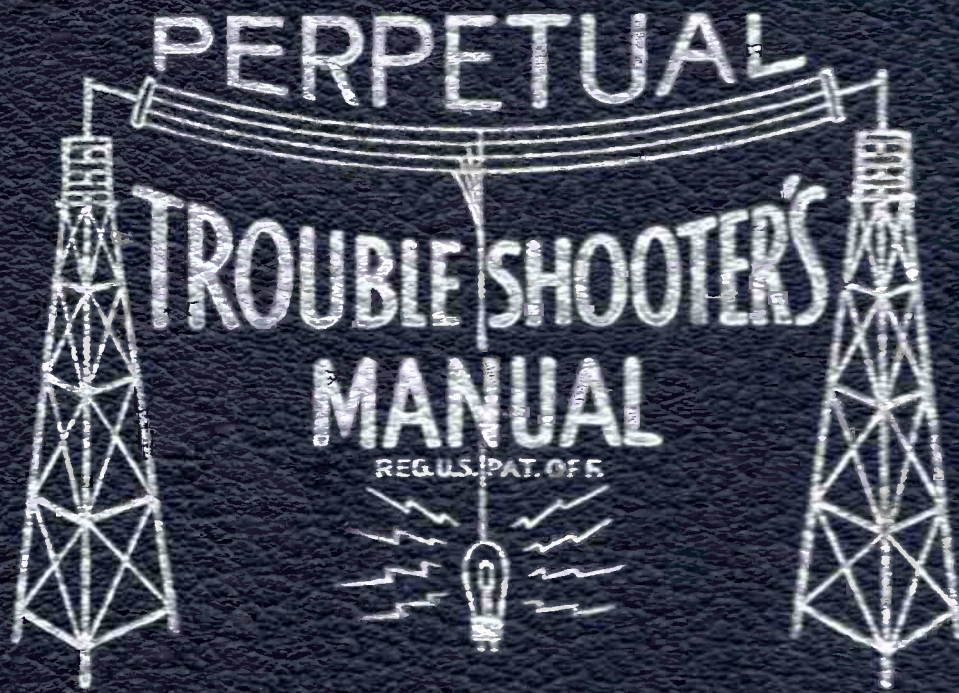
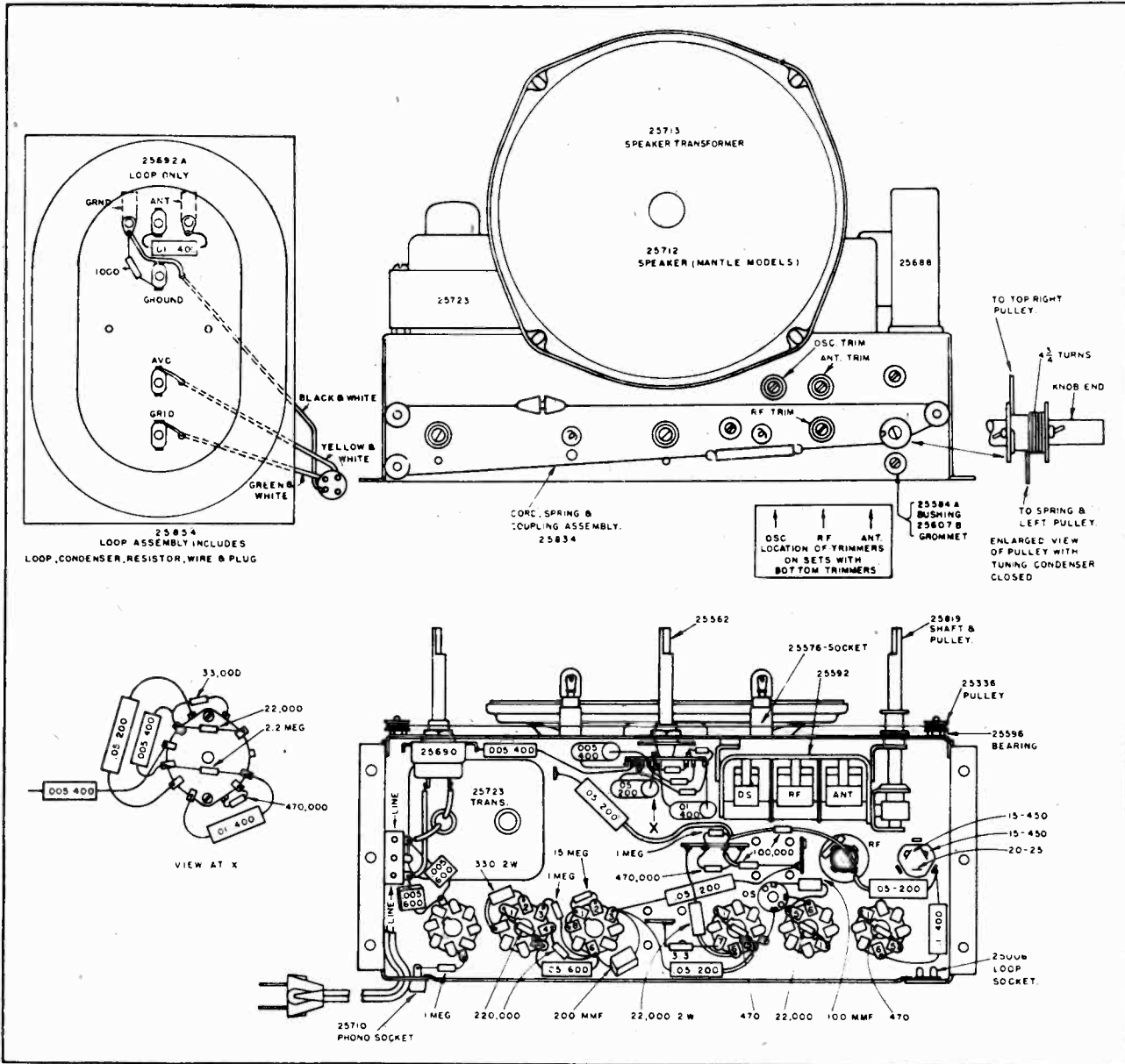


VOLUME XV



JOHN F. RIDER



SERVICE PARTS LIST

MODEL 43-8685

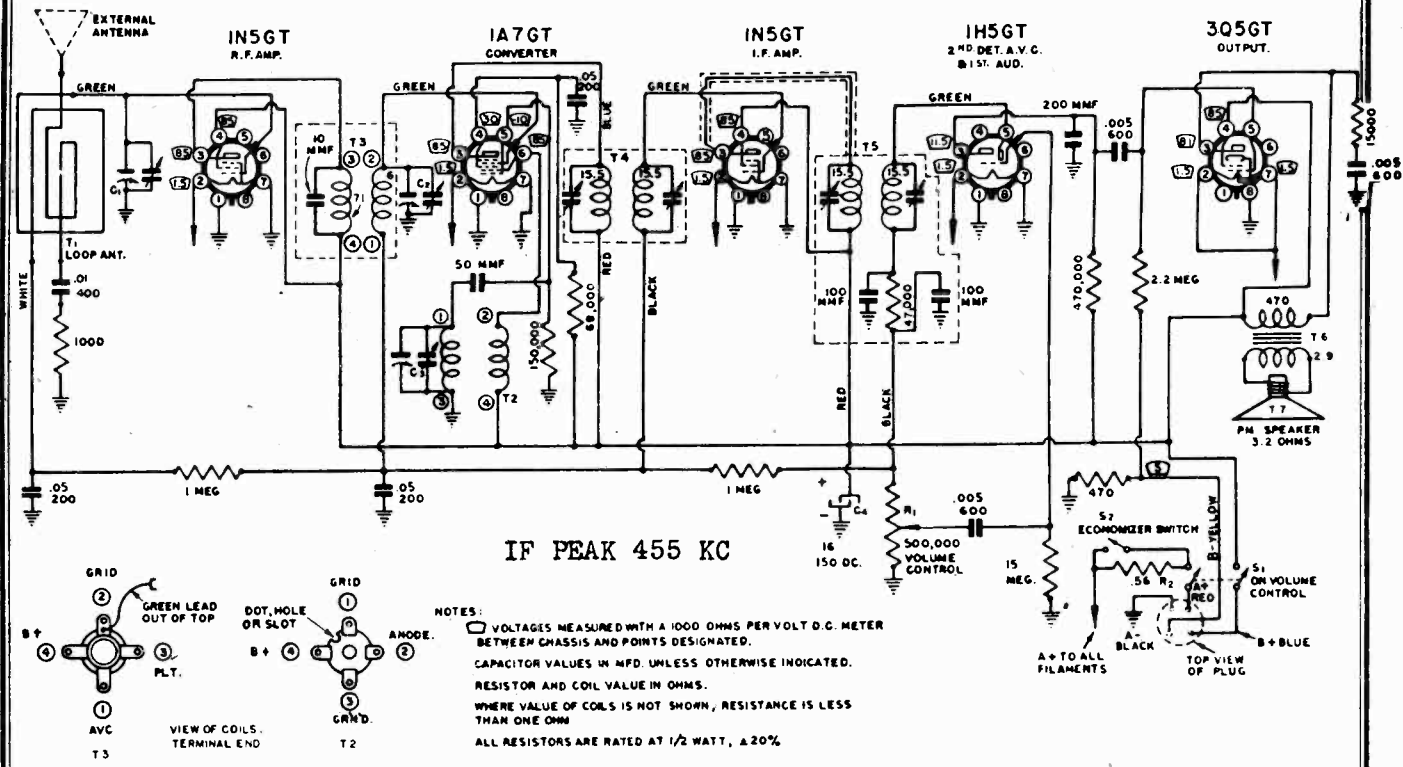
When ordering parts always mention complete factory model number, series and issue.

Part No.	Description	Part No.	Description
25692	Antenna—Loop	25336	Pulley—Wood—Small
25596	Bearings—For Wood Pulleys	25819	Pulley—Manual Drive With Shaft
25572	Bracket—Tuning Condenser—Front	25607	Rubber—Grommets
25573	Bracket—Tuning Condenser—Rear	25774	Screw—Set For Worm Gear (Tuning Condenser)
25574	Bracket—Speaker	25576	Socket—Dial Lamp
25765	Bracket—Pointer Track	25620	Socket—Octal
25660	Cabinet	25006	Socket—For Loop
25597	Coil—R. F.	25712	Speaker—With Transformer
25724	Coil—Oscillator	25562	Switch—Tone S-1.
25688	Condenser—Filter 15-450, 15-450, 20-25	25711	Track—Pointer
25592	Condenser—Tuning C-1, C-2, C-3	25715	Transformer—I. F. Input
25690	Control—Volume (with AC Switch S-2)	25714	Transformer—I. F. Output
25068	Cord—AC and Plug	25713	Transformer—Output—Speaker
25834	Cord—Dial (includes Spring and Pointer Coupling)	25723	Transformer—Power 60 Cycles
25751	Dial Scale—Glass		Note: Resistors and condensers not listed will be supplied on order—specify value.
25578	Dial Pointer		We cannot supply speaker cones. We can replace or repair a damaged speaker for a nominal price if it is returned to our factory, transportation charges prepaid.
25829	Knob—Tone		
25696	Knob—Volume and Tuning		
25710	Phono—Pick-Up Socket		
25693	Plug—For Loop		

In ordering any part not listed give complete description and a sketch, if possible.

WESTERN AUTO SUPPLY CO. OF CAL.

MODEL 43-6451



SERVICE PARTS LIST MODEL 43-6451

Order Parts by Model No. and Part No.

Part No.	Name
25296	Adaptor, for use with 2 volt storage battery.
25566	Bearing (for wood pulleys)
25561	Cabinet
25597	Coil, R. F. (T3)
25598	Coil, Oscillator (T2)
25600	Condenser, Electrolytic 16 Mfd, 150 V. (C4)
25592	Condenser—Tuning, 3 Gang. less Tuning Shaft (C1, C2, C3)
25367	Control, Volume, with On-Off Switch (R1)
25811	Cord, Dial, complete with Spring and Pointer Coupling
25696	Knob, Tuning or Volume
25609	Loop (T1)
25612	Plug, Battery Cable 4 Prong
	Pointer, Dial — See, "Track-Pointer"
25336	Pulley—Wood
25616	Scale, Dial
25766	Shaft—Tuning with "spool" pulley
25620	Socket—Tube
25593	Speaker 5" P. M. Dynamic (T7) (less Transformer)
25319	Switch, Economizer (S2)
25808	Track, Pointer, complete with Brackets and Pointer
25621	Transformer I. F. Input (T4)
25622	Transformer I. F. Output (T5)
25594	Transformer—Speaker Output (T6)

Reference Numbers such as (C4) are shown on circuit diagram.

Parts not listed above, may be ordered by part number as shown in the picture and by complete description, send a sketch if possible.

We cannot supply speaker cones. We can replace or repair a damaged speaker for a nominal price if it is returned to our factory, transportation charges prepaid.

Model 43-6451

Five Tube Battery Radio

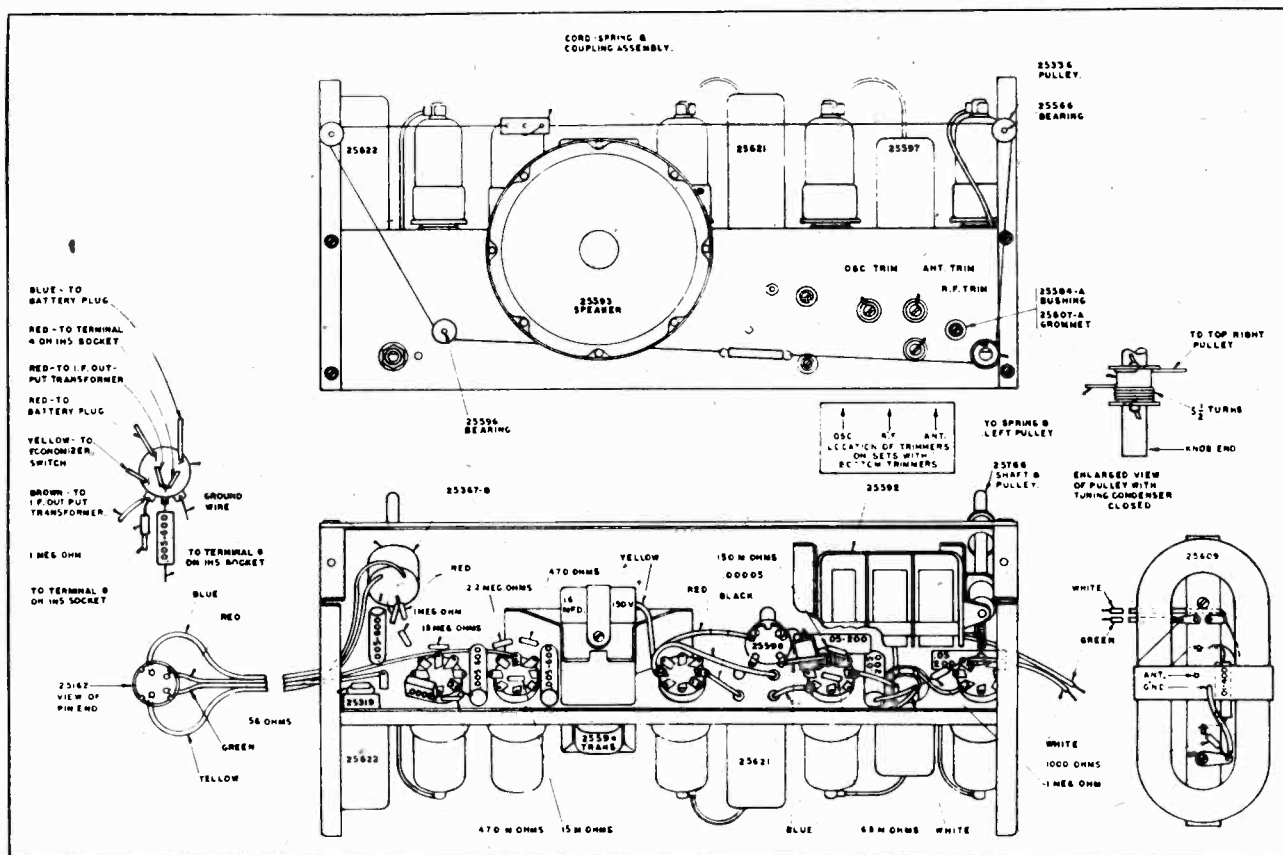
Service Notes

How To Remove Chassis From Cabinet—Remove knobs by pulling straight off, disconnect battery by removing plug, and remove two screws inserted through bottom of cabinet. Chassis can be removed now. To REMOVE GLASS DIAL—remove the four wood screws which are inserted from the interior of cabinet. (Note—After installing chassis in cabinet see that the bakelite strip attached to dial cord is engaged with the pin on the dial pointer.)

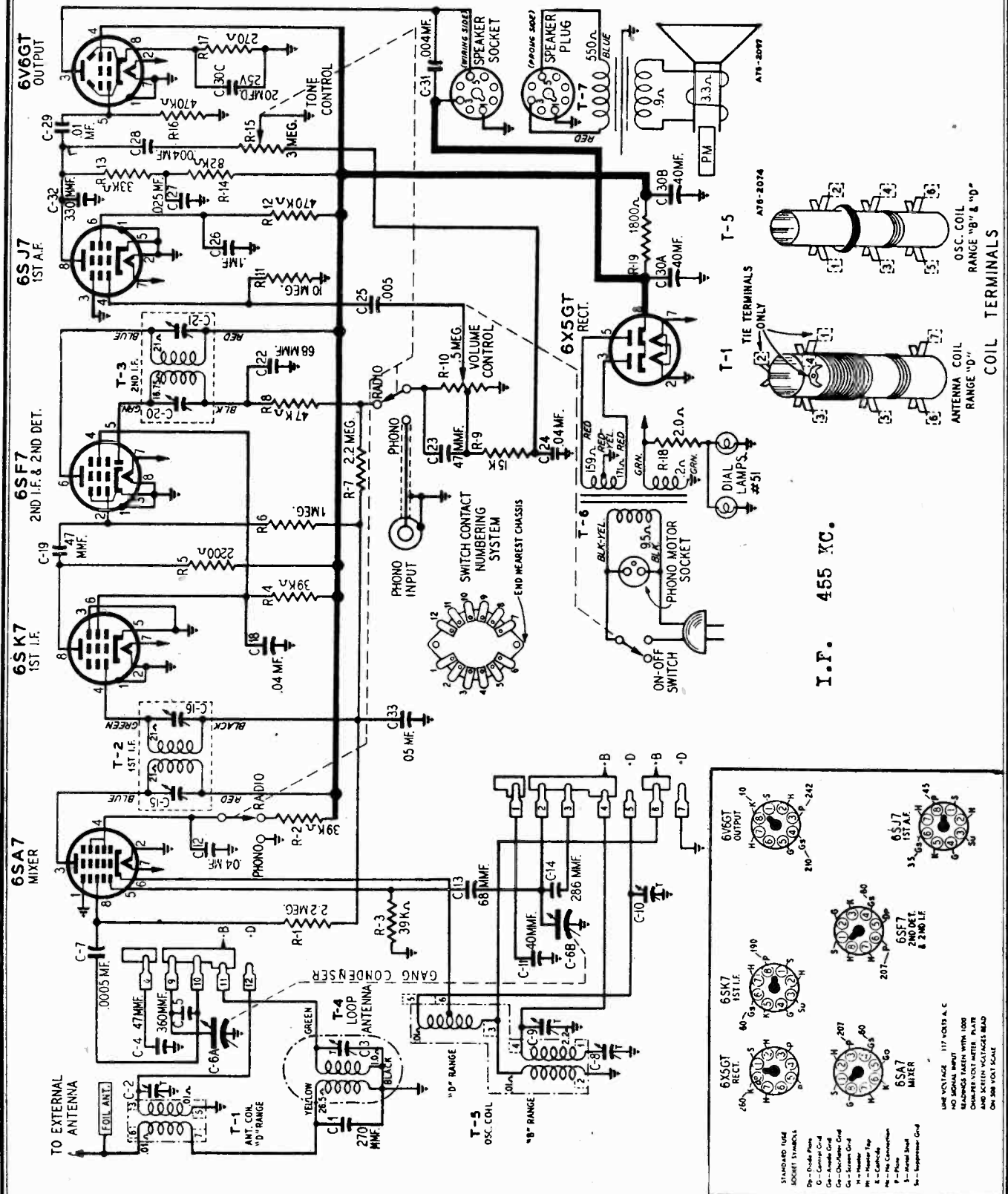
To Properly Align—Remove chassis from cabinet, and align I. F. Transformers in the conventional manner with a test oscillator adjusted to 455 KC, connected to the grid of the 1A7GT through a .1 Mfd condenser, with the tuning condenser set at minimum capacity. To align tuning condenser, connect test oscillator to antenna wire (green) through a .0001 Mfd. condenser. Adjust oscillator trimmer condenser (located on left top) to 1620 KC with tuning condenser at minimum capacity (completely out of mesh). The antenna and R. F. sections are trimmed at 1400 KC. Antenna trimmer is top right; R. F. trimmer is below at right. Dial pointer may be adjusted to scale by slipping bakelite pointer coupling on dial cord.

Battery Unit Voltages—Should be checked with receiver turned on—if B voltage is below 60 Volts, battery unit should be replaced.

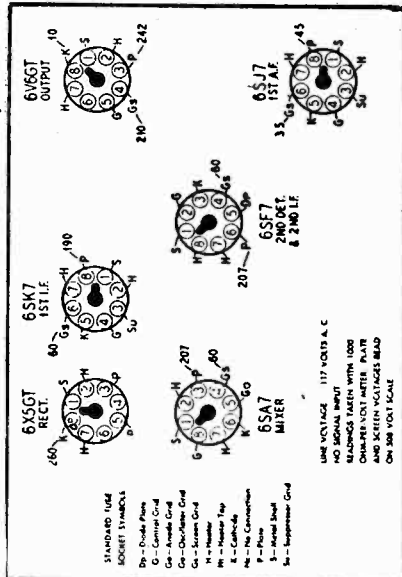
Dial Cord Replacement—Is best accomplished by replacing complete cord assembly #25811, which is made up to correct length. In an emergency 30 lb. fish line may be used. See picture of chassis for correct installation.



WESTERN AUTO SUPPLY CO.



I.P. 455 KC.



STANDARD IUF SOCKET SYMBOLS
 Dp - Diode Plate
 G - Control Grid
 Gc - Collector Grid
 Gs - Screen Grid
 H - Heater
 K - Control Knob
 L - Lamp
 M - Motor
 N - No. Connections
 P - Pin
 S - Signal Shield
 Ss - Suppressor Grid

LINE VOLTAGE 117 VOLTS A.C.
 NO SIGNAL INPUT
 READINGS TAKEN WITH 1000 OHM RESISTOR IN PLACE
 DIMENSIONS IN INCHES UNLESS NOTED
 ON 300 VOLT SCALE

WESTERN AUTO SUPPLY CO. REPLACEMENT PARTS LIST

NOTICE: There is a power rating label on the chassis. This label specifies the power supply on which the radio may be used, and identifies the radio as to chassis, dial and issue letter. When ordering parts or writing, give ALL information appearing on this label.

RESISTORS

B85225	R-1, R-7	2.2 megohms	0.5 W	Carbon.....
C84393	R-2, R-4	39 K ohms	1.0 W	Carbon.....
B84393	R-3	39 K ohms	0.5 W	Carbon.....
B84222	R-5	2200 ohms	0.5 W	Carbon.....
B85105	R-6	1 megohm	0.5 W	Carbon.....
B85473	R-8	47 K ohms	0.5 W	Carbon.....
B84153	R-9	15 K ohms	0.5 W	Carbon.....
36X358	R-10	.5 megohm		Volume control and line switch
B85106	R-11	10 megohms	0.5 W	Carbon.....
B85474	R-12, R-16	470 K ohms	0.5 W	Carbon.....
B84333	R-13	33 K ohms	0.5 W	Carbon.....
B84823	R-14	82 K ohms	0.5 W	Carbon.....
40X276	R-15	3.0 megohms		Tone control & Radio-Phono switch
C84271	R-17	270 ohms	1.0 W	Carbon.....
43X213	R-18	2.0 ohms	0.5 W	Wire wound.....
D84182	R-19	1800 ohms	2.0 W	Carbon.....

MISCELLANEOUS

12A436	8" P.M. Speaker Complete with Output Transformer.....
	Cone and Voice Coil Assembly (Specify part number and letters stamped on speaker).....
	Output Transformer (Specify part number and letters stamped on speaker).....
3A303	Tube socket-octal (8 prong) moulded.....
3A304	Phono motor socket.....
3A305	Phono socket-single pin tip.....
10A467	Knob (Tuning).....
10A468	Knob (Off-On, Volume).....
10A529	Knob (Tone, Radio-Phono).....
10A469	Knob (SW-BC).....
2A359	Band Change Switch.....
13X328	Line cord and plug assembly.....
9A1229	Counterpoise antenna.....

TRANSFORMERS AND COILS

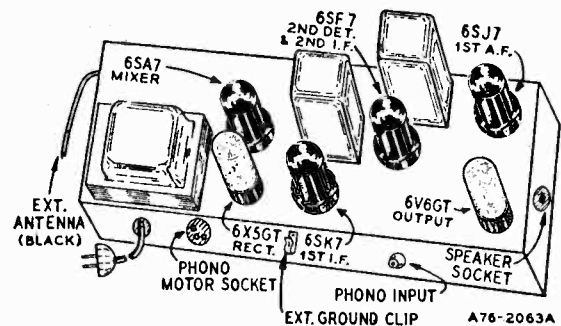
T-1	9A1812	"D" Range Antenna Coil Assembly.....
T-2	9A1814	1st I.F. Coil Assembly.....
T-3	9A1815	2nd I.F. Coil Assembly.....
T-4	9A1821	"B" Range Loop Antenna.....
T-5	9A1813	"B" Range and "D" Range Oscillator Coil Assembly.....
T-6	53X282	117 Volt 60 Cycle Standard Power Transformer.....
T-6	53X283	117 Volt 25 Cycle Standard Power Transformer.....
T-6	53X284	117-234 Volt, 40-60 Cycle Universal Power Transformer.....

CAPACITORS

C-1	47X445	270 mmf	Moulded
C-2	17A164	5-50 mmf	Trimmer
C-3	17A235	2-12 mmf	Trimmer
C-4	47X473	47 mmf	Silvered mica
C-5	47X474	360 mmf	Silvered mica
C-6A, C-6B	14A184	Gang Condenser with drive pulley	
C-7	B66501	.0005 mf 200 V	Tubular
C-8	17A157	440-490 mmf	Trimmer
C-9, C-10	17A109	2.5-35 mmf	Dual Trimmer Condenser
C-11	47X472	40 mmf	Silvered mica
C-12, C-18	D66403	.04 mf 400 V	Tubular
C-13	47X466	68 mmf	Moulded
C-14	47X481	286 mmf	Silvered mica
C-15, C-16	Part of T-2 (1st I.F. Coil Assem.)		Moulded
C-19, C-23	47X463	47 mmf	Moulded
C-20, C-21	Part of T-3 (2nd I.F. Coil Assem.)		Moulded
C-22	47X471	68 mmf	Moulded
C-24	D64403	.04 mf 400 V	Tubular
C-25	D66502	.005 mf 400 V	Tubular
C-26	D66104	.10 mf 400 V	Tubular
C-27	D64253	.025 mf 400 V	Tubular
C-28, C-31	D66402	.004 mf 400 V	Tubular
C-29	D66103	.01 mf 400 V	Tubular
C-30A		40 mf 450 V	3 Section Electrolytic.....
C-30B	45X346	40 mf 450 V	
C-30C		20 mf 25 V	
C-32	47X470	330mmf	Moulded
C-33	B66503	.05 mf 200 V	Tubular

DIAL AND DRIVE ASSEMBLY

6X21	Rubber Grommet	} Mtg. Gang Condenser {
20X329	Cond. Cushion Stud	
57X176	Mounting Plate	
25X1488	Idle Bracket.....	
25X1489	Pulley Bracket (right).....	
25X1490	Pulley Bracket (left).....	
24X360	Idle Pulley.....	
26X485	Drive Shaft.....	
19X192	"C" Washer (for drive shaft).....	
25X1491	Pointer Bracket.....	
15X229	Pointer.....	
	50" Drive Cord (18 lb. test).....	
28X113	Tension Spring (Drive cord).....	
30X517	Dial clamp.....	
4X915	Escutcheon, Dial (Right).....	
4X916	Escutcheon, Dial (Left).....	
4X931	Escutcheon Insert.....	
58X613	Dial Glass.....	
7A200	Pilot light socket assembly.....	
	No. 51 Pilot light.....	



SPECIFICATIONS

Power Consumption (at 117 Volts AC).....	40 Watts (normal) 65 Watts (phono operating)	Speaker.....	8" PM Dynamic
Power Output.....	4 Watts, Maximum 2.3 Watts, 10% Harmonics	Intermediate Frequency.....	455 KC
Tuning Frequency Range		Selectivity.....	40 KC Broad at 1000 Times Signal
B Range	540-1600 Kilocycles	Sensitivity (For 0.5 Watt Output, with External Antenna)	
D Range	9-15.6 Megacycles	B Range.....	9 Microvolts Average
		D Range.....	20 Microvolts Average

MODEL D1645

MODELS D2610, D2611

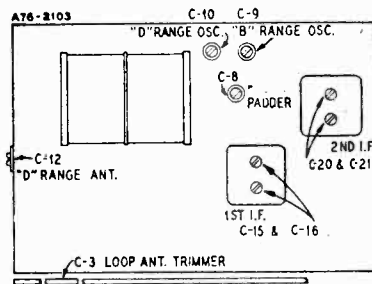
WESTERN AUTO SUPPLY CO.

MODEL D1645

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments. 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		CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
FREQUENCY SETTING	Grid of 6SA7 Pin 8					
I.F.	455 KC		.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C15) & (C16) 2nd I.F. (C20) & (C21)
RANGE B	1620 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C9)
	1400 KC	Antenna Lead	100 mmf.	B Range	Tune Rotor to Max. Output	Ant. Range B (C3)
	600 KC	Antenna Lead	100 mmf.	B Range	Tune Rotor to Max. Output	Oscillator (C8) See Note B
Repeat above steps at 1620 and 600 KC until readjusting the oscillator Range B Trimmer (C8) causes no further improvement of output.						
RANGE D	15,600 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C10)
	15,600 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Ant. Range D (C2)
Reassemble chassis in cabinet.						
LOOP RANGE B	1400 KC	Antenna Lead	100 mmf.	B Range	Tune Rotor to Max. Output	Ant. Range B (C3) See Note A



NOTE A—Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

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

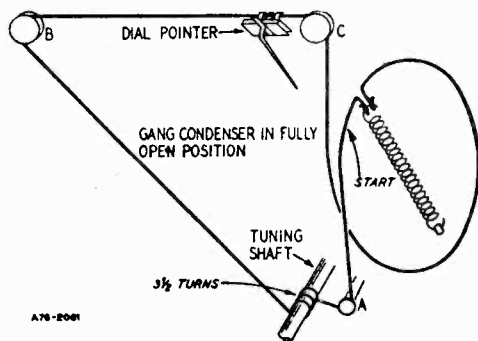
Before removing the chassis from the cabinet it will be necessary to detach the dial pointer from the dial string. To do this, spread the tabs on the pointer and pull the dial string off the pointer.

The dial lamp socket assemblies may be disengaged from the cabinet mounting by squeezing together and pulling away from the cabinet mounting, the spring bracket to which the dial lamp socket is mounted. Take care not to bend or damage the large drive pulley on the gang condenser while doing this.

When replacing the chassis in the cabinet it will be necessary to tune in a station of a known frequency and move the dial pointer until that frequency is indicated on the dial and then attach the pointer to the dial string. Take care not to scuff or cut the dial string or bend the pointer during this operation.*

DRIVE CORD REPLACEMENT

The drive cord should be replaced as shown on the accompanying illustration using a 50" drive cord for the purpose. After the cord has been installed, stretch the tension spring and tie the free end of the cord to it, then cut off any excess string that may remain.



MODELS D2610, D2611

REPLACEMENT PARTS LIST

When ordering parts mention part number, model number, and series

Schematic Diagram Symbol	Part No.	Description
CONDENSERS		
C1		See "Antenna plate" under "Miscellaneous"
C2, C8	12912	.00025 mfd., mica, 20%
C3, C6	124150	Dual trimmer, antenna and oscillator
C4	12938	.00005 mfd., mica, 10%
C5	1001	.1 mfd., 400 volts, +50%-10%
C7	1008	.05 mfd., 200 volts, 25%
C9	10025	.002 mfd., 600 volts, 25%
C10	10091	.15 mfd., 400 volts, 25%
C11	129160	.0004 mfd., mica, 20%
C12	10078	.01 mfd., 200 volts, 25%
C13, C14 or C13, C14	11992	Electrolytic, for 60-cycle sets, 20 mfd. x 150 volts, 40 mfd. x 150 volts
C13, C14	11993	Electrolytic, for 25-cycle sets, 60 mfd. x 150 volts, 60 mfd. x 150 volts
C15	10011	.01 mfd., 400 volts, 25%
RESISTORS *		
R1	A-9B1-78	22,000 ohms, 10%, 1/2 watt
R2	A-9B1-3	22 ohms, 20%, 1/2 watt
R3	A-9B1-34	3.3 megohms, 20%, 1/2 watt
R4	101230	Volume control, 500,000 ohms
R5, R7	A-9B1-83	150,000 ohms, 10%, 1/2 watt
R6	A-9B1-35	4.7 megohms, 20%, 1/2 watt
R8	A-9B1-23	330,000 ohms, 20%, 1/2 watt
R9	A-9B1-52	150 ohms, 10%, 1/2 watt
R10	A-9B2-64	1500 ohms, 10%, 1 watt
R11	A-9B1-50	100 ohms, 10%, 1/2 watt
SPEAKER		
T6	114213	4-inch P.M. speaker (less output transformer)
T5	105117	Output transformer for speaker
COILS		
T1, T2	112827	Tuning assembly, complete (consists of antenna and oscillator coils)
T3	108157J	Input I.F. coil, complete in can
T4	108157K	Output I.F. coil, complete in can

*The values of all resistors listed above are based on RMA standards. Due to conditions beyond our control some receivers have been shipped with resistors of pre-standardized values. This receiver will operate equally well with resistors of either group. An illustration of the difference follows:

Pre-standardized value—50,000 ohms, ±10%, 1/3 watt
RMA value—47,000 ohms, ±10%, 1/2 watt

NOTE ON TUBE REPLACEMENT

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

DIAL PARTS

112822	Dial scale
112824	Crystal for dial scale
A-2M-7758	Cinch buttons
112825	Pointer
120184	Coiled tension spring for dial string
1209	Dial string
117809	Shaft for pointer
115647	Bracket for dial
115648	Support for dial bracket
117808	Drive shaft
115594	Drive bracket

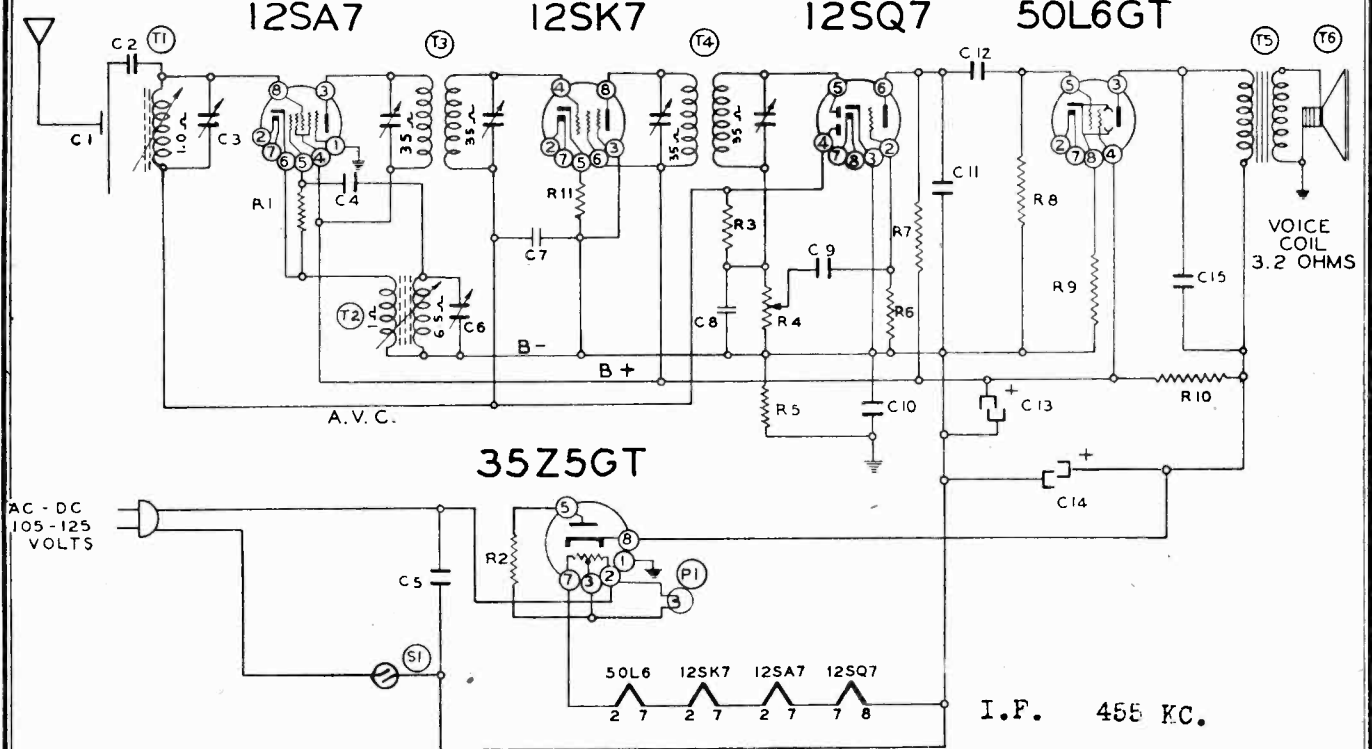
MISCELLANEOUS

12120	Octal socket, molded bakelite
121216	Socket base for filter condenser, bakelite
10798	Line cord and plug
R4, S1	Volume control and switch (500,000 ohms)
101230	
P1	Pilot light bulb, 6-8 volts, type T-47
107249	
107344	Socket assembly for pilot light
13220	Chassis mounting screws, No. 6-32 x 3/8"
131193	Cinch buttons, for mounting antenna plate
C1	115645 Antenna plate, walnut (includes washer condenser)
C1	115649B Antenna plate, ivory (includes washer condenser)
	128501-36 Cabinet, bakelite, walnut
	128501-9 Cabinet, bakelite, ivory
	128499-36 Knob, bakelite, walnut
	128499-9 Knob, bakelite, ivory

We cannot supply speaker cones or fields separately. We can replace or repair a damaged speaker if it is returned to our factory, transportation charges prepaid.

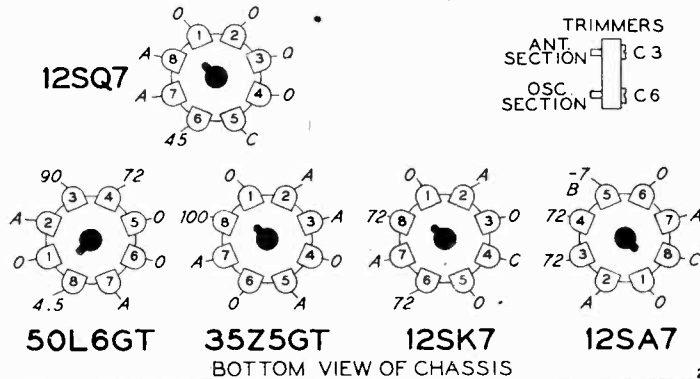
WESTERN AUTO SUPPLY COMPANY

WESTERN AUTO SUPPLY CO



NOTES - VOLTAGES MEASURED WITH A 1000-OHM-PER-VOLT VOLT-METER BETWEEN SOCKET TERMINALS AND NEGATIVE B SUPPLY.
 A - CANNOT BE MEASURED WITH VOLT-METER.
 B - OSCILLATOR VOLTAGE MEASURED WITH R.F. CHOKE IN SERIES WITH VOLT-METER LEAD.
 C - DIODE VOLTAGE, LESS THAN ONE VOLT NEGATIVE, CANNOT BE MEASURED ACCURATELY.

Voltages at tube sockets

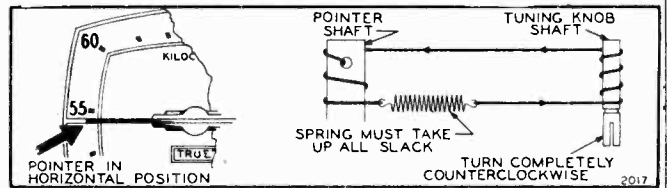


Technical Data

Tuning Range	535 to 1720 kc.
Intermediate Freq.	455 kc.
Power Consumption	35 watts
Sensitivity (for 0.05 watt output)	60 microvolts average
Selectivity	80 kc. at 1000 times signal at 1000 kc.
Power Output (in voice coil)	
Undistorted	0.8 watt
Maximum	1.2 watt

REPLACING DIAL STRING (See Illustration)

1. Rotate the tuning shaft to its extreme counter-clockwise position (rotors completely closed).
2. Tie one end of the string to the tension spring. Wind the string around the pointer shaft, passing it through the hole, and around the tuning knob shaft as shown. The direction of winding and the number of turns must be exactly as illustrated. IMPORTANT: When the installation is complete, and when the condenser rotors are closed, the spring should be close to the pointer shaft.
3. Tie the other end of the string to the spring, first stretching the spring so that it will take up all slack.
4. Remove the crystal covering the face of the dial. Rotate the pointer, against the friction of the shaft, until it is in a horizontal position, as illustrated.



Dial string replacement

WESTERN AUTO SUPPLY CO.

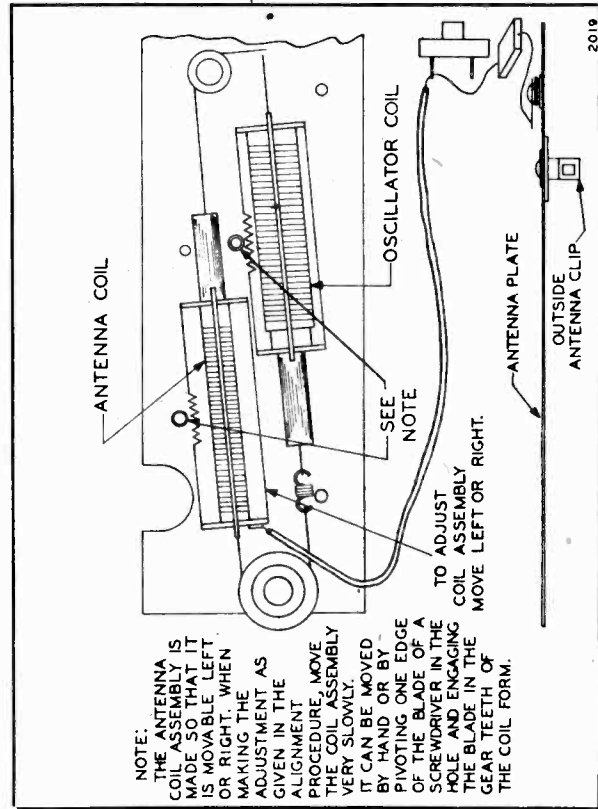
ALIGNMENT PROCEDURE

- No aligning adjustments should be attempted until all other possible causes of trouble have been checked.
- Turn volume control to maximum for all adjustments.
- Connect ground post of signal generator to B— of radio through a 0.1 mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.

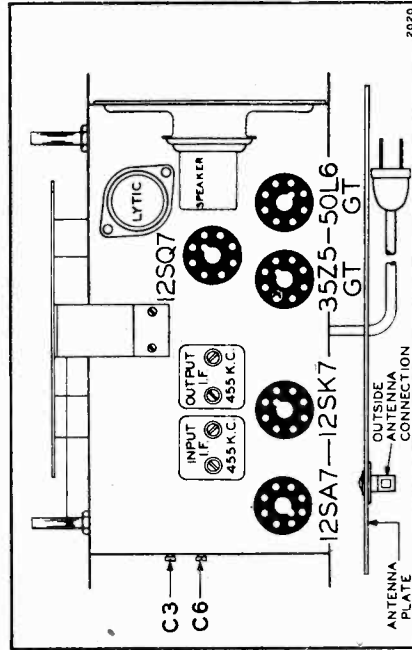
Band	Signal Generator Frequency Setting	Dummy Antenna	Connection to Radio	Position of Iron Cores (Dial Setting)	Trimmers Adjusted (in order shown)	Adjustment
I.F.	455 Kc.	.1 mfd.	Grid of 12SA7	All the way out	Two trimmers on top of output I.F. can	Adjust for maximum output
	455 Kc.	.1 mfd.	Grid of 12SA7	All the way out	Two trimmers on top of input I.F. can	Adjust for maximum output
	1720 Kc.	.1 mfd.	Grid of 12SA7	All the way out	Oscillator trimmer C6 (see chassis view, page 2)	Adjust for maximum output
	1720 Kc.	200 mmf.	Outside Antenna Clip	All the way out	Antenna trimmer C3 (see chassis view, page 2)	Adjust for maximum output
BROADCAST	1400 Kc.	200 mmf.	Outside Antenna Clip	Turn dial to 1400 Kc.	Adjust position of antenna coil	Adjust for maximum output (see coil view below)
	1720 Kc.	200 mmf.	Outside Antenna Clip	Turn dial to 1720 Kc.	Antenna trimmer C3 (see chassis view, page 2)	Check for tracking (see note below)

NOTE: After the antenna coil has been tracked at 1400 Kc. it is necessary to check the adjustment of antenna trimmer C3 again at 1720 Kc. If no appreciable change in trimmer adjustment is necessary, the coil is in track. If the trimmer requires considerable adjustment, it will be necessary again

to adjust the position of the antenna coil at 1400 Kc. These two adjustments should be made several times, until no change of trimmer adjustment is required at 1720 Kc.

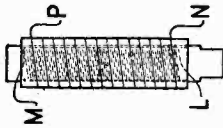
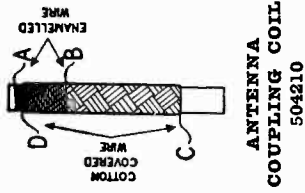


View of coil assembly



Top view of chassis

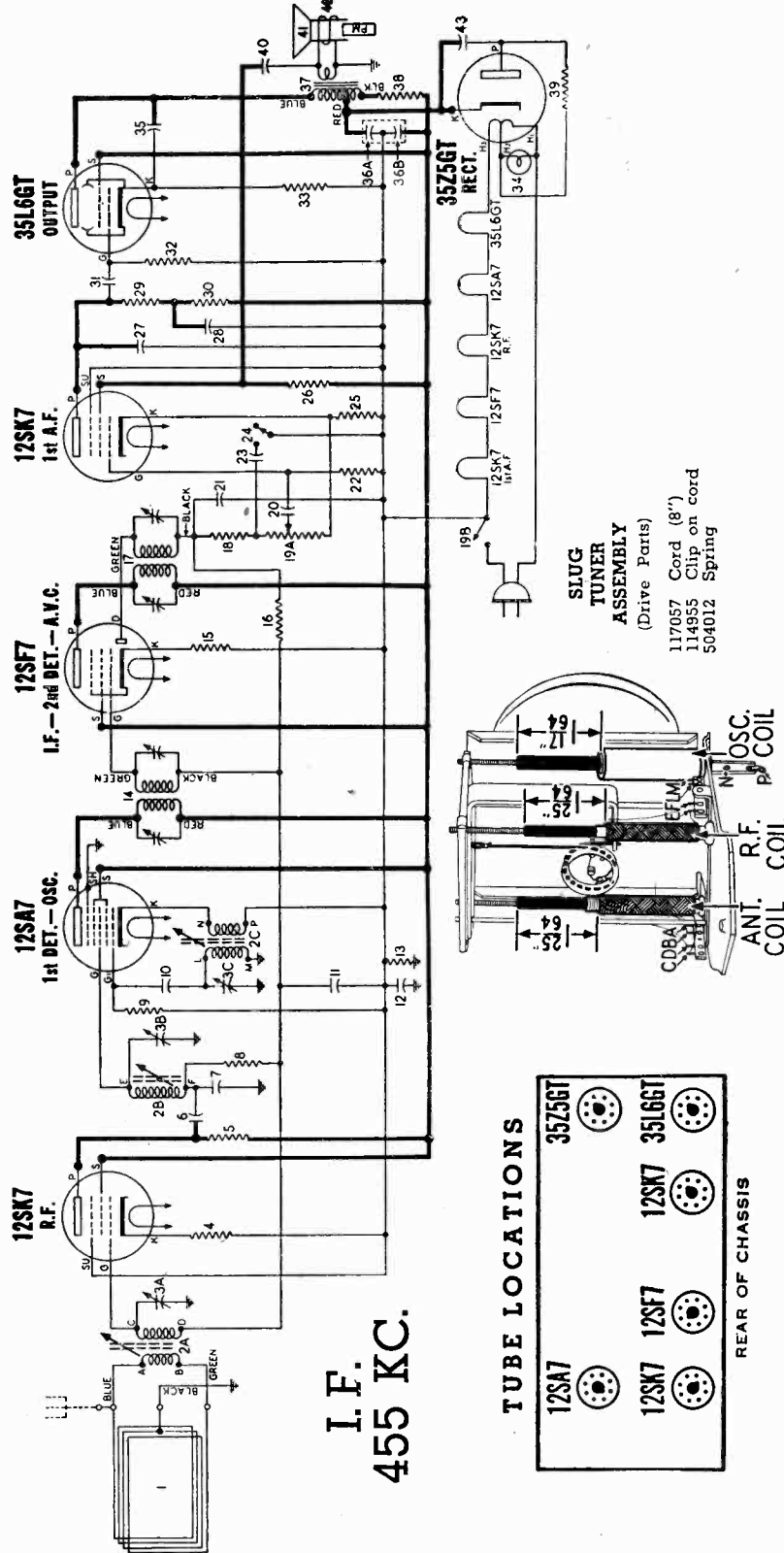
WESTERN AUTO SUPPLY CO.



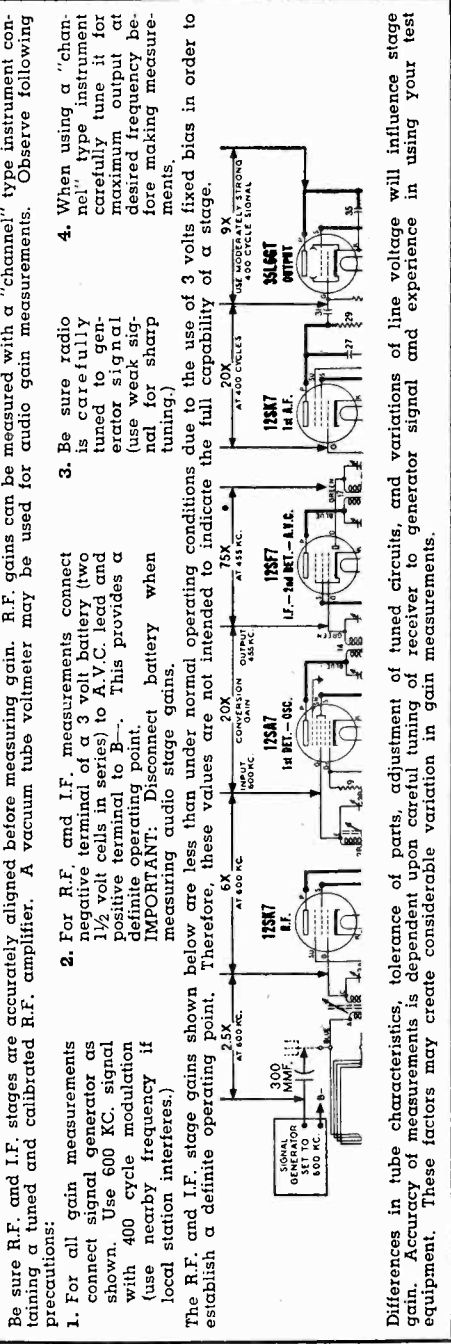
SLUG COILS FOR COILS
ANT.—504211
R.F.—504215
OSC.—504213



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



APPROXIMATE STAGE GAIN DATA



MODEL D2612

WESTERN AUTO SUPPLY CO.

ALIGNMENT PROCEDURE

1. Remove chassis and loop from cabinet. Solder approximately 8" of insulated wire to any B— connection (see voltage chart on opposite side for convenient B— location). Then reinstall chassis and loop in cabinet. The B— lead should extend from under the chassis at the back.
2. Connect ground lead of signal generator to B— lead.
3. Connect output meter across the speaker voice coil (terminals at back of speaker.)
4. Turn the tuning control knob clockwise as far as it will go (tuner mechanism is now in maximum open position with tuning slugs almost completely withdrawn from coils). Dial pointer should then point to 1600 Kc mark on scale. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Ungrounded terminal of trimmer No. 6 (see Fig. 2 below for location of trimmer.)	455 KC	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	1600 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
				7	Broadcast Antenna	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Tune to 1400 KC generator signal	Ant. coil tuning slug		Adjust position of slug for maximum output.
				R.F. coil tuning slug		Adjust position of slug for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	6	Broadcast R.F.	Recheck adjustment for maximum output.
				7	Broadcast Antenna	Recheck adjustment for maximum output.

Apply a coating of speaker cement at top of each tuning core stem to prevent movement.

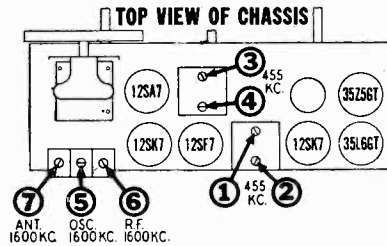
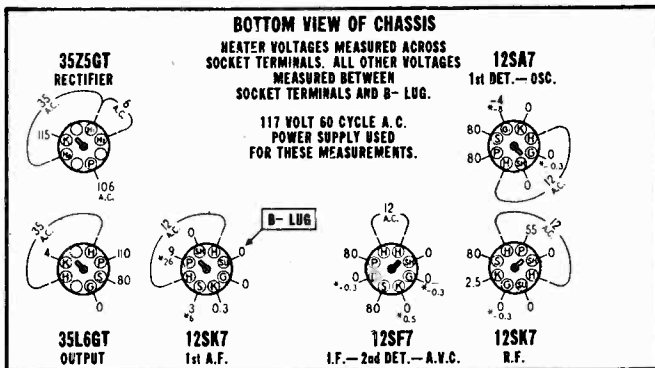


FIG. 2

SOCKET VOLTAGES

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

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



*—Measured with vacuum tube voltmeter

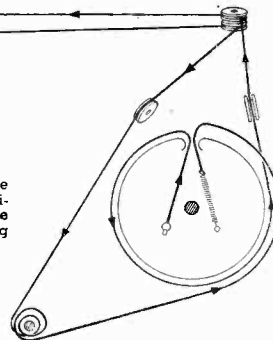
AUDIO OSCILLATION

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

DIAL AND POINTER DRIVE CORD ARRANGEMENT

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

- 114955 Clip on end of cord
- 117057 Cord (55 inches)
- 119087 Ring for dial cord
- 161334 Tension Spring



MODEL D2612

WESTERN AUTO SUPPLY CO.

MODEL D2612

MODEL D2613

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
CONDENSERS			
3-A, B, C	504086	Condenser—trimmer assembly A—10 to 160 Mmfd. B—20 to 270 Mmfd. C—20 to 270 Mmfd.	\$
6	502271	Condenser—mica 260 Mmfd. 500 volt.	
7	502165	Condenser—mica 1.000 Mmfd. 500 volt.	
10	502159	Condenser—mica 50 Mmfd. 500 volt.	
11	502155	Condenser—.1 Mfd. 200 volt.	
12	502158	Condenser—.2 Mfd. 400 volt.	
20	502453	Condenser—.002 Mfd. 400 volt.	
21	502160	Condenser—mica 110 Mmfd. 500 volt.	
23	502470	Condenser—.0008 Mfd. 400 volt.	
27	502160	Condenser—mica 110 Mmfd. 500 volt.	
28	502153	Condenser—.05 Mfd. 200 volt.	
31	502156	Condenser—.004 Mfd. 400 volt.	
35	502151	Condenser—.01 Mfd. 400 volt.	
36A, B	500256	Condenser—electrolytic A—40 Mfd. 150 volt B—20 Mfd. 150 volt	
40	502152	Condenser—.02 Mfd. 400 volt.	
43	502157	Condenser—.05 Mfd. 400 volt.	
RESISTORS			
4	502140	Resistor—carbon 390 ohms 1/4 watt.	
5	502291	Resistor—carbon 4700 ohms 1/4 watt.	
9	502134	Resistor—carbon 470,000 ohms 1/4 watt.	
8	502130	Resistor—carbon 22,000 ohms 1/4 watt.	
13	502133	Resistor—carbon 220,000 ohms 1/4 watt.	
15	502264	Resistor—carbon 47 ohms 1/4 watt.	
16	502269	Resistor—carbon 3.3 Meg. 1/4 watt.	
18	502131	Resistor—carbon 47,000 ohms 1/4 watt.	
19-A, B	502145	Volume control 500,000 ohms (with switch)	
22	502136	Resistor—carbon 10 Meg. 1/4 watt.	
25	502128	Resistor—carbon 2200 ohms 1/4 watt.	
26	502135	Resistor—carbon 2.2 Meg. 1/4 watt.	
29, 30	502133	Resistor—carbon 220,000 ohms 1/4 watt.	
32	502134	Resistor—carbon 470,000 ohms 1/4 watt.	
33	502138	Resistor—carbon 130 ohms 1/4 watt.	
38	502469	Resistor—carbon 1500 ohms 1 watt.	
39	502574	Resistor—carbon 33 ohms 1/2 watt.	
COILS & TRANSFORMERS			
1	502246	Loop antenna	
2-A, B, C	504096	Tuning unit; complete assembly	
2-A	504210	Coil—antenna (less slug)	
2-B	504214	Coil—R.F. (less slug)	
2-C	504212	Coil—oscillator (less slug)	

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
	504211	Slug core for Ant. coil (yellow end)	
	504213	Slug core for Osc. coil (white end)	
	504215	Slug core for R.F. coil (purple end)	
14	502102	Transformer—1st I.F.	
17	502103	Transformer—2nd I.F.	
37	502213	Transformer—output (for R-502998 spkr.)	
	502904	Transformer—output (for A-502998 spkr.)	
	504244	Transformer—output (for W-502998 spkr.)	
OTHER ELECTRICAL PARTS			
24	500546	Switch—tone control	
34	502473	Lamp—dial (Mazda 47) 6-8V. 150 Ma.	
41	502214	Cone & voice coil for R-502998 spkr.	
	502903	Cone & voice coil for A-502998 spkr.	
42	504245	Cone & voice coil for W-502998 spkr.	
	502998	Speaker—P.M. dynamic (5 inch)	
MISCELLANEOUS PARTS			
	502185	Back for cabinet	
	116467	Base for mtg. electrolytic condenser	
	502236	Cabinet—mahogany	
	500261	Clamp—dial scale mtg.	
	500497	Clip—retainer for cabinet back	
	114955	Clip—retainer on end of dial cord	
	116563	Connector—for antenna leads	
	117057	Cord—dial drive (55 in. required)	
	500324	Cover—cardboard for elect. cond.	
	504144	Dial scale—glass	
	501186	Grounding plate (under I.F. trans. can)	
	502551	Knob—mahogany	
	502230	Metal grille for cabinet	
	502367	Pointer	
	81145	Retaining ring for tuning shaft	
	119087	Ring for dial cord	
	85078	Rubber grommet; Ant. & R.F. coil mtg.	
	504045	Rubber grommet; Osc. coil mtg.	
	17063	Screw—No. 6 x 1/4	
	17064	Screw—No. 4 x 7/32	
	114628	Screw—No. 8 x 1/2 chassis mtg.	
	502173	Shaft—tuning control	
	116690	Socket—octal base	
	160392	Socket—octal (rectifier)	
	500499	Socket—dial lamp (with leads)	
	504012	Spring for tuning slug drive cord	
	161384	Spring—dial cord tension	
	111436	Washer—spring washer for tuning shaft	

MODEL D26

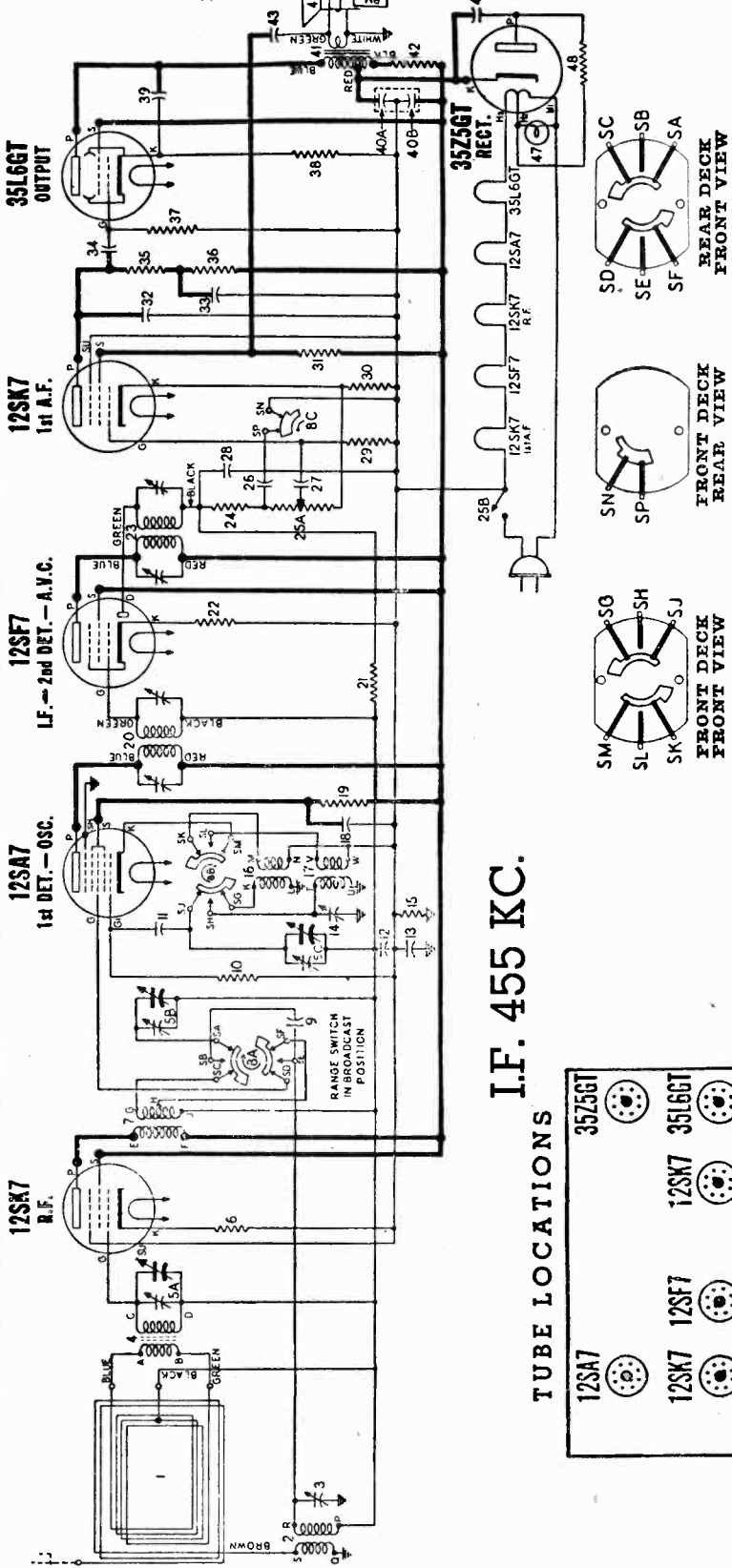
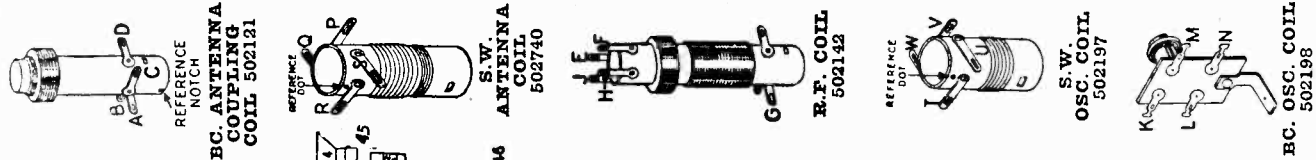
PARTS LIST

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
CONDENSERS			
3	502172	Condenser—trimmer; 25 to 100 Mmfd.	\$0.36
5A-5B-5C	502123	Condenser—variable gang (with drum)	4.60
9	502162	Condenser—315 Mmfd. 500 volt.	.45
11	502159	Condenser—mica—50 Mmfd. 500 volt.	.24
12	502155	Condenser—.1 Mfd. 200 volt.	.30
13	502158	Condenser—.2 Mfd. 400 volt.	.36
14	502172	Condenser—trimmer; 25 to 100 Mmfd.	.36
18	502262	Condenser—.25 Mfd. 200 volt.	.36
26	502470	Condenser—.0008 Mfd. 400 volt.	.20
27	502453	Condenser—.002 Mfd. 400 volt.	.20
28	502160	Condenser—mica—110 Mmfd. 500 volt.	.24
32	502160	Condenser—mica—110 Mmfd. 500 volt.	.24
33	502153	Condenser—.05 Mfd. 200 volt.	.24
34	502156	Condenser—.004 Mfd. 400 volt.	.20
39	502151	Condenser—.01 Mfd. 400 volt.	.20
40A-40B	500256	Condenser—electrolytic A—40 Mfd. 150 volt B—20 Mfd. 150 volt	1.50
43	502152	Condenser—.02 Mfd. 400 volt.	.24
46	502157	Condenser—.05 Mfd. 400 volt.	.24
RESISTORS			
6	502140	Resistor—carbon 390 ohms 1/4 watt.	.12
10	502130	Resistor—carbon 22,000 ohms 1/4 watt.	.12
15	502133	Resistor—carbon 220,000 ohms 1/4 watt.	.12
19	502291	Resistor—carbon 4700 ohms 1/4 watt.	.12
21	502269	Resistor—carbon 3.3 Meg. 1/4 watt.	.12
22	502264	Resistor—carbon 47 ohms 1/4 watt.	.12
24	502131	Resistor—carbon 47,000 ohms 1/4 watt.	.12
25A-25B	502145	Volume control 500,000 ohms (with switch)	1.25
29	502136	Resistor—carbon 10 Meg. 1/4 watt.	.12
30	502128	Resistor—carbon 2200 ohms 1/4 watt.	.12
31	502135	Resistor—carbon 2.2 Meg. 1/4 watt.	.12
35-36	502133	Resistor—carbon 220,000 ohms 1/4 watt.	.12
37	502134	Resistor—carbon 470,000 ohms 1/4 watt.	.12
38	502138	Resistor—carbon 130 ohms 1/4 watt.	.12
42	502469	Resistor—carbon 1500 ohms 1 watt.	.16
48	502574	Resistor—carbon 33 ohms 1/2 watt.	.12
COILS & TRANSFORMERS			
1	502503	Loop antenna	3.00
2	502740	Coil—S. W. antenna	1.12
4	502121	Coil—antenna coupling	1.64

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
7	502142	Coil—BC. R.F.	\$2.26
16	502198	Coil—BC. oscillator	1.32
17	502197	Coil—S.W. oscillator	1.12
20	502102	Transformer—1st I.F.	2.30
23	502103	Transformer—2nd I.F.	2.30
41	502213	Transformer—output for R-502998 spkr.	2.50
	502904	Transformer—output for A-502998 spkr.	2.50
	504244	Transformer—output for W-502998 spkr.	2.50
OTHER ELECTRICAL PARTS			
8A-8B-8C	502199	Switch—tone & band	2.00
44	502214	Cone and voice coil for R-502998 spkr.	2.00
	502903	Cone and voice coil for A-502998 spkr.	2.00
45	504245	Cone and voice coil for W-502998 spkr.	2.00
	502998	Speaker—P.M. dynamic (5 inch)	6.80
47	502473	Lamp—dial (Mazda 47) 6-8V. 150 Ma.	.22
MISCELLANEOUS PARTS			
	502185	Back for cabinet	.30
	116467	Base for mtg. electrolytic condenser	.04
	502242	Cabinet	5.00
	500261	Clamp—dial scale mtg.	.02
	112745	Clip—coil mtg.	.01
	114955	Clip—retainer on end of dial cord	.01
	500497	Clip—retainer for cabinet back	.02
	116563	Connector—for antenna leads	.01
	117057	Cord—dial drive (55 in. required) per ft.	.05
	500324	Cover—cardboard, for elect. cond.	.04
	502445	Dial scale—glass	.80
	501186	Grounding plate (under I.F. Trans. can)	.10
	502553	Knob—volume or tuning	.10
	502554	Knob—tone & range sw.	.12
	502230	Metal grill for cabinet	1.00
	502367	Pointer	.16
	81145	Retaining ring for tuning shaft	.01
	119087	Ring for Dial cord	.01
	17063	Screw—No. 6x1/4; holds clamps to cab.	.01
	17064	Screw—No. 4x7/32	.02
	114628	Screw—No. 8x1/2; chassis mtg.	.01
	502173	Shaft—tuning control	.15
	116690	Socket—octal base	.12
	160392	Socket—octal (rectifier)	.16
	500499	Socket—dial lamp (with leads)	.44
	161384	Spring—dial cord tension	.06
	111436	Washer—spring washer for tuning shaft	.005

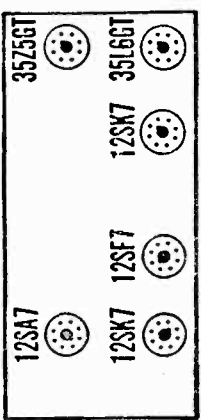
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

WESTERN AUTO SUPPLY CO.

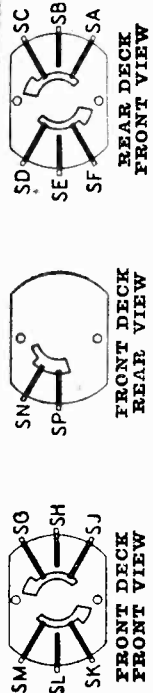


I.F. 455 KC.

TUBE LOCATIONS



REAR OF CHASSIS



BAND AND TONE SWITCH 502199

APPROXIMATE STAGE GAIN DATA

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

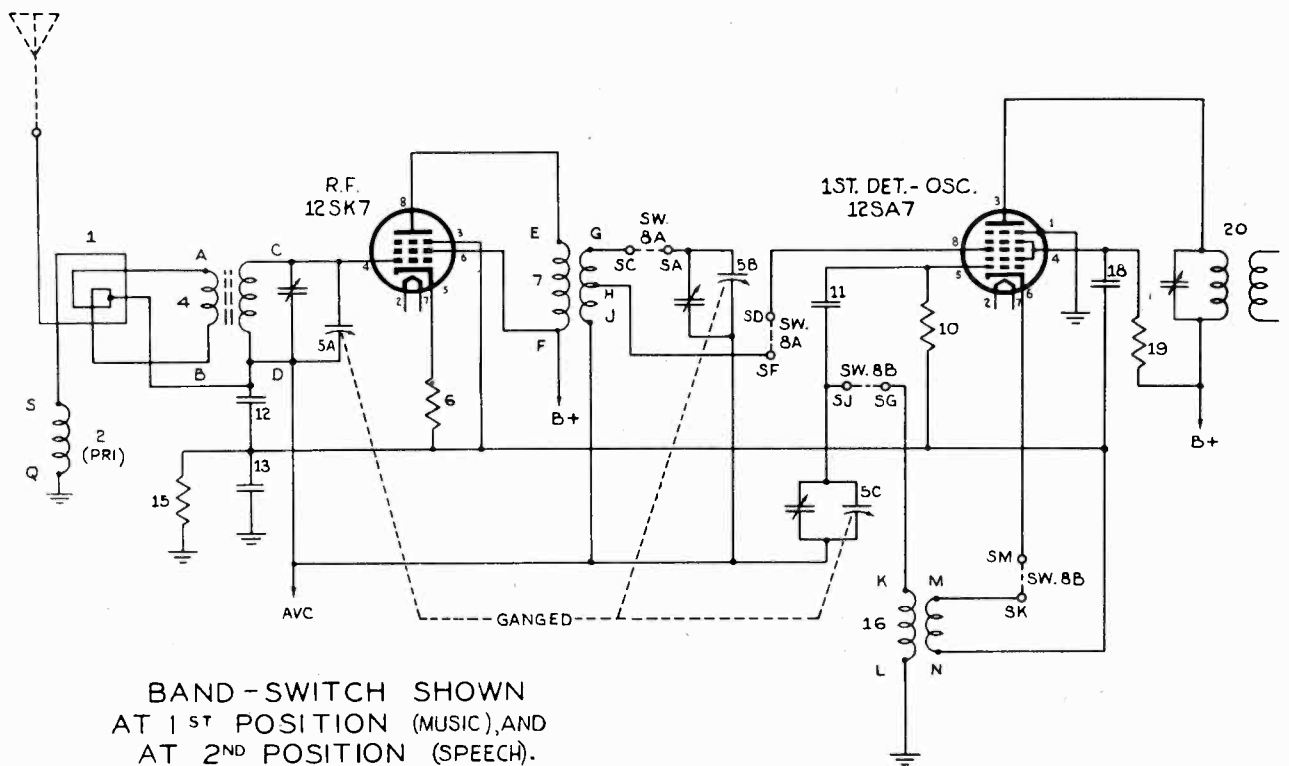
1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal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

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

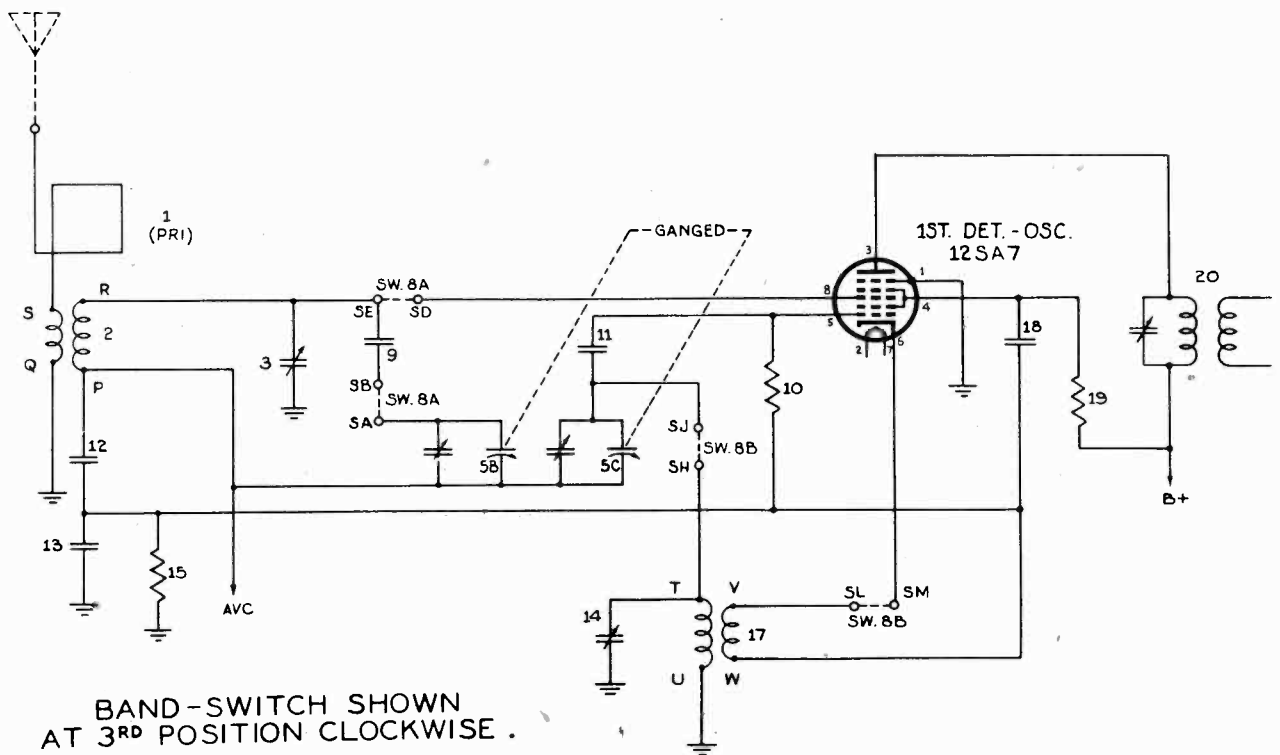
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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

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

WESTERN AUTO SUPPLY CO.



BAND - SWITCH SHOWN
AT 1ST POSITION (MUSIC), AND
AT 2ND POSITION (SPEECH).
BROADCAST BAND
540-1650KC.



BAND - SWITCH SHOWN
AT 3RD POSITION CLOCKWISE .
SHORT WAVE BAND
9-12 MC

MODEL D2613

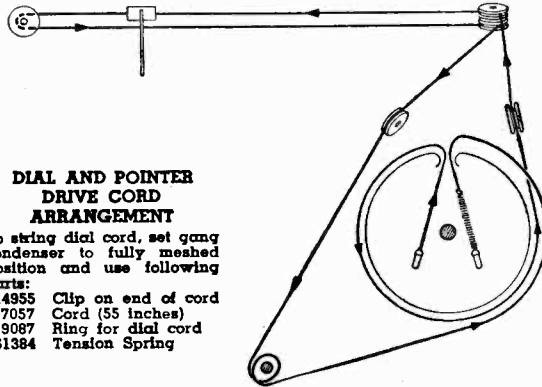
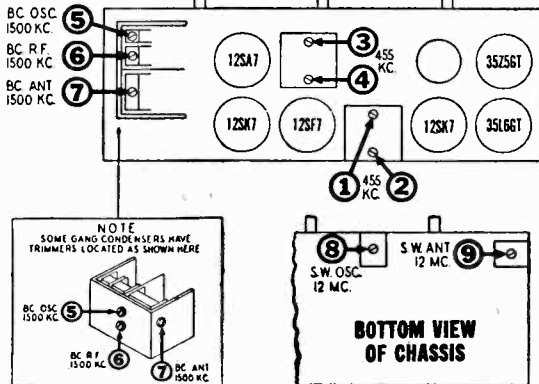
WESTERN AUTO SUPPLY CO. ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.
2. Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
3. Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).
4. Connect ground lead from signal generator to B— through a .25 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

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

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

TOP VIEW OF CHASSIS



**DIAL AND POINTER
DRIVE CORD
ARRANGEMENT**

To string dial cord, set gang condenser to fully meshed position and use following parts:
 114955 Clip on end of cord
 117057 Cord (55 inches)
 119087 Ring for dial cord
 161384 Tension Spring

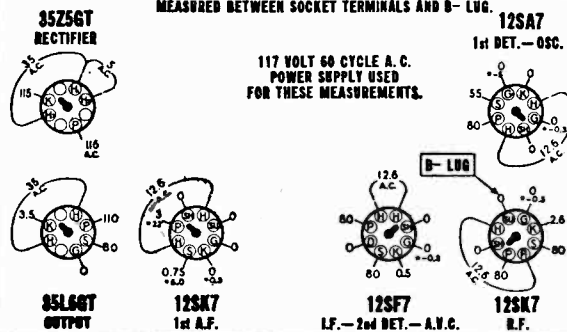
SOCKET VOLTAGES

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

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

BOTTOM VIEW OF CHASSIS

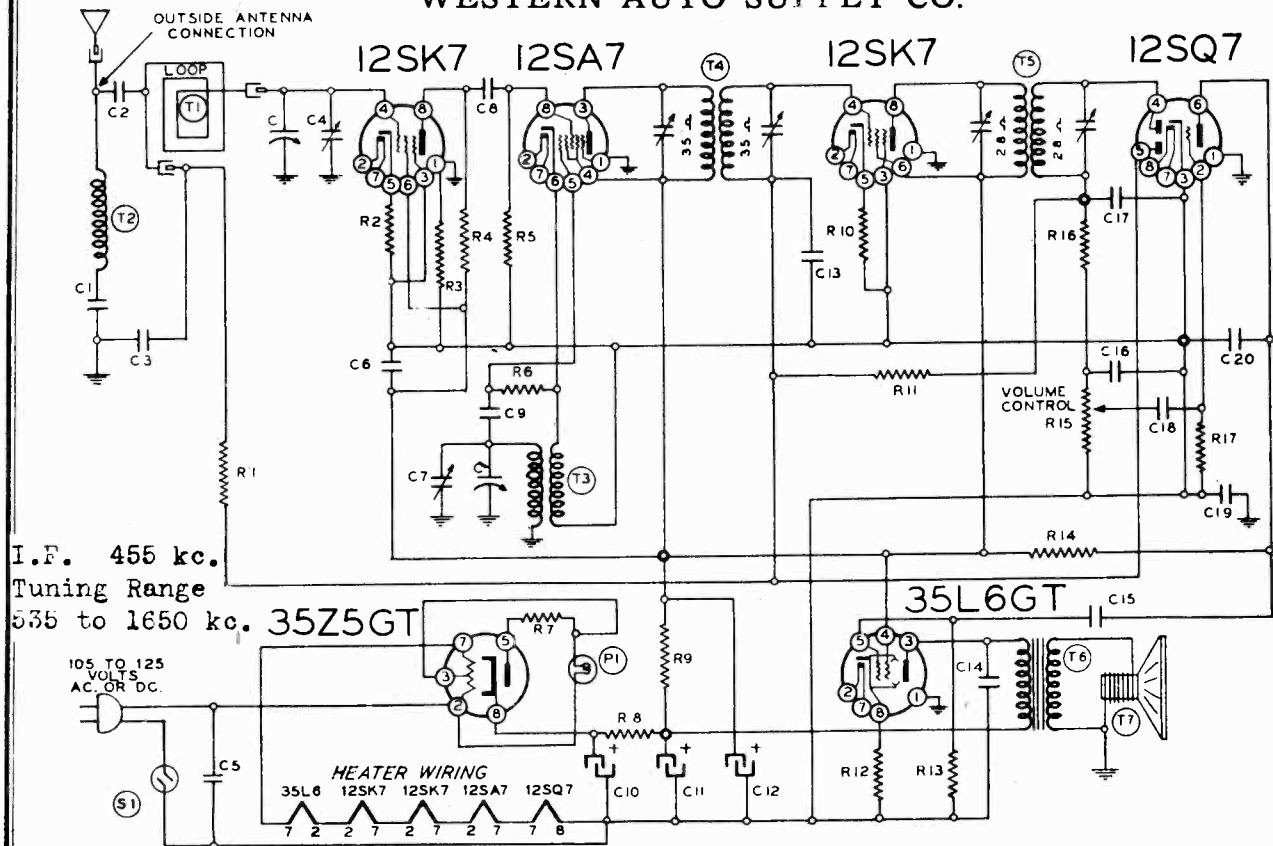
HEATED VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND B— LUG.



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

WESTERN AUTO SUPPLY CO.



I.F. 455 kc.
Tuning Range
535 to 1650 kc.

SETTING THE PUSHBUTTONS

The pushbuttons may be used, after proper adjustment, for the automatic tuning of any six stations which you select. They can be set up in any order.

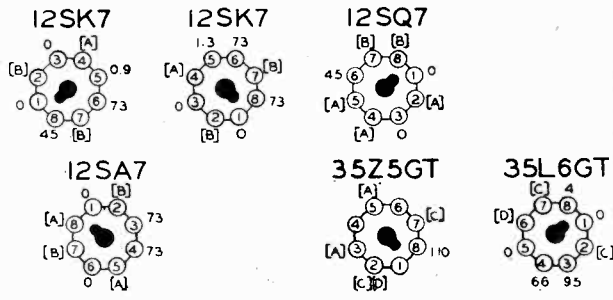
1. Turn on the radio. Allow it to warm up for at least one minute.
2. Push out the call letters of the six stations from the call-letter sheets supplied with this manual.
3. Insert one call-letter tab in the rectangular opening in each of the pushbuttons, in any sequence. Press an acetate tab (supplied in small envelope) into each of the pushbuttons.
4. Check to see that the locking screw in the center of the tuning knob (see illustration) is loose. If it is not, turn it several turns to the left (counterclockwise). A coin may be used for this purpose.
5. Press the first pushbutton down all the way. With one hand hold the button down firmly and with the other carefully tune in the desired station. Release the pushbutton.
6. Follow this procedure for each of the five other buttons, adjusting each one for a different station.
7. Rotate the tuning knob on the side of the cabinet as far to the right as it will go. Tighten the locking screw in the center of the knob. **IT IS IMPORTANT THAT THIS SCREW BE TIGHTENED VERY FIRMLY.**
8. The pushbuttons are now properly set for automatic tuning. Any of the six stations may now be tuned in simply by pressing the proper button down as far as it will go. If it is desired to reset any of the buttons for a new station, loosen the locking screw in the center of the tuning knob, set the pushbutton as described above, and re-tighten the locking screw.

Power consumption 35 watts
Selectivity..... 55 Kc. broad at 1000 times signal at 1000 Kc.

BOTTOM VIEW OF CHASSIS

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

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



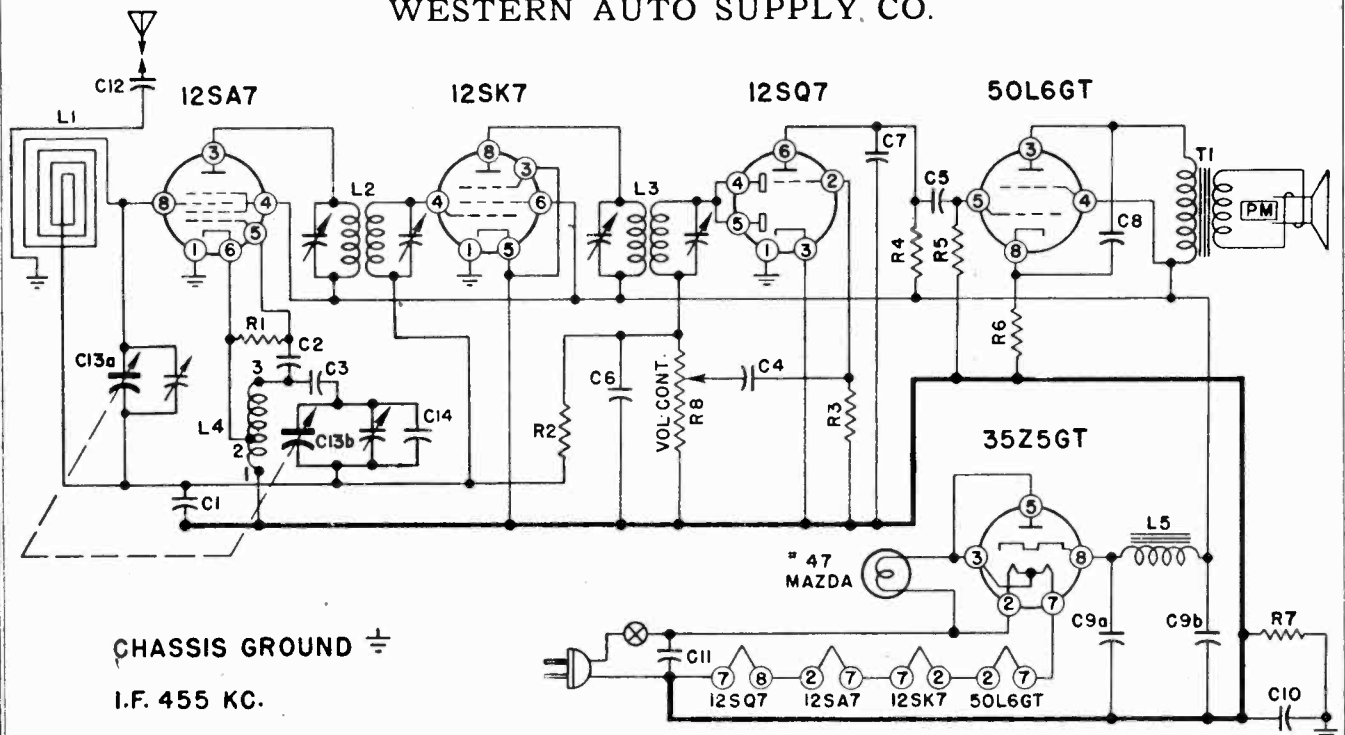
REAR OF CHASSIS

Voltages at tube socket terminals

IMPORTANT!

This receiver, unless otherwise marked, must be operated on an AC voltage of 105 to 125 volts, 50 to 60 cycles, or on a DC voltage of 105 to 125 volts. If you are in doubt as to the voltage of your power supply, consult your local power company. **DO NOT INSERT THE PLUG IN THE POWER RECEPTACLE UNLESS YOU ARE SURE THAT THE CORRECT VOLTAGE IS AVAILABLE.** Receivers of this same model which are for use on voltages other than those specified above are so marked.

WESTERN AUTO SUPPLY CO.



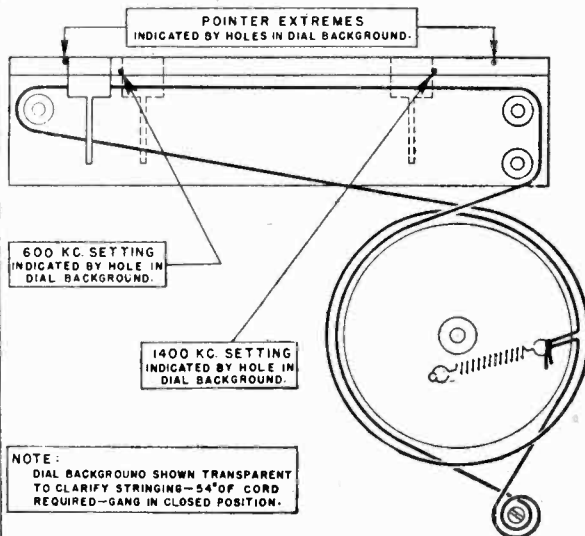
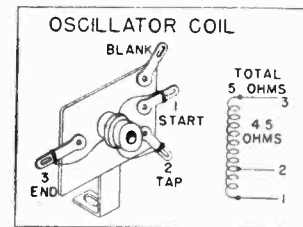
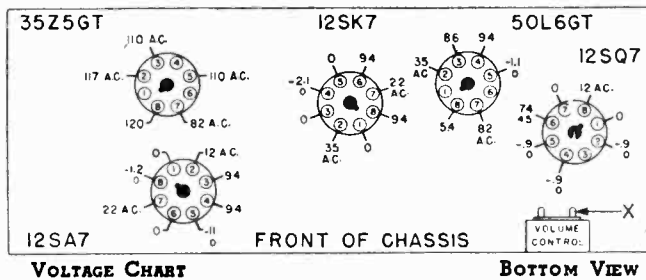
CHASSIS GROUND \perp
I.F. 455 KC.

VOLTAGE DATA

Voltages are measured from the socket terminals and the point marked "X" on the voltage chart. With the dial tuned to the low frequency end, no signal and the volume control set at maximum, a vacuum tube voltmeter was used for all readings. The A.C. line input was 117 volts A.C. for all measurements shown. Where use of a 1000 ohm per voltmeter would result in noticeably lower readings due to the increased drain of this type of instrument, a second reading is shown directly below the initial reading.

TRUETONE TUBES USED

- 12SA7—1st Det. Osc.
- 12SK7—I. F. Amplifier
- 12SQ7—2nd Det. — A. V. C. — 1st Audio
- 50L6 GT—Beam Power Output
- 35Z5 GT—Rectifier



POWER SUPPLY

This receiver is designed to operate from any AC (Alternating Current) power supply line of 110-120 volts, 50-60 cycles or DC (Direct Current) power supply line of 110-120 volts. If the receiver fails to operate after several minutes on DC, reverse the power line plug.

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

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. (See next page for full instructions.)

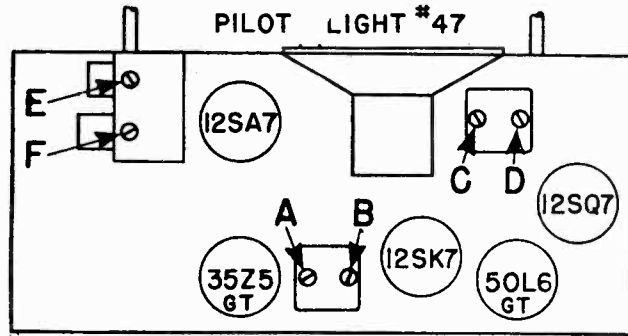
MODEL D2620

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.
- Connect dummy antenna value in series with generator output lead, when needed (see below).
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

The following equipment is required for aligning:

- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
 - Output indicating meter.
 - Non-metallic screwdriver.
- Dummy antenna—.1 mf.



BACK OF CHASSIS

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 KC.	.1 MFD.	Gang Condenser Ant. Stator	Rotor full open (Plates out of mesh)	C, D	Output I.F.	Adjust to maximum output
	455 KC.	.1 MFD.	Gang Condenser Ant. Stator	Rotor full open (Plates out of mesh)	A, B	Input I.F.	Adjust to maximum output
BROAD-CAST	1630 KC.	.1 MFD.	Gang Condenser Ant. Stator	Rotor full open (Plates out of mesh)	E gang-front	Oscillator	Adjust to maximum output
	1400 KC.	Inductive Coupling—Use a loop or place Gen. lead close to Rec. loop. No connection bet. Receiver and Generator		Set dial to tune in Generator Signal	F gang-rear	Antenna	Adjust to maximum output

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 K.C. Power consumption 30 watts.

REPLACEMENT PARTS

PAPER CONDENSERS

PART No.	SYMBOL No.	DESCRIPTION
64B1-12	C-12	Condenser, Tubular .005 mfd. 600 V.....
64B1-22	C-11	Condenser, Tubular .05 mfd. 400 V.....
64B1-24	C-3, C-8	Condenser, Tubular .02 mfd. 400 V.....
64B1-25	C-4, C-5	Condenser, Tubular .01 mfd. 400 V.....
64B1-30	C-1	Condenser, Tubular .01 mfd. 200 V.....
64A2-1	C-10	Condenser, Tubular .2 mfd. 900 V.....

VARIABLE CONDENSERS

68A2	C-13a, C-13b	Condenser, Gang
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MICA CONDENSERS

65B5-5	C-14	Condenser, Mica 20 mmf. ±10%.....
65B5-11	C-2	Condenser, Mica 50 mmf. ±10%.....
65B7-22	C-6	Condenser, Mica 250 mmf. ±20%.....
65B7-27	C-7	Condenser, Mica 500 mmf. ±20%.....

ELECTROLYTIC CONDENSERS

67A3	{ C-9a	30 mfd. 150 V.}
	{ C-9b	50 mfd. 150 V.}

RESISTORS

60B8-151	R-6	150 ohm ½ W. ±10%.....
60B8-223	R-1	22,000 ohm ½ W. ±10%.....
60B8-154	R-7	150,000 ohm ½ W. ±10%.....
60B8-224	R-4	220,000 ohm ½ W. ±10%.....
60B8-474	R-5	470,000 ohm ½ W. ±10%.....
60B8-105	R-2	1 meg ½ W. ±10%.....
60B8-106	R-3	10 meg ½ W. ±10%.....
75B1-6	R-8	1 meg Volume Control & Switch

TRANSFORMERS and COILS

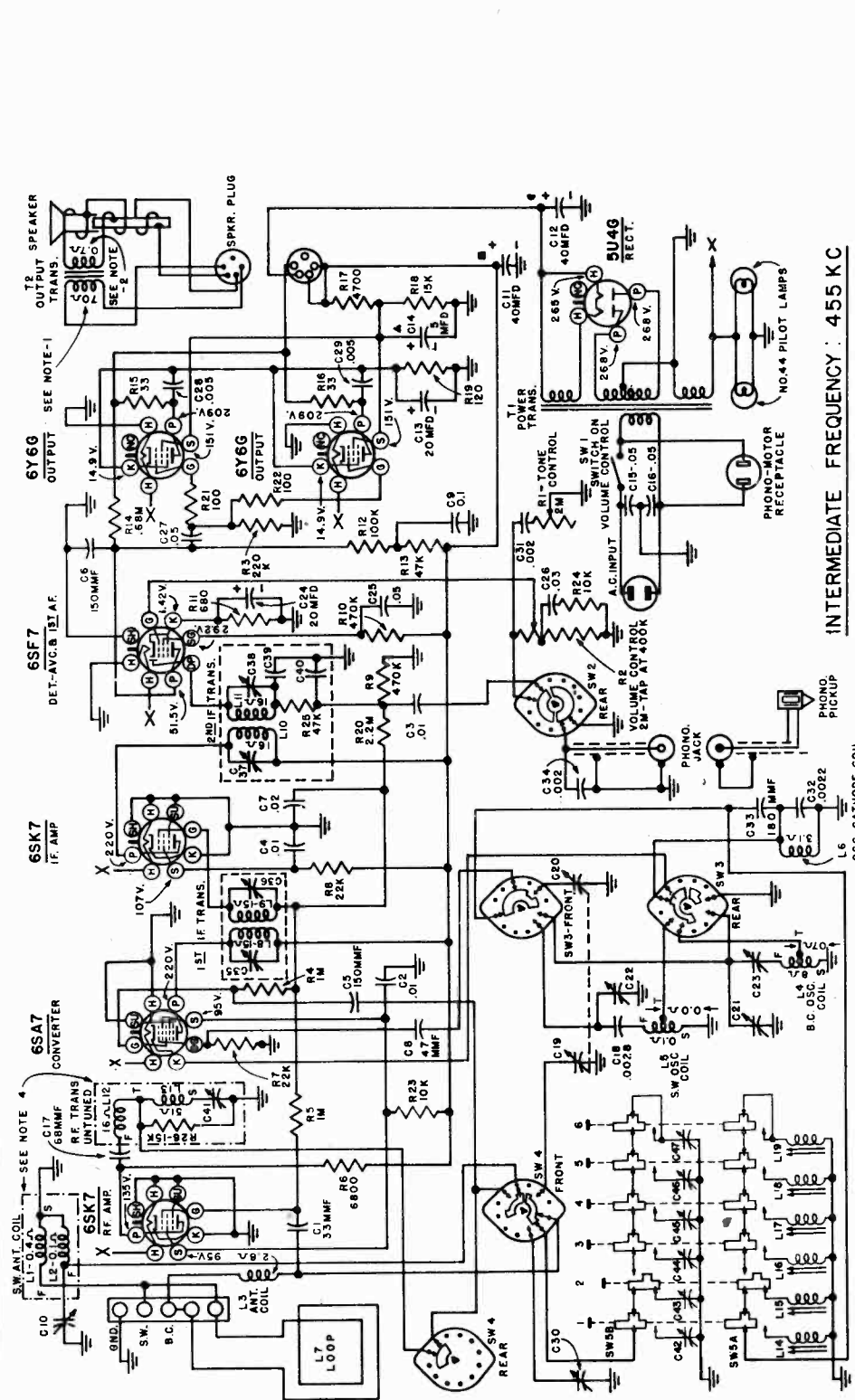
69B4	L-1	Antenna, Loop
72B3	L-2	Transformer, 1st I. F.

TRANSFORMERS and COILS (Cont'd.)

