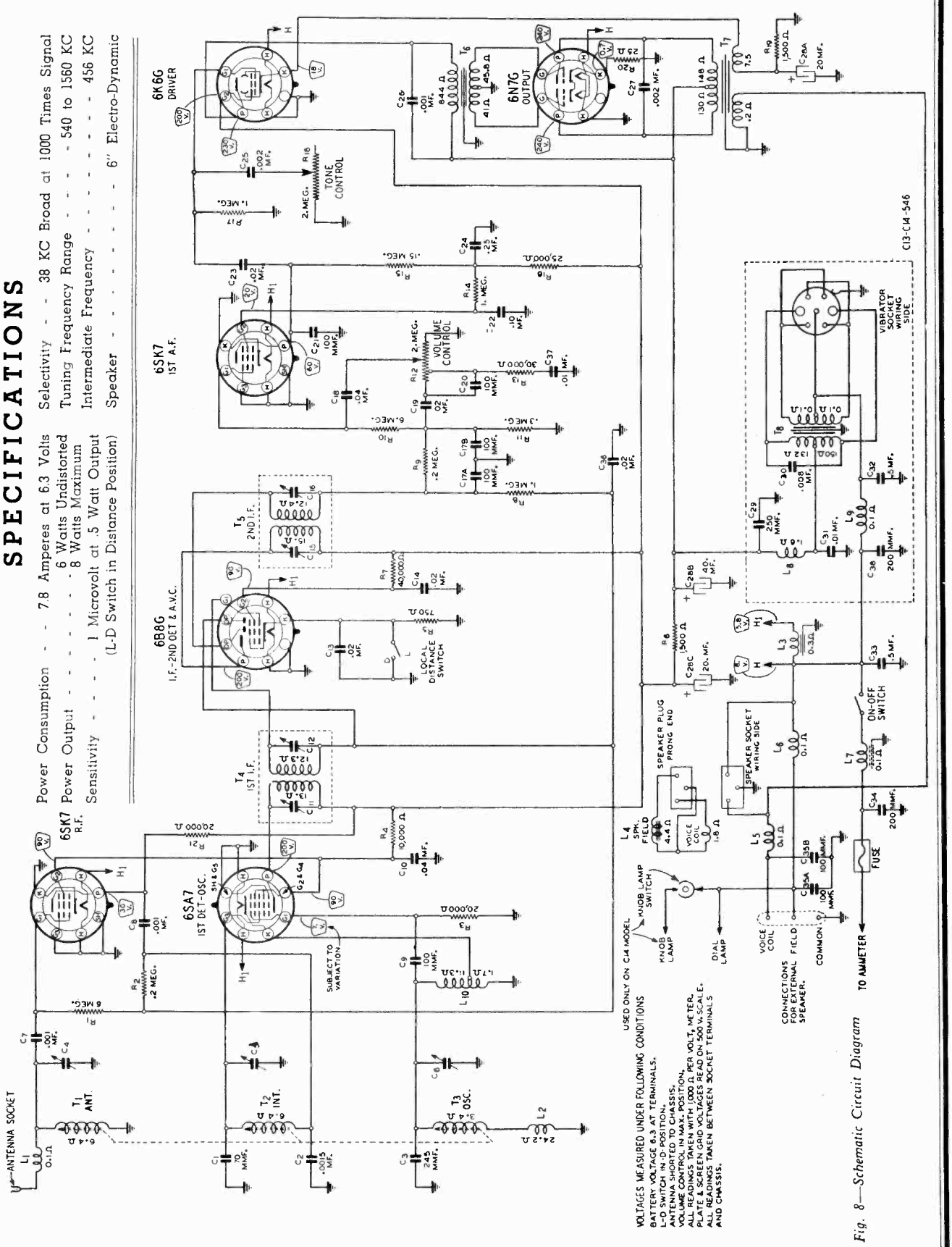


Fig. 8—Schematic Circuit Diagram

WESTERN AUTO SUPPLY CO.

MODELS D1091,D4040
Issue A
MODELS D1145,D1176

Procedure for Setting the Stations

MODELS D1091,D4040

There are 6 positions of the Automatic Station Mechanism. Five of these are Automatic Station positions and one is the Manual Tuning position. A sixth station may be tuned in with the Manual Tuning Knob. If the position of this knob is not disturbed, the sixth station will be automatically tuned in when the Automatic Station Mechanism is in the Manual Tuning position.

The different positions are reached by pushing the Automatic Station Knob firmly and gently all the way in and releasing this knob so that it snaps all the way back. Pushing in the knob once in this manner will advance the mechanism to the next position, twice will move it to the second position, etc.

When the radio is in the Manual Tuning position, the Automatic Station Knob is dark. When it is in any of the 5 station setting positions, the Automatic Station Knob is illuminated.

Five stations may be set for Automatic Tuning. A sixth station may also be automatically tuned in at the Manual Tuning position as explained above.

Make a list of your favorite stations, those which you tune in regularly. There may be any number up to and including 6 in this list.

It is better to list the stations in frequency order.

Any station setting position may be used for any station you can receive although it is better to put the stations on your list in frequency order.

First get the mechanism in the Manual Tuning position. If the Automatic Station Knob is dark, it is already in this position. If the Automatic Station Knob is illuminated, depress this knob one or more times until it is dark.

Select the first station from the list you have made and carefully tune in this station by rotating the Manual Tuning Knob. Determine what program is being broadcast.

Then advance the mechanism to position No. 1 by depressing the Automatic Station Knob once. As shown in Fig. 3, there are 5 small holes in the chassis case through which the station setting screws are reached.

Insert a small bladed screwdriver in the opening for setting screw No. 1 and turn this screw in or out until the desired station (the one previously tuned in) is heard. Turning the screw in (clockwise) will tune in stations with lower kilocycle numbers while turning the screw out (counter-clockwise) will tune in stations with higher kilocycle numbers.

There is a card supplied with the radio on which is a frequency scale. Using the screwdriver as a guide, this scale will show the approximate frequency (kilocycle number) at which the setting screw is set.

Be sure not to tune in some other station broadcasting the same program. Turn the screw slowly back and forth until this station is carefully tuned in to the clearest and loudest point. The final motion of the setting screw should be to the right (clockwise). The station is now set for position No. 1.

Next advance the mechanism to position No. 2 by depressing the Automatic Station Knob once more. Tune in the second station on your list by adjusting setting screw No. 2 as explained above.

If you have difficulty in knowing when this station is tuned in, push the Automatic Tuning Knob 4 times to reach the Manual Tuning position. Then tune in this station with the Manual Tuning Knob, noting the program that is being broadcast. Push in the Automatic Station Knob twice to get the mechanism back into position No. 2 and again tune in this station by carefully adjusting setting screw No. 2 until the station is clearest and loudest.

Proceed in like manner to set any remaining stations on your list.

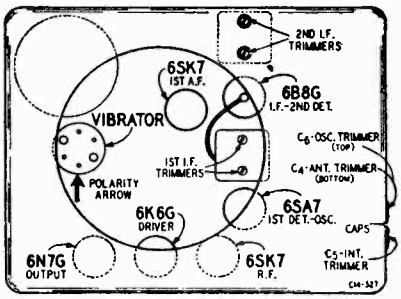


Fig. 5—Location of Tubes and Vibrator

SPECIFICATIONS MODELS D1145,D1176

Power Consumption — 60 Watts (At 117 volts 60 cycles) 80 Watts (Phonograph Operating)

Power Output - - - - - - - 2.5 Watts Undistorted 3.5 Watts Maximum

Selectivity - - 40 KC Broad at 1000 times Signal

Intermediate Frequency - - - - - - 456 KC

Speaker - - - - 6" and 8" Electro-Dynamic

Tuning Frequency Range

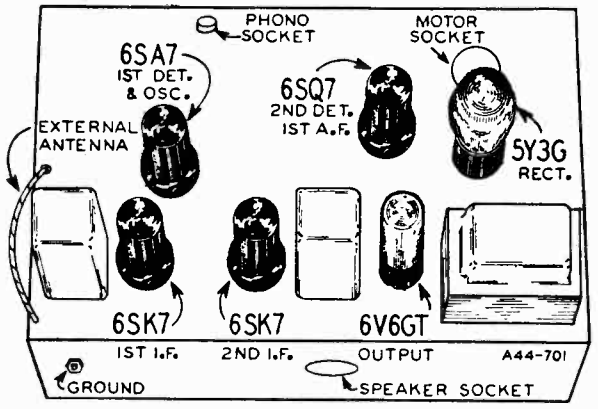
B Range - - - - - - - - - 528 to 1600 KC

D Range - - - - - - - - - 5750 to 18300 KC

Sensitivity —External Antenna—(For 0.5 Watt output)

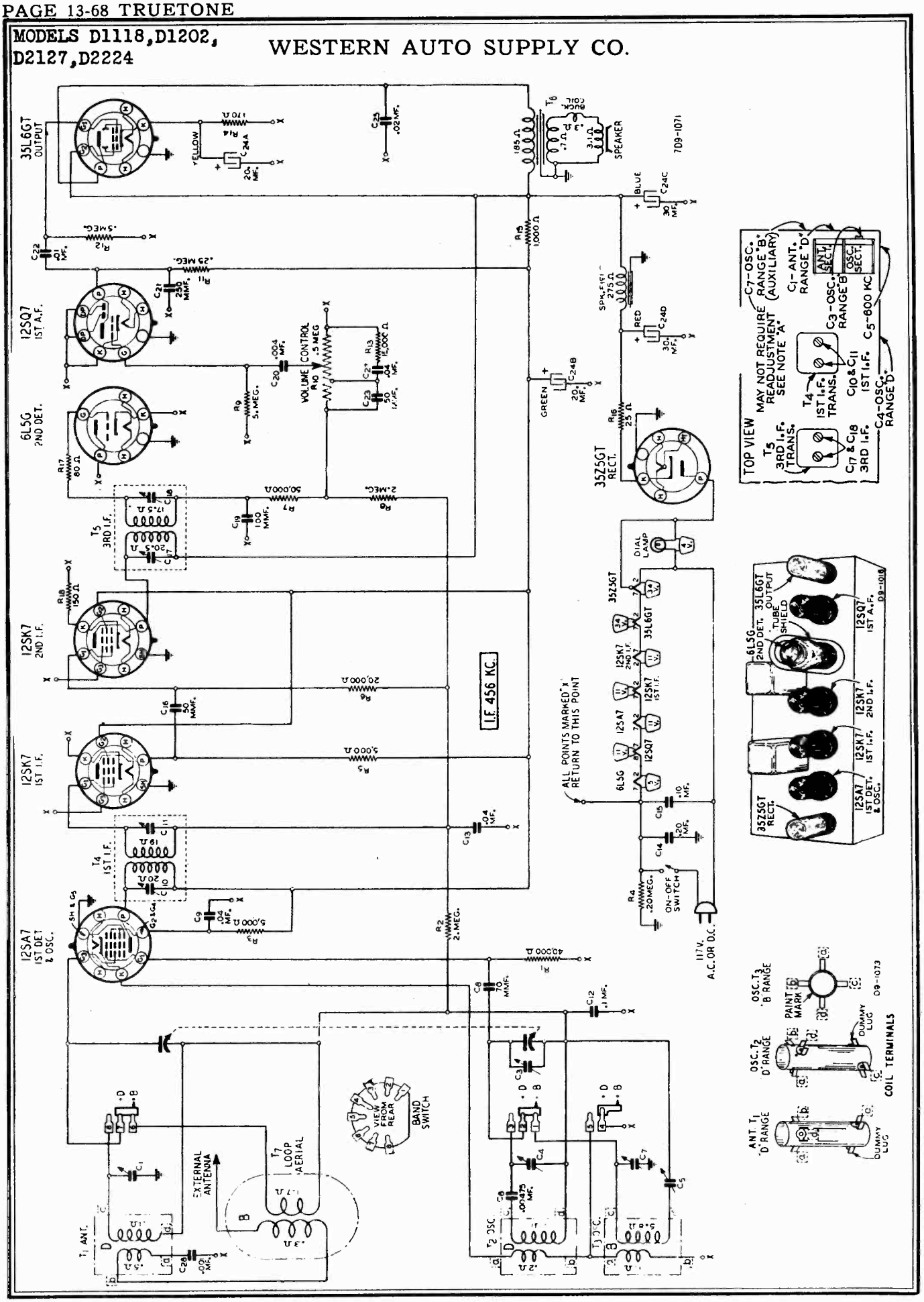
B Range - - - - - - - 4.0 Microvolts Average

D Range - - - - - - - 10 Microvolts Average



MODELS D1118,D1202,
D2127,D2224

WESTERN AUTO SUPPLY CO.



ALIGNMENT PROCEDURE

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						
FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)
I.F. 456 KC	Signal Grid of 1st Det. Connect at Stator of Large Gang Section.	Point "X" { 12SQ7—1st A.F. Prong No. 3 }	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C10) & (C11) 3rd I.F. (C17) & (C18)
RANGE B 1600 KC	Signal Grid of 1st Det.	Point "X"	.1 mf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C3) See Note A
600 KC	External Antenna Clip	Point "X"	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C5) Rock Rotor—See Note C
RANGE D 18,300 KC	External Antenna Clip	Point "X"	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C4)
17,000 KC	External Antenna Clip	Point "X"	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1)

DRIVE CORD REPLACEMENT

Turn gang condenser to full open position. Using a new drive cord 50" in length, attach one end to tension spring. Fasten other end of tension spring to hook on drive pulley. Pass cord through slot in pulley rim and around idler pulleys A, B and C as shown. Wind 2 turns counter-clockwise (from front of chassis) around tuning shaft spool. Turns should progress away from chassis—See illustration.

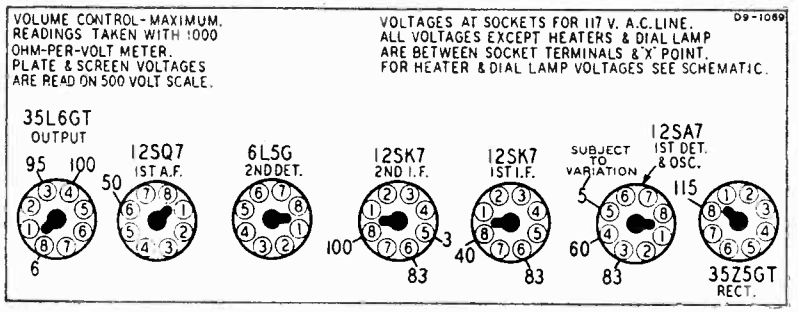
Pass cord through string guide. Wind 1¼ turns counter-clockwise (from front of chassis) around drive pulley. This turn should be on the left side of the pulley rim (from gang end of chassis). Continue cord through slot in pulley rim. Stretch tension spring and tie free end of cord to spring.

After each range is completed, repeat the procedure as a final check.

NOTE A—Adjust Oscillator Range B (C3) trimmer on gang condenser. Oscillator Range B (C7) auxiliary trimmer on side of chassis is adjusted at factory and ordinarily need not be readjusted in the field.

NOTE B—If the pointer is not at 1400 KC on the dial, set pointer at this mark on the dial scale.

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



SPECIFICATIONS

Power Consumption .....28 Watts (At 117 volts AC Supply)

Power Output .....75 Watt Undistorted 1.3 Watts Maximum

Selectivity....49 KC Broad at 1000 times Signal

Intermediate Frequency.....456 KC

Speaker .....5" Electro-Dynamic

Tuning Frequency Range

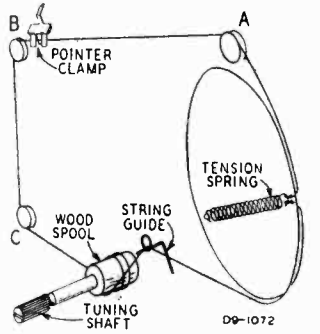
B Range..... 528 to 1600 KC

D Range.....5750 to 18,300 KC

Sensitivity (For .05 watt output)—External Ant.

B Range..... 9 Microvolts Average

D Range.....30 Microvolts Average



MODELS D1118,D1202,D2127,D2224

MODEL D1180

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

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

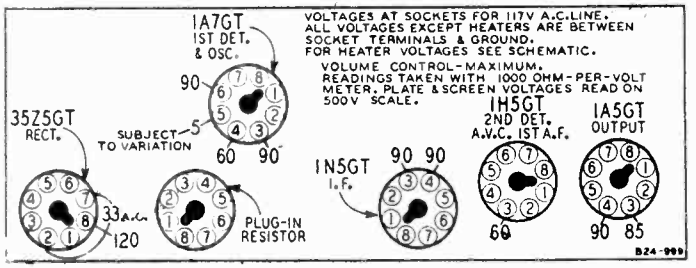
The equipment in column at right is required for aligning:

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

Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antennas—.1 mf., 100 mmf.

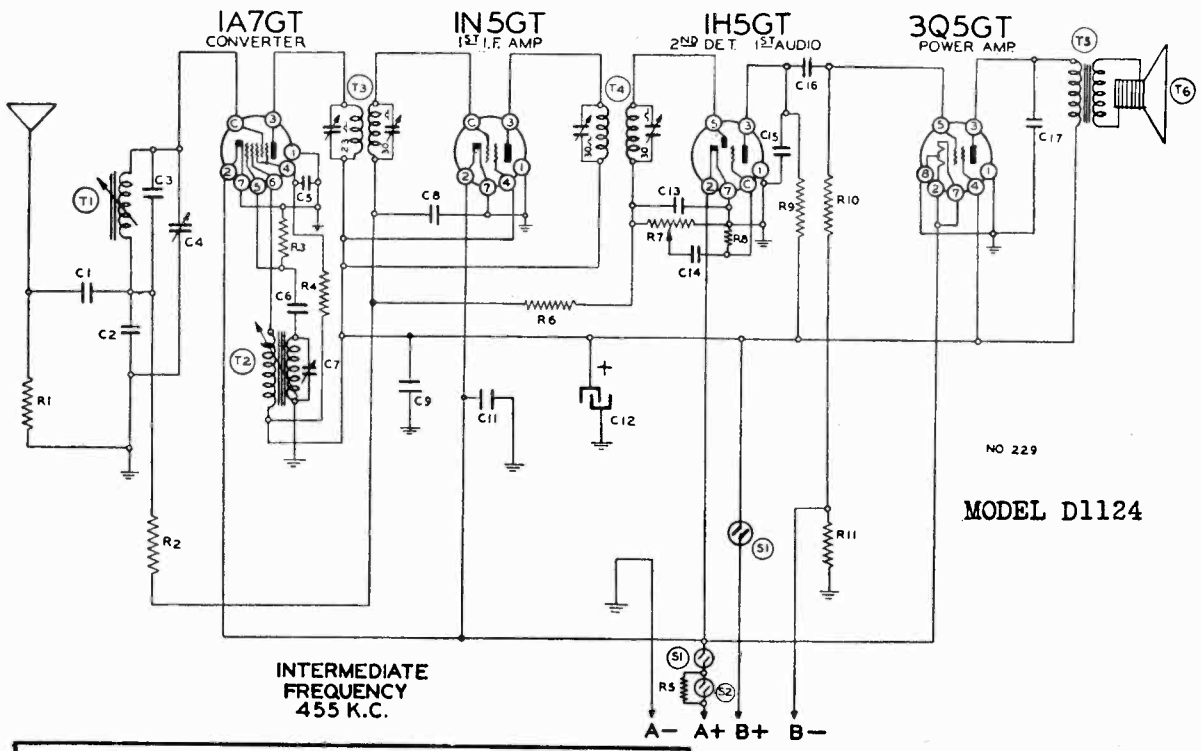
MODEL D1180

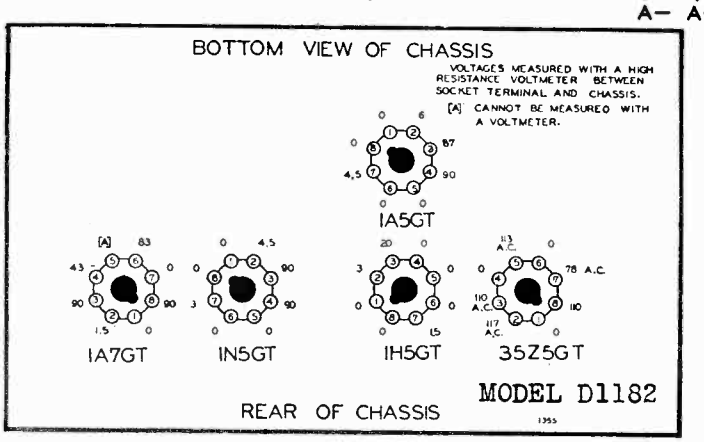


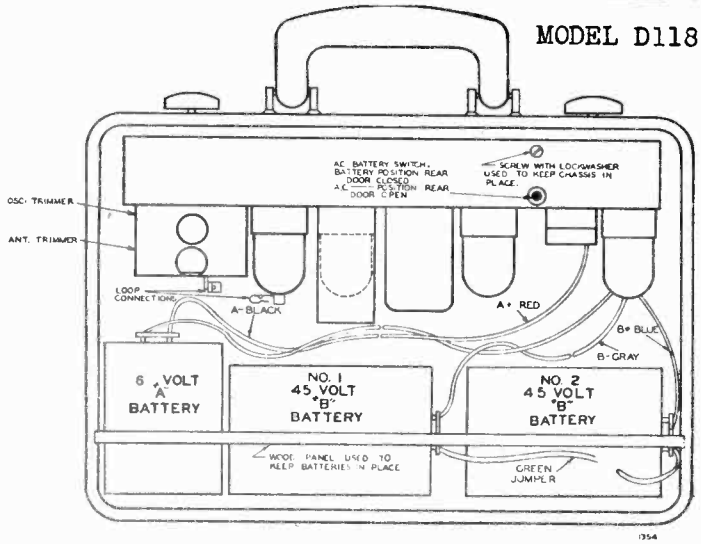
SIGNAL GENERATOR					
FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
Remove chassis from cabinet					
456 KC	Signal Grid of 1st Det. (Top Cap)	Chassis base thru .1 mf. Condenser	.1 mf.	Turn Rotor to full open	1st I.F. (C9) & (C10) 2nd I.F. (C13) & (C14)
1600 KC	Signal Grid of 1st Det.	Same as Above	.1 mf.	Turn Rotor to full open	Oscillator (C1)
Reassemble chassis in cabinet.					
1400 KC	External Antenna Clip	External Ground Clip	100 mmf.	Turn Rotor to max. output	Antenna (C2)

MODEL D1124
MODEL D1182

WESTERN AUTO SUPPLY CO.







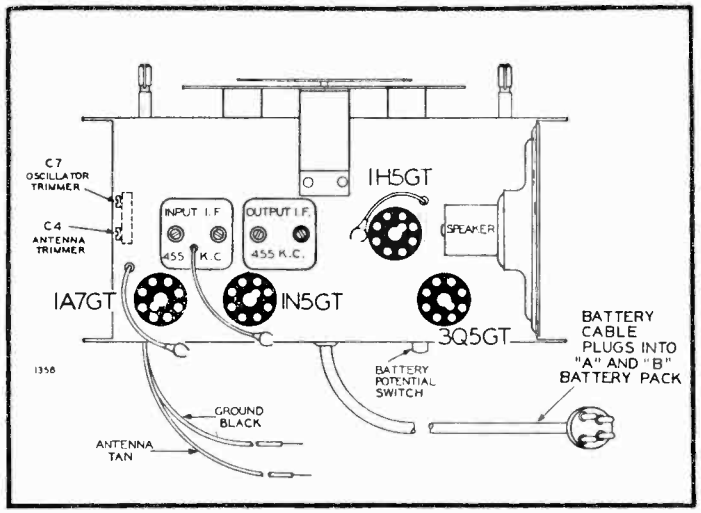
BATTERY CONNECTIONS—When replacing batteries connect cables as shown above.

MODEL D1124

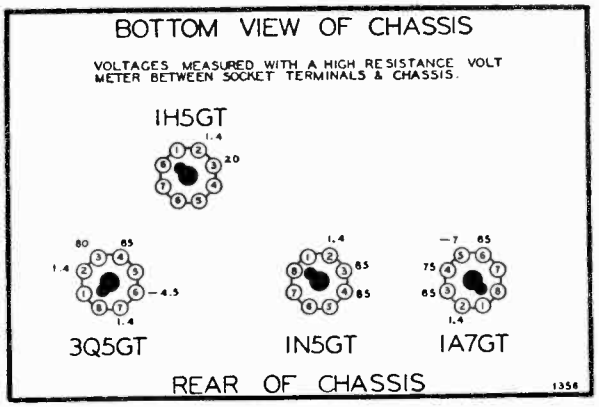
Code No.	Part No.	Description
		RESISTORS
R1	13082	10M ohm—⅓ w.
R2	1304	3 megohm—⅓ w.
R3	1309	200M ohm—⅓ w.
R4	130194	35M ohm—⅓ w.
R5	130346	.56 ohm—⅓ w. wire wound
R6	1304	3 megohm—⅓ w.
R7	101210	1 megohm—volume control and switch—⅓ w.
R8	130257	5 megohm—⅓ w.
R9	13068	1 megohm—⅓ w.
R10	130146	2 megohm—⅓ w.
R11	13079	400 ohm—⅓ w.
		CONDENSERS
C1	129114	.0003 mica
C2	100112	.001 x 200 v.
C3	129177	.000045—ceramicon
C4	124165	Antenna trimmer
C5	10022	.05 x 200 v.—condenser
C6	12912	.00025 mica
C7	124165	Oscillator trimmer
C8	10022	.05 x 200 v. condenser
C9	1006	.25 x 200 v. condenser
C11	10017	.5 x 120 v.
C12	119117	10 mfd. x 150 v. lytic
C13	12940	.0001 mica
C14	10012	.003 x 600 v. condenser
C15	12940	.0001 mica
C16	10026	.02 x 400 v. condenser
C17	1007	.005 x 600 v. C4 and C7 are in same unit.
		PARTS
T1	13613	Antenna coil permeability tuning assem. complete
T2	13613	Oscillator coil permeability tuning assem. complete
T3	108202B	Input I.F. coil 455 Kc.
T4	108153C	Output I.F. coil 455 Kc.
T5	10591C	Output transformer
T6	114213	4" PM speaker
S1		Switch-on volume control
S2	12588B	Battery potential switch

MODEL D1124

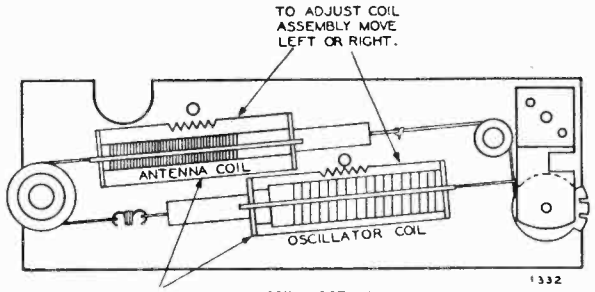
WESTERN AUTO SUPPLY CO.



CHASSIS VIEW



TECHNICAL DATA



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 COIL ASSEMBLY VERY SLOWLY

COIL ASSEMBLY VIEW

Sensitivity for 50 Milliwatt Output:
45 Microvolts Average

Tuning Frequency Range - - - 540 to 1700 KC

Power Consumption - A—.250 Amp. B .014 Amps.
Power Output - - - - 160 Milliwatts Undistorted
Selectivity - 48 KC at 1000 Times Signal at 1000 KC

ALIGNMENT PROCEDURE

The following equipment is required for aligning.

- Dummy antenna .1 mfd. and 200 mmf.
- Volume control—Maximum all adjustments.
- Connect ground lead of radio chassis to ground post of signal generator.

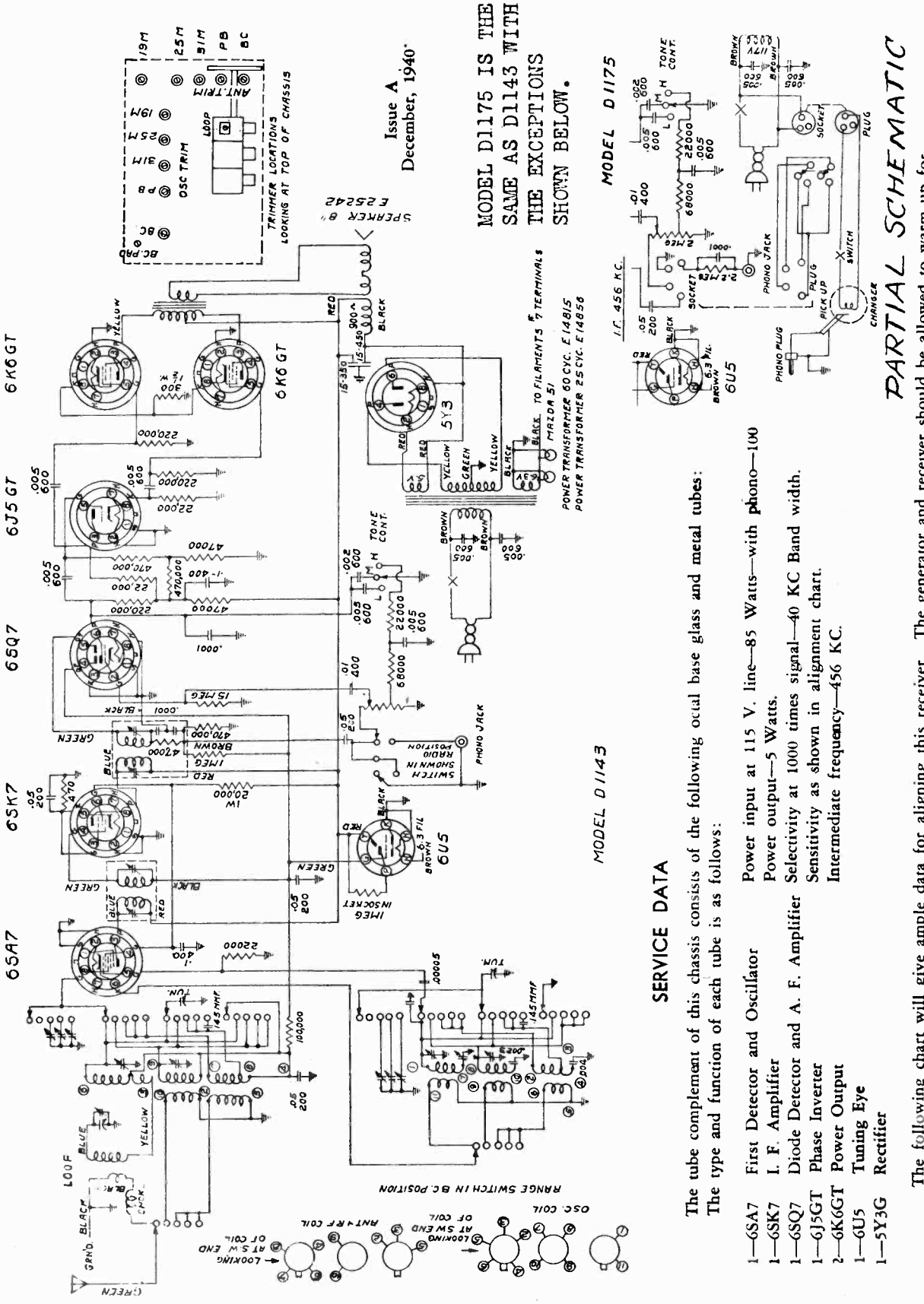
BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Iron Cores (Dial Setting)	Trimmers Adjusted (in Order Shown)	Trimmer Function	Ajustment
455 Kc. I. F.	455 Kc.	.1 MFD.	Connect to Grid of 1A7	Iron Cores All the way out	Two trimmers on top of output I. F. can	Output I. F.	maximum output
	455 Kc.	.1 MFD.	Connect to Grid of 1A7	Iron Cores All the way out	Two trimmers on top of input I. F. can	Input I. F.	maximum output
BROAD-CAST BAND	1700 Kc.	.1 MFD.	Connect to Grid of 1A7	Iron Cores All the way out	Trimmer (C7) (See chassis view)	Oscillator	maximum output
	1700 Kc.	200 MMF.	Connect to Antenna Clip	Iron Cores All the way out	Trimmer (C4) (See chassis view)	Antenna	maximum output
	1400 Kc.	200 MMF.	Connect to Antenna Clip	Turn Dial to 1400 Kc.	Adjust position of antenna coil (See coil assembly view)	Antenna Coil Adjustment	maximum output (See Note "A")
	1700 Kc.	200 MMF.	Connect to Antenna Clip	Turn Dial to 1700 Kc.	Adjust Trimmer (C4) (See chassis view)	Antenna	Check for tracking (See Note "B")

NOTE "A"—The antenna coil assembly is made so that it is movable. 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.

NOTE "B"—After the antenna coil has been tracked at 1400 Kc. it is necessary to check the antenna trimmer (C4) adjustment again at 1700 Kc. If no appreciable change in trimmer adjustment is made the coil is in track, if the trimmer requires considerable change it will be necessary to again adjust the position of the antenna coil at 1400 Kc. These two adjustments should be tried several times until no change of trimmer adjustment is required at 1700 Kc.

MODEL D1143, Issue A
MODEL D1175

WESTERN AUTO SUPPLY CO.



SERVICE DATA

The tube complement of this chassis consists of the following octal base glass and metal tubes:
The type and function of each tube is as follows:

1—6SA7	First Detector and Oscillator	Power input at 115 V. line—85 Watts—with phono—100
1—6SK7	I. F. Amplifier	Power output—5 Watts.
1—6SQ7	Diode Detector and A. F. Amplifier	Selectivity at 1000 times signal—40 KC Band width.
1—6J5GT	Phase Inverter	Sensitivity as shown in alignment chart.
2—6K6GT	Power Output	Intermediate frequency—456 KC.
1—6U5	Tuning Eye	
1—5Y3G	Rectifier	

PARTIAL SCHEMATIC

The following chart will give ample data for aligning this receiver. The generator and receiver should be allowed to warm up for several minutes. An accurately calibrated generator should be used and dummy antennas of 200 MMF, 400 Ohms and .1 MFD should be available as well as an output indicating device. The volume control setting is maximum and sensitivities given are for .5 Watt output.

SEE CIRCUIT DIAGRAM FOR TRIMMER LOCATIONS

Generator	Connection at Radio	Dummy Antenna	Range Switch	Dial	Trimmers to Tune	Sensitivity	Remarks
I. F. 456 K.C.	Center Stator of Variable	.1 MFD.	A	H. F. End	I. F. Transformers	65—70MV.	Tune to Max.
B. C. 1725 K.C.	Antenna	200 MMF.	A	H. F. Limit of Travel	B. C. Oscillator		Set Band Limit
1400 K.C.	Antenna	200 MMF.	A	1400	B. C. Antenna and Loop	5-10 MV.	See Note A
600 K.C.	Antenna	200 MMF.	A	Rock Rotor	Padder	10-15 MV.	
P.B. 6.0 M.C.	Antenna	400 Ohm	B	6.0 M. C.	P. B. Osc. P. B. Ant.	25 MV.	See Note B
2.2 M. C.	Antenna	400 Ohm	B	2.2 M. C.	Check	40 MV.	See Note B
31M. 9.6 M.C.	Antenna	400 Ohm	C	9.6 M. C.	31M. Ant. 31M. Osc.	25 MV.	See Note B
25M. 11.6 M.C.	Antenna	400 Ohm	D	11.6 M. C.	25M. Ant. 25M. Osc.	30 MV.	See Note B
19M. 15.2 M.C.	Antenna	400 Ohm	E	15.2 M. C.	19M Ant. 19M. Osc.	40 MV.	See Note B

MODELS D1143 and D1175

Note "A"-If the pointer is not at 1400 KC with a 1400KC sig. it may be loosen from the dial cord and moved to correct the calibration.This should be checked across the band to arrive at the optimum condition.

Note "B"-Care should be taken not to align on image frequency.This may be checked by rotating the dial of sig. gen. Another sig. should be heard at dial frequency plus 912 KC.This sig. should be checked carefully on all short wave bands, making sure the lowest frequency sig. agrees with dial setting in frequency and that it is the strongest of the two.

ALIGNMENT PROCEDURE

- 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.
- 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 antennas—.1 mf., 175 mmf.

MODEL DE3000

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7G I.F. Tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6A8G	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Input I. F.	Adjust to maximum output
BROADCAST BAND	1550 ~~1725~~ Kc.	175 ~~200~~ mmf.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Top of Middle section of gang (See Fig. 2)	Oscillator	Adjust to maximum output
	1400 Kc.	175 ~~200~~ mmf.	Antenna lead	Set dial at 1400 Kc.	Trimmers—Top of front and rear section of gang (See Fig. 2)	Antenna and R. F.	Adjust to maximum output
	600 Kc.	175 ~~200~~ mmf.	Antenna lead	Set dial at 600 Kc.	B.C. Series Pad (See Fig. 2)	Oscillator series pad	Adjust to maximum rock dial. (See note "A")

NOTE "A" Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained. Trimmer is located on top of chassis along side of gang.

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each band is completed, repeat the procedure as a final check.

Do not bend plates of variable condenser to correct tracking.

FREQUENCY RANGE
530 to 1550 Kc.

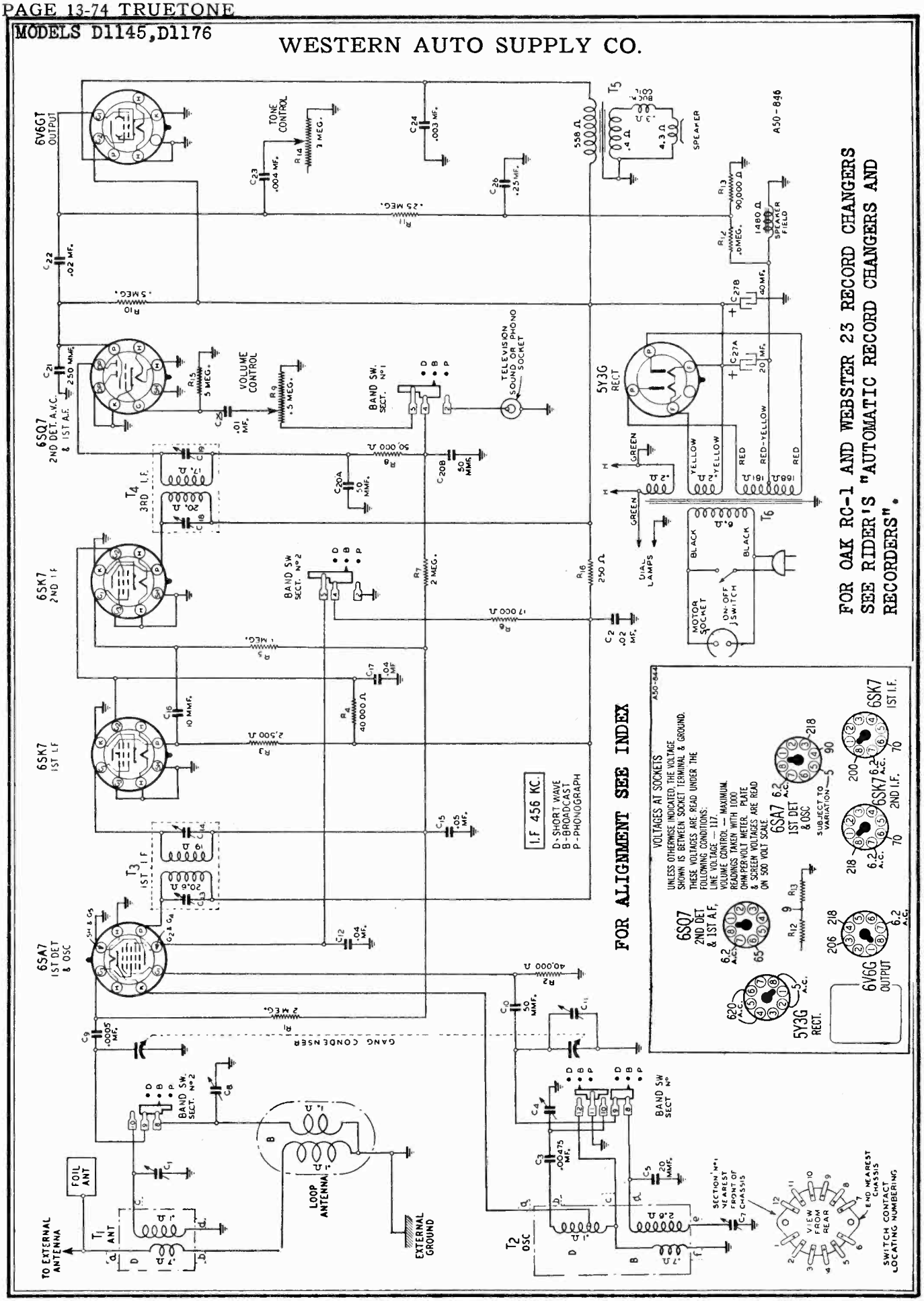
Power Output ..... 2 Watts Undistorted, 3.5 Watts Maximum

Intermediate Frequency ..... 465 KC.

Power Consumption ..... 6 Amperes at 6.3 Volts

MODELS D1145, D1176

WESTERN AUTO SUPPLY CO.



VOLTAGE CHART

All voltages measured with a 1,000 ohm per volt meter on the 150 volt scale. Line voltage 117 volts A.C. Volume control maximum and no signal tuned in. Power consumption 30 watts, radio only, with changer 48 watts.

12SA7 TUBE

	Volts
Plate (3) to ground	93
Screen (4) to ground	95

12SK7 TUBE

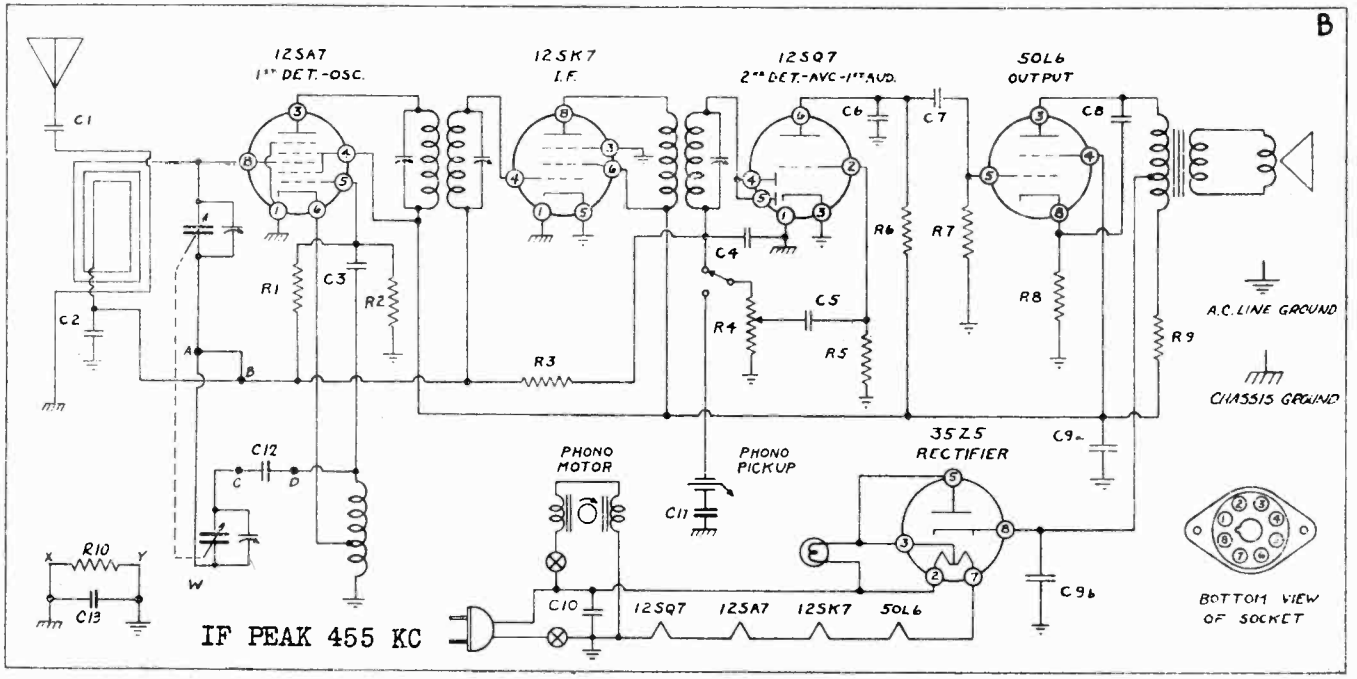
Plate (8) to ground	93
Screen (6) to ground	95

50L6 TUBE

Plate (3) to ground	118
Screen (4) to ground	95
Cathode (8) to ground	5.5

35Z5 TUBE

Filament (8) to ground	122



In model M5-PH only, connect points w, x, and y together. R10 and C13 are not used. Also C12 is not used, and point C connects to D. Disconnect points A and B.

RESISTORS

No.	Ohms	Watts	No.	Ohms	Watts
R1	10,000,000	¼	R6	250,000	¼
R2	25,000	¼	R7	500,000	¼
R3	2,000,000	¼	R8	150-10%	¼
R4	500,000	V.C.	R9	1,000	½
R5	5,000,000	¼	R10	150,000	½

CONDENSERS

No.	Capacity (Mfd.)	Volts	No.	Capacity (Mfd.)	Volts
C1	.001	600	C8	.02	400
C2	.05	200	C9a	50. Elect.	150
C3	.00005	Mica	C9b	30. Elect.	150
C4	.00025	Mica	C10	.05	400
C5	.005	600	C11	.2	400
C6	.0005	Mica	C12	.02	400
C7	.01	400	C13	.16	200

MODEL D1171, Issue B

WESTERN AUTO SUPPLY CO.

SERVICE INFORMATION

Speaker (Part No. P4792) 5" PM Type.

D.C. voice coil resistance.....3.5 ohms
Voice coil impedance at 400 cycles.....3.8 ohms

Oscillator Coil (Part No. P4780) Used in M5-PH only.

Looking at the connection end in a clockwise direction starting at the chassis the terminals are No. 1, end of winding; No. 2, start of winding; No. 3, tap.

No. 2 and No. 1—Resistance 4.9 ohms.
No. 3 and No. 1—Resistance 4.3 ohms.

Oscillator Coil (Part No. P4941) XM5-PH only

Looking at the connection end in a clockwise direction, starting at the chassis, the terminals are No. 1, tap; No. 2, dummy; No. 3, end; No. 4, start.

No. 4 and No. 3—Resistance.....4.8 ohms
No. 1 and No. 3—Resistance.....4.3 ohms

First I.F. Transformer (Part No. P3923)

Primary—Blue, plate; red, B+ Resistance.....20.4 ohms
Secondary—White, grid; Black, AVC Resistance.....20.3 ohms

Second I.F. Transformer (Part No. P3924)

Primary—Blue, plate; red B+ Resistance.....22.2 ohms
Secondary—White, diode; black, AVC Resistance.....22.1 ohms

POWER SUPPLY

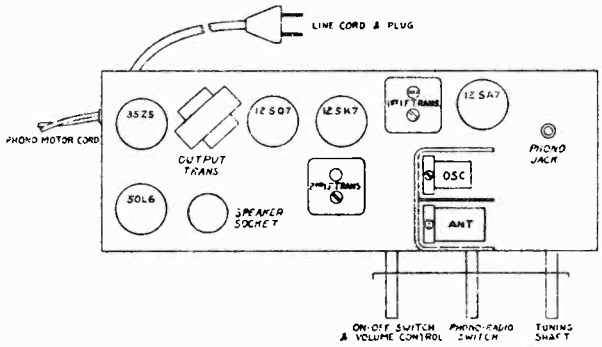
This receiver is designed to operate from a power supply main of 110-120 volts, 60 cycle alternating current (A.C.). Never plug in a D.C. outlet.

ISSUE B

APRIL, 1941

FOR RADIO PRODUCTS RC-50 RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

–Top View



ALIGNMENT PROCEDURE

- 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.
- 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 antennas—.1 mfd., 200 mmf.

BAND	SIGNAL GENERATOR Frequency Setting	SIGNAL GENERATOR Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 KC.	.1 Mfd.	Grid of 12SK7 I.F. tube	Rotor full open (Plates out of mesh)	One trimmer on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	455 KC.	.1 Mfd.	Grid of 12SA7 tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
BROAD-CAST	1,630 KC.	200 Mmf.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Top of gang	Oscillator	Adjust to maximum output
	1,400 KC.	200 Mmf.	Antenna lead	Set dial at 1400 KC.	Trimmer—Top of gang	Broadcast Antenna	Adjust to maximum output

Frequency Range—535 to 1630 K.C.

Attenuate the signal from the signal generator to prevent the leveling-off action of the A.V.C.

Power output 1.3 watts undistorted—2.0 watts maximum.

Intermediate Frequency 455 K.C.

Total Power Consumption—48 watts.

MODELS D1172, D2149,
Issue A

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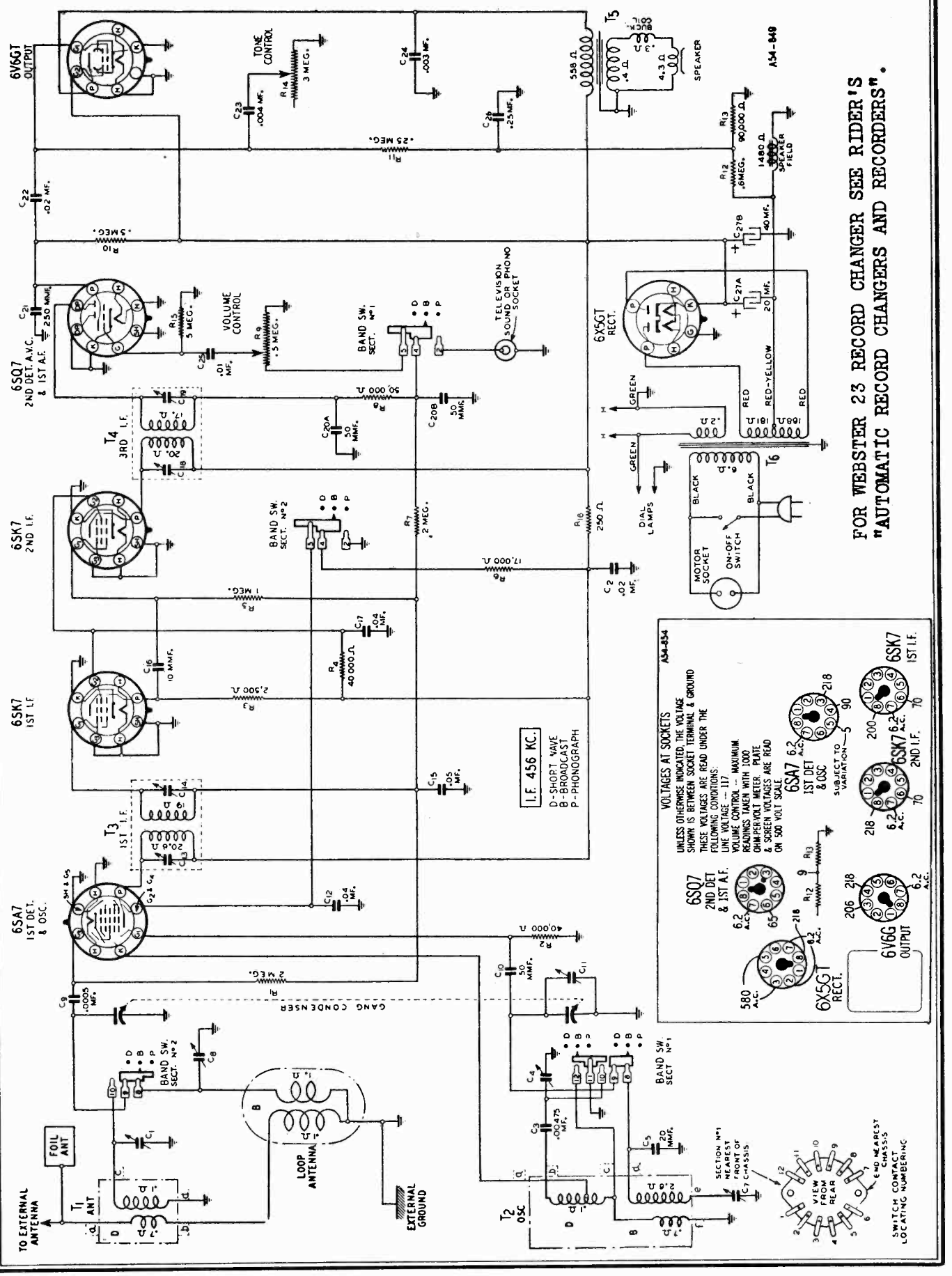


MODELS D1172,D2149
Issue A
MODELS D1145,D1176

WESTERN AUTO SUPPLY CO.

ALIGNMENT PROCEDURE FOR MODELS D1172,D2149,D1145,D1176

Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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

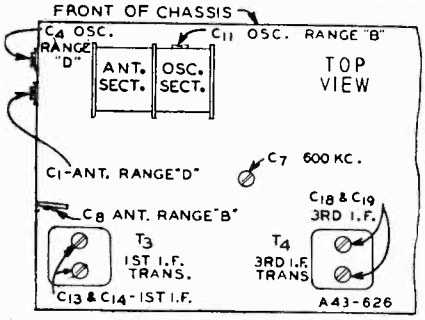
The following equipment is required for aligning:

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 Antennas—.1 mf., 100 mmf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.					
456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C13) & (C14) 3rd I.F. (C18) & (C19)
RANGE B					
1600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C11)
1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC—See Note A	Ant. Range B (C8)
600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C7) Rock Rotor—See Note B
RANGE D					
18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C4)
17,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Rock Rotor—See Note B
LOOP RANGE B					
1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C8)



Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

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

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial It may be necessary to increase the input signal to hear the image.

DRIVE CORD REPLACEMENT

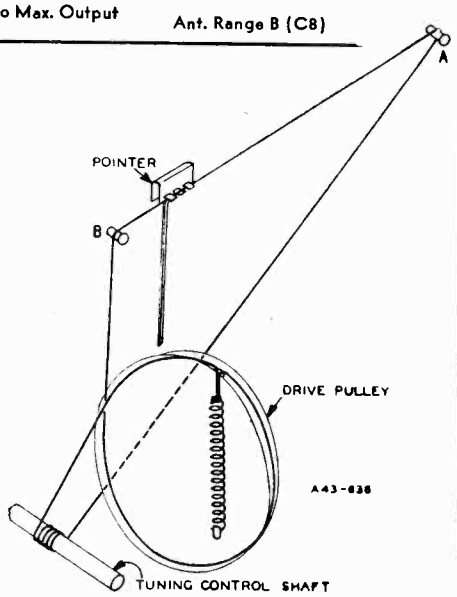
Turn gang condenser to full open position—See illustration. Use a new drive cord 42 inches in length.

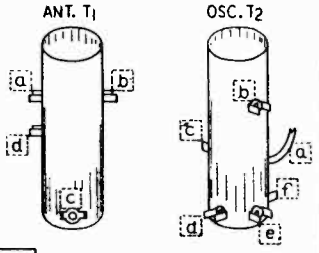
Tie one end of cord to tension spring. Pass other end of cord up through hole in groove of drive pulley. Pull cord through hole until spring is flush against inside of pulley rim.

Wind cord ¼ turn counter-clockwise (from pulley side of chassis) around drive pulley. Then wind 4½ turns clockwise (from front of chassis) around tuning control shaft. These turns should progress toward chassis. Pass cord over idler studs A and B as shown, then wind cord ¾ turn counter-clockwise (from pulley side of chassis) around drive pulley. This turn should be on left side (from front of chassis) of pulley groove.

Pass cord through hole in groove of drive pulley. Tie cord to tension spring. Fasten other end of spring to hook on drive pulley.

DIAL POINTER ATTACHMENT—Tune in a signal of known frequency. Set pointer at this frequency mark on dial scale. Fasten pointer to drive cord—See illustration.





Power Consumption 60 Watts (At 117 volts 60 cycles) 80 Watts (Phonograph Operating)

Power Output - - - - - - 2.5 Watts Undistorted 3.5 Watts Maximum

Selectivity - - 40 KC Broad at 1000 times Signal

Intermediate Frequency - - - - - - 456 KC

Speaker - - - - 6" and 8" Electro-Dynamic

Tuning Frequency Range

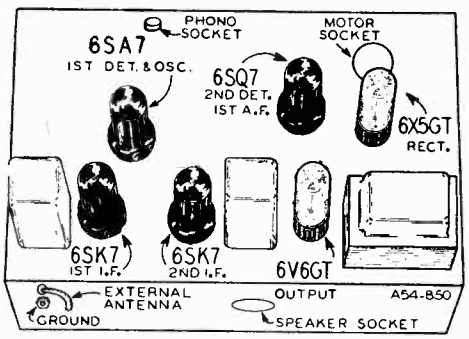
B Range - - - - - - - - - 528 to 1600 KC

D Range - - - - - - - - - 5750 to 18300 KC

Sensitivity —External Antenna—(For 0.5 Watt output)

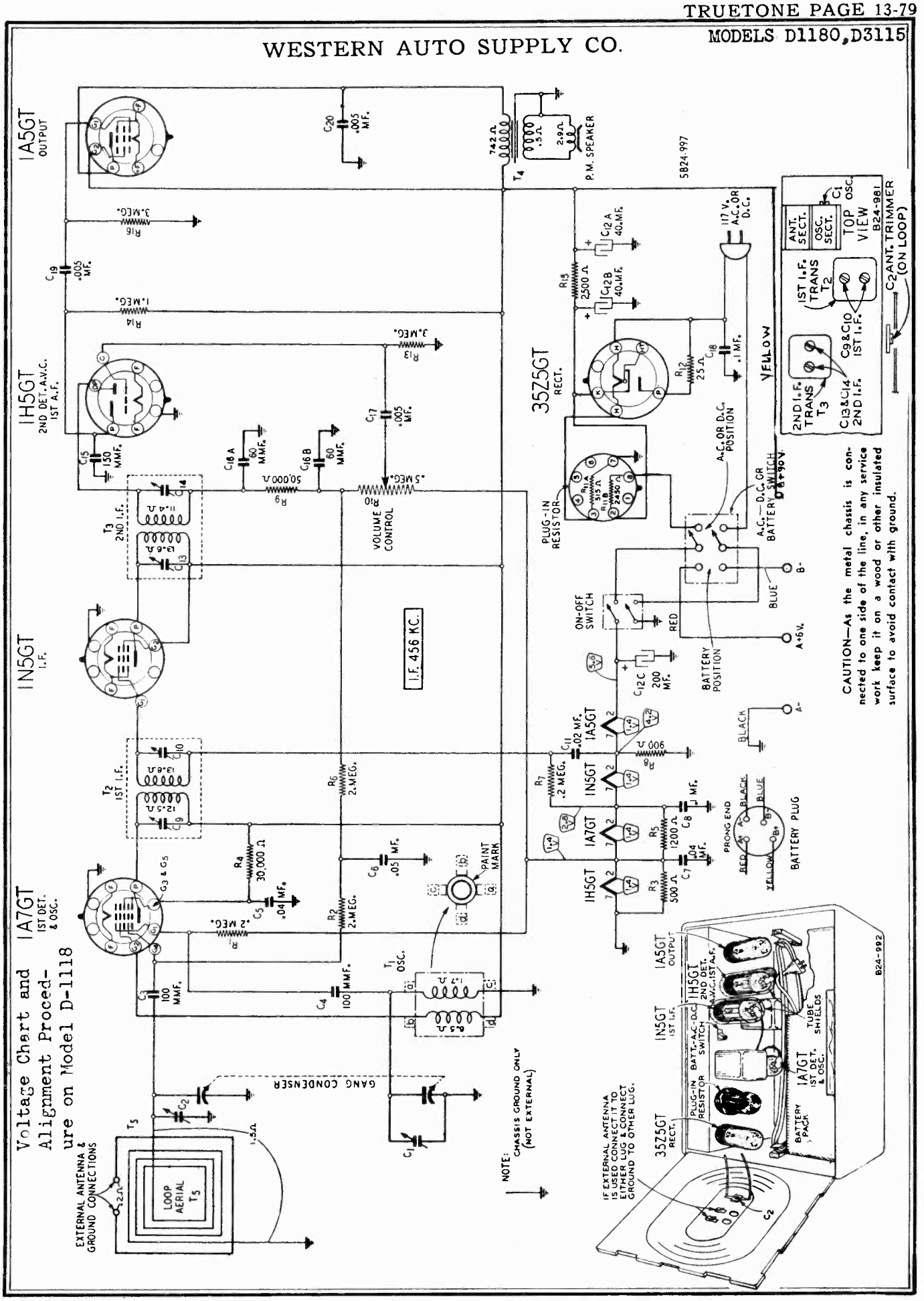
B Range - - - - - - - 4.0 Microvolts Average

D Range - - - - - - - 10 Microvolts Average



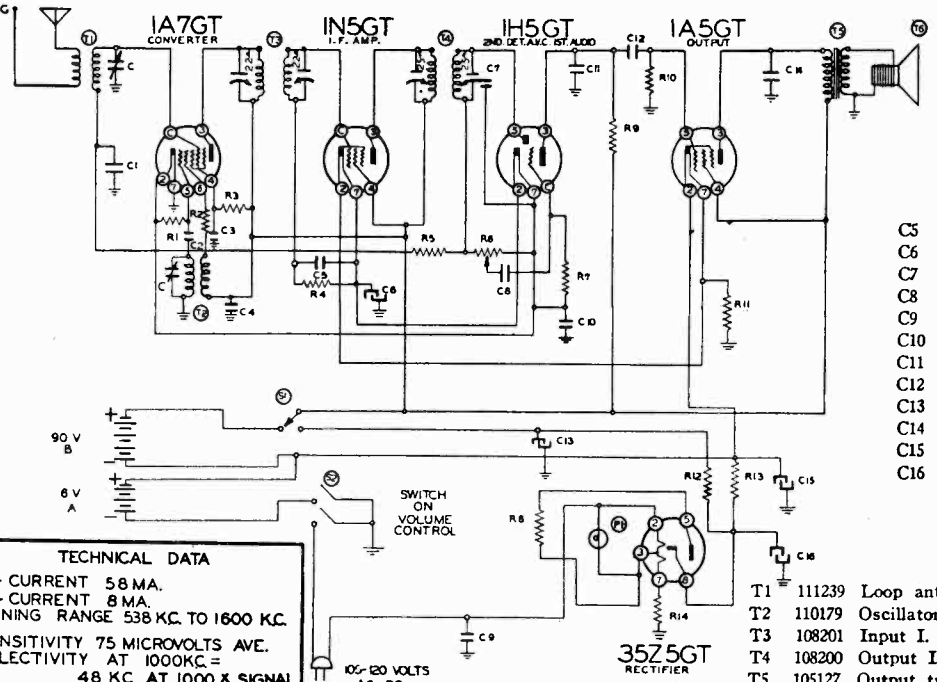
WESTERN AUTO SUPPLY CO.

MODELS D1180, D3115



CAUTION—As the metal chassis is connected to one side of the line, in any service work keep it on a wood or other insulated surface to avoid contact with ground.

Voltage Chart and Alignment Procedure on Model D-1118



TECHNICAL DATA

A – CURRENT 58 MA.
B – CURRENT 8 MA.
TUNING RANGE 538 KC. TO 1600 KC.
SENSITIVITY 75 MICROVOLTS AVE.
SELECTIVITY AT 1000KC. = 48 K.C. AT 1000 X SIGNAL
OUTPUT 180MW UNDISTORTED 3 OHM VOICE COIL
I.F 455 K.C.

CONDENSERS

C	102141	Gang condenser
C1	1009	.05 x 200 v. condenser
C2	1295	.0001 mica
C3	100128	.05 x 120 v. condenser
C4	100135	.25 x 120 v. condenser
C5	100127	.01 x 120 v. condenser
C6	119123	20.0 mfd.—50 w. v. Lytic
C7		Approximately 100 mfd. in I.F. can
C8	100134	.006 x 120 v. condenser
C9	10013	.05 x 400 v. condenser
C10	100133	.1 x 120 v. condenser
C11	1295	.0001 mica
C12	100127	.01 x 120 v. condenser
C13	119123	40.0 mfd.—150 w. v. Lytic
C14	10025	.002 x 600 v. condenser
C15	119123	200.0 mfd.—10 w. v. Lytic
C16	119123	40.0 mfd.—150 w. v. Lytic

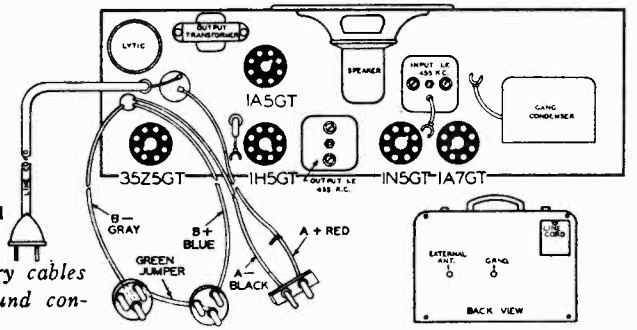
C6, C13, C15 and C16 are in one unit

RESISTORS

Code No.	Part No.	Description
R1	1309	200M ohm—½ w.
R2	130193	3M ohm—½ w.
R3	130305	65M ohm—½ w.
R4	130225	15 megohm—½ w.
R5	1304	3 megohm—½ w.
R6	101252	1 megohm—Volume control
R7	130223	10 megohm—½ w.
R8	130197	20 ohm—½ w.
R9	13019	1 megohm—½ w.
R10	1304	3 megohm—½ w.
R11	130345	1M ohm—½ w.
R12	130129	2500 ohm—½ w.
R13	130344	1975 ohm—6 watt
R14	130343	545 ohm—14 watt

PARTS

T1	111239	Loop antenna assembly
T2	110179	Oscillator coil
T3	108201	Input I. F. coil
T4	108200	Output I. F. coil
T5	105127	Output transformer
T6	114241	Speaker 5" P.M.
S1	125153	A. C. Battery switch
S2	101252	Switch on Volume control
P1	107362	Pilot Lite bulb—T47



CHASSIS VIEW showing tube location and battery cables —INSET back view, shows external ant. and ground connections.

ALIGNMENT PROCEDURE

The following equipment is required for aligning.

- Dummy antenna .1 mfd. and 200 mmf.
- Volume control—Maximum all adjustments.
- Connect ground lead of radio chassis to ground post of signal generator.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Iron Cores (Dial Setting)	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
455 Kc. I. F.	455 Kc.	.1 MFD.	Connect to Grid of 1A7	Rotor full open (Plates out of mesh)	Trimmers on top of I. F. cans	Output and input I. F.	maximum output (See Note "A")
BROAD-CAST BAND	1600 Kc.	.1 MFD.	Connect to Grid of 1A7	Rotor full open (Plates out of mesh)	Trimmer on gang (See chassis view)	Oscillator	maximum output (See Note "A")
	1400 Kc.	200 MMF.	Connect to Antenna Clip	Set dial at 1400 Kc.	Trimmer on gang (See chassis view)	Antenna	maximum output (See Note "B")

NOTE "A"—The loop antenna need not be connected to the radio when making these adjustments, but a 1. Meg. Resistor must be substituted across the loop clips. The ground of the signal generator is connected to the chassis and the other lead from the signal generator in series with .1 MFD. dummy to the grid of the 1A7GT tube.

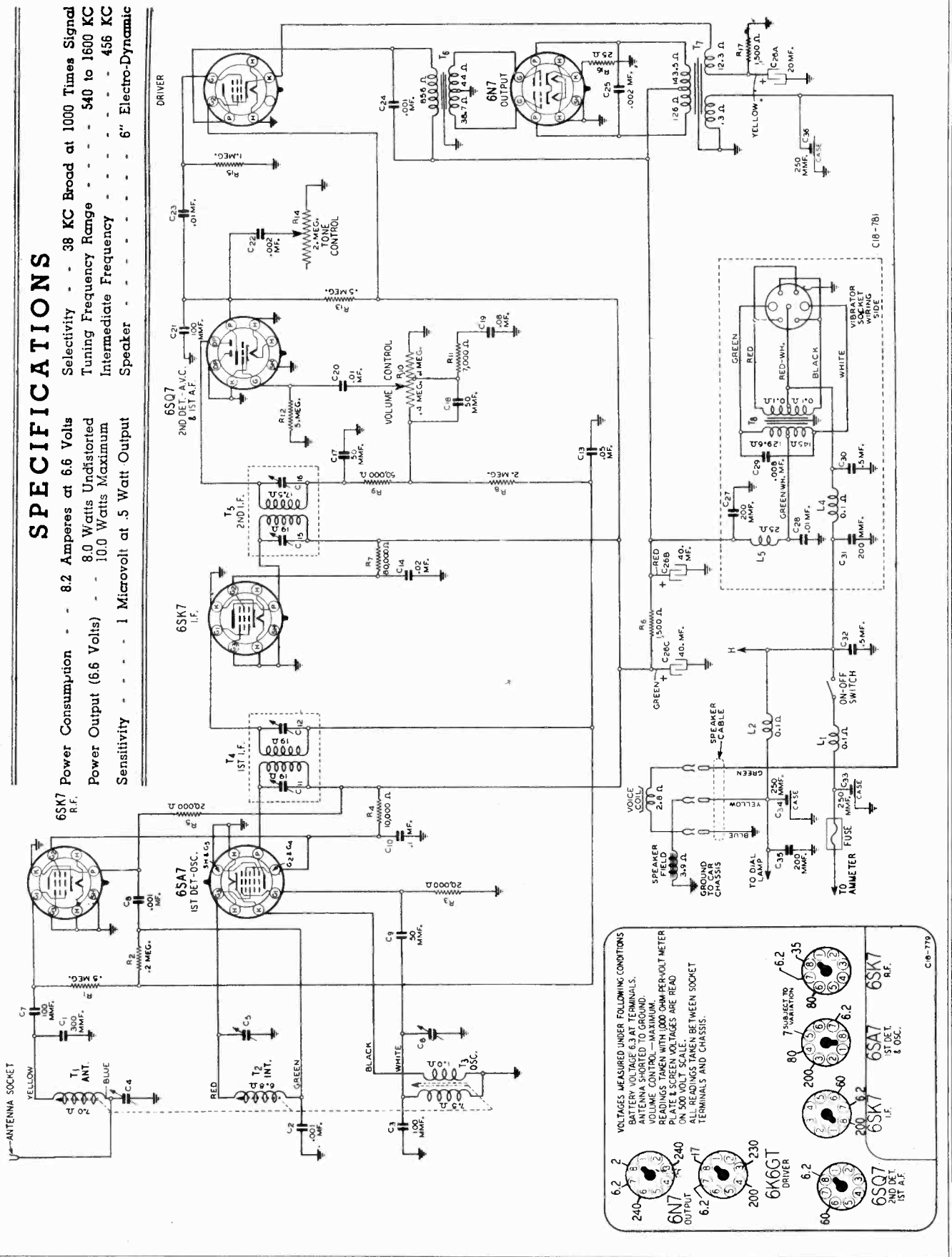
NOTE "B"—This adjustment should be made with the ground lead of the signal generator connected to the external ground terminal. The other lead of the signal generator is connected in series with a 200 Mmf. dummy to the external antenna terminal.

WESTERN AUTO SUPPLY. CO.

MODELS D1191, D4140
Issue A

SPECIFICATIONS

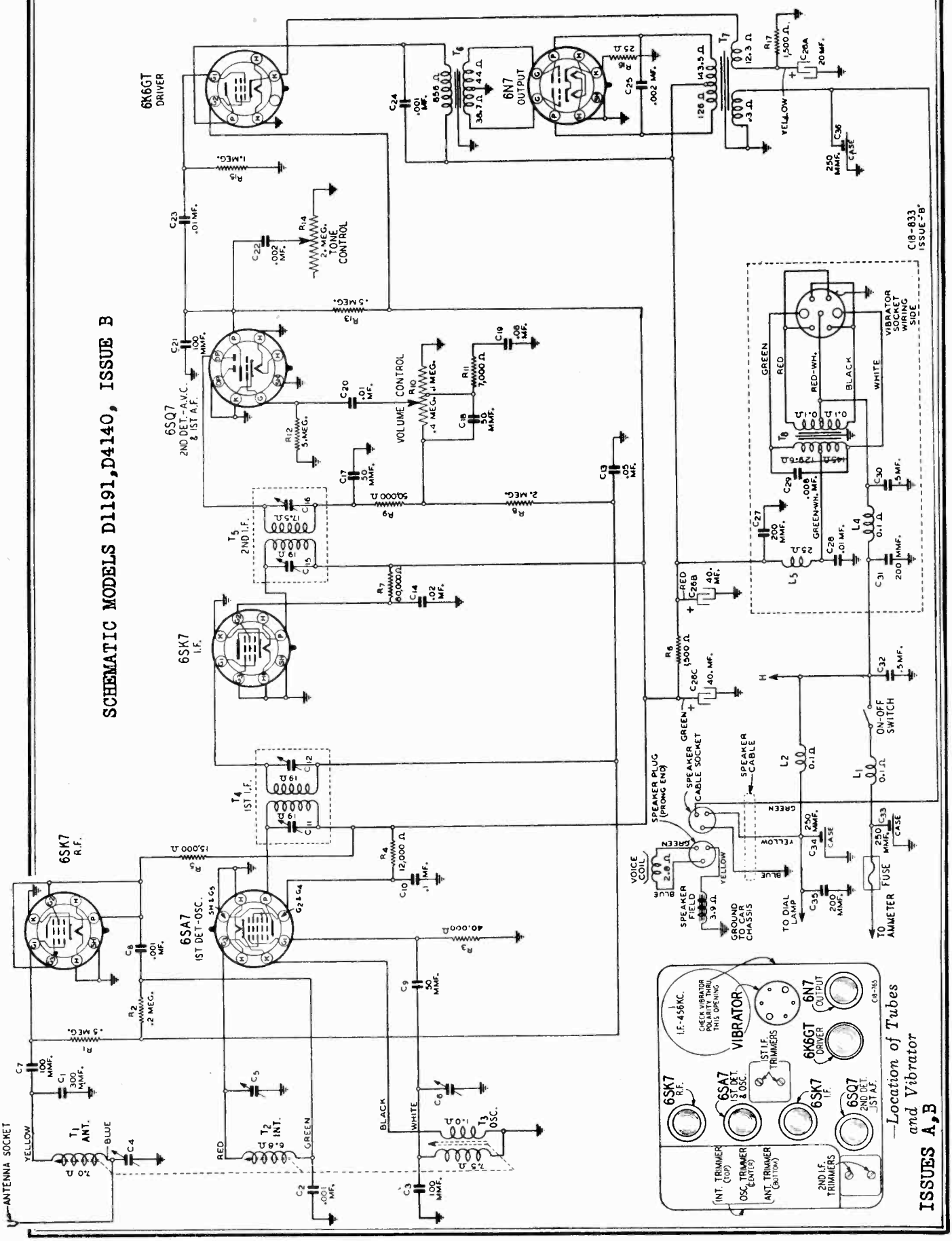
Power Consumption	- - 8.2 Amperes at 6.6 Volts	Selectivity	- - 38 KC Broad at 1000 Times Signal
Power Output (6.6 Volts)	- - 8.0 Watts Undistorted	Tuning Frequency Range	- - - - 540 to 1600 KC
	10.0 Watts Maximum	Intermediate Frequency	- - - - - - - - 456 KC
Sensitivity	- - - - 1 Microvolt at .5 Watt Output	Speaker	- - - - - - - - - 6" Electro-Dynamic



MODELS D1191,D4140
Issue B

WESTERN AUTO SUPPLY CO.

SCHEMATIC MODELS D1191,D4140, ISSUE B



ALIGNMENT PROCEDURE

- 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.
- 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 antennas—.1 mf., 35 mmf.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Remote Tuner Dial Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD.	Grid of 6SK7 I. F. Tube	Set dial at 1400 Kc.	See Chassis View	Output I. F.	Adjust to maximum output
	455 Kc.	.1 MFD.	Grid of 6SA7 I. F. Tube	Set dial at 1400 Kc.	See Chassis View	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1600 Kc.	35 mmf.	Antenna lead	Set dial at 1600 Kc.	Trimmer C9, C6, C1 Chassis View	Oscillator R. F. antenna	Adjust to maximum output
	1400 Kc.	35 mmf.	Antenna lead	Set dial at 1400 Kc.	Rotate cores of antenna and R. F. coils	Antenna and R. F.	Adjust to maximum output

Schematic Diagram Ref. No. Part No. Description

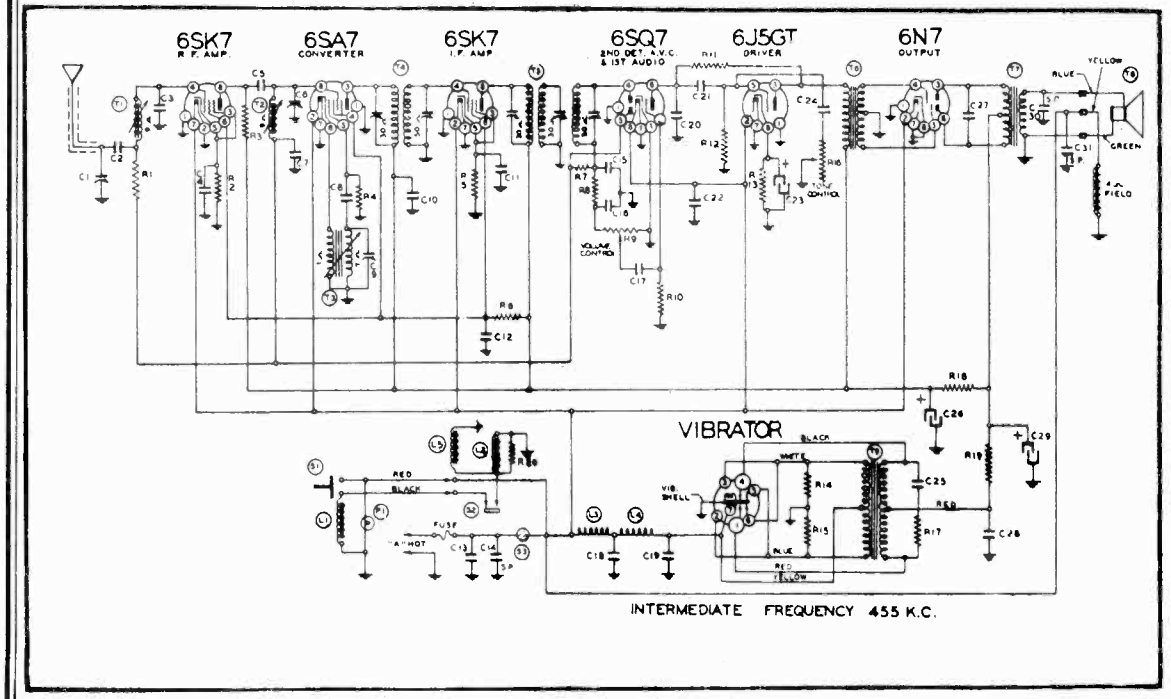
RESISTORS

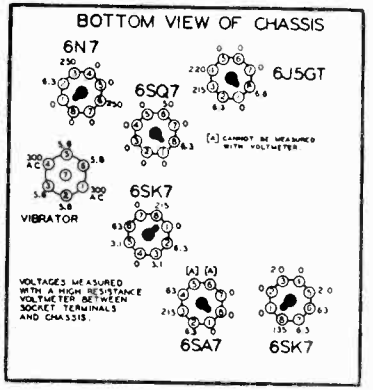
R1	130330	220M ohm—½ w.
R2	130332	250 ohm—½ w.
R3	130331	15M ohm—½ w.
R4	130329	47M ohm—½ w.
R5	13016	900 ohm—½ w.
R6	130196	30M ohm—1 w.
R7	13019	1 megohm—½ w.
R8	130329	47M ohm—½ w.
R9	101242	500M ohm volume control
R10	130257	5 megohm—½ w.
R11	130102	500M ohm—½ w.
R12	130102	500M ohm—½ w.
R13	13092	1M ohm—½ w.
R14	130168	100 ohm—½ w.
R15	130168	100 ohm—½ w.
R16	101245	1 megohm tone control
R17	13092	1M ohm—½ w.
R18	130199	1500 ohm—1 w.
R19	130328	75 ohm—½ w.
R20	13060	100 ohm—½ w.

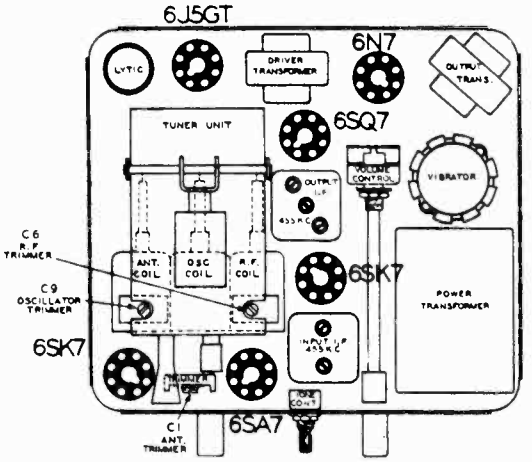
CONDENSERS

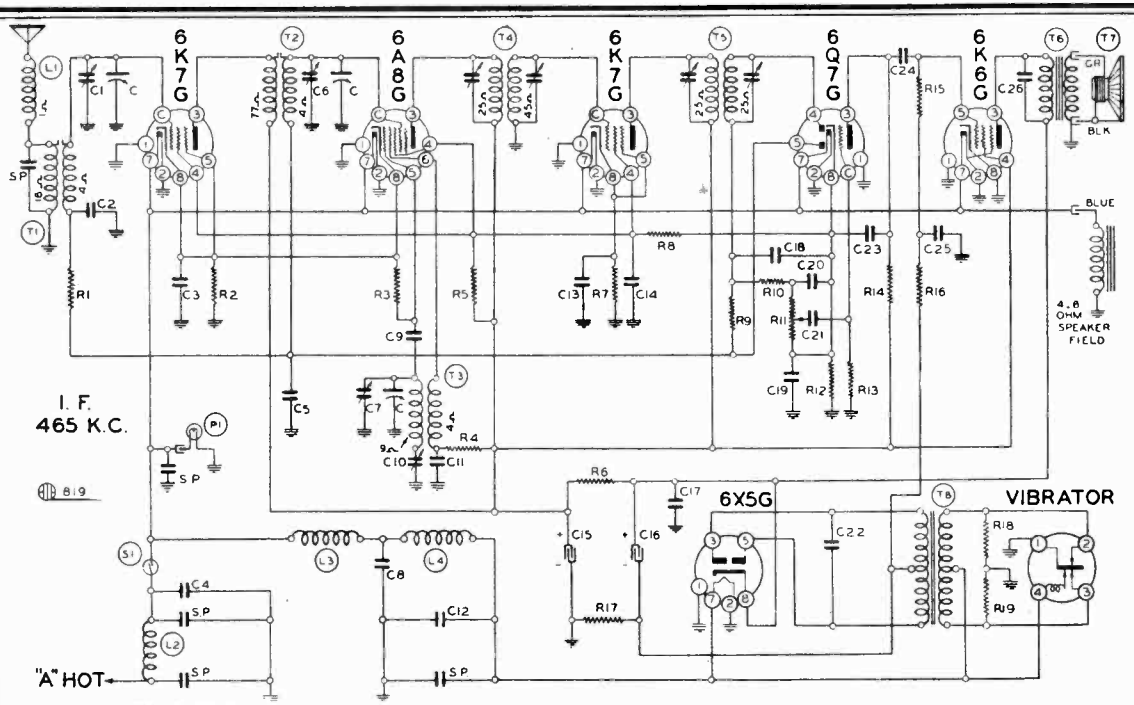
C1	124157	Antenna trimmer
C2	100127	.01 x 120 v.
C3	129172	.0001 ceramicon
C4	100128	.05 x 120 v.
C5	129145	.00001 ceramicon
C6	124159	R.F. trimmer
C7	100129	.02 x 120 v.
C8	129172	.0001 ceramicon
C9	124158	Oscillator trimmer
C10	10001	.1 x 400 v.
C11	100128	.05 x 120 v.
C12	10053	.25 x 400 v.
C13	10031	.5 x 120 v.
C14	115687	Spark plate
C15	129165Ⅱ	.00005 mica
C16	129165Ⅱ	.00005 mica
C17	100127	.01 x 120 v.
C18	10031	.5 x 120 v.
C19	10031	.5 x 120 v.
C20	100130	.00025 x 400 v.
C21	100130	.02 x 400 v.
C22	1292	.0005 mica
C23	119118	20.0 mfd. x 25 v. lytic
C24	10011	.01 x 400 v.
C25	10098	.005 x 1600 v.
C26	119118	20 mfd. x 400 v. lytic
C27	100126	.006 x 800 v.
C28	1001	.1 x 400 v.
C29	119118	20 mfd. x 400 v. lytic
C30	115710	Spark plate
C31	115710	Spark plate

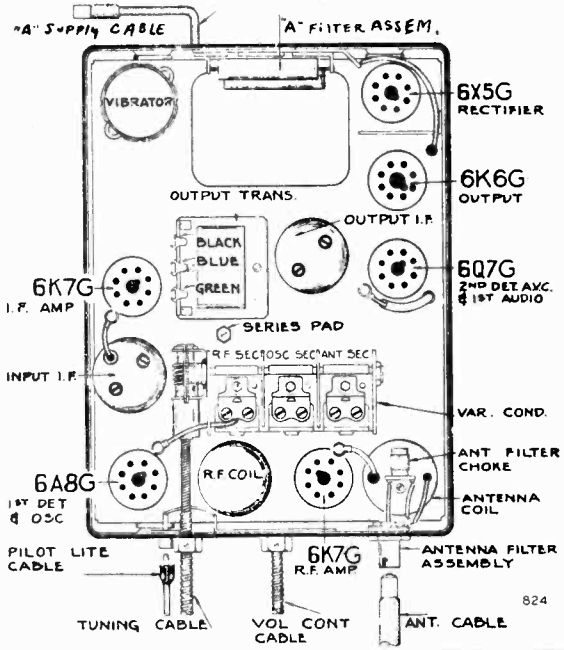
C15 and C16 are in same unit
C20 and C21 are in same unit
C23, C26 and C29 are in same unit











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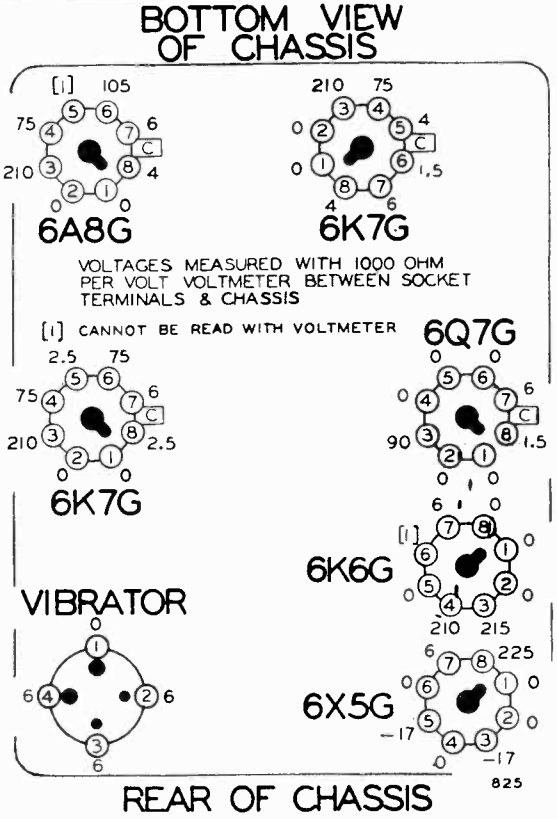


Circuit Diagram Reference	Part No.	Description
		RESISTORS
R1	13020	100M ohm—⅓ w.
R2	13054	500 ohm—⅓ w.
R3	130162	50M ohm—⅓ w.
R4	130208	40M ohm—⅓ w.
R5	13030	25M ohm—1 watt
R6	130279	1M ohm—1 watt
R7	13079	400 ohm—⅓ w.
R8	130139	40M ohm—⅓ w.
R9	13019	1 megohm—⅓ w.
R10	13012	50M ohm—⅓ w.
R11	10141	500M ohm volume control
R12	130153	700 ohm—⅓ w.
R13	13019	1 megohm—⅓ w.
R14	130141	250M ohm—⅓ w.
R15	130278	300M ohm—⅓ w.
R16	13011	250M ohm—⅓ w.
R17	130277	400 ohm—1 watt
R18	13060	100 ohm—⅓ w.
R19	13060	100 ohm—⅓ w.
		CONDENSERS
C	10226	3 gang variable condenser
C1		Antenna Trimmer on gang
C2	10063	.05 x 200 v.
C3	10063	.1 x 200 v.
C4	10031	.5 x 120 v.
C5	10022	.05 x 200 v.
C6		R. F. Trimmer on Gang
C7		Oscillator Trimmer on Gang
C8	10031	.5 x 120 v.
C9	12912	.00025 mica
C10	12437	350 mmfd. W C. Series Pad
C11	10020	.1 x 200 v.
C12	10031	.5 x 120 v.
C13	10020	.1 x 200 v.
C14	10053	.25 x 400 v.
C15	11965C	16 mfd. lytic—350 w. v.
C16	11965C	16 mfd. lytic—350 w. v.
C17	10011	.01 x 400 v.
C18	1295	.0001 Mica
C19	10011	.01 x 400 v.
C20	1295	.0001 Mica
C21	10011	.01 x 400 v.
C22	100100	.008 x 1600 v.
C23	1295	.0001 Mica
C24	10011	.01 x 400 v.
C25	10020	.1 x 200 v.
C26	10054	.006 x 600 v. C2 and C3 in same unit
		PARTS
T1	11171	Antenna Coil
T2	10935	R. F. Coil
T3	11057	Oscillator Coil
T4	10896B	Input I. F.—465 kc.
T5	10898	Output I. F.—465 kc.
T6	10537	Output Transformer
T7	11459	5" Dynamic Speaker (4.6 Ohm Field)
T8	104159B	Power Transformer
L1	11176	Antenna Filter Choke
L2	10526	"A" Choke
L3	10524	"A" Choke
L4	10519	"A" Choke
P1	10797	6-8 v. pilot light
S1		Off-on switch on volume control

MODEL D4240

WESTERN AUTO SUPPLY CO.

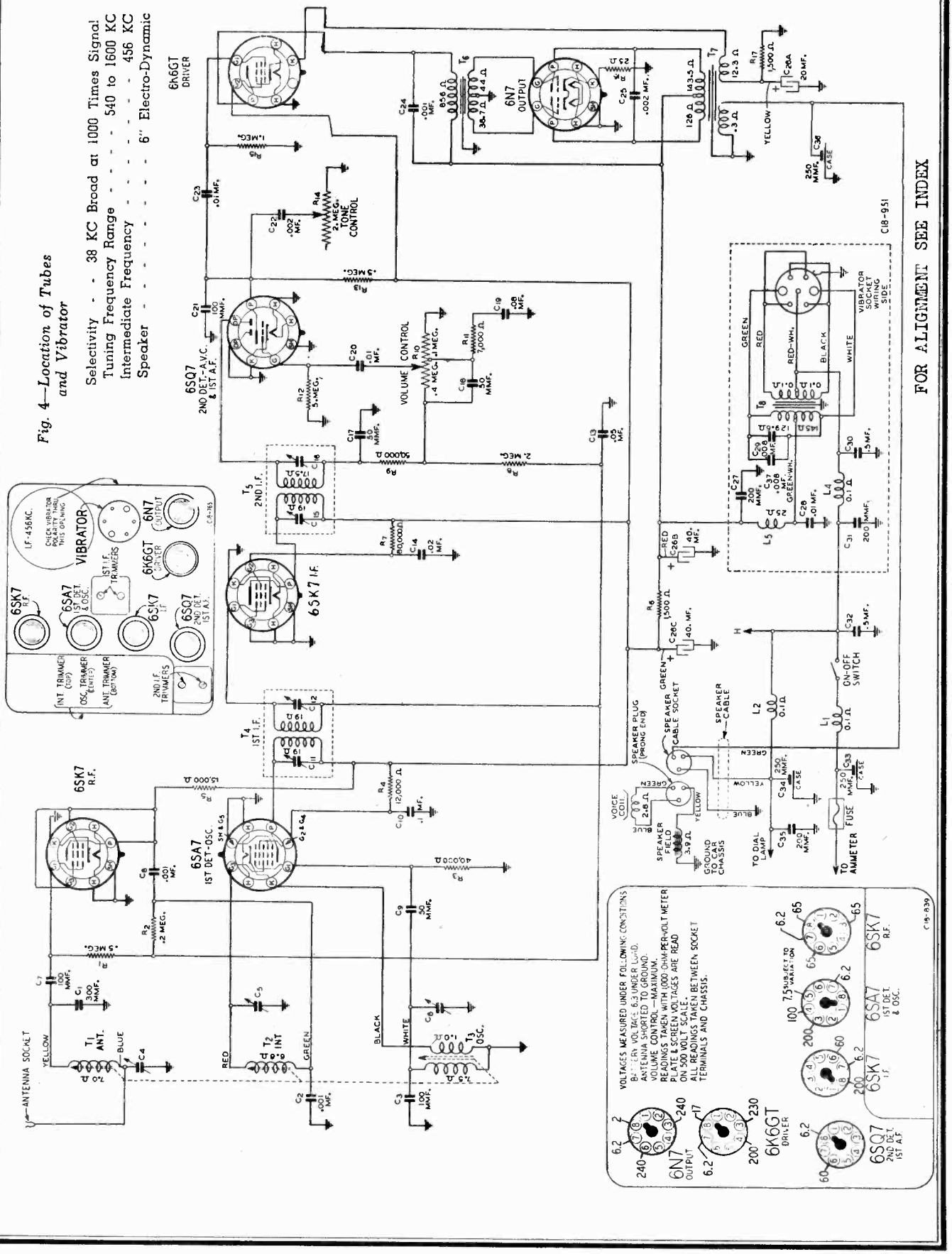
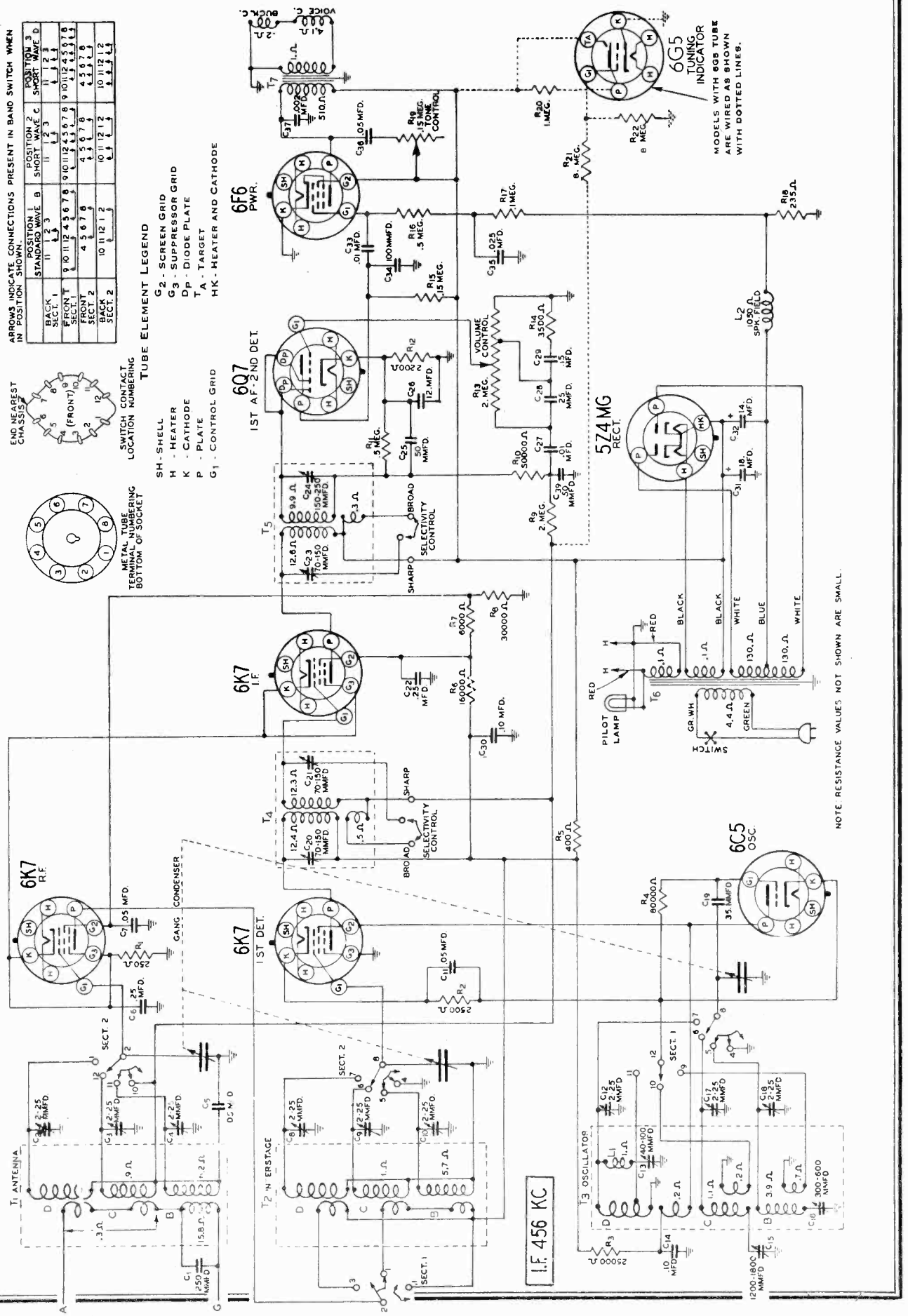


Fig. 4—Location of Tubes and Vibrator

FOR ALIGNMENT SEE INDEX

MODEL D701

WESTERN AUTO SUPPLY CO.



Voltage Chart

The voltage readings are taken with a voltmeter having a resistance of 1000 ohms per volt.

The standard metal tube socket terminal numbering system (bottom of socket) is shown in Fig. 5. On the schematic circuit diagram, Fig. 2 is a list giving the complete names of the tube elements and the corresponding symbols as used on the sockets on the schematic.

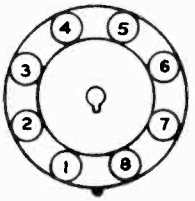


Fig. 5—Metal tube terminal numbering (bottom of socket)

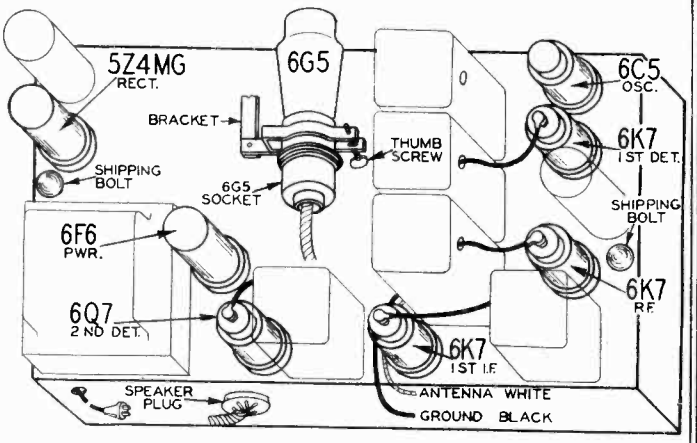


Fig. 6—Location of Tubes

Line Voltage: 115
Volume Control: Maximum

Antenna Shorted to Ground
Position of Band Switch: Standard Wave

TUBE	FUNCTION	VOLTAGE BETWEEN SOCKET PRONGS AND GROUND (Unless otherwise indicated)							
		Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Prong No. 8
6K7	RF	0	6.1(1)	260	100	4.0	....	6.1(1)	4.0
6K7	1st Det.	0	6.1(1)	260	118	0	....	6.1(1)	9.0
6C5	Osc.	0	6.1(1)	120	...	0	....	6.1(1)	0
6K7	I F	0	6.1(1)	260	138	4.0	....	6.1(1)	4.0
6Q7	1st A.F.—2nd Det.	0	6.1(1)	105	0	0	....	6.1(1)	1.4
6F6	Power Amp.	0	6.1(1)	238	260	18	....	6.1(1)	0
5Z4MG	Rect.	0	4.9(2)	...	680(3)	...	680(3)	....	4.9(2)
6E5	Tuning Indicator	Plate to Ground 30(4)		Target to Ground 270		Cathode to Ground 0		Across Heater 6.1 A.C.	

(1) A.C. voltage as read across heater terminals 2 and 7.
(2) A.C. voltage as read across heater terminals 2 and 8.
(3) A.C. voltage as read across terminals 4 and 6.
(4) As read with 500,000 ohm meter.

Alignment and Calibration

Correct alignment is extremely important in connection with all wave radios. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment.

A signal generator that will provide an accurately calibrated signal at 456, 1730, 1500, 600, 5800, 5000, 1800, 18,300, 15,000 and 6000 KC and an output indicating meter are required. It will be practically impossible to align the receiver if unsatisfactory apparatus is used.

Use a non-metallic screwdriver for the adjustments. The complete procedure is as follows:

I. F. Adjustment

Set the signal generator for a signal of 456 KC.

Connect the output of the signal generator through a .1 mf. condenser to the grid of the 1st detector.

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

Turn the band selector to the Range B position (standard wave band).

Turn the selectivity control to the sharp position and keep it in this position for all adjustments.

Turn the volume control to the maximum position.

Attenuate the signal from the signal generator to prevent the levelling-off action of the AVC.

Then adjust the four I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 3.

Range B Alignment

After the procedure for the alignment of each range, as explained below, is completed, it is advisable to repeat the procedure as a final check.

1730 KC Adjustment

Set the signal generator for 1730 KC.

Turn the rotor of the tuning condenser to the full open position.

Keep the band selector in the standard wave position.

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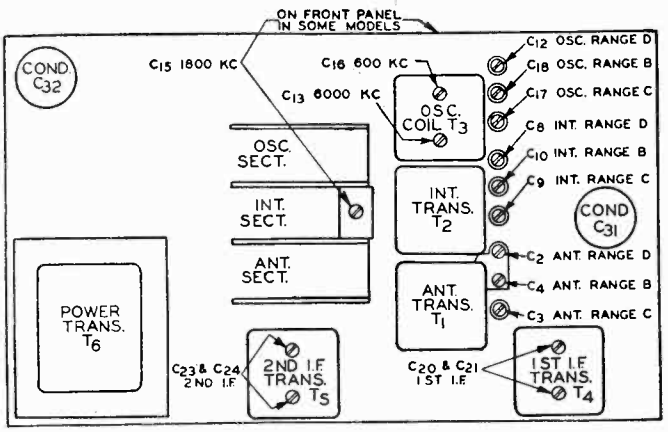

Fig. 3—Location of Trimmers

Connect the antenna lead of the receiver through a 200 mmf. condenser to the output of the signal generator.

For this and ***all*** subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent AVC action.

Adjust the oscillator Range B trimmer (C18) until maximum output is obtained. The location of this trimmer is shown in Fig. 3.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Loosen the pointer set screw and set the large pointer at the 1500 KC mark on the standard wave band scale. Retighten the set screw.

Adjust the interstage Range B trimmer (C10) and antenna Range B trimmer (C4) to maximum.

Do not change the setting of the oscillator Range B trimmer.

600 KC Adjustment

Set the signal generator for 600 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth, at the same time adjusting the 600 KC trimmer, until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Range C Alignment

CAUTION—When aligning the short wave bands be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC. It may be necessary to increase the input signal to hear the image.

5800 KC Adjustment

Set the signal generator for 5800 KC.

Connect the antenna lead of the receiver through a 400 ohm resistor to the output of the signal generator.

Turn the rotor of the tuning condenser to the full open position.

Turn the band selector to the Range C position (1st short wave band).

Adjust the oscillator Range C trimmer (C17) until maximum output is obtained. See Fig. 3 for location of this trimmer.

5000 KC Adjustment

Set the signal generator for 5000 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range C trimmer (C9) and antenna Range C trimmer (C3) to maximum.

Do not change the setting of the oscillator Range C trimmer.

1800 KC Adjustment

Set the signal generator for 1800 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth, at the same time adjusting the 1800 KC trimmer, until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Range D Alignment

18,300 KC Adjustment

Set the signal generator for 18,300 KC.

Keep the antenna lead of the receiver connected through the 400 ohm resistor to the output of the signal generator.

Turn the rotor of the tuning condenser to the full open position.

Turn the band selector to the Range D position (2nd short wave band).

Adjust the oscillator Range D trimmer (C12) until maximum output is obtained. See Fig. 3 for location of this trimmer.

15,000 KC Adjustment

Set the signal generator for 15,000 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range D trimmer (C8) and antenna Range D trimmer (C2) to maximum.

When adjusting the interstage Range D trimmer, it will be necessary at the same time to turn the tuning condenser rotor slowly back and forth until the peak of greatest intensity is obtained.

Do not change the setting of the oscillator Range D trimmer.

6000 KC Adjustment

Set the signal generator for 6000 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 6000 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

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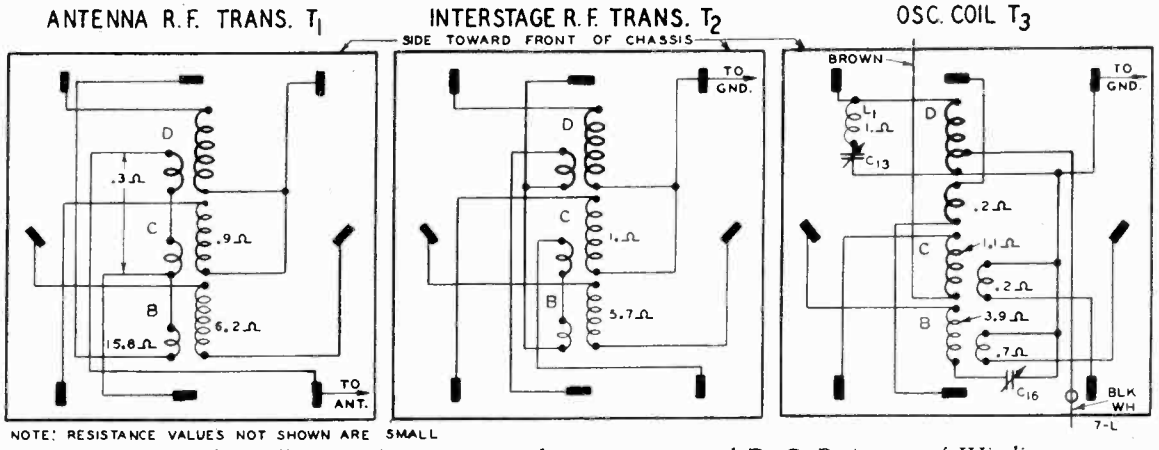

Fig. 4—R. F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

Trimmer Replacement

If one trimmer of the gang trimmer strip should become defective, it is not necessary to replace the entire strip. A single trimmer P-17A36, as shown in the replacement parts list, may be used. Disconnect the lead from the coil side (side not grounded) of the defective trimmer in the strip. This connection is then made to the single trimmer. Connect it to the side of the trimmer not in contact with the adjusting screw. The other side of the single trimmer is then connected to a good ground, using a piece of heavy wire in order to support the trimmer adequately. In replacing a trimmer, be sure to keep both leads as short as possible and keep the ungrounded lead as far from ground as possible.

Phonograph Connections

Phonograph connections can be made as shown in Fig. 7. The parts required are shown in the parts list. Knockouts are provided in the back panel of the chassis for mounting the phono jack and phono switch —See Fig 8.

The phono switch must be mounted with one set of terminals nearest the bottom of the chassis base.

The connections are made by opening the diode return circuit at the volume control. Unsolder the .01 mf. condenser C27 from the volume control.

Strip about 2¾ inches of the shielding from each end of the cable furnished with the phono attachment parts. Connect one lead of the cable to the terminal on the volume control from which condenser C27 was removed. The other end of this lead is connected to the phono switch as shown in Fig. 7. The second cable lead is connected to the open end of condenser C27. Then connect the other end of this lead to the phono switch as shown in Fig. 7. Both of the shielded cable leads connected to the phono switch are connected to the switch terminals nearest the chassis base. Before connecting the cable leads to the phono switch, it will be necessary to slip a piece of varnished tubing over the portion of the cable that passes near the 6K7 1st I.F. tube socket.

Now ground the shielding by soldering it to the lugs on the chassis base. One of these lugs is located just below the planetary drive; the other is near the rear mounting foot of the gang condenser.

Complete the other connections as illustrated in Fig. 7. The lead between the tone control and the .05 mf. tubular condenser C36 mounted on the back of the chassis base, should be covered with a piece of varnished tubing.

The tin plate shield is soldered to the tone control mounting bracket in such a way that when it is bent down toward the bottom and back of the chassis it will shield the lower leads of the phono switch and the lead between the tone control and tubular condenser C36.

After making the phono connections, the I.F. stages should be realigned.

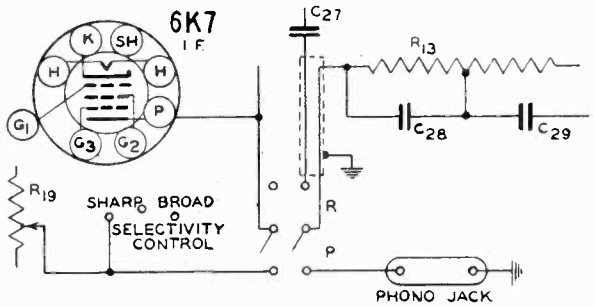

Fig. 7—Phonograph Connections

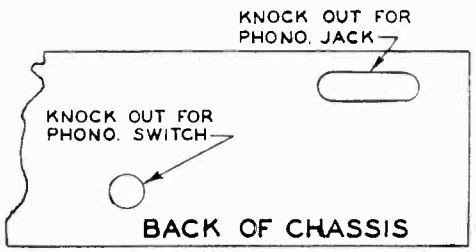

Fig. 8—Location of Phono Knockouts

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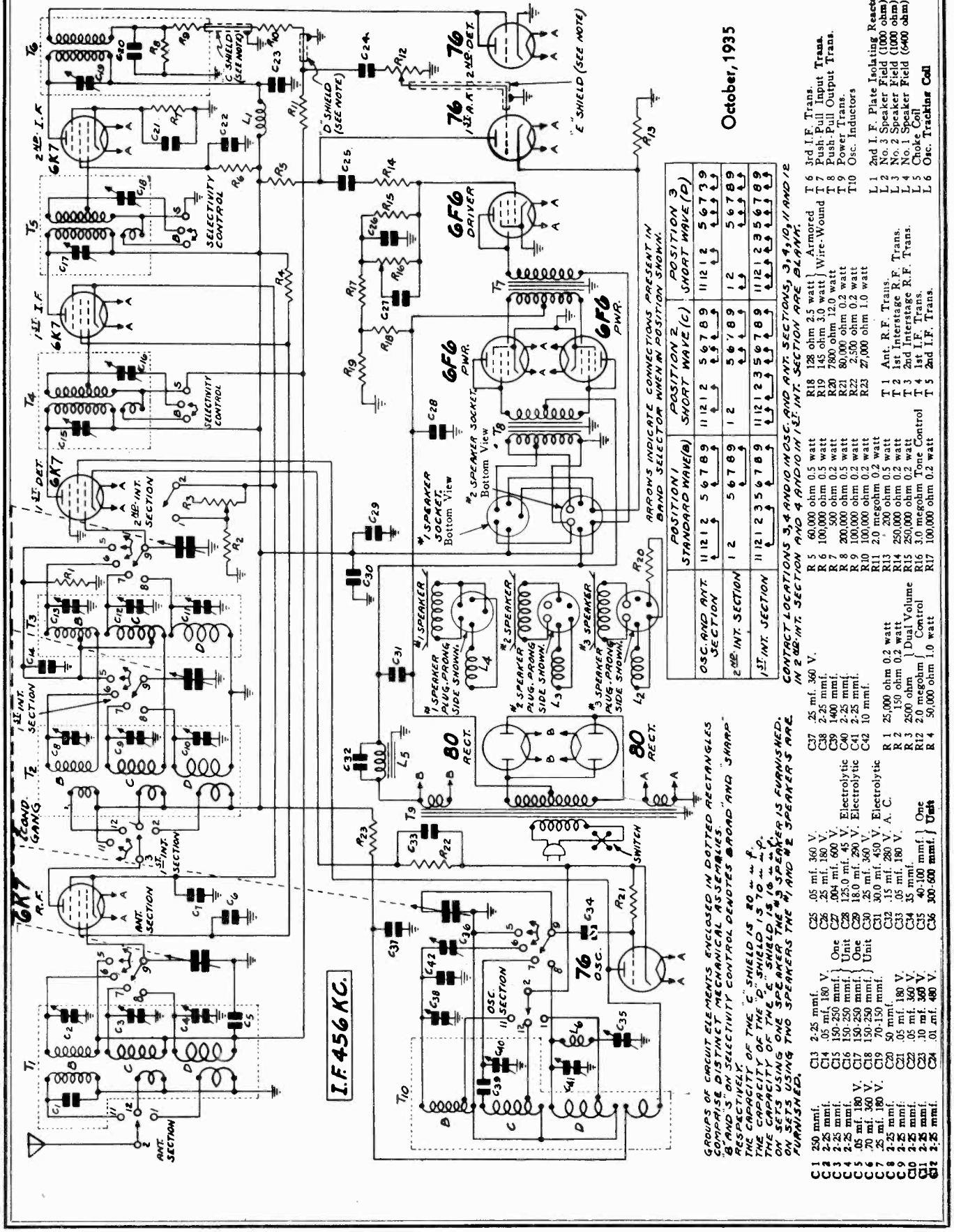

	OSC. AND ANT. SECTION	2ND INT. SECTION	1ST INT. SECTION
POSITION 1 STANDARD WAVE(B)	11 12 1 2 5 6 7 8 9	1 2 5 6 7 8 9	11 12 1 2 3 5 6 7 8 9
POSITION 2 SHORT WAVE(C)	11 12 1 2 5 6 7 8 9	1 2 5 6 7 8 9	11 12 1 2 3 5 6 7 8 9
POSITION 3 SHORT WAVE(D)	11 12 1 2 5 6 7 3 9	1 2 5 6 7 8 9	11 12 1 2 3 5 6 7 8 9

ARROWS INDICATE CONNECTIONS PRESENT IN BAND SELECTOR WHEN IN POSITION SHOWN.

CONTACT LOCATIONS 3,4 AND 10 IN OSC. AND ANT. SECTIONS, 3,4, 10, 11 AND 12 IN 2ND INT. SECTION AND 4 AND 10 IN 1ST INT. SECTION ARE BLANK.

GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES "B" AND "S" ON SELECTIVITY CONTROL DENOTES "BROAD" AND "SHARP" RESPECTIVELY. THE CAPACITY OF THE "C" SHIELD IS 10 mmf. THE CAPACITY OF THE "D" SHIELD IS 70 mmf. THE CAPACITY OF THE "E" SHIELD IS 5 mmf. ON SETS USING ONE SPEAKER THE #3 SPEAKER IS FURNISHED. ON SETS USING TWO SPEAKERS THE #1 AND #2 SPEAKERS ARE FURNISHED.

C1	250 mmf.	C13	2.25 mmf.	C25	.05 mf. 360 V.	C37	.25 mf. 360 V.	R 5	60,000 ohm 0.5 watt	R18	128 ohm 2.5 watt } Armored	T 6 3rd I.F. Trans.
C2	2.25 mmf.	C14	.05 mf. 180 V.	C26	.25 mf. 180 V.	C38	2.25 mmf.	R 6	100,000 ohm 0.5 watt	R19	145 ohm 3.0 watt } Wire-Wound	T 7 Push-Pull Input Trans.
C3	2.25 mmf.	C15	150-250 mmf. } One	C27	.004 mf. 600 V.	C39	1400 mmf.	R 7	500 ohm 0.2 watt	R20	7800 ohm 12.0 watt	T 8 Push-Pull Output Trans.
C4	2.25 mmf.	C16	150-250 mmf. } Unit	C28	125.0 mf. 45 V. Electrolytic	C40	2.25 mmf.	R 8	200,000 ohm 0.5 watt	R21	80,000 ohm 0.2 watt	T 9 Power Trans.
C5	.05 mf. 180 V.	C17	150-250 mmf. } One	C29	18.0 mf. 290 V. Electrolytic	C41	2.25 mmf.	R 9	100,000 ohm 0.2 watt	R22	2,500 ohm 0.2 watt	T10 Osc. Inductors
C6	.70 mf. 360 V.	C18	150-250 mmf. } Unit	C30	.25 mf. 360 V.	C42	10 mmf.	R10	100,000 ohm 0.2 watt	R23	27,000 ohm 1.0 watt	
C7	.25 mf. 180 V.	C19	70-150 mmf.	C31	30.0 mf. 450 V. Electrolytic			R11	2.0 megohm 0.2 watt			L 1 2nd I.F. Plate Isolating Reactor
C8	2.25 mmf.	C20	50 mmf.	C32	.15 mf. 280 V. A. C.	R 1	25,000 ohm 0.2 watt	R13	200 ohm 0.5 watt	T 1	Ant. R.F. Trans.	L 2 No. 3 Speaker Field (1000 ohm)
C9	2.25 mmf.	C21	.05 mf. 180 V.	C33	.05 mf. 180 V.	R 2	150 ohm 0.2 watt	R14	250,000 ohm 0.2 watt	T 2	1st Interstage R.F. Trans.	L 3 No. 2 Speaker Field (1000 ohm)
C10	2.25 mmf.	C22	.05 mf. 360 V.	C34	.35 mmf.	R 3	2500 ohm } Dual Volume	R15	250,000 ohm 0.2 watt	T 3	2nd Interstage R.F. Trans.	L 4 No. 1 Speaker Field (400 ohm)
C11	2.25 mmf.	C23	.10 mf. 300 V.	C35	40-100 mmf. } One	R12	2.0 megohm } Control	R16	3.0 megohm Tone Control	T 4	1st I.F. Trans.	L 5 Choke Coil
C12	2.25 mmf.	C24	.01 mf. 480 V.	C36	300-600 mmf. } Unit	R 4	50,000 ohm 1.0 watt	R17	100,000 ohm 0.2 watt	T 5	2nd I.F. Trans.	L 6 Osc. Tracking Coil

Alignment and Calibration

Correct alignment is extremely important in connection with all wave receivers. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment.

A signal generator that will provide an accurately calibrated signal at 456, 1730, 1500, 600, 5800, 5000, 18,300, 15,000 and 6000 KC and an output indicating meter are required. It will be practically impossible to align the receiver if unsatisfactory apparatus is used. If a station is tuned in with the selectivity control in the broad position and this control is then turned to the sharp position, the station may disappear. This is not an indication that the receiver is out of alignment.

Use a non-metallic screwdriver for the adjustments. The complete procedure is as follows:

I. F. Adjustment

Set the signal generator for a signal of 456 KC.

Connect the output of the signal generator to the grid of the 1st detector through a 0.1 MF condenser.

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

Turn the band selector to the Range B position (standard wave band—purple dial color).

Turn the selectivity control to the sharp position and keep it in this position for all adjustments.

Turn the volume control to the maximum position.

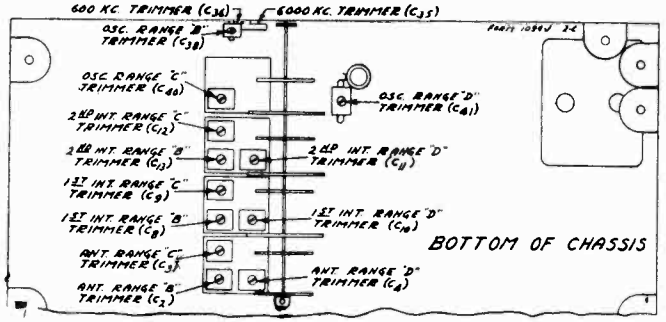

Fig. 3—Location of Trimmers

Attenuate the signal from the signal generator to prevent the levelling-off action of the A.V.C.

Then adjust the five I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 5.

Range B Alignment

17.30 KC Adjustment

Set the signal generator for 1730 KC.

Turn the rotor of the tuning condenser to the full open position.

Keep the band selector in the standard wave position.

Connect the antenna lead of the receiver through a 200 mmf. condenser to the output of the signal generator.

For this and all subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range B trimmer (C38) until maximum output is obtained. The location of this trimmer is shown in Fig. 3.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Loosen the pointer set screw and set the large pointer at the 1500 KC mark on the standard wave band scale. Retighten the set screw.

Adjust the 1st and 2nd interstage Range B trimmers (C8 and C13) and antenna Range B trimmer (C2) to maximum.

Do not change the setting of the oscillator Range B trimmer.

600 KC Adjustment

Set the signal generator for 600 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 6000 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Use a non-metallic screwdriver for this adjustment

Twenty-five Cycle Receivers

The twenty-five cycle receiver differs from the sixty cycle receiver only in the fact that a different power transformer is used. The correct power transformer is shown in the parts list.

The twenty-five cycle receiver can be operated satisfactorily from a sixty cycle power supply. However, the reverse is not true, the sixty cycle receiver cannot be operated from a twenty-five cycle power supply.

A 115-230 Volt, 40 to 60 cycle as well as other power transformers with special power ratings are also available for this model.

Part No.	Winding	Coils	In Ohms
P-9A418	Antenna R. F. Transformer	T1	
	Range B Primary Winding		21.4
	Range C Primary Winding		0.3
	Range D Primary Winding		0.2
	Range B Secondary Winding		6.1
	Range C Secondary Winding		2.1
	Range D Secondary Winding		Small
P-9A411	1st Interstage R. F. Transformer	T2	
	Range B Primary Winding		3.6
	Range C Primary Winding		2.4
	Range D Primary Winding		0.5
	Range B Secondary Winding		5.8
	Range C Secondary Winding		2.1
	Range D Secondary Winding		Small
P-50X24	Audio Input Transformer	T7	
	Primary Winding		815.0
	Secondary Winding		
	Center Tap to Inside		211.7
	Center Tap to Outside		288.5
P-51X26	Audio Output Transformer	T8	
	Primary Winding		
	Center Tap to Inside		135.5
	Center Tap to Outside		155.3
	Secondary Winding		
	Tap to Upper Side		0.16
	Tap to Ground Side		0.12
P-53X82	Power Transformer (115 Volt-60 Cycle)	T9	
	Primary Winding		1.7
	Tube Filament Secondary (A-A)		Small
	Tube Filament Secondary (B-B) (80)		Small
	High Voltage Secondary Winding		
	Center Tap to Inside		92.9
	Center Tap to Outside		106.4
P-9A427	Oscillator Coils	T10	
	Range B Grid Coil		
	Red White Tap to White		3.1
	Red White Tap to Ground		0.7
	Range C Grid Coil		
	Green White Tap to Green		1.7
	Green White Tap to Ground		0.5
	Range D Grid Coil		
	Black White Tap to Black		Small
	Black White Tap to Ground		Small
	Oscillator Plate Coil		0.2
P-9A408	2nd I. F. Plate Isolating Reactor	L1	34.7
P-12A204	12" Dynamic Speaker (No. 1—See Fig. 2)		
	Speaker Field	L4	6400.
	Voice Coil		Small
P-12A205	12" Dynamic Speaker (No. 2—See Fig. 2)		
	Speaker Field	L3	1000.
	Voice Coil		Small
P-12A226	12" Dynamic Speaker (No. 3—See Fig. 2)		
	Speaker Field	L2	1000.
	Voice Coil		Small
P-52X39	Reactor Assembly	L5	143.6
P-9A391	High Frequency Oscillator Tracking Coil	L6	1.0
P-9A412	2nd Interstage R. F. Coils	T3	
	Range B Section		
	Long Portion		5.9
	Short Portion		0.2
	Range C Section		
	Long Portion		1.8
	Short Portion		0.2
	Range D Section		Small
P-9A413	1st I. F. Transformer	T4	
	Primary Winding		4.4
	Coupling Winding		0.3
	Secondary Winding		
	Tap to Condenser Side		2.3
	Tap to Switch Side		2.3
P-9A414	2nd I. F. Transformer	T5	
	Primary Winding		4.3
	Coupling Winding		0.3
	Secondary Winding		
	Tap to Condenser Side		2.3
	Tap to Switch Side		2.3
P-9A415	3rd I. F. Transformer	T6	
	Primary Winding		9.8
	Secondary Winding		30.6

MODEL D716

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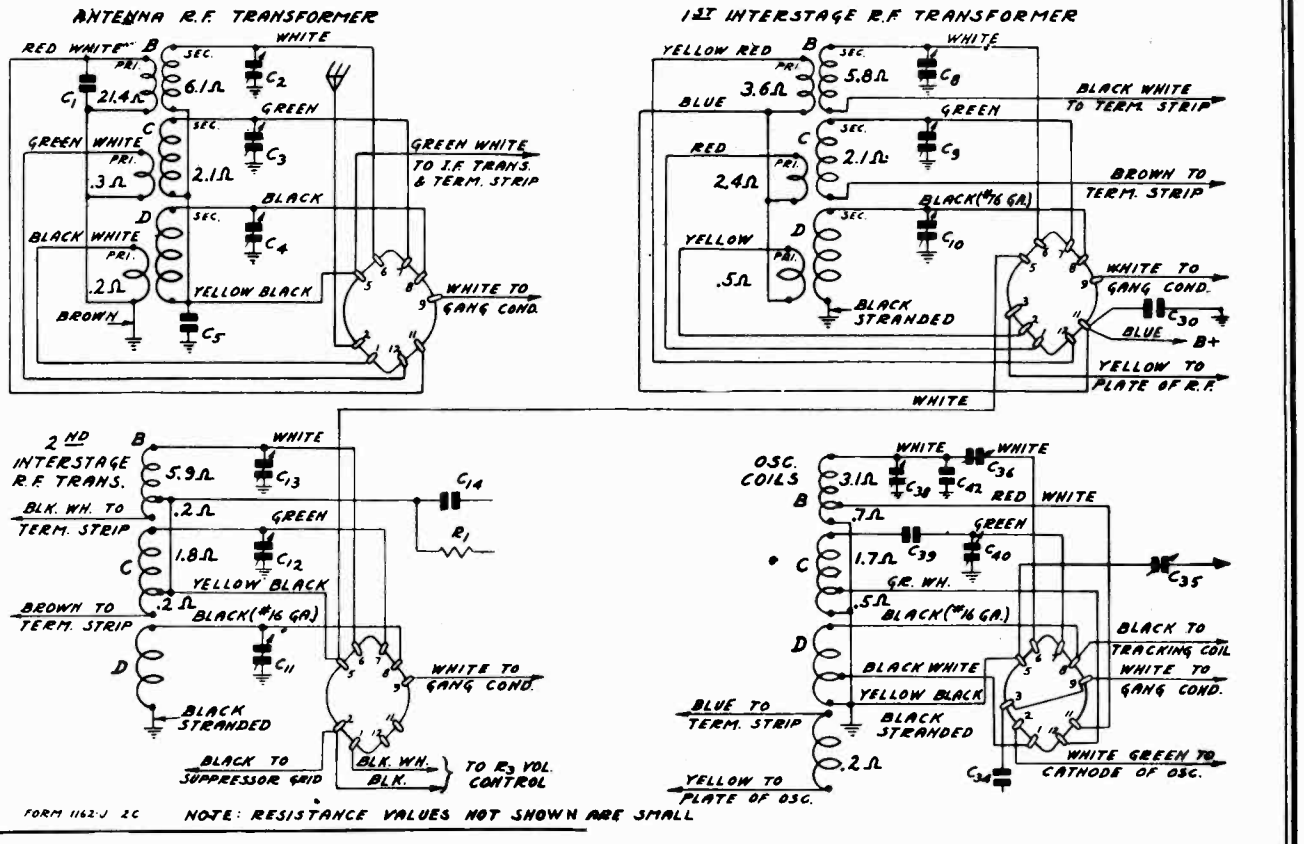


Fig. 4—Color Coding of Coil Wires and D. C. Resistance of Windings. (Also see complete D. C. Resistance List)

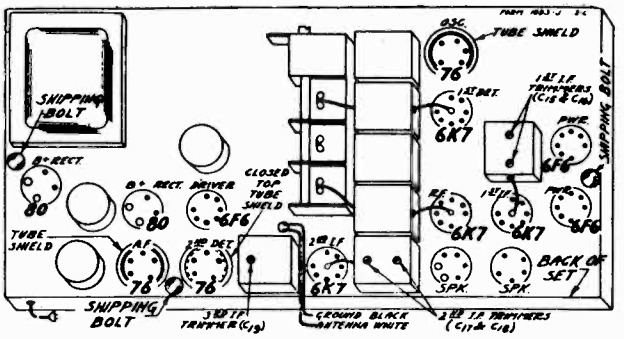


Fig. 5—Location of Tubes

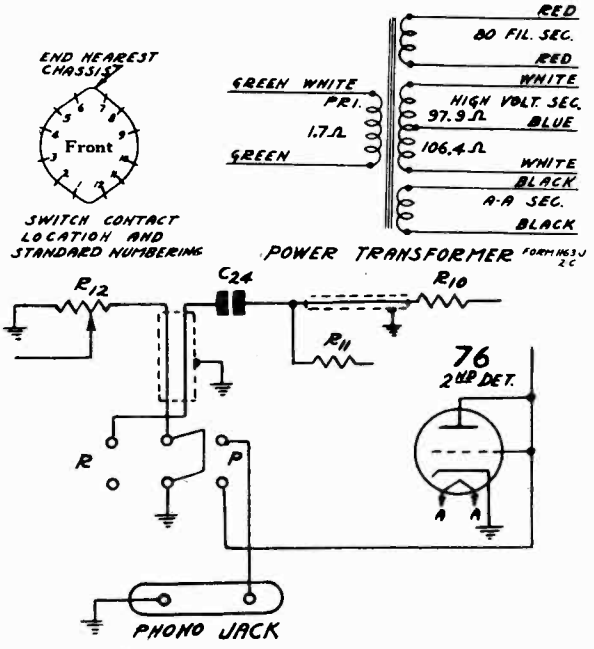


Fig. 7—Phonograph Connections

VOLTAGES AT SOCKETS

Line Voltage 115 - Antenna Shorted to Ground
Volume Control at Maximum

Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cath. to Ground	Cath. M A
6K7	R. F.	6.2	245	80	2.8	7.6
6K7	1st Det.	6.2	245	90	6.5	2,6
76	Osc.	6.2	90			5.3
6K7	1st I. F.	6.2	245	80	2.8	7.6
6K7	2nd I. F.	6.2	245	74	3.9	7.0
76	2nd Det.	6.2				
76	1st A. F.	6.2	110		5.6	2.1
6F6	Driver	6.2	235	230	20.0(1)	27.0
6F6	Power	6.2	345	345	38.0(2)	22.5
80	Rectifier	5.1	500(3)			140.0(4)

(1) As read across R19
(2) Grid to Ground
(3) Plate to Center Tap
(4) Two tubes in parallel

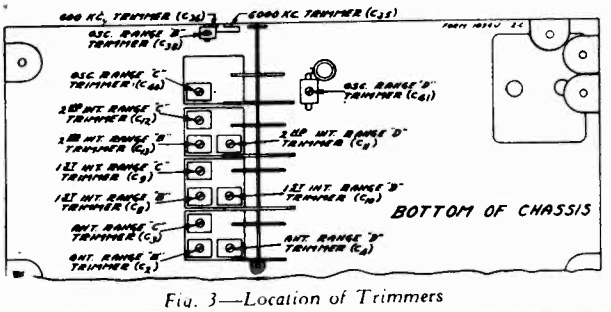
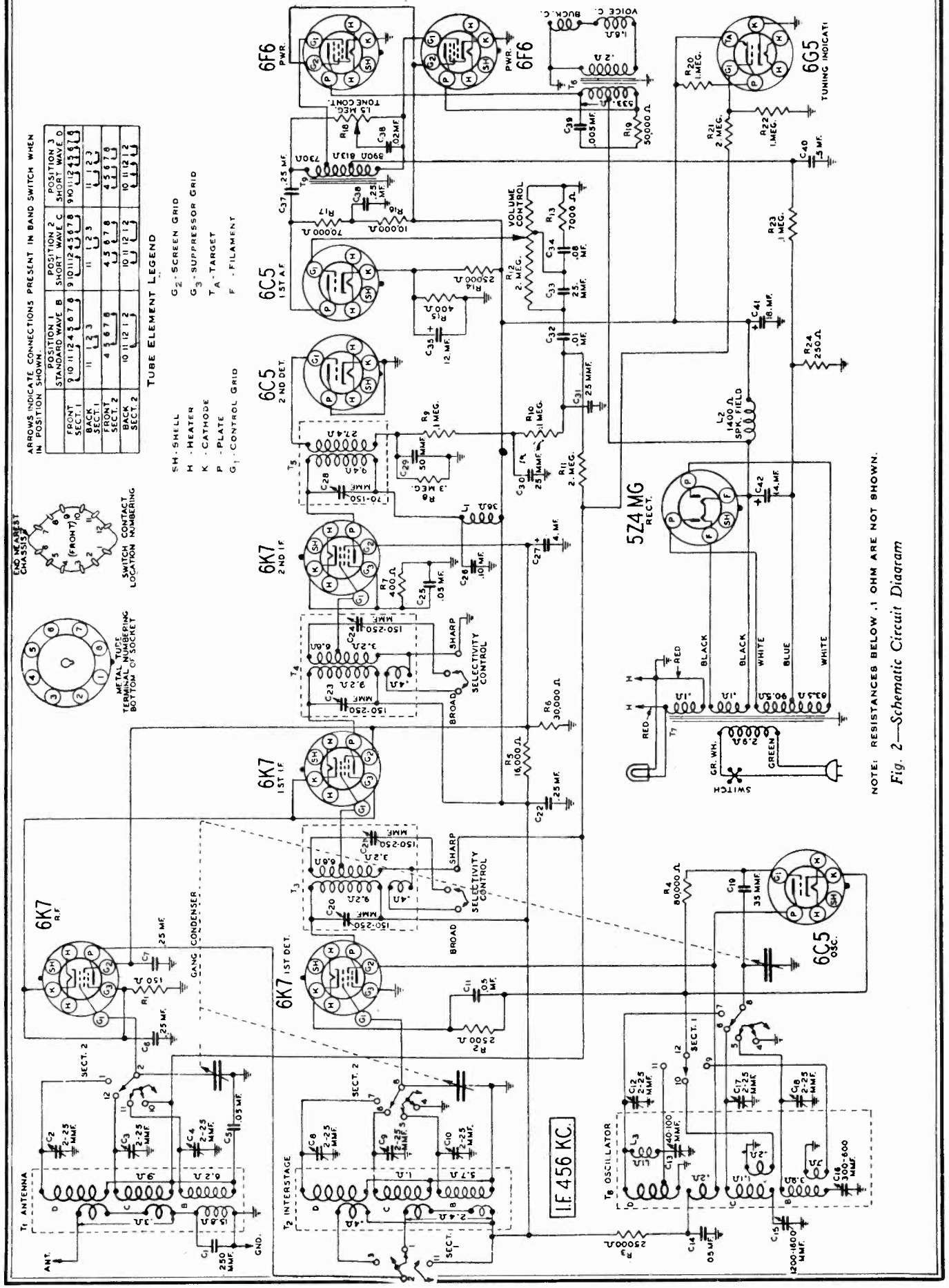


Fig. 3—Location of Trimmers

WESTERN AUTO SUPPLY CO.

MODEL D722



ARROWS INDICATE CONNECTIONS PRESENT IN BAND SWITCH WHEN IN POSITION SHOWN.

	POSITION 1 STANDARD WAVE B	POSITION 2 SHORT WAVE C	POSITION 3 SHORT WAVE D
FRONT SECT. 1	9 10 11 12 1 2 3 4 5 6 7 8	9 10 11 12 1 2 3 4 5 6 7 8	9 10 11 12 1 2 3 4 5 6 7 8
BACK SECT. 1	11 12 3	11 12 3	11 12 3
FRONT SECT. 2	4 5 6 7 8	4 5 6 7 8	4 5 6 7 8
BACK SECT. 2	10 11 12 1 2	10 11 12 1 2	10 11 12 1 2

TUBE ELEMENT LEGEND

SH - SHELL
H - HEATER
K - CATHODE
P - PLATE
G1 - CONTROL GRID
G2 - SCREEN GRID
G3 - SUPPRESSOR GRID
TA - TARGET
F - FILAMENT

END NEAREST CHASSIS

SWITCH CONTACT LOCATION NUMBERING

METAL TUBE TERMINAL NUMBERING BOTTOM OF SOCKET

NOTE: RESISTANCES BELOW .1 OHM ARE NOT SHOWN.

Fig. 2—Schematic Circuit Diagram

I. F. Adjustment

Set the signal generator for a signal of 456 KC.

Connect the output of the signal generator through a .1 mf. condenser to the grid of the 1st detector.

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

Turn the band switch to the Range B position (standard wave band).

Turn the selectivity control to the sharp position and keep it in this position for all adjustments.

Turn the volume control to the maximum position.

Attenuate the signal from the signal generator to prevent the levelling-off action of the AVC.

Then adjust the five I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis and the location is shown in Fig. 3.

Range B Alignment

After the procedure for the alignment of each range, as explained below, is completed, it is advisable to repeat the procedure as a final check.

1730 KC Adjustment

Set the signal generator for 1730 KC.

Turn the rotor of the tuning condenser to the full open position.

Keep the band switch in the standard wave position.

Connect the antenna lead of the receiver through a 200 mmf. condenser to the output of the signal generator.

For this and all subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent AVC action.

Adjust the oscillator Range B trimmer (C18) until maximum output is obtained. The location of this trimmer is shown in Fig. 3.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

In sets using pointers, loosen the screw of the large pointer and set the pointer at the 1500 KC mark on the standard wave band scale. Re-tighten the screw.

In sets using the moving beam of light, there is a moving light assembly held to the front of the drive drum by means of a screw. Loosen this screw and move the light assembly until it is at the 1500 KC mark on the dial. Re-tighten the screw.

Adjust the interstage Range B trimmer (C10) and antenna Range B trimmer (C4) to maximum.

Do not change the setting of the oscillator Range B trimmer.

600 KC Adjustment

Set the signal generator for 600 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 600 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Range C Alignment

CAUTION—When aligning the short wave bands be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC. It may be necessary to increase the input signal to hear the image.

5800 KC Adjustment

Set the signal generator for 5800 KC.

Connect the antenna lead of the receiver through a 400 ohm resistor to the output of the signal generator.

Turn the rotor of the tuning condenser to the full open position.

Turn the band switch to the Range C position (first short wave band).

Adjust the oscillator Range C trimmer (C17) until maximum output is obtained. See Fig. 3 for location of this trimmer.

5000 KC Adjustment

Set the signal generator for 5000 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range C trimmer (C9) and antenna Range C trimmer (C3) to maximum.

Do not change the setting of the oscillator Range C trimmer.

1800 KC Adjustment

Set the signal generator for 1800 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 1800 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Range D Alignment

18,300 KC Adjustment

Set the signal generator for 18,300 KC.

Keep the antenna lead of the receiver connected through the 400 ohm resistor to the output of the signal generator.

Turn the rotor of the tuning condenser to the full open position.

Turn the band switch to the Range D position (second short wave band).

Adjust the oscillator Range D trimmer (C12) until maximum output is obtained. See Fig. 3 for location of this trimmer.

15,000 KC Adjustment

Set the signal generator for 15,000 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range D trimmer (C8) and antenna Range D trimmer (C2) to maximum.

When adjusting the interstage and antenna Range D trimmers, it will be necessary at the same time to turn the tuning condenser rotor slowly back and forth until the peak of greatest intensity is obtained.

Do not change the setting of the oscillator Range D trimmer.

6000 KC Adjustment

Set the signal generator for 6000 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 6000 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Trimmer Replacement

If one trimmer of the gang trimmer strip should become defective, it is not necessary to replace the entire strip. A single trimmer P-17A36, as shown in the replacement parts list, may be used. Disconnect the lead from the coil side (side not grounded) of the defective trimmer in the strip. This connection is then made to the single trimmer. Connect it to the side of the trimmer not in contact with the adjusting screw. The other side of the single trimmer is then connected to a good ground, using a piece of heavy wire in order to support the trimmer adequately. In replacing a trimmer, be sure to keep both leads as short as possible and keep the ungrounded lead as far from ground as possible.

Planetary Drive Assembly

The planetary assembly is the unit that is integral with the tuning shaft.

If the nut on the back end of this assembly is too tight, the drive will be jerky and will turn hard in high speed. If this condition exists, back off this nut one or two turns and note the effect.

If this nut is too loose, the drive will slip in slow speed. The remedy in this case, of course, is to tighten the nut.

Should the condenser drive cord slip when the planetary pulley is turning, inspect the tuning condenser, drive drum and gears to see if they are turning properly or if they are being obstructed in some way.

If the drive turns unevenly (rough in spots), this may mean that the planetary assembly is defective or damaged internally and a new unit will be required.

Phonograph Connections

Phonograph connections can be made as shown in Fig. 7. The parts required are shown in the parts list. Knockouts are provided in the back panel of the chassis for mounting the phono jack and phono switch—See Fig. 8.

The phono switch must be mounted with one set of terminals nearest the bottom of the chassis base.

The connections are made by opening the diode return circuit at the volume control. This is done by removing the white wire connected to the insulated lug of the terminal strip on which one end of condenser C32 is also connected. The terminal strip is located at the back of the volume control. This wire is then connected to the phono switch as shown in Fig. 7. A wire is then connected from the lug on the above mentioned terminal strip to the phono switch, as shown in Fig. 7. Both of the above wires are connected to the switch terminals nearest the chassis base and should be twisted together as far

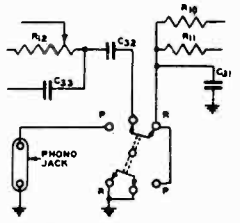


Fig. 7—Phonograph Connections

as possible and run as close to the back of the chassis base as possible.

The lead to condenser C32, after turning away from the back of the chassis base, should be run close to the 6C5 tube sockets.

Complete the other connections as illustrated in Fig. 7, using the lugs in the chassis base, located near the phono switch and jack, for grounding purposes.

The control grid lead of the 6F6 power tube nearest the back of the chassis should be removed and a longer lead substituted. This lead is run from the tone control to the back of the chassis, along the lower edge and is then brought to the grid terminal by being routed between the speaker socket and the tubular condenser next to it.

If a hum is heard when the phono pickup is touched, reverse the two pickup leads.

Switch Contact Location Numbering

A standard arrangement for switch contact location numbering has been adopted. This numbering is illustrated in Fig. 2. In contact locations not used, the number applying to that particular location is not employed.

Voltage Chart

The voltage readings are taken with a voltmeter having a resistance of 1000 ohms per volt.

The standard metal tube socket terminal numbering system (bottom of socket) is shown in Fig. 5 On the schematic circuit diagram, Fig. 2, is a list giving the complete names of the tube elements and the corresponding symbols as used on the sockets on the schematic.

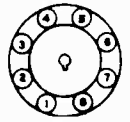


Fig. 5—Metal Tube Terminal numbering (bottom of socket)

MODEL D722

WESTERN AUTO SUPPLY CO.

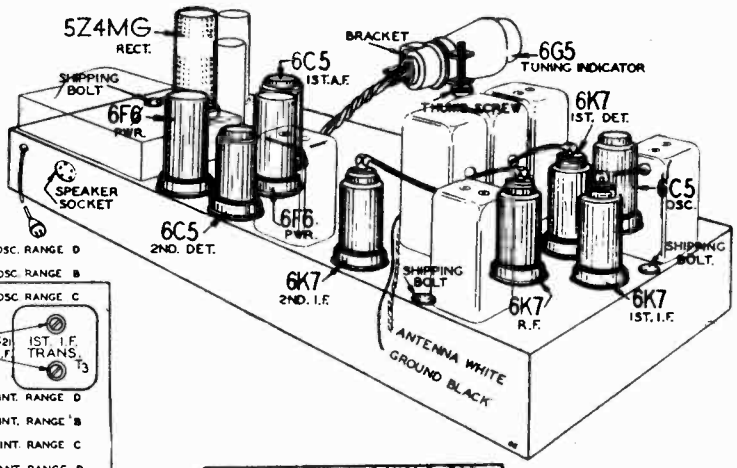


Fig. 6—Location of Tubes

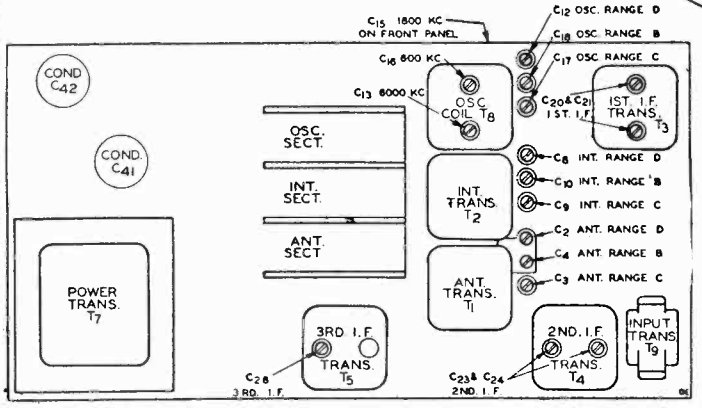


Fig. 5—Location of Trimmers

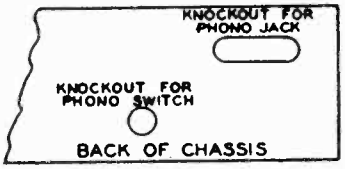


Fig. 8—Location of Phono Knockouts

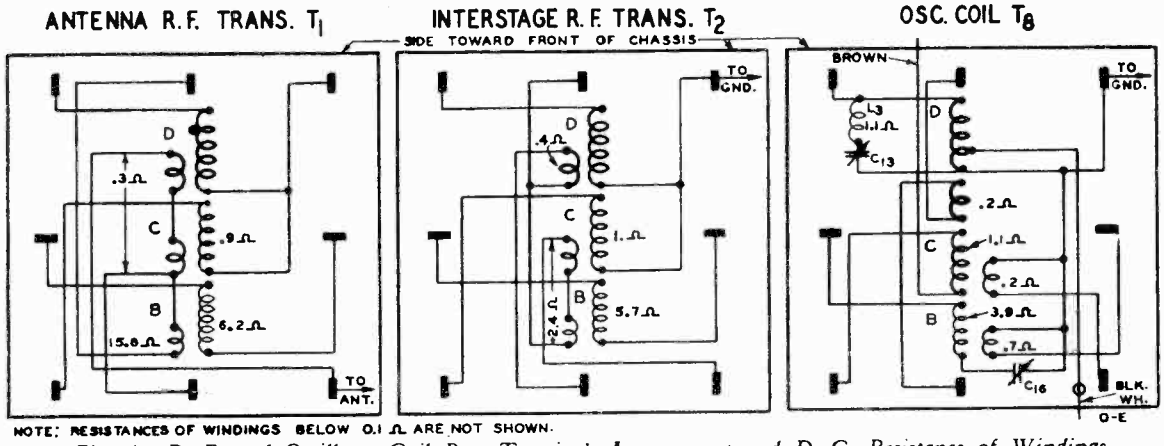


Fig. 4—R. F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

Line Voltage: 115
Volume Control: Maximum

Antenna Shorted to Ground
Position of Band Switch: Standard Wave

TUBE	FUNCTION	VOLTAGE BETWEEN SOCKET PRONGS AND GROUND (Unless otherwise indicated)							
		Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Prong No. 8
6K7	R.F.	0	6.1(1)	250	100	2.5	...	6.1(1)	2.5
6K7	1st Det.	0	6.1(1)	250	120	0	...	6.1(1)	9
6C5	Osc.	0	6.1(1)	120	...	...	...	6.1(1)	0
6K7	1st I.F.	0	6.1(1)	250	100	2.5	...	6.1(1)	2.5
6K7	2nd I.F.	0	6.1(1)	250	100	3	...	6.1(1)	3
6C5	2nd Det.	0	6.1(1)	0	...	...	...	6.1(1)	0
6C5	1st A.F.	0	6.1(1)	110	...	...	...	6.1(1)	4.5
6F6	Power Amp.	0	6.1(1)	330	250	25(2)	...	6.1(1)	0
5Z4MG	Rect.	0	4.8(3)	...	640(4)	...	640(4)	...	4.8(3)

6G5	Tuning Indicator	Plate to Ground 20(5)	Target to Ground 250	Cathode to Ground 0	Across Heater 6.1 A.C.

(1) A.C. voltage as read across heater terminals 2 and 7.
(2) As read across resistor R24.
(3) A.C. voltage as read across heater terminals 2 and 8.
(4) A.C. voltage as read across terminals 4 and 6.
(5) As read with 500,000 ohm meter.

MODEL D725

WESTERN AUTO SUPPLY CO.

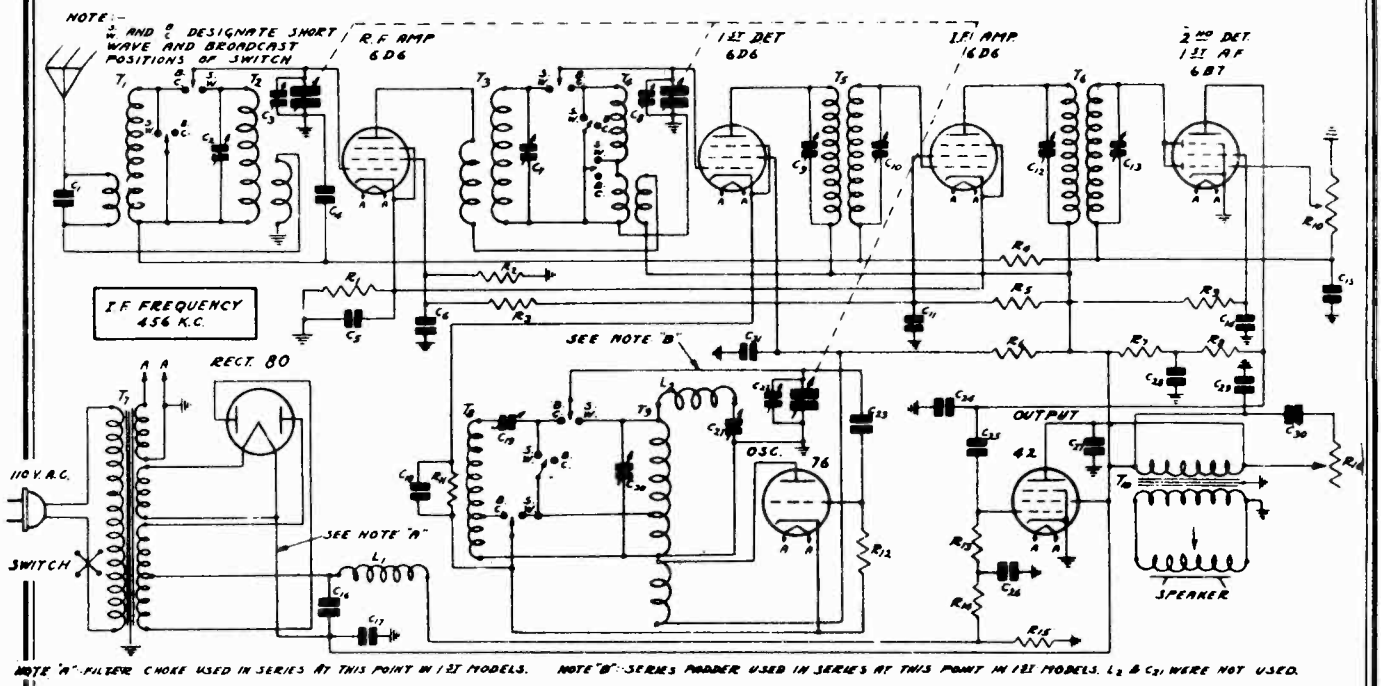


Fig. 1—Schematic Circuit Diagram

Condenser Alignment

Correct alignment is extremely important in connection with all wave receivers. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment. A signal generator that will provide an accurately calibrated signal of 456 K. C. and accurately calibrated signals over the broadcast and short wave bands, 530-1740 K. C. and 5.8-18.3 M. C., is required. An output indicating meter is also necessary. It will be practically impossible to align the receiver if unsatisfactory apparatus is used.

