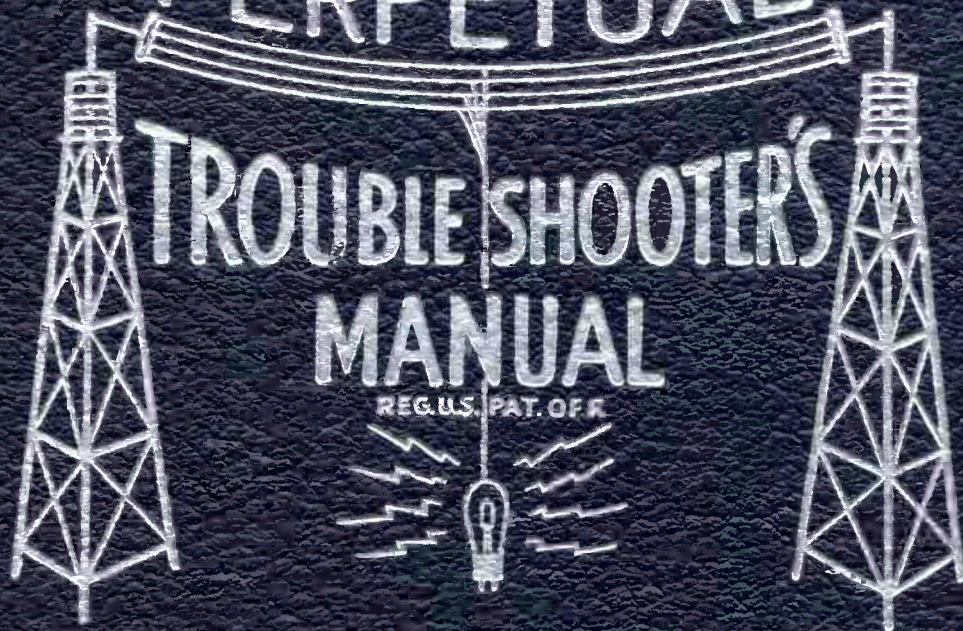


VOLUME XIX

PERPETUAL



JOHN F. RIDER

Model 500 Radio-Phonograph is a console combination designed for operation on the AM and the FM broadcast bands and for record reproduction with standard 78 rpm and LP 33 1/3 rpm records. The radio receiver is comprised of two units; a tuner for AM and FM with all controls, and a power unit containing the transformer and rectifying circuits as well as the final audio amplifying circuits. The record player will operate with intermixed 10 and 12 inch records on 78 rpm and will play the new LP, or 33 1/3 rpm records singly using a special pickup provided. A 12 inch diameter, permanent magnet, dynamic speaker is used in a special acoustic compartment. The record changer compartment is lined with sound absorbing material to prevent undesirable acoustic resonances.

INSTALLATION

The Model 500 is shipped with the tuner (Figure 1) and the loudspeaker installed in the cabinet. The power amplifier (Figure 2) and the record changer are shipped in individual cartons.

To install the power amplifier it is necessary only to remove the unit from its packing carton, and place it in the compartment at the left of the speaker housing, as viewed from the rear of the cabinet. Install the unit with connecting sockets outward, that is, with the power transformer on the inside. Fasten the unit to the cabinet floor with the wood screws provided.

To install the record changer remove from packing carton, pull phono drawer fully forward, and set changer on the mounting board making sure that the spring mounts on the changer fit securely in the counterbored holes provided in the mounting panel. While doing this feed the a.c. cord and the pickup cord through the mounting board, making sure that they both clear moving parts of the mechanism. Now remove the board covering the back of the phono compartment. Dress the a.c. cord and the pickup lead in the clear under the mechanism. Fasten the a.c. cord at the right of the phono drawer, viewed from the rear of the cabinet. Then feed the a.c. cord through the right hand hole (the larger one) of the back board and the pickup lead through the left hand hole, and replace phono board. Insert the pickup plug in the socket labeled "PH" at the right rear of the tuner. Insert the a.c. cord of the phono in the a.c. receptacle of the power unit, dressing the cord so that it moves freely when the phono drawer is moved out and in.

Connect the tuner to the power amplifier by means of the outlets provided. The power pack a.c. cord should be plugged into the tuner receptacle labeled "Amplifier" (Figure 3).

NOTE: Do not use the tuner receptacle labeled "Phono" for a.c. supply to the record player. As described above, use the outlet in the power amplifier as this provides better dressing of the record player a.c. cord.

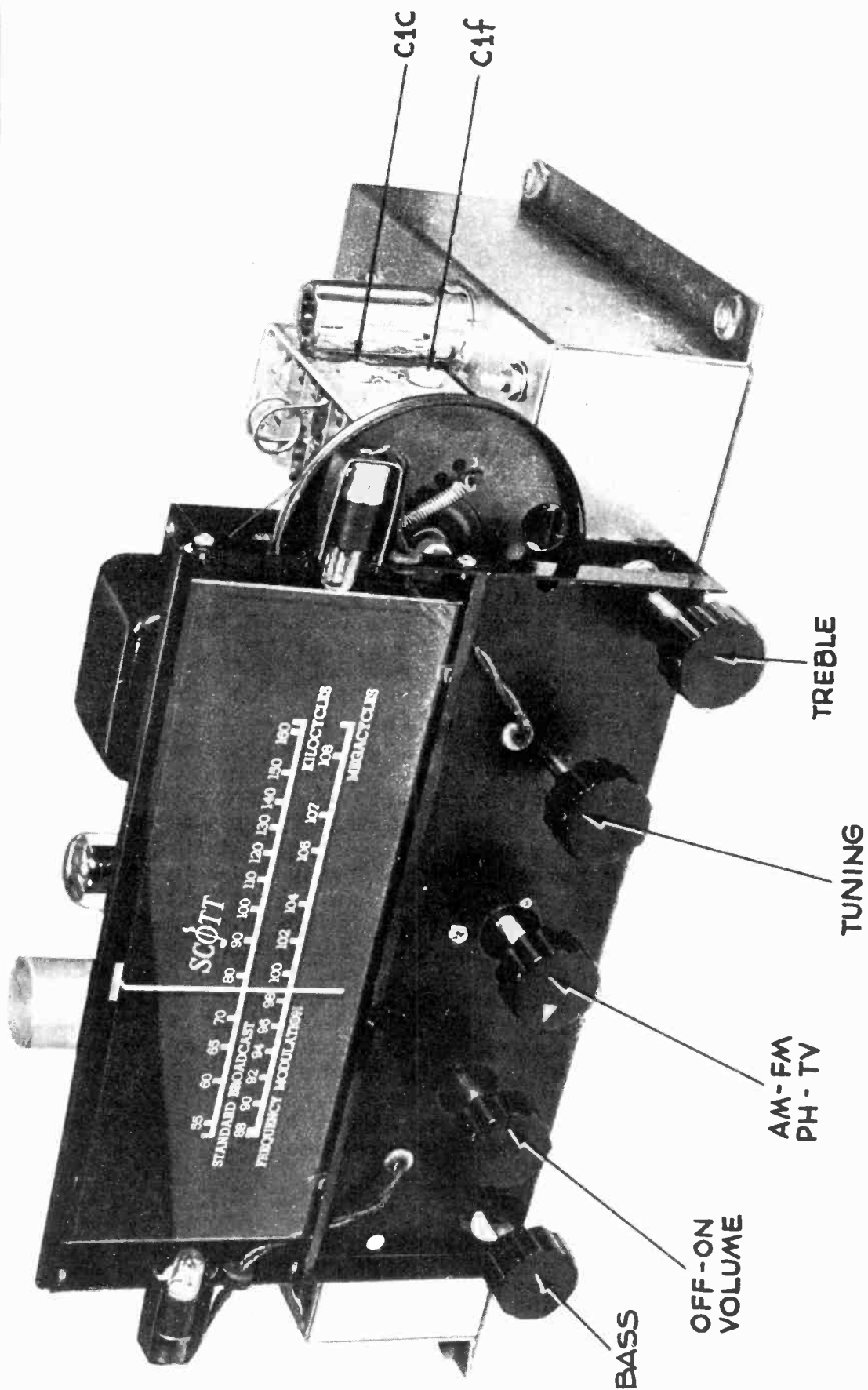


Figure 1 Tuner - Front View

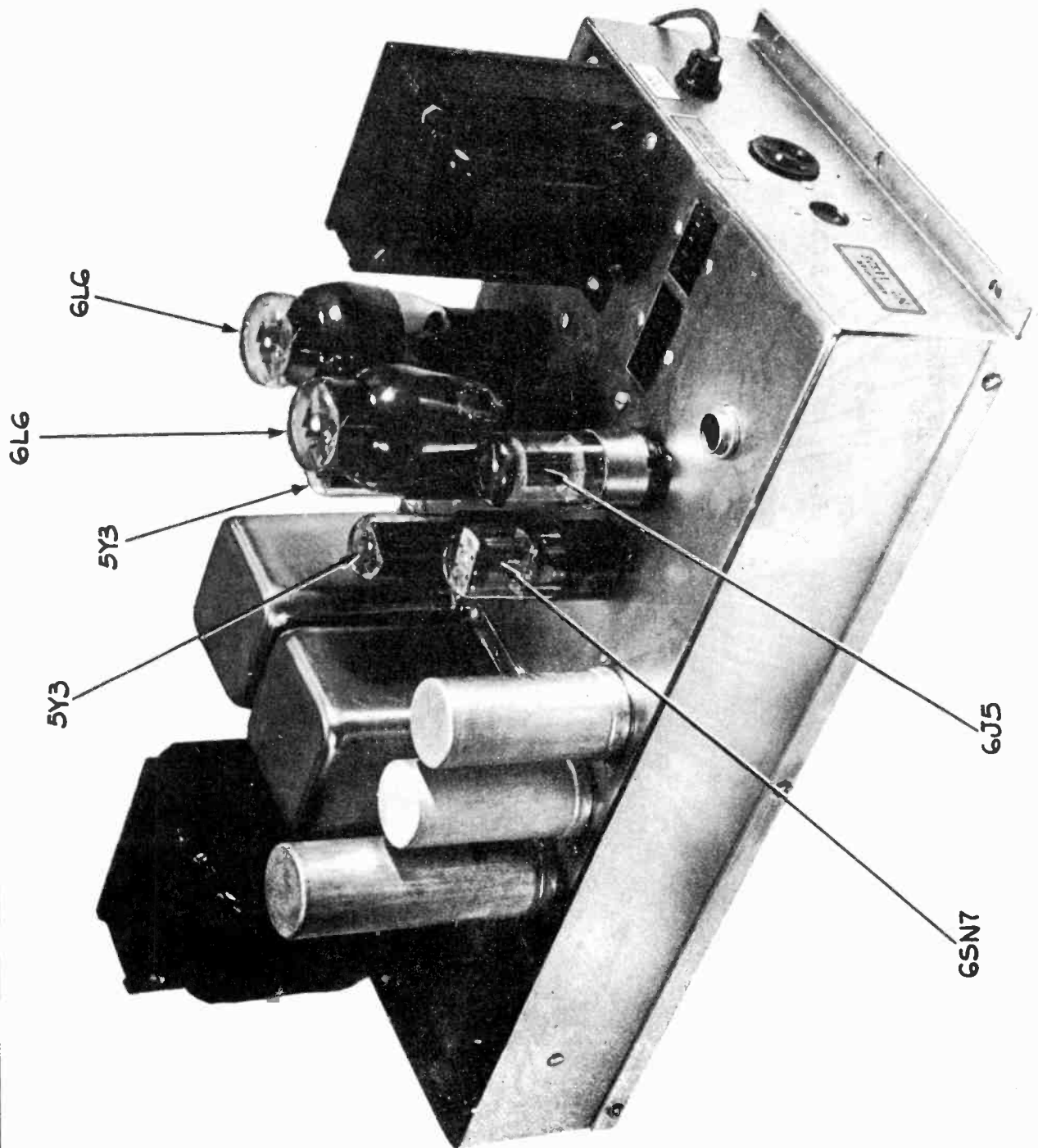


Figure 2 Amplifier - Top View

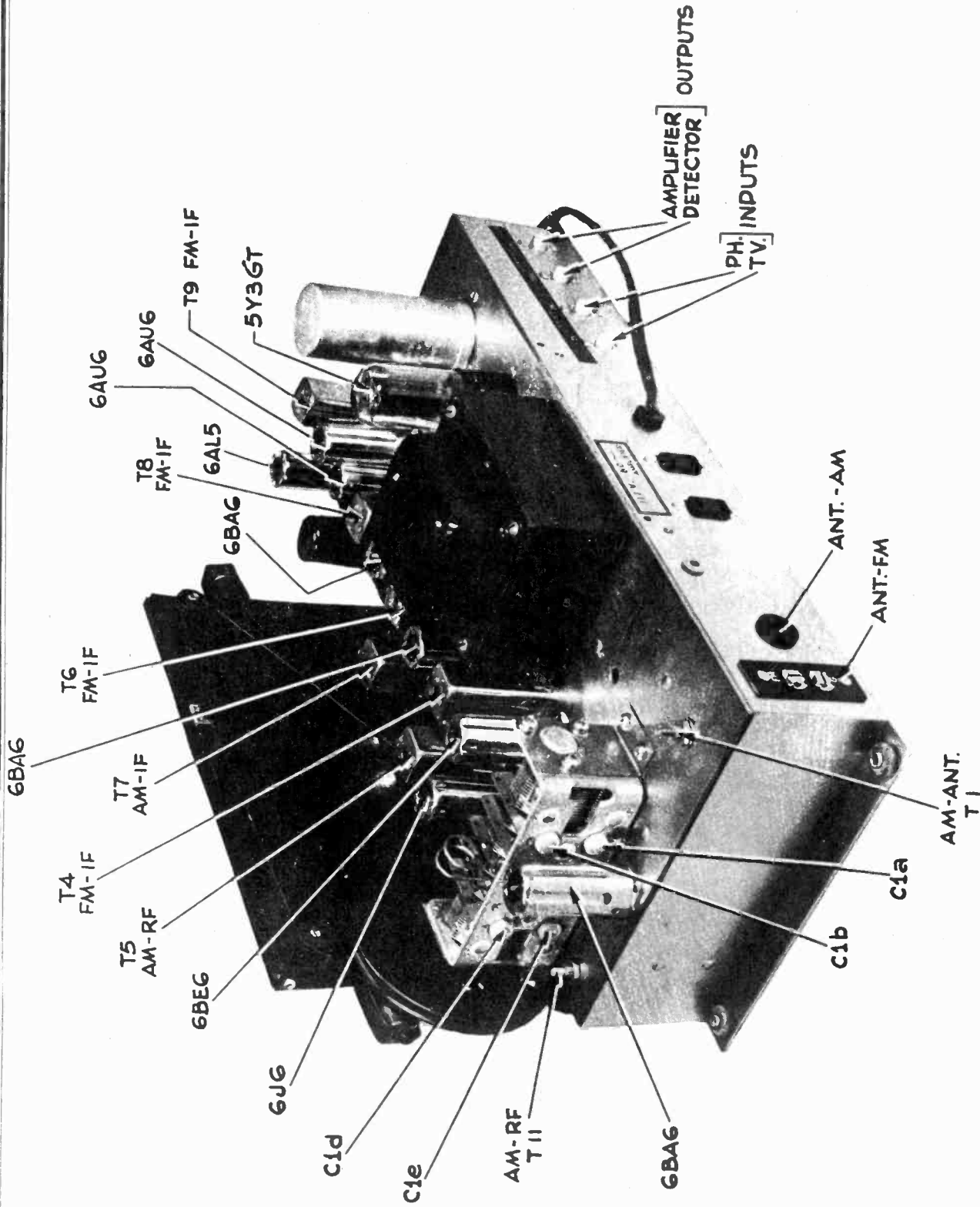


Figure 3 Tuner - Rear View

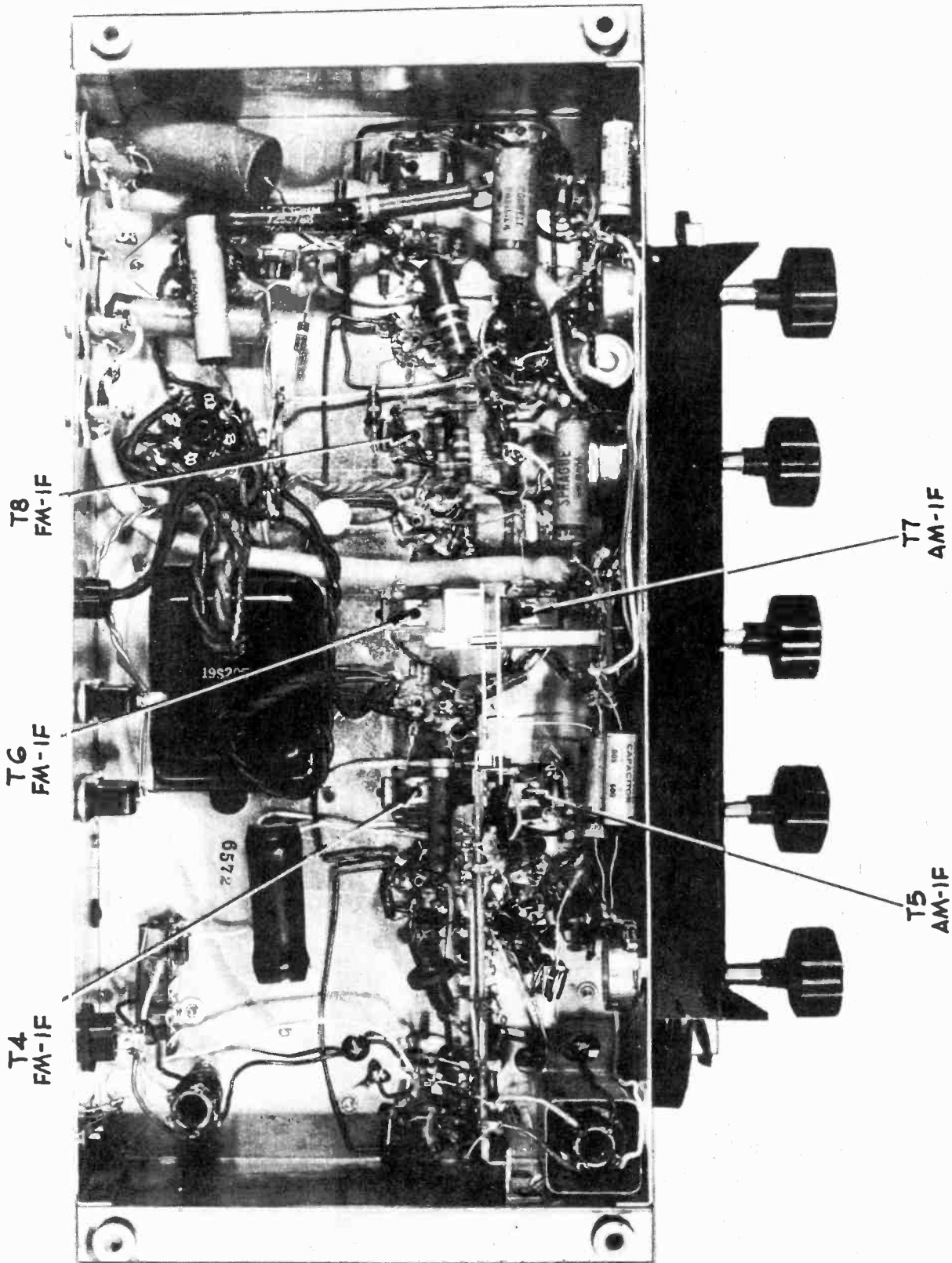


Figure 4 Tuner - Bottom View

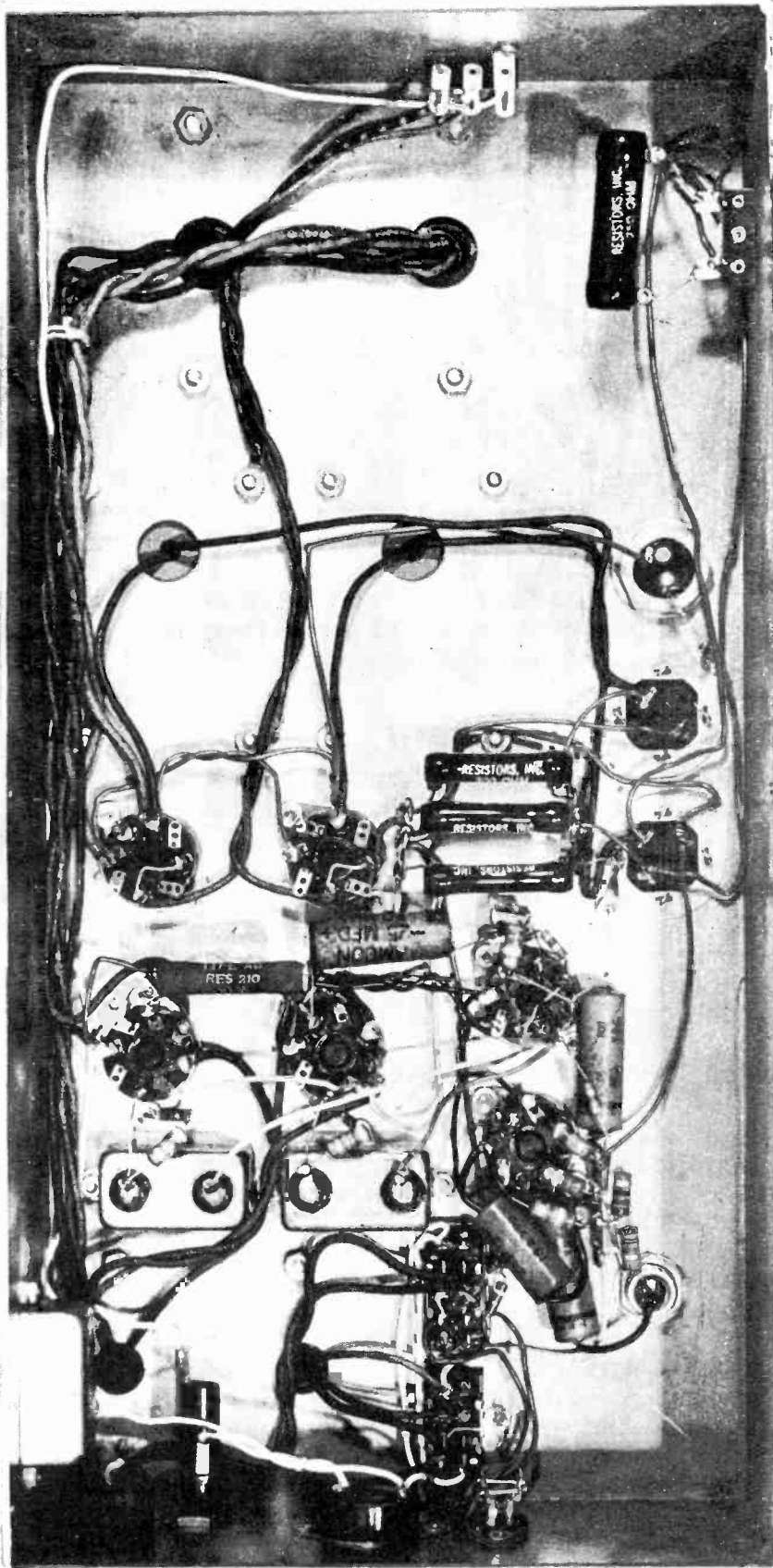


Figure 5 Amplifier - Bottom View

SERVICE ADJUSTMENT

Alignment Procedure

Check position of pointer on the dial scale. When the condenser gang is completely meshed the pointer should be at the last reference mark on the low frequency end of the dial - just beyond 55. The volume control should be fully to the right. The output of the signal generator should be adjusted only high enough to obtain an output reading. Do not use a metallic blade screwdriver for adjusting the IF transformers. Use an insulated blade which will accurately fit the slot in the iron cores. Care should be taken as it is easy to damage the cores with a poorly fitting screwdriver. To align see Figures 1, 3 and 4 and proceed as follows:

1. Connect the signal generator to pin #7 (grid) of the 6BE6 through a .1 mf capacitor and adjust the signal generator to 455 kc. Modulate at 400 cps. Set band switch to AM position, that is, fully to the left. Set the dial to a point of no interference from local broadcasting stations. Connect an a.c. voltmeter across the audio output (speaker) terminals, and adjust T7 and T5, both top and bottom, for maximum deflection of the output meter.
2. Connect the signal generator to pin #2 of loop socket through a 220 mmf condenser. Adjust signal generator to 1500 kc and modulate at 400 cps. Keep band switch in AM position, that is, fully to the left. Set the tuner dial to 1500 kc and adjust C1A, C1E and C1F for maximum deflection of audio output meter.
3. Set signal generator to 600 kc, adjust tuner dial for maximum response and then tune T1 and T11 for maximum deflection of audio output meter.
4. Return signal generator to 1500 kc and repeat operation #2.
5. Return signal generator to 600 kc and repeat operation #3.
6. Connect signal generator to pin #7 of the 6BE6 through a .01 mf coupling condenser. Set generator frequency to 10.7 mc without modulation. Set the band switch one step to the right and put the dial at a point of no interference from local FM stations. Connect audio voltmeter to output of diode filter F1 on lower side of IF transformer T6. Adjust T8, T6 and T4 (top and bottom) for maximum output deflection.
7. Transfer output voltmeter to output of FM discriminator (across C25) and adjust T9 for zero deflection. Be sure that voltmeter goes first plus and then minus (reverse voltmeter terminals) and set finally at zero.
8. Connect signal generator through a 300 ohm carbon resistor to FM antenna post and set to 104 mc modulated (FM) 400 cps. Connect audio voltmeter across output terminals. Adjust C1D, C1C, C1B and the bottom of T9 for maximum deflection of audio output voltmeter. This completes the alignment.

Dial Cord Drive

The correct method of installing the cord of the dial drive is given in Figure 6.

Voltage Readings

The voltage appearing on all sockets is given in Table I. Measurements are taken on the tuner in both AM and FM settings.

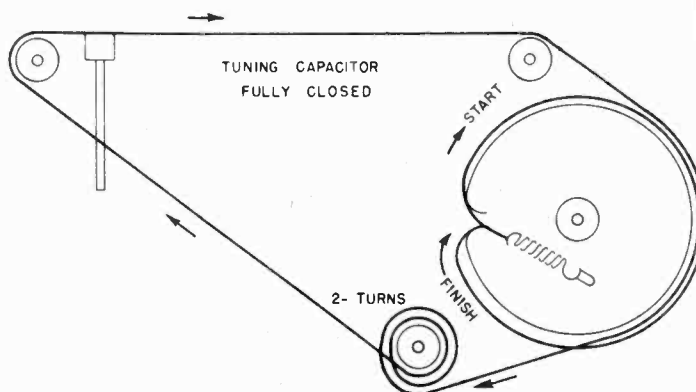


Figure 6 Dial Drive Cord Installation

RECORD CHANGER OPERATION

The Scott Special two speed record changer (standard 78 rpm and long playing 33 1/3 rpm) will operate only on a 105-125 volt 60 cycle power supply.

For reproduction of standard 78 rpm records the record changer is put in operation as follows:

1. Set control on the radio receiver to "PH" position. This is the knob directly to the left of the large tuning knob.
2. Make sure the LP tone arm is firmly in its rest bracket.
3. With the record changer selector control set at "A" (automatic) position, turn back the record stabilizing weight on the record shelf, then load 10 or 12 inch records (or a mixed stack if you desire). Loading should not exceed a 1 1/8 inch stack of records. Now turn the record stabilizing weight over onto the top record.
4. Set the speed control to the 78 rpm position.
5. Press the "ON" button and the record changer will operate. (The changer will shut off automatically after playing the last record.)
6. Adjust the volume control on the radio receiver for the desired output level and the bass and treble controls for desired tone quality.
7. If it is desired to reject a record that is playing, press the "ON" button all the way down and release it.
8. To play records one at a time set the selector control to the "M" position; place the record on the turntable and depress the "ON" button. At the conclusion of the record the changer must be turned off manually by depressing the "OFF" button.

9. The record changer may be stopped at any time while the record is being played, by pressing the "OFF" button. The pickup arm may be picked up off the record and returned to the "OFF" position.

NOTE: At all times when the phono player is not in operation be sure that the speed control is set to the center, or neutral position.

For reproduction of LP (long playing), 33 1/3 rpm records the record changer is put into operation as follows:

1. Remove any records that may happen to be on the turntable.
2. Remove center spindle, place LP record on turntable, center record carefully on turntable and replace spindle.
3. Turn speed control to the 33 1/3 position.
4. Set the selector control to "M" (manual) position.
5. Depress the "ON" button.
6. Remove LP tone arm from its rest bracket and carefully place it in the starting groove of the record.
7. On completion of the record carefully lift tone arm from record and place on rest bracket. Actuate "OFF" button by lifting the standard tone arm and replace, pressing down at the same time in order to operate the switch.

NOTE: When phono player is not in operation be sure that speed control is set at the center, or neutral position.

IMPORTANT: The LP record is fragile and the following precautions should be taken.

1. Handle gently to prevent scratching the soft record surface.
2. When placing pickup on record or removing pickup from record be careful not to damage record grooves by rough usage.
3. Always replace record in its envelope when not in use to prevent dust accumulations on the record surface or physical damage.
4. Keep records at normal room temperature.
5. Be sure that operating instructions are followed carefully. If, by incorrect procedure, the standard 78 rpm pickup should operate, and come to rest on an LP record, the record will be permanently damaged.
6. The LP tone arm should never be used on standard records or on a home recording. This use will seriously damage the pickup needle.

TUBE COMPLEMENT

The tube complement of the Series 500 Radio-Phonograph is as follows:

Symbol	Type	Application	Symbol	Type	Application
V1	6BA6	RF Amplifier	V8	6AL5	2nd Detector, FM
V2	6BE6	Converter AM & FM	V9	6SJ7	Audio Amplifier
V3	6J6	Oscillator, Reactance Mod.	V10	5Y3G	Rectifier
V4	6BA6	IF Amplifier	V11	6J5	Audio Amplifier
V5	6BA6	IF Amplifier, FM & 2nd Detector AM	V12	6SN7	Inverter, Driver
V6	6AU6	1st Limiter, FM	V13	6L6G	Power Amplifier
V7	6AU6	2nd Limiter, FM	V14	6L6G	Power Amplifier
			V15	5Y3G	Rectifier
			V16	5Y3G	Rectifier

FUSE REPLACEMENT

A fuse is provided in the power supply chassis for protection of the electrical circuits against overload. If the fuse blows replace it with a 3 ampere fuse. If the overload was momentary the replacement fuse will put the equipment back in working order. However, if the replacement fuse blows immediately, DO NOT replace it with a fuse of higher rating. The receiver must be checked to find and correct the cause of the overload.

TELEVISION SOUND RECEPTION

Used in conjunction with the Scott Model 6T11 Television Receiver, the high power, high quality audio and acoustic system of the Series 500 may be used in the reproduction of television sound. For this purpose a special audio cable is used to connect the audio output terminal on the 6T11 Television Receiver to the audio input terminal of the Series 500. The switch position "TV" on the Series 500 will make the audio system available for this service.

Table I Voltage Readings										
Symbol Desig.	Tube	Description	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
TUNER										
V1	6BA6	RF Amp.	0	0	0	6.6ac	+172 +200	+100 +103	+0.7 +0.9	-
V2	6BE6	Mixer	-6.8 -5.2	0	0	6.6ac	+185 +200	+103 +118	-0.7 -0.6	-
V3	6J6	Oscillator	+162 +190	0	0	6.6ac	+0.3 +0.3	-5.8 -1.1	+2.7 +4.5	-
V4	6BA6	1st IF	-0.7 -0.1	0	0	6.6ac	+230 +240	+112 +110	+1.0 +1.1	-
V5	6BA6	2nd IF	-0.9 -0.2	0	0	6.6ac	-0.9 +232	-.85 +100	0 +0.9	-
V6	6AU6	Lim. 1st	-.36 -.36	0	0	6.6ac	+ 25 + 25	+ 59 + 62	0	-
V7	6AU6	Lim. 2nd	-.4 -.4	0	0	6.6ac	+230 +240	+90 +95	0	-
V8	6AL5	Discrim.	0	-.50 -3.5	6.6ac	0	+.10 -.60	0	-.60 -36	-
V9	6SJ7	Audio	0	6.6ac	+1.4 +1.6	0	+1.4 +1.6	+52 +60	0	+55 +64
V10	5Y3G	Rectifier	-	+285 +295	-	300ac 300ac	-	300ac 300ac	-	+285 +295
POWER AMPLIFIER										
V11	6J5	Amplifier	0	6.2ac	+160	-	0	-	0	+6.7
V12	6SN7	Inv., Driver	+54	+215	+65	+54	+215	+65	6.2ac	0
V13	6L6	Amp. Audio	0	0	+360	+275	0	-	6.2ac	+21
V14	6L6	Amp. Audio	0	0	+360	+275	0	-	6.2ac	+21
V15	5Y3G	Rectifier	0	+400	-	380ac	-	380ac	-	+400
V16	5Y3G	Rectifier	0	+400	-	380ac	-	380ac	-	+400

Line Voltage - 117 V

Dial set at low frequency end of range.

In the tuner readings where two figures are given the top one is the AM voltage reading and the bottom figure the FM voltage reading.

Table II Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part No.
C1	V1 AVC filter	Capacitor, paper, .05 MF 400 V	15L3466
C2	V1 cathode bypass	Capacitor, ceramic, 47 MMF 500 V	15G2830
C3	V1 screen bypass	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C4	V1 plate filter	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C5	V1 plate to V3 grid coupling	Capacitor, ceramic, 15 MMF 500 V	15E1268
C6	V3 grid coupling FM	Capacitor, ceramic, 15 MMF 500 V	15E1268
C7	V3 oscillator grid coupling	Capacitor, ceramic, 47 MMF 500 V	15G2830
C8	V2 AFC plate decoupling	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C9	V2 oscillator plate coupling	Capacitor, ceramic, 470 MMF 500 V	15P3938
C10	BC band oscillator plate decoupling	Capacitor, ceramic, 47 MMF 500 V	15G2830
C11	V2 oscillator grid coupling	Capacitor, ceramic, 47 MMF 500 V	15G2830
C12	V2 oscillator cathode bypass	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C13	V2 AFC plate coupling	Capacitor, ceramic, 22 MMF 500 V	15P3939
C14	V2 AFC grid RF bypass	Capacitor, ceramic, 100 MMF 500 V	15E1269
C15	V2 AFC grid audio bypass	Capacitor, paper, .1 MF 600 V	15H2706
C16	RF section +B bypass	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C17	V3 mixer screen bypass	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C18	V3 plate decoupling	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C19	1st FM-IF coil primary tuning	Capacitor, ceramic, 33 MMF 500 V	15P3940
C20	1st AM-IF coil primary tuning	Capacitor, ceramic, 130 MMF 500 V	15P3941
C21	1st FM-IF coil secondary tuning	Capacitor, ceramic, 33 MMF 500 V	15P3940
C22	1st AM-IF coil secondary tuning	Capacitor, ceramic, 105 MMF 500 V	15P3942
C23	RF and mixer AVC bypass	Capacitor, paper, .02 MF 600 V	15E1001
C24	V4 heater bypass	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C25	V4 screen bypass	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C26	V4 plate decoupling	Capacitor, ceramic, 5000 MMF 400 V	15L3462

Table II Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part No.
C27	2nd FM-IF coil primary tuning	Capacitor, ceramic, 33 MMF 500 V	15P3940
C28	2nd AM-IF coil primary tuning	Capacitor, ceramic, 130 MMF 500 V	15P3941
C29	2nd FM-IF coil secondary tuning	Capacitor, ceramic, 33 MMF 500 V	15P3940
C30	2nd AM-IF coil secondary tuning	Capacitor, ceramic, 105 MMF 500 V	15P3942
C31	AM audio series resistor bypass	Capacitor, ceramic, 2 x 150 MMF 400 V. See F1	
C32A	V5 cathode bypass	Capacitor, ceramic 3 x 5000 MMF 400 V	15P3944
B	V5 screen bypass		
C	V5 plate decoupling		
C33	3rd FM-IF coil primary tuning	Capacitor, ceramic, 33 MMF 500 V	15P3940
C34	3rd FM-IF coil secondary tuning	Capacitor, ceramic, 33 MMF 500 V	15P3940
C35	1st FM limiter grid decoupling	Capacitor, ceramic, 47 MMF 500 V	15G2830
C36	V6 2nd FM limiter screen bypass	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C37	V6 plate and screen decoupling	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C38	V6 plate to V7 grid coupling	Capacitor, ceramic, 22 MMF 500 V	15P3939
C39	V7 2nd FM limiter screen bypass	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C40	V7 plate decoupling	Capacitor, ceramic, 5000 MMF 400 V	15L3462
C41	FM discriminator coil primary tuning	Capacitor, ceramic, 33 MMF 500 V	15P3940
C42	FM discriminator coil coupling	Capacitor, ceramic, 33 MMF 500 V	15P3940
C43	FM discriminator coil secondary tuning	Capacitor, ceramic, 33 MMF 500 V	15P3940
C44	FM discriminator output bypass	Capacitor, ceramic, 100 MMF 500 V	15E1269
C45	FM de-emphasis network	Capacitor, ceramic, 1500 MMF 350 V	15L3459
C46	Bass control circuit	Capacitor, paper, 5000 MMF 600 V	15E1002
C47	Bass control circuit	Capacitor, paper, .02 MF 600 V	15E1001
C48	Treble control series	Capacitor, paper, 5000 MMF 600 V	15E1002
C49	Treble control series	Capacitor, paper, .01 MF 400 V	15L3474
C50	V9 1st audio plate coupling	Capacitor, paper, .1 MF 400 V	15E1848
C51	V9 1st audio screen bypass	Capacitor, paper, .25 MF 200 V	15L3469
C52	V9 1st audio cathode bypass	Capacitor, electrolytic, 25 MF 50 V	15B638

Table II Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part No.
C53	V9 plate decoupling	Capacitor, electrolytic, 10 MF 300 V	15P3945
C54A	+B filter	Capacitor, electrolytic, 40 MF 400 V	15P3946
B	+B filter	40 MF 400 V	
C	+B filter	20 MF 300 V	
C55	AC line bypass tuner chassis	Capacitor, paper, .01 MF 600 V	15E1050
C56	AC line bypass audio chassis	Capacitor, paper, 2 x .05 MF 600 V	15A11
C57	+B filter 6L6 plate supply	Capacitor, paper, 4 MF 600 V	15B481
C58	+B filter 6L6 plate supply	Capacitor, electrolytic, 2 x 30 MF 450 V	15A17
C59A	+B filter audio plate supply	Capacitor, electrolytic, 30 MF 450 V	15K3010
B	+B filter audio plate supply	30 MF 450 V	
C	+B filter audio plate supply	30 MF 450 V	
C60	Audio input coupling	Capacitor, paper, .05 MF 600 V	15E1041
C61	V13 cathode bypass	Capacitor, electrolytic, 25 MF 25 V	15B795
C62	V13 plate to V14 grid coupling	Capacitor, paper, .05 MF 600 V	15E1041
C63	V14 plate to V15 grid coupling	Capacitor, paper, .25 MF 600 V	15A14
C64	V14 plate to V16 grid coupling	Capacitor, paper, .25 MF 600 V	15A14
C65	V-15-V16 cathode bypass	Capacitor, electrolytic, 25 MF 50 V	15B638
C66	Audio input coupling	Capacitor, paper, .05 MF 400 V	15L3466
F1	AM diode filter	Filter, consists of 47 K ohm resistor bypassed with 2 150 MMF capacitors on ceramic form	2P3943
I1	Dial lamp	Lamp, 6-8 volts .25 A #44 blue bead	49E1091
I2	Dial lamp	Lamp, 6-8 volts .25 A #44 blue bead	49E1091
L1	AM band antenna coil	RF coil	20P3947
L2	FM band antenna coil	RF coil	20P3948
L3	V1 plate choke	RF choke, 3.5 uh	17P3949
L4	AM Band RF coil	RF coil	20P3950

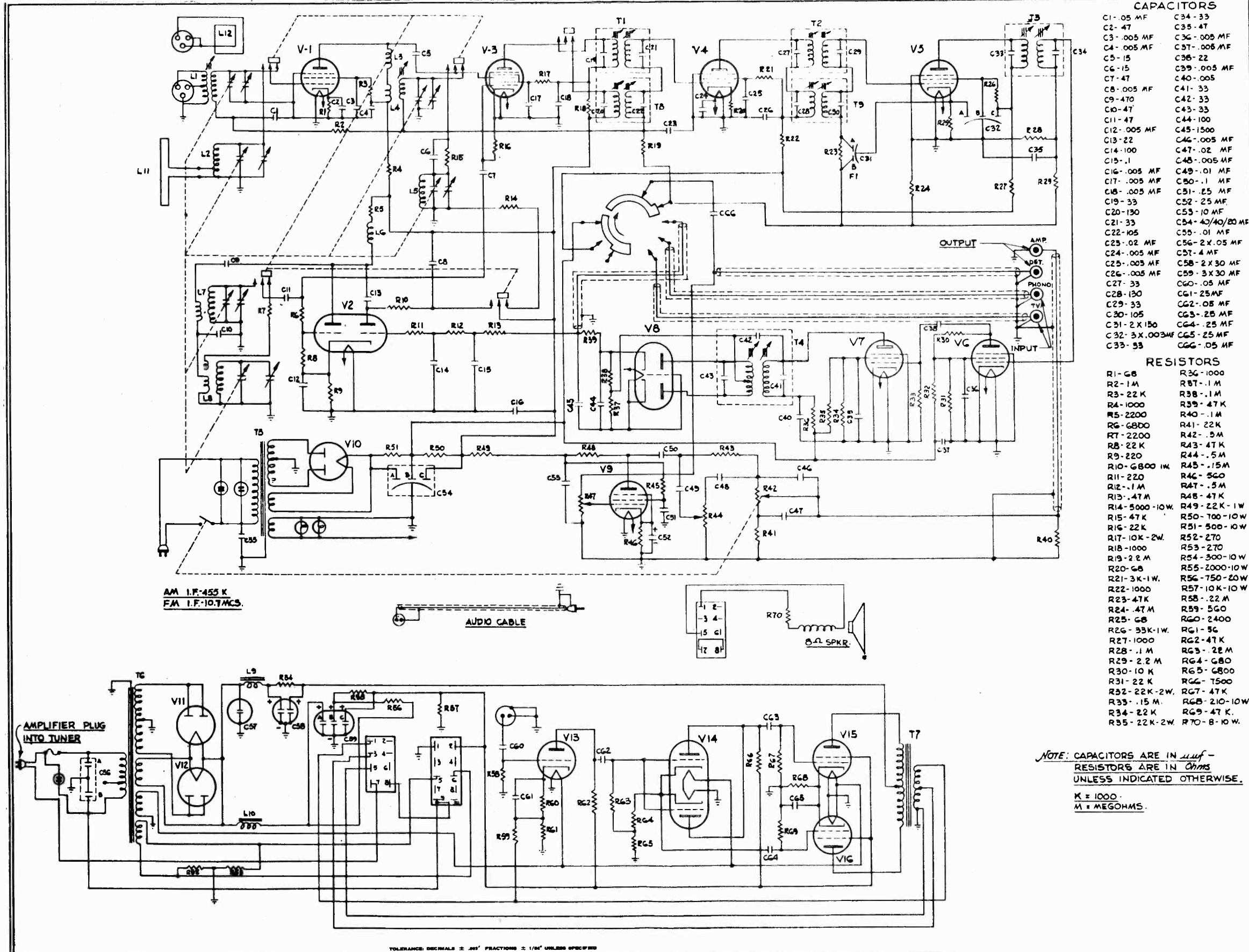
Table II Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part No.
L5	FM band RF coil	RF coil	20P3951
L6	Oscillator + B RF choke	RF choke, 3.5 uh	17P3949
L7	FM band oscillator coil	RF coil	20P3952
L8	AM band oscillator coil	RF coil	20P3953
L9	+B filter 6L6 plate supply	LF choke	17B492
L10	+B filter audio plate supply	LF choke	17B492
L11	FM folded dipole antenna	Antenna	1P3954
L12	AM loop antenna	Antenna	1P3955
R1	V1 cathode bias	Resistor, 68 ohm 10% $\frac{1}{2}$ W	70E1195
R2	V1 grid return	Resistor, 1 meg 20% $\frac{1}{2}$ W	70A63
R3	V1 screen filter	Resistor, 22 K ohm 10% $\frac{1}{2}$ W	70H2708
R4	V1 plate filter	Resistor, 1000 ohm 10% $\frac{1}{2}$ W	70A47
R5	V2 oscillator plate filter	Resistor, 2200 ohm 10% $\frac{1}{2}$ W	70K3023
R6	V2 oscillator grid series	Resistor, 6.8 ohm 10% $\frac{1}{2}$ W	70P3956
R7	BC band oscillator coil damping	Resistor, 220 ohm 10% $\frac{1}{2}$ W	70K1289
R8	V2 oscillator grid return	Resistor, 22 K ohm 10% $\frac{1}{2}$ W	70H2708
R9	V2 cathode bias	Resistor, 220 ohm 10% $\frac{1}{2}$ W	70E1289
R10	V2 AFC plate filter	Resistor, 6800 ohm 10% 1 W	70P3957
R11	V2 AFC grid series	Resistor, 220 ohm 10% $\frac{1}{2}$ W	70E1289
R12	V2 AFC grid filter	Resistor, .1 meg 10% $\frac{1}{2}$ W	70A58
R13	V2 AFC grid filter	Resistor, .47 meg 10% $\frac{1}{2}$ W	70A61
R14	+B bleeder in Am position	Resistor, 5000 ohm 10% 10 W	70D2919
R15	V3 FM grid leak	Resistor, 47 K ohm 10% $\frac{1}{2}$ W	70A54
R16	V3 oscillator grid return	Resistor, 22 K ohm 10% $\frac{1}{2}$ W	70H2708
R17	V3 screen filter	Resistor, 10 K ohm 10% 2 W	70P3958
R18	1st FM-IF primary +B filter	Resistor, 1000 ohm 10% $\frac{1}{2}$ W	70A47
R19	AVC filter RF & mixer & 1st IF amplifier	Resistor, 2.2 meg 20% $\frac{1}{2}$ W	70A64
R20	V4 cathode bias	Resistor, 68 ohm 10% $\frac{1}{2}$ W	70E1195
R21	V4 screen filter	Resistor, 33 K ohm 10% 1 W	70A67
R22	V4 plate filter	Resistor, 1000 ohm 10% $\frac{1}{2}$ W	70A47
R23	AM 2nd det. audio filter	Resistor, 47 K ohm See F1	
R24	AM 2nd det. audio load	Resistor, .47 meg 10% $\frac{1}{2}$ W	70A61
R25	V5 cathode bias	Resistor, 68 ohm 10% $\frac{1}{2}$ W	70E1195
R26	V5 screen filter	Resistor, 33 K ohm 10% 1 W	70A67
R27	V5 plate filter	Resistor, 1000 ohm 10% $\frac{1}{2}$ W	70A47
R28	V6 grid return	Resistor, .1 meg 10% $\frac{1}{2}$ W	70A58
R29	AVC filter 1st FM limiter	Resistor, 2.2 meg 20% $\frac{1}{2}$ W	70A64
R30	V6 plate load	Resistor, 10 K ohm 10% $\frac{1}{2}$ W	70A419
R31	V6 screen bleeder	Resistor, 22 K ohm 10% $\frac{1}{2}$ W	70H2708
R32	V6 screen & plate filter	Resistor, 22 K ohm 10% 2 W	70P3959
R33	V7 grid return	Resistor, .15 meg 10% $\frac{1}{2}$ W	70E1214
R34	V7 screen bleeder	Resistor, 22 K ohm 10% $\frac{1}{2}$ W	70H2708
R35	V7 screen filter	Resistor, 22 K ohm 10% 2 W	70P3959
R36	V7 plate filter	Resistor, 1000 ohm 10% $\frac{1}{2}$ W	70A47

MODEL 500

Table II Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part No.
R37	FM discriminator audio load	Resistor, .1 meg 10% $\frac{1}{2}$ W	70A58
R38	FM discriminator audio load	Resistor, .1 meg 10% $\frac{1}{2}$ W	70A58
R39	FM audio de-emphasis	Resistor, 47 K ohm 10% $\frac{1}{2}$ W	70A54
R40	Audio output load	Resistor, .1 meg 10% $\frac{1}{2}$ W	70A58
R41	Bass control limiting	Resistor, 22 K ohm 10% $\frac{1}{2}$ W	70H2708
R42	Bass control	Potentiometer, .5 meg $\frac{1}{4}$ W	70P3960
R43	Bass control series	Resistor, 47 K ohm 10% $\frac{1}{2}$ W	70A54
R44	Treble control	Potentiometer, .5 meg $\frac{1}{4}$ W	70P3961
R45	V9 screen filter	Resistor, .15 meg 10% $\frac{1}{2}$ W	70E1214
R46	V9 cathode bias	Resistor, 560 ohm 10% $\frac{1}{2}$ W	70A46
R47	Volume control	Potentiometer, .5 meg $\frac{1}{4}$ W	70P3962
R48	V9 plate load	Resistor, 47 K ohm 10% $\frac{1}{2}$ W	70A54
R49	+B supply filter tuner chassis	Resistor, 22 K ohm 10% 1 W	70P3963
R50	+B supply filter tuner chassis	Resistor, 700 ohm 10% 10 W	70P3964
R51	+B supply filter tuner chassis	Resistor, 500 ohm 10% 10 W	70E1236
R52	Heater supply center tap	Resistor, 270 ohm 10% $\frac{1}{2}$ W	70E1197
R53	Heater supply center tap	Resistor, 270 ohm 10% $\frac{1}{2}$ W	70E1197
R54	+B filter 6L6 plate supply	Resistor, 300 ohm 10% 10 W	70B682
R55	+B filter audio supply	Resistor, 2000 ohm 10% 10 W	70K3136
R56	+B filter	Resistor, 750 ohm 10% 20 W	70B990
R57	+B bleeder	Resistor, 10 K ohm 10% 10 W	70B660
R58	V13 grid return	Resistor, .22 meg 10% $\frac{1}{2}$ W	70A59
R59	Feedback circuit series	Resistor, 560 ohm 10% $\frac{1}{2}$ W	70A46
R60	V13 cathode series	Resistor, 2400 ohm 10% $\frac{1}{2}$ W	70A49
R61	V13 cathode load	Resistor, 56 ohm 10% $\frac{1}{2}$ W	70A43
R62	V13 plate load	Resistor, 47 K ohm 10% $\frac{1}{2}$ W	70A54
R63	V14 grid return	Resistor, .22 meg 10% $\frac{1}{2}$ W	70A59
R64	V14 cathode series	Resistor, 680 ohm 10% $\frac{1}{2}$ W	70E1077
R65	V14 cathode load	Resistor, 6800 ohm 10% $\frac{1}{2}$ W	70D2770
R66	V14 plate load	Resistor, 7500 ohm 10% $\frac{1}{2}$ W	70E1074
R67	V15 grid return	Resistor, 47 K ohm 10% $\frac{1}{2}$ W	70A54
R68	V15-V16 cathode bias	Resistor, 210 ohm 10% 10 W	70D2769
R69	V16 grid return	Resistor, 47 K ohm 10% $\frac{1}{2}$ W	70A54
SW1	AM-FM switch	Switch, slide, 5 P. D.T.	89P3965
SW2	AM-FM-PH-TV switch	Switch, rotary, 2 P. 4 T.	89P3966
T1	1st FM-IF transformer	Transformer, IF, 10.7 mc	91P3967
T2	2nd FM-IF transformer	Transformer, IF, 10.7 mc	91P3968
T3	3rd FM-IF transformer	Transformer, IF, 10.7 mc	91P3969
T4	FM discriminator transformer	Transformer, IF, 10.7 mc	91P3970
T5	Power transformer - tuner chassis	Transformer, power	91P3971



- CAPACITORS**
- | | |
|-----------------|------------------|
| C1-.05 MF | C34-.33 |
| C2-.47 | C35-.47 |
| C3-.005 MF | C36-.005 MF |
| C4-.005 MF | C37-.005 MF |
| C5-.15 | C38-.22 |
| C6-.15 | C39-.005 MF |
| C7-.47 | C40-.005 |
| C8-.005 MF | C41-.33 |
| C9-.470 | C42-.33 |
| C10-.47 | C43-.33 |
| C11-.47 | C44-100 |
| C12-.005 MF | C45-1500 |
| C13-.22 | C46-.005 MF |
| C14-100 | C47-.02 MF |
| C15-.1 | C48-.005 MF |
| C16-.005 MF | C49-.01 MF |
| C17-.005 MF | C50-.1 MF |
| C18-.005 MF | C51-.25 MF |
| C19-.33 | C52-.25 MF |
| C20-130 | C53-.10 MF |
| C21-.33 | C54-.40/40/20 MF |
| C22-105 | C55-.01 MF |
| C23-.02 MF | C56-2 X .05 MF |
| C24-.005 MF | C57-.4 MF |
| C25-.005 MF | C58-2 X 30 MF |
| C26-.005 MF | C59-3 X 30 MF |
| C27-.33 | C60-.05 MF |
| C28-130 | C61-.25 MF |
| C29-.33 | C62-.05 MF |
| C30-105 | C63-.25 MF |
| C31-2 X 150 | C64-.25 MF |
| C32-3 X .003 MF | C65-.25 MF |
| C33-.33 | CGG-.05 MF |
- RESISTORS**
- | | |
|--------------|--------------|
| R1-68 | R36-1000 |
| R2-1M | R37-.1M |
| R3-22 K | R38-.1M |
| R4-1000 | R39-.47 K |
| R5-2200 | R40-.1M |
| R6-6800 | R41-22 K |
| R7-2200 | R42-.5M |
| R8-22 K | R43-47 K |
| R9-220 | R44-.5M |
| R10-6800 Ω | R45-.15M |
| R11-220 | R46-500 |
| R12-.1M | R47-.5M |
| R13-.47M | R48-47 K |
| R14-5000-10W | R49-22 K-1W |
| R15-47 K | R50-700-10W |
| R16-22 K | R51-500-10W |
| R17-10K-2W | R52-270 |
| R18-1000 | R53-270 |
| R19-2.2 M | R54-300-10W |
| R20-68 | R55-2000-10W |
| R21-3K-1W | R56-750-20W |
| R22-1000 | R57-10K-10W |
| R23-47K | R58-.22 M |
| R24-.47 M | R59-500 |
| R25-68 | R60-2400 |
| R26-33K-1W | R61-50 |
| R27-1000 | R62-47 K |
| R28-.1 M | R63-.22 M |
| R29-2.2 M | R64-680 |
| R30-10 K | R65-6800 |
| R31-22 K | R66-7500 |
| R32-22K-2W | R67-47 K |
| R33-.15 M | R68-210-10W |
| R34-22 K | R69-47 K |
| R35-22 K-2W | R70-8-10 W |

NOTE: CAPACITORS ARE IN *μ*mf -
RESISTORS ARE IN Ohms
UNLESS INDICATED OTHERWISE.
K = 1000 -
M = MEGOHMS.

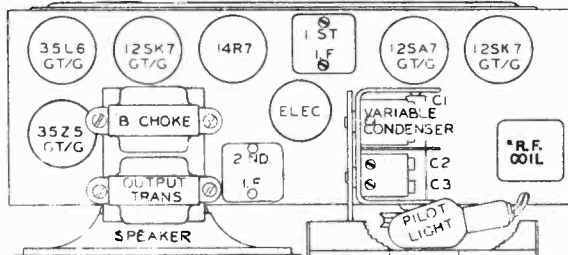
SCOTT RADIO LABS., INC.

MODEL 500

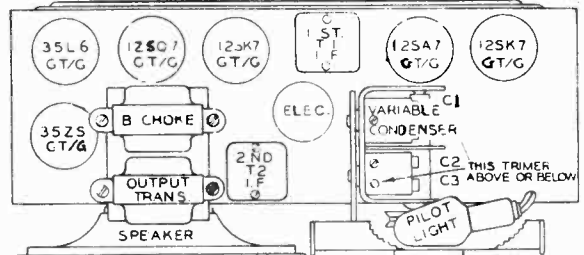
Table II Parts List By Symbol Designation			
Symbol Desig.	Function	Description	Part No.
T6	Power transformer - audio chassis	Transformer, power	91K3043
T7	Audio output transformer	Transformer, output	91C2699
T8	1st AM-IF transformer	Transformer, IF, 455 kc	91P3972
T9	2nd AM-IF transformer	Transformer, IF, 455 kc	91P3973
V1	RF amplifier	Tube, 6BA6	92G2871
V2	HF oscillator & AFC	Tube, 6J6	92G3199
V3	Mixer	Tube, 6BE6	92P3728
V4	1st IF amplifier AM & FM	Tube, 6BA6	92G2871
V5	AM 2nd det. & 2nd FM-IF amplifier	Tube, 6BA6	92G2871
V6	1st FM limiter	Tube, 6AU6	92C2659
V7	2nd FM limiter	Tube, 6AU6	92C2659
V8	FM discriminator	Tube, 6AL5	92G2870
V9	1st audio amplifier	Tube, 6SJ7	92A236
V10	Rectifier for tuner chassis	Tube, 5Y3G	92B480
V11	Rectifier for audio chassis	Tube, 5Y3G	92B480
V12	Rectifier for audio chassis	Tube, 5Y3G	92B480
V13	2nd audio amplifier	Tube, 6J5	92A228
V14	Phase inverter	Tube, 6SN7	92A230
V15	Audio output amplifier	Tube, 6L6G	92A233
V16	Audio output amplifier	Tube, 6L6G	92A233

SEARS, ROEBUCK & CO.

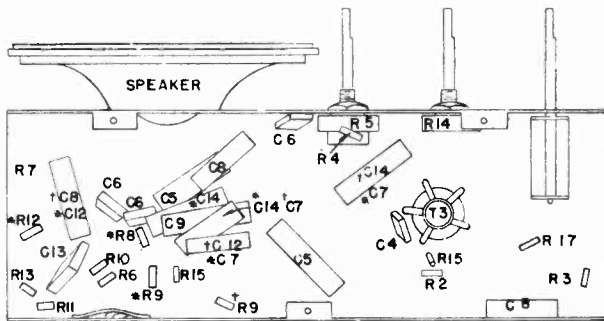
MODEL 6050, CHASSIS
 132.825, 132.825-1,
 132.825-2, 132.825-3,
 132.825-4



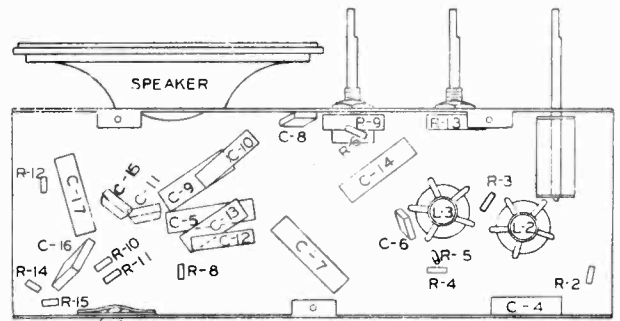
ON THE 132.825-2 CHASSIS THE R.F. COIL IS MOUNTED UNDER THE CHASSIS.
 LOCATION OF PARTS ON TOP OF CHASSIS
 132.825, 132.825-1, & 132.825-2



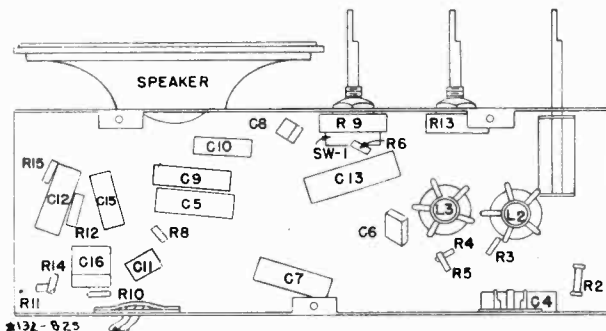
LOCATION OF PARTS ON TOP OF CHASSIS
 132.825-3 & 132.825-4



132.825
 132.825-1
 LOCATION OF PARTS UNDER CHASSIS
 132.825 AND 132.825-1

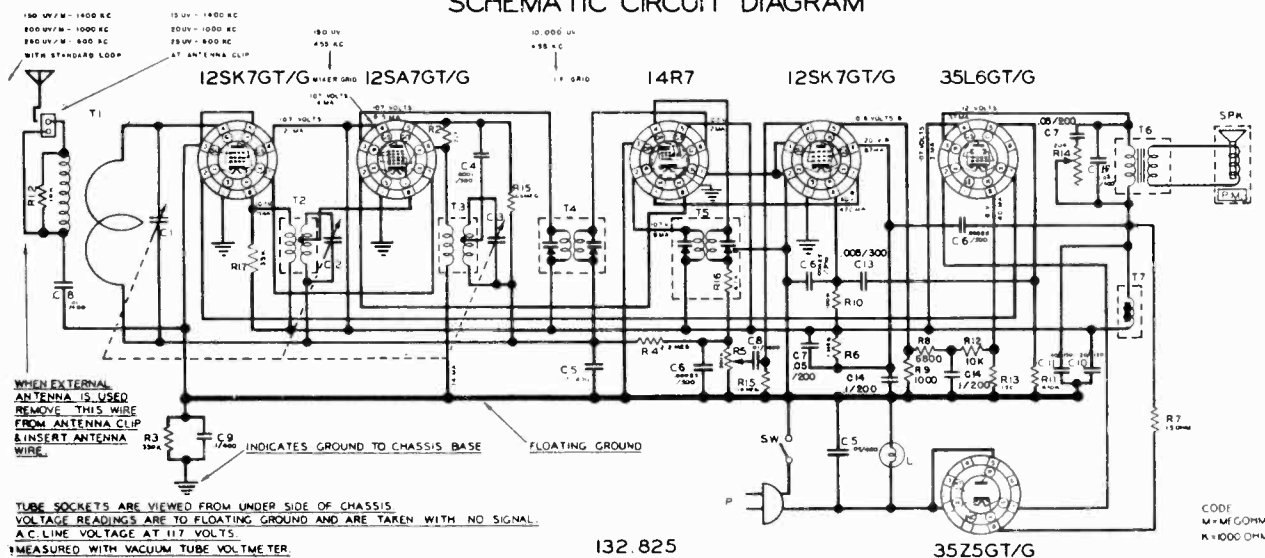


LOCATION OF PARTS UNDER CHASSIS
 132.825-2



LOCATION OF PARTS UNDER CHASSIS
 132.825-3 AND 132.825-4

SCHEMATIC CIRCUIT DIAGRAM



WHEN EXTERNAL ANTENNA IS USED REMOVE THIS WIRE FROM ANTENNA CLIP & INSERT ANTENNA WIRE.

INDICATES GROUND TO CHASSIS BASE

FLOATING GROUND

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS ARE TO FLOATING GROUND AND ARE TAKEN WITH NO SIGNAL. A.C. LINE VOLTAGE AT 117 VOLTS.

MEASURED WITH VACUUM TUBE VOLTMETER.

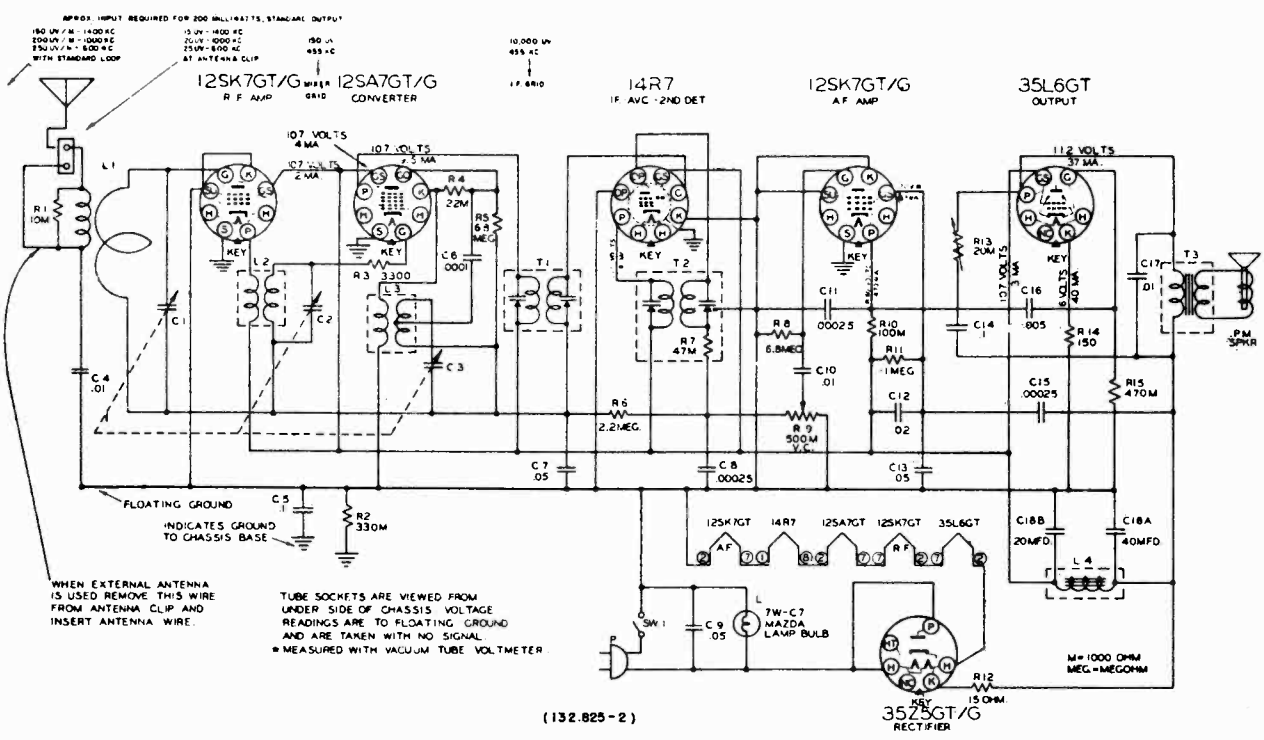
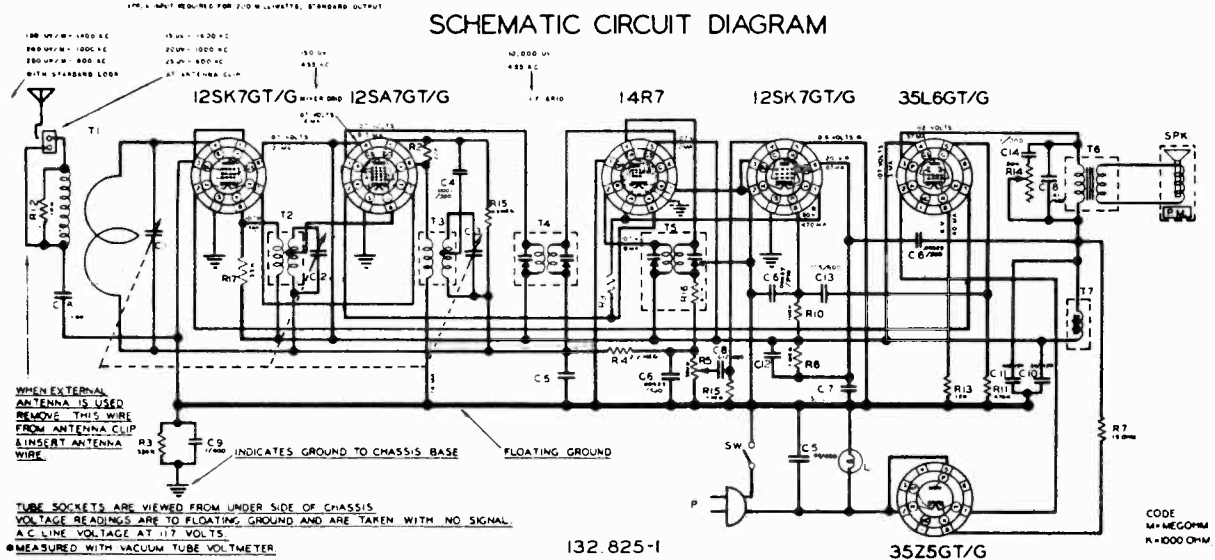
132.825

35Z5GT/G

CODE
 M = MEG OHM
 K = 1000 OHM

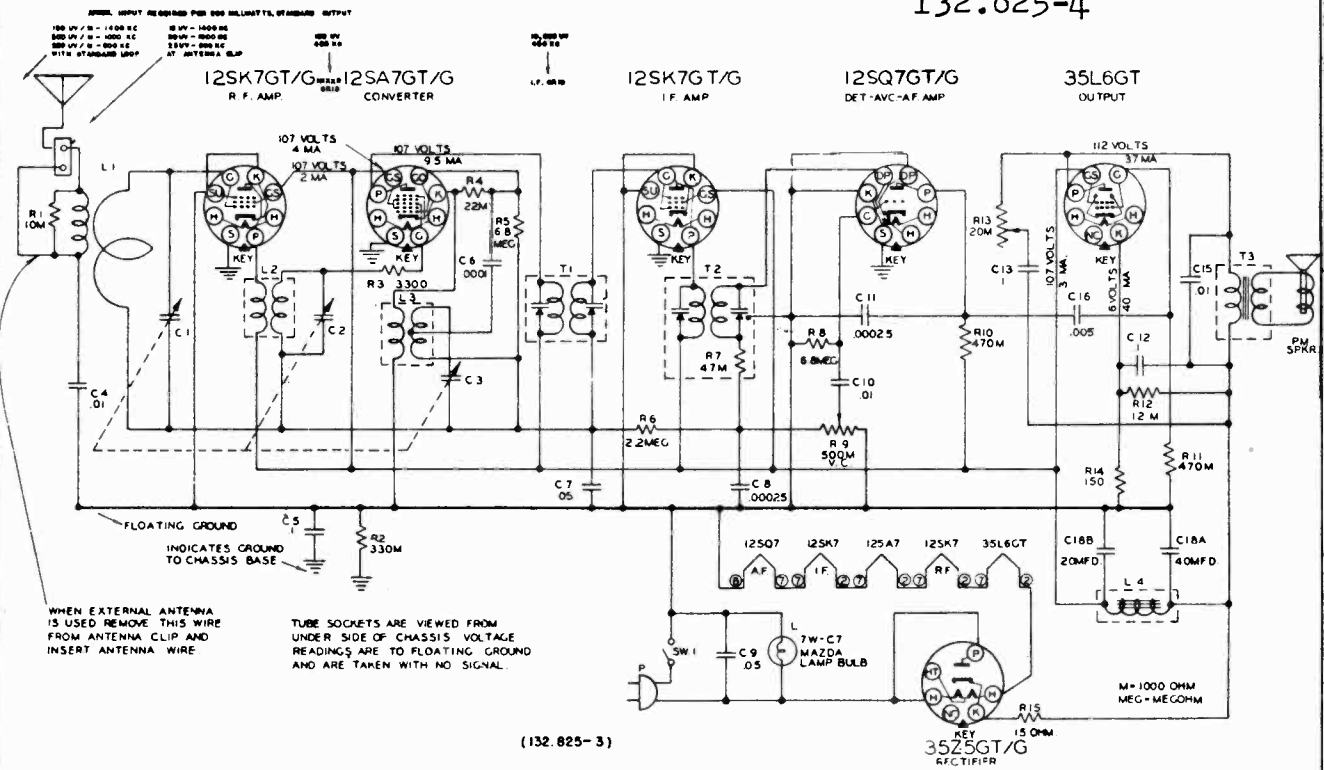
MODEL 6050, CHASSIS SEARS, ROEBUCK & CO.
 132.825, 132.825-1,
 132.825-2, 132.825-3,
 132.825-4

SCHMATIC CIRCUIT DIAGRAM

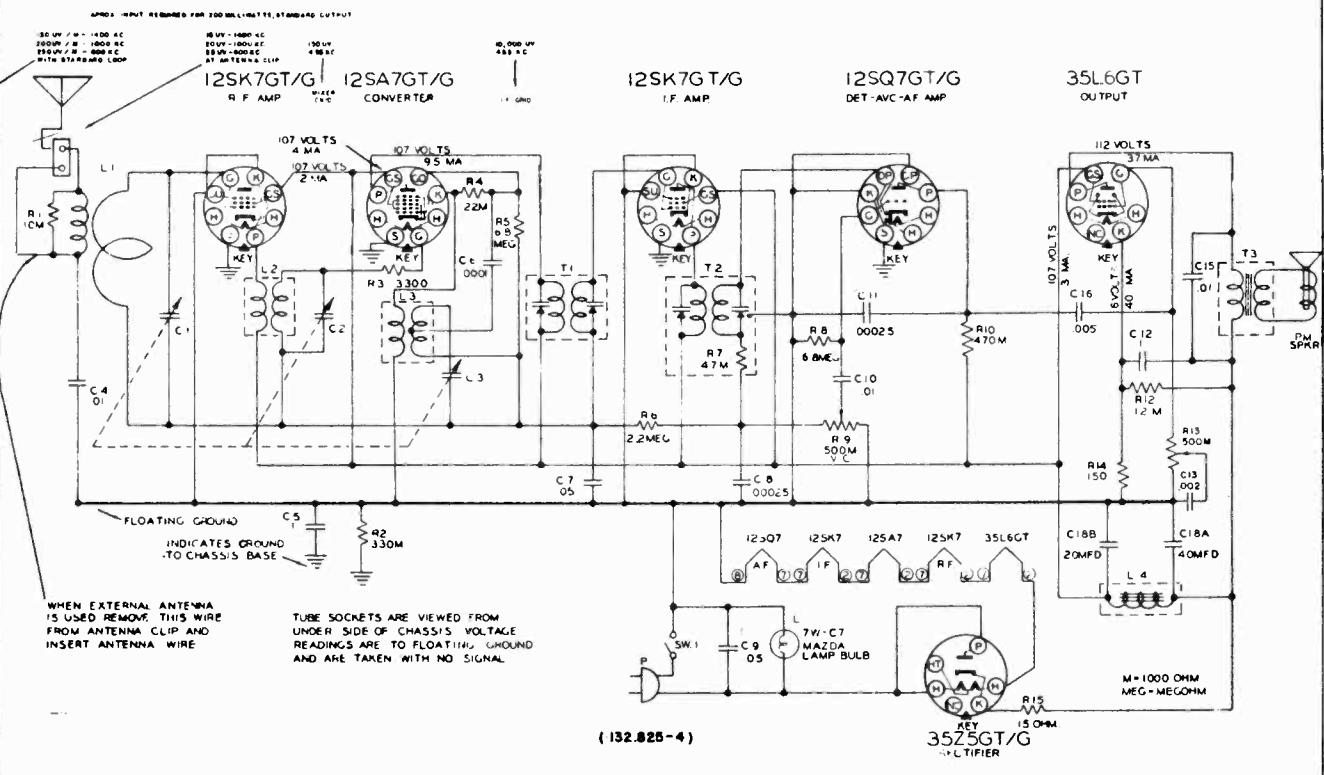


SEARS, ROEBUCK & CO.

MODEL 6050, CHASSIS
132.825, 132.825-1,
132.825-2, 132.825-3,
132.825-4



SERVICE NOTE: The a-c hum can often be greatly reduced on these chassis by replacing C12 with a 0.03-µf, 400-V capacitor. Sometimes the hum can be further reduced by replacing R12 with a 15,000-ohm, 1-watt resistor.



MODEL 6050, CHASSIS SEARS, ROEBUCK & CO.

132.825, 132.825-1,
132.825-2, 132.825-3,
132.825-4

SPECIFICATIONS

Power Supply -- 105-125 Volts AC-DC, 45 Watts Tuning Range Broadcast Band 540-1600 Kc
 Power Output Speaker
 Undistorted .8 Watts, maximum - 2.5 Watts Voice Coil Impedance 3.2 Ohms
 CHASSIS DIFFERENCES

Note: On a few of the 132.825 chassis, a 470 ohm resistor was placed across the heater of the 14R7 tube to equalize the warm up period of the tubes. This is not shown on the Circuit Diagram.

132.825-1

Addition of Suffix Number - 1 to Chassis Identification Number 132.825 covers the following changes from the 132.825 chassis.

1. Removal of the bass boost circuit to reduce hum.
2. Change in tone control circuit.
3. Circuit changes as follows: Tone control condenser C14, .1 mfd. 200V was C7, .05 mfd., 200v; C8, .01 mfd. 400V fixed tone condenser in output circuit was C12, .02 mfd. 400v; C13, .005 mfd., 600V was .005 mfd., 300V; R9, 470 ohm 1/4 watt resistor added to 14R7 tube socket between heater lugs; C12, .02 mfd., 400V was C7, .05 mfd., 200v, on 12SK7 screen grid to floating ground. C14, .1 mfd., 200V condenser; R8, 6800 ohm 1/4 watt resistor, R9 1,000 ohm 1/4 watt resistor and R12, 10,000 ohm 1/4 watt resistor deleted from cathode circuit of 12 SK7 and 35L6 tubes.
4. Revision of parts price list; schematic diagram; and parts layout.

132.825-2

Addition of Suffix Number 2 to Chassis Identification Number 132.825 covers the following changes from the 132.825-1 chassis.

1. RF coil N18598 is replaced by RF coil N19860.
2. The RF coil location is changed from the top of chassis to under chassis.
3. 470 ohm resistor deleted from 14R7 tube heater circuit.
4. The schematic diagram is redrawn with rearrangement of schematic location symbols in consecutive order from left to right without duplication.
5. Rearrangement of schematic location symbols on parts list and parts location drawings to correspond with schematic diagram.

132.825-3

Addition of Suffix Number - 3 to Chassis Identification Number 132.825 covers the following changes from the 132.825-2 chassis.

1. Addition of 12SQ7 tube and deletion of 14R7 tube.
2. Addition of hum bucking circuit in output stage (C12 & R12) from B+ to cathode of 35L6 tube, to replace the hum bucking circuit used in the 12SK7 screen grid circuit. Resistor R11, 1 megohm, 1/4 watt; and condensers C13, .05 mfd., C12 .02 mfd., and C15 .00025 mfd. deleted.
3. Resistor R10, in the plate circuit of the first audio tube changed from 100,000 ohms to 470,000 ohms.
4. Revision of parts price list; schematic diagram and parts and tube layouts.

Note: All schematic diagrams on the instruction sheets and chassis stickers supplied with radios bearing the chassis number 132.825-3 are incorrect. They show the secondary of the second IF transformer connected to the grid of the 12SQ7 tube, and both diodes of the tube connected to floating ground. The schematic diagram on this RL has been corrected.

132.825-4

Addition of Suffix Number - 4 to the Chassis Identification Number 132.825, covers the following changes from the 132.825-3 chassis.

1. Tone control changes from plate circuit to grid circuit of output tube.
2. Resistor R13, 500,000 ohms, part #N19967 was 20,000 ohms, N19530. Resistor R11, 470,000 ohms 1/4 watt deleted; condenser C13, .002 mfd. 600V was .1 mfd. 200V.
3. Revision of parts price list, and schematic diagram.

SEARS, ROEBUCK & CO.

MODEL 6050, CHASSIS
132.825, -1, -2, -3, -4

PARTS LIST

132.825 & 132.825-1

Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
R2		Resistor, 22,000 ohm, 1/4 watt			
R3		Resistor, 330,000 ohm, 1/4 watt	C13		Condenser, .005 mfd., 600 volt (132.825-1)
R4		Resistor, 2.2 megohms, 1/4 watt	C13		Condenser, .005 mfd., 300 volt (132.825)
R5	N19529	Resistor, 500,000 ohm, vol. cont. & sw.	C14		Condenser, .1 mfd., 200 volt
R6		Resistor, 1 megohm, 1/4 watt	T1	N19516	Cabinet back with Antenna Loop Assy.
R7		Resistor, 15 ohm, 1/4 watt	T2	N18598	Coil, R. F.
R8		Resistor, 6800 ohm, 1/4 watt (132.825)	T3	N18580	Coil, Oscillator
R9		Resistor, 1000 ohm, 1/4 watt (132.825)	T4	N18581	Transformer, 1st I. F.
R10		Resistor, 470 ohm, 1/4 watt (132.825-1)	T5	N18578	Transformer, 2nd I. F.
R11		Resistor, 100,000 ohm, 1/4 watt	T6	N18582	Transformer, Output
R12		Resistor, 470,000 ohm, 1/4 watt	T7	N18583	Choke, Iron Core "B"
R13		Resistor, 10,000 ohm, 1/4 watt (132.825)	Spk.	N18550	Speaker, 5 1/2 in. P.M.less Output Trans and Choke
R14	N19530	Resistor, 20,000, tone control	L	N20064	Line Cord with Plug
R15		Resistor, 5.8 megohm, 1/4 watt	C17	N19463	Lamp, Dial, Mazda 7WC7 117V
R16		Resistor, 47,000 ohm, 1/4 watt		N19469	Knob, walnut, volume
R17		Resistor, 33,000 ohm, 1/4 watt		N19466	Knob, walnut, tuning
C1,2,3	N18564	Condenser, variable		N19466	Knob, walnut, tone
C4		Condenser, .0001 mfd., 500 volt, mica		N19532	Scale, Dial
C5		Condenser, .05 mfd., 400 volt		N19226	Escutcheon, dial with crystal
C6		Condenser, .00025 mfd., 500 volt, mica		N19523	Pointer, Dial
C7		Condenser, .05 mfd., 200 volt		N19523-1	Instruction Sheet (132.825)
C8		Condenser, .01 mfd., 400 volt		N19395	Instruction Sheet (132.825-1)
C9		Condenser, .1 mfd., 400 volt		N19132	Tuning Shaft
C10,11	N19239	Condenser, Elect. 20-40 mfd., 150 volt		N19132	Cord, Dial Drive
C12		Condenser, .02 mfd., 400 volt		N19234	Socket, Antenna
				N19134	Socket, Dial Light with leads

132.825-2, 132.825-3, & 132.825-4

Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
R1		Resistor, 10,000 ohm, 1/4 watt	C15		Condenser, .00025 mfd., 500 volt Mica (132.825-2)
R2		Resistor, 330,000 ohm, 1/4 watt	C15		Condenser, .01 mfd., 400 volt (132.825-3 & -4)
R3		Resistor, 3,350 ohm, 1/4 watt	C15		Condenser, .005 mfd., 600 volt Mica
R4		Resistor, 22,000 ohm, 1/4 watt	C18A-18B	N19239	Condenser, .01 mfd., 400 volt (132.825-2)
R5-R8		Resistor, 5.8 megohm, 1/4 watt	C17	N19518	Condenser, Elect., 20-40 mfd., 150 volt
R6		Resistor, 2.2 megohm, 1/4 watt	L	N19516	Cabinet back with Antenna Loop Assy.
R7		Resistor, 47,000 ohm, 1/4 watt	L2	N19860	Coil, R. F.
R9	N19529	Resistor, 500,000 ohm volume cont. & sw.	L3	N18580	Coil, Oscillator
R10		Resistor, 470,000 ohm, 1/4 watt (132.825-3 & -4)	L4	N18583	Choke, Iron Core "B"
R10		Resistor, 100,000 ohm, 1/4 watt (132.825-2)	L1	N19209	Transformer, First I. F. (132.825-3 & -4)
R11		Resistor, 1 megohm, 1/4 watt (132.825-2)	L1	N18581	Transformer, First I. F. (132.825-2)
R11		Resistor, 470,000 ohm, 1/4 watt (132.825-3)	L2	N18578	Transformer, Second I. F.
R12		Resistor, 12,500 ohm, 1 watt (132.825-3 & -4)	L3	N18582	Transformer, Output
R12		Resistor, 15 ohm, 1/4 watt (132.825-2)	Spk.	N18550	Speaker, 5 1/2 in. P.M.less Output Trans and Choke
R13	N19530	Resistor, 20,000 ohm tone control (132.825-2 & -3) PKT.	L	N20064	Line Cord with Plug
R13	N19987	Resistor, 500,000 ohm tone control (132.825-4)	L		Dial Light, Mazda 7W, C7-117 volt
R14		Resistor, 150 ohm, 1/4 watt		N19463	Knob, Volume
R15		Resistor, 470,000 ohm, 1/4 watt (132.825-3 & -4)		N19466	Knob, Tone
C1,2,3	N18564	Condenser, Variable		N19469	Knob, Tuning
C4-C10		Condenser, .01 mfd., 400 volt		N19533	Scale, Dial
C5		Condenser, .1 mfd., 400 volt		N19512	Escutcheon, Dial with Crystal
C6		Condenser, .0001 mfd., 500 volt Mica		N19226	Pointer, Dial
C7-C9		Condenser, .05 mfd., 400 volt		N19395	Shaft, Tuning
C8-C11		Condenser, .00025 mfd., 500 volt Mica		N19132	Cord, Dial Drive
C12		Condenser, .02 mfd., 200 volt (132.825-2)		N19234	Socket, Antenna
C12		Condenser, .1 mfd., 400 volt (132.825-3 & -4)		N19134	Socket, Assy., Dial Light with Leads
C13		Condenser, .05 mfd., 200 volt (132.825-2)		N19295	Spring, Dial Cord
C13		Condenser, .1 mfd., 200 volt (132.825-3)		N19523-2	Instruction Sheet (132.825-2)
C13		Condenser, .002 mfd., 800 volt (132.825-4)		N19523-3	Instruction Sheet (132.825-3)
C14		Condenser, .1 mfd., 200 volt (132.825-2)		N19523-4	Instruction Sheet (132.825-4)

PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter connection..... Across Speaker Voice Coil
 Output meter reading to indicate 200 mw (Standard output)..... .8 Volts
 Dummy antenna value used in series with generator output..... See Chart Below
 Connection of generator output lead..... See Chart Below
 Connection of generator ground lead..... Floating Ground
 Generator modulation..... 30% 400 Cycles
 Position of volume control..... Fully clockwise
 Position of tone control..... Treble
 Position of dial pointer with variable fully closed..... Horizontal

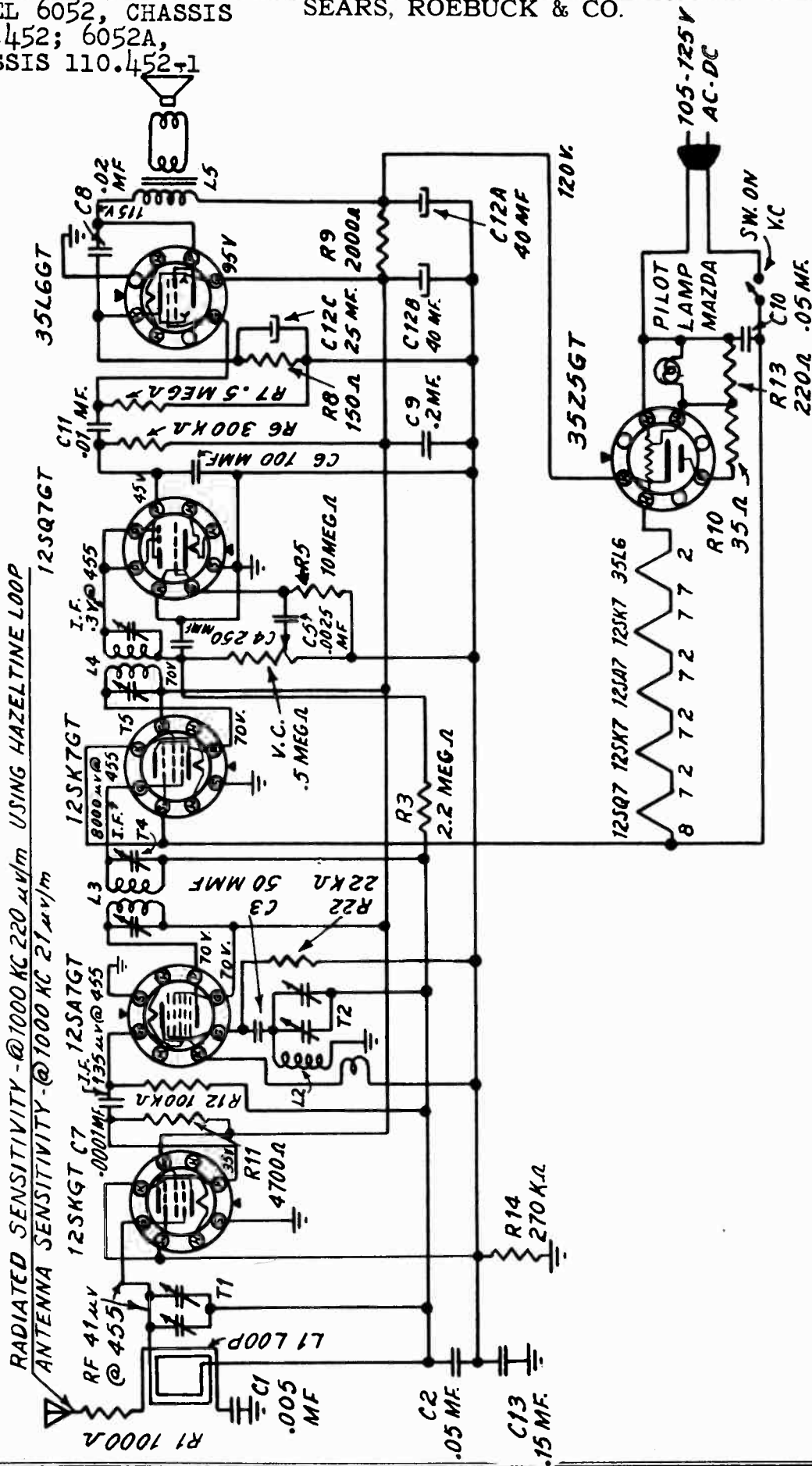
POSITION OF VARIABLE	FREQUENCY OF GENERATOR	DUMMY ANTENNA	GENERATOR OUTPUT CONNECTION	TRIMMERS ADJUSTED IN ORDER SHOWN FOR MAX. OUTPUT	FUNCTION OF TRIMMER
Open	455	.05 mfd.	12SA7 Grid (or Stator of C-2)	Top of 2nd & 1st IF Trans.	IF
1400	1400	.0002 mfd.	Antenna Clip (with black wire removed)	C-3; C-2; & C-1 Trimmers located on variable condenser	Oscillator Mixer RF

IMPORTANT ALIGNMENT NOTES:

1. Place set loop in the same position and at the same distance with respect to the back of the chassis as it would be when the set is mounted in the cabinet, during alignment of the RF stage.
2. If a standard test loop is used with the Signal Generator for alignment of the receiver, the black wire will be left in the antenna clip.
3. The alignment procedure should be repeated in the original order for greatest accuracy. Always keep the output from the signal generator at its lowest possible value to make the A.V.C. action of the receiver ineffective.

MODEL 6052, CHASSIS 110.452; 6052A, CHASSIS 110.452+1

SEARS, ROEBUCK & CO.



SEARS, ROEBUCK & CO.

MODEL 6052, CHASSIS
110.452; 6052A,
CHASSIS 110.452-1

ALIGNMENT PROCEDURE

PRELIMINARY

OUTPUT METER CONNECTION ACROSS LOUD SPEAKER VOICE COIL
 METER READING FOR 1/2 WATT OUTPUT 1.26 VOLTS
 CONNECTION OF GENERATOR GROUND FLOATING GROUND
 GENERATOR MODULATION APP. 30% 400 CYCLES
 POSITION OF VOLUME CONTROL FULLY CLOCKWISE
 POSITION OF DIAL POINTER WITH VARIABLE CONDENSER FULLY CLOSED LAST LINE ON LEFT HAND SIDE OF SCALE

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	DUMMY ANTENNA	TRIMMERS ADJUSTED	FUNCTION
1000 KC	455 KC	R. F. GRID OF 12SA7	.2 MFD	T3, T4, T5, T6	I.F.
1500 KC	1500 KC	STANDARD RADIATING LOOP	.0002 MFD	T2, T1	OSC. R. F.
600 KC	600 KC	STANDARD RADIATING LOOP	.00020 MFD	CHECK POINT	*

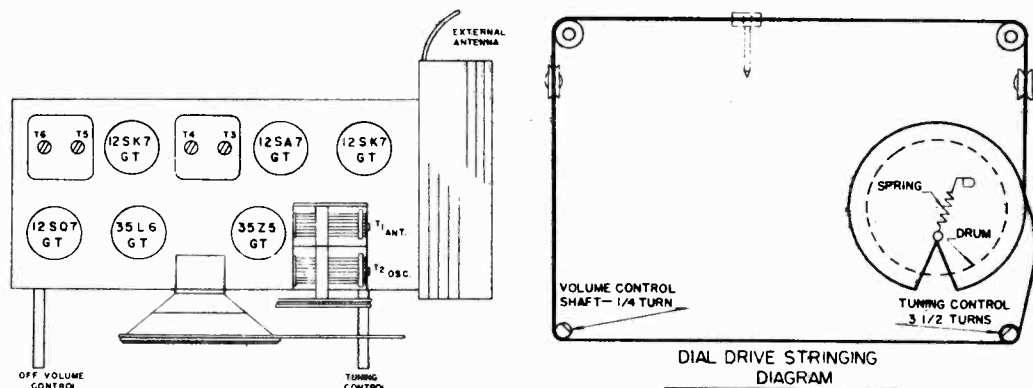
It is advisable to repeat the entire alignment procedure in the original order to insure greater accuracy.

Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly.

Approximately 90 microvolts per meter input using standard Hazeltine alignment loop 24" from set for 1/2 watt output.

*Check the sensitivity at 600 KC, if weak, adjust antenna section plates for maximum output at 600 KC. Tracking is accomplished by adjusting plates of rotor.

Approximate stage by stage sensitivities are: R. F. Grid - 455 KC - 95 UV
 R. F. Grid - 1000 KC - 150 UV, Antenna - 1500 KC - 40 UV, 600 KC - 60 UV



PARTS LIST

SCH. LOC.	PART NO.	DESCRIPTION	SCH. LOC.	PART NO.	DESCRIPTION
	A62163C	BACK COVER		A.4137	DIAL POINTER DRIVE SPRING
L1	A28147	COIL-LOOP		A40112	DIAL SCALE (GLASS)
L2	A28160	COIL-OSCILLATOR		A39125	KNOB, OFF-VOLUME
C1		CONDENSER, .005 MFD 400 VOLT		A39126	KNOB, TUNING
C2		CONDENSER, .05 MFD 200 VOLT		A59259	LEAFLET, INSTRUCTION
C3		CONDENSER, .00005 MFD MICA	R1		RESISTOR, 1000 OHMS 1/4 WATT
C4		CONDENSER, .00025 MFD MICA	R2		RESISTOR, 22,000 OHMS 1/4 WATT
C5		CONDENSER, .002 MFD 400 VOLT	R3		RESISTOR, 2.2 MEGOHMS 1/4 WATT
C6, C7		CONDENSER, .0001 MFD MICA	R5		RESISTOR, 10 MEGOHMS 1/4 WATT
C8		CONDENSER, .02 MFD 400 VOLT	R6		RESISTOR, 300,000 OHMS 1/4 WATT
C9		CONDENSER, .2 MFD 400 VOLT	R7		RESISTOR, 4700 OHMS 1/4 WATT
C10		CONDENSER, .05 MFD 400 VOLT	R8		RESISTOR, 150 OHMS 1/2 WATT
C11		CONDENSER, .01 MFD 400 VOLT	R9		RESISTOR, 2000 OHMS 2 WATT
C12	A2068D	CONDENSER, ELECTROLYTIC	R10		RESISTOR, 35 OHMS 1/4 WATT
C13		40-40 MFD X 150VOLT 25 MFD X 25 VOLT	R11		RESISTOR, 4700 OHMS 1/4 WATT
	A2463	CONDENSER, .15 MFD 400 VOLT CONTROL, VOLUME WITH SWITCH (S.P.S.T.); .5 MEGOHM	R12		RESISTOR, 100,000 OHMS 1/4 WATT
	A5559	CORD, LINE	R13		RESISTOR, 220 OHMS 1/2 WATT
	A4640	SHAFT ASSEMBLY, DIAL DRIVE	R14		RESISTOR, 270,000 OHMS 1/4 WATT
	A1851	DIAL LAMP SOCKET		A5871	SPEAKER, 5" P. M.
	A4137	DIAL POINTER	L5	A1330	TRANSFORMER, OUTPUT
	A4574	DIAL POINTER DRIVE CORD	L3	A3329	TRANSFORMER, I.F. INPUT
			L4	A3529	TRANSFORMER, I.F. OUTPUT
				A1652	VARIABLE CONDENSER

POWER SUPPLY -- 105-125 VOLTS AC-DC, 40 WATTS
 POWER OUTPUT --

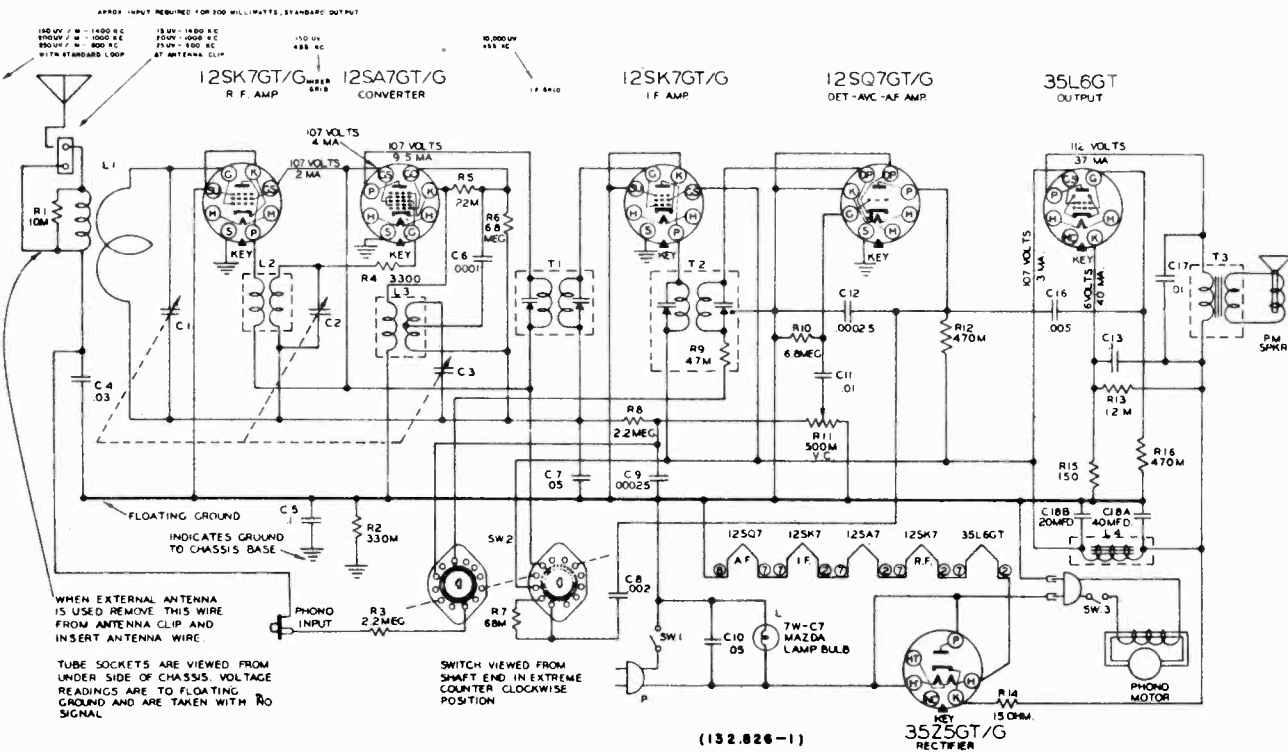
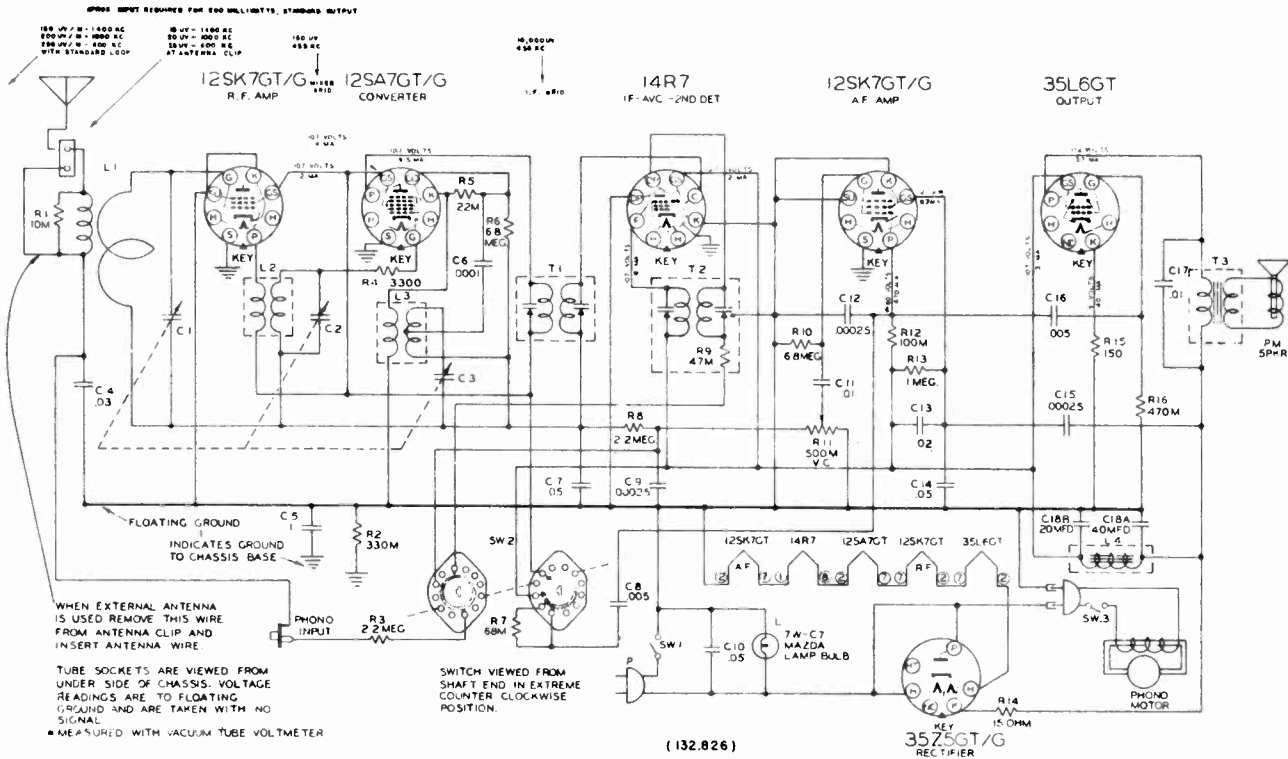
UNDISTORTED . 6 WATTS, MAXIMUM 1.7 WATTS

TUNING RANGE BROADCAST BAND 535-1740 KG

SPEAKER VOICE COIL IMPEDANCE 3.2 OHMS

MODEL 6071, CHASSIS
132.826, 132.826-1

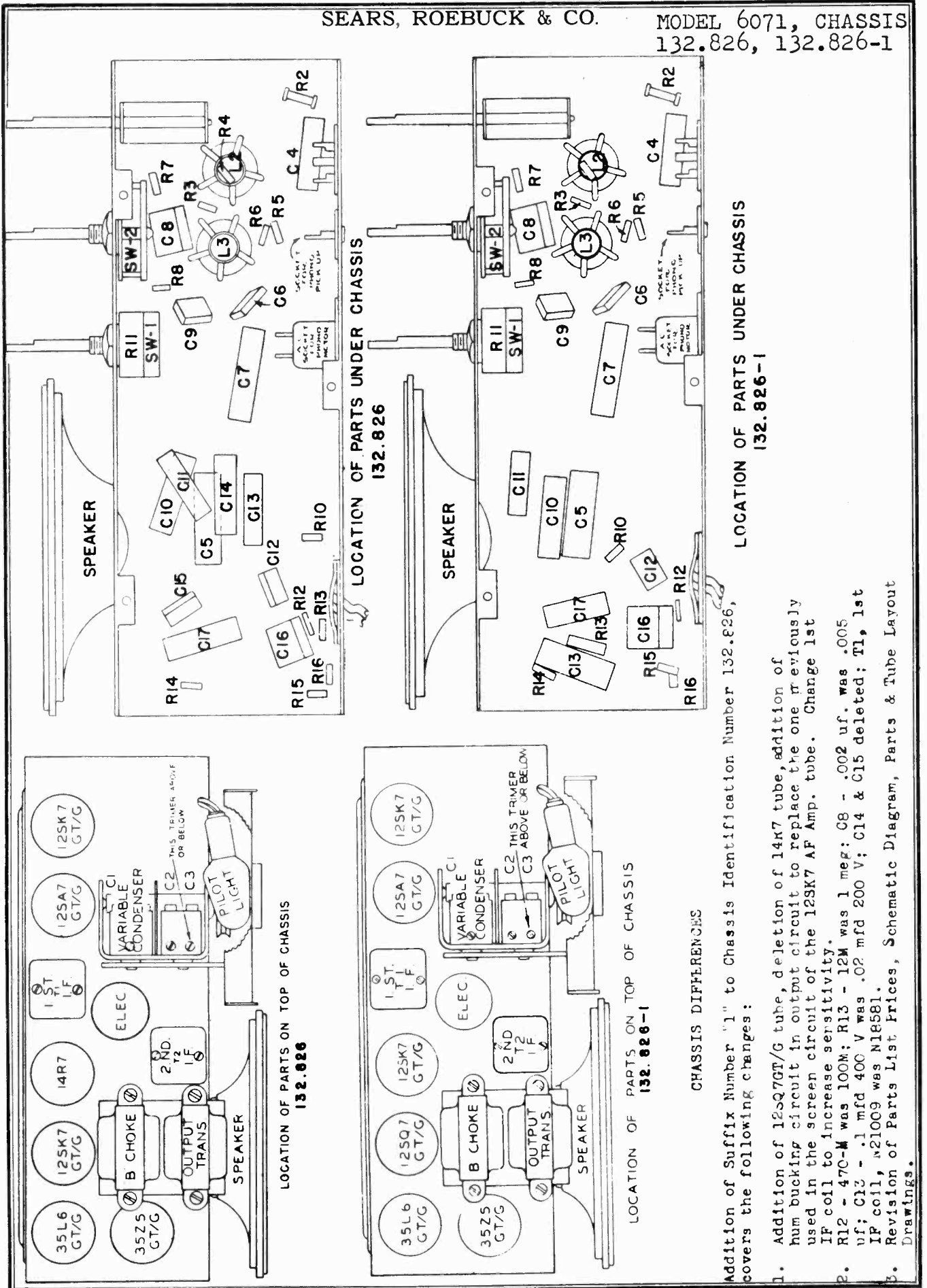
SEARS, ROEBUCK & CO.



SERVICE NOTE: The a-c hum can often be greatly reduced on this chassis by replacing C13 with a 0.03- μ f, 400-V capacitor. Sometimes the hum can be further reduced by replacing R13 with a 15,000-ohm, 1-watt resistor.

SEARS, ROEBUCK & CO.

MODEL 6071, CHASSIS
132.826, 132.826-1



LOCATION OF PARTS UNDER CHASSIS
132.826-1

CHASSIS DIFFERENCES

- Addition of Suffix Number "1" to Chassis Identification Number 132.826, covers the following changes:
1. Addition of 14K7GT/G tube, deletion of 14K7 tube, addition of hum bucking circuit in output circuit to replace the one previously used in the screen circuit of the 12SK7 AF Amp. tube. Change 1st IF coil to increase sensitivity.
 2. R12 - 470-M was 100M; R13 - 12M was 1 meg; C8 - .002 uf. was .005 uf; C12 - .1 mfd 400 V was .02 mfd 200 V; C14 & C15 deleted; T1, 1st IP coil, #21009 was N16581.
 3. Revision of Parts List Prices, Schematic Diagram, Parts & Tube Layout Drawings.

MODEL 6071, CHASSIS
132.826, 132.826-1

SEARS, ROEBUCK & CO.

SPECIFICATIONS

Power Supply -- 105-125 volts AC, 65 watts Tuning Range Broadcast Band 540-1600 Kc
Power Output Speaker
Undistorted .8 watts, maximum - 2.5 watts Voice Coil Impedance 3.2 Ohms

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connectionAcross Speaker Voice Coil
Output meter reading to indicate 200 mw (Standard Output)..... .8 Volts
Dummy antenna value used in series with generator output See Chart Below
Connection of generator output lead..... See Chart Below
Connection of generator ground lead..... Floating Ground
Generator modulation..... 30% 400 Cycles
Position of volume control..... Fully Clockwise
Position of tone control..... Treble
Position of dial pointer with variable fully closed..... Horizontal

POSITION OF VARIABLE	FREQUENCY OF GENERATOR	DUMMY ANTENNA	GENERATOR OUTPUT CONNECTION	TRIMMERS ADJUSTED IN ORDER SHOWN FOR MAX. OUTPUT	FUNCTION OF TRIMMER
Open	455	.05 mfd.	12SA7 Grid (or Stator of C-2)	Top of 2nd & 1st IF Trans.	IF
1400	1400	.0002 mfd.	Antenna Clip (with black wire removed)	C-3; C-2; & C-1 Trimmers located on Variable Condenser	Oscillator Mixer RF

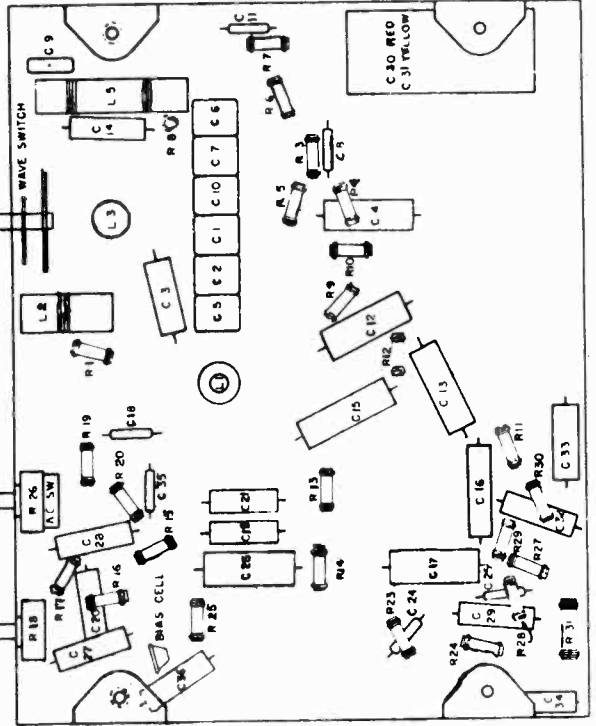
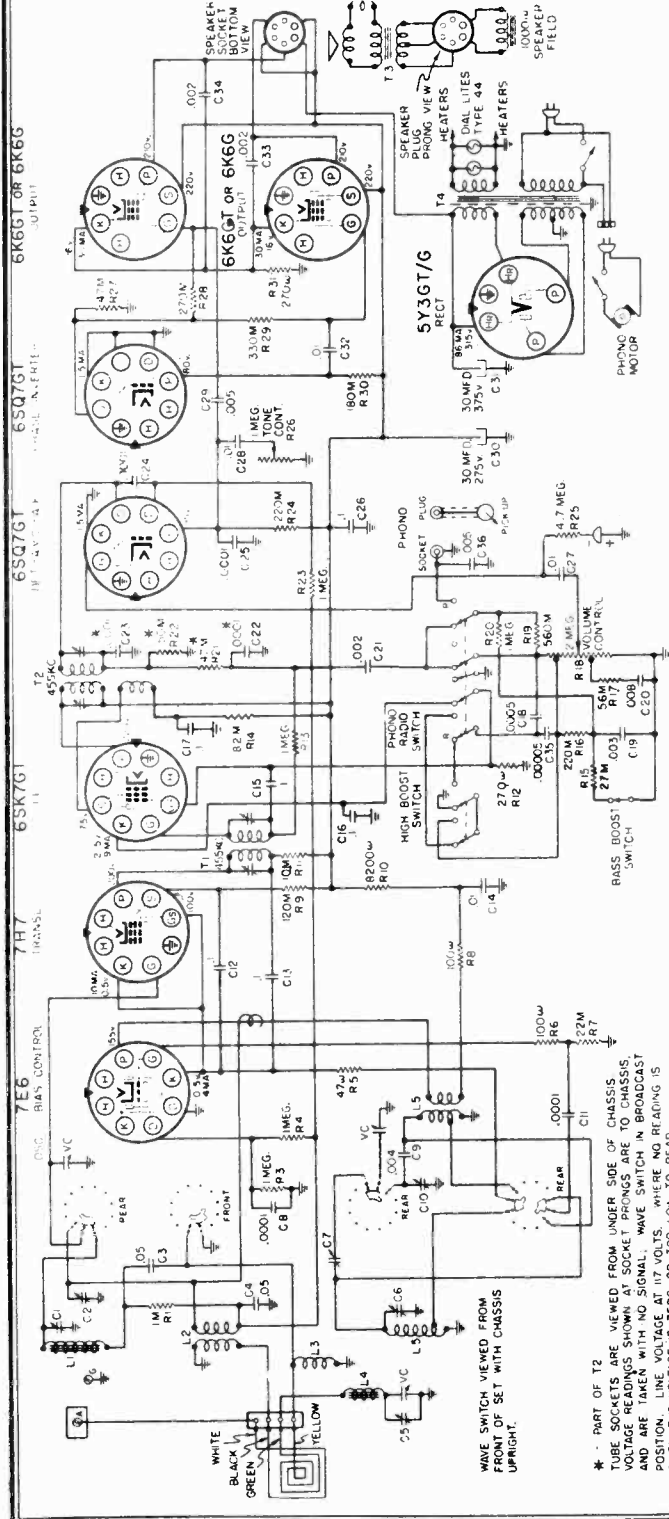
IMPORTANT ALIGNMENT NOTES:

1. Place set loop in the same position and at the same distance with respect to the back of the chassis as it would be when the set is mounted in the cabinet, during alignment of the RF stage.
2. If a standard test loop is used with the Signal Generator for alignment of the receiver, the black wire will be left in the antenna clip.
3. The alignment procedure should be repeated in the original order for greatest accuracy. Always keep the output from the signal generator at its lowest possible value to make the A. V. C. action of the receiver ineffective.