PART No.	SYMBOL No.	DESCRIPTION
72B4	L-3	Transformer, 2nd I. F.
69A5	L-4	Oscillator, Coil
74A1	L-5	Choke Coil (Filter)
		Transformer, Output
		(Specify full part number of Speaker, including Mfg. Code when ordering)

MISCELLANEOUS (Alphabetical)

PART No.	DESCRIPTION
X22C3-1	Background, Dial
35C29	Cabinet (Wood) (D-2620)
43B17	Cover, Back
89A1	Cord, Line
50A1-1	Cord, Dial (54")
A10Y2	Drum and Hub Assy., Dial
23A7-1	Escutcheon
12A1-2	Grommets, Rubber
33A10-2	Knob, Walnut
1A67-29-2	Mounting Bolts, 8-32x¼" lg.
81A1-8	Pilot Light #47
82A2-3	Pilot Light Socket & Leads
25A10-3	Pointer Slide
25A11-3	Pointer Clip
25A12-1	Pointer
17A1-3	Pulley, Fibre Dial
21B16	Scale, Glass Dial
28A1-1	Shaft, Tuning
13A1-4-47	Snap Buttons, (Cabinet Back)
87A10-2	Socket, Laminated Octal Tube
78B4-1	Speaker, 5" PM and Output Trans.
19A1-3	Spring, Dial Cord Tension

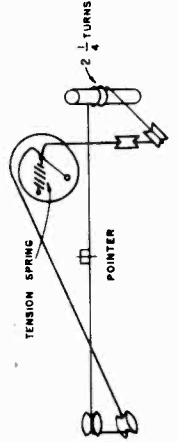


INTERMEDIATE FREQUENCY: 455 KC

- 4. DOT-DASH LINE INDICATES ASSEMBLY OF COMPONENT PARTS UNSHIELDED.
- 5. ALL VOLTAGES MEASURED FROM CHASSIS (BND.) USING 20,000 OHMS/VOLT METER.
- 6. LINE VOLTAGE 117 V.A.C. MAX. VOLUME CONTROL SETTING AT NO SIGNAL CONDITIONS FOR THE BROADCAST BAND.
- 7. READINGS SHOULD APPROXIMATE THE VALUES SHOWN WITHIN 20 PERCENT.

- 1. GRAYNER PLUG REMOVED.
- 2. VOICE COIL DISCONNECTED.
- 3. SWITCH SW2-3 & 4 SHOWN AS VIEWED FROM FRONT OF SET IN P.B.-B.C. POSITION.
- 4. EXTREME COUNTER CLOCKWISE POSITION IS PHONO.
- 5. EXTREME COUNTER CLOCKWISE POSITION IS MANUAL B.C. BAND.
- 6. SECOND POSITION COUNTER CLOCKWISE IS MANUAL B.C. BAND.
- 7. FOURTH POSITION COUNTER CLOCKWISE IS S.W. BAND.

Tuning Drive Ratio 30 to 1



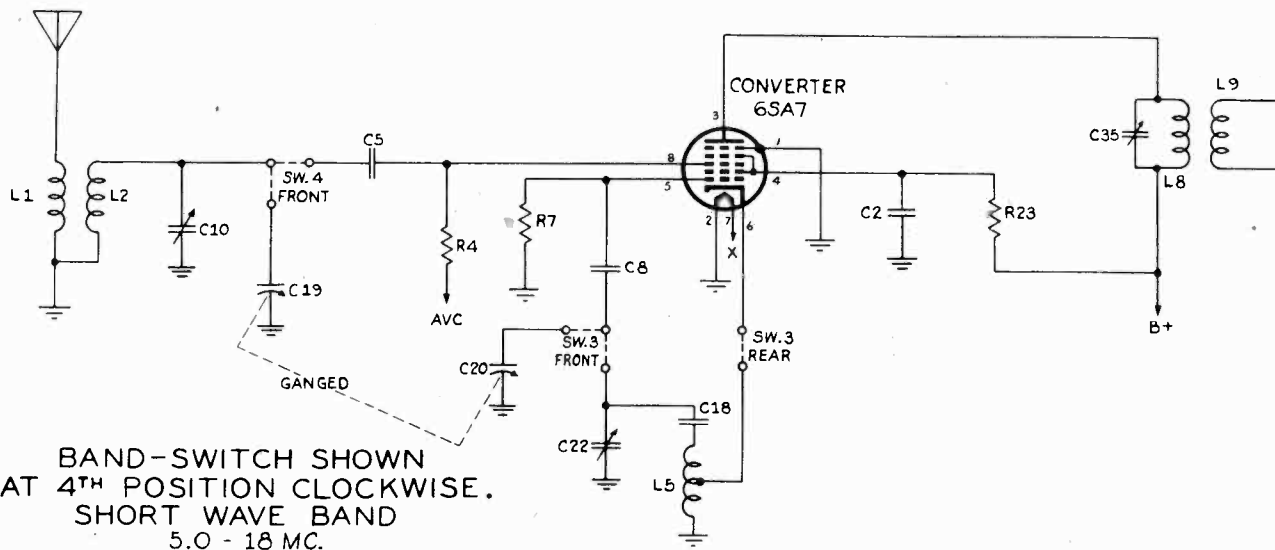
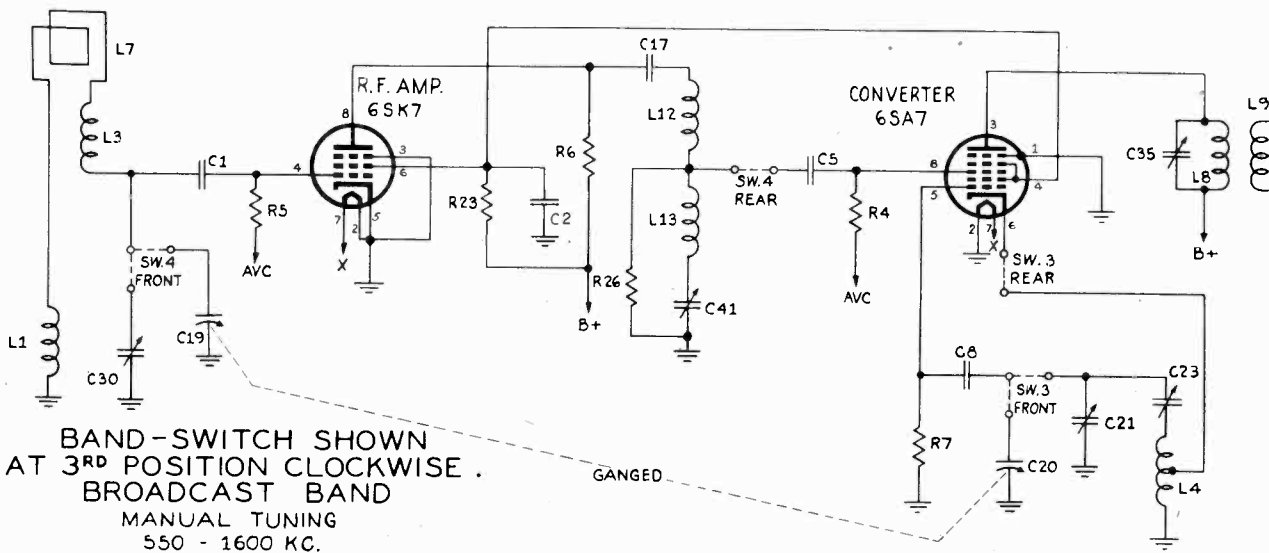
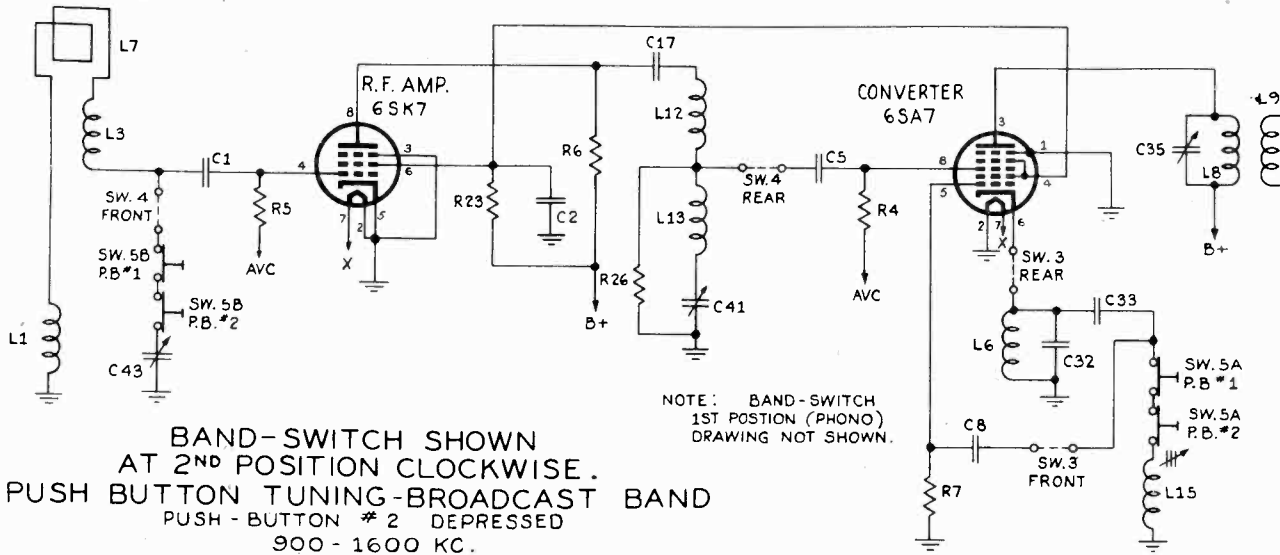
DIAL DRIVE MECHANISM

3. Reset the phono-band switch on "PUSH BUTTON" and depress the first push button (right button, viewed from the front). Adjust L14, using a small long-handled screwdriver, to receive the station. Adjust C42 for maximum volume on the station.
4. Return the band switch to "BROADCAST" to make sure that the push button has been set to the desired station.
5. Adjust remaining push buttons in the same manner.

PUSH BUTTONS

- Push buttons 1 to 3 are designed to receive stations from 900 to 1600 kc; push buttons 4 to 6 are designed to receive stations from 540 to 900 kc.
1. Turn on radio and allow it to warm up for five minutes.
 2. Set the phono-band switch on "BROADCAST."
 3. Tune in the desired station in the frequency range 900 to 1600 kc.

MODELS H104, H105, WESTINGHOUSE ELECTRIC CORP.
H107, H108, H110,
H111, H137, H138



WESTINGHOUSE ELECTRIC CORP.

MODELS H104, H105, H107,
H108, H110, H111, H137,
H138

SPECIAL PROVISIONS:

H-137 & H-138 Phonograph, FM and television sound input. 110 volt A-C outlet for phonograph motor at rear of chassis.

H-110 & H-111 FM and television sound input at rear of chassis.

SPECIAL PROVISIONS:

H-104 & H-105 Phonograph, F.M. and television sound input. 110 volt A-C outlet for phonograph motor at rear of chassis.

H-107 & H-108 F.M. and television sound input at rear of chassis.

FREQUENCY RANGES:

Standard Broadcast 550 to 1600 kc.
International Short Wave 5.0 to 18 mc.

POWER CONSUMPTION:

H-104 & H-105 145 watts
H-107 & H-108 185 watts

POWER CONSUMPTION:

H-137 & H-138 145 watts
H-110 & H-111 185 watts

PILOT LAMPS: (2),

Westinghouse No. 44, 6.3 volts, 0.25 amps.

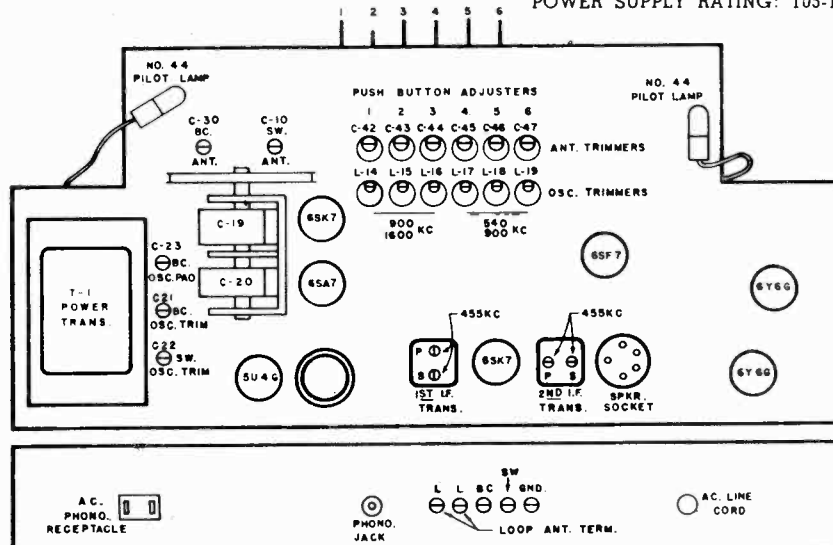
POWER OUTPUT:

Undistorted (radio) 10 watts
Undistorted (phonograph) 10 watts
Maximum 15 watts

LOUDSPEAKER:

Type Electro-dynamic
Field Resistance 200 ohms
Voice Coil Impedance 3.2 ohms
Size (H-104 & H-105) 6 inches
Size (H-107 & H-108) 8 inches

POWER SUPPLY RATING: 105-120 volts, 50-60 cycles A-C



Steps	Connect Signal Generator to—	Adjust Signal Generator to—	Tune Radio Dial to —	Adjust
1	6SK7, i-f amplifier, control grid through a 0.1 mfd. capacitor	455 kc	550 kc	secondary trimmer or 2nd i-f transformer for maximum output
2	6SK7, i-f amplifier, control grid through a 0.1 mfd. capacitor	455 kc	550 kc	primary trimmer of 2nd i-f transformer for maximum output
3	6SA7, converter, control grid through a 0.1 mfd. capacitor	455 kc	550 kc	secondary trimmer of 1st i-f transformer for maximum output
4	6SA7, converter, control grid through a 0.1 mfd. capacitor	455 kc	550 kc	primary trimmer of 1st i-f transformer for maximum output
5	6SA7, converter, control grid through a 0.1 mfd. capacitor	455 kc	550 kc	"peak" all i-f trimmers for maximum output
6	6SK7, r-f amplifier, control grid through a 0.1 mfd. capacitor	455 kc	550 kc	i-f rejection trap trimmer for minimum output
7	"B.C." antenna terminal through a 200 mfd. capacitor	600 kc	600 kc	broadcast band "oscillator padder" for maximum output
8	"B.C." antenna terminal through a 200 mfd. capacitor	1620 kc	minimum capacity stop	broadcast band "oscillator trimmer" for maximum output
9	recheck steps 7 and 8 in order given			
10	radiated signal (no actual connection)	1400 kc	1400 kc	broadcast band "antenna trimmer" for maximum output
11	set phono-band switch on position "4"			
12	"S.W." antenna terminal through 400 ohm resistor	18.5 mc	minimum capacity stop	short wave "oscillator trimmer" for maximum output
13	radiated signal (no actual connection)	16 mc	16 mc	short wave "antenna trimmer" for maximum output

MODELS H104, H105, H107, H108, H110, H111, H137, WESTINGHOUSE ELECTRIC CORP. H138

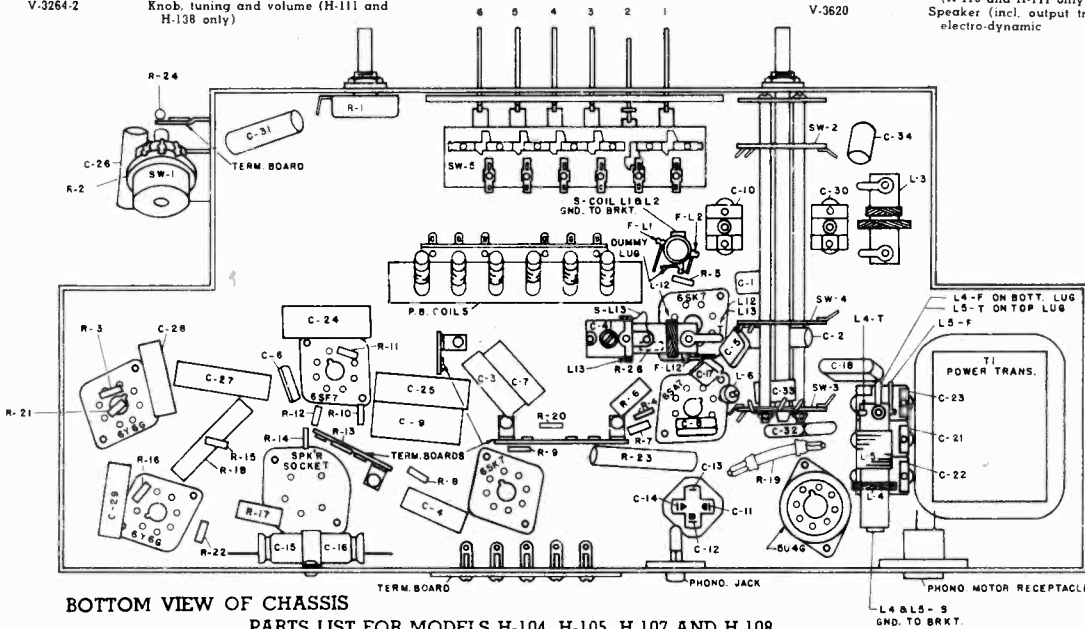
PARTS LIST FOR MODELS H-110, H-111, H-137 AND H-138

The parts listed below for the MODELS H-104, H-105, H-107 and H-108 apply to MODELS H-110, H-111, H-137 and H-138 with the following exceptions:

- V-3390 Decal. band (H-110 and H-111 only)
- V-3792 Decal. band (H-137 and H-138 only)
- V-3197 Decal. tone (H-110 and H-111 only)
- V-3791 Decal. tone (H-137 and H-138 only)
- V-3262-1 Knob. tone (H-110 and H-137 only)
- V-3262-2 Knob. tone (H-111 and H-138 only)
- V-3262-3 Knob. band (H-110 and H-137 only)
- V-3262-4 Knob. band (H-111 and H-138 only)
- V-3264-1 Knob. tuning and volume (H-110 and H-137 only)
- V-3264-2 Knob. tuning and volume (H-111 and H-138 only)

- V-3832-1 Cardboard and grille cloth assy., speaker section (H-110 only)
- V-3832-2 Cardboard and grille cloth assy., speaker section (H-111 only)
- V-3833-1 Cardboard and grille cloth assy., record storage section (H-110 only)
- V-3833-2 Cardboard and grille cloth assy., record storage section (H-111 only)
- V-3686-1 Grille cloth, speaker (H-137 only)
- V-3686-2 Grille cloth, speaker (H-138 only)

- V-3283-1 Loop assembly (L7)
- V-3229-2 Moulding, dial
- V-3534 Plate, front glass (H-110 only)
- V-3819 Plate, front glass (H-111 only)
- V-3813 Plate, front glass (H-137 only)
- V-3685 Plate, front glass (H-138 only)
- V-3639-1 Slide mechanism, left hand unit (H-110 and H-111 only)
- V-3639-2 Slide mechanism, right hand unit (H-110 and H-111 only)
- V-3620 Speaker (incl. output trans. T2) 10" electro-dynamic



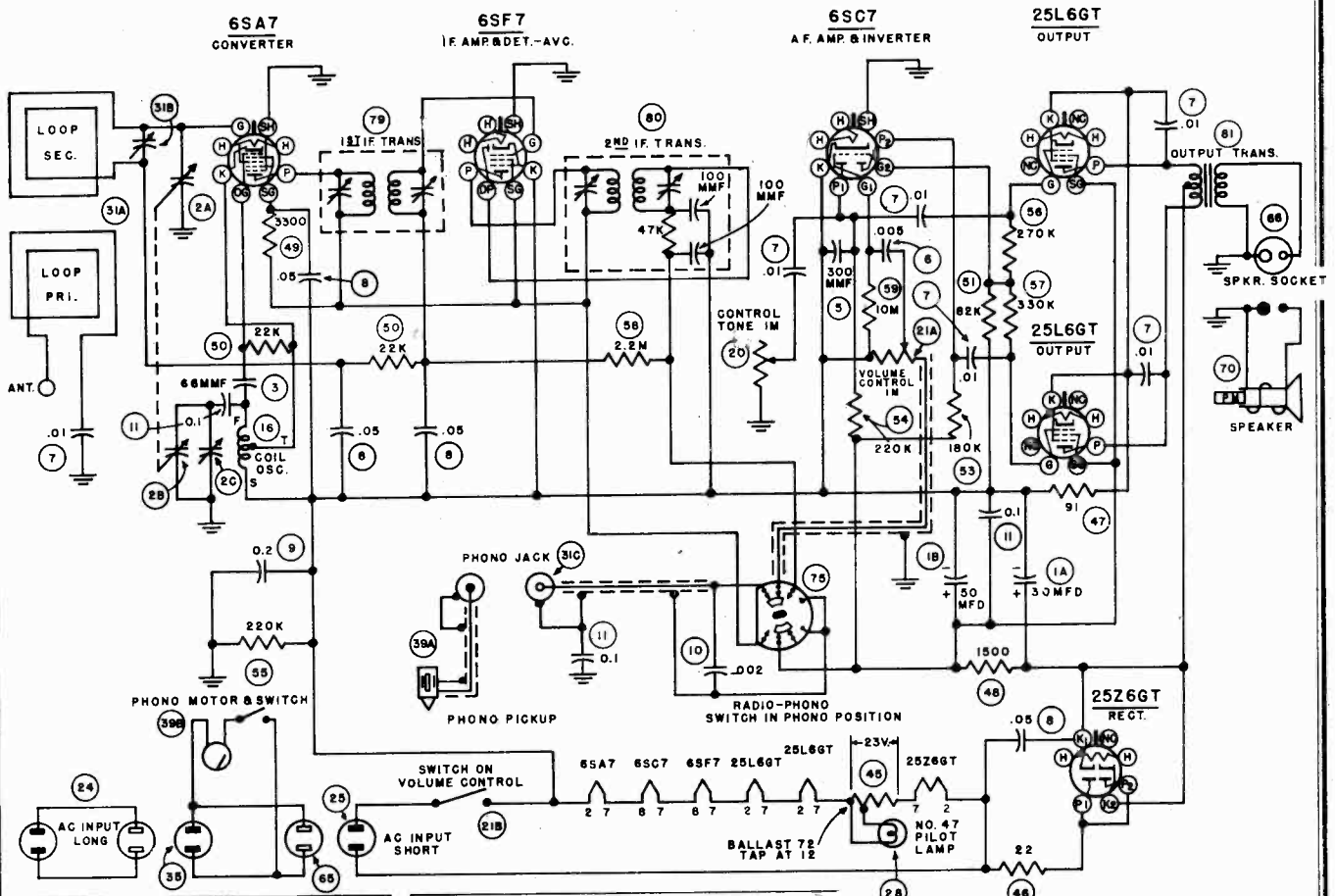
BOTTOM VIEW OF CHASSIS

PARTS LIST FOR MODELS H-104, H-105, H-107 AND H-108

When ordering parts specify model number of set in addition to part number and description of part.

Part No.	Description	Part No.	Description	Part No.	Description
V-3615	Asbestos sheet (H-104 and H-105 only)	V-3219S-1	Cord dial drive	RC10AE681M	Resistor, 680 ohms, 1/4 w. (R11)
V-3186	Background, felt	V-3239	Cord. power: A-C	RC10AE104M	Resistor, 100K 1/4 w. (R12)
V-3532S	Bar, flat, for phono mtg. (H-107 and H-108 only)	V-3421	Cover, back (H-107 and H-108 only)	RC10AE473M	Resistor, 47K 1/4 w. (R13)
V-3336	Bracket assembly, dial background	V-3390	Decal. band	RC10AE684M	Resistor, 0.68M 1/4 w. (R14)
V-3185	Bracket, dial light	V-3197	Decal. tone	RC10AE330K	Resistor, 33 ohms 1/4 w. (R15, R16)
V-1102-1	Cabinet (H-104 only)	V-3263	Dial	RC41AE472M	Resistor, 4700 ohms 2 w. (R17)
V-1102-2	Cabinet (H-105 only)	V-3364	Escutcheon, push button	RC41AE153M	Resistor, 15K 2 w. (R18)
RCM20A330M	Capacitor, .33 mfd mica (C1)	V-3348-1	Grille cloth, speaker (H-107 only)	V-3282	Resistor, 120 ohms 3 w. (R19)
RCM10W4103A	Capacitor, .001 mfd 400 v. (C2, C3, C4)	V-3348-2	Grille cloth, speaker (H-108 only)	RC10AE225M	Resistor, 2.2M 1/4 w. (R20)
RCM20A151M	Capacitor, 150 mfd mica (C5, C6)	V-3924-1	Panel and grille cloth assy., cabinet door (H-107 only)	RC10AE101M	Resistor, 100 ohms 1/4 w. (R21, R22)
RCM10W4203A	Capacitor, .002 mfd 400 v. (C7)	V-3924-2	Panel and grille cloth assy., cabinet door (H-108 only)	RC41AE103M	Resistor, 10K 2 w. (R23)
RCM20B470M	Capacitor, 47 mfd mica (C8)	V-3268	Grommet, var. cond. mounting	RC10AE103M	Resistor, 10K 1/4 w. (R24)
RCM10W4104A	Capacitor, .01 mfd 400 v. (C9)	V-3274S	Holder, tube	V-3164	Shalt, tuning
V-3170	Capacitor, S.W. ant. trimmer (C10)	V-3262-3	Knob. band (H-104 and H-107 only)	V-3353-1	Slide mechanism, left hand unit (H-107 and H-108 only)
V-3216	Capacitor, electrolytic, 40 mid 350 v. (C11), 40 mid 350 v. (C12), 20 mid 25 v. (C13), 5 mid 250 v. (C-14)	V-3262-4	Knob. band (H-105 and H-108 only)	V-3353-2	Slide mechanism, right hand unit (H-107 and H-108 only)
V-3241	Capacitor, dual line filter (C15, C16)	V-3262-1	Knob. tone (H-104 and H-107 only)	V-3220	Socket, A.C power
RCM20A680M	Capacitor, .68 mfd mica (C17)	V-3262-2	Knob. tone (H-105 and H-108 only)	V-3275S	Socket, moulded octal
RCM30C282H	Capacitor, .0028 mfd S.W. padder (C18)	V-3264-1	Knob. tuning and volume (H-104 and H-107 only)	V-3246S	Socket, octal
V-3233	Capacitor, variable, 2-gang (C19, C20)	V-3264-2	Knob. tuning and volume (H-105 and H-108 only)	V-3252-2	Socket, pilot light
V-3217	Capacitor, 3-gang trimmer (C21, C22, C23)	(W) No. 44	Lamp, pilot light 6.3 v.	V-3162S	Socket, speaker input
V-3236	Capacitor, electrolytic, 20 mid 25 v. (C24)	V-3394	Loop assembly (L7) (H-104 and H-105 only)	V-3294	Speaker (incl. output trans. T2) 6" electro-dynamic (H-104 and H-105 only)
RCM10W4503A	Capacitor, .005 mfd 400 v. (C25)	V-3283-1	Loop assembly (L7) (H-107 and H-108 only)	V-3244	Speaker (incl. output trans. T2) 8" electro-dynamic (H-107 and H-108 only)
RCM10W4303A	Capacitor, .003 mfd 400 v. (C26)	V-3229-1	Moulding, dial (H-104 and H-105 only)	V-3248S	Spring, dial drive
RCM10M4503A	Capacitor, .005 mfd 400 v. (C27)	V-3229-2	Moulding, dial (H-107 and H-108 only)	V-3167S-1	Stud, pulley—threaded (short)
RCM10M6502A	Capacitor, .005 mfd 600 v. (C28, C29)	V-3414	Plate, glass front (H-104 only)	V-3167S-2	Stud, pulley—threaded (long)
V-3191	Capacitor, B.C. ant. trimmer (C30)	V-3817	Plate, glass front (H-105 only)	V-3261-1	Switch, push button (SW5A, SW5B)
RCM10W6202A	Capacitor, .002 mfd 600 v. (C31)	V-3191	Plate, glass front (H-107 only)	V-3289	Switch, selector (SW2, SW3, SW4)
RCM30B222M	Capacitor, .0022 mfd mica (C32)	V-3818	Plate, glass front (H-108 only)	V-3395	Tab, station
RCM20C181J	Capacitor, 180 mfd mica (C33)	V-3178	Pointer assembly	V-3431	Window, station lab
RCM10W6202M	Capacitor, .002 mfd 600 v. (C34)	V-3166S	Pulley, 7 16 dia.	V-3255	Terminal board, ant. gnd.
V-3183	Clip, speed	V-3398-1	Push button with spring (H-104 and H-107 only)	V-3228S-2	Terminal board, 2 lugs
V-3224	Coil, S.W. ant. (L1, L2)	V-3398-2	Push button with spring (H-105 and H-108 only)	V-3231	Terminal board, 3 lugs
V-3238	Coil, ant. loading (L3)	V-3181	Rail, pointer	V-3232	Terminal board, 5 lugs
V-3243	Coil, B.C. and S.W. osc. (L4, L5)	RC10AE224M	Resistor, 220K 1/4 w. (R3)	V-3218	Transformer, 1st I-F (L8, L9, C35, C36)
V-3313	Coil, osc. cathode (L6)	RC10AE105M	Resistor, 1M 1/4 w. (R4, R5)	V-3249	Transformer, 2nd I-F (L10, L11, C37, C38, C39, C40, R25)
V-3254	Connector, phono	RC41AE682K	Resistor, 6800 ohms 2 w. (R6)	V-3250	Transformer, power (T1)
V-3222	Control, tone, 2 megohms (R1)	RC10AE223M	Resistor, 22K 1/4 w. (R7, R8)	V-3245	Transformer, untuned R-F (L12, L13, C41, R26)
V-3221	Control, volume and power, 2 megohms tapped at 400,000 ohms (R2) and switch (SW1)	RC10AE474M	Resistor, 470K 1/4 w. (R9, R10)	V-3317	Tuner, push button (L14 to L19, and C42 to C47 incl.)

WESTINGHOUSE ELECTRIC CORP.



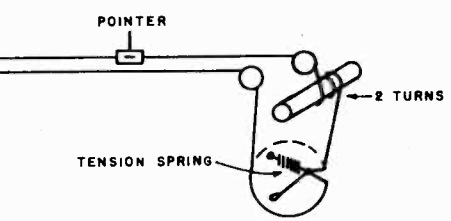
VOLTAGE AND CURRENT TABLE
 ALL VOLTAGES ARE MEASURED FROM THE NEGATIVE SIDE OF THE DUAL FILTER CAPACITOR USING A 20,000 OHMS PER VOLT METER. ALL CURRENTS ARE MEASURED FROM TOP OF TUBE SOCKETS USING A BREAK-IN ADAPTER. LINE VOLTAGE 117V.A.C. SIGNAL VOLTAGE ZERO.

TUBE	SOCKET TERMINAL			I _k mA
	K	S	P	
6SA7	ZERO	66	82	
6SC7	ZERO		NO.1-46 NO.2-30	
6SF7	Z.F.O.	82	82	
25L6GT	5-4	82	120	60
25Z6GT	125			84

READINGS SHOULD APPROXIMATE THE ABOVE WITHIN 20 PERCENT.

RESISTANCE TABLE

ITEM	PRIMARY OHMS	SECONDARY OHMS	REMARKS
31A	1	1 1/2	
16	1" TO 5" - 1/2	1" TO 5" - 3/8	"F" TO "S" - 4 1/4 OHMS
79	28	28	
80	19	19	
80		47,000	INCLUDES INTERNAL RESISTOR IN SERIES WITH SECONDARY.
81	285		PLATE TO PLATE
81			PLUGS REMOVED FROM SPEAKER SOCKET
70		3.2	PLUGS REMOVED FROM SPEAKER SOCKET



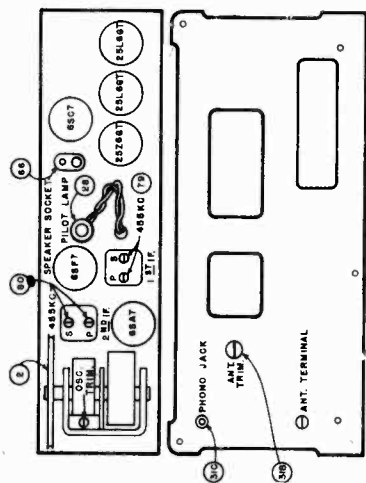
Pilot Lamp: (1).....Westinghouse No. 47, 6.3 volts, .15 ampere

Frequency Range:
 Standard Broadcast550 to 1600 kc
 Intermediate Frequency455 kc

- Phonograph Specifications:**
1. Automatic record changer, single button control.
 2. Plays either 12 ten-inch or 10 twelve-inch records automatically.
 3. Balanced tone arm.
 4. Voltage and frequency of motor - 105 - 120 volts, 50 - 60 cycles, single phase a.c.
 5. Type of cartridge - high impedance crystal.
 6. Type of needle - straight shank steel or semi-permanent sapphire.

Record Changer: General Instrument Model 205

WESTINGHOUSE ELECTRIC CORP.



The foregoing alignment procedure is condensed in the following table as a convenience for the service technician.

Steps	Connect Signal Generator to—	Adjust Signal Generator to—	Tune Radio Dial to—	Adjust
1	6SF7 control grid through 0.1 mfd. capacitor	455 kc	1600 kc	secondary trimmer of 2nd i-f transformer for maximum output
2	6SF7 control grid through 0.1 mfd. capacitor	455 kc	1600 kc	primary trimmer of 2nd i-f transformer for maximum output
3	6SA7 control grid through 0.1 mfd. capacitor	455 kc	1600 kc	secondary trimmer of 1st i-f transformer for maximum output
4	6SA7 control grid through 0.1 mfd. capacitor	455 kc	1600 kc	primary trimmer of 1st i-f transformer for maximum output
5	antenna terminal through 200 mmfd. capacitor	1615 kc	gang at minimum	trimmer of oscillator section, tuning capacitor for maximum output
6	radiated signal (no actual connection)	1400 kc	1400 kc	antenna trimmer for maximum output

Power Supply Polarity:

When the receiver is operated on 105-120 volts a.c., a slight hum may be heard if the power plug is inserted in such a manner that the "hot" side of the supply line is connected nearest to the chassis. To eliminate this trouble, reverse the plug in the convenience outlet.

When operated on direct current, the set will not function at all if the power plug polarity is reversed with respect to the line voltage. If it does not function within one minute after it is turned on, reverse the plug.

Ground Connection:

The use of an external ground is not recommended for two reasons: First, the r-f circuits are returned to ground through the a-c or d-c supply line; second, the radio chassis is connected to one side of the supply line through a 220,000 ohm resistor and a capacitor of 0.2 mfd. If the power plug is inserted in such a manner that the "hot" side of the supply line is connected nearest to the chassis, the use of an external ground would place the 105-120 volt supply voltage directly across the resistor-capacitor combination. This might cause a loud hum or, under certain conditions, actual damage to the receiver.

Alignment Procedure

The overall sensitivity and selectivity of these models is affected to a great extent by the alignment of the i-f and r-f circuits. In general, a complete realignment of both circuits is unnecessary. If realignment is required, however, the following procedure must be used:

1. Disconnect the receiver from the 105-120 volt power source.
2. Remove the rear cover - loop assembly as outlined above.
3. Pull off the four knobs at the front of the cabinet.
4. Remove the pilot lamp socket from the speaker bracket. Remove the speaker plug from its socket. This socket is located at the front of the chassis near the 6SC7 tube.
5. To release the chassis, remove the two screws from the bottom of the cabinet.
6. Reconnect the speaker. Place the power plug in the 105-120 volt a-c or d-c convenience outlet and set the controls on the front as follows:
 - a. Volume control and a-c switch - full on.
 - b. Radio-phonograph switch - in RADIO position (extreme counter clockwise).
 - c. Tone control - HIGH position (extreme clockwise).
 - d. Tuning dial - 1600 kc position.
7. Connect the signal generator to the control grid of the 6SF7 i-f amplifier tube through a series capacitor of 0.1 mfd. Adjust the signal generator for an output frequency of 455 kc; keep the signal reduced to avoid a.v.c. action.
8. Connect an a-c output meter across the speaker voice coil; place the meter range switch on the highest output scale position for the preliminary adjustments.
9. Using an alignment tool, adjust the secondary trimmer of the second i-f transformer for the maximum output indication on the meter. As the circuits come into alignment, it will be necessary to further reduce the test signal amplitude in order to prevent a.v.c. action. Always use the lowest range on the meter which will give at least one-half scale deflection. Adjust the primary trimmer of the second i-f transformer for maximum output indication.
10. Connect the signal generator output to the control grid of the 6SA7 mixer tube, and adjust in turn, the secondary and primary trimmers of the first i-f transformer for maximum output indication.
11. Leave the signal generator connected to the control grid of the 6SA7 mixer tube. Reduce the test signal to the lowest perceptible value and carefully "peak" each adjustment in Steps 9 and 10 for maximum output indication.
12. Connect the signal generator to the antenna terminal on the back cover - loop assembly through a capacitor of approximately 200 mmfd.; adjust the signal generator to an output frequency of 1615 kc. Rotate the tuning condenser until the minimum capacity stop is reached, and adjust the oscillator trimmer for the maximum response on the output meter.
13. Disconnect the signal generator test lead from the antenna terminal. Turn attenuator on the signal generator for full output. Adjust the signal generator for 1400 kc. Bring the output lead near, but do not connect to, the loop antenna. Tune in the test signal as accurately as possible on the radio. If the test signal is too strong, move the lead farther away. Adjust the antenna trimmer for maximum output on the meter.

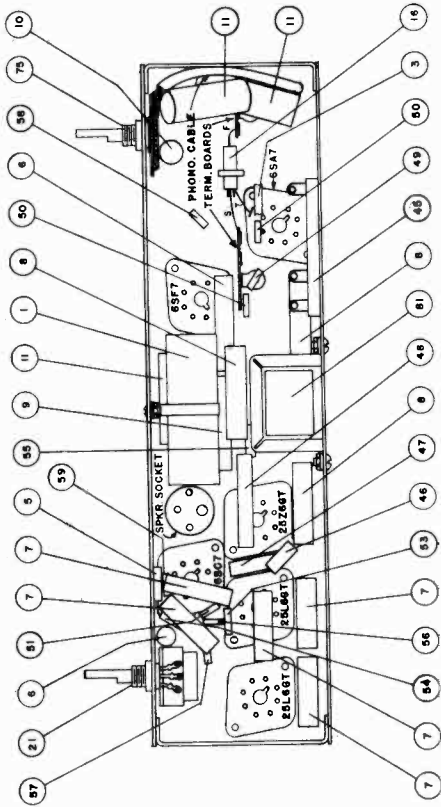
Note: The antenna trimmer must be readjusted after the chassis is replaced in the cabinet as the metal chassis and speaker affect the inductance of the loop.
14. Check on radio stations at selected points for calibration and sensitivity.

WESTINGHOUSE ELECTRIC CORP.

PARTS LIST FOR H-122 AND H-130

When ordering parts specify model number of set in addition to part number and description of part.

Item No.	Part No.	Description of Part
1	V-3304	Capacitor, electrolytic
1A		Capacitor, 30 mfd.
1B		Capacitor, 50 mfd.
2	V-3335	Capacitor, variable two-gang
2A		Capacitor, loop tuning
2B		Capacitor, oscillator tuning
2C		Capacitor, oscillator trimmer
3	RCM20A680M	Capacitor, 68 mmfd.
4	RCM20A301M	Capacitor, 300 mmfd.
5	RCPI0W6502A	Capacitor, .005 mfd.
6	RCPI0W4103A	Capacitor, .01 mfd.
7	RCPI0W4503A	Capacitor, .05 mfd.
8	RCPI0W4204K	Capacitor, 0.2 mfd.
9	RCPI0W6202A	Capacitor, .002 mfd.
10	RCPI0W4104A	Capacitor, .01 mfd.
11	V-3382	Coil, oscillator
16	V-3303	Control, tone
20	V-3298	Control, volume and switch
21		Control, variable resistor
21A		Control, switch
21B		Control, switch
24	V-3392	Cord, power a.c. long (H-122 only)
25	V-3372-122	Cord, power short (H-122 only)
25	V-3372-130	Cord, power (H-130 only)
28	Westinghouse No. 47	Light, pilot
31	V-3660	Loop, antenna (H-122 only)
31	V-3666	Loop, antenna (H-130 only)
31A		Loop, winding
31B		Loop, trimmer
31C		Phono socket
35	V-3379	Receptacle
39A		Phonograph pickup (See Service Notes, V-3288-2 Record Changer)
39B		Phonograph motor and switch (See Service Notes, V-3288-2 Record Changer)
45	V-3311	Resistor, ballast
46	RC20AE220M	Resistor, 22 ohms 1/2 watt
47	RC30AE910J	Resistor, 91 ohms 1 watt
48	RC40AE152M	Resistor, 150 ohms 2 watts
49	RC10AE332M	Resistor, 3,300 ohms 1/4 watt
50	RC10AE223M	Resistor, 22,000 ohms 1/4 watt
51	RC10AE823K	Resistor, 82,000 ohms 1/4 watt
53	RC20AE184K	Resistor, 180,000 ohms 1/2 watt
54	RC20AE224K	Resistor, 220,000 ohms 1/2 watt
55	RC10AE224M	Resistor, 220,000 ohms 1/4 watt
56	RC10AE274K	Resistor, 270,000 ohms 1/4 watt
57	RC10AE334K	Resistor, 330,000 ohms 1/4 watt
58	RC10AE225M	Resistor, 2.2 megohms 1/4 watt
59	RC10AE106M	Resistor, 10 megohms 1/4 watt
65	V-3398-1	Socket, regular a.c. power
66	V-3299	Socket, speaker
70	V-3291	Switch, 6" PM
75	V-3301	Switch, radio phono
79	V-3328	Transformer, 1st 1-f
80	V-3329	Transformer, 2nd 1-f



- 81 V-3297 Transformer, output
- V-3219S-1 Cord, dial drive
- V-3343 Pointer assembly
- V-3321 Rail, pointer
- V-3335 Socket, pilot light
- V-3246S Socket
- V-3248S Spring, dial drive
- V-1109-1 Cabinet (radio section H-122 only)
- V-1110-1 Cabinet (less radio section H-122 only)
- V-1111-2 Cabinet (H-130 only)
- V-3425 Dial (H-122 only)
- V-3047-2 Dial (H-130 only)
- V-3413 Knob, tone (H-122 only)
- V-3362-2 Knob, tone (H-130 only)
- V-3413 Knob, tuning (H-122 only)
- V-3262-2 Knob, tuning (H-130 only)
- V-3331-1 Knob assembly, volume (H-122 only)
- V-3667-2 Knob assembly, volume (H-130 only)
- V-3331-2 Knob assembly, radio-phonograph (H-122 only)
- V-3667-4 Knob assembly, radio-phonograph (H-130 only)
- V-3333S-1 Medallion

Power Output:	
Undistorted (radio)	3 watts
Undistorted (phonograph)	3.5 watts
Maximum	5 watts

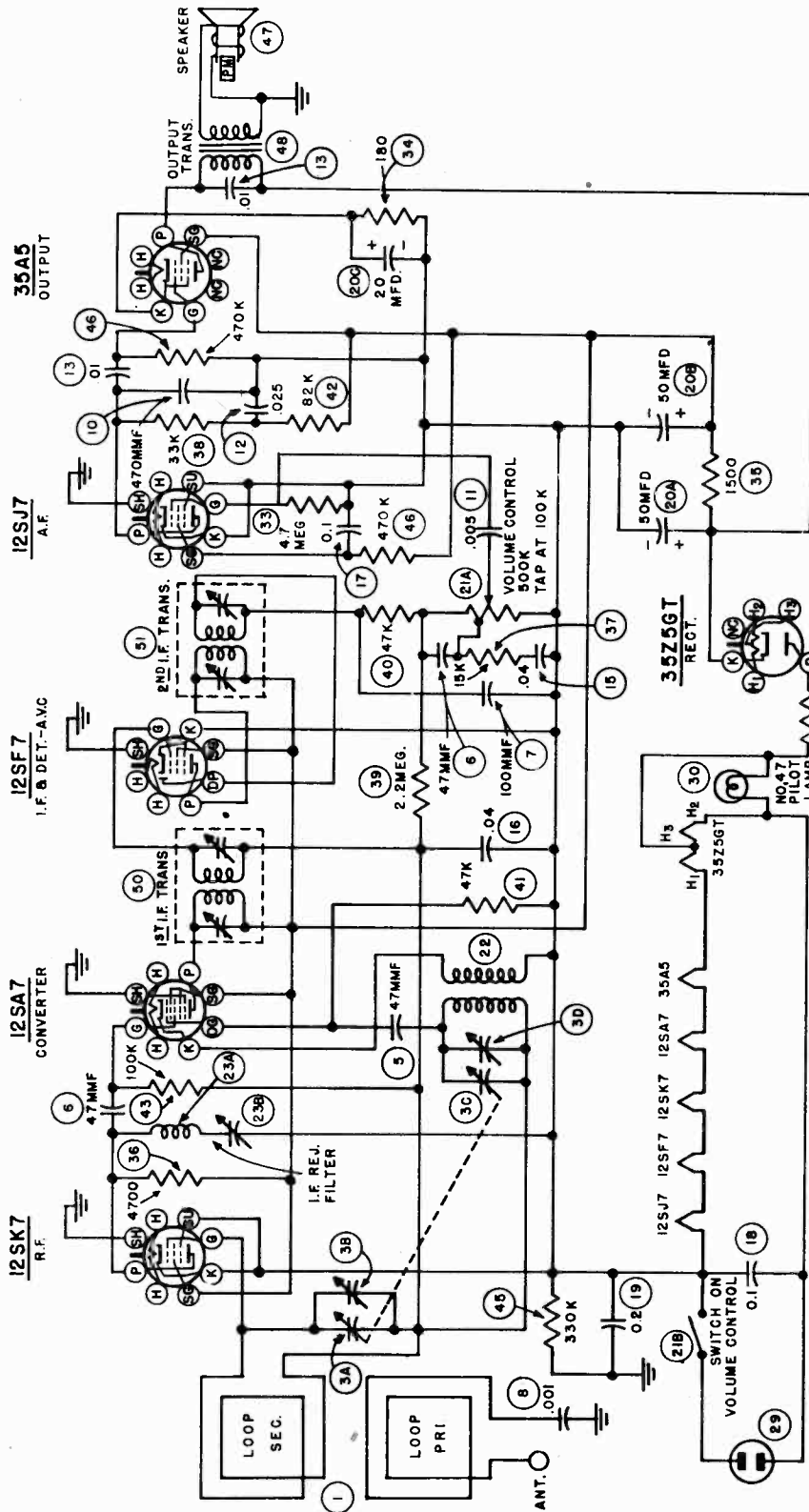
Power Supply Rating:	
H-122 combination	105 - 120 volts, 50 - 60 cycles a.c.
H-130 or radio section of H-122 only	105 - 120 volts d.c. or 105 - 120 volts, 50 - 60 cycles a.c.

Power Consumption:	
H-122 combination	150 watts
H-130 or radio section of H-122	60 watts

Special Provisions:	
H-130	Phonograph, FM, and television sound input connection at rear of cabinet
H-122	FM and television sound input connection at rear of cabinet

Loudspeaker:	
Type	6 1/2" dia. P.M. dynamic
Voice Coil Impedance	3.2 ohms

WESTINGHOUSE ELECTRIC CORP.



RESISTANCE TABLE

ITEM	PRIMARY OHMS	SECONDARY OHMS	REMARKS
1		2	
22	1/2	7	
23A	50		
50	27	26	
51	27	23	VOICE COIL DISCONNECTED
47		2.95	VOICE COIL DISCONNECTED
48	37.5	1/4	VOICE COIL DISCONNECTED

INTERMEDIATE FREQUENCY : 455 K C

VOLTAGE AND CURRENT TABLE
 ALL VOLTAGES ARE MEASURED FROM THE NEGATIVE SIDE OF THE QUAL FILTER CAPACITOR UNLESS OTHERWISE NOTED. 20,000 OHMS PER VOLT METER LINE VOLTAGE IS 117 V.A.C. SIGNAL VOLTAGE IS ZERO.

TUBE	SOCKET TERMINAL		
	K	S,G	P
12SK7	ZERO	70	31
12SA7	ZERO	70	69
12SF7	ZERO	70	69
12SJ7	ZERO	19	26
35A5	4.25	70	115
35Z5GT	12.2		52.0

READINGS SHOULD APPROXIMATE THE ABOVE WITHIN 20 PERCENT.

Loudspeaker:

0.85 watt Type 5" dia. P.M. dynamic
 1.25 watts V.C. Impedance 3.2 ohms at 400 cps

Power Output:

Undistorted
 Maximum

WESTINGHOUSE ELECTRIC CORP.

to 1615 kc. Tune the receiver tuning condenser to minimum. Adjust the trimmer on the oscillator section of the main tuning condenser for **maximum** reading on the output meter.

- Adjust the signal generator to 1400 kc. Bring the output lead near the receiver input but do not make an actual connection. Tune in the test signal on the receiver dial and adjust the antenna trimmer for maximum output as read on the output meter.

The foregoing alignment procedure is condensed in the following table as a convenience for the service technician:

Steps	Connect Signal Generator to—	Adjust Signal Generator to—	Tune Radio Dial to—	Adjust for Maximum Output
1	12SF7 grid in series with a .01 mfd. capacitor	455 kc	quiet point near 1600 kc.	primary and secondary 2nd i-f transformer
2	12SA7 grid in series with a .01 mfd. capacitor	455 kc	quiet point near 1800 kc.	primary and secondary 1st i-f transformer
3	12SA7 grid in series with a .01 mfd. capacitor	455 kc	quiet point near 1600 kc.	repeat 1 and 2
4	antenna terminal	455 kc	600 kc	adjust i-f rejection trimmer for minimum output
5	antenna terminal in series with a 50 mmd. capacitor	1615 kc	gang at minimum	oscillator trimmer
6	radiated signal from signal generator	1400 kc	1400 kc	adjust antenna trimmer

Power Supply Polarity:

When the receiver is operated on 110 volts 60 cycles a.c., a slight hum may be heard if the power plug is inserted in such a manner that the "hot" side of the supply line is connected nearest to the chassis. To eliminate this trouble, reverse the supply plug in the convenience outlet.

When operated on direct current, the set will not function at all if the power plug polarity is reversed with respect to the line voltage. If it does not operate within one minute after it is turned on, reverse the plug in the convenience outlet.

Tube Replacement:

When replacing tubes this procedure must be followed to prevent damage to the loop and other delicate parts:

- Disconnect the power plug from the 110-volt service outlet.
- Pull the knobs and remove the Phillips head screw from the right-hand plastic cover.
- Carefully remove the plastic cover and handle.
- Lift the loop assembly and tilt it forward until the tubes are accessible.
- Turn the tuning dial to 550 kc to avoid damage to the rotor plates of the tuning condenser.

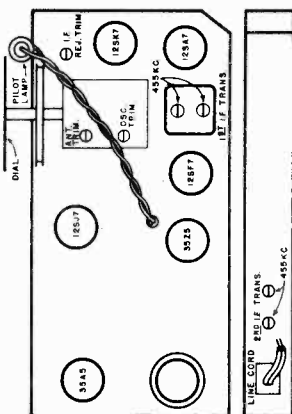


Fig. 1

Alignment Procedure (Refer to Fig. 1):

The overall sensitivity and selectivity of the Little Jewel are affected to a great extent by the alignment of the i-f and f-circuits. In general, a complete realignment of both circuits is unnecessary. If realignment is required, however, the following procedure is recommended:

- Remove the knobs, the plastic cover, and the loop as outlined above.
- Remove the Allen head screw from the left-hand plastic cover and carefully lift off the cover.
- Turn on the receiver and tune to a quiet spot near 1600 kc.
- Connect an a-c output meter across the speaker voice coil. Turn the meter range switch to a high-voltage position.
- Connect the outer conductor of the signal generator test lead to the common negative (this is the metal can enclosing the filter capacitors). Reduce the output of the signal generator to prevent a.v.c. action during the alignment procedure.
- Connect the inner conductor of the signal generator test lead to the 12SF7 i-f amplifier control grid through a capacitance of 0.01 mfd. Adjust the signal generator frequency to 455 kc.
- With an insulated screwdriver or neutralizing tool, adjust the second i-f transformer secondary trimmer for maximum reading on the output meter. Use the lowest practicable scale on the meter and, as the circuits come into alignment, reduce the signal generator output to prevent a.v.c. action.
- Repeat operation 7, this time adjusting the second i-f transformer primary trimmer.
- Connect the signal generator output, through the 0.01 mfd. capacitor, to the control grid of the 12SA7 converter tube. Repeat operations 7 and 8, this time adjusting the secondary and primary trimmers of the first i-f transformer.
- Connect the signal generator output, adjusted to 455 kc, to the antenna terminal at the bottom of the cabinet. Tune the radio dial to 600 kc. Adjust the i-f rejection trimmer for **minimum** reading on the output meter.
- Connect the test oscillator output through a capacitance of 50 mmd. to the antenna terminal at the bottom of the cabinet. Adjust the signal generator frequency

WESTINGHOUSE ELECTRIC CORP.

PARTS LIST FOR H-125 AND H-126

When ordering parts specify model number of set in addition to part number and description of part.

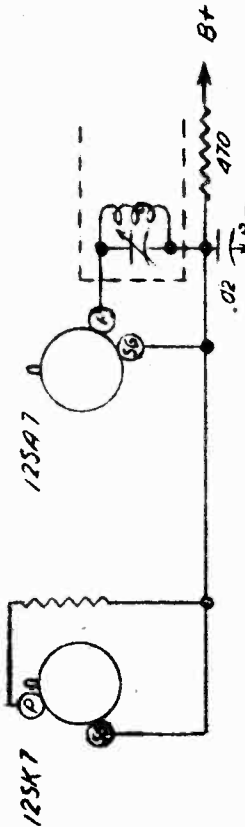
Item No.	Part No.	Description of Part
1	V-3466	Loop antenna
3	V-3474	Variable
3A	Part of Item 3	Capacitor, antenna tuner
3B	Part of Item 3	Capacitor, antenna trimmer
3C	Part of Item 3	Capacitor, oscillator tuner
3D	Part of Item 3	Capacitor, oscillator trimmer
5	RCM20A470K	Capacitor, 47 mmfd.
6	RCM20A470M	Capacitor, 47 mmfd.
7	RCM20A101M	Capacitor, 100 mmfd.
8	RCP10W6102A	Capacitor, 1,000 mmfd.
10	RCM20A471M	Capacitor, 470 mmfd.
11	RCP10W6502A	Capacitor, .005 mfd.
12	RCP10W2253K	Capacitor, .025 mfd.
13	RCP10W2103A	Capacitor, .01 mfd.
15	RCP10W2403K	Capacitor, .04 mfd.
16	RCP10W2403A	Capacitor, .04 mfd.
17	RCP10W2104A	Capacitor, .10 mfd.
18	RCP10W4104A	Capacitor, .10 mfd.
19	RCP10W2204A	Capacitor, .20 mfd.
20	V-3470	Capacitor, electrolytic
20A	Part of Item 20	Capacitor, 50 mfd. 150 volts electrolytic
20B	Part of Item 20	Capacitor, 50 mfd. 150 volts electrolytic
20C	Part of Item 20	Capacitor, 20 mfd. 25 volts electrolytic
21	V-3476	Control, volume and switch
21A	Part of Item 21	Control, variable resistor
21B	Part of Item 21	Control, switch
22	V-3473	Coil, oscillator
23	V-3465	Coil, trap assembly
23A	Part of Item 23	Coil
23B	Part of Item 23	Trap trimmer
29	V-3477	Cord, power A.C.
30	Westinghouse Type No. 47	Light, pilot
31	RC20AE270K	Resistor, 27 ohms 0.5 watt
33	RC20AE475M	Resistor, 4.7 megohms 0.5 watt
34	RC20AE181J	Resistor, 180 ohms 0.5 watt
35	RC30AE152K	Resistor, 1,500 ohms 1 watt
36	RC20AE472K	Resistor, 4,700 ohms 0.5 watt
37	RC20AE153K	Resistor, 15,000 ohms 0.5 watt
38	RC20AE333K	Resistor, 33,000 ohms 0.5 watt
39	RC20AE225M	Resistor, 2.2 megohms 0.5 watt
40	RC20AE473M	Resistor, 47,000 ohms 0.5 watt
41	RC20AE473K	Resistor, 47,000 ohms 0.5 watt
42	RC20AE823K	Resistor, 82,000 ohms 0.5 watt
43	RC20AE104K	Resistor, 100,000 ohms 0.5 watt
45	RC20AE134M	Resistor, 330,000 ohms 0.5 watt
46	RC20AE147K	Resistor, 470,000 ohms 0.5 watt
47	V-3475	Speaker, 5 inch permanent magnet
48	V-3496	Transformer, output
50	V-3471	Transformer, 1st i-f
51	V-3472	Transformer, 2nd i-f
	V-3219S-1	Cord, dial drive

- V-3455-1 Dial (for Model H-125 only)
- V-3455-2 Dial (for Model H-126 only)
- V-3449 Drive shaft bearing
- V-3480 Shaft, drive
- V-3468 Socket, molded octal tube
- V-3469 Socket, pilot light
- V-3499 Socket, dial drive
- V-3448 Spring, dial drive
- V-3435 Bumper, felt (screw type)
- V-3501-1 Case assembly, center
- V-3461-1 Cover, left-hand (H-125 only)
- V-3459-1 Cover, right-hand (H-125 only)
- V-3498-1 Handle assembly (H-125 only)
- V-3481-1 Knob (H-125 only)
- V-3491 Terminal strip assembly
- V-3461-2 Cover, left-hand (H-126 only)
- V-3459-2 Cover, right-hand (H-126 only)
- V-3498-2 Handle assembly (H-126 only)
- V-3481-2 Knob (H-126 only)
- V-3711-2 Baffle and Grille Cloth Assembly (H-125)
- V-3333S-1 Baffle and Grille Cloth Assembly (H-126)
- V-3333S-2 Medallion (H-125 only)
- V-3745 Medallion (H-126 only)
- Socket, lock-in

SUBJECT: CIRCUIT CHANGE, H-125 and H-126 Radios

Effective July 11, 1946, all Model H-125 and H-126 radios which have the letter "Ch" stamped on the end of the chassis directly below the output tube, have been changed as follows:

A 470 ohm 1/4 watt isolating resistor has been inserted in the plate and screen supply line for the R.F. and converter stages, and a .02 mfd, 200 volt paper by-pass capacitor has been connected from the tube side of this resistor to the common negative line. These connections are shown below.

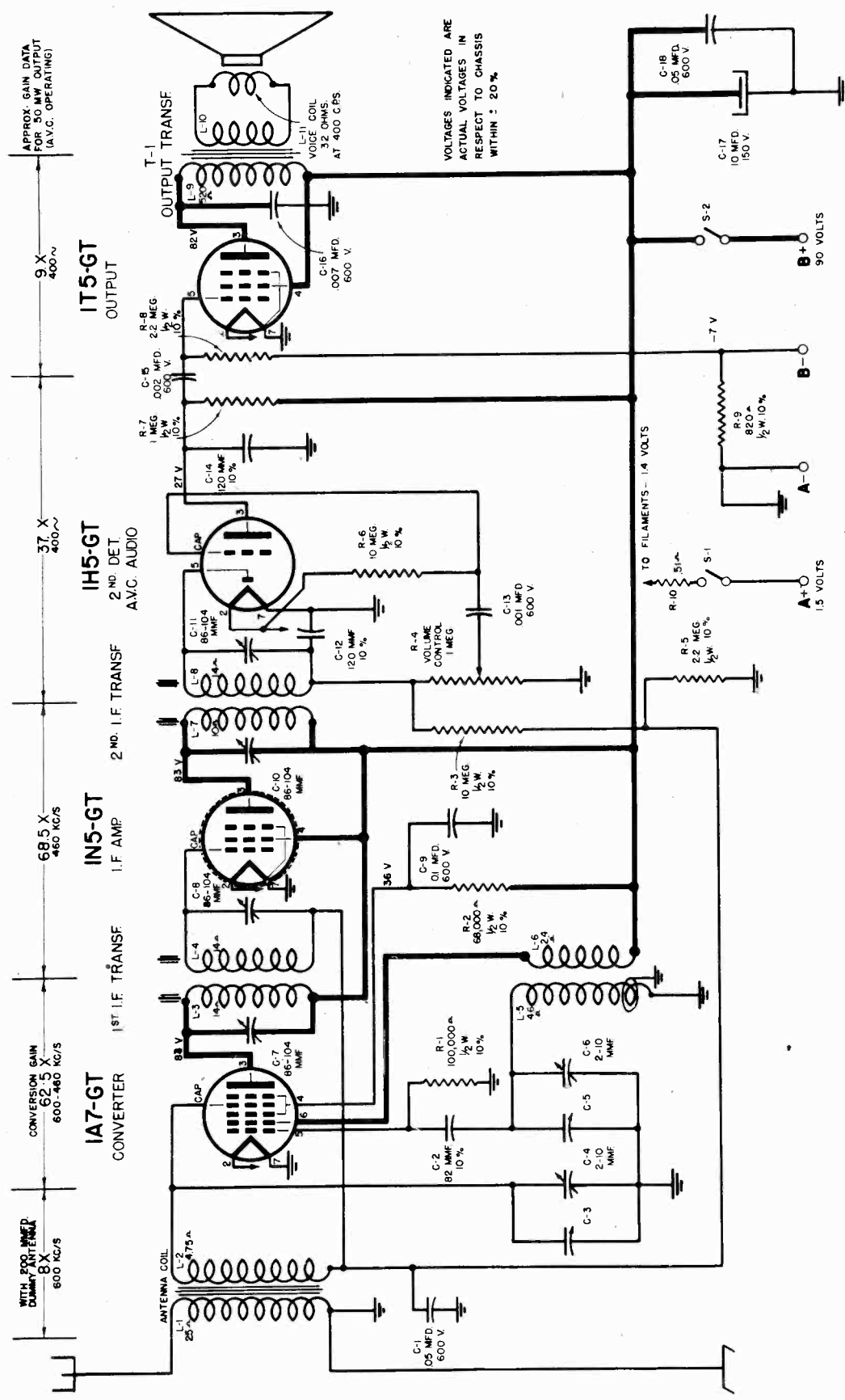


Where this change has been incorporated in the radio, voltages at the R.F. and converter tube sockets will differ slightly from the values given in the original Service Notes. Approximate voltages when the change is incorporated are as follows: 12SK7 screen grid 66 V., plate 30 V.; 12SA7 screen grid 66 V., plate 65 V.

Procurement difficulties with respect to certain components make the change advisable at this time.

WESTINGHOUSE ELEC. INTERNAT. CO.

MODELS B470-A,
B470-B, B470-C,
B470-D



APPROX. GAIN DATA
FOR 30 MW OUTPUT
(A.V.C. OPERATING)

9 X
400~

IT5-GT
OUTPUT

37 X
400~

IH5-GT
2 ND DET
A.V.C. AUDIO

68.5 X
460 KC/S

IN5-GT
1.5 AMP
I.F. TRANSF.

CONVERSION GAIN
62.5 X
600-480 KC/S

IA7-GT
CONVERTER
1ST I.F. TRANSF.

- UNDISTORTED OUTPUT.....100 MILLIWATTS AT 90 V. (B).
- FREQUENCY RANGE.....530 TO 1735 KC/S.
- DRIVE RATIO..... APPROX. 10 TO 1.
- BATTERY DRAIN..... "A" AT 1.4 VOLTS 200 ma.
"B" AT 90 VOLTS 8.5 ma.

APRIL 1946

MODELS B470-A,
B470-B, B470-C,
B470-D

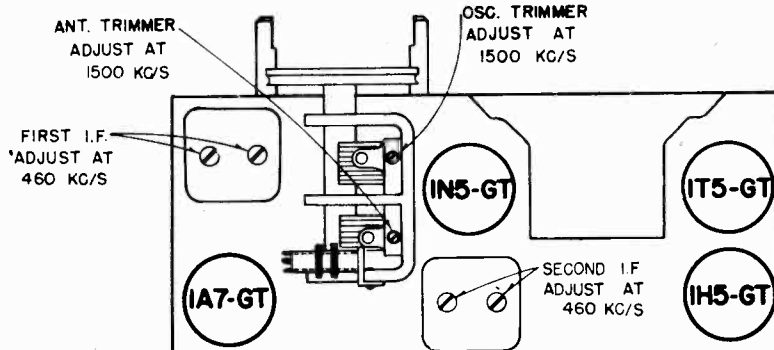
WESTINGHOUSE ELEC. INTERNAT. CO.

ALIGNMENT PROCEDURE

IF USING A CATHODE RAY OSCILLOGRAPH, THE VERTICAL "HIGH" TERMINAL IS TO BE CONNECTED TO THE ^N5GT GRID CAP WITH A 2.0 MEG. RESISTOR IN SERIES AT THE GRID END.

FOR THE I.F. ALIGNMENT USE A DUMMY ANTENNA CAPACITOR OF .01 MFD. AND COUPLE TEST SIGNAL TO GRID CAP OF THE 1A7GT.

FOR PRELIMINARY ADJUSTMENT OF THE OSCILLATOR CIRCUIT USE THE SAME DUMMY ANTENNA AND CONNECTION POINT. FEED THE TEST GENERATOR TO THE ANTENNA LEAD USING A 200 MMFD. CAPACITOR AS A DUMMY ANTENNA, ADJUST THE ANTENNA TRIMMER C-4 FOR MAXIMUM AT 1500 KC/S. THEN READJUST THE OSCILLATOR SHORTED LOOP FOR MAXIMUM AT 600 KC/S WHILE ROCKING THE GANG CAPACITOR. RECHECK AT 1500 KC/S.



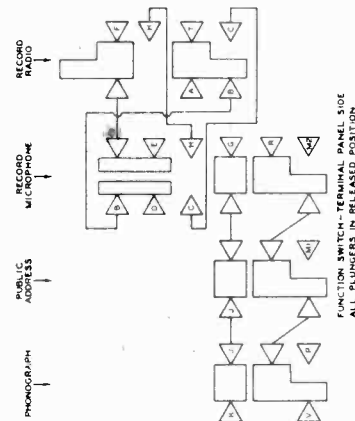
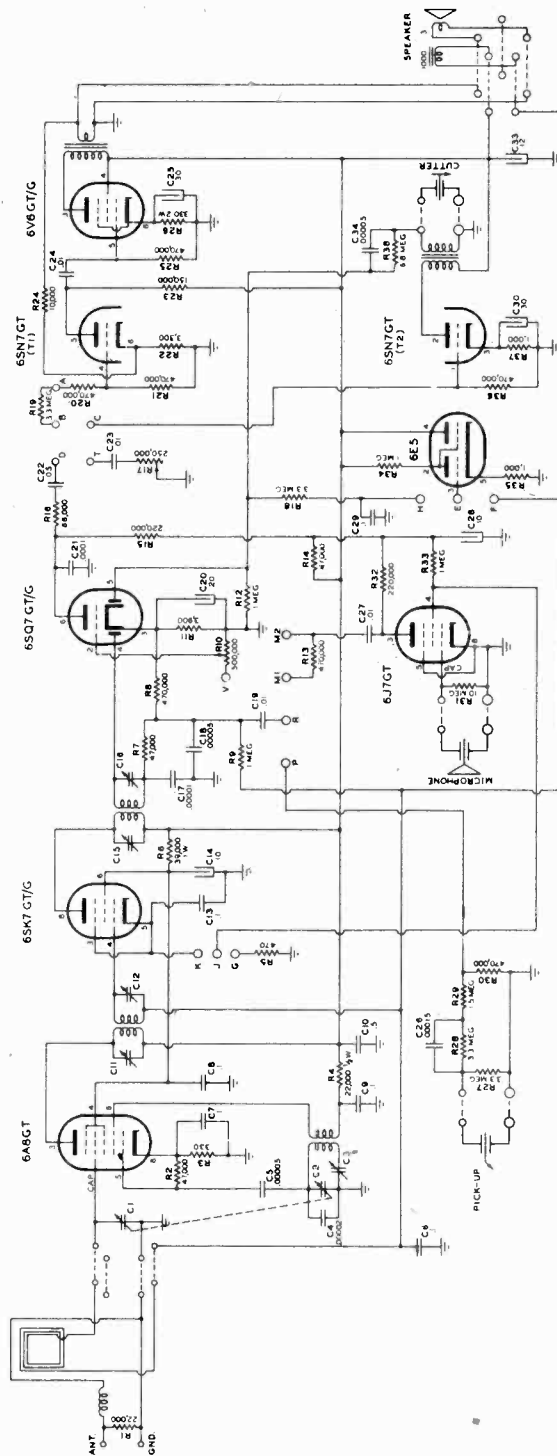
PART	KEY No.	B470-A	B470-B	KEY No.	B470-C	B470-D
Cabinet - Mantel.....		573092-1	574260-1		1-1-96-1	1-1-96-2
Cable - Battery (Complete with Attachment).....		586709-505	586709-505		586709-505	586709-505
Capacitor - 2 Gang Tuning.....	C3, C4 C5, C6	1.95 587265-1	1.95 587969-1		1.95	1.95
Capacitor - 2 Gang Tuning with Drum.....				C3, C4 C5, C6 C17	2-M-275-2 2.75 595086-4	2-M-275-2 2.75 595086-4
Capacitor - Tubular 10 Mfd. 150 Volt.....	C17	595086-4 .80	595086-4 .80		595086-4 .80	595086-4 .80
Clip - Control Grid..... Pkg. of 5.....		#6011	#6011		#6011	#6011
Clamp - To Hold Chassis to Cabinet.....		595639-4 .30	595639-4 .30	L1, L2	595639-4 .30	595639-4 .30
Coil - Antenna.....	L9, L10	587256-503 .15	587256-503 .15		587256-503 .15	587256-503 .15
Coil - Oscillator.....	L4, L5	587256-504 .80	587256-504 .80	L5, L6	587256-504 .80	587256-504 .80
Control - Volume Control with D.P.S.T. Switch.....	S1, S2 R4	595769-2 1.50	595769-2 1.50	S1, S2 R4	595769-2 1.50	595769-2 1.50
Cord - (35 lb. Black Prince 1/32 Dia.).....		K-89811-504	K-89811-504		K-89811-504	K-89811-504
Dial - Calibrated.....		K-89516-501 .25				
Dial - Calibrated Glass Scale.....			595943-1 .60		597038-1 .40	597038-1 .40
Indicator - Paper Disc.....					1-N-50-2 .40	1-N-50-2 .40
Knob - For Volume Control.....		K-39008-6 .15	595170-4 .20		595170-4 .20	595170-4 .20
Knob - For Tuning Condenser.....		K-89515-502 .15	596370-1 .20		596370-1 .20	596370-1 .20
Plug - "A" Battery.....		595093-1 .15	595093-1 .15		595093-1 .15	595093-1 .15
Plug - "B" Battery.....		#60456 .10	#60456 .10		#60456 .10	#60456 .10
Reproducer - Less Output Transformer.....	L8	572797-135 3.50	572797-135 3.50	L10	572797-135 3.50	572797-135 3.50
Reproducer - Complete.....		572797-19	572797-19	L9, L10 L11	572797-19	572797-19
Shield - Coat Tube with Ground Clip.....		H-40290 .20	H-40290 .20			
Shield - Coat Tube.....				#1222	#1222	#1222
Shield - Spira Shield for Wires 6" Long.....		593969-15 .10	593969-15 .10		593969-15 .10	593969-15 .10
Socket - 8 Contact (Tube).....		596185-2 .25	596185-2 .25		596185-2 .25	596185-2 .25
Spring - Drive Cord Tension..... Pkg. of 5.....		594451-11 .15	594451-11 .15		594451-11 .15	594451-11 .15
Spring - For Dial and Knob..... Pkg. of 5.....		K-82890-2 .20				
Spring - Knob..... Pkg. of 5.....		K-87778-1 .20	H-40411 .10		H-40411 .10	H-40411 .10
Transformer - 1st. I.F.....	L2, L3 C8, C9	587174-503 1.60	587174-503 1.60	L3, L4 C7, C8	587989-501 1.60	587989-501 1.60
Transformer - 2nd. I.F.....	L6, L7 C10, C18	587174-504 1.60	587174-504 1.60	L7, L8 C10, C11	587989-502 1.60	587989-502 1.60
Transformer - Reproducer Output.....	T1	572797-134 1.50	572797-134 1.50	T1	572797-134 1.50	572797-134 1.50
Tuning - Drum.....			596333-1 .30			
Tuning - Shaft Complete with Bearing.....			596331-502 .45			
Tuning - Shaft.....					1-N-61-3 .15	1-N-61-3 .15
Tuning - Shaft Bearing.....					1-N-68-3 .10	1-N-68-3 .10
Tuning - "C" Washer on Drive Shaft Pkg. of 5.....					K-61933-4 .10	K-61933-4 .10
Resistor Kit - 2 Volt D.C. Supply.....		H-40291 1.25	H-40291 1.25		H-40291 1.25	H-40291 1.25

All prices subject to change without notice.

These 1.4 Volt Battery Receivers may be used with a 2.0 Storage Cell if resistor kit H-40291 is installed.

WILCOX GAY CORP.

MODELS 6B10, 6B20, 6B30,
6B32 Early. Serial Nos.
700,000 to 701,751



TYPICAL VOLTAGE CHART

TUBE	1	2	3	4	5	6	7	8
6A8	0	0	240	80	-10	54	83AC	2.6
6SK7	0	0	3.3	3.3	80	83AC	240	
6SN7	0	232	8.5	0	55	16	83AC	0
6V6	0	0	1.5	0	0	66	83AC	0
6J7	0	0	225	240	0	240	83AC	13
5Y3	0	0	80	3.3	0	180	3AC	0
6E5	0	6	0	320	305AC	305AC	320	

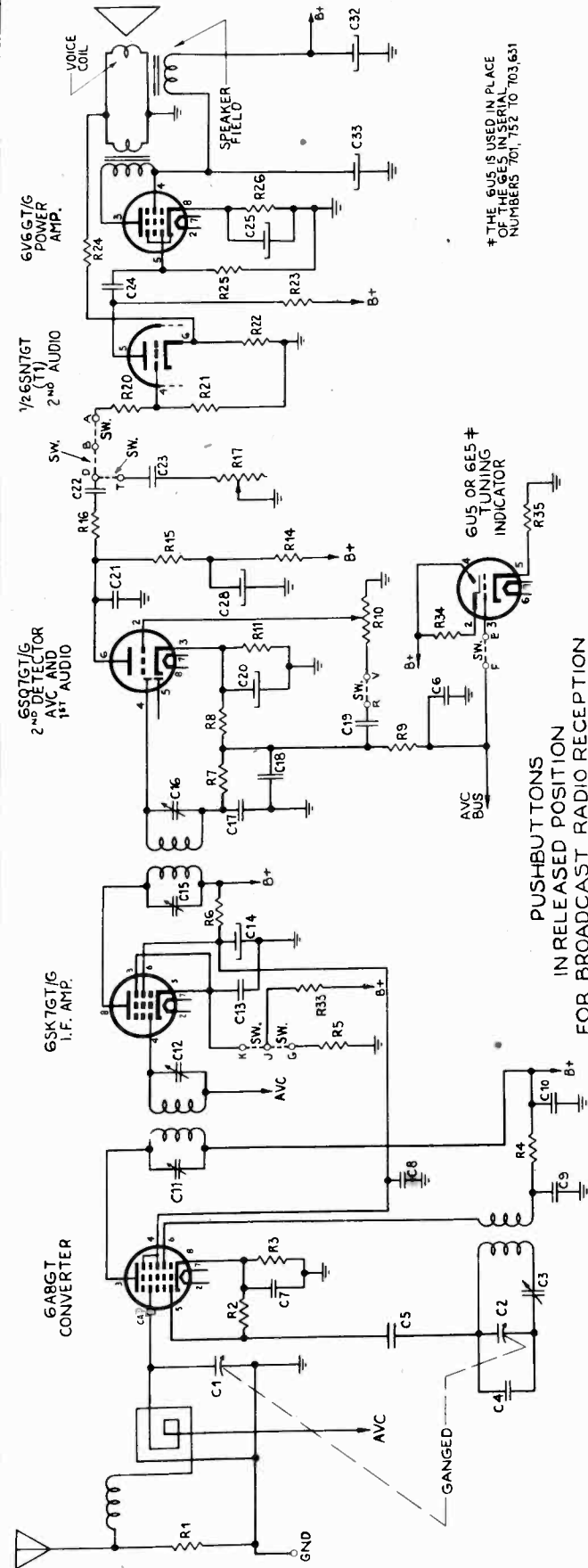
MEASURED WITH 100Ω BIAS PER VOLT METER
SCALES USED - 100-300-300
ALL PLUNGERS IN RELEASED POSITION

- FUNCTION:
- RADIO
 - PHONOGRAPH
 - PUBLIC ADDRESS
 - RECORD MICROPHONE
 - RECORD RADIO
 - V-R
 - V-P
 - V-M1
 - V-M2
 - D-B-A-T
 - D-B-A-T
 - D-B-A-T
 - D-B-A-T
 - D-C
- SWITCH CONTACTS CLOSED
- R-J-C
 - V-R
 - R-J-G
 - V-P
 - K-J
 - V-M1
 - E-F
 - E-F
 - E-F
 - E-M

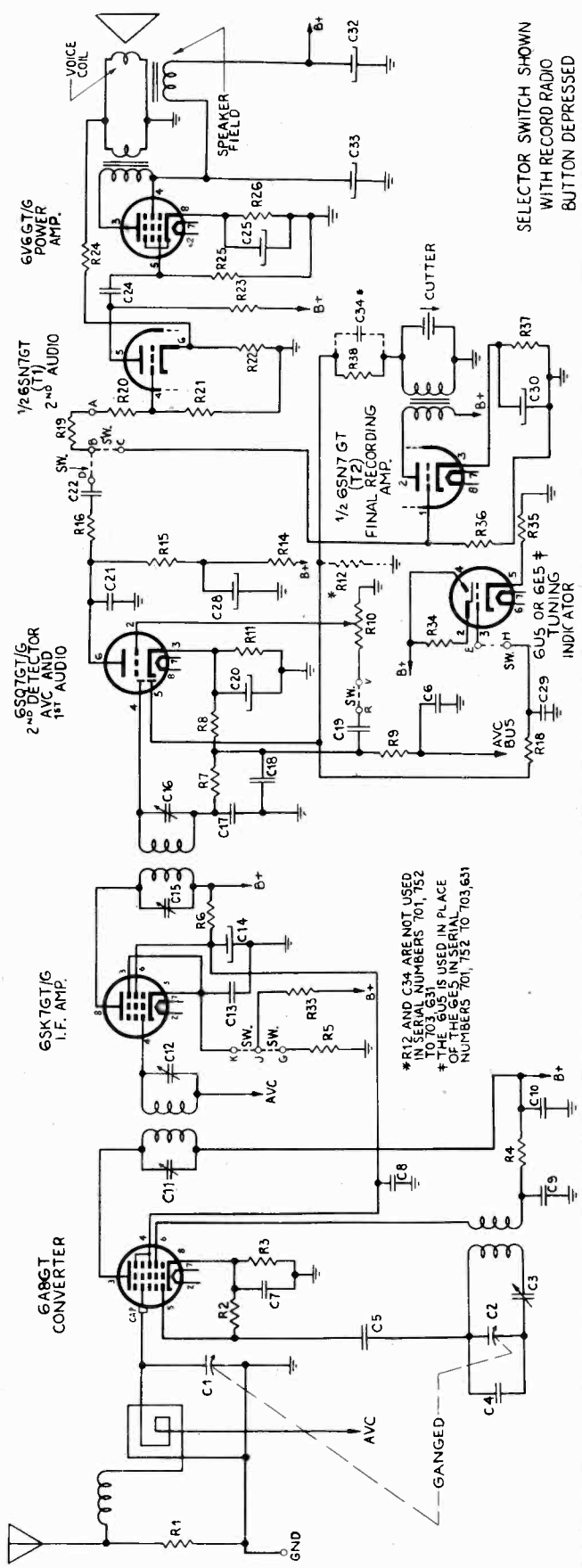
IF PEAK 456 KC

MODELS 6B10, 6B20, 6B30,
6B52, Early, Late

WILCOX GAY CORP.



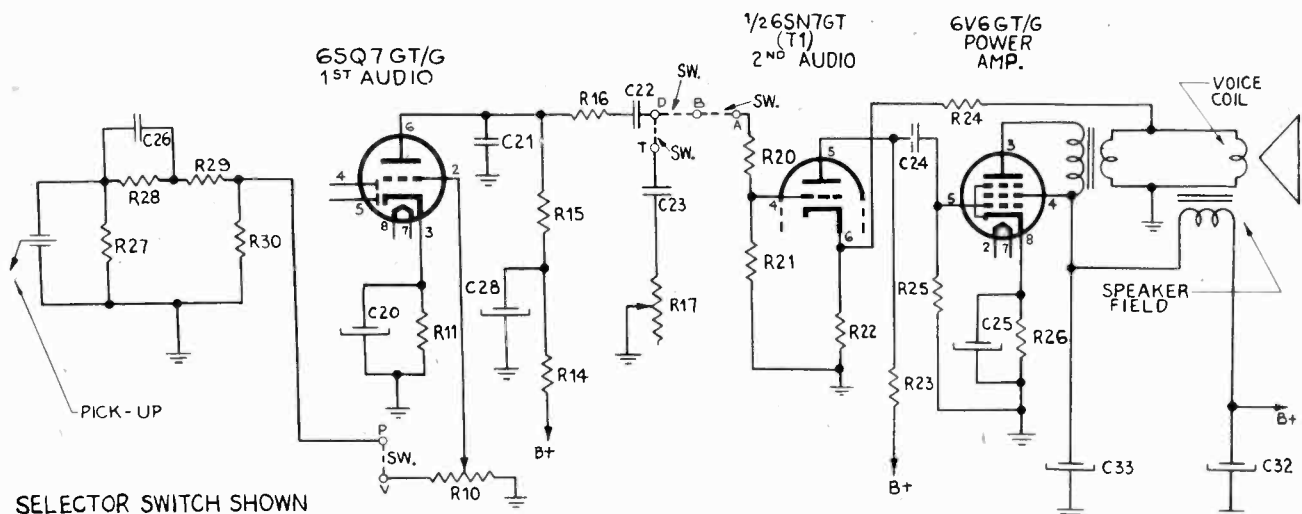
* THE 6U5 IS USED IN PLACE OF THE 6E5 IN SERIAL NUMBERS 701,752 TO 703,631



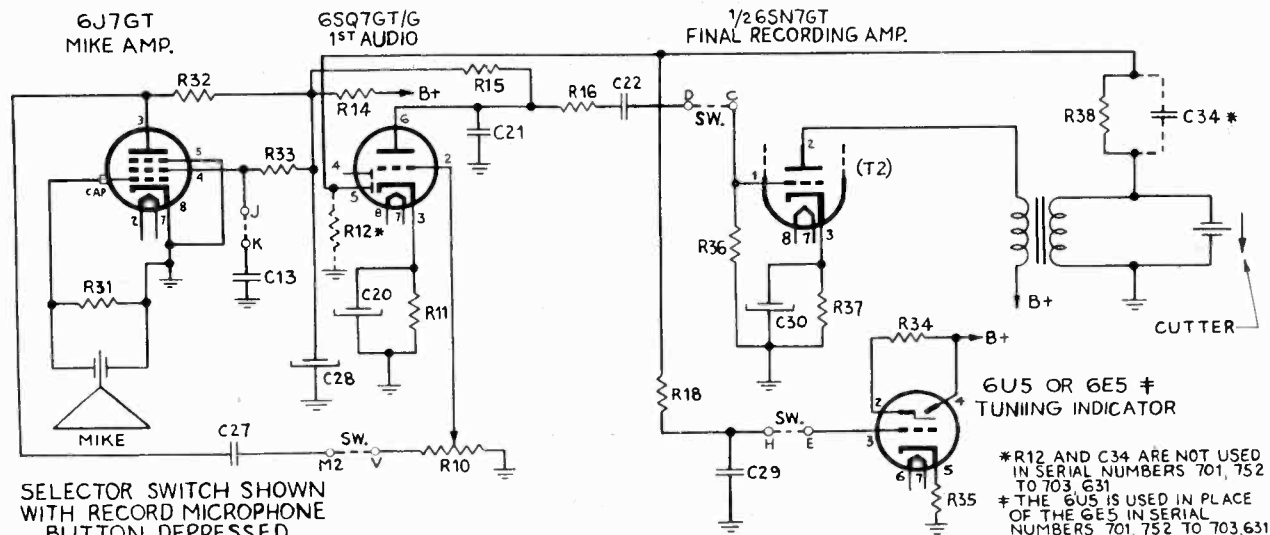
* R12 AND C34 ARE NOT USED IN SERIAL NUMBERS 701,752 TO 703,631

* THE 6U5 IS USED IN PLACE OF THE 6E5 IN SERIAL NUMBERS 701,752 TO 703,631

WILCOX GAY CORP.

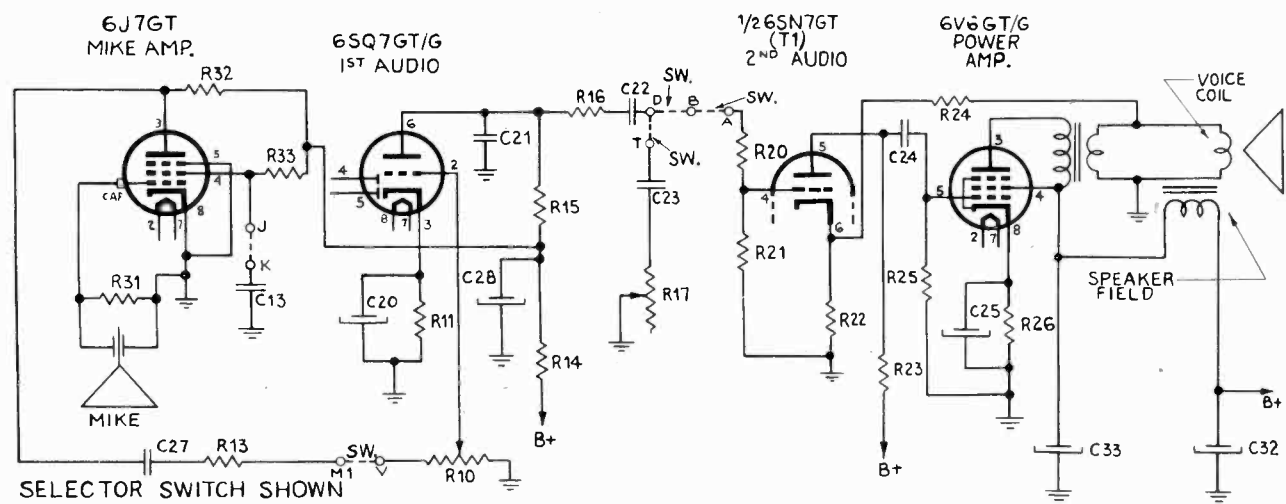


SELECTOR SWITCH SHOWN WITH PHONOGRAPH BUTTON DEPRESSED



SELECTOR SWITCH SHOWN WITH RECORD MICROPHONE BUTTON DEPRESSED

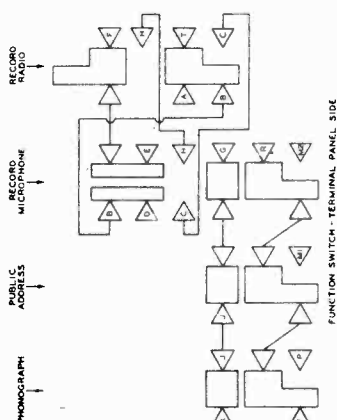
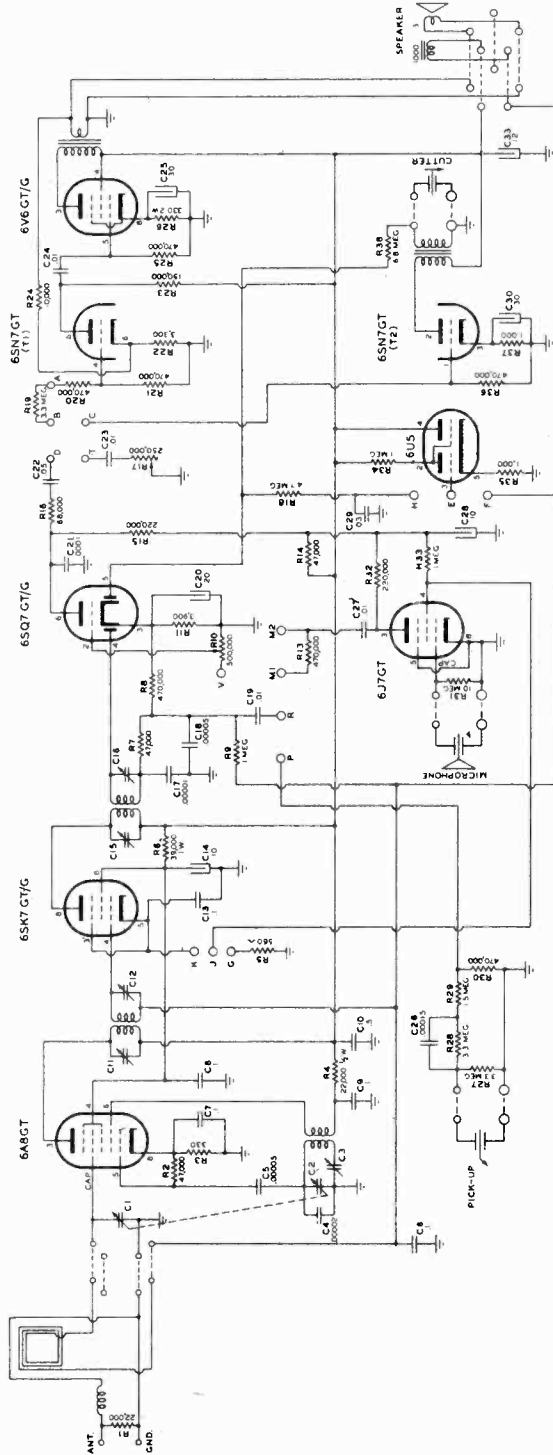
*R12 AND C34 ARE NOT USED IN SERIAL NUMBERS 701, 752 TO 703, 631
 † THE 6U5 IS USED IN PLACE OF THE 6E5 IN SERIAL NUMBERS 701, 752 TO 703, 631



SELECTOR SWITCH SHOWN WITH PUBLIC ADDRESS BUTTON DEPRESSED

MODELS 6B10, 6B20, 6B30,
6B32, Late, Serial Nos.
701, 752 to 703, 631

WILCOX GAY CORP.



TYPICAL VOLTAGE CHART

TUBE	1	2	3	4	5	6	7	8
6AB	0	0	240	80	-10	156	63AC	24
6SK7	0	0	3.3	3.3	60	63AC	240	
6SN7	0	232	6.5	0	55	16	63AC	0
6V6	0	0	1.5	0	0	66	63AC	13
6J7	0	0	80	3.3	0	180	3AC	0
5Y3	0	320	305AC	305AC	320			
6ES	0	6	0	240	1	63AC		

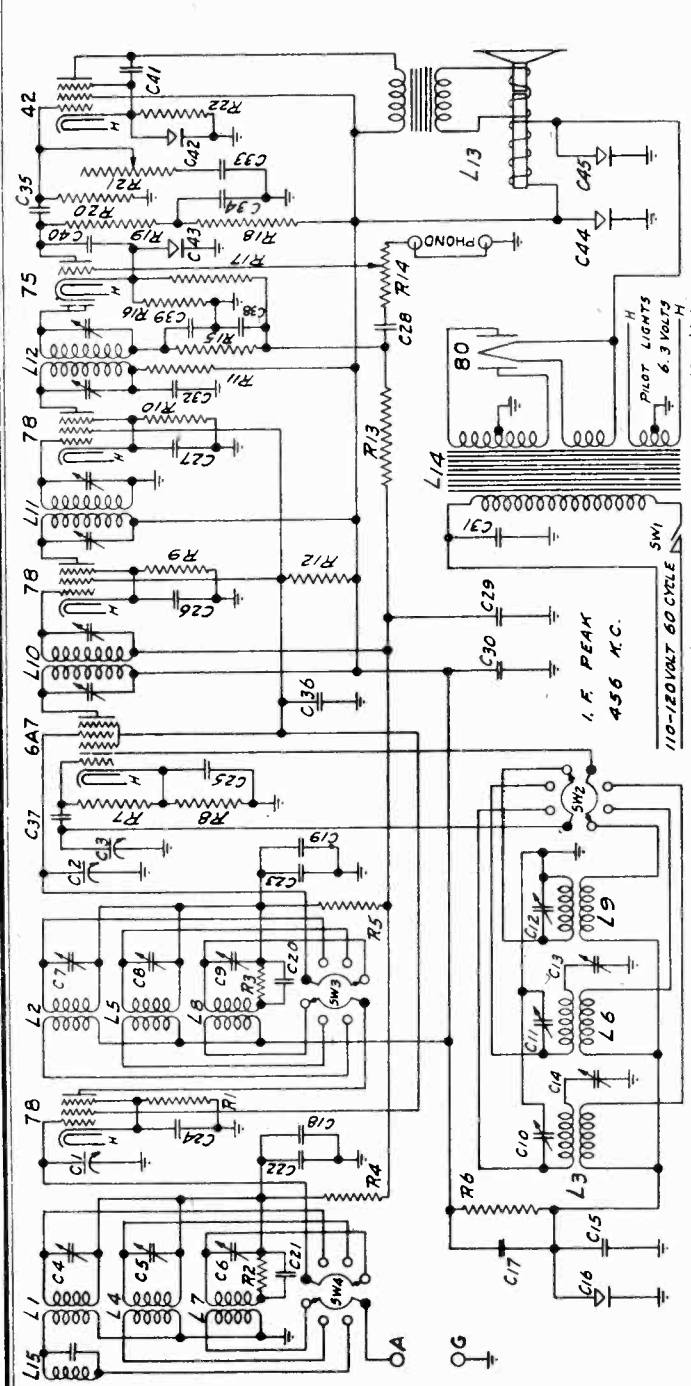
MEASUREMENTS MADE WITH 100-1000 PERCENT VOLTMETER
SCALES USED IN 100-1000-3000
ALL PLUNGERS IN RELEASED POSITION

- FUNCTION
- RADIO
 - RADIO
 - PHONOGRAPH
 - PUBLIC ADDRESS
 - RECORD MICROPHONE
- SWITCH CONTACTS CLOSED
- M-J-C
 - V-R
 - J-G
 - X-J
 - K-J
 - D-B-A-T
 - E-M
 - D-B-A-T
 - E-F
 - D-B-A-T
 - E-F
 - D-C

IF PEAK 456 KC

WILCOX GAY CORP.

MODELS A-36, A-37



WAVEBANDS
 540 - 1750 KC
 1.75 - 5.75 MC
 5.5 - 18.5 MC

CONDENSERS (Cont'd.)