Use a non-metallic screw driver for the adjustments. The complete procedure is as follows:

Intermediate Frequency Adjustment

Set the signal generator for 456 K. C. Connect the antenna lead of the signal generator to the grid of the 1st detector through a .05 mfd. condenser. Turn the tuning condenser rotor until the plates are completely out. The ground lead from the signal generator goes to the ground lead of the receiver. The volume control should be at the maximum position. Attenuate the signal so that A. V. C. action is not obtained.

Then adjust the four I. F. trimmer condensers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis and are in the round I. F. cans—See Fig. 2. The openings to the trimmer condensers are covered over by a small cover plate which is held in position by a screw. Loosen these screws until the cover plates can be swung around.

Broadcast Band Adjustment

The broadcast short wave switch should be in the broadcast position. Set the signal generator for 1740 K. C. Turn the rotor to the full open position. The antenna lead from the signal generator is in this instance connected to the antenna lead of the receiver. Attenuate the signal so that A. V. C. action is not obtained. Adjust the oscillator broadcast trimmer until maximum output is obtained. This trimmer is on the tuning condenser and its location is shown in Fig. 2.

Then set the signal generator for 1500 K. C. Turn the rotor until maximum output is obtained. Loosen the pointer screw and set the pointer at the 1500 K. C. mark on broadcast band scale. Retighten pointer screw. Then adjust the antenna and 1st detector broadcast trimmers until maximum output is obtained.

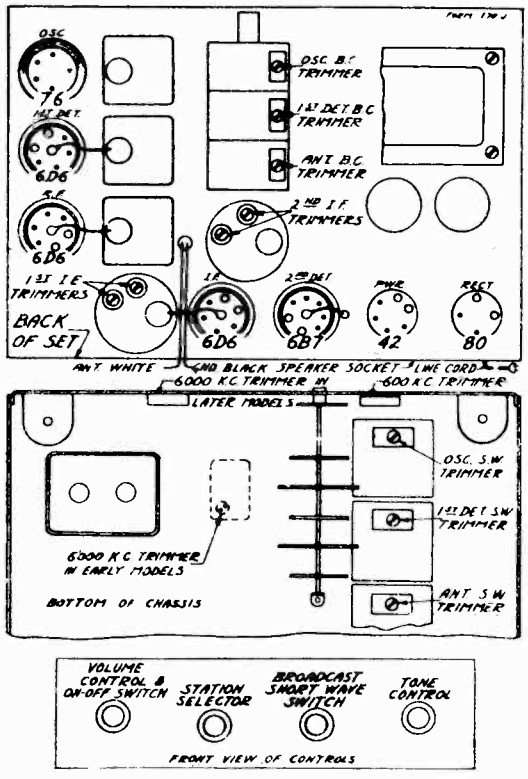


Fig. 2—Tube Arrangement and Location of Trimmers

Next set the signal generator for 600 K. C. and adjust the 600 K. C. trimmer. The adjusting screw is reached through a hole in the front panel of the chassis as shown in Fig. 2. Turn the tuning condenser rotor until maximum output is obtained. Then turn the rotor slowly back and forth over

this setting at the same time adjusting the 600 K. C. trimmer screw until the highest output is obtained.

Short Wave Band Adjustment

CAUTION—After the broadcast band alignment as described above has been made, do not change the adjustment of any of the broadcast band trimmers.

Turn the broadcast short wave switch to the short wave position. Turn the rotor to the full open position. As explained above, the volume control should be at the maximum position and the signal should be attenuated to prevent A. V. C. action. Set the signal generator for 18,300 K. C. Then adjust the oscillator short wave trimmer for maximum output. This trimmer is reached from under the chassis and its position is shown in Fig. 2.

Next set the signal generator for 15,000 K. C. Turn the rotor until the dial pointer is at the 15,000 K. C. mark on the short wave portion of the dial scale. Then adjust the antenna and 1st detector short wave trimmers until maximum output is obtained.

In aligning the short wave band of the receiver, it will be noted that the signal will be heard with the signal generator set at two points 912 K. C. apart. That is, if the receiver is tuned to 15,000 K. C. a signal will be heard when the signal generator is set at 15,000 K. C. and again at approximately 15,912 K. C. This is due to image reception or the fact that a 456 K. C. beat is obtained when the signal is 456 K. C. lower than the receiver oscillator and also when the signal is 456 K. C. higher than the receiver oscillator. Care should be taken to see that the receiver is tracked with the signal generator adjusted to the lower of the two frequencies at which a signal is heard, in order that the oscillator in the receiver will be 456 K.C. higher in frequency than the signal.

Next set the signal generator for 6000 K. C. and adjust the 6000 K. C. trimmer. In the first models of this receiver, this condenser was located at the point shown in Fig. 2 in dashed lines. In the later models it is reached through a hole in the front panel of the chassis as shown in the same illustration. Turn the tuning condenser rotor until maximum output is obtained. Then turn the rotor slowly back and forth over this setting, at the same time adjusting the 6000 K. C. trimmer screw until the highest output is obtained. In the early models this adjustment is broad while in the later models it is more critical.

Caution

The can of electrolytic condenser C16 is not at ground potential. Therefore in any work on the chassis, care should be taken not to touch this can and any other grounded point such as the other electrolytic condenser can.

Replacing Drive Cord

Remove chassis from cabinet.

Take off the pilot light assembly by lifting off the two sockets and spring clips.

Detach the large pointer by removing the screw at the center of the dial.

Loosen the dial assembly by taking out the two screws which secure the bottom of this assembly to the chassis.

Then lay the complete dial assembly face downward in front of the chassis. It is not necessary to remove the volume control and tone control collars which hold the indicator cords of these two controls in position.

Turn the drive drum until the opening in this drum is approximately vertical and with the hole at the top as shown in Fig. 3.

Remove the tension spring and the old drive cord.

See that the eyelet is in the hole in the drive drum as shown in Fig. 3. Insert one end of the drive cord from the outside through the hole in the eyelet in the drive drum.

Voltages at Sockets
LINE VOLTAGE — 115
ANTENNA SHORTED TO GROUND

Type of Tube	Function	Across Fila. or Heater	Plate to Cath.	Screen to Cath.	Control Grid to Cath.	Normal Plate M. A.
6D6	R. F.	6.3	246	100	3.6(1)	5.3
6D6	1st Det.	6.3	237	97	8.0(2)	3.4
76	Osc.	6.3	115		0	4.8
6D6	I. F.	6.3	246	130	3.6(1)	8.3
6B7	2nd Det.	6.3	50(3)	40(3)	0	2.7
42	Power	6.3	230	245	17.0(4)	33.0
80	Rectifier	5.0				37.0 per plate

(1) Cathode to ground
(2) Subject to variation
(3) Read with 1,000,000 ohm meter
(4) As read across R15

Tie the end of the cord which has been inserted in the hole to one end of the tension spring.

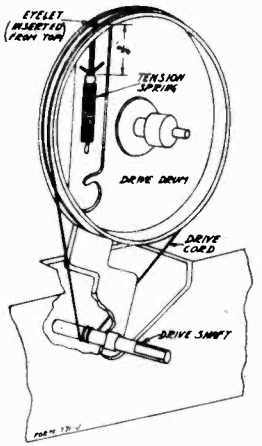


Fig. 3—Drive Cord Replacement

Wrap the cord in a clockwise direction (facing front of chassis) around the drive drum approximately one-half turn.

Then tilt the chassis up on its back panel and bring the cord mentioned in the previous paragraph down to the drive shaft. Wrap it two and one-half times around the drive shaft as shown in Fig. 3.

Then bring this cord up from the drive shaft and wrap it around the drive drum approximately one and one fifth turns in a clockwise direction until it is up to the hole in this drum as illustrated.

Insert the free end of the cord through the hole in the eyelet and tie it to the end of the tension spring. The end of the spring, when hanging free, should be approximately ¼" from the flange of the drum as shown in Fig. 3. Cut off the surplus length of cord after it is knotted.

Then secure the other end of the tension spring over the spur on the drive drum.

Replace the dial assembly and pointer.

Replace the pilot light assembly after which the chassis may be reinstalled in the cabinet.

Changes in Early Models

There are two points at which the early models of this receiver differ from the present models. These points are indicated in Fig. 1 and described below.

Power Unit

In the early models a separate filter choke was used in series at the point indicated in note A in Fig. 1. The values of the two filter condensers C16 and C17 were less than as used at present. The values of the old and new condensers are shown in the parts list. A different power transformer was also used with the early filter system and this is likewise shown in the parts list.

The two power transformers are not interchangeable and care must be taken in ordering for replacement purposes to order the correct one. The original chassis can be identified by the separate filter choke.

Short Wave Oscillator

Referring to Fig. 1 it will be noted that there is a tracking coil L2 and a trimmer condenser C21 connected in series between the short wave oscillator coil and ground. In the first models of this receiver these two units, which are required for tracking the short wave oscillator, are not used. Instead a series padding condenser was used at the point in the circuit indicated by note B in Fig. 1.

At the time this change was made a change was also made in the oscillator assembly and care must be taken in ordering for replacement purposes to order the correct one. Early models with the original oscillator assembly have no spot of paint or a green spot of paint on the 80 socket rivet. Later models with the new oscillator assembly and new tracking system have a red spot of paint on the 80 socket rivet.

Twenty-five Cycle Receivers

The twenty-five cycle receiver differs from the sixty-cycle, receiver, only in the fact that a different power transformer is used. The correct power transformer is shown in the parts list.

The twenty-five cycle chassis can be operated satisfactorily from a sixty-cycle power supply. However, the reverse is not true, the sixty-cycle receiver cannot be operated from a twenty-five cycle power supply.

A 110-220 Volt, 40-60 cycle Power Transformer is also available for this model.

REPAIR PARTS LIST FOR 7 TUBE BROADCAST AND SHORT WAVE RECEIVER

When ordering parts be sure and give the part number. Also give the series number which will be found in the License Notice label. If there is a spot of paint on the chassis, give this color.

Part No.	Item	List Price
P-1441	Double Mounting Strip	.10
P-1421	Single Mounting Strip	.10
P-2060	Knob Small	.20
P-2062	Knob Large	.20
P-10230	Small Tone & Volume Control Disc	.10
P-30912	Pointer, Large	.20
P-3012	Pilot Light Bulb 6-8 volt	.15
P-10252	Rubber Mounting Feet	.10
P-10420	Glass Crystal	.15
P-30875	Crystal Retainer Ring	.10
P-2090	6" Speaker Mantel Sets Ld. - 1250 ohm	6.00
P-2091	8" Speaker Console Sets Ld. - 1250 ohm	6.75
	8" Black Drive Cord (V. C. or T. C. Ind.)	.05
	29" Black Drive Cord (Cond. Drive)	.10
P-2136	Pilot Lamp Socket & Clip Assembly	.10
P-2131	Broadcast-Short Wave Switch	1.88

Part No.	Item	List Price
P-1885	No. 6D6 Socket	$ .15
P-2022	No. 76 Socket	.15
P-1944	No. 6B7 Socket	.15
P-1884	No. 42 Socket	.15
P-2025	No. 80 Socket	.15
P-1632	Speaker Socket	.10
P-40445	Tube Shield for 6D6 & 6B7 Tubes	.15
P-40444	Tube Shield for 76 Tube	.15
P-40443	Tube Shield Bases	.10
*P-30634	Power Transformer 115 Volts, 60 Cycles	3.00
*P-30633	Power Transformer 115 Volts, 25 Cycles	4.30
*P-30636	Power Transformer 115-230 Volts, 40-60 Cycles	3.25
†P-30646	Power Transformer 115 Volts, 60 Cycles	3.25
†P-30647	Power Transformer 115 Volts, 25 Cycles	4.30
†P-30648	Power Transformer 115-230 Volts, 40-60 Cycles	3.75
*P-30632	Filter Reactor	.85
P-30999 A	Output Transformer T 10	1.15
P-3176	Antenna R.F. Trans. less can T1 & T2	1.80
P-3177	Inter-Stage R. F. Trans. less can T3 & T4	1.75
*P-3178	Oscillator Coil Assembly Less can T8 & T9	1.70
†P-30643	Oscillator Coil Assembly Less can T8 & T9	1.70
P-30435	Cans for the above Assemblies	.15
†P-3180	High Frequency Oscillator Tracking Coil L2	.35
P-3179	1st I. F. Assembly Complete with Can T5	2.15
P-3180	2nd I. F. Assembly Complete with Can T6	1.75
P-30342 A	Grid Cap Only	.10
P-26702	AC Cord & Plug	.70
P-1564	8 Terminal Mounting Strip	.10

Part No.	Code	Resistance	Watts	Type	List Price
P-98016	R1	200 ohm	.2	Flex. Wire Wound	$ .15
P-B93303	R2	30,000 ohm	.5	Carbon	.20
P-B94602	R3	6,000 ohm	.5	Carbon	.15
P-A95305	R4	2.0 megohm	.2	Carbon	.15
P-98020	R5	16,000 ohm	1.5	Armored wire wound	.65
	R6	25,000 ohm	1.0		
P-A94303	R7	20,000 ohm	.2	Carbon	.15
P-B94603	R8	60,000 ohm	.5	Carbon	.15
P-B94254	R9	250,000 ohm	.5	Carbon	.15
P-96014	R10	500,000 ohm		Vol. Control & Switch	1.05
P-A94252	R11	2.500 ohm	.2	Carbon	.15
P-A94104	R12	100,000 ohm	.2	Carbon	.15
P-A95504	R13	500,000 ohm	.2	Carbon	.20
P-A94104	R14	100,000 ohm	.2	Carbon	.15
P-98015	R15	235 ohm	2.0	Flex. Wire Wound	.15
P-97011	R16	150,000 ohm		Tone Control	.75

Part No.	Code	Capacity	Volts	Type	List Price
P-80919	C1	.00025 mfd.		Moulded	$ .20
P-2102	C2	3-40 mmfd.		Ant. S.W. Trimmer	.15
	C3	(See 3 Gang Cond.)		Gang Trimmer	
P-80862	C4	.05 mfd.	300V.	Tubular	.15
P-80888	C5	.25 mfd.	200V.	Tubular	.25
P-80890	C6	.05 mfd.	400V.	Tubular	.20
P-2102	C7	3-40 mmfd.		1st Det.S.W. Trim	.15
	C8	(See 3 Gang Cond.)		Gang Trimmer	
P-1386-B	C9	90+30 mmfd.		Dual Trimmer Part of I. F. Assem.	
	C10	90+30 mmfd.			
P-81034	C11	.25 mfd.	100V.	Tubular	.30
P-1386-B	C12	90+30 mmfd.		Dual Trimmer Part of I. F. Assem.	
	C13	90+30 mmfd.			
P-81040	C14	.25 mfd.	400V.	Tubular	.35
P-80977	C15	.0001 mfd.		Moulded	.20
†P-81043	C16	18.0 mfd.	300V.	Electrolytic Wet	1.30
*P-80916	C16	8.0 mfd.	450V.	Electrolytic Wet	1.25
*P-81032	C17	8.0 mfd.	500V.	Electrolytic Wet	1.30
†P-81042	C17	14.0 mfd.	400V.	Electrolytic Wet	1.45
P-80862	C18	.05 mfd.	200V.	Tubular	.15
P-2112	C19	300-500 mmfd.		600 K.C. Trimmer	.45
P-2102	C20	3-40 mmfd.		Osc. S.W. Trimmer	.15
†P-1685	C21	20+30 mmfd.		6000 K.C. Trimmer	.35
	C22	(See 3 Gang Cond.)		Gang Trimmer	
P-81005	C23	.000035 mfd.		Moulded	.15
P-80914	C24	.002 mfd.	600V.	Tubular	.20
P-80981	C25	.01 mfd.	400V.	Tubular	.20
P-81044	C26	.03 mfd.	400V.	Tubular	.15
P-80914	C27	.002 mfd.	600V.	Tubular	.20
P-81033	C28	.25 mfd.	400V.	Tubular	.35
P-80887	C29	.1 mfd.	400V.	Tubular	.20
P-80890	C30	.05 mfd.	400V.	Tubular	.20
P-80887	C31	.1 mfd.	400V.	Tubular	.20
P-81027-B	3 Gang Condenser				3.3.
*P-2113		600-1300 mmfd		6000 K.C. Trimmer	.61

* Used in early Models. See Article on changes in this Manual
† Used in Later Models. See Article on changes in this Manual

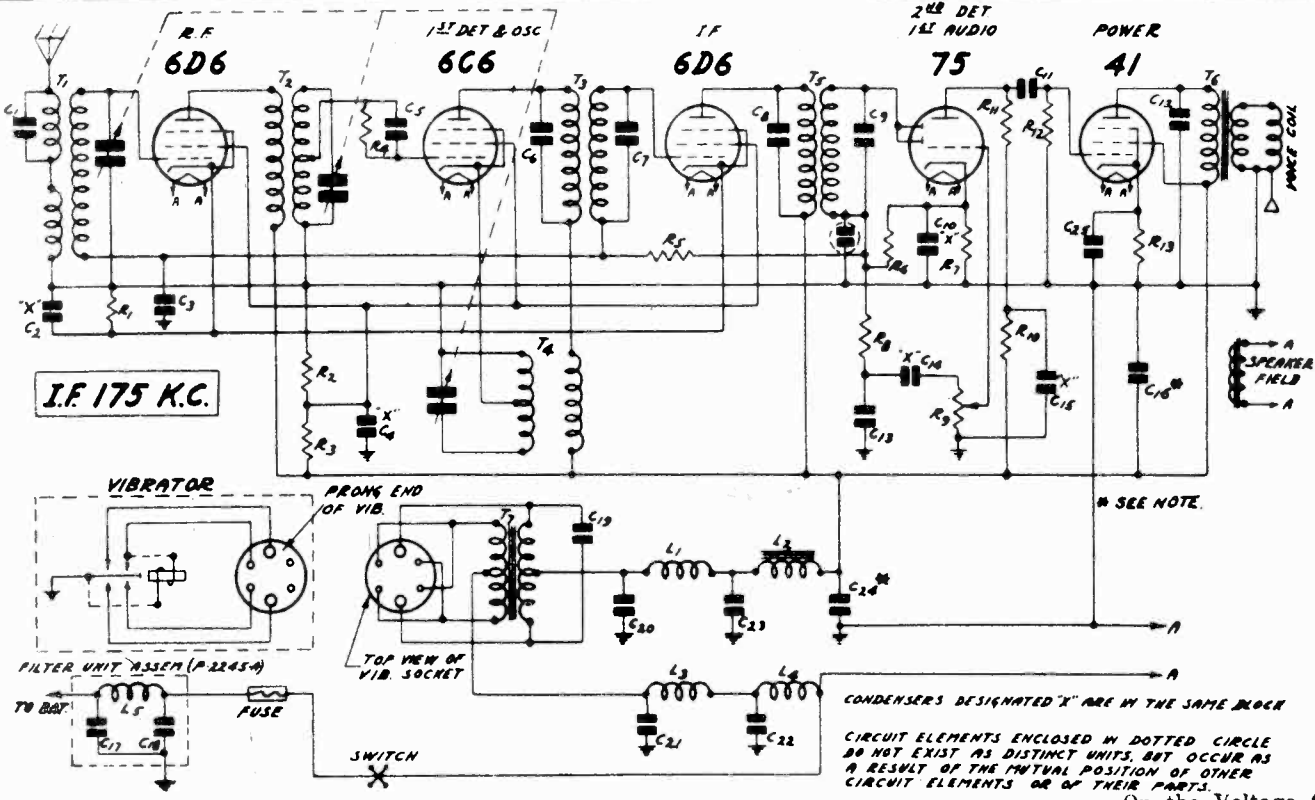


Fig. 1—*Schematic Circuit Diagram*

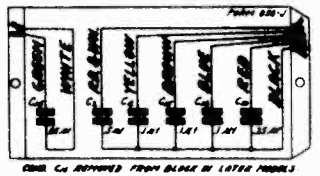


Fig. 6—Condenser Block Internal Wiring

Fig. 7—Electrolytic Block Internal Wiring

CONDENSERS

Part No.	Code	Capacity	Voltage	Type
P-81814	C1	250 mmf.	Part of Antenna Coil Assembly	
P-82600D	C2	.50 mf.	200V.	Bypass Block
	C4	.10 mf.	140V.	
	C10	.25 mf.	140V.	
	C14	.05 mf.	300V.	
	C15	.10 mf.	200V.	
P-81116	C3	.05 mf.	200V.	Tubular
P-81815	C5	35 mmf.	Part of Grid Leak Assembly	
P-81806	C6	70 mmf.	Part of 1st I. F. & Osc. Coil Assembly	
	C7	70 mmf.		
P-81806	C8	70 mmf.	Part of 2nd I. F. Coil Assembly	
	C9	70 mmf.		
P-81115	C11	.05 mf.	300V	Tubular
P-81114	C12	.006 mf.	600V.	Tubular
P-81814	C13	250 mmf.		Moulded
P-81132	C16	.10 mf.	300V.	Tubular
	C17	.01 mf.	120V.	In Choke Condenser Unit
	C18	.01 mf.	120V.	
P-81120	C19	.007 mf.	1600V.	Tubular
P-81122	C20	.10 mf.	300V.	Tubular
P-81121	C21	.50 mf.	140V	Tubular
P-81816	C22	.002 mf.		Moulded
P-82002	C23	4.0 mf.	250V.	Dry Electrolytic Block
	C24	2.0 mf.	250V.	
	C25	4.0 mf.	25V.	
P-82500	Gang Condenser			

RESISTORS

Part No.	Code	Resistance	Wattage	Type
P-B94351ww	R1	350 Ohm	.5	Flexible Wire Wound
P-B95253	R2	25,000 Ohm	.5	Carbon
P-B95103	R3	10,000 Ohm	.5	Carbon
P-A95105	R4	1 Megohm	.2	Carbon
P-A95105	R5	1 Megohm	.2	Carbon
P-A95504	R6	500,000 Ohm	.2	Carbon
P-A94752	R7	7,500 Ohm	.2	Carbon
P-A95104	R8	100,000 Ohm	.2	Carbon
P- 96017	R9	2 Megohm		Volume Control and Switch
P-A95503	R10	50,000 Ohm	.2	Carbon
P-A95204	R11	200,000 Ohm	.2	Carbon
P-A95504	R12	500,000 Ohm	.2	Carbon
P-B94801ww	R13	800 Ohm	.5	Flexible Wire Wound

In the first models of this receiver a bypass condenser block (P-82600) containing condensers: C2, C4, C10, C14, C15 and C16 was used. Condenser C16 was removed in the later models and added as a separate tubular condenser (P-81132) while the other condensers remained in the block (P-82600-D).

A second condenser change from the earlier models was in the electrolytic filter block (P-82002). In this block section C24 was changed from an 8 mfd., 250 volt to a 2 mfd., 250 volt condenser.

On the Voltage Chart are given the voltages at the sockets with all tubes in and the set in operating condition. The antenna should be disconnected at the bayonet connector.

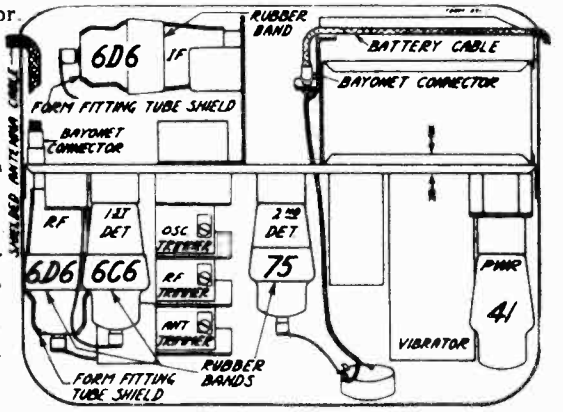


Fig. 2—*Location of Tubes and Vibrator*

Condenser Alignment

Misalignment or mistracking of condensers generally manifests itself as broad tuning and lack of volume at portions or all of the standard wave band. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment. A signal generator that will provide accurately calibrated signals over the standard wave band and an output meter are required for indicating the effect of adjustments.

First remove the cover of the box. Leave the antenna and battery cables connected to the chassis.

Disconnect the car antenna and connect antenna cable lead to the lead from the signal generator.

Set the signal generator for 1650 K. C. Turn the rotor to the full open position. The antenna lead from the signal generator adjustment is connected to the antenna lead of the receiver. Adjust the trimmer of the oscillator section of the 3 gang condenser until maximum output is obtained. The oscillator section is the one with the cut plate rotor.

Now set the signal generator for 1400 K. C. and turn the rotor until maximum output is obtained. Adjust the other two trimmers on the gang condenser for maximum output.

To calibrate the receiver, tune in a station of known frequency at about the center of the dial. Remove the escutcheon plate and glass. The pointer is held in position by friction. Grasp the pointer at the center and turn it until it points to the frequency of the station being received.

The use of the cut plate type of condenser eliminates the necessity of a 600 K. C. padder and, therefore, no adjustment at this frequency is required.

Adjusting Antenna Trimmer

After the receiver is installed and the car antenna is connected it will be necessary to adjust the antenna trimmer. Tune in a weak signal between 1200 and 1400 K. C. with the volume control about three-fourths on. Drop the chassis from the cover. The location of the antenna trimmer is shown in Fig. 2. Turn the adjusting screw of this condenser up or down until maximum output is obtained. CAUTION—Do not turn any of the other trimmer adjusting screws for this adjustment.

Removing Chassis From Case

First unsolder the black, brown, yellow, and green speaker leads which connect to the terminal strip adjacent to the vibrator unit. Next, notice the small length of braided shielding which is soldered to the solder lug that is secured to the chassis case between the dial scale and the volume control shaft. Unsolder this shielding at the lug.

Remove the 4 screws which hold the chassis in the case — 2 are in the side and 2 on the speaker panel of the chassis case. (Do not remove the four speaker mounting screws.)

Remove the two control knobs by pulling them off of the shaft.

Next remove the volume control. To do this first loosen the hexagonal nut on the inside of the case with a flat wrench. Then unscrew and remove the round knurled nut from the front.

The chassis may then be taken out.

Replacing Vibrator Unit

The vibrator unit is plugged in in the same manner as a tube. This unit may, in case of failure, be readily replaced. CAUTION—Polarity, as explained in the label on the unit and in the label on the metal box in the chassis, must be observed when plugging in vibrator unit.

In replacing the vibrator unit be sure to replace the corrugated cardboard pad, which prevents the unit from working its way out of the socket.

When servicing this receiver, a new vibrator unit should be tried out in the same manner as a new set of tubes would be tried out.

One or more vibrator units should be kept on hand for replacement purposes.

Replacing Volume Control

To remove the volume control and the switch, first pull the knob from the volume control shaft. Next loosen the hexagonal nut on the inside of the case with a flat end wrench. Then unscrew and remove the round knurled nut from the front.

The old volume control and switch connections may now be unsoldered and the new unit put in its place and the leads resoldered.

Fasten the volume control to the case in the reverse order in which it was removed.

D. C. Resistance of Windings

Following are the D. C. resistances of the various windings in the chassis. The values given below will vary slightly in different sets.

Part No.	Item	Code	D.C. Resistance in Ohms
P-5247	Antenna Trans. Pri. in Series	T1	17.50
	Antenna Trans. Sec.	T1	5.25
P-5248	R. F. Interstage Trans. Pri.	T2	2.31
	R. F. Interstage Trans. Sec. (Center Tap to Inside)	T2	3.23
	(Center Tap to Outside)		3.98
P-5249	1st I. F. Trans. Primary	T3	100.00
	1st I. F. Trans. Secondary	T3	100.00
	Oscillator Cathode Coil (Total)	T4	4.50
	Oscillator Plate Coil	T4	9.00
P-5250	2nd I. F. Trans. Pri.	T5	100.00
	2nd I. F. Trans. Sec.	T5	100.00
P-50656	Power Trans. Pri.	T7	0.36
	Power Trans. Sec.	T7	860.00
P-5174	"B" R. F. Choke	L1	1.65
P-50657	Power Choke	L2	390.00
P-5251	"A" Choke	L3	Small
P-5253	Line Choke	L4	Small
P-5252	Choke Coil	L5	Small
P-2228	Output Trans. Pri.	To	640.00
	Output Trans. Sec. and Voice Coil in Par.		0.80
	Speaker Field		6.00

When ordering parts be sure and give the part number. Also give the complete serial number which includes the Series No.

Part No.	Item
P-1001	6H6 Tube Socket
P-1006	6A6 Tube Socket
P-1775	75 Tube Socket
P-1011	41 Tube Socket
P-5247	Antenna Coil Assembly Less Can
P-40415B	Can for above assembly Part of Gang Condenser Assembly
P-5248	R. F. Interstage Coil Assembly Less Can
P-40447C	Can for above assembly Part of Chassis Assembly
P-5249	1st I. F. and Oscillator Coils and Can Assembly
P-5250	2nd I. F. Coil and Can Assembly
P-2228	Dynamic Speaker
P-10359	Cardboard Baffle for Speaker
P-2229	Vibrator Unit
P-2020	Vibrator Socket
P-50656	Power Transformer
P-5251	R. F. "A" Choke Coil
P-5174	R. F. "B" Choke Coil
P-50657	Power Choke Coil Assembly
P-5253	Filament Choke Coil
P-2220	2 Half Tube Shields with Clamping Ring
P-2040	Grid Leak and Condenser Assembly
P-2234	Knobs
P-20940	Thumb Screws
P-10856	Glass Crystal
P-10861	Gasket for Glass Crystal
P-30342A	Grid Clip only
P-10211	Wide Rubber Bands for Tubes
P-79774	Shielded Antenna Cable
P-70781	"A" Battery Cable
P-1421	Single Lug Terminal Strip
P-2002	Double Insulated Terminal Strip
P-2232	Five Lug Terminal Strip
P-1931	Couch Terminal Lug
P-20701	Drive Tension Spring
P-20893	Horse-shoe Lock Washer
P-2027	Dial Strip
P-20954	Dial Pointer

Replacing Drive Cord

The drive cord in this receiver may be replaced as follows:

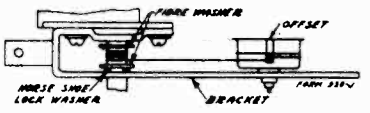


Fig. 3—*Cord Drive—Top View*

First remove the chassis from the case as explained on page 4.

Some of the first models did not have two fibre "end" washers on the drive shaft to protect the drive cord as shown in Fig. 3. If this is the case, these washers should be put on as follows:

Separate and take off the horse-shoe lock washer which holds the drive shaft in position. This may be done with a fine jawed, long nose plier.

Now pull the drive shaft out just far enough to permit the two fibre washers to be slipped over the end of the shaft.

Then slip the shaft back into place and replace the horse-shoe lock washer.

Knot one end of the new drive cord and with the condenser plates in a completely closed position, slip the drive cord through the small hole "A" in the drive drum — see Fig. 4. The knot will then be on the inside of the drum.

Now wrap the cord around the lower half of the drive drum as indicated and bring it up to the drive shaft. Proceed by wrapping it in a clockwise direction (front

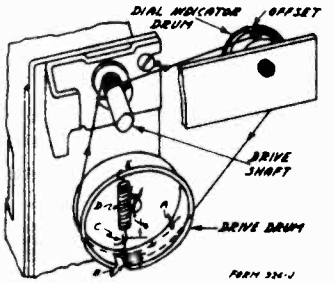


Fig. 4—*Cord Drive Replacement*

front) around the drive shaft three and one-quarter turns between the two fibre washers, progressing towards the front of the chassis. Be sure that the condenser plates are kept in a closed position and that the cord is held tight.

Set the dial indicator drum so that the offset is at the top or a little to the right of the center — see Fig. 4.

Wrap the cord from the drive shaft once around the offset in the dial indicator drum and then approximately one and one-half turns around the drum itself in a clockwise direction, progressing toward the back.

From the dial indicator drum draw the cord over the lower right hand quarter of drive drum as shown in Fig. 4.

Fig. 5—*Drive "Take-up" Spring*

Then bring the cord inside of the drum by way of the turned-in portion of the flange at "B".

Tie the drive tension spring "D" to the loose end of the cord at the point "C" just above the top edge of the lip "B" as shown in the illustration. This should be done so that the lower hook of spring "D" at point "C" will be between ¼" and ⅜" from top edge of the turned-in portion of the flange "B" in the flange of the drive drum. After the spring is hooked and the drive turned over several times the tension in the cord will cause this distance to become about ¼".

Now, by applying a tension on the drive spring "D", hook the other end of the spring into the small hole "E" near the top of the drive drum. Hook spring from the inside out.

After the cord has been put on it may be necessary to calibrate the receiver as explained in the article on condenser alignment.

All of the earlier models did not have drive shaft "take-up" springs. This spring will prevent any tendency toward change of setting should the receiver be subjected to vibration. To insert these springs and fibre washers on the drive shaft proceed as follows:

Remove the station selector knob by pulling it off of the shaft.

Slip the small fibre washer over the shaft and clip the "take-up" spring to the drive bracket as shown in Fig. 5.

The chassis may now be replaced into the case in the reverse order of the manner in which it was removed.

VOLTAGES AT SOCKETS

Input 6.3 Volts—Antenna Disconnected at Connector

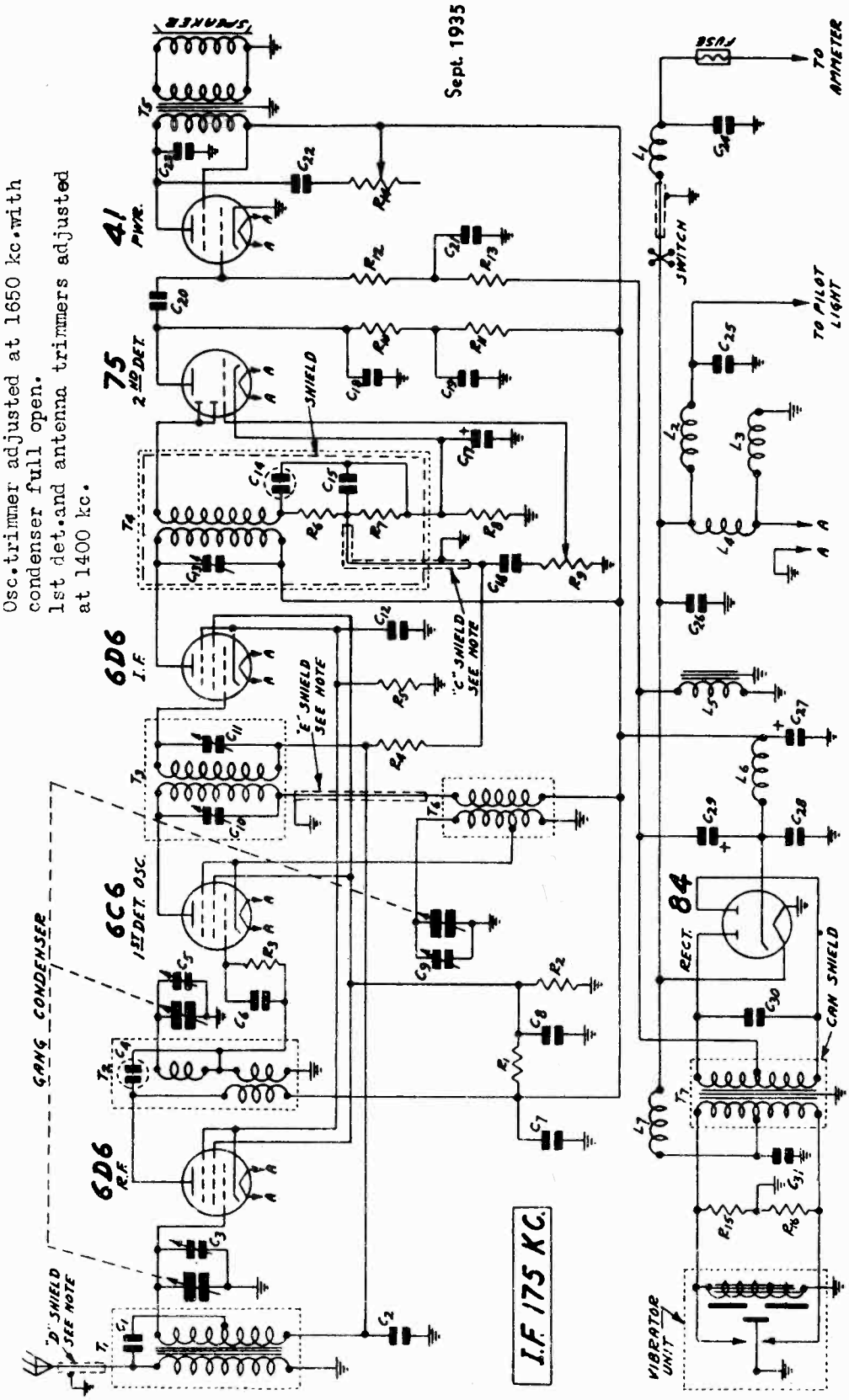
Type of Tube	Function	Volts at Heater	Plate to Cathode	Screen to Cathode	Grid to Cathode	Normal Plate M.A.
6D6	R. F.	6.2	154	95	3.0	5.2
6C6	1st Det. & Osc.	6.2	160	97	0	3.0
6D6	I. F.	6.2	154	95	3.0	5.2
75	2nd Det. & 1st A. F.	6.2	110	—	1.	.25
41	Power	6.2	143	146	14.	13.0

MODEL D737

WESTERN AUTO SUPPLY CO.

Sept. 1935

Osc.trimmer adjusted at 1650 kc.with condenser full open.
1st det.and antenna trimmers adjusted at 1400 kc.



GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES.
CIRCUIT ELEMENTS ENCLOSED IN DOTTED CIRCLES DO NOT EXIST AS DISTINCT UNITS BUT OCCUR AS A RESULT OF THE MUTUAL POSITION OF OTHER CIRCUIT ELEMENTS OR THEIR PARTS.
THE CAPACITY OF "C" SHIELD IS 37 MMF, THE CAPACITY OF "D" SHIELD IS 85 MMF AND THE CAPACITY OF "E" SHIELD IS 15 MMF.

C 1 21 mmf.
C 2 .05 mf. 180 V
C 3 Gang Trimmer
C 4 40 mmf.
C 5 Gang Trimmer
C 6 35 mmf
C 7 .10 mf. 360 V.
C 8 .10 mf. 180 V.
C 9 Gang Trimmer
C10 70-150 mmf. } One
C11 70-150 mmf. } Unit
C12 .10 mf. 180 V.
C13 70-150 mmf.
C14 250 mmf.
C15 250 mmf.
C16 .01 mf. 360 V.
C18 250 mmf.
C19 .10 mf. 360 V.
C20 .01 mf. 360 V.
C21 .25 mf. 180 V.
C22 .02 mf. 600 V.
C23 .002 mf. 600 V.
C24 .50 mf. 180 V.
C25 2000 mmf.
C26 2000 mmf.
C28 .01 mf. 360 V.
C30 .0075 mf. 1600 V.
C31 .50 mf. 180 V.
C17 4.0 mf. 25 V.
C27 5.0 mf. 350 V. } Electrolytic
C29 8.0 mf. 350 V. } Block
R 1 17000 ohm 1.0 W.
R 2 2000 ohm ohm .5 W.
R 3 .50 Megohm .2 W.
R 4 1.0 Megohm .2 W.
R 5 350 ohm .2 W.
R 6 50000 ohm .2 W.
R 7 500000 ohm .2 W.
R 8 6000 ohm .2 W.
R 9 2.0 Megohm Volume Control
R10 150000 ohm .2 W.
R11 50000 ohm .2 W.
R12 .50 Megohm .2 W.
R13 100000 ohm .2 W.
R14 150000 ohm Tone Control
R15 50 ohm .5 W.
R16 50 ohm .5 W.
T 1 Antenna Trans.
T 2 R. F. Interstage Trans.
T 3 1st I. F. Trans.
T 4 2nd I. F. Trans.
T 5 Output Trans.
T 6 Osc. Inductor
T 7 Power Trans.
L 1 Motor Noise Reactor
L 2 Pilot Light Reactor
L 3 Speaker Field S.J
L 4 Filament Reactor
L 5 Filter Choke
L 6 "B" Reactor
L 7 Vibrator Reactor

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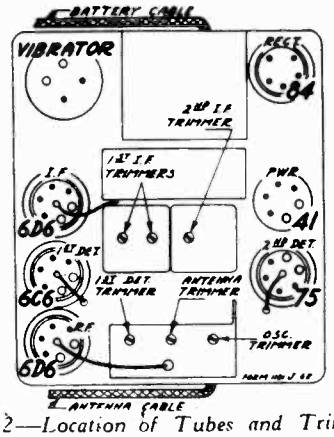


Fig. 2—Location of Tubes and Trimmers

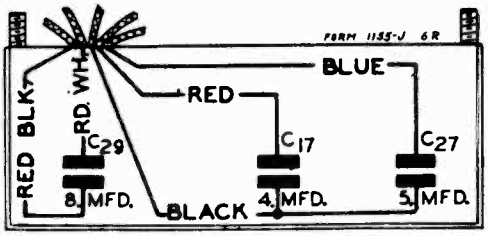
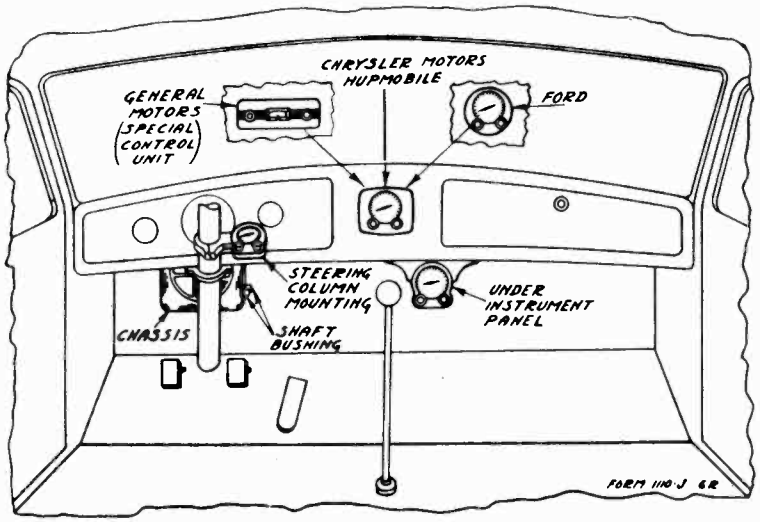


Fig. 4—Condenser Block—Internal Wiring



Power Consumption - - 6.5 Amperes at 6.3 Volts
Power Output - - - - - 3 Watts Undistorted

Tuning Frequency Range - - - - - 530-1650 KC

VOLTAGES AT SOCKETS

Antenna Disconnected Battery 6 Volts Under Load

Type of Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cathode to Ground	Cathode Current M. A.
6D6	R. F. Amp.	5.8	220	90	4.5	6.3
6C6	1st Det. Osc.	5.8	220	90	0	2.4
6D6	I. F. Amp.	5.8	220	90	4.5	6.3
75	2nd Det.	5.8	130(1)		1.2	0.3
41	Power	5.8	210	220	16(2)	25.3
84	Rectifier	5.8				50.0

(1) With 250,000 Ohm Meter
(2) As read across filter choke.

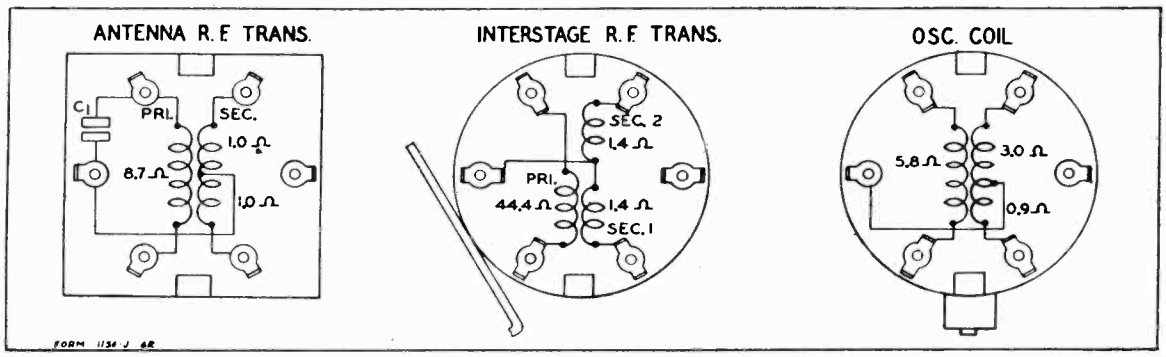


Fig. 3—R. F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

D. C. Resistance of Windings

Following are the D. C. resistances of the various windings in the chassis. The values given below will vary slightly in different sets.

Part No.	Winding	Code	D. C. Resistance in Ohms
P-9A443	Antenna Transformer	T1	
	Primary Winding		8.7
	Secondary Winding--Either Portion		1.0
P-9A439	Interstage Transformer	T2	
	Primary Winding		44.4
	Secondary Winding—Either Portion		1.4
P-9A441	1st I. F. Transformer	T3	
	Primary Winding		93.5
	Secondary Winding		97.6
P-9A442	2nd I. F. Transformer	T4	
	Primary Winding		44.1
	Secondary Winding		49.6
P-12A227	Dynamic Speaker		
	Output Transformer Primary	T5	416.6
	Output Transformer Secondary	T5	Small
	Speaker Field	L3	5.3
	Speaker Voice Coil		Small
P-9A440	Oscillator Coils	T6	
	Grid Coil		
	Long Portion		3.0
	Short Portion		0.9
	Plate Coil		5.8
P-53X108	Power Transformer	T7	
	Primary Winding		
	Center Tap to Inside		Small
	Center Tap to Outside		Small
	Secondary Winding		
	Center Tap to Inside		200.
	Center Tap to Outside		200.
P-9A444	Motor Noise Reactor	L1	Small
P-9A448	Pilot Light Line Reactor	L2	Small
P-9A446	Filament Reactor	L4	Small
P-52X42	Filter Choke	L5	312.5
P-9A447	R. F. "B" Plate Reactor	L6	4.1
P-9A445	Vibrator Filter Reactor	L7	Small

MODEL D745

WESTERN AUTO SUPPLY CO.

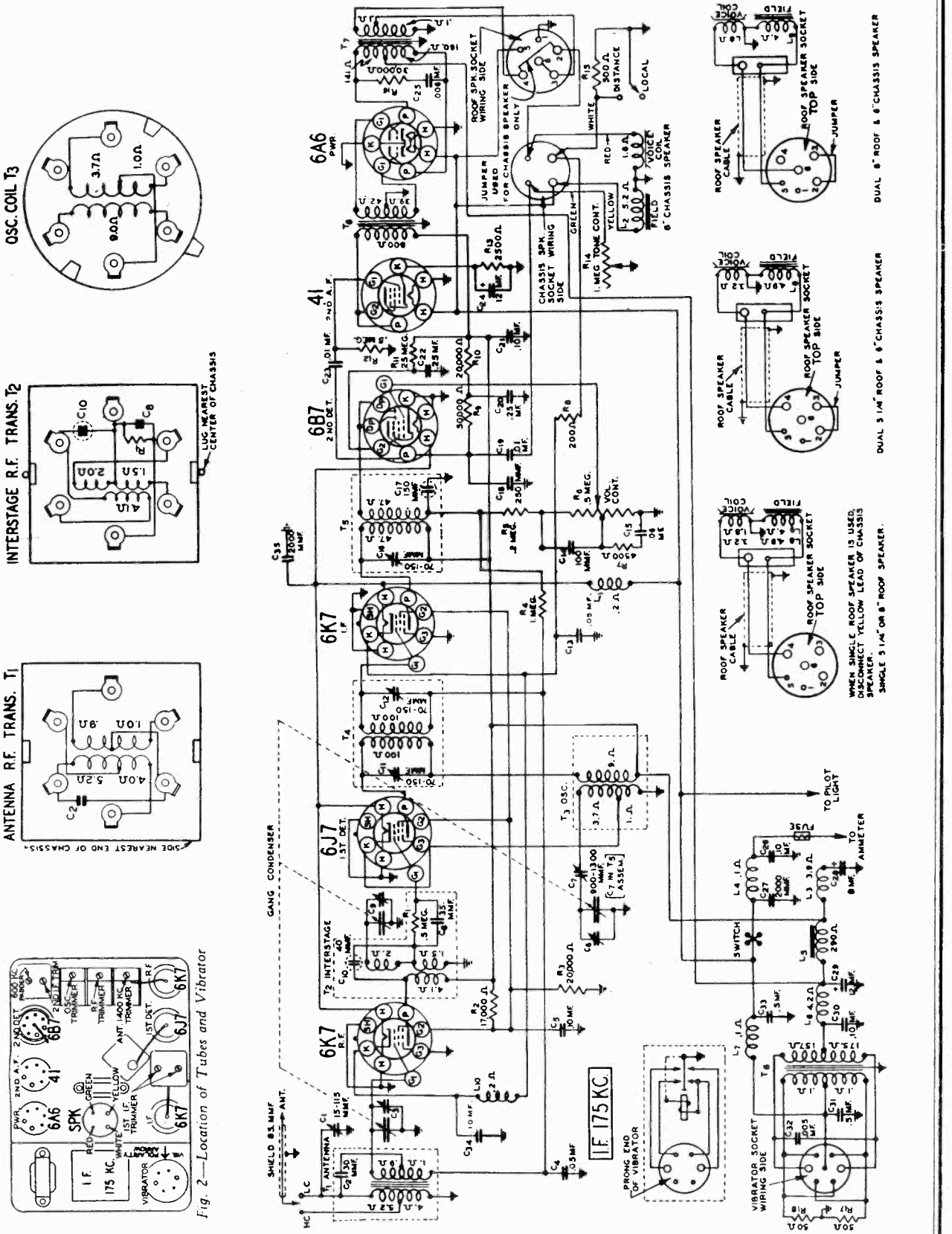


Fig. 2—Location of Tubes and Vibrator

June 1936

6 Tube Synchronous Vibrator Automobile Radio

VOLTAGES AT SOCKETS

Antenna Plug Withdrawn — L-D Switch in Distant Position — Battery 6.2 Volts under Load

Type of Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cathode to Ground
6K7	R.F.	5.6	260	110	3
6J7	1st Det.	5.6	260	110	
6K7	I.F.	5.6	260	110	3
6B7	2nd Det.	5.6	55	50	
41	2nd A.F.	5.7	255	55	30
6A6	Pwr.	5.7	275		

I. F. Adjustment

Set the signal generator for a signal of 175 KC.

Connect the output of the signal generator through a .05 mf. condenser to the stator of the R.F. interstage section of the tuning condenser. (See Fig. 2 for location of this section.)

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

Turn the Local-Distance switch to the Distance position and keep it in this position for all adjustments.

Set the volume control at the maximum position.

Attenuate the signal from the signal generator to prevent the levelling-off action of the AVC.

Then adjust the three I.F. trimmers until maximum output is obtained. The location of these trimmers is shown in Fig. 2.

1575 KC Adjustment

Set the signal generator for 1575 KC.

Turn the rotor of the tuning condenser to the full open position.

If a low capacity antenna is used, connect the shielded antenna lead from the chassis through a 150 mmf. condenser to the antenna post of the signal generator. (If high capacity, use 1500 mmf.) The antenna plug must be correctly inserted, dependent on the capacity of the antenna used.

For this and all subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent AVC action.

Adjust the trimmer of the oscillator section of the three gang condenser until maximum output is obtained—see Fig. 2 for location of this trimmer.

1400 KC Adjustment

Set the signal generator for 1400 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the R.F. interstage and antenna 1400 KC trimmers for maximum output.

Do not change the setting of the oscillator trimmer.

600 KC Adjustment

Set the signal generator for 600 KC.

Connect the output of the signal generator through a .05 mf. condenser to the control grid of the 6K7 R.F. tube.

Turn the tuning condenser rotor until maximum output is obtained. Then turn the tuning condenser rotor back and forth, at the same time adjusting the 600 KC padder (see Fig. 2) until the peak of greatest intensity is obtained.

Re-connect the output of the signal generator to the shielded antenna lead through a 150 mmf. condenser (1500 mmf. if antenna is high capacity).

Adjust the 600 KC antenna trimmer to maximum. This trimmer is reached from the outside of the case

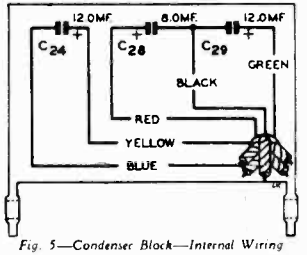


Fig. 5—Condenser Block—Internal Wiring

Adjusting Antenna 600 KC Trimmer

After the receiver is installed and the car antenna is connected, it will be necessary to adjust the antenna trimmer. Tune in a weak signal at approximately 600 KC with the volume control about three-fourths on. Turn the adjusting screw of the antenna 600 KC trimmer up or down until maximum output is obtained. See Fig. 3 for location of this trimmer.

As shown in this illustration, the antenna plug is inserted in one of two ways, depending on whether the car has a high or low capacity antenna. Full instructions are in the installation manual packed with each radio.

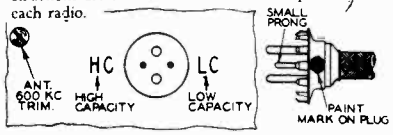


Fig. 3—Antenna Plug Insertion

Calibrating the Radio

To calibrate the radio, tune in a station of known frequency. At the back of the control head is the calibration screw. Remove the pilot lamp assembly. Insert a fine blade screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received. The knob must be held during this adjustment.

If the control head is inaccessible it may be calibrated by setting the pointer from the front. Remove the crystal by inserting a knife blade under the lower edge. Loosen the pointer screw, set the pointer and retighten.

Replacement Parts

There is a large letter on the chassis which identifies the set as to major part changes. When ordering parts please be sure to mention the series number and this large letter

Part No.		Description	List Price
P-3A223	6J7	Tube Socket	$0.15
P-3A211	6K7	Tube Socket	.15
P-3A208	6A6	Tube Socket	.15
P-3A116	41	Tube Socket	.10
P-3A120	6B7	Tube Socket	.15
P-3A229	6 Prong	Socket (External Speaker)	.15
P-3A226	Antenna	Socket	.10
P-3A228	Vibrator	Socket	.15
P-3A231	4 Prong	Socket (Internal Speaker)	.10

SPEAKER

P-12A242		6" Dynamic Speaker	$4.35

Part No.	Code	Description	List Price
P-9A588	L4	"A" Line Reactor	.20
P-52X46	L5	"B" Reactor	.80
P-9A585	L6	"B" Reactor	.30
P-9A587	L7	Vibrator Reactor	.50
P-9A614	L10	Filament Choke	.20

RESISTORS

CARBON

Part No.	Code	Resistance	Wattage	List Price
P-A94504	R1	500,000 Ohms	0.2	$0.15
P-C94173	R2	17,000 Ohms	1.0	.15
P-B94203	R3	20,000 Ohms	0.5	.15
P-A95105	R4	1 Megohm	0.2	.10
P-A95204	R5	200,000 Ohms	0.2	.10
P-A94452	R7	4,500 Ohms	0.2	.15
P-A94201	R8	200 Ohms	0.2	.15
P B95503	R9	50 000 Ohms	0.5	.10
P-A95203	R10	20,000 Ohms	0.2	.10
P-A95264	R11	260,000 Ohms	0.2	.10
P-A95604	R12	500,000 Ohms	0.2	.10
P-B94252	R13	2,500 Ohms	0.5	.15
P-B95101	R15	500 Ohms	0.5	.10
P-C95303	R16	30,000 Ohms	1.0	.10
P-B94500	R17	50 Ohms	0.5	.15
P-B94500	R18	50 Ohms	0.5	.15

VARIABLE

P-36X213	R6	500,000 Ohms	Volume Control & Switch	1.00
P-40X212	R14	1 Megohm	Tone Control	.70

CONDENSERS

TUBULAR

Part No.	Code	Capacitance	Voltage	List Price
P-44X80	C4	.05 mf.	180	$0.15
P-44X181	C5	.10 mf.	240	.15
P-44X80	C13	.05 mf.	180	.15
P-44X185	C15	.04 mf.	180	.15
P-44X161	C19	.01 mf.	600	.15
P-44X189	C20	.25 mf.	360	.30
P-44X105	C21	.10 mf.	360	.20
P-44X143	C22	.25 mf.	360	.30
P-44X120	C23	.01 mf.	360	.15
P-44X101	C25	.004 mf.	600	.15
P-44X98	C26	.10 mf.	180	.20
P-44X105	C30	.10 mf.	360	.20
P-44X136	C31	.5 mf.	180	.40
P-44X183	C32	.0055 mf.	1,600	.20
P-44X135	C33	.5 mf.	180	.40
P-44X98	C34	.10 mf.	180	.20

ELECTROLYTIC

P-45X211	C24	12 mf.	25	Electrolytic Block	2.70
	C28	8 mf.	350		
	C29	12 mf.	450		

MOLDED

P-47X66	C2	30 mmf.	.15
P-47X83	C8	35 mmf.	.10
P-47X57	C14	100 mmf.	.10
P-47X45	C18	250 mmf.	.15
P-47X41	C27	2,000 mmf.	.20
P-47X41	C35	2,000 mmf.	.20

TRIMMER

P-17A48	C1	25-115 mmf. Antenna Trimmer	.20
P-17A46	C3	Antenna Trimmer—Part of Gang Condenser	.55
	C6	Oscillator Trimmer—Part of Gang Condenser	
	C7	900-1,300 mmf. 600 KC Oscillator Padding Cond.	
	C16	70-150 mmf. 2nd I. F. Primary Trimmer	
	C9	Interstage Trimmer Part of Gang Condenser	
P-17A33	C11	70-150 mmf. 1st I. F. Trimmer	.40
	C12	70-150 mmf.	

MISCELLANEOUS

	C10	40 mmf. Integral Part of Interstage Transformer Assembly	
	C17	150 mmf. Integral Part of 2nd I. F. Transformer Assembly	
P-44A51	Three Section Gang Condenser Assembly complete with Drive Gears		$4.50

Part No.		Description	List Price
P-19A24		Vibrator Unit	$4.10
Specify Name and Model of Receiver		Chassis Case Only	3.80
		Chassis Case Cover Only	3.05
		Spring Clamp Button	.10
		Tone Control Knob	.10
		Local-Distance Switch Knob	.10
		8-32 x 3/16" Headless Cup Point Set Screw Doz.	.15
P-30X14		Grid Clip only—Glass Tube	.10
P-30X44		Grid Clip only—Metal Tube	.10
P-32X30		Tube Shield Base	.10
P-32X88		Tube Shield	.15
P-2A54		Local-Distance Switch	.40

TRANSFORMERS AND COILS

Part No.	Code	Description	List Price
P-9A580	T1	Antenna Transformer & Can Assembly	$1.60
P-9A581	T2	Interstage Transformer & Can Assembly	1.55
P-9A582	T3	Oscillator Coil & Can Assembly	.95
P-9A583	T4	1st I. F. Coil & Can Assembly	1.45
P-9A584	T5	2nd I. F. Coil & Can Assembly	1.80
P-50X32	T6	Input Transformer	1.30
P-61X43	T7	Output Transformer	1.60
P-53X124	T8	Power Transformer	3.10
P-9A586	L1	Filament Reactor } One Assembly	.55
	L2	R.F. "B" Reactor }	

CABLE AND FLEXIBLE SHAFT ASSEMBLIES

Part No.	Quan. Used	Description	List Price
P-18A40	2	20" Volume Control or Tuning Control Flexible Drive Shaft ea.	$1.10
P-18A42	2	25" Volume Control or Tuning Control Flexible Drive Shaft ea.	1.30
P-18A44	2	36" Volume Control or Tuning Control Flexible Drive Shaft ea.	1.65
P-13X252	1	Pilot Light Cable less Lamp	.65
P-13X253	1	48" Antenna Cable & Plug	.95
P-13X227	1	Battery Cable (long section with fuse receptacle)	.35
P-13X234	1	"A" Cable—Short Section Connected to Chassis (Part of Chassis Assembly)	.35

MOUNTING BOLT ASSEMBLY

P-20X59	3	Double End Hex Bolts for Mounting Chassis to Dash ea.	.10
	3	S 16"—18 Spring Locknut for above Mounting Assembly doz.	.10
P-19X18	6	Flat Washers for above Mounting Assembly doz.	.15
	6	S 16"—18 Hex Nuts for above Mounting Assembly doz.	.15
	1	S 16" Shakeproof Lockwasher to Ground Chassis Case to Metal Dash Surface on Engine Side doz.	.10

MISCELLANEOUS MOUNTING ITEMS

P-7A32	1	Pilot Light Bulb	.30
P-16X14	1	20 Ampere Fuse	.10
P-16X3	1	Fuse Shield	.10
P-21A6	1	Distributor Suppressor	.35
P-48X27	1	Generator Condenser	.45
P-21A5	1	Choke Condenser Unit (Not Shipped with Set)	1.50
P-21A7		Spark Plug Suppressors (Not Shipped with Set) ea.	.35

CONTROL HEAD AND PLATE ASSEMBLY

Part No.	Quan. Used	Description	List Price
*P-20A27	1	No. 4 Control Head only with ⅜" Hex Nut	3.00
*P-20A28	1	Volume Control Fitting complete with Retaining Spring, ⅜" Hex Nut and Lock Washer	.25
*	1	Dial Scale (Specify Name and Model of Radio)	.10
*P-15X45	1	Pointer	.10
*		Pointer Screw 3-48 x 5/16" doz.	.10
†P-17X13	1	Dial Crystal	.25
†		Control Knobs—Specify Car, Year and Model ea.	.25

NOTE: Prices of Instrument Panel Plate Kits are shown in Chart on Page 5.

*Shipped with each Set
†Shipped with Panel Kit

ROOF MOUNTING SPEAKER KITS

1936 BUICK, CHEVROLET, PONTIAC, OLDSMOBILE

Part No.	Description	List Price
P-21A27	SPEAKER KIT ASSEMBLY COMPLETE Includes	$5.35
P-12A234	5¼" Dynamic Speaker	3.05
P-23A56	Mounting Kit—Includes Trim Ring, Speaker Housing, Self Tapping Screws & Clamp Springs	2.00
P-13X248	Speaker Cable Assembly Complete	1.05
P-21A28	SPEAKER KIT ASSEMBLY COMPLETE Includes	9.65
P-12A233	8" Dynamic Speaker	6.65
P-23A57	Mounting Kit—Includes Trim Ring and Self Tapping Screws	3.00
P-13X248	Speaker Cable Assembly Complete	1.05

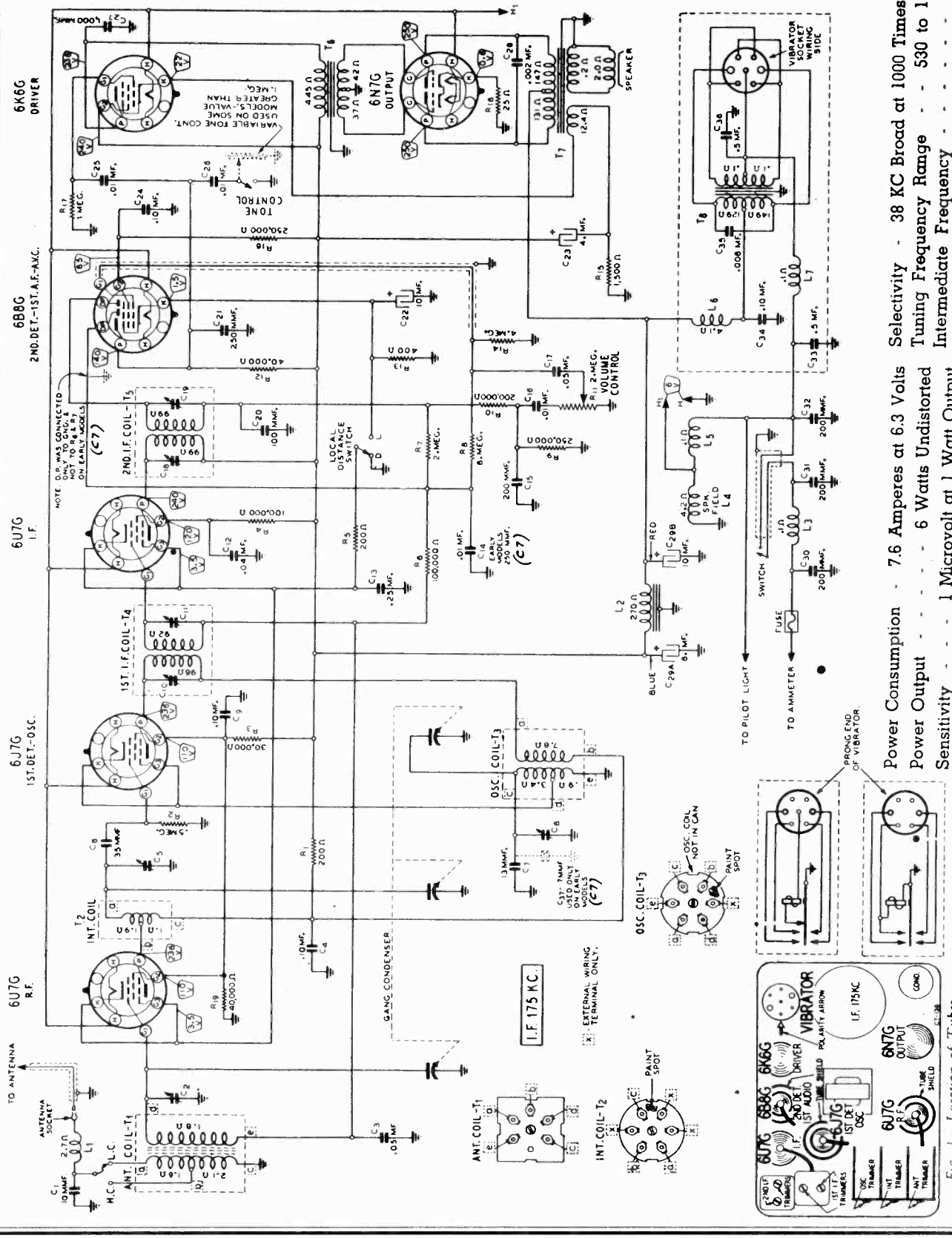
1936 FORD—STANDARD AND DELUXE

Part No.	Description	List Price
P-21A29	SPEAKER KIT ASSEMBLY COMPLETE Includes	4.15
P-12A234	5¼" Dynamic Speaker	3.05
P-23A58	Mounting Kit—Includes Hex Nuts, Lockwashers and Bolts	.40
P-13X248	Speaker Cable Assembly Complete	1.05

MODEL D748

WESTERN AUTO SUPPLY CO.

ALIGNMENT Adjust IF trimmers at 175 KC thru .05 mf dummy. Adjust Osc. trimmer at 1581 KC thru 120 mmf dummy if 60 inch cable 70 mmf is used - or thru 25 mmf dummy if 30 inch cable 35 mmf dummy is used.
Adjust Interstage and Antenna trimmers at 1400 KC.
Readjust Antenna trimmer C2 at 1400 KC.



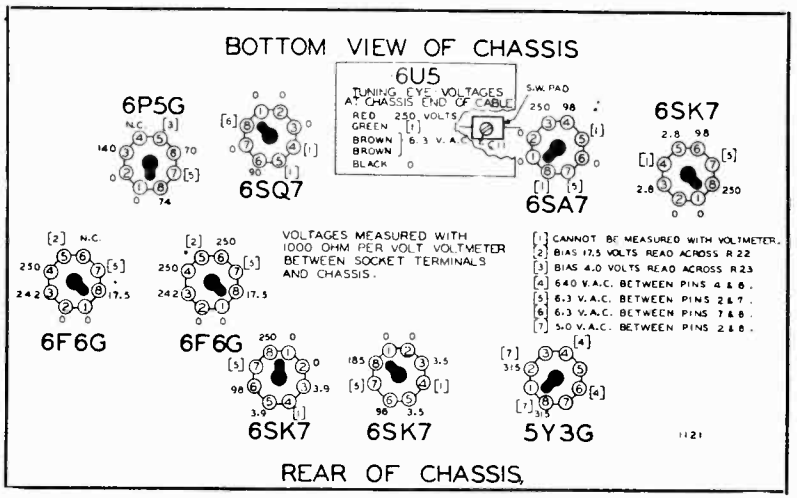
Power Consumption - 7.6 Amperes at 6.3 Volts
Power Output - - - - - 6 Watts Undistorted
Sensitivity - - - 1 Microvolt at 1 Watt Output (I-D Switch in Distance Position)

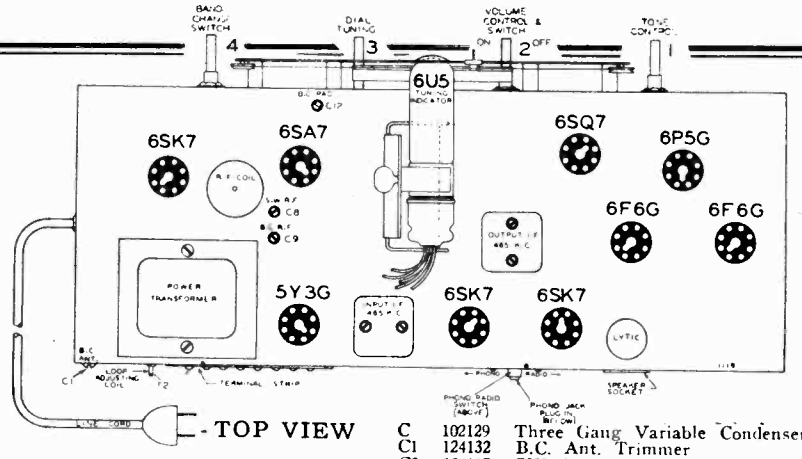
Selectivity - 38 KC Broad at 1000 Times Signal
Tuning Frequency Range - - 530 to 1581 KC
Intermediate Frequency - - - - - - - 175 KC
Speaker - - - - - - - - - - - - 6" Dynamic

Fig 1—Location of Tubes and Vibrator

WESTERN AUTO SUPPLY CO.

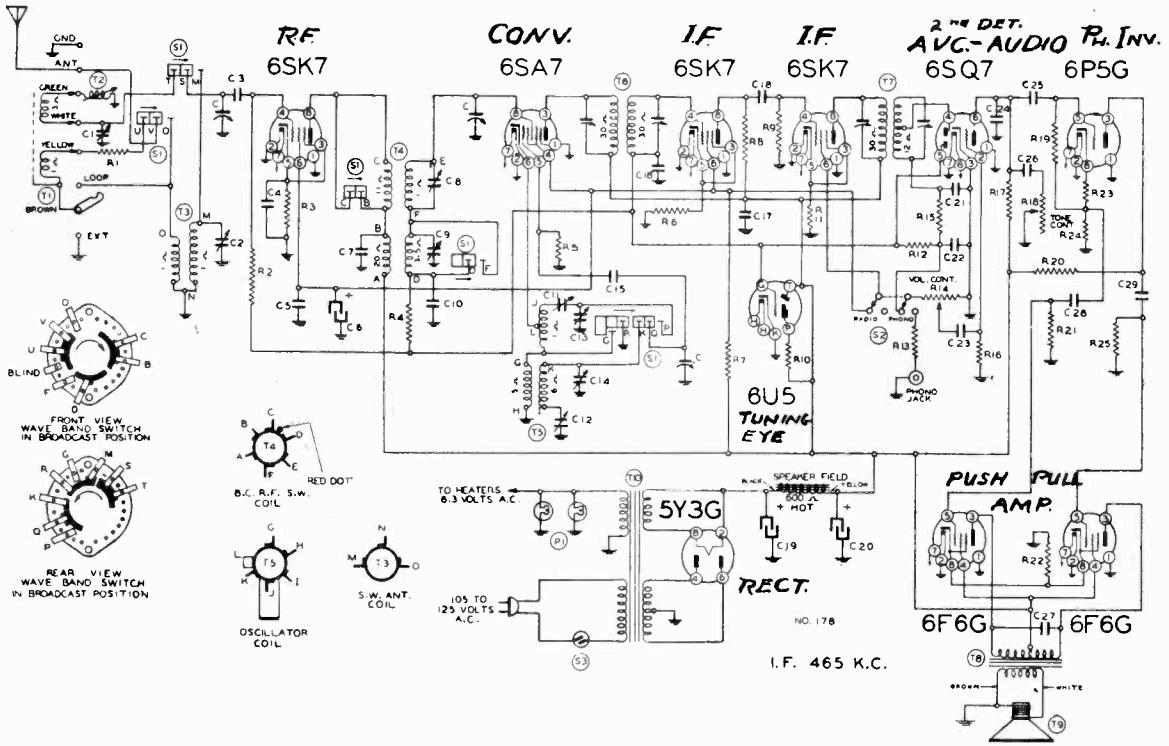
MODEL D1041
Issue A





ISSUE A
February 1940

BOTTOM OF CHASSIS



C	102129	Three Gang Variable Condenser
C1	124132	B.C. Ant. Trimmer
C2	124117	SW Antenna Trimmer
C3	1292	.0005 Mica
C4	10020	.1 x 200 v.
C5	100117	.25 x 400 v.
C6	119106	10 mfd. lytic—350 w. v.
C7	129160	.0004 mica
C8	124131	S.W. R.F. Trimmer
C9	129131	B.C. R.F. Trimmers
C10	10026	.02 x 400 v.
C11	129156	.0024 Compression S.W. Pad
C12	129157	.000525 Compression B.C. Pad
C13	124130	S.W. Oscillator trimmer
C14	124130	B.C. Oscillator trimmer
C15	12939	.00005 Mica
C16	10026	.02 x 400 v.
C17	100117	.25 x 400 v.
C18	1292	.0005 mica
C19	119106	10 mfd. lytic—450 w. v.
C20	119106	15 mfd. lytic—450 w. v.
C21	1295	.0001 mica
C22	1295	.0001 mica
C23	10025	.002 x 600 v.
C24	12912	.00025 mica
C25	10026	.02 x 400 v.
C26	10011	.01 x 400 v.
C27	10071	.004 x 600 v.
C28	1009	.05 x 200 v.
C29	10013	.05 x 400 v.
		C6, C19 and C20 in one unit
		C8 and C9 in one unit
		C13 and C14 in one unit
R1	13024	400 ohm—⅓ w.
R2	13019	1 megohm—⅓ w.
R3	13099	300 ohm—⅓ w.
R4	1305	300M ohm—⅓ w.
R5	130208	40M ohm—⅓ w.
R6	13054	500 ohm—⅓ w.
R7	130304	12M ohm—2 watt
R8	130263	12M ohm—⅓ w.
R9	13020	100M ohm—⅓ w.
R10		1 megohm—in eye socket
R11	13054	500 ohm—⅓ w.
R12	130170	3 megohm—⅓ w.
R13	13019	1 megohm—⅓ w.
R14	101214	Volume Control (500M ohm)
R15	13012	50M ohm—⅓ w.
R16	130225	15 megohm—⅓ w.
R17	13011	250M ohm—⅓ w.
R18	101213	Tone Control—(1 Megohm)
R19	13019	1 megohm—⅓ w.
R20	13020	100M ohm—⅓ w.
R21	1303	500M ohm—⅓ w.
R22	130311	300 ohm—1 watt
R23	13022	5M ohm—⅓ w.
R24	13020	100M ohm—⅓ w.
R25	1303	500M ohm—⅓ w.

Power Consumption - - 110 Watts (At 117 Volts 60 Cycles)

Power Output - - - - - - - - - 5 Watts Undistorted
7 Watts Maximum

Sensitivity (for .5 Watts Output) - - - -
Broadcast Band—10 Microvolts Average
Shortwave Band—10 Microvolts Average

Selectivity - - 35 KC Broad at 1000 Times Signal at 1000 KC

Tuning Frequency Range - - - - - - - 540 to 1580 KC
5.5 to 18.5 MC

Intermediate Frequency - - - - - - - - - - 465 KC

Speaker - - - - - - - - - 10 in. Electro Dynamic

BAND	SIGNAL GENERATOR Frequency Setting	SIGNAL GENERATOR Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6SK7 I. F.	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6SA7 Mixer	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND (See Note A)	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C13 (See Fig. 4)	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmers C8, C2 (See Figs. 5 & 4)	Short Wave R. F. and S. W. Antenna	Adjust to maximum output
	6 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 6 Mc.	Trimmer C11 (See Fig. 6)	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "C")
BROAD-CAST BAND (See Note A)	1580 Kc.	200 mmf.	Grid of 6SK7 R. F. Tube	Broadcast	Rotor full open (Plates out of mesh)	Trimmer C14 (See Fig. 4)	Broadcast oscillator	Adjust to maximum output
	540 Kc.	200 mmf.	Grid of 6SK7 R. F. Tube	Broadcast	Set Dial at 540 Kc. (Plates in Mesh)	Trimmer C12 (See Fig. 5)	Broadcast oscillator series pad	Adjust to maximum output
	1400 Kc.	200 mmf.	Grid of 6SK7 R. F. Tube	Broadcast	Set Dial at 1400 Kc.	Trimmer C9 (See Fig. 5)	Broadcast R. F.	Adjust to maximum output
LOOP ALIGN-MENT (See Note B)	1400 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 1400 Kc.	Trimmer C1 (See Fig. 5)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 600 Kc.	Trimmer T2 (See Fig. 5)	Iron Core Tracking Coil	Adjust to maximum output

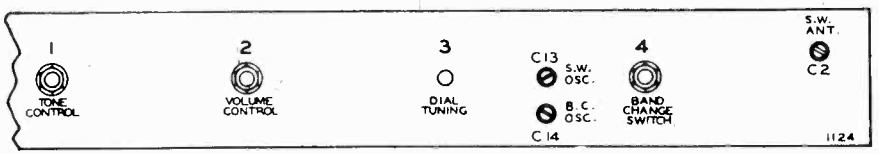
NOTE "A"—The signal generator is connected to the "ANT." and "GND." terminals on the rear of the chassis when aligning the **Short Wave Band** and to the grid of the 6SK7 R.F. Tube and ground terminal when setting the **Broadcast Band** oscillator end frequencies, (1580 and 540 K. C.).

The loop antenna need not be connected to the radio when making these adjustments.

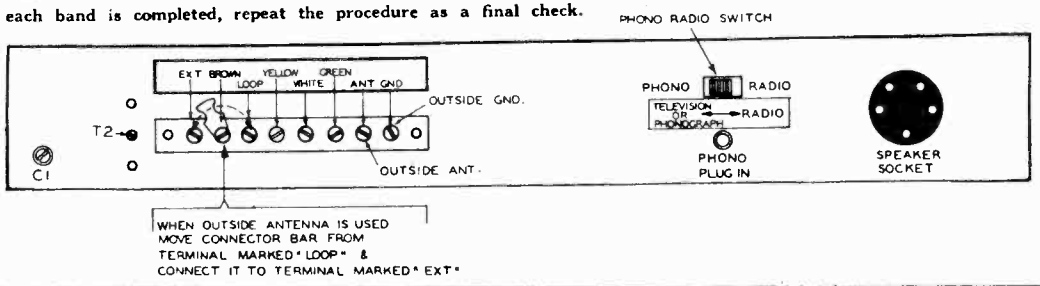
NOTE "B"—Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected to the terminal board. The signal generator is connected to the "ANT." and "GND." terminals and the jumper on the terminal board connected to "EXT." terminal. (See Fig. 1).

NOTE "C"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.
Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each band is completed, repeat the procedure as a final check.



—FRONT OF CHASSIS

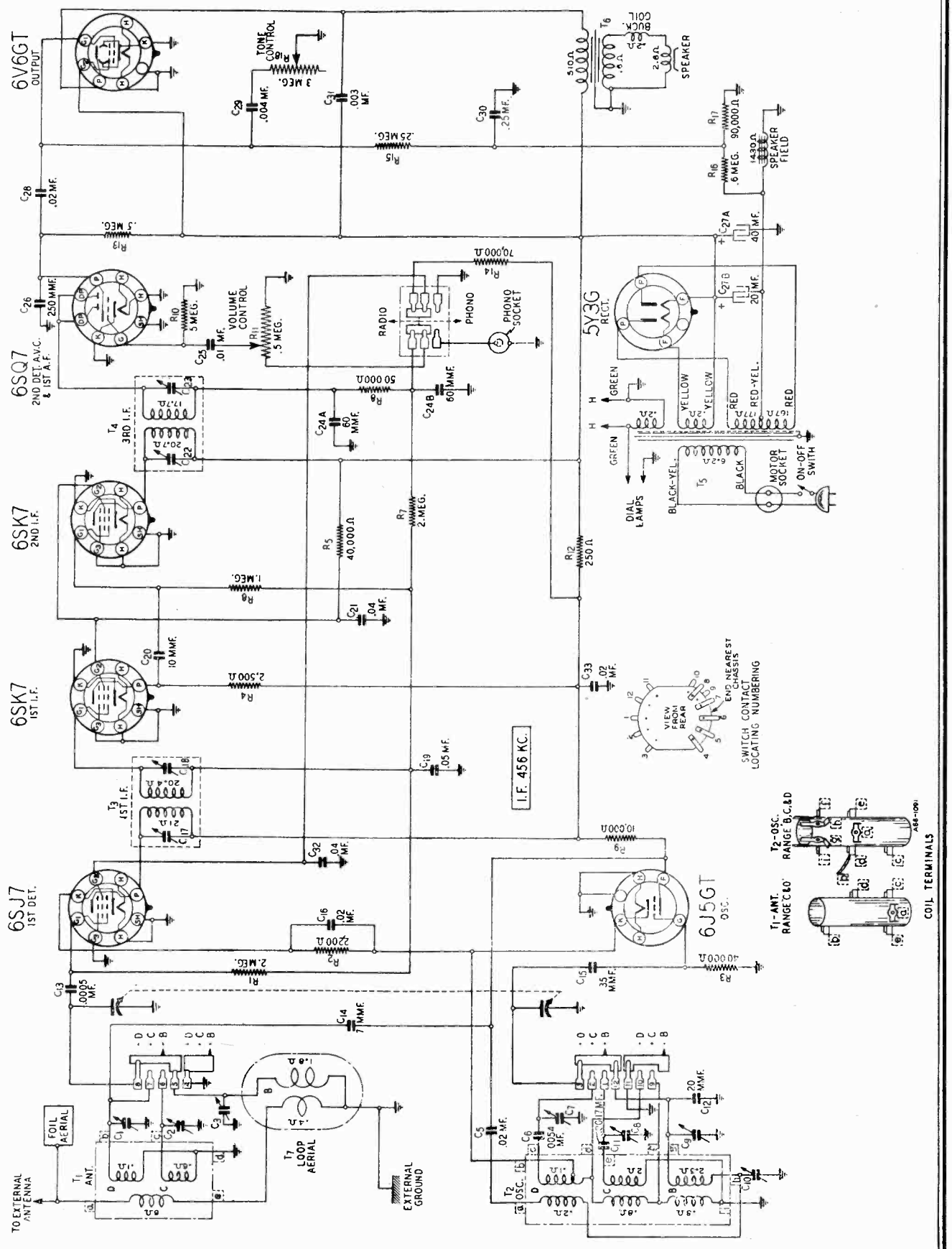


It is important during **loop alignment** that the loop antenna and the chassis be installed in the cabinet.

To remove the chassis from the cabinet, remove the two chassis mounting bolts which are used to hold the chassis to the cabinet shelf; take the knobs off their shafts and disconnect the loop antenna.

MODEL D2133

WESTERN AUTO SUPPLY CO.



ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

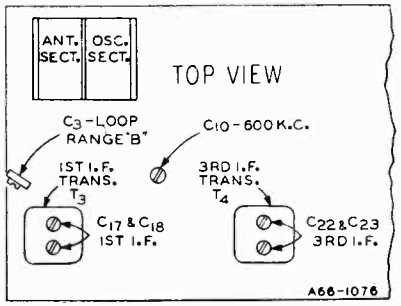
Allow Chassis and Signal Generator to "Heat Up" for several minutes.

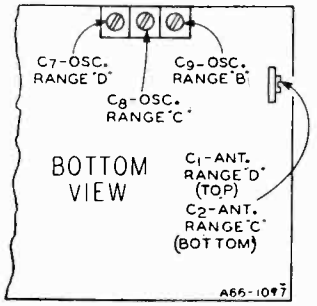
The following equipment is required for aligning:
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antennas—.1 mf., 100 mmf., and 400 ohms.

	SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.	456 KC	Signal Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C17) & (C18) 3rd I.F. (C22) & (C23)
RANGE B	1600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C9)
	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC— See Note A	Ant. Range B (C3)
	600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C10) Rock Rotor—See Note B
RANGE C	7000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C8)
	6000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Ant. Range C (C2) Rock Rotor—See Note B
RANGE D	22,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C7)
	18,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Rock Rotor—See Note B
LOOP RANGE B	1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C3)

NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

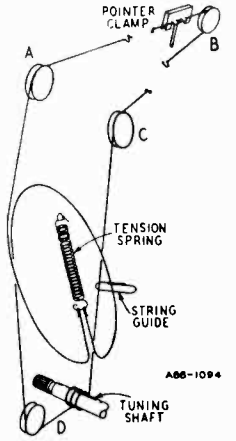
NOTE B—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

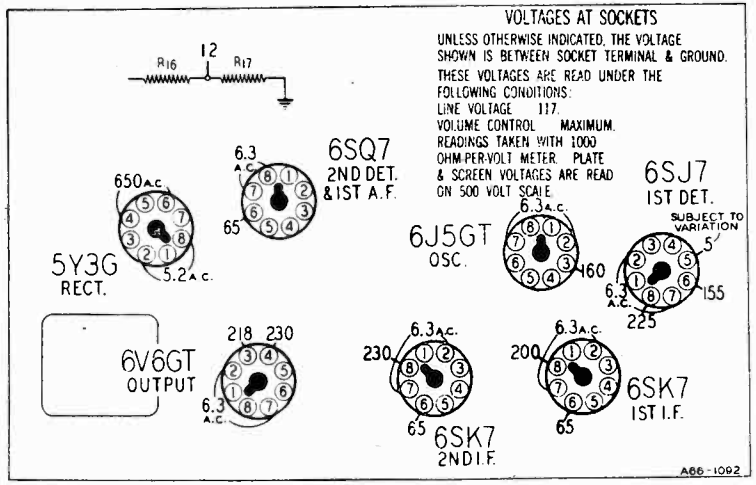


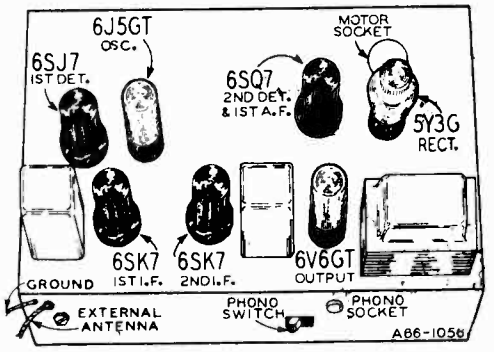


DRIVE CORD REPLACEMENT

Turn gang condenser to full closed position. Using a new drive cord 57" in length, tie one end to tension spring. Fasten other end of tension spring to hook on drive pulley. Pass cord through slot in pulley rim. Wind cord 1/3 turn clockwise (from gang end of chassis) around drive pulley; continue around idler pulleys A, B, and C as shown. Pass cord through wire string guide and wind 3 turns counter-clockwise (from front of chassis) around tuning shaft. These turns should progress away from chassis. Continue cord around idler pulley D and wind ¾ turn clockwise (from gang end of chassis) around drive pulley. Turn should be on left side of pulley groove (from front of chassis). Pass cord through slot in pulley rim. Stretch tension spring and attach free end of cord.







SPECIFICATIONS

Power Consumption - - - - 60 Watts (At 117 volts 60 cycles)

Power Output - - - - - 2.5 Watts Undistorted
3.5 Watts Maximum

Selectivity . . 40 KC Broad at 1000 Times Signal

Intermediate Frequency - - - - - - 456 KC

Speaker - - - - - - - 6" Electro-Dynamic

Tuning Frequency Range
B Range - - - - - - - - 528 to 1600 KC
C Range - - - - - - - - - 2.2-to 7.0 KC
D Range - - - - - - - - 7.0 to 22.0 MC

Sensitivity—External Antenna—For 0.5 Watt output
B Range - - - - - - 4 Microvolts Average
C Range - - - - - - 7 Microvolts Average
D Range - - - - - - 8 Microvolts Average

MODEL D4230

WESTERN AUTO SUPPLY CO.

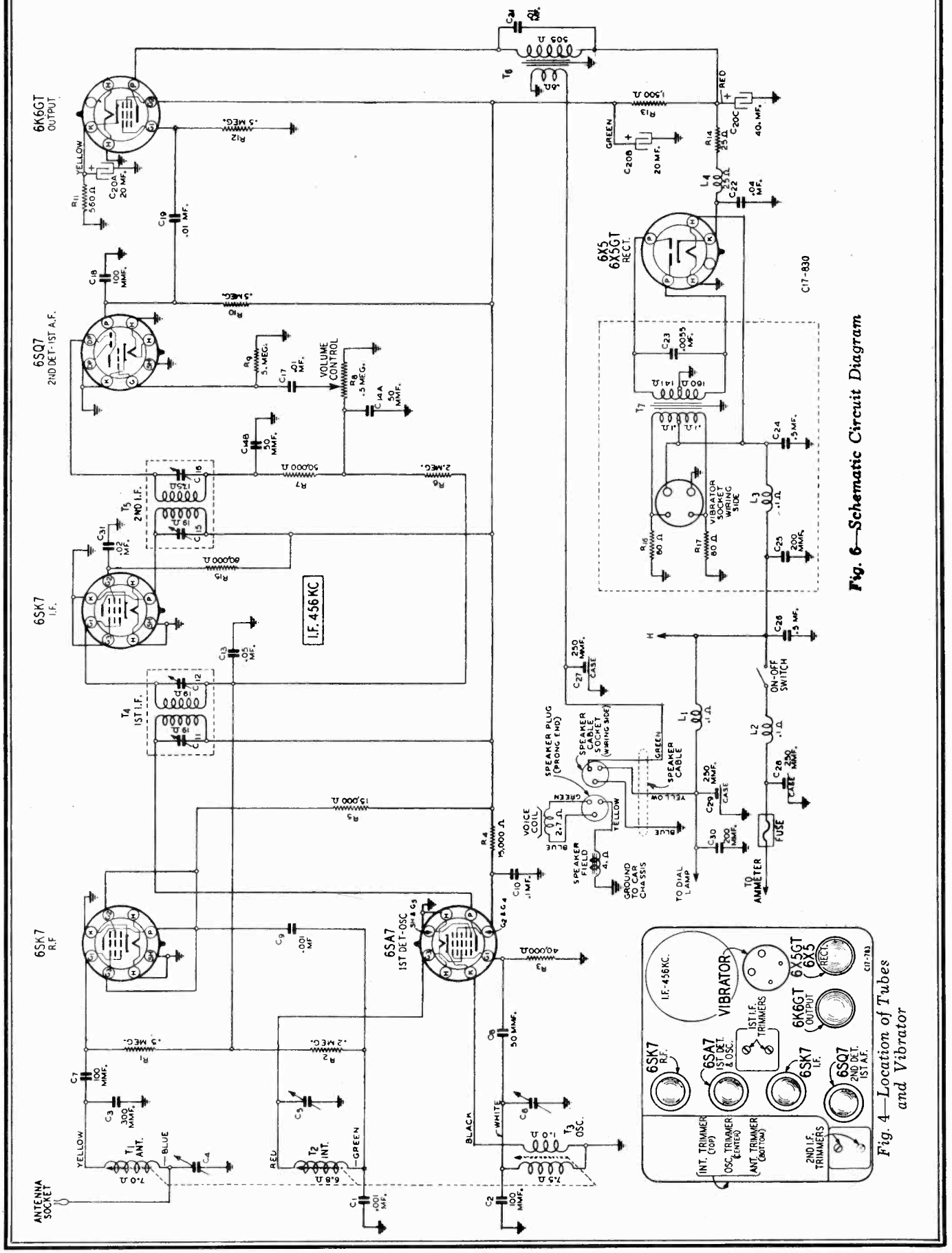


Fig. 6—Schematic Circuit Diagram

Fig. 4—Location of Tubes and Vibrator

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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

The following equipment is required for aligning:

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

Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antenna—.05 mf., See Note A.

SIGNAL GENERATOR				
FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	IRON CORE SETTING	ADJUST TRIMMERS TO MAXIMUM (See Figs. 3 and 4)
I.F.				
456 KC	Control Grid (prong No. 8) 6SA7 1st Det. Tube	.05 mf.	Extreme Position out of Coil	1st I.F. (C11) & (C12) 2nd I.F. (C15) & (C16)
OSCILLATOR				
1600 KC	Antenna Cable See Note A	See Note A	Extreme Position out of Coil	Oscillator (C6)
1400 KC ADJUSTMENT				
1400 KC	Antenna Cable	See Note A	Tune to Max. Output with Tuning Knob	Int. (C5) Ant. (C4)

Reassemble Radio—Install in Car—Connect Car Antenna to Radio.

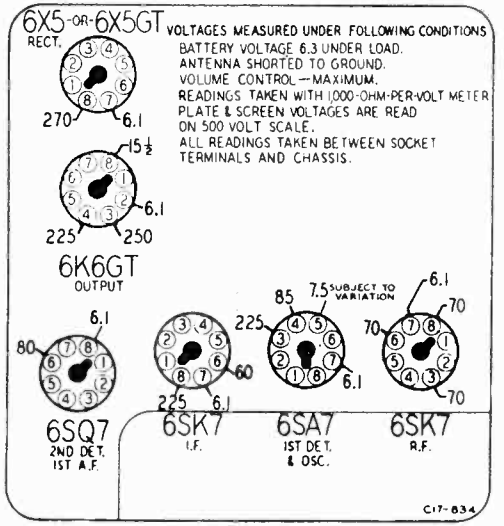
Car Antenna Readjustment—Tune in weak signal near 1400 KC—Readjust Antenna Trimmer C4 for maximum output.

CALIBRATION — To calibrate the radio, see article "Calibrating the Radio" on page 4.

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

NOTE A—Insert the antenna cable plug in the antenna socket on the chassis. The total capacity of the antenna cable and dummy antenna should be 60 mmf. If the cable, for example, has a capacity of 30 mmf., use a 30 mmf. condenser for a dummy antenna. Connect the other end of the antenna cable through the dummy antenna capacity to the output of the signal generator.



SPECIFICATIONS

Power Consumption - - 8.2 Amperes at 6.6 Volts

Power Output (6.6 volts) - - - 3.0 Watts Undistorted 5.5 Watts Maximum

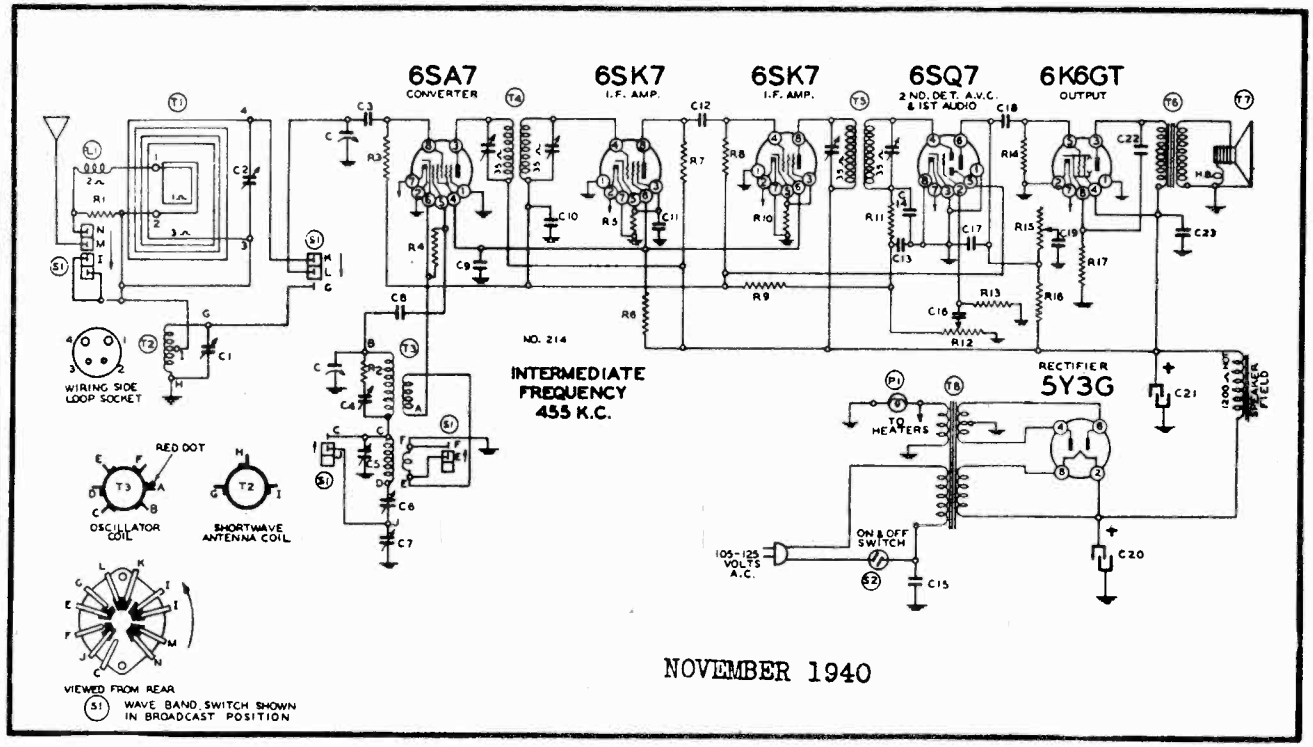
Sensitivity - - - - 1 Microvolt at .5 Watt Output

Selectivity - - - 38 KC Broad at 1000 Times Signal

Tuning Frequency Range - - - - 540 to 1600 KC

Intermediate Frequency - - - - - - - - - 456 KC

Speaker - - - - - - - - - 6" Electro-Dynamic



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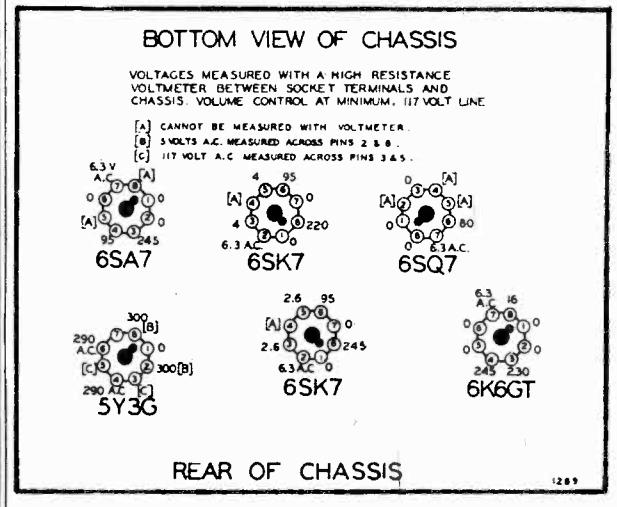


Setting the Pushbuttons

Make a list of your 6 favorite stations. Push out the call letters of these stations from the call letter sheets supplied. Insert a call letter in the front of each pushbutton.

Next push one of the pushbuttons all the way in as far as it will go and hold it there. Now tune in the station you want with the tuning knob—Tune back and forth until the station is clear and distinct, then release the button. Continue setting each pushbutton in the same way. Now rotate the tuning knob to the right (clockwise) as far as it will turn.

Looking at the back of the cabinet note the reset lock screw on the left hand side of the chassis, (see chassis view).

Rotate the reset lock screw to the right (clockwise) by means of the pin thru the shaft.

It is very important that this locking screw is turned until it is absolutely tight.

This screw will lock in place all the stations you have selected on the automatic tuner pushbuttons. Pressing the proper button will now tune the station you want. (NOTE: Locking screw is loose when radio is shipped from factory).

To change stations simply loosen the reset lock screw and repeat the procedure above.

Code No.	Part No.	Description
		RESISTORS
R1	13071	4M ohm—½ w.
R2	130197	20 ohm—½ w.
R3	13019	1 megohm—½ w.
R4	130236	30M ohm—½ w.
R5	130283	750 ohm—½ w.
R6	130298	19M ohm—1½ w.
R7	130218	5M ohm—½ w.
R8	13020	100M ohm—½ w.
R9	1304	3 megohm—½ w.
R10	130222	350 ohm—½ w.
R11	13012	50M ohm—½ w.
R12	101240	1 megohm volume control
R13	130223	10 megohm—½ w.
R14	1303	500M ohm—½ w.
R15	101241	1 megohm tone control
R16	13011	250M ohm—½ w.
R17	130255	500 ohm—1 w.
		CONDENSERS
C	102128	2 gang variable condenser
C1	124116	S.W. antenna trimmer
C2	124141	B.C. antenna trimmer
C3	1292	.0005 mica
C4	124142	S.W. oscillator trimmer
C5	124142	B.C. oscillator trimmer
C6	124146	B.C. padding condenser
C7	124146	S.W. padding condenser
C8	12960	150 mfd. mica
C9	10013	.05 x 400 v.
C10	1009	.05 x 200 v.
C11	1009	.05 x 200 v.
C12	1292	.0005 mica
C13	129161	.0001 mica
C14	129161	.0001 mica
C15	10061	.02 x 600 v.
C16	10025	.002 x 600 v.
C17	12912	.00025 mica
C18	10026	.02 x 400 v.
C19	10071	.004 x 600 v.
C20	119115	16 mfd. x 400 w.v. lytic
C21	119115	16 mfd. x 400 w.v. lytic
C22	10019	.006 x 600 v.
C23	1001	.1 x 400 v.
		C4 and C5 are in same unit
		C13 and C14 are in same unit
		C6 and C7 are in same unit
		C20 and C21 are in same unit

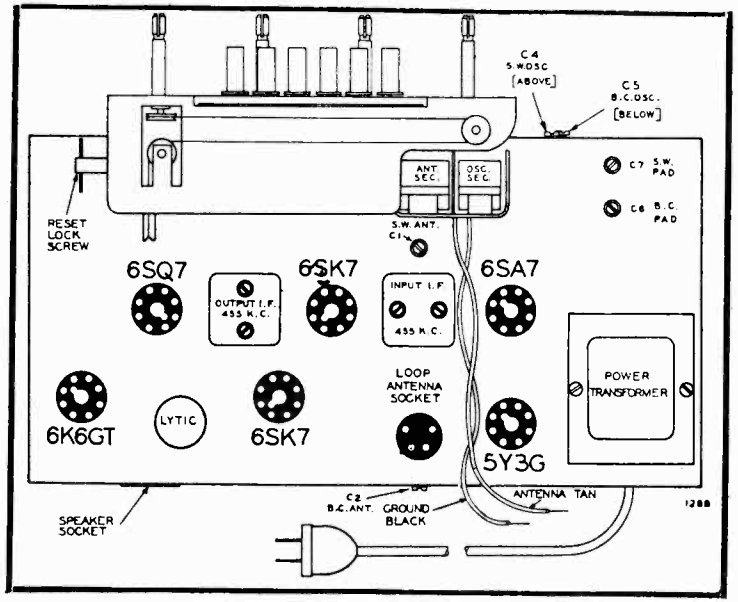
ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect radio ground to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- 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 antennas—.1—mf., 200 mmf., 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD	Grid of 6SA7	Broadcast	Rotor full open (Plates out of mesh)	Trimmers on top (See Chassis View)	Input and Output I. F.	Adjust to maximum output
SHORT WAVE BAND	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C4	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C1	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 6 Mc.	Trimmer C7	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "A")
BROAD-CAST BAND	1600 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full open (Plates out of mesh)	Trimmer C5	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 1400 Kc.	Trimmer C2 (See Chassis View)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 600 Kc.	Trimmer C6 (See Chassis View)	Broadcast oscillator series pad	Adjust to maximum output and rock dial (See note "A")



CHASSIS VIEW

The loop antenna should be connected to the radio when making all R. F. adjustments.

NOTE "A"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each band is completed, repeat the procedure as a final check.

Tuning Frequency Range Broadcast Band - 535 to 1600 KC
Shortwave Band - 5.43 to 18.3 MC

Intermediate Frequency - - - - - - - 455 KC

Speaker - - - - - - - 8 in. Electro Dynamic

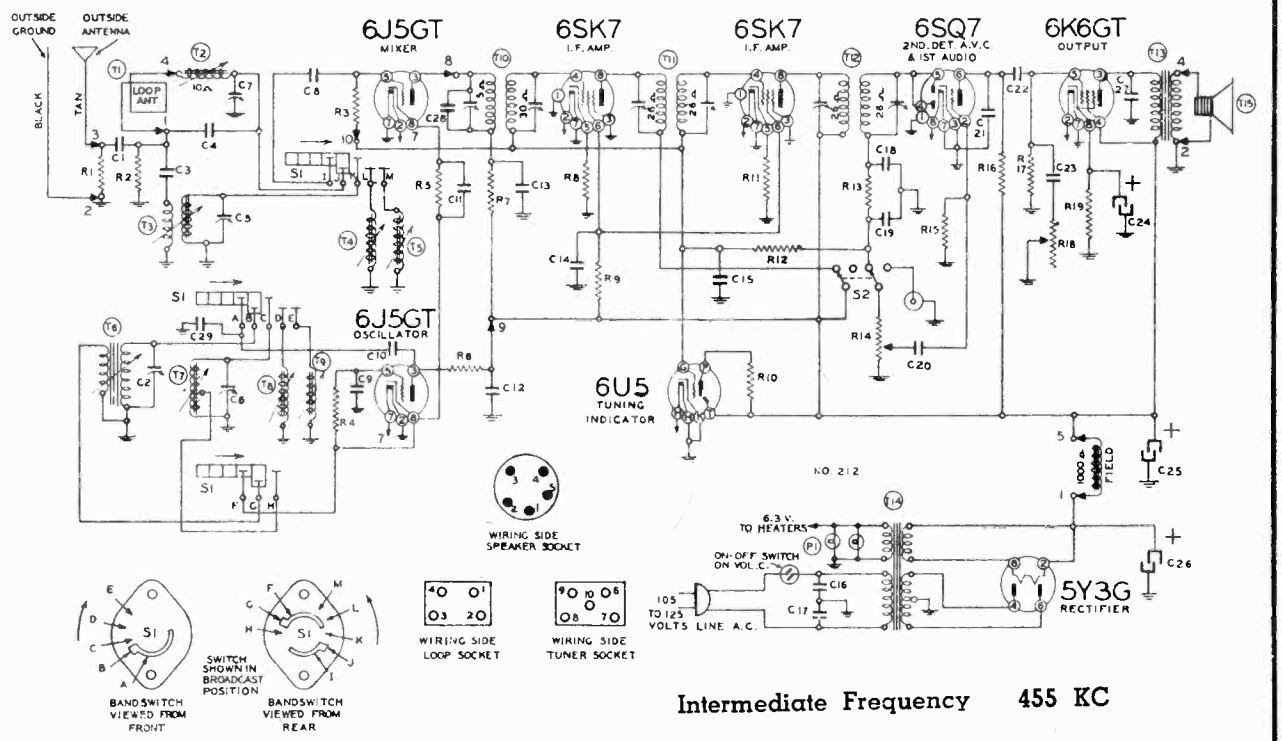
Power Consumption - - - - - - - 55 Watts

Power Output - - - - - 2.2 Watts Undistorted

Sensitivity for 500 Milliwatt Output: 15 Microvolts Average

Selectivity - 47 KC Broad at 1000 Times Signal at 1000 KC

WESTERN ROYAL



Intermediate Frequency 455 KC

CONDENSERS

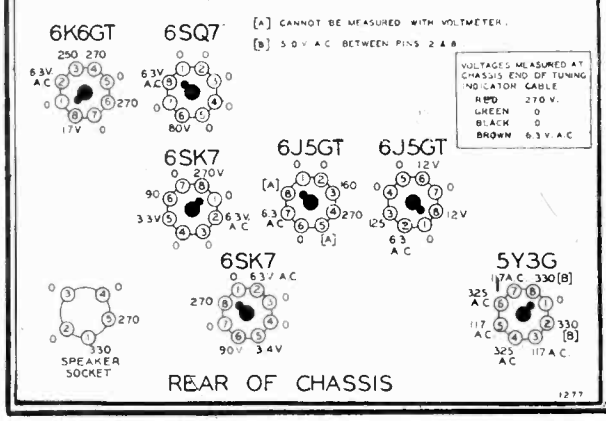
C1	1292	.0005 mica
C2	124144	B.C. oscillator trimmer
C3	100112	.001 tubular
C4	129102	.00002 ceramicon
C5	124154	9 mc. ant. trimmer
C6	124145	9 mc. osc. trimmer
C7	124154	B.C. antenna trimmer
C8	1292	.0005 mica
C9	1292	.0005 mica
C10	129158	.0002 mica
C11	10022	.05 x 200 v.
C12	10074	.1 x 400 v.
C13	10026	.02 x 400 v.
C14	10024	.25 x 400 v.
C15	10026	.02 x 400 v.
C16	10061	.02 x 600 v.
C17	10061	.02 x 600 v.
C18	129161	.0001 mica
C19	129161	.0001 mica
C20	10078	.01 x 200 v.
C21	12912	.00025 mica
C22	10026	.02 x 400 v.
C23	10019	.006 x 600 v.
C24	11997	40.0 x 25 w.v. lytic
C25	11997	15.0 x 400 w.v. lytic
C26	11997	15.0 x 450 w.v. lytic
C27	10019	.006 x 600 v.
C28	129171	.0022 mica in coil 108186
C29	129167	.0002 silver mica

RESISTORS

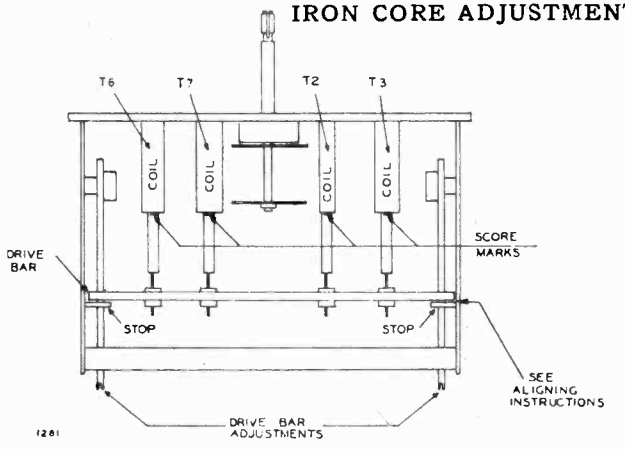
R1	130232	25M ohm—⅓ w.
R2	130232	25M ohm—⅓ w.
R3	13038	2 megohm—⅓ w.
R4	13094	50M ohm—⅓ w.
R5	130157	12M ohm—⅓ w.
R6	130219	20M ohm—1 w.
R7	130103	100M ohm—⅓ w.
R8	13079	400 ohm—⅓ w.
R9	130291	50M ohm—1 w.
R10		1 megohm in tuning indicator cable
R11	13083	300 ohm—⅓ w.
R12	13019	1 megohm—⅓ w.
R13	13012	50M ohm—⅓ w.
R14	101239	500M ohm volume control
R15	130257	5 megohm—⅓ w.
R16	13011	250M ohm—⅓ w.
R17	13019	1 megohm—⅓ w.
R18	125140	1 megohm tone control
R19	13093	450 ohm—⅓ w.
T1	111226	Loop antenna assembly
T2	111222	B.C. antenna coil
T3	111223	9 mc. antenna coil
T4	111224	12 mc. antenna coil
T5	111225	15 mc. antenna coil
T6	110170	B.C. oscillator coil
T7	110171	9 mc. oscillator coil

BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED WITH A HIGH RESISTANCE VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS. 117 V. A.C. LINE, B.C. BAND, NO SIGNAL



IRON CORE ADJUSTMENT VIEW

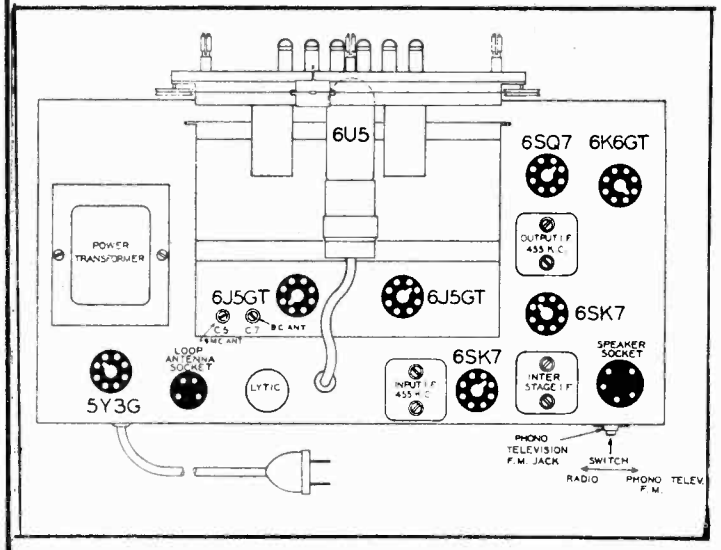


- Tone control—Treble
- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal 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 antennas—.1 mf., 200 mmf., and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Dial Pointer Setting	Trimmers Adjusted In Order Shown	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD.	Grid of 6SK7 (2nd I.F.)	Broadcast	Set Dial at 1600 Kc.	Two Trimmers on Top	Output I. F.	Adjust to maximum output
	455 Kc.	.1 MFD.	Grid of 6SK7 (1st I.F.)	Broadcast	Set Dial at 1600 Kc.	Two Trimmers on Top	Interstage I. F.	Adjust to maximum output
	455 Kc.	.1 MFD.	Grid of 6J5 (Mixer)	Broadcast	Set Dial at 1600 Kc.	Two Trimmers on Top	Input I. F.	Adjust to maximum output
31 METER BAND	9.6 Mc.	400 ohms	Antenna lead	31M	Set Dial at 9.6 Mc.	(See Trimmer View) C6 (See Trimmer on Top) C5	Osc. Ant.	Adjust to maximum output
25 METER BAND	11.8 Mc.	400 ohms	Antenna lead	25M	Set Dial at 11.8 Mc.	(See Trimmer View) T8 (See Trimmer View) T4	Osc. Ant.	Adjust to maximum output
19 METER BAND	15.2 Mc.	400 ohms	Antenna lead	19M	Set Dial at 15.2 Mc.	(See Trimmer View) T9 (See Trimmer View) T5	Osc. Ant.	Adjust to maximum output
BROAD-CAST BAND	1600 Kc.	200 mmf.	Antenna lead	Broadcast	Set Dial at 1600 Kc.	(See Trimmer View) C2 (See Trimmer on Top) C7	Osc. Ant.	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast	Set Dial at 1400 Kc.	Rotate Core T2 (See Iron Core Adjustment View)	Ant.	Adjust to maximum output



CHASSIS VIEW

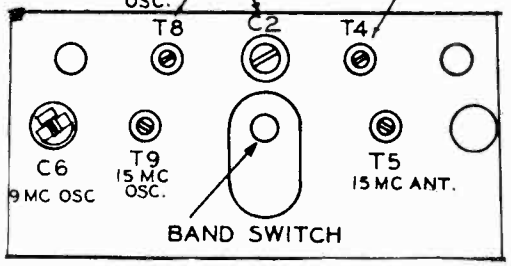
Setting the Pushbuttons

Make a list of your 6 favorite stations. Push out the call letters of these stations from the call letter sheets supplied. Insert a call letter in the slot on top of each pushbutton.

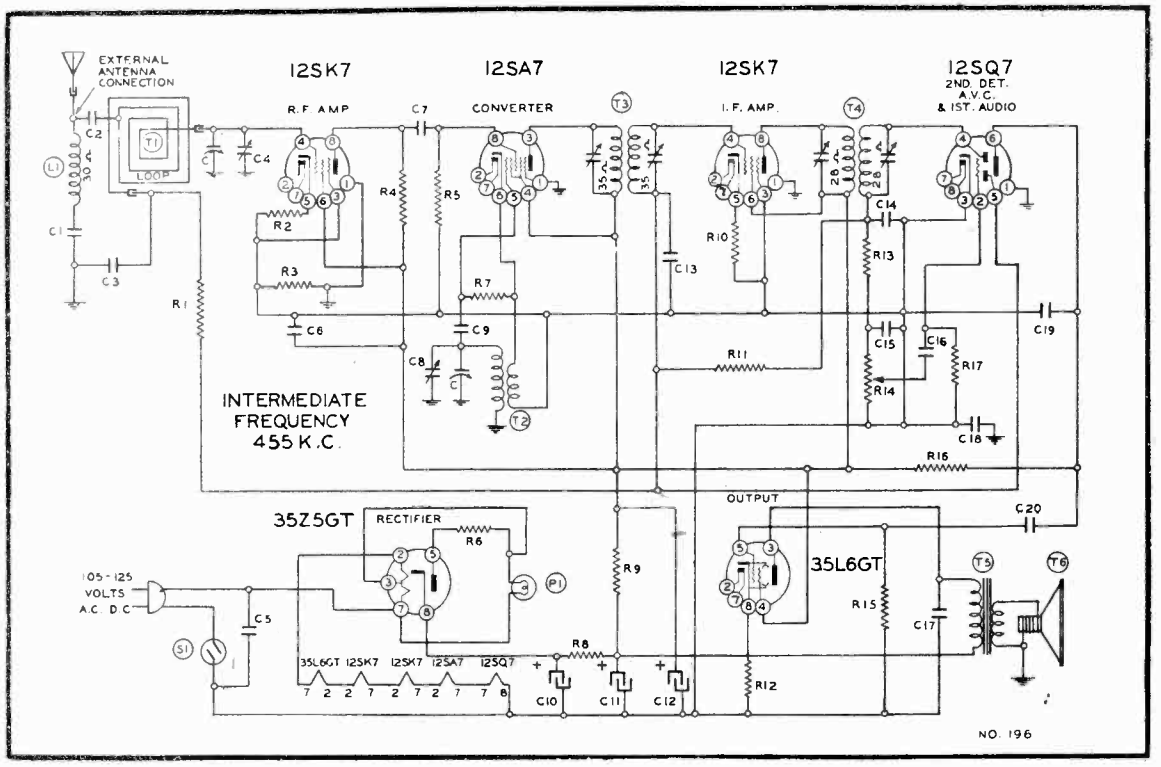
Next pull one of the pushbuttons all the way out as far as it will come (pull, with fingers on top and bottom of button). Now tune in the station you want with the tuning knob—Tune back and forth until the station is clear and distinct. Now push the button hard all the way in to lock the station in place, (push directly on front of button). Continue setting each pushbutton in the same way. Pressing the proper button will now tune the station you want. If it does not do so you did not push the button hard enough to lock it in place when setting up the station.

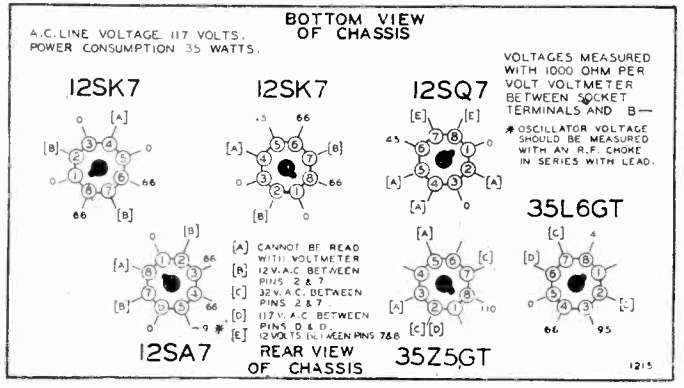
To change stations simply repeat the procedure above.

TRIMMER VIEW



Power Consumption.....80 Watts
Power Output...2 1/2 watts Un-Distorted.
Sensitivity for 500 Milliwatt O.P. 10 Microvolts Average.
Selectivity-35KC Broad at 1000 Times Sig. at 1000 KC.
Tuning Frequency Range Broadcast Band-540 to 1600 KC
31M Band 9.1 to 10 MC
25M Band 11.4 to 12.1 MC
19M Band 14.9 to 15.4 MC





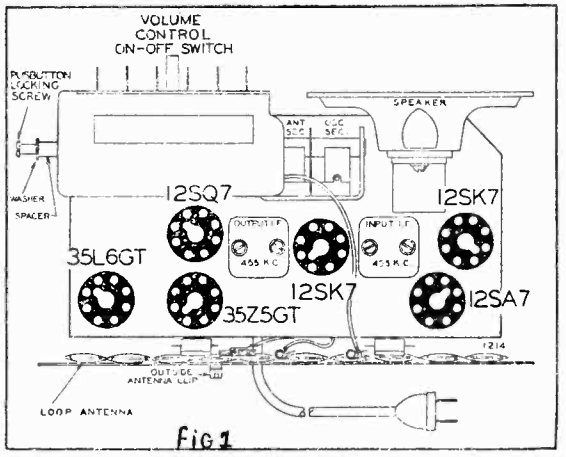


Fig 1

CONDENSERS

C	102116	2 gang variable condenser
C1	10011	.01 x 400 v.
C2	129132	.000125 mica
C3	10026	.02 x 400 v.
C4		B.C. Antenna Trimmer
C5	1001	.1 x 400 v.
C6	1006	.25 x 200 v.
C7	1295	.0001 mica
C8		B.C. Oscillator Trimmer
C9	1295	.0001 mica
C10	11994	40 mfd.—150 w.v. lytic
C11	11994	20 mfd.—150 w.v. lytic
C12	11994	20 mfd.—150 w.v. lytic
C13	1009	.05 x 200 v.
C14	1295	.0001 mica

Code No.	Part No.	Description
C15	12939	.00005 mica
C16	10025	.002 x 600 v.
C17	10026	.02 x 400 v.
C18	100110	.2 x 400 v.
C19	1295	.0001 mica
C20	100106	.004 x 600 v.

C10, C11 and C12 are in same unit

Code No.	Part No.	Description

RESISTORS

R1	130100	150M ohm—⅓ w.
R2	130168	100 ohm—⅓ w.
R3	130100	150M ohm—⅓ w.
R4	130218	5M ohm—⅓ w.
R5	13020	100M ohm—⅓ w.
R6	130215	25 ohm—½ w.
R7	13094	50M ohm—⅓ w.
R8	130296	200 ohm—1 w.
R9	130287	1200 ohm—1 w.
R10	130248	40 ohm—⅓ w.
R11	1304	3 megohm—⅓ w.
R12	130166	150 ohm—⅓ w.
R13	13012	50M ohm—⅓ w.
R14	101193	1 megohm volume control
R15	1303	500M ohm—⅓ w.
R16	1309	200M ohm—⅓ w.

Code No.	Part No.	Description
R17	130257	5 megohm—⅓ w.

ALIGNMENT PROCEDURE

IMPORTANT:—See alignment instructions

- Volume control—Maximum all adjustments.
- Connect B - of radio chassis to ground post of signal generator through .1 Mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- 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.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antennas—.1 Mfd.

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.	Grid of 12SA7	Rotor full open (Plates out of mesh)	Four Trimmers on Top (See Fig. 1)	Output and Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1600 Kc.	.1 MFD.	Grid of 12SA7	Rotor full open (Plates out of mesh)	Trimmer rear section of gang.	Broadcast Oscillator	Adjust to maximum output
	1400 Kc.	See Note "A"		Set dial at 1400 Kc.	Trimmer front section of gang	Broadcast Antenna	Adjust to maximum output

NOTE "A" Lay the output lead from the generator in back of the loop antenna. Turn up the output of the generator, picking up the energy in the loop antenna without any electrical connection from the generator.

	FREQUENCY RANGE 535 to 1600 K.C.
Power Consumption	35 Watts
Power Output	1 Watt Undistorted, 1.5 Watts Maximum
Intermediate Frequency	455 K.C.

PROCEDURE FOR SETTING THE AUTOMATIC TUNER PUSH BUTTONS

1. Make a list of six stations you tune in regularly. There are six push buttons on the front of the radio by means of which six stations may be tuned automatically. (See "B," Fig. 2.)

2. Punch out the call letters of the stations you have selected from the set of station call letter tabs supplied.

On the front of each automatic tuner button an opening is provided for inserting the call letter tabs, (See "A" Fig. 2).

Insert the call letter tabs in the rectangular openings in each of the automatic tuner push buttons.

3. Stations may be set up in any sequence desired. Press any one of the automatic tuner push buttons down-all the way.

4. Hold the push button down firmly, and tune set very carefully to station desired, until station is heard clearly and with maximum volume.

Release the push button.

5. Press down another automatic tuner push button. Hold it down FIRMLY and carefully tune in next station desired. Release this push button.

Follow this procedure until you have selected all of your favorite stations.

6. Now rotate the tuning knob to the right (clockwise) as far as it will turn, and with a coin (quarter), tighten the special locking screw ("C") in the center of the tuning knob, (See Fig. 2).

It is VERY IMPORTANT that this locking screw is turned until it is ABSOLUTELY TIGHT.

This screw will lock in place all the stations you have selected on the automatic tuner push buttons. (Note: Locking screw "C" is loose when radio is shipped from factory.)

CHANGING STATIONS:

If you should desire to change any station you have selected to another, hold the tuning knob securely and with a coin loosen the locking screw "C" one or two turns. Hold down push button on which the station is to be changed and tune in new station desired. Release the push button.

Be sure to, retighten the locking screw, otherwise the stations you have previously selected will not stay adjusted to the push buttons.

The set is now set up for automatic tuning.

TUBES:

The tube complement of this chassis consists of the following octal base glass and metal tubes.

The type and function of each tube is as follows:

1—Type 12SK7 R. F. Amplifier.
1—Type 12SA7 Mixer, First Detector-Oscillator.
1—Type 12SK7 I. F. Amplifier.
1—Type 12SQ7 Second Detector, A.V.C. and First Audio.
1—Type 35L6GT Beam Output Amplifier.
1—Type 35Z5GT High Vacuum Rectifier.

ALIGNING INSTRUCTIONS:

CAUTION:—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltage, defective tubes, condensers and resistors. In order to properly align this radio, the chassis should be removed from the cabinet.

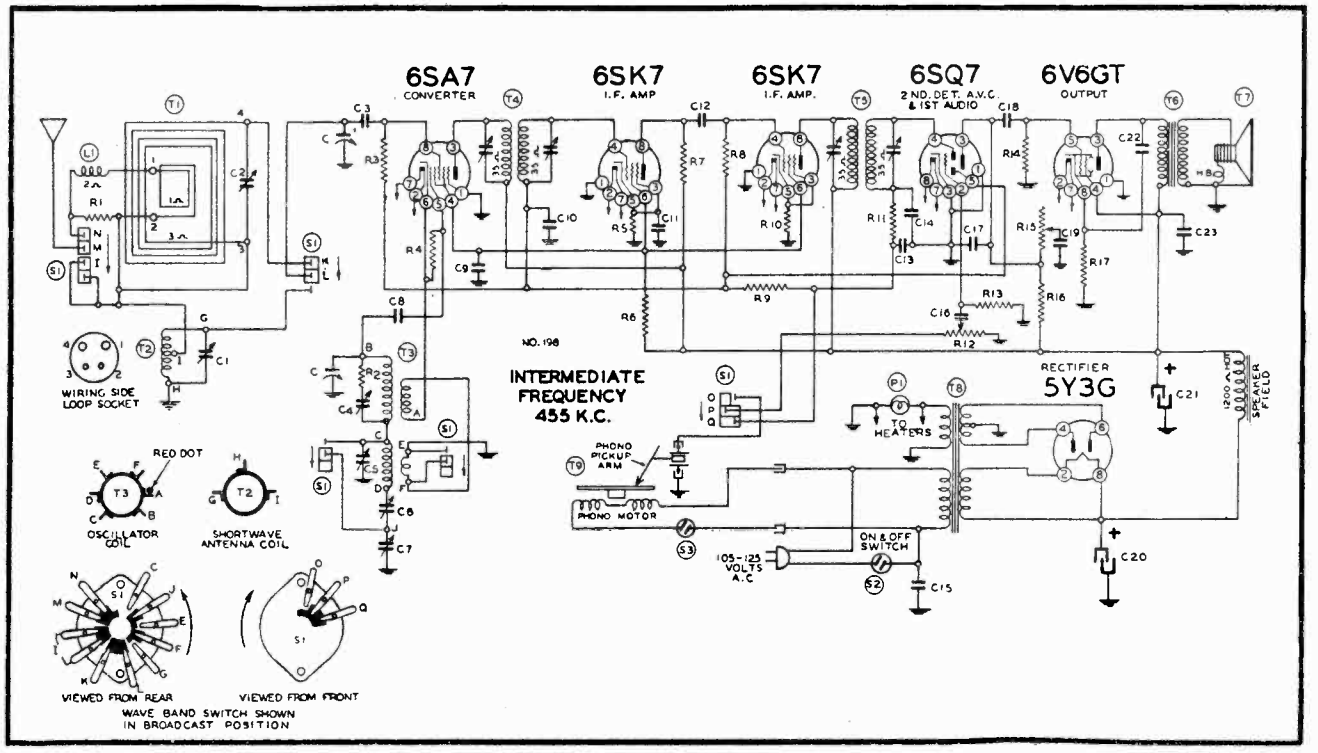
It is important during alignment that the same distance between the loop antenna and the chassis be maintained as when the chassis is installed in the cabinet.

Slight adjustments to the oscillator and antenna circuits can be made without removing the chassis from the cabinet through two holes which are provided on the bottom of the cabinet.

The two adjustments on the variable gang condenser can be reached wih a long insulated type screw driver through these two holes.

Code No.	Part No.	Description
		RESISTORS
R1	13071	4000 ohm—⅓ w.
R2	130128	20 ohm—⅓ w.
R3	13019	1 megohm—⅓ w.
R4	130236	30M ohm—⅓ w.
R5	130283	750 ohm—⅓ w.
R6	130324	18M ohm—1 watt
R7	130218	5M ohm—⅓ w.
R8	13020	100M ohm—⅓ w.
R9	130170	3 megohm—⅓ w.
R10	130222	350 ohm—⅓ w.
R11	13012	50M ohm—⅓ w.
R12	101232	1 megohm volume control
R13	130223	10 megohm—⅓ w.
R14	1303	500M ohm—⅓ w.
R15	101231	1 megohm tone control
R16	130172	250M ohm—⅓ w.
R17	130323	270 ohm—1 watt
		CONDENSERS
C	102137	Two gang variable condenser
C1	124149	S. W. Antenna trimmer
C2	124149	B. C. Antenna trimmer
C3	1292	.0005 mica
C4	124142	S. W. Oscillator trimmer
C5	124142	B. C. Oscillator trimmer
C6	124146	B. C. Padding Condenser
C7	124146	S. W. Padding Condenser
C8	12960	150 mmfd. mica
C9	10013	.05 x 400 v.
C10	10022	.05 x 200 v.
C11	1009	.05 x 200 v.
C12	1292	.0005 mica
C13	129161	.0001 mica
C14	129161	.0001 mica
C15	10061	.02 x 600 v.
C16	10025	.002 x 600 v.
C17	12912	.00025 mica
C18	10026	.02 x 400 v.
C19	10071	.004 x 600 v.
C20	119115	16 mfd. x 400 w. v. lytic
C21	119115	16 mfd. x 400 w. v. lytic
C22	10019	.006 x 600 v.
C23	1001	.1 x 400 v.

C1 and C2 are in same unit C4 and C5 in same unit
C6 and C7 are in same unit C13 and C14 in same unit
C20 and C21 are in same unit

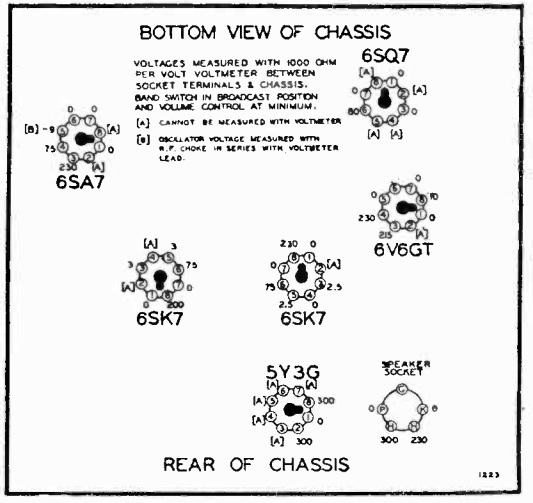


ALIGNING INSTRUCTIONS

CAUTION:—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltage, defective tubes, condensers and resistors.

PARTS

T1	111208	Loop antenna assembly
T2	111184	S. W. Antenna Coil
T3	110154	B. C. and S. W. Oscillator Coil
T4	108169E	Input I. F. Coil—455 kc.
T5	108106U	Output I.F. Coil—455 kc.
T6	105118	Output Transformer
T7	114216	8" Electro Dynamic Speaker
T8	104225B	60 cycle power transformer
and	104238B	25 cycle power transformer
T9	104228	60 cycle Seeburg Record Changer and Phono Assembly
and	104229	25 cycle Seeburg Record Changer and Phono Assembly
S1	125132	Phono-band switch
S2		Switch on volume control
S3		Switch on record changer
L1	12312	R. F. Choke coil
P1	10794	Pilot light bulb No. T-44



FOR SEEBURG J RECORD CHANGER SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

- Volume control—Maximum all adjustments.
- Connect radio ground to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- 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 antennas—.1—mf., 200 mmf., 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD	Grid of 6SA7 Mixer	Broadcast	Rotor full open (Plates out of mesh)	Trimmers on top (See Top View)	Input and Output I. F.	Adjust to maximum output
SHORT WAVE BAND (See Note A)	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C4	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C1	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 6 Mc.	Trimmer C7	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "C")
BROAD-CAST BAND (See Note A)	1600 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full open (Plates out of mesh)	Trimmer C5	Broadcast oscillator	Adjust to maximum output
	530 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full closed	Trimmer C6	Broadcast oscillator series pad	Adjust to maximum output
LOOP ALIGN-MENT (See Note B)	1400 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 1400 Kc.	Trimmer C2 (See Top View)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 600 Kc.	Trimmer C6 (See Top View)	Broadcast oscillator series pad	Adjust to maximum output

NOTE "A"—The signal generator is connected to the "ANT." and "GND" leads when aligning the **Short Wave Band** and to the grid of the 6SA7 tube and ground terminal when setting the **Broadcast Band** oscillator end frequencies, (1600 and 530 K. C.).

The loop antenna should be connected to the radio when making these adjustments.

NOTE "B"—Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected. The signal generator is connected to the "ANT." and "GND." leads.

NOTE "C"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each band is completed, repeat the procedure as a final check.

TECHNICAL DATA—Model No. W-671

Power Consumption Radio Only - - - - - 70 Watts
Motor Only - - - - - 20 Watts

Power Output - - - - - - - - 2.1 Watts Undistorted

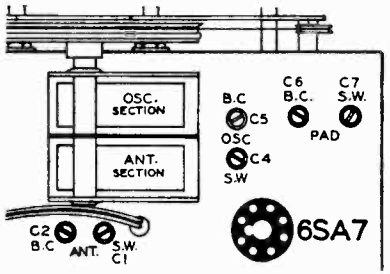
Sensitivity for 500 Milliwatt Output: 15 Microvolts Average

Selectivity - 51 KC Broad at 1000 Times Signal at 1000 KC

Tuning Frequency Range Broadcast Band - 530 to 1600 KC
Shortwave Band - 5.46 to 18.3 MC

Intermediate Frequency - - - - - - - - - 455 KC

Speaker - - - - - - - - - 8 in. Electro Dynamic



TRIMMER VIEW

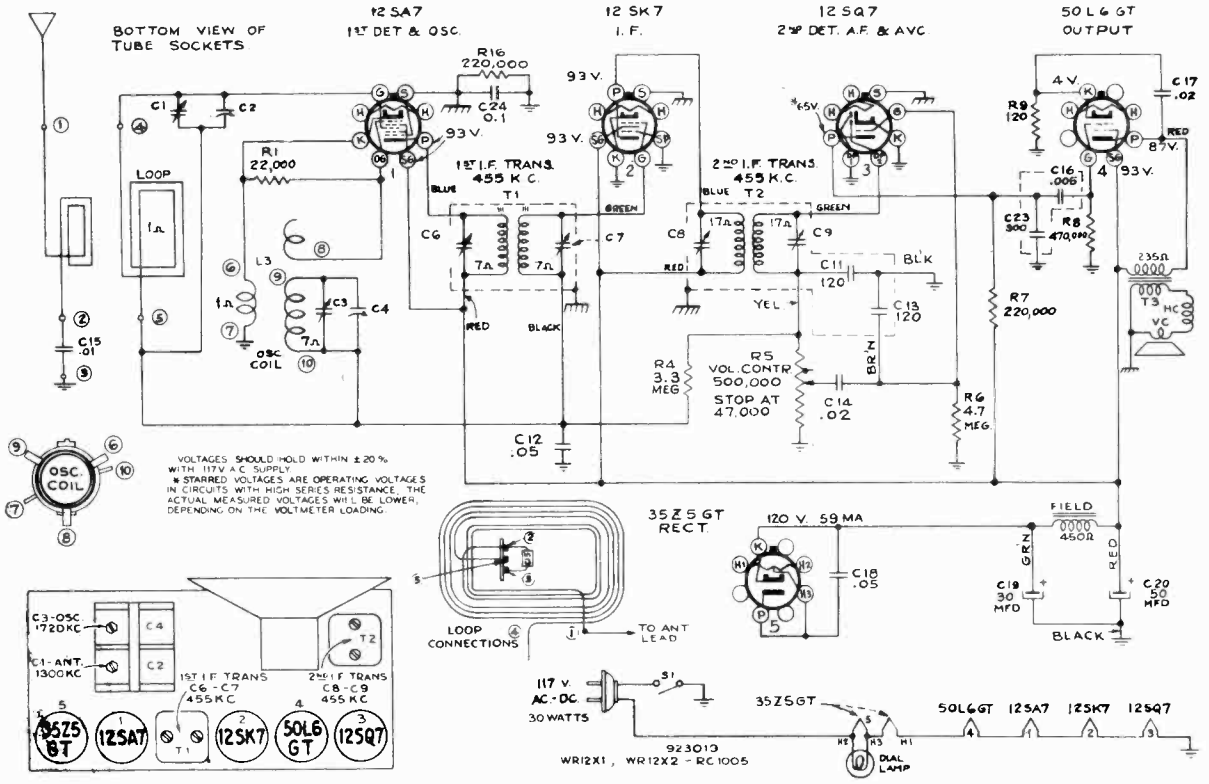
Service Notes

Voltages taken from different points of circuit to chassis are measured with volume control at minimum, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt.

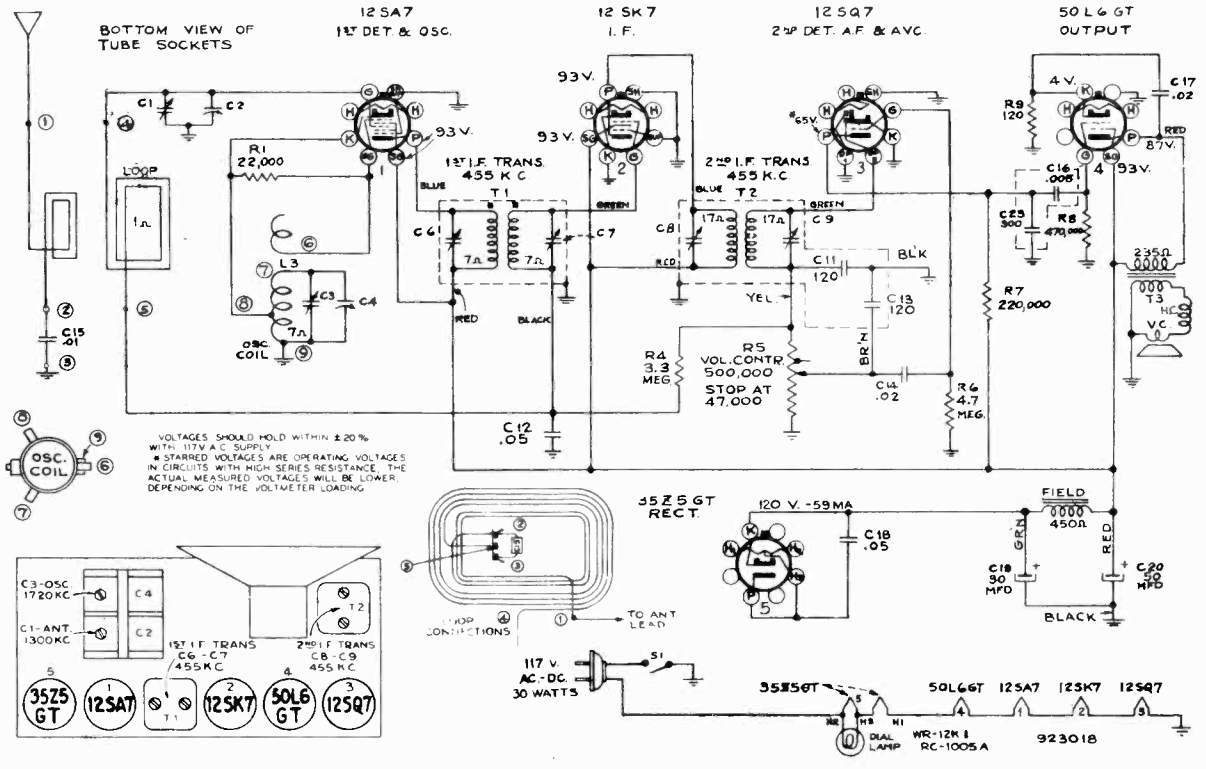
Resistances of coil windings are indicated in ohms on the schematic cir cuit diagram.

WESTINGHOUSE ELEC. SUPPLY CO., INC.

MODELS WR12X1
WR12X2
MODEL WR12K1



Schematic Circuit Diagram Model WR-12X1 & WR-12X2



Schematic Circuit Diagram Model WR-12K1

FOR ALIGNMENT SEE INDEX

MODELS WR12X3
WR12X5, WR12X6

WESTINGHOUSE ELEC. SUPPLY CO., INC.

Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 530-1,720 kc
Intermediate Frequency ..... 455 kc

POWER SUPPLY RATINGS
105-125 volts, direct current, or 50-60 cycles ..... 30 watts

POWER OUTPUT (125 volts, 60 cycle supply)
Undistorted ..... 0.8 watts Maximum ..... 1.2 watts

LOUDSPEAKER (86A-3) ..... 5-inch Electrodynamic
V.C. Impedance ..... 4 ohms at 400 cycles

PILOT LAMP ..... Mazda No. 51, 6-8 volts, 0.2 amp.

CABINET DIMENSIONS

	WR-12X3	WR-12X5, WR-12X6
Height	7⅞ in.	6⅞ in.
Width	11⅜ in.	10⅛ in.
Depth	6⅝ in.	6⅜ in.
Weight (Net)	7¼ lbs.	6½ lbs.
Weight (Shipping)	9½ lbs.	8½ lbs.

Tuning Drive Ratio ..... 12 to 1

TUBE COMPLEMENT
(1) RCA-12SA7 ..... 1st Det.—Osc.
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd Det., A.V.C. and A-F Amplifier
(4) RCA-50L6-GT ..... Power Output
(5) RCA-35Z5-GT ..... Rectifier

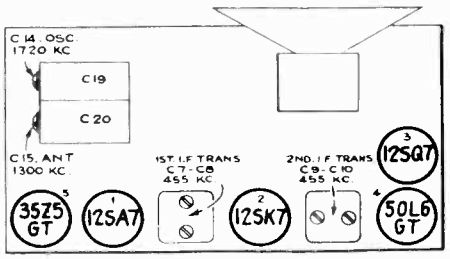
Alignment Procedure

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.—Connect the low side of the test oscillator to the receiver chassis through a .01 mfd. capacitor. With the output meter alignment method the test oscillator output should be kept as low as possible.

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.

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	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	C10, C9 2nd I-F Transformer
2	1st Det. grid in series with .01 mfd.			C8, C7 1st I-F Transformer
3	Ant. terminal in series with 100 mmfd.	1,720 kc	Gang at minimum	C14 (osc.)
4	Radiated signal 1,300 kc		Signal frequency	C15 (ant.)
5	Repeat steps 3 and 4.			

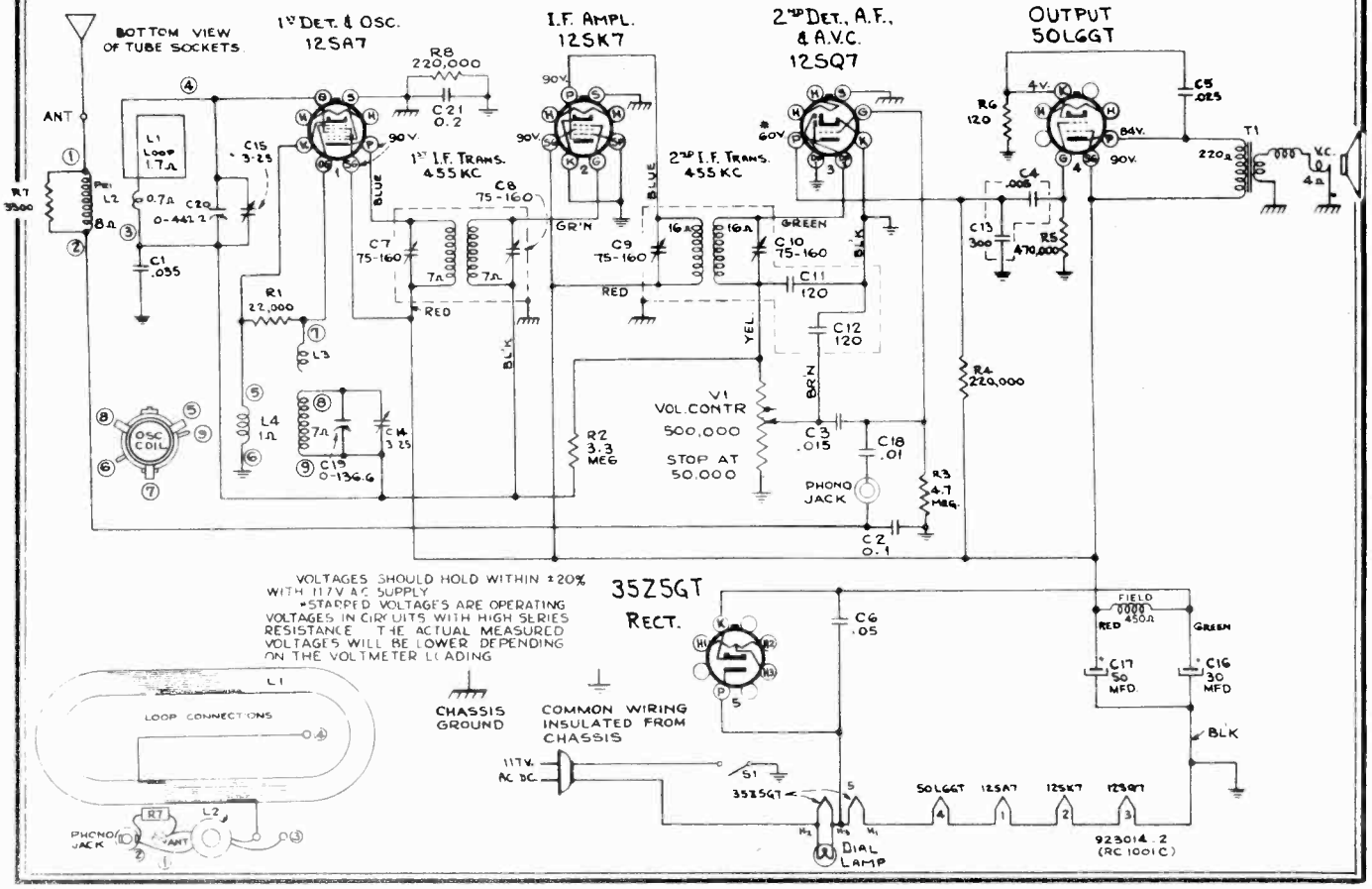


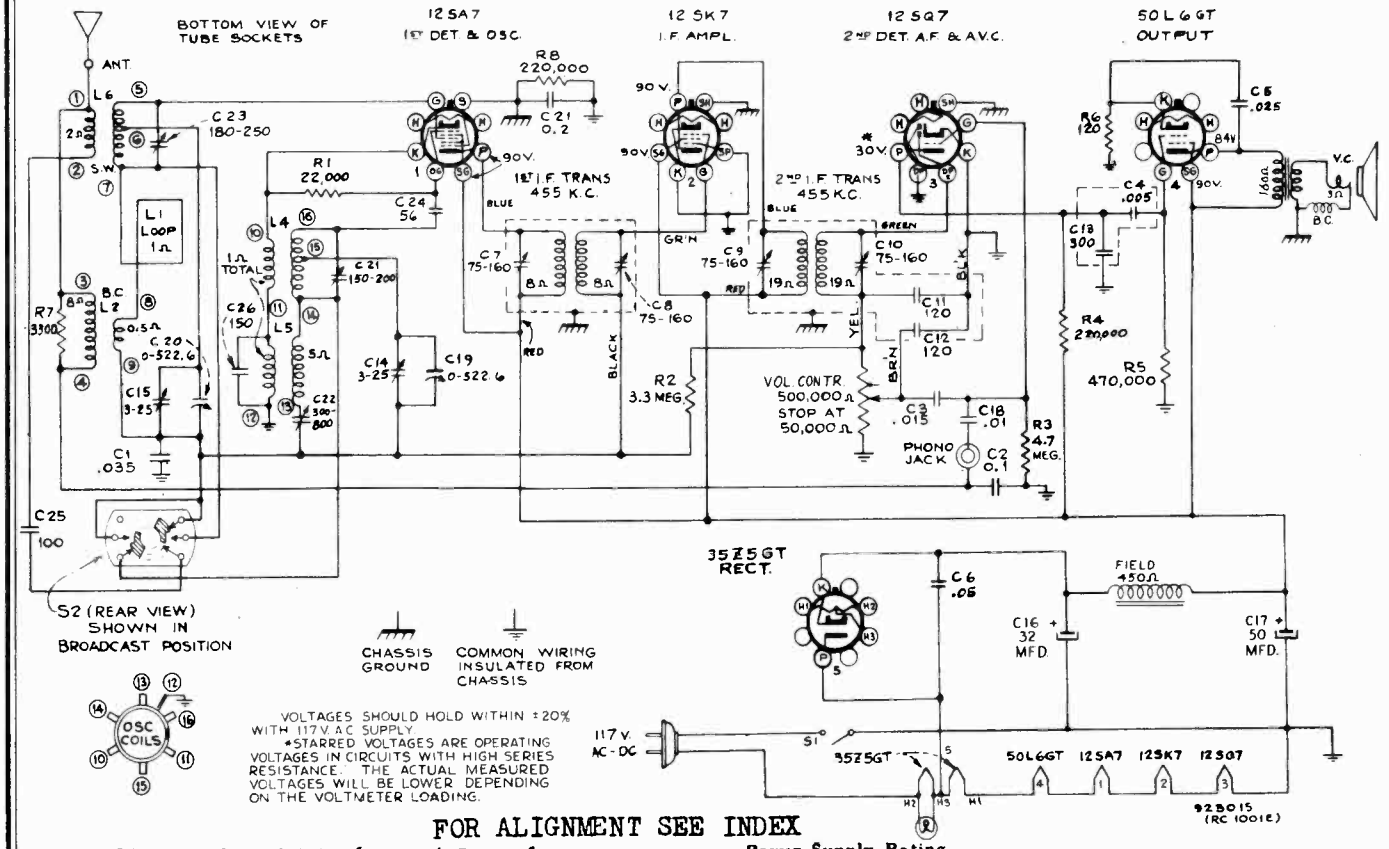
Tube and Trimmer Locations

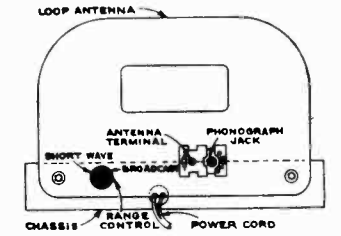
Record Player.—A jack is provided on the rear of the set for attaching a Record Player. The cable from the Record Player should be terminated in a Stock No. 31048 plug to fit the jack.