PARTS LIST

Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
R1		Resistor, 10,000 ohm, 1/2 watt	T1	N18581	Transformer, First I. F.
R2		Resistor, 330,000 ohm, 1/2 watt	T1	N21009	Transformer, First I. F.
R3-R8		Resistor, 2.2 megohm, 1/2 watt	T2	N18578	Transformer, Second, I. F.
R4		Resistor, 3300 ohm, 1/2 watt	T3	N18582	Transformer, Output
R5		Resistor, 22,000 ohm, 1/2 watt	Spkr.	N18550	Speaker, 5 1/2" P.M. less Output Trans & Choke
R6-R10		Resistor, 6.8 megohm, 1/2 watt	P	N20064	Line Cord with Plug
R7		Resistor, 68,000 ohm, 1/2 watt	L		Dial Light, Mazda 7 W, C7, 117 volt
R9		Resistor, 47,000 ohm, 1/2 watt	SW-2	N19546	Switch, Phono-Radio-Tone
R11.	N19529	Resistor, 500,000 ohm, Vol. Cont. & Sw.	SW-3	N19545	Switch, Phono-Motor
R12-R16		Resistor, 470,000 ohm, 1/2 watt		N19395	Shaft, Tuning
R13		Resistor, 1 megohm, 1/2 watt (132.826)		N19533	Scale, Dial
R13		Resistor, 12,000 ohm, 1 watt (132.826-1)		N19226	Pointer, Dial
R14		Resistor, 15 ohm, 1/2 watt		N19132	Cord, Dial Drive
R15		Resistor, 150 ohm, 1/2 watt		N19295	Spring, Dial Cord
C1-C2-C5	N18564	Condenser, Variable, 3 gang		N19234	Socket, Antenna
C4		Condenser, .03 mfd., 400 volt		N19134	Socket Assy., Dial Light with Leads
C5		Condenser, .1 mfd., 400 volt		N19551	Socket, AC, for Phono-Motor
C6		Condenser, .0001 mfd., 500 volt, Mica		N19552	Socket, for Phono Input
C7-C10		Condenser, .05 mfd., 400 volt		N19512	Escutcheon, Dial with Crystal
C8		Condenser, .008 mfd., 800 volt (132.826)		N19475	Motor, phono with 9" Turntable
C8		Condenser, .002 mfd., 800 volt (132.826-1)		N19908	Turntable only for Phono-Motor 9"
C9-C12		Condenser, .00025 mfd., 500 volt, mica		N19477	Pickup arm with cartridge
C11-C17		Condenser, .01 mfd., 400 volt		N19907	Pickup cartridge only, Shure No. P93B
C13		Condenser, .02 mfd., 200 volt (132.826)		N19589	Escutcheon, Phono-Motor Switch
C13		Condenser, .1 mfd., 400 volt (132.826-1)		N19555	Rest, Pickup-Arm
C14		Condenser, .05 mfd., 200 volt (132.826)		N19463	Knob, Volume
C15		Condenser, .00025 mfd., 500v. Mica (132.826)		N19469	Knob, Tuning
C16		Condenser, .005 mfd., 500 volt		N19470	Knob, Tone-phono-Radio
C18A-C18B	N19239	Condenser, Electrolytic, 40-20 mfd, 150vlt		N19554	Plug, Phono input
L1	N19558	Cabinet Back with Ant. Loop Assy.		N19556	Plug, AC, Phono-Motor
L2	N19860	Coil, R. F.		N19397	Instruction Sheet (132.826)
L3	N18580	Coil, Oscillator		N19397-1	Instruction Sheet (132.826-1)
L4	N18563	Choke, Iron Core "B"			

MODELS 6106, CHASSIS 101.662-2E; 6111, CHASSIS 101.662-3C



SCHEMATIC DIAGRAM 101.662-2E & 101.662-3C

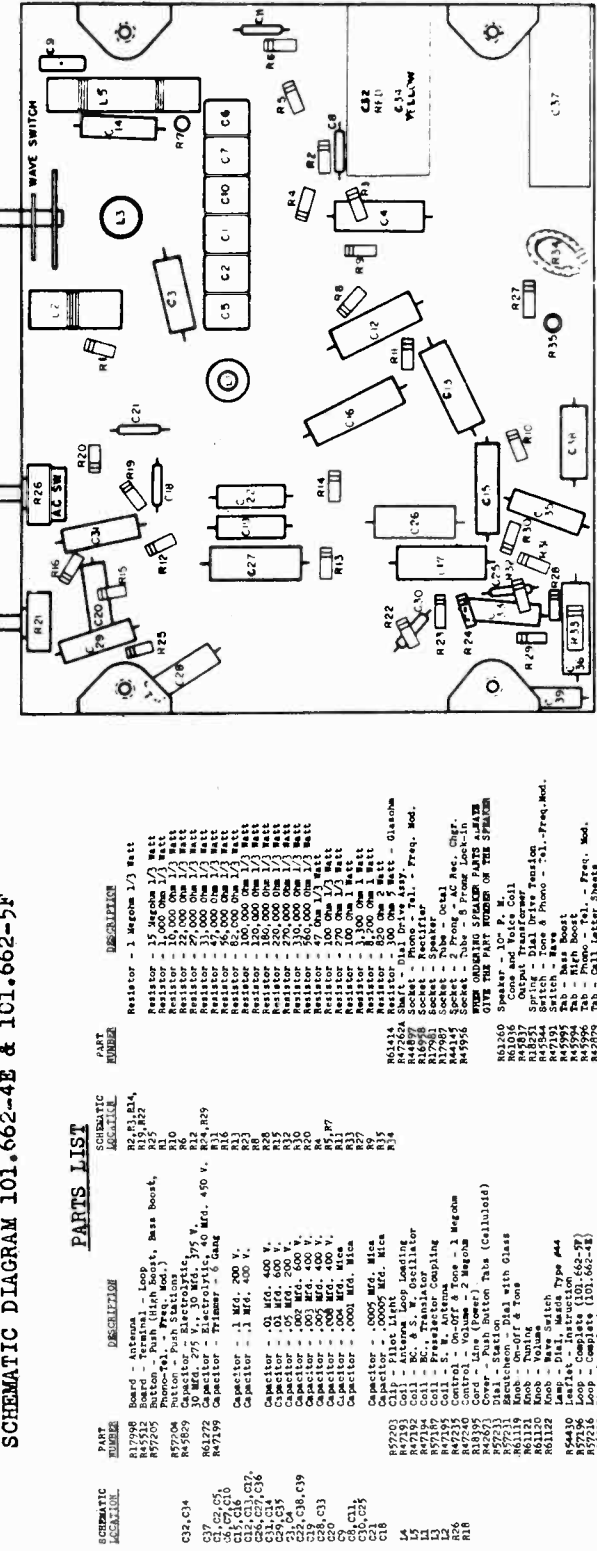
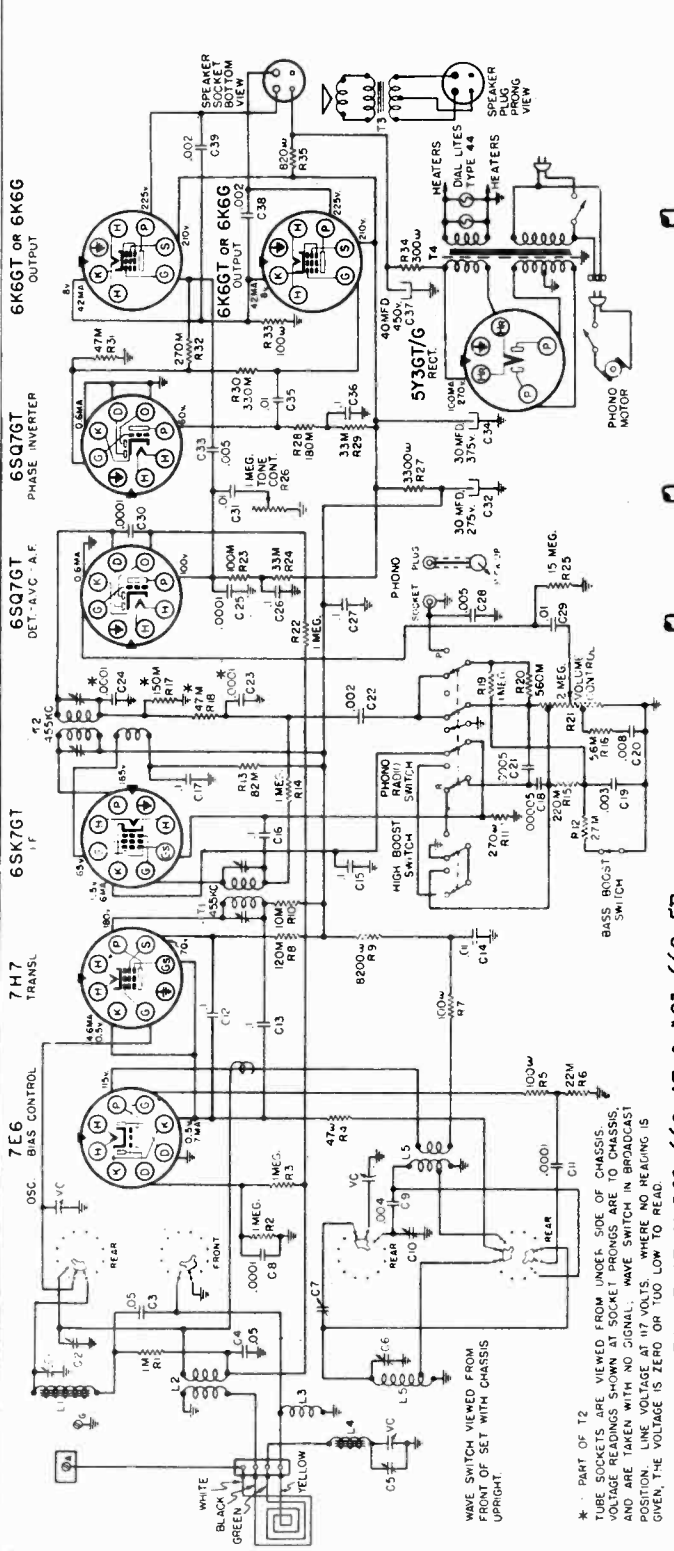
LOCATION OF PARTS UNDER CHASSIS

PARTS LIST

PART NUMBER	DESCRIPTION
R10112	Resistor - Bias Coil
R16039	Pin - Loop Lead
R17401	Pin - Loop
R17477	Pin - Loop, Large
R18416	Pin - Loop, Small
R18417	Pin - Loop, Small
R18418	Pin - Loop, Small
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R18595	Pin - Loop, Small
R18596	Pin - Loop, Small
R18597	Pin - Loop, Small
R18598	Pin - Loop, Small
R18599	Pin - Loop, Small
R18600	Pin - Loop, Small

©John F. Rider RECORD CHANGERS: For 101.662-2E, Model 101.206-1, RCD.CH. 18-6; For 101.662-3C, Model 101.204, RCD.CH.18-1

MODELS 6106A, CHASSIS 101.662-4E; 6111A, CHASSIS 101.662-5F SEARS, ROEBUCK & CO.



LOCATION OF PARTS UNDER CHASSIS

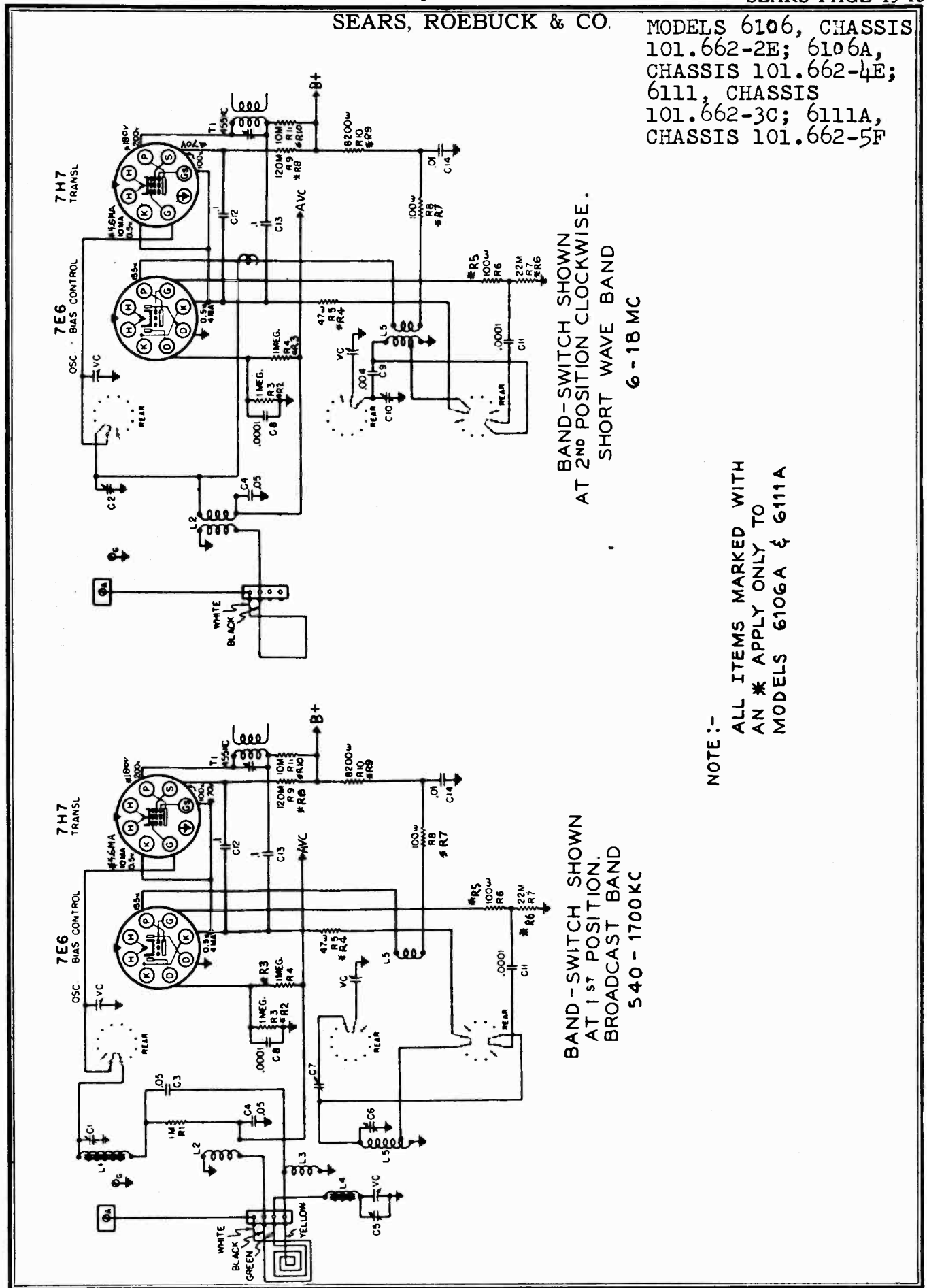
* - PART OF T2
 TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS, VOLTAGE READINGS SHOWN AT SOCKET LEGS ARE IN CHASSIS, AND ARE TAKEN WITH VOLTAGE AT 0 V OLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR 100 VOLTS TO READ.

PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
C17, C18	R1	Resistor - .002 Meg. mica	R21	Resistor - 500K Ohm 1/2 Watt
C19, C20	R2	Resistor - .01 Meg. mica	R22	Resistor - 500K Ohm 1/2 Watt
C21, C22	R3	Resistor - .05 Meg. mica	R23	Resistor - 100K Ohm 1/2 Watt
C23, C24	R4	Resistor - .1 Meg. mica	R24	Resistor - 100K Ohm 1/2 Watt
C25, C26	R5	Resistor - .5 Meg. mica	R25	Resistor - 100K Ohm 1/2 Watt
C27, C28	R6	Resistor - 1 Meg. mica	R26	Resistor - 100K Ohm 1/2 Watt
C29, C30	R7	Resistor - 1.5 Meg. mica	R27	Resistor - 100K Ohm 1/2 Watt
C31, C32	R8	Resistor - 2 Meg. mica	R28	Resistor - 100K Ohm 1/2 Watt
C33, C34	R9	Resistor - 2.5 Meg. mica	R29	Resistor - 100K Ohm 1/2 Watt
C35, C36	R10	Resistor - 3 Meg. mica	R30	Resistor - 100K Ohm 1/2 Watt
C37, C38	R11	Resistor - 3.5 Meg. mica	R31	Resistor - 100K Ohm 1/2 Watt
C39, C40	R12	Resistor - 4 Meg. mica	R32	Resistor - 100K Ohm 1/2 Watt
C41, C42	R13	Resistor - 4.5 Meg. mica	R33	Resistor - 100K Ohm 1/2 Watt
C43, C44	R14	Resistor - 5 Meg. mica	R34	Resistor - 100K Ohm 1/2 Watt
C45, C46	R15	Resistor - 5.5 Meg. mica	R35	Resistor - 100K Ohm 1/2 Watt
C47, C48	R16	Resistor - 6 Meg. mica	R36	Resistor - 100K Ohm 1/2 Watt
C49, C50	R17	Resistor - 6.5 Meg. mica	R37	Resistor - 100K Ohm 1/2 Watt
C51, C52	R18	Resistor - 7 Meg. mica	R38	Resistor - 100K Ohm 1/2 Watt
C53, C54	R19	Resistor - 7.5 Meg. mica	R39	Resistor - 100K Ohm 1/2 Watt
C55, C56	R20	Resistor - 8 Meg. mica	R40	Resistor - 100K Ohm 1/2 Watt
C57, C58	R21	Resistor - 8.5 Meg. mica	R41	Resistor - 100K Ohm 1/2 Watt
C59, C60	R22	Resistor - 9 Meg. mica	R42	Resistor - 100K Ohm 1/2 Watt
C61, C62	R23	Resistor - 9.5 Meg. mica	R43	Resistor - 100K Ohm 1/2 Watt
C63, C64	R24	Resistor - 10 Meg. mica	R44	Resistor - 100K Ohm 1/2 Watt
C65, C66	R25	Resistor - 10.5 Meg. mica	R45	Resistor - 100K Ohm 1/2 Watt
C67, C68	R26	Resistor - 11 Meg. mica	R46	Resistor - 100K Ohm 1/2 Watt
C69, C70	R27	Resistor - 11.5 Meg. mica	R47	Resistor - 100K Ohm 1/2 Watt
C71, C72	R28	Resistor - 12 Meg. mica	R48	Resistor - 100K Ohm 1/2 Watt
C73, C74	R29	Resistor - 12.5 Meg. mica	R49	Resistor - 100K Ohm 1/2 Watt
C75, C76	R30	Resistor - 13 Meg. mica	R50	Resistor - 100K Ohm 1/2 Watt
C77, C78	R31	Resistor - 13.5 Meg. mica	R51	Resistor - 100K Ohm 1/2 Watt
C79, C80	R32	Resistor - 14 Meg. mica	R52	Resistor - 100K Ohm 1/2 Watt
C81, C82	R33	Resistor - 14.5 Meg. mica	R53	Resistor - 100K Ohm 1/2 Watt
C83, C84	R34	Resistor - 15 Meg. mica	R54	Resistor - 100K Ohm 1/2 Watt
C85, C86	R35	Resistor - 15.5 Meg. mica	R55	Resistor - 100K Ohm 1/2 Watt
C87, C88	R36	Resistor - 16 Meg. mica	R56	Resistor - 100K Ohm 1/2 Watt
C89, C90	R37	Resistor - 16.5 Meg. mica	R57	Resistor - 100K Ohm 1/2 Watt
C91, C92	R38	Resistor - 17 Meg. mica	R58	Resistor - 100K Ohm 1/2 Watt
C93, C94	R39	Resistor - 17.5 Meg. mica	R59	Resistor - 100K Ohm 1/2 Watt
C95, C96	R40	Resistor - 18 Meg. mica	R60	Resistor - 100K Ohm 1/2 Watt
C97, C98	R41	Resistor - 18.5 Meg. mica	R61	Resistor - 100K Ohm 1/2 Watt
C99, C100	R42	Resistor - 19 Meg. mica	R62	Resistor - 100K Ohm 1/2 Watt
C101, C102	R43	Resistor - 19.5 Meg. mica	R63	Resistor - 100K Ohm 1/2 Watt
C103, C104	R44	Resistor - 20 Meg. mica	R64	Resistor - 100K Ohm 1/2 Watt
C105, C106	R45	Resistor - 20.5 Meg. mica	R65	Resistor - 100K Ohm 1/2 Watt
C107, C108	R46	Resistor - 21 Meg. mica	R66	Resistor - 100K Ohm 1/2 Watt
C109, C110	R47	Resistor - 21.5 Meg. mica	R67	Resistor - 100K Ohm 1/2 Watt
C111, C112	R48	Resistor - 22 Meg. mica	R68	Resistor - 100K Ohm 1/2 Watt
C113, C114	R49	Resistor - 22.5 Meg. mica	R69	Resistor - 100K Ohm 1/2 Watt
C115, C116	R50	Resistor - 23 Meg. mica	R70	Resistor - 100K Ohm 1/2 Watt
C117, C118	R51	Resistor - 23.5 Meg. mica	R71	Resistor - 100K Ohm 1/2 Watt
C119, C120	R52	Resistor - 24 Meg. mica	R72	Resistor - 100K Ohm 1/2 Watt
C121, C122	R53	Resistor - 24.5 Meg. mica	R73	Resistor - 100K Ohm 1/2 Watt
C123, C124	R54	Resistor - 25 Meg. mica	R74	Resistor - 100K Ohm 1/2 Watt
C125, C126	R55	Resistor - 25.5 Meg. mica	R75	Resistor - 100K Ohm 1/2 Watt
C127, C128	R56	Resistor - 26 Meg. mica	R76	Resistor - 100K Ohm 1/2 Watt
C129, C130	R57	Resistor - 26.5 Meg. mica	R77	Resistor - 100K Ohm 1/2 Watt
C131, C132	R58	Resistor - 27 Meg. mica	R78	Resistor - 100K Ohm 1/2 Watt
C133, C134	R59	Resistor - 27.5 Meg. mica	R79	Resistor - 100K Ohm 1/2 Watt
C135, C136	R60	Resistor - 28 Meg. mica	R80	Resistor - 100K Ohm 1/2 Watt
C137, C138	R61	Resistor - 28.5 Meg. mica	R81	Resistor - 100K Ohm 1/2 Watt
C139, C140	R62	Resistor - 29 Meg. mica	R82	Resistor - 100K Ohm 1/2 Watt
C141, C142	R63	Resistor - 29.5 Meg. mica	R83	Resistor - 100K Ohm 1/2 Watt
C143, C144	R64	Resistor - 30 Meg. mica	R84	Resistor - 100K Ohm 1/2 Watt
C145, C146	R65	Resistor - 30.5 Meg. mica	R85	Resistor - 100K Ohm 1/2 Watt
C147, C148	R66	Resistor - 31 Meg. mica	R86	Resistor - 100K Ohm 1/2 Watt
C149, C150	R67	Resistor - 31.5 Meg. mica	R87	Resistor - 100K Ohm 1/2 Watt
C151, C152	R68	Resistor - 32 Meg. mica	R88	Resistor - 100K Ohm 1/2 Watt
C153, C154	R69	Resistor - 32.5 Meg. mica	R89	Resistor - 100K Ohm 1/2 Watt
C155, C156	R70	Resistor - 33 Meg. mica	R90	Resistor - 100K Ohm 1/2 Watt
C157, C158	R71	Resistor - 33.5 Meg. mica	R91	Resistor - 100K Ohm 1/2 Watt
C159, C160	R72	Resistor - 34 Meg. mica	R92	Resistor - 100K Ohm 1/2 Watt
C161, C162	R73	Resistor - 34.5 Meg. mica	R93	Resistor - 100K Ohm 1/2 Watt
C163, C164	R74	Resistor - 35 Meg. mica	R94	Resistor - 100K Ohm 1/2 Watt
C165, C166	R75	Resistor - 35.5 Meg. mica	R95	Resistor - 100K Ohm 1/2 Watt
C167, C168	R76	Resistor - 36 Meg. mica	R96	Resistor - 100K Ohm 1/2 Watt
C169, C170	R77	Resistor - 36.5 Meg. mica	R97	Resistor - 100K Ohm 1/2 Watt
C171, C172	R78	Resistor - 37 Meg. mica	R98	Resistor - 100K Ohm 1/2 Watt
C173, C174	R79	Resistor - 37.5 Meg. mica	R99	Resistor - 100K Ohm 1/2 Watt
C175, C176	R80	Resistor - 38 Meg. mica	R100	Resistor - 100K Ohm 1/2 Watt
C177, C178	R81	Resistor - 38.5 Meg. mica	R101	Resistor - 100K Ohm 1/2 Watt
C179, C180	R82	Resistor - 39 Meg. mica	R102	Resistor - 100K Ohm 1/2 Watt
C181, C182	R83	Resistor - 39.5 Meg. mica	R103	Resistor - 100K Ohm 1/2 Watt
C183, C184	R84	Resistor - 40 Meg. mica	R104	Resistor - 100K Ohm 1/2 Watt
C185, C186	R85	Resistor - 40.5 Meg. mica	R105	Resistor - 100K Ohm 1/2 Watt
C187, C188	R86	Resistor - 41 Meg. mica	R106	Resistor - 100K Ohm 1/2 Watt
C189, C190	R87	Resistor - 41.5 Meg. mica	R107	Resistor - 100K Ohm 1/2 Watt
C191, C192	R88	Resistor - 42 Meg. mica	R108	Resistor - 100K Ohm 1/2 Watt
C193, C194	R89	Resistor - 42.5 Meg. mica	R109	Resistor - 100K Ohm 1/2 Watt
C195, C196	R90	Resistor - 43 Meg. mica	R110	Resistor - 100K Ohm 1/2 Watt
C197, C198	R91	Resistor - 43.5 Meg. mica	R111	Resistor - 100K Ohm 1/2 Watt
C199, C200	R92	Resistor - 44 Meg. mica	R112	Resistor - 100K Ohm 1/2 Watt
C201, C202	R93	Resistor - 44.5 Meg. mica	R113	Resistor - 100K Ohm 1/2 Watt
C203, C204	R94	Resistor - 45 Meg. mica	R114	Resistor - 100K Ohm 1/2 Watt
C205, C206	R95	Resistor - 45.5 Meg. mica	R115	Resistor - 100K Ohm 1/2 Watt
C207, C208	R96	Resistor - 46 Meg. mica	R116	Resistor - 100K Ohm 1/2 Watt
C209, C210	R97	Resistor - 46.5 Meg. mica	R117	Resistor - 100K Ohm 1/2 Watt
C211, C212	R98	Resistor - 47 Meg. mica	R118	Resistor - 100K Ohm 1/2 Watt
C213, C214	R99	Resistor - 47.5 Meg. mica	R119	Resistor - 100K Ohm 1/2 Watt
C215, C216	R100	Resistor - 48 Meg. mica	R120	Resistor - 100K Ohm 1/2 Watt

SEARS, ROEBUCK & CO.

MODELS 6106, CHASSIS
101.662-2E; 6106A,
CHASSIS 101.662-4E;
6111, CHASSIS
101.662-3C; 6111A,
CHASSIS 101.662-5F



BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE.
SHORT WAVE BAND
6 - 18 MC

BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
540 - 1700 KC

NOTE :-
ALL ITEMS MARKED WITH
AN * APPLY ONLY TO
MODELS 6106A & 6111A

MODELS 6106, CHASSIS
101.662-2E; 6106A,
CHASSIS 101.662-4E

SEARS, ROEBUCK & CO.

MODELS 6111, CHASSIS
101.662-3C; 6111A,
CHASSIS 101.662-5F

ALIGNMENT PROCEDURE

Preliminary:

Output Meter Connection.....Across Loud Speaker Voice Coil
Output Meter Reading to Indicate 50 Milliwatts (Standard Output).....1.2 Volts
Generator Ground Lead Connection.....Receiver Chassis
Dummy Antenna Value to be in Series with Generator Output.....See Chart Below
Connection of Generator Output Lead.....See Chart Below
Generator Modulation.....30%, 400 Cycles
Position of Volume Control.....Fully on
Position of Tone Control.....Treble
Position of Pointer with Tuner Fully Closed.....Last Line Below 540 Calibration Mark

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

IMPORTANT ALIGNMENT NOTES

The Alignment must be done in the order given.

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

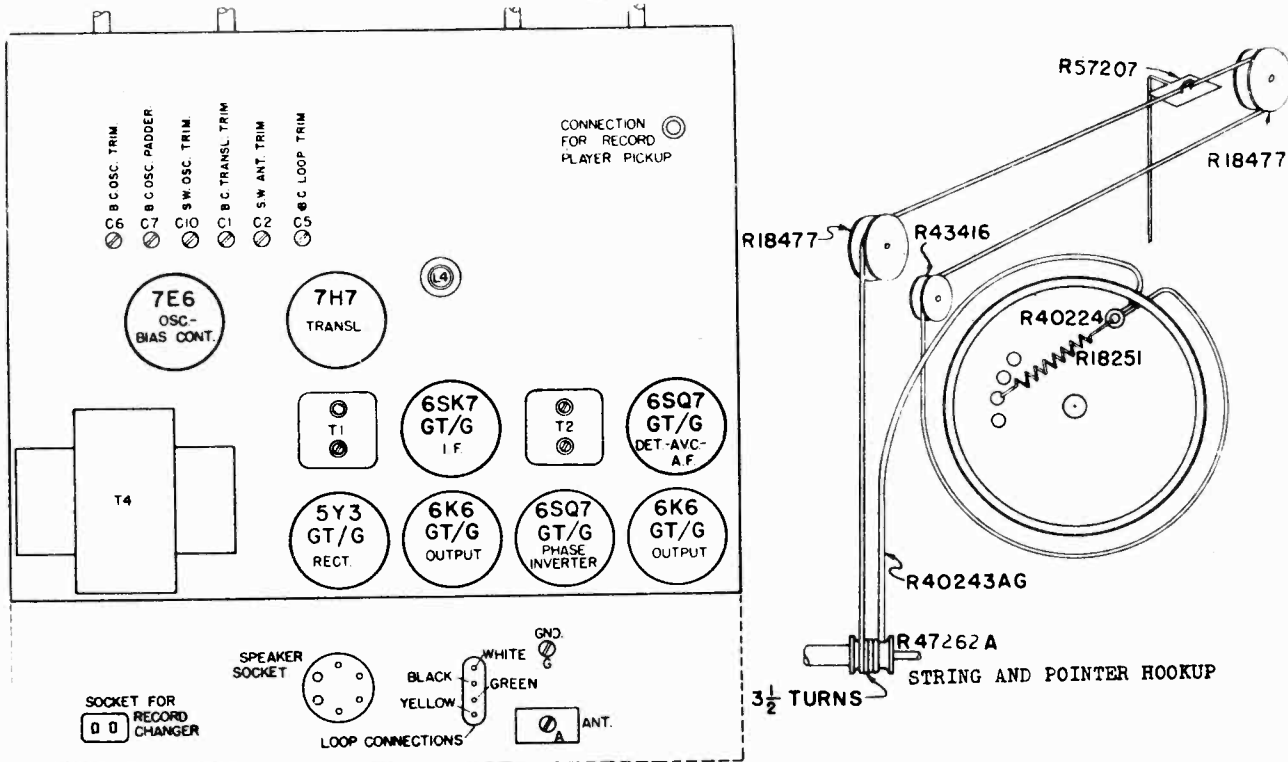
Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

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

Power Output Undistorted 3.6 Watts Maximum 6.5 Watts

Power Supply: SPECIFICATIONS
All models available.....117 Volts 60 Cycles AC 100 Watts

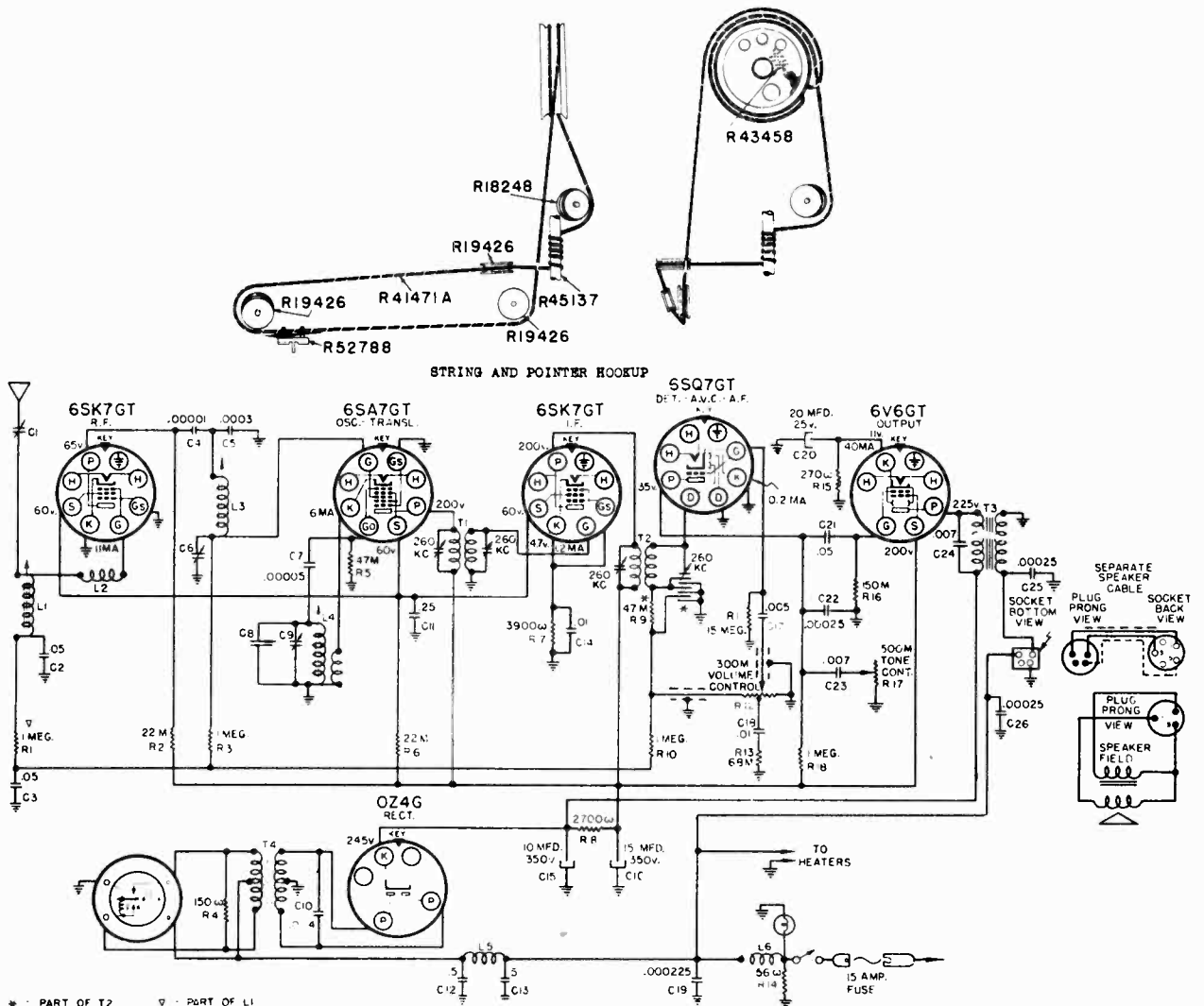
Frequency Range:
Broadcast.....540-1700 KC
Short Wave.....6-18 MC



LOCATION OF PARTS ON TOP OF CHASSIS

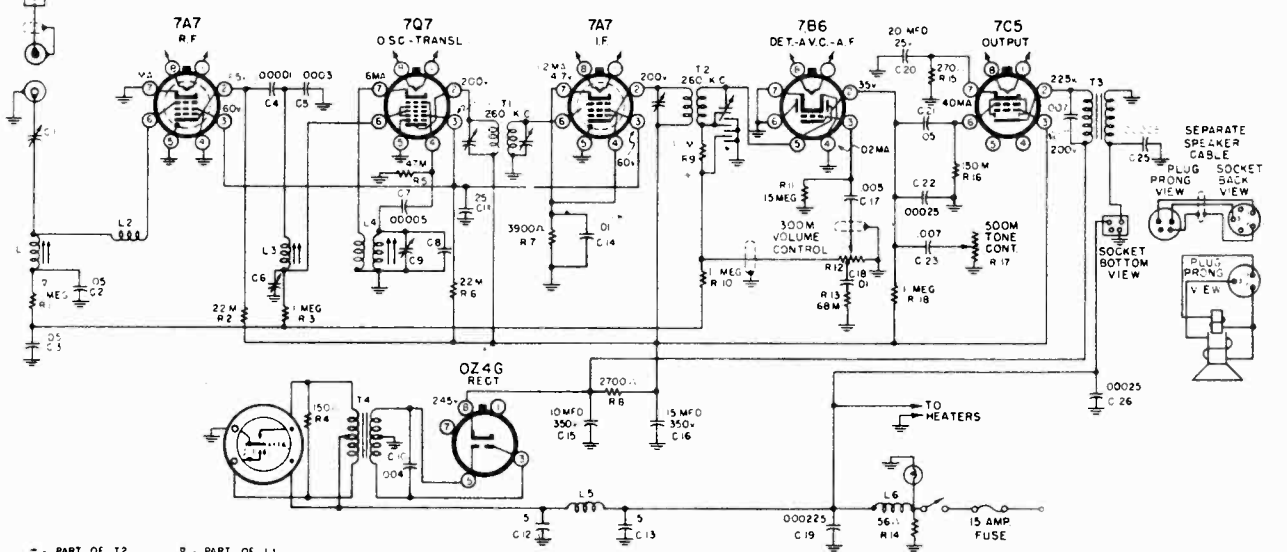
SEARS, ROEBUCK & CO.

MODEL 6285, CHASSIS
101.666A, 101.666-1B



SCHMATIC DIAGRAM 101.666A

* PART OF T2 ▽ PART OF L1
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.
A BATTERY - 6 VOLTS CURRENT DRAIN - 6.5 AMPERES



SCHMATIC DIAGRAM 101.666-1B

* PART OF T2 ▽ PART OF L1
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.
A BATTERY - 6 VOLTS CURRENT DRAIN - 6.5 AMPERES

©John F. Rider

MODEL 6285, CHASSIS
101.666A, 101.666-1B

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output Meter Connection.....Across Loud Speaker Voice Coil
Output Meter Reading to Indicate Standard Output of 1.0 Watt.....1.78 Volt
Connection of Signal Generator Ground Lead.....Receiver Chassis
Connection of Signal Generator Output Lead.....See Chart Below
Dummy Antenna Value to be in Series with Generator Output.....See Chart Below
Position of Volume Control.....Fully On
Position of Tone Control.....Treble

<u>POSITION OF TUNER</u>	<u>GENERATOR FREQUENCY</u>	<u>DUMMY ANTENNA</u>	<u>GENERATOR CONNECTION</u>	<u>TRIMMER ADJUSTMENTS IN ORDER SHOWN</u>	<u>TRIMMER FUNCTION</u>
Closed	260 KC	0.1 Mfd.	Translator Grid	T2, T1	I.F.
Fully Open	1610 KC	.00005 Mfd.	Ant. Connection	C9, C6, C1	Osc., RF., Ant.
1410 KC	1410 KC	.00005 Mfd.	Ant. Connection	L4, L3, L1	Osc., RF., Ant.

IMPORTANT ALIGNMENT NOTES

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

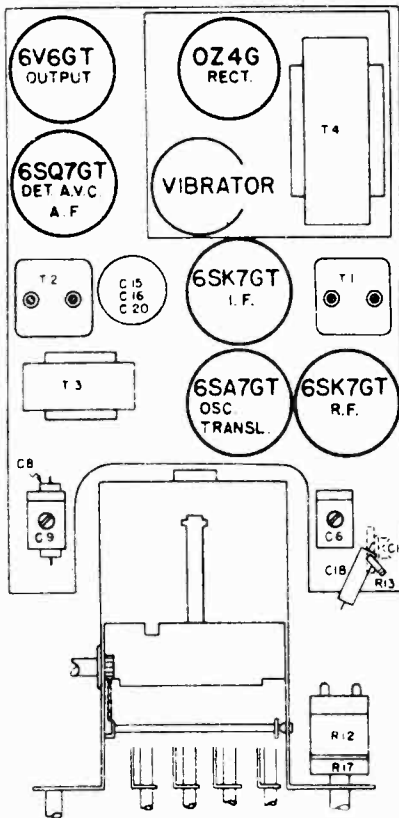
The Alignment Procedure should be repeated in the original order, step by step to insure greater accuracy.

SPECIFICATIONS

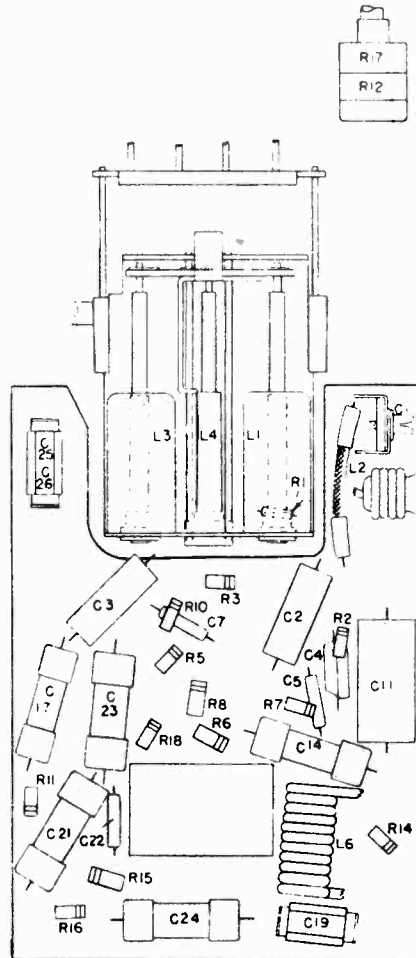
Power Supply:
All models available.....6 Volt DC; 6.5 Amperes

Frequency Range:
Standard Broadcast.....540-1600 KC

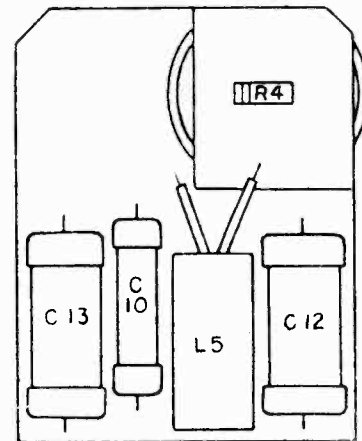
Power Output:
Undistorted.....3.5 Watts
Maximum.....5 Watts



LOCATION OF PARTS
BOTTOM COVER REMOVED
101.666A



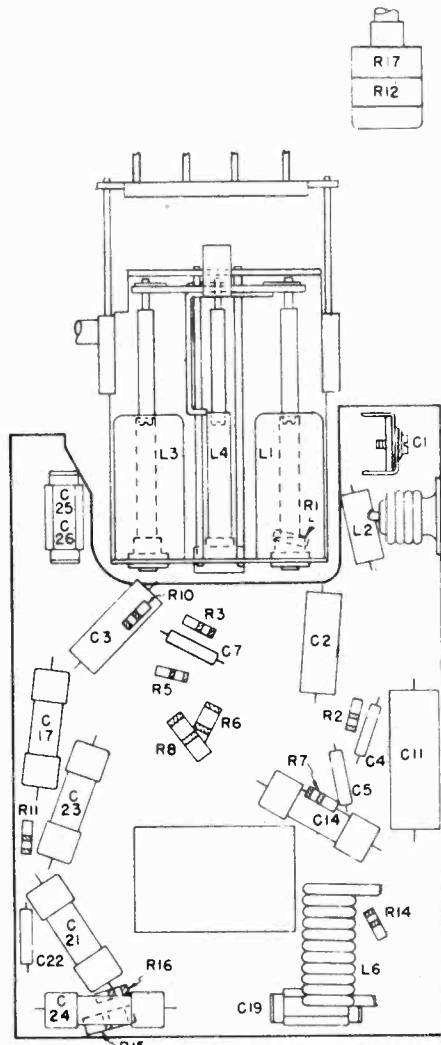
LOCATION OF PARTS UNDER CHASSIS 101.666A



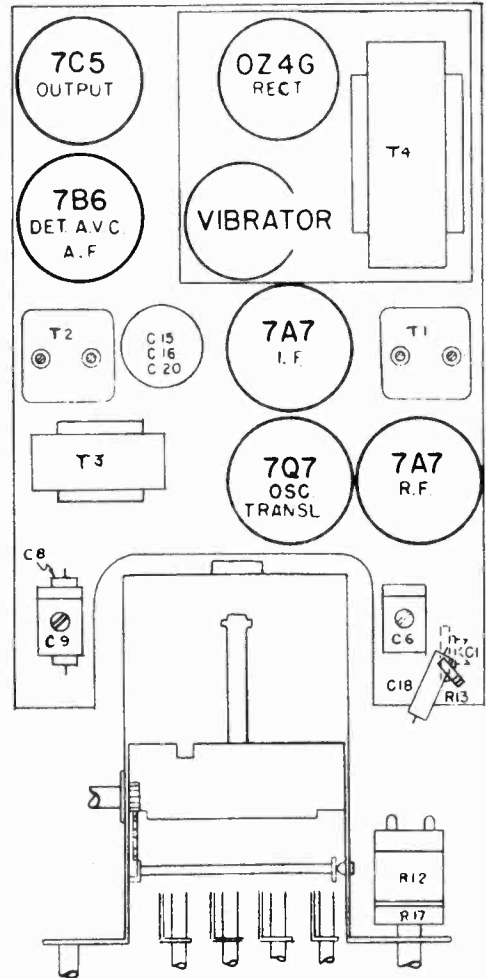
LOCATION OF PARTS
UNDER POWER SUPPLY
101.666A-1B

SEARS, ROEBUCK & CO.

MODEL 6285, CHASSIS
101.666A, 101.666-1B



LOCATION OF PARTS UNDER CHASSIS 101.666-1B

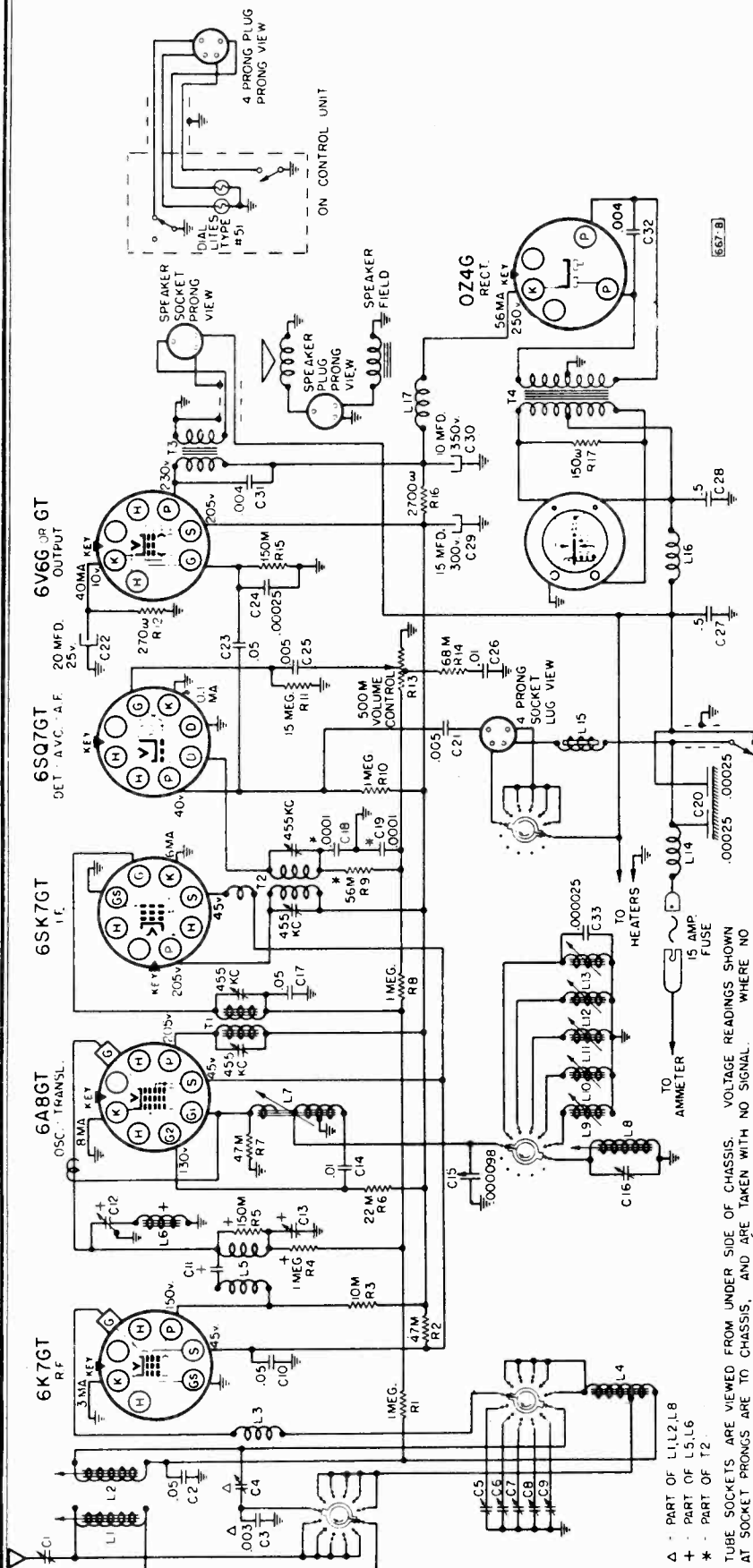


LOCATION OF PARTS
BOTTOM COVER REMOVED
101.666-1B

PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R43642	Bolt - 3/8-24 x 3/4" Rec. Front Mtg. Brkt.		R19455	Knob - Dummy
	R41483	Bolt - 5/16-24 x 2" Rec. Rear Mtg. Brkt.		R52793	Knob - Tuning (101.666A-1B)
	R45255	Bolt - Carriage - 10-24 x 3/4" Speaker Mtg. Brkt.			Lamp - Dial - Mazda Type #44
	R45817	Bracket - Speaker Mtg. - Lower		R5276AA	Lamp - "A" Connector Assembly
	R45228	Bracket - Speaker Mtg. - Upper		R52098	Leaflet - Instruction (101.666A)
	R52800	Bracket - Rec. Mtg. - Front L.R. (101.666A-1B)		R54487	Leaflet - Instruction (101.666-1B)
	R52801	Bracket - Rec. Mtg. - Front R.B. (101.666A-1B)		R45282	Nut - Ring 10-24
	R43870A	Bracket Assembly - Rear Mtg.		R43969	Nut - Ring 6-32
	R16149	Capacitor - Ammeter		R52788	Pointer - Dial (101.666A-1B)
	R16150	Capacitor - Generator		R19426	Pulley - Knob
C15, C16, C20	R45187	Capacitor - Electrolytic - 10 Mfd. 350 V., 15 Mfd. 350 V., 20 Mfd. 25 V.		R43423	Pulley - Spool
	R43793	Capacitor - Trimmer - Antenna		R52785	Push Button (101.666A-1B)
C1	R43694	Capacitor - Trimmer (101.666A-1B)	R14	Resistor - 56 Ohm - 1/3 Watt	
	R45518	Capacitor - Trimmer - Oscillator	R4	Resistor - 150 Ohm - 1 Watt	
C12, C13		Capacitor - .5 Mfd. 100 V.	R6	Resistor - 270 Ohm - 1 Watt	
C11		Capacitor - .25 Mfd. 200 V.	R8	Resistor - 2,700 Ohm - 1 Watt	
C2, C3, C21		Capacitor - .05 Mfd. 200 V.	R7	Resistor - 3,900 Ohm - 1/3 Watt	
C14		Capacitor - .01 Mfd. 400 V.	R8	Resistor - 25,000 Ohm - 1 Watt	
C18		Capacitor - .01 Mfd. 100 V.	R2	Resistor - 22,000 Ohm - 1/3 Watt	
C23, C24		Capacitor - .007 Mfd. 600 V.	R5	Resistor - 47,000 Ohm - 1/3 Watt	
C17		Capacitor - .005 Mfd. 200 V.	R13	Resistor - 68,000 Ohm - 1/3 Watt	
C10		Capacitor - .004 Mfd. 1500 V.	R16	Resistor - 150,000 Ohm - 1/3 Watt	
C5		Capacitor - .0003 Mfd. Mica	R1, R3, R10, R18	Resistor - 1 Megohm - 1/3 Watt	
C22		Capacitor - .00025 Mfd. Mica	R11	Resistor - 15 Megohm - 1/3 Watt	
C19		Capacitor - .000225 Mfd. Mica		R41407	Ring - Rubber - Power Supply Case
C8	R45851	Capacitor - .000165 Mfd. Temp. Compensating		R11613	Ring - Rubber - Vibrator
C25, C26		Capacitor - .00025 Mfd. Dual - Mica		R45136	Shaft - Front Drive
C4		Capacitor - .00005 Mfd. Mica		R45137A	Shaft - Rear Drive
C7		Capacitor - .00001 Mfd. Mica		R43701	Socket - Rectifier
	R52802	Case - Speaker (101.666A-1B)		R17627	Socket - Speaker
	R9741	Clip - Ammeter		R41942	Socket - Tube - 8 Prong Octal (101.666A)
	R45271	Clip - Dial Lamp Socket		R42177	Socket - Tube - 8 Prong Lock-in (101.666-1B)
L2	R46820	Coil - Antenna Choke (101.666A-1B)		R41111	Socket - Vibrator
L6	R9044E	Coil - Beam Choke (101.666A-1B)		R61206	Speaker - 7" P.H. (101.666A-1B)
L1, L3, L4	R52202B	Coil - Spark Choke (101.666A-1B)		R43458	Spring - Dial Cord
L1, L3, L4	R43217	Coils - Para. Unit - Less Tuner (101.666A-1B)		R42274	Suppressor - Distributor
L1, L3, L4	R52790	Coils & Tuner Assembly (101.666A)		R45168	Transformer - 1.5#. #1
L1, L3, L4	R61575	Coils & Tuner Assembly (101.666-1B)		R45169	Transformer - 1.5#. #2
R12, R17	R45139	Control - On-Off - Volume & Tone	T1	R45162	Transformer - Power
	R41471	Cord - Dial Drive - 40"	T2	R45166	Transformer - Output (101.666A)
	R52792	Dial - Station (101.666A-1B)	T3	R45166	Transformer - Output (101.666-1B)
	R52827	Escutcheon - (101.666A-1B)		R62301	Transformer - Output (101.666A-1B)
		Fuse - (Type 3 A0 - 15 Amp - 25 V.)		R52874	Tube - Station Call Letter (101.666A-1B)
	R19415	Knob - Tone		R52787	Tuner - Push Button - Less Coils (101.666A)
				R61574	Tuner - Push Button - Less Coils (101.666-1B)
				R5160	Vibrator

MODEL 6290,
CHASSIS 101.667B



SCHMATIC DIAGRAM FOR 101.667B

PARTS LIST

SUBSCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R45284	Bolt - Carriage - 10-24 x 1/4"
	R45285	Bracket - Upper Speaker Mtg.
	R45817	Bracket - Lower Speaker Mtg.
	R42506	Cable - Flex. Dr. - Volume Control
	R42373	Cable - Flex. Er. - Volume Control - Extra Length - 33"
	R42397	Cable - Flex. Er. - Volume Control - Extra Length - 32"
	R45020	Cable - Flex. Dr. - Tuning Control - Extra Length - 32"
	R18150	Clip - Grid
	R9741	Clip - Ammeter
	R45112	Coil - Antenna Choke
	R45266	Coil - Untuned R.F.
	R47294	Coil - Oscillator
	R45097	Coils - Perm. & Capacitor Assembly
	R45017	Coil - Ant. - Osc., Manual Tuning
	R90449	Coil - Hash Choke
	R16149	Capacitor - Ammeter
	R16150	Capacitor - Generator
	R45243	Capacitor - Electrolytic - 20 Mfd., 25 V., 15 Mfd., 300 V., 10 Mfd., 500 V.
	R45226	Capacitor - Trimmer
	R45282	Capacitor - .5 Mfd., 100 V.
	R45283	Capacitor - .05 Mfd., 200 V.
	R45284	Capacitor - .01 Mfd., 100 V.
	R45285	Capacitor - .005 Mfd., 400 V.
	R45286	Capacitor - .004 Mfd., 600 V.
	R45287	Capacitor - .002 Mfd., 1000 V.
	R47285	Capacitor - .00025 Mfd. - Temp. Compensator
	R42244	Control - On-Off & Volume
	R42490	Control - Push Button Unit
	R45492	Control - Tone
	R42493	Control - Station Selector
	R42847	Drum - Call Letter
	R42848	Drum - Call Letter Drum
	R42981	Socket - Lamp
	R42982	Socket - Lamp
	R45221	Control - Manual Tuning
	R42079	Control - Instruction (#1th All Contents)
	R42816	Envelope - Instruction
	R45282	Fuse - 15 Amp., 25 Volt
	R18636	Insulator - Fuse
	R45404	Leaflet - Instruction
	R45226	Screen - Speaker
	R42529	Socket - Control Plug
	R45018	Socket - Vibrator
	R45016	Socket - Vibrator - 25 Dynamic
	R61409	Sparker - 75 P.M.
	R11157	Stud - Ground Mounting
	R43954	Stud - Speaker Mounting
	R42274	Suppressor - Distributor
	R45018	Transformer - I.F. #1
	R45019	Transformer - I.F. #2
	R45079	Transformer - Output
	R45140	Vibrator
	R45226	Rectifier
	R45229	Socket - Control Plug
	R19321	Socket - Vibrator
	R45016	Sparker - 75 P.M.
	R61409	Sparker - 75 P.M.
	R11157	Stud - Ground Mounting
	R43954	Stud - Speaker Mounting
	R42274	Suppressor - Distributor
	R45018	Transformer - I.F. #1
	R45019	Transformer - I.F. #2
	R45079	Transformer - Output
	R45140	Vibrator

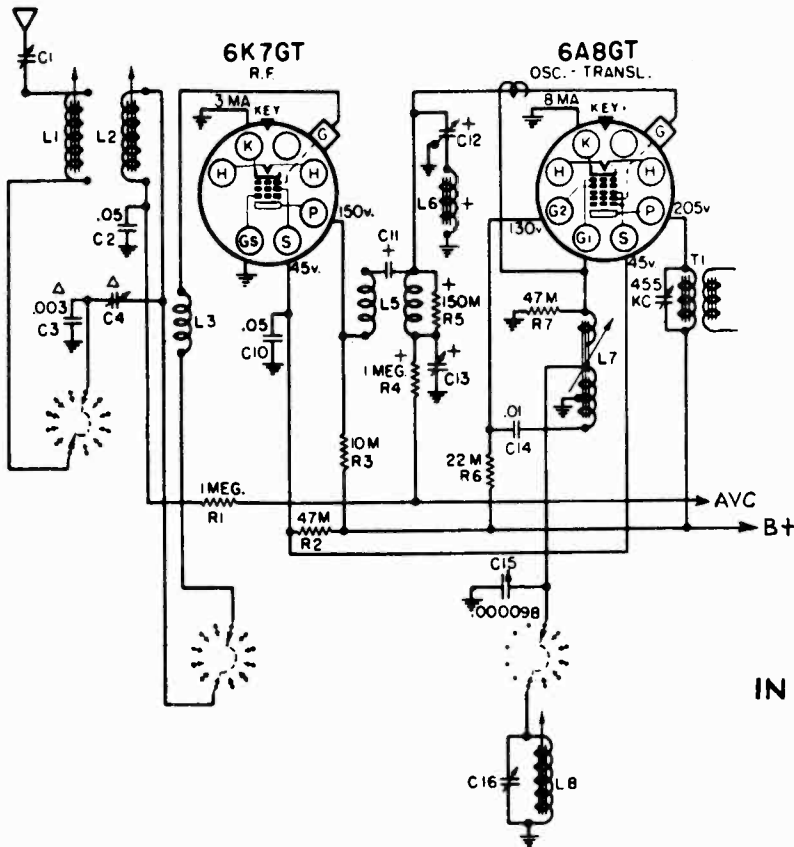
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Registered Trademark

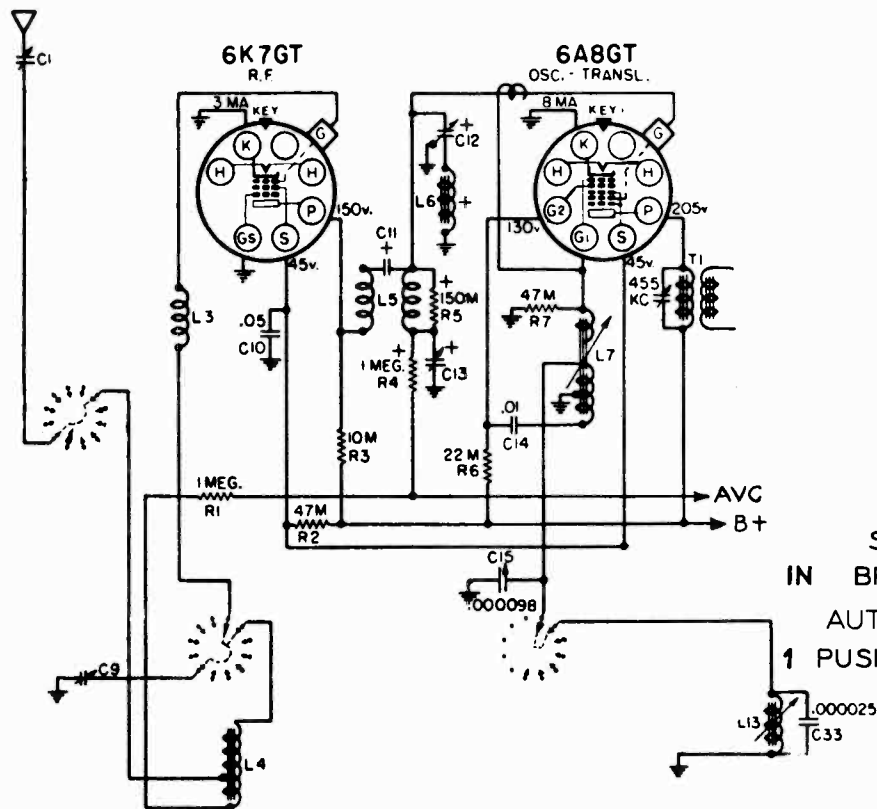
SEARS PAGE 19-19

SEARS, ROEBUCK & CO.

MODEL 6290,
CHASSIS 101.667B



SWITCH SHOWN
IN BROADCAST POSITION.
MANUAL TUNING



SWITCH SHOWN
IN BROADCAST POSITION
AUTOMATIC TUNING
1 PUSH BUTTON DEPRESSED

MODEL 6290,
CHASSIS 101.667B

SEARS, ROEBUCK & CO.

GENERAL INFORMATION AND SERVICE HINTS

MATCHING THE ANTENNA:

Before proceeding with this adjustment the receiver should be left on for about 15 minutes to warm up.

An adjusting screw, accessible to a screw driver through a hole in the bottom cover of the case, is provided to match the receiver to the car antenna. With the receiver adjusted for "DIAL" tuning, use the Station Selector knob to tune in a very weak station at about 1400 kilocycles, with the volume control fully on. Then turn the adjusting screw to the point affecting maximum volume.

THE PUSH BUTTON TUNING MECHANISM:

Preselection of push button tuned stations is accomplished by settings of the iron cores in the oscillator coils and settings of the trimmer condensers across the antenna coil. The proper coils are selected by a switch which is rotated one step at a time by means of a solenoid, controlled by the tuning push button. Pushing the button also mechanically rotates the station call letter drum.

Each button can be set only to a station within a certain frequency range as follows:

<u>STATION</u>	<u>FREQUENCY RANGE</u>
#1	535 to 920 Kc
#2	630 to 1070 Kc
#3	690 to 1170 Kc
#4	850 to 1450 Kc
#5	950 to 1610 Kc

To set up the mechanism, insert the call letter tabs in their proper frequency order in the call letter drum. The drum is accessible by removing the snap-in button at the top of the push button unit before mounting the unit. One of the positions is for manual tuning. When this position is reached, the manual tuning dial will become illuminated and the receiver can be tuned manually.

Stations are set up by removing the front grille of the receiver, exposing the station tuning screws. The adjusting screws are labeled. The Osc. screw must be adjusted first; then the ANT. screw. Then repeat the two adjustments.

TO SYNCHRONIZE THE MECHANISM, PUSH THE TUNING BUTTON UNTIL THE MANUAL TUNING DIAL BECOMES ILLUMINATED. REMOVE THE PUSH BUTTON CABLE FROM ITS SOCKET IN THE SIDE OF THE RECEIVER CASE AND THEN PUSH THE BUTTON UNTIL THE "DIAL" TAB COMES INTO VIEW. THEN REINSERT THE CABLE PLUG.

Under certain conditions the mechanism may fall out of synchronism if the button is not pushed all the way in and completely released when operating it. The user should be instructed accordingly.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output Meter Connection.....Across Loud Speaker Voice Coil
 Output Meter Reading to Indicate Standard Output of 1.0 Watt.....1.78 Volt
 Connection of Signal Generator Ground Lead.....Receiver Chassis
 Connection of Signal Generator Output Lead.....See Chart Below
 Dummy Antenna Value to be in Series with Generator Output.....See Chart Below
 Position of Volume Control.....Fully On
 Position of Tone Control.....Treble

<u>POSITION OF TUNER</u>	<u>GENERATOR FREQUENCY</u>	<u>DUMMY ANTENNA</u>	<u>GENERATOR CONNECTION</u>	<u>TRIMMER ADJUSTMENTS IN ORDER SHOWN</u>	<u>TRIMMER FUNCTION</u>
Closed	455 KC	0.1 Mfd.	Translator Grid	T2, T1	I.F.
Closed	455 KC	0.1 Mfd.	R. F. Grid	C12	I.F. Trap
1610 KC	1610 KC	.00005 Mfd.	Ant. Connection	C16, C4, C1	Osc., R.F., Ant.
1610 KC	2520 KC	.00005 Mfd.	Antenna	C13	Image Trap
1410 KC	1410 KC	.00005 Mfd.	Antenna	L8, L2, L1	Osc., R.F., Ant.
600 KC	600 KC	.00005 Mfd.	Antenna	L7	Osc. Padder

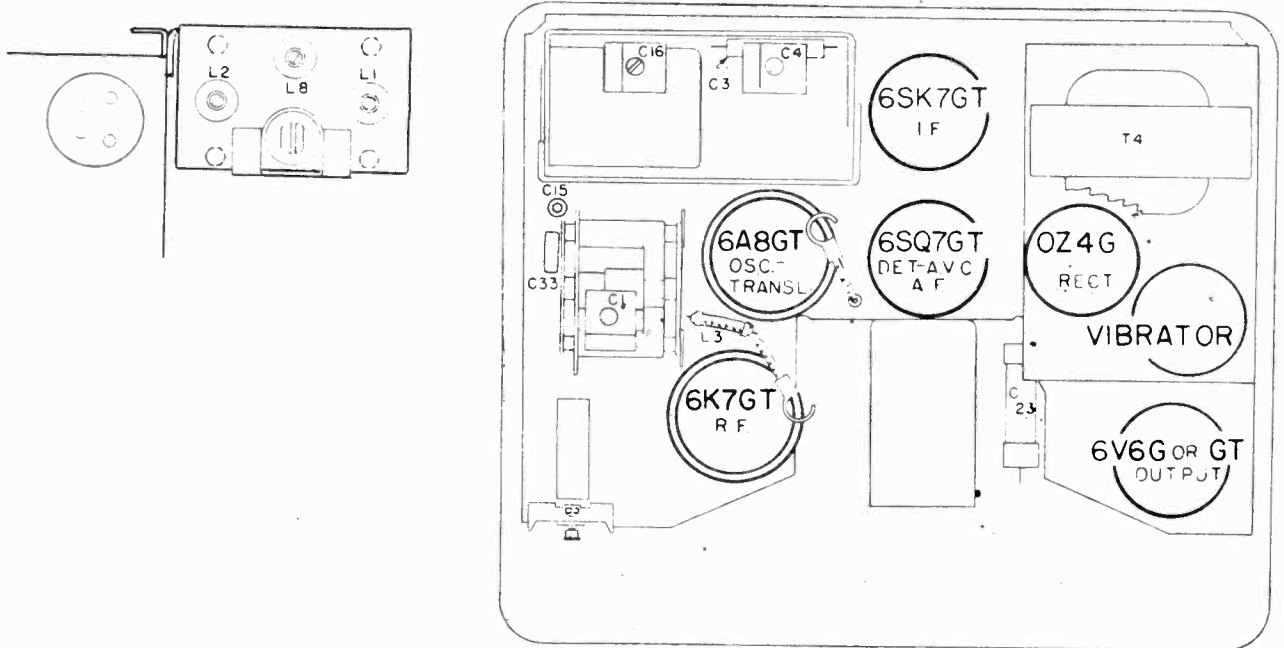
SEARS, ROEBUCK & CO.

MODEL 6290,
CHASSIS 101.667B

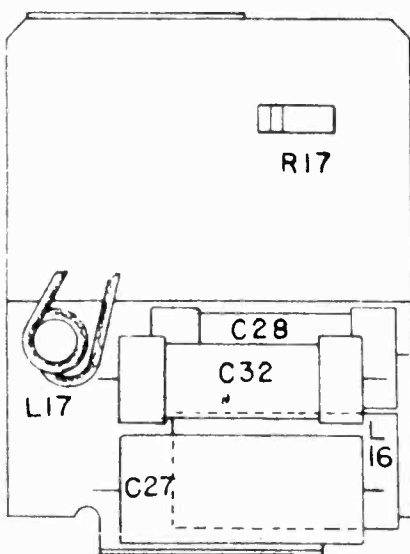
IMPORTANT ALIGNMENT NOTES

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

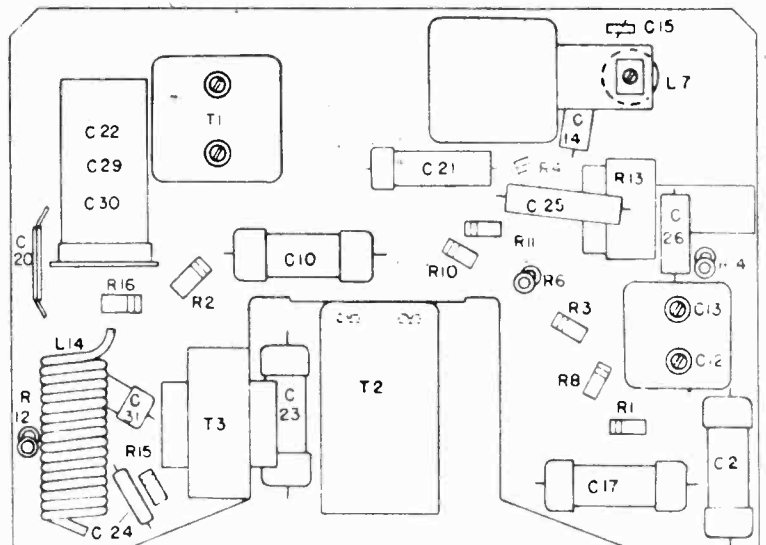
The Alignment Procedure should be repeated in the original order, step by step to insure greater accuracy.



LOCATION OF PARTS - BOTTOM COVER REMOVED



PARTS UNDER POWER SUPPLY



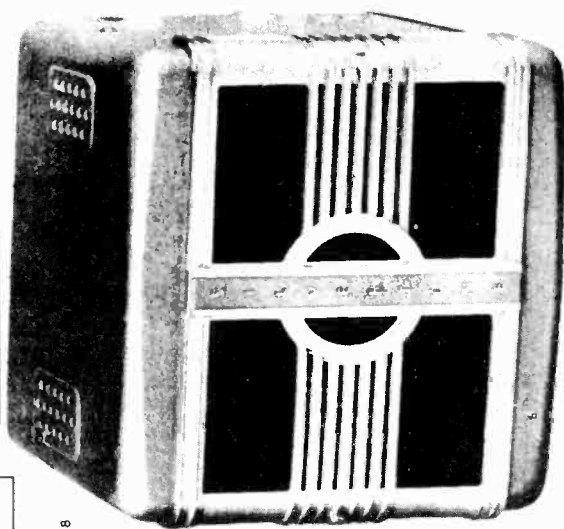
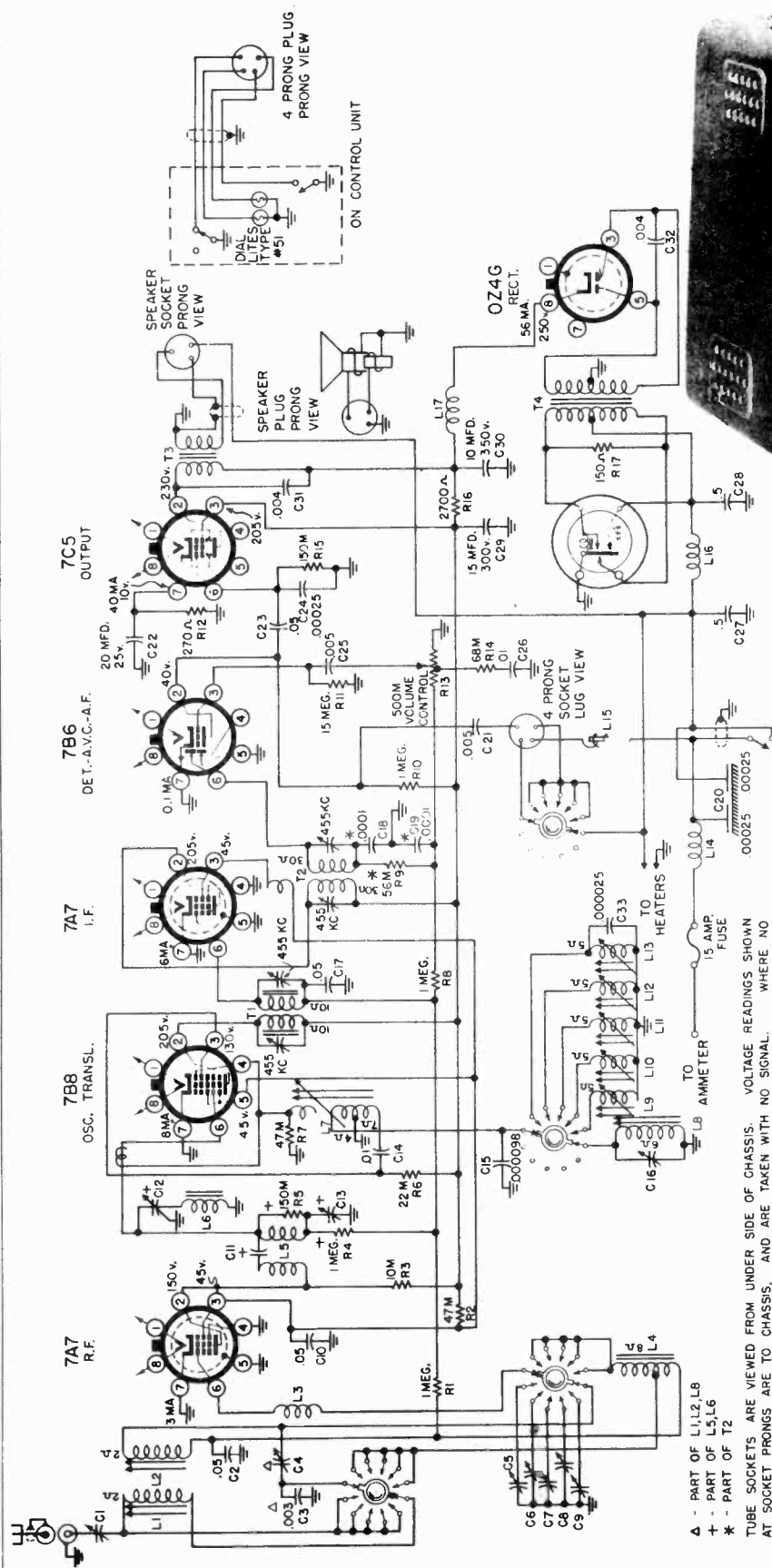
LOCATION OF PARTS - TOP COVER REMOVED

Power Supply:
All models available.....6 Volt DC; 6.9 Amperes

Frequency Range:
Standard Broadcast.....540-1600 KC

Power Output:
Undistorted.....3.75 Watts
Maximum.....5.65 Watts

MODEL 6290,
CHASSIS 101.667-1B



POWER SUPPLY

All models rated at 6 Volts DC; 6.9 Amperes.

TUNING

Manual and 5 electrical push buttons.

FREQUENCY RANGE

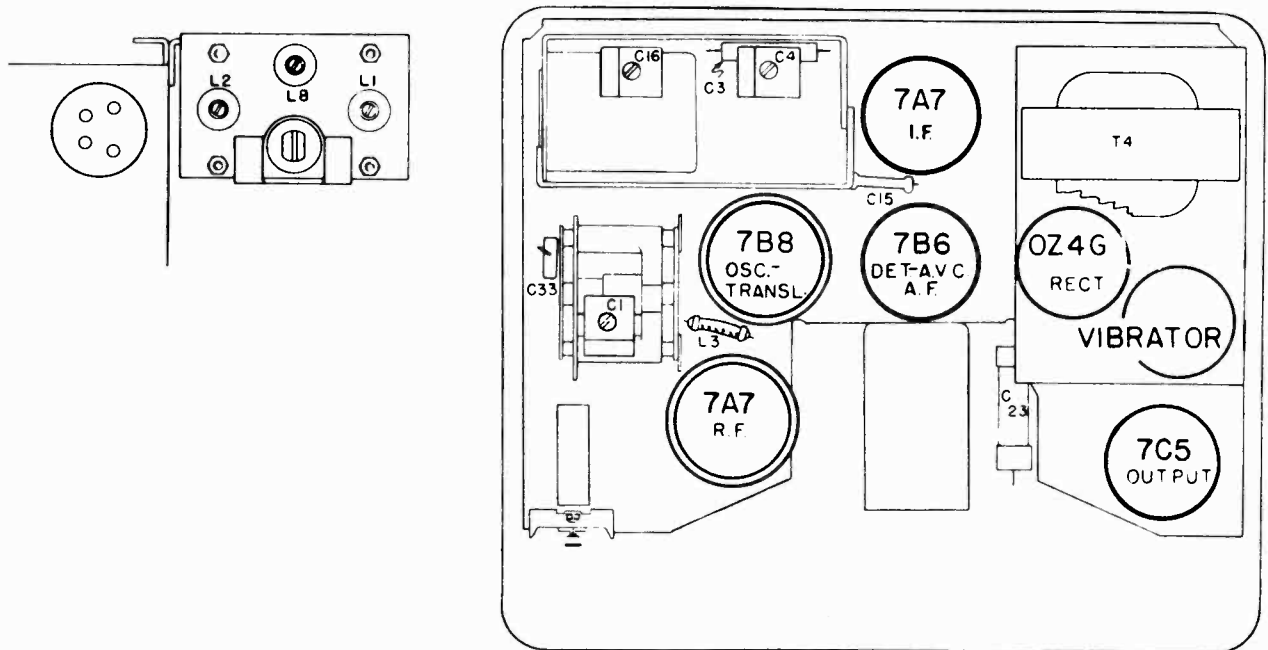
540 - 1600 Kc.

ANTENNA CAPACITY

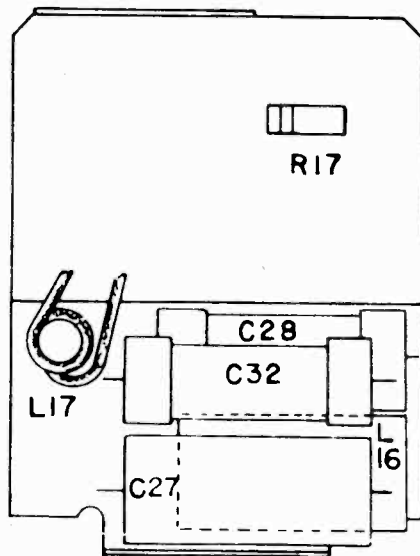
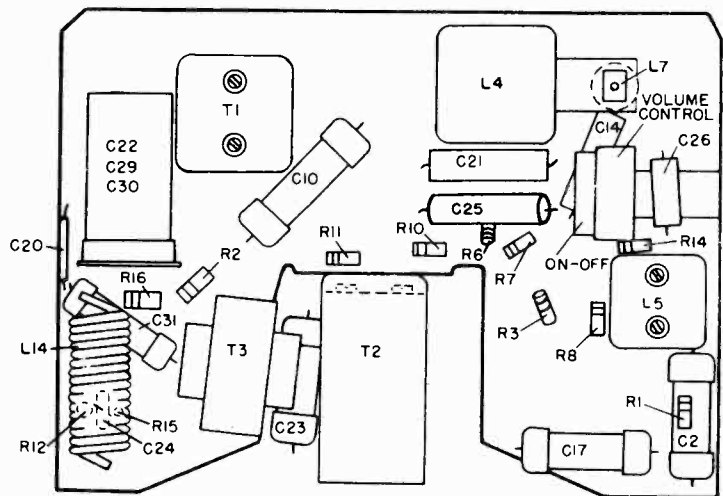
50 - 90 mmfd.

▲ - PART OF L1,L2,L8
 + - PART OF L5,L6
 * - PART OF T2
 TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.
 VOLTAGE READINGS ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT.
 SYMBOLS ARE IN ACCORDANCE WITH A.S.A. STANDARDS Z32.5 AND Z32.10 UNLESS OTHERWISE STATED.
 "A" BATTERY - 6. VOLTS
 CURRENT DRAIN - 7.2 AMPERES

SEARS, ROEBUCK & CO.

MODEL 6290,
CHASSIS 101.667-1B

LOCATION OF PARTS - BOTTOM COVER REMOVED

LOCATION OF PARTS
UNDER POWER SUPPLY

LOCATION OF PARTS - TOP COVER REMOVED

MATCHING THE ANTENNA:

Before proceeding with this adjustment the receiver should be left on for about 15 minutes to warm up.

An adjusting screw, accessible with a screw driver through the hole in the bottom cover of the case, is provided to match the receiver to the car antenna. With the receiver adjusted for "DIAL" tuning, use the Station Selector knob to tune in a very weak station at about 1400 kilocycles, with the volume control fully on. Then turn the adjusting screw to the point affecting maximum volume.

MODEL 6290,
CHASSIS 101.667-1B

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDUREPRELIMINARY

Output Meter Connection Across Loud Speaker Voice Coil
 Output Meter Reading to Indicate Standard Output of 1.0 Watt 1.78 Volt
 Connection of Signal Generator Ground Lead Receiver Chassis
 Connection of Signal Generator Output Lead See Chart Below
 Dummy Antenna Value to be in Series with Generator Output See Chart Below
 Position of Volume Control Fully On
 Position of Tone Control Treble

<u>POSITION OF TUNER</u>	<u>GENERATOR FREQUENCY</u>	<u>DUMMY ANTENNA</u>	<u>GENERATOR CONNECTION</u>	<u>TRIMMER ADJUSTMENTS IN ORDER SHOWN</u>	<u>TRIMMER FUNCTION</u>
Closed	455 KC	0.1 Mfd.	Translator Grid	T2, T1	I.F.
Closed	455 KC	0.1 Mfd.	R. F. Grid	C12 *	I.F. Trap
1610 KC	1610 KC	.00005 Mfd.	Antenna	C16, C4, C1	Osc., R.F., Ant.
1610 KC	2520 KC	.00005 Mfd.	Antenna	C13 *	Image Trap
1410 KC	1410 KC	.00005 Mfd.	Antenna	L8, L2, L1	Osc., R.F., Ant.
600 KC	600 KC	.00005 Mfd.	Antenna	L7	Osc. Padder

IMPORTANT ALIGNMENT NOTES

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

The alignment procedure should be repeated in the original order, step by step to insure greater accuracy.

- * The signal generator should be adjusted for high output and the trimmer should be adjusted for minimum response.

THE PUSH BUTTON TUNING MECHANISM:

Preselection of push button tuned stations is accomplished by settings of the iron cores in the oscillator coils and settings of the trimmer condensers across the antenna coil. The proper coils are selected by a switch which is rotated one step at a time by means of a solenoid, controlled by the tuning push button. Pushing the button also mechanically rotates the station call letter drum.

Each button can be set to a station within a certain frequency range as follows:

<u>STATION</u>	<u>FREQUENCY RANGE</u>
#1	535 to 920 Kc
#2	630 to 1070 Kc
#3	690 to 1170 Kc
#4	850 to 1450 Kc
#5	950 to 1610 Kc

To set up the mechanism, insert the call letter tabs in their proper frequency order in the call letter drum. The drum is accessible by removing the snap-in button at the top of the push button unit before mounting the unit. One of the positions is for manual tuning. When this position is reached, the manual tuning dial will become illuminated and the receiver can be tuned manually.

Stations are set up by removing the front grille of the receiver, exposing the station tuning screws. The adjusting screws are labeled. The Osc. screw must be adjusted first; then the ANT. screw. Then repeat the two adjustments.

TO SYNCHRONIZE THE MECHANISM, PUSH THE TUNING BUTTON UNTIL THE MANUAL TUNING DIAL BECOMES ILLUMINATED. REMOVE THE PUSH BUTTON CABLE FROM ITS SOCKET IN THE SIDE OF THE RECEIVER CASE AND THEN PUSH THE BUTTON UNTIL THE "DIAL" TAB COMES INTO VIEW. THEN REINSERT THE CABLE PLUG.

Under certain conditions the mechanism may fall out of synchronism if the button is not pushed all the way in and completely released when operating it. The user should be instructed accordingly.

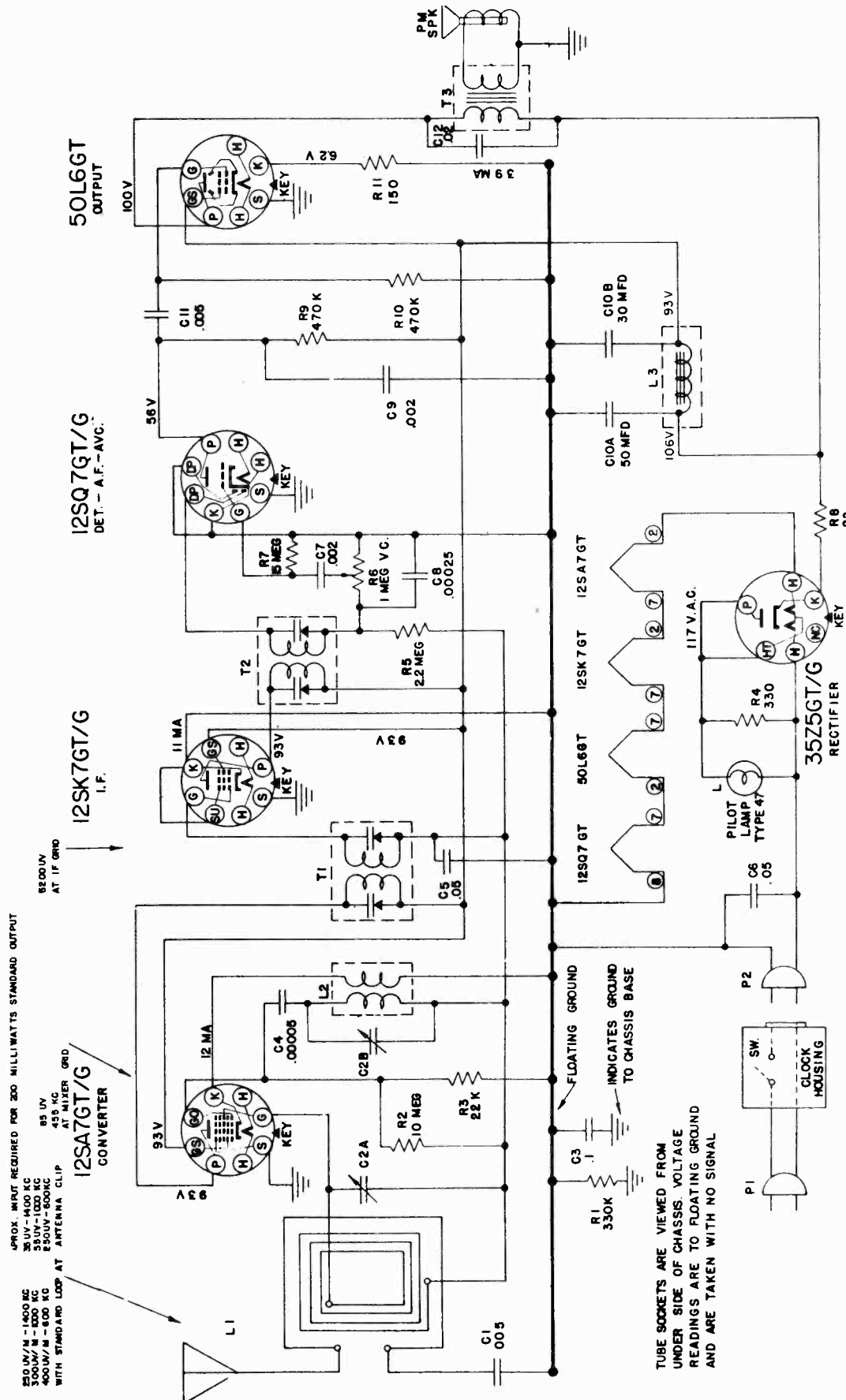
SEARS, ROEBUCK & CO.

MODEL 6290,
CHASSIS 101.667-1B

<u>SCHEMATIC LOCATION</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>SCHEMATIC LOCATION</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
R17	R42490	Control - Push Button Unit		R45265	Bolt - Carriage #10-24 x 3/4"
R12	R42491	Cable & Plug Assembly (Part of R42490)		R45228	Bracket - Upper Speaker Mtg.
R16	R42492	Switch - Tone (Part of R42490)		R45817	Bracket - Lower Speaker Mtg.
R3	R45221	Control - Manual Tuning		R42306	Cable - Flex. Dr. - Volume Control
R6	R40079	Control - Manual Volume		R42373	Cable - Flex. Dr. - Volume Control - Extra Length
R7	R42847	Drum - Call Letter		R42307	Cable - Flex. Dr. - Tuning Control
R2	R10292	Fuse - 15 Amp. - 25 V.		R42374	Cable - Flex. Dr. - Tuning Control - Extra Length
R14	R52812	Grille - Case & Screen Assembly		R45020	Cable - Speaker
R15	R64093	Lamp - Dial - Mazda, Type #51		R5220A	Coil - Spark Choke
R1, R8, R10	R45321	Leaflet - Instruction	L14	R9741	Clip - Ammeter
R11	R45282	Nut - Wing - 1/4-20	L4	R45112	Coil - Antenna
	R45205	Nut - Wing - #10-24	R4, R5, L5, L6, C11, C12, C13	R48820	Coil - Antenna Choke
		Relay & Switch Assembly	L7	R62517	Coil - Untuned R. F.
		Resistor - 150 Ohm - 1 W.	C5, C6, C7, C8, C9, L9, L10, L11, L12, L13	R47294	Coil - Oscillator
		Resistor - 270 Ohm - 1 W.	C3, C4, C16, L1, L2, L8	R45097	Coils - Perm. & Capacitor Assy.
		Resistor - 2700 Ohm - 1 W.	L16	R45017	Coil - Antenna - Oscillator, Manual Tuning
		Resistor - 10,000 Ohm - 1/2 W.	L17	R9044G	Coil - Hash Choke
		Resistor - 22,000 Ohm - 1/2 W.		R5114CM	Coil - Hash Choke
		Resistor - 47,000 Ohm - 1/2 W.		R16149	Capacitor - Ammeter
		Resistor - 47,000 Ohm - 1 W.		R16150	Capacitor - Generator
		Resistor - 68,000 Ohm - 1/2 W.		R42243	Capacitor - Electrolytic - 20 Mfd. 25 V. 15 Mfd. 300 V., 10 Mfd. 350 V.
		Resistor - 150,000 Ohm - 1/2 W.		R45237	Capacitor - Trimmer
		Resistor - 1 Megohm - 1/2 W.			Capacitor - .5 Mfd. 100 V.
		Resistor - 15 Megohm - 1/2 W.			Capacitor - .05 Mfd. 600 V.
		Screen - Speaker			Capacitor - .01 Mfd. 600 V.
	R45226	Socket - Lamp			Capacitor - .005 Mfd. 600 V.
	R42849	Socket - Rectifier			Capacitor - .004 Mfd. 600 V.
	R20539	Socket - Control Plug			Capacitor - .004 Mfd. 1500 V.
	R42224	Socket - 8 Prong Lock-in			Capacitor - .0025 Mfd. Mica
	R62871	Socket - Vibrator			Capacitor - .00098 Mfd. - Temp. Compensator
	R19321	Shield - Tube			Capacitor - .00025 Mfd. Mica - Dual Control - On-Off & Volume
	R57193	Speaker - 7" P.M.			
	R61409	Strap - Ground			
	R19157	Stud - Speaker Mounting			
	R11534	Suppressor - Distributor			
	R42274	Switch - Station Selector			
	R42493	Transformer - I.F. #1			
T1	R62516	Transformer - I.F. #2		R47295	
T2	R45019	Transformer - Power		R43696	
T4	R45100	Transformer - Output		R42244	
T3	R45079	Vibrator			
	R45160				

MODEL 8010,
CHASSIS 132.840

SEARS, ROEBUCK & CO.



SCHEMATIC DIAGRAM
CHASSIS-132.840

SPECIFICATIONS

Power Output
Undistorted
Maximum
1.0 Watt
2.0 Watt

Speaker Voice Coil Impedance 3.2 Ohms

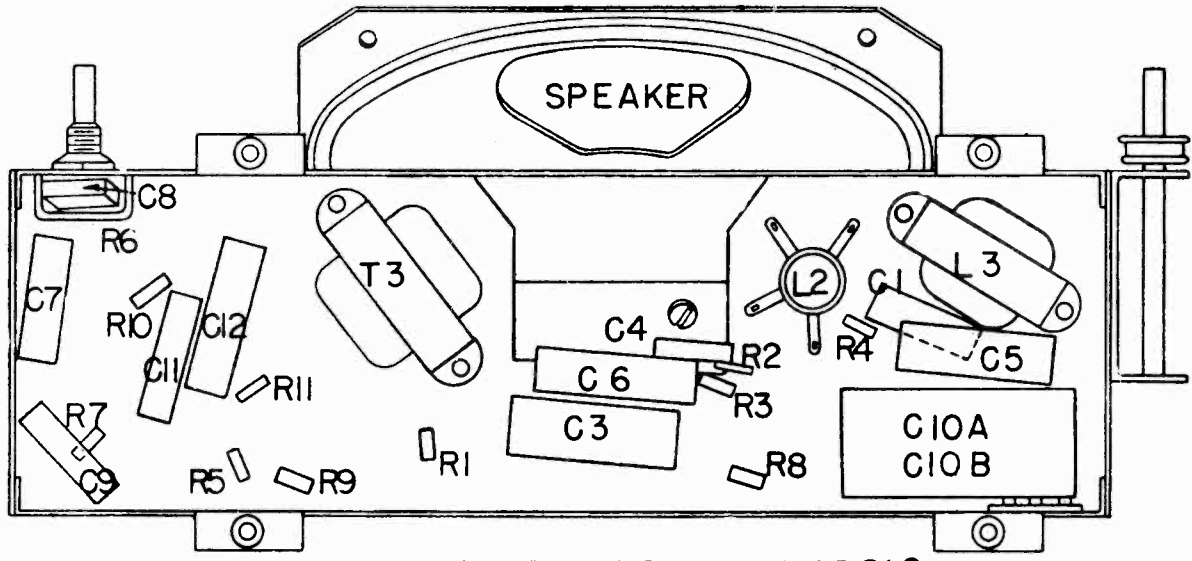
Power Supply
105-125 Volts AC-DC 37 Watts

Frequency Range
Broadcast
540-1600 Kc

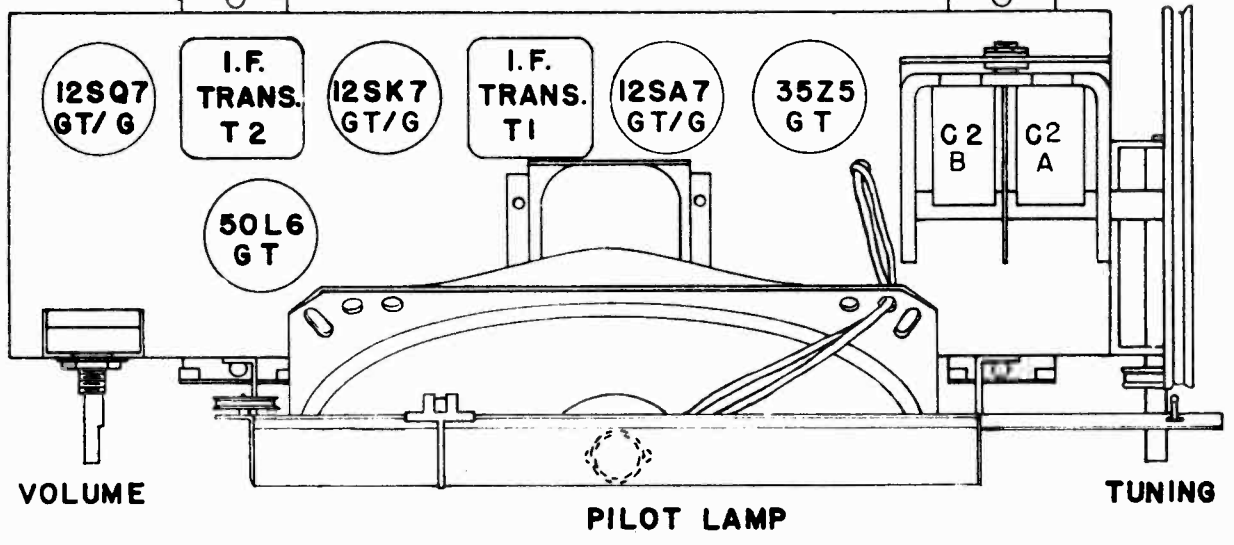
TUBE SOCKETS ARE VIEWED FROM
UNDER SIDE OF CHASSIS. VOLTAGE
READINGS ARE TO FLOATING GROUND
AND ARE TAKEN WITH NO SIGNAL

SEARS, ROEBUCK & CO.

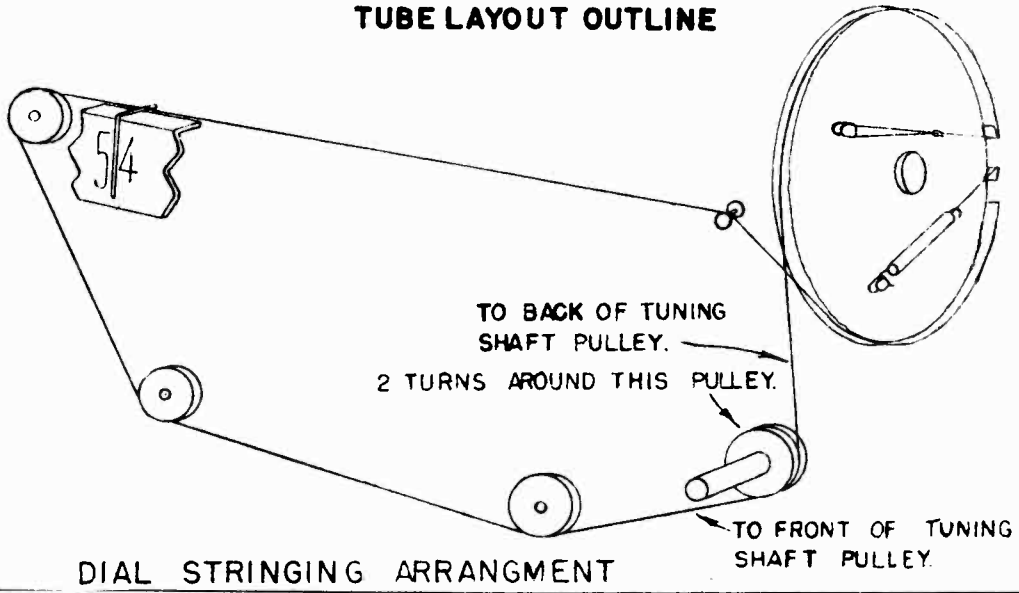
MODEL 8010,
CHASSIS 132.840



LOCATION OF PARTS UNDER CHASSIS



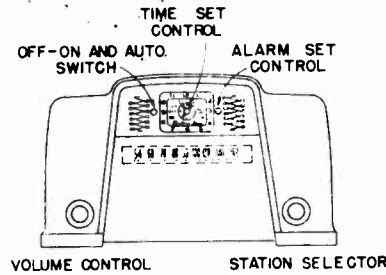
TUBE LAYOUT OUTLINE



DIAL STRINGING ARRANGMENT

MODEL 8010,
CHASSIS 132.840

SEARS, ROEBUCK & CO.



ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection Across Speaker Voice Coil
 Output meter reading to indicate 200 MW (Standard output)8 Volt
 Generator modulation 30 % 400 Cycles
 Position of volume control Fully Clockwise
 Dial pointer position with variable condenser closed Last Mark on Dial

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION (HIGH SIDE)	GENERATOR CONNECTION GND. LEAD	ADJUST TRIMMERS ORDER SHOWN	TRIMMER FUNCTION
Open	455 KC	.05 Mfd.	Mixer Grid	Fltg. Gnd.	T2-T1	IF
1400 KC	1400 KC	50 Mmf.	*Ant. Lead	Fltg. Gnd.	C2B	Oscillator
1400 KC	1400 KC	50 Mmf.	*Ant. Lead	Fltg. Gnd.	C2A	Antenna
600 KC	600 KC	50 Mmf.	*Ant. Lead	Fltg. Gnd.	**Check Point	Antenna

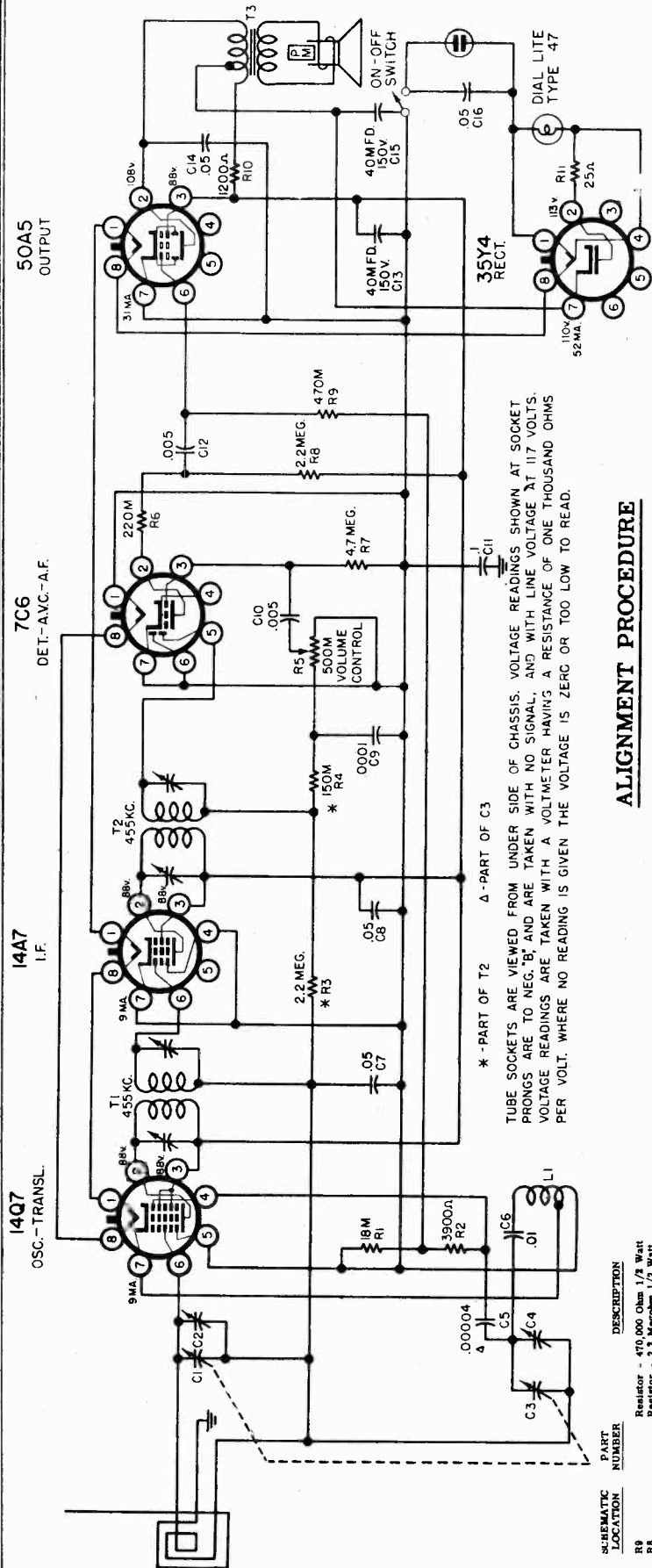
IMPORTANT ALIGNMENT NOTES

- * Connect generator lead to green wire on loop antenna or a test loop may be used on the generator placed a short distance from the set loop.
 - **Check sensitivity at 600 KC. If low, adjust antenna section plates of variable for maximum output at 600 KC.
- The alignment procedure should be repeated in the original order for greatest accuracy. Always keep the output from the signal generator at its lowest possible value to make the A. V. C. action of the receiver ineffective.

PARTS LIST

Schematic Location	Part No.	Description	M.U. Code	Schematic Location	Part No.	Description
L1	N21297	Antenna Loop Assembly			N19132	Cord, Dial Drive
	N21092	Cabinet, Less Front Trim Assy.	AO		N21274	Insulator, Chassis
	N21245	Trim Assembly, Cabinet Front	AO		N21204-2	Knob, Control, Volume or Tuning Lamp, Dial, Mazda No. 47
*See note below	N21245	Choke Filter				Leaflet, Instruction
	N21265	Clock, less knobs, cord & metal harz.	B5		N21276	Pointer, Dial
	N21693	Knob, Clock, Off-On-Auto		R1	N21295	Resistor, 330,000 ohms, 1/4 W
	N21694	Knob, Clock, Alarm Set		R2		Resistor, 10 megohms, 1/4 W
	N21695	Knob, Clock Time Set		R3		Resistor, 22,000 ohms, 1/4 W
L2	R19354	Coil, Oscillator		R4		Resistor, 330 ohms, 1/4 W
C1, 11		Condenser, .005 mfd, 400V		R5		Resistor, 2.2 megohm, 1/4 W
C2A, 2B	N21305	Condenser, Variable	AAO	R7		Resistor, 15 megohm, 1/4 W
C3		Condenser, .1 mfd, 400V		R8		Resistor, 22 ohms, 1/4 W
C4		Condenser, .00005 mfd, 500V, Mica		R9, R10		Resistor, 470,000 ohms, 1/4 W
C5		Condenser, .05 mfd, 200V		R11		Resistor, 150 ohms, 1/4 W
C6		Condenser, .05 mfd, 400V			N21290	Scale, Dial
C7		Condenser, .002 mfd, 400V			N21291	Shaft, Tuning with Pulley
C8		Condenser, .00025 mfd, 500V, Mica			N19234	Socket, Antenna Loop
C9		Condenser, .0005 mfd, 500V, Mica			N21296	Socket, Dial Light, with Leads
C10A, 10B	N21253	Condenser, Electrolytic, 50-30 mfd, 150V			N21302	Speaker, 4" x 6" P. M.
C12		Condenser, .02 mfd, 400V			N20149	Spring, Dial Cord
R6	N21304	Control, Volume, 1 megohm			N21424	Transformer, 1st I. P.
	N21303	Cord, Power, Chassis to Clock (11")			N21425	Transformer, 2nd I. P.
	N20138-11	Cord, Power, Clock (8')			N21247	Transformer, Output

* Repair parts for this clock are not available.



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEG. 'B' AND ARE TAKEN WITH NO SIGNAL, AND WITH LINE VOLTAGE AT 117 VOLTS. VOLTAGE READINGS ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.

ALIGNMENT PROCEDURE

- Output Meter reading to indicate 0.05 Watt across voice coil 0.4 Volt
- Generator ground lead connection I.F. alignment-negative 'B' lead
- Generator Modulation R.F. alignment-Receiver chassis
- Position of Volume Control 30%, 400 cycles
- Position of pointer with tuner fully closed Fully on
- Frequency Range: Last line to left of 540 Kc. calibration mark on escutcheon or light brown mark about 1 inch from the left hand end on the lower edge of dial background.
- Broadcast 540-1600 KC
- Power Output Undistorted 1.0 Watt
- Maximum 1.5 Watts

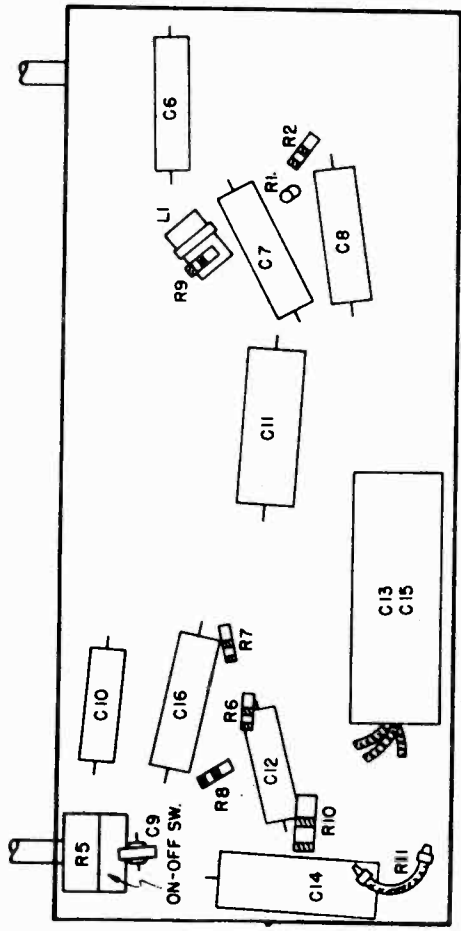
PRELIMINARY

PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
R9	Resistor - 470,000 Ohm 1/2 Watt	R64751	Background - Dial
R8	Resistor - 2.2 Megohm 1/2 Watt	C7	Capacitor - .05 mfd. 500 Volt
R7	Resistor - 4.7 Megohm 1/2 Watt	C8	Capacitor - .1 mfd. 500 Volt
R10	Resistor - 1200 Ohm 1 Watt	C9	Capacitor - .05 mfd. 500 Volt
R11	Resistor - Glasohm 35 Ohm 1 Watt	C10	Capacitor - Electrolytic 400 mfd. 150 Volt
R44582	Shield - Plug Lamp	C11	Control - On-Off & Volume
R44583	Socket - Pilot Lamp	C12	Cord - Line
R44584	Socket - 5 1/2 P.M.	C13	Dial - Station
R44585	Spring - Dial Cord Tension	C14	Knob - Tuning
R44586	Cord - Dial Drive (31") (per foot)	C15	Knob - On-Off & Volume
R44587	Transformer - I.F. #1	C16	Lamp - Mazda Type #47
R44588	Transformer - I.F. #2	C17	Leaflet - Instruction
R44589	Washer - Micro Coupling Capacitor	C18	Leaflet - Assembly
R44590	Washer - Flat - Coupling Capacitor	C19	Pointer - Dial
R44591	Washer - Flat - Chassis Mounting	L1	Resistor - 3900 Ohm 1/2 Watt
R44592	Washer - Flat - Chassis Mounting	R1	Resistor - 19,000 Ohm 1/2 Watt
R44593	Resistor - 19,000 Ohm 1/2 Watt	R2	Resistor - 390,000 Ohm 1/2 Watt

Power Supply:
All models available 117 Volts DC, 25-60 Cycles AC, 30 Watts

MODEL 8051,
CHASSIS 101.839

SEARS, ROEBUCK & CO.



LOCATION OF PARTS UNDER CHASSIS

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA CONNECTION	TRIMMERS (ADJ. IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 Kc.	0.1 mfd.	T2 & T1	I. F.
Fully Open	1650 Kc.	.0002 mfd.	C4	Osc.
See Note Below	1410 Kc.	.0002 mfd.	C2	Ant.

IMPORTANT ALIGNMENT NOTES

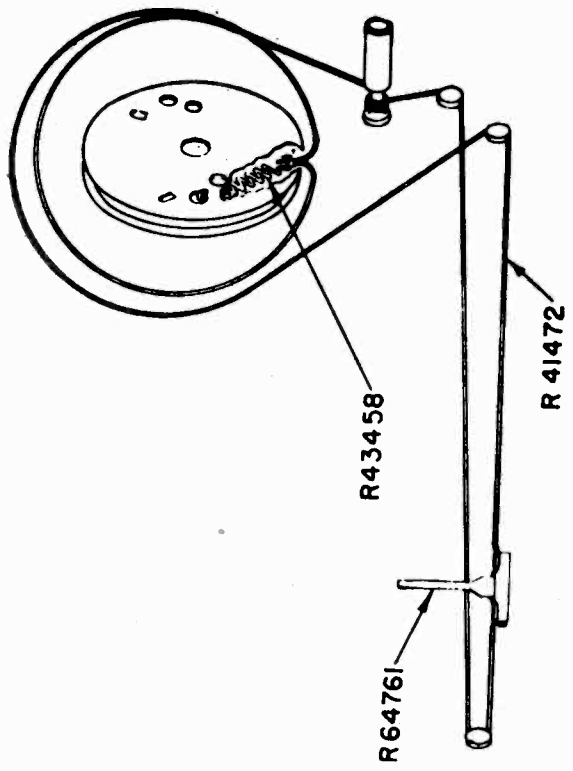
NOTE: It is recommended that an isolation transformer be connected between the radio chassis and the line before aligning receiver on A.C.

The 1410 Kc. calibration point is a light brown mark about 2 inches from the right-hand end on the lower edge of the dial background.

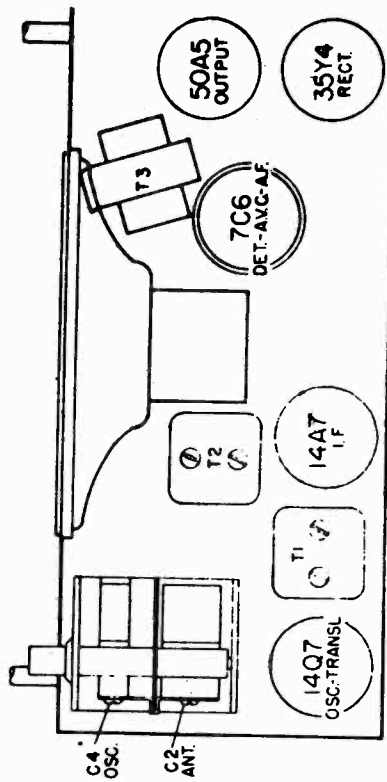
The Alignment must be done in the order given.

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

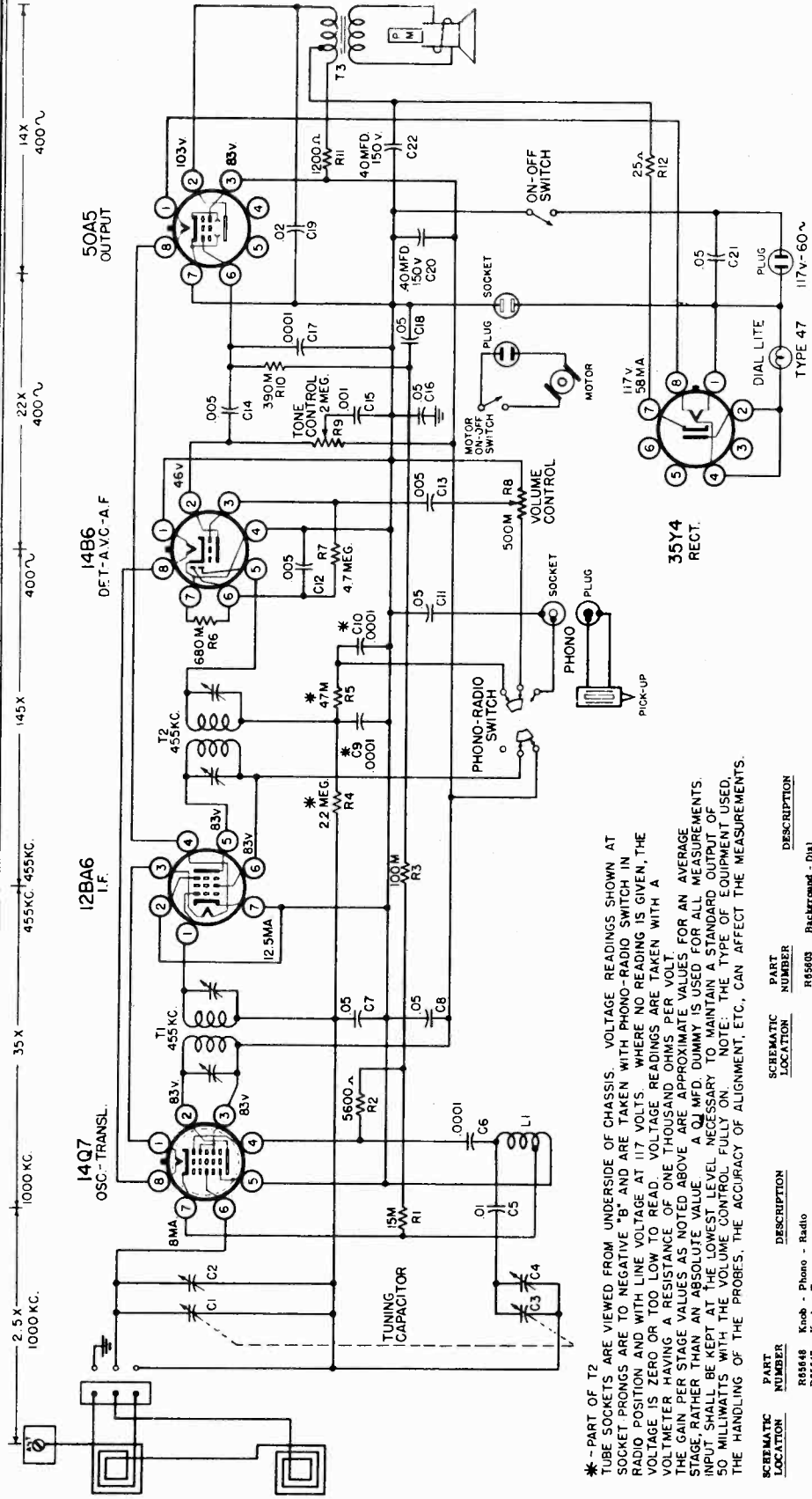
Always keep the output from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.



STRING AND POINTER HOOKUP



LOCATION OF PARTS ON TOP OF CHASSIS



Frequency Range 540-1600 Kc.
Power Output
Undistorted 1.5 Watts
Maximum 2.5 Watts

* - PART OF T2
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE "B" AND ARE TAKEN WITH PHONO-RADIO SWITCH IN RADIO POSITION AND WITH LINE VOLTAGE AT 117 VOLTS WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. VOLTAGE READINGS ARE TAKEN WITH A VOLT-METER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT. THE GAIN PER STAGE VALUES AS NOTED ABOVE ARE APPROXIMATE VALUES FOR AN AVERAGE INPUT, RATHER THAN AN ABSOLUTE VALUE. A 0.1 MFD. DUMMY IS USED FOR ALL MEASUREMENTS. 50 P.M. SHALL BE KEPT AT THE LOWEST LEVEL NECESSARY TO MAINTAIN A STANDARD OUTPUT OF 50 MILLIWATTS WITH THE VOLUME CONTROL FULLY ON. NOTE: THE TYPE OF EQUIPMENT USED, THE HANDLING OF THE PROBES, THE ACCURACY OF ALIGNMENT, ETC., CAN AFFECT THE MEASUREMENTS.

PART NUMBER	DESCRIPTION	SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
R65948	Knob - Phono - Radio		R65903	Background - Dial
R65947	Knob - Tone		R65904	Background - Dial
R65946	Knob - Tuning		R65905	Bumper - Lid
R65945	Lamp - Mazda - 44T		R65906	Cabinet - Bottom Section
R65944	Loop & Board Assy.		R65907	Cover
R65943	Phono - Dial		R65908	Support - Cover
XY31531	Resistor - 5,000 ohm - 1/2 W	C12,C13,C14	R65909	Capacitor - 0.01 Mfd. - 600 V.
XY31531	Resistor - 15,000 ohm - 1/2 W	C15	R65910	Capacitor - 0.01 Mfd. - 600 V.
XY31531	Resistor - 100,000 ohm - 1/2 W	C16	R65911	Capacitor - 0.01 Mfd. - 600 V.
XY31531	Resistor - 300,000 ohm - 1/2 W	C17,C18,C21	R65912	Capacitor - 0.01 Mfd. - 600 V.
XY31531	Resistor - 600,000 ohm - 1/2 W	C19	R65913	Capacitor - Ceramic - 100 Mmfd.
XY31531	Resistor - 1,200 ohm - 1/2 W	C20	R65914	Capacitor - 80 Mfd. - 150 V.
R40232	Resistor - 25 ohm - 1 W - Glasohm	C21	R65915	Capacitor - 80 Mfd. - 150 V.
R65911	Shut - Tuning	C22	R65916	Capacitor - Variable - 2 Gang
R48897	Socket - Phono Input		R65917	Coil - Oscillator - Single
R65926	Socket - Pilot Lamp		R65918	Control - Tone
R65925	Socket - T.C. to Changer		R65919	Control - Drive & Volume
R65924	Socket - T.C. to Changer		R65920	Card - Line
R65923	Socket - Tube - Miniaturs		R65921	Card - Station - Lucite
R65922	Socket - Tube - Miniaturs		R65922	Drum & Bushing Assy.
R65921	Speaker - 6" x 7" - P.M.		R65923	Grille - Metal - Rubber
R65920	Speaker - 6" x 7" - P.M.		R65924	Knob - On-Off & Volume
R65919	Cone & Voice Coil			
R65918	Output Transformer			
R65917	Armature - Drive String Assy.			
R65916	Switch - Phono - Radio			
R65915	Transformer - 4:1 I.F.			
R65914	Transformer - #2 I.F.			
R65913	Transformer - #1 I.F.			

MODEL 8080,
CHASSIS 101.852

PRELIMINARY: ALIGNMENT PROCEDURE

Output meter reading to indicate 0.05 Watt across voice coil 0.4 Volt
 Generator ground lead connection I.F. alignment - negative "B" lead
 R.F. alignment - receiver chassis
 Generator modulation 30%, 400 cycles
 Position of volume control Fully on
 Position of tone control Treble
 Position of pointer with tuner fully closed Last line to the left of 540 kc. calibration mark

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 & T1	I.F.
1600 Kc.	1600 Kc.	50 mmfd.	Hazeltine Loop	C4	Osc.
1400 Kc.	1400 Kc.	50 mmfd.	Hazeltine Loop	C2	Ant.

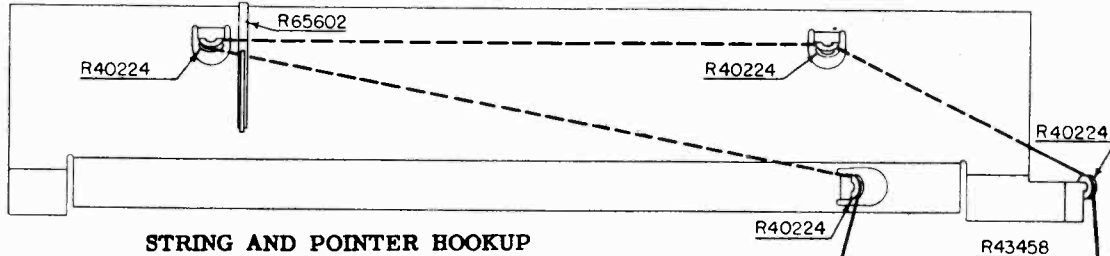
IMPORTANT ALIGNMENT NOTES:

NOTE: It is recommended that an isolation transformer be connected between the radio chassis and the line before aligning receiver on A.C.