CODE PART NO.	CONDENSERS (Cont'd.)
C30	.5 Mfd. 400 V. Paper Condenser
C31	.01 Mfd. 400 V. Paper Condenser
C32	.01 Mfd. 400 V. Paper Condenser
C33	.1 Mfd. 400 V. Paper Condenser
C34	.1 Mfd. 400 V. Paper Condenser
C35	.1 Mfd. 400 V. Paper Condenser
C36	.1 Mfd. 400 V. Paper Condenser
C37	.00005 Mfd. Mica Condenser
C38	.0001 Mfd. Mica Condenser
C39	.001 Mfd. Mica Condenser
C40	.001 Mfd. Mica Condenser
C41	.004 Mfd. 600 V. Paper Condenser
C42	25 Mfd. 25 V. Elect. Condenser
C43	25 Mfd. 25 V. Elect. Condenser
C44	12 Mfd. 325 V. V. Elect. Condenser
C45	8 Mfd. 450 V. V. Elect. Condenser

INDUCTANCES

CODE PART NO.	INDUCTANCES
L1	Broadest Antenna Coil Assembly
L2	Broadest Antenna Coil Assembly
L3	Broadest Antenna Coil Assembly
L4	Police Band Antenna Coil Assembly
L5	Police Band Antenna Coil Assembly
L6	Police Band Antenna Coil Assembly
L7	Foreign Band Antenna Coil Assembly
L8	Foreign Band Antenna Coil Assembly
L9	Foreign Band Antenna Coil Assembly
L10	First I.P. Transformer Assembly
L11	Second I.P. Transformer Assembly
L12	Third I.P. Transformer Assembly
L13	12" Speaker, 6000 Ohm Field, 42 Tube Trm. s.
L14	500 Ohm 60 Cycle Transformer
L15	Wave Trap Coil Assembly

SWITCHES

CODE PART NO.	SWITCHES
SW1	Power Line Off-On Switch
SW2	Front Panel of Band Switch
SW3	Center Panel of Band Switch
SW4	Rear Panel of Band Switch

RESISTORS

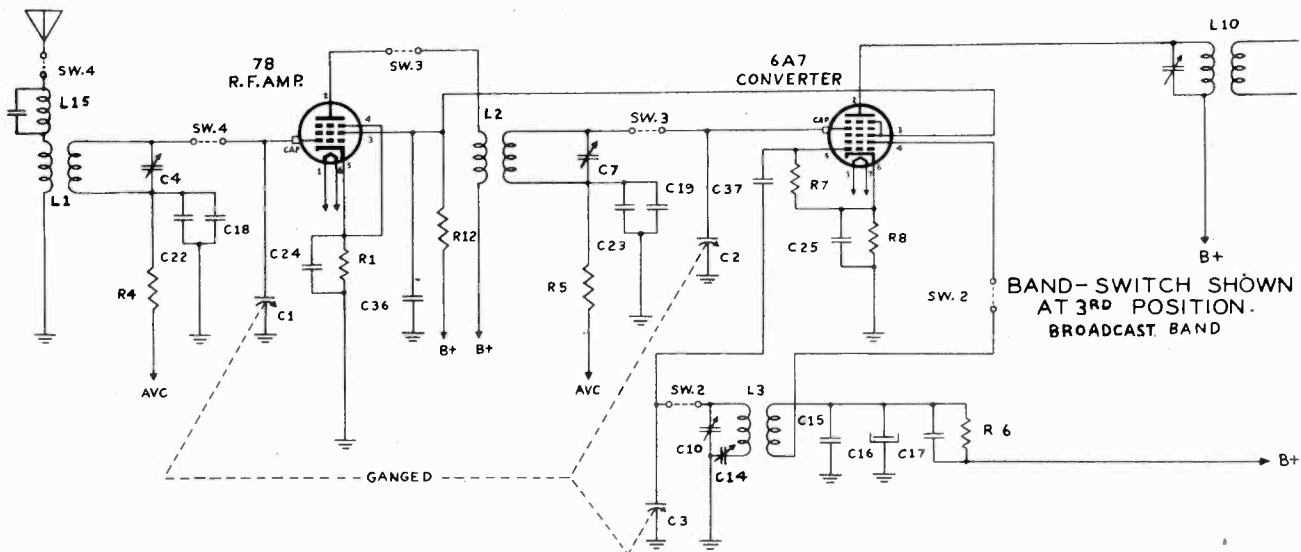
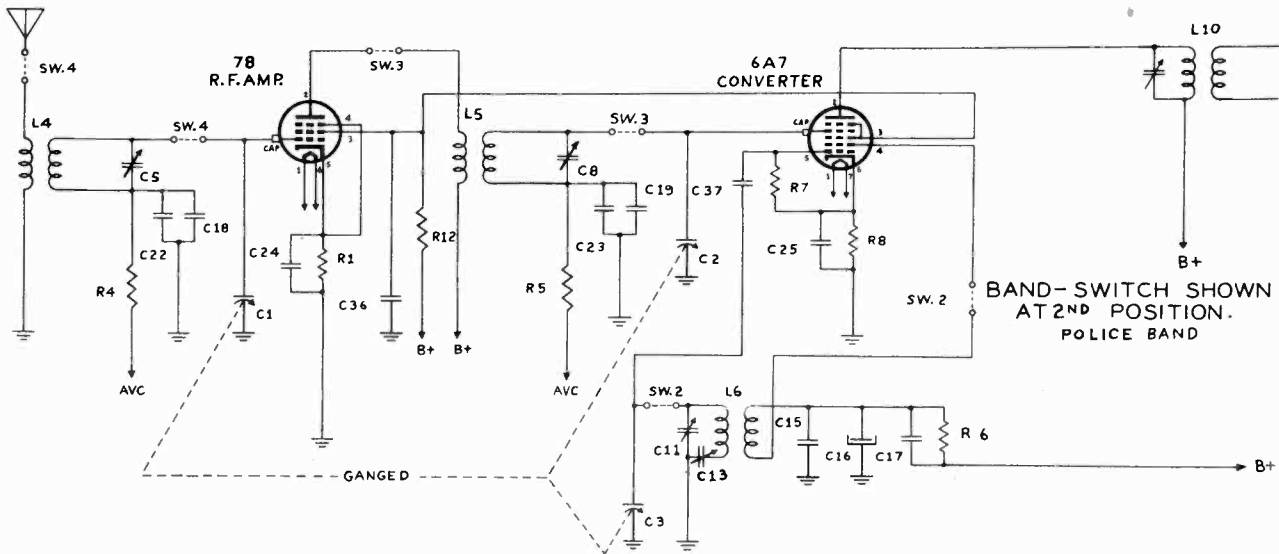
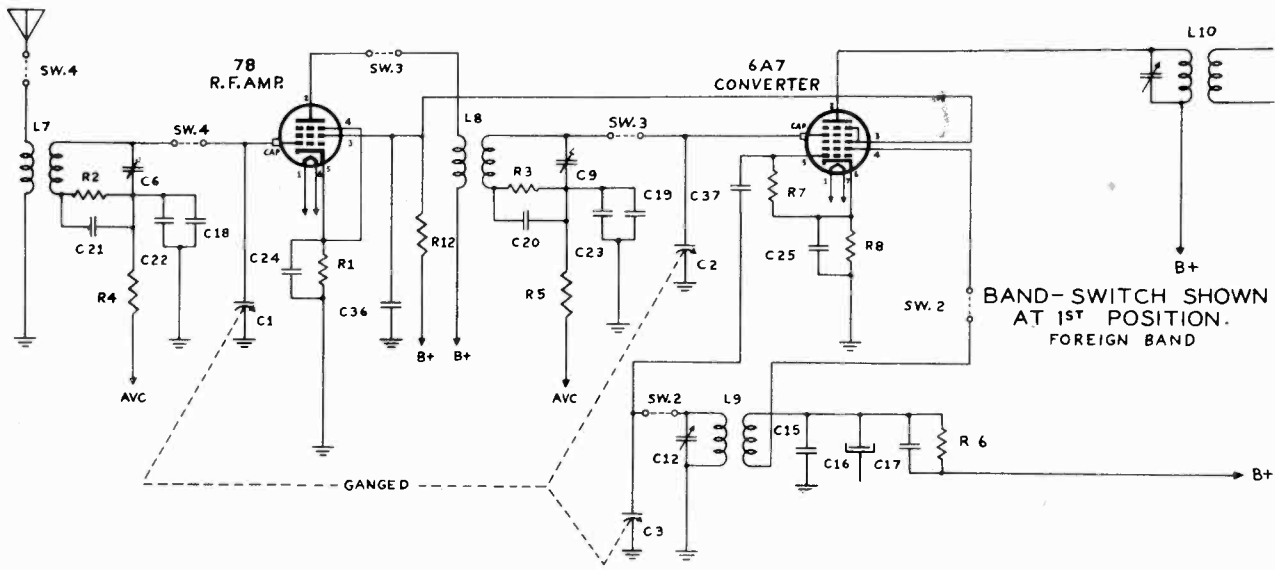
CODE PART NO.	RESISTORS
R1	500 Ohm Wirewound Resistor
R2	10,000 Ohm Type M Resistor
R3	10,000 Ohm Type M Resistor
R4	100,000 Ohm Type M Resistor
R5	100,000 Ohm Type M Resistor
R6	20,000 Ohm Type M Resistor
R7	20,000 Ohm Type M Resistor
R8	250,000 Ohm Wirewound Resistor
R9	500 Ohm Wirewound Resistor
R10	500 Ohm Wirewound Resistor
R11	500 Ohm Type J Resistor
R12	21 Meg Ohm Type M Resistor
R13	500,000 Ohm Volume Control
R14	500,000 Ohm Type M Resistor
R15	500,000 Ohm Type M Resistor
R16	5,000 Ohm Type M Resistor
R17	100,000 Ohm Type M Resistor
R18	250,000 Ohm Type M Resistor
R19	250,000 Ohm Type M Resistor
R20	250,000 Ohm Tone Control
R21	250,000 Ohm Wirewound Resistor
R22	500 Ohm Wirewound Resistor

CONDENSERS

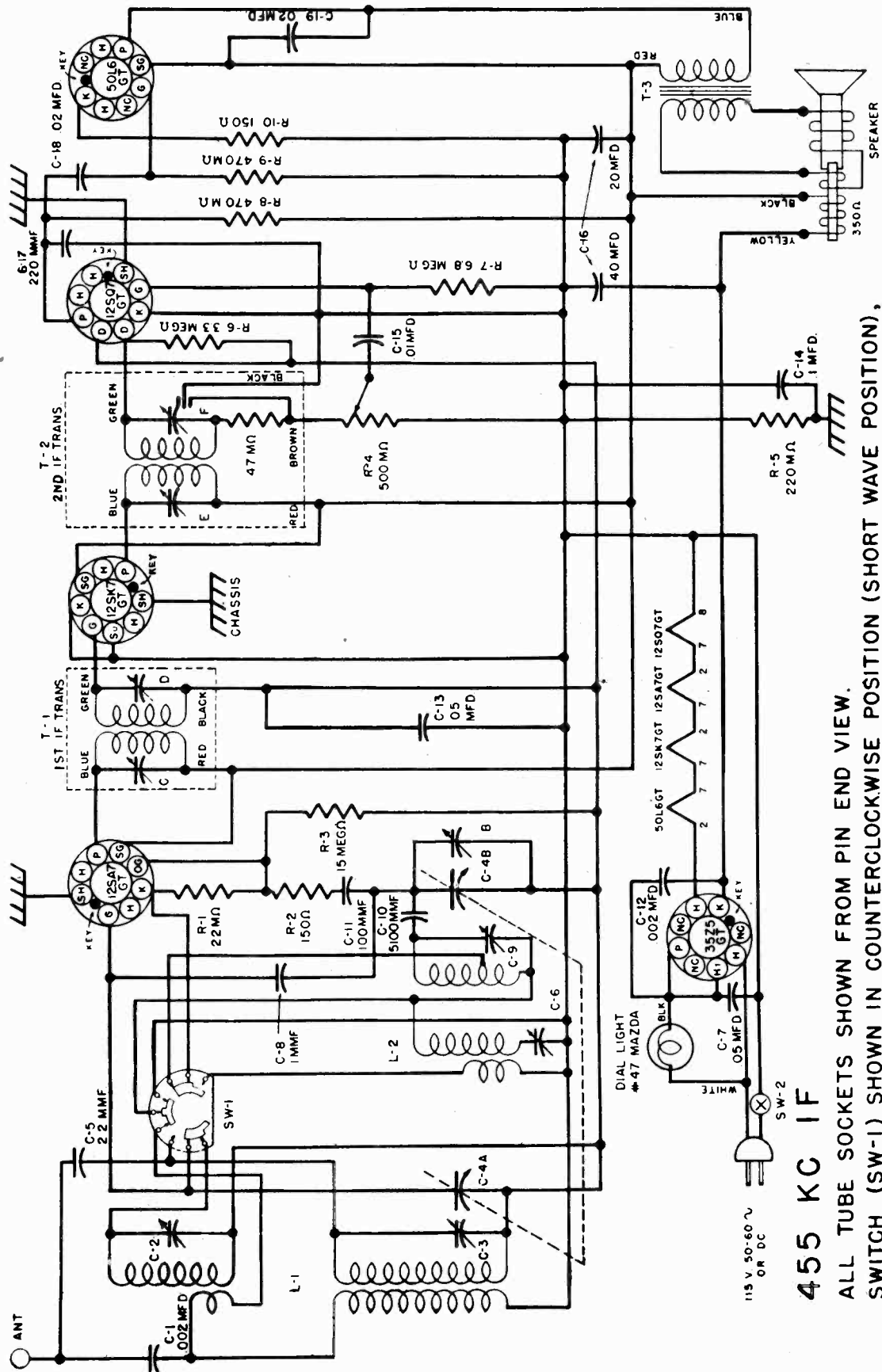
CODE PART NO.	CONDENSERS
C1, C5, C3	3 Gang Tuning Condenser
C4, C6, C9	3-50 Mfd. 3 Gang Trimmer Cond.
C7, C8, C9	3-50 Mfd. 3 Gang Trimmer Cond.
C10, C11, C12	3-50 Mfd. 3 Gang Trimmer Cond.
C13	78-2030 600 & 1500 Mfd. 2 Gang Trimmer Cond.
C14	.01 Mfd. 400 V. Paper Condenser
C15	.002 Mfd. Mica Condenser
C16	.002 Mfd. Mica Condenser
C17	.002 Mfd. Mica Condenser
C18	.002 Mfd. Mica Condenser
C19	.004 Mfd. 600 V. Paper Condenser
C20	.004 Mfd. 600 V. Paper Condenser
C21	.004 Mfd. 600 V. Paper Condenser
C22	.1 Mfd. 200 V. Paper Condenser
C23	.1 Mfd. 200 V. Paper Condenser
C24	.1 Mfd. 200 V. Paper Condenser
C25	.1 Mfd. 200 V. Paper Condenser
C26	.1 Mfd. 200 V. Paper Condenser
C27	.1 Mfd. 200 V. Paper Condenser
C28	.1 Mfd. 200 V. Paper Condenser
C29	.1 Mfd. 200 V. Paper Condenser
C30	.1 Mfd. 200 V. Paper Condenser

"clarified schematics"

WILCOX GAY CORP.



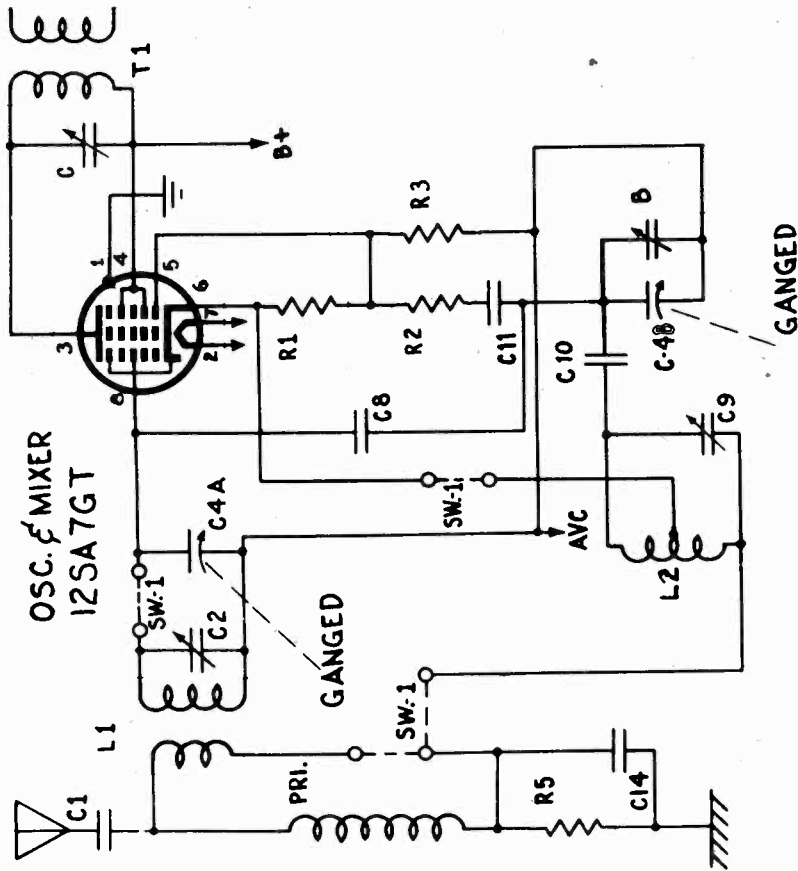
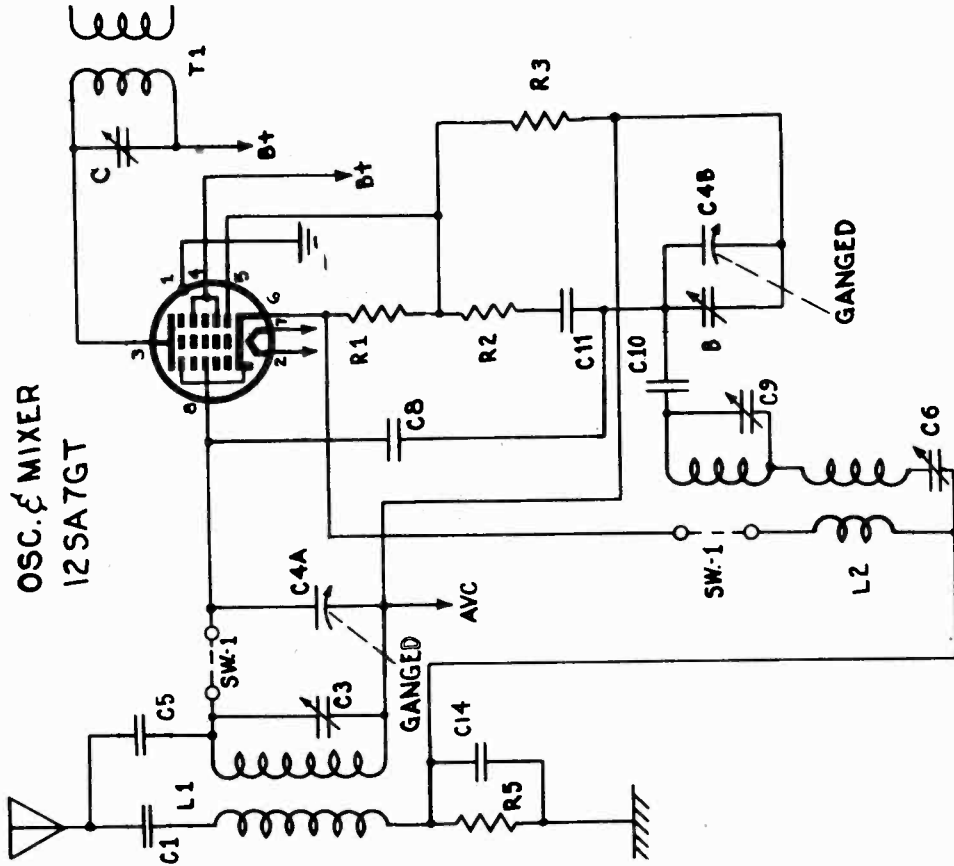
WALGREEN CO.



455 KC IF

ALL TUBE SOCKETS SHOWN FROM PIN END VIEW.
 SWITCH (SW-1) SHOWN IN COUNTERCLOCKWISE POSITION (SHORT WAVE POSITION),
 SHAFT END VIEW.

WALGREEN CO.



WALGREEN CO.

ALIGNMENT PROCEDURE

The following equipment is necessary to properly align this chassis:

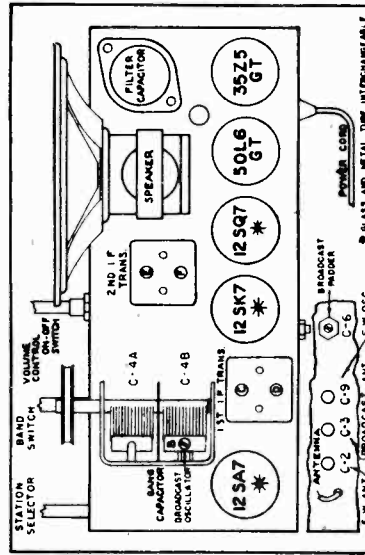
1. A signal generator which will provide an accurately calibrated signal at the frequencies listed.
2. An output meter.
3. A non-metallic screwdriver.
4. Dummy antenna: — .1 mfd. — 200 mmf. — 400 ohms

CONNECT TEST OSCILLATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	BAND	SET DIAL AT	TRIMMERS	PURPOSE
12SA7GT grid	.1 mfd.	455 kc.	Broadcast	HF end	C D E F	Align IF
12SA7GT grid	.1 mfd.	1620 kc.	Broadcast	HF end	B	Set limit of band
Ant. terminal	400 ohms	18.3 mc.	Short Wave	HF end	C-9	Set limit of band
Ant. terminal	400 ohms	18.0 mc.	Short Wave	18 mc.	C-2	Align antenna
Ant. terminal	200 mmf.	1400 kc.	Broadcast	1400 kc.	C-3	Align antenna
Ant. terminal	200 mmf.	600 kc.	Broadcast	600 kc.	C-6	Rock gang and adjust to max.

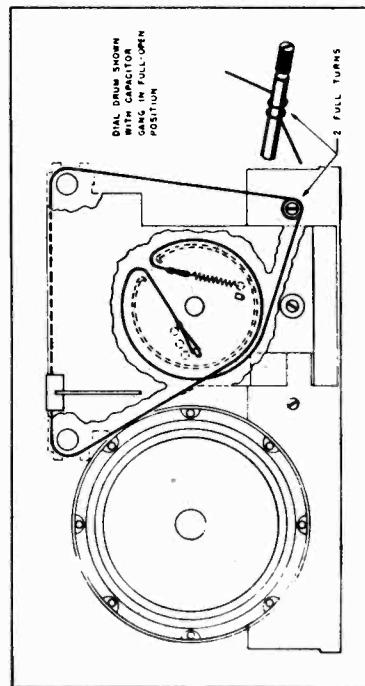
TUBE COMPLEMENT

- 1-12SA7GT
Osc. & Mixer tube
- 1-12SK7GT
IF Amplifier tube
- 1-12SQ7GT
2nd Det. & 1st
Audio tube
- 1-50L6GT
Power Output tube
- 1-35Z5GT
Rectifier tube

NOTE: The above glass tubes are interchangeable with their metal equivalent.



Tube Layout



Dial Mechanism

NOTE: Recheck alignment of trimmers B and C-3 after adjusting C-6.

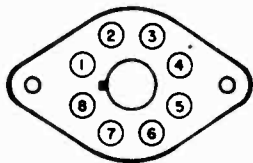
Electrical and Mechanical Specifications

Frequency Range	540-1600 kc., 6-18 mc.	V.C. Impedance	3.5 ohms at 400 cycles
Intermediate Frequency	455 kc.	Power Output (Undistorted)	.75 watt
Power Supply	105-125 volts, 50-60 cycle AC or DC	Power Output (Maximum)	1.5 watts
Loudspeaker	Dynamic	Tuning Drive Ratio	5-1

MODEL 568

**WALGREEN CO.
SOCKET VOLTAGES**

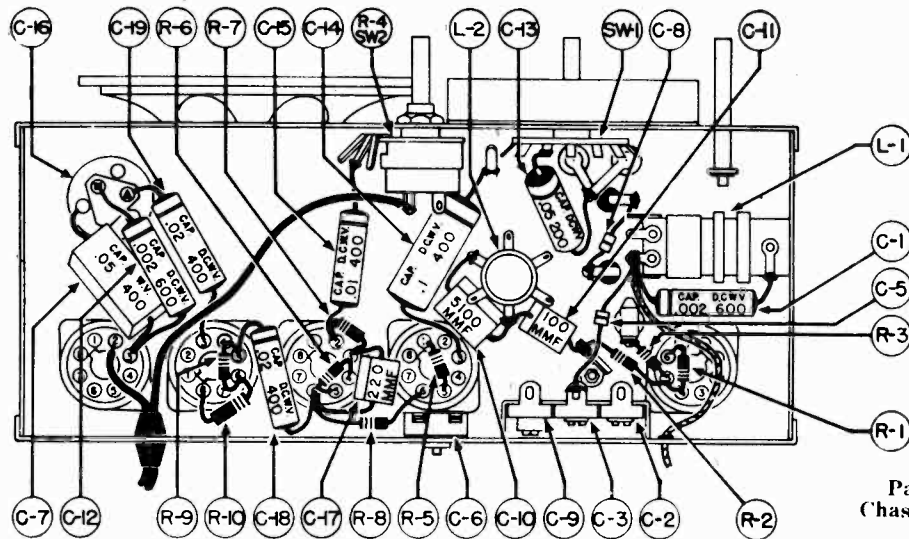
TUBE	POSITION	1	2	3	4	5	6	7	8
12SA7GT	Oscillator and Mixer	0	37.5 AC	99	99	-4.2	0	24.5 AC	0
12SK7GT	IF Amplifier	0	24.5 AC	0	0	0	99	12.5 AC	99
12SQ7GT	2nd Det.—1st Audio	0	0	0	0	0	16	12.5 AC	0
50L6GT	Power Output	0	85 AC	91.5	99	0	0	37.5 AC	5.9
35Z5GT	Rectifier	0	117 AC	112 AC	0	112 AC	0	85 AC	112



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

Volume control full on. No signal.

Line Voltage 117 volts AC.



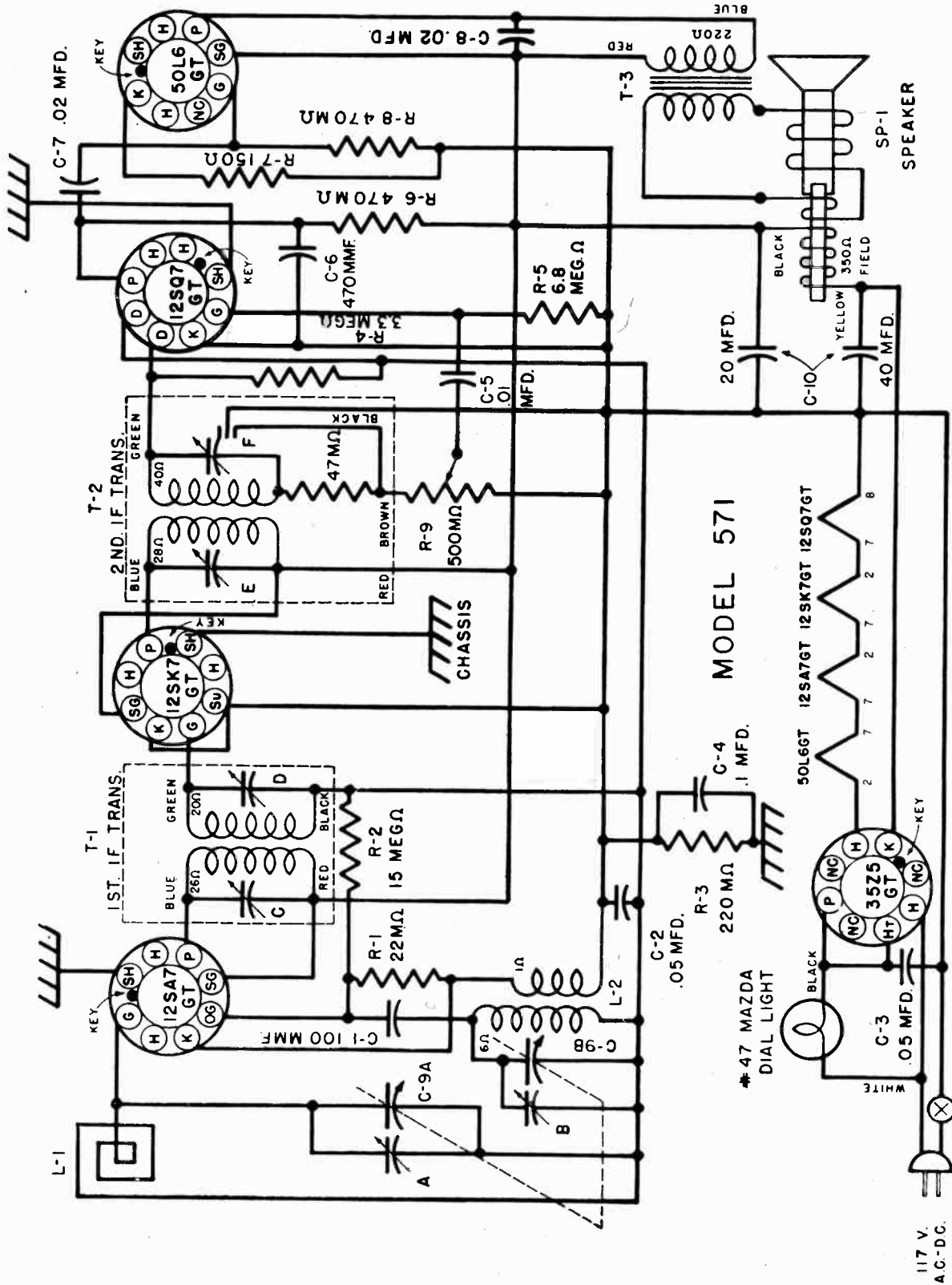
Parts Layout
Chassis Model 568

SERVICE PARTS LIST

Symbol	Part No.	Description	Symbol	Part No.	Description
C-7	BC31B503	Cap., Molded Paper, .05 mfd.	C-16	A-8948	Cap., Electrolytic, 40-20 mfd.
C-13	BD210503	Cap., Paper, .05 mfd., 200 v.	R-4	R-9051-5	Control, Vol & Sw. 500,000 ohm
C-15	BD410103	Cap., Paper, .01 mfd., 400 v.	T-1	B-51010-1	Transformer Assembly, 1st IF
C-14	BD410104	Cap., Paper, .1 mfd., 400 v.	T-2	B-51011-1	Transformer Assembly, 2nd IF
C-18, 19	BD410203	Cap., Paper, .02 mfd., 400 v.	C-51014	A-51160-1	Speaker, 5-inch Dynamic
C-1, 12	BD610202	Cap., Paper, .002 mfd., .600 v.	Cord, Power, 6 ft.	A-51163	Clip, Spring
C-10	BM58D512	Cap., Mica, 5100 mmf.	C-6	B-51428-5	Capacitor, Padder
C-11	BM78A101	Cap., Mica, 100 mmf.	B-51591	B-51764-1	Spring, Dial Bracket
C-17	BM78A221	Cap., Mica, 220 mmf.	SW-1	A-51787	Switch, Band
R-10	BR16C151	Resistor, 150 ohm, 1/2 w.	L-1	B-51828	Spring, Cable, Music Wire
R-2	BR17B151	Resistor, 150 ohm, 1/3 w.	C-2, 3, 9	A-51834	Coil Assembly, BC & SW Ant.
R-3	BR17B156	Resistor, 15 meg., 1/3 w.	L-2	B-51836	Capacitor, Trimmer, 3-section
R-1	BR17B223	Resistor, 22,000 ohm, 1/3 w.	C-4	C-51837-1	Coil Assembly, Osc.
R-5	BR17B224	Resistor, 220,000 ohm, 1/3 w.	C-8	B-51839-2	Capacitor, Variable
R-6	BR17B335	Resistor, 3.3 meg., 1/3 w.	C-8	B-51839-2	Capacitor, 1 mmf.
R-8, 9	BR17B474	Resistor, 470,000 ohm, 1/3 w.	C-5	B-51839-4	Capacitor, 2.2 mmf.
R-7	BR17B685	Resistor, 6.8 meg., 1/3 w.	A-51869	A-51869	Antenna Reel Assembly
	A-2163	Cable, Drive			
	A-6158	Lamp, Pilot, No. 47, Mazda, 6.3 v.			

Order parts not listed by specifying (1) Part Name and (2) Model Number (include number following dash)

WALGREEN CO.



ALL TUBE SOCKETS SHOWN FROM PIN END VIEW.

455 KC IF

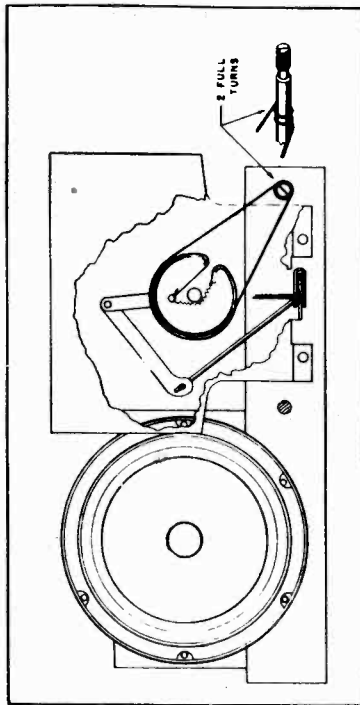
ALIGNMENT PROCEDURE

The following equipment is necessary to properly align this chassis:

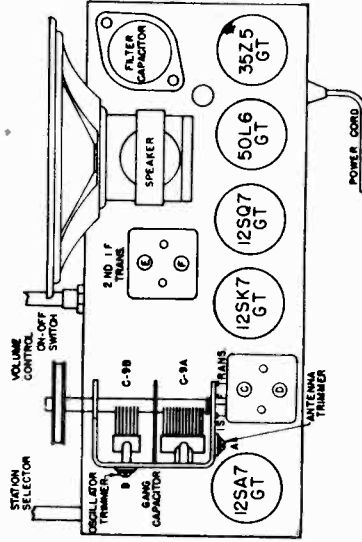
1. A signal generator which will provide an accurately calibrated signal at the frequencies listed.
2. An output meter.
3. A non-metallic screwdriver.
4. Dummy antenna: —.1 mfd., — RMA loop.

NOTE: Intermediate Frequency and Oscillator adjustments may be made with the loop disconnected provided a resistor of 10,000 to 50,000 ohms is substituted to close the 12SA7GT grid circuit. The loop alignment must be done with the loop and chassis mounted in operating position in the cabinet. A single turn loosely coupled to loop may be substituted for RMA loop.

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



Dial Mechanism



Tube Layout

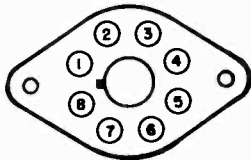
Electrical and Mechanical Specifications

Frequency Range	540-1600 kc.	Power Output (Undistorted)	.75 watts
Intermediate Frequency	455 kc.	Power Output (Maximum)	1.5 watts
Power Supply	105-125 volts AC-DC	Tuning Drive Ratio	3 to 1
Loudspeaker	Dynamic		
V.C. Impedance	3.5 ohms at 400 cycles		

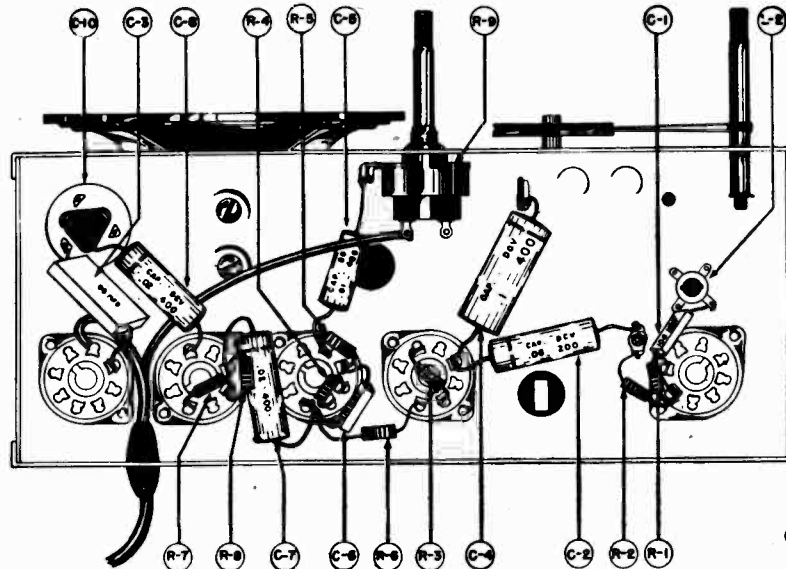
WALGREEN CO.

SOCKET VOLTAGES

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



NOTE: All DC voltages measured with a 1000 ohm per volt meter from ON-OFF switch (—B) to socket contact indicated. All AC voltages are measured from ON-OFF switch (—B) to socket contact indicated. All voltages are positive DC unless otherwise marked. Volume control full on. Line voltage 117 volts AC.



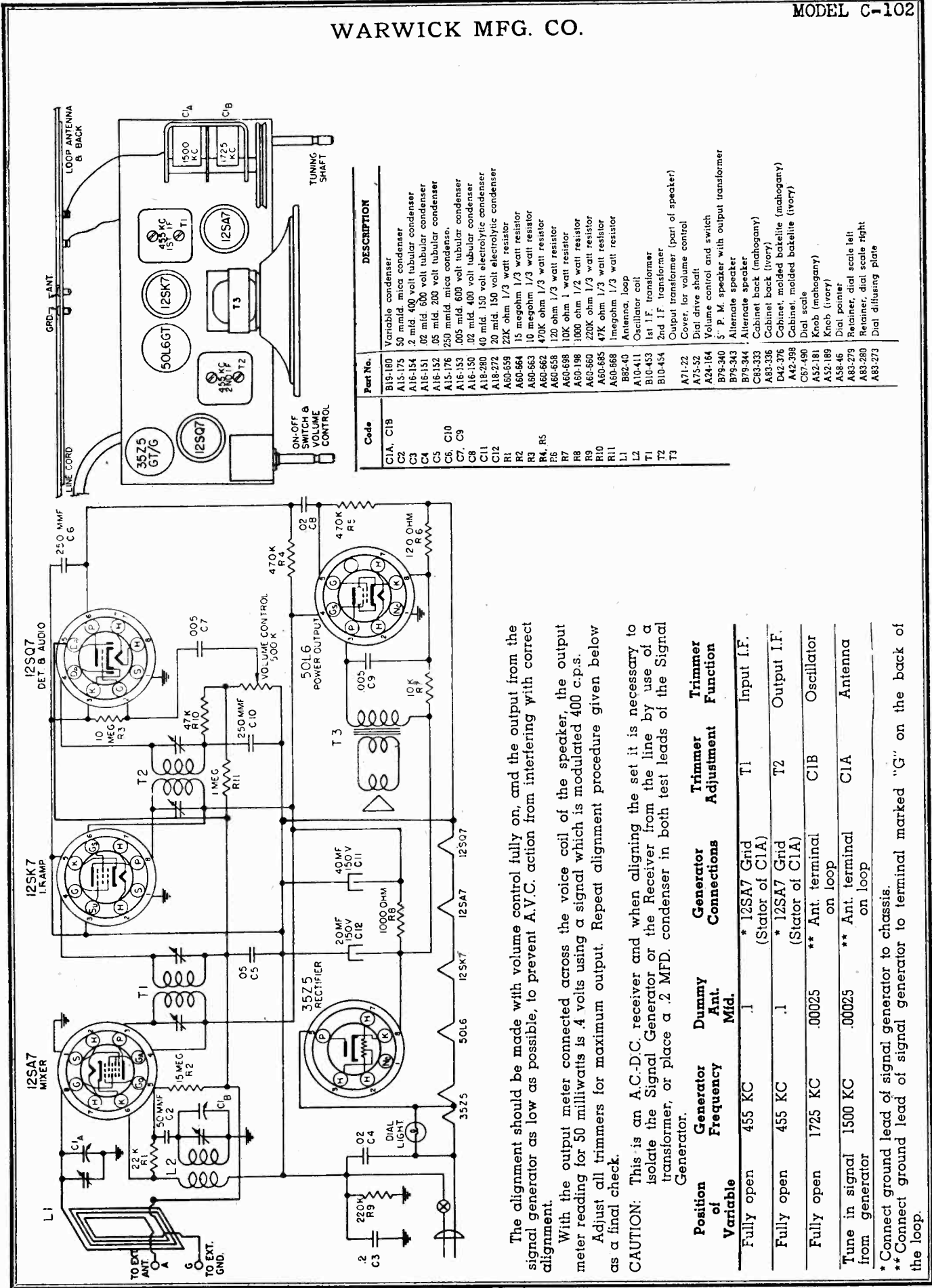
Parts Layout
Chassis Model 571

SERVICE PARTS LIST

Symbol	Part No.	Description	Symbol	Part No.	Description
C-1	BM78A101	Cap., Mica, 100 mmf.	R-7	BR16C151	Resistor, 150 ohm. 1/2 w.
C-2	BD210503	Cap., Paper, .05 mfd., 200 v.	R-9	B-9051-1	Control, Vol. & Sw. 500M ohm.
C-3	BC31B503	Cap., Mold., Paper, .05 mfd.	T-1	B-51010-1	Trans., Assembly, 1st IF
C-4	BD410104	Cap., Paper, .1 mfd., 400 v.	T-2	B-51011-1	Trans., Assembly, 2nd IF
C-5	BD410103	Cap., Paper, .01 mfd., 400 v.	SP-1	C-51014	Speaker, 5" Dynamic, 350 ohm.
C-6	BM78A471	Cap., Mica, 470 mmf.	A-2163		Cable, Drive
C-7, 8	BD410203	Cap., Paper, .02 mfd., 400 v.	A-6158		Lamp, Pilot No. 47 Mazda 6.3 v.
C-9	C-51155-1	Cap., Variable, 2 Section	A-51160-1		Cord, AC-DC Line, 6 ft.
C-10	A-8948	Cap., Electro., 40-20 mfd., 150 v.	B-51162-1		Shaft, Drive
L-2	B-51159	Coil, Osc. Assembly	A-51163		Clip, Spring
R-1	BR17B223	Resistor, 22M ohm 1/3 w.	B-51177		Brkt. Assy., Dial (571A-571B only)
R-2	BR17B156	Resistor, 15 meg. 1/3 w.	A-51202		Link, Insulating
R-3	BR17B224	Resistor, 220M ohm 1/3 w.	A-51206		Arm, Dial Drive
R-4	BR17B335	Resistor, 3.3 meg. 1/3 w.	B-51330-1		Channel, Rubber (571 only)
R-5	BR17B685	Resistor, 6.8 meg. 1/3 w.	A-51331		Spring, Dial Bracket
R-6, 8	BR17B474	Resistor, 470M ohm 1/3 w.	C-51335		Bracket, Dial (571 only)
			A-51787		Spring, Cable

Order parts not listed by specifying (1) Part Name and (2) Model Number (include number following dash)

WARWICK MFG. CO.



Code	Part No.	DESCRIPTION
C1A, C1B	B18-180	Variable condenser
C2	A15-175	50 mmd. mica condenser
C3	A16-154	2 mid. 400 volt tubular condenser
C4	A16-151	02 mid. 600 volt tubular condenser
C5	A16-152	05 mid. 200 volt tubular condenser
C6, C10	A15-176	250 mmd. mica condenser
C7, C9	A15-153	.005 mid. 600 volt tubular condenser
C8	A16-150	.02 mid. 400 volt tubular condenser
C11	A18-280	40 mid. 150 volt electrolytic condenser
C12	A18-272	20 mid. 150 volt resistor
R1	A60-559	22K ohm 1/3 watt resistor
R2	A60-564	15 megohm 1/3 watt resistor
R3	A60-563	10 megohm 1/3 watt resistor
R4, R5	A60-562	470K ohm 1/3 watt resistor
R6	A60-558	120 ohm 1/3 watt resistor
R7	A60-598	100K ohm 1 watt resistor
R8	A60-198	1000 ohm 1/2 watt resistor
R9	A60-560	220K ohm 1/3 watt resistor
R10	A60-565	47K ohm 1/3 watt resistor
R11	A60-568	1megohm 1/3 watt resistor
L1	B82-40	Antenna, loop
L2	A10-411	Oscillator coil
T1	B10-453	1st I.F. transformer
T2	B10-454	2nd I.F. transformer
T3	B10-454	Output transformer (part of speaker)
A71-22		Cover, for volume control
A75-52		Dial drive shaft
A24-184		Volume control and switch
B79-340		5" P. M. speaker with output transformer
B79-343		Alternate speaker
B79-344		Cabinet back (mahogany)
C83-333		Cabinet back (ivory)
A83-336		Cabinet, molded bakelite (mahogany)
D42-376		Cabinet, molded bakelite (mahogany)
A42-398		Cabinet, molded bakelite (ivory)
C57-490		Dial scale
A52-181		Knob (mahogany)
A52-182		Knob (ivory)
A52-189		Knob (ivory)
A58-46		Dial pointer
A85-273		Retainer, dial scale left
A85-280		Retainer, dial scale right
A83-273		Dial diffusing plate

The alignment should be made with volume control fully on, and the output from the signal generator as low as possible, to prevent A.V.C. action from interfering with correct alignment.

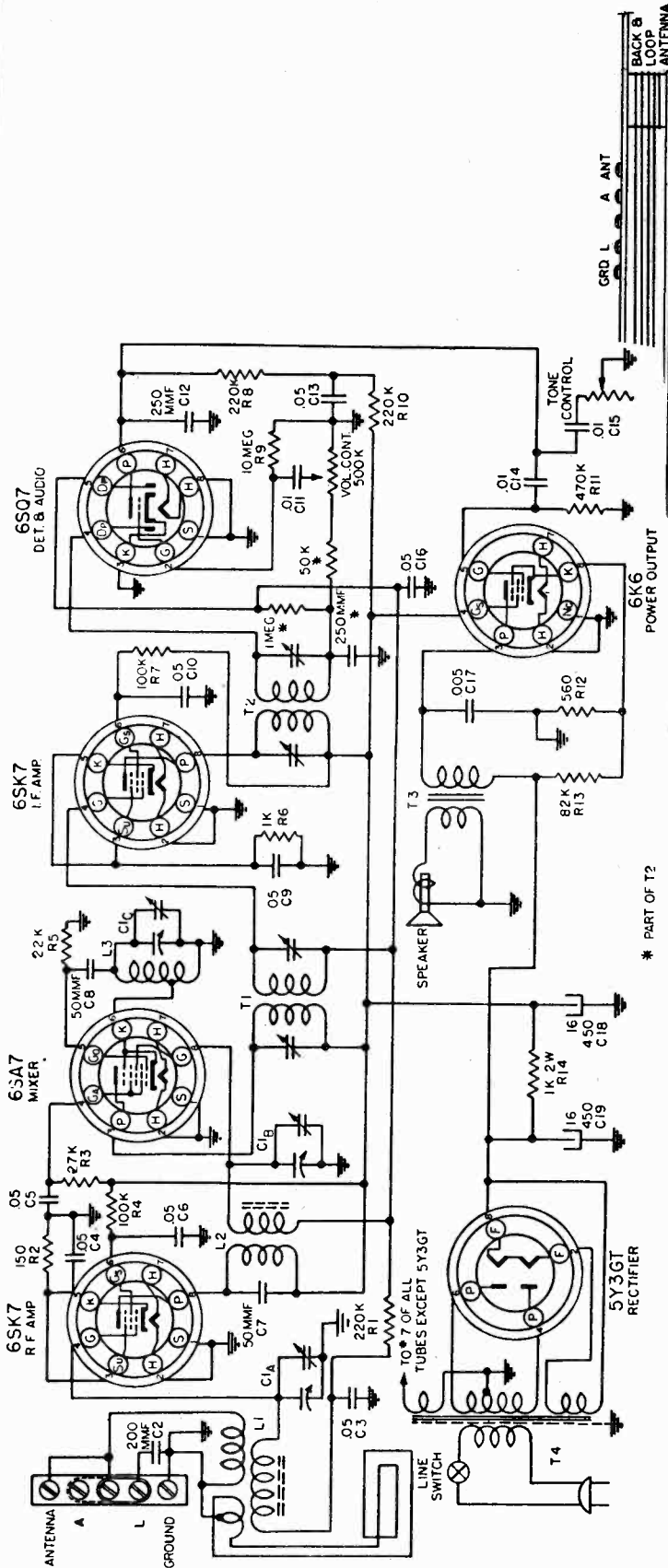
With the output meter connected across the voice coil of the speaker, the output meter reading for 50 milliwatts is .4 volts using a signal which is modulated 400 c.p.s.

Adjust all trimmers for maximum output. Repeat alignment procedure given below as a final check.

CAUTION: This is an A.C.-D.C. receiver and when aligning the set it is necessary to isolate the Signal Generator or the Receiver from the line by use of a transformer, or place a .2 MFD. condenser in both test leads of the Signal Generator.

Position of Variable	Generator Frequency	Dummy Ant. Mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully open	455 KC	.1	* 12SA7 Grid (Stator of C1A)	T1	Input I.F.
Fully open	455 KC	.1	* 12SA7 Grid (Stator of C1A)	T2	Output I.F.
Fully open	1725 KC	.00025	** Ant. terminal on loop	C1B	Oscillator
Tune in signal from generator	1500 KC	.00025	** Ant. terminal on loop	C1A	Antenna

* Connect ground lead of signal generator to chassis.
 ** Connect ground lead of signal generator to terminal marked "G" on the back of the loop.



* PART OF T2

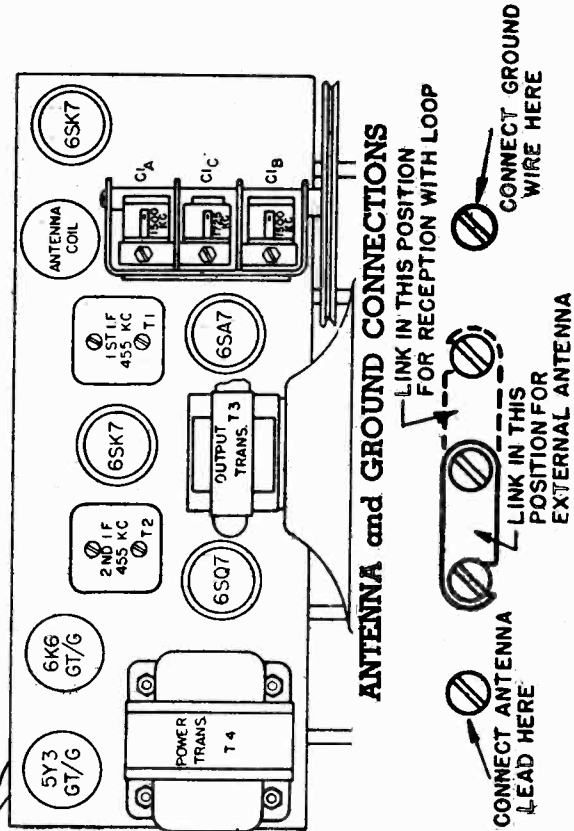
With an output meter connected across the voice coil of the speaker, the output meter reading for 1/2 watt is 1.25 volts using a signal which is modulated 400 c.p.s. Follow through the procedure as outlined below for proper alignment.

The alignment should be made with volume control fully on, and the output from the signal generator as low as possible, for accurate alignment.

Position of Variable	Generator Freq.	Dummy Ant. mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully Open	455 KC	.1	6SA7 Grid (Stator of C1B)	T1 T2	I. F.
Fully Open	1725 KC	.00025	*Ant. Terminal on Loop	C1C	Osc.
Tune in signal from Generator	1500 KC	.00025	*Ant. Terminal on Loop	C1B	R. F.
Tune in signal from Generator	1500 KC	.00025	*Ant. Terminal on Loop	C1A	Ant.

* Be sure coupling link is in correct position for external antenna operation. See illustration below.

Repeat the above alignment procedure as a final check.



ANTENNA and GROUND CONNECTIONS

LINK IN THIS POSITION FOR RECEPTION WITH LOOP

CONNECT ANTENNA LEAD HERE

LINK IN THIS POSITION FOR EXTERNAL ANTENNA

CONNECT GROUND WIRE HERE

WARWICK MFG. CO.

MODEL C-103
MODEL C-104A

MODEL C104-A

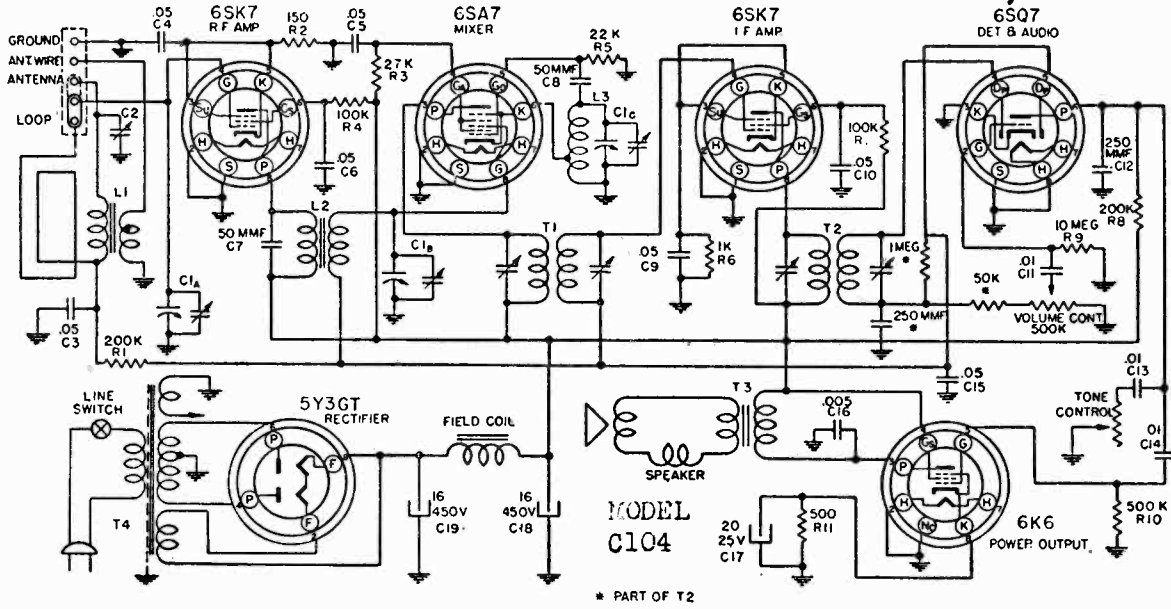
Circuit Reference	Part No.	DESCRIPTION
C1A, C1B, C1C	B19-186	Variable condenser
C2	A16-152	200 MMF mica condenser (on Loop)
C3	A16-158	.05 MFD. 200 volt tubular condenser
C5, C6, C10, C13	A15-175	.05 MFD. 400 volt tubular condenser
C7, C8	A16-156	50 MMF mica condenser
C11, C14, C15	A15-176	.01 MFD. 400 volt tubular condenser
C12	A16-153	250 MMF mica condenser
C17	A18-279	.005 MFD. 600 volt tubular condenser
C18	A18-274	16 MFD. 450 volt electrolytic condenser
C19	A84-71	16 MFD. 450 volt electrolytic condenser
C20	A60-667	6.9 MMF. condenser
R1, R8 & R10	A60-667	220K ohm 1/3 watt resistor
R2	A60-686	150 ohm 1/3 watt resistor
R3	A60-692	27K ohm 1 watt resistor
R4, R7	A60-671	100K ohm 1/2 watt resistor
R5	A60-659	22K ohm 1/3 watt resistor
R6	A60-675	1K ohm 1/3 watt resistor
R9	A60-663	10 megohm 1/3 watt resistor
R11	A60-662	470K ohm 1/3 watt resistor
R12	A60-701	560 ohm 1 watt resistor
R13	A60-700	82K ohm 1 watt resistor
R14	A60-699	1000 ohm 2 watt resistor
L1	B10-451	Antenna coil
L2	B10-452	R. F. coil
L3	A10-446	Oscillator coil
T1	B10-412	1st I.F. transformer
T2	B10-444	2nd I.F. transformer
T3	C80-223	Output transformer (part of speaker)
T4	B79-341	Power transformer
	B79-342	Speaker assembly, with output transformer
	S84-56	Alternate speaker assembly
	D42-390	Loop antenna assembly
	C67-488	Cabinet, wood
	A52-187	Dial scale
	A58-49	Knob
	A83-289	Dial pointer
	A84-41	Dial diffusing plate
	A69-169	Dial drive shaft and pulley
	A24-165	On-Off switch
	A26-123	Volume control
		Tone control

MODEL C103

Circuit Reference	Part No.	DESCRIPTION
C1A, C1B, C1C	B19-186	Variable condenser
C2	A16-152	200 MMF mica condenser (on Loop)
C3	A16-158	.05 MFD. 200 volt tubular condenser
C5, C6, C10, C13	A15-175	.05 MFD. 400 volt tubular condenser
C7, C8	A16-156	50 MMF mica condenser
C11, C14, C15	A15-176	.01 MFD. 400 volt tubular condenser
C12	A16-153	250 MMF mica condenser
C17	A18-279	.005 MFD. 600 volt tubular condenser
C18	A18-274	16 MFD. 450 volt electrolytic condenser
C19	A60-667	16 MFD. 450 volt electrolytic condenser
R1, R8 & R10	A60-667	220K ohm 1/3 watt resistor
R2	A60-686	150 ohm 1/3 watt resistor
R3	A60-692	27K ohm 1 watt resistor
R4, R7	A60-671	100K ohm 1/2 watt resistor
R5	A60-659	22K ohm 1/3 watt resistor
R6	A60-675	1K ohm 1/3 watt resistor
R9	A60-663	10 megohm 1/3 watt resistor
R11	A60-662	470K ohm 1/3 watt resistor
R12	A60-701	560 ohm 1 watt resistor
R13	A60-700	82K ohm 1 watt resistor
R14	A60-699	1000 ohm 2 watt resistor
L1	B10-451	Antenna coil
L2	B10-452	R. F. coil
L3	A10-446	Oscillator coil
T1	B10-412	1st I.F. transformer
T2	B10-444	2nd I.F. transformer
T3	C80-223	Output transformer (part of speaker)
T4	S84-50	Power transformer
	S84-52	Loop antenna assembly
	B83-325	Loop antenna assembly (with mahogany back)
	D42-379	Loop antenna assembly (with ivory back)
	A42-401	Baffle, cardboard
	C67-482	Cabinet, bakelite (mahogany)
	A98-4	Cabinet, bakelite (ivory)
	A98-5	Dial scale
	A52-187	Grille cloth (for mahogany cabinet)
	A52-191	Grille cloth (for ivory cabinet)
	A58-48	Knob (mahogany)
	A83-292	Knob (ivory)
	A83-293	Dial pointer
	S84-49	Dial scale retainer, right
		Dial scale retainer, left
		6" P. M. Speaker assembly (includes speaker output transformer and necessary mounting brackets)

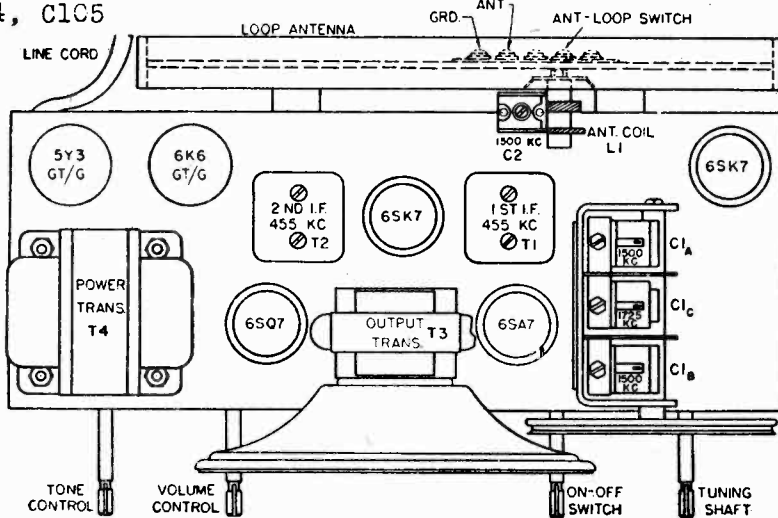
MODEL C-104
MODEL C-105

WARWICK MFG. CO.



* PART OF T2

Models C104, C105



With an output meter connected across the voice coil of the speaker, the output meter reading for 1/2 watt is 1.25 volts using a signal which is modulated 30% at 400 c.p.s. Follow through the procedure as outlined below for proper alignment.

The alignment should be made with volume control fully on, and the output from the signal generator as low as possible, for accurate alignment.

Position of Variable	Generator Freq.	Dummy Ant. mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully Open	455 KC	.1	6SA7 Grid (Stator of C1B)	T1 T2	I. F.
Fully Open	1725 KC	.00025	*Ant. Terminal on Loop	C1C	Osc.
Tune in signal from Generator	1500 KC	.00025	*Ant. Terminal on Loop	C1B	R. F.
Tune in signal from Generator	1500 KC		**Loosely coupled to Loop	C1A	Ant. (Loop)
Tune in signal from Generator	1500 KC	.00025	*Ant. Terminal on Loop	C2	Ant. (Coil)

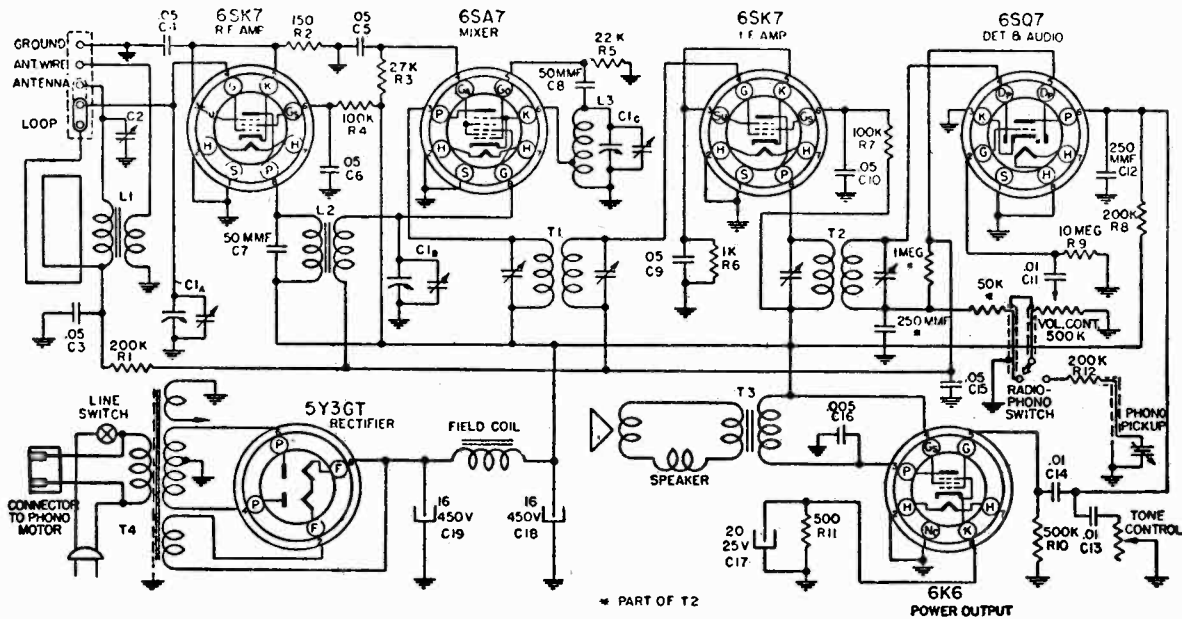
*Be sure coupling link is in correct position for external antenna operation, (between 2nd and 3rd screws from the left.)

**Be sure coupling link is in correct position for loop operation, (between 1st and 2nd screws from the left).

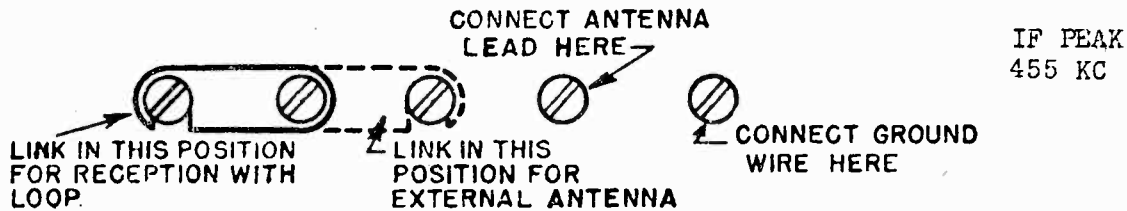
MODEL C-104
MODEL C-105

WARWICK MFG. CO.

MODEL C105



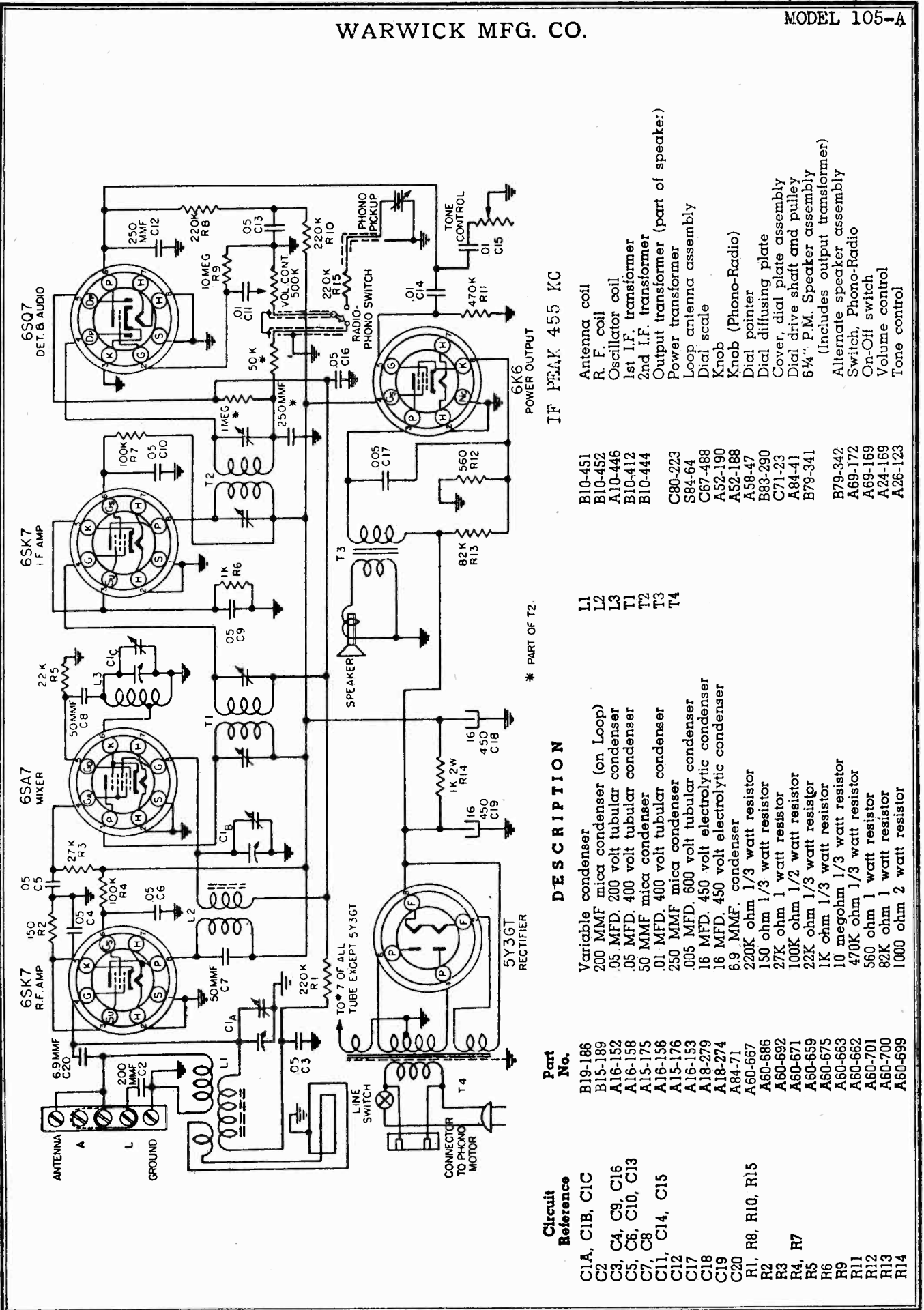
ANTENNA and GROUND CONNECTIONS



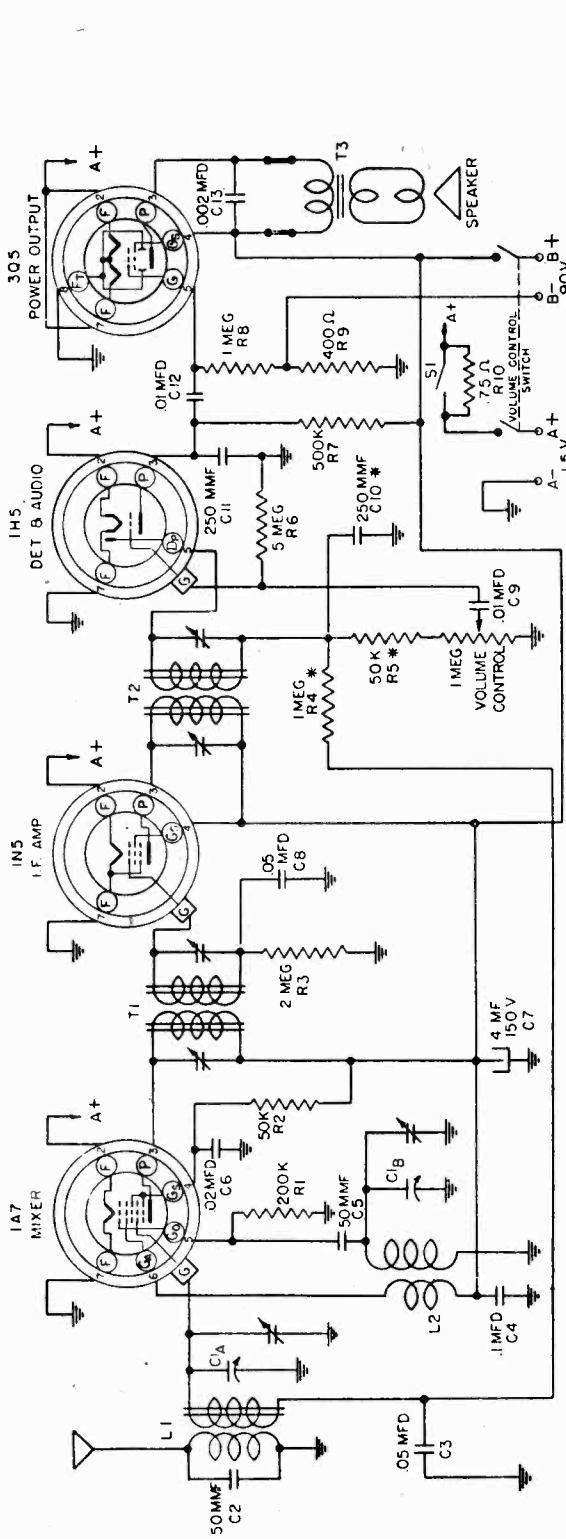
Code	Part No.	DESCRIPTION	Code	Part No.	DESCRIPTION	Code	Part No.	DESCRIPTION
C1A, C1B, C1C	B19-185	Variable Condenser	R1, R8		200 K Ohm 1/3 Watt Resistor	B82-39		Loop Antenna (Less Antenna Coil)
C2	A20-139	Trimmer Condenser (On Loop)	R2		150 Ohm 1/3 Watt Resistor	A69-169		On-Off Switch
C3, C4, C9, C15		.05 MFD 200 V Tubular Condenser	R3		27 K Ohm 1 Watt Resistor	A24-169		Volume Control 500 K Ohm
C5, C6, C10		.05 MFD 400 V Tubular Condenser	R4, R7		100 K Ohm 1/2 Watt Resistor	A26-123		Tone Control
C7, C8		50 MMF Mica Condenser	R5		22 K Ohm 1/3 Watt Resistor	B79-338		6 1/4" Dynamic Speaker (without Output Transformer)
C11, C13, C14		.01 MFD 400 V Tubular Condenser	R6		1 K Ohm 1/3 Watt Resistor	A84-41		Dial Drive Shaft and Pulley
C12		250 MMF Mica Condenser	R9		10 Megohm 1/3 Watt Resistor	B83-290		Dial Diffusing Plate
C16		.005 MFD 600 V Tubular Condenser	R10		500 K Ohm 1/3 Watt Resistor	C83-310		Back
C17	A18-278	20 MFD 25 V. Electrolytic Condenser	R11		500 Ohm 1 Watt Resistor	C67-488		Dial Scale
C18	A18-279	16 MFD 450 V. Electrolytic Condenser	L1	A10-445	Antenna Coil	A58-47		Dial Pointer
C19	A18-274	16 MFD 450 V. Electrolytic Condenser	L2	A10-447	R. F. Coil	D42-389		Wood Cabinet
			L3	A10-446	Oscillator Coil	C71-23		Cover, Dial Plate Assembly
			T1	B10-412	1st I F Transformer			
			T2	B10-444	2nd I F Transformer			
			T3	A80-222	Speaker Output Transformer			
			T4	C80-223	Power Transformer			

MODEL C104

Code	Part No.	DESCRIPTION	Code	Part No.	DESCRIPTION	Code	Part No.	DESCRIPTION
C1A, C1B, C1C	B19-185	Variable Condenser	R1, R8		200 K Ohm 1/3 Watt Resistor	B82-39		Loop Antenna (Less Antenna Coil)
C2	A20-139	Trimmer Condenser (On Loop)	R2		150 Ohm 1/3 Watt Resistor	A69-169		On-Off Switch
C3, C4, C9, C15		.05 MFD 200 V. Tubular Condenser	R3		27 K Ohm 1 Watt Resistor	A24-169		Volume Control 500 K Ohm
C5, C6, C10		.05 MFD 400 V. Tubular Condenser	R4, R7		100 K Ohm 1/2 Watt Resistor	A26-123		Tone Control
C7, C8		50 MMF Mica Condenser	R5		22 K Ohm 1/3 Watt Resistor	B79-338		6 1/4" Dynamic Speaker (without Output Transformer)
C11, C13, C14		.01 MFD 400 V. Tubular Condenser	R6		1 K Ohm 1/3 Watt Resistor	A84-41		Dial Drive Shaft and Pulley
C12		250 MMF Mica Condenser	R9		10 Megohm 1/3 Watt Resistor	B83-289		Dial Diffusing Plate
C16		.005 MFD 600 V. Tubular Condenser	R10		500 K Ohm 1/3 Watt Resistor	B83-300		Chipboard Back, Walnut
C17	A18-278	20 MFD 25 V. Electrolytic Condenser	R11		500 Ohm 1 Watt Resistor	C67-488		Dial Scale
C18	A18-279	16 MFD 450 V. Electrolytic Condenser	L1	A10-445	Antenna Coil	A58-49		Dial Pointer
C19	A18-274	16 MFD 450 V. Electrolytic Condenser	L2	A10-447	R. F. Coil	D42-390		Wood Cabinet
			L3	A10-446	Oscillator Coil			
			T1	B10-412	1st I F Transformer			
			T2	B10-444	2nd I F Transformer			
			T3	A80-222	Speaker Output Transformer			
			T4	C80-223	Power Transformer			



Circuit Reference	Part No.	DESCRIPTION
C1A, C1B, C1C	B19-186	Variable condenser
C2	B15-189	200 MMF mica condenser (on Loop)
C3	A16-152	.05 MFD. 200 volt tubular condenser
C4, C9, C16	A16-158	.05 MFD. 400 volt tubular condenser
C5, C6, C10, C13	A15-175	50 MMF mica condenser
C7, C8	A16-156	.01 MFD. 400 volt tubular condenser
C11, C14, C15	A15-176	250 MMF mica condenser
C12	A16-153	.005 MFD. 600 volt tubular condenser
C17	A18-279	16 MFD. 450 volt electrolytic condenser
C18	A18-274	16 MFD. 450 volt electrolytic condenser
C19	A84-71	6.9 MMF. condenser
C20	A60-667	220K ohm 1/3 watt resistor
R1, R8, R10, R15	A60-686	150 ohm 1/3 watt resistor
R2	A60-692	27K ohm 1 watt resistor
R3	A60-671	100K ohm 1/2 watt resistor
R4, R7	A60-659	22K ohm 1/3 watt resistor
R5	A60-675	1K ohm 1/3 watt resistor
R6	A60-663	10 megohm 1/3 watt resistor
R9	A60-662	470K ohm 1/3 watt resistor
R11	A60-701	560 ohm 1 watt resistor
R12	A60-700	82K ohm 1 watt resistor
R13	A60-699	1000 ohm 2 watt resistor
R14	A60-699	1000 ohm 2 watt resistor
L1	B10-451	Antenna coil
L2	B10-452	R. F. coil
L3	A10-446	Oscillator coil
T1	B10-412	1st I.F. transformer
T2	B10-444	2nd I.F. transformer
T3	C80-223	Output transformer (part of speaker)
T4	S84-64	Power transformer
	C67-488	Loop antenna assembly
	A52-190	Dial scale
	A52-188	Knob
	A58-47	Knob (Phono-Radio)
	B83-290	Dial pointer
	C71-23	Dial diffusing plate
	A84-41	Cover, dial plate assembly
	B79-341	Dial drive shaft and pulley
	B79-342	6 1/4" P.M. Speaker assembly (Includes output transformer)
	A69-172	Alternate speaker assembly
	A69-169	Switch, Phono-Radio
	A24-169	On-Off switch
	A26-123	Volume control

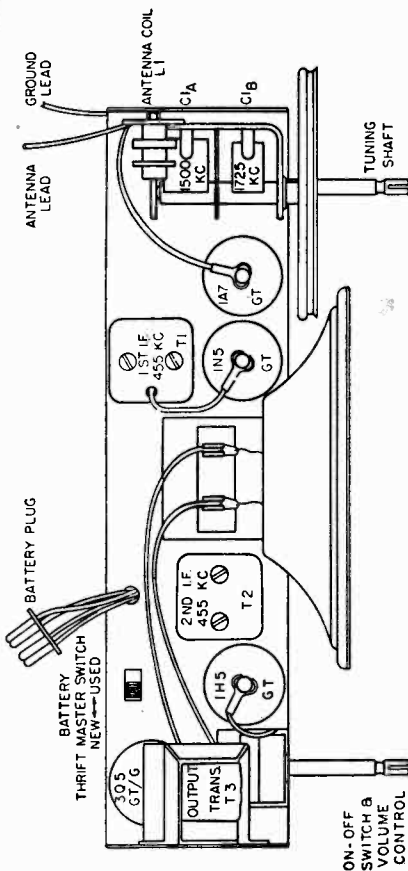


ALIGNMENT PROCEDURE

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

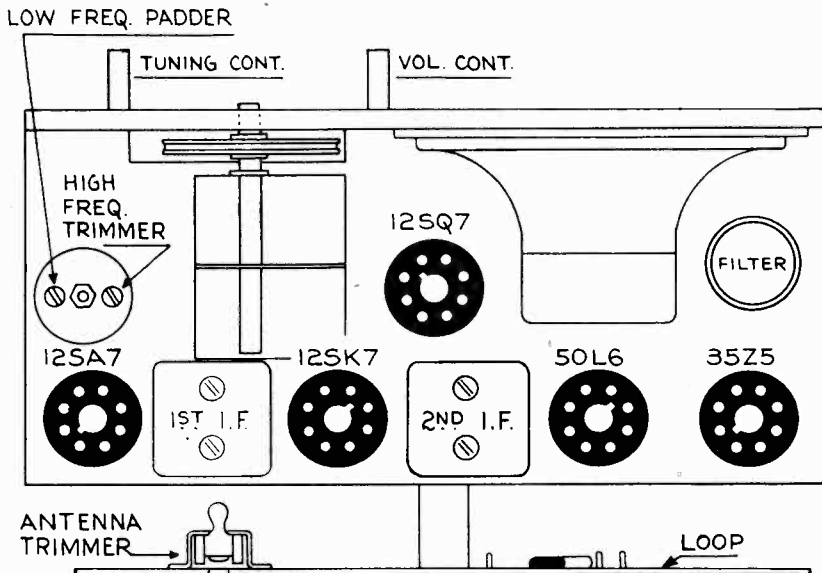
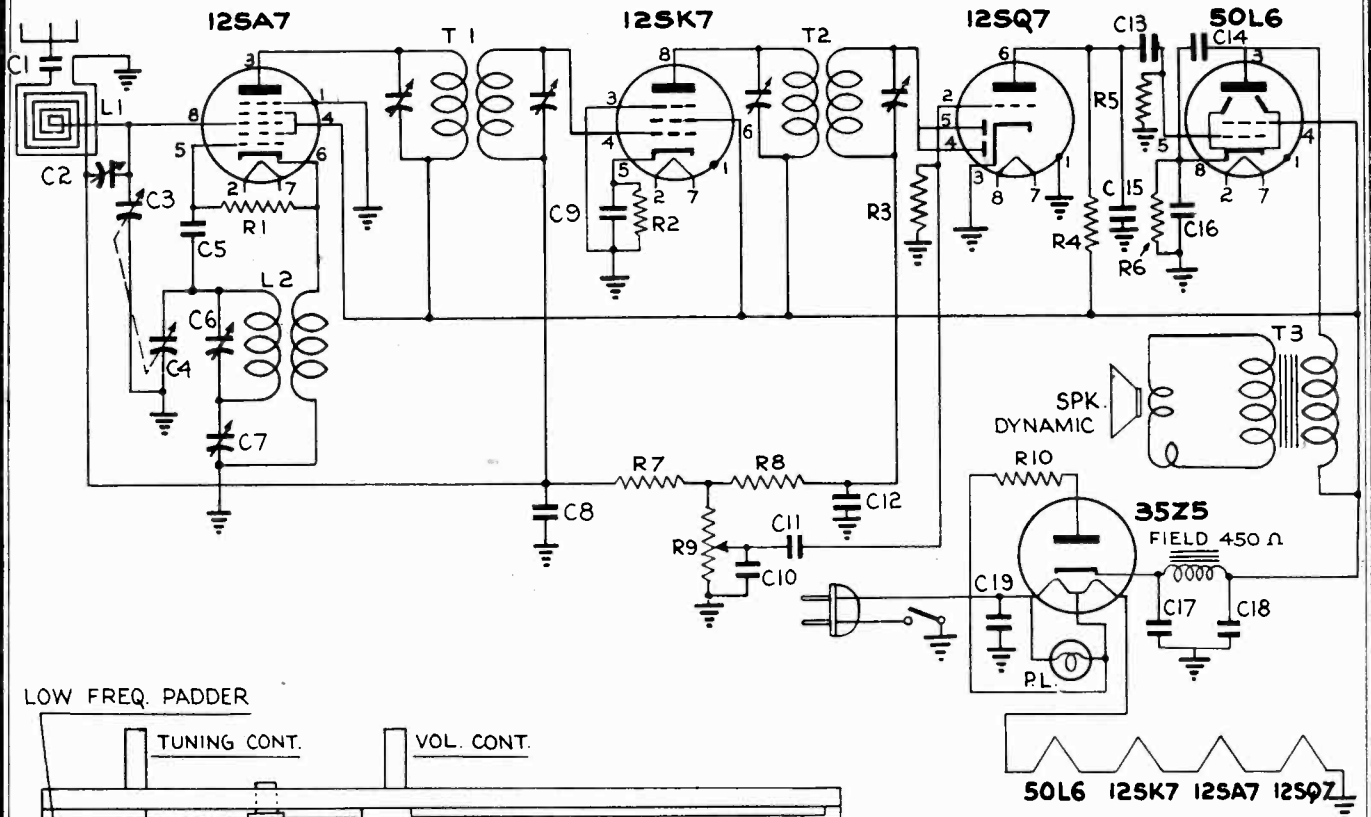
Connect the signal generator to the grid cap of the 1A7 GT Tube through a .1 MFD. Condenser. Connect the ground lead of the generator to the chassis. Adjust the signal generator to 455 K.C. and set the variable condenser of the receiver to minimum capacity (fully opened). With the volume control full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

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



Code	Part No.	DESCRIPTION	Code	Part No.	DESCRIPTION
C1A	B18-185	Variable Condenser	R1	A50-891	200 K Ohm 1/3 Watt Carbon Resistor
C2	C8	50 MMFD Mica Condenser (Part of L-1)	R2		50 K Ohm 1/3 Watt Carbon Resistor
C3	C8	50 MMFD 200 V Tubular Condenser	R3		2 Megohm 1/3 Watt Carbon Resistor
C4	C3	1 MFD 200 V Tubular Condenser	R4		1 Megohm 1/3 Watt Carbon Resistor (Part of T-2)
C5	C3	50 MMFD Mica Condenser	R5		50 K Ohm 1/3 Watt Carbon Resistor (Part of T-2)
C6	C7	50 MMFD 400 V Tubular Condenser	R6		5 Megohm 1/3 Watt Carbon Resistor
C7	C8	50 MMFD 400 V Tubular Condenser	R7		500 K Ohm 1/3 Watt Carbon Resistor
C8	C12	81 MFD 150 V Electrolytic Condenser	R8		1 Megohm 1/3 Watt Carbon Resistor
C9	C10	250 MMFD Mica Condenser (Part of T-2)	R9		400 Ohm 1/3 Watt Carbon Resistor
C10	C11	250 MMFD Mica Condenser	R10		75 Ohm 1 Watt Resistor
C11	C11	250 MMFD Mica Condenser			
C12	C13	800 MFD 670 V Tubular Condenser			
L1	L1	Antenna Coil			
L2	L2	Oscillator Coil			
T1	T1	1st I.F. Transformer			
T2	T2	2nd I.F. Transformer			
T3	T3	Speaker Output Transformer			
S1	S1	Battery Throttlemaster Switch			
		Volume Control and Switch			
		Speaker			

WATTERSON RADIO MFG. CO.



CODE	PART NO.	DESCRIPTION
C1	5W1	.001 MFD. COND.
C2	8W1	TRIMMER - 30 MMFD.
C3	7WM1961	GANG CONDENSER - ANT
C4	7WM1961	GANG COND. OSC. SECTION
C5	6W3	.0005 MFD. MICA COND.
C6	3W30	TRIMMER - OSC. - H.F.
C7	3W30	PADDER - OSC. - LOW FREQ
C8	5W9	.03 MFD. 400V. TUBULAR
C9	5W9	.05 MFD. 400V. TUBULAR
C10	6W2	.00025 MFD. MICA COND.
C11	5W2	.005 MFD. 400V. TUBULAR
C12	6W2	.00025 MFD. MICA COND.
C13	5W21	.01 MFD. 600V. TUBULAR
C14	5W7	.02 MFD. 400V. TUBULAR
C15	6W2	.00025 MFD. MICA COND.
C16	19W2	20 MFD. 25V. ELECTROLYTIC
C17	19W2	30 MFD. 150V. ELECTROLYTIC
C18	19W2	20 MFD. 150V. ELECTROLYTIC
C19	5W13	.1 MFD. 400V. TUBULAR
R1	9W6	20,000 Ω - 1/4 WATT
R2	9W11	250 Ω - 1/4 WATT
R3	9W9	10 MEGOHM - 1/4 WATT
R4	9W5	200,000 Ω - 1/4 WATT
R5	9W3	500,000 Ω - 1/4 WATT
R6	9W2	150 Ω - 1/4 WATT
R7	9W8	2 MEGOHM - 1/4 WATT
R8	9W4	50,000 Ω - 1/4 WATT
R9	13W1	500,000 Ω - VOL. CONT.
R10	9W15	15 Ω - 1/4 WATT
T1	3W20	FIRST I.F.
T2	3W21	SECOND I.F.
T3	12W1	OUTPUT TRANS.
L1	3W31	LOOP
L2	3W30	OSC. COIL
SPK.	22W20	SPEAKER, DYNAMIC
P.L.	26W2	PILOT LT. 150 MILLS

ALIGNMENT PROCEDURE

I.F. ALIGNMENT - SWING THE VARIABLE CONDENSER TO MINIMUM CAPACITY POSITION. FEED 455 K.C. SIGNAL TO GRID OF 12SA7 TUBE THRU .1 MFD. CONDENSER AND ADJUST FOUR I.F. TRIMMERS FOR MAXIMUM RESPONSE.

R.F. ALIGNMENT - SET DIAL POINTER TO 1400 K.C. ON DIAL. SET SIGNAL GENERATOR TO 1400 K.C. FEEDING OUTPUT INTO STANDARD RADIATING LOOP. ADJUST HIGH FREQUENCY TRIMMER FOR MAXIMUM OUTPUT THEN ADJUST ANT. TRIMMER LOCATED ON RECEIVER LOOP FOR MAXIMUM OUTPUT.

SET SIGNAL GENERATOR TO 600 K.C. AND WHILE ROCKING GANG, ADJUST LOW FREQUENCY TRIMMER FOR MAXIMUM OUTPUT. RETURN TO 1400 K.C. AND REPEAT HIGH FREQUENCY ADJUSTMENT.

WATTERSON RADIO MFG. COMPANY
DALLAS, TEXAS. ENGINEERING DEPT.

NAME **MODEL 4581**

DATE 11-15-45 CHECKED BY [Signature] PRINT NO 4581 ISSUE

SCALE VERIFIED BY [Signature]

MODEL 4582

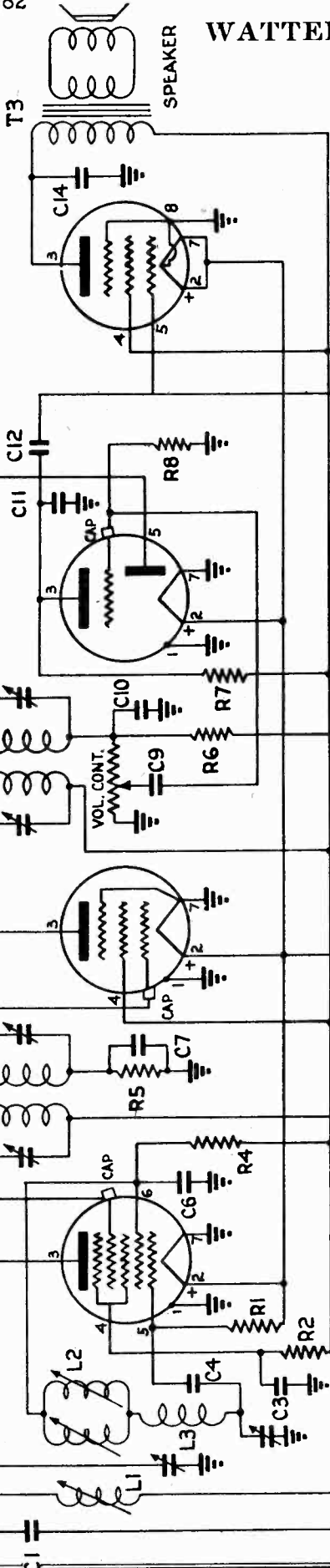
WATTERSON RADIO MFG. CO.

3Q5

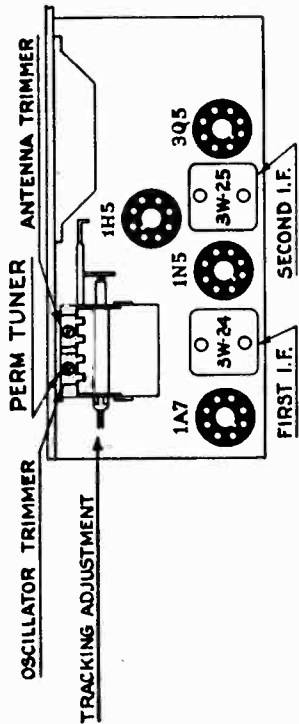
1H5

1N5

1A7



I F PEAK 455 KC



CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION
C1	6W-4	.00005 MFD. MICA COND.	L1	L2, L3, 4W-1	PERM TUNER
C2	6W-3	.0005 MFD. MICA COND.	R3	13W-2	VOL. CONTROL
C3	5W-13	.1 MFD. 400V. TUBULAR COND.	R4	22W-10B	SPEAKER
C4	5W-13	.00005 MFD. ON PERM TUNER	R5	9W-5	200,000 Ω - 1/4 WATT
C5	5W-13	.1 MFD. 400V. TUBULAR COND.	R6	9W-4	50,000 Ω - 1/4 WATT
C6	6W-2	.00025 MFD. MICA COND.	R7	9W-28	100,000 Ω - 1/4 WATT
C7	5W-7	.02 MFD. 400V. TUBULAR COND.	R8	9W-6	20,000 Ω - 1/4 WATT
C8	5W-50	.25 MFD. 400V. TUBULAR COND.	R9	9W-10	1 MEGOHM - 1/4 WATT
C9	5W-2	.005 MFD. 400V. TUBULAR COND.	R10	9W-10	1 MEGOHM - 1/4 WATT
C10	6W-2	.00025 MFD. MICA COND.	R11	9W-9	10 MEGOHM - 1/4 WATT
C11	6W-1	.0001 MFD. MICA COND.	R12	9W-12	3/4 OHM - 1/4 WATT
C12	5W-6	.01 MFD. 400V. TUBULAR COND.	R13	9W-13	750 Ω - 1/4 WATT
C13	19W-4	10. MFD. 25V. ELECTROLYTIC COND.	R14	9W-8	2 MEGOHM - 1/4 WATT
C14	5W-3	.002 MFD. 400V. TUBULAR COND.	T1	3W-24	I.F. TRANSFORMER
			T2	3W-25	I.F. TRANSFORMER
			T3	12W-2	OUTPUT TRANSFORMER

WHERE SPECIFIED: TOLERANCE ON ALL RESISTANCE PARTS SHALL BE ± 5% ON TUBULAR PARTS AND HOLES, ± 10% ON LEADS.
ALL TUBES AND TAPED PARTS TO BE CLASS 1 FT. UNLESS OTHERWISE SPECIFIED.
UNLESS OTHERWISE SPECIFIED, TOLERANCE ON STAMPED PARTS SHALL BE ± 5% ON ALL DIMENSIONS EXCEPTING HOLES WHICH SHALL BE ± 10% ON ALL DIMENSIONS.

WATTERSON RADIO MFG. CORP., DALLAS, TEXAS
ENGINEERING DEPT.

NOMENCLATURE

MODEL 4582

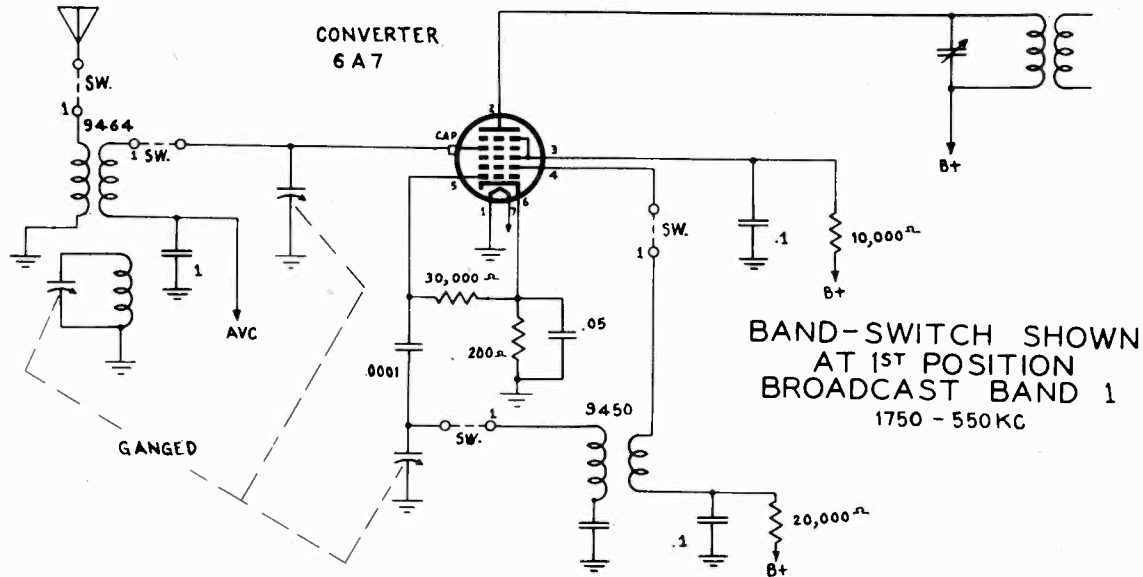
DRAWN BY: B. E. N. S. CHECKED BY: PART NO. 18104
H.C.P. SCALE 1/8" = 1"

APPROVED BY: *[Signature]*

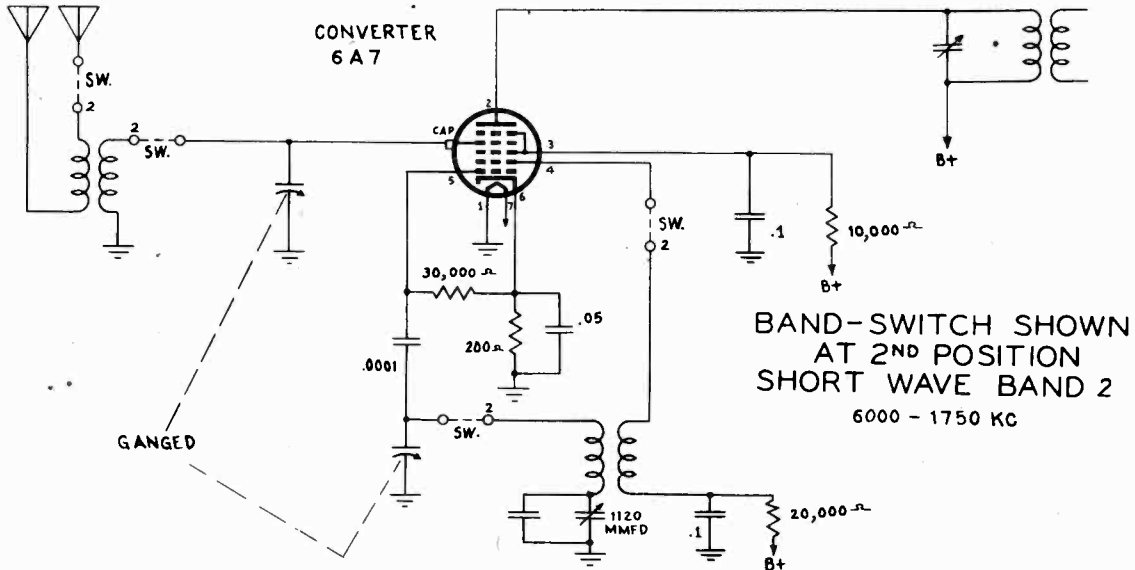
3W-8

MODEL 38

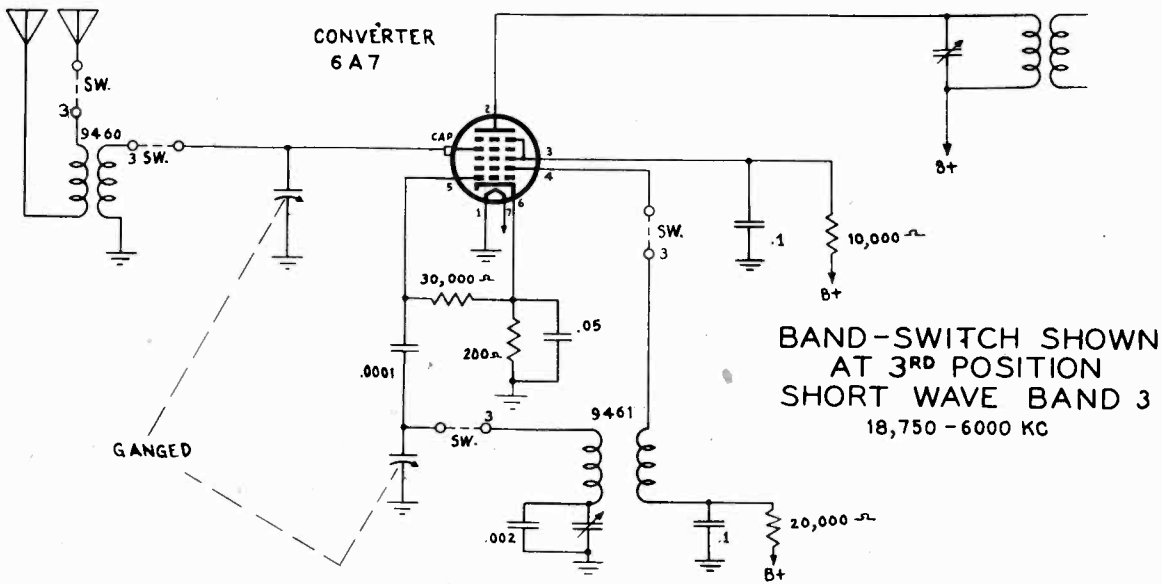
WESTERN AIR PATROL



BAND-SWITCH SHOWN AT 1ST POSITION
BROADCAST BAND 1
1750 - 550 KC

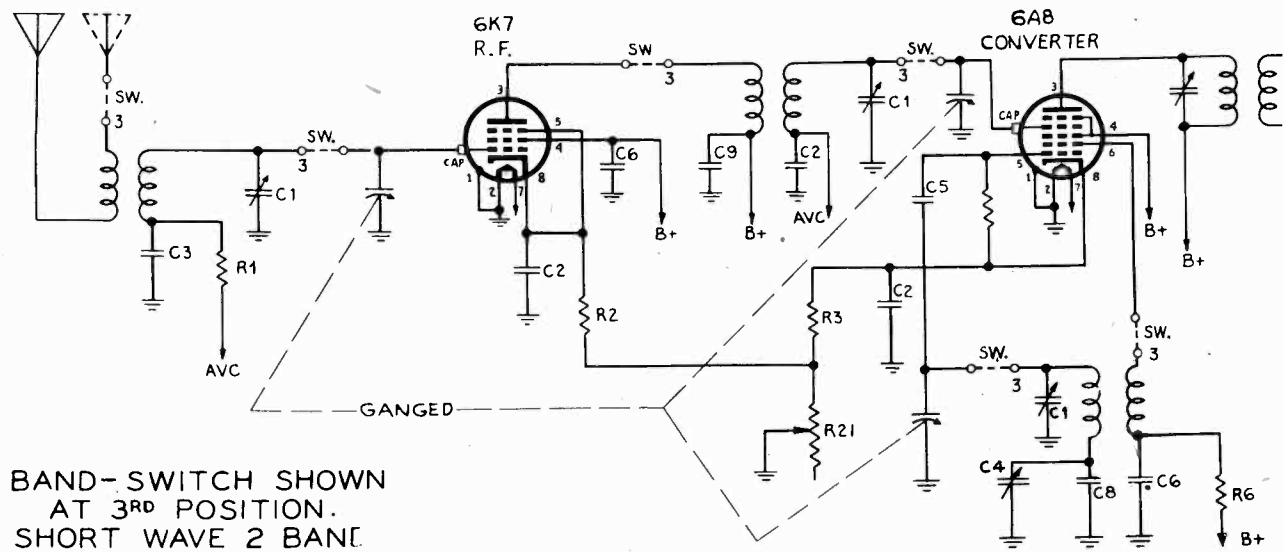
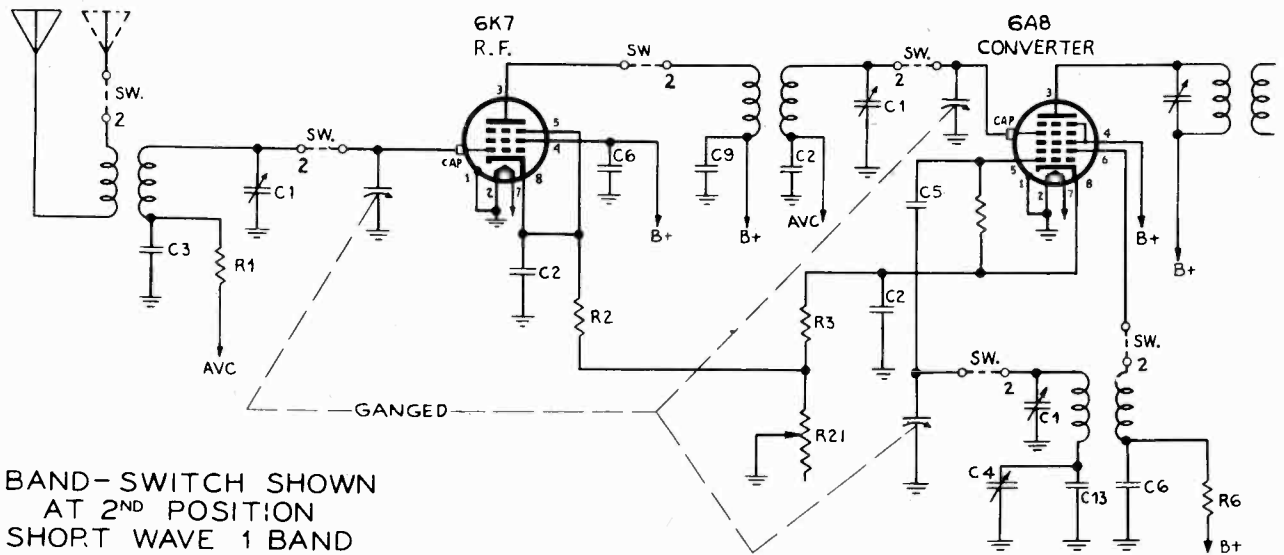
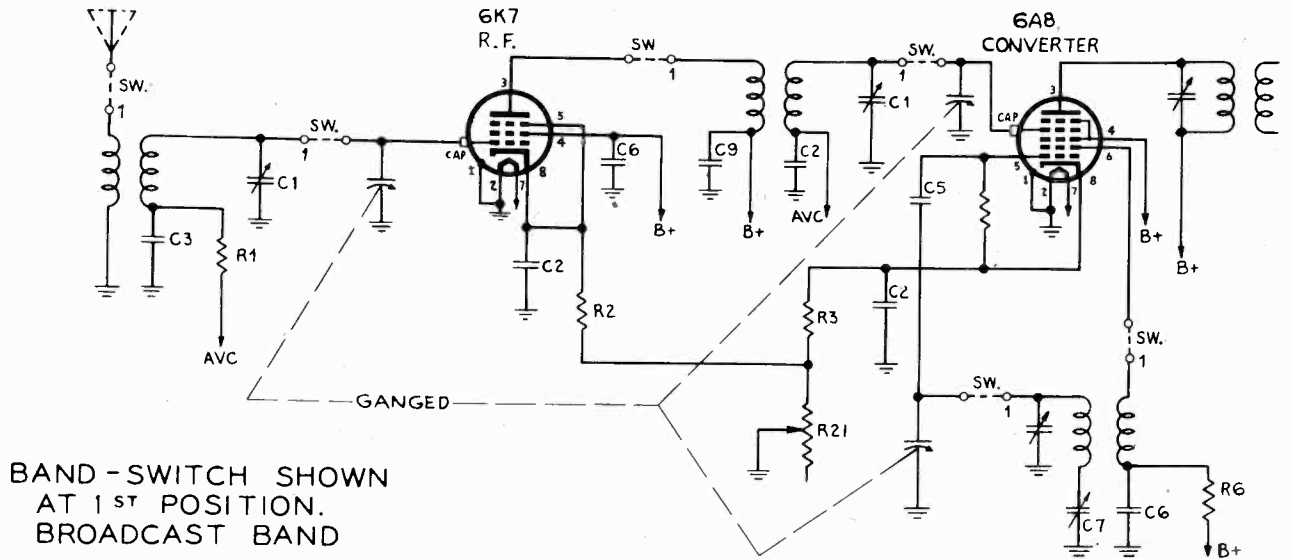


BAND-SWITCH SHOWN AT 2ND POSITION
SHORT WAVE BAND 2
6000 - 1750 KC



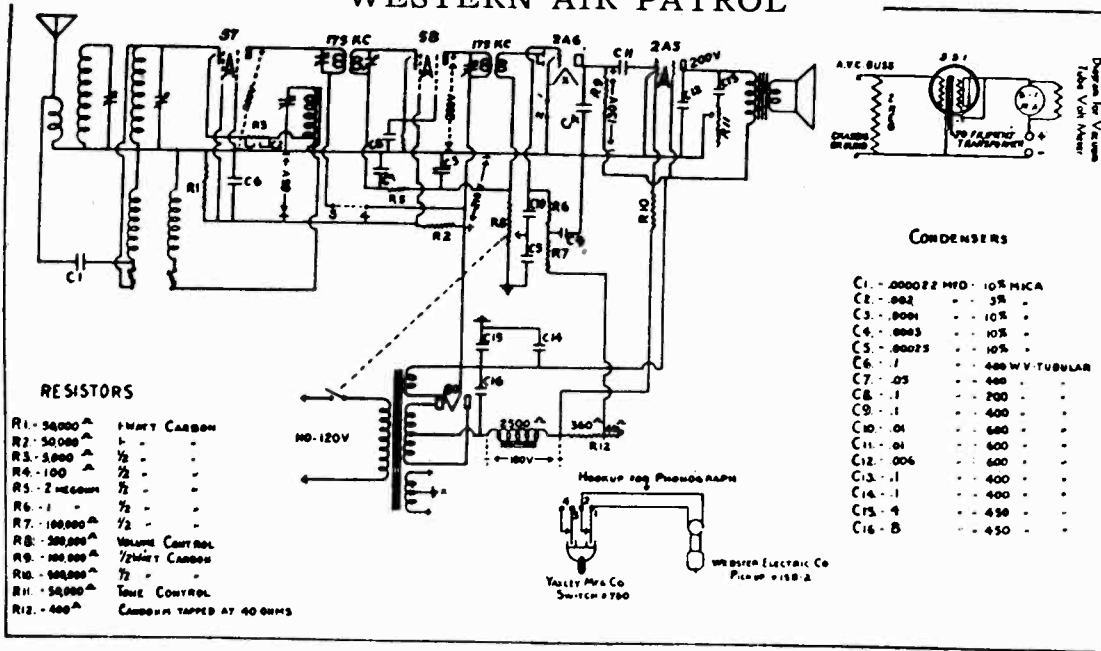
BAND-SWITCH SHOWN AT 3RD POSITION
SHORT WAVE BAND 3
18,750 - 6000 KC

WESTERN AIR PATROL



MODEL 5-Tube
Super. '34-'35

WESTERN AIR PATROL



RESISTORS

R1 - 50,000 ^Ω	1/2 WATT CARBON
R2 - 50,000 ^Ω	1/2 - - -
R3 - 5,000 ^Ω	1/2 - - -
R4 - 100 ^Ω	1/2 - - -
R5 - 2 megohms	1/2 - - -
R6 - 1	1/2 - - -
R7 - 100,000 ^Ω	1/2 - - -
R8 - 500,000 ^Ω	VOLUME CONTROL
R9 - 100,000 ^Ω	1/2 WATT CARBON
R10 - 500,000 ^Ω	1/2 - - -
R11 - 50,000 ^Ω	TIME CONTROL
R12 - 400 ^Ω	CARBON TAPPED AT 40 OHMS

CONDENSERS

C1 - .000022 MFD.	10% MICA
C2 - .002	3% - - -
C3 - .0004	10% - - -
C4 - .0003	10% - - -
C5 - .00025	10% - - -
C6 - 1	400 W.V. TUBULAR
C7 - .05	400 - - -
C8 - 1	200 - - -
C9 - 1	400 - - -
C10 - .01	600 - - -
C11 - .01	600 - - -
C12 - .006	600 - - -
C13 - .1	400 - - -
C14 - .1	400 - - -
C15 - 4	450 - - -
C16 - 8	450 - - -

SERVICE DATA, FIVE TUBE SUPER-HETERODYNE, 1934-1935
All models have automatic volume control of the diode type, controlling the first detector as well as the high frequency amplifier tubes. This A.V.C. makes it impossible to service and rebalance without a meter of the type to be described. This meter will work on any make or type of A.V.C., provided care is used. It can not be damaged by improper connection of the leads.