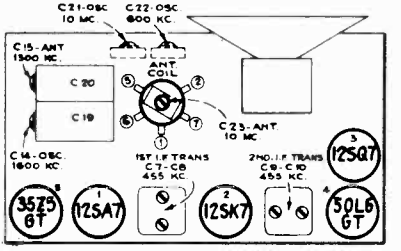
For phono operation, tune the receiver to a quiet point on the dial, turn the radio volume control to minimum, and use the control on the Record Player to regulate volume.

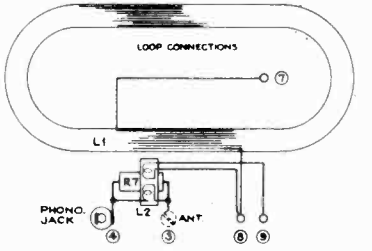
For radio operation, always remove the record-player plug from the jack.

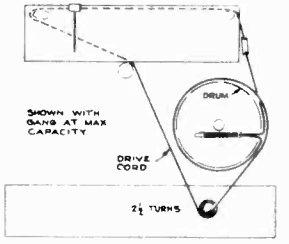












FOR ALIGNMENT SEE INDEX

Electrical and Mechanical Specifications

Frequency Range

Broadcast Band ..... 540-1,720 kc
Short Wave Band ..... 9 mc to 12 mc.

Intermediate Frequency ..... 455 kc

Tube Complement

(1) RCA-12SA7 ..... 1st Det.—Osc.
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd Det., A.V.C., and A-F Amplifier
(4) RCA-50L6-GT ..... Power Output
(5) RCA-35Z5-GT ..... Rectifier

Pilot Lamp ..... Mazda No. 51, 6-8 volts, 0.2 amp.

Power Output

Undistorted ..... .9 watts
Maximum ..... 1.3 watts

Loudspeaker (RL-86A-3)

Type ..... 5-inch Electrodynamic
V.C. Impedance ..... 3.3 ohms at 400 cycles

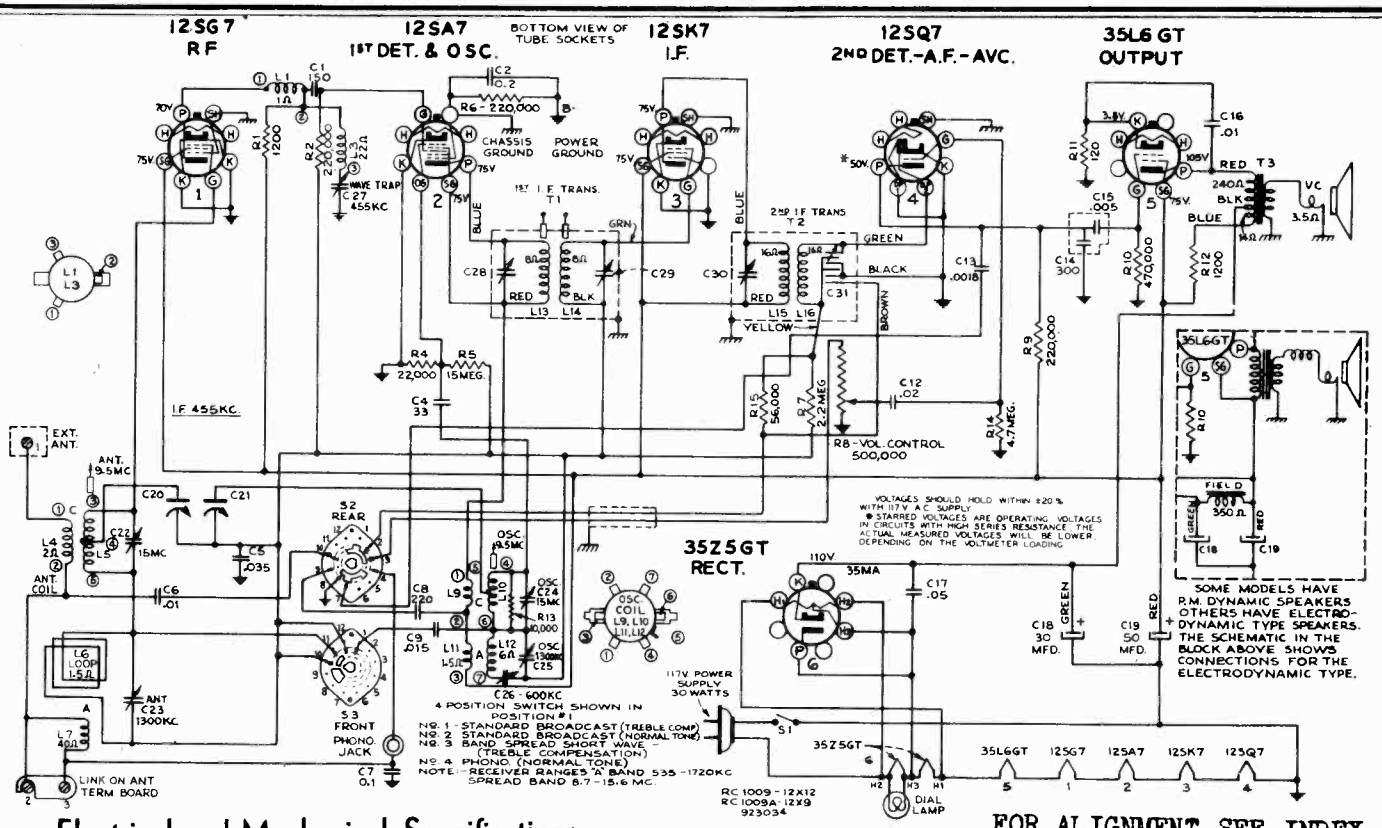
Power Supply Rating

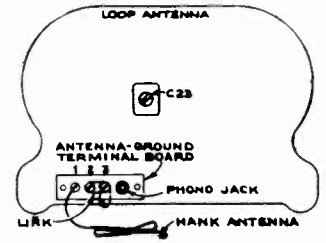
105-125 volts, AC 50 or 60 cycles, or DC ..... 30 watts

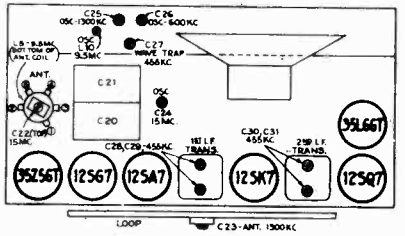
Precautionary Lead Dress.—

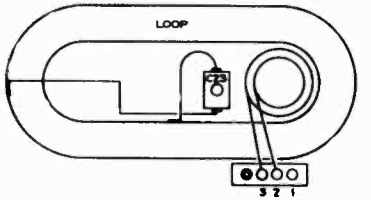
1. Dress the power cable to switch on the volume control close to the chassis and away from all grid and diode leads and condensers.
2. Dress capacitors in the 12SQ7 grid circuit away from all wiring.
3. Green and black phono wires should be twisted and dressed away from other parts and leads.
4. 50L6-GT filament wires should be dressed to rear of chassis and away from the second I-F transformer leads.
5. Dress brown lead from second I-F transformer to 12SQ7 away from power cable.
6. Dress wire to No. 1 grid of the 12SA7 away from pilot lamp leads.
7. Dress wire from loop to variable condenser away from chassis.
8. Dress all capacitors, leads, etc. which come close to oscillator coil rigidly and as far as possible from it.

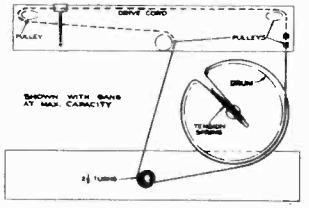
Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.











FOR ALIGNMENT SEE INDEX

Electrical and Mechanical Specifications

FREQUENCY RANGE

Broadcast	535-1,750 kc
Short Wave	8.7-15.6 mc

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SG7	R-F Amplifier
(2) RCA-12SA7	1st Det.—Osc.
(3) RCA-12SK7	I-F Amplifier
(4) RCA-12SQ7	2nd Det., A.V.C., and A-F Amplifier
(5) RCA-35L6-GT	Power Output
(6) RCA-35Z5-GT	Rectifier

PILOT LAMP ..... Mazda No. 51, 6-8 volts, 0.2 amp.

POWER OUTPUT

Undistorted	0.9 watts
Maximum	1.4 watts

LOUDSPEAKER

Type RL-81B2	5-inch permanent-magnet dynamic
Type RL-86B1	5-inch electrodynamic
V.C. Impedance	4 ohms at 400 cycles

POWER SUPPLY RATING

105-125 volts. AC, 50 or 60 cycles, or DC ..... 25 watts

Precautionary Lead Dress

1. Dress output tube plate lead to speaker and output bypass condenser away from terminal board and yellow lead in cable.
2. Dress brown and yellow leads from 2nd I.F. transformer away from output plate and bypass condenser.
3. Dress .02 capacitor C12 away from output capacitor C16.
4. Dress all leads or parts as far as possible away from oscillator coil.
5. Dress lead from C13 to band switch down along front apron of chassis.
6. Dress lead from trimmer condenser on loop to S.W. Ant. coil around outside of rectifier tube. Other leads between rectifier and R.F. tube.

Combination Range, Tone and Phonograph Control

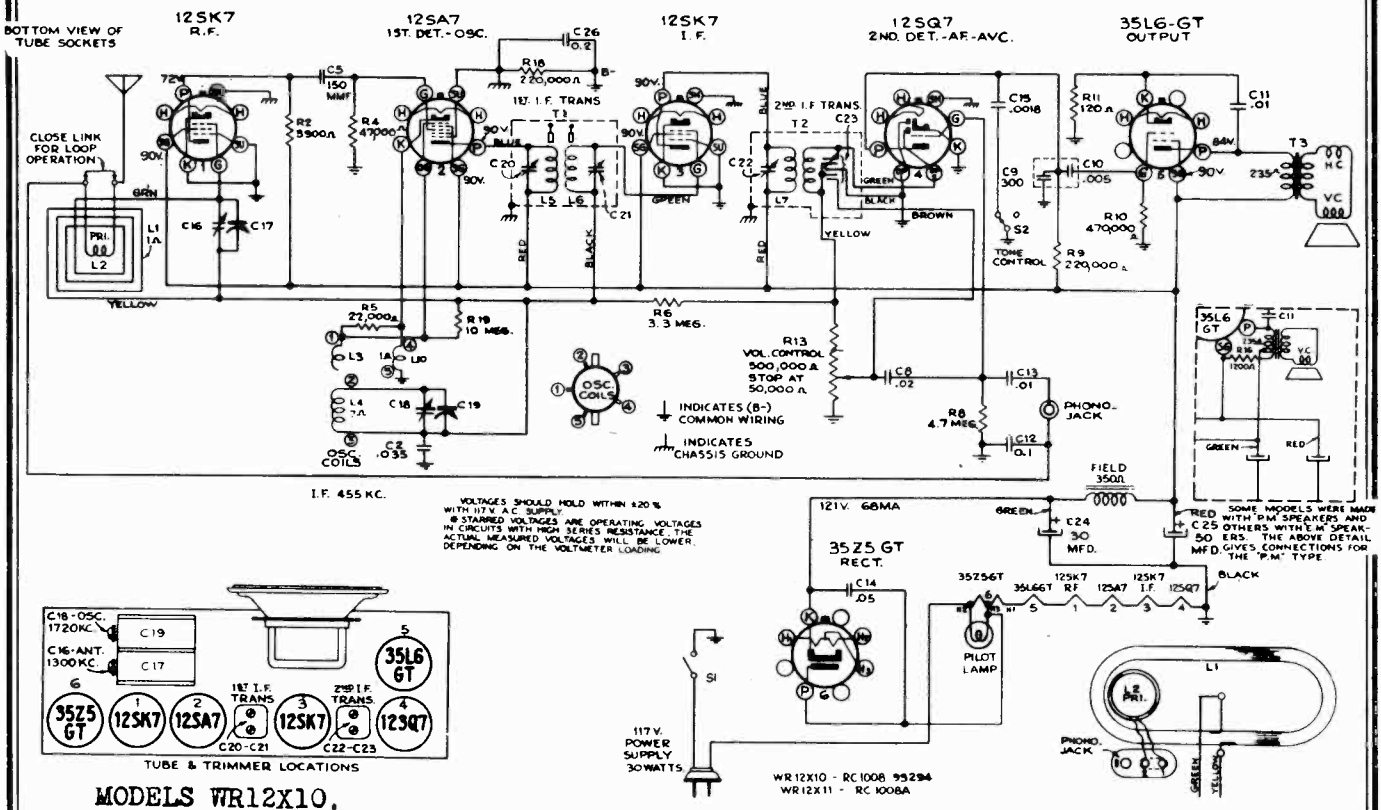
1. Extreme counter-clockwise position (Broadcast reception high tones emphasized).
2. Full tone (Broadcast Reception).
3. Band Spread Short Wave Reception.
4. Phonograph Attachment operation with full tones.

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.

WESTINGHOUSE ELEC. SUPPLY CO., INC.

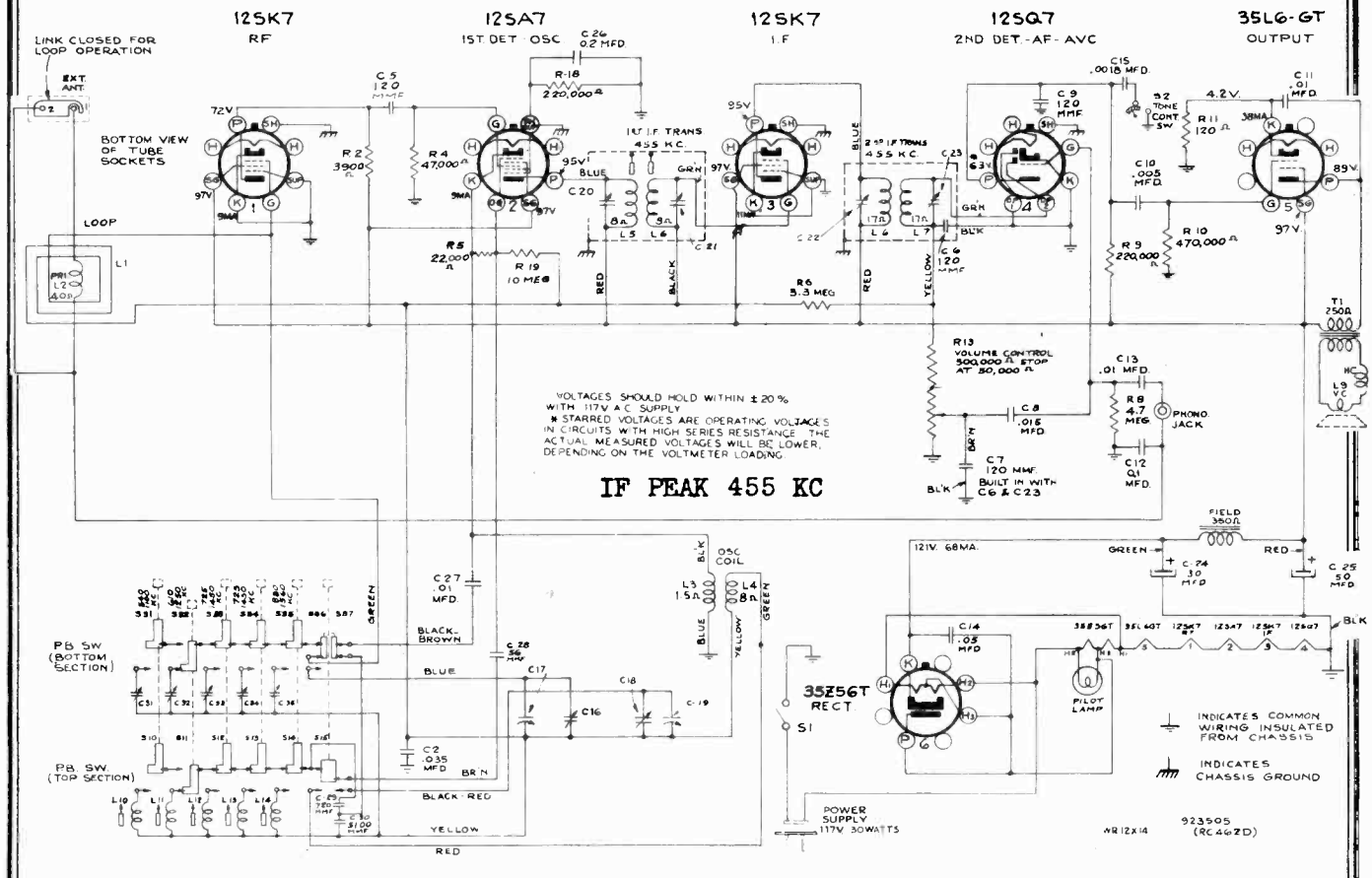
MODELS WR12X10, WR12X11

MODELS WR12X10, WR12X11
MODEL WR12X14



MODELS WR12X10, WR12X11, WR12X14

MODEL WR12X14



MODELS WR12X10, WR12X11

WESTINGHOUSE ELEC. SUPPLY CO., INC.

MODEL WR12X14
MODEL WR12X15

Alignment Procedure FOR MODELS WR12X10, 12X11, WR12X14

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

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.

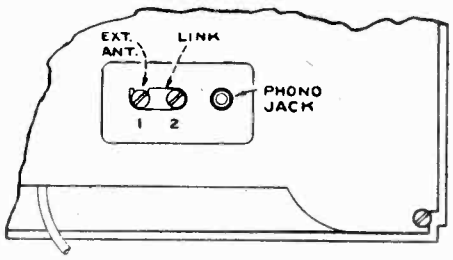
Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it should be connected to the blue antenna lead on the rear of the chassis.

Precautionary Lead Dress:

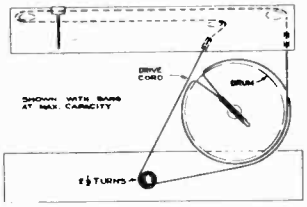
1. .01 mfd. capacitor from output plate to cathode to be dressed as far as possible away from .015 mfd. 1st audio grid condenser and volume control terminals to eliminate audio howl.
2. Filament lead to pin No. 7 on 35L6-GT socket to be dressed away from 1st audio grid.
3. Dress B+ lead on 12SK7 I.F. socket across bottom of socket between grid and plate contacts to aid reduction of grid plate capacitance.
4. Dress excess lead lengths of I.F. transformer, grid and plate leads into cans to aid shielding.
5. Dress filament leads of 35L6-GT around 12SQ7 socket and into chassis corner to reduce hum.

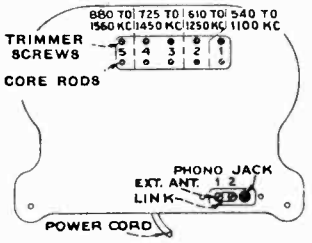
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio to—	Adjust the following for maximum peak output
1	12SK7 I-F grid, in series with 0.1 mfd.	455 kc	Quiet Point at 1,700 kc end of dial	C23, C22 2nd I-F transformer
2	12SA7 1st det. grid, in series with 0.1 mfd.			C21, C20 1st I-F transformer
3	12SK7 R-F grid, in series with 0.1 mfd.	1,720 kc	1,720 kc	C18 (osc.)
4	Radiated signal 1,300 kc		Signal frequency	C16 (ant.)
5	Repeat steps 3 and 4.			

MODELS WR12X10, WR12X11



MODEL WR12X14 ONLY





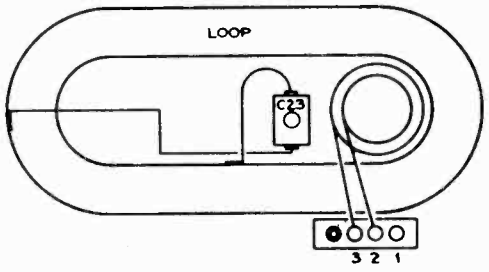
Push Button Adjustment:

1. Make a list of the five desired stations, arranged in order from low to high frequencies, push in Dial Tuning button, allow at least a five minute warm-up period, and manually tune-in the first station on this list.
2. Push in station button No. 1 (extreme left) and adjust No. 1 oscillator core to receive the station.
3. Adjust antenna trimmer for maximum output. Clockwise core and trimmer adjustment tunes circuits to lower frequencies.
4. Adjust for each of the four remaining stations in a similar manner.
5. Make a final careful re-adjustment of oscillator cores and antenna trimmers.

MODEL WR12X15

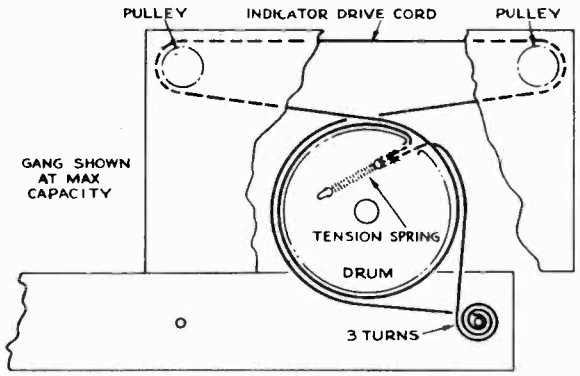
Precautionary Lead Dress

1. Dress output tube plate lead to speaker and output bypass condenser away from terminal board and yellow lead in cable.
2. Dress brown and yellow leads from 2nd I.F. transformer away from output plate and bypass condenser.
3. Dress .02 capacitor C12 away from output capacitor C16.
4. Dress all leads or parts as far as possible away from oscillator coil.
5. Dress lead from C13 to band switch down along front apron of chassis.
6. Dress lead from trimmer condenser on loop to S.W. Ant. coil around outside of rectifier tube. Other leads between rectifier and R.F. tube.



Loop Connections

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.



Drive Cord Arrangement

Record Player.—A jack is provided on the rear of the set for attaching a Record Player. The cable from the Record Player should be terminated in a Part No. 31048 plug to fit the jack.

Electrical and Mechanical Specifications

FREQUENCY RANGE

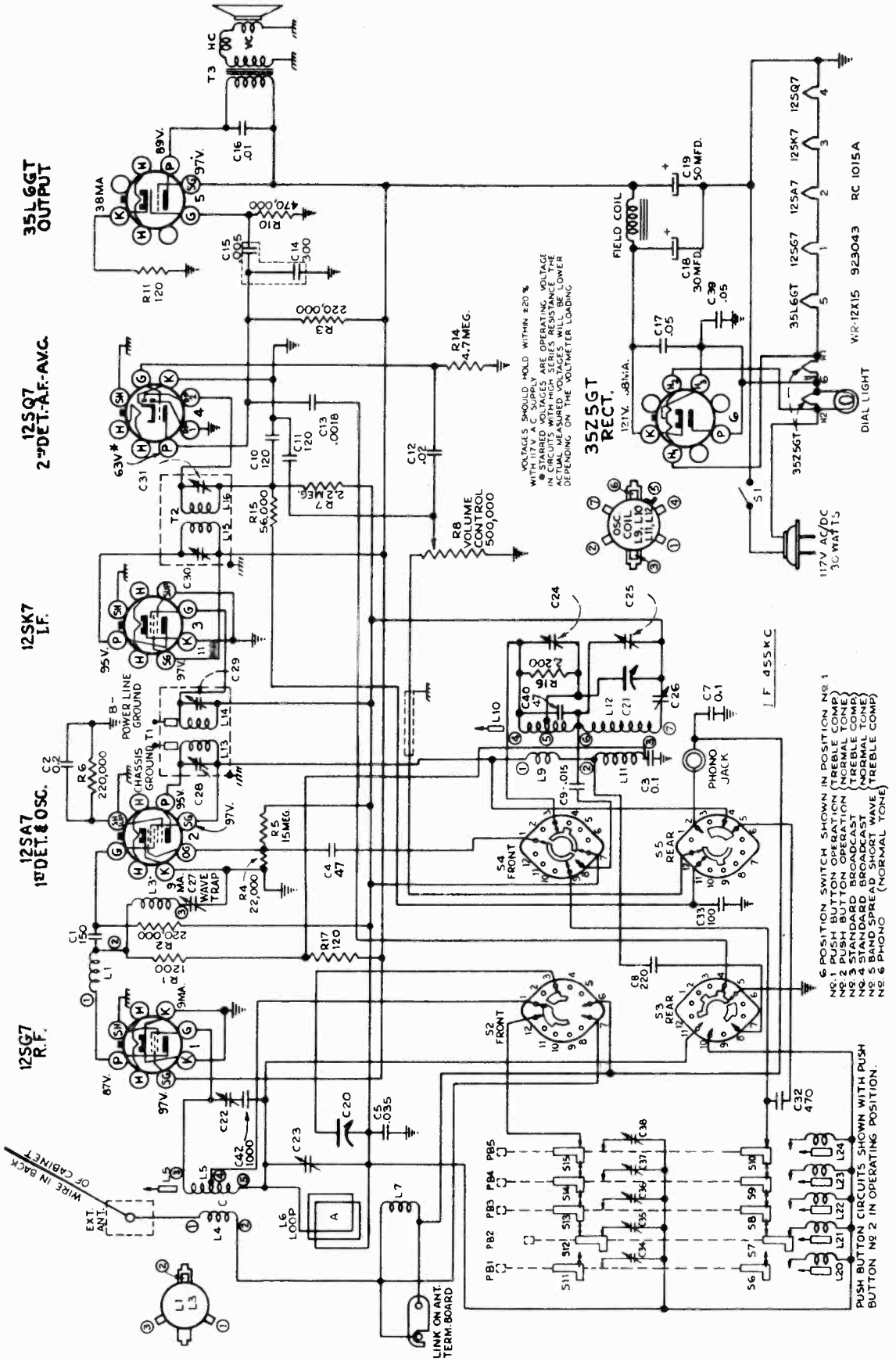
Broadcast	540-1,600 kc
Short Wave	9-15.5 mc
INTERMEDIATE FREQUENCY	455 kc
PILOT LAMP	Mazda No. 51, 6-8 volts, 0.2 amp.

POWER OUTPUT

Undistorted	0.9 watts
Maximum	1.4 watts

MODEL WR12X15

WESTINGHOUSE ELEC. SUPPLY CO., INC.



MODEL WR12X15
MODEL WR12X16

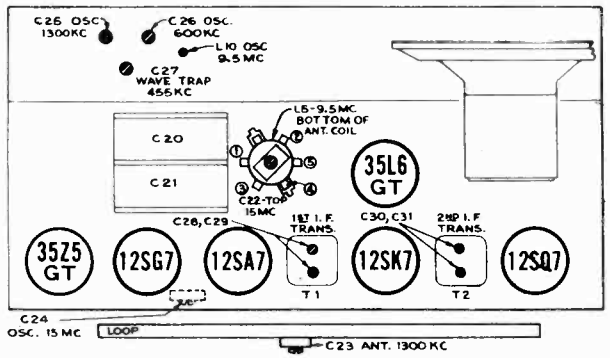
WESTINGHOUSE ELEC. SUPPLY CO., INC.

MODEL WR12X15 — Alignment Procedure

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, keep the 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 dial backing plate for quick reference during alignment.
With gang in full mesh, move the dial pointer to the last mark at the left-hand end of the dial scale.



Tube and Trimmer Locations

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 0.1 mfd.	455 kc	Quiet Point at 1,700 kc end of dial	C-30, C-31
2	1st det. grid in series with 0.1 mfd.			C-28, C-29
3	R.F. grid in series with 0.1 mfd.			C27**
4	Ant. terminal in series with 47 mmf. (link open)	15 mc	15 mc "C" Band	C-24 (osc.)* C-22 (ant.)
5		9.5 mc	9.5 mc "C" Band	L-10 (osc.) L-5 (ant.)
6	Repeat steps 4 and 5.			
7	Ant. terminal in series with 220 mmf. (link open)	1,300 kc	1,300 kc "A" Band	C-25 (osc.) C-23 (ant.)
8		600 kc	600 kc "A" Band	C-26 (osc.)
9	Repeat steps 7 and 8.			

*Use minimum capacity peak if two peaks can be obtained.
**Adjust C-27 for *minimum* signal with 455 kc applied to R.F. grid.
Note.—Oscillator tracks 455 kc above signal on all bands.

MODEL WR12X15. — Push Button Adjustment

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

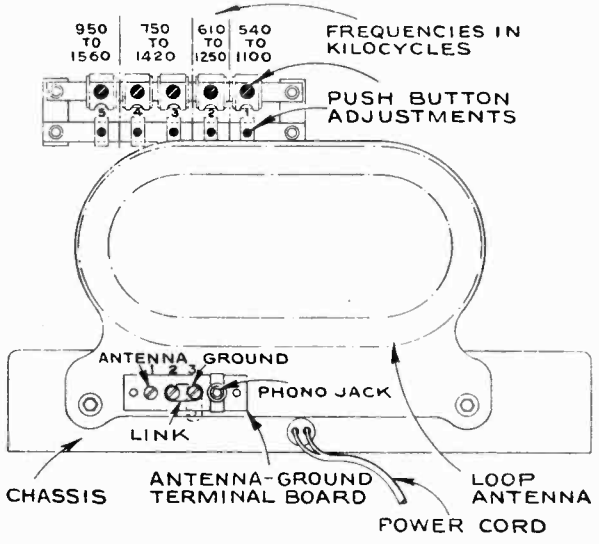
In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

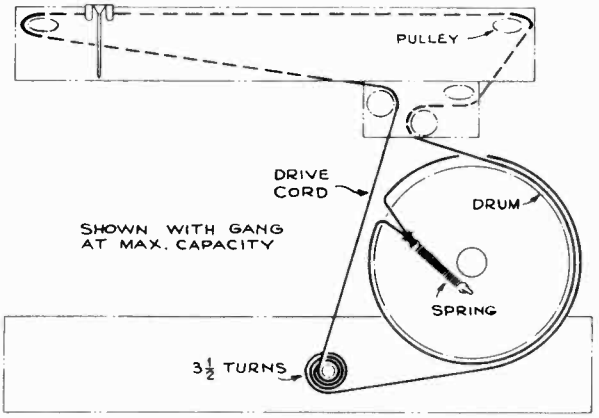
1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to dial position, and manually tune in the first station on the list.
3. Turn range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station.
4. After oscillator core is set correctly, adjust No. 1 antenna trimmer for maximum output.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On the 950 to 1,560 kc push-button, the higher frequency stations may be received with L24 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.

PUSH-BUTTON RANGES

One station between approximately	540-1,100 kc
One station between approximately	610-1,250 kc
Two stations between approximately	750-1,420 kc
One station between approximately	950-1,560 kc





Model WR-12X16

Drive and Indicator Cord Arrangement

Phono Attachment.—A jack is provided on the rear of cabinet for connecting a Phono Attachment into the audio-amplifying circuit. The cable from the Phono Attachment should be terminated in a Part No. 31048 plug to fit the jack.

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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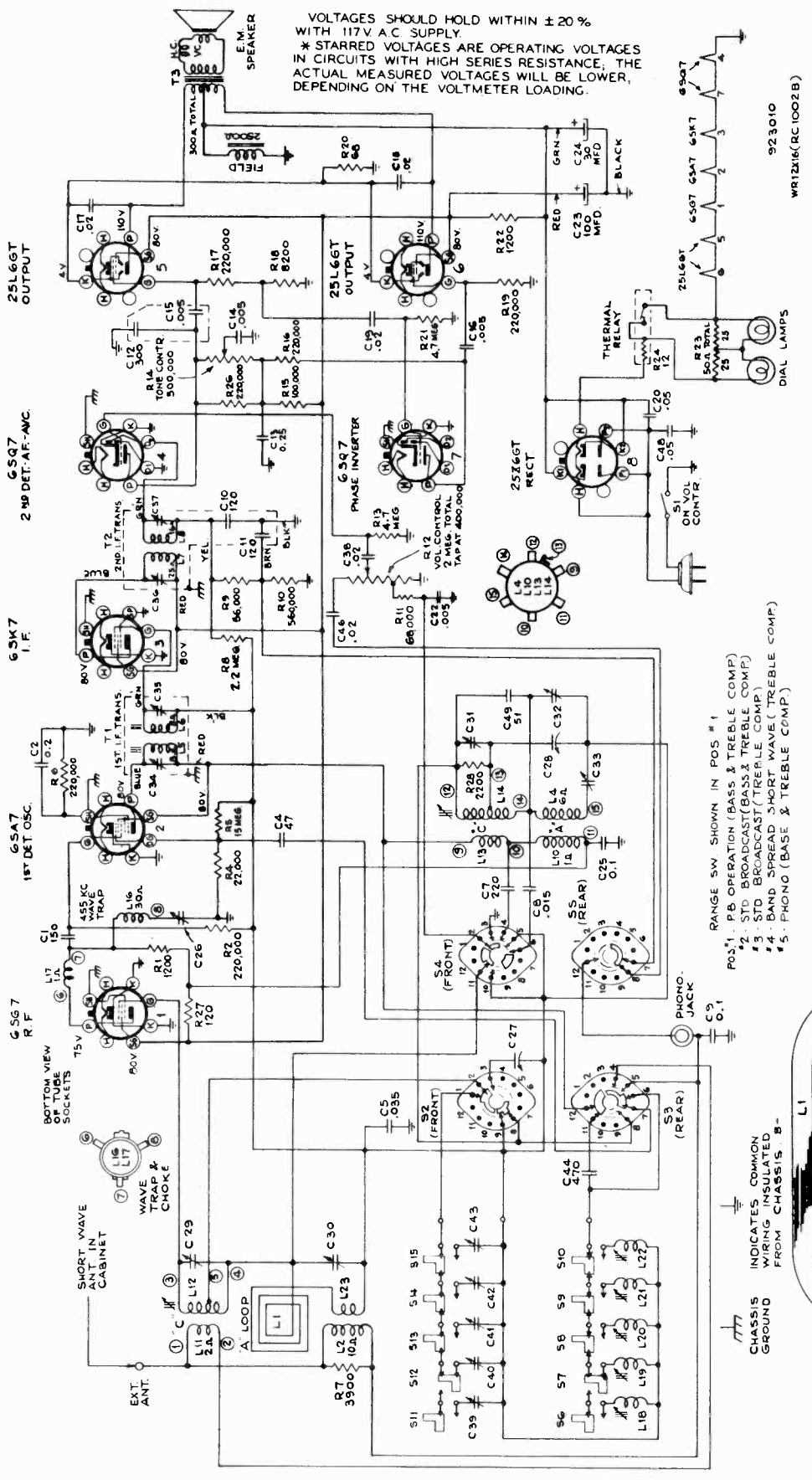


Loop Connections

Critical Lead Dress

1. Dress all AC filament and power wiring down close to chassis and as far as possible from all audio grid or plate wiring.
2. Dress all leads or parts as far as possible away from oscillator coil.
3. Dress audio coupling capacitor C38 from volume control to grid of 6SQ7 away from filament wire connecting No. 8 pin socket 5 and No. 8 pin socket 7.
4. Dress lead from trimmer condenser on loop to S.W. ant. coil between rectifier and R.F. tube and away from other coil leads.
5. Dress I.F plate and grid leads back into the shield can to keep exposed length as short as possible.

MODEL WR12X16

WESTINGHOUSE ELEC. SUPPLY CO., INC.

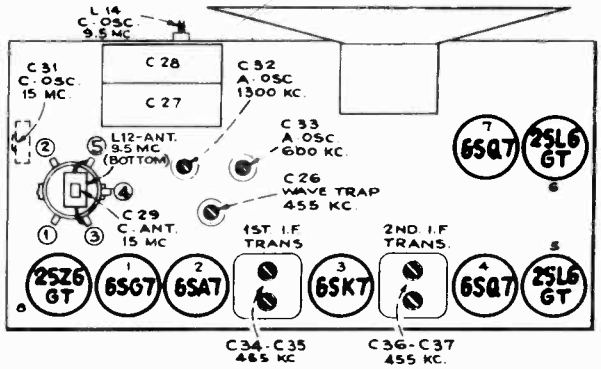
Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Dial Pointer Adjustment.—The dial pointer should be set at the left-hand end dial marks, with the gang in full mesh.



Tube and Trimmer Locations

Steps	Connect the high side of test osc. to—	Tune test. osc. to—	Range Switch to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid in series with .01 mfd.	455 kc	A	Quiet Point near middle of dial	C-36, C-37 2nd I-F trans.
2	Det. grid in series with .01 mfd.				C-34, C-35 1st I-F trans.
3	Ant. lead in series with 50 mmfd.	15 mc	C	15 mc	C-31 (osc.)* C-29 (ant.)
4		9.5 mc	C	9.5 mc	L-14 (osc.) L-12 (ant.)
5	Repeat steps 3 and 4.				
6	Antenna terminal in series with 200 mmfd.	1,300 kc	A	1,300 kc	C-32 (osc.) C-30 (ant.)
7		600 kc	A	600 kc	C-33 Rock in
8	Repeat steps 6 and 7.				
9	R-F grid in series with .01 mfd.	455 kc	A	low end of dial	C-26**

* Oscillator should track on high frequency side of signal.

If two peaks are obtained use high frequency (minimum capacity peak).

** Feed a high signal level of 455 kc into R.F. grid and adjust C-26 for minimum signal.

Electrical and Mechanical Specification

FREQUENCY RANGES

Standard Broadcast	540-1,600 kc
Short Wave	9-15 mc
Intermediate Frequency	455 kc

TUBE COMPLEMENT

(1) RCA-6SG7	R-F Amplifier
(2) RCA-6SA7	1st Det.-Osc.
(3) RCA-6SK7	I-F Amplifier
(4) RCA-6SQ7	2nd Det., A.V.C., A.F. Amp.
(5) RCA-6SQ7	Phase Inverter
(6) RCA-25L6GT	Power Output
(7) RCA-25L6GT	Power Output
(8) RCA-25Z6GT	Rectifier

Dial Lamp (2) ..... Mazda 44, 6.3 V., 0.25 A.

LOUDSPEAKER

Type	9¼ inch elliptical electrodynamic
V.C. Impedance	3 ohms at 400 cycles

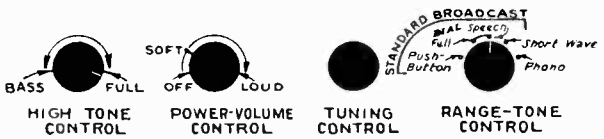
POWER OUTPUT RATING

Undistorted	2.5 watt
Maximum	4.0 watt

POWER SUPPLY RATING

105-125 A.C. 50-60 cy. or D.C. ..... 60 watts

	Height	Width	Depth
Cabinet Dimensions (inches)	12⅜	16¼	10
Chassis Base Dimensions (inches)	2½	12½	6
Overall Chassis Height			9½
Weight (Net)			14 lbs.
Tuning drive ratio			26 to 1



Location of Controls

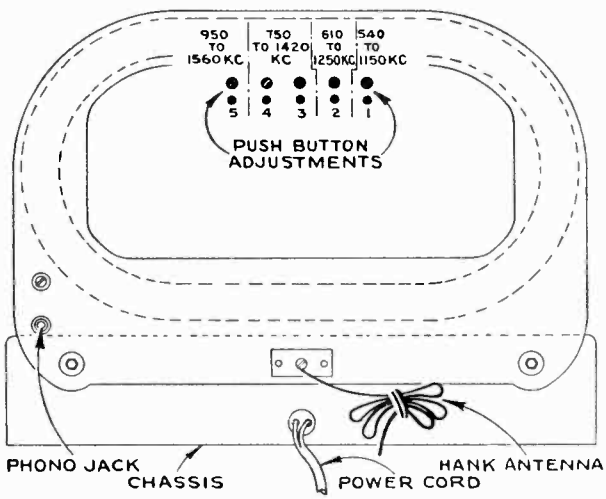
Push Button Adjustment

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

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure.

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station. It may be necessary to maintain approximate tracking between antenna and oscillator to receive weak stations.
4. After oscillator core is adjusted properly, adjust antenna trimmer No. 1 for maximum output.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the five remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On push-button No. 5, the higher frequency stations may be obtained with the oscillator core No. 5 either in or out. (Oscillator frequency either 455 kc below or above the signal.) The out position should be used so the oscillator is 455 kc above the signal.



Rear of Chassis—Push Button Adjustment

MODELS WR12X9, WR12X12

WESTINGHOUSE ELEC. SUPPLY CO., INC.

MODELS WR12X1, WR12X2, WR12K1 MODEL WR12X8

Alignment Procedure MODEL WR12X8

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.—Connect the low side of the test oscillator to the receiver chassis through a .01 mfd. capacitor. With the output meter alignment method the test oscillator output should be kept as low as possible.

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.

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	12SK7 grid in series with 0.1 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C10, C9 2nd I-F Transformer
2	12SA7 grid in series with 0.1 mfd.			C8, C7 1st I-F Transformer
3	Antenna term. in series with 47 mmf.	10 mc*	10 mc	C21 (osc.)** C23 (ant.)
4	Antenna term. in series with 200 mmfd.	1,600 kc	1,600 kc	C14 (osc.)
5	Radiation Loop	1,300 kc	Resonance on Signal	C15 (ant.)
6	Radiation Loop	600 kc	600 kc	C22 Osc. Rock in

* It is recommended that this step be repeated using a received station of known frequency.

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

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

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	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,700 kc end of dial	C8 and C9 2nd I-F Transformer
2	1st Det. grid in series with .01 mfd.			C6 and C7 1st I-F Transformer
3	Ant. terminal in series with 200 mmfd.	1,720 kc	Gang at minimum	C3 (osc.)
4	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,300 kc	Signal Frequency	C1 (ant.)
5	Repeat steps 3 and 4			

WR-12X1, WR-12X2 and WR-12K1

Antenna.—The set is equipped with a built-in loop antenna. If an out-door antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

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.

Precautionary Lead Dress:

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress leads from terminal board on loop support away from loop.

MODELS WR12X9, WR12X12

Alignment Procedure

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, keep the 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 dial backing plate for quick reference during alignment.

With gang in full mesh, move the dial pointer to the last mark at the left-hand end of the dial scale.

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 0.1 mfd.	455 kc	Quiet Point at 1,700 kc end of dial	C30, C31
2	1st det. grid in series with 0.1 mfd.			C-28, C-29
3	R.F. grid in series with 0.1 mfd.			C-27**
4	Ant. terminal in series with 47 mmf. (link open)	15 mc	15 mc "C" Band	C-24 (osc.)* C-22 (ant.)
5		9.5 mc	9.5 mc "C" Band	L-10 (osc.) L-5 (ant.)
6		Repeat steps 4 and 5.		
7	Ant. terminal in series with 220 mmf. (link open)	1,300 kc	1,300 kc "A" Band	C-25 (osc.) C-23 (ant.)
8		600 kc	600 kc "A" Band	C-26 (osc.)
9		Repeat steps 7 and 8.		

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

**Adjust C-27 for *minimum* signal with 455 kc applied to R.F. grid.

Note.—Oscillator tracks 455 kc above signal on all bands.

MODELS WR12X1, WR12X2, WR12K1

Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,720 kc

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7 ..... 1st Detector—Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd Detector, 1st A.F. and A.V.C.
(4) RCA-50L6GT ..... Power Output
(5) RCA-35Z5GT ..... Half-Wave Rectifier

DIAL LAMP ..... Mazda 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volts, 60 cycle supply)

Undistorted ..... 0.75 watts
Maximum ..... 1.2 watts

LOUDSPEAKER

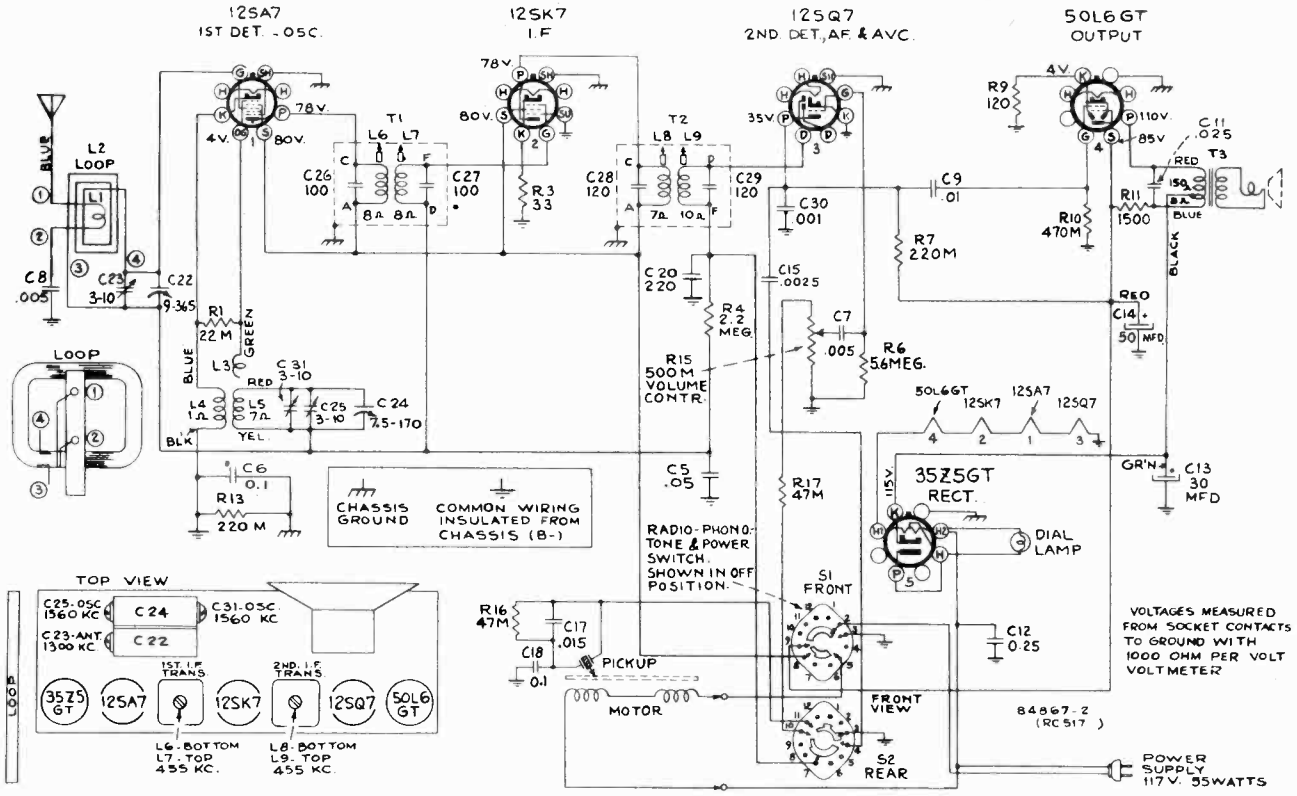
Type ..... 5-inch Electrodynamic

	Height	Width	Depth
Over all Dimensions	7 inches	9¼ inches	6¾ inches
Weight		9 pounds (shipping)	

These models are identical with the exception of minor circuit changes—see schematic diagram and parts list.

MODEL WR42X1

WESTINGHOUSE ELEC. SUPPLY CO., INC.



Alignment Procedure

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.

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

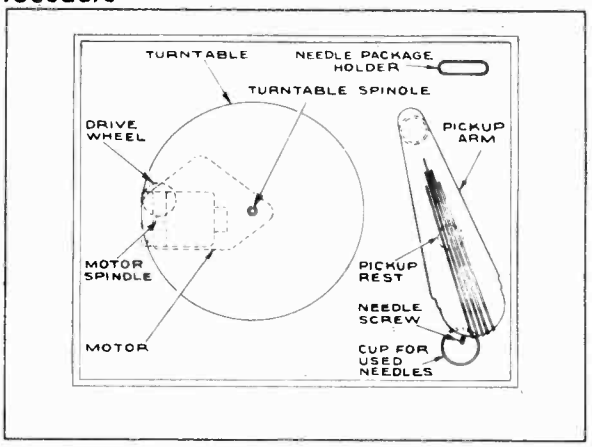
Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it should be connected to the blue antenna lead on the rear of the chassis.

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	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	L8 and L9 2nd I-F Transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 1st I-F Transformer
3	Ant. terminal in series with 200 mmfd.	1,650 kc	Gang at minimum	C25 (osc.) C31 (osc.)
4	Radiated signal 1300 kc		Signal Frequency	C23 (ant.)
5	Repeat steps 3 and 4.			

Controls

The phonograph motor is a self-starting, constant-speed induction type. It should be lubricated every six months by applying a few drops of light machine oil to the top and bottom motor spindle bearings, to the turntable spindle and to the turntable drive wheel bearing.

CAUTION: Keep oil away from drive bushing on top of motor spindle and from rubber driving tire on turntable drive wheel.



Phonograph

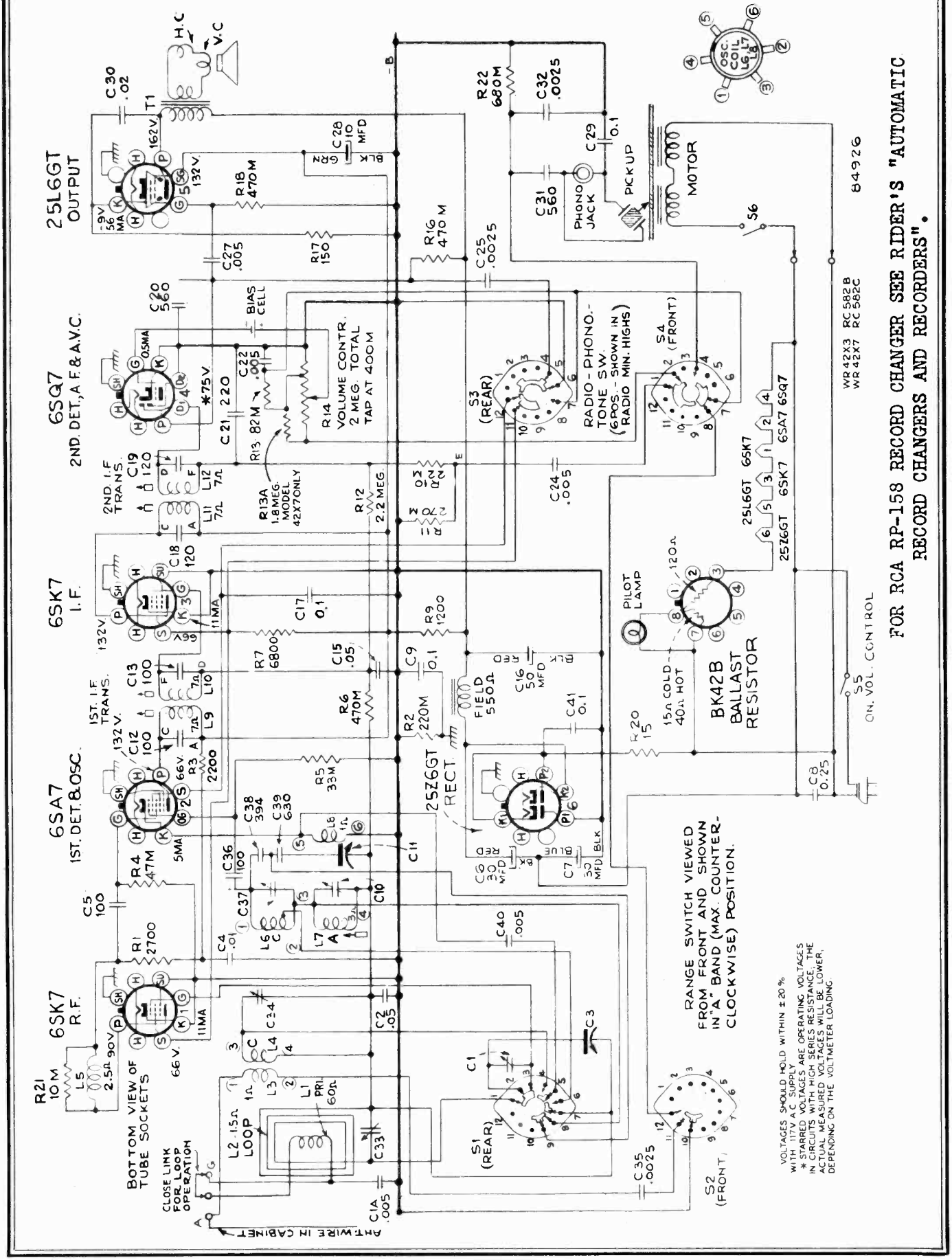
Frequency Range	540-1,650 kc
Intermediate Frequency	455 kc
Tube Complement	
(1) RCA-12SA7	1st Detector-Oscillator
(2) RCA-12SK7	I-F Amplifier
(3) RCA-12SQ7	2nd Detector, 1st A.F. and A.V.C.
(4) RCA-50L6GT	Power Output
(5) RCA-35Z5GT	Half-Wave Rectifier
Dial Lamp (1)	Mazda 51, 7.5 volts, 0.2 amp

Power Output (125 volt, 60 cycle supply)	**Radio**	**Phonograph**
Undistorted	0.9 watts	1.5 watts
Maximum	1.2 watts	2.2 watts

Power Supply Ratings	
A-C Rating	105-125 volts, 60 cycles, 55 watts
Loudspeaker (RL-81-B4)	
Type	5-inch permanent-magnet dynamic
Voice-Coil Impedance	4 ohms at 400 cycles
Phonograph	Synchronous (self-starting)
Records	10-inch and 12-inch, 78 r.p.m.
Pickup	Crystal, 100,000 ohms at 1,000 c.p.s.
Average Output of Pickup	1½ volts at 1,000 c.p.s. across ¼ meg. load
Cabinet Dimensions (inches)	Height 10⅜, Width 16⅛, Depth 13⅜
Weight	18 lbs. (net) 22 lbs. (shipping)
Tuning Drive Ratio	10—1

MODELS WR42X3
WR42X7

WESTINGHOUSE ELEC. SUPPLY CO., INC.



MODELS WR42X3, WR42X7

WESTINGHOUSE ELEC. SUPPLY CO., INC.

Alignment Procedure

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 common negative wiring, and keep the 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 calibration scale printed full size in this service note can be used as an accurate and convenient substitute for the regular dial.

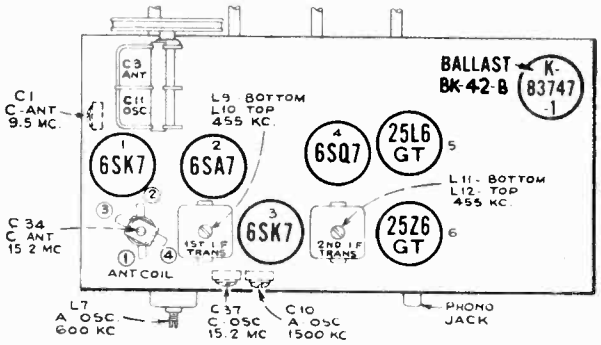
Each method is described below.

Using Tuning Dial.—

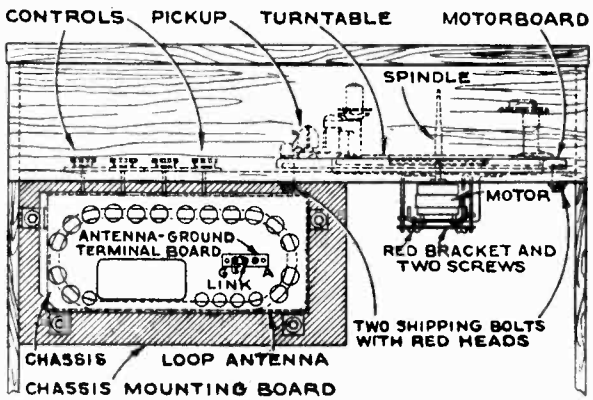
1. Remove the glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.
4. After completion of alignment, replace the glass dial in cabinet.

Using Calibration Scale.—

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
2. Temporarily fasten the dial scale drawing in this service note, to the dial backing plate with scotch tape, so that the extreme left scale graduation coincides with the pointer.



Tube and Trimmer Location



Back View Model WR-42X3

Steps	Connect the 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	L11, L12 (2nd I-F Trans.)
2	1st-Det. Grid in series with .01 mfd.			L9, L10 (1st I-F Trans.)
3	"A" terminal on ant. terminal board in series with 47 mmf. (link open)	15.2 mc	"C" Band 15.2 mc	C37 (osc.)* C34 (ant.)
4		9.5 mc	"C" Band 9.5 mc	C1 (ant.) (Rock Gang)
5		Repeat steps 3 and 4.		
6	Middle terminal on ant. terminal board in series with 200 mmf. (link open)	1,500 kc	"A" Band 1,500 kc	C10 (osc.) C33 (ant.) (on loop)
7		600 kc	"A" Band 600 kc	L7 (Rock Gang)
8		Repeat steps 6 and 7.		

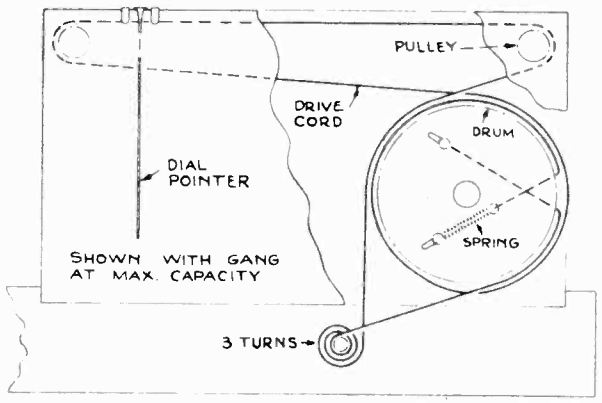
*Use minimum capacity peak.

Oscillator tracks 455 kc above signal on both bands.

Dial Pointer Adjustment.—After the chassis is replaced in cabinet move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

Critical Lead Dress

(1) Dress bias cell up from chassis and away from A.C. switch.
(2) Dress R13 (volume control compensation circuit) close to front apron.
(3) Dress C9 between osc. coil and side apron.
(4) Black lead from AC switch should be kept away from tone control leads and switch.
(5) Dress R22, C32 (pickup compensation circuit) close to front apron.
(6) Blue lead to antenna terminal board should be dressed in back of I-F'S.
(7) Dress brown lead from volume control to tone switch close to front apron.
(8) Dress R18 (output grid circuit) away from A.C. switch and A.C. leads.
(9) Dress lead to phono socket up from chassis.



Dial-Indicator and Drive Mechanism

POWER OUTPUT RATING

Undistorted	3 watts
Maximum	5 watts

LOUDSPEAKER (RL-70-N2)

Type	12 inch electrodynamic
V C Impedance	2.2 ohms at 400 cycles

POWER SUPPLY RATING

105-125 volts, 60 cycles	80 watts total

FREQUENCY RANGE

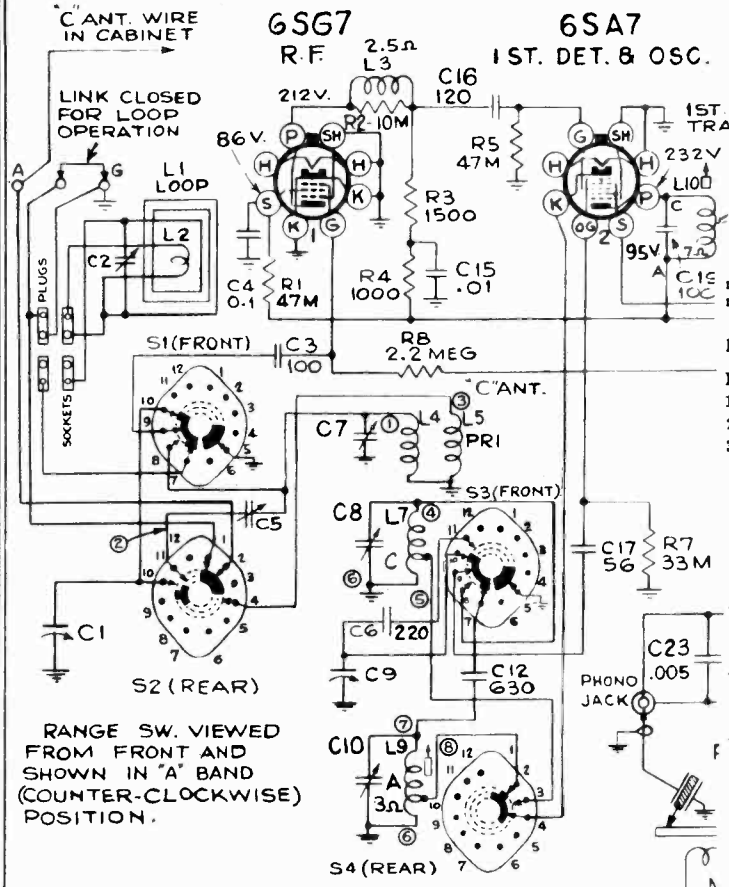
Standard Broadcast (A)	540-1,600 kc
Short Wave (C)	9.4-15.4 mc
Intermediate Frequency	455 kc

(1) RCA-6SK7	R-F Amplifier
(2) RCA-6SA7	1st Det. Oscillator
(3) RCA-6SK7	I-F Amplifier
(4) RCA-6SQ7	2nd Det., A.V.C., A-F Amplifier
(5) RCA-25L6-GT	Power Output
(6) RCA-25Z6-GT	Rectifier

WESTINGHOUSE ELEC. SUPPLY CO., INC.

MODELS WR42X4
WR42X14
MODELS WR62K1,
WR62K2

PARTIAL SCHEMATIC SHOWING REMOVAL OF PUSH-BUTTON TUNER. OTHERWISE SAME AS MODEL WR42X5



Schematic Circuit Diagram Model WR-42X4 & WR-42X14

MODELS WR62K1, WR62K2

Alignment Procedure

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

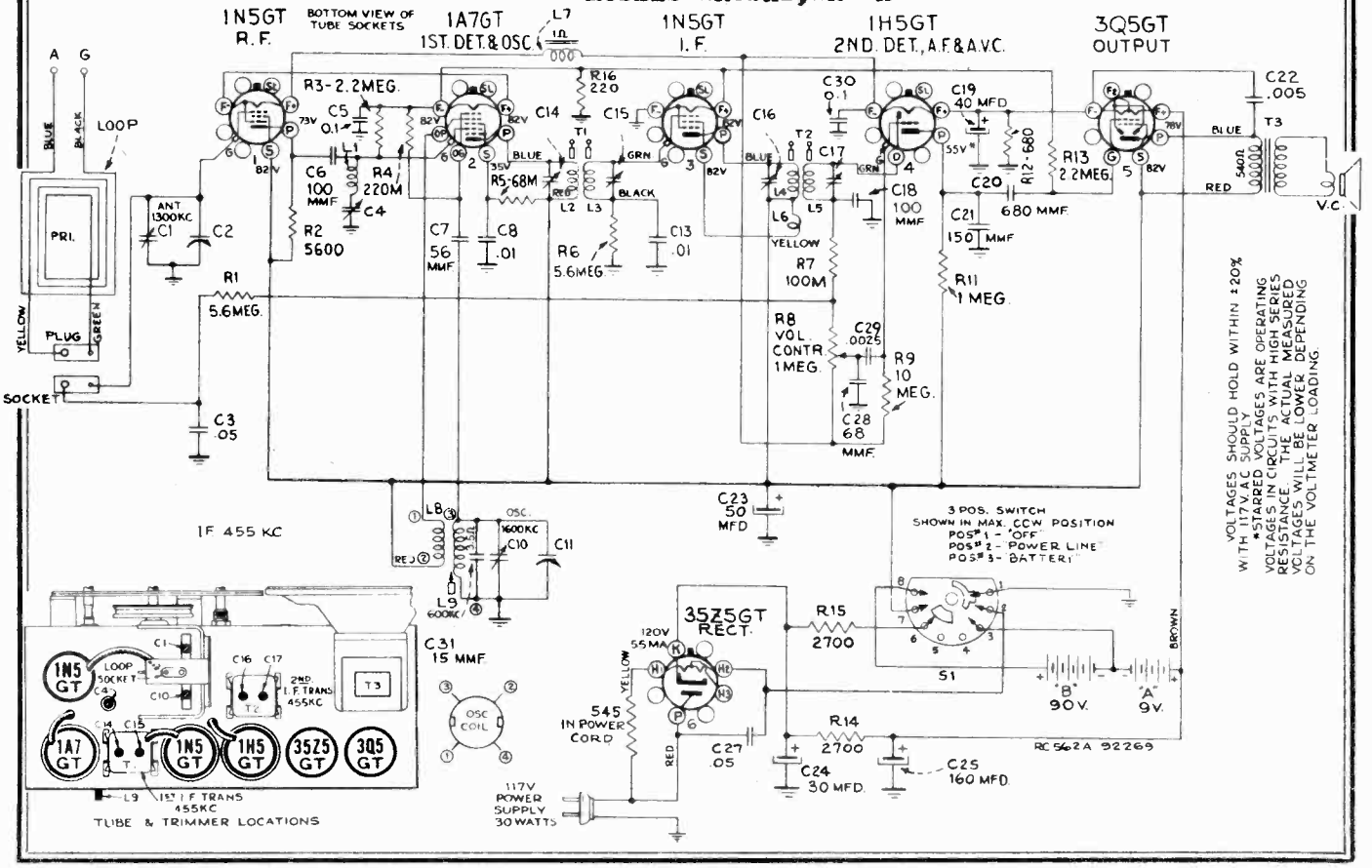
Test-Oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Precautionary Lead Dress.—

1. Keep green grid leads above chassis away from each other.
2. All filament wires should be dressed close to chassis.
3. Keep blue leads from I-F transformers close to chassis.

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	1N5GT I-F grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C16, C17 (2nd I-F transformer)
2	1A7GT 1st Det. grid cap, in series with .01 mfd.			C14, C15 (1st I-F transformer)
3	Antenna terminal in series with 200 mmfd.			C4 Wave trap for *minimum* output
4		600 kc	600 kc	L9 (osc.) (Rock in)
5		1,600 kc	1,600 kc	C10 (osc.)
6		1,300 kc	1,300 kc	C1 (ant.)
7	Repeat steps 4, 5 and 6 until aligned			
8	With chassis in cabinet and batteries connected repeat step 6			

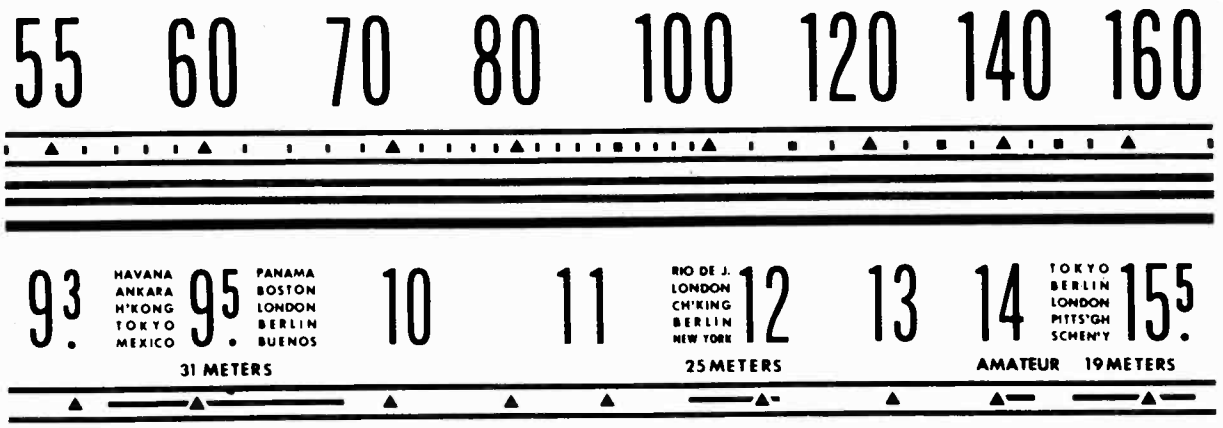
MODELS WR62K1, WR62K2



MODELS WR42X4, WR42X14

WESTINGHOUSE ELEC. SUPPLY CO., INC.

MODELS WR42X5, WR42X15



The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.

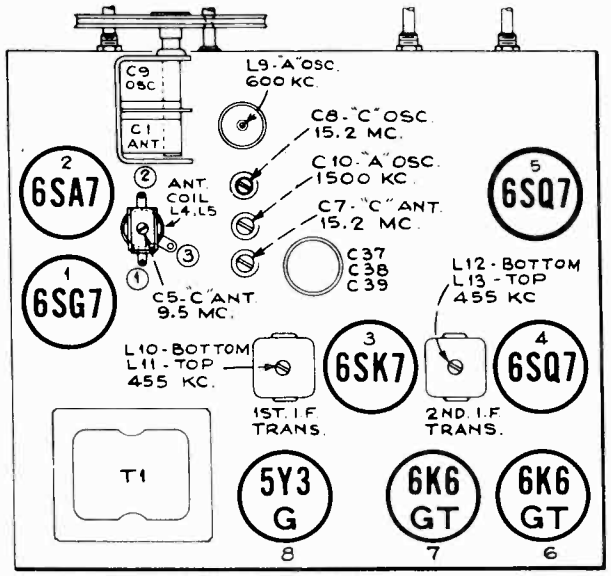
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

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 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 scale printed in this service note can be used as an accurate and convenient substitute for the regular dial.

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 R15 (grid resistor) C34 (coupling capacitor of output tube) close to socket.
8. Keep C23 (tone compensating capacitor) close to back apron.
9. Keep R15, C48 (in tone compensating circuit) close to front apron.
10. Dress green lead from osc. coil to trimmer close to oscillator coil.
11. Dress cable from phono. socket to phono. switch up away from base.
12. Dress red A.C. leads away from I.F. trans. and 6SQ7 socket.
13. RF choke in plate of 6SG7 must be dressed toward back apron.



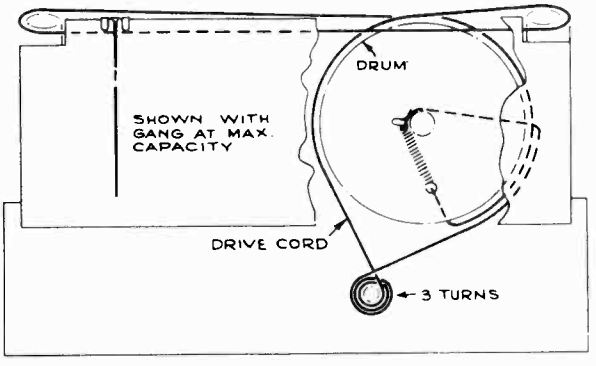
Using Tuning Dial.—

1. Remove glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to a point 1/16 inch to left of reference mark at left hand end of the dial backing plate.
3. Place the glass dial under the pointer 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 on the RF coil on the chassis. Turn screw carefully with a special screwdriver (Part No. 31031) while the receiver is tuned to a station in the 31-meter band, and make setting for best reception. If returning to internal antenna at any time, close the link on the center terminal and adjust "C" band antenna trimmer for best reception on 31-meter band.

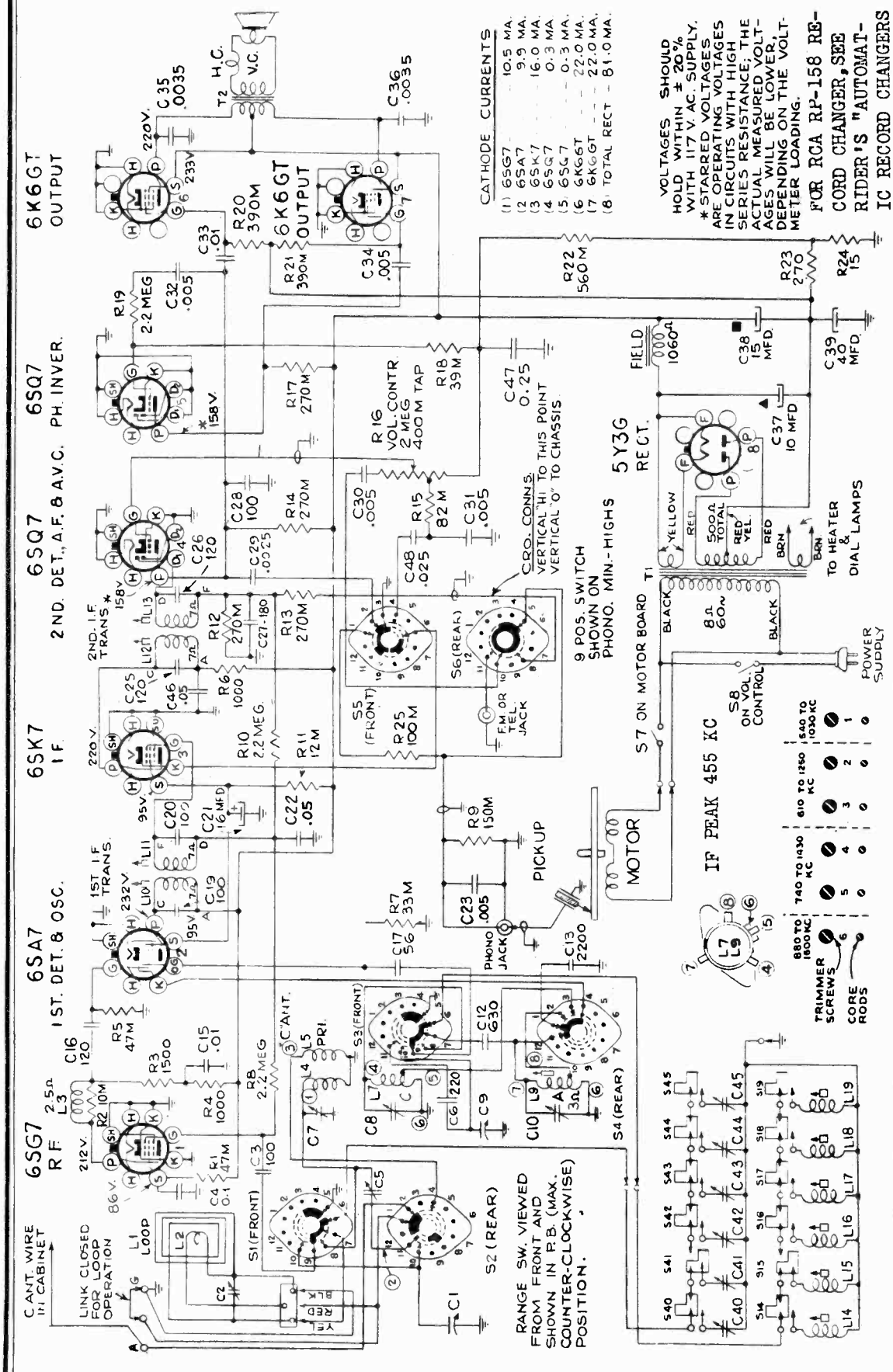
Steps	Connect test-osc. output to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid in series with .01 mfd.	455 kc	"A" band 540 kc	L12 and L13 (2nd I-F trans.)
2	1st Det. grid in series with .01 mfd.			L10 and L11 (1st I-F trans.)
3	A-Terminal in series 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.



MODELS WR42X5
WR42X15

WESTINGHOUSE ELEC. SUPPLY CO., INC.



Push Button Adjustments

The push buttons (Models WR-42X5 and WR-42X15) connect to separate magnetite-core oscillator coils and separate ant. circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as Part No. 310-31. 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 No. 1 oscillator core to receive the first station. To secure the best adjustment, rotate the set for least pickup, and adjust core for peak output.
5. Adjust No. 1 antenna trimmer capacitor for peak output on the first station.
6. Proceed in the same manner to adjust for the remaining stations.

On the 880 to 1,600 kc push-button, the higher frequency stations may be received with osc. core 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.

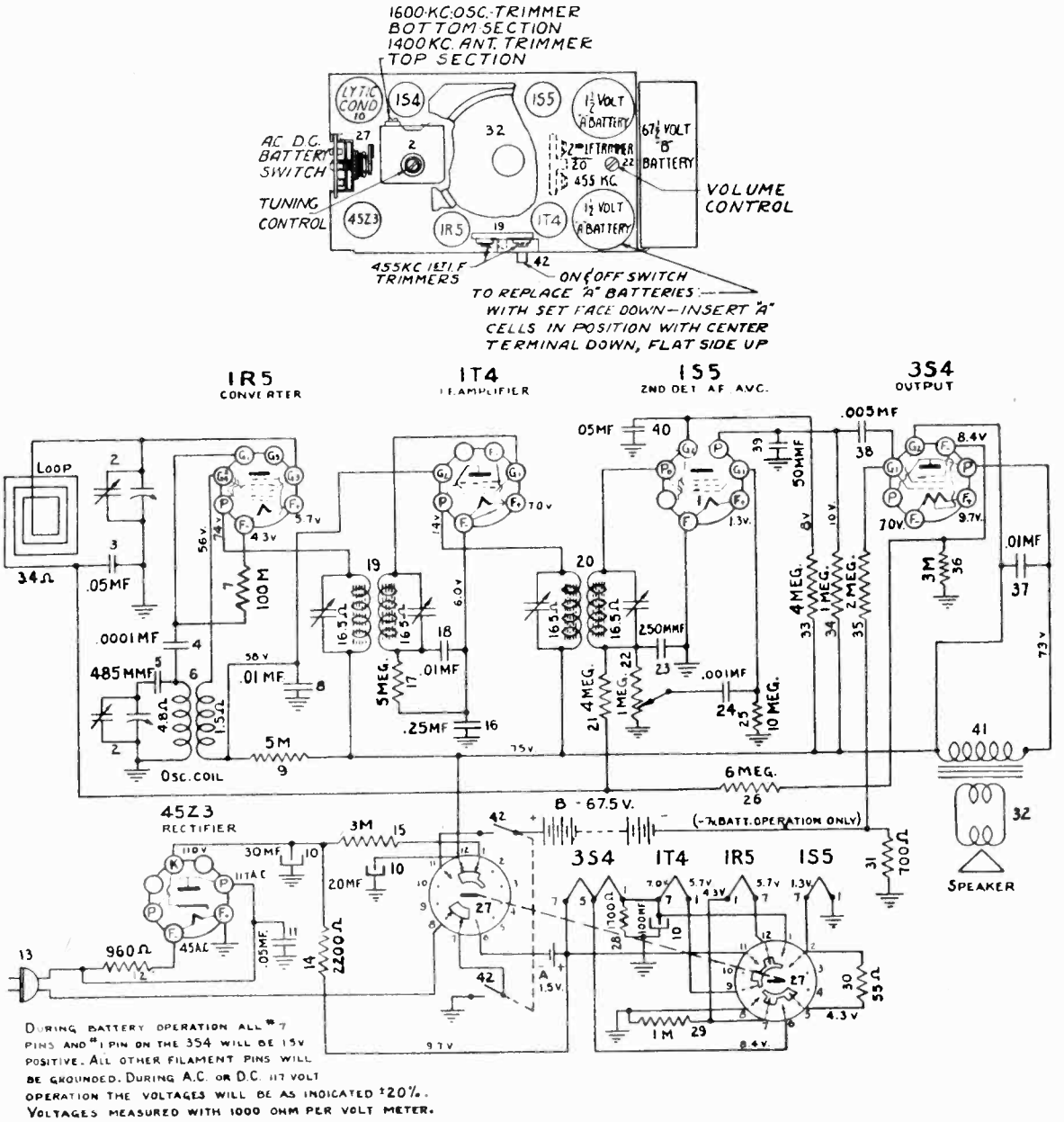
MODEL WR62K3

WESTINGHOUSE ELEC. SUPPLY CO., INC.

Output Meter: Connect across voice coil and turn receiver volume control to maximum.

Test Oscillator: For all alignment operation, keep the output as low as possible to avoid A.V.C. action.

Steps	Test Oscillator	Tune Test Osc. to	Turn Radio Dial to	Adjust the following for max. output
1	To antenna section of tuning condenser stator through 0.1 mfd	455 kc	Quiet point at 1600 kc end of dial	Transformers 19 and 20 Four Trimmers
2	Radiate signal	1610 kc	Full counter-clockwise (gang open)	Oscillator Trimmer On Gang
3	Radiate signal	1400 kc	Tune to signal	Antenna Trimmer On Gang
4	Repeat steps 1, 2, and 3			



Calibration: To make dial calibrate, close tuning condenser, then install knob so that it points to 54. The tuning shaft is knurled so that the knob will slide on in any position.

WESTINGHOUSE ELEC. SUPPLY CO., INC.

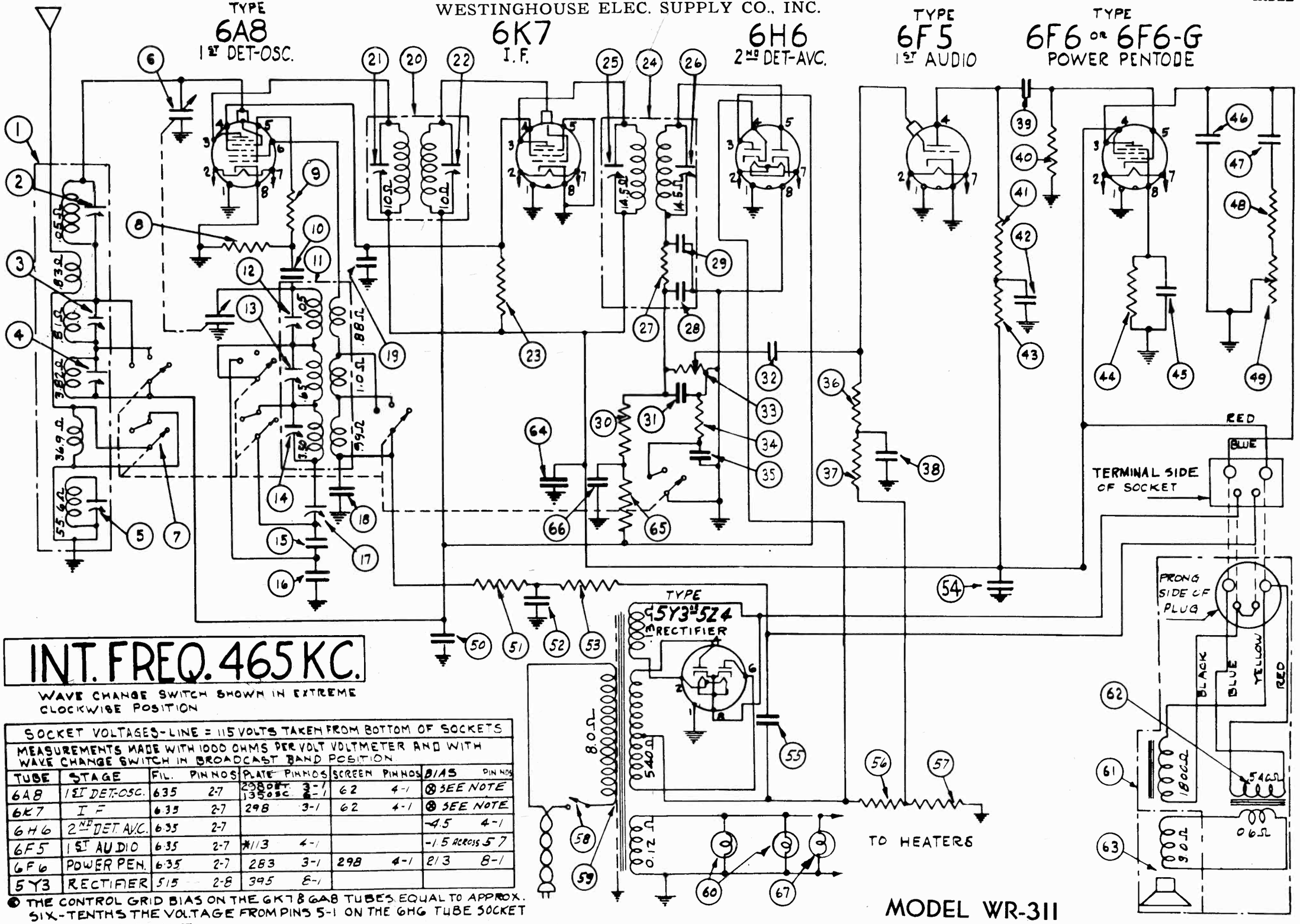
TYPE 6A8 1ST DET-OSC.

6K7 I.F.

TYPE 6H6 2ND DET-AVC.

TYPE 6F5 1ST AUDIO

TYPE 6F6 OR 6F6-G POWER PENTODE



INT. FREQ. 465 KC.

WAVE CHANGE SWITCH SHOWN IN EXTREME CLOCKWISE POSITION

SOCKET VOLTAGES - LINE = 115 VOLTS TAKEN FROM BOTTOM OF SOCKETS

MEASUREMENTS MADE WITH 1000 OHMS PER VOLT VOLTMETER AND WITH WAVE CHANGE SWITCH IN BROADCAST BAND POSITION

TUBE	STAGE	FIL.	PIN NOS	PLATE	PIN NOS	SCREEN	PIN NOS	BIAS	PIN NOS
6A8	1ST DET-OSC.	6.35	2-7	208 DET. / 135 OSC.	3-1 / 8-1	62	4-1	⊗ SEE NOTE	
6K7	I F	6.35	2-7	298	3-1	62	4-1	⊗ SEE NOTE	
6H6	2ND DET. A.V.C.	6.35	2-7					-4.5	4-1
6F5	1ST AUDIO	6.35	2-7	*113	4-1			-1.5 ACROSS 5-7	
6F6	POWER PEN.	6.35	2-7	283	3-1	298	4-1	2.3	8-1
5Y3	RECTIFIER	5.15	2-8	395	8-1				

⊗ THE CONTROL GRID BIAS ON THE 6K7 & 6A8 TUBES EQUAL TO APPROX. SIX-TENTHS THE VOLTAGE FROM PINS 5-1 ON THE 6H6 TUBE SOCKET

* 600 VOLT SCALE.

MODEL WR-311

MODEL WR311

WESTINGHOUSE ELEC. SUPPLY CO., INC.

GENERAL DESCRIPTION

This model is a six-tube, three-band, superheterodyne receiver whose circuits employ all-metal tubes. The circuit employs a type 6A8 tube as a combined first detector-oscillator frequency converter, a type 6H6 tube as a second detector and automatic volume control, a type 6F5 tube as a first audio frequency amplifier, a type 6F6 as an output amplifier, and a type 5Y3 tube as a rectifier.

LINE-UP CAPACITOR ADJUSTMENTS

To align the circuits of this receiver it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied with absence from overload, when the individual circuits of the receiver are brought into alignment. A conventional output meter should be connected across the terminals of the speaker voice coil to indicate when the circuits are in alignment. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in figures #1 and #2 and should be carefully studied before the actual work is started.

ADJUSTMENT OF I.F. (465 KC.)

1. Set volume control to maximum position, tone control to treble, wave change switch on Broadcast (White) and Indicator at approximately 600 KC.
2. Connect output meter across voice coil of speaker.
3. Set test oscillator to 465 KC., and apply signal to grid of 6K7 I.F. tube through a 0.5 mfd. blocking condenser.
4. Adjust trimmers #25 and #26 to maximum output, reducing output of test oscillator as required.
5. Apply test signal to grid of 6A8 first detector-oscillator tube and adjust trimmers #21 and #22 to maximum output.
6. Apply test signal to antenna of receiver.
7. Adjust trap coil trimmer #5 to minimum output.

ADJUSTMENT OF BROADCAST BAND (540 to 1550 KC.)

1. Set wave change switch to standard broadcast band position.
2. Set test oscillator and dial indicator to 1400 KC.
3. Apply the test signal to the antenna of the receiver through a .0002 mfd. condenser and adjust the oscillator trimmer condenser #14 until the signal is tuned in.
4. Adjust the preselector trimmer #4 to maximum output.
5. Set the test oscillator and dial indicator to 600 KC. and adjust the oscillator series condenser #17 until the signal is received. Tune the variable condenser to a slightly lower frequency and readjust trimmer #17 to maximum output. If the sensitivity increases, continue this adjustment in the same direction until no improvement in sensitivity can be made. If the sensitivity decreases, try this adjustment at slightly higher frequencies.

ADJUSTMENT OF GREEN BAND

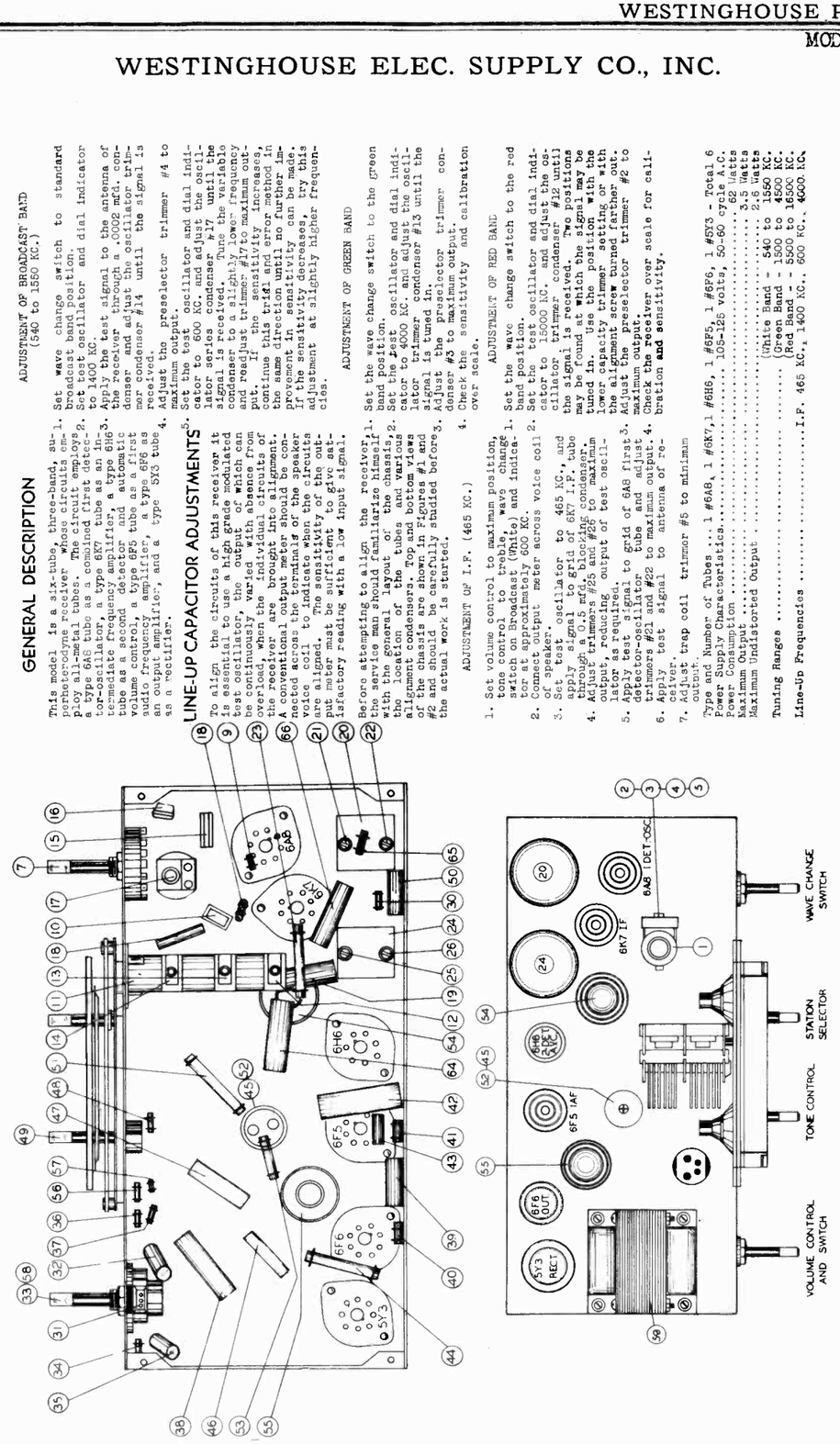
Set the wave change switch to the green band position.

1. Set the test oscillator and dial indicator to 4000 KC. and adjust the oscillator trimmer condenser #13 until the signal is tuned in.
2. Adjust the preselector trimmer condenser #3 to maximum output.
3. Check the sensitivity and calibration over scale.

ADJUSTMENT OF RED BAND

Set the wave change switch to the red band position.

1. Set the test oscillator and dial indicator to 15000 KC. and adjust the oscillator trimmer condenser #12 until the signal is received. Two positions may be found at which the signal may be tuned in. Use the position with the lower capacity trimmer setting or with the dial pointer nearer the low frequency end of the scale.
2. Adjust the preselector trimmer #2 to maximum output.
3. Check the receiver over scale for calibration and sensitivity.



Type and Number of Tubes ... 1 #6A8, 1 #6K7, 1 #6H6, 1 #6F5, 1 #6F6, 1 #5Y3 - Total 6
Power Supply Characteristics ..... 105-125 volts, 50-60 cycle A.C.
Power Consumption ..... 62 watts
Maximum Output ..... 3.5 watts
Maximum Undistorted Output ..... 2.5 watts
Tuning Ranges ..... (White Band - 540 to 1550 KC.
(Green Band - 1500 to 4500 KC.
(Red Band - 5500 to 16500 KC.
Line-Up Frequencies ..... I.F. 465 KC., 1400 KC., 600 KC., 4000 KC.

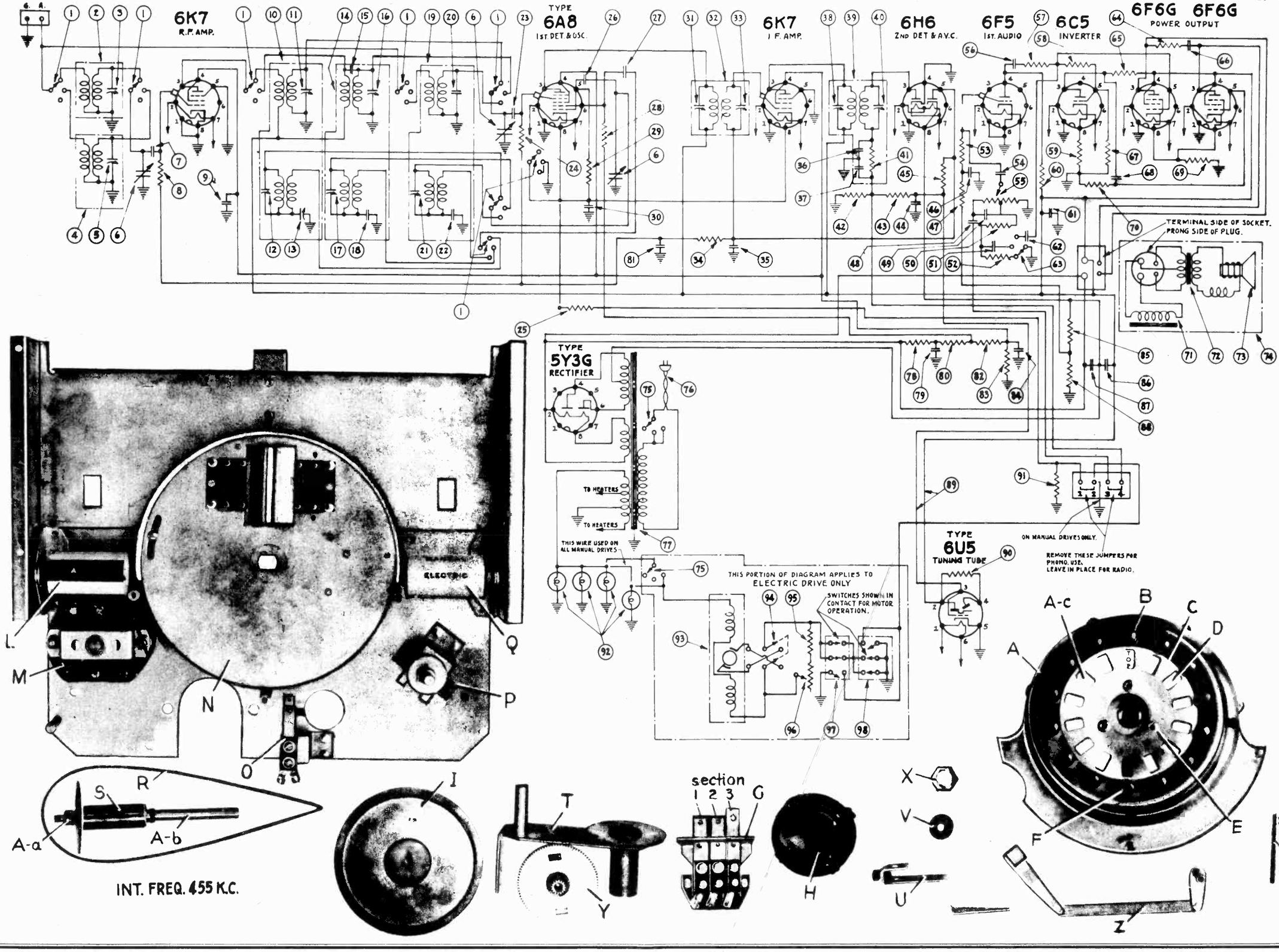
MODEL WR311

WESTINGHOUSE ELEC. SUPPLY CO., INC.

Dia. #	Part #	Description of Parts	List Price
1	RC 95202	Antenna coil assembly	$ 2.25
2		4-25 mmf. trimmer condenser - part of RC 95202	
3		1.5-10 mmf. trimmer condenser - part of RC 95202	
4		1.5-10 mmf. trimmer condenser - part of RC 95202	
5		30-60 mmf. trimmer condenser - part of RC 95202	
6	CG 9549	Variable condenser (2 gang)	2.50
7	SW 9548	Wave change switch	1.00
8	RE 9575	50,000 ohm, 1/4 W. resistor	.15
9	RE 9582	200 ohm, 1/4 W. resistor	.15
10	CM 9511	.000065 mfd. mica condenser	.15
11	RC 95203	Oscillator coil assembly	1.75
12		4-25 mmf. trimmer condenser - part of RC 95203	
13		1.5-10 mmf. trimmer condenser - part of RC 95203	
14		1.5-10 mmf. trimmer condenser - part of RC 95203	
15	CM 9525	.0027 mfd. mica condenser	.30
16	CM 9524	.0034 mfd. mica condenser	.35
17	CS 9545	300-600 mmf. osc. series condenser	.40
18	CW 4005	.005 mfd., 400 V. condenser	.15
19	CW 2-10	.1 mfd., 200 V. condenser	.15
20	IC 9572	I.F. coil assembly (first) 465 KC.	1.35
21		45-135 mmf. trimmer condenser - part of IC 9572	
22		45-135 mmf. trimmer condenser - part of IC 9572	
23	SA 99957	40,000 ohm, 1 W. resistor	.25
24	IC 9574	I.F. coil assembly (second) 465 KC.	1.75
25		30-100 mmf. trimmer condenser - part of IC 9574	
26		30-100 mmf. trimmer condenser - part of IC 9574	
27		50,000 ohm, 1/8 W. resistor - part of IC 9574	
28		.0001 mfd. mica condenser - part of IC 9574	
29		.0001 mfd. mica condenser - part of IC 9574	
30	RE 9574	1 meg., 1/4 W. resistor	.15
31	CM 9519	.0005 mfd. mica condenser	.20
32	CW 4-02	.02 mfd., 400 V. condenser	.15
33	VR 9535	.5 meg. volume control	1.10
34	RE 9527	5,000 ohm, 1/4 W. resistor	.10
35	CW 2-05	.05 mfd., 200 V. condenser	.15
36	RE 9574	1 meg., 1/4 W. resistor	.15
37	RE 9575	50,000 ohm, 1/4 W. resistor	.15
38	CW 2-25	.25 mfd., 200 V. condenser	.20
39	CW 4-02	.02 mfd., 400 V. condenser	.15
40	RE 9572	.5 meg., 1/4 W. resistor	.15
41	RE 9531	.25 meg., 1/8 W. resistor	.10
42	CW 2-10	.1 mfd., 200 V. condenser	.15
43	RE 9581	50,000 ohm, 1/4 W. resistor	.15
44	SA 107391	500 ohm, 1 W. resistor	.20
45	CE 9537	10 mfd., 25 V. electrolytic cond.	1.25
46	CW 4-005	.005 mfd., 400 V. condenser	.15
47	CW 4-05	.05 mfd., 400 V. condenser	.15
48	RE 9550	2000 ohm, 1/4 W. resistor	.15
49	VR 9534	20,000 ohm, tone control	.55
50	CW 2-05	.05 mfd., 200 V. condenser	.15
51	RE 95116	50,000 ohm, 1 W. resistor	.20
52		4 mfd., 450 V. electrolytic cond. - part of CE 9537.	.20
53	SA 100825	10,000 ohm, 1/2 W. resistor	.15
54	CE 9535	16 mfd., 300 V. electrolytic condenser	.75
55	CE 9536	12 mfd., 450 V. electrolytic condenser	.80
56	RE 9537	50 ohm, 1/4 W. resistor	.10
57	RE 9556	25 ohm, 1/4 W. resistor	.15
58		On & Off switch - part of VR 9535	
59	TR 9557	Power transformer 105-125 V., 50-60 cycle	$ 4.00
60	LP 951	Dial light (6-8 V., .20 amp.)	.20
61	SK 9512	Speaker assembly	10.75
62	TR 9515	Output transformer	1.85
63	DM 956	Diaphragm and voice coil assembly	1.25
64	CW 4-10	.1 mfd., 400 V. condenser	.15
65	RE 9574	1 meg., 1/4 W. resistor	.15
66	CW 2-10	.1 mfd., 200 V. condenser	.15
67	LP 9510	Dial light (6.3 V., .25 amp.)	.15
68	CB 9512	Line cable assembly	.50

WESTINGHOUSE ELEC. SUPPLY CO., INC.

MODELS WR330, WR33
MODEL WR336



GENERAL DESCRIPTION OF ELECTRIC TUNER

The electric tuning mechanism consists essentially of a group of adjustable levers attached to their respective push buttons. Mounted adjacent to these levers is a rotating disc driven by a reversible electric motor through a belt and gear mechanism. Attached to this disc is the tuning condenser (through a reducing gear), reversing stops and a mechanical stop.

The levers may be turned or adjusted to allow a specific band of frequency, as outlined in the instruction book, to be tuned in. The gate contacts any depressed button and stops the disc, thus stopping the tuning condenser at the desired station. Associated with the gate are three pairs of contacts arranged to perform the following functions: Remove power from the motor when the button drops into the gate, and short out a resistor which mutes or silences the set during tuning. On the twelve-tube set, a third pair of contacts on the gate removes a short-circuit from the A.F.C.

For manual tuning, a switch (red button) is provided, which cuts out the motor, removes the mute, etc., allowing normal operation of the set. The reversing stops on the disc engage a lever attached to a reversing switch that reverses the motor field winding, thus changing the direction of rotation of the motor.

A lever attached to the manual-electric switch controls the belt tension through an idler pulley which makes manual tuning easier.

ELECTRIC DRIVE SERVICE SUGGESTIONS

MOTOR DRIVE DOES NOT OPERATE:

1. With receiver turned "on", turn manual electric switch back and forth and note dial indicator lamp at right side of scale. If lamp lights on electric position, the switch is making contact, and there is voltage to the field of the motor (see diagram).

2. Turn receiver "off" and remove right-hand dial indicator lamp, and with some button other than the red button depressed, but without contact in gate, check for continuity from the upper left-hand field terminal #2 of the motor to ground.

3. If the circuit is open, disconnect one wire from the motor speed control resistor #96 or #126 and check from the same field terminal #2 to both armature terminals #1 and #4, at the same time operating the motor reversing switch "P" by hand. If no reading is obtained on continuity meter, either the reversing switch or the field of the motor is open. Check each individually. If reading is obtained when manipulating the reversing switch, check for bad brush contacts or open circuit armature.

4. Check between #1 and #2 (top) terminals of mute switch "0". Open circuit indicates bad contacts on switch.

5. Check between #2 terminal of mute switch "0" and ground for open circuit. This will indicate the condition of the gate switch "G", section #1.

MECHANISM DOES NOT TUNE IN STATION:

1. Motor speed set too slow. Increase the speed of the motor slightly by turning the motor speed adjustment on the rear of the chassis in a clockwise direction (when facing the chassis from the rear).

2. Mute section of gate switch "G" does not close. With some dial contact button engaged in the gate in a normal manner, check the pair of contacts, section #1, of the gate plate for continuity. (Normally should read closed, while sections #1 and #2 should read open.)

3. Bar attached to the red button is off position on long leaf of mute switch "0". Re-set position.

MOTOR CONTINUES TO RUN AFTER TUNING:

1. Motor circuits on gate switch "G" not open. With dial button contact in gate, check sections #1 and #2 of gate switch (should read open).

On the ten-tube chassis, both pairs of contacts are associated with the motor circuit, while on the twelve-tube set, one pair of contacts are associated with the motor circuit and the remaining pair cuts out the A.F.C. while the motor is performing the tuning function.

2. Dial button contact comes to brass section of switch but does not drop into slot. Motor speed too slow. Increase speed of motor slightly.

RECEIVER DOES NOT MUTE (NOT SILENT WHILE MOTOR IS IN OPERATION) WHILE TUNING, CAUSING MOTOR NOISE AND OTHER INTERFERENCE:

1. Check bottom contacts on mute switch "0" and section #3 on gate switch "G" (not opening properly).

DIAL POINTER WILL NOT REVERSE AFTER REACHING THE END OF SCALE:

1. Check lever on reversing switch "P", making sure that it is tight and in the correct position. On the rim of the gate plate there is a bolt in a slot. This has been set at the factory to give the proper amount of rotation of the dial, and should not be changed unless it has become loosened.

2. Check reversing switch "P" in both positions for continuity.

PUSHING A BUTTON AFFECTS THE ADJACENT BUTTON:

1. The levers connected to the odd-number buttons (counting the button at the left of the red button as #1) point to the hub of the assembly, while the levers connected to the even-number buttons point to the rim of the assembly. By having loosened the button sleeve too much and forcing the small screw, the lever may have become turned in the wrong sequence. This condition is overcome as follows:

a. Turn the dial pointer as far away from the button being re-set as possible.

b. Remove the button cap and loosen the button sleeve about one turn.

c. Insert a small screw driver into the button and push and turn the small screw at the same time, until the position of the lever is corrected.

d. Set the button to the desired station, as described in the operating instructions.

If a button has been loosened too many turns, it may be found that it cannot be re-tightened. Place a long screw driver in back of the lever button assembly and press forward, at the same time turning the button sleeve until the thread catches.

DEPRESSING RED BUTTON CAUSES MOTOR TO START:

1. Check lever on end of red button (grounding top contact of mute switch "0").

Referring to the diagram, it will be seen that the various switches associated with the motor make a complete circuit to ground. Thus, if the motor continues to operate, check for grounds in the circuit.

If the electric drive appears to operate too noisely, check the position of the idler pulley which may be touching the large pulley. The correct position of this pulley is approximately 1/4" away from the large pulley when the manual-electric switch is in the electrical position.

(used with speed

VR 9557	Motor speed control	.90
RE 95142	45 ohm, 8 W. resistor	.50
PU 9536	Motor pulley	.10
BK 95296	Motor holding bracket	.05
NT 105795	Motor holding nut	.05
WR 951	Setting-up tool	.10

	Part #		List Price
A	CU 9527	Control head assembly	15.00
B	PG 9554	Station button cap - 12 used	.05
C	PL 95142	Window cover over station call letters	.45
D	DC 9511	Celluloid cover over station call letters	.10
E	SP 1014	Spring button	.05
F	PG 9555	Red button cap	.05
G	SW 9599	Three-contact switch on gate plate	1.25
H	KN 95130	Tuning knob	.35
I	PU 9537	Bakelite drive pulley - 3⅛" dia.	.45
J	IT 954	Insert for tuning knob	.10
K	SI 9580	Dial pointer	.20
L	SI 9588	Wave band indicator	.60
M	MO 951	Electric motor	5.00
N	PL 95146	Gate and plate assembly	1.25
O	SW 9584	Six-contact mute switch	1.10
P	SW 9582	Motor reversing switch	1.65
Q	SI 9589	Indicator, manual-electric	.60
R	SP 9561	Drive belt	.10
S	SH 9558	Shaft and gear assembly	1.75
T	SH 9559	Shaft lever and gear assembly	1.50
U	LE 957	Reversing switch lever	.10
V	PU 9541	Idler pulley	.10
W	LE 9513	Idler pulley lever	.10
X	NT 10303	Nut	.05
Y	GE 9531	Intermediate gear - 1-15/16" dia. with do attached	.75
Z	LE 9511	Idler pulley lever assembly	.35
A-a	GE 9528	Pinion gear	.10
A-b	SH 9555	Tuning shaft	.20
A-c	DC 9510	Paper disc	.05

Figure No. 1

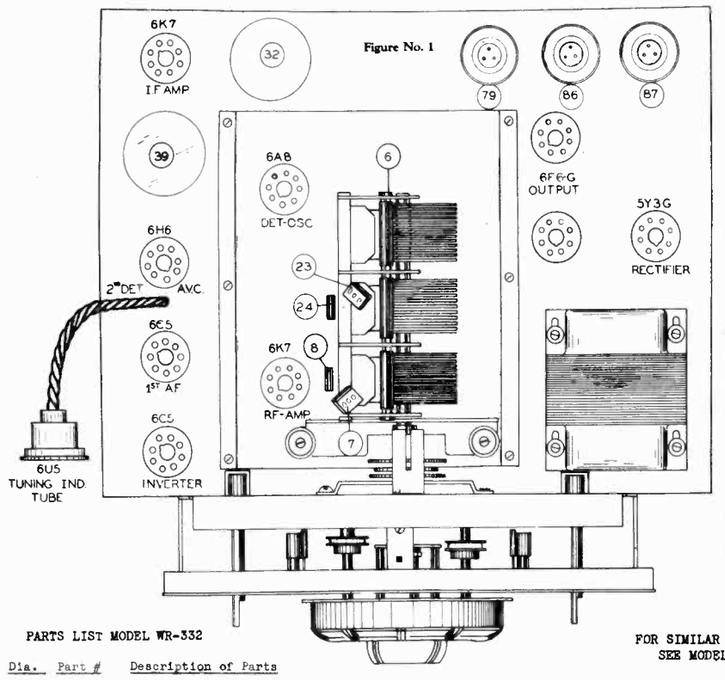
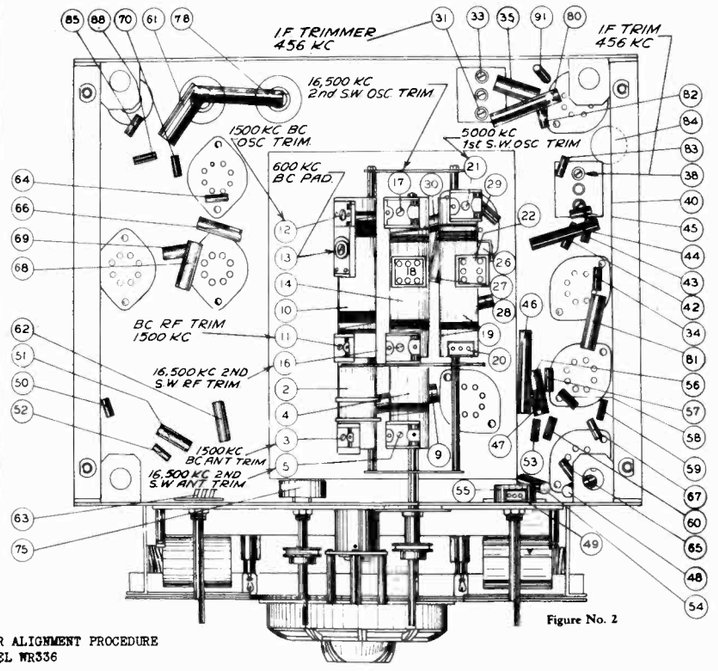


Figure No. 2



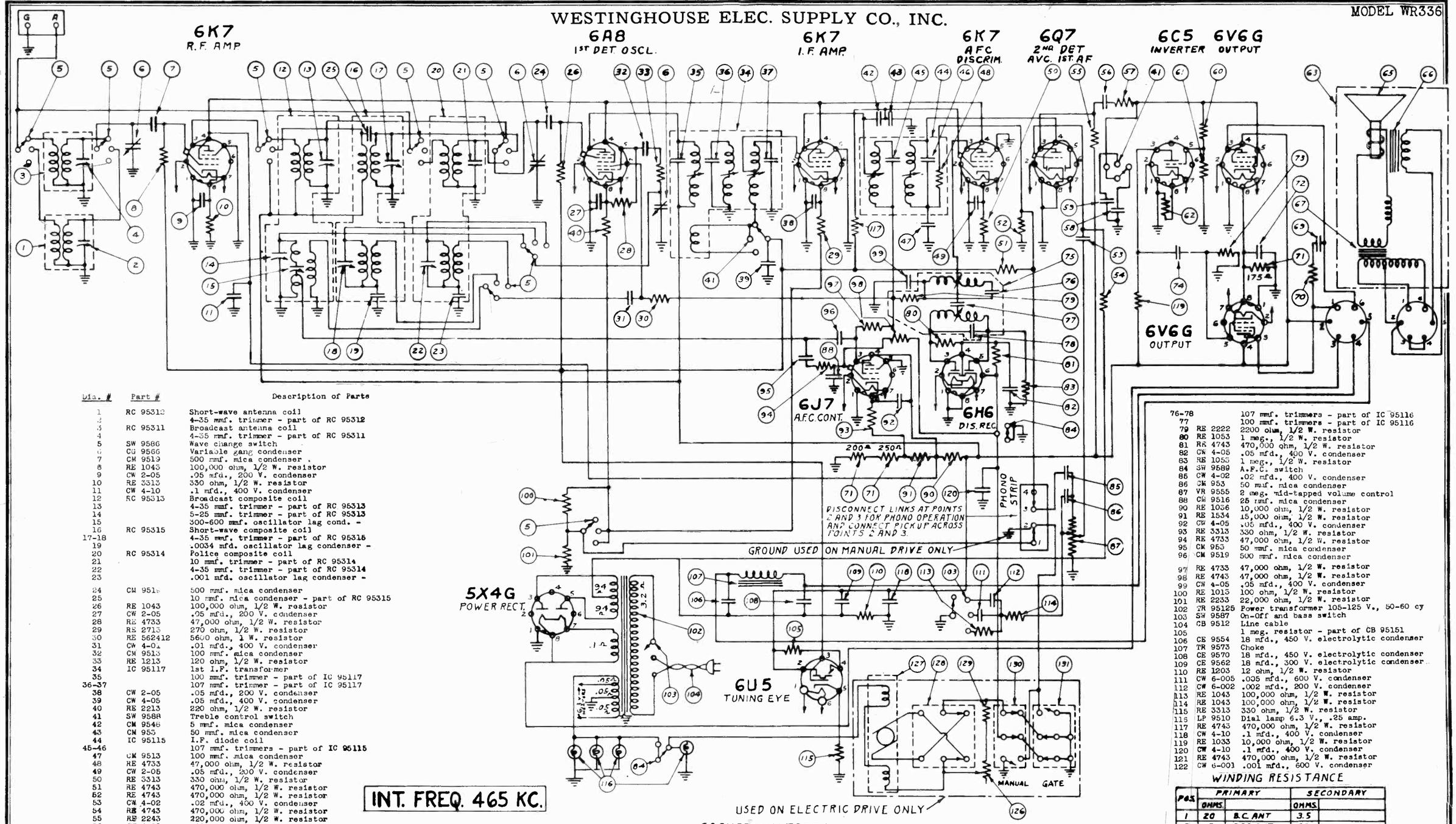
PARTS LIST MODEL WR-332

FOR SIMILAR ALIGNMENT PROCEDURE SEE MODEL WR336

Dia.	Part #	Description of Parts	
1	SW 9586	Wave change switch assembly	2.00
2	RC 95311	B.C. antenna coil assembly	1.10
3		4-35 mmf. trimmer - part of RC 95311	
4	RC 95312	S.W. antenna coil assembly	.75
5		4-35 mmf. trimmer - part of RC 95312	
6	CG 9566	Variable condenser gang	5.50
7	CM 9519	.0005 mfd. mica condenser	.20
8	RE 1043	100,000 ohm, 1/2 W. resistor	.10
9	CW 4-10	.1 mfd., 400 V. condenser	.15
10	RC 95317	B.C. composite coil assembly	2.00
11		4-35 mmf. trimmer - part of RC 95317	
12		8-25 mmf. trimmer - part of RC 95317	
13		300-600 mmf. trimmer - part of RC 95317	
14	RC 95315	S.W. composite coil assembly	2.00
15		10 mmf. mica condenser - part of RC 95315	
16-17		4-35 mmf. trimmers - part of RC 95315	
18		3400 mmf. mica condenser - part of RC 95315	
19	RC 95314	Police composite coil assembly	1.75
20		10 mmf. mica condenser - part of RC 95314	
21		4-35 mmf. trimmer - part of RC 95314	
22		1100 mmf. mica condenser - part of RC 95314	
23	CM 9519	.0005 mfd. mica condenser	.10
24	RE 1043	100,000 ohm, 1/2 W. resistor	.10
25	RE 1513	150 ohm, 1/2 W. resistor	.10
26	CM 9518	.0001 mfd. mica condenser	.10
27	CW 4-01	.01 mfd., 400 V. condenser	.15
28	RE 562412	5,600 ohm, 1 W. resistor	.12
29	RE 4733	47,000 ohm, 1/2 W. resistor	.10
30	CW 2-05	.05 mfd., 200 V. condenser	.15
31-33		80-200 mmf. trimmers - part of IC 95119	
32	IC 95116	1st I.F. transformer	1.60
34	RE 4743	470,000 ohm, 1/2 W. resistor	.10
35	CW 4-05	.05 mfd., 400 V. condenser	.15
36-37		100 mmf. mica condenser - part of IC 95121	
38-40		80-200 mmf. trimmers - part of IC 95121	
39	IC 95121	2nd I.F. transformer	1.80
41	RE 4733	47,000 ohm, 1/2 W. resistor	.10
42	RE 4743	470,000 ohm, 1/2 W. resistor	.10
43	RE 1053	1 meg., 1/2 W. resistor	.10
44	CW 4-10	.1 mfd., 400 V. condenser	.15
45	RE 1053	1 meg., 1/2 W. resistor	.10
46	CW 4-10	.1 mfd., 400 V. condenser	.15
47	RE 4743	470,000 ohm, 1/2 W. resistor	.10
48	CW 4-02	.02 mfd., 400 V. condenser	.15
49	CM 9518	75 mmf. mica condenser	.15
50	RE 1043	100,000 ohm, 1/2 W. resistor	.10
51	CW 6-002	.002 mfd., 600 V. condenser	.15
52	RE 1043	100,000 ohm, 1/2 W. resistor	.10
53	RE 2253	2.2 meg., 1/2 W. resistor	.10
54	CW 4-02	.02 mfd., 400 V. condenser	.10
55	VR 9555	2 meg. - mid tapped volume control	.90
56	CW 4-02	.02 mfd., 400 V. condenser	.15
57	RE 4733	47,000 ohm, 1/2 W. resistor	.10
58	RE 3943	390,000 ohm, 1/2 W. resistor	.10
59	RE 5613	560 ohm, 1/2 W. resistor	.10
60	RE 2243	220,000 ohm, 1/2 W. resistor	.10
61	CW 4-10	.1 mfd., 400 V. condenser	.15
62	CW 4-01	.01 mfd., 400 V. condenser	.15
63	SW 9578	Tone control switch	.60
64	RE 223522	22,000 ohm, 2 W. resistor	.30
65	RE 1033	10,000 ohm, 1/2 W. resistor	.10
66	CW 6-001	.001 mfd., 600 V. condenser	.15
67	RE 6833	68,000 ohm, 1/2 W. resistor	.10
68	CW 4-02	.02 mfd., 400 V. condenser	.15
69	RE 271522	270 ohm, 2 W. resistor	.30
70	RE 4743	470,000 ohm, 1/2 W. resistor	.10
71	CL 9572	Speaker field coil	3.00
72	TR 95150	Speaker output transformer	3.00
73	DM 9528	Speaker diaphragm assembly (12")	5.00
74	SK 9585	Speaker complete (12")	11.00
75	SW 9577	Line switch	.55
76	CB 9512	Line cable and plug assembly	.50
77	TR 95121	Power transformer - 105-125 volts, 50-60 cycle	6.75
78	RE 682522	6800 ohm, 2 W. resistor	.30
79	CE 9528	8 mfd., 450 V. electrolytic condenser	.80
80	RE 103522	10,000 ohms, 2 W. resistor	.30
81	CW 4-05	.05 mfd., 400 V. condenser	.15
82	RE 1033	10,000 ohm, 1/2 W. resistor	.10
83	RE 6833	68000 ohm, 1/2 W. resistor	.10
84	CW 4-50	.5 mfd., 400 V. condenser	.30
85	RE 1803	18 ohm, 1/2 W. resistor	.10
86	CE 9562	18 mfd., 300 V. electrolytic condenser	.80
87	CE 9554	18 mfd., 450 V. electrolytic condenser	.85
88	RE 1803	18 ohm, 1/2 W. resistor	.10
89	CB 95151	Cable and socket for tuning tube	.90
90		1 meg. resistor - part of CB 95151	.10
91	RE 223522	22,000 ohm, 2 W. resistor	.30
92	LP 9510	Dial light - 6.3 V., .25 amp.	.15

WESTINGHOUSE ELEC. SUPPLY CO., INC.

MODEL WR336



Dia. #	Part #	Description of Parts
1	RC 95312	Short-wave antenna coil
2		4-35 mmf. trimmer - part of RC 95312
3	RC 95311	Broadcast antenna coil
4		4-35 mmf. trimmer - part of RC 95311
5	SW 9586	Wave change switch
6	CG 9566	Variable gang condenser
7	CM 9519	500 mmf. mica condenser .
8	RE 1045	100,000 ohm, 1/2 W. resistor
9	CW 2-05	.05 mfd., 200 V. condenser
10	RE 3313	330 ohm, 1/2 W. resistor
11	CW 4-10	.1 mfd., 400 V. condenser
12	RC 95313	Broadcast composite coil
13		4-35 mmf. trimmer - part of RC 95313
14		5-25 mmf. trimmer - part of RC 95313
15		300-600 mmf. oscillator lag cond. -
16	RC 95315	Short-wave composite coil
17-18		4-35 mmf. trimmer - part of RC 95315
19		.0034 mfd. oscillator lag condenser -
20	RC 95314	Police composite coil
21		10 mmf. trimmer - part of RC 95314
22		4-35 mmf. trimmer - part of RC 95314
23		.001 mfd. oscillator lag condenser -
24	CM 951[illegible]	500 mmf. mica condenser
25		10 mmf. mica condenser - part of RC 95315
26	RE 1043	100,000 ohm, 1/2 W. resistor
27	CW 2-05	.05 mfd., 200 V. condenser
28	RE 4733	47,000 ohm, 1/2 W. resistor
29	RE 2713	270 ohm, 1/2 W. resistor
30	RE 562412	5600 ohm, 1 W. resistor
31	CW 4-01	.01 mfd., 400 V. condenser
32	CM 9513	100 mmf. mica condenser
33	RE 1213	120 ohm, 1/2 W. resistor
34	IC 95117	1st I.F. transformer
35		100 mmf. trimmer - part of IC 95117
36-37		107 mmf. trimmer - part of IC 95117
38	CW 2-05	.05 mfd., 200 V. condenser
39	CW 4-05	.05 mfd., 400 V. condenser
40	RE 2213	220 ohm, 1/2 W. resistor
41	SW 9588	Treble control switch
42	CM 9546	5 mmf. mica condenser
43	CM 955	50 mmf. mica condenser
44	IC 95115	I.F. diode coil
45-46		107 mmf. trimmers - part of IC 95115
47	CM 9513	100 mmf. mica condenser
48	RE 4733	47,000 ohm, 1/2 W. resistor
49	CW 2-05	.05 mfd., 200 V. condenser
50	RE 3313	330 ohm, 1/2 W. resistor
51	RE 4743	470,000 ohm, 1/2 W. resistor
52	RE 4743	470,000 ohm, 1/2 W. resistor
53	CW 4-02	.02 mfd., 400 V. condenser
54	RE 4743	470,000 ohm, 1/2 W. resistor
55	RE 2243	220,000 ohm, 1/2 W. resistor
56	CW 4-02	.02 mfd., 400 V. condenser
57	RE 4733	47,000 ohm, 1/2 W. resistor
58	CW 6-003	.003 mfd., 600 V. condenser
59	CW 6-001	.001 mfd., 600 V. condenser
60	RE 3945	390,000 ohm, 1/2 W. resistor
61	RE 6835	68,000 ohm, 1/2 W. resistor
62	RE 5613	560 ohm, 1/2 W. resistor
63	SK 9584	Speaker
65	DM 9528	Speaker diaphragm assembly
66	CL 9570	Speaker field coil
67	TR 95151	Speaker output transformer
69	CW 6-001	.001 mfd., 600 V. condenser
70	RE 223412	22,000 ohm, 1 W. resistor
71	RE 95141	200-250 ohm - voltage divider resistor
72	CE 9569	12 mfd., 50 V. electrolytic condenser
73	RE 4743	470,000 ohm, 1/2 W. resistor
74	CW 4-02	.02 mfd., 400 V. condenser
75	IC 95116	Descriminator coil
76-78		107 mmf. trimmers - part of IC 95116
77		100 mmf. trimmers - part of IC 95116
79	RE 2222	2200 ohm, 1/2 W. resistor
80	RE 1053	1 meg., 1/2 W. resistor
81	RE 4743	470,000 ohm, 1/2 W. resistor
82	CW 4-05	.05 mfd., 400 V. condenser
83	RE 1053	1 meg., 1/2 W. resistor
84	SW 9589	A.F.C. switch
85	CW 4-02	.02 mfd., 400 V. condenser
86	CM 953	50 mmf. mica condenser
87	VR 9555	2 meg. mid-tapped volume control
88	CM 9516	25 mmf. mica condenser
90	RE 1036	10,000 ohm, 1/2 W. resistor
91	RE 1534	15,000 ohm, 1/2 W. resistor
92	CW 4-05	.05 mfd., 400 V. condenser
93	RE 3313	330 ohm, 1/2 W. resistor
94	RE 4733	47,000 ohm, 1/2 W. resistor
95	CM 953	50 mmf. mica condenser
96	CM 9519	500 mmf. mica condenser
97	RE 4733	47,000 ohm, 1/2 W. resistor
98	RE 4743	47,000 ohm, 1/2 W. resistor
99	CW 4-05	.05 mfd., 400 V. condenser
100	RE 1015	100 ohm, 1/2 W. resistor
101	RE 2233	22,000 ohm, 1/2 W. resistor
102	TR 95125	Power transformer 105-125 V., 50-60 cy
103	SW 9587	On-Off and bass switch
104	CB 9512	Line cable
105		1 meg. resistor - part of CB 95151
106	CE 9554	18 mfd., 450 V. electrolytic condenser
107	TR 9573	Choke
108	CE 9570	18 mfd., 450 V. electrolytic condenser
109	CE 9562	18 mfd., 300 V. electrolytic condenser
110	RE 1203	12 ohm, 1/2 W. resistor
111	CW 6-005	.005 mfd., 600 V. condenser
112	CW 6-002	.002 mfd., 200 V. condenser
113	RE 1043	100,000 ohm, 1/2 W. resistor
114	RE 1043	100,000 ohm, 1/2 W. resistor
115	RE 3313	330 ohm, 1/2 W. resistor
116	LP 9510	Dial lamp 6.3 V., .25 amp.
117	RE 4743	470,000 ohm, 1/2 W. resistor
118	CW 4-10	.1 mfd., 400 V. condenser
119	RE 1033	10,000 ohm, 1/2 W. resistor
120	CW 4-10	.1 mfd., 400 V. condenser
121	RE 4743	470,000 ohm, 1/2 W. resistor
122	CW 6-001	.001 mfd., 600 V. condenser

INT. FREQ. 465 KC.

SOCKET VOLTAGES

TUBE	STAGE	FIL	PIN NO.	PLATE	PIN NO.	SCREEN	PIN NO.	BIAS	CATH	OSCL. PL VOL
6K7	R.F. AMP.	6.3	2 to 7	256	1 to 3	107	1 to 4	—	3.2	
6A8	1ST DET. OSC.	"	"	"	"	"	"	—	5 & RO 1 P-S W	220
6K7	I.F. AMP.	"	"	"	"	"	"	—	4.5 & RO 1 P-S W	
6Q7	2ND DET.	"	"	120	"	—	—	-1.8	—	
6C5	INVERTER	"	"	180	"	—	—	—	4	
6V6G	OUTPUT	"	"	250	"	255	1 to 4	—	13.5	
6V6G	" "	"	"	"	"	"	"	—	"	
6H6	DISC. REC.	"	"	—	—	—	—	—	—	
6J7	A.F.C. CONT.	"	"	180	1 to 3	107	1 to 4	—	4.4	
5X4G	POW. REC.	5	7 to 8	—	—	—	—	—	390	
6U5	EYE	6.3	1 to 6	255	—	—	—	—	175	

FOR TUNER DATA SEE INDEX

WINDING RESISTANCE

POS.	PRIMARY OHMS		SECONDARY OHMS	
1	20	B.C. ANT	3.5	
3	.5	REP ANT	.03	
12	1.5	B.C. R.F.	13	
12	1.3	B.C. OSCL.	1/2 / 2	HIGH END TO TAP, LOW END TO TAP
16	2	POLICE R.F.	.03	
16	.5	REP OSCL.	.03	
20	1.5	POLICE ANT.	.6	
20	.5	" OSCL.	1.2	
34	9	1ST I.F.	45 TAP / 90	LINK 9 OHMS
44	5 TAP	DIODE TRANS.	10	
75	5 TAP	DISCRIM. "	10	
107	92	CHOKE		
118	2	VOICE COIL		
67	225 TAP	OUTPUT TR.	.05	
66	400	SPK. FIELD		

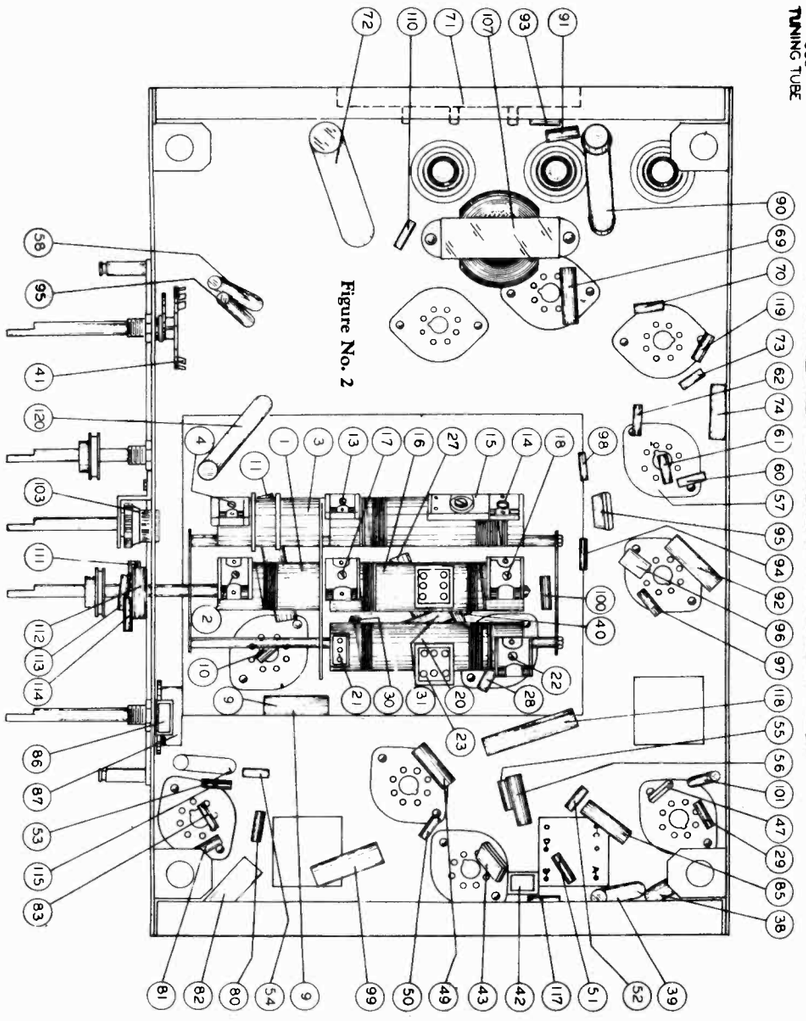


Figure No. 2

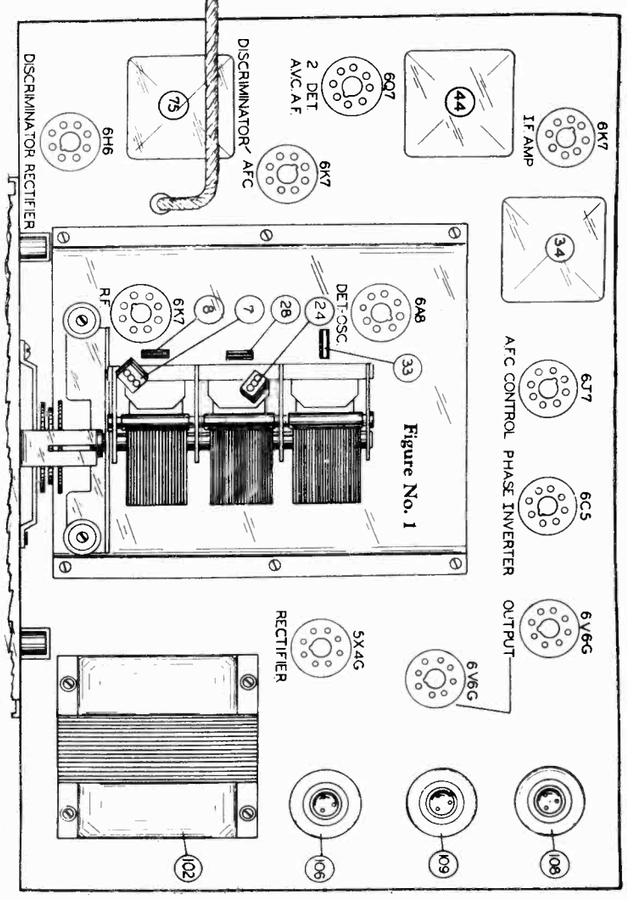


Figure No. 1

WR-336

GENERAL DESCRIPTION

This model is a twelve tube, three band superheterodyne receiver. Among the many desirable features are, controlled bass and treble compensation, high fidelity and automatic frequency control of the broadcast band.

The tubes, in the order mentioned under the heading "type and number of tubes", function as follows: RF amplifier, 1st detector-oscillator, I.F. amplifier, 2nd detector A.V.C. 1st audio, phase inverter, output, rectifier, limiter, discriminator rectifier, A.F.C. control and tuning indication.

The R.F. amplifier and detector oscillator with the associated parts including the gang condenser, coils, trimmer and lag condensers and wave change switch, is mounted on the chassis as a unit.

LINE-UP CAPACITOR ADJUSTMENT

To properly align the circuits of the receiver, it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied when the individual circuits are brought into alignment. A conventional output meter should be connected across the speaker voice coil terminals to indicate proper alignment. The sensitivity of the output meter must be sufficient to give a satisfactory reading with a low input signal.

A zero center micro-ammeter with an approximate 0-30 scale is absolutely essential for the proper alignment of the discriminator circuit.

Before attempting to align the receiver, the circuit, position of alignment adjustments and chassis layout should be familiarized. The top and bottom views of the chassis are shown in figures #1 and #2.

ADJUSTMENT OF THE I.F. DIODE COIL 465 KC.

1. Refer to bottom view of chassis and connect a 20,000 ohm resistor between points "C" and "D" under 2nd I.F. coil #44.
2. Turn the receiver "ON" and to the position immediately after set is turned on. Set volume control on full. Set A.F.C. switch in "OFF" position. Set high fidelity control in a left hand or MINIMUM position. Set wave change switch to broadcast position.
3. Connect the output meter across the speaker voice coil.
4. Set the test oscillator to 465 KC. and adjust the output to give a readable deflection of the output meter when the signal is applied to the grid of the 6K7 I.F. tube through a .5 mfd. blocking condenser.
5. Adjust the bottom adjustment screw on coil #44 for maximum output.
6. Remove the 20,000 ohm resistor from points "C" and "D" and connect between points "A" and "B".
7. Adjust the top adjustment screw on coil #44 for maximum output.
8. Remove the 20,000 ohm resistor.

ALIGNMENT OF DISCRIMINATOR COIL

1. Connect the micro-ammeter between the #4 terminal of the 6H6 discriminator rectifier tube and ground.
2. With test signal still applied to the I.F. tube increase the signal output of the oscillator.
3. Adjust the bottom screw on the discriminator coil #75 for maximum deflection of the micro-ammeter (either direction).
4. Adjust the top screw on the discriminator coil until a zero reading on the micro-ammeter is reached. To check this alignment, vary the I.F. signal slightly to each side of the 465 setting and the micro-ammeter should show a deflection first on one side then the other of the zero point.

ADJUSTMENT OF 1ST I.F. COIL 465 KC.

1. Apply the test signal to the grid of the 6A8 detector-oscillator tube through a .5 mfd. blocking condenser.
2. Adjust first the bottom, second the middle and third the top alignment screws on I.F. coil #34 for maximum output.

ADJUSTMENT OF THE BROADCAST BAND

1. With the gang condenser completely in mesh, check the position of the dial pointer which should be at the end horizontal line of the scale.
2. Set the test oscillator and dial pointer to 1500 KC.
3. Adjust the oscillator trimmer #14.
4. Connect the test oscillator to the antenna terminal of the receiver through a .0002 mfd. condenser.
5. Adjust the R.F. and antenna trimmers #13 and #4 for maximum output.
6. Set the test oscillator and dial pointer to 600 KC.
7. Adjust the oscillator series (lag) condenser #15 at the same time turning the gang condenser slightly back and forth until a maximum is reached.
8. Return the test oscillator and dial pointer to the 1500 KC. setting and recheck trimmers #14, #13 and #4.
9. Check sensitivity and calibration over the scale.

NOTE: In adjusting the two remaining bands, a .0002 mfd. condenser and a 400 ohm resistor connected in series should be inserted between the test oscillator and the antenna terminal of the receiver. This combination is the approximate equivalent of a short wave antenna.

DJUSTMENT OF THE GREEN BAND

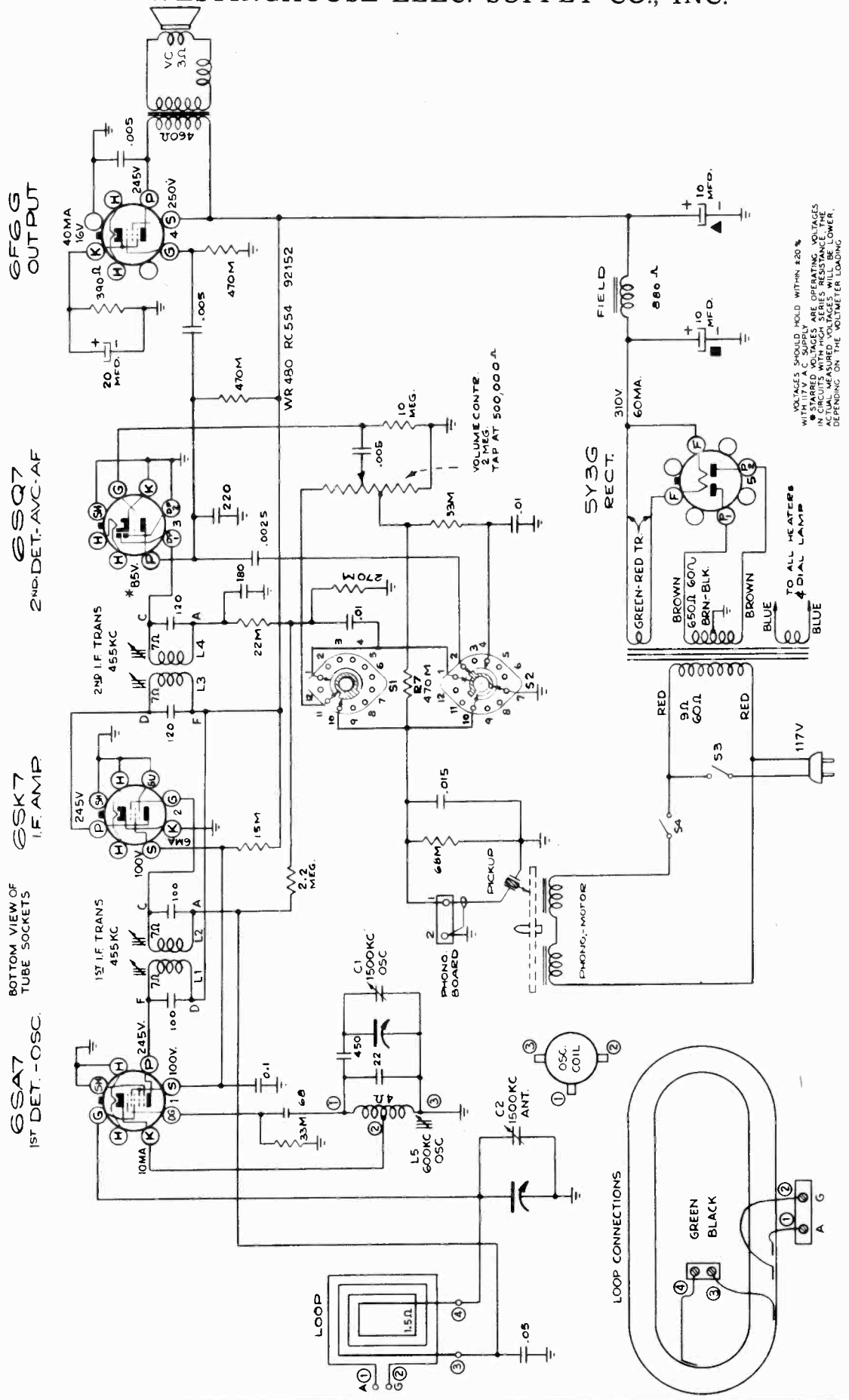
1. Turn the wave change switch to the green band position.
2. Set the test oscillator and dial pointer at 5000 KC.
3. Adjust the oscillator trimmer #22.
4. Check sensitivity and calibration over the scale.

ADJUSTMENT OF THE RED BAND

1. Turn the wave change switch to the red band position.
2. Set the test oscillator and dial pointer at 16,000 KC.
3. Adjust the oscillator trimmer #18. Two positions may be found at which the signal can be heard. Use the one with the least capacity or with the trimmer farther out.
4. Adjust the R.F. and antenna trimmers #17 and #2 for maximum output.
5. Check calibration and sensitivity over the scale.

WESTINGHOUSE ELEC. SUPPLY CO., INC.

MODEL WR480



MODEL WR480

WESTINGHOUSE ELEC. SUPPLY CO., INC.

Alignment Procedure

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	I-F grid, in series with .01 mfd.	455 kc	Quiet Point at H-F end of dial	L3 and L4 (2nd I.F. Trans.
2	1st det. grid, in series with .01 mfd.			L1 and L2 (1st I.F. Trans.
3	Antenna term. of ant. loop in series with 100 mmfd.	1,500 kc	1,500 kc	C1 (oscillator) C2 (antenna)
4		600 kc	600 kc	L5 (oscillator)
5	Repeat steps 3 and 4.			

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver ground, and keep the output as low as possible.

Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 6SK7 close to chassis.
2. Dress leads from terminal board on loop support away from loop.

Electrical and Mechanical Specifications

Frequency Range ..... 540-1,720 kc

Intermediate Frequency ..... 455 kc

Tube Complement

(1) RCA-6SA7 ..... First Detector-Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... Second Detector A-F Amplifier and A.V.C.
(4) RCA-6F6G ..... Power Output
(5) RCA-5Y3G ..... Rectifier

Power Output

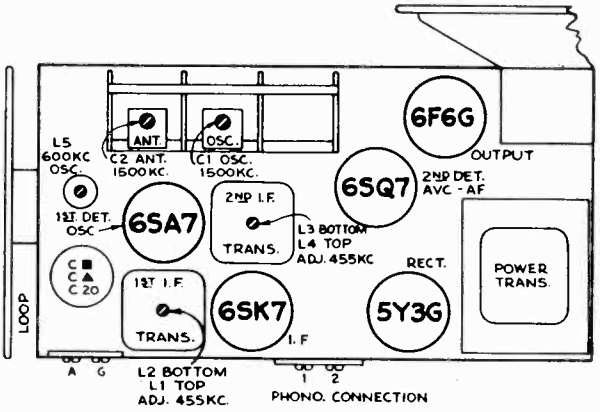
Undistorted ..... 2.0 watts
Maximum ..... 4.0 watts

Power Supply Rating

105-125 volts, 50-60 cycles ..... 55 watts

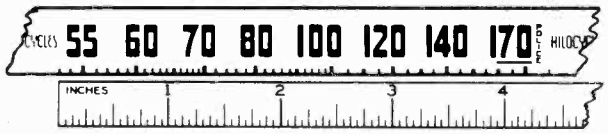
Loudspeaker (RL 79 B3)

Type ..... 6-inch Electrodynamic
Voice Coil Impedance ..... 3.4 ohms at 400 cycles



Tube and Trimmer Locations

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. Or, if necessary, the calibration scale printed in this service note can be used in conjunction with an ordinary 6-inch ruler as an accurate and convenient substitute for the regular dial.



Receiver Dial Scale and Corresponding Calibration Scale

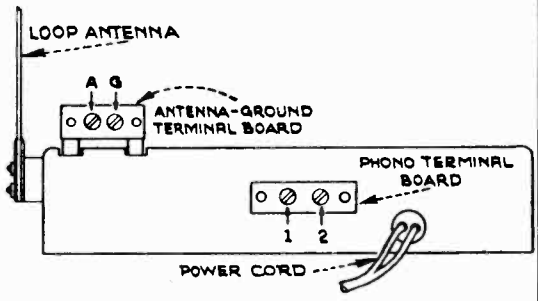
Using Calibration Scale.—

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

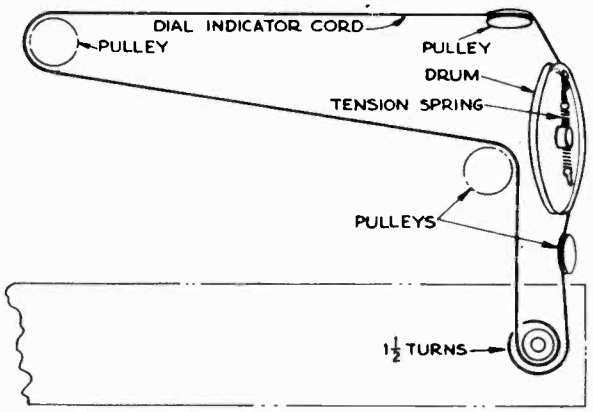
2. Place a flat 6-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at the bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale. For example 1,500 kc is approximately 3¼ inches from the reference mark.

Dial-Pointer Adjustment.—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.



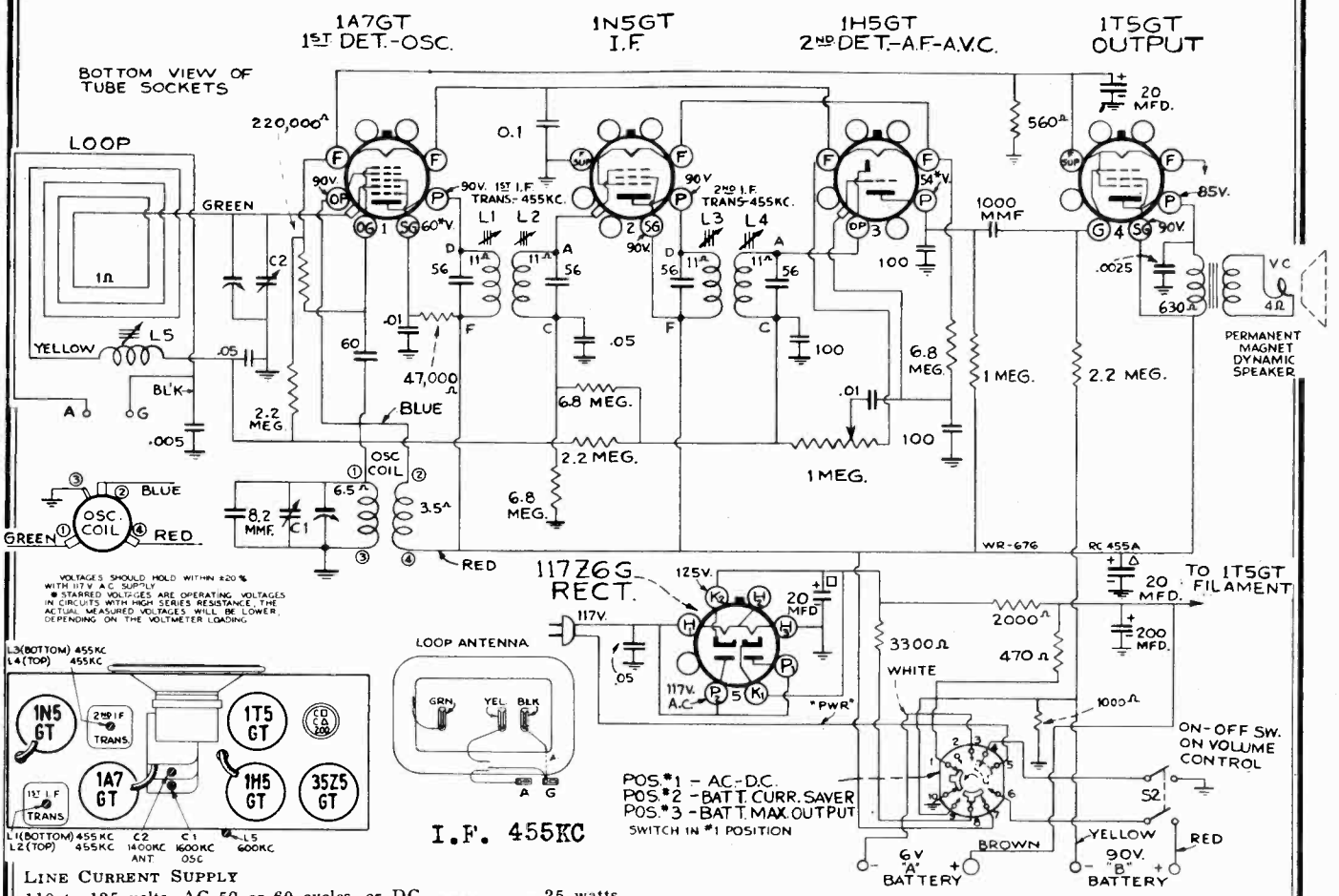
Back of Chassis



Dial-Indicator and Drive Mechanism

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR676



LINE CURRENT SUPPLY

110 to 125 volts, AC 50 or 60 cycles, or DC ..... 25 watts

BATTERIES REQUIRED

"A" one 6 volt dry plug-in type (Eveready No. 747 or equivalent)
"B" two 45 volt dry plug-in type (Eveready No. 482 or equivalent)

CURRENT CONSUMPTON

"A," 0.05 ampere—"B," 10.5 milliamperes full power; 6.0 milliamperes save power.