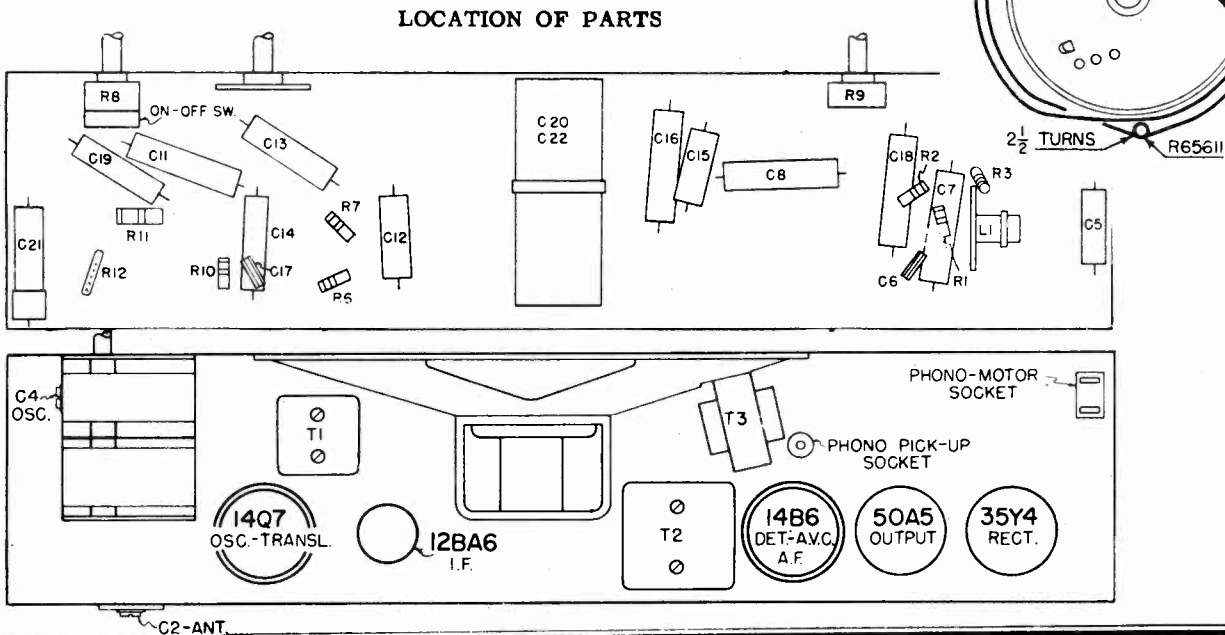
The alignment must be done in the order given.

The entire alignment procedure should be repeated step by step in the original order for greatest accuracy.

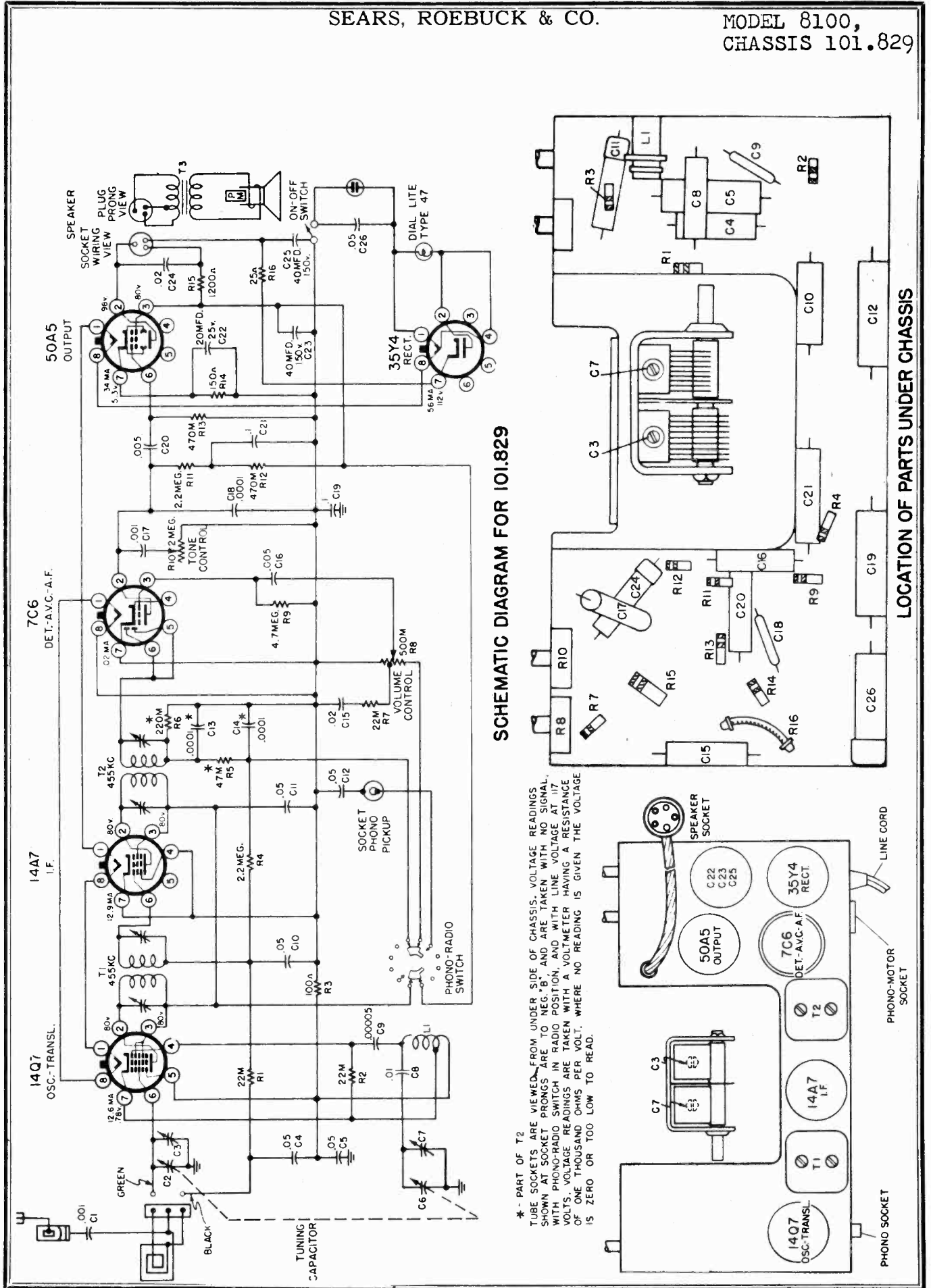
Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.



STRING AND POINTER HOOKUP



LOCATION OF PARTS



SCHEMATIC DIAGRAM FOR 101.829

* - PART OF T2
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEG. B, AND ARE TAKEN WITH NO SIGNAL. WITH PHONO-RADIO SWITCH IN RADIO POSITION, AND WITH LINE VOLTAGE AT 117 VOLTS. VOLTAGE READINGS ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.

LOCATION OF PARTS UNDER CHASSIS

MODEL 8100,
CHASSIS 101.829

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

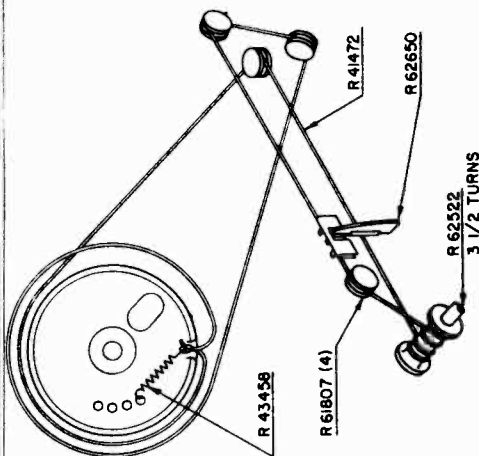
- Output meter reading to indicate 0.05 Watt across voice coil.....0.4 Volt
- Generator ground lead connection.....I.F. alignment-negative "B" lead
- Generator modulation.....Ant. alignment-Receiver chassis
- Position of volume control.....30%, 400 cycles
- Position of tone control.....Fully on
- Position of pointer with tuner fully closed.....HI
- Position of pointer with tuner fully closed..Last line beneath the 540 Kc. calibration mark on the dial or the "START" of calibration mark on the bottom of the dial background mounting plate.

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 - T1	I. F.
Fully open	1650 Kc.	.0002 mfd.	Antenna	C7	Oscillator
See note below	1400 Kc.	.0002 mfd.	Antenna	C3	Translator

IMPORTANT ALIGNMENT NOTES:

NOTE: The dial pointer shall be positioned at the 1400 Kc. calibration mark on the bottom of the dial background mounting plate.
The alignment must be done in the order given.
The entire alignment procedure should be repeated step by step in the original order for greatest accuracy.

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

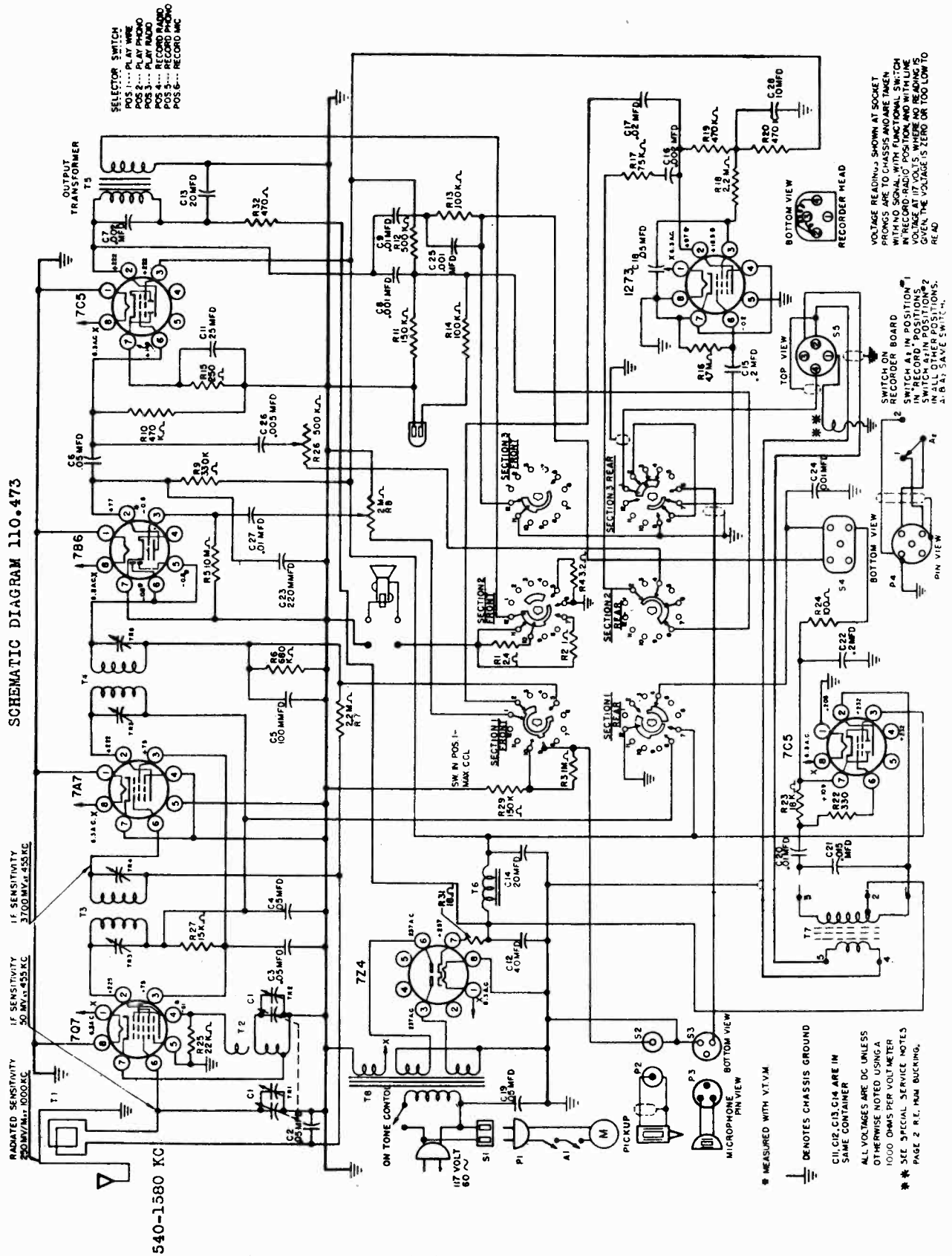


STRING AND POINTER HOOKUP

Power Supply: All models available...117 Volts 60 Cycle AC 30 Watts
Frequency Range: Broadcast.....540-1600 KC
Power Output: Undistorted.....1.0 Watt
Maximum.....1.5 Watts

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
C19, C21	R62379	Background - Dial
CB	R60985	Board Assembly - Loop Antenna
C25, C24	R13961	Button - Snap
C4, C5, C10, C11, C12, C26	R62531	Capacitor - 0.1 Mfd. 400 Volt
C16, C20	R62531	Capacitor - .01 Mfd. 600 Volt
C18	R62531	Capacitor - .02 Mfd. 600 Volt
C22, C23, C25	R49789	Capacitor - .05 Mfd. 600 Volt
C2, C6	R49662	Capacitor - .001 Mfd. 600 Volt
L1	R49663	Capacitor - .005 Mfd. 600 Volt
R10	R57311	Capacitor - Mica - 50 Mfd.
R8	R52826	Capacitor - Mica - 100 Mfd.
	R57272	Capacitor - Electrolytic - 20 Mfd. 25 Volt, 40 Mfd. 150 Volt, 40 Mfd. 150 Volt
	R62650	Capacitor - Variable - 2 Gang
	R1807	Capacitor - Oscillator
	R3	Coil - On-Off & Tone
	R1, R2, R7	Control - On-Off & Tone
	R12, R13	Control - Volume
	R4, R11	Cord - Dial Drive - 42"
	R6	Cord - Line
	R16706	Dial Lamp #47
	R62578	Escutcheon & Dial Assembly
	R62534	Knob - On-Off & Tone
	R62535	Knob - Phono - Radio
	R62712	Knob - Tuning
	R62531	Knob - Volume
	R64013	Leaflet - Instruction
	R49789	Motor - Phono - 117 Volt, 60 Cycle (Less Turntable) - Alliance
	R49662	Idle Wheel - Phono Motor
	R49663	Turntable - 9" (only)
	R57311	Spring - 50 Cycle Conversion
	R52826	Pickup Arm (Less Crystal Cartridge)
	R57272	Crystal Cartridge (Asatic - L-70)
	R62650	Plug - Phono Connector - 1 Prong
	R1807	Pointer & Slide Assembly
	R3	Pulley - Metal
	R4	Resistor - 100 Ohm - 1/3 Watt
	R13	Resistor - 22,000 Ohm - 1/3 Watt
	R1, R2, R7	Resistor - 470,000 Ohm - 1/3 Watt
	R12, R13	Resistor - 2.2 Megohm - 1/3 Watt
	R4, R11	Resistor - 4.7 Megohm - 1/3 Watt
	R6	Resistor - 1200 Ohm - 1 Watt
	R15	Resistor - 615ohm - 25 Ohm x .1 Watt
	R16	Resistor - 615ohm - 25 Ohm x .1 Watt
	R62906	Rest - Pickup Arm
	R62522	Shaft - Tuning
	R44145	Socket - A. C. Phono Motor
	R44897	Socket - Phono Connector - 1 Prong
	R60515	Socket - Pilot Lamp
	R60693	Socket - Speaker Cable
	R57049	Socket - Tube - 8 Prong Lock-In
		WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER
	R62636	Speaker - 6" x 6" M.
	R62601	Cone & Voice Coil
	R48743	Output Transformer
	R62502	Plug (Speaker)
	R62906	Spring - Automatic Shut Off Switch Latch
	R43468	Spring - Dial Drive Cord Tension
	R57457	Spring - Pickup Arm
	R61915	Switch - Automatic Shut Off
	R62657	Switch - Phono-Radio
	T1	Transformer - I. F. #1
	T2	Transformer - I. F. #2
	R60418	Wafer - Electrolytic Mounting
	R60480	Wafer - Electrolytic Mounting

SCHEMATIC DIAGRAM 110.473



IF SENSITIVITY 2700 MVA @ 455 KC
 IF SENSITIVITY 50 MVA @ 455 KC
 IF SENSITIVITY 1000 KC

SELECTOR SWITCH
 POS. 1... PLAY RADIO
 POS. 2... PLAY RADIO
 POS. 3... PLAY RADIO
 POS. 4... RECORD RADIO
 POS. 5... RECORD RADIO
 POS. 6... RECORD MIC

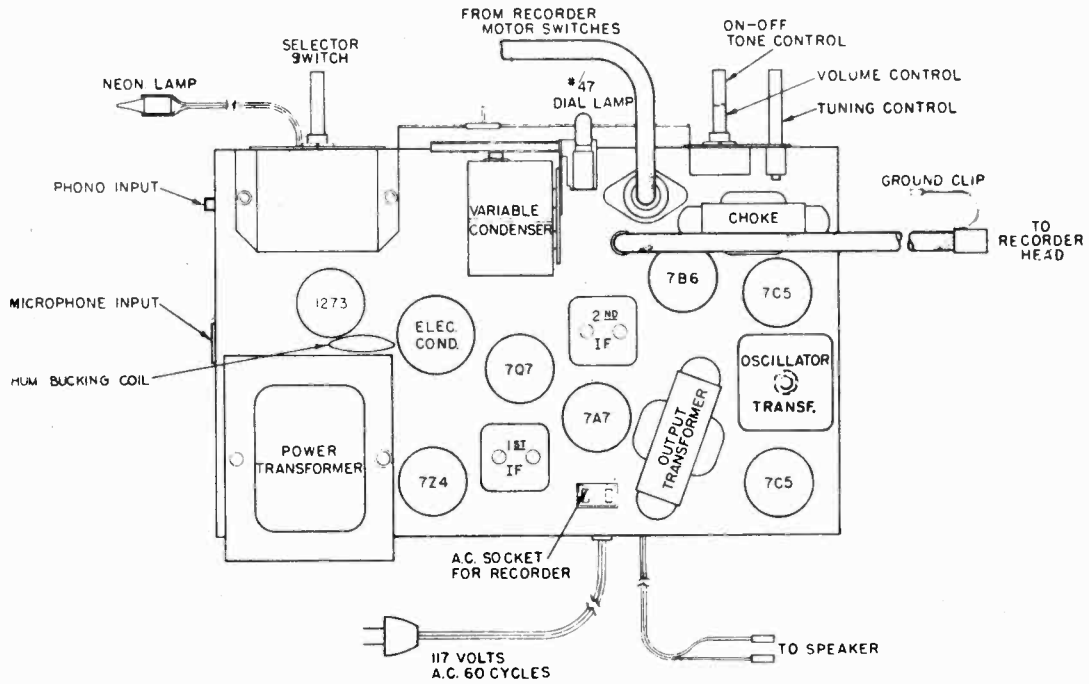
VOLTAGE READINGS SHOWN AT SOCKET
 PROMOS ARE TO CHASSIS AND ARE TAKEN
 WITH THE CHASSIS AT POSITIVE POTENTIAL.
 VOLTAGE AT 117 VOLTS WHERE NO READING IS
 GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO
 READ

SWITCH RECORDER BOARD
 SWITCH RECORDER BOARD IN POSITION #1
 IN RECORD POSITION #2
 SWITCH AGAIN POSITIONS #2
 IN ALL OTHER POSITIONS.
 A. B. A.1 SAVE SWITCH.

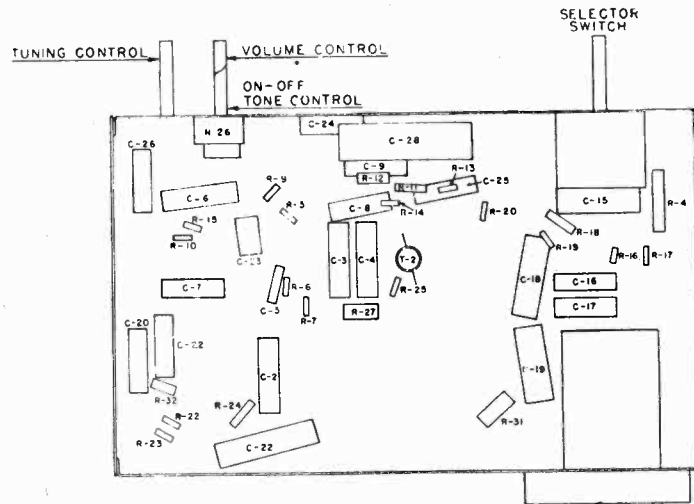
* MEASURED WITH V.T.V.M.
 ⏏ DENOTES CHASSIS GROUND
 C11, C12, C13, C14 ARE IN
 SAME CONTAINER
 ALL VOLTAGES ARE DC UNLESS
 OTHERWISE NOTED USING A
 1000 OHMS PER VOLT METER
 * SEE SPECIAL SERVICE NOTES
 PAGE 2 R.E. MUM BUCKING.

MODEL 8103,
CHASSIS 110.473

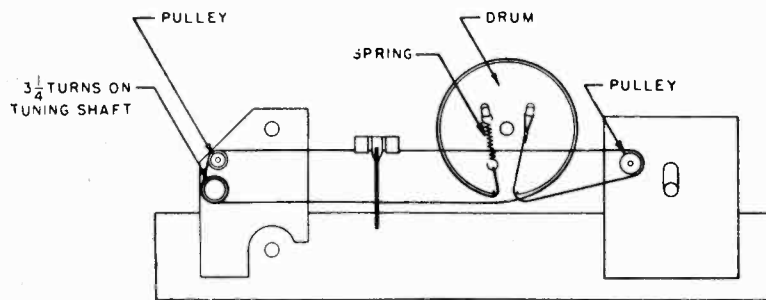
SEARS, ROEBUCK & CO.



TUBE LOCATION



LOCATIONS OF PARTS UNDER CHASSIS



DIAL STRINGING DIAGRAM

SEARS, ROEBUCK & CO.

MODEL 8103,
CHASSIS 110.473

ALIGNMENT PROCEDURE

Output Meter Connection.....Across Loud Speaker Voice Coil
 Output Meter Reading to Indicate 500 Milliwatts.....1.25 Volts
 Dummy Antenna Value to be in Series with Generator Output.....See Chart Below
 Connection of Generator Output Lead.....See Chart Below
 Connection of Generator Ground Lead.....I. F. Alignment B - Bus
 Generator Modulation.....30% at 400 cycles
 Position of Volume Control.....Fully Clockwise
 Position of Tone Control.....Counter Clockwise (HI)
 Position of Dial Pointer with Variable Fully Closed.On Mark Below 540 KC Calibration
 Position of Master Control Switch....."Play Radio"

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455	0.1 Mfd.	Grid 7Q7	TR3 TR4 TR5 TR6	I.F.
1500 KC	1500 KC	***	***See Below	TR2	Osc.
1500 KC	1500 KC	***	***See Below	TR1	Trans.
600 KC	600 KC	***	***See Below	(Check-Point)	Check Point

*** Run a wire from the output terminal of generator near the receiver. No connection is made between the signal generator and the receiver.

IMPORTANT ALIGNMENT NOTES

The alignment procedure should be repeated stage by stage, in the original order for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the Receiver ineffective.

Power Output Undistorted....2.25 Watts Maximum....6 Watts

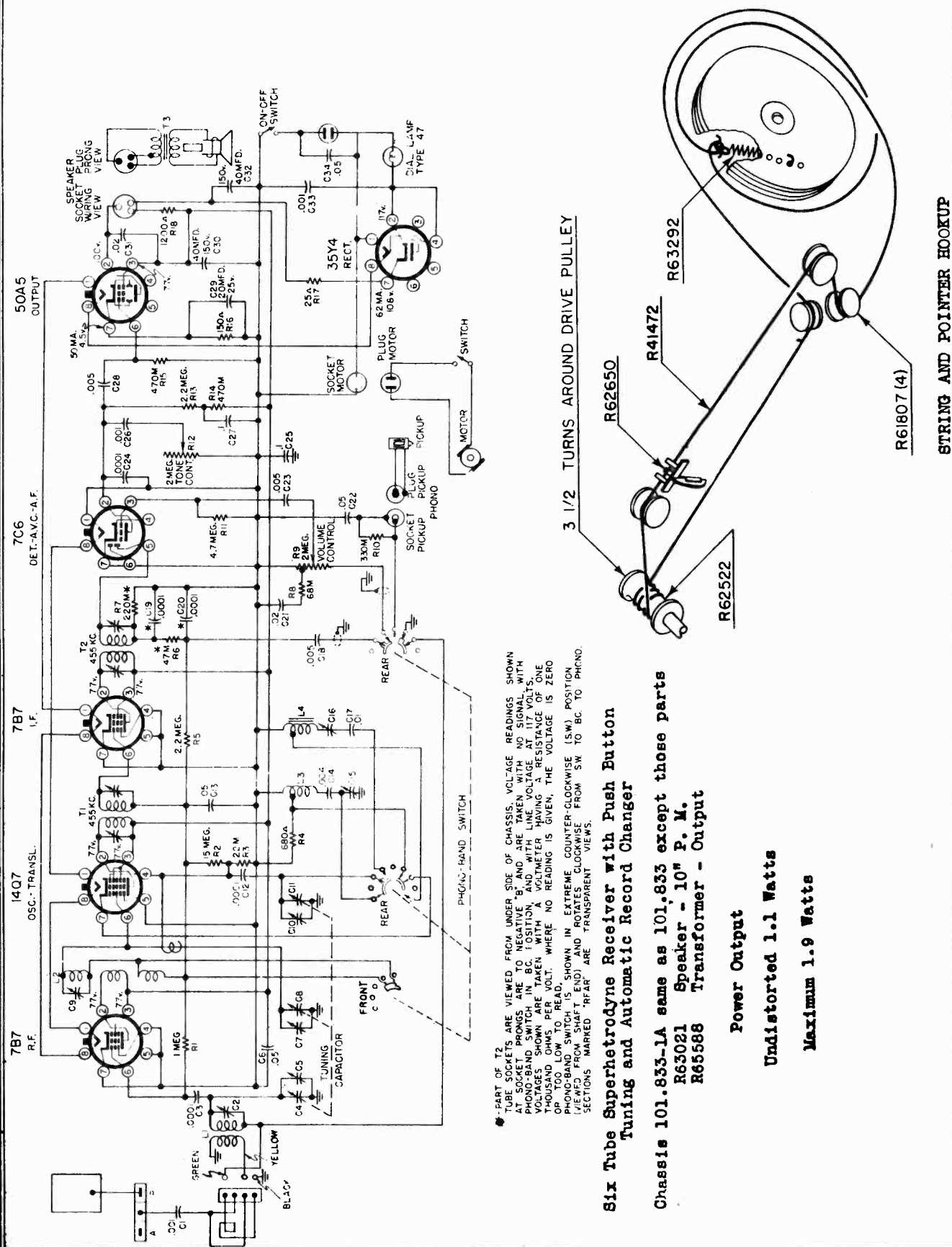
SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
R3		Resistor - 1 meg ohm 1/4 Watt
R4		Resistor - 3.2 ohm 1 Watt Wirewound
R5		Resistor - 10 meg ohms 1/4 Watt
R6		Resistor - 880,000 ohms 1/4 Watt
R7		Resistor - 2.2 meg ohms 1/4 Watt
R9		Resistor - 330,000 ohms 1/4 Watt
R10		Resistor - 470,000 ohms 1/4 Watt
R11		Resistor - 150,000 ohms 1/4 Watt
R12		Resistor - 500,000 ohms 1/4 Watt
R13		Resistor - 100,000 ohms 1/4 Watt
R14		Resistor - 100,000 ohms 1/4 Watt
R15		Resistor - 250,000 ohms 1/2 Watt
R16		Resistor - 4.7 meg ohms 1/4 Watt
R17		Resistor - 75,000 ohms 1/4 Watt
R18		Resistor - 2.2 meg ohms 1/4 Watt
R19		Resistor - 470,000 ohms 1/4 Watt
R20		Resistor - 470,000 ohms 1/4 Watt
R22		Resistor - 330,000 ohms 1/4 Watt
R23		Resistor - 18,000 ohms 1/4 Watt
R24		Resistor - 100 ohms 1/4 Watt
R25		Resistor - 22,000 ohms 1/4 Watt

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	
R27		Resistor - 15,000 ohms 2 Watt	
R29		Resistor - 150,000 ohms 1/4 Watt	
R31		Resistor - 18 ohms 2 Watt	
R32		Resistor - 150,000 ohms 1/4 Watt	
A18146		Socket, AC	
A18144		Socket, Dial Light	
A54374		Socket, (for cable from recorder switch)	
A18101		Socket, Microphone	
A18104		Socket, Phone	
A59103		Speaker - 10" (P.P.)	
A54355		Spring - Dial Cord	
A3791		Switch - Meter - 6 Position	
A3371		Transformer - 1st I.F.	
T4		A3535	Transformer - 2nd I.F.
T5		A1379	Transformer - Output
T6		A18176	Transformer - Bias Oscillator
T8		A1791	Transformer - Power

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
R26	A2486	Control - Tone, with switch
R8	A2485	Control - Volume
	A54373	Cord - Dial Drive (per yard)
	A5592	Cord - Line 8 feet long
	A40131	Dial
	A4448	Enochsson (Dial Crystal)
	A31972	Knob - Master Selector Switch
	A39171	Knob - Tone, Off-On
	A39169	Knob - Tuning
	A39170	Knob - Volume-Control
	A4026	Lamp - Neon Light Assy
		Lamp - Pilot Light #47
	A59398	Leaflet - Instruction
	A54372	Lens - Neon Light
T1	A28205	Loop Antenna Assy
	A6610	Microphone - Cord, Plug & Stand
	A4146	Pointer - Dial
R1		Resistor - 2.4 ohms 1/2 Watt
R2		Resistor - 1.0 ohms 1/2 Watt

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
C1	A5594	Cable - Recorder Read
	A1595	Capacitor - Variable
C2		Capacitor - .05 mfd 200 v
C3 C4 C16 C18		Capacitor - .05 mfd 400 v
C5		Capacitor - 100 mfd Mica or Ceramic
C7 C14		Capacitor - .002 mfd 400 v
C8 C24 C25		Capacitor - .001 mfd 400 v
C9 C20 C27		Capacitor - .01 mfd 400 v
C11 C12 C13	A20114	Capacitor - Electrolytic 25 mfd 20 v
C14		40 mfd 300 v 20 mfd 300 v
C15		Capacitor - .2 mfd 200 v
C17		Capacitor - .02 mfd 400 v
C19		Capacitor - .05 mfd 011 (metal case) 400 v
C21		Capacitor - .015 mfd 600 v
C22		Capacitor - .2 mfd 400 v
C23		Capacitor - 220 mfd Mica or Ceramic
C26		Capacitor - .005 mfd 400 v
C28		Capacitor - Electrolytic 10 mfd 400 v
C29	A30117	Choke - Filter
	A3368	Choke - Filter
T2	A28184	Coil - Oscillator B.C.

MODELS 8105, 8105A,
8106, 8106A, CHASSIS
101.833, 101.833-1A



* PART OF T2
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE 'B' AND ARE TAKEN WITH NO SIGNAL, WITH PHONO-BAND SWITCH IN 'BC' POSITION, AND WITH LINE VOLTAGE AT 117 VOLTS. VOLTAGES SHOWN ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO.
PHONO-BAND SWITCH 'R' IS SHOWN IN EXTREME COUNTER-CLOCKWISE (S.W.) POSITION (VIEWED FROM SHAFT END) AND ROTATES CLOCKWISE FROM SW TO BC TO PHONO. SECTIONS MARKED 'RFAR' ARE 'TRANSPARENT VIEWS'.

Six Tube Superheterodyne Receiver with Push Button Tuning and Automatic Record Changer

Chassis 101.833-1A same as 101.833 except these parts
R63021 Speaker - 10" P. M.
R65588 Transformer - Output

Power Output
Undistorted 1.1 Watts
Maximum 1.9 Watts

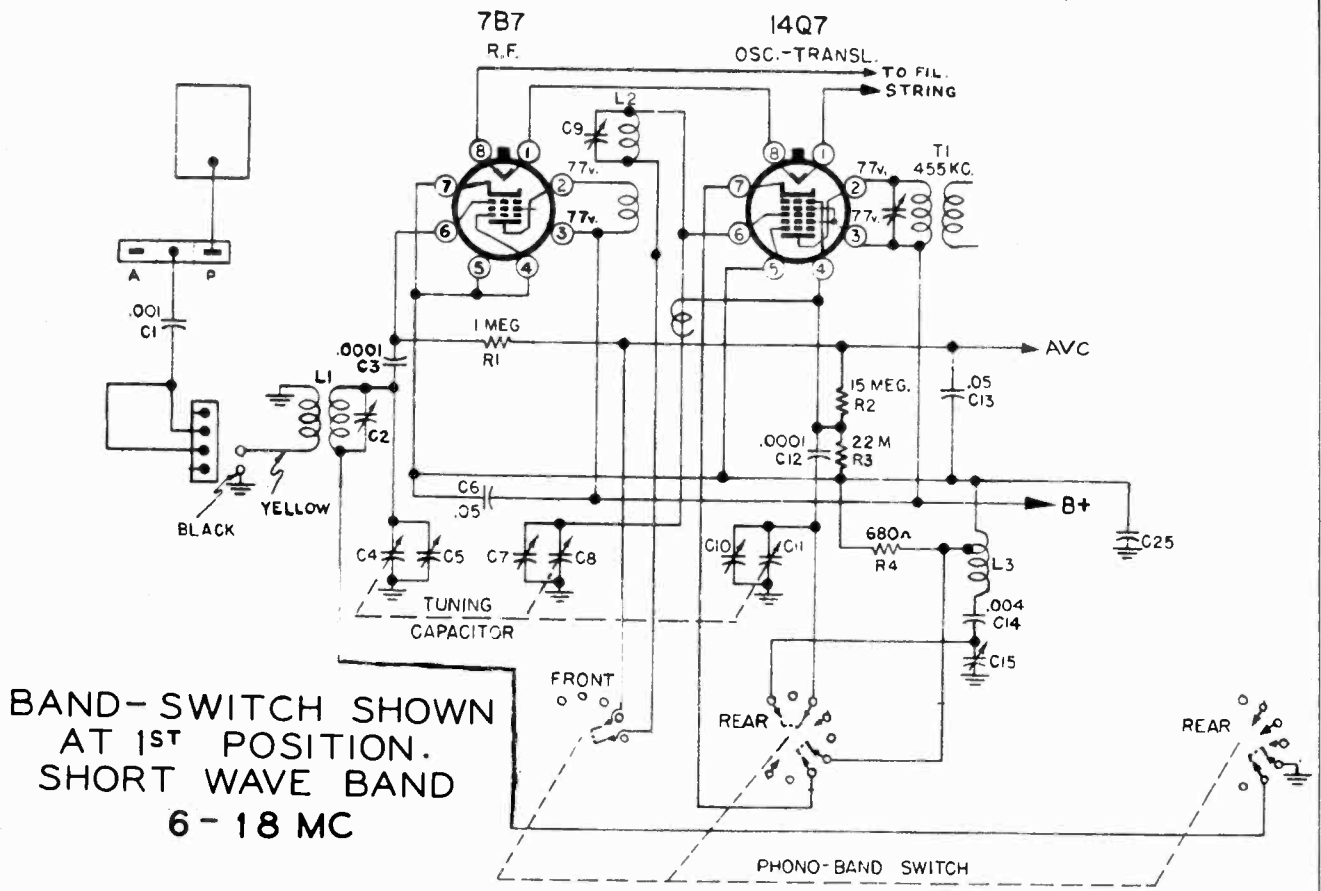
CLARI-SKEMATIX

Registered Trademark

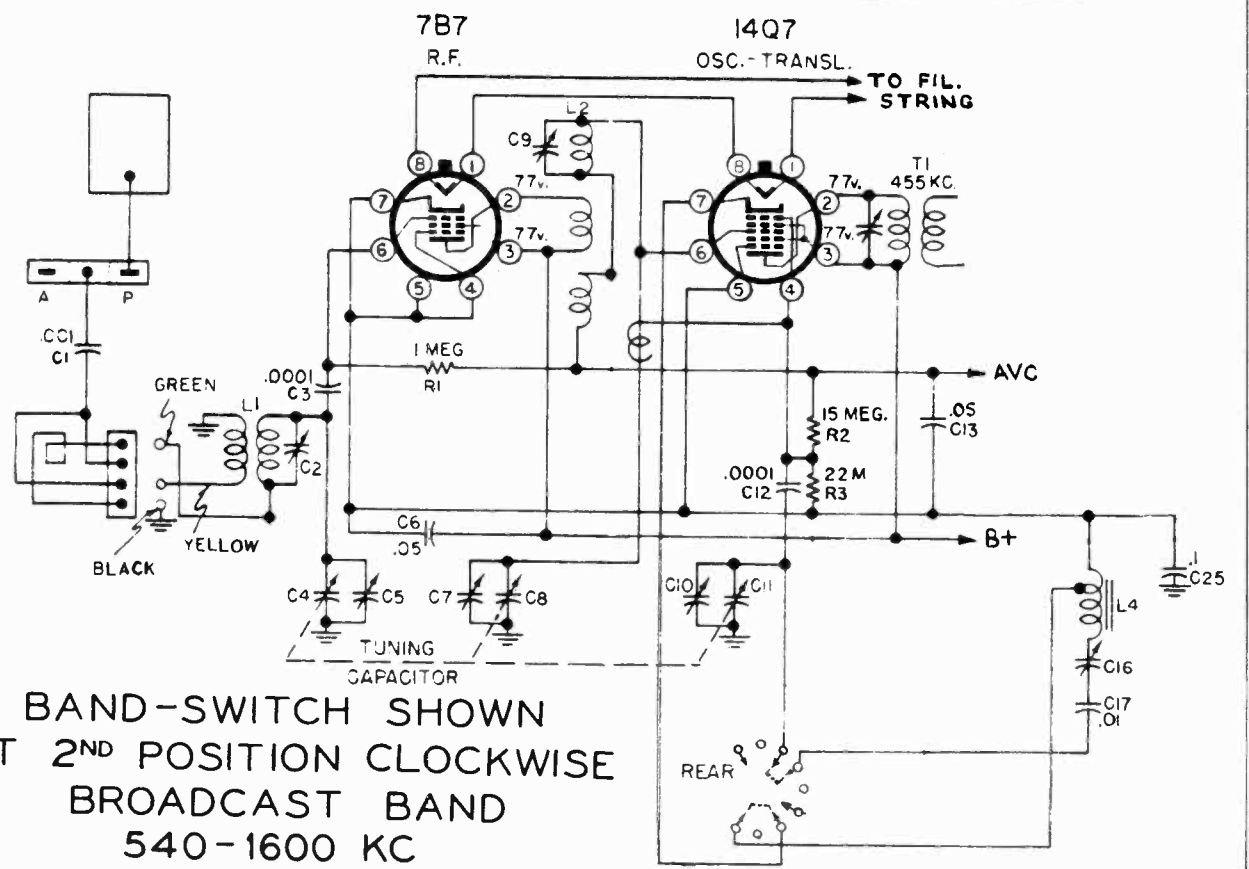
SEARS PAGE 19-39

SEARS, ROEBUCK & CO.

MODELS 8105, 8105A,
8106, 8106A, CHASSIS
101.833, 101.833-1A



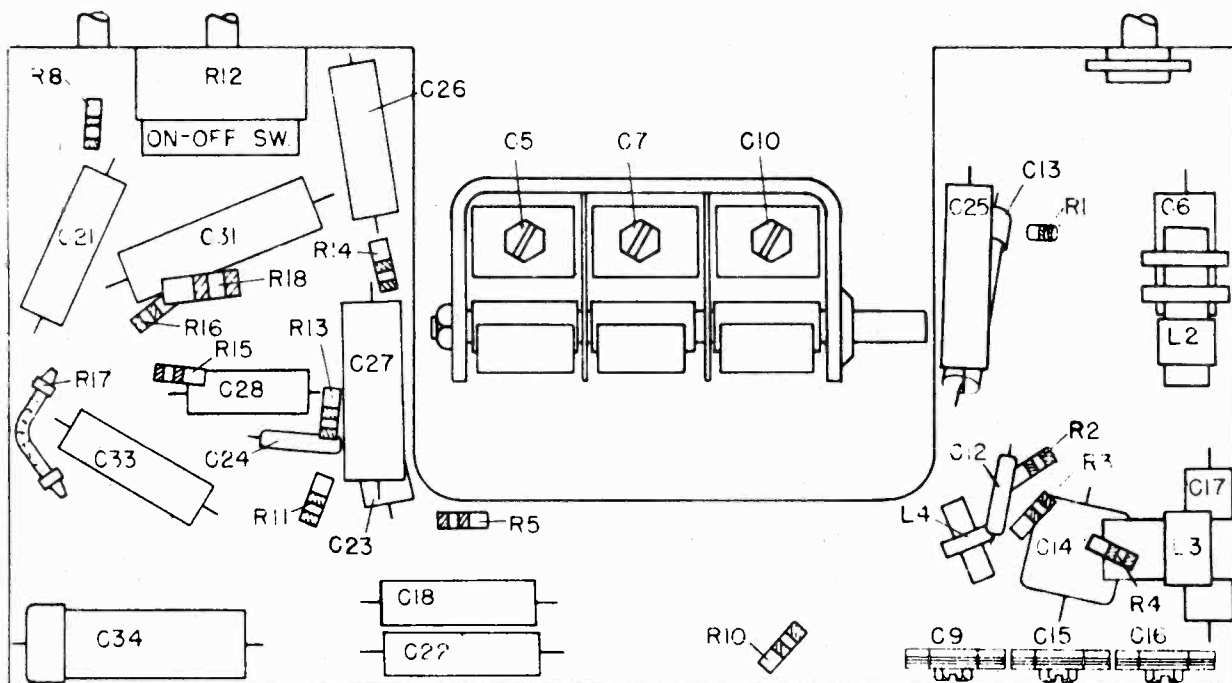
BAND-SWITCH SHOWN
AT 1ST POSITION.
SHORT WAVE BAND
6 - 18 MC



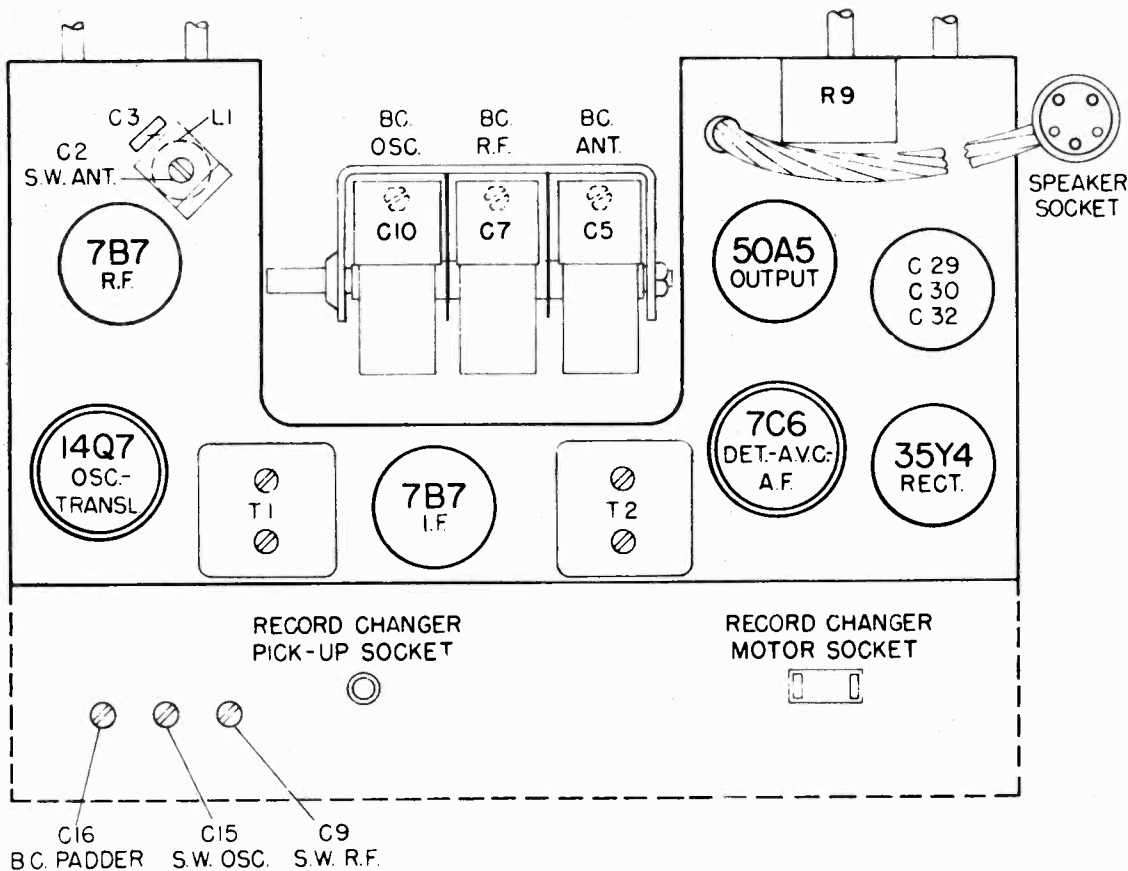
BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE
BROADCAST BAND
540-1600 KC

MODELS 8105, 8105A,
8106, 8106A, CHASSIS
101.833, 101.833-1A

SEARS, ROEBUCK & CO.



LOCATION OF PARTS UNDER CHASSIS



LOCATION OF PARTS ON TOP AND BACK OF CHASSIS

SEARS, ROEBUCK & CO.

MODELS 8105, 8105A,
8106, 8106A, CHASSIS
101.833, 101.833-1A

REPAIR PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MT CODE	SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MT CODE
	R62379	Background - Dial			R62307	Plunger & Yoke Assembly	
	R62652	Button - Push			R62480	Pointer & Slide Assembly	
	R13961	Button - Snap			R61807	Pulley - Metal	
C25, C27		Capacitor - .1 Mfd. 500 Volt		R16		Resistor - 150 Ohm - 1/3 Watt	
C17		Capacitor - .01 Mfd. 500 Volt		R4		Resistor - 800 Ohm - 1/3 Watt	
C25, C31		Capacitor - .02 Mfd. 500 Volt		R3		Resistor - 22,000 Ohm - 1/3 Watt	
C6, C13, C22, C34		Capacitor - .05 Mfd. 500 Volt		R8		Resistor - 68,000 Ohm - 1/3 Watt	
C1, C5, C22		Capacitor - .001 Mfd. 500 Volt		R10		Resistor - 330,000 Ohm - 1/3 Watt	
C18, C23, C26		Capacitor - .005 Mfd. 400 Volt		R14, R15		Resistor - 470,000 Ohm - 1/3 Watt	
C14		Capacitor - Mica - .004 Mfd.		R1		Resistor - 1 Megohm - 1/3 Watt	
C3, C12, C24		Capacitor - Mica - 100 Mfd.		R5, R13		Resistor - 2.2 Megohm - 1/3 Watt	
C29, C30, C32	R60416	Capacitor - Electrolytic - 40 Mfd. 150 Volt, 20 Mfd. 25 Volt, 40 Mfd. 150 V.		R11		Resistor - 4.7 Megohm - 1/3 Watt	
				R2		Resistor - 15 Megohm - 1/3 Watt	
				R18		Resistor - 1200 Ohm - 1 Watt	
				R17		Resistor - Diamond - 25 Ohm - 1 Watt	
					R40232	Resistor - Diamond - 25 Ohm - 1 Watt	
					R62303	Hooker - Bar & Plates Assembly	
					R57193	Shield - Tube	
					R44145	Socket - 2 Prong - Female A.C.	
					R44897	Socket - 1 Prong - Phone	
					R57049	Socket - Tube & Prong Lock-In	
					R60315	Socket - Pilot Lamp	
					R60639	Socket - Speaker Cable	
						WREN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER	
					R61032	Speaker - 8" P. M.	B6
					R61037	Cone & Yoke Coil	
					R61038	Output Transformer	
					R60427	Spring - Extension - Tuner Assembly	
					R60437	Spring - Compression - Tuner Assembly	
					R60677	Spring - Dial Drive	
					R62362	Switch - Wave	
					R62362	Tuning Shaft Assembly	
					R60417	Transformer - I. F. #1	
					R60418	Transformer - I. F. #2	
					R60440	Wafer - Electric Capacitor Mounting	
					R62364	Wafer - Rear - Wave Switch	
					R65523	Wafer - Spring - Lever, Arm & Link Assy.	
					R60462	Wafer - Laminating - Phone Socket	

SPECIFICATIONS

Power Supply:
All models available.....117 Volts 60 Cycles AC 60 Watts

Frequency Range:
Broadcast.....540-1600 KC
Short Wave.....6-18 MC

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter reading to indicate 0.05 Watt across voice coil.....0.4 Volt
Generator ground lead connection.....I.F. alignment-negative "B" lead
.....R.F. alignment-Receiver chassis
Generator Modulation.....30%, 400 cycles
Position of volume control.....Fully on
Position of tone control.....Treble
Position of pointer with tuner fully closed....Last line to left of 540 calibration
mark on the dial scale or first light
brown mark from the left-hand end on
the upper edge of the dial background.

WAVE SWITCH POSITION	POSITION OF TUNER	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS (ADJ. IN ORDER SHOWN)	TRIMMER FUNCTION
BC	Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 & T1	I.F.
BC	Fully open	1650 Kc.	200 mmfd.	Antenna	C10	Osc.
BC	See Note 1	1400 Kc.	200 mmfd.	Antenna	C7	Transl.
BC	See Note 1	1400 Kc.	200 mmfd.	Antenna	C5	Ant.
BC	See Note 2	600 Kc. (Rock)	200 mmfd.	Antenna	C16	Padder
SW	16.5 Mc.	16.5 Mc.	400 ohms	Antenna	C15	Osc.
SW	See Note 1	14 Mc. (Rock)	400 ohms	Antenna	C9	Transl.
SW	See Note 1	14 Mc. (Rock)	400 ohms	Antenna	C2	Ant.

IMPORTANT ALIGNMENT NOTES:

NOTE 1: The 1400 Kc. & 14 Mc. calibration point is the second light brown mark from the right-hand end on the upper edge of the dial background.

NOTE 2: The 600 Kc. calibration point is the third light brown mark from the left-hand edge of the dial background.

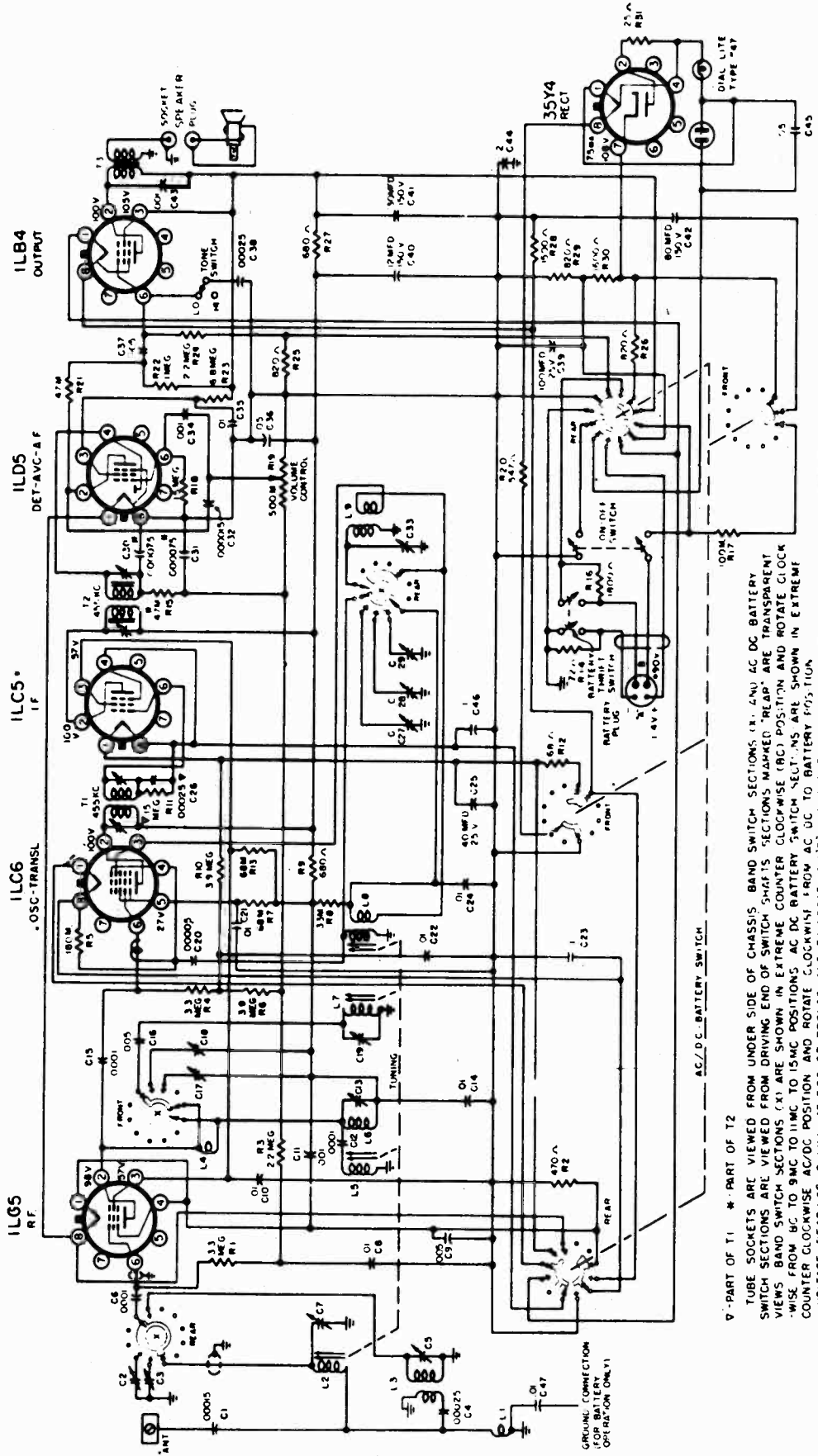
The Alignment must be done in the order given.

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

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

During alignment of the "BC" Band Padder and the "SW" Band R.F. and Antenna Trimmers, the tuner should be rocked through resonance to assure alignment.

MODEL 8230,
CHASSIS 101.835



V - PART OF T1 * PART OF T2
 TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS BAND SWITCH SECTIONS IN 4N1 AC DC BATTERY
 SWITCH SECTIONS ARE VIEWED FROM DRIVING END OF SWITCH SHIFTS SECTIONS MARKED REAR ARE TRANSPARENT
 BAND SWITCH SECTIONS (A) ARE SHOWN IN EXTREME COUNTER CLOCKWISE (B) POSITION AND ROTATE CLOCK
 WISE FROM (B) TO (A) POSITION AND ROTATE COUNTER CLOCKWISE FROM (A) TO (B) POSITION AND ROTATE COUNTER
 CLOCKWISE AC/DC POSITION AND ROTATE COUNTER CLOCKWISE FROM AC TO DC TO BATTERY POSITION
 VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE (B) AND ARE TAKEN WITH "0" SIGNAL WITH BAND SWITCH IN (B) POSITION WITH AC/DC
 BATTERY SWITCH IN AC/DC POSITION AND WITH LINE VOLTAGE AT 117 VOLTS WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ VOLTAGE
 READINGS ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT

PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter reading to indicate 0.05 watt across voice coil.....0.4 volt
 Generator ground lead connection.....I.F. alignment-negative "B" lead
Ant. alignment-receiver chassis
 Generator modulation.....30%, 400 cycles
 Position of volume control.....Fully on
 Position of tone control.....Treble
 Position of pointer with tuner fully closed..Last line to left of 540 calibration mark
 on the dial scale.

WAVEBAND SWITCH POSITION	POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
BC	Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 & T1	I. F.
BC	See Note	1725 Kc.	75 mmfd.	Antenna	C29	Oscillator
BC	See Note	1725 Kc.	75 mmfd.	Antenna	C7 & C19	Ant., Transl.
BC	See Note	1500 Kc.	75 mmfd.	Antenna	L8	Oscillator
BC	See Note	1500 Kc.	75 mmfd.	Antenna	L2 & L7	Ant., Transl.
C	See Note	15.2 Mc.	400 ohms	Antenna	C33	Oscillator
C	See Note	15.2 Mc.	400 ohms	Antenna	C5 & C13	Ant., Transl.
B	See Note	11.8 Mc.	400 ohms	Antenna	C27	Oscillator
B	See Note	11.8 Mc.	400 ohms	Antenna	C2 & C17	Ant., Transl.
A	See Note	9.6 Mc.	400 ohms	Antenna	C28	Oscillator
A	See Note	9.6 Mc.	400 ohms	Antenna	C3 & C18	Ant., Transl.

IMPORTANT ALIGNMENT NOTES:

NOTE: Before alignment of receiver, remove the dial background. The tuner should be positioned at the frequency noted under "GENERATOR FREQUENCY" on the above chart. These frequencies are noted on the dial background mounting plate. "START," shall be considered the position of the tuner fully closed and "FINISH," the position of the tuner at 1725 Kc.

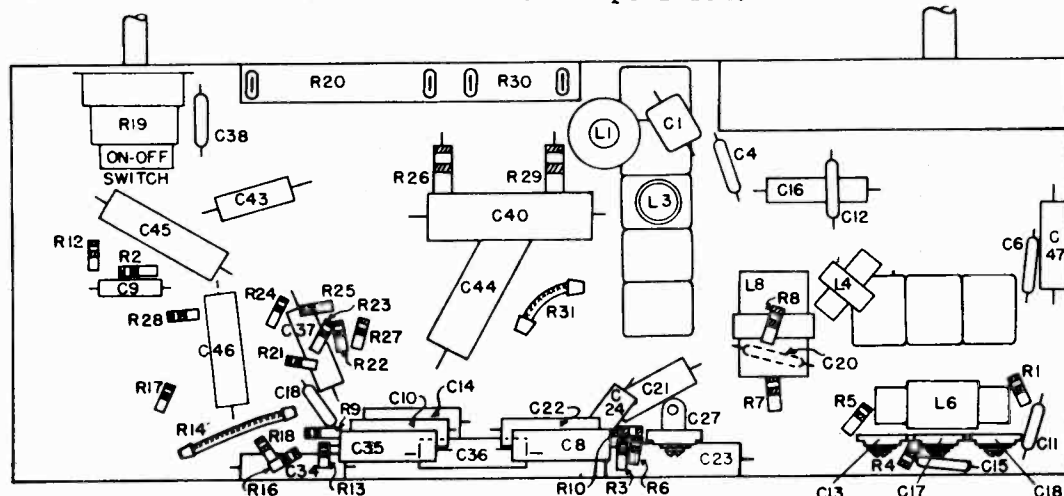
During the alignment of the antenna and translator trimmers on the shortwave spreadbands the tuner should be rocked through resonance to assure alignment.

The alignment must be done in the order given.

The entire alignment procedure should be repeated step by step in the original order for greatest accuracy.

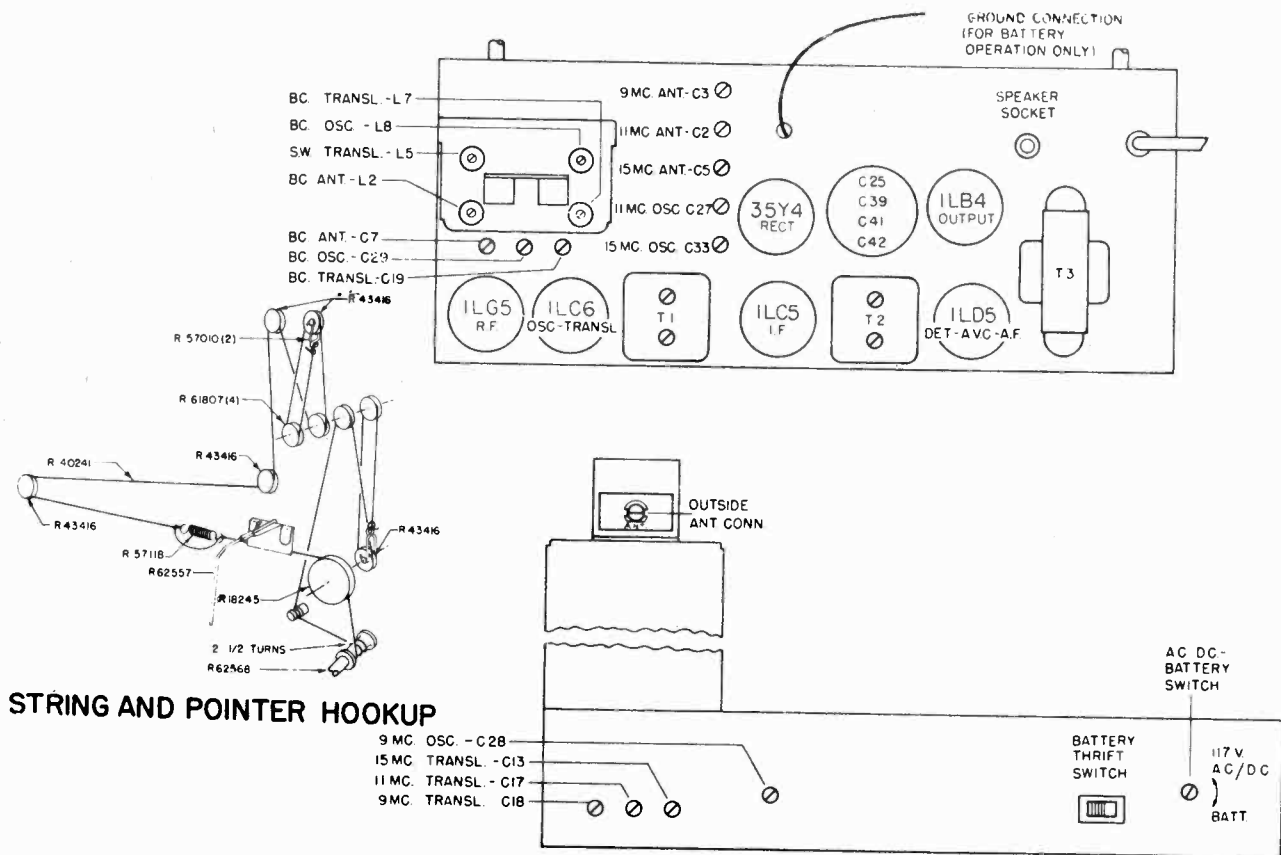
Always keep the output power from the generator at its lowest possible value to prevent the AVC action of the receiver from interfering with accurate alignment.

Before attempting shortwave alignment, the L5 core should be adjusted to a dimension of approximately 1-21/32" from the top of core to the top turn of the winding. This should be done with the tuner in the 1725 Kc. position.



MODEL 8230,
CHASSIS 101.835

SEARS, ROEBUCK & CO.



SCHEMATIC LOCATION

PART NUMBER

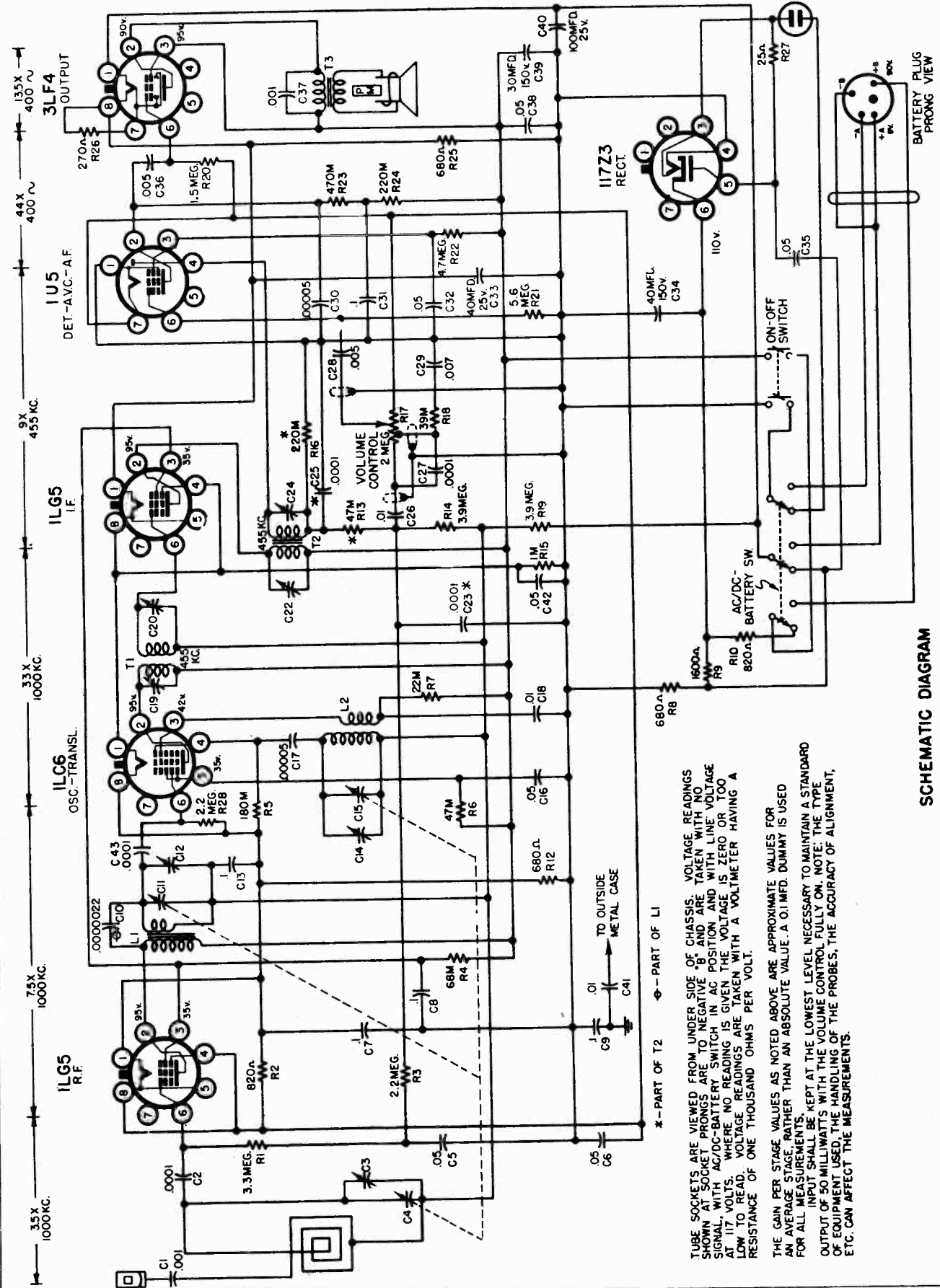
DESCRIPTION

LOCATION OF PARTS ON TOP & BACK OF CHASSIS

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R57045	Antenna Kit
	R62558	Background - Dial
	R57021	Bushing - Shaft
	R61846	Button - Snap
C23, C46		Capacitor - .1 Mfd. 600 Volt
C44		Capacitor - .2 Mfd. 600 Volt
C8, C10, C14, C21, C22, C24, C35, C47		Capacitor - .01 Mfd. 600 Volt
C36, C45		Capacitor - .05 Mfd. 600 Volt
C1, C43		Capacitor - .001 Mfd. 600 Volt
C16, C37		Capacitor - .005 Mfd. 600 Volt
C32		Capacitor - Mica - 15 Mmfd.
C20		Capacitor - Mica - 50 Mmfd.
C6, C12, C15		Capacitor - Mica - 100 Mmfd.
C1		Capacitor - Mica - 150 Mmfd.
C38		Capacitor - Mica - 250 Mmfd.
C11		Capacitor - Mica - 1000 Mmfd.
C4		Capacitor - Silver Mica - 250 Mmfd.
C9		Capacitor - Mica - 5000 Mmfd.
C28	R57080	Capacitor - Trimmer - Single
C7, C19, C29	R57081	Capacitor - Trimmer - 3 Gang
C13, C17, C18	R57020	Capacitor - Trimmer - 3 Gang
C2, C3, C5, C27, C33	R57082	Capacitor - Trimmer - 5 Gang
C40	R61840	Capacitor - Dry Electrolytic - 12 Mfd. 150 Volt
C25, C39, C41, C42	R60803	Capacitor - Electrolytic - 40 Mfd. 25 Volt 100 Mfd. 25 V., 30 Mfd. 150 V., 80 Mfd. 150 V.
L3	R45074	Coil - Antenna - S. W. Shunt
L6	R45077	Coil - R.F. - S.W. Shunt
L1	R45255	Coil - Choke
L9	R57078	Coil - Oscillator - S.W. Shunt
R19	R62577	Control - On-Off, Volume & Tone
	R17166	Cord - Line
	R40241	Cord - Dial Drive (48")
	R62586	Dial - Station
	R62559	Escutcheon
	R62540	Knob - On-Off & Volume
	R62541	Knob - Tone
	R62542	Knob - Tuning
	R62543	Knob - Wave Switch
	R20963	Lamp - Mazda Type #47
	R64090	Leaflet - Instruction
	R40457	Plug - 4 Prong - Battery Cable
	R62557	Pointer - Dial
	R18245	Pulley - Wood - 1 1/16" O.D.
	R43416	Pulley - Wood - 17/32" O.D.
	R61807	Pulley - Metal
R12		Resistor - 68 Ohm - 1/2 Watt
R2		Resistor - 470 Ohm - 1/2 Watt
	R9, R27	Resistor - 680 Ohm - 1/2 Watt
	R25, R26	Resistor - 820 Ohm - 1/2 Watt
	R28	Resistor - 1500 Ohm - 1/2 Watt
	R16	Resistor - 1800 Ohm - 1/2 Watt
	R8	Resistor - 33,000 Ohm - 1/2 Watt
	R21	Resistor - 47,000 Ohm - 1/2 Watt
	R7, R13	Resistor - 68,000 Ohm - 1/2 Watt
	R17	Resistor - 100,000 Ohm - 1/2 Watt
	R5	Resistor - 180,000 Ohm - 1/2 Watt
	R22	Resistor - 1 Megohm - 1/2 Watt
	R3, R24	Resistor - 2.2 Megohm - 1/2 Watt
	R1, R4	Resistor - 3.3 Megohm - 1/2 Watt
	R6, R10	Resistor - 3.9 Megohm - 1/2 Watt
	R23	Resistor - 6.8 Megohm - 1/2 Watt
	R18	Resistor - 15 Megohm - 1/2 Watt
	R29	Resistor - 820 Megohm - 1 Watt
	R40232	Resistor - Glasohm - 25 Ohm - 1 Watt
	R45254	Resistor - Flexohm - .72 Ohm - 1/2 Watt
	R61838	Resistor - Wire Wound - 2 Section
	R62592	Screw - #2 x 5/8 - Escutcheon & Dial Mounting
	R62640	Screw - #2 x 3/8 - Escutcheon & Dial Mounting
	R62568	Shaft & Link Assembly
	R44897	Socket - 1 Prong - Speaker Connector
	R57040	Socket - Pilot Lamp
	R57049	Socket - Tube - 8 Prong Lock-In
		WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER
	R57061	Speaker - 5 1/4" P.M.
	R57272	Plug
	R57118	Spring - Extension
	R57038	Switch - Slide Type - D.P.S.T.
	R61828	Switch - AC - DC - Battery
	R57064	Switch - Wave
	R57120	Transformer - I.F. #1
	R62571	Transformer - I.F. #2
	R62253	Transformer - Output
	R62724	Tuner - Permeability Unit
	R63128	Coil - Antenna
	R63129	Coil - Oscillator
	R63130	Coil - R.F.
	R63131	Coil - S.W. Shunt
	R61819	Core Slide Bracket Assembly
	R62811	Core - Iron
	R45067	Cover
	R13335	Washer - "C" - Shaft & Link Assembly Retaining
	R61815	Washer - Metal Pulley Retaining
	R15496	Washer - Flat - Chassis Mounting
	R62587	Washer - Felt (behind knob)

SEARS, ROEBUCK & CO.

MODELS 8270, 8270A,
CHASSIS 101.822,
101.822A



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE "B" AND ARE TAKEN WITH NO SIGNAL, WITH AC/DC-BATTERY SWITCH IN AC POSITION AND WITH LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ. VOLTAGE READINGS ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT.

THE GAIN PER STAGE VALUES AS NOTED ABOVE ARE APPROXIMATE VALUES FOR AN AVERAGE STAGE, RATHER THAN AN ABSOLUTE VALUE. A 0.1MFD. DUMMITY IS USED FOR ALL MEASUREMENTS.

INPUT SHALL BE KEPT AT THE LOWEST LEVEL NECESSARY TO MAINTAIN A STANDARD OUTPUT OF 50 MILLIWATTS WITH THE VOLUME CONTROL FULLY ON. NOTE: THE TYPE OF EQUIPMENT USED, THE HANDLING OF THE PROBES, THE ACCURACY OF ALIGNMENT, ETC. CAN AFFECT THE MEASUREMENTS.

SCHEMATIC DIAGRAM

MODELS 8270, 8270A,
CHASSIS 101.822,
101.822A

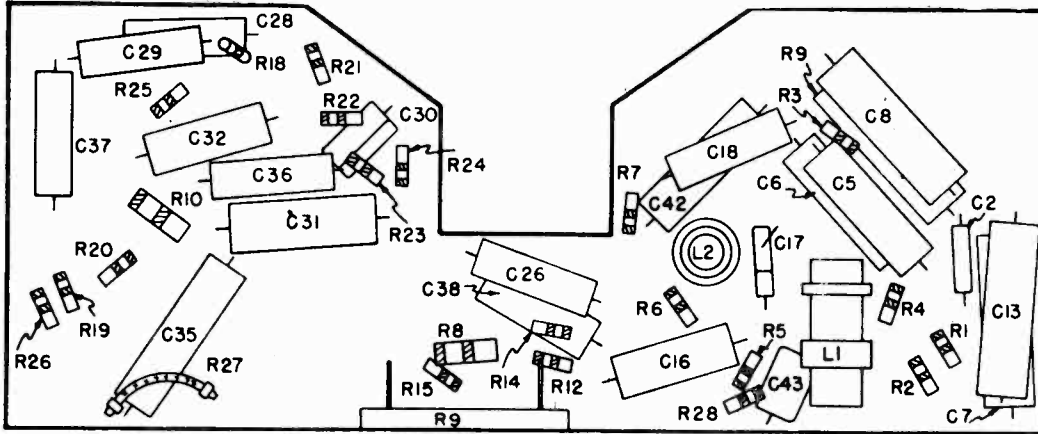
SEARS, ROEBUCK & CO.

SPECIFICATIONS

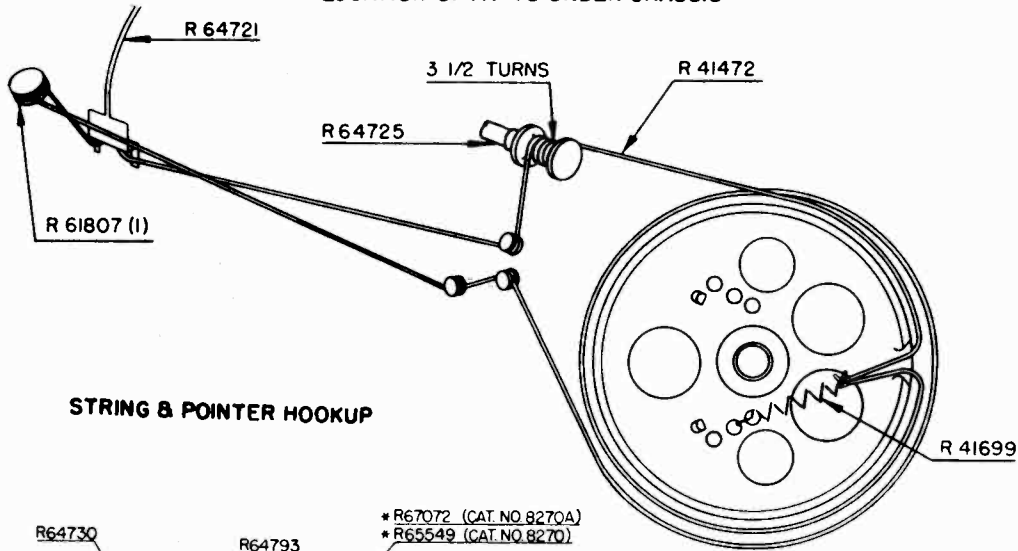
Power Supply:
All Models available..... 117 Volts DC, 25-60 Cycle AC, 20 Watts
or Catalog No. 6404 Battery Pack

Power Output:
Undistorted..... .25 Watts
Maximum..... .45 Watts

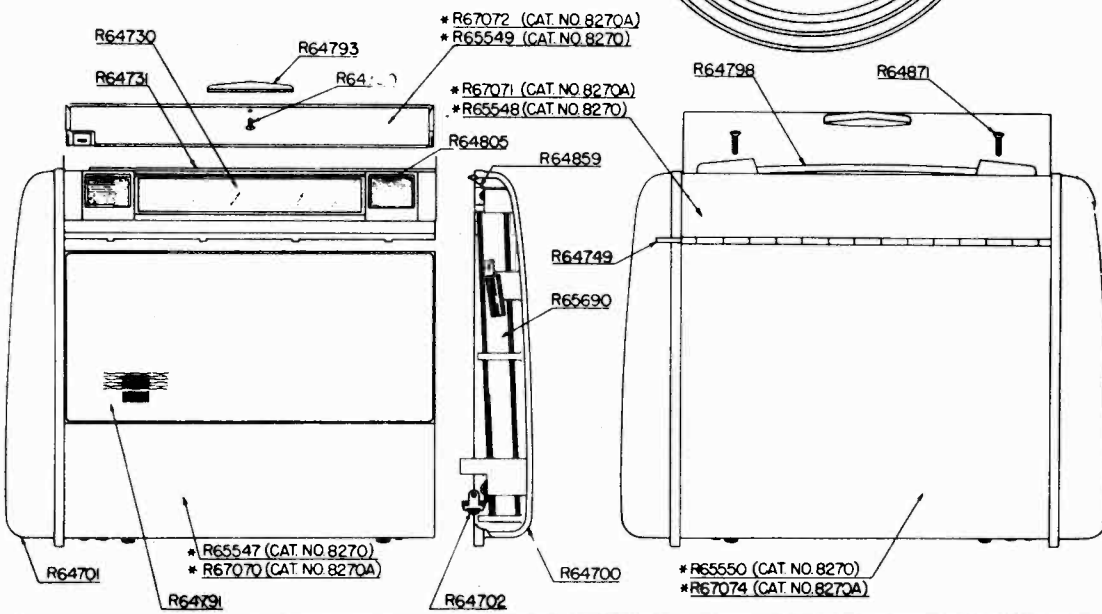
Frequency Range:
Broadcast..... 540-1600 KC



LOCATION OF PARTS UNDER CHASSIS



STRING & POINTER HOOKUP



SEARS, ROEBUCK & CO.

MODELS 8270, 8270A,
CHASSIS 101.822,
101.822A

PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter reading to indicate 0.05 Watt across voice coil..... 0.4 Volt
 Generator ground lead connection..... To B- through 0.1 mfd. capacitor
 Generator modulation..... 30%, 400 cycles
 Position of volume control..... Fully on
 Position of pointer with tuner fully closed..... The second line to the left of the
 540 Kc. calibration mark.

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455 Kc.	0.1 mfd.	Trans-Grid	T2 & T1	I.F.
1400 Kc.	1400 Kc.	50 mmfd.	Hazeltine Loop	C14	Oscillator
1400 Kc.	1400 Kc.	50 mmfd.	Hazeltine Loop	C12	R.F.
1400 Kc.	1400 Kc.	50 mmfd.	Hazeltine Loop	* C3	Antenna

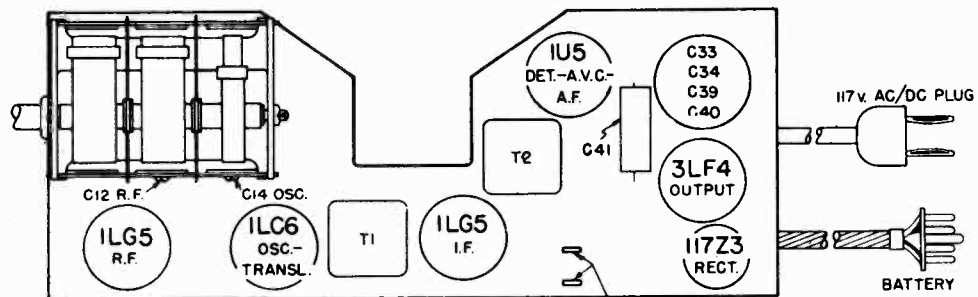
IMPORTANT ALIGNMENT NOTES:

NOTE: It is recommended that an isolation transformer be connected between the radio chassis and the line before aligning the receiver on AC.

The alignment must be done in the order given.

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

*Located on Loop and Case End Assembly



LOCATION OF PARTS ON TOP OF CHASSIS

FOR BATTERY OPERATION,
INSERT AC/DC PLUG IN
THIS SOCKET.

PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE	SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE
	R64702	Capacitor - Trimmer - Loop & End Case Assy.		R36	R64702	Resistor - 270 ohm 1/2 Watt	
CY,C3,C4,		Capacitor - .1 mfd. 600 Volt		R13,R4,R36	R64702	Resistor - 680 ohm 1/2 Watt	
C15,C21		Capacitor - .01 mfd. 600 Volt		R10	R64702	Resistor - 620 ohm 1/2 Watt	
C18,C26,C41		Capacitor - .05 mfd. 600 Volt		R10	R64702	Resistor - 1000 ohm 1/2 Watt	
C35,C37,C43		Capacitor - .05 mfd. 600 Volt		R15	R64702	Resistor - 25,000 ohm 1/2 Watt	
C37,C43		Capacitor - Mica - 100 mmfd.		R6	R64702	Resistor - 39,000 ohm 1/2 Watt	
C17,C30		Capacitor - Mica - 50 mmfd.		R4	R64702	Resistor - 47,000 ohm 1/2 Watt	
C1,C31		Capacitor - .001 mfd. 600 Volt		R2	R64702	Resistor - 85,000 ohm 1/2 Watt	
C38,C38		Capacitor - .005 mfd. 600 Volt		R7,R34	R64702	Resistor - 150,000 ohm 1/2 Watt	
C39		Capacitor - .007 mfd. 600 Volt		R20	R64702	Resistor - 350,000 Ohm 1/2 Watt	
C84,C39,C40, R64705		Capacitor - Electrolytic - 40 mfd. 25 Volt		R25	R64702	Resistor - 470,000 ohm 1/2 Watt	
C33		100 mfd. 25 Volt, 30 mfd. 150 Volt, 40 mfd. 150 Volt		R20	R64702	Resistor - 1.8 megohm 1/2 Watt	
C6,C11,C16		Capacitor - 3 Gang Variable		R3,R28	R64702	Resistor - 3.3 megohm 1/2 Watt	
	R68860	Case Assembly - Rear Out. #8270-Listed	AS	R1	R64702	Resistor - 3.3 megohm 1/2 Watt	
	R67074	Case Assembly - Rear Out. #8270A-Listed	AAO	R16,R14	R64702	Resistor - 3.3 megohm 1/2 Watt	
	R67070	Case Assembly - Front Out. #8270A-Listed		R23	R64702	Resistor - 4.7 megohm 1/2 Watt	
	R68847	Case Assembly - Front Out. #8270-Listed	AAO	R21	R64702	Resistor - 5.8 megohm 1/2 Watt	
	R68848	Case Assembly - Top Out. #8270-Listed		R2	R64702	Resistor - 5.8 megohm 1/2 Watt	
	R67071	Case Assembly - Top Out. #8270A-Listed		R2	R64702	Resistor - 520 Ohm 1 Watt	
	R64700	Case - End - R.H.		R27	R64702	Resistor - Glassohm - 25 ohm 1 Watt	
	R64701	Case - End - L.H.		R8	R64716	Resistor - 1600 ohm - 6 Watt	
	R64730	Cover - Dial Callinoid		R57069	Socket - Tube - 8 Pin, Lock-In		
	R68849	Cover Assembly - Reversible Out. #8270-Listed		R68153	Socket - Miniature Tube (11723 Tube)		
	R67073	Cover Assembly - Reversible Out. #8270A-Listed		R68845	Socket - Miniature Tube (11723 Tube)		
	R64738	Clip - Coil Mounting				WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER	
L1	R64706	Coil - R.F.		R65157	Speaker - 8 1/4" P.M.		
L2	R64708	Coil - Oscillator		R62919	Case & Voice Coil	AO	
R17	R64704	Control - On-Off & Volume	T3	R64794	Transformer - Output		
	R64711	Cord - Line		R61890	Spring - Dial Drive		
	R41473	Cord - Dial Drive (84")		R60013	Switch - A.C. - Battery		
	R64823	Dial - Station		R64738	Soft Assembly - Tuning		
	R64731	Earphones	AS	R64780	Screw - Earsphone - Cover Assembly		
	R64761	Grille		R64971	Screw - Carrying Strap Mounting		
	R64732	Handle - Earsphone Cover		R64660	Spring Assembly - Loop & Case End Assembly		
	R64287	Leaflet - Instruction	T1	R64798	Strap - Carrying		
	R64800	Loop - Antenna	T2	R64707	Transformer - I.F. #1		
	R64743	Knob - On-Off or Tuning		R64706	Transformer - I.F. #2		
	R64749	Pin - Stage		R61830	Wafer - Electrolytic Capacitor Mounting		
	R64847	Plug - Battery Cable		R16498	Washer - Flat - Chassis Assembly Mounting		
	R64731	Potentiometer - Dial		R61815	Washer - Metal Pulley Retaining		
	R61607	Pulley - Metal		R64744	Washer - Insulating - Potentiometer Drive Assembly Mtg.		

MODEL 9054,
CHASSIS 101.849

SEARS, ROEBUCK & CO.

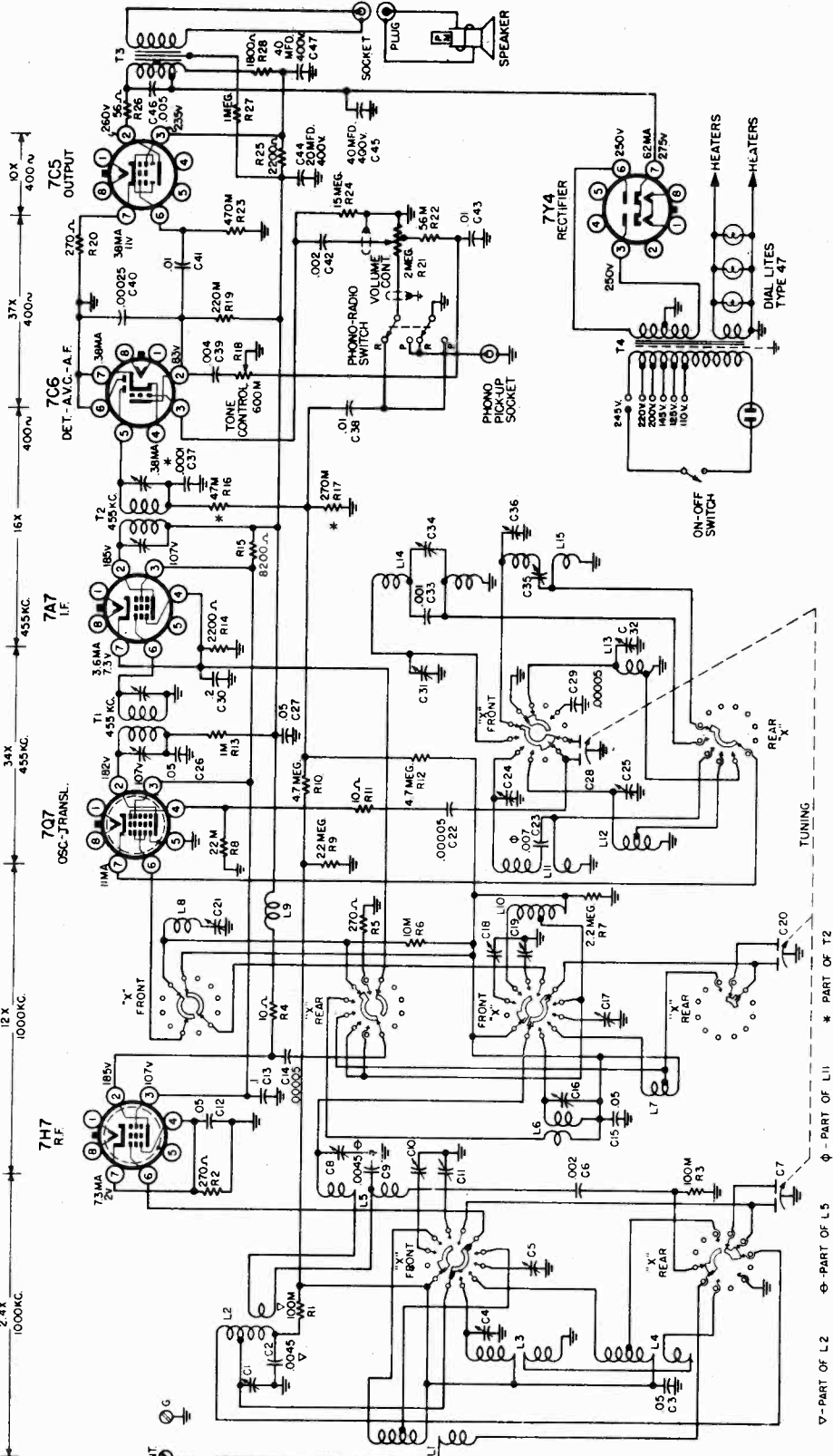
SPECIFICATIONS

Power Supply:
All models available 110-125-145-200-245 Volts 40 to 60 Cycle AC - 50 Watts

Frequency Range:
Band "A" 540-1600 Kc.
Band "B" 1.65-4.6 Mc.
Band "C" 4.6-10.0 Mc.

Power Output:
Undistorted 3.0 Watts
Maximum 4.0 Watts

SCHMATIC DIAGRAM FOR YOUR RADIO



7A7 - PART OF L2 7Q7 - PART OF L1 * PART OF T2

BAND SWITCH "X" IS SHOWN IN EXTREME CLOCKWISE (B.C. OR BAND A) POSITION (VIEWED FROM KNOB END OF SWAST) AND ROTATES COUNTER CLOCKWISE FROM BAND A TO BAND B TO BAND C TO BAND D TO BAND E POSITION. SECTIONS MARKED REAR ARE TRANSPARENT VIEW. TUBE SOCKET NUMBER SHOWN UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS AND ARE TAKEN WITH NO SIGNAL. WITH PHONO-RADIO SWITCH IN RADIO POSITION, SWITCH IN BAND POSITION IS, IN B.C. OR BAND A POSITION, WITH POWER TRANSFORMER TAP IN 110 VOLT POSITION, AND WITH LINE VOLTAGE AT 110 VOLTS, WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. ALL VOLTAGE READINGS ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT.

THE GAIN PER STAGE VALUES AS NOTED ABOVE ARE APPROXIMATE FOR AN AVERAGE STAGE. RATHER THAN AN ABSOLUTE VALUE. A .01 MFD. DUMMY IS USED FOR ALL MEASUREMENTS, EXCEPT FOR THE ANTENNA WHERE A 200 MMFD. DUMMY IS USED. INPUT SHALL BE KEPT AT THE LOWEST LEVEL POSSIBLE FOR A STANDARD OUTPUT OF 0.5 WATT. WITH THE VOLUME CONTROL FULLY ON. NOTE: THE TYPE OF EQUIPMENT USED, THE HANDLING OF THE PROBES, THE ACCURACY OF ALIGNMENT, ETC. CAN AFFECT THE MEASUREMENTS.

SEARS, ROEBUCK & CO.

MODEL 9054,
CHASSIS 101.849

ALIGNMENT PROCEDURE

PRELIMINARY:

- Output meter reading to indicate 0.5 watt across voice coil 1.26 volt
- Generator ground lead connection To receiver chassis
- Generator modulation 30%, 400 cycles
- Position of volume control Fully on
- Position of tone control Treble
- Position of pointer with tuner fully closed Last line below 540 Kc. cali-
bration mark on dial scale "A"

WAVE BAND SWITCH POS.	POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
Band B	Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 - T1	I.F.
Band A	Closed	See Note	200 mmfd.	Ant.	C21	I.F. Trap
Band A	1410 Kc.	1410 Kc.	200 mmfd.	Ant.	C36	Osc.
Band A	1410 Kc.	1410 Kc.	200 mmfd.	Ant.	C8	Transl.
Band A	1410 Kc.	1410 Kc.	200 mmfd.	Ant.	C1	Ant.
Band A	600 Kc.	600 Kc.	200 mmfd.	Ant.	C35	Osc. Pad.
Band B	4.2 Mc.	4.2 Mc.	400 ohms	Ant.	C31	Osc.
Band B	4.2 Mc.	4.2 Mc.	400 ohms	Ant.	C16	Transl.
Band B	4.2 Mc.	4.2 Mc.	400 ohms	Ant.	C4	Ant.
Band B	1800 Kc.	1800 Kc.	400 ohms	Ant.	C34	Osc. Pad.
Band C	9.6 Mc.	9.6 Mc.	400 ohms	Ant.	C24	Osc.
Band C	9.6 Mc.	9.6 Mc.	400 ohms	Ant.	C19	Transl.
Band C	9.6 Mc.	9.6 Mc.	400 ohms	Ant.	C11	Ant.
Band E	21.6 Mc.	21.6 Mc.	400 ohms	Ant.	C32	Osc.
Band E	21.6 Mc.	21.6 Mc.	400 ohms	Ant.	C18	Transl.
Band E	21.6 Mc.	21.6 Mc.	400 ohms	Ant.	C10	Ant.
Band D	15.2 Mc.	15.2 Mc.	400 ohms	Ant.	C25	Osc.
Band D	15.2 Mc.	15.2 Mc.	400 ohms	Ant.	C17	Transl.
Band D	15.2 Mc.	15.2 Mc.	400 ohms	Ant.	C5	Ant.

IMPORTANT ALIGNMENT NOTES:
NOTE: The signal generator frequency shall be adjusted for highest response near 455 Kc. for alignment of the I.F. trap.

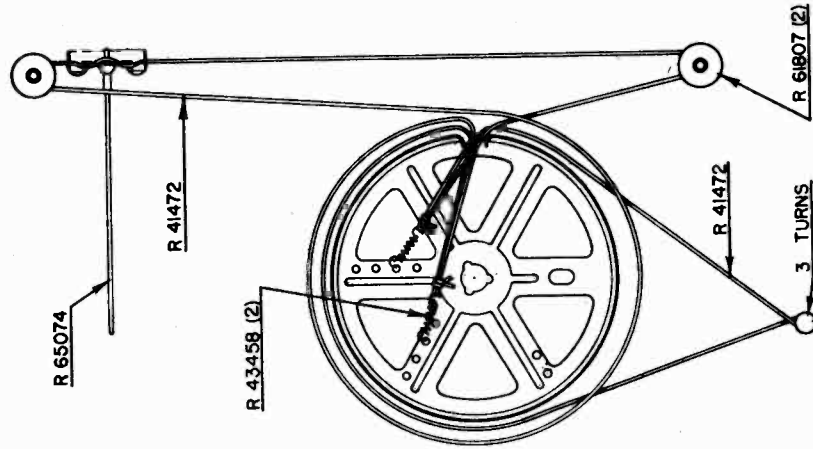
Band E oscillator operates below the signal frequency. The setting of the oscillator trimmer occurs at the first peak out from tight for the fundamental. All other bands have the oscillator operating above the signal frequency and are to be aligned in the normal manner.

During the alignment of the oscillator padder on bands A and B the tuner should be rocked through resonance to assure alignment.

The alignment must be done in the order given.

The entire alignment procedure should be repeated step by step in the original order for greatest accuracy.

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



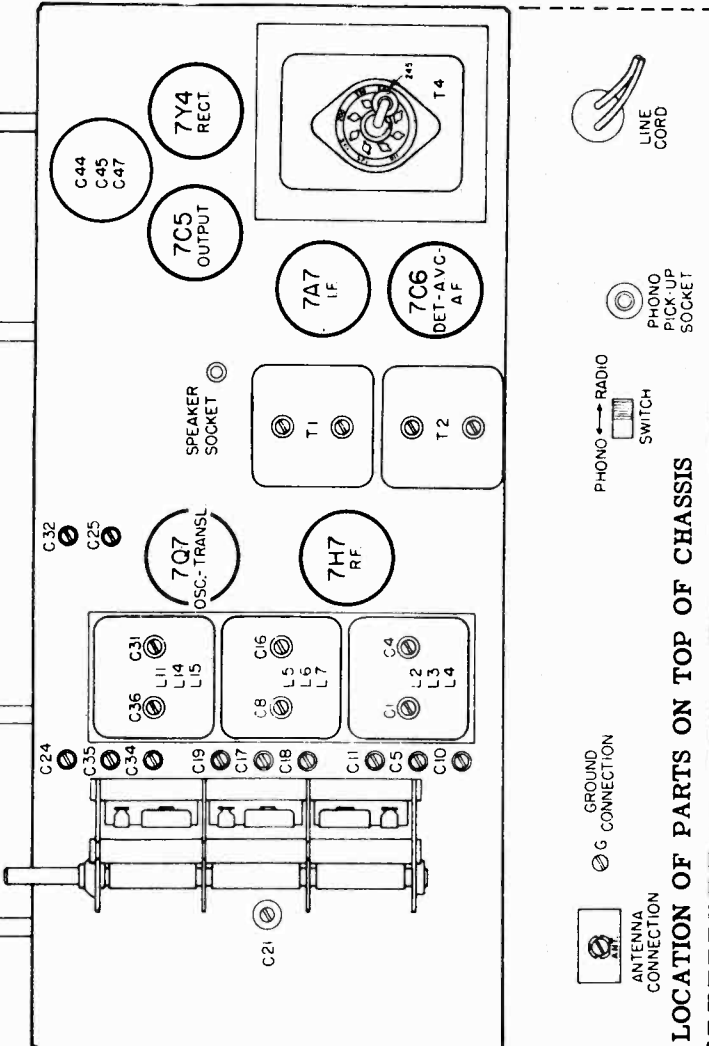
STRING AND POINTER HOOKUP

MODEL 9054,
CHASSIS 101.849

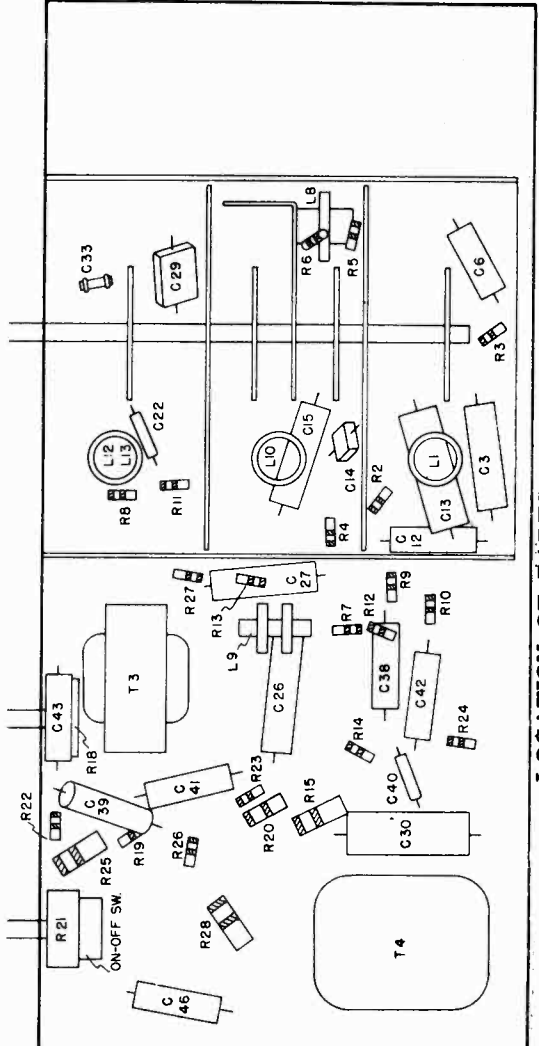
SEARS, ROEBUCK & CO.

REPAIR PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	PK. CODE
C44	R65098	Background - Dial	
C39	R01646	Button - Snap	
C42		Capacitor - .005 mfd. - 800 V.	
C41		Capacitor - .004 mfd. - 400 V.	
C12,C15,		Capacitor - .002 mfd. - 600 V.	
C30		Capacitor - .05 mfd. - 600 V.	
C13		Capacitor - .01 mfd. - 600 V.	
C40		Capacitor - .02 mfd. - 400 V.	
C14		Capacitor - .01 mfd. - 400 V.	
C35,C32		Capacitor - Mica - 50 mmfd.	
C5,C10,C11,		Capacitor - Mica - 1000 mmfd.	
C17,C18,C19		Capacitor - Mica - 250 mmfd.	
C7,C20,C35		Capacitor - Trimmer - 50 mmfd.	
C21,C26,C28		Capacitor - Trimmer - 3 Gang	
C22		Capacitor - Variable - 3 Gang	
C23		Capacitor - Variable - 3 Gang	
C20		Capacitor - I.F. Trap	
C45		Capacitor - I.F. Trap Trimmer	
C44		20 mfd. - 400 V.	AAO
C45		10 mfd. - 400 V.	AAO
C47		40	
L1	R65077	Coil - Antenna - Bands D and E	AO
L2,L3,L4	R65085	Coil - Antenna - Bands A, B, and C	
L8	R65088	Coil - I.F. Trap Choke	
L12,L13	R65078	Coil - Oscillator	
L10,L14,L15	R65080	Coil - Oscillator - Bands D and E	A5
L9	R65082	Coil - Oscillator - Bands A, B, and C	
L5,L6,L7	R65086	Coil - Transformer - Bands A, B, and C	A5
L10	R65088	Coil - Transformer - Bands D and E	
R21	R65073	Control - On-Off and Volume	
R18	R01972	Control - Tone	
		Band Indicator - 9"	
		Band Indicator - 9"	
		Band Indicator - 9"	
		Ponder Drive - 23"	
R65233		Cord - Line	
R65270		Cover - Back - Cabinet	
R65187		Cover - Bottom	
R65270		Cover - Transformer Tap Socket	
R65270		Disc - Bottom	
R65089		Disc - Band Indicator - Assy.	
R65098		Escuchabon - Dial	
R65257		Knob - Band	
R65256		Knob - On-Off and Volume	
R65255		Knob - Tone	
R65253		Knob - Tone	
R65253		Knob - Tone	
R65074		Pointer - Dial	
R61807		Pointer - Dial	
		Puller - Metal - Dial	
R4,R11		Resistor - 10 ohm - 1/2 W.	
R2		Resistor - 35 ohm - 1/2 W.	
R5		Resistor - 250 ohm - 1/2 W.	
R14		Resistor - 1000 ohm - 1/2 W.	
R6		Resistor - 2000 ohm - 1/2 W.	
R7		Resistor - 10,000 ohm - 1/2 W.	
R8		Resistor - 22,000 ohm - 1/2 W.	
R22		Resistor - 150,000 ohm - 1/2 W.	
R2		Resistor - 100,000 ohm - 1/2 W.	
R19		Resistor - 220,000 ohm - 1/2 W.	
R23		Resistor - 470,000 ohm - 1/2 W.	
R27		Resistor - 1 megohm - 1/2 W.	
R21		Resistor - 2.2 megohm - 1/2 W.	
R10,R12		Resistor - 15.0 megohm - 1/2 W.	
R24		Resistor - 270 ohm - 1 W.	
R28		Resistor - 1,800 ohm - 2 W.	
R25		Resistor - 3,200 ohm - 2 W.	
R13		Resistor - 8,200 ohm - 2 W.	
R65083		Socket - Tuning and Speaker	
R41897		Socket - Plug	
R51049		Socket - Tube - 8 Prong Lock-in	
R61013		Socket - Tube - 8 Prong Lock-in (Molded) - T24	
R00997		Socket - Tube - 8 Prong Lock-in (Molded) - T24	
R00994		Socket - Band Indicator - Pilot Lamp	
R65261		Socket - Pilot Lamp Assy. - (Dual)	
WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER APPEARING ON THE SPEAKER			
R65260		Speaker - 8" P.M.	
R59603		Coil & Voice Coil	
R57272		Plug	
R40008		Switch - D.P.D.T. - Phono - Radio	T1
R65080		Transformer - I.F. #1	T2
R65080		Transformer - I.F. #2	T3
R65087		Transformer - Output	T4
R65088		Transformer - Power 50-40 cycle	



LOCATION OF PARTS ON TOP OF CHASSIS

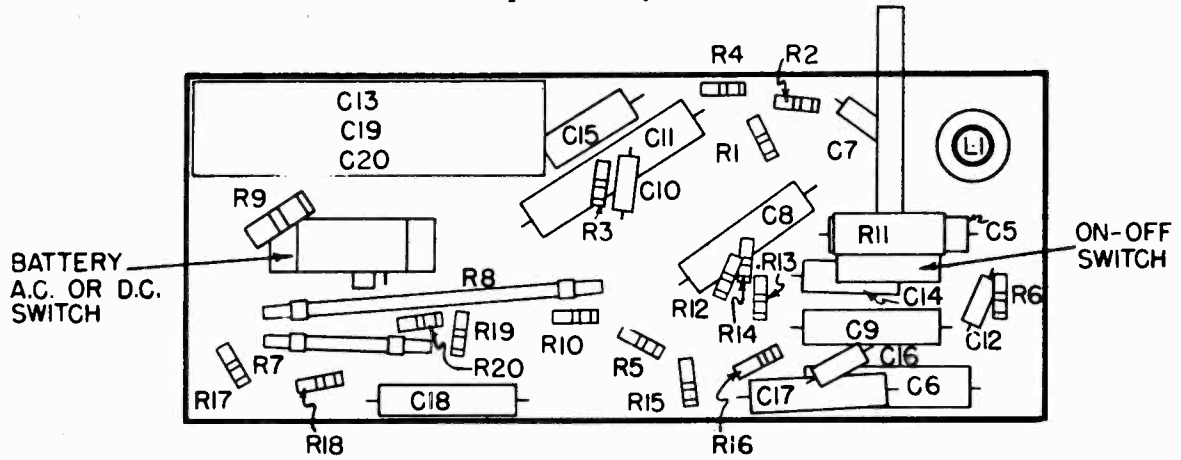


LOCATION OF PARTS UNDER CHASSIS

SEARS, ROEBUCK & CO.

MODEL 9260,
CHASSIS 101.850

Five Tube AC-DC Superheterodyne Portable Receiver

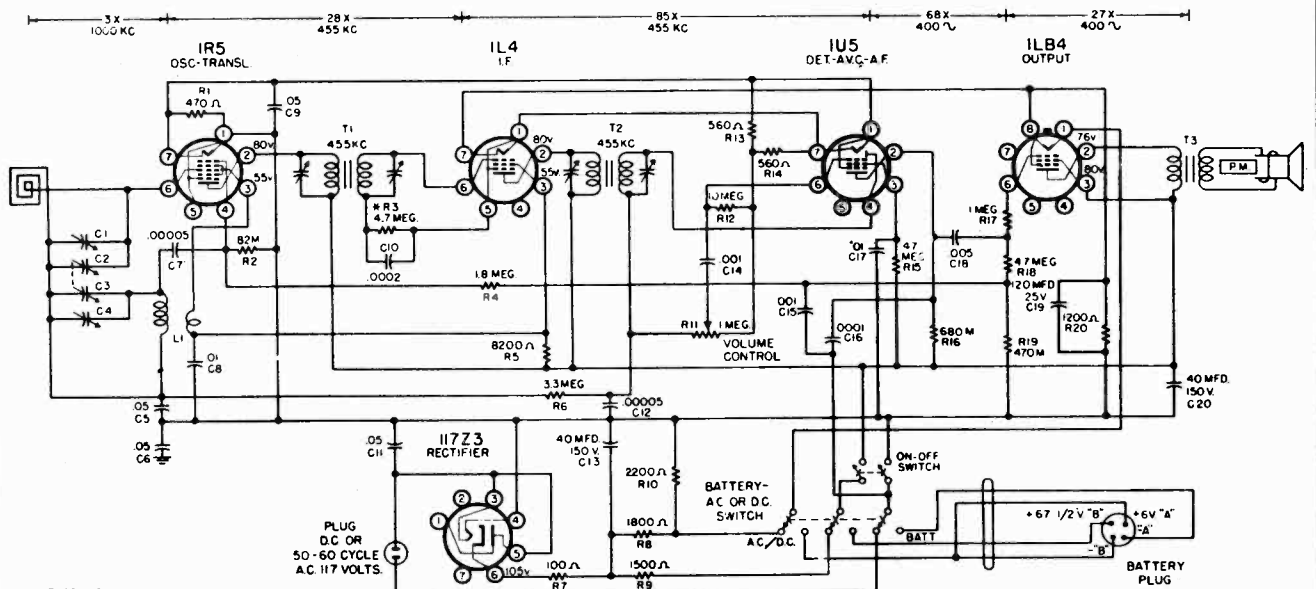


LOCATION OF PARTS UNDER CHASSIS

PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R65503	Cover - Cabinet	R1	R65511	Resistor - 470 ohm - 1/2 Watt
	R65516	Clip - Tabular	R12,R14	R65512	Resistor - 560 ohm - 1/2 Watt
	R65501	Cabinet (Body)	R20	R65513	Resistor - 1,200 ohm - 1/2 Watt
	R65510	Clip (Cover Retaining)	R8	R65514	Resistor - 8,200 ohm - 1/2 Watt
	R65518	Clip (Headset)	R2	R65515	Resistor - 42,000 ohm - 1/2 Watt
	R65502	Grille (Front)	R19	R65516	Resistor - 470,000 ohm - 1/2 Watt
	R65517	Handle (Carrying)	R18	R65517	Resistor - 680,000 ohm - 1/2 Watt
	R65519	Loop (Antenna)	R17	R65518	Resistor - 1 megohm - 1/2 Watt
	R65527	Cable - Battery (With Plug)	R4	R65519	Resistor - 1.8 megohm - 1/2 Watt
	R65515	Plug - Battery	R15,R18	R65520	Resistor - 3.3 megohm - 1/2 Watt
C18	R65522	Capacitor - .005 mfd. - 600 Volt	R12	R65521	Resistor - 4.7 megohm - 1/2 Watt
C14,C19	R65523	Capacitor - .001 mfd. - 600 Volt	R8	R65522	Resistor - 18 megohm - 1/2 Watt
C11	R65524	Capacitor - .05 mfd. - 500 Volt	R9	R65523	Resistor - 1,500 ohm - 1 Watt
C8	R65525	Capacitor - .05 mfd. - 300 Volt	R10	R65524	Resistor - 2,300 ohm - 1 Watt
C5,C9	R65526	Capacitor - .05 mfd. - 100 Volt	R7	R65525	Resistor - 3,000 ohm - 1 Watt
C8,C17	R65527	Capacitor - .01 mfd. - 600 Volt	R3	R65526	Resistor - 1,500 ohm - 1 Watt
C7,C12	R65528	Capacitor - Ceramic - 50 mmfd.	R12,R19	R65527	Resistor - Glassohm - 150 ohm - 2 Watt
C18	R65529	Capacitor - Ceramic - 100 mmfd.	R8	R65528	Resistor - Glassohm - 1,800 ohm - 3 Watt
C2,C3	R65530	Capacitor - Variable - 3 Gang	R3,C10	R65529	Resistor-Capacitor Combination - 4.7 megohm - 300 mmfd.
C12,C19,C20	R65531	Capacitor - Electrolytic	R57049	R65530	Socket - Tube - 8 Prong Lock-In
	R65532	40 mfd. - 150 Volt	R65531	R65531	Socket - Tube - Miniature
	R65533	40 mfd. - 150 Volt	R65532	R65532	Socket - Tube - Miniature (with Ground Term.)
	R65534	170 mfd. - 350 Volt			
	R65535	40 mfd. - 150 Volt			
	R65536	170 mfd. - 350 Volt			
LI	R65537	Clip - Chassis Mounting			
R11	R65538	Control - On-Off & Volume			
	R65539	Cord - Line			
	R65540	Cover - Bottom of Chassis			
	R65541	Insulator - Line Cord Mounting			
	R65542	Knob - On-Off & Volume			
	R65543	Knob - Tune			
	R65544	Knob - Dial Assy.			
	R65545	Knob - Dial Assy.			

SCHEMATIC DIAGRAM FOR YOUR RADIO



* PART OF C10

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEG. 'B' AND ARE TAKEN WITH NO SIGNAL, AND WITH LINE VOLTAGE AT 117 VOLTS A.C. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ. THE GAIN PER STAGE VALUES AS NOTED ABOVE ARE APPROXIMATE VALUES FOR AN AVERAGE STAGE, RATHER THAN AN ABSOLUTE VALUE. A 0.1MFD DUMMY IS USED FOR ALL MEASUREMENTS EXCEPT THE 1000 KC WHERE A STANDARD RADIATING LOOP IS USED. INPUT SHALL BE KEPT AT THE LOWEST LEVEL NECESSARY TO MAINTAIN A STANDARD OUTPUT OF 50 MILLIWATTS WITH THE VOLUME CONTROL FULLY ON. NOTE: THE TYPE OF EQUIPMENT USED, THE HANDLING OF THE PROBES THE ACCURACY OF ALIGNMENT, ETC., CAN AFFECT THE MEASUREMENTS.

MODEL 9260,
CHASSIS 101.850

SEARS, ROEBUCK & CO.

SPECIFICATIONS

Power Supply

All models available 117 Volt, 50-60 Cycles AC or DC, 15 Watts

Frequency Range

Broadcast 540-1600 KC

Power Output

Undistorted05 Watt
Maximum 0.1 Watt

PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter reading to indicate 0.05 Watt across voice coil. 0.4 Volts
Generator ground lead connection To B—through 0.1 mfd. capacitor
(I.F. Alignment)
Generator modulation 30%, 400 cycles
Position of volume control Fully on
Position of pointer with tuner fully closed Below the 540 kc. calibration mark

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 & T1	I.F.
*1400 Kc.	1400 Kc.	200 mmfd.	Hazeltine Loop	C4	Oscillator
*1400 Kc.	1400 Kc.	200 mmfd.	Hazeltine Loop	C1	Antenna

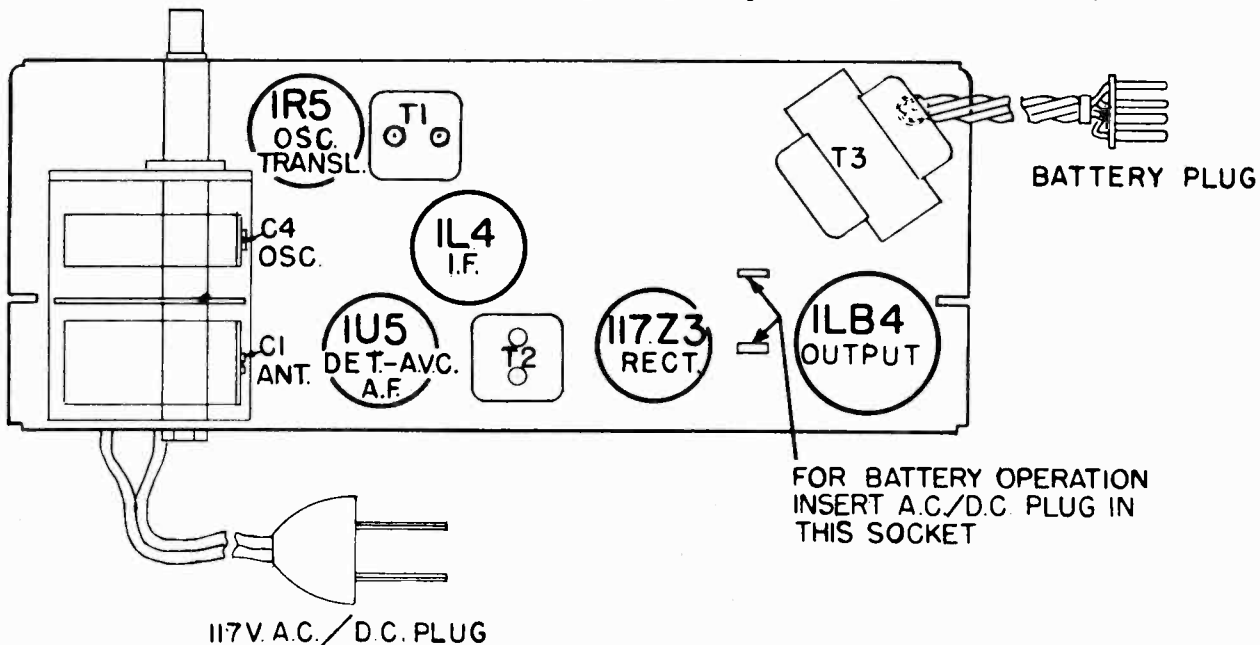
IMPORTANT ALIGNMENT NOTES:

NOTE: It is recommended that an isolation transformer be connected between the radio chassis and the line before aligning the receiver on A.C.

The alignment must be done in the order given.

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

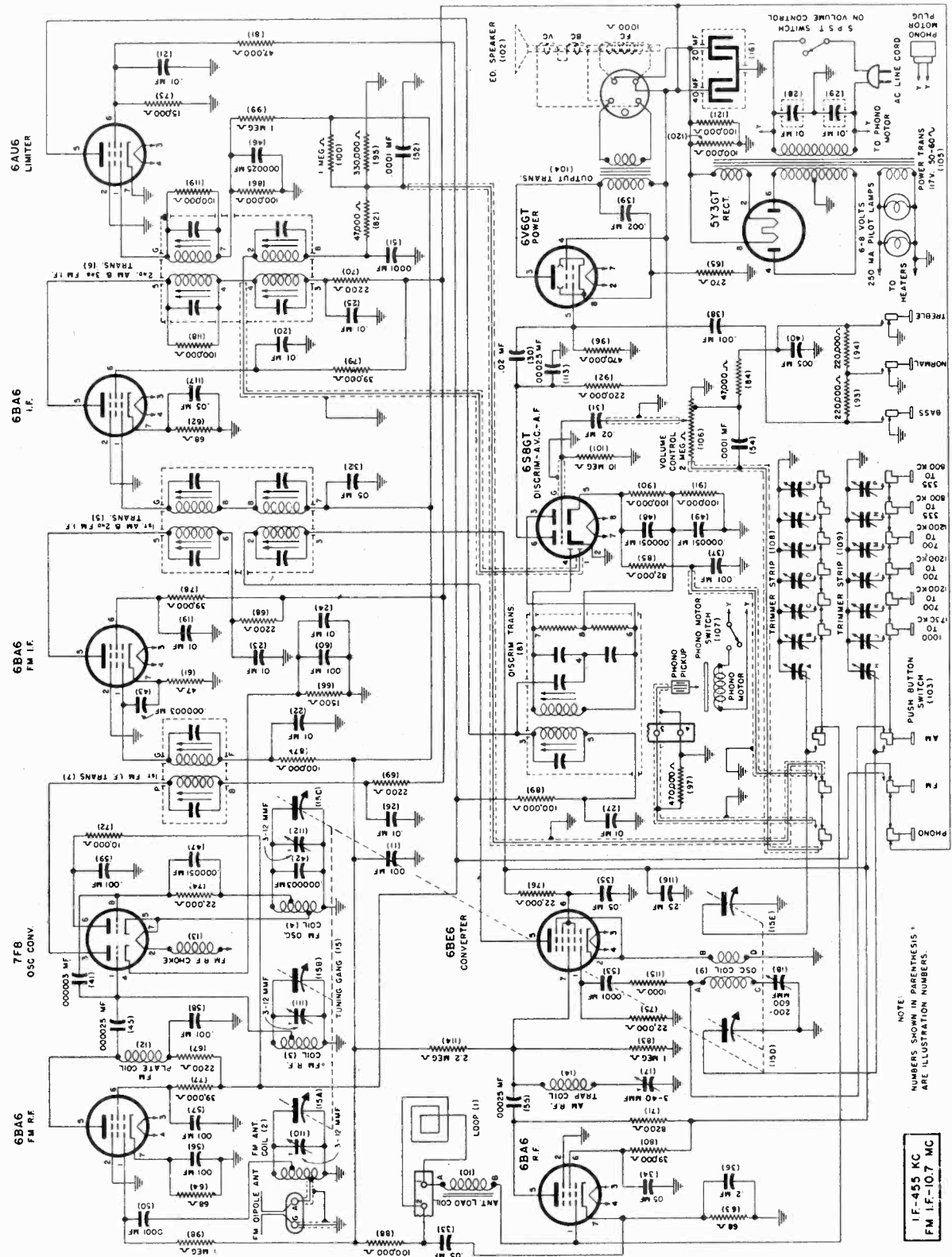
*Always make these trimmer adjustments with the loop in approximately the same position, with respect to the chassis, as it is when the chassis and loop are mounted in the case.