- PARTS REQUIRED FOR VACUUM TUBE VOLT METER**
- 1—O to 1 or O to 1.5 milliammeter.
 - 1—Bell ringing transformer with secondary of 6-10 volts.
 - 1—5 prong socket.
 - 1—551 tube.
 - 1—2 megohm grid leak.
 - 1—10 ohm rheostat.
 - 1—45 volt B battery.
- Clips, Box, Cord, Hookup Wire.

USING VACUUM TUBE VOLT METER
The cathode clip is connected to the cathodes of the tubes controlled by the A.V.C. The buss clip is connected to the A.V.C. buss in front of the isolating resistor. Adjust rheostat shunt until meter shows full scale reading. All balancing is done with maximum peak indicated by the meter swing toward O. Sensitivity of various receivers can be checked by the swing of meter from a known station. Short Wave fading can be seen by tuning in the station with meter connected to set.

REBALANCING
Do not rebalance a set until you are sure it requires it. 99 per cent of the sets do not need it. We do not find one case in one hundred that really should be rebalanced.

INTERMEDIATES
Connect a 175 K.C. oscillator to the first detector grid (No. 57 tube) leaving grid cap in place. Set dial at 1400 K.C. Hook up vacuum tube volt meter as described and carefully adjust 3 screws on top of intermediates for maximum gain (minimum reading of meter). Don't flat top any stages. Have all shields in place. Keep volume control at lowest level.

CONDENSER GANG
Set dial at 1400 K.C. when gang is at minimum position and tighten dial set screws. Tune in a station (or use an oscillator) to a known frequency signal around 1400 K.C. Carefully adjust oscillator section of gang until frequency is correct on dial. If the intermediates are balanced on 175 K.C., the dial will now track within 5 K.C. over the entire dial.

Adjust first detector section for maximum gain and follow by adjusting band pass trimmers. Don't bend any condenser plates unless absolutely necessary.

OVERLOADING—OR POOR QUALITY AT LOW VOLUME
The chief cause of this trouble is too long an antenna. A powerful local station will cause the N. F. tubes to block. Check this by disconnecting the antenna on the station causing the trouble. If too close to a powerful station, installing a switch in the aerial circuit helps this. In rare cases the set seems to overload and the A.V.C. works too quickly on all stations. Check the following:

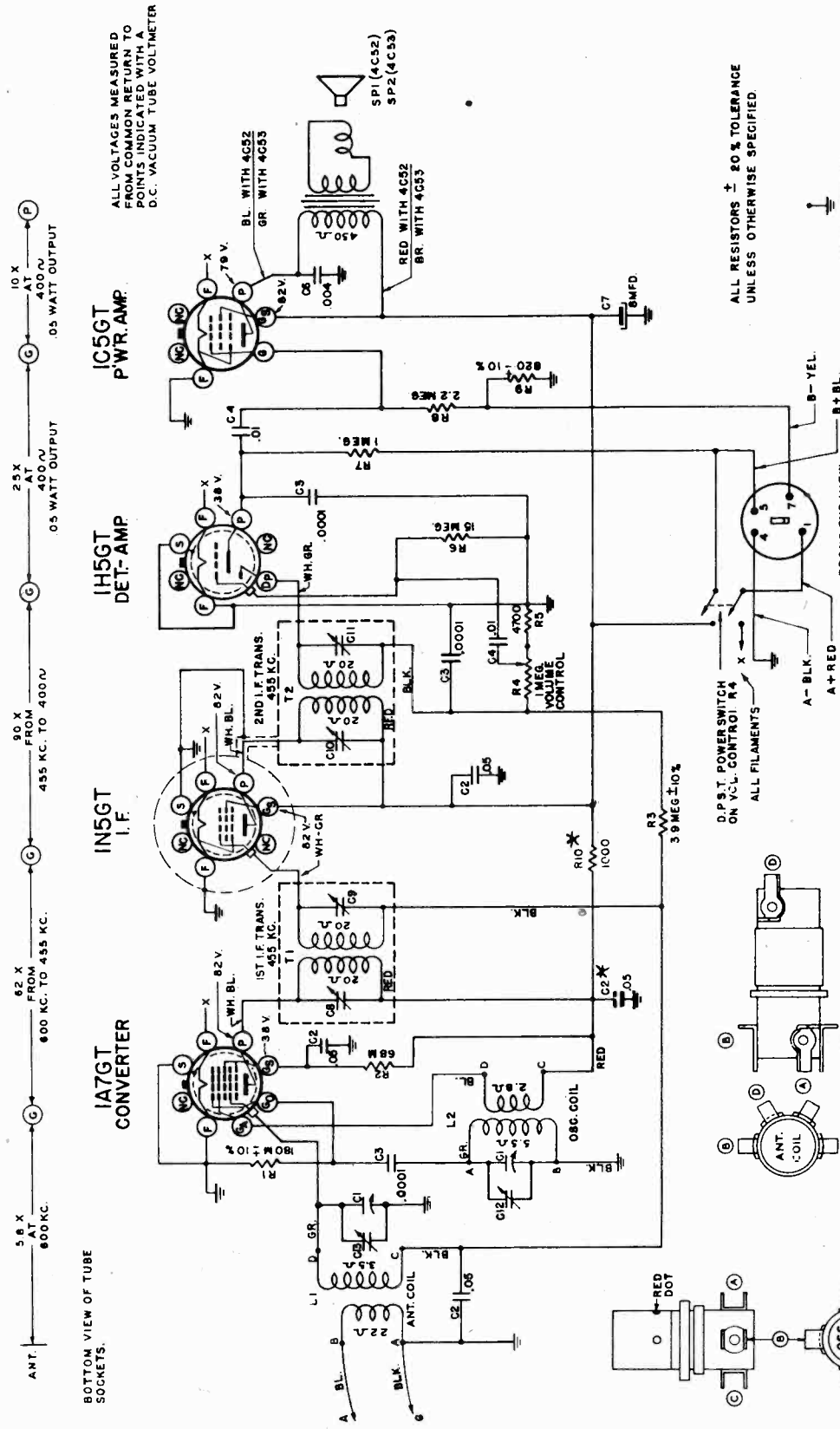
Disconnect 2 meg. resistor from A.V.C. buss at tie point. Have all tubes cold. Use high voltage, high resistance ohmmeter capable of reading 25 megohms and test from ground to A.V.C. buss for leakage. After condensers have charged, no leakage should be shown. This must read around 100 megohms to ground. If slight leakage is observed, disconnect bypass condensers from buss until defective one is found. Sometimes moisture is found on coil terminals. Scrape this clear.

NOISY OPERATION (Not Static)
A defective tube will cause a sharp 60 cycle R.F. pickup. This is most prominent on low frequency. Replace with a good tube. In many cases it is found that the noise cannot be eliminated by servicing the receiver. Noise may enter into the light lines or via the antenna. The only way to check the source is to turn off one after another all electrical apparatus in the vicinity of the set. There is no freak or trick antenna that will eliminate natural static.

GENERAL
All resistors, bypass condensers and filter units are marked. Voltages are shown at tube socket on diagram. 99 per cent of trouble in a chassis is caused by defective tubes, check them carefully.

ZENITH RADIO CORP.

MODELS 4K016, Ch. 4C52, 4K035, Chas. 4C53



ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH A D.C. VACUUM TUBE VOLTMETER

ALL RESISTORS ± 20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

DEMOTES CHASSIS

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

1 1/2 V. BATTERY PACK NO. Z-22

*Not in early model

MODELS 4K016-4K035 CHASSIS Nos. 4C52-4C53

R1	63-654	180M OHM	1/4 W.
R2	63-954	68M OHM	1/4 W.
R3	63-669	3.9 MEG.	1/4 W.
R4	63-1235	VOLUME CONTROL (4C53)	
R5	63-1381	VOLUME CONTROL (4C53)	
R6	63-587	4700 OHM	1/4 W.
R7	63-578	10 MEG.	1/4 W.
R8	63-271	1 MEG.	1/4 W.
R9	63-600	2.2 MEG.	1/4 W.
R10	63-634	820 OHM	1/4 W.
R10	63-583	1000 OHM	1/4 W.
L1	512024	ANTENNA COIL	
L2	512014	OSC. COIL ASSY.	
T1	95-814	1ST I.F. TRANSFORMER	
T2	95-839	2ND I.F. TRANSFORMER	
SP1	49-519	5" SPEAKER (with 4C53)	
SP2	49-450	6 1/2" SPEAKER (with 4C53)	

DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1453	TWO GANG VARIABLE (4C53)
C2	22-1454	TWO GANG VARIABLE (4C52)
C3	22-829	.05 MFD.
C4	22-196	.01 MFD.
C5	22-448	.004 MFD.
C6	22-884	8 MFD. ELECTRO. 150 V.
C7	ON T1	1ST I.F. TRANS. PRI.
C8	ON T1	1ST I.F. TRANS. SEC.
C9	ON T2	2ND I.F. TRANS. PRI.
C10	ON T2	2ND I.F. TRANS. SEC.
C11	ON C1	BROADCAST OSC. (ON CHAS.)
C12	ON C1	BROADCAST OSC. (ON CHAS.)
C13	ON C1	BROADCAST ANT. (ON CHAS.)

MODELS 4K016, 4K035
MODELS 6D015, 6D030

ZENITH RADIO CORP.

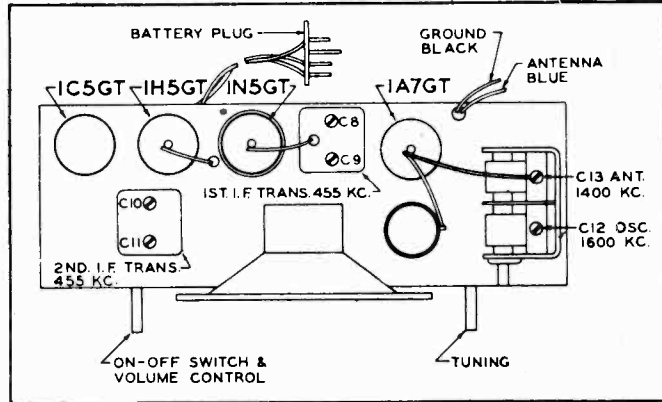
MODELS 4K016-4K035
CHASSIS Nos. 4C52-4C53

TO THE SERVICE MAN:

The alignment of this chassis is conventional.

A 4700 ohm resistor R5 between the low end of the volume control and ground allows some audio output with normal signal input when the volume control is in counter clockwise positions. This is the Guardian Reminder circuit.

If the audio output is objectionably high (with the volume control in counter clockwise position) resistor R5 may be reduced in value to 2500 ohms or removed from the circuit and the low end of the control grounded.



TUBE AND TRIMMER LOCATION

ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	C-8, C-9, C-10, C-11	Align I. F.
2	Antenna and Ground	200 mmfd.	1600 Kc.	1600 Kc.	C-12	Set Oscillator to Dial Scale.
3	Antenna and Ground	200 mmfd.	1400 Kc.	1400 Kc.	C-13	Align antenna stage.

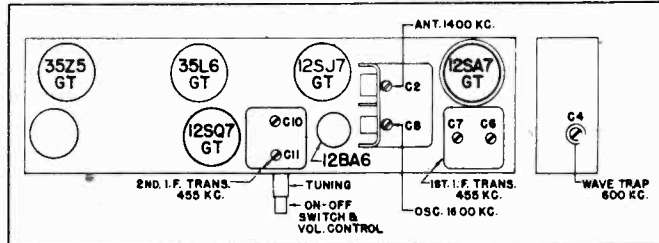
MODELS 6D015-6D030
CHASSIS No. 6C05

TO THE SERVICE MAN:

The filter circuits of chassis 6C05 incorporate new features that should be well understood by the service man. An examination of the schematic drawing will show the output transformer tapped slightly off center. This tap is the B + connection from filter resistor R11 and capacitor C19 off the cathode of the rectifier 35Z5 to the 35L6 plate. The lower connection of the output transformer feeds B + to the rest of the tubes in the receiver. Current flowing through the upper windings of the output transformer to the 35L6 produces a magnetic field which is 180° out of phase with the magnetic field produced by current flowing in the opposite direction through the output transformer to the rest of the receiver, therefore, most of the AC hum is cancelled. Further reduction of hum is accomplished by filtering through resistor R10 and 12 and capacitors C17 and 18.

This development in filtering systems allows a higher effective plate voltage on the 35L6 for increased power output.

NOTE: The output transformer must be replaced with an exact duplicate, Part No. 206-547. Be sure to add the speaker code letter to the transformer part number.



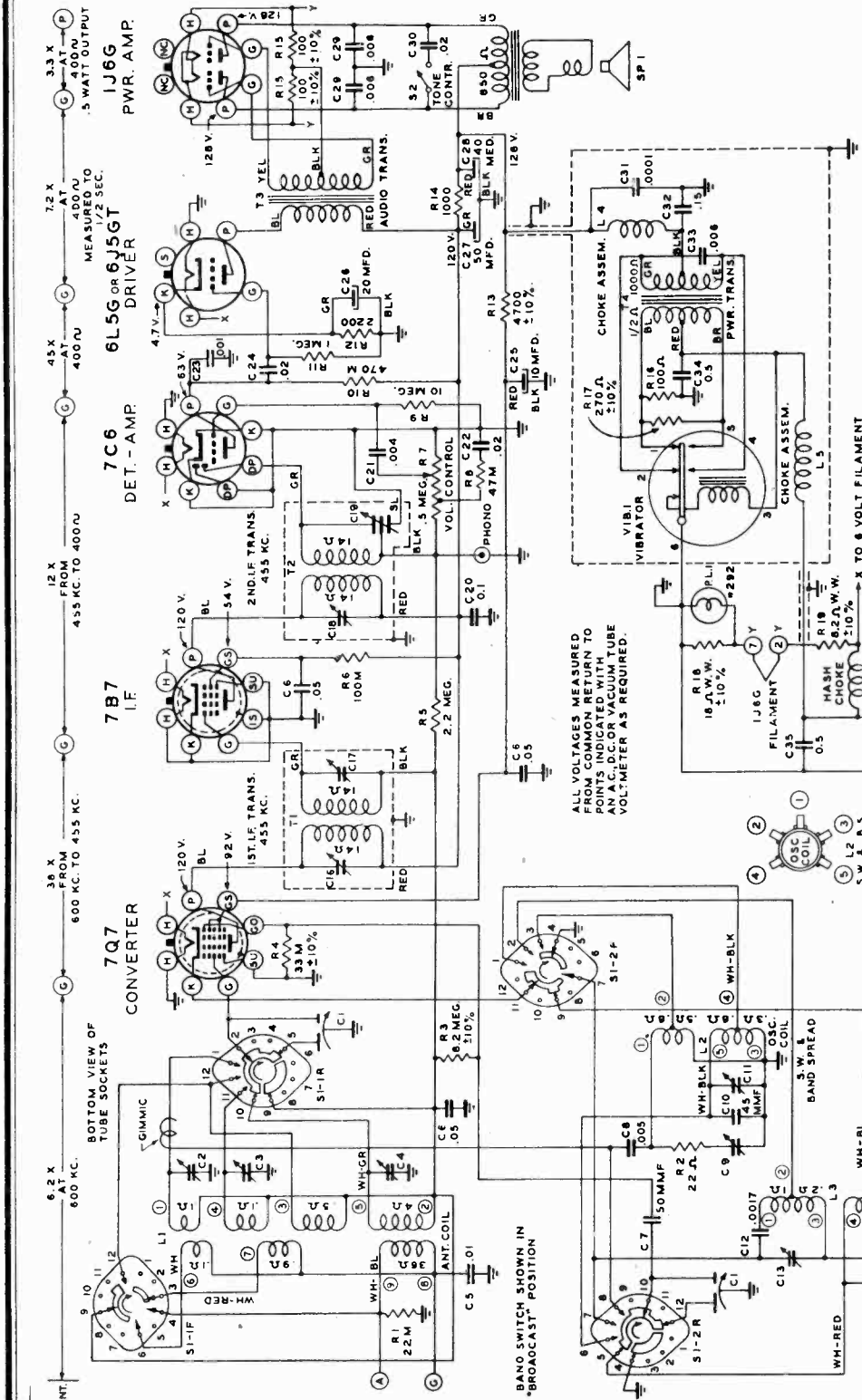
TUBE AND TRIMMER LOCATION

ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY TO ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	C-6, C-7, C-10, C-11	I.F. Alignment
2	Single Turn Loosely Coupled to Wave Magnet		455 Kc.	600 Kc.	C-4	Adjust Wave Trap to minimum.
3			1600 Kc.	1600 Kc.	C-8	Set Oscillator to Dial Scale.
4			1400 Kc.	1400 Kc.	C-2	Antenna Alignment

ZENITH RADIO CORP.

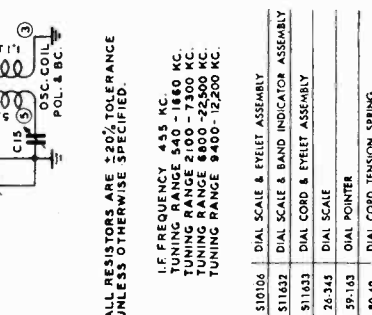
MODEL 5B042
Chas. 5C62T



PHONO
Ce récepteur est pourvu d'une "Cheville de Phonographe" et une prise, qui se trouvent au dos du châssis. Pour employer le poste avec un appareil phonographique externe ("record player"), tournez le commutateur sélectionneur de bandes à une des bandes d'ondes courtes, et réglez le volume du son au moyen du contrôle du volume du poste.

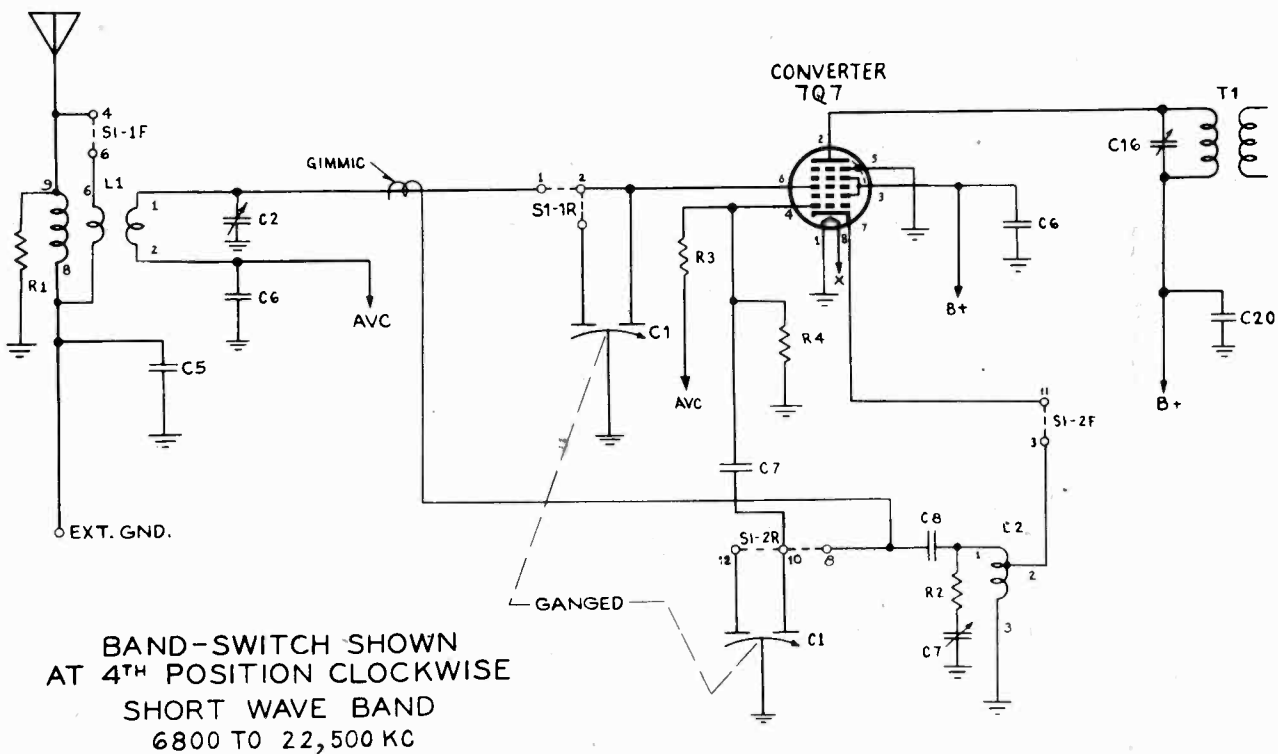
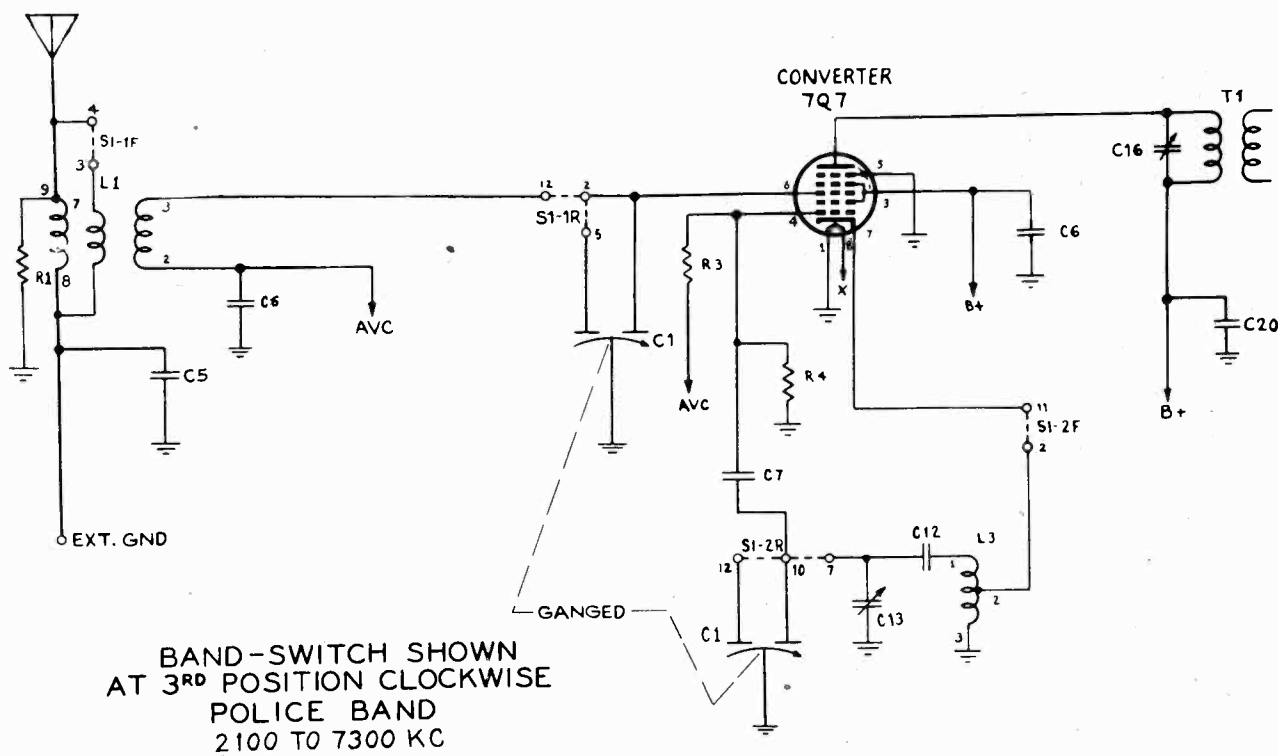
PHONO
Este receptor está provisto de una conexión para el fonógrafo, y una clavija o toma, situadas en la parte posterior del chasis. Para usar el receptor con un "Tocadiscos," ajuste el cambio de banda a una de las bandas de onda corte y cambie el volumen del sonido por medio del control de volumen del receptor.

This receiver is equipped with a Phono Jack and Plug located on the rear of the chassis. To use the receiver with a record player, set the Band Switch to one of the short-wave bands and control the volume of the record reproduction with the receiver Volume Control.



DIAL PART NO.	DESCRIPTION
C1	Z21-250 2-GANG VARIABLE
C2	Z21-152 SHORTWAVE ANT. TR.
C3	Z5 METER ANT. TR.
C4	Z2-124 BROADCAST ANT. TR.
C5	Z2-910 .01 MFD. 400 V.
C6	Z2-918 .05 MFD. 400 V.
C7	Z2-289 50 MFD. 600 V.
C8	Z2-1022 1005 MFD. 600 V.
C9	Z2-1090 SHORTWAVE OSC. TRIM.
C10	Z2-1284 45 MFD. COMP.
C11	Z2-1090 5 METER OSC. TRIM.
C12	Z2-1259 .0017 MFD. 600 V.
C13	Z2-1090 3.5 W. 2 OSC. TRIMMER
C14	Z2-1255 BROADCAST PADDER TR.
C15	ON T1 1ST. I.F. TRANS. PRI. TR.
C16	ON T1 1ST. I.F. TRANS. SEC. TR.
C17	ON T2 2ND. I.F. TRANS. PRI. TR.
C18	ON T2 2ND. I.F. TRANS. SEC. TR.
C19	ON T2 2ND. I.F. TRANS. SEC. TR.
C20	Z2-821 .01 MFD. 400 V.
C21	Z2-805 .004 MFD. 600 V.
C22	Z2-813 .02 MFD. 200 V.
C23	Z2-1063 .02 MFD. 600 V.
C24	Z2-815 .02 MFD. 600 V.
C25	Z2-1286 .01 MFD. ELECTRO 200V.
C26	Z2-1286 .20 MFD. " 25V.
C27	Z2-1046 .50 MFD. " 250V.
C28	Z2-808 .40 MFD. " 800V.
C29	Z2-808 .008 MFD. " 800V.
C30	Z2-616 .02 MFD. 600V.
C31	Z2-162 .0001 MFD. 600V.
C32	Z2-1021 .15 MFD. 400V.
C33	Z2-1068 .008 MFD. 1600 V.
C34	Z2-824 .5 MFD. 200V.
C35	Z2-1064 .5 MFD. 120 V.
R1	R3-591 22 M OHM 1/4 W.
R2	R3-573 22 OHM 1/4 W.
R3	R3-673 6.2 MEGOHM 1/4 W.
R4	R3-946 33 M OHM 1/4 W.
R5	R3-722 2.2 MEGOHM 1/4 W.
R6	R3-595 100 M OHM 1/4 W.
R7	R3-1249 .5 MEG. VOL. CONTROL
R8	R3-593 47 M OHM 1/4 W.
R9	R3-604 10 MEGOHM 1/4 W.
R10	R3-597 470 M OHM 1/4 W.
R11	R3-271 1 MEGOHM 1/4 W.
R12	R3-585 2200 OHM 1/4 W.
R13	R3-1025 4700 OHM 1/2 W.
R14	R3-583 1000 OHM 1/4 W.
R15	R3-294 100 OHM 1/4 W.
R16	R3-697 100 OHM 1/4 W.
R17	R3-106 270 OHM 1/2 W.
R18	R3-1068 18 OHM WIRE W/D/2W
R19	R3-1451 8.2 OHM WIRE W/D/1W
L1	S9982 ANTENNA COIL ASSY.
L2	S10040 OSC. COIL S.W. & B.S.
L3	S10039 OSC. COIL POL. A.C.
L4	S9748 CHOKE ASSEMBLY
L5	S9748 CHOKE ASSEMBLY
L6	S9748 CHOKE ASSEMBLY
L7	S9748 CHOKE ASSEMBLY
L8	S9748 CHOKE ASSEMBLY
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L368	S9748 CHOKE ASSEMBLY

ZENITH RADIO CORP.



PRECAUTION
S'assurer que les pattes d'attache sont connectées avec les propres bornes plus ou moins de l'accum, comme autrement on n'aura pas de réception et le vibrateur pourra s'avarter.

CAUTION
Be certain that the battery clips are connected to the proper plus and minus terminals of the battery; otherwise reception cannot be obtained and the vibrator may be damaged.

¡OJO!
Es indispensable que las terminales del acumulador estén conectadas a la terminal positiva o negativa correspondientes. De lo contrario, no se puede obtener recepción y el vibrador puede dañarse.

ANTENNE
Une bonne antenne s'impose pour obtenir une réception satisfaisante. Une antenne extérieure de 13 à 20 mètres de long et placé aussi haut

ANTENNA
A good antenna is necessary for satisfactory reception. An outside antenna from 40 to 60 feet in length and as high as possible will give good all

ANTENA
Una buena antena es indispensable para la recepción de radio. Una antena exterior de 13 a 20 metros instalada lo más alto posible es la más apropiada para uso general.

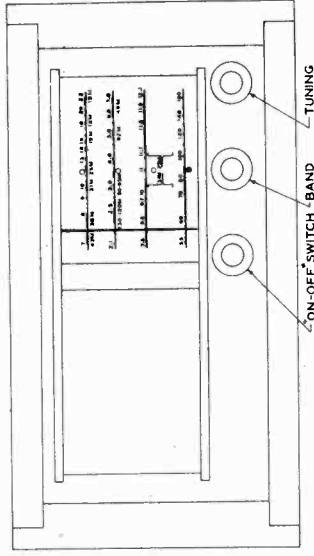


FIG. 1. CONTROLS.

que possible donnera d'excellents résultats pour tout service. Si vous vous proposez d'utiliser votre antenne actuelle, il conviendra d'en faire un examen approfondi pour en déterminer l'état car les connexions peuvent en être rouillées ou rompues, ce qui rendrait l'antenne impropre à l'emploi. Si on décide de construire une nouvelle antenne, il convient de veiller à ce que le fil d'entrée ne rejoigne pas la terre par des arbres, des murs ou des gouttières, et toutes les connexions devront être soudées avec soin pour prévenir la corrosion et les parasites qui en résulteraient.

around results. If your present antenna is to be used, a thorough examination should be made to determine its condition, as the connections may be corroded or broken thus rendering the antenna unfit for service. If a new antenna is to be constructed, care should be taken to prevent the lead-in wire from grounding to trees, walls or gutters and all connections should be properly soldered to prevent corrosion and resulting noise. Connect the antenna lead-in to the post marked "A" at the back of the chassis.

ral. Si se ha de suar una antena ya instalada, ésta debe examinarse minuciosamente para determinar su estado pues puede haber conexiones oxidadas o rotas, que nulifican la eficacia de la antena. Por otra parte si ha de instalarse una antena nueva hay que tomar las precauciones necesarias para que el alambre de bajada no haga contacto con la pared o con cualquier objeto que resulte en una conexión a tierra. Todas las conexiones deben estar correctamente soldadas para prevenir contra la oxidación y los ruidos que se producen a consecuencia de esto.

MODEL NO. 5B042
Chassis No. 5C62T

INSTRUCCIONES PARA LA INSTALACION Y FUNCIONAMIENTO	INSTALLATION, OPERATING AND SERVICE INSTRUCTIONS	LES INSTRUCTIONS POUR L'INSTALLATION ET LE FONCTIONNEMENT
<p>INFORMACION GENERAL Después de desembalar el receptor, el papel engomado usado en empaque y embarque, tiene que quitarse del chasis.</p> <p>Este receptor es un moderno aparato superheterodino de cinco tubos, que sintoniza las bandas de onda larga y corta, como sigue: 540 a 1660 Kc. (555 a 180 metros), 2100 a 7300 Kc. (143 a 41 metros), 6800 a 22,500 Kc. (44 a 13.3 metros), y una gama de ondas especial desde 9400 a 12,200 Kc. (31.9 a 24.6 metros) con ensanchamiento de banda en 25 y 31 metros.</p> <p>El receptor está provisto de altoparlante de imán permanente del tipo electro-dinámico, y un regulador de tono de dos posiciones.</p> <p>SUMINISTRO DE ENERGIA Este receptor funciona con un acumulador de 6 voltios solamente.</p> <p>Consumo de energía del chasis con altoparlante de imán permanente es de 2.2 amperios. El máximo de salida de fuerza es de 2.2 vatios.</p>	<p>GENERAL After the receiver has been unpacked from the carton, the paper tape used for packing and shipping must be removed from the chassis.</p> <p>This receiver is a modern five tube superheterodyne, tuning over the following standard broadcast and short-wave bands: 540 to 1660 Kc (555 to 180 meters), 2100 to 7300 Kc (143 to 41 meters), 6800 to 22,500 Kc (44 to 13.3 meters), and a special range covering 9400 to 12,200 Kc (31.9 to 24.6 meters) with spread bands at 25 and 31 meters.</p> <p>It is equipped with a permanent magnet dynamic type speaker and a two position tone control.</p> <p>POWER SUPPLY This receiver operates from a 6 volt storage battery only.</p> <p>Power consumption of the receiver is 2.2 amperes. The maximum power output is 2.2 watts.</p>	<p>GENERAL Après déballage du récepteur de la boîte en carton, la bande de papier-cache employée pour l'emballage et l'expédition doit être enlevée du châssis.</p> <p>Le présent poste est un récepteur superhétérodyne moderne à cinq lampes, dont l'accord englobe les bandes standard suivantes d'ondes moyennes et d'ondes courtes: 540 à 1660 Kc. (555 à 180 mètres), 2100 à 7300 Kc. (143 à 41 mètres), 6800 à 22,500 Kc. (44 à 13,3 mètres), et une échelle spéciale qui couvre de 9400 à 12,200 Kc. (31,9 à 24,6 mètres) avec épanouissement des bandes à 25 et 31 mètres.</p> <p>Ce poste est équipé avec un haut parleur à aimant permanent du type électro-dynamique, et un contrôle de son à deux positions.</p> <p>ALIMENTATION DE COURANT Ce récepteur de TSF ne fonctionne qu'avec accu de six volts.</p> <p>La consommation de courant du châssis utilisant le haut parleur à aimant permanent est de 2,2 ampères. Le débit maximum de puissance est de 2,2 watts.</p>

ZENITH RADIO CORP.

Conéctese el alambre de bajada de la antena a la terminal marcada "A" en la parte trasera del chasis.

TIERRA

Una conexión a tierra bien hecha mejorará considerablemente la recepción aumentando la fuerza de las señales de estaciones lejanas y reduciendo el ruido de fondo. La conexión de tierra más satisfactoria consiste en una sección de tubería de un metro a 1.50 metros de largo, colocada verticalmente y casi cubierta de tierra húmeda; un extremo de la conexión a tierra se conecta a la terminal marcada "G" en el chasis.

FUNCIONAMIENTO

(Véase la fig. 1). El grabado indica la posición y propósito de cada perilla. Haciendo girar la perilla combinada interruptor (ON-OFF) y regulador de volumen hacia la derecha, el receptor empieza a funcionar. Las válvulas requieren un minuto más o menos para calentarse. Para aumentar el volumen es necesario girar la perilla hacia la derecha. El volumen se reduce haciendo girar la perilla hacia la izquierda y el receptor se apaga cuando se oye el ruido del interruptor.

Para sintonizar una estación gírese la perilla selectora hasta que la aguja indique la frecuencia deseada. La sintonización debe hacerse en el centro de la frecuencia de la onda para obtener la mejor calidad de tono posible.

El tono se cambia por medio de un interruptor en la parte atrás del receptor, de "Treble" (alto) a "Bass" (bajo).

El receptor tiene cuatro gamas de onda, y cualquiera de ellas puede seleccionarse por medio del conmutador de bandas. La banda que se está usando estará indicada por medio de un punto rojo en el centro de la escala correspondiente.

A good ground will aid reception materially by improving the signal strength of distant stations and reducing background noise. The best ground is a 4 to 6 foot pipe driven down to damp earth; the ground lead-in should be securely soldered to this.

A suitable ground may be obtained by making a good connection to a water pipe or radiator. Connect the ground lead-in to the post marked "G" at the rear of the chassis.

PLACING THE RECEIVER IN OPERATION

Note figure 1. This shows the position and purpose of each control. Turning the combination "ON-Off" switch and volume control to the right will turn the receiver ON. Approximately one minute will be required for the tubes to heat to operating temperature. Continued rotation of this knob to the right increases the volume. Turning this control to the left decreases the volume and, when a click is heard, turns the receiver OFF.

When tuning in a station turn the tuning knob slowly to the desired station. Care should be taken to tune the receiver to the middle of the signal, otherwise the tone will be impaired.

The tone may be changed by means of the switch at the back of the radio from "Treble" to "Bass".

The receiver has four tuning ranges, any one of which may be selected by means of the hand switch. The band in use will be indicated by a red dot in the center of the corresponding scale.

Daylight has a decided effect on the reception of short wave stations and different wave lengths are most effective at different times of the day. The following table may be used as a guide.

ent. Reliez le fil d'entrée de l'antenne au montant marqué "A" à l'arrière du châssis.

PRISE DE TERRE

Une bonne prise de terre aidera notablement la réception en améliorant la force du signal pour les stations distantes et en réduisant le bruit de fond. La meilleure prise de terre consiste d'un tuyau de 4 à 6 pieds qu'on enfonce dans le sol humide; la prise de terre devra y être solidement soude.

On peut réaliser une prise de terre convenable en établissant une bonne connexion au tuyau d'eau ou à un radiateur. Reliez la prise de terre au montant marqué "G" à l'arrière du châssis.

MISE DU RECEPTEUR EN SERVICE

Notez la fig. 1. Elle montre la position et l'objet de chaque contrôle. En tournant le commutateur combinaison interrupteur "ON-OFF" et le contrôle du volume, vers la droite, le récepteur sera mis en circuit. Il faut compter environ 1 minute pour que les lampes se chauffent à la température de fonctionnement. En continuant de tourner ce bouton vers la droite, le volume augmente en même temps. En tournant ce même contrôle vers la gauche, on diminue le volume de sonnerie et, quand on entend un léger clic, c'est qu'on a mis le récepteur hors circuit.

Quand vous accordez une station, tournez le bouton de sintonisation lentement jusqu'à ce que vous ayez obtenu la station désirée. Il convient de veiller à accorder le poste au milieu de la fréquence d'onde correspondante; autrement le ton en sera affecté.

Le ton peut être modifié au moyen du commutateur qui se trouve à l'arrière du poste, et cela de la position "Treble" (haut) à "Bass" (bas).

Le récepteur possède quatre échelles d'accord parmi lesquelles on peut sélectionner l'une quelconque d'entre elles au moyen du commutateur sélectionneur de bandes. La bande en usage sera indiquée

La luz del día tiene una decidida influencia sobre la recepción de la onda corta y diferentes longitudes de onda alcanzan mayor eficacia a diferentes horas del día. El cuadro a la derecha puede ser usado como guía para sintonizar a diferentes horas del día y la noche.

VALVULAS

Este receptor usa las válvulas siguientes:
7Q7 - 7B7 - 7C6 - 6L5G y 1J6G.

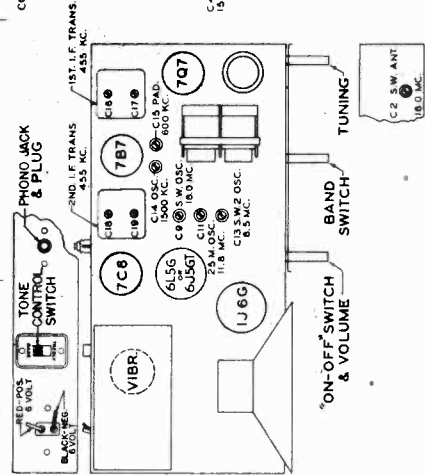
La fig. 2 muestra la posición de las válvulas.

Table with 2 columns: SHORT WAVE BAND, TIME OF BEST RECEPTION. Rows include 16 and 20 meters, 19 and 25 meters, 25 and 31 meters, 31 and 49 meters.

TUBES

The following tubes are employed in this receiver:
7Q7 - 7B7 - 7C6 - 6L5G and 1J6G.

Figure 2 shows the correct socket for each tube.



ALIGNMENT PROCEDURE

Table with 9 rows and 6 columns: Opk., Connect, Dummy Ant., Input Sig. Frequency, Band, Set Dial at, Transmitters, Purpose. Details alignment steps for various frequencies and bands.

par un point rouge au centre de l'échelle correspondante.

La réception radiophonique sur ondes courtes est définitivement affectée par la lumière du jour et la réception sur différentes longitudes d'ondes est plus ou moins efficace à différents moments de la journée. Nous donnons à gauche un barème qui peut être suivi pour l'écoute des différentes stations pendant le jour ou la nuit.

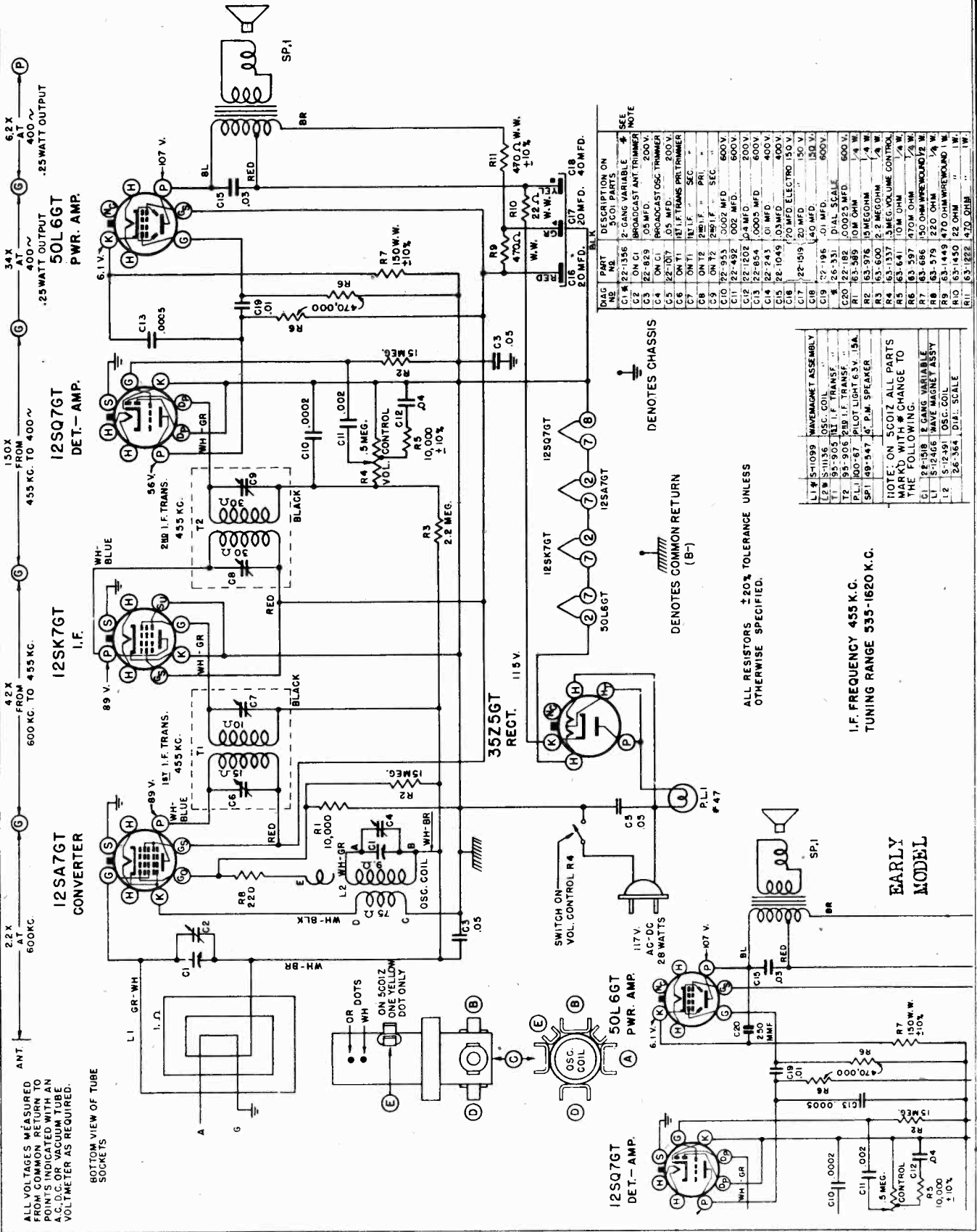
LAMPES

Les lampes suivantes sont employées sur ce poste:
7Q7 - 7B7 - 7C6 - 6L5G et 1J6G.

La figure 2 montre la douille correcte pour chaque lampe.

ZENITH RADIO CORP.

MODELS 5D011, 5D011W,
5D011Y, 5D027, Ch. 5C01
5D011Z, 5D011ZW, 5D011ZY,
5D027Z, Early, Late
Chassis 5C01Z



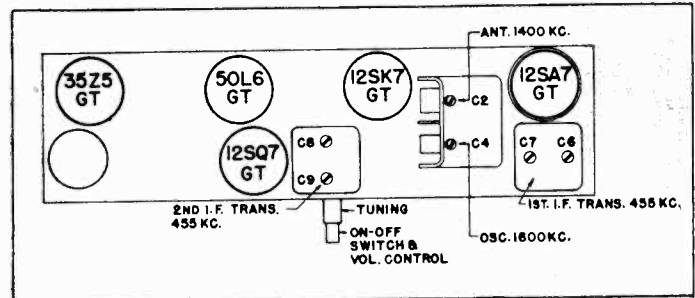
ZENITH RADIO CORP.

MODELS 5D011 Series,
5D011Z Series
MODELS 5R080, 5R086

TO THE SERVICE MAN:

The filter circuits of chassis 5C01 incorporate new features that should be well understood by the service man. An examination of the schematic drawing will show the output transformer tapped slightly off center. This tap is the B+ connection from filter resistor R10 and capacitor C18 off the cathode of the rectifier 35Z5 to the 50L6 plate. The lower connection of the output transformer feeds B+ to the rest of the tubes in the receiver. Current flowing through the upper windings of the output transformer to the 50L6 produces a magnetic field which is 180° out of phase with the magnetic field produced by current flowing in the opposite direction through the output transformer to the rest of the receiver, therefore, most of the AC hum is cancelled. Further reduction of hum is accomplished by filtering through resistor R9 and 11 and capacitors C16 and 17. Capacitor C15 across the primary of the output transformer by passes high frequency back to ground. This development in filtering systems allows a higher effective plate voltage on the 50L6 for increased power output.

NOTE: The output transformer must be replaced with an exact duplicate Part No. 202-549. Be sure to add the speaker code letter to the transformer Part number.



TUBE AND TRIMMER LOCATION

MODELS 5D011-5D027
CHASSIS No. 5C01
ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	C-6, C-7, C-8, C-9	Align I. F.
2	One Turn Loop Coupled Loosely to Wave Magnet	--	1600 Kc.	1600 Kc.	C-4	Set Oscillator to Dial Scale.
3		--	1400 Kc.	1400 Kc.	C-2	Align Antenna Stage

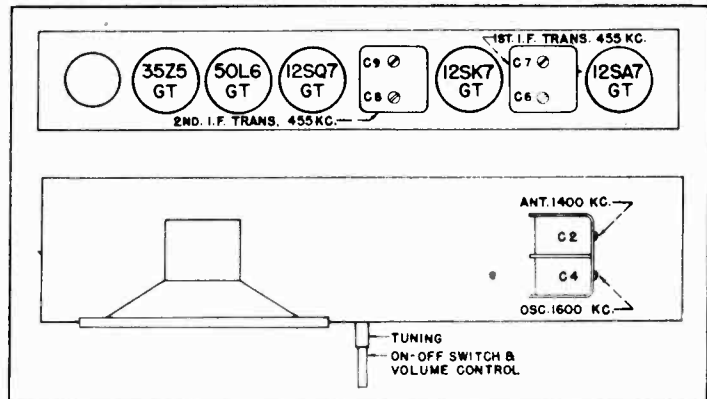
TO THE SERVICE MAN:

The 5C02 and 5C04 chassis are identical electrically. Chassis 5C02 has a Record Reject push button switch on the receiver control panel to reject records.

The socket P1 is used to connect the automatic record changer to the receiver.

The Phono-Radio switch is a two position double acting push-button switch and when in the "in" position connects the changer for playing records.

Chassis 5C04 has the same Phono-Radio switch arrangement. However, the 5C04 does not have socket P1 and the Record Reject switch. The record player is connected to the receiver by a shielded cable and socket arrangement.



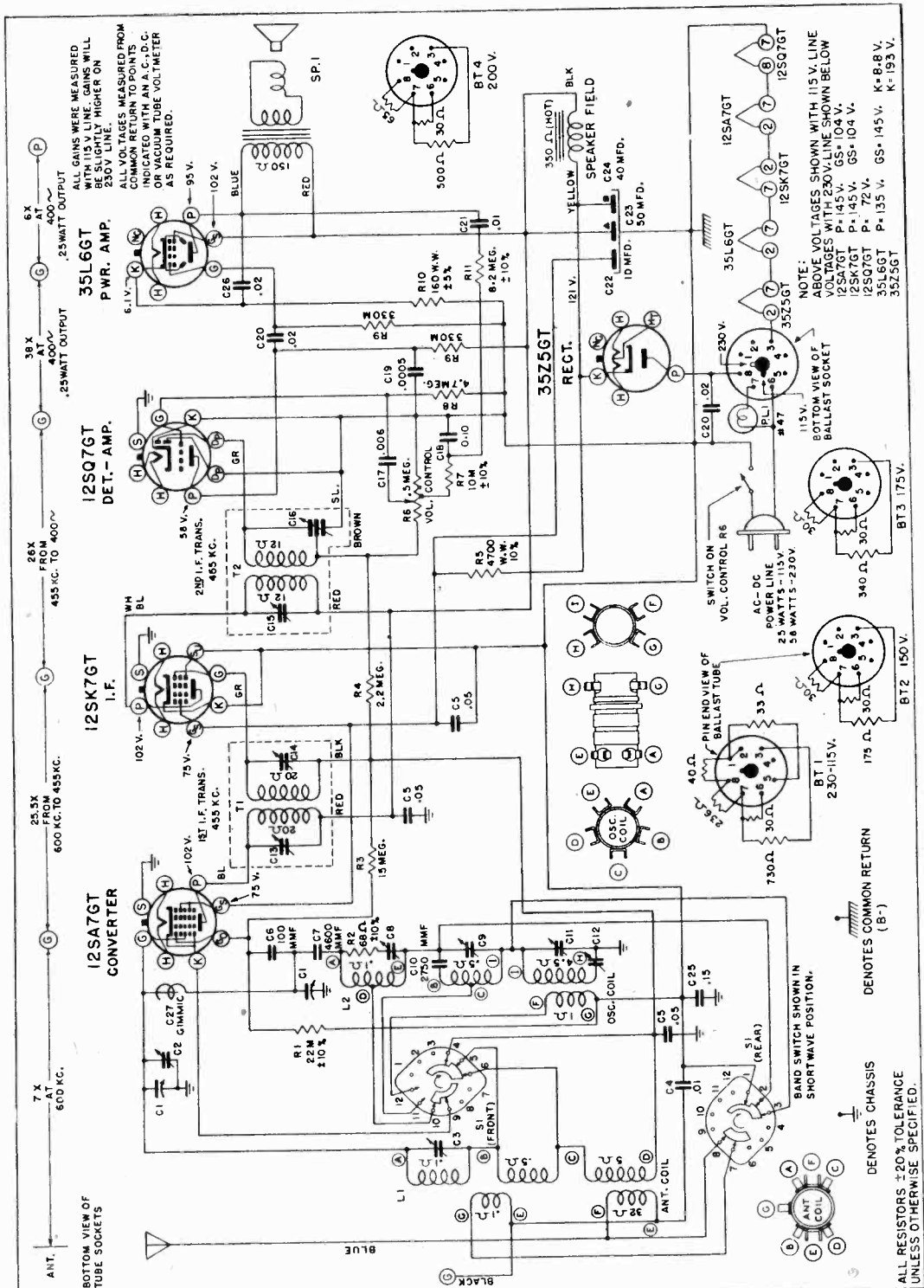
TUBE AND TRIMMER LOCATION

MODELS 5R080-5R086
CHASSIS Nos. 5C02-5C04
ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 KC.	C-6, C-7, C-8, C-9	Align I. F.
2	Single Turn Loop Loosely Coupled to Wave magnet		1600 Kc.	1600 Kc.	C-4	Set Oscillator to Dial Scale.
3			1400 Kc.	1400 Kc.	C-2	Align Ant

MODEL 5D012T
Chas. 5C60T

ZENITH RADIO CORP.



DIAG. PART NO.	DESCRIPTION
C1	22-1411 2-GANG VARIABLE
C2	22-1411 BROADCAST ANTENNA TRIM
C3	22-1424 SHORT-WAVE ANTENNA TRIM
C4	22-811 .01 MFD. 600V.
C5	22-818 .05 MFD. 400V.
C6	22-1442 .005 MFD. 500V.
C7	22-1432 4500 MMFD. 500V.
C8	22-483 SHORT-WAVE OSC. TRIMMER
C9	22-1433 S.W.2 OSC. TRIMMER
C10	22-1433 2750 MMFD. 600V.
C11	22-482 BROADCAST OSC. TRIMMER
C12	22-1433 BROADCAST PADDER TRIM
C13	ON T1 1ST L.F. TRANS. PHIL. TRIM.
C14	ON T1 1ST L.F. TRANS. SEC. TRIM.
C15	ON T2 2ND L.F. TRANS. PRI. TRIM.
C16	ON T2 2ND L.F. TRANS. SEC. TRIM.
C17	22-808 .05 MFD. 600V.
C18	22-1434 .005 MFD. 200V.
C19	22-817 .02 MFD. 600V.
C20	22-817 .02 MFD. 600V.
C21	22-810 .01 MFD. 400V.
C22	22-1446 50 MFD. ELECTRO. 150 V.
C23	22-1446 40 MFD. ELECTRO. 250 V.
C24	22-1021 .15 MFD. 400V.
C25	22-816 .02 MFD. 600V.
C27	511900 GIMMICK
R1	63-763 22 M OHM 1/4 W.
R2	63-737 68 OHM 1/4 W.
R3	63-1093 5 MEG OHM 1/4 W.
R4	63-722 2.2 MEG OHM 1/4 W.
R5	63-1140 4700 OHM W.W. 2 W.
R6	63-1354 5 MEG. VOL. CONTROL
R7	63-641 10 M OHM 1/4 W.
R8	63-602 4.7 MEG OHM 1/4 W.
R9	63-586 3300 OHM 1/4 W.
R10	63-1068 160 OHM W.W. 2 W.
R11	63-673 8.2 MEG OHM 1/4 W.
L1	51539 ANTENNA COIL ASSEM.
L2	51540 OSCILLATOR
P1	100-67 PILOT LIGHT 6.3 V. .15 A.
S1	85-348 BAND SWITCH
SP	45-52 4 1/4" DYNAMIC SPEAKER
T1	95-924 1ST L.F. TRANS.
T2	95-925 2ND L.F. TRANS.
BT1	100-85 BALLAST TUBE 230-115 V.
BT2	100-87 BALLAST TUBE 150 V.
BT3	100-89 BALLAST TUBE 175 V.
BT4	100-91 BALLAST TUBE 200 V.

ALL GAINS WERE MEASURED WITH 115 V. LINE. GAINS WILL BE HIGHER ON 230 V. LINE.

ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH AN A.C. D.C. OR VACUUM TUBE VOLTMETER AS REQUIRED.

NOTE: ABOVE VOLTAGES SHOWN WITH 115 V. LINE VOLTAGES WITH 230 V. LINE SHOWN BELOW

12SA7GT P-145 V. GS-104 V.
12SK7GT P-145 V. GS-104 V.
35L6GT P-72 V. GS-145 V. K-8.8 V.
35Z5GT P-135 V. GS-145 V. K-195 V.

ANT. COIL (FRONT)
ANT. COIL (REAR)
OSC. COIL
GALV. COIL
SPEAKER FIELD
SPEAKER FIELD

25WATT OUTPUT
25WATT OUTPUT
25WATT OUTPUT

35L6GT P.W.R. AMP.
12SQ7GT DET.-AMP.
12SK7GT I.F.
12SA7GT CONVERTER

35Z5GT RECT.

BT1 150V.
BT2 175V.
BT3 175V.
BT4 200V.

7 X AT 600 KC.
25.5X FROM 600 KC. TO 455 KC.
26 X FROM 455 KC. TO 400 KC.
38 X AT 400 V.
6 X AT 400 V.

7 X AT 600 KC.
25.5X FROM 600 KC. TO 455 KC.
26 X FROM 455 KC. TO 400 KC.
38 X AT 400 V.
6 X AT 400 V.

ANT. (FRONT)
ANT. (REAR)
OSC. COIL
GALV. COIL
SPEAKER FIELD
SPEAKER FIELD

25WATT OUTPUT
25WATT OUTPUT
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35L6GT P.W.R. AMP.
12SQ7GT DET.-AMP.
12SK7GT I.F.
12SA7GT CONVERTER

35Z5GT RECT.

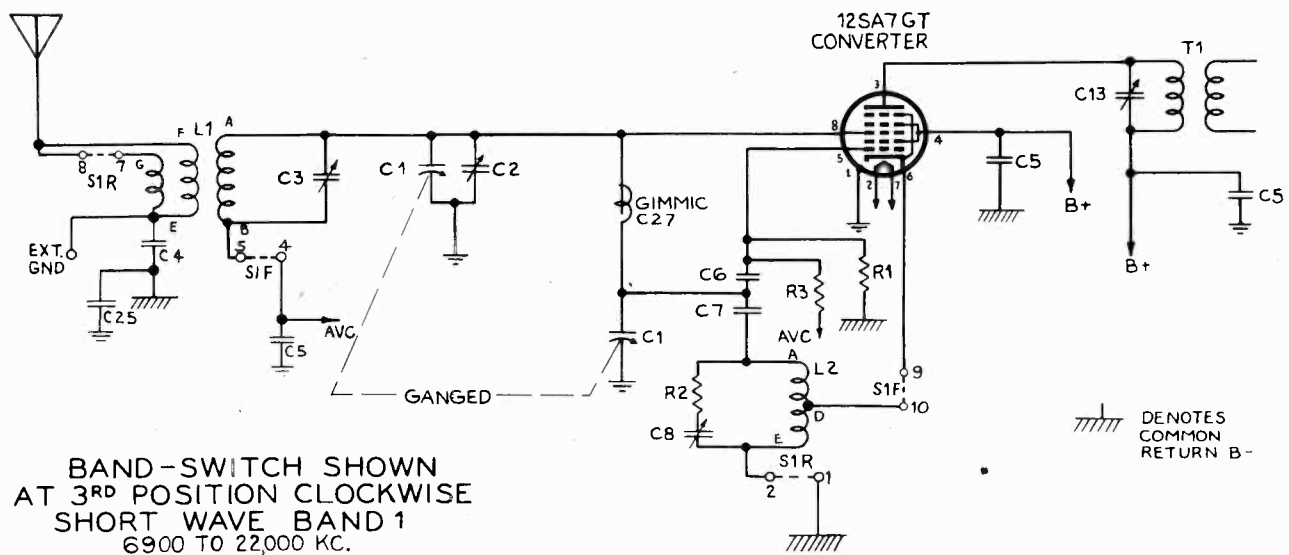
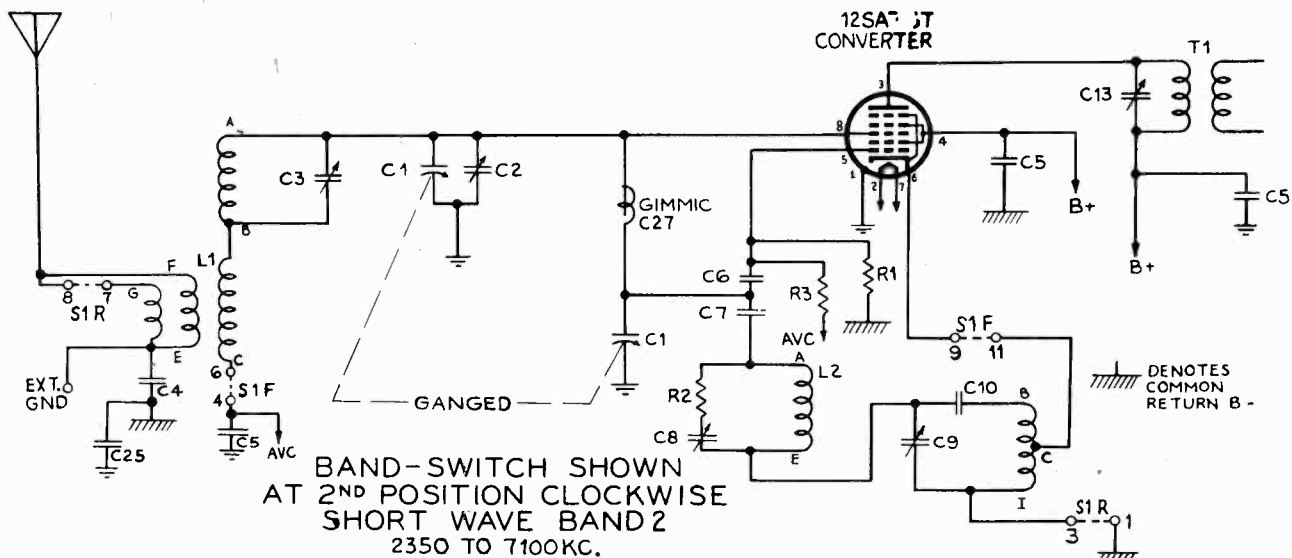
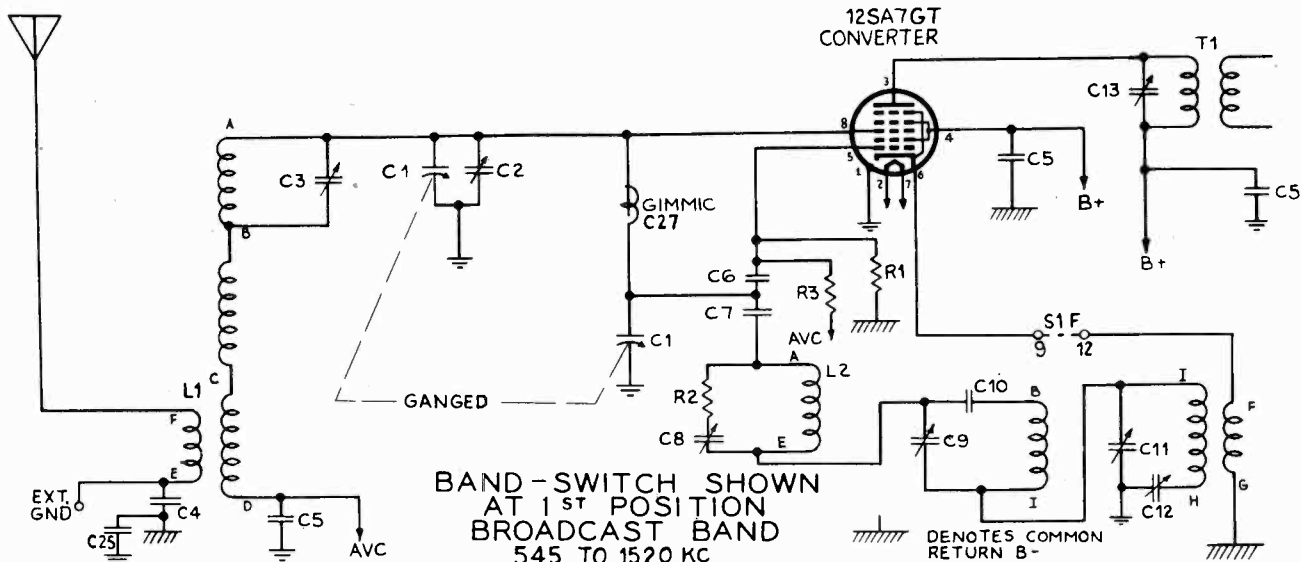
BT1 150V.
BT2 175V.
BT3 175V.
BT4 200V.

7 X AT 600 KC.
25.5X FROM 600 KC. TO 455 KC.
26 X FROM 455 KC. TO 400 KC.
38 X AT 400 V.
6 X AT 400 V.

7 X AT 600 KC.
25.5X FROM 600 KC. TO 455 KC.
26 X FROM 455 KC. TO 400 KC.
38 X AT 400 V.
6 X AT 400 V.

MISCELLANEOUS PARTS	
14911	TABLE CABINET (5D012T)
14911W	TABLE CABINET (5D012WT)
14911Y	TABLE CABINET (5D012YT)
512546	GRILLE CLOTH & GRILLE ASSEMBLY
46-559	TUNING CONTROL KNOB
46-570	VOLUME CONTROL KNOB
110-106	GRILLE CLOTH
2 108	CABINET BACK
117-93	BAND SWITCH LEVER
138-17	SPEAKER GRILLE
192-84	DIAL CRYSTAL
26-343	DIAL SCALE
511137	DIAL CORD & EYELET ASSEMBLY
511812	DIAL SCALE & COIL MTG. BRACKET ASSEMBLY
59 153	DIAL POINTER
80-160	DIAL CORD TENSION SPRING

ZENITH RADIO CORP.



MODEL 5D012T

ZENITH RADIO CORP.

Ceci sera fait également si un bourdonnement se produit lorsque le poste fonctionne sur courant alternatif.

La consommation totale de puissance lorsque le poste est opéré sur 115 volts, est de 25 watts; et de 58 watts lorsqu'il fonctionne sur 230 volts.

Le débit de puissance maximum sur 115 volts est de 1,4 et sur 230 volts est de 3 watts.

AVIS

Des résistances spéciales peuvent être obtenues pour usage avec débits de puissance aux voltages suivants: 150 volts... Pièce No. 100-87 175 volts... Pièce No. 100-89 200 volts... Pièce No. 100-91 Ces tubes de résistance doivent être insérés de façon à ce que l'emboîture d'attache soit à la position de 220 volts ou le poste ne pourra pas être mis en jeu.

ANTENNE

Une bonne antenne est nécessaire pour obtenir une réception satisfaisante.

on alternating current.

The total power consumption when operated on 115 volts is 25 watts, and when operated on 230 volts, 58 watts.

The maximum power output on 115 volts is 1.4 watts and on 230 volts is 3 watts.

IMPORTANT

Special ballasts are available for operation with power supplies of the following voltages: 150 Volt... Part No. 100-87 175 Volt... Part No. 100-89 200 Volt... Part No. 100-91 These ballast tubes must be inserted so the hold down bracket is in 220 volt position or the receiver will not operate.

ANTENNA

A good antenna is necessary for satisfactory reception. An outside antenna from 40 to 66 feet in length and as high as possible will give good all-around results. If your present antenna is to be used, a thorough examination should be made.

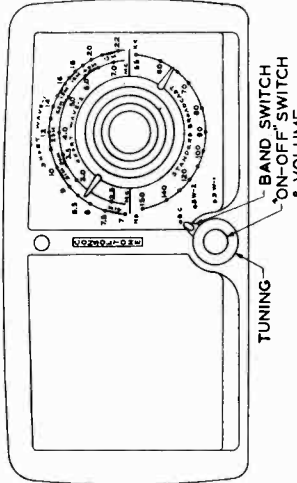


FIG. 1 CONTROLS

enchufe de la pared. Debe emplearse también este procedimiento en caso de escucharse un zumbido cuando el receptor funciona con corriente alterna. El consumo total de energía cuando funciona con 115 voltios, es de 25 vatios; y cuando funciona con 230 voltios, es de 58 vatios.

La máxima producción de energía funcionando con 115 voltios es de 1,4 vatios; y con 230 voltios, es de 3 vatios.

IMPORTANTE

Se dispone de resistencias especiales para funcionar con suministros de energía de los siguientes voltajes: 150 Voltios. Parte No. 100-87 175 Voltios. Parte No. 100-89 200 Voltios. Parte No. 100-91 Estos tubos de resistencia deben ser insertados de tal manera que el alfiler de inserción esté en la posición de 220 voltios, de lo contrario no funcionará el receptor.

Es indispensable una buena antena para obtener una recepción satisfactoria. Una antena exterior de 13 a 20 metros de longitud y de la mayor altura posible, dará buenos resultados para uso general. Si ha de usar su antena actual, ésta debe ser minuciosamente examinada para determinar su estado, ya que las conexiones pueden estar oxidadas o interrumpidas, haciéndola inapropiada para el uso. Si se ha de instalar una nueva antena hay que tomar las precauciones necesarias para

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Si el receptor no comienza a funcionar dentro de un minuto cuando se le conecta a una corriente continua, la ficha de contacto debe ser invertida en el

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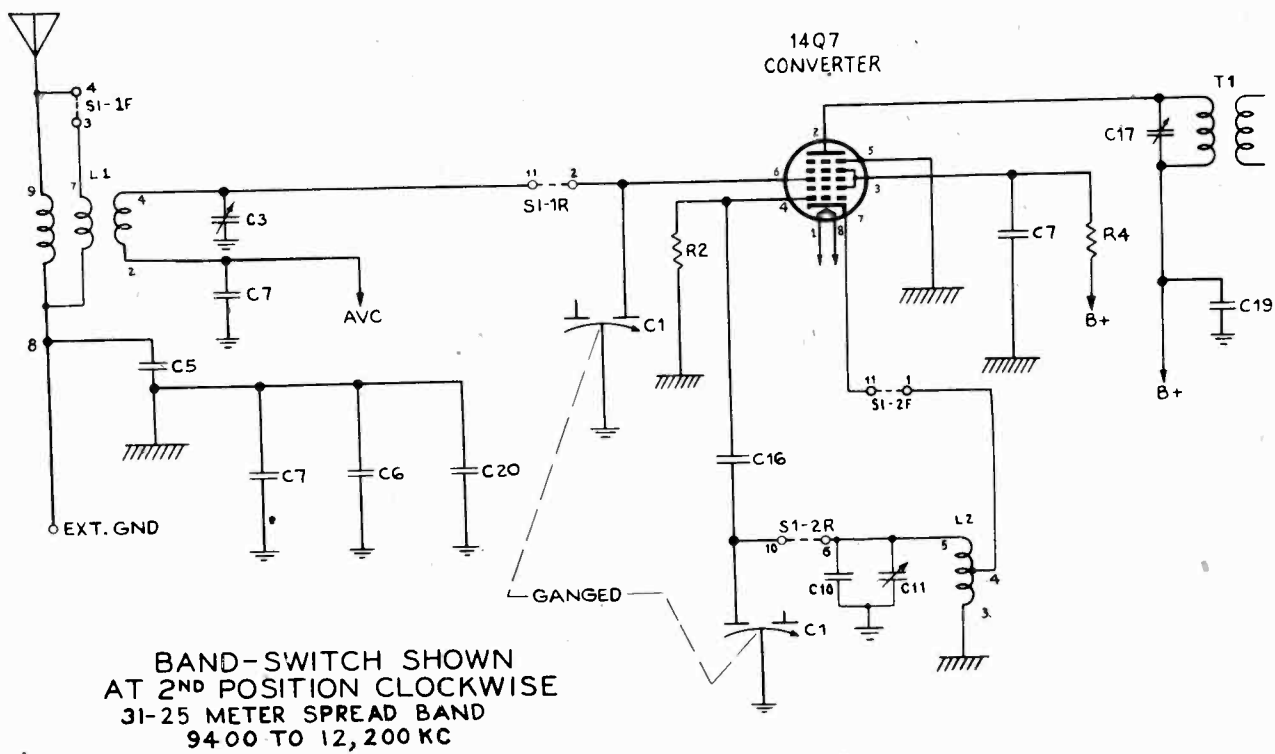
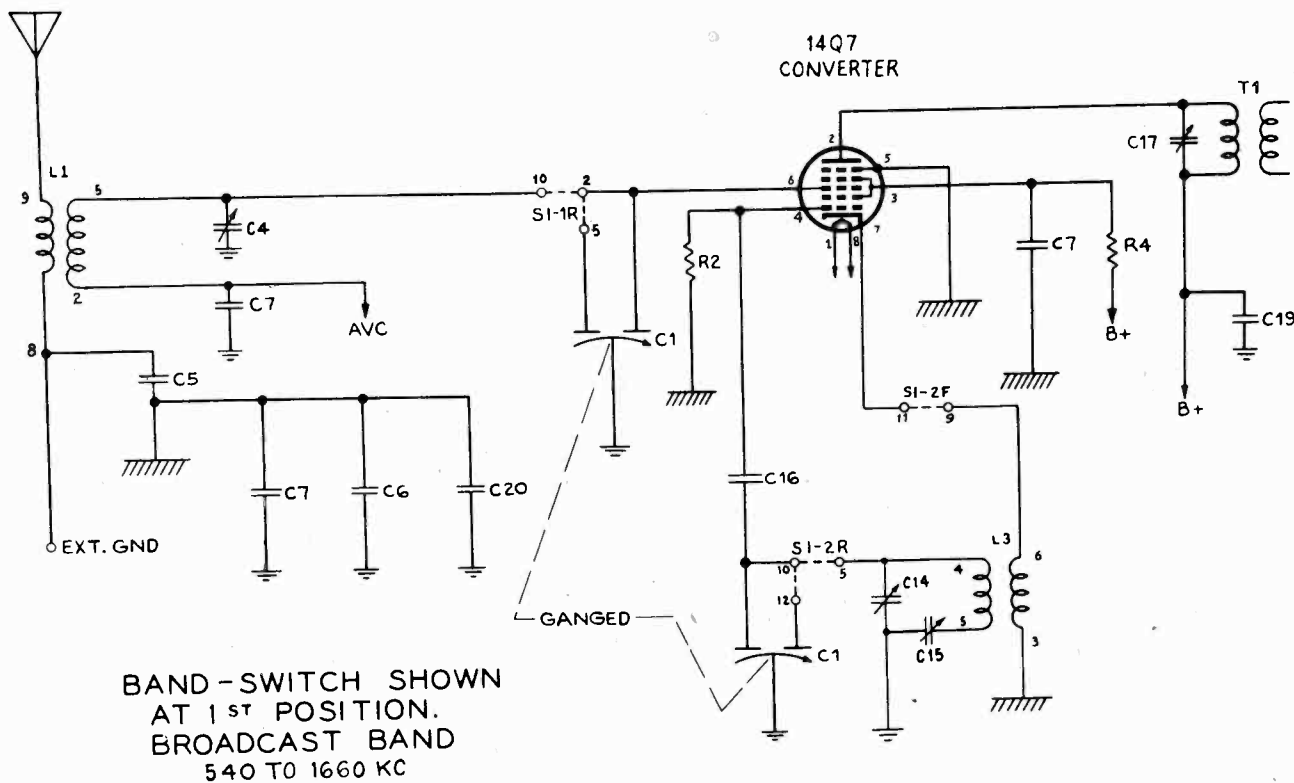
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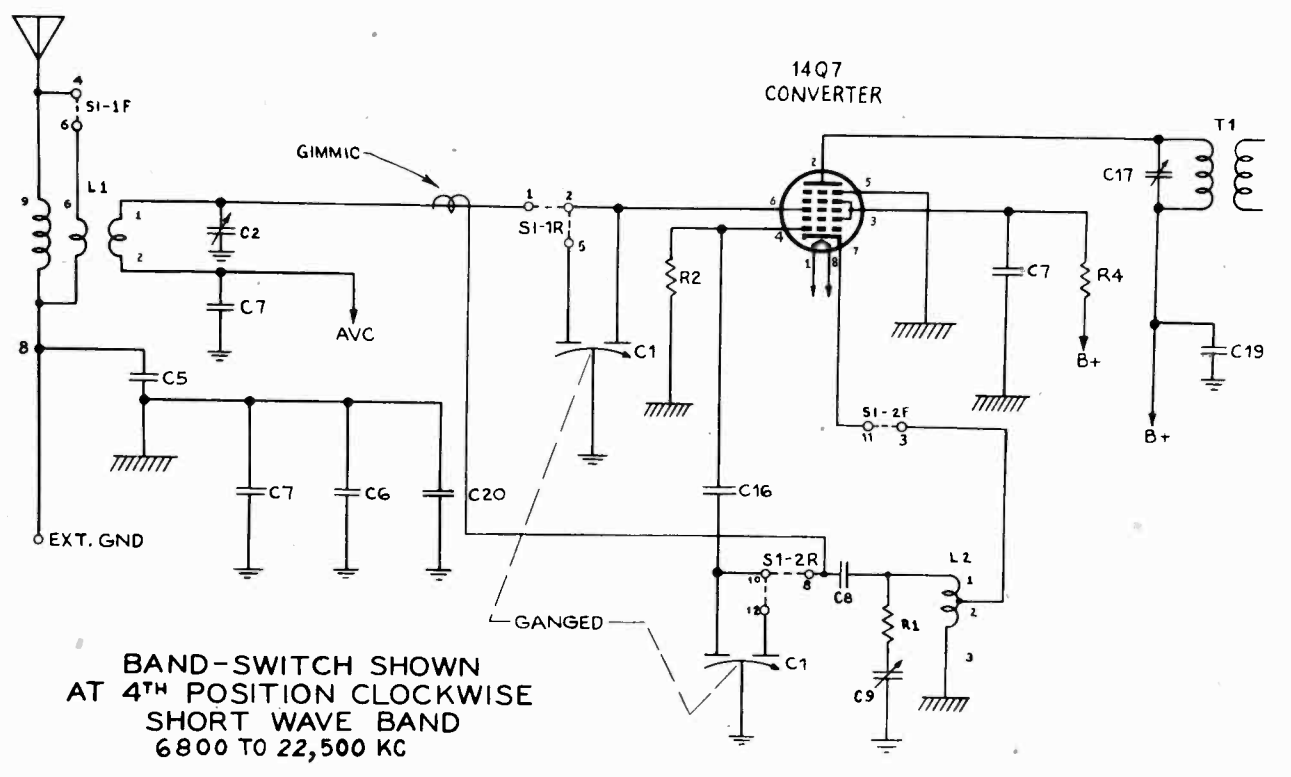
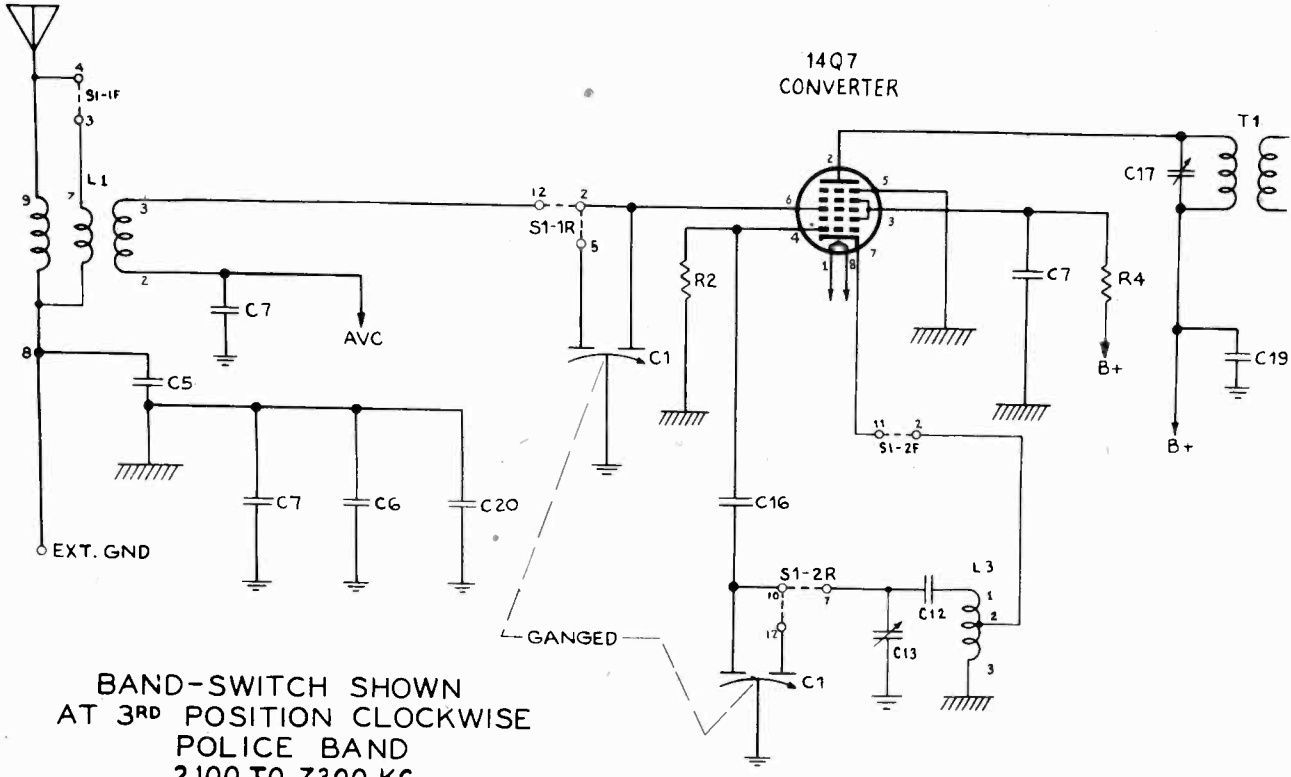
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ZENITH RADIO CORP.



ZENITH RADIO CORP.



ZENITH RADIO CORP.

MODEL 5D042T

d'énergie de 230 volts, et on peut rajuster pour l'opération sur courant de 115 volts en enlevant d'abord la vis de blocage dans la lampe ballast, enlevant la lampe de sa douille, et remplaçant dans la douille dans la position 115 volts comme indiqué dans la douille. Si le poste récepteur n'opère pas en dedans d'une minute quand il est relié au courant constant, on devrait renverser la prise de courant à la douille dans le mur. On devrait adapter cette procédure aussi si un murmure est apparent quand le poste récepteur est opéré dans le courant alternatif.

115 volt position as indicated on the socket.
If the receiver does not operate within one minute when connected to direct current, the power plug should be reversed at the wall socket. This procedure should also be followed if a hum is apparent when the receiver is operated on alternating current.
The total power consumption when operated on 115 volts is 26 watts, and when operated on 230 volts, 60 watts. The maximum power output on 115 volts is 2.1 watts and on 230 volts is 4.25 watts. Special ballast tubes are available for operation with

la válvula reguladora ("Ballast"), quitando el tubo de su zócalo y volviendo a insertarlo en el zócalo en la posición de 115 voltios tal como está indicado en el mismo.
Si el receptor no funciona después de estar conectado a la corriente continua durante un minuto, el tomacorriente tiene que ponerse en posición opuesta en el enchufe. Este procedimiento tiene que seguirse también, si se siente un zumbido cuando el receptor está funcionando sobre corriente alterna.
El consumo total de energía cuando está operando en 115 voltios, es de 26 vatios, y

quando está operando en 230 voltios, es de 60 vatios. La potencia de salida máxima en 115 voltios es de 2.1 vatios, y en 230 voltios es de 4.25 vatios.
Cuando se requiera, podemos suministrar tubos de resistencia especiales para funcionamiento con corrientes otras que de 115 ó 230 voltios, como sigue:
1.50 voltios—No. de ref. 100-87
175 voltios—No. de ref. 100-89
200 voltios—No. de ref. 100-91
Los tubos de resistencia deben colocarse en la posición de 230 voltios. De otra manera, el receptor no funcionará.
ANTENA
Una buena antena es indispensable para la recepción de radio y mientras más cuidadosa sea la instalación mejores serán

La consommation totale d'énergie quand en opération dans 115 volts est 26 watts, et quand en opération dans 230 volts est 60 watts.
Le maximum rendement d'énergie dans 115 volts est 2.1 watts et dans 230 volts est 4.25 watts.
Des valves spéciales (valves de résistance) sont disponibles pour des réseaux autres que de 115 ou 230 volts, comme suit:
150 volts—Piece No. 100-87
175 volts—Piece No. 100-89
200 volts—Piece No. 100-91
Ces valves de résistance doivent être insérées de manière que la barre de serrage se trouve en position de 230 volts. Autrement le récepteur ne fonctionnera pas.

La consommation totale d'énergie quand en opération dans 115 volts est 26 watts, et quand en opération dans 230 volts est 60 watts.
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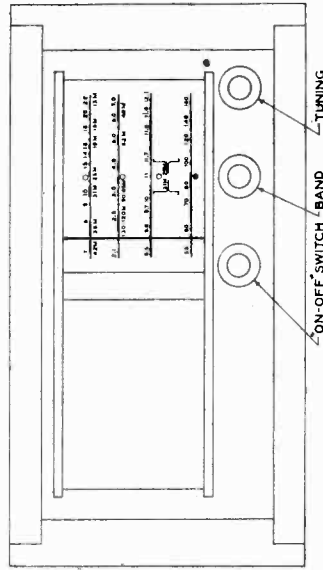


FIG. 1.—CONTROLS

quando está operando en 230 de 60 vatios. La potencia de salida máxima en 115 voltios es de 2.1 vatios, y en 230 voltios es de 4.25 vatios.
Cuando se requiera, podemos suministrar tubos de resistencia especiales para funcionamiento con corrientes otras que de 115 ó 230 voltios, como sigue:
1.50 voltios—No. de ref. 100-87
175 voltios—No. de ref. 100-89
200 voltios—No. de ref. 100-91
Los tubos de resistencia deben colocarse en la posición de 230 voltios. De otra manera, el receptor no funcionará.
ANTENA
Una buena antena es indispensable para la recepción de radio y mientras más cuidadosa sea la instalación mejores serán

quando está operando en 230 de 60 vatios. La potencia de salida máxima en 115 voltios es de 2.1 vatios, y en 230 voltios es de 4.25 vatios.
Cuando se requiera, podemos suministrar tubos de resistencia especiales para funcionamiento con corrientes otras que de 115 ó 230 voltios, como sigue:
1.50 voltios—No. de ref. 100-87
175 voltios—No. de ref. 100-89
200 voltios—No. de ref. 100-91
Los tubos de resistencia deben colocarse en la posición de 230 voltios. De otra manera, el receptor no funcionará.
ANTENA
Una buena antena es indispensable para la recepción de radio y mientras más cuidadosa sea la instalación mejores serán

quando está operando en 230 de 60 vatios. La potencia de salida máxima en 115 voltios es de 2.1 vatios, y en 230 voltios es de 4.25 vatios.
Cuando se requiera, podemos suministrar tubos de resistencia especiales para funcionamiento con corrientes otras que de 115 ó 230 voltios, como sigue:
1.50 voltios—No. de ref. 100-87
175 voltios—No. de ref. 100-89
200 voltios—No. de ref. 100-91
Los tubos de resistencia deben colocarse en la posición de 230 voltios. De otra manera, el receptor no funcionará.
ANTENA
Una buena antena es indispensable para la recepción de radio y mientras más cuidadosa sea la instalación mejores serán

quando está operando en 230 de 60 vatios. La potencia de salida máxima en 115 voltios es de 2.1 vatios, y en 230 voltios es de 4.25 vatios.
Cuando se requiera, podemos suministrar tubos de resistencia especiales para funcionamiento con corrientes otras que de 115 ó 230 voltios, como sigue:
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200 voltios—No. de ref. 100-91
Los tubos de resistencia deben colocarse en la posición de 230 voltios. De otra manera, el receptor no funcionará.
ANTENA
Una buena antena es indispensable para la recepción de radio y mientras más cuidadosa sea la instalación mejores serán

quando está operando en 230 de 60 vatios. La potencia de salida máxima en 115 voltios es de 2.1 vatios, y en 230 voltios es de 4.25 vatios.
Cuando se requiera, podemos suministrar tubos de resistencia especiales para funcionamiento con corrientes otras que de 115 ó 230 voltios, como sigue:
1.50 voltios—No. de ref. 100-87
175 voltios—No. de ref. 100-89
200 voltios—No. de ref. 100-91
Los tubos de resistencia deben colocarse en la posición de 230 voltios. De otra manera, el receptor no funcionará.
ANTENA
Una buena antena es indispensable para la recepción de radio y mientras más cuidadosa sea la instalación mejores serán

MODEL NO. 5D042T

Chassis No. 5C64T

INSTRUCCIONES PARA LA INSTALACION Y FUNCIONAMIENTO

INFORMACION GENERAL

Después de desembalar el receptor, el papel engomado usado en embalaje y embarque, tiene que quitarse del chasis. La tabla de montaje, usada solamente en los receptores con gabinetes de material plástico, puede removerse siguiendo las instrucciones que se encuentran sobre dicha tabla. Radios con gabinetes de madera no requieren una tabla de montaje, y están listos para funcionar después de quitar el papel engomado.
Este receptor es un moderno aparato superheterodino, de seis válvulas, incluyendo una reguladora, que sintoniza las bandas de onda larga y corta, como sigue: 540 a 1660 Kc. (555 a 180 metros), 2100 a 7300 Kc. (143 a 41 metros), 6800 a 22,500 Kc. (44 a 13.3 metros) y una gama de ondas especial desde 9400 a 12,200 Kc. (31.9 a 24.6 metros) con ensanchamiento de banda en 25 y 31 metros.
Está equipado con altoparlante electrodinámico y un regulador de tono de dos posiciones.

SUMINISTRO DE ENERGIA

El receptor puede ser usado con corriente alterna (C.A.) de 50 a 60 periodos o con corriente continua (C.C.). Sale de la fábrica ajustado para uso con 230 voltios y puede ser reajustado para funcionar con corriente de 115 voltios, removiendo el tornillo de cierre en

INSTALLATION, OPERATING AND SERVICE INSTRUCTIONS

GENERAL

After the receiver has been unpacked from the carton, the paper tape used for packing and shipping must be removed from the chassis. The mounting board, used only on receivers with plastic cabinets, may be removed by following the instructions placed on the board. Radios with wooden cabinets do not require a mounting board; they are ready for operation after removing the paper tape.
This receiver is a modern six tube (including ballast) superheterodyne, tuning over the following standard broadcast and short-wave bands: 540 to 1660 Kc (555 to 180 meters), 2100 to 7300 Kc (143 to 41 meters), 6800 to 22,500 Kc (44 to 13.3 meters), and a special range covering 9400 to 12,200 Kc (31.9 to 24.6 meters) with spread bands at 25 and 31 meters.
It is equipped with an electrodynamic speaker and a two position tone control.

POWER SUPPLY

The receiver may be used on either alternating current (A. C.) or 50 to 60 cycles or direct current (D. C.) It leaves the factory adjusted for use on 230 volt power supply, and may be readjusted to operate on 115 volt power lines by first removing the locking screw on the ballast tube, removing the tube from its socket, and reinserting in the socket in the

LES INSTRUCTIONS POUR L'INSTALLATION ET LE FONCTIONNEMENT

GENERAL

Après déballage du récepteur de la boîte en carton, la bande de papier-cache employée pour l'emballage et l'expédition doit être enlevée du chassiss. Le panneau de montage, utilisé seulement avec des récepteurs avec meubles en matière plastique, peut être enlevé en suivant les instructions données sur le panneau. Les récepteurs à T.S.F. avec meubles en bois n'ont pas besoin d'un panneau de montage; ils sont prêts à fonctionner après que la bande de papier-cache a été enlevée.
Le présent poste est un récepteur superhétérodyne, muni à six lampes, compris la lampe ballast, dont l'accord englobe les bandes standard suivantes d'ondes moyennes et d'ondes courtes: 540 à 1660 Kc. (555 à 180 mètres), 2100 à 7300 Kc. (143 à 41 mètres), 6800 à 22,500 Kc. (44 à 13.3 mètres), et une échelle spéciale qui couvre de 9400 à 12,200 Kc. (31.9 à 24.6 mètres) avec épanouissement des bandes à 25 et 31 mètres.
Il est équipé d'un haut-parleur électrodynamique et d'une commande de ton à deux positions.

ALIMENTATION DE COURANT

On peut user le poste récepteur dans le courant alternatif (C.A.) 50 à 60 périodes ou le courant continu (C.C.) Il est sorti de l'usine réglé pour fonctionner sur une provision

los resultados. Una antena exterior de 13 a 20 metros instalada lo más alto posible es la más apropiada para uso general. Si se ha de usar una antena ya instalada, ésta debe examinarse minuciosamente para determinar su estado pues puede haber conexiones oxidadas o rotas, que nullifican la eficacia de la antena. Por otra parte si ha de instalarse una antena nueva, hay que tomar las precauciones necesarias para que el alambre de bajada no haga contacto con la pared o con cualquier objeto que resulte en una conexión a tierra. Todas las conexiones deben estar correctamente soldadas para prevenir contra la oxidación y los ruidos que se producen a consecuencia de esto. Conéctese el alambre de bajada de la antena a la terminal marcada "A" en la parte trasera del chasis.

GROUND

A good ground will aid reception materially by improving the signal strength of distant stations and reducing background noise. The best ground is a 4 to 6 foot pipe driven down to damp earth; the ground lead-in should be securely soldered to this.

A suitable ground may be obtained by making a good connection to a water pipe or radiator. Connect the ground lead-in to the post marked "G" at the rear of the chassis.

PLACING THE RECEIVER IN OPERATION

Note Fig. 1. This shows the position and purpose of each control. Turning the combination "Off-On" switch and volume control to the right will turn the receiver ON. Approximately one minute will be required for the tubes to heat to operating temperature. Continued rotation of this knob to the right increases the volume. Turning this control to the left decreases the volume and, when a click is heard, turns the receiver OFF.

When tuning in a station turn the tuning knob slowly to the desired station. Care should be taken to tune the receiver to the exact middle of the wave; otherwise the tone will be impaired.

The tone may be changed by means of the switch at the back of the radio from "High" to "Low."

The receiver has four tuning scales, any one of which may be selected by means of the

Una buena antena s'impone para obtener una recepción satisfactoria, y vale bien el effort necesario para su construcción. Una antena exterior de 13 a 20 metros de-long et placée aussi haut que possible donnera d'excellents résultats pour tout service. Si vous voulez proposer d'installer votre antenne actuelle, il conviendra d'en faire un examen approfondi pour en déterminer l'état car les connexions peuvent en être rouillées ou rompues, ce qui rendrait l'antenne impropre à l'emploi. Si on décide de construire une nouvelle antenne, il convient de veiller à ce que le fil d'entrée ne rejoigne pas la terre par des arbres, des murs ou des gouttières, et toutes les connexions devront être soignées avec soin pour prévenir la corrosion et les parasites qui en résulteraient. Relyez le fil d'entrée de l'antenne au montant marqué "A" à l'arrière du chassis.

PRISE DE TERRE

Une bonne prise de terre aidera notablement la réception en améliorant la force du signal pour les stations distantes et en réduisant le bruit de fond. La meilleure prise de terre consiste d'un tuyau de 1 à 1.50 mètres qu'on enfonce dans le sol et qui est solidement soudé.

On peut réaliser une prise de terre convenable en établissant une bonne connexion au tuyau d'eau ou à un radiateur. Relyez la prise de terre au montant marqué "G" à l'arrière du chassis.

MISE DU RECEPTEUR EN SERVICE

Notes la figure 1. Elle montre la position et l'objet de chaque contrôle. En tournant le commutateur "OFF-ON" et contrôlez le volume, vers la droite, le récepteur sera mis en circuit. Il faut compter environ 1 minute pour que les lampes se chauffent à la température de fonctionnement. En continuant de tourner ce bouton vers la droite, le volume augmente et intensité. En tournant ce même contrôle vers la gauche, on diminue le volume de so-

El tono se cambia por medio de un interruptor en la parte atrás del receptor, de "High" (alto) a "Low" (bajo).