POWER OUTPUT

Undistorted ..... 0.08 watt
Maximum ..... 0.17 watt

LOUDSPEAKER

Type ..... 5-inch permanent-magnet dynamic
Voice-coil Impedance ..... 4.5 ohms at 400 cycles

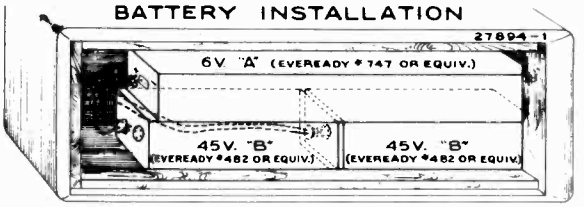
Alignment Procedure

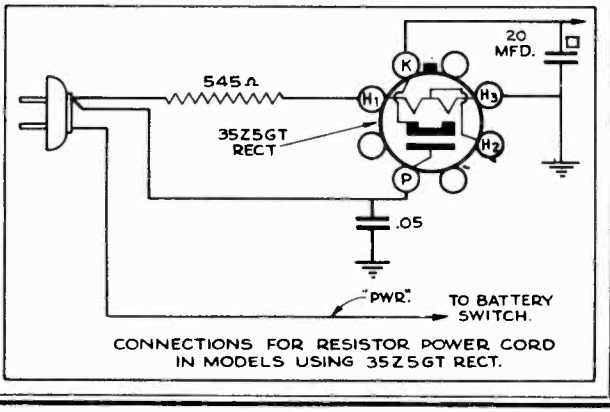
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

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

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	1A7GT 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	L1, L2, L3, L4 (1st and 2nd I-F transformers)
2		1,600 kc	1,600 kc	C1 osc.
3	radiated signal near 600 kc		signal frequency	L5
4	radiated signal near 1,400 kc		signal frequency	C2
5	radiated signal near 600 kc		signal frequency	L5

For steps 3, 4, and 5 the chassis must be in the cabinet and the batteries in place and connected. L-5 is then reached through the small hole in the cabinet which is normally covered with a small plug located farthest away from C-2 and C-2 is reached through an eyelet in the speaker grille. If a broadcast signal is used it should be weak to avoid a-v-c action. Turning loop in minimum pickup position will sometimes be helpful. If no broadcast signal is available connect test oscillator output to a suitable radiation loop located several feet away from receiver.

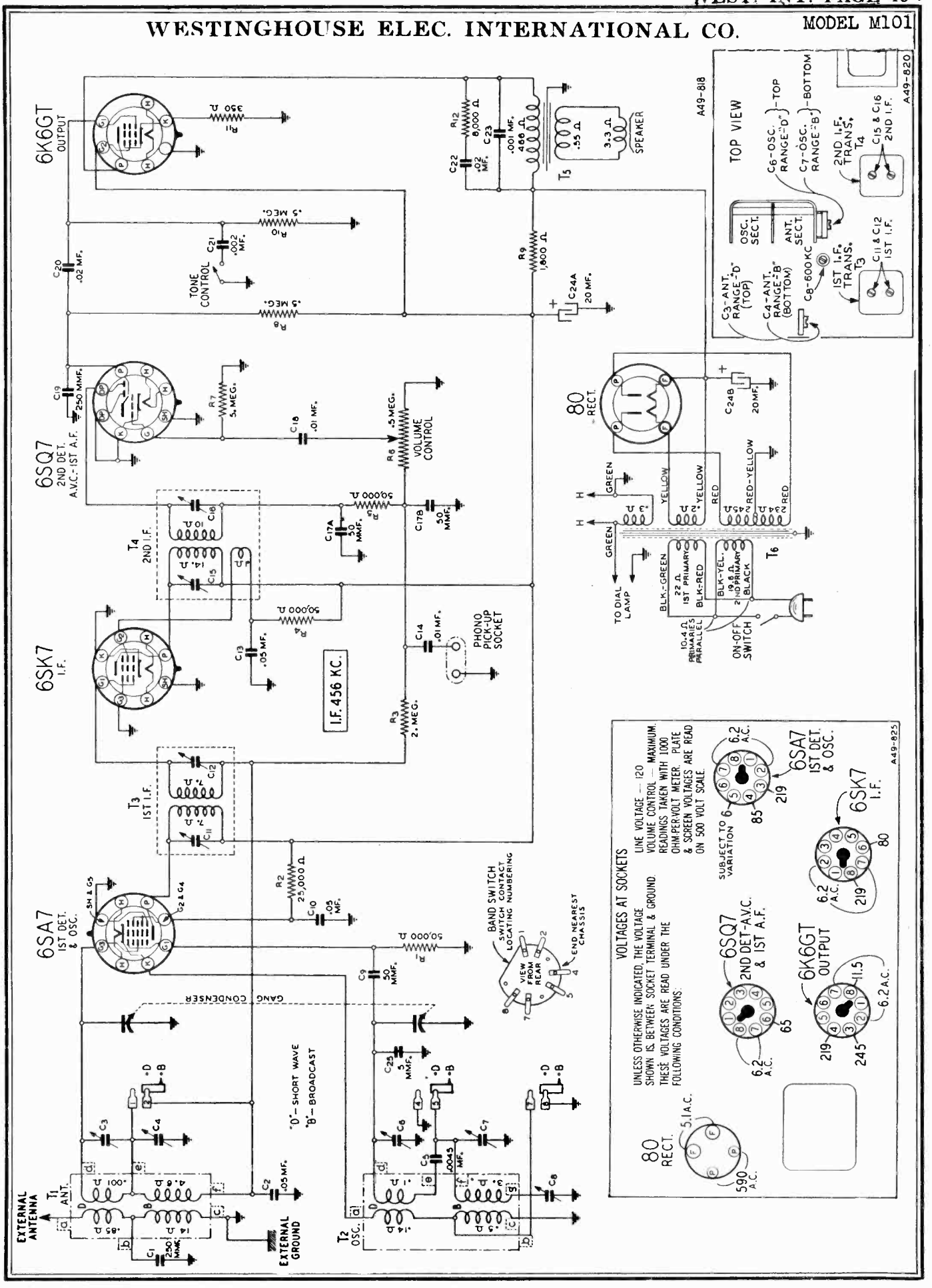




CONNECTIONS FOR RESISTOR POWER CORD IN MODELS USING 35Z5GT RECT.

WESTINGHOUSE ELEC. INTERNATIONAL CO.

MODEL M101



MODEL M101

WESTINGHOUSE ELEC. INTERNATIONAL CO.

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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—Small Screwdriver.

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

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	RANGE SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
It is not necessary to remove chassis from cabinet if a short screwdriver is used for the I.F. adjustments. CAUTION—Align S.W. (Range D) **before** aligning Broadcast (Range B).					
I.F.					
456 KC	Antenna Lead	.1 mf.	Broadcast (to left)	Turn Rotor to Full Open	1st I.F. (C11) & (C12) 2nd I.F. (C15) & (C16)
S.W. (RANGE D)					
18,000 KC	Antenna Lead	400 Ohm	Shortwave (to right)	Turn Rotor to Full Open	Oscillator Shortwave (C6)
17,000 KC	Antenna Lead	400 Ohm	Shortwave (to right)	Turn Rotor to Max. Output	Ant. Shortwave (C3) Rock Rotor—See Note B
BROADCAST (RANGE B)					
1600 KC	Antenna Lead	200 mmf.	Broadcast (to left)	Turn Rotor to Full Open	Oscillator Broadcast (C7)
1400 KC	Antenna Lead	200 mmf.	Broadcast (to left)	Turn Rotor to Max. Output Set Pointer to 1400 KC—See Note A	Ant. Broadcast (C4)
600 KC	Antenna Lead	200 mmf.	Broadcast (to left)	Turn Rotor to Max. Output	600 KC (C8) Rock Rotor—See Note B

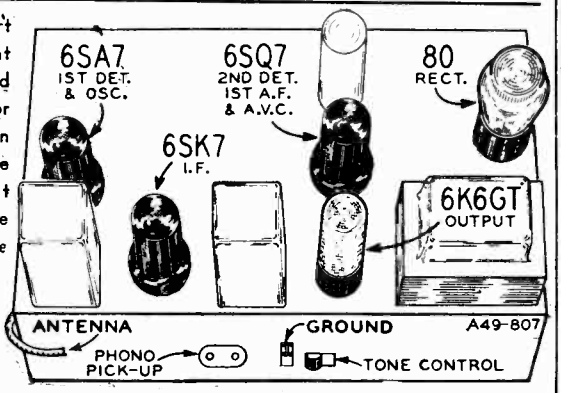
Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

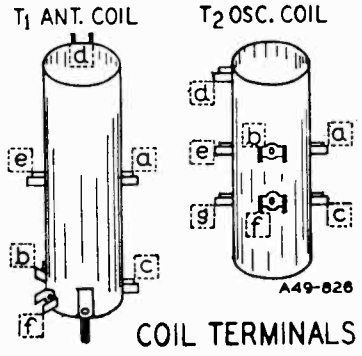
After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1400 KC on the dial when maximum output is obtained, move the pointer to the 1400 KC mark on the dial scale.

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

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.



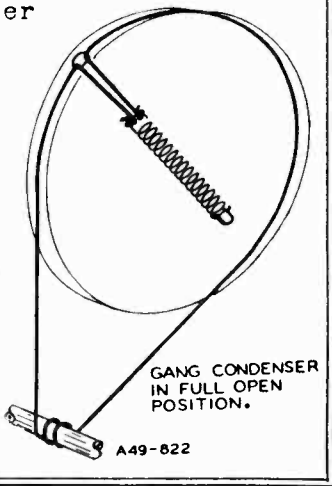


Tuning Frequency Range Broadcast Range-540 to 1600KC; Short Wave Range--4700 to 18000KC Sensitivity-(for 0.5 W. output) Broadcast Range--20 Microvolts Average; Short Wave Range--60 Microvolts Average; Power Consumption-45 W. (at 120 v.60 cycles) Power Output--1.5 W. Undistorted; 3.0 W. Max. Selectivity--37 KC Broad at 1000 times Sig. Intermediate Frequency--456 KC; Speaker Voice Coil Impedance at 400 cycles..3½Ohms.

DRIVE CORD REPLACEMENT

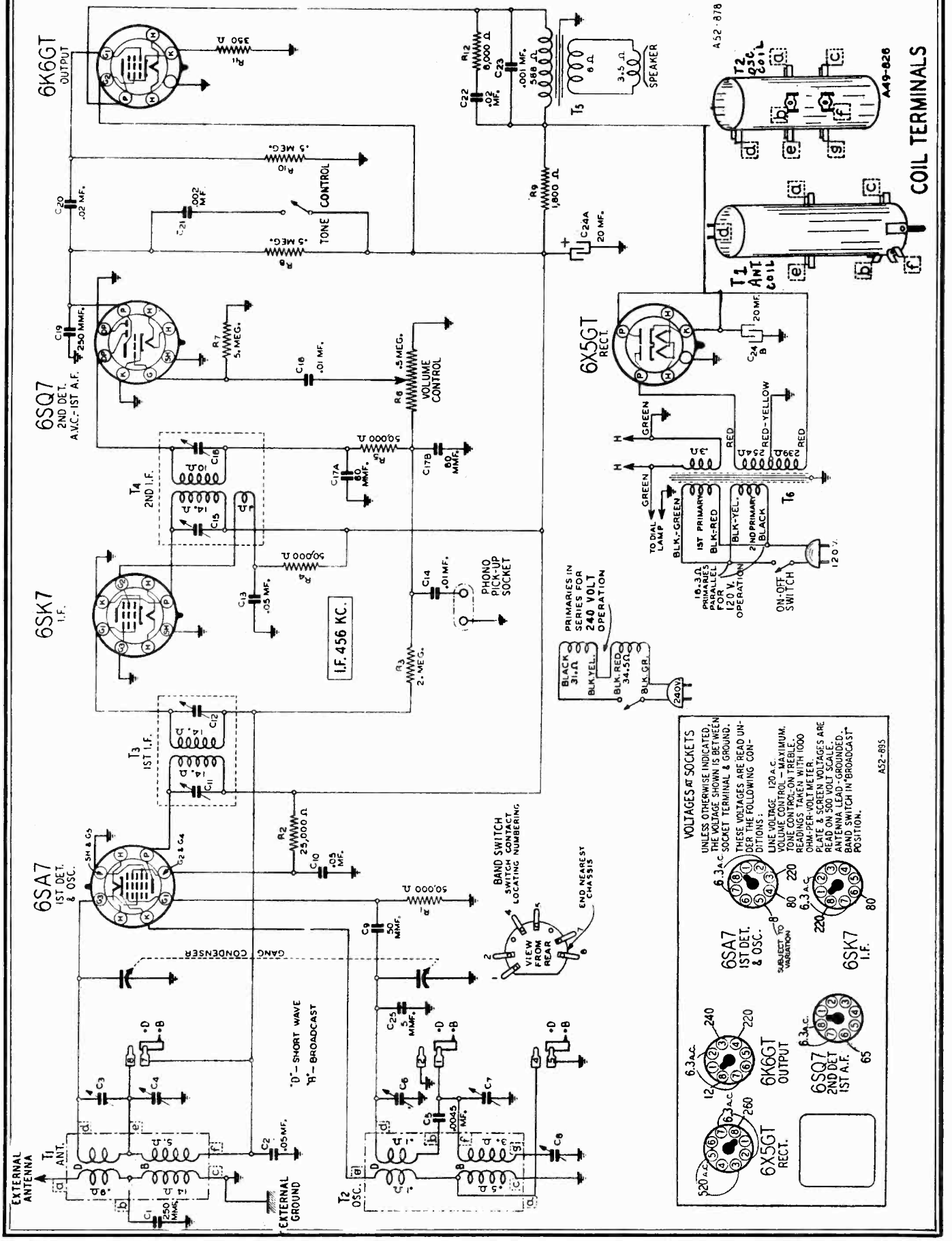
To replace drive cord, first remove dial scale mounting plate from chassis as follows: Pull dial scale pointer off its shaft. Remove dial lamp socket assembly from mounting plate. Take out the 2 screws in the bottom mounting brackets and the screw in the top brace bracket.

Tie both ends of new drive cord to same end of tension spring, so that doubled drive cord measures 10¾" from knots to looped end of cord. Secure spring to hook on pulley — see illustration. Turn gang condenser to full open position. Thread doubled cord through hole in pulley groove. Wind one section of cord approximately 2½ turns counter-clockwise (from front of chassis) around tuning control shaft. Turns should progress away from chassis. Stretch tension spring and wind remaining section of cord around drive pulley.



MODELS M102, M111

WESTINGHOUSE ELEC. INTERNATIONAL CO.



MODELS M102, M111 WESTINGHOUSE ELEC. INTERNATIONAL CO.

Power Consumption 45 Watts (At 120 volts 60 cycles)
Power Output .....1.5 Watts Undistorted
3.0 Watts Maximum
Selectivity.....37 KC Broad at 1000 times Signal
Intermediate Frequency .....456 KC
Speaker Voice Coil Impedance at
400 cycles .....3½ Ohms

Tuning Frequency Range
Broadcast Range ..... 540 to 1600 KC
Shortwave Range .....4700 to 18000 KC

Sensitivity—(For 0.5 Watt output)
Broadcast Range.....20 Microvolts Average
Shortwave Range.....60 Microvolts Average

120 OR 240 VOLT POWER TRANSFORMER CONNECTIONS

All radios except those for use on 25 cycles are equipped with a dual voltage power transformer which may be connected for 120 volts or 240 volts operation on 50-60 cycles. See diagram on page 3.

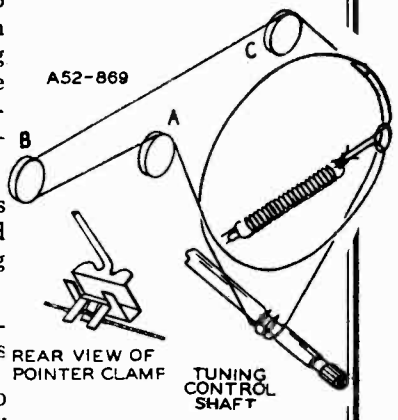
DRIVE CORD REPLACEMENT

Turn gang condenser to completely closed position. Using a new drive cord 45" in length, tie one end to tension spring. Pass other end through hole in rim of drive pulley. Pull spring flush against inside of pulley rim. Wind cord around drive pulley and pass over idler pulleys "A," "B," and "C"—See illustration.

Continue cord around drive pulley to tuning control shaft. Cord should be on right side of pulley groove (from gang condenser end of chassis). Wind drive cord 2 turns around section of tuning control shaft directly below drive pulley—See illustration.

Continue cord around drive pulley. Pass cord through hole in pulley rim. Tie cord to tension spring. Stretch tension spring and secure free end to hook on pulley.

Turn tuning knob counterclockwise until extreme high frequency position is reached (gang condenser to full open) Slip pointer on the dial cord and move to the high frequency end of scale. Carefully align pointer with the 18 MC dial mark and clamp securely into position.



ALIGNMENT PROCEDURE

Before aligning make certain that the dial pointer is adjusted properly as instructed under "Drive Cord Replacement."
Volume Control—Maximum All Adjustments.
Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.
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—Small Screwdriver.
Dummy Antennas—.1 mf., 200 mmf., and 400 ohm carbon resistor.

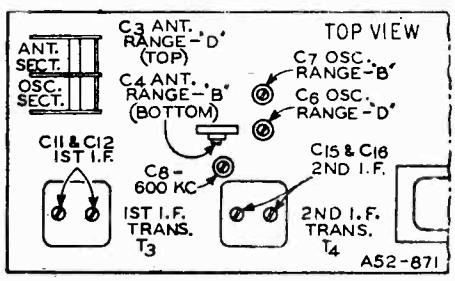
SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	RANGE SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
It is not necessary to remove chassis from cabinet if a short screwdriver is used for the I.F. adjustments. CAUTION—Align S.W. (Range D) *before* aligning Broadcast (Range B).					
I.F.					
.456 KC	Antenna Lead	.1 mf.	Broadcast (to left)	Turn Rotor to Full Open	1st I.F. (C11) & (C12) 2nd I.F. (C15) & (C16)
S.W. (RANGE D)					
18,000 KC	Antenna Lead	400 Ohm	Shortwave (to right)	Turn Rotor to Full Open	Oscillator Shortwave (C6)
17,000 KC	Antenna Lead	400 Ohm	Shortwave (to right)	Turn Rotor to Max. Output	Ant. Shortwave (C3) Rock Rotor—See Note B
BROADCAST (RANGE B)					
1600 KC	Antenna Lead	200 mmf.	Broadcast (to left)	Turn Rotor to Full Open	Oscillator Broadcast (C7)
1400 KC	Antenna Lead	200 mmf.	Broadcast (to left)	Turn Rotor to Max. Output Set Pointer to 1400 KC—	Ant. Broadcast (C4)
600 KC	Antenna Lead	200 mmf.	Broadcast (to left)	Turn Rotor to Max. Output	600 KC (C8) Rock Rotor—See Note B

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

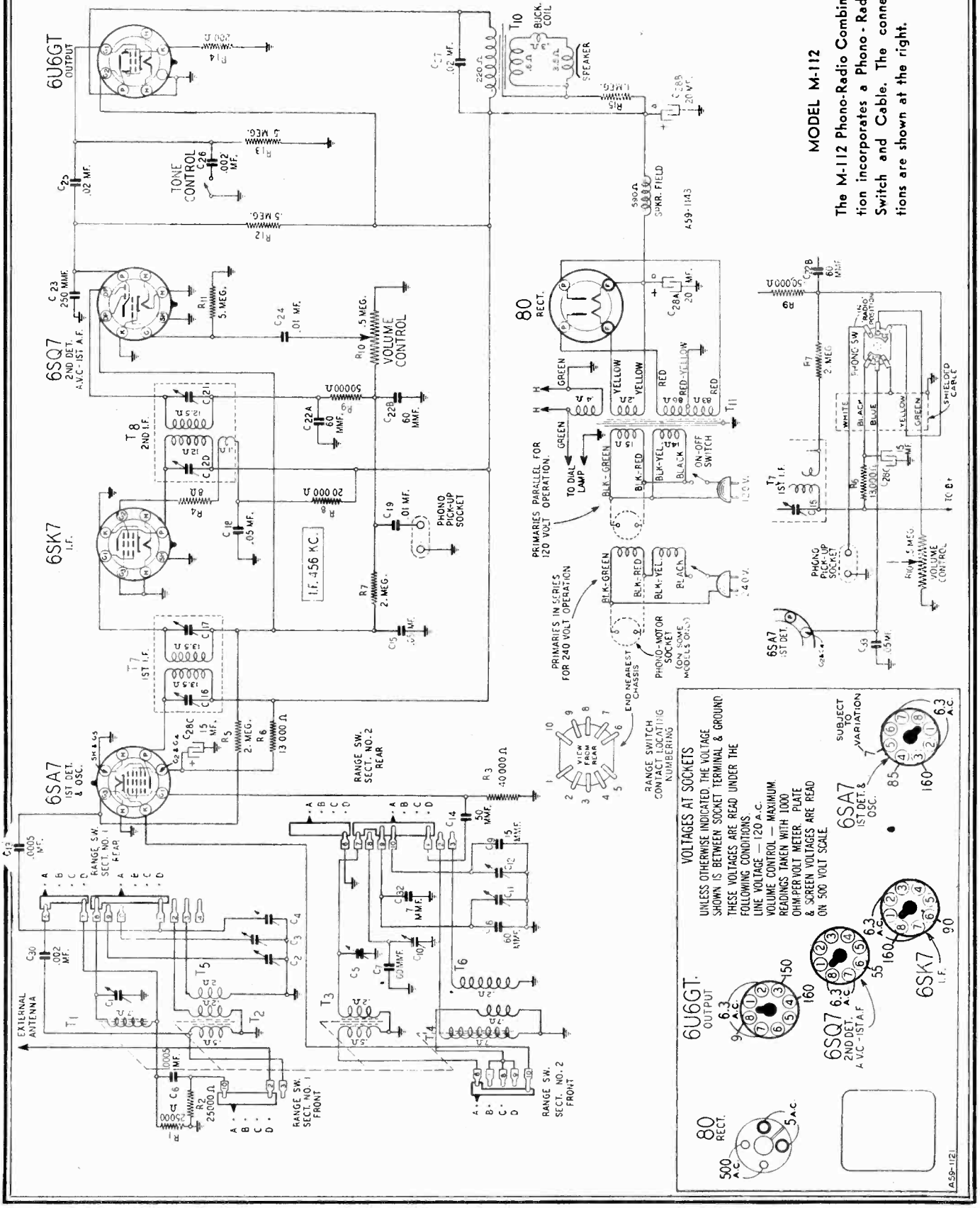
NOTE B—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal should be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.



MODELS M103, M112, M116

WESTINGHOUSE ELEC. INTERNATIONAL CO.



MODELS M103, M112, M116

WESTINGHOUSE ELEC. INTERNATIONAL CO.

ALIGNMENT PROCEDURE

Before aligning make certain that dial pointer is adjusted properly as instructed under "Drive Cord Replacement" on page 5.
Volume Control—Maximum All Adjustments.
Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.
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 Antennas—.1 mf., 200 mmf., and 400 ohms. (Connect in series with Antenna lead.)

	SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	POINTER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.	456 KC	Antenna Lead	.1 mf.	A Range	Turn Tuning Knob until Extreme High Frequency Position Is Reached	2nd I.F. (C20) & (C21) 1st I.F. (C16) & (C17)
RANGE D	21.8 MC	Antenna Lead	400 Ohm	D Range	Same as Above	Oscillator Range D (C12)
	Reset to 20.0 MC	Antenna Lead	400 Ohm	D Range	Turn Tuner to Max. Output	Antenna Range D (C4) Rock Tuner—See Note A
RANGE C	12.05 MC	Antenna Lead	400 Ohm	C Range	Extreme High Frequency Position	Oscillator Range C (C11)
	Reset to 11.5 MC	Antenna Lead	400 Ohm	C Range	Turn Tuner to Max. Output	Antenna Range C (C3) Rock Tuner—See Note A
RANGE B	7.4 MC	Antenna Lead	400 Ohm	B Range	Extreme High Frequency Position	Oscillator Range B (C10)
	Reset to 7.0 MC	Antenna Lead	400 Ohm	B Range	Turn Tuner to Max. Output	Antenna Range B (C2) Rock Tuner—See Note A
RANGE A	1610 KC	Antenna Lead	200 mmf.	A Range	Extreme High Frequency Position	Oscillator Range A (C5) Antenna Range A (C1)

WAVE RANGES

BROADCAST RANGE

A Range 535 to 1610 Kilocycles

This range is calibrated in kilocycles and meters. Standard Broadcast stations are tuned in on this range.

SHORT WAVE RANGES

B Range 3.2 to 7.4 Megacycles
C Range 8.3 to 12.05 Megacycles
D Range 15.1 to 21.8 Megacycles

The Short Wave ranges are calibrated in megacycles and meters. Short Wave broadcasts will be heard best on the D range during the day and on the B and C ranges at night.

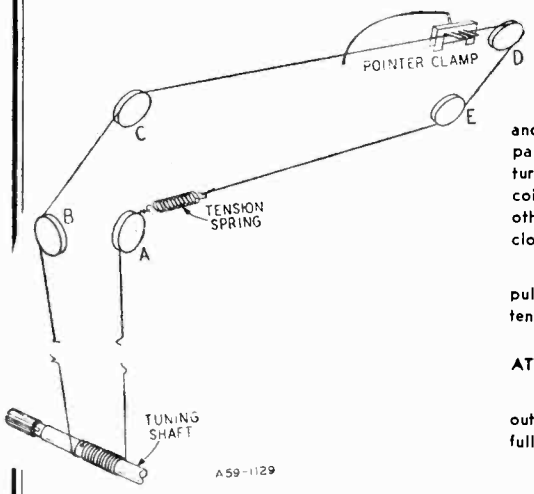
Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

CAUTION—When aligning the short wave ranges, be sure NOT to adjust at the image frequency. This can be checked as follows: let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It will be necessary to increase the input signal to hear the image. The image frequency must always be 912 KC LESS than the frequency at which the set is aligned. This is true of all the short wave ranges.

It is very important that the bandspread ranges (B, C and D) be aligned at the precise frequencies given. If the accuracy of the signal generator is not known, it is always best to first calibrate the signal generator by using a receiver that is in good condition. First tune in a station of known frequency close to 12.05 MC. Then tune the signal generator until it "beats" with the station, carefully marking the setting of the generator. Proceed in the same manner for all the other alignment frequencies.

NOTE A—Turn tuner back and forth and adjust trimmer until peak of greatest intensity is reached.



DRIVE CORD REPLACEMENT

Turn drive shaft until cores are entirely within coil form. Pass cord through hole in tuning shaft and bring two ends together evenly. CAUTION—Cord must remain centered on shaft. Wind one part of cord two turns on tuning shaft in a counterclockwise direction (from front of chassis). These turns should progress away from chassis. Hold both parts of cord and withdraw cores from within coils slowly by turning the tuning shaft. One part of cord should progress towards chassis and the other away from the chassis. Unwind the inside cord from shaft. Then wind this cord two turns in a clockwise direction (from front of chassis). These turns should progress towards rear of chassis.

Pass this cord over idler pulley A—see illustration. Pass outer cord on tuning shaft over idler pulleys B, C, D and E, attaching it to tension spring. Secure other end of cord to opposite end of tension spring. This spring should be slightly stretched for tension.

ATTACHING DIAL POINTER

Turn tuning knob clockwise until extreme high frequency position is reached. (Cores completely out of coils.) Slip the pointer on the dial cord and move to high frequency end of dial scale. Carefully align pointer with end of printed scales and clamp securely into position.

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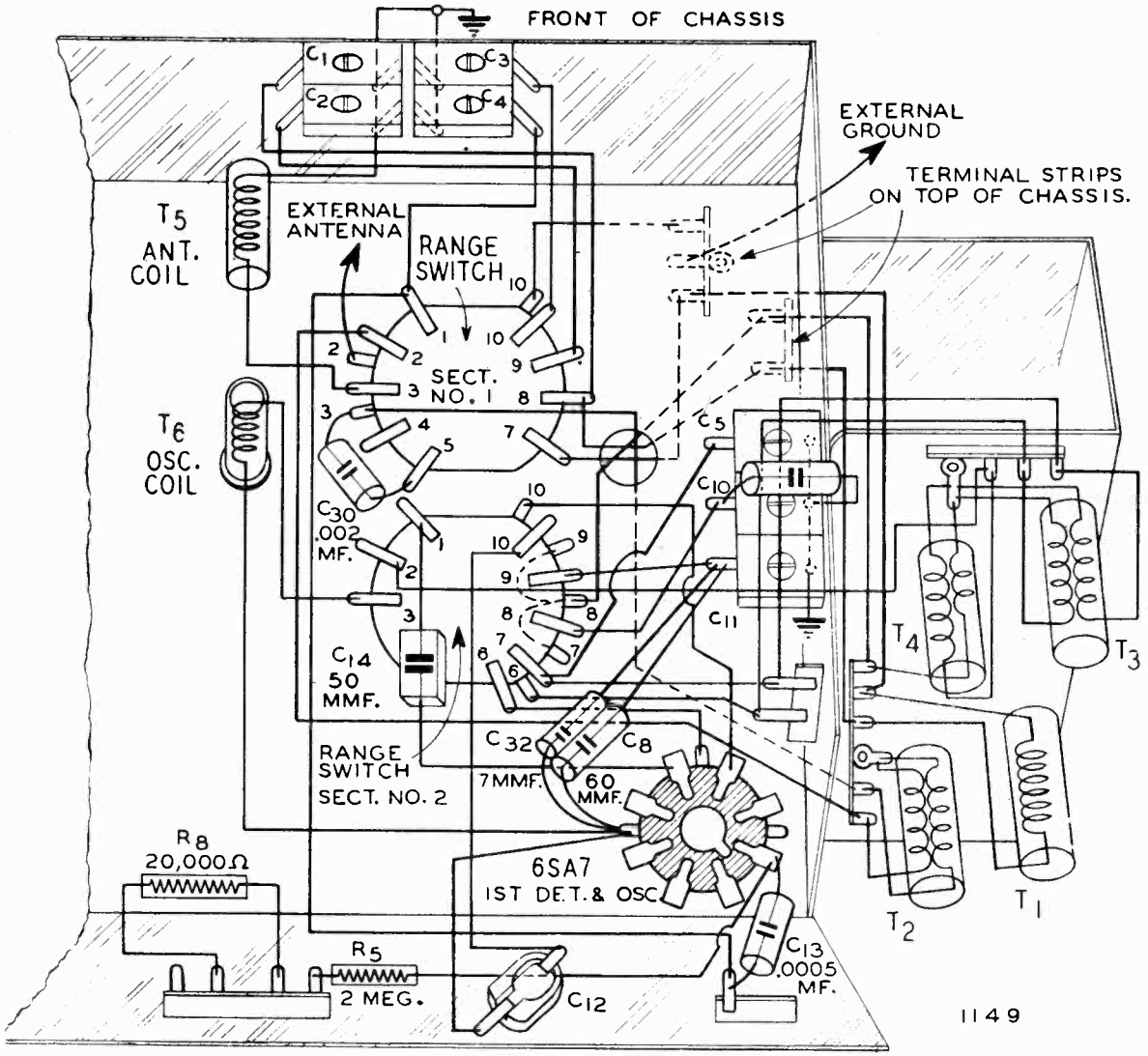
MODELS M103, M112, M116



ON SOME MODELS THE TRIMMER C_{12} IS REPLACED BY AN AIR TRIMMER MOUNTED NEAR THE OSCILLATOR TRIMMER STRIP. (ADJACENT TO C_{11})

Wiring Diagram for Coil System

SPECIFICATIONS

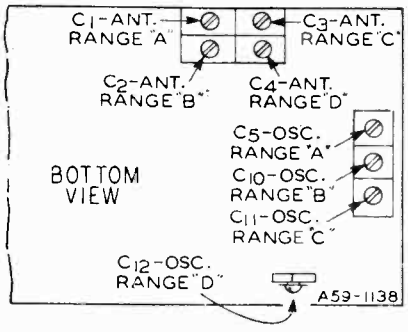
Power Consumption	60 Watts (at 120 volts 60 cycles) 75 Watts (motor operating) on Phono Combination Models
Power Output	2.7 Watts Undistorted 4.0 Watts Maximum
Selectivity	38 KC Broad at 1000 times Signal
Intermediate Frequency	456 KC
Speaker	6" Electro-Dynamic

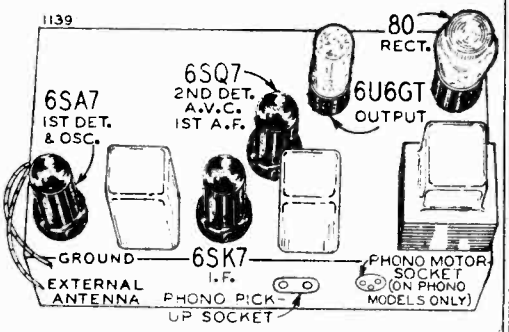
Tuning Frequency Range

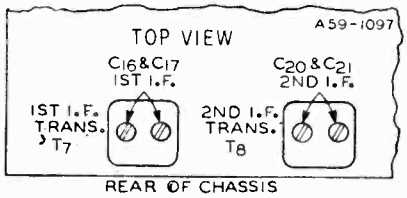
A Range	535 to 1610 KC
B Range	3.2 to 7.4 MC
C Range	8.3 to 12.05 MC
D Range	15.1 to 21.8 MC

Sensitivity (For 0.5 Watt Output)

A Range	25 Microvolts Average
B Range	40 Microvolts Average
C Range	35 Microvolts Average
D Range	25 Microvolts Average







ELECTRICAL SPECIFICATIONS

Type and Number of Tubes ..... 1 #6A7, 1 #6D6, 1 #75, 1 #43, 1 #25Z5, 1 #K49C - Total 6
Power Supply ..... 105 to 125 volt, D.C., or 105 to 125 volt, 50 to 60 cycle A.C.
Power Consumption ..... 47 Watts
Tuning Ranges ..... 540 to 1550 and 1500 to 3200 KC.
Maximum Output ..... .75 Watt
Maximum Undistorted Output ..... 1 Watt
Line-Up Frequencies ..... I.F. 465 KC., 1400 KC.

LINE-UP CAPACITOR ADJUSTMENTS

ADJUSTMENT OF I.F. (465 KC.)

1. Set volume control on full, the wave-change switch on the Broadcast (treble position) and the dial indicator at approximately 500 KC.
2. Connect output meter across voice coil of speaker.
3. Set test oscillator to 465 KC., and adjust its output to produce a measurable reading on output meter when test signal is applied to the grid of the 6D6 I.F. tube through a .5 mfd. blocking condenser.
4. Adjust #24 (see Fig. #2) to maximum output, reducing output of test oscillator as required.
5. Apply test signal to grid of 6A7 first detector-oscillator tube and adjust #13 and #15 (Fig. #1) to maximum output.
6. With test signal still on the grid of 6F7 tube, repeat the above adjustments for greatest sensitivity.
7. Apply strong 465 KC. signal to the antenna and adjust trap coil trimmer #3 to a minimum output.

ADJUSTMENT OF BROADCAST BAND

1. Apply test signal on grid of 6A7 tube and set the test oscillator to 1400 KC.
2. Turn the gang condenser to its maximum position. Adjust dial indicator until either end is directly over the long horizontal lines on the dial scale. Then set dial indicator to 1400 KC.
3. Adjust trimmer #7 to maximum output.
4. Apply test signal to antenna of set through a .0002 mfd. condenser and adjust trimmer #8 to maximum output.

ADJUSTMENT OF POLICE BAND

When adjustments as outlined under the Broadcast Band are completed, the Police Band requires no adjustment unless the coil has been changed. In this event, set test oscillator and station indicator to 1700 KC., and apply test signal to antenna lead. The Police Band winding is indicated by "A" in Fig. #2. Adjust the position of this winding by sliding it back and forth on the coil until maximum output is indicated on the output meter. This winding should then be secured in place by applying a thin coat of coil cement.

Dia. #	Part #	Description of Parts	List Price
1	CM 9519	.0005 mfd. mica condenser	$ .20
2	RC 95165	Antenna coil assembly	1.50
3		30-60 mmf. trimmer condenser - part of RC 95165	
4	SW 9562	Wave-change switch	.75
5	CW 2-10	.1 mfd., 200 V. condenser	.15
6	CW 6-10	.1 mfd., 600 V. condenser	.20
7		Trimmer condenser - part of CG 9547	
8		Trimmer condenser - part of CG 9547	
9	SA 106417	.0001 mfd. mica condenser	.20
10	RE 9581	50,000 ohm, 1/4 W. resistor	.15
11	CG 9547	Variable condenser - 2 gang	2.50
12	CM 9522	.00048 mfd. mica condenser	.20
13		35-130 mmf. trimmer condenser - part of IC 9586	
14	IC 9586	First I.F. coil - 465 KC.	2.00
15		35-130 mmf. trimmer condenser - part of IC 9586	
16	RE 9536	20,000 ohm, 1/4 W. resistor	.10
17	CW 2-10	.1 mfd., 200 V. condenser	.15
18	SA 105249	5000 ohm, 1/4 W. resistor	.15
19	RC 95166	Oscillator coil assembly	.70
20	CW 2-10	.1 mfd., 200 V. condenser	.15
21	CW 2-10	.1 mfd., 200 V. condenser	.15
22	RE 9570	180 ohm, 1/8 W. resistor	.10
23	CM 9519	.0005 mfd. mica condenser	.20
24		30-60 mmf. trimmer condenser - part of IC 9595	
25	IC 9595	Second I.F. coil - 465 KC.	1.60
26	SA 105279	.25 meg., 1/4 W. resistor	.15
27	CW 4-005	.005 mfd., 400 V. condenser	.15
28	CW 4-005	.005 mfd., 400 V. condenser	.15
29	RE 9572	500,000 ohm, 1/4 W. resistor	.15
30	VR 957	.5 meg. volume control	1.25
31	CW 2-10	.1 mfd., 200 V. condenser	.15
32	RE 9572	.5 meg , 1/4 W. resistor	.15
33	RE 9572	.5 meg., 1/4 W. resistor	.15
34	CW 9525	.1 mfd., 100 V. condenser	.40
35	CW 2-05	.05 mfd., 200 V. condenser	.15
36	CW 4-005	.005 mfd., 400 V. condenser	.15
37	TR 9583	Output transformer	1.25
38	DM 9514	Diaphragm and voice coil assembly	1.15
39	SK 9544	Speaker	4.50
40	RE 9572	.5 meg., 1/4 W. resistor	.15
41	CW 2-10	.1 mfd., 200 V. condenser	.15
42	RE 9572	.5 meg., 1/4 W. resistor	.15
43	CW 2-10	.1 mfd., 200 V. condenser	.15
44	LP 9516	Dial lamp, 6.3 V., .15 amp.	.20
45		On-off switch - part of VR 957	
46	CB 9512	Line cable	.50
47	RE 9564	25 ohm, 1/2 W. resistor	.20
48		Field coil	
49	SA 105311	Choke coil assembly	.95
50	CE 9545	20 mfd., 150 V. electrolytic condenser	.85
51	CE 9546	12 mfd., 150 V. electrolytic condenser	.85
52	RE 9566	25 ohm, 1/4 W. resistor	.15
55	SA 105277	75,000 ohm, 1/4 W. resistor	.15

MAIN ASSEMBLIES

	CH 95148	Chassis assembly	
SK 9544		Speaker	$ 4.50
KA 9569		Cabinet	

CABLES

CB 95128	Antenna cable	.10
PR 97160	Dial drive cable - 18"	Per Yard .05

TUBE SOCKETS & TUBE SHIELDS

CV 9560	Tube shield - plain top	.05
CV 9559	Tube shield - slotted top	.05
FP 105947	Tube shield ring	.05
SA 105461	Tube socket - 7 prong	.20
SA 104617	Tube socket - 6 prong	.20
SO 956	Tube socket - 8 prong	.20
BE 9536	Tube shield base	.05

SCREWS

SC 953	Mounting screw and felt foot	.05
SC 97061	Set screw - dial pulley	.05
SC 102441	Set screw - dial drive pulley	.05
SC 952	Dial indicator screw	.05
SC 958	Escutcheon plate screw	.05

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

The Model WR 103-A is the same as the Model WR 103, except for the following items:

Power Tube 25B6G
Power Consumption ..... 48 Watts
Maximum Output ..... 1.5 Watts
Maximum Undistorted Output ..... 1 Watt

Part #	Description of Parts	List Price
CH 95180	Chassis assembly	
SK 9549	Speaker	$ 4.50

Dia. #	Part #	Description of Parts	List Price
35	CW 2-10	.1 mfd., 200 V. condenser	$ .15
37	TR 9590	Output transformer	1.25
39	SK 9549	Speaker	4.50
47		Omitted	
50	CE 9553	40 mfd., 150 V. electrolytic condenser	.80
55	RE 95121	13 ohm, 1/2 W. resistor	.10
56	CM 952	.00001 mfd. mica condenser	.20
57	RE 95119	4 meg., 1/2 W. resistor	.10

MODEL WR103

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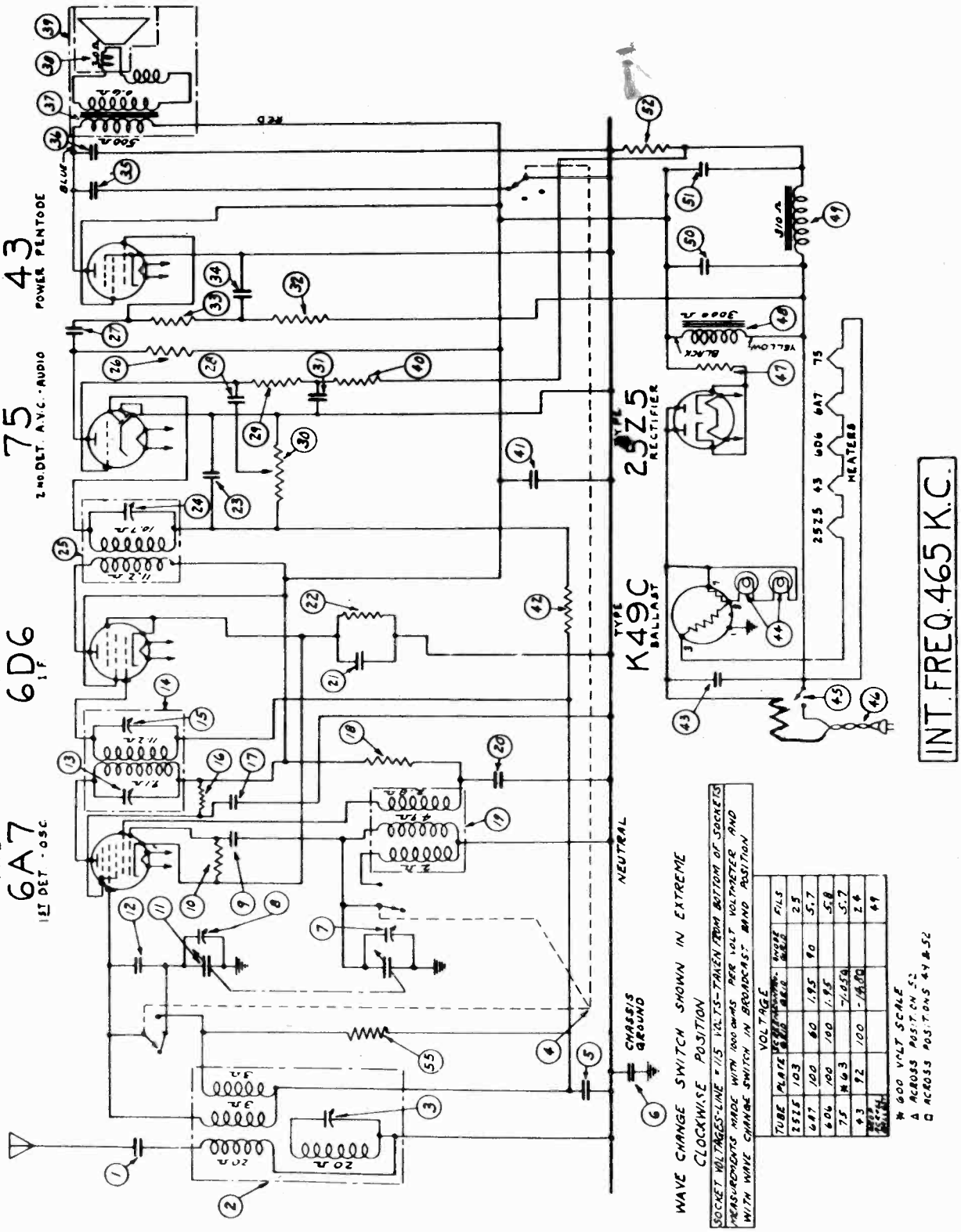

MODEL WR103

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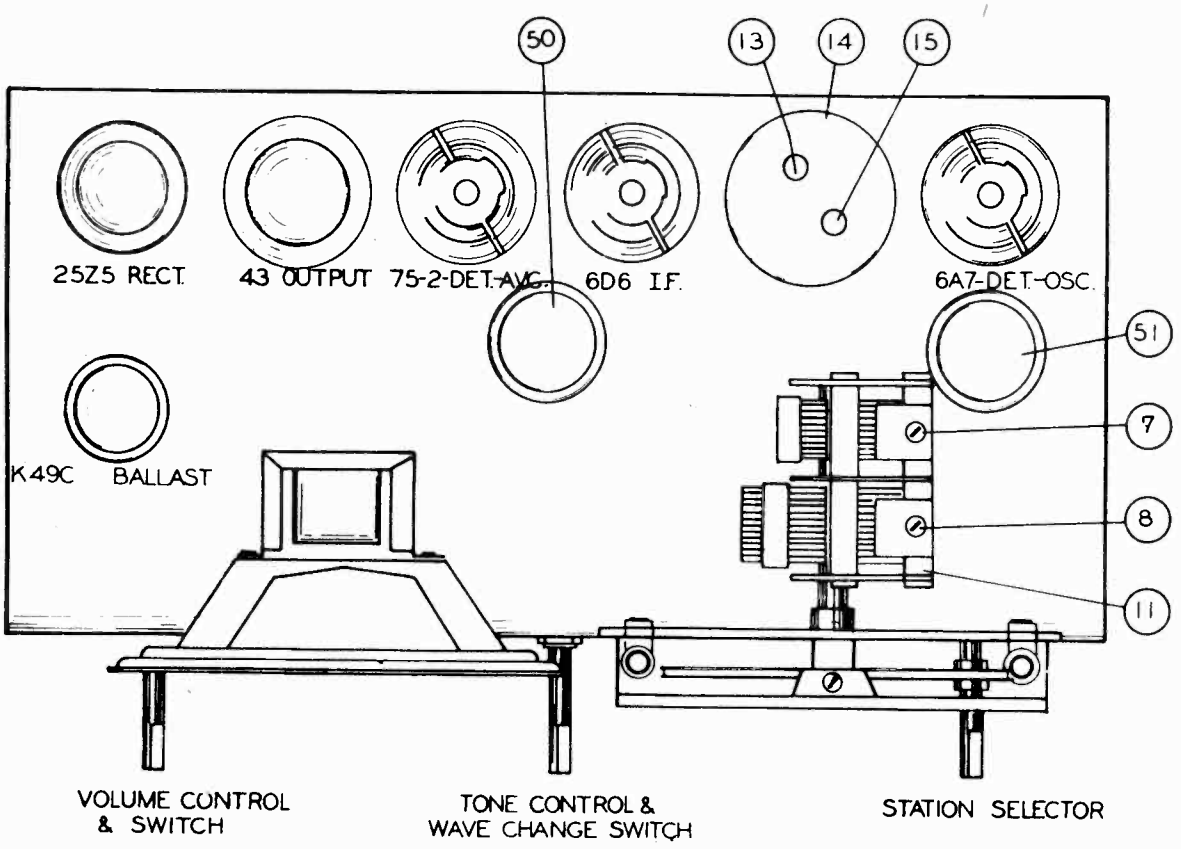

Figure No. 1

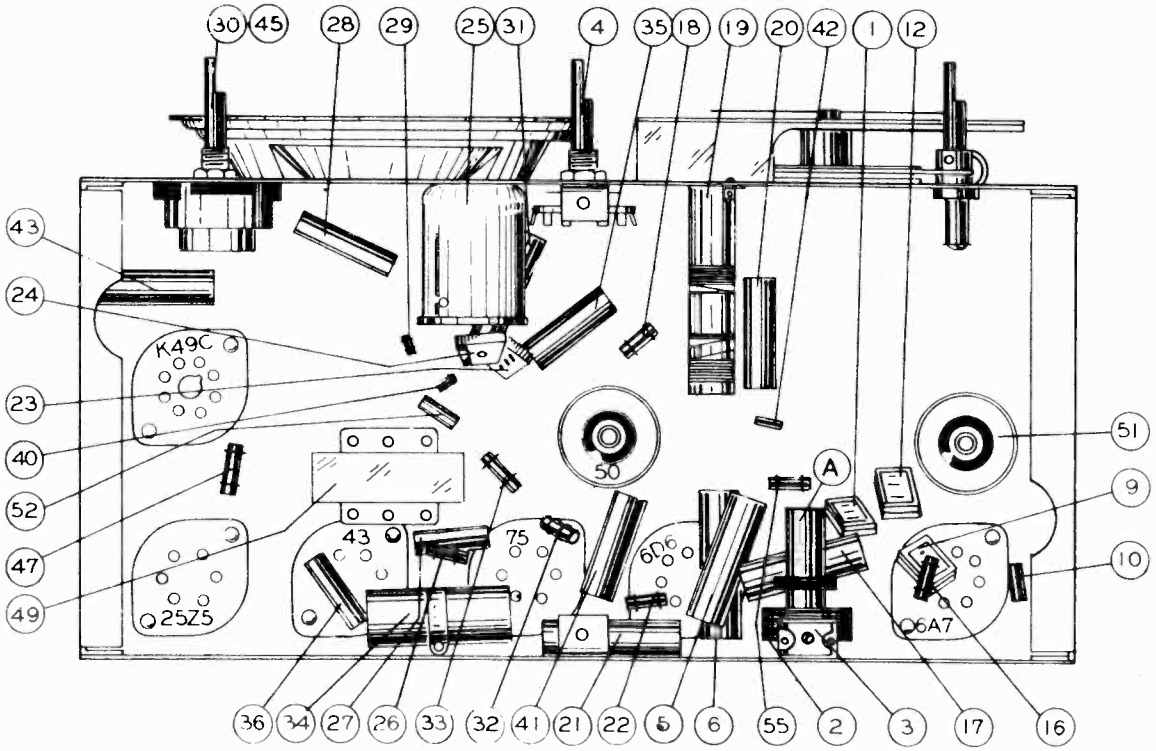

Figure No. 2

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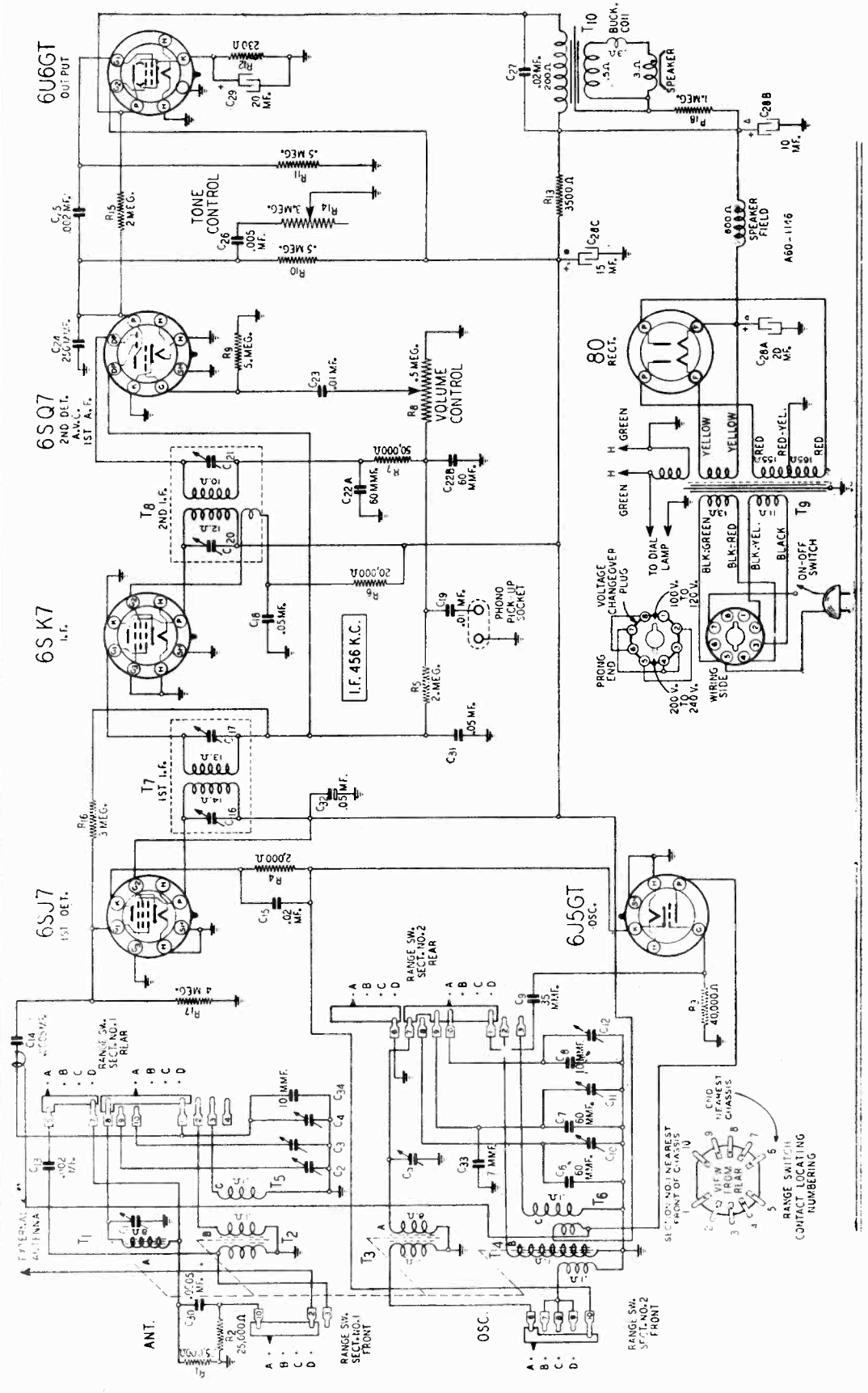


SPECIFICATIONS

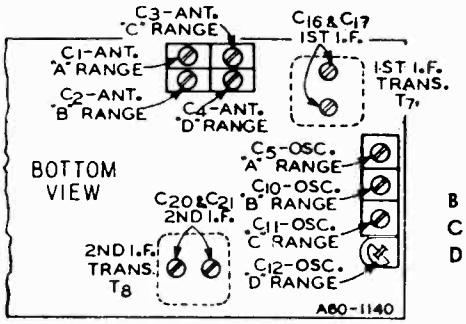
Power Consumption—(At 120 volts 60 cycles) - 65 Watts
Power Output - - - - - - - - - - 5 Watts Undistorted
7 Watts Maximum

Selectivity - - - - - 38 KC Broad at 1000 times Signal
Intermediate Frequency - - - - - - - - 456 KC
Speaker - - - - - - - - - 6" Electro-Dynamic

Range	Tuning Frequency Range	Sensitivity (For 0.5 Watt output)
A Range	535 to 1610 KC	10 Microvolts Average
B Range	3.2 to 7.4 MC	12 Microvolts Average
C Range	8.32 to 12.05 MC	12 Microvolts Average
D Range	15.0 to 22.0 MC	18 Microvolts Average

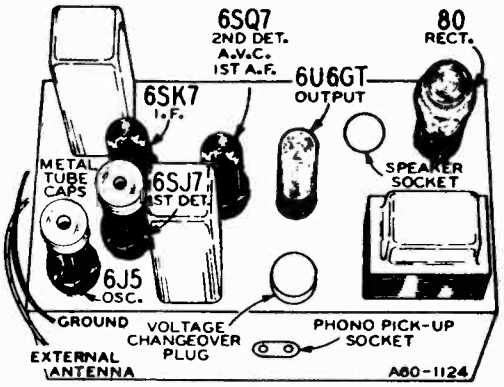
MODEL M108

WESTINGHOUSE ELEC. INTERNATIONAL CO



6 TUBE AC
4 RANGES

B Range 3.2 to 7.4 Megacycles
C Range 8.32 to 12.05 Megacycles
D Range 15.0 to 22.0 Megacycles

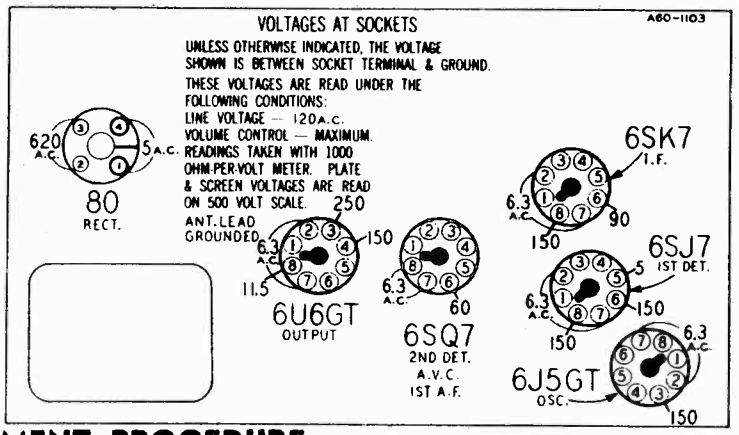


Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

CAUTION—When aligning the short wave ranges, be sure NOT to adjust at the image frequency. This can be checked as follows: let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It will be necessary to increase the input signal to hear the image. The image frequency must always be 912 KC LESS than the frequency at which the set is aligned. This is true of all the short wave ranges.

It is very important that the bandspread ranges (B, C and D) be aligned at the precise frequencies given. If the accuracy of the signal generator is not known, it is always best to first calibrate the signal generator by using a receiver that is in good condition. First tune in a station of known frequency close to 12.05 MC. Then tune the signal generator until it "beats" with the station, carefully marking the setting of the generator. Proceed in the same manner for all the other alignment frequencies.



NOTE A—Turn tuner back and forth and adjust trimmer until peak of greatest intensity is reached.

ALIGNMENT PROCEDURE

Before aligning make certain that dial pointer is adjusted properly as instructed under "Drive Cord Replacement" on page 5.
Volume Control—Maximum All Adjustments.
Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead
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 Antennas—.1 mf., 200 mmf., and 400 ohms. (Connect in series with Antenna lead.)

	SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	POINTER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.	456 KC	Antenna Lead	.1 mf.	A Range	Turn Tuning Knob until Extreme High Frequency Position Is Reached	2nd I.F. (C20) & (C21) 1st I.F. (C16) & (C17)
RANGE D	21.8 MC	Antenna Lead	400 Ohm	D Range	Same as Above	Oscillator Range D (C12)
	Reset to 20.0 MC	Antenna Lead	400 Ohm	D Range	Turn Tuner to Max. Output	Antenna Range D (C4) Rock Tuner—See Note A
RANGE C	12.05 MC	Antenna Lead	400 Ohm	C Range	Extreme High Frequency Position	Oscillator Range C (C11)
	Reset to 11.5 MC	Antenna Lead	400 Ohm	C Range	Turn Tuner to Max. Output	Antenna Range C (C3) Rock Tuner—See Note A
RANGE B	7.4 MC	Antenna Lead	400 Ohm	B Range	Extreme High Frequency Position	Oscillator Range B (C10)
	Reset to 7.0 MC	Antenna Lead	400 Ohm	B Range	Turn Tuner to Max. Output	Antenna Range B (C2) Rock Tuner—See Note A
RANGE A	1610 KC	Antenna Lead	200 mmf.	A Range	Extreme High Frequency Position	Oscillator Range A (C5) Antenna Range A (C1)

ADJUSTMENT TO VARIOUS LINE VOLTAGES

An accurate AC voltmeter should be used to measure the line voltage before installing the radio.

CAUTION—Never make any of the following power transformer adjustments without first withdrawing the plug on the end of the power cord from the receptacle.

OPERATION ON LINE VOLTAGE OF 200 TO 250 VOLTS, 50-60 CYCLES

When shipped from the factory, these radios are adjusted for a line voltage of 200 to 250 volts.

Care should be taken to see that the voltage changer plug (see tube arrangement illustration) is so inserted in the voltage changer socket that the white dot is adjacent to the "220 Volt" marking on the chassis.

TO ADJUST THE RECEIVER FOR A LINE VOLTAGE OF 100 TO 125 VOLTS, 50 60 CYCLES

Remove the voltage changer plug and reinsert it so that the white dot is adjacent to the "110 Volt" marking on the chassis.

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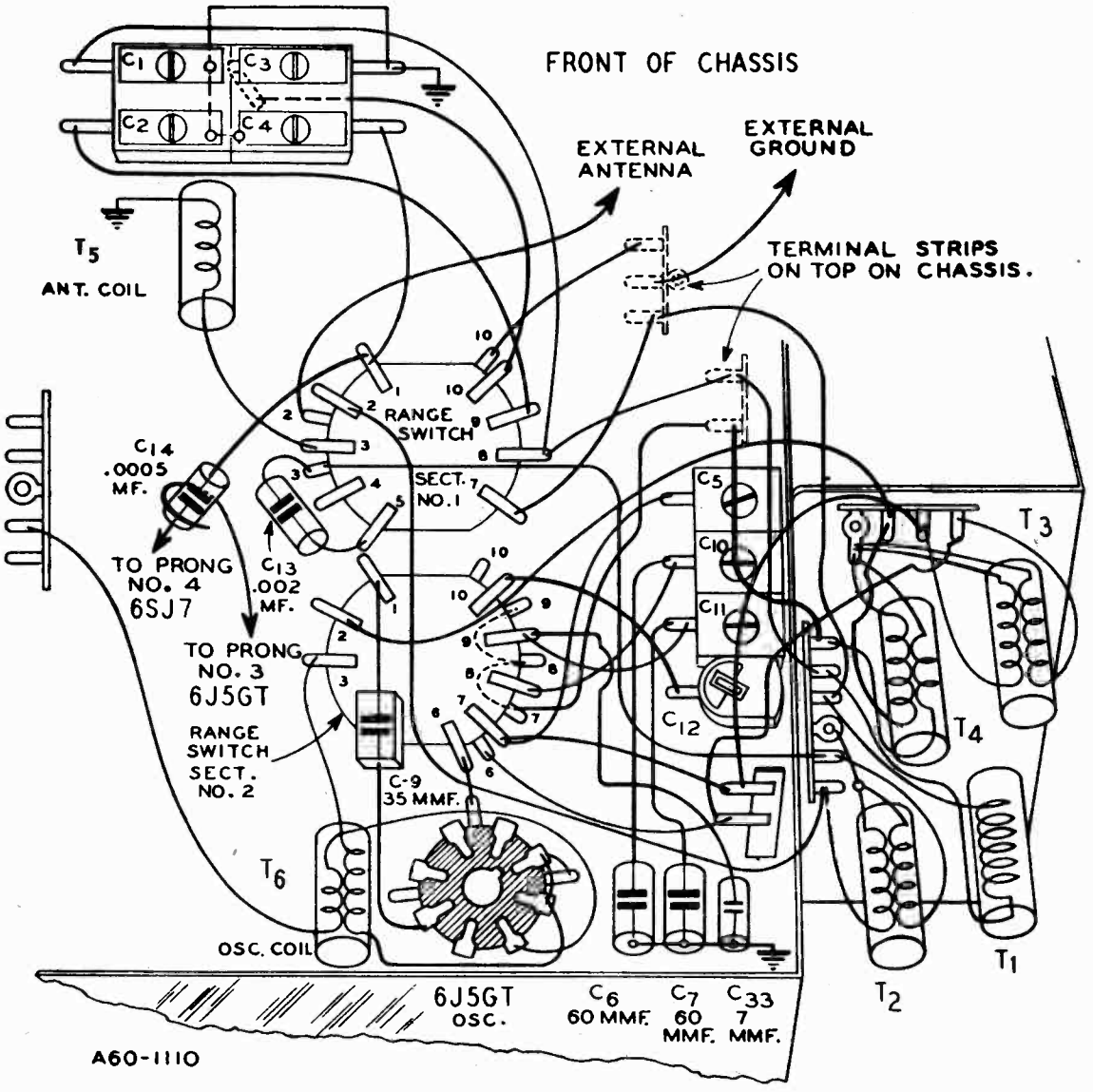


Wiring Diagram for Coil System

DRIVE CORD REPLACEMENT

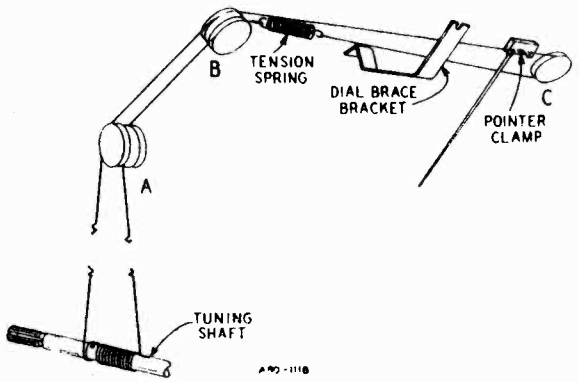
Turn drive shaft until cores are entirely within coil forms. Pass cord through hole in tuning shaft and bring two ends together evenly. CAUTION—Cord must remain centered on shaft. Wind one part of cord two turns on tuning shaft in a counter-clockwise direction (from front of chassis). These turns should progress away from chassis. Hold both parts of cord and withdraw cores from within coils slowly by turning the tuning shaft. One part of cord should progress towards chassis and the other away from the chassis. Unwind the inside cord from shaft. Then wind this cord two turns in a clockwise direction (from front of chassis). These turns should progress towards rear of chassis.

Pass cord, progressing away from chassis, over inside idler pulley A and outside idler pulley B—See illustration. Wind cord around dial brace bracket. Pass the outside cord from tuning shaft to outside idler pulley A to inside idler pulley B and over idler pulley C. Attach tension spring to end of cord.

Unwind cord from dial brace bracket and attach to other end of spring. The spring should be slightly stretched for tension.

ATTACHING DIAL POINTER

Turn tuning knob clockwise until high frequency position is reached. (Cores completely out of coils.) Slip pointer on the dial cord and move to high frequency end of dial scale. Carefully align pointer with the round dots at the end of each scale and clamp it securely into position.



MODELS M110, M114

WESTINGHOUSE ELEC. INTERNATIONAL CO.

Power Consumption—(At 110 volts 60 cycles)
M-110 - - - - - - 100 Watts
M-114 - - - - - - 110 Watts
Power Output - - - - - - - 10.0 Watts Undistorted
14.0 Watts Maximum
Selectivity - - - - 30 KC Broad at 1000 times Signal
Intermediate Frequency - - - - - - - - 456 KC
Speaker - - - - M-110....10" Electro-Dynamic
M-114....12" Electro-Dynamic

Range	Tuning Frequency Range	Sensitivity (For 0.5 Watt output)
A Range	528 to 1610 KC	3 Microvolts Average
B Range	2.3 to 7.5 MC	3 Microvolts Average
C Range	8.4 to 12.0 MC	3 Microvolts Average
D Range	12.5 to 15.40 MC	3 Microvolts Average
E Range	17.6 to 21.8 MC	5 Microvolts Average

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Never align with Selectivity Switch (on Tone Control) in Hi-Fidel. position.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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

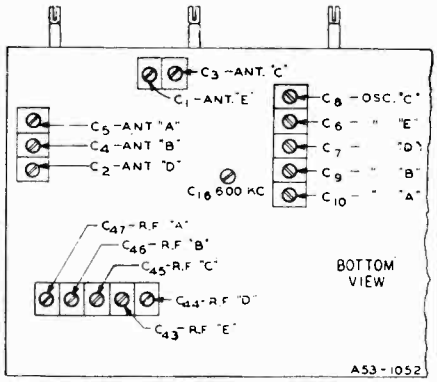
The following equipment is required for aligning:

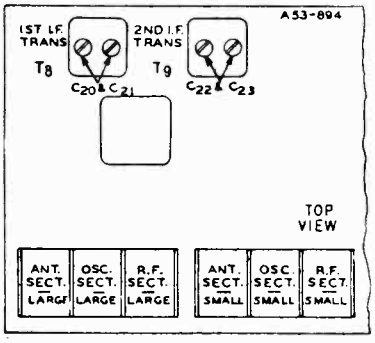
An All Wave Signal Generator which will provide an **accurately calibrated** signal at the test frequencies as listed.

Output Indicating Meter — Non-Metallic Screwdriver.

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

SIGNAL GENERATOR FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F. 456 KC	Stator of R.F. Section on Large Gang Condenser	.1 mf.	A Range	Turn Rotor to Full Open	2nd I.F. (C22) & (C23) 1st I.F. (C20) & (C21)
RANGE A					
1610 KC	Antenna Lead	200 mmf.	A Range	Turn Rotor to Full Open	Oscillator Range A (C10)
1400 KC	Antenna Lead	200 mmf.	A Range	Turn Rotor to Max. Output Set Indicator to 1400 KC—See Note A	Ant. Range A (C5) R.F. Range A (C47)
600 KC	Antenna Lead	200 mmf.	A Range	Turn Rotor to Max. Output	600 KC (C16) Rock Rotor—See Note B
RANGE B					
7000 KC	Antenna Lead	400 Ohm	B Range	Set Dial to 7.0 MC	Oscillator Range B (C9)
7000 KC	Antenna Lead	400 Ohm	B Range	Leave Dial at 7.0 MC	Ant. Range B (C4) R.F. Range B (C46) Rock Rotor—See Note B
RANGE C					
12,000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C8)
11,900 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Ant. Range C (C3) R.F. Range C (C45) Rock Rotor—See Note B
RANGE D					
15,400 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C7)
15,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C2) R.F. Range D (C44) Rock Rotor—See Note B
RANGE E					
21,800 KC	Antenna Lead	400 Ohm	E Range	Turn Rotor to Full Open	Oscillator Range E (C6)
21,500 KC	Antenna Lead	400 Ohm	E Range	Turn Rotor to Max. Output	Ant. Range E (C1) R.F. Range E (C43) Rock Rotor—See Note B





Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1400 KC on the dial, remove cord clamp, correct pointer position, then replace cord clamp astride pointer on both drive cords.

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

CAUTION — When aligning the short wave ranges, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It will be necessary to increase the input signal to hear the image. The image frequency must always be 912 KC LESS than the frequency at which the set is aligned. This is true of all the shortwave ranges.

It is very important that the bandspread ranges (C, D and E) be aligned at the precise frequencies given. If the accuracy of the signal generator is not known, it is always best to first calibrate the signal generator by using a receiver that is in good condition. First tune in a station of known frequency close to 11,900 KC. Then tune the signal generator until it "beats" with the station, carefully marking the setting of the generator. Proceed in the same manner for the other alignment frequencies: 12000, 15000, 15400, 21500 and 21800 KC.

SHORT WAVE RANGES

B Range 2.3 to 7.5 Megacycles

C Range 8.4 to 12.0 Megacycles

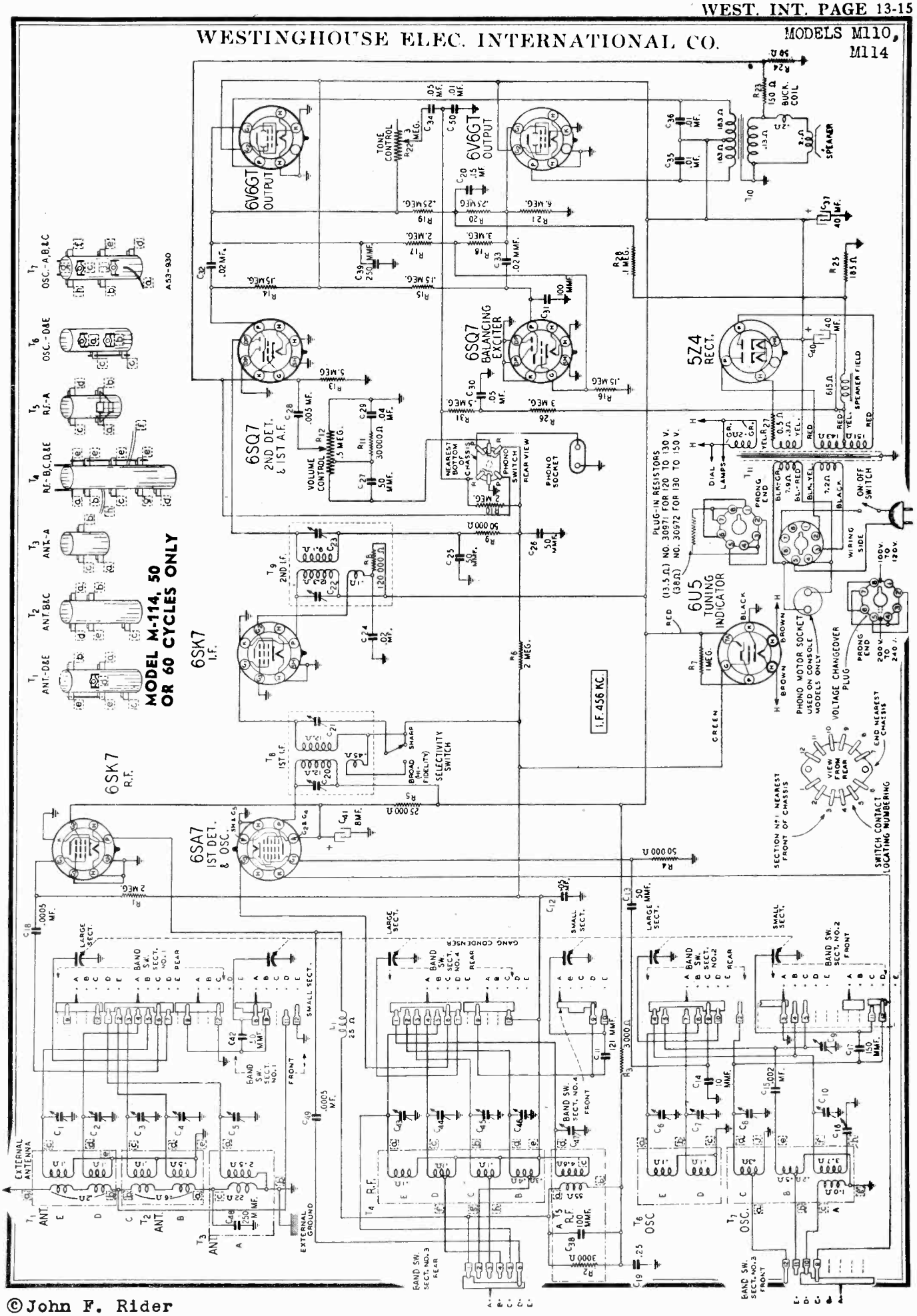
D Range 12.5 to 15.4 Megacycles

E Range 17.6 to 21.8 Megacycles

MODEL M-110 WITH 110-220 VOLT TRANSFORMER

An accurate AC voltmeter should be used to measure the line voltage before installing the radio.

CAUTION—Never make any of the following power transformer adjustments without first withdrawing the plug on the end of the power cord from the receptacle.



MODELS M110, M114

WESTINGHOUSE ELEC. INTERNATIONAL CO

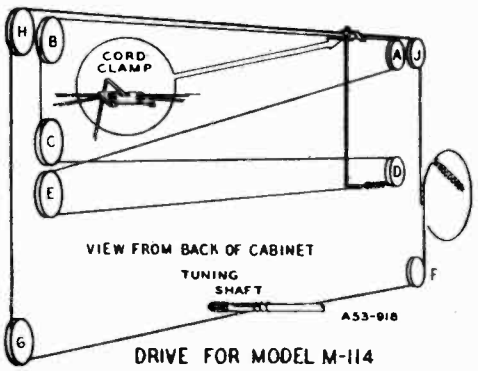
DRIVE CORD REPLACEMENT

MODEL M-110

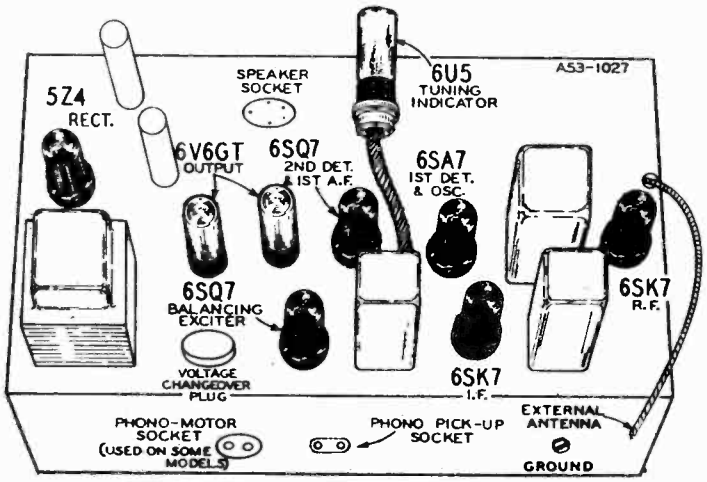
TO REPLACE DRIVE CORD AT BACK OF DIAL MOUNTING PLATE—Tie one end of new drive cord to each end of tension spring (length of doubled cord should be 29½ inches). Place cord over pulleys A and B so that tension spring is between these pulleys—See illustration. Continue left-hand section of cord around pulleys C and D. Loop remainder of cord over pulley E.

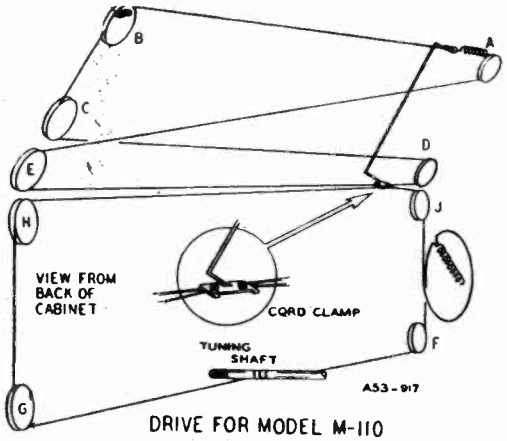
TO REPLACE DRIVE CORD AT FRONT OF CHASSIS—Turn gang condenser to closed position. Tie both ends of new drive cord to one end of tension spring (length of doubled drive cord should be 38½ inches). Hook free end of spring in hole just below and to left of hub on gang condenser drive pulley. Pass cord through slot in pulley rim. Wind one section of cord around drive pulley toward front of chassis and continue under pulley F. Wind 3 turns counter-clockwise (from front of chassis) around tuning shaft. Turns should progress away from chassis. Continue cord over pulleys G, H and J. Stretch tension spring. Wind remainder of cord around the gang condenser drive pulley.

Calibration—Tightly fasten top of pointer to drive cord at left of tension spring on dial mounting plate. Tune in a station of known frequency. Move pointer to correct frequency by moving dial plate cord. Tightly fasten bottom of pointer to dial plate cord only. Assemble cord clamp on both cords as shown in illustration.

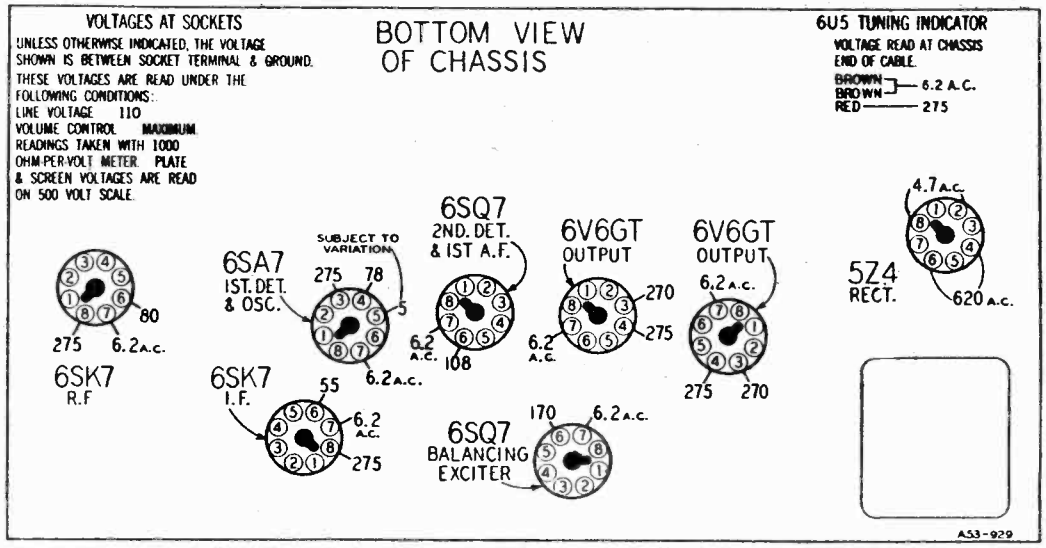


DRIVE FOR MODEL M-114



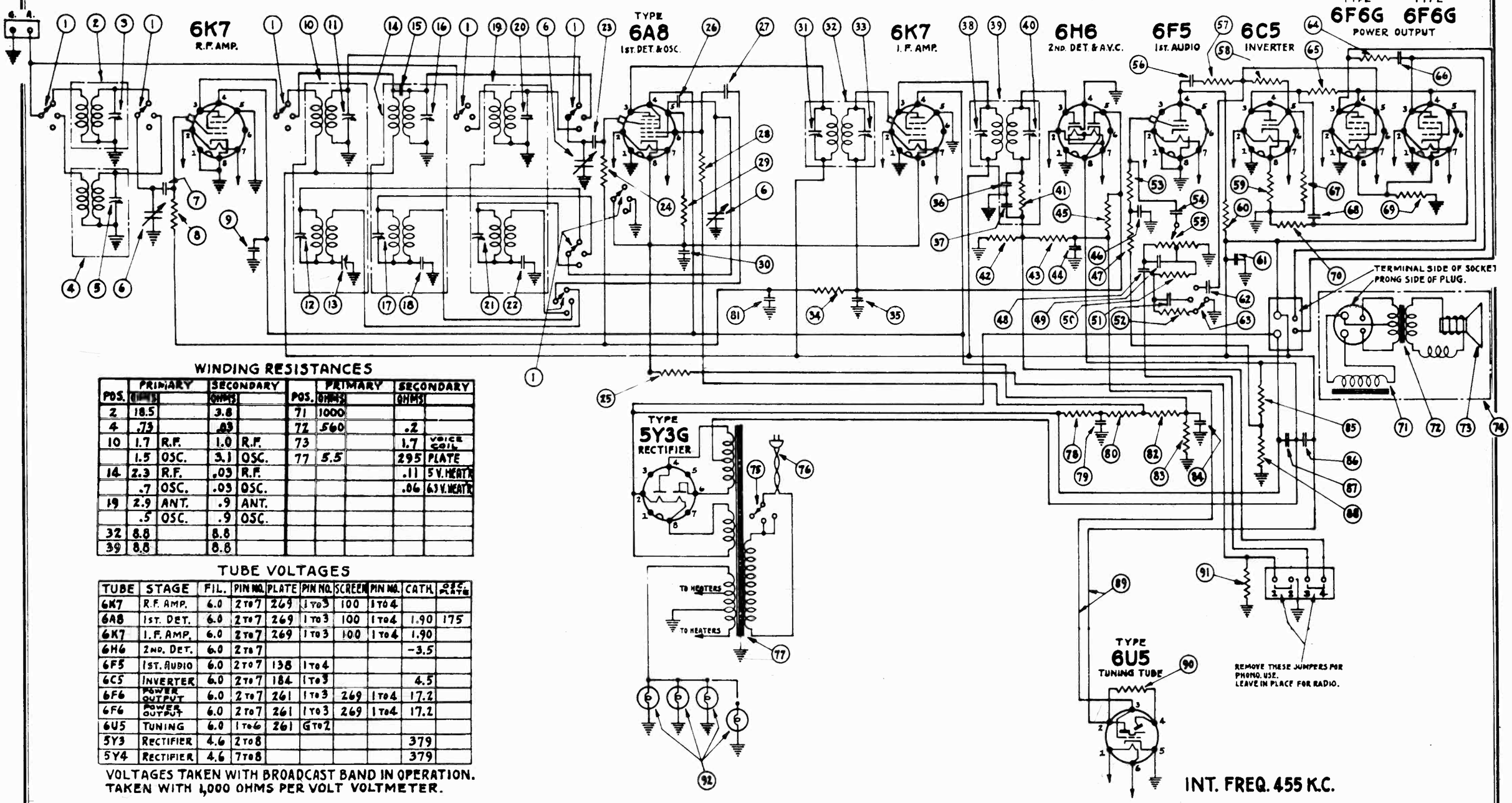


DRIVE FOR MODEL M-110



WESTINGHOUSE ELEC. INTERNATIONAL CO.

WESTINGHOUSE RADIO MODEL WR-330



WINDING RESISTANCES

POS.	PRIMARY (OHMS)		SECONDARY (OHMS)		POS.	PRIMARY (OHMS)		SECONDARY (OHMS)	
2	18.5		3.8		71	1000			
4	.73		.03		72	560		.2	
10	1.7	R.F.	1.0	R.F.	73			1.7	VOICE COIL
	1.5	OSC.	3.1	OSC.	77	5.5		295	PLATE
14	2.3	R.F.	.03	R.F.				.11	5 V. HEATR
	.7	OSC.	.03	OSC.				.06	6.3 V. HEATR
19	2.9	ANT.	.9	ANT.					
	.5	OSC.	.9	OSC.					
32	8.8		8.8						
39	8.8		8.8						

TUBE VOLTAGES

TUBE	STAGE	FIL.	PIN NO.	PLATE	PIN NO.	SCREEN	PIN NO.	CATH.	OSC. PLATE
6K7	R.F. AMP.	6.0	2 TO 7	269	1 TO 3	100	1 TO 4		
6A8	1ST. DET.	6.0	2 TO 7	269	1 TO 3	100	1 TO 4	1.90	175
6K7	I.F. AMP.	6.0	2 TO 7	269	1 TO 3	100	1 TO 4	1.90	
6H6	2ND. DET.	6.0	2 TO 7					-3.5	
6F5	1ST. AUDIO	6.0	2 TO 7	138	1 TO 4				
6C5	INVERTER	6.0	2 TO 7	184	1 TO 3			4.5	
6F6	POWER OUTPUT	6.0	2 TO 7	261	1 TO 3	269	1 TO 4	17.2	
6F6	POWER OUTPUT	6.0	2 TO 7	261	1 TO 3	269	1 TO 4	17.2	
6U5	TUNING	6.0	1 TO 6	261	G TO 2				
5Y3	RECTIFIER	4.6	2 TO 8					379	
5Y4	RECTIFIER	4.6	7 TO 8					379	

VOLTAGES TAKEN WITH BROADCAST BAND IN OPERATION.
TAKEN WITH 1,000 OHMS PER VOLT VOLTMETER.

WESTINGHOUSE ELEC. INTERNATIONAL CO.

MODEL WR330

Dia. #	Part #	Description of Parts	List Price
61	CW 4-10	.1 mfd., 400 V. condenser	$ .15
62	CW 4-01	.01 mfd., 400 V condenser	.15
63	SW 9578	Tone control switch	.60
64	RE 223522	22,000 ohm, 2 W. resistor	.30
65	RE 1033	10,000 ohm, 1/2 W. resistor	.10
66	CW 6-001	.001 mfd., 600 V. condenser	.15
67	RE 6833	68,000 ohm, 1/2 W. resistor	.10
68	CW 4-02	.02 mfd., 400 V. condenser	.15
69	RE 2715122	270 ohm, 2 W. resistor	.30
70	RE 4743	470,000 ohm, 1/2 W. resistor	.10
71	CL 9572	Speaker field coil	3.00
72	TR 95150	Speaker output transformer	3.00
73	DW 9528	Speaker diaphragm assembly (12")	5.00
74	SK 9585	Speaker complete (12")	11.00
75	SW 9577	Line switch and plug assembly	.55
76	CB 9512	Power transformer 105-125 volts, 50-60 cycles	6.75
77	RE 682522	6800 ohm, 2 W. resistor	.30
78	CE 9528	8 mfd., 450 V. electrolytic condenser	.80
79	RE 1033522	10,000 ohm, 2 W. resistor	.30
80	CW 4-05	.05 mfd., 400 V. condenser	.15
81	RE 1033	10,000 ohm, 1/2 W. resistor	.10
82	RE 6833	68000 ohm, 1/2 W. resistor	.10
83	CW 4-50	.5 mfd., 400 V. condenser	.30
84	RE 1803	18 ohm, 1/2 W. resistor	.10
85	CE 9562	18 mfd., 300 V. electrolytic condenser	.80
86	CE 9554	18 mfd., 450 V. electrolytic condenser	.85
87	RE 1803	18 ohm, 1/2 W. resistor	.10
88	CB 95151	Cable and socket for tuning tube	.90
89		Image resistor - part of CB 95151	.10
90	RE 223522	22,000 ohm, 2 W. resistor	.30
91	LP 9510	Dial light - 6.3 V., .25 amp.	.15
92			

MISCELLANEOUS

	BK 95182	Electrolytic condenser mounting bracket	.05
	CV 95226	I.F. coil cover	.55
	DS 95104	Dial scale	3.25
	FP 108003	Felt washer under knobs	.05
	GE 9528	Small brass drive gear	.10
	GE 9531	Intermediate gear assembly (2 brass, 1 steel)	.75
	HP 9523	Tuning tube holder	.20
	IS 1002	Rubber mounting bushings (gang condenser)	.06
	IS 9593	Antenna and ground terminal	.20
	IS 95226	Phono-jack terminal	.25
	IS 95234	Rubber bushing (tuning tube)	.10
	KA 95101	Cabinet	
	KN 95130	Tuning knob (vernier)	.35
	KN 95131	Knob push on type	.15
	KN 95135	Knob - set-screw type	.15
	NT 958	3/8" Pal nut	.05
	PL 95113	Escutcheon dial plate	5.00
	PL 95136	Large tuning knob	1.25
	PR 97160	Indicator drive cord per yard	.05
	PU 9534	Indicator drive pulleys	.40
	SA 107257	Socket (speaker)	.10
	SH 9555	Brass drive shaft	.20
	SH 9558	Large gear and steel shaft	1.75
	SH 9559	2 large gears, shaft and pointer bracket assembly	1.50
	SH 9561	Wave change switch shaft	.80
	SI 9580	Dial pointer	.20
	SI 9588	Wave band indicator	.60
	SI 9590	On-Off indicator	.60
	SO 956	Socket (octal 9 used)	.20
	SO 9537	Dial lamp socket	.15
	SP 9544	Spring (indicator drive cord)	.05
	SP 9564	Gang drive spring and collar	.40
	TU 95172	Insulation for electrolytic condenser	.05

Type and Number of Tubes .. 1 #6K7, 1 #6A8, 1 #6K7, 1 #6H6, 1 #6F5, 1 #6G5, 2 #6F66, 1 #5Y3G, 1 #6U5 - Total 10

Power Supply ..... 105-125 volts, 50-60 cycle A.C.

Power Consumption ..... 100 Watts

Maximum Output ..... 10 Watts

Maximum Undistorted Output ..... 5.5 Watts

Tuning Ranges ..... (Broadcast Band 535-1,800 KC.
(1st Short-wave Band 1,770-6,000 KC.
(2nd Short-wave Band 5,860-18,500 KC.

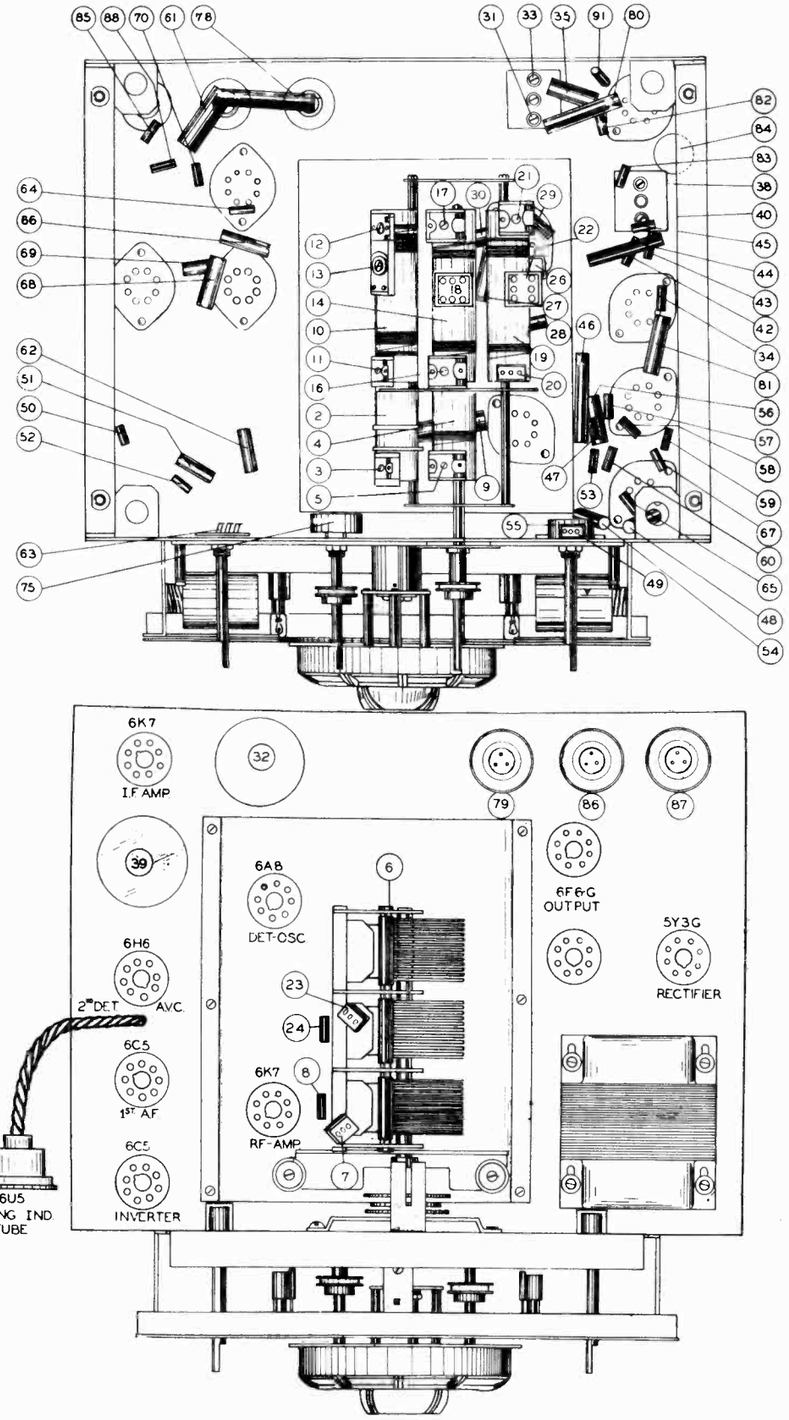
Line-Up Frequencies ..... I.F. 455 KC., 1500 KC., 600 KC., 6000 KC., 15,500 KC.

Dia. #	Part #	Description of Parts	List Price
1	SW 9586	Wave change switch assembly	$ 2.00
2	RC 95311	S.C. antenna coil assembly	1.10
3		4-35 mmf. trimmer - part of RC 95311	
4	RC 95312	S.W. antenna coil assembly	.75
5		4-35 mmf. trimmer - part of RC 95312	
6	CG 9566	Variable condenser gang	5.50
7	CM 9519	.0005 mfd. mica condenser	.20
8	RE 1043	100,000 ohm, 1/2 W. resistor	.10
9	CW 4-10	.1 mfd., 400 V. condenser	.15
10	RC 95317	B.C. composite coil assembly	2.00
11		4-35 mmf. trimmer - part of RC 95317	
12		5-25 mmf. trimmer - part of RC 95317	
13		300-600 mmf. trimmer - part of RC 95317	
14	RC 95315	S.W. composite coil assembly	2.00
15		10 mmf. mica condenser - part of RC 95315.	
16-17		4-35 mmf. trimmers - part of RC 95315	
18	RC 95314	3400 mmf. mica condenser - part of RC 95315	1.75
19		Police composite coil assembly	
20		10 mmf. mica condenser - part of RC 95314	
21		4-35 mmf. trimmer - part of RC 95314	
22		1100 mmf. mica condenser - part of RC 95314	
23	CM 9519	.0005 mfd. mica condenser	.10
24	RE 1043	100,000 ohm, 1/2 W. resistor	.10
25	RE 1513	150 ohm, 1/2 W. resistor	.10
26	CM 9517	.0001 mfd. mica condenser	.15
27	CW 4-01	.01 mfd., 400 V. condenser	.12
28	RE 562412	5,600 ohm, 1 W. resistor	.10
29	RE 4733	47,000 ohm, 1/2 W. resistor	.15
30	CW 2-05	.05 mfd., 200 V. condenser	
31-33		80-200 mmf. trimmers - part of IC 95119	1.60
32	IC 95119	1st I.F. transformer	.10
34	RE 4743	470,000 ohm, 1/2 W. resistor	.15
35	CW 4-05	.05 mfd., 400 V. condenser	
36-37		100 mmf. mica condenser - part of IC 95121	
38-40		80-200 mmf. trimmers - part of IC 95121	
39	IC 95121	2nd I.F. transformer	1.80
41	RE 4733	47,000 ohm, 1/2 W. resistor	.10
42	RE 4743	470,000 ohm, 1/2 W. resistor	.10
43	RE 1055	1 meg., 1/2 W. resistor	.15
44	CW 4-10	.1 mfd., 400 V. condenser	.10
45	RE 1055	1 meg., 1/2 W. resistor	.15
46	CW 4-10	.1 mfd., 400 V. condenser	.10
47	RE 4743	470,000 ohm, 1/2 W. resistor	.15
48	CW 4-02	.02 mfd., 400 V. condenser	.15
49	CM 9518	75 mmf. mica condenser	.15
50	RE 1043	100,000 ohm, 1/2 W. resistor	.10
51	CW 6-002	.002 mfd., 600 V. condenser	.15
52	RE 1043	100,000 ohm, 1/2 W. resistor	.10
53	RE 2255	2.2 meg., 1/2 W. resistor	.10
54	CW 4-02	.02 mfd., 400 V. condenser	.10
55	VR 9555	2 meg. - mid tapped volume control	.90
56	CW 4-02	.02 mfd., 400 V. condenser	.15
57	RE 4703	47,000 ohm, 1/2 W. resistor	.10
58	RE 3943	390,000 ohm, 1/2 W. resistor	.10
59	RE 5613	560 ohm, 1/2 W. resistor	.10
60	RE 2243	220,000 ohm, 1/2 W. resistor	.10

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODEL WR330

WESTINGHOUSE ELEC. INTERNATIONAL CO.



WESTINGHOUSE ELEC. INTERNATIONAL CO. MODEL WR330

GENERAL DESCRIPTION

This model is a ten-tube, A.C. three-band superheterodyne receiver, designed for complete coverage from 535 to 18,500 KC.

The circuits of the receiver comprise an R.F. amplifier, a combined detector-oscillator, an I.F. amplifier, a combined 2nd detector and automatic volume control, an audio amplifier, an inverter, power output, a rectifier and a tuning tube.

The R.F. amplifier and detector-oscillator with the associated parts, including the gang condenser, coils, trimmer and lag condensers and wave-change switch, is mounted on the chassis as a unit.

The radio circuit proper is the same for the manual and electric drive models.

LINE-UP CAPACITOR ADJUSTMENTS

To align the circuits of this receiver, it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied with absence from overload, when the individual circuits of the receiver are brought into alignment. A conventional output meter should be connected across the terminals of the speaker voice coil to indicate when the circuits are aligned. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in Figures #1 and #2 and should be carefully studied before the actual work is started.

ADJUSTMENT OF I.F. (455 KC.)

1. Set the volume control on full, the wave-change switch to the broadcast position and the dial indicator to approximately 600 KC.

2. Set test oscillator to 455 KC., and adjust its output to produce a measurable reading on output meter when test signal is applied to grid of detector-oscillator tube through a .5 mfd. blocking condenser.

3. Set test oscillator to 455 KC., and adjust its output to produce a measurable reading on output meter when test signal is applied to grid of detector-oscillator tube through a .5 mfd. blocking condenser.

4. Adjust I.F. trimmers #31, #33, #38, and #40 to maximum output, reducing output of test oscillator as required.

ADJUSTMENT OF BROADCAST BAND

1. With the gang condenser fully in mesh, check the dial pointer, which should be at the horizontal line on the end of the scale.

2. Set test oscillator and dial indicator to 1500 KC.

3. With signal still applied to grid of detector-oscillator tube, adjust oscillator trimmer #12.

4. Apply test signal to antenna terminal of chassis through a .0002 mfd. series condenser and adjust R.F. and antenna trimmers #11 and #3.

5. Set test oscillator and dial indicator to 600 KC., and adjust oscillator series (lag) condenser #13, at the same time tuning the gang back and forth slightly, until a maximum is reached.

6. Set the test oscillator and dial indicator at 1500 KC., and recheck the oscillator, R.F. and antenna trimmers #12, #11 and #3.

7. Check sensitivity and calibration over the scale.

NOTE: In adjusting the two short-wave bands, a .0002 mfd. condenser and a 400 ohm resistor in series should be inserted between the antenna terminal and the high side of the test oscillator. This combination is the approximate equivalent of a short-wave antenna.

ADJUSTMENT OF 1st SHORT-WAVE BAND

1. Set wave-change switch to 1st short-wave position.

2. Set test oscillator and dial indicator to 5000 KC.

3. With the condenser-resistor combination connected to the chassis antenna terminal, adjust oscillator trimmer #21.

ADJUSTMENT OF 2nd SHORT-WAVE BAND

1. Set wave-change switch to the 2nd short-wave position.

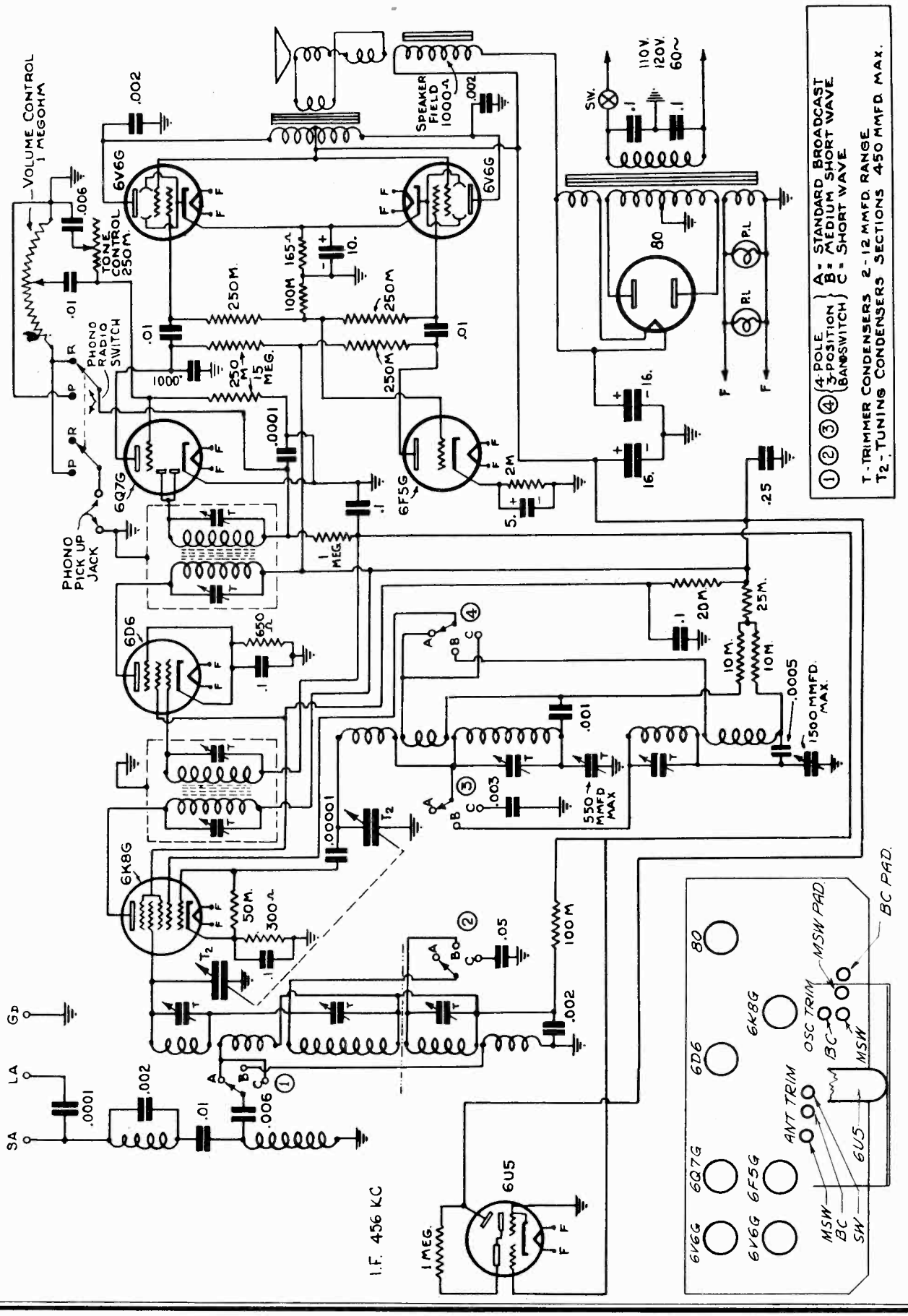
2. Set test oscillator and dial indicator to 16,500 KC., and adjust oscillator trimmer #17. Two positions on the trimmer condenser may be found where the signal is heard. Use the one with the least capacity or with the trimmer screw farther out.

3. Adjust the R.F. and antenna trimmers #16 and #5.

4. Check sensitivity and calibration over the scale.

MODEL BS-3

WHOLESALE RADIO SERVICE CO., INC.

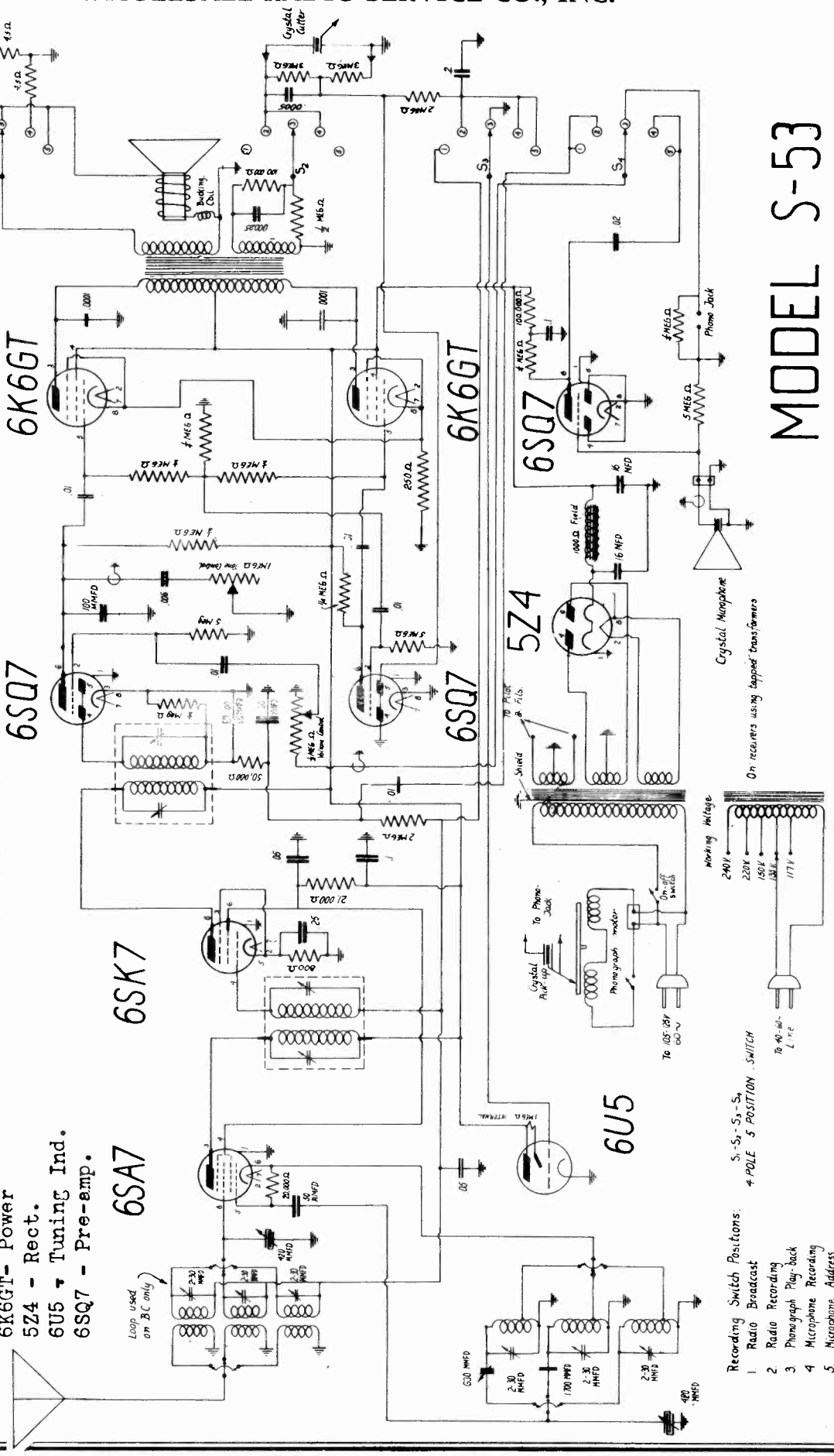


MODEL S-53

WHOLESALE RADIO SERVICE CO., INC.

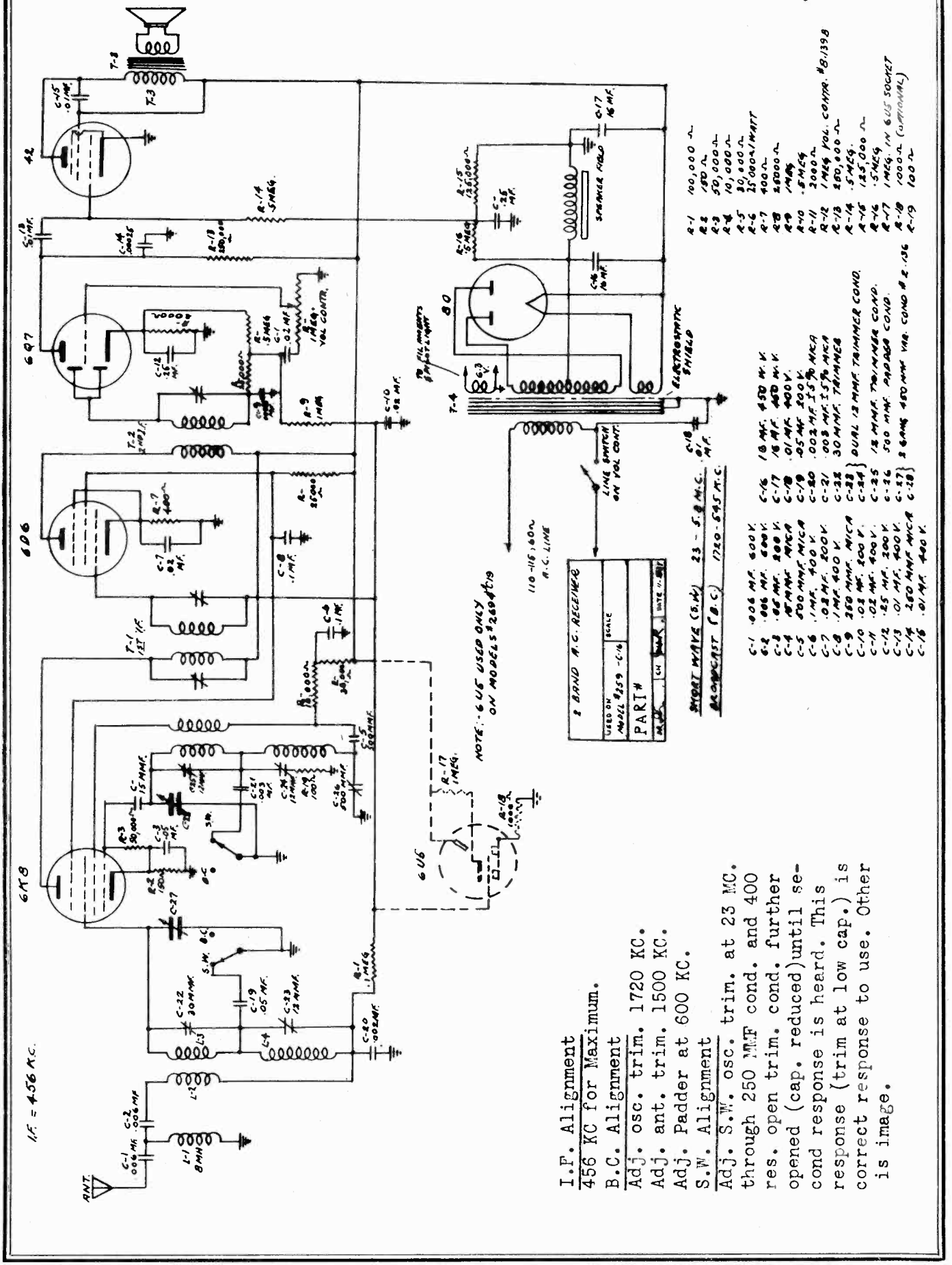
I.F. Alignment -455 KC for Maximum.
B.C. Alignment -1500 KC osc. Trim. for Maximum.
Padder at 600 KC Maximum.
S.W. Alignment S.W. osc. at 8 MC.for max. at 2.7-9.0 MC.Band.
Low frequency is automatically adjusted by a fixed padder.
To calibrate 8.0-24.0 MC Band-adjust at 22MC the same as for 1st. S.W. Band.

TUBES
6SA7 - Osc. 1st. det.
6SK6 - I.F.
6SQ7 - 2nd. A.V.C. audio
6SQ7 - P.I.
6K6GT- Power
5Z4 - Rect.
6U5 - Tuning Ind.
6SQ7 - Pre-amp.



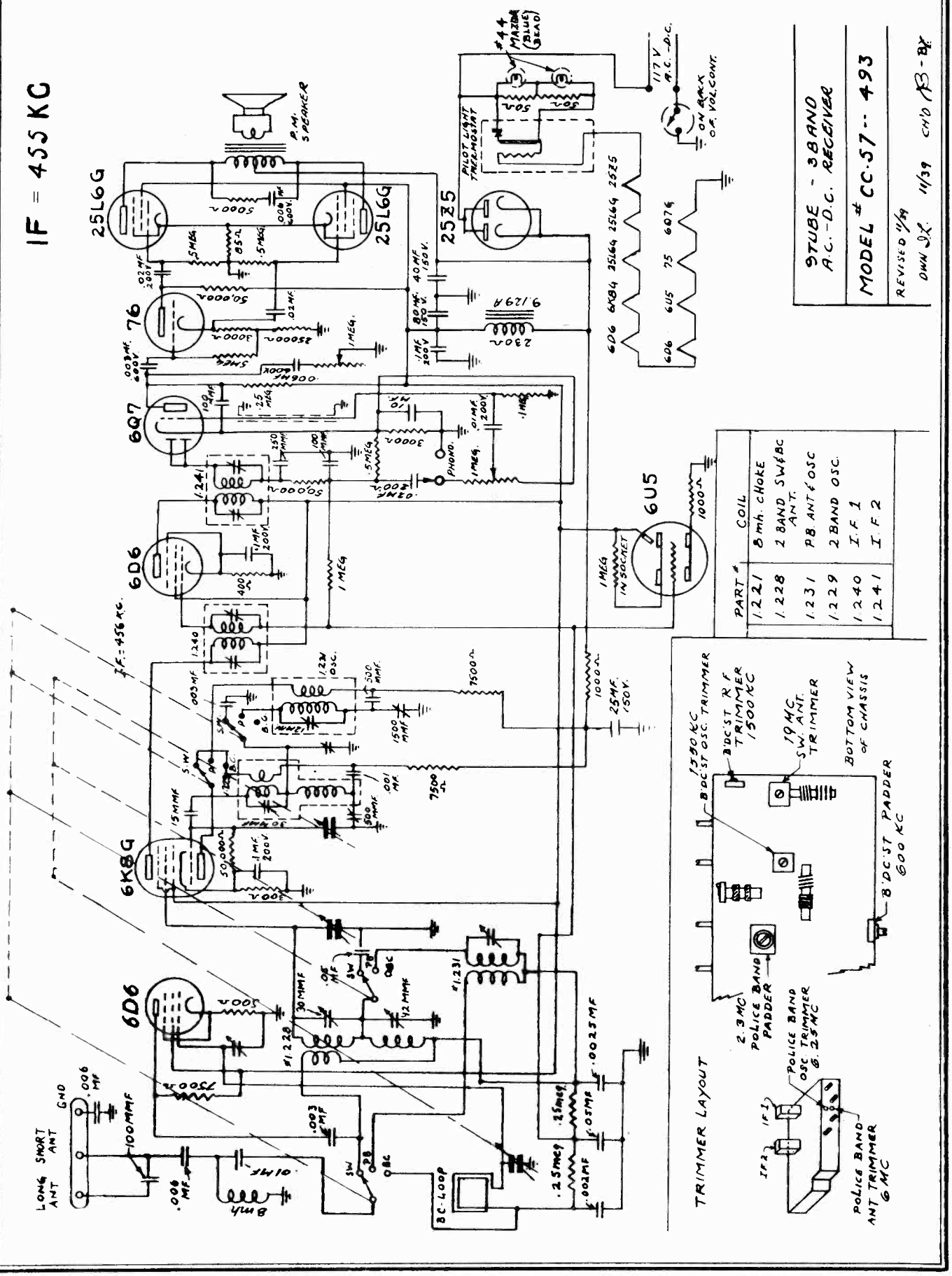
WHOLESALE RADIO SERVICE CO., INC.

MODELS C-16,19, 259,269



MODELS CC-57,
CC-57T,493

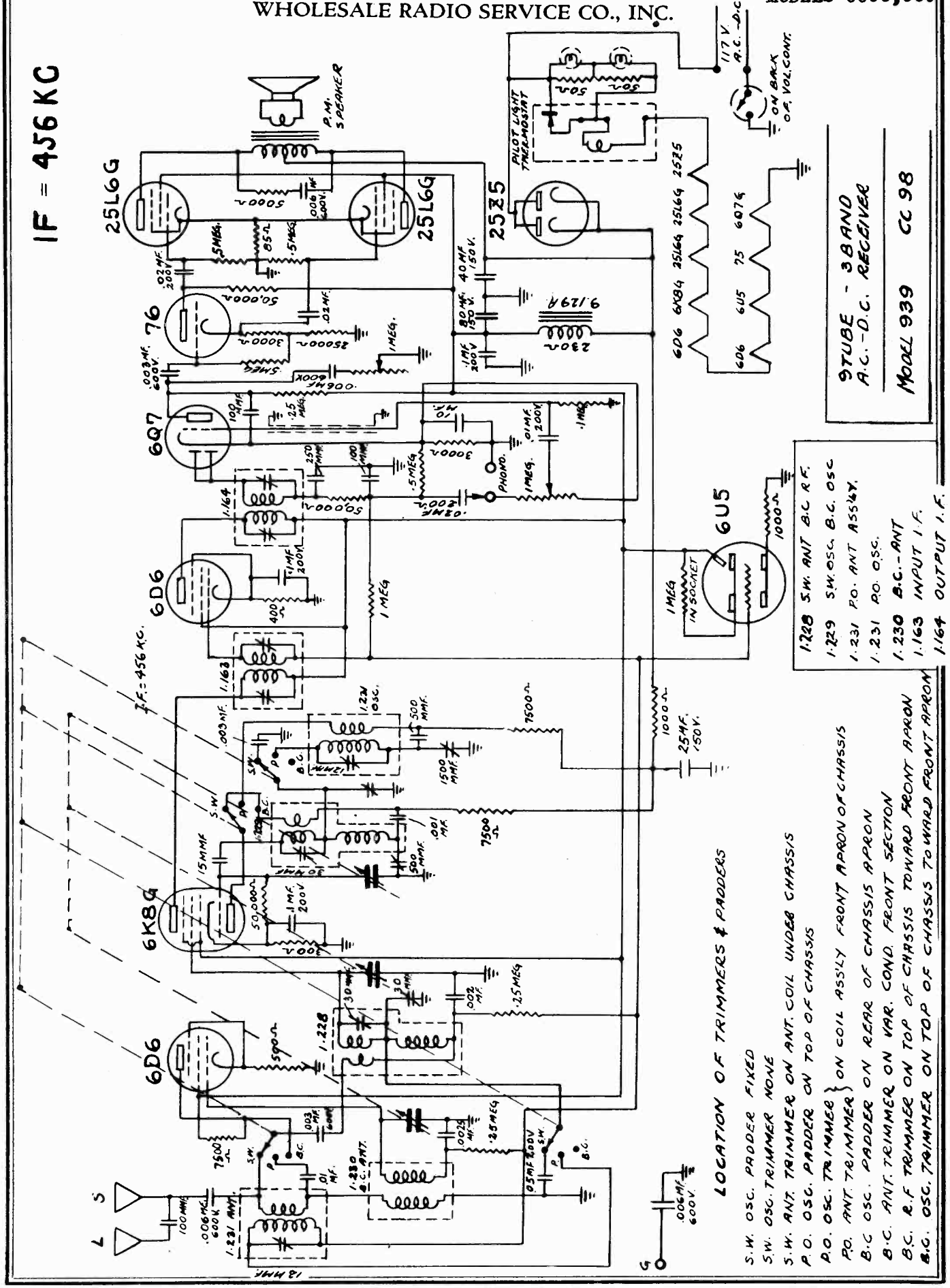
WHOLESALE RADIO SERVICE CO., INC.



PART #	COIL
1.221	8 mh. CHOKE
1.228	2 BAND SW & BC ANT.
1.231	PB ANT & OSC
1.229	2 BAND OSC.
1.240	I.F. 1
1.241	I.F. 2

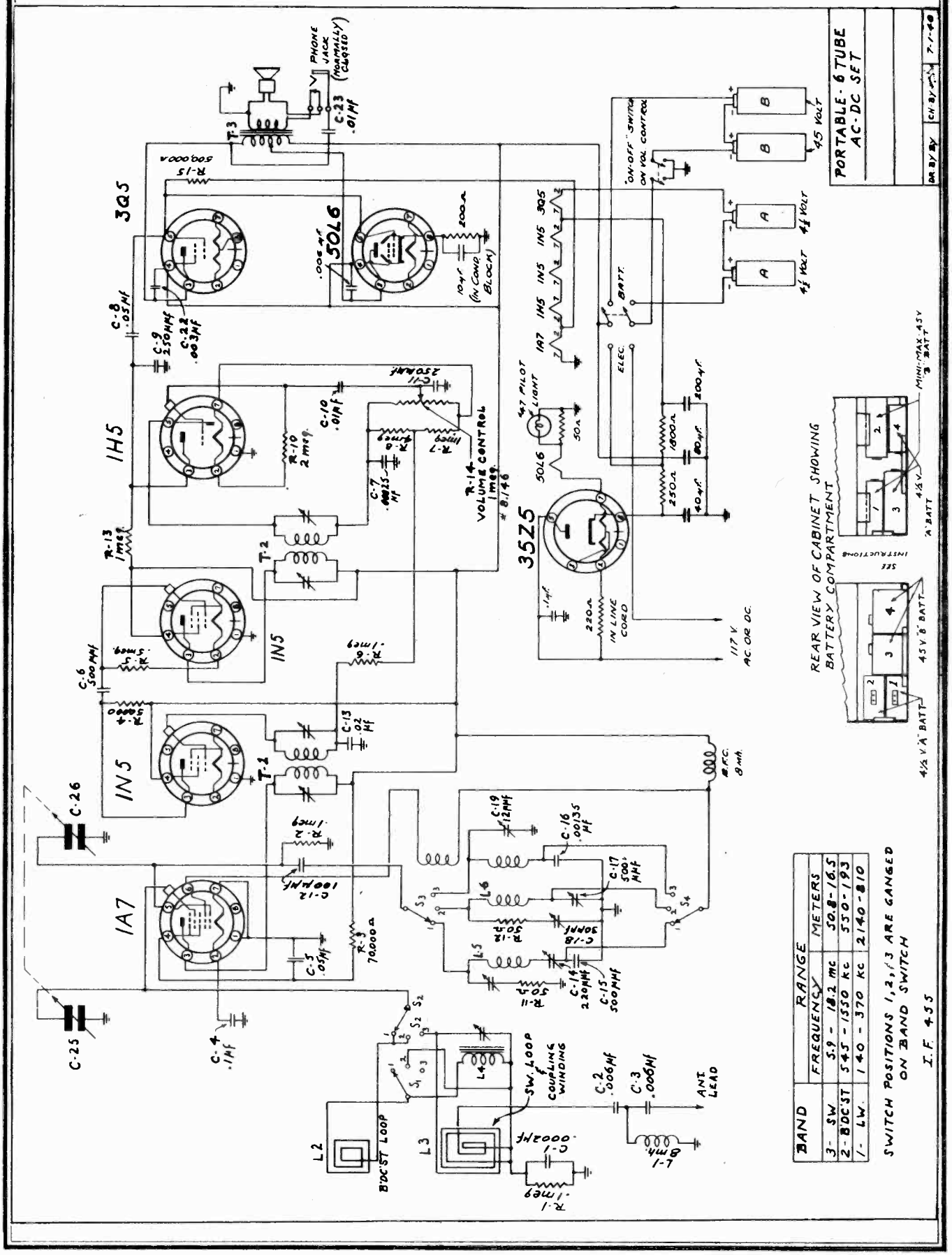
MODELS CC98, 939

WHOLESALE RADIO SERVICE CO., INC.



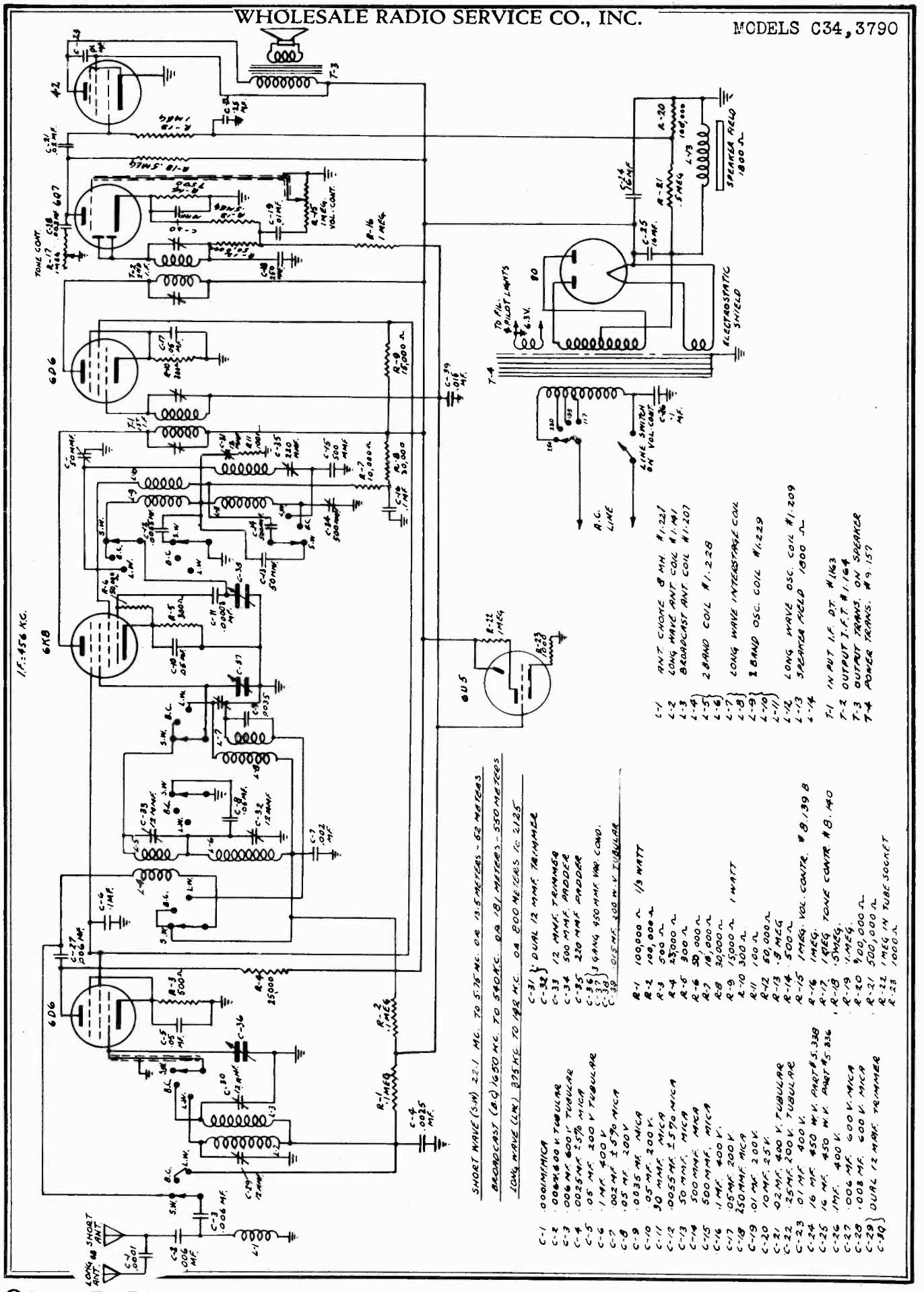
MODEL C-116

WHOLESALE RADIO SERVICE CO., INC.



WHOLESALE RADIO SERVICE CO., INC.

MODELS C34, 3790

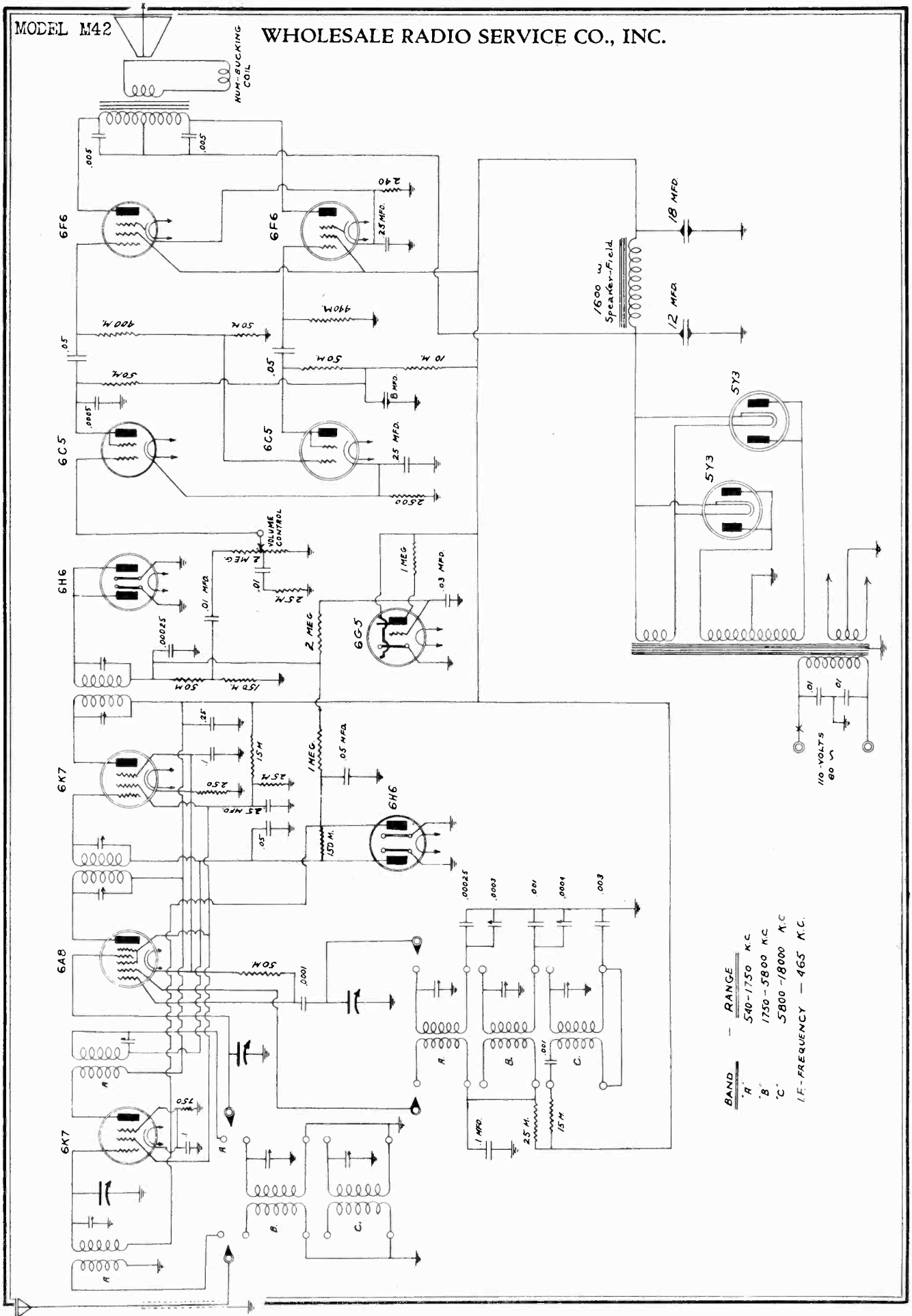


C-1	.0001 MICA	C-31 } DUAL 12 MMF. TRIMMER	
C-2	.0004 600 V TUBULAR	C-32 }	
C-3	.006 MF. 600 V. TUBULAR	C-33 12 MMF. TRIMMER	
C-4	.0025 MF. 2% MICA	C-34 500 MMF. PADDER	
C-5	.05 MF. 200 V TUBULAR	C-35 220 MMF. PADDER	
C-6	1 MF. 400 V	C-36 } 3 GANG 450 MMF. VAR. COND.	
C-7	.002 MF. 1% MICA	C-37 }	
C-8	.05 MF. 200 V	C-38 }	
C-9	.0035 MF. MICA	C-39 .015 MF. 400 V. TUBULAR	
C-10	.05 MF. 200 V.		
C-11	30 MMF. MICA	R-1 100,000 Ω 1/3 WATT	
C-12	.0055 MF. 1% MICA	R-2 100,000 Ω	
C-13	50 MMF. MICA	R-3 500 Ω	
C-14	500 MMF. MICA	R-4 25,000 Ω	
C-15	500 MMF. MICA	R-5 300 Ω	
C-16	.1 MF. 400 V.	R-6 30,000 Ω	
C-17	.05 MF. 200 V.	R-7 10,000 Ω	
C-18	450 MMF. MICA	R-8 30,000 Ω	
C-19	.01 MF. 200 V.	R-9 15000 Ω 1 WATT	
C-20	10 MF. 25 V.	R-10 300 Ω	
C-21	.02 MF. 400 V. TUBULAR	R-11 100 Ω	
C-22	.25 MF. 200 V. TUBULAR	R-12 50,000 Ω	
C-23	.01 MF. 400 V.	R-13 .5 MEG	
C-24	16 MF. 450 W.V. PART # S.338	R-14 500 Ω	
C-25	16 MF. 450 W.V. PART # S.836	R-15 1 MEG. VOL. CONTR. # B.139 B	
C-26	1 MF. 400 V.	R-16 1 MEG.	
C-27	.004 MF. 600 V. MICA	R-17 1 MEG. TONE CONTR # B.140	
C-28	.008 MF. 600 V. MICA	R-18 .5 MEG.	
C-29	DUAL 12 MMF. TRIMMER	R-19 1 MEG.	
C-30		R-20 500,000 Ω	
		R-21 500,000 Ω	
		R-22 1 MEG IN TUBE SOCKET	
		R-23 1000 Ω	

T-1	ANT CHOKE 8 MH #1.221
T-2	LONG WAVE ANT COIL #1.141
T-3	BROADCAST ANT COIL #1.207
T-4	2 BAND COIL #1.228
T-5	
T-6	
T-7	LONG WAVE INTERSTAGE COIL
T-8	
T-9	2 BAND OSC. COIL #1.229
T-10	
T-11	
T-12	LONG WAVE OSC. COIL #1.209
T-13	SPEAKER FIELD 1800 Ω
T-14	
T-1	IN PUT I.F. PT. #1163
T-2	OUTPUT I.F.T. #1164
T-3	OUTPUT TRANS. ON SPEAKER
T-4	POWER TRANS. #9.157

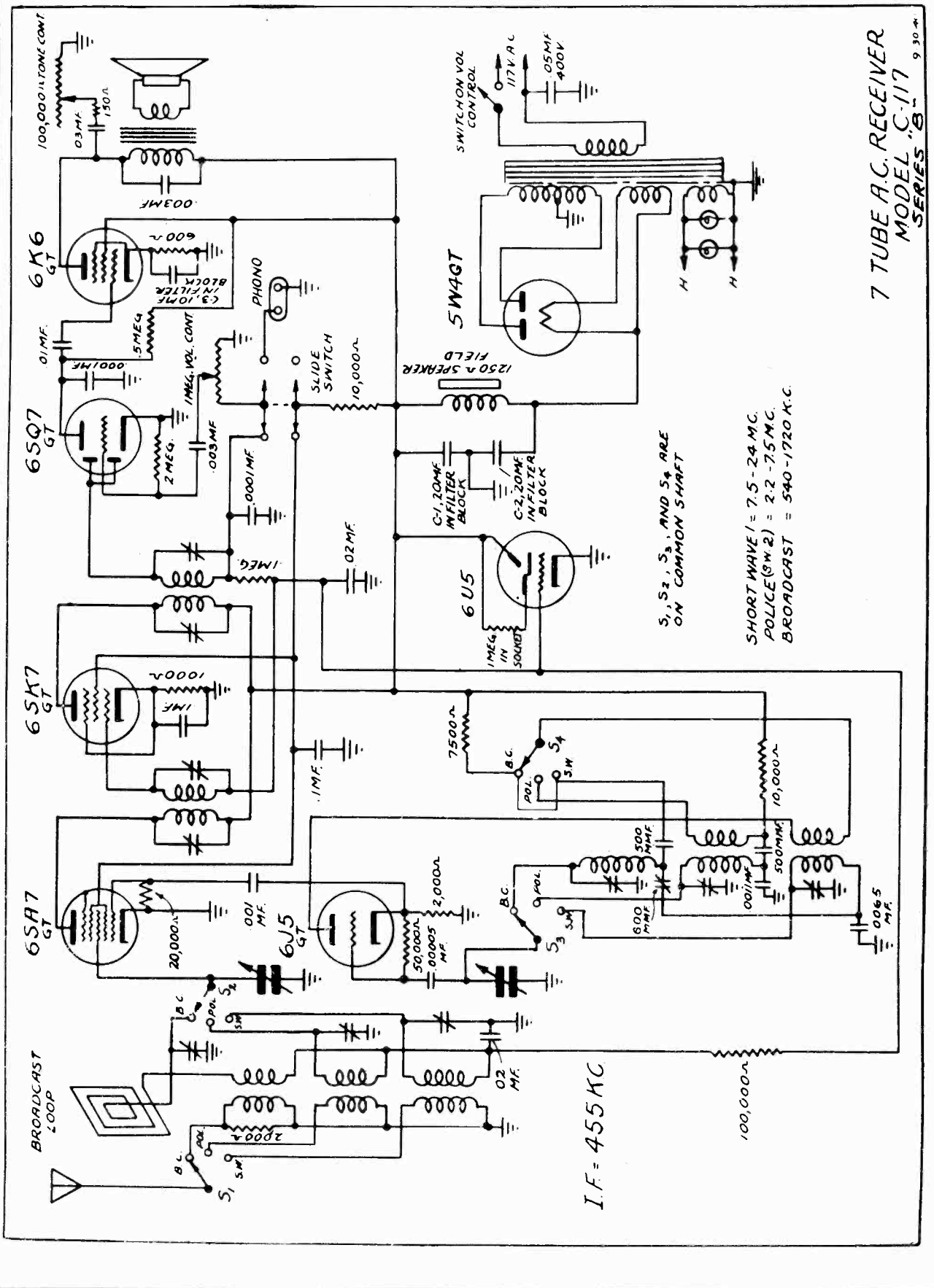
MODEL M42

WHOLESALE RADIO SERVICE CO., INC.



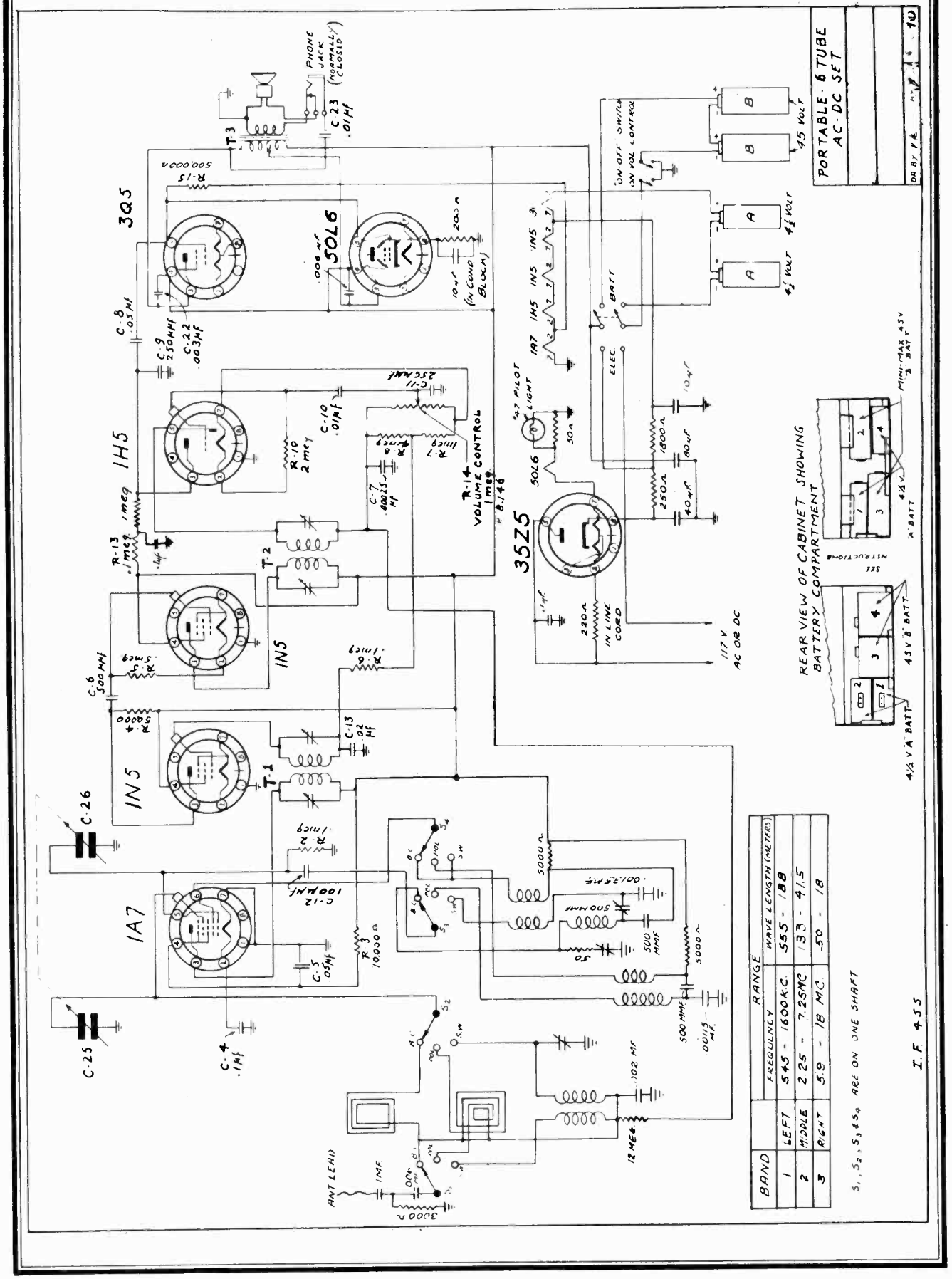
WHOLESALE RADIO SERVICE CO., INC.

MODEL C117
Series B



MODEL C125

WHOLESALE RADIO SERVICE CO., INC.



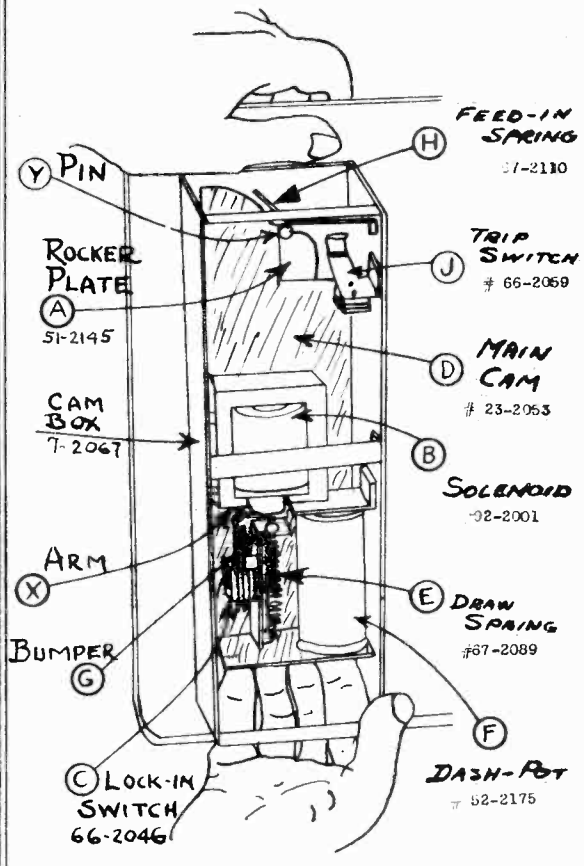
MODEL Insta-Matic
Record Changer

WILCOX-GAY CORP.

Phonograph Mechanism

Models

A-105 A-111 A-112 A-113 A-113B A-114 A-115 A-115B



Foreword

The Wilcox-Gay INSTA-MATIC Record Changer is truly an innovation because its operation does not depend upon an assembly of gears and levers, and no power is taken from the motor in actuating the automatic changing mechanism.

Since the power to operate the changer is derived from a separate source other than the turntable rotating mechanism, it has been possible to design the unit to operate rapidly without putting demand for power on one source. This feature eliminates the necessity for a series of reduction gears which are both costly and complicated, and has permitted unique design with respect to changing from 10" to 12" records, using but one cam and set of adjustments for both record sizes.

Description of Trip Mechanism

1. The eccentric groove on the record causes the pickup arm to oscillate in a forward and backward motion. The trip switch "J" contact is then closed by friction of the leather contact on the knurled rocker plate "A". Closing of the trip switch energizes solenoid "B" and plunger is drawn into solenoid "B" through magnetic action of the coil. This action closes the lock-in switch "C" which still maintains closed circuit for the solenoid "B" even though trip switch "J" is now open. The main cam assembly "D" is then drawn forward by draw spring "E" against the snubbing action of the dashpot "F". At the time main cam rubber bumper "G" strikes the solenoid plunger, the lock-in switch "C" is opened by arm "X" releasing current from solenoid "B". During this inward action, pickup arm is raised by push rod and returned to replay position by the rounded section of cam on pin "Y" on rocker plate. At the same time, cam action rotates record holding knob and record selector arm finger releases bottom record to turntable. Reset pin is engaged in rocker arm return slot. Internal spring against dashpot action forces main cam "D" outward and reset pin follows rocker arm slot carrying the pickup arm to edge of record. The tone arm is automatically positioned on the record just inside the record periphery and the feed-in spring "H" acting upon the rocker plate attached to the tone arm pivot post, urges the phonograph needle, gently but positively, into the first record groove. Reset pin drops away from the rocker plate due to hold down spring.

Removing Changer From Cabinet

(1) Before removing record changer unit from cabinet, remove cutting stylus and position the recording arm near the center of the turntable to prevent damage to the follower arm in lifting the unit from the cabinet. (The arm should be returned to this position before replacing unit in cabinet.)

(2) Remove playback needle if unit is type 11-D or 11-E. If unit is type 11-F place metal guard on pickup cartridge to protect sapphire needle against injury.

(3) Remove mounting screws (one at each corner of unit base plate) and remove all plug-in connections between record changer unit and amplifier chassis.

(4) Remove record changer unit from cabinet. DO NOT TAKE HOLD OF RECORD SUPPORT POSTS. Instead, grasp the base plate of the unit, at opposite sides.

(5) Place unit on the service bench, tilted to a position that provides access to the under side of the unit. DO NOT PLACE UNIT IN UPSIDE-DOWN POSITION, as the record spindle may be sprung or bent.

Failure To Trip At End of Record

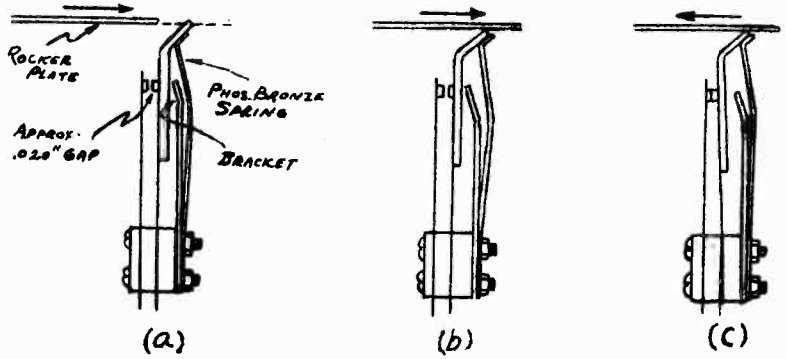
2. All commercial records manufactured in recent years have the eccentric (oscillating) type of trip groove. Make sure first that the record that does not trip the mechanism has the eccentric groove. Failure to trip is caused by lack of proper contact or friction of the leather finger on the trip switch with the knurled surface on the rocker plate. Too great an opening of the contact points will not allow the switch to close during an oscillating action. Check and set points for .020" gap when trip switch is at rest (leather finger not in contact with rocker plate). The switch can be removed by taking out the two lockwasher screws in the slotted section immediately below the clamp holding the one red and two black wires. After the contact point clearance has been set and checked, the switch should be replaced and set to the point where the leather finger just makes contact with the rocker plate. A forward and back motion of the rocker plate should move the phosphor bronze spring slightly. The phosphor bronze support spring eliminates the fatiguing of the leather finger to a semi-circular position and gives constant upward pressure on the leather finger. The trip switch should not be set too high whereby the leather and phosphor bronze spring both engage the rocker plate.

Positioning of Trip Switch

3. When the switch is correctly positioned, the switch contacts will remain normally open at all times excepting after the playback arm reaches a position near the center of the turntable. A slight reversal in the lateral movement of the arm will cause the contacts to close.