LOCATION OF PARTS ON TOP OF CHASSIS

SENTINEL RADIO CORP.

MODEL 296-B,
296-M



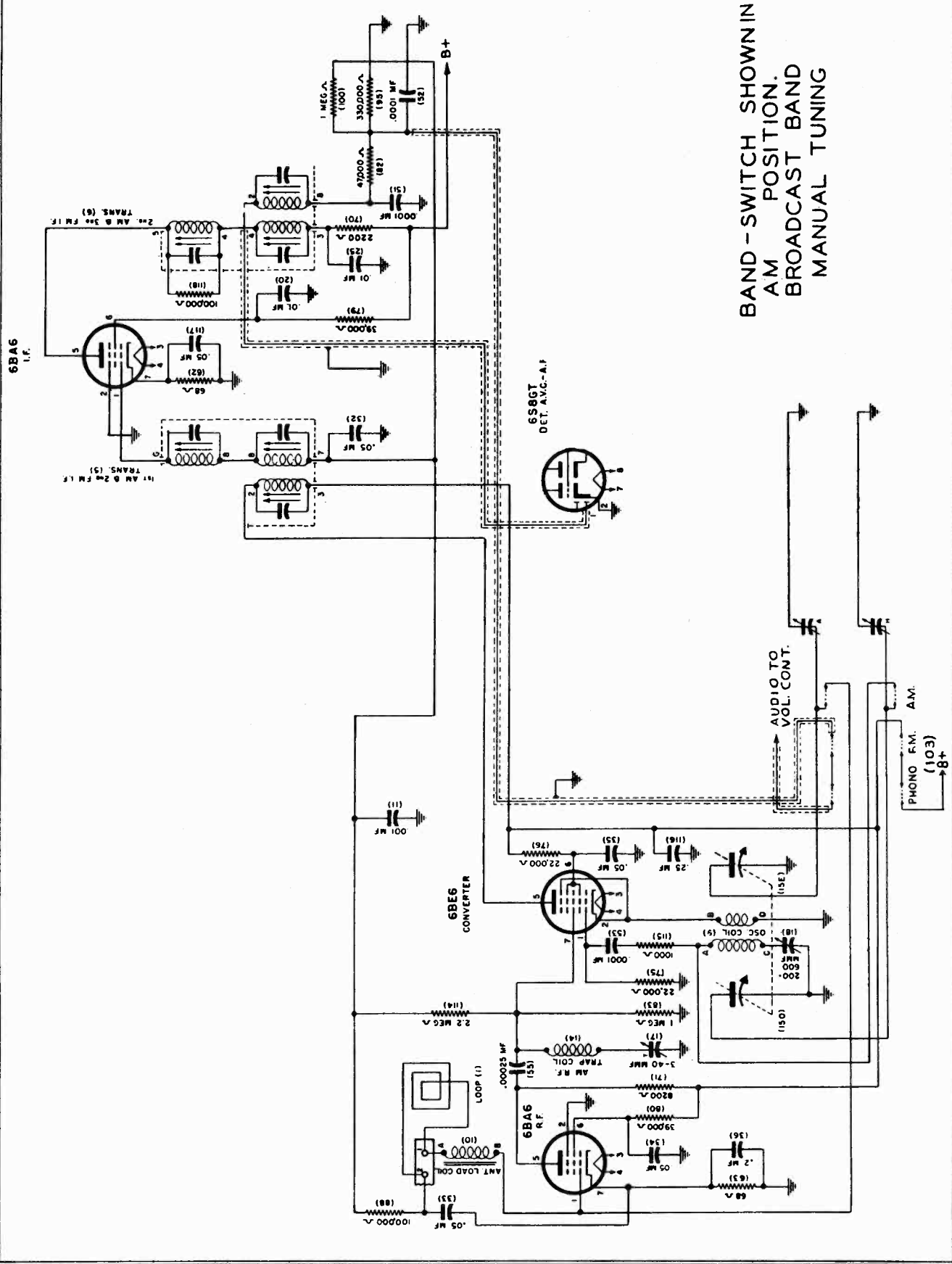
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PAGE 19-2 SENTINEL

MODEL 296-B,
296-M

SENTINEL RADIO CORP.



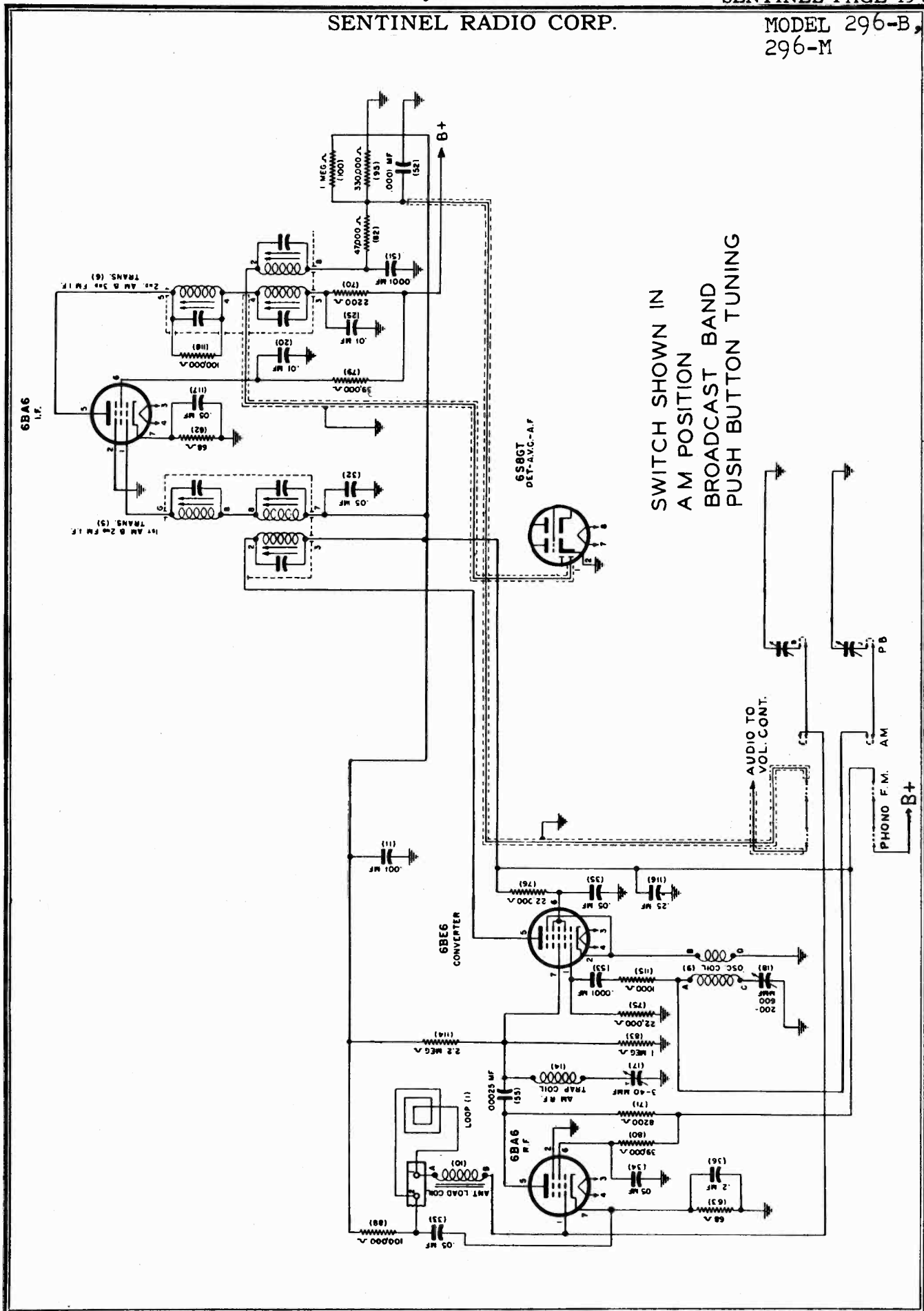
BAND-SWITCH SHOWN IN
AM POSITION.
BROADCAST BAND
MANUAL TUNING

CLARI-SKEMATIX

Registered Trademark

SENTINEL RADIO CORP.

MODEL 296-B,
296-M



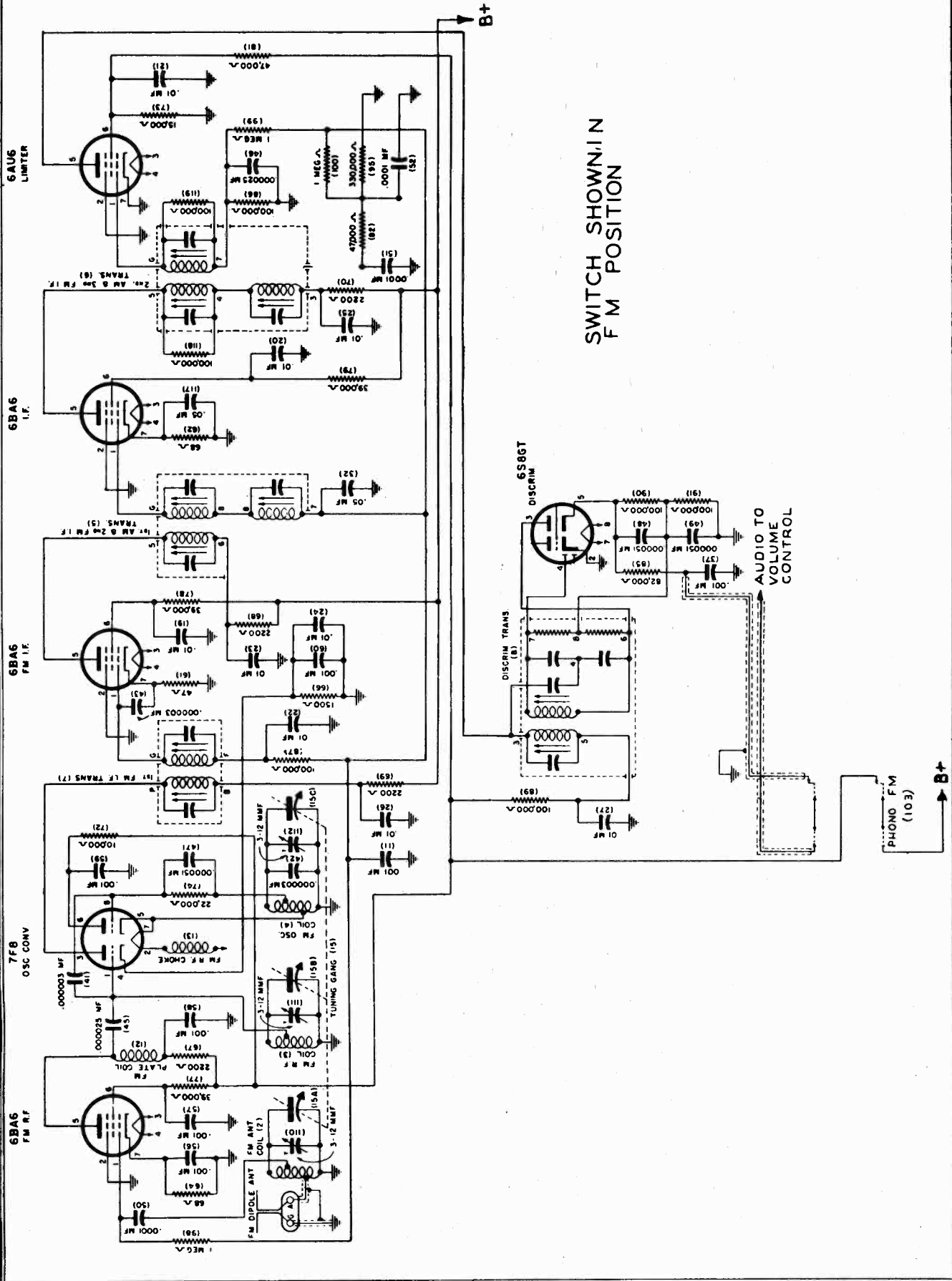
SWITCH SHOWN IN
AM POSITION
BROADCAST BAND
PUSH BUTTON TUNING

CLARI-SKEMATIX

Registered Trademark

SENTINEL RADIO CORP.

MODEL 296-B,
296-M



FM ALIGNMENT

Instructions for Alignment of the Frequency Modulation I. F. Transformers, Discriminator, Oscillator, R. F. and Antenna Circuits, with AM equipment generally available to the service man.

The equipment necessary for this procedure consists of the following:
D.C. Vacuum Tube Voltmeter of the Volt-Ohmyst Type. An AM Signal Generator that will supply:

- (1) A 10.7 M.C. Signal for I. F. alignment.
- (2) A 105 M.C. and 109 M.C. Signal—a Signal Generator that only goes up to 30 M.C. but which has sufficient fourth harmonics present in the carrier could be used for this purpose.

THE GENERATOR USED NEED NOT BE FREQUENCY MODULATED.

IT IS ALWAYS DESIRABLE TO ALIGN THE "AM" I. F. TRANSFORMERS BEFORE MAKING ANY OF THE "FM" I. F. ADJUSTMENTS, and to RECHECK "AM" I. F. TRIMMERS AFTER COMPLETING "FM" I. F. ADJUSTMENTS.
BE SURE TO MAKE THE "FM" ADJUSTMENTS IN THE ORDER GIVEN BELOW.

(1) PROCEDURE FOR ALIGNMENT OF FM DISCRIMINATOR TRANSFORMER:

- (A) Connect the Voltmeter from Pin No. 5 of the 6S8GT tube to chassis.
- (B) With a .002 Mfd. Isolation Condenser in series with hot Signal Generator lead, connect generator from Pin No. 1 of the 6AU6 Limiter tube to chassis.
- (C) Set Signal Generator to EXACTLY 10.7 M. C.
- (D) Adjust 10.7 M. C. Discriminator Primary Trimmer for MAXIMUM reading on Voltmeter.
- (E) Leave Signal Generator set at 10.7 M. C. and modulate with a 400 cycle note.
- (F) Adjust 10.7 M. C. Secondary Discriminator Trimmer for MINIMUM 400 CYCLE RESPONSE IN THE SPEAKER. IMPORTANT: The reading on the Voltmeter should be ZERO. MINIMUM AUDIO RESPONSE WILL BE RATHER CRITICAL IN ADJUSTMENT.

- (G) To check adjustment, swing Signal Generator to one side of 10.7 M. C. until MAXIMUM reading is obtained on Voltmeter and NOTE FREQUENCY and VOLTAGE READING. Then swing Signal Generator to the opposite side of 10.7 M. C. until MAXIMUM reading is obtained on Voltmeter and AGAIN NOTE VOLTAGE AND FREQUENCY READINGS. The two Voltmeter readings should be similar within 3 DB. and the two Signal Frequency readings should be a reasonably equal distance from 10.7 M. C. The difference in K.C. between the center frequency and one side should not exceed the difference between the center frequency and the other side by more than 50 K. C.

NOTE: If reliable FM Generator is available at 10.7 M.C., the procedure outlined in Paragraph (G) will be simplified by aligning to the proper pattern on an Oscilloscope. 100 K. C. deviation should be used.

CAUTION: Care should be taken to align the I. F. stages at the EXACT same center frequency as the Discriminator Coil. Switching from FM to AM on some generators may shift the carrier frequency somewhat.

(2) PROCEDURE FOR ALIGNMENT OF "FM" I. F. TRANSFORMERS:

- (A) Connect the Voltmeter from the junction of the two 1 Megohm Resistors, (Illus. 99 and 100) to chassis.
- (B) Connect Signal Generator to Input Grid (Pin No. 1) of 7F8 Converter tube.
- (C) Set Signal Generator to EXACTLY 10.7 M. C.—if possible, mark the position where this occurs right on the Generator's calibrated dial because this becomes a reference point in checking for proper FM I. F. alignment.
- (D) Adjust each of the 1st, 2nd and 3rd FM I. F. Transformers' 10.7 M. C. trimmers for MAXIMUM reading on Voltmeter. KEEP OUTPUT OF SIGNAL GENERATOR SO THAT A READING OF APPROXIMATELY 2 to 4 VOLTS IS OBTAINED ON THE VOLTMETER.
- (E) After all the above FM I. F. Transformer Trimmer adjustments have been correctly completed, MAKE A NOTE OF THE READING ON THE VOLTMETER.
- (F) Next, detune the signal generator to a slightly HIGHER frequency (higher than the 10.7 reference frequency), until the Voltmeter reads ONE-HALF of the figure noted in (E) above, and MAKE A NOTE OF THE GENERATOR FREQUENCY AT WHICH THIS OCCURS.
- (G) Now, detune the signal generator to a LOWER frequency (lower than the 10.7 reference frequency), until the Voltmeter again reads ONE-HALF the original figure noted in (E), and AGAIN NOTE THE GENERATOR FREQUENCY AT WHICH THIS OCCURS.

The difference between the two above frequencies obtained in (F) and (G), the one lower than 10.7 M. C. reference point and the one higher, is the "Half-amplitude" Band width of the FM-I. F. system. These two frequencies (F) and (G), should be somewhat uniformly spaced on either side of the 10.7 M. C. (C) reference frequency. A SLIGHT DIFFERENCE IS NOT SERIOUS. Only when one is more than twice as far as the other from the 10.7 M. C. reference frequency, or when there is a double peak, is the discrepancy serious. Assuming the FM I. F. Transformers have been properly adjusted, a double peak, or extremely one-sided "half-amplitude" band width, is usually caused by regeneration or a defective FM I. F. Transformer.

(3) PROCEDURE FOR THE ALIGNMENT OF THE "FM" ANTENNA, R.F., AND OSCILLATOR CIRCUITS:

- (A) Leave Voltmeter connected as it was for FM I. F. Alignment.
- (B) Connect the hot Signal Generator lead through a 300 Ohm Resistor to the FM Antenna Post, marked "ANT" on back of chassis, and the other lead to the post marked "GND".
- (C) Set Signal Generator so that it will deliver a modulated 108 M. C. signal. If the generator available is not de-

MODEL 296-B,
296-M

SENTINEL RADIO CORP.

- signed to deliver a 108 M. C. signal, use a generator covering at least to 30 M. C. and set this generator frequency to 27 M. C.—the fourth harmonic of which will be 108 M. C.
- (D) Set Receiver Dial Pointer to EXACTLY 108 M. C.
 - (E) Adjust 108 M. C. Oscillator Trimmer for MAXIMUM reading on Voltmeter or MAXIMUM signal heard in speaker.
 - (F) Next, tune the receiver to 104 M. C.
 - (G) Set Signal Generator to deliver a 104 M. C. modulated signal.
 - (H) Adjust 104 M. C. Antenna and R. F. Trimmers for MAXIMUM reading on Voltmeter or MAXIMUM signal heard in speaker.

Because it is somewhat helpful to hear the signal, an AM modulation on the 108 M. C. and 104 M. C. signal frequencies may be used for alignment of the FM Oscillator, R. F. and Antenna circuits. With modulated or unmodulated signal, ALWAYS ADJUST FOR MAXIMUM READING ON VOLTMETER. (ADJUSTMENT OF "FM" GANG CONDENSER PLATES AT 98 M.C. AND 90 M. C. MAY BE NECESSARY TO INSURE PROPER TRACKING.)

A FREQUENCY MODULATED SIGNAL GENERATOR may be used instead of an AM signal generator. When a Frequency Modulated Signal Generator is used, it is recommended that an unmodulated carrier be used for all of the above adjustments EXCEPT alignment of the Discriminator Secondary Trimmer. Use a Frequency Modulated signal (100 K.C. deviation) and align Discriminator Secondary for proper pattern on an Oscilloscope.

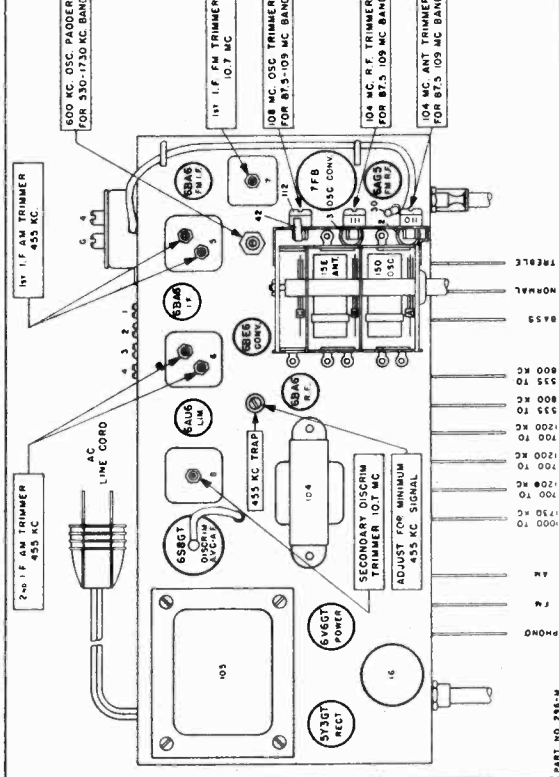
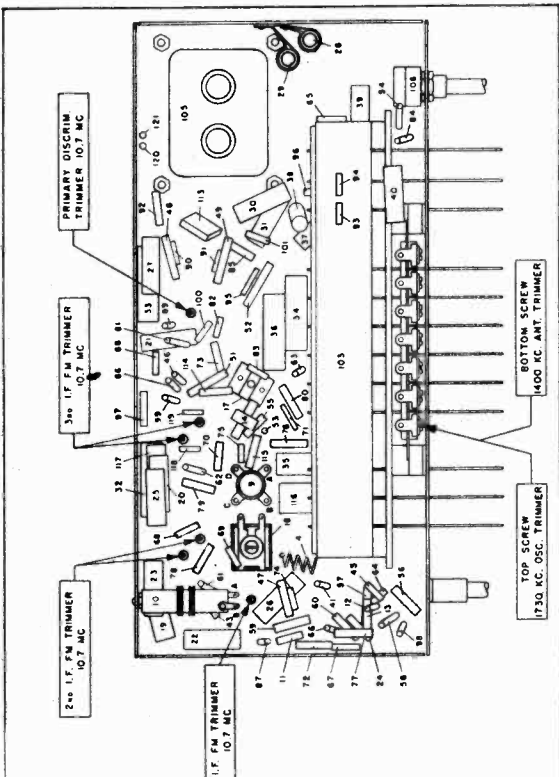
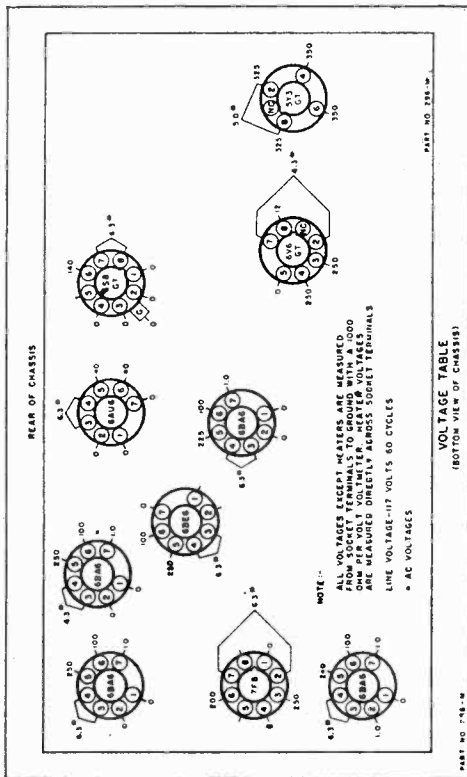
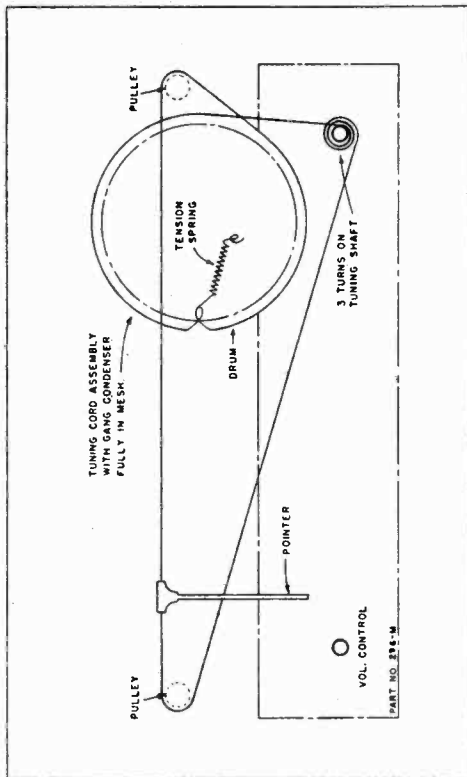
AM ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. Make the adjustment marked (1) first, (2) next.

Before starting alignment:

- (A) Check tuning dial adjustment by turning gang condenser until plates reach maximum capacity stop (completely in mesh) at which point the dial pointer must be exactly even with the last line at the low frequency end of the AM dial calibration. If dial pointer does not point exactly to last line move to correct position.
- (B) Use an accurately calibrated test oscillator with some type of output measuring device.
- (C) WHEN ADJUSTING THE 1730 KC OSCILLATOR TRIMMER, THE 455 KC TRIMMER, remove chassis from cabinet and disconnect the loop connection wires from the set. Attach a 1 megohm resistor across these connections and feed output of test oscillator across the 1 megohm resistor.
- (D) THE 1400 KC LOOP ANTENNA TRIMMER and 600 KC PADDER should be adjusted only after all other adjustments have been made and with the set mounted in the cabinet, and the loop in position. When aligning the 1400 KC Antenna Trimmer and 600 KC Padder, couple test oscillator to receiver loop by: (1) make loop consisting of five to ten turns of No. 20 to No. 30 size wire, wound on a 2" or 3" form; (2) connect this loop across output of test oscillator; (3) place test oscillator loop near radio loop. BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.

Steps	Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR		Refer to parts layout diagram for location of trimmers mentioned below:	
			Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:		Attach output of test oscillator to:
1	AM Band position	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	Adjust each of the 2nd 455 K. C. AM I. F. transformer trimmers for maximum output, then adjust each of the 1st 455 K. C. I. F. transformer trimmers for maximum output.	
			Exactly 1730 K. C.			
2	AM Band position	Route gang condenser to maximum capacity	Exactly 455 K. C.	.00025 Condenser	Adjust 135 K. C. trap trimmer for MINIMUM 455 K. C. Signal.	
		Exactly 1730 K. C.	Exactly 1730 K. C.			Adjust 1730 K. C. oscillator trimmer for maximum output.
		Approx. 1400 K. C.	Approx. 1400 K. C.			Adjust 1400 K. C. AM Ant. trimmer for maximum output.
		Approx. 600 K. C.	Approx. 600 K. C.		While rocking gang condenser, adjust 600 K. C. oscillator padder for maximum output.	



VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

MODEL 296-B,
296-M

SENTINEL RADIO CORP.

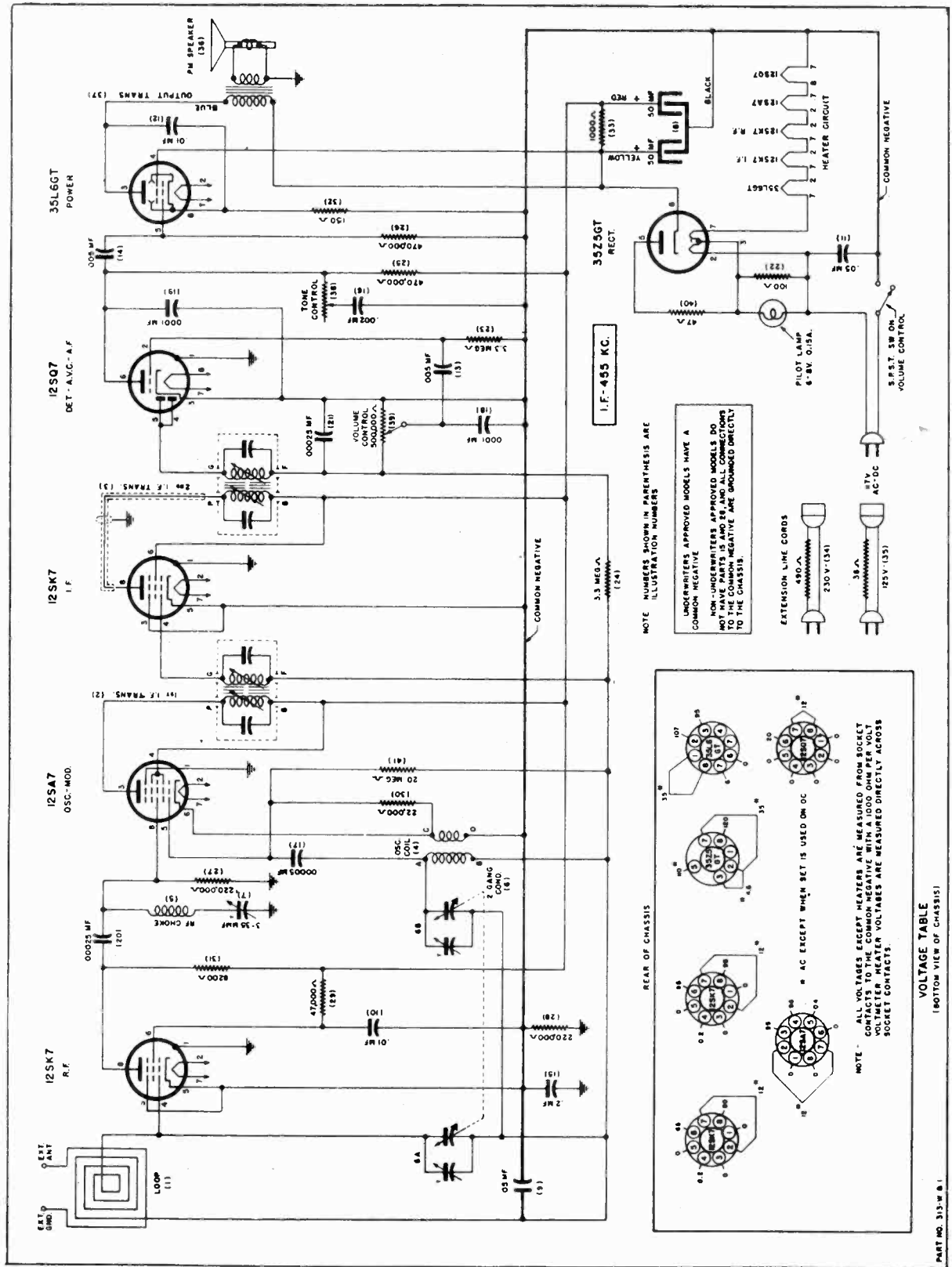
PARTS LIST

Illus. No.	Part No.	Part Name	Description	Part No.	Part Name	Description
1	20E235	Antenna	Loop	62	27E680-2	Resistor
2	2E48	Coil	FM Antenna	63	27E680-2	Resistor
3	2E49	Coil	FM R.F.	64	27E680-2	Resistor
4	2E50	Coil	FM Osc.	65	27E271-5	Resistor
5	20E217	Coil	1st AM & 3rd FM I.F. Trans.	66	27E152-2	Resistor
6	20E218	Coil	2nd AM & 3rd FM I.F. Trans.	67	27E222-2	Resistor
7	20E219	Coil	1st FM I.F. Trans.	68	27E222-2	Resistor
8	20E220	Coil	Discriminator	69	27E222-2	Resistor
9	20E221	Coil	Oscillator	70	27E222-2	Resistor
10	20E222	Coil	Ant. Loading	71	27E822-3	Resistor
11	23E2012	Condenser	Fixed Ceramic, .001 Mfd.	72	27E105-3	Resistor
12	2E52	Coil	FM Plate	73	27E153-2	Resistor
13	2E47	Coil	FM R.F. Choke	74	27E223-2	Resistor
14	2E19	Coil	455 KC Trap	75	27E223-2	Resistor
15	24E27	Condenser	Tuning Gang	76	27E223-5	Resistor
16	25E20	Condenser	Elect. Dry 20-40 Mfd. 400 V.	77	27E393-2	Resistor
17	24E3	Condenser	Trimmer, 3-40 MMF.	78	27E393-2	Resistor
18	24E16	Condenser	Paeder, 200-600 MMF.	79	27E393-2	Resistor
19	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.	80	27E393-2	Resistor
20	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.	81	27E473-5	Resistor
21	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.	82	27E473-5	Resistor
22	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.	83	27E105-2	Resistor
23	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.	84	27E473-2	Resistor
24	23E411	Condenser	Fixed Paper, .01 Mfd. 150 V.	85	27E823-2	Resistor
25	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.	86	27E104-2	Resistor
26	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.	87	27E104-2	Resistor
27	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.	88	27E104-2	Resistor
28	23E250	Condenser	.01 Mfd. 220 V. Metal Container.	89	27E104-2	Resistor
29	23E250	Condenser	.01 Mfd. 220 V. Metal Container.	90	27E104-2	Resistor
30	23E413	Condenser	Fixed Paper, .02 Mfd. 200 V.	91	27E104-2	Resistor
31	23E213	Condenser	Fixed Paper, .02 Mfd. 200 V.	92	27E224-2	Resistor
32	23E2014-8	Condenser	Fixed Paper, .05 Mfd. 200 V.	93	27E224-2	Resistor
33	23E416	Condenser	Fixed Paper, .05 Mfd. 200 V.	94	27E224-2	Resistor
34	23E416	Condenser	Fixed Paper, .05 Mfd. 400 V.	95	27E224-2	Resistor
35	23E416	Condenser	Fixed Paper, .05 Mfd. 400 V.	96	27E394-2	Resistor
36	23E2014-10	Condenser	Fixed Paper, .2 Mfd. 200 V.	97	27E474-2	Resistor
37	23E204	Condenser	Fixed Paper, .001 Mfd. 200 V.	98	27E474-2	Resistor
38	23E204	Condenser	Fixed Paper, .001 Mfd. 200 V.	99	27E105-2	Resistor
39	23E605	Condenser	Fixed Paper, .002 Mfd. 600 V.	100	27E105-2	Resistor
40	23E208	Condenser	Fixed Paper, .005 Mfd. 200 V.	101	27E106-2	Resistor
41	23E20	Condenser	Fixed Ceramic, .000003 Mfd. 500 V.	102	1E24	Speaker
42	23E20	Condenser	Fixed Ceramic, .000003 Mfd. 500 V.	103	29E14	Switch
43	23E13	Condenser	Fixed Ceramic, .000025 Mfd. 500 V.	104	22E18	Transformer
44	23E8	Condenser	Fixed Ceramic, .000025 Mfd. 500 V.	105	22E19	Transformer
45	23E8	Condenser	Fixed Ceramic, .000025 Mfd. 500 V.	106	28E21	Volume Control
46	23E2	Condenser	Fixed Ceramic, .000051 Mfd. 500 V.	107	11X052	Switch
47	23E2	Condenser	Fixed Ceramic, .000051 Mfd. 500 V.	108	24E25	Capacitor
48	23E2	Condenser	Fixed Ceramic, .000051 Mfd. 500 V.	109	24E26	Capacitor
49	23E2	Condenser	Fixed Ceramic, .000051 Mfd. 500 V.	110	24E28	Capacitor
50	23E10	Condenser	Fixed Ceramic, .000051 Mfd. 500 V.	111	24E28	Capacitor
51	23E11	Condenser	Fixed Ceramic, .0001 Mfd. 500 V.	112	24E28	Capacitor
52	23E11	Condenser	Fixed Ceramic, .0001 Mfd. 500 V.	113	23E42	Condenser
53	23E11	Condenser	Fixed Ceramic, .0001 Mfd. 500 V.	114	27E225-2	Resistor
54	23E11	Condenser	Fixed Ceramic, .0001 Mfd. 500 V.	115	27E102-2	Resistor
55	23E42	Condenser	Fixed Mica, .00025 Mfd.	116	23E422	Capacitor
56	23E2012	Condenser	Fixed Ceramic, .001 Mfd. 500 V.	117	27E104	Capacitor
57	23E2012	Condenser	Fixed Ceramic, .001 Mfd. 500 V.	118	27E104	Capacitor
58	23E2012	Condenser	Fixed Ceramic, .001 Mfd. 500 V.	119	27E104-5	Resistor
59	23E2012	Condenser	Fixed Ceramic, .001 Mfd. 500 V.	120	27E104-5	Resistor
60	23E2012	Condenser	Fixed Ceramic, .001 Mfd. 500 V.	121	27E104-5	Resistor
61	27E470-2	Resistor	Carbon, 47 Ohm 1/2 Watt	122	27E104-5	Resistor

MISCELLANEOUS PARTS

Part No.	Part Name	Description
64E9	Antenna	FM DI Pole
7E116	Back	For Cabinet
53E128	Call Letters	Complete Set Station Call Letter Sheets
53E129	Call Letters	"AM-FM," "Phono," "High," "Med."
36E29	Dial Scale	"Bass" on Sheet
20E270-6	Dial Shaft	Calibrated Scale
20E253-10	Dial Cord	Drive Shaft Assembly
65E2	Dial Spring	Drive Cord
20E174-4	Dial Pointer	Tension Spring for Dial Cord
48E3	Dial Escutcheon	Dial Indicator
48E3-2	Dial Escutcheon	Fits around Dial Scale and Push Buttons for 296M
		Fits around Dial Scale and Push Buttons for 296B

Part No.	Part Name	Description
40E2	Dial Light	6-8 Volt, .250 Amp. Mazda Type No. 44
37E27-12	Knob	Marked "Tuning" for Model 296M
37E27-14	Knob	Marked "Off-On-Vol." for Model 296M
37E27-34	Knob	Marked "Tuning" for Model 296B
37E27-35	Knob	Marked "Off-On-Vol." for Model 296B
37E27-35	Knob	Push Button
37E46	Knob	2 Prong for Phono-Motor
17E21-2	Plug	4 Post Binding
18E4-2	Post	2 Post Binding
18E4-3	Post	For Record Changer
7E111	Slide Rail	For Pilot Light
17E27	Socket	2 Contact, Female, for Phono Motor
20E184	Socket	



MODELS 313I, 313W,
1U-313I, 1U-313W

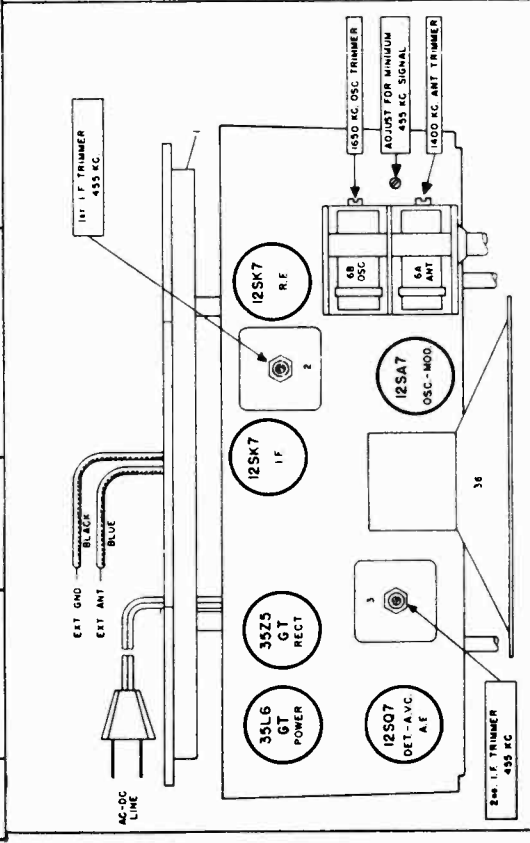
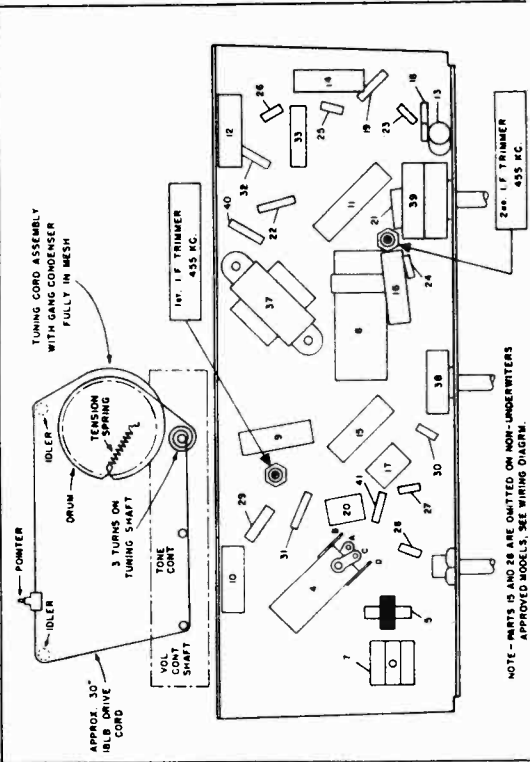
SENTINEL RADIO CORP.

ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third. **IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET. BE SURE THAT IT DOES NOT MOVE WHILE ALIGNING.**

When adjusting 1650 kilocycle oscillator trimmer, 455 K.C. R.F. trimmer and 1400 kilocycle antenna trimmer, connect test oscillator to loop external antenna and ground connections with a .0002 Mfd. capacitor in series with antenna lead.

Steps	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
	Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:		Attach output of test oscillator to:
	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
1	Rotate gang condenser to maximum capacity	Exactly 455 K. C.	.0002 Mfd. Condenser	Adjust R. F. coil trimmer for <u>minimum</u> 455 K. C. signal.
2	Rotate gang condenser to minimum capacity	Exactly 1650 K. C.	.0002 Mfd. Condenser	Adjust 1650 K. C. oscillator trimmer for maximum output.
3	Approximately 1400 K. C.	Approx. 1400 K. C.	.0002 Mfd. Condenser	Adjust 1400 K. C. antenna trimmer for maximum output.



SENTINEL RADIO CORP.

MODELS 313I, 313W,
1U-313I, 1U-313W

PARTS LIST

Illus. No.	Part No.	Part Name	Description	Part No.	Part Name	Description
1	7E149	Antenna	Loop & Cabinet Back	23E37	Condenser	Mica, .00005 Mfd.
	or			23E39	Condenser	Mica, .0001 Mfd.
1	7E150	Antenna	Loop & Cabinet Back	23E39	Condenser	Mica, .0001 Mfd.
2	20E261	Coil	1st I. F. Transformer	23E42	Condenser	Mica, .00025 Mfd.
	or			27E101-2	Resistor	Carbon, 100 Ohm 1/2 Watt
2	20E307	Coil	1st I. F. Transformer	27E335	Resistor	Carbon, 3.3 Meg Ohm 1/3 Watt
3	20E261-2	Coil	2nd I. F. Transformer	27E335	Resistor	Carbon, 3.3 Meg Ohm 1/3 Watt
	or			27E474	Resistor	Carbon, 470,000 Ohm 1/3 Watt
3	20E307-2	Coil	2nd I. F. Transformer	27E474	Resistor	Carbon, 470,000 Ohm 1/3 Watt
4	20E64	Coil	Oscillator	27E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt
5	2E19	Coil	R. F. Choke	27E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt
6	24E8	Condenser	Tuning, 2 Gang			(1U-313 Models Only)
7	24E3	Condenser	Trimmer (3-35 MMF)	27E473	Resistor	Carbon, 47,000 Ohm 1/3 Watt
8	25E6	Condenser	Tubular, Dry Elect. 50-50 Mfd. 150 V.	27E223	Resistor	Carbon, 22,000 Ohm 1/3 Watt
9	23E216	Condenser	Tubular, .05 Mfd. 200 V.	27E822	Resistor	Carbon, 8,200 Ohm 1/3 Watt
10	23E211	Condenser	Tubular, .01 Mfd. 200 V.	27E151	Resistor	Carbon, 150 Ohm 1/3 Watt
11	23E416	Condenser	Tubular, .05 Mfd. 400 V.	27E102-3	Resistor	Carbon, 1,000 Ohm 1 Watt
12	23E411	Condenser	Tubular, .01 Mfd. 400 V.	1E1	Speaker	4" x 6" Elliptical P.M.
13	23E408	Condenser	Tubular, .005 Mfd. 400 V.	22E8	Transformer	Output
14	23E408	Condenser	Tubular, .005 Mfd. 400 V.	28E8	Tone Control	500,000 Ohm with S.P.S.T. Switch
15	23E421	Condenser	Tubular, .2 Mfd. 400 V.	28E7	Volume Control	Carbon, 47 Ohm 1/2 Watt
			(1U-313 Models Only)	27E470-2	Resistor	Carbon, 20 Megohm 1/3 Watt
16	23E405	Condenser	Tubular, .002 Mfd. 400 V.	41	27E206	Resistor

MISCELLANEOUS PARTS

Part No.	Part Name	Description	Part No.	Part Name	Description
40E1	Bulb	6-8 Volt, .150 Amp. Type 47	20E270-5	Dial Shaft Assem.	Drive Shaft Assembly
7E149	Cabinet Back	With Loop Antenna	20E65	Dial Back Plate	Backplate Assembly, less scale
	or		36E36	Dial Scale	Calibrated Glass Scale
7E150	Cabinet Back	With Loop Antenna	35E23	Dial Pointer	Dial Indicator
7E46-1	Cabinet	Walnut Plastic	37E27-11	Knob	For Walnut Cabinet
7E46-2	Cabinet	Ivory Plastic	37E27-15	Knob	For Ivory Cabinet
65E2	Dial Cord Spring	Tension Spring	17E22	Socket	Dial Light Socket Assembly
20E253-18	Dial Cord	30" of 18 lb. Drive Cord	10E42	Studs	Trimount for Mounting Back to Cabinet. 1.20

VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON EITHER:

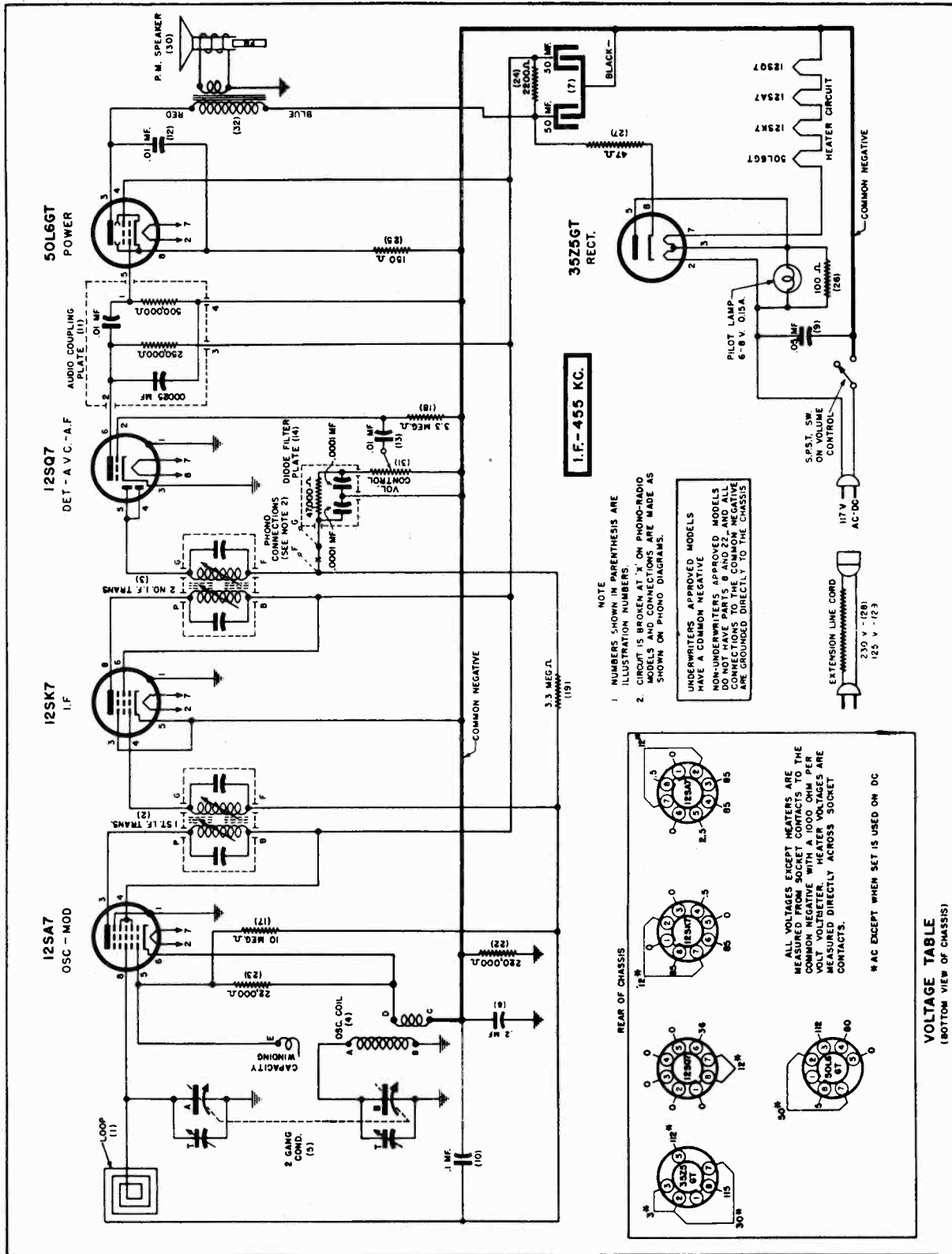
110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC)

OR

110-120 VOLTS DIRECT CURRENT (DC)

MODELS 314E, 314I,
314W, 1U-314E,
1U-314I, 1U-314W

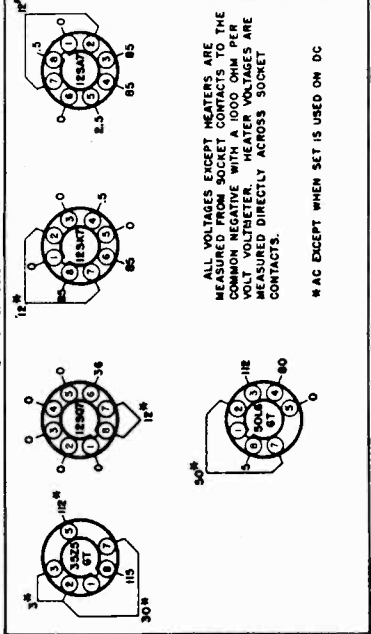
SENTINEL RADIO CORP.



I.F. - 455 KC.

NOTE
1. NUMBERS SHOWN IN PARENTHESES ARE ILLUSTRATION NUMBERS.
2. CIRCUIT IS BROKEN AT 'X' ON PHONO-RADIO SOCKETS. CONNECTIONS ARE MADE AS SHOWN ON PHONO DIAGRAMS.

UNDERWRITERS' APPROVED MODELS
NON-UNDERWRITERS' APPROVED MODELS
HEATER CONNECTIONS TO THE COMMON NEGATIVE CONNECTIONS TO THE COMMON NEGATIVE ARE GROUNDED DIRECTLY TO THE CHASSIS



VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

PART NO. 314

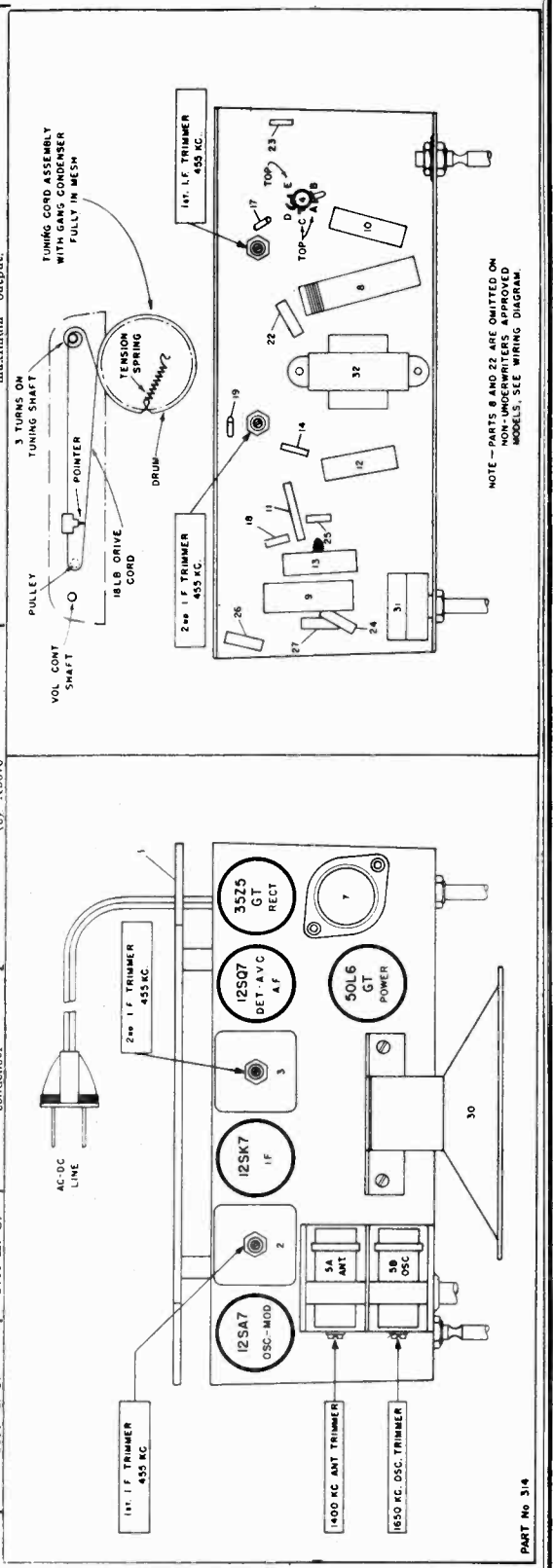
ALIGNMENT PROCEDURE

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

Before starting alignment:

- (a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.
- (b) Use an accurately calibrated test oscillator with some type of output measuring device.
- (c) **PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.** Couple test oscillator to receiver loop by: (1) make loop consisting of five to ten turns of No. 20 to No. 30 size wire, wound on a 2" or 3" form; (2) connect this loop across output of test oscillator; (3) place test oscillator loop near radio loop. **BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.**

Steps	Set receiver dial to:	TEST OSCILLATOR		Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:		Attach output of test oscillator to:
1	Any point where no interfering signal is received.	455 K. C.	.02 MFD. condenser	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
2	Exactly 1650 K. C.	Exactly 1650 K. C.	.00025 MFD. condenser	Adjust 1650 K. C. oscillator trimmer for maximum output.
3	Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.



MODELS 314E, 314I, SENTINEL RADIO CORP.
 314W, 1U-314E,
 1U-314I, 1U-314W

PARTS LIST

Ill. No.	Part No.	Part Name	Description
1	20E322	Antenna	Loop and Back
1	20E323	Antenna	Loop and Back
2	20E307	Coil	1st I.F. Transformer
2	20E261	Coil	1st I.F. Transformer
3	20E307-2	Coil	2nd I.F. Transformer
3	20E261-2	Coil	2nd I.F. Transformer
4	20E162	Coil	Oscillator
4	20E346	Coil	Oscillator (1U-314 Models Only)
5	24E2	Condenser	Tuning, 2 Gang
7	25E27	Condenser	Dry Elect. 50-50 Mfd. 150 V.
8	23E421	Condenser	Tubular, .2 Mfd. 400 V. (1U-314 Models Only)
9	23E416	Condenser	Tubular, .05 Mfd. 400 V.
10	23E218	Condenser	Tubular, .1 Mfd. 200 V.
11	23E2023	Condenser	Audio Coupling Plate
12	23E211	Condenser	Tubular, .01 Mfd. 200 V.
13	23E211	Condenser	Tubular, .01 Mfd. 200 V.
14	23E2022	Condenser	Diode Filter Plate
17	27E106	Resistor	Carbon, 10 Meg Ohm 1/3 Watt
18	27E335	Resistor	Carbon, 3.3 Meg Ohm 1/3 Watt
19	27E335	Resistor	Carbon, 3.3 Meg Ohm 1/3 Watt
22	27E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt (1U-314 Models Only)
23	27E223	Resistor	Carbon, 22,000 Ohm 1/3 Watt
24	27E222-3	Resistor	Carbon, 2,200 Ohm 1 Watt
25	27E151	Resistor	Carbon, 150 Ohm 1/3 Watt
26	27E101	Resistor	Carbon, 100 Ohm 1/3 Watt
27	27E470-2	Resistor	Carbon, 47 Ohm 1/2 Watt
30	1E9	Speaker	5" P.M.
31	28E1	Volume Control	500,000 Ohm with S.P.S.T. Switch
32	22E2	Transformer	Output Transformer

MISCELLANEOUS PARTS

Part No.	Part Name	Description
7E31-1	Cabinet	Walnut Plastic
7E31-2	Cabinet	Ivory Plastic
7E31-3	Cabinet	Black Plastic
20E322	Cabinet Back	With Antenna Loop
20E323	Cabinet Back	With Antenna Loop
41E1	Cord	6 ft. Rubber Line Cord
20E318	Dial Plate Assem.	Dial Back Plate Assembly
20E253-17	Dial Cord	30" of 18 lb. Drive Cord
9E2	Dial Crystal	Acetate Crystal
36E35	Dial Scale	Calibrated Scale
20E270-3	Dial Shaft Assem.	Drive Shaft Assembly
35E22	Dial Pointer	Dial Indicator
65E2	Dial Spring	Tension Spring for Drive Cord
37E17-1	Knob	For Walnut Cabinet
37E17-3	Knob	For Ivory Cabinet
37E17-4	Knob	For Black Cabinet
20E43	Pilot Lamp Socket	Pilot Lamp Socket Assembly
40E1	Pilot Lamp	6-8 Volt .150 Amp. Type 47 Lamp

VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON EITHER:

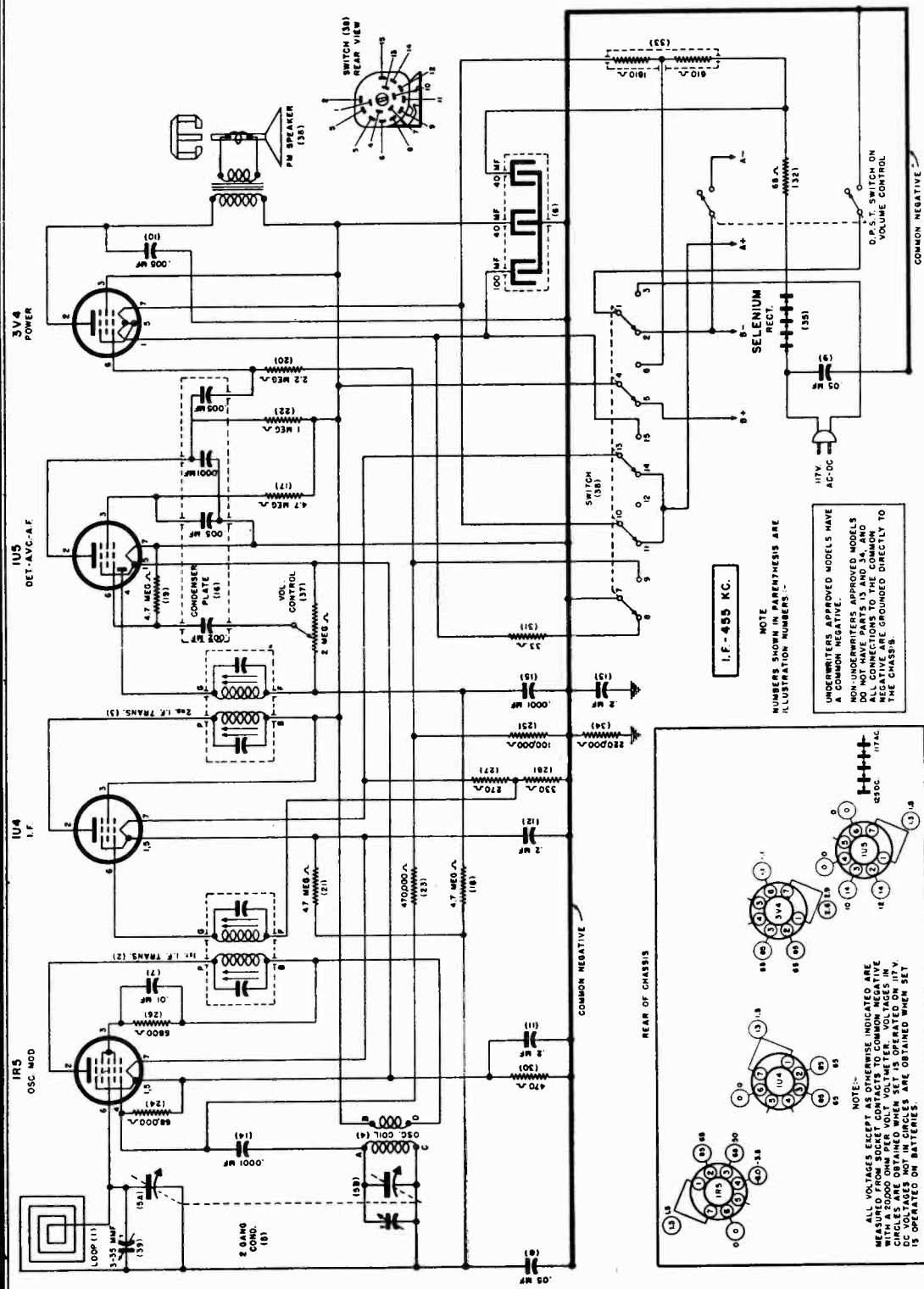
110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC)

OR

110-120 VOLTS DIRECT CURRENT (DC)

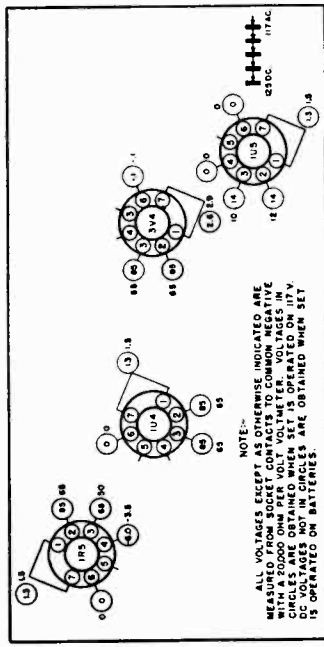
SENTINEL RADIO CORP.

MODELS 316PM, 316PT,
1U-316PM, 1U-316PT



INSTALLATION OF REQUIRED BATTERIES

Diagram shows proper location and connections of the following required types of batteries:
 One 4 1/2 Volt "A" Battery, such as SENTINEL Type A38, or Ray-O-Vac P83A or Eveready No. 736A, etc.
 One 67 1/2 Volt "B" Battery, such as SENTINEL Type B7634, or Ray-O-Vac 4367 or Eveready No. 467, etc.
 NOTE: A 90 Volt "B" Battery, such as Eveready Type No. 490B, may be used in place of the 67 1/2 Volt "B" Battery. The use of a 90 Volt "B" Battery will provide somewhat increased sensitivity and more power output, but this battery will not last quite as long as the 67 1/2 Volt "B" Battery.



POWER SUPPLY CAN BE OPERATED ON EITHER:

110 to 120 VOLTS, 50 to 60 CYCLE, ALTERNATING CURRENT
 OR
 110 to 120 VOLTS, 50 to 60 CYCLE, ALTERNATING CURRENT
 BATTERIES—WITH ONE 4 1/2 VOLT "A" and ONE 67 1/2 VOLT "B"

MODELS 316PM, 316PT,
1U-316PM, 1U-316PT

SENTINEL RADIO CORP.

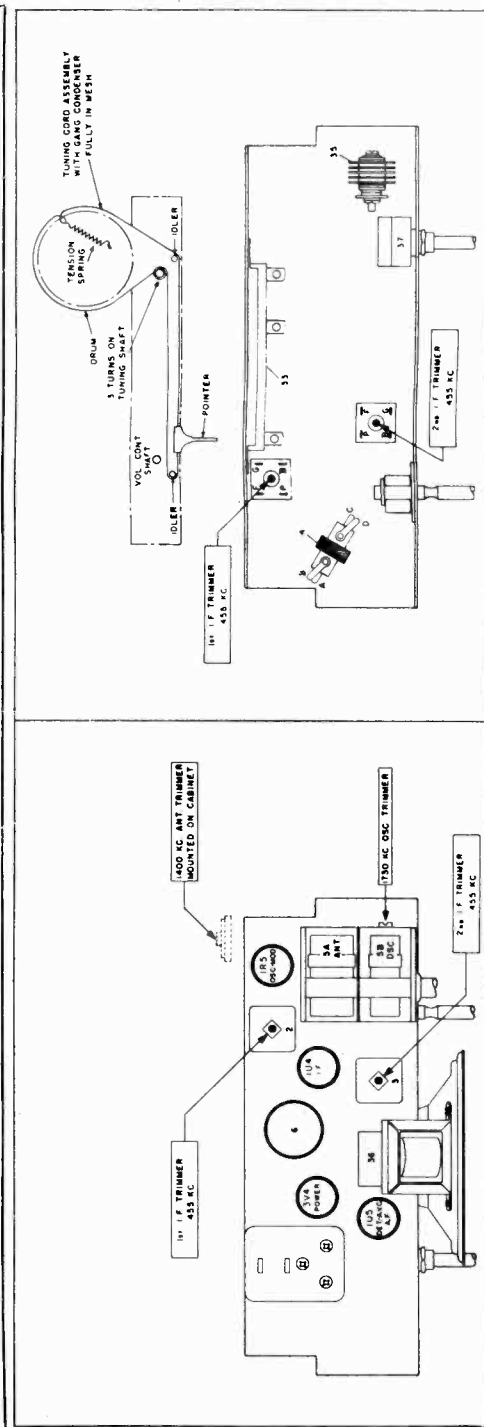
ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure, read tabulations from left to right. Make the adjustment marked (1) first, (2) next, (3) third. IF RADIO HAS METAL PLATE ON BOTTOM OF CHASSIS BE SURE TO HAVE PLATE MOUNTED ON CHASSIS WHEN ALIGNING SET.

Before starting alignment:

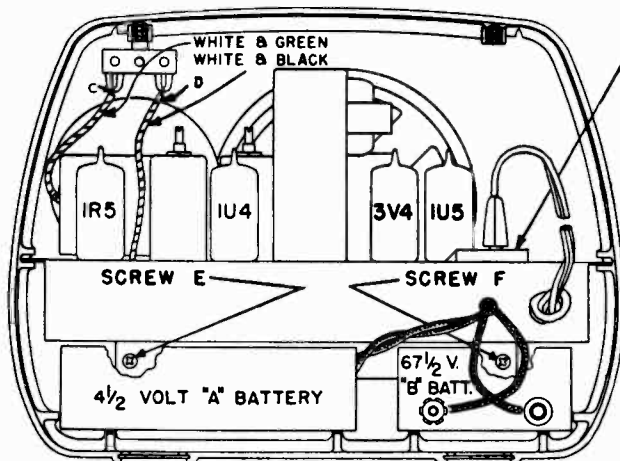
- (A) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial indicator must be exactly even with the outside edge of the first 5 in the 55 calibration number at the low frequency end of the dial scale. If dial indicator does not point exactly to the outside edge, move pointer to correct position.
- (B) Use an accurately calibrated test oscillator with some type of output measuring device.
- (C) WHEN ADJUSTING THE 1730 KC OSCILLATOR TRIMMER, remove chassis from cabinet and disconnect the loop connection wires from the loop terminal strip. Attach a 1 megohm resistor across these connections and feed output of test oscillator across the 1 megohm resistor.
- (D) THE 1400 KC LOOP ANTENNA TRIMMER should be adjusted only after all other adjustments have been made and with the set mounted in the cabinet. When aligning the 1400 KC Antenna Trimmer, couple test oscillator to receiver loop by: (1) make loop consisting of five to ten turns of No. 20 to No. 30 size wire, wound on a 2" or 3" form; (2) connect this loop across output of test oscillator; (3) place test oscillator loop near radio loop. BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.

TEST OSCILLATOR				Refer to parts layout diagram for location of trimmers mentioned below:
Steps	Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	
1	Any point where no interfering signal is received	Exactly 425 K. C.	0.2 Mfd. Condenser	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
2	Rotate gang condenser to minimum capacity	Exactly 1730 K. C.	See paragraph (C) above	Adjust 1730 K. C. oscillator trimmer for maximum output.
3	Approximately 1400 K. C.	Approx. 1400 K. C.	See paragraph (D) above	Adjust 1400 K. C. antenna trimmer for maximum output.

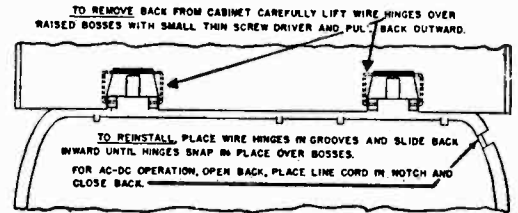


SENTINEL RADIO CORP.

MODELS 316PM, 316PT,
1U-316PM, 1U-316PT



FOR BATTERY OPERATION THE AC LINE CORD PLUG MUST BE FIRMLY INSERTED INTO THIS RECEPTACLE.
TO REMOVE CHASSIS FROM CABINET:
1. REMOVE BATTERIES.
2. UNSOLDER ANTENNA WIRES C & D.
3. REMOVE SCREWS E & F.



PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	64E18	Antenna	Loop
2	20E337	Coil	1st I.F. Transformer
3	20E337	Coil	2nd I.F. Transformer
4	20E338	Coil	Oscillator
5	20E339	Condenser	Tuning, Two Gang
6	25E28	Condenser	Dry Electrolytic, 40-40 Mfd. 150 V.
OR			& 100 Mfd. 10 V.
6	25E29	Condenser	Dry Electrolytic, 40-40 Mfd. 150 V. & 100 Mfd. 10 V. (Used in 1U-316P Only)
7	23E211	Condenser	Tubular, .01 Mfd. 200 V.
8	23E216	Condenser	Tubular, .05 Mfd. 200 V.
9	23E416	Condenser	Tubular, .05 Mfd. 400 V.
10	23E408	Condenser	Tubular, .005 Mfd. 400 V.
11	23E220	Condenser	Tubular, .2 Mfd. 200 V.
12	23E220	Condenser	Tubular, .2 Mfd. 200 V.
13	20E407	Choke	R. F. (Used in 1U-316P Only)
14	23E24	Condenser	Ceramic, .0001 Mfd.
15	23E24	Condenser	Ceramic, .0001 Mfd.
16	23E2024	Condenser	Ceramic Condenser Plate
17	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
18	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
19	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
20	27E225	Resistor	Carbon, 2.2 Megohm, 1/3 W.
21	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
22	27E105	Resistor	Carbon, 1 Megohm, 1/3 W.
23	27E474	Resistor	Carbon, 470,000 Ohm, 1/3 W.
24	27E683	Resistor	Carbon, 68,000 Ohm, 1/3 W.
25	27E104	Resistor	Carbon, 100,000 Ohm, 1/3 W.
26	27E682	Resistor	Carbon, 6,800 Ohm, 1/3 W.
27	27E271	Resistor	Carbon, 270 Ohm, 1/3 W.
28	27E331	Resistor	Carbon, 330 Ohm, 1/3 W.
30	27E471	Resistor	Carbon, 470 Ohm, 1/3 W.
31	27E330-2	Resistor	Carbon, 33 Ohm, 1/2 W.
32	27E680-3	Resistor	Carbon, 68 Ohm, 1 W.
33	27E1005	Resistor	Wire Wound, 1810 and 610 Ohms, 8 W.
35	57E1-4	Rectifier	Selenium
36	1E29	Speaker	4" P.M.
37	28E30	Volume Control	With D.P.S.T. Switch, 2 Megohm
38	29E20	Switch	Spring Return Type
39	24E33	Condenser	Trimmer 3-35 MMF. Working Range

HARDWARE

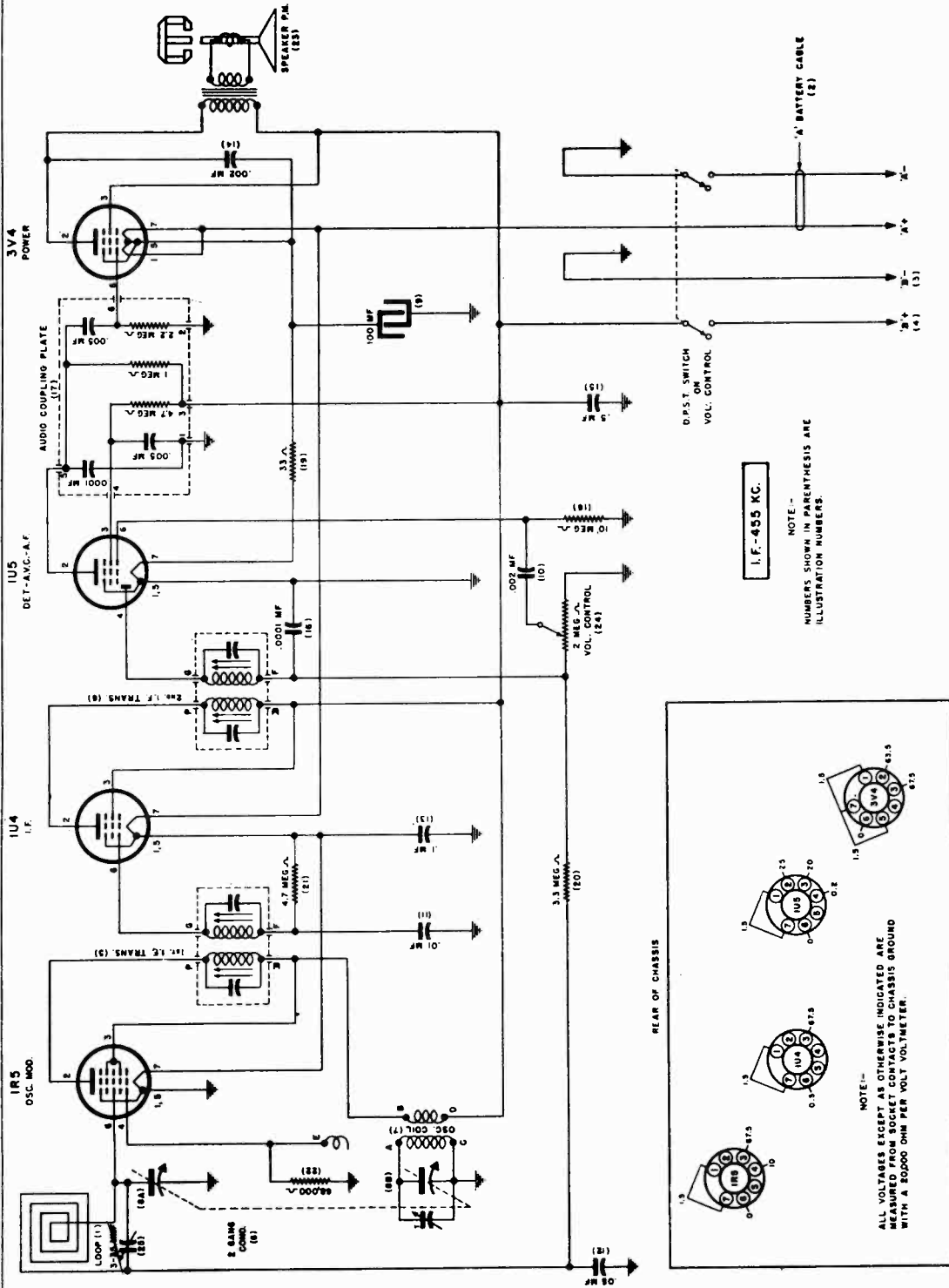
Part No.	Part Name	Description
13E103-9	Clip	Holds Back to Cabinet
82E35-F10	Screw	6-20x1/4—Holds 13E103-9 Clip to Cabt.
82E37-F10	Screw	6-20x3/8—For Mounting Chassis
10E43	Stud	Trimount, for Mounting Speaker Baffle to Cabinet
35E8-8	Dial Pointer	Dial Indicator
20E249	Batt. Connector B-	Battery Connector Assembly
20E249-2	Batt. Connector B+	Battery Connector Assembly
20E340	"A" Batt. Cable	"A" Battery Cable with Plug
55E21-1	Handle Bracket	Bracket for Mounting Handle
52E31	Handle Cover	Plastic Cover
55E39	Handle Strap	Clock Spring Steel
65E27	Hinge	Spring Hinge for Cabinet Back
37E17-5	Knob	Maroon
37E17-6	Knob	Tan
41E12	Line Cord	Line Cord and Plug

MISCELLANEOUS PARTS

Part No.	Part Name	Description
20E343	Cabinet	Complete Cabt. Assembly with Handle, Baffle, Loop and Cabt. Back, Maroon
20E343-2	Cabinet	Complete Cabt. Assembly with Handle, Baffle, Loop and Cabt. Back, Tan
20E344	Cabinet, less Back	Cabinet Assembly, less Back, but with Handle, Baffle and Loop, Maroon
20E344-2	Cabinet, less Back	Cabinet Assembly, less Back, but with Handle, Baffle and Loop, Tan
7E165-4	Cabinet Back	Back for Cabinet with 65E27 Spring Hinge Maroon
17E3-2	Plug	"A" Battery Plug
20E345	Speaker Baffle	Baffle Assembly with Grille Cloth, Tan
20E345-2	Speaker Baffle	Baffle Assembly with Grille Cloth, Maroon
7E165-8	Cabinet Back	Back for Cabinet with 65E27 Spring Tan
20E253-19	Dial Cord	Dial Drive Cord
65E2	Dial Spring	Dial Cord Tension Spring
20E348	Dial Shaft	Drive Shaft Assembly

MODELS 319PM,
319PT

SENTINEL RADIO CORP.

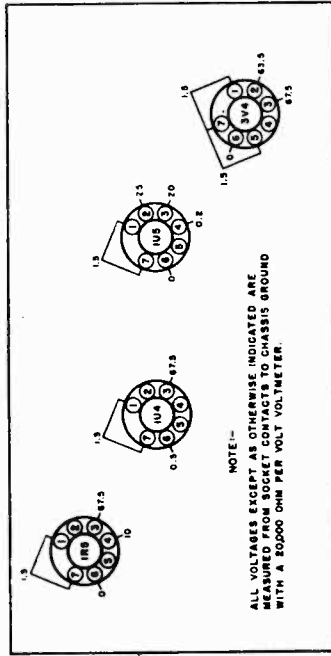


INSTALLATION OF REQUIRED BATTERIES

Diagram shows proper location and connections of the following required types of batteries:

- One 4½ Volt "A" Battery, such as SENTINEL Type A38, or Ray-O-Vac P83A or Eveready No. 746, etc.
- One 67½ Volt "B" Battery, such as SENTINEL Type B7634, or Ray-O-Vac 4367 or Eveready No. 467, etc.

VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)



NOTE—
ALL VOLTAGES EXCEPT AS OTHERWISE INDICATED ARE MEASURED FROM SOCKET CONTACTS TO CHASSIS GROUND WITH A 20000 OHM PER VOLT VOLTMETER.

NOTE—
NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.

I.F.—455 KC.

ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure, read tabulations from left to right. Make the adjustment marked (1) first, (2) next, (3) third. Before starting alignment:

- (A) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial indicator must be exactly even with the outside edge of the first 5 in the 55 calibration number at the low frequency end of the dial scale. If dial indicator does not point exactly to the outside edge, move pointer to correct position.
- (B) Use an accurately calibrated test oscillator with some type of output measuring device.
- (C) **WHEN ADJUSTING THE 1730 KC OSCILLATOR TRIMMER**, remove chassis from cabinet and disconnect the loop connection wires from the loop. Attach a 1 megohm resistor across these connections and feed output of test oscillator across the 1 megohm resistor.
- (D) **THE 1400 KC LOOP ANTENNA TRIMMER** should be adjusted only after all other adjustments have been made and with the set mounted in the cabinet. When aligning the 1400 KC Antenna Trimmer, couple test oscillator to receiver loop by: (1) make loop consisting of five to ten turns of No. 20 to No. 30 size wire, wound on a 2" or 3" form; (2) connect this loop across output of test oscillator; (3) place test oscillator loop near radio loop. **BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.**

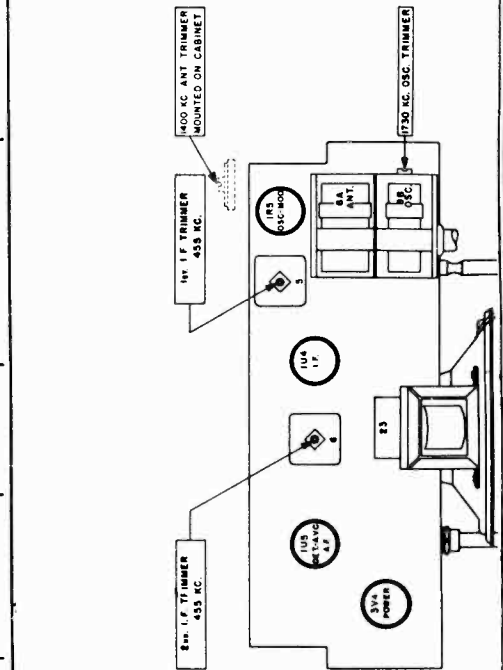
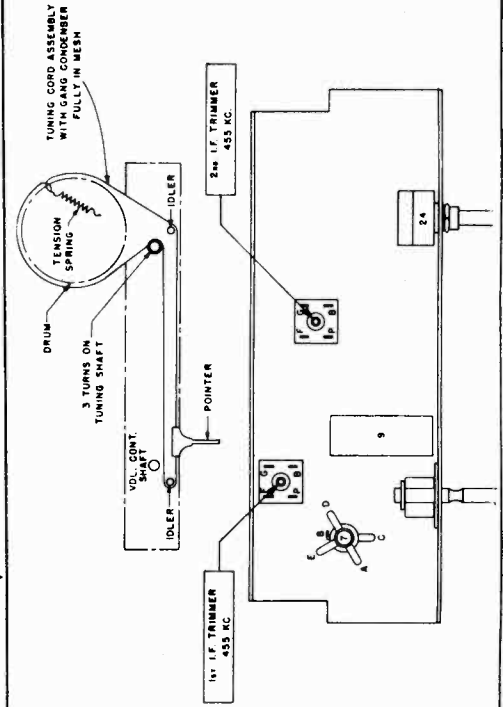
TEST OSCILLATOR			
Steps	Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:
1	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser
2	Rotate gang condenser to minimum capacity	Exactly 1730 K. C.	See paragraph (C) above
3	Approximately 1100 K. C.	Approx. 1400 K. C.	See paragraph (D) above

Refer to parts layout diagram for location of trimmers mentioned below:

Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.

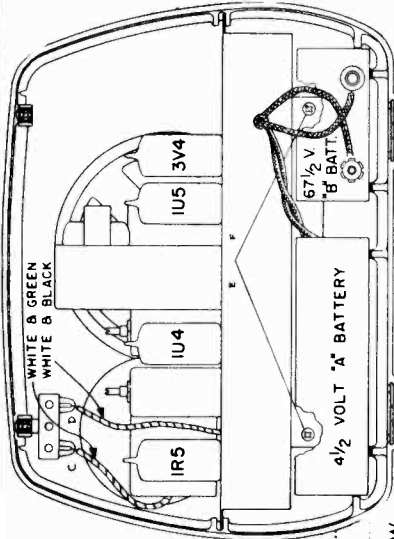
Adjust 1730 K. C. oscillator trimmer for maximum output.

Adjust 1100 K. C. antenna trimmer for maximum output.



MODELS 319PM,
319PT

SENTINEL RADIO CORP.



PARTS LIST

Illus. No.	Description	Part No.	Part Name	Description
1	Loop	14	23E405	Condenser
2	"A" Battery	15	23E224	Condenser
3	"B" Battery	16	23E24	Condenser
4	"B" + Battery	17	23E2023-2	Condenser
5	1st I. F. Transformer	18	27E106	Resistor
6	2nd I. F. Transformer	19	27E330-2	Resistor
7	Oscillator	20	27E335	Resistor
8	Tuning, Two Gang	21	27E475	Resistor
9	Dry Electrolytic, 100 Mfd. 25 V.	22	27E683	Resistor
10	Tubular, .002 Mfd. 200 V.	23	1E29	Speaker
11	Tubular, .01 Mfd. 200 V.	24	28E30	Volume Control
12	Tubular, .05 Mfd. 200 V.	25	24E33	Condenser
13	Tubular, .1 Mfd. 200 V.			

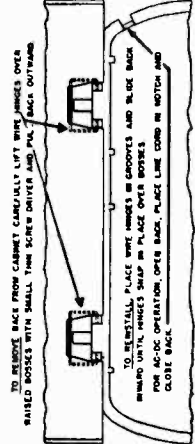
IMPORTANT: When ordering complete cabinet, cabinet less back, handle, cabinet back, or knobs, be sure to mention required color in addition to proper part number.

MISCELLANEOUS PARTS

Part No.	Part Name	Description
20E384	Cabinet	Complete Cabt. Assembly with Handle, Baffle, Loop and Cabt. Back, Maroon.
20E384-2	Cabinet	Complete Cabt. Assembly with Handle, Baffle, Loop and Cabt. Back, Tan.
20E385	Cabinet less Back	Cabinet Assembly, less Back, but with Handle, Baffle and Loop, Maroon.
20E385-2	Cabinet less Back	Cabinet Assembly, less Back, but with Handle, Baffle and Loop, Tan.
7E165-4	Cabinet Back	Back for Cabinet with 65E27 Spring Hinge, Maroon
7E165-8	Cabinet Back	Back for Cabinet with 65E27 Spring Hinge, Tan
20E253-19	Dial Cord	Dial Drive Cord
65E2	Dial Spring	Dial Cord Tension Spring
20E348	Dial Shaft	Drive Shaft Assembly
35E8-8	Dial Pointer	Dial Indicator
20E249	Batt. Connector	B- Battery Connector Assembly
20E249-2	Batt. Connector	B+ Battery Connector Assembly
20E340	"A" Batt. Cable	"A" Battery Cable with Plug
55E21-1	Handle Bracket	Bracket for Mounting Handle
52E31	Handle Cover	Plastic Cover
55E39	Handle Strap	Clock Spring Steel
65E27	Hinge	Spring Hinge for Cabinet Back
37E17-5	Knob	Maroon
37E17-6	Knob	Tan
17E3-2	Plug	"A" Battery Plug
20E345	Speaker Baffle	Baffle Assembly with Grille Cloth

HARDWARE

Part No.	Part Name	Description
13E103-9	Clip	Holds Back to Cabinet
82E35-F10	Screw	6-20x1/4—Holds 13E103-9 Clip to Cabt
82E37-F10	Screw	6-20x3/8—For Mounting Chassis
10E43	Stud	Trimount, for Mounting Speaker Baffle to Cabinet

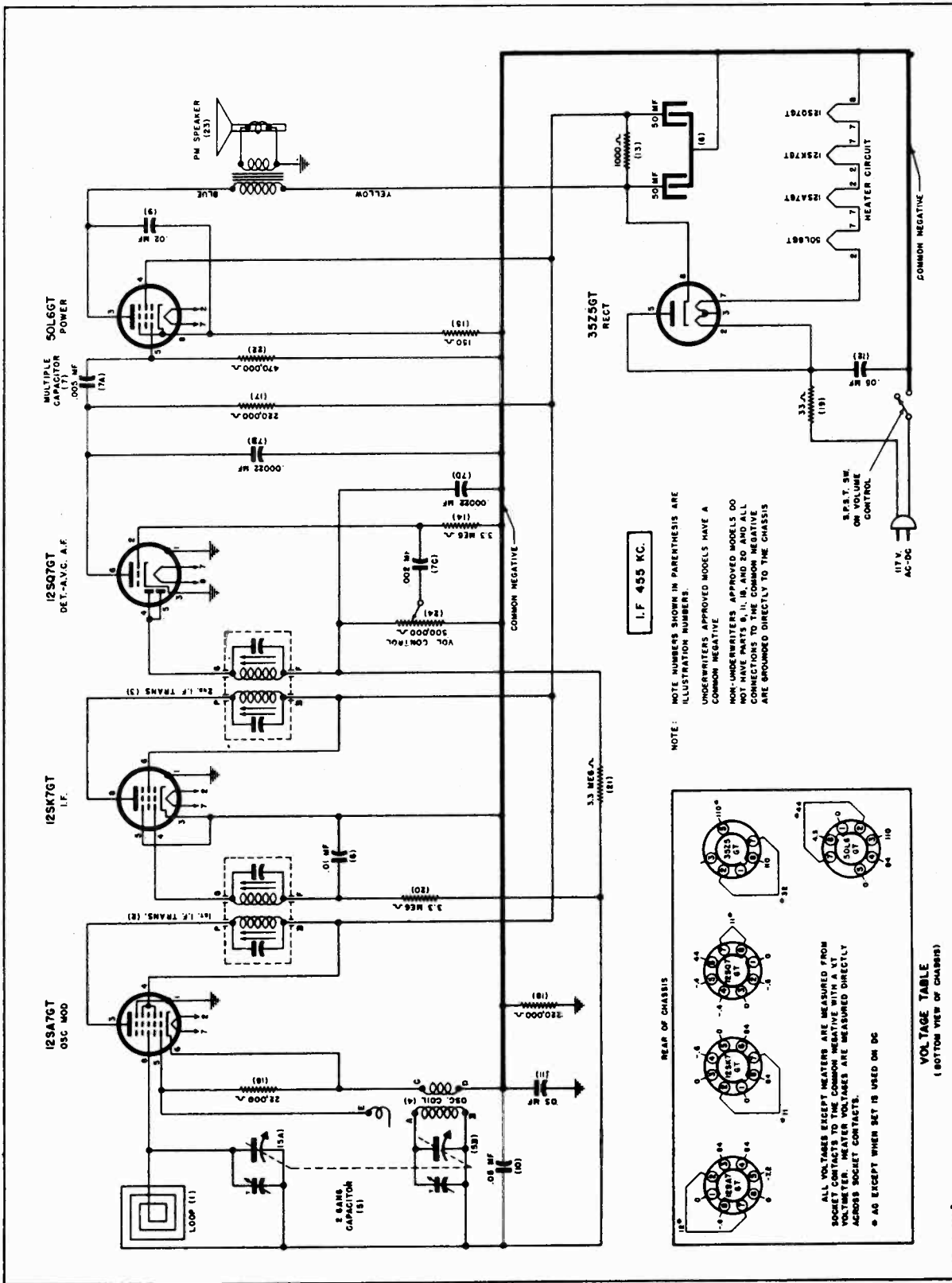


TO REMOVE BACK FROM CABINET CAUTIONALLY LIFT WIRE SPRINGS OVER BAIRED HOLES WITH SMALL TORX SCREW DRIVER AND PULL BACK OUTWARD

TO REINSTALL, PLACE WIRE SPRINGS IN GROOVES AND SLIDE BACK INWARD UNTIL SPRINGS SNAP IN PLACE OVER HOLES FOR AC-DC OPERATION OPEN BACK, PLACE LINE CORD IN MOTOR AND CLOSE PANEL

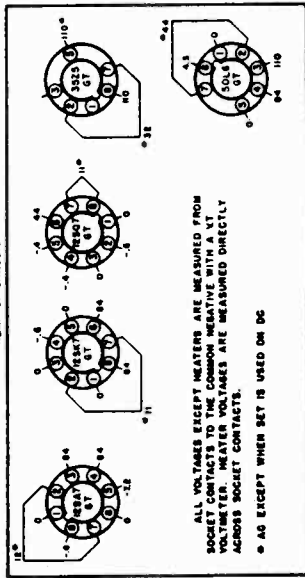
TO REMOVE CHASSIS FROM CABINET:
1. REMOVE BATTERIES
2. UNSOLDER ANTENNA WIRES C & D.
3. REMOVE SCREWS E & F.

MODELS 330-I, 330-R, 330-W, 1U-330-I, 1U-330-R, 1U-330-W



I.F. 455 KC.

NOTE: NOTE NUMBERS SHOWN IN PARENTHESES ARE ILLUSTRATION NUMBERS.
 UNDERWRITERS APPROVED MODELS HAVE A COMMON NEGATIVE
 NON-UNDERWRITERS APPROVED MODELS DO NOT HAVE PARTS 8, 11, 12, AND SO ALL CONNECTIONS TO THE COMMON NEGATIVE ARE GROUND DIRECTLY TO THE CHASSIS



ALL VOLTAGES EXCEPT HEATERS ARE MEASURED FROM SOCKET CONTACTS TO THE COMMON NEGATIVE WITH A VT VOLTMETER. HEATER VOLTAGES ARE MEASURED DIRECTLY ACROSS SOCKET CONTACTS.
 * AD EXCEPT WHEN SET IS USED ON DC

VOLTAGE TABLE
 (BOTTOM VIEW OF CHASSIS)

PART NO. 309 J

MODELS 330-I, 330-R, 330-W, 1U-330-I, 1U-330-R, 1U-330-W
SENTINEL RADIO CORP.

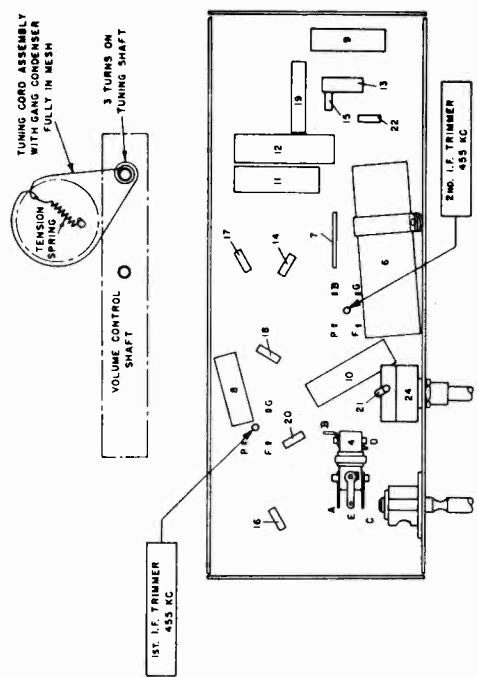
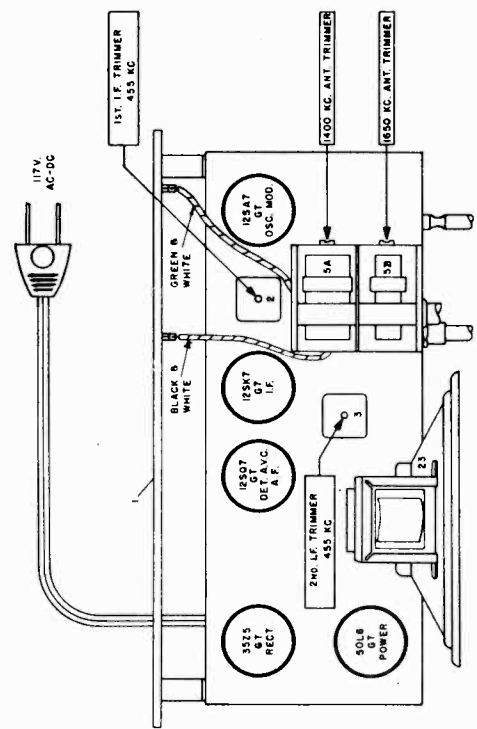
ALIGNMENT PROCEDURE

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

Be sure to:

- (A) Use an accurately calibrated test oscillator with some type of output measuring device.
- (B) **WHEN ADJUSTING THE 1620 KC OSCILLATOR TRIMMER AND THE 1400 KC ANTENNA TRIMMER, remove chassis from cabinet and leave the loop attached to the chassis with the two plastic screws. Couple test oscillator to receiver loop by: (1) make loop consisting of five to ten turns of No. 20 to No. 30 size wire, wound on a 2" or 3" form; (2) connect this loop across output of test oscillator; (3) place test oscillator loop near radio loop. BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.**

Steps	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
	Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:		Attach output of test oscillator to:
1	Any point where no interfering signal is received.	455 K. C.	.02 MFD. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through a .02 Mfd. blocking condenser.
2	Exactly 1620 K. C.	Exactly 1620 K. C.	See paragraph (1) above	See paragraph (B) above
3	Approx. 1400 K. C.	Approx. 1100 K. C.	See paragraph (B) above	See paragraph (B) above



NOTE - PARTS 8, 11, 18, AND 20 ARE OMITTED ON NON UNDERWRITERS APPROVED MODELS. SEE WIRING DIAGRAM.

PART NO. 330

SENTINEL RADIO CORP.

MODELS 330-I, 330-R,
330-W, 1U-330-I,
1U-330-R, 1U-330-W

VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON EITHER:
110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC)
OR
110-120 VOLTS DIRECT CURRENT (DC)

TO SERVICE TUBES, it is necessary to remove the cabinet back by gently pulling out the two trimount studs and re-moving the two plastic screws, used to hold the back to the cabinet, and detaching the two leads from the loop.
Before remounting the back on the cabinet, be sure to properly re-connect these two leads. The green-white wire must be attached to the terminal which is marked with the word "GREEN" close to it.

PARTS LIST

Illus. No.	Part No.	Part Name	Description	Part No.	Part Name	Description
1	20E446	Antenna	Loop and back	23E416	Capacitor	Fixed Paper, .05 Mfd. 400 V. (Used in 1U330 only)
2	20E445	Coil	1st I.F. Transformer	23E416	Capacitor	Fixed Paper, .05 Mfd. 400 V. (Used in 1U330 only)
	OR					
2	20E445-2	Coil	1st I.F. Transformer	27E102-3	Resistor	Carbon, 1000 Ohm, 1 Watt
3	20E445	Coil	2nd I.F. Transformer	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 Watt
	OR					
3	20E445-2	Coil	2nd I.F. Transformer	27E151	Resistor	Carbon, 150 Ohm, 1/3 Watt
4	20E444	Coil	Oscillator	27E223	Resistor	Carbon, 22,000 Ohm, 1/3 Watt
5	-24E48	Capacitor	Variable, 2 Gang	27E224	Resistor	Carbon, 220,000 Ohm, 1/3 Watt
6	25E24	Capacitor	Dry Elect., 50-50 Mfd. 150 Volt			(Used in 1U330 only)
7	23E2024-2	Capacitor	Multiple Capacitor Plate	27E330-5	Resistor	Carbon, 33 Ohm, 2 Watt
8	23E411	Capacitor	Fixed Paper, .01 Mfd. 400 V. (Used in 1U330 only)	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 Watt
9	23E413	Capacitor	Fixed Paper, .02 Mfd. 400 V.	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 Watt
10	23E416	Capacitor	Fixed Paper, .05 Mfd. 400 V.	1E35	Speaker	Carbon, 470,000 Ohm, 1/3 Watt
				28E4	Vol. Control	5" P.M.

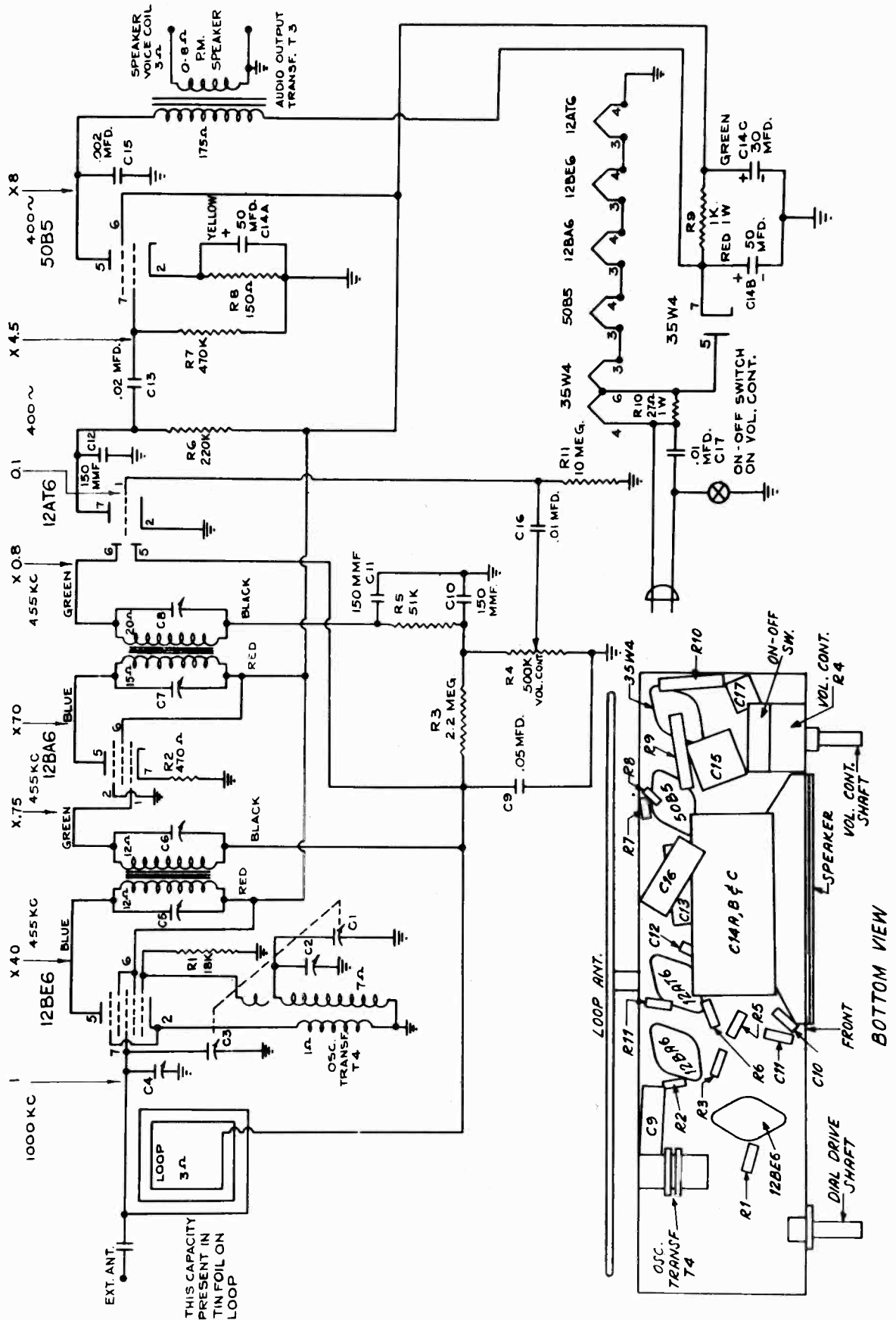
MISCELLANEOUS

Part No.	Part Name	Description
7E188-2	Cabinet	Walnut Plastic
7E188-9	Cabinet	Ivory Plastic
41E13	Cord	5 Ft. Rubber Line Cord
20E253-22	Dial Cord	Dial Drive Cord Assembly
20E348-5	Dial Shaft Assembly	Dial Drive Shaft with Bracket
35E21-2	Dial Pointer	
65E2	Dial Spring	Tension Spring for Dial Cord
37E21-7	Knob	For Walnut Cabinet
37E27-36	Knob	For Ivory Cabinet
10E42	Stud	Trimount Stud for Loop & Back
82E2002-2	Screw	Plastic Screw

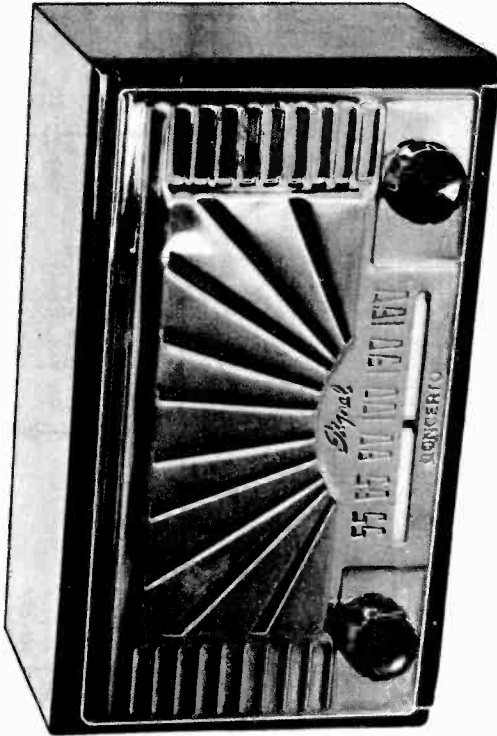
SIGNAL ELECTRONIC & MFG. CO.

MODEL 241

APPROXIMATE GAIN PER STAGE USING CHANALYST AND WITH A FIXED BIAS OF -3 VOLTS



TUBE	PIN	VOLTS	1,000 OHM/V	RESISTANCE
12BE6 conv.	1	-6.5	-3.5	18K
	2	0	0	1 ohm
	3	A.C.	A.C.	30 ohm
	4	A.C.	A.C.	16 ohm
	5	100	100	over 500K
	6	100	100	over 500K
	7	-0.6	-0.2	2.5 meg.
12BA6 I.F. AMPL.	1	-0.6	-0.2	2.5 meg.
	2	GRID.	GRID.	GRID.
	3	A.C.	A.C.	40 ohm
	4	A.C.	A.C.	30 ohm
	5	100	100	over 500K
	6	100	100	over 500K
	7	2.5	2.5	470 ohm
12AF6 DET. A.V.C. 1st audio AMPL.	1	-0.8	-0.3	10 meg.
	2	GRID.	GRID.	GRID.
	3	A.C.	A.C.	16 ohm
	4	GRID.	GRID.	GRID.
	5	-0.7	-0.2	2.5 meg.
	6	-0.6	-0.1	50K
	7	50	30	over 500K
50B5 audio output	1	0	0	470K
	2	0	0	150 ohm
	3	A.C.	A.C.	50 ohm
	4	A.C.	A.C.	40 ohm
	5	115	115	over 500K
	6	100	100	over 500K
	7	0	0	470K
35W4 rectifier	1	—	—	—
	2	—	—	—
	3	A.C.	A.C.	90 ohm
	4	A.C.	A.C.	120 ohm
	5	A.C.	A.C.	115 ohm
	6	A.C.	A.C.	115 ohm
	7	120	120	over 500K



ALIGNMENT PROCEDURE

With the receiver in the cabinet, set the dial pointer to 1600 kc and make a light pencil mark on the dial backing plate. Repeat the procedure for 1400 kc. This mark can be easily erased after alignment.

Remove the receiver from the cabinet and connect output meter across voice coil.

Connect the signal generator to the standard Haseltine Loop Model 1150 and connect the antenna lead to the receiver loop. Set the volume control at maximum, and fully mesh the tuning capacitor.

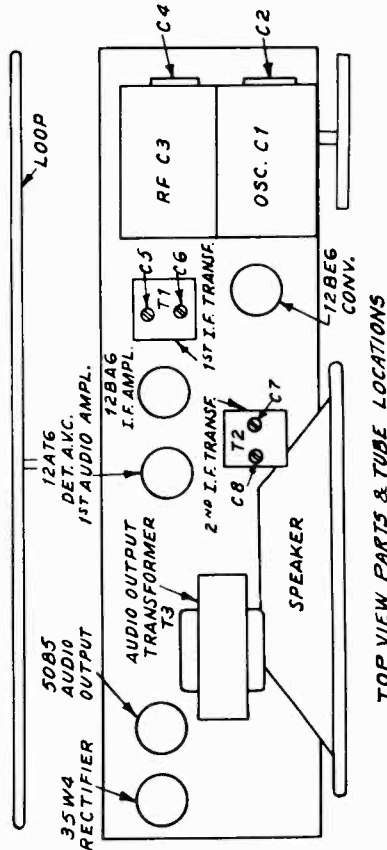
The output of the signal generator should be just sufficient to give a readable deflection on the output meter.

Set the signal generator to 455 kc and adjust L-f trimmers for maximum output in the following order: C5, C7, C6, C4. Repeat sequence if trimmers were badly misadjusted.

Set the signal generator and receiver to 1600 kc and adjust the oscillator trimmer C1 for maximum output.

Set the signal generator and receiver to 1400 kc and adjust the antenna trimmer C2 for maximum output.

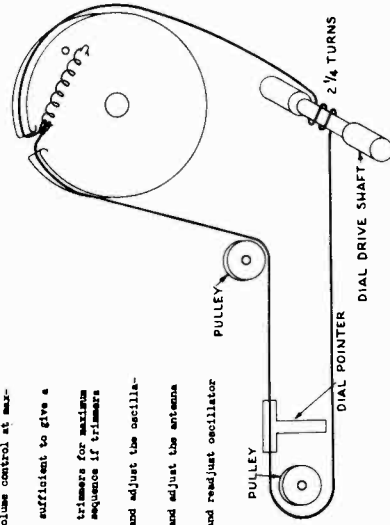
Set the signal generator and receiver to 1600 kc and readjust oscillator trimmer C1 for maximum output.

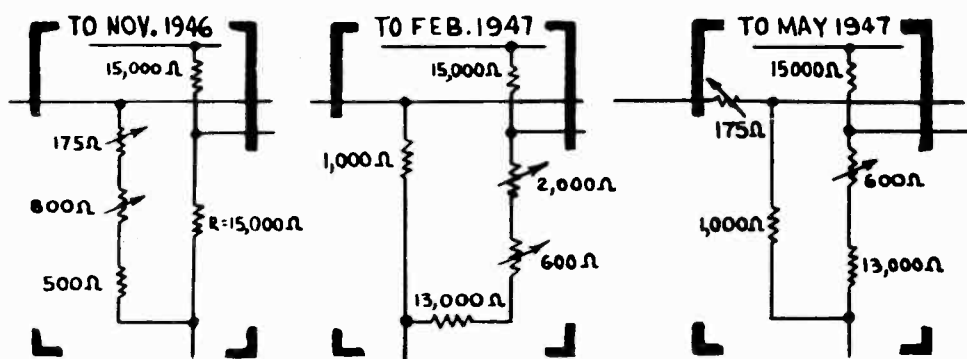
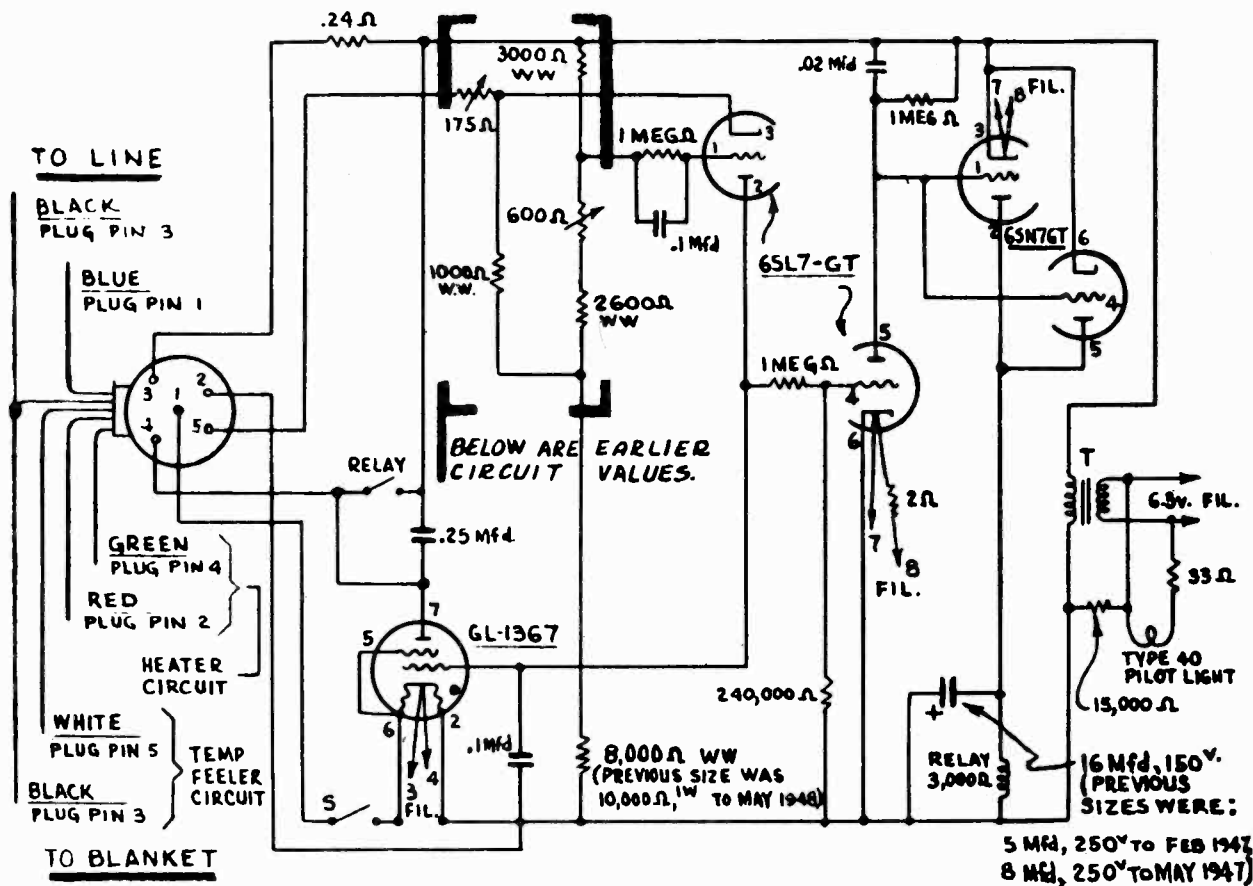


TOP VIEW PARTS & TUBE LOCATIONS

ALL VOLTAGE AND RESISTANCE MEASUREMENTS MADE WITH RESPECT TO CHASSIS GROUND.

AND WITH A LINE VOLTAGE OF 116 V.A.C.



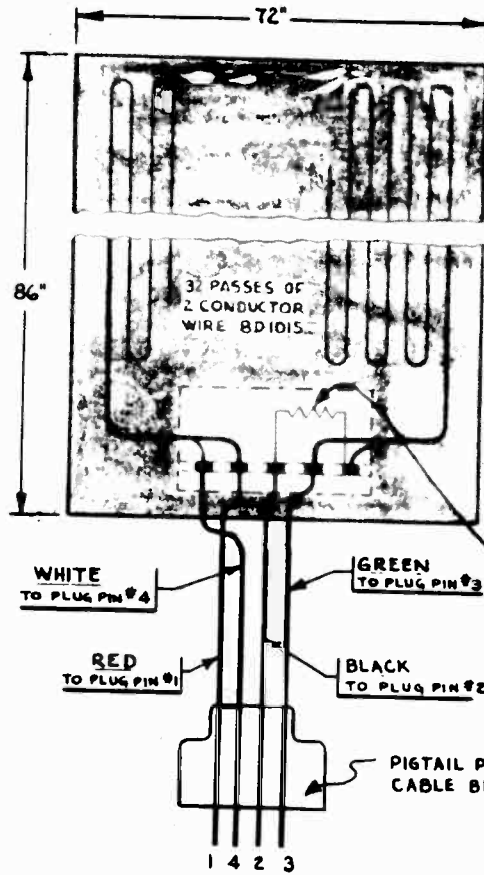


NOTE: FACTORY ADJUSTMENT OF 600 Ω ; WITH MAXIMUM TEMPERATURE SETTING OF DIAL CONTROL IS JUST "OFF" (LEADS RED AND GREEN N), WHEN 1317 Ω IS CONNECTED BETWEEN LEADS BLACK AND WHITE.

CONTROL UNIT

MODELS AB-1,
AC-2

SIMMONS CO.

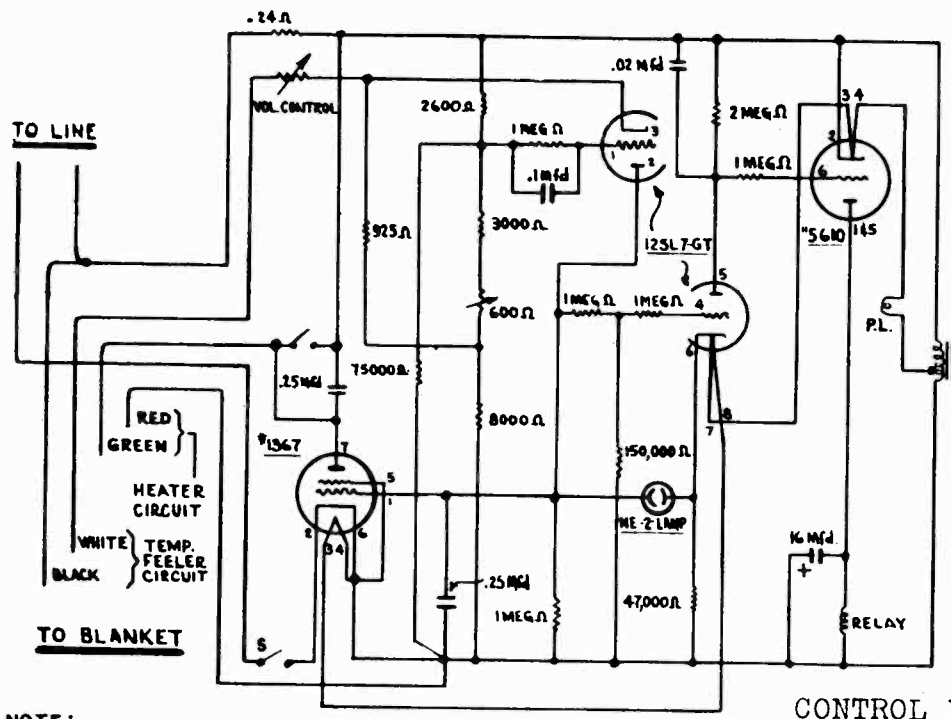


RESISTANCE -VS.-TEMPERATURE		
° F	HEATER (COPPER CIRCUIT) PINS 1-3	ALLOY CIRCUIT PINS 2-4
60	57.0 Ω	1164 Ω
65	57.6	1180
70	58.1	1197
75	58.8	1213
80	59.4	1230
85	60.0	1246
90	60.7	1263
95	61.3	1280

LEAKAGE RESISTANCE PINS 1-4 OR 2-3, 1 MEG. MIN.