El receptor tiene cuatro gamas de onda, y cualquiera de ellas puede seleccionarse por medio del conmutador de bandas. La banda que se está usando estará indicada por medio de la escala correspondiente.

La mejor calidad de tono possible. El tono se cambia por medio de un interruptor en la parte atrás del receptor, de "High" (alto) a "Low" (bajo).

El receptor tiene cuatro gamas de onda, y cualquiera de ellas puede seleccionarse por medio del conmutador de bandas. La banda que se está usando estará indicada por medio de la escala correspondiente.

La luz del día tiene una decidida influencia sobre la recepción de la onda corta y diferentes longitudes de onda alcanzan mayor eficacia a diferentes horas del día. El uso como guía para sintonizar a diferentes horas del día y la noche.

VALVULAS

Este receptor usa las válvulas siguientes:

1407 7B7 - 7C6 - 50C6G
- 35Z5GT - 100-85. 58Le6g

La fig. 2 muestra la posición de las válvulas.

Este receptor está equipado con un "jack" y una ficha de fonógrafo situada en la parte posterior del chasis. Para utilizar el receptor con un tocadiscos, coloque el conmutador de bandas en una de las bandas de onda corta y controle el volumen de la producción del disco con el Control de Volumen del receptor.

band switch. The scale in use will be indicated by a red dot in the center of the corresponding scale.

Daylight has a decided effect on the reception of short wave stations and different wave lengths are most effective at different times of the day. The following table may be used as a guide.

SHORT WAVE BAND	TIME OF BEST RECEPTION
14 meters	A. M. (Morning hours)
19 and 23 meters	P. M. (Afternoon)
25 meters	P. M. (Early evening)
31 and 49 meters	P. M. (Late evening)

The following tubes are employed in this receiver.

1407 - 7B7 - 7C6 - 50C6G
- 35Z5GT - 100-85. 58Le6g

Figure 2 shows the correct socket for each tube.

PHONO

This receiver is equipped with a phono jack and plug located on the rear of the chassis. To use the receiver with a record player, set the Band Switch to one of the short wave bands and control the volume of the record reproduction with the receiver Volume Control.

notici et, quand on entend un léger clic, c'est qu'on a mis le récepteur hors circuit.

Quand vous accordez une station, tournez le bouton de sintonisation lentement jusqu'à ce que vous ayez obtenu la station désirée. Il convient de veiller à accorder le poste exactement au milieu de la longueur d'onde correspondante; autrement le ton en sera affecté.

Le ton peut être modifié au moyen du commutateur qui se trouve à l'arrière du poste, et cela de la position "High" (haut) à "Low" (bas).

Le récepteur possède quatre échelles d'accord parmi lesquelles on peut sélectionner l'une quelconque d'entre elles au moyen du commutateur sélecteur de bandes. La bande en usage sera indiquée par un point rouge au centre de l'échelle correspondante.

La réception radiophonique sur ondes courtes est définitivement affectée par la lumière du jour et la réception sur différentes longitudes d'ondes est plus ou moins efficace à différents moments de la journée. Nous donnons à gauche un barème qui peut être suivi pour l'écoute des différentes stations pendant le jour ou la nuit.

Les lampes suivantes sont employées sur ce poste:

1407 - 7B7 - 7C6 - 50C6G
- 35Z5GT - 100-85.

La figure 2 montre la douille correcte pour chaque lampe.

LAMPES

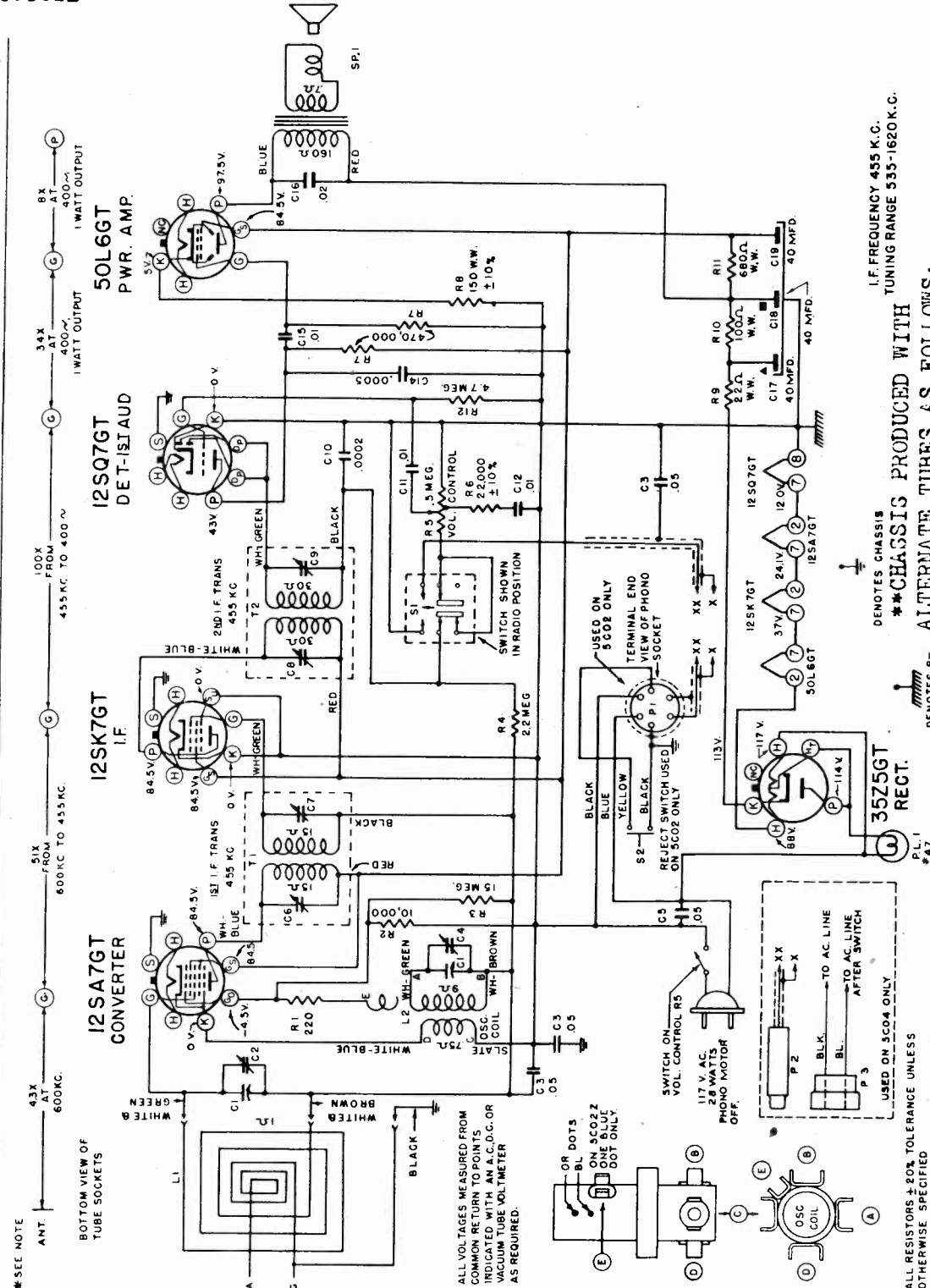
Le récepteur est muni d'un "Phono Jack" et d'un Fiche placés au dos du Chassis. Pour faire fonctionner l'appareil avec le gramophone placez le Commutateur de Bandes à l'une des bandes d'ondes courtes et contrôlez le volume du son du disque par le bouton de contrôle de volume du récepteur.

PHONO

Le récepteur est muni d'un "Phono Jack" et d'un Fiche placés au dos du Chassis. Pour faire fonctionner l'appareil avec le gramophone placez le Commutateur de Bandes à l'une des bandes d'ondes courtes et contrôlez le volume du son du disque par le bouton de contrôle de volume du récepteur.

MODELS 5R080, Ch. 5C04,
5R086, Ch. 5C02, 5R086Z,
Chas. 5C02Z

ZENITH RADIO CORP.



I.F. FREQUENCY 455 K.C.
TUNING RANGE 535-1620 K.C.

CHASSIS PRODUCED WITH
ALTERNATE TUBES AS FOLLOWS:

- ORIGINAL: 12SA7GT, 12SA7GT, 35Z5GT
- ALTERNATE: 12BE6, 14Q7, 35W4

NOTES CHASSIS

REJECT SWITCH USED ON 5C02 ONLY

USED ON 5C04 ONLY

ALL RESISTORS ± 20% TOLERANCE UNLESS OTHERWISE SPECIFIED

MODELS 5R080-5R086
CHASSIS Nos. 5C02-5C04

QTY	PART	DESCRIPTION
C1	22-1419	2-GANG VARIABLE (5C02)
C2	22-1356	2-GANG VARIABLE (5C04)
C3	22-829	.05 MFD. 200 V.
C4	22-1017	.05 MFD. 200 V.
C5	22-1017	.05 MFD. 200 V.
C6	ONT1	12I.F. TRANS. PRI. TRIMMER
C7	ONT2	12I.F. TRANS. SEC. TRIMMER
C8	ONT2	200 F. SEC.
C9	ONT2	200 F. SEC.
C10	22-953	.0002 MFD. 600 V.
C11	22-669	.01 MFD. 600 V.
C12	22-826	.01 MFD. 200 V.
C14	22-854	.0005 MFD. 600 V.
C15	22-196	.01 MFD. 600 V.
C16	22-1379	.02 MFD. 400 V.
C17	22-1381	40MFD. ELECTRO. 150 V.
C18	22-1381	40MFD. 150 V.
C19	22-1381	40MFD. 150 V.
R1	63-579	220 OHM 1/4 W.
R2	63-589	10M OHM 1/4 W.
R3	63-976	15 MEG OHM 1/4 W.
R4	63-600	2.2 MEG OHM 1/4 W.
R5	63-1348	5 MEG. VOLUME CONTROL 1/4 W.
R6	63-644	22M OHM 1/4 W.
R7	63-597	470M OHM 1/4 W.
R8	63-686	150 OHM WIRE WOUND 1/4 W.
R9	63-1219	22 OHM WIRE WOUND 1/4 W.
R10	63-1220	100 OHM WIRE WOUND 1/4 W.
R11	63-1221	680 OHM WIRE WOUND 1/4 W.
R12	63-602	4.7 MEG OHM 1/4 W.
L1	S11296	WAVE MAGNET ASSEMBLY
L2	S1284	OSC. COIL
T1	95-919	12I.F. TRANS.
T2	95-906	200I.F. TRANS.
P.L.	100-67	PILOT LIGHT 6.3V. 15A
S1	85-337	PHONO-RADIO SWITCH
S2	85-338	REJECT SWITCH
P1	S11293	PHONO CABLE
P2	S11287	USED ON 5C02 & 5C02Z
P3	52-188	USED ON 5C04 ONLY
SP.1	49-518	5" SPEAKER "P.M."

NOTE: ON 5C02Z ALL PARTS MARKED WITH * CHANGE TO THE FOLLOWING.

- C1 22-1527 2-GANG VARIABLE
- L1 S12877 WAVE MAGNET ASSEM
- L2 S12852 OSC. COIL
- 26-367 DIAL SCALE

For Alignment, see P.15-9. Record Changer: Zenith Model S11468 used with Model 5R086

ZENITH RADIO CORP.

MODELS 5S042AT, 5S042ET
5S042CT, Chas. 5C63

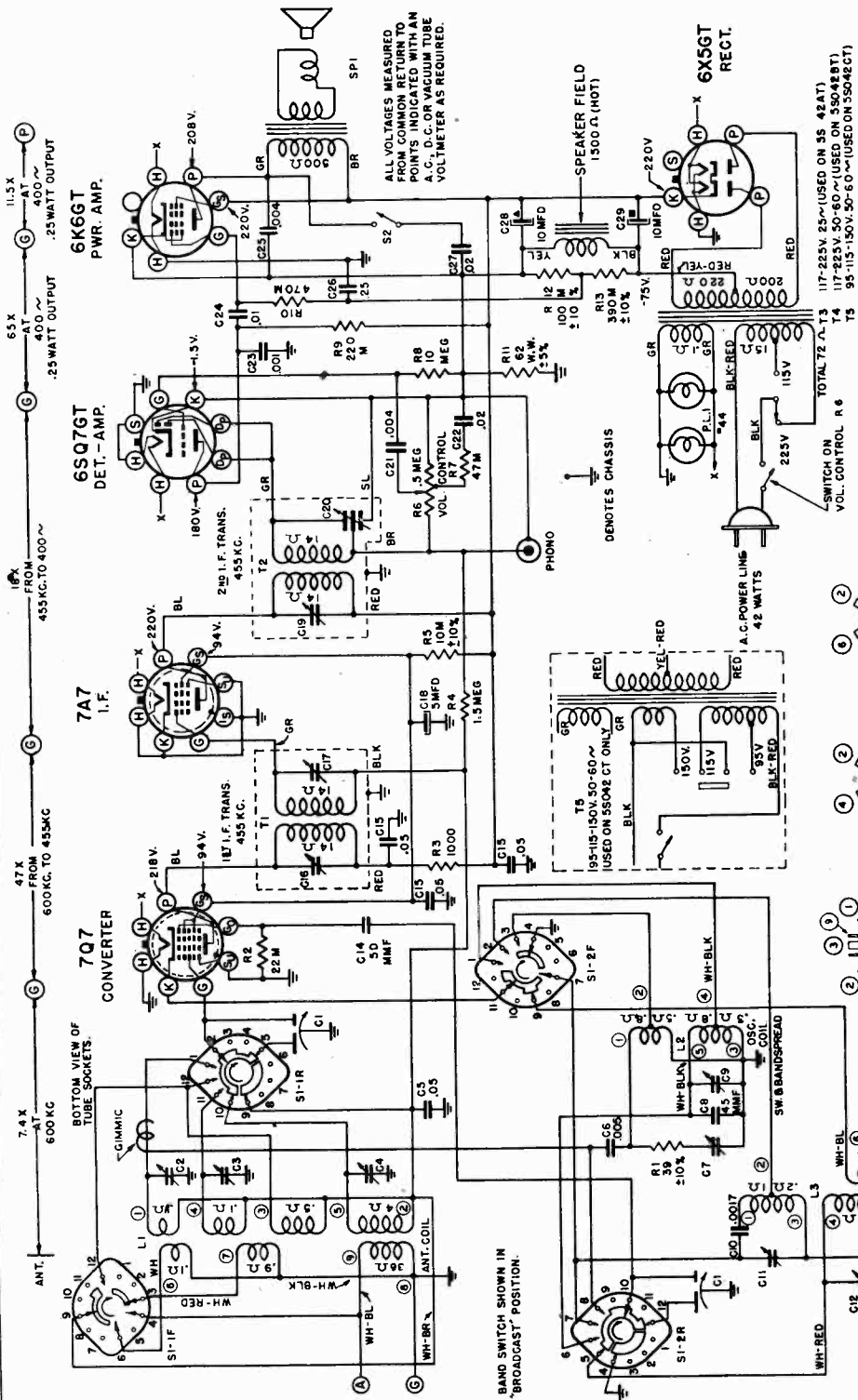


FIG. PART NO.	DESCRIPTION	QTY.	REMARKS
C1	22-1250 P-CANG VARIABLE	1	1/4 W.
C2	22-1252 SHORTWAVE ANT. TRIM.	1	1/4 W.
C3	22-1254 SHORTWAVE ANT. TRIM.	1	1/4 W.
C4	22-818 500 PFD.	1	1/4 W.
C5	22-1022 1000 PFD.	1	1/4 W.
C6	22-1050 SHORTWAVE OSC. TRIM.	1	1/4 W.
C7	22-1264 45 MFD. COMP.	1	1/4 W.
C8	22-1090 25 METER OSC. TRIM.	1	1/4 W.
C9	22-1258 500 PFD.	1	1/4 W.
C10	22-1253 BROADCAST OSC. TRIM.	1	1/4 W.
C11	22-1253 BROADCAST OSC. TRIM.	1	1/4 W.
C12	22-1253 BROADCAST OSC. TRIM.	1	1/4 W.
C13	22-289 50 MFD.	1	1/4 W.
C14	22-819 .05 MFD.	1	1/4 W.
C15	ON T1 187 I.F. TRANS. PRI. TRIM.	1	1/4 W.
C16	ON T1 187 I.F. TRANS. SEC.	1	1/4 W.
C17	ON T1 187 I.F. TRANS. SEC.	1	1/4 W.
C18	22-1123 5 MFD. ELECTRO. 300V.	1	1/4 W.
C19	ON T2 220 I.F. TRANS. PRI. TRIM.	1	1/4 W.
C20	ON T2 220 I.F. TRANS. PRI. TRIM.	1	1/4 W.
C21	22-1005 1000 PFD.	1	1/4 W.
C22	22-813 .02 MFD.	1	1/4 W.
C23	22-1063 .001 MFD.	1	1/4 W.
C24	22-806 .004 MFD.	1	1/4 W.
C25	22-1199 .25 MFD.	1	1/4 W.
C26	22-816 .02 MFD.	1	1/4 W.
C27	22-1086 10 MFD. ELECTRO. 350 V.	1	1/4 W.
C28	22-1086 10 MFD. ELECTRO. 350 V.	1	1/4 W.
C29	22-1086 10 MFD. ELECTRO. 350 V.	1	1/4 W.
R1	63-621 39 OHM	1	1/4 W.
R2	63-591 22 M OHM	1	1/4 W.
R3	63-583 1000 OHM	1	1/4 W.
R4	63-721 1.5 MEG OHM	1	1/4 W.
R5	63-1198 10 M OHM	1	1/4 W.
R6	63-1249 1.5 MEG. VOL. CONTROL	1	1/4 W.
R7	63-593 47 M OHM	1	1/4 W.
R8	63-504 10 MEG OHM	1	1/4 W.
R9	63-596 220 OHM	1	1/4 W.
R10	63-597 470 OHM	1	1/4 W.
R11	63-1090 62 OHM WIREWOUND 2W	1	1/4 W.
R12	63-260 100 M OHM	1	1/4 W.
R13	63-638 390 M OHM	1	1/4 W.
L1	S9962 ANTENNA COIL ASSEM.	1	
L2	S10040 OSC. COIL (S.W.B.S.)	1	
L3	S10039 OSC. COIL (B.C.B. POL.)	1	
P.L.1	100-36 DIAL LIGHT 16.3V. 25A	1	
S1	83-298 BAND SELECTOR SWITCH	1	
S2	83-134 TONE CONTROL SWITCH	1	
T1	95-716 187 I.F. TRANSFORMER	1	
T2	95-931 229 I.F.	1	
T3	95-949 PWR. TRANS. 117-225V. 25W	1	
T4	95-836 PWR. TRANS. 117-225V. 50W	1	
T5	95-832 PWR. TRANS. 117-225V. 50W	1	
SPI	49-842 15/4 SPEAKER	1	

ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH AN A.C. D.C. OR VACUUM TUBE VOLTMETER AS REQUIRED.

ALL RESISTORS ARE ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED

I.F. FREQUENCY 455 KC. TUNING RANGE 540-1660 KC. TUNING RANGE 2100-7300 KC. TUNING RANGE 6800-22,500 KC. TUNING RANGE 5400-12,800 KC.

PHONO
Ce recepteur est pourvu d'une "Cheville de Phonographe" et une prise, qui se trouvent au dos du châssis. Pour employer le poste avec un appareil phonographique externe ("record player"), tournez le commutateur sélectionneur de bandes à une des bandes d'ondes courtes, et réglez le volume du son au moyen du contrôle du volume du poste.

PHONO
The Phono Jack and Plug is located on the rear of the receiver chassis. When using a record player with this receiver set the band switch to one of the short wave bands. Control the phono volume with the receiver Volume Control.

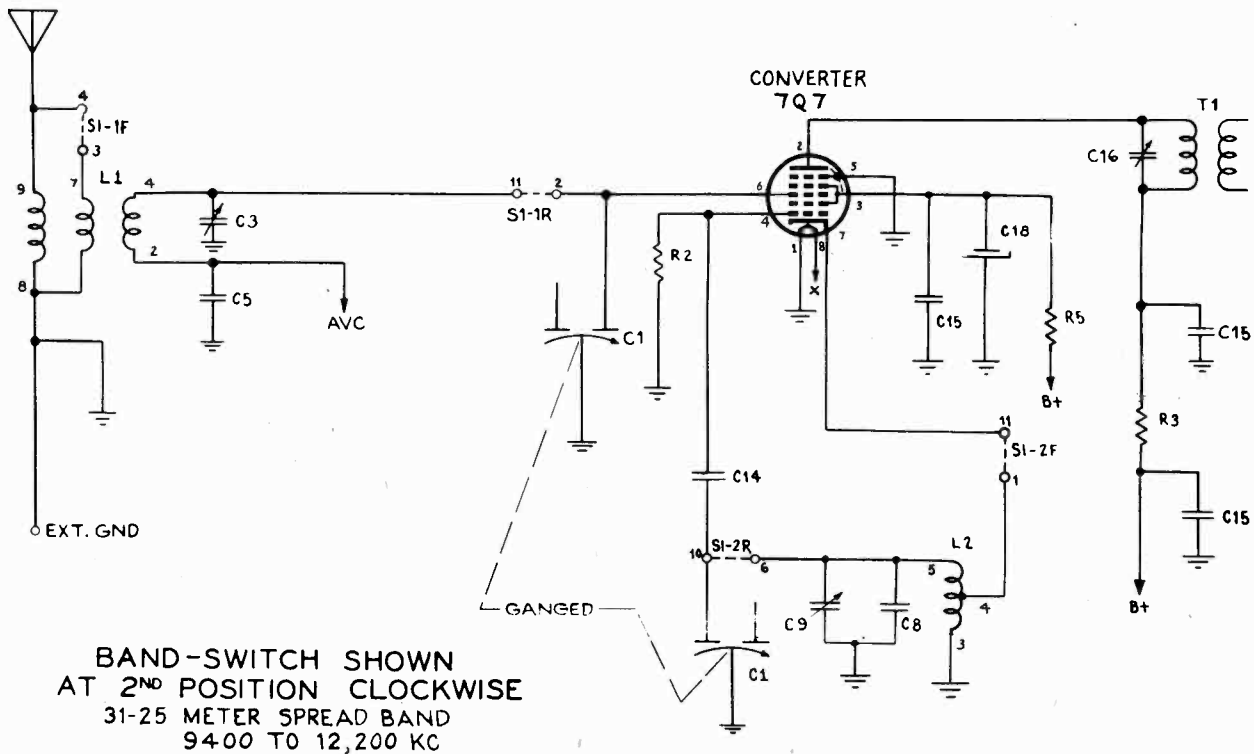
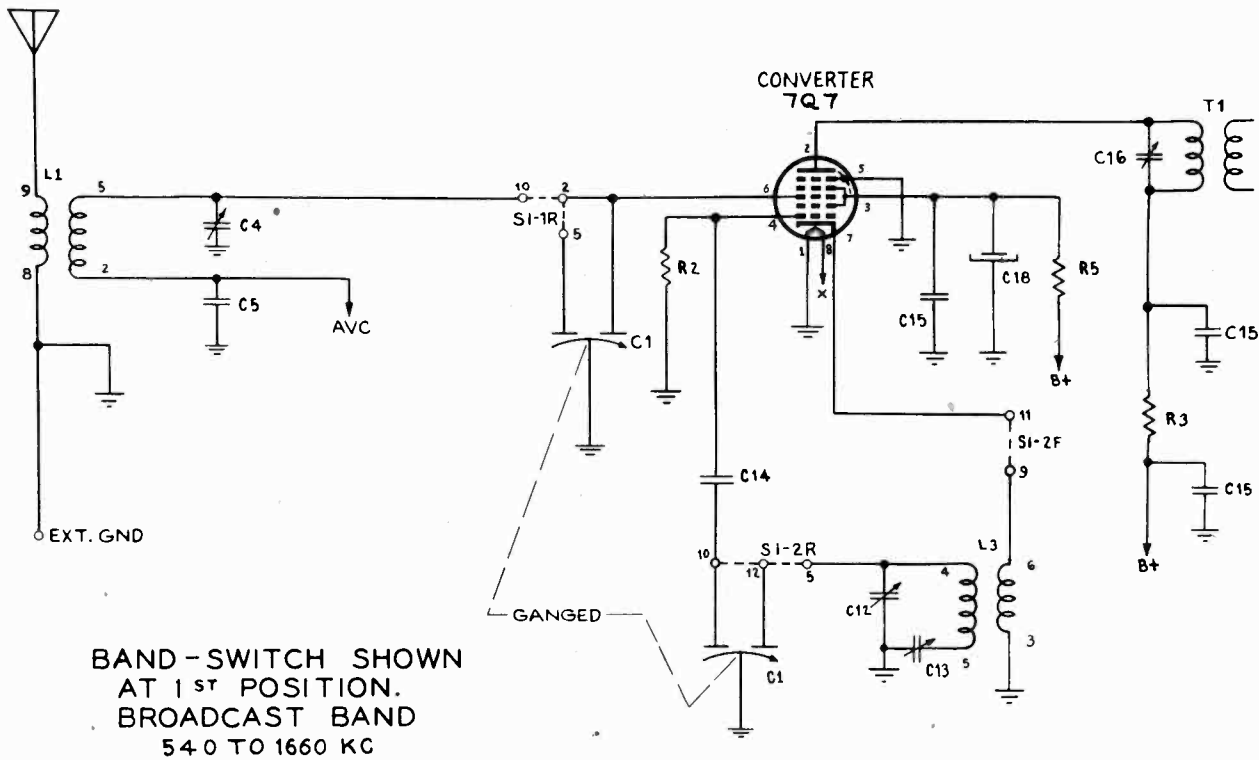
PHONO
Este receptor esta provisto de una conexión para el fonógrafo, y una clavija o toma, situadas en la parte posterior del chasis. Para usar el receptor con un "Tocadiscos," ajuste el cambio de banda a una de las bandas de onda corta y controle el volumen del sonido con el control de volumen del receptor.

"clarified schematics"

PAGE 15-22 ZENITH

MODELS 5S042AT, 5S042BT,
5S042CT

ZENITH RADIO CORP.



MODELS 5S042AT, 5S042BT,
5S042CT

ZENITH RADIO CORP.

**MODEL NO. 5S042AT,
5S042BT, 5S042CT**

Chassis No. 5C63

**INSTRUCCIONES
PARA LA
INSTALACION Y
FUNCIONAMIENTO**

INFORMACION GENERAL

Después de desembalar el receptor el papel engomado usado en embalaje y embarque tiene que quitarse del chasis.

Este receptor es un moderno aparato superheterodino, de cinco tubos, que sintoniza las bandas de onda larga y corta siguientes: 540 a 1660 Kc. (555 a 180 metros), 2100 a 7300 Kc. (143 a 41 metros), 6800 a 22,500 Kc. (44 a 13.3 metros) y una escala especial de ondas desde 9400 a 12,200 Kc. (31.9 a 24.6 metros) con ensanchamiento de banda en 25 y 31 metros.

**INSTALLATION,
OPERATING
AND SERVICE
INSTRUCTIONS**

GENERAL

After the receiver has been unpacked from the carton, the paper tape used for packing and shipping must be removed from the chassis.

This receiver is a modern five tube superheterodyne, tuning over the following standard broadcast and short-wave bands: 540 to 1660 Kc. (555 to 180 meters), 2100 to 7300 Kc. (143 to 41 meters), 6800 to 22,500 Kc. (44 to 13.3 meters), and a special range covering 9400 to 12,200 Kc. (31.9 to 24.6 meters) with spread bands at 25 and 31 meters.

**LES INSTRUCTIONS
POUR LA
INSTALLATION ET
FONCTIONNEMENT**

GENERAL

Après déballage du récepteur de la boîte en carton, la bande de papier-cache employée pour l'emballage et l'expédition doit être enlevée du châssis.

Le présent poste est un récepteur superhétérodyne moderne à cinq lampes, dont l'accord englobe les bandes standard suivantes d'ondes longues et d'ondes courtes: 540 à 1660 Kc. (555 à 180 mètres), 2100 à 7300 Kc. (143 à 41 mètres), 6800 à 22,500 Kc. (44 à 13.3 mètres), et une échelle spéciale qui couvre de 9400 à 12,200 Kc. (31.9 à 24.6 mètres) avec épanouissement des bandes à 25 et 31 mètres.

POWER SUPPLY

**CAUTION: DO NOT
CONNECT THIS RE-
CEIVER TO DIRECT
CURRENT (D.C.)**

This radio was shipped from the factory with the power transformer adjusted for high voltage operation and may be changed for low voltage operation by means of the switch located on the power transformer.

The 5C63BT chassis is designed to operate on 115 or 225 volts, 50 to 60 cycles.

SUMINISTRO DE ENERGIA

**PRECAUCION! ESTE
RECEPTOR NO DEBE
CONECTARSE A CO-
RRIENTE CONTINUA
(C.C.)**

El transformador de fuerza fué ajustado en la fábrica a un voltaje máximo, y puede ajustarse al voltaje deseado mediante el conmutador graduado que se encuentra en el transformador.

El chasis 5C63BT ha sido diseñado para funcionar con 115 ó 225 voltios, de 50 ó 60 periodos.

The 5C63AT chassis is designed to operate on 115 or 225 volts, 25 to 100 cycles.

The 5C63CT chassis is designed to operate on 95, 115 or 150 volts, 50 to 60 cycles.

Ascertain your line voltage and frequency, preferably by consulting your dealer or local power company and if necessary reset the power switch to conform to the local power source.

Total power consumption is 40 watts. Maximum power output is 3 1/2 watts.

ANTENNA

A good antenna is necessary for satisfactory reception. An

Le châssis 5C63AT est prévu pour emploi sur courant de 115 ou 225 volts, 25 à 100 périodes.

Le châssis 5C63CT est prévu pour emploi sur courant de 115 ou 225 volts, 50 à 60 périodes.

Assurez-vous du voltage, et de la fréquence de votre courant, de préférence en consultant votre revendeur ou votre compagnie électrique locale, et si y a lieu, ajustez le commutateur de courant en conformité avec la source électrique locale.

La consommation total de courant est de 40 watts. Le débit maximum de courant est de 3 1/2 watts.

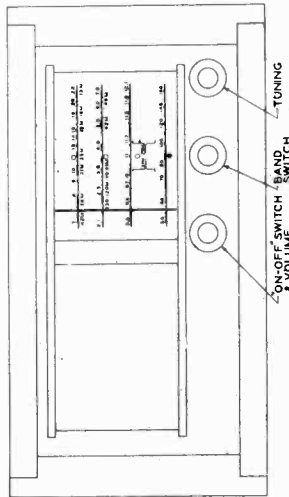


FIG. 1—CONTROLS

ANTENNA

Una buena antena es indispensable para la recepción satisfactoria. Una antena exterior de 13 to 20 metros de longitud instalada lo más alto posible es la más apropiada para uso general. Si ha de usar una antena ya instalada, ésta debe examinarse minuciosamente para determinar su estado pues puede haber conexiones oxidadas o rotas, que nulifiquen la eficacia de la antena. Por otra parte si ha de instalarse una antena nueva hay que tomar las precauciones necesarias para que el alambre de bajada no haga contacto con la pared o con cualquier objeto

outside antenna from 40 to 60 feet in length and as high as possible will give good all around results. If your present antenna is to be used, a thorough examination should be made to determine its condition, as the connections may be corroded or broken thus rendering the antenna unfit for service. If a new antenna is to be constructed, care should be taken to prevent the lead-in wire from grounding to trees, walls or gutters and all connections should be properly soldered to prevent corrosion and resulting noise. Connect the antenna lead-in to the post marked "A" on the back of the chassis.

ANTENNE

Une bonne antenne s'impose pour obtenir une réception satisfaisante. Une antenne extérieure de 13 à 20 mètres de longueur et placée aussi haut que possible donnera d'excellents résultats pour tout service. Si vous voulez proposer d'utiliser votre antenne actuelle il conviendra d'en faire un examen approfondi pour en déterminer l'état car les connexions peuvent en être rouillées ou rompues, ce qui rendrait l'antenne impropre à l'emploi. Si on décide de construire une nouvelle antenne, il convient de veiller à ce que le fil d'entrée ne rejoigne pas la terre par des arbres, des murs ou des gouttières, et toutes les connexions

ZENITH RADIO CORP.

MODELS 5S042AT, 5S042BT, 5S042CT

que resulte en una conexión a tierra. Todas las conexiones deben estar correctamente soldadas para prevenir contra la oxidación y los ruidos que se producen a consecuencia de esto. Concétese el alambre de bajada de la antena a la terminal marcada "A" en la parte trasera del chasis.

TIERRA

Una conexión a tierra bien hecha mejorará considerablemente la recepción aumentando la fuerza de las señales de estaciones lejanas y reduciendo el ruido de fondo. La conexión a tierra más satisfactoria consiste en una sección de tubería de un metro a 1.50 metros de largo, introducida verticalmente en tierra húmeda, un extremo de la conexión a tierra se conecta a la terminal marcada "G" en el chasis.

FUNCIONAMIENTO

(Véase la fig. 1). El grabado indica la posición y propósito de cada perilla. Haciendo girar la perilla combinada del interruptor (ON-OFF) y regulador de volumen hacia la derecha, el receptor empezará a funcionar. Las válvulas requieren 30 segundos más o menos para calentarse. Para aumentar el volumen es necesario girar la perilla hacia la derecha. El volumen se reduce haciendo girar la perilla hacia la izquierda y el receptor se apaga cuando se oye el ruido del interruptor.

Para sintonizar una estación gírese la perilla selectora hasta que la aguja indique la frecuencia deseada. La sintonización debe hacerse en el centro de la irreducencia para obtener la mejor calidad de tono posible. El tono se cambia por medio de un interruptor en la parte posterior del receptor, de "Alto" a "Bajo".

El receptor tiene cuatro escalas de onda, y cualquiera de ellas puede seleccionarse por medio del conmutador de bandas. La banda que se está

GROUND

A good ground will aid reception materially by improving the signal strength of distant stations and reducing background noise. The best ground is a 4 to 6 foot pipe driven down to damp earth; the ground lead-in should be securely soldered to this.

A suitable ground may be obtained by making a good connection to a water pipe or radiator. Connect the ground lead-in to the post marked "G" at the rear of the chassis.

PLACING THE RECEIVER IN OPERATION

Note figure 1. This shows the position and purpose of each control. Turning the combination "ON-OFF" switch and volume control to the right will turn the receiver ON. Approximately 30 seconds will be required for the tubes to heat to operating temperature. Continuing rotation of his knob to the right increases the volume. Turning this control to the left decreases the volume and, when a click is heard, turns the receiver OFF.

When tuning in a station turn the tuning knob slowly to the desired station. Care should be taken to tune the receiver to the middle of the signal; otherwise the tone will be impaired.

The tone may be changed by means of the switch at the back of the radio from "Treble" to "Bass."

If a hum is apparent, reverse the power plug in the wall outlet.

The receiver has four tuning ranges, any one of which may be selected by means of the band switch. The band in use will be indicated by a red dot in the center of the corresponding scale.

Daylight has a decided effect on the reception of short wave stations and different wave lengths are most effective at

deveront être soulevées avec soin pour prévenir la corrosion et les bruits parasites qui en résultent. Reliez le fil d'entrée de l'antenne au montant marqué "A" à l'arrière du châssis.

PRISE DE TERRE

Une bonne prise de terre aidera notablement la réception en améliorant la force du signal pour les stations distantes et en réduisant le bruit de fond. La meilleure prise de terre consiste d'un tuyau de 4 à 6 pieds qu'on enfonce dans le sol humide; la prise de terre devra y être soigneusement soudée.

On peut réaliser une prise de terre convenable en établissant une bonne connexion au tuyau d'eau ou radiateur. Connectez la prise de terre au montant marqué "G" à l'arrière du châssis.

MISE DU RECEPTEUR EN SERVICE

Notez la fig. 1. Elle montre la position et l'objet de chaque contrôle. En tournant le combinatoire "ON-OFF" et contrôle du volume, vers la droite, le récepteur sera mis en circuit. Il faut compléter environ 30 secondes pour que les lampes se chauffent à la température de fonctionnement. En continuant de tourner ce bouton vers la droite, le volume augmente et intensifié. En tournant ce même contrôle vers la gauche, on diminue le volume de sonorité et, quand on entend un léger clic, c'est qu'on a mis le récepteur hors circuit.

Quand vous accordez une station, tournez le bouton de sintonisation lentement jusqu'à ce que vous ayez obtenu la station désirée. Il convient de veiller à accorder le poste au milieu de la fréquence d'onde correspondante; autrement le ton sera affecté.

Le ton peut être modifié au moyen du commutateur qui se trouve à l'arrière du poste, et cela de la position "Haut" à "Bas". Le récepteur possède quatre échelles d'accord parmi les

usando estará indicada por medio de un punto rojo en el centro de la escala correspondiente.

La luz del día tiene una decidida influencia sobre la recepción de la banda porta y diferentes longitudes de onda alcanzan mayor eficacia a diferentes horas del día. El cuadro a la derecha puede ser usado como guía para sintonizar a diferentes horas del día y de la noche.

VALVULAS

Este receptor usa las válvulas siguientes:

- 70Z 6X5GT
- 7A7 6K6GT
- 6SQ7GT

La fig. 2 muestra la posición de las válvulas.

different times of the day. The following table may be used as a guide.

SHORT WAVE BAND	TIME OF BEST RECEPTION
16 meters	A. M. (morning hours)
19 and 25 meters	P. M. (Afternoon)
28 and 31 meters	P. M. (Early evening)
31 meters	P. M. (Late evening)

TUBES

The following tubes are employed in this receiver:

- 70Z 6X5GT
- 7A7 6K6GT
- 6SQ7GT

Figure 2 shows the correct socket location for each tube.

La fig. 2 muestra la posición de las válvulas.

quelles on peut sélectionner l'une quelconque d'entre elles au moyen du commutateur sélectionneur de bandes. La bande en usage sera indiquée par un point rouge au centre de l'échelle correspondante.

La réception radiophonique sur ondes courtes est définitivement affectée par la lumière du jour et la réception sur différentes longueurs d'ondes est plus ou moins efficace à différents moments de la journée. Nous donnons à gauche un barème qui peut être suivi pour l'écoute des différentes stations pendant le jour ou la nuit.

LAMPES

Les lampes suivantes sont employées sur ce poste:

- 70Z 6X5GT
- 7A7 6K6GT
- 6SQ7GT

La figure 2 montre la douille correcte pour chaque lampe.

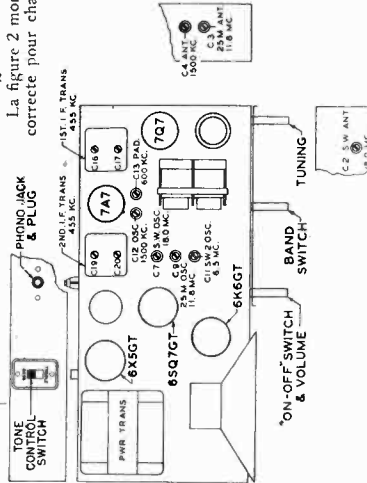
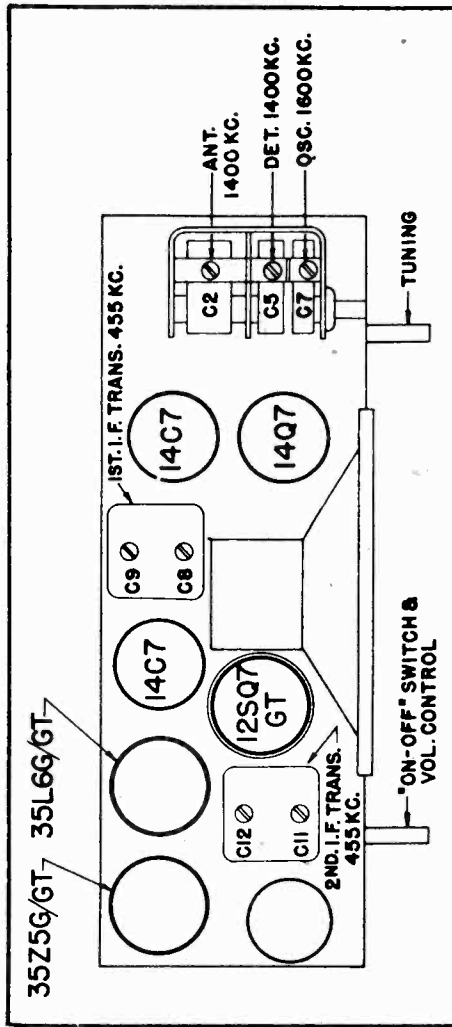


FIG. 2—TUBE SOCKETS & TRIMMER POSITIONS ALIGNMENT PROCEDURE

Component	Consect. to	Dummy An.	Input Sig. Freq.	Band	Set Dial at	Trimmer	Purpose
1	1st Det. Grid	1 mild.	455 kc.	BC	600 kc.	C16, 17, 19, 20	Align I.F.
2	Aut.-Gnd.	200 m.m.f.	1500 kc.	BC	1500 kc.	C12	Set Osc. to Scale
3	Aut.-Gnd.	200 m.m.f.	1500 kc.	BC	1500 kc.	C4	Align Ant.
4	Aut.-Gnd.	200 m.m.f.	600 kc.	BC	Rock at 600 kc.	C13	Set Padder
5	Aut.-Gnd.	400 ohm	6.5 mc.	SW2	Rock at 6.5 mc.	C11	Align SW2
6	Aut.-Gnd.	400 ohm	18.0 mc.	SW1	18 mc.	C7	Set Osc. to Scale
7	Aut.-Gnd.	400 ohm	18.0 mc.	SW1	18 mc.	C2	Align Ant.
8	Aut.-Gnd.	400 ohm	11.8 mc. meter	31.25 meter	11.8 mc.	C8	Set Osc. to Scale
9	Aut.-Gnd.	400 ohm	11.8 mc.	31.25 meter	11.8 mc.	C3	Align Ant.

**MODELS 6D014-6D029
 CHASSIS No. 6C01**



TUBE AND TRIMMER LOCATION

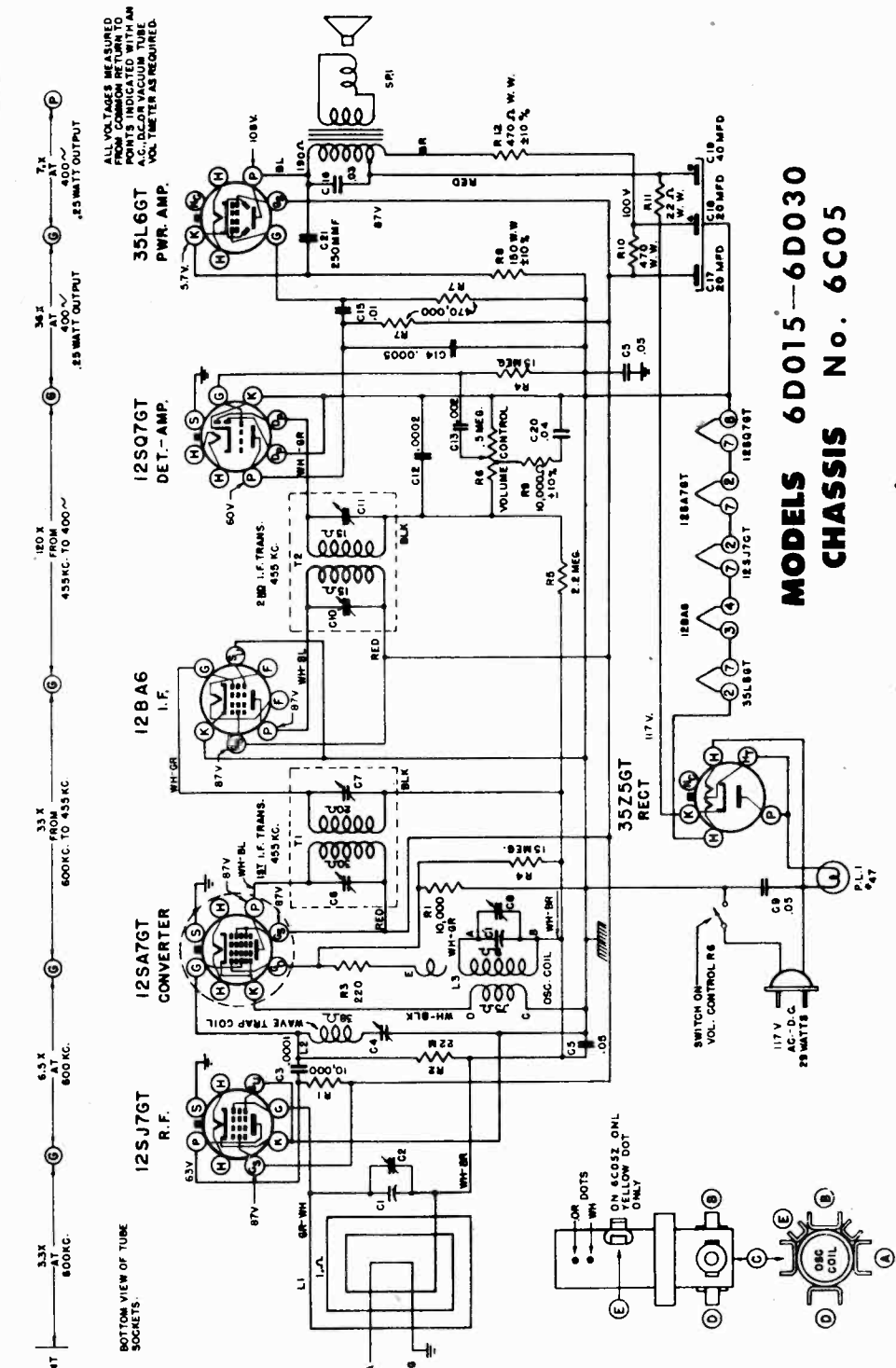
TO THE SERVICE MAN:
 Chassis 6C01 features a high gain tuned R.F. circuit ahead of a conventional superheterodyne circuit, with feedback in the audio circuit, and a new filter circuit to reduce hum to a minimum.
 Part of the audio voltage from the voice coil is fed back to the first audio grid (12SQ7) in phase through resistor R10 and R7 to a tap on the volume control R6. Capacitor C15 bypasses highs to ground. One side of the output transformer secondary is grounded. The side grounded determines the phase relationship of the feedback voltage, therefore, when replacing the output transformer be certain the proper end of the secondary is grounded or degeneration will result. The overall result of this arrangement is to boost the bass tones.
 The filter circuits of chassis 6C01 incorporate new features that should be well understood by the service man. An examination of the schematic drawing will show the output transformer tapped slightly off center. This tap is the B+ connection from filter resistor R11 and capacitor C20 off the cathode of the rectifier 35Z5 to the 35L6 plate. The lower connection of the output transformer feeds B+ to the rest of the tubes in the receiver. Current flowing through the upper windings of the output transformer to the 35L6 produces a magnetic field which is 180° out of phase with the magnetic field produced by current flowing in the opposite direction through the output transformer to the rest of the receiver, therefore, most of the AC hum is cancelled. Further reduction of hum is accomplished by filtering through resistors R12 and R13 and capacitors C18 and C19.
 This development in filtering systems allows a higher effective plate voltage on the 35L6 for increased power output.
 NOTE: The output transformer must be replaced with an exact duplicate, Part No. 206-549 be sure to add the speaker code letter to the transformer Part Number.

ALIGNMENT PROCEDURE

OPERATOR	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	C-8, C-9, C-11, C-12	Align I. F.
2	One Turn Loop Coupled Loosely to Wave Magnet	--	1600 Kc.	1600 Kc.	C-7	Set Oscillator to Dial Scale.
3		--	1400 Kc.	1400 Kc.	C-5	Align detector
4		--	1400 Kc.	1400 Kc.	C-2	Align antenna stage

MODELS 6D015, 6D030
Chassis 6C05, Early

ZENITH RADIO CORP.



**MODELS 6D015-6D030
CHASSIS No. 6C05**

ALL VOLTAGES MEASURED FROM COMMON RETURN TO AC LINE INCLUDING TUBE AND SOCKET PLATES UNLESS OTHERWISE SPECIFIED.

ALL RESISTERS ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

IF FREQUENCY 455 K.C.
TUNING RANGE 535-1620 K.C.

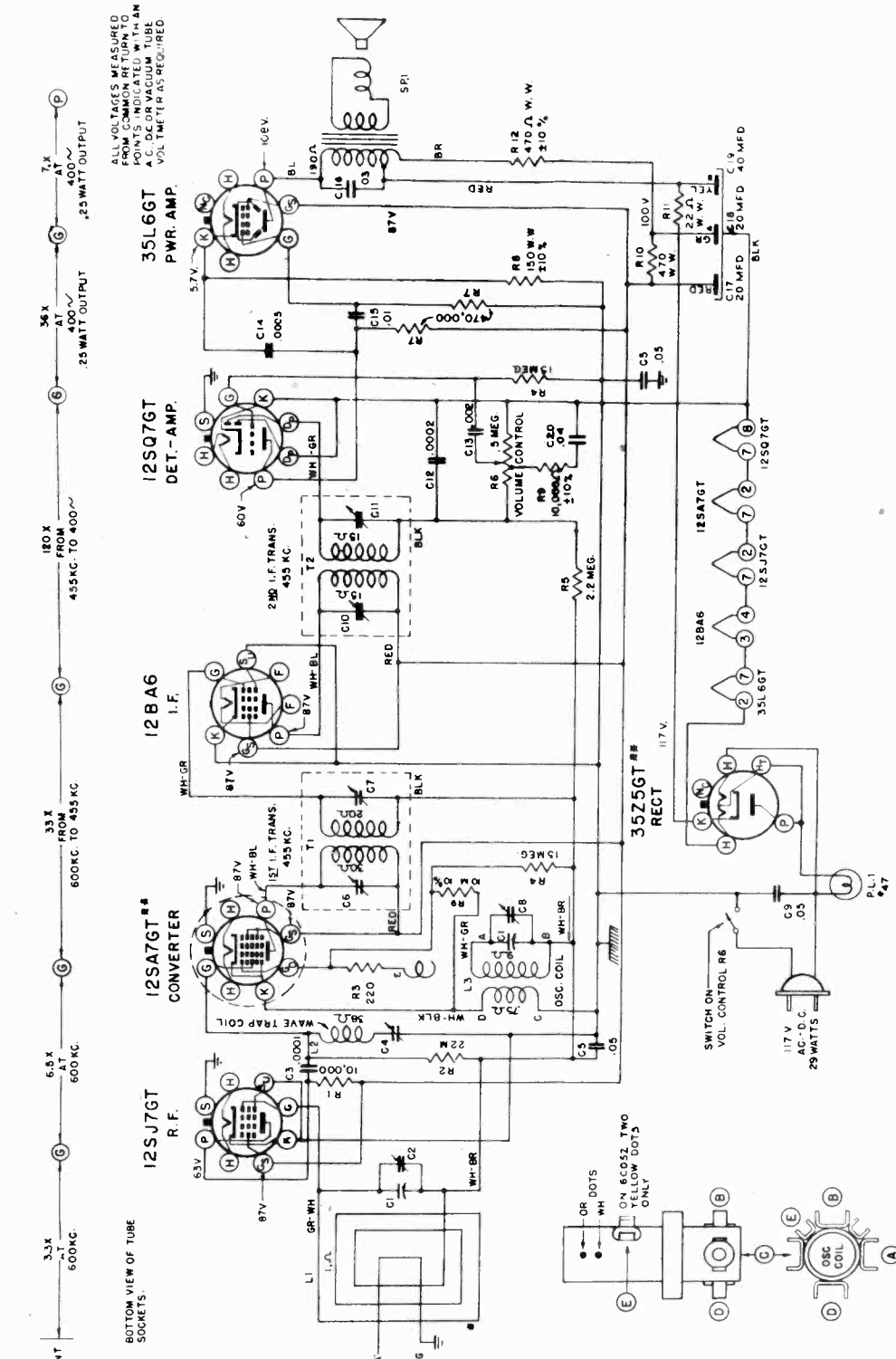
DISTORTION AND POOR SENSITIVITY; Distortion and poor sensitivity caused by a short between turns on the wavemagnet.
Poor sensitivity and set fails to operate on low-frequency end of dial--replace oscillator coil.

UNCONTROLLED OSCILLATION; A 470,000 ohm resistor soldered across the secondary of the first i-f transformer will correct this condition.

PART	DESCRIPTION OF PART
R1	250K 1/2 W
R2	500K 1/2 W
R3	100K 1/2 W
R4	500K 1/2 W
R5	100K 1/2 W
R6	500K 1/2 W
R7	100K 1/2 W
R8	500K 1/2 W
R9	100K 1/2 W
R10	500K 1/2 W
R11	100K 1/2 W
R12	500K 1/2 W
R13	100K 1/2 W
R14	500K 1/2 W
R15	100K 1/2 W
R16	500K 1/2 W
R17	100K 1/2 W
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R21	100K 1/2 W
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R215	100K 1/2 W
R216	500K 1/2 W
R217	100K 1/2 W
R218	500K 1/2 W
R219	100K 1/2 W
R220	500K 1/2 W
R221	100K 1/2 W

ZENITH RADIO CORP.

MODELS 6D015, 6D030
Chassis 6C05, Late



NO.	PART	DESCRIPTION OF PARTS
C1	22-189	500K. VAR. SEE NOTE
C2	ON C1	BROADCAST ANT. TRIMMER
C3	12-182	600V. 1000. MFD.
C4	12-188	200V. 100. MFD.
C5	12-823	500V. 100. MFD.
C6	ON T1	250 I.F. TRANS. PR. TRIMMER
C7	ON T1	455 I.F. SEC.
C8	ON C1	BROADCAST OSC.
C9	12-107	200V. 100. MFD.
C10	ON T2	250 I.F. TRANS. PR. TRIMMER
C11	ON T2	455 I.F. SEC.
C12	12-185	500V. 200. MFD.
C13	12-492	500V. 100. MFD.
C14	12-854	500V. 100. MFD.
C15	12-854	500V. 100. MFD.
C16	22-104	400V. 10. MFD.
C17	22-181	20. MFD. ELECTRO. 150 V.
C18	22-151	40. MFD. 150 V.
C19	22-151	40. MFD. 150 V.
C20	22-202	2.2 MEG. 200 V.
R1	63-1222	470 OHM WIRE WND. 1/4 W.
R2	63-598	10M OHM 1/4 W.
R3	63-591	22M OHM 1/4 W.
R4	63-978	220 OHM 1/4 W.
R5	63-978	15 MEG OHM 1/4 W.
R6	63-600	2.2 MEG OHM 1/4 W.
R7	63-1337	5 MEG. VOLUME CONTROL 1/4 W.
R8	63-587	470M OHM 1/4 W.
R9	63-668	150 OHM WIRE WND. 1/4 W.
R10	63-1448	470 OHM WIRE WND. 1/4 W.
R11	63-1450	22 OHM 1/4 W.
R12	63-1099	WAVEMAGNET ASSEMBLY 1/4 W.
L1	511099	WAVETRAP COIL
L2	511326	OSC. COIL
L3	511136	OSC. COIL
T1	95-929	51 I.F. TRANSFORMER
T2	95-930	250 I.F.
PL1	100-87	PILOT LIGHT 6.3V. 15A
SPI	49-347	4" P.M. SPEAKER
28-348		DIAL SCALE

NOTE: ON 6C05Z ALL PARTS WITH W CHANGE TO THE FOLLOWING

C1 22-1527 5 GANG VARIABLE
 C2 4-12486 WAVE MAGNET ASSY
 L3 51-2491 OSC COIL
 26 365 DIAL SCALE

RECHASSIS PRODUCED WITH ALTERNATE TUBES AS FOLLOWS:
 ORIGINAL 12BA6
 ALTERNATE 12B6E
 14Q7
 35Z5GT
 33V4

ALL RESISTERS ± 20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

IB-1 DENOTES COMMON RETURN

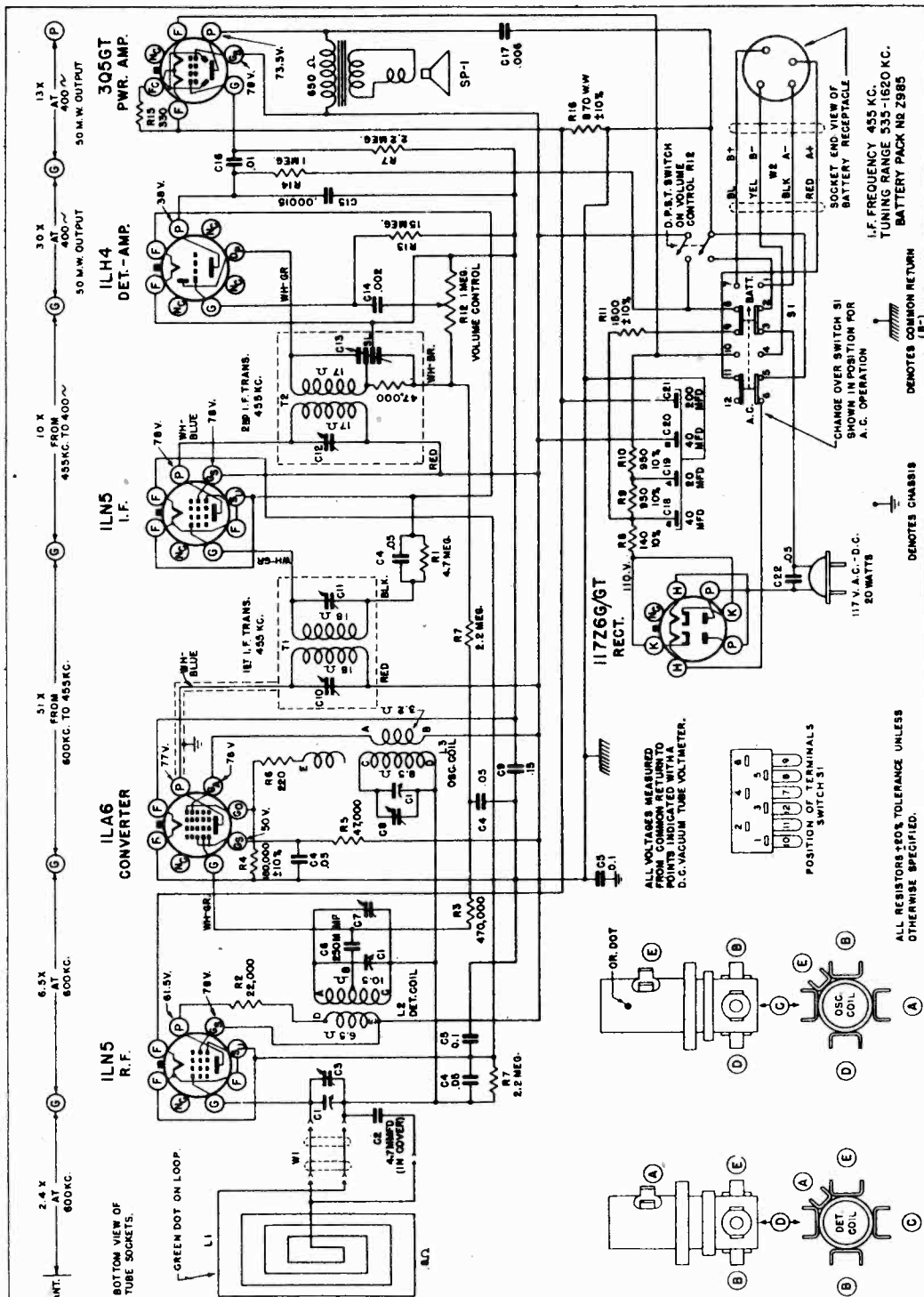
⊥ DENOTES CHASSIS

I.F. FREQUENCY 455K C.
 TUNING RANGE 535-1620 K.C.

MODEL 6G001
Chassis 6C40

ZENITH RADIO CORP.

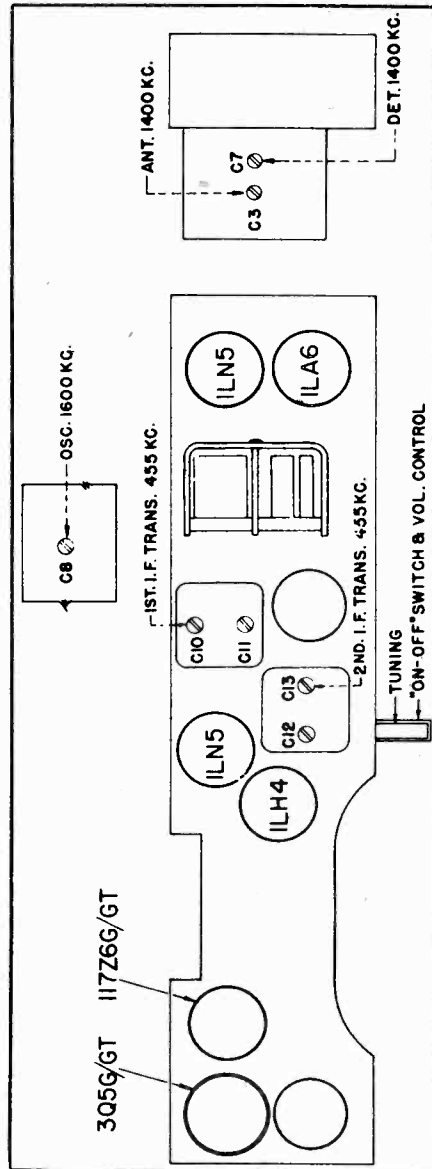
BLOCKING: The a-c plug being inserted in the battery saver switch socket while the on-off switch is on may cause the set to block and become dead. Switching the set off and on will relieve this blocked condition and return the set to normal operation.



DIAG PART NO.	DESCRIPTION
A1	ANT. 2.4 X 600KC.
A2	ANT. 6.5 X 600KC.
A3	ANT. 10 X 455KC. TO 400~
A4	ANT. 30 X 400~
A5	ANT. 13 X 400~
C1	22-1532 3-GANG VARIABLE
C2	22-1532 3-GANG VARIABLE
C3	22-1532 3-GANG VARIABLE
C4	22-829 .05 MFD. 200V.
C5	22-827 .1 MFD. 200V.
C6	22-826 .1 MFD. 200V.
C7	22-1055 .15 MFD. 200V.
C8	22-1055 .15 MFD. 200V.
C9	22-1055 .15 MFD. 200V.
C10	22-1055 .15 MFD. 200V.
C11	22-1055 .15 MFD. 200V.
C12	22-1055 .15 MFD. 200V.
C13	22-492 .002 MFD. 600V.
C14	22-492 .002 MFD. 600V.
C15	22-470 .00015 MFD. 600V.
C16	22-196 .01 MFD. 600V.
C17	22-458 .006 MFD. 600V.
C18	22-1448 .40 MFD. ELECTRO. 150 V.
C19	22-1448 .40 MFD. ELECTRO. 150 V.
C20	22-1448 .40 MFD. ELECTRO. 150 V.
C21	22-1017 .05 MFD. 200V.
C22	22-1017 .05 MFD. 200V.
R1	83-609 4.7 MEG. OHM 1/4W.
R2	83-644 32.8M OHM 1/4W.
R3	83-719 470M OHM 1/4W.
R4	83-773 180M OHM 1/4W.
R5	83-715 47M OHM 1/4W.
R6	83-578 220 OHM 1/4W.
R7	83-600 2.2 MEG. OHM 1/4W.
R8	83-1568 140 OHM 3 W.
R9	83-1582 930 OHM 3 W.
R10	83-1583 930 OHM 3 W.
R11	83-418 1600 OHM 1/2W.
R12	83-1231 1MEG. VOLUME CONTROL
R13	83-976 15 MEG. OHM 1/4W.
R14	83-271 1 MEG. OHM 1/4W.
R15	83-580 330 OHM 1/4W.
R16	83-1087 870 OHM WIREWOUND 1/4W.
L1	210837 WAVE MAGNET ASSEMBLY
L2	210837 WAVE MAGNET ASSEMBLY
L3	210883 OSCILLATOR
T1	83-604 RTF I.F. TRANSFORMER
T2	83-605 250 I.F.
SP1	48-512 5/4 P.M. SPEAKER
S1	83-511 CHANGE OVER SWITCH
W1	510882 WAVE MAGNET CABLE
W2	51019 BATTERY CABLE
B.F. 1	5-27 BATTERY PACK Z985

MODEL 6G001
CHASSIS No. 6C40

ZENITH RADIO CORP.



TUBE AND TRIMMER LOCATION

IF Alignment: Remove the chassis from the cabinet and arrange the units so that the wavemagnet can be plugged in. All the connections and adjustments can be made from the top of the chassis. Connect a signal generator, through a .1 mfd. dummy antenna, to the lug on top of the center section of the gang condenser (converter grid) and condenser gang frame. Connect an output meter across the voice coil of the speaker (two lugs provided). Set the signal generator to 455Kc. and adjust C10, C11, C12 and C13 for maximum indication on the output meter. Always keep the signal output from the generator just high enough to get an indication, otherwise excessive loading may result. Remove the signal generator leads from the gang.

RF Alignment: Connect a two turn loop across the leads of the signal generator, loosely couple this loop to the wavemagnet. Set the signal generator and dial pointer to 1600 Kc. and adjust C8 to resonance. Set the signal generator and dial pointer to 1400 and adjust C7 (detector) and C3 (RF) to resonance. These trimmers are on the side of gang condenser. Check operation and re-install set in cabinet. Tune in a weak station near 1400 Kc. or use background noise and readjust C3 through the hole in the side of the cabinet for maximum sensitivity.

ALIGNMENT PROCEDURE

Operation	Connect Osc. To Converter Grid	Dummy Antenna .1 MFD	Input Signal Frequency	Band	Set Dial To	Trimmers	Purpose
1	Converter Grid		455KC	BC	600KC	C-10-11-12 13	IF alignment
2	Two turns loosely coupled to Wave Magnet		1600KC	BC	1600KC	C8	Set oscillator to scale
3	Two turns loosely coupled to Wave Magnet		1400KC	BC	1400KC	C7	Align Det.
4	Two turns loosely coupled to Wave Magnet		1400KC	BC	1400KC	C3	Align Wave magnet

TO THE SERVICE MAN:

The 6C40 chassis is an AC, DC or battery operated superheterodyne circuit with a stage of RF amplification. The chassis is isolated from the DC circuit, and all measurements must be made from a common negative point. The most convenient place to reach this negative point is the terminal strip to which C5 is connected. The DC resistance from chassis to any circuit must be almost infinite. If any circuit becomes grounded a hum will appear. Microphonic tubes will cause audio howl. Check 1LA6.

The wavemagnet is connected to the chassis through the hinges in the cabinet, snaps and flexible leads. If the RF becomes weak or dead, check resistance of wavemagnet at condenser gang. The DC resistance across the two leads should be approximately 1 ohm. If the circuit is open, remove the two screws that hold the handle and top panel. When the top is removed, the wavemagnet connecting leads will be visible for inspection. Also loosen the snap-on socket and check for shorted or broken leads.

IF Alignment: Remove the chassis from the cabinet and arrange the units so that the wavemagnet can be plugged in. All the connections and adjustments can be made from the top of the chassis. Connect a signal generator, through a .1 mfd. dummy antenna, to the lug on top of the center section of the gang condenser (converter grid) and condenser gang frame. Connect an output meter across the voice coil of the speaker (two lugs provided). Set the signal generator to 455Kc. and adjust C10, C11, C12 and C13 for maximum indication on the output meter. Always keep the signal output from the generator just high enough to get an indication, otherwise excessive loading may result. Remove the signal generator leads from the gang.

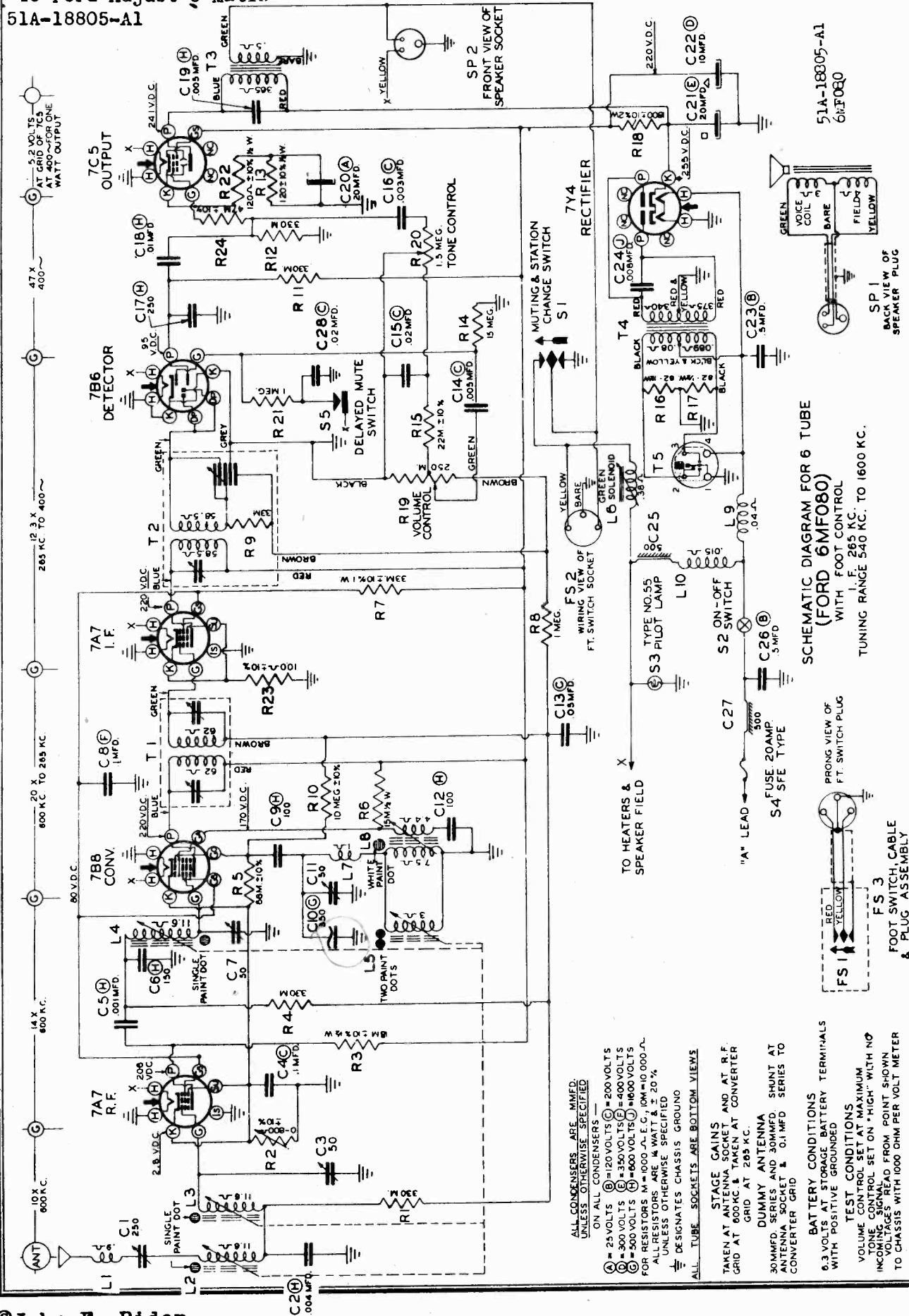
RF Alignment: Connect a two turn loop across the leads of the signal generator, loosely couple this loop to the wavemagnet. Set the signal generator and dial pointer to 1600 Kc. and adjust C8 to resonance. Set the signal generator and dial pointer to 1400 and adjust C7 (detector) and C3 (RF) to resonance. These trimmers are on the side of gang condenser. Check operation and re-install set in cabinet. Tune in a weak station near 1400 Kc. or use background noise and readjust C3 through the hole in the side of the cabinet for maximum sensitivity.

MODEL 6MF080, Ch. 6C81

'46 Ford Adjust-O-Matic

51A-18805-A1

ZENITH RADIO CORP.

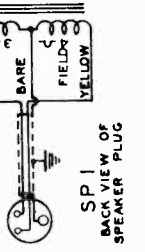
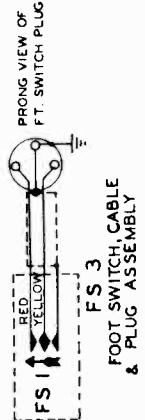


SCHEMATIC DIAGRAM FOR 6 TUBE (FORD 6MF080) WITH FOOT CONTROL TUNING RANGE 540 KC. TO 1600 KC.

ALL CONDENSERS ARE M.M.F.D. UNLESS OTHERWISE SPECIFIED ON ALL CONDENSERS —
 A = 25 VOLTS B = 50 VOLTS C = 100 VOLTS D = 200 VOLTS E = 350 VOLTS F = 500 VOLTS G = 1000 VOLTS H = 1500 VOLTS I = 2000 VOLTS J = 3000 VOLTS K = 5000 VOLTS L = 10000 VOLTS M = 15000 VOLTS N = 20000 VOLTS O = 30000 VOLTS P = 50000 VOLTS Q = 100000 VOLTS R = 150000 VOLTS S = 200000 VOLTS T = 300000 VOLTS U = 500000 VOLTS V = 1000000 VOLTS W = 1500000 VOLTS X = 2000000 VOLTS Y = 3000000 VOLTS Z = 5000000 VOLTS
 ALL RESISTORS ARE 1/4 WATT ± 20% UNLESS OTHERWISE SPECIFIED
 ⚡ DESIGNATES CHASSIS GROUND
 ALL TUBE SOCKETS ARE BOTTOM VIEWS

STAGE GAINS TAKEN AT ANTENNA SOCKET AND AT R.F. GRID AT 600 KC. & TAKEN AT CONVERTER GRID AT 245 KC.
 DUMMY ANTENNA SHUNT AT ANTENNA SOCKET & 0.1 MFD SERIES TO CONVERTER GRID

BATTERY CONDITIONS 6.3 VOLTS AT STORAGE BATTERY TERMINALS WITH POSITIVE GROUND
 TEST CONDITIONS VOLUME CONTROL SET AT MAXIMUM TONE CONTROL SET ON "HIGH" WITH NO INCOMING SIGNAL FROM POINT SHOWN VOLTAGES MEASURED FROM POINT SHOWN TO CHASSIS WITH 1000 OHM PER VOLT METER



ZENITH RADIO CORP.

CORE OR COIL REPLACEMENT ONLY

WARNING: The following adjustments are to be made ONLY if a core or coil is replaced.

- 1—Replace coil or core.
- 2—Set signal generator to 1700 Kc.
- 3—Connect signal generator leads through dummy, illustrated in Figure 9, to antenna receptacle on the receiver.
- 4—Set receiver dial to 1600 Kc. (maximum high frequency end of dial.)
- 5—Screw the core completely out of the antenna coil, the R.F. coil, the converter coil, and the oscillator coil.
- 6—Adjust oscillator trimmer C-11 (Fig. 8) at 1700 Kc.
- 7—Adjust converter trimmer C-7, R.F. trimmer C-3, and antenna trimmer C-1 (Fig. 7 and 8) for maximum output reading.
- 8—Replace cores to their approximate original position.
- 9—Set generator dial and receiver dial to 1200 Kc.
- 10—Adjust oscillator core L-5 (Fig. 8) to scale at 1200 Kc.
- 11—Adjust the antenna core, R.F. core, and converter core (Fig. 7 and 8) for maximum output reading.
- 12—Set signal generator to 600 Kc.

3—"Rock in" shunt oscillator coil L-8 (Fig. 8) for maximum output reading. This should be done only as a last resort. This is the same as rocking in the paddler condenser on a ganged condenser receiver.

14—Check receiver at 1200 Kc. for calibration and gain. If the receiver is off scale or weak, repeat operations 9, 10 and 11.

15—After alignment is complete, the maximum high frequency tuning range should be checked. If the range is greater or less than 1605 Kc., the mechanical stop for the tuner cross arm should be bent to limit the frequency coverage to 1605 Kc.

After all adjustments have been made, glue core screws with speaker cement.

IMPORTANT: After reinstalling the receiver in the car, allow it to operate for approximately 15 minutes to reach normal operating temperature. Extend antenna to maximum. Check the antenna trimmer alignment on a weak station at approximately 1200 Kc.

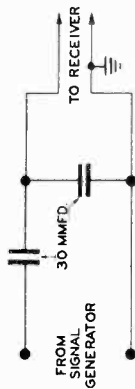


Fig. 9. Dummy Antenna

Fig. 9 shows the schematic of a recommended dummy antenna, closely resembling actual antenna capacity, to be used in series with signal generator leads when aligning the R.F. section of the receiver.

ALIGNMENT

Maximum performance depends on accurate alignment of the receiver; therefore follow these instructions carefully.

CAUTION: Make all alignment adjustments to the receiver with the volume control set at maximum, and the tone control in the treble position. Reduce the signal intensity as much as possible at the signal generator. Connect the output meter across the voice coil.

I.F. ALIGNMENT PROCEDURE

- 1—Remove top and bottom covers from receiver.
- 2—Set signal generator to 265 Kc.
- 3—Apply signal from generator through a .1 Mfd. dummy to 7B8 converter grid. (Pin No. 6 on socket.)
- 4—Adjust I.F. trimmers A, B, C and D (Fig. 7) in the order named for maximum output. Repeat the operation to assure accurate alignment.

R.F. AND OSCILLATOR ALIGNMENT

- 1—Connect signal generator leads through dummy, illustrated in Fig. 9, to antenna lead in socket on receiver.
- 2—Set signal generator to 535 Kc.
- 3—Place set in manual tuning position and set dial to 535 Kc.
- 4—Adjust oscillator trimmer C-11 (Fig. 8) for maximum response.
- 5—Set signal generator to 1200 Kc.
- 6—Tune set to 1200 Kc.
- 7—Adjust converter trimmer C-7 (Fig. 8) and R.F. trimmer C-3 (Fig. 7) for maximum response.

8—If dial calibration is off after making above adjustments, a correction can be made by loosening dial scale mounting screws and sliding scale to desired position.

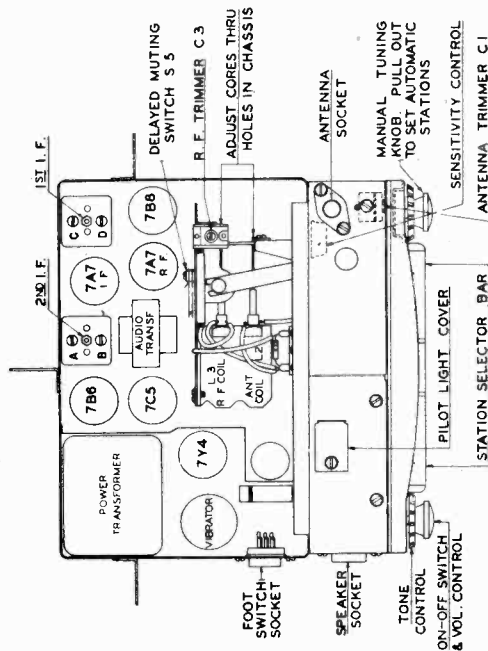


Fig. 7. Top View of Chassis

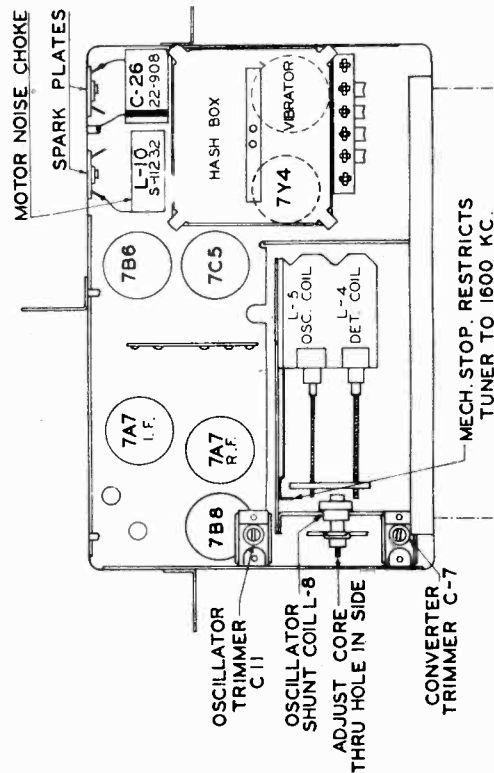


Fig. 8. Bottom View of Chassis

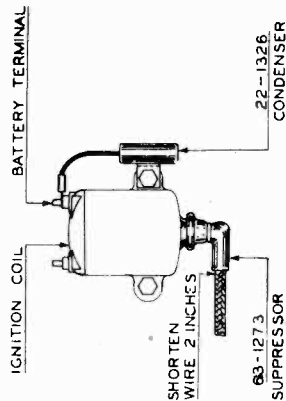


Fig. 5

The ignition coil condenser No. 22-1326 and suppressor with rubber nipple No. S-10408 should be installed as shown above in Figure 5. The oil gauge condenser No. 22-1326 should be installed as shown in Figure 6. Note the different locations for 6 and 8 cylinder cars.

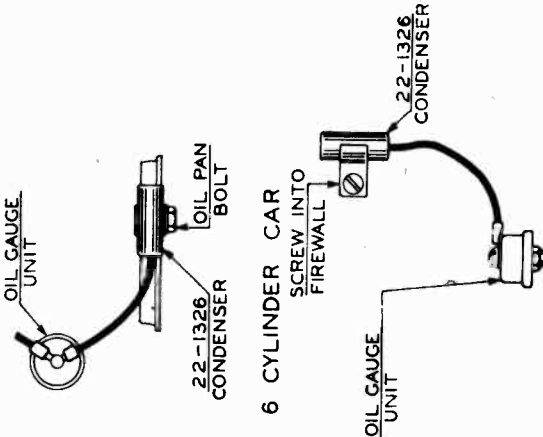


Fig. 6

Be sure the inside windshield divider trim strip, the antenna connector and all the instrument panel bolts are tight in order to make a good ground contact with the car body.

DELAYED AUTOMATIC MUTING CIRCUIT

Pressing either the touch-bar or the foot control switch automatically mutes the receiver for the duration of the change cycle. This action is accomplished by applying 6 volts negative to the 7B6 first audio grid through the 1 megohm resistor R-21. (See schematic diagram.) This negative voltage blocks the grid of the 7B6 until the voltage bleeds off through the 15 megohm resistor R-14. Then the receiver will again operate normally.

NOTE: If the battery polarity is reversed the receiver will not mute and it may become distorted during the change cycle. Always connect the positive (+) terminal of the storage battery or power supply to the receiver case when checking the receiver.

INTERFERENCE SUPPRESSION

There should be no motor noise or interference from the ignition system if the receiver has been installed in the car according to the instructions furnished with it. The interference suppression equipment may be checked for proper installation by referring to the following illustrations:

The circuit breaker condenser No. 22-1148 should be installed as shown in Figure 3.

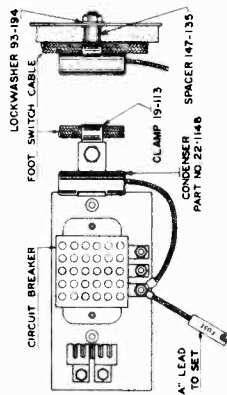


Fig. 3

The voltage regulator condenser No. 22-1148 and the ground strap should be installed as shown in Figure 4.

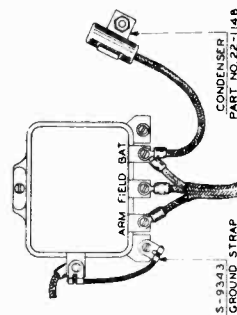


Fig. 4

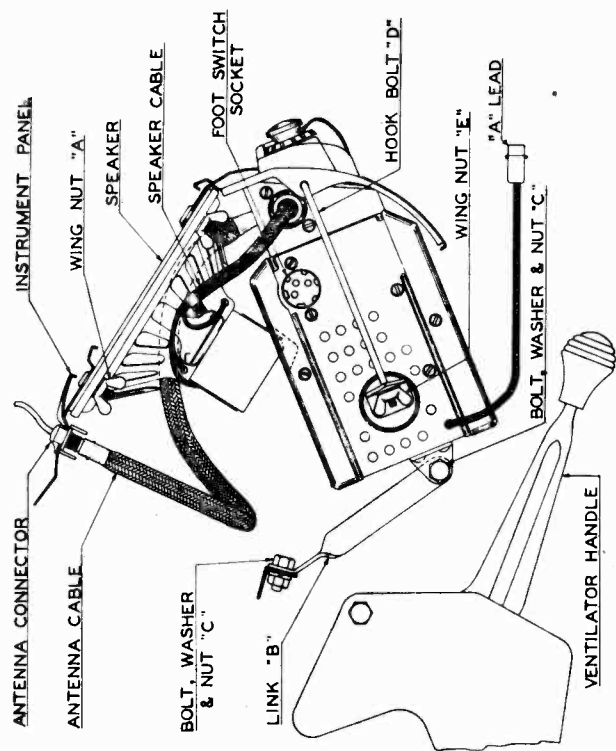


Fig. 1. Set Installed, Cut Away View.

RECEIVER INSTALLATION

1. Press station selector touch bar (Fig. 2) several times or until the letter 'M' appears in indicator window.
2. Pull manual tuning control knob (right hand) outward and turn to tune in desired station. Be sure to tune to exact frequency to assure the best tone quality.

VOLUME—Adjust left hand control knob for desired volume.
STONE CONTROL—The stone control is located behind the volume control knob. Turn in either direction for most pleasing tone.

ADJUST-O-MATIC TUNING

There are five automatic tuning positions which may be adjusted to five desired stations. If these positions have not been previously adjusted proceed as follows:

1. Press station selector touch bar until number 1 appears in station indicator window.

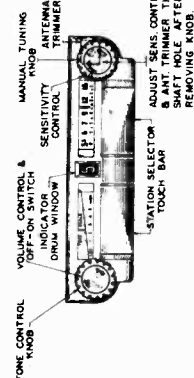


Fig. 2. Front Panel View

2. Pull manual tuning knob outward to engage the adjust-o-matic mechanism.
 3. Select the station desired and tune to its frequency by turning the tuning knob. Tune very carefully for clearest reception.
 4. Press station selector bar, pull manual tuning knob outward and tune in station desired for No. 2 position. Use same procedure for positions No. 3, 4 and 5.
- When the five adjust-o-matic positions have been adjusted to the five desired stations as instructed, it is only necessary to press the station selector bar to return to dial tuning, or to only one of the stations set up on the Adjust-o-Matic.

ZENITH RADIO CORP.

**PARTS LIST MODEL 6MF080 (CHASSIS 6C81)
1946 FORD ADJUST-O-MATIC 51A-1880S-A1**

COILS AND CHOKES

Diagram No.	Description	Part No.	Description
L 9	Main hash choke	63-1398	33 M ohm
T 1	1st I.F. transformer	63-1399	82 ohm
T 2	2nd I.F. transformer	63-1400	15 megohm
L 1	Antenna motor noise choke assem.	63-1401	15 M ohm
L 7	Oscillator series coil assem.	63-1410	120 ohm
L 8	Oscillator shunt coil assem.	63-1411	1800 ohm
L 10	Motor noise choke coil assem.	63-1413	10 meg.
L 5	Oscillator tuning coil assem.	63-1414	100 ohm
L 2	Antenna tuning coil assem.	63-1417	47,000 ohm
L 3	R.F. tuning coil assem.		
L 4	Converter tuning coil assem.		

Note: In ordering coils marked *, be sure to give color code information.

CONDENSERS

C 9	100 mmfd. 600 volt
C 8	22-170 1 mfd. 400 volt
C 17	22-182 250 mmfd. 600 volt
C 4	22-190 200 volt
C 13	22-250 .05 mfd. 200 volt
C 19	22-838 .005 mfd. 600 volt
C 14	22-906 .005 mfd. 200 volt
C 23	22-908 .5 mfd. 120 volt
C 6	22-1137 150 mmfd. 600 volt
C 5	22-1169 .001 mfd. 600 volt
C 18	22-1170 .01 mfd. 600 volt
C 16	22-1180 .003 mfd. 200 volt
C 2	22-1244 .004 mfd. 600 volt
C 15	22-1270 .02 mfd. 200 volt
C 1	22-1375 Antenna trimmer
C 3	22-1376 R.F. trimmer
C 7	22-1377 Detector trimmer
C 11	22-1378 Oscillator trimmer
C 20	20 MFD. 25 W.V. Electrolytic
C 21	20 MFD. 350 W.V. Electrolytic
C 22	10 MFD. 300 W.V. Electrolytic
C 24	008 mfd. 1600 volt
C 10	22-1478 350 mmfd. compensator

RESISTORS

R 19	63-1333 Tone control, vol. control & sw.
R 20	52
R 18	63-1368 1800 ohm 2 watt W.W.
R 2	63-1379 Sensitivity control
R 8	63-1390 1 megohm 1/4 watt
R 1	63-1392 330 M ohm 1/4 watt
R 4	
R 11	
R 12	
R 15	63-1395 22 M ohm 1/4 watt
R 5	63-1396 68 M ohm 1/4 watt

DIAL AND TUNING MECHANISM ASSEMBLY (Continued)

Diagram No.	Description	Part No.	Description
80-341	Kick-off spring	S11278	Motor noise suppression kit complete
80-342	Tuning shaft spring	22-1148	Voltage regulator & circuit breaker condenser
80-343	Solenoid switch spring		
80-344	Solenoid switch contact spring	22-1326	Distributor & oil gauge condenser
80-378	Selector knob spring	54-68	5/16 x 18 x 9/16 x 7/32 hex nut
80-379	Pointer return spring	63-1273	Distributor suppressor
80-426	Pointer drive tension spring	93-194	5/16 internal shakeproof lockwasher
80-442	Selector knob spring	112-323	No. 12 x 1/2 R.H. S.T. screw
100-31	Dial light bulb	114-249	5/16 x 18 x 1 3/4 hex Hd. M.S.
126-481	Dial glass shield	147-135	Spacer
149-44*	Adjusting spring and core		
188-45	Turret screw lock ring		
192-82	Dial glass (2 used)		
S10826	Solenoid end plug & bracket assem.		
S10829	Solenoid and terminal assem.		
S10831	Ratchet and bracket assem.		
S10834	Mounting plate & lever assem.		
S10836	Cross arm assem.		
S11031	Dial drum and bracket assem.		
S11033	Tuning & trim knob assem.		
S11051	Tuning shaft and gear assem.		
S11082	Turret assem.		
S11971	Dial light socket & wire assem.		
S11972	Selector knobs, housing & clamp assem.		
S12050	Tone control dial & pulley assem.		
S12120	Dial cord and eyelet assem.		

INSTALLATION PARTS

S11279	Set installation kit complete
19-113	Foot switch cable retaining clip
19-114	Foot switch cable retaining clip
54-123	No. 10-24 wing nut
54-157	1/4-20 x 7/16 x 3/32 hex nut
54-189	No. 8-32 wing nut
93-43	Ground strap
93-161	1/4" ext. shakeproof lockwasher
112-310	No. 10 x 1/2 R.H. S.M. screw
112-360	Set installation screw
114-175	1/4-20 x 1/2 hex. Hd. M.S.
118-30	Set installation link used on first 1500 sets only
118-36	Set installation link

Note: In ordering adjusting spring and core marked *, be sure to give color code information.

DIAL AND TUNING MECHANISM ASSEMBLY

26-330	Dial scale (manual tuning)
34-132	Indexing disc
34-133	Ratchet gear
34-140	Volume control gear
34-141	Idler gear
46-524	Tone control knob
46-527	Volume control knob
46-528	Selector knob—L.H.
46-583	Selector knob—R.H.
57-1029	Escutcheon
59-151	Dial pointer
59-169	Tone control pointer
73-02	No. 6-32 x 3/16 headless set screw
80-232	Knob retaining spring
80-329	Gear indexing spring
80-331	Cross arm return spring
80-332	Cam lever spring
80-336	Ratchet gear return spring

Note: When ordering cone and voice coil assembly marked *, be sure to give manufacturer's code letter that follows base number printed on cone.

MOTOR NOISE SUPPRESSION KIT

Diagram No.	Description	Part No.	Description
80-341	Kick-off spring	S11278	Motor noise suppression kit complete
80-342	Tuning shaft spring	22-1148	Voltage regulator & circuit breaker condenser
80-343	Solenoid switch spring		
80-344	Solenoid switch contact spring	22-1326	Distributor & oil gauge condenser
80-378	Selector knob spring	54-68	5/16 x 18 x 9/16 x 7/32 hex nut
80-379	Pointer return spring	63-1273	Distributor suppressor
80-426	Pointer drive tension spring	93-194	5/16 internal shakeproof lockwasher
80-442	Selector knob spring	112-323	No. 12 x 1/2 R.H. S.T. screw
100-31	Dial light bulb	114-249	5/16 x 18 x 1 3/4 hex Hd. M.S.
126-481	Dial glass shield	147-135	Spacer
149-44*	Adjusting spring and core		
188-45	Turret screw lock ring		
192-82	Dial glass (2 used)		
S10826	Solenoid end plug & bracket assem.		
S10829	Solenoid and terminal assem.		
S10831	Ratchet and bracket assem.		
S10834	Mounting plate & lever assem.		
S10836	Cross arm assem.		
S11031	Dial drum and bracket assem.		
S11033	Tuning & trim knob assem.		
S11051	Tuning shaft and gear assem.		
S11082	Turret assem.		
S11971	Dial light socket & wire assem.		
S11972	Selector knobs, housing & clamp assem.		
S12050	Tone control dial & pulley assem.		
S12120	Dial cord and eyelet assem.		

INSTALLATION PARTS

S11279	Set installation kit complete
19-113	Foot switch cable retaining clip
19-114	Foot switch cable retaining clip
54-123	No. 10-24 wing nut
54-157	1/4-20 x 7/16 x 3/32 hex nut
54-189	No. 8-32 wing nut
93-43	Ground strap
93-161	1/4" ext. shakeproof lockwasher
112-310	No. 10 x 1/2 R.H. S.M. screw
112-360	Set installation screw
114-175	1/4-20 x 1/2 hex. Hd. M.S.
118-30	Set installation link used on first 1500 sets only
118-36	Set installation link

Note: In ordering adjusting spring and core marked *, be sure to give color code information.

TUNING RANGE: 540-1600 Kc **SPEAKER:** 6" x 9" oval, instrument panel mounting.

INTERMEDIATE FREQUENCY: 265 Kc **CURRENT CONSUMPTION:** 7.5 amperes

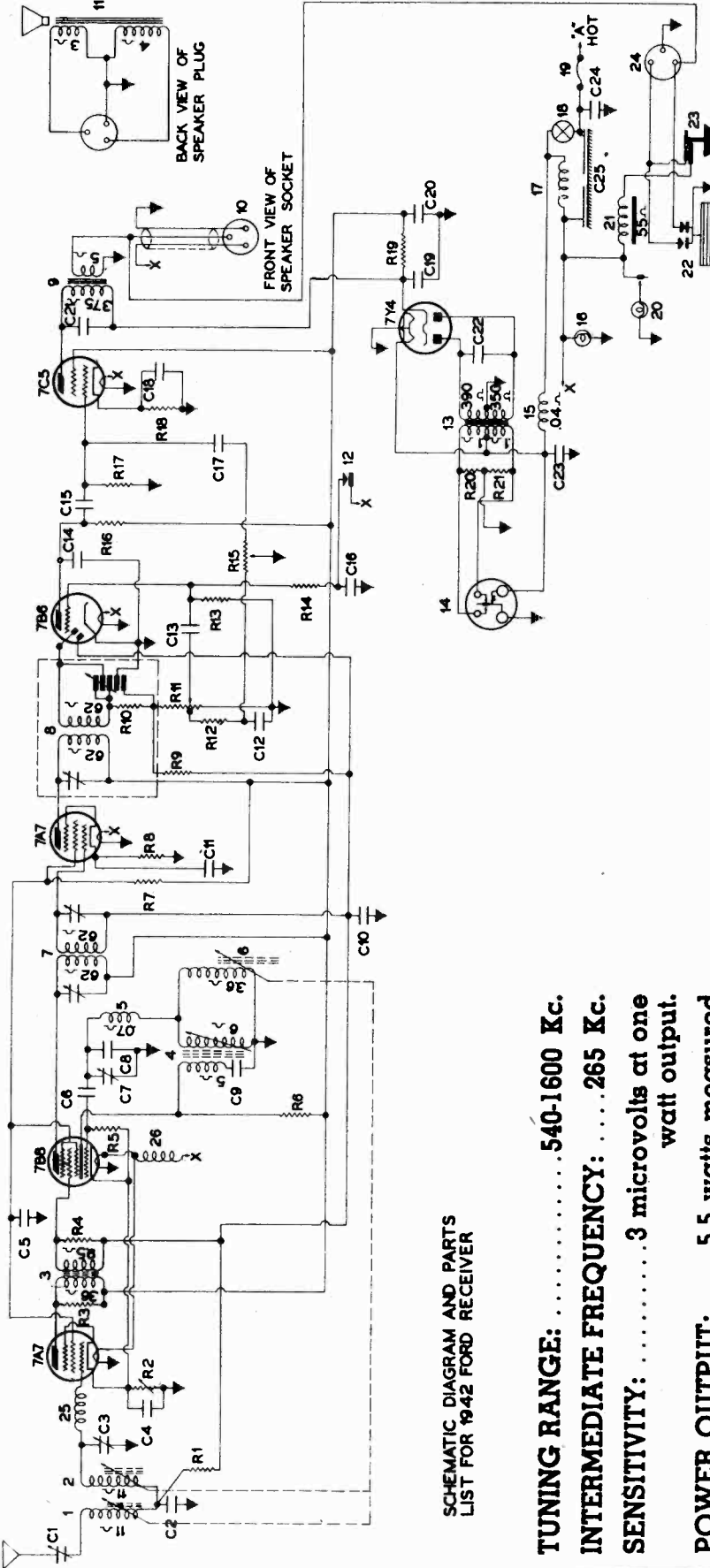
SENSITIVITY: 6 microvolts at one watt output **INSTANTANEOUS CURRENT CONSUMPTION DURING AUTOMATIC CHANGE CYCLE:** 20 amperes

UNDISTORTED POWER OUTPUT: 2.5 watts measured at the voice coil **TUBE COMPLEMENT:** 7A7 R.F., 7B8 converter, 7A7 I.F., 7B6 detector and 1st audio, 7C5 power output, 7Y4 rectifier.

MAXIMUM POWER OUTPUT: 4.5 watts measured at the voice coil.

MODEL 6MF690, Ch. 6B19
 Ford Adjust-O-Matic
 21A-18805-A1

ZENITH RADIO CORP.