4. The contact spacing should be approximately .020" and the leather piece should just touch the stop bracket when the switch is "idle" or "at rest".

(1) Position the switch so that the leather finger just touches the rocker plate surface, and note the point of contact between the leather and the phosphor bronze spring.



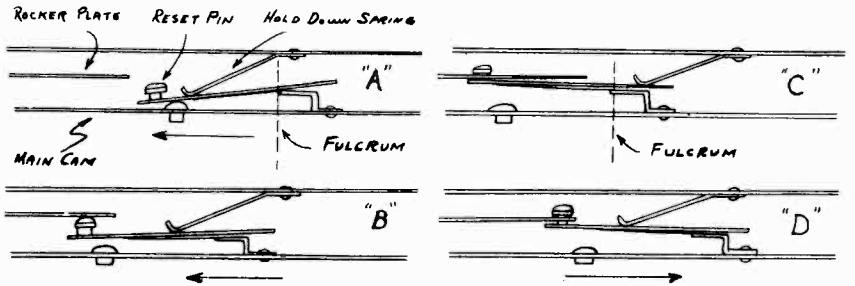
5. (2) Raise the switch vertically (toward the rocker plate) until the end of the phosphor bronze spring nearly touches the rocker plate.

(3) The correct switch position will be found to be approximately half way between these two extreme positions.

Mechanism Trips But Pickup Arm Does Not Return To Record

6. This is usually caused by failure of the lock-in switch to open when the cam assembly is at the end of its forward motion. The lock-in switch should have a clearance of approximately .025 and can be adjusted by bending forward or backward arm "X". Bending the arm so that more pressure is exerted on the fiber stub of the long contact arm increases the gap and bending the arm so that less pressure is exerted decreases the gap contact. Failure of the arm to return to the record is sometimes caused by binding action of the reset pin and rocker plate or failure of the reset pin to engage the rocker plate. This will be covered in another paragraph entitled "Adjustment of Reset Plate Hold-down Spring".

ADJUSTMENT OF RESET PLATE HOLD-DOWN SPRING



7. Illustrations (A) (B) (C) (D) show four phases of the operation of the resetting device located between the main cam and inside surface of the cam box. The resetting action can be observed by viewing the cam box assembly from the end nearest the arm pivot post. At the beginning of the change cycle the cam moves

in a direction shown by the arrow in illustration (A). The reset pin, moving with the cam, should travel beneath the rocker plate, illustration (B). Near the end of the initial cam stroke, the reset pin should snap into the enlarged opening in the rocker plate, illustration (C). With the return stroke of the cam, the reset pin should travel in the narrow slot of the rocker plate, illustration (D) and at the very end of the stroke drop out of the slot and resume position as shown in illustration (A).

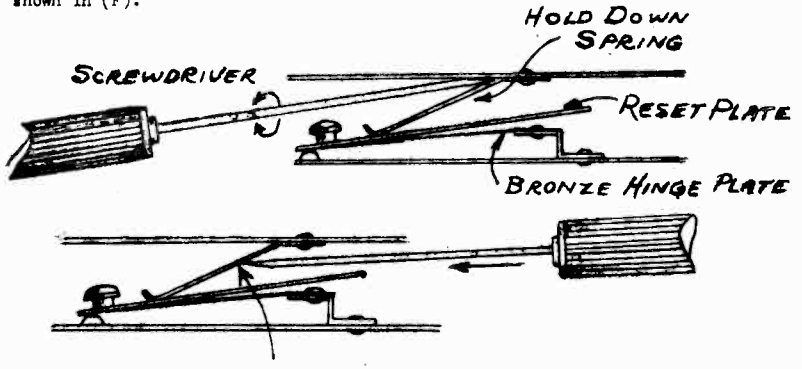
8. The function of the hold down spring is to hold the reset plate down while bearing on one side of the fulcrum point, and to hold it up when bearing on the opposite side of the fulcrum point, illustration (A) and (C).

9. It will now be obvious that insufficient pressure of the hold down spring will cause (1) the reset pin to approach the rocker plate in too high a position causing a possibility of jamming; (2) also at the end of the initial cam stroke, illustration (a), the reset pin will not protrude through the rocker plate far enough to allow proper retraction of the cam, illustration (D).

10. Pressure of the hold down spring in excess of that required to produce correct operation as described above, will not result in any better operation of the resetting device, but will only introduce a source of undesired friction.

11. Greater hold down spring pressure may be obtained by use of a long slender screwdriver as shown in (E). With the screwdriver bit held into the "V" at the junction of the hold down spring and the plate to which it is attached, rotate the screwdriver in alternately opposite directions as shown by the arrows, thus increasing the downward pressure of the spring.

12. Less hold down spring pressure may be obtained by use of the screwdriver as shown in (F).

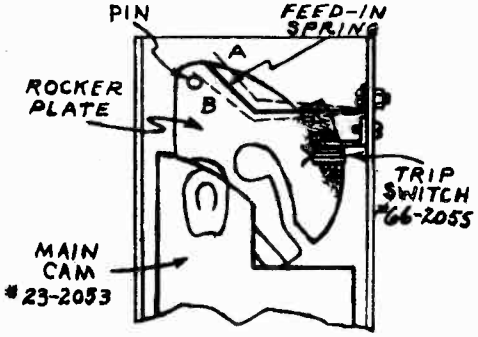


Adjustment of Pickup Arm To Set Properly On Record

13. The pickup arm when returning to the record should drop at a point half-way between the first playing groove and the edge of the record. The kick-in spring moves the pickup arm gently to the first playing groove. If the needle is dropping into the first playing groove, then loosen the screw in front of the pickup arm bracket and immediately under the pickup arm channel. Move the pickup arm bracket slightly outward and tighten the screw. If the arm is dropping at the edge of the record, loosen the screw and move the pickup arm bracket slightly inward and retighten screw.

Pick-up Feed-in Adjustment

14. The feed-in adjustment can best be made by use of a record having no spiral feed-in groove. With record on turntable and changer set for size record used, the changer is caused to cycle by either depressing the reject button or allowing the arm to trip. When operating correctly, the arm should set down on the record and move gently into the first groove. If the feed-in is too violent, resulting in groove jumping, bend the feed-in spring toward the dotted line (A). If the feed-in action is insufficient, resulting in the arm not reaching the first groove consistently, bend the spring toward dotted line (B).



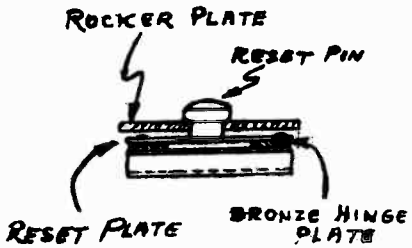
Setting Mechanism To Release Records Properly

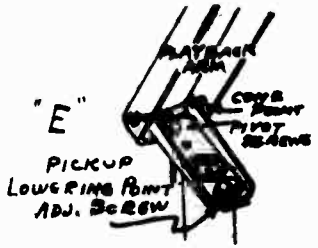
15. Remove screw and finishing washer in top of record selector shaft. Replace so that the flat sections of the shaft engage the flat sections of the record selector finger. Install and tighten screw. Place the mechanism in the 10" operating position by rotating the Uni-point control knob so that it points directly to the turntable shaft. Place a 10" record on turntable shaft so that the edges rest on the retaining arms. The selector finger and the record should have approximately 1/16" clearance. If this clearance is not correct, loosen the two screws on the tie rod assembly (formed rod underneath turntable connecting cam box and Uni-point control post) and move selector post inward or outward so that the clearance of selector finger and record is correct. Then tighten screws in tie rod securely. Adjustment for 10" or 12" dropping of records is exactly the same and if adjustment is made for 10" record, the 12" adjustment is automatically taken care of and vice versa.

16. It is very important that the Uni-point control post be positioned in the proper manner. Sometimes this post becomes bent inward slightly which "hangs on" to a 12" record too long and causes the record to flutter down instead of dropping down with a positive action. Breakage or cracking of records sometimes results. The Uni-point control post is stationary but can be bent inward or outward by hand. The control post should be at a point where a 12" record is very near the edge of the record holding bracket.

Pickup Arm Remains Stationary At About The Center of Home Recorded Discs

17. Make sure first that the home recorded disc has a good clean groove and the proper depth of cut. Pivot posts of the pickup arm should be set to the point where very little play is evidenced but not to the binding point. The lower part of the pickup arm channel should just come flush with or a little bit lower than the top of the turntable. If the arm is above the turntable, the flat bracket immediately above the push rod in the center of the pickup arm shaft should be bent upward slightly. Positioning of the trip switch to the point where the leather finger engages the rocker arm too high sometimes causes friction which will hold the pickup arm in place when home recorded records are played. Be sure that the pickup arm cord is hanging free and is not under pickup arm bracket and arm channel.





Variation in Lowering of Pick-Up Arm

18. It will be observed that it is the retraction of the reset pin through the slot in the rocker plate, during the return stroke of the cam, that causes the arm to move from its outward position and reset onto the record. It can be seen that lost motion or "shake" in the lateral movement of the pickup arm must be at a minimum in order for the pickup lowering position to remain unchanged when records are changed automatically. To determine the cause for any variation in the position of the pickup lowering point:

(1st.) Move the main cam be the method illustrated (Page 4) and allow the cam to return to the position shown in Figure (D) page 7. The relative positions of the rocker plate and reset plate, with the reset pin engaged in the end of the slot in the rocker plate. Holding the cam in this position, take hold of the pickup arm and by lightly applying force in alternately opposite directions (laterally) observe the resulting effect on the position of the reset pin. If the reset pin can be moved excessively in making this test, this gives indication of a broken hinge plate, which condition necessitates removal of the main cam with the reset plate assembly attached, and replacement with a new one.

(2nd.) Observe that the cone point pivot screws at the heel of the pickup arm are properly adjusted so that no lost motion in the lateral movement of the arm exists. CAUTION: Do not make this adjustment too tight as abnormal friction in the vertical movement of the arm may result.

(3rd.) Note that the screw provided for adjusting the pickup lowering position (Figure E) is tightened securely.

Dash Pot

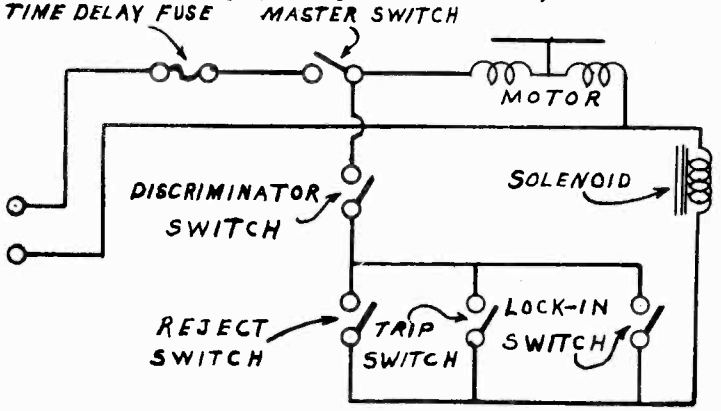
19. The dash pot, which is an air chamber with an internal spring return piston and an air release serves to govern the speed at which the main cam or changing process operates. At the start of the solenoid stroke, the contacts on the lock-in switch, which is connected in parallel with the trip switch, are closed maintaining energy in the solenoid. The draw spring then functions to pull the main cam assembly forward against the snubbing action of the dash pot. At the end of the stroke, when the lock-in switch points are opened, energy is released from the solenoid and the internal spring of the dash pot returns the main cam assembly to its original position.

20. It can readily be seen from the above that if the dash pot through some manner has lost its snubbing action, the changing process of the unit will be very erratic and in most cases damage will result through the fast action. Always replace a defective dash pot and never attempt to repair or oil the plunger. This plunger is treated by a special process and further oiling will eventually ruin the leather.

Buzzing or Weak Solenoids

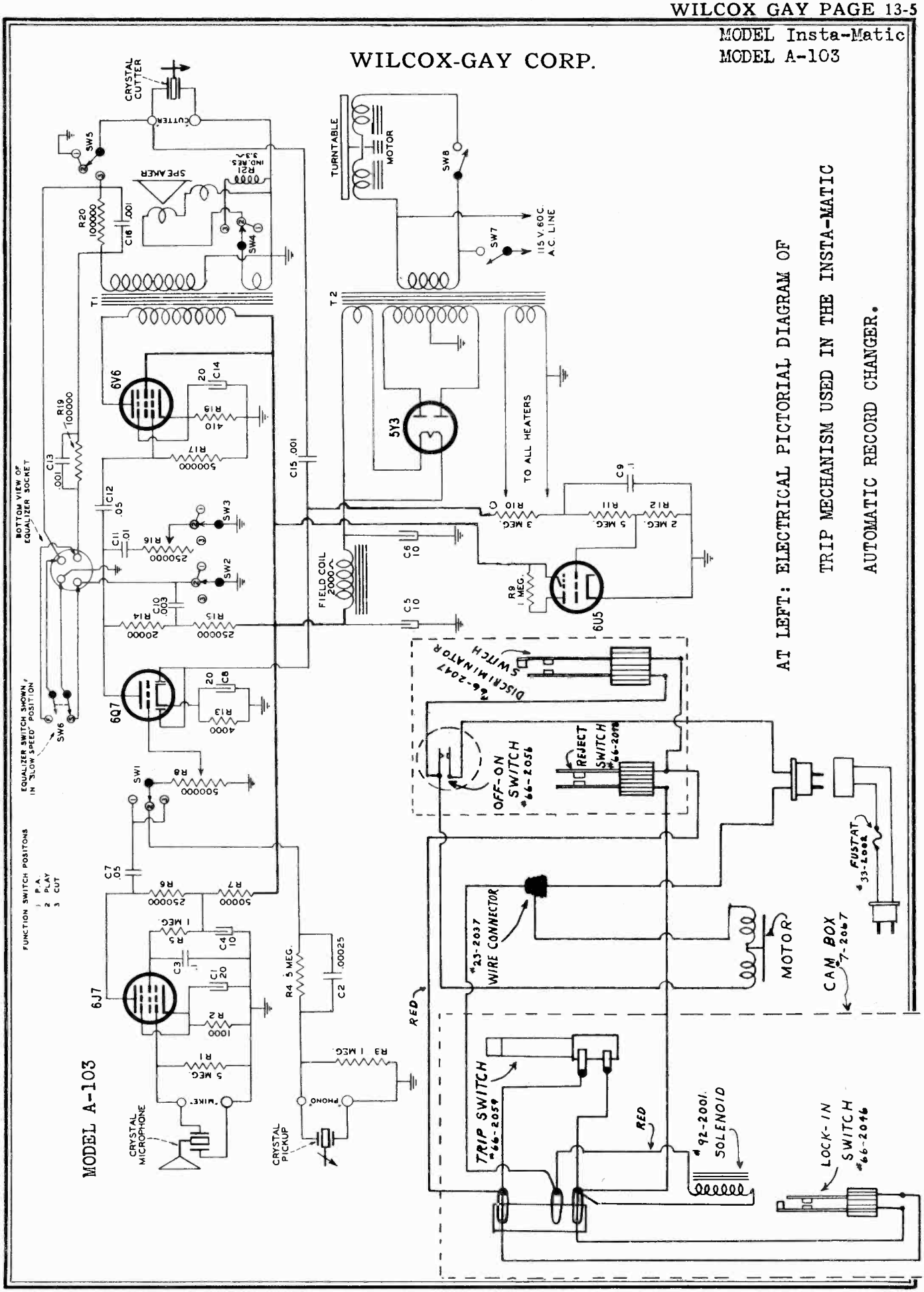
21. Incorrect spacing of the lock-in switch will oftentimes cause the solenoid to buzz or chatter during the change period. If the contacts are set so that they are just touching on the solenoid stroke, vibration will cause them to open and close resulting in the solenoid being energized and de-energized at a very rapid rate. If the lock-in switch contacts are correctly set and buzzing still continues, it is usually found to be in the laminations of the solenoid and the only cure is replacement of the complete solenoid including core. The solenoid plus the core are matched at the factory and the complete assembly should be installed.

22. The solenoid on the Insta-Matic changer is designed to operate satisfactorily on line voltages 105 Volts or above. Lower line voltages will cause the mechanism to either chatter or buzz and in some cases will not operate. If the line voltage is above 105 Volts and the mechanism changes very slowly or the solenoid plunger is drawn only partway in, this is an indication of a weak solenoid and the only solution is to install a new assembly. This naturally is assuming that all other adjustments, such as the dash pot, reset plate and rocker arm, are correct.



MODEL Insta-Matic
MODEL A-103

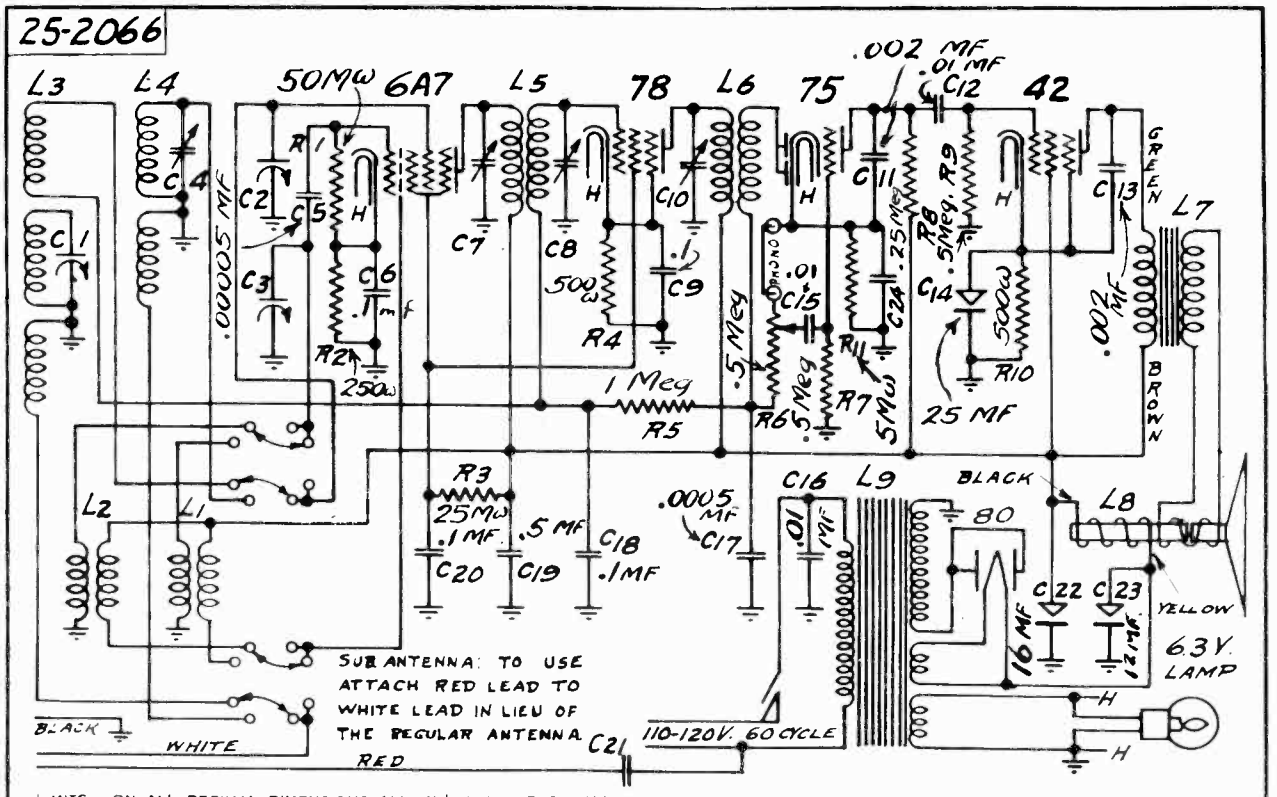
WILCOX-GAY CORP.



AT LEFT: ELECTRICAL PICTORIAL DIAGRAM OF TRIP MECHANISM USED IN THE INSTA-MATIC AUTOMATIC RECORD CHANGER.

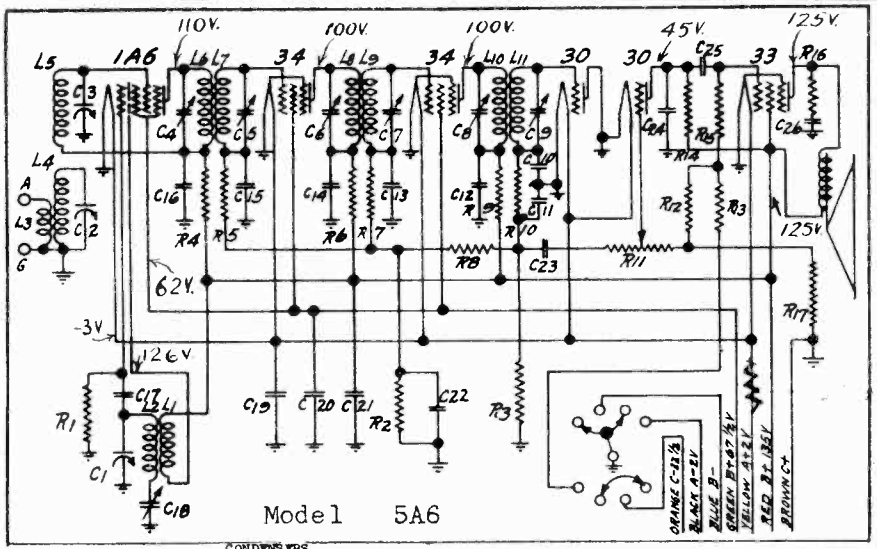
MODEL 5A6
MODEL 6AC5

WILCOX-GAY CORP.



LIMITS ON ALL DECIMAL DIMENSIONS ALLOW ± .003 AND ON ALL FRACTIONAL DIMENSIONS ALLOW ± 1/64 UNLESS OTHERWISE SPECIFIED.

CHANGES	MATERIAL	TITLE- SCHEMATIC DIAGRAM MODEL 6AC5	SCALE	DATE	PART NO.
FOR ALIGNMENT SEE INDEX			DWN. Cam	4-20-36	25-2066
			CK. [illegible]	5-28-36	
			TR. C. Cam	5-28-36	
		THE WILCOX-GAY CORP. CHARLOTTE MICHIGAN	APP. [illegible]	ISSUED	OCT 22 1937



CONDENSERS

CODE	PART NO.		CODE	PART NO.	
C1	77-1581	16-366 Oscillator Section of 3 Gang	C11	76-339	.0001 Mfd. Mica Diode Filter
C2	77-1581	16-366 First Preselector Section of 3 Gang	C12	75-269A	.01 Mfd. 400 Volt Second I.F. Plate Isolation Cond.
C3	77-1581	16-366 Second Preselector Section of 3 Gang	C13	75-269A	.01 Mfd. 400 Volt Second I.F. Grid Isolation Cond.
C4	78-1561	70-120 MMFD. First I.F. Primary Trimmer	C14	75-269A	.01 Mfd. 400 Volt First I.F. Plate Isolation Cond.
C5	78-1561	70-120 MMFD. First I.F. Secondary Trimmer	C15	75-269A	.01 Mfd. 400 Volt First I.F. Grid Isolation Cond.
C6	78-1561	70-120 MMFD. Second I.F. Primary Trimmer	C16	75-269A	.01 Mfd. 400 Volt First Detector Plate Isolation Cond.
C7	78-1561	70-120 MMFD. Second I.F. Secondary Trimmer	C17	76-264	.00005 Mfd. Mica Oscillator Coupling Cond.
C8	78-1561	70-120 MMFD. Third I.F. Primary Trimmer	C18	78-1569	450 MMFD. Oscillator Reciprocal Trimmer
C9	78-1561	70-120 MMFD. Third I.F. Secondary Trimmer	C19	75-267A	.5 Mfd. 200 Volt Filament By-Pass Condenser
C10	76-339	.0001 Mfd. Mica Diode Filter	C20	75-267A	.5 Mfd. 200 Volt Screen By-Pass Condenser
			C21	75-266	1. Mfd. 400 Volt B. Supply By-Pass Condenser
			C22	75-272A	.1 Mfd. 200 Volt A.V.C. Network By-Pass Condenser
			C23	75-269A	.01 Mfd. 400 Volt Audio Feed Condenser
			C24	76-265	.001 Mfd. Mica First Audio Plate Filter Cond.
			C25	75-269A	.01 Mfd. 400 Volt Audio Feed Condenser
			C26	75-1132	.002 Mfd. 600 Volt Tone Condenser

INDUCTANCES

L1	17-1645	Oscillator Primary
L2	17-1645	Oscillator Secondary
L3	17-2003	Preselector Primary
L4	17-2003	Preselector Frist Secondary
L5	17-2003	Preselector Second Secondary
L6	17-1633	First I.F. Primary
L7	17-1633	First I.F. Secondary
L8	17-1633	Second I.F. Primary
L9	17-1633	Second I.F. Secondary
L10	17-1633	Third I.F. Primary
L11	17-1633	Third I.F. Secondary

RESISTORS

CODE	PART NO.		
R1	53-926	1 Megohm	Oscillator Grid
R2	53-926	1 Megohm	A.V.C. Network
R3	53-925	500,000 Ohm	A.V.C. Network
R4	53-919	5,000 Ohm	First Detector Plate Isolation
R5	53-923	100,000 Ohm	First I.F. Grid Isolation
R6	53-919	5,000 Ohm	First I.F. Plate Isolation
R7	53-923	100,000 Ohm	Second I.F. Grid Isolation
R8	53-926	1 Meg Ohm	A.V.C. Network
R9	53-919	5,000 Ohm	Second I.F. Plate Isolation
R10	53-898	50,000 Ohm	Diode Filter
R11	19-1317	250,000 Ohm	Volume Control 10,000
R12	~~53-926~~	~~1 Meg~~ Ohm	C Bias Network 2500
R13	~~53-924~~	~~250,000~~ Ohm	C Bias Network
R14	53-923	100,000 Ohm	First Audio Plate
R15	53-925	500,000 Ohm	Output Grid
R16	53-920	10,000 Ohm	Tone Series Resistor
R17	53-923	~~100,000~~ Ohm	C Bias Network Resistor 4,000

MODELS 6AC5,7A5
7AC5

WILCOX-GAY CORP.

ALIGNMENT FOR MODELS 6A5,7A5

CONNECT SIG.GEN.	FREQUENCY SIG.GEN.	DIAL AT	WAVEBAND SW. SET AT	TRIMMER NUMBER	OUTPUT SIGNAL
Remove Grid clip from 6A7					
Control Grid of 6A7	175 kc	1400 kc	Broadcast(left)	1	Max.[1]
" " " "	"	"	"	2	"
" " " "	"	"	"	3	"
Connect Grid clip to 6A7					
Antenna Lead* White Lead / Black Ground	1400 kc	1400 kc	Broadcast	4	Max[1]
" "	"	"	"	5	"
" "	"	"	"	6	"
" "	600 kc	600 kc	"	4[2]	"
" "	"	"	"	5[2]	"
" "	"	"	"	6[2]	"
" "	3.5 mc**	3.5 mc**	Police**	7	"
" "	1.75 mc**	1.75 mc**	"	7[3]	

Volume control "Full On" at all times

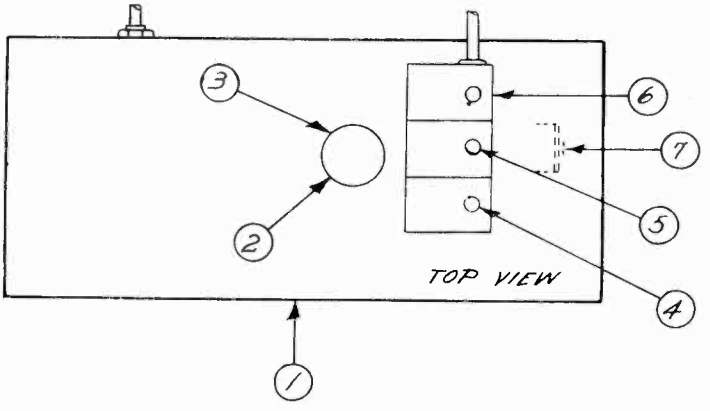
* Connect a standrad dummy antenna between signal generator and receiver.

Note 1:Signal across primary of output transformer not to be over 50 volts

Note 2:Due to formed oscillator plates, set should track. If not, bend slotted plates at this point and recheck at 1400 kc.

Note 3:Check ganging at this point.

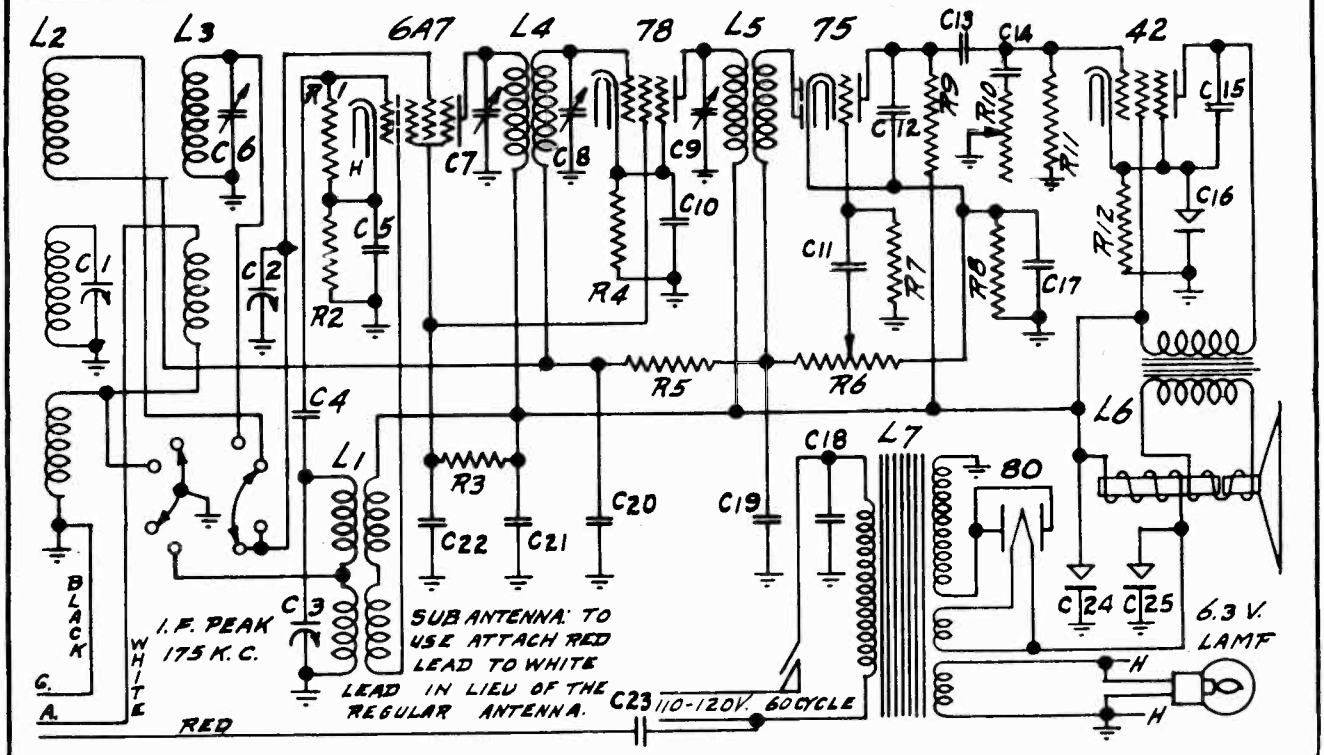
** Alignment for Models 6AC5 and 7AC5 is the same up to this point, the adjustment of trimmer 7. For Models 6AC5 and 7AC5 use 15 mc for adjusting the foreign-band trimmer No.7 and 6 mc for checking the ganging, the final operation



MODEL 7A5

WILCOX-GAY CORP.

25-2106



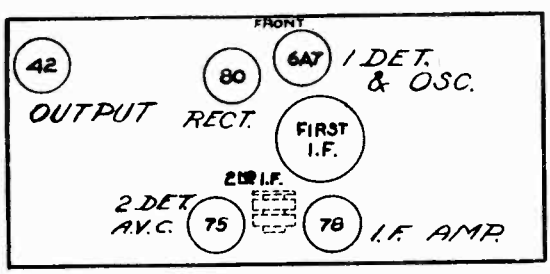
FOR ALIGNMENT SEE INDEX

CODE	PART NO.	RESISTORS			
R1	53-898	50,000 Ohm 6A7 Grid Resistor	L1	17-2101	Oscillator Coil Assembly
R2	53-1062	250 Ohm 6A7 Cathode Resistor	L2	17-2100	Preselector Coil Assembly
R3	53-1042	25,000 Ohm 6A7 & 78 Screen Resistor	L3	17-2103	Police Band Preselector Coil Assembly
R4	53-1063	500 Ohm 78 Cathode Resistor	L4	68-2012	First I.F. Transformer Assembly
R5	53-926	1 Meg Ohm A.V.C. Network Resistor	L5	17-2102	Second I.F. Transformer Coil Assembly
R6	19-1291	500,000 Ohm Volume Control & Switch	L6	64-2021	5" Speaker, 1500 Ohm field 42 Tube Transformer
R7	53-925	500,000 Ohm 75 Grid Resistor	L7	80-2009	Power Transformer for 110-120 V. 60 Cycle
R8	53-919	5,000 Ohm 75 Cathode Resistor			
R9	53-924	250,000 Ohm 75 Plate Resistor			
R10	19-1317	250,000 Ohm Tone Control			
R11	53-925	500,000 Ohm 42 Grid Resistor			
R12	53-1063	500 Ohm 42 Cathode Resistor			

CONDENSERS

C1	77-833	366 MMFD. Preselector Section of 3 Gang
C2	77-833	366 MMFD. Preselector Section of 3 Gang
C3	77-833	328 MMFD. Oscillator Section of 3 Gang
C4	76-2002	.00005 Mfd. Mica Oscillator Grid Condenser
C5	75-2005	.1 Mfd. 200 V. Paper 6A7 Cathode By-Pass Cond.
C6	78-2010	3-30 MMFD. Police Band Preselector Trimmer Cond.
C7	78-2008	First I.F. Primary Trimmer Condenser
C8	78-2011	First I.F. Secondary Trimmer Condenser
C9	78-2009	Second I.F. Trimmer Condenser
C10	75-2003	.1 Mfd. 200 V. Paper 78 Cathode By-Pass Cond.
C11	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C12	76-662	.002 Mfd. Mica 75 Plate Filter Condenser
C13	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C14	75-2003	.01 Mfd. 400 V. Paper Tone Control Condenser
C15	75-2001	.002 Mfd. 600 V. Paper 42 Plate Filter Cond.
C16	18-928	25 Mfd. 25 V. Dry Electrolytic Condenser
C17	75-2005	.1 Mfd. 200 V. Paper 75 Cathode By-Pass Cond.
C18	75-2003	.01 Mfd. 400 V. Paper Line By-Pass Condenser
C19	76-307	.0005 Mfd. Mica Diode Filter Condenser
C20	75-2005	.1 Mfd. 200 V. Paper A.V.C. Network By-Pass Cond.
C21	75-2011	.5 Mfd. 200 V. Paper B Supply By-Pass Condenser
C22	75-2005	.1 Mfd. 200 V. Paper 6A7 & 78 Screen By-Pass Cond.
C23	75-2003	.01 Mfd. 400 V. Paper Sub-Antenna Condenser
C24	18-2006	16 Mfd. 250 W.V. Electrolytic Condenser
C25	18-2005	12 Mfd. 325 W.V. Electrolytic Condenser

LOCATION OF TUBES



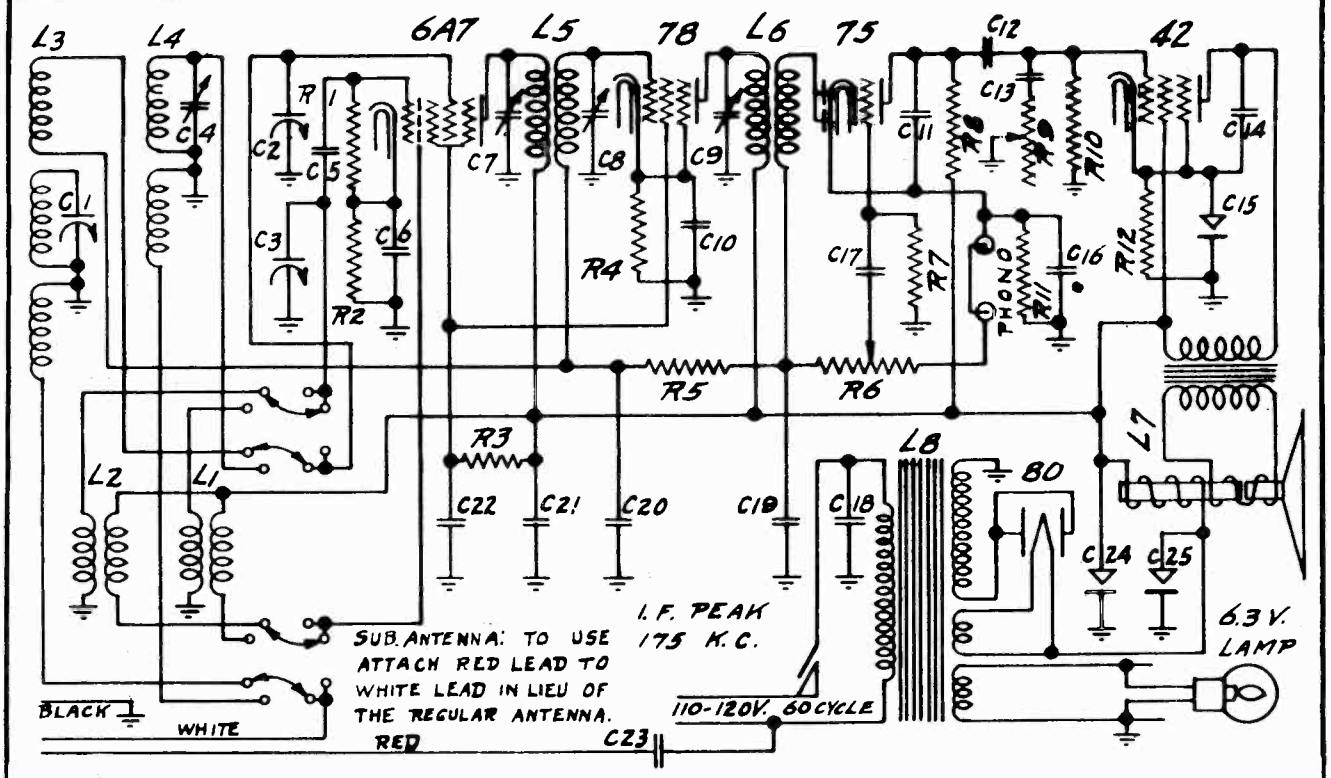
FOR USE ONLY WITH
110-120 V . 50-60 CYCLE

PILOT LIGHTS 6-8 V.
I. F. PEAK 175 K. C.

WILCOX-GAY CORP.

MODEL 6AC5
MODEL 7AC5

25-2110



CODE	PART NO.	RESISTORS
R1	53-898	50,000 Ohm Oscillator Grid Resistor
R2	53-1062	250 Ohm Oscillator Cathode Resistor
R3	53-1042	25,000 Ohm 6A7 & 78 Screen Resistor
R4	53-1063	500 Ohm 78 Cathode Resistor
R5	53-926	1 Meg Ohm A.V.C. Network Resistor
R6	19-1291	500,000 Ohm Volume Control & Switch
R7	53-925	500,000 Ohm 75 Grid Resistor
R8	53-924	250,000 Ohm 75 Plate Resistor
R9	19-1317	250,000 Ohm Tone Control
R10	53-925	500,000 Ohm 42 Grid Resistor
R11	53-919	5,000 Ohm 75 Cathode Resistor
R12	53-1063	500 Ohm 42 Cathode Resistor

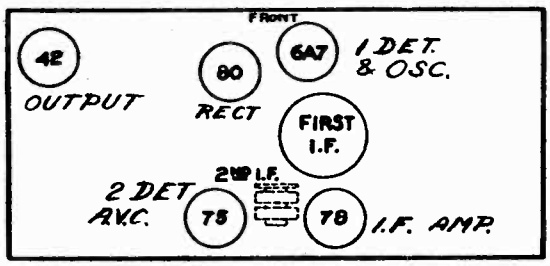
CODE	PART NO.	CONDENSERS
C1	77-833	16-366 MMFD. Preselector Section of 3 Gang Cond.
C2	77-833	16-366 MMFD. Preselector Section of 3 Gang Cond.
C3	77-833	16-328 MMFD. Oscillator Section of 3 Gang Cond.
C4	78-2010	3-30 MMFD. Foreign Band Pres. Trimmer Cond.
C5	76-2002	.00005 Mfd. Mica Oscillator Grid Condenser
C6	75-2005	.1 Mfd. 200 V. Paper 6A7 Cathode By-Pass Cond.
C7	78-2008	First I.F. Primary Trimmer Condenser
C8	78-2011	First I.F. Secondary Trimmer Condenser
C9	78-2009	Second I.F. Trimmer Condenser.
C10	75-2005	.1 Mfd. 200 V. Paper 78 Cathode By-Pass Cond.
C11	76-662	.002 Mfd. Mica 75 Plate Filter Condenser
C12	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C13	75-2003	.01 Mfd. 400 V. Paper Tone Control Condenser
C14	75-2001	.002 Mfd. 600 V. Paper 42 Plate Filter Cond.
C15	18-928	25 Mfd. 25 V. Dry Electrolytic Condenser
C16	75-2005	.1 Mfd. 200 V. Paper 75 Cathode By-Pass Cond.
C17	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C18	75-2003	.01 Mfd. 400 V. Paper Line By-Pass Condenser
C19	76-307	.0005 Mfd. Mica Diode Filter Condenser
C20	75-2005	.1 Mfd. 200 V. Paper A.V.C. Network By-Pass Cond.
C21	75-2011	.5 Mfd. 200 V. Paper B Supply By-Pass Condenser
C22	75-2005	.1 Mfd. 200 V. Paper 6A7 & 78 Screen By-Pass Cond.
C23	75-2003	.01 Mfd. 400 V. Paper Sub. Antenna Condenser
C24	18-2006	16 Mfd. 250 W.V. Electrolytic Condenser
C25	18-2005	12 Mfd. 325 W.V. Electrolytic Condenser

CODE	PART NO.	INDUCTANCES
L1	17-2095	Foreign Band Oscillator Coil Assembly
L2	17-2079	Broadcast Oscillator Coil Assembly
L3	17-2100	Broadcast Preselector Coil Assembly
L4	17-2096	Foreign Band Preselector Coil Assembly
L5	68-2012	First I.F. Transformer Assembly
L6	17-2102	Second I.F. Transformer Coil Assembly
L7	64-2021	5" Speaker, 1500 Ohm Field, #42 Tube Output Trans.
L8	80-2009	Power Transformer for 110-120 V. 60 Cycle

FOR USE ONLY WITH
110-120 V . 50-60 CYCLE

PILOT LIGHTS 6-8 V.
I. F. PEAK 175 K. C.

LOCATION OF TUBES

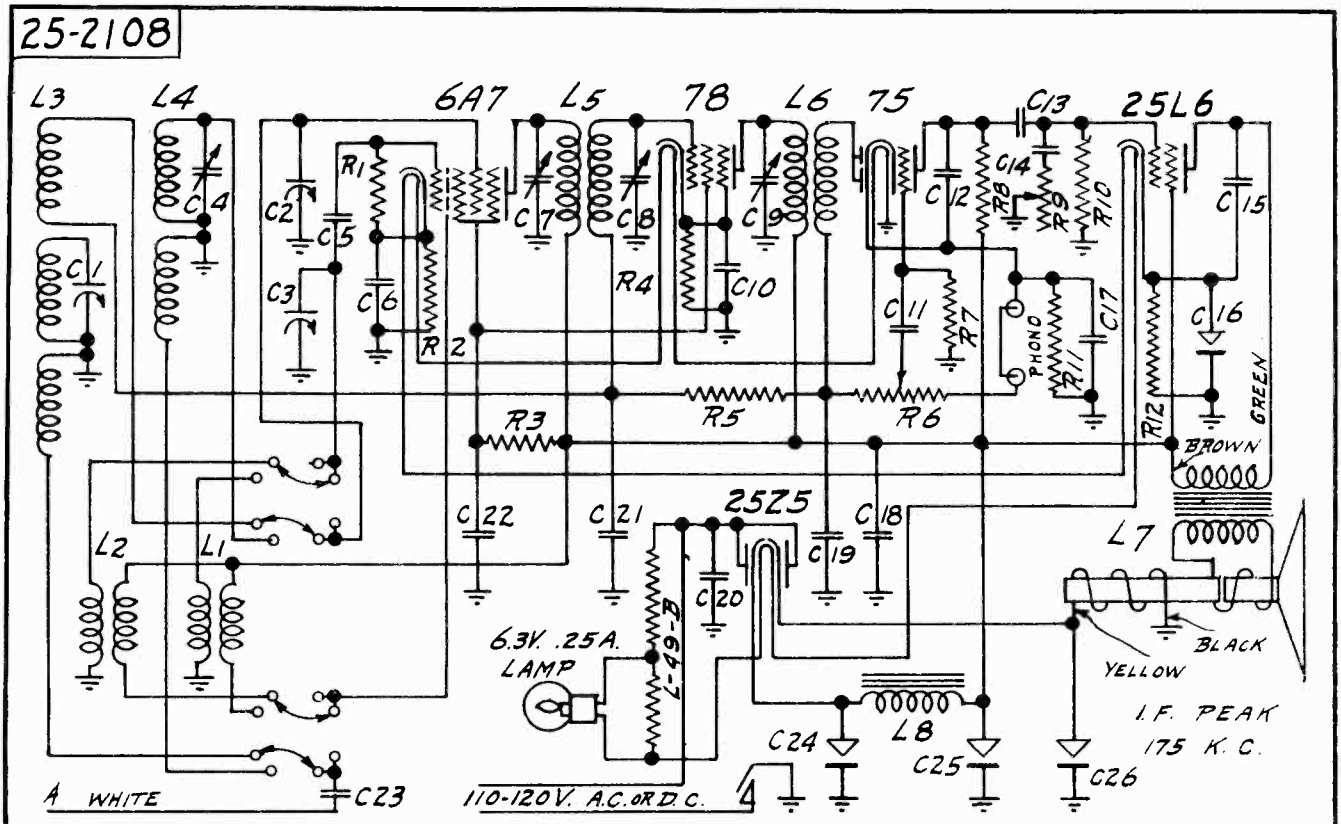


Models 6AC5 & 7AC5

FOR ALIGNMENT SEE INDEX

MODEL 7B6

WILCOX-GAY CORP.



CODE	PART NO.	RESISTORS
R1	53-898	50,000 Ohm Oscillator Grid Resistor
R2	53-1062	250 Ohm Oscillator Cathode Resistor
R3	53-1042	25,000 Ohm 6A7 & 78 Screen Resistor
R4	53-1063	500 Ohm 78 Cathode Resistor
R5	53-926	1 Meg Ohm A.V.C. Network Resistor
R6	19-1291	500,000 Ohm Volume Control & Switch
R7	53-925	500,000 Ohm 75 Grid Resistor
R8	53-924	250,000 Ohm 75 Plate Resistor
R9	19-1317	250,000 Ohm Tone Control
R10	53-925	500,000 Ohm 25L6 Grid Resistor
R11	53-920	10,000 Ohm 75 Cathode Resistor
R12	53-2014	200 Ohm 25L6 Cathode Resistor

		CONDENSERS
C1	77-833	16-366 MMFD. Preselector Sect. of 3 Gang Cond.
C2	77-833	16-366 MMFD. Preselector Sect. of 3 Gang Cond.
C3	77-833	16-328 MMFD. Oscillator Sect. of 3 Gang Cond.
C4	78-2010	3-30 MMFD. Foreign Band Preselector Trimmer
C5	76-2002	.00005 Mfd. Oscillator Grid Condenser
C6	75-2005	.1 Mfd. 200 V. Paper 6A7 Cathode By-Pass Cond.
C7	78-2008	First I.F. Primary Trimmer Condenser
C8	78-2011	First I.F. Secondary Trimmer Condenser
C9	78-2009	Second I.F. Trimmer Condenser
C10	75-2005	.1 Mfd. 200 V. Paper 78 Cathode By-Pass Cond.
C11	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C12	76-662	.002 Mfd. Mica 75 Plate Filter Condenser
C13	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C14	75-2003	.01 Mfd. 400 V. Paper Tone Control Condenser
C15	75-2001	.002 Mfd. 600 V. Paper 25L6 Plate Filter Cond.
C16	18-928	25 Mfd. 25 V. Dry Electrolytic Condenser
C17	75-2005	.1 Mfd. 200 V. Paper 75 Cathode By-Pass Cond.
C18	75-2011	.5 Mfd. 200 V. Paper B Supply By-Pass Cond.
C19	76-307	.0005 Mfd. Mica Diode Filter Condenser
C20	75-2005	.1 Mfd. 200 V. Paper Line By-Pass Condenser
C21	75-2005	.1 Mfd. 200 V. Paper A.V.C. Network By-Pass Cond.
C22	75-2005	.1 Mfd. 200 V. Paper 6A7 & 78 Screen By-Pass Cond.
C23	75-2003	.01 Mfd. 400 V. Paper Antenna Series Condenser
C24	18-2003	11 Mfd. 150 W.V. Dry Electrolytic Condenser
C25	18-2003	4 Mfd. 150 W.V. Dry Electrolytic Condenser
C26	18-2003	4 Mfd. 150 W.V. Dry Electrolytic Condenser

		INDUCTANCES
L1	17-2095	Foreign Band Oscillator Coil Assembly
L2	17-2079	Broadcast Oscillator Coil Assembly
L3	17-2100	Broadcast Preselector Coil Assembly
L4	17-2096	Foreign Band Preselector Coil Assembly
L5	68-2012	First I.F. Transformer Assembly
L6	17-2102	Second I.F. Transformer Coil Assembly
L7	64-2043	5" Speaker, 3000 Ohm Field, 25L6 Output Trans.
L8	14-940	20 Henry Filter Choke

FOR USE ONLY WITH

110-120 V 50-60 CYCLE

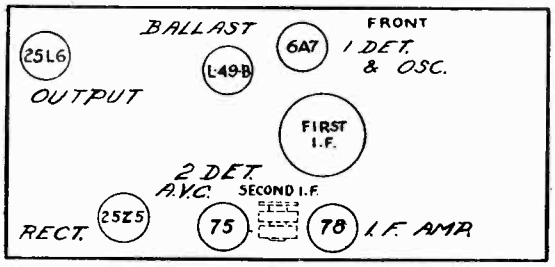
OR

110-120 V. D.C.

PILOT LIGHT 6-8 V.

I. F. PEAK 175 K.C.

LOCATION OF TUBES

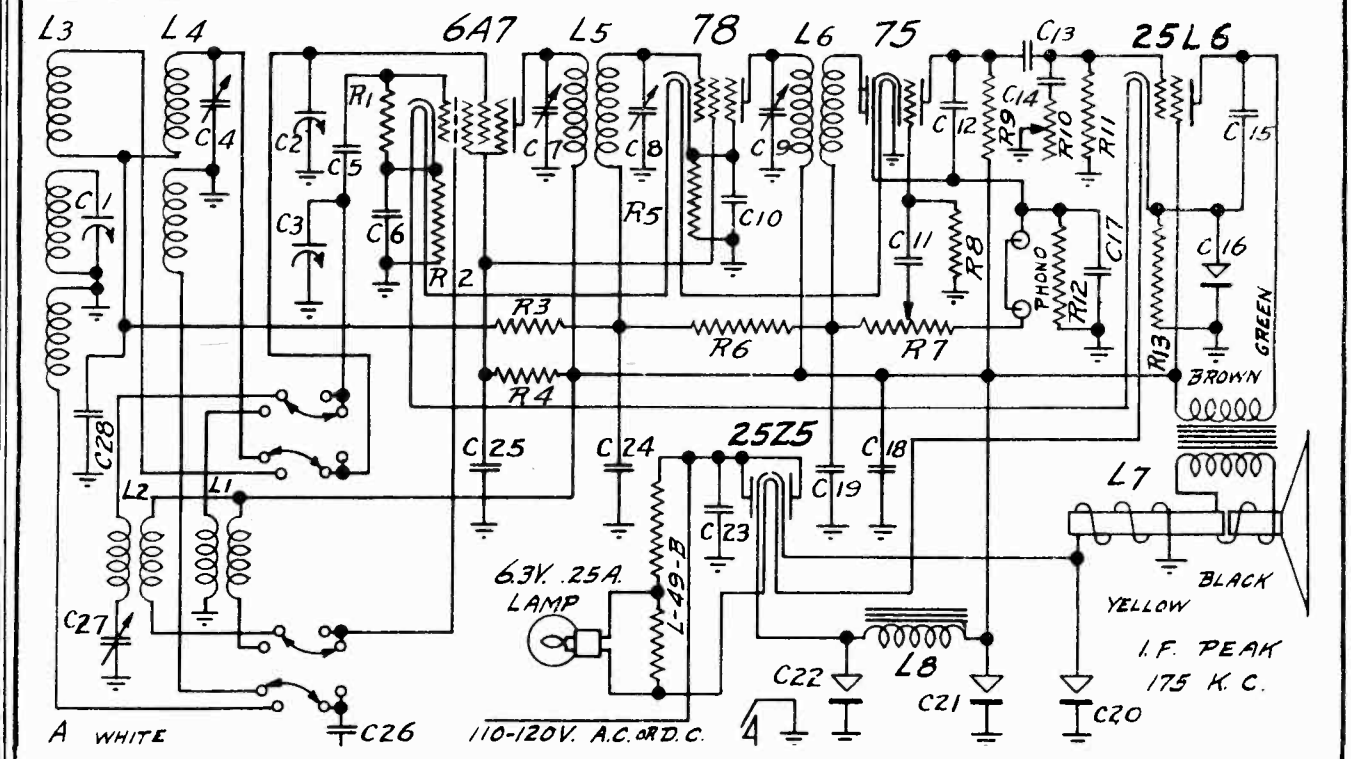


For other data see Index

MODEL 7BA6

WILCOX-GAY CORP.

25-2116



CODE	PART NO.	RESISTORS
R1	53-898	50,000 Ohm Oscillator Grid Resistor
R2	53-1062	250 Ohm Oscillator Cathode Resistor
R3	53-923	100,000 Ohm A.V.C. Network Resistor
R4	53-1042	25,000 Ohm 6A7 & 78 Screen Resistor
R5	53-1063	500 Ohm 78 Cathode Resistor
R6	53-926	1 Meg Ohm A.V.C. Network Resistor
R7	19-1291	500,000 Ohm Volume Control & Switch
R8	53-925	500,000 Ohm 75 Grid Resistor
R9	53-924	250,000 Ohm 75 Plate Resistor
R10	19-1317	250,000 Ohm Tone Control
R11	53-925	500,000 Ohm 25L6 Grid Resistor
R12	53-920	10,000 Ohm 75 Cathode Resistor
R13	53-2014	200 Ohm 25L6 Cathode Resistor

CODE	PART NO.	CONDENSERS
C1	77-833	16-366 MMFD. Preselector Section of 3 Gang
C2	77-833	16-366 MMFD. Preselector Section of 3 Gang
C3	77-833	16-366 MMFD. Oscillator Section of 3 Gang
C4	78-2010	3-30 MMFD. Long Wave Preselector Trimmer
C5	76-2002	.00005 Mfd. Oscillator Grid Condenser
C6	75-2005	.1 Mfd. 200 V. Paper 6A7 Cathode By-Pass Cond.
C7	78-993	First I.F. Primary Trimmer
C8	78-1228	First I.F. Secondary Trimmer
C9	78-788	Second I.F. Trimmer
C10	75-2005	.1 Mfd. 200 V. Paper 78 Cathode By-Pass Cond.
C11	75-2003	.01 Mfd. 400 V. Paper Audio Feed Cond.
C12	76-662	.002 Mfd. Mica 75 Plate Filter Cond.
C13	75-2003	.01 Mfd. 400 V. Paper Audio Feed Cond.
C14	75-2003	.01 Mfd. 400 V. Paper Tone Control Cond.
C15	75-2001	.002 Mfd. 600 V. Paper 43 Plate Filter Cond.
C16	18-928	25 Mfd. 25 V. Dry Electrolytic Condenser
C17	75-2005	.1 Mfd. 200 V. Paper 75 Cathode By-Pass Cond.
C18	75-2011	.5 Mfd. 200 V. Paper B Supply By-Pass Cond.
C19	76-307	.0005 Mfd. Mica Diode Filter Condenser
C20	18-2003	4 Mfd. 150 W.V. Dry Electrolytic Condenser
C21	18-2003	4 Mfd. 150 W.V. Dry Electrolytic Condenser
C22	18-2003	11 Mfd. 150 W.V. Dry Electrolytic Condenser
C23	75-2005	.1 Mfd. 200 V. Paper Line By-Pass Condenser
C24	75-2005	.1 Mfd. 200 V. Paper A.V.C. Network By-Pass Cond.
C25	75-2005	.1 Mfd. 200 V. Paper 6A7 & 78 Screen By-Pass Cond
C26	75-2003	.01 Mfd. 400 V. Paper Antenna Series Condenser
C27	78-2006	Long Wave Oscillator Series Condenser
C28	75-2005	.1 Mfd. 200 V. Grid Isolation Resistor

CODE	PART NO.	INDUCTANCES
L1	17-2070	Broadcast Oscillator Coil Assembly
L2	17-2070	Long Wave Oscillator Coil Assembly
L3	17-2115	Broadcast Preselector Coil Assembly
L4	17-2115	Long Wave Preselector Coil Assembly
L5	68-2022	First I.F. Transformer Assembly
L6	17-2097	Second I.F. Transformer Assembly
L7	64-2043	5" Speaker, 3000 Ohm Field, 25L6 Output Trans.
L8	14-940	20 Henry Filter Choke

FOR USE ONLY WITH

110-120 V . 50-60 CYCLE

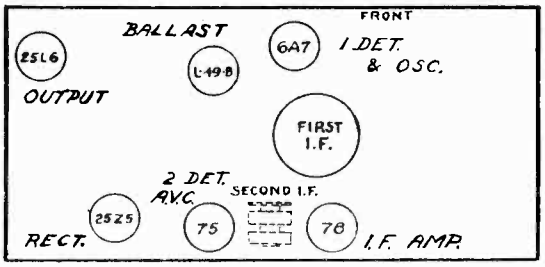
OR

110-120 V. D. C.

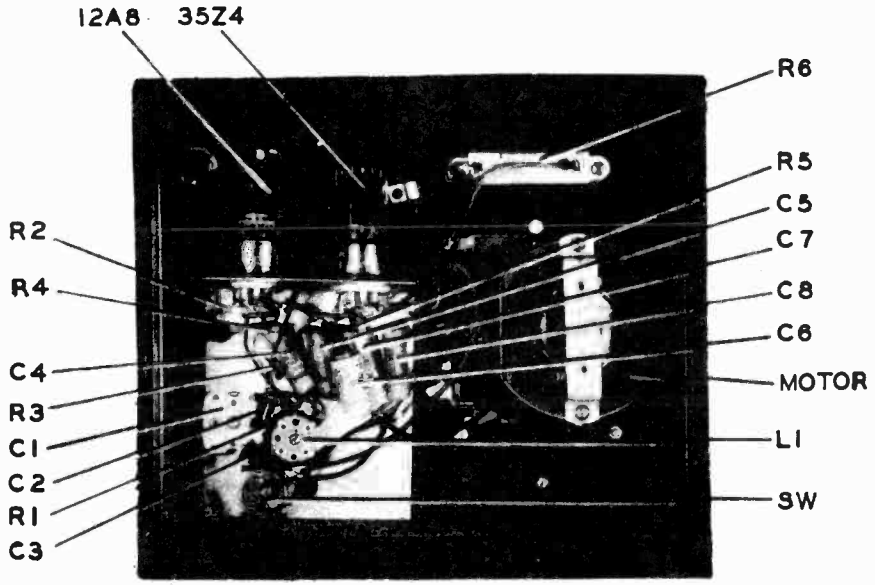
PILOT LIGHT 6-8 V.

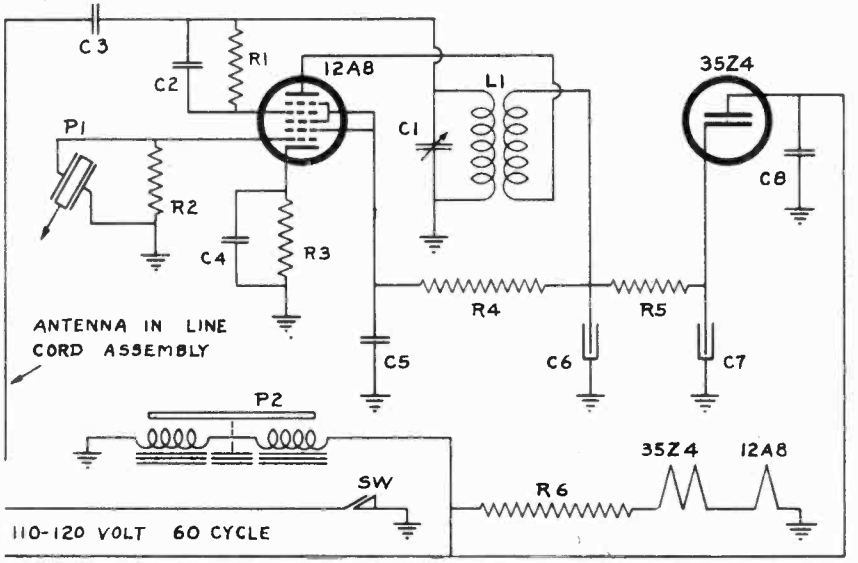
I. F. PEAK 115 K.C.

LOCATION OF TUBES



CODE	PART NO.	NAME
	6-2206	CABINET
	7-2046	CABINET BOTTOM
L1	17-2223	COIL ASSEMBLY, OSCILLATOR
C1	78-2034	COND. TRIMMER, 40-240 MMFD.
C2	76-2002	COND. MICA, 50 MMFD.
C3	76-2003	COND. MICA, 10 MMFD.
C4	75-2006	COND. PAPER, .1 MFD. 200 V.
C5	75-2005	COND. PAPER, .1 MFD. 200 V.
C6	18-2011	COND. ELECT. 8 MFD. 150 W.V.
C7	18-2010	COND. ELECT. 16 MFD. 150 W.V.
C8	75-2006	COND. PAPER, .1 MFD, 200 V.
R1	53-920	RESISTOR, 10,000 OHM 1/4 WATT
R2	53-924	RESISTOR, 250,000 OHM 1/4 WATT
R3	53-2023	RESISTOR, 1,000 OHM 1/4 WATT
R4-R5	53-919	RESISTOR, 5,000 OHM 1/4 WATT
R6	53-2026	RESISTOR, 466 OHM 10 WATT
SW	66-2023	SWITCH, LINE, "OFF-ON"





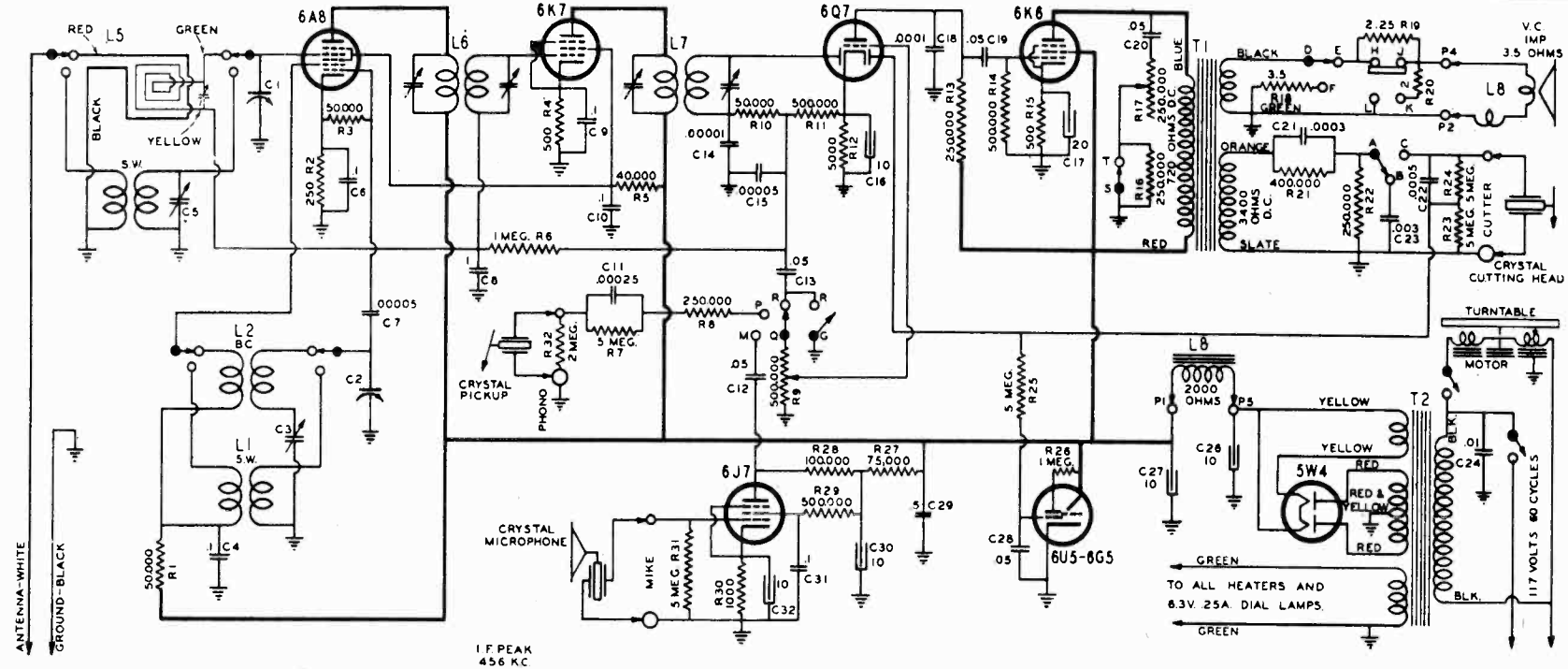
VOLTAGE DATA

Line Voltage --	115
C7 to GND. ----	150
C6 to GND. ----	110
12A8 Plate ----	110
12A8 Screen ---	90
12A8 Cathode --	6.2

40-2036	KNOB
20-2022	LINE CORD & PLUG--WITH ANT. WIRE
47-2015	MOTOR ASSEMBLY--WITH TURNTABLE
2-2012	PICK-UP ARM ASSEMBLY
5-2250	PICK-UP ARM REST
23-2024	PICK-UP CRYSTAL CARTRIDGE
57-2066	PICK-UP NEEDLE SCREW
49-2003	PHONOGRAPH NEEDLES (1 PKG.)

NOTE: An extension of the antenna contained within the line cord, and placed near the antenna lead of the radio receiver will provide sufficient signal intensity to overcome unusual static and interference conditions.

Test for oscillation: Connect low range voltmeter across R1. Use short meter leads, as long leads or high capacity to ground may cause oscillations to stop.
Meter reading..non-oscillating condition....zero.
Meter reading..oscillating condition....on the order of 0.5 volt.
Meter reading will depend upon tube characteristics, resistance of meter used, length of meter leads, and frequency to which the record player oscillator is tuned.



Tube	Position	Plate	Screen	Cathode
6A8	1st. Det. Osc.	230	75	2.2
6K7	I.F.	230	75	3.0
6Q7	2nd. Det.	90*		1.5
6J7	Mike Amp.	45 to 65*	30*	.8
6K6	Output	215	235	13.5

NOTE: This is a typical voltage analysis made by use of standard 1000 ohm per volt voltmeter, using the 300 volt scale for plate and screen voltage readings.

* Not actual voltages due to large values of resistance in circuit between supply voltage and point of measurement. These voltage values may vary considerably, depending upon the resistance of voltmeter used.

Line Voltage----------118
P5 or C26 to GND.-------350
P1 or C27 to GND.-------240
P5 to P1 (sp'kr field)--110
C30 to GND.------------150

Aerial disconnected.
All voltage measurements made against ground (chassis) except as noted.

January 1 1942

WILCOX-GAY CORP.

MODELS A-104, A-107

WILCOX-GAY CORP.

Alignment Data

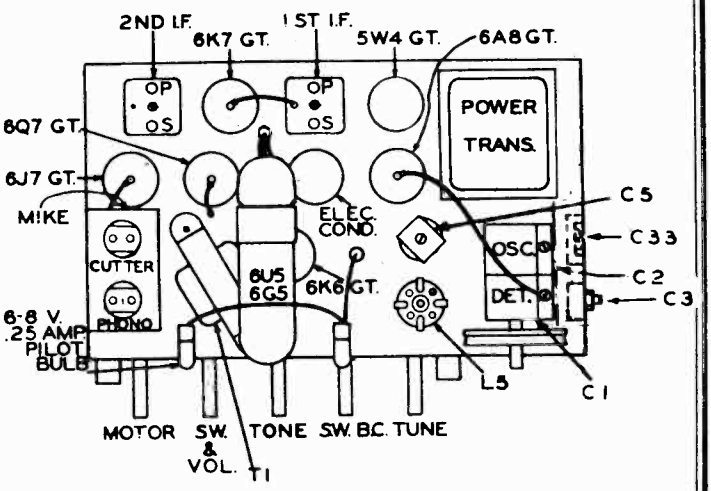
An OUTPUT METER or other indicating device should be used for accuracy in making ganging adjustments.

If an output meter is not available, the magic eye (6U5) may be used as an output indicator as follows:

(a) Depress push-button No. 4 "To Record Radio"

(b) Disconnect cutting-head from chassis.

(c) Adjust volume control to near maximum.



Connect signal generator to control grid of the 6A8 tube.

SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER
456 K.C.	1500 K.C.	Broadcast	2nd. I.F.--S
" "	" "	"	" " P
" "	" "	"	1st. I.F.--S
" "	" "	"	" " P
" "	550 K.C.	"	C-33 °

Connect signal generator to ANT. and GND. leads.

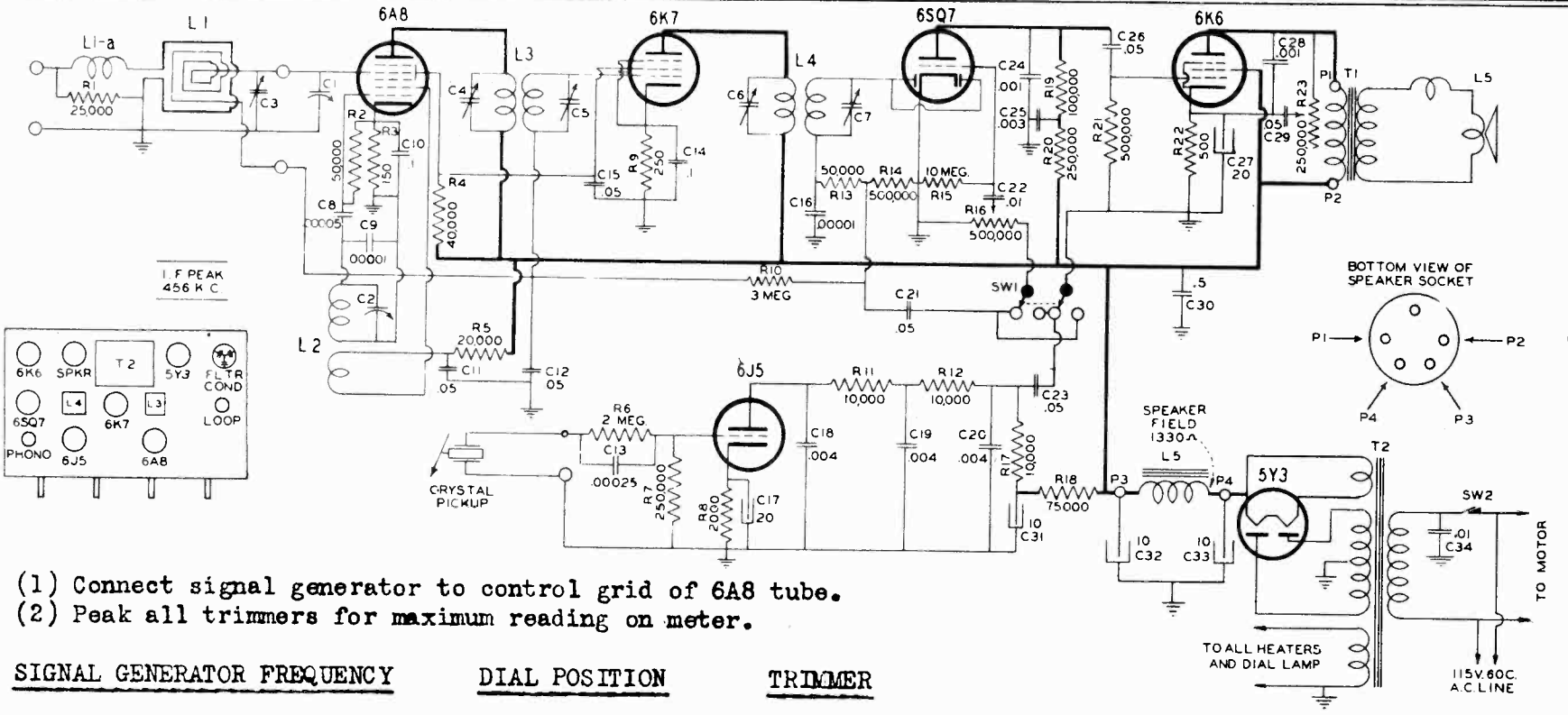
Turn condenser gang to full maximum capacity and check position of dial pointer with reference line on the scale, which is the last graduation below the 550 K.C. calibration.

600 K.C.	600 K.C.	Broadcast	L.F.Pad (C-3)
1400 K.C.	1400 K.C.	"	Osc.(C-2)
" "	" "	"	Det.(C-1)
Not used °°	15-16 M.C.	Short Wave	Ant.(C-5)

The entire alignment procedure should be repeated to obtain greatest accuracy in the adjustment of the trimming condensers.

° Adjust C-33 trimmer for MINIMUM signal.

°° Connect antenna to receiver, and adjust dial so that no station is received. Advance volume control until a fair volume of noise is received. Adjust trimmer for greatest noise.



(1) Connect signal generator to control grid of 6A8 tube.
(2) Peak all trimmers for maximum reading on meter.

SIGNAL GENERATOR FREQUENCY	DIAL POSITION	TRIMMER
456 K.C.	1700 K.C.	I.F. - C4
" "	" "	I.F. - C5
" "	" "	I.F. - C6
" "	" "	I.F. - C7

Check the alignment of the pointer with reference line below the 550-kc mark on the scale.

Connect signal generator to ANT. and GND. terminals.

1400 K.C.	1400 K.C.	C2-Osc.
" "	" "	Trimmer on Loop - R.F.

The Oscillator trimmer C2 is on the front section of the gang condenser.

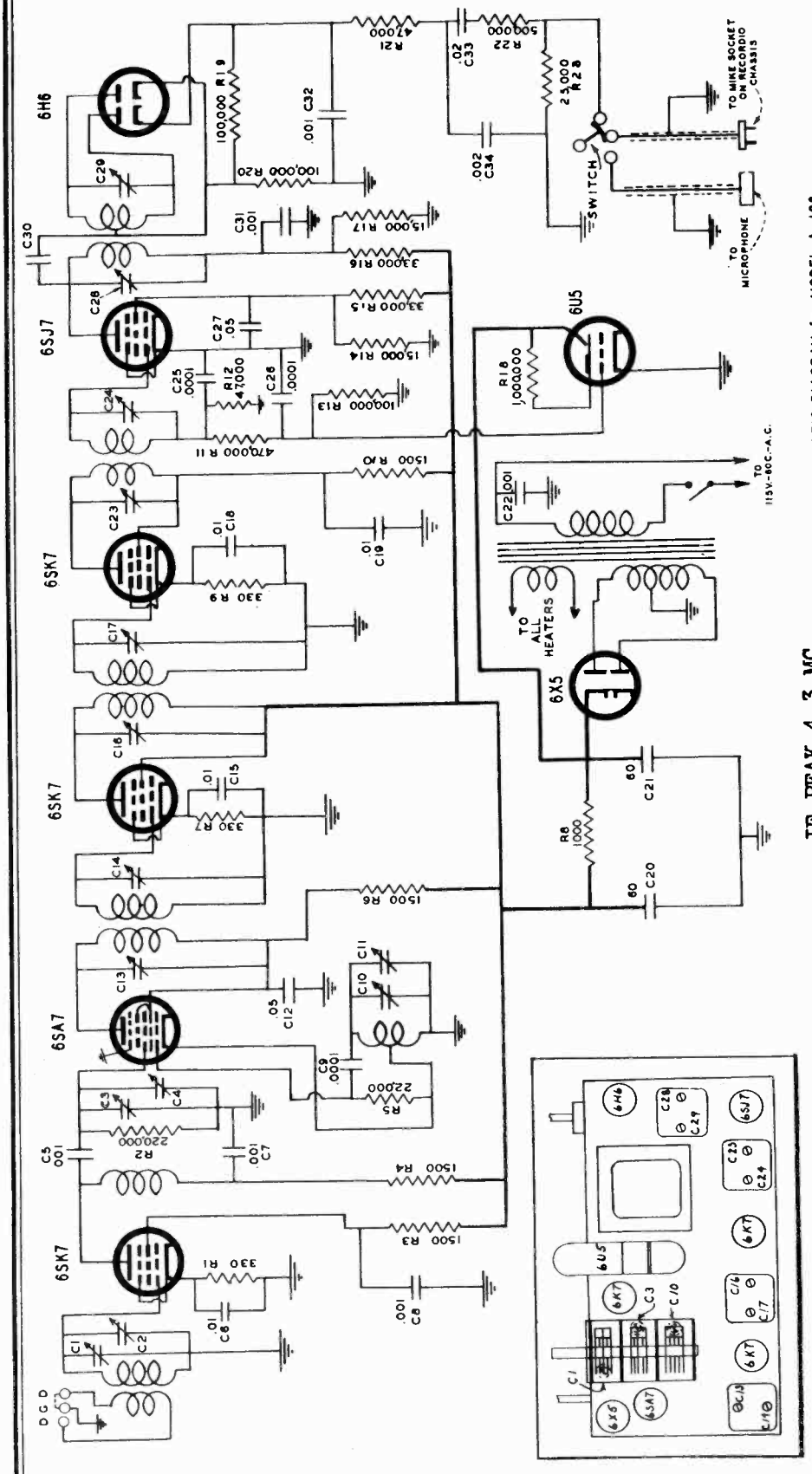
NOTE: In the event of loop antenna replacement, the R.F. alignment should be checked at 600 K.C., and if necessary, inductance of the loop may be adjusted to bring about correct alignment of the dial at 600 K.C., by dressing the end of the inside loop turn to provide more or less inductance as required.

Ad adjustment of loop inductance should be followed by re-alignment of the R.F. trimmers at 1400 K.C.

FOR DATA ON INSTA-MATIC RECORD CHANGER, SEE INDEX

MODEL A-106

WILCOX-GAY CORP.



SCHEMATIC DIAGRAM for MODEL A-106
FREQUENCY MODULATION UNIT

IF PEAK 4.3 MC

TUBE	DESCRIPTION	PLATE	SCREEN	CATHODE
6SK7	R-F Amplifier	105	36	3.6
6SA7	1st Det-Ocs	100	100	0
6SK7	1st I.F.	105	110	3.6
6SK7	2nd I.F.	105	110	3.0
6SJ7	Limiter	26	38	0
6H6	Discriminator	---	---	---
6U5	Tuning Eye	Term.No.4	- 163 Term.No.2	15
6X5GT	Rectifier	0	---	163

Line Voltage----------117
Cathode Rect. to Gnd.---163

Aerial Disconnected
All Voltages Measurements made against ground (chassis)

WILCOX-GAY CORP.

DISCRIMINATOR ALIGNMENT

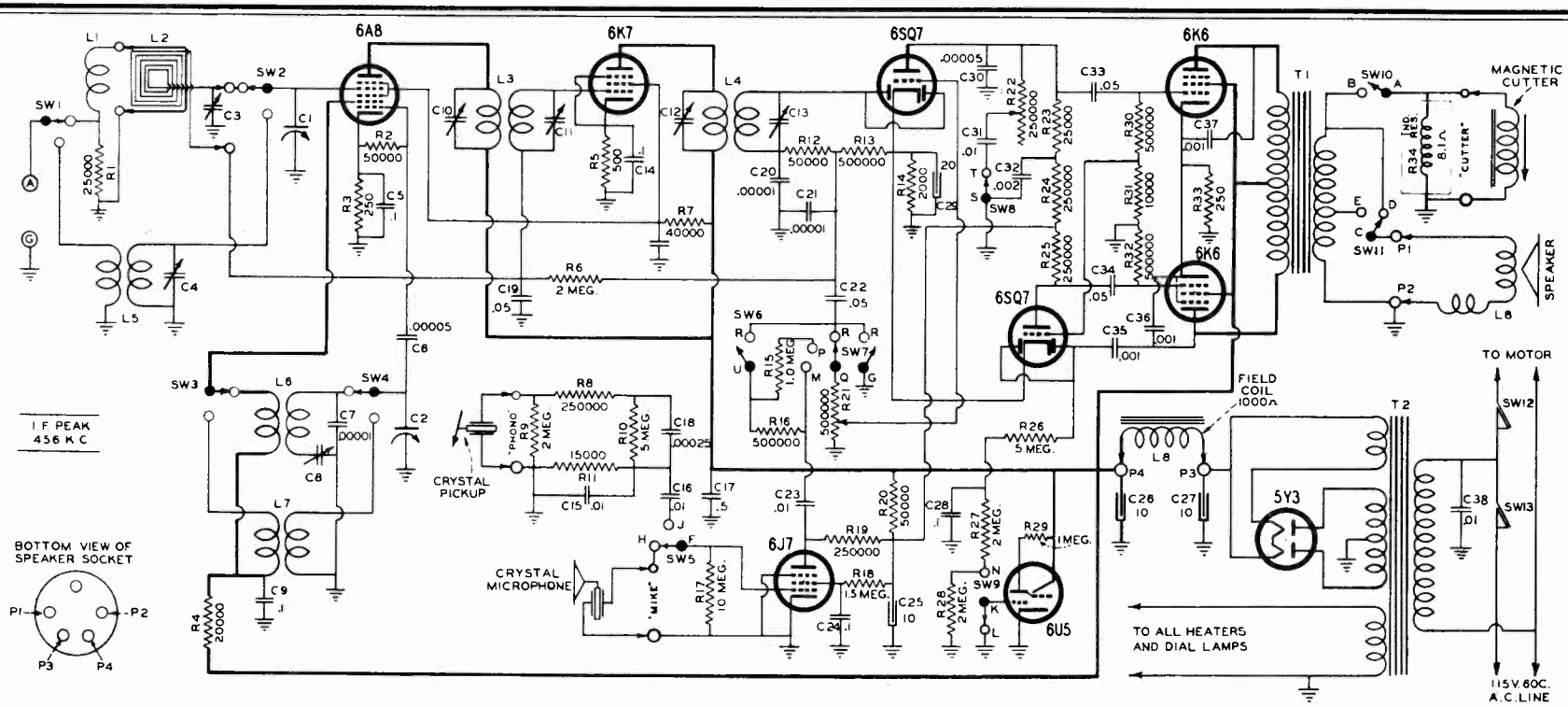
Connect the audio output leads of the F. M. unit to any convenient audio amplifier or "Phono" plug of any receiver, and connect an output meter (having a low range of 1 to 5 Volts) across the voice coil of the speaker. Temporarily increase the gain of the 6SJ7 limiter tube by shunting a 2,000 ohm resistor across the transformer, No. 01860. Apply a 4.3 mc. signal to the grid of the limiter tube through an .05 mfd. coupling condenser.

When a Frequency Modulated signal is used for aligning the Discriminator, the adjustment is made for maximum output in much the same manner as the conventional alignment of a 456 KC (AM) I. F. transformer on an AM signal, but if only an AM generator is available for aligning the Discriminator, the primary is aligned for maximum output and the secondary for balance or zero output, since one of the functions of the Discriminator is to eliminate amplitude modulated signals.

In tuning the secondary of the discriminator there are three places of minimum response; (1) out of resonance with the condenser too tight, (2) CORRECT, and (3) out of resonance, with the condenser too loose. The proper minimum has the characteristic that the signal rises very rapidly as the trimmer is turned IN EITHER DIRECTION. The other two minima mentioned above DO NOT have this characteristic and are incorrect. The trimmer farthest from the 6SJ7 tube tunes the secondary of the discriminator and by slowly rotating this trimmer the point of minimum audio response will be found and will indicate correct alignment of this trimmer. Now MISTUNE this trimmer as little as possible but enough to hear a signal and to obtain an output meter indication with which to align the primary trimmer for MAXIMUM response. Leaving the secondary trimmer mistuned, to assist in the I. F. alignment, move the signal input to the grid of the second 6SK7 I.F. amplifier tube, and align this stage, always reducing input as sensitivity increases so as to remain below the level at which the "Limiter" works. Unless this precaution is observed, the resonance indication is broadened. In the same way align the remaining I.F. transformers finishing with the signal applied to the 6SA7 grid. The SECONDARY of the discriminator may now be retuned to minimum response and the 2000 ohm shunt resistor removed, completing the I.F. alignment.

R. F. ALIGNMENT

For reasons of stability, the oscillator in the F.M. unit operates on the low side of R.F. signal. Because of the high intermediate frequency (4.3 mc) there is no possibility of aligning the oscillator on the image. If there is reason to believe that the trimmers are badly out of alignment, a very practical initial adjustment would be to adjust ALL THREE TRIMMERS to a position about one-fourth turn from maximum capacity. Then apply a 48 mc. signal (or equivalent harmonic of some lower frequency) to the antenna terminals of the Receptor through a dummy antenna of 200 to 400 ohms, set the pointer to 48 mc. and adjust the trimmer on the center (oscillator) section of the gang condenser to give the maximum response OF THE TUNING EYE. Align the antenna (front) and R.F. (rear) trimmers for maximum response and check the sensitivity at various points within the band. When properly aligned the antenna and oscillator trimmers are about one-fourth turn from maximum capacity with the R. F. trimmer about two turns from minimum.



Tube	Position	Plate	Screen	Cathode	GA
6A8	Det. Oscillator	250	100	2.6	165
6K7	I. F.	250	100	4.0	
6SQ7	2nd. Det.	75*	---	1.0	
6SQ7	1st. Audio	70*	---	1.0	
6J7	Speech Amp.	40*	50*	0	
6Y6	Push Pull	240	250	20.	
6K6	Audio	240	250	20.	
5Y3	Rectifier	---	---	345.	

Line Voltage----------115
C27 to GND.----------345
C26 to GND.----------235
Speaker Field Voltage-100

Aerial Disconnected.
Volume Control - Minimum
All Voltage Measurements made from noted point to ground (chassis) except as noted.

FOR DATA ON INSTA-MATIC RECORD CHANGER, SEE INDEX

WILCOX-GAY CORP.

WILCOX-GAY CORP.

An OUTPUT METER or other indicating device should be used for accuracy in making ganging adjustments.

If an output meter is not available, the magic eye (6U5) may be used as an output indicator as follows:

(a) Depress push button "To Record Radio".

(b) Disconnect cutting head from chassis.

(c) Adjust volume control to near maximum.

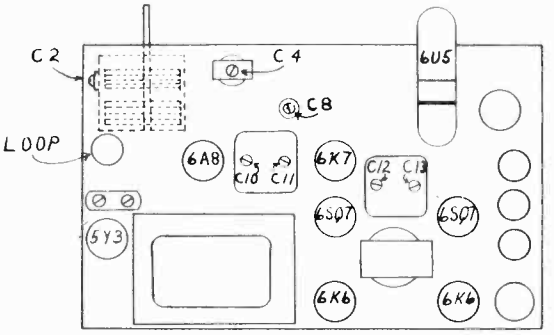


FIG. 2

(1) Connect signal generator to control grid of 6A8 tube and chassis.

SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER
456 K.C.	1500 K.C.	Broadcast	2nd. I.F. - Sec.* C13
" "	" "	"	" " - Pri. C12
" "	" "	"	1st. I.F. - Sec. C11
" "	" "	"	" " - Pri. C10

(2) Connect signal generator to ANT. and GND. terminals.

Turn condenser gang to full maximum capacity and check position of dial pointer with reference line on the scale, 530 K.C. calibration.

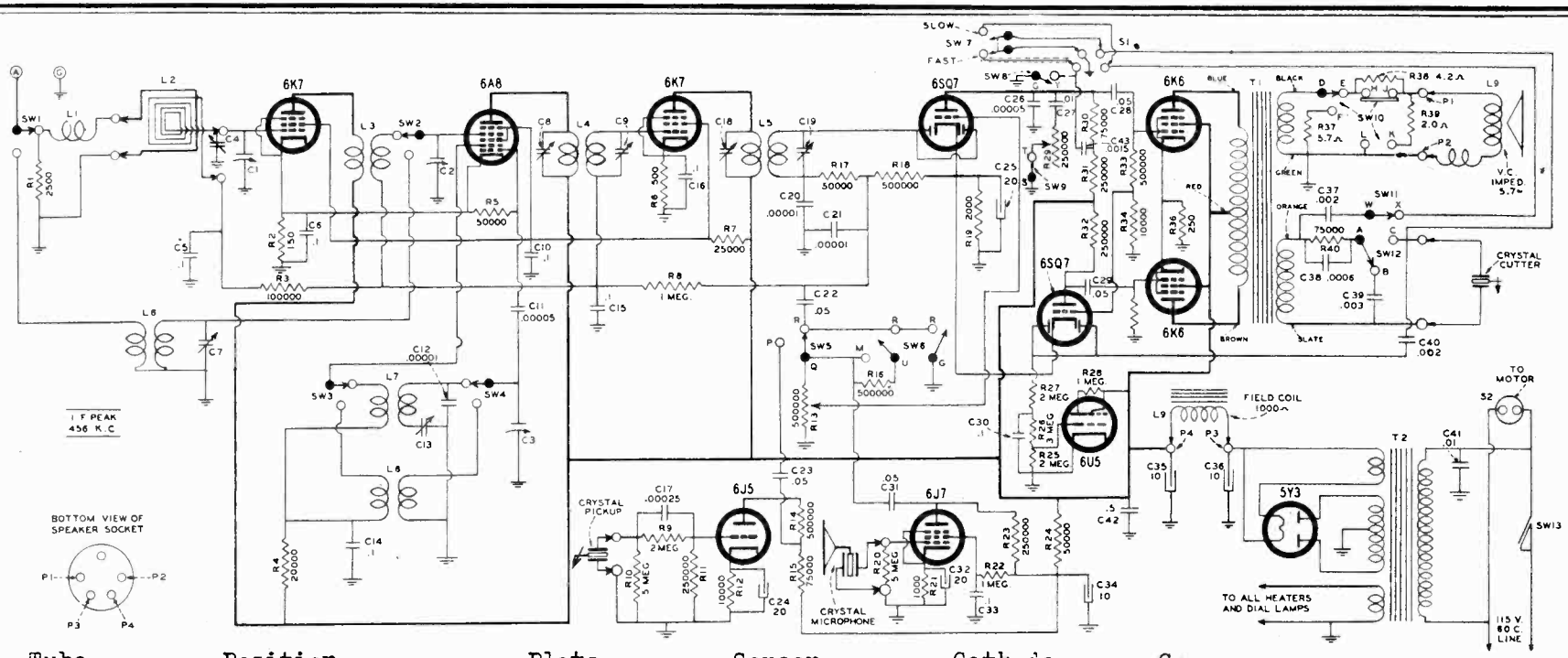
600 K.C.	600 K.C.	Broadcast	L.F. Pad. (C-8)
1400 K.C.	1400 K.C.	"	Osc. (C-2)
1400 K.C.	1400 K.C.	"	Det. Trimmer on Loop
Not Used**	15-16 M.C.	Short Wave	Trimmer (C-4)

It is advisable to repeat the entire alignment procedure to correct the slight effect one adjustment may have upon the other.

As resonance is approached by adjustment of the trimmers, the signal generator attenuator should be adjusted for a minimum signal that will provide a low reading on the output indicator.

* If the trimming condenser on the secondary of the second I.F. transformer is adjusted throughout its full range, two "peaks" will be observed. The correct peak is the one of lowest capacity in the adjustment of the trimmer. The I.F. trimming condensers when properly adjusted will rest at approximately one and one half turns from the fully closed position.

** Connect antenna to receiver, and adjust dial so that no station is received. Advance volume control until a fair volume of noise is received. Adjust trimmer for greatest noise.



Tube	Position	Plate	Screen	Cathode	GA
6K7	R. F.	235	95	2.5	
6A8	1st. Detector	235	95	2.4	140
6K7	I. F.	235	95	3.6	
6SQ7	2nd. Detector	165		-1.2	
6SQ7	1st. Audio	165		-1.2	
6J5	Phono Amp.	35*		.8	
6K6	Push Pull	225	235	20.	
6K6	Audio	225	235	20.	
5Y3	Rectifier			355.	
6J7	Speech Amp.	25*	30*	.8	

FOR DATA ON INSTA-MATIC RECORD CHANGER, SEE INDEX

Line Voltage----------115
C36 to Gnd.----------355
C35 to GND.----------255
Speaker Field Voltage----100

Aerial Disconnected.
Volume Control - Minimum
All Voltage Measurements made from noted point to ground (chassis) except as noted.

WILCOX-GAY CORP.

An OUTPUT METER or other indicating device should be used for accuracy in making ganging adjustments.

If an output meter is not available, the magic eye (6U5) may be used as an output indicator as follows:

(a) Depress push button "To Record Radio".

(b) Disconnect cutting head from chassis.

(c) Adjust volume control to near maximum.

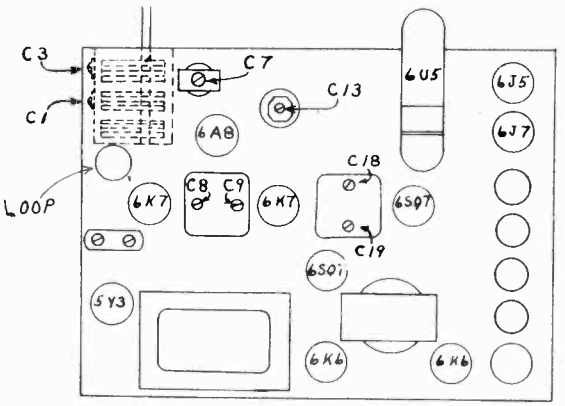


FIG. 3

Connect signal generator to control grid of 6A8 tube. Make connection to side of middle section (C3) of condenser gang. (Fig. 11)

SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER
456 K.C.	1500 K.C.	Broadcast	2nd I.F. - C19
" "	" "	"	" " - C18
" "	" "	"	1st I.F. - C 9
" "	" "	"	" " - C 8

Connect signal generator to ANT. and GND. terminals.

600 K.C.	600 K.C.	Broadcast	L.F. Pad (C-13)*
1400 K.C.	1400 K.C.	"	Osc. (C- 3)
1400 K.C.	1400 K.C.	"	Det. (C- 1)
1400 K.C.	1400 K.C.	"	Trimmer on Loop (P-2)
Not Used**	15-16 M.C.	Short Wave	R.F. (C- 7)

As resonance is approached by adjustment of the trimmers, the signal generator attenuator should be adjusted for a minimum signal that will provide a low reading on the output indicator.

It is advisable to repeat the entire alignment procedure to correct the slight effect one adjustment may have upon the other.

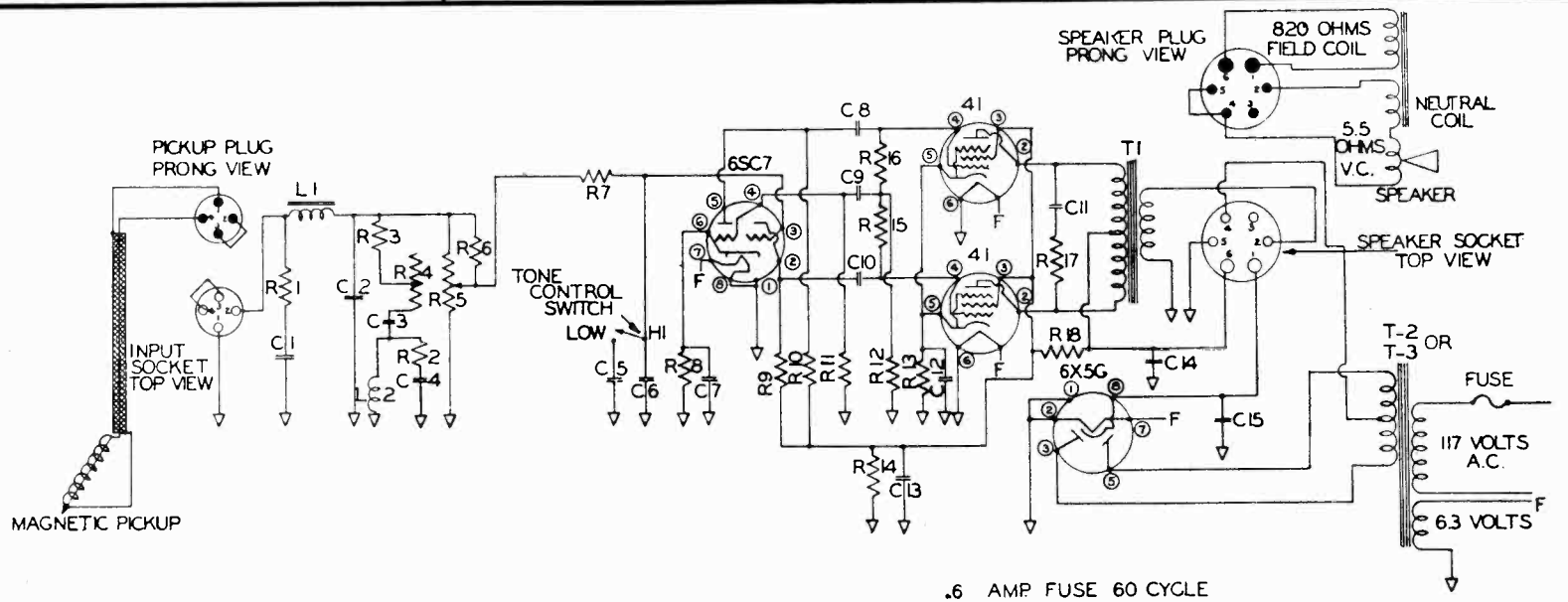
* First note the position of the dial pointer with the condenser gang turned to full maximum capacity. The left edge of the pointer should be slightly to the right of the last dial graduation.

In adjusting the L.F. Pad.(C-13) rock the condenser gang back and forth across the 600 K.C. signal and note that maximum output meter reading coincides with the 600 K.C. dial graduation. If the dial reading is other than 600 K.C., reset the dial pointer on the dial cord, to read 600 K.C. at maximum output meter indication.

** Connect antenna to receiver, and adjust dial so that no station is received. Advance volume control until a fair volume of noise is received. Adjust trimmer (C-7) for greatest noise.

SOUND SYSTEM FOR MODEL 41 38655

PICKUP PART NO. 34968	AMPLIFIER 0413 25 CYCLE 37263 041 50-60 CYCLE 36073	SPEAKER MAGNAVOX 35948



.6 AMP. FUSE 60 CYCLE
.75 AMP. FUSE 25 CYCLE

ITEM	PART NO.	VALUE	REMARKS
		RESISTORS	
R1	22530	1000 OHMS	±10% ⅓ WATT
R2	22530	1000 OHMS	±10% ⅓ WATT
R3	35945	100 OHMS	±10% ⅓ WATT
R4	35931	1000 OHMS	DUAL VOLUME
R5		150000 OHMS	CONTROL
R6	35946	27000 OHMS	±10% ⅓ WATT
R7	35925	82000 OHMS	±10% ½ WATT
R8	35926	2700 OHMS	±10% ½ WATT
R9	22528	220000 OHMS	±10% ½ WATT
R10	22528	220000 OHMS	±10% ½ WATT
R11	35924	560000 OHMS	±10% ½ WATT
R12	20855	150000 OHMS	±10% ½ WATT
R13	35928	390 OHMS	±10% 1 WATT
R14	35922	82000 OHMS	±10% 1 WATT
R15	35923	330000 OHMS	±10% ½ WATT
R16	35923	330000 OHMS	±10% ½ WATT
R17	35929	15000 OHMS	±10% ½ WATT
R18	35921	4700 OHMS	±10% 1 WATT

ITEM	PART NO.	VALUE	REMARKS
		CONDENSERS	
C1	35940	.003 MFD	±10% 100 W.V.
C2	35943	.005 MFD	±20% 100 W.V.
C3	35941	.5 MFD	±10% 100 W.V.
C4	35942	.008 MFD	±10% 100 W.V.
C5	35927	.001 MFD	±10% 200 W.V.
C6	35930	.0005 MFD	±10% 200 W.V.
C7	36432	20. MFD	25 W.V.
C8	22850	.01 MFD	±10% 400 W.V.
C9	22850	.01 MFD	±10% 400 W.V.
C10	22850	.01 MFD	±10% 400 W.V.
C11	35989	.006 MFD	±10% 1200 W.V.
C12	35920	20. MFD	25 W.V.
C13		10. MFD	350 W.V.
C14	35920	10. MFD	350 W.V.
C15		10. MFD	450 W.V.

ITEM	PART NO.	VALUE	REMARKS
		CHOKES	
L1	35933	290 MILLIHNR	COIL
L2	35917	400 MILLIHNR	COIL
		TRANSFRMRS	
T1	35919		AUDIO OUTPUT
T2	35915	50-60 CYCLE	POWER
T3	37264	25 CYCLE	POWER

VOLTAGES AND CURRENTS OF MODEL 041 AMPLIFIER ALL MEASUREMENTS MADE WITH LINE VOLTAGE 117 VOLTS 60 OR 25 CYCLES A.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER (ALL VOLTAGES OVER 50 VOLTS USE 500 VOLT SCALE)

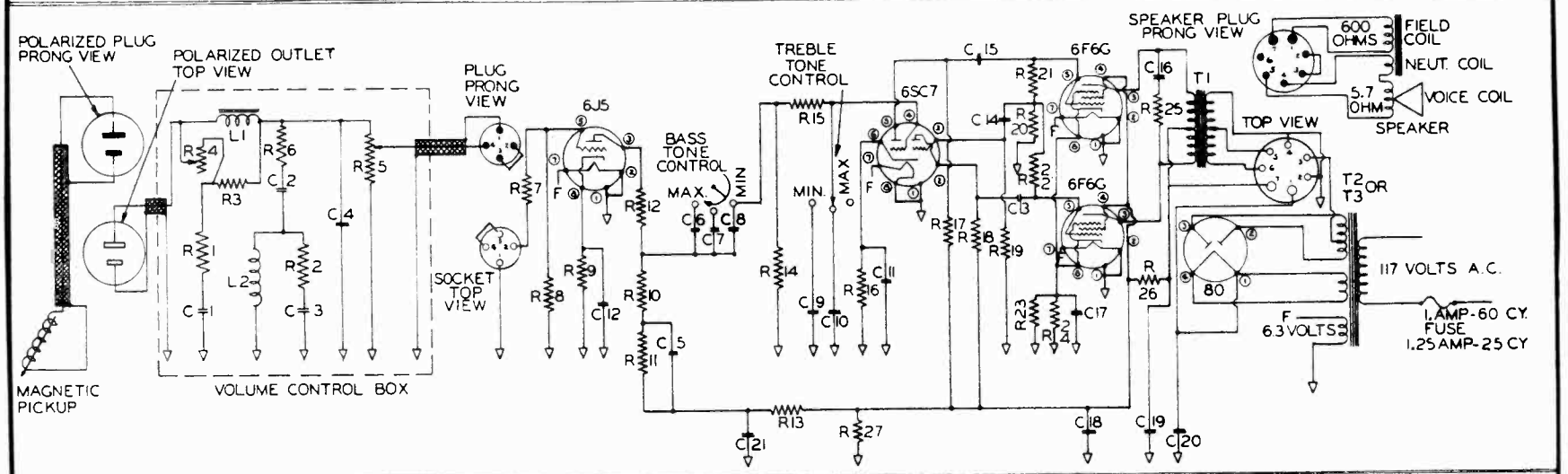
AVERAGE PLATE AND SCREEN VOLTAGE MEASURED TO CHASSIS	AVERAGE PLATE CURRENT	AVERAGE BIAS VOLTAGE MEASURED FROM CATHODE TO CHASSIS	AVERAGE FILAMENT VOLTAGE
6SC7 PLATE 149 VOLTS D.C.	6SC7 .4 MILLS. D.C.	6SC7 2.25 VOLTS D.C.	6SC7 6.3 VOLTS A.C.
41 PLATE 321 VOLT D.C. SCR'N 258 VOLT D.C.	41 23. MILLS. D.C.	41 20.5 VOLTS D.C.	41 6.3 VOLTS A.C.
			6X5G 6.3 VOLTS A.C.

AVERAGE VOLTAGE ACROSS CONDENSER C13 267 VOLTS D.C. — CONDENSER C14 323 VOLTS D.C. — CONDENSER C15 370 VOLTS D.C.

SPEAKER FIELD 820-OHMS. BETWEEN TERMINALS 1 & 6 ON SPEAKER SOCKET 48 VOLTS D.C.

SOUND SYSTEM FOR MODEL 71 — 38613

PICKUP PART NO 34969	VOLUME CONTROL 36549	AMPLIFIER 0713 25 CYCLE 37266 / 071 50-60 CYCLE 36333	SPEAKER 36485



ITEM	PART NO	VALUE	REMARKS
		RESISTOR	
R 1	36553	5 100 OHMS	± 10 % ½ WATT
R 2	22530	1 000 OHMS	± 10 % ½ WATT
R 3	36554	3 900 OHMS	± 10 % ½ WATT
R 4		20 000 OHMS	VOL CON REAR
R 5	36551	150 000 OHMS	VOL CON PANEL
R 6	36325	1 200 OHMS	± 10 % ½ WATT
R 7	36475	120 000 OHMS	± 10 % ½ WATT
R 8	36447	390 000 OHMS	± 10 % ½ WATT
R 9	36324	3 300 OHMS	± 10 % ½ WATT
R 10	36477	4 700 OHMS	± 10 % ½ WATT
R 11	20855	150 000 OHMS	± 10 % ½ WATT
R 12	36326	56 000 OHMS	± 10 % ½ WATT
R 13	21200	10 000 OHMS	± 10 % ½ WATT
R 14	36323	270 000 OHMS	± 10 % ½ WATT
R 15	20855	150 000 OHMS	± 10 % ½ WATT
R 16	36325	1 200 OHMS	± 10 % ½ WATT
R 17	36476	180 000 OHMS	± 10 % ½ WATT
R 18	36476	180 000 OHMS	± 10 % ½ WATT
R 19	35924	560 000 OHMS	± 10 % ½ WATT
R 20	21938	100 000 OHMS	± 10 % ½ WATT
R 21	36476	180 000 OHMS	± 10 % ½ WATT
R 22	36476	180 000 OHMS	± 10 % ½ WATT
R 23	36327	680 OHMS	± 10 % 1 WATT
R 24	36327	680 OHMS	± 10 % 1 WATT
R 25	25574	15 000 OHMS	± 10 % 1 WATT
R 26	37145	1 500 OHMS	± 10 % 3 WATT
R 27	36321	47 000 OHMS	± 10 % 3 WATT

ITEM	PART NO	VALUE	REMARKS
		CONDENSER	
C 1	36320	.003 MFD	± 10 % 600 W.V.
C 2	28123	.3 MFD	± 10 % 120 W.V.
C 3	25680	.008 MFD	± 10 % 600 W.V.
C 4	26560	.004 MFD	± 10 % 600 W.V.
C 5	36471	.075 MFD	± 10 % 200 W.V.
C 6	22850	.01 MFD	± 10 % 400 W.V.
C 7	36473	.00085 MFD	± 10 % 600 W.V.
C 8	36474	.0015 MFD	± 10 % 600 W.V.
C 9	36472	.001 MFD	± 10 % 600 W.V.
C10	36319	.00035 MFD	± 10 % 600 W.V.
C11	36330	20. MFD	DUAL 25 W.V.
C12		20. MFD	DUAL 25 W.V.
C13	37284	.03 MFD	+10+40 % 600 W.V.
C14	22850	.01 MFD	± 10 % 400 W.V.
C15	37284	.03 MFD	+10+40 % 600 W.V.
C16	35989	.006 MFD	± 10 % 1200 W.V.
C17		20. MFD	25 W.V.
C18	36338	10. MFD	450 W.V.
C19		10. MFD	450 W.V.
C20		10. MFD	475 W.V.
C21	36469	8. MFD	350 W.V.

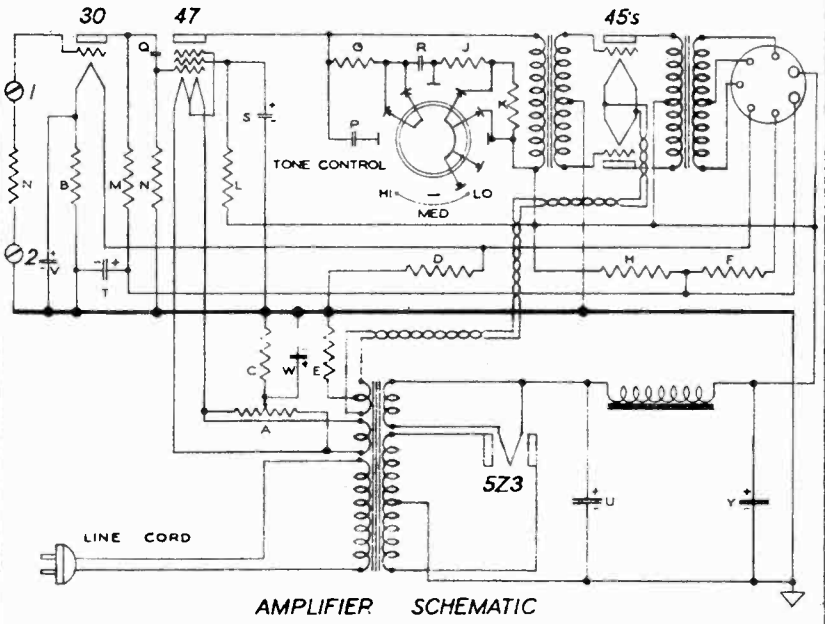
ITEM	PART NO	VALUE	REMARKS
		CHOKES	
L 1	35917	400 MILLIHENRIES	COIL
L 2	35933	290 MILLIHENRIES	COIL
		TRANSFORMER	
T 1	36314		AUDIO OUTPUT
T 2	36315	50-60 CYCLE	POWER
T 3	37267	25 CYCLE	POWER

VOLTAGES & CURRENTS OF MODEL 071 AMPLIFIER — ALL MEASUREMENTS MADE WITH LINE AT 117 VOLTS 25 OR 60 CYCLE
ALL VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER. (ALL VOLTAGES OVER 50 USE 500 VOLT SCALE)

AVERAGE PLATE & SCREEN VOLTAGE MEASURED TO CHASSIS	AVERAGE PLATE CURRENT	AVERAGE BIAS VOLTAGE MEASURED FROM CATHODE TO CHASSIS	AVERAGE FILAMENT VOLTAGE
6J5 PLATE 77. VOLTS D.C.	6J5 1.1 MILLS D.C.	6J5 3. VOLTS D.C.	6J5 6.3 VOLTS A.C.
6SC7 PLATE 155. VOLTS D.C.	6SC7 .8 MILLS D.C.	6SC7 1.75 VOLTS D.C.	6SC7 6.3 VOLTS A.C.
6F6G PLATE 337. VOLTS D.C.	6F6G 30. MILLS D.C.	6F6G 23. VOLTS D.C.	6F6G 6.3 VOLTS A.C.
6F6G SCREEN 310. VOLTS D.C.			80 5. VOLTS A.C.

AVERAGE VOLTAGE ACROSS CONDENSERS — C17 23 VOLTS D.C. — C18 309 VOLTS D.C. — C19 337 VOLTS D.C. — C20 388 VOLTS D.C. — C21 295 VOLTS D.C.

SPEAKER FIELD RESISTANCE 600 OHMS —— 51 VOLTS D.C. MEASURED BETWEEN TERMINALS 1 & 7 OF SPEAKER SOCKET



AMPLIFIER SCHEMATIC

Connection
NO Connection
Ground
Ohm
MΩ Kilohm
Ω Megohm

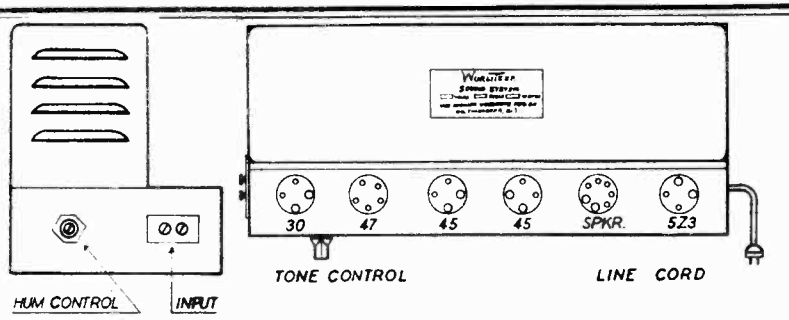
PARTS LIST

amplifier unit

A	20Ω	Hum Control
B	65Ω	w.w. res.
C	500Ω	w.w. res.
D	280Ω	volt. div.
E	775Ω	volt. div.
F	1650Ω	volt. div.
G	4500Ω	carbon.
H	7000Ω	volt. div.
J	1500Ω	carbon w/2
K	4 MΩ	carbon w/2
L	5 MΩ	carbon w/;
M	100MΩ	carbon w/4
N	0.5Ω	carbon w/4
P	.01mf.	600v paper
Q	.05mf.	400v paper
R	.3mf	400v paper
S	2 mf.	450v. dry
T	8 mf	200v. dry
U	8 mf.	475v. wet
V	10 mf.	25v. dry
W	25mf.	25v. dry
Y	30mf	400v. wet

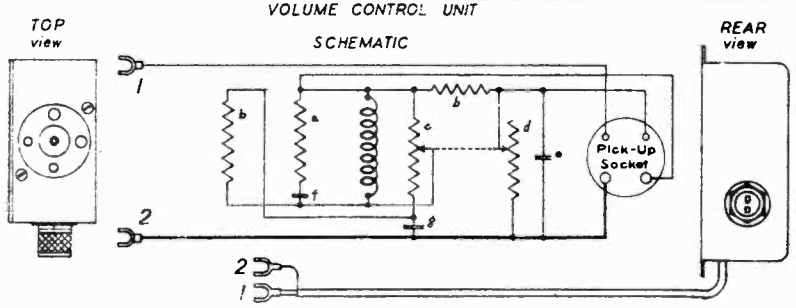
volume control unit

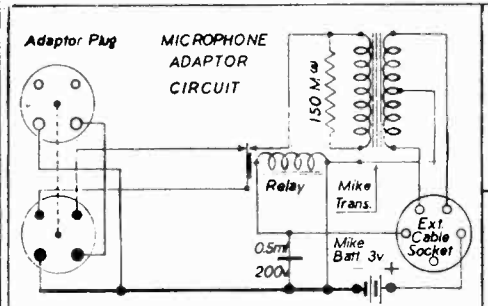
a	15MΩ	carbon w/4
b	50MΩ	carbon w/4
c	50 MΩ	dual var.
d	150MΩ	dual var.
e	0.005mf	mica
f	0.004mf	mica
g	.25mf	200v paper



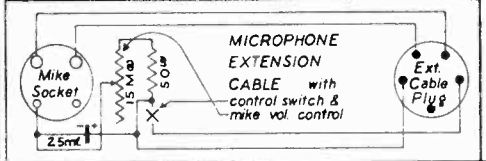
END VIEW — MODEL 550 AMPLIFIER — TOP VIEW

VOLUME CONTROL UNIT

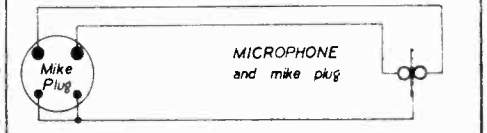




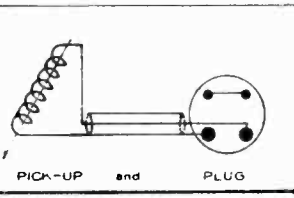
Insert adaptor plug between pick-up plug and its socket.



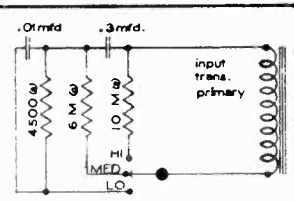
MICROPHONE EXTENSION CABLE with control switch & mike vol. control



MICROPHONE and mike plug

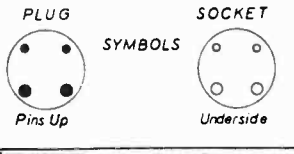


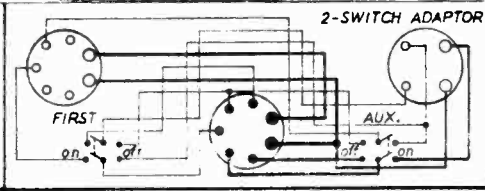
PICK-UP and PLUG

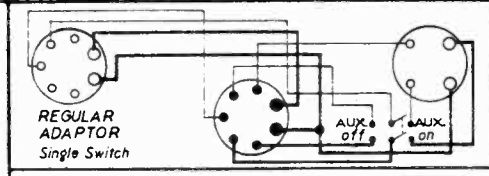


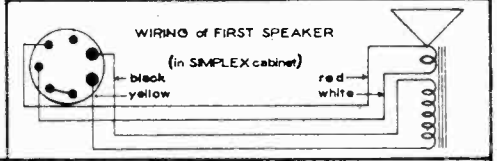
ELECTRICAL EQUIVALENT not wiring equivalent OF TONE CONTROL CIRCUITS

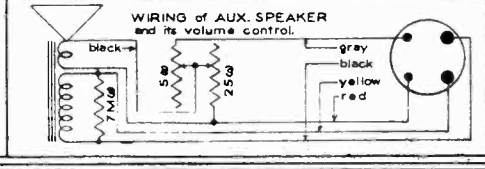
Presented only for simplicity of checking tone control operation.











NOTES

Measure all D.C. voltages from chassis with a 1000 ohm per volt meter with the line at 115 volts 60 cycles.

AVERAGE D.C. VOLTAGES

45 Plates	338v.	45 Bias	57.5v
47 Plate	313v.	47 Bias	19v.
30 Plate	75v.	30 Bias	4.1v.
47 Screen	294v.	5Z3 Fil.	365v.
Across cond. Y	340v.	Across cond. T	170v.

Letters on circuit diagrams refer to list of values and ratings of component parts.

Terminals 1 & 2 of the volume control unit connect to the corresponding amplifier input terminals.

SERVICE SCHEMATIC

SIMPLEX POWER AMPLIFIER

MODEL 550

SERIAL NUMBER SERIES 5 500 001

DRAWING NUMBER 97

9-1-35

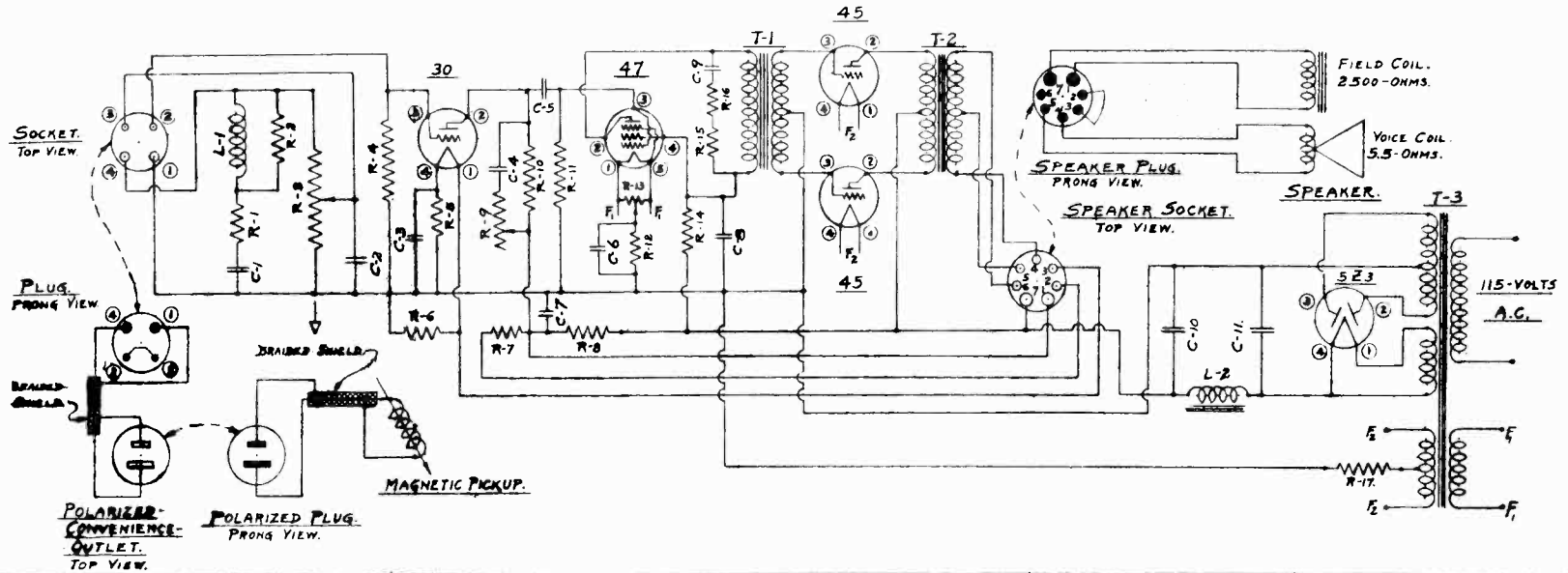
RUDOLPH WURLITZER CO.

WURLITZER PAGE 13-3

MODEL 550

SOUND SYSTEM FOR MODEL-P-30.

PICKUP PART Nº 20141.	AMPLIFIER #551 : 25-CYCLE #21116.-60-CYCLE #20915.	SPEAKER-PART Nº 20756.



ITEM	PART Nº	VALUE	REMARKS
		RESISTORS	
R-1	21300	10 000 - OHMS	±10% 1/2 WATT.
R-2	21300	10 000 - OHMS	±10% 1/4 WATT.
R-3	20764	150000 - OHMS	VOLUME CONTROL.
R-4	20750	500000 - OHMS	±20% 1/4 WATT.
R-5	20159	65 - OHMS	± 5% 1/2 WATT.
R-6		280 - OHMS	VOLTAGE DIVIDER
R-7	20145	1850 OHMS.	VOLTAGE DIVIDER.
R-8		7000 - OHMS	VOLTAGE DIVIDER
R-9	20764	150 000 - OHMS	TONE CONTROL
R 10	4409	100 000 - OHMS	±20% 1/4 WATT.
R 11	20855	150 000 - OHMS	±10% 1/4 WATT.
R 12	20158	500 - OHMS	±10% 2 - WATT.
R 13	20445	20 - OHMS	HUM CONTROL
R-14	20779	1200 - OHMS	±10% 10 - WATT.
R-15	20264	1500 - OHMS	±10% 1/2 - WATT.
R-16	20145	4500 - OHMS	VOLTAGE DIVIDER
R-17		775 - OHMS	VOLTAGE DIVIDER.

ITEM	PART Nº	VALUE	REMARKS
		CONDENSERS	
C-1	20133	.25 - MFD	+10%-20% 200 VOLT.
C-2	20865	.0015 - MFD	±10%
C-3	20129	10 — MFD	25 VOLT.
C-4	20789	.02 MFD	+20% -10% 400 VOLT.
C 5	20131	.05 - MFD	+20% -10% 400 VOLT.
C-6	20128	25 — MFD.	25 VOLT.
C-7	20778	8 — MFD	450 VOLT.
C-8		8 — MFD	450 VOLT.
C-9	20775	.5 MFD	±25% 400 VOLT.
C-10	20139	30 — MFD	400 VOLT.
C-11	20513	8 — MFD	475 VOLT.
C-12			
C-			

ITEM	PART Nº	VALUE	REMARKS
		TRANSFORMER.	
T-1	20590		AUDIO INPUT
T-2	20767		AUDIO OUTPUT
T-3	5041		POWER TRANSFORMER
T-4			
T-5			
		CHOKES.	
L-1	20765		AIR CORE
L-2	5048		POWER FILTER CHOKE
L-3			
		SPEAKER.	
	20757	FIELD 2,500 OHM	VOICE COIL - 5.5 OHMS

VOLTAGES AND CURRENTS OF MODEL #551-AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115-VOLTS.
ALL VOLTAGES MEASURED WITH 1,000-OHMS PER VOLT VOLTMETER.

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE + TO CHASSIS —.	
OUTPUT -45	388-VOLTS D.C.
DRIVER -47	313-VOLTS D.C.
DRIVER -30-SCREEN	294-VOLTS D.C.

AVERAGE PLATE CURRENT:-	
OUTPUT -45	37.0-M.A.D.C.
DRIVER -47	32.0-M.A.D.C.

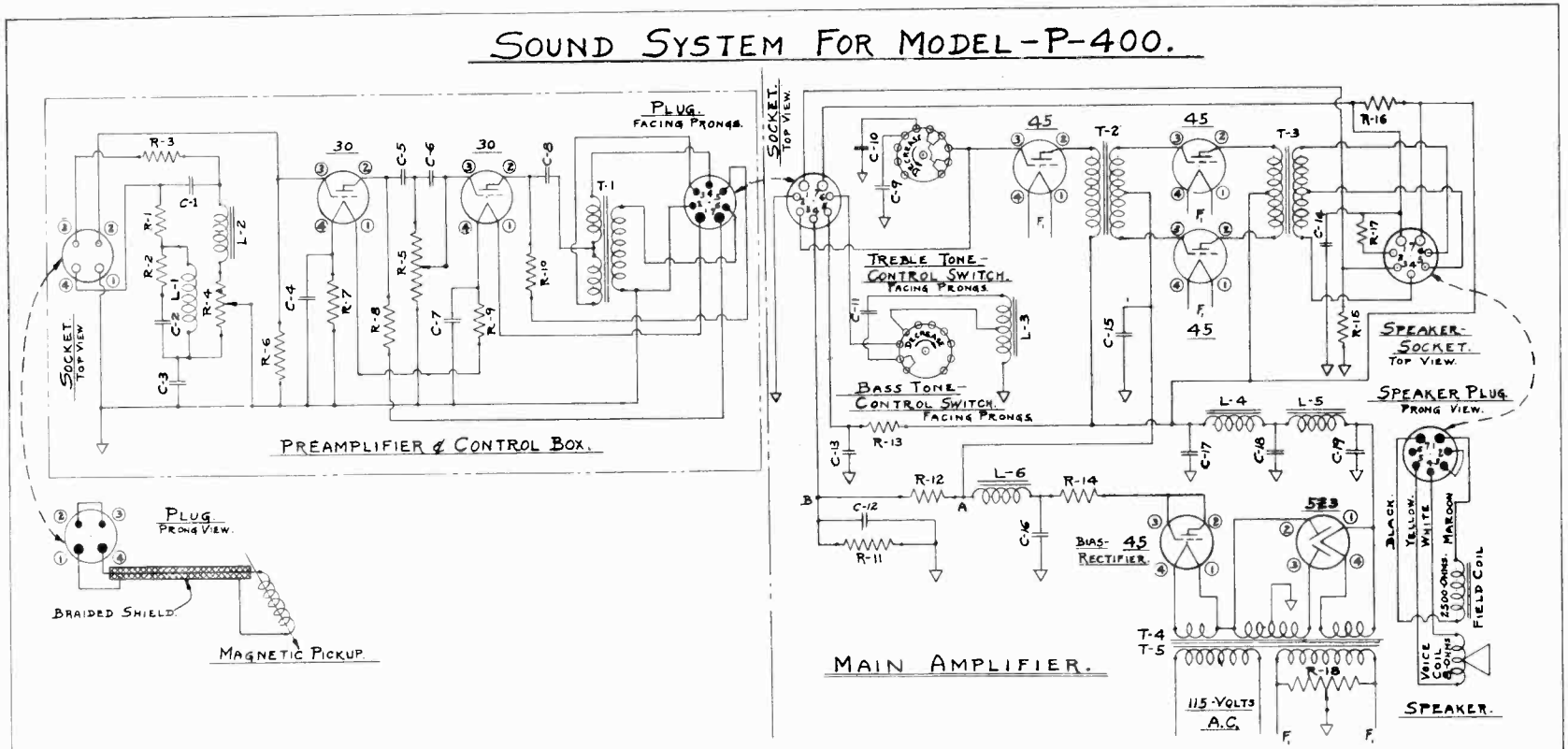
AVERAGE BIAS VOLTAGE MEASURED FROM CENTER TAP OF FILAMENT TO CHASSIS:-	
OUTPUT -45	57.5-VOLTS D.C.
DRIVER -47	19.0-VOLTS D.C.

AVERAGE FILAMENT VOLTAGE.-	
RECTIFIER 5Z3	5.0-VOLTS A.C.
OUTPUT -45	2.5-VOLTS A.C.
DRIVER -45	2.5-VOLTS A.C.
-30	2.0-VOLTS D.C.

AVERAGE VOLTAGES ACROSS SPEAKER FIELDS AND ELECTROLYTIC CONDENSERS.
2500-OHM SPEAKER FIELD VOLTAGE MEASURED FROM #7-CONTACT TO #1-CONTACT ON SPEAKER SOCKET 170-VOLTS D.C.
2500-OHM AUXILIARY SPEAKER FIELD (PARALLEL WITH 7,000-OHM RESISTOR) VOLTAGE MEASURED FROM #3-CONTACT TO #1-CONTACT ON SPKR. SOCKET. 160-VOLTS.

C-11	ELECTROLYTIC	365-VOLTS D.C.
C-10	ELECTROLYTIC	340-VOLTS D.C.
C-7	ELECTROLYTIC	170-VOLTS D.C.

SOUND SYSTEM FOR MODEL-P-400.



MAGNETIC PICKUP - PART Nº 20141. PREAMPLIFIER - PART Nº 20700. AMPLIFIER *570 { 25-CYCLE-PART *21060. / 60-CYCLE-PART *20659. } SPEAKER - PART Nº 20087.

RESISTORS.

ITEM	PART Nº	VALUE	REMARKS
R-1	20704	3,500 - OHMS	±10% 1/4-WATT.
R-2	20704	3,500 - OHMS	±10% 1/4-WATT.
R-3	20728	250,000 - OHMS	±20% 1/4-WATT.
R-4	20123	50,000 - OHMS	REAR UNIT VOL CONTROL
R-5	20123	50,000 - OHMS	PANEL UNIT VOL CONTROL
R-6	20703	300,000 - OHMS	±10% 1/4-WATT.
R-7	20159	65 - OHMS	±5% 1/2-WATT.
R-8	20266	75,000 - OHMS	±10% 1/4-WATT.
R-9	20708	50 - OHMS	±5% 1/2-WATT.
R-10	20296	50,000 - OHMS	±20% 1/4-WATT.
R-11	20608	3,200 - OHMS	BIAS VOLTAGE DIVIDER
R-12	20608	330 - OHMS	
R-13	20669	20,000 - OHMS	±10% 1/2-WATT
R-14	20609	6,400 - OHMS	VOLTAGE DIVIDER
R-15	20609	375 - OHMS	VOLTAGE DIVIDER
R-16	20609	7,000 - OHMS	VOLTAGE DIVIDER
R-17	20609	1,000 - OHMS	VOLTAGE DIVIDER
R-18	20445	20 - OHMS	HUM CONTROL

CONDENSERS.

ITEM	PART Nº	VALUE	REMARKS
C-1	20706	.08 - MFD.	±10% - 200-VOLT
C-2	20257	.004 - MFD.	+10% -20% MICA
C-3	20133	.25 - MFD.	+10%-20% 200-V.
C-4	20612	10.0 - MFD.	25-WORKING VOLTS
C-5	20707	.25 - MFD.	±15% - 400-W.V.
C-6	20705	.00025-MFD.	±15% - MICA.
C-7	20612	10.0 - MFD.	25-WORKING VOLTS.
C-8	20707	.25 - MFD.	±15% - 400-W.V.
C-9	20864	.003 - MFD.	±10% - MICA.
C-10	20865	.0015 - MFD.	±10% - MICA.
C-11	20711	.18 - MFD.	±15% -400-W.V.
C-12	20665	.25 - MFD.	±10% - 200-W.V.
C-13	20130	2.0 - MFD.	450-W.V.
C-14	20130	8.0 - MFD.	200-W.V.
C-15	20617	16.0 - MFD.	160-W.V.
C-16	20617	16.0 - MFD.	160-W.V.
C-17	20139	30.0 - MFD.	400-W.V.
C-18	20139	30.0 - MFD.	400-W.V.
C-19	20513	8.0 - MFD.	475-W.V.

TRANSFORMERS.

ITEM	PART Nº	VALUE	REMARKS
T-1	21048		AUDIO INPUT
T-2	20590		DRIVER INPUT
T-3	20603		AUDIO OUTPUT
T-4	20582	60-CYCLE	POWER
T-5	21086	25-CYCLE	POWER

CHOKES.

L-1	20602	540-MILLIHENRIES	CHOKE COIL.
L-2	20610	400-HENRIES.	LOADING REACTOR
L-3	20583	105-HENRIES	TONE REACTOR.
L-4	20596	1.5-HENRIES	#2-POWER FILTER
L-5	20595	6.0-HENRIES	#1-POWER FILTER
L-6	20591	78.0-HENRIES	BIAS FILTER.

VOLTAGES AND CURRENTS.

ALL VOLTAGES MEASURED WITH 1,000-OHMS PER VOLT VOLTMETER. - 115-VOLT LINE.

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE + TO CHASSIS -

OUTPUT - 45	275-VOLTS D.C.
OUTPUT - 45	275-VOLTS D.C.
DRIVER - 45	255-VOLTS D.C.
- 30	128-VOLTS D.C.
- 30	60-VOLTS D.C.

AVERAGE BIAS VOLTAGE MEASURED FROM POINTS INDICATED TO CHASSIS.

OUTPUT - 45	POINT 'A'	57-VOLTS.
DRIVER - 45	POINT 'B'	51-VOLTS.
RECTIFIER-45	PLATE	185-VOLTS.

AVERAGE VOLTAGES ACROSS SPEAKER SOCKET AND ELECTROLYTICS.

2500-OHM SPEAKER FIELD FROM #1-CONTACT TO #3-CONTACT ON SPEAKER SOCKET-175-VOLTS D.C.

1000-OHM AUX. SPEAKER FIELD FROM #1-CONTACT TO #3-CONTACT ON SPKR SOCKET-98-VOLTS D.C.

C-19-ELECTROLYTIC -320-VOLTS D.C.

C-18-ELECTROLYTIC -305-VOLTS D.C.

C-17-ELECTROLYTIC - 280-VOLTS D.C.

AVERAGE CURRENTS.-

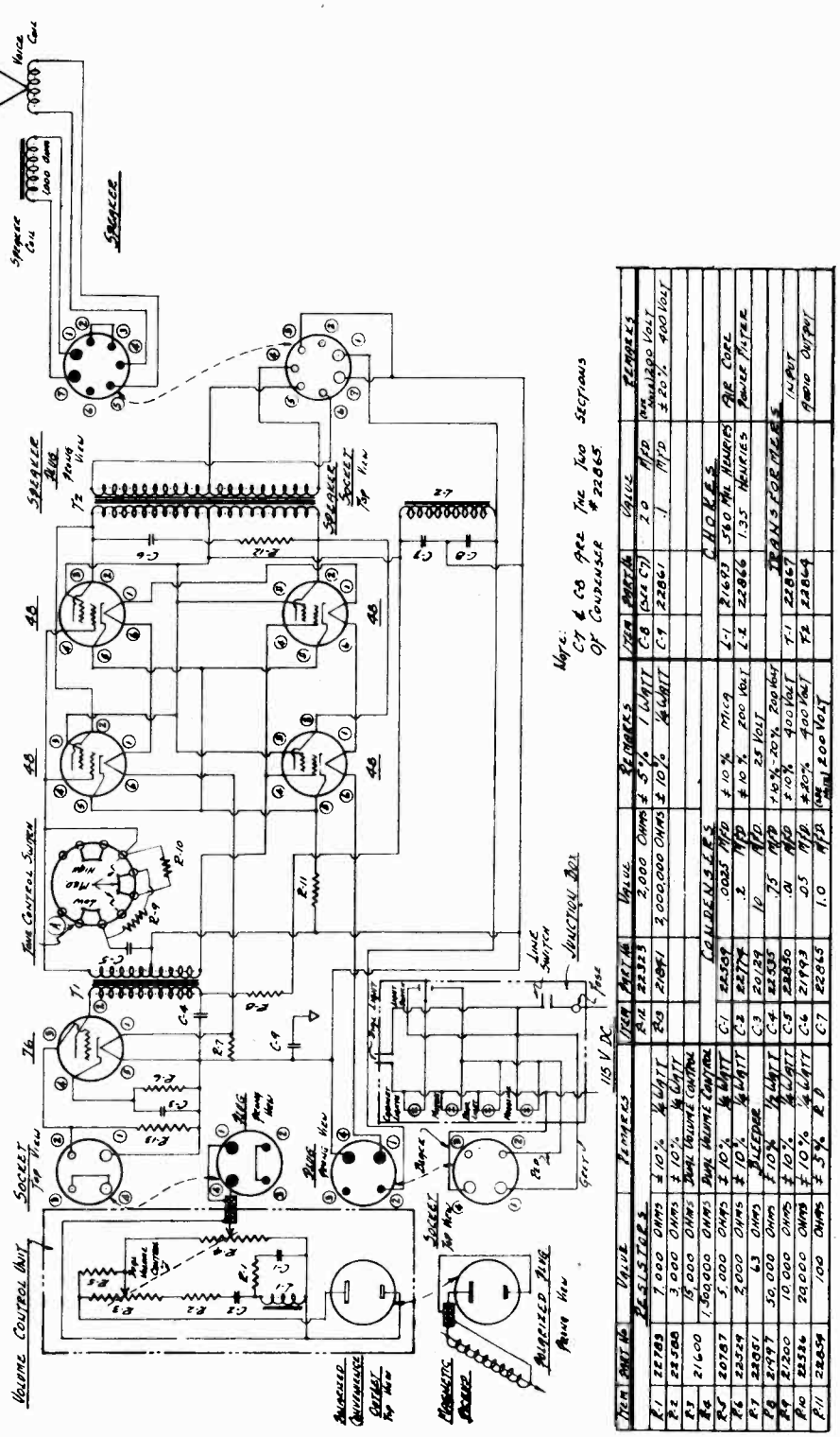
OUTPUT - 45	28 - M.A.
DRIVER - 45	32 - M.A.
- 30	2.1 - M.A.
- 30	.5 - M.A.

MODEL 651

RUDOLPH WURLITZER CO.

SOUND SYSTEM FOR D.C. MODELS *312 & 412.

PICKUP - PART Nº 21782 | VOLUME CONTROL *156 AM PART Nº 22965 | AMPLIFIER *651 - PART Nº 22961. | SPEAKER PART Nº 22870.



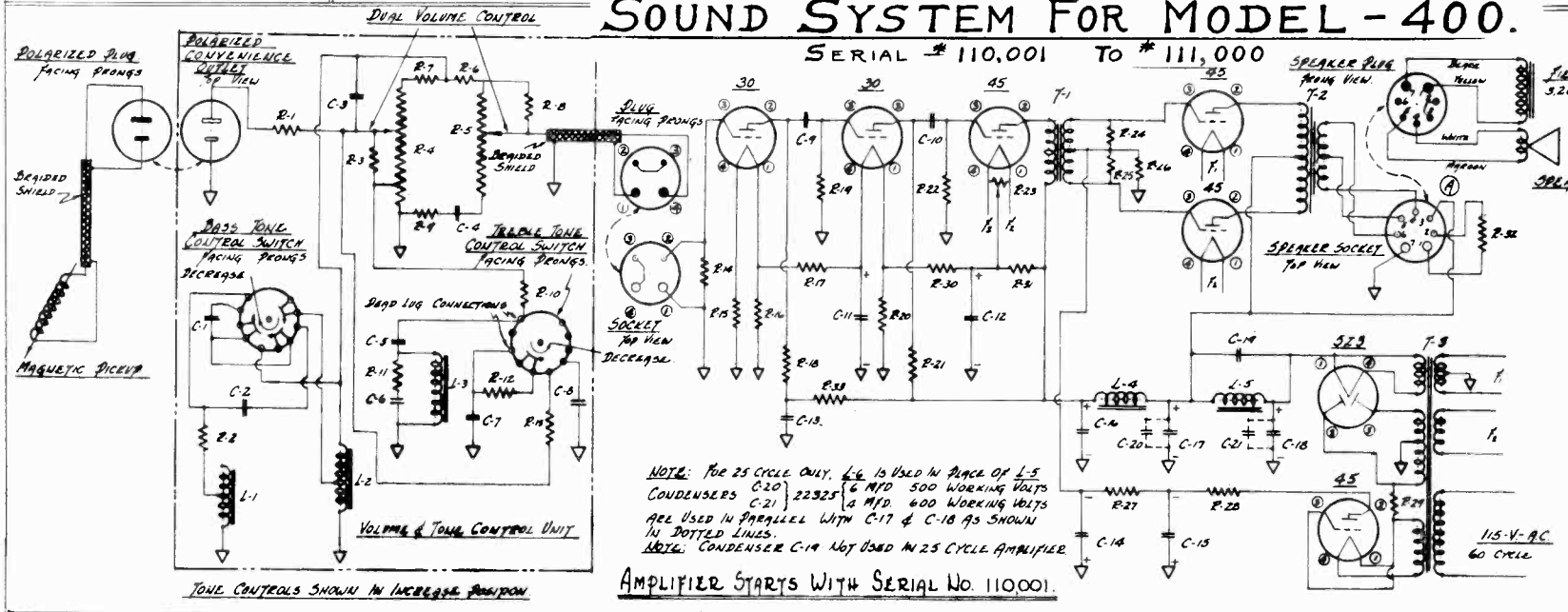
Item	Part No.	Value	Remarks
		RESISTORS	
R1	22183	7,000 OHMS	± 10% ½ WATT
R2	23500	3,000 OHMS	± 10% ½ WATT
R3	21600	15,000 OHMS	Bass Volume Control
R4		1,500,000 OHMS	Bass Volume Control
R5	20787	5,000 OHMS	± 10% ½ WATT
R6	22529	2,000 OHMS	± 10% ½ WATT
R7	22065	43 OHMS	½ WATT
R8	21497	30,000 OHMS	± 10% ½ WATT
R9	21200	10,000 OHMS	± 10% ½ WATT
R10	22534	20,000 OHMS	± 10% ½ WATT
R11	22654	100 OHMS	± 5% 2 WATTS
		CONDENSERS	
C1	22509	.0025 MFD	± 10% 1000 VOLT
C2	22276	.2 MFD	± 10% 200 VOLT
C3	20124	.1 MFD	25 VOLT
C4	22535	.75 MFD	+10% -20% 200 VOLT
C5	22836	.01 MFD	± 10% 400 VOLT
C6	21793	.05 MFD	± 20% 400 VOLT
C7	22865	1.0 MFD	(Dual) 200 VOLT
C8	(See C7)	2.0 MFD	(Dual) 200 VOLT
C9	22861	.1 MFD	± 20% 400 VOLT
		CHOKES	
L1	21693	380 MIL HENRIES	AF COIL
L2	22866	1.35 HENRIES	POWER SUPPLY
		TRANSFORMERS	
T1	22867		INPUT
T2	22864		AUDIO OUTPUT

Voltages and Currents of Model *651-Amplifier. All measurements made with line voltage 115-Volts D.C. all voltages measured with 1000-ohms per volt voltmeter.			
Average Plate Voltage Measured From Plate + To Contact *7 On Speaker Socket	Average Plate Current:-	Average Bias Voltage Measured From Cathode Of Tube To 7-Contact	Average Filament Voltage:-
-48 110-Volts D.C.	-48 35.0-M.A.	-48 27.5-Volts D.C.	-48 27.5-Volts D.C.
-76 20-Volts D.C.	-76 .6-M.A.	-76 6.1-Volts D.C.	-76 6.1-Volts D.C.
		On Speaker Socket.	
		-48 19.5-Volts D.C.	
		-76 1.0-Volt D.C.	

PICKUP PART Nº 23223 | VOLUME CONTROL #176-AM-PART Nº 23209 | AMPLIFIER #671. 25-CYCLE #23744 60-CYCLE #23004 | SPEAKER PART Nº 23089.

SOUND SYSTEM FOR MODEL-400.

SERIAL # 110,001 TO # 111,000



NOTE: FOR 25 CYCLE ONLY, L-6 IS USED IN PLACE OF L-5
CONDENSERS C-20, C-21 } 22325 { 6 MFD 500 WORKING VOLTS, 4 MFD 600 WORKING VOLTS
ARE USED IN PARALLEL WITH C-17 & C-18 AS SHOWN IN DOTTED LINES.
NOTE: CONDENSER C-19 NOT USED IN 25 CYCLE AMPLIFIER

AMPLIFIER STARTS WITH SERIAL NO. 110,001.

ITEM	PART NO.	VALUE	REMARKS
		RESISTORS	
R-1	22529	2,000 OHMS	±10% ½ WATT
R-2	21999	800 OHMS	±10% ½ WATT
R-3	20267	15,000 OHMS	±10% ½ WATT
R-4	23215	100,000 OHMS	±5% VOLUME CONTROL
R-5		150,000 OHMS	±15% VOLUME CONTROL
R-6	29208	60,000 OHMS	±10% ½ WATT
R-7	21998	100,000 OHMS	±10% ½ WATT
R-8	20750	500,000 OHMS	±20% ½ WATT
R-9	22529	2,000 OHMS	±10% ½ WATT
R-10	20787	5,000 OHMS	±10% ½ WATT
R-11	20787	5,000 OHMS	±10% ½ WATT
R-12	20704	3,500 OHMS	±10% ½ WATT
R-13	20704	3,500 OHMS	±10% ½ WATT
R-14	20750	500,000 OHMS	±10% ½ WATT
R-15	22354	65 OHMS	±5% ½ WATT
R-16	22323	2,000 OHMS	±5% 1 WATT
R-17	23014	100 OHMS	±5% ½ WATT
R-18	21938	100,000 OHMS	±10% ½ WATT
R-19	20726	250,000 OHMS	±20% ½ WATT
R-20	22328	2,000 OHMS	±5% 1 WATT
R-21	23206	60,000 OHMS	±10% ½ WATT
R-22	20858	150,000 OHMS	±10% ½ WATT
R-23	20645	20 OHMS	HUM CONTROL
R-24	22322	25,000 OHMS	±10% ½ WATT
R-25	22322	25,000 OHMS	±10% ½ WATT
R-26	23012	5,000 OHMS	±5% 10 WATT
R-27	23011	2,000 OHMS	±5% 10 WATT
R-28	23011	2,000 OHMS	±5% 10 WATT
R-29	23013	3,500 OHMS	±10% 10 WATT
R-30	23015	375 OHMS	BLEEDER 4 WATT
R-31		9,000 OHMS	BLEEDER 30 WATT
R-32		2,500 OHMS	BLEEDER 33 WATT
R-33	20266	75,000 OHMS	±10% ½ WATT

ITEM	PART NO.	VALUE	REMARKS
		CONDENSERS	
C-1	21490	.25 MFD	±10% 200 VOLT
C-2	22535	.75 MFD	-10%+20% 200 VOLT
C-3	23221	.18 MFD	±10% 200 VOLT
C-4	22544	.8 MFD	±10% 200 VOLT
C-5	22544	.15 MFD	±10% 200 VOLT
C-6	22589	.0025 MFD	±10%
C-7	22532	.004 MFD	±10%
C-8	22534	.015 MFD	±10% 200 VOLT
C-9	21993	.05 MFD	±20% 400 VOLT
C-10	21736	.1 MFD	±20% 400 VOLT
C-11	23010	10 MFD.	25 VOLT
C-12	23009	12 MFD.	150 VOLT
C-13	20775	.5 MFD.	±25% 400 VOLT

ITEM	PART NO.	VALUE	REMARKS
C-14	23021	8 MFD	150 VOLT
C-15		8 MFD	150 VOLT
C-16	23020	25 MFD	450 VOLT
C-17		6 MFD	500 VOLT
C-18		4 MFD	600 VOLT
C-19	22121	1.25 MFD	±10% 200 VOLT
		CHOKES	
L-1	22514		CHOKE TONE CONTROL
L-2	23216		ELECTRIC TONE CONTROL
L-3	23217		CHOKE ASSEMBLY
L-4	23018		#2 FILTER CHOKE
L-5	23017		#1 FILTER CHOKE
L-6	23746		CHOKE
		TRANSFORMERS	
T-1	21548		AUDIO INPUT
T-2	23019		AUDIO OUTPUT
T-3	23016		POWER TRANSFORMER

VOLTAGES AND CURRENTS OF MODEL #671-AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115-VOLTS.
ALL VOLTAGES MEASURED WITH 1,000-OHMS PER VOLT VOLTMETER.

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE + TO CHASSIS −.

OUTPUT	-45	355-VOLTS D.C.
DRIVER	-45	327-VOLTS D.C.
	-30	175-VOLTS D.C.
	-30	80-VOLTS D.C.

AVERAGE PLATE CURRENT:-

OUTPUT	-45	28.0-M.A.D.C.
DRIVER	-45	38.0-M.A.D.C.
	-30	2.1-M.A.D.C.
	-30	1.5-M.A.D.C.

AVERAGE GRID VOLTAGE MEASURED FROM GRID TO FILAMENT.

OUTPUT	-45	87-VOLTS D.C.
DRIVER	-45	40-VOLTS D.C.

AVERAGE FILAMENT VOLTAGE:-

RECTIFIER	523	5.0-VOLTS A.C.
OUTPUT	-45	2.5-VOLTS A.C.
DRIVER	-45	2.5-VOLTS A.C.
	-30	2.1-VOLTS D.C.

AVERAGE VOLTAGES ACROSS SPEAKER FIELDS AND ELECTROLYTIC CONDENSERS.
3200-OHM SPEAKER FIELD VOLTAGE MEASURED FROM #1-CONTACT TO #7-CONTACT ON SPEAKER SOCKET 205-VOLTS D.C.
2500-OHM AUXILIARY SPEAKER FIELD VOLTAGE MEASURED FROM #1-CONTACT TO #3-CONTACT ON SPEAKER SOCKET 155-VOLTS D.C.

C-18	ELECTROLYTIC	385-VOLTS D.C.
C-17	ELECTROLYTIC	360-VOLTS D.C.
C-16	ELECTROLYTIC	355-VOLTS D.C.

FROM RECTIFIER -45 PLATE − TO CHASSIS + 150-VOLTS D.C.

RUDOLPH WURLITZER CO.