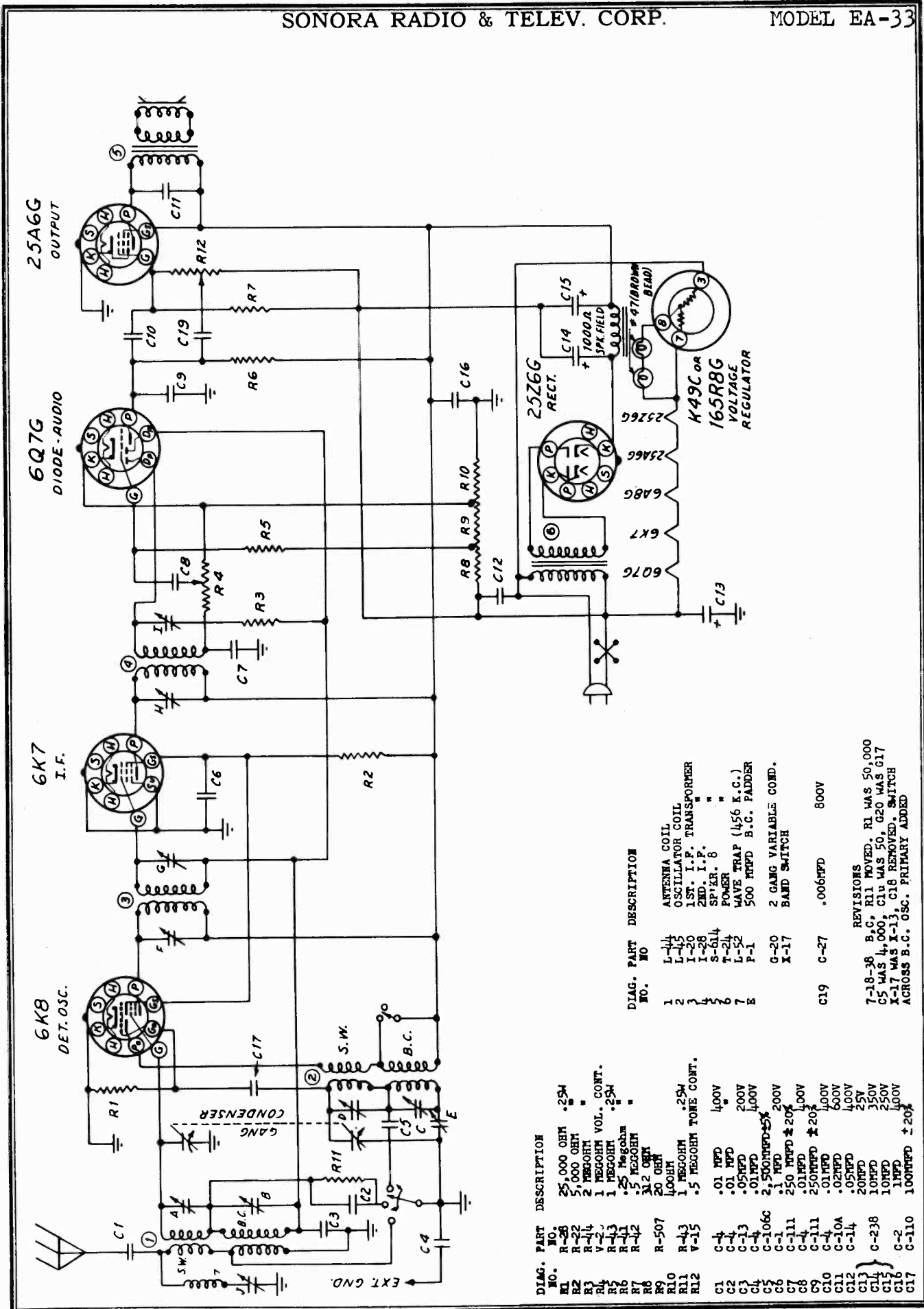
RESIST. = 1/2 WATT WIRE WOUND PADDER 0-120 Ω

BLANKET CIRCUIT AB-1



CONTROL UNIT AC-2

NOTE:
FACTORY ADJUSTMENT OF 600 Ω: WITH MAXIMUM TEMPERATURE SETTING OF DIAL CONTROL IS JUST "OFF" (LEADS GREEN AND RED) WHEN 1360 Ω IS CONNECTED BETWEEN LEADS BLACK AND WHITE.



DIAG. PART NO.	PART DESCRIPTION
1	ANTENNA COIL
2	OSCILLATOR COIL
3	1ST. I.F. TRANSFORMER
4	2ND. I.F.
5	S-614 SPKR. 8
6	T-24 WAVE TRAP (456 K.C.)
7	L-52 500 MFSD B.C. PADDER
E	G-20 2 GANG VARIABLE COND.
	X-17 BAND SWITCH
C19	C-27 .006MFD 800V
REVISIONS 7-18-38 B.C. R11 MOVED. R1 WAS 50,000 C5 WAS 4,000. C14 WAS 50. G20 WAS C17 X-17 WAS X-13. C16 REMOVED. SWITCH ACROSS B.C. OSC. PRIMARY ADDED	

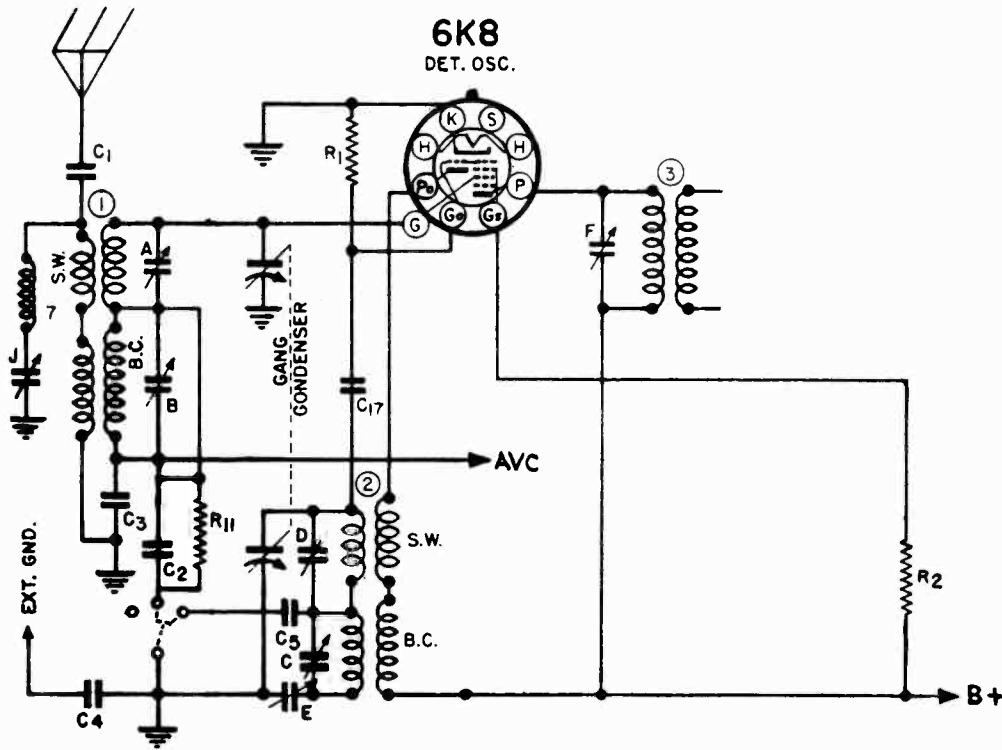
CLARI - SKEMATIX

Registered Trademark

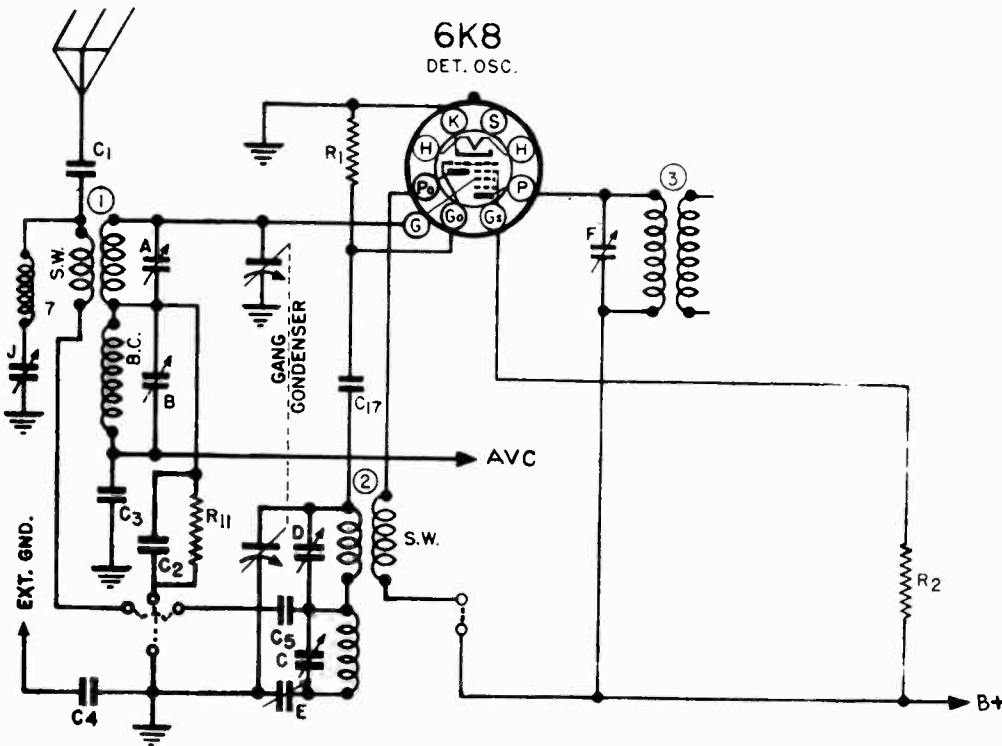
PAGE 19-2 SONORA

MODEL EA-33

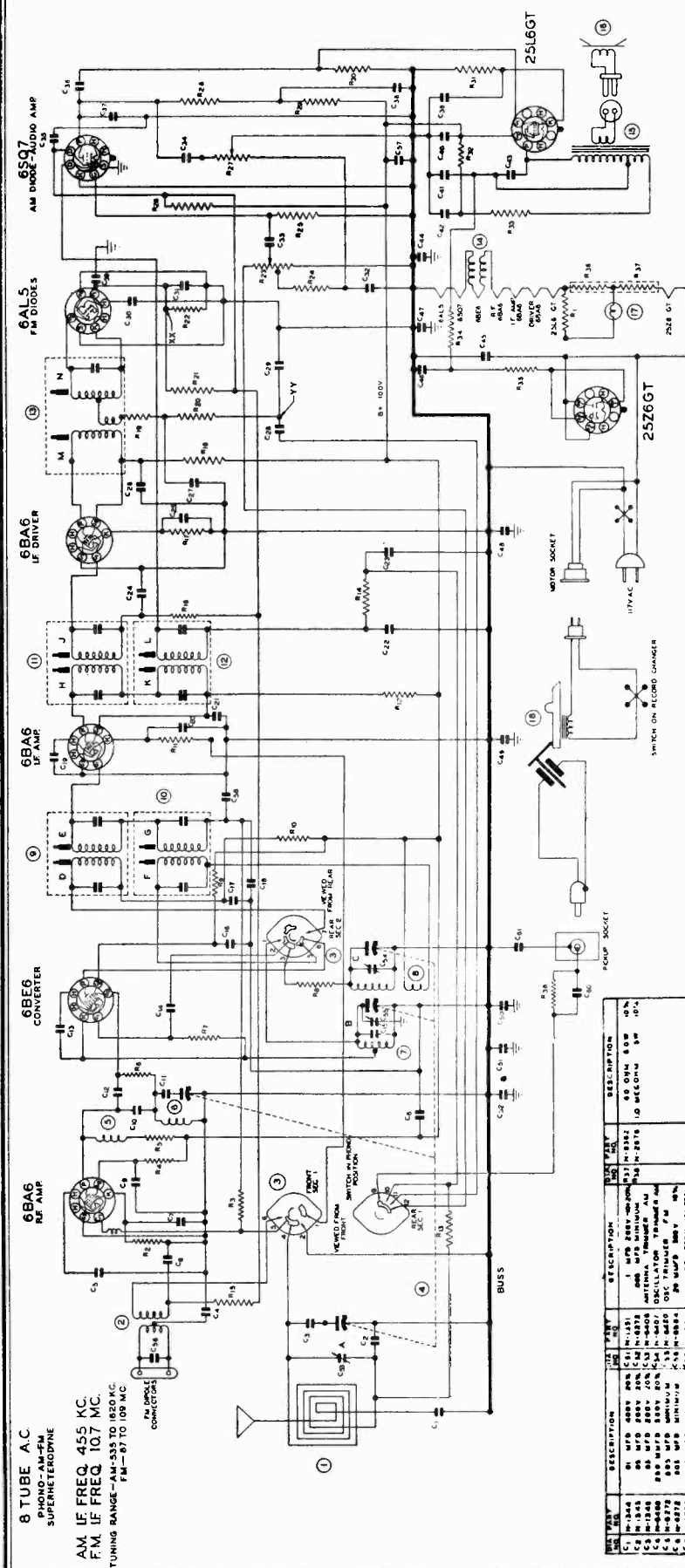
SONORA RADIO & TELEV. CORP.



BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND



BAND-SWITCH SHOWN
AT 2ND POSITION
SHORT WAVE BAND

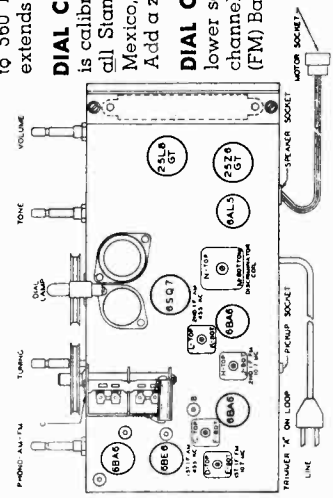


CHASSIS LAYOUT AND TUBE POSITIONS

This receiver is designed to operate over two tuning ranges; the broadcast band which extends from 535 to 1620 Kilocycles (KC) (185 to 560 Meters), and the Frequency Modulation (FM) Band which extends from 87 to 109 Megacycles (MC).

DIAL CALIBRATION. (Standard Broadcast Band.) The upper scale is calibrated from 55 to 160 (Standard Broadcast). This band covers all Standard Broadcast frequencies of the United States, Canada, Mexico, Cuba, and many Central and South American Countries. Add a zero to figures on the scale to obtain kilocycles.

DIAL CALIBRATION. (Frequency Modulation Band.) The entire lower scale is calibrated from 88 to 108 Megacycles (201 to 300 FM channels) which covers the entire popular Frequency Modulation (FM) Band.



NO.	DESCRIPTION	VAL.	NO.	DESCRIPTION	VAL.	NO.	DESCRIPTION	VAL.
C1	500 MF 50V	50	1	ANTENNA LOOP COIL	100	1	ANTENNA LOOP COIL	100
C2	500 MF 50V	50	2	50 OHM 50W 10%	10	2	50 OHM 50W 10%	10
C3	500 MF 50V	50	3	10 MEGOHM 10W 5%	10	3	10 MEGOHM 10W 5%	10
C4	500 MF 50V	50	4	10 MEGOHM 10W 5%	10	4	10 MEGOHM 10W 5%	10
C5	500 MF 50V	50	5	10 MEGOHM 10W 5%	10	5	10 MEGOHM 10W 5%	10
C6	500 MF 50V	50	6	10 MEGOHM 10W 5%	10	6	10 MEGOHM 10W 5%	10
C7	500 MF 50V	50	7	10 MEGOHM 10W 5%	10	7	10 MEGOHM 10W 5%	10
C8	500 MF 50V	50	8	10 MEGOHM 10W 5%	10	8	10 MEGOHM 10W 5%	10
C9	500 MF 50V	50	9	10 MEGOHM 10W 5%	10	9	10 MEGOHM 10W 5%	10
C10	500 MF 50V	50	10	10 MEGOHM 10W 5%	10	10	10 MEGOHM 10W 5%	10
C11	500 MF 50V	50	11	10 MEGOHM 10W 5%	10	11	10 MEGOHM 10W 5%	10
C12	500 MF 50V	50	12	10 MEGOHM 10W 5%	10	12	10 MEGOHM 10W 5%	10
C13	500 MF 50V	50	13	10 MEGOHM 10W 5%	10	13	10 MEGOHM 10W 5%	10
C14	500 MF 50V	50	14	10 MEGOHM 10W 5%	10	14	10 MEGOHM 10W 5%	10
C15	500 MF 50V	50	15	10 MEGOHM 10W 5%	10	15	10 MEGOHM 10W 5%	10
C16	500 MF 50V	50	16	10 MEGOHM 10W 5%	10	16	10 MEGOHM 10W 5%	10
C17	500 MF 50V	50	17	10 MEGOHM 10W 5%	10	17	10 MEGOHM 10W 5%	10
C18	500 MF 50V	50	18	10 MEGOHM 10W 5%	10	18	10 MEGOHM 10W 5%	10
C19	500 MF 50V	50	19	10 MEGOHM 10W 5%	10	19	10 MEGOHM 10W 5%	10
C20	500 MF 50V	50	20	10 MEGOHM 10W 5%	10	20	10 MEGOHM 10W 5%	10
C21	500 MF 50V	50	21	10 MEGOHM 10W 5%	10	21	10 MEGOHM 10W 5%	10
C22	500 MF 50V	50	22	10 MEGOHM 10W 5%	10	22	10 MEGOHM 10W 5%	10
R1	100K	100	1	REGULATING RESISTOR	100	1	REGULATING RESISTOR	100
R2	100K	100	2	500 OHM 50W 10%	50	2	500 OHM 50W 10%	50
R3	100K	100	3	500 OHM 50W 10%	50	3	500 OHM 50W 10%	50
R4	100K	100	4	500 OHM 50W 10%	50	4	500 OHM 50W 10%	50
R5	100K	100	5	500 OHM 50W 10%	50	5	500 OHM 50W 10%	50
R6	100K	100	6	500 OHM 50W 10%	50	6	500 OHM 50W 10%	50
R7	100K	100	7	500 OHM 50W 10%	50	7	500 OHM 50W 10%	50
R8	100K	100	8	500 OHM 50W 10%	50	8	500 OHM 50W 10%	50
R9	100K	100	9	500 OHM 50W 10%	50	9	500 OHM 50W 10%	50
R10	100K	100	10	500 OHM 50W 10%	50	10	500 OHM 50W 10%	50
R11	100K	100	11	500 OHM 50W 10%	50	11	500 OHM 50W 10%	50
R12	100K	100	12	500 OHM 50W 10%	50	12	500 OHM 50W 10%	50
R13	100K	100	13	500 OHM 50W 10%	50	13	500 OHM 50W 10%	50
R14	100K	100	14	500 OHM 50W 10%	50	14	500 OHM 50W 10%	50
R15	100K	100	15	500 OHM 50W 10%	50	15	500 OHM 50W 10%	50
R16	100K	100	16	500 OHM 50W 10%	50	16	500 OHM 50W 10%	50
R17	100K	100	17	500 OHM 50W 10%	50	17	500 OHM 50W 10%	50
R18	100K	100	18	500 OHM 50W 10%	50	18	500 OHM 50W 10%	50
R19	100K	100	19	500 OHM 50W 10%	50	19	500 OHM 50W 10%	50
R20	100K	100	20	500 OHM 50W 10%	50	20	500 OHM 50W 10%	50
R21	100K	100	21	500 OHM 50W 10%	50	21	500 OHM 50W 10%	50
R22	100K	100	22	500 OHM 50W 10%	50	22	500 OHM 50W 10%	50
L1	100UH	100	1	100 OHM 50W 10%	50	1	100 OHM 50W 10%	50
L2	100UH	100	2	100 OHM 50W 10%	50	2	100 OHM 50W 10%	50
L3	100UH	100	3	100 OHM 50W 10%	50	3	100 OHM 50W 10%	50
L4	100UH	100	4	100 OHM 50W 10%	50	4	100 OHM 50W 10%	50
L5	100UH	100	5	100 OHM 50W 10%	50	5	100 OHM 50W 10%	50
L6	100UH	100	6	100 OHM 50W 10%	50	6	100 OHM 50W 10%	50
L7	100UH	100	7	100 OHM 50W 10%	50	7	100 OHM 50W 10%	50
L8	100UH	100	8	100 OHM 50W 10%	50	8	100 OHM 50W 10%	50
L9	100UH	100	9	100 OHM 50W 10%	50	9	100 OHM 50W 10%	50
L10	100UH	100	10	100 OHM 50W 10%	50	10	100 OHM 50W 10%	50
L11	100UH	100	11	100 OHM 50W 10%	50	11	100 OHM 50W 10%	50
L12	100UH	100	12	100 OHM 50W 10%	50	12	100 OHM 50W 10%	50
L13	100UH	100	13	100 OHM 50W 10%	50	13	100 OHM 50W 10%	50
L14	100UH	100	14	100 OHM 50W 10%	50	14	100 OHM 50W 10%	50
L15	100UH	100	15	100 OHM 50W 10%	50	15	100 OHM 50W 10%	50
L16	100UH	100	16	100 OHM 50W 10%	50	16	100 OHM 50W 10%	50
L17	100UH	100	17	100 OHM 50W 10%	50	17	100 OHM 50W 10%	50
L18	100UH	100	18	100 OHM 50W 10%	50	18	100 OHM 50W 10%	50
L19	100UH	100	19	100 OHM 50W 10%	50	19	100 OHM 50W 10%	50
L20	100UH	100	20	100 OHM 50W 10%	50	20	100 OHM 50W 10%	50
L21	100UH	100	21	100 OHM 50W 10%	50	21	100 OHM 50W 10%	50
L22	100UH	100	22	100 OHM 50W 10%	50	22	100 OHM 50W 10%	50

SERVICE DATA

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes, such as weak or defective tubes or speaker, open or grounded resistors, or bypass condensers. Never attempt to realign the set until all other possible sources of trouble

have been first thoroughly investigated and definitely proved not to be the cause. It will be necessary to follow the procedure outlined below and to use recommended equipment for satisfactory results.

BROADCAST ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED: Modulated Test Oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC, also an Output Meter to connect across the primary or secondary of the output transformer.

I. F. ALIGNMENT: Put switch in the broadcast position and connect the test oscillator to the converter grid through a .05 condenser. The ground lead of the test oscillator should be connected to the buss of the receiver. Adjust the four I. F. trimmers (F, G, L and K) for maximum reading on the output meter. Always use the peak on the slug which is obtained when screw is out of the can the greatest distance.

F. M. ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED: F. M. Generator with frequencies of 90, 98, 106, and 109 megacycles, and generator without any modulation which covers 10.7 megacycles, also a zero center microammeter, and a DC Vacuum Tube Voltmeter (An oscilloscope and variable frequency audio oscillator can be used for better results. This method of alignment is described in the last paragraph).

DISCRIMINATOR ALIGNMENT: Connect DC Vacuum Tube Voltmeter between the buss and point "XX" on circuit diagram. Point "XX" is negative potential on the vacuum tube voltmeter. Isolate point "XX" and buss connections to vacuum tube voltmeter with chokes made by wrapping approximately 20 turns of hookup wire

PRELIMINARY I. F. ALIGNMENT: Connect test oscillator to the converter grid through a 250 mmf. mica condenser. Adjust slugs D, E, H and J to maximum output on the vacuum tube voltmeter. In making these adjustments reduce the generator input to keep the vacuum tube voltmeter at approximately 5 volts when making this adjustment. Always use the peak on the slug which is obtained when the screw is out of the can the greatest distance.

FINAL I. F. ALIGNMENT: Set the test oscillator to 109 MC without frequency modulation and connect it to converter grid. Adjust trimmer "B" for approximate maximum output on the vacuum tube voltmeter and zero center for exact centering. Adjust test oscillator to approximately 25 KC deviation, carefully adjust trimmers D, E, H, J and M for maximum on vacuum tube voltmeter. It may be necessary to shift the frequency of the oscillator slightly to hold the zero center meter on center. In making this adjustment turn up volume control slightly to obtain an audio signal out of the speaker. If this signal is free of distortion, increase the deviation to approximately 75 KC and repeat the above alignment. If this is done carefully there will be no distortion in the speaker with this deviation. If distortion is obtained in the speaker with this deviation, it will be necessary to carefully repeat the I. F. alignment.

R. F. ALIGNMENT: Move the signal generator to the FM antenna terminals, using 150 ohm resistors between the generator terminals

R. F. ALIGNMENT: Connect the test oscillator to the antenna lead on the loop through a 100 mmf. condenser. The Loop and Chassis must occupy the same relative positions on the bench as they do in the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. Set the gang condenser to the maximum high frequency position and the test oscillator to 1620 KC. Adjust Trimmer "C" to the maximum output. Set test oscillator to 1400 KC and tune in signal with the gang condenser and adjust Trimmer "A" to maximum response. Set test oscillator to 600 KC and tune in signal with gang condenser. Check for damage to gang condenser or coils.

around a pencil. This is illustrated in Figure 1. Connect two 100,000 ohm resistors in series. (These resistors must match to 5%.) Connect them from point "XX" to buss. Between junction of 100,000 ohm resistors and the point "YY" connect Zero Center Meter, which is also isolated by the choke described above. These connections are illustrated in Figure 1. Connect test oscillator which is adjusted to 10.7 megacycles to grid of IF Driver through a 250 mmf condenser. Adjust slug "M" to maximum on the vacuum tube voltmeter. Reduce test oscillator to keep vacuum tube voltmeter to around 5 volts. Adjust slug "N" to bring zero center meter to zero point. Slug "N" should never be touched after this alignment.

and each of the FM antenna terminals. Set the test oscillator to 106 megacycles and tune in signal with gang condenser to obtain approximate maximum on the vacuum tube voltmeter and zero center on the meter. Slightly bend the RF section in the gang condenser for maximum output with vacuum tube voltmeter. Set the signal generator to 98 megacycles, tune in signal with the gang condenser. Repeat the above procedure at this frequency and also at 90 megacycles. Recheck alignment at 106 megacycles.

FINAL ALIGNMENT OF FM IF WITH OSCILLOSCOPE AND VARIABLE AUDIO OSCILLATOR:

The oscilloscope and variable audio oscillator should be connected as shown in Figure 2. Adjust the deviation to approximately 25 KC and align trimmers D, E, H, J and M to maximum on the vacuum tube voltmeter while watching the oscilloscope for a straight line. It may be necessary to vary the frequency of the variable audio oscillator in order to make the line straight on the scope. Next increase deviation to approximately 75 KC and repeat procedure, adjusting for maximum or as close to maximum as it is possible to obtain without losing the straight line on the oscilloscope. After all the trimmers have been properly adjusted to a maximum and a straight line on the scope, increase the deviation from approximately 125 to 150 KC. The curves illustrated in Figure 3 should be obtained. In making the above adjustments it may be necessary to make slight variations in the RF frequency in order to hold the zero center meter at the zero point.

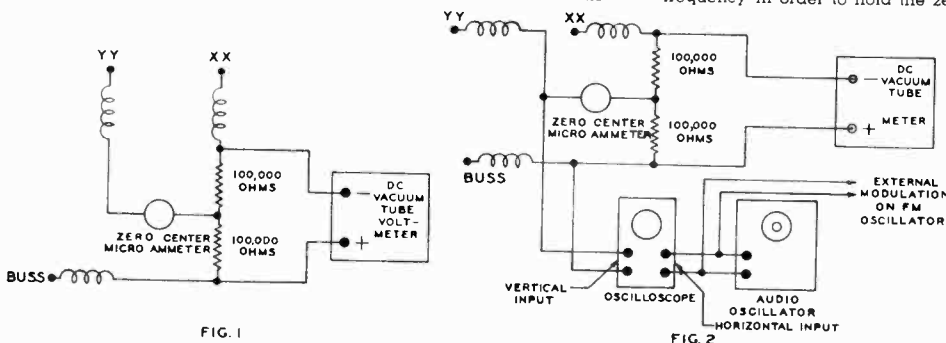


FIG. 1

FIG. 2

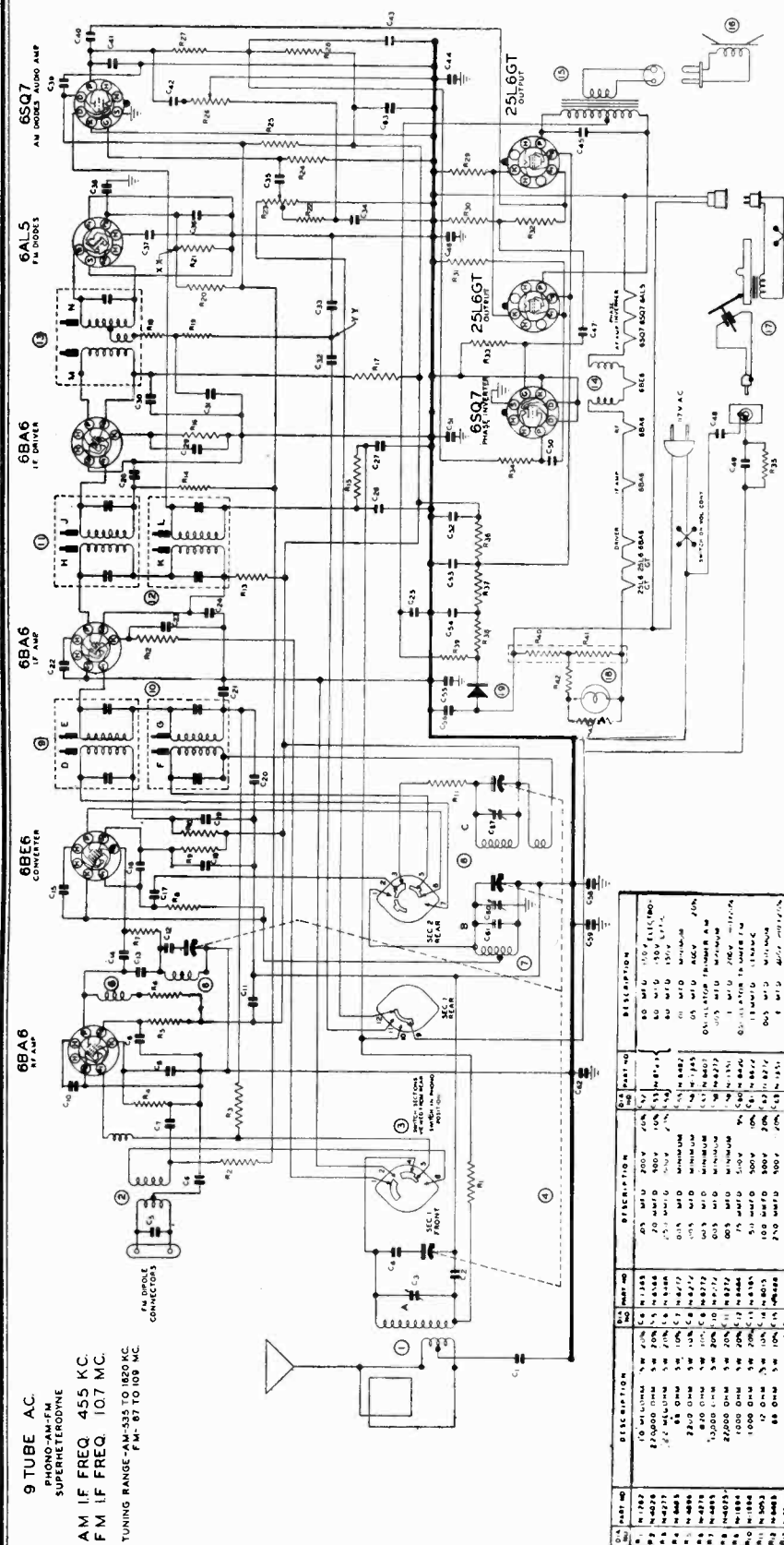
FIG. 3

AERIAL SYSTEM

This receiver has a built-in "Loop" aerial for broadcast reception. Its excellent design is such as to increase pick-up from stations having wide variations in signal strength. The efficiency and selectivity of the loop provide outstanding reception without the use of an external aerial. In or near metal buildings, iron ore deposits or steel structures, or in localities remote from broadcasting stations, reception of the Standard Broadcast Band may require an outside aerial 50 to 100 feet in length including lead-in. Connect the outside aerial to the aerial lead (Blue Wire) located at the rear of the receiver. When using the outside antenna it may be necessary to reverse the power cord plug to eliminate hum or distortion. The built-in FM aerial is a folded dipole Antenna. Although the re-

ceiver performs satisfactorily on the broadcast band, your particular location may require an outside antenna for FM reception. The external aerial for FM reception, must be a dipole Antenna with a 300 ohm line, which you may secure from your local Sonora Dealer. The two lead-in leads of the dipole antenna should be attached, one lead under each screw, to the terminal strip located on the cabinet back after removing the FM antenna furnished with the receiver. For best possible reception with an outside dipole, adjust lead length on the lead-in cable on the weakest station. Cut off lead 6 inches at a time and until signal comes in stronger. If cutting off an additional length does not increase signal, you have reached the correct lengths. It is not necessary to cut off more than 2½ feet.

SONORA RADIO & TELEV. CORP. MODELS WLRU-219,
WLRU-220A, WLRU-254A;
402F

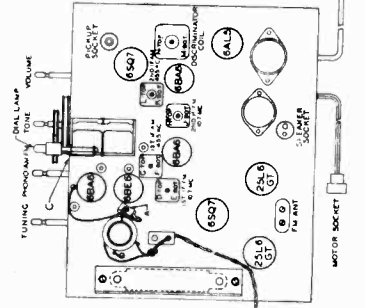


9 TUBE AC
PHONO-AM-FM
SUPERHETERODYNE
AM IF FREQ. 455 KC.
FM IF FREQ. 107 MC.
TUNING RANGE-AM-535 TO 1620 KC.
FM-87 TO 109 MC.

This receiver is designed to operate over two tuning ranges; the broadcast band which extends from 535 to 1620 Kilocycles (KC) (185 to 560 Meters), and the Frequency Modulation (FM) Band which extends from 87 to 109 Megacycles (MC).

DIAL CALIBRATION. (Standard Broadcast Band.) The upper scale is calibrated from 55 to 160 (Standard Broadcast). This band covers all Standard Broadcast frequencies of the United States, Canada, Mexico, Cuba, and many Central and South American Countries. Add a zero to figures on the scale to obtain kilocycles.

DIAL CALIBRATION. (Frequency Modulation Band.) The entire lower scale is calibrated from 88 to 108 Megacycles (201 to 300 FM channels) which covers the entire popular Frequency Modulation (FM) Band.



PART NO.	DESCRIPTION	QUANTITY	REMARKS
10	10 MFD 50V ELECTROLYTIC	1	
11	20 MFD 250V 50% TOL	1	
12	50 MFD 50V 50% TOL	1	
13	100 MFD 50V 50% TOL	1	
14	200 MFD 50V 50% TOL	1	
15	500 MFD 50V 50% TOL	1	
16	1000 MFD 50V 50% TOL	1	
17	2000 MFD 50V 50% TOL	1	
18	5000 MFD 50V 50% TOL	1	
19	10000 MFD 50V 50% TOL	1	
20	20000 MFD 50V 50% TOL	1	
21	50000 MFD 50V 50% TOL	1	
22	100000 MFD 50V 50% TOL	1	
23	200000 MFD 50V 50% TOL	1	
24	500000 MFD 50V 50% TOL	1	
25	1000000 MFD 50V 50% TOL	1	
26	2000000 MFD 50V 50% TOL	1	
27	5000000 MFD 50V 50% TOL	1	
28	10000000 MFD 50V 50% TOL	1	
29	20000000 MFD 50V 50% TOL	1	
30	50000000 MFD 50V 50% TOL	1	
31	100000000 MFD 50V 50% TOL	1	
32	200000000 MFD 50V 50% TOL	1	
33	500000000 MFD 50V 50% TOL	1	
34	1000000000 MFD 50V 50% TOL	1	
35	2000000000 MFD 50V 50% TOL	1	
36	5000000000 MFD 50V 50% TOL	1	
37	10000000000 MFD 50V 50% TOL	1	
38	20000000000 MFD 50V 50% TOL	1	
39	50000000000 MFD 50V 50% TOL	1	
40	100000000000 MFD 50V 50% TOL	1	
41	200000000000 MFD 50V 50% TOL	1	
42	500000000000 MFD 50V 50% TOL	1	
43	1000000000000 MFD 50V 50% TOL	1	
44	2000000000000 MFD 50V 50% TOL	1	
45	5000000000000 MFD 50V 50% TOL	1	
46	10000000000000 MFD 50V 50% TOL	1	
47	20000000000000 MFD 50V 50% TOL	1	
48	50000000000000 MFD 50V 50% TOL	1	
49	100000000000000 MFD 50V 50% TOL	1	
50	200000000000000 MFD 50V 50% TOL	1	
51	500000000000000 MFD 50V 50% TOL	1	
52	1000000000000000 MFD 50V 50% TOL	1	
53	2000000000000000 MFD 50V 50% TOL	1	
54	5000000000000000 MFD 50V 50% TOL	1	
55	10000000000000000 MFD 50V 50% TOL	1	
56	20000000000000000 MFD 50V 50% TOL	1	
57	50000000000000000 MFD 50V 50% TOL	1	
58	100000000000000000 MFD 50V 50% TOL	1	
59	200000000000000000 MFD 50V 50% TOL	1	
60	500000000000000000 MFD 50V 50% TOL	1	
61	1000000000000000000 MFD 50V 50% TOL	1	
62	2000000000000000000 MFD 50V 50% TOL	1	
63	5000000000000000000 MFD 50V 50% TOL	1	
64	10000000000000000000 MFD 50V 50% TOL	1	
65	20000000000000000000 MFD 50V 50% TOL	1	
66	50000000000000000000 MFD 50V 50% TOL	1	
67	100000000000000000000 MFD 50V 50% TOL	1	
68	200000000000000000000 MFD 50V 50% TOL	1	
69	500000000000000000000 MFD 50V 50% TOL	1	
70	1000000000000000000000 MFD 50V 50% TOL	1	
71	2000000000000000000000 MFD 50V 50% TOL	1	
72	5000000000000000000000 MFD 50V 50% TOL	1	
73	10000000000000000000000 MFD 50V 50% TOL	1	
74	20000000000000000000000 MFD 50V 50% TOL	1	
75	50000000000000000000000 MFD 50V 50% TOL	1	
76	100000000000000000000000 MFD 50V 50% TOL	1	
77	200000000000000000000000 MFD 50V 50% TOL	1	
78	500000000000000000000000 MFD 50V 50% TOL	1	
79	1000000000000000000000000 MFD 50V 50% TOL	1	
80	2000000000000000000000000 MFD 50V 50% TOL	1	
81	5000000000000000000000000 MFD 50V 50% TOL	1	
82	10000000000000000000000000 MFD 50V 50% TOL	1	
83	20000000000000000000000000 MFD 50V 50% TOL	1	
84	50000000000000000000000000 MFD 50V 50% TOL	1	
85	100000000000000000000000000 MFD 50V 50% TOL	1	
86	200000000000000000000000000 MFD 50V 50% TOL	1	
87	500000000000000000000000000 MFD 50V 50% TOL	1	
88	1000000000000000000000000000 MFD 50V 50% TOL	1	
89	2000000000000000000000000000 MFD 50V 50% TOL	1	
90	5000000000000000000000000000 MFD 50V 50% TOL	1	
91	10000000000000000000000000000 MFD 50V 50% TOL	1	
92	20000000000000000000000000000 MFD 50V 50% TOL	1	
93	50000000000000000000000000000 MFD 50V 50% TOL	1	
94	100000000000000000000000000000 MFD 50V 50% TOL	1	
95	200000000000000000000000000000 MFD 50V 50% TOL	1	
96	500000000000000000000000000000 MFD 50V 50% TOL	1	
97	1000000000000000000000000000000 MFD 50V 50% TOL	1	
98	2000000000000000000000000000000 MFD 50V 50% TOL	1	
99	5000000000000000000000000000000 MFD 50V 50% TOL	1	
100	10000000000000000000000000000000 MFD 50V 50% TOL	1	

MODELS WLRU-219, SONORA RADIO & TELEV. CORP.
 WLRU-220A, WLRU-254A;
 402F
BROADCAST ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED: Modulated Test Oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC, also an Output Meter to connect across the primary or secondary of the output transformer.

I. F. ALIGNMENT: Put switch in the broadcast position and connect the test oscillator to the converter grid through a .05 condenser. The ground lead of the test oscillator should be connected to the buss of the receiver. Adjust the four I. F. trimmers (F, G, L and K) for maximum reading on the output meter. Always use the peak on the slug which is obtained when screw is out of the can the greatest distance.

R.F. ALIGNMENT. Connect the test oscillator to the antenna lead on the loop through a 100 mmf. condenser. For the antenna adjustment, it is necessary to connect the loop on the cabinet to the chassis, or use an equivalent dummy. An equivalent dummy can be constructed by winding two turns of hookup wire on a piece of carton material to form a loop 22x35 inches. Set the gang condenser to the maximum high frequency position and the test oscillator to 1620 KC. Adjust Trimmer "C" to the maximum output. Set test oscillator to 1400 KC and tune in signal with the gang condenser and adjust Trimmer "A" to maximum response. Set test oscillator to 600 KC and tune in signal with gang condenser. Check for damage to gang condenser or coils.

F. M. ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED: F. M. Generator with frequencies of 90, 98, 106, and 109 megacycles, and generator without any modulation which covers 10.7 megacycles, also a zero center microammeter, and a DC Vacuum Tube Voltmeter (An oscilloscope and variable frequency audio oscillator can be used for better results. This method of alignment is described in the last paragraph).

DISCRIMINATOR ALIGNMENT: Connect DC Vacuum Tube Voltmeter between the buss and point "XX" on circuit diagram. Point "XX" is negative potential on the vacuum tube voltmeter. Isolate point "XX" and buss connections to vacuum tube voltmeter with chokes made by wrapping approximately 20 turns of hookup wire around a pencil. This is illustrated in Figure 1. Connect two 100,000 ohm resistors in series. (These resistors must match to 5%.) Connect them from point "XX" to buss. Between junction of 100,000 ohm resistors and the point "YY" connect Zero Center Meter, which is also isolated by the choke described above. These connections are illustrated in Figure 1. Connect test oscillator which is adjusted to 10.7 megacycles to grid of IF Driver through a 250 mmf condenser. Adjust slug "M" to maximum on the vacuum tube voltmeter. Reduce test oscillator to keep vacuum tube voltmeter to around 5 volts. Adjust slug "N" to bring zero center meter to zero point. Slug "N" should never be touched after this alignment.

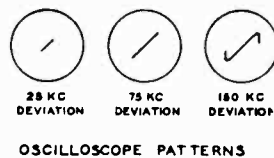
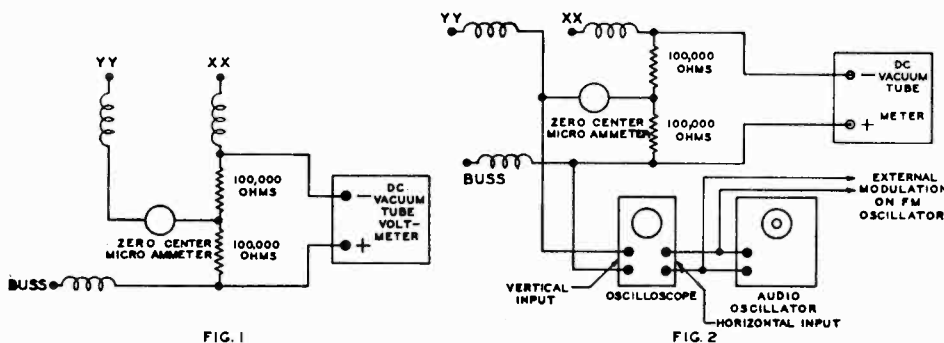
PRELIMINARY I. F. ALIGNMENT: Connect test oscillator to the converter grid through a 250 mmf. mica condenser. Adjust slugs D, E, H and J to maximum output on the vacuum tube voltmeter. In making these adjustments reduce the generator input to keep the vacuum tube voltmeter at approximately 5 volts when making this adjustment. Always use the peak on the slug which is obtained when the screw is out of the can the greatest distance.

FINAL I. F. ALIGNMENT: Set the test oscillator to 109 MC without frequency modulation and connect it to converter grid. Adjust trimmer "B" for approximate maximum output on the vacuum tube voltmeter and zero center for exact centering. Adjust test oscillator to approximately 25 KC deviation, carefully adjust trimmers D, E, H, J and M for maximum on vacuum tube voltmeter. It may be neces-

sary to shift the frequency of the oscillator slightly to hold the zero center meter on center. In making this adjustment turn up volume control slightly to obtain an audio signal out of the speaker. If this signal is free of distortion, increase the deviation to approximately 75 KC and repeat the above alignment. If this is done carefully there will be no distortion in the speaker with this deviation. If distortion is obtained in the speaker with this deviation, it will be necessary to carefully repeat the I. F. alignment.

R. F. ALIGNMENT: Move the signal generator to the FM antenna terminals, using 150 ohm resistors between the generator terminals and each of the FM antenna terminals. Set the test oscillator to 106 megacycles and tune in signal with gang condenser to obtain approximate maximum on the vacuum tube voltmeter and zero center on the meter. Slightly bend the RF section in the gang condenser for maximum output with vacuum tube voltmeter. Set the signal generator to 98 megacycles, tune in signal with the gang condenser. Repeat the above procedure at this frequency and also at 90 megacycles. Recheck alignment at 106 megacycles.

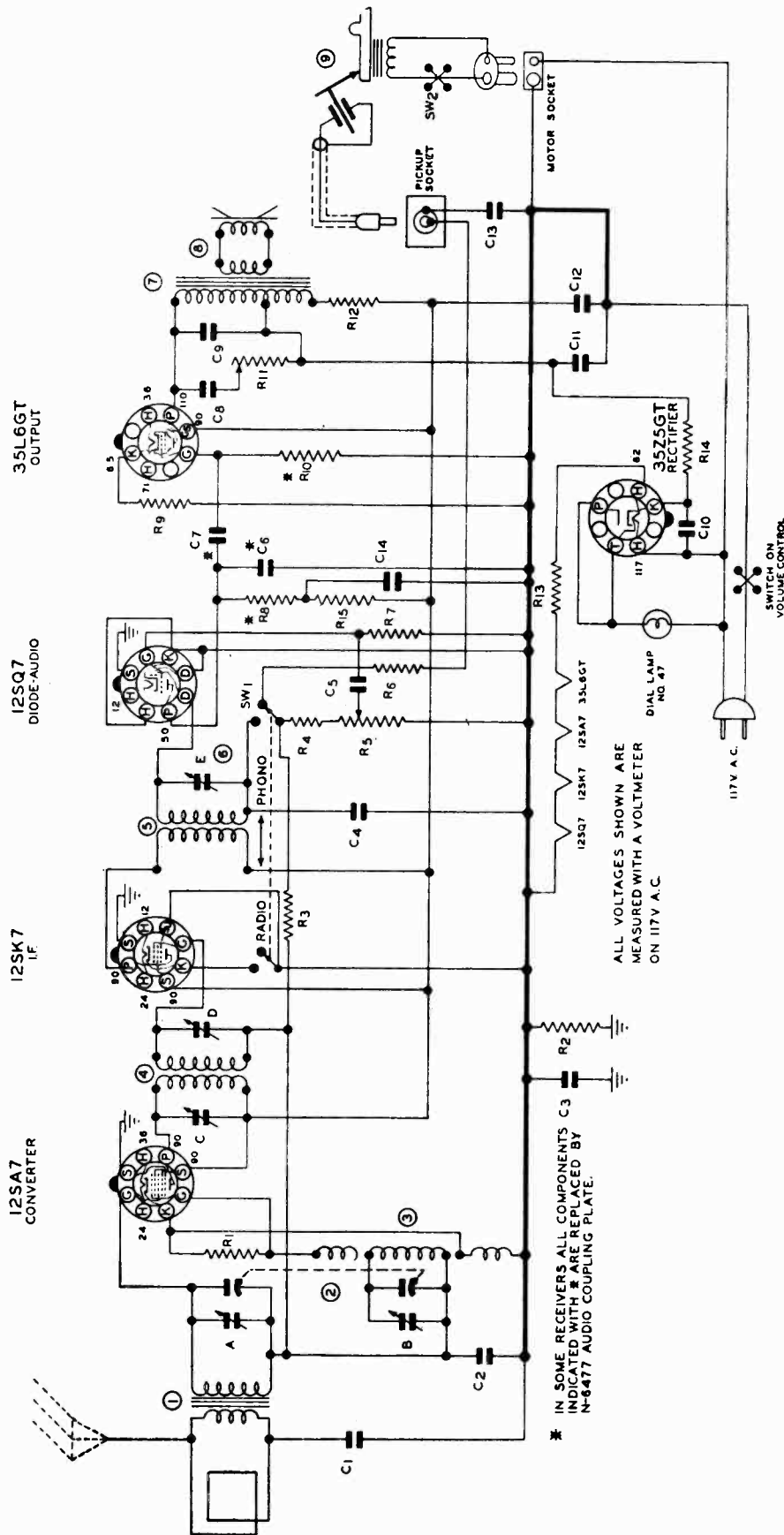
FINAL ALIGNMENT OF FM IF WITH OSCILLOSCOPE AND VARIABLE AUDIO OSCILLATOR: The oscilloscope and variable audio oscillator should be connected as shown in Figure 2. Adjust the deviation to approximately 25 KC and align trimmers D, E, H, J and M to maximum on the vacuum tube voltmeter while watching the oscilloscope for a straight line. It may be necessary to vary the frequency of the variable audio oscillator in order to make the line straight on the scope. Next increase deviation to approximately 75 KC and repeat procedure, adjusting for maximum or as close to maximum as it is possible to obtain without losing the straight line on the oscilloscope. After all the trimmers have been properly adjusted to a maximum and a straight line on the scope, increase the deviation from approximately 125 to 150 KC. The curves illustrated in Figure 3 should be obtained. In making the above adjustments it may be necessary to make slight variations in the RF frequency in order to hold the zero center meter at the zero point.



AERIAL SYSTEM

This receiver has a built-in "Loop" aerial for broadcast reception. Its excellent design is such as to increase pick-up from stations having wide variations in signal strength. The efficiency and selectivity of the loop provide outstanding reception without the use of an external aerial. In or near metal buildings, iron ore deposits or steel structures, or in localities remote from broadcasting stations, reception of the Standard Broadcast Band may require an outside aerial 50 to 100 feet in length including lead-in. Connect the outside aerial to the aerial lead (Blue Wire) located at the rear of the receiver. When using the outside antenna it may be necessary to reverse the power cord plug to eliminate hum or distortion. The built-in FM aerial is a folded dipole Antenna. Although the re-

ceiver performs satisfactorily on the broadcast band, your particular location may require an outside antenna for FM reception. The external aerial for FM reception must be a dipole Antenna with a 300 ohm line, which you may secure from your local Sonora Dealer. The two lead-in leads of the dipole antenna should be attached, one lead under each screw, to the terminal strip located on the chassis after removing the FM antenna furnished with the receiver. For best possible reception with an outside dipole, adjust lead length on the lead-in cable on the weakest station. Cut off lead 6 inches at a time and until signal comes in stronger. If cutting off an additional length does not increase signal, you have reached the correct lengths. It is not necessary to cut off more than 2 1/2 feet.



35L6GT
OUTPUT

12SQ7
DIODE-AUDIO

12SK7
IF

12SA7
CONVERTER

* IN SOME RECEIVERS ALL COMPONENTS C3
INDICATED WITH # ARE REPLACED BY
N-8477 AUDIO COUPLING PLATE.

ALL VOLTAGES SHOWN ARE
MEASURED WITH A VOLTMETER
ON 117V A.C.

TUNING RANGE

The receiver is designed to operate over the standard broadcast band which extends from 535 to 1620 Kilocycles (KC) (185 to 560 Meters).

DIAL CALIBRATION. The scale is calibrated from 55 to 160 (Standard Broadcast). This band covers all Standard Broadcast frequencies of the United States, Canada, Mexico, Cuba and many Central and South American Countries. Add a zero to figures on the scale to obtain kilocycles.

[IF 455 KC.]

5 TUBE A.C.-D.C.
SUPERHETERODYNE
SINGLE BAND

PHONO-CHANGER COMBINATION

Lack of sensitivity and poor tone quality may be due to any one of a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED. OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

ALIGNMENT PROCEDURE

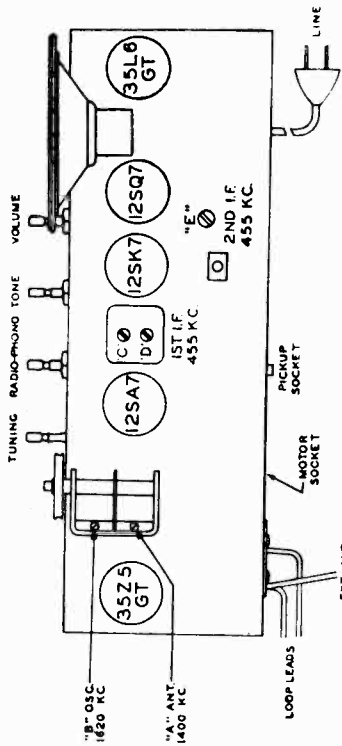
GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

I. F. ALIGNMENT. Remove chassis from the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. With the gang condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube (12SA7) through a .05 or .1 mid. condenser. The ground on the test oscillator should be connected to the ground buses, indicated on the circuit diagram. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

The receiver has a built-in "loop" aerial. Its excellent design is such as to increase pick-up from stations having wide variations in signal strength. The efficiency and selectivity of the loop provide outstanding reception without the use of an external aerial. The "loop" aerial used on this receiver is somewhat directional so reception from weak stations can be improved by turning the set in the proper direction. In or near metal buildings, iron ore deposits



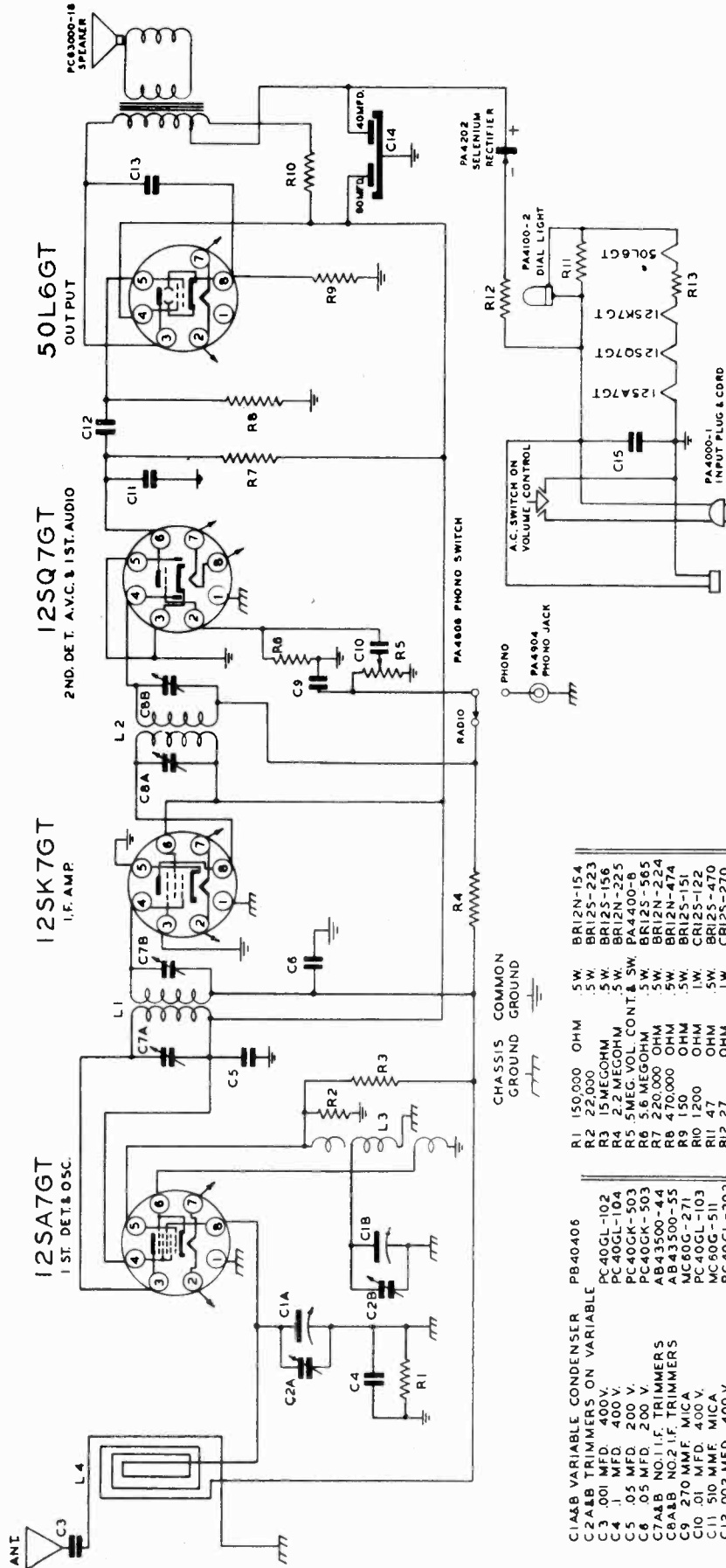
PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
R1 N-4029	22,000 OHM .5W 20%	C6 N-8135	250 MMFD 500V 20%
R2 N-4026	220,000 OHM .5W 20%	C7 N-1344	.01 MFD 400V 20%
R3 N-1282	1 MEG OHM .5W 20%	C8 N-1823	.1 MFD. 400V -10+20%
R4 N-4083	47,000 OHM .5W 20%	C9 N-1376	.02 MFD 400V 20%
R5 N-4843	.5 MEG OHM VOL. CONT.	C10 N-1346	.05 MFD 400V 20%
R6 N-1282	1 MEG OHM .5W 20%	C11 N-501	40 MFD 150V ELECTROLYTIC
R7 N-4028	68 MEG OHM .5W 20%	C12 N-4837	.09 MFD 200V 20%
R8 N-4028	220,000 OHM .5W 20%	C13 N-1345	.06 MFD 200V 20%
R9 N-4087	160 OHM .5W 10%		
R10 N-4027	470,000 OHM .5W 20%	1 N-8149	ANT. COIL
R11 N-8157	25,000 OHM TONE CONT.	2 N-8154	2 GANG CONDENSER
R12 N-3356	1000 OHM 1W 10%	3 N-4810	OSCILLATOR COIL
R13 N-4023	82 OHM 2W 10%	4 N-4813	1ST I.F. TRANSFORMER
R14 N-4022	33 OHM .5W 20%	5 N-4846	2ND I.F. TRANSFORMER
R15 N-4064	35,000 OHM .5W 20%	6 N-4883	TRIMMER
		7 N-4875	OUTPUT TRANSFORMER
		8 N-8148	5" P.M. SPEAKER
		9 N-8151	RECORD CHANGER
		10 N-8145	RADIO-PHONO SWITCH
		11 N-8158	MOTOR SWITCH ON CHANGER
		12	MOTOR SWITCH ON CHANGER

AERIAL SYSTEM

or steel structures or in localities remote from broadcasting stations, reception can be improved by using an outside aerial 50 feet to 100 feet in length including lead-in. Connect the outside aerial to the aerial lead. When using the outside aerial it may be necessary to reverse the power cord plug in wall socket to eliminate hum or distortion.

INTERMEDIATE FREQUENCY 456 KC.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

(Original) June 24, 1947



- | | | | |
|-----|-------------------|----|-----------|
| R1 | 150,000 OHM | 5W | BRI2N-154 |
| R2 | 22,000 | 5W | BRI2S-223 |
| R3 | 15 MEGOHM | 5W | BRI2S-156 |
| R4 | 2.2 MEGOHM | 5W | BRI2N-225 |
| R5 | 5 MEG. VOL. CONT. | 5W | PA4400-6 |
| R6 | 5.6 MEGOHM | 5W | BRI2S-565 |
| R7 | 220,000 OHM | 5W | BRI2N-224 |
| R8 | 470,000 OHM | 5W | BRI2N-474 |
| R9 | 150 OHM | 5W | BRI2S-151 |
| R10 | 1200 OHM | 1W | BRI2S-122 |
| R11 | 47 OHM | 5W | CRI2S-470 |
| R12 | 27 OHM | 1W | CRI2S-270 |
| R13 | 165 OHM | 5W | PA4200-6 |
-
- | | | |
|----|-----------------------|-----------|
| L1 | NO.1 I.F. COIL ASSEM. | AA6800-1 |
| L2 | NO.2 I.F. COIL ASSEM. | AA6800-2 |
| L3 | BC OSC. COIL ASSEM. | AA6797-1 |
| L4 | LOOP ASSEM. | AB4350B-1 |

- | | | |
|-------|----------------------|------------|
| C1A&B | VARIABLE CONDENSER | PB40406 |
| C2A&B | TRIMMERS ON VARIABLE | |
| C3 | .001 MFD. 400V. | PC40GL-102 |
| C4 | .1 MFD. 400 V. | PC40GL-104 |
| C5 | .05 MFD. 200 V. | PC40GK-503 |
| C6 | .05 MFD. 200 V. | PC40GK-503 |
| C7A&B | NO.1 I.F. TRIMMERS | AB43500-44 |
| C8A&B | NO.2 I.F. TRIMMERS | AB43500-55 |
| C9 | .270 MME. MICA | MC605-271 |
| C10 | .01 MFD. 400 V. | PC40GL-103 |
| C11 | .510 MME. MICA | MC605-511 |
| C12 | .002 MFD. 400 V. | PC40GL-202 |
| C13 | .01 MFD. 400 V. | PC40GL-103 |
| C14 | ELECTROLYTIC | PA4306 |
| C15 | .05 MFD. 400 V. | PC40GL-503 |

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMERS	REMARKS
1	Set dial pointer even with last calibration with cond. gang fully closed.						
2	I.F.	*	.02 MFD. Cond.	456 KC.	Open	C8 A & B C7 A & B	Peak Accurately " "
3	Special Note: Before realigning the R.F. stages of this receiver please observe the special note at the bottom of this page.						
4	Broad-cast	**	Driver Loop	1500 KC.	1500 KC.	C2B Osc. Trim. C2A Ant. Trim.	Peak Accurately ***
5	Repeat operations (2 and 4).						
6	Check calibration at 600 KC., 1000 KC., and 1500 KC.						

* Pin No. 8 on 12SA7GT Tube.

** Use driver loop as shown

*** Rock dial while adjusting for maximum output.

SPECIAL NOTE: In view of the fact that the metal speaker grill will affect the R. F. alignment on this set, please observe the following instructions when alignment is necessary. After the receiver has been removed from cabinet, turn the chassis in such manner that the speaker faces the metal cabinet grill. Slide chassis up against cabinet so that the metal grill and the loop antenna will be in the same relative position as when the chassis is properly mounted in the cabinet. By using the procedure as outlined in this bulletin the receiver will remain properly aligned when placed back into cabinet.

RECEIVER OPERATED ON: A.C.
Line Voltage: 117 Volts

Position of Volume Control: Full with set tuned to quiet channel.

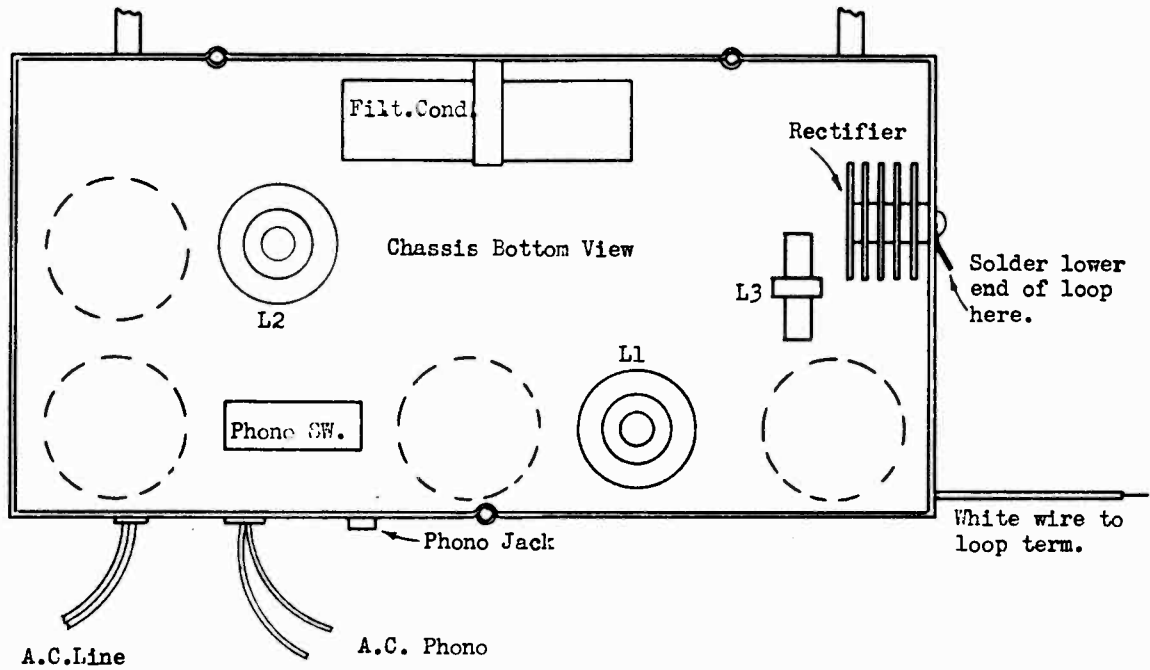
VOLTAGE CHART

TUBE	FUNCTION	Voltage of socket prongs to B-.							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
12SA7GT	Osc. & Det.	0	0*	97.0	97.5	**	0	12.4*	0
12SK7GT	I. F. Amp.	0	24.6*	0	- .5	0	97.5	37.2*	97.0
12SQ7GT	2nd Det. A.V.C., 1st Audio	0	0.5	0	**	0	5.5	24.6*	12.4*
50L6GT	Output	0	11.2*	131	97	0	117*	66.0*	6.2

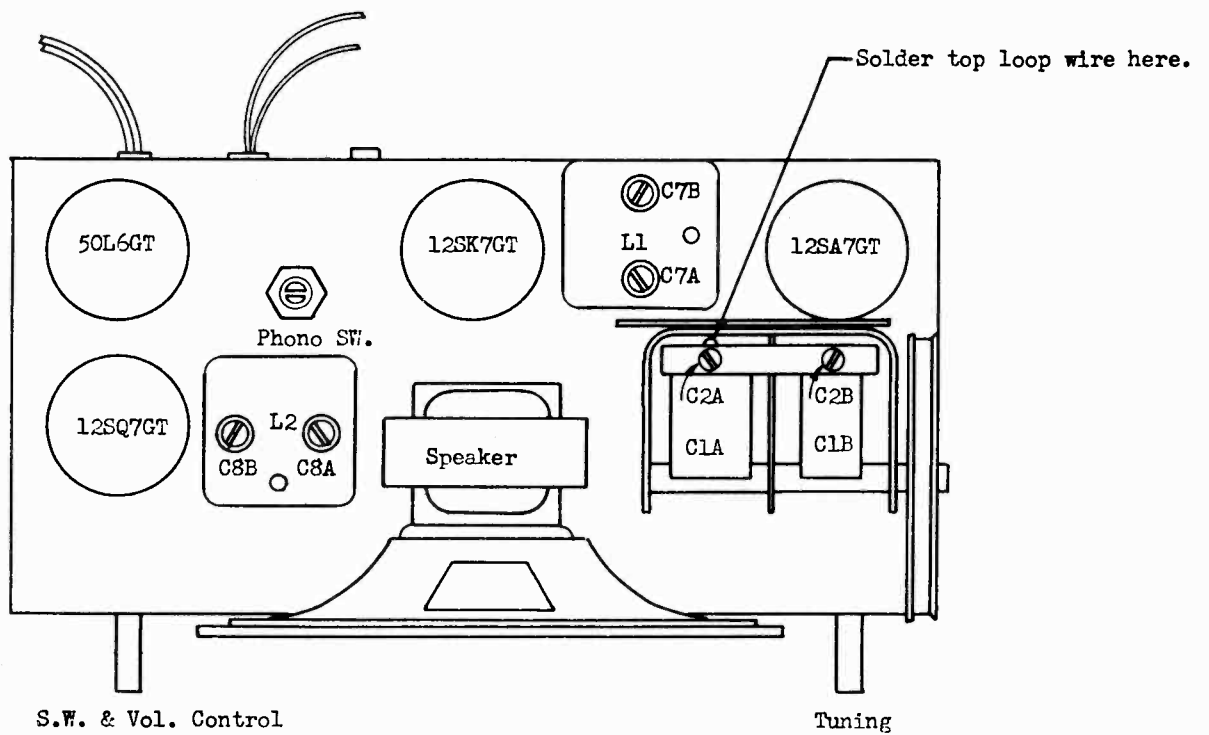
NOTE: Voltage readings are for schematic diagram in this bulletin. Allow 15% or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.

* Designates A.C. Volts

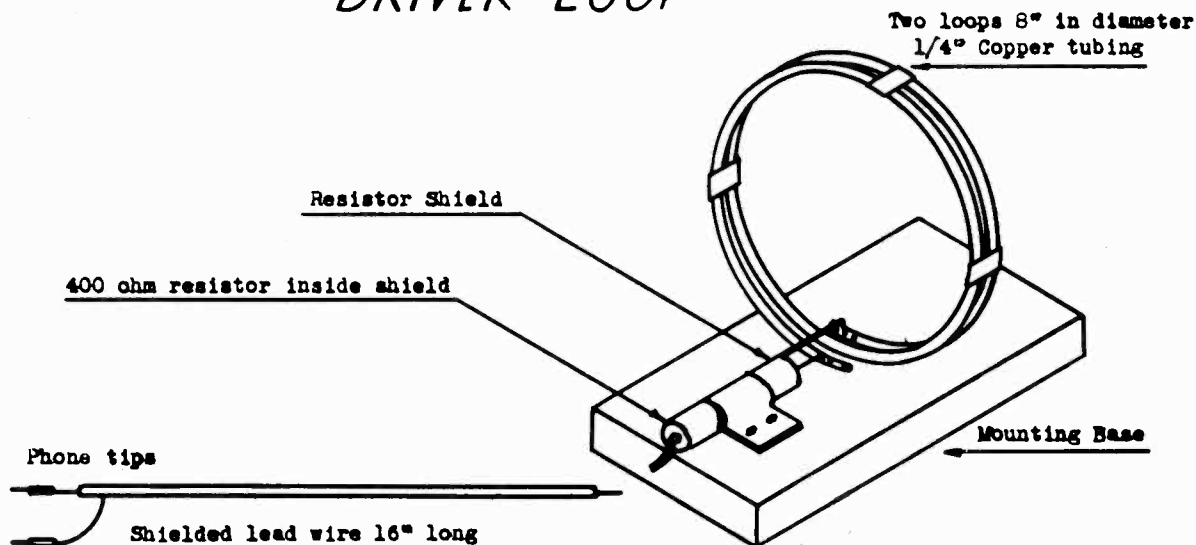
** Cannot be measured with 20,000 ohms per volt voltmeter.



CHASSIS DIAGRAM

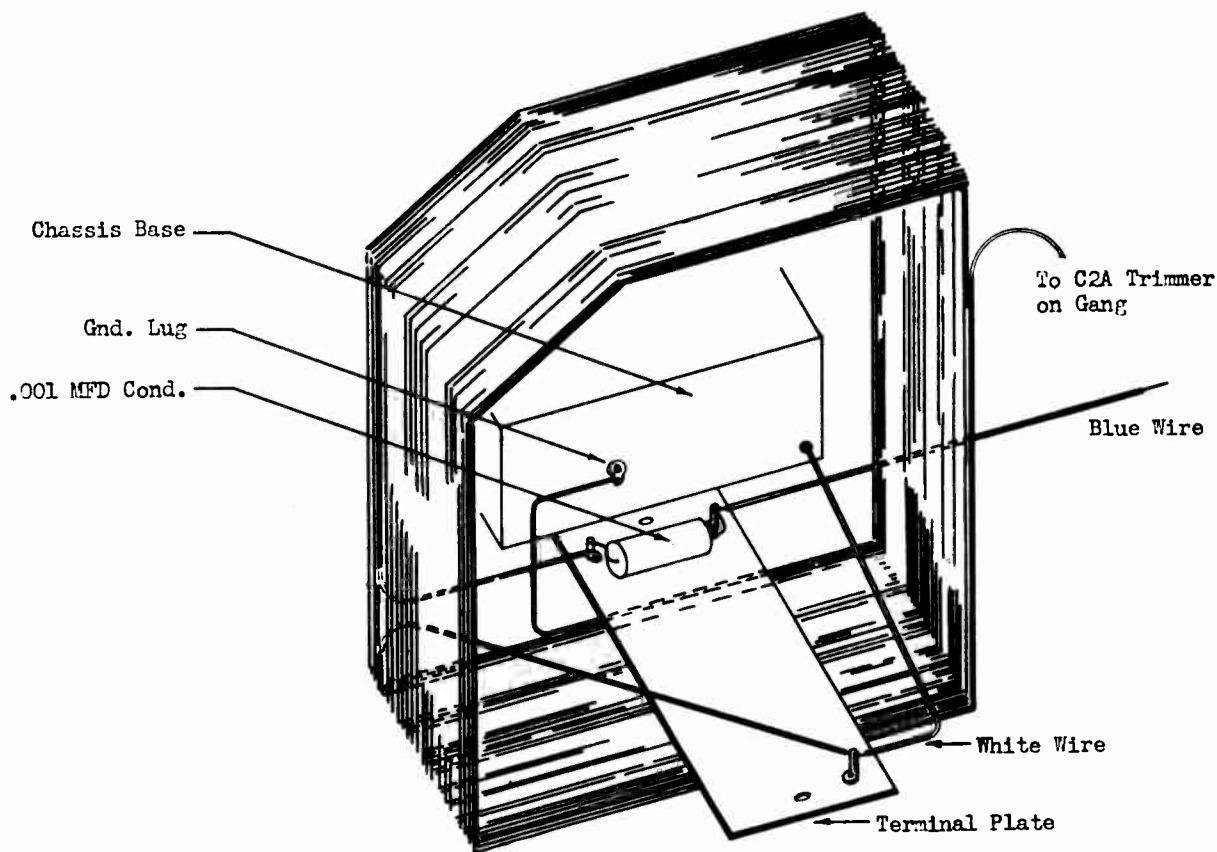


DRIVER LOOP



SPECIFICATIONS

Two loops of 1/4" copper tubing 8" in diameter spaced 1/4" apart with 400 ohms resistor in series. Connecting cable and resistor must be shielded. The loop should be spaced twice the diameter of the loop from the receiver being aligned to prevent an over modulated signal and poor alignment of the receiver.

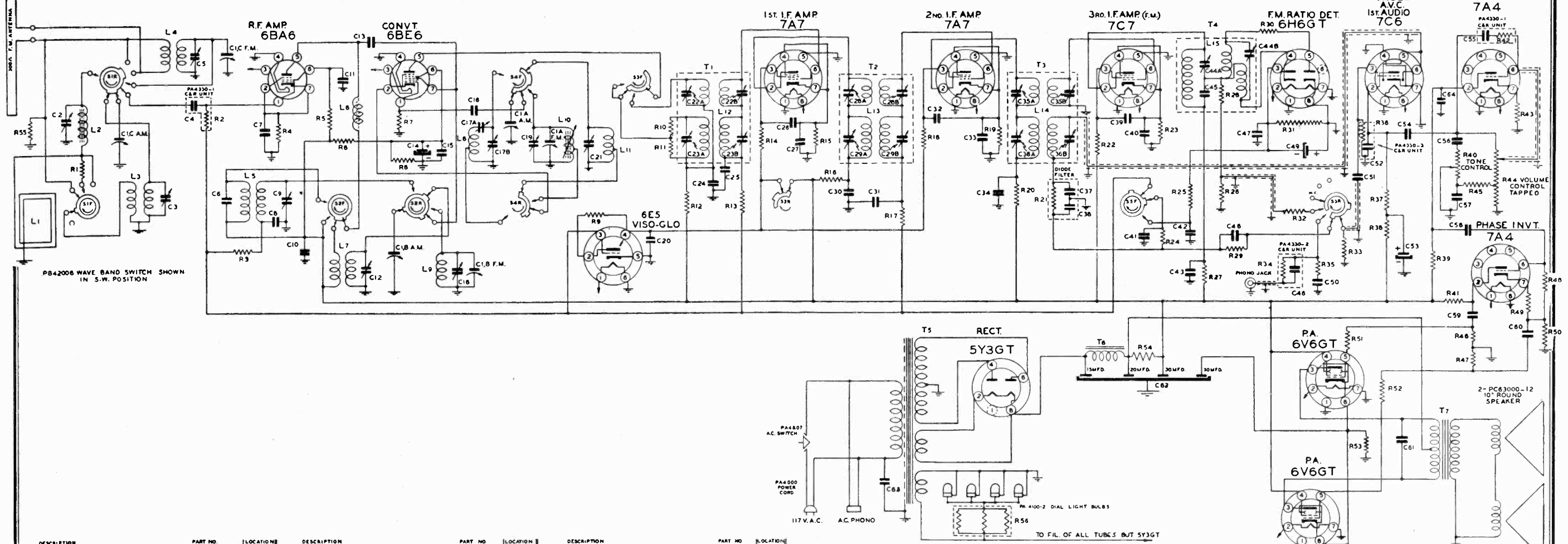


Model 5-07PA Loop Hookup

THE SPARKS-WITHINGTON CO.

MODELS 1000, 1001, 1003, 1020, 1021, 1023, CHASSIS 12L7

INTERMEDIATE FREQUENCY A.M. 450 Kc. F.M. 10.7 Mc. BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

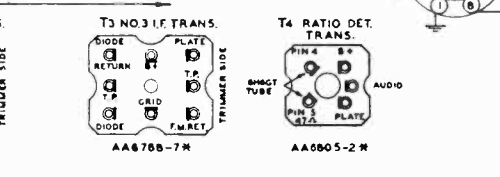


DESCRIPTION	PART NO.	LOCATION
C1A AM B.A.M. CAM 3 GANG CONDENSER	PC85000	DM-WH1P4
C1A FM B.F.M. C.F.M.	PC85000	DM-WH1P4
C2 B.C. ANT. TRIMMER	PA4378-2	P-1
C3 S.W. ANT. TRIMMER	PA4352-2	O-5
C4 100 MMF. COND. (C&R UNIT)	PA4330-1	O-5
C5 F.M. ANT. TRIMMER	PA4385-1	R-6
C6 51 MMF. CERAMIC	PC30H-510K	O-6
C7 01 MFD. 100V. MOLDED PAPER	PA4325-1	P-8
C8 01 MFD. 100V.	PA4325-1	N-8
C9 B.C. RF. TRIMMER	PA4378-2	O-8
C10 1000 MMF. CERAMIC	PA4328-8	R-9
C11 1000 MMF.	PA4328-8	R-10
C12 5 W.R.F. TRIMMER	PA4378-2	M-10
C13 5 MMF. CERAMIC	PA4328-7	S-10
C14 4 MFD. 250V. ELECTRO. COND.	PA4303-8	P-12
C15 1000 MMF. CERAMIC	PA4328-8	O-12
C16 51 MMF.	PC30H-510K	O-13
C17 A.B.C. OSC. PAD. C17B B.C. OSC. TRIM.	AB43500-36	O-13
C18 FM RF. TRIMMER	PA4385-1	M-13
C19 FM OSC.	PA4385-1	M-15
C20 05 MFD. 400V. TUBULAR	PC40HL-503	M-18
C21 S.W. OSC. TRIMMER	PA4378-2	P-18
C22 A.B. NO. 1 IF. TRIMMER F.M. #	PA4359-3	P19-20
C23 A.B. NO. 2 IF. TRIMMER A.M. #	PA4359-1	P19-20
C24 01 MFD. 400V. PAPER MOLDED	PC45GL-103	O-19
C25 01 MFD. 200V.	PC45CK-103	O-21
C26 01 MFD. 300V.	PA4325-4	O-21
C27 01 MFD. 200V.	PC45CK-103	P-21
C28 A.B. NO. 3 IF. TRIMMER F.M. #	PA4359-1	Q23-24
C29 A.B. NO. 2 IF. TUBULAR A.M. #	PA4359-1	P23-24
C30 05 MFD. 400V. TUBULAR	PC40HL-503	O-23
C31 01 MFD. 200V. PAPER MOLDED	PC40HL-103	O-23
C32 01 MFD. 300V.	PA4325-4	O-25
C33 01 MFD. 200V.	PC45GK-103	P-26
C34 05 MFD. 400V. TUBULAR	PC40HL-503	P-27
C35 A.B. NO. 3 IF. TRIMMER F.M. #	PA4359-1	D27-28
C36 A.B. NO. 1 IF. TRIMMER A.M. #	PA4359-3	P27-28
C37 100 MMF. CERAMIC	PA4329-1	O-28
C38 100 MMF. (C&R UNIT)	PA4329-1	O-28
C39 01 MFD. 300V. PAPER MOLDED	PA4325-4	N-30
C40 01 MFD. 200V.	PC45GK-103	P-30
C41 1 MFD. 200V. TUBULAR	PC40HL-104	N-30
C42 01 MFD. 200V. PAPER MOLDED	PA4325-2	N-31
C43 05 MFD. 400V. TUBULAR	PC40HL-503	R32-33
C44 A.B. RATIO DET. TRIMMER #	PC4359-1	N-32
C45 51 MMF. MICA	MC60F-510	O-32
C46 330 MMF. CERAMIC (C&R UNIT)	MC60C-331	N-33
C47 1000 MMF. CERAMIC (C&R UNIT)	PA4328-8	M-34
C48 220	PA4330-2	M-34
C49 3 MFD. 50V. ELECTRO. COND.	PA4308-1	P-34
C50 01 MFD. 200V. TUBULAR	PC40HL-103	O-36
C51 01 MFD. 100V. PAPER MOLDED	PA4325-1	P-36
C52 100 MMF. (C&R UNIT)	PA4330-3	P-36
C53 4 MFD. 400V. ELECTRO. COND.	PA4303-1	M-37

DESCRIPTION	PART NO.	LOCATION
C54 05 3000 400V. TUBULAR	PC40HL-503	P-37
C55 100 MMF. (C&R UNIT)	PA4330-1	S-40
C56 005 MFD. 200V. TUBULAR	PC40HK-502	P-39
C57 01 MFD. 200V.	PC40HL-103	P-39
C58 05 MFD. 400V.	PC40HL-503	N-39
C59 05 MFD. 400V.	PC40HL-503	K-40
C60 05 MFD. 400V.	PC40HL-503	K-40
C61 008 MFD. 1000V.	PC40HN-602	M-37
C62 ELECTRO. COND. 30,20,15MFD. 450V.	PA4307-1	J-28,30,32
C63 05 MFD. 600V. PAPER MOLDED	PC45GM-503	M-24
C64 150 MMF. MICA	MC60F-151	Q-38

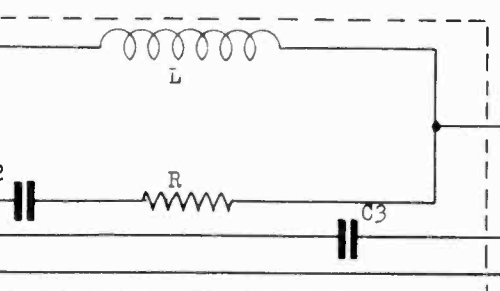
DESCRIPTION	PART NO.	LOCATION
R39 100,000 OHMS. 1/2 W.	BR125-104	M-38
R40 47,000 OHMS. 1/2 W.	BR125-473	L-39
R41 47,000 OHMS. 1/2 W.	BR125-473	S-40
R42 100,000 OHMS. 1/2 W.	PA4330-1	P-40
R43 2,700 OHMS. 1/2 W.	BR125-272	O-40
R44 22,000 OHMS. 1/2 W.	BR125-223	O-39
R45 470,000 OHMS. 1/2 W.	BR125-474	K-39
R46 470,000 OHMS. 1/2 W.	BR125-474	M-41
R47 470,000 OHMS. 1/2 W.	BR125-474	O-40
R48 470,000 OHMS. 1/2 W.	BR125-474	K-41
R49 2,700 OHMS. 1/2 W.	BR125-272	L-40
R50 47,000 OHMS. 1/2 W.	BR125-473	K-41
R51 15,000 OHMS. 1/2 W.	BR125-152	K-38
R52 15,000 OHMS. 1/2 W.	BR125-152	J-38
R53 220 OHMS. 1/2 W.	BR125-221	M-38
R54 470 OHMS. 1/2 W.	BR125-471	K-31
R55 100,000 OHMS. 1/2 W.	BR125-104	O-1
R56 3.3 OHMS. (3-10W)	AA 6887-1	G-24

DESCRIPTION	PART NO.	LOCATION
L1 B.C. LOOP ASSEMBLY	AC6700B-2	N-1
L2 B.C. ANT. LOADING COIL ASSEM.	AA6780-3	P-3
L3 SW. ANT. COIL	AA6758-7	O-4
L4 F.M.	AA6787-8	R-7
L5 B.C. RF.	AA6756-5	N-7
L6 B.C. RF. CHOKE	AA6798-2	O-10
L7 S.W. RF. COIL	AA6760-6	O-10
L8 B.C. OSC. COIL	AA6752-6	P-13
L9 F.M. RF.	PA3224	M-13
L10 F.M. OSC. ASSEM.	AA677-7	P-17
L11 S.W. OSC.	AA6770-3	P-17
L12 NO. 1 IF. COIL ASSEMBLY #	AA6803-2	O-19
L13 NO. 2 IF.	AA6803-2	O-23
L14 NO. 3 IF.	AA6803-2	O-23
L15 RATIO DETECTOR COIL ASSEM. #	AA6805-2	O-32



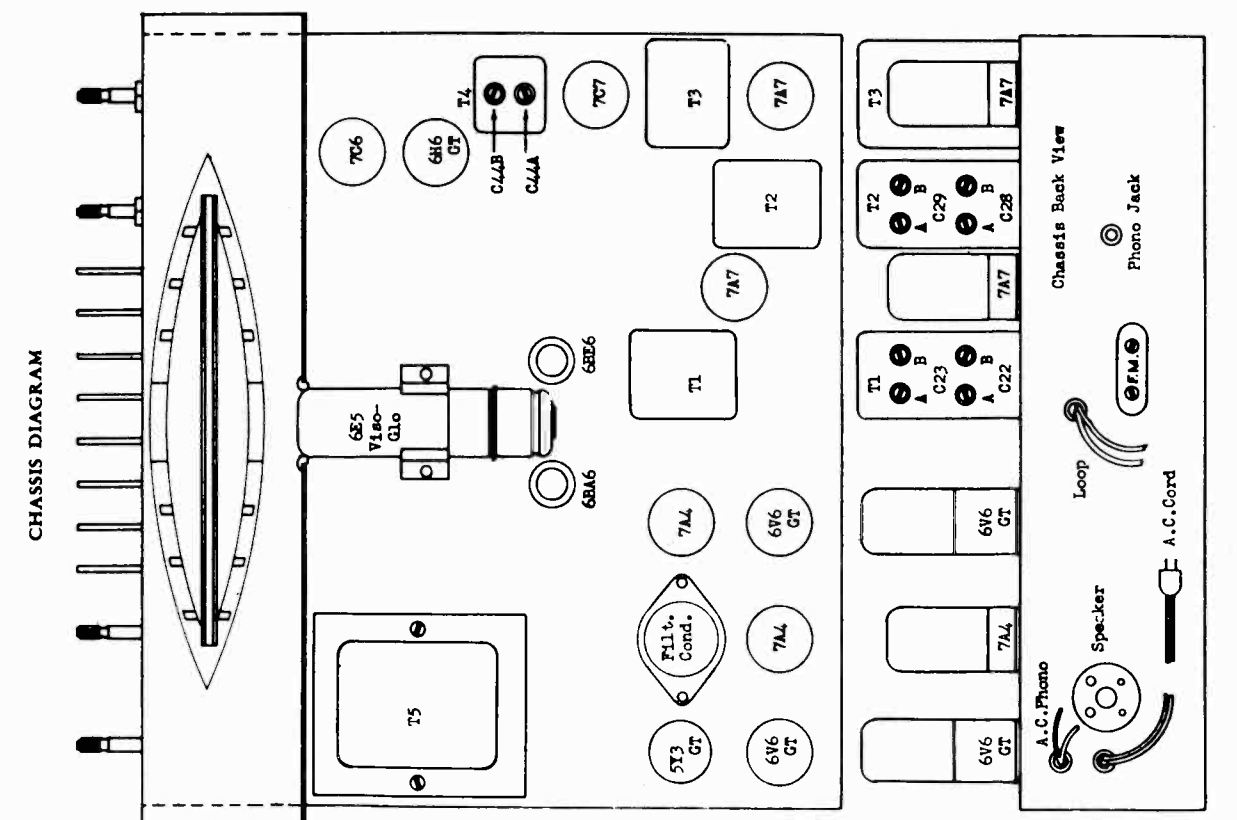
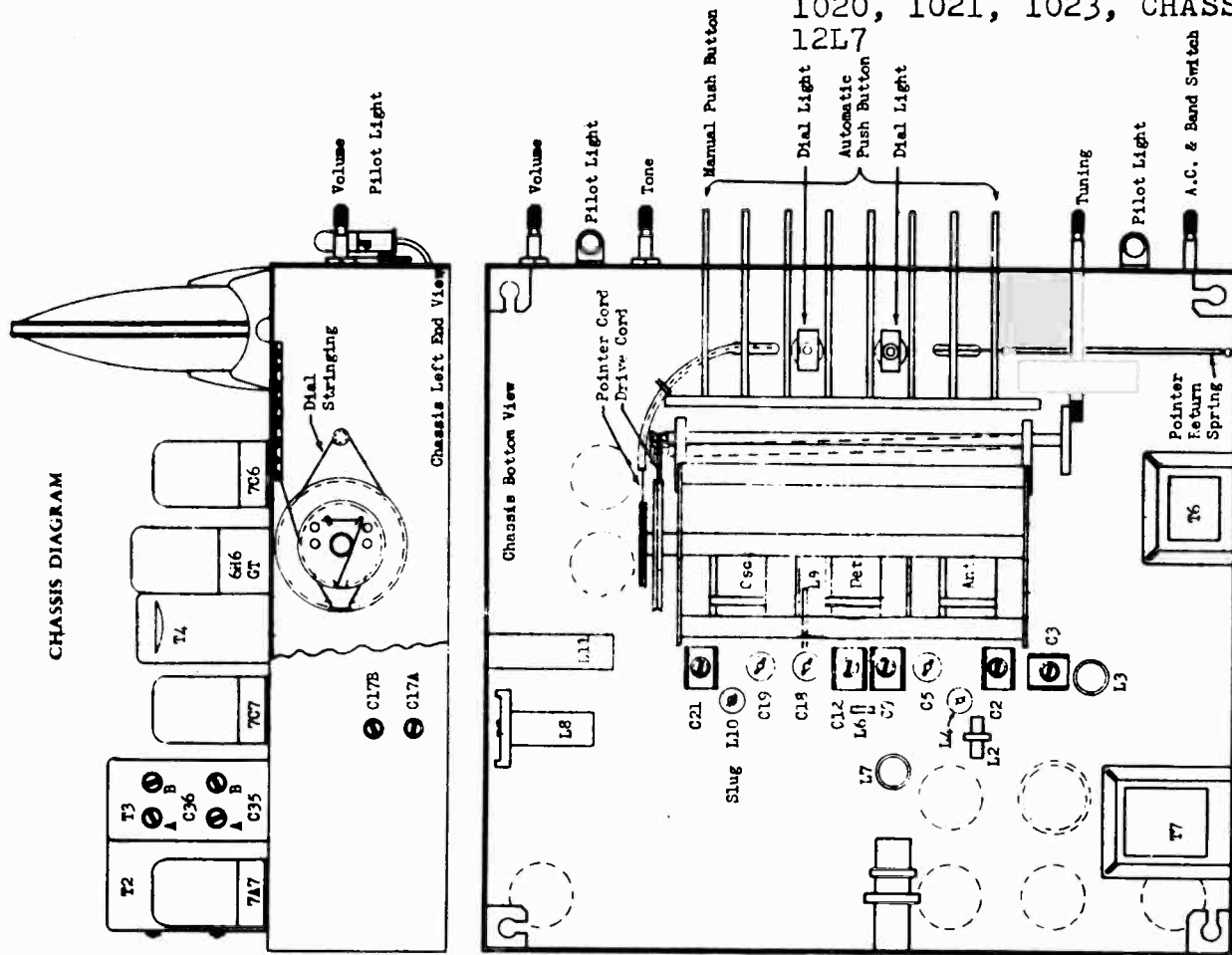
TERMINAL HOOKUP FOR L12, L13, L14 & L15. *SPECIAL SERVICE NOTE: THESE TRANSFORMERS SUPPLIED AS COMPLETE ASSEMBLIES ONLY.

DUMMY ANTENNA



C1-200 mmf. Condenser 400 V.D.C. ---Case Shield
 C2-400 mmf. Condenser 400 V.D.C. Choke Coil Specification
 C3-.02 mmf. Condenser 400 V.D.C. Tubing - 3/8" Diameter Bakelite
 R-100 ohms Resistor 1/4 Watt Wire - No. 38 Enameled
 L-Choke Coil Turns - 59 closely wound (Impregnated)
 NOTE: When using this dummy antenna the generator output impedance should be 10 ohms or lower.

THE SPARKS-WITHINGTON CO. MODELS 1000, 1001, 1003, 1020, 1021, 1023, CHASSIS 12L7



MODELS 1000, 1001, THE SPARKS-WITHINGTON CO. 1003, 1020, 1021, 1023, CHASSIS 12L7

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer to 88 Mc. with gang condenser closed.							
2	A. M. I. F.	Center A. M. Section of Gang Condenser	*	456 KC.	BC.	Open	C36 A & B T3	Peak Accurately
							C29 A & B T2	" "
							C23 A & B T1	" "
3	BC. R.F.	Ant.	*	1600 KC.	BC.	1600 KC.	C17B Osc. Tr.	" "
1400 KC.				1400 KC.		C9 R.F. Tr.	**	
600 KC.				600 KC.		C2 Ant. Tr.	Peak Accurately	
5							C17A Osc. Pad.	**
6	Repeat operations 2, 3, and 4.							
7	Check calibrations at 600 Kc., 1000 Kc., and 1400 Kc.							
8	S. W. R. F.	Ant.	*	16 MC.	S. W.	16 MC.	C21 Osc. Tr.	Max. A. V. C.
							C12 R.F. Tr.	Peak Accurately
							C3 Ant. Tr.	" "
9	Repeat operation #8.							
10	Check calibrations at 6 Mc., 10 Mc., and 16 Mc.							
11	SPECIAL NOTE: For complete F.M.-I.F. visual alignment instructions please refer to pages 7, 8, 9, 10, 11, and 12, of this bulletin.							
12	F.M.-I.F. alignment using A.M. Generator and Output Meter.							
13	T4 F. M. Ratio Det.	Pin #6 on 7C7 3rd I. F. Amp.	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	C44A C44B	Peak Accurately " "
14	NOTE: Operation #13 must be made with generator output as low as possible, consistent with usable output meter reading.							
15	Connect a 15,000 ohm resistor (to prevent overcoupling) between pin #6 (grid) on 7C7 3rd I. F. Amp. tube to gnd. After operation #16 is completed leave resistor connected for operations to follow.							
16	T3 F.M.-I.F.	Pin #6 of 2nd 7A7 Tube	.05 MFD. Cond.	10.7 MC.	F. M.	108 MC.	C35B C35A	Peak Accurately " "
17	Connect a 15,000 ohm resistor between Pin #6 on 2nd 7A7 I. F. Amp. and Gnd. After operation #18 is completed leave resistor connected for operations to follow.							
18	T2 F.M.-I.F.	Pin #6 of 2nd 7A7 I.F. Amp.	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	C28B Sec. C28A Pri.	Peak Accurately " "
19	NOTE: Operation #18 must be made with generator output as low as possible, consistent with usable output meter reading.							
20	Connect another 15,000 ohm resistor between Pin #6 (Grid) on 1st 7A7 tube to Gnd. After operation #21 is completed leave resistor connected for operations to follow.							
21	T1 F.M.-I.F.	Center Sec. of Gang Condenser	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	C22B Sec. C22A Pri.	Peak Accurately " "
22	NOTE: Operation #21 must be made with generator output as low as possible, consistent with usable output meter reading.							
23	Repeat operations 13, 16, 18, and 21.							
24	Remove the three 15,000 ohm resistor dummies from Pin #6 on the two 7A7 and the 7C6 tubes but leave generator coupled through the .05 MFD. Cond. to the center F.M. Section of Gang Condenser.							
25	Adjust C44B secondary trimmer on T4 ratio detector transformer to minimum deflection or dip on output meter. Under certain conditions it is possible to adjust C44B secondary trimmer to minimum noise with the receiver tuned to a weak station. This operation is very sharp and the receiver must be tuned to the center response only.							
26	Repeat operation #25.							
27	F.M.-R.F. alignment using an A.M. generator with frequency of 88 to 108 Mc. and vacuum tube voltmeter, D.C. Voltmeter (20,000 ohms per volt).							
28	Place meter across C49 Elect. Cond. Meter reading approx. 1 Volt.							

NOTE: * Use dummy antenna
** Rock dial while adjusting for maximum output.

THE SPARKS-WITHINGTON CO. MODELS 1000, 1001, 1003, 1020, 1021, 1023, CHASSIS 12L7

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
29	F. M. R. F.	Ant.	Match to 300 Ohms	108 MC.	F. M.	108 MC.	C19 F.M.Osc. C18 F.M.-R.F. C5 F.M. Ant.	Max. A. V. C. V. Peak Accurately " "
30	Repeat operation #29.							
31	Check calibration at 88 and 100 Mc.							

VOLTAGE CHART

Line Voltage: 117 Volts AC
Position of volume control: Full with set tuned to quiet channel.
Position of Band Switch: Broadcast.

TUBE	FUNCTION	Voltage of Sockets Prongs to Ground See Prong Nos. on schematic.								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9
6BA6	R. F. Amp.	-.15	.65	6.2*	0	235	80	.55	-	-
6BE6	Converter	-9.0	0	6.2*	0	205	75	-.40	-	-
7A7	No. 1 I.F. Amp.	0	205	95	2.7	0	-.20	2.7	6.2*	-
7A7	No. 2 I.F. Amp.	0	205	95	2.7	0	-.20	2.7	6.2*	-
7C7	No. 3 I.F. Amp. (F.M.)	0	225	100	3.2	0	0	3.2	6.2*	-
6H6GT	Ratio Det. (F.M.)	0	0	-.15	**	**	-	6.2*	.15	-
7C6	Det., A.V.C., & 1st A.F. (A.M.)	0	120	-.20	0	-.35	-.35	0	6.2*	-
7A4	No. 2 A.F. Amp.	0	85	235	75	80	0	0	6.2*	-
7A4	Phase Inverter	6.2*	160	-	-	70	13	75	0	-
6V6GT	Power Amp. (2)	0	6.2*	250	235	0	0	0	13	-
5Y3GT	Rectifier	-	260	-	260*	-	260*	-	260	-
6E5	Tuning Eye (Viso-Glo)	6.2*	**	-.40	235	0	-	-	-	-

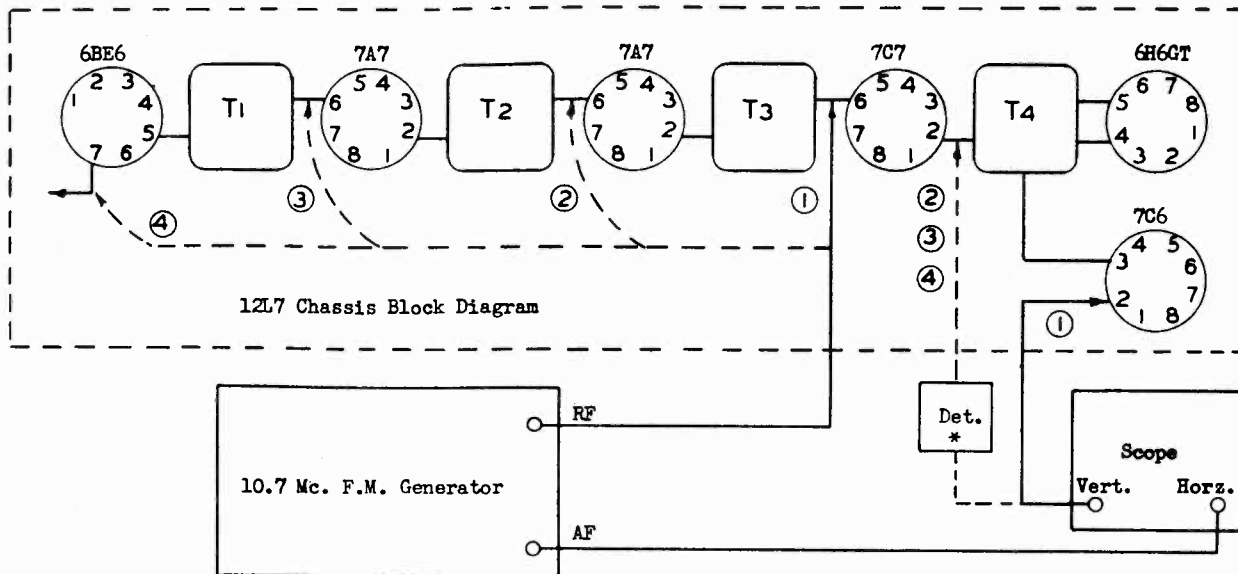
NOTES: Voltage readings are for schematic diagram in this bulletin. Allow 15% or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
* AC Volts.
** Cannot be measured with 20,000 Ohms per volt voltmeter.

MODELS 1000, 1001, THE SPARKS-WITHINGTON CO.
 1003, 1020, 1021,
 1023,
 CHASSIS 12L7

VISUAL I. F. - F. M. ALIGNMENT DATA

DESCRIPTION OF CIRCUIT USED:

A 6H6GT is employed as a ratio detector. This tube is preceded by a 7C7 ratio detector driver and two stages of 10.7 Mc. amplification using type 7A7 tubes. All stages are coupled by transformer coupling. The transformers are of the composite type wherein both 10.7 Mc. and 456 Kc. units are constructed within one can.



Gen. & Scope Position

- 1
- 2
- 3
- 4
- *

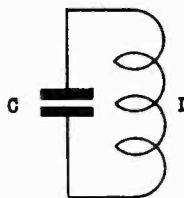
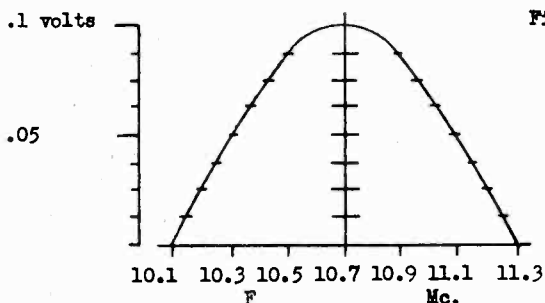
Use

- Align Ratio Detector - Adjust T4
- Align I.F. - Adjust T3
- Align I.F. - Adjust T2
- Align I.F. - Adjust T1
- See paragraph 3(e) under equipment required.

THEORY OF VISUAL ALIGNMENT.

One of the characteristics of a tuned circuit is the fact that when it is excited or driven by a generator such as a vacuum tube or another tuned circuit, the voltage developed across it will vary with slight changes in frequency. This voltage will be greatest when the frequency is equal to the resonant frequency of the circuit and will be less if the frequency is higher or lower than the resonant frequency.

Thus if we were to shift the frequency from high to low or low to high across the resonant frequency and make a record of the voltage across the tuned circuit, we could plot the voltage against frequency and obtain a curve which might look like Fig. 1.



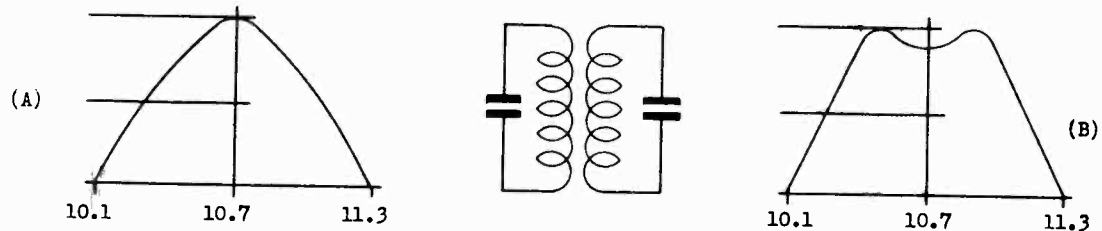
This is the selectivity curve or response curve for the circuit under discussion. This type of circuit may be aligned or adjusted to resonance by simply changing either L or C until maximum voltage is obtained at the resonant frequency. Now if another circuit tuned to the same resonant frequency is coupled to the simple case above, a number of things can happen. First current flowing in one circuit will induce current in the second circuit, the magnitude of this current depending on the degree or amount of coupling between the two circuits. This coupling may be in the form of mutual inductance, mutual capacitance or any impedance common to the two circuits. Now if we repeat the procedure outlined for obtaining the response curve of a single tuned circuit using the voltage developed across the secondary of the coupled circuit while driving the primary, we may get either

THE SPARKS-WITHINGTON CO.

MODELS 1000, 1001,
1003, 1020, 1021,
1023, CHASSIS 12L7**VISUAL I. F. - F. M. ALIGNMENT DATA**

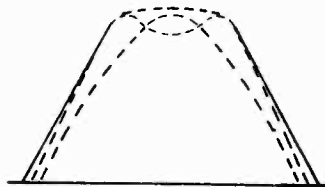
of two types of curves depending on the magnitude of the coupling, (a) in Fig. 2 is a typical curve for two circuits coupled below critical coupling and (b) is a representation of the curve for an overcoupled circuit.

Fig. 2



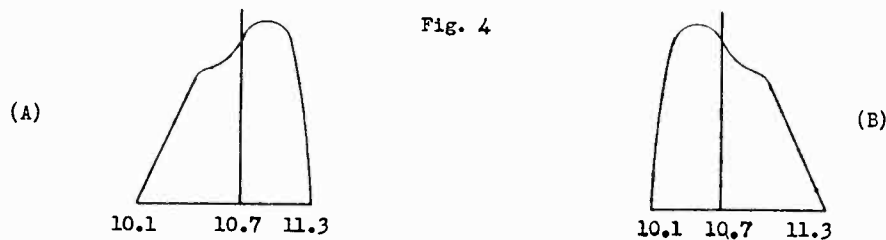
Overcoupled circuits producing a response curve like (b) Fig. 2 are often employed where it is important that the response curve remain approximately flat over a narrow band of frequencies near the resonant frequency. They are also frequently combined with single peaked circuits to produce a response curve like Fig. 3.

Fig. 3



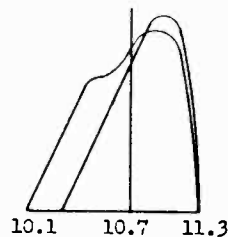
The dotted lines indicate the curves of the individual circuits and the solid curve shows the overall response of the two or more pairs of coupled circuits. Circuits like the above or approaching them in form are desirable in an F.M. receiver where the pass band should be of the order of 200 Kc. Now from the above it is evident that simple peaking both sides of a circuit coupled below critical for maximum voltage will provide optimum alignment but if this procedure is followed with an overcoupled circuit it is almost a certainty that the two circuits will not be tuned to the resonant frequency but will instead be aligned so that either one or the other is accentuated. The response curve will then look like Fig. 4 (a) or (b).

Fig. 4



Now if this overcoupled circuit is combined with a single peaked circuit (where the coupling is below critical), the misalignment becomes worse, something like Fig. 5.

Fig. 5



From the above it appears that to properly align a receiver using overcoupled IF transformers it will be necessary to take a response curve of each stage and align the circuit so that the two peaks are symmetrical, that is, approximately equal in amplitude and displaced equally from the center frequency. To do this with a CW or AM signal would be laborious and time consuming whereas the use of visual equipment makes it nearly as simple as adjusting a simple single peaked amplifier.

MODELS 1000, 1001, THE SPARKS-WITHINGTON CO.

1003, 1020, 1021,

1023,

CHASSIS 12L7

VISUAL I. F. - F. M. ALIGNMENT DATA

Visual alignment test equipment performs the operation of plotting the response curve almost exactly as described above except that instead of manually changing the generator frequency, recording the voltage and then plotting the results, these operations are performed automatically and simultaneously by a combination of electronic circuits. The operation is briefly as follows.

In the signal generator a low AC voltage is applied to a reactance tube modulator which shifts the oscillator frequency from low to high or from high to low at a rate determined by the frequency of the AC voltage and by an amount determined by the AC voltage. The frequency at any instant is then dependant on the AC voltage present at that instant of time. An oscilloscope is provided which may be considered a voltmeter used to read the voltage across the tuned circuit, provided a detector is used to convert the RF to a low audio frequency. This voltage is then applied to the vertical plates and results in a vertical displacement of the spot on the screen. Some of the voltage used to shift the oscillator frequency is also applied to the horizontal plates of the oscilloscope providing a means of displacing the spot horizontally. It is now evident that since that for any given AC voltage only one frequency may be obtained and since that AC voltage will result in an exact amount of spot deflection on the scope we can read the voltage across the circuit under examination by noticing the position of the spot at this exact instant.

Now if we consider the frequency as shifting from low to high 60 times per second and remember that the spot is moving across the screen of the scope 60 times per second at exact synchronization with the change in frequency it is only necessary to apply the voltage from our circuit to the vertical plates to obtain a replica of the response curve on the face of the cathode ray tube. This curve will be repeated 60 times per second if our sweep frequency is 60 cycles. Adjustments to the circuit may now be made and the effect on the response curve noted instantaneously.

EQUIPMENT REQUIRED.

(a) A sweep signal generator with a center frequency of 10.7 Mc. and a total sweep width of at least 400 Kc. This generator should be equipped with filters to remove all spurious oscillator frequencies and limiters should be provided to remove all amplitude modulation. There should also be a crystal oscillator to provide a marker frequency at 10.7 Mc. for accurate determination of the center frequency.

(b) An amplitude modulated signal generator tuned to 456 Kc. This generator should be either crystal controlled or means should be provided for accurate frequency calibration.

(c) An Oscilloscope with either a 3" or 5" tube equipped with both vertical and horizontal amplifiers.

(d) A power output meter with an internal impedance to match the output transformer for use in 456 Kc. alignment.

(e) A diode detector for use in connection with the oscilloscope while aligning the F.M.-I.F. channel. This diode detector may be either a crystal or a two element vacuum tube such as the 6H6. A diode load resistor, coupling condenser, etc. will also be necessary.

ALIGNMENT OF THE 456 KC. I.F.

This alignment adjustment should be made before attempting to align the 10.7 I.F. circuit because of the possible effects on the operation of the F.M. I.F.

Connect the output meter to the receiver. Connect the signal generator output lead to the converter grid. Turn the wave band switch to BC. and the generator to 456 Kc. Using the output meter as an indicator peak the A.M. I.F. trimmers for maximum output.

ALIGNMENT OF THE 10.7 I.F.

Turn the wave band switch to F.M. and the generator to 10.7 Mc. Move the signal generator lead to the grid of the ratio detector driver tube and the scope to the 1st audio plate. Now proceed to align the ratio detector transformer for maximum linearity and minimum noise. This operation can be facilitated by applying a small amount of amplitude modulation along with the F.M. and then adjusting the secondary trimmer for minimum noise. Please note that the adjustment of the secondary circuit, controls to a large extent, the linearity of the pattern and adjustment of the primary is responsible for the gain in the circuit. Fig. 6 will represent a linear detector curve and Fig. 7, a detector curve with noise or A.M. present.

With the generator output lead connected to the grid of the next I.F. amplifier, connect the scope through the temporary detector mentioned previously (3e) to the ratio detector driver plate. Align for maximum output and symmetry.

THE SPARKS-WITHINGTON CO.

MODELS 1000, 1001,
1003, 1020, 1021,
1023,
CHASSIS 12L7

VISUAL I. F.-F. M. ALIGNMENT DATA

Fig. 6

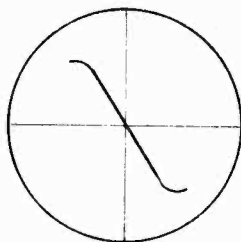
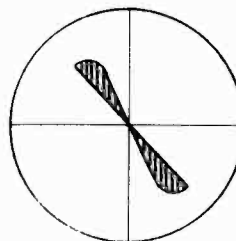


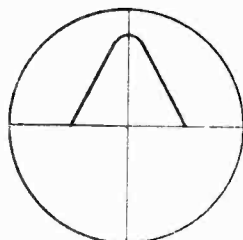
Fig. 7



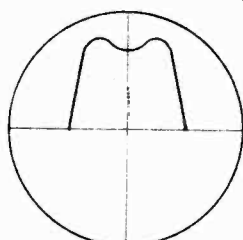
*Move the generator lead to the grid of the next I.F. tube and align the next I.F. transformer. Adjust both trimmer screws for maximum gain, meanwhile maintaining symmetry in the curve. Observe that by alternately adjusting the primary and secondary trimmer, the vertical amplitude can be increased without allowing the response curve to become greatly distorted. Move the generator lead to the grid of the converter tube and align No. 1 I.F. transformer following the same procedure as above.

Fig. 8, (A), (B), (C), and (D) below represent typical response curves of an overall I.F. amplifier.

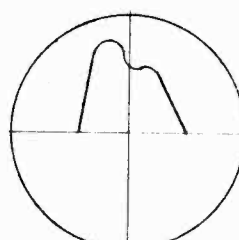
Fig. 8



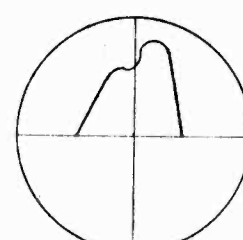
(A)
Not Overcoupled
Properly Aligned
(Right)



(B)
Overcoupled
Properly Aligned
(Right)



(C)
Overcoupled
Improperly Aligned
(Wrong)



(D)
Overcoupled
Improperly Aligned
(Wrong)

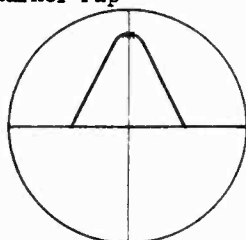
With the generator lead still connected to the converter grid, connect the scope to the 1st audio plate, and check the detector curve for linearity and noise. Should this appear unsatisfactory, a very slight readjustment of the detector secondary alignment may be made at this time. If, however, the adjustment required is very great the entire alignment procedure should be repeated in that the need for adjustment is an indication of incorrect alignment in one of the other stages.

USE OF MARKER FREQUENCIES.

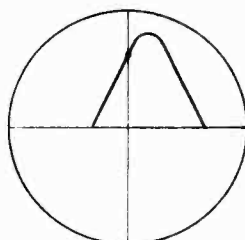
A crystal controlled marker frequency should be provided at 10.7 Mc. The frequency of the sweep oscillator is correct when the pip will appear in the exact center of the sweep and so in the center of the resonance curve. See Fig. 9.

Fig. 9

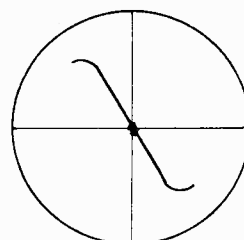
Marker Pip



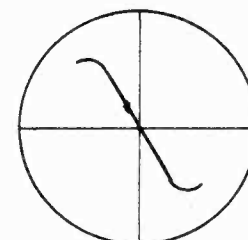
Right



Wrong
Resonance Curve
Off Frequency



Right



Wrong
Sweep Oscillator
Off Frequency

Note that either the sweep oscillator or the circuit alignment may be off frequency.

*This stage may or may not be included depending upon the particular model.

MODELS 1035, 1035A, THE SPARKS-WITHINGTON CO.
1036, 1036A, 1037,
1037A, CHASSIS 9L8

STEP BY STEP ALIGNMENT PROCEDURE

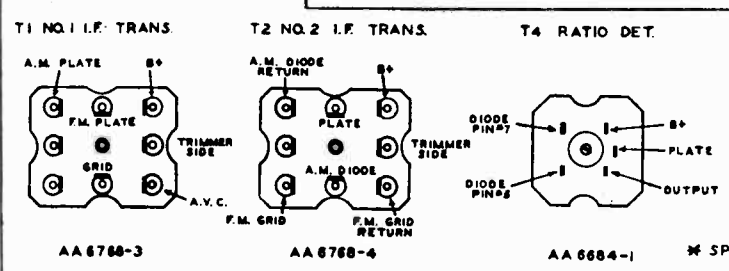
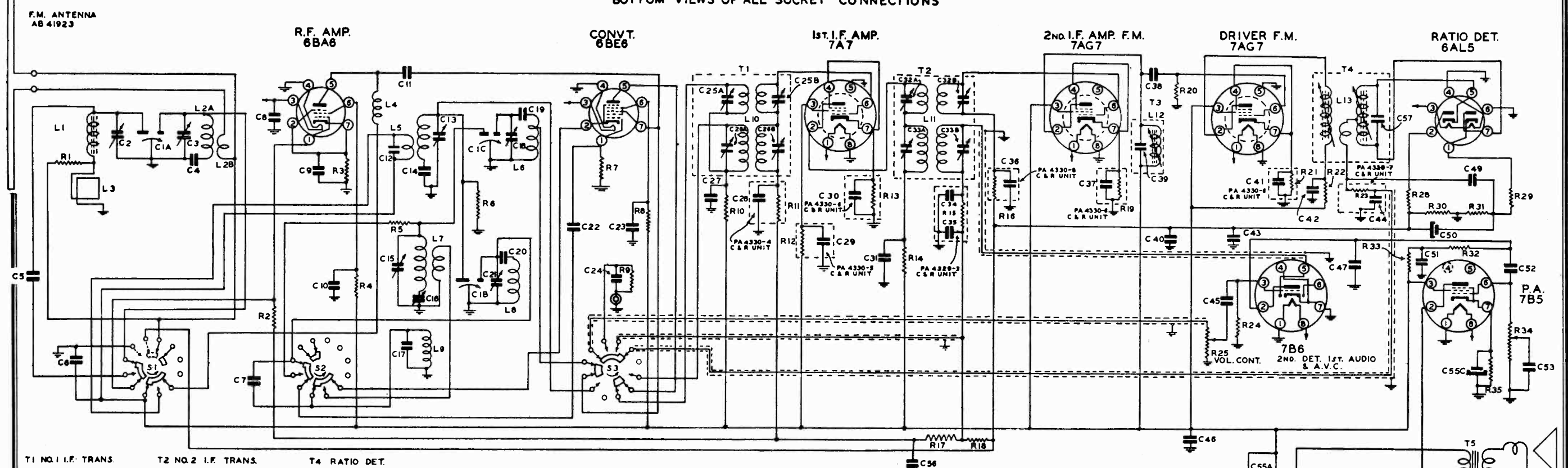
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with left-hand stop line with condenser gang closed.							
2	A.M.-I.F.	Pin #7 of 6BE6 Conv. Tube	.02 MFD. Cond.	456 KC.	BC.	Open	C33 A & B	Peak Accurately
							C26 A & B	" "
3	A.M.-R.F.	BC. Ant.	*	1500 KC.	BC.	1500 KC.	C15 Osc. Tr.	" "
							C13 R.F. Tr.	" "
							C2 Ant. Tr.	" "
4				600 KC.		600 KC.	C16 Osc. Pad.	**
5	Repeat operations 3 and 4.							
6	Check calibrations at 600, 1000 and 1500 Kc.							
7	SPECIAL NOTE: For complete F.M.-I.F. Visual alignment instructions please refer to pages 6, 7, 8, 9, 10, and 11.							
8	F.M.-I.F. Alignment using an A.M. Generator and Output Meter.							
9	T4 F. M. Ratio Det.	Pin #6 on 7AG7 Driver Tube	.05 MFD. Cond.	10.7 MC.	F.M.	Open 108 MC.	L13 Sec.	Max. Reading
							L13 Pri.	" "
10	NOTE: Operation #9 must be made with generator output as low as possible with maximum reading on output meter.							
11	T3 Plate Choke	Pin #6 on 7AG7 #2 I.F. Amp.	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	L12 Slug	Max. Reading
12	T2 F.M.-I.F.	Pin #6 on 7A7 I.F. Amp.	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	C32 B	Peak Accurately
							C32 A	" "
13	NOTE: Operation #11 & 12 must be made with generator output as low as possible with maximum reading on output meter.							
14	Connect a 15,000 ohm resistor between pin #6 (Grid) on 7A7 tube to ground.							
15	T1 F.M.-I.F.	Pin #7 on 6BE6 Tube or C.T. on L6 coil	.05 MFD. Cond.	10.7 MC.	F. M.	Open 103 MC.	C25 B	Peak Accurately
							C25 A	" "
16	NOTE: Operation #15 must be made with generator output as low as possible with maximum reading on output meter.							
17	Remove the 15,000 ohm resistor dummy from pin #6 on 7A7 tube, but leave generator coupled through .05 Mfd. condenser to pin #7 on 6BE6 tube or C.T. on L6 coil.							
18	Adjust L13 secondary slug on T4 ratio detector transformer to minimum deflection or dip on output meter. Under certain conditions it is possible to adjust L13 secondary slug to minimum noise with the receiver tuned to a weak station. This operation is very sharp and the receiver must be tuned to the center response only.							
19	F. M. - R. F. alignment using an A. M. Generator with frequencies of 88 to 108 Mc. and vacuum tube voltmeter, or D.C. Voltmeter. (20,000 ohms per volt).							
20	Place meter across C50 elect. condenser. (Meter reading approx. 1 volt.)							
21	F.M.-R.F.	F.M. Ant.	Match to 300 Ohms.	108 MC.	F. M.	108 MC.	C21 Osc. Tr.	Max. A.V.C. V.
							C18 R.F. Tr.	Peak Accurately
							C3 Ant. Tr.	" "
22	Check calibration at 38 Mc.							