CONDENSERS		RESISTORS		MISCELLANEOUS	
PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
1	ANT. TRIMMER PLATE 250MMF	1	330000 OHMS 1/4W ± 20%	1	5-10084 ANTENNA COIL
2	0.004MFD. 50V	2	22000 OHMS 1/4W ± 10%	2	5-10084 RF COIL
3	1MFD. 50V	3	33000 OHMS 1/4W ± 10%	3	5-10084 UNTUNED RF TRANSFORMER
4	1MFD. 50V	4	33000 OHMS 1/4W ± 10%	4	5-10095 OSC SHUNT COIL
5	1MFD. 50V	5	68000 OHMS 1/4W ± 10%	5	20-242 OSC SERIES COIL
6	100MMF 50V	6	15000 OHMS 1/2W ± 20%	6	5-10083 OSC TUNING COIL
7	100MMF 50V	7	33000 OHMS 1W ± 10%	7	95-819 1" LF TRANSFORMER
8	350MMF 27V COMPENSATOR	8	100 OHMS 1/4W ± 20%	8	91-120 OUTPUT TRANSFORMER
9	100MMF 50V	9	1 MEG. 1/4W ± 20%	9	95-867 DIODE TRANSFORMER
10	0.05MFD. 50V	10	330000 OHMS 1/4W ± 20%	10	52-241 SPEAKER CABLE & SOCKET
11	0.05MFD. 50V	11	250000V.C.TAP AT 75000V	11	29-491 DELAYED MUTING SWITCH
12	0.05MFD. 50V	12	22000 OHMS 1/4W ± 20%	12	95-880 VIBRATOR POWER TRANSFORMER
13	0.05MFD. 50V	13	1 MEG. 1/4W ± 20%	13	20-0-13 PULL OUT CHOKE
14	0.05MFD. 50V	14	1 MEG. 1/4W ± 20%	14	100-13 PULL OUT CHOKE #55
15	0.05MFD. 50V	15	330000 OHMS 1/4W ± 20%	15	7-5-333 MOTOR NOISE CHOKE
16	0.05MFD. 50V	16	22000 OHMS 1/4W ± 20%	16	83-12333 NON-OFF SWITCH ON VOL CONTROL
17	0.05MFD. 50V	17	330000 OHMS 1/4W ± 20%	17	19-13-15 FUSE - 20 AMPS
18	0.05MFD. 50V	18	1 MEG. 1/4W ± 20%	18	100-18 MANUAL DIAL LIGHT #44
19	0.05MFD. 50V	19	2700 OHMS 1/2W ± 20%	19	15-10127 HAND SELECTOR & MUTING SWITCH
20	0.05MFD. 50V	20	85 OHMS 1/2W ± 20%	20	22-85-308 HAND SELECTOR & MUTING SWITCH
21	0.05MFD. 50V	21	85 OHMS 1/2W ± 20%	21	23-5-10411 SAFETY SWITCH & AUTOMATIC SETUP
22	0.05MFD. 50V	22	85 OHMS 1/2W ± 20%	22	24-78-406 FOOT SWITCH SOCKET
23	0.05MFD. 50V	23	85 OHMS 1/2W ± 20%	23	25-5-8819 ANY MOTOR NOISE CHOKE
24	0.05MFD. 50V	24	85 OHMS 1/2W ± 20%	24	26-5-9841 HEATER LINE CHOKE
25	0.05MFD. 50V	25	85 OHMS 1/2W ± 20%	25	
26	0.05MFD. 50V	26	85 OHMS 1/2W ± 20%	26	

SCHEMATIC DIAGRAM AND PARTS LIST FOR 1942 FORD RECEIVER

- TUNING RANGE:** 540-1600 Kc.
- INTERMEDIATE FREQUENCY:** 265 Kc.
- SENSITIVITY:** 3 microvolts at one watt output.
- POWER OUTPUT:** 5.5 watts measured at the voice coil.
- SPEAKER:** 6" x 9" oval, instrument panel mounting.
- CURRENT CONSUMPTION:** 7.5 amperes
- INSTANTANEOUS CURRENT CONSUMPTION DURING AUTOMATIC CHANGE CYCLE:** 16.5 amperes
- TUBE COMPLEMENT:** 7A7 R.F., 7B8 converter, 7A7 I.F., 7B6 Detector and 1st Audio, 7C5 Power Output, 7Y4 Rectifier.

ZENITH RADIO CORP.

R.F. AND OSCILLATOR ALIGNMENT

- 1—Set the signal generator at 1640 Kc.
- 2—Connect the signal generator leads, through the dummy as illustrated in Figure 9, 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. 8) at 1640 Kc.
- 6—Peak the R.F. and antenna trimmers (G and H—Fig. 8) 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. 8) to scale at 1200 Kc.
- 10—Adjust the antenna and R.F. cores (1 and 2—Fig. 7) for maximum output reading.
- 11—Set the signal generator at 600 Kc.
- 12—"Rock in" the Shunt oscillator core (4—Fig. 8) for maximum output reading. (Same as rocking in the paddler condenser on a ganged condenser receiver.)
- 13—Check the receiver at 1200 Kc. for calibration and gain. If the receiver is off scale or weak, repeat operations 9 and 10.

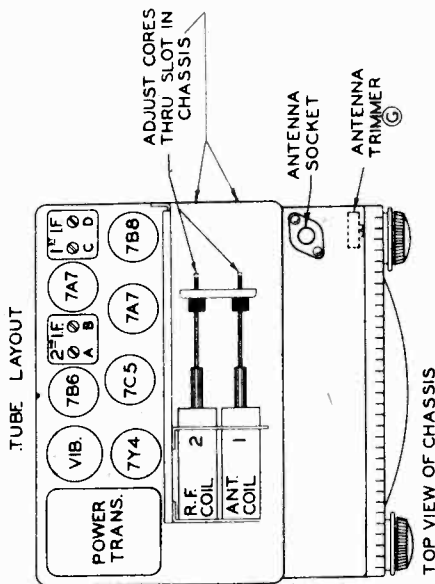


FIG. 7

Maximum performance is dependent upon the accurate alignment of the receiver, so follow the alignment instructions carefully.

CAUTION: Make all alignment adjustments to the receiver with the volume control turned full on. Reduce the signal intensity, if necessary, at the signal generator. Connect the output meter across the voice coil

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. 7) for maximum output. Repeat the operation to assure accurate alignment.

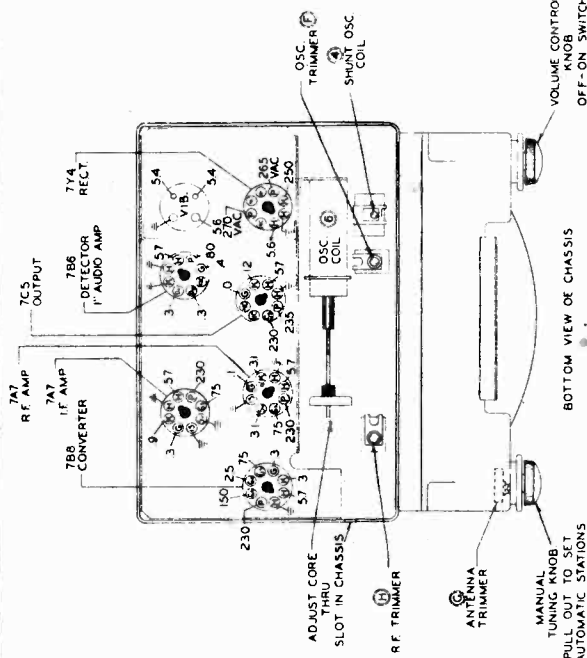


FIG. 8

Figure 8 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.

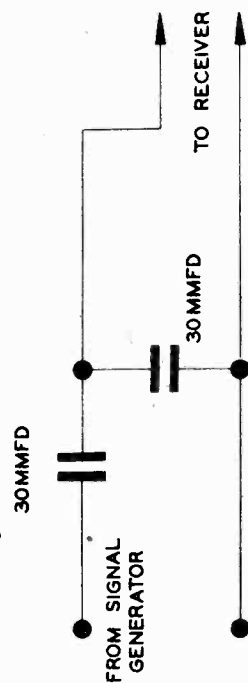


FIG. 9

Schematic of a recommended dummy antenna, closely resembling actual antenna capacity, to be used in series with signal generator leads when aligning the R. F. section of the receiver.

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.

RECEIVER INSTALLATION:

Figures 1 and 2, illustrating the escutcheon plate, control knobs and the installed receiver are given here to facilitate removal and reinstallation.

tion of the receiver when service or repairs are necessary.

Remove the Link "B" and loosen the hook bolts "D" to remove the receiver from the car.

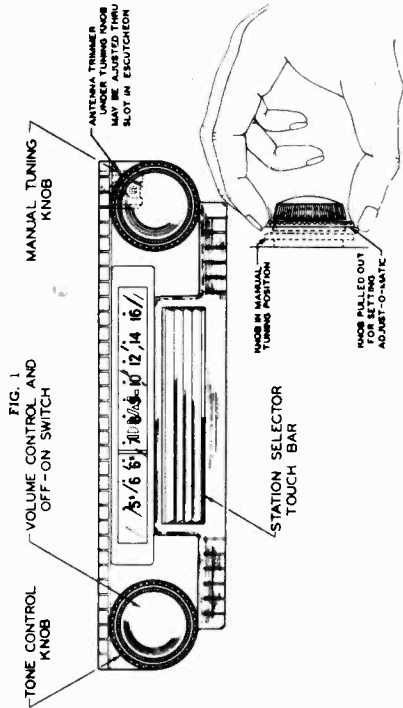
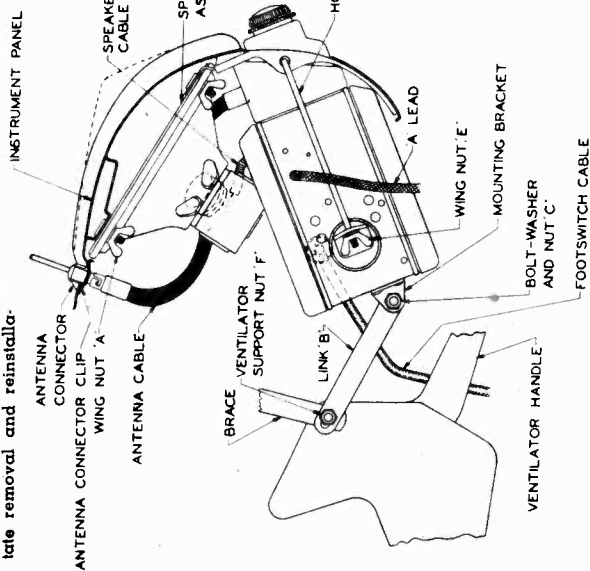


FIG. 1

FIG. 2

INTERFERENCE SUPPRESSION

There should be no motor noise or interferences from the ignition circuit, if the receiver has been installed in the car according to the instructions furnished with it. The interference suppression equipment may be checked for proper installation by referring to the following illustrations:

The circuit breaker condenser No. 22-1148 should be installed as shown in Figure 3.

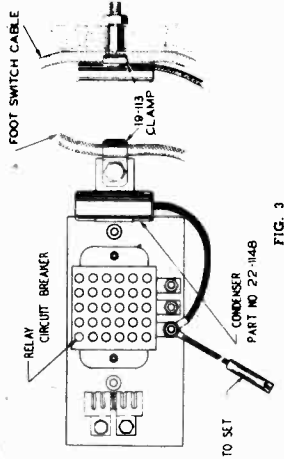


FIG. 3

NOTE: To set up a station on any automatic position, pull the tuning knob out and tune the receiver as in manual tuning. Press the tuning knob in to its original position after the station has been accurately tuned in.

The voltage regulator condenser No. 22-1148 and the ground strap No. S-9343 should be installed as shown in Figure 4 below.

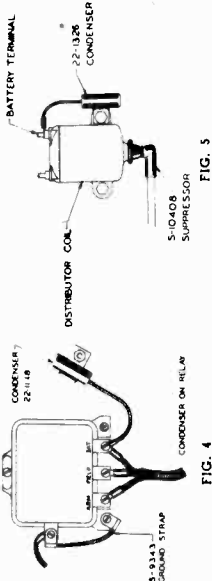


FIG. 5

The distributor primary condenser No. 22-1326 and suppressor with rubber nipple No. S-10408 should be installed as shown above in Figure 5.

The oil gauge condenser No. 22-1326 should be installed as shown in Figure 6.

Note the different locations for 6 and 8 cylinder cars.

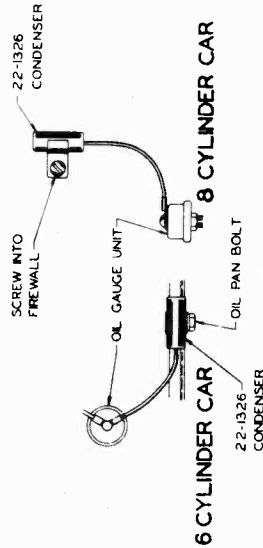


FIG. 6

Check the inside windshield divider trim strip, the antenna connector, and all the instrument panel bolts so they make a good ground contact with the body.

DELAYED AUTOMATIC MUTING CIRCUIT

Pressing either the Touch-bar or the foot control switch automatically mutes the receiver for the duration of the change cycle. This action is accomplished by applying 6 volts negative to the 7B6 first audio grid through the 1 megohm resistor R-14. (See schematic diagram.) This negative voltage blocks the grid of the 7B6 until the voltage bleeds off through the 15 megohm resistor R-13, when the receiver will again operate normally. **NOTE:** The storage battery in the car must be properly polarized to apply the negative muting voltage to the receiver. If the battery polarity is reversed the receiver will not mute and it may become distorted during the change cycle. Always connect the positive (+) terminal of the storage battery or power supply to the receiver case when checking the receiver.

ZENITH RADIO CORP.

DIAL AND TUNING MECHANISM

12-894	Rear magnet mounting bracket	.15
19-127	Dial scale mounting clip	.01
28-313	Dial scale	.90
34-106	Ratchet	.25
46-470	Station selector bar	.15
46-472	Tone control knob	.15
46-474	Volume control knob	.10
57-962	Escutcheon plate	1.35
80-232	Knob retaining spring	.01
80-272	Ratchet lever spring	.02
80-274	Tuning coil return spring	.05
80-300	Gear indexing spring	.70
83-998	Light beam conductor strip	.03
85-308	Station selector switch	.60
100-31	Dial light bulb	.07
100-36	Dial light bulb (manual)	.09
114-102	No. 6 x 3/8" Hex acorn Hd. S.T. screw (escutcheon mounting)	.50C
114-174	No. 4/40 x 1/4" Hex Hd. S.H. screw (dial scale mounting)	.50C
126-433	Manual dial light shield	.01
147-118	Manual automatic bakelite breaker collar	.04
188-34	Tuning shaft retaining ring	.01
188-39	Turret screw lock ring	.02
188-43	Retaining ring (dial pointer)	.01
S10110	Front magnet mounting bracket & detent lever spring assembly	.20
S10120	Tuning adjustment screw & grommet assembly	.40
S10127	Magnet coil & terminal assembly	1.00
S10149	Tuning control shaft & gear assembly	.30
S10394	Tuning & trim knob assembly (46-471 & 46-473)	.65
S10409	Ratchet drive lever & spring assembly	.35
S10411	Manual automatic selector switch assembly	.25
S10412	Tuning drive bushing & bracket assembly	.40
S10415	Turret shaft, screw & stop assembly	2.00
S10418	Cross arm, magnet core, pointer drive bracket & stud assembly	.65
S10426	Manual dial light socket & wire assembly	.40
S10427	Light switch, bracket & stud assembly	.25
S10430	Dial pointer & tip assembly	.75
S10433	Dial scale background plate, shield & strip assembly	.40
S10584	Dial light socket & wire assembly	.35
S10657	Selector bar retaining plate & spring assembly	.25

RESISTORS

63-271	1 megohm	1/4 watt	.07
63-294	100 ohm	1/4 watt	.07
63-594	68M ohm	1/4 watt	.07
63-596	330M ohm	1/4 watt	.07
63-644	22M ohm	1/4 watt	.07
63-646	33M ohm	1/4 watt	.07
63-718	330M ohm	1/4 watt insulated	.15
63-763	22M ohm	1/4 watt insulated	.15
63-957	33M ohm	1 watt insulated	.20
63-976	15 megohm	1/4 watt	.07
63-1170	1500 ohm W.W.	2 watt insulated	.30
63-1180	15M ohm	1/2 watt insulated	.17
63-1197	82 ohm	1/2 watt	.08
63-1203	270 ohm W.W.	1 watt insulated	.20
63-1258	Tone control, volume control & switch	2.50	
63-1267	Sensitivity control	.30	
S10408	Distributor suppressor assembly (63-1271)	.50	

MISCELLANEOUS

49-491	Dynamic speaker (6" x 9" oval)	5.00
209-491	Field coil (not replaceable)	2.00
52-200	Battery cable—fuse to ammeter	.20
52-202	Battery cable—set to fuse	.15
52-241	Speaker cable & plug	.40
52-251	Antenna cable	1.00
78-251	Socket—antenna connector	.10
78-406	Socket—foot switch	.10
78-454	Socket—lokial tube (8 contact)	.15
78-455	Socket—lokial tube (6 contact)	.15
78-467	Socket—lokial tube (5 contact)	.15
78-477	Socket—vibrator	.10
80-291	Muting switch spring	.03
83-1002	Sponge rubber strip (on top cover)	.03
95-880	Power transformer	4.25
95-887	Output transformer	1.25
114-63	No. 6 32 x 3 16" Hex acorn Hd. M.S.-N.P.	.25C
114-118	No. 6 x 3/16" Hex acorn Hd. S.T. screw (statuary bronze)	.45C
114-150	No. 6/32 x 5 32" Hex acorn Hd. M.S.	.35C
126-421	Tube shield	.10
136-12	Fuse—20 ampere	.10
190-19	Vibrator	2.95
196-54	Speaker gasket & screen	.65
202-321	Instruction book	.05
S10317	Foot control switch & cable assembly	2.00

All Prices List—Subject to Regular Discount and Change Without Notice—9 15, 41.

COILS AND CHOKES

20-213	Main hash choke coil	.25
20-242	Oscillator series coil	.20
95-819	1st I.F. transformer	1.10
95-820	2nd I.F. transformer	1.10
S8819	Antenna motor noise choke assembly	.20
S9762	Untuned R.F. coil & core assembly	.50
S9841	Heater line choke assembly	.20
S10063	Oscillator coil & shield assembly	1.10
S10064	R.F. coil & shield assembly	1.40
S10095	Oscillator shunt coil assembly	.60
S10393	Motor noise choke coil assembly	.15

CONDENSERS

22-162	.0001 mfd.	600 volt	.15
22-170	.1 mfd.	400 volt	.20
22-162	.00025 mfd.	600 volt	.20
22-190	.1 mfd.	200 volt	.18
22-250	.05 mfd.	200 volt	.15
22-906	.005 mfd.	200 volt	.15
22-908	.5 mfd.	120 volt	.25
22-912	.002 mfd.	600 volt	.15
22-1076	Dual spark plate condenser		.20
22-1148	Voltage regulator & circuit breaker cond.		.50
22-1170	.01 mfd.	600 volt	.15
22-1180	.003 mfd.	200 volt	.15
22-1233	20 mfd. 25 volt x 10 mfd. 300 volt x 20 mfd. 350 volt Dry Electrolytic		1.25
22-1235	Single section ceramic trimmer		.15
22-1236	Single section ceramic trimmer		.20
22-1238	.5 mfd.	120 volt	.25
22-1244	.004 mfd.	600 volt	.20
22-1247	.008 mfd.	1600 volt	.20
22-1248	350 mmfd. compensator		.40
22-1270	.02 mfd.	200 volt	.15
22-1277	Antenna trimmer		.35
22-1326	Distributor & oil gauge condenser		.45

MOTOR NOISE SUPPRESSION KIT

S10446	Motor noise suppression kit complete	2.60
S9343	Regulator ground lead assembly	.05
S10408	Distributor suppressor assembly	.50
22-1148	Voltage regulator & circuit breaker cond.	.50
22-1326	Distributor & oil gauge condenser	.45
54-68	5/16-18 Hex nut	.01
93-194	5 16" internal shakeproof lockwasher	.50C
112-323	No. 12 x 1/2" R.H.S.T. screw	1.50C
114-152	5 16-18 Hex Hd. M.S.	.04
147-108	Spacer	.02

ZENITH RADIO CORP.

DELAYED AUTOMATIC MUTING CIRCUIT

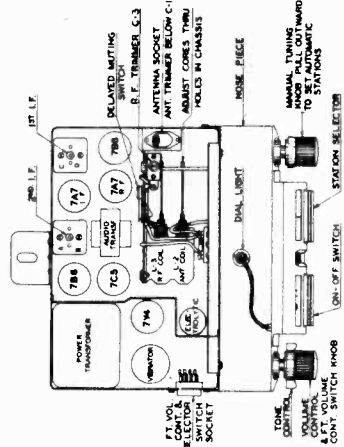


Fig. 10. Top View of Chassis.

ALIGNMENT

Maximum performance depends on accurate alignment of volume control turned full on and foot volume control cable plugged into its socket. Reduce signal intensity as much as possible at signal generator. Connect output meter across voice coil.

CAUTION: Make all adjustments on the receiver with voice coil.

I.F. ALIGNMENT PROCEDURE

1. Remove top and bottom covers from receiver.
2. Set signal generator to 265 Kc.
3. Apply signal from generator through a .1 Mfd. dummy to 788 converter grid. (Pin No. 6 on socket.)
4. Adjust I.F. trimmers A, B, C, and D (Fig. 10), in the order named for maximum output. Repeat the operation to assure accurate alignment.

R.F. AND OSCILLATOR ALIGNMENT

1. Connect signal generator leads through dummy illustrated in Fig. 12 to antenna lead in socket on receiver.
2. Set signal generator to 535 Kc.
3. Place set in manual tuning position and set dial to 535 Kc.
4. Adjust oscillator trimmer C-11 (Fig. 11), for maximum response.

CORE OR COIL REPLACEMENT ONLY

WARNING: The following adjustments are to be made ONLY if a core or coil is replaced.

1. Replace coil or core.
2. Set signal generator to 1700 Kc.
3. Connect signal generator leads through dummy illustrated in Figure 12 to antenna receptacle on the receiver.
4. Set receiver dial to 1600 Kc. (Maximum high frequency end of dial.)
5. Screw the core completely out of the antenna coil, the R.F. Coil, the converter coil, and the oscillator coil.
6. Adjust oscillator trimmer C-11 (Fig. 11), at 1700 Kc.
7. Adjust converter trimmer C-7, R.F. trimmer C-3, and antenna trimmer C-1 (Fig. 10 and 11) for maximum output reading.
8. Replace cores to their approximate original positions.
9. Set generator dial and receiver dial to 1200 Kc.
10. Adjust oscillator core (Figure 10) to scale at 1200 Kc.
11. Adjust the antenna core, R.F. core, and converter core (Fig. 10 and 11), for maximum output reading.
12. Set signal generator to 600 Kc.
13. "Rock in" shunt oscillator coil (Fig. 10) for maximum output reading. (This should only be done as a last resort.) This is the same as rocking in the paddler condenser on a ganged condenser receiver.
14. Check receiver at 1200 Kc. for calibration and gain. If the receiver is off scale or weak, repeat operations 9, 10 and 11.
15. After alignment is complete, the maximum high frequency tuning range should be checked. If the range is greater or less than 1605 Kc. the mechanical stop for the tuner cross arm should be bent to limit the frequency coverage to 1605 Kc.

After all adjustments have been made, glue core screws with speaker cement.

IMPORTANT: After reinstalling the receiver in the car, allow it to operate for approximately 15 minutes to reach normal operating temperature. Check the antenna trimmer alignment on a weak station at approximately 1200 Kc. Extend antenna to maximum before adjusting the antenna trimmer.

The approximate voltages are measured with a 1000 ohm per volt meter between the socket terminals and the chassis as shown on the circuit diagram. The Volume Control is set at maximum with no signal. Battery voltage is 6.3

AUTOMATIC TUNING

There are five automatic tuning positions which may be adjusted to five desired stations. If these positions have not been previously adjusted proceed as follows:

1. Press station selector bar until number 1 appears in station indicator window.
2. Pull manual tuning knob outward to engage the automatic mechanism.
3. Select the station desired and tune to its frequency by turning tuning knob. Tune very carefully for clearest reception.
4. Press station selector bar, pull manual tuning knob outward, and tune in station desired for No. 2 position. Use same procedure for positions No. 3, 4 and 5.

When the five automatic positions have been adjusted to the five desired stations as instructed, it is only necessary to press the station selector bar to return to dial tuning, or any one of the stations, adjusted on the Automatic.

MANUAL TUNING

1. Press Automatic Tuning Station Selector (Fig. 2) several times or until the letter "M" appears in indicator window.
2. Pull Manual tuning control knob (right hand) outward and turn to tune in desired station. Be sure to tune to exact frequency to assure the best tone quality.

VOLUME—Adjust left hand control knob for desired volume.

TONE CONTROL—The tone control is located behind the volume control knob. Turn in either direction for most pleasing tone.

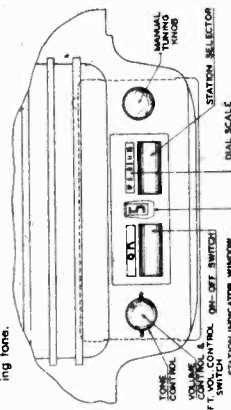


Fig. 2. Front View

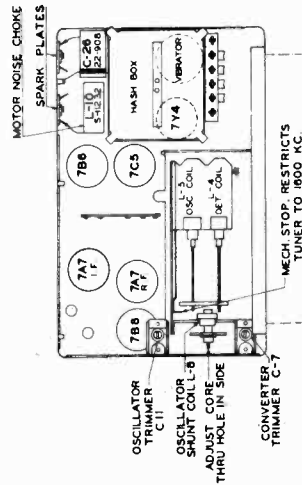


Fig. 11. Bottom View of Chassis.

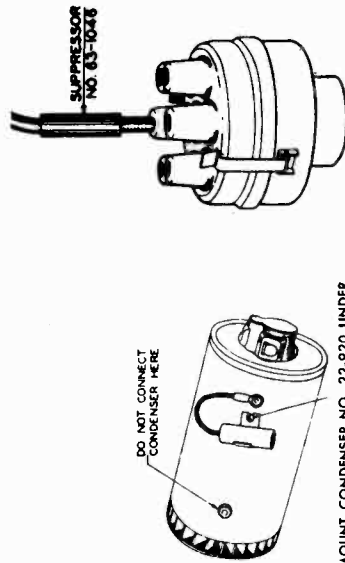
5. Set signal generator to 1200 Kc.
6. Tune set to 1200 Kc.
7. Adjust converter trimmer C-7 (Fig. 11) and R.F. trimmer C-3 (Fig. 10) for maximum response.
8. If dial calibration is off after making above adjustments, a correction can be made by loosening dial scale mounting screws and sliding scale to desired position.

ZENITH RADIO CORP.

INTERFERENCE SUPPRESSION

There should be no motor noise or interference from the ignition circuit if the receiver has been installed in the car according to the instructions furnished with it. The interference suppression equipment may be checked for proper installation by referring to the following illustrations:

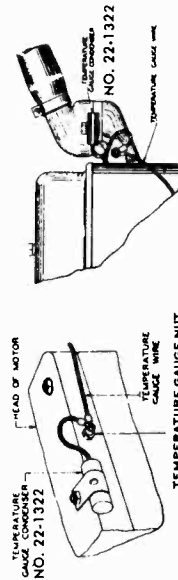
The generator condenser No. 22-920 should be installed as shown below in Figure 3.



MOUNT CONDENSER NO. 22-920 UNDER GENERATOR GROUND LEAD SCREW

Fig. 3

The distributor suppressor No. 63-1046 should be connected as shown above in Figure 4.



TEMPERATURE GAUGE WIRE NO. 22-1322

TEMPERATURE GAUGE NUT NO. 22-1322

Fig. 5

The No. 22-1322 temperature gauge condenser should be installed as shown in Figure 5 for Nash 600 series cars and Figure 6 for Ambassador cars.

The ammeter and fuel gauge condensers No. 22-919 should be installed as shown in Figure 7.

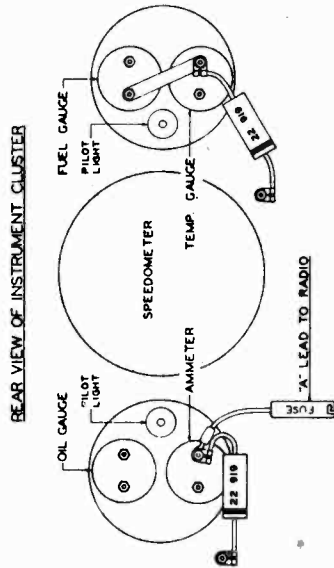


Fig. 7

The motor hood bond spring No. 80-145 should be installed as shown in Figure 8. Note that the sharp extrusions are facing down toward the front of the car before the hood grounding strip is bent back. Make sure the instrument panel bolts and chassis mounting bolts are tight.

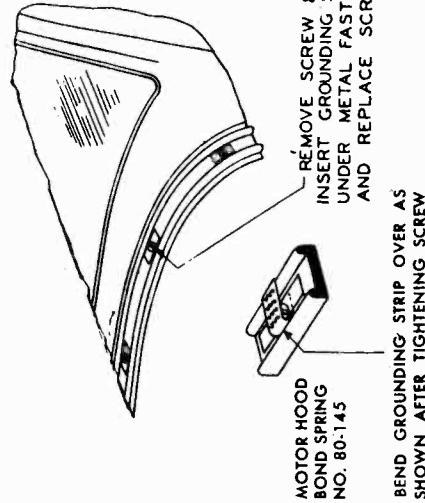


Fig. 8

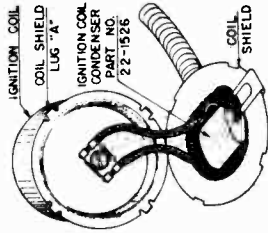


Fig. 9. Ign. Coil Cond.

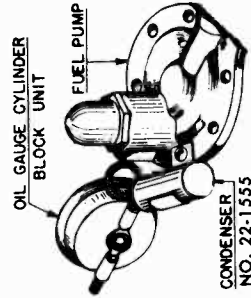


Fig. 9A. Oil Gauge Cond.

Straighten coil shield lugs "A" on back of ignition coil. Remove shield. Condenser should be installed as shown in Fig. 9. When replacing shield be sure to bend lugs down tightly to insure good connection between shield and coil. The oil gauge condenser should be installed as shown in Fig. 9A.

PARTS LIST MODEL 6MN082 (CHASSIS 6C82)
1946 NASH LONG DISTANCE RADIO AC-6016

COILS AND CHOKES

Diagram No.	Part No.	Description
L10	20-213	Main hash choke
T 1	95-916	1st I.F. transformer
T 2	95-917	2nd I.F. transformer
L 1	58819	Antenna motor noise choke assem.
L 7	S11229	Oscillator series coil assem.
L 8	S11231	Oscillator shunt coil assem.
L 9	S11232	Motor noise choke coil assem.
L 5	S12053*	Oscillator tuning coil assem.
L 2	S12060*	Antenna tuning coil assem.
L 3	S12060*	R.F. tuning coil assem.
L 4	S12060*	Converter tuning coil assem.

Note: In ordering coils marked *, be sure to give color code information.

CONDENSERS

C 8	22-162	100 mmfd. 600 volt
C11	22-170	.1 mfd. 400 volt
C13	22-182	250 mmfd. 600 volt
C17	22-190	.1 mfd. 200 volt
C 4	22-190	.1 mfd. 200 volt
C12	22-250	.05 mfd. 200 volt
C19	22-838	.005 mfd. 600 volt
C14	22-906	.005 mfd. 200 volt
C27	22-908	.5 mfd. 120 volt
C23	22-1170	.01 mfd. 600 volt
C18	22-1180	.003 mfd. 200 volt
C16	22-1244	.004 mfd. 600 volt
C 2	22-1270	.02 mfd. 200 volt
C28	22-1374	.02 mfd. 200 volt
C15	22-1376	R.F. trimmer
C 3	22-1377	Detector trimmer
C 7	22-1378	Oscillator trimmer
C10	20MFD.	25 W.V. Electrolytic
C20	22-1387	20 MFD. 350 W.V. Electrolytic
C21	10 MFD.	300 W.V. Electrolytic
C22	22-1420	Antenna trimmer
C 1	22-1448	.008 mfd. 1600 volt
C24	22-1456	10 mmfd. 600 volt mica
C 5	22-1478	3.50 mmfd. compensator
C 9		

RESISTORS

R19	63-1342	Tone control vol. control & sw.
R20		
R 5	63-1368	1800 ohm 2 watt W.W.
R18	63-1369	270 ohm 1 watt W.W.
R13	63-1390	1 megohm 1/4 watt
R 8	63-1391	33M ohm 1/4 watt
R22		
R10	63-1392	330M ohm 1/4 watt
R 1	63-1393	47 ohm 1/4 watt
R11		
R12		
R21		

Diagram No.

Diagram No.	Part No.	Description
R15	63-1394	10M ohm 1/4 watt
R 5	63-1396	68M ohm 1/4 watt
R 8	63-1398	33M ohm 1 watt
R16	63-1399	82 ohm 1/2 watt
R14	63-1400	1.5 megohm 1/4 watt
R 7	63-1401	15M ohm 1/2 watt
R26	63-1410	120 ohm 1/2 watt
R 3	63-1411	18M ohm 1/4 watt
R24	63-1414	100 ohm 1/4 watt
R 6	63-1416	6.8 megohm 1/4 watt
R27	63-1417	47,000 ohm 1/4 watt
R25	63-1418	3300 Ohm 1/4 watt

MISCELLANEOUS

SK1	52-280	Speaker cable & socket
	52-311	Battery cable (set to fuse)
	52-312	Battery cable (fuse to ammeter)
	78-281	Vibrator socket
FS2	78-551	Foot switch cable plug socket
	78-596	Tube socket-Loktal base (8 contact)
	80-374	Knob spring-LH.
	80-375	Knob spring-RH.
S2	85-353	On-off switch
	93-456	Vibrator cushion washer
T4	95-914	Power transformer
T3	95-915	Output transformer
S4	136-12	Fuse-20 amp.
V1	190-20	Vibrator
	192-86	Dial crystal
	202-406	Instruction book
S1	S11270	Hand selector & mulling switch assem.
	S11391	Antenna connector socket & bracket assem.
	S11395	Escutcheon dial crystal & key plate assem.
FS3	S12348	Foot switch, vol. control, cable & plug assem.
	63-1287	Foot vol. control
	S11922	Foot switch rubber cap assembly

SPEAKER AND SPEAKER MOUNTING PARTS

SP1	49-500	8" dynamic speaker & plug
	54-30	No. 8/32 x 5/16 x 7/64 Hex nut
	57-862	Speaker mounting plate
	112-298	No. 8/32 x 1/2 B.H. M.S.
	147-102	Speaker mounting spacer
	196-38	Speaker gasket
	208-500*	Cone & voice coil assem.

Note: When ordering cone and voice coil marked * be sure to add manufacturer's code letter that follows base part number.

DIAL AND TUNING MECHANISM ASSEMBLY

Diagram No.	Part No.	Description
S3	100-32	Dial light bulb
L6	S10829	Dial scale & terminal assem.
	26-333	Dial scale (manual tuning)
	34-132	Indexing disc
	34-154	Ratchet gear
	34-135	Volume control gear
	46-533	Selector, knob (2 used)
	57-1045	Escutcheon
	57-1046	Key plate (4 used)
	59-154	Dial pointer
	59-168	On-off indicator
	80-329	Gear indexing spring
	80-331	Cross arm return spring
	80-332	Cam lever spring
	80-336	Ratchet gear return spring
	80-340	Lever spring
	80-341	Kick-off spring
	80-342	Tuning shaft spring
	80-343	Solenoid switch contact spring
	80-344	Solenoid switch contact spring
	149-44*	Adjusting spring & core
	188-45	Turret screw lock ring
	S10826	Solenoid end (plug & bracket assem.)
	S10831	Ratchet & bracket assem.
	S10834	Mounting plate & lever assem.
	S10836	Cross arm assem.
	S11053	Tuning shaft & gear assem.
	S11082	Turret assem.
	S11179	Dial drum & bracket assem.
	S11627	Dial light socket & wire assem.

Note: In ordering Adjusting Spring & Core marked *, be sure to give color code information.

MOTOR NOISE SUPPRESSION KIT

S11399	Motor noise suppression kit complete
22-919	Ammeter & fuel gauge condenser
22-290	Generator condenser
22-1322	Temperature gauge condenser
22-1526	Ignition coil condenser
22-1555	Oil gauge condenser
63-1046	Distributor suppressor
80-145	Motor hood band spring

KNOBS AND INSTALLATION PARTS

S11400	Set installation kit complete
S11394	Tuning knob firm knob & set screw (146-536 & 537)
46-534	Volume control knob
46-534	Tone control knob
54-146	No. 10/32 wing nut
54-148	1/4-20 x 1/2 x 1/4 Hex nut
54-153	7/16-28 x 1/20 hex. nut
80-232	Knob retaining spring
93-127	No. 10 internal shakeproof lockwasher
93-173	1/4 internal shakeproof lockwasher
93-416	1/32 x 13/64 x 5/8 steel washer
112-310	Foot switch mounting screw
144-20	Set mounting bolt
147-101	Set mounting spacer
188-41	Spacer ring

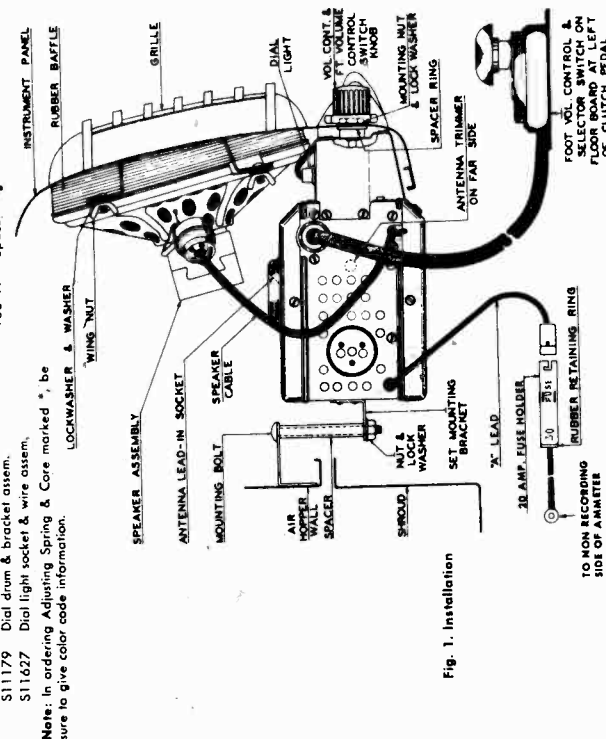
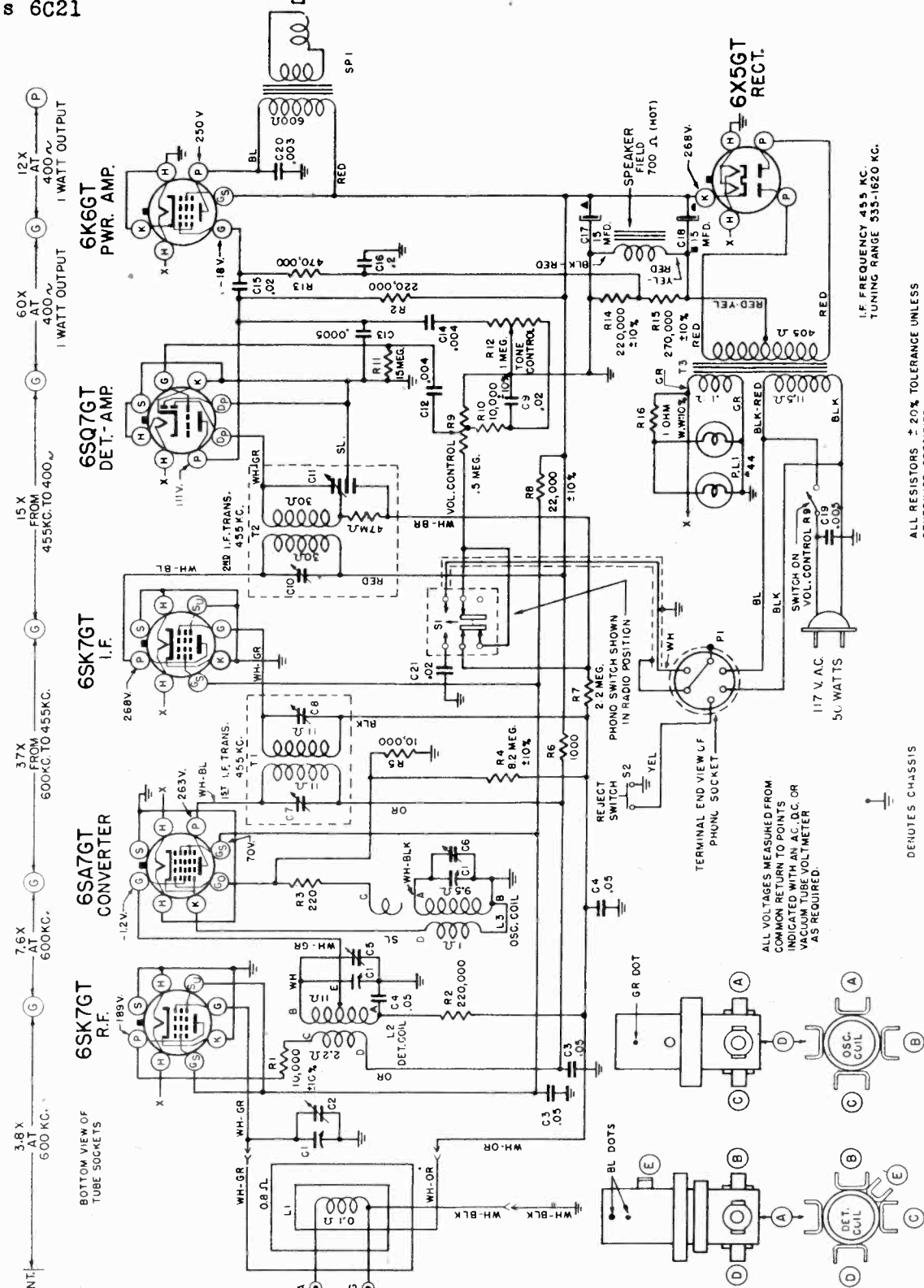


Fig. 1. Installation

MODEL 6R084
Chassis 6C21

ZENITH RADIO CORP.



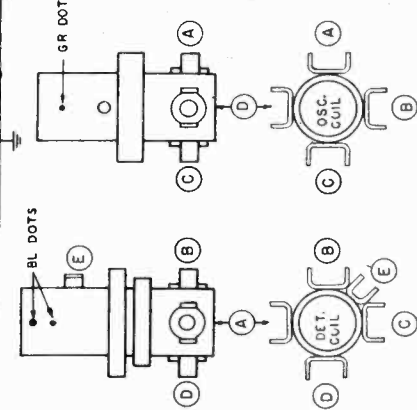
I.F. FREQUENCY 455 KC.
TUNING RANGE 535-1620 KC.

ALL RESISTORS ± 20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

DENOTES CHASSIS

MODEL 6R084
CHASSIS No. 6C21

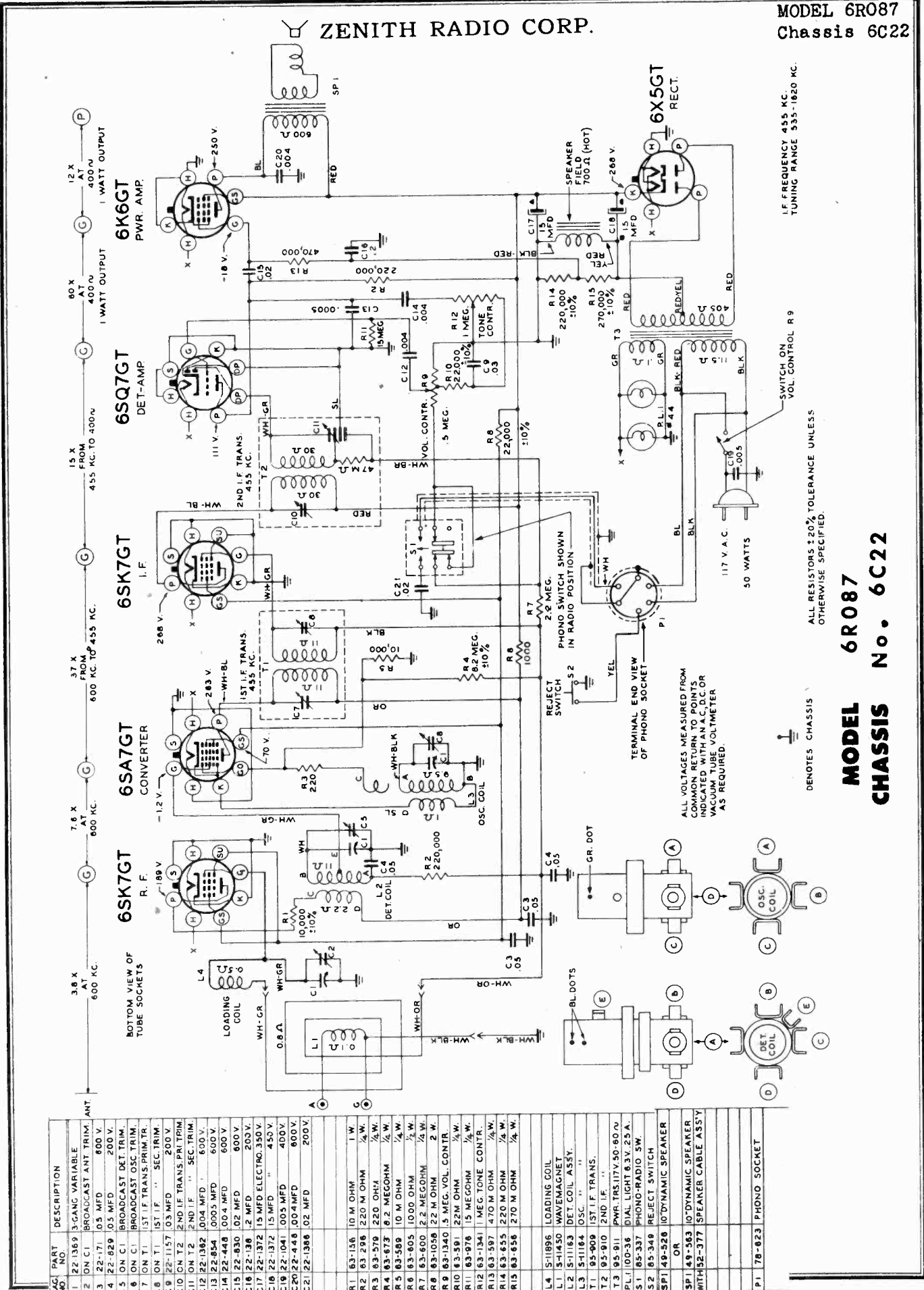
ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH AN A.C. OR VACUUM TUBE VOLT METER AS REQUIRED.



DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1369	3-GANG VARIABLE
C2	ON C1	BROADCAST ANT. TRIMMER
C3	22-171	.05 MFD. 500 V.
C4	22-829	.05 MFD. 200 V.
C5	ON C1	BROADCAST DE T. TRIMMER
C6	ON C1	BROADCAST OSC. TRIMMER
C7	ON T1	I.F. TRANS. PRI. TRIMMER
C8	DN T1	.5 T. SEC.
C9	22-327	.02 MFD. 200 V.
C10	ON T2	2ND I.F. TRANS. PRI. TRIMMER
C11	ON T2	2ND I.F. SEC.
C12	22-1362	604 MFD. 600 V.
C13	22-854	.0005 MFD. 600 V.
C14	22-648	.004 MFD. 600 V.
C15	22-930	.02 MFD. 600 V.
C16	22-136	.2 MFD. 200 V.
C17	22-1372	15 MFD. ELECTRO 350 V.
C18	22-1372	15 MFD. 450 V.
C19	22-1041	.003 MFD. 400 V.
C20	22-288	.003 MFD. 600 V.
C21	22-1386	.02 MFD. 200 V.
R1	63-156	1.0 M OHM 1 W.
R2	63-296	320 M OHM 1/4 W.
R3	63-979	22.0 OHM 1/4 W.
R4	63-873	8.2 MEG OHM 1/4 W.
R5	63-289	10 M OHM 1/4 W.
R6	63-605	1000 OHM 1/4 W.
R7	63-1038	22 MEG OHM 1/4 W.
R8	63-1340	.5 MEG VOLUME CONTROL 2 W.
R9	63-1340	.5 MEG VOLUME CONTROL 2 W.
R10	63-641	10 M OHM 1/4 W.
R11	63-976	15 MEG OHM 1/4 W.
R12	63-341	1 MEG. TONE CONTROL 1 W.
R13	63-597	470 M OHM 1/4 W.
R14	63-655	22 M OHM 1/4 W.
R15	63-656	270 M OHM 1/4 W.
R16	63-1223	1 OHM WIREWOUND 1/4 W.
L1	S-1388	WAVE MAGNET
L2	S-1163	DET. COIL ASSEMBLY
L3	S-1164	OSC. COIL
T1	95-909	I.F. TRANSFORMER
T2	95-910	2ND I.F. TRANSFORMER
T3	95-911	PWR. TRANS. 117V. 50-60V
PL1	100-36	DIAL LIGHT 6.3 V. 25 A.
S1	85-337	PHONO-RADIO SWITCH
S2	85-349	REJECT SWITCH
SP1	48-315	5" DYNAMIC SPEAKER
PI	S-1167	PHONO CABLE ASSEMBLY

ZENITH RADIO CORP.

MODEL 6R087
Chassis 6C22



IF FREQUENCY 455 KC.
TUNING RANGE 535-1620 KC.

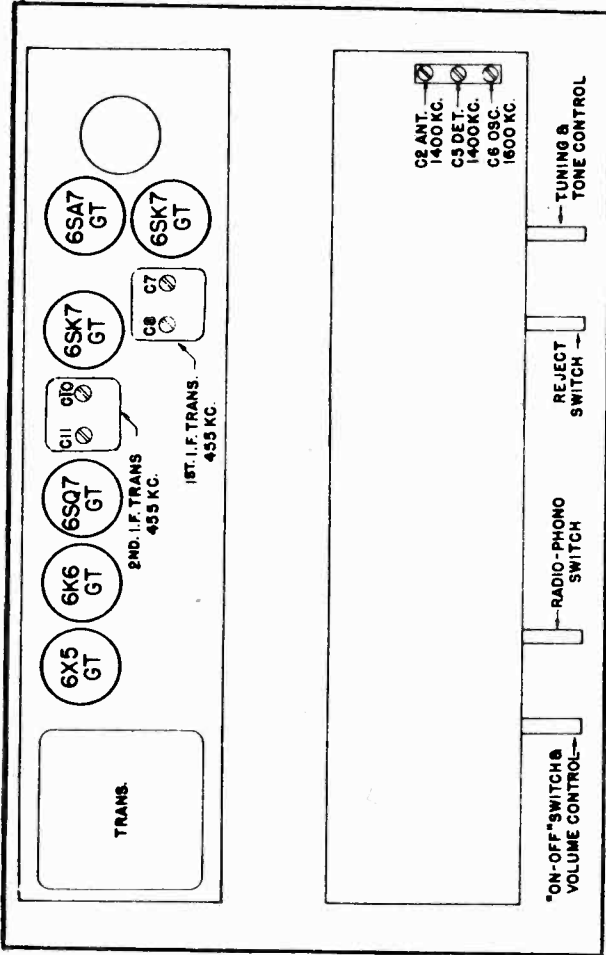
SWITCH ON VOL. CONTROL R 9

ALL RESISTORS ± 20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

⊥ DENOTES CHASSIS

MODEL 6R087
CHASSIS No. 6C22

DIAG. NO.	PART NO.	DESCRIPTION	QTY.	REMARKS
C1	22-1369	3-GANG VARIABLE	1	
C2	ON C1	BROADCAST ANT. TRIM.	600 V.	
C3	22-171	.05 MFD	600 V.	
C4	22-829	.05 MFD	200 V.	
C5	ON C1	BROADCAST DET. TRIM.		
C6	ON C1	BROADCAST OSC. TRIM.		
C7	ON T1	ST. I.F. TRANS. PRIM. TR.		
C8	ON T1	ST. I.F. SEC. TRIM.		
C9	22-1157	.03 MFD	200 V.	
C10	ON T2	2ND I.F. TRANS. PRIM. TRIM.		
C11	ON T2	2ND I.F. SEC. TRIM.		
C12	22-1582	.004 MFD	600 V.	
C13	22-854	.0005 MFD	600 V.	
C14	22-448	.004 MFD	600 V.	
C15	22-830	.02 MFD	600 V.	
C16	22-138	.2 MFD	200 V.	
C17	22-1372	15 MFD ELECTRO.	350 V.	
C18	22-1372	15 MFD ELECTRO.	450 V.	
C19	22-1041	.005 MFD	400 V.	
C20	22-448	.004 MFD	600 V.	
C21	22-1386	.02 MFD	200 V.	
R1	63-156	10 M OHM	1 W.	
R2	63-296	2.20 M OHM	1/4 W.	
R3	63-570	220 OHM	1/4 W.	
R4	63-673	6.2 MEG OHM	1/4 W.	
R5	63-589	10 M OHM	1/4 W.	
R6	63-605	1000 OHM	1/4 W.	
R7	63-600	2.2 MEG OHM	1/4 W.	
R8	63-1056	22 M OHM	2 W.	
R9	63-1340	.5 MEG. VOL. CONTR.	1/4 W.	
R10	63-591	22M OHM	1/4 W.	
R11	63-976	15 MEG OHM	1/4 W.	
R12	63-1341	1 MEG. TONE CONTR.	1/4 W.	
R13	63-597	470 M OHM	1/4 W.	
R14	63-655	220 M OHM	1/4 W.	
R15	63-656	270 M OHM	1/4 W.	
L1	S-11896	LOADING COIL		
L2	S-11450	WAVEMAGNET		
L3	S-11163	DET. COIL ASSY.		
L4	S-11164	OSC. COIL		
T1	63-900	1ST I.F. TRANS.		
T2	95-910	2ND I.F. TRANS.		
T3	95-911	PWR. TRANS. 50-60 W.		
PL1	100-36	DIAL LIGHT 6.3V. 25 A.		
S1	65-337	PHONO-RADIO SW.		
S2	65-349	REJECT SWITCH		
SP1	49-526	10" DYNAMIC SPEAKER		
OR		10" DYNAMIC SPEAKER		
SP1	49-563	10" DYNAMIC SPEAKER		
WITH	52-377	SPEAKER CABLE ASSY.		
P1	78-823	PHONO SOCKET		



TUBE AND TRIMMER LOCATION

MODELS 6R084-6R087 CHASSIS Nos. 6C21-6C22 ALIGNMENT PROCEDURE

TO THE SERVICE MAN:

A feature of chassis 6C21 is a high gain tuned R.F. stage ahead of the conventional superheterodyne circuit. When making repairs or adjustments on the chassis be sure to have the Phono-Radio switch in Radio position (button out).

The Tone Control circuit used in chassis 6C21 is unusual. Attenuation or control occurs in both the grid and plate circuit of the triode section of the 6SQ7 tube. To increase the bass response Resistor R10 and Capacitor C9 boost the bass in the grid circuit. Capacitor C14 and the Variable Tone Control R12 attenuate the highs in the plate circuit.

When the tone control R12 is in the treble position attenuation to highs are greatly reduced in the plate circuit and minimum bass boost takes place in the grid circuit.

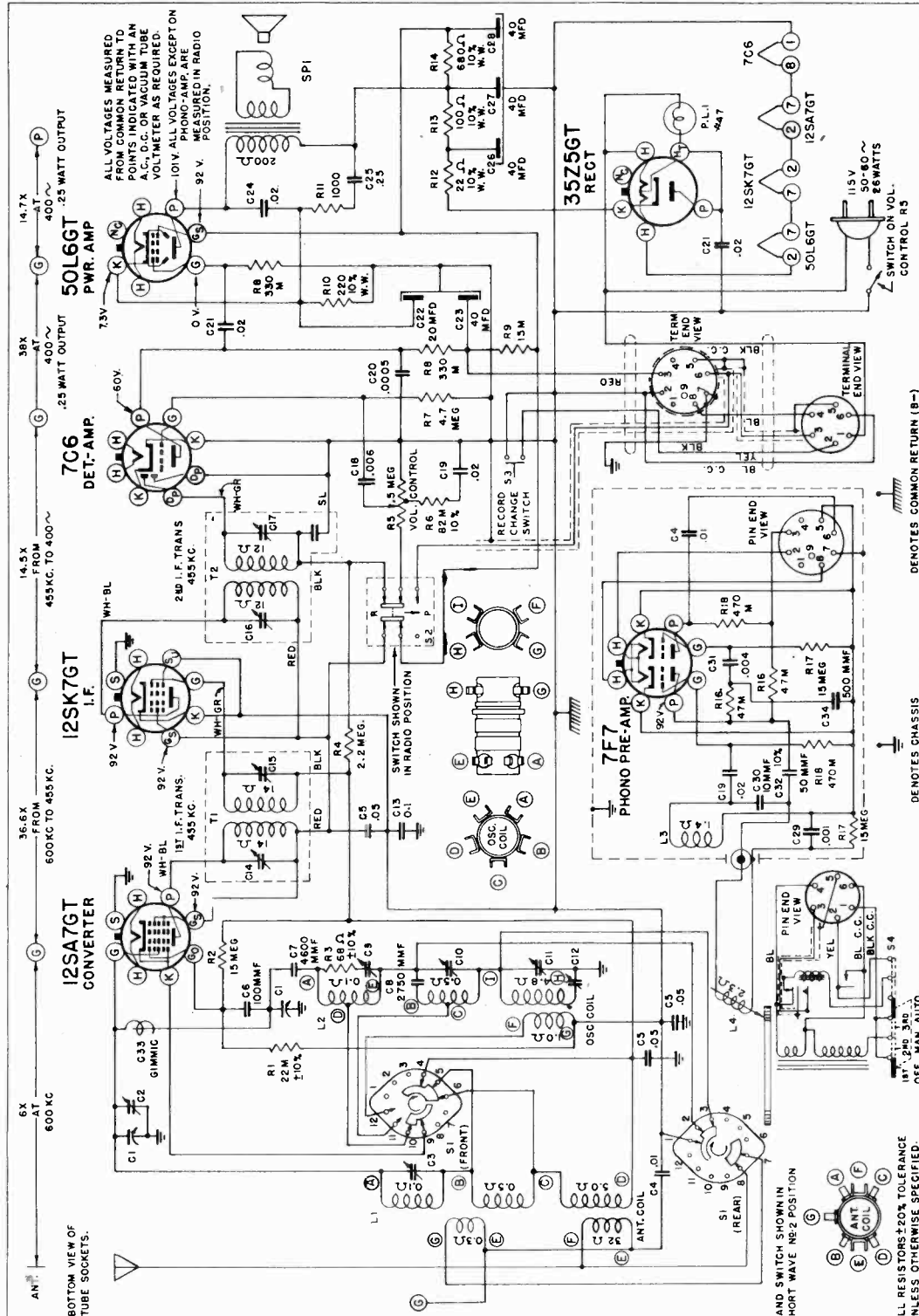
When the tone control is in bass position, attenuation to the highs takes place in the plate circuit with maximum bass boost in the grid circuit.

The result of this arrangement allows a smooth tone control over the audio frequency range.

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	5 Mfd.	455 Kc.	600 Kc.	C-7-, C-8, C-10, C-11	Align I F
2	One Turn Loop Coupled to Loosely to Wave Magnet	--	1600 Kc	1600 Kc	C-6	Set Oscillator to Dial Scale
3		--	1400 Kc.	1400 Kc.	C-5	Align det.
4		--	1400 Kc.	1400 Kc.	C-2	Align Ant.

ZENITH RADIO CORP.

MODEL 6S071T
Chassis 5C61T



DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1411	2-GANG VARIABLE
C2	ON C1	BROADCAST ANT. TRIM
C3	22-1424	SHORTWAVE "
C4	22-811	.01 MFD. 600 V.
C5	22-818	.05 MFD. 400 V.
C6	22-1442	100 MMFD. 500 V.
C7	22-1432	4600 MMFD. 500 V.
C8	22-1433	2750 MMFD. 600 V.
C9	22-1435	S.W. 2 OSC. TRIM.
C10	22-1435	S.W. 1 "
C11	ON C1	BROADCAST "
C12	22-821	.1 MFD. 400 V.
C13	ON T1	127 I.F. TRANS. PH. TRIM.
C14	ON T2	240 I.F. " SEC.
C15	ON T2	240 I.F. " SEC.
C16	ON T2	240 I.F. " SEC.
C17	ON T2	240 I.F. " SEC.
C18	22-809	.005 MFD. 600 V.
C19	22-810	.005 MFD. 600 V.
C20	22-811	.005 MFD. 600 V.
C21	22-812	.005 MFD. 600 V.
C22	22-813	.005 MFD. 600 V.
C23	22-814	.005 MFD. 600 V.
C24	22-815	.005 MFD. 600 V.
C25	22-816	.005 MFD. 600 V.
C26	22-817	.005 MFD. 600 V.
C27	22-1381	40 MFD. 150 V.
C28	22-1063	.001 MFD. 150 V.
C29	22-1456	10 MMFD. 600V.
C30	22-1532	50 MMFD. 500V.
C31	22-805	.004 MFD. 600V.
C32	22-1532	50 MMFD. 500V.
C33	S1900	GI-MIMIC
C34	22-716	500 MMFD. 600V.
R1	63-763	22 M OHM 1/4 W.
R2	63-1093	15 MEGOHM 1/4 W.
R3	63-737	68 OHM 1/4 W.
R4	63-600	2.2 MEGOHM 1/4 W.
R5	63-1357	.5 MEG. VOL. CONTROL
R6	63-681	82 M OHM 1/4 W.
R7	63-602	4.7 MEGOHM 1/4 W.
R8	63-586	330 M OHM 1/4 W.
R9	63-590	15 M OHM 1/4 W.
R10	63-1227	220 OHM W. W. 1/4 W.
R11	63-238	1000 OHM 1/4 W.
R12	63-1228	22 OHM WIREWOUND 1 W.
R13	63-1229	100 OHM 1 W.
R14	63-1070	680 OHM 1 W.
R15	63-583	47 M OHM 1/4 W.
R16	63-976	15 MEGOHM 1/4 W.
R17	63-587	470 M OHM 1/4 W.
R18	63-587	470 M OHM 1/4 W.
L1	S1250	PHONO CARTRIDGE ASSY.
L2	S1844	ANT. COIL ASSEMBLY
L3	S1845	OSC. COIL ASSEMBLY
L4	S1846	PHONO OSC. COIL "
S1	63-338	PHONO-RADIO SWITCH
S2	63-338	RECORD-CHANGE
S3	63-371	3 POSITION SWITCH
S4	63-932	127 I.F. TRANS.
T1	63-933	240 I.F. "
T2	63-933	240 I.F. "
SP1	49-539	5" P.M. SPEAKER
PL1	100-87	DIAL LIGHT & 3V. 15A.

ALL RESISTORS ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

PHONO PRE-AMP

DET.-AMP.

PWR. AMP.

MISCELLANEOUS PARTS

46-601	BAND SWITCH KNOB
192-104	DIAL GLASS
196-79	DIAL GASKET
57-1160	ESCUTCHEON PLATE
511473	COBRA TONE ARM AND CARTRIDGE
511473	NEEDLE CARTRIDGE

ZENITH RADIO CORP.

ANTENNA

Une bonne antenne est nécessaire pour obtenir une réception satisfaisante. Une antenne extérieure de 40 à 60 pieds (12-18 m) de long et aussi élevée que possible donne de bons résultats généraux. Si votre antenne actuelle devra être utilisée, elle devra subir un examen minutieux afin d'en déterminer l'état. Les connexions peuvent être corrodées ou cassées, rendant par là l'antenne inutilisable. Si une nouvelle antenne est construite, prenez soin que la prise de terre n'ait

ANTENNA

A good antenna is necessary for satisfactory reception. An outside antenna from 40 to 60 feet in length and as high as possible will give good all-around results. If your present antenna is to be used, a thorough examination should be made to determine its condition. The connections may be corroded or broken, thus rendering the antenna unfit for service. If a new antenna is to be constructed, care should be

ANTENNA

Es indispensable una buena antena para obtener la recepción satisfactoria. Una antena exterior de 13 a 20 metros de longitud y de la mayor altura posible dará buenos resultados para uso general. Si ha de usarse su antena actual, ésta debe ser minuciosamente examinada para determinar su estado pues las conexiones pueden estar oxidadas o rotas haciéndola inapropiada para el uso. Si se ha de instalar una nueva antena hay que tomar las precauciones necesarias para que el alambre

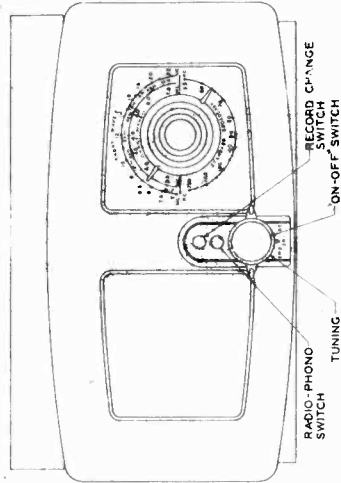


FIG. 1 PANEL CONTROLS

pas lieu dans un arbre, sur un mur ou dans un fossé et tous les câblages devront être soignés avec soin afin d'éviter la corrosion et les bruits parasites. Attachez le fil conducteur de l'antenne au fil marqué "Ant" au dos du châssis.

PRISE DE TERRE

Une bonne prise de terre aide considérablement à augmenter la puissance des stations distantes et diminue les parasites. La meilleure prise de terre est un tuyau de 4 à 6 pieds (1.25 à 2 mètres) enfoncé dans un sol humide.

Le fil de prise devra être soudé au tuyau ou bien attaché fermement avec une bonne attache de prise, le tuyau étant nettoyé soigneusement à cet endroit. Une prise de terre satisfaisante peut être obtenue en attachant solidement le fil de prise à un tuyau

taken to prevent the lead-in wire from grounding to trees, walls or gutters and all connections should be securely soldered to prevent corrosion and resulting noise. Connect the antenna lead-in to the wire marked "Ant" at the back of the chassis.

GROUND

A good ground with aid reception materially by improving the signal strength of distant stations and reducing background noise. The best ground is a 4 to 6 foot pipe driven in moist earth.

The ground wire should be soldered to the pipe or fastened securely with a good ground clamp, first thoroughly clean-

de bajada no haga contacto con las paredes, árboles o cualquier otro objeto en la conexión a tierra. Todas las conexiones deberán ser correctamente soldadas para evitar la oxidación y el ruido que se produciría. Conecte el alambre de bajada de la antena al alambre terminal marcado "Ant" en la parte posterior del chasis.

TIERRA

Una buena conexión a tierra mejorará efectivamente la recepción, aumentando la fuerza de las señales de las estaciones lejanas y reduciendo el ruido de fondo. La mejor conexión a tierra es un caño de un metro a 1.50 metros introducido en tierra húmeda.

El alambre a tierra debe ser soldado al caño o asegurado cuidadosamente con una buena grapa de tierra, previa limpieza cuidadosa del caño en ese punto. Una tierra conveniente

MODEL NO. 6S071T

Chassis No. 5C61T

INSTRUCCIONES PARA LA INSTALACION, FUNCIONAMIENTO Y SERVICIO	INSTALLATION, OPERATING AND SERVICE INSTRUCTIONS	METHODE D'INSTALLATION, OPERATION ET SERVICE
GENERAL	GENERAL	GENERALITES
Después de desembalar la combinación, quítese el papel engomado usado para la protección del chasis durante el embarque. El receptor emplea un circuito superheterodino de sintonización altamente desarrollada sobre las siguientes bandas de onda larga y corta: 545 a 1520 kilociclos (550 a 197 metros), 2350 a 7100 kilociclos (127.7 a 42.3 metros) y 6900 a 22000 kilociclos (43.5 a 13.6 metros).	After the combination has been unpacked, remove the paper tape used for protection of the chassis in shipment. The receiver employs a high-frequency developed superheterodyne circuit tuning over the following standard broadcast and shortwave bands: 545 to 1520 kilocycles (550 to 197 meters), 2350 to 7100 kilocycles (127.7 to 42.3 meters) and 6900 to 22000 kilocycles (43.5 to 13.6 meters).	Après avoir déballé le poste-combinaison, les bandes de papier utilisées pour la protection du châssis durant le transport devront être enlevées. Le poste emploie un circuit hautement développé superhétérodyne dont la bande de sélection couvre les rangées de radiodiffusion normales et les ondes courtes suivantes: de 545 à 1520 kilocycles (de 550 à 197 mètres), de 2350 à 7100 kilocycles (de 127.7 à 42.3 mètres) et 6900 à 22000 kilocycles (de 43.5 à 13.6 mètres).
SUMINISTRO DE ENERGIA	POWER SUPPLY	SOURCE DE PUISSANCE
Esta combinación está diseñada para funcionar ya sea en 50 o 60 períodos de una corriente alterna (C.A.) de 105 a 120 voltios. El consumo total de corriente de las líneas de suministro es de 46 vatios.	This combination is designed for operation on either 50 or 60 cycle 105-120 volt alternating current (A.C.). Total current consumption from the power lines is 46 watts.	Cette combinaison fonctionne sur courant alternatif de 50 ou 60 cycles, 105-120 volts. La consommation totale des lignes de puissance est de 46 watts.
PRECAUCION No intente usar esta combinación con corriente continua (C.C.) o con ninguna fuente de corriente fuera de la especificada previamente para evitar daño serio. Un transformador especial puede obtenerse de su vendedor permitiéndolo usarlo en 200 a 250 voltios de C.A.	CAUTION: Do not attempt to use this combination on direct current D.C. or any current source other than that specified above otherwise serious damage will result. A special transformer obtainable from your dealer will permit use on 200 to 250 volt A.C. lines.	PRECAUTION N'essayez pas d'employer cette combinaison sur courant continu ou sur courant plus haut, sinon de sérieux dégâts résulteront. Un transformateur spécial, à obtenir chez votre fournisseur, en permettra l'usage sur les lignes A.C. de 200 à 250 volts.

ing the pipe at that point. A suitable ground may also be obtained by making a good connection to a water pipe or radiator. Connect the ground lead-in to the wire marked "Gnd" at the rear of chassis.

PHONO-RADIO SWITCH

The Phono-Radio switch is of the double acting push button type.

To play records the button must be pushed in. Pushing the button a second time will return it to the Radio position. (See Figure 1.)

TUNING

Figure 1 shows the position of Tuning and Volume Control knobs. To place the instrument in operation, turn the Volume Control knob to the right. This will turn on the set. Allow about 30 seconds for the tubes to reach operating temperature.

To tune the set, turn the Tuning Control knob slowly to the desired station. Readjust the Volume Control knob to the right or left for the desired volume. To turn the receiver OFF rotate the Volume Control knob as far as it will go to the left, or until a "click" is heard.

The receiver has three tuning ranges, any one of which may be selected by means of the Band Switch (see Fig. 1). The band in use will be indicated by the "Band Switch pointer."

Short wave stations must be tuned in by turning the Tuning Knob very slowly. The receiver is very selective at the higher frequencies (short waves).

Daylight has a decided effect on the reception of short wave stations. Different wave lengths are most effective at different times of the day. Use the following table as a guide in tuning.

SHORT WAVE BAND	TIME OF BEST RECEPTION	
	A.M.	P.M.
16 meters	(Morning hours)	(Afternoon)
19 and 25 meters		
22 and 31 meters	(Early evening)	
31 and 49 meters		(Late evening)

puede ser obtenida haciendo una buena conexión a un caño de agua o radiador. Conecte la bajada a tierra al alambre marcado "Gnd" en la parte posterior del chasis.

INTERRUPTOR FONOGRAFO-RADIO

El interruptor Fono-Radio es del tipo de botón de presión de doble acción.

Para tocar discos, el botón debe ser introducido por presión. Presionando el botón una segunda vez lo volverá a la posición de Radio. (Vea la figura 1.)

SINTONIZACION

La figura 1 indica la posición de las perillas del control de sintonización y de volumen. Para poner el instrumento en funcionamiento, gire la perilla del control de volumen hacia la derecha. Esto pondrá en funcionamiento el aparato. Espere unos 30 segundos para que las válvulas alcancen la temperatura de funcionamiento.

Para sintonizar el aparato, gire la perilla de Control de Volumen lentamente a la estación deseada. Ajuste la perilla de Control de Volumen hacia la derecha o hacia la izquierda hasta alcanzar el volumen deseado. Para desconectar el receptor (OFF) gire la perilla de Control de Volumen todo lo que pueda hacia la izquierda, o hasta que oiga un ruido "clic."

El receptor tiene tres escalas de sintonización, cualquiera de las cuales puede ser seleccionada por medio del Interruptor de Banda (Vea la Fig. 1). La banda en uso estará indicada por el indicador del Interruptor de Banda.

Las estaciones de onda corta deberán ser sintonizadas girando la Perilla de Sintonización muy lentamente. El receptor es muy selectivo a las frecuencias más altas (ondas cortas).

La luz del día tiene una decidida influencia sobre la recepción de las estaciones de onda corta. Las diferentes longitudes de onda tienen mayor eficacia a diferentes horas del día. Use la tabla siguiente de guía para sintonizar.

d'eau ou à un radiateur. Branchez le fil de prise au fil marqué "Gnd" au dos de chaque sis.

COMMUTATEUR PHONO-RADIO.

Le commutateur Phono-Radio est du type bouton-poussoir à action double. Pour faire jouer les disques, appuyez sur le bouton. Appuyez une seconde fois et le poste sera remis à la position Radio. (Voyez la figure 1.)

ACCORD

La figure 1 montre la position des boutons d'accord et de régulateur d'amplification. Pour mettre l'appareil en fonctionnement, tournez le bouton du régulateur d'amplification vers la droite. Ceci mettra le poste en opération. Laissez les tubes se chauffer 30 secondes environ afin d'arriver à température de réception.

Pour obtenir la station voulue, tournez le bouton d'accord lentement jusqu'au point désiré. Ajustez à nouveau le bouton du régulateur d'amplification vers la droite, ou la gauche jusqu'au volume convenable. Pour en cesser l'usage, tournez le bouton du régulateur d'amplification autant que possible, jusqu'à provoquer un clic.

Ce poste a trois échelles d'accord; chacune d'entre elles peut être choisie par moyen du commutateur de bande (voir figure 1). La bande en usage est indiquée par l'aiguille du commutateur de bande.

La réception des stations à ondes courtes se fera en tournant le bouton d'accord très lentement. Le récepteur est très sélectif aux plus hautes fréquences (ondes courtes). La lumière du jour a un effet décidé quant à la réception des stations à ondes courtes. Les longueurs d'ondes diverses auront leur meilleure réception à des heures diverses. Employez la table suivante comme guide pour la sintonisation.

TUBES

Les tubes suivants sont employés pour cette combinaison: 12SA7GT 50L6GT 12SK7GT 35Z5GT 7F7 7C6

Las siguientes válvulas se emplean en esta combinación: 12SA7GT 50L6GT 12SK7GT 35Z5GT 7C6

La figura 4 indica la posición correcta de cada válvula en su respectivo porta válvulas.

INSTRUCCIONES PARA EL FUNCIONAMIENTO DEL CAMBIA-DISCOS AUTOMATICO ZENITH CON BRAZEO DE TONO COBRA GENERALIDADES

Su Cambia-Discos Automático Zenith es un mecanismo nuevo muy mejorado equipado con el "pick-up" revolucionario Cobra, una característica exclusiva de Zenith producida como resultado de muchos años de investigación y de desarrollo. Controles electrónicos en el mecanismo de Comienzo-Dejamiento con una velocidad regulada (3½ segundos), por medio de un botón de control de recepción.

El sensacional Pick-up Radiónico Cobra tiene un "Fila-

The following tubes are employed in this combination: 12SA7GT 50L6GT 12SK7GT 35Z5GT 7C6

Figure 4 shows the correct position of each tube in its respective socket.

OPERATING INSTRUCTIONS FOR ZENITH AUTOMATIC RECORD CHANGER WITH COBRA TONE ARM GENERAL

Your Zenith Automatic Record Changer is a new, highly improved mechanism equipped with the new revolutionary Cobra pickup, an exclusive Zenith feature, produced as the result of many years of research and development. Electronic controls trip its Start-Stop mechanism with lightning speed (3½ seconds) by a push button on the receiver control panel.

La figure 4 montre la position propre à chaque tube dans son support respectif.

INSTRUCTIONS POUR L'EMPLOI DU CHANGE-DISQUES AUTOMATIQUE ZENITH AVEC BRAS-COBRAS GENERALITES

Votre Change-Disques Automatique Zenith est un nouvel appareil, beaucoup amélioré, muni du nouveau pick-up Cobra, un perfectionnement révolutionnaire produit exclusivement par Zenith après de nombreuses années de recherches et de développement. Des commandes électroniques déclenchent son mécanisme d'appel Start-Stop avec la rapidité de l'éclair (3 secondes et demie) au moyen d'un bouton sur le panneau de contrôle du récepteur.

Ce pick-up radionique Cobra a le nouveau "Filament Pilotant" qui allonge la durée d'usage d'un disque par mille pour cent et révèle une beauté de ton inconnue jusqu'ici et qui

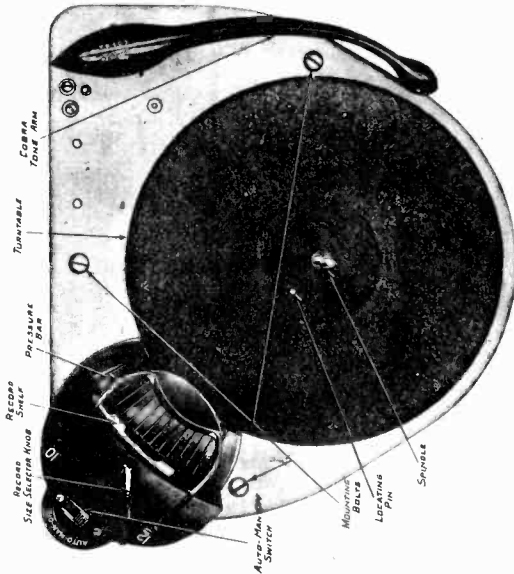


Fig. 2. Record Changer Top View

ZENITH RADIO CORP.

COMMENT FAIRE FONCTIONNER L'APPAREIL

A. Mise de Disques Pour Fonctionnement Automatique
1. Placez le BOUTON SE-LECTEUR DE GRANDEUR DE DISQUES...



2. Eleveez la BARRE D'APPUYI aussi haut que possible.

3. Appuyez légèrement et tournez le disque dans la direction opposée à celle des aiguilles...

4. Placez la pile de disques (jusqu'à 12 disques de 25 cms ou 10 disques de 30 cms) sur le fuseau.

5. Remettez la BARRE D'APPUYI sur la pile de disques.

Mise en Fonction du Change-Disques

1. Appuyez sur le bouton PHONO-RADIO au panneau du récepteur.

2. Placez le commutateur "AUTO-MAN-OFF" du Change-Disques à la position AUTO.

3. Appuyez sur le bouton CHANGE-DISQUES sur le panneau du récepteur. Quand vous voudrez rejeter un disque, vous n'aurez qu'à appuyer sur le bouton CHANGE-DISQUES au panneau du récepteur. Ceci mettra le disque suivant en jeu.

Arrêt du Change-Disques.

1. Il faut que l'aiguille soit en position pour le jeu (en contact avec le disque).
2. Placez le commutateur AUTO-MAN-OFF à la position OFF.

HOW TO OPERATE Loading for Automatic Operation

1. Set RECORD SIZE SELECTOR KNOB to either 10 or 12, depending on the size of record you wish to play. DO NOT INTERMIX 10 INCH AND 12 INCH RECORDS.



2. Raise the PRESSURE BAR up as far as it will go.

3. Press lightly and turn the SPINDLE counter-clockwise to the LOAD position.

4. Place the stack of records (up to twelve 10 inch or ten 12 inch) over the spindle.

5. Set the PRESSURE BAR down on the record stack.

Starting the Changer

1. Push PHONO-RADIO button on the receiver panel.

2. Set the AUTO-MAN-OFF switch on the Record Changer to AUTO.

3. Push the RECORD CHANGE button on the receiver panel. Should you desire to reject a record, it is only necessary to push the RECORD CHANGE button on the radio receiver panel. This will allow the next record to be played.

Turning the Changer Off

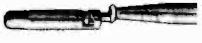
1. See that the needle cartridge is in the playing position (in contact with the record).

2. Set the AUTO-MAN-OFF switch to OFF.

3. Lift the tone arm and move it to the rest position (that is, to the right of the turntable).

MANERA DE HACERLO FUNCIONAR Funcionamiento Automático

1. Colóquese la Perilla Selectora de Tamaño de Discos ya sea en 10 ó en 12, dependiendo del tamaño del disco que desee tocar. NO MEZCLE DISCOS DE 10 PULGADAS CON DISCOS DE 12 PULGADAS.



2. Eleveze la Varilla de Presión lo más que sea posible.

3. Presiónese ligeramente y gírese el Vástago en sentido contrario al movimiento de las agujas de reloj hacia la posición de CARGA.

4. Colóquese la pila de discos (hasta doce de 10 pulgadas ó diez de 12 pulgadas) sobre el vástago.

5. Colóquese la Varilla de Presión sobre la pila de discos.

Modo de Poner en Marcha el Cambia-Discos

1. Empújese el botón FONORADIO situado en el tablero de recepción.

2. Colóquese el interruptor AUTO-MAN-OFF en el Cambia-Discos en posición AUTO.

3. Empújese el botón del CAMBIA-DISCOS situado en el tablero de recepción. Si quisiera suprimir un disco, sólo es necesario empujar el botón del CAMBIA-DISCOS situado en el tablero de recepción. Esto permitirá que sea tocado el disco siguiente.

Detección del Cambio de Discos

1. Cerciórese que la aguja esté en la posición de tocar (en contacto con el disco).

2. Colóquese el interruptor AUTO-MAN-OFF en posición OFF.

3. Eleveze el brazo de tono y muévelo hacia la posición de descanso (es decir, hacia la derecha de la placa giratoria).

is not affected by humidity, but by the high and low temperatures. The Change-Disques will automatically play either before and is not affected by humidity and temperature changes. The changer will automatically play either twelve 10 inch records or ten 12 inch records. A continuous program of your own selection with a playing time of 45 minutes is possible with one load of the changer.

The changer is equipped with a synchronous self-starting motor which drives the turntable at 78 RPM. The changer may be operated on 50 or 60 cycle alternating current (A.C.) by changing the motor drive bushing.

FUNCTIONNEMENT DU CHANGE-DISQUES

Le Change-Disques a été emballé avec soin afin d'éviter d'être endommagé durant le transport et les papiers et autres matériaux d'emballage seront enlevés avant d'essayer de faire fonctionner l'appareil. Lisez attentivement toutes les étiquettes et enlevez les bandes d'emballage, les boulons, etc.

à l'ergo lame et tournez les trois boulons de montage (voyez figure 2) dans la même direction que les aiguilles d'une montre jusqu'à ce que les têtes des boulons soient à ras de la plaque de montage. Ceci permettra au Change-Disques de "flotter" sur son support anti-choc.

Ne pas omettre d'enlever les bandes d'emballage afin que le pré-amplificateur-phonos puisse être balancé sans entraves sur sa monture de caoutchouc; sinon des audio-cris et des parasites microphoniques se feront entendre pendant la mise en jeu du Change-Disques.

IMPORTANT

Le Change-Disques est expédié avec la douille phonos-moteur de 60 cycles en place. La douille à 50 cycles est attachée au Change-Disques et doit être installée avant d'essayer de faire fonctionner l'appareil sur un courant de 50 cycles.

The sensational Radiomic Cobra Pickup has the new "Floating Filament" that lengthens record life over 1000 per cent, detects tone beauty unheard of before and is not affected by humidity and temperature changes. The changer will automatically play either twelve 10 inch records or ten 12 inch records. A continuous program of your own selection with a playing time of 45 minutes is possible with one load of the changer.

The changer is equipped with a synchronous self-starting motor which drives the turntable at 78 RPM. The changer may be operated on 50 or 60 cycle alternating current (A.C.) by changing the motor drive bushing.

PLACING THE RECORD CHANGER IN OPERATION

The Record Changer has been securely packed to avoid damage in shipment and all packing material must be removed before an attempt to operate it is made. Be sure to read all tags and remove packing strips, bolts, etc.

Use a wide blade screwdriver and turn the three mounting bolts (see Fig. 2) clockwise until the heads are flush with the mounting plate. This allows the changer to "float" on its shock mounts.

Do not fail to remove the packing strip to allow the phonos preamplifier to float freely on its rubber mounts or audio howl and microphonics will be heard when playing the Record Changer.

CAUTION

The Changer is shipped with the 60 cycle phonos motor bushing installed. The 50 cycle bushing is attached to the Changer and must be installed before operation on 50 cycle current is attempted.

mento Flotante" nuevo que extiende la duración del disco más del 1000 por ciento, revela bellezas de tono no escuchadas hasta el presente y no es afectado por los cambios de temperatura y de humedad. El cambia-discos tocará automáticamente doce discos de 10 pulgadas ó diez discos de 12 pulgadas. Es posible un programa continuo de su propia selección de 45 minutos de duración con una sola carga del cambia-discos.

El cambia-discos está equipado con un motor sincrónico de comienzo automático que impulsa la placa giratoria porta-discos a 78 rpm. El cambia-discos puede hacerse funcionar con una corriente alterna (C.A.) de 50 ó 60 ciclos cambiando el manguito de la impulsión del motor.

PUESTA DEL CAMBIA-DISCOS EN FUNCIONAMIENTO

El Cambia-Discos ha sido embalado cuidadosamente para evitar ser dañado durante el embarque, debiéndose retirar todo el material de empaque antes de intentar ponerlo en funcionamiento. Asegúrese de leer todas las rótulos y enlevar los cintas de empaque, pernos, etc.

Utilice un destornillador de hoja ancha y rote los pernos de montaje (Fig. 2) en el sentido de las agujas del reloj hasta que las cabezas estén parejas con la plancha de montaje. Esto permite que el cambiador "flote" montado contra sacudidas.

No deje de remover la banda de empaque para permitir que el pre-amplificador fonos flote libremente montado sobre cauchos, de lo contrario será oído el chillido del audio y microfonico cuando funcione el cambia-discos.

PRECAUCION

El Cambia-Discos es expedido con el manguito del motor del fonógrafo instalado para 60 ciclos. El manguito de 50 ciclos está unido al Cambia-Discos debiendo ser instalado antes de intentarse hacerlo funcionar con una corriente de 50 ciclos.

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clage ou des ronflements parasites indiquent d'ordinaire que le disque a été endommagé par l'usage. Une rapide usure de disques neufs et la présence de bruits parasites dépendra de la qualité de la manufacture, du type de musique enregistrée et du soin que l'on aura pris du disque. Une couche de cire très mince sur le fûseau éliminera le grincement causé par le frottement du disque contre le fûseau si cette condition existe.

SOIN DE DISQUES

Très peu d'effort de votre part vous assurera d'une longue durée pour vos disques. Ne les exposez pas à la chaleur du soleil, des radiateurs ou des fourneaux. Gardez vos disques dans des albums en un endroit frais et sec et placez-les, soit horizontalement, soit verticalement. Epoussetez-les avec un chiffon fin et un léger mouvement circulaire. Une couche de poussière, quelque légère qu'elle soit, contient souvent des particules abrasives, qui, lorsqu'elles sont écrasées sur la surface du disque par l'action de l'aiguille, l'endommageront rapidement.

Important

Ne laissez jamais les disques sur le fûseau lorsque vous n'employez pas le Change - Disques. Cela pourrait faire gauchir et laisser les disques et démonter le Change - Disques.

CHANGEMENT DE LA

CARTOUCHE A AIGUILLE

Si l'est nécessaire de changer la cartouche à aiguilles, soit qu'elle soit usée ou qu'elle ait été endommagée, étudiez la figure 3 et faites ce qui suit :



Inserting Needle Cartridge



Needle Cartridge Out

Fig. 3. Replacing the Needle Cartridge

a worn record. The amount of wear and background noise on new records will vary depending on the quality of manufacture, type of music recorded and care given the records. A very thin coat of wax on the spindle will eliminate squeaking caused by friction between the spindle and records (should this condition exist).

CARE OF RECORDS

Small effort on your part will insure long life for your records. Do not expose them to heat from the sun, radiators or stoves. Store your records in albums in a cool, dry place resting vertically or horizontally. Remove dust and dirt with a soft cloth using a light circular motion. Evert a fine film of dust often contains abrasive particles which, when ground against the record surface by the needle can cause very rapid wear.

Important

Never allow records to remain on the spindle when the Record Changer is not in use. To do so may result in warping and failure of the Changer to play such records.

CHANGING THE NEEDLE CARTRIDGE

If it becomes necessary to change the Needle Cartridge due to wear or mishandling, study Fig. 3 and proceed as follows.

de fondo indican por lo general, un disco gastado. La cantidad de ruido de desgaste y de fondo en los discos nuevos variará de acuerdo con la calidad de fabricación, tipo de música grabada y el cuidado que se le presta a los discos. La colocación de una capa muy ligera de cera sobre el vástago eliminará el chillido causado por la fricción entre el vástago y los discos, toda vez que se presente este inconveniente.

CUIDADO DE LOS DISCOS

Un pequeño esfuerzo hecho por usted les asegurará una larga duración a sus discos. No los exponga al calor solar, de los radiadores o de las estufas. Guarde sus discos en álbumes en un sitio fresco y seco, en posición vertical u horizontal. Retírese el polvo y la suciedad con un paño suave, empleando un movimiento circular. Limpie una fina película de polvo contenida frecuentemente en partículas abrasivas, que cuando se mueven contra la superficie del disco por la aguja pueden ocasionar desgaste muy rápido.

Importante

Nunca deje permanecer a los discos sobre el vástago cuando no está en uso el Cambia-Discos pues podría ocasionar la combadura y la falla del Cambia-Discos para tocar tales discos.

CAMBIO DEL CARTUCHO DE AGUJAS

En caso de que se haga necesario cambiar el Cartucho de Aguja (debido a desgaste o cuidado inapropiado, estúdiense la Fig. 3 y procedase de la manera siguiente:

3. Levez le bras acoustique et mettez-le à la position de repos, c'est-à-dire à la droite du plateau tourne-disques.

D. Pour Enlever

Pour enlever la pile de disques du plateau après avoir joué le dernier disque, faites ce qui suit :

1. Tournez le commutateur à la position OFF, comme on l'a décrit plus haut au paragraphe C.

2. Levez la BARRE D'APPUI aussi haut que possible.

3. Appuyez légèrement et tournez le fûseau dans la même direction que les aiguilles et une montre jusqu'à la position UNLOAD.

4. Levez la pile de disques, ou autant d'entre eux que vous voulez soulever facilement, tout droit jusqu'à ce que les disques soient entièrement dégagés du fûseau.

E. Fonctionnement Manuel.

Les disques faits chez soi ne sont pas prévus pour le jeu automatique et doivent être employés manuellement, c'est-à-dire séparément, comme sur un gramophone ordinaire, non-automatique. Pour ce fonctionnement manuel, tournez le commutateur AUTO-MAN-OFF à la position MAN (voyez la figure 2).

Le bras acoustique est maintenant libre et vous pouvez le mouvoir à votre gré. Une aiguille de repère est placée sur le plateau tourne-disques pour les disques faits chez soi.

F. Cas Dans Lesquels le Change-Disques est Oublié en Action

Aucun dégât ne résultera si vous oubliez d'interrompre le Change-Disques après avoir joué tous vos disques. Il répètera le dernier jusqu'à ce que vous l'arrêtiez ou le remplaciez.

DISQUES BRUYANTS

Une sonorité défectueuse est causée d'habitude par une aiguille usagée. Un bruit de râ-



Position "Unload"



Unloaded Position



Position de Descarga

D. Unloading

To remove the record stack from the turntable after the last record has been played, proceed as follows:

1. Turn the Record Changer OFF as described in paragraph C.

2. Raise the PRESSURE BAR as far up as it will go.

3. Press lightly and turn the SPINDLE clockwise to the UNLOAD position.

4. Raise the Unloaded Position record stack, or as many records as you can conveniently handle STRAIGHT UP until the records are entirely clear of the spindle.

E. Manual Operation

Home recordings are not intended for automatic use and must be played manually, that is, singly as on a non-automatic record player. For manual operation set the AUTO-MAN-OFF switch to the MAN position (see Fig. 2). The tone arm is now free and may be moved at will. A locating pin is provided on the turntable for home recordings.

F. If the Changer is Left Running

No damage will be done if you forget to turn off the Changer after it has played the entire selection of records. It will repeat the last record until stopped or reloaded.

NOISY RECORDS

Poor tone is usually caused by a worn needle cartridge, however, scratch and background noise usually indicates

D. Descarga

Para retirar la pila de discos de la placa giratoria después que haya sido tocado el último disco, procedase de la siguiente manera:

1. Deténgase el Cambia-Discos de la manera descrita en el párrafo C.

2. Elevése la BARRA DE PRESION lo más alto posible.

3. Presiónese ligeramente y gírese el VÁSTAGO en el sentido de las agujas de reloj hacia la posición de DESCARGA.

4. Levántese VERTICALMENTE toda la pila de discos o todos los discos que puede manipular convenientemente, hasta retirar los discos del vástago.

E. Funcionamiento Manual

Las grabaciones hechas en la casa no son para uso automático, debiendo ser tocadas manualmente; es decir, por separado, como se hace en un tocadiscos no automático. Para funcionamiento manual coloque el interruptor AUTO-MAN-OFF en posición MAN (véase la Fig. 2). El brazo de tono queda libre, pudiendo ser movido a voluntad. Se suministra una aguja de ubicación sobre la placa giratoria para las grabaciones hechas en la casa.

F. Si se Deja el Cambia-Discos Funcionando

No se producirá daño alguno si olvida de detener el Cambia-Discos después que haya tocado toda la selección de discos. Repetirá el último disco hasta ser detenido o vuelto a cargar.

DISCOS RUIDOSOS

Si bien una tonalidad mala es ocasionada por una aguja gastada, el ruido de rayado y

ZENITH RADIO CORP.

MODEL 6S071T

1. Colóquese el interruptor OFF-MAN-AUTO en posición OFF.

2. Elévese el BRAZO DE TONO.

3. Tómese el CARTUCHO DE AGUJAS rojo con la punta de los dedos y retíresela suavemente hacia fuera en línea recta.

4. Insértese un nuevo CARTUCHO DE AGUJAS y empujela hacia adentro suavemente con el pulgar. El Cartucho es graduado, pudiendo sólo ser insertado en un sentido. Póngase cuidado, pues forzando el cartucho en un ángulo inapropiado dañará la ranura.

1. Set the OFF - MAN - AUTO switch to OFF.

2. Raise the TONE ARM.

3. Grasp the red NEEDLE CARTRIDGE with the finger tips and gently pull it straight out.

4. Insert a new Needle Cartridge and push it in gently with the thumb. The Cartridge is indexed and can only be inserted one way. Use care — forcing the cartridge in at the wrong angle will damage the socket.

1. Tournez le commutateur AUTO-MAN-OFF à position OFF.

2. Levez le bras acoustique.

3. Saisissez la cartouche à aiguilles rouge entre le bout des doigts et tirez doucement tout droit.

4. Insérez une nouvelle cartouche et enfoncez-la lentement avec le pouce.

La cartouche est marquée et ne peut être mise en place que d'une seule façon. Faites-le avec soin. Si vous enfoncez la cartouche de biais avec force le porte-aiguille sera endommagé.

SERVICE DATA

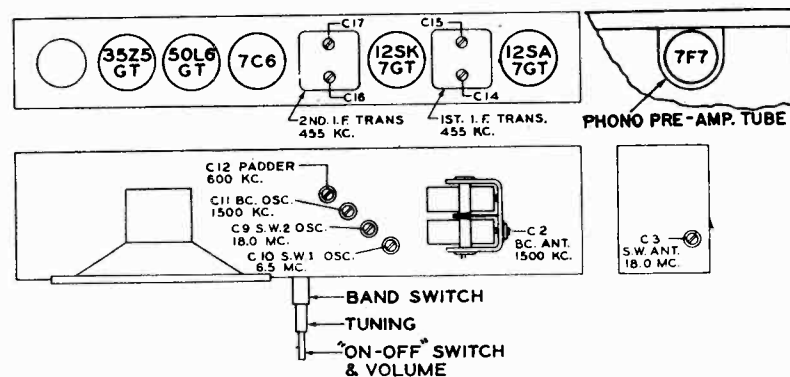


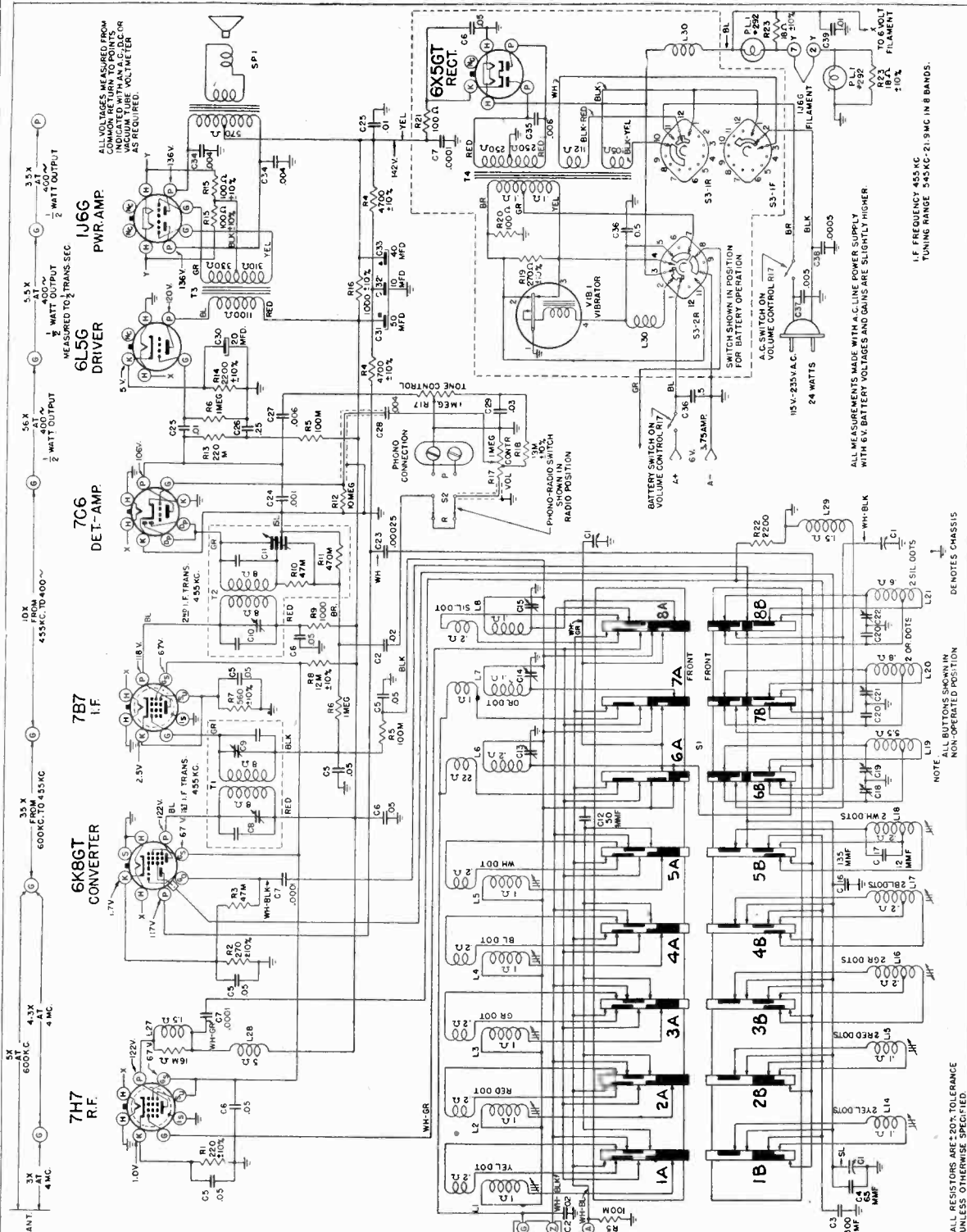
Fig. 4. Tube and Trimmer Positions

ALIGNMENT PROCEDURE

Opr.	Connect Osc. to	Dummy Ant.	Input Sig. Frequency	Band	Set Dial at	Trimmers	Purpose
1	1st Det. Grid	.1 mfd.	455 kc.	BC	600 kc.	C14, 15, 16 and 17	Align I.F.
2	Antenna and Ground	200 mmfd.	1500 kc.	BC	1500 kc.	C11	Set Osc. to Dial Scale
3	Antenna and Ground	200 mmfd.	1500 kc.	BC	1500 kc.	C2	Align Antenna
4	Antenna and Ground	200 mmfd.	600 kc.	BC	Rock at 600 kc.	C12	Padder
5	Antenna and Ground	400 ohms	6.5 mc.	SW1	6.5 mc.	C10	Align SW2
6	Antenna and Ground	400 ohms	18 mc.	SW2	18 mc.	C9	Set Osc. to Dial Scale
7	Antenna and Ground	400 ohms	18 mc.	SW2	18 mc.	C3	Align Antenna

MODEL 7J045T
Chassis 7C61T

ZENITH RADIO CORP.