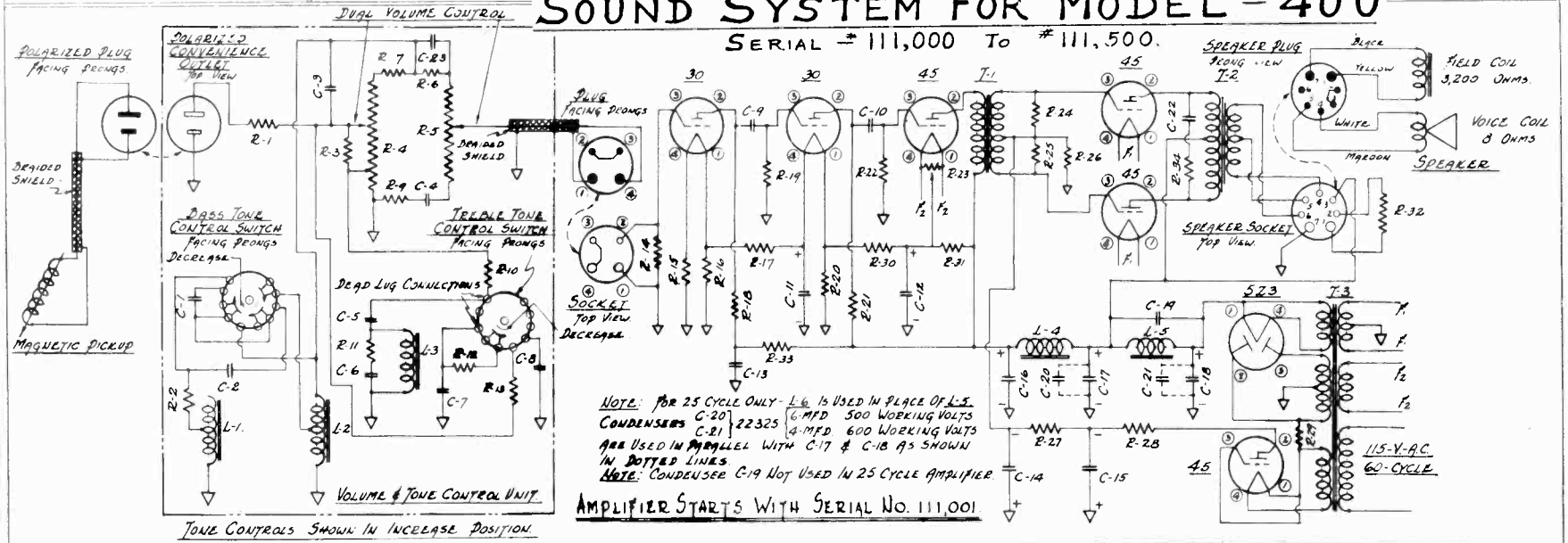
WURLITZER PAGE 13-7 MODEL 671

RUDOLPH WURLITZER CO.

PICKUP PART Nº 23223 | VOLUME CONTROL #276-AM-PART Nº 24065 | AMPLIFIER #672: 60-CYCLE #24062 | SPEAKER PART Nº 23089

SOUND SYSTEM FOR MODEL - 400

SERIAL # 111,000 TO # 111,500.



NOTE: FOR 25 CYCLE ONLY - L-6 IS USED IN PLACE OF L-5.
CONDENSERS C-20, C-21 } 22325 { 6-MFD 500 WORKING VOLTS, 4-MFD 600 WORKING VOLTS ARE USED IN PARALLEL WITH C-17 & C-18 AS SHOWN IN DOTTED LINES.
NOTE: CONDENSER C-19 NOT USED IN 25 CYCLE AMPLIFIER.

AMPLIFIER STARTS WITH SERIAL NO. 111,001

ITEM	PART NO	VALUE			REMARKS
		RESISTORS			
R-1	22588	3,000	OHMS	±10%	½ WATT
R-2	21999	800	OHMS	±10%	½ WATT
R-3	21998	35,000	OHMS	±10%	½ WATT
R-4	23215	100,000	OHMS	±15%	VOLUME CONTROL
R-5		150,000	OHMS	±15%	VOLUME CONTROL
R-6	23084	25,000	OHMS	±10%	½ WATT
R-7	23084	25,000	OHMS	±10%	½ WATT
R-8					
R-9	20704	3,500	OHMS	±10%	½ WATT
R-10	20787	5,000	OHMS	±10%	½ WATT
R-11	22783	7,000	OHMS	±10%	½ WATT
R-12	20704	3,500	OHMS	±10%	½ WATT
R-13	20704	3,500	OHMS	±10%	½ WATT
R-14	20750	500,000	OHMS	±10%	½ WATT
R-15	22354	65	OHMS	± 5%	½ WATT
R-16	22323	2,000	OHMS	± 5%	1 WATT
R-17	23016	100	OHMS	± 5%	½ WATT
R-18	21998	100,000	OHMS	±10%	½ WATT
R-19	20728	250,000	OHMS	±20%	½ WATT
R-20	22323	2,000	OHMS	± 5%	1 WATT
R-21	23208	60,000	OHMS	±10%	½ WATT
R-22	20855	150,000	OHMS	±10%	½ WATT
R-23	20445	20	OHMS	HUM CONTROL	
R-24	22322	25,000	OHMS	±10%	½ WATT
R-25	22322	25,000	OHMS	±10%	½ WATT
R-26	23012	5,000	OHMS	± 5%	10 WATT
R-27	23011	2,000	OHMS	± 5%	10 WATT
R-28	23011	2,000	OHMS	± 5%	10 WATT
R-29	23013	3,500	OHMS	±10%	10 WATT
R-30	23015	375	OHMS	BLEEDER	4 WATT
R-31		9,000	OHMS	BLEEDER	30 WATT
R-32		2,500	OHMS	BLEEDER	33 WATT
R-33	20266	75,000	OHMS	±10%	½ WATT
R-34	24064	7,000	OHMS	± 5%	10 WATT

ITEM	PART NO	VALUE			REMARKS
		CONDENSERS			
C-1	21940	.25	MFD.	±10%	200 VOLT
C-2	22535	.75	MFD	-10% +20%	200 VOLT
C-3	23221	.18	MFD	±10%	200 VOLT
C-4	22544	.15	MFD	±10%	200 VOLT
C-5	22564	.15	MFD	±10%	200 VOLT
C-6	22589	.0025	MFD	±10%	
C-7	22532	.004	MFD	±10%	
C-8	22534	.015	MFD	±10%	200 VOLT
C-9	21993	.05	MFD	±20%	400 VOLT
C-10	21736	.1	MFD	±20%	400 VOLT
C-11	23010	10	MFD		25 VOLT
C-12	23009	12	MFD		150 VOLT
C-13	20775	.5	MFD	±25%	400 VOLT
C-14	23021	8	MFD		150 VOLT
C-15		8	MFD		150 VOLT
C-16		25	MFD		450 VOLT
C-17	23020	6	MFD		500 VOLT
C-18		4	MFD		600 VOLT
C-19	22121	1.25	MFD	±10%	200 VOLT
C-20	22325	6	MFD		500 VOLT
C-21		4	MFD		600 VOLT
C-22	24063	.015	MFD	±10%	600 VOLT
C-23	22544	.003	MFD	±10%	
		CHOKES			
L-1	24145				CHOKE TONE CONTROL
L-2	24318				REACTOR TONE CONTROL
L-3	21693				CHOKE ASSEMBLY
L-4	23018				#2 FILTER CHOKE
L-5	23017			60 CYCLE ONLY	#1 FILTER CHOKE
L-6	23746			25 CYCLE ONLY	#1 FILTER CHOKE
		TRANSFORMERS			
T-1	21548				AUDIO INPUT
T-2	23019				AUDIO OUTPUT
T-3	23016				POWER TRANSFORMER

VOLTAGES AND CURRENTS OF MODEL #672-AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115-VOLTS.
ALL VOLTAGES MEASURED WITH 1,000-OHMS PER VOLT VOLTMETER.

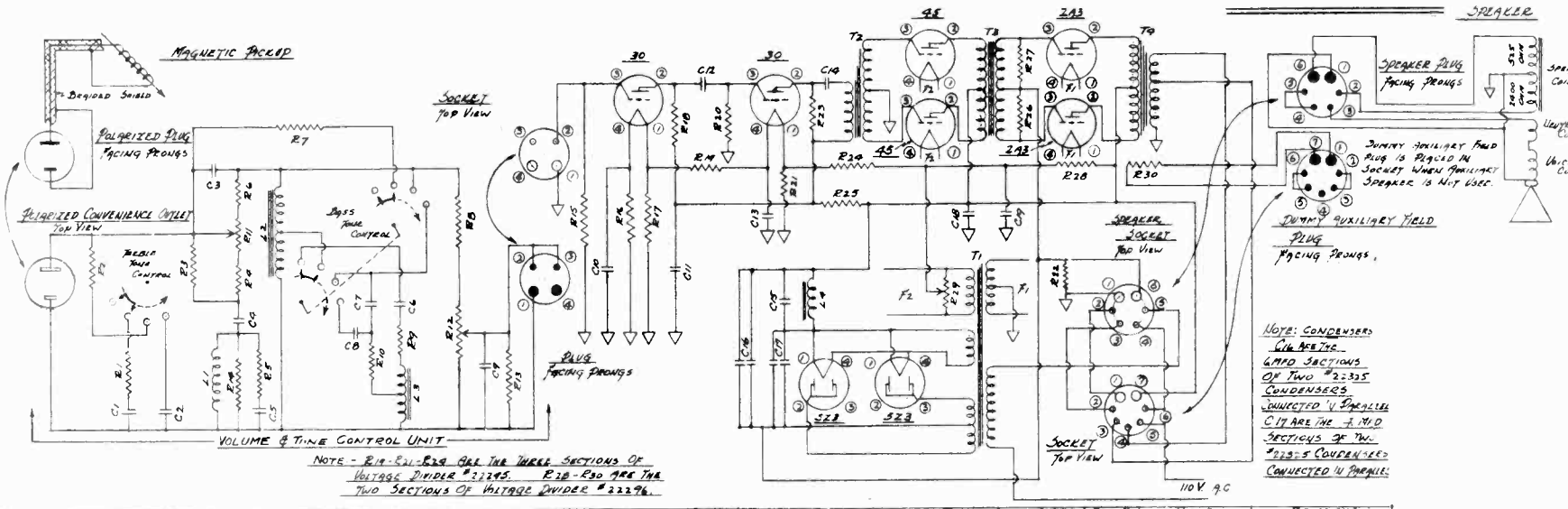
AVERAGE PLATE VOLTAGE MEASURED FROM PLATE + TO CHASSIS −.		AVERAGE PLATE CURRENT:-		AVERAGE GRID VOLTAGE MEASURED FROM GRID TO FILAMENT.		AVERAGE FILAMENT VOLTAGE:-	
OUTPUT -45	355-VOLTS D.C	OUTPUT -45	28.0-M.A.D.C.	OUTPUT -45	87-VOLTS D.C.	RECTIFIER 5Z3	5.0-VOLTS A.C
DRIVER -45	327-VOLTS D.C.	DRIVER -45	38.0-M.A.D.C.	DRIVER -45	40-VOLTS D.C.	OUTPUT -45	2.5-VOLTS A.C.
-30	175-VOLTS D.C.	-30	2.1-M.A.D.C.			DRIVER -45	2.5-VOLTS A.C.
-30	80-VOLTS D.C.	-30	1.5-M.A.D.C.			-30	2.1-VOLTS D.C.

AVERAGE VOLTAGES ACROSS SPEAKER FIELDS AND ELECTROLYTIC CONDENSERS.
3200-OHM SPEAKER FIELD VOLTAGE MEASURED FROM #1-CONTACT TO #7-CONTACT ON SPEAKER SOCKET 205-VOLTS D.C.
2500-OHM AUXILIARY SPEAKER FIELD VOLTAGE MEASURED FROM #1-CONTACT TO #3-CONTACT ON SPEAKER SOCKET 155-VOLTS D.C.

C-18	ELECTROLYTIC	385-VOLTS D.C	FROM RECTIFIER -45-PLATE- TO CHASSIS + 150-VOLTS D.C.
C-17	ELECTROLYTIC	360-VOLTS D.C.	
C-16	ELECTROLYTIC	355-VOLTS D.C.	

SOUND SYSTEM FOR MODEL-35.

PICKUP - PART Nº 22377. | VOLUME CONTROL - PART Nº 22521 | AMPLIFIER *680. - *22357. | SPEAKER - PART Nº 22327



NOTE - R19-R21-R29 ARE THE THREE SECTIONS OF VOLTAGE DIVIDER #22295. R28-R30 ARE THE TWO SECTIONS OF VOLTAGE DIVIDER #22296.

NOTE: CONDENSERS C16 ARE THE 6 MFD SECTIONS OF TWO #22335 CONDENSERS CONNECTED IN PARALLEL. C17 ARE THE 4 MFD SECTIONS OF TWO #22325 CONDENSERS CONNECTED IN PARALLEL.

ITEM	PART No.	VALUE	REMARKS
		RESISTORS	
R1	22527	2,500 OHM	±10% - 1/4 WATT
R2	20781	1,000 OHM	±10% - 1/4 WATT
R3	22526	1,000 OHM	±10% - 1/2 WATT
R4	20709	3,500 OHM	±10% - 1/4 WATT
R5	20704	3,500 OHM	±10% - 1/4 WATT
R6	22546	20,000 OHM	±10% - 1/2 WATT
R7	21934	50,000 OHM	±10% - 1/2 WATT
R8	20266	15,000 OHM	±10% - 1/2 WATT
R9	22529	2,000 OHM	±10% - 1/2 WATT
R10	22535	1,000 OHM	±10% - 1/2 WATT
R11	22536	50,000 OHM	DUAL VC REAR SECTION
R12	22530	50,000 OHM	DUAL VC FRONT SECTION
R13	22538	2,2,000 OHM	±10% - 1/2 WATT
R14	21931	30,000 OHM	±10% - 1/2 WATT
R15	22329	500,000 OHM	±10% - 1/2 WATT
R16	22327	65 OHM	±5% - 1/2 WATT
R17	22323	2,000 OHM	±5% - 1 WATT
R18	20855	150,000 OHM	±10% - 1/2 WATT
R19	22295 (BROWN)	100 OHM	VOLTAGE DIVIDER
R20	20855	150,000 OHM	±10% - 1/2 WATT
R21	22295 (BROWN)	400 OHM	VOLTAGE DIVIDER
R22	22294	530 OHM	VOLTAGE DIVIDER
R23	22321	35,000 OHM	±10% - 1/2 WATT
R24	22295 (BROWN)	485 OHM	VOLTAGE DIVIDER
R25	22322	25,000 OHM	±10% - 1/2 WATT
R26	22322	25,000 OHM	±10% - 1/2 WATT
R27	22322	25,000 OHM	±10% - 1/2 WATT
R28	22296 (RED)	19,000 OHM	VOLTAGE DIVIDER
R29	20945	20 OHM	HUM CONTROL
R30	22296 (RED)	1,000 OHM	VOLTAGE DIVIDER
R			
R			
R			

ITEM	PART No.	VALUE	REMARKS
R			
		CONDENSERS	
C1	22532	.004 MFD	±10%
C2	22534	.015 MFD	±10% - 300 VOLT
C3	21730	.3 MFD	±10% - 200 VOLT
C4	22534	.15 MFD	±10% - 200 VOLT
C5	22531	.003 MFD	±10%
C6	22545	.03 MFD	±10% - 200 VOLT
C7	22535	.75 MFD	-10% +20% - 200 VOLT
C8	21990	.25 MFD	±10%
C9	22533	.0004 MFD	±10%
C10	20612	.01 MFD	25 VOLT
C11	22309	.1 MFD	300 VOLT
C12	22310	.022 MFD	±10% - 600 VOLT
C13	20612	.01 MFD	25 VOLT
C14	22320	.3 MFD	+20% -10% 400 VOLT
C15	22320	.3 MFD	+20% -10% 400 VOLT

ITEM	PART No.	VALUE	REMARKS
C16	22335	6+6 MFD	(SECTIONS) 500 VOLT
C17	22325	4+4 MFD	(SECTIONS) 600 VOLT
C18	21720	25 MFD	450 VOLT
C19	21596	16 MFD	150 VOLT
C			
C			
		CHOKES	
L1	21693	560 MILLIHENRIES	AIR CORE
L2	22519	100 HENRIES	TONE CONTROL
L3	22520	100 HENRIES	TONE CONTROL
L4	22312	8 HENRIES	POWER FILTER
L			
		TRANSFORMERS	
T1	22311		POWER
T2	22315		INPUT
T3	22314		DRIVER
T4	22313		OUTPUT

VOLTAGES AND CURRENTS OF MODEL-680-AMPLIFIER. ALL VOLTAGES MEASURED WITH 1000-OHMS PER VOLT VOLTMETER.
ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115-VOLTS, 60-CYCLE AT THE AMPLIFIER.

PLATE VOLTAGE MEASURED FROM PLATE + TO FILAMENT -.	
OUTPUT 2A3	360-VOLTS D.C.
OUTPUT 2A3	360-VOLTS D.C.
-45	275-VOLTS D.C.
-45	275-VOLTS D.C.
-30	157-VOLTS D.C.
-30	57-VOLTS D.C.

PLATE CURRENTS:-	
OUTPUT-2A3	37.0-M.A.D.C.
OUTPUT-2A3	37.0-M.A.D.C.
-45	32.0-M.A.D.C.
-45	32.0-M.A.D.C.
-30	2.5-M.A.D.C.
-30	1.2-M.A.D.C.

GRID VOLTAGE MEASURED FROM GRID - TO FILAMENT +.	
OUTPUT-2A3	74-VOLTS D.C.
2A3	74-VOLTS D.C.
-45	62-VOLTS D.C.
-45	62-VOLTS D.C.

FILAMENT VOLTAGE MEASURED ACROSS FILAMENT.	
OUTPUT 2A3	2.5-VOLTS A.C.
OUTPUT 2A3	2.5-VOLTS A.C.
-45	2.5-VOLTS A.C.
-45	2.5-VOLTS A.C.
-30	2.0-VOLTS D.C.
-30	2.0-VOLTS D.C.

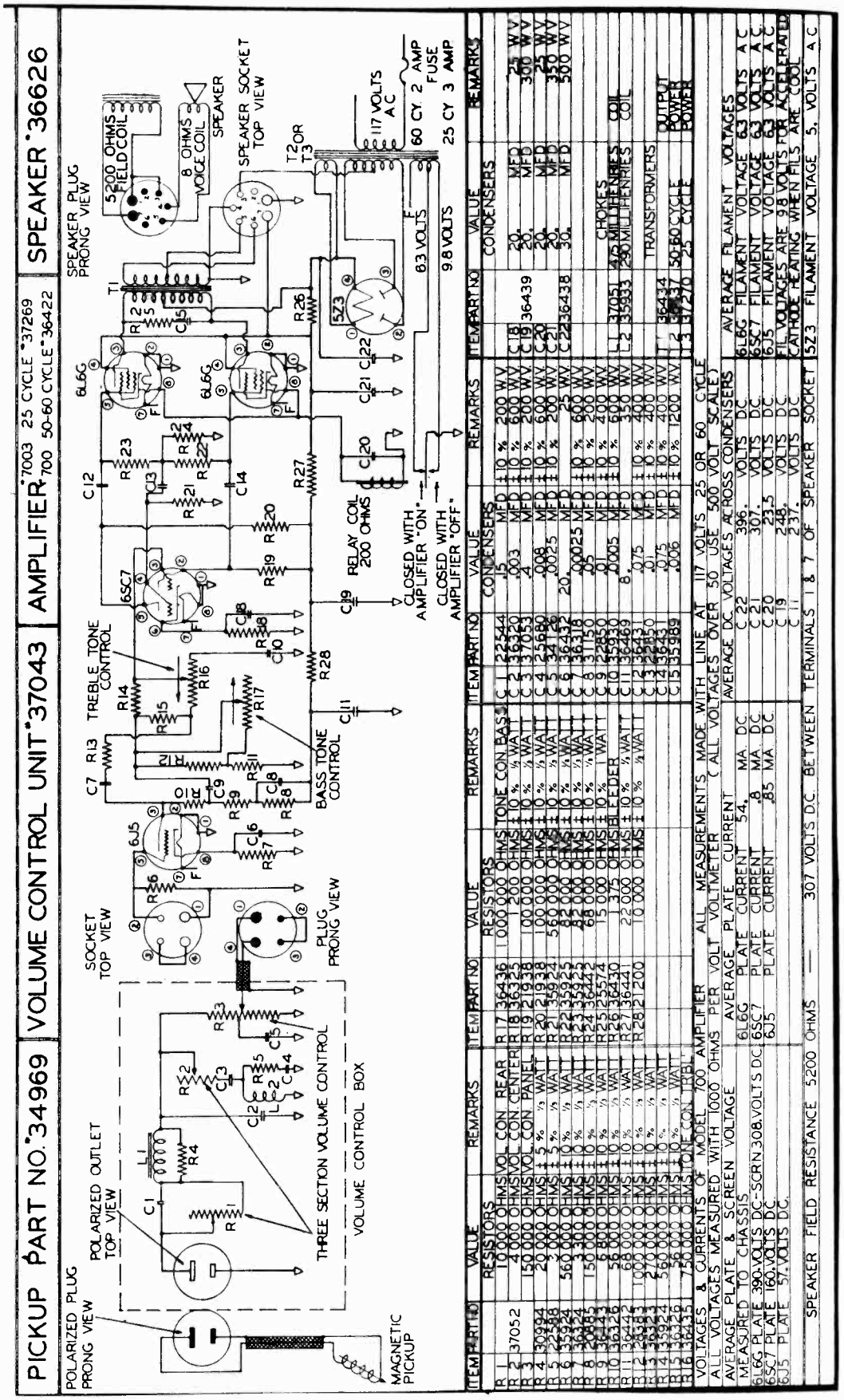
525-OHM SPEAKER FIELD VOLTAGE MEASURED FROM #1-CONTACT TO #6-CONTACT ON SPEAKER SOCKET. - 72.5-VOLTS D.C.
2400-OHM SPEAKER FIELD VOLTAGE MEASURED FROM #1-CONTACT TO #2-CONTACT ON SPEAKER SOCKET- 260-VOLTS D.C.

MODELS 700, 7003

RUDOLPH WURLITZER CO.

SOUND SYSTEM FOR MODEL 700

PICKUP PART NO. 34969 | VOLUME CONTROL UNIT "37043 | AMPLIFIER "7003 25 CYCLE "37269 700 50-60 CYCLE "36422 | SPEAKER "36626



ITEM	PART NO	VALUE	REMARKS
		RESISTORS	
R 1		10 000 OHMS	VOL CON REAR
R 2	37052	4 000 OHMS	VOL CON CENTER
R 3		150 000 OHMS	VOL CON PANEL
R 4	30984	20 000 OHMS	± 5 % ⅓ WATT
R 5	22588	3 000 OHMS	± 5 % ⅓ WATT
R 6	35924	560 000 OHMS	± 10 % ⅓ WATT
R 7	36324	3 300 OHMS	± 10 % ⅓ WATT
R 8	20985	150 000 OHMS	± 10 % ⅓ WATT
R 9	36443	6 800 OHMS	± 10 % ⅓ WATT
R 10	36326	56 000 OHMS	± 10 % ⅓ WATT
R 11	36445	68 000 OHMS	± 10 % ⅓ WATT
R 12	36441	100 000 OHMS	± 10 % ⅓ WATT
R 13	35924	560 000 OHMS	± 10 % ⅓ WATT
R 14	35924	560 000 OHMS	± 10 % ⅓ WATT
R 15	36326	56 000 OHMS	± 10 % ⅓ WATT
R 16	36435	750 000 OHMS	± 10 % ⅓ WATT
R 17	36436	1 000 000 OHMS	TONE CON BASS
R 18	36325	1 200 000 OHMS	± 10 % ½ WATT
R 19	21938	100 000 OHMS	± 10 % ½ WATT
R 20	21938	100 000 OHMS	± 10 % ½ WATT
R 21	35924	560 000 OHMS	± 10 % ½ WATT
R 22	35925	820 000 OHMS	± 10 % ½ WATT
R 23	35925	820 000 OHMS	± 10 % ½ WATT
R 24	36442	68 000 OHMS	± 10 % ½ WATT
R 25	23574	15 000 OHMS	± 10 % 1 WATT
R 26	36430	1 375 OHMS	BLEEDER ± 10 % ½ WATT
R 27	36421	22 000 OHMS	± 10 % ½ WATT
R 28	21200	10 000 OHMS	± 10 % ½ WATT

ITEM	PART NO	VALUE	REMARKS
		CONDENSERS	
C 1	22544	.5	MFD ± 10 % 200 WV
C 2	36320	.003	MFD ± 10 % 600 WV
C 3	37053	.4	MFD ± 10 % 200 WV
C 4	22680	.008	MFD ± 10 % 600 WV
C 5	34126	.0025	MFD ± 10 % 200 WV
C 6	36432	20.	MFD 25 WV
C 7	36318	.00025	MFD ± 10 % 600 WV
C 8	31150	.05	MFB ± 10 % 200 WV
C 9	22850	.01	MFD ± 10 % 400 WV
C 10	35930	.0005	MFD ± 10 % 600 WV
C 11	36469	8.	MFD 350 WV
C 12	36431	.075	MFD ± 10 % 400 WV
C 13	22850	.075	MFD ± 10 % 400 WV
C 14	36433	.075	MFD ± 10 % 1200 WV
C 15	35989	.006	MFD ± 10 % 1200 WV
C 16	36439	20.	MFD 200 WV
C 17		20.	MFD 300 WV
C 18		20.	MFD 350 WV
C 19		20.	MFD 500 WV
C 20	36438	30.	MFD 350 WV
C 21		30.	MFD 500 WV
C 22			

ITEM	PART NO	VALUE	REMARKS
		CHOKES	
L 1	37051	45 MILLIHENRIES	COIL
L 2	35933	250 MILLIHENRIES	COIL
		TRANSFORMERS	
T 1	36434		OUTPUT
T 2	36437	50-60 CYCLE	POWER
T 3	37220	25 CYCLE	POWER

VOLTAGES & CURRENTS OF MODEL 700 AMPLIFIER ALL MEASUREMENTS MADE WITH LINE AT 117 VOLTS 25 OR 60 CYCLE

ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER (ALL VOLTAGES OVER 50 USE 500 VOLT SCALE)

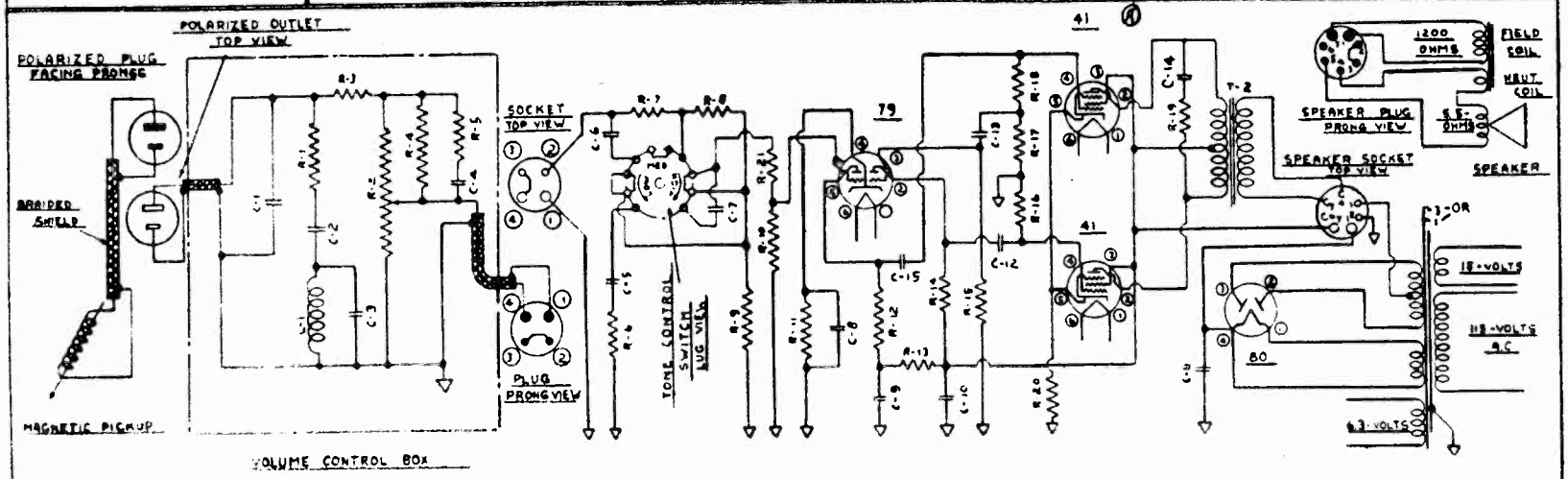
AVERAGE PLATE & SCREEN VOLTAGE MEASURED TO CHASSIS	AVERAGE PLATE CURRENT		AVERAGE DC VOLTAGES ACROSS CONDENSERS
6L6G PLATE 390 VOLTS DC-SCRN 308 VOLTS DC	6L6G PLATE CURRENT 54.	MA. DC	C 22 396. VOLTS DC
6SC7 PLATE 160 VOLTS DC	6SC7 PLATE CURRENT .8	MA. DC	C 21 307. VOLTS DC
6J5 PLATE 57. VOLTS DC	6J5 PLATE CURRENT .85	MA. DC	C 20 233 VOLTS DC
			C 19 248 VOLTS DC
			C 11 237. VOLTS DC

AVERAGE FILAMENT VOLTAGES	
6L6G FILAMENT VOLTAGE 6.3 VOLTS A.C.	
6SC7 FILAMENT VOLTAGE 6.3 VOLTS A.C.	
6J5 FILAMENT VOLTAGE 6.3 VOLTS A.C.	
FIL VOLTAGES ARE 9.8 VOLTS FOR ACCELERATED CATHODE HEATING WHEN FILS ARE COOL	
5Z3 FILAMENT VOLTAGE 5. VOLTS A.C.	

SPEAKER FIELD RESISTANCE 5200 OHMS — 307 VOLTS D.C. BETWEEN TERMINALS 1 & 7 OF SPEAKER SOCKET

SOUND SYSTEM FOR MODEL-51

PICKUP PART Nº 25662	VOLUME CONTROL *147-AM-PART Nº 25676	AMPLIFIER -*741 25-CYCLE -*25746 60-CYCLE -*25565	SPEAKER MAGNAVOX - JENSEN - UTAH - *25595



ITEM	PART Nº	VALUE	REMARKS
RESISTORS			
R-1	25418	1,500 - OHMS	±10% ¼ WATT
R-2	25679	100,000 - OHMS	VOLUME CONTROL
R-3	22588	3,000 - OHMS	±10% ¼ WATT
R-4	21938	100,000 - OHMS	±10% ¼ WATT
R-5	25575	200,000 - OHMS	±10% ¼ WATT
R-6	21200	10,000 - OHMS	±10% ½ WATT
R-7	20266	75,000 - OHMS	±10% ¼ WATT
R-8	21200	10,000 - OHMS	±10% ¼ WATT
R-9	21938	100,000 - OHMS	±10% ¼ WATT
R-10	25911	250,000 - OHMS	±10% ½ WATT
R-11	22588	3,000 - OHMS	±10% ¼ WATT
R-12	25575	200,000 - OHMS	±10% ¼ WATT
R-13	20266	75,000 - OHMS	±10% ¼ WATT
R-14	20728	250,000 - OHMS	±20% ¼ WATT
R-15	20728	250,000 - OHMS	±20% ¼ WATT
R-16	25432	500,000 OHMS	±10% ½ WATT
R-17	21200	10,000 - OHMS	±10% ½ WATT
R-18	25432	500,000 - OHMS	±10% ½ WATT
R-19	25574	15,000 - OHMS	±10% 1 - WATT
R-20	25573	250 - OHMS	±5% 10 - WATTS
R-21	25910	50,000 - OHMS	±5% ½ - WATT

ITEM	PART Nº	VALUE	REMARKS
CONDENSERS			
C-1	25680	.008 - MFD.	±10% 200 - W.V.
C-2	20665	.25 - MFD.	±10% 200 - W.V.
C-3	22531	.003 MFD.	±10% MICA
C-4	25680	.008 - MFD.	±10% 200 - W.V.
C-5	22589	.0025 - MFD.	±10% MICA
C-6	22532	.004 - MFD.	±10% MICA
C-7	22589	.0025 - MFD.	±10% MICA
C-8	23010	10 - MFD.	25 - W.V.
C-9	22320	.3 - MFD.	+20% 10% 400 - W.V.
C-10	25570	25 - MFD.	450 - W.V.
C-11		8 - MFD.	500 - W.V.
C-12	21993	.05 - MFD.	±10% 400 - W.V.
C-13	21993	.05 - MFD.	±10% 400 - W.V.
C-14	22531	.003 - MFD.	±10% MICA
C-15	21993	.05 - MFD.	±10% 400 - W.V.

ITEM	PART Nº	VALUE	REMARKS
CHOKES			
L-1	25598	290 MILLIHENRIES	CHOKE COIL
TRANSFORMERS			
T-1	25572	60 - CYCLE	POWER
T-2	25571		AUDIO OUTPUT
T-3	25747	25 - CYCLE	POWER

VOLTAGES AND CURRENTS OF MODEL-*741 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE - 115 - VOLTS

ALL VOLTAGES MEASURED WITH 1,000 - OHMS PER VOLT VOLTMETER

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE TO CHASSIS:-		AVERAGE PLATE CURRENT:-	
79	115 - VOLTS D.C.	79	35 - MILLS
41	270 - VOLTS D.C.	41	30 - MILLS

AVERAGE BIAS VOLTAGE MEASURED FROM CATHODE TO GROUND:-	
79	APPROX 15-2 - VOLTS
41	18 - VOLTS

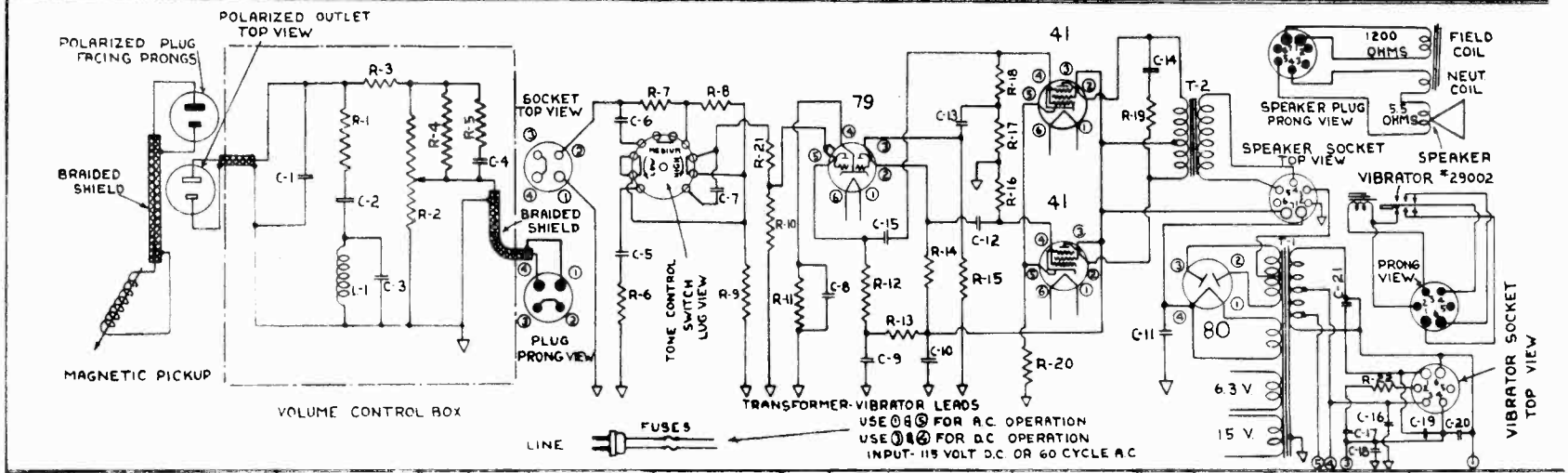
AVERAGE FILAMENT VOLTAGE -	
79	6.3 - VOLTS A.C.
41	6.3 - VOLTS A.C.
80	5.0 - VOLTS A.C.

VOLTAGE ACROSS CONDENSER :- C-10 275 VOLTS D.C. C-11 360 VOLTS D.C.

SPEAKER FIELD 1200 - OHMS BETWEEN TERMINALS *1 & *7 ON SPEAKER SOCKET 90 VOLTS D.C.

SOUND SYSTEM FOR 115 VOLT D.C. VIBRATOR MODEL 51

PICKUP PART Nº25662	VOLUME CONTROL *147-AM-PART Nº25676	AMPLIFIER- *742- PART NO *29166	SPEAKER- JENSEN - *25595



ITEM	PART NO	VALUE	REMARKS	ITEM	PART NO	VALUE	REMARKS	ITEM	PART NO	VALUE	REMARKS	ITEM	PART NO	VALUE	REMARKS
		RESISTORS								CONDENSERS		C-16	29016	25 MFD	±10% 200 W.V.
R-1	25418	1500 OHMS	±10% ¼ WATT	R-16	25432	500000 OHMS	±10% ¼ WATT	C-1	25680	.008 MFD	±10% 200 W.V.	C-17	24329	1 MFD	±10% 200 W.V.
R-2	25679	100000 OHMS	VOLUME CONTROL	R-17	21200	10000 OHMS	±10% ¼ WATT	C-2	20665	.25 MFD	±10% 200 W.V.	C-18	29017	.01 MFD	±10% 200 W.V.
R-3	22588	3000 OHMS	±10% ¼ WATT	R-18	25432	500000 OHMS	±10% ¼ WATT	C-3	22531	.003 MFD	±10% MICA	C-19	24364	.5 MFD	±10% 200 W.V.
R-4	21938	100000 OHMS	±10% ¼ WATT	R-19	25574	15000 OHMS	±10% 1 WATT	C-4	25680	.008 MFD	±10% 200 W.V.	C-20	24364	.5 MFD	±10% 200 W.V.
R-5	25575	200000 OHMS	±10% ¼ WATT	R-20	25573	250 OHMS	±5% 10 WATT	C-5	22589	.0025 MFD	±10% MICA	C-21	29155	1 MFD	220 W.V. A.C.
R-6	21200	10000 OHMS	±10% ¼ WATT	R-21	25910	50000 OHMS	±5% ¼ WATT	C-6	22532	.004 MFD	±10% MICA				
R-7	20266	75000 OHMS	±10% ¼ WATT	R-22	22530	1000 OHMS	±10% ¼ WATT	C-7	22589	.0025 MFD	±10% MICA			CHOKES	
R-8	21200	10000 OHMS	±10% ¼ WATT					C-8	23010	10. MFD	25 W.V.	L-1	25598	290 MILLIHENRIES	CHOKE COIL
R-9	21938	100000 OHMS	±10% ¼ WATT					C-9	22320	.3 MFD	+20% -10% 400 W.V.				
R-10	25911	250000 OHMS	±10% ¼ WATT					C-10	25570	25 MFD	450 W.V.				
R-11	22588	3000 OHMS	±10% ¼ WATT					C-11		8. MFD	500 W.V.			TRANSFORMERS	
R-12	25575	200000 OHMS	±10% ¼ WATT					C-12	21993	.05 MFD	±10% 400 W.V.	T-1	29149	60- CYCLE	POWER
R-13	20266	75000 OHMS	±10% ¼ WATT					C-13	21993	.05 MFD	±10% 400 W.V.	T-2	25571		AUDIO OUTPUT
R-14	20728	250000 OHMS	±20% ¼ WATT					C-14	22531	.003 MFD	±10% MICA				
R-15	20728	250000 OHMS	±20% ¼ WATT					C-15	21993	.05 MFD	±10% 400 W.V.				

VOLTAGES AND CURRENTS OF MODEL *742 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS D.C OR 60 CYCLE A.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE TO CHASSIS:-		AVERAGE PLATE CURRENT		AVERAGE BIAS VOLTAGE MEASURED FROM CATHODE TO GROUND		AVERAGE FILAMENT VOLTAGES	
79	115- VOLTS D.C	79	35- MILLS D.C	79	APPROX 1.5-2 VOLTS	79	6.3 VOLTS A.C
41	270- VOLTS D.C	41	30. - MILLS D.C	41	18 VOLTS	41	6.3 VOLTS A.C
						80	5.0 VOLTS A.C

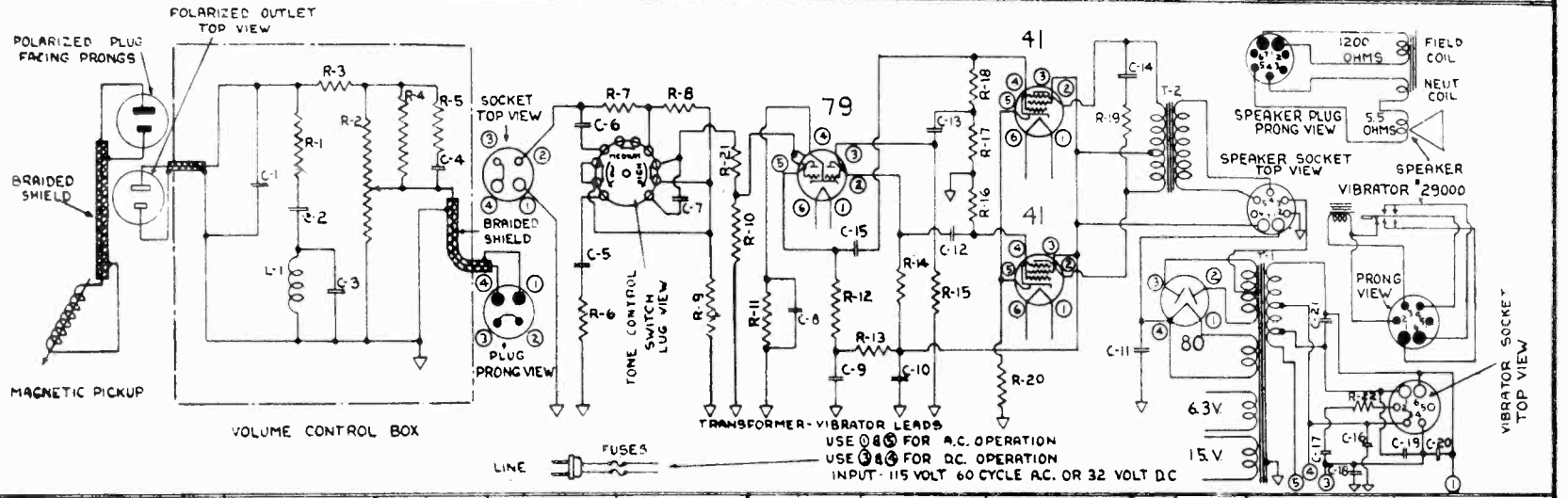
VOLTAGE ACROSS CONDENSER C-10 - 275 VOLTS D.C. VOLTAGE ACROSS CONDENSER C-11 360 VOLTS D.C.

SPEAKER FIELD - 1200 OHMS BETWEEN TERMINALS *1 & *7 ON SPEAKER SOCKET

RUDOLPH WURLITZER CO.

SOUND SYSTEM FOR 32 VOLT D.C. VIBRATOR MODEL 51

PICKUP PART Nº25662	VOLUME CONTROL "147-A.M-PART Nº25676	AMPLIFIER - "743 PART NO "29172	SPEAKER - JENSEN - "25595



ITEM	PART NO.	VALUE	REMARKS
		RESISTORS	
R-1	25418	1500 OHMS	±10% ¼WATT
R-2	25679	100000 OHMS	VOLUME CONTROL
R-3	22588	3000 OHMS	±10% ¼WATT
R-4	21936	100000 OHMS	±10% ¼WATT
R-5	25575	200000 OHMS	±10% ¼WATT
R-6	21200	10000 OHMS	±10% ¼WATT
R-7	20266	75000 OHMS	±10% ¼WATT
R-8	21200	10000 OHMS	±10% ¼WATT
R-9	21938	100000 OHMS	±10% ¼WATT
R-10	25911	250000 OHMS	±10% ¼WATT
R-11	22588	3000 OHMS	±10% ¼WATT
R-12	25575	200000 OHMS	±10% ¼WATT
R-13	20266	75000 OHMS	±10% ¼WATT
R-14	20728	250000 OHMS	±20% ¼WATT
R-15	20728	250000 OHMS	±20% ¼WATT
R-16	25432	500000 OHMS	±10% ¼WATT
R-17	21200	10000 OHMS	±10% ¼WATT
R-18	25432	500000 OHMS	±10% ¼WATT
R-19	25574	15000 OHMS	±10% 1 WATT
R-20	25573	250 OHMS	±5% 10 WATT
R-21	25910	50000 OHMS	±5% ¼WATT
R-22	22530	1000 OHMS	±10% ¼WATT

ITEM	PART NO.	VALUE	REMARKS
		CONDENSERS	
C-1	25680	.008 MFD.	±10% 200 W.V
C-2	20665	.25 MFD	±10% 200 W.V
C-3	22531	.003 MFD	±10% MICA
C-4	25680	.008 MFD.	±10% 200 W.V
C-5	22589	.0025 MFD	±10% MICA
C-6	22532	.004 MFD	±10% MICA
C-7	22589	.0025 MFD	±10% MICA
C-8	23010	10 MFD	25 W.V.
C-9	22320	3 MFD	-20% 10% 400 W.V
C-10	25570	25 MFD	450 W.V
C-11		8 MFD	500 W.V.
C-12	21993	.05 MFD	±10% 400 W.V
C-13	21993	.05 MFD	±10% 400 W.V.
C-14	22531	.003 MFD	±10% MICA
C-15	21993	.05 MFD	±10% 400 W.V.
C-16	29016	.25 MFD.	±10% 200 W.V
C-17	24329	.1 MFD	±10% 200 W.V
C-18	29017	.01 MFD	±10% 200 W.V
C-19	24364	.5 MFD.	±10% 200 W.V
C-20	24364	.5 MFD	±10% 200 W.V
C-21	29164	10. MFD	65. W.V A.C
		CHOKES	
L-1	25598	290 MILLIHENRIES	CHOKE COIL
		TRANSFORMERS	
T-1	29136	60- CYCLE	POWER
T-2	25571		AUDIO OUTPUT

VOLTAGES AND CURRENTS OF MODEL "743 AMPLIFIER ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS 60 CYCLE A.C. OR 32 VOLTS D.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE TO CHASSIS		AVERAGE PLATE CURRENT		AVERAGE BIAS VOLTAGE MEASURED FROM CATHODE TO GROUND		AVERAGE FILAMENT VOLTAGE	
79	115 VOLTS DC	79	.35 MILLS D.C.	79	APPROX. 1.5-2 VOLTS	79	6.3 VOLTS A.C
41	270 VOLTS DC	41	30. MILLS D.C.	41	18 VOLTS	41	6.3 VOLTS A.C
						80	5.0 VOLTS A.C

VOLTAGE ACROSS CONDENSER C-10 - 275 VOLTS D.C VOLTAGE ACROSS CONDENSER C-11 360 VOLTS D.C.

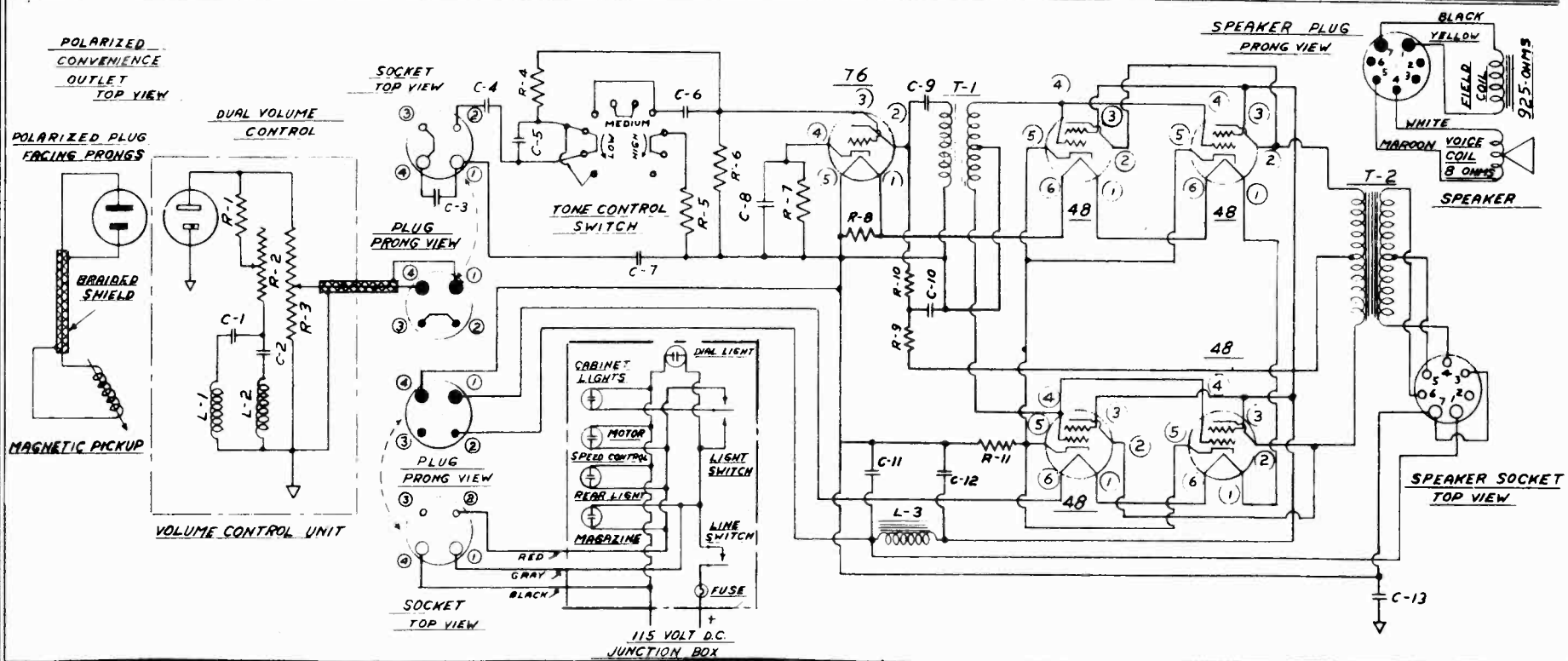
SPEAKER FIELD - 1200 OHMS BETWEEN TERMINALS "1 & "7 ON SPEAKER SOCKET 90 VOLTS D.C

RUDOLPH WURLITZER CO.

WURLITZER PAGE 13-13
MODEL 743

SOUND SYSTEM FOR D.C. MODELS —316-416-616-716 & 616A

PICKUP-#24707	VOLUME CONTROL-#157 A.M. PART NO.# 26374	AMPLIFIER #751 PART NO.# 26367	SPEAKERS JENSEN#27676 FOR 616-A MAGNAVOX#27674	316,416 SPEAKERS 616,716	#27156 #26394



RESISTORS

ITEM	PART NO.	VALUE	REMARKS
R-1	22530	1000 OHM	±10% ¼ WATT
R-2	26378	7500 OHM	DUAL V.C. REAR SECT.
R-3		150000 OHM	DUAL V.C. PANEL SECT.
R-4	21939	50,000 OHM	±10% ¼ WATT
R-5	21998	35000 OHM	±10% ¼ WATT
R-6	20855	150000 OHM	±10% ¼ WATT
R-7	22529	2000 OHM	±10% ¼ WATT
R-8	22851	63 OHM	±5% 10 WATT
R-9	21997	50000 OHM	±10% ½ WATT
R-10	21938	100,000 OHM	±10% ¼ WATT
R-11	22851	63 OHM	±5% 10 WATT

CONDENSERS

ITEM	PART NO.	VALUE	REMARKS
C-1	22241	.002 - MFD.	±10% MICA
C-2	20665	.25 - MFD.	±10% - 200 W. VOLTS
C-3	22241	.002 - MFD	±10% MICA
C-4	24329	.1 - MFD.	±10% 200 W. VOLTS
C-5	26372	.0075 - MFD.	±10% 200 W. VOLTS
C-6	26372	.0075 - MFD.	±10% 200 W. VOLTS
C-7	24363	1.0 - MFD.	±10% 200 W. VOLTS
C-8	24279	.10 - MFD.	ELEC. 25 W. VOLTS
C-9	21736	.1 - MFD.	±20% 400 W. VOLTS
C-10	22535	.75 - MFD.	-10% 120% 200 W. VOLTS
C-11	22865	2.0 - MFD.	200 W. VOLTS
C-12		1.0 - MFD.	200 W. VOLTS
C-13	21736	.1 - MFD.	±20% 400 W. VOLTS

CHOKES

ITEM	PART NO.	VALUE	REMARKS
L-1	24305	290-MILLIHENRIES	AIR CORE
L-2	21693	540-MILLIHENRIES	AIR CORE
L-3	22866	1.35-HENRIES	POWER FILTER

TRANSFORMERS

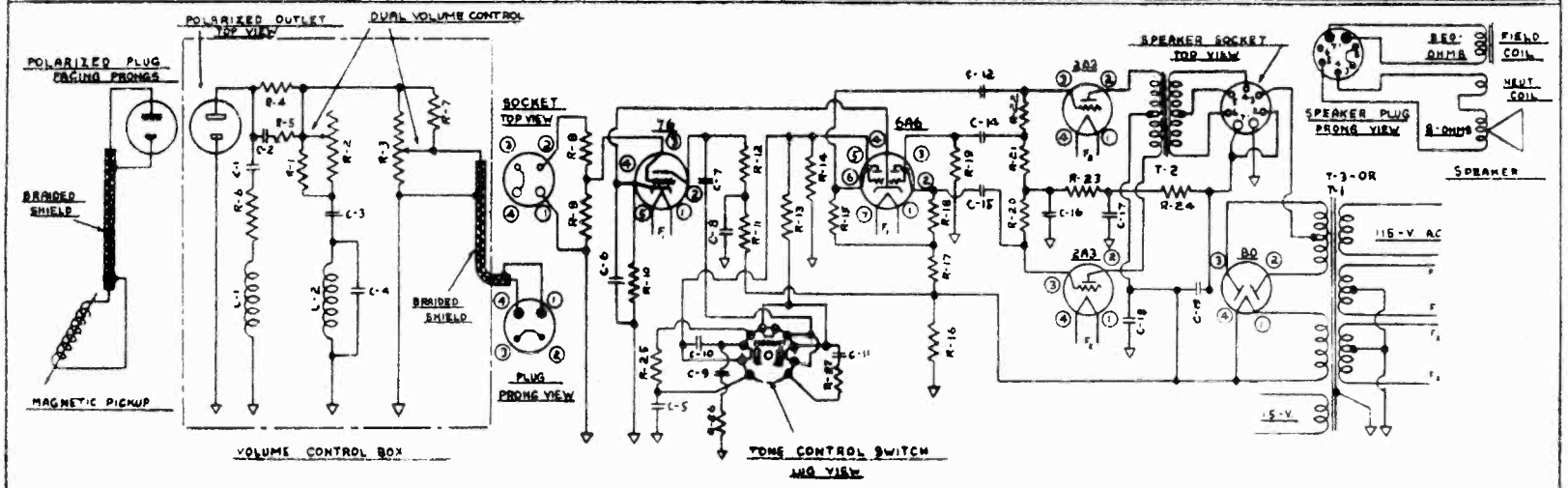
ITEM	PART NO.	VALUE	REMARKS
T-1	22867	AUDIO	INPUT
T-2	22864	AUDIO	OUTPUT

VOLTAGES AND CURRENTS OF MODEL #751 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS D.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE + TO CONTACT -#7 ON SPEAKER SOCKET		AVERAGE PLATE CURRENT		AVERAGE BIAS VOLTAGE MEASURED FROM CATHODE OF TUBE TO #7-CONTACT ON SPEAKER SOCKET		AVERAGE FILAMENT VOLTAGES:-	
-48	110-VOLTS D.C.	-48	48.0 - MA.	-48	16.0-VOLTS D.C.	-48	27.5-VOLTS D.C.
-76	20-VOLTS D.C.	-76	.6 - M.A.	-76	1.0-VOLT D.C.	-76	6.1-VOLTS D.C.

SOUND SYSTEM FOR MODEL-50

PICKUP PART Nº 25662	VOLUME CONTROL-*257AM-PART Nº 25423	AMPLIFIER -*752 25-CYCLE -*25744 60-CYCLE-*25406	SPEAKER MAGNAVOX-JENSEN - *25593 UTAH -



ITEM	PART NO	VALUE	REMARKS
		RESISTORS	
R-1	20787	5,000-OHMS	± 10% ¼ WATT
R-2	22765	12,000-OHMS	DUAL VOLUME CONTROL
R-3		150,000-OHMS	
R-4	21200	10,000-OHMS	±10% ¼ WATT
R-5	20787	5,000-OHMS	±10% ¼ WATT
R-6	25418	1,500-OHMS	±10% ¼ WATT
R-7	20267	15,000-OHMS	±10% ¼ WATT
R-8	28626	25,000-OHMS	± 5% ¼ WATT
R-9	28152	75,000-OHMS	± 5% ¼ WATT
R-10	25418	1,500-OHMS	±10% ¼ WATT
R-11	20855	150,000-OHMS	±10% ¼ WATT
R-12	21939	50,000-OHMS	±10% ¼ WATT
R-13	21938	100,000-OHMS	±10% ¼ WATT
R-14	20855	150,000-OHMS	±10% ¼ WATT
R-15	20728	250,000-OHMS	±20% ¼ WATT
R-16	25557	25,000-OHMS	± 5% 20-WATT
R-17	20266	75,000-OHMS	±10% ¼ WATT
R-18	20728	250,000-OHMS	±20% ¼-WATT
R-19	20728	250,000-OHMS	±20% ¼-WATT
R-20	20760	500,000-OHMS	±20% ¼-WATT
R-21	23084	25,000-OHMS	±10% ¼-WATT
R-22	20750	500,000-OHMS	±20% ¼-WATT
R-23	20855	150,000-OHMS	±10% ¼-WATT
R-24	22014	30,000-OHMS	±10% ¼-WATT
R-25	20266	75,000-OHMS	±10% ¼-WATT
R-26	22526	20,000-OHMS	±10% ¼-WATT
R-27	20266	75,000-OHMS	±10% ¼-WATT
		CONDENSERS	
C-1	25427	.002-MFD.	± 5% MICA
C-2	25430	.02 -MFD.	±10% 200-W.V.
C-3	23221	.18 -MFD.	±10% 200-W.V.
C-4	22531	.003-MFD.	±10% MICA
C-5	22753	.006-MFD.	±10% 400 W.V.
C-6	23010	10. -MFD.	25-W.V.
C-7	21993	.05 -MFD.	±10% 400-W.V.
C-8	24321	2. -MFD.	450-W.V.
C-9	25428	.0015-MFD.	± 5% MICA
C-10	25429	.00035-MFD.	±10% MICA
C-11	22753	.006 -MFD.	±10% 400-W.V.
C-12	21993	.05 -MFD.	±10% 400-W.V.
C-13			
C-14	21993	.05 -MFD.	±10% 400-W.V.
C-15	21993	.05 -MFD.	±10% 400-W.V.
C-16	20665	.25-MFD	±10% 200-W.V.
C-17		12. -MFD.	150-W.V.
C-18	25415	25 -MFD.	450 W.V.
C-19		8. -MFD.	500-W.V.
		CHOKES	
L-1	25598	290 MILLHENRIES	CHOKE COIL
L-2	21693	540 MILLIHENRIES	CHOKE COIL
		TRANSFORMERS	
T-1	25417	60-CYCLE	POWER
T-2	25416		AUDIO OUTPUT
T-3	25745	25-CYCLE	POWER

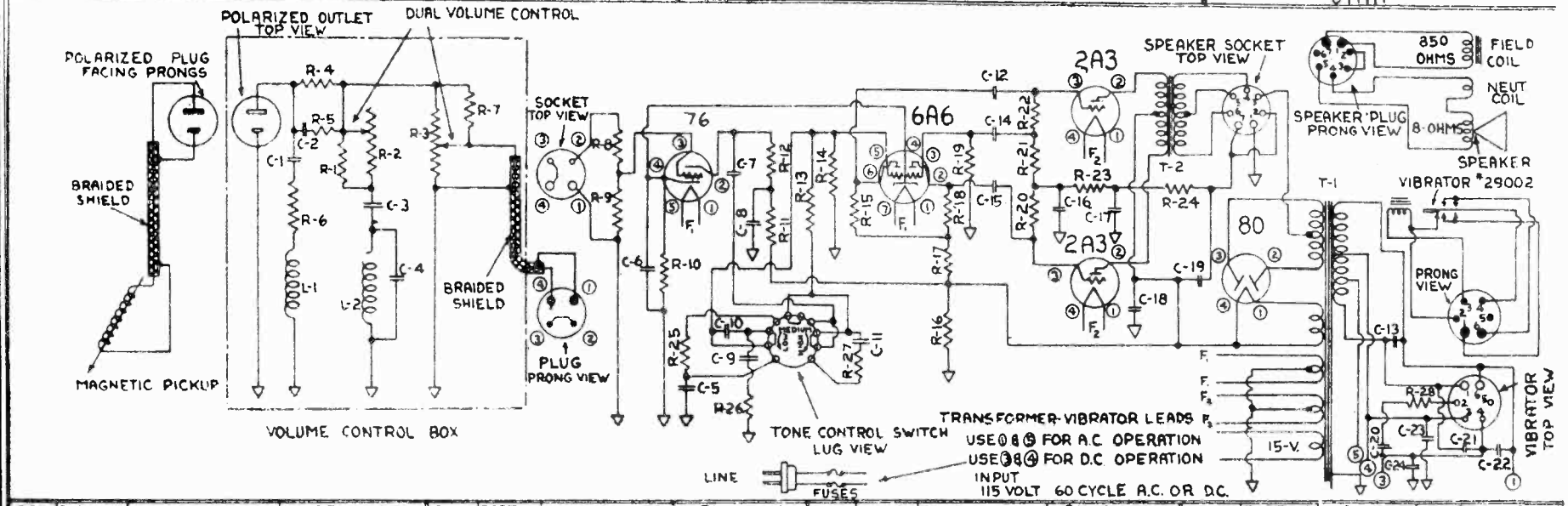
VOLTAGES AND CURRENTS OF MODEL *752 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS.
ALL VOLTAGES MEASURED WITH 1,000 OHMS PER VOLT VOLTMETER.

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE + TO CHASSIS:-		AVERAGE PLATE CURRENT:-		AVERAGE VOLTAGE MEASURED ACROSS CONDENSERS:-		AVERAGE FILAMENT VOLTAGE:-	
76 - PLATE TO CHASSIS	65-VOLTS D.C.	76-PLATE CURRENT	13-MILLS D.C.	C-18	345-VOLTS D.C.	76 - FIL. VOLTAGE	6.3-VOLTS A.C.
6A6 - PLATE TO CHASSIS	110-VOLTS D.C.	6A6-PLATE CURRENT	5-MILLS D.C.	C-19	420-VOLTS D.C.	6A6 - FIL. VOLTAGE	6.3-VOLTS A.C.
2A3 - PLATE TO CHASSIS	345-VOLTS D.C.	2A3-PLATE CURRENT	34.0-MILLS D.C.	C-6	35-VOLTS D.C.	2A3 - FIL. VOLTAGE	2.5-VOLTS A.C.
				C-17	70. -VOLTS D.C.	80 - FIL. VOLTAGE	5.0-VOLTS A.C.

SPEAKER FIELD 850-OHMS BETWEEN TERMINALS *1 & *7 ON SPEAKER SOCKET - 70-VOLTS D.C.

SOUND SYSTEM FOR 115 VOLT D.C. VIBRATOR MODEL 50

PICKUP PART-N°25662	VOLUME CONTROL-257-A.M.-PART-NO.25423	AMPLIFIER-*753-PART NO. *29145	SPEAKER- MAGNAVOX JENSEN-UTAH *25593



ITEM	PART NO	VALUE	REMARKS
		RESISTORS	
R-1	20787	5000 OHMS	±10% ¼WATT
R-2	22765	12000 OHMS	DUAL VOLUME CONTROL
R-3		150000 OHMS	
R-4	21200	10000 OHMS	±10% ¼WATT
R-5	20787	5000 OHMS	±10% ¼WATT
R-6	25418	1500 OHMS	±10% ¼WATT
R-7	20267	15000 OHMS	±10% ¼WATT
R-8	28626	25000 OHMS	±5% ¼WATT
R-9	28152	75000 OHMS	±5% ¼WATT
R-10	25418	1500 OHMS	±10% ¼WATT
R-11	20855	150000 OHMS	±10% ¼WATT
R-12	21939	50000 OHMS	±10% ¼WATT
R-13	21938	100000 OHMS	±10% ¼WATT
R-14	20855	150000 OHMS	±10% ¼WATT
R-15	20728	250000 OHMS	±20% ¼WATT
R-16	25557	25000 OHMS	±5% 20WATT
R-17	20266	75000 OHMS	±10% ¼WATT
R-18	20728	250000 OHMS	±20% ¼WATT
R-19	20728	250000 OHMS	±20% ¼WATT
R-20	20750	500000 OHMS	±20% ¼WATT
R-21	23084	25000 OHMS	±10% ¼WATT
R-22	20750	500000 OHMS	±20% ¼WATT
R-23	20855	150000 OHMS	±10% ¼WATT
R-24	22014	30000 OHMS	±10% ¼WATT
R-25	20266	75000 OHMS	±10% ¼WATT
R-26	22526	20000 OHMS	±10% ¼WATT
R-27	20266	75000 OHMS	±10% ¼WATT
R-28	22530	1000 OHMS	±10% ¼WATT
		CONDENSERS	
C-1	25427	.002 MFD.	±5% MICA
C-2	25430	.02 MFD.	±10% 200W.V.
C-3	23221	.18 MFD.	±10% 200W.V.
C-4	22531	.003 MFD.	±10% MICA
C-5	22753	.006 MFD.	±10% 400W.V.
C-6	23010	10. MFD.	25 W.V.
C-7	21993	.05 MFD.	±10% 400W.V.
C-8	24321	2. MFD.	450 W.V.
C-9	25428	.0015 MFD.	±5% MICA
C-10	25429	.00035 MFD.	±10% MICA
C-11	22753	.006 MFD.	±10% 400W.V.
C-12	21993	.05 MFD.	±10% 400W.V.
C-13	29155	1. MFD.	220W.V.A.C.
C-14	21993	.05 MFD.	±10% 400W.V.
C-15	21993	.05 MFD.	±10% 400W.V.
C-16	20665	.25 MFD.	±10% 200W.V.
C-17	25415	12. MFD.	150 W.V.
C-18		25. MFD.	450 W.V.
C-19		8. MFD.	500 W.V.
C-20	24329	.1 MFD.	±10% 200 W.V.
C-21	24364	.5 MFD.	±10% 200 W.V.
C-22	24364	.5 MFD.	±10% 200 W.V.
C-23	29016	.25 MFD.	±10% 200 W.V.
C-24	29017	.01 MFD.	±10% 200 W.V.
		CHOKES	
L-1	25598	290 MILLIHENRIES	CHOKE COIL
L-2	21693	540 MILLIHENRIES	CHOKE COIL
		TRANSFORMERS	
T-1	29158	60 CYCLE	POWER
T-2	25416		AUDIO OUTPUT

VOLTAGES AND CURRENTS OF MODEL *753 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS D.C. OR 60 CYCLE A.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER.

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE + TO CHASSIS -	
76- PLATE TO CHASSIS	65-VOLTS D.C.
6A6- PLATE TO CHASSIS	110- VOLTS D.C.
2A3 - PLATE TO CHASSIS	345-VOLTS D.C.

AVERAGE PLATE CURRENT:-	
76 PLATE CURRENT	1.3 MILLS D.C.
6A6 PLATE CURRENT	5 MILLS D.C.
2A3 PLATE CURRENT	34. MILLS D.C.

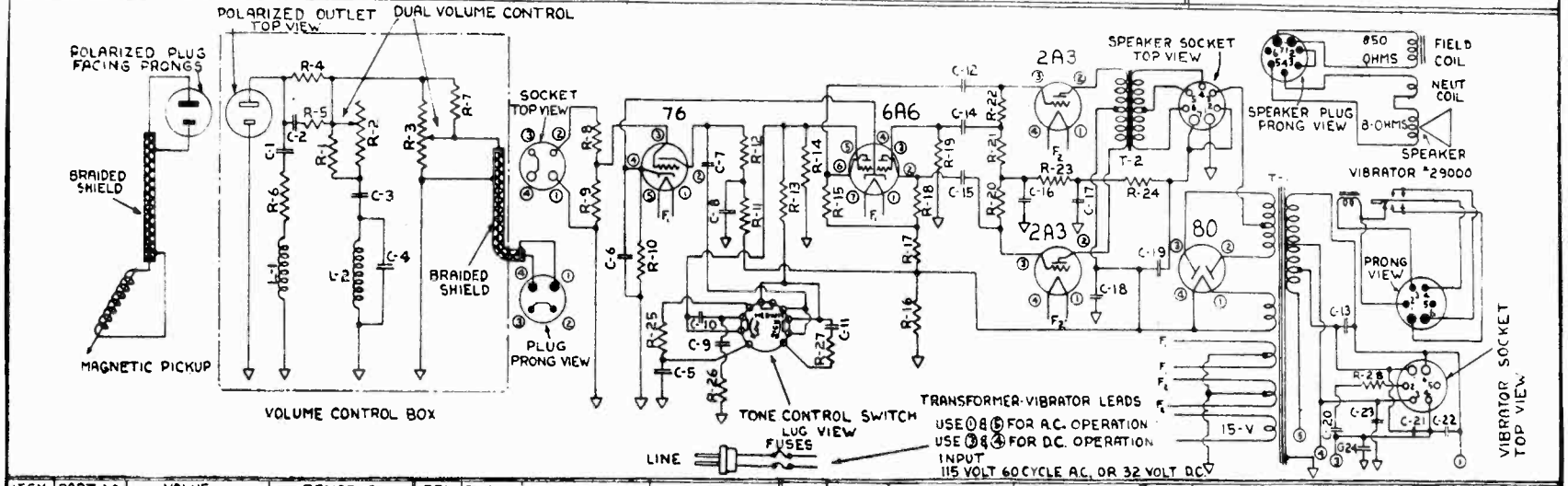
AVERAGE VOLTAGE MEASURED ACROSS CONDENSERS:-	
C-18	345 VOLTS D.C.
C-19	420 VOLTS D.C.
C-6	3.5 VOLTS D.C.
C-17	70. VOLTS D.C.

AVERAGE FILAMENT VOLTAGE:-		
76	FIL. VOLTAGE	6.3 VOLTS A.C.
6A6	FIL. VOLTAGE	6.3 VOLTS A.C.
2A3	FIL. VOLTAGE	2.5 VOLTS A.C.
80	FIL. VOLTAGE	5.0 VOLTS A.C.

SPEAKER FIELD 850 OHMS BETWEEN TERMINALS *1 & *7 ON SPEAKER SOCKET- 70 VOLTS D.C.

SOUND SYSTEM FOR 32 VOLT D.C. VIBRATOR MODEL 50

PICKUP PART Nº25662	VOLUME CONTROL-257-A.M.-PART-Nº25423	AMPLIFIER- *754 PART No. *29162	SPEAKER-JENSEN *25593



ITEM	PART NO.	VALUE	REMARKS
		RESISTORS	
R-1	20787	5000 OHMS	±10% ¼WATT
R-2	22765	12000 OHMS	DUAL VOLUME CONTROL
R-3		150000 OHMS	
R-4	21200	10000 OHMS	±10% ¼WATT
R-5	20767	5000 OHMS	±10% ¼WATT
R-6	25418	1500 OHMS	±10% ¼WATT
R-7	20267	15000 OHMS	±10% ¼WATT
R-8	28626	25000 OHMS	±5% ¼WATT
R-9	28152	75000 OHMS	±5% ¼WATT
R-10	25418	1500 OHMS	±10% ¼WATT
R-11	20855	150000 OHMS	±10% ¼WATT
R-12	21939	50000 OHMS	±10% ¼WATT
R-13	21938	100000 OHMS	±10% ¼WATT
R-14	20855	150000 OHMS	±10% ¼WATT
R-15	20728	250000 OHMS	±20% ¼WATT
R-16	25557	25000 OHMS	±5% 20WATT
R-17	20266	75000 OHMS	±10% ¼WATT
R-18	20728	250000 OHMS	±20% ¼WATT
R-19	20728	250000 OHMS	±20% ¼WATT
R-20	20750	500000 OHMS	±20% ¼WATT
R-21	23084	25000 OHMS	±10% ¼WATT
R-22	20750	500000 OHMS	±20% ¼WATT
R-23	20855	150000 OHMS	±10% ¼WATT
R-24	22014	30000 OHMS	±10% ¼WATT
R-25	20266	75000 OHMS	±10% ¼WATT
R-26	22526	20000 OHMS	±10% ¼WATT
R-27	20266	75000 OHMS	±10% ¼WATT
R-28	22530	1000 OHMS	±10% ¼WATT

ITEM	PART NO	VALUE	REMARKS
		CONDENSERS	
C-1	25427	.002 MFD.	±5% MICA
C-2	25430	.02 MFD.	±10% 200 W.V.
C-3	23221	.18 MFD.	±10% 200 W.V.
C-4	22531	.003 MFD.	±10% MICA
C-5	22753	.006 MFD.	±10% 400 W.V.
C-6	23010	10. MFD.	25 W.V.
C-7	21993	.05 MFD.	±10% 400 W.V.
C-8	24321	2 MFD.	450 W.V.
C-9	25428	.0015 MFD.	±5% MICA
C-10	25429	.00035 MFD.	±10% MICA
C-11	22753	.006 MFD.	±10% 400 W.V.
C-12	21993	.05 MFD.	±10% 400 W.V.
C-13	29164	10. MFD.	65 W.V. A.C.
C-14	21993	.05 MFD.	±10% 400 W.V.
C-15	21993	.05 MFD.	±10% 400 W.V.
C-16	20665	25 MFD.	±10% 200 W.V.
C-17		12 MFD.	150 W.V.
C-18	25415	25 MFD.	450 W.V.
C-19		8 MFD.	500 W.V.
C-20	24329	1 MFD.	±10% 200 W.V.
C-21	24364	.5 MFD.	±10% 200 W.V.
C-22	24364	.5 MFD.	±10% 200 W.V.
C-23	29016	.25 MFD.	±10% 200 W.V.
C-24	29017	.01 MFD.	±10% 200 W.V.
		CHOKES	
L-1	25598	290 MILLIHENRIES	CHOKE COIL
L-2	21693	540 MILLIHENRIES	CHOKE COIL
		TRANSFORMERS	
T-1	29001	60 CYCLE	POWER
T-2	25416		AUDIO OUTPUT

VOLTAGES AND CURRENTS OF MODEL *754 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS 60 CYCLE A.C. OR 32 VOLTS D.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER.

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE + TO CHASSIS-	
76 PLATE TO CHASSIS	65 VOLTS D.C.
6A6 PLATE TO CHASSIS	110 VOLTS D.C.
2A3 PLATE TO CHASSIS	345 VOLTS D.C.

AVERAGE PLATE CURRENT:-	
76 PLATE CURRENT	1.3 MILLS D.C.
6A6 PLATE CURRENT	.5 MILLS D.C.
2A3 PLATE CURRENT	34. MILLS D.C.

AVERAGE VOLTAGE MEASURED ACROSS CONDENSERS:-	
C-18	345 VOLTS D.C.
C-19	420 VOLTS D.C.
C-6	3.5 VOLTS D.C.
C-17	70 VOLTS D.C.

AVERAGE FILAMENT VOLTAGES		
76	FIL VOLTAGE	6.3 VOLTS A.C.
6A6	FIL VOLTAGE	6.3 VOLTS A.C.
2A3	FIL VOLTAGE	2.5 VOLTS A.C.
80	FIL VOLTAGE	5.0 VOLTS A.C.

SPEAKER FIELD - 850 OHMS BETWEEN TERMINALS *1 & *7 ON SPEAKER SOCKET - 70 VOLTS D.C.

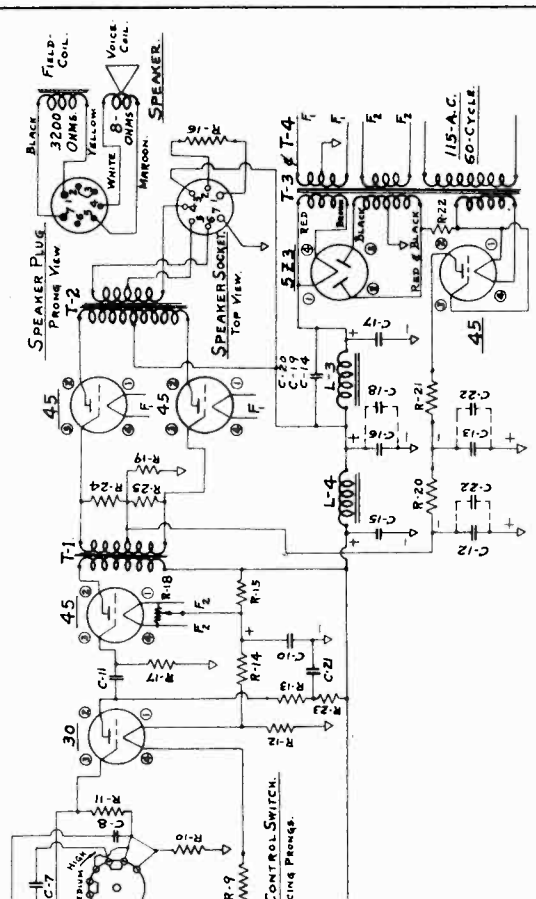
RUDOLPH WURLITZER CO.

MODEL 771

RUDOLPH WURLITZER CO.

SOUND SYSTEM FOR MODELS -316-416-616-716 & 616-A.

PICKUP-*24707	VOLUME CONTROL-*177-AM PART Nº 24298.	AMPLIFIER-*771. 25-CYCLE-*24368. 40-CYCLE-*24370 60-CYCLE-*24274	SPEAKERS FOR *616A.	JENSEN-*27359 MAGNAVOX-27374	316 : 416 JENSEN-*26923 SPEAKERS 616 : 716 MAGNAVOX-26409.



ITEM	PART Nº	VALUE	REMARKS	ITEM	PART Nº	VALUE	REMARKS
		RESISTORS				CONDENSERS	
R-1	22530	1,000-OHMS	±10% ½-WATT	R-19	23012	5,000-OHMS	±5% 10-WATT
R-2	22765	12,000-OHMS	±10% ½-WATT	R-20	23011	2,000-OHMS	±5% 10-WATT
R-3	22765	150,000-OHMS	±15% VOLUME CONTROL	R-21	23011	2,000-OHMS	±5% 10-WATT
R-4	20750	500,000-OHMS	±20% ½-WATT	R-22	23013	3,500-OHMS	±5% 10-WATT
R-5	22354	65-OHMS	±5% ½-WATT	R-23	23084	25,000-OHMS	±10% ¼-WATT
R-6	22323	2,000-OHMS	±10% 1-WATT	R-24	26358	7,000-OHMS	±10% ½-WATT
R-7	21938	100,000-OHMS	±10% ¼-WATT	R-25	26358	7,000-OHMS	±10% ½-WATT
R-8	21939	50,000-OHMS	±10% ¼-WATT	R-26	21939	50,000-OHMS	±10% ¼-WATT
R-9	23014	100-OHMS	± 5% ½-WATT				
R-10	20750	500,000-OHMS	±20% ¼-WATT				
R-11	20266	75,000-OHMS	±10% ¼-WATT				
R-12	22323	2,000-OHMS	±10% 1-WATT				
R-13	23208	60,000-OHMS	±10% ½-WATT				
R-14		575-OHMS	BLEEDER 4-WATT				
R-15	23015	9,000-OHMS	BLEEDER-30-WATT				
R-16		2,500-OHMS	BLEEDER-33-WATT				
R-17	20728	250,000-OHMS	±20% ¼-WATT				
R-18	20445	20-OHMS	HUM CONTROL				

ITEM	PART Nº	VALUE	REMARKS
C-1		.25-MFD	±10% 200-VOLT
C-2	20665		
C-3		.25-MFD	±10% 200-VOLT
C-4	24321	2. MFD	450-VOLT
C-5	24280	.00075-MFD.	±10% ±20% MICA
C-6	22241	.002-MFD	±10% MICA
C-7	21993	.05-MFD	±20% 400-VOLT
C-8	26560	.004-MFD	±10% 600-VOLT
C-9	24279	10. MFD	25-VOLT
C-10	24775	25. MFD	150-VOLT
C-11	21736	.1 MFD	±20% 400-VOLT
C-12	23021	8. MFD	150-VOLT
C-13		8. MFD	150-VOLT
C-14	20665	.25 MFD	FOR 60-CYCLE
C-15	21720	25. MFD	450-VOLT
C-16	22325	6. MFD.	500-VOLT
C-17		4. MFD	600-VOLT
C-18	21720	25. MFD	FOR 25 & 40-CYCLE

ITEM	PART Nº	VALUE	REMARKS
C-19	24363	1. — MFD.	FOR 25-30-CYCLE
C-20	24364	.5-MFD.	FOR 40-CYCLE
C-21	24321	2. — MFD.	450-VOLT
C-22	23021	8 - 8 - MFD.	FOR 25-30-CYCLE
C-23			
C-24	22241	.002-MFD.	±10% MICA
		CHOKES.	
L-1	21693	540-MILLIHENRIES	CHOKE COIL
L-2	24305	290-MILLIHENRIES	CHOKE COIL
L-3	21550	875-HENRIES	#1-FILTER CHOKE
L-4	23017	2-HENRIES	#2-FILTER CHOKE
		TRANSFORMERS.	
T-1	21548		AUDIO INPUT
T-2	23019		AUDIO OUTPUT
T-3	24527	60-CYCLE	POWER.
T-4	24526	25-CYCLE	POWER.

VOLTAGES AND CURRENTS OF MODEL *771-AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115-VOLTS.

ALL VOLTAGES MEASURED WITH 1,000-OHMS PER VOLT VOLTMETER.

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE + TO CHASSIS —			
OUTPUT - 45	355-VOLTS D.C.	DRIVER - 45	327-VOLTS D.C.
DRIVER - 45	327-VOLTS D.C.	-30	175-VOLTS D.C.
-30	175-VOLTS D.C.		80-VOLTS D.C.

AVERAGE PLATE CURRENT:-	
OUTPUT - 45	28.0-M.A.D.C.
DRIVER - 45	38.0-M.A.D.C.
-30	2.1-M.A.D.C.
-30	1.5-M.A.D.C.

AVERAGE GRID VOLTAGE MEASURED FROM GRID TO FILAMENT.	
OUTPUT - 45	87-VOLTS D.C.
DRIVER - 45	40-VOLTS D.C.

AVERAGE FILAMENT VOLTAGES:-	
RECTIFIER 523	5.0-VOLTS A.C.
OUTPUT -45	2.5-VOLTS A.C.
DRIVER -45	2.5-VOLTS A.C.
-30	2.1-VOLTS D.C.

AVERAGE VOLTAGES ACROSS SPEAKER FIELDS AND ELECTROLYTIC CONDENSERS.

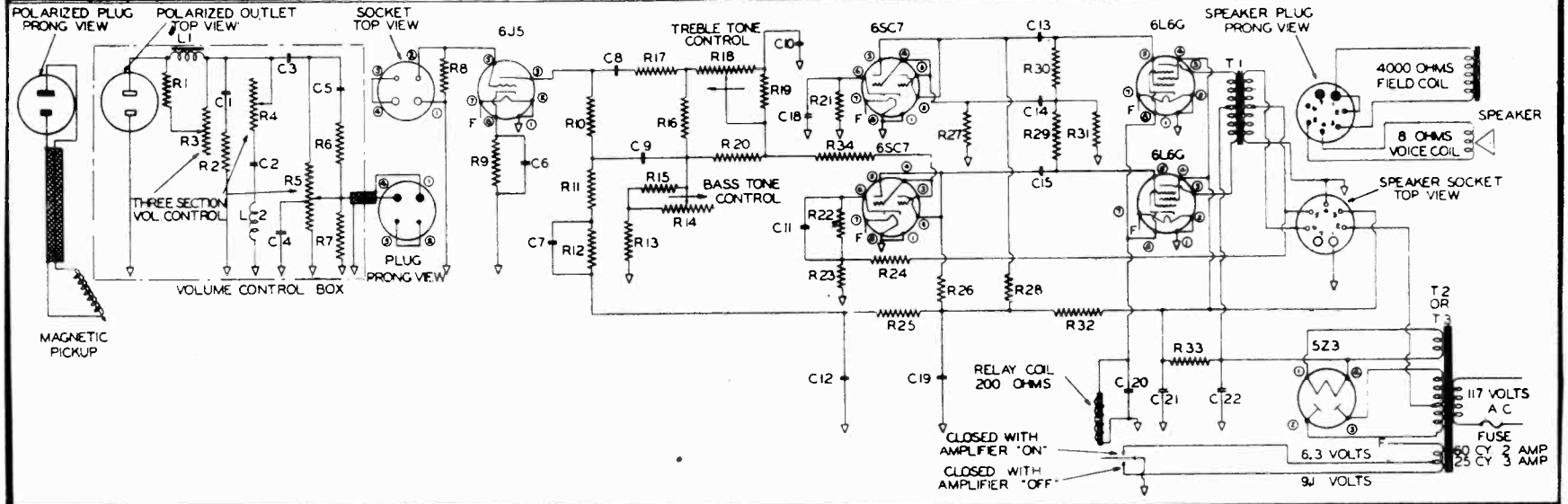
3200-OHM SPEAKER FIELD VOLTAGE MEASURED FROM *1-CONTACT TO *7-CONTACT ON SPEAKER SOCKET 205-VOLTS D.C.

2500-OHM AUXILIARY SPEAKER FIELD VOLTAGE MEASURED FROM *1-CONTACT TO *3-CONTACT ON SPEAKER SOCKET 155-VOLTS D.C.

C-17	ELECTROLYTIC	385-VOLTS D.C.	FROM RECTIFIER -45-PLATE - TO CHASSIS + 150-VOLTS D.C.
C-16	ELECTROLYTIC	360-VOLTS D.C.	
C-15	ELECTROLYTIC	355-VOLTS D.C.	

SOUND SYSTEM FOR MODEL 800

PICKUP PART NO. 34969	VOLUME CONTROL UNIT 37181	AMPLIFIER 8003 25 CYCLE 37273 800 50-60-CYCLE 36761	SPEAKER 36627



ITEM	PART NO.	VALUE	REMARKS
		RESISTORS	
R 1	36554	3900 OHMS	± 10 % 1/3 WATT
R 2	25418	1500 OHMS	± 10 % 1/3 WATT
R 3		150000 OHMS	VOL CON REAR
R 4	37186	3500 OHMS	VOL CON CENTER
R 5		150000 OHMS	VOL CON PANEL
R 6	20855	150000 OHMS	± 10 % 1/3 WATT
R 7	36323	270000 OHMS	± 10 % 1/3 WATT
R 8	35924	560000 OHMS	± 10 % 1/3 WATT
R 9	36324	3300 OHMS	± 10 % 1/3 WATT
R 10	21200	10000 OHMS	± 10 % 1/3 WATT
R 11	36443	6800 OHMS	± 10 % 1/3 WATT
R 12	22528	220000 OHMS	± 10 % 1/3 WATT
R 13	37446	39000 OHMS	± 10 % 1/3 WATT
R 14	36436	1000000 OHMS	TONE CON BASS
R 15	28383	1000000 OHMS	± 10 % 1/3 WATT
R 16	20855	150000 OHMS	± 10 % 1/3 WATT
R 17	35946	27000 OHMS	± 10 % 1/3 WATT

ITEM	PART NO.	VALUE	REMARKS
		RESISTORS	
R 18	36435	750000 OHMS	TONE CON TREBLE
R 19	28383	1000000 OHMS	± 10 % 1/3 WATT
R 20	35923	330000 OHMS	± 10 % 1/3 WATT
R 21	36325	1200 OHMS	± 10 % 1/3 WATT
R 22	36325	1200 OHMS	± 10 % 1/3 WATT
R 23	37368	220 OHMS	± 5 % 1/2 WATT
R 24	37369	5100 OHMS	± 5 % 1 WATT
R 25	21200	10000 OHMS	± 10 % 1/3 WATT
R 26	36326	56000 OHMS	± 10 % 1/3 WATT
R 27	35924	560000 OHMS	± 10 % 1/3 WATT
R 28	36326	56000 OHMS	± 10 % 1/3 WATT
R 29	35925	82000 OHMS	± 10 % 1/3 WATT
R 30	35925	82000 OHMS	± 10 % 1/3 WATT
R 31	36442	68000 OHMS	± 10 % 1/3 WATT
R 32	36441	22000 OHMS	± 10 % 1/3 WATT
R 33	36766	1150 OHMS	BLEEDER
R 34	37446	39000 OHMS	± 10 % 1/3 WATT

ITEM	PART NO.	VALUE	REMARKS
		CONDENSERS	
C 1	28143	.01 MFD	± 10 % 200 WV
C 2	28123	.3 MFD	± 10 % 120 WV
C 3	22545	.03 MFD	± 10 % 200 WV
C 4	36474	.0015 MFD	± 10 % 600 WV
C 5	36472	.001 MFD	± 10 % 600 WV
C 6	36432	20. MFD	25 WV
C 7	22545	.03 MFD	± 10 % 200 WV
C 8	36472	.001 MFD	± 10 % 600 WV
C 9	22550	.01 MFD	± 10 % 400 WV
C 10	36440	.00075 MFD	± 10 % 600 WV
C 11	36432	20. MFD	25 WV
C 12	36469	8. MFD	350 WV
C 13	36431	.075 MFD	± 10 % 400 WV
C 14	22850	.01 MFD	± 10 % 400 WV
C 15	36431	.075 MFD	± 10 % 400 WV

ITEM	PART NO.	VALUE	REMARKS
		CONDENSERS	
C 18		20 MFD	25 WV
C 19	36439	20 MFD	300 WV
C 20		20 MFD	25 WV
C 21		20 MFD	350 WV
C 22	36438	30 MFD	500 WV
		CHOKES	
L1	37185	920 MILLIHENRIES	COIL
L2	37051	475 MILLIHENRIES	COIL
		TRANSFORMERS	
T1	36434		OUTPUT
T2	36767	50 - 60 CYCLE	POWER
T3	37274	25 CYCLE	POWER

ALL MEASUREMENTS MADE WITH LINE AT 117 VOLTS 25 OR 60 CYCLE

VOLTAGES & CURRENTS OF MODEL 800 AMPLIFIER

ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER FOR ALL VOLTAGES OVER 50 USE 500 VOLT SCALE

AVERAGE PLATE & SCREEN VOLTAGE MEASURED TO CHASSIS

6L6G	PLATE	390 VOLTS DC	SCREEN 308 VOLTS DC
6SC7	PLATE	150 VOLTS DC.	
6J5	PLATE	50 VOLTS DC.	

AVERAGE PLATE CURRENT.

6L6G	PLATE	50 MA DC
6SC7	PLATE	1.3 MA DC
6J5	PLATE	.7 MA DC

AVERAGE DC VOLTAGE ACROSS CONDENSERS

C 22	396	VOLTS DC
C 21	307	VOLTS DC
C 20	23.5	VOLTS DC
C 19	228	VOLTS DC
C 18	2	VOLTS DC
C 12	218	VOLTS DC
C 11	2	VOLTS DC
C 6	2	VOLTS DC

AVERAGE FILAMENT VOLTAGE

6L6G	FILAMENT	6.3 VOLTS A C
6SC7	FILAMENT	6.3 VOLTS A C
6J5	FILAMENT	6.3 VOLTS A C

FILAMENT VOLTAGES ARE 9J FOR ACCELERATED CATHODE HEATING WHEN FILAMENTS ARE COOL

5Z3	FILAMENT	5 VOLTS A C

SPEAKER FIELD RESISTANCE 4000 OHMS

307 VOLTS DC BETWEEN TERMINALS 1 & 3 OF SPEAKER SOCKET

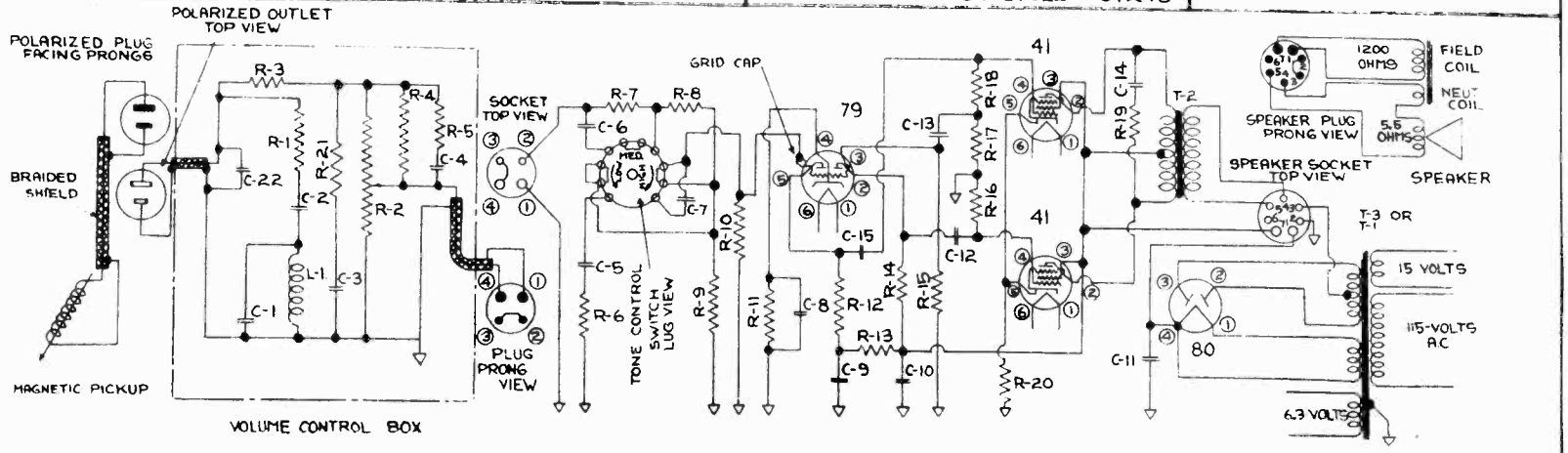
RUDOLPH WURLITZER CO.

WURLITZER PAGE 13-19

MODELS 800, 8003

SOUND SYSTEM FOR MODEL 61

PICKUP PART NO 25662	VOLUME CONTROL *148-AM-PART Nº31247	AMPLIFIER *841 25 CYCLE *31645 60 CYCLE *31245	SPEAKER UTAH - *31931 JENSEN- *32124



ITEM	PART NO	VALUE	REMARKS
		RESISTORS	
R-1	31144	1000 OHMS	±5% ¼ WATT
R-2	25679	100000 OHMS	VOLUME CONTROL
R-3	28153	15000 OHMS	±5% ¼ WATT
R-4	31644	100000 OHMS	±5% ¼ WATT
R-5	31152	200000 OHMS	±5% ¼ WATT
R-6	21200	10000 OHMS	±10% ¼ WATT
R-7	20266	75000 OHMS	±10% ¼ WATT
R-8	21200	10000 OHMS	±10% ¼ WATT
R-9	21938	100000 OHMS	±10% ¼ WATT
R-10	20703	300000 OHMS	±10% ¼ WATT
R-11	22588	3000 OHMS	±10% ¼ WATT
R-12	25575	200000 OHMS	±10% ¼ WATT
R-13	20266	75000 OHMS	±10% ¼ WATT
R-14	20728	250000 OHMS	±20% ¼ WATT
R-15	20728	250000 OHMS	±20% ¼ WATT
R-16	25432	500000 OHMS	±10% ¼ WATT
R-17	21200	10000 OHMS	±10% ¼ WATT
R-18	25432	500000 OHMS	±10% ¼ WATT
R-19	25574	15000 OHMS	±10% 1- WATT
R-20	25573	2500 OHMS	±5% 10-WATT
R-21	25910	50000 OHMS	±5% ¼-WATT

ITEM	PART NO	VALUE	REMARKS
		CONDENSERS	
C-1	22532	.004 MFD.	±10% MICA
C-2	20665	.25 MFD.	±10% 200 W.V.
C-3	22758	.001 MFD.	±10% MICA
C-4	25680	.008- MFD.	±10% 200 W.V.
C-5	22589	.0025- MFD.	±10% MICA
C-6	22532	.004 - MFD.	±10% MICA
C-7	22589	.0025 MFD.	±10% MICA
C-8	23010	10. MFD.	25 W.V.
C-9	22320	.3 MFD.	+20%-10% 400 W.V.
C-10	25570	25. MFD.	450 W.V.
C-11		8 MFD.	500 W.V.
C-12	21993	.05 MFD.	±10% 400 W.V.
C-13	21993	.05 MFD.	±10% 400 W.V.
C-14	22531	.003 MFD.	±10% MICA
C-15	21993	.05 MFD.	±10% 400 W.V.

ITEM	PART NO	VALUE	REMARKS
C-22	25680	.008 MFD.	±10% 200 W.V.
			CHOKES
L-1	25598	290 MILLIHENRIES	CHOKE COIL
			TRANSFORMERS
T-1	25572	60- CYCLE	POWER
T-2	25571		AUDIO OUTPUT
T-3	25747	25- CYCLE	POWER

VOLTAGES AND CURRENTS OF MODEL *841 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS 60 OR 25 CYCLE A.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER.

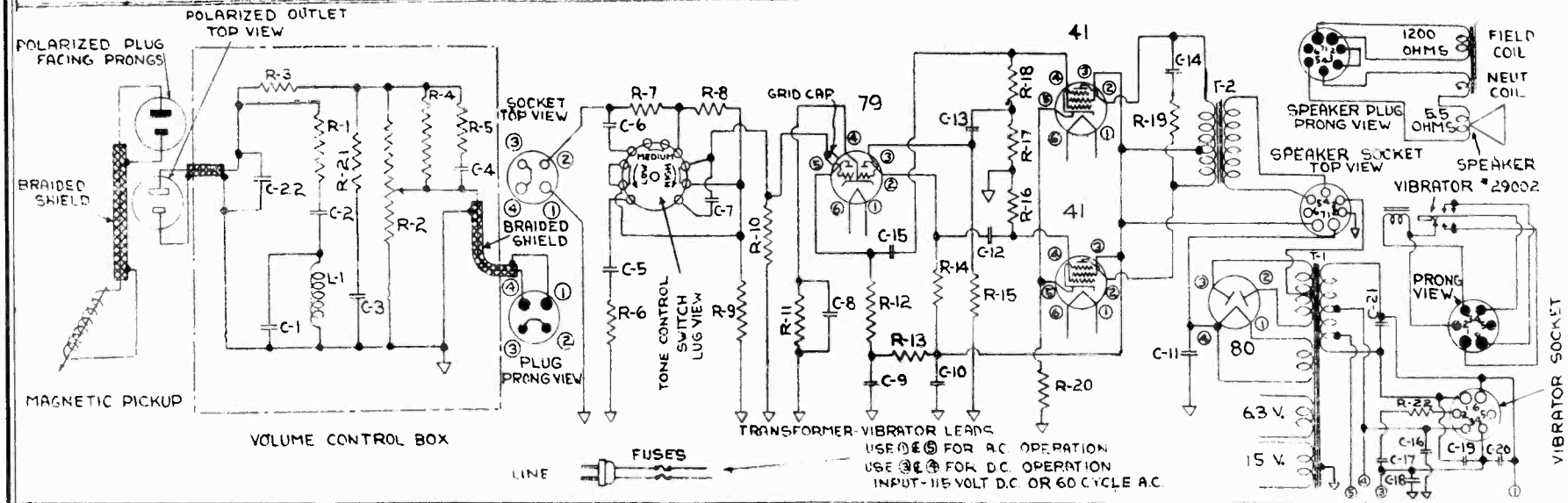
AVERAGE PLATE VOLTAGE MEASURED FROM PLATE TO CHASSIS:-		AVERAGE PLATE CURRENT		AVERAGE BIAS VOLTAGE MEASURED FROM CATHODE TO GROUND:-		AVERAGE FILAMENT VOLTAGE	
79	115-VOLTS	79	.35 - MILLS	79	APPROX. 1.5-2. VOLTS	79	6.3- VOLTS A.C.
41	270- VOLTS	41	30. - MILLS	41	18. VOLTS	41	6.3- VOLTS A.C.
						80	5.0- VOLTS A.C.

VOLTAGE ACROSS CONDENSER C-10 275 VOLTS D.C. VOLTAGE ACROSS CONDENSER C-11 360 VOLTS D.C.

SPEAKER FIELD 1200-OHMS BETWEEN TERMINALS *1 & *7 ON SPEAKER SOCKET 85 VOLTS D.C.

SOUND SYSTEM FOR 115 VOLT D.C. VIBRATOR MODEL 61

PICKUP PART Nº25662	VOLUME CONTROL *148-A.M-PART Nº31247	AMPLIFIER - *842 - PART No. *31809	SPEAKER-JENSEN - * 32124 UTAH - *31931



ITEM	PART NO.	VALUE	REMARKS
		RESISTORS	
R-1	31144	1000 OHMS	±5% ¼ WATT
R-2	25679	100000 OHMS	VOLUME CONTROL
R-3	28153	15000 OHMS	±5% ¼ WATT
R-4	31644	100000 OHMS	±5% ¼ WATT
R-5	31152	200000 OHMS	±5% ¼ WATT
R-6	21200	10000 OHMS	±10% ¼ WATT
R-7	20266	75000 OHMS	±10% ¼ WATT
R-8	21200	10000 OHMS	±10% ¼ WATT
R-9	21938	100000 OHMS	±10% ¼ WATT
R-10	20703	300000 OHMS	±10% ¼ WATT
R-11	22588	3000 OHMS	±10% ¼ WATT
R-12	25575	200000 OHMS	±10% ¼ WATT
R-13	20266	75000 OHMS	±10% ¼ WATT
R-14	20728	250000 OHMS	±20% ¼ WATT
R-15	20728	250000 OHMS	±20% ¼ WATT
R-16	25432	500000 OHMS	±10% ¼W
R-17	21200	10000 OHMS	±10% ¼W
R-18	25432	500000 OHMS	±10% ¼W
R-19	25574	15000 OHMS	±10% 1 W
R-20	25573	250 OHMS	±5% 10W
R-21	25910	50000 OHMS	±5% ¼W
R-22	22530	1000 OHMS	±10% ¼W

ITEM	PART NO.	VALUE	REMARKS
		CONDENSERS	
C-1	22532	.004 MFD.	±10% MICA
C-2	20665	.25 MFD.	±10% 200 W.V.
C-3	22758	.001 MFD.	±10% MICA
C-4	25680	.008 MFD.	±10% 200 W.V.
C-5	22589	.0025 MFD.	±10% MICA
C-6	22532	.004 MFD.	±10% MICA
C-7	22589	.0025 MFD.	±10% MICA
C-8	23010	10. MFD.	25 W.V.
C-9	22320	.3 MFD.	+20% -10% 400 W.V.
C-10	25570	25. MFD.	450 W.V.
C-11		8. MFD.	500 W.V.
C-12	21993	.05 MFD.	±10% 400 W.V.
C-13	21993	.05 MFD.	±10% 400 W.V.
C-14	22531	.003 MFD.	±10% MICA
C-15	21993	.05 MFD.	±10% 400 W.V.
C-16	29016	.25 MFD.	±10% 200 W.V.
C-17	24329	.1 MFD.	±10% 200 W.V.
C-18	29017	.01 MFD.	±10% 200 W.V.
C-19	24364	.5 MFD.	±10% 200 W.V.
C-20	24364	.5 MFD.	±10% 200 W.V.
C-21	29155	1. MFD.	220 W.V. A.C.
C-22	25680	.008 MFD.	±10% 200 W.V.

ITEM	PART NO	VALUE	REMARKS
		CHOKES	
L-1	25598	290 MILLIHENRIES	CHOKE COIL
		TRANSFORMERS	
T-1	29149	60-CYCLE	POWER
T-2	25571		AUDIO OUTPUT

VOLTAGES AND CURRENTS OF MODEL *842 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS D.C. OR 60 CYCLE A.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE TO CHASSIS:-		AVERAGE PLATE CURRENT	
79	115-VOLTS D.C.	79	.35-MILLS D.C.
41	270-VOLTS D.C.	41	30. -MILLS D.C.

AVERAGE BIAS VOLTAGE MEASURED FROM CATHODE TO GROUND		AVERAGE FILAMENT VOLTAGES	
79	APPROX. 1.5-2. VOLTS	79	6.3 VOLTS A.C.
41	18. VOLTS	41	6.3 VOLTS A.C.
		80	5.0 VOLTS A.C.

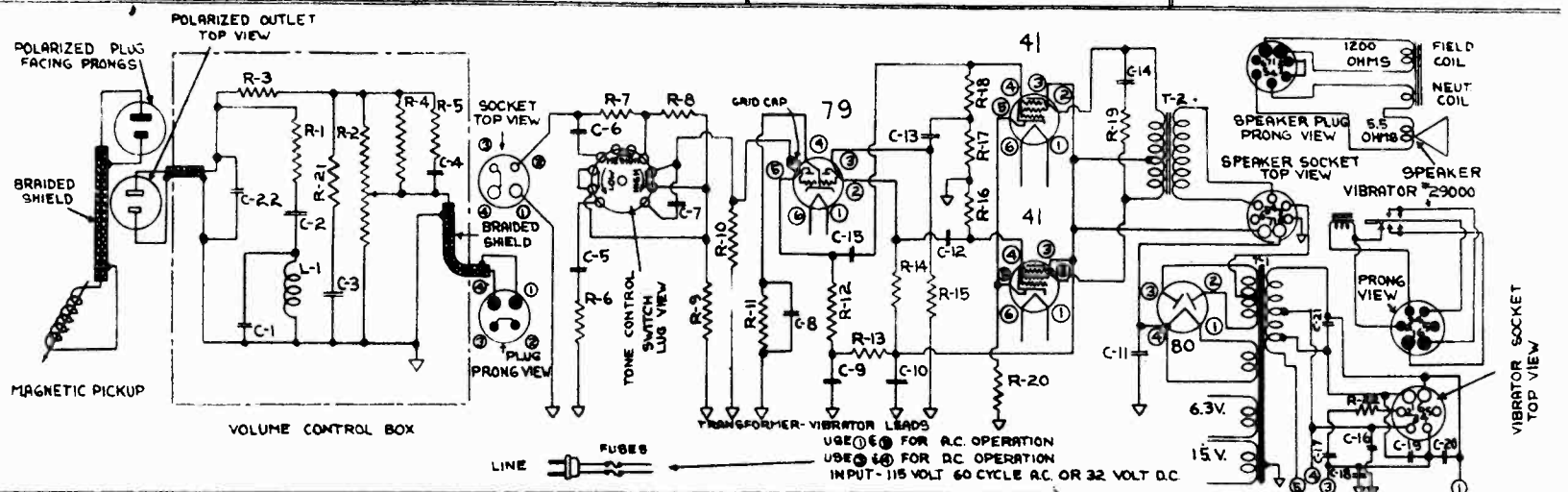
VOLTAGE ACROSS CONDENSER C-10 - 275 VOLTS D.C. VOLTAGE ACROSS CONDENSER C-11 360 VOLTS D.C.

SPEAKER FIELD - 1200 OHMS BETWEEN TERMINALS *1 & *7 ON SPEAKER SOCKET - 85 VOLTS D.C.

RUDOLPH WURLITZER CO.

SOUND SYSTEM FOR 32 VOLT D.C. VIBRATOR MODEL 61

PICKUP PART Nº *25662	VOLUME CONTROL *148-A.M.-PART Nº *31247	AMPLIFIER--*843 PART NO. *31811	SPEAKER- UTAH - *31931 JENSEN - *32124



ITEM	PART NO.	VALUE	REMARKS
		RESISTORS	
R-1	31144	1000 OHMS	±5% ¼WATT
R-2	25679	100000 OHMS	VOLUME CONTROL
R-3	28153	15000 OHMS	±5% ¼WATT
R-4	31644	100 000 OHMS	±5% ¼WATT
R-5	31152	200000 OHMS	±5% ¼WATT
R-6	21200	10000 OHMS	±10% ¼WATT
R-7	20266	75000 OHMS	±10% ¼WATT
R-8	21200	10000 OHMS	±10% ¼WATT
R-9	21938	100000 OHMS	±10% ¼WATT
R-10	20703	300000 OHMS	±10% ¼WATT
R-11	22588	3000 OHMS	±10% ¼WATT
R-12	25575	200000 OHMS	±10% ¼WATT
R-13	20266	75000 OHMS	±10% ¼WATT
R-14	20728	250000 OHMS	±20% ¼WATT
R-15	20728	250000 OHMS	±20% ¼WATT
R-16	25432	500000 OHMS	±10% ¼WATT
R-17	21200	10000 OHMS	±10% ¼WATT
R-18	25432	500000 OHMS	±10% ¼WATT
R-19	25574	15000 OHMS	±10% 1 WATT
R-20	25573	250 OHMS	±5% 10 WATT
R-21	25910	50000 OHMS	±5% ¼WATT
R-22	22530	1000 OHMS	±10% ¼WATT

ITEM	PART NO.	VALUE	REMARKS
		CONDENSERS	
C-1	22532	.004 MFD.	±10% MICA
C-2	20665	.25 MFD.	±10% 200 W.V.
C-3	22758	.001 MFD.	±10% MICA
C-4	25680	.008 MFD.	±10% 200 W.V.
C-5	22589	.0025 MFD.	±10% MICA
C-6	22532	.004 MFD.	±10% MICA
C-7	22589	.0025 MFD.	±10% MICA
C-8	23010	10. MFD.	25 W.V.
C-9	22320	.3 MFD.	±20% 10% 400 W.V.
C-10	25570	25 MFD.	450 W.V.
C-11		8. MFD.	500 W.V.
C-12	21993	.05 MFD.	±10% 400 W.V.
C-13	21993	.05 MFD.	±10% 400 W.V.
C-14	22531	.003 MFD.	±10% MICA
C-15	21993	.05 MFD.	±10% 400 W.V.
C-16	29016	.25 MFD.	±10% 200 W.V.
C-17	24329	.1 MFD.	±10% 200 W.V.
C-18	29017	.01 MFD.	±10% 200 W.V.
C-19	24364	.5 MFD.	±10% 200 W.V.
C-20	24364	.5 MFD.	±10% 200 W.V.
C-21	29164	10. MFD.	65 W.V. A.C.
C-22	25680	.008 MFD.	±10% 200 W.V.
		CHOKES	
L-1	25598	290 MILLIHENRIES	CHOKE COIL
		TRANSFORMERS	
T-1	29136	60-CYCLE	POWER
T-2	25571		AUDIO OUTPUT

VOLTAGES AND CURRENTS OF MODEL *843 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS 60 CYCLE A.C. OR 32 VOLTS D.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER.

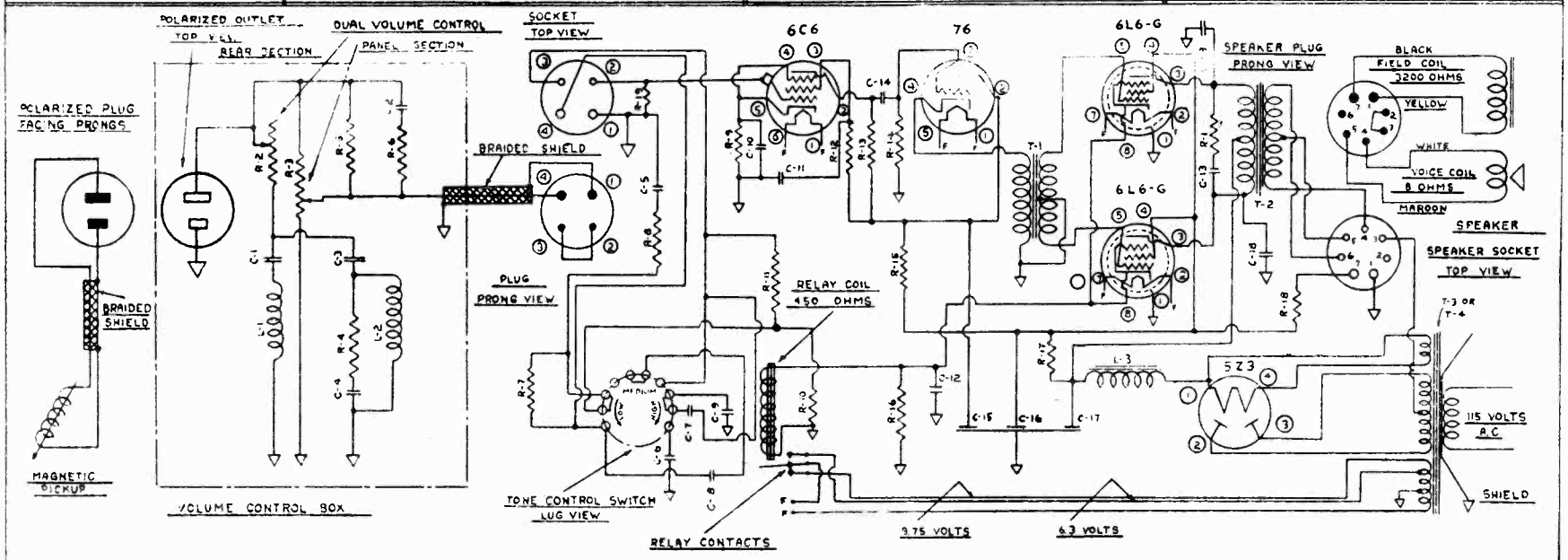
AVERAGE PLATE VOLTAGE MEASURED FROM PLATE TO CHASSIS		AVERAGE PLATE CURRENT		AVERAGE BIAS VOLTAGE MEASURED FROM CATHODE TO GROUND		AVERAGE FILAMENT VOLTAGE	
79	115 VOLTS D.C.	79	.35 MILLS D.C.	79	APPROX. 1.5-2. VOLTS	79	6.3 VOLTS A.C.
41	270 VOLTS D.C.	41	30. MILLS D.C.	41	18. VOLTS	41	6.3 VOLTS A.C.
						80	5.0 VOLTS A.C.

VOLTAGE ACROSS CONDENSER C-10 - 275 VOLTS D.C. VOLTAGE ACROSS CONDENSER C-11 - 360 VOLTS D.C.

SPEAKER FIELD - 1200 OHMS BETWEEN TERMINALS *1 & *7 ON SPEAKER SOCKET - 85 VOLTS D.C.

SOUND SYSTEM FOR MODEL 24 & 24-A

PICKUP PART NO-21423	VOLUME CONTROL-158 A.M.-PART NO 28121	AMPLIFIER-*851	SPEAKER
		25 CYCLE - * 28643 60 CYCLE - * 28125	JENSEN- * 27359 MAGNAVOX- * 27374



ITEM	PART NO	VALUE	REMARKS
		RESISTORS	
R-1	28145	18000 OHMS	± 10% 1 WATT
R-2	2-378	1500 OHMS ± 15%	DUAL VOLUME CONTROL
R-3		150 000 OHMS	± 15 %
R-4	22783	7000 OHMS	± 10% ¼ WATT
R-5	23084	25000 OHMS	± 10% ¼ WATT
R-6	21998	35000 OHMS	± 10% ¼ WATT
R-7	28151	10 000 OHMS	± 5% ¼ WATT
R-8	28152	75000 OHMS	± 5% ¼ WATT
R-9	28150	600 OHMS	± 5% ¼ WATT
R-10	25575	200000 OHMS	± 10% ¼ WATT
R-11	28153	15000 OHMS	± 5% ¼ WATT
R-12	25575	200000 OHMS	± 10% ¼ WATT
R-13	23208	60 000 OHMS	± 10% ½ WATT
R-14	25432	500 000 OHMS	± 10% ¼ WATT
R-15	28147	10 000 OHMS	± 10% 1 WATT
R-16	28146	390 OHMS	± 5% 3 WATT
R-17	28133	950 OHMS BLEEDER	± 5% 20 WATT
R-18		1500 OHMS BLEEDER	± 5% 25 WATT
R-19	21841	2 000 000 OHMS	± 10% ¼ WATT

ITEM	PART NO	VALUE	REMARKS
		CONDENSERS	
C-1	25427	.002 MFD.	± 5% MICA
C-2	22531	.003 MFD.	± 10% MICA
C-3	28123	.3 MFD	± 10% 120 VOLTS
C-4	25427	.002 MFD.	± 5% MICA
C-5	22531	.003 MFD.	± 10% MICA
C-6	23052	.005 MFD.	± 10% 200 VOLTS
C-7	23052	.005 MFD.	± 10% 200 VOLTS
C-8	28145	.006 MFD.	± 10% 600 VOLTS
C-9	28143	.01 MFD.	± 10% 200 VOLTS
C-10	28141	.25 MFD.	25 VOLTS
C-11	28211	.25 MFD.	± 10% 400 VOLTS
C-12	28139	16. MFD.	50 VOLTS
C-13	28145	.006 MFD.	± 10% 600 VOLTS
C-14	28142	.03 MFD.	± 10% 400 VOLTS
C-15	28138	4 MFD.	350 VOLTS
C-16	28138	20. MFD.	450 VOLTS
C-17		8 MFD.	500 VOLTS
C-18	28924	.00035 MFD	± 10% 600 VOLTS
C-19	28924	.00035 MFD	± 10% 600 VOLTS
		CHOKES	
L-1	25598	290-MILLIHENRIES	CHOKE COIL
L-2	28526	400-MILLIHENRIES	CHOKE COIL
L-3	28137	4.1-HENRIES ± 15%	FILTER CHOKE
		TRANSFORMERS	
T-1	28136		AUDIO INPUT
T-2	28135		AUDIO OUTPUT
T-3	28134	60 CYCLE	POWER
T-4	28470	25 CYCLE	POWER

VOLTAGES AND CURRENTS OF MODEL *851 AMPLIFIER ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER.

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE TO CHASSIS	
6L6-G PLATE TO CHASSIS	400 VOLTS
76 PLATE TO CHASSIS	220 VOLTS
6C6 PLATE TO CHASSIS	65 VOLTS

AVERAGE PLATE CURRENT		
6L6-G	PLATE CURRENT	51 MA. D.C.
76	PLATE CURRENT	6.5 MA. D.C.
6C6	PLATE CURRENT	2.5 MA. D.C.

AVERAGE D.C. VOLTAGES	
ACROSS 5Z3 FILAMENT & GROUND	420 VOLTS D.C.
ACROSS C-17	405 VOLTS D.C.
ACROSS C-16	325 VOLTS D.C.
ACROSS C-12	24 VOLTS D.C.
ACROSS C-10	1.7 VOLTS D.C.

AVERAGE HEATER VOLTAGE		
6L6-G	FIL. VOLTAGE	6.3 VOLTS A.C.
76	FIL. VOLTAGE	6.3 VOLTS A.C.
6C6	FIL. VOLTAGE	6.3 VOLTS A.C.

THESE FILAMENT VOLTAGES ARE 9.8 VOLTS FOR ACCELERATED CATHODE HEATING WHEN FILAMENTS ARE COOL

SPEAKER FIELD - 3200 OHMS. BETWEEN TERMINALS 1+7 ON SPEAKER SOCKET - 220 VOLTS D.C.

RUDOLPH WURLITZER CO.

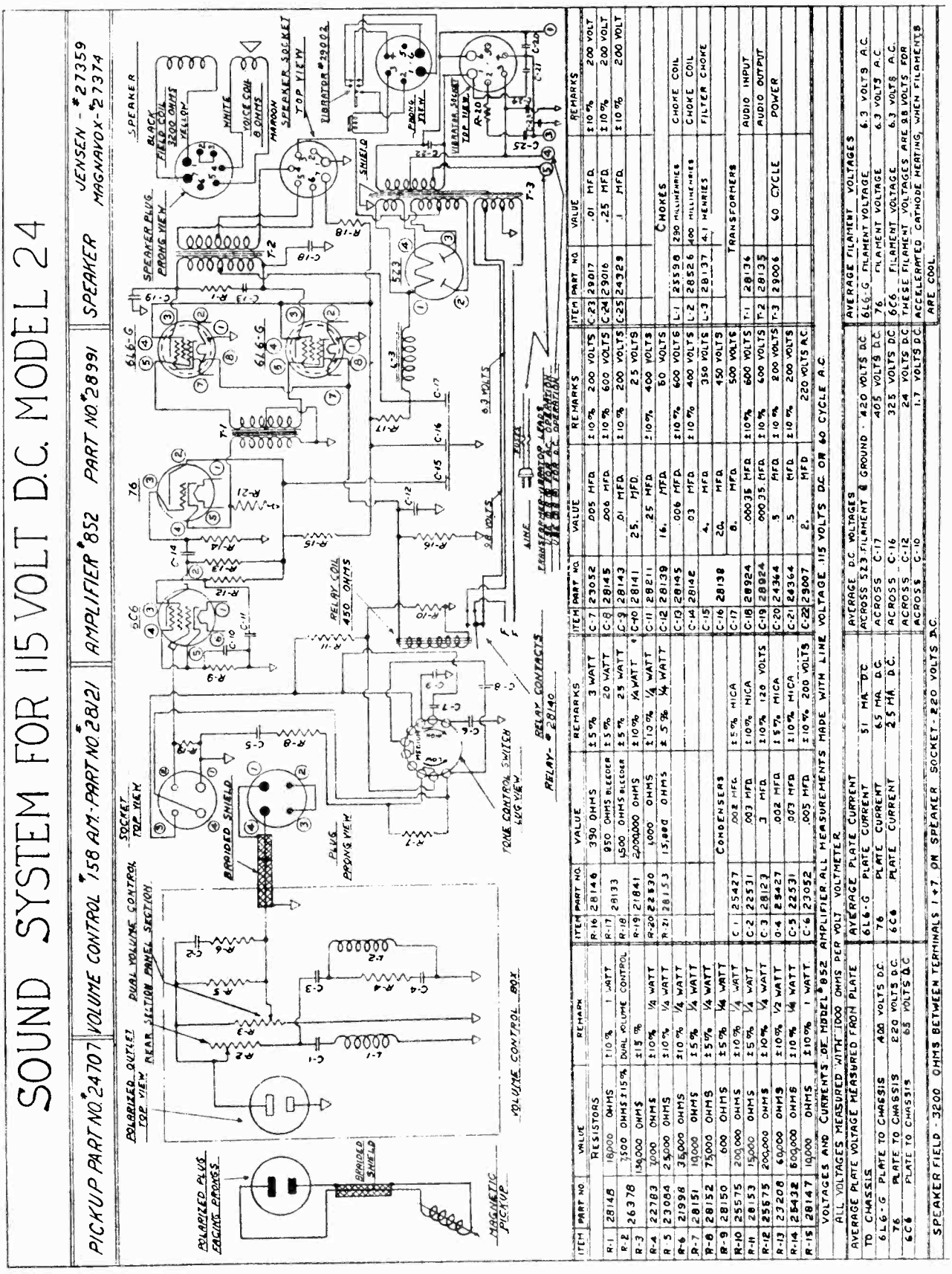
WURLITZER PAGE 13-23
MODEL 851

MODEL 852

RUDOLPH WURLITZER CO.

SOUND SYSTEM FOR 115 VOLT D.C. MODEL 24

PICKUP PART NO. *24707 | VOLUME CONTROL *158 AM - PART NO *28121 | AMPLIFIER *852 PART NO *28991 | SPEAKER JENSEN - *27359 MAGNAVOX - *27374



ITEM	PART NO	VALUE	REMARK
		RESISTORS	
R-1	28148	18,000 OHMS	±10% 1 WATT
R-2	26378	3500 OHMS ±15%	DUAL VOLUME CONTROL
R-3		150,000 OHMS	±15%
R-4	22783	7000 OHMS	±10% ½ WATT
R-5	23064	25,000 OHMS	±10% ½ WATT
R-6	21998	35,000 OHMS	±10% ¼ WATT
R-7	28151	19,000 OHMS	±5% ¼ WATT
R-8	28152	75,000 OHMS	±5% ¼ WATT
R-9	28150	600 OHMS	±5% ¼ WATT
R-10	25575	200,000 OHMS	±10% ¼ WATT
R-11	28153	15,000 OHMS	±5% ¼ WATT
R-12	25575	200,000 OHMS	±10% ¼ WATT
R-13	23208	60,000 OHMS	±10% ½ WATT
R-14	25432	600,000 OHMS	±10% ¼ WATT
R-15	28147	10,000 OHMS	±10% 1 WATT
R-16	28146	390 OHMS	±5% 3 WATT
R-17	28133	950 OHMS BLEEDER	±5% 20 WATT
R-18		4500 OHMS BLEEDER	±5% 25 WATT
R-19	21841	2,000,000 OHMS	±10% ¼ WATT
R-20	22830	4000 OHMS	±10% ¼ WATT
R-21	28153	15,000 OHMS	±5% ¼ WATT
		CONDENSERS	
C-1	25427	.002 MFD.	±5% MICA
C-2	22531	.003 MFD	±10% MICA
C-3	28123	.1 MFD	±10% 120 VOLTS
C-4	25427	.002 MFD	±5% MICA
C-5	22531	.003 MFD	±10% MICA
C-6	23052	.005 MFD	±10% 200 VOLTS
C-7	23052	.005 MFD	±10% 200 VOLTS
C-8	28145	.006 MFD	±10% 600 VOLTS
C-9	28143	.01 MFD	±10% 200 VOLTS
C-10	28141	.25 MFD	±10% 400 VOLTS
C-11	28211	.25 MFD	±10% 400 VOLTS
C-12	28139	16. MFD	±10% 50 VOLTS
C-13	28145	.006 MFD	±10% 600 VOLTS
C-14	28142	.03 MFD	±10% 400 VOLTS
C-15		4. MFD	350 VOLTS
C-16	28138	20. MFD	150 VOLTS
C-17		8. MFD	500 VOLTS
C-18	28924	.00035 MFD	±10% 600 VOLTS
C-19	28924	.00035 MFD	±10% 600 VOLTS
C-20	24364	.5 MFD	±10% 200 VOLTS
C-21	28364	.5 MFD	±10% 200 VOLTS
C-22	29007	2. MFD	220 VOLTS AC
C-23	29017	.01 MFD.	±10% 200 VOLT
C-24	29016	.25 MFD.	±10% 200 VOLT
C-25	24329	.1 MFD.	±10% 200 VOLT
		CHOKES	
L-1	25590	290 MILLIHENRIES	CHOKE COIL
L-2	28526	400 MILLIHENRIES	CHOKE COIL
L-3	28137	4.1 HENRIES	FILTER CHOKE
		TRANSFORMERS	
T-1	28136		AUDIO INPUT
T-2	28135		AUDIO OUTPUT
T-3	29006	60 CYCLE	POWER

VOLTAGES AND CURRENTS OF MODEL *852 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS DC OR 60 CYCLE A.C.

ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER.

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE	AVERAGE PLATE CURRENT		
TO CHASSIS	6L6-G PLATE CURRENT	51 MA. D.C.	
6L6-G PLATE TO CHASSIS	400 VOLTS D.C.	76 PLATE CURRENT	6.5 MA. D.C.
76 PLATE TO CHASSIS	220 VOLTS D.C.	6C6 PLATE CURRENT	2.5 MA. D.C.
6C6 PLATE TO CHASSIS	65 VOLTS D.C.		

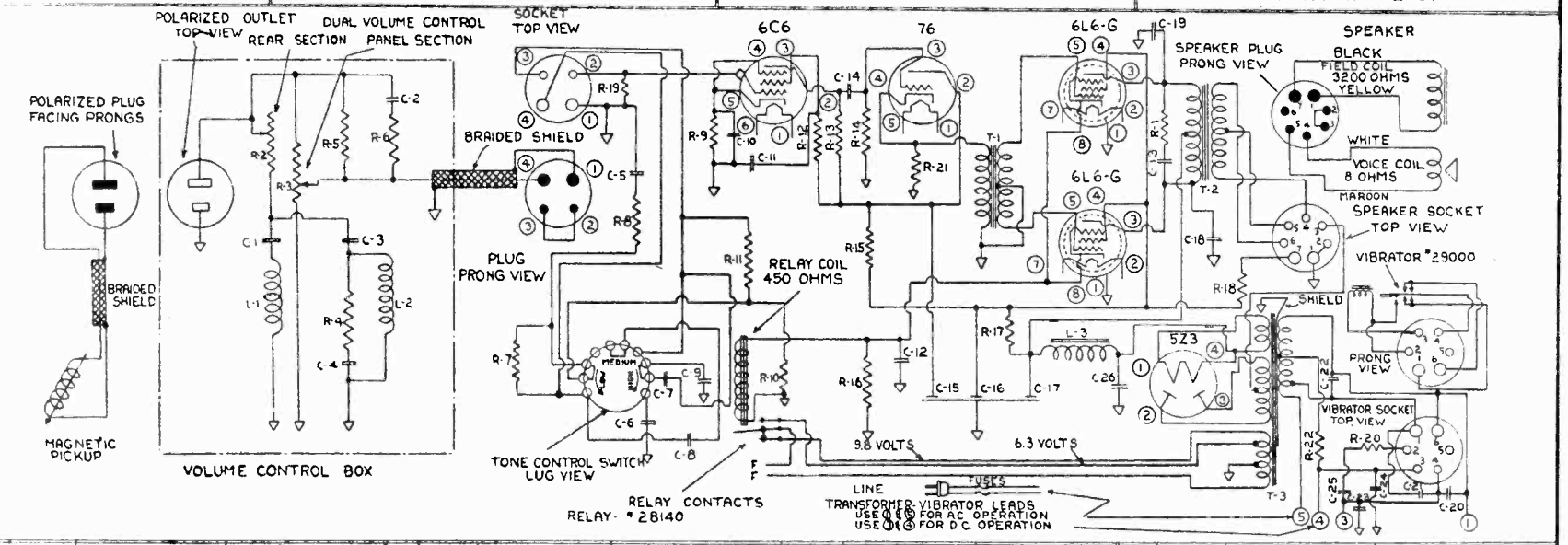
AVERAGE D.C. VOLTAGES	
ACROSS 5Z3 FILAMENT & GROUND - 420 VOLTS D.C.	
ACROSS C-17	405 VOLTS D.C.
ACROSS C-16	325 VOLTS D.C.
ACROSS C-12	24 VOLTS D.C.
ACROSS C-10	1.7 VOLTS D.C.

AVERAGE FILAMENT VOLTAGES	
6L6-G FILAMENT VOLTAGE	6.3 VOLTS A.C.
76 FILAMENT VOLTAGE	6.3 VOLTS A.C.
6C6 FILAMENT VOLTAGE	6.3 VOLTS A.C.
THESE FILAMENT VOLTAGES ARE 5% VOLTS FOR ACCELERATED CATHODE HEATING, WHEN FILAMENTS ARE COOL.	

SPEAKER FIELD - 3200 OHMS BETWEEN TERMINALS 1 + 7 ON SPEAKER SOCKET - 220 VOLTS D.C.

SOUND SYSTEM FOR 32 VOLT D.C. VIBRATOR MODEL 24

PICKUP PART NO. *24707	VOLUME CONTROL *158 A.M. PART NO. *28121	AMPLIFIER *853 PART NO. *29141	SPEAKER JENSEN - *27359 MAGNAVOX *27374



ITEM	PART NO.	VALUE	REMARKS
		RESISTORS	
R-1	28148	18000 OHMS	±10% 1 WATT
R-2	26378	7500 OHMS	±15% DUAL VOLUME CONTROL
R-3		150000 OHMS	±15%
R-4	22783	7000 OHMS	±10% ¼ WATT
R-5	23084	25000 OHMS	±10% ¼ WATT
R-6	21998	35000 OHMS	±10% ¼ WATT
R-7	28151	10000 OHMS	±5% ¼ WATT
R-8	28152	75000 OHMS	±5% ¼ WATT
R-9	28150	600 OHMS	±5% ¼ WATT
R-10	25575	200000 OHMS	±10% ¼ WATT
R-11	28153	15000 OHMS	±5% ¼ WATT
R-12	25575	200000 OHMS	±10% ¼ WATT
R-13	23208	60000 OHMS	±10% ½ WATT
R-14	25432	500000 OHMS	±10% ¼ WATT
R-15	28147	10000 OHMS	±10% 1 WATT
R-16	28146	390 OHMS	±5% 3 WATT
R-17	28133	950 OHMS BLEEDER	±5% 20 WATT
R-18		1500 OHMS BLEEDER	±5% 25 WATT
R-19	21841	2000000 OHMS	±10% ¼ WATT
R-20	22530	1000 OHMS	±10% ¼ WATT
R-21	28153	15000 OHMS	±5% ¼ WATT
R-22	30856	1 OHM	±5% 36 WATT
		CONDENSERS	
C-1	25427	.002 MFD.	±5% MICA
C-2	22531	.003 MFD.	±10% MICA
C-3	28123	.1 MFD	±10% 120 VOLTS
C-4	25427	.002 MFD.	±5% MICA
C-5	22531	.003 MFD.	±10% MICA
C-6	23052	.005 MFD.	±10% 200 VOLTS
C-7	23052	.005 MFD.	±10% 200 VOLTS
C-8	28145	.006 MFD.	±10% 600 VOLTS
C-9	28143	.01 MFD.	±10% 200 VOLTS
C-10	28141	.25 MFD.	25 VOLTS
C-11	28211	.25 MFD.	±10% 400 VOLTS
C-12	28139	16. MFD.	50 VOLTS
C-13	28145	.006 MFD.	±10% 600 VOLTS
C-14	28142	.03 MFD.	±10% 400 VOLTS
C-15		4. MFD.	350 VOLTS
C-16	28138	20. MFD.	450 VOLTS
C-17		8. MFD.	500 VOLTS
C-18	28924	.00035 MFD.	±10% 600 VOLTS
C-19	28924	.00035 MFD.	±10% 600 VOLTS
C-20	24364	.5 MFD.	±10% 200 VOLTS
C-21	24364	.5 MFD.	±10% 200 VOLTS
C-22	29143	20. MFD.	100 VOLTS A.C.
C-23	29017	.01 MFD.	±10% 200 VOLT
C-24	29016	.25 MFD.	±10% 200 VOLT
C-25	24329	.1 MFD.	±10% 200 VOLT
C-26	30858	4. MFD.	+20%-10% 600 VOLT
		CHOKES	
L-1	25598	290 MILLIHENRIES	CHOKE COIL
L-2	28526	400 MILLIHENRIES	CHOKE COIL
L-3	28137	41 HENRIES	FILTER CHOKE
		TRANSFORMERS	
T-1	28136		AUDIO INPUT
T-2	28135		AUDIO OUTPUT
T-3	29140	60 CYCLE	POWER

VOLTAGES AND CURRENTS OF MODEL *853 AMPLIFIER. ALL MEASUREMENTS MADE WITH LINE VOLTAGE 32 VOLTS D.C. OR 115 VOLTS 60 CYCLE A.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE TO CHASSIS		
6L6-G	PLATE TO CHASSIS	400 VOLTS D.C.
76	PLATE TO CHASSIS	220 VOLTS D.C.
6C6	PLATE TO CHASSIS	65 VOLTS D.C.

AVERAGE PLATE CURRENT		
6L6-G	PLATE CURRENT	51 MA. D.C.
76	PLATE CURRENT	6.5 MA. D.C.
6C6	PLATE CURRENT	2.5 MA. D.C.

AVERAGE D.C. VOLTAGES	
ACROSS 5Z3 FILAMENT & GROUND	420 VOLTS D.C.
ACROSS C-17	405 VOLTS D.C.
ACROSS C-16	325 VOLTS D.C.
ACROSS C-12	24 VOLTS D.C.
ACROSS C-10	1.7 VOLTS D.C.

AVERAGE FILAMENT VOLTAGES	
6L6-G FILAMENT VOLTAGE	6.3 VOLTS A.C.
76 FILAMENT VOLTAGE	6.3 VOLTS A.C.
6C6 FILAMENT VOLTAGE	6.3 VOLTS A.C.
THESE FILAMENT VOLTAGES ARE 9.8 VOLTS FOR ACCELERATED CATHODE HEATING WHEN FILAMENTS ARE COOL	

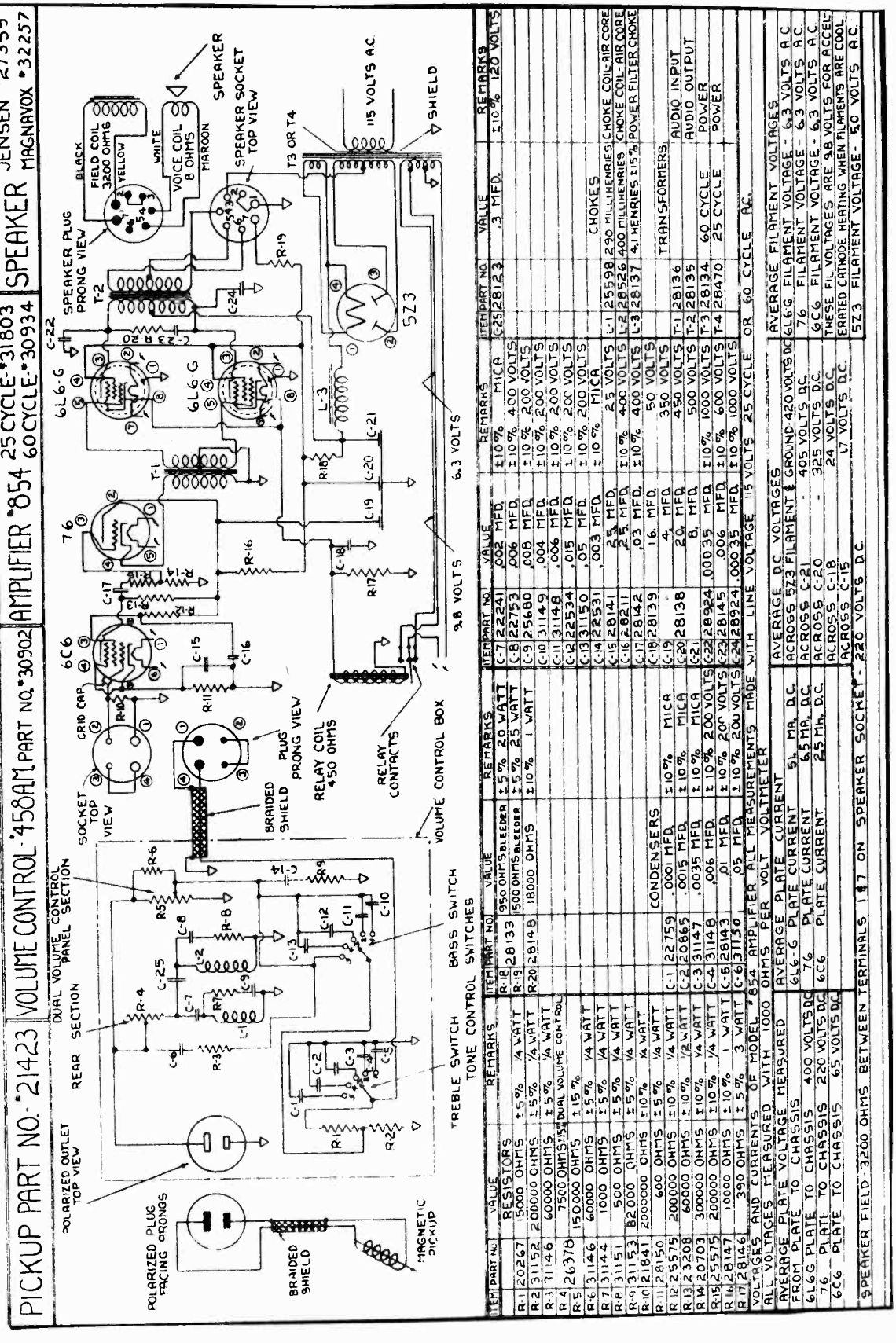
SPEAKER FIELD - 3200 OHMS BETWEEN TERMINALS *1 & *7 ON SPEAKER SOCKET - 220 VOLTS D.C.

MODEL 854

RUDOLPH WURLITZER CO.

SOUND SYSTEM FOR MODELS 500 & 500A

PICKUP PART NO. "21423 | VOLUME CONTROL "458AM. PART NO. "30902 | AMPLIFIER "854 25 CYCLE-"31803 60 CYCLE-"30934 | SPEAKER JENSEN "27359 MAGNAVOX "32257



ITEM PART NO.	VALUE	REMARKS	ITEM PART NO.	VALUE	REMARKS	ITEM PART NO.	VALUE	REMARKS	ITEM PART NO.	VALUE	REMARKS
	RESISTORS		R-18	950 OHMS BLEEDER	±5% 20 WATT	C-7 22241	.002 MFD.	±10% MICA	C25 28123	.3 MFD.	±10% 120 VOLTS
R-1 20267	15000 OHMS	±5% ¼ WATT	R-19	1500 OHMS BLEEDER	±5% 25 WATT	C-8 22753	.006 MFD.	±10% 400 VOLTS			
R-2 31152	200000 OHMS	±5% ¼ WATT	R-20	28148 18000 OHMS	±10% 1 WATT	C-9 25680	.008 MFD.	±10% 200 VOLTS			
R-3 31146	60000 OHMS	±5% ¼ WATT				C-10 31149	.004 MFD.	±10% 200 VOLTS			
R-4 26378	7500 OHMS	±15% DUAL VOLUME CONTROL				C-11 31148	.006 MFD.	±10% 200 VOLTS			
R-5	150000 OHMS	±15%				C-12 22534	.015 MFD.	±10% 200 VOLTS			
R-6 31146	60000 OHMS	±5% ¼ WATT				C-13 31150	.05 MFD.	±10% 200 VOLTS		CHOKES	
R-7 31144	1000 OHMS	±5% ¼ WATT				C-14 22531	.003 MFD.	±10% MICA			
R-8 31151	500 OHMS	±5% ¼ WATT				C-15 28141	25 MFD.	25 VOLTS	L-1 25598	290 MILLIHENRIES	CHOKE COIL-AIR CORE
R-9 31153	82000 OHMS	±5% ¼ WATT				C-16 28211	25 MFD.	±10% 400 VOLTS	L-2 28526	400 MILLIHENRIES	CHOKE COIL-AIR CORE
R-10 21841	2000000 OHMS	±10% ¼ WATT				C-17 28142	.03 MFD.	±10% 400 VOLTS	L-3 28137	4.1 HENRIES ±15%	POWER FILTER CHOKE
R-11 28150	600 OHMS	±5% ¼ WATT		CONDENSERS		C-18 28139	16. MFD.	50 VOLTS			
R-12 25575	200000 OHMS	±10% ¼ WATT	C-1 22759	.0001 MFD.	±10% MICA	C-19	4. MFD.	350 VOLTS		TRANSFORMERS	
R-13 23208	60000 OHMS	±10% ½ WATT	C-2 20865	.0015 MFD.	±10% MICA	C-20 28138	2.0 MFD.	450 VOLTS	T-1 28136		AUDIO INPUT
R-14 20703	300000 OHMS	±10% ¼ WATT	C-3 31147	.0035 MFD.	±10% MICA	C-21	8. MFD.	500 VOLTS	T-2 28135		AUDIO OUTPUT
R-15 25575	200000 OHMS	±10% ¼ WATT	C-4 31148	.006 MFD.	±10% 200 VOLTS	C-22 28924	.000035 MFD.	±10% 1000 VOLTS	T-3 28134	60 CYCLE	POWER
R-16 28147	10000 OHMS	±10% 1 WATT	C-5 28143	.01 MFD.	±10% 200 VOLTS	C-23 28145	.006 MFD.	±10% 600 VOLTS	T-4 28470	25 CYCLE	POWER
R-17 28146	390 OHMS	±5% 3 WATT	C-6 31130	.05 MFD.	±10% 200 VOLTS	C-24 28924	.000035 MFD.	±10% 1000 VOLTS			

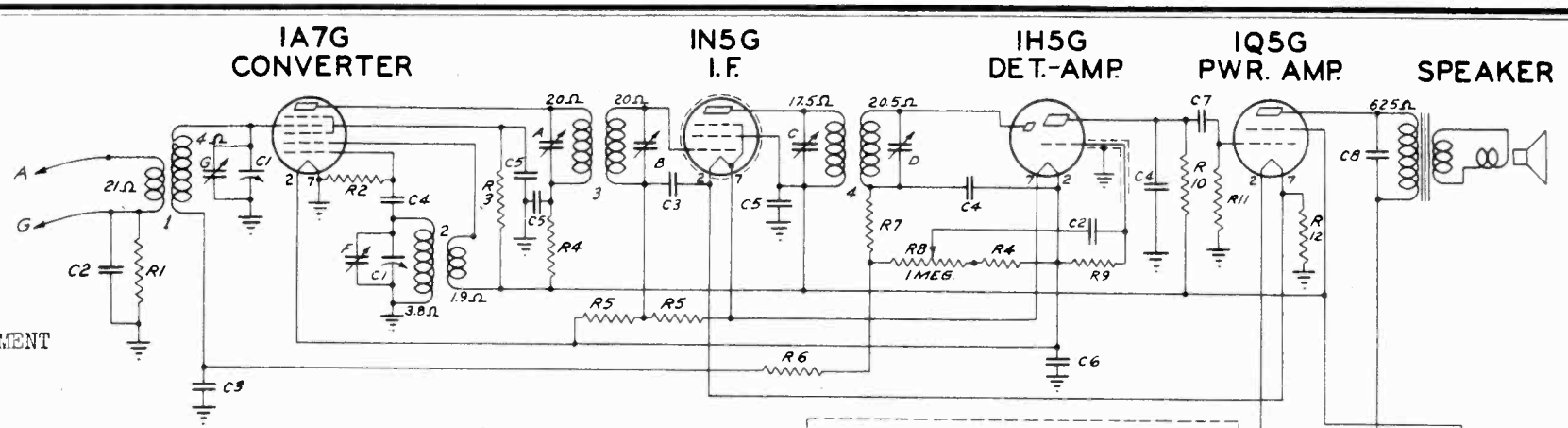
VOLTAGES AND CURRENTS OF MODEL "854 AMPLIFIER ALL MEASUREMENTS MADE WITH LINE VOLTAGE 115 VOLTS 25 CYCLE OR 60 CYCLE A.C.
ALL VOLTAGES MEASURED WITH 1000 OHMS PER VOLT VOLTMETER

AVERAGE PLATE VOLTAGE MEASURED FROM PLATE TO CHASSIS	AVERAGE PLATE CURRENT
6L6-G PLATE TO CHASSIS 400 VOLTS D.C.	51 MA. D.C.
76 PLATE TO CHASSIS 220 VOLTS D.C.	6.5 MA. D.C.
6C6 PLATE TO CHASSIS 65 VOLTS D.C.	25 MA. D.C.

AVERAGE DC VOLTAGES ACROSS 5Z3 FILAMENT & GROUND 420 VOLTS D.C.
ACROSS C-21 - 405 VOLTS D.C.
ACROSS C-20 - 325 VOLTS D.C.
ACROSS C-18 - 24 VOLTS D.C.
ACROSS C-15 - 17 VOLTS D.C.

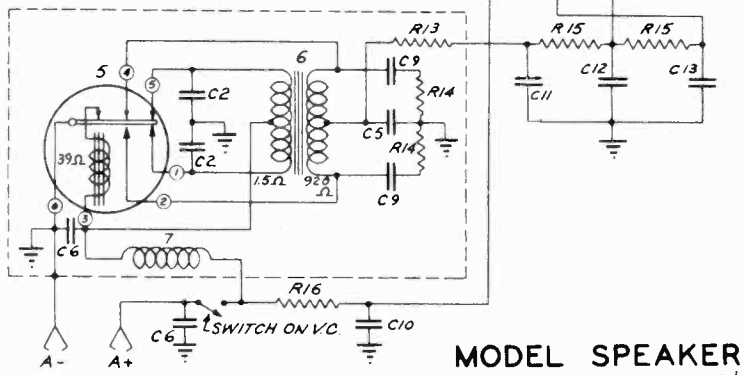
AVERAGE FILAMENT VOLTAGES
6L6G FILAMENT VOLTAGE - 6.3 VOLTS A.C.
76 FILAMENT VOLTAGE - 6.3 VOLTS A.C.
6C6 FILAMENT VOLTAGE - 6.3 VOLTS A.C.
THESE FIL VOLTAGES ARE 98 VOLTS FOR ACCELERATED CATHODE HEATING WHEN FILAMENTS ARE COOL.
5Z3 FILAMENT VOLTAGE- 5.0 VOLTS A.C.

SPEAKER FIELD 3200 OHMS BETWEEN TERMINALS 1 & 7 ON SPEAKER SOCKET - 220 VOLTS D.C.



DENOTES CHASSIS "GROUND"

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-695	TWO GANG VARIABLE		R2	63-595	100 M OHM	1/4 W			
C2	22-826	.01 MFD.	200V	R3	63-594	68 M OHM	1/4 W	1	20-208	ANTENNA COIL
C3	22-829	.05 MFD.	200V	R4	63-583	1000 OHM	1/4 W	2	S6381	OSCILLATOR COIL ASSEM.
C4	22-162	.0001 MFD.	600V	R5	63-296	220 M OHM	1/4 W	3	95-589	1ST I.F. TRANS.
C5	22-828	.05 MFD.	400V	R6	63-669	3.9 MEGOHM	1/4 W	4	95-590	2ND I.F. TRANS.
C6	22-199	.5 MFD.	200V	R7	63-593	47 M OHM	1/4 W	5	190-17	VIBRATOR
C7	22-243	.01 MFD.	400V	R8	63-1079	VOLUME CONTROL		6	95-635	POWER TRANSFORMER
C8	22-448	.004 MFD.	600V	R9	63-976	15 MEGOHM	1/4 W	7	S5043	CHOKE ASSEMBLY
C9	22-966	.04 MFD.	600V	R10	63-271	1 MEGOHM	1/4 W			
C10	22-961	500 MFD. ELECTROLYTIC	15V	R11	63-600	2.2 MEGOHM	1/4 W			
C11		15 MFD. "	250V	R12	63-1060	90 OHM WIREWOUND	1 W			
C12	22-742	15 MFD. "	250V	R13	63-577	100 OHM	1/4 W	A		1ST I.F. TRANS. PRI.
C13		10 MFD. "	250V	R14	63-697	100 OHM	1/4 W	B		1ST I.F. TRANS. SEC.
				R15	63-605	1000 OHM	1/2 W	C		2ND I.F. TRANS. PRI.
				R16	63-1061	7 OHM	1/2 W	D		2ND I.F. TRANS. SEC.
								F		B'DCAST OSC. (ON GANG)
R1	63-597	470 M OHM	1/4 W					G		B'DCAST ANT. (ON GANG)

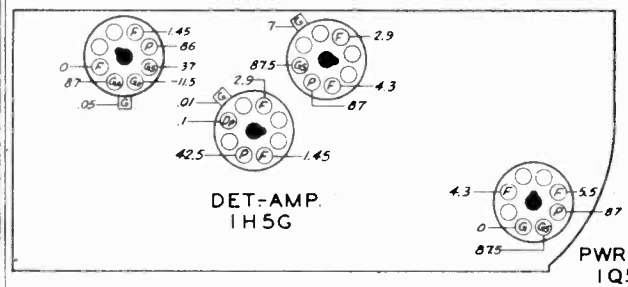


MODEL SPEAKER
4B639 49-473 6½"

I.F. FREQUENCY 455 KC.
4 TUBE SUPERHETERODYNE
CHASSIS Nº 4B04-6V.-SINGLE BAND

CONVERTER 1A7G

I.F. 1N5G



SOCKET VOLTAGES—BOTTOM VIEW

Antenna disconnected volume control full on.

Battery voltage 6 volt.