NOTE:

- * Use dummy antenna as described
- ** Rock dial while adjusting for maximum output.

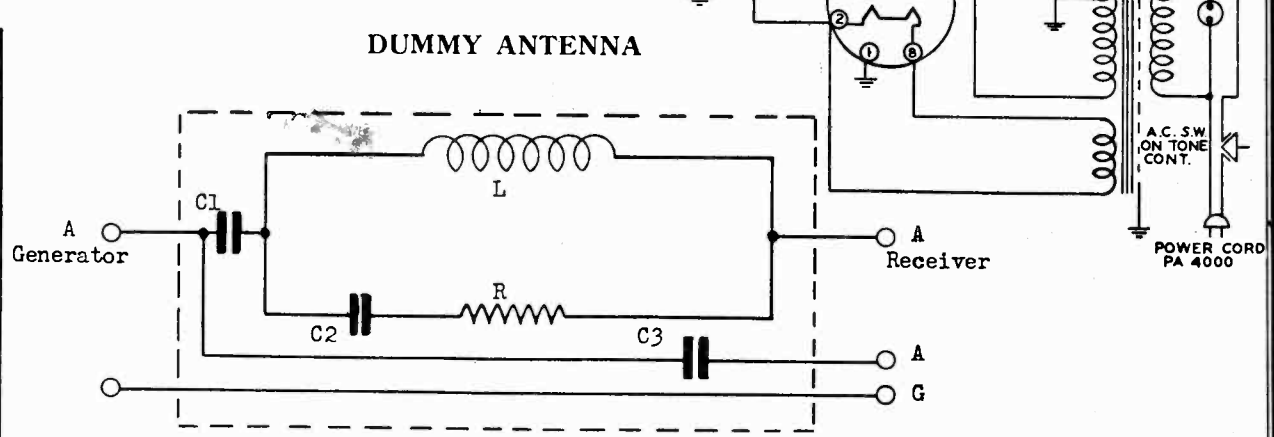
THE SPARKS-WITHINGTON CO. INTERMEDIATE FREQUENCY A.M. 456 Kc. F.M. 10.7 Mc. BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

MODELS 1035, 1035A, 1036, 1036A, 1037, 1037A, CHASSIS 9L8



TERMINAL HOOKUP FOR BOTTOM VIEW T1, T2 & T4

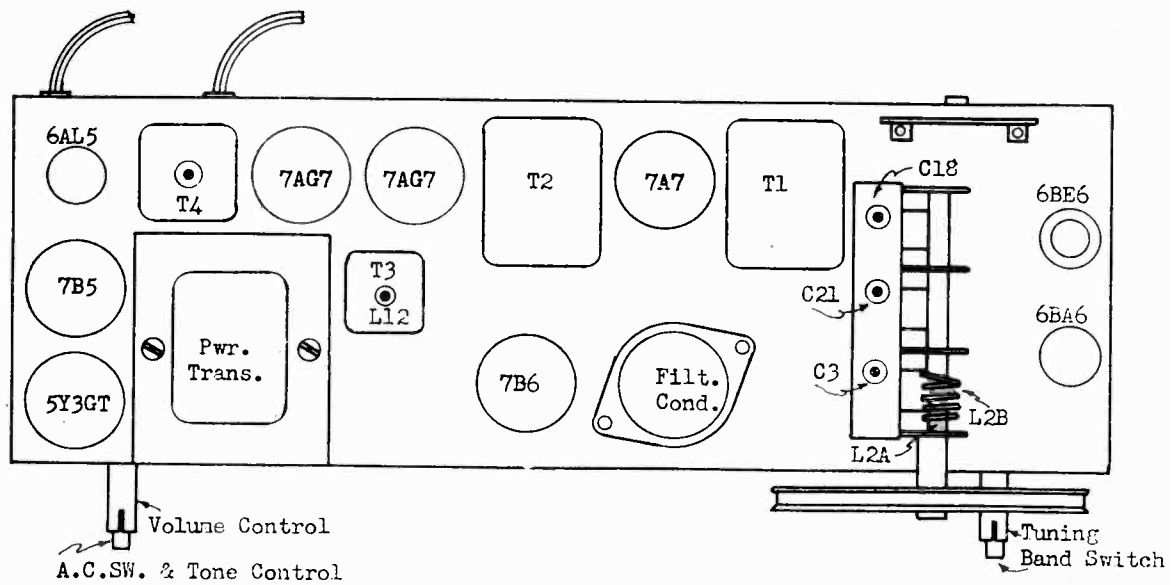
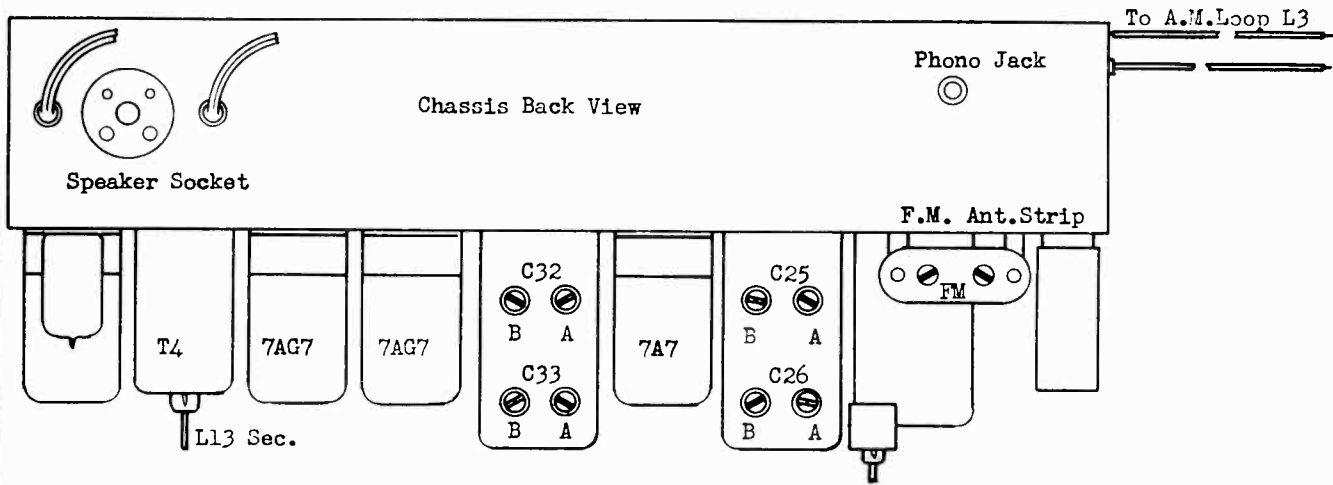
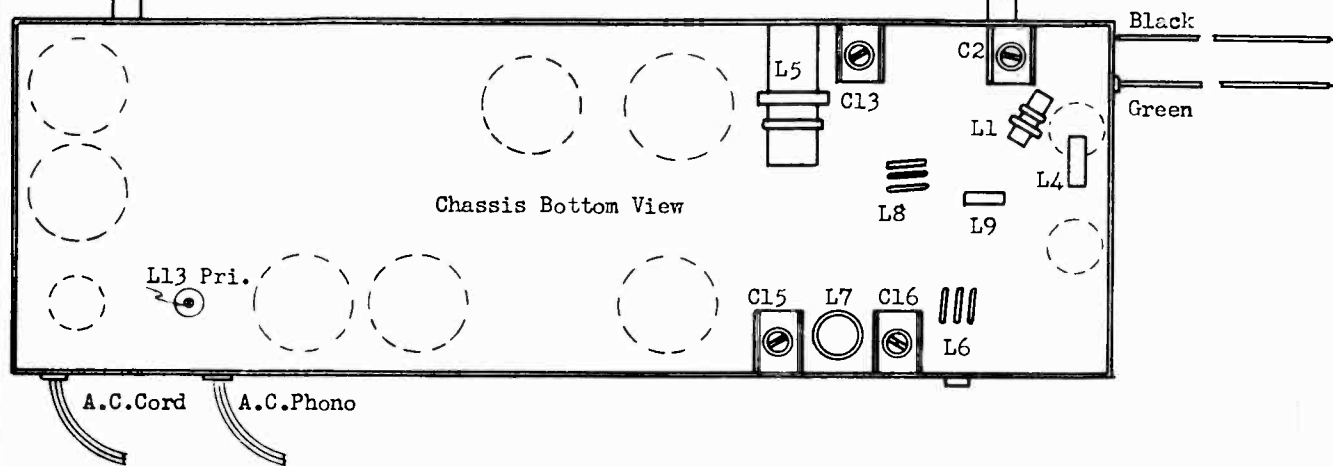
Parts list table with columns for DESCRIPTION, PART NO., LOCATION, and additional descriptions. Includes components like C1A-C47, R1-R35, T1-T6, and various capacitors and resistors.



NOTE: When using this dummy antenna the generator output impedance should be 10 ohms or lower. C1 - 200 mmf. Condenser 400 V.D.C. C2 - 400 mmf. Condenser 400 V.D.C. C3 - .02 mmf. Condenser 400 V.D.C. R - 100 Ohms Resistor 1/4 Watt L - Choke Coil

THE SPARKS-WITHINGTON CO. MODELS 1035, 1035A, 1036, 1036A, 1037, 1037A, CHASSIS 9L8

CHASSIS DIAGRAM



MODELS 1035, 1035A, 1036, 1036A, 1037, 1037A, CHASSIS 9L8 THE SPARKS-WITHINGTON CO.

VOLTAGE CHART

Line Voltage: 117 Volts AC

Position of volume control: Full with set tuned to quiet channel.
Position of Band Switch: Broadcast.

TUBE	FUNCTION	Voltage of Sockets Prongs to Ground. See Prong Nos. on schematic.							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
6BA6	R. F. Amplifier	**	.8	6.3*	0	230	98	.8	-
6BE6	Converter	-1	0	6.3*	0	225	83	0	-
7A7	1st I. F. Amplifier	6.3*	225	75	2.2	0	**	2.2	0
7AG7	2nd I. F. Amplifier (F.M.)	6.3*	220	220	1.8	0	**	1.8	0
7AG7	Driver (F.M.)	6.3*	210	220	1.5	0	**	1.8	0
7B6	2nd Det., A.V.C., & 1st Audio	6.3*	95	**	0	0	.5	0	0
6AL5	Ratio Det.	.25	0	0	6.3*	0	0	0	-
7B5	Power Amp.	0	250	230	0	0	**	14	6.3
5Y3GT	Rectifier	0	270	0	250*	0	250*	0	304

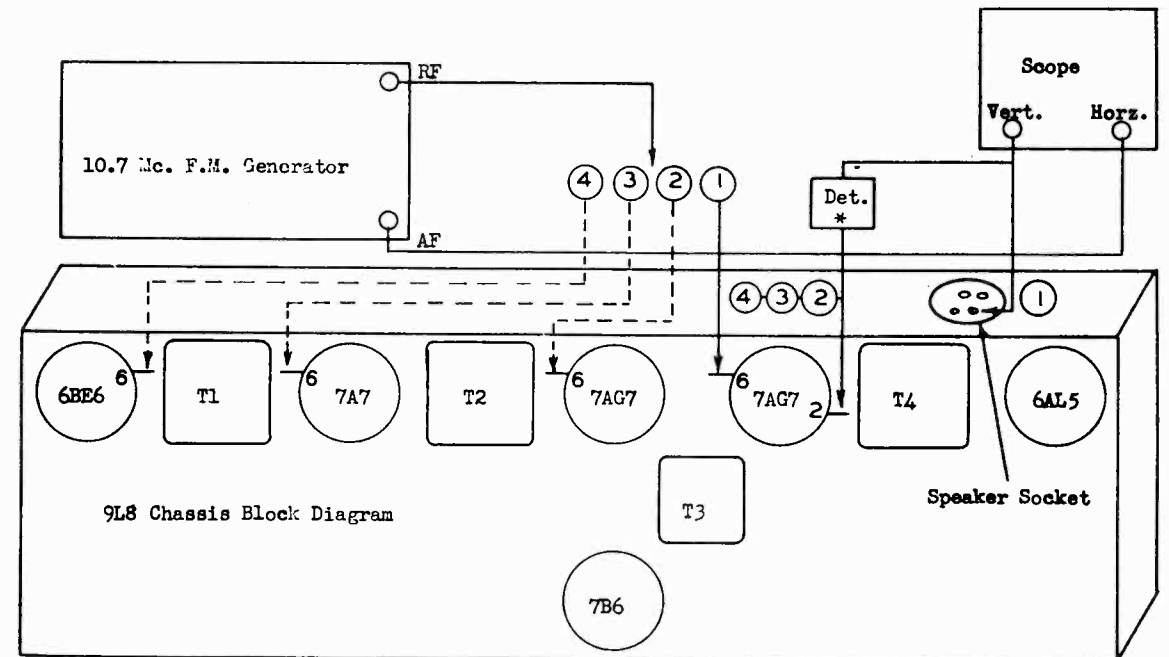
NOTES: Voltage readings are for schematic diagram in this bulletin. Allow 15% +/- on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
* AC Volts.
** Cannot be measured with 20,000 ohms per volt voltmeter.

VISUAL I. F. - F. M. ALIGNMENT DATA

1. DESCRIPTION OF CIRCUIT USED:

This circuit consists of a 6BE6 Converter, 7A7 1st I.F. (A.M. & F.M.), two 7AG7 2nd F.M.-I.F. Amplifier and Ratio Detector Driver, a 6AL5 Ratio Detector for F.M. The A.M.-I.F. frequency is 456 Kc. and the F.M. frequency is 10.7 Mc.

The diagram below shows the correct hook-up for generator and scope to the receiver circuit.



Gen. & Scope Position

- 1
- 2
- 3
- 4
- *

Use

- Align Ratio Det. - Adjust T4
- Align Plate Choke - Adjust T3
- Align I.F. - Adjust T2
- Align I.F. - Adjust T1
- See paragraph 3 (e) under equipment required.

VISUAL I. F.-F. M. ALIGNMENT DATA

2. THEORY OF VISUAL ALIGNMENT.

One of the characteristics of a tuned circuit is the fact that when it is excited or driven by a generator such as a vacuum tube or another tuned circuit, the voltage developed across it will vary with slight changes in frequency. This voltage will be greatest when the frequency is equal to the resonant frequency of the circuit and will be less if the frequency is higher or lower than the resonant frequency.

Thus if we were to shift the frequency from high to low or low to high across the resonant frequency and make a record of the voltage across the tuned circuit, we could plot the voltage against frequency and obtain a curve which might look like Fig. 1.

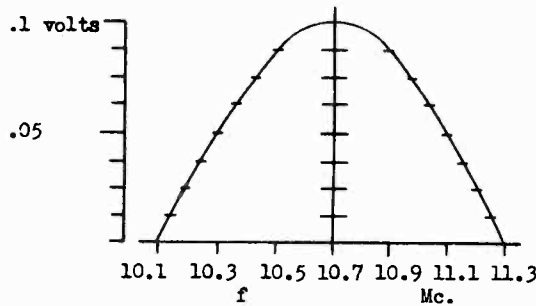
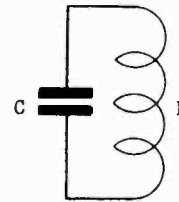
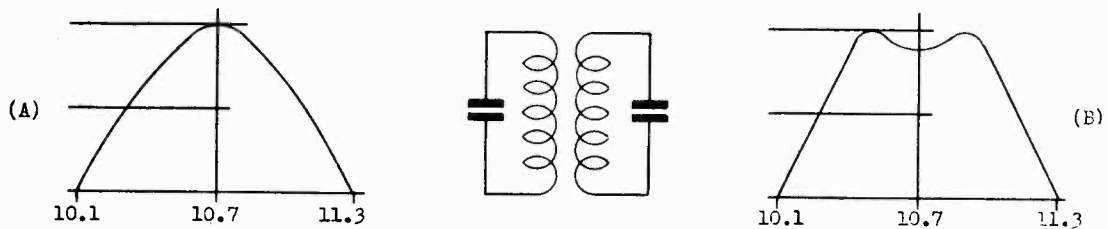


Fig. 1



This is the selectivity curve or response curve for the circuit under discussion. This type of circuit may be aligned or adjusted to resonance by simply changing either L or C until maximum voltage is obtained at the resonant frequency. Now if another circuit tuned to the same resonant frequency is coupled to the simple case above, a number of things can happen. First current flowing in one circuit will induce current in the second circuit, the magnitude of this current depending on the degree or amount of coupling between the two circuits. This coupling may be in the form of mutual inductance, mutual capacitance or any impedance common to the two circuits. Now if we repeat the procedure outlined for obtaining the response curve of a single tuned circuit using the voltage developed across the secondary of the coupled circuit while driving the primary, we may get either of two types of curves depending on the magnitude of the coupling, (a) in Fig. 2 is a typical curve for two circuits coupled below critical coupling and (b) is a representation of the curve for an overcoupled circuit.

Fig. 2



Overcoupled circuits producing a response curve like (b) Fig. 2 are often employed where it is important that the response curve remain approximately flat over a narrow band of frequencies near the resonant frequency. They are also frequently combined with single peaked circuits to produce a response curve like Fig. 3.

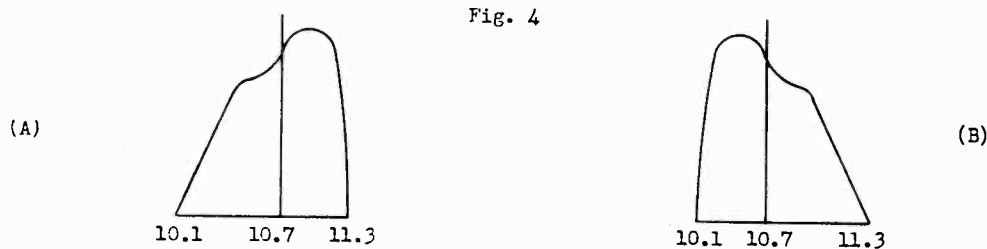
Fig. 3



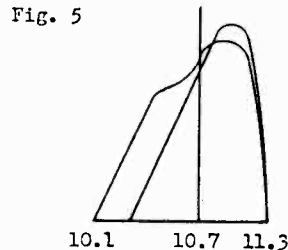
MODELS 1035, 1035A, THE SPARKS-WITHINGTON CO.
 1036, 1036A, 1037,
 1037A,
 CHASSIS 9L8

VISUAL I. F.-F. M. ALIGNMENT DATA

The dotted lines indicate the curves of the individual circuits and the solid curve shows the overall response of the two or more pairs of coupled circuits. Circuits like the above or approaching them in form are desirable in an F.M. receiver where the pass band should be of the order of 200 Kc. Now from the above it is evident that simple peaking both sides of a circuit coupled below critical for maximum voltage will provide optimum alignment but if this procedure is followed with an overcoupled circuit it is almost a certainty that the two circuits will not be tuned to the resonant frequency but will instead be aligned so that either one or the other is accentuated. The response curve will then look like Fig. 4 (a) or (b).



Now if this overcoupled circuit is combined with a single peaked circuit (where the coupling is below critical), the misalignment becomes worse, something like Fig. 5.



From the above it appears that to properly align a receiver using overcoupled IF transformers it will be necessary to take a response curve of each stage and align the circuit so that the two peaks are symmetrical, that is, approximately equal in amplitude and displaced equally from the center frequency. To do this with a CW or AM signal would be laborious and time consuming whereas the use of visual equipment makes it nearly as simple as adjusting a simple single peaked amplifier.

Visual alignment test equipment performs the operation of plotting the response curve almost exactly as described above except that instead of manually changing the generator frequency, recording the voltage and then plotting the results, these operations are performed automatically and simultaneously by a combination of electronic circuits. The operation is briefly as follows.

In the signal generator a low AC voltage is applied to a reactance tube modulator which shifts the oscillator frequency from low to high or from high to low at a rate determined by the frequency of the AC voltage and by an amount determined by the AC voltage. The frequency at any instant is then dependant on the AC voltage present at that instant of time. An oscilloscope is provided which may be considered a voltmeter used to read the voltage across the tuned circuit, provided a detector is used to convert the RF to a low audio frequency. This voltage is then applied to the vertical plates and results in a vertical displacement of the spot on the screen. Some of the voltage used to shift the oscillator frequency is also applied to the horizontal plates of the oscilloscope providing a means of displacing the spot horizontally. It is now evident that since that for any given AC voltage only one frequency may be obtained and since that AC voltage will result in an exact amount of spot deflection on the scope we can read the result in an exact amount of spot deflection on the scope we can read the voltage across the circuit under examination by noticing the position of the spot at this exact instant.

Now if we consider the frequency as shifting from low to high 60 times per second and remember that the spot is moving across the screen of the scope 60 times per second at exact synchronization with the change in frequency it is only necessary to apply the voltage from our circuit to the vertical plates to obtain a replica of the response curve on the face of the cathode ray tube. This curve will be repeated 60 times per second if our sweep frequency is 60 cycles. Adjustments to the circuit may now be made and the effect on the response curve noted instantaneously.

THE SPARKS-WITHINGTON CO. MODELS 1035, 1035A,
1036, 1036A, 1037,
1037A, CHASSIS 9L8

VISUAL I. F.-F. M. ALIGNMENT DATA

3. EQUIPMENT REQUIRED.

(a) A sweep signal generator with a center frequency of 10.7 Mc. and a total sweep width of at least 400 Kc. This generator should be equipped with filters to remove all spurious oscillator frequencies and limiters should be provided to remove all amplitude modulation. There should also be a crystal oscillator to provide a marker frequency at 10.7 Mc. for accurate determination of the center frequency.

(b) An amplitude modulated signal generator tuned to 456 Kc. This generator should be either crystal controlled or means should be provided for accurate frequency calibration.

(c) An oscilloscope with either a 3" or 5" tube equipped with both vertical and horizontal amplifiers.

(d) A power output meter with an internal impedance to match the output transformer for use in 456 Kc. alignment.

(e) A diode detector for use in connection with the oscilloscope while aligning the F.M.-I.F. channel. This diode detector may be either a crystal or a two element vacuum tube such as the 6H6. A diode load resistor, coupling condenser, etc. will also be necessary.

4. ALIGNMENT OF THE 456 KC. I. F.

This alignment adjustment should be made before attempting to align the 10.7 I.F. circuit because of the possible effects on the operation of the F.M. I.F.

Connect the output meter to the receiver. Connect the signal generator output lead to the converter grid. Turn the wave band switch to Bc. and the generator to 456 Kc. Using the output meter as an indicator peak the A.M. I.F. trimmers for maximum output.

5. ALIGNMENT OF THE 10.7 I.F.

Turn the wave band switch to F.M. and the generator to 10.7 Mc. Move the signal generator lead to the grid of the ratio detector driver tube and the scope to the 1st audio plate. Now proceed to align the ratio detector transformer for maximum linearity and minimum noise. This operation can be facilitated by applying a small amount of amplitude modulation along with the F.M. and then adjusting the secondary trimmer for minimum noise. Please note that the adjustment of the secondary circuit, controls to a large extent, the linearity of the pattern and adjustment of the primary is responsible for the gain in the circuit. Fig. 6 will represent a linear detector curve and Fig. 7, a detector curve with noise or A.M. present.

Fig. 6

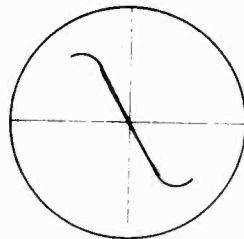
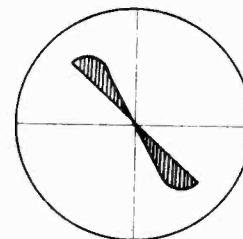


Fig. 7



With the generator output lead connected to the grid of the next I.F. amplifier, connect the scope through the temporary detector mentioned previously (3e) to the ratio detector driver plate. Align for maximum output and symmetry.

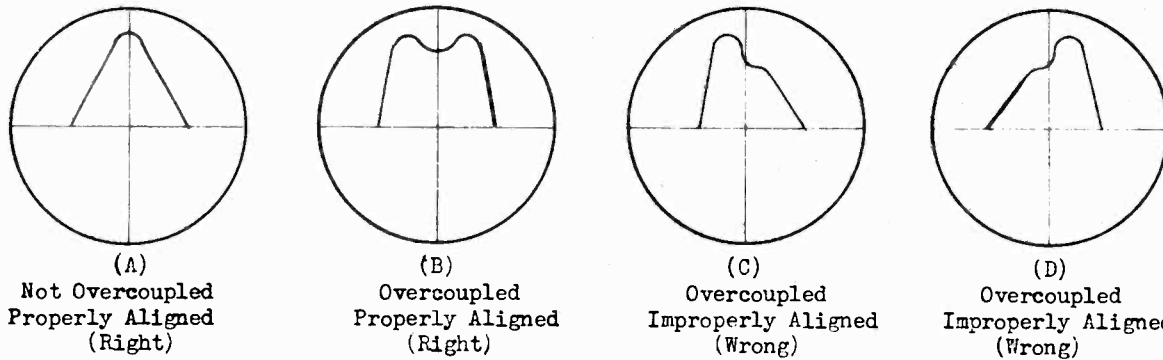
MODELS 1035, 1035A THE SPARKS-WITHINGTON CO.
 1036, 1036A, 1037,
 1037A,
 CHASSIS 9L8

VISUAL I. F.-F. M. ALIGNMENT DATA

*Move the generator lead to the grid of the next I.F. tube and align the next I.F. transformer. Adjust both trimmer screws for maximum gain, meanwhile maintaining symmetry in the curve. Observe that by alternately adjusting the primary and secondary trimmer, the vertical amplitude can be increased without allowing the response curve to become greatly distorted. Move the generator lead to the grid of the converter tube and align No. 1 I.F. transformer following the same procedure as above.

Fig. 8, (A), (B), (C), & (D) below represent typical response curves of an overall I.F. amplifier.

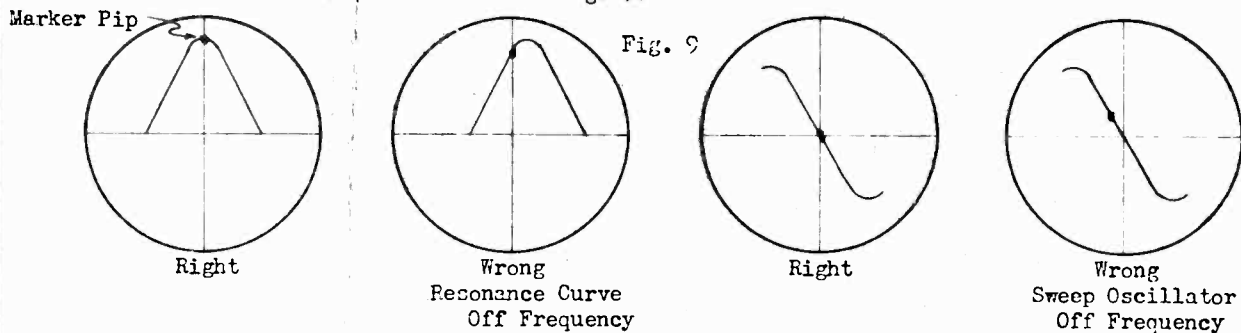
Fig. 8



With the generator lead still connected to the converter grid, connect the scope to the 1st audio plate, and check the detector curve for linearity and noise. Should this appear unsatisfactory, a very slight readjustment of the detector secondary alignment may be made at this time. If, however, the adjustment required is very great the entire alignment procedure should be repeated in that the need for adjustment is an indication of incorrect alignment in one of the other stages.

5. USE OF MARKER FREQUENCIES.

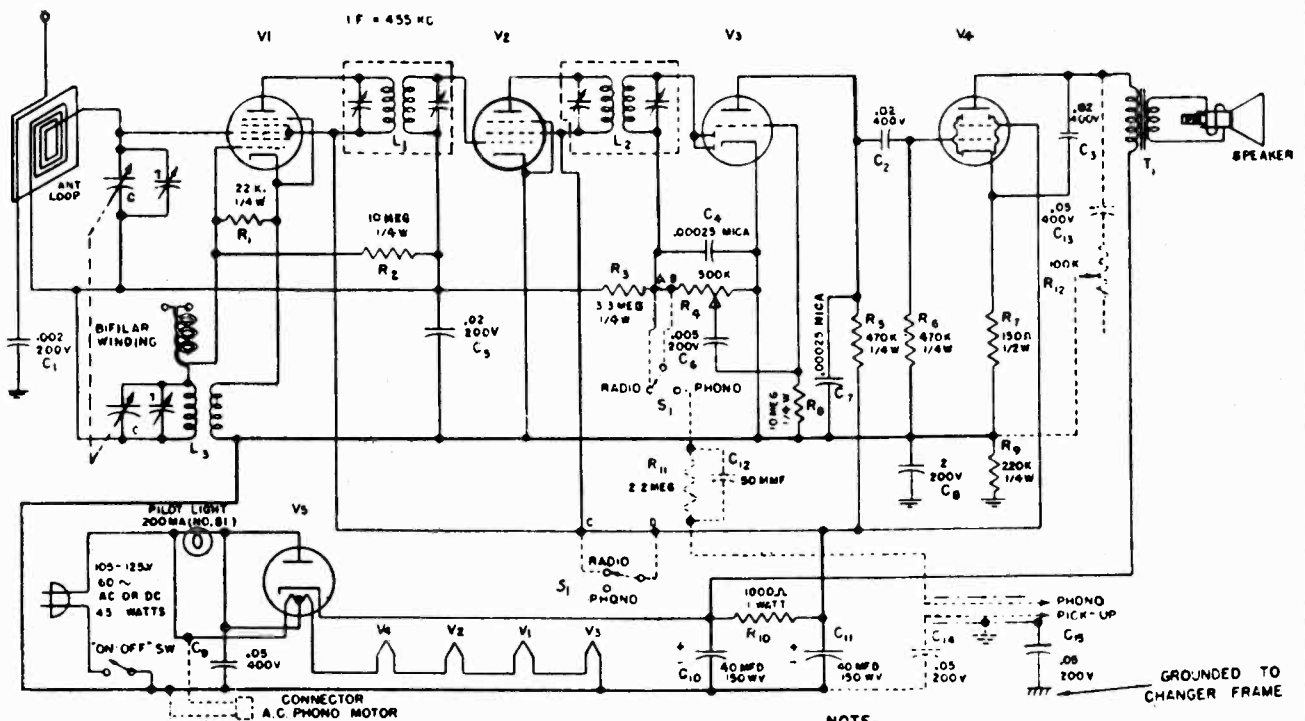
A crystal controlled marker frequency should be provided at 10.7 Mc. The frequency of the sweep oscillator is correct when the pip will appear in the exact center of the sweep and so in the center of the resonance curve. See Fig. 9.



Note that either the sweep oscillator or the circuit alignment may be off frequency.

*This stage may or may not be included depending upon the particular model.

SPIEGEL



NOTICE: ON SETS HAVING THREE (3) CONTROLS, R12 & C15 ARE OMITTED.

- NOTE:
- (1) POINTS A-B, C-D JUMPED IN RADIO MODELS SWITCH S₁ USED IN RADIO-PHONO COMBINATION
 - (2) DOTTED LINES IN CIRCUIT USED IN PHONO-COMBINATION ONLY
 - (3) RADIO POWER INPUT IS 30 WATTS, WITH PHONO 45 WATTS.
 - (4) C₁₅ USED ON MODEL 6547 ONLY.
 - (5) **WARNING!**—DO NOT USE PHONO ON D.C.

TUBE COMPLEMENT

TUBE	LOCTAL	OCTAL	MINIATURE
V ₁	14Q7		12BE6
V ₂	14A7		12BA6
V ₃	14B6		12AT6
V ₄	50A5	50L6	50B5
V ₅	35Y4		35W4

PARTS LIST:

- C 1—.002 Mfd., 200V paper
- C 2—.02 Mfd., 400V paper
- C 3—.02 Mfd., 400V paper
- C 4—.00025 Mfd., mica
- C 5—.02 Mfd., 200V paper
- C 6—.005 Mfd., 200V paper
- C 7—.00025 Mfd., mica
- C 8—.25 Mfd. (or .20 Mfd.), 200V paper
- C 9—.05 Mfd., 400V, molded bakelite
- C10, 11—Dual 40 Mfd., 150V (*A-25.019)
- C12—50 Mmfd., mica
- C13—.05 Mfd., 400V
- C14—.05 Mfd., 200V
- C15—.05 Mfd., 200V
- R 1—22K, 1/4W, 20%
- R 2—10 meg., 1/4W, 20%
- R 3—3.3 meg., 1/4W, 20%
- R 4—500K variable, audio taper, with SPST (*A-9.066)-PULLEY
- R 5—470K, 1/4W, 20%
- R 6—470K, 1/4W, 20%
- R 7—150 ohms, 1/2W, 10%
- R 8—10 meg., 1/4W, 20%
- R 9—220K, 1/4W, 20%
- R10—1000 ohms, 2W (or 1W), 20%
- R11—2.2 meg., 1/4W, 20%
- L 1—Transformer, IF input, 455KC (*C-2.191-1)
- L 2—Transformer, IF output, 455KC (*C-2.191-2)
- L 3—Coil, oscillator (*B-2.192)
- Antenna, loop (*B-5.006)
- Loudspeaker, PM, 5" Trans. to match 50A5 (*B-11.037)
- Pilot light, Mazda No. 51, 200 Ma.

Figure 4. Schematic Diagram

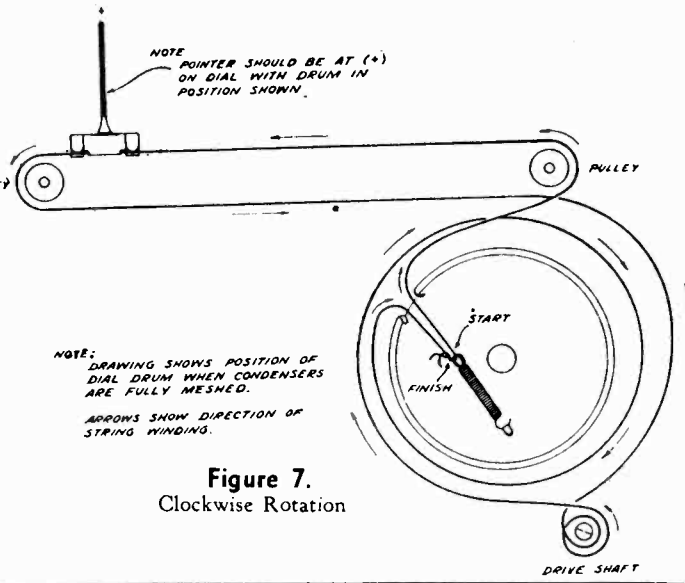


Figure 7. Clockwise Rotation

* Mfg. Part No.
Part No. NG-440 Rev. 1-21-47

Tube Complement:

loctal	octal	miniature	function
V ₁ —14Q7		12BE6	Osc., Conv.
V ₂ —14A7		12BA6	I.F. Amp.
V ₃ —14B6		12AT6	Det., A.V.C., Amp.
V ₄ —50A5	50L6	50B5	Power Amp.
V ₅ —35Y4		35W4	Rectifier

Loctal base tubes have a special locking arrangement which holds the tubes securely in the sockets. To remove a tube, use slightly off-side pressure towards socket rivet, thus releasing the socket lock.

This is a 5-tube Superheterodyne radio receiver designed to operate on:

1. 105-125 volts A.C. 60 cycles.
2. *105-125 volts D.C.

This receiver operates on the standard broadcast band, 540-1700 KC.

* Operate phonograph on A.C. only.

ALIGNMENT PROCEDURE.

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

Output meter is connected across voice coil.

Receiver volume is turned to maximum

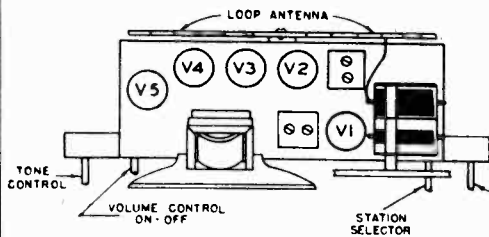


Fig. 3. Tube and Trimmer Locations—4-Control

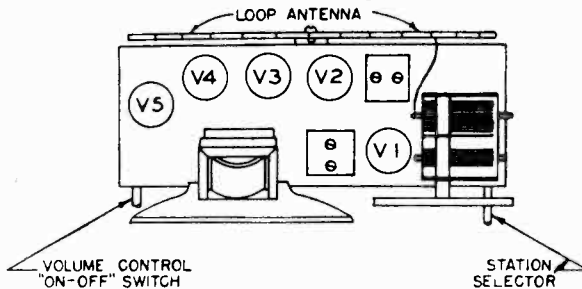


Fig. 1. Tube and Trimmer Locations—2-Control

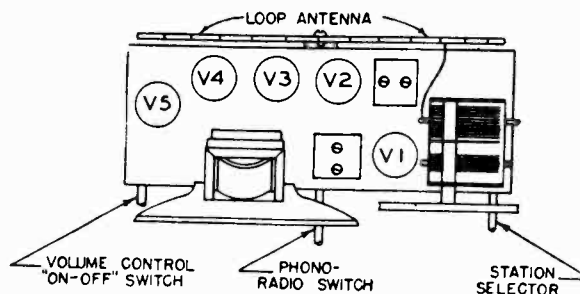
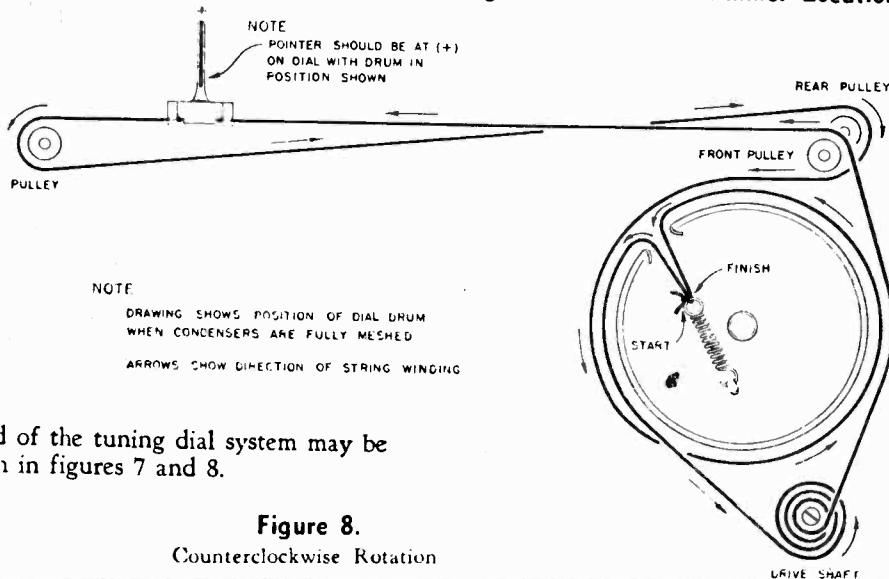


Fig. 2. Tube and Trimmer Locations—3-Control



NOTE
DRAWING SHOWS POSITION OF DIAL DRUM WHEN CONDENSERS ARE FULLY MESHED
ARROWS SHOW DIRECTION OF STRING WINDING

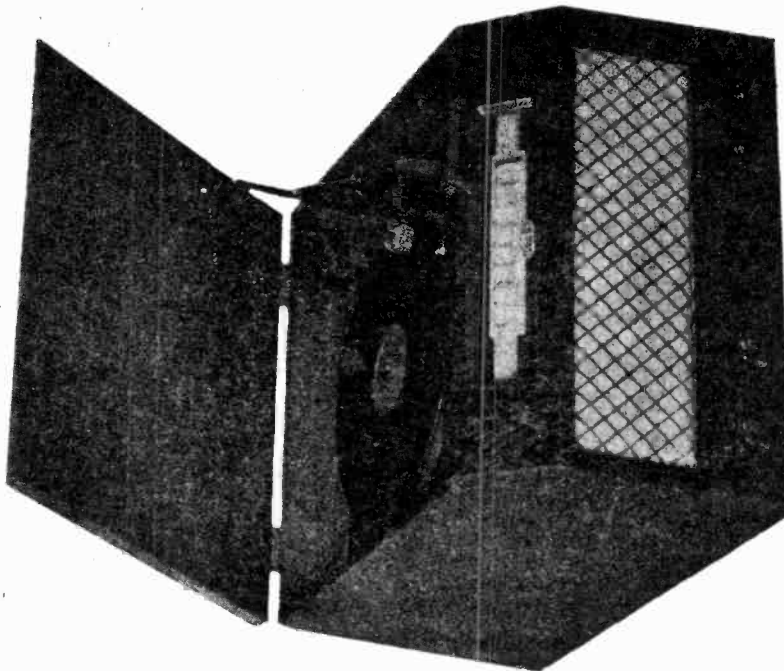
Nylon cord of the tuning dial system may be replaced as shown in figures 7 and 8.

Figure 8.
Counterclockwise Rotation

Alignment: No attempt should be made to re-align this receiver until it has been determined that a poor tube, or some local condition is not responsible for the faulty reception.

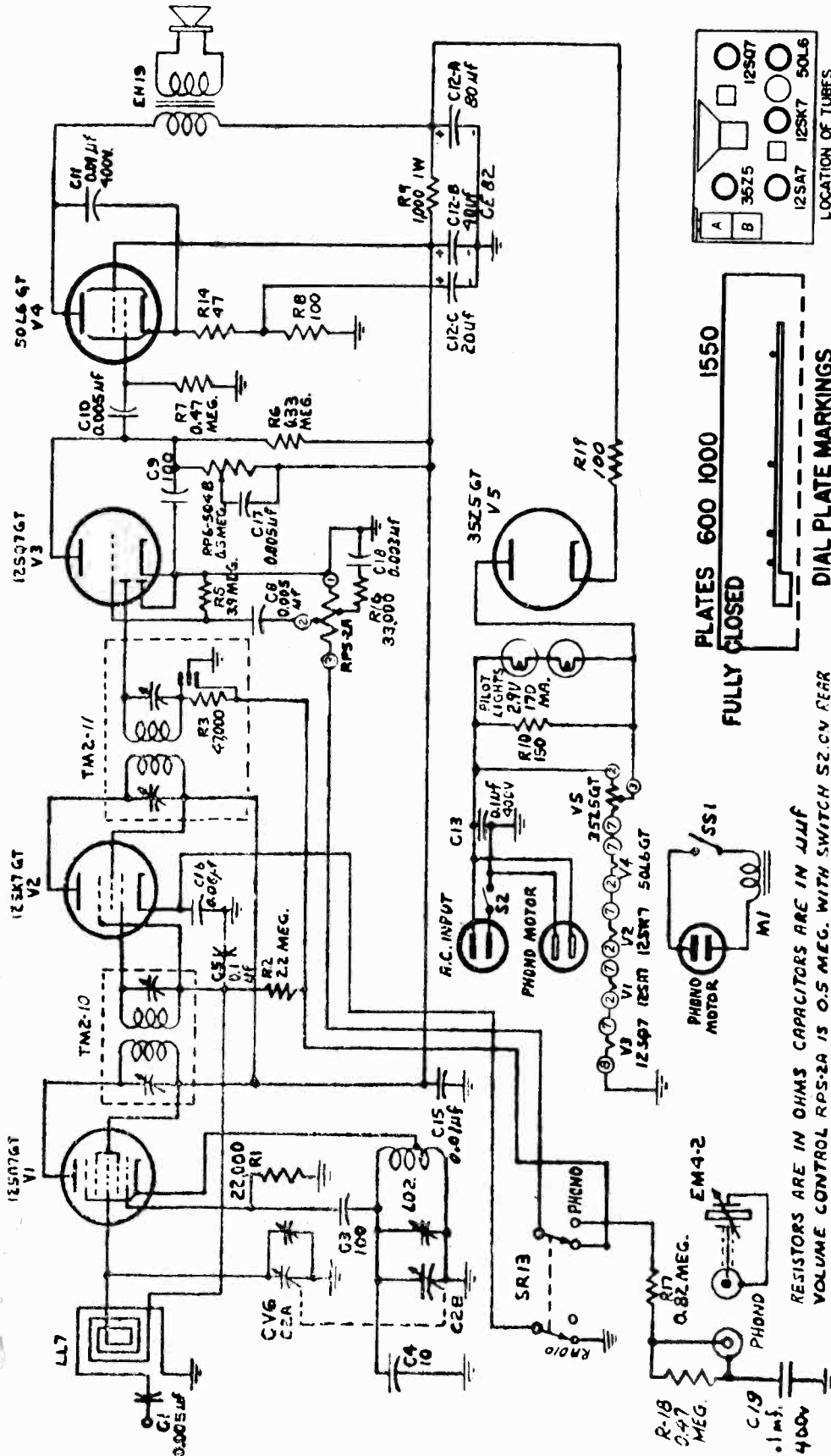
The Signal Generator may be connected through a 0.01 mf capacitor (used as dummy antenna) to the lug on RF section (B) of tuning capacitor. Connect ground clip of generator directly to chassis. Align the I. F. trimmers to 455 kc, using least possible input from Signal Generator to avoid developing A.V.C. voltage which would make the tuning adjustments very broad. An output meter may be clipped directly across the voice coil lugs.

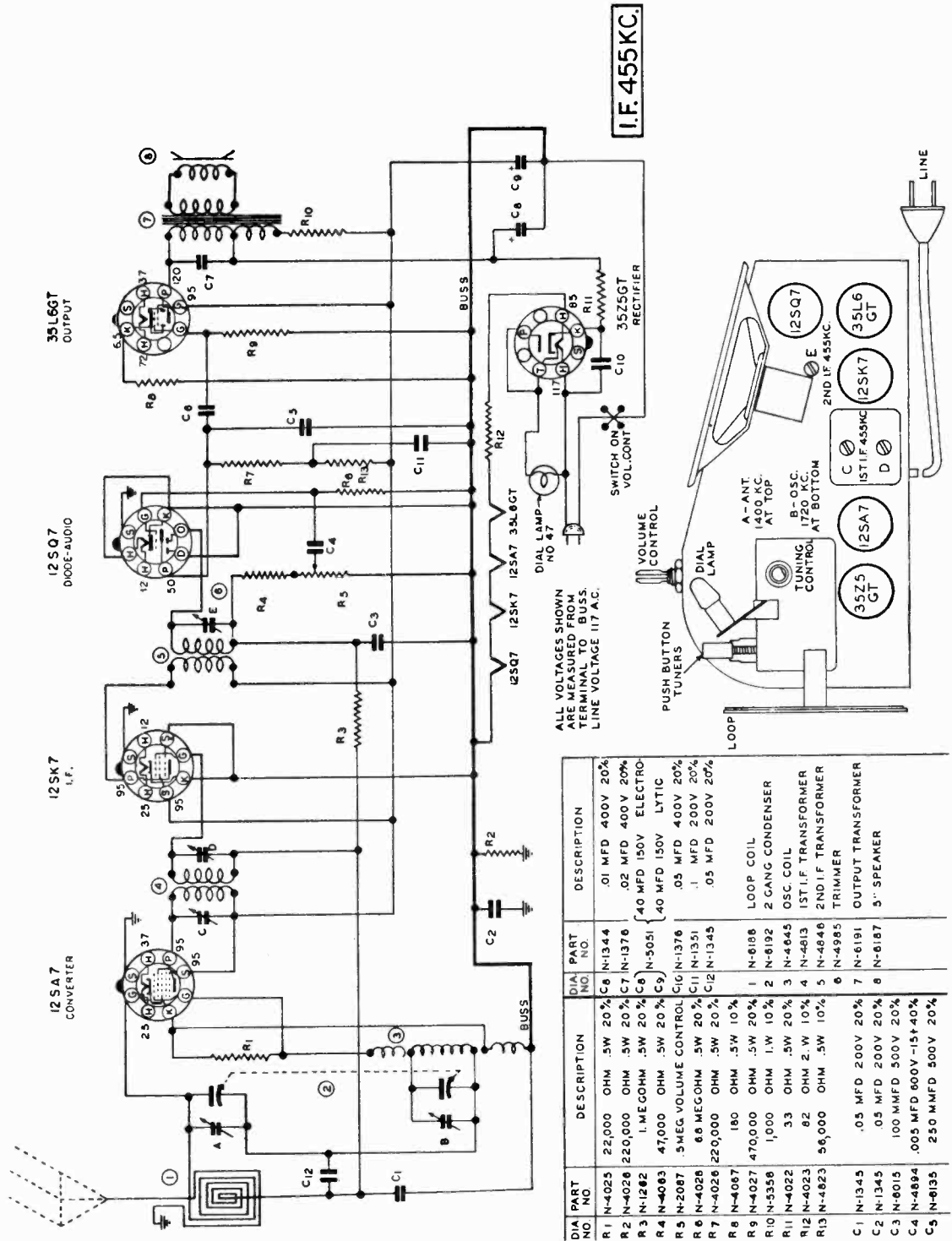
To align RF trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads to two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal Generator. With the tuning capacitor plates completely out of mesh, and pointer at extreme right end of travel, adjust the oscillator trimmer (A) (on front section of tuning capacitor) to 1700 kc. Re-adjust both Signal Generator and tuning capacitor to 1550 kc and adjust the RF trimmer (B) (on rear section) for maximum response. With tuning capacitor plates fully meshed, the receiver should tune to 532 kc; however, no adjustment is required at this point. For checking purposes, four fine marks are engraved on the dial plate. These represent, in order, the pointer position with capacitor plates fully meshed, and the pointer setting for 600, 1000 and 1550 kc.



Operation: The set operates on 110 to 120 volts, 60 cycles A.C. only. Power drain is approximately 25 watts for radio and about 10 watts additional for the motor.

Range: Model G-516 covers the broadcast band from 540 to 1620 kilocycles. Since the scale is calibrated 54 to 160, the actual frequency of the station received is obtained by adding a zero to the dial calibration.





SERVICE DATA

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED. OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

TUNING RANGE

This receiver is designed to operate over the standard broadcast band which extends from 535 to 1720 Kilocycles (KC) (174 to 560 Meters).

DIAL CALIBRATION. The scale is calibrated from 55 to 170 (Standard

Broadcast). This band covers all Standard Broadcasts frequencies of the United States, Canada, Mexico, Cuba and many Central and South American Countries. Add a zero to figures on the scale to obtain kilocycles.

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1720 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

I.F. ALIGNMENT. Remove the chassis and loop antenna from the cabinet and set them up on the bench so that they occupy exactly the same respective positions on the bench as they did in the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. With the gang

condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube (12SA7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the ground buss, indicated on the circuit diagram. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1720 KC, and adjust the oscillator (or 1720 KC trimmer) on gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

AERIAL SYSTEM

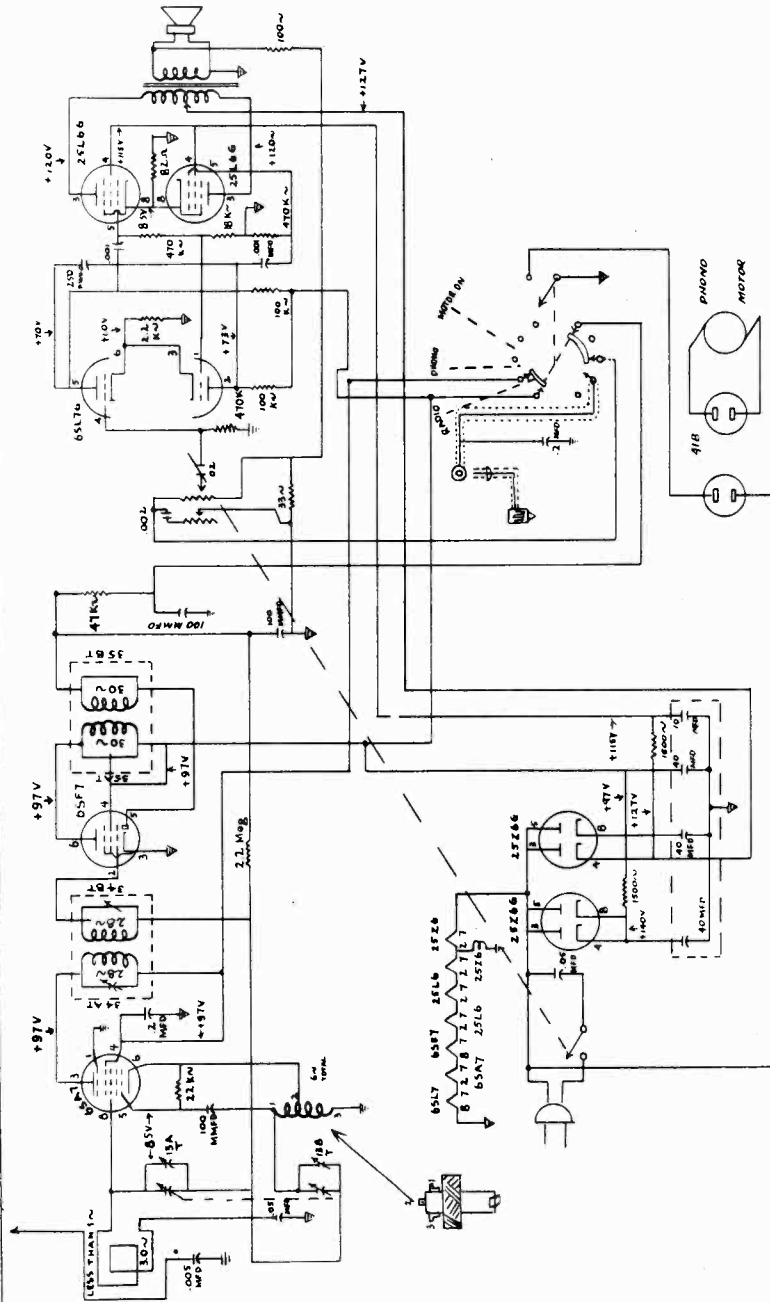
This receiver has a built-in "loop" aerial. Its excellent design is such as to increase pick-up from stations having wide variations in signal strength. The efficiency and selectivity of the loop provide outstanding reception without the use of an external aerial. The "loop" aerial used on this receiver is somewhat directional so reception from weak stations can be improved by turning the set in the proper direction. In or near metal buildings, iron ore deposits or steel structures or in

localities remote from broadcasting stations, reception can be improved by using an outside aerial 50 feet to 100 feet in length including lead-in. Connect the outside aerial to the aerial lead. When using the outside aerial with AC power supply it may be necessary to reverse the power cord plug in wall socket to eliminate hum or distortion.

TUBES USED

Five tubes are used. (One tube is a rectifier.) Type numbers and locations are shown in the tube location diagram on the cabinet. If tubes are removed from their sockets for test or replacement purposes, make certain that each tube is placed in its proper socket when

replacing the tubes in the set. Failure to replace the tubes in their proper sockets may result in damage to the tube, or to the receiver, or both.



Phono-Radio with automatic record changer for alternating (A.C.) current, of 110 to 125 volts at 60 cycles.

1. The knob marked PHONO-RADIO, controls a three position switch. The extreme counter clockwise position is for radio reception. The center position is for FM reception when desired, to be used with an external F.M. tuning unit.
The extreme clockwise position is for phono reception.
2. The knob marked VOLUME, controls the off and on position of the radio receiver and also acts as a master switch by cutting off the current supply to the record changer.

The unit is turned off when the knob is in the extreme left. (Counter clockwise position).

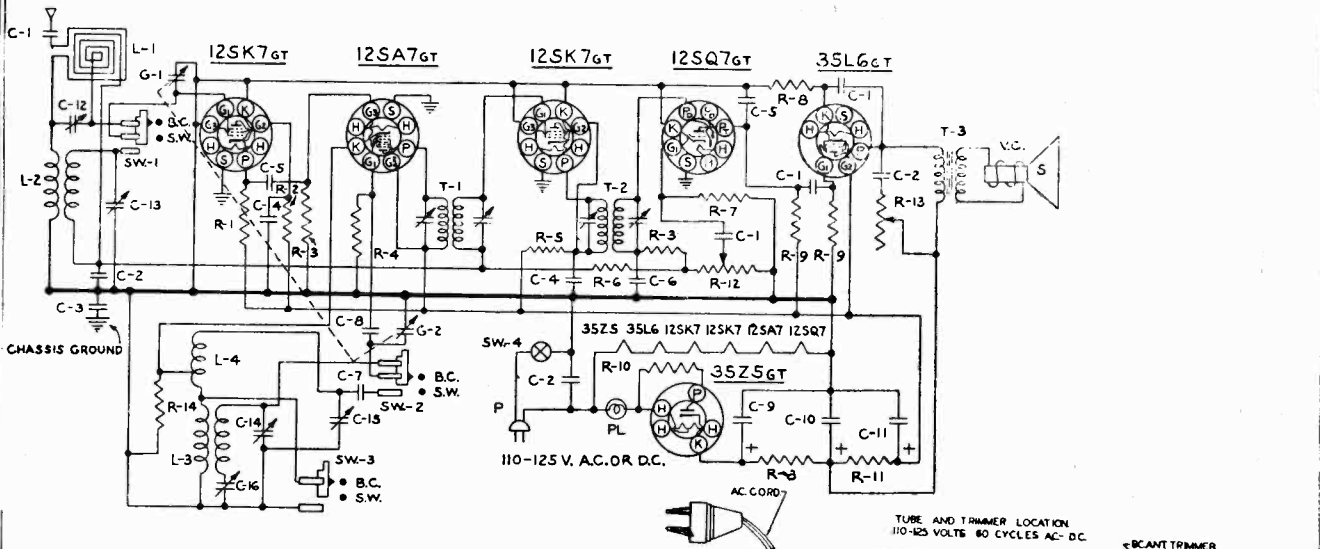
To turn on, turn this knob to the right (clockwise) until a click is heard. Further rotation adjusts the volume.

3. The knob marked TONE, is the tone control which is of the continuously, variable type and may be placed in the most pleasing position to the listener.

4. The knob marked TUNING, is for dialing the broadcast stations.

MODELS 5011, 5012

SPIEGEL

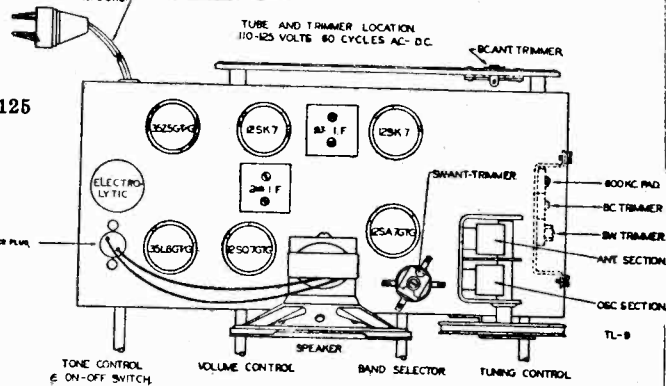


CAUTION

POWER SOURCES: — This receiver will operate either on 110-125 volt A.C., 50-60 cycle current or 110-125 volt D. C. current.

Never plug this receiver into a 220 volt line.

The components in this receiver are designed for 110-125 volt operation only. Any attempt to operate this receiver at a higher than prescribed voltage will cause serious damage.



ALIGNMENT AND SERVICE DATA

Remove the chassis from the cabinet for alignment.

A signal generator is required, having the following frequencies: 455 KC, 1400 KC, 1730 KC, 6 MC, 16 MC, and 18.3 MC. An output meter should be connected across the speaker.

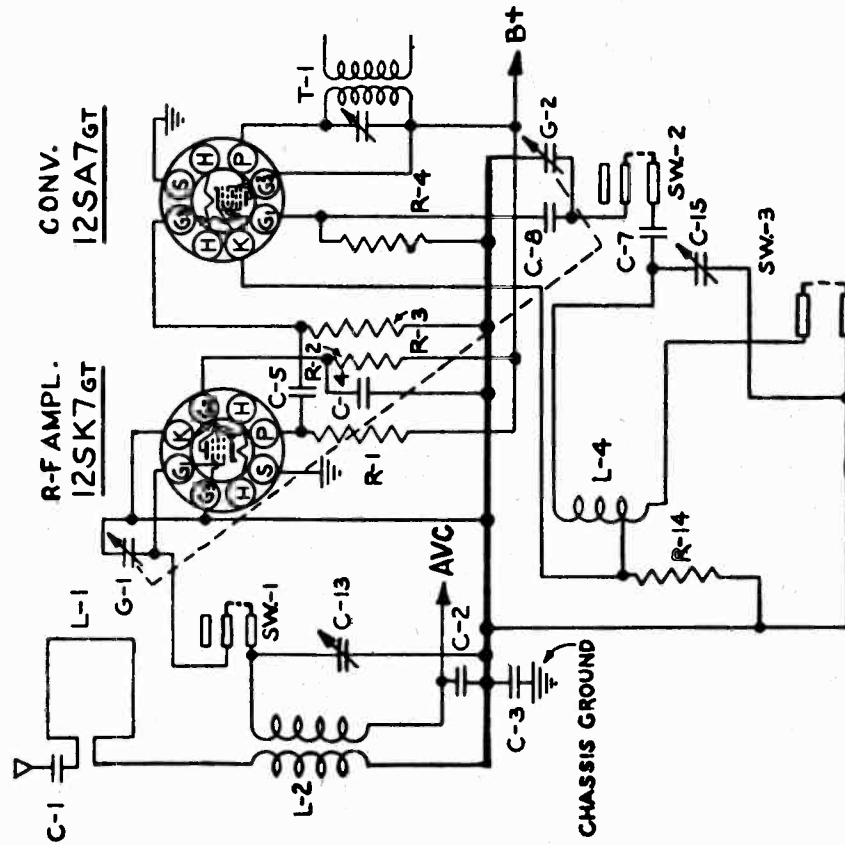
I. F. ALIGNMENT: — Connect the generator lead through a .1 MFD Condenser to the terminal lug on the "Antenna" section of the gang condenser. The ground lead from the generator should be connected to the gang frame. Set the generator at 455 KC. Adjust the trimmer screws in the 1st and 2nd I. F. cans (See Fig. 1) until a maximum reading is noted on the output meter.

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

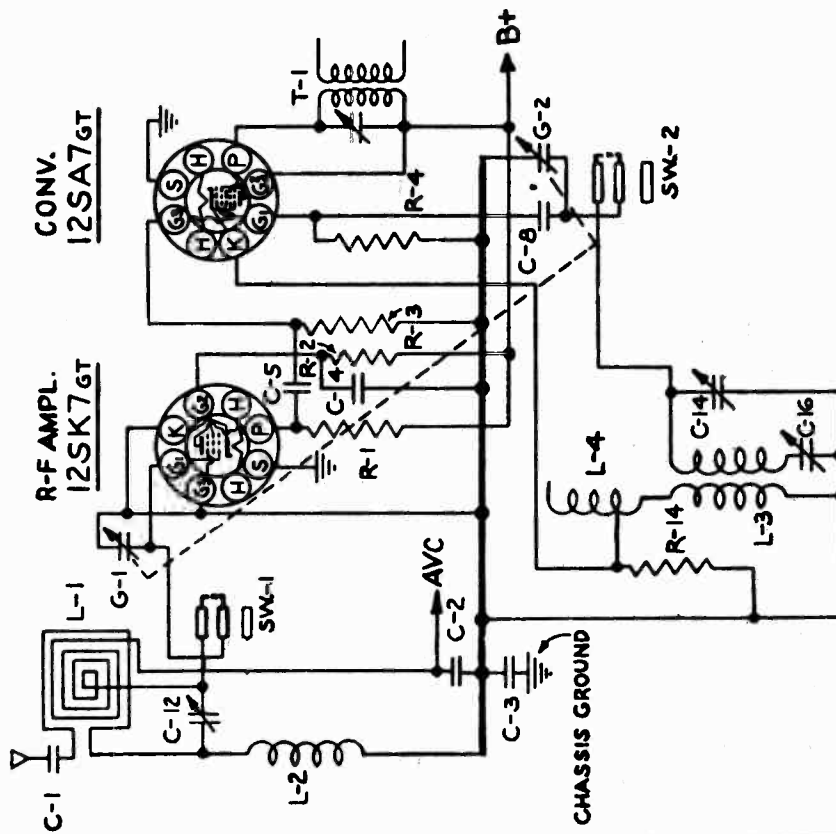
BC. OR BROADCAST ALIGNMENT: — With the generator leads still connected as in I. F. Alignment, rotate the tuning condenser to complete minimum capacity. Set the generator to 1730 KC. Adjust the BC. oscillator trimmer until the signal is tuned in. Next remove the hot lead of the generator from the "Ant" section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Set the generator to 1400 KC and rotate the tuning condenser until the signal is tuned in. Adjust the BC. antenna trimmer until a maximum reading is noted on the output meter. Set the generator to 600 KC and turn the tuning control until the signal is tuned in. Rock the tuning control back and forth slowly and at the same time adjust the 600 KC pad, slowly to the right or left until a maximum reading is noted on the output meter. It is advisable to return to the 1730 KC adjustment and re-check that setting to make sure it has not changed while padding at 600 KC.

S. W. OR SHORT WAVE ALIGNMENT: — Set the generator at 18.3 MC. Turn the receiver band switch to short band position. Turn the tuning condenser to complete minimum capacity. The generator leads should be connected to the antenna lead wire that projects from the back of the loop antenna through a 400 Ohm resistor. Adjust the S. W. oscillator trimmer slowly until the 18.3 MC signal is tuned in. At this point, it will be well to make sure that the fundamental signal is turned in. Turn up the generator output and tune the receiver to approximately 17.3 MC. At this point the 18.3 MC signal will be heard again but much weaker. This is the image frequency. If the image is not heard, then turn the tuning condenser back to complete minimum and readjust the S. W. oscillator trimmer. Remember, the image must always be heard (at 2 times the I. F. frequency in KC) lower the frequency than the fundamental signal. After the oscillator has been properly set, tune the signal generator to 16 MC and rotate the tuning control until the signal is tuned in. Adjust the S.W. antenna trimmer until a maximum reading is noted on the output meter. It is advisable to rock the gang slowly while adjusting the antenna trimmer. Set the generator to 6 MC and tune the signal in on the receiver. Check the alignment at this frequency. No adjustment should be necessary as the coils have been carefully checked before leaving the factory. A fixed oscillator padding condenser is used at 6 MC.

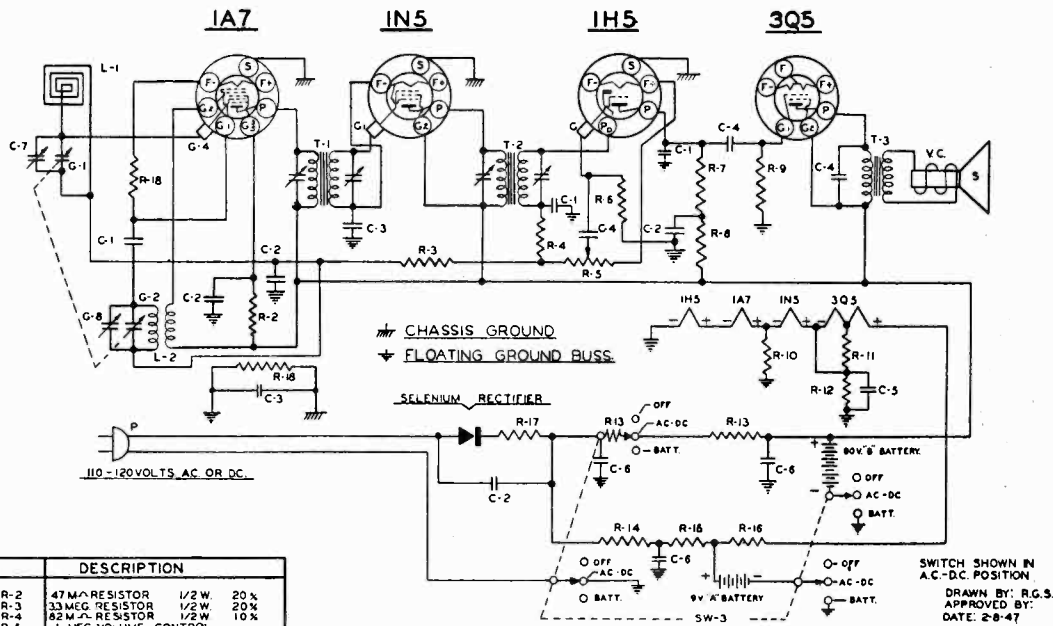
PART NO.	DESCRIPTION
IR-22	3900 Ω RESISTOR 1/2 W. 10%
IR-8	22000 Ω RESISTOR 1/2 W. 10%
IR-2	47000 Ω RESISTOR 1/2 W. 20%
IR-10	22000 Ω RESISTOR 1/2 W. 20%
IR-9	22000 Ω RESISTOR 1/2 W. 20%
IR-4	22000 Ω RESISTOR 1/2 W. 20%
IR-24	1000 Ω RESISTOR 1/2 W. 20%
IR-23	3.9 MEG. RESISTOR 1/2 W. 20%
IR-13	2 MEG. RESISTOR 1/2 W. 20%
IR-5	220 Ω RESISTOR 1/2 W. 10%
IR-11	47000 Ω RESISTOR 1/2 W. 20%
IR-17	39 Ω RESISTOR 1/2 W. 20%
IR-21	330 Ω RESISTOR 1/2 W. 10%
VC-3	1 MEG. VOLUME CONTROL
VC-1	25M Ω TONE CONTROL & SW.
IR-6	470 Ω RESISTOR 1/2 W. 10%
PC-7	.01 MFD. CONDENSER 400 V.
PC-5	.05 MFD. CONDENSER 400 V.
PC-9	.25 MFD. CONDENSER 400 V.
PC-8	.1 MFD. CONDENSER 400 V.
MC-3	.0022 MFD. MICA COND. 500V
MC-2	.0001 MFD. MICA COND. 500V
MC-1	.00475 MFD. MICA COND. 3%
MC-4	.00005 MFD. MICA COND. 500V
EC-4	40 MFD.
TC-10	40 MFD. 150 V. ELECTROLYTIC
TC-12	40 MFD.
TC-7	LOOP ANTENNA TRIMMER
TC-9	S.W. ANTENNA TRIMMER
TC-1	BC. OSC. TRIMMER
TC-1	S.W. OSC. TRIMMER
GC-1	BC. OSC. PADDING COND.
G-1	GANG CONDENSER
G-2	GANG CONDENSER
SW-1	BAND SWITCH
SW-2	BAND SWITCH
SW-3	BAND SWITCH
SW-4	A.C. SW. ON TONE CONTROL
LI-1	INPUT I.F. TRANSFORMER
T-1	OUTPUT I.F. TRANSFORMER
LI-2	OUTPUT SPK. TRANSFORMER
T-3	VOICE COIL
VC	PM. SPEAKER
PB-1	PL. PILOT BULB #47
CO-1	P. LINE CORD
LL-2	L-1 LOOP ANTENNA
LA-2	L-2 S.W. ANTENNA COIL
LO-3	L-3 B.C. OSC. COIL
LO-4	L-4 S.W. OSC. COIL
TU-4	12 SK7GT 12 SA7GT 12 SK7GT 12 SQ7GT 35L6GT 35Z5GT



BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE
SHORT WAVE BAND



BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND



PART NO.	DESCRIPTION
IR-10	R-2 47 M Ω RESISTOR 1/2W 20%
IR-23	R-3 33 MEG RESISTOR 1/2W 10%
IR-31	R-4 82 M Ω RESISTOR 1/2W 10%
VC-2	R-5 1 MEG VOLUME CONTROL
IR-3	R-6 10 MEG RESISTOR 1/2W 20%
IR-12	R-7 1 MEG RESISTOR 1/2W 20%
IR-11	R-8 470 M Ω RESISTOR 1/2W 20%
IR-13	R-9 2.2 MEG RESISTOR 1/2W 20%
IR-32	R-10 560 Ω RESISTOR 1/2W 10%
IR-33	R-11 270 Ω RESISTOR 1/2W 10%
IR-21	R-12 330 Ω RESISTOR 1/2W 10%
IR-39	R-13 620 Ω RESISTOR 1/2W 5%
WR-3A	R-14 1050 Ω CANDOHM RESISTOR
	R-15 40 Ω
IR-35	R-16 82 Ω WIREWOUND RESISTOR 2W 10%
IR-20	R-18 220 M Ω RESISTOR 1/2W 20%
MC-2	C-1 100 MMF CONDENSER [MICA]
PC-5	C-2 .05 MFD CONDENSER 400V
PC-8	C-3 .1MFD CONDENSER 400V
PC-6	C-4 .005 MFD CONDENSER 600V

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
EC-6	C-5 70 MFD 10V ELECTROLYTIC	T-3	OUTPUT SPEAKER TRANSFORMER
EC-4	C-6 40-40-40-150V ELECTROLYTIC	VC	VOICE COIL
TC-7	C-7 OSC. TRIMMER	S	P.M. SPEAKER
	G-8 OSC. TRIMMER	SW-5	4 POLE 3 POSITION
GC-4	C-2 GANG CONDENSER	SR-1	SELENIUM RECTIFIER
LL-10	C-1 LOOP ANTENNA	TU-11	1A7-1N5-1H5-3Q5
LO-8	L-2 OSC. COIL	'A' BATTERY	9 VOLTS
L1-3	T-1 INPUT I.F. TRANSFORMER	'B' BATTERY	90 VOLTS
L1-4	T-2 OUTPUT I.F. TRANSFORMER		
CO-1	P LINE CORD		

POWER SOURCES: This receiver is designed for operation on either an external power source or on the enclosed batteries.

AC OR DC OPERATION: This receiver may be operated on 50 to 60 cycle, 110 to 125 volt AC current or 110 to 125 DC current.

CAUTION: Never plug this receiver into a 220 volt line as this will seriously damage the component parts which have been designed for 110 to 125 volt operation only.

To operate on AC or DC open the small door at the lower right hand corner in the back of the cabinet. Pull out the power cord and plug into a convenient outlet of the proper voltage and current. Follow instructions under "Controls."

To operate on the enclosed batteries, follow instructions under "Control."

CONTROLS: This receiver has three control knobs which are located on the front panel of the cabinet.

STATION SELECTOR KNOB: The right hand knob is the station selector. Rotate this knob to the right or left to select your desired station. The dial scale is calibrated in kilocycles. By mentally adding a zero to the numbers on the scale, the result will be read directly in (KC) kilocycles. (i.e., 60 plus 0 equals 600 KC or 140 plus 0 equals 1400 KC).

POWER SELECTOR SWITCH: The center knob is the power selector. It has three positions which are indicated on the front panel. The extreme left hand position is the "OFF" position. The small dot on this knob must point to "OFF" when the receiver is not in use. The center position is "AC-DC" and is used when it is desired to operate the receiver from a power line source. The extreme right hand position is "BATT" and is used when it is desired to operate on the enclosed batteries.

AC OPERATION: When an AC power source is used, set the power selector knob to "AC-DC" after the power cord has been plugged into a convenient outlet. The receiver is now ready for operation.

DC OPERATION: If the receiver does not operate after a few seconds, reverse the power cord plug in the outlet and it will operate properly.

BATTERY OPERATION: The power cord is not used for battery operation and may be hanked and put back in the cabinet. Set the power control knob to "BATT" and the receiver is ready for operation on the enclosed batteries.

CAUTION: When the receiver is not in use, the power selector knob must be turned to "OFF." If the knob is allowed to remain in "BATT" position, the batteries will be in use constantly. The volume control does not control the batteries and they are still in operation even though the volume control is turned all the way off.

VOLUME CONTROL: The left hand knob is the volume control. After the power selector knob has been properly set and the receiver is in operation, rotate the volume control knob to the right to increase volume or to the left to decrease volume.

BATTERY SUPPLIERS

The batteries for this receiver may be purchased from any reliable radio dealer.

For proper operation of this receiver, you must use, two (2) 4 1/2 Volt "A" batteries, and two (2) 45 Volt "B" batteries.

The following is a table of manufacturers and their battery type number.

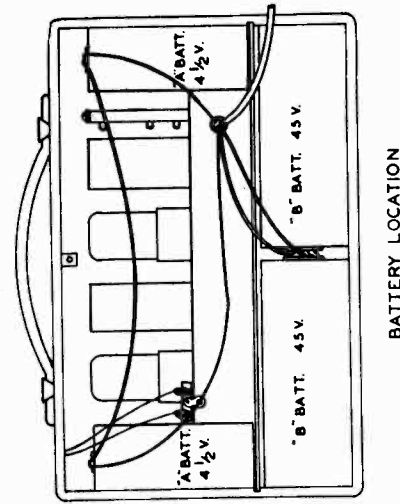
"B" BATTERIES
(2 Required)

Mfgt.	Volts	Type No.
Burgess	45	"B" M30
General	45	"B" W30B
Bright Star	45	"B" 3033
Usalite	45	"B" 640
Rayovac	45	"B" P7880
Eveready	45	"B" 482

"A" BATTERIES
(2 Required)

Burgess	4 1/2	"A" G3
General	4 1/2	"A" 3H3
Bright Star	4 1/2	"A" 361
Usalite	4 1/2	"A" 683
Rayovac	4 1/2	"A" P83A
Eveready	4 1/2	"A" 746

MODEL - 5027



BATTERY LOCATION

BATTERY SERVICING

(See Figure No. 1)

To replace batteries, loosen and remove the two screws at the left and right hand corners of the cabinet back. Remove the back and pull out the plug from each battery. Never pull on the wires connected to the plugs as they may break. Always grasp the plug form between the fingers, or use a flat blade to pry out the plug. Observe with care the position of the batteries and plugs when replacing. Be sure that batteries and plugs are replaced as shown in the "Battery Location" diagram. (Figure No. 1)

After the batteries have been installed, replace the back. Make sure that the two wires from the loop antenna are held in place between the brackets of the cabinet and the back by the two fastening screws.

ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1650 KC. An output meter should be connected across the speaker.

The volume control of the receiver should be turned to maximum during the I. F. and all subsequent alignment and the generator output as low as possible to prevent the A. V. C. from working and giving false readings.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser through a .1 MFD. condenser. The ground lead from the generator must be connected to "B" minus under the chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the trimmers of the first and second I. F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1650 KC. Adjust the OSC. trimmer until the 1650 KC signal is tuned in. The gang condenser must be at complete minimum capacity for this adjustment.

THIRD STEP: Remove the generator leads from the gang condenser and replace the chassis in the cabinet. Loosely couple the generator to the receiver loop by making a complete turn of wire over the outside of the cabinet. With the receiver and generator set at 1400 KC, increase the generator output. Adjust the ANT. trimmer through the hole which is provided in the top of the cabinet until a maximum signal is noted on the output meter. The ANT. trimmer hole in the top of the cabinet is covered by a small plug button. Replace this button after adjustment has been made. No further adjustment should be made as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

TUBE AND TRIMMER LOCATION
MODEL - 5027

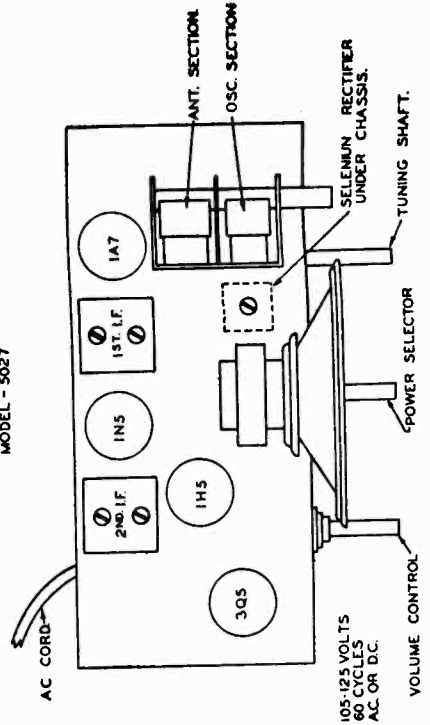


FIGURE - 1

Tl-50

POWER SOURCES: This receiver is designed for operation on either an external power source or on the enclosed batteries.

AC OR DC OPERATION: This receiver may be operated on 50 to 60 cycle, 110 to 125 volt AC current or 110 to 125 DC current.

CAUTION: Never plug this receiver into a 220 volt line as this will seriously damage the component parts which have been designed for 110 to 125 volt operation only.

To operate on AC or DC open the small door at the right in the back of the cabinet. Pull out the power cord and plug into a convenient outlet of the proper voltage and current. Follow instructions under "Controls."

To operate on the enclosed batteries, follow instructions under "Controls."

ANTENNA: This receiver is equipped with a sensitive loop antenna and requires no external antenna wire. However, due to the directional qualities of the loop some stations may appear to be weak in reception. This condition may be remedied by rotating or changing the position of the receiver.

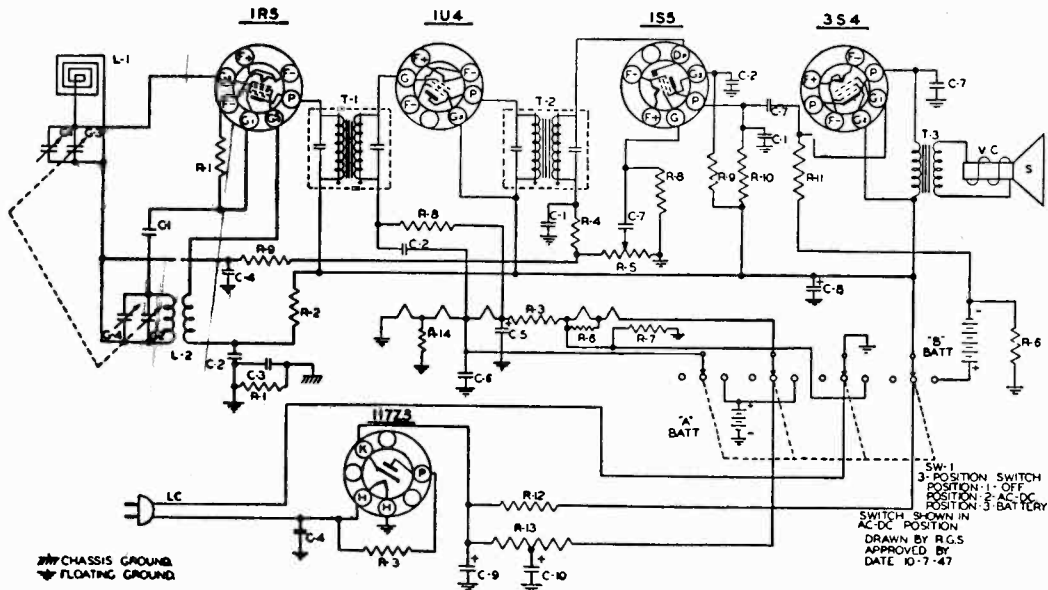
CONTROLS: This receiver has three control knobs which are located on the front panel of the cabinet.

STATION SELECTOR KNOB: The right hand knob is the station selector. Rotate this knob to the right or left to select your desired station. The dial scale is calibrated in kilocycles. By mentally adding a zero to the numbers on the scale, the result will be read directly in (KC) kilocycles. (i.e., 60 plus 0 equals 600 KC or 140 plus 0 equals 1400 KC),

POWER SELECTOR SWITCH: The left hand knob is the power selector. It has three positions which are indicated on the front panel. The extreme left hand position is the "OFF" position. The small dot on this knob must point to "OFF" when the receiver is not in use. The center position is "AC-DC" and is used when it is desired to operate the receiver from a power line source. The extreme right hand position is "BATT" and is used when it is desired to operate on the enclosed batteries.

AC OPERATION: When an AC power source is used, set the power selector knob to "AC-DC" after the power cord has been plugged into a convenient outlet. The receiver is now ready for operation.

DC OPERATION: If the receiver does not operate after a few seconds, reverse the power cord plug in the outlet and it will operate properly.



PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
1R-20	R-1 220M RESISTOR 1/2W 20 %	PC-3	C-6 1 MFD. CONDENSER 200 W.V	LI-5	T-1 INPUT IF TRANSFORMER
1R-37	R-2 80M RESISTOR 1/2W 20 %	PC-6	C-7 .005MFD CONDENSER 600 W.V	LI-5	T-2 OUTPUT IF TRANSFORMER
1R-31	R-3 80M RESISTOR 1/2W 20 %	C-8	40 MFD.	EC-14	C-8 40 MFD. 150WV ELECTROLYTIC
1R-33	R-4 80M RESISTOR 1/2W 20 %	C-9	40 MFD.	C-9	20 MFD.
1R-35	R-5 270 RESISTOR 1/2W 10 %	C-10	20 MFD.	G-1	ANT TRIMMER
1R-39	R-6 620 RESISTOR 1/2W 5 %	G-2	GANG CONDENSER	G-2	GANG CONDENSER
1R-38	R-7 10M RESISTOR 1/2W 5 %	G-3	OSC TRIMMER	G-3	OSC TRIMMER
1R-36	R-8 10M RESISTOR 1/2W 5 %	G-4	OSC TRIMMER	LC	LC LINE CORD
1R-32	R-9 2.2M RESISTOR 1/2W 5 %	LC	LC LINE CORD	SW-8	SW-1 4 POLE-3 POSITION SWITCH
1R-34	R-10 3000 RESISTOR 1/2W 5 %	SW-8	SW-1 4 POLE-3 POSITION SWITCH		
1R-30	R-11 400-1050 CANDORUM RESISTOR 3W 5%				
1R-1	R-14 470 RESISTOR 1/2 20 %				
MC-2	C-1 .001MFD. MICA CONDENSER				
PC-7	C-2 .01MFD. CONDENSER 400WV				
PC-8	C-3 .01MFD. CONDENSER 400WV				
PC-4	C-4 .05 MFD. CONDENSER 400WV				
EC-6	C-5 70MFD. 10WV ELECTROLYTIC				

ALIGNMENT AND SERVICE DATA

(See Fig. No. 2 For Trimmer Location)

Remove chassis from cabinet for alignment.

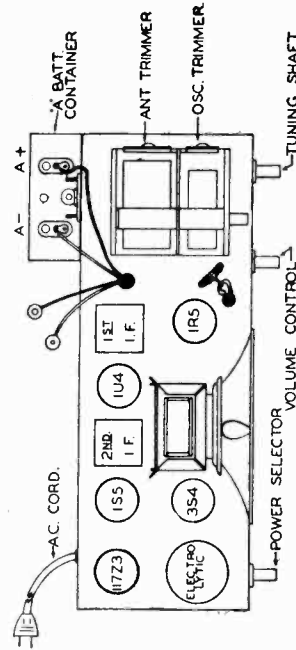
A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1650 KC. An output meter should be connected across the speaker.

The volume control of the receiver should be turned to maximum during the I. F. and all subsequent alignment and the generator output as low as possible to prevent the A. V. C. from working and giving false readings.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser through a .1 MFD. condenser. The ground lead from the generator must be connected to "B" minus under the chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the movable iron cores in the IF cans. These IF adjustments are made in the top and in the bottom of the can under the chassis. Adjust the cores until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1650 KC. Adjust the OSC. trimmer until the 1650 KC signal is tuned in. The gang condenser must be at complete minimum capacity for this adjustment.

THIRD STEP: Remove the generator leads from the gang condenser and replace the chassis in the cabinet. Loosely couple the generator to the receiver loop by making a complete turn of wire over the outside of the cabinet. With the receiver and generator set at 1400 KC, increase the generator output. Adjust the ANT. trimmer through the hole which is provided in the end of the cabinet until a maximum signal is noted on the output meter. The ANT. trimmer hole in the side of the cabinet is covered by a small plug button. Replace this button after adjustment has been made. No further adjustment should be made as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.



MODEL-5028
TUBE AND TRIMMER LOCATION
FIGURE-2

TL-60

BATTERY OPERATION: The power cord is not used for battery operation and may be hanked and put back in the cabinet. Set the power control knob to "BATT" and the receiver is ready for operation on the enclosed batteries.

CAUTION: When the receiver is not in use, the power selector knob must be turned to "OFF." If the knob is allowed to remain in "BATT" position, the batteries will be in use constantly. The volume control does not control the batteries and they are still in operation even though the volume control is turned all the way off.

VOLUME CONTROL: The center knob is the volume control. After the power selector knob has been properly set and the receiver is in operation, rotate the volume control knob to the right to increase volume or to the left to decrease volume.

BATTERY SUPPLIERS

The batteries for this receiver may be purchased from any reliable dealer.

For proper operation this receiver requires two "A" batteries and one "B" battery.

The "A" batteries are size "D" flashlight cells and are made by all battery manufacturers.

The "B" battery is a 67½ volt battery and is made by the following manufacturers:

Eveready 67½ vlt. # 457

Burgess 67½ vlt. # XX45

General 67½ vlt. # W45A

Ray-O-Vac 67½ vlt. # 4367

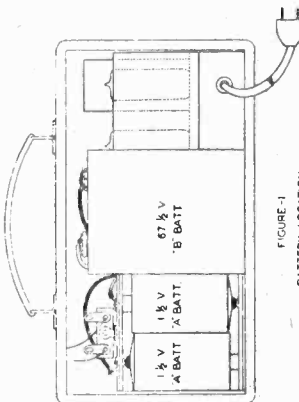


FIGURE-1
BATTERY LOCATION

BATTERY SERVICING

(See Fig. No. 1)

To replace the batteries in this receiver:

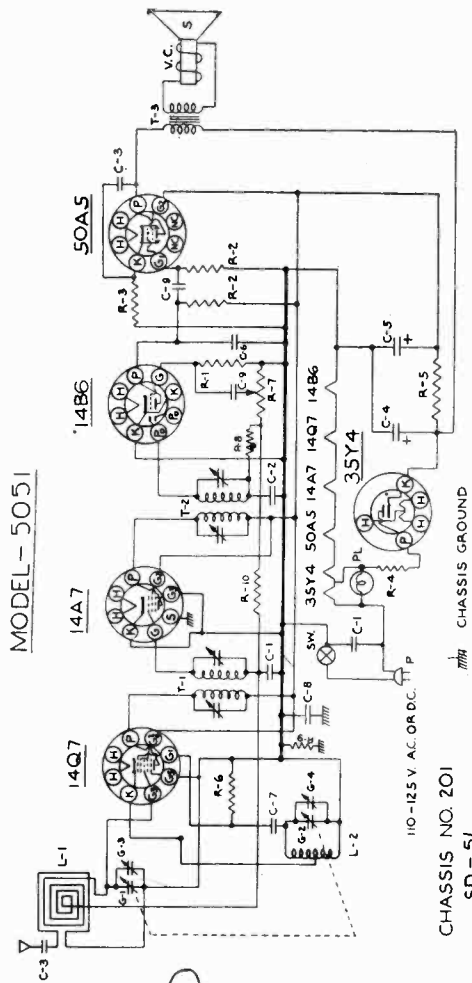
Remove the back.

To the left, looking into the rear of the cabinet is the "A" or flashlight battery container. To the right is the "B" or 67½ volt battery.

To replace the "A" batteries, pull the old batteries out of the container. Replace with fresh batteries, making sure the batteries are inserted according to the diagram on the inside of the container.

To replace the "B" battery, disconnect the snap fastener connectors. Replace with a fresh battery and snap the connectors into place. Replace the battery in the cabinet as shown in Fig. No. 1, making sure that the connector end faces the top of the cabinet.

After the batteries have been installed, replace the back, making sure that the two washers in the bottom of the back fit into the slot near the bottom edge of the cabinet.



DATE: 12-6-45 DR: APPROVED:

CHASSIS GROUND

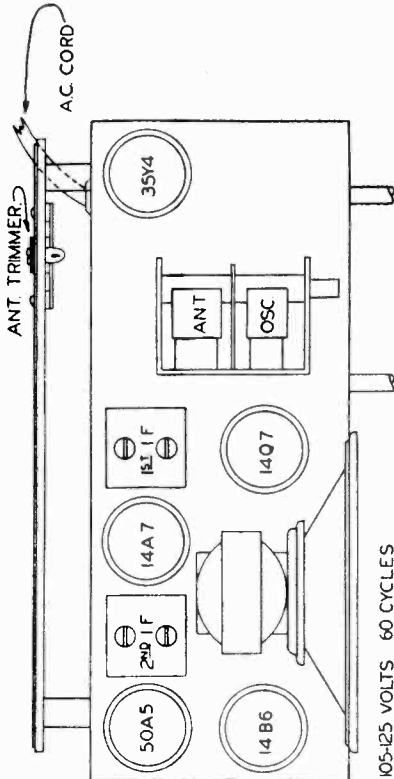
CHASSIS NO. 201

SD - 51

FIGURE - 1.

MODEL - 5051

TUBE AND TRIMMER LOCATION.
ANT. TRIMMER.



105-125 VOLTS 60 CYCLES
AC OR DC

TL - 51

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
IR-13	R-1 22MEG RESISTOR 1/2W 20%	G-4	OSC. TRIMMER COND.	LO-11	OSC. COIL
IR-14	R-2 470M RESISTOR 1/2W 20%	C-1	.05 MFD COND. 400V	L-1-2	INDUCTIVE TRANSFORMER
IR-15	R-3 150A RESISTOR 1/2W 20%	C-2	.0001 MFD MICA COND. 20%	T-2	OUTPUT I.F. TRANSFORMER
IR-16	R-4 47A RESISTOR 1/2W 20%	C-3	.01 MFD COND. 400V	T-3	OUTPUT SPK. TRANSFORMER
VC-1	R-5 2200A RESISTOR 1/2W 20%	C-4	40 MFD 150V ELECTROLYTIC	V.C.	VOICE COIL
G-1	R-6 33MA RESISTOR 1/2W 20%	C-5	20 MFD 50V ELECTROLYTIC	S	PM SPEAKER
C-1	R-7 1 MEG VOLUME CONTROL	C-6	20 MFD 50V ELECTROLYTIC	PL	#47 PILOT BULB
C-2	G-1 GANG CONDENSER	C-7	.000056 MFD MICA 20%	SW	A.C. SW. ON VOL. CONTROL
C-3	G-2 ANT. TRIMMER COND.	C-8	.1 MFD COND. 400V	P	LINE CORD
IR-10	R-8 47M 1/2W 20%	L-1	250MA 1/2W 20%	R-10	33MEG 1/2W 20%
		L-2	250MA 1/2W 20%	C-9	14Q7 14A7 14B6 50A5 35Y4
				C-10	1000MFD 500V

ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies : 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

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

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

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

ALIGNMENT DATA

Remove the chassis from the cabinet. A Signal Generator with the following frequencies is required: 455 KC, 1400 KC and 1720 KC.

The receiver volume control should be turned to maximum during the I.F. and all subsequent alignments to keep the A.V.C. from working and giving false readings. Turn the tone control to complete left hand position. Keep the generator output as low as possible to prevent overloading.

Connect an output meter across the voice coil of the speaker.

Connect a 20,000 ohm resistor across the loop connector terminals to reflect the proper loop impedance.

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

SECOND STEP: With the leads from the generator connected in the same manner as in I.F. alignment, adjust the signal generator to 1720 KC. The "OSC." trimmer is located on the front section of the gang condenser. Adjust this trimmer until the signal is tuned in. The gang condenser should be at complete minimum capacity for this setting.

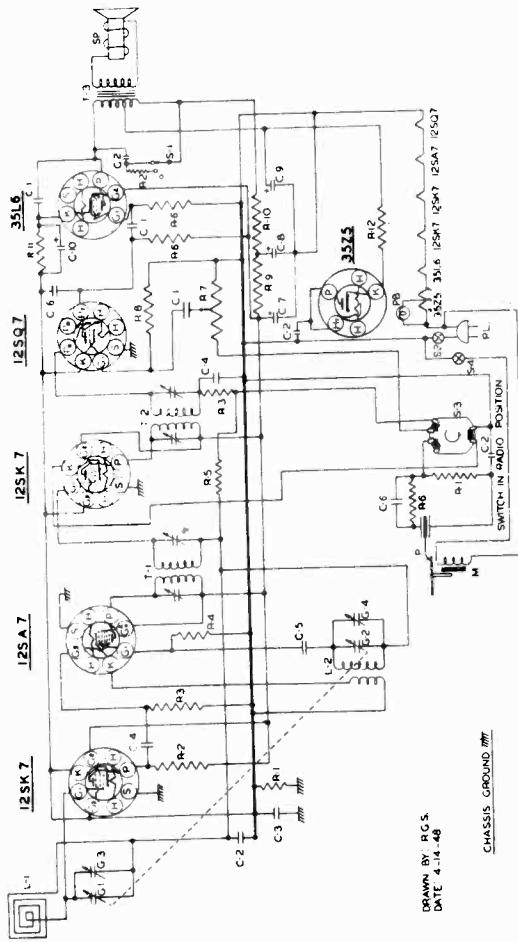
THIRD STEP: Remove the generator leads from the chassis. Remove the 20,000 ohm resistor from the loop connector terminals. Reinstall the chassis in the cabinet, connect the loop leads, motor plug and phono pickup leads.

Connect the generator leads to a transmitting loop, made of a few turns of wire, and loosely couple to the receiver loop antenna which is located on the back end of the cabinet. Adjust the generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The "ANT." trimmer is located on the rear section of the gang condenser. Adjust this trimmer until a maximum signal is noted on the output meter.

No further adjustment should be necessary, unless the receiver has been damaged, as the coils and tuning condenser have been specially handled at the factory to insure proper alignment at the lower frequencies.

MODEL-6041

SD-69-U



DRAWN BY R.G.
DATE 4-14-48

CHASSIS GROUND

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
C-1	10 MFD. CONDENSER 400 V.	IR-13	2.2 MEG. RESISTOR 1/2W 20%
C-2	10 MFD. CONDENSER 400 V.	R-9	470 Ω RESISTOR 1/2W 20%
C-3	1 MFD. CONDENSER 400 V.	R-10	1000 Ω RESISTOR 1 W 10%
PC-8	100 MFD. MICA CONDENSER	IR-14	150 Ω RESISTOR 1/2W 20%
MC-2	400 MFD. MICA CONDENSER	IR-17	33 Ω RESISTOR 1/2W 20%
MC-4	500 MFD. MICA CONDENSER	GC-5	GANG CONDENSER
MC-5	500 MFD. MICA CONDENSER	G-2	ANT. TRIMMER
EC-14	150WV ELECTROLYTIC	G-3	OSC. TRIMMER
C-8	40 MFD.	G-4	OSC. TRIMMER
C-9	40 MFD.	T-1	INPUT IF TRANSFORMER
C-10	10 MFD. 25 WV ELECTROLYTIC	L-1	INPUT IF TUNING COIL
R-1	2500 Ω RESISTOR 1/2W 20%	L-6	ANT. TUNING COIL
R-2	2500 Ω RESISTOR 1/2W 20%	L-7	OSC. COIL
R-3	470 Ω RESISTOR 1/2W 20%	L-17	LOOP ANT.
R-4	470 Ω RESISTOR 1/2W 20%	LO-15	OSC. COIL
R-5	22 Ω RESISTOR 1/2W 20%	SPH-2	5" PM. SPEAKER
R-6	33 MEG. RESISTOR 1/2W 20%		
R-7	400 Ω RESISTOR 1/2W 20%		

PART NO.	DESCRIPTION
SW-2	5-1 TONE SWITCH
SW-1	5-2 SWITCH RADIO VOLUME CONTROL
AC-M-7	5-3 SWITCH ON RECORD CHANGER
AC-PU-7	5-4 SWITCH ON RECORD CHANGER
CO-2	M P RECORD CHANGER MOTOR
	PB CRYSTAL PICKUP ARM CARTRIDGE SH
	PL #47 PILOT BULB
	LINE CORD

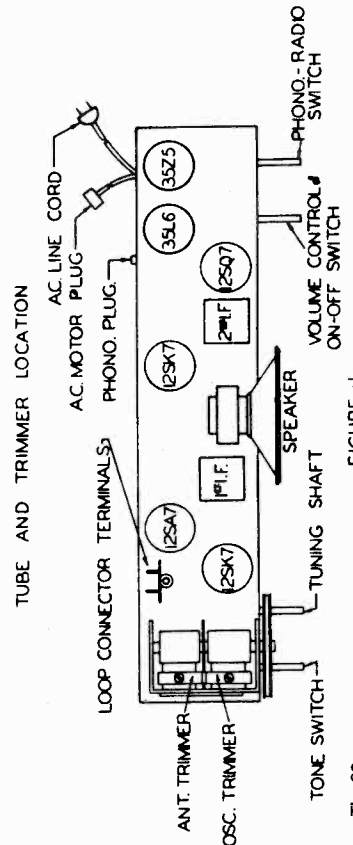
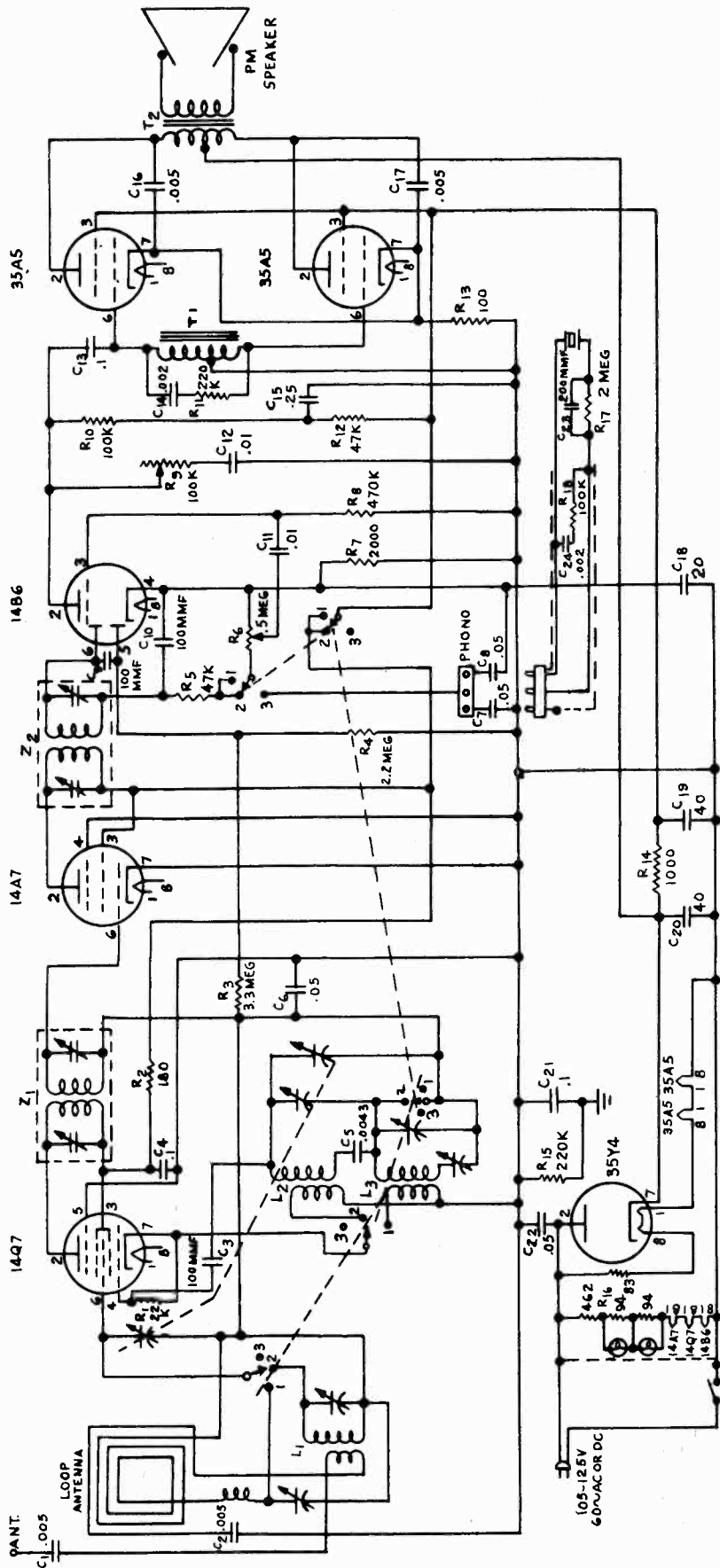


FIGURE -1



NOTE (1) PHONO MOTOR PLUG IS ON RADIO-
PHONO COMBINATION MODELS ONLY.

Short Wave Reception:

With a good antenna connected to it this receiver is able to pick up foreign and domestic short wave programs. International broadcasts may be heard in the following bands.

- 49 meter 6.0 — 6.2 Mc
- 31 meter 9.5 — 9.7 Mc
- 25 meter 11.7 — 11.9 Mc
- 19 meter 15.1 — 15.35 Mc
- 16 meter 17.75 — 17.85 Mc

Amateur radio stations may be heard on the 20 meter band from 14.0 to 14.4 Mc.

I. F. PEAK 455 KC

Tube Complement:

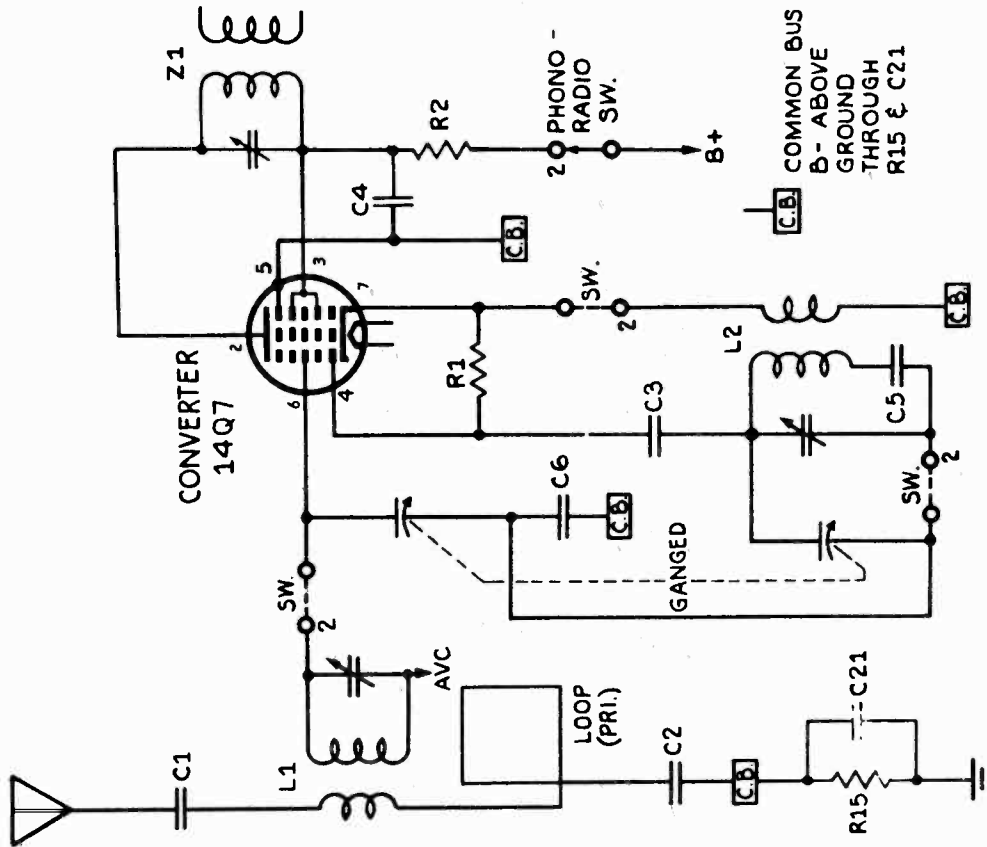
- 1 type 14Q7 Oscillator-Converter
- 1 type 14A7 I.F. Amplifier
- 1 type 14B6 Det. A.V.C. and Amplifier
- 2 type 35A5 Power Amp.
- 1 type 35Y4 Rectifier

radio receiver designed to operate on:

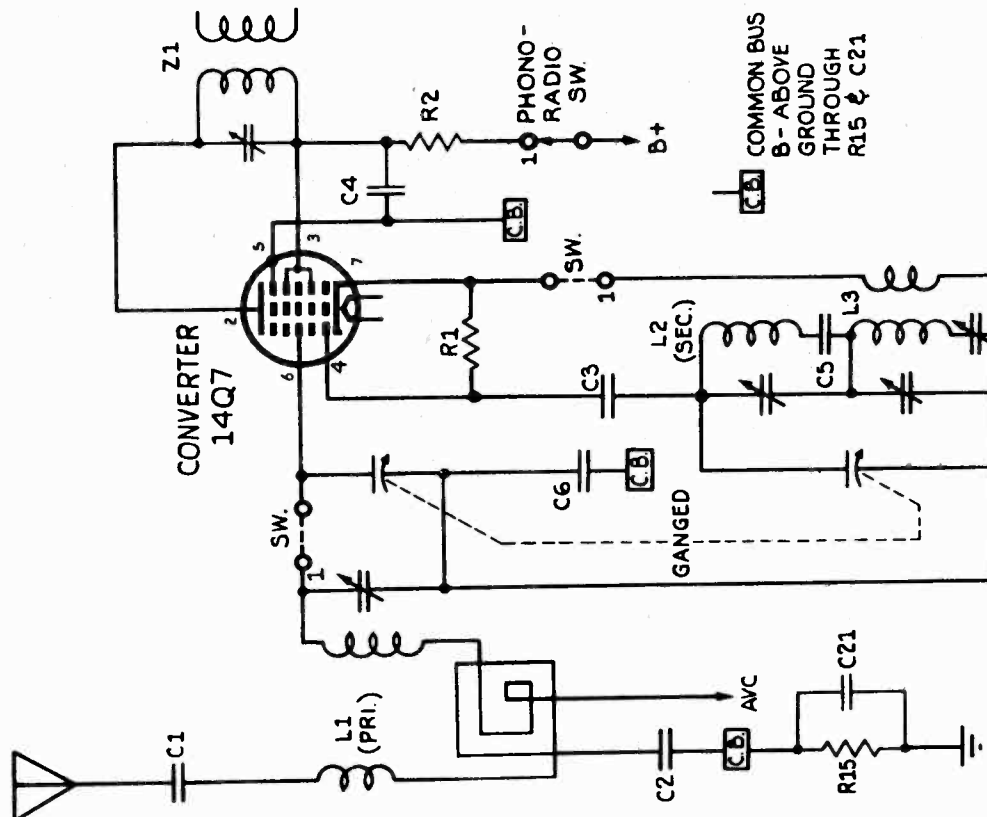
- 1. 105-125 volts A.C. 60 cycles.
 - 2. 105-125 volts D.C.*
- Power drawn is 50 watts.

SPIEGEL

MODELS 7541, 7547,
8714, 8715, 8718



BAND - SWITCH SHOWN
AT 2ND POSITION.
SHORT WAVE BAND
5.5 - 18 MC.



BAND - SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND

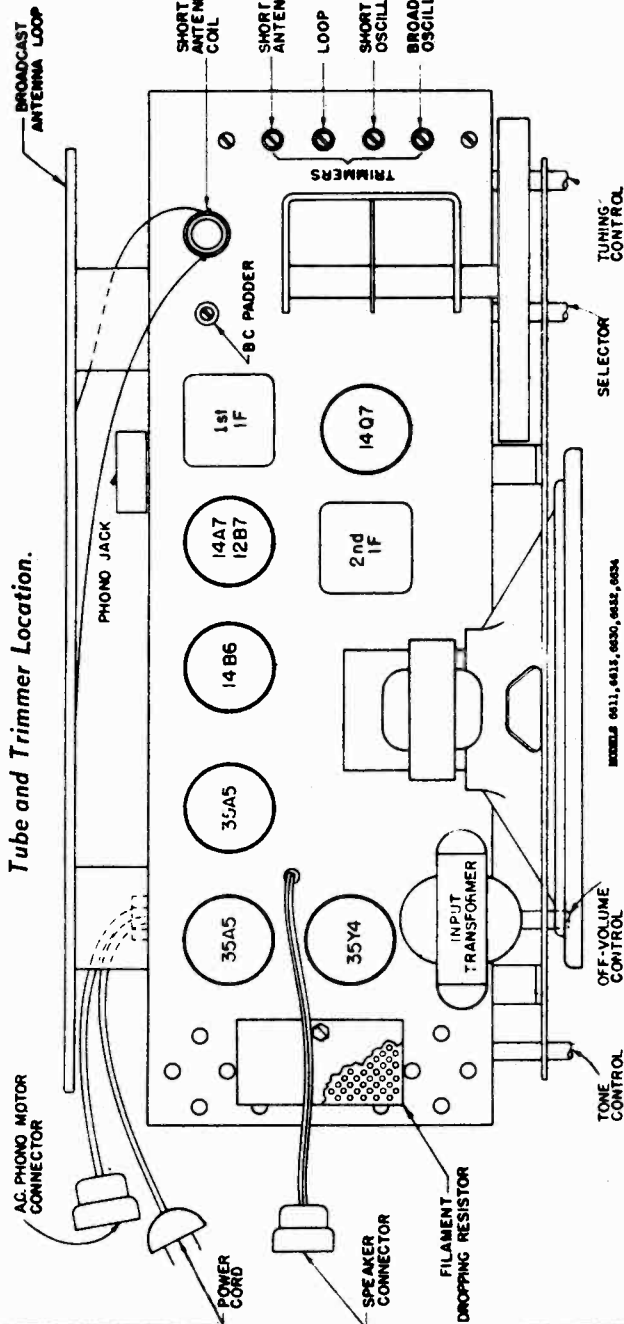
MODELS 7541, 7547,
8714, 8715, 8718

SPIEGEL

Parts List:

- C 1—005 Mfd. 400V
- C 2—005 Mfd. 400V
- C 3—100 Mmf. 20%
- C 4—1 Mfd. 200V
- C 5—0043 Mfd. 5%
- C 6—05 Mfd. 200V
- C 7—05 Mfd. 200V
- C 8—05 Mfd. 200V
- C 9—100 Mmf. 20%
- C 10—100 Mmf. 20%
- C 11—01 Mfd. 400V
- C 12—01 Mfd. 400V
- C 13—1 Mfd. 200V
- C 14—002 Mfd. 200V
- C 15—25 Mfd. 200V
- C 16—005 Mfd. 400V
- C 17—005 Mfd. 400V
- C 18—20 Mfd. Electrolytic (*CA25.020)
- C 19—40 Mfd. Electrolytic (*CA25.020)
- C 20—40 Mfd. Electrolytic (*CA25.020)
- C 21—1 Mfd. 200V
- C 22—05 Mfd. 400V
- C 23—200 Mmf. 20%
- C 24—002 Mfd. 200V paper
- Z 1—1st I.F. Transformer (*ZC2.191-1)
- Z 2—2nd I.F. Transformer (*ZC2.191-2)
- T 1—Audio Choke (*TA15.018)
- R 1—22K 1/4W
- R 2—180 ohms 1/4W
- R 3—3.3 Meg 1/4W
- R 4—2.2 Meg 1/4W
- R 5—47K 1/4W
- R 6—5 Meg Variable (*RA9.066)
- R 7—2000 ohms 1/4W
- R 8—470K 1/4W
- R 9—100K Variable (*RA9.068)
- R 10—100K 1/4W
- R 11—220K 1/4W
- R 12—47K 1/4W
- R 13—100 ohms 1W
- R 14—1000 ohms 1W
- R 15—220K 1/4W
- R 16—Wire Wound (*RA14.026)
- R 17—2 Meg 1/4W
- R 18—100K 1/4W

Pilot Light, Mazda No. 47, 150 Ma.
*Mfr. Part No.



NOTE: FOR PHONO COMBINATION MODELS, SPEAKER IS REMOVED FROM CHASSIS & FILAMENT DROPPING RESISTOR IS LOCATED IN AREA WHERE SPEAKER IS SHOWN.
SPEAKER CONNECTOR IS USED ON PHONO COMBINATION MODELS ONLY.