PUSHBUTTON SWITCH LABELED TO IA, 1B, ETC. FOR REFERENCE TO CLARIFIED SCHEMATICS

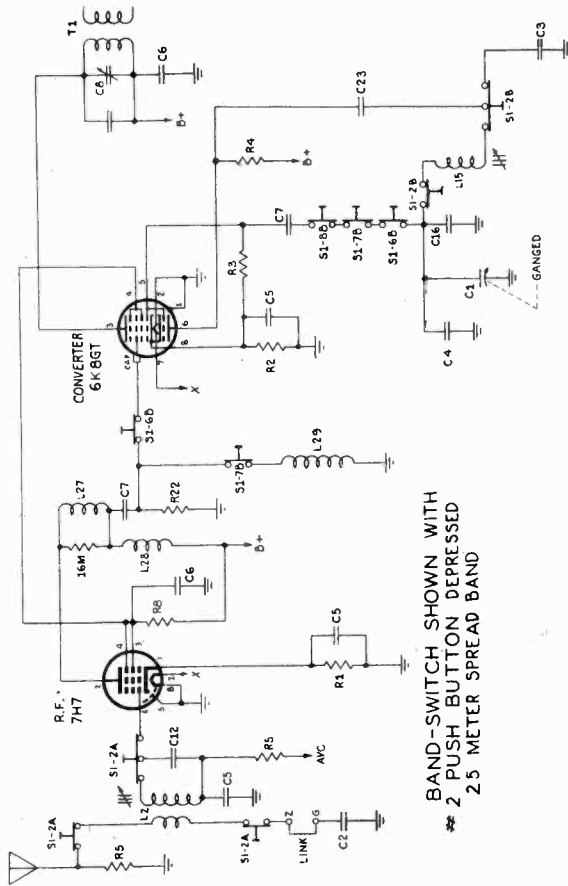
NOTE: ALL BUTTONS SHOWN IN NON-OPERATED POSITION

ALL RESISTORS ARE ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

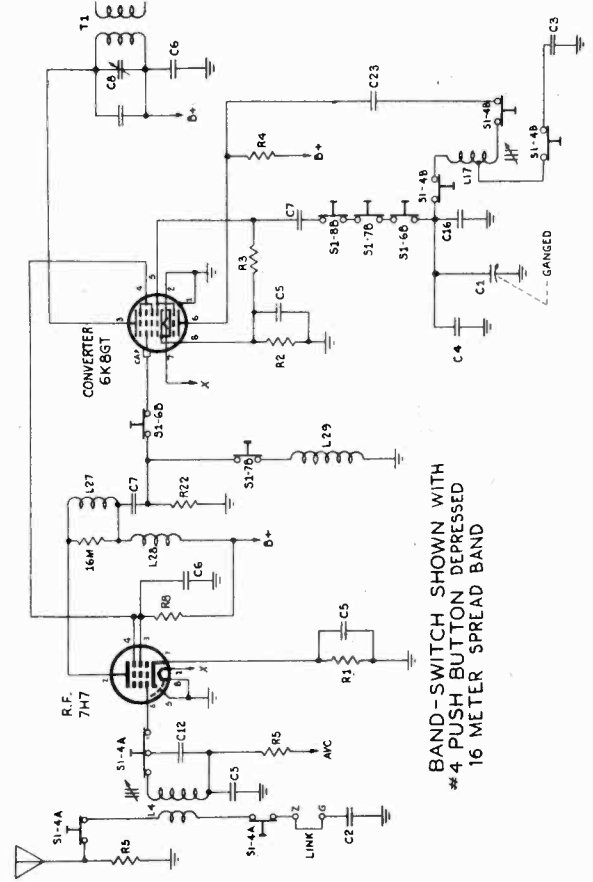
DENOTES CHASSIS

PART NO.	DESCRIPTION	QTY.	REMARKS
1N-73	DIAL GAUGE	1	
1N-74	DIAL GAUGE	1	
1N-75	DIAL GAUGE	1	
1N-76	DIAL GAUGE	1	
1N-77	DIAL GAUGE	1	
1N-78	DIAL GAUGE	1	
1N-79	DIAL GAUGE	1	
1N-80	DIAL GAUGE	1	
1N-81	DIAL GAUGE	1	
1N-82	DIAL GAUGE	1	
1N-83	DIAL GAUGE	1	
1N-84	DIAL GAUGE	1	
1N-85	DIAL GAUGE	1	
1N-86	DIAL GAUGE	1	
1N-87	DIAL GAUGE	1	
1N-88	DIAL GAUGE	1	
1N-89	DIAL GAUGE	1	
1N-90	DIAL GAUGE	1	
1N-91	DIAL GAUGE	1	
1N-92	DIAL GAUGE	1	
1N-93	DIAL GAUGE	1	
1N-94	DIAL GAUGE	1	
1N-95	DIAL GAUGE	1	
1N-96	DIAL GAUGE	1	
1N-97	DIAL GAUGE	1	
1N-98	DIAL GAUGE	1	
1N-99	DIAL GAUGE	1	
1N-100	DIAL GAUGE	1	

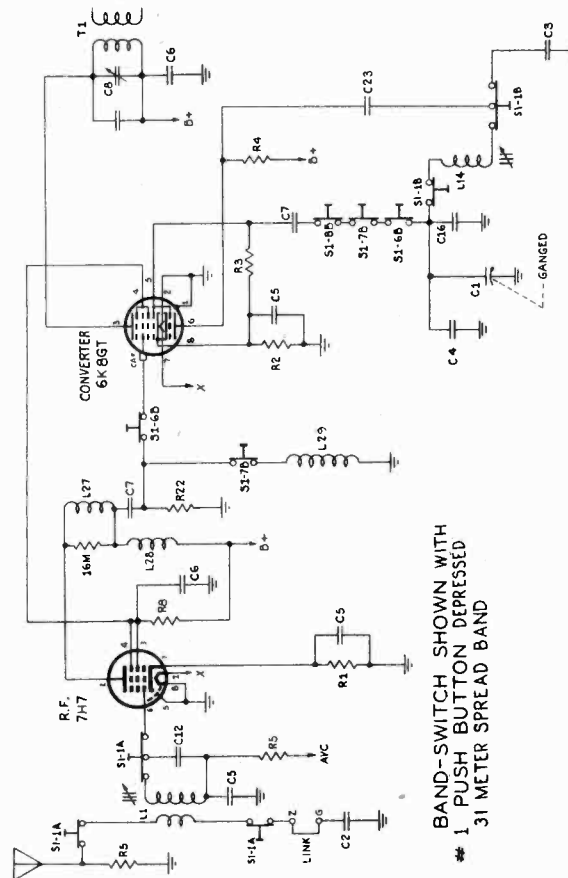
ZENITH RADIO CORP.



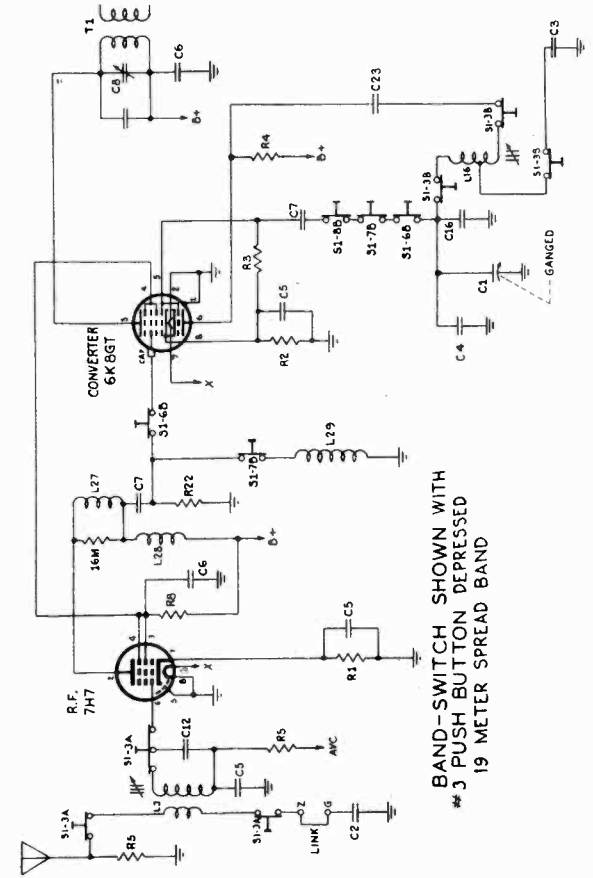
BAND-SWITCH SHOWN WITH
2 PUSH BUTTON DEPRESSED
25 METER SPREAD BAND



BAND-SWITCH SHOWN WITH
4 PUSH BUTTON DEPRESSED
16 METER SPREAD BAND



BAND-SWITCH SHOWN WITH
1 PUSH BUTTON DEPRESSED
31 METER SPREAD BAND



BAND-SWITCH SHOWN WITH
3 PUSH BUTTON DEPRESSED
19 METER SPREAD BAND

ZENITH RADIO CORP.

MODEL NO. 7J045T
Chassis No. 7C61T

INSTRUCCIONES PARA LA INSTALACION Y FUNCIONAMIENTO

INFORMACION GENERAL

Este receptor es un moderno aparato superheterodino de 7 válvulas, con una gama de ondas comprendiendo frecuencias entre 545 y 21,900 kilociclos. Esta gama de ondas está dividida en tres bandas, marcadas en el cuadrante como sigue: "Broadcast" — "Short Wave 1" — "Short Wave 2." La mayor facilidad de sintonización en la onda corta en las cinco escalas adicionales, incorporando las bandas de 13, 16, 19, 25 y 31 metros, se obtiene por medio de ampliación de banda, la cual permite que las estaciones de onda corta se sintonicen con la misma facilidad que las estaciones locales.

¡OJO! Asegúrese que los pernos que soportan el chasis durante el embarque estén suficientemente flojos para permitir que el chasis flote libremente antes de que el receptor se ponga a funcionar.

SUMINISTRO DE ENERGIA

Este radio receptor puede ajustarse para ser operado con una fuente de energía de 115 voltios, 40 a 60 períodos, o con 235 voltios, 40 a 60 períodos, así como con un acumulador de 6 voltios, por medio del conmutador que se encuentra en la parte posterior del chasis.

INSTALLATION, OPERATING AND SERVICE INSTRUCTIONS

GENERAL

This receiver is a modern 7-tube superheterodyne with tuning ranges covering frequencies between 545 k.c. and 21,900 k.c. This tuning range is divided into three bands which are labeled on the dial scale "Broadcast" — "Short Wave 1" and "Short Wave 2." Extreme ease of tuning over the short wave band is provided by means of five additional tuning ranges covering the 13, 16, 19, 25 and 31 meter bands with a band spread arrangement which allows short wave stations to be tuned in as easily as stations on the broadcast band.

CAUTION: Make sure that the bolts supporting the chassis during shipment are loosened sufficiently to allow the chassis to float freely before the receiver is placed in operation.

POWER SUPPLY

This receiver may be adjusted for use on either a 115 volt, 40 to 60 cycle power supply, or a 6-volt storage battery by means of the switch on the rear of the chassis.

When a storage battery is used as the source of power, care should be taken that the RED battery lead to the positive (+) terminal of the battery, and the BLACK lead to the

INSTRUCTIONS POUR INSTALLATION ET FONCTIONNEMENT

GENERALITES

Poste de T.S.F. superhétérodynne de 7 lampes avec réglages couvrant les périodes entre 545 et 21,900 k.c. L'échelle de sélection est divisée en trois rangées marquées sur le vernier "Broadcast" — "Ondes courtes 1" et "Ondes courtes 2." La sélection des stations en ondes courtes se fait aussi facilement que celle sur ondes longues, grâce à 5 échelles différentes pourvues d'une extension de 13, 16, 19, 25 et 31 mètres.

PRECAUTION: Assurez-vous que les boulons qui supportent le châssis en route soient suffisamment lâches pour permettre qu'il flote librement avant que le poste soit mis en fonction.

SOURCE D'ALIMENTATION

Ce poste récepteur peut être ajusté pour être utilisé sur une source d'alimentation de 115 volts, de 40 à 60 périodes, ou sur une de 235 volts de 40 à 60 périodes ou encore sur un accu de 6 volts, au moyen du commutateur qui se trouve au dos du châssis.

Quand on utilise un accumulateur comme source d'alimentation, on doit faire attention que le fil rouge au dos du récepteur soit branché à la borne positive (+) de l'accumulateur, et le fil noir, à la borne négative (—).

Quando se utiliza un acumulador como fuente de energía conectese el alambre ROJO del receptor al polo positivo (+) del acumulador, y el alambre NEGRO del receptor al polo negativo (—).

Si el receptor produce un zumbido constante cuando está conectado con corriente alterna, invértese el tomacorriente en el zócalo de la pared.

¡OJO! BAJO NINGUNA CIRCUNSTANCIA HA DE CONECTARSE ESTE RECEPTOR A CORRIENTE CONTINUA (C.C.) POR CAUSAR ESTO DAÑOS IRREPARABLES.

Si un grondement se produit dans le récepteur après qu'il ait été branché à une source d'alimentation de courant alternatif, changez la position de la fiche dans le réceptacle monté dans la cloison.

PRECAUTION: CE RECEPTEUR DE T.S.F. NE DOIT ÊTRE BRANCHE A UNE SOURCE DE COURANT CONTINU (C.C.) POUR EVITER DES DOMMAGES SERIEUX.

TUBES

The following tubes are used (See Fig. 2):
7H7 7C6
6K8GT 6L5G
1J6G
6X5G
7B7

LAMPES

Il emploie les lampes suivantes (Voir Fig. 2):
7H7 7C6
6K8GT 6L5G
1J6G
6X5G
7B7

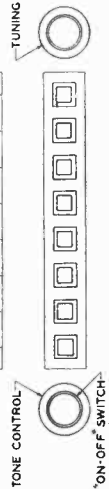


FIG. 1. Controls

VALVULAS

Las siguientes válvulas son usadas (Véase Fig. 2):
7H7 7C6
6K8GT 6L5G
1J6G
6X5G
7B7

Quando se usa una antena "doublet," el alambre doble tiene que conectarse a las terminales A y Z en la parte de atrás del chasis, y el anillo que conecta las terminales Z y G, que conecta las terminales Z y G, tiene que ser removido.

Quando se usa una antena de un solo alambre, éste se conecta a la terminal A, y el anillo que conecta las terminales Z y G se deja donde está, y una buena conexión tierra tiene que hacerse a la terminal G. La antena tiene que ser de 15 a 30

When using a doublet antenna the twisted pair should be connected to terminals A and Z on the rear of the chassis, and the connecting link between terminals Z and G should be removed.

When using a single wire antenna, the lead-in is connected to terminal A, the connecting link between terminals Z and G is left in place and a good ground connection should be connected to terminal G. The antenna should be from 50 to 100 feet in length, and placed as high as possible. Too long an antenna may cause interference between stations, while too

metros de largo y tiene que colocarse tan alto fuera del edificio como sea posible. Una antena demasiado larga puede causar interferencia entre estaciones, mientras que una antena demasiado pequeña dará como resultado una recepción defectuosa de las estaciones más débiles. Nunca debe conectarse el receptor a una antena vieja sin antes haberla examinado cuidadosamente para determinar su condición, porque las conexiones pueden estar rotas u oxidadas, reduciendo así el rendimiento del receptor.

FUNCIONAMIENTO

La posición y el nombre de cada perilla de control está señalado en la Fig. 1. El uso de estas perillas es como sigue:

Interruptor de Fuerza y Regulador de Volumen — Gírese la perilla a la derecha. Se requieren aproximadamente 30 segundos para que las válvulas se calienten y el receptor esté en condiciones para funcionar. Siguiendo la rotación de esta perilla se aumenta el volumen.

Commutador de Ondas — Los ocho botones debajo del cuadrante determinan la banda que ha de usarse. Solamente apriete el botón correspondiente a la banda que se desea sintonizar. La escala del cuadrante que se encuentra directamente encima del botón que se usa, automáticamente entra en función.

Sintonización — La perilla situada a la derecha se utiliza para sintonizar las diferentes escalas del cuadrante. La sintonización ha de hacerse lenta y cuidadosamente para evitar que las estaciones más lejanas y débiles pasen desapercibidas; un arreglo de volante interior se usa para pasar fácil y rápidamente de un extremo al otro. Solamente hágase girar la perilla en la dirección deseada, y el volante continuará la rotación hasta el sitio deseado en la escala, donde el indicador se detiene por medio de una ligera presión en la perilla.

pietra dans les stations faibles. Il ne faut jamais brancher le récepteur à une vieille antenne sans en faire l'examen complet de sa condition, car les connexions peuvent être cassées ou corrodées et donner par là un mauvais rendement.

FUNCIONNEMENT

La position et le but des boutons de commande sont montrés sur la Fig. 1. et leur utilisation est comme suit:

Commutateur Marche-Arrêt et de Volume — Le récepteur est branché quand le bouton est tourné vers la droite. Trente secondes suffisent approximativement pour que les lampes puissent être chauffées avant que l'on obtienne une réception. On contrôle le volume en tournant le bouton d'avantage vers la droite.

Commutateur d'échelles — Les 8 boutons-poussoirs au bas de l'échelon indiquent l'échelle utilisée. Pressez simplement sur un bouton pour obtenir l'échelle que l'on désire. Immédiatement le vernier qui se trouve au-dessus du bouton sera mis en utilisation.

Sélection — Le bouton à droite sert à faire la sélection des diverses échelles sur le vernier. La sélection doit être faite doucement et soigneusement pour ne pas passer les stations faibles et lointaines. Une combinaison de roues à engrenages procure le moyen de faire le déplacement d'un bout à l'autre du vernier rapidement. Faites simplement tourner le bouton dans la direction voulue et le système de roues à engrenages continuera à tourner jusqu'à ce que l'on atteigne la partie du vernier que l'on désire, après quoi une légère pression sur le bouton arrêtera la rotation de ce dernier.

Quand on fait la sélection d'une station, placez l'aiguille-repère des deux cotés de la démarcation jusqu'à ce que l'on obtienne le volume maximum, le moindre bruit, et la tonalité la plus claire. La réception sur

guide for listening at different times during the day or night.

SHORT WAVE BAND	TIME OF BEST RECEPTION
15 meters and below	A. M. (Morning hours)
19 and 25 meters	P. M. (Afternoon)
25 and 31 meters	P. M. (Early evening)
31 and 49 meters	P. M. (Late evening)

PHONE CONTROL

The tone control provides a means of varying the proportion of bass and treble notes and allows the tone of the receiver to be changed to suit the user's taste.

Rotation to the left increases the proportion of bass or low notes and rotation to the right increases the treble notes.

PHONO

The receiver may be used as an excellent phono amplifier by connecting any good high impedance type phono pickup to the phono terminals on the rear of the chassis and placing the phono-radio switch on the rear of the chassis in the "phono" position. The volume and tone controls of the receiver will be effective on record reproduction.

Cuando se esté sintonizando una estación, muévase la aguja sobre la señal en ambas direcciones hasta encontrar el punto de mayor intensidad, menor ruido y mayor claridad de tono. La luz del día tiene una decidida influencia sobre la recepción de la onda corta, y diferentes longitudes de onda alcanzan mayor eficacia a diferentes horas del día. El cuadro a la derecha puede ser usado como guía para sintonizar a diferentes horas del día y la noche.

REGULADOR DE TONO

El regulador de tono proporciona un medio para variar la proporción de tonos altos y bajos y permite que el tono del receptor se cambie a gusto del radio-escucha.

Rotación a la izquierda aumenta la proporción de notas bajas y rotación a la derecha aumenta las notas altas.

FONOGRÁFO

Este receptor puede ser usado como un excelente amplificador de fonógrafo conectando cualquier tipo de discos con un brazo acústico de alta impedancia a las terminales de fonógrafo en la parte posterior de chassis y poniendo el conmutador de fonó-radio en la posición "phono". Los reguladores de volumen y tono del receptor se usan para regular la reproducción de discos.

ondes courtes est affectée définitivement par le jour, de même que celle sur différentes longueurs d'ondes est plus ou moins efficace à divers moments de la journée. Le graphique à gauche peut être utilisé comme guide d'écoute pour la réception à différents moments pendant le jour ou la nuit.

COMMANDE DE TONALITE

La commande de tonalité procure un moyen de combiner les notes basses avec les aigres et permet aussi de changer la tonalité du récepteur à son goût.

La rotation du bouton vers la gauche augmente les notes basses et vers la droite les notes aigres.

PHONO

Le récepteur peut être utilisé comme un excellent amplificateur de phono en branchant le pickup de bonne impédance aux bornes du phono au dos du chassis et en plaçant le commutateur radio-phono qui se trouve aussi au dos du chassis dans la position "phono". Les commandes de volume et de tonalité sont très efficaces dans la reproduction phonographique.

DELAYED AUTOMATIC MUTING CIRCUIT

Pressing the touch-bar or the foot control switch automatically mutes the receiver during the station changing cycle. After the hand or foot pressure is removed, the noise of tuning through stations on the return stroke is eliminated automatically. This special circuit applies a large negative voltage to the 1st audio grid to bias it beyond cut off. When the luner is operated, the delayed muting switch S3 on the back of the luner connects the grid side of the con-

denser C19 to ground and charges it positively. As soon as the luner starts its return stroke, the switch grounds the positive terminal of the condenser and ungrounds the grid side. The grid side now becomes negative with respect to ground and cuts off the 1st audio tube. The charge rapidly leaks off through R12 and R14, and the receiver operates normally after the change cycle.

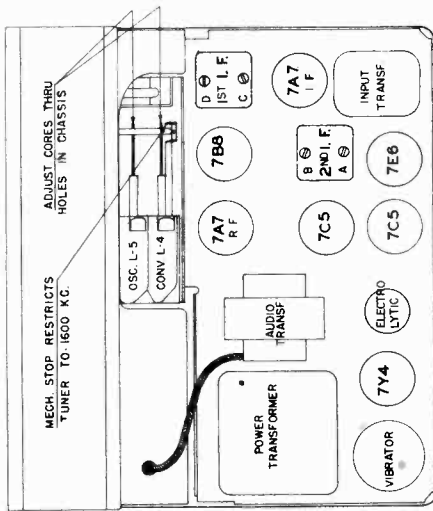


Fig. 9. Top View of Chassis

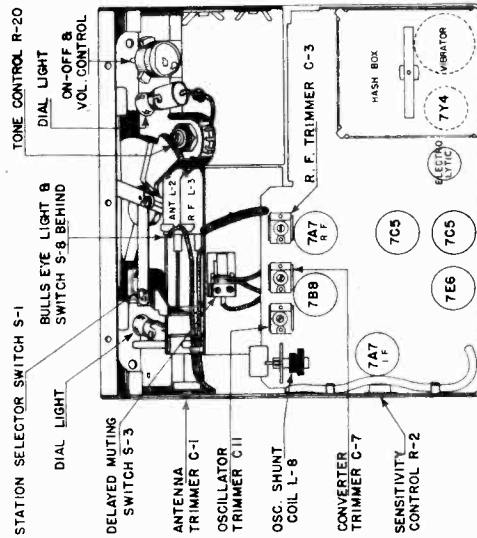


Fig. 10. Bottom View of Chassis

CORE OR COIL REPLACEMENT ONLY

WARNING: The following adjustments are to be made ONLY if a core or coil is replaced.

1. Replace coil or core.
2. Set signal generator to 1700 Kc.
3. Connect signal generator leads through dummy illustrated in Figure 11 to antenna receptacle on the receiver.
4. Set receiver dial to 1600 Kc. (Maximum high frequency end of dial.)
5. Screw the core complete out of the antenna coil, the R.F. coil, the converter coil, and the oscillator coil.
6. Adjust oscillator trimmer C-11 (Fig. 10 at 1700 Kc.
7. Adjust converter trimmer C-7, R.F. trimmer C-3, and antenna trimmer C-1 (Fig. 10) for maximum output reading.
8. Replace cores to their approximate original positions.
9. Set generator dial and receiver dial to 1200 Kc.
10. Adjust oscillator core L5 (Figure 9) to scale at 1200 Kc.
11. Adjust antenna, R.F. and converter cores (Figures 9 and 10) for maximum output reading.
12. Set signal generator to 600 Kc.
13. "Rock in" shunt oscillator coil L8 (Fig. 10) for maximum output reading. This should be done only as a last resort. This is the same as rocking in the paddler condenser on a ganged condenser receiver.
14. Check receiver at 1200 Kc. for calibration and gain. If the receiver is off scale or weak, repeat operations 9, 10 and 11.
15. After alignment is complete, the maximum high frequency tuning range should be checked. If the range is greater or less than 1605 Kc., the mechanical stop for the tuner cross arm should be bent to limit the frequency coverage to 1605 Kc.

After all adjustments have been made, glue core screws with speaker cement.

IMPORTANT: After reinstalling the receiver in the car, allow it to operate for approximately 15 minutes to reach normal operating temperature. Extend antenna to maximum. Check the antenna trimmer alignment on a weak station at approximately 1200 Kc.

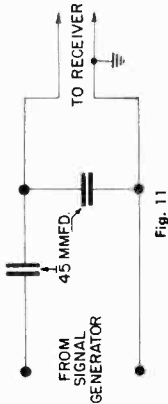


Fig. 11

Figure 11 shows the schematic of a recommended dummy antenna, closely resembling actual antenna capacity, to be used in series with signal generator leads when aligning the R.F. section of the receiver.

ALIGNMENT

Maximum performance depends on accurate alignment of the receiver; therefore follow these instructions carefully.

CAUTION: Make all alignment adjustments to the receiver with the volume control set at maximum and the tone control in the treble position. Reduce the signal intensity as much as possible at the signal generator. Connect the output meter across the voice coil.

I.F. ALIGNMENT PROCEDURE

1. Remove top and bottom covers from receiver.
2. Set signal generator to 265 Kc.
3. Apply signal from generator through a .1 Mfd. dummy to 7B8 converter grid. (Pin No. 6 on socket.)
4. Adjust I.F. trimmers A, B, C and D (Fig. 9) in the order named for maximum output. Repeat the operation to assure accurate alignment.

R.F. AND OSCILLATOR ALIGNMENT

1. Connect signal generator leads through dummy illustrated in Fig. 11 to antenna lead in socket on receiver.
2. Set signal generator to 535 Kc.
3. Place set in manual tuning position and set dial to 535 Kc.
4. Adjust oscillator trimmer C-11 (Fig. 10) for maximum response.
5. Set signal generator to 1200 Kc.
6. Tune set to 1200 Kc.
7. Adjust converter trimmer C-7 (Fig. 10) and P.F. trimmer C-3 (Fig. 10) for maximum response.
8. If dial calibration is off after making above adjustments, a correction can be made by turning eccentric screw at fulcrum of dial pointer.

ZENITH RADIO CORP.

INTERFERENCE SUPPRESSION

There should be no motor noise or interferences from the ignition circuit if the receiver has been installed in the car according to the instructions furnished with it. The interference suppression equipment may be checked for proper installation by referring to the following illustrations:

The two ignition coil condensers No. 22-1147 should be installed as shown in Figure 3 below.

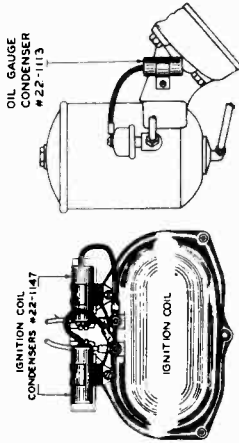


Fig. 3
The oil gauge condenser No. 22-1113 should be installed as shown in Figure 4.

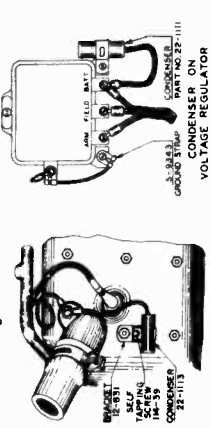


Fig. 4

The temperature gauge condenser No. 22-1113 should be installed with its bracket fastened under one of the cylinder head nuts as shown in Figure 5.

The voltage regulator condenser and ground strap should be installed as shown in Figure 6.

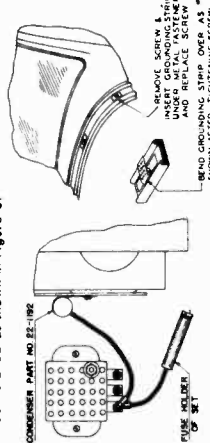


Fig. 5

The No. 22-1192 condenser and the "A" lead should be connected together at the circuit breaker inside the car above the steering column as shown in Figure 7.

The No. 80-145 motor hood bond spring should be installed as illustrated in Figure 8.

RECEIVER INSTALLATIONS

Figures 1, 1A, 2 and 2A, illustrating the escutcheon plates, control knobs and the installed receivers, are given here to facilitate removal and reinstallation of the receivers when service or repair is necessary.

To take the receiver from the car, remove the tuning and volume control knobs. Remove the 8-32 flathead screws that support the receiver at the top. Remove the lower support brackets "D" and finally loosen the hook bolts "A."

To remove the Continental speaker, remove grille (held in place by four nuts on back side of instrument panel). Then remove four machine screws No. 69-84 holding the speaker to the front of the instrument panel. (Fig. 2A.)

The Lincoln speaker is held to the rear of the panel by four wing nuts No. 54-146. (Fig. 2.)

MANUAL TUNING

1. Press station selector touch-bar (Fig. 1) several times or until the green dot appears in the back ground of the dial.
2. Pull manual tuning (right hand) control knob outward and turn to tune in desired station. Be sure to tune to exact frequency to assure the best tone quality.

VOLUME—Adjust left hand control knob for desired volume.

TO NE CONTROL—The tone control is located under dial scale. (Fig. 1.) Turn in either direction for most pleasing one.

ADJUST-O-MATIC TUNING

If not previously set up for Adjust-O-Matic operation, proceed as follows:

1. Press station selector touch bar (Fig. 1) until green dot appears in dial scale background. Press the touch bar once more to advance Adjust-O-Matic mechanism to the No. 1 position.
2. Pull manual tuning knob outward to engage the Adjust-O-Matic mechanism.
3. Select the station desired and tune to its frequency by turning the tuning knob. Tune very carefully for clearest reception.
4. Press station selector bar, pull tuning knob outward and tune in station desired for No. 2 position. Use same procedure for positions No. 3, 4 and 5.

When the five Adjust-O-Matic positions have been adjusted to the five desired stations as instructed, it is only necessary to press the selector bar to return to dial tuning or to any one of the stations selected on the Adjust-O-Matic.

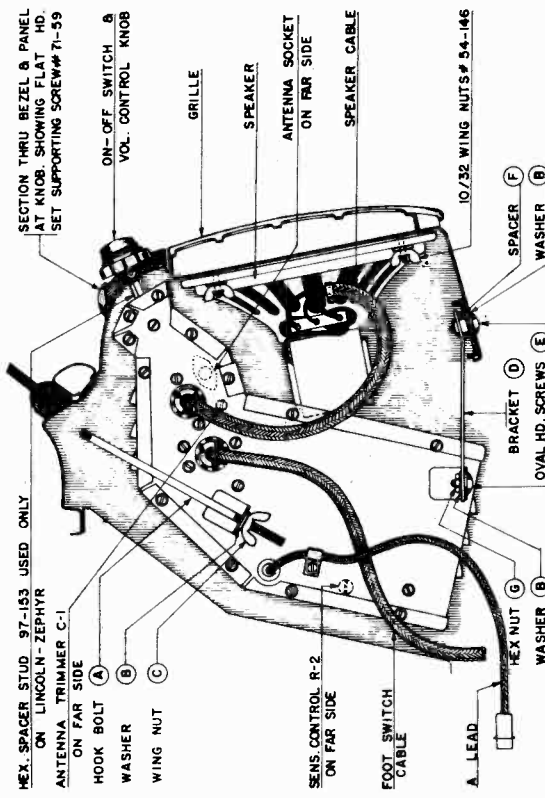


Fig. 2. Lincoln

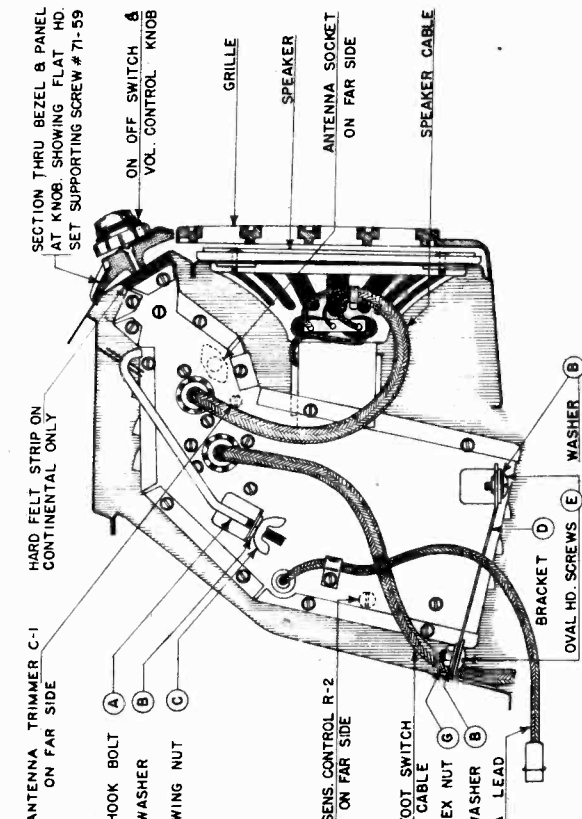


Fig. 2A. Continental

PARTS LIST LINCOLN MODEL 7ML080 (CHASSIS 7C80)

1946 ADJUST-O-MATIC RADIO

COILS AND CHOKES

Diagram No.	Part No.	Description
L 9	20-313	Main hash choke
T 1	95-944	1st I.F. transformer
T 2	95-945	2nd I.F. transformer
L 1	S8819	Antenna motor noise choke assem.
L 7	S11229	Oscillator series coil assem.
L 5	S12053*	Oscillator tuning coil assem.
L 2	S12060*	Antenna tuning coil assem.
L 3	S12060*	R.F. tuning coil assem.
L 4	S12060*	Converter tuning coil assem.
L 8	S11231*	Oscillator shunt coil assem.
L 10	S12233	Motor noise choke coil assem.

Note: In ordering coils marked *, be sure to give color code information.

CONDENSERS

C 9	22-162	100 mmfd.	600 volt
C 8	22-170	.1 mfd.	400 volt
C 17	22-182	250 mmfd.	600 volt
C 4	22-190	.1 mfd.	200 volt
C 13	22-250	.05 mfd.	200 volt
C 31	22-289	50 mmfd.	600 volt
C 27	22-908	.5 mfd.	120 volt
C 28	22-1136	250 mmfd.	600 volt
C 6	22-1169	.001 mfd.	600 volt
C 2	22-1244	.004 mfd.	600 volt
C 14	22-1270	.02 mfd.	200 volt
C 1	22-1420	Antenna trimmer	
C 26	22-1448	.008 mfd.	1600 volt
C 10	22-1478	350 mmfd. compensator	
C 7	22-1479	Oscillator and converter trimmer	
C 3	22-1480	R.F. trimmer	
C 24	22-1481	.003 mfd.	600 volt
C 18	22-1482	.1 mfd.	400 volt
C 23	22-1483	Dry electrolytic—20 mfd.—25 volt	
C 20	22-1484	Dry electrolytic 20 mfd.—25 V. x 20 mfd.—400 V. x 20 mfd.—400 V.	

RESISTORS

R 18	63-1370	1800 ohm	3 watt
R 11	63-1371	330 ohm	2 watt
R 2	63-1379	Sensitivity control	
R 20	63-1384	Tone control	
R 19	63-1385	Volume control and switch	
S 2	63-1390	1 megohm	1/4 watt

DIAL AND TUNING MECHANISM ASSEMBLY (Continued)

Diagram No.	Part No.	Description
R 1	63-1392	330M ohm
R 4	63-1395	22M ohm
R 5	63-1396	68M ohm
R 7	63-1398	33M ohm
R 16	63-1399	82 ohm
R 17	63-1401	15M ohm
R 6	63-1402	10M ohm
R 3	63-1404	33M ohm
R 10	63-1405	2 megohm
R 12	63-1406	15 megohm
R 23	63-1407	1.5 megohm
R 8	63-1408	1M ohm
R 21	63-1409	1M ohm
R 13	63-1410	1M ohm
R 22	63-1411	1M ohm

S 4 }
S 5 }
S 7 }

MISCELLANEOUS

S 1	19-87	Cable clip
S 2	49-543	6" x 9" dynamic speaker
S 3	52-200	Battery cable fuse to ammeter
S 4	52-350	Battery cable set to fuse
S 5	78-477	Vibrator socket
S 6	78-596	Tube socket—laktal base (8 cont.)
S 7	78-645	Speaker plug socket
S 8	78-646	Foot switch cable plug socket
S 9	78-251	Antenna connector socket
S 10	93-456	Vibrator cushion washer
S 11	95-946	Input transformer
S 12	95-947	Output transformer
S 13	95-948	Power transformer
S 14	97-235	Set installation mounting stud
S 15	136-12	Fuse—20 amp.
S 16	190-22	Vibrator
S 17	202-418	Instruction book
S 18	S11269	Hand selector & muting switch assem.
S 19	S12041	Foot switch cable & plug assem.
S 20	208-543*	Cone and voice coil assembly

DIAL AND TUNING MECHANISM ASSEMBLY

R 12	12-970	Selector bar support bracket
R 11	12-1160	Light rod retaining bracket
R 10	26-353	Dial scale
R 9	34-122	Tone control
R 8	34-132	Indexing disc
R 7	34-133	Ratchet gear
R 6	57-1132	Dial scale back plate
R 5	57-1133	Escutcheon
R 4	73-69	No. 6-32 x 5/16 Allen head set screw
R 3	80-329	Gear indexing spring
R 2	80-331	Cross arm return spring
R 1	80-332	Cam lever spring

DIAL AND TUNING MECHANISM ASSEMBLY

Diagram No.	Part No.	Description
R 1	80-336	Ratchet gear return spring
R 2	80-340	Lever spring
R 3	80-341	Kick-off spring
R 4	80-342	Tuning shaft spring
R 5	80-343	Solenoid switch spring
R 6	80-344	Solenoid switch contact spring
R 7	80-429	Indicator switch contact spring
R 8	80-430	Indicator switch contact spring
R 9	80-431	Selector bar tension spring
R 10	97-156	Tone control knob retaining stud
R 11	100-32	Dial light bulbs (3 used)
R 12	118-34	Pointer drive link
R 13	126-497	Manual indicator light shield
R 14	126-498	Dial light shield
R 15	128-22	Indicator cam
R 16	149-44*	Adjusting spring and core
R 17	187-7	Manual indicator light rod
R 18	188-43	Retaining ring
R 19	188-45	Turret screw lock ring
R 20	S10826	Solenoid end plug & bracket assem.
R 21	S10829	Solenoid end terminal assem.
R 22	S10831	Ratchet and bracket assem.
R 23	S10836	Cross arm assem.
R 24	S11054	Tuning shaft and gear assem.
R 25	S11084	Turret assem.
R 26	S12068	Tuning & volume control knob assem.
R 27	S12069	Selector key bar & bracket assem. (46-388)
R 28	S12073	Pointer and stud assem. (59-170)
R 29	S12075	Pointer drive bracket & stud assem.
R 30	S12183	Mounting plate and lever assem.
R 31	S12195	Dial light socket & wire assem.—L.H.

PARTS LIST CONTINENTAL MODEL 7ML081 (CHASSIS 7C80) 1946 ADJUST-O-MATIC RADIO

The parts list for Model 7ML081 is the same as for Model 7ML080 with the following parts omitted and added:

Diagram No.	Part No.	Description
S 1	49-543	6" x 9" dynamic speaker
S 2	97-235	Set installation mounting stud
S 3	54-146	10/32 wing nut (4 used)
S 4	71-59	8/32 x 1/2 flat head M.S.
S 5	112-348	Set installation screw
S 6	208-543	Cone and voice coil

ADD

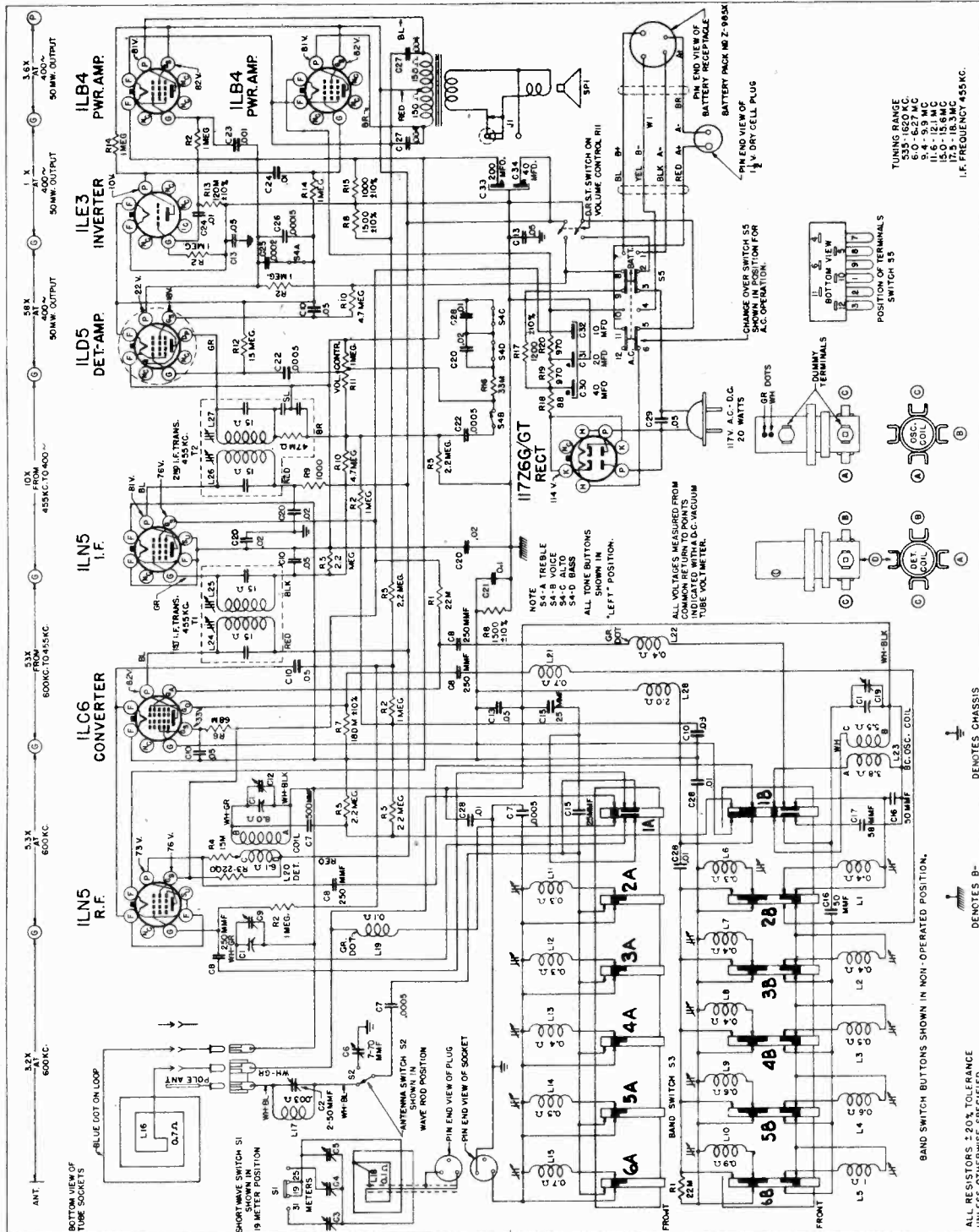
S 1	49-539	6" x 9" dynamic speaker
S 2	112-545	Set installation screw L.H.
S 3	112-546	Set installation screw R.H.
S 4	69-84	10/32 x 7/8 R.H. M.S.
S 5	71-29	8/32 x 7/8 F.H. M.S.
S 6	93-369	No. 10 internal shakeproof lock-washer
S 7	93-593	7/16 external shakeproof lock-washer
S 8	208-539*	Cone and voice coil

OMIT

S 1	49-543	6" x 9" dynamic speaker
S 2	97-235	Set installation mounting stud
S 3	54-146	10/32 wing nut (4 used)
S 4	71-59	8/32 x 1/2 flat head M.S.
S 5	112-348	Set installation screw
S 6	208-543	Cone and voice coil

When ordering cone and voice coil assembly marked *, be sure to give manufacturer's code letter that follows base number.

ZENITH RADIO CORP.



PART	DESCRIPTION
ANT	ANTENNA
ILN5	500K TO 455K I.F. TRANS.
ILC6	CONVERTER
ILN5	500K TO 455K I.F. TRANS.
ILD5	DET. AMP.
ILE3	INVERTER
ILB4	PWR. AMP.
SP1	SPEAKER
BATT	BATTERY PACK
S1	METER SWITCH
S2	ANTENNA SWITCH
S3	BAND SWITCH
S5	AC OPERATOR SWITCH
C1-C28	VARIOUS CAPACITORS
L1-L19	VARIOUS INDUCTORS
R1-R10	VARIOUS RESISTORS
VOL	VOLUME CONTROL
SW	SWITCHES
TR	TRANSFORMERS
SP	SPEAKER
BATT	BATTERY PACK

PUSHBUTTON SWITCH LABELED IA, IB, ETC. FOR REFERENCE TO CLARIFIED SCHEMATICS

MICROPHONICS: Howl caused by a microphonic 1LD5 tube. These tubes have been improved, and all tubes after F6E (June '46) are non-microphonic and should replace the older type.

TUNING RANGE
 535-1620 KC.
 60-627 MC
 11.6-12.1 MC
 150-156 MC
 1.6-1.7 MC
 I.F. FREQUENCY-455KC.

DEMOTES CHASSIS

DEMOTES B-

BAND SWITCH BUTTONS SHOWN IN NON-OPERATED POSITION.

ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS SHOWN IN POSITION FOR TUBE VOLTMETER.

CHANGE OVER SWITCH S5 SHOWN IN POSITION FOR A.C. OPERATION.

NOTE:
 S4-A REBLE
 S4-B VOICE
 S4-C ALTO
 S4-D BASS

ALL TONE BUTTONS SHOWN IN "LEFT" POSITION.

ANTENNA SWITCH S2 SHOWN IN WAVE ROD POSITION.

SHORT WAVE SWITCH S1 SHOWN IN 19 METERS POSITION.

19 METERS POSITION

WHILE DOT ON LOOP

1.2X AT 600KC

53X AT 600KC

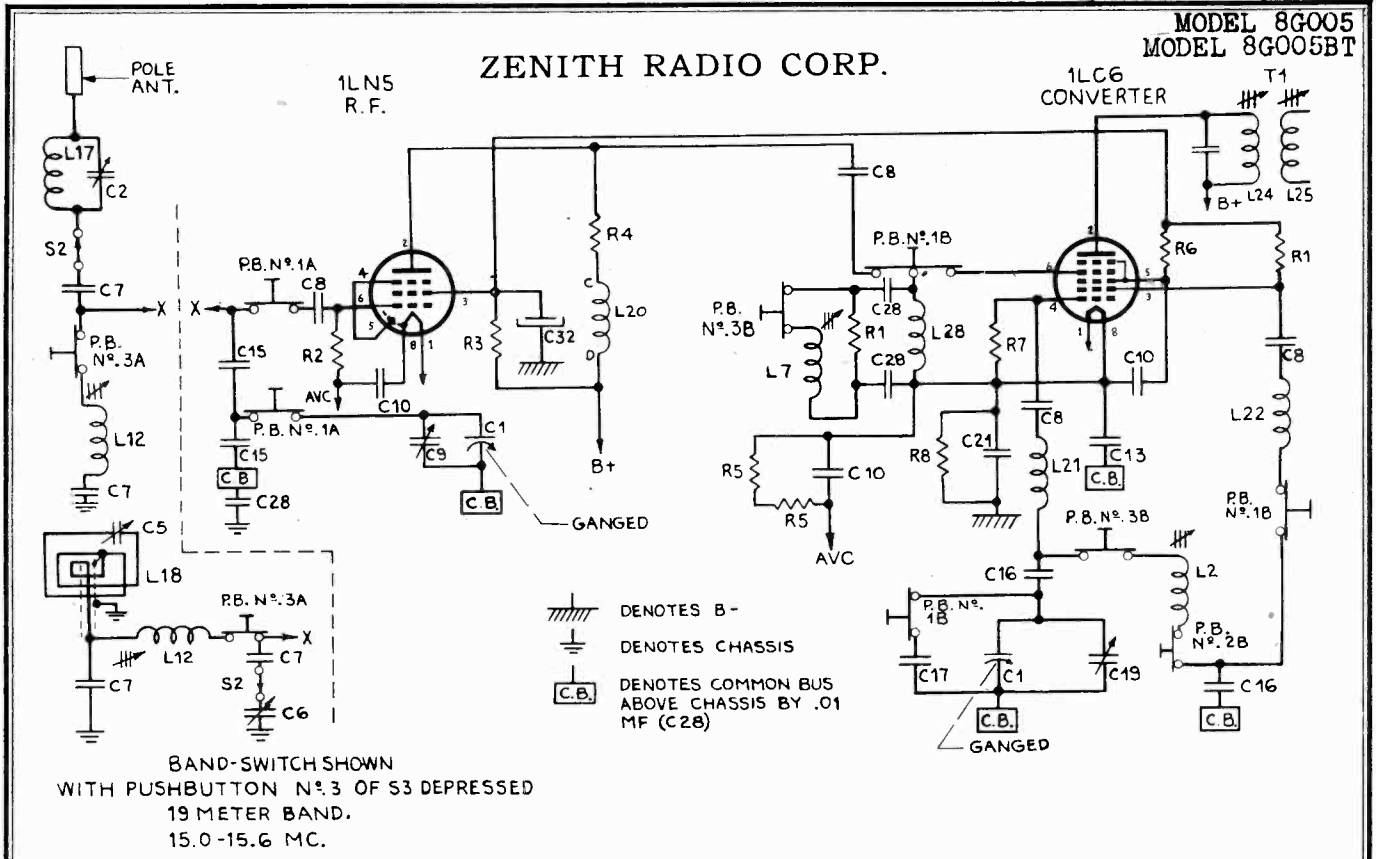
800MC TO 455KC

53X FROM 455KC TO 400~

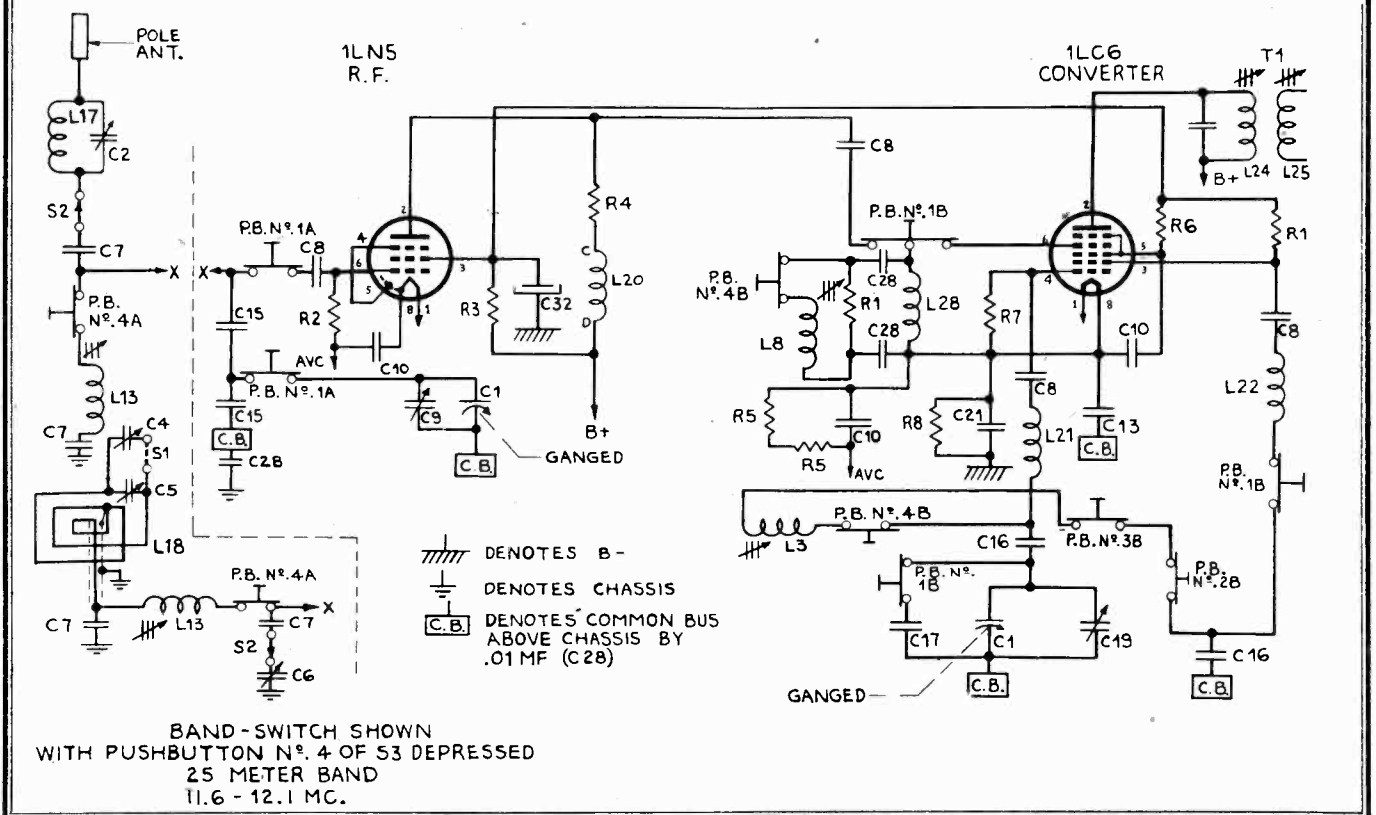
10X AT 455KC TO 400~

58X AT 455KC TO 400~

36X AT 455KC TO 400~



NOTE: Where the pole antenna is not effective, such as on steel buildings, trains automobiles, etc., the shortwave wavemagnet is then used and placed in a corner of the window. The shortwave wavemagnet is equipped with a plug which, when inserted into the receptacle on the rear of the set, automatically disconnects the pole antenna by operating switch S2 in the circuit. It is simply pulled out and switch S2 then automatically reconnects the pole antenna.



TO THE SERVICE MAN:

CAUTION—Before attempting to operate this receiver, make certain that the Line Voltage Switch is properly set.

1. For 110-125 V. AC or DC operation set the Line Voltage Switch to 115 V. AC-DC.
2. For 210-240 V. AC operation, set the switch to the 220 V. AC position.
3. For 210-240 V. DC operation, set the switch to the 220 V. DC position.

The 8C40BT chassis is an AC, DC or battery operated superheterodyne circuit with a stage of tuned radio frequency amplification and band spread tuning over the 49, 31, 25, 19, and 16 meter bands.

The audio amplifier used in chassis 8C40BT features phase inversion and push-pull power output.

If removal of the chassis from the cabinet becomes necessary, great care must be exercised so that the coil assembly is not damaged.

The 8C40BT chassis is isolated from the DC circuits, and all measurements must be from a common negative point. The most convenient place to reach this point is at the junction where C13 is connected to the filter condenser. The DC resistance from the chassis to any circuit must be almost infinite. If any circuit becomes grounded to the chassis, a hum will appear. Microphonic tubes will cause an audio howl. Check the 1LD5 and 1LC6 tubes.

The wavemagnet is connected to the chassis through the hinges in the cabinet, snaps and flexible leads. If the RF becomes weak or dead, check resistance of wavemagnet at the condenser gang. The DC resistance across the two leads should be approximately 1 ohm. If the circuit is open, unscrew the four wood screws and the two screws which hold the handle. The top can now be removed and connecting leads will be visible for inspection. Also loosen the snap-on socket and check for broken or shorted leads.

The alignment of chassis 8C40BT is conventional. However, care must be exercised when making adjustments, and the alignment procedure must be followed exactly. Set the chassis over a metal plate approximately the same distance the battery pack is from the bottom of the chassis when it is in the cabinet. This procedure will introduce the approximate amount of metal in the field of the RF and oscillator coils as when the chassis is in the cabinet. A signal generator of reasonable accuracy and good attenuation must be used. An output meter (AC) of the copper oxide rectified type with a range of 1 to 30 volts in several steps is necessary to get accurate output readings. Alignment wrenches should be of the non-metallic type, especially when making adjustments at the higher frequencies.

When reinstalling the chassis in the cabinet be careful not to disturb the cabling between the short wave coil assembly and chassis. Tune in a weak broadcast signal near 1400 Kc., and touch up trimmer C9. This will insure maximum performance after alignment.

A LOS MECANICOS

PRECAUCION: Antes de empezar el funcionamiento de este receptor, cerci6rese de que el Interruptor del Voltaje de la Linea est6 debidamente ajustado.

1. Para corriente de 110-125 voltios, corriente continua o corriente alterna, adj6stese el Interruptor del Voltaje de la Linea a 115 voltios C.C. o C.A.
2. Para corriente de 210-240 v. C.A., aj6stese el Interruptor a 220 v. C.A.
3. Para corriente de 210-240 v. C.C., aj6stese el Interruptor en la posici6n de 220 v. C.C.

El bastidor 8C40BT es un circuito superheterodino que funciona en una etapa de amplificaci6n de radio-frecuencia sintonizada y un ensanche de banda que sintoniza con las bandas de 49, 31, 25, y 16 metros.

La v6lvula amplificadora de audofrecuencia que se usa en el bastidor 8C40BT da importancia a la inversi6n de fases y a la salida sim6trica de la energa.

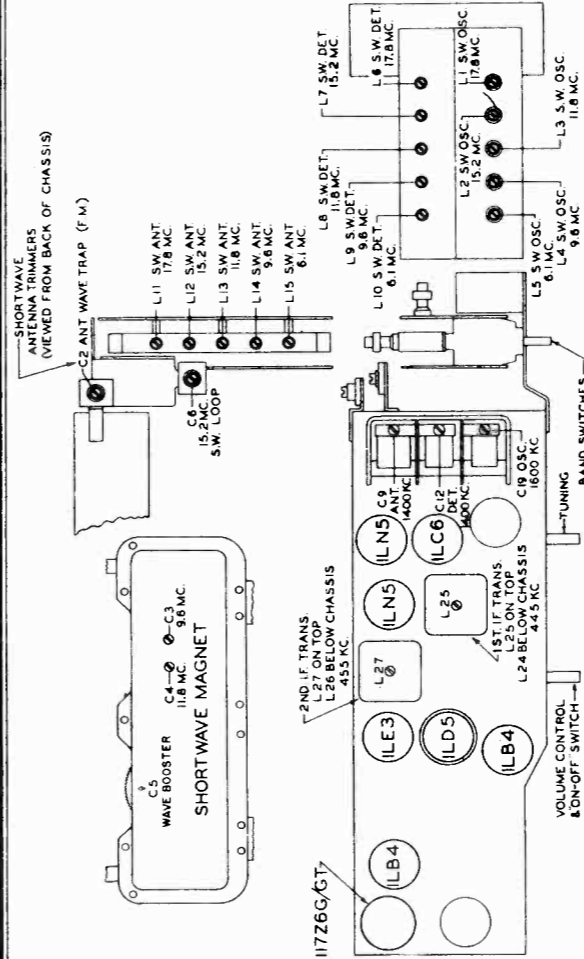
Si se hace necesario quitar el bastidor del armario, deber6 ejercerse gran cuidado para evitar que se da6e el embobinado.

El bastidor 8C40BT est6 aislado de los circuitos de corriente continua, y todas las medidas deben hacerse desde un punto negativo com6n. El lugar m6s conveniente para alcanzar este punto est6 en la uni6n donde C13 est6 conectado al condensador del filtro. La resistencia de la corriente continua precedente del bastidor a cualquier circuito deber6 ser casi infinita. Si una de las v6lvulas est6 a masa (cortocircuito) con el bastidor, se oir6 un zumbido. Las v6lvulas microf6nicas producir6n un ruido de estudio. Examine las v6lvulas 1LD5 y 1LC6.

El im6n de ondas est6 conectado al bastidor por medio de las bisagras en el armario. Inspecci6nese la resistencia del im6n de ondas en el m6ltiple del condensador. La resistencia de la C.C. a trav6s de los dos conductores (plomos) deber6 ser aproximadamente de 1 ohm. Si el circuito est6 abierto, aj6stese los cuatro tornillos de madera y los dos tornillos que sostienen el mango. Ahora, la tapa se puede quitar, quedando visibles para su inspecci6n los conductores conectados. Aj6stese tambi6n el casquillo de resorte y ex6minese para ver si hay conductores rotos o en cortocircuito.

El alineamiento del armaz6n 8C40BT es convencional; sin embargo, debe tenerse cuidado al hacerse ajustes o composuras, y es imperativo hacer el alineamiento siguiendo el procedimiento exactamente. Col6quese el armaz6n sobre una plancha de metal aproximadamente a la misma distancia que el paquete de las acumuladoras est6 del armaz6n cuando 6ste est6 en el armario. Este procedimiento introducir6 en el campo de las bobinas de R.F. y del oscilador la cantidad aproximada de metal que hay cuando el armaz6n est6 en el armario. Hay que usar un generador de se6ales que funcione con exactitud y buena atenuaci6n. Se necesita un medidor de rendimiento de C.A. del tipo rectificaci6n de 6xido de cobre, con una amplitud de 1 a 30 voltios en varias etapas, para obtener medidas correctas del rendimiento. Hay que usar llaves de alineamiento que no sean de metal, especialmente cuando se hagan ajustes o reparaciones en las frecuencias altas.

Cuando se instale otra voz el armaz6n en el armario, t6ngase cuidado de no desajustar las posiciones de los cables que se extienden entre el conjunto de la bobina de onda corta y el armaz6n. Sintonizese con una se6al de radiodifusi6n d6bil cerca de 1400 Kc., y t6quese la pieza C9 (trimmer). As6 se obtendr6 un funcionamiento m6ximo despu6s del alineamiento.



ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	BAND	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid (Pin 6-1LC6)	.1 mfd.	455 Kc.	BC	600 Kc.	L-24, 25, 26, 27	Align I.F.
2			1600 Kc.	BC	1600 Kc.	C-19	Set Oscillator to Scale
3	One Turn Loop Coupled Loosely to		1400 Kc.	BC	1400 Kc.	C-12	Alignment of Detector Sec.
4	Broadcast Wavemagnet		1400 Kc.	BC	1400 Kc.	C-9	Alignment of B.C. Wavemagnet
5*			6.1 Mc.	49 Met.	6.1 Mc.	L-5, L-10, L-15	Alignment of S.W. Antenna, Detector and Oscillator
6*			9.6 Mc.	31 Met.	9.6 Mc.	L-4, L-9, L-14	
7*			11.8 Mc.	25 Met.	11.8 Mc.	L-3, L-8, L-13	
8*			15.2 Mc.	19 Met.	15.2 Mc.	L-2, L-7, L-12	
9*			17.8 Mc.	16 Met.	17.8 Mc.	L-1, L-6, L-11	
10			15.2 Mc.	19 Met.	15.2 Mc.	C-5, C-6	Alignment of Shortwave Magnet
11	One Turn Loop Coupled Loosely to Shortwave Magnet, Wavered		11.8 Mc.	25 Met.	11.8 Mc.	C-4	
12	One Turn Loop Coupled Loosely to Collapsed		9.6 Mc.	31 Met.	9.6 Mc.	C-3	
13	When Receiving Normal Transmission on the 49, 31, 25, 19 or 16 Meter Bands, if FM Interference is Experienced Adjust Wave Trap Trimmer C-2 for Minimum Response of the Interfering Signal.						

*Note: Rock Tuning Condenser When Making Alignment Under Operations 5, 6, 7, 8 and 9.

ZENITH RADIO CORP.

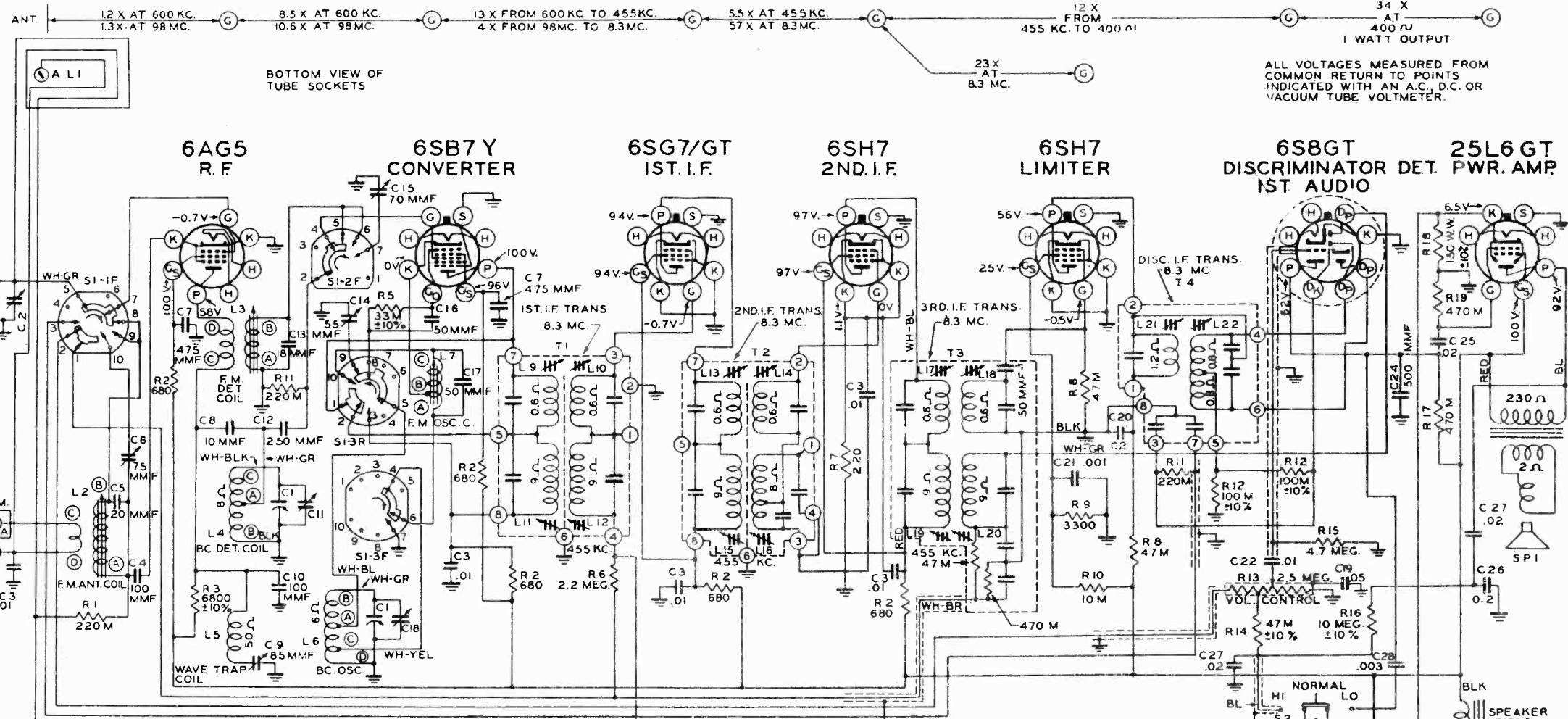
MODELS 8H023, 8H034
Chassis 8C01

DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1359	3 GANG VARIABLE
C2	ON C1	BROADCAST ANT. TR.
C3	22-1365	.01 MFD.
C4	22-1468	100 MMF. MICA 300 V.
C5	22-1491	20 MMF. CER. COND.
C6	22-1485	F. M. ANT. TRIM
C7	27-87	475 MMF. MICA DISC.
C8	22-1489	10 MMF. CER. COND.
C9	ON L5	TRIMMER WAVE TR.
C10	22-162	100 MMF. MICA 300 V.
C11	ON C1	BROADCAST DET. TR.
C12	22-162	250 MMF. COND. MICA
C13	22-1490	18 MMF. CER. COND.
C14	22-1571	F. M. OSC. TRIM.
C15	22-1486	F. M. DET. TRIM.
C16	22-1367	50 MMF. CER. COND.
C17	22-1492	50 MMF. CER. COND.
C18	ON C1	BROADCAST OSC. TR.
C19	22-829	.05 MFD.
C20	22-1366	.02 MFD.
C21	22-1439	.001 MFD.
C22	22-196	.01 MFD.
C24	22-1136	500 MMFD.
C25	22-830	.02 MFD.
C26	22-1531	.02 MFD.
C27	22-1127	.02 MFD.
C28	22-286	.003 MFD.
C29		40 MFD. ELECT. 150 V.
C30	22-1366	40 MFD.
C31		40 MFD.
C32	22-1017	.05 MFD.

R1	63-717	220 M	1/4 W.
R2	63-582	680 OHM	1/4 W.
R3	63-639	6800 Ω	1/4 W.
R4	63-1339	30-67 OHM CANDOHM	
R5	63-1484	30-67 OHM	
R6	63-765	33 M	1/4 W.
R7	63-722	2.2 MEGOHM	1/4 W.
R8	63-579	220 OHM	1/4 W.
R9	63-593	47 M OHM	1/4 W.
R10	63-586	3300 OHM	1/4 W.
R11	63-1216	10 M OHM	1 W.
R12	63-296	220 M	1/4 W.
R13	63-445	100 M OHM	1/4 W.
R14	63-1336	2.5 MEG. VOL. CONT.	
R15	63-767	47 M OHM	1/4 W.
R16	63-802	4.7 MEGOHM	1/4 W.
R17	63-674	10 MEGOHM	1/4 W.
R18	63-597	470 M OHM	1/4 W.
R19	63-1237	150 OHM WIREWD 1/2 W.	
R20	63-719	470 M OHM	1/4 W.
R21	63-1450	22 OHM	1 W.

L1	S1135	WAVEMAGNET ASS'Y.
L2	S12257	F.M. ANT. COIL
L3	S12258	F.M. DET. COIL
L4	S13117	BC. DET. COIL
L5	S12520	WAVE TRAP COIL & TR.
L6	S11157	BC. OSC. COIL. ASSY.
L7	S12259	F.M. OSC.
L8	S12256	A.C. CHOKE LINE
L9	ON T1	1ST. I.F. TR. PRI. F.M.
L10	ON T1	1ST. I.F. " " F.M.
L11	ON T1	1ST. I.F. " " PRI.
L12	ON T1	1ST. I.F. " " SEC.
L13	ON T2	2ND. I.F. TR. PRI. F.M.
L14	ON T2	2ND. I.F. " " SEC. F.M.
L15	ON T2	2ND. I.F. " " PRI.
L16	ON T2	2ND. I.F. " " SEC.
L17	ON T3	3RD. I.F. TR. PRI. F.M.
L18	ON T3	3RD. I.F. " " SEC. F.M.
L19	ON T3	3RD. I.F. " " PRI.
L20	ON T3	3RD. I.F. " " SEC.
L21	ON T4	4TH. I.F. TR. PRI. F.M.
L22	ON T4	4TH. I.F. " " SEC. F.M.

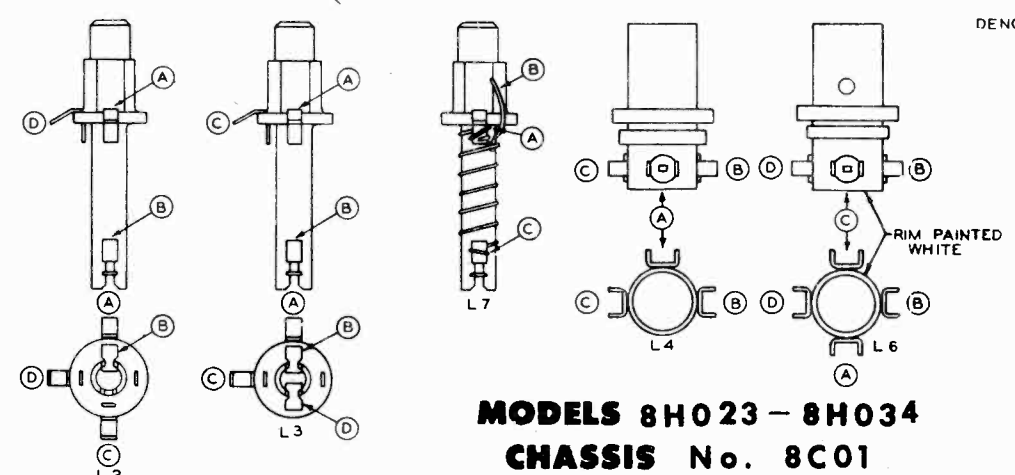
PL1	100-67	PILOT LIGHT 6.3V.15A.
S1	65-384	BAND SWITCH
S2	65-365	TONE SWITCH
SPI	49-516	5 DYNAMIC SPEAKER



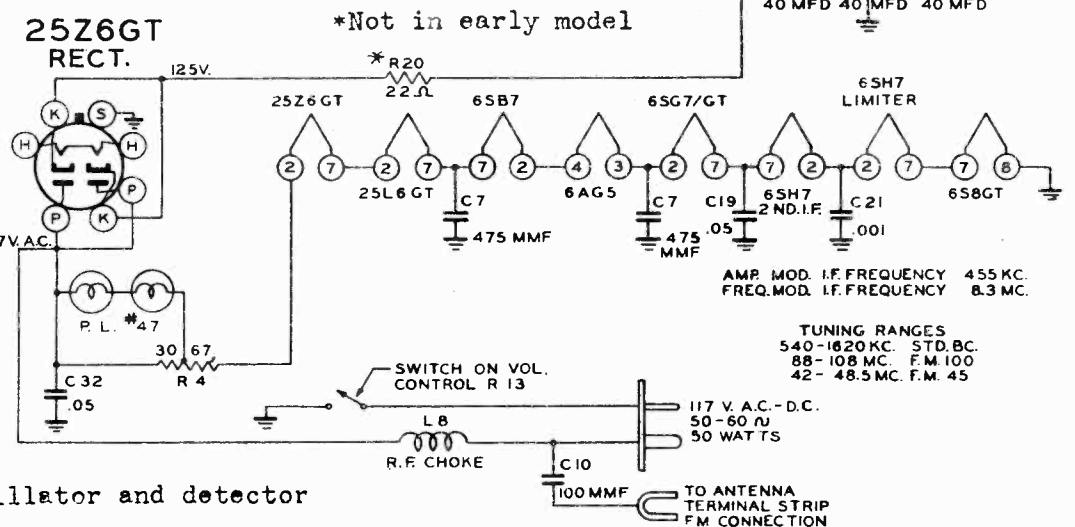
BAND SWITCH S1 SHOWN IN STANDARD BROADCAST POSITION
BAND SWITCH POSITIONS: 1ST. POS. STD. BROADCAST, 2ND. POS. F.M. 100 MC., 3RD. POS. F.M. 45 MC.

ALL RESISTORS ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.



MODELS 8H023 - 8H034
CHASSIS No. 8C01



AMP. MOD. I.F. FREQUENCY 455 KC.
FREQ. MOD. I.F. FREQUENCY 8.3 MC.

TUNING RANGES
540-1620 KC. STD. BC.
88-108 MC. F.M. 100
42-48.5 MC. F.M. 45

AUDIO HOWL ON FM:

1. 83-1328 plastic spacer installed between the centers of the oscillator and detector slug shafts. This prevents the slugs from vibrating.
2. Float speaker on rubber grommets.
3. 166-36 felt cushion placed between the back of the gang and i-f transformer.
4. To improve floating of the gang, remove the support screw nearest the dial.

ZENITH RADIO CORP.

ALIGNMENT PROCEDURE

Opera- tion	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 8 on Converter Tube 6SB7 Socket	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	L-11, 12, 15, 16, 19 and 20	Align I.F. channel for maximum output
2	Pin 1 on R.F. tube 6AG5 socket	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	C9	Adjust wavetrap for minimum output
3	2 turns loosely cpld. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc.	C18	Set oscillator to dial scale
4	2 turns loosely cpld. to wavemagnet	.05 Mfd.	1400 Kc. Modulated	BC	1400 Kc.	C11 & C2	Align det. and ant. stages.
5 (a)	Pin 4 (grid) on 6SH7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	FM		L21 coil slug Primary discr.	Align primary of discriminator for maximum reading
6 (b)	Pin 4 (grid) on 6SH7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	FM		L22 coil slug sec. of discr.	Adjust secondary of discrimi- nator for zero reading
7 (c)	Pin 4 (grid) on 6SH7 2nd IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM		L17 & L18 Prim. & Sec. of 3rd IF trans.	Align 3rd IF transformer for maximum reading
8 (c)(d)	Pin 4 (grid) on 6SB7 1st IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM		L13 & L14 primary and sec. of 2nd IF transformer	Align 2nd IF transformer for maximum reading
9 (c)(d)	Pin 8 (grid) on 6SB7 converter tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM		L9 & L10 Primary & Sec. of 1st IF transformer	Align 1st IF transformer for maximum reading
10 (c)	Antenna Post (Re- move line ant.)	270 ohms	98 Mc. Unmodulated	FM	98 Mc.	L7 Osc. Coil slug	Set oscillator to dial scale
11 (c)	Antenna Post (Re- move line ant.)	270 ohms	98 Mc. Unmodulated	FM	98 Mc.	L3 & L2 Det. and RF coil slugs	Align det. and ant. stages to maximum reading
12 (c)	Antenna Post (Re- move line ant.)	270 ohms	45 Mc. Unmodulated	FM	45 Mc.	C14	Set oscillator to dial scale
13 (c)	Antenna Post (Re- move line ant.)	270 ohms	45 Mc. Unmodulated	FM	45 Mc.	C15 & C6	Align detector & ant. stages for maximum reading

IMPORTANT: Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

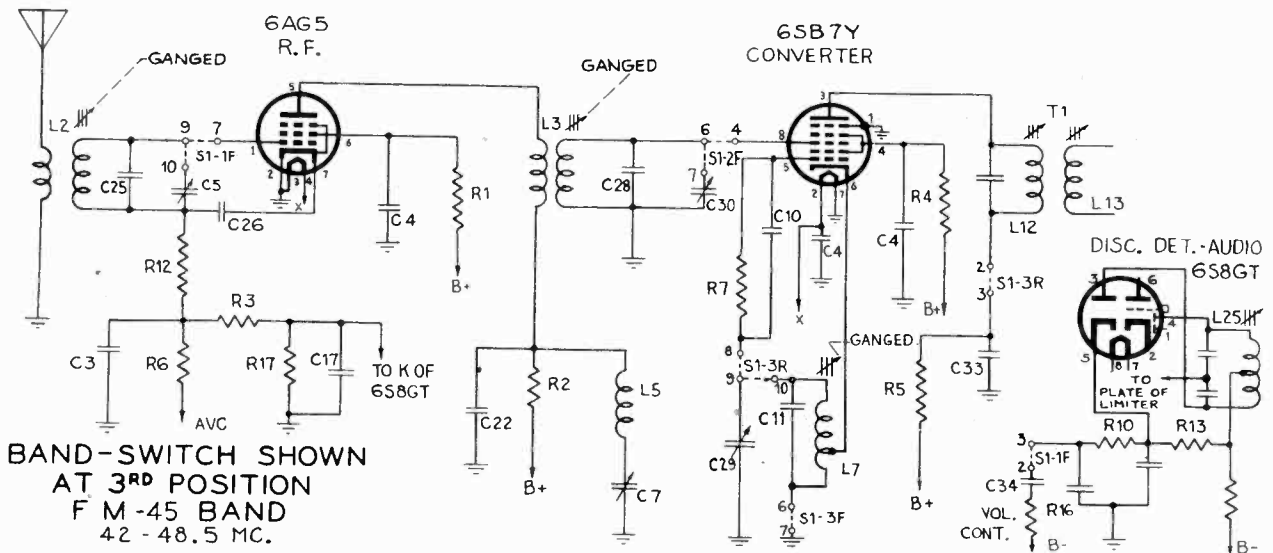
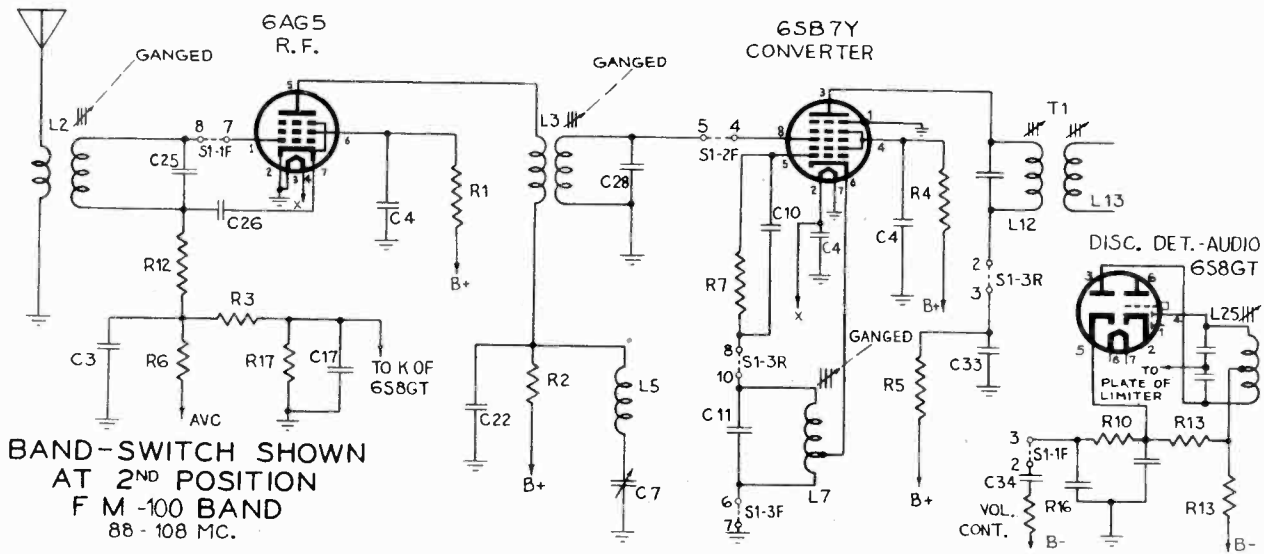
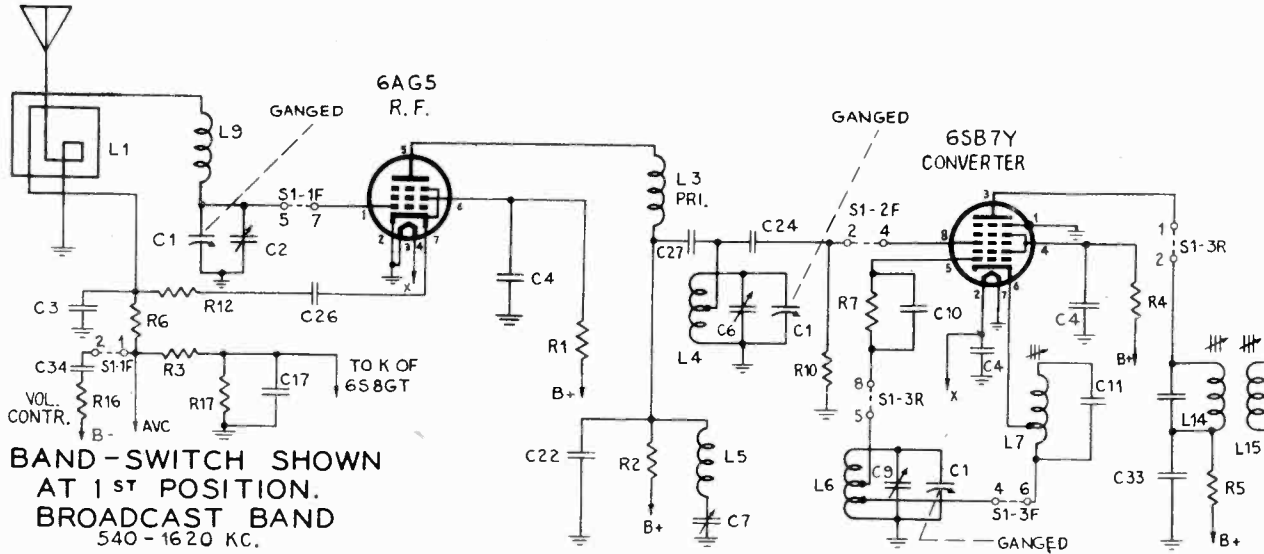
A vacuum tube voltmeter with an isolation resistor of 200,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

- Vacuum Tube Voltmeter pin 5 on discriminator transformer to chassis (half discriminator load.)
- Vacuum Tube Voltmeter pin 7 on discriminator transformer to chassis (full discriminator load.)
- Vacuum Tube Voltmeter 6SH7 limiter grid (pin 4) to chassis.
- 300 ohm $\frac{1}{2}$ watt carbon resistor soldered across the secondary L14 (pin 2 and 3 of 2nd, IF trans.). The leads to the resistor must be as short as possible and the resistor removed before operation 10 is started.

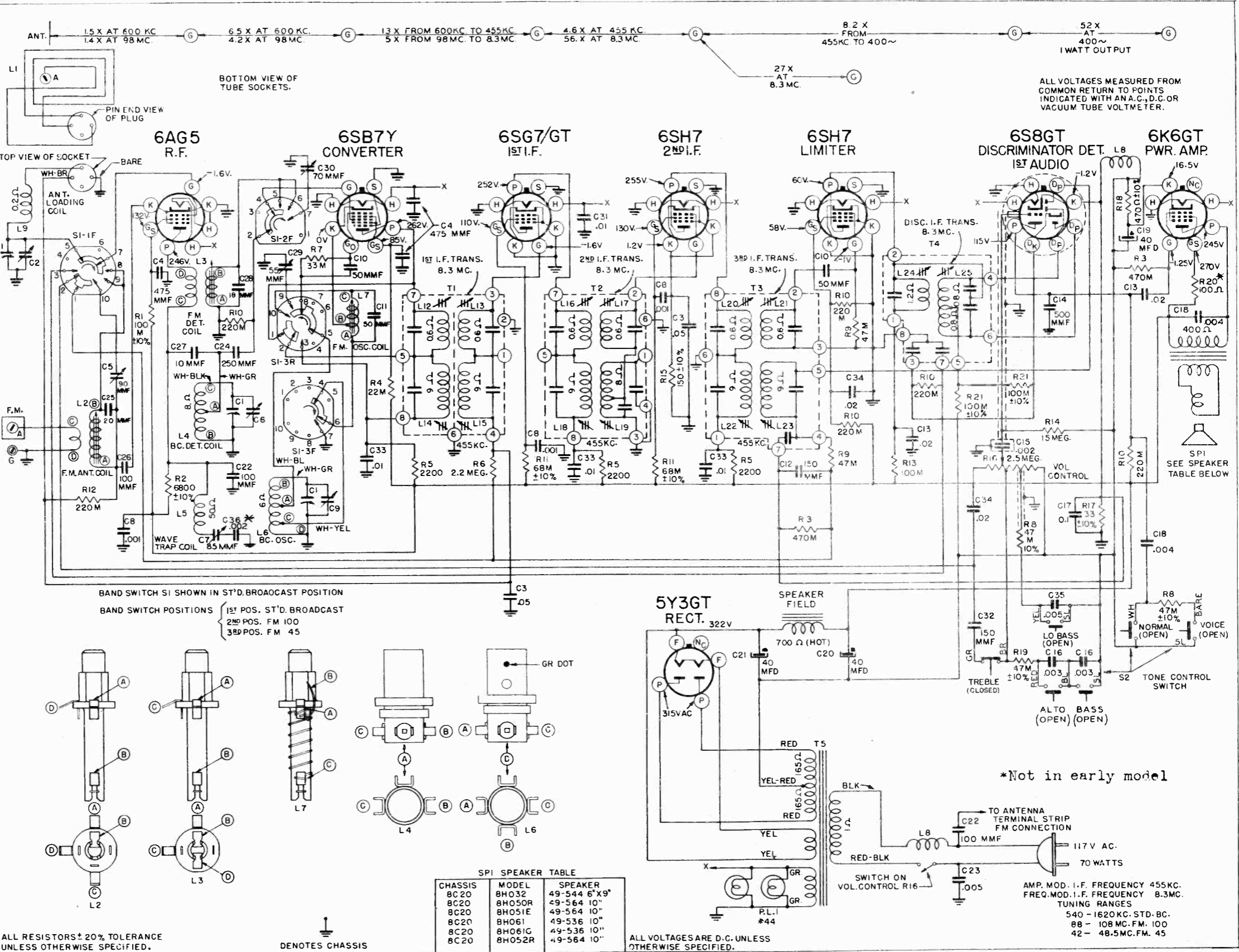
MODELS 8H032, 8H033, 8H050, 8H051, 8H052, 8H061
ZENITH RADIO CORP.
Chassis 8C20, Early, Late



ZENITH RADIO CORP.

MODELS 8H032, 8H033, 8H050, 8H051, 8H052, 8H061, Ch. 8C20, Early, Late

DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1368	3-GANG VARIABLE
C2	ON C1	BROADCAST ANT. TRIM.
C3	22-829	.05 MFD. 200V.
C4	27-87	475 MMFD. MICA DISC.
C5	22-1485	90 MMFD TRIMMER
C6	ON C1	BROADCAST DET. TRIM.
C7	ON L5	WAVE TRAP TRIMMER
C8	22-1431	.001 MFD. 600 V.
C9	ON C1	BROADCAST OSC. TRIM.
C10	22-1367	50 MMFD. 500 V.
C11	22-1492	50 MMFD. GER.
C12	22-470	150 MMFD. 600V.
C13	22-830	.02 MFD. 600V.
C14	22-1138	500 MMFD. 600V.
C15	22-1445	.002 MFD. 600V.
C16	22-288	.003 MFD. 600V.
C17	22-827	.1 MFD. 200V.
C18	22-448	.004 MFD. 600V.
C19	40 MFD. ELECTRO. 25V.	
C20	22-1382	40 MFD. 450V.
C21	40 MFD. 450V.	
C22	22-162	100 MMFD. 600V.
C23	22-1041	.005 MFD. 400V.
C24	22-182	250 MMFD. 600V.
C25	22-1491	20 MMFD. GER.
C26	22-1488	100 MMFD. 300 V.
C27	22-1489	10 MMFD. GER.
C28	22-1490	18 MMFD. GER.
C29	22-1571	55 MMFD TRIMMER
C30	22-1486	70 MMFD
C31	22-1385	.01 MFD. 200V.
C32	22-1137	150 MMFD. 600V.
C33	22-196	.01 MFD. 600V.
C34	22-188	.02 MFD. 400V.
C35	22-1135	.005 MFD. 600V.
C36	22-912	.002 MFD. 600V.
L1	S-11461	WAVE MAGNET TYPE 30D
L2	S-12257	FM ANTENNA COIL ASSEMBLY
L3	S-12258	FM DETECTOR
L4	S-11156	BC DETECTOR
L5	S-12253	WAVE TRAP COIL TRIM
L6	S-11291	BC OSCILLATOR COIL
L7	S-12259	FM
L8	S-12256	R.F. CHOKE ASSEMBLY
L9	S-12389	ANT. LOADING COIL
L12	ON T1	1ST I.F. TRANS. PRI. (F.M.)
L13	ON T1	1ST I.F. SEC. (F.M.)
L14	ON T1	1ST I.F. PRI.
L15	ON T1	1ST I.F. SEC.
L16	ON T2	2ND I.F. TRANS. PRI. (F.M.)
L17	ON T2	2ND I.F. SEC. (F.M.)
L18	ON T2	2ND I.F. PRI.
L19	ON T2	2ND I.F. SEC.
L20	ON T3	3RD I.F. TRANS. PRI. (F.M.)
L21	ON T3	3RD I.F. SEC. (F.M.)
L22	ON T3	3RD I.F. PRI.
L23	ON T3	3RD I.F. SEC.
L24	ON T4	4TH I.F. TRANS. PRI. (F.M.)
L25	ON T4	4TH I.F. SEC. (F.M.)
R	63-160	100 M OHM 1/2W.
R2	63-639	6800 OHM 1/4W.
R3	63-597	470 M OHM 1/4W.
R4	63-1058	22 M OHM 2W.
R5	63-803	2200 OHM 1/2W.
R6	63-722	2.2 MEG OHM 1/4W.
R7	63-712	33 M OHM 1/4W.
R8	63-767	47 M OHM 1/4W.
R9	63-593	47 M OHM 1/4W.
R10	63-296	220 M OHM 1/4W.
R11	63-1225	68 M OHM 1/2W.
R12	63-717	220 M OHM 1/4W.
R13	63-595	100 M OHM 1/4W.
R14	63-975	15 MEG OHM 1/4W.
R15	63-246	150 OHM 1/4W.
R16	63-1466	2.5 MEG. VOL. CONTROL
R17	63-1099	33 OHM W.W. 1/2W.
R18	63-1222	470 OHM W.W. 1W.
R19	63-648	47 M OHM 1/4W.
R20	83-1172	100 OHM W.W. 1/2W.
R21	63-445	100 M OHM 1/4W.
S1	85-378	BAND SWITCH
S2	S12510	TONE SWITCH ASSEMBLY
SP1		SEE SPEAKER TABLE
PL1	100-36	PILOT LIGHT 6.3V. 25A
T1	S-12249	1ST I.F. TRANS. ASSEMBLY
T2	S-12250	2ND I.F. " "
T3	S-12251	3RD I.F. " "
T4	S-12252	DISC. I.F. " "
T5	95-922	POWER TRANSFORMER



MODELS 8H032 - 8H033 - 8H050 - 8H051 - 8H052 - 8H061 CHASSIS No. 8C20

ALIGNMENT PROCEDURE

Operation	Connect	Dummy	Input Signal	Set Dial	Purpose
1	Oscillator to Pin 8 on Converter Tube 6SB7 socket	.05 Mfd.	455 Kc. Modulated	600 Kc.	Align I.F. channel for maximum output
2	Pin 1 on R.F. tube 6AG5 socket	.05 Mfd.	455 Kc. Modulated	600 Kc.	Adjust wavetrap for minimum output
3	2 turns loosely cpld. to wavemagnet		1600 Kc. Modulated	1600 Kc.	Set oscillator to dial scale
4	2 turns loosely cpld. to wavemagnet		1400 Kc. Modulated	1400 Kc.	Align det. and ant. stages
5(a)	Pin 4 grid on 6SH7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	45	Align primary of discriminatory discriminator
6(b)	Pin 4 grid on 6SH7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	45	Adjust secondary of discriminator for zero reading
7(c)	Pin 4 (grid) on 6SH7 2nd IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	45	Align 3rd IF transformer for maximum reading
8(c)(d)	Pin 4 (grid) on 6SG7 1st IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	45	Align 2nd IF transformer for maximum reading
9(c)(d)	Pin 8 grid on 6SB7 converter tube socket	.05 Mfd.	8.3 Mc. Unmodulated	45	Align 1st IF transformer for maximum reading
10(c)	Antenna Post (Remove line ant.)	270 Ohms	98 Mc. Unmodulated	100 98 Mc.	Set oscillator to dial scale
11(c)	Antenna Post (Remove line ant.)	270 ohms	98 Mc. Unmodulated	100 98 Mc.	Align det. and ant. stages to maximum reading
12(c)	Antenna Post (Remove line ant.)	270 ohms	45 Mc. Unmodulated	45 MC.	Set oscillator to dial scale
13(c)	Antenna Post (Remove line ant.)	270 ohms	45 Mc. Unmodulated	45 MC.	Align detector & ant. stages for maximum reading

IMPORTANT: Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:
 A vacuum tube voltmeter with an isolation resistor of 200,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

- (a) Vacuum Tube Voltmeter pin 5 on discriminator transformer to chassis (half discriminator load.)
- (b) Vacuum Tube Voltmeter pin 7 on discriminator transformer to chassis (full discriminator load.)
- (c) Vacuum Tube Voltmeter 6SH7 limiter grid (pin 4) to chassis.
- (d) 300 ohm 1/2 watt carbon resistor soldered across the secondary L17 (pin 2 and 3 of 2nd, IF transformer. The leads to the resistor must be as short as possible and the resistor removed before operation 10 is started.

ZENITH RADIO CORP.

MODELS 8H032, 8H033, 8H050
 8H051, 8H052, 8H061
 MODELS 9H079, 9H081, 9H082,
 9H085, 9H088

TO THE SERVICE MAN:

The 8C21 chassis incorporates a super-heterodyne circuit with two stages of IF, and one stage of RF amplification on all bands.

AM Alignment: The alignment of this chassis on the standard broadcast band is conventional. The alignment slugs in the IF transformers are threaded and screw into the coil forms. The slugs are slotted for a small size fiber screw driver. Do not press hard on the aligning tool (fiber screw driver) or the threads in the coil forms will strip and adjustment will be impossible.

FM RF Alignment: The same coil slug arrangement which tunes the 100 MC FM band also tunes the 45 MC band. However, on 45 MC the band switch connects trimmer condensers in parallel and padding wires in series with the 100 MC coils. The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustments the shafts must be secured with a drop of speaker cement.

FM IF Alignment: The same type of tuning slugs for aligning the AM IF Amplifier are used for the FM I.F.'s. Observe the same precautions when making adjustments. When an overcoupled stage is overcoupled. Overcoupling gives a wide band pass with good sensitivity. The second 8.3 Mc IF stage is uncoupled. The stage must be loaded. A 300 ohm carbon resistor soldered across the secondary of the second IF transformer provides a satisfactory load for this circuit. The resistor leads must be kept short to reduce the distributed capacity of the circuit.

When aligning a loaded stage, it will be found that considerable signal from the generator will be required, and that it will tune broadly. **THE LOAD RESISTOR MUST BE REMOVED AFTER ALIGNMENT.**
 If the signal generator used does not have sufficient output to overcome the temporary loss caused by the load resistor, the load resistance may be increased or the signal fed into the preceding stage.

FM Discriminator Alignment: When the secondary of the discriminator is aligned (operation 6) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when this meter starts to go to the left (negative) of zero will give the same results.

MODELS 9H079 - 9H081 - 9H082 - 9H085 - 9H088

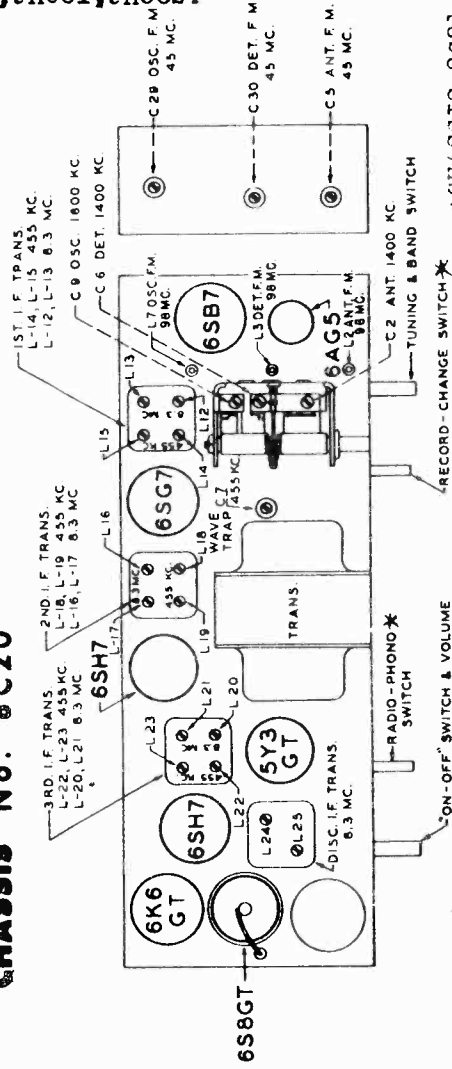
CHASSIS No. 8C21

MODELS 8H032 - 8H033 - 8H050 - 8H051 - 8H052 - 8H061

CHASSIS No. 8C20

MODELS 8H032, 8H033, 8H050,
 8H051, 8H052, 8H061
 MODELS 9H079, 9H081, 9H082,
 9H085, 9H088

ZENITH RADIO CORP.



TUBE AND TRIMMER LOCATION

The tuning slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustments the shafts must be secured with a drop of speaker cement.

FM IF Alignment: The same type of tuning slugs for aligning the AM IF Amplifier are used for the FM I.F.'s. Observe the same precautions when making adjustments. When an overcoupled stage is overcoupled. Overcoupling gives a wide band pass with good sensitivity. The second 8.3 Mc IF stage is uncoupled. The stage must be loaded. A 300 ohm carbon resistor soldered across the secondary of the second IF transformer provides a satisfactory load for this circuit. The resistor leads must be kept short to reduce the distributed capacity of the circuit.