Battery consumption—.5 ampere.

Power Output—.37 watts.

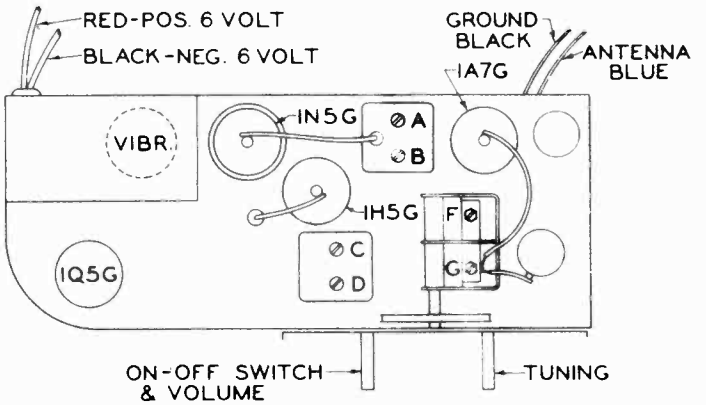
Stage Gains:

Ant. to conv. grid—4.9× at 1000 Kc.

Conv. grid to I. F. grid—50× at 455 Kc.

Overall audio—448× at .050 watt —400 cycles.

Tuning range—540 Kc.—1740 Kc.



TUBE AND TRIMMER LOCATION

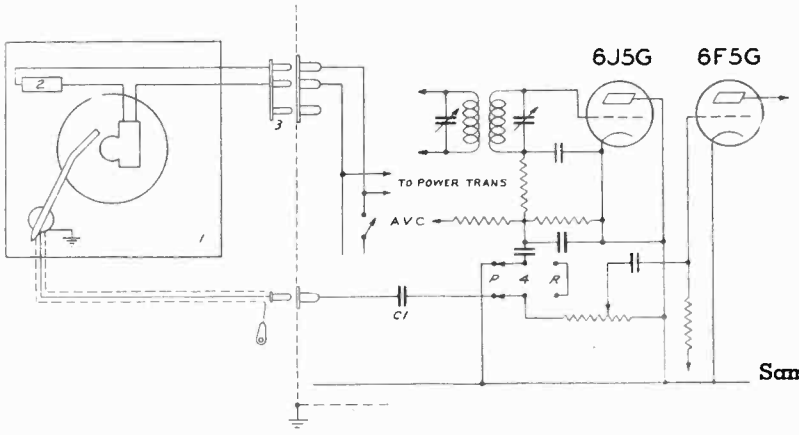
ZENITH RADIO CORP.

MODEL 4B639, Ch. 4B04

ZENITH PAGE 13-1

MODEL 10S599, Ch. 10A2R
MODEL 4K600, Ch. 4B01

ZENITH RADIO CORP.



DIAG No.	PART No.	DESCRIPTION	
C1	22-1189	.00075 MFD.	600 V
1	169-63	WEBSTER AUTOMATIC RECORD PLAYER	60 ~
	169-64		50 ~
2	85-191	A.C. SWITCH	
3	58-85	A.C. PLUG	
4	85-228	PHONO-RADIO SW.	

PHONO CIRCUIT DATA
MODEL SPEAKER
10S599 49-442-14"
CHASSIS No. 10A2R

Same as 10A2 with audio compensation revised to match new pickup.

SEE ZENITH PAGE 12-23

ALIGNMENT INSTRUCTIONS

Chassis No. 4B01

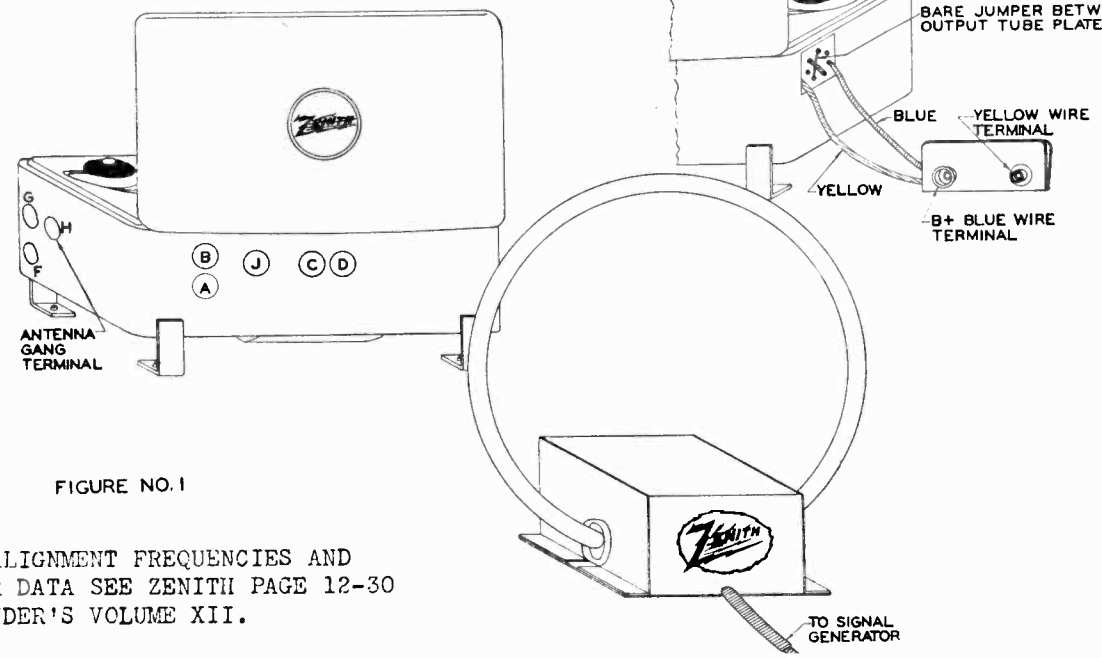


FIGURE NO. 1

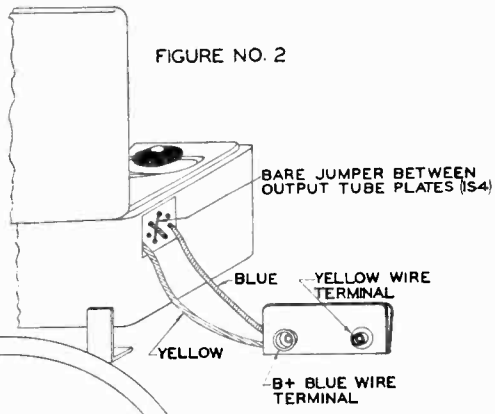


FIGURE NO. 2

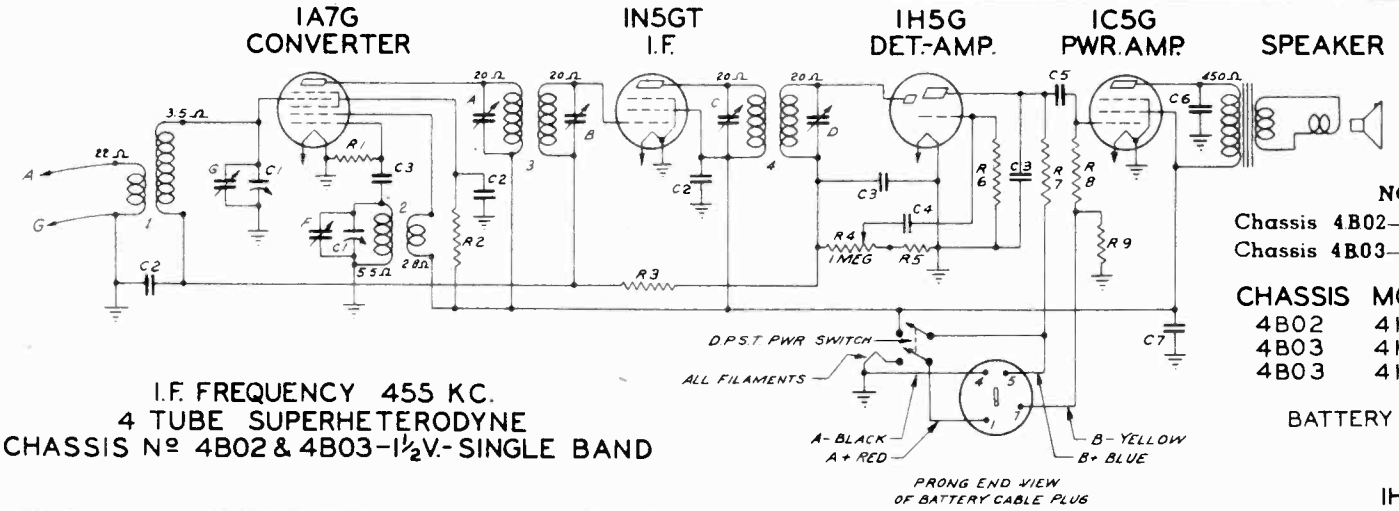
FOR ALIGNMENT FREQUENCIES AND OTHER DATA SEE ZENITH PAGE 12-30 IN RIDER'S VOLUME XII.

The following ALIGNMENT PROCEDURE on Model 4K600 POKETRADIO must be carefully followed using a #MS-652 Zenith Alignment Jig to maintain actual shielding capacities during the balancing operations.

Remove back of receiver.
Remove "B" batteries.
Remove case of receiver.

To remove case: first place receiver on bench with lid down, then place screw driver under spring clips and pry up, at the same time pulling case away from chassis. After spring clips have been released the case can be lifted off chassis. Next remove clips by turning and pulling away from chassis. Do not remove "A" Batteries. Place chassis in Alignment Jig as shown in Figure 1.

Connect one lead from the output meter to the bare jumper connecting the plates of the output tube (1S4) and the other output meter lead to B+ at the battery (blue wire). CAUTION — Keep signal from generator at minimum so A.V.C. action will not give a false peak.



I.F. FREQUENCY 455 KC.
4 TUBE SUPERHETERODYNE
CHASSIS Nº 4B02 & 4B03 - 1½V. - SINGLE BAND

NOTE

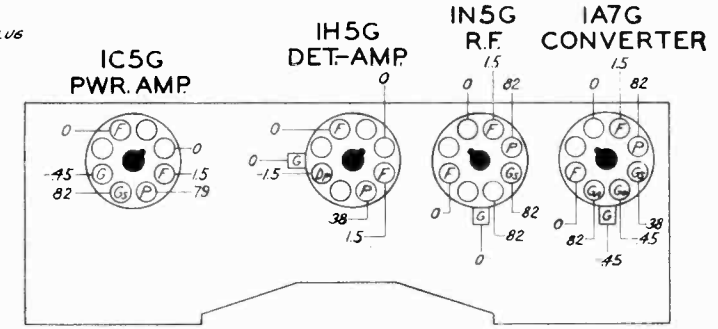
Chassis 4B02—attached speaker.
Chassis 4B03—remote speaker.

CHASSIS	MODEL	SPEAKER
4B02	4K616	49-449 5"
4B03	4K635	49-450 6½"
4B03	4K658	49-461 8"

BATTERY PACK Nº Z-28

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1209	TWO GANG VARIABLE - 4B03		R4	63-1235	VOLUME CONTROL-4B03				
	22-1213	TWO GANG VARIABLE - 4B02			63-1236	VOLUME CONTROL-4B02				
C2	22-829	.05 MFD.	200V	R5	63-587	4700 OHM	½ W			
C3	22-162	.0001 MFD.	600V	R6	63-976	.15 MEGOHM	½ W			
C4	22-826	.01 MFD.	200V	R7	63-271	1 MEGOHM	½ W	A		1ST I.F. TRANS. PRI.
C5	22-243	.01 MFD.	400V	R8	63-600	2.2 MEGOHM	½ W	B		1ST I.F. " SEC.
C6	22-448	.004 MFD.	600V	R9	63-634	820 OHM	½ W	C		2ND I.F. " PRI
C7	22-684	.8 MFD. ELECTROLYTIC	150V					D		2ND I.F. " SEC.
								F		BROADCAST OSC. (ON GANG)
								G		BROADCAST ANT. (ON GANG)
R1	63-654	180 M. OHM	½ W.	1	20-237	ANTENNA COIL				
R2	63-594	68 M. OHM	½ W.	2	5-9584	OSC. COIL ASSEMBLY				
R3	63-669	3.9 MEGOHM	½ W.	3	95-814	1ST I.F. TRANSFORMER				
				4	95-815	2ND I.F. "				

Tuning Range—540 Kc.—1740 Kc.



SOCKET VOLTAGES—BOTTOM VIEW

All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control on full.

Battery Z28

Power consumption—1.3 watts.

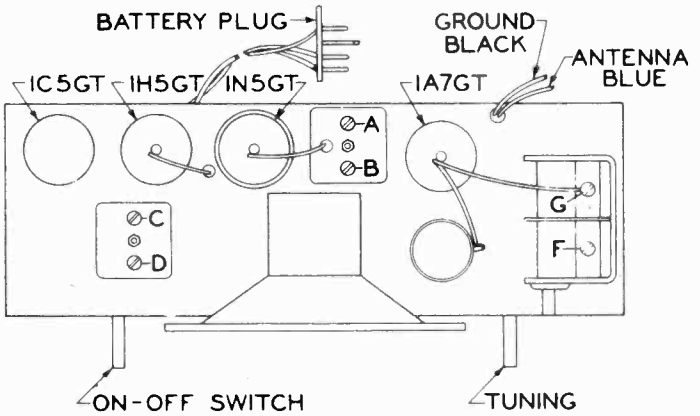
Power output— .28 watts.

Stage Gains
Bc. and I.F.

Ant. to conv. grid—5.7× at 1000 Kc.

Conv. grid to I.F. grid 69× at 455 Kc.

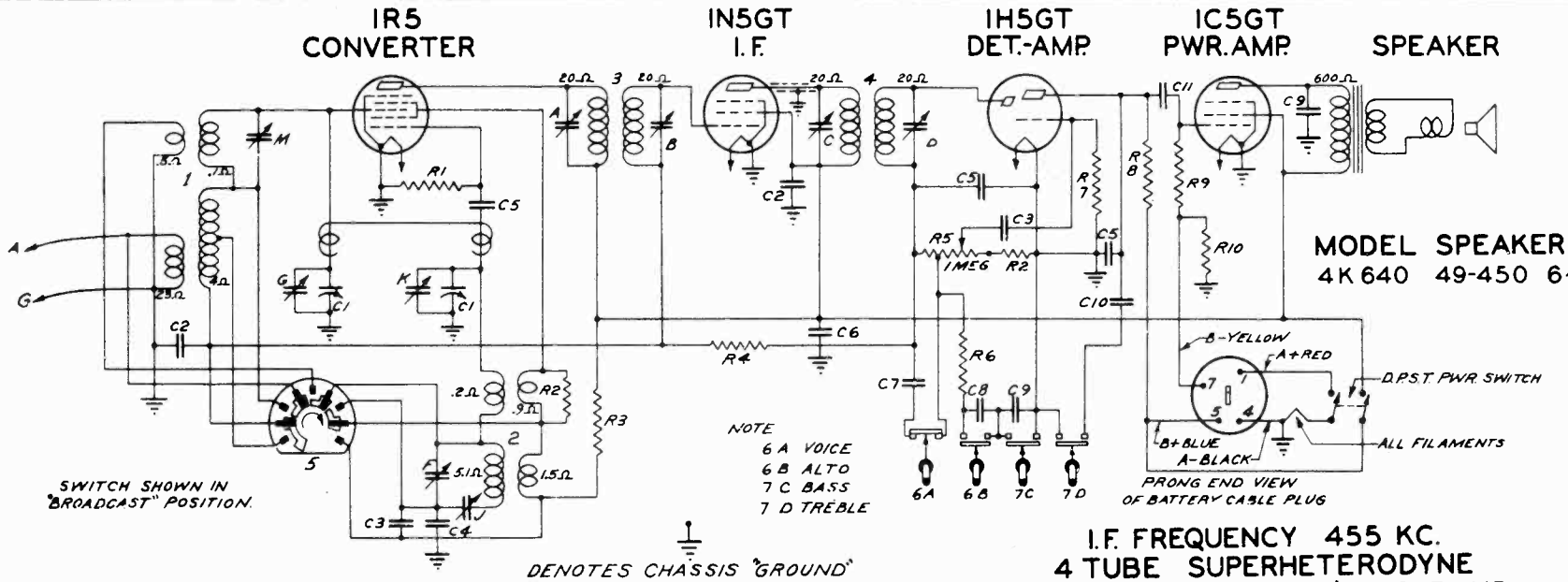
Overall audio 257× at .050 watt, 400 cycles.



TUBE AND TRIMMER LOCATION

CHASSIS 4B04 **ALIGNMENT PROCEDURE** CHASSIS 4B02, 4B03

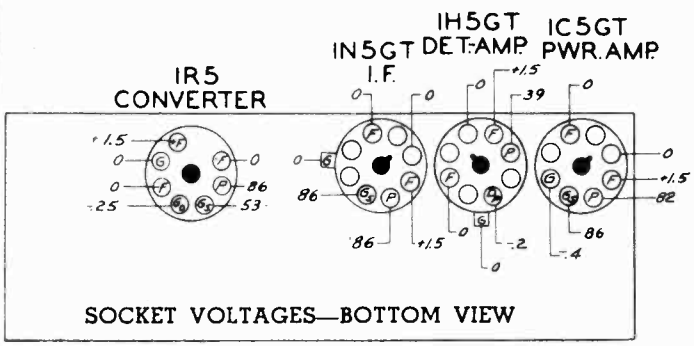
Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	Converter Grid	½ Mfd.	455 Kc.	Broadcast	600 Kc.	A, B, C, D	I. F. Alignment
2	Ant.-Gnd.	200 Mmf.	1500 Kc.	Broadcast	1500 Kc.	F	Set Oscillator to Scale
3	"	200 Mmf.	1400 Kc.	Broadcast	1400 Kc.	G	Alignment of Antenna



I.F. FREQUENCY 455 KC.
4 TUBE SUPERHETERODYNE
CHASSIS Nº 4B05-1½V.-2 BAND

FOR ALIGNMENT SEE INDEX

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1208	TWO-GANG VARIABLE		R4	63-669	3.9 MEGOHM	¼ W			
C2	22-829	.05 MFD.	200 V.	R5	63-1236	VOLUME CONTROL				
C3	22-826	.01 MFD.	200 V.	R6	63-594	68 M OHM	¼ W.	A		1ST I.F. TRANS. PRI.
C4	22-1022	.005 MFD.	600 V.	R7	63-976	15 MEGOHM	¼ W.	B		1ST I.F. " SEC.
C5	22-162	.0001 MFD.	600 V.	R8	63-271	1 MEGOHM	¼ W.	C		2ND I.F. " PRI.
C6	22-684	.8 MFD. ELECTROLYTIC	150 V.	R9	63-600	2.2 MEGOHM	¼ W.	D		2ND I.F. " SEC.
C7	22-887	.001 MFD.	600 V.	R10	63-634	820 OHM	¼ W.	F		BROADCAST OSC. (SEE NOTE)
C8	22-448	.004 MFD.	600 V.					G		BROADCAST ANT. (GANG)
C9	22-492	.01.2 MFD.	600 V.					J		BROADCAST PAD. (SEE NOTE)
C10	22-182	.00025 MFD.	600 V.					K		SHORT WAVE OSC. (GANG)
C11	22-243	.01 MFD.	400 V.	1	S 9832	ANTENNA COIL ASSEM.		M	22-1240	SHORT WAVE ANT.
				2	S 9829	OSCILLATOR " "				
				3	95-838	1ST I.F. TRANSFORMER				NOTE:
				4	95-839	2ND I.F. "				TRIMMERS J & F
R1	63-260	100 M OHM	½ W.	5	85-279	BAND SELECTOR SW.				ARE MOUNTED ON
R2	63-587	4700 OHM	½ W.	6	85-284	T.C. SW. ASSEM. (LEFT)				STRIP #22-1239
R3	63-311	15 M OHM		7	85-288	T.C. SW. ASSEM. (RIGHT)				



Battery Z28

Volume control full on.

Power consumption 1.6 watts.
Power output .27 watts.

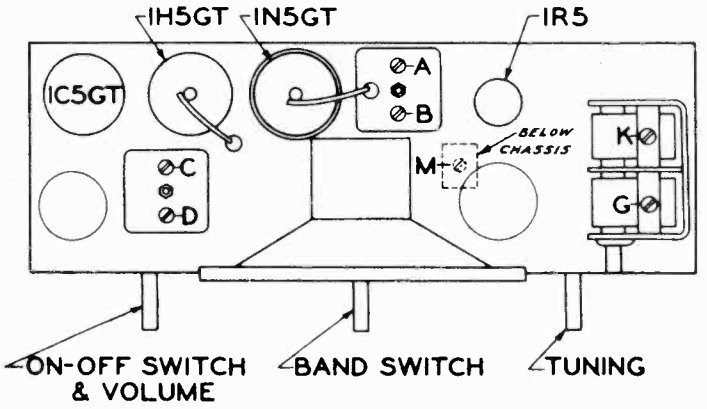
Stage Gains:

Tuning ranges-- 540 Kc.-1620 Kc. --5600 Kc.--18200 Kc.

Ant. to conv. grid—6X at 1000 Kc.

Conv. grid to I. F. grid— 48X at 455 Kc.

Overall audio—340X at .050 watt, 400 cycles.



TUBE AND TRIMMER LOCATION

ZENITH RADIO CORP.

MODEL 4K640
MODEL 5R680X
MODEL 5G603
MODELS 6G638, 6G660

Model 4K640 ALIGNMENT PROCEDURE Chassis No. 4B05

Operation	Conn. Test Osc. to	Dummy Ant.	Input Sig. Freq.	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 Mfd.	455 Kc.	Broadcast	600 Kc.	A B C D	Align I. F.
2	Ant.—Gnd.	400 Ohms	18 Mc.	Short Wave	18 Mc.	K	Set. Osc. to Scale
3	Ant.—Gnd.	200 Mmf.	1600 Kc.	Broadcast	1600 Kc.	F	Set Osc. to Scale
4	Ant.—Gnd.	200 Mmf.	1400 Kc.	Broadcast	1400 Kc.	G	Align Ant.
5	Ant.—Gnd.	200 Mmf.	600 Kc.	Broadcast	600 Kc.	J	Rock Gang & Adj. to Max.
6	Ant.—Gnd.	400 Ohms	18 Mc.	Short Wave	18 Mc.	M	Rock Gang

Model 5G603

Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	Converter Grid	.5 mf.	455	—	600	A B C D	I. F. Alignment
2	Single Turn Loop Coupled Loosely to Wave Magnet	—	1400	—	1400	F	Set Osc. to Scale
3		—	1400	—	1400	G	Alignment of Antenna

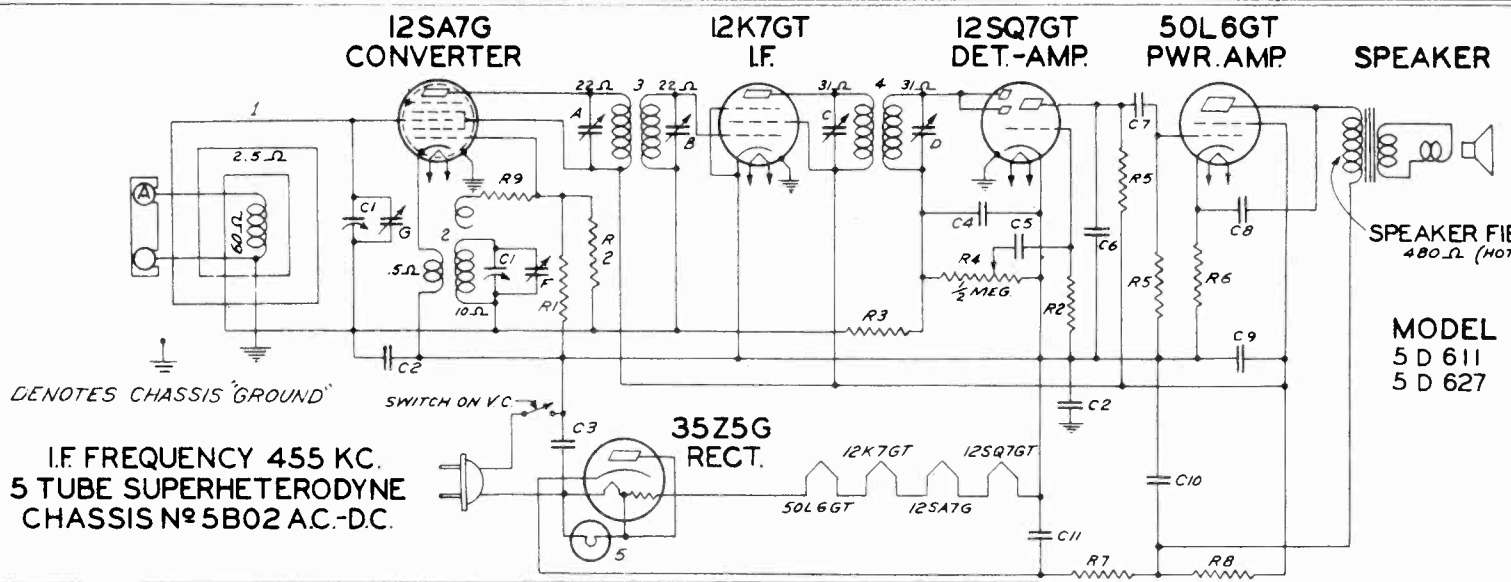
Gnd. of test osc. connected to No. 8 pin of ILA6 socket.

Model 5R680X

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	1600 Kc.	A, B, C, D	Align I.F.
2	Ant. & Grnd with 10 ohm shunt	.5 mfd.	1600 Kc.	"	1600 Kc.	F	Set to Scale
3	"	.5 mfd.	1400 Kc.	"	1400 Kc.	H, G	Align Ant.

Models 6G638–6G660 Chassis No. 6B09

Operation	Conn. Test Osc. to	Dummy Ant.	Input Sig. Freq.	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.1 Mfd.	455 Kc.	B.C.	600 Kc.	A B C D	Align I.F.
2	Ant. & Grnd with 10 ohm shunt	400 Ohm	18 Mc.	S.W.	18 Mc.	K	Set to Scale
3	"	"	16 Mc.	S.W.	16 Mc.	M	Align Ant.
4	"	"	5 Mc.	Police	5 Mc.	N	Set to Scale
5	"	"	"	"	"	Q	Align Ant.
6	"	200 mmf	1800 Kc.	B.C.	1800 Kc.	F	Set to Scale
7	"	"	1700 Kc.	"	1700 Kc.	G—H	Align R.F. & det.
8	"	"	600 Kc.	"	600 Kc.	J	Rock gang & Adj. padder
8	"	"	1800 Kc.	"	1800 Kc.	F—G—H	Repeat 6 & 7

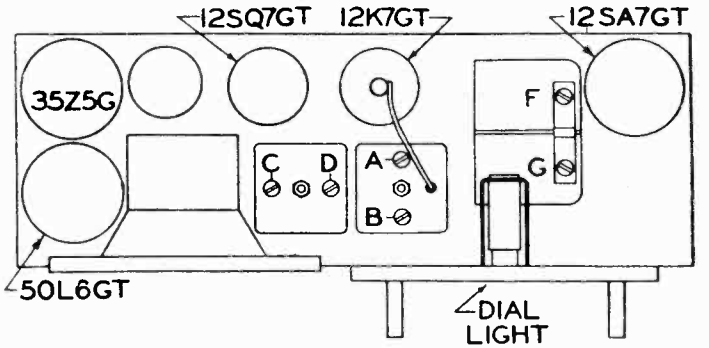


MODEL	SPEAKER
5 D 611	49-439 4"
5 D 627	49-439 4"

DIAG Nº	PART Nº	DESCRIPTION	
C1	22-1206	TWO-GANG VARIABLE	
C2	22-829	.05 MFD.	200 V
C3	22-1017	.05 MFD.	200 V
C4	22-953	.0002 MFD.	600 V.
C5	22-492	.002 MFD.	600 V
C6	22-854	.0005 MFD.	600 V
C7	22-243	.01 MFD.	400 V
C8	22-1182	.01 MFD.	400 V
C9	22-1186	20 MFD. ELECTROLYTIC	150 V
C10		20 MFD. "	150 V
C11		30 MFD. "	150 V

DIAG Nº	PART Nº	DESCRIPTION	
R1	63-589	10 M. OHM	½ W.
R2	63-976	15 MEGOHM	¼ W.
R3	63-600	2.2 MEGOHM	¼ W.
R4	63-1112	VOLUME CONTROL	
R5	63-597	470 M. OHM	¼ W.
R6	63-1171	75 OHM WIREWOUND	½ W.
R7	63-1172	100 OHM WIREWOUND	½ W.
R8	63-1173	1500 OHM	1 W.
R9	63-579	220 OHM	¼ W.
/	S 9619	WAVEMAGNET ASSEMBLY	

DIAG Nº	PART Nº	DESCRIPTION
2	S 9450	OSC. COIL ASSEMBLY
3	95-696	1ST I. F. TRANS.
4	95-794	2ND I. F. TRANS.
5	100-67	PILOT LIGHT 6.3 V. .15 A.
A		1ST I.F. TRANS PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
F		BROADCAST OSC. (ON GANG)
G		BROADCAST ANT. (ON GANG)



Stage Gains:

Bc. and 455 Kc. I.F.

Ant. to Conv. grid 7× at 1000 Kc.

Conv. grid to I.F. grid 74× at 455 Kc.

Overall audio 225× at .05 watt. 400 cycles.

Volume control full on.

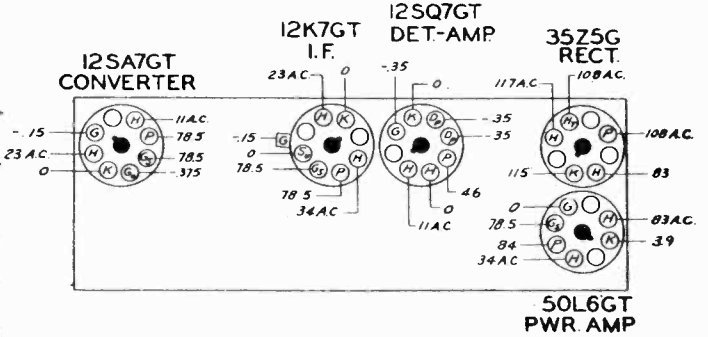
Line voltage 117 A.C. or D.C.

Power consumption 29 watts.

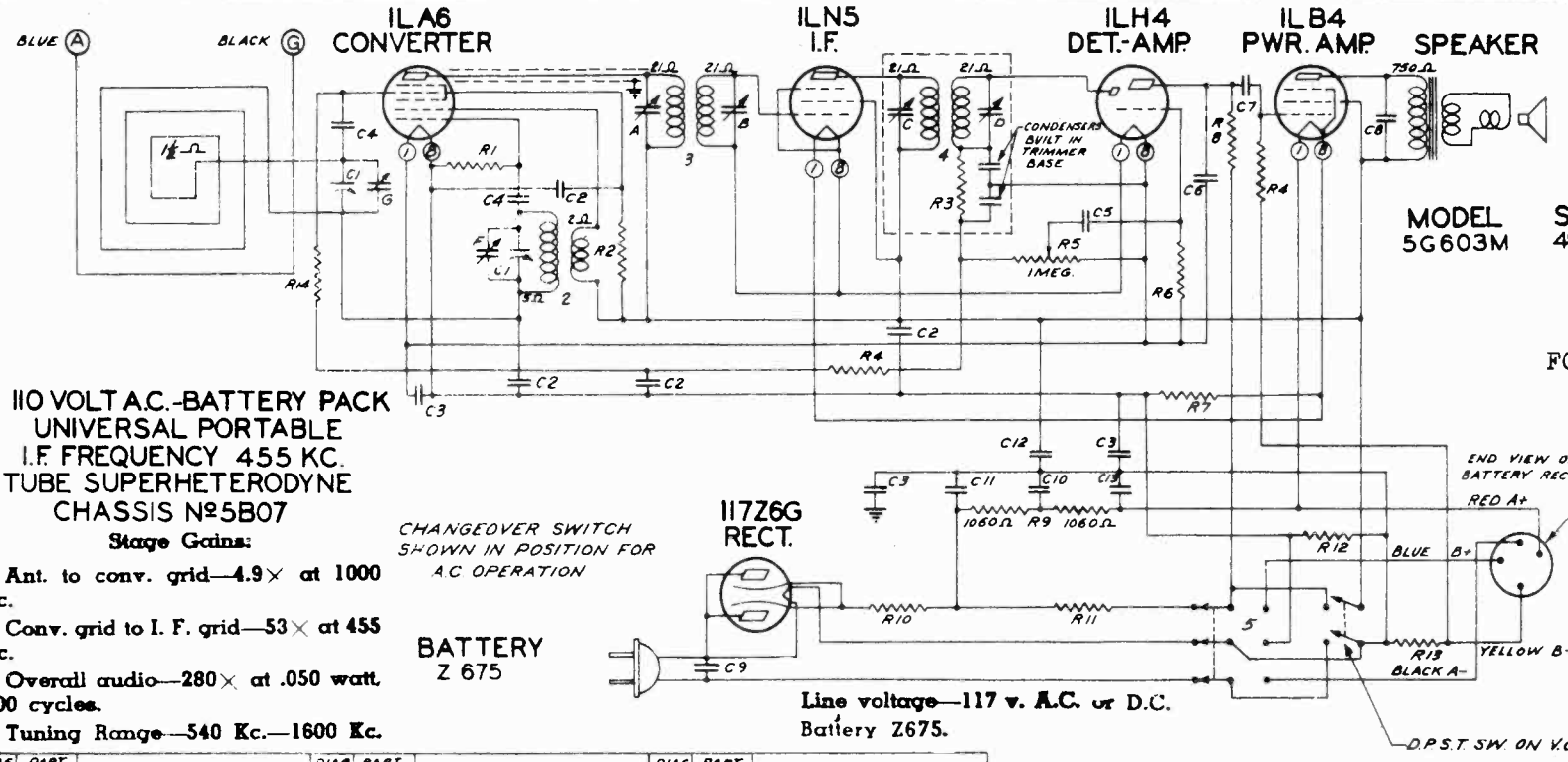
Power output 1.3 watts.

Tuning Ranges 540 Kc to 1620 Kc.

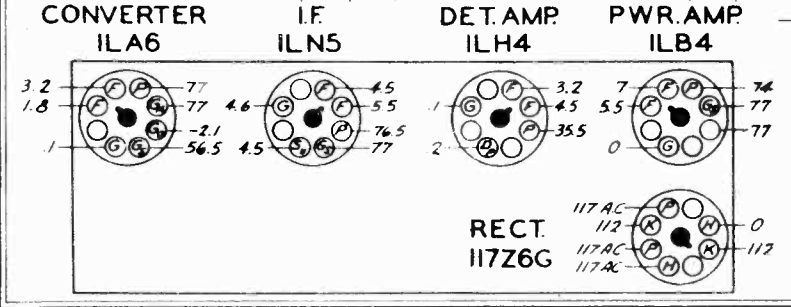
TRIMMER LOCATIONS

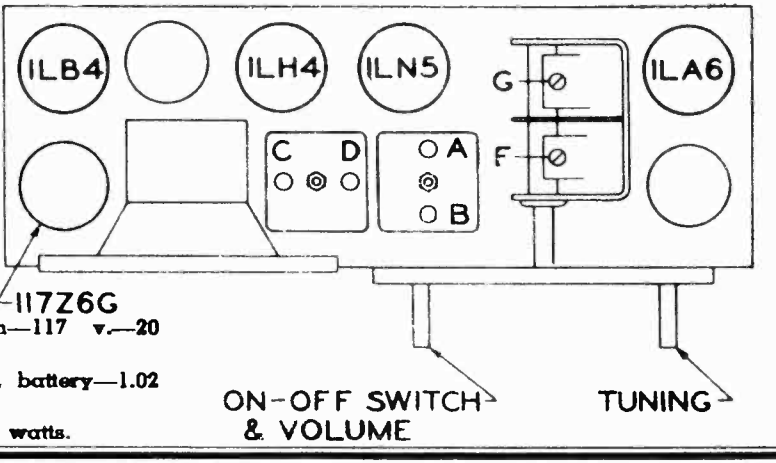


Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.1 mfd.	455 Kc.	—	600 Kc.	A, B, C, D	Align I. F.
2	Single Turn Loop coupled	—	1500 Kc.	—	1500 Kc.	F	Set Oscillator to Scale
3	loosely to Wave Magnet	—	1500 Kc.	—	1500 Kc.	G	Adjust for Maximum



DIAG. Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1062	TWO GANG VARIABLE		R1	63-773	180 M OHM	1/4 W	1	58742	WAVEMAGNET ASSEMBLY
C2	22-829	.05 MFD	200 v	R2	63-646	33M OHM	1/4 W	2	58730	OSC. COIL ASSEMBLY
C3	22-827	.1 MFD	200 v	R3	63-713	47 M OHM	1/4 W	3	95-720	1ST I.F. TRANSFORMER
C4	22-162	0001 MFD	600 V	R4	63-600	2.2 MEGOHM	1/4 W	4	95-721	2ND I.F. TRANSFORMER
C5	22-492	002 MFD	600 V	R5	63-1126	VOLUME CONTROL		5	85-242	CHANGEOVER SWITCH
C6	22-470	00015 MFD	600 V	R6	63-976	15 MEGOHM	1/4 W			
C7	22-243	01 MFD	400 V	R7	63-1097	870 OHM WIREWOUND	1 W			
C8	22-326	003 MFD	400 V	R8	63-271	1 MEGOHM	1/4 W			
C9	22-869	05 MFD	400 V	R9	63-1137	2-SECTION CANOHM		A		1ST I.F. TRANS. PRI.
C10	22-1026	20 MFD ELECTROLYTIC	150 V	R10	63-1096	140 OHM WIREWOUND	2 W	B		1ST I.F. TRANS. SEC.
C11		40 MFD ELECTROLYTIC	150 V	R11	63-439	2700 OHM	1/4 W	C		2ND I.F. TRANS. PRI.
C12	22-1027	20 MFD ELECTROLYTIC	150 V	R12	63-1099	33 OHM WIREWOUND	1/2 W	D		2ND I.F. TRANS. SEC.
C13		20 MFD ELECTROLYTIC	25 V	R13	63-748	180 OHM	1/2 W	F		BROADCAST OSC. (ON GANG)
				R14	63-296	220 M OHM	1/4 W	G		BROADCAST ANT. (ON GANG)



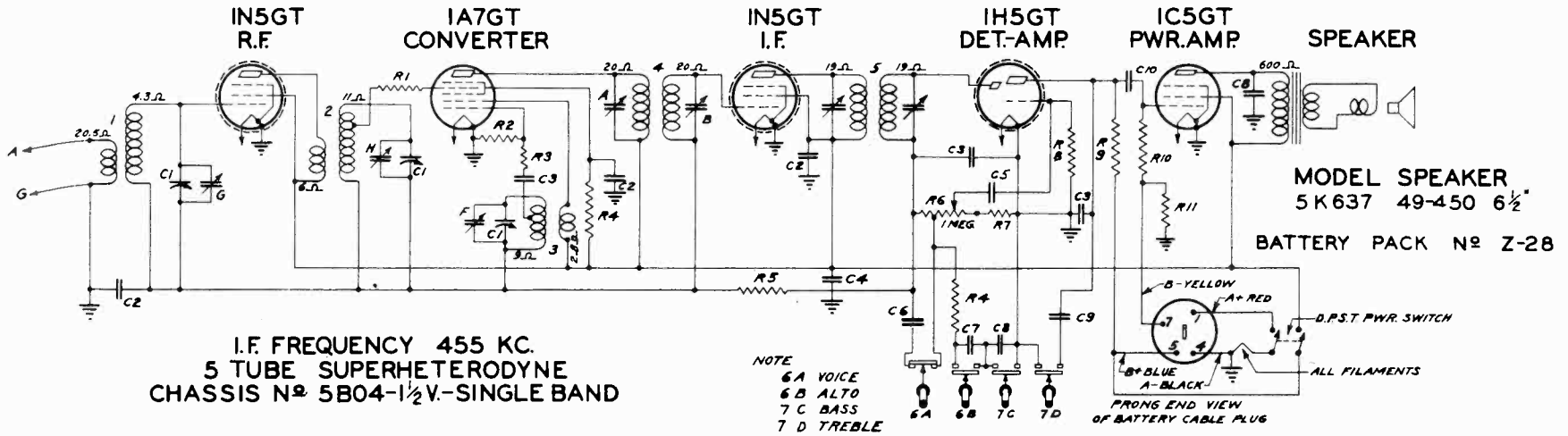


Power consumption—117 v.—20 watts.

Power consumption, battery—1.02 watts.

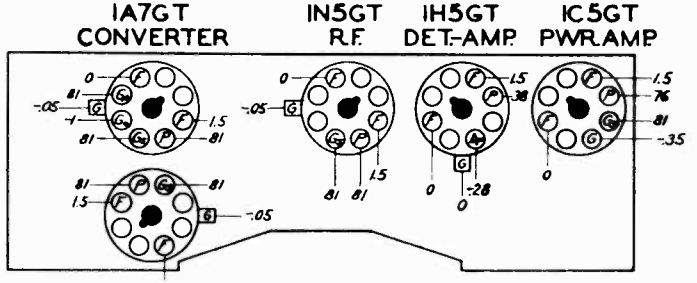
Power output—.170 watts.

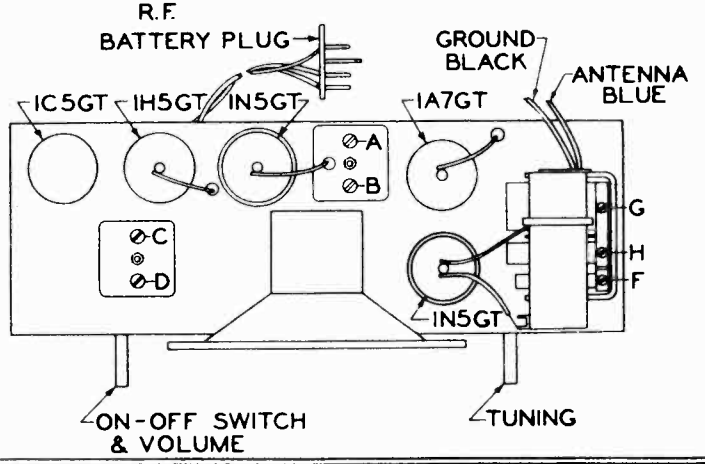
ZENITH RADIO CORP.



I.F. FREQUENCY 455 KC.
5 TUBE SUPERHETERODYNE
CHASSIS Nº 5B04-1½V.-SINGLE BAND

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1214	THREE GANG VARIABLE		R5	63-669	3.9 MEGOHM	½ W.			
C2	22-829	.05 MFD.	200 V.	R6	63-1236	VOLUME CONTROL				
C3	22-168	.0001 MFD.	600 V.	R7	63-587	4700 OHM	½ W.			
C4	22-684	8 MFD. ELECTROLYTIC	150 V.	R8	63-976	15 MEGOHM	½ W.	A		1ST I.F. TRANS. PRI.
C5	22-826	.01 MFD.	200 V.	R9	63-271	1 MEGOHM	½ W.	B		1ST I.F. " SEC.
C6	22-887	.001 MFD.	600 V.	R10	63-600	2.2 MEGOHM	½ W.	C		2ND I.F. " PRI.
C7	22-448	.004 MFD.	600 V.	R11	63-694	820 OHM	½ W.	D		2ND I.F. " SEC.
C8	22-492	.002 MFD.	600 V.					F		BROADCAST OSC. (ON GANG)
C9	22-182	.00025 MFD.	600 V.					G		BROADCAST ANT. (ON GANG)
C10	22-243	.01 MFD.	400 V.					H		BROADCAST DET. (ON GANG)
				1	20-239	ANTENNA COIL				
				2	39570	DETECTOR COIL ASSEM.				
				3	39746	OSCILLATOR " "				
R1	63-638	5600 OHM	½ W.	4	95-814	1ST I.F. TRANSFORMER				
R2	63-654	180M OHM	½ W.	5	95-815	2ND I.F. "				
R3	63-581	470 OHM	½ W.	6	85-284	T.C. SW. ASSEM. (LEFT)				
R4	63-594	68M OHM	½ W.	7	85-288	T.C. SW. ASSEM (RIGHT)				





Stage Gains
Bc. and I.F.

Ant. to R.F. grid 10.7× at 1000 Kc.

R.F. grid to conv. grid 3.25× at 1000 Kc.

Conv. grid to I.F. grid 40× at 455 Kc.

Overall audio 366× at .05 watt. 400 cycles.

Volume control full on.

Battery Z28.
Power consumption 1.3 watts.
Power output .270 watts.

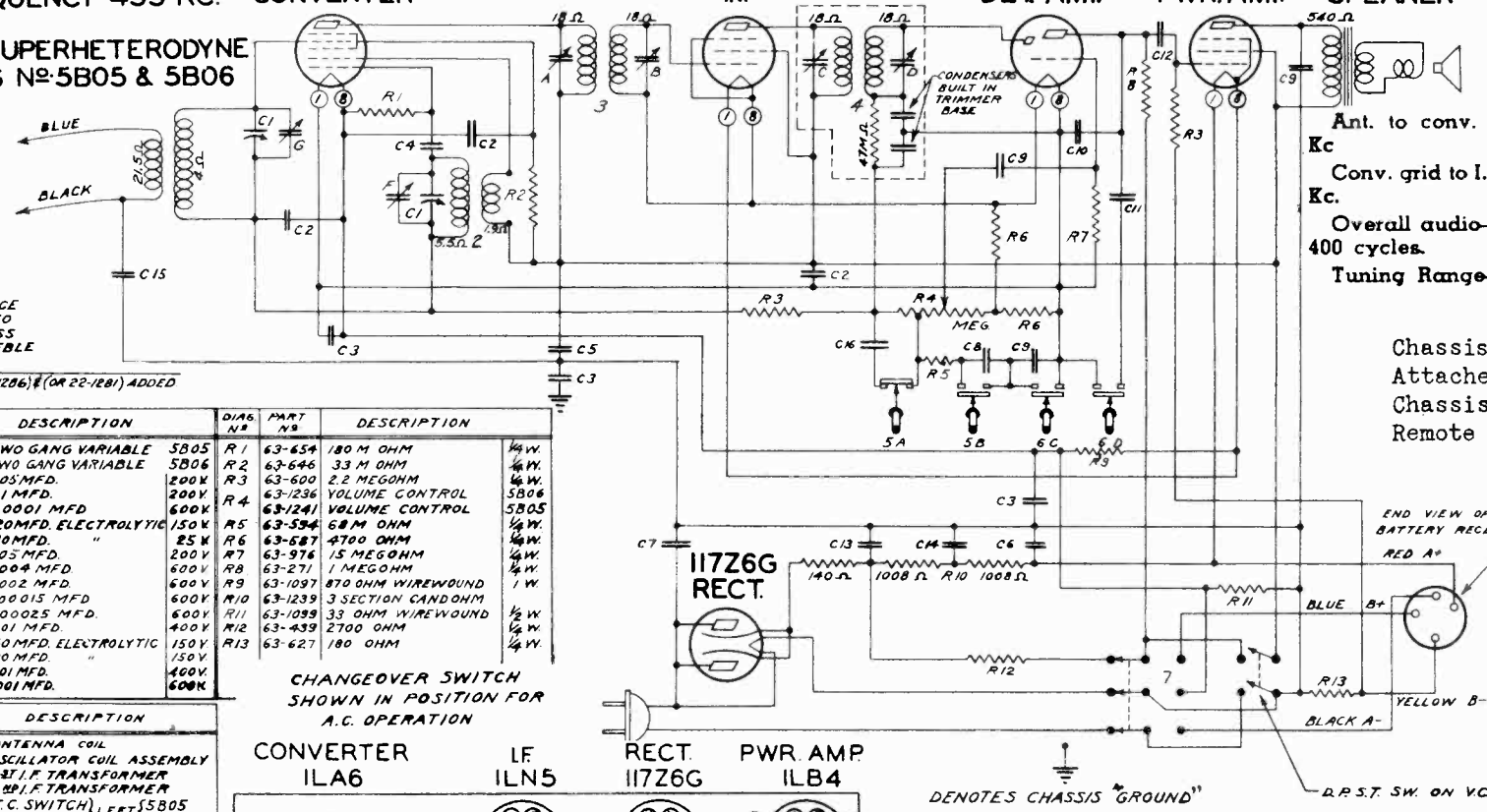
Tuning Range

540 Kc. to 1620 Kc.

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	Converter Grid	½ Mfd.	455 Kc.	Broadcast	600 Kc.	A, B, C, D	I. F. Alignment
2	Ant.—Gnd.	200 Mmf.	1500 Kc.	Broadcast	1500 Kc.	F	Set Oscillator to Scale
3	"	200 Mmf.	1400 Kc.	Broadcast	1400 Kc.	H. G	Align R.F. & Ant.

110 VOLT A.C.-BATTERY PACK
I.F. FREQUENCY 455 KC.
5 TUBE SUPERHETERODYNE
CHASSIS Nº.5B05 & 5B06

ILA6 CONVERTER | ILN5 I.F. | ILH4 DET.-AMP. | ILB4 PWR. AMP. | SPEAKER



NOTE:
5A VOICE
5B ALTO
6C BASS
6D TREBLE

8-29-41 (OR 22-1286) & (OR 22-1281) ADDED

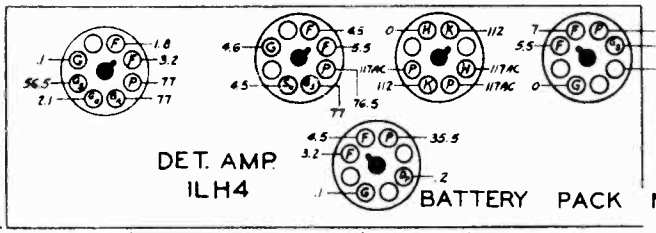
DIAG Nº	PART Nº	DESCRIPTION	
C1	22-1215	TWO GANG VARIABLE	5B05
	22-1216	TWO GANG VARIABLE	5B06
C2	22-829	.05 MFD.	200 V.
C3	22-827	.1 MFD.	200 V.
C4	22-162	.0001 MFD	600 V.
C5	22-1027 OR	20 MFD. ELECTROLYTIC	150 V.
C6	22-1286	20 MFD. "	25 V.
C7	22-1017	.05 MFD.	200 V.
C8	22-448	.004 MFD.	600 V.
C9	22-492	.002 MFD.	600 V.
C10	22-470	.00015 MFD.	600 V.
C11	22-182	.00025 MFD.	600 V.
C12	22-243	.01 MFD.	400 V.
C13	22-1026 OR	40 MFD. ELECTROLYTIC	150 V.
C14	22-1281	20 MFD. "	150 V.
C15	22-1183	.01 MFD.	400 V.
C16	22-847	.001 MFD.	600 V.

DIAG Nº	PART Nº	DESCRIPTION	
R1	63-654	180 M OHM	½ W.
R2	63-646	33 M OHM	½ W.
R3	63-600	2.2 MEGOHM	½ W.
R4	63-1236	VOLUME CONTROL	5B06
	63-1241	VOLUME CONTROL	5B05
R5	63-594	68 M OHM	½ W.
R6	63-687	4700 OHM	½ W.
R7	63-976	.15 MEGOHM	½ W.
R8	63-271	1 MEGOHM	½ W.
R9	63-1097	870 OHM WIREWOUND	1 W.
R10	63-1239	3 SECTION CANDOHM	
R11	63-1099	33 OHM WIREWOUND	½ W.
R12	63-439	2700 OHM	½ W.
R13	63-627	180 OHM	½ W.

CHANGEOVER SWITCH SHOWN IN POSITION FOR A.C. OPERATION

DIAG Nº	PART Nº	DESCRIPTION
1	20-238	ANTENNA COIL
2	5-9597	OSCILLATOR COIL ASSEMBLY
3	95-816	1ST I.F. TRANSFORMER
4	95-817	2ND I.F. TRANSFORMER
5	85-285	T.C. SWITCH LEFT 5B05
	85-284	" " " LEFT 5B06
6	85-289	" " " RIGHT 5B05
	85-288	" " " RIGHT 5B06
7	85-254	CHANGEOVER SWITCH
A		1ST I.F. TRANS. PRI
B		1ST I.F. TRANS. SEC.
C		2ND I.F. TRANS. PRI.
D		2ND I.F. TRANS. SEC.
F		BROADCAST OSC. (ON GANG)
G		BROADCAST ANT. (ON GANG)

CONVERTER ILA6 | I.F. ILN5 | RECT. 117Z6G | PWR. AMP. ILB4



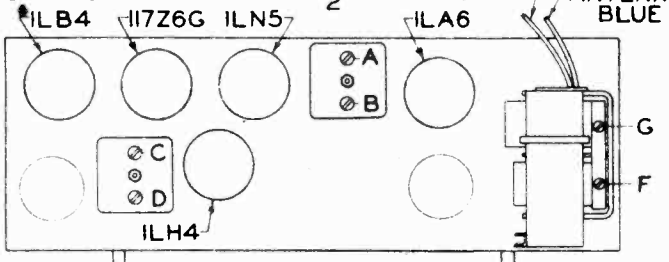
DET. AMP. ILH4

BATTERY PACK Nº. Z-682

Ant. to conv. grid—5 at 1000 Kc
Conv. grid to I. F. grid—75 at 455 Kc.
Overall audio—260 at .050 watt, 400 cycles.
Tuning Range—540 Kc.—1740 Kc.

Chassis 5B05
Attached Speaker
Chassis 5B06
Remote Speaker

CHASSIS	MODEL	SPEAKER	
5B05	5G617	49-454	5"
5B06	5G636	49-455	6½"



Power consumption—117 v.—20 watts.
Power consumption, battery—1.02 watts.

ON-OFF SW & VOLUME

Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	Converter Grid	.5 mmfd.	455	—	600	A B C D	I F. Alignment
2	Ant.—Gnd.	200 mmfd.	1400	—	1400	F	Set Osc. to Scale
3	" "	200 mmfd.	1400	—	1400	G	Alignment of Antenna

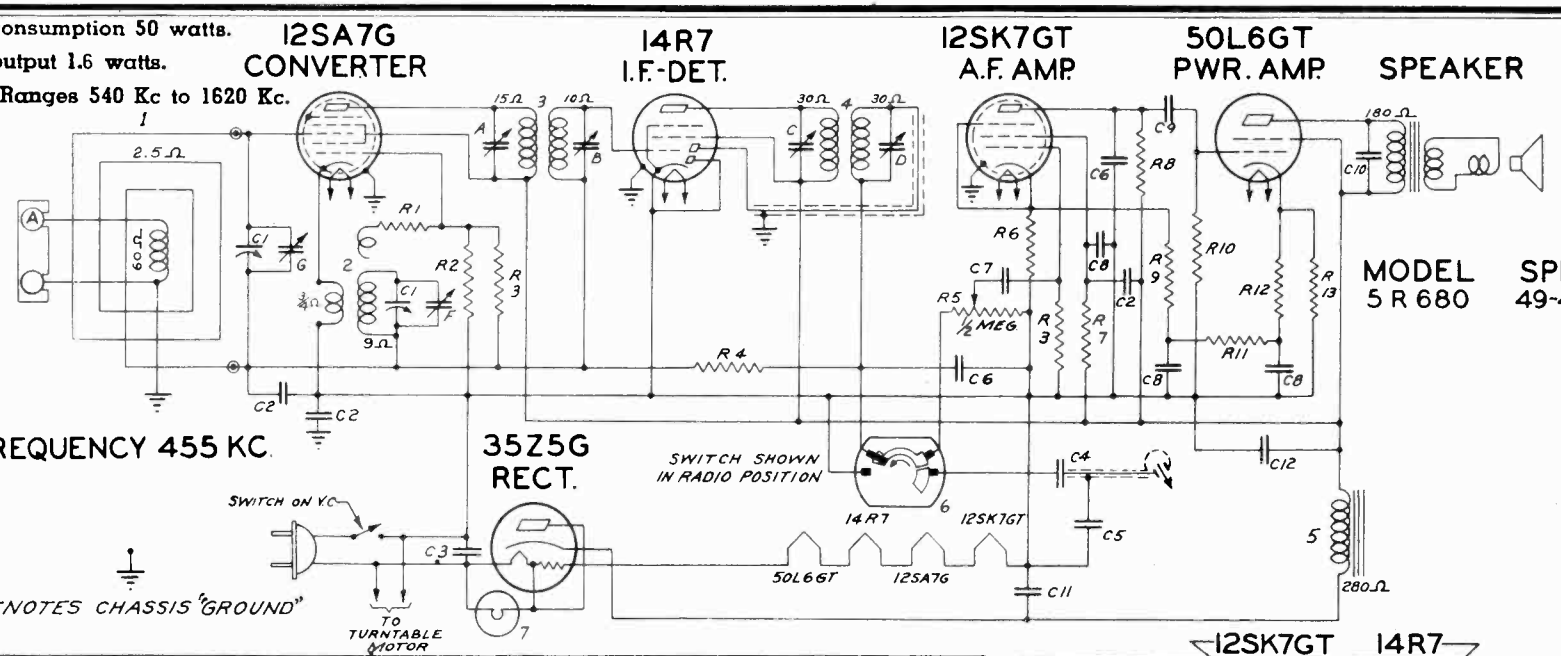
*Gnd. of test osc. connected to No. 8 pin of ILA6 socket

ZENITH RADIO CORP.

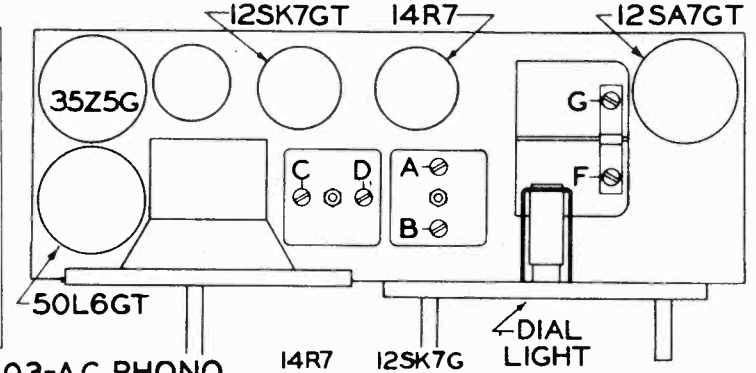
MODELS 5G617, 5G2617, Ch. 5B05; 5G636, Ch. 5B06

ZENITH PAGE 13-9

Power consumption 50 watts.
Power output 1.6 watts.
Tuning Ranges 540 Kc to 1620 Kc.



DIAG. No.	PART No.	DESCRIPTION		DIAG. No.	PART No.	DESCRIPTION		DIAG. No.	PART No.	DESCRIPTION
C1	22-1206	TWO-GANG VARIABLE		R3	63-976	15 MEGOHM	1/4 W.	3	95-811	1ST I.F. TRANSFORMER
C2	22-829	.05 MFD.	200V.	R4	63-600	2.2 MEGOHM	1/4 W.	4	95-812	2ND I.F. TRANSFORMER
C3	22-1017	.05 MFD.	200V.	R5	63-1112	VOLUME CONTROL		5	95-813	FILTER CHOKE
C4	22-887	.001 MFD.	600V.	R6	63-634	820 OHM	1/4 W.	6	85-282	PHONO-RADIO SWITCH
C5	22-327	.02 MFD.	200V.	R7	63-778	470M OHM	1/4 W.	7	100-67	DIAL LIGHT 6.3 V. .15 A.
C6	22-953	.0002 MFD.	600V.	R8	63-445	100M OHM	1/4 W.			
C7	22-492	.002 MFD.	600V.	R9	63-439	2700 OHM	1/4 W.			
C8	22-827	.1 MFD.	200V.	R10	63-597	470M OHM	1/4 W.			
C9	22-188	.02 MFD.	400V.	R11	63-637	4700 OHM	1/4 W.	A		1ST I.F. TRANS. PRI.
C10	22-1182	.01 MFD.	400V.	R12	63-639	6800 OHM	1/4 W.	B		1ST I.F. " SEC.
C11	22-1026	20 MFD. ELECTROLYTIC	150V.	R13	63-1015	140 OHM WIREWOUND	1/2 W.	C		2ND I.F. " PRI
C12		40 MFD. "	150V.					D		2ND I.F. " SEC.
								F		BROADCAST OSC. (ON GANG)
								G		BROADCAST ANT. (ON GANG)
R1	63-579	220 OHM	1/4 W.	1	S 9599	WAVEMAGNET				
R2	63-589	10M OHM	1/4 W.	2	S 9450	OSCILLATOR COIL ASSEMBLY				



CHASSIS Nº5B03-A.C. PHONO

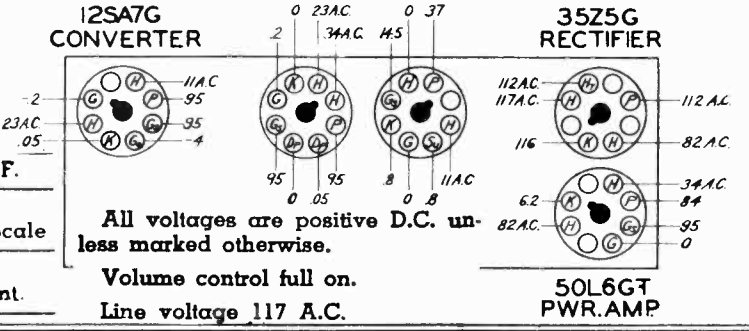
Stage Gains
Bc. and I.F.

Ant. to conv. grid—5.8× at 1000 Kc.

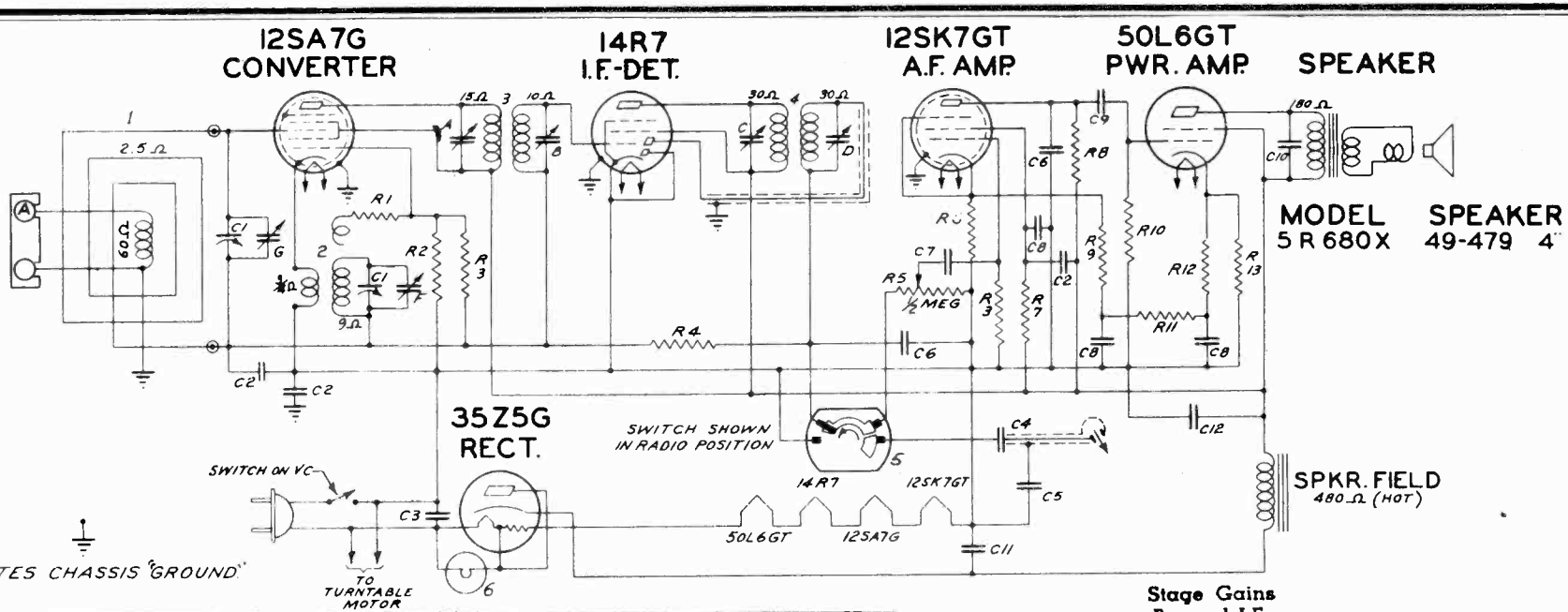
Conv. grid to I. F. grid—57× at 455 Kc.

Overall audio—222× at .35 watt, 400 cycles.

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	
1	Converter Grid	.5 mfd.	455 Kc.	BC	1600 Kc.	A, B, C, D	Align I.F.
2	Single Turn Loop Loosely Coupled to Wave Magnet	.5 mfd.	1600 Kc.	"	1600 Kc.	F	Set to Scale
3		.5 mfd.	1400 Kc.	"	1400 Kc.	G	Align Ant.



All voltages are positive D.C. unless marked otherwise.
Volume control full on.
Line voltage 117 A.C.



DIAG N°	PART N°	DESCRIPTION		DIAG N°	PART N°	DESCRIPTION		DIAG N°	PART N°	DESCRIPTION
C1	22-1206	TWO-GANG VARIABLE		R3	63-976	15 MEGOHM	½ W	3	95-811	1ST I.F. TRANSFORMER
C2	22-829	.05 MFD.	200V	R4	63-600	2.2 MEGOHM	¼ W	4	95-812	2ND I.F. TRANSFORMER
C3	22-1017	.05 MFD.	200V	R5	63-1112	VOLUME CONTROL		5	85-282	PHONO-RADIO SWITCH
C4	22-887	.001 MFD.	600V	R6	63-634	820 OHM	½ W	6	100-67	DIAL LIGHT 6.3V. .15A.
C5	22-327	.02 MFD.	200V	R7	63-778	470M OHM	½ W			
C6	22-953	.0002 MFD.	600V	R8	63-445	100M OHM	½ W			
C7	22-492	.002 MFD.	600V	R9	63-439	2700 OHM	½ W			
C8	22-827	.1 MFD.	200V	R10	63-597	470 M OHM	½ W			
C9	22-188	.02 MFD.	400V	R11	63-637	4700 OHM	½ W	A		1ST I.F. TRANS. PRI.
C10	22-1182	.01 MFD.	400V	R12	63-639	6800 OHM	½ W	B		1ST I.F. " SEC.
C11 C12	22-1026	20 MFD ELECTROLYTIC 40 MFD. "	150V 150V	R13	63-1213	140 OHM	½ W	C		2ND I.F. " PRI.
								D		2ND I.F. " SEC.
								F		BROADCAST OSC. (ON GANG)
								G		BROADCAST ANT. (ON GANG)
R1	63-579	220 OHM	¼ W	1	S 9599	WAVEMAGNET				
R2	63-589	10M OHM	¼ W	2	59450	OSCILLATOR COIL ASSEMBLY				

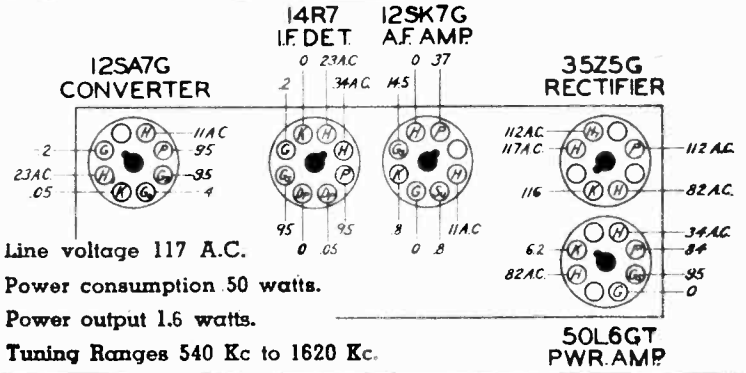
Stage Gains Bc. and I.F.

Ant. to conv. grid—5.8× at 1000 Kc.

Conv. grid to I. F. grid—57× at 455 Kc.

Overall audio—222× at .35 watt. 400 cycles.

I.F. FREQUENCY 455 KC.
5 TUBE SUPERHETERODYNE
CHASSIS N°5B14-A.C. PHONO



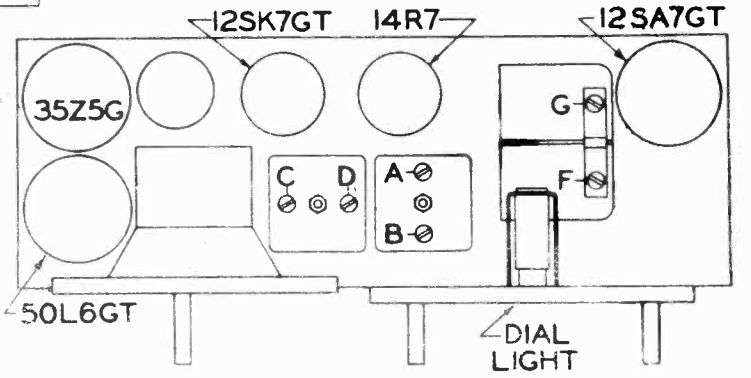
Line voltage 117 A.C.

Power consumption 50 watts.

Power output 1.6 watts.

Tuning Ranges 540 Kc to 1620 Kc.

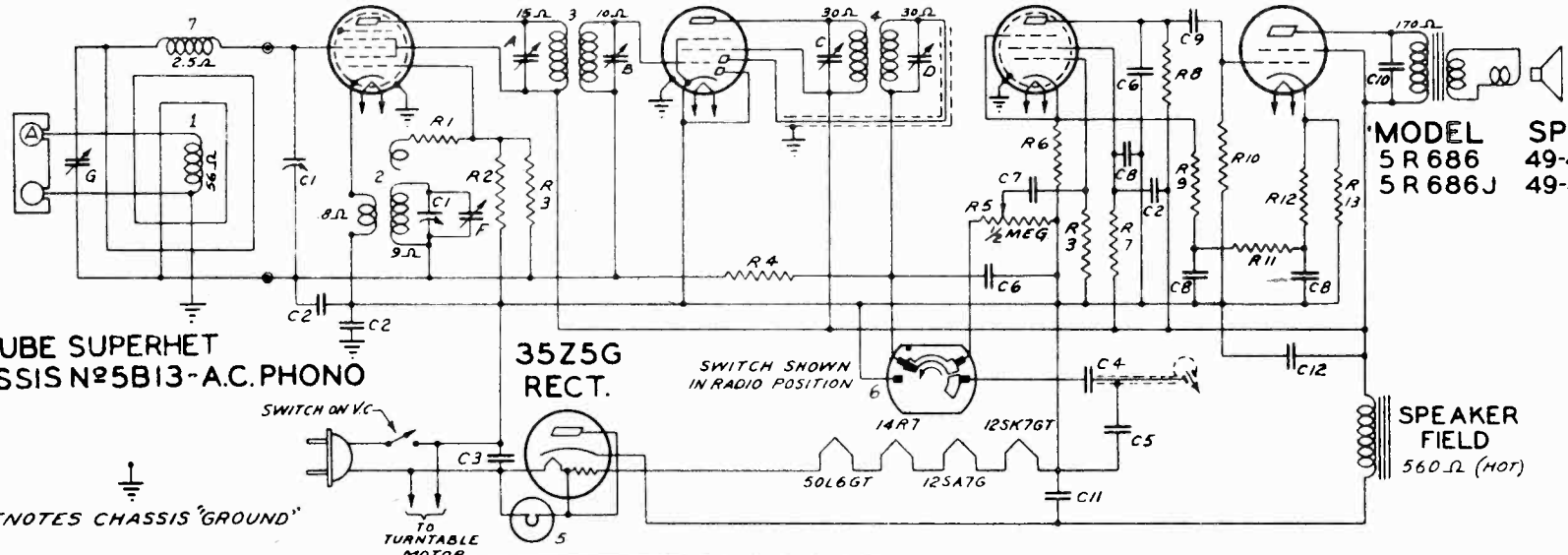
FOR ALIGNMENT SEE INDEX



MODELS 5R686, 5R686J
Chas. 5B13 Phono

I.F. FREQUENCY 455 KC

12SA7G CONVERTER — 14R7 I.F.-DET. — 12SK7GT A.F. AMP. — 50L6GT PWR. AMP. — SPEAKER

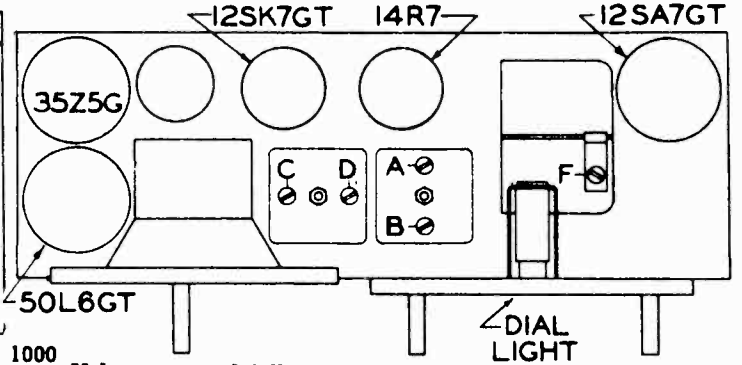


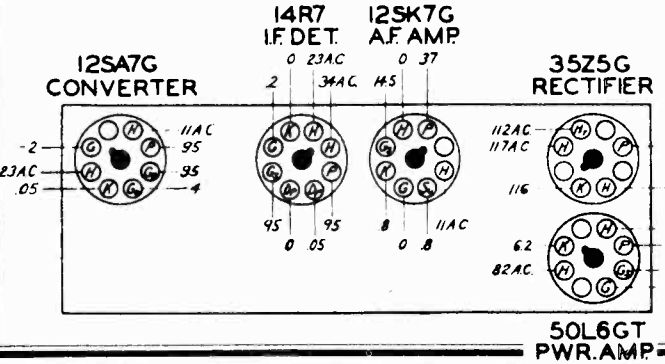
5 TUBE SUPERHET
CHASSIS Nº5B13-A.C. PHONO

DENOTES CHASSIS "GROUND"

MODEL	SPEAKER
5R686	49-480 5"
5R686J	49-480 5"

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1242	TWO-GANG VARIABLE		R3	63-976	15 MEGOHM	½ W	3	95-811	1ST I.F. TRANSFORMER
C2	22-829	.05 MFD.	200V	R4	63-600	2.2 MEGOHM	½ W	4	95-812	2ND I.F. TRANSFORMER
C3	22-1017	.05 MFD.	200V	R5	63-1112	VOLUME CONTROL		5	100-67	DIAL LIGHT 6.3V. .15A.
C4	22-1189	.00075 MFD.	600V	R6	63-634	820 OHM	½ W	6	85-282	PHONO-RADIO SWITCH
C5	22-327	.02 MFD.	200V	R7	63-778	470M OHM	½ W	7	510072	LOOP LOADING COIL
C6	22-953	.0002 MFD.	600V	R8	63-445	100M OHM	½ W			
C7	22-492	.002 MFD.	600V	R9	63-439	2700 OHM	½ W			
C8	22-827	.1 MFD.	200V	R10	63-597	470M OHM	½ W			
C9	22-188	.02 MFD.	400V	R11	63-637	4700 OHM	½ W	A		1ST I.F. TRANS PRI
C10	22-1182	.01 MFD.	400V	R12	63-639	6800 OHM	½ W	B		1ST I.F. " SEC
C11	22-1026	20 MFD. ELECTROLYTIC	150V	R13	63-1015	140 OHM WIREWOUND	½ W	C		2ND I.F. " PRI
C12		40 MFD. "	150V					D		2ND I.F. " SEC
								F		BROADCAST OSC (ON GANG)
								G	22-1226	BROADCAST ANTENNA
R1	63-579	220 OHM	½ W	1	59879	WAVEMAGNET				
R2	63-589	10M OHM	½ W	2	59470	OSCILLATOR COIL ASSEMBLY				





Ant. to conv. grid—5.8× at 1000 Kc.

Conv. grid to I. F. grid—57× at 455 Kc.

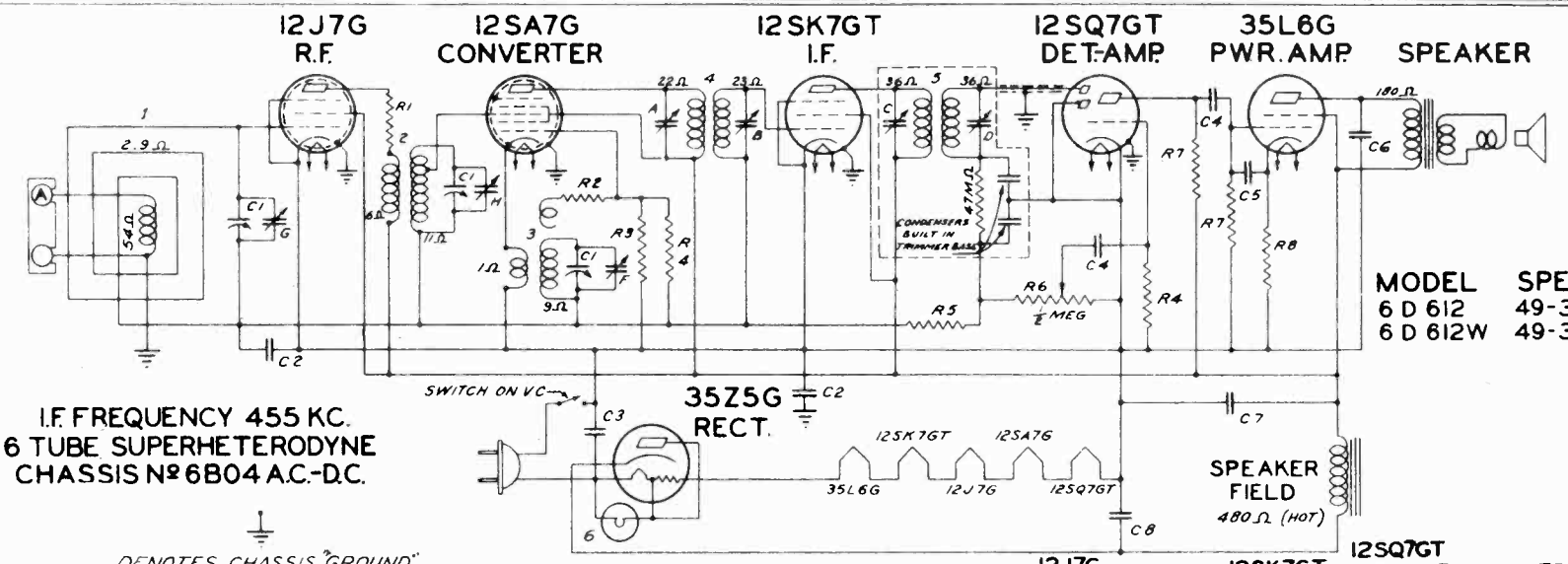
Overall audio—222× at .35 watt, 400 cycles.

Volume control full on. Line voltage 117 A.C. Power consumption 50 watts.

Power output 1.6 watts. Tuning Ranges 540 Kc to 1620 Kc

	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	1600 Kc.	A, B, C, D	Align I.F.
2	One Turn Loop Coupled Loosely to Wave Magnet	—	1600 Kc.	"	1600 Kc.	F	Set to Scale
3	"	—	1400 Kc.	"	1400 Kc.	G, Located at Back of Wave Magnet	Align Ant.

ZENITH RADIO CORP.

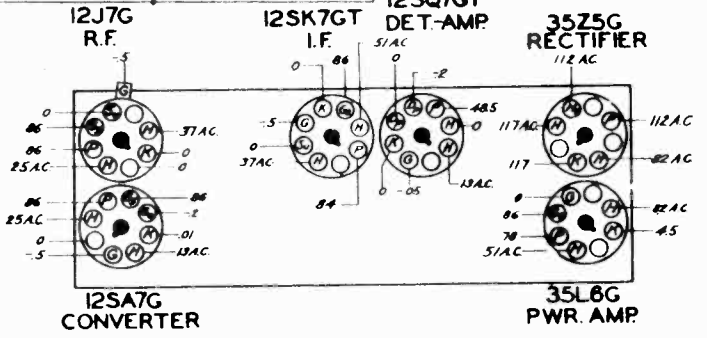


MODEL	SPEAKER
6 D 612	49-385 4"
6 D 612W	49-385 4"

I.F. FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº 6B04 A.C.-D.C.

DENOTES CHASSIS "GROUND"

DIAG Nº	PART Nº	DESCRIPTION	
C1	22-1201	THREE-GANG VARIABLE	
C2	22-829	.05 MFD.	200 V
C3	22-1017	.05 MFD.	200 V
C4	22-243	.01 MFD.	400 V
C5	22-854	.0005 MFD.	600 V
C6	22-1049	.03 MFD.	400 V
C7	22-1014	20 MFD. ELECTROLYTIC	150 V
C8		20 MFD. ELECTROLYTIC	150 V
R1	63-590	15M OHM	½ W
R2	63-579	220 OHM	½ W
R3	63-589	10M OHM	½ W
R4	63-976	1.5 MEGOHM	½ W
R5	63-600	2.2 MEGOHM	½ W
R6	63-1112	VOLUME CONTROL	
R7	63-597	470M OHM	½ W
R8	63-686	150 OHM WIREWOUND	½ W
1	S 9576	WAVEMAGNET ASSEMBLY	
2	S 9570	DETECTOR COIL ASSEMBLY	
3	S 9571	OSCILLATOR COIL ASSEMBLY	
4	95-808	1ST I.F. TRANS.	
5	95-809	2ND I.F. TRANS.	
6	100-67	PILOT LIGHT 6.3 V. .15A	
A		1ST I.F. TRANS. PRI.	
B		1ST I.F. TRANS. SEC.	
C		2ND I.F. TRANS. PRI.	
D		2ND I.F. TRANS. SEC.	
F		BROADCAST OSC. (ON GANG)	
G		BROADCAST ANT. (ON GANG)	
H		BROADCAST DET. (ON GANG)	



Stage Gains
Bc. and I.F.

Ant. to R.F. grid 5.7 at 1000 Kc.

R.F. grid to conv. grid 10.5 at 1000 Kc.

Conv. grid to I.F. grid 46.4 at 455 Kc.

Overall audio 245 at .25 watt, 400 cycles.

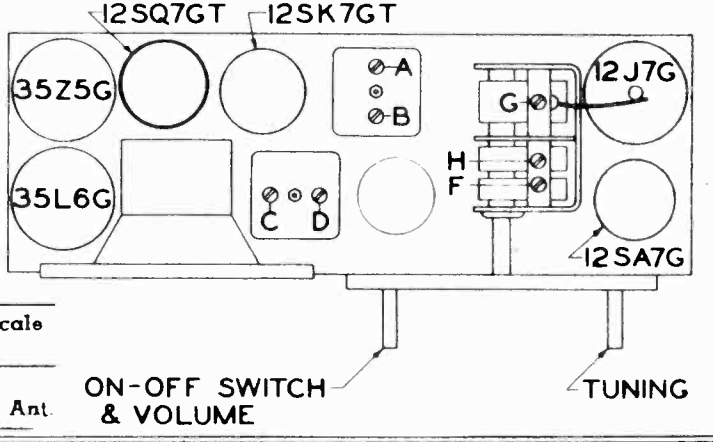
Volume control full on.

Line voltage 117 A.C. or D.C.
Power consumption 30 watts.
Power output 1.38 watts.

Tuning Range

540 Kc. to 1620 Kc.

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	1600 Kc.	A, B, C, D	Align I.F.
2	Single Turn Loop Coupled Loosely to Wave Magnet	.5 mfd.	1600 Kc.	"	1600 Kc.	F	Set osc. to scale at 1600 Kc.
3		.5 mfd.	1400 Kc.	"	1400 Kc.	H, G	Align R.F. & Ant.

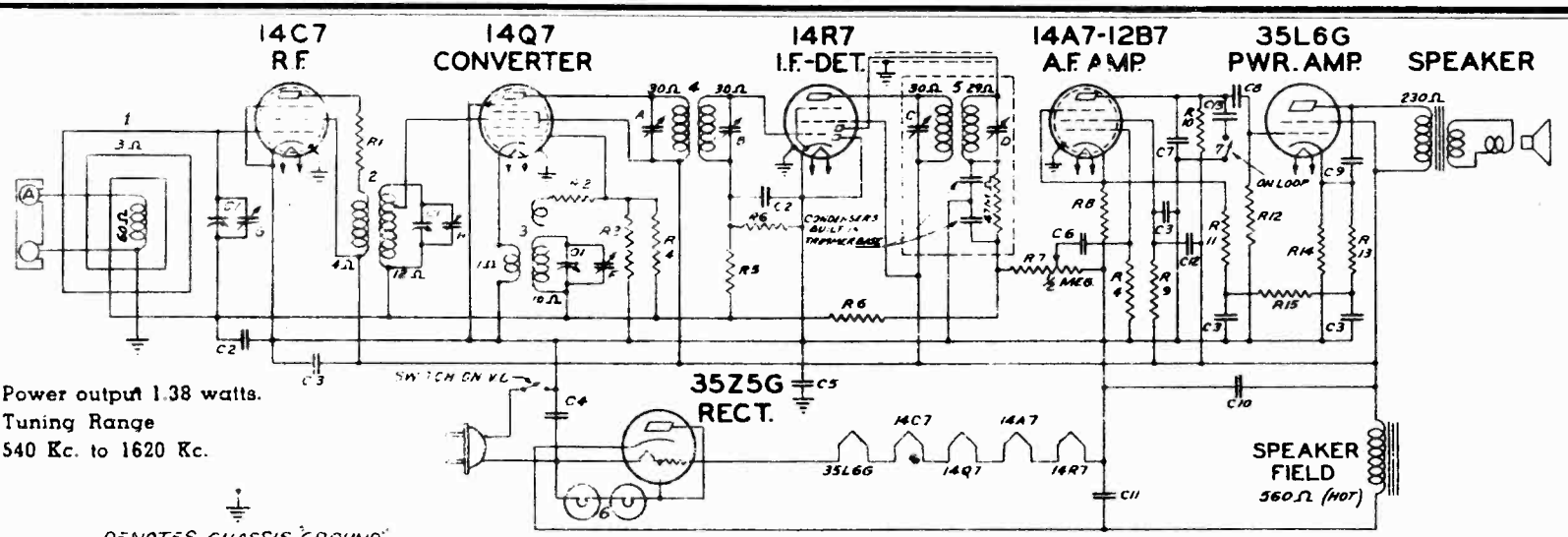


ZENITH RADIO CORP.

MODELS 6D612, 6D612W, 6D622, 6D628, 6D2612, Ch. 6B04

MODELS 6D614, 6D614W, 6D621, 6D629, 6D2614, Ch. 6B01

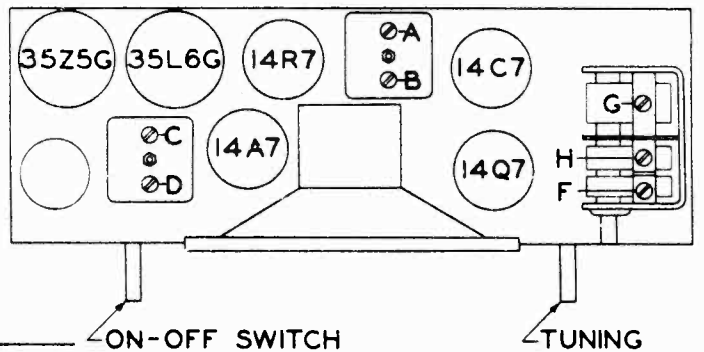
ZENITH RADIO CORP.



Power output 1.38 watts.
Tuning Range
540 Kc. to 1620 Kc.

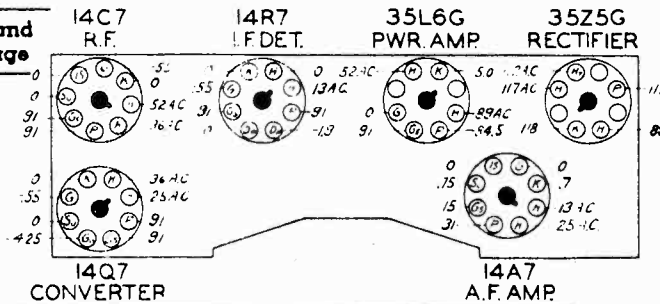
DENOTES CHASSIS "GROUND"

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1201	THREE-GANG VARIABLE		R3	63-589	10M OHM	½ W.	2	S 9561	DETECTOR COIL ASSEMBLY
C2	22-829	.05 MFD.	200 V.	R4	63-1093	15 MEGOHM	½ W.	3	S 9578	OSCILLATOR COIL ASSEMBLY
C3	22-827	.1 MFD.	200 V.	R5	63-722	2.2 MEGOHM	½ W.	4	95-806	1ST I.F. TRANS.
C4	22-1017	.05 MFD.	200 V.	R6	63-600	2.2 MEGOHM	½ W.	5	95-807	2ND I.F. TRANS.
C5	22-1207	.07 MFD.	200 V.	R7	63-1238	VOLUME CONTROL		6	100-90	PILOT LIGHT 3.2V. .15A.
C6	22-243	.01 MFD.	400 V.	R8	63-634	820 OHM	½ W.	7	85-257	TONE CONTROL SWITCH
C7	22-834	.0005 MFD.	600 V.	R9	63-659	470 M OHM	½ W.			
C8	22-188	.02 MFD.	400 V.	R10	63-260	100 M OHM	½ W.			
C9	22-1049	.03 MFD.	400 V.	R11	63-439	2700 OHM	½ W.	A		1ST I.F. TRANS. PRI.
C10	22-1016	20 MFD ELECTROLYTIC	150 V.	R12	63-597	470 M OHM	½ W.	B		1ST I.F. TRANS. SEC.
C11		20 MFD ELECTROLYTIC	150 V.	R13	63-755	3300 OHM	½ W.	C		2ND I.F. TRANS. PRI.
C12	22-1219	.04 MFD.	200 V.	R14	63-1237	150 OHM WIREWOUND	½ W.	D		2ND I.F. TRANS. SEC.
C13	22-492	.002 MFD.	600 V.	R15	63-637	4700 OHM	½ W.	F		BROADCAST OSC. (ON GANG)
								G		BROADCAST ANT. (ON GANG)
								H		BROADCAST DET. (ON GANG)
R1	63-590	15M OHM	½ W.							
R2	63-579	220 OHM	½ W.	1	S 9582	WIREMAGNET ASSEMBLY				



Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	5 mfd	455	BC	600	A. B. C. D	Align I.F.
2	One Turn Loop Coupled Loosely to Wave Magnet	—	1600	BC	1600	F	Set osc. to scale at 1600 Kc.
3		—	1400	BC	1400	H. G	Align det. and antenna stage

Volume control full on.
Line voltage 117 A.C. or D.C.
Power consumption 40 watts.



MODEL	SPEAKER
6 D 614	49-448 5"
6 D 614W	49-448 5"
6 D 629	49-448 5"

I.F. FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº 6B01 A.C.-D.C.

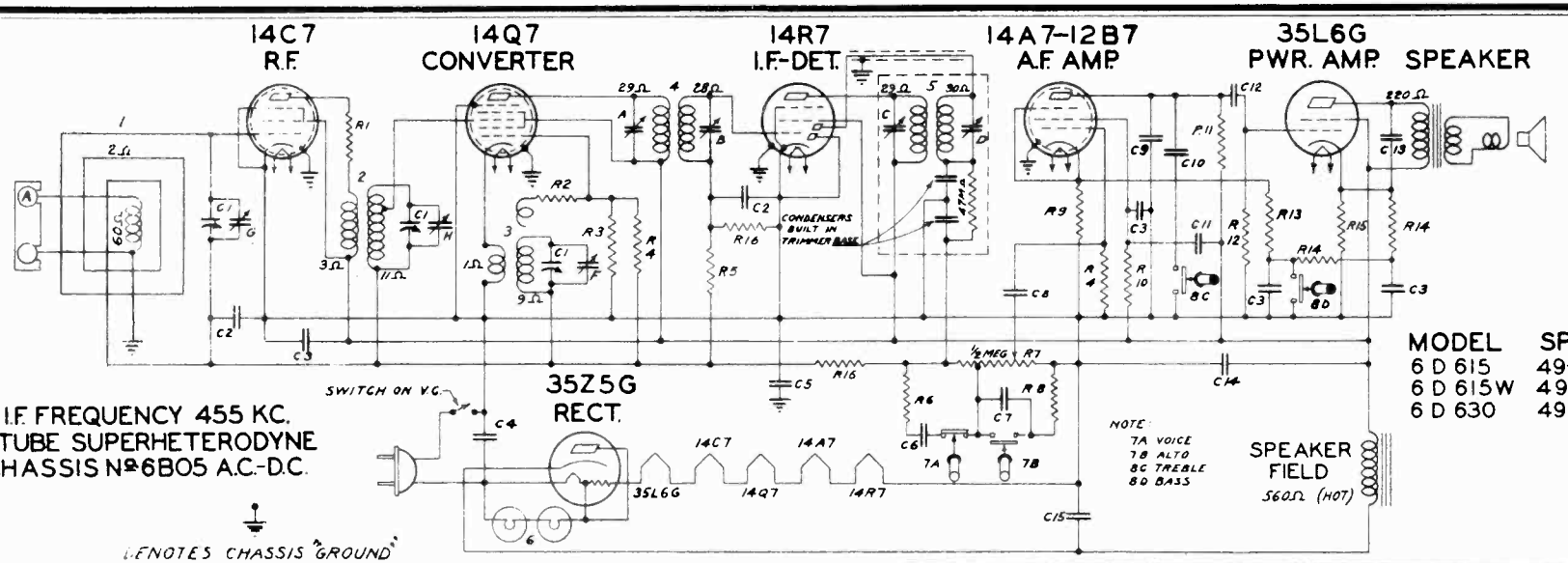
Stage Gains
Bc. and I.F.

Ant. to R.F. grid 8 at 1000 Kc.

R.F. grid to conv. grid 9.6 at 1000 Kc.

Conv. grid to I.F. grid 39 at 455 Kc.

Overall audio 162 at .25 watt, 400 cycles.



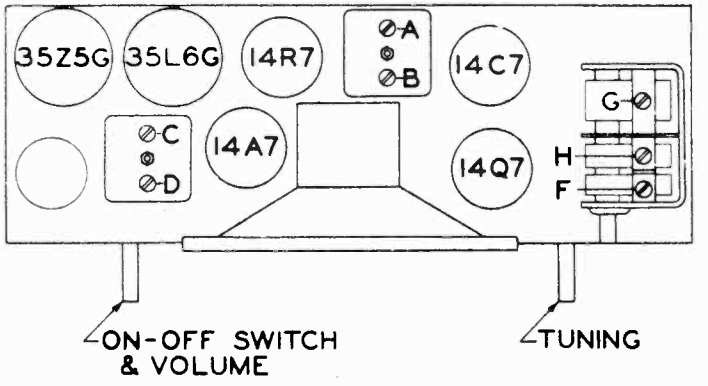
I.F. FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS №6B05 A.C.-D.C.

⏚ DENOTES CHASSIS "GROUND"

MODEL	SPEAKER	
6 D 615	49-448	5"
6 D 615W	49-448	5"
6 D 630	49-448	5"

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1201	TRIPLE GANG VARIABLE		R1	63-590	15M OHM
C2	22-429	.05 MFD.	200 V	R2	63-579	220 OHM
C3	22-827	.1 MFD.	200 V	R3	63-589	10M OHM
C4	22-1017	.05 MFD.	200 V	R4	63-1093	15 MEGOHM
C5	22-1007	.01 MFD.	200 V	R5	63-722	2.2 MEGOHM
C6	22-326	.003 MFD.	400 V	R6	63-325	150M OHM
C7	22-331	.02 MFD.	200 V	R7	63-1239	VOLUME CONTROL
C8	22-245	.1 MFD.	400 V	R8	63-591	22 M OHM
C9	22-1054	.0025 MFD.	600 V	R9	63-694	820 OHM
C10	22-847	.001 MFD.	600 V	R10	63-659	470M OHM
C11	22-214	.04 MFD.	200 V	R11	63-260	100M OHM
C12	22-148	.1 MFD.	400 V	R12	63-597	470M OHM
C13	22-1127	.05 MFD.	400 V	R13	63-639	2700 OHM
C14	22-1014	25 MFD. ELECTROLYTIC	150 V	R14	63-639	6800 OHM
C15		30 MFD. ELECTROLYTIC	150 V	R15	63-1237	150 OHM WIREWOUND
				R16	63-600	2.2 MEGOHM

DIAG Nº	PART Nº	DESCRIPTION
1	59727	WAVEMAGNET ASSEMBLY
2	59561	DETECTOR COIL ASSEMBLY
3	59578	OSCILLATOR COIL ASSEMBLY
4	95-806	1ST I.F. TRANSFORMER
5	95-807	2ND I.F. TRANSFORMER
6	100-90	DIAL LIGHT 3.2 V. .15A.
7	85-284	T.C. SW. ASSEM. (LEFT)
8	85-288	T.C. SW. ASSEM. (RIGHT)
A		1ST I.F. TRANS. PRI.
B		1ST I.F. TRANS. SEC.
C		2ND I.F. TRANS. PRI.
D		2ND I.F. TRANS. SEC.
F		BROADCAST OSC. (ON GANG)
G		BROADCAST ANT. (ON GANG)
H		BROADCAST DET. (ON GANG)



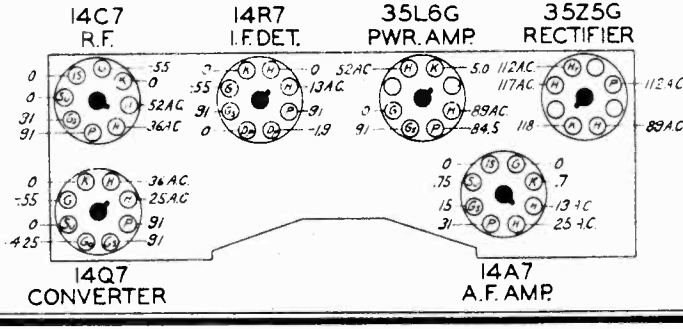
Stage Gains Bc. and I.F.

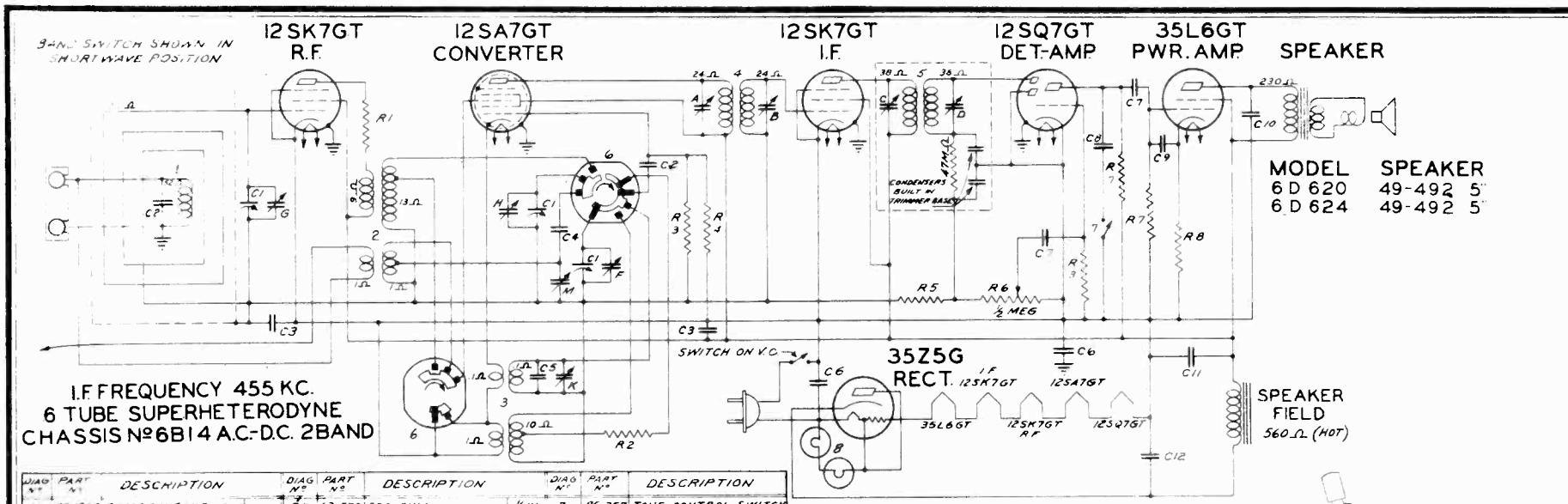
Ant. to R.F. grid 8× at 1000 Kc.
R.F. grid to conv. grid 9.6× at 1000 Kc.
Conv. grid to I.F. grid 39× at 455 Kc.
Overall audio 162× at .25 watt, 400 cycles.

Volume control full on.
Line voltage 117 A.C. or D.C.
Power consumption 40 watts.
Power output 1.38 watts.

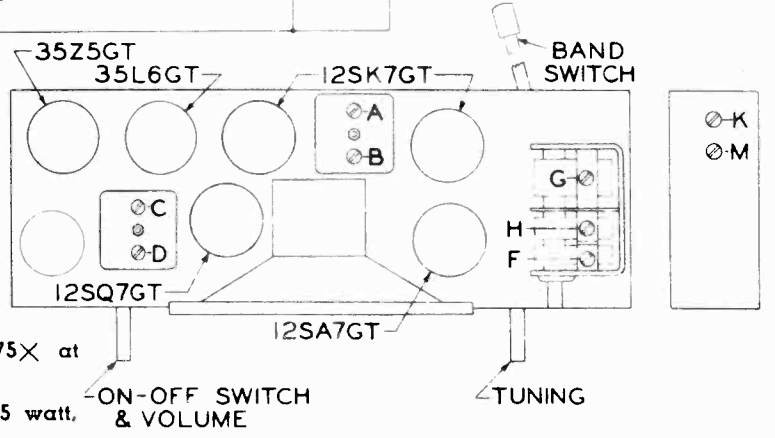
Tuning Range
540 Kc. to 1620 Kc.

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd	455 Kc.	BC	600 Kc.	A, B, C, D	Align I.F.
2	1 turn loop made from generator or Radex Loop	———	1600 Kc.	BC	1600 Kc.	F	Set osc. to scale at 1600 Kc.
3		———	1400 Kc.	BC	1400 Kc.	H, G	Align det. and ant. stage





DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1268	THREE GANG VARIABLE		R2	63-579	220 OHM	½ W	7	85-257	TONE CONTROL SWITCH
C2	22-[illegible]	50 MMFD	600V	R3	63-976	.15 MEGOHM	½ W	8	100-90	DIAL LAMP 3.2 V. .17A
C3	22-869	.05 MFD	200V	R4	63-589	10 M OHM	½ W			
C4	22-[illegible]	000025 MFD	600V	R5	63-600	2.2 MEGOHM	½ W			
C5	22-[illegible]	30 MMFD COMP		R6	63-1238	VOLUME CONTROL		A		1ST I.F. TRANS. PRI.
C6	22-[illegible]	.05 MFD	200V	R7	63-597	470 M OHM	½ W	B		1ST I.F. " SEC.
C7	22-[illegible]	.01 MFD	400V	R8	63-1237	150 OHM WIREWOUND	½ W	C		2ND I.F. " PRI.
C8	22-[illegible]	.025 MFD	600V					D		2ND I.F. " SEC.
C9	22-[illegible]	.0005 MFD	600V					F		BROADCAST OSC. (ON GANG)
C10	22-[illegible]	.1 MFD	400V					G		BROADCAST ANT. (ON GANG)
C11	[illegible]	MFD ELECTROLYTIC	150V	1	S10134	WAVEMAGNET		H		BROADCAST DET. (ON GANG)
C12	[illegible]	20 MFD	150V	2	S10154	DETECTOR COIL ASSEMBLY		K		SHORTWAVE OSC. (SEE NOTE)
				3	S10155	OSCILLATOR		M		SHORTWAVE ANT. (SEE NOTE)
				4	95-869	1ST I.F. TRANSFORMER				NOTE
				5	95-870	2ND I.F.				TRIMMERS K & M ARE
R1	63-208	8200 OHM	½ W	6	85-307	BAND SWITCH				MOUNTED ON STRIP 22-1273



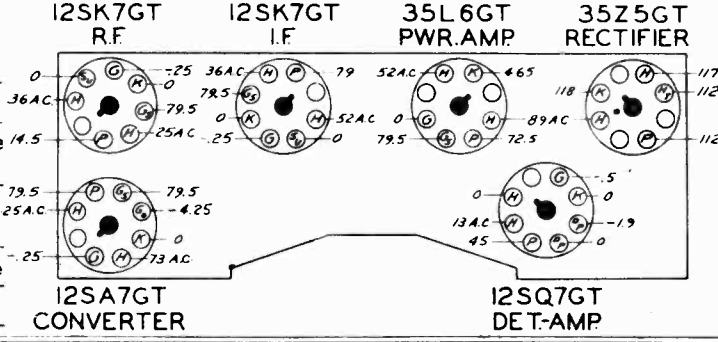
Power consumption 30 watts.

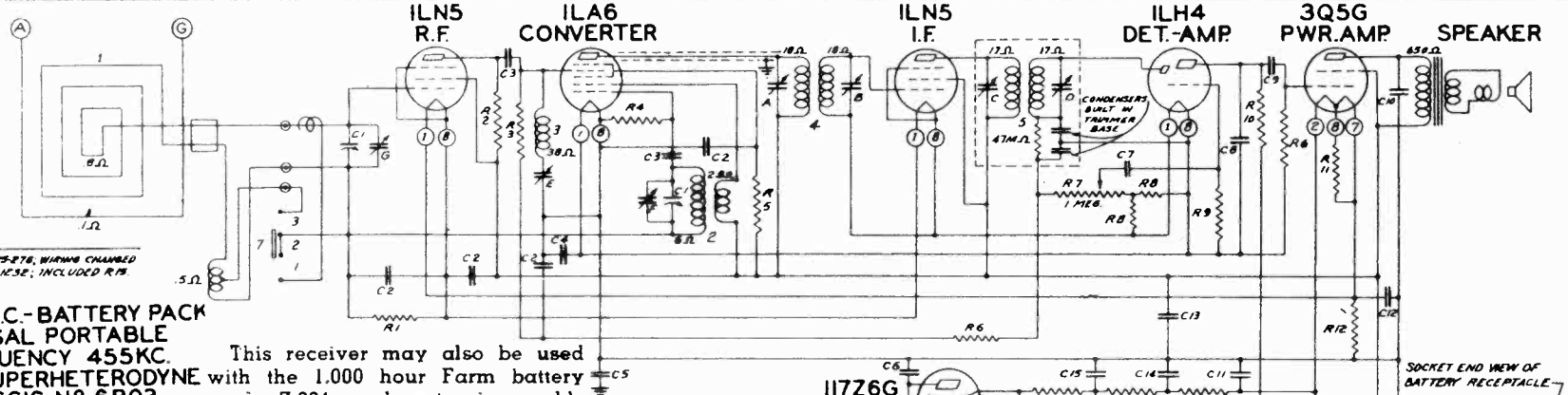
Maximum audio power output 1.25 watts.

Tuning Ranges:
540 Kc. to 1620 Kc.
5.75 Mc. to 12.2 Mc.

Stage Gains
Bc. and I.F.
Ant. to R.F. grid 5× at 1000 Kc.
R.F. grid to conv. grid 3.8× at 1000 Kc.
Conv. grid to I.F. grid 75× at 455 Kc.
Overall audio 220× at .25 watt, 400 cycles.

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial at	Trimmers	Purpose
1	Conv. Grid	.5 mfd.	455 Kc.	B.C.	600 Kc.	A. B. C. D	Align I.F.
2	Single Turn Loop Loosely Coupled to Wavemagnet	—	1400 Kc.	B.C.	1400 Kc.	F	Set oscillator to scale
3		—	1400 Kc.	B.C.	1400 Kc.	H & G	Align R.F. and Ant.
4	Ant.-Gnd.	400 ohms	12 Mc.	S.W.	12 Mc.	K	Set oscillator to scale
5	Ant.-Gnd.	400 ohms	12 Mc.	S.W.	12 Mc.	M	Align Ant.





110 V. A.C.-D.C.- BATTERY PACK
UNIVERSAL PORTABLE
I.F. FREQUENCY 455KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº 6B03

This receiver may also be used with the 1.000 hour Farm battery pack Z-884 and extension cable

DIAG Nº	PART Nº	DESCRIPTION	
C1	22-1200	TWO GANG VARIABLE	
C2	22-829	.05 MFD	200 V.
C3	22-162	.0001 MFD.	600 V.
C4	22-1025	.15 MFD	200 V.
C5	22-827	.1 MFD	200 V.
C6	22-1017	.05 MFD	200 V.
C7	22-492	.002 MFD	600 V.
C8	22-470	.0001 5 MFD	600 V.
C9	22-196	.01 MFD	600 V.
C10	22-458	.006 MFD	600 V.
C11		(20 MFD ELECTROLYTIC	25 V.
C12	22-1159	40 MFD ELECTROLYTIC	25 V.
C13		40 MFD ELECTROLYTIC	150 V.
C14		20 MFD ELECTROLYTIC	150 V.
C15	22-1026	40 MFD ELECTROLYTIC	150 V.

DIAG Nº	S-9598 DESCRIPTION	
R1	63-716	150 M OHM
R2	63-590	15 M OHM
R3	63-595	100 M OHM
R4	63-773	180 M OHM
R5	63-712	33 M OHM
R6	63-600	2.2 MEGOHM
R7	63-1231	VOLUME CONTROL
R8	63-585	2200 OHM
R9	63-976	15 MEGOHM
R10	63-271	1 MEGOHM
R11	63-580	330 OHM
R12	63-1097	870 OHM WIREWOUND
R13	63-1259	2 SECTION CANDOHM
R14	63-1150	1800 OHM
R15	63-1260	140 OHM WIREWOUND
S-9579	WAVEMAGNET ASSEMBLY	

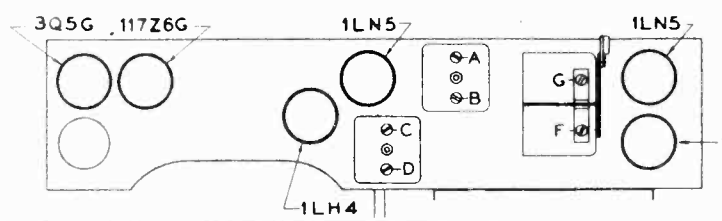
DIAG Nº	PART Nº	DESCRIPTION
2	S-9578	OSCILLATOR COIL ASSEMBLY
3	S-8326	WAVE TRAP ASSEMBLY
4	95-806	1ST I.F. TRANSFORMER
5	95-805	2ND I.F. TRANSFORMER
6	85-299	CHANGEOVER SWITCH
7	85-225	WAVEMAGNET SWITCH
A		1ST I.F. TRANS. PRI.
B		1ST I.F. TRANS. SEC.
C		2ND I.F. TRANS. PRI.
D		2ND I.F. TRANS. SEC.
E	88-1066	WAVE TRAP
F		BROADCAST OSC. (ON GANG)
G		BROADCAST ANT (ON GANG)

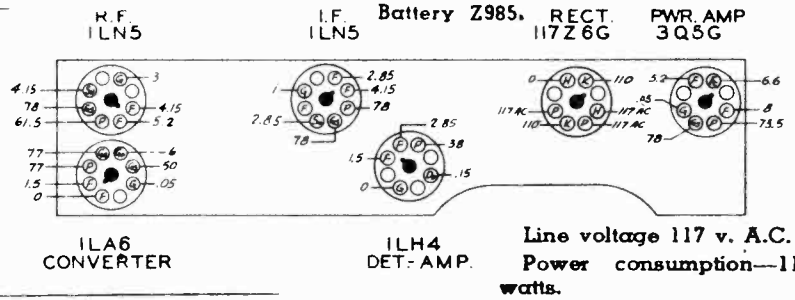
MODEL	SPEAKER	BATTERY
6G601D, 6G601L, 6G601M, 6G601MH, 6G601ML	49-445 5¼"	Z985, Z884

CHANGEOVER SWITCH SHOWN IN POSITION FOR A.C. OPERATION

Volume control on full.

Battery Z985.





Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	Converter Grid	.5 mmfd.	455	—	600	A B C D	I. F. Alignment
2	Converter Grid	.5 mmfd.	455	—	600	E	Adj. Trap Minimum
3	Single Turn Loop Coupled Loosely to Wave Magnet	—	1400	—	1400	F	Set Osc. to Scale
4		—	1400	—	1400	G	Alignment of Antenna

Gnd of test osc. connected to No. 8 pin of 1LA6 socket

Line voltage 117 v. A.C. or D.C.

Power consumption—117 v.—20 watts.

Power output—360 milliwatts.

Stage Gains:

Ant. to R.F. grid—5 × at 1000 Kc.

R.F. grid to conv. grid.—6.5 × at 1000 Kc.

Conv. grid to I.F. grid—49.1 × at 455 Kc.

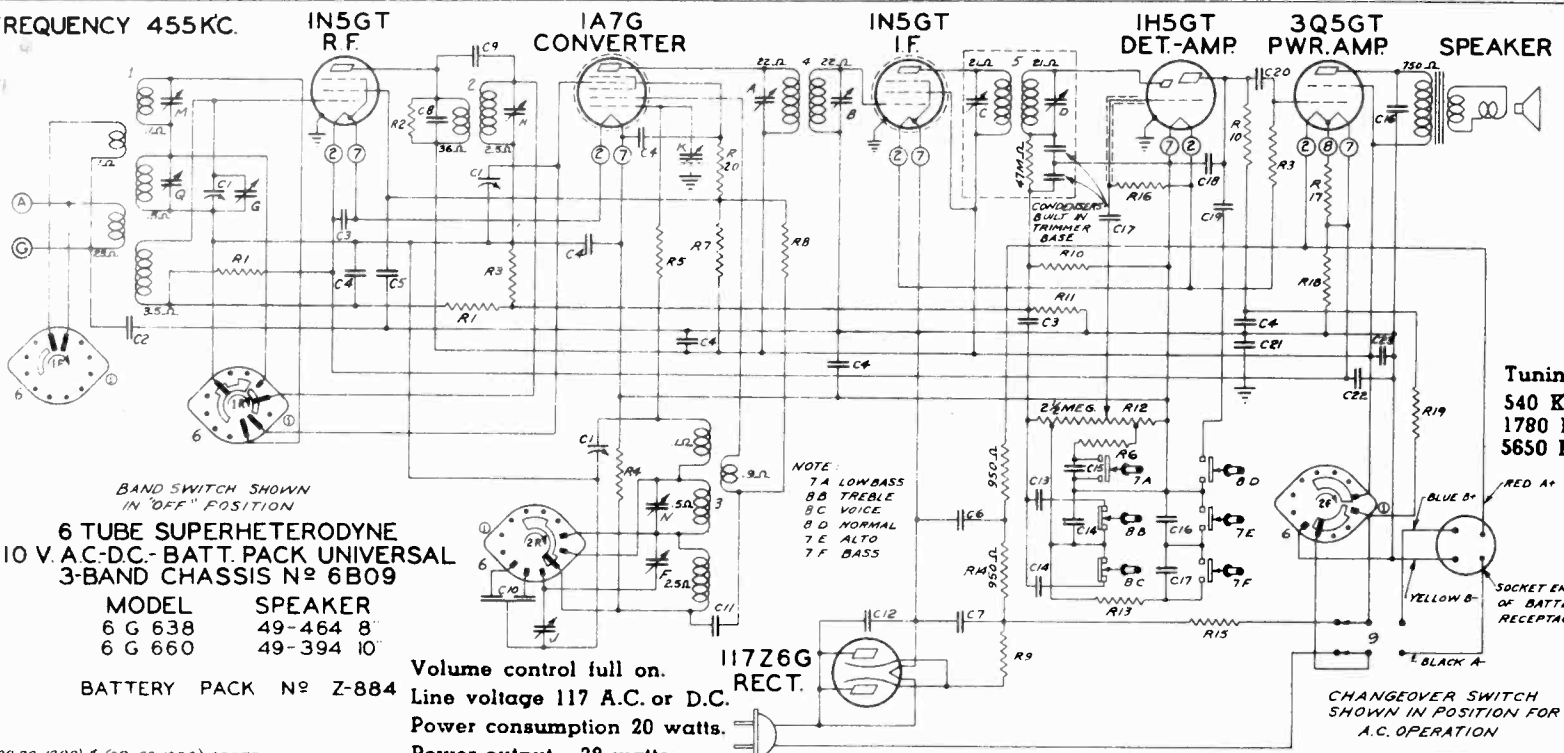
Overall audio—322 × at .05 watt, 400 cycles.

Tuning Range—540 Kc. to 1620 Kc.

MODELS 6G638, 6G660
Chassis 6B09

ZENITH RADIO CORP.

I.F. FREQUENCY 455 KC.



BAND SWITCH SHOWN IN "OFF" POSITION

CHANGEOVER SWITCH SHOWN IN POSITION FOR A.C. OPERATION

6 TUBE SUPERHETERODYNE
110 V. A.C.-D.C.- BATT. PACK UNIVERSAL
3-BAND CHASSIS Nº 6B09

MODEL	SPEAKER
6 G 638	49-464 8"
6 G 660	49-394 10"

BATTERY PACK Nº Z-884

Tuning Range
540 Kc. to 1820 Kc.
1780 Kc. 5750 Kc.
5650 Kc.—18400 Kc.

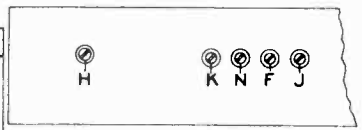
Volume control full on.
Line voltage 117 A.C. or D.C.
Power consumption 20 watts.
Power output .38 watts.

8-29-41 (OR 22-1289) & (OR 22-1298) ADDED
8-8-41 R20 WAS R6, S.W. TR CONN. CHANGED, GIMMICK REMOVED

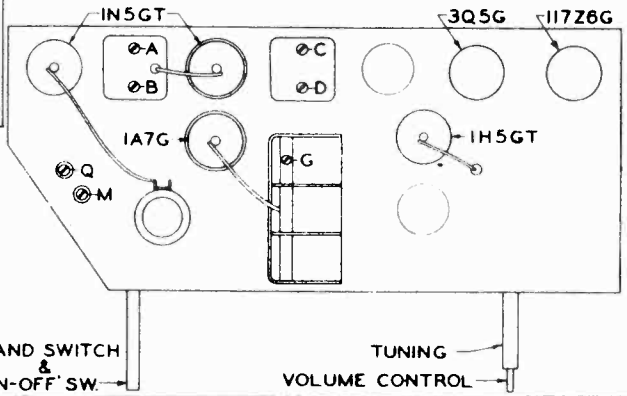
DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1217	THREE GANG VARIABLE		C20	22-243	.01 MFD	400V	R13	63-594	68M OHM ½ W
C2	22-83	.01 MFD	400V	C21	22-827	.1 MFD	200V	R14	63-1259	TWO-SECTION CANDOHM
C3	22-327	.02 MFD	200V	C22	22-1234 OR 22-1298	.2 MFD ELECTROLYTIC	10V	R15	63-605	1000 OHM ½ W
C4	22-829	.05 MFD	200V	C23		.40 MFD	150V	R16	63-976	15 MEGOHM ½ W
C5	22-1047	.13 MFD ELECTROLYTIC	150V					R17	63-580	330 OHM ½ W
C6	OR 22-1289	.20 MFD	150V					R18	63-1097	870 OHM WIREWOUND 1 W
C7		.30 MFD.	150V					R19	63-597	470 M OHM ½ W
C8	22-289	.50 MMFD	600V	R1	63-602	4.7 MEGOHM ¼ W		R20	63-591	22 M OHM ¼ W
C9	22-303	.5 MMFD	600V	R2	63-589	10M OHM ¼ W				
C10	22-930	DUAL PADDER	600V	R3	63-600	2.2 MEGOHM ¼ W				
C11	22-358	.002 MFD	600V	R4	63-654	180M OHM ¼ W		1	S9688	ANTENNA COIL ASSEMBLY
C12	22-10.7	.05 MFD	200V	R5	63-577	100 OHM ¼ W		2	S9690	DETECTOR COIL
C13	22-954	.00035 MFD	600V	R6	63-593	47M OHM ¼ W		3	S9689	OSCILLATOR COIL
C14	22-470	.00015 MFD	600V	R7	63-635	3300 OHM ¼ W		4	95-821	1ST I.F. TRANSFORMER
C15	22-229	.005 MFD	600V	R8	63-640	8200 OHM ¼ W		5	95-822	2ND I.F. "
C16	22-448	.004 MFD	600V	R9	63-1260	140 OHM WIREWOUND ¼ W		6	85-298	BAND SELECTOR SWITCH
C17	22-492	.002 MFD	600V	R10	63-271	1 MEGOHM ½ W		7	S9987	TONE CONTROL (LEFT)
C18	22-1162	.0001 MFD	600V	R11	63-604	.10 MEGOHM ¼ W		8	S9986	TONE CONTROL (RIGHT)
C19	22-887	.001 MFD.	600V	R12	63-1844	VOLUME CONTROL		9	85-171	CHANGEOVER SWITCH

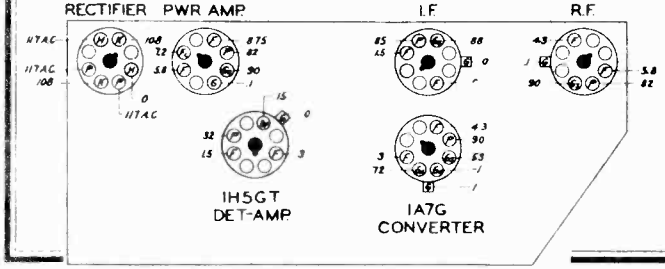
DIAG Nº	PART Nº	DESCRIPTION
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
F		BROADCAST OSC. (NOTE 1)
G		BROADCAST ANT. (GANG)
H	22-1226	BROADCAST DETECTOR
J		BROADCAST PADDER (NOTE 1)
K		SHORT WAVE OSC. (NOTE 1)
M		SHORT WAVE ANT. (NOTE 2)
N		POLICE BAND OSC. (NOTE 1)
Q		POLICE BAND ANT. (NOTE 2)

NOTES: (1) TRIMMERS F, J, K & N ARE MOUNTED ON STRIP #22-1144
(2) TRIMMERS M & Q ARE MOUNTED ON STRIP #22-1230



FOR ALIGNMENT SEE INDEX





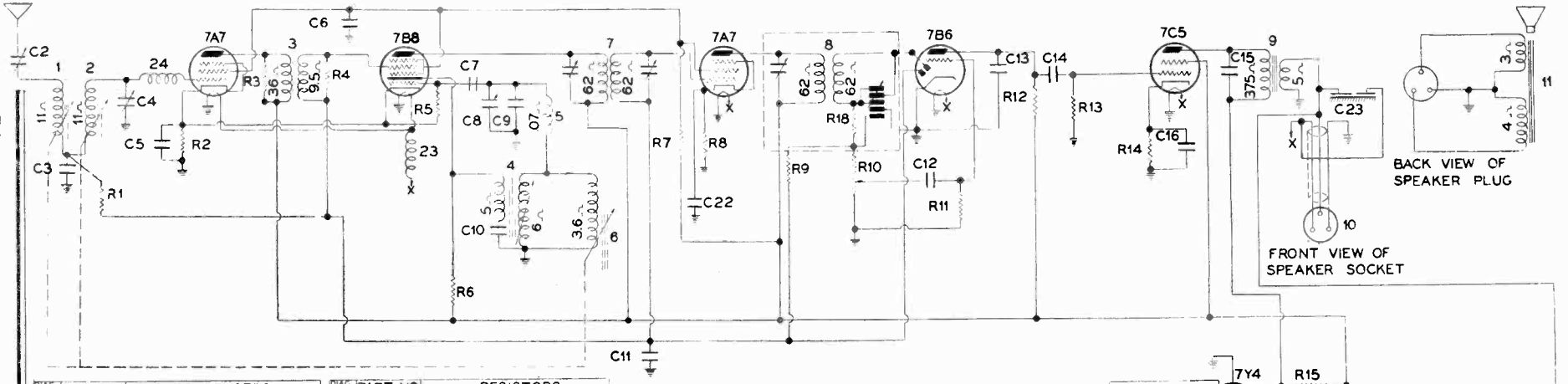
Stage Gains
Bc. and I.F.

Ant. to R.F. grid 6.8× at 1000 Kc.

R.F. grid to conv. grid 3.8× at 1000 Kc.

Conv. grid to I.F. grid 66× at 455 Kc.

Overall audio 425× at .05 watt. 400 cycles.



DIAG NO	PART NO	CONDENSERS
C1	22-1076	LOW REACTOR DUAL 250MMFD
2	22-1249	ANT. TRIM. 6 PLATE 250 MMF.
3	22-1244	004 MFD ±10% MICA
4	22-1236	R.F. TRIM. 3 PLATE 50MMF.
5	22-190	1 MFD. +50% -10% 200V
6	22-170	1 MFD. 50% -10% 400V
7	22-162	100MMF +50% 20% MICA
8	22-1235	OSC. TRIM. 2 PLATE 50 MMF.
9	22-1248	350MMF. 2 1/2 COMPENSATOR
10	22-162	100MMF +50% 20% MICA
11	22-250	05 MFD. +50% -10% 200V
12	22-906	005 MFD. +20% -10% 200V
13	22-182	250MMF. +50% -10% MICA
14	22-1170	01 MFD. ±20% 600V
15	22-1170	01 MFD. ±20% 600V
16		20 MFD 25WV
17	22-1233	10 MFD 300WV
18		20 MFD 350WV
19	22-1247	008 MFD. 20% -10% 1600V
20	22-1238	5 MFD. 50% -10% 120V
21	22-908	15 MFD. +50% -10% 120V
22	22-250	05 MFD. 50% -10% 200V
23	22-1076	LOW REACTOR DUAL 250 MMFD

DIAG NO	PART NO	RESISTORS
R1	63-596	330000 OHMS 1 4W 20%
2	63-265	220 OHMS 1 4W 10%
3	63-645	27000 OHMS 1 4W 10%
4	63-640	33000 OHMS 1 4W 10%
5	63-594	68000 OHMS 1 4W 20%
6	63-1180	15000 OHMS 1 2W 20%
7	63-957	33000 OHMS 1W 10%
8	63-294	100 OHMS 1 4W 10%
9	63-271	1 MEG. 1 4W 20%
10	63-1254	250000 VC TAP AT 75000
11	63-976	15 MEG. 1 4W 20%
12	63-596	330000 OHMS 1 4W 20%
13	63-596	330000 OHMS 1 4W 20%
14	63-941	390 OHMS 1W 10%
15	63-968	1800 OHMS 2W 10%
16	63-1197	82 OHMS 1 2W 20%
17	63-1197	82 OHMS 1 2W 20%
18	63-712	33000 OHMS 1 4W 20%

DIAG NO	PART NO	MISCELLANEOUS
1	S-10064	ANTENNA COIL
2	S-10064	R.F. GRID COIL
3	S-9763	UNTUNED R.F. TRANSFORMER
4	S-10095	OSC. SHUNT COIL
5	20-242	OSC. SERIES COIL
6	S-10033	OSC. TUNING COIL
7	95-8.3	1ST I.F. TRANSFORMER
8	95-820	DIODE TRANSFORMER
9	95-837	OUTPUT TRANSFORMER
10	52-246	SPEAKER CABLE & SOCKET
11	49-477	SPEAKER & PLUG
12	95-832	VIBRATOR POWER TRANSFORMER
13	190-19	VIBRATOR
14	20-213	HASH CHOKE
15	S-5844	MOTOR NOISE CHOKE
16	100-32	DIAL LIGHT #51
17	78-406	FOOT SWITCH SOCKET
18	S-10115	SILENCING & SELECTOR SWITCH
19	S-10115	SAFETY SWITCH-AUTOM SET UP
20	S-10127	SOLENOID
21	136-12	FUSE - 20 AMPS.
22	63-1254	ON-OFF SWITCH ON VOL CONTROL
23	S-9841	HEATER LINE CHOKE
24	S-8819	ANT MOTOR NOISE CHOKE

SENSITIVITY..3 microvolts at 1 watt output

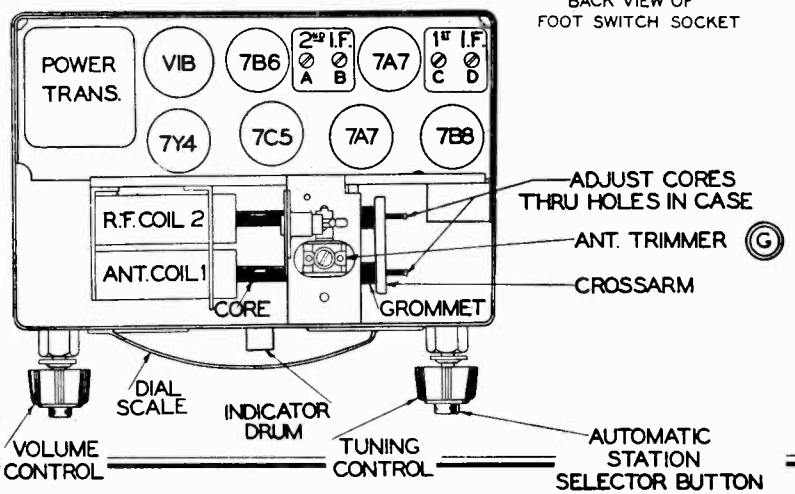
POWER OUTPUT....4.5 watts measured at the voice coil

SPEAKER.....7" Firewall mounting

SCHEMATIC DIAGRAM AND PARTS LIST FOR 1942 WILLYS AMERICAR RECEIVER

CURRENT CONSUMPTION ...7.3 amp

INSTANTANEOUS CURRENT CONSUMPTION DURING AUTOMATIC CHANGE CYCLE.....16.0 amp



ZENITH RADIO CORP.

ZENITH PAGE 13-19 MODEL 6MW693

ZENITH RADIO CORP.

I.F. Alignment Procedure

1—Remove the top and bottom covers from the receiver.

2—Place the receiver in the Manual tuning position and set the pointer at the low frequency end of the dial (540 Kc.).

3—Set the signal generator at 265 Kc.

4—Apply the signal from the generator through a .1 mfd. dummy to the 7B8 converter grid.

5—Adjust trimmers A-B-C and D (Fig. 8) for maximum output. Repeat the operation to assure accurate alignment.

R.F. and Oscillator

1—Set the signal generator at 1640 Kc.

2—Connect the signal generator leads, through the dummy as illustrated in Figure 10, to the antenna receptacle on the receiver.

3—Set the receiver dial at 1640 Kc. (Maximum high frequency end of dial).

4—Screw the cores completely out of the antenna, R.F. and oscillator coils.

5—Set the oscillator trimmer (F—Fig. 9) at 1640 Kc.

6—Peak the R.F. and antenna trimmers (G and H—Fig. 8-9) for maximum output reading.

7—Replace the cores to their approximate original positions in the antenna, R.F. and oscillator coils.

8—Set the generator and the receiver dial at 1200 Kc.

9—Adjust the oscillator core (6—Fig. 9) to scale at 1200 Kc.

10—Adjust the antenna and R.F. cores (1 and 2—Fig. 8) for maximum output reading.

11—Set the signal generator at 600 Kc.

12—"Rock in" the Shunt oscillator core (4—Fig. 9) for maximum output reading. (Same as rocking in the padder condenser on a ganged condenser receiver.)

13—Check receiver at 1200 Kc. for calibration and gain. If the receiver is off scale or weak, repeat operations 9 and 10.

IMPORTANT: When reinstalling the receiver in the car, allow it to operate for approximately 15 minutes to reach normal operating temperature before checking the antenna trimmer alignment on a weak station at approximately 1200 Kc.

Figure 9 shows the approximate voltages as measured with a 1000 ohm per volt meter measured between the socket terminals and the chassis. Volume control set at maximum with no signal.

Battery Voltage — 6.3.

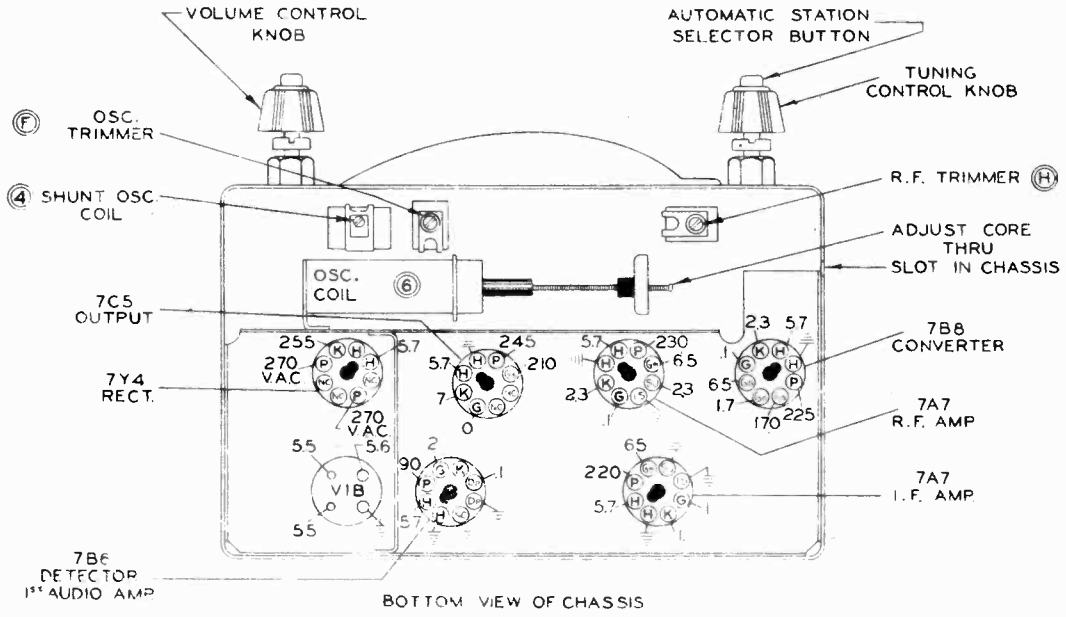
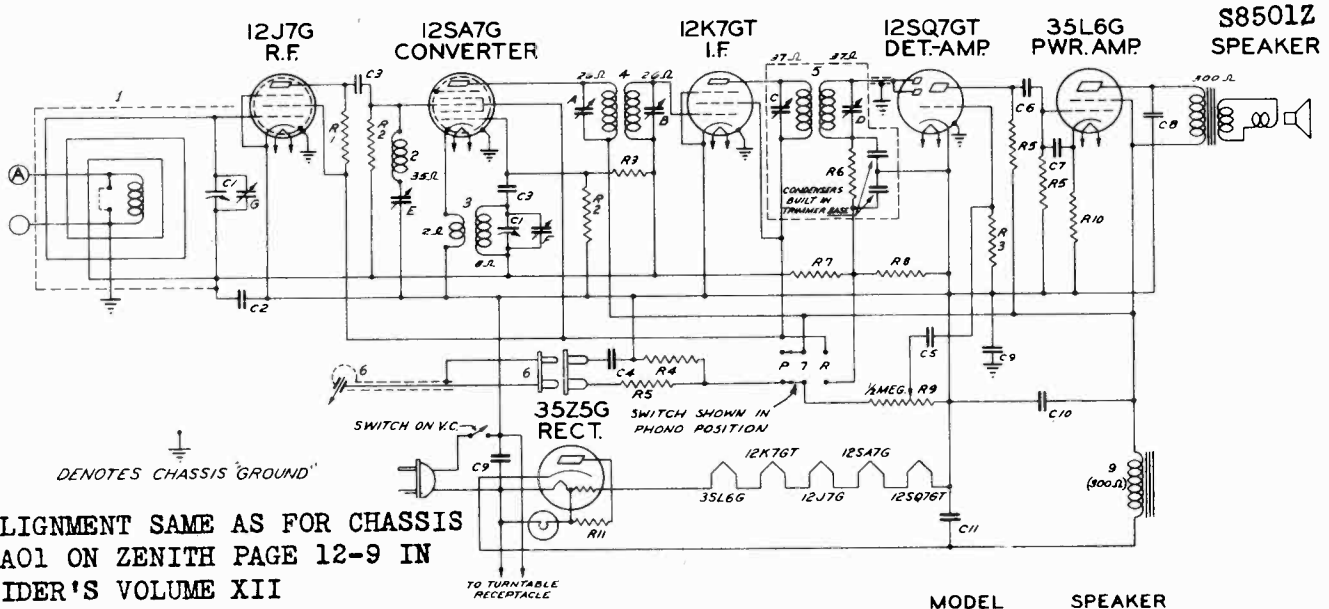


FIG. 9

ZENITH RADIO CORP.

MODELS 6R583, 6R592,
Chassis 6A08
MODELS S8500, S8501,
S8501Z



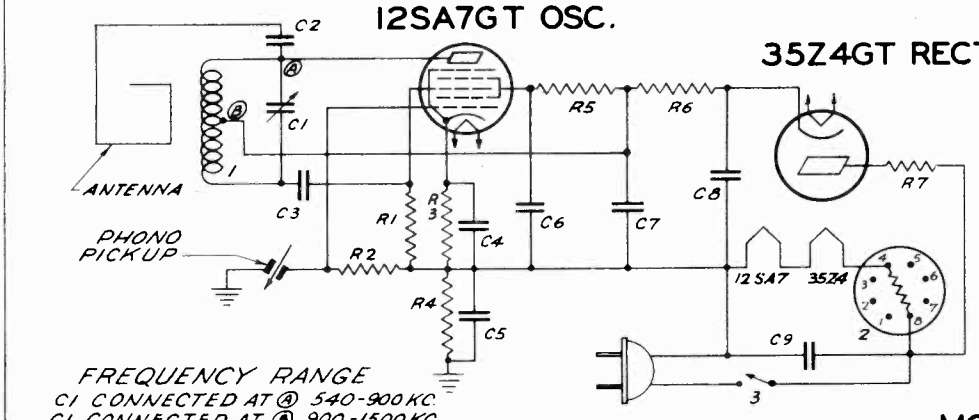
ALIGNMENT SAME AS FOR CHASSIS 6A01 ON ZENITH PAGE 12-9 IN RIDER'S VOLUME XII

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1006	TWO-GANG VARIABLE		R3	63-1093	15 MEGOHM	½ W.	5	95-697	2ND I.F. TRANS.
C2	22-829	.05 MFD.	200 V.	R4	63-715	100 M OHM	½ W.	6	142-31	PICKUP & PLUG
C3	22-162	.0001 MFD.	600 V.	R5	63-719	470 M OHM	½ W.	7	85-240	PHONO-RADIO SWITCH
C4	22-327	.02 MFD.	200 V.	R6	63-719	47 M OHM	½ W.	8	100-67	PILOT LIGHT 6.3 V. .15 A.
C5	22-492	.002 MFD.	600 V.	R7	63-722	2.2 MEGOHM	¼ W.	9	95-713	FILTER CHOKE
C6	22-243	.01 MFD.	400 V.	R8	63-726	10 MEGOHM	¼ W.			
C7	22-854	.0005 MFD.	600 V.	R9	63-1112	VOLUME CONTROL				
C8	22-849	.03 MFD.	400 V.	R10	63-686	150 OHM WIREWOUND	½ W.			
C9	22-1017	.05 MFD.	200 V.	R11	63-1023	22 OHM WIREWOUND	½ W.	A		1ST I.F. TRANS. PRI.
C10	22-1014	20 MFD. ELECTROLYTIC	150 V.					B		1ST I.F. TRANS. SEC.
C11		20 MFD. ELECTROLYTIC	150 V.					C		2ND I.F. TRANS. PRI.
								D		2ND I.F. TRANS. SEC.
				1		WAVE MAGNET ASSEMBLY		E	22-1015	WAVE TRAP
				2	SB326	WAVE TRAP COIL ASSEMBLY		F		BROADCAST OSC. (ON GANG)
R1	63-709	10 M. OHM	½ W.	3	SB336	OSC. COIL ASSEMBLY		G		BROADCAST ANT. (ON GANG)
R2	63-711	22 M OHM	½ W.	4	95-696	1ST I.F. TRANS.				

MODEL 6R583 — SPEAKER 49-403 4"

6RS92

I.F. FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº 6A08 – A.C. PHONO



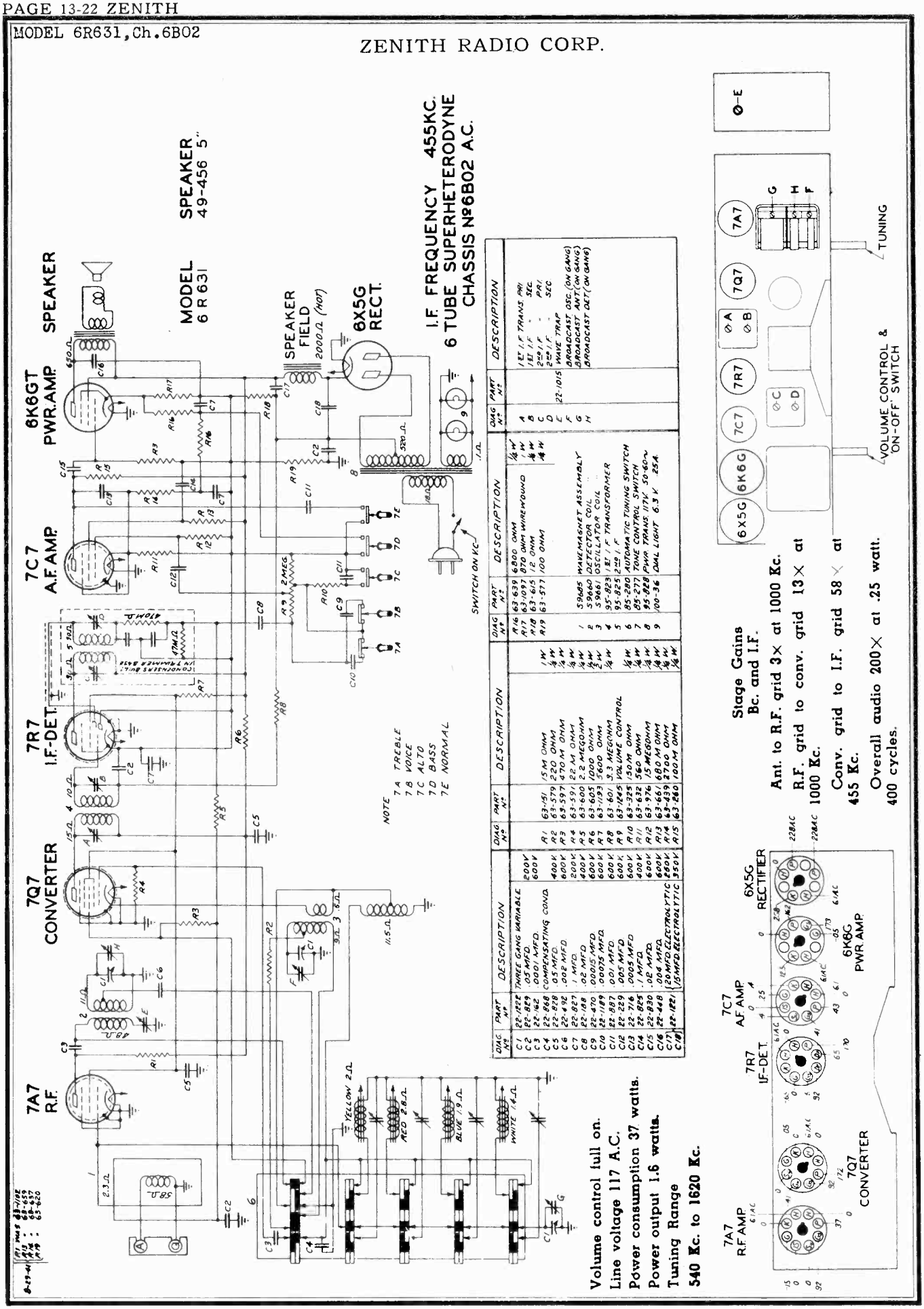
DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-690	TUNING CONDENSER		R3	63-701	470 OHM	½ W.
C2	22-162	.0001 MFD.	600 V.	R4	63-296	220 M OHM	½ W.
C3	22-182	.00025 MFD.	600 V.	R5	63-964	4700 OHM	½ W.
C4	22-829	.05 MFD.	200 V.	R6	63-803	2200 OHM	½ W.
C5	22-827	.1 MFD.	200 V.	R7	63-575	47 OHM	¼ W.
C6	22-243	.01 MFD.	400 V.				
C7	22-876	8 MFD. ELECTROLYTIC	150 V.				
C8		40 MFD. "	150 V.	1	58611	OSC. COIL ASSEM.	
C9	22-828	.05 MFD.	400 V.	2	100-76	BALLAST TUBE	
				3	85-170	A.C. SWITCH	
R1	63-591	22 M OHM	¼ W.				
R2	63-271	1 MEGOHM	¼ W.				

MODELS
S 8500
S 8501
S 8501 Z

PHONOGRAPH OSCILLATOR
ZENITH RADIO CORPORATION
CHICAGO, ILL.

MODEL 6R631, Ch. 6B02

ZENITH RADIO CORP.



DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1222	THREE GANG VARIABLE	200V	R1	63-451	15M OHM		R16	63-639	6800 OHM ¼W
C2	22-859	.03 MFD.	600V	R2	63-579	220 OHM		R17	63-691	870 OHM WIREWOUND ½W
C3	22-962	.0001 MFD.		R3	63-591	22M OHM	½W	R18	63-615	12 OHM ½W
C4	22-868	COMPENSATING COND.	400V	R4	63-597	470M OHM	½W	R19	63-577	100 OHM ½W
C5	22-870	.03 MFD.	600V	R5	63-601	2.2 MEGOHM	½W			
C6	22-892	.002 MFD.	200V	R6	63-605	1000 OHM	½W	1	59685	WAVEMAGNET ASSEMBLY
C7	22-827	.1 MFD.	400V	R7	63-621	3.3 MEGOHM	½W	2	59660	DETECTOR COIL
C8	22-188	.02 MFD.	600V	R8	63-661	5.1 MEGOHM	½W	3	59661	OSCILLATOR COIL
C9	22-470	.0005 MFD.	600V	R9	63-1245	VOLUME CONTROL	½W	4	95-823	1ST I.F. TRANSFORMER
C10	22-1189	.0005 MFD.	600V	R10	63-325	250M OHM	½W	5	95-825	2ND I.F.
C11	22-887	.001 MFD.	600V	R11	63-632	56Ω OHM	½W	6	85-280	AUTOMATIC TUNING SWITCH
C12	22-229	.005 MFD.	400V	R12	63-976	1.5 MEGOHM	½W	7	85-277	TONE CONTROL SWITCH
C13	22-716	.0005 MFD.	600V	R13	63-666	680 M OHM	½W	8	95-858	PWR. TRANS. 117V. 50-60~
C14	22-825	.1 MFD.	400V	R14	63-639	6800 OHM	½W	9	100-36	DIAL LIGHT 6.3 V. .25A
C15	22-830	.02 MFD.	600V	R15	63-680	270 OHM	½W			
C16	22-448	.004 MFD.	600V	R16	63-639	6800 OHM	½W			
C17	22-1221	20 MFD ELECTROLYTIC	450V	R17	63-691	870 OHM	½W			
C18	22-1221	15 MFD ELECTROLYTIC	350V	R18	63-680	270 OHM	½W			

DIAG Nº	PART Nº	DESCRIPTION
A		1ST I.F. TRANS PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
E	22-1015	WAVE TRAP
F		BROADCAST OSC. (ON GANG)
G		BROADCAST ANT. (ON GANG)
H		BROADCAST DET. (ON GANG)

Volume control full on.
Line voltage 117 A.C.
Power consumption 37 watts.
Power output 1.6 watts.
Tuning Range
540 Kc. to 1620 Kc.

Stage Gains
Bc. and I.F.

Ant. to R.F. grid 3× at 1000 Kc.
R.F. grid to conv. grid 13× at 1000 Kc.
Conv. grid to I.F. grid 58 × at 455 Kc.
Overall audio 200× at .25 watt. 400 cycles.

ZENITH RADIO CORP.

MODEL 6R631
MODELS 6S632,6S646,6S656
MODELS 7S681,7S682,7S685

Model 6R631 ALIGNMENT PROCEDURE

Chassis No. 6B02

Operation	Conn. Test Osc. to	Dummy Ant.	Input Sig. Freq.	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 Mfd.	455 Kc.	Manual	600 Kc.	A B C D	Align I.F.
2	R.F. Grid	.5 Mfd.	455 Kc.	Automatic	600 Kc.	E	Adjust Wavetrap for Minimum
3	One Turn Loop Coupled Loosely to Wave Magnet	.5 Mfd.	1600 Kc.	Manual	1600 Kc.	F	Set to Scale
4		.5 Mfd.	1400 Kc.	Manual	1400 Kc.	H. G	Align det. and ant. stage

Models 6S632–6S646–6S656

Chassis No. 6B08

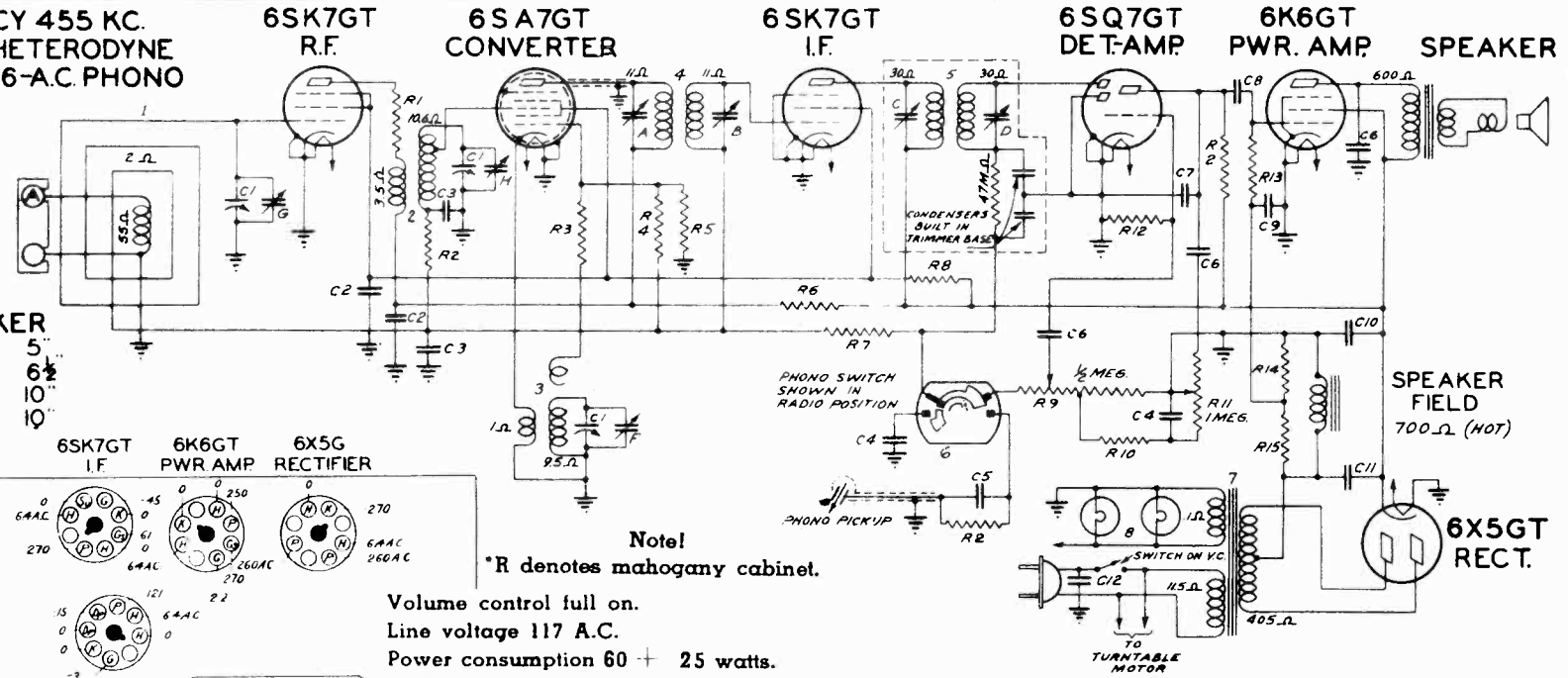
Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	Converter Grid	.5 Mfd.	455 Kc.	Broadcast	600 Kc.	A, B, C, D	I. F. Alignment
2	" "	.5 Mfd.	455 Kc.	Automatic	—	E	Adjust for Minimum
3	Antenna-Gnd.	400 Ohms	18 Mc.	S. W.	18 Mc.	K	Set to Scale
4	" " "	400 Ohms	16 Mc.	S. W.	16 Mc.	M	Align ant.
5	Single Turn Loop Coupled Loosely to Wave Magnet	—	1600 Kc.	Broadcast	1600 Kc.	F	Set to Scale
6		—	1400 Kc.	Broadcast	1400 Kc.	G—H	Align R.F. & Ant.
7	" " "	—	600 Kc.	Broadcast	600 Kc.	J	Rock gang & Adj. padder
8	Recheck 5 and 6						

Models 7S681–7S682–7S685

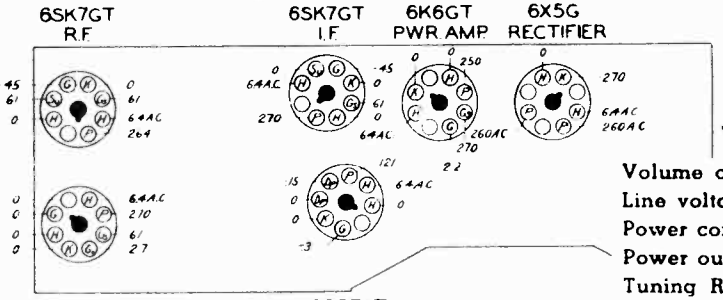
Chassis No. 7B02 Phono.