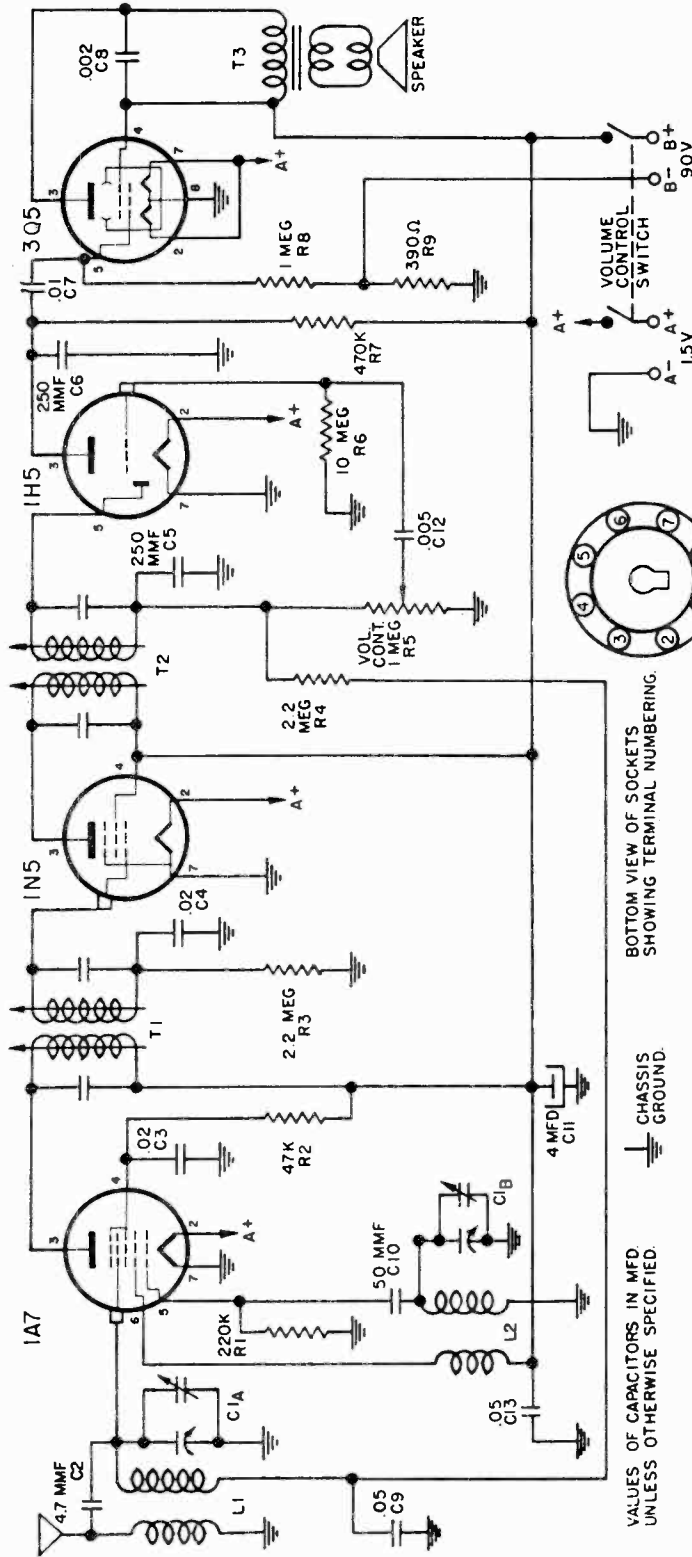
VI. ALIGNMENT PROCEDURE:

Steps	Connect output of Generator to	Tune Osc. to	Band Switch on	Tune Radio Dial to	Adjust the following for Max. Peak Output
1	Tuning condenser (ant.) in series with .01 mfd	455 Kc	Bcet	Quiet point on high frequency end of dial	1st and 2nd IF transformers
2	Antenna term. of Ant. loop in series with 100 mfd.	1660 Kc	Bcet	Full clockwise (out of mesh)	B.C. Osc. Trimmer
3	Same	1500 Kc	Bcet	Signal (1500 Kc)	B.C. loop trimmer
4	Same	600 Kc	Bcet	600 Kc	Osc. padder (rock in)
5	Same	1660 Kc	Bcet	Full clockwise (out of mesh)	B.C. Osc. Trimmer
6	Ant. term. in series with 100 mfd and 400 ohm resistor	18.6 Mc	S.W.	Full clockwise (out of mesh)	S.W. Osc. Trimmer
7	Same	18.0 Mc	S.W.	Signal (18.0 Mc)	S.W. Ant. Trimmer (rock in)

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

SPiegel

MODEL 13203



BOTTOM VIEW OF SOCKETS SHOWING TERMINAL NUMBERING.

CHASSIS GROUND

VALUES OF CAPACITORS IN MFD. UNLESS OTHERWISE SPECIFIED.

PARTS LIST

Code	Part No.	DESCRIPTION	Code	Part No.	DESCRIPTION	Code	Part No.	DESCRIPTION
C1A, C1B	B19-188	Variable Condenser (For model X132)	R1	A60-667	220K Ohm 1/2 Watt Resistor		B79-352	Speaker, 5" P. M.
C2	B19-188	Variable Condenser (For model YX132)	R2, R3, R4	A60-665	47K Ohm 1/2 Watt Resistor		A75-60	Tuning Shaft
C3, C4	A16-155	4.7 MMFD Condenser	R5	A20-170	2.2 Megohm 1/2 Watt Resistor		A45-118	Battery Plug
C5, C6	A16-155	.02 MFD 400 Volt Condenser	R6	A60-663	10 Megohm 1/2 Watt Resistor		B87-515	Dial Scale
C7	A16-178	.01 MFD 400 Volt Condenser	R7	A60-662	470K Ohm 1/2 Watt Resistor		58-31	Dial Pointer
C8	A16-155	.01 MFD 400 Volt Condenser	R8	A60-668	1 Megohm 1/2 Watt Resistor		48-21	Dial Cryst. I
C9, C13	A16-155	.002 MFD 600 Volt Condenser	R9	A60-665	300 Ohm 1/2 Watt Resistor		A52-246	Knob, Ivory
C10	A16-132	.05 MFD 200 Volt Condenser	L1	A10-414	Antenna Coil (For model X132)		A42-436	Cabinet, Walnut, Plastic
C11	A15-175	50 MMFD Mica Condenser	L2	A10-485	Antenn. Coil (For model YX132)		D42-431	Cabinet, Walnut, Wood
C11	A16-273	4 MFD 150 Volt Electrolytic C. ndensar	T1, T2	A10-505	Oscillator Coil (For model X132)		D42-437	Cabinet, Walnut, Wood
C12	A16-153	.005 MFD 600 Volt Condenser	T3	A10-306	1-st and 2nd I. F. Tr:n:former		A52-245	Knob, Walnut
				B80-232	Output Transformer			

540 kilocycles to 1725 kilocycles (K.C.). The tubes

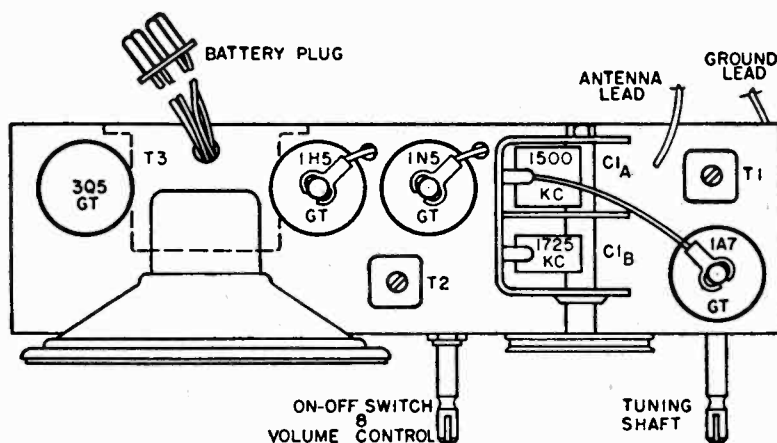
1A7 GT—Osc. Converter

1H5 GT—AVC Det. Audio Amplifier

1N5 GT—I. F. Amplifier

3Q5 GT—Power Output

This receiver has been designed to operate on a self-contained battery containing both the "B" battery (90 Volts) and the "A" battery (1½ Volts) such as General #60B6L.



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 IA7 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 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.

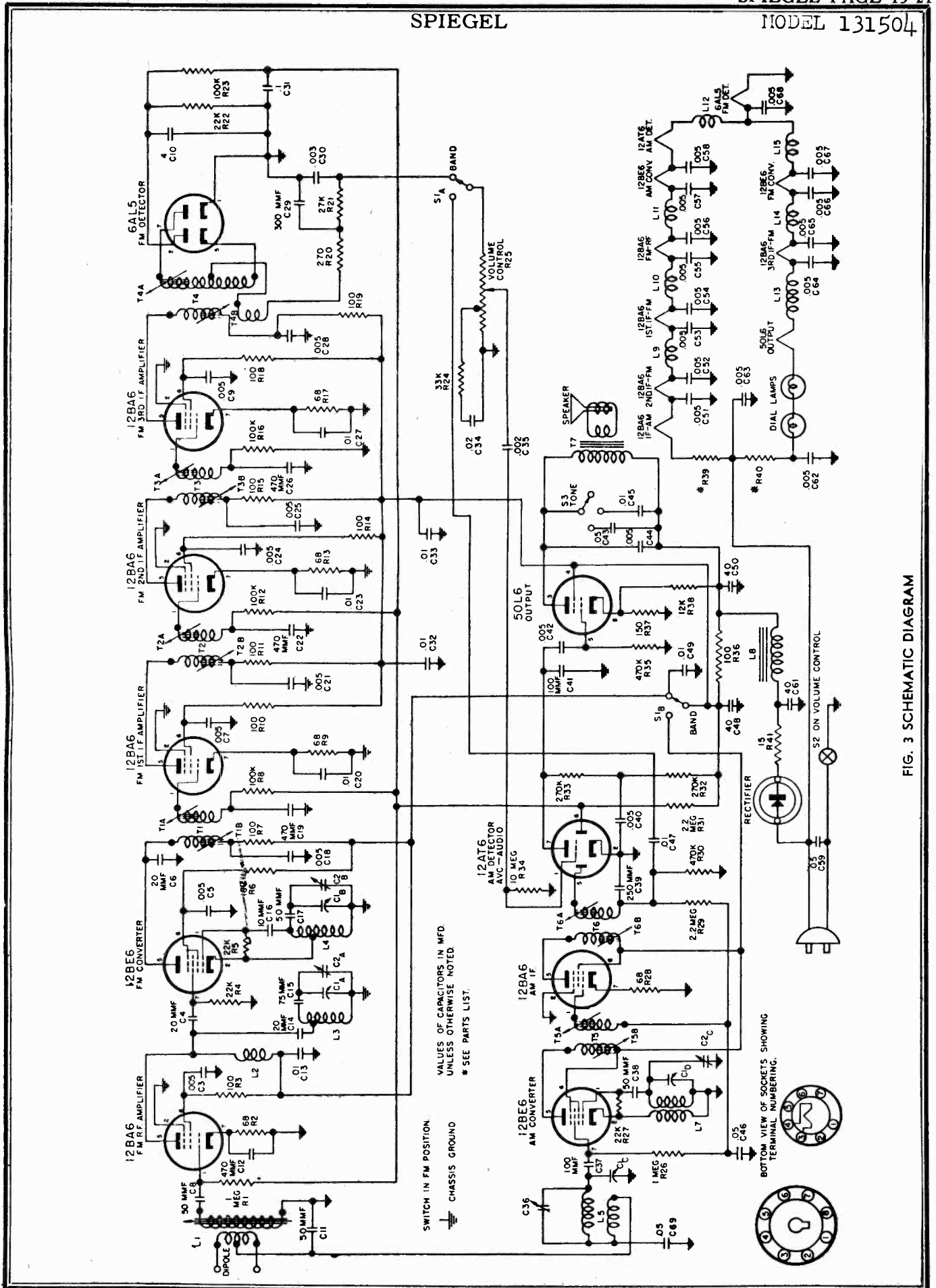


FIG. 3 SCHEMATIC DIAGRAM

ALIGNMENT PROCEDURE

STEPS	RECEIVER DIAL SETTING	BAND SWITCH POSITION	SIGNAL GENERATOR FREQUENCY	DUMMY ANTENNA	SIGNAL GENERATOR CONNECTIONS	OUTPUT INDICATOR	TRIMMER ADJUSTMENT	TRIMMER FUNCTION	REMARKS
1	Minimum capacity	AM	455 KC 400 cycle AM	.1 MFD	High side—Grid of AM converter tube (12BE6) Low side—Chassis	Output Meter across voice coil	T5A, T5B T6A, T6B	AM I.F.	Adjust for maximum output
2	"	"	1600 KC 400 cycle AM	.00025 MFD	"	"	C2C	AM Oscillator	Adjust for maximum output
3	1400 KC	"	1400 KC 400 cycle AM	"	High side—One ant. terminal Low side—Other ant. terminal	"	C36 (on back)	AM Antenna	Adjust for maximum output
4	Any position where there is no station interference.	FM	10.7 MC unmodulated .1 volt output.	.1 MFD	High side—Grid of 3rd I.F. amplifier tube (12BA6) Low side—Chassis	Connect V.T.V.M. to plate of Ratio detector tube, pin 2 (6AL5)	T4B	Ratio detector primary	Adjust for maximum negative voltage, about -5 volts
5	"	"	10.7 MC 400 cycle 30% Modulation. (See note A)	"	"	Connect scope to audio take off point (across C30)	T4A	Ratio detector secondary	Adjust for a balanced pattern on scope. See Fig. 4.
6	"	"	"	"	High side—Grid of 2nd I.F. amplifier tube (12BA6) Low side—Chassis	Connect scope across 100K ohm grid return resistor of 3rd I.F. (R16)	T3A, T3B	FM 3rd I.F.	Adjust for maximum gain and best pattern on scope. See Fig. 5 (See note "B" below)
7	"	"	"	"	High side—Grid of 1st I.F. amplifier tube (12BA6) Low side—Chassis	"	T2A, T2B	FM 2nd I.F.	Adjust for maximum gain and best pattern on scope. See Fig. 6.
8	"	"	"	"	High side—Plate of FM R.F. tube, pin 5 (12BA6) Low side—Chassis	"	T1A, T2B	FM 1st I.F.	Adjust for maximum gain and best pattern on scope. See Fig. 7.
9	109 MC	"	109 MC 400 cycle 30% modulation. (22.5 KC Deviation)	150 ohms in each lead.	High side—One ant. terminal Low side—Other ant. terminal	Connect output meter across voice coil	C2B	FM Oscillator	Adjust for maximum output (remove AVC ground)
10	103 MC	"	103 MC 400 cycle 30% modulation. (22.5 KC Deviation)	"	"	"	C2A	FM R.F.	Adjust for maximum output
11	100 MC	"	100 MC 400 cycle 30% modulation. (22.5 KC Deviation)	"	"	"	L1	FM Antenna	Adjust for maximum output

EQUIPMENT USED FOR ALIGNMENT

- Vacuum tube voltmeter.
- AM Signal generator
- FM Sweep generator.
- Oscilloscope.
- Insulated screw driver.
- Dummy antenna:
 - .1 MFD condenser
 - .00025 MFD mica condenser
 - 150 ohm resistor (2)
- Output meter.

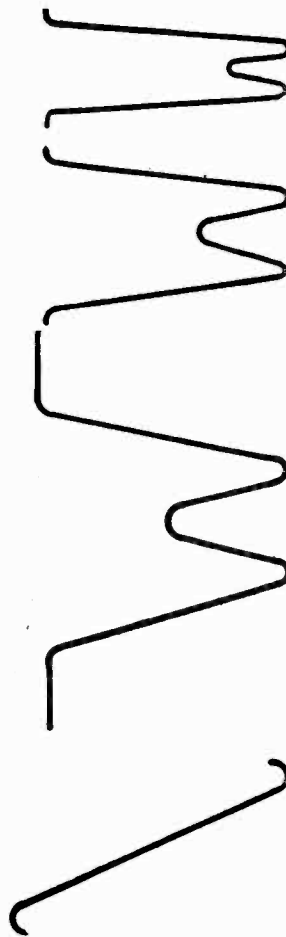


FIGURE 4

FIGURE 5

FIGURE 6

FIGURE 7

NOTE A: When aligning the FM I.F. circuits, keep the output from the signal generator as low as possible.

NOTE B: The AVC circuit must be grounded to the chassis when aligning the FM I.F. circuits.

SPIEGEL

MODEL 131504

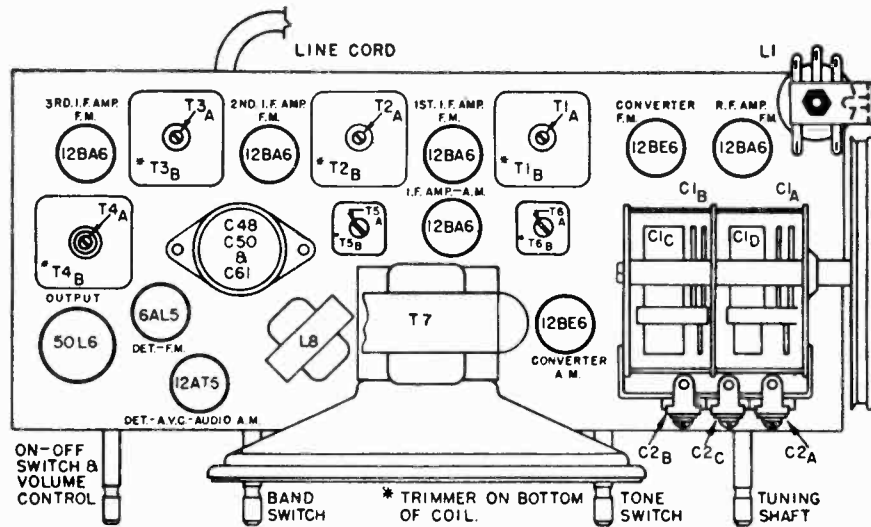


FIG. 1 TUBE AND TRIMMER LOCATIONS

VOLTAGE CHART

TUBE No.	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
12BE6 AM—Converter	—6	0	29ac	17ac	100	100	0	
12BA6 AM—I.F. Amp.	0	0	75ac	63ac	100	100	1	
12AT6 AM—Det.-AVC-Audio	0	0	17ac	6ac	0	0	30	
12BA6 FM—R.F. Amp.	0	0	29ac	39ac	100	95	1	
12BE6 FM—Converter	0	0	6ac	18ac	95	95	0	
12BA6 FM—1st I.F. Amp.	0	0	39ac	50ac	95	95	1	
12BA6 FM—2nd I.F. Amp.	0	0	50ac	63ac	95	95	1	
12BA6 FM—3rd I.F. Amp.	0	0	18ac	31ac	95	95	1	
6AL5 FM—Ratio detector	0	—3	0	6ac	—4	0	0	
50L6GT Power output	0	31ac	85	95	0	30	80ac	6.5

RESISTANCE CHART

TUBE No.	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
12BE6 AM—Converter	20K	1	27	18	25K	25K	3 meg	
12BA6 AM—I. F. Amp.	2 meg.	0	70	62	25K	25K	70	
12AT6 AM—Det.-AVC-Audio	10 meg.	0	18	5	470K	120K	540K	
12BA6 FM—R.F. Amp.	1 meg.	0	27	40	25K	25K	70	
12BE6 FM—Converter	20K	0	5	18	25K	25K	22K	
12BA6 FM—1st I.F. Amp.	220K	0	40	50	25K	25K	70	
12BA6 FM—2nd I.F. Amp.	220K	0	50	62	25K	25K	70	
12BA6 FM—3rd I.F. Amp.	100K	0	18	28	25K	25K	70	
6AL5 FM—Ratio Detector	0	25K	0	5	750K	0	750K	
50L6GT Power output	0	28	25K	25K	450K	250K	70	150

All voltage readings are taken from tube pin to chassis. All measurements are made with no signal, using a 20,000 ohm per volt meter.

AC input voltage must be maintained at 117 volts for accurate readings.

AC voltages shown are at 1000 ohms per volt.

All voltages shown are approximate.

All resistance readings are taken from tube pin to chassis.

Due to manufacturing tolerance on component parts, resistance readings may vary as much as 20%.

All readings are shown in ohms unless otherwise noted.

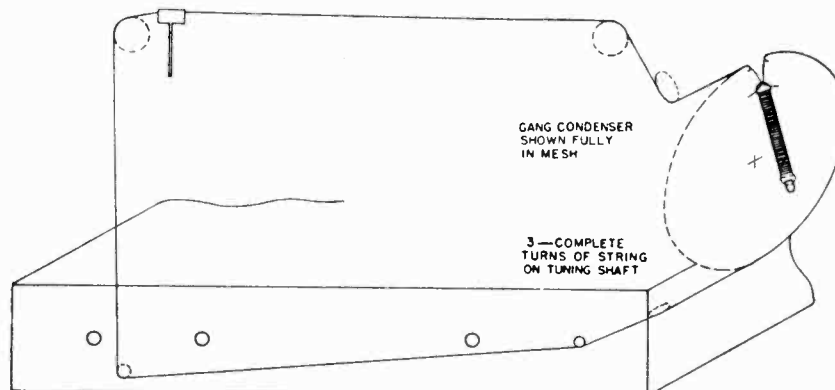


FIG. 2 DIAL CORD STRINGING

MODEL 131504

SPIEGEL

FM-AM radio receiver designed for use on 117 volts 60 cycles AC or DC current.

It covers the standard AM broadcast frequency range, 540-1600 kilocycles (KC) and the FM frequency range from 88 to 108 megacycles (MC).

SPECIFICATIONS

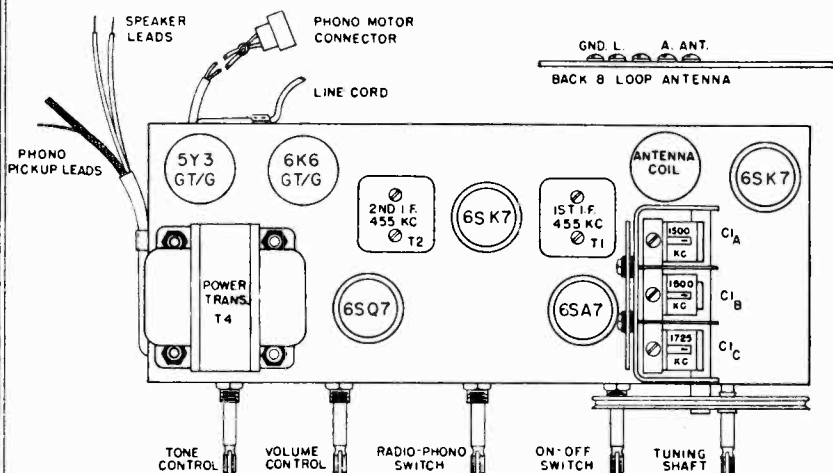
Power Supply.....	117 volts AC DC	The tubes used are as follows:
Power Consumption.....	55 Watts	12BA6 FM, R.F. Amplifier
Frequency Range FM.....	88 to 108 MC.	12BE6 FM, Converter
Frequency Range AM.....	540 to 1600 KC.	12BA6 FM, 1st I.F. Amplifier
I.F. frequency FM.....	10.7 MC.	12BA6 FM, 2nd I.F. Amplifier
I.F. frequency AM.....	455 KC.	12BA6 FM, 3rd I.F. Amplifier
Band width, FM, Ratio detector.....	360 KC.	6AL5 FM, Ratio detector
Band width, FM, 2nd I.F.....	280 KC.	12BE6 AM, Converter
Band width, FM, 1st I.F.....	240 KC.	12BA6 AM, I.F. Amplifier
Band width, FM, Converter.....	180 KC.	12AT5 AM, Detector-AVC-1st audio
Tubes.....	10	50L6GT Power output
Rectifier.....	Selenium, 150 ma.	A83-463 Selenium rectifier
Speaker.....	6" P.M.	No. 47 Pilot lights (2)

PARTS LIST

Schematic Diagram Reference	Part No.	Description	CIA, C18 C1C, C1D C2A C2B C2C C3, C5, C7, C9, C18, C21, C23, C24, C25, C28, C40, C51 C52, C53, C54 C55, C56, C57 C58, C62, C64 C65, C66, C67 C68 C4, C14 C6 C8, C17 C10 C34, C12, C19 C22, C26 C13, C32, C33 C47 C49 C15 C16 C20, C23, C27 C42, C44 C29 C30 C31 C35 C36 C37 C11, C38 C39 C41 C46 C69, C43, C59 C45 C48 C50 C61 R1, R26 R2, R13, R17, R28, R9 R3, R6, R7, R10, R19, R11 R14, R15, R18 R4, R5, R22 R27	Part No.	Description
R8, R12, R16 R23	A60-727	100 K Ohm 20% 1/2 Watt	C19-191	Variable Condenser	
R20	A60-723	270 Ohm 20% 1/2 Watt Resistor	A20-144	FM—R.F. Trimmer	
R21	A60-745	27 K Ohm 10% 1/2 Watt Resistor		FM—Oscillator Trimmer	
R24	A60-748	33 K Ohm 10% 1/2 Watt Resistor		AM—Oscillator Trimmer	
R25	B24-173	Volume Control with Switch	A16-177	005 MFD Ceramic Condenser (Centralab No. DA048 or Equiv.)	
R29, R31	A60-726	2.2 Megohm 20% 1/2 Watt	A15-198	20 MMF 20% Ceramic Condenser (Erie Style "A" or Equiv.)	
R30, R35	A60-731	470K Ohm 1/2 Watt Resistor 20%	A15-193	20 MMF 20% Ceramic Condenser (Erie Style K or Equiv.)	
R32, R33	A60-747	270K Ohm 20% 1/2 Watt	A15-194	50 MMF 10% Ceramic Condenser (Erie Style K or Equiv.)	
R34	A60-728	10 Megohm 20% 1/2 Watt	A18-273	4 MFD 150 Volt Elec. Condenser	
R36	A60-755	100 Ohm 1 Watt 10% Resistor	A16-150	.02 MFD 400 Volt Tubular Condenser	
R37	A60-741	150 Ohm 10% 1 Watt Resistor	A15-200	470 MMF 20% Mica Condenser	
R38	A60-751	12K Ohm 10% 1 Watt Resistor	A16-165	.01 MFD 200 V Tubular Condenser	
R39	A60-734	Special Compensating Resistor (Order from Spiegel)	A15-195	75 MMF 10% Ceramic Condenser (Erie Style K or Equiv.)	
R40	A60-735	Special Compensating Resistor (Order from Spiegel)	A15-197	10 MMF 10% Ceramic Condenser (Erie Style A or Equiv.)	
R41	A60-738	15 Ohm — Glassohm 10% 3 Watt Resistor	A16-163	.01 MFD 120 V Molded Paper Condenser	
L1	S810-488	Antenna Coil, FM	A16-153	.005 MFD 600 Volt Tubular Condenser	
L3	B10-489	R. F. Coil, F.M.	A15-199	300 MMF 20% Mica Condenser	
L4	B10-490	Oscillator Coil, F. M.	A16-180	.003 MFD 200 V Molded Paper Condenser	
L5	A10-507	Antenna Coil, A. M.	A16-157	.1 MFD 200 V Tubular Condenser	
L7	B10-491	Oscillator Coil, A. M.	A16-178	.002 MFD 200 V Molded Paper Condenser	
L8	A33-225	Filter Choke	A20-139	AM Antenna Trimmer	
L2, L9, L10 L11, L12, L14 L15	A33-226	Filament Choke, 11 mh.	A15-190	100 MMF 20% Mica Condenser	
L13	A33-227	Filament Choke	A15-191	50 MMF 20% Mica Condenser	
S1A, S1B	A69-181	Switch, F.M.—A.M.	A15-176	250 MMF 20% Mica Condenser	
S2		Switch, ON-OFF, (on volume control)	A15-196	100 MMF 20% Ceramic Condenser (Erie Style K or Equiv.)	
S3	A26-125	Tone Control	A16-158	.05 MFD 400 V Tubular Condenser	
T1	SA10-493	1st I. F. Transformer, F. M.	A16-156	.01 MFD 400 V Tubular Condenser	
T2, T3	SC10-494	2nd & 3rd I. F. Transformer, F.M.	A18-284	40 MFD 150 Volt Electrolytic Condenser 40 MFD 300 Volt Electrolytic Condenser 40 MFD 300 Volt Electrolytic Condenser	
T4	SC10-492	Ratio detector transformer, F.M.	A60-688	1 Megohm Resistor 20% 1/2 Watt	
T5	A10-499	1st I. F. transformer, A. M.	A60-742	68 Ohm Resistor 10% 1/2 Watt	
T6	A10-500	2nd I. F. transformer, A. M.	A60-743	100 Ohm Resistor 20% 1/2 Watt	
T7	A80-234	Output transformer	A60-744	22 K Ohm Resistor 10% 1/2 Watt	
	B39-285	Drum, for variable condenser			
	A23-151	Line cord			
	A83-463	Selenium rectifier, 150 ma.			
	A75-63	Tuning shaft			
	B79-354	Speaker, 6 1/4" P. M.			
	A21-111	Cover, for compensating resistors			
	S882-49	F. M. antenna assembly, Dipole			
	B83-325	Speaker baffle			
	D42-379	Cabinet, Walnut			
	C67-534	Dial Scale			
	A98-4	Grille Cloth			
	A52-279	Knob, Walnut			
	A83-292	Retainer, dial scale, right			
	A83-293	Retainer, dial scale, left			
	C83-580	Cabinet back			
	B83-503	Dial diffusing plate			
	A58-65	Dial pointer			

SPiegel

MODEL 138104



TUBE COMPLEMENT

The tube complement of this receiver consists of the following:

- 1—6SK7—R.F. Amplifier
- 1—6SA7—Mixer—OSC.
- 1—6SK7—I.F. Amplifier
- 1—6SQ7—Det. AVC—Audio
- 1—6K6—Power Output
- 1—5Y3—Rectifier

Fig. 1 Chassis, Top View

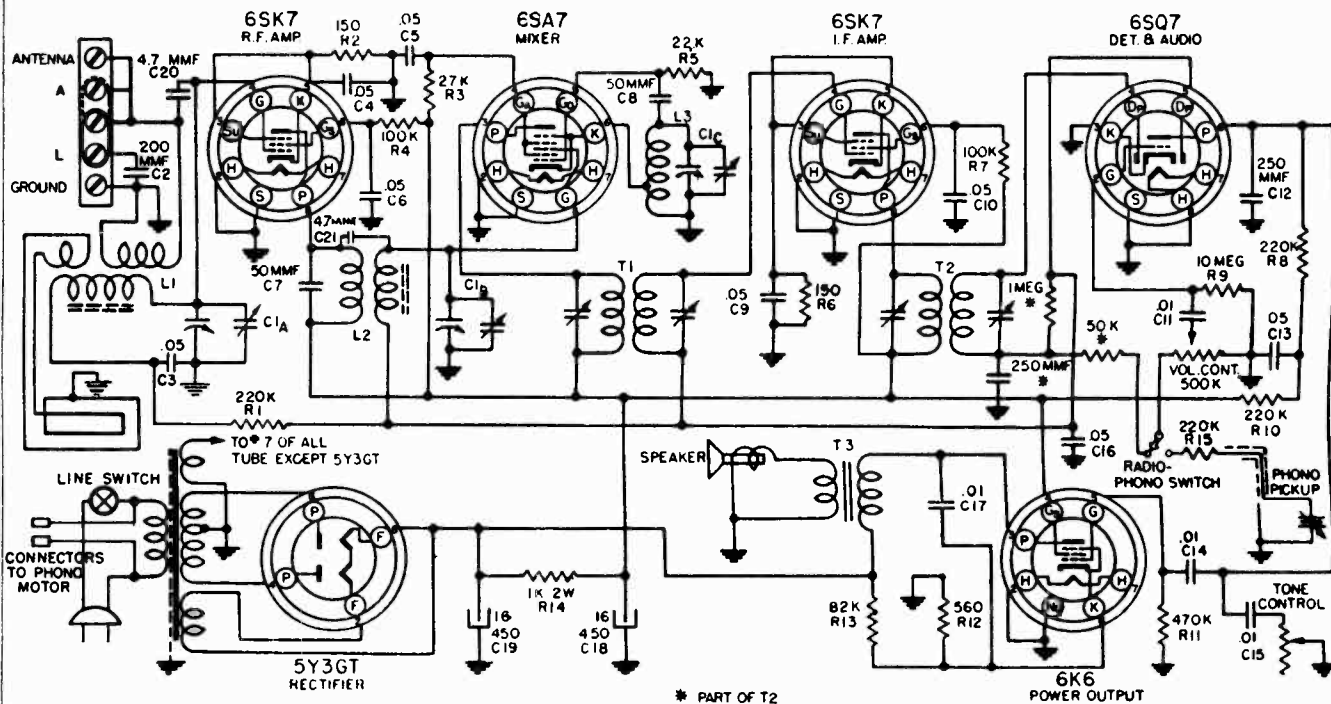


Fig. 2 Schematic Diagram

ALIGNMENT PROCEDURE

- Volume control—Maximum: all adjustments.
- Tone Control—Treble: Full Clockwise Rotation.
- Connect ground lead of signal generator to radio chassis.
- Connect dummy antenna in series with output lead of signal generator.
- Connect output meter across voice coil of speaker.

- The following equipment is necessary for proper alignment:
- Signal generator that will provide the test frequencies as listed.
- Output meter.
- Non-metallic screwdriver.
- Dummy antennas—.1 mfd., .00025 mfd.

Position of Variab'e	Generator Frequency	Dummy Ant. mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Minimum Capacity (Fully Opened)	455 K.C.	.1	6SA7 Grid (Stator of C1B)	T1 T2	I. F.
Minimum Capacity (Fully Opened)	1725 K.C.	.00025	*Ant. Terminal on Loop	C1C	Osc.
Tune in signal From Generator	1500 K.C.	.00025	*Ant. Terminal on Loop	C1B	R. F.
Tune in signal From Generator	1500 K.C.	.00025	*Ant. Terminal on Loop	C1A	Ant.

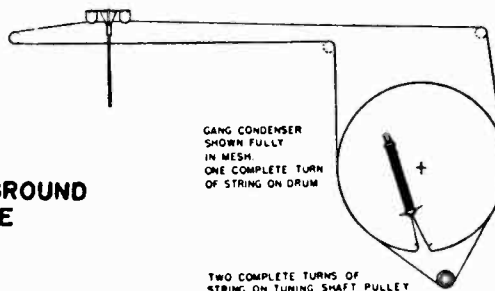
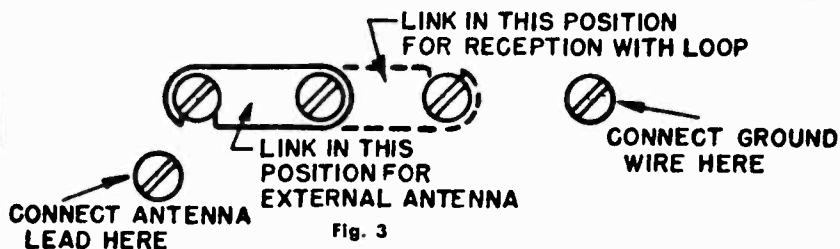
*Be sure coupling link is in correct position for external antenna operation. See Fig 3.
Repeat the above alignment procedure as a final check.

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.

POWER SUPPLY

This receiver is designed to operate from a power source of 117 volts A.C. 60 cycle current. If in doubt about the power rating in your location consult your local power company for this information. Never attempt to operate this radio on any current other than that specified.

ANTENNA and GROUND CONNECTIONS



PARTS LIST

Circuit Reference
 C1A, C1B, C1C
 C2
 C3, C4, C9, C16
 C5, C6, C10, C13
 C7, C8
 C11, C14, C15
 C12
 C17
 C18
 C19
 C20, C21

Part No.
 B19-186
 B15-189
 A16-152
 A16-158
 A15-175
 A16-156
 A15-176
 A16-168
 A18-279
 A18-274
 A83-355

R1, R8, R10, R15
 R2, R6
 R3
 R4, R7
 R5
 R9
 R11
 R12
 R13
 R14

A60-667
 A60-686
 A60-692
 A60-671
 A60-659
 A60-663
 A60-662
 A60-701
 A60-700
 A60-699

L1
 L2
 L3
 T1
 T2

C10-459
 B10-452
 B10-446
 B10-412
 B10-444

T3
 T4

A80-222
 C80-223
 A69-169
 A26-123
 A24-169
 A84-41
 B79-359
 S84-234
 C67-529
 A52-263
 A52-264
 A52-265
 A52-266
 A52-267
 B58-67
 A83-537
 A69-180
 11200

CONDENSERS

Description
 Variable condenser
 200 MMF Mica condenser (on loop) ..
 .05 MFD 200 volt condenser
 .05 MFD 400 volt condenser
 50 MMF mica condenser
 .01 MFD 400 volt condenser
 250 MMF mica condenser
 .01 MFD 1000 volt condenser
 16 MFD 450 volt electrolytic condenser
 16 MFD 450 volt electrolytic condenser
 4.7 MMF condenser

RESISTORS

220K ohm 1/2 watt resistor
 150 ohm 1/2 watt resistor
 27K ohm 1 watt resistor
 100K ohm 1/2 watt resistor
 22K ohm 1/2 watt resistor
 10 megohm 1/2 watt resistor
 470K ohm 1/2 watt resistor
 560 ohm 1 watt resistor
 82K ohm 1 watt resistor
 1000 ohm 2 watt resistor

COILS

Antenna coil
 R. F. Coil
 Oscillator coil
 1st I.F. transformer
 2nd I. F. transformer

MISCELLANEOUS

Output transformer
 Power transformer
 Switch, on-off
 Tone control
 Volume control
 Dial drive shaft and pulley assembly ..
 Speaker, 10" P. M.
 Loop antenna and Back assembly
 Dial scale
 Knob, (tuning)
 Knob, (tone)
 Knob, (volume)
 Knob, (on-off)
 Knob, (radio-phon)
 Dial pointer
 Retainer, dial scale
 Switch, radio-phon
 Milwaukee Automatic Record Changer ..

SPIEGEL

MODEL 138124

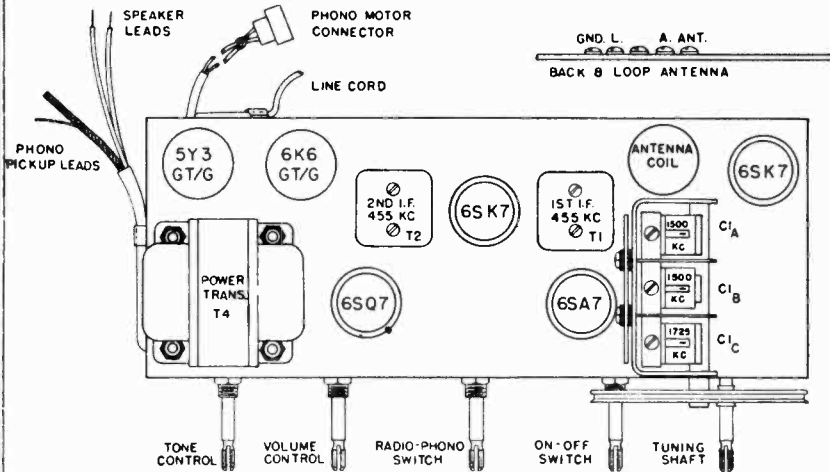


Fig. 1 Chassis, Top View

TUBE COMPLEMENT

The tube complement of this receiver consists of the following:

- 1—6SK7—R.F. Amplifier
- 1—6SA7—Mixer—OSC.
- 1—6SK7—I.F. Amplifier
- 1—6SQ7—Det. AVC—Audio
- 1—6K6—Power Output
- 1—5Y3—Rectifier

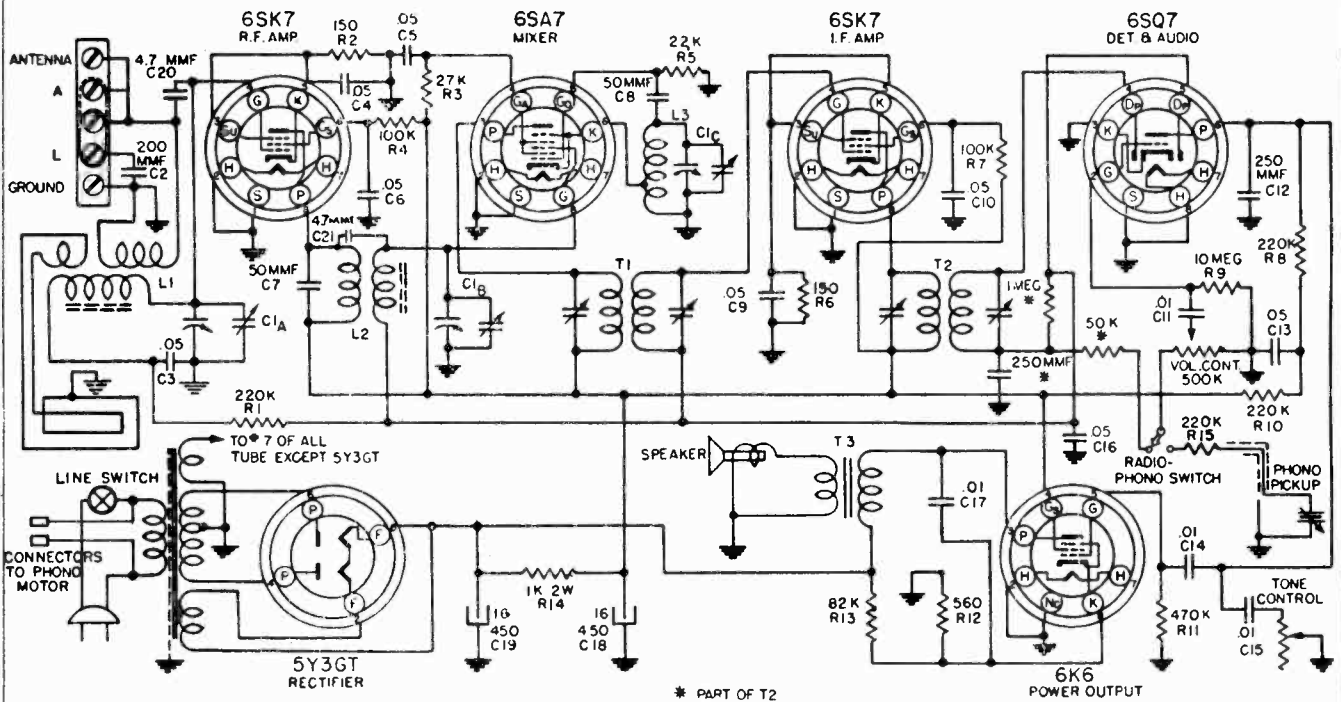


Fig. 2 Schematic Diagram

ALIGNMENT PROCEDURE

- Volume control—Maximum: all adjustments.
- Tone Control—Treble: Full Clockwise Rotation.
- Connect ground lead of signal generator to radio chassis.
- Connect dummy antenna in series with output lead of signal generator.
- Connect output meter across voice coil of speaker.

- The following equipment is necessary for proper alignment:
- Signal generator that will provide the test frequencies as listed.
- Output meter.
- Non-metallic screwdriver.
- Dummy antennas—.1 mfd., .00025 mfd.

Position of Variable	Generator Frequency	Dummy Ant. mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Minimum Capacity (Fully Opened)	455 K.C.	.1	6SA7 Grid (Stator of C1B)	T1 T2	I. F.
Minimum Capacity (Fully Opened)	1725 K.C.	.00025	*Ant. Terminal on Loop	C1C	Osc.
Tune in signal From Generator	1500 K.C.	.00025	*Ant. Terminal on Loop	C1B	R. F.
Tune in signal From Generator	1500 K.C.	.00025	*Ant. Terminal on Loop	C1A	Ant.

*Be sure coupling link is in correct position for external antenna operation. See Fig 3.
Repeat the above alignment procedure as a final check.

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.

POWER SUPPLY

This receiver is designed to operate from a power source of 117 volts A.C. 60 cycle current. If in doubt about the power rating in your location consult your local power company for this information. Never attempt to operate this radio on any current other than that specified.

ANTENNA and GROUND CONNECTIONS

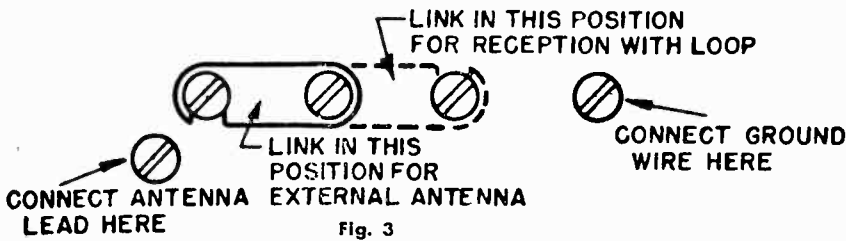
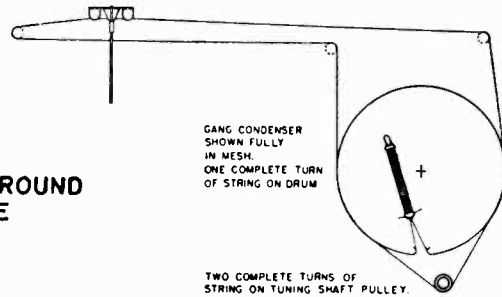


Fig. 3



PARTS LIST

Circuit Reference
 C1A, C1B, C1C
 C2
 C3, C4, C9, C16
 C5, C6, C10, C13
 C7, C8
 C11, C14, C15
 C12
 C17
 C18
 C19
 C20, C21

Part No.
 B19-186
 B15-189
 A16-152
 A16-158
 A15-175
 A16-156
 A15-176
 A16-168
 A18-279
 A18-274
 A83-355

CONDENSERS

Description
 Variable condenser
 200 MMF Mica condenser (on loop) ..
 .05 MFD 200 volt condenser
 .05 MFD 400 volt condenser
 50 MMF mica condenser
 .01 MFD 400 volt condenser
 250 MMF mica condenser
 .01 MFD 1000 volt condenser
 16 MFD 450 volt electrolytic condenser ..
 16 MFD 450 volt electrolytic condenser ..
 4.7 MMF condenser

R1, R8, R10, R15
 R2, R6
 R3
 R4, R7
 R5
 R9
 R11
 R12
 R13
 R14

A60-667
 A60-686
 A60-692
 A60-671
 A60-659
 A60-663
 A60-662
 A60-701
 A60-700
 A60-699

RESISTORS

220K ohm 1/2 watt resistor
 150 ohm 1/2 watt resistor
 27K ohm 1 watt resistor
 100K ohm 1/2 watt resistor
 22K ohm 1/2 watt resistor
 10 megohm 1/2 watt resistor
 470K ohm 1/2 watt resistor
 560 ohm 1 watt resistor
 82K ohm 1 watt resistor
 1000 ohm 2 watt resistor

COILS

L1
 L2
 L3
 T1
 T2

C10-459
 B10-452
 B10-446
 B10-412
 B10-444

Antenna coil
 R. F. Coil
 Oscillator coil
 1st I.F. transformer
 2nd I. F. transformer

MISCELLANEOUS

T3
 T4
 A80-222
 C80-223
 A69-169
 A26-123
 A24-169
 A84-41
 B79-359
 S84-248
 C67-533
 A52-263
 A52-264
 A52-265
 A52-266
 A52-267
 A58-68
 B83-471
 A69-180
 11200

Output transformer
 Power transformer
 Switch, on-off
 Tone control
 Volume control
 Dial drive shaft and pulley assembly ..
 Speaker, 10" P. M.
 Loop antenna and Back assembly
 Dial scale
 Knob, (tuning)
 Knob, (tone)
 Knob, (volume)
 Knob, (on-off)
 Knob, (radio-phon)
 Dial pointer
 Retainer, dial scale
 Switch, radio-phon
 Milwaukee Automatic Record Changer ..

MODEL 147114

SPIEGEL

ALIGNMENT PROCEDURE

Volume control—Maximum: all adjustments.

Connect ground lead of signal generator to common negative.

Connect dummy antenna in series with output lead of signal generator.

Connect output meter across voice coil of speaker.

The following equipment is necessary for proper alignment:

Signal generator that will provide the test frequencies as listed, 30% modulated, 400 c.p.s.

Output meter.

Non-metallic screwdriver.

Dummy antenna—.1 mfd.

CAUTION: This is an A.C.-D.C. receiver and if alignment is made with the receiver connected to 117 volts A.C. or D.C., it is necessary to isolate the signal generator or the receiver from the line by use of a transformer, or place a .2 M.F.D. 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	*1R5 Grid (Stator of C1A)	T2	Output I.F.
Fully open	455 KC	.1	*1R5 Grid (Stator of C1A)	T1	Input I.F.
Fully open	1600 KC	.1	*1R5 Grid (Stator of C1A)	C1B	Oscillator
Tune in signal from generator	1400 KC	—	Loosely coupled to loop	C1A	Antenna

*Connect ground lead of signal generator to common negative.

Circuit Diagram Reference	Part No.	Description
C1A, C1B	B19-197	Variable condenser
C2, C6	A16-152	.05 MFD 200 volt condenser
C3	A16-189	.05 MFD 400 volt condenser
C4	A15-175	50 MMF mica condenser
C5, C11	A16-153	.005 MFD 600 volt condenser
C7	A16-157	.1 MFD 200 volt condenser
C8	A16-172	.05 MFD 400 volt condenser
C9	A15-188	100 MMF mica condenser
C10	A18-290	40 MFD 150 volt electrolytic cond.
C12		30 MFD 150 volt electrolytic cond.
C13		100 MFD 10 volt electrolytic cond.
C14	A16-182	.002 MFD 200 volt condenser
C15	*A17-100	.005 MMF
C16		.005 MFD
C17		50 MMF
R1	A60-671	100K ohm 1/2 watt 20% resistor
R2	A60-680	1500 ohm 1/2 watt 10% resistor
R3, R9	A60-663	10 megohm 1/2 watt 20% resistor
R4	A60-685	47K ohm 1/2 watt 20% resistor
R5	A60-684	2.2 megohm 1/2 watt 20% resistor
R6	A60-725	160 ohm 5 watt 10% resistor
R7	A60-722	470 ohm 1/2 watt 10% resistor
R8, S1	A24-178	Volume control, with switch
R10	A60-757	2000 ohm 10 watt 10% resistor
R11	A60-724	3300 ohm 1 watt 10% resistor
R12	A60-665	390 ohm 1/2 watt 10% resistor
R13	A60-756	1200 ohm 1/2 watt 10% resistor
R16	*A17-100	2.2 megohm
R15		1 megohm
R14		4.7 megohm
R17	A60-668	1 megohm 1/2 watt 20% resistor
R18	A60-758	560 ohm 1/2 watt 10% resistor
L1	A10-514	Oscillator coil
T1, T2	C10-475	1st and 2nd I.F. transformer
T3	B80-245	Output transformer
S2	A69-182	Switch, AC-DC, Battery
MISCELLANEOUS PARTS		
	D21-108	Cap for handle
	A83-421	Clip, I.F. transformer mounting
	S84-271	Cover assembly, front (with loop)
	S84-128	Cover assembly, rear
	B83-442	Handle
	S84-243	Hub and pointer assembly
	C52-216	Knob, tuning
	B52-217	Knob, volume
	B23-156	Line cord and plug
	A83-568	Rectifier, selenium
	A71-38	Retainer, paper tube for line cord
	A68-35	Socket, tube
	B79-364	Speaker, 4" P.M.
	A76-49	Terminal, for "B" battery

*NOTE: C15, C16, C17, R14, R15, R16 are contained in the Ceramic Coupling Unit, Part No. A17-100.

MODELS A72T3, CHASSIS 9026C; A72T4, CHASSIS 9026D

STEWART-WARNER CORP.

MODELS A72T1, CHASSIS 9026A; A72T2, CHASSIS 9026B

	A72T1	A72T2	A72T3	A72T4
CABINET	Mahogany (Plastic)	Ivory (Plastic)	Walnut (Wood)	Blonde (Wood)
FREQUENCY RANGES	Detection of amplitude modulated 455 KC signals is accomplished by the 6AQ6 diode rectification circuit.			
Broadcast	540-1600 KC			
FM	88-108 MC			
POWER OUTPUT	Frequency modulation detection is accomplished by an entirely new circuit that is known as the "RATIO DISCRIMINATOR." This FM detector circuit has the unusual ability to reject noise or other brief variations in amplitude of the signal. The relative insensitivity of the Ratio Discriminator to signal amplitude variation makes it possible to eliminate the use of a "limiter" stage that usually precedes the discriminator in other types of FM detector systems. It will therefore be noted that this receiver utilizes a normal I.F. amplifier stage instead of a low gain limiter stage preceding the FM discriminator.			
Undistorted	.1 watt			
Maximum	2.5 watts			

SPEAKER 5" PM Dynamic
 INTERMEDIATE FREQUENCY) FM—10.7 MC
) AM—455 KC

This receiver will operate on either 50 or 60 cycles Alternating Current (A.C.) at 105 to 125 volts or on Direct Current (D.C.) at 105 to 125 volts. Rectified B+ voltage is obtained by using a miniature selenium type rectifier which is noted for reliability and long life.

The built-in antenna used for AM reception is a high impedance loop that is mounted on the rear of the chassis. A 46" length of wire serves as a built-in FM antenna. This wire is connected to the right hand terminal of the pair of terminals labeled "External FM Antenna" and it must be uncoiled and allowed to hang down at back of receiver.

Tuning of the radio frequency circuits of the receiver is accomplished by a 5 section gang condenser. Two sections are used to tune the AM antenna and oscillator circuits, and three sections are used to tune the FM antenna, R.F., and oscillator circuits.

An R.F. amplifier stage is utilized to give maximum sensitivity and selectivity as well as high image rejection on FM reception. Although this stage is switched out of the circuit on AM reception, overall receiver sensitivity is adequate for highly satisfactory reception where station signals are of moderate strength.

Both transformer coupled I.F. stages are used for FM and one stage is used for AM. The first and second I.F. transformers have two sets of windings; one set is tuned to 455 KC for AM operation and the other is tuned to 10.7 MC for FM operation. Switching of the windings, to alleviate undesired beat frequencies, is necessary only in the first I.F. transformer.

STAGE GAIN MEASUREMENT PROCEDURE

REQUIRED INSTRUMENTS: The amount of amplification or "gain" of each of the stages of this receiver should be measured with an A. C. Vacuum Tube Voltmeter of the high frequency type (uniform response up to 100 MC). A conventional "AM" type signal generator may be used but it must be capable of producing fundamental frequencies of 600 KC. and 98 MC—avoid using a generator that produces the 98 MC. signal by means of harmonics.

PROCEDURE: It is exceedingly important to adhere to the procedure outlined below since the accuracy of these measurements will be affected to a considerable extent by the failure to establish proper operating conditions.

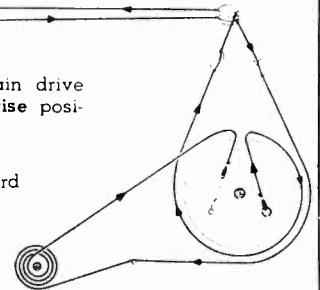
1. Be sure that R.F., I.F. and Discriminator stages are carefully and accurately aligned by utilizing the alignment procedure given in this manual.
2. Connect Signal Generator as shown below. Note that generator connections differ for "AM" and "FM" measurements.
3. For "AM" measurements, set signal generator to 600 KC. and then carefully tune radio receiver to this signal by using an output meter to indicate peak output. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
4. For "FM" measurements, set signal generator to 98 MC. and then carefully tune radio receiver to this signal by using a D. C.

Audio frequency output from both AM and FM detectors is amplified through the triode section of the 6AQ6. The audio power amplifier stage incorporates a 50B5 tube which is coupled to a permanent magnet dynamic speaker. A special inverse feedback arrangement is used which reduces distortion and contributes to exceptionally good tone quality.

DIAL AND POINTER DRIVE CORD ARRANGEMENT

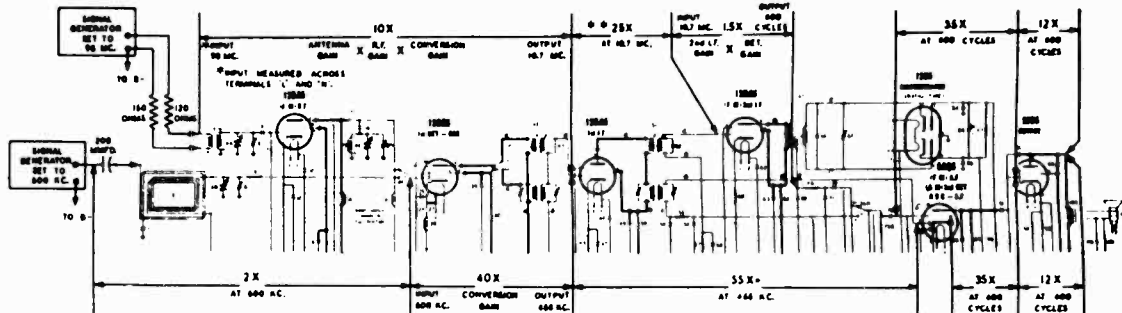
To string dial cord, turn the main drive drum to maximum counter-clockwise position and use following parts:

- 114955—Clip on end of cord
- 117057—Cord (6 feet)
- 119087—Ring for dial cord
- 161384—Tension Spring



Vacuum Tube Voltmeter as an output indicator—meter must be connected between pin #3 of 12H6 tube and B—. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.

5. The values of stage gain which are given here were measured with a fixed bias of 1.5 volts on the control grids of all R.F. and I.F. tubes which are connected to the A.V.C. circuit. Therefore, these values are not intended to indicate the full capability of a stage but they will serve as a convenient basis for determining proper operation. In order to duplicate the fixed bias voltage, connect the negative terminal of a 1.5 volt battery to A.V.C. at terminal 7 of the 1st I.F. transformer and connect the positive battery lead to B—.
6. R.F. and I.F. circuits are slightly de-tuned when contact is made with an instrument probe and this action, which is indicated by a change in the output meter reading, may seriously affect the gain measurement. Therefore, it is important to adjust the associated circuit trimmer for a maximum output meter reading and to set the input signal level to a convenient reference point on the gain-measuring instrument while the probe is making contact. After removing the probe it is again necessary to adjust the trimmer so as to obtain the same output meter reading and thereby assure that the signal voltage at the specified point has not changed as a result of circuit de-tuning.



** When measuring the gain of this stage with a vacuum tube voltmeter the input signal level for minimum meter indication may cause overloading. Under those conditions the measured gain will be found to be approximately 14X.

DIFFERENCES in tube characteristics, tolerance of parts, adjustment of tuned circuits and variations in line voltage will influence stage gain. These factors should be given due attention in event the gain of a stage varies extensively from the values shown above.

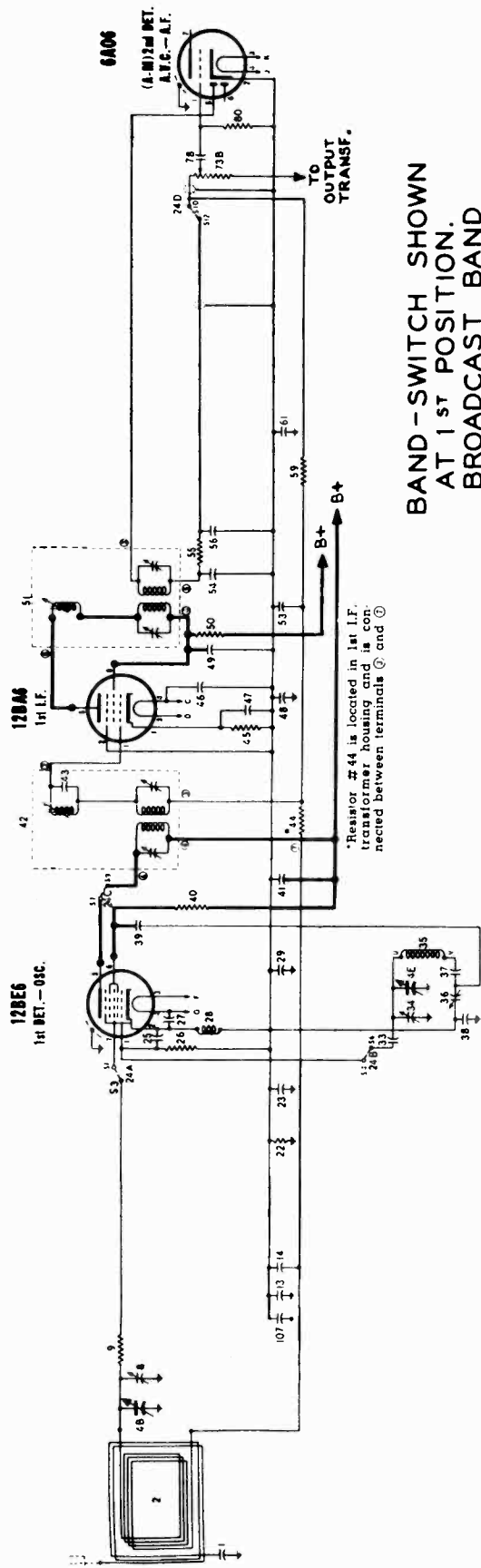
CLARI-SKEMATIX

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MODELS A72T1, CHASSIS 9026A; A72T2, CHASSIS 9026B

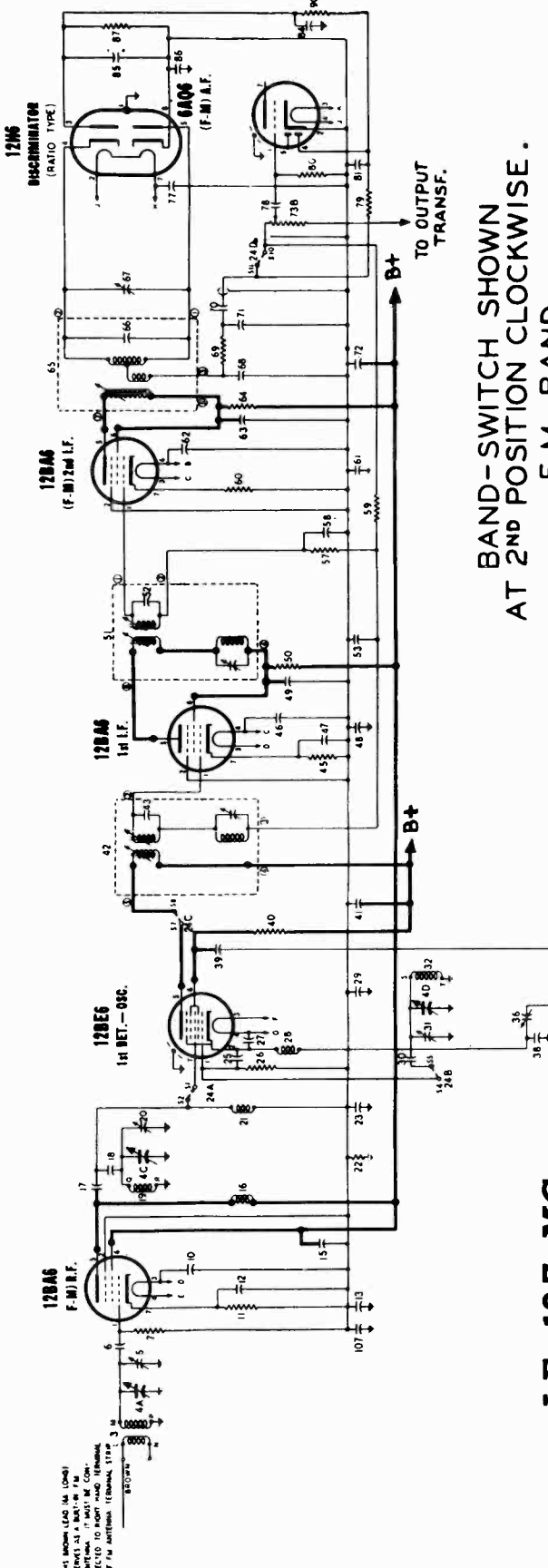
STEWART-WARNER CORP.

MODELS A72T3, CHASSIS 9026C; A72T4, CHASSIS 9026D



BAND - SWITCH SHOWN AT 1ST POSITION.
BROADCAST BAND
540-1600 KC

I.F. 455 KC.



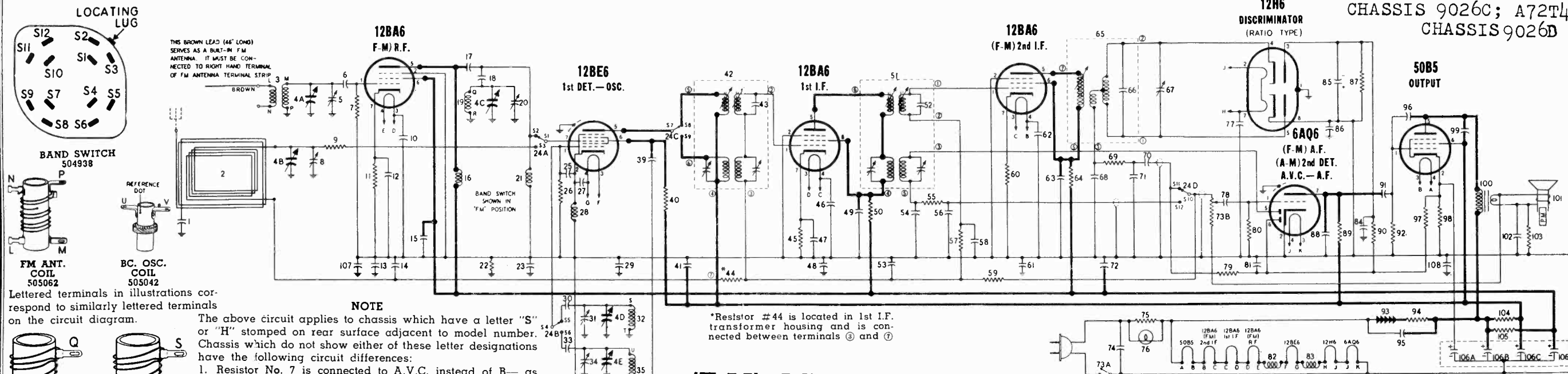
BAND - SWITCH SHOWN AT 2ND POSITION CLOCKWISE.
F M BAND
88-108 MC

I.F. 10.7 MC.

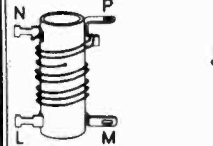
THE SHOWN LEAD (IN 12BE6) MUST BE CONNECTED TO POINT MARKED TERMINAL ① OF THE ANTENNA (TERMINAL 11) IN BROADCAST BAND.

STEWART-WARNER CORP.

MODELS A72T1, CHASSIS 9026A;
A72T2, CHASSIS 9026B; A72T3,
CHASSIS 9026C; A72T4,
CHASSIS 9026D

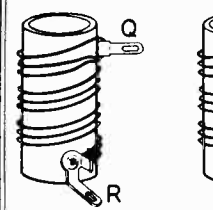


LOCATING LUG
S12 S2
S11 S1 S3
S10 S4
S9 S7 S5
S8 S6



BAND SWITCH 504938
FM ANT. COIL 505062
BC. OSC. COIL 505042

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



FM R.F. COIL 505060
FM OSC. COIL 505060

THIS BROWN LEAD (.46" LONG) SERVES AS A BUILT-IN FM ANTENNA. IT MUST BE CONNECTED TO RIGHT HAND TERMINAL OF FM ANTENNA TERMINAL STRIP.

NOTE
The above circuit applies to chassis which have a letter "S" or "H" stamped on rear surface adjacent to model number. Chassis which do not show either of these letter designations have the following circuit differences:
1. Resistor No. 7 is connected to A.V.C. instead of B— as shown above.
2. Condensers Nos. 107 and 108 are omitted.
3. Resistor R87 is 33,000 ohms.
Changes 1 and 2 are incorporated in chassis which carry the "S" designation and all three changes appear in chassis with the "H" designation.
These changes were made to increase sensitivity on FM operation.

*Resistor #44 is located in 1st I.F. transformer housing and is connected between terminals ③ and ⑦

(F-M) I.F. 10.7 MC.
(A-M) I.F. 455 KC.

WARNING: Some parts listed below have special characteristics. Do not use substitutes for replacement purposes.

DIA-GRAM NO.	PART NO.	DESCRIPTION
CONDENSERS		
1	504725	Condenser—.02 Mfd. 200 volt
4-A to E	504955	Condenser—variable gang and drum
5	504954	Condenser—trimmer; 3 to 12 Mmfd.
6	504974	Condenser—ceramic 47 Mmfd. 500 volt
8	504069	Condenser—trimmer; 3 to 35 Mmfd.
10	504976	Condenser—ceramic 1500 Mmfd. 150 volt
12	505025	Condenser—ceramic 100 Mmfd. 350 volt
13	505052	Condenser—.002 Mfd. 400 volt
14	505073	Condenser—.05 Mfd. 400 volt
15	504975	Condenser—ceramic 470 Mmfd. 350 volt
17	502295	Condenser—ceramic 10 Mmfd. 500 volt
18	505053	Condenser—ceramic 15 Mmfd. 500 volt
20	504954	Condenser—trimmer; 3 to 12 Mmfd.
23	505027	Condenser—.01 Mfd. 400 volt
25	504730	Condenser—ceramic 3 Mmfd. 500 volt
27	504973	Condenser—ceramic 22 Mmfd. 500 volt
29	505454	Condenser—.05 Mfd. 400 volt (low impedance at 455 Kc.—do not substitute ordinary capacitor)
30	505072	Condenser—ceramic 33 Mmfd. 350 volt
31	504954	Condenser—trimmer; 3 to 12 Mmfd.
33	504974	Condenser—ceramic 47 Mmfd. 500 volt
34	119491	Condenser—trimmer; 10 to 90 Mmfd.
36	505051	Condenser—trimmer; 440 to 660 Mmfd.
37	504979	Condenser—ceramic .01 Mfd. 150 volt
38	504975	Condenser—ceramic 470 Mmfd. 350 volt
39	504979	Condenser—ceramic .01 Mfd. 150 volt
41	504979	Condenser—ceramic .01 Mfd. 150 volt
43	505068	Condenser—ceramic 91 Mmfd. 350 volt
46	504976	Condenser—ceramic 1500 Mmfd. 150 volt
47	505028	Condenser—.05 Mfd. 150 volt
48	504979	Condenser—ceramic .01 Mfd. 150 volt
49	505211	Condenser—.08 Mfd. 400 volt
52	505068	Condenser—ceramic 91 Mmfd. 350 volt
53	505028	Condenser—.05 Mfd. 150 volt
54	505026	Condenser—ceramic 150 Mmfd. 350 volt
56	505026	Condenser—ceramic 150 Mmfd. 350 volt
58	504978	Condenser—ceramic .005 Mfd. 150 volt
61	504979	Condenser—ceramic .01 Mfd. 150 volt
62	504976	Condenser—ceramic 1500 Mmfd. 150 volt
63	504978	Condenser—ceramic .005 Mfd. 150 volt
66	505074	Condenser—ceramic 43 Mmfd. 350 volt
67	504954	Condenser—trimmer; 3 to 12 Mmfd.
68	505025	Condenser—ceramic 100 Mmfd. 350 volt
70	505028	Condenser—.05 Mfd. 150 volt
71, 72	504979	Condenser—ceramic .01 Mfd. 150 volt
74	505083	Condenser—.02 Mfd. 400 volt
77	504976	Condenser—ceramic 1500 Mmfd. 150 volt
78	504977	Condenser—ceramic .002 Mfd. 150 volt
81	505082	Condenser—.02 Mfd. 150 volt
84	505027	Condenser—.01 Mfd. 400 volt
85	504937	Condenser—electrolytic 5 Mfd. 50 volt
86	504979	Condenser—ceramic .01 Mfd. 150 volt
88	505025	Condenser—ceramic 100 Mmfd. 350 volt

DIA-GRAM NO.	PART NO.	DESCRIPTION
91	505028	Condenser—.05 Mfd. 150 volt
95	505073	Condenser—.05 Mfd. 400 volt
96	504973	Condenser—ceramic 22 Mmfd. 500 volt
99	505027	Condenser—.01 Mfd. 400 volt
102	505071	Condenser—.2 Mfd. 400 volt
106-A, B, C, D	504980	Condenser—electrolytic A—20 Mfd. 25 volt B—60 Mfd. 150 volt C—40 Mfd. 150 volt D—40 Mfd. 150 volt
107	504975	Condenser—ceramic 470 Mmfd. 350 volt
108	504979	Condenser—ceramic .01 Mfd. 150 volt
RESISTORS		
7	502134	Resistor—carbon 470,000 Ohms 1/4 watt
9	504969	Resistor—carbon 33 Ohms 1/4 watt
11	502794	Resistor—carbon 68 Ohms 1/4 watt
22	502133	Resistor—carbon 220,000 Ohms 1/4 watt
26	502130	Resistor—carbon 22,000 Ohms 1/4 watt
40	502406	Resistor—carbon 1,500 Ohms 1/4 watt
44	502134	Resistor—carbon 470,000 Ohms 1/4 watt
45	502794	Resistor—carbon 68 Ohms 1/4 watt
50	502287	Resistor—carbon 680 Ohms 1/4 watt
55	504710	Resistor—carbon 33,000 Ohms 1/4 watt
57	502134	Resistor—carbon 470,000 Ohms 1/4 watt
59	502268	Resistor—carbon 1 Meg. 1/4 watt
60	504968	Resistor—carbon 10 Ohms 1/4 watt
64	502287	Resistor—carbon 680 Ohms 1/4 watt
69	502514	Resistor—carbon 3,300 Ohms 1/4 watt
73-A, B	504967	Resistor—Volume control 1 Meg (with Switch)
75	505024	Resistor—carbon 22 Ohms 2 watt
79	502134	Resistor—carbon 470,000 Ohms 1/4 watt
80	502136	Resistor—carbon 10 Meg. 1/4 watt
87	504710	Resistor—carbon 33,000 Ohms 1/4 watt
87	502408	Resistor—carbon 68,000 Ohms 1/4 watt (used only in chassis stamped with letter "H")
89, 90	502134	Resistor—carbon 470,000 Ohms 1/4 watt
92	502134	Resistor—carbon 470,000 Ohms 1/4 watt
94	505023	Resistor—carbon 33 Ohms 1 watt
97	502135	Resistor—carbon 2.2 Meg. 1/4 watt
98	504437	Resistor—carbon 150 Ohms 1/2 watt
103	502132	Resistor—carbon 100,000 Ohms 1/4 watt
104	504971	Resistor—carbon 2,200 Ohms 1/2 watt
105	504970	Resistor—carbon 470 Ohms 2 watt
COILS AND TRANSFORMERS		
2	505054	Loop Antenna
3	505062	Coil—F.M. antenna
16	505075	Coil—R.F. choke (FM)
19	505060	Coil—FM R.F.
21	505076	Coil—R.F. choke (FM)
28	505076	Coil—R.F. choke (FM)

DIA-GRAM NO.	PART NO.	DESCRIPTION
32	505060	Coil—FM oscillator
35	505042	Coil—BC oscillator
42	505066	Transformer—1st I.F.
51	505067	Transformer—2nd I.F.
65	505391	Transformer—discriminator
82, 83	505392	Coil—R.F. choke (FM)
100	502213	Transformer—output (for R-502998 sp'k'r)
100	504244	Transformer—output (for W-502998 sp'k'r)
100	502904	Transformer—output (for A-502998 sp'k'r)
OTHER ELECTRICAL PARTS		
24-A, B, C, D	504938	Switch—band
76	110629	Lamp—dial (Mazda #44) 6.3V 0.25 Amps
93	504972	Rectifier—selenium
101	502998	Speaker—P.M. dynamic (5 inch) includes transformer
MISCELLANEOUS PARTS		
505084		Back for cabinet (Models A72T1, A72T2)
505093		Back for cabinet (Models A72T3, A72T4)
504981		Base for mounting electrolytic condenser
504598		Base—tube shield
502666		Cabinet—Mahogany (Model A72T1)
502665		Cabinet—Ivory (Model A72T2)
502506		Clamp—dial scale mounting
504691		Clip—coil mounting; BC oscillator
500497		Clip—retainer for cabinet back
114955		Clip—retainer on end of dial cord
117057		Cord—dial drive (6 ft. required) per ft.
505085		Dial scale (Models A72T1, A72T2)
505092		Dial scale (Models A72T3, A72T4)
502563		Knob—volume or tuning (Model A72T1)
502564		Knob—volume or tuning (Model A72T2)
505086		Knob—volume or tuning (Model A72T3)
505087		Knob—volume or tuning (Model A72T4)
505090		Knob—band (Model A72T1)
505091		Knob—band (Model A72T2)
505088		Knob—band (Model A72T3)
505089		Knob—band (Model A72T4)
505095		Metal grille (Models A72T3, A72T4)
502690		Pointer
81145		Retaining ring for tuning shaft
119087		Ring for dial cord
17063		Screw—No. 6 x 1/4 holds dial clamp
114628		Screw—No. 8 x 1/2; chassis mounting
79905		Screw—No. 8 x 1/2 for loop mounting
83047		Screw—No. 8 x 7/8; chassis mounting
501777		Screw—No. 4 x 1/2 for mounting back
505045		Shaft—tuning
504599		Shield—tube
504499		Socket—dial lamp (with leads)
504597		Socket—miniature
116690		Socket—octal base
161384		Spring—dial cord tension

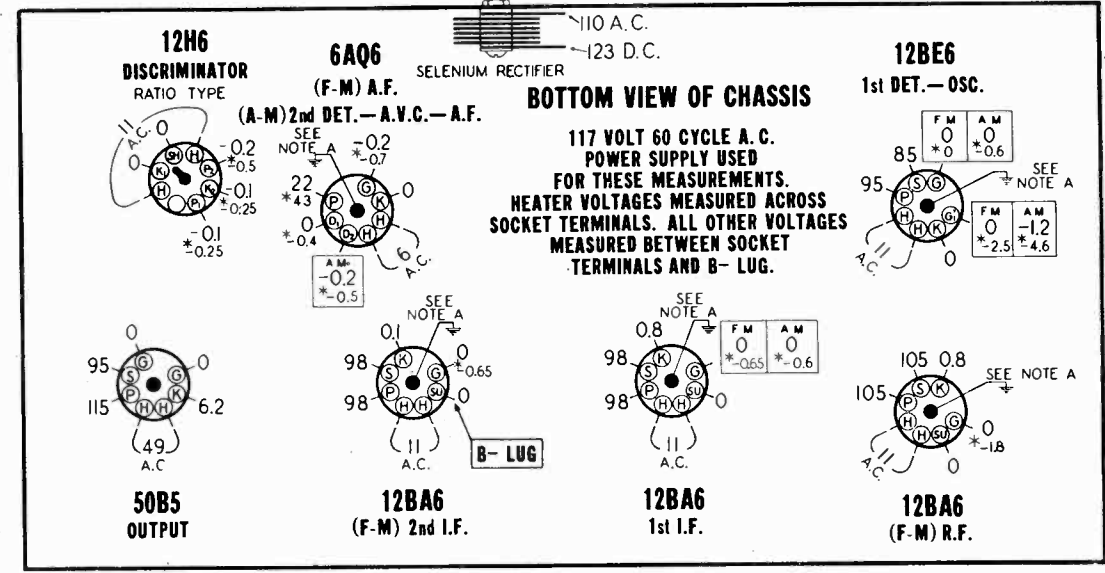
AUDIO OSCILLATION
The audio system of this receiver utilizes a two stage type of inverse feedback arrangement and, should it ever be necessary to replace the speaker or output transformer, it is important to maintain a definite phase relationship in the feedback circuit. If the connections to the output transformer are reversed or if the feedback 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.

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*). The (*) symbol designates a vacuum tube voltmeter measurement.

ALL MEASUREMENTS MADE WITH BAND SWITCH IN "FM" POSITION UNLESS OTHERWISE INDICATED

DIAL TUNED TO 108MC. FOR "FM" MEASUREMENTS
DIAL TUNED TO 540KC. FOR "AM" MEASUREMENTS
VOLUME CONTROL SET TO MINIMUM WITH NO SIGNAL



REAR OF CHASSIS

NOTE A: Grounding of center stud on tube socket is necessary to reduce capacity coupling between other pins. Oscillation may result if this ground is omitted.

MODELS A72T1, CHASSIS 9026A;
A72T2, CHASSIS 9026B; A72T3,
CHASSIS 9026C; A72T4, CHASSIS
9026D

STEWART-WARNER CORP.

FREQUENCY MODULATION — "FM" — ALIGNMENT PROCEDURE

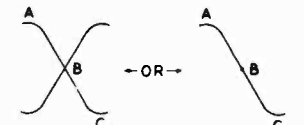
INSTRUMENTS: Alignment of the FM circuits in this receiver may be accomplished with either a conventional AM type signal generator or an FM signal generator. The output indicator should be an oscilloscope or a vacuum tube voltmeter.

Although it is preferable to use an FM generator and an oscilloscope, reasonably accurate alignment is obtainable when using a conventional AM generator and a vacuum tube voltmeter providing proper care is exercised in adjusting the discriminator circuit trimmer condenser.

IMPORTANT: If an AM signal generator is used, it should be capable of producing fundamental frequencies of 10.7 and 88 to 108 MC. Avoid using an AM generator which produces signals in the 88 to 108 MC range by using harmonics higher than the second. Generators which are dependent upon third, fourth or fifth harmonics for frequencies of 88 to 108 MC will generally produce undesirable spurious beat signals with the local oscillator in the receiver and alignment will be exceedingly difficult.

The following procedure is adaptable for use with either an AM or FM generator and oscilloscope or vacuum tube voltmeter merely follow the instructions that are applicable to the instruments that are used.

1. If alignment of both AM and FM channels is required it is necessary to align the AM channel first, then align the FM channel as instructed in the following chart (AM alignment procedure is given on page 7).
2. Before removing the chassis from the cabinet, turn the tuning control until dial pointer is at 98 MC. Then remove chassis and place a pencil mark on dial frame so as to indicate the 98 MC calibration point.
3. Do not attempt to reposition pointer by releasing it from clip on dial card as this is done only during AM alignment.
4. Set the receiver volume control to the maximum volume position.
5. Dress FM circuit leads as short and straight as possible, particularly those in the oscillator circuit. I.F. plate and grid leads should also be kept short and straight.
6. Alignment of receiver circuits may now be accomplished by using the procedure in the chart below.

SIGNAL GENERATOR CONNECTIONS			V-T VOLTMETER OR OSCILLOSCOPE CONNECTIONS		RECEIVER				TYPE OF ADJUSTMENT AND OUTPUT INDICATION	
CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	CONNECT GROUND LEAD OF SIGNAL GENERATOR TO	FREQUENCY & TYPE OF MODULATION	IF A V-T VOLTMETER IS USED, CONNECT IT AS FOLLOWS:	IF AN OSCILLOSCOPE IS USED, CONNECT IT AS FOLLOWS:	BAND SWITCH POSITION	DIAL SETTING	TRIMMER OR SLUG NUMBER	TRIMMER DESCRIPTION	ADJUSTMENT AND OUTPUT INDICATION WHEN USING A V-T VOLTMETER	ADJUSTMENT AND OUTPUT INDICATION WHEN USING AN OSCILLOSCOPE
Pin #1 of 12BA6 (FM) 2nd I.F. use a .01 MFD. condenser in series with generator lead.	B— in vicinity of 12BA6 (FM) 2nd I.F. tube.	10.7 MC AM signal may be 400 cycle modulated or FM signal should preferably be modulated ±300 KC.	Connect common (or ground) terminal of meter to B— D.C. probe lead of meter is then connected to pin #3 of the 12H6 tube.	Connect vertical amplifier "high" lead in series with an 0.1 MFD. condenser to pin #7 of 6AQ6 tube. Connect scope ground lead to B	FM Maximum clockwise position	Any position where it does not affect the signal.	8	Discriminator Primary	Set meter to a low D.C. voltage range and adjust trimmer #8 for maximum meter reading. (This voltage will be negative.)	Set vertical amplifier of scope for maximum amplification. Where FM signal generator provides an output voltage for synchronization, connect this voltage to "sync" terminals of the scope. Then adjust setting of trimmer #9, before attempting to adjust trimmer #8, until a pattern similar to the following appears on the screen. If pattern does not remain stationary, operate sweep frequency control on scope and also "sync" control until desired result is obtained. 
Same as above	Same as above	Same as above	Before connecting V-T voltmeter, it is necessary to connect two 68,000 ohm resistors (resistance of both units must compare within 1%) in series from pin #3 of the 12H6 tube to B—. Then connect common (or ground) terminal of V-T voltmeter to the junction of these two resistors. D.C. probe lead of meter is now connected to junction of resistor #69 (3300 ohms) and condenser #70 (.05 MFD.) which are in the discriminator output circuit.	Same as above	Same as above	Same as above	9	Discriminator Secondary Use an insulated phasing tool to adjust this trimmer.	Set meter for operation on its lowest D.C. voltage range. Note that as trimmer #9 is rotated a point will be found where voltmeter will swing rather sharply from a positive to a negative reading or vice versa. Correct setting of trimmer #9 is obtained when meter reads zero as trimmer is moved through this point. The adjustment is somewhat critical and considerable care must be exercised to set the trimmer for a zero meter indication.	With the 'scope set up as described above, adjust trimmer #9 until the cross-over point "B" is centrally located in both the horizontal and vertical directions; in addition, the portion of the curve between "A" and "C" should be as linear (straight) as possible.
Recheck the two preceding adjustments to be sure that both trimmers are set as accurately as possible to obtain the specified output indication on vacuum tube voltmeter or oscilloscope. Then disconnect and remove the two 68,000 ohm resistors that were used for the vacuum tube voltmeter connection in the 2nd step.										
Pin #1 of 12BA6 (FM) 1st I.F. tube; use a .01 MFD. condenser in series with generator lead.	B— in vicinity of 12BA6 (FM) 1st I.F. tube.	Same as above	Connect common (or ground) terminal of meter to B—. D.C. probe lead of meter is then connected to Pin #3 of the 12H6 tube.	Same as above	Same as above	Same as above	10 and 11	2nd I.F.	Adjust trimmers #10 and #11 for maximum meter reading.	With 'scope set up as described above, adjust trimmers #10 and #11 for maximum amplitude and steepness of that portion of the pattern between "A" and "C".
Pin #7 of 12BE6 tube; use a .01 MFD. condenser in series with generator lead.	B— in vicinity of 12BE6 tube.	Same as above	Same as above	Same as above	Same as above	Same as above	12 and 13	1st I.F.	Adjust trimmers #12 and #13 for maximum meter reading.	Adjust trimmers #12 and #13 for maximum amplitude and steepness of pattern as described above. If the enlarged pattern now indicates a lack of symmetry, readjust trimmer #9 for correct cross-over point.
Generator output leads must be connected to the two "External FM Antenna" terminals at back of antenna loop frame. Connect "high" lead to one terminal in series with a 120 ohm resistor and connect generator ground lead to the other terminal in series with a 150 ohm resistor.		98 MC AM signal may be 400 cycle modulated or FM signal should preferably be modulated ±300 KC.	Same as above	Same as above	Same as above	98 MC	14	Oscillator Trimmer	Set trimmer #14 to receive 98 MC. signal and adjust for maximum meter reading.	Adjust trimmer #14 to obtain the symmetrical pattern shown above. Correct setting of trimmer #14 is obtained when cross-over point in pattern is centrally located.
Same as above		Same as above	Same as above	Same as above	Same as above	98 MC	15 12 and 13	R.F. Trimmer 1st I.F.	Adjust trimmer #15 for maximum meter reading. Recheck adjustment of these trimmers for maximum meter reading.	Adjust trimmer #15 for maximum amplitude of pattern. Recheck adjustment of these trimmers for maximum amplitude and symmetry of pattern.
Same as above		Same as above	Same as above	Same as above	Same as above	98 MC	16	Antenna Trimmer	Adjust trimmer #16 for maximum meter reading.	Adjust trimmer #16 for maximum amplitude of pattern.

Check calibration and tracking of receiver with input signals of 88 and 108 MC.

*If your signal generator has an AC-DC type power supply, insert a .25 MFD. condenser in series with the ground lead before making the connections shown above.

MODELS A72T3, CHASSIS 9026C; A72T4, CHASSIS 9026D

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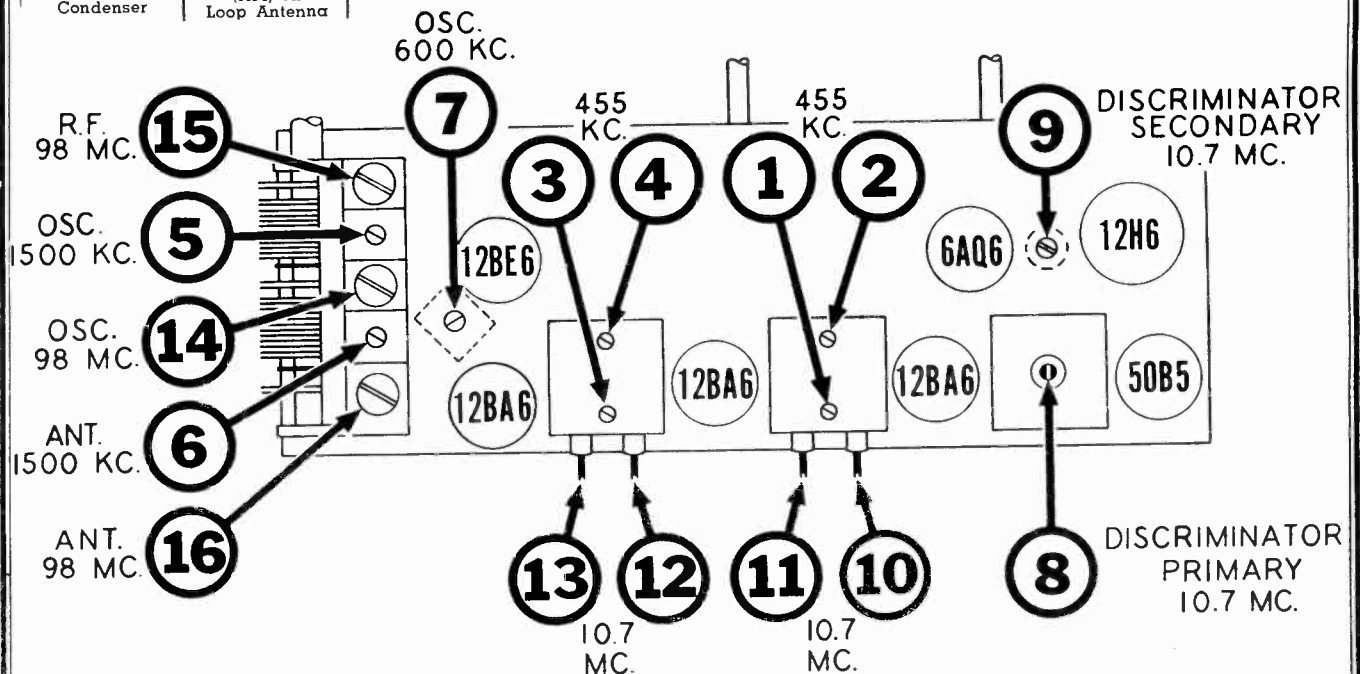
MODELS A72T1, CHASSIS 9026A; A72T2, CHASSIS 9026B

BROADCAST BAND — "AM" — ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet.
2. With the gang fully meshed, the dial pointer should be in the position indicated by the last mark below 55 on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.
3. During the alignment of this receiver, it will be necessary to set the dial pointer to the following frequencies: 1500 Kc., and 600 Kc. In order to avoid replacing the chassis in the cabinet each time a dial setting is required, it will be found more convenient to mark the required frequency points on the white dial background before starting the alignment.
4. Connect an output meter across speaker voice coil or from plate of the 50B5 tube to B— through a 0.1 Mfd. condenser (see voltage chart for convenient B— connection).
5. Connect ground lead of signal generator to B— lug.
CAUTION: If your signal generator is designed with an AC-DC type power supply, connect ground lead of signal generator to B— lug through a .25 Mfd. condenser.
6. Set volume control to the maximum volume position and use a weak signal from the signal generator.
7. If alignment of both AM and FM channels is required, it is necessary to align the AM channel first; then align the FM channel as instructed in the preceding section.

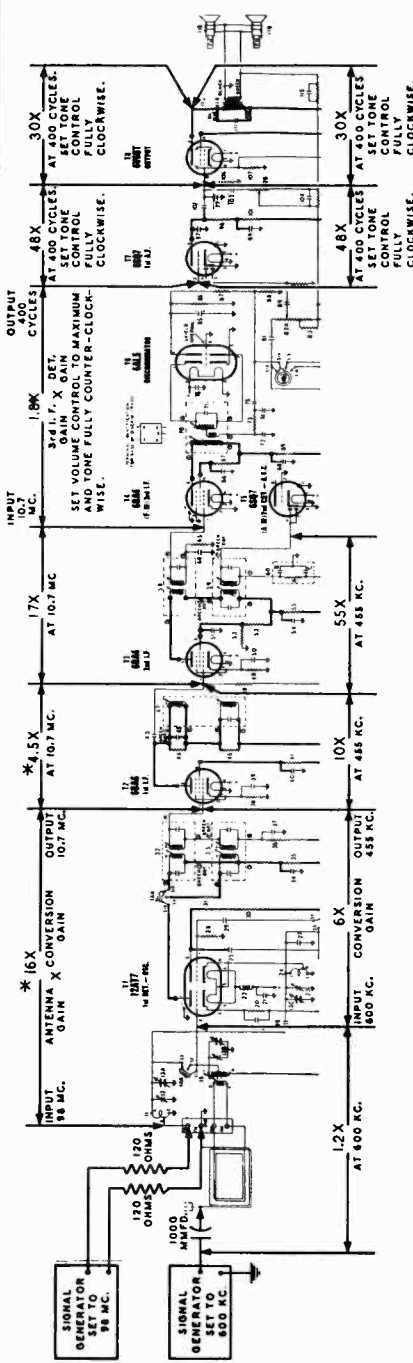
DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
0.1 MFD. Condenser	Pin #7 of 12BE6 tube.	455 KC	Broadcast (counter-clockwise)	Any point where 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 Terminal (AM) on Loop Antenna	1500 KC	Broadcast (counter-clockwise)	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Terminal (AM) on Loop Antenna	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 KC Generator Signal	6	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Terminal (AM) on Loop Antenna	600 KC	Broadcast (counter-clockwise)	Tune to 600 KC Generator Signal	7	Broadcast Oscillator (Series Pad)	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

Repeat adjustment of trimmers 5 and 6 at 1500 Kc. Then re-check adjustment of trimmer 7 at 600 Kc.



TRIMMER LOCATION CHART

MODELS B92CR1, -2, -3, -4, STEWART-WARNER CORP.
-8, -9, -10; CHASSIS
9043-A, -B, -C, -D, -K, -L, -M

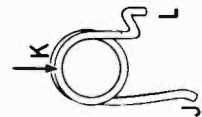


TERMINAL B IS LOCATED
1/2 TURN FROM
TERMINAL C

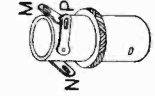


FM ANT.
COIL
505919

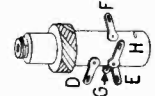
TERMINAL K IS LOCATED
1/2 TURN FROM
TERMINAL L



FM OSC.
COIL
505918



BC. OSC.
COIL
505927



BC. ANT.
COIL
505929

*The gain of these stages cannot be made with a vacuum tube voltmeter due to the presence of RF voltage from the local oscillator as that voltage prevents a true measurement of the incoming signal. To determine actual gain, use a signal generator with calibrated output so that a signal of

known value may be injected at desired points. The ratio of signal generator voltage, applied to successive stages to produce a given audio output will be the gain of that section of the receiver.

DIFFERENCES in tube characteristics, tolerance of parts, adjustment of tuned circuits and variations in line voltage will influence stage gain. These factors should be given due attention in event the gain of a stage varies extensively from the values shown above.

STAGE GAIN MEASUREMENT PROCEDURE

REQUIRED INSTRUMENTS: The amount of amplification or "gain" of most of the stages of this receiver can be measured with an A.C. Vacuum Tube Voltmeter of the high frequency type. An AM (600 KC.) as well as an FM (98 MC.) signal source is required. For gain measurements in the FM antenna-FM converter-FM 1st I.F. stages, a microvolt calibrated FM signal generator must be used.

PROCEDURE: It is exceedingly important to adhere to the procedure outlined below since the accuracy of these measurements will be affected to a considerable extent by the failure to establish proper operating conditions.

1. Be sure that R.F., I.F. and Discriminator stages are carefully and accurately aligned by utilizing the alignment procedure given in this manual.
2. Connect Signal Generator as shown below. Note that generator connections differ for "AM" and "FM" measurements.
3. For "AM" measurements, set signal generator to 600 KC. (400 cycle modulation) and then carefully tune radio receiver to this signal by using an output meter to indicate peak output. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
4. For "FM" measurements, set signal generator to 98 MC. (400 cycle modulation with 22 1/2 KC. deviation) and then carefully tune radio receiver to this signal by using a D.C. Vacuum Tube Volt-

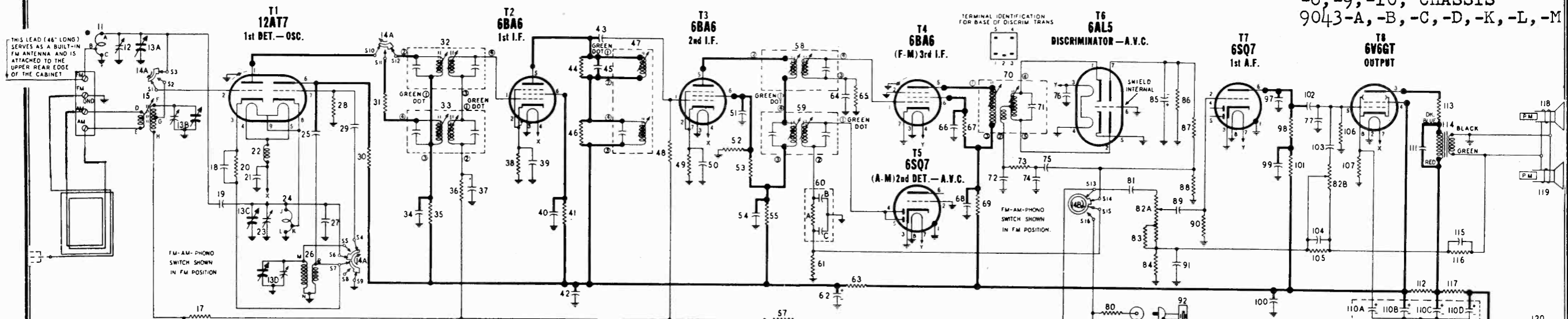
meter as an output indicator—meter must be connected between pin #7 of 6AL5 tube and chassis. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.

5. The values of stage gain which are given here were measured with a fixed bias of 3 volts on the control grids of all R.F. and I.F. tubes which are connected to the A.V.C. circuit. Therefore, these values are not intended to indicate the full capability of a stage but they will serve as a convenient basis for determining proper operation. In order to duplicate the fixed bias voltage, connect the negative terminal of a 3 volt battery to A.V.C. at the junctions of resistors #17 and 57 and connect the positive battery lead to the receiver chassis.

6. R.F. and I.F. circuits are slightly de-tuned when contact is made with an instrument probe and this action, which is indicated by a change in the output meter reading, may seriously affect the gain measurement. Therefore, it is important to adjust the associated circuit trimmer for a maximum output meter reading and to set the input signal level to a convenient reference point on the gain measuring instrument while the probe is making contact. After removing the probe it is again necessary to adjust the trimmer so as to obtain the same output meter reading and thereby assure that the signal voltage at the specified point has not changed as a result of circuit de-tuning.

STEWART-WARNER CORP.

MODELS B92CR1, -2, -3, -4, -8, -9, -10; CHASSIS 9043-A, -B, -C, -D, -K, -L, -M



DIA-GRAM NO.	PART NO.	DESCRIPTION
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DIA-GRAM NO.	PART NO.	DESCRIPTION
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DIA-GRAM NO.	PART NO.	DESCRIPTION
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DIA-GRAM NO.	PART NO.	DESCRIPTION
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CONDENSERS		
12	505920	Condenser—trimmer 3-12 Mmfd.
13 A to D	505916	Condenser—variable gang (with drum)
16	502153	Condenser—.05 Mfd. 200 volt.
18	505873	Condenser—ceramic .005 Mfd. 450 volt.
19	504983	Condenser—ceramic 1.0 Mmfd. 500 volt.
21	502151	Condenser—.01 Mfd. 400 volt.
23	505920	Condenser—trimmer 3-12 Mmfd.
25	505873	Condenser—ceramic .005 Mfd. 450 volt.
27	504905	Condenser—ceramic 5 Mmfd. 500 V. ± 10%
29	502182	Condenser—ceramic 39 Mmfd. 500 V. ± 5%
34	505873	Condenser—ceramic .005 Mfd. 450 volt.
37	505873	Condenser—ceramic .005 Mfd. 450 volt.
39	502156	Condenser—.004 Mfd. 400 volt.
40	505873	Condenser—ceramic .005 Mfd. 450 volt.
42	505873	Condenser—ceramic .005 Mfd. 450 volt.
43	504974	Condenser—ceramic 47 Mmfd. 500 volt.
45	506399	Condenser—ceramic 33 Mmfd. 500 V. ± 5%
50, 51	505873	Condenser—ceramic .005 Mfd. 450 volt.
54	505873	Condenser—ceramic .005 Mfd. 450 volt.
56	502153	Condenser—.05 Mfd. 200 volt.
60 B, C	505946	Condenser—ceramic 150 Mmfd. 400 volts (part of RF filter unit)
62	504719	Condenser—electrolytic 4 Mfd. 450 volt.
64	505873	Condenser—ceramic .005 Mfd. 450 volt.
66	505873	Condenser—ceramic .005 Mfd. 450 volt.
68	505873	Condenser—ceramic .005 Mfd. 450 volt.
71	505183	Condenser—ceramic 47 Mmfd. 500 V. ± 2%
72	505026	Condenser—ceramic 150 Mmfd. 350 volt.
74	502151	Condenser—.01 Mfd. 400 volt.
75	502152	Condenser—.02 Mfd. 400 volt.
76	505873	Condenser—ceramic .005 Mfd. 450 volt.
77	504974	Condenser—ceramic 47 Mfd. 500 volt.
79	502151	Condenser—.01 Mfd. 400 volt.
81	502153	Condenser—.05 Mfd. 200 volt.
85	504937	Condenser—electrolytic 5 Mfd. 50 volt.
89	502260	Condenser—.002 Mfd. 600 volt.
91	512044	Condenser—.25 Mfd. 200 volt.
97	502931	Condenser—mica 100 Mmfd. 500 volt.
99	502410	Condenser—.1 Mfd. 400 volt.
100	502157	Condenser—.05 Mfd. 400 volt.
102	502152	Condenser—.02 Mfd. 400 volt.
103	504904	Condenser—.01 Mfd. 600 volt.
104	512032	Condenser—.1 Mfd. 200 volt.
110 A to D	505908	Condenser—electrolytic A—20 Mfd. 25 volt B—10 Mfd. 450 volt C—30 Mfd. 450 volt D—40 Mfd. 450 volt
111	502260	Condenser—.002 Mfd. 600 volt.
115	512032	Condenser—.1 Mfd. 200 volt.
121	512255	Condenser—.01 Mfd. 400 volt.

53	510155	Resistor—carbon 10,000 Ohms 1/2 watt.
55	510037	Resistor—carbon 1,000 Ohms 1/4 watt.
57	510093	Resistor—carbon 2.2 Meg. 1/4 watt.
60-A	505946	Resistor—carbon 47,000 Ohms 1/5 watt (part of RF filter unit)
61	510085	Resistor—carbon 470,000 Ohms 1/4 watt.
63	510343	Resistor—carbon 2,200 Ohms 2 watt.
65	510091	Resistor—carbon 1 Meg. 1/4 watt.
67	510261	Resistor—carbon 22,000 Ohms 1 watt.
69	510137	Resistor—carbon 1,000 Ohms 1/2 watt.
73	510046	Resistor—carbon 3,300 Ohms 1/4 watt.
78	510070	Resistor—carbon 68,000 Ohms 1/4 watt.
80	510079	Resistor—carbon 220,000 Ohms 1/4 watt.
82-A,B,C	505911	Volume and tone control A—2 Megohms B—2 Megohms C—"ON-OFF" switch
83	510070	Resistor—carbon 68,000 Ohms 1/4 watt.
84	510037	Resistor—carbon 1,000 Ohms 1/4 watt.
86	510061	Resistor—carbon 22,000 Ohms 1/4 watt.
87	510093	Resistor—carbon 2.2 Meg. 1/4 watt.
88	510085	Resistor—carbon 470,000 Ohms 1/4 watt.
90	510098	Resistor—carbon .15 Meg. 1/4 watt.
98	510093	Resistor—carbon 2.2 Meg. 1/4 watt.
101	510079	Resistor—carbon 220,000 Ohms 1/4 watt.
105	510067	Resistor—carbon 47,000 Ohms 1/4 watt.
106	510085	Resistor—carbon 470,000 Ohms 1/4 watt.
107	510128	Resistor—carbon 330 Ohms 1/2 watt.
112	510709	Resistor—wire wound 600 Ohms 5 watt.
113	510013	Resistor—carbon 47 Ohms 1/4 watt.
116	510043	Resistor—carbon 2,200 Ohms 1/4 watt.
117	510709	Resistor—wire wound 600 Ohms 5 watt.

COILS AND TRANSFORMERS		
11	505919	Coil—FM antenna
15	505929	Coil BC. antenna
	505894	Slug core for antenna coil
22	505075	Coil—R.F. choke (FM)
24	505918	Coil—FM oscillator
26	505927	Coil—BC oscillator
32	506080	Transformer—1st I.F. (FM)
33	505906	Transformer—1st I.F. (AM)
47	505907	Transformer—2nd I.F. (FM and AM)
58	505905	Transformer—3rd I.F. (FM)
59	505906	Transformer—3rd I.F. (AM)
70	505904	Transformer—discriminator
108	505075	Coil—R.F. choke (FM)
114	505912	Transformer—output
120	505909	Transformer—power

OTHER ELECTRICAL PARTS		
14-A, B	505922	Switch—FM-AM-Phono
60-A,B,C	505946	RF filter unit A—Resistor—carbon 47,000 Ohms 1/5 watt B—Condenser—ceramic 150 Mmfd. 400 volt. C—Condenser—ceramic 150 Mmfd. 400 volt.
92	505100	Crystal cartridge
	505273	Motor—for type "VM"—505339 and "VM"—506261 record changer 115 volt 60 cyc.
	505274	Motor—for type "VM"—505339 and "VM"—506261 record changer 115 volt 50 cyc.
93	505750	Motor—for type "A"—505650 record changer 115 volt 50 cyc.
	505758	Motor—for type "A"—505650 record changer 115 volt 60 cyc.

MISCELLANEOUS PARTS		
301270		Base for mtg. electrolytic condenser
505368		Base for tube shield
505896		Bulls eye for pilot light in record changer compartment
505165		"C" washer
112745		Clip—coil mounting
114955		Clip—retains on end of dial cord
160326		Clip—retains dial scale
160832		Clip—retains escutcheon
505101		Clip for mounting I.F. transformers
117057		Cord—dial drive (3 ft. required) per ft.
505939		Dial scale (brown background)
506310		Dial scale (black background)
506070		Door for radio compartment; upper right; Model B92CR1 (less hardware)
506071		Door for record compartment; lower left; Model B92CR1 (less hardware)
506072		Door for record compartment; lower right; Model B92CR1 (less hardware)
506075		Door for record storage compartment; Model B92CR3 (less hardware)
506156		Door for record storage compartment; Model B92CR2 (less hardware)
506157		Door for record storage compartment; Model B92CR4 (less hardware)
505333		Escutcheon—dial
506380		Fastener for loop antenna
506073		Handle for record storage compartment door; Model B92CR1
506077		Handle for door; Models B92CR2, B92CR3, and B92CR4
506265		Handle; Models B92CR8, B92CR9, B92CR10
505466		Handle for radio door; Model B92CR1
505467		Hinge—door; Model B92CR1 per pair
506076		Hinge—door; Model B92CR3 per pair
506162		Hinge for door; Model B92CR2, B92CR4 (supplied in pairs)
505457		Hinge for lid; Models B92CR2, B92CR4, B92CR8, B92CR9, B92CR10, (supplied in pairs)
505464		Hinge for lid; Models B92CR1 and B92CR3 (supplied in pairs)
505935		Knob—"TUNING" (brown plastic)
505936		Knob—"VOLUME" (brown plastic)
505937		Knob—"TONE" (brown plastic)
506938		Knob—"FM-AM-PHONO" (brown plastic)
506306		Knob—"TUNE" (black plastic)
506307		Knob—"VOLUME" (black plastic)
506308		Knob—"TONE" (black plastic)
506309		Knob—"FM-AM-PHONO" (black plastic)
505462		Lid for record changer compartment; Model B92CR1 (less hardware)
505669		Lid for record changer compartment; Model B92CR3 (less hardware)
506159		Lid for record changer compartment; Model B92CR2 (less hardware)

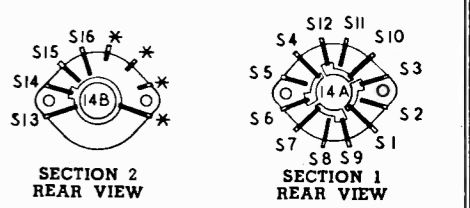
DIA-GRAM NO.	PART NO.	DESCRIPTION
506160		Lid for record changer compartment; Model B92CR4 (less hardware)
506268		Lid for record changer compartment; Model B92CR8
506269		Lid for record changer compartment; Model B92CR9
506270		Lid for record changer compartment; Model B92CR10
505456		Lid support for Models B92CR8, B92CR9, and B92CR10
505463		Lid support for Model B92CR1
506074		Lid support for Model B92CR3
506163		Lid support for Models B92CR2, B92CR4
505469		Light diffusing strip
505717		Needle—Phonograph
505686		Pointer
500966		Plug for phono. pick-up cable
501031		Plug for phono. motor cable
119087		Ring for dial cord
505944		Rubber pad for mtg. chassis
79993		Screw—8 x 1/4"; for mtg. chassis
505923		Shaft—tuning
503588		Shaft and drum for dial
505722		Shield—light
505367		Shield—tube
505930		Shield—tube (12AT7)
505894		Slug core for antenna coil
116690		Socket—octal base
160039		Socket—phono. plug
160392		Socket—octal (rectifier)
504597		Socket—miniature
505307		Socket and phono. motor cable
505910		Socket—pilot light
505921		Socket—noval base
505933		Socket—pilot light (record changer comp.)
505161		Spring—tension
506275		Stop for door; Models B92CR2, B92CR4
506276		Stop for door; Model B92CR3
505924		Terminal strip (FM-FM-AM-AM)

NOTE

A revision that occurred during production is included in the circuit on this page and it may be identified as follows:

Condenser #77 was formerly connected from terminal S14 (switch section 14B) to ground.

This change was made to provide greater stability in the audio system. Chassis incorporating the change have a letter "S" stamped on rear surface adjacent to model number.



SECTION 2 REAR VIEW

SECTION 1 REAR VIEW

★ Not used; may serve as wiring junction point.

BAND SWITCH 505922

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

STEWART-WARNER CORP.

MODELS B92CR1, -2, -3, -4, -8, -9, -10; CHASSIS 9043-A, -B, -C, -D, -K, -L, -M

BROADCAST BAND — "AM" — ALIGNMENT PROCEDURE

1. Disconnect leads from FM-AM antenna terminal strip (labelled FM-FM-AM-AM) at back of chassis; also disconnect speaker leads and phone plugs. Remove chassis as well as the two speakers. (If desired, allow speakers to remain in cabinet and connect to receiver by extension leads.)
2. Stand chassis on one edge and space it approximately same distance from loop (attached to back of cabinet) as when installed in cabinet. Reconnect all antenna leads previously connected to the antenna terminal strip. Reconnect the two speakers.
3. With the gang condenser fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, hold tuning shaft steady and reposition pointer.
4. Connect an output meter across speaker voice coils, or from plate of 6V6GT tube to chassis through a 0.1 Mfd. condenser.
5. Connect ground lead of signal generator to the receiver chassis.
6. Set volume control at maximum volume position and use a weak signal from the signal generator.
7. After alignment procedure is completed and chassis and loop antenna have been reinstalled in cabinet, arrange leads to loop so that they are separated from each other as much as possible—avoid twisting, taping or extending these leads.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER OR SLUG NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Lug on trimmer #7 at top of gang (see figure below for location of trimmer).	455 KC	AM Broadcast (Middle)	Any point where it does not affect the signal.	1-2 3 4-5	3rd I.F. 2nd I.F. 1st I.F.	Adjust for maximum output. Then repeat adjustment.
1000 MMFD. Mica Condenser	External Antenna Clip on Cabinet	1500 KC	AM Broadcast (Middle)	1500 KC	6	Broadcast Oscillator	Adjust for maximum output.
1000 MMFD. Mica Condenser	External Antenna Clip on Cabinet	1500 KC	AM Broadcast (Middle)	Tune to 1500 Kc. generator signal.	7	Broadcast Antenna	Adjust for maximum output.
1000 MMFD. Mica Condenser	External Antenna Clip on Cabinet	600 KC	AM Broadcast (Middle)	Tune to 600 Kc. generator signal.	8	Adjustable core of Broadcast Antenna Coil.	Adjust for maximum output.

Repeat adjustment of trimmers 7 and 8 until one no longer detunes the other.

NOTE: It is preferable to check the alignment of the 2nd IF stage in the FM channel after completing AM alignment.

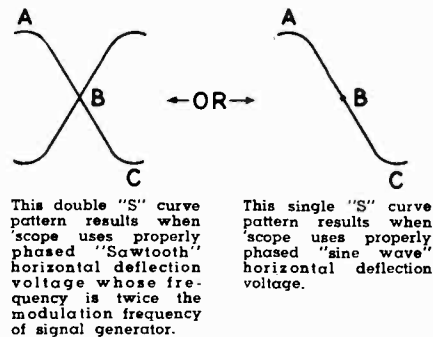
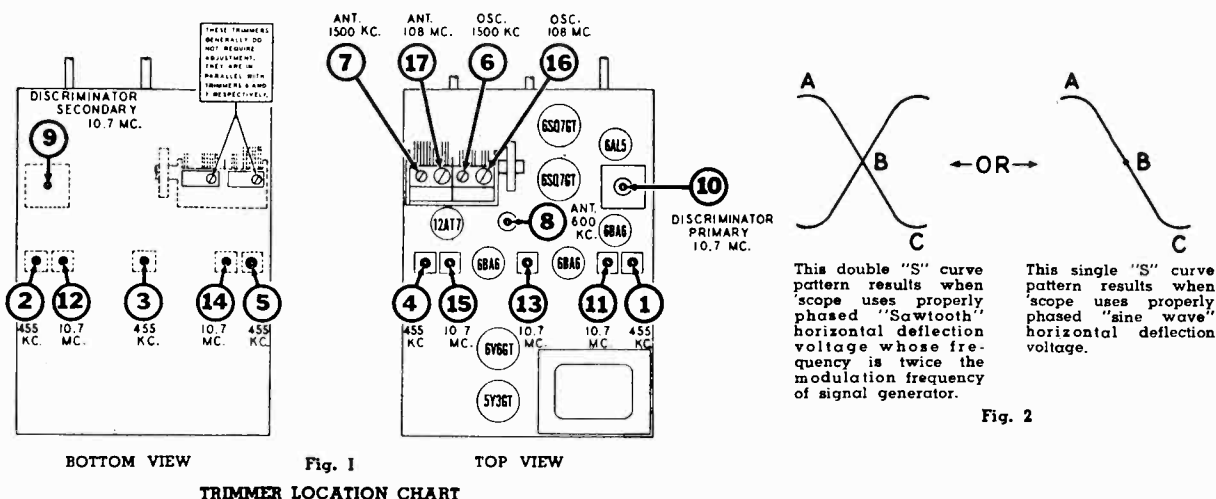


Fig. 2

MODELS B92CR1, -2, -3, -4, -8, -9, -10; CHASSIS 9043-A, -B, -C, -D, -K, -L, -M STEWART-WARNER CORP.

FREQUENCY MODULATION — "FM" — ALIGNMENT PROCEDURE

(USING A VACUUM TUBE VOLTMETER AND AM SIGNAL GENERATOR)

INSTRUMENTS: Although it is preferable to use an FM generator and an oscilloscope, reasonably accurate alignment is obtainable when using a conventional AM generator and vacuum tube voltmeter providing proper care is exercised in adjusting the discriminator circuit trimmer.

IMPORTANT: When using an AM signal generator, it should be capable of producing fundamental frequencies of 10.7 MC and 88 to 108 MC — avoid using an AM generator which produces signals in the 88 to 108 MC range by using harmonics higher than the second. Generators which are dependent upon third, fourth or fifth harmonics for output frequencies of 88 to 108 MC will generally produce undesirable spurious beat signals with the local oscillator in the receiver and alignment will be exceedingly difficult.

1. If alignment of both AM and FM channels is required it is necessary to align the AM channel first, then align the FM channel as instructed in chart below (AM alignment procedure is given on the preceding page).

2. Disconnect leads from FM-AM antenna terminal strip (labelled FM-FM-AM-AM) at back of chassis; also disconnect speaker leads and phone plugs. Remove chassis as well as the two speakers. (If desired, allow speaker to remain in cabinet and connect to receiver by extension leads.)
3. With the gang condenser fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, hold tuning shaft steady and reposition pointer.
4. A specific setting of the receiver volume control is not required, however, it will be found convenient to leave it in the maximum volume position so that alignment signals will be audible even though the output indication is obtained by a V-T voltmeter connected to points in the discriminator circuit.
5. Dress FM circuit leads as short and straight as possible, particularly those in the oscillator circuit. I.F. plate and grid leads should also be kept short and straight.
6. Set band switch to the FM (extreme clockwise) position.

SIGNAL GENERATOR CONNECTIONS	FREQUENCY & TYPE OF MODULATION	VACUUM TUBE VOLTMETER CONNECTIONS	RECEIVER DIAL SETTING	TRIMMER OR SLUG NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT AND OUTPUT INDICATION
Connect high side to Pin #2 of 12AT7. Use a .01 MFD. condenser in series with generator lead. Connect ground lead to receiver chassis in vicinity of 12AT7 tube.	10.7 MC AM signal may be 400 cycle modulated.	Connect common (or ground) terminal of meter to receiver chassis. D.C. probe lead of meter is then connected to pin #7 of the 6AL5 tube.	Any position where it does not affect the signal.	10	Discriminator Primary	Adjust these trimmers for maximum meter reading—the output voltage will be of negative polarity.
				11 and 12	3rd I.F.	
				13	2nd I.F.	
Same as above	Same as above	Before connecting V-T voltmeter, it is necessary to connect two 68,000 ohm resistors (resistance of both units must compare within 1%) in series from pin #7 of the 6AL5 tube to the chassis. Then connect common (or ground) terminal of V-T voltmeter to the junction of these two resistors. D.C. probe lead of meter is now connected to junction of resistor #73 (3300 ohms) and condenser #75 (.02 MFD.) which are in the discriminator output circuit.	Same as above	14 and 15	1st I.F.	Note that as trimmer #9 is rotated a point will be found where voltmeter will swing rather sharply from a positive to a negative reading or vice versa. Correct setting of trimmer #9 is obtained when meter reads zero as trimmer is moved through this point. The adjustment is somewhat critical and considerable care must be exercised to set the trimmer for a zero meter indication.
				9	Discriminator Secondary	

Recheck adjustment of trimmers #9 and 10 to be sure that both are set as accurately as possible to obtain the specified output indication on vacuum tube voltmeter. Then disconnect and remove the two 68,000 ohm resistors that were used for the vacuum tube voltmeter connection in the preceding step.

Generator output leads must be connected to the two "FM" antenna terminals at back of chassis. Insert a 120 Ohm resistor in series with each of the generator leads before connecting to receiver antenna terminals.	108 MC AM signal may be 400 cycle modulated.	Connect common (or ground) terminal of meter to receiver chassis. D.C. probe lead of meter is then connected to Pin #7 of the 6AL5 tube.	108 MC	16	Oscillator Trimmer	Set trimmer #16 to receive 108 MC. signal as indicated by maximum meter reading.
				17	Antenna Trimmer	Adjust trimmer #17 for maximum meter reading.
Same as above	Same as above	Same as above	By means of tuning control knob, set dial pointer to 108 MC. mark on dial.	14 and 15	1st I.F.	Recheck adjustment of these trimmers for maximum meter reading.

Check calibration and tracking of receiver with input signals of 88 and 98 MC. If difference between dial pointer setting and 88 or 98 MC calibration mark does not exceed ± 0.3 MC. and antenna circuit is tracking properly, then alignment may be considered satisfactory and no further adjustment is necessary.

Where the calibration error is greater than ± 0.3 MC. it is advisable to make the following adjustments:

1. If pointer falls above the 88 MC. calibration point, it will be necessary to slightly spread the windings of the FM oscillator coil. Then repeat the two preceding adjustments of trimmers

16 and 17 at 108 MC. Should it be found impossible to obtain the 108 MC. signal at the proper point on the dial by adjustment of the trimmers it will then be necessary to adjust the spacing of the gang condenser plates.