When aligning a loaded stage, it will be found that considerable signal from the generator will be required, and that it will tune broadly. **THE LOAD RESISTOR MUST BE REMOVED AFTER ALIGNMENT.**
 If the signal generator used does not have sufficient output to overcome the temporary loss caused by the load resistor, the load resistance may be increased or the signal fed into the preceding stage.

FM Discriminator Alignment: When the secondary of the discriminator is aligned (operation 6) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when this meter starts to go to the left (negative) of zero will give the same results.

ALIGNMENT PROCEDURE

Operation	Connect Oscillator to Pin 8 on Converter Tube 6SB7 socket	Dummy Antenna .05 Mfd.	Input Signal Frequency 455 Kc. Modulated	Band BC	Set Dial To 600 Kc.	Adj. Trimmers L-14, 15, 18, 19 22 and 23	Purpose Align I.F. channel for maximum output
1	Tube 6SB7 socket	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	L-14, 15, 18, 19 22 and 23	Align I.F. channel for maximum output
2	Pin 1 on R.F. tube 6AG5 socket	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	C7	Adjust wavetrapp for minimum output
3	2 turns loosely cpld. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc.	C9	Set oscillator to dial scale
4	2 turns loosely cpld. to wavemagnet		1400 Kc. Modulated	BC	1400 Kc.	C2 & C6	Align det. and ant. stages
5(a)	Pin 4 grid on 6SH7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	FM	45	L24 coil slug primary discriminator	Align primary of discriminator for maximum reading
6(b)	Pin 4 grid on 6SH7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	FM	45	L25 coil slug sec. of discriminator	Adjust secondary of discriminator for zero reading
7(c)	6SH7 2nd IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM	45	L20 & L21 Prim. & Sec. of 3rd IF transformer	Align 3rd IF transformer for maximum reading
8(c)(d)	Pin 4 (grid) on 6SG7 1st IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM	45	L16 & L17 Primary & Sec. of 2nd IF transformer	Align 2nd IF transformer for maximum reading
9(c)(d)	Pin 8 grid on 6SB7 converter tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM	45	L12 & L13 Primary & Sec. of 1st IF transformer	Align 1st IF transformer for maximum reading
10(c)	Antenna Post (Remove line ant.)	270 Ohms	98 Mc. Unmodulated	FM	100 98 Mc.	L7 Oscillator coil slug	Set oscillator to dial scale
11(c)	Antenna Post (Remove line ant.)	270 ohms	98 Mc. Unmodulated	FM	100 98 Mc.	L2 and L3 Det. and RF coil slugs	Align det. and ant. stages to maximum reading
12(c)	Antenna Post (Remove line ant.)	270 ohms	45 Mc. Unmodulated	FM	45 MC.	C29	Set oscillator to dial scale
13(c)	Antenna Post (Remove line ant.)	270 ohms	45 Mc. Unmodulated	FM	45 MC.	C5 and C30	Align detector & ant. stages for maximum reading

IMPORTANT: Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:
 A vacuum tube voltmeter with an isolation resistor of 200,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.
 An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.
 (a) Vacuum Tube Voltmeter pin 5 on discriminator transformer to chassis (half discriminator load.)
 (b) Vacuum Tube Voltmeter pin 7 on discriminator transformer to chassis (full discriminator load.)
 (c) Vacuum Tube Voltmeter 6SH7 limiter grid (pin 4) to chassis.
 (d) 300 ohm 1/2 watt carbon resistor soldered across the secondary L17 (pin 2 and 3 of 2nd, IF transformer. The leads to the resistor must be as short as possible and the resistor removed before operation 10 is started.

ZENITH RADIO CORP.

MODELS 8H032, 8H033, 8H050, 8H051, 8H052, 8H061
 MODELS 9H079, 9H081, 9H082, 9H085, 9H088

MODELS 9H079 - 9H081 - 9H082 - 9H085 - 9H088

CHASSIS No. 8C21

MODELS 8H032 - 8H033 - 8H050 - 8H051 - 8H052 - 8H061

CHASSIS No. 8C20

TO THE SERVICE MAN:

The 8C21 chassis incorporates a super-heterodyne circuit with two stages of IF, and one stage of RF amplification on all bands.

AM Alignment: The alignment of this chassis on the standard broadcast band is conventional. The alignment slugs in the IF transformers are threaded and screw into the coil forms. The slugs are slotted for a small size fiber screw driver. Do not press hard on the aligning tool (fiber screw driver) or the threads in the coil forms will strip and adjustment will be impossible.

FM RF Alignment: The same coil slug arrangement which tunes the 100 MC FM band also tunes the 45 MC band. However, on 45 MC the band switch connects trimmer condensers in parallel and padding wires in series with the 100 MC coils. The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustments the shafts must be secured with a drop of speaker cement.

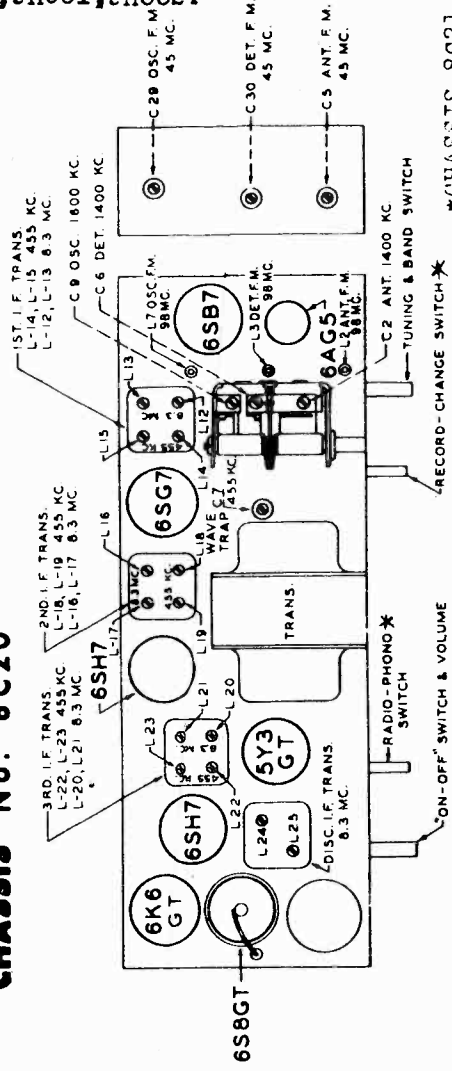
FM IF Alignment: The same type of tuning slugs for aligning the AM IF Amplifier are used for the FM I.F.'s. Observe the same precautions when making adjustments. The second 8.3 Mc IF stage is overcoupled. Overcoupling gives a wide band pass with good sensitivity. When an overcoupled stage is aligned with an unmodulated signal, the stage must be loaded. A 300 ohm carbon resistor soldered across the secondary of the second IF transformer provides a satisfactory load for this circuit. The resistor leads must be kept short to reduce the distributed capacity of the circuit. When aligning a loaded stage, it will be found that considerable signal from the generator will be required, and that it will tune broadly. **THE LOAD RESISTOR MUST BE REMOVED AFTER ALIGNMENT.**

If the signal generator used does not have sufficient output to overcome the temporary loss caused by the load resistor, the load resistance may be increased or the signal fed into the preceding stage.

FM Discriminator Alignment: When the secondary of the discriminator is aligned (operation 6) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when this meter starts to go to the left (negative) of zero will give the same results.

MODELS 8H032, 8H033, 8H050, 8H051, 8H052, 8H061
 MODELS 9H079, 9H081, 9H082, 9H085, 9H088

ZENITH RADIO CORP.



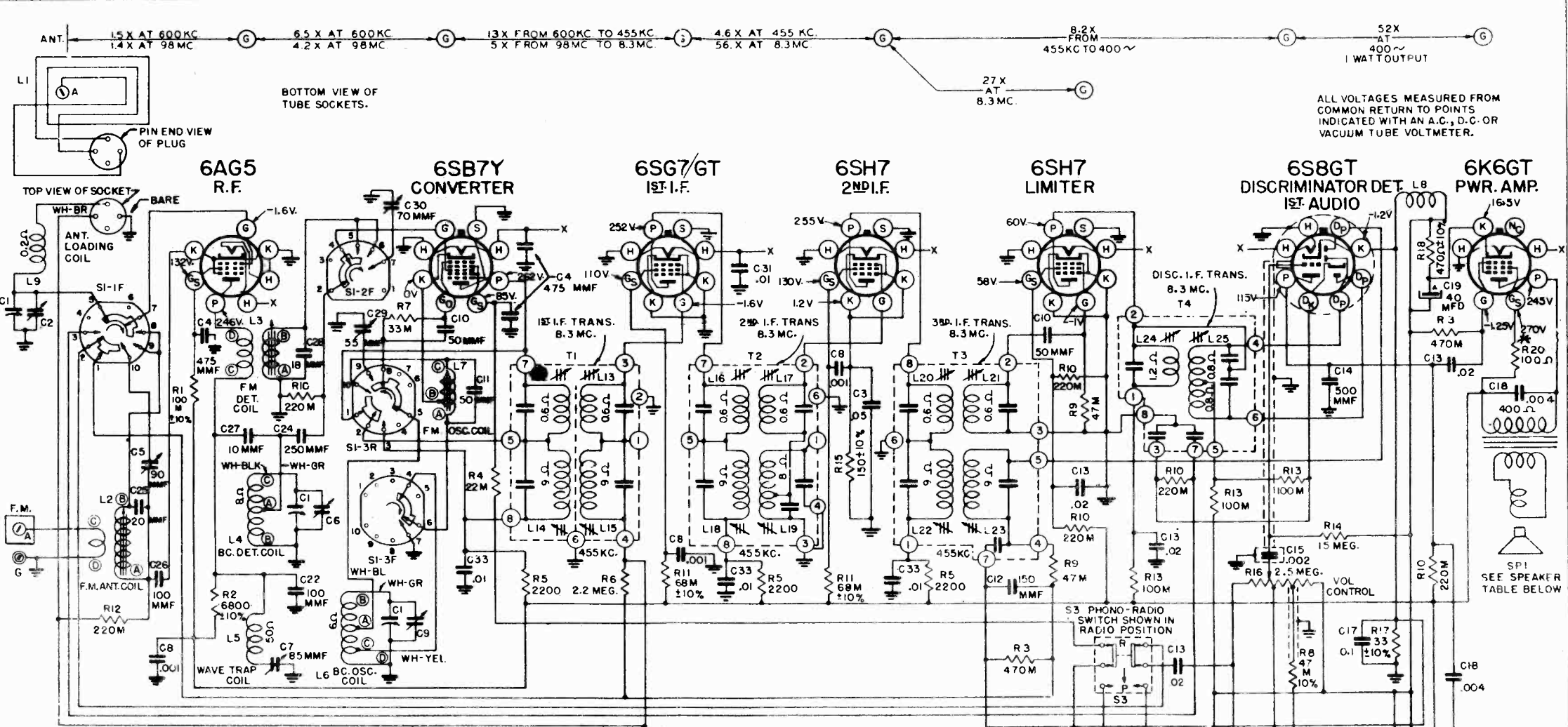
TUBE AND TRIMMER LOCATION

*CHASSIS 8C21

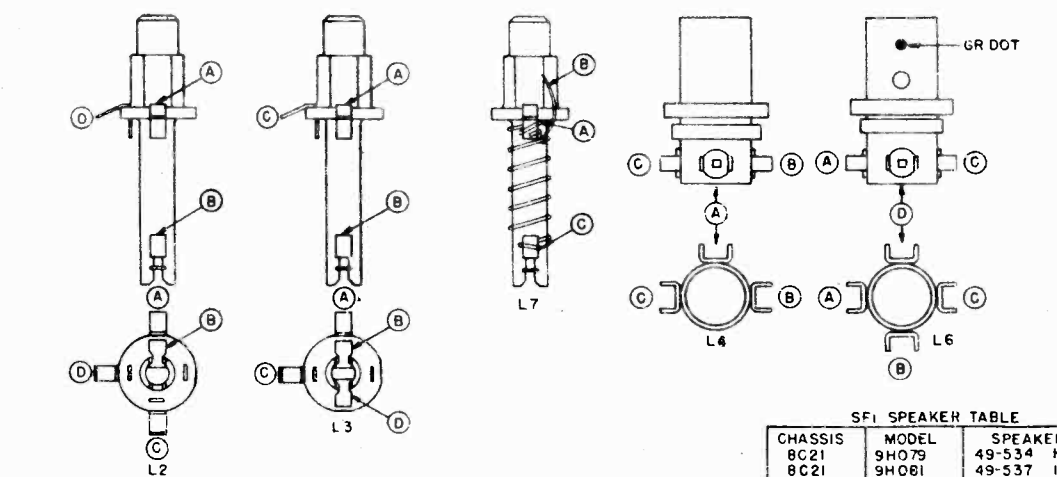
ZENITH RADIO CORP.

MODELS 9H079, 9H081, 9H082, 9H085, 9H088, Chassis 8C21, Early, Revised

DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1368	3-GANG VARIABLE
C2	ON C1	BROADCAST ANT. TRIM.
C3	22-829	.05 MFD. 200V.
C4	27-87	.475 MMFD. MICA DISC
C5	22-1485	90 MMFD TRIMMER
C6	ON C1	BROADCAST DET. TRIM.
C7	ON L5	WAVE TRAP TRIMMER
C8	22-1431	.001 MFD. 600V.
C9	ON C1	BROADCAST OSC. TRIM.
C10	22-1367	50 MMFD. 500V.
C11	22-1492	50 MMFD. GER.
C12	22-470	150 MMFD. 600 V.
C13	22-830	.02 MFD. 600V.
C14	22-1138	.50C MMF. 600V.
C15	22-1445	.002 MFD. 600V.
C16	22-288	.003 MFD. 600V.
C17	22-827	.1 MFD. 200V.
C18	22-448	.004 MFD. 600V.
C19	22-1362	40MFD. ELECTRO. 25V.
C20	22-1362	40MFD. " 450V.
C21	22-1362	40MFD. " 450V.
C22	22-162	100 MMFD. 600V.
C23	22-1041	.005 MFD. 400V.
C24	22-182	250 MMFD. 600V.
C25	22-1491	20 MMFD. GER.
C26	22-1488	100 MMFD. 300V.
C27	22-1489	10 MMFD. GER.
R1	63-160	100 M OHM 1/2 W.
R2	63-639	6800 OHM 1/4 W.
R3	63-597	470 M OHM 1/4 W.
R4	63-1058	22 M OHM 2 W.
R5	63-803	220 M OHM 1/2 W.
R6	63-722	2.2 MEG OHM 1/4 W.
R7	63-712	33 M OHM 1/4 W.
R8	63-767	47 M OHM 1/4 W.
R9	63-593	47 M OHM 1/4 W.
R10	63-296	220 M OHM 1/4 W.
R11	63-1225	68 M OHM 1/2 W.
R12	63-717	220 M OHM 1/4 W.
R13	63-564	100 M OHM 1/4 W.
R14	63-976	15 MEG OHM 1/4 W.
R15	63-246	150 OHM 1/4 W.
R16	63-1466	2.5 MEG. VOL. CONTROL
R17	63-1099	33 OHM W.W. 1/2 W.
R18	63-1222	470 OHM W.W. 1 W.
R19	63-648	47 M OHM 1/4 W.
R20	63-1172	100 OHM 1/4 W.
L1	S-11481	WAVE MAGNET TYPE 300
L2	S-12257	FM ANTENNA COIL ASSY
L3	S-12258	FM DETECTOR
L4	S-11156	BC DETECTOR
L5	S-12253	WAVE TRAP COIL B TRIM.
L6	S-11291	BC OSCILLATOR
L7	S-12259	FM
L8	S-12246	RF CHOKER
L9	S-12389	ANT. LOADING COIL
L10	S-12249	1ST I.F. TRANS. ASSEM.
L11	S-12250	2ND I.F.
L12	S-12251	3RD I.F.
L13	S-12252	DISC. I.F.
L14	S-12253	POWER TRANSFORMER
L15	S-12254	BAND SWITCH
L16	S-12255	TONE SWITCH ASSEM.
L17	S-12256	PHONO-RADIO SWITCH
L18	S-12257	RECORD-CHANGE SWITCH
L19	S-12258	PHONO CABLE ASSEM.
L20	S-12259	PILOT LIGHT 6.3V.25A
L21	S-12260	SEE SPEAKER TABLE
C28	22-1490	18 MMFD. GER.
C29	22-1371	55 MMFD TRIMMER
C30	22-1486	70 MMF
C31	22-1365	.01 MFD. 800 V.
C32	22-1137	150 MMFD. 600 V.
C33	22-196	.01 MFD. 600 V.
C36	22-1155	.005 MFD. 600 V.
L18	ON T1	1ST I.F. TRANS. PRI. (F.M.)
L13	ON T1	1ST I.F. SEC. (F.M.)
L14	ON T1	1ST I.F. PRI. (P.R.I.)
L15	ON T1	1ST I.F. SEC. (P.R.I.)
L16	ON T2	2ND I.F. TRANS. PRI. (F.M.)
L17	ON T2	2ND I.F. SEC. (F.M.)
L18	ON T2	2ND I.F. PRI. (P.R.I.)
L19	ON T2	2ND I.F. SEC. (P.R.I.)
L20	ON T3	3RD I.F. TRANS. PRI. (F.M.)
L21	ON T3	3RD I.F. SEC. (F.M.)
L22	ON T3	3RD I.F. PRI. (P.R.I.)
L23	ON T3	3RD I.F. SEC. (P.R.I.)
L24	ON T4	4TH I.F. TRANS. PRI. (F.M.)
L25	ON T4	4TH I.F. SEC. (F.M.)



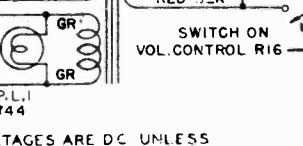
BAND SWITCH SHOWN IN ST'D BROADCAST POSITION
 BAND SWITCH POSITIONS: 1ST POS. ST'D BROADCAST, 2ND POS. FM 100, 3RD POS. FM 45



SPEAKER TABLE

CHASSIS	MODEL	SPEAKER
8C21	9H079	49-534 10"
8C21	9H081	49-537 12"
8C21	9H085R	49-537 12"
8C21	9H088R	49-550 12"
8C21	9H082R	49-555 8"

ALTERNATE SPEAKER WITH ALTE SPKR 49-567 10"
 USE CABLE WITH ALTE SPKR 52-377



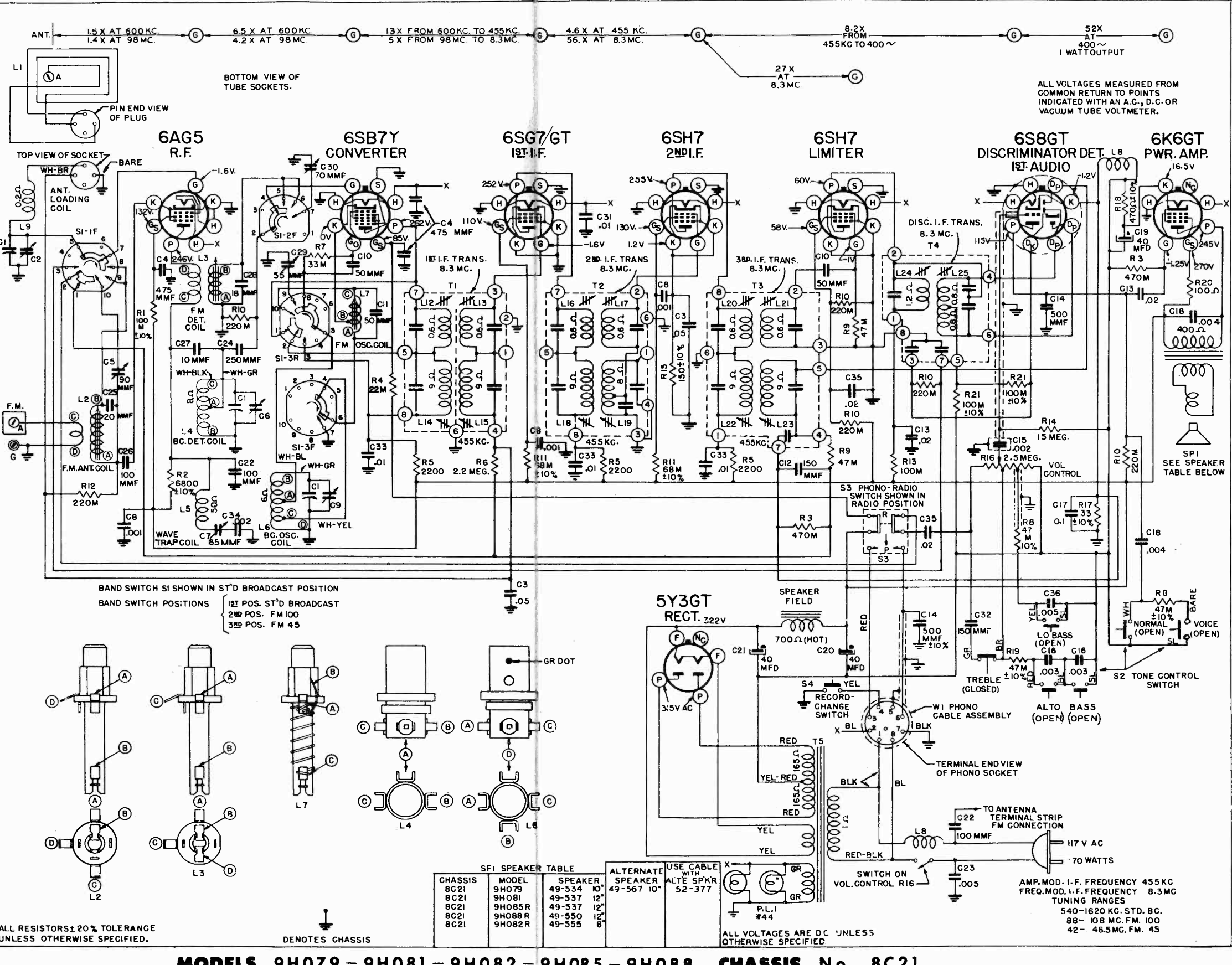
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 AMP. MOD. I.F. FREQUENCY 455 KC
 FREQ. MOD. I.F. FREQUENCY 8.3 MC
 TUNING RANGES
 540-1620 KC. STD. BC.
 88-108 MC. FM. 100
 42-46.5 MC. FM. 45

MODELS 9H079-9H081-9H082-9H085-9H088 CHASSIS No. 8C21

* NOT IN EARLY MODEL

ZENITH RADIO CORP.

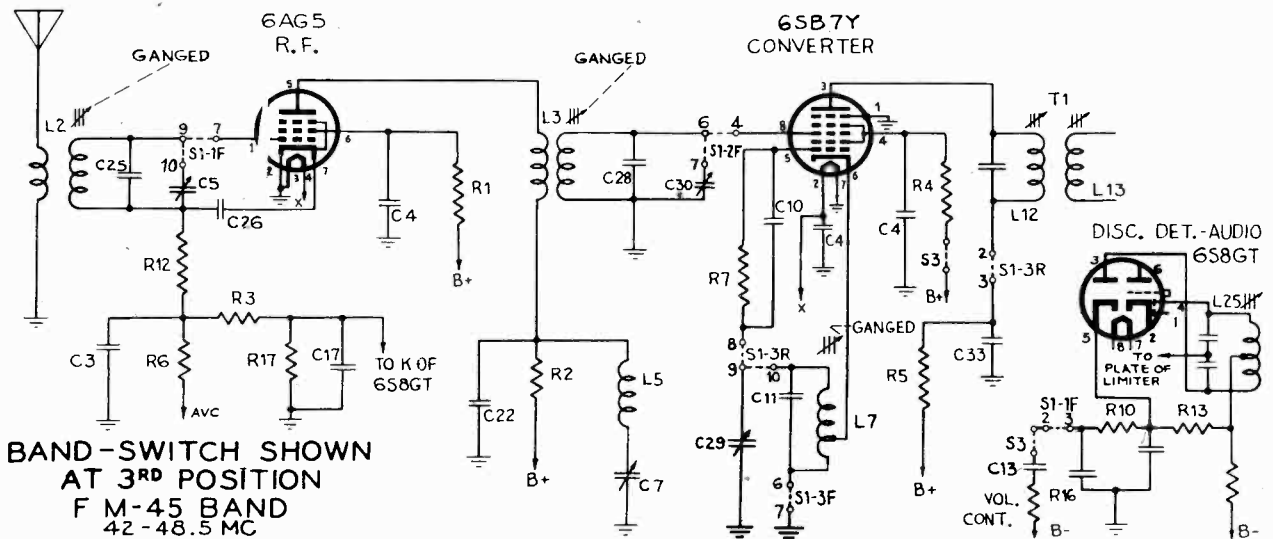
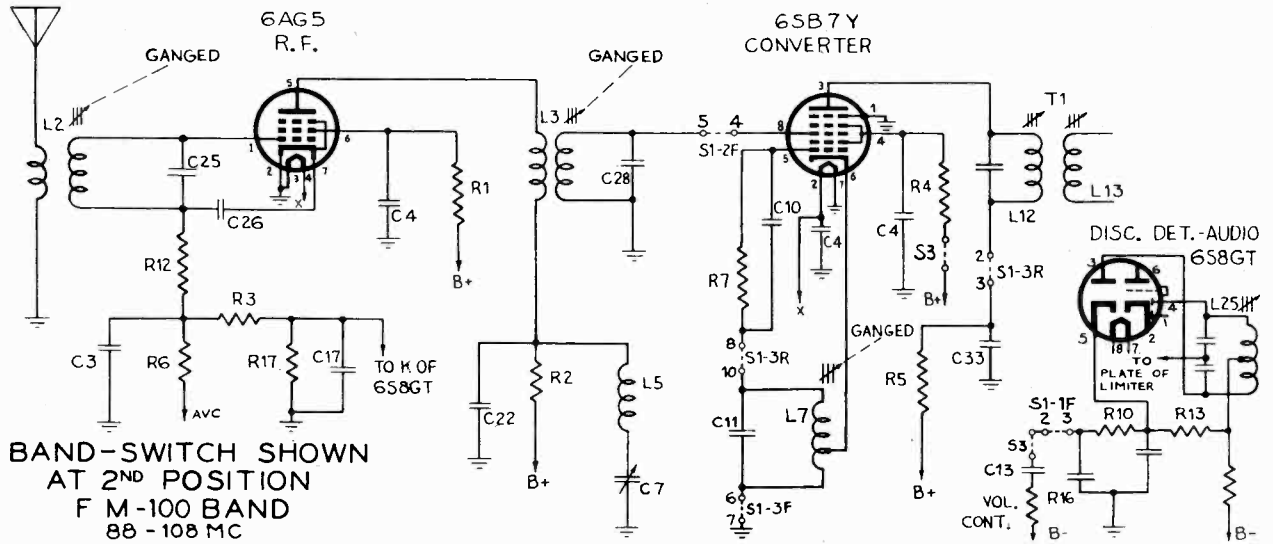
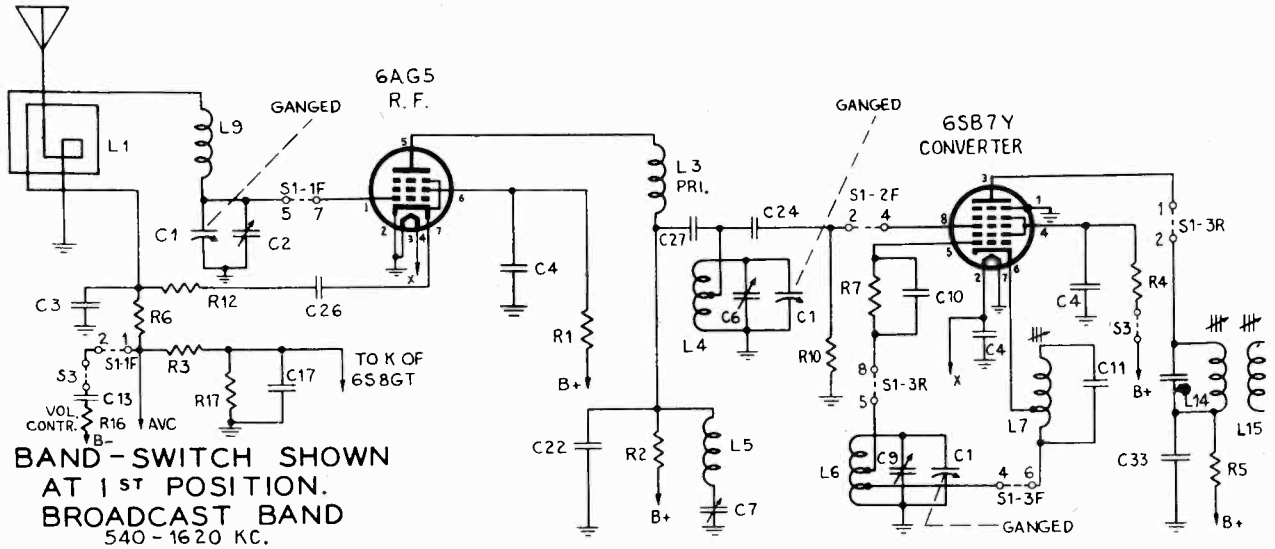
DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1368	3-GANG VARIABLE
C2	ON C1	BROADCAST ANT. TRIM.
C3	22-829	.05 MFD. 200V.
C4	27-87	475 MMFD. MICA DISC
C5	22-1485	90 MMF TRIMMER
C6	ON C1	BROADCAST DET. TRIM.
C7	ON L5	WAVE TRAP TRIMMER
C8	22-1431	.001 MFD. 600V.
C9	ON C1	BROADCAST OSC. TRIM.
C10	22-1367	50 MMFD. 500V.
C11	22-1492	50 MMFD. CER.
C12	22-470	150 MMFD. 600V.
C13	22-830	.02 MFD. 600V.
C14	22-1138	500 MMF. 600V.
C15	22-1445	.002 MFD. 600V.
C16	22-268	.003 MFD. 600V.
C17	22-827	.1 MFD. 200V.
C18	22-448	.004 MFD. 600V.
C19		40MMFD. ELECTRO. 25V.
C20	22-1382	40MMFD. 450V.
C21		40MMFD. 450V.
C22	22-162	100 MMFD. 600V.
C23	22-1041	.003 MFD. 400V.
C24	22-182	250 MMFD. 600V.
C25	22-1491	20MMFD. CER.
C26	22-1488	100 MMFD. 300V.
C27	22-1489	10MMFD. CER.
R1	63-160	100 M OHM 1/2 W.
R2	63-639	6800 OHM 1/4 W.
R3	63-597	470 M OHM 1/4 W.
R4	63-1058	82 M OHM 2 W.
R5	63-803	2200 OHM 1/4 W.
R6	63-722	2.2 MEG OHM 1/4 W.
R7	63-712	33 M OHM 1/4 W.
R8	63-767	47 M OHM 1/4 W.
R9	63-593	47 M OHM 1/4 W.
R10	63-296	220 M OHM 1/4 W.
R11	63-1225	68 M OHM 1/2 W.
R12	63-717	220 M OHM 1/4 W.
R13	63-595	100 M OHM 1/4 W.
R14	63-976	15 MEG OHM 1/4 W.
R15	63-246	150 OHM 1/4 W.
R16	63-1466	2.5 MEG. VOL. CONTROL
R17	63-1099	33 OHM W.W. 1/4 W.
R18	63-1222	470 OHM W.W. 1 W.
R19	63-648	47 M OHM 1/4 W.
R20	63-1172	100 OHM 1/4 W.
R21	63-449	100 OHM 1/4 W.
L1	S-11461	WAVE MAGNET TYPE 3/D
L2	S-12257	FM ANTENNA COIL ASSY
L3	S-12258	FM DETECTOR
L4	S-11156	BC DETECTOR
L5	S-12253	WAVE TRAP COIL & TRIM
L6	S-11291	BC OSCILLATOR
L7	S-12259	FM
L8	S-12256	R.F. CHOKER
L9	S-12529	ANT. LOADING COIL
T1	S-12249	1ST I.F. TRANS. ASSEM.
T2	S-12250	2ND I.F.
T3	S-12251	3RD I.F.
T4	S-12252	DISC. I.F.
T5	S-922	POWER TRANSFORMER
S1	S-378	BAND SWITCH
S2	S-18510	RECORD-CHANGE SWITCH
S3	S-363	PHONO-RADIO SWITCH
S4	S-349	RECORD-CHANGE SWITCH
W1	S-12265	PHONO CABLE ASSEM.
PL1	100-36	PILOT LIGHT 6.3V.25A
SP1		SEE SPEAKER TABLE
C28	22-1490	18 MMFD CER.
C29	22-1571	55 MMF TRIMMER
C30	22-1486	70 MMF
C31	22-1385	.01 MFD. 200 V.
C32	22-1137	150 MMFD 600 V.
C33	22-196	.01 MFD. 600 V.
C34	22-912	.002 MFD. 800 V.
C35	22-188	.02 MFD. 400 V.
C36	22-1135	.005 MFD. 600 V.
L12	ON T1	1ST I.F. TRANS. PRI. (F.M.)
L13	ON T1	1ST I.F. SEC. (F.M.)
L14	ON T1	1ST I.F. PRI.
L15	ON T1	1ST I.F. SEC.
L16	ON T2	2ND I.F. TRANS. PRI. (F.M.)
L17	ON T2	2ND I.F. SEC. (F.M.)
L18	ON T2	2ND I.F. PRI.
L19	ON T2	2ND I.F. SEC.
L20	ON T3	3RD I.F. TRANS. PRI. (F.M.)
L21	ON T3	3RD I.F. SEC. (F.M.)
L22	ON T3	3RD I.F. PRI.
L23	ON T3	3RD I.F. SEC.
L24	ON T4	DISC. I.F. TRANS. PRI. (F.M.)
L25	ON T4	DISC. I.F. SEC. (F.M.)



MODELS 9H079 - 9H081 - 9H082 - 9H085 - 9H088 CHASSIS No. 8C21

ZENITH RADIO CORP.

MODELS 9H079, 9H081, 9H082, 9H085, 9H088, Early, Late



MODELS 8HO32, 8HO33, 8HO50,
8HO51, 8HO52, 8HO61

ZENITH RADIO CORP.

MODELS 9HO79, 9HO81, 9HO82,
9HO85, 9HO88

CHASSIS 8C20-8C21-8HO-9HO-SERIES

HUM COMPLAINT ON 9HO SERIES:

Check audio and a-c leads to the volume control. The leads from the tone control must be dressed away from the a-c leads. The high voltage secondary leads from the power transformer must be dressed away and close to the chassis from the 47,000 resistor on the tap points.

HOWL ON AM 8HO SERIES:

Howl due to vibrations transmitted into the oscillator sections of the gang condenser by the speaker. To remedy this condition, a felt strip can be placed between the rear of the gang, and the first i-f transformer. It may also be necessary to move the oscillator section lead underneath the gang slightly to reduce tension.

STRIPPED IF SLUG INSERTS:

Damaged i-f slug thread inserts may be replaced by unscrewing the slug and pushing out the old insert. Two types of inserts are used, 83-1063 short and 83-1069 long.

FM SPEAKERS 8HO AND 9HO SERIES:

Some of the earlier 8C20-21 chassis are wired for electro-dynamic speakers only. Later production sets are wired for either electro-dynamic or FM speakers which have the filter unit attached to the speaker frame. These chassis are identified by a dot of black paint on or near the speaker socket. To use the FM speakers on the earlier sets, it will be necessary to run a lead from B-(center tap of high-voltage winding) to a lug on the speaker socket which connects to the negative side of the filter on the speaker.

BUZZ IN DIAL ESCUTHEON 8HO AND 9HO SERIES:

If the dial assembly comes in contact with the power transformer a buzz will result and a 83-1331 felt spacer should be added between the dial and transformer.

INCREASING BASS RESPONSE OF PHONO:

To increase the bass response on records, the value of R5 in the phono pre-amplifier may be increased. Do not increase the value to over 10,000 ohms or audio howl may be heard.

IMPROVING FM RECEPTION ON 8HO AND 9HO SERIES:

In FM Consoles, a cabinet FM antenna may be added in addition to the line antenna. This antenna is made up of two 28 inch lengths of wire. One wire is connected to the FM antenna post, the other to chassis. The two wires are then tacked in the cabinet in opposite directions, and should not come in contact with ground.

WAVE TRAP TRIMMER SHORTING OUT:

A .002 mfd 600 volt condenser has been added in series with the wave trap. This condenser removes the d-c potential from the trap and eliminates the possibility of breakdown.

AUDIO HOWL AS VOLUME CONTROL IS ADVANCED (FM RECEPTION):

FM howl may be caused by the speaker vibrating the oscillator slug. A fiber spacer between the oscillator, and detector slug shafts in the FM tuner will eliminate vibration. A thin rubber band tied to the center of the oscillator slug shaft and upper frame will also eliminate the howl.

ZENITH RADIO CORP.

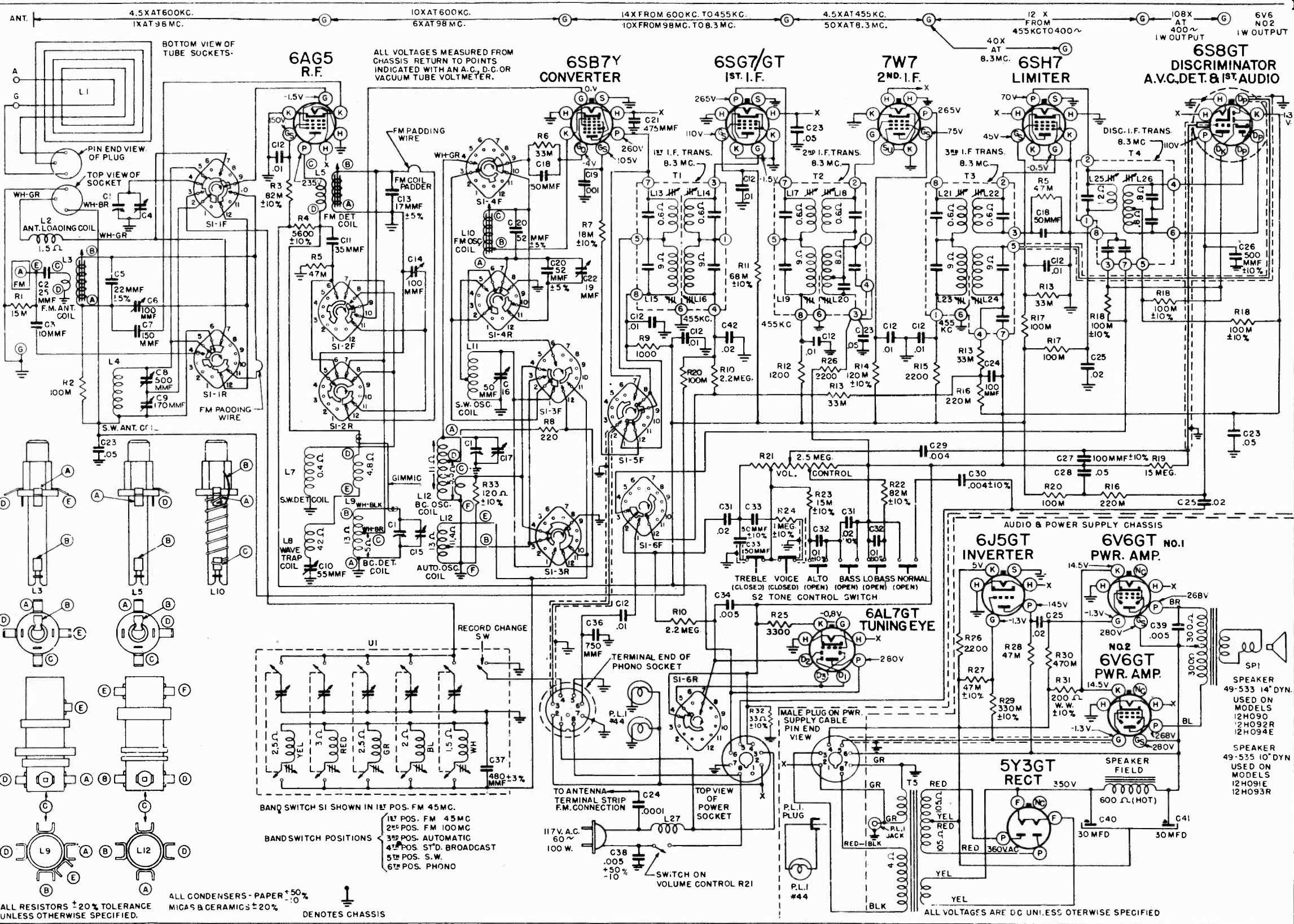
MODELS 12H090, 12H091, 12H092, 12H093, 12H094, Chassis 11C21

Early

DIAG. No.	PART No.	DESCRIPTION
C1	22-1563	5-GANG VARIABLE
C2	22-1507	25 MMFD. CER. 500V.
C3	22-1504	10 MMFD. CER. 500V.
C4	ON C1	BROADCAST ANT. TRIM.
C5	22-1506	22 MMFD. CER. 500V.
C6	22-1493	FM ANTENNA TRIM.
C7	22-1503	150 MMFD. 500V.
C8		S.W. ANT. TRIM.
C9	22-1497	S.W. ANT. TRIM.
C10		WAVE TRAP TRIMMER
C11	22-1508	35 MMFD. CER. 500V.
C12	22-1516	01 MFD. 600V.
C13	22-1505	17 MMFD. CER. 500V.
C14	22-1494	FM DET. TRIMMER
C15	ON C1	BROADCAST DET. TRIM.
C16	22-1502	S.W. OSC. TRIMMER
C17	ON C1	BROADCAST OSC. TRIM.
C18	22-1367	50 MMFD. CER. 500V.
C19	22-1169	001 MFD. MICA 600V.
C20	22-1509	32 MMFD. CER. 500V.
C21	27-87	475 MMFD. MICA DISC.
C22	22-1514	F.M. OSC. TRIMMER
C23	22-879	05 MFD. 200V.
C24	22-162	100 MMFD. MICA 600V.
C25	22-830	02 MFD. 600V.
C26	22-1138	500 MMFD. MICA 600V.
C27	22-365	100 MMFD. MICA 600V.
C28	22-117	05 MFD. 600V.
C29	22-1562	004 MFD. 600V.
C30	22-448	004 MFD. ±10% 600V.
C31	22-1127	02 MFD. 400V.
C32	22-1126	01 MFD. 400V.
C33	22-289	50 MMFD. MICA 600V.
C34	22-319	005 MFD. 200V.
C35	22-242	750 MMFD. MICA 500V.
C36	22-668	480 MMFD. SILVER MICA
C37	22-1041	005 MFD. 400V.
C38	22-1257	005 MFD. 1000V.
C39	22-496	30 MFD. ELECTRO 450V.
C40	22-1386	02 MFD. 200V.

R1	63-607	15M OHM	1/2W.
R2	63-715	100M OHM	1/4W.
R3	63-895	82M OHM	1/4W.
R4	63-1448	5600 OHM	1/4W.
R5	63-593	47M OHM	1/4W.
R6	63-712	33M OHM	1/4W.
R7	63-510	18M OHM	2W.
R8	63-579	220 OHM	1/4W.
R9	63-605	1000 OHM	1/2W.
R10	63-600	2.2 MEGOHM	1/4W.
R11	63-970	68M OHM	1/2W.
R12	63-1446	1200 OHM	1/2W.
R13	63-592	33M OHM	1/4W.
R14	63-1447	120M OHM	1/2W.
R15	63-803	2200 OHM	1/2W.
R16	63-296	220M OHM	1/4W.
R17	63-380	100M OHM	1W.
R18	63-760	100M OHM	1/4W.
R19	63-976	15 MEG OHM	1/4W.
R20	63-595	100M OHM	1/4W.
R21	63-1349	2.5 MEG. VOL. CONTROL	
R22	63-651	82M OHM	1/4W.
R23	63-503	15M OHM	1/4W.
R24	63-441	1 MEG OHM	1/4W.
R25	63-586	3300 OHM	1/4W.
R26	63-585	2200 OHM	1/4W.
R27	63-644	47M OHM	1/4W.
R28	63-1187	47M OHM	1W.
R29	63-657	330M OHM	1/4W.
R30	63-597	470M OHM	1/4W.
R31	63-1189	200 OHM WIREWOUND	2W.
R32	63-620	35 OHM	1/4W.
R33	63-626	120 OHM	1/4W.

L1	S1211	WAVEMAGNET TYPE 30E
L2	S1229	ANT. LOADING COIL ASSY
L3	S12301	F.M. ANT. COIL ASSEM.
L4	S12282	S.W. ANT. " "
L5	S12302	F.M. DET. " "
L6	S12291	S.W. DET. COIL ASSEM
L7	S12281	WAVE TRAP " "
L8	S12293	B.C. DET. " "
L9	S12303	F.M. OSC. " "
L10	S12292	S.W. OSC. " "
L11	S11344	B.C. AUTO. OSC. " "
L12	ON T1	1ST I.F. TRANS. PRI. FM
L13	ON T1	1ST I.F. " SEC. FM
L14	ON T1	1ST I.F. " PRI.
L15	ON T1	1ST I.F. " SEC.
L16	ON T2	2ND I.F. TRANS. PRI. FM
L17	ON T2	2ND I.F. " SEC. FM
L18	ON T2	2ND I.F. " PRI.
L19	ON T2	2ND I.F. " SEC.
L20	ON T3	3RD I.F. TRANS. PRI. FM
L21	ON T3	3RD I.F. " SEC. FM
L22	ON T3	3RD I.F. " PRI.
L23	ON T3	3RD I.F. " SEC.
L24	ON T4	DISC. I.F. TRANS. PRI.
L25	ON T4	DISC. I.F. " SEC.
L26	ON T4	DISC. I.F. " PRI.
L27	S12256	A.C. LINE CHOKE COIL ASSY

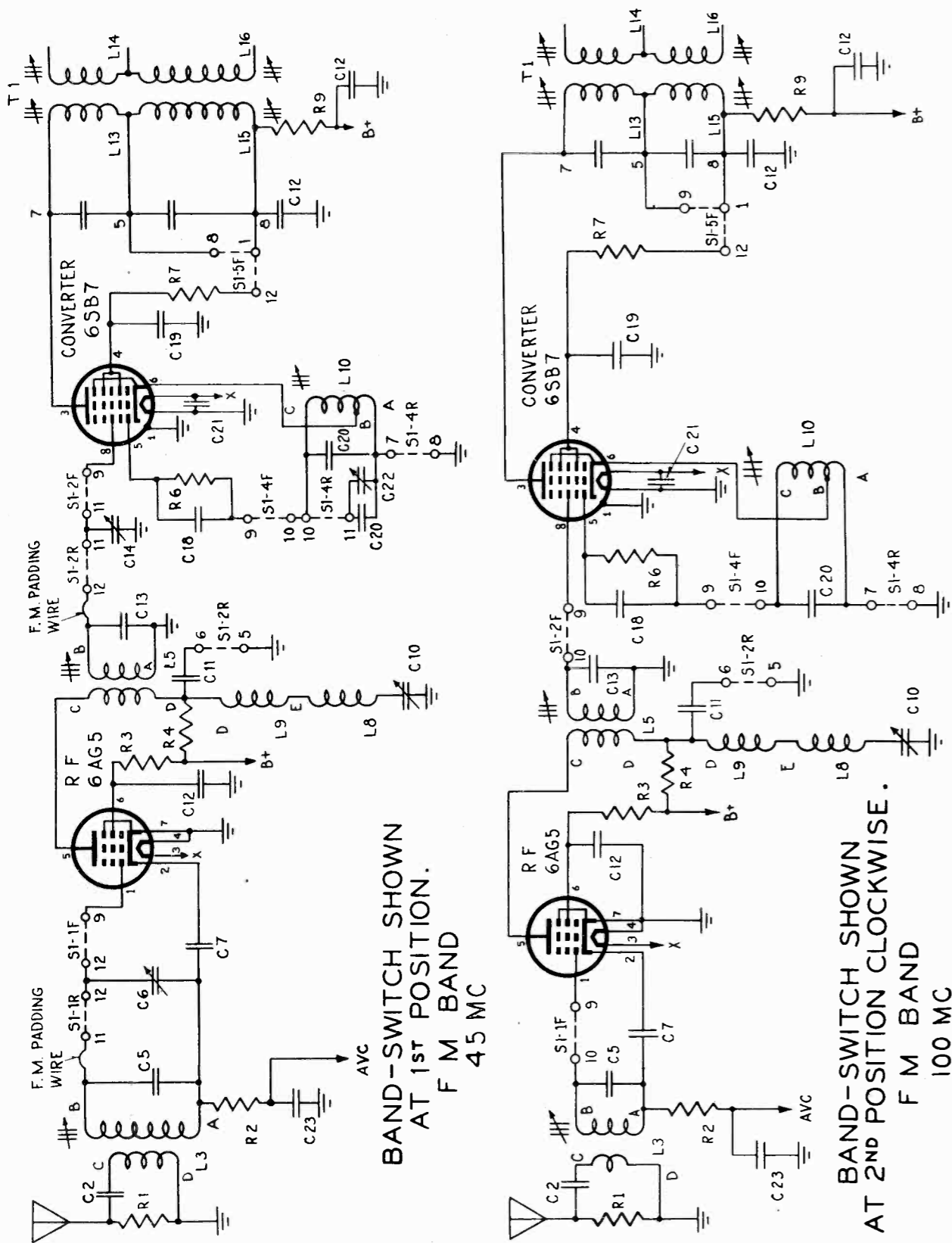


ALL RESISTORS ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.
 ALL CONDENSERS - PAPER ±50% MICA'S & CERAMICS ±20%
 DENOTES CHASSIS

MODELS 12H090 - 12H091 - 12H092 - 12H093 - 12H094
CHASSIS No. 11C21

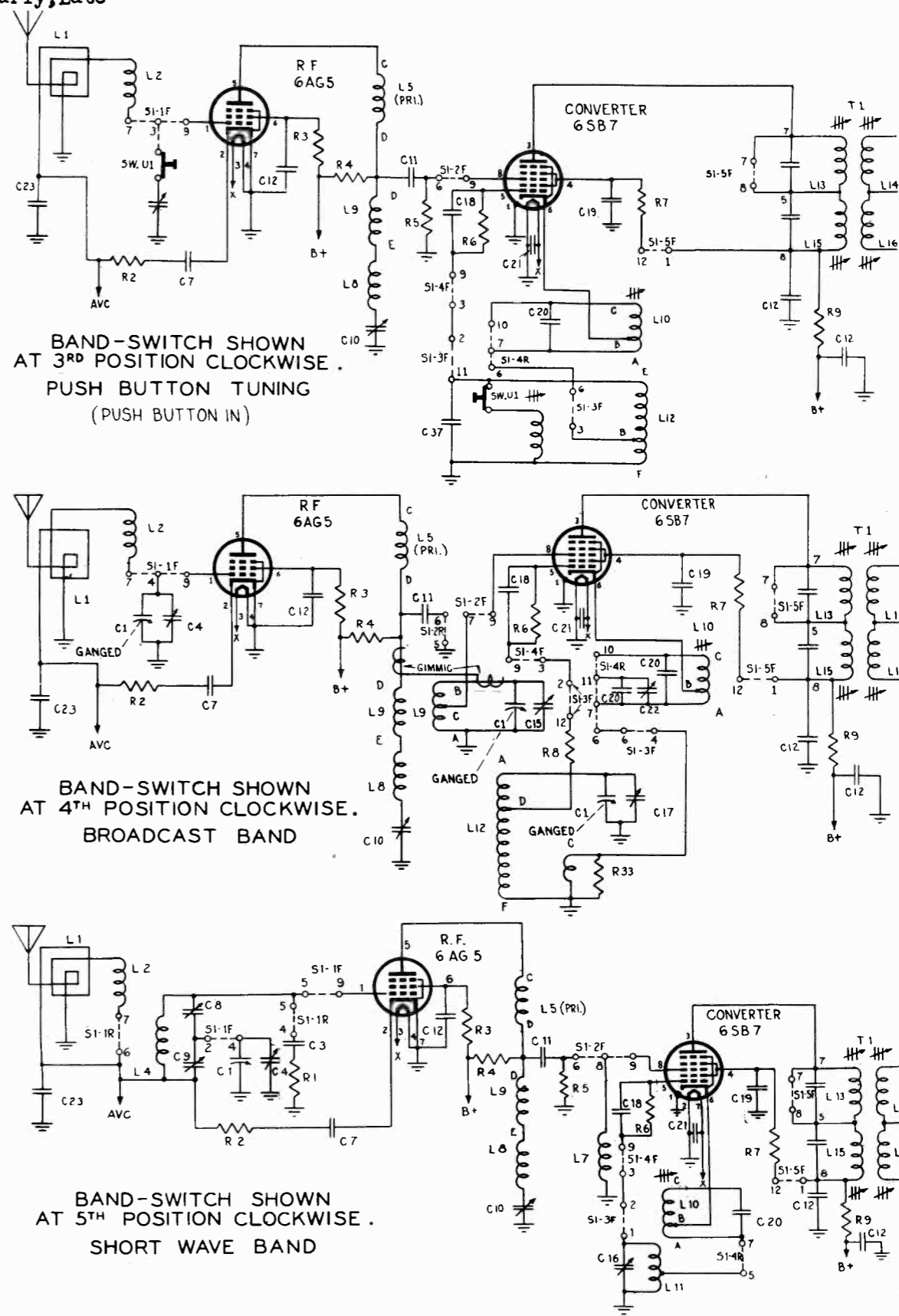
ZENITH RADIO CORP.

MODELS 12H090, 12H091,
12H092, 12H093, 12H094
Early, Late



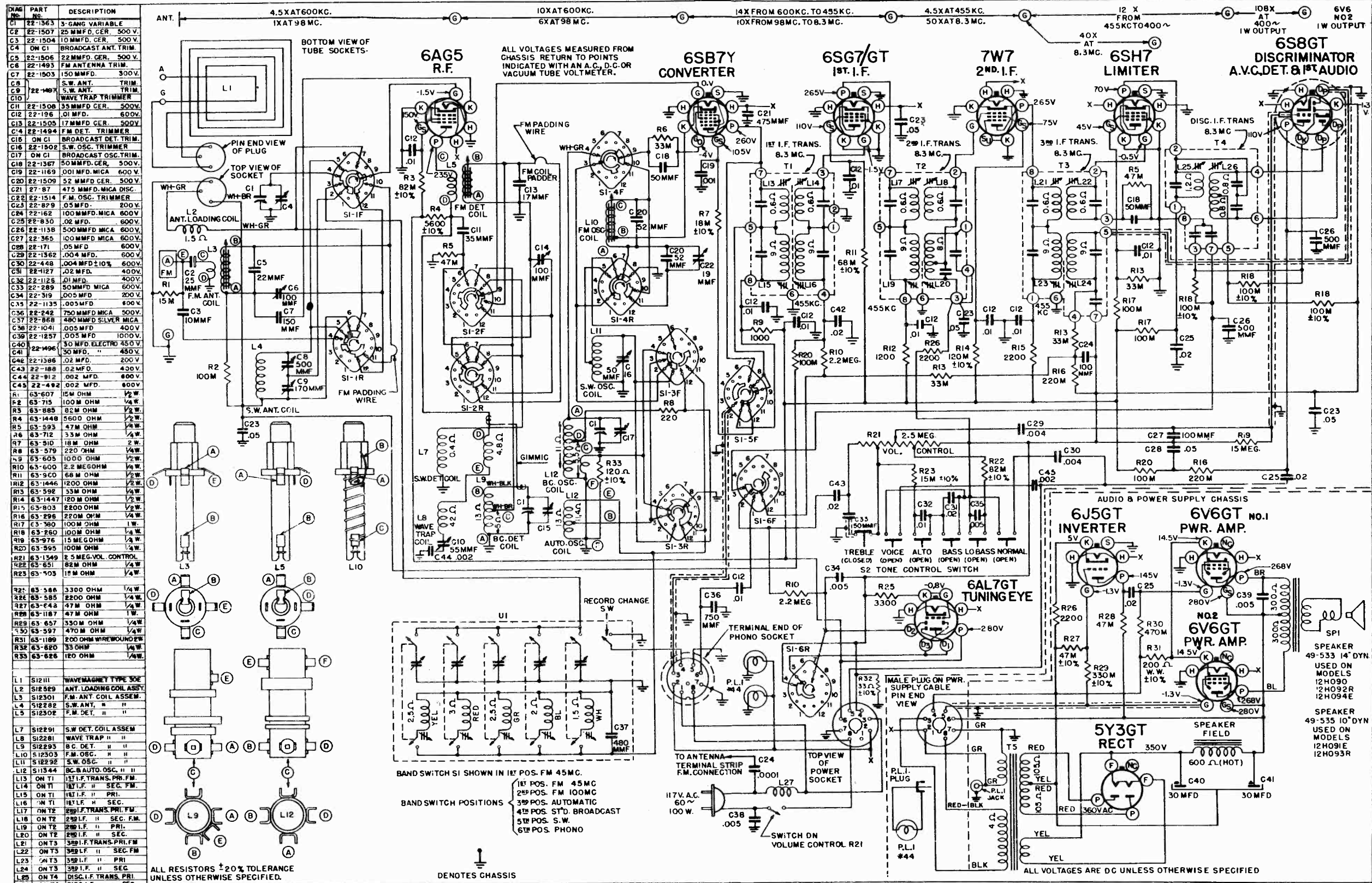
ZENITH RADIO CORP.

MODELS 12H090, 12H091,
12H092, 12H093, 12H094
Early, Late



ZENITH RADIO CORP.

MODELS 12H090, 12H091, 12H092, 12H093, 12H094, Chassis 11C21 Late



QTY	PART NO.	DESCRIPTION
C1	22-1563	3-GANG VARIABLE
C2	22-1507	25 MMFD. CER. 500 V.
C3	22-1504	10 MMFD. CER. 500 V.
C4	ON C1	BROADCAST ANT. TRIM.
C5	22-1506	22 MMFD. CER. 500 V.
C6	22-1493	FM ANTENNA TRIM.
C7	22-1503	150 MMFD. 300V.
C8	22-1497	S.W. ANT. TRIM.
C9	22-1497	S.W. ANT. TRIM.
C10	22-1497	WAVE TRAP TRIMMER
C11	22-1508	35 MMFD. CER. 500V.
C12	22-196	.01 MFD.
C13	22-1505	17 MMFD. CER. 500V.
C14	22-1494	FM DET. TRIMMER
C15	ON C1	BROADCAST DET. TRIM.
C16	22-1502	S.W. OSC. TRIMMER
C17	ON C1	BROADCAST OSC. TRIM.
C18	22-1367	50 MMFD. CER. 500V.
C19	22-1169	.001 MFD. MICA 600 V.
C20	22-1509	52 MMFD. CER. 500 V.
C21	27-87	475 MMFD. MICA DISC.
C22	22-1514	F.M. OSC. TRIMMER
C23	22-879	.05 MFD.
C24	22-162	100 MMFD. MICA 600V.
C25	22-830	.02 MFD.
C26	22-1138	500 MMFD. MICA 600V.
C27	22-365	100 MMFD. MICA 600V.
C28	22-171	.05 MFD.
C29	22-1362	.004 MFD. 600V.
C30	22-448	.004 MFD. ±10% 600V.
C31	22-127	.01 MFD.
C32	22-1128	.01 MFD.
C33	22-289	50 MMFD. MICA 600V.
C34	22-319	.005 MFD.
C35	22-1135	.005 MFD.
C36	22-242	750 MMFD. MICA 500V.
C37	22-868	480 MMFD. SILVER MICA
C38	22-1041	.005 MFD.
C39	22-1257	.005 MFD.
C40	22-1495	30 MFD. ELECTRO 450 V.
C41	22-1495	30 MFD. " 450 V.
C42	22-1586	.02 MFD.
C43	22-188	.02 MFD.
C44	22-812	.002 MFD.
C45	22-492	.002 MFD.
R1	63-607	15M OHM
R2	63-715	100M OHM
R3	63-865	92M OHM
R4	63-1448	5600 OHM
R5	63-593	47M OHM
R6	63-712	33M OHM
R7	63-510	18M OHM
R8	63-579	220 OHM
R9	63-605	1000 OHM
R10	63-600	2.2 MEGOHM
R11	63-960	68M OHM
R12	63-1446	1200 OHM
R13	63-592	33M OHM
R14	63-1447	120M OHM
R15	63-803	2200 OHM
R16	63-296	220M OHM
R17	63-360	100M OHM
R18	63-260	100M OHM
R19	63-976	15 MEGOHM
R20	63-595	100M OHM
R21	63-1349	2.5 MEG-VOL. CONTROL
R22	63-651	82M OHM
R23	63-503	15M OHM
R24	63-586	3300 OHM
R25	63-585	2200 OHM
R26	63-648	47M OHM
R27	63-1187	47M OHM
R28	63-637	330M OHM
R29	63-597	470M OHM
R30	63-1189	200 OHM WIREWOUND
R31	63-820	33 OHM
R32	63-626	120 OHM
L1	S12111	WAVEMAGNET TYPE SOE
L2	S12529	ANT. LOADING COIL ASSY.
L3	S12301	F.M. ANT. COIL ASSEM.
L4	S12282	S.W. ANT. " "
L5	S12302	F.M. DET. " "
L6	S12291	S.W. DET. COIL ASSEM.
L7	S12281	WAVE TRAP " "
L8	S12293	B.C. DET. " "
L9	S12303	F.M. OSC. " "
L10	S12292	S.W. OSC. " "
L11	S12344	B.C. & AUTO. OSC. " "
L12	ON T1	1ST I.F. TRANS. PRI. FM.
L13	ON T1	1ST I.F. TRANS. SEC. FM.
L14	ON T1	1ST I.F. H. PRI.
L15	ON T1	1ST I.F. H. SEC.
L16	ON T2	2ND I.F. TRANS. PRI. FM.
L17	ON T2	2ND I.F. TRANS. SEC. FM.
L18	ON T2	2ND I.F. H. PRI.
L19	ON T2	2ND I.F. H. SEC.
L20	ON T3	3RD I.F. TRANS. PRI. FM.
L21	ON T3	3RD I.F. TRANS. SEC. FM.
L22	ON T3	3RD I.F. H. PRI.
L23	ON T3	3RD I.F. H. SEC.
L24	ON T4	DISC. I.F. TRANS. PRI.
L25	ON T4	DISC. I.F. TRANS. SEC.
L26	S12256	A.C. LINE CHOKE COIL ASSY.
T1	S12249	1ST I.F. TRANS.
T2	S12250	2ND I.F. TRANS.
T3	S12251	3RD I.F. TRANS.
T4	S12252	DISC. I.F. TRANS.
P1	100-36	PILOT LIGHT 6.3V. 25A
S1	S12356	BAND SWITCH ASSEM.
S2	S1248	TO NE " "
SPI	49-533	14" DYNAMIC SPEAKER
SPI	49-535	10" DYNAMIC SPEAKER

MODELS 12H090-12H091-12H092-12H093-12H094
CHASSIS No. 11C21

ZENITH RADIO CORP.

MODELS 12H090, 12H091,
12H092, 12H093, 12H094Early
Late

TO THE SERVICE MAN:

The 11C21 chassis incorporates a superheterodyne circuit with two stages of IF, and one stage of RF amplification on all bands.

HUM COMPLAINT: Check for excessive length of the a-c line cord inside the main chassis between the point of entrance and the solder lugs. This slack may be in close proximity of the tone control leads.

DIFFERENCES IN 11C21-11C21Z CHASSIS: Sets using chassis 11C21Z are equipped with FM speakers. FM speakers cannot be used on 11C21 chassis. When ordering speaker replacements specify 11C21 or 11C21Z chassis.

IMPROVING FM RECEPTION: In FM Consoles a cabinet FM antenna may be added in addition to the line antenna. This antenna is made up of two 28-inch lengths of wire. One wire is connected to the FM antenna post, the other to chassis. The two wires are then tacked in the cabinet in opposite directions, and should not come in contact with ground.

HOWL ON FM: FM howl may be caused by the speaker vibrating the oscillator slug. A fiber spacer between the oscillator, and detector slug shafts in the FM tuner will eliminate vibration. A thin rubber band tied to the center of the oscillator slug shaft and upper frame will also eliminate the howl.

INCREASING BASS RESPONSE ON PHONO: To increase the bass response on records, the value of R5 in the phono-preamplifier may be increased. Do not increase the value to over 10,000 ohms or audio howl may be heard.

STRIPPED IF THREAD INSERTS: Damaged IF slug thread inserts may be replaced by unscrewing the slug, and pushing out the old insert. Two types of inserts are used, 83-1063 short, and 83-1069 long.

WAVE TRAP TRIMMER SHORTS OUT: A .002 mfd 600 volt condenser has been added in series with the grounded side of the wave trap.

AM Alignment: The alignment of this chassis on the short wave and standard broadcast band is conventional. The alignment slugs in the IF transformers are threaded and screw into the coil forms. The slugs are slotted for a small size fiber screw driver. Do not press hard on the aligning tool (fiber screw driver) or the threads in the coil forms will strip and adjustment will be impossible.

FM RF Alignment: The same coil slug arrangement which tunes the 100 MC FM band also tunes the 45 MC band. However, on 45 MC the band switch connects trimmer condensers in parallel and padding wires in series with the 100 MC coils. The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustments the shafts must be secured with a drop of speaker cement.

FM IF Alignment: The same type of tuning slugs for aligning the AM IF Amplifier are used for the FM I.F.'s. Observe the same precautions when making adjustments. The second 8.3 Mc IF stage is overcoupled. Overcoupling gives a wide band pass with good sensitivity. When an overcoupled stage is aligned with an unmodulated signal, the stage must be loaded. A 300 ohm carbon resistor soldered across the secondary of the second IF transformer provides a satisfactory load for this circuit. The resistor leads must be kept short to reduce the distributed capacity of the circuit.

When aligning a loaded stage, it will be found that considerable signal from the generator will be required, and that it will tune broadly. **THE LOAD RESISTOR MUST BE REMOVED AFTER ALIGNMENT.**

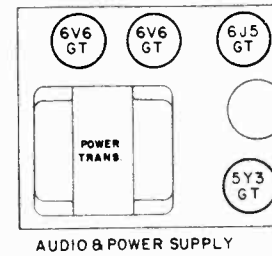
If the signal generator used does not have sufficient output to overcome the temporary loss caused by the load resistor, the load resistance may be increased or the signal fed into the preceding stage.

FM Discriminator Alignment: When the secondary of the discriminator is aligned (operation 9) use sufficient signal input to set a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when this meter starts to go to the left (negative) of zero will give the same results.

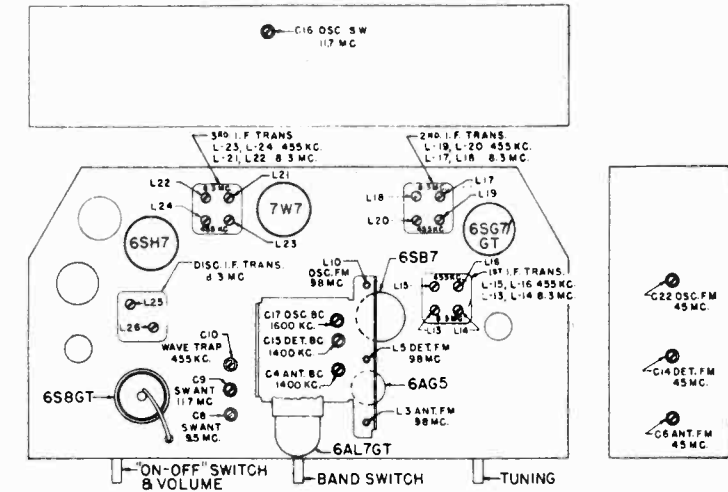
ZENITH RADIO CORP.

MODELS 12H090, 12H091,
12H092, 12H093, 12H094
Early, Late

ALIGNMENT PROCEDURE



AUDIO & POWER SUPPLY



Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 8 on Converter Tube 6SB7 socket	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	L15, 16, 19, 20, 23 and 24	Align I.F. channel for maximum output
2	Pin 1 on R.F. tube 6AG5 socket	.05 Mfd.	455 Kc. Modulated	Aut.	Press any button on Auto.	C10	Adjust wavetrap to minimum
3	2 Turns loosely coupled to wavemag.		1600 Kc. Modulated	BC	1600 Kc.	C17	Set oscillator to dial scale
4	2 turns loosely coupled to wavemag.		1400 Kc. Modulated	BC	1400 Kc.	C15 & C4	Align det. and ant. stages
5	Antenna Post (Remove line ant.)	400 ohms	11.7 Mc. Modulated	SW	11.7 Mc.	C16	Set oscillator to dial scale
6	Antenna Post (Remove line ant.)	400 ohms	11.7 Mc. Modulated	SW	11.7 Mc.	C9	Align ant. stage
7	Antenna Post (Remove line ant.)	400 ohms	9.7 Mc. Modulated	SW	9.7 Mc.	C8	Align ant. stage Repeat Oper. 6 for maximum output
8 (a)	Pin 4 grid on 6SB7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L25 coil slug primary disc.	Align primary of discriminator for maximum reading
9 (b)	Pin 4 grid on 6SB7 limiter socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L26 coil slug sec. of discor.	Adjust secondary of discor. for zero reading
10 (c)	Pin 6 (grid) on 7W7 2nd IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L21 & L22 prim. & sec. of 3rd IF transformer	Align 3rd IF transformer for maximum reading
11 (c)	Pin 4 (grid) on 6SG7 1st IF tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L17 & L18 prim. & sec. of 2nd IF transformer	Align 2nd IF transformer for maximum reading
12 (c)	Pin 8 (grid) on 6SB7 converter tube socket	.05 Mfd.	8.3 Mc. Unmodulated	FM 45		L13 & L14 prim. & sec. of 1st IF transformer	Align 1st IF transformer for maximum reading
13 (c)	Antenna Post (remove line ant.)	270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L10 Osc. coil Slugs	Set oscillator to dial scale
14 (c)	Antenna Post (Remove line ant.)	270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L5 and L3 Det. and RF coil slugs	Align det. and Ant. stage to maximum reading
15 (c)	Antenna Post (remove line ant.)	270 ohms	45 Mc. Unmodulated	FM 45	45 Mc.	C22	Set oscillator to dial scale
16 (c)	Antenna Post (remove line ant.)	270 ohms	45 Mc. Unmodulated	FM 45	45 Mc.	C14 and C6	Align detector and ant. stages for maximum reading

IMPORTANT: Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 200,000 ohms in series with the hot lead will serve for FM adjustments. This lead must be shielded.

An ordinary AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

- Vacuum Tube Voltmeter pin 5 on discriminator transformer to chassis (half discriminator load.)
- Vacuum Tube Voltmeter pin 7 on discriminator transformer to chassis (full discriminator load.)
- Vacuum Tube Voltmeter 6SH7 limiter grid (pin 4 to chassis).
- 300 ohm $\frac{1}{2}$ watt carbon resistor soldered across the secondary L18 (pin 2 and 3 of 2nd IF trans.). The leads to the resistor must be as short as possible and the resistor removed before operation is started.

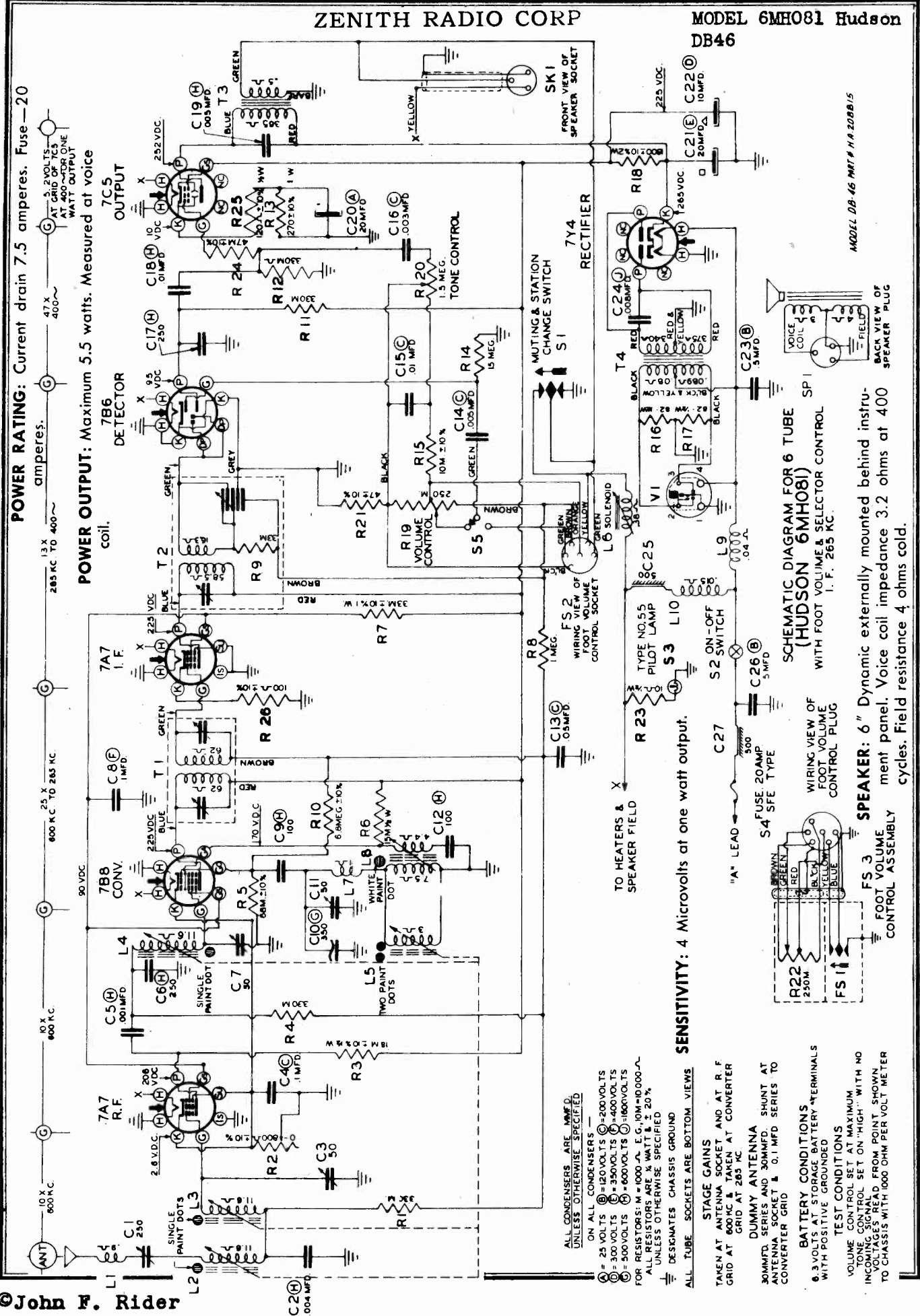
ZENITH RADIO CORP

MODEL 6MH081 Hudson

DB46

POWER RATING: Current drain 7.5 amperes. Fuse—20 amperes.

POWER OUTPUT: Maximum 5.5 watts. Measured at voice coil.



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ALL CONDENSERS ARE MFD. UNLESS OTHERWISE SPECIFIED.
ON ALL CONDENSERS:
⊖ = 25 VOLTS ⊕ = 125 VOLTS ⊙ = 200 VOLTS
⊘ = 300 VOLTS ⊚ = 350 VOLTS ⊛ = 400 VOLTS
⊜ = 500 VOLTS ⊝ = 600 VOLTS ⊞ = 100 VOLTS
FOR RESISTORS: M = 1000 Ω, E.G., 10M = 10,000 Ω
ALL RESISTORS ARE 1/2 WATT ± 20%
UNLESS OTHERWISE SPECIFIED
⊕ DESIGNATES CHASSIS GROUND
ALL TUBE SOCKETS ARE BOTTOM VIEWS

STAGE GAINS
TAKEN AT ANTENNA SOCKET AND AT R.F. GRID AT 600 KC & TAKEN AT CONVERTER GRID AT 265 KC

DUMMY ANTENNA
30MMFD. SERIES AND 30MMFD. SHUNT AT ANTENNA SOCKET & 0.1MFD SERIES TO CONVERTER GRID

BATTERY CONDITIONS
6.3 VOLTS AT STORAGE BATTERY TERMINALS WITH POSITIVE GROUND

TEST CONDITIONS
VOLUME CONTROL SET AT MAXIMUM
TONE CONTROL SET ON "HIGH"
INCOMING SIGNAL SET ON "HIGH"
VOLTAGES READ FROM POINT SHOWN TO CHASSIS WITH 1000 OHM PER VOLT METER

SENSITIVITY: 4 Microvolts at one watt output.

SCHEMATIC DIAGRAM FOR 6 TUBE (HUDSON 6MH081)
WITH FOOT VOLUME & SELECTOR CONTROL
I. F. 265 KC.

SPEAKER: 6" Dynamic externally mounted behind instrument panel. Voice coil impedance 3.2 ohms at 400 cycles. Field resistance 4 ohms cold.

MODEL DB-46 MPT # HA 2088B-15

CORE OR COIL REPLACEMENT ONLY

WARNING: The following adjustments are to be made ONLY if a core or coil is replaced.

1. Replace coil or core.
2. Set signal generator to 1700 Kc.
3. Connect signal generator leads through dummy illustrated in figure 12 to antenna receptacle on the receiver.
4. Set receiver dial to 1600 Kc. (Maximum high frequency end of dial.)
5. Screw the core completely out of the antenna coil, the R.F. Coil, the converter coil, and the oscillator coil.
6. Adjust oscillator trimmer C-11 (Fig. 11) at 1700 Kc.
7. Adjust converter trimmer C-7, R.F. trimmer C-3, and antenna trimmer C-1 (Fig. 10 and 11) for maximum output reading.
8. Replace cores to their approximate original positions.
9. Set generator dial and receiver dial to 1200 Kc.
10. Adjust oscillator core (Fig. 10) to scale at 1200 Kc.
11. Adjust the antenna core, R.F. core, and converter core (Fig. 10 and 11), for maximum output reading.
12. Set signal generator to 600 Kc.
13. "Rock in" Shunt oscillator coil (Fig. 10) for maximum output reading. (This should only be done as a last resort.) This is the same as rocking in the paddler condenser on a ganged condenser receiver.
14. Check receiver at 1200 Kc. for calibration and gain. If receiver is off scale or weak, repeat operations 9, 10 and 11.
15. After alignment is complete, the maximum high frequency tuning range should be checked; if the range is greater or less than 1605 Kc. the mechanical stop for the tuner cross arm should be bent to limit the frequency coverage to 1605 Kc.

After all adjustments have been made, glue core screws with speaker cement.

IMPORTANT: After reinstalling the receiver in the car, allow it to operate for approximately 15 minutes to reach normal operating temperature. Check the antenna trimmer alignment on a weak station at approximately 1200 Kc. Extend antenna to maximum before adjusting the antenna trimmer.

ALIGNMENT

Maximum performance depends on accurate alignment of the receiver; so follow these instructions carefully.

CAUTION: Make all adjustments on the receiver with volume control turned full on and foot volume control cable plugged into its socket. Reduce signal intensity as much as possible at signal generator. Connect output meter across voice coil.

I.F. ALIGNMENT PROCEDURE

1. Remove top and bottom covers from receiver.
2. Set signal generator to 265 Kc.
3. Apply signal from generator through a .1 Mfd. dummy to 7B8 converter grid. (Pin No. 6 on socket.)
4. Adjust I.F. trimmers A, B, C and D (Fig. 10), in the order named for maximum output. Repeat the operation to assure accurate alignment.

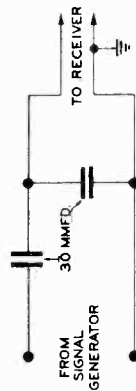


Figure 12. Dummy Antenna

Figure 12 shows the schematic of a recommended dummy antenna closely resembling actual antenna capacity to be used when aligning the R.F. section of the receiver.

R.F. AND OSCILLATOR ALIGNMENT

1. Connect signal generator leads through dummy illustrated in figure 12 to antenna lead in socket on receiver.
2. Set signal generator to 535 Kc.
3. Place set in manual tuning position and set dial to 535 Kc.
4. Adjust oscillator trimmer C-11 (Fig. 11) for maximum response.
5. Set signal generator to 1200 Kc.
6. Tune set to 1200 Kc.
7. Adjust converter trimmer C-7 (Fig. 11) and R.F. trimmer C-3 (Fig. 10) for maximum response.

If dial calibration is off after making above adjustments, a correction can be made by loosening dial scale mounting screws and sliding scale to desired position.

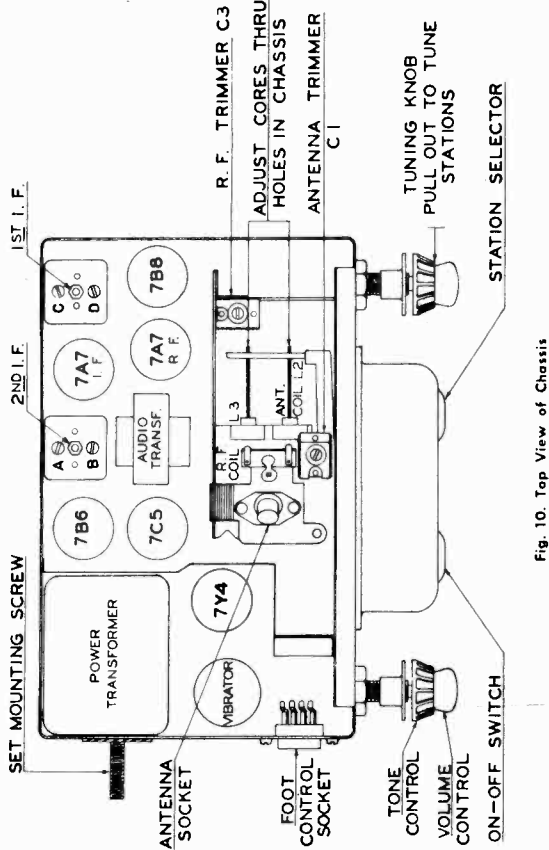


Fig. 10. Top View of Chassis

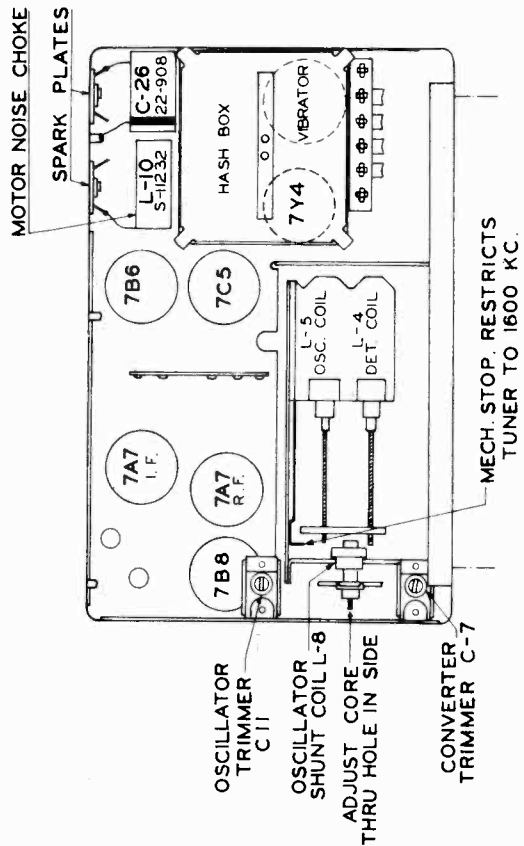


Fig. 11. Bottom View of Chassis

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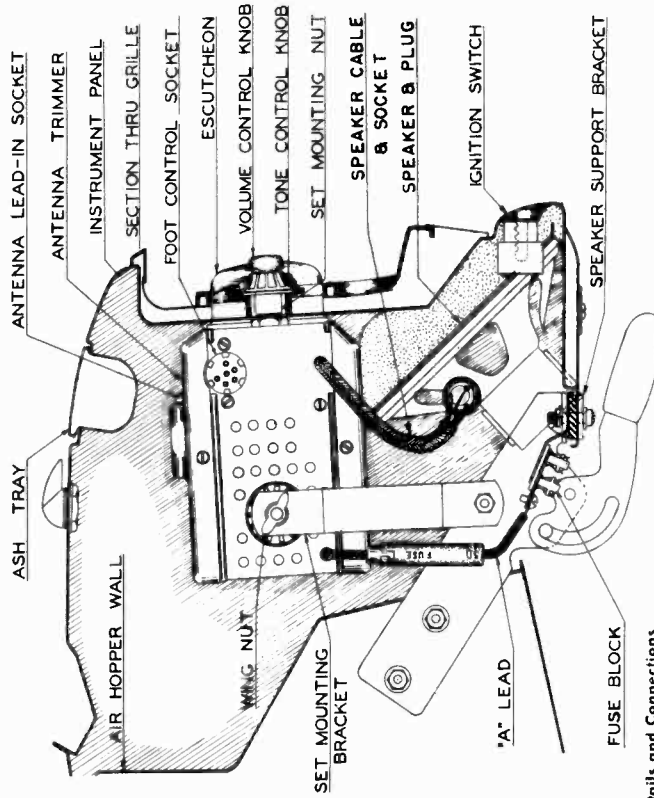
MODEL 6MH081
Hudson DB46

Fig. 2. Mounting Details and Connections

RADIO INSTALLATION INSTRUCTIONS

1. Install the antenna. Complete instructions are packed with each antenna kit.
2. Remove the decorative plate, in the center of the grille, covering the radio opening.
3. Remove the floor mat around the clutch and brake pedals. Place the foot control over the holes provided in the floor board. Fasten it with the three No. 8 R.H. self-rapping screws furnished in the installation kit (Fig. 3).
4. Dress the foot control lead to the left of the clutch pedal and up behind the fire wall pad.
5. Lift the cap from the foot control. Replace the floor mat and cut a hole for the foot control button. To replace the foot control cap, press it firmly and turn until the notches in the cap slip into the flanges on the foot control button.
6. Remove accessory switch bracket.
7. Plug the foot control cable into the socket provided on the left end of the receiver. With this end of the receiver down and the control shafts to the right, push the air hopper as far as it will go. Turn the radio clockwise until the knob shafts point downward. Lift the front of the receiver up until the shafts slide through the slots provided below the shaft openings in the instrument panel. Bring the receiver forward so that the knob shafts protrude through the shaft openings.
8. Fit the knob shaft bushing nuts on the shafts and tighten as much as possible with the fingers. Place the tips of long nose pliers in the holes in the nuts and tighten securely.
9. Attach set mounting bracket by fastening one end to the side of the receiver case with the wing nut. Fasten the other end of the radio mounting bracket to the cowl ventilator handle bracket with $\frac{1}{4}$ " x $\frac{3}{4}$ " M.S. flat washer, and nut (Fig. 2).
10. Remove cardboard protector from speaker unit and fasten speaker and bracket assembly in place with two $\frac{1}{4}$ " x $\frac{3}{4}$ " M.S. flat washers, two lock washers, and two nuts provided. (Fig. 2.) Plug the speaker cable into the socket provided on the speaker frame.
11. Fasten the controls in place as shown in figure 1.
NOTE: Tuning knob must be placed 3.16" away from the instrument panel in order to rotate freely in the automatic position.
12. Fasten the accessory switch bracket back in place.
13. Remove the ash tray assembly and plug the antenna lead into the socket provided on the top of the receiver.
14. Fasten the "A" lead to the fuse block as indicated in figure 2.
15. Turn the receiver on and allow it to operate for approximately fifteen minutes in order for it to reach normal operating temperature. Tune in a weak station near 1200 KC. Reach through the ash tray opening with a small screw driver and adjust the antenna trimmer, located on the top of the receiver, for maximum volume. (Fig. 2.) Replace ash tray.

MANUAL TUNING

1. Press the automatic tuning push button on the left side beneath automatic indicator window several times or until the letter "M" appears on the automatic indicator.
2. Pull manual tuning (right hand) control knob outward and turn to tune in desired stations. Tune to exact frequency for the best tone quality.

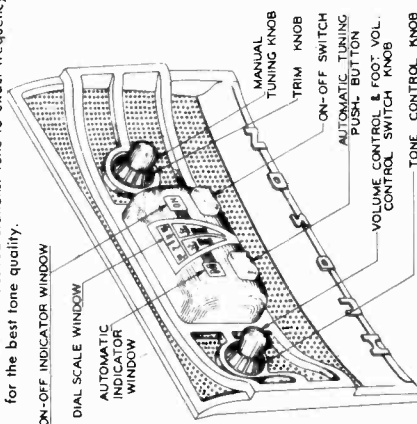


Fig. 1. Operating Controls.

AUTOMATIC TUNING

There are five automatic tuning positions which may be adjusted to five desired stations. If these positions have not been previously adjusted, proceed as follows:

1. Press the automatic tuning push button (on the left side) until Number 1 appears in the automatic indicator window.
2. Pull the manual tuning knob OUTWARD to engage the automatic mechanism.
3. Select the station desired and tune to its frequency by turning the tuning knob. Tune very carefully for clearest reception. CAUTION: DO NOT ATTEMPT TO FORCE TUNING KNOB IN. Knob will return to the "IN" position when the automatic tuning push-button is pressed.
4. Press the automatic station selector push button, pull manual tuning knob outward, and tune in station desired for No. 2 position. Use same procedure for positions No. 3, 4 and 5.

When the five automatic positions have been adjusted to the five desired stations as instructed, it is only necessary to press the AUTOMATIC button to return to MANUAL tuning, or to any one of the stations selected on the automatic.

FOOT CONTROL

The Foot Control provides a convenient means of selecting stations, controlling the volume, and muting the set without taking the hands off the steering wheel or the eyes from the road. Its function is identical to that of the station selector push button and the volume control knob combined. The foot control requires no set up or other adjustment. Press the foot control button all the way down to change stations. Press lightly to silence radio during conversation. Turn the knob with the shoe tip to adjust the volume to any desired point. When using the foot volume control feature turn the panel volume control fully to the left, or until it clicks.

MODEL 6MH081
Hudson DB46

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INTERFERENCE ELIMINATION

IMPORTANT: Use the utmost care in the following operations to insure freedom from motor noise. Be sure that good ground contacts are made between the interference condensers and the car body. If necessary, clean away paint or dirt with emery paper. Tighten all nuts and bolts securely.

1. Remove the top mounting screw of the horn relay near the voltage regulator and under this screw mount the condenser No. 22-1537. Connect the lead to the voltage regulator battery terminal. (Fig. 4.)
 2. Install suppressor in center hole of distributor cap. Place high tension lead in the top of suppressor. Be sure the suppressor and the lead are fastened securely. (Fig. 5.)
 3. On the six cylinder car, remove the bolt, above the ignition coil, from the firewall. Mount the condenser No. 22-1537 under this bolt. Connect the lead to the coil terminal as shown in figure 6A.
- On the eight cylinder car, remove the bottom screw from the ignition coil mounting bracket. Install the condenser No. 22-1537 under the screw. Connect the lead to the coil terminal as shown in figure 6B.
4. Loosen the upper rear cap screw of the engine water jacket plate. **CAUTION: Do not REMOVE cap screw.** Slide the slotted bracket of the condenser No. 22-1260 under the head of this screw. Tighten the screw.

Attach the condenser lead to the water temperature element in the head. (Fig. 7A.)

5. Remove the tape from the hole (located near the left rear cylinder head nut) in the dash. Fasten the flat ground strip to this hole with a sheet metal screw and lock washer. On the six cylinder car, place the other end of the strip on top of the regular stud nut, and fasten it in place with the special nut furnished in the installation kit. (Fig. 7A.) On the eight cylinder cars, bolt the other end of the strap under the regular stud nut. (Fig. 7B.)

6. Install the motor hood bond spring No. 80-145 as shown in Figure 8. Fasten with No. 8 sheet metal screw. Part No. 112-365.

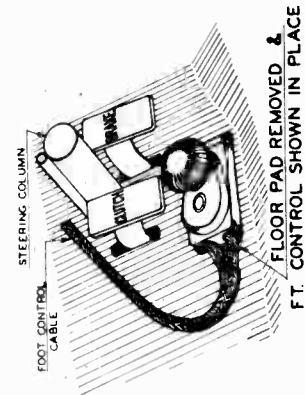


Fig. 3.

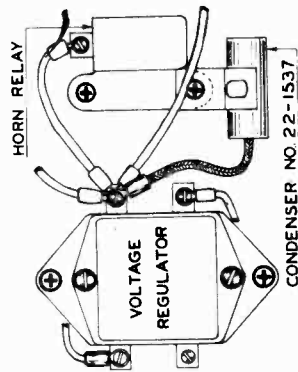


Fig. 4.

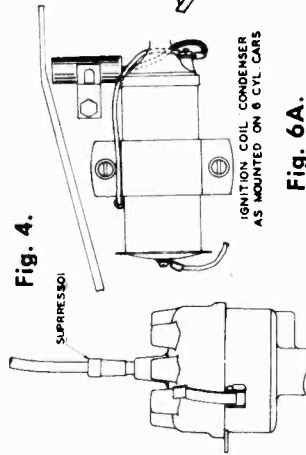


Fig. 6A.

Fig. 5.

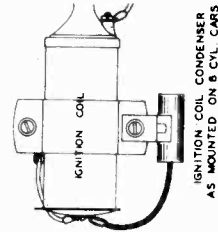


Fig. 6B.

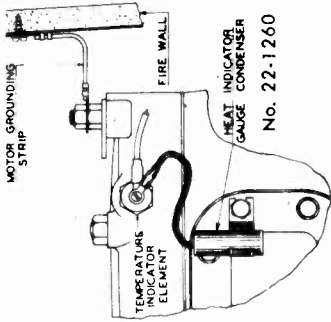


Fig. 7A.

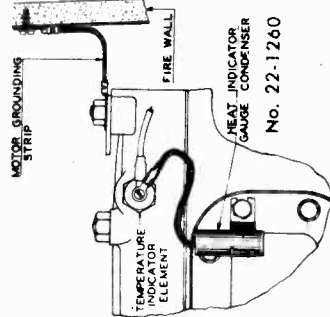


Fig. 7B.

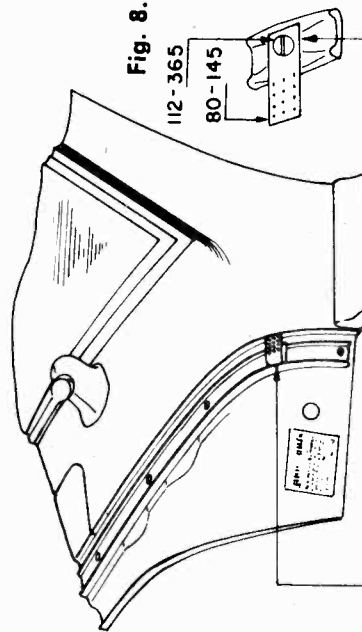


Fig. 8.

PULL OUT PRESENT DRIVE SCREW & PLACE BONDING STRIP OVER HOLE WITH PERFORATIONS FACING DOWN. PUT IN SHEET METAL SCREW. BEND BONDING STRIP OVER AS SHOWN AFTER TIGHTENING SCREW

MODEL Ford
Mercury

ZENITH RADIO CORP.

**FORD MERCURY INTEGRAL AERIAL
FOR 1946 CLOSED CARS
INSTALLATION INSTRUCTIONS**

CAUTION — AERIAL SHOULD BE INSTALLED BEFORE RADIO IS INSTALLED

1. Locate the roof hole by laying the metal template (furnished with the antenna kit) along the upper end of the windshield divider strip as shown in Fig. 1. Prick punch two holes at the word marked "Closed" on template as shown. Be careful not to allow the drill or cutter to punch a hole through the headlining. The accurate drilling of the lower edge of the bottom hole is important for the correct fitting of the roof tube and the smooth operation of the aerial. Cut out the metal between the lines as shown in Fig. 2.

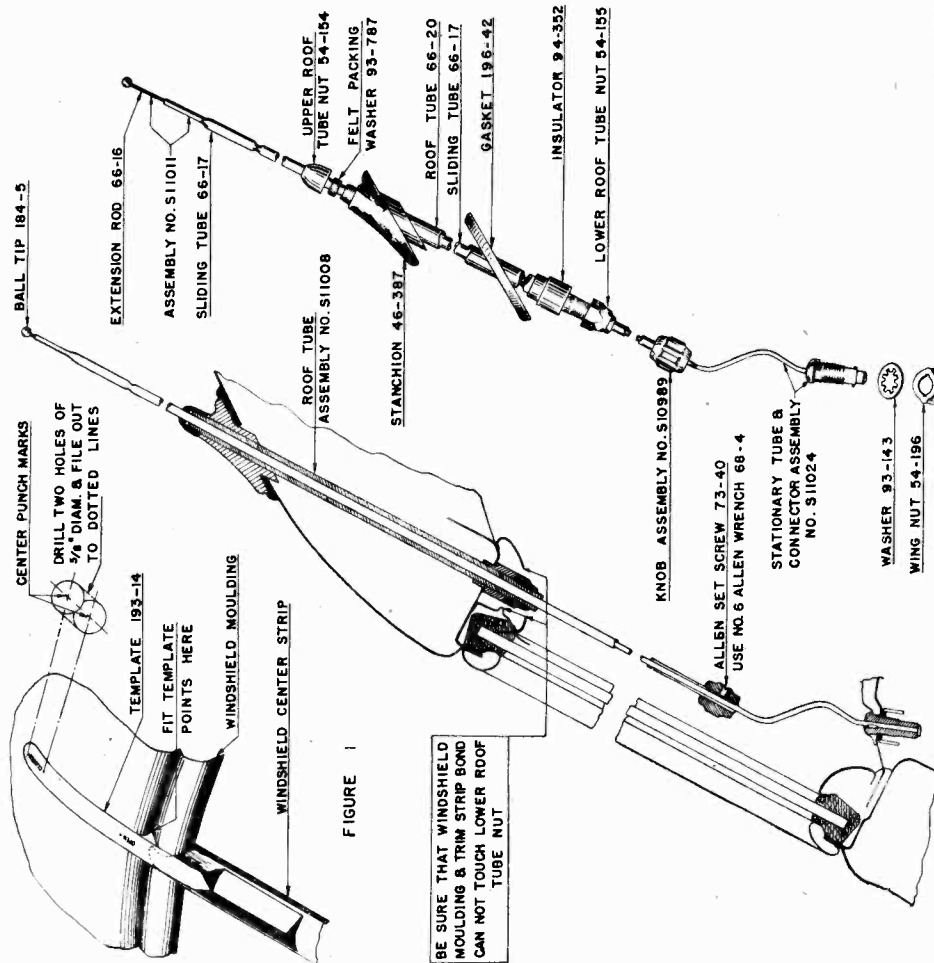
2. Remove rear vision mirror bracket.
3. Remove plastic button from top center instrument board.
4. Loosen sliding tube knob and lower roof tube nut. (See Fig. 4.) (Caution: Upper roof tube nut is not to be loosened at any time!) Allow knob, nut and insulator to slip down and ride loosely on stationary tube. Next slip stationary tube out of the sliding tube and push upper end through hole in moulding behind rear vision mirror until the connector at the bottom of the tube can be dropped into hole in top of instrument panel. Assemble washer and wing nut from below panel.
5. From the outside of the car, thread the sliding tube (complete with roof tube, gasket, stanchion and upper roof tube nut) over the stationary tube which now extends through hole in roof, and lower the assembly into car. Rubber gasket and stanchion should be located properly around hole.

6. Working from the inside of the car, slide the insulator over the roof tube so that the shoulder of the insulator seats well into the hole. Make sure the roof tube does not raise out of the hole during this operation. The lower roof tube nut should be tightened only enough to assure a good moisture seal of exterior parts of aerial.

CAUTION: Be sure that neither the center trim strip, bond nor the windshield moulding touches the lower roof tube nut (Fig. 2).

7. Align the sliding tube knob with the lower end of the sliding tube. Tighten using Allen Wrench.

IMPORTANT — KEEP THE INSULATORS FREE FROM OIL OR POLISHING WAX



BE SURE THAT WINDSHIELD Moulding & TRIM STRIP BOND CAN NOT TOUCH LOWER ROOF TUBE NUT

EXPLODED VIEW
FIGURE 3

COMPLETED INSTALLATION
FIGURE 2