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	Converter Grid	½ Mfd.	455 Kc.	Broadcast	600 Kc.	A, B, C, D	I. F. Alignment
2	Ant.-Gnd.	400 Ohms	455 Kc.	S.W.	6.5 Mc.	E	Adjust Wavetrap for Minimum
3	"	"	18 Mc.	S. W.	18 Mc.	F	Set to Scale
4	"	"	16 Mc.	S. W.	16 Mc.	M	Align ant.
5	Single Turn Loop Loosely Coupled to Wave Magnet	—	1600 Kc.	Broadcast	1600 Kc.	K	Set to Scale
6		—	1400 Kc.	Broadcast	1400 Kc.	H. G	Align det. and ant. stage
7	"	—	600 Kc.	Broadcast	600 Kc.	J	Rock Gang and Adjust for Max.

I.F. FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº 6B06-A.C. PHONO



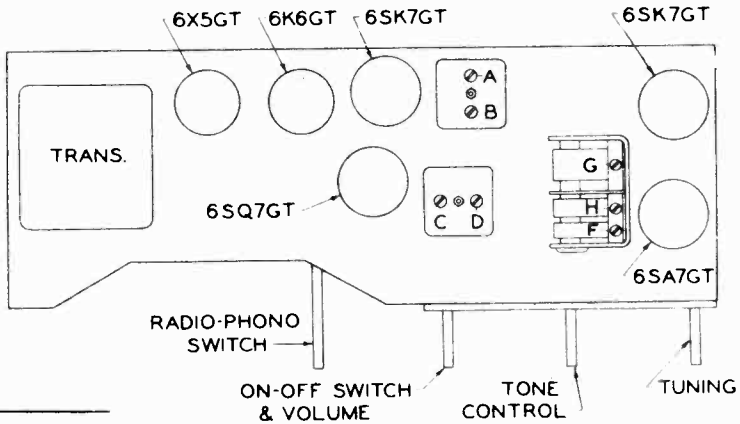
MODEL	SPEAKER	
6 R 683	49-467	5"
6 R 684	49-469	6½"
6 R 687	49-465	10"
6 R 688	49-465	10"



Note!
*R denotes mahogany cabinet.

Volume control full on.
Line voltage 117 A.C.
Power consumption 60 + 25 watts.
Power output 6. watts.
Tuning Range
540 Kc. to 1620 Kc.

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1241	THREE GANG VARIABLE		R3	63-579	220 OHM	½ W	2	59834	DETECTOR COIL ASSEM.
C2	22-828	.05 MFD.	400V	R4	63-673	8.2 MEGOHM	½ W	3	59835	OSCILLATOR "
C3	22-829	.05 MFD.	200V	R5	63-589	10M OHM	¼ W	4	95-841	1ST I.F. TRANSFORMER
C4	22-327	.02 MFD.	200V	R6	63-605	1000 OHM	½ W	5	95-842	2ND I.F. "
C5	22-887	.001 MFD.	600V	R7	63-600	2.2 MEGOHM	½ W.	6	85-297	PHONO-RADIO SWITCH
C6	22-448	.004 MFD.	600V	R8	63-1058	22M OHM	2 W	7	95-840	PWR. TRANS 117V 50-60N
C7	22-854	.0005 MFD.	600V	R9	63-1246	VOLUME CONTROL		8	100-36	DIAL LIGHT 6.3 V .25 A
C8	22-830	.02 MFD.	600V	R10	63-591	22 M OHM	½ W			
C9	22-138	.2 MFD.	200V	R11	63-1247	TONE CONTROL				
C10	22-719	16 MFD ELECTROLYTIC	350V	R12	63-976	15 MEGOHM	½ W			
C11	22-1036	14 MFD. "	450V	R13	63-597	470M OHM	½ W	A		1ST I.F TRANS PRI
C12	22-1041	.005 MFD.	600V	R14	63-655	220 M OHM	¼ W	B		1ST I.F " SEC
				R15	63-656	270 M OHM	¼ W	C		2ND I.F " PRI
								D		2ND I.F " SEC
								F		BROADCAST OSC. (ON GANG)
R1	63-1071	10M OHM	1 W.					G		BROADCAST ANT (ON GANG)
R2	63-896	220M OHM	½ W.	1		WAVEMAGNET		H		BROADCAST DET (ON GANG)



Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I.F.
2	Single Turn Loop Coupled Loosely Wave Magnet	.5 mfd.	1600 Kc.	"	1600 Kc	F	Set Oscillator to Scale
3		.5 mfd.	1400 Kc.	"	1400 Kc.	H, G	Align det. and antenna stage

Ant. to R.F. grid 7 × at 1000 Kc.

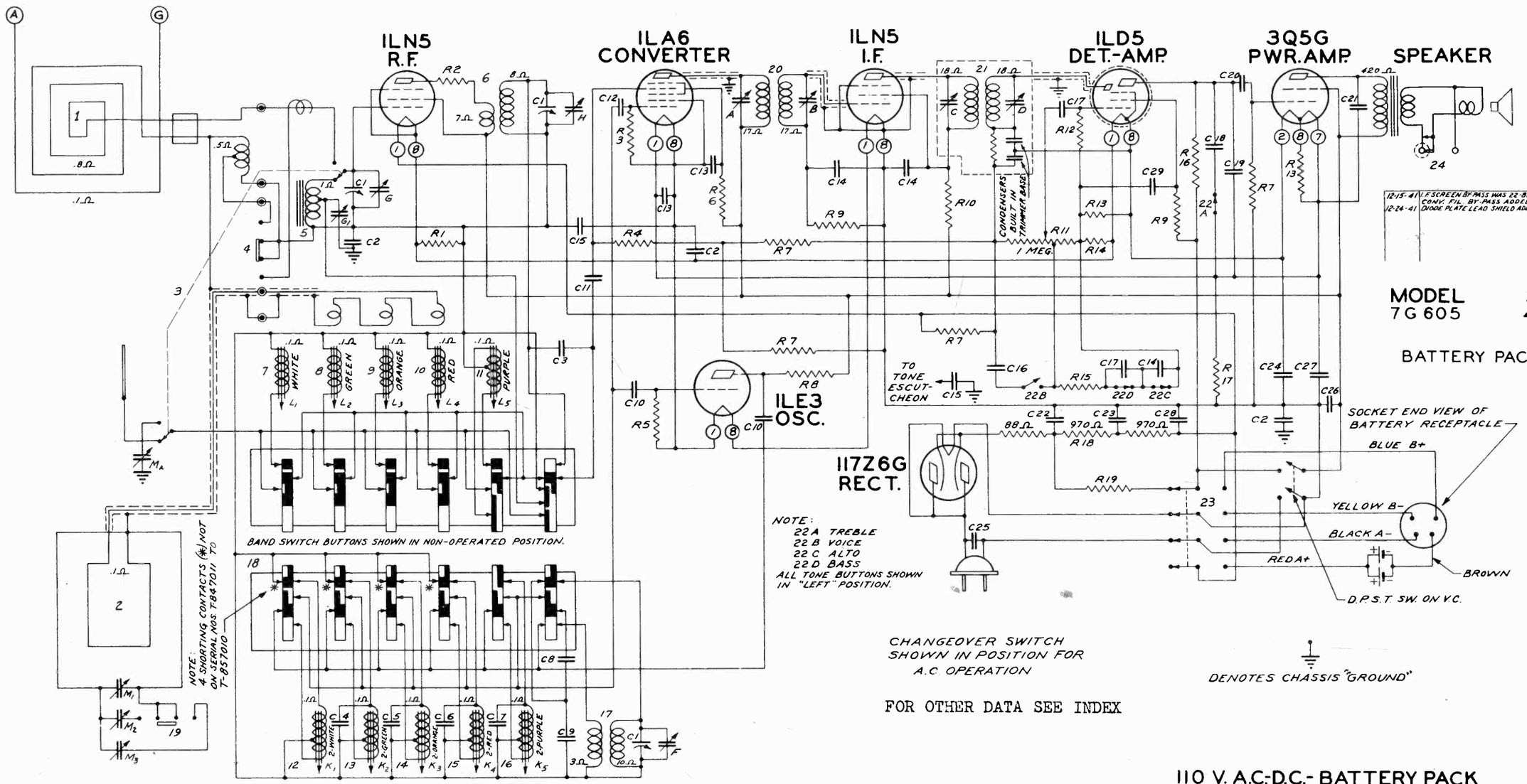
R.F. grid to conv. grid 9 × at 1000 Kc.

Conv. grid to I.F. grid 52 ⁄ at 455 Kc.

Overall audio—630 × at 1 watt, 400 cycles.

ZENITH RADIO CORP.

ZENITH RADIO CORP.



FOR OTHER DATA SEE INDEX

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION	DIAG Nº	PART Nº	DESCRIPTION
C1	22-1308	THREE GANG VARIABLE		C26	22-1282	40MFD. ELECTROLYTIC	150 V.				24	44-17	HEADPHONE JACK
C2	22-827	.1 MFD.	200 V	C27	OR	40MFD. "	25 V.						
C3	22-1130	15 MMFD.	600 V	C28	22-1159	20MFD. "	25 V.	1	S10680	BROADCAST WAVEMAGNET	A		1ST I.F. TRANS. PRI.
C4	22-1312	100 MMFD. COMP.		C29	22-326	.003 MFD.	400 V.	2	S10682	SHORTWAVE WAVEMAGNET	B		1ST I.F. " SEC.
C5	22-1332	200 MMFD. COMP.						3	85-314	ANTENNA POLE SWITCH	C		2ND I.F. TRANS. PRI
C6	22-705	150 MMFD. COMP.						4	85-225	WAVEMAGNET SWITCH	D		2ND I.F. " SEC.
C7	22-702	250 MMFD. COMP.		R1	63-596	330M OHM	½ W.	5	S10670	ANTENNA COIL ASSEM	F		BROADCAST OSC. (ON GANG)
C8	22-1311	75 MMFD. COMP.		R2	63-641	10M OHM	½ W.	6	S10290	DETECTOR COIL ASSEM.	G		BROADCAST ANT. (ON GANG)
C9	22-1310	50 MMFD. COMP.		R3	63-773	180M OHM	¼ W.	7	S10284	6 MC. ANTENNA COIL ASSEM	H		BROADCAST DET. (ON GANG)
C10	22-162	.0001 MFD.	600 V	R4	63-325	150M OHM	½ W.	8	S10289	9 MC. " " "	K1		SHORTWAVE OSC. 6 MC.
C11	22-327	.02 MFD.	200 V	R5	63-648	47M OHM	½ W.	9	S10288	12 MC. " " "	K2		SHORTWAVE OSC. 9 MC.
C12	22-289	50 MMFD.	600 V	R6	63-592	33M OHM	¼ W.	10	S10296	15 MC. " " "	K3		SHORTWAVE OSC. 12 MC.
C13	22-829	.05 MFD.	200 V.	R7	63-600	2.2 MEGOHM	¼ W.	11	S10297	18 MC. " " "	K4		SHORTWAVE OSC. 15 MC.
C14	22-826	.01 MFD.	200 V	R8	63-761	10 M OHM	¼ W.	12	S10281	6MC. OSCILLATOR COIL ASSEM.	K5		SHORTWAVE OSC. 18 MC.
C15	22-1207	.07 MFD.	200 V	R9	63-602	4.7 MEGOHM	¼ W.	13	S10290	9 MC. " " "	L1		SHORTWAVE DET. 6 MC.
C16	22-887	.001 MFD.	600 V	R10	63-583	1000 OHM	¼ W.	14	S10285	12 MC " " "	L2		SHORTWAVE DET. 9 MC.
C17	22-492	.002 MFD.	600 V	R11	63-1265	VOLUME CONTROL		15	S10293	15 MC " " "	L3		SHORTWAVE DET. 12 MC.
C18	22-953	.0002 MFD.	600 V	R12	63-976	15 MEGOHM	½ W.	16	S10294	18 MC. " " "	L4		SHORTWAVE DET. 15 MC.
C19	22-470	.00015 MFD.	600 V	R13	63-580	330 OHM	½ W.	17	S10295	BC. " " "	L5		SHORTWAVE DET. 18 MC.
C20	22-196	.01 MFD.	600 V	R14	63-577	100 OHM	½ W.	18	85-312	AUTOMATIC BAND SWITCH	G1		WAVEROD TRIMMER (SEE NOTE.)
C21	22-448	.004 MFD.	600 V	R15	63-594	68M OHM	½ W.	19	85-322	SHORTWAVE LOOP SWITCH	MA		WAVEROD COMPENSATOR (SEE NOTE)
C22	22-1307	40 MFD ELECTROLYTIC	150 V.	R16	63-271	1 MEGOHM	½ W.	20	95-862	1ST I.F. TRANSFORMER	M1		SHORTWAVE ANT. 19M.
C23	OR	20 MFD. "	150 V.	R17	63-941	390 OHM WIREWOUND	1 W.	21	95-863	2ND I.F. TRANSFORMER	M2		SHORTWAVE ANT. 25M.
C24	22-1330	40 MFD. "	25 V	R18	63-1264	THREE SECTION CANDOHM		22	85-313	TONE CONTROL SWITCH	M3		SHORTWAVE ANT. 31M.
C25	22-869	.05 MFD.	400 V	R19	63-1156	1800 OHM	½ W.	23	85-311	POWER CHANGE-OVER SWITCH	NOTE: TRIMMERS M & MA ARE MOUNTED ON STRIP 22-1230		

110 V. A.C.-D.C.- BATTERY PACK
UNIVERSAL PORTABLE
I.F. FREQUENCY 455KC.
7 TUBE SUPERHETERODYNE
CHASSIS Nº 7B04 6 BAND

Tuning ranges:
540 to 1620 Kc.
6.0 to 6.5 Mc.
9.4 to 9.8 Mc.
11.7 to 11.9 Mc.
15.1 to 15.3 Mc.
17.6 to 18.0 Mc.

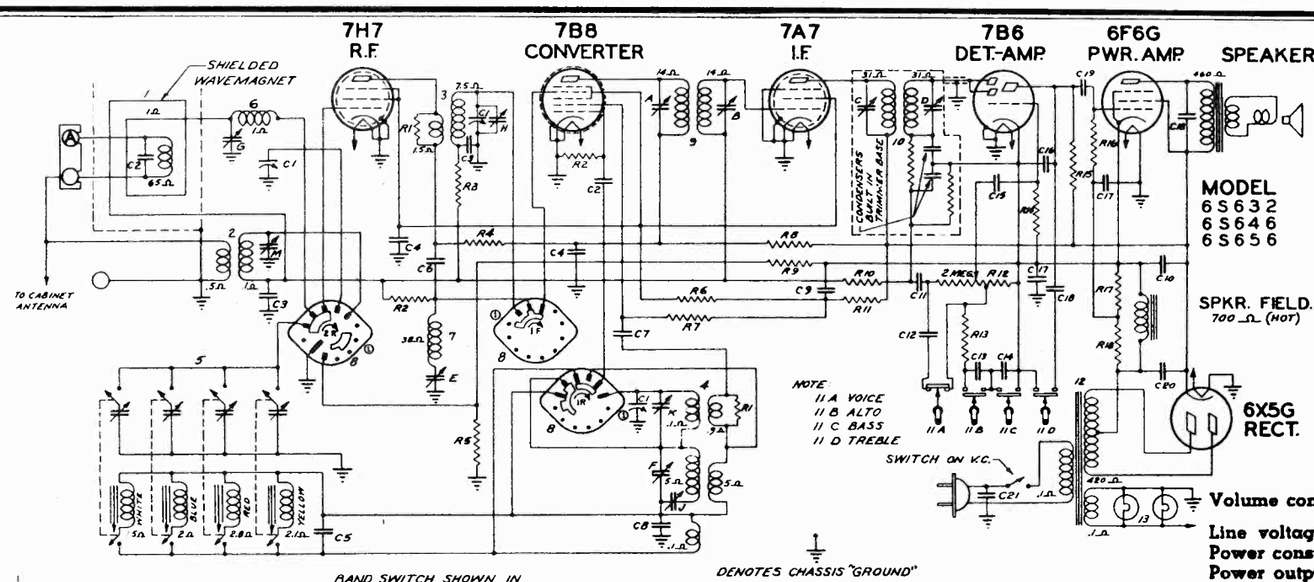
Stage Gains
Bc. and I.F.

Ant. to R.F. grid 5× at 1000 Kc.

R.F. grid to conv. grid 9× at 1000 Kc.

Conv. grid to I.F. grid 66× at 455 Kc.

Overall audio 900× at .05 watt. 400 cycles.



MODEL	SPEAKER
6S632	49-460 .6"
6S646	49-459 .8"
6S656	49-465 10"

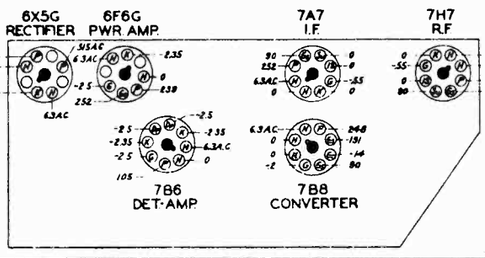
Volume control full on.

Line voltage 117 A.C.
Power consumption 60 watts
Power output 6 watts.

Tuning Range
540 Kc. to 1620 Kc.
5400 Kc. —18300 Kc.

8-29-41 R17 WAS 63-654 & R18 WAS 63-656
5-16-41 C21 ADDED

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1205	THREE GANG VARIABLE		C20	22-1036	14 MFD. ELECTROLYTIC	450V	R16	63-597	470 M OHM	½ W			
C2	22-289	50 MMFD	600V	C21	22-1041	.005 MFD.	600V	R17	63-658	390 M OHM	½ W			
C3	22-829	.05 MFD.	200V					R18	63-660	360 M OHM	½ W			
C4	22-828	.05 MFD.	400V									A		1ST I.F. TRANS. PRI.
C5	22-868	COMPENSATING COND.		R1	63-590	15 M OHM	½ W					B		1ST I.F. - SEC.
C6	22-162	.0001 MFD.	600V	R2	63-593	47 M OHM	½ W					C		2ND I.F. - PRI.
C7	22-182	.00025 MFD.	600V	R3	63-595	100 M OHM	½ W	1		WAVEMAGNET ASSEMBLY		D		2ND I.F. - SEC.
C8	22-1022	.005 MFD.	600V	R4	63-637	4700 OHM	½ W	2	59587	ANTENNA COIL ASSEMBLY		E	22-1015	WAVE TRAP
C9	22-1034	.5 MFD ELECTROLYTIC	450V	R5	63-624	68 OHM	½ W	3	59585	DETECTOR "		F		BROADCAST OSC. (NOTE 1)
C10		15 MFD.	350V	R6	63-957	33 M OHM	1 W	4	59586	OSCILLATOR "		G		BROADCAST ANT. (NOTE 2)
C11	22-186	.02 MFD.	400V	R7	63-650	10 M OHM	½ W	5	59735	AUTOMATIC TUNING "		H		BROADCAST DET. (ON GANG)
C12	22-470	.00015 MFD.	600V	R8	63-583	1000 OHM	½ W	6	59589	LOOP LOADING COIL "		J		BROADCAST PADDER (NOTE 2)
C13	22-826	.01 MFD.	200V	R9	63-1098	42 OHM WIREWOUND	½ W	7	58326	WAVE TRAP COIL ASSEMBLY		K		SHORT WAVE OSC. (NOTE 1)
C14	22-229	.005 MFD.	600V	R10	63-599	1.5 MEGOHM	½ W	8	85-278	BAND SELECTOR SWITCH		M		SHORT WAVE ANT. (NOTE 2)
C15	22-482	.002 MFD.	600V	R11	63-1191	8200 OHM	2 W	9	95-708	1ST I.F. TRANSFORMER				
C16	22-854	.0005 MFD.	600V	R12	63-1123	VOLUME CONTROL		10	95-709	2ND I.F. "		NOTES		(1) TRIMMERS F & K ARE MOUNTED ON STRIP 22-1145
C17	22-827	.1 MFD.	200V	R13	63-592	33 M OHM	½ W	11	59743	TONE CONTROL SW. ASSEM.				(2) TRIMMERS G, J & M ARE MOUNTED ON STRIP 22-1211
C18	22-448	.004 MFD.	600V	R14	63-976	1.5 MEGOHM	½ W	12	95-710	PWR. TRANS. 115 V. 50-60 ~				
C19	22-830	.02 MFD.	600V	R15	63-296	220 M OHM	½ W	13	100-36	DIAL LIGHT 6.3 V. .25 A.				



FOR ALIGNMENT SEE INDEX

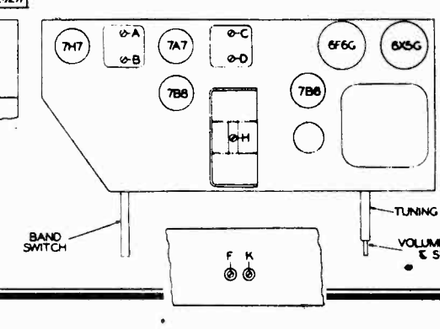
Stage Gains
Bc. and I.F.

Ant. to R.F. grid 4.6× at 1000 Kc.

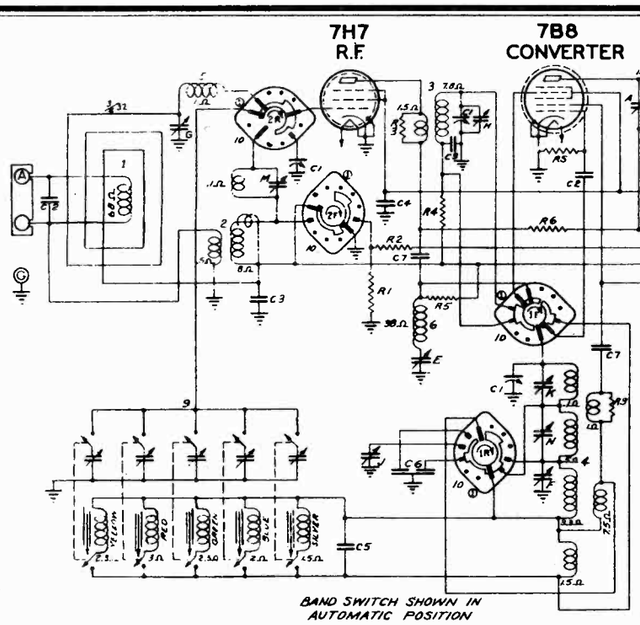
R.F. grid to conv. grid 9.3× at 1000 Kc.

Conv. grid to I.F. grid 75× at 455 Kc.

Overall audio 724× at 1 watt 400 cycles.



I.F. FREQUENCY 455KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº. 6B08 2 BAND A.C.



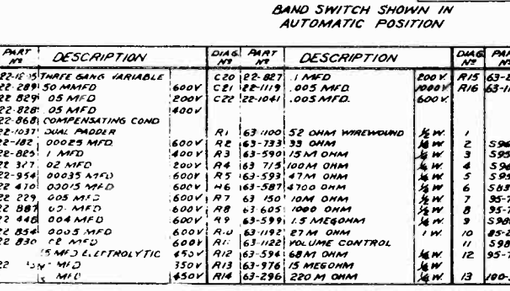
FOR ALIGNMENT SEE INDEX

Tuning ranges— 540 Kc.— 1620 Kc.
1550 Kc.— 5150 Kc.
5800 Kc.—18300 Kc.

MODEL	SPEAKER
7S633	49-460 6"
7S634	49-460 6"
7S657	49-457 12"
7S633R	49-505 6"
7S634R	49-505 6"
7S657R	49-397 12"

I.F. FREQUENCY 455KC.
7 TUBE SUPERHETERODYNE
CHASSIS Nº 7B01 & 7B01R 3 BAND A.C.

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1015	THREE GANG VARIABLE		C20	22-827	.1 MFD.	200 V.	R15	63-237	1 MEGOHM	½ W	14	95-882	PWR. TRANS. 115 V. 50-60 ~ (7B01 R)
C2	22-289	50 MMFD.	600V	C21	22-1119	.005 MFD.	1000 V.	R16	63-1191	8200 OHM	2 W			
C3	22-829	.05 MFD.	200V	C22	22-1041	.005 MFD.	600 V.					A		1ST I.F. TRANS. PRI.
C4	22-828	.05 MFD.	400V									B		1ST I.F. - SEC.
C5	22-868	COMPENSATING COND.										C		2ND I.F. - PRI.
C6	22-1037	DUAL PADDER		R1	63-1100	52 OHM WIREWOUND	½ W	1		WAVE MAGNET ASSEMBLY		D		2ND I.F. - SEC.
C7	22-182	.00025 MFD.	600V	R2	63-733	33 OHM	½ W	2	59657	ANTENNA COIL "		E	22-1015	WAVE TRAP
C8	22-825	.1 MFD.	400V	R3	63-5901	1.5 M OHM	½ W	3	59585	DETECTOR COIL "		F		BROADCAST OSC. (NOTE 1)
C9	22-317	.02 MFD.	200V	R4	63-713	100 M OHM	½ W	4	59658	OSCILLATOR COIL "		G		BROADCAST ANT. (NOTE 2)
C10	22-954	.00035 MFD.	600V	R5	63-593	47 M OHM	½ W	5	59589	LOOP LOADING COIL "		H		BROADCAST DET. (ON GANG)
C11	22-430	.0015 MFD.	600V	R6	63-5871	4700 OHM	½ W	6	58326	WAVE TRAP COIL ASSEMBLY		J		BROADCAST PADDER (NOTE 2)
C12	22-229	.005 MFD.	600V	R7	63-650	10 M OHM	½ W	7	95-706	1ST I.F. TRANSFORMER		K		SHORT WAVE OSC. (NOTE 1)
C13	22-883	.02 MFD.	600V	R8	63-605	1000 OHM	½ W	8	95-709	2ND I.F. "		M		SHORT WAVE ANT. (NOTE 2)
C14	22-448	.004 MFD.	600V	R9	63-599	1.5 MEGOHM	½ W	9	59808	AUTOMATIC TUNING "		N		POLICE BAND OSC. (NOTE 1)
C15	22-854	.0005 MFD.	600V	R10	63-1192	27 M OHM	1 W	10	85-279	BAND SELECTOR SWITCH "		NOTES		(1) TRIMMERS F, K & N ARE MOUNTED ON STRIP 22-1145
C16	22-830	.02 MFD.	600V	R11	63-1122	VOLUME CONTROL		11	59805	TONE CONTROL SWITCH ASSEM.				(2) TRIMMERS G, J & M ARE MOUNTED ON STRIP 22-1211
C17		15 MFD. ELECTROLYTIC	450V	R12	63-594	68 M OHM	½ W	12	95-710	PWR. TRANS. 115 V. 50-60 ~ (7B01)				
C18	22-[illegible]	.1 MFD.	350V	R13	63-976	1.5 MEGOHM	½ W							
C19		.1 MFD.	450V	R14	63-296	220 M OHM	½ W	13	100-36	DIAL LIGHT 6.3 V. .25 A.				



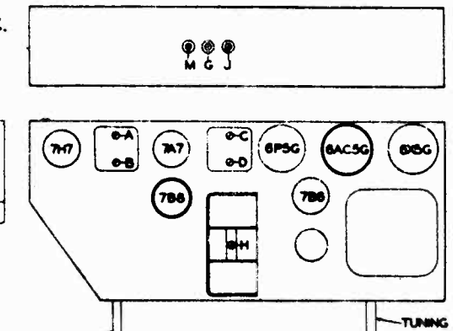
Stage Gains
Bc. and I.F.

Ant. to R.F. grid 6.3× at 1000 Kc.

R.F. grid to conv. grid 6.1× at 1000 Kc.

Conv. grid to I.F. grid 80× at 455 Kc.

Overall audio 646× at 1 watt. 400 cycles.



*R denotes change in 7B01 Chassis of loading coil, speaker and power transformer.

S9589 L.C. to S-8474.
49-460 Speaker to 49-505.
49-457 Speaker to 49-397.
95-710 Power Trans. to 95-882.

Line voltage 117 A.C.
Power consumption 85 watts.
Power output—6 watts.

ZENITH RADIO CORP.

CHASSIS 7B01,7B01R
CHASSIS 8B01
CHASSIS 10B1,10B2

CHASSIS 7B01, 7B01R ALIGNMENT PROCEDURE

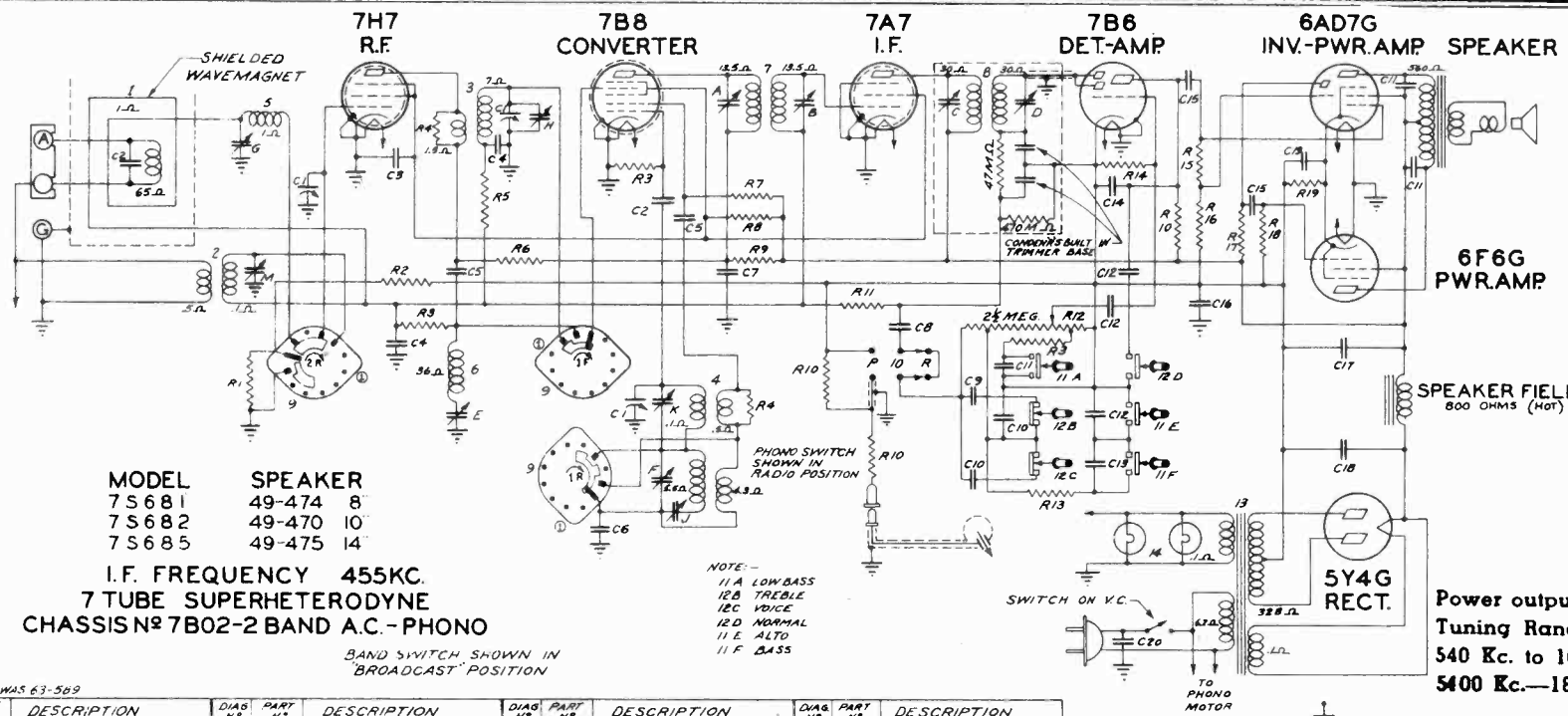
Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	Converter Grid	½ Mfd.	455 Kc.	Broadcast	600 Kc.	A, B, C, D	I. F. Alignment
2	R.F. Grid	½ Mfd.	455 Kc.	Automatic	600 Kc.	E	Adj. for Minimum
3	Ant.-Gnd.	400 Ohms	18 Mc.	S. W.	18 Mc.	K	Set Oscillator to Scale
4	"	"	16 Mc.	S.W.	16 Mc.	M	Alignment of Antenna
5	"	"	4.5 Mc.	Police	4.5 Mc.	N	Rock Gang and Adjust for Max.
6	Single Turn Loop Coupled Loosely to Wave Magnet	—	1600 Kc.	Broadcast	1600 Kc.	F	Set Oscillator to Scale
7		—	1400 Kc.	Broadcast	1400 Kc.	H. G	Align R.F. & Ant.
8	"	—	600 Kc.	Broadcast	600 Kc.	J	Rock Gang and Adjust for Max.

CHASSIS 8B01 ALIGNMENT PROCEDURE

Operation	Conn. Test Osc. to	Dummy Ant.	Input Sig. Freq.	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 Mfd.	455 Kc.	B.C.	1600 Kc.	A B C D	Align I.F.
2	Ant.-Gnd. with 10 ohm shunt	400 Ohms	455 Kc.	Police	1700 Kc.	E	Adjust for Minimum
3	"	"	18 Mc.	S.W.	18 Mc.	K	Set to Scale
4	"	"	16 Mc.	S.W.	16 Mc.	M	Align ant.
5	"	"	4.5 Mc.	Police	4.5 Mc.	N	Set to Scale
6	"	"	4.5 Mc.	Police	4.5 Mc.	Q	Align ant.
7	Single Turn Loop Loosely Coupled to Wave Magnet	—	1500 Kc.	B.C.	1500 Kc.	F	Set to Scale
8		—	1400 Kc.	B.C.	1400 Kc.	G-H	Align R.F. Align ant.
9	"	—	600 Kc.	B.C.	600 Kc.	J	Rock Gang and Adj. Padder
10	Rpt. 7 & 8						

CHASSIS 10B1,10B2 ALIGNMENT PROCEDURE

Operation	Conn. Test Osc. to	Dummy Ant.	Input Sig. Freq	Set Dial At	Band	Trimmers	Purpose
1	Converter Grid	.5 Mfd.	455 Kc.	B.C.	600 Kc.	A B C D	Align I.F.
2	Ant.-Gnd. with 10 ohm shunt	400 ohms	455 Kc.	POL.	1700 Kc.	E	Adjust for Minimum
3	"		18 Mc.	S.W	18 Mc.	K	Set to Scale
4	"	"	16 Mc.	S.W	16 Mc.	M	Align ant.
5	"	"	4.5 Mc.	POL.	4.5 Mc.		Set to Scale
6	"	"	4.5 Mc.	POL.	4.5 Mc.	Q	Align ant.
7	Single Turn Loop Loosely Coupled to Wave Magnet	—	1500 Kc.	B.C.	1500 Kc.	F	Set to Scale
8		—	1400 Kc.	B.C.	1400 Kc.	G—H	Align R.F. Det.
9	"	—	600 Kc.	B.C.	600 Kc.	J	Rock Gang and Adj. Padder
10	"	—	1500 Kc.	B.C.	1500 Kc.	F—G—H	Rpt. 7 & 8



MODEL	SPEAKER	
7S681	49-474	8
7S682	49-470	10
7S685	49-475	14

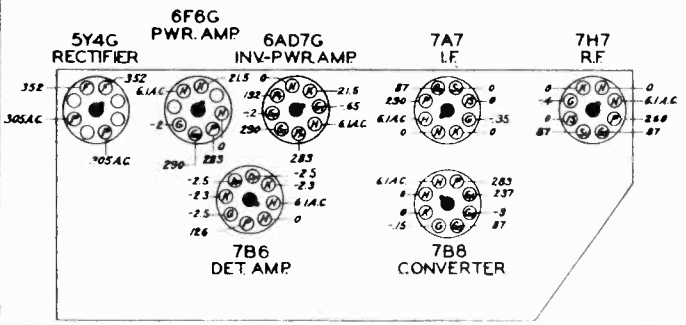
I.F. FREQUENCY 455KC.
7 TUBE SUPERHETERODYNE
CHASSIS Nº 7B02-2 BAND A.C.-PHONO

NOTE:—
11A LOW BASS
12B TREBLE
12C VOICE
12D NORMAL
11E ALTO
11F BASS

Power output 8.4 watts.
Tuning Range
540 Kc. to 1620 Kc.
5400 Kc.—18300 Kc.

8-19-41 R7 WAS 63-589

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1205	THREE GANG VARIABLE		C20	22-1041	.005 MFD.	600 V	R17	63-772	150M OHM	½W	14	100-36	DIAL LIGHT 6.3V. .25A.
C2	22-289	50 MMFD.	600 V					R18	63-659	470M OHM	½W			
C3	22-828	.05 MFD.	400 V					R19	63-1174	420 OHM WIREWOUND	1W	A		1ST I.F. TRANS. PRI.
C4	22-829	.05 MFD.	200 V	R1	63-1020	68 OHM WIREWOUND	½W					B		1ST I.F. " SEC.
C5	22-182	.00025 MFD.	600 V	R2	63-1098	32 OHM WIREWOUND	½W					C		2ND I.F. " PRI.
C6	22-1022	.005 MFD.	600 V	R3	63-493	.47M OHM	½W					D		2ND I.F. " SEC.
C7	22-825	.1 MFD.	400 V	R4	63-590	.15M OHM	½W	1		WAVEMAGNET ASSEMBLY		E	22-1015	WAVE TRAP
C8	22-827	.02 MFD.	200 V	R5	63-595	100M OHM	½W	2	59587	ANTENNA COIL		F		BROADCAST OSC. (NOTE 1)
C9	22-954	.00035 MFD.	600 V	R6	63-587	4700 OHM	½W	3	59585	DETECTOR		G		BROADCAST ANT. (NOTE 2)
C10	22-470	.00015 MFD.	600 V	R7	63-604	2.2M OHM	½W	4	59659	OSCILLATOR		H		BROADCAST DET. (ON SAN 6)
C11	22-229	.005 MFD.	600 V	R8	63-1094	47M OHM	1W	5	59589	LOOP LOADING COIL		J		BROADCAST PADDER (NOTE 2)
C12	22-448	.004 MFD.	600 V	R9	63-605	1000 OHM	½W	6	58326	WAVE TRAP COIL ASSEMBLY		K		SHORT WAVE OSC. (NOTE 1)
C13	22-492	.002 MFD.	600 V	R10	63-296	.220M OHM	½W	7	95-708	1ST I.F. TRANSFORMER		M		SHORT WAVE ANT. (NOTE 2)
C14	22-854	.0005 MFD.	600 V	R11	63-599	1.5 MEGOHM	½W	8	95-824	2ND I.F. "				
C15	22-196	.01 MFD.	600 V	R12	63-1122	VOLUME CONTROL		9	85-291	BAND SELECTOR SWITCH				
C16	22-827	.1 MFD.	200 V	R13	63-598	68M OHM	½W	10	85-171	PHONO-RADIO SWITCH				NOTES: (1) TRIMMERS F & K ARE MOUNTED ON STRIP 22-1145
C17		20 MFD. ELECTROLYTIC	450 V	R14	63-976	1.5 MEGOHM	½W	11	59803	T.C. SWITCH ASSEM. (LEFT)				
C18	22-1187	20 MFD. "	450 V	R15	63-657	330 M OHM	½W	12	59802	T.C. SWITCH ASSEM. (RIGHT)				(2) TRIMMERS G, J & M ARE MOUNTED ON STRIP 22-1211
C19		40 MFD. "	35 V	R16	63-652	120M OHM	½W	13	95-756	PWR. TRANS. 117V. 50-60 ~				



Volume control full on.
Line voltage 117 A.C.
Power consumption 80+30 watts.

Stage Gains
Bc. and I.F.

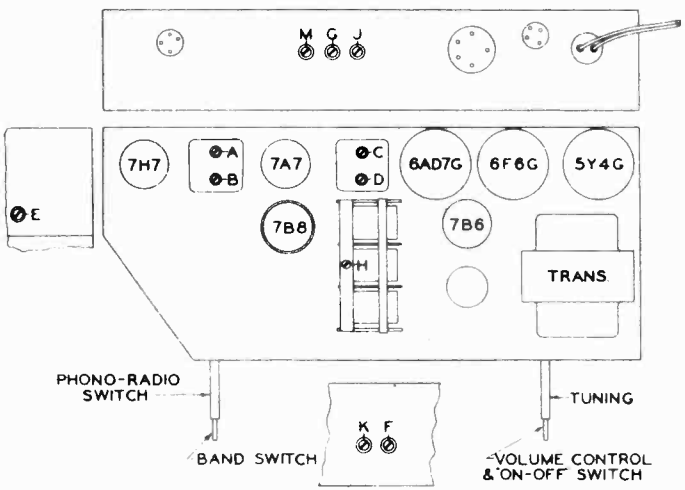
Ant. to R.F. grid 7.1× at 1000 Kc.

R.F. grid to conv. grid 5.6× at 1000 Kc.

Conv. grid to I.F. grid 73× at 455 Kc.

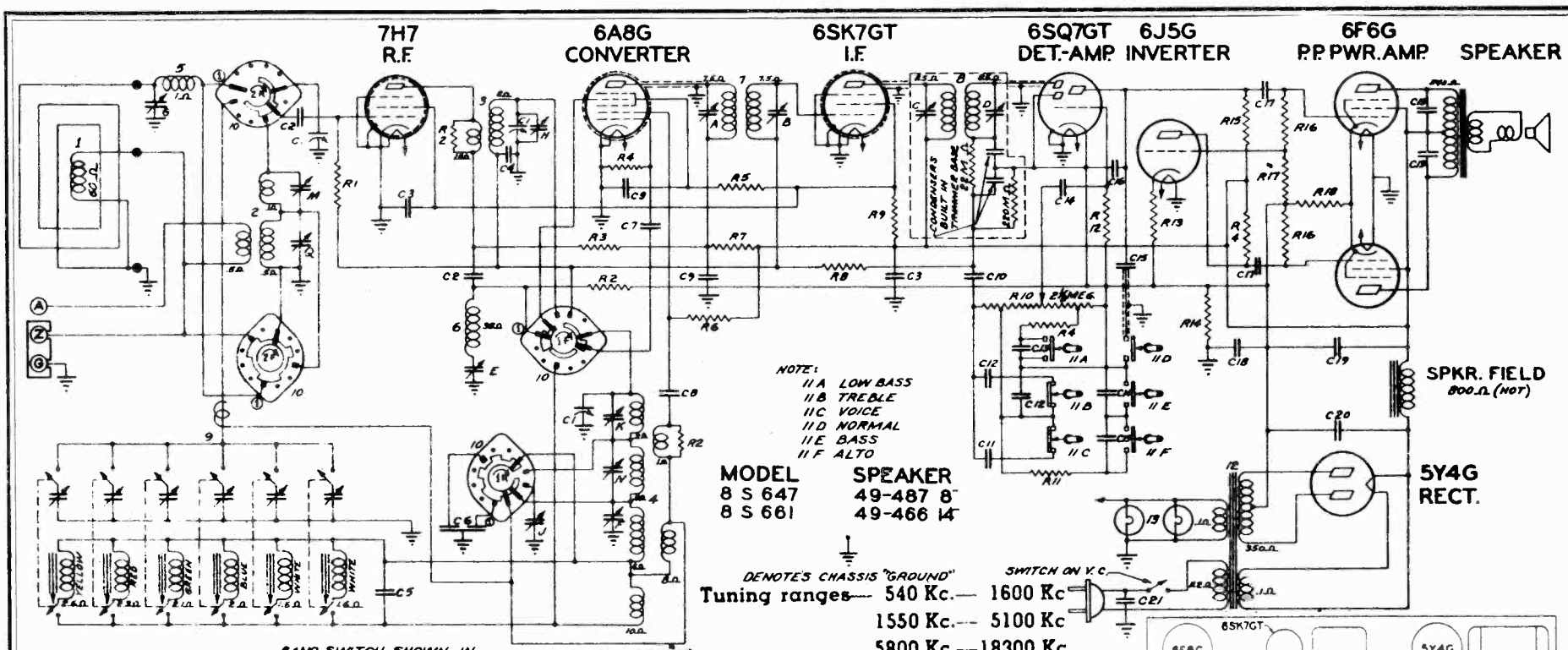
Overall audio 1600× at 1 watt 400 cycles.

DENOTES CHASSIS "GROUND"



FOR ALIGNMENT
SEE INDEX

ZENITH RADIO CORP.



ZENITH RADIO CORP.

MODELS 8S647, 8S661 Chassis 8B01

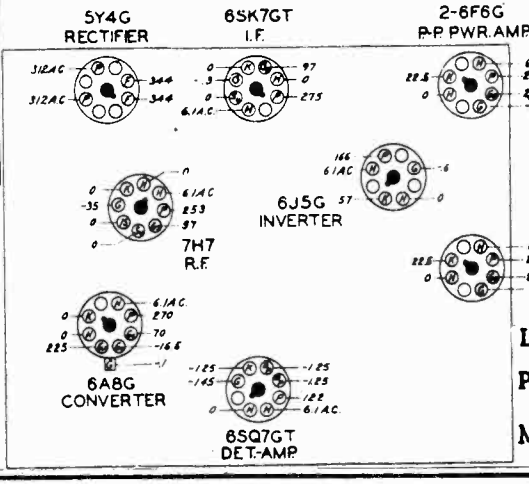
I.F. FREQUENCY 455KC. 8 TUBE SUPERHETERODYNE CHASSIS Nº 8B01 3 BAND A.C

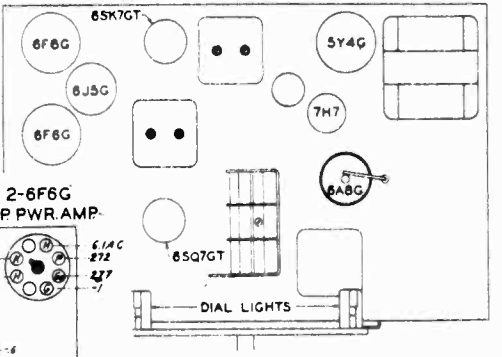
8-19-41 R6 WAS 63-796

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-1218	THREE GANG VARIABLE		C21	22-1041	.005 MFD	600V
C2	22-716	.0005 MFD.	600V				
C3	22-828	.05 MFD.	400V				
C4	22-829	.05 MFD.	200V				
C5	22-868	COMPENSATING COND.		R1	63-600	2.2 MEGOHM	½W
C6	22-930	DUAL PADDER		R2	63-590	.15M OHM	½W
C7	22-127	.25 MMFD.	600V	R3	63-587	4700 OHM	½W
C8	22-182	.00025 MFD.	600V	R4	63-593	47M OHM	½W
C9	22-825	.1 MFD.	400V	R5	63-643	1.8M OHM	½W
C10	22-327	.02 MFD.	200V	R6	63-609	22M OHM	½W
C11	22-289	50 MMFD.	600V	R7	63-605	1000 OHM	½W
C12	22-470	.00015 MFD.	600V	R8	63-271	1 MEGOHM	½W
C13	22-229	.005 MFD.	600V	R9	63-1169	39M OHM	1W
C14	22-492	.002 MFD.	600V	R10	63-1075	VOLUME CONTROL	
C15	22-445	.004 MFD.	600V	R11	63-714	68M OHM	½W
C16	22-854	.0005 MFD.	600V	R12	63-976	.15 MEGOHM	½W
C17	22-171	.05 MFD.	600V	R13	63-585	2200 OHM	½W
C18	22-827	.1 MFD.	200V	R14	63-1100	52 OHM WIREWOUND	½W
C19	22-1108	20 MFD. ELECTROLYTIC	450V	R15	63-298	220M OHM	½W
C20		20 MFD. -	450V	R16	63-657	330M OHM	½W

DIAG. Nº	PART Nº	DESCRIPTION	
R17	63-648	47M OHM	½W
R18	63-1195	470 OHM WIREWOUND	½W
1		WAVEMAGNET ASSEMBLY	
2	59695	ANTENNA COIL	
3	59698	DETECTOR COIL	
4	59696	OSCILLATOR COIL	
5	59589	LOOP LOADING COIL	
6	58926	WAVETRAP COIL ASSEMBLY	
7	95-826	1ST I.F. TRANSFORMER	
8	95-827	2ND I.F.	
9	59926	AUTOMATIC TUNING ASSEM.	
10	85294	BAND SELECTOR SWITCH	
11	59911	TONE CONTROL	
12	95-756	PWR. TRANS. 117K 50-60~	
13	100-36	DIAL LIGHT 6.3V. .25A.	

DIAG. Nº	PART Nº	DESCRIPTION
A		1ST I.F. TRANS. PRI.
B		1ST I.F. - SEC.
C		2ND I.F. - PRI.
D		2ND I.F. - SEC.
E	22-1015	WAVETRAP
F		BROADCAST OSC. (NOTE 1)
G	22-1226	BROADCAST ANT.
H		BROADCAST DET. (5th GANG)
J	22-1227	BROADCAST PADDER
K		SHORT WAVE OSC. (NOTE 1)
M		SHORT WAVE ANT. (NOTE 2)
N		POLICE BAND OSC. (NOTE 1)
Q		POLICE BAND ANT. (NOTE 2)
	NOTES	(1) TRIMMERS F, K & N ARE MOUNTED ON STRIP 22-850
		(2) TRIMMERS M & Q ARE MOUNTED ON STRIP 22-850





FOR ALIGNMENT SEE INDEX

Line voltage 117 A.C.

Power consumption—75 watts.

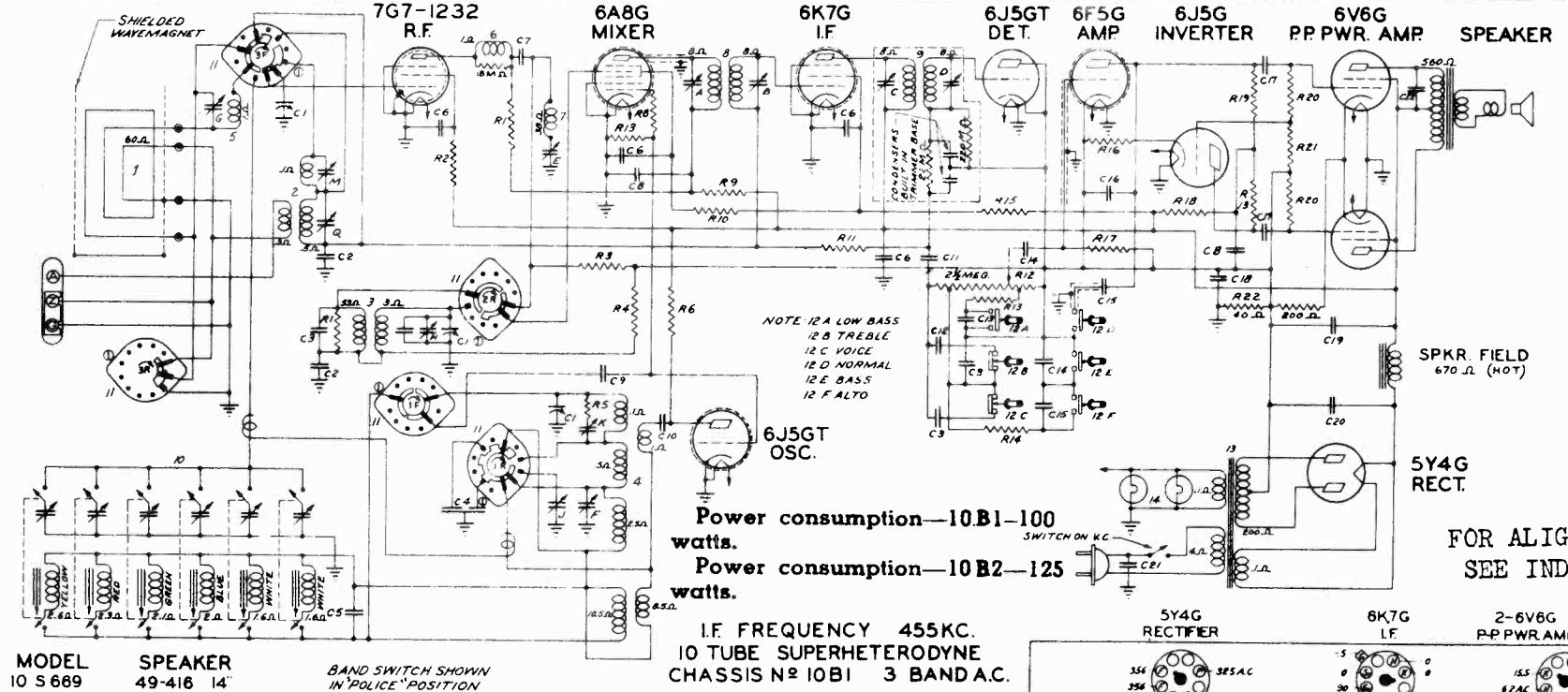
Max. power output—8 watts.

Ant. to R.F. grid— 5× at 1000 Kc.

R.F. grid to conv. grid— 8× at 1000 Kc.

Conv. grid to I.F. grid—52× at 455 Kc.

Overall audio—1236× at 1 watt 400 cycles.



Power consumption—10B1—100 watts.

Power consumption—10B2—125 watts.

I.F. FREQUENCY 455KC.
10 TUBE SUPERHETERODYNE
CHASSIS Nº 10B1 3 BAND A.C.

MODEL 10 S 669 — SPEAKER 49-416 14"

BAND SWITCH SHOWN IN "POLICE" POSITION

FOR ALIGNMENT SEE INDEX

Tuning ranges

540 Kc.— 1600 Kc.
1500 Kc.— 5200 Kc.
5700 Kc.—18300 Kc.

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-1232	THREE GANG VARIABLE					
C2	22-829	.05 MFD.	200 V.				
C3	22-470	.00015 MFD.	600 V.	R1	63-587	4700 OHM	½ W.
C4	22-1039	DUAL PADDER		R2	63-595	100 M OHM	½ W.
C5	22-868	COMPENSATING COND.		R3	63-590	15 M OHM	½ W.
C6	22-828	.05 MFD.	400 V.	R4	63-589	10 M OHM	½ W.
C7	22-147	.0005 MFD.	600 V.	R5	63-576	68 OHM	½ W.
C8	22-825	.1 MFD.	400 V.	R6	63-151	15 M OHM	1 W.
C9	22-127	25 MMFD.	600 V.				
C10	22-182	.00025 MFD.	600 V.	R8	63-581	470 OHM	½ W.
C11	22-327	.02 MFD.	200 V.	R9	63-605	1000 OHM	½ W.
C12	22-954	.00035 MFD.	600 V.	R10	63-643	1.8 M OHM	½ W.
C13	22-229	.005 MFD.	600 V.	R11	63-271	1 MEGOHM	½ W.
C14	22-492	.002 MFD.	600 V.	R12	63-1075	VOLUME CONTROL	
C15	22-468	.004 MFD.	600 V.	R13	63-593	47 M OHM	½ W.
C16	22-854	.0005 MFD.	600 V.	R14	63-714	68 M OHM	½ W.
C17	22-171	.05 MFD.	600 V.	R15	63-1159	39 M OHM	1 W.
C18	22-827	.1 MFD.	200 V.	R16	63-585	2200 OHM	½ W.
C19	22-1108	(20 MFD ELECTROLYTIC	450 V.	R17	63-976	.15 MEGOHM	½ W.
C20		(20 MFD.	450 V.	R18	63-594	68 M OHM	½ W.
C21	28-1041	.005 MFD.	600 V.	R19	63-598	820 M OHM	½ W.
C22	22-669	.01 MFD.	600 V.	R20	63-657	330 M OHM	½ W.

DIAG. Nº	PART Nº	DESCRIPTION	
R21	63-648	47 M OHM	½ W.
R22	63-1048	TWO SECTION CANDOHM	
1		WAVEMAGNET ASSEMBLY	
2	59747	ANTENNA COIL	
3	58436	DETECTOR COIL	
4	59748	OSCILLATOR COIL	
5	59589	LOOP LOADING COIL	
6	59622	COIL & RES. ASSEMBLY	
7	58326	WAVE TRAP	
8	95-625	1ST I.F. TRANSFORMER	
9	95-844	2ND I.F.	
10	59826	AUTOMATIC TUNING ASSEM.	
11	95-296	BAND SELECTOR SWITCH	
12	5991	TONE CONTROL	
13	95-893	PWR. TRANS. 117V. 50-60~	
14	100-36	DIAL LIGHT 6.3 V. .25 A	

DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-1189	.00075 MFD.	600 V.
1	69-90 / 64-81	AUTOMATIC CHANGER / RECORD CHANGER	50~ / 50~
2	42-46	PICKUP CARTRIDGE	
3	58-85	A.C. PLUG	
4	85-303	PHONO RADIO SW.	

DIAG. Nº	PART Nº	DESCRIPTION
A		1ST I.F. TRANS. PRI.
B		1ST I.F. - SEC.
C		2ND I.F. - PRI.
D		2ND I.F. - SEC.
E	22-1015	WAVE TRAP
F		BROADCAST OSC. (NOTE 1)
G	22-1226	BROADCAST ANTENNA
H		BROADCAST DET. (ON GANG)
J	22-1227	BROADCAST PADDER
K		SHORTWAVE OSC. (NOTE 1)
M		SHORTWAVE ANT. (NOTE 2)
Q		POLICE BAND ANT. (NOTE 2)

NOTES:
(1) TRIMMERS F & K ARE MOUNTED ON STRIP 22-1301
(2) TRIMMERS M & Q ARE MOUNTED ON STRIP 22-1045

9-2-41 OSC. GRID LEAK WAS 63-591
6-19-41 22-1301 WAS 22-850

Ant. to R.F. grid—3.7× at 1000 Kc.

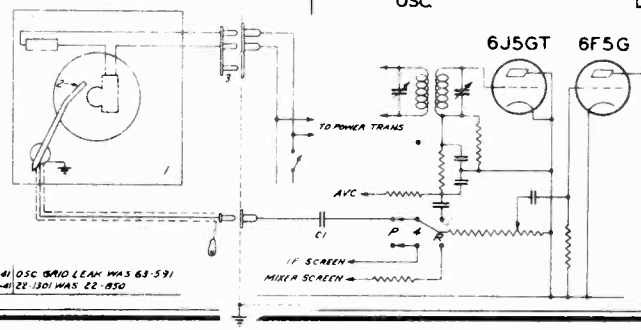
R.F. grid to conv. grid—9.7× at 1000 Kc.

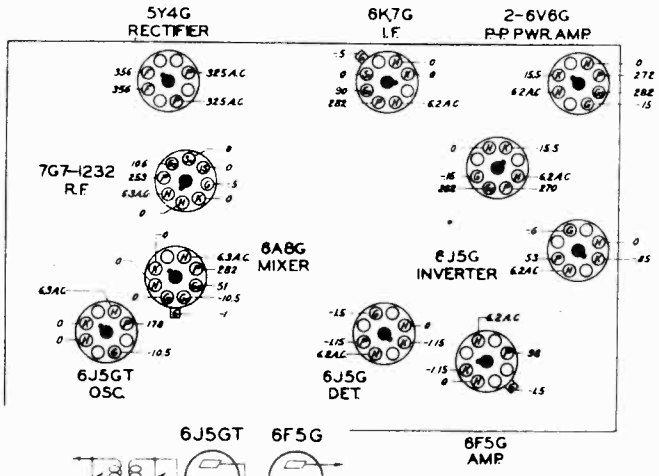
Conv. grid to I.F. grid—63× at 455 Kc.

Overall audio—1250× at 1 watt 400 cycles.

NOTE

Chassis 10B2 has phono connections added

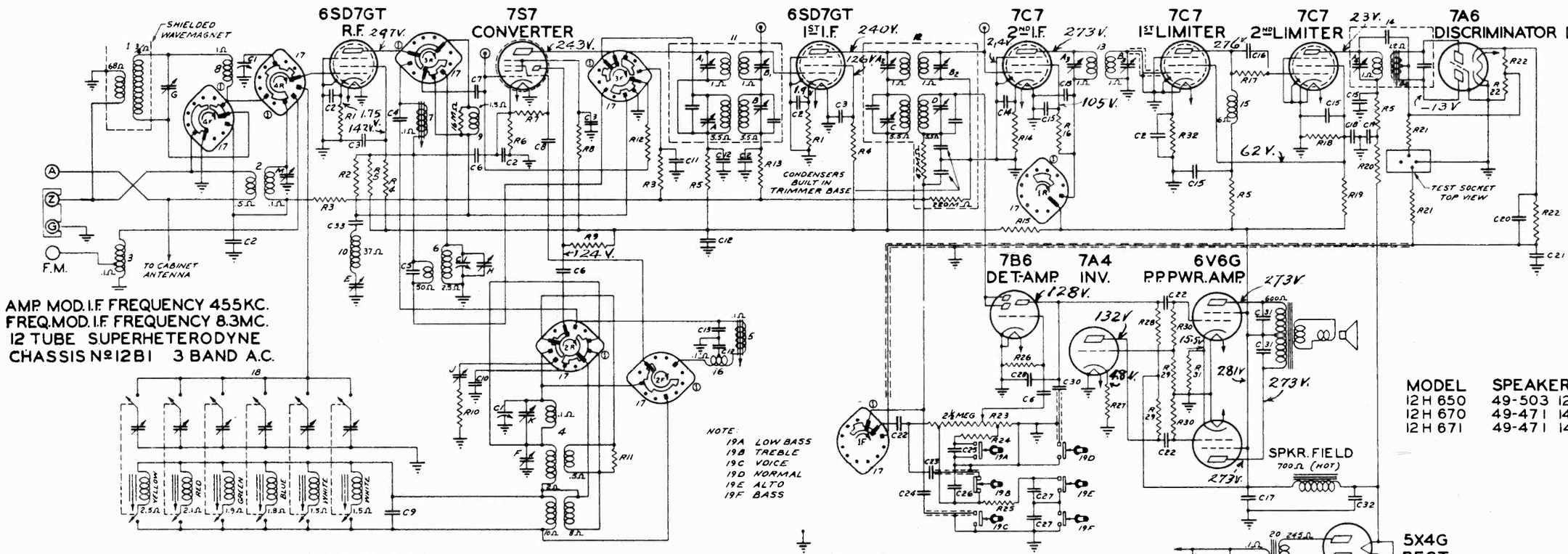




PHONO CIRCUIT DATA
MODEL SPEAKER
10S690 49-442 14"
CHASSIS Nº10B2

ZENITH RADIO CORP.

MODELS 12H650,12H671,12H691
Chassis 12B1



AMP. MOD. I.F. FREQUENCY 455 KC.
FREQ. MOD. I.F. FREQUENCY 8.3 MC.
12 TUBE SUPERHETERODYNE
CHASSIS Nº 12B1 3 BAND A.C.

NOTE:
19A LOW BASS
19B TREBLE
19C VOICE
19D NORMAL
19E ALTO
19F BASS

BAND SWITCH SHOWN IN "SHORT WAVE" POSITION

DENOTES CHASSIS "GROUND"

MODEL	SPEAKER
12H 650	49-503 12"
12H 670	49-471 14"
12H 671	49-471 14"

9-16-41 R32 & BY-PASS ADDED.
9-5-41 R20 WAS 63-679; C33 ADDED.
8-29-41 C5 WAS 22-470; OUTPUT BY-PASSES RETURNED TO BY
6-5-41 7B6 GRID COND. WAS 22-186

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1251	THREE GANG VARIABLE		C26	22-1137	.00015 MFD.	600V	R15	63-606	1000 OHM	1 W	6	S9847	DETECTOR COIL ASSEM. (A.M)		A1		1ST I.F. TRANS. PRI. (F.M.)
C2	22-829	.05 MFD.	200V	C27	22-1126	.01 MFD.	400V	R16	63-656	270 M OHM	½ W	7	S9849	DETECTOR " (F.M.)		B1		1ST I.F. " SEC. (F.M.)
C3	22-243	.01 MFD.	400V	C28	22-1136	.00025 MFD	600V	R17	63-599	1.5 MEGOHM	½ W	8	S9589	LOOP LOADING COIL		A2		2ND I.F. " PRI. (F.M.)
C4	22-1259	COMPENSATING COND.		C29	22-1041	.005 MFD.	400V	R18	63-607	15M OHM	½ W	9	S9850	COIL & RES ASSEMBLY		B2		2ND I.F. " SEC. (F.M.)
C5	22-182	.0025 MFD.	600V	C30	22-468	.004 MFD.	600V	R19	63-957	33 M OHM	1 W	10	S8836	WAVETRAP		A3		3RD I.F. " PRI. (F.M.)
C6	22-492	.002 MFD.	600V	C31	22-1134	.002 MFD.	1000V	R20	63-1211	82 M OHM	2 W	11	95-849	1ST I.F. TRANSFORMER		B3		3RD I.F. " SEC. (F.M.)
C7	22-162	.0001 MFD.	600V	C32	22-1124	30 MFD. ELECTROLYTIC	450V	R21	63-597	470 M OHM	½ W	12	95-850	2ND I.F. "		A4		DISCRIMINATOR I.F. TRANS. PRI.
C8	22-289	50 MMFD	600V	C33	22-887	.001 MFD	600V	R22	63-260	100 M OHM	½ W	13	95-787	3RD I.F. " (F.M.)		B4		DISCRIMINATOR I.F. " SEC.
C9	22-868	COMPENSATING COND.						R23	63-1074	VOLUME CONTROL		14	95-788	DISCRIMINATOR I.F. TRANS (F.M.)		E	22-1015	WAVETRAP
C10	22-1257	.005 MFD.	1000V					R24	63-593	47 M OHM	½ W	15	S10073	PLATE CHOKE		F		BROADCAST OSC (NOTE 1)
C11	22-826	.01 MFD.	200V					R25	63-711	22 M OHM	½ W	16	S9882	PEAKING COIL		G		BROADCAST ANTENNA (NOTE 2)
C12	22-828	.05 MFD.	400V	R1	63-246	150 OHM	½ W	R26	63-976	1.5 MEGOHM	½ W	17	83-302	BAND SELECTOR SWITCH		H		BROADCAST DET (ON GANG)
C13	22-1267	COMPENSATING COND.		R2	63-680	10 M OHM	1 W	R27	63-585	2200 OHM	½ W	18	S10817	AUTOMATIC TUNING UNIT		J	22-1227	BROADCAST PADDER
C14	22-319	.005 MFD.	200V	R3	63-600	2.2 MEGOHM	½ W	R28	63-296	220 M OHM	½ W	19	S9606	TONE CONTROL SW. ASSEM.		K		SHORT WAVE OSC (NOTE 1)
C15	22-229	.005 MFD.	600V	R4	63-1139	39 M OHM	1 W	R29	63-668	47 M OHM	½ W		95-848	POWER TRANS. 117 V (50-60 ~		M		SHORT WAVE ANT (NOTE 2)
C16	22-127	25 MMFD.	600V	R5	63-583	1000 OHM	½ W	R30	63-657	330 M OHM	½ W	20	95-864	25 ~				
C17		30 MFD. ELECTROLYTIC	450V	R6	63-782	180 OHM	½ W	R31	63-1189	200 OHM WIREWOUND	2 W	21	S3504	LINE CHOKE				NOTE:
C18	22-1178	.5 MFD. "	300V	R7	63-713	47 M OHM	½ W	R32	63-418	1500 OHM	½ W	22	100-56	DIAL LIGHT 6.3 V. .25 A.				(1) TRIMMERS F & K ARE MOUNTED ON STRIP #22-1045
C19		.15 MFD "	250V	R8	63-773	180 M OHM	½ W											
C20	22-1138	.0005 MFD.	600V	R9	63-1065	15 M OHM	1 W											
C21	22-1203	.001 MFD.	600V	R10	63-572	15 OHM	½ W	1		WAVEMAGNET								(2) TRIMMERS G & M ARE MOUNTED ON STRIP #22-1039
C22	22-830	.02 MFD.	600V	R11	63-587	4700 OHM	½ W	2	S9972	ANTENNA COIL ASSEM.		A		1ST I.F. TRANS. PRI. (A.M)				
C23	22-1256	75 MMFD.	600V	R12	63-719	470 M OHM	½ W	3				B		1ST I.F. " SEC. (A.M)				
C24	22-1135	.005 MFD.	600V	R13	63-271	1 MEGOHM	½ W	4	S9823	OSCILLATOR " " (A.M.)		C		2ND I.F. " PRI. (A.M)				
C25	22-1127	.02 MFD.	400V	R14	63-633	680 OHM	½ W	5	S9848	OSCILLATOR " " (F.M.)		D		2ND I.F. " SEC. (A.M)				

FOR OTHER DATA SEE INDEX

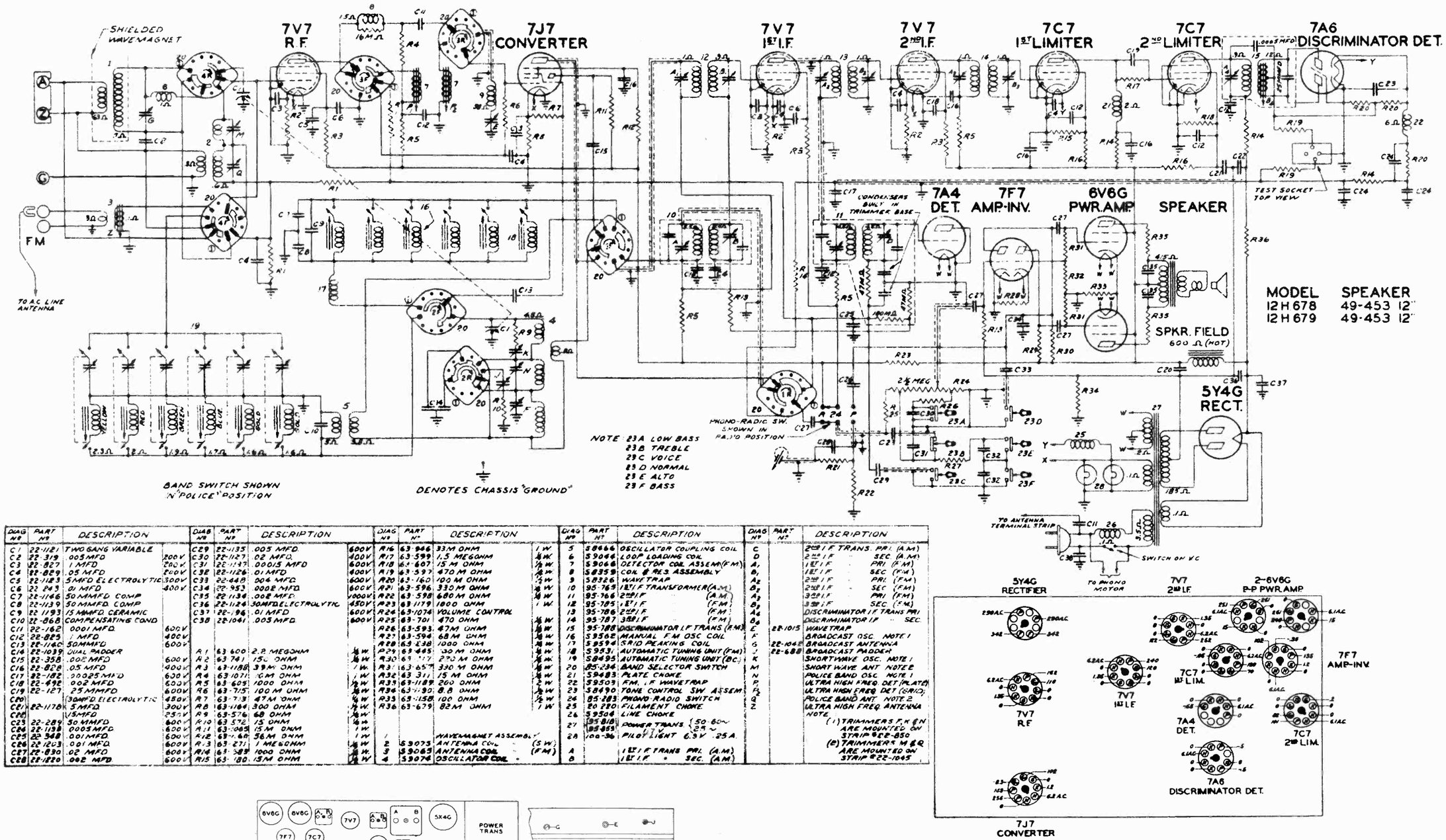
Line voltage 117 A.C.
Power consumption 110 watts.
Power output 15 watts.
Tuning Ranges
540 Kc. to 1620 Kc.
5.6 Mc. to 18.5 Mc.
42 Mc to 50 Mc—(FM)

Stage Gains
Bc. and I.F.

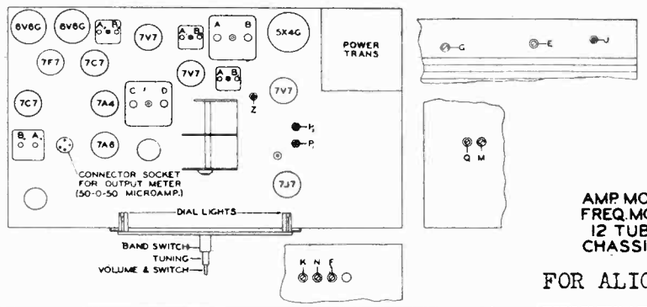
Ant. to R.F. grid 8× at 1000 Kc.c.
R.F. grid to conv. grid 7.25× at 1000 Kc.
Conv. grid to I.F. grid 41.5× at 455 Kc.
Overall audio 1850× at 1 watt 400 cycles.

MODELS 12H678,12H679
Chassis 12A6

ZENITH RADIO CORP.



DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1121	TWO GANG VARIABLE		C29	22-1135	.005 MFD.	600V	R16	63-946	33M OHM	1 W	5	S8666	OSCILLATOR COUPLING COIL		C		2ND I.F. TRANS. PRI. (A.M.)
C2	22-319	.005 MFD.	200V	C30	22-1127	.02 MFD.	400V	R17	63-599	1.5 MEGOHM	½ W	6	S9046	LOOP LOADING COIL		D		2ND I.F. SEC. (A.M.)
C3	22-827	.1 MFD.	200V	C31	22-1137	.00015 MFD.	600V	R18	63-607	.15 M OHM	½ W	7	S9066	DETECTOR COIL ASSEM.(F.M.)		A_1		1ST I.F. PRI. (F.M.)
C4	22-829	.05 MFD.	200V	C32	22-1126	.01 MFD.	400V	R19	63-597	470 M OHM	½ W	8	S8359	COIL & RES. ASSEMBLY		B_1		1ST I.F. SEC. (F.M.)
C5	22-1123	.5 MFD ELECTROLYTIC	300V	C33	22-648	.004 MFD.	600V	R20	63-160	100 M OHM	½ W	9	S8326	WAVE TRAP		A_2		2ND I.F. PRI. (F.M.)
C6	22 843	.002 MFD.	400V	C34	22-953	.0002 MFD.	600V	R21	63-596	330 M OHM	½ W	10	95-769	1ST I.F. TRANSFORMER(A.M.)		B_2		2ND I.F. SEC. (F.M.)
C7	22-1146	50 MMFD. COMP.		C35	22-1134	.002 MFD.	1000V	R22	63-598	680 M OHM	½ W	11	95-766	2ND I.F. (A.M.)		A_3		3RD I.F. PRI. (F.M.)
C8	22-1139	50 MMFD. COMP.		C36	22-1124	30MFD.ELECTROLYTIC	450V	R23	63-1179	1800 OHM	1 W	12	95-785	1ST I.F. (F.M.)		B_3		3RD I.F. SEC. (F.M.)
C9	22 1193	15 MMFD. CERAMIC		C37	22-196	.01 MFD.	600V	R24	63-1074	VOLUME CONTROL		13	95-786	2ND I.F. (F.M.)		A_4		DISCRIMINATOR I.F. TRANS. PRI.
C10	22-868	COMPENSATING COND.		C38	22-1041	.005 MFD.	600V	R25	63-701	470 OHM	½ W	14	95-787	3RD I.F. (F.M.)		B_4		DISCRIMINATOR I.F. TRANS. SEC.
C11	22-162	.0001 MFD.	600V					R26	63-593	47M OHM	½ W	15	95-788	DISCRIMINATOR I.F. TRANS. (F.M.)		E	22-1015	WAVE TRAP
C12	22-825	.1 MFD.	400V					R27	63-598	68 M OHM	½ W	16	S9356	MANUAL F.M. OSC. COIL		F		BROADCAST OSC. NOTE 1
C13	22-1140	50 MMFD.	600V					R28	63-1198	1000 OHM	½ W	17	S9594	10-10 READING COIL		G	22-1048	BROADCAST ANTENNA
C14	22-1039	DUAL PADDER		R1	63-600	2.2 MEGOHM	½ W	R29	63-665	330 M OHM	½ W	18	S9831	AUTOMATIC TUNING UNIT (F.M.)		J	22-688	BROADCAST PADDER
C15	22-358	.002 MFD.	600V	R2	63-741	15Ω OHM	½ W	R30	63-117	220 M OHM	½ W	19	S8695	AUTOMATIC TUNING UNIT (B.C.)		K		SHORTWAVE OSC. NOTE 1
C16	22-828	.05 MFD.	400V	R3	63-1188	39M OHM	1 W.	R31	63-657	330 M OHM	½ W	20	85-234	BAND SELECTOR SWITCH		M		SHORT WAVE ANT. NOTE 2
C17	22-182	.00025 MFD	600V	R4	63-1071	1 M OHM	1 W	R32	63-311	15 M OHM	½ W	21	S9483	PLATE CHOKE		N		POLICE BAND OSC. NOTE 1
C18	22-492	.002 MFD.	600V	R5	63-605	1000 OHM	½ W	R33	63-1189	260 OHM	2 W	22	S9503	F.M. I.F. WAVETRAP		P		ULTRA HIGH FREQ. DET. (PLATE)
C19	22-127	.25 MMFD.	600V	R6	63-715	100 M OHM	½ W	R34	63-1190	8.8 OHM	½ W	23	S8490	TONE CONTROL SW. ASSEM.		P_1		ULTRA HIGH FREQ. DET. (GRID)
C20		(30MFD ELECTROLYTIC	450V	R7	63-713	47M OHM	½ W	R35	63-1158	100 OHM	½ W	24	85-283	PHONO-RADIO SWITCH		Q		POLICE BAND ANT. NOTE 2
C21	22-1178	.5 MFD.	300V	R8	63-1164	300 OHM	1 W	R36	63-679	82M OHM	1 W	25	20 220	FILAMENT CHOKE		Z		ULTRA HIGH FREQ. ANTENNA
C22		.1 MFD.	250V	R9	63-576	68 OHM	½ W					26	S9506	LINE CHOKE				NOTE
C23	22-289	50 MMFD.	600V	R10	63-572	15 OHM	½ W					27	95-818 / 85-865	POWER TRANS. (50-60~ / 25~)				(1) TRIMMERS F, K & N ARE MOUNTED ON STRIP #22-850
C24	22-1138	.0005 MFD.	600V	R11	63-1065	15M OHM	1 W					28	100-36	PILOT LIGHT 6.3V. .25A.				(2) TRIMMERS M & R ARE MOUNTED ON STRIP #22-1045
C25	22-348	.001 MFD.	600V	R12	63-1066	56 M OHM	1 W											
C26	22-1203	.001 MFD.	600V	R13	63-271	1 MEGOHM	½ W.	2	S9075	ANTENNA COIL (S.W.)		A		1ST I.F. TRANS. PRI. (A.M.)				
C27	22-830	.02 MFD.	600V	R14	63-583	1000 OHM	½ W	3	S9063	ANTENNA COIL (F.M.)		B		1ST I.F. " SEC. (A.M.)				
C28	22-1220	.002 MFD.	600V	R15	63-180	15M OHM	½ W	4	S9076	OSCILLATOR COIL								



AMP. MOD. I.F. FREQUENCY 455 KC.
FREQ. MOD. I.F. FREQUENCY 8.3 MC.
12 TUBE SUPERHETERODYNE
CHASSIS Nº 12A6 - A.C. - 4 BAND

FOR ALIGNMENT SEE INDEX

Stage Gains
Bc. and I.F.

Ant. to R.F. grid 6.5× at 1000 Kc.

R.F. grid to conv. grid 28.1× at 1000 Kc.

Conv. grid to I.F. grid 265× at 455 Kc.

Overall audio 807× at 1 watt, 400 cycles.

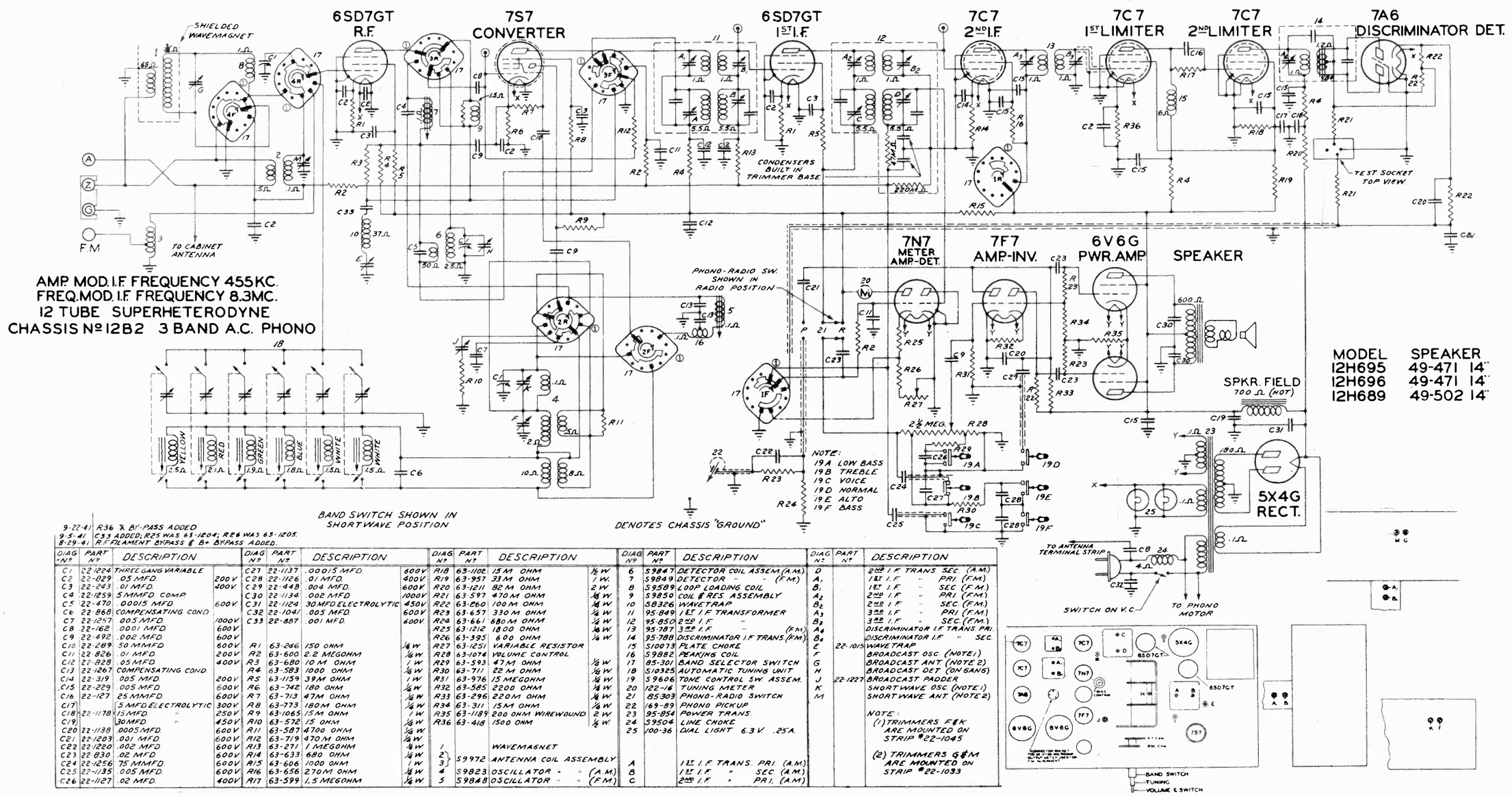
Line voltage 117 A.C.
Power consumption 150 watts.
Power output 14. watts.
Tuning Ranges
540 Kc. to 1600 Kc.
1.5 Mc. to 5.2 Mc.
5.2 Mc. to 18.5 Mc.
41.5 Mc to 50.5 Mc—(FM)

All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control full on.

ZENITH RADIO CORP.



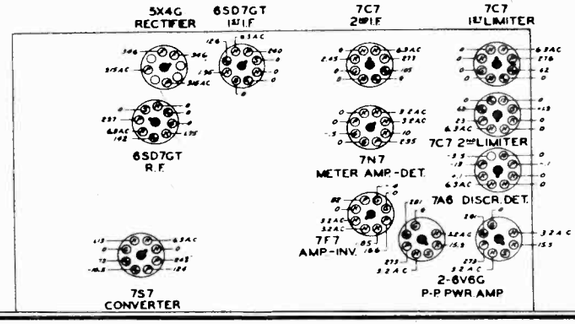
MODEL	SPEAKER
12H695	49-471 14"
12H696	49-471 14"
12H689	49-502 14"

9-22-41 | R36 & BY-PASS ADDED
9-5-41 | C33 ADDED; R25 WAS 63-1204; R26 WAS 63-1205.
8-29-41 | R.F. FILAMENT BYPASS & B+ BYPASS ADDED.

DIAG Nº	PART Nº	DESCRIPTION	
C1	22-1224	THREE GANG VARIABLE	
C2	22-829	.05 MFD.	200V
C3	22-243	.01 MFD.	400V
C4	22-1259	5 MMFD COMP.	
C5	22-470	.00015 MFD	600V
C6	22-868	COMPENSATING COND.	
C7	22-1247	.005 MFD.	1000V
C8	22-162	.0001 MFD.	600V
C9	22-492	.002 MFD.	600V
C10	22-289	50 MMFD.	600V
C11	22-826	.01 MFD.	200V
C12	22-828	.05 MFD.	400V
C13	22-1267	COMPENSATING COND.	
C14	22-319	.005 MFD.	200V
C15	22-229	.005 MFD.	600V
C16	22-127	25 MMFD.	600V
C17		.5 MFD ELECTROLYTIC	300V
C18	22-1178	15 MFD. "	250V
C19		30 MFD. "	450V
C20	22-1138	.0005 MFD.	600V
C21	22-1203	.001 MFD.	600V
C22	22-1280	.002 MFD.	600V
C23	22-830	.02 MFD.	600V
C24	22-1256	75 MMFD.	600V
C25	22-1135	.005 MFD.	600V
C26	22-1127	.02 MFD.	400V
C27	22-1137	.00015 MFD.	600V
C28	22-1126	.01 MFD.	400V
C29	22-448	.004 MFD.	600V
C30	22-1134	.002 MFD.	1000V
C31	22-1124	30 MFD ELECTROLYTIC	450V
C32	22-1041	.005 MFD.	600V
C33	22-887	.001 MFD.	600V
R1	63-246	150 OHM	½ W
R2	63-600	2.2 MEGOHM	½ W
R3	63-680	10 M OHM	1 W
R4	63-583	1000 OHM	½ W
R5	63-1159	39 M OHM	1 W
R6	63-742	180 OHM	½ W
R7	63-713	47 M OHM	½ W
R8	63-773	180 M OHM	½ W
R9	63-1065	15 M OHM	1 W
R10	63-572	15 OHM	½ W
R11	63-587	4700 OHM	½ W
R12	63-719	470 M OHM	½ W
R13	63-271	1 MEGOHM	½ W
R14	63-633	680 OHM	½ W
R15	63-606	1000 OHM	1 W
R16	63-656	270 M OHM	½ W
R17	63-599	1.5 MEGOHM	½ W
R18	63-1102	15 M OHM	½ W
R19	63-957	33 M OHM	1 W.
R20	63-1211	82 M OHM	2 W
R21	63-597	470 M OHM	½ W
R22	63-660	100 M OHM	½ W
R23	63-657	330 M OHM	½ W
R24	63-661	680 M OHM	½ W
R25	63-1212	1800 OHM	½ W
R26	63-395	600 OHM	½ W
R27	63-1251	VARIABLE RESISTOR	
R28	63-1074	VOLUME CONTROL	
R29	63-593	47 M OHM	½ W
R30	63-711	22 M OHM	½ W
R31	63-976	15 MEGOHM	½ W
R32	63-585	2200 OHM	½ W
R33	63-296	220 M OHM	½ W
R34	63-311	15 M OHM	½ W
R35	63-1189	200 OHM WIREWOUND	2 W
R36	63-418	1500 OHM	½ W.
1		WAVEMAGNET	
2	S9972	ANTENNA COIL ASSEMBLY	
3			
4	S9823	OSCILLATOR " (A.M.)	
5	S9848	OSCILLATOR " (F.M.)	
6	S9847	DETECTOR COIL ASSEM. (A.M.)	
7	S9849	DETECTOR " (F.M.)	
8	S9589	LOOP LOADING COIL	
9	S9850	COIL & RES. ASSEMBLY	
10	S8326	WAVETRAP	
11	95-849	1ST I.F. TRANSFORMER	
12	95-850	2ND I.F. "	
13	95-787	3RD I.F. " (F.M.)	
14	95-788	DISCRIMINATOR I.F. TRANS. (F.M.)	
15	S10073	PLATE CHOKE	
16	S9882	PEAKING COIL	
17	85-301	BAND SELECTOR SWITCH	
18	S10325	AUTOMATIC TUNING UNIT	
19	S9606	TONE CONTROL SW. ASSEM.	
20	122-16	TUNING METER	
21	85-303	PHONO-RADIO SWITCH	
22	169-89	PHONO PICKUP	
23	95-854	POWER TRANS.	
24	S9504	LINE CHOKE	
25	100-36	DIAL LIGHT 6.3 V. .25 A.	
A		1ST I.F. TRANS. PRI. (A.M.)	
B		1ST I.F. " SEC. (A.M.)	
C		2ND I.F. " PRI. (A.M.)	
D		2ND I.F. TRANS. SEC. (A.M.)	
A1		1ST I.F. " PRI. (F.M.)	
B1		1ST I.F. " SEC. (F.M.)	
A2		2ND I.F. " PRI. (F.M.)	
B2		2ND I.F. " SEC. (F.M.)	
A3		3RD I.F. " PRI. (F.M.)	
B3		3RD I.F. " SEC. (F.M.)	
A4		DISCRIMINATOR I.F. TRANS. PRI.	
B4		DISCRIMINATOR I.F. " SEC.	
E	22-1015	WAVETRAP	
F		BROADCAST OSC. (NOTE 1)	
G		BROADCAST ANT. (NOTE 2)	
H		BROADCAST DET. (ON GANG)	
J	22-1227	BROADCAST PADDER	
K		SHORTWAVE OSC. (NOTE 1)	
M		SHORTWAVE ANT. (NOTE 2)	

NOTE:
(1) TRIMMERS F & K ARE MOUNTED ON STRIP #22-1045
(2) TRIMMERS G & M ARE MOUNTED ON STRIP #22-1033

FOR ALIGNMENT SEE INDEX

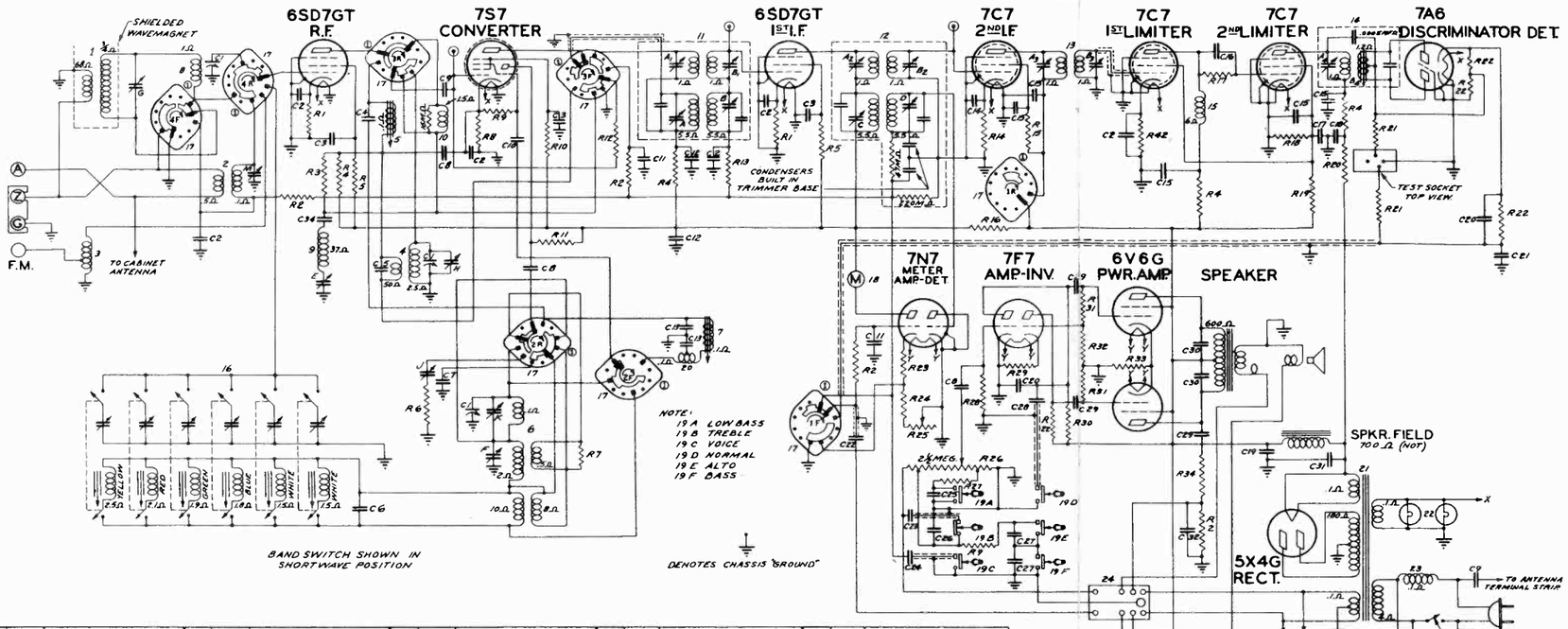


Line voltage 117 A.C.
Power consumption 150 watts, including Phono motor.
Power output 15 watts.
Tuning Ranges
540 Kc. to 1620 Kc.
5.6 Mc. to 18.5 Mc.
42 Mc to 50 Mc—(FM)

Stage Gains
Bc. and I.F.
Ant. to R.F. grid 8× at 1000 Kc.c.
R.F. grid to conv. grid 7.25× at 1000 Kc.
Conv. grid to I.F. grid 41.5× at 455 Kc.
Overall audio 1850× at 1 watt 400 cycles.

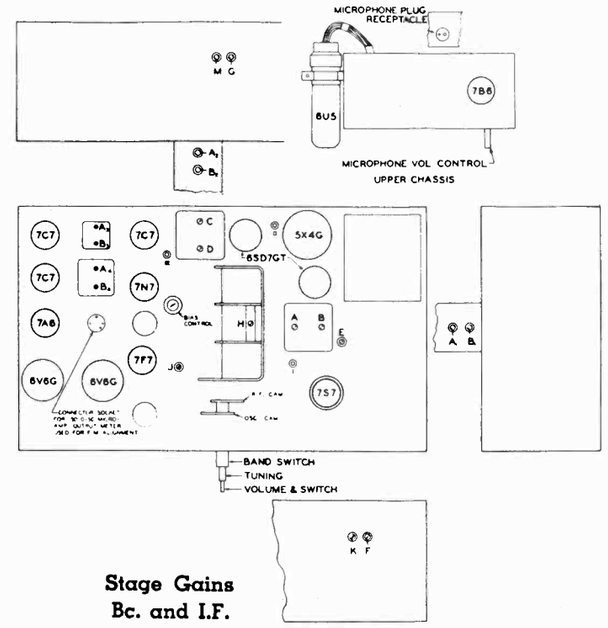
MODEL 14H697, Chassis 14B1

ZENITH RADIO CORP



DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1024	THREE GANG VARIABLE.		C27	22-1126	.01 MFD.	400V	R17	63-599	1.5 MEGOHM	½W	6	59823	OSCILLATOR COIL ASSEM. (AM)
C2	22-829	.05 MFD.	200V	C28	22-448	.004 MFD.	600V	R18	63-1105	15M OHM	½W	7	59848	OSCILLATOR " (FM)
C3	22-243	.01 MFD.	400V	C29	22-830	.02 MFD.	600V	R19	63-957	33 M OHM	1W	8	59589	LOOP LOADING COIL
C4	22-1253	5 MMFD. COMP		C30	22-1134	.002 MFD.	1000V	R20	63-1211	82 M OHM	2W	9	38926	WAVE TRAP
C5	22-682	.00025 MFD.	600V	C31	22-1124	30MFD ELECTROLYTIC	450V	R21	63-997	470M. OHM	½W	10	59850	COIL & RES. ASSEMBLY
C6	22-868	COMPENSATING COND.		C32	22-854	.0005 MFD.	600V	R22	63-260	100M OHM	½W	11	95-849	1ST I.F. TRANSFORMER
C7	22-1257	.005 MFD.	1000V	C33	22-1041	.005 MFD.	600V	R23	63-1212	1800 OHM	½W	12	95-850	2ND I.F. "
C8	22-492	.002 MFD.	600V	C34	22-887	.001 MFD.	600V	R24	63-1195	600 OHM	½W	13	95-888	3RD I.F. "
C9	22-162	.0001 MFD.	600V					R25	63-1251	BIAS CONTROL		14	95-788	DISCRIMINATOR I.F. TRANS (FM)
C10	22-289	50 MMFD.	600V					R26	63-1074	VOLUME CONTROL		15	510073	PLATE CHOKE
C11	22-828	.01 MFD.	200V	R1	63-246	150 OHM	½W	R27	63-593	47M OHM	½W	16	510325	AUTOMATIC TUNING UNIT
C12	22-828	.05 MFD.	400V	R2	63-600	2.2 MEGOHM	½W	R28	63-978	15 MEGOHM	½W	17	85-301	BAND SELECTOR SWITCH
C13	22-1267	100 MMFD. COMP		R3	63-680	10M OHM	1W	R29	63-585	2200 OHM	1W	18	12E-16	TUNING METER
C14	22-319	.005 MFD.	200V	R4	63-583	1000 OHM	½W	R30	63-296	220M OHM	½W	19	510507	TONE CONTROL SW. ASSEM.
C15	22-229	.005 MFD.	600V	R5	63-1159	39M OHM	1W	R31	63-657	330 M OHM	½W	20	59882	BEATING COIL
C16	22-127	25 MMFD.	600V	R6	63-572	15 OHM	¼W	R32	63-311	15M OHM	½W	21	95-858	PWR. TRANS. 117 V. 50-60~
C17	22-1178	5 MFD ELECTROLYTIC	300V	R7	63-587	4700 OHM	¼W	R33	63-1189	200 OHM	2W	22	100-36	DIAL LIGHT 6.3 V. .25 A.
C18	22-1135	.04 5 MFD.	450V	R8	63-742	180 OHM	½W	R34	63-596	330M OHM	½W	23	59584	LINE CHOKE
C19	22-1235	30MFD.	450V	R9	63-713	47M OHM	½W	R42	63-418	1500 OHM	½W	24	78-471	CONNECTOR SOCKET
C20	22-1139	.0005 MFD.	600V	R10	63-779	180M OHM	½W							
C21	22-1230	.002 MFD.	600V	R11	63-1065	15M OHM	1W							
C22	22-138	.2 MFD.	200V	R12	63-719	470M OHM	½W	/		WAVEMAGNET		A		1ST I.F. TRANS PRI.
C23	22-1236	75 MMFD.	600V	R13	63-271	1 MEGOHM	½W	6	59972	ANTENNA COIL ASSEMBLY		B		1ST I.F. " SEC.
C24	22-1233	.025 MFD.	600V	R14	63-633	680 OHM	½W	3				C		2ND I.F. " PRI.
C25	22-1127	.02 MFD.	400V	R15	63-656	270M OHM	½W	4	59847	DETECTOR COIL ASSEM. (AM)		D		2ND I.F. " SEC.
C26	22-1137	.0005 MFD.	600V	R16	63-606	1000 OHM	1W	5	59849	DETECTOR " (FM)		A1		1ST I.F. " PRI (F.M.)

AMP. MOD. I.F. FREQUENCY 455KC.
FREQ. MOD. I.F. FREQUENCY 8.3MC.
14 TUBE SUPERHETERODYNE
CHASSIS Nº 14B1 3 BAND A.C. PHONO
ZENITH RADIO CORPORATION
CHICAGO, ILL.



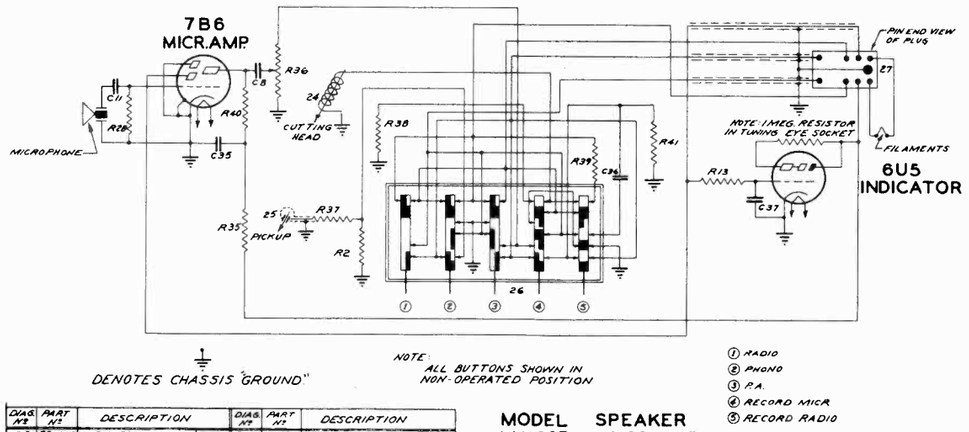
Stage Gains Bc. and I.F.

Ant. to R.F. grid 8× at 1000 Kc.

R.F. grid to conv. grid 7× at 1000 Kc.

Conv. grid to I.F. grid 40× at 455 Kc.

Overall audio 1850× at 1 watt, 400 cycles.



DIAG Nº	PART Nº	DESCRIPTION	
C8	22-492	.02 MFD.	600V
C11	22-826	.01 MFD.	200V
C35	22-1123	5 MFD. ELECTROLYTIC	300V
C36	22-1203	.001 MFD.	600V
C37	22-887	.1 MFD.	200V
R2	63-600	2.2 MEGOHM	½W
R13	63-271	1 MEGOHM	½W
R28	63-976	15 MEGOHM	½W
R35	63-575	100 M OHM	½W
R36	63-1250	VOLUME CONTROL	
R37	63-774	220 M. OHM	½W
R38	63-1209	20 OHM	1W
R39	63-1210	38 OHM	1W
R40	63-717	220 M OHM	½W
R41	63-445	100 M OHM	½W
24	142-58	CUTTING HEAD	
25	142-49	PICKUP CARTRIDGE	
26	85-300	RECORDER CONTROL SW.	
27	58-102	CONNECTOR PLUG	

MODEL 14H697 — SPEAKER 49-504 14"

Microphone Amplifier

AMP. MOD. I.F. FREQUENCY 455KC.
FREQ. MOD. I.F. FREQUENCY 8.3MC.
14 TUBE SUPERHETERODYNE
CHASSIS Nº 14B1 3 BAND A.C. PHONO
ZENITH RADIO CORPORATION
CHICAGO, ILL.

All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control full on.

Line voltage 117 A.C. 60 cycle.

Power consumption 115 watts.

Phono motor 35 watts additional.

Maximum audio power output 15 watts.

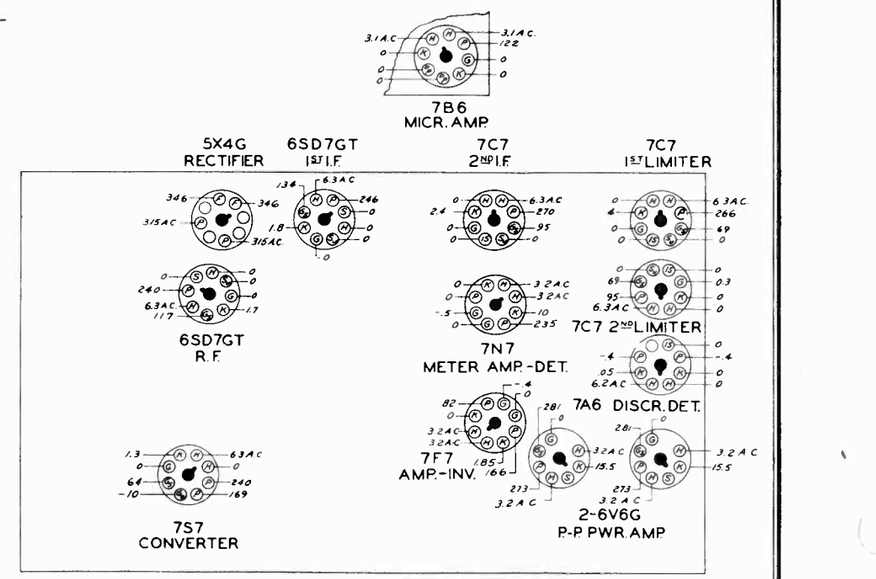
Tuning ranges:

540 to 1620 Kc.

5.6 to 18.4 Mc.

42 to 50 Mc. (F.M.).

FOR ALIGNMENT SEE INDEX



SOCKET VOLTAGES—BOTTOM SIDE UP

ZENITH RADIO CORP.

CHASSIS 12A6
CHASSIS 12B1,12B2 Phono

ALIGNMENT PROCEDURE CHASSIS 12A6

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Con. Grid	0.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I.F.
2	R.F. Grid	0.5 mfd.	455 Kc.	BC	600 Kc.	E	Adjust for minimum 455 Kc. signal
3	Ant. Z and G	400 ohm	18 Mc.	SW	18 Mc.	K	Scale SW Osc. at 18 meg.
4	"	"	16 Mc.	SW	16 Mc.	M	Align SW antenna
5	"	"	5 Mc.	Med.	5.0 Mc.	N	Scale med. band osc. at 5. meg.
6	"	"	4.5 Mc.	Med.	4.5 Mc.	Q	Align med. band antenna
7	One turn loop made with generator lead or Radex loop	——	1600 Kc.	BC	1600 Kc.	F	Set BC Osc. to scale at 1600 Kc.
8		——	1400 Kc.	BC	1400 Kc.	G	Align broadcast loop
9		——	600 Kc.	BC	600 Kc.	J	Rock gang to track BC padder
10	7V7 2nd I.F. Grid	0.5 mfd.	8.3 Mc.	Man. F.M.	42.5 Mc.	A_4	Align for max. deflection across ½ discrim. load
11	"	"	"	"	"	B_4	Align for zero deflection across full discrim. load
12	"	"	"	"	"	A_3 - B_3	Align for max. deflection across ½ discrim. load
13	7V7 1st I.F. Grid	"	"	"	"	A_2 - B_2	"
14	Converter Grid	"	"	"	"	A_1 - B_1	"
15	F.M. Ant. Terminal	100 ohm	46 Mc.	"	46 Mc.	Adj. cam on gang to scale osc.	Align for zero deflection across full discrim. load
16	"	"	42.5 Mc.	"	42.5 Mc.	P_1	Align for max. deflection across ½ discrim. load
17	"	"	49 Mc.	"	49 Mc.	P_2	"
18	"	"	46 Mc.	"	46 Mc.	Z	"

FOR TRIMMER LOCATIONS SEE INDEX

ALIGNMENT PROCEDURE CHASSIS 12B1 and 12B2 Phono

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Con. Grid	0.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I.F.
2	R.F. Grid	0.5 mfd.	455 Kc.	BC	600 Kc.	E	I.F. Trap. Adjust for Minimum. I.F. Signal
3	Ant. A and G	400 ohm	18 Mc.	SW	18 Mc.	K	Scale SW Osc. at 18 meg.
4	"	"	15 M.C.	SW	15 M.C.	M	Align SW antenna
5	One turn loop made with generator lead or Radex loop	——	1600 Kc.	BC	1600 Kc.	F	Set BC Osc. to scale at 1600 Kc.
6		——	1400 Kc.	BC	1400 Kc.	H	Align BC R.F. Stage
7		——	1400 Kc.	BC	1400 Kc.	G	Align broadcast loop
8	"	——	600 Kc.	BC	600 Kc.	J	Rock gang to track BC padder
9	7C7 2nd I.F. Grid Pin Jack III	0.5 mfd.	8.3 Mc.	F.M.	42.5 Mc.	A_4	Align for max. deflection across ½ discrim. load
10	"	"	"	"	"	B_4	Align for zero Deflection across Full Disc. Load. Repeat Operation No. 9
11	"	"	"	"	"	A_3 - B_3	Align for max. deflection across ½ discrim. load
12	6SD7GT 1st I.F. Grid Pin Jack II	"	"	"	"	A_2 - B_2	Align for max. deflection across ½ discrim. load
13	Con. Grid Pin Jack I	"	"	"	"	A_1 - B_1	"
14	F.M. Ant. Terminal	100 ohm	46 Mc.	"	46 Mc.	Adjust Osc. Cam GangShaft to Scale Osc	Align for zero deflection across full discrim. load
15	"	100 ohm	46 Mc.	"	46 Mc.	Adjust R.F. Cam for FM Tracking	Align for max. deflection across ½ discrim. load
16	Adjust Tuning Meter.			F.M.	Clear of signals	Bias Control	Adjust bias for tuning meter

Remove 2nd I.F. tube (7C7) from socket. Adjust bias control until meter reads exactly center. Replace I.F. tube and check meter behavior on F.M. and A.M. signals.

NOTE: THE ALIGNMENT FOR CHASSIS 12B1 IS THE SAME AS THE ABOVE WITH THE EXCEPTION THAT OPERATION NO. 16 IS NOT USED FOR 12B1 NOR IS THE LAST OPERATION.

MODEL 7G605
MODEL 14H697
MODELS 22H698, 22H699

ZENITH RADIO CORP.

Model 7G605

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Conv. grid	.1 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I.F.
2	One Turn Loop Coupled		1600 Kc.	BC	1600 Kc.	F	Set oscillator to scale
3	Loosely to Broadcast		1400 Kc.	BC	1400 Kc.	H	Alignment of detector section
4	Wavemagnet		1400 Kc.	BC	1400 Kc.	G	Alignment of B.C. Wavemagnet
5	3 Feet of Wire		1400 Kc.	BC	1400 Kc.	G_1	B.C. waverod alignment
6	Approximately		6.2 Mc.	49 Met.	6.2 Mc.	K_1-L_1	Alignment of S.W. Oscillators and Antenna Trimmers
7	1 Foot from		9.6 Mc.	31 Met.	9.6 Mc.	K_2-L_2	
8	Extended		11.8 Mc.	25 Met.	11.8 Mc.	K_3-L_3	
9	Waverod		15.2 Mc.	19 Met.	15.2 Mc.	K_4-L_4	
10			17.8 Mc.	16 Met.	17.8 Mc.	K_5-L_5	
11	One Turn Loop Coupled Loosely to Shortwave Magnet, Waverod Collapsed		15.2 Mc.	19 Met.	15.2 Mc.	M_1-M_1	Alignment of shortwave magnet
12			11.8 Mc.	25 Met.	11.8 Mc.	M_2	
13			9.6 Mc.	31 Met.	9.6 Mc.	M_3	

ALIGNMENT PROCEDURE

Model 14H697

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Conv. grid	.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align BC I. F.
2	R.F. grid	"	"	"	"	E	I.F. trap adjustment for minimum I.F. signal
3	Ant. Gnd.	400 ohm	18 Mc.	SW	18 Mc.	K	Scale osc. at 18 Mc.
4	"	"	15 Mc.	"	15 Mc.	M	Align SW antenna
5	ONE TURN		1600 Kc.	BC	1600 Kc.	F	Set BC osc. to scale at 1600 Kc.
6	LOOP WITH		1400 Kc.	"	1400 Kc.	H	Align BC R.F. stage
7	GENERATOR		1400 Kc.	"	1400 Kc.	G	Align BC loop
8	LEADS		600 Kc.	"	600 Kc.	J	Rock gang to track BC padder
9	7C7 2nd I.F. Grid Pin Jack III	.5 mfd.	8.3 Mc.	FM	42.5 Mc.	A_1	Align for maximum deflection across ½ discrim. load
10		"	"	"	"	B_1	Align for zero deflection across full discrim. load. Repeat operation No. 9
11		"	"	"	"	A_2-B_2	Align for maximum deflection across ½ discrim. load
12	6SD7 1st I.F. grid Pin Jack III	"	"	"	"	A_3-B_3	Align for maximum deflection across ½ discrim. load
13	Conv. grid Pin Jack I	"	"	"	"	A_4-B_4	Align for maximum deflection across ½ discrim. load
14	F.M. Ant. Ter.	100 ohms	46 Mc.	"	46 Mc.	Adjust osc. cam gang shaft to scale osc.	Align for zero deflection across full discrim load
15	"	"	"	"	"	Adjust R.F. cam for F.M. tracking	Align for max. deflec. across ½ discrim. load
16	Adjust Tuning Meter			"	Clear of Signals	Bias control	Adjust bias for tuning meter

Remove 2nd I.F. tube (7C7) from socket. Adjust bias control until meter reads exactly center.
Replace I.F. tube and check meter behavior on F.M. and A.M. signals.

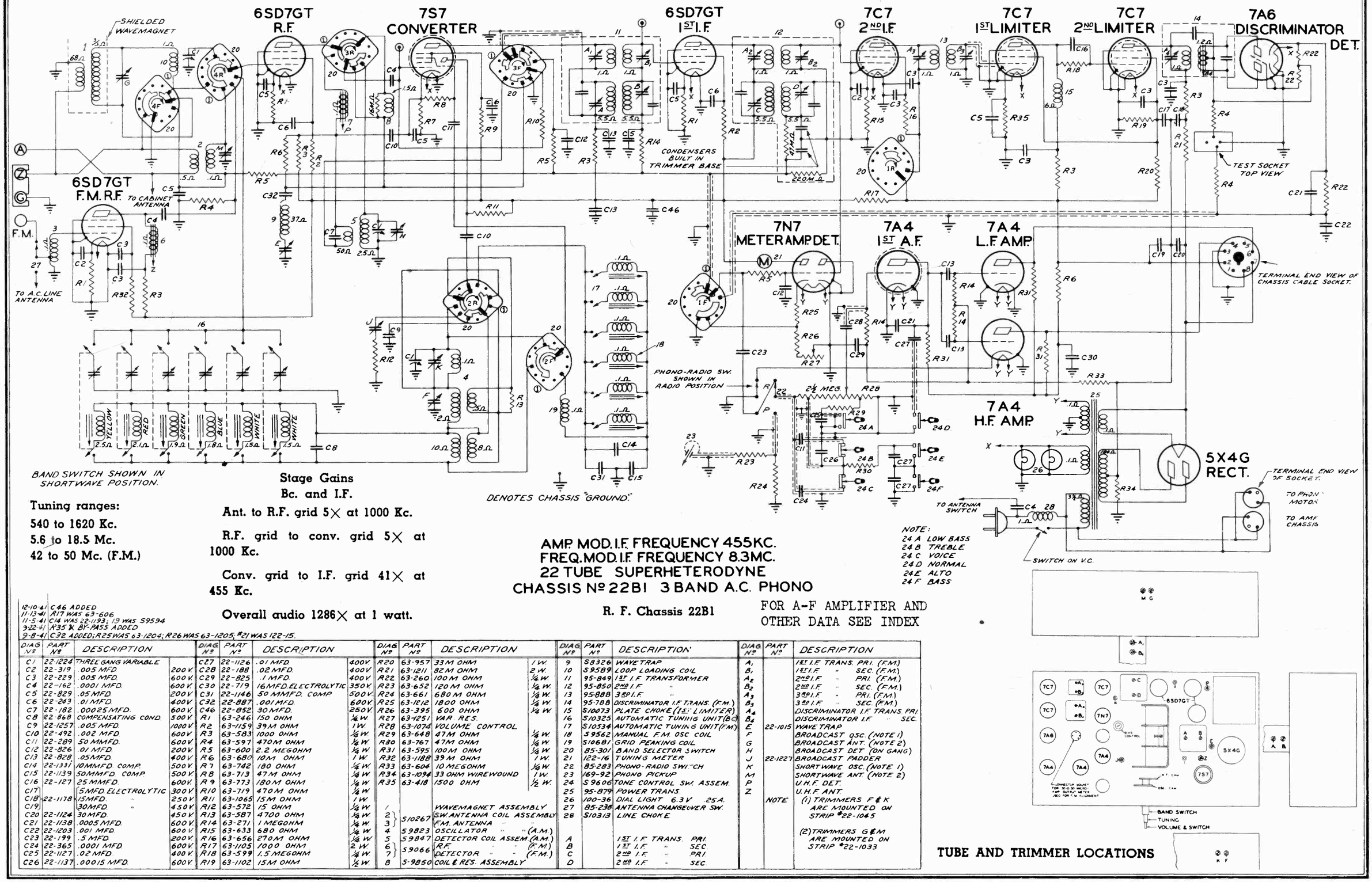
ALIGNMENT PROCEDURE

Models 22H698 and 22H699

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Conv. grid	.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align B.C. I.F.
2	R.F. grid	"	"	"	"	E	I.F. trap adjustment for minimum I.F. signal
3	Ant.-Gnd.	400 ohm	18 Mc.	SW	18 Mc.	K	Scale osc. at 18 Mc.
4	"	"	15 Mc.	"	15 Mc.	M	Align SW antenna
5	ONE TURN		1600 Kc.	BC	1600 Kc.	F	Set BC osc. to scale at 1600 Kc.
6	LOOP MADE WITH		1400 Kc.	"	1400 Kc.	H	Align BC R.F. stage
7	GENERATOR		1400 Kc.	"	1400 Kc.	G	Align BC loop
8	LEADS		600 Kc.	"	600 Kc.	J	Rock gang to track BC padder
9	7C7 2nd I.F. grid Pin Jack III	.5 mfd.	8.3 Mc.	F.M.	42.5 Mc.	A_1	Align for maximum deflection across ½ discrim. load
10	"	"	"	"	"	B_1	Align for zero deflection across full discriminator load. Repeat operation No. 9
11	"	"	"	"	"	A_2-B_2	Align for maximum deflection across ½ discrim. load
12	6SD7 1st I. F. grid Pin Jack III	"	"	"	"	A_3-B_3	Align for maximum deflection across ½ discrim. load
13	Conv. grid Pin Jack I	"	"	"	"	A_4-B_4	Align for maximum deflection across ½ discrim. load
14	F.M. Ant. Ter.	100 ohm	46 Mc.	"	46 Mc.	Adjust osc. cam gang shaft to scale osc.	Align for zero deflection across full discriminator load
15A	"	"	49 Mc.	"	49 Mc.	Z	Align for maximum deflection across ½ discriminator load
15B	"	"	43 Mc.	"	43 Mc.	P	Align for maximum deflection across ½ discriminator load
16	Adjust Tuning Meter			"	Clear of Sigs	Bias control	Adjust bias for tuning meter
	Remove 2nd I.F. tube (7C7) from socket. Adjust bias control until meter reads exactly center. Replace I.F. tube and check meter behavior on F.M. and A.M. signals.						
17	Set hum adjustment for minimum hum level. (Page 317)						

ZENITH RADIO CORP.

MODELS 22H698, 22H699
Chassis 22B1



Tuning ranges:

540 to 1620 Kc.
5.6 to 18.5 Mc.
42 to 50 Mc. (F.M.)

Stage Gains
Bc. and I.F.

Ant. to R.F. grid 5× at 1000 Kc.

R.F. grid to conv. grid 5× at 1000 Kc.

Conv. grid to I.F. grid 41× at 455 Kc.

Overall audio 1286× at 1 watt.

AMP. MOD. I.F. FREQUENCY 455KC.
FREQ. MOD. I.F. FREQUENCY 8.3MC.
22 TUBE SUPERHETERODYNE
CHASSIS Nº 22B1 3 BAND A.C. PHONO

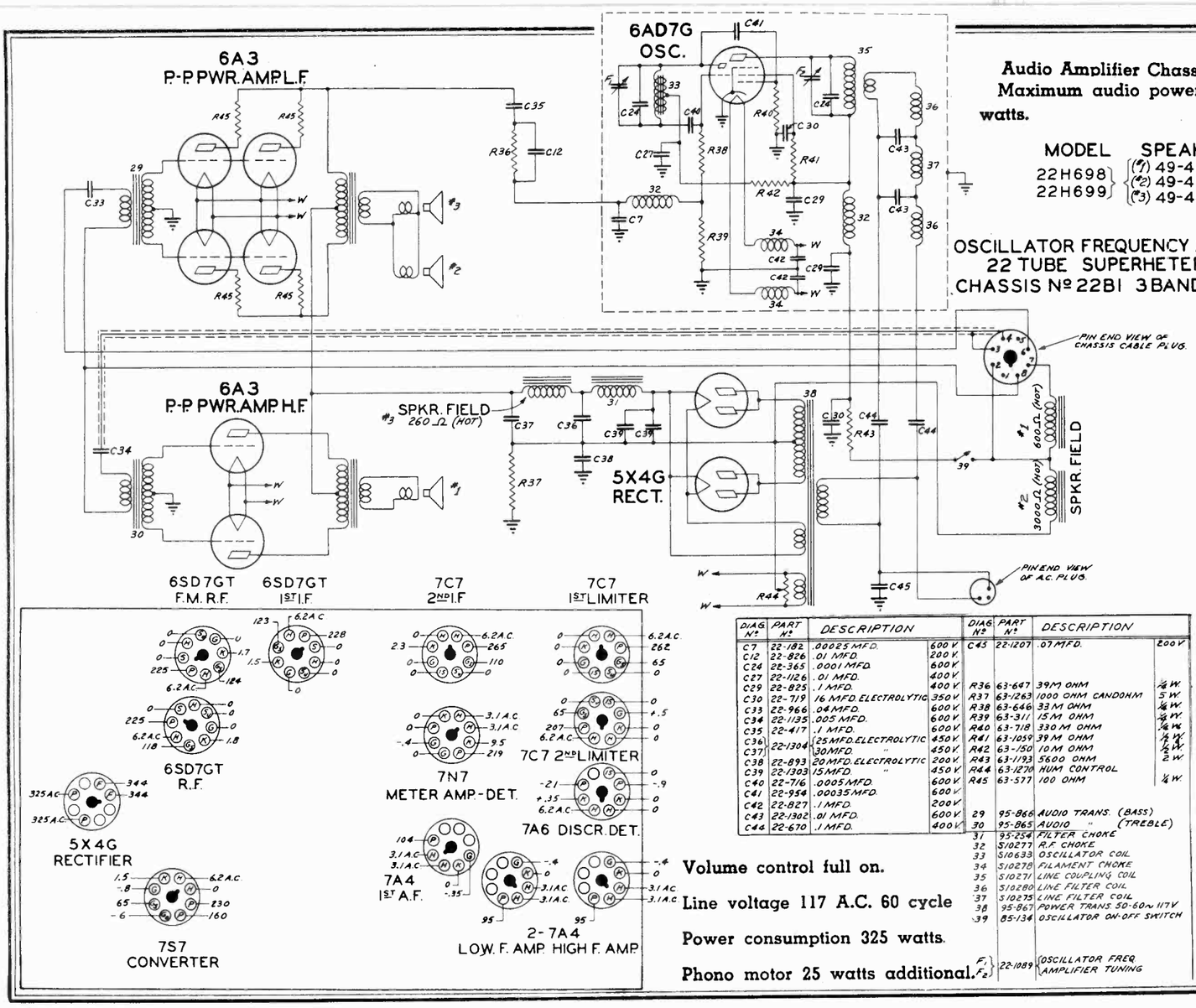
R. F. Chassis 22B1

FOR A-F AMPLIFIER AND OTHER DATA SEE INDEX

NOTE:
24A LOW BASS
24B TREBLE
24C VOICE
24D NORMAL
24E ALTO
24F BASS

12-10-41 C46 ADDED.
11-13-41 R17 WAS 63-606
11-5-41 C14 WAS 22-1193; 19 WAS S9594
9-22-41 R35 & BY-PASS ADDED
9-8-41 C32 ADDED; R25 WAS 63-1204; R26 WAS 63-1205; #21 WAS 122-15.

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION	DIAG Nº	PART Nº	DESCRIPTION
C1	22-1224	THREE GANG VARIABLE		C27	22-1126	.01 MFD.	400V	R20	63-957	33M OHM	1W.	9	S8326	WAVE TRAP	A1		1ST I.F. TRANS. PRI. (F.M.)
C2	22-319	.005 MFD.	200V	C28	22-188	.02 MFD.	400V	R21	63-1211	82M OHM	2W.	10	S9589	LOOP LOADING COIL	B1		1ST I.F. " SEC. (F.M.)
C3	22-229	.005 MFD.	600V	C29	22-825	.1 MFD.	400V	R22	63-260	100M OHM	1/4W	11	95-849	1ST I.F. TRANSFORMER	A2		2ND I.F. " PRI. (F.M.)
C4	22-162	.0001 MFD.	600V	C30	22-719	16MFD. ELECTROLYTIC	350V.	R23	63-652	120M OHM	1/4W	12	95-850	2ND I.F. "	B2		2ND I.F. " SEC. (F.M.)
C5	22-829	.05 MFD.	200V	C31	22-1146	50 MMFD. COMP.	500V	R24	63-661	680M OHM	1/4W	13	95-888	3RD I.F. "	A3		3RD I.F. " PRI. (F.M.)
C6	22-243	.01 MFD.	400V	C32	22-887	.001 MFD.	600V	R25	63-1212	1800 OHM	1/4W	14	95-788	DISCRIMINATOR I.F. TRANS. (F.M.)	B3		3RD I.F. " SEC. (F.M.)
C7	22-182	.00025 MFD.	600V	C46	22-852	30 MFD.	250V	R26	63-395	600 OHM	1/4W	15	S10073	PLATE CHOKE (1ST LIMITER)	A4		DISCRIMINATOR I.F. TRANS. PRI.
C8	22-868	COMPENSATING COND.	500V	R1	63-246	150 OHM	1/4W	R27	63-1251	VAR. RES.		16	S10325	AUTOMATIC TUNING UNIT (BC)	B4		DISCRIMINATOR I.F. " SEC.
C9	22-1257	.005 MFD.	1000V	R2	63-1159	39M OHM	1W	R28	63-1074	VOLUME CONTROL		17	S10334	AUTOMATIC TUNING UNIT (F.M.)	E	22-1015	WAVE TRAP
C10	22-492	.002 MFD.	600V	R3	63-583	1000 OHM	1/2W	R29	63-648	47M OHM	1/4W	18	S9562	MANUAL F.M. OSC. COIL	F		BROADCAST OSC. (NOTE 1)
C11	22-289	50 MMFD.	600V	R4	63-597	470M OHM	1/2W	R30	63-767	47M OHM	1/4W	19	S10681	GRID PEAKING COIL	G		BROADCAST ANT. (NOTE 2)
C12	22-826	.01 MFD.	200V	R5	63-600	2.2 MEGOHM	1/2W	R31	63-595	100M OHM	1/4W	20	85-301	BAND SELECTOR SWITCH	H		BROADCAST DET. (ON GANG)
C13	22-828	.05MFD.	400V	R6	63-680	10M OHM	1W	R32	63-1188	39M OHM	1W	21	122-16	TUNING METER	J	22-1227	BROADCAST PADDER
C14	22-1331	10MMFD. COMP.	500V	R7	63-742	180 OHM	1/2W	R33	63-604	.10 MEGOHM	1/2W	22	85-283	PHONO-RADIO SWITCH	K		SHORTWAVE OSC. (NOTE 1)
C15	22-1139	50MMFD. COMP.	500V	R8	63-713	47M OHM	1/2W	R34	63-1094	33 OHM WIREWOUND	1W.	23	169-92	PHONO PICKUP	M		SHORTWAVE ANT. (NOTE 2)
C16	22-127	25 MMFD.	600V	R9	63-773	180M OHM	1/2W	R35	63-418	1500 OHM	1/2W.	24	S9606	TONE CONTROL SW. ASSEM.	P		U.H.F. DET.
C17		(5MFD. ELECTROLYTIC	300V	R10	63-719	470M OHM	1/2W					25	95-879	POWER TRANS.	Z		U.H.F. ANT.
C18	22-1178	15MFD. "	250V	R11	63-1065	15M OHM	1W					26	100-36	DIAL LIGHT 6.3V. .25A.		NOTE	(1) TRIMMERS F & K ARE MOUNTED ON STRIP #22-1045
C19		30MFD. "	450V	R12	63-572	15 OHM	1/2W	/		WAVEMAGNET ASSEMBLY		27	85-238	ANTENNA CHANGEOVER SW.			
C20	22-1124	30MFD.	450V	R13	63-587	4700 OHM	1/2W	2	510267	SW. ANTENNA COIL ASSEMBLY		28	S10313	LINE CHOKE			(2) TRIMMERS G & M ARE MOUNTED ON STRIP #22-1033
C21	22-1138	.0005 MFD.	600V	R14	63-271	1 MEGOHM	1/2W	3		FM. ANTENNA " "							
C22	22-1203	.001 MFD.	600V	R15	63-633	680 OHM	1/2W	4	59823	OSCILLATOR " " (A.M.)							
C23	22-199	.5 MFD.	200V	R16	63-656	270M OHM	1/2W	5	59847	DETECTOR COIL ASSEM (A.M.)	A			1ST I.F. TRANS. PRI.			
C24	22-365	.0001 MFD.	600V	R17	63-1105	7000 OHM	2W	6	59066	R.F. " " (F.M.)	B			1ST I.F. " SEC.			
C25	22-1127	.02 MFD.	400V	R18	63-599	1.5 MEGOHM	1/2W	7		DETECTOR " " (F.M.)	C			2ND I.F. " PRI.			
C26	22-1137	.00015 MFD.	600V	R19	63-1102	15M OHM	1/2W	8	59850	COIL & RES. ASSEMBLY	D			2ND I.F. " SEC.			



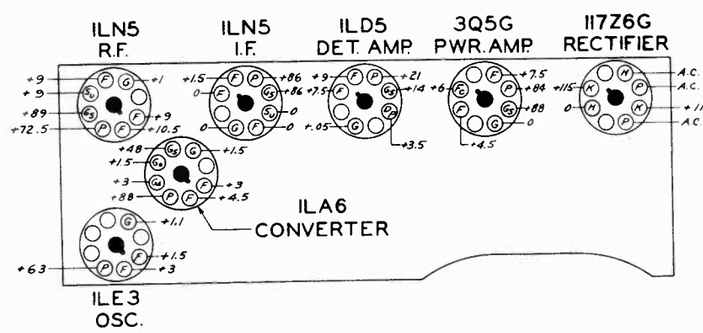
Audio Amplifier Chassis 22B1
Maximum audio power output 50 watts.

MODEL	SPEAKER
22H698	(#1) 49-488 6"
22H699	(#2) 49-490 12"
	(#3) 49-489 12"

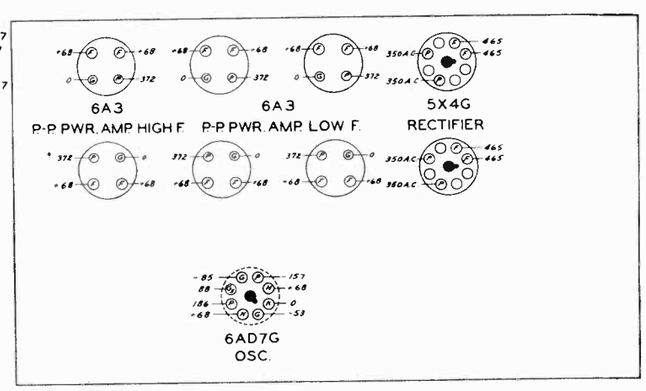
OSCILLATOR FREQUENCY 240-260 KC.
22 TUBE SUPERHETERODYNE
CHASSIS Nº 22B1 3 BAND A.C. PHONO

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION	
C7	22-182	.0025 MFD.	600 V	C45	22-1207	.07 MFD.	200 V
C12	22-826	.01 MFD.	200 V				
C24	22-365	.0001 MFD.	600 V				
C27	22-1126	.01 MFD.	400 V				
C29	22-825	.1 MFD.	400 V	R36	63-647	39M OHM	½ W.
C30	22-719	16 MFD. ELECTROLYTIC	350 V	R37	63-1263	1000 OHM CANDOHM	5 W.
C33	22-966	.04 MFD.	600 V	R38	63-646	33M OHM	½ W.
C34	22-1135	.005 MFD.	600 V	R39	63-371	15M OHM	½ W.
C35	22-417	.1 MFD.	600 V	R40	63-718	330 M OHM	½ W.
C36	22-1304	[25 MFD. ELECTROLYTIC	450 V	R41	63-1059	39M OHM	½ W.
C37		30 MFD. "	450 V	R42	63-150	10M OHM	½ W.
C38	22-893	20 MFD. ELECTROLYTIC	200 V	R43	63-1193	5600 OHM	2 W.
C39	22-1303	15 MFD. "	450 V	R44	63-1278	HUM CONTROL	
C40	22-716	.0005 MFD.	600 V	R45	63-577	100 OHM	½ W.
C41	22-958	.00035 MFD.	600 V				
C42	22-827	.1 MFD.	200 V				
C43	22-1302	.01 MFD.	600 V	29	95-866	AUDIO TRANS. (BASS)	
C44	22-670	.1 MFD.	400 V	30	95-865	AUDIO " (TREBLE)	
				31	95-354	FILTER CHOKE	
				32	5/10277	R.F. CHOKE	
				33	5/10633	OSCILLATOR COIL	
				34	5/10278	FILAMENT CHOKE	
				35	5/10271	LINE COUPLING COIL	
				36	5/10280	LINE FILTER COIL	
				37	5/10275	LINE FILTER COIL	
				38	95-867	POWER TRANS. 50-60~ 117V	
				39	85-134	OSCILLATOR ON-OFF SWITCH	
				F1, F2	22-1089	{OSCILLATOR FREQ. AMPLIFIER TUNING	

Volume control full on.
Line voltage 117 A.C. 60 cycle
Power consumption 325 watts.
Phono motor 25 watts additional.

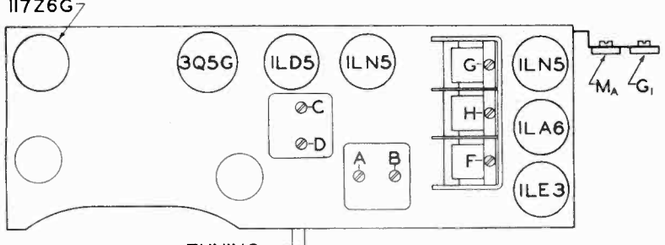


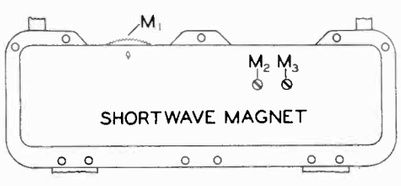
SOCKET VOLTAGES—BOTTOM SIDE UP



SOCKET VOLTAGES—BOTTOM SIDE UP

Model 7G605

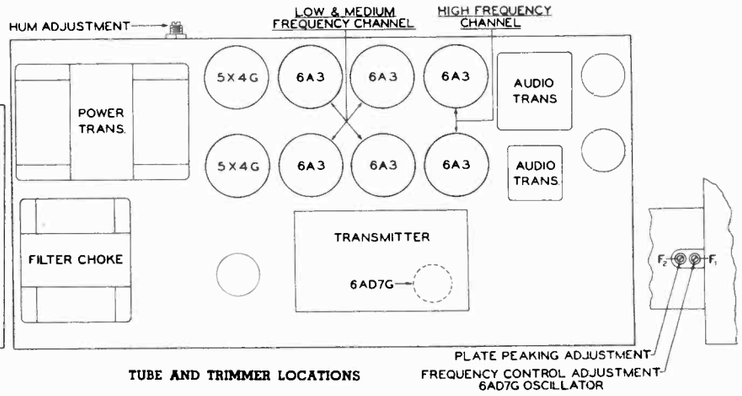




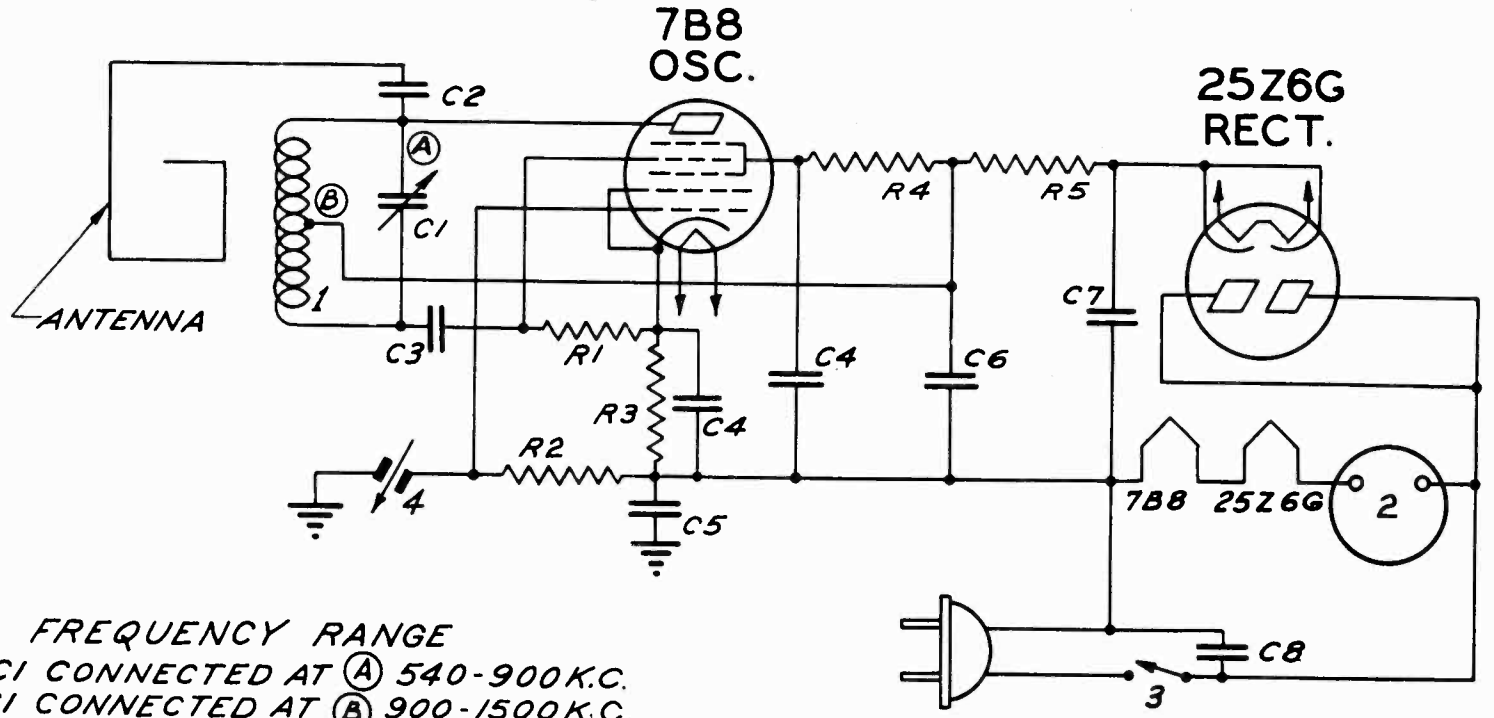
TUBE AND TRIMMER LOCATIONS

Models 22H698 and 22H699

Chassis 22B1—Phono
Audio Amplifier Section



TUBE AND TRIMMER LOCATIONS



FREQUENCY RANGE
C1 CONNECTED AT (A) 540-900K.C.
C1 CONNECTED AT (B) 900-1500K.C.

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-690	TUNING CONDENSER		R2	63-464	1 MEGOHM	1/4 W.
C2	22-127	25 MMFD.	600 V.	R3	63-581	470 OHM	1/4 W.
C3	22-182	.00025 MFD.	600 V.	R4	63-707	4700 OHM	1/4 W.
C4	22-829	.05 MFD.	200 V.	R5	63-964	4700 OHM	1/2 W.
C5	22-827	.1 MFD.	200 V.				
C6	22-1061	8 MFD. ELECTROLYTIC	150 V.				
C7		16 MFD. "	150 V.	1	S8611	OSC. COIL ASSEM.	
C8	22-1017	.05 MFD.	400 V.	2	141-85	MOTOR (60~)	
				3	85-191	A.C. SWITCH	
				4	142-50	PICKUP-MODEL-S9001	
R1	63-593	47M OHM	1/4 W.		142-51	PICKUP-MODEL-S9002	

PHONOGRAPH OSCILLATOR
ZENITH RADIO CORPORATION
CHICAGO, ILL.

5-18-41 RCA

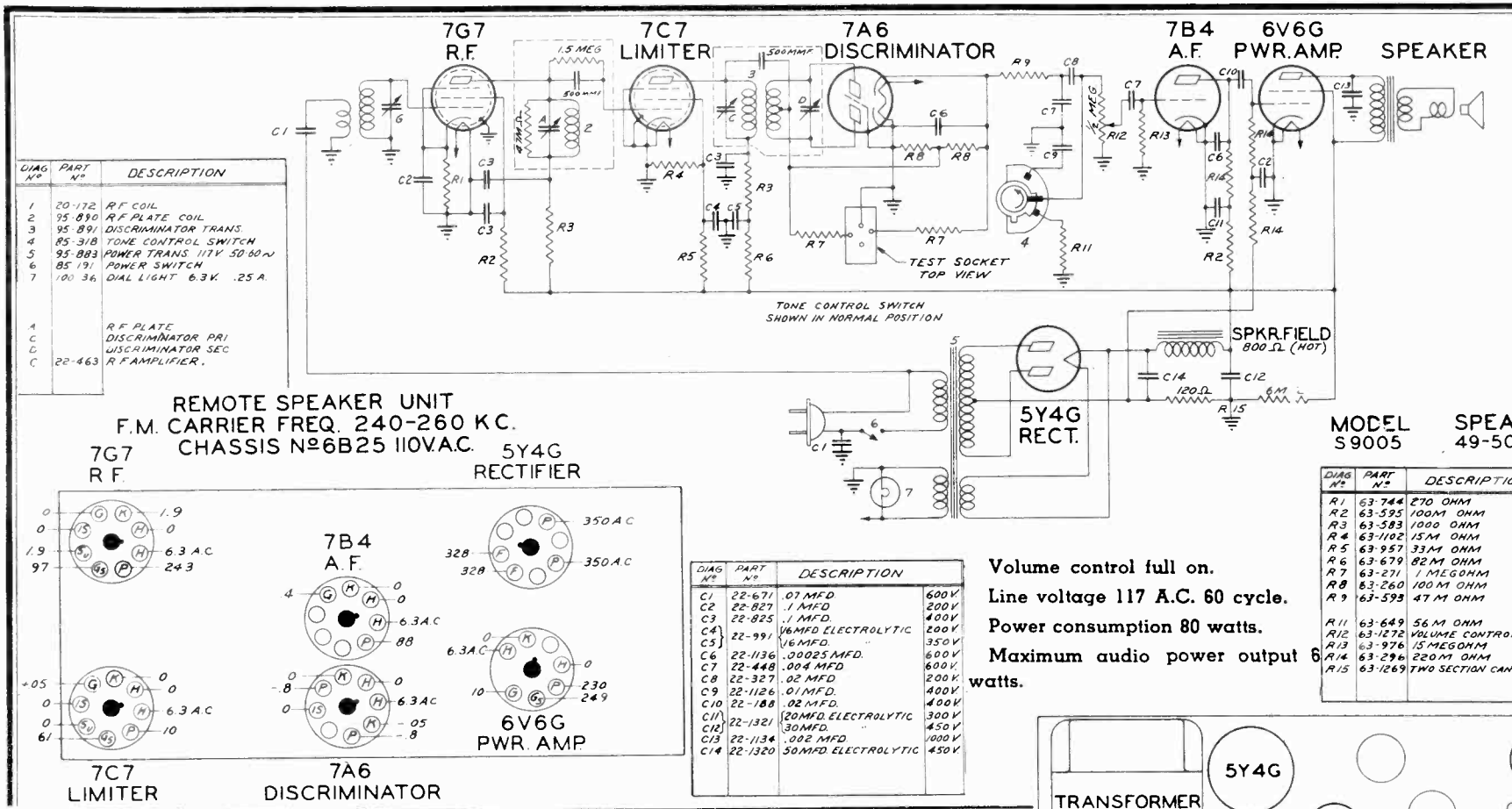
ZENITH RADIO CORP.

MODELS
S9001
S9002

MODELS S9001, S9002
Phono Oscillator

MODEL S9005
Chassis 6B25

ZENITH RADIO CORP.



DIAG Nº	PART Nº	DESCRIPTION
1	20-172	R F COIL
2	95-890	R F PLATE COIL
3	95-891	DISCRIMINATOR TRANS.
4	85-318	TONE CONTROL SWITCH
5	95-883	POWER TRANS. 117V 50-60 ~
6	85-191	POWER SWITCH
7	100-36	DIAL LIGHT 6.3 V. .25 A.
A		R F PLATE
C		DISCRIMINATOR PRI
D		DISCRIMINATOR SEC
C	22-463	R F AMPLIFIER.

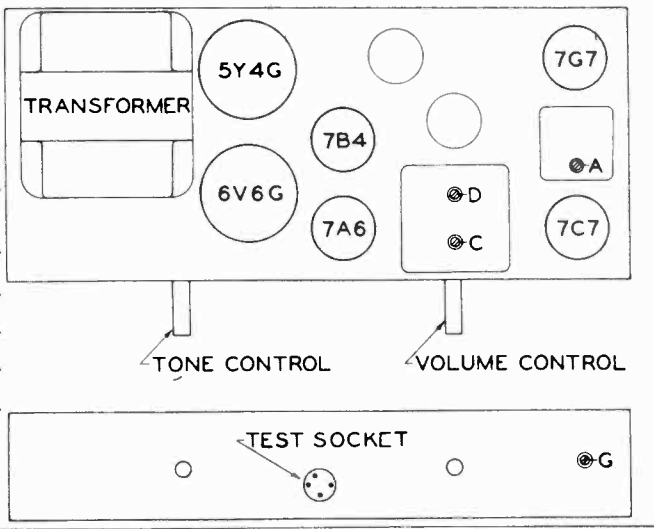
REMOTE SPEAKER UNIT
F.M. CARRIER FREQ. 240-260 K.C.
CHASSIS Nº6B25 110V.A.C.

DIAG Nº	PART Nº	DESCRIPTION	
C1	22-671	.07 MFD.	600V
C2	22-827	.1 MFD.	200V
C3	22-825	.1 MFD.	400V
C4	22-991	16MFD. ELECTROLYTIC	200V
C5		16MFD. "	350V
C6	22-1136	.00025 MFD.	600V
C7	22-448	.004 MFD.	600V.
C8	22-327	.02 MFD.	200V.
C9	22-1126	.01 MFD.	400V
C10	22-188	.02 MFD.	400V
C11	22-1321	20MFD. ELECTROLYTIC	300V
C12		30MFD. "	450V
C13	22-1134	.002 MFD.	1000V
C14	22-1320	50MFD. ELECTROLYTIC	450V

Volume control full on.
Line voltage 117 A.C. 60 cycle.
Power consumption 80 watts.
Maximum audio power output 6 watts.

MODEL S9005 SPEAKER 49-506 10"

DIAG Nº	PART Nº	DESCRIPTION	
R1	63-744	270 OHM	1/8 W
R2	63-595	100M OHM	1/4 W
R3	63-583	1000 OHM	1/4 W
R4	63-1102	15M OHM	1/2 W
R5	63-957	33M OHM	1 W
R6	63-679	82M OHM	1 W
R7	63-271	1 MEGOHM	1/4 W
R8	63-260	100M OHM	1/4 W
R9	63-593	47M OHM	1/4 W
R11	63-649	56M OHM	1/4 W
R12	63-1272	VOLUME CONTROL	
R13	63-976	15 MEGOHM	1/4 W
R14	63-296	220M OHM	1/4 W
R15	63-1269	TWO SECTION CANDOHM	



Operation	Connect oscillator to	Dummy Antenna	Input Sig. Frequency	Trimmers	Purpose
1	Coil side of C1. See Schematic	.5 mfd.	250 Kc.	C	Align for max. deflec. across ½ discrim. load
2	"	"	"	D	Align for zero deflec. across full discrim. load
3	"	"	"	A	Align for max. deflec. across ½ discrim. load
4	"	"	"	G	Align for max. deflec. across ½ discrim. load
5	Repeat step No. 2 and then remove oscillator leads.				
6	If the tone quality of the remote speaker is impaired, the frequency of the 6AD7G transmitter will have to be reset in the following manner: Align F. (see 22B1 trimmer locations) for zero deflection across the full discriminator load of the remote receiver and then align F. for maximum deflection across ½ of the discriminator load. If F. tunes broad it is an indication that the remote speaker is located too close to the transmitter and the action of the limiter is masking the correct peak adjustment.				