2. If pointer falls below the 88 MC. calibration point, it will be necessary to push the windings together on the FM oscillator coil. Then repeat the two preceding adjustments of trimmers 16 and 17 at 108 MC. Should it be found impossible to obtain the 108 MC. signal at the proper point on the dial by adjustment of the trimmers it will then be necessary to adjust the spacing of the gang condenser plates.

STEWART-WARNER CORP. MODELS B92CR1, -2, -3, -4, -8, -9, -10; CHASSIS 9043-A, -B, -C, -D, -K, -L, -M

FREQUENCY MODULATION — "FM" — ALIGNMENT PROCEDURE

(USING AN OSCILLOSCOPE AND FM "SWEEP" GENERATOR)

INSTRUMENTS: Alignment of the FM circuits in this receiver can be most conveniently accomplished with an FM signal generator. When using this type generator, the output indicator must be an oscilloscope.

1. If alignment of both AM and FM channels is required it is necessary to align the AM channel first, then align the FM channel as instructed in chart below (AM alignment procedure is given on page 4).
2. Disconnect leads from FM-AM antenna terminal strip (labelled FM-FM-AM-AM) at back of chassis; also disconnect speaker leads and phono plugs. Remove chassis as well as the two speakers. (If desired, allow speakers to remain in cabinet and connect to receiver by extension leads.)
3. With the gang condenser fully meshed, dial pointer should be in the position indicated by the last

division below 55 on the dial. If it is set incorrectly, hold tuning shaft steady and reposition pointer.

4. A specific setting of the receiver volume control is not required, however, it will be found convenient to leave it in the maximum volume position so that alignment signals will be audible even though the output indication is obtained by an oscilloscope connected to points in the discriminator circuit.
5. Dress FM circuit leads as short and straight as possible, particularly those in the oscillator circuit. I.F. plate and grid leads should also be kept short and straight.
6. Set band switch to the FM (extreme clockwise) position.
7. Set tone control to fully counter-clockwise position.

SIGNAL GENERATOR CONNECTIONS	FREQUENCY & TYPE OF MODULATION	OSCILLOSCOPE CONNECTIONS	RECEIVER DIAL SETTING	TRIMMER OR SLUG NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT AND OUTPUT INDICATION
Connect high side to Pin #2 of 12A77. Use a 01 MFD. condenser in series with generator lead. Connect ground lead to receiver chassis in vicinity of 12A77 tube.	10.7 MC FM signal should preferably be modulated ±300 KC.	Connect vertical amplifier "high" lead in series with an 0.1 MFD. condenser to pin #6 of 6SQ7 1st A.F. tube. Connect scope ground lead to receiver chassis. Set vertical amplifier of scope for maximum amplification. Where FM signal generator provides an output voltage for synchronization, connect this voltage to "sync" terminals of the scope.	Any position where it does not affect the signal.	9	Discriminator Secondary	Before attempting to adjust trimmer #9, set trimmers #10, 11, 12, 13, 14 and #15 for approximately maximum sound output from the speaker (output meter not required). This is done to obtain sufficient signal for an oscilloscope pattern of desirable amplitude when making the following discriminator trimmer adjustment. Adjust setting of trimmer #9 until a pattern similar to that shown in Fig. 2 appears on the screen. If pattern does not remain stationary operate sweep frequency control on 'scope and also "sync" control until desired result is obtained. Correct setting of trimmer #9 is obtained when crossover point "B" (Fig. 2) is centrally located in both the horizontal and vertical directions; in addition that portion of the curve between "A" and "C" should be as linear (straight) as possible.
				10	Discriminator Primary	
				11 and 12	3rd I.F.	
				13	2nd I.F.	
Same as above	Same as above	Same as above	Same as above	14 and 15	1st I.F.	Adjust these trimmers for maximum amplitude and steepness of that portion of the pattern between "A" and "C" (see Fig. 2).

Recheck adjustments of trimmers #9 and 10 to be sure that both are set as accurately as possible to obtain correct cross-over point or symmetry of pattern.

Generator output leads must be connected to the two "FM" antenna terminals at back of chassis. Insert a 120 Ohm resistor in series with each of the generator leads before connecting to receiver antenna terminals.	108 MC FM signal should preferably be modulated ±300 KC.	Same as above	108 MC	16	Oscillator Trimmer	Adjust trimmer #16 to obtain the symmetrical pattern shown in Fig. 2. Correct setting of trimmer #16 is obtained when cross-over point in pattern is centrally located.
				17	Antenna Trimmer	
Same as above	Same as above	Same as above	By means of tuning control knob, set dial pointer to 108 MC. mark on dial.	14 and 15	1st I.F.	Recheck adjustment of these trimmers for maximum amplitude of pattern.

Check calibration and tracking of receiver with input signals of 88 and 98 MC. If difference between dial pointer setting and 88 or 98 MC calibration mark does not exceed ± 0.3 MC. and antenna circuit is tracking properly, then alignment may be considered satisfactory and no further adjustment is necessary.

Where the calibration error is greater than ± 0.3 MC. it is advisable to make the following adjustments:

1. If pointer falls above the 88 MC. calibration point, it will be necessary to slightly spread the windings of the FM oscillator coil. Then repeat the two preceding adjustments of trimmers

16 and 17 at 108 MC. Should it be found impossible to obtain the 108 MC. signal at the proper point on the dial by adjustment of the trimmers it will then be necessary to adjust the spacing of the gang condenser plates.

2. If pointer falls below the 88 MC. calibration point, it will be necessary to push the windings together on the FM oscillator coil. Then repeat the two preceding adjustments of trimmers 16 and 17 at 108 MC. Should it be found impossible to obtain the 108 MC. signal at the proper point on the dial by adjustment of the trimmers it will then be necessary to adjust the spacing of the gang condenser plates.

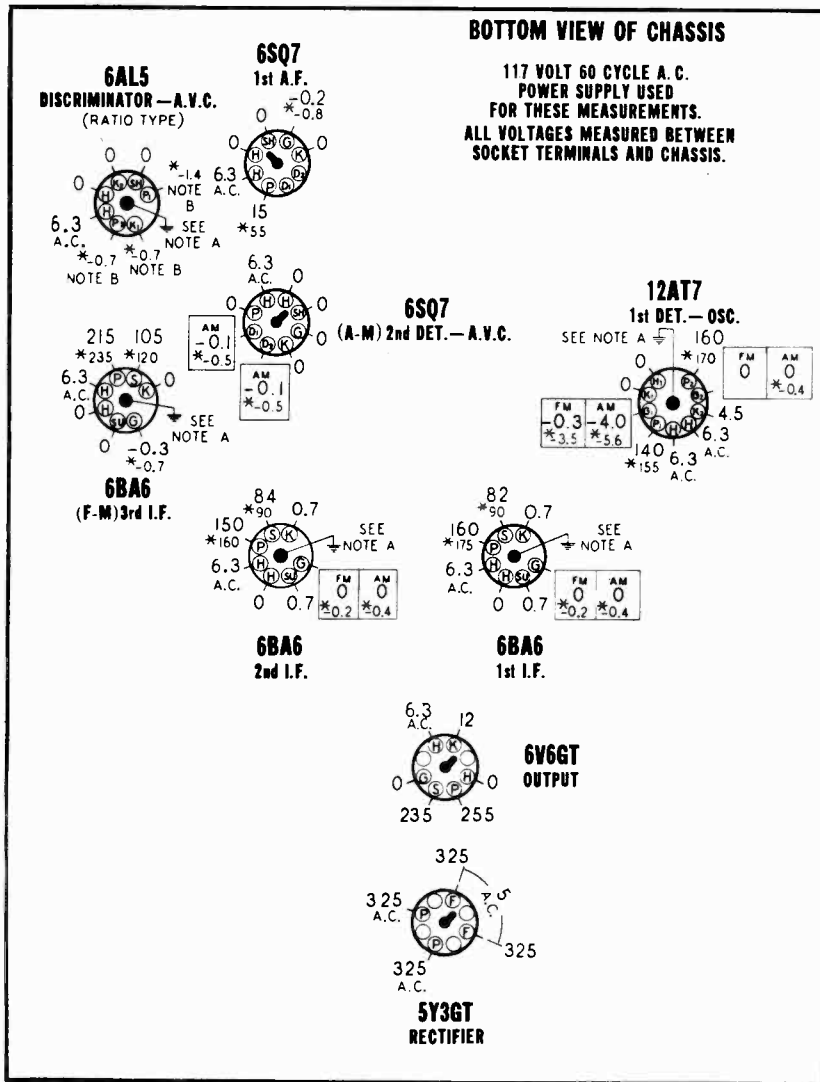
MODELS B92CR1, -2, -3, STEWART-WARNER CORP.
-4, -8, -9, -10

CHASSIS 9043-A, -B,
-C, -D, -K, -L, -M

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*). The (*) symbol designates a vacuum tube voltmeter measurement.

ALL MEASUREMENTS MADE WITH BAND SWITCH IN "FM" POSITION UNLESS OTHERWISE INDICATED
DIAL TUNED TO 88MC. FOR "FM" MEASUREMENTS
DIAL TUNED TO 540KC. FOR "AM" MEASUREMENTS
VOLUME CONTROL SET TO MINIMUM WITH NO SIGNAL
TONE CONTROL SET TO FULLY CLOCKWISE POSITION
GROUND ALL ANTENNA TERMINALS

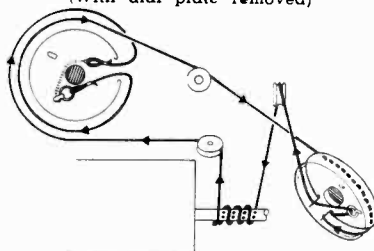


REAR OF CHASSIS

NOTE A: Grounding of center stud on tube socket is necessary to reduce capacity coupling between other pins. Oscillation may result if this ground is omitted.
NOTE B: This measurement should NOT be made with a conventional type voltmeter as circuit may break into oscillation due to coupling thru instrument leads; use a vacuum tube voltmeter with short leads.

DIAL AND POINTER DRIVE CORD ARRANGEMENT

SIDE VIEW
(With dial plate removed)

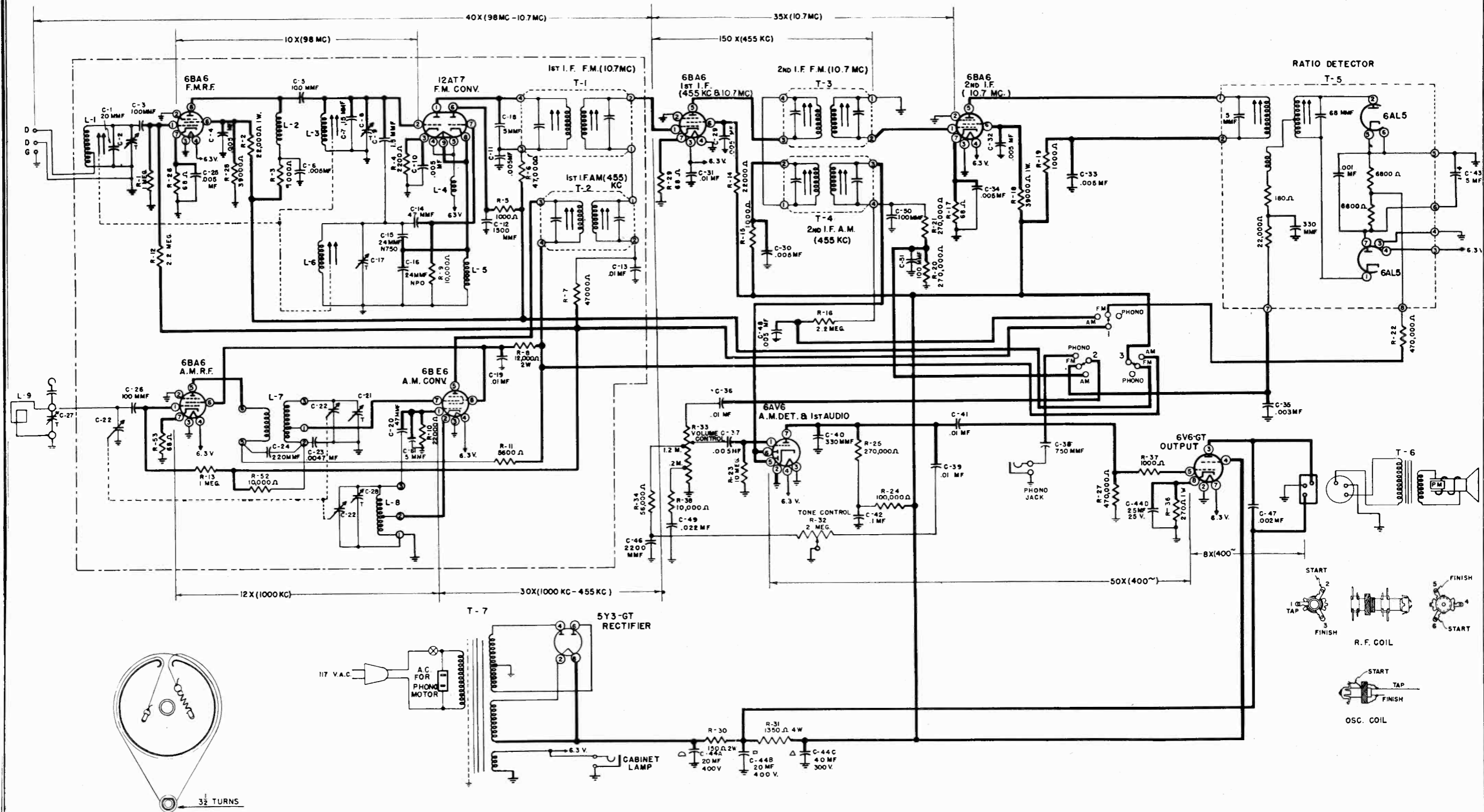


To string dial cord, first slip pointer off its shaft. Then remove dial scale by taking out the six clips around edges. Dial plate may be taken off by removing the two screws which are visible and accessible at front of chassis. Now set gang condenser to fully open position and use the following parts:

- 114955 Clip on end of cord
- 117057 Cord (3 feet)
- 119087 Ring for dial cord
- 505161 Tension spring

To replace and properly position pointer see step 3 in "AM-Alignment Procedure" on page 4.

SCHEMATIC



Note: C-30 should be shown returning to 6BA6 1st IF screen grid (Pin 6), instead of to ground.
The wire should be shown removed from Pin 5 of 6AV6 AM Detector and then Pin 5 should be shown grounded.

SPECIFICATIONS

Voltage Rating	50-60 cycle 117V
Tuning Range	535 to 1630 Kc.
	87 to 109 Mc.
Input Power Rating	70 Watts
	25 Watts
Intermediate Frequency	455 Kc.
	10.7 Mc.
Speaker Voice Coil Impedance* at 400 Cycles	6 Ohms
Power Output	3 Watts

TUBE COMPLEMENT

6BA6	IF & RF Amplifiers	4
12AT7	FM Converter	1
6BE6	AM Converter	1
6AL5	Ratio Detector	1
6AV6	AM Detector	1
6V6GT	Power Output	1
5Y3GT	Rectifier	1

10

IDENTIFICATION TABLE

Model	Chassis	Cabinet	Speaker	Phonograph	
				Mfr. No.	S-C No.
PLM	112052	108126	155065	VM-800A	148035
PLA	112052	108127	155065	VM-800A	148035

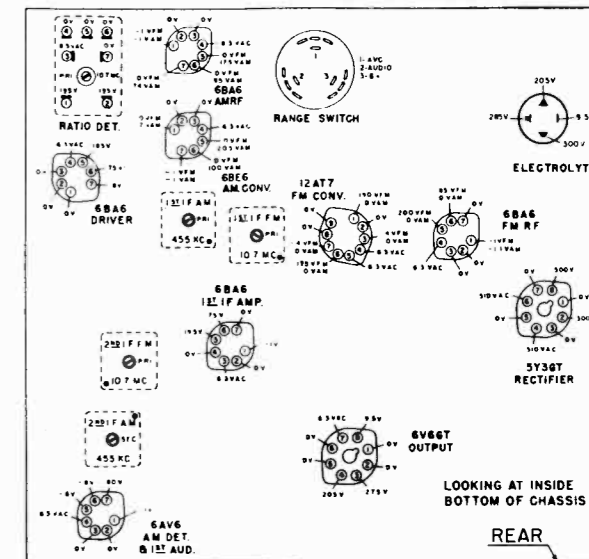
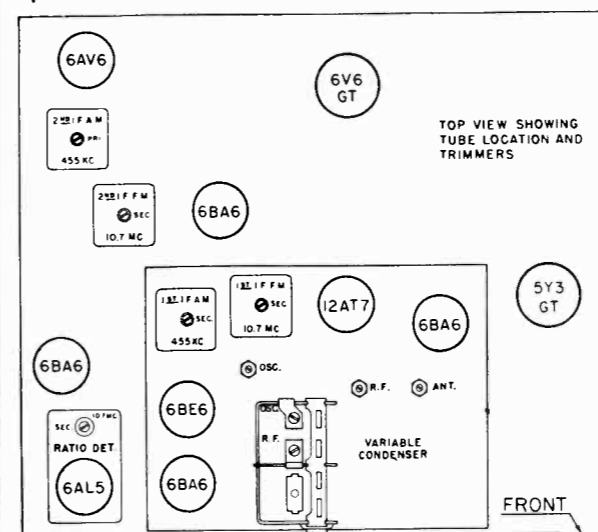
REPLACEMENT PARTS

The 1406 receiver uses many of the same parts that are also used on the 1407. Therefore, when ordering replacement parts, use the 1407 Service Notes with the exception of the following which replace corresponding parts of the 1407.

Part No.	Circuit No.	Description
110413	C-61	5MMF Ceramic Capacitor
111057	C-44	Electrolytic Capacitor
122035		Dial
124022		Drive Cord Assembly
134054		Ring
134074		Knob (Tuning)
134075		Knob (Tone and Volume)
134077		Knob (Selector)
144020		Pointer
145073	R-33	Potentiometer 2 Meg. (Volume Control)
145074	R-32	Potentiometer 2 Meg. (Tone Control)
147023		Pulley Assembly
149321	R-31	1350 Ohms 4 Watt
158034		Range Switch

CABINET PARTS

Part No.	PLA	PLM	Description
130080	x		Grille Cloth
130081		x	Grille Cloth
132016	x	x	Bullet Catch
132063	x	x	Knife Hinge R.H.
132064	x	x	Knife Hinge L.H.
132109		x	Door Pull
132110	x		Door Pull
132112	x	x	Drawer Slide
132113	x	x	Drawer Glide
148033	x	x	Drawer Assembly
201016	x		Door Pull Screw
204041		x	Door Pull Screw
524198	x	x	Hinge Mounting Screw



TUBE LOCATION AND VOLTAGE CHARTS

NOTE: Dots on IF trans. indicate the position of the color coded terminals.

ALIGNMENT PROCEDURE

On IF and Ratio Detector transformers, primary slugs are under chassis and secondary slugs above chassis. Adjust AM loop trimmer after chassis is in cabinet for best reception at 1500 Kc. Adjust dial pointer to diamond under 88 Mc. with condenser plates fully meshed.

A.M. - I.F.

Band & Pointer	Signal Generator	VTVM or Scope Connection	Adjustment and Notes
1. AM low end of dial.	455 Kc. 400 cy. mod. to Pin 7 (Grid) of 6BE6 tube through .01 cap.	Term. 2 of Range sw and ground.	Adj. two AM-IF trans., using —3V DC Scale.
2. " "	455 Kc. swept 15 Kc.	" "	Adjust same for best double-trace curve on scope.

F.M. - I.F.

1. FM low end of dial.	10.7 Mc. 400 cy. mod. to Pin 2 (Grid) of 12AT7 tube at RF Coil thru .01 capacitor.	" "	Detune secondary of ratio det. Adj. two FM-IF trans. and pri. ratio det. trans., using —3 VDC scale.
2. " "	10.7 Mc. swept 150 Kc.	" "	Disconnect ground end of C-43 (5 mfd. electrolytic under ratio detector can). Adj. as step 1 for best double-trace curve on scope.
3. " "	" "	Terms. 2 & 1 of Range sw.	Be sure VTVM is not grounded. Connect C-43, Adj. sec. ratio det. for 0 voltage.

A.M. - R.F.

1. AM 1500 Kc.	1500 Kc. 400 cy. mod. coupled loosely to loop leads.	Term. 2 of Range sw and ground.	Adj. two trimmers on tuning cond., using low —DC scale.
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F.M. - R.F.

1. FM 100 mc.	100 Mc. 400 cy. mod. to FM Ant. Terms., thru 270 ohm resistor.	" "	Adj. C-17 (Osc.) C-8 (RF) and C-2 (Ant.) on low —DC scale.
---------------	--	-----	--

Align both IF channels if either is out of adjustment. Use a non-metallic screwdriver and light pressure for slug adjustment. 2nd AM-IF trans. will be damaged if chassis is placed on left side. If FM osc. coil is replaced, adjust placement of its ground lead for tracking at 88 mc. Refer to No. 4 Vol. 1 Current Flash for suggested instrument use.

STROMBERG-CARLSON CO.

MODELS 1407PFM,
1407PLM, 1409 M-2W,
M2-M, M2-Y, M3A, M3M,
PGM, PGW

SPECIFICATIONS		1407	1409	TUBE COMPLEMENT		1407	1409
Voltage Rating		50-60 Cycle 117V	50-60 Cycle 117V	6BA6	IF & RF Amplifiers	4	5
Type Of Circuit		Superheterodyne	Superheterodyne	12AT7	FM Converter	1	1
Tuning Range	{AM	535 to 1630 Kc.	535 to 1630 Kc.	6BE6	AM Converter	1	1
	{FM	87 to 109 Mc.	87 to 109 Mc.	6AL5	Ratio Detector	1	1
Input Power Rating	{Radio	70 Watts	100 Watts	6AV6	AM Detector & Audio Amplifier	1	1
	{Phono	25 Watts	25 Watts	12AU7	Audio Phase Inverter	1	1
Intermediate Frequency	{AM	455 Kc.	455 Kc.	6V6GT	Power Output	1	2
	{FM	10.7 Mc.	10.7 Mc.	5Y3GT	Rectifier	1	1
Speaker Voice Coil Impedance at 400 Cycles		6 Ohms	6 Ohms	6E5	Tuning Eye	—	1
Power Output		3 Watts	11 Watts			10	14

IDENTIFICATION TABLES

Model	Cabinet
1409 M3A	108112
1409 M3M	108098
1409 M-2W	108093
1409 M2-Y	108091
1409 M2-M	108092
1409 PGM	108095
1409 PGW	108096
1407 PLM	108090
1407 PFM	108099

Description	Part No.
1409 Chassis	112036
1407 Chassis	112037
1409 & 1407 Speaker	155065
1409 Phonograph	148022 (Seeburg SQ-2)
	148018 (Seeburg S)
	148026 (VM-402 Duo)
	148031 (VM-402)
1407-PL Phonograph	148021 (Seeburg SQ-1)
	148024 (VM-400)
1407-PF Phonograph	148026 (VM-402 Duo)
	148030 (VM-402)
	148021 (Seeburg SQ-1)

REPLACEMENT PARTS

Resistors

Part No.	1409 R-No.	1407 R-No.	Description
27640	34,35		150,000 Ohms 1/2 W
28144	17,21,26,29,53	17,26,29,53	68 Ohms 1/2 W
28162	4	4	2200 Ohms 1/2 W
28169	40		8200 Ohms 1/2 W
28170	20		10,000 Ohms 1/2 W
28176	28	28	39,000 Ohms 1/2 W
28177	6	6	47,000 Ohms 1/2 W
28178	43	34	56,000 Ohms 1/2 W
28184	41	20,21,25	270,000 Ohms 1/2 W
28186	33		390,000 Ohms 1/2 W
28187	42,44,55		470,000 Ohms 1/2 W
28195	12	12	2.2 Meg. 1/2 W
149020	45		330 Ohms 2 W
149036		30	150 Ohms 2 W
149055	8	8	12,000 Ohms 2 W
149101	3,5,15,19,23,31	3,5,15,19,37	1000 Ohms 1/2 W
149103	50,51		2200 Ohms 1/2 W
149107	9,52	9,38,52	10,000 Ohms 1/2 W
149109	10	10	22,000 Ohms 1/2 W
149111	7	7	47,000 Ohms 1/2 W
149112	47		68,000 Ohms 1/2 W
149113	32	24	100,000 Ohms 1/2 W
149115	38,39		220,000 Ohms 1/2 W
149117		22,27	470,000 Ohms 1/2 W
149119	1,13	1,13	1 Meg. 1/2 W
149121	16,24	16	2.2 Meg. 1/2 W
149123	27,46		4.7 Meg. 1/2 W
149125		23	10 Meg. 1/2 W
149170		36	270 Ohms 1 W
149184	11	11	5600 Ohms 1 W

Part No.	1409	1407	Description
149188	2	2,14,18	22,000 Ohms 1 W
149189	14,18,22		39,000 Ohms 1 W
149247	30		1,000 Ohms 10 W
149282	54	41	4.7 Ohms 1 W
149286		31,32	2700 Ohms 2 W

Capacitors

Part No.	1409 C-No.	1407 C-No.	Description
25483		42	.1 MF 400 V Tubular
27646	50		.002 MF 600 V Tubular
27760		30,37,48	.005 MF 600 V Tubular
46315		35	.003 MF 400 V Tubular
110025	2,8,17	2,8,17	Trimmer
110029	22	22	Variable Condenser
110031	27	27	Trimmer 1.5-15 MMF
110402	14,20	14,20	47 MMF Ceramic
110403	16	16	24 MMF Ceramic
110404	1	1	20 MMF Ceramic
110405	7	7	15 MMF Ceramic
110419	45		.005 MF 500 V Tubular
110438	9	9	1.5 MMF Ceramic
110451	3,5,26,34,40	3,5,26,50,51	100 MMF Ceramic
110453	24	24	220 MMF Ceramic
110454		40	330 MMF Ceramic
110455	39,43		470 MMF Ceramic
110456	44	38	750 MMF Ceramic
110457	12	12	1500 MMF Ceramic
110476	56		100 MMF Ceramic NPO
110478	31		Diode Filter
110488	37		.003 MF 500 V Tubular
110536		46	2200 MMF Moulded
110540	13,19,29,30,32,33,35,36,38,41,47,53,54,59,60	13,19,31,36	.01 MF 400 V Moulded

MODELS 1407PFM, STROMBERG-CARLSON CO.
1407PLM, Series 1409

REPLACEMENT PARTS—Continued

Part No.	1409 C-No.	1407 C-No.	Description	Part No.	1409	1407	Description
110542	46	49	.022 MF 400 V Moulded	144017	x	x	Pointer
110546	57		.1 MF 400 V Moulded	146192	x	x	Call Letters
110551		47	.0022 MF 600 V Moulded	147022	x	x	3/4" Pulley
110555		39,41	.01 MF 600 V Moulded	147023	x	x	Pulley Assembly
110538	23	23	.0047 MF 400 V Moulded	147026	x	x	Balance Wheel
110586	4,6,10,11, 25,42,49	4,6,10,11, 25,29,32, 33,34	.005 MF Disc Ceramic	147027	x	x	Dial Drive Pulley
110587	48		.004 MF 500 V Tubular	150037	x	x	Dial Drive Shaft
110592	15	15	24 MMF Ceramic N 750	151028	x	x	Tube Shield Base
110593	18	18	5 MMF Ceramic	151036	x	x	Tube Shield
111043	51		Electrolytic	151060	x	x	R.F. Shield
111044	52		Electrolytic	151063	x		I.F. Shield
111045		45	Electrolytic	152009	x	x	Pilot Light Socket & Plug Assembly
111046		44	Electrolytic	152014	x	x	Octal Socket
111047	58	43	Electrolytic	152021	x	x	7 Pin Miniature Socket
111048	55		Electrolytic	152033		x	Speaker Socket
				152038	x	x	A-C Socket
				152055	x	x	Pilot Lamp Socket
				152056	x	x	9 Pin Miniature Socket
				152057	x	x	5 Pt. Socket
				154042	x	x	Rubber Coil Spacer
				155066	x	x	Speaker Cone
				158031	x	x	A.M.-F.M. Switch
				158032	x	x	Radio-Phono Switch
				159027	x	x	Antenna Binding Post

Potentiometers

145056	R-25		Volume On-Off, 1 Meg.
145057	R-37	R-35	Treble, 1 Meg.
145058	R-36		Bass, 5 Meg.
145059		R-33	Volume On-Off, 2 Meg.
145060		R-40	Bass, 2 Meg.

Coils—Transformers

114051	L-8	L-8	A.M. Osc. Coil
114052	L-7	L-7	A.M. RF Coil
114053	L-1	L-1	FM Ant. Coil
114054	L-3,6	L-3,6	FM RF and Osc. Coil
114329	L-10		3rd. IF FM Coil
114337	T-4		2nd IF AM
114363	T-1,3	T-1,3	IF FM
114364	T-2	T-2,4	IF AM
114365	T-5	T-5	Ratio Detector
114618	L-11,12		Heater Choke Coil
114620	L-5	L-5	R.F. Cathode Choke
114621	L-4	L-4	R.F. Heater Choke Coil
114633	L-2	L-2	R.F. Plate Choke Coil
161239		T-6	Output Transformer
161240	T-6		Output Transformer
161415		T-7	Power Transformer
161416	T-7		Power Transformer

Tone Dial Assembly

18630	x	x	Tone Dial Lamp
119015	x	x	Tone Dial Plug Shell
134061	x	x	Tone Wheel
138017	x	x	Red Lens
138018	x	x	Blue Lens
138019	x	x	Inside Lens Holder
138020	x	x	Outside Lens Holder
143014	x	x	Tone Dial Plug (5 point)
152058	x	x	Tone Dial Lamp Socket

Miscellaneous

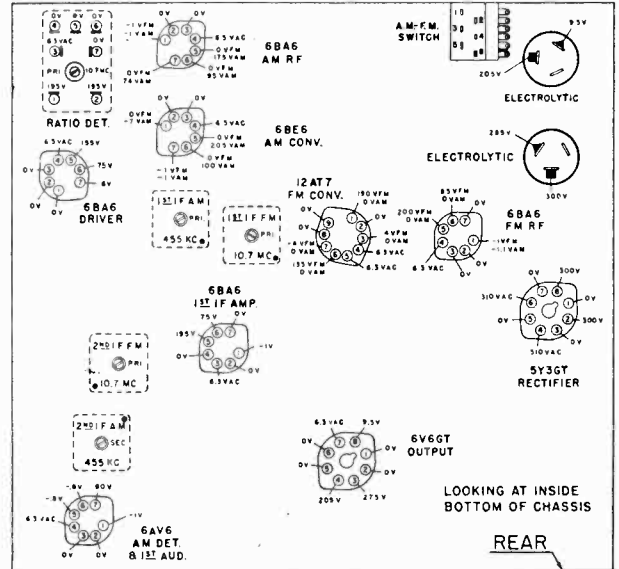
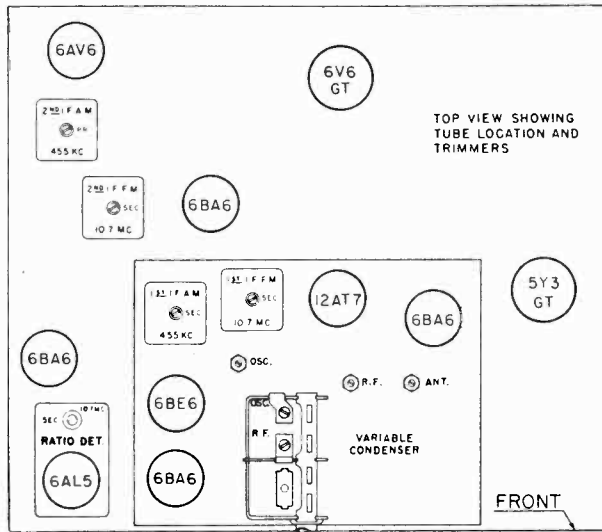
29956	x	x	Pilot Lamp
32041	x		Speaker Socket
107010	x	x	Push Button
109031	x	x	Eye Cable Assembly
113030	x	x	I.F. Trans. Mtg. Clip
118028	x	x	F.M. R.F. Core
122031	x	x	Dial Glass
124018	x	x	Drive Cord Assembly
129019	x	x	Pinion Gear
129022	x	x	Core Carriage Gear Assembly
131004	x	x	A-C Cord Grommet
131015	x	x	Dial Glass Grommet
134059	x	x	Knob
139028	x	x	A.M. Loop Assembly
142048	x	x	Dial Plate

Cabinet Parts

Part No.	1409—M3M, M3A	1409 M2W, M2Y, M2M	1409—PGM, PGW	1407—PLM	1407—PF	Description
37148			x			Door Pull
38442			x			Bullet Catch
41102			x	x		Stop Hinge R.H.
41103			x	x		Stop Hinge L.H.
108087	x			x	x	Phono Drawer and Track
125018		x				Speaker Escutcheon
125025	x	x	x	x	x	Plastic Escutcheon
125026	x	x	x			Metal Escutcheon
125028				x	x	Metal Escutcheon
130003		x				Grille Cloth
130030				x		Grille Cloth
130031				x		Metal Grille
130062	x					Grille Cloth
130064		x				Grille Cloth
130070				x		Grille Cloth
132009	x					Concealed Door Pull
132013	x					Butt Hinge
132016	x	x	x	x		Bullet Catch
132021	x	x				Right Phono Track
132022	x	x				Left Phono Track
132053	x					Upper Hinge, Semi-Concealed
132059	x		x	x		Right Phono Track
132060	x		x	x		Left Phono Track
132061			x			Door Pull
132062			x			Rosette
132063			x	x		Hinge, R. H.
132064			x	x		Hinge, L. H.
132065	x					Door Pull
132071			x			Album Door Pull
132084	x					Lower Hinge, Semi-Concealed
132089	x					Hinge
132090	x					Door Pull
132103				x		Door Pull
148019	x	x				Phono Drawer and Track
152009	x	x	x	x		Socket and Plug Assembly
201848				x		Door Pull Screw
201849				x		Album Door Pull Screw
801401		x	x	x		Lamp Cap
801403	x					Lamp Cap

STROMBERG-CARLSON CO.
1407 TUBE LOCATION AND VOLTAGE CHARTS

MODELS 1407PFM,
PLM



ALIGNMENT PROCEDURE 1407

NOTE: Dots on IF trans. indicate the position of the color coded terminals.

On IF and Radio Detector transformers, primary slugs are under chassis and secondary slugs above chassis.
Adjust AM loop trimmer after chassis is in cabinet for best reception at 1500 Kc.
Adjust dial pointer to marker at top left of dial with condenser plates fully meshed.

A.M. - I.F.

Band & Pointer	Signal Generator	VTVM or Scope Connection	Adjustment and Notes
1. AM low end of dial.	455 Kc. 400 cy. mod. to Pin 7 (Grid) of 6BE6 tube through .01 cop.	Term. 2 of AM-FM sw and ground.	Adj. two AM-IF trans., using —3V DC Scale.
2. " "	455 Kc swept 15 Kc.	" "	Adjust same for best double-trace curve on scope.

F.M. - I.F.

1. FM low end of dial.	10.7 Mc. 400 cy. mod. to Pin 2 (Grid) of 12AT7 tube at RF Coil thru .01 capacitor.	" "	Detune secondary of ratio det. Adj. two FM-IF trans. and pri. ratio det. trans., using —3 VDC scale.
2. " "	10.7 Mc. swept 150 Kc.	" "	Disconnect ground end of C-43 (5 mfd. electrolytic under ratio detector can). Adj. as step 1 for best double-trace curve on scope.
3. " "	" "	Terms. 2 & 5 of AM-FM sw.	Be sure VTVM is not grounded. Connect C-43, Adj. sec. ratio det. for 0 voltage.

A.M. - R.F.

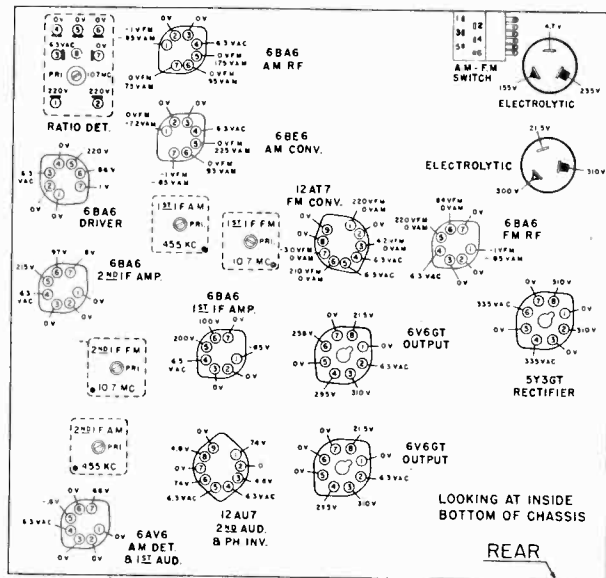
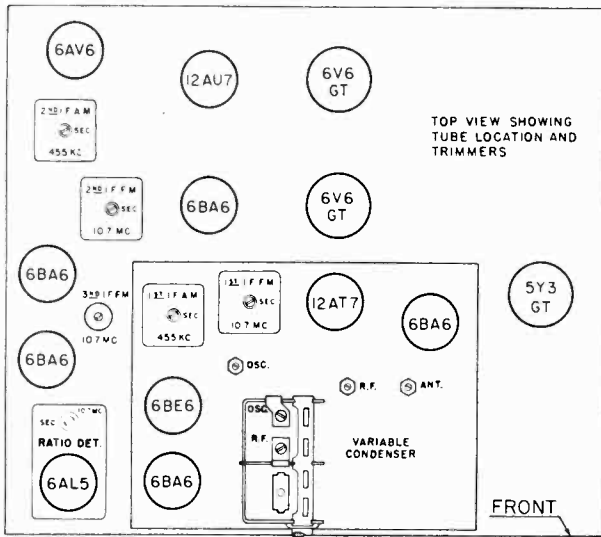
1. AM 1500 Kc.	1500 Kc. 400 cy mod. coupled loosely to loop leads.	Term. 2 of AM-FM sw & ground.	Adj. two trimmers on tuning cond., using low —DC scale.
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F.M. - R.F.

1. FM 100 mc.	100 Mc. 400 cy. mod. to FM Ant. Terms., thru 270 ohm resistor.	" "	Adj. C-17 (Osc.) C-8 (RF) and C-2 (Ant.) on low —DC scale.
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Align both IF channels if either is out of adjustment.
Use a non-metallic screwdriver and light pressure for slug adjustment.
2nd AM-IF trans. will be damaged if chassis is placed on left side.
If FM osc. coil is replaced, adjust placement of its ground lead for tracking at 88 mc.

1409 TUBE LOCATION AND VOLTAGE CHARTS



NOTE: Dots on IF trans. indicate the position of the color coded terminals.

ALIGNMENT PROCEDURE 1409

On IF and Ratio Detector transformers, primary slugs are under chassis and secondary slugs above chassis.
 Adjust AM loop trimmer after chassis is in cabinet for best reception at 1500 Kc.
 Adjust dial pointer to marker at top left of dial with condenser plates fully meshed.

A.M. - I.F.

Band & Pointer	Signal Generator	VTVM or Scope Connection	Adjustment and Notes
1. AM low end of dial.	455 Kc. 400 cy. mod. to Pin 7 (Grid) of 6BE6 tube through .01 cap.	Term. 2 of AM-FM sw and ground.	Adj. two AM-IF trans., using —3V DC Scale.
2. " "	455 Kc swept 15 Kc.	" "	Adjust same for best double-trace curve on scope.

F.M. - I.F.

1. FM low end of dial.	10.7 Mc. 400 cy. mod. to Pin 2 (Grid) of 12AT7 tube at RF Coil thru .01 capacitor.	" "	Detune secondary of ratio det. Adj. three FM-IF trans & ratio det. primary using —3V DC scale.
2. " "	10.7 Mc swept 150 Kc.	Pin 6 (screen) of third IF tube thru .01 capacitor.	Adj. as above for best double-trace curve on scope.
3. " "	" "	Term. 2 of AM-FM switch & Term 8 of ratio det. trans.	Be sure VTVM is not grounded. Adj. sec. of ratio det. for 0 voltage.

A.M. - R.F.

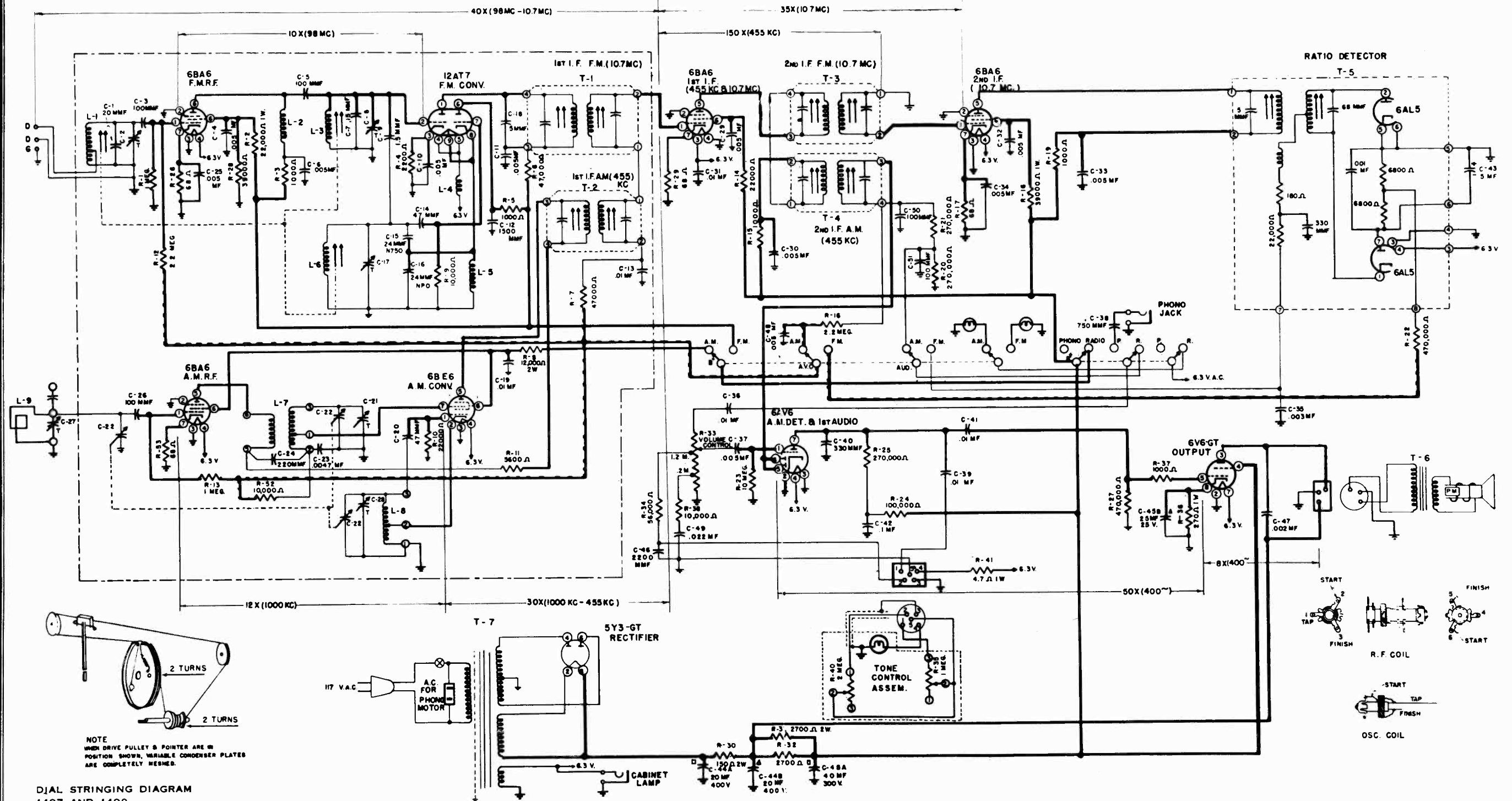
1. AM 1500 Kc.	1500 Kc. 400 cy mod. coupled loosely to loop leads.	Term. 2 of AM-FM sw & ground.	Adj. two trimmers on tuning cond., using low —DC scale.
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F.M. - R.F.

1. FM 100 mc.	100 Mc. 400 cy. mod. to FM Ant. Terms., thru 270 ohm resistor.	" "	Adj. C-17 (Osc.) C-8 (RF) and C-2 (Ant.) on low —DC scale.
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Align both IF channels if either is out of adjustment.
 Use a non-metallic screwdriver and light pressure for slug adjustment.
 2nd AM-IF trans. will be damaged if chassis is placed on left side.
 If FM osc. coil is replaced, adjust placement of its ground lead for tracking at 88 mc.

RADIO RECEIVER 1407

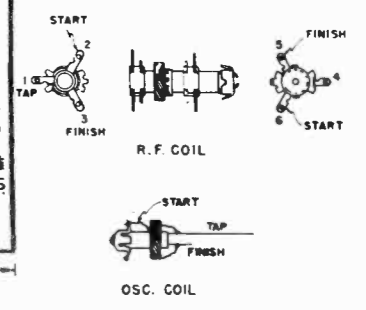
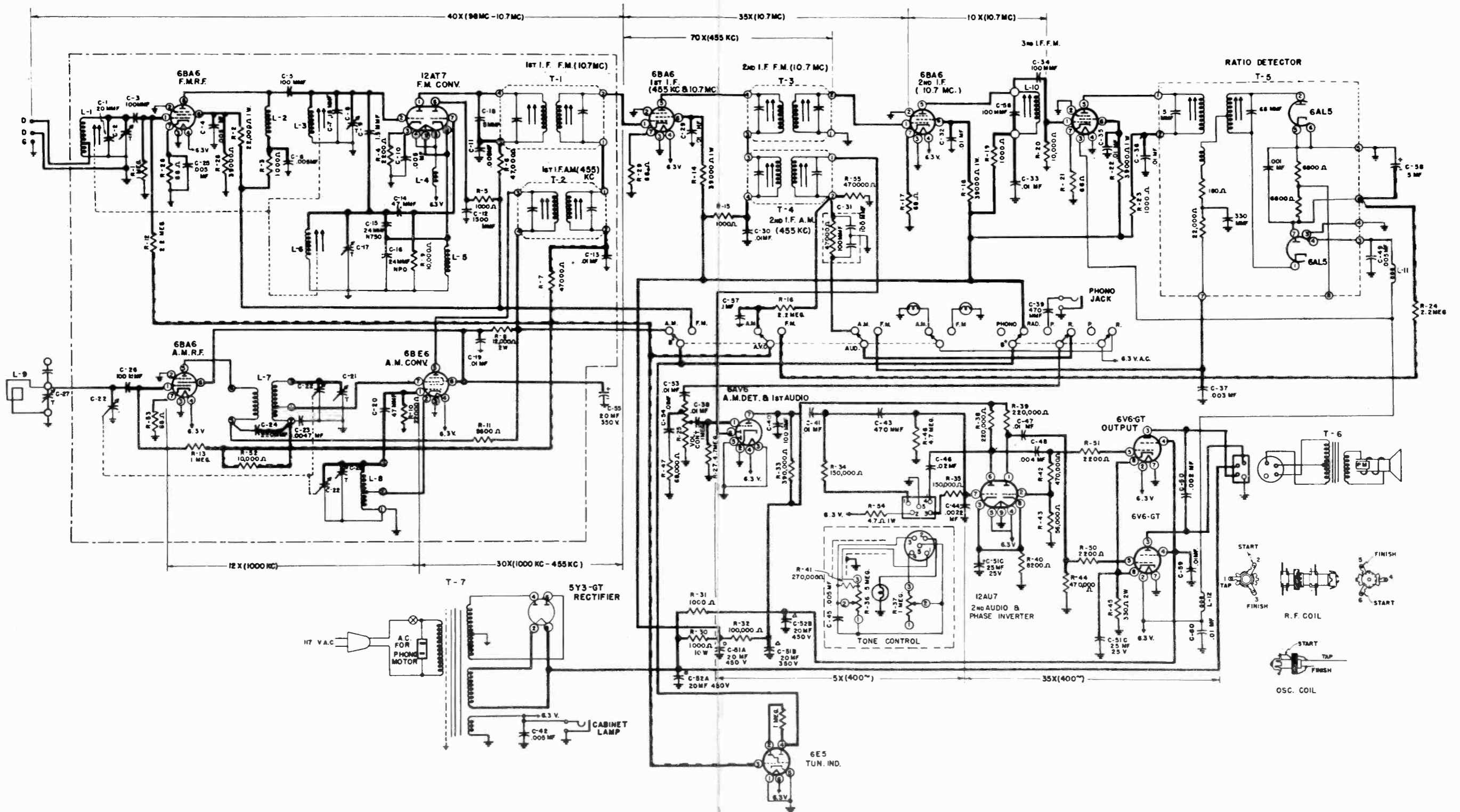


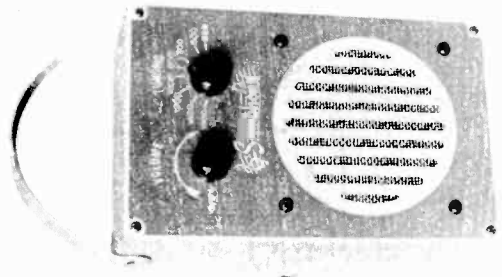
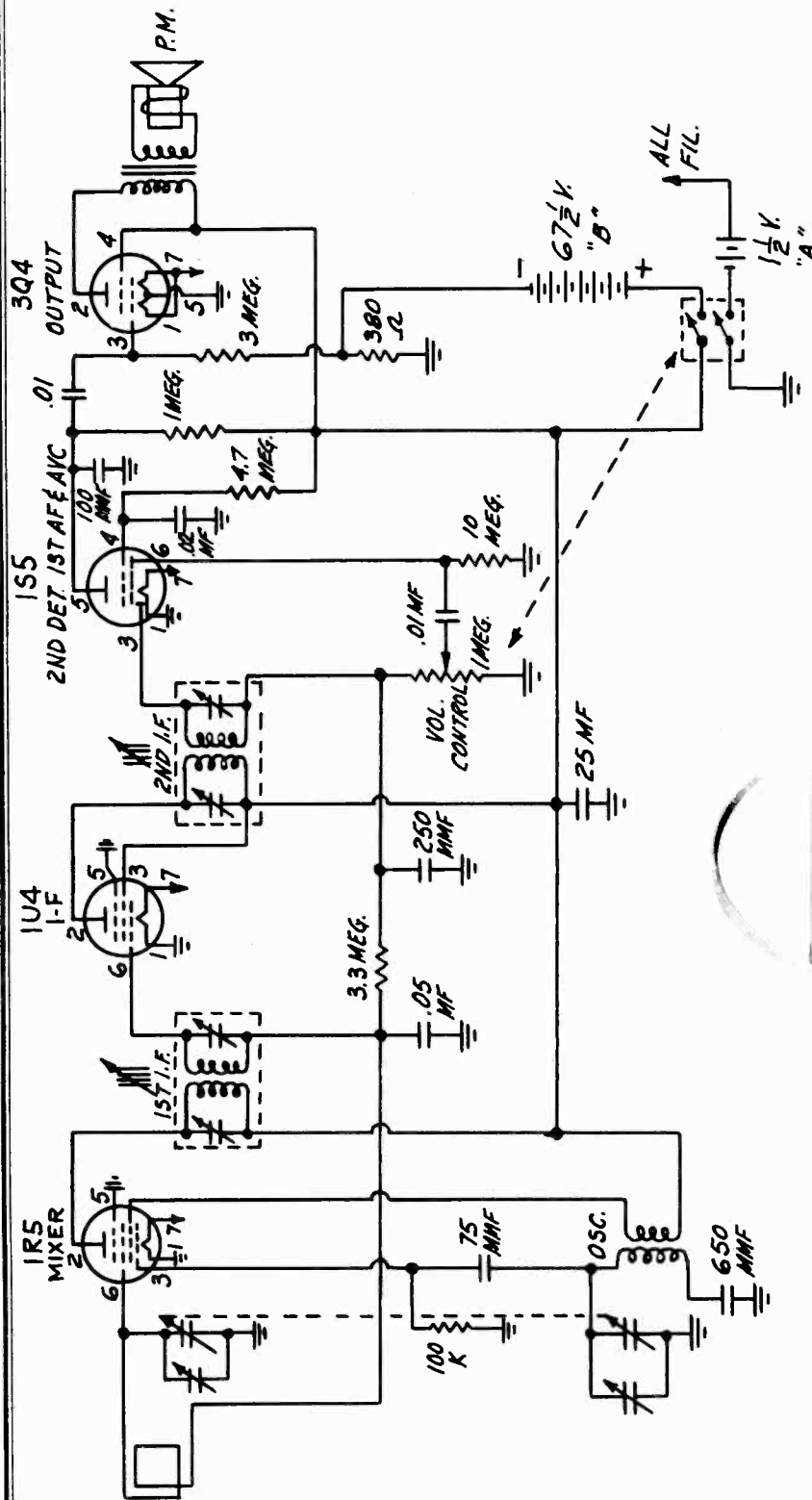
DJAL STRINGING DIAGRAM
1407 AND 1409

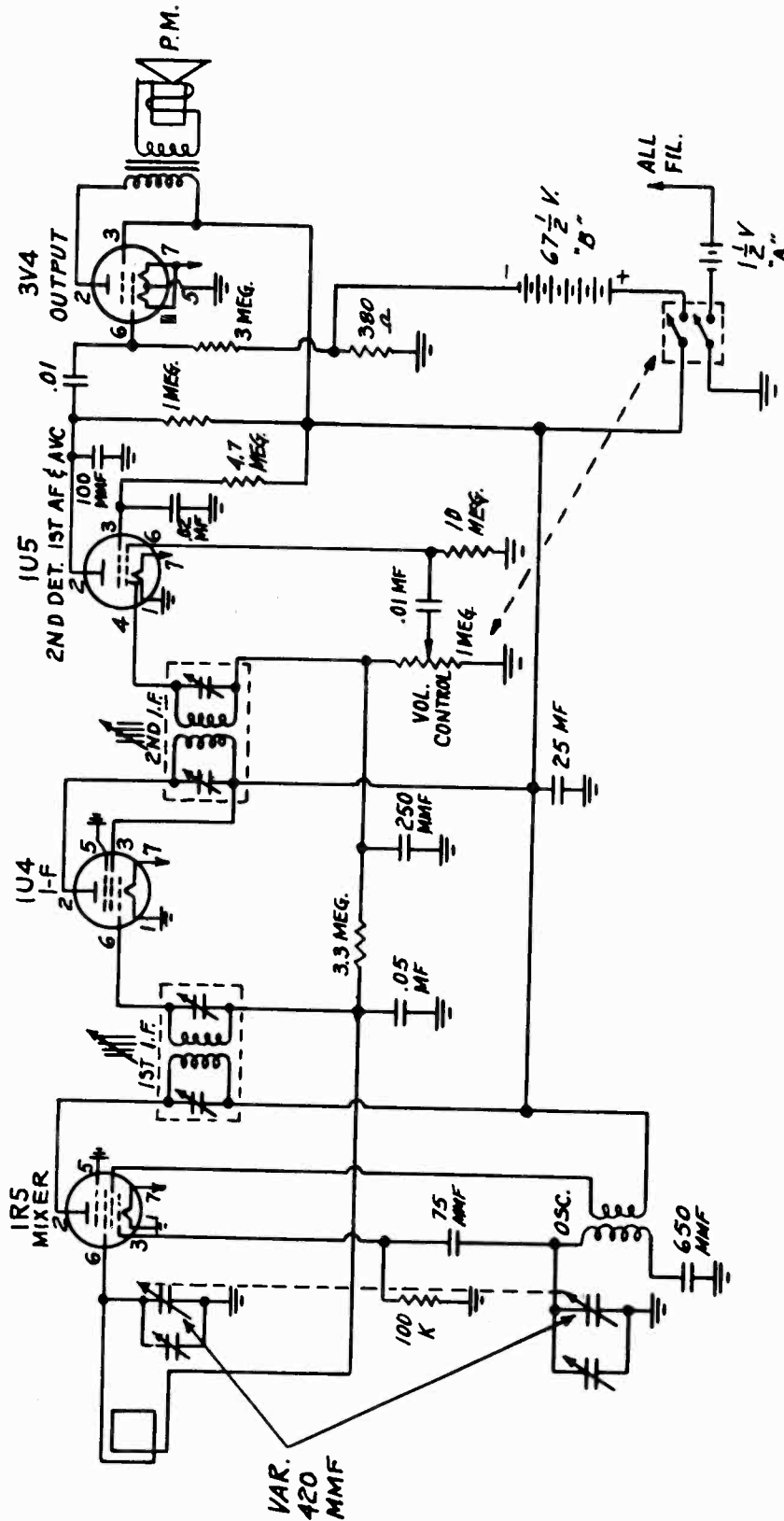
MODELS 1409 M-2W, M2-M,
M2-Y, M3A, M3M, PGM, PGW

STROMBERG-CARLSON CO.

RADIO RECEIVER 1409

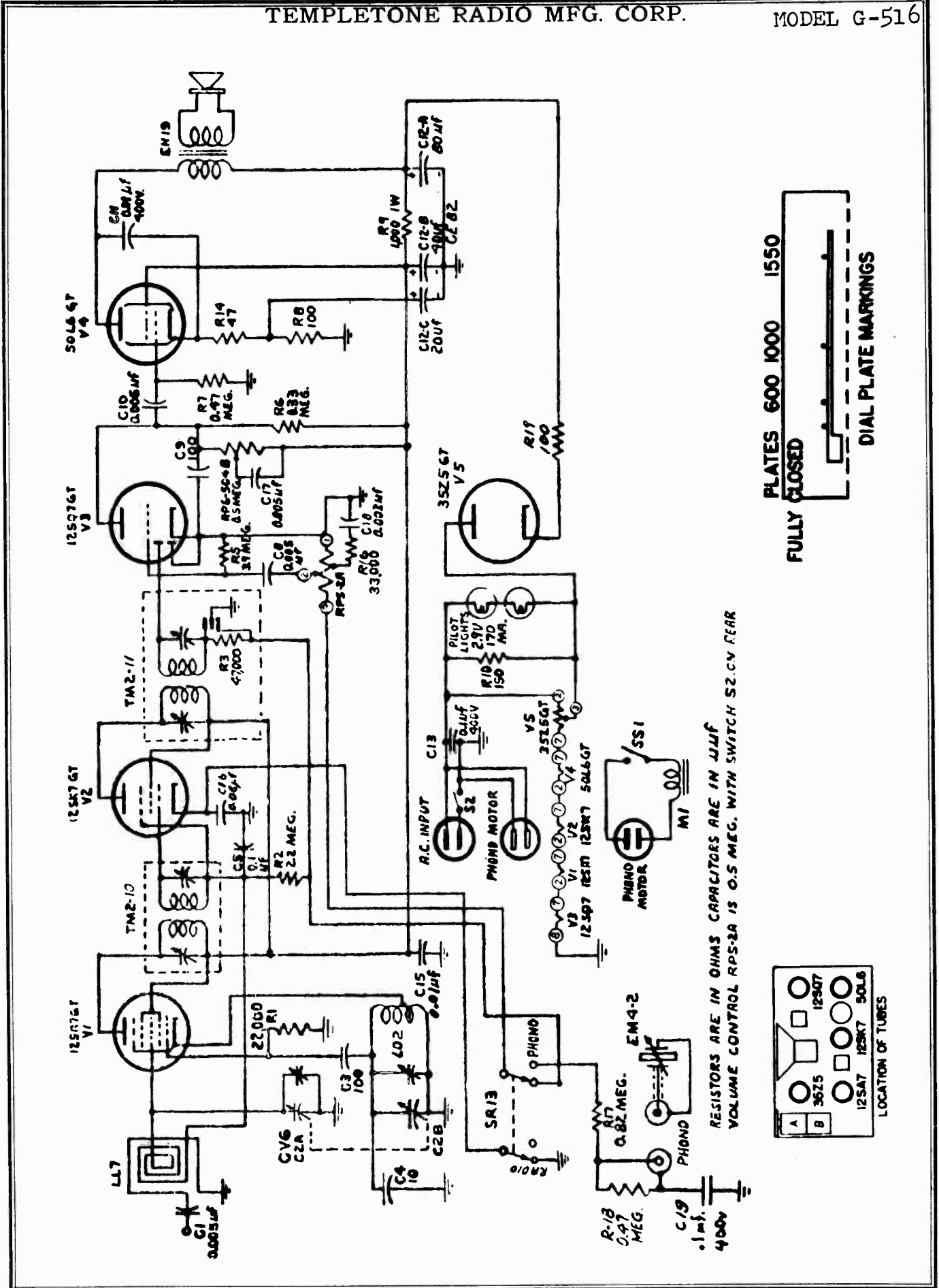




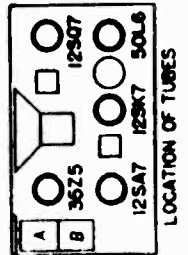
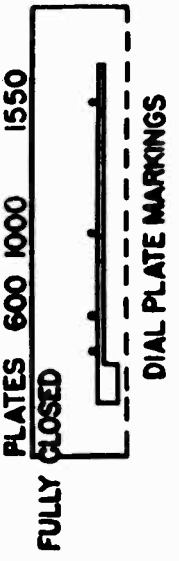


TEMPLETONE RADIO MFG. CORP.

MODEL G-516



RESISTORS ARE IN OHMS CAPACITORS ARE IN UJUF
 VOLUME CONTROL RPS-2A IS 0.5 MEG. WITH SWITCH S2.CY REAR



MODELS G-615,
G-618

TEMPLETONE RADIO MFG. CORP.



OPERATING INSTRUCTIONS AND SERVICE NOTES

Model G-618 Temple Radio is a 6-tube super-heterodyne receiver having an RF stage for increased sensitivity and using the latest type of low-drain electronic tubes.

Operation: The set operates on 110 to 120 volts, 50 or 60 cycles A. C. and 110 to 120 volts D. C. Power drain is approximately 30 watts.

When operated on direct current (D. C.), if no reception is obtained after approximately one minute of warm-up time, reverse the line plug in the power outlet.

Range: Model G-618 covers the broadcast band from 540 to 1620 kilocycles. Since the scale is calibrated 54 to 160, the actual frequency of the station received is obtained by adding a zero to the dial calibration.

Controls: Only two controls are required for operation. The left-hand control puts set into operation, increases the volume with clockwise rotation, and includes the power switch. The right-hand control tunes the dial to the desired station.

Antenna: For normal reception, no outside aerial is required, as more than adequate pickup is obtained by the self-contained loop antenna.

At installations remote from the stations desired to be heard, improved results may be obtained by rotating the receiver for maximum response, as the loop antenna has a marked directional effect on weak signals. Reception can also be improved, and the directional effect reduced, by attaching a length of insulated wire approximately 15 to 25 feet long, to the antenna connection provided at the back of the cabinet. This wire may be laid on the floor along one side of the room, or concealed under the rug.

No external ground is required — such ground is automatically provided through the power lines.

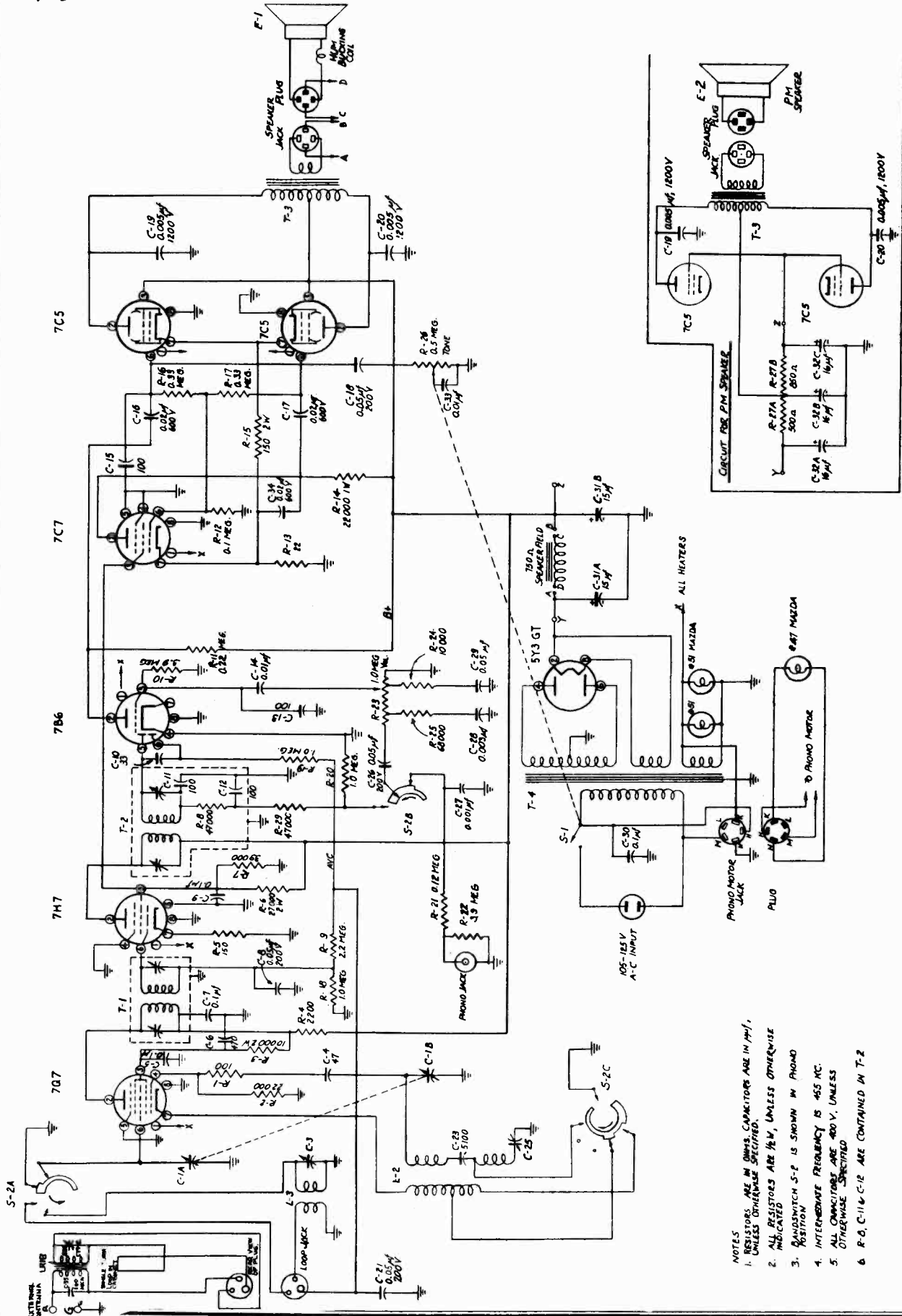
Alignment: No attempt should be made to realign this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception. An output meter may be clipped directly across the voice coil lugs.

The Signal Generator may be connected through a 0.01 mf capacitor (used as dummy antenna) to the lug on RF section (B) of tuning capacitor. Connect ground clip of generator to the common negative of the electrolytic capacitor. Align the I. F. trimmers to 455 kc, using least possible input from Signal Generator to avoid developing A.V.C. voltage which would make the tuning adjustments very broad.

To align RF trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads to two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal Generator. With the tuning capacitor plates completely out of mesh, and pointer at extreme right end of travel, adjust the oscillator trimmer (A) (on front section of tuning capacitor) to 1700 kc. Readjust both Signal Generator and tuning capacitor to 1550 kc and adjust the RF trimmer (B) (on rear section) for maximum response. With tuning capacitor plates fully meshed, the receiver should tune to 532 kc; however, no adjustment is required at this point. For checking purposes, four fine marks are engraved on the dial plate. These represent, in order, the pointer position with capacitor plates fully meshed, and the pointer setting for 600, 1000 and 1550 kc.

MODELS G-722,
G-723

TEMPLETONE RADIO MFG. CORP.



- NOTES
1. RESISTORS ARE IN OHMS. CAPACITORS ARE IN µF, UNLESS OTHERWISE SPECIFIED.
 2. ALL RESISTORS ARE 1/4W, UNLESS OTHERWISE INDICATED.
 3. BANDSWITCH S-2 IS SHOWN IN PHONO POSITION.
 4. INTERMEDIATE FREQUENCY IS 455 KC.
 5. ALL CAPACITORS ARE 400 V, UNLESS OTHERWISE SPECIFIED.
 6. R-9, C-11 & C-12 ARE CONTAINED IN T-2.

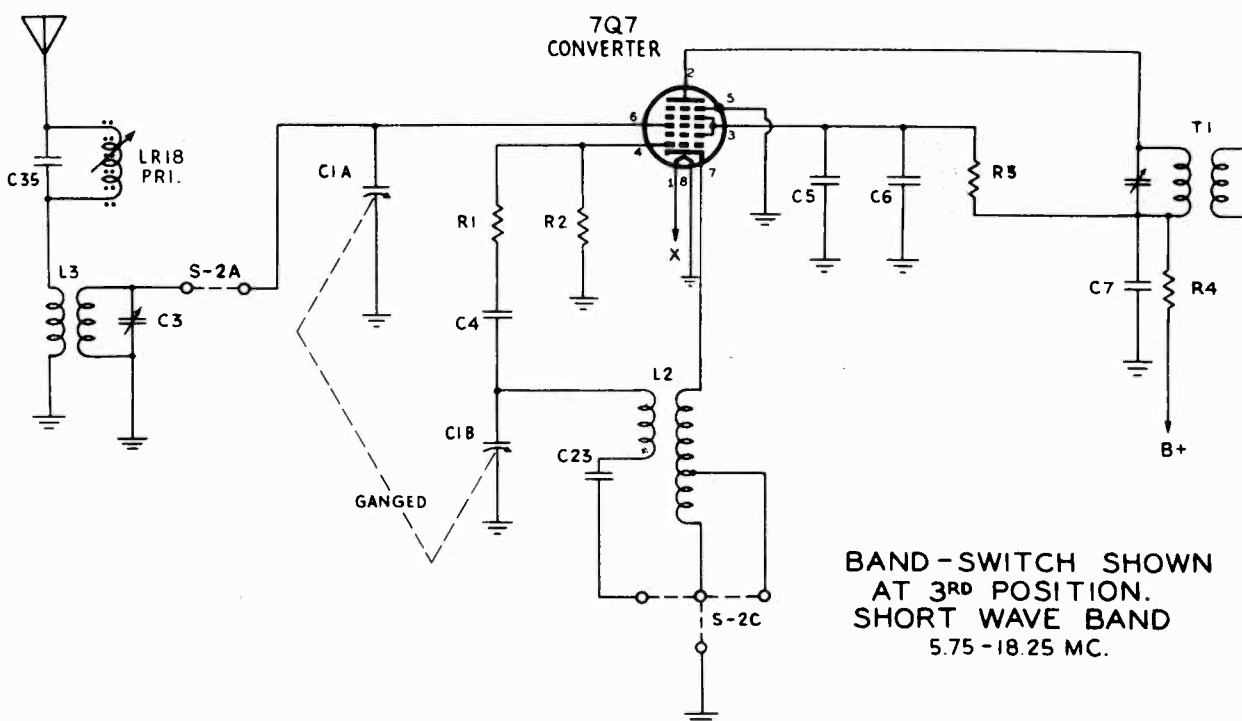
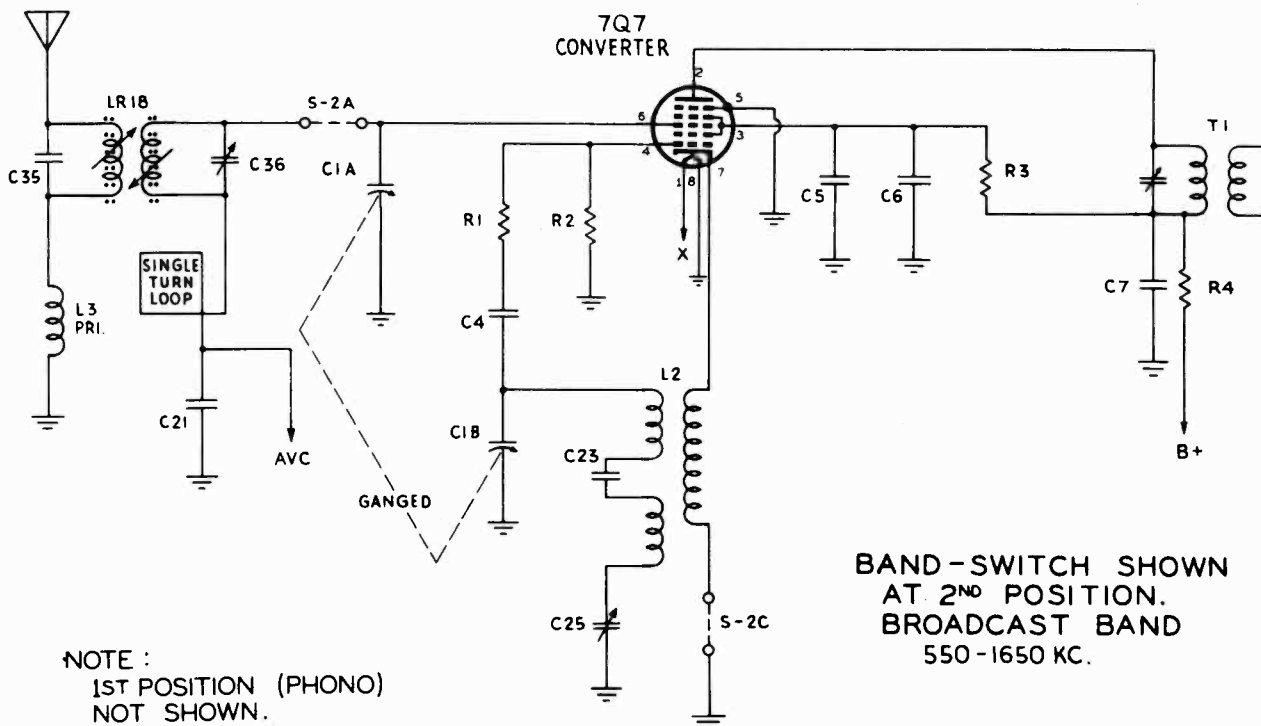
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TEMPLETONE PAGE 19-5

TEMPLETONE RADIO MFG. CORP.

MODELS G-722,
G-723



MODELS G-722,
G-723

TEMPLETONE RADIO MFG. CORP.

Alignment: No attempt should be made to realign this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception. The Signal Generator may be connected through a 0.01 mf capacitor (used as a dummy antenna) to the lug on R. F. section (A) of tuning capacitor. Connect ground clip of generator directly to chassis. Align the I. F. trimmers to 455 K.C., using least possible input from the Signal Generator to avoid developing A.V.C. voltage which would make the tuning adjustments very broad. An output meter may be clipped across the voice coil lugs.

To align broadcast R. F. trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads to two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal Generator. With the tuning plates completely out of mesh and the pointer at the extreme right end of travel, adjust the broadcast oscillator trimmer, on the under side of the chassis, to 1650 K.C. With tuning capacitor fully meshed adjust the padder on the chassis deck to 535 K.C. Readjust both Signal Generator and tuning capacitor to 1550 K.C. and adjust the R. F. trimmer on the loop for maximum response.

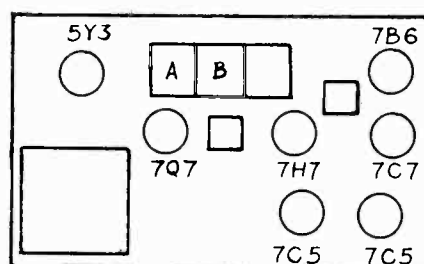
To align the short wave band connect the Signal Generator through a 0.01 mf capacitor and a 400 ohm resistor in series (used as a dummy antenna) to the antenna connection on the loop antenna. With the tuning capacitor plates completely out of mesh, and pointer at the extreme right end of travel, adjust the short wave oscillator trimmer (on the under side of the chassis) to 18.25 magacycles. Re-adjust both Signal Generator and tuning capacitor to 16 megacycles and adjust short wave antenna coil trimmer for maximum response. With tuning capacitor fully meshed, the receiver should tune to 5.75 megacycles, however, no adjustment is required at this point.

For checking purposes five marks are engraved on the front of the dial plate. These represent, in order, the pointer position with the capacitor plates fully meshed and the pointer settings for 600 kc, 8 mc, 16 mc, and 1550 kc.

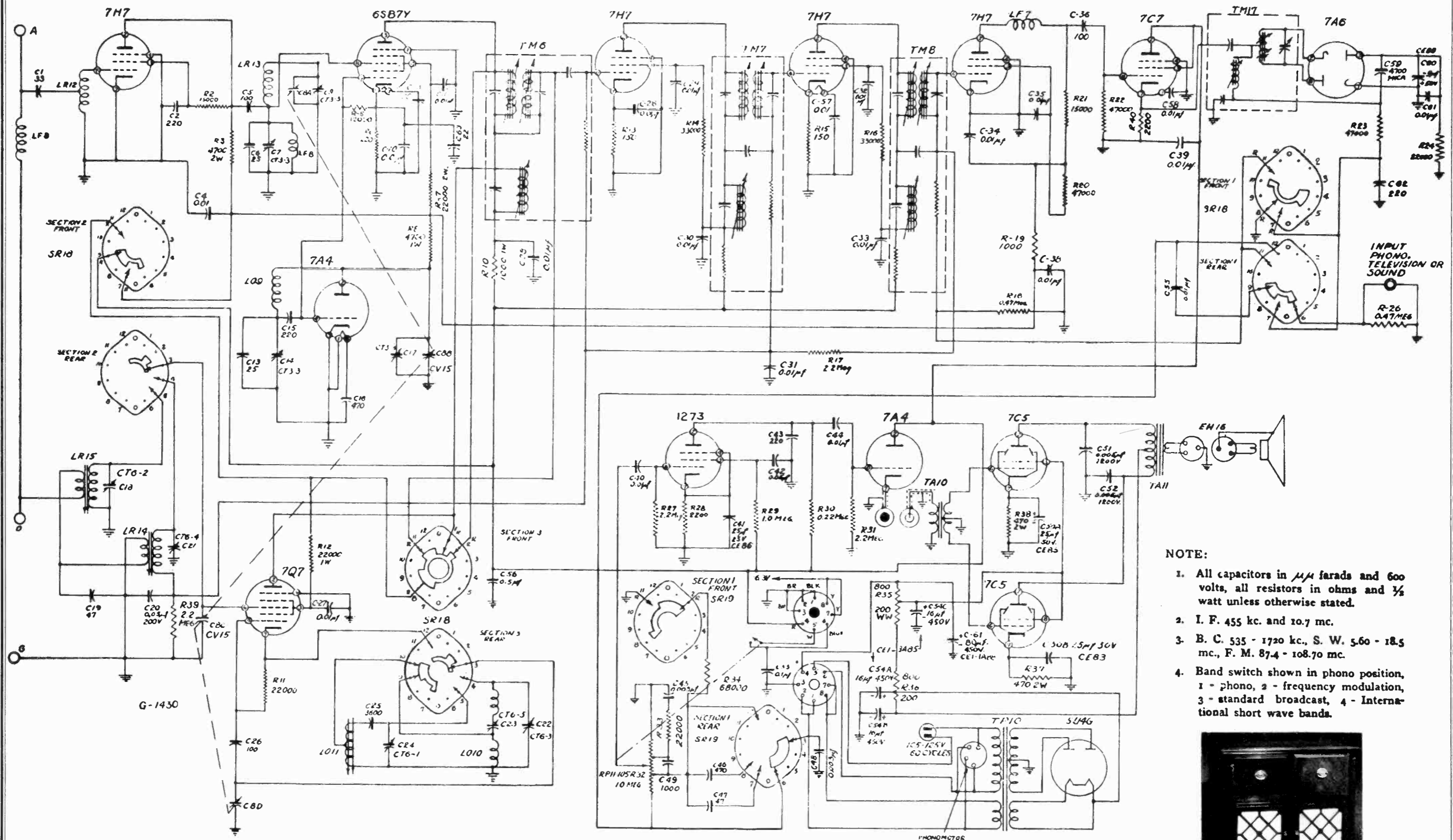
Pushbuttons: To set pushbuttons remove pushbutton knobs. This will expose a set screw on the shaft of each pushbutton. Starting at one end push a pushbutton down and loosen its set screw. Set the bandswitch to the broadcast position. Hold the pushbutton down and tune the manual tuning control to the station to which the pushbutton is to be set. Still holding the pushbutton down tighten its set screw. The pushbutton may now be released and its knob replaced. It will now select the station to which it was set. The other pushbuttons may be set in a similar manner.

REPLACEMENT PARTS LIST

Circuit Symbol	Part Number	Item	Description
C-1 A & B	CV-9	Capacitor	Variable 2-gang, Push-button
C-2	CT1-1	Capacitor	Trimmer 1.5—15 MMF
C-3	CT1-2	Capacitor	Trimmer 2.2—40 MMF
C-22	CT1-2	Capacitor	Trimmer 2.2—40 MMF
C-23	CT1-2	Capacitor	Trimmer 2.2—40 MMF
C-25	CX2-1	Capacitor	Padder
E-1	EH-9	Speaker	10" Electrodynamic
E-2	EH-14	Speaker	10" P.M.
L-1	LL-9	Loop Antenna	
L-2	LO-4	Oscillator Coil Assembly	Broadcast & S.W. Osc. Coils
L-3	LR-4	S.W. Antenna Coil	
R-23	RP8-105	Potentiometer	1 Meg. with 2 taps, Volume Control
R-26	RP5-2	Potentiometer	0.5 Meg. with switch, Tone Control
R-27 A & B	RW3-1	Resistor	Wirewound 1350 Ohms 17 watt tapped at 500 Ohms
S-2 A, B & C	SR-9	Bandswitch	
T-1	TM2-4	Transformer	I. F. Input
T-2	TM2-5	Transformer	I. F. Output
T-3	TA-8	Transformer	Push-pull speaker output
T-4	TP-9	Transformer	Power

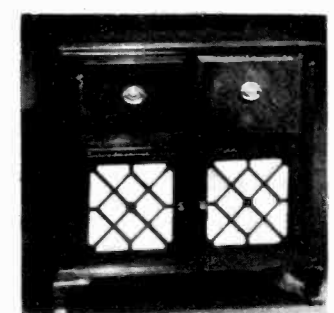


TUBE LOCATION



NOTE:

1. All capacitors in $\mu\mu$ farads and 600 volts, all resistors in ohms and $\frac{1}{2}$ watt unless otherwise stated.
2. I. F. 455 kc. and 10.7 mc.
3. B. C. 535 - 1720 kc., S. W. 5.60 - 18.5 mc., F. M. 87.4 - 108.70 mc.
4. Band switch shown in phono position, 1 - phono, 2 - frequency modulation, 3 - standard broadcast, 4 - International short wave bands.



Instructions For Removing Radio From Cabinet

Main Chassis:

To remove main chassis from the cabinet it is first necessary to remove the four control knobs by pulling them gently until they come off. Remove all plugs from the rear of the main chassis and power pack chassis. Pull the 5U4G rectifier tube out of the power pack chassis. The four screws holding the chassis may now be removed. The chassis itself may now be taken out by sliding it straight back toward the rear of the cabinet.

Power Pack Chassis:

The power pack chassis may be removed from the cabinet by unscrewing the four large screws holding it to its support shelf. These are accessible from the under side of the cabinet.

Record Changer:

Most adjustments may be made to the record changer without removing it from its drawer. Before attempting to remove the record changer from the cabinet the motor plug and the phono pickup plug must first be removed from the main and power pack chassis. Loosen the cable clamps on the rear of the cabinet sufficiently to lift out cables.

Pull changer drawer forward until it hits its stop. Lift the turntable completely off. Be careful not to lose the spring and loose gear on the spindle of the record changer. Remove retaining washers from the mounting screws at the front and rear of the record changer. The mounting screws may now be removed from the bottom of record changer drawer and the record changer may be lifted out.

Alignment:

No attempt should be made to realign this receiver until it has been determined that a poor tube or some local condition is not responsible for faulty reception. The following is a list of minimum equipment necessary to realign this receiver:

- 1—AM signal generator covering 455KC, 600KC, 1550KC, 6 MC, 10.7 MC and 18 MC
- 2—FM signal generator covering 10.7 MC, 92 MC and 106 MC
- 3—Output meter, rectifier type, approximately 0 to 2 volts RMS
- 4—Dummy antennas
 - 0.01 MFD Capacitor
 - 200 MMF Mica Capacitor
 - 400 Ohm Resistor
 - 300 Ohm Resistor

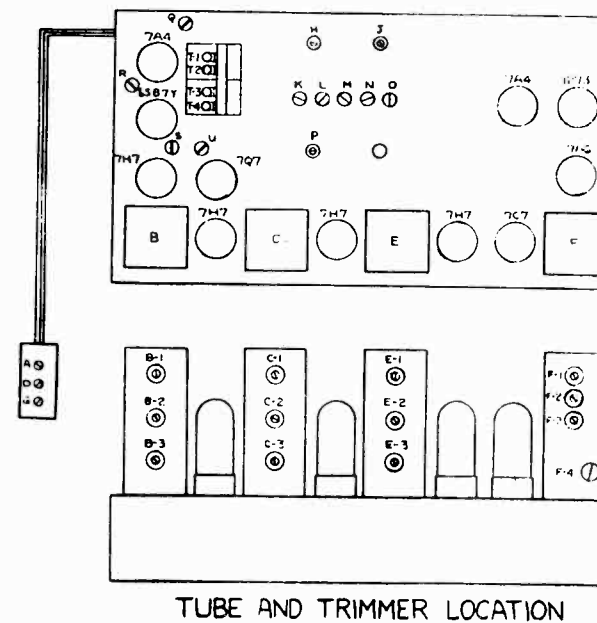
In the following alignment procedure the high side of the signal generator is connected to the terminal indicated in the "Signal Generator Coupling" column below. The ground side of the signal generator is connected directly to the chassis unless otherwise noted. The output meter should be connected across the voice coil of the speaker for all measurements.

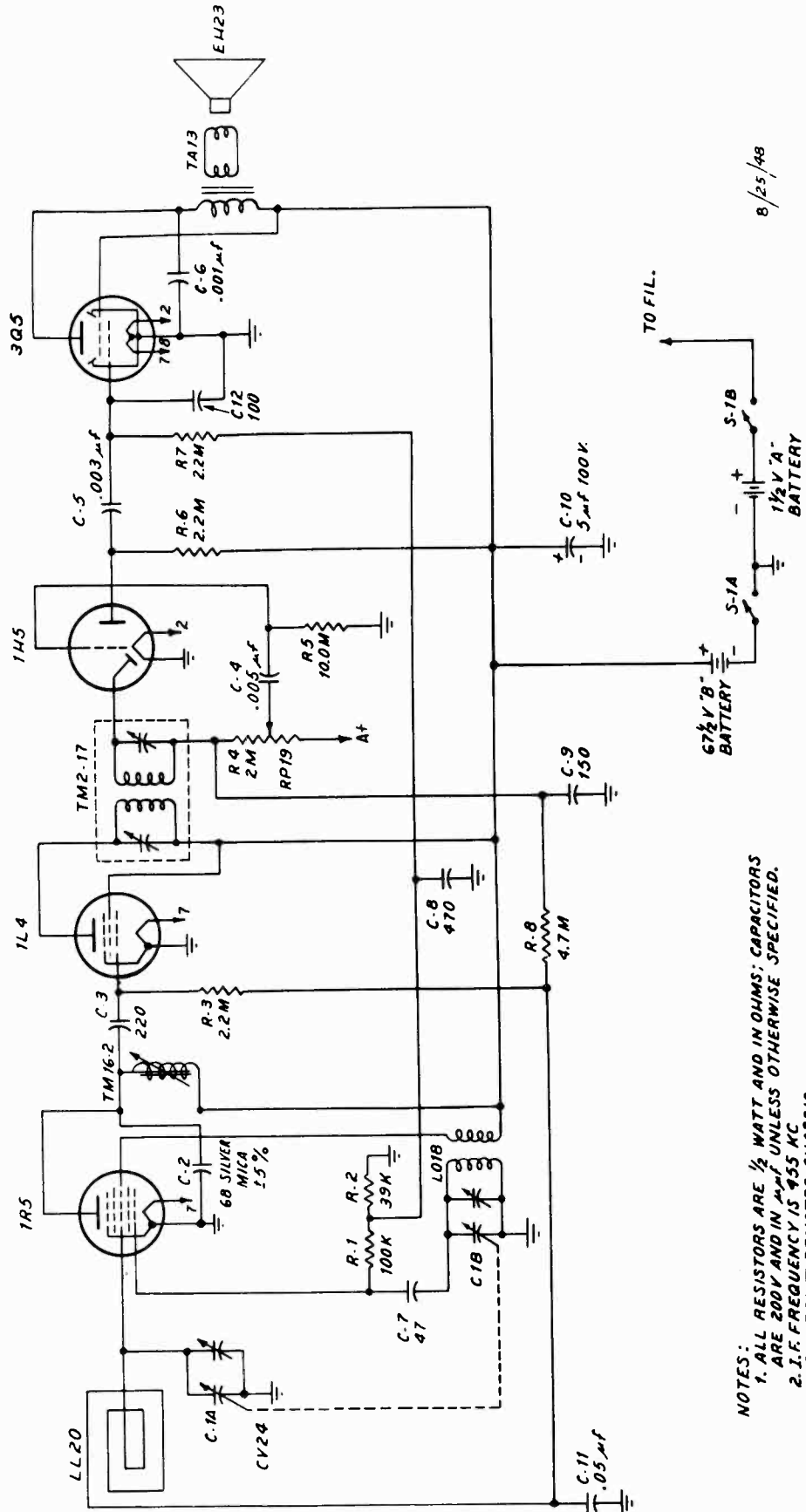
In adjusting the radio frequency trimmers and padders it is advisable to "rock" the variable capacitor gang slightly across the signal being delivered by the signal generator until that particular signal has been accurately peaked.

The location of the following trimmers, padders and terminals can be found by referring to the tube and trimmer location diagram.

ALIGNMENT PROCEDURE:

Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Switch Position	Radio Dial Setting	Adjust	Remarks
0.01 MFD	Terminal T-2	455 KC	Broadcast	1700 KC	E-1 C-1 B-1	Adjust for maximum output Repeat for fine adjustment
"	Pin 6 of 7C7 IF tube with FM Signal Generator	10.7MC	FM	109 MC	F-2	Adjust for maximum output (Broad adjustment)
"	"	"	"	"	F-4	Adjust for maximum output
"	AM Signal Generator	"	"	"	F-1 or F-3	Adjust whichever is required for minimum output
"	"	"	"	"	"	Repeat last two steps for fine adjustment until settings for maximum FM output coincides with settings for minimum AM output.
"	"	"	"	"	E-3, E-2	Adjust for maximum output
"	"	"	"	"	C-3, C-2	" " " "
"	"	"	"	"	B-3, B-2	" " " "
"	"	"	"	"	"	Repeat last three steps for fine adjustment
"	"	"	Broadcast	535 KC	Pointer	Adjust pointer to reference mark
200 MMF	Terminal D	600 KC	Broadcast	290 KC	O, J	Adjust for maximum output
"	"	1550 KC	"	1550 KC	M, N	" " " "
400 Ohm Resistor	"	6 MC	Shortwave	6 MC	P, H	" " " "
"	"	18 MC	"	18 MC	K, L	" " " "
300 Ohm Resistor	Terminal A Ground Side of Signal Generator to Terminal D	92 MC	FM	92 MC	R, S	" " " "
"	"	106 MC	"	106 MC	Q, U	" " " "

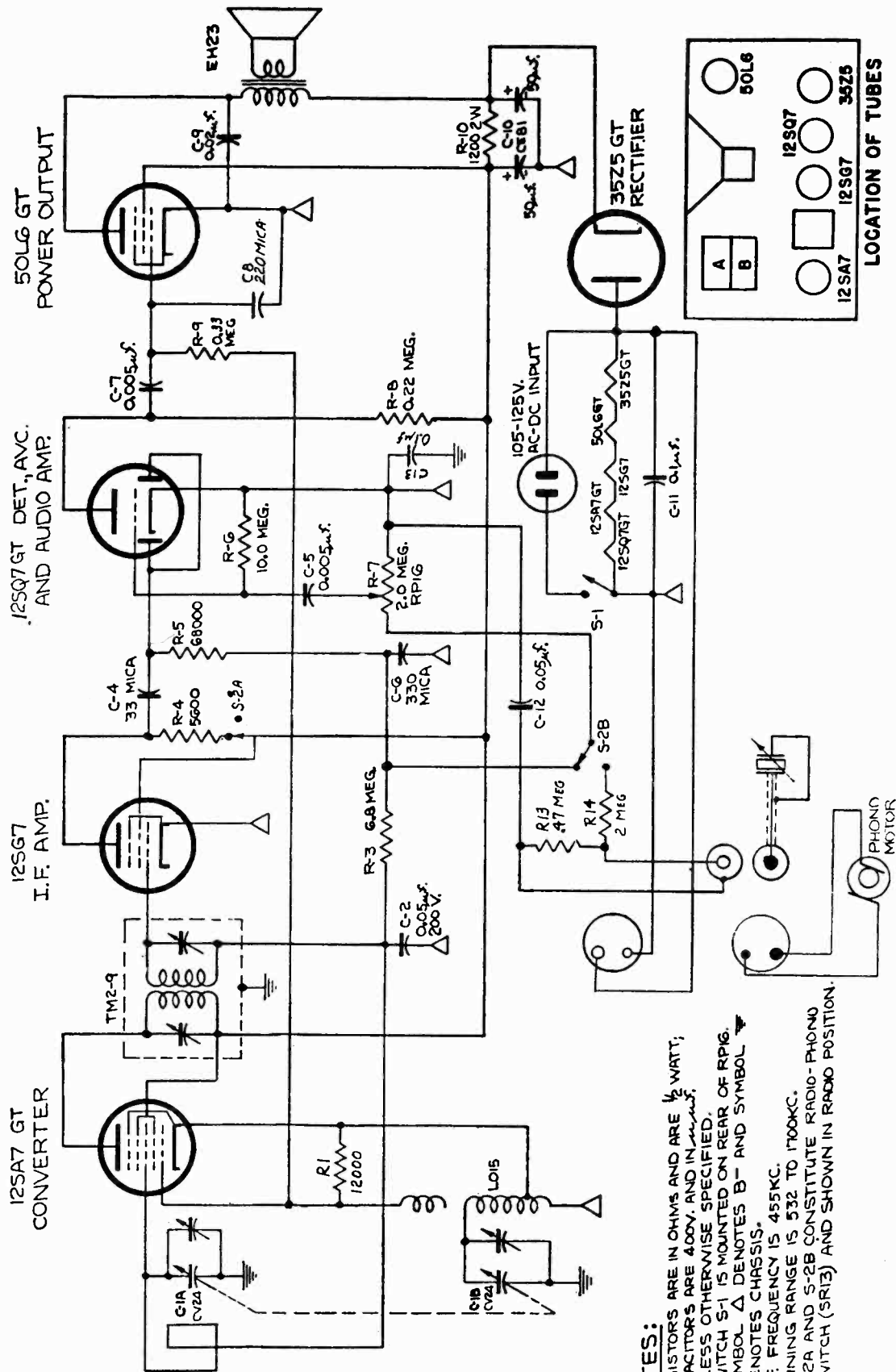




- NOTES:
1. ALL RESISTORS ARE 1/2 WATT AND IN OHMS; CAPACITORS ARE 200V AND IN μ F UNLESS OTHERWISE SPECIFIED.
 2. I.F. FREQUENCY IS 455 KC
 3. SYMBOL \equiv DENOTES CHASSIS
 4. S-1A AND S-1B ARE ON RP19
 5. M-1000, M-1000,000

8/25/48

TO FIL.



- NOTES:**
1. RESISTORS ARE IN OHMS AND ARE $\frac{1}{2}$ WATT; CAPACITORS ARE 400V. AND IN μ mf. UNLESS OTHERWISE SPECIFIED.
 2. SWITCH S-1 IS MOUNTED ON REAR OF RPIG.
 3. SYMBOL Δ DENOTES B- AND SYMBOL ∇ DENOTES CHASSIS.
 4. I.F. FREQUENCY IS 455KC.
 5. TUNING RANGE IS 532 TO 1700KC.
 6. S-2A AND S-2B CONSTITUTE RADIO-PHONO SWITCH (SR13) AND SHOWN IN RADIO POSITION.

OPERATING INSTRUCTIONS AND SERVICE NOTES

This radio-phonograph combination includes a five tube superheterodyne receiver and a smoothly-operating dependable, automatic record changer. It has a built-in sensitive loop antenna, an Alnico V permanent magnet speaker, and full size octal tubes for longer life. The radio chassis and record changer are electrically floating to prevent possibility of hazardous shock.

Operation: The set operates on 105-125 volts 60 cycles AC only. Power drain is approximately 25 watts for radio and 17 watts additional for the record changer.

Range: The complete broadcast band is covered, from 532 to 1700 kilocycles. Since the scale is calibrated from 55 to 170, the actual frequencies are read by adding a zero to the dial calibration.

Controls: Three controls are provided for operating the set. The upper right control tunes to any desired station when pointer knob is rotated. The bottom right control incorporates the on-off switch and volume control. The extreme counter-clockwise position is the "off" position and rotating the knob clockwise turns the set on and increases the volume. The control at the left is the phono-radio switch, which switches from phonograph operation in the counter-clockwise position to radio operation in the clockwise position.

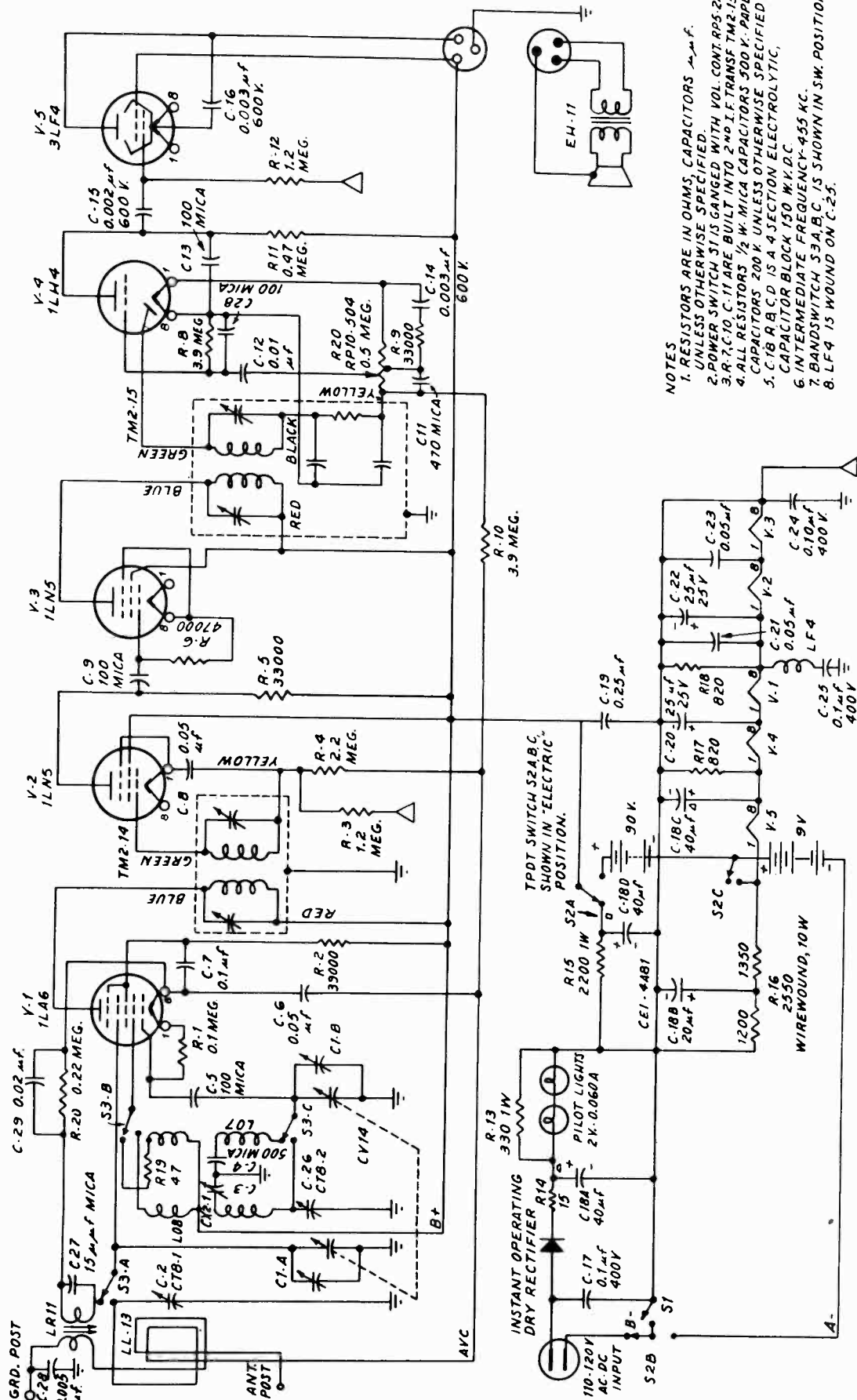
Record Changer: The record changer is completely automatic and will play twelve ten-inch records or ten twelve-inch records. Complete

operating instructions for the record changer are included in the record changer instruction sheet.

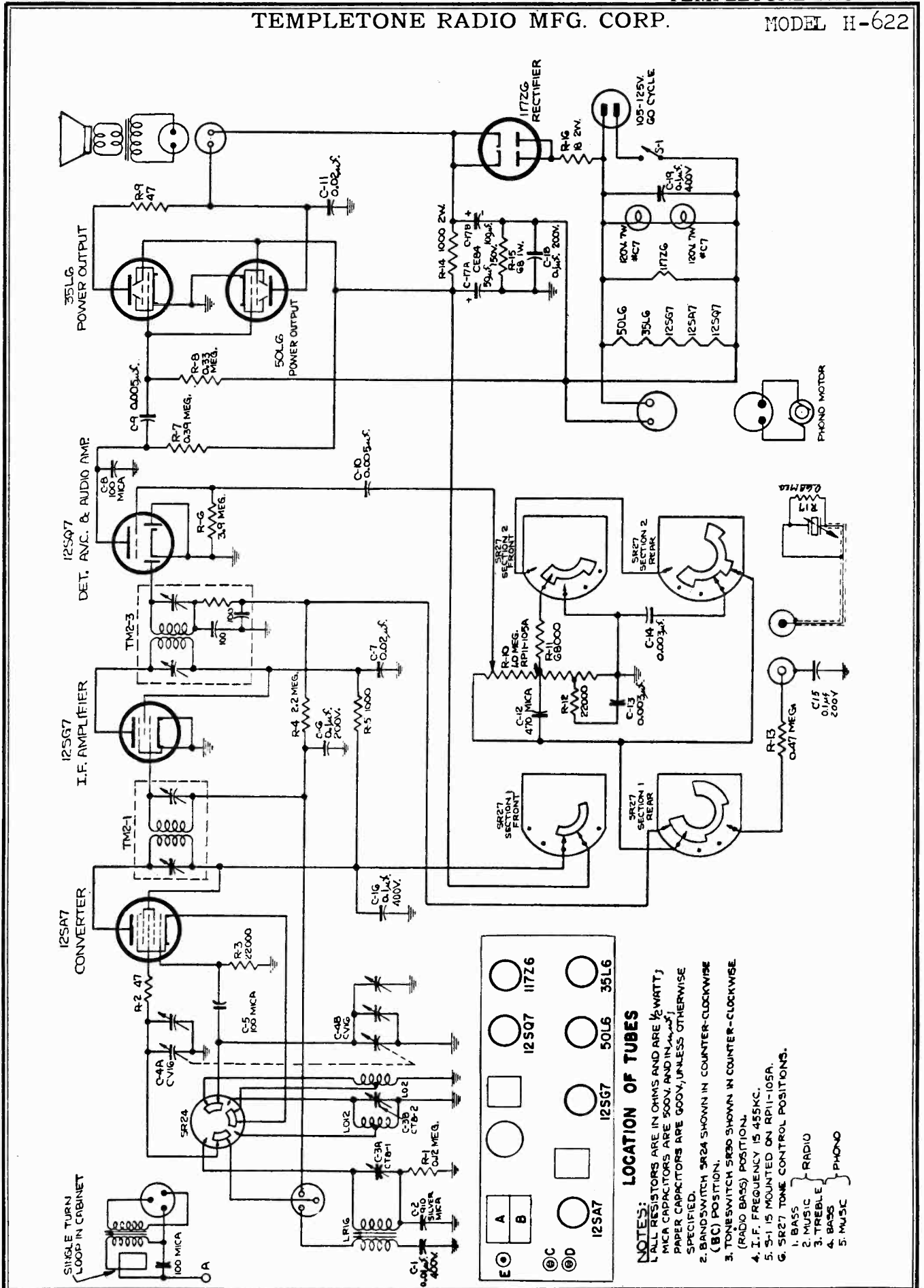
Antenna: For normal reception no outside aerial is required, as more than adequate pickup is obtained by the self-contained loop antenna. At installations remote from the desired stations, improved results may be obtained by rotating the receiver for maximum response, since the loop has marked directional effects on weak signals.

Alignment: No attempt should be made to re-align this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception. The signal generator may be connected through 0.01 mfd capacitor, used as a dummy antenna to the lug on the RF section of the tuning capacitor. Connect ground clip of generator to a B-point. Align the IF trimmers to 455 kilocycles using least possible input from signal generator, for maximum output as measured across voice coil or speaker.

To align RF, remove 0.01 mfd capacitor and connect signal generator to two or three turns of heavy wire forming a self-supporting loop, about 7 or 8 inches in diameter placed about a foot away from the receiver's loop antenna. Again, use least possible input from the signal generator. With the variable completely open (plates out of mesh) adjust the oscillator trimmer to 1700 kilocycles, then tune the set and signal generator to 1550 kilocycles and adjust RF trimmer for maximum response.



- NOTES
1. RESISTORS ARE IN OHMS, CAPACITORS μ m.f.
 2. POWER SWITCH S1 IS GANGED WITH VOL. CONT. RPS-24.
 3. R-7, C-10, C-11 ARE BUILT INTO 2ND I.F. TRANSF. TM2-15.
 4. ALL RESISTORS $\frac{1}{2}$ W. MICA CAPACITORS 500 K. PAPER CAPACITORS 200 K. UNLESS OTHERWISE SPECIFIED.
 5. C-18 A, B, C, D IS A SECTION ELECTROLYTIC. CAPACITOR BLOCK 150 W.V. D.C.
 6. INTERMEDIATE FREQUENCY 455 KC.
 7. BANDSWITCH S3A, B, C IS SHOWN IN SW. POSITION.
 8. LF4 IS WOUND ON C-25.



LOCATION OF TUBES

A	12SA7	12SG7	50L6	35L6
B				
C				
D				

- NOTES:**
- ALL RESISTORS ARE IN OHMS AND ARE 1/2 WATT; MICA CAPACITORS ARE 500V. AND IN PAPER CAPACITORS ARE 500V, UNLESS OTHERWISE SPECIFIED.
 - BANDSWITCH SR24 SHOWN IN COUNTER-CLOCKWISE (CC) POSITION.
 - TONE SWITCH SR30 SHOWN IN COUNTER-CLOCKWISE (RADIO BASS) POSITION.
 - I.F. FREQUENCY IS 455KC.
 - SR15 MOUNTED ON RPI-105A.
 - 1. BASS
 - 2. MUSIC
 - 3. TREBLE
 - 4. BASS
 - 5. MUSIC

OPERATING INSTRUCTIONS AND SERVICE NOTES

This set is a six-tube, two band, superheterodyne receiver and phonograph combination, using the latest type of low-drain electronic tubes and a smoothly operating, dependable record changer.

Operation: The set operates on 105-125 volts 60 cycles, AC. The power drain is approximately 35 watts on radio operation and 17 watts additional on phonograph operation.

Range: This set has both a broadcast and shortwave range. The complete broadcast band is covered from 532 to 1700 kilocycles. Since the broadcast dial scale is calibrated from 55 to 160, the actual frequency of the station may be obtained by adding zero to the dial calibration. The shortwave band covers from 5.6 to 12.5 megacycles. The shortwave dial scale is calibrated directly in megacycles.

Controls Four controls are provided for the operation of the radio set. The control at the extreme left includes the on-off switch and the volume control. The extreme counter-clockwise position is "off", and rotating the knob clockwise turns the set on and increases the volume. The second control from the left is the phono-radio switch and the tone control. The positions in order, from counter-clockwise to clockwise are: radio bass; radio music; radio treble; phonograph bass and phonograph music. Tone is varied electrically by boosting bass, treble or both, and not by merely reducing the high frequency response. The third control is the bandswitch which switches from broadcast in counter-clockwise position, to shortwave in clockwise position. The last control is the tuning control which permits accurate tuning of the slide rule dial through smooth vernier action.

Record Changer: The record changer is completely automatic and will play up to 12 ten-inch records or 10 twelve-inch records. Complete operating instructions for the record changer are included on a separate instruction sheet. It is provided with a precious metal alloy tipped, long-life needle balanced to give high quality reproduction with the speaker, amplifier and tone arm. It will provide many hours of excellent performance with low record wear.

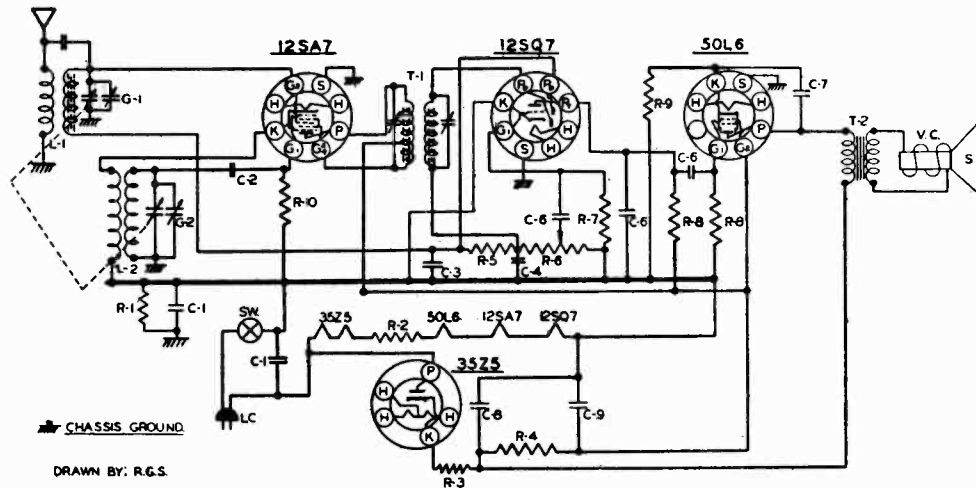
Antenna: For normal reception, no outside antenna is required, as more than adequate pick-up is obtained from the built-in cabinet loop and the high sensitivity of the receiver. In very poor receiving locations improved results may be obtained by connecting an outside aerial to the post marked "A" on the rear of the cabinet.

Alignment: No attempt should be made to re-align this receiver until it has been determined that poor tubes or some local condition is not responsible for faulty reception. The signal generator may be connected through 0.01 mfd capacitor used as a dummy antenna, to the lug on the RF section "B" of the tuning capacitor. Connect ground clip of generator directly to chassis. An output meter may be clipped across the voice coil lug on the speaker. Align IF trimmers to 455 kilocycles, using the least possible input in the signal generator. With tuning plates completely out of mesh (pointer at the extreme right end of travel) the set in broadcast position, adjust the broadcast oscillator trimmer (A) to 1700 kilocycles. Then switch to shortwave and adjust the shortwave oscillator trimmer (D) to 12.5 megacycles. Replace the 01 mfd dummy by a 39 mmfd mica capacitor and connect to antenna terminal "A." Tune set and signal generator to 600 kilocycles and adjust broadcast antenna coil slug for maximum output. Then re-tune set and signal generator to 1550 kilocycles and adjust RF trimmer "B" on tuning capacitor for maximum response. Repeat these adjustments until no further adjustment is required, then switch receiver to shortwave. Tune set and signal generator to 6 megacycles and adjust shortwave antenna coil slug "E" for maximum response. Retune set and signal generator to 10.5 megacycles and tune shortwave antenna, trimmer "C" for maximum response. In these adjustments the tuning control should be rocked for best results. Repeat these adjustments until no further adjustment is needed.

For checking purposes, five marks are engraved on the dial plate. These represent, in order from left to right: the pointer position capacitor plates fully meshed and the pointer settings for 600 kc or 6 mc; 1000 kc, 10.5 mc and 1550 kc.

TRAV-LER RADIO CORP.

MODEL 5054



DRAWN BY: R.G.S.

ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1650 KC. An output meter should be connected across the speaker.

The volume control of the receiver should be turned to maximum during the I. F. and all subsequent alignment and the generator output as low as possible to prevent the A. V. C. from working and giving false readings.

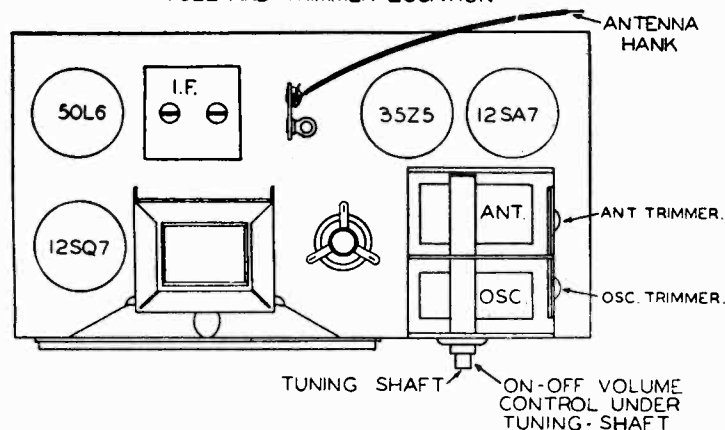
PART NO.	DESCRIPTION
1R-20	R-1 220M RESISTOR 1/2W. 20
1R-41	R-2 47 RESISTOR 1 W. 10
1R-17	R-3 33 RESISTOR 1/2W. 20
1R-25	R-4 2200 RESISTOR 1 W. 10
1R-23	R-5 3.3MEG. RESISTOR 1/2W. 20
VC-9	R-6 1MEG. VOLUME CONTROL
1R-3	R-7 10MEG. RESISTOR 1/2W. 20
1R-11	R-8 470M RESISTOR 1/2W. 20
1R-14	R-9 150 RESISTOR 1/2W. 20
1R-9	R-10 22M RESISTOR 1/2W. 20
PC-5	C-1 .05MFD. CONDENSER 400V.
MC-4	C-2 50MMFD. MICA.
PC-2	C-3 .05MFD. CONDENSER 200V
MC-2	C-4 100MMFD. MICA.
MC-5	C-5 500MMFD. MICA.
PC-6	C-6 .005MFD. CONDENSER 600V
PC-7	C-7 .01MFD. CONDENSER 400V.
EC-15	C-8 30MFD. ELECTROLYTIC COND.
	C-9 20MFD.
LA-3	L-1 ANT. COIL
LO-14	L-2 OSC. COIL
LI-8	T-1 I.F. TRANSFORMER
	T-2 OUTPUT TRANSFORMER
SPK-10	S 4" PM. SPEAKER.
	V.C. VOICE COIL
GC-7X	G-1 TUNING CONDENSER
	G-2 TUNING CONDENSER
CO-1	LC LINE CORD
TU-32	35Z5-50L6-12SA7-12SQ7

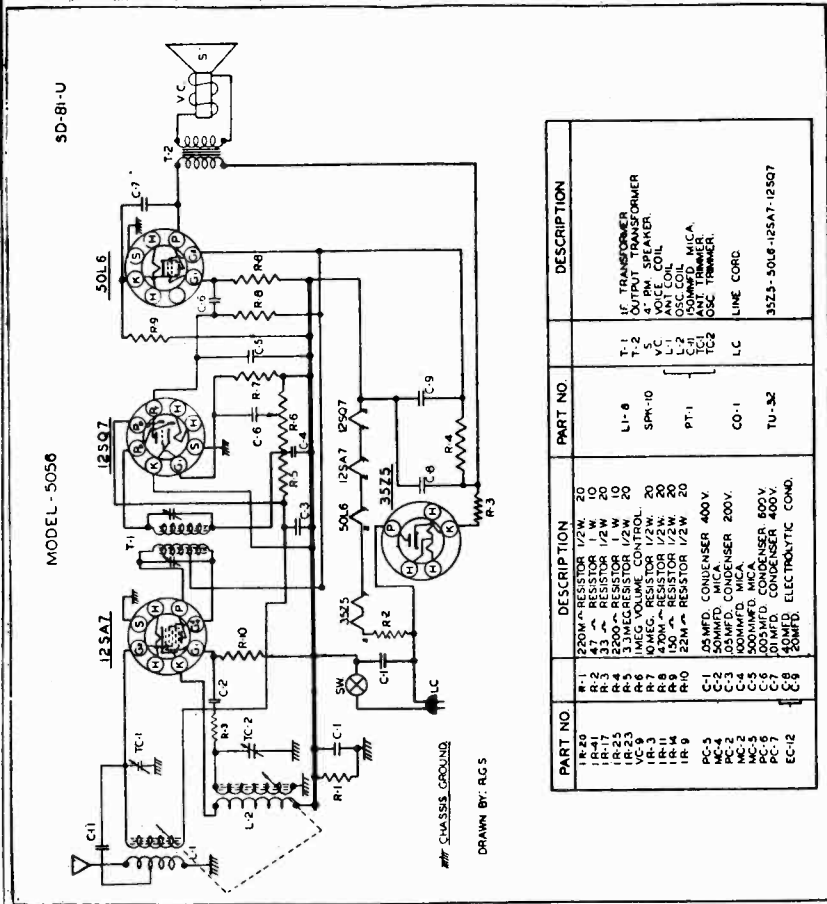
FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser through a .1 MFD. condenser. The ground lead from the generator must be connected to "B" minus under the chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the trimmers of the I. F. transformer until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1650 KC. Adjust the OSC. trimmer until the 1650 KC signal is tuned in. The gang condenser must be at complete minimum capacity for this adjustment.

THIRD STEP: Remove the generator hot lead and connect it to the antenna hank terminal strip through a 200 MMFD. condenser. With the receiver and generator set at 1400 KC, increase the generator output. Adjust the ANT. trimmer until a maximum signal is noted on the output meter. No further adjustment should be made as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

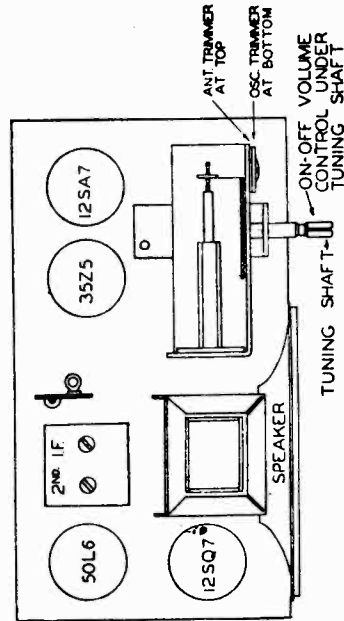
TUBE AND TRIMMER LOCATION





PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
R-1	220Ω RESISTOR 1/2W 20	T-1	IF TRANSFORMER
R-2	33Ω RESISTOR 1/2W 20	T-2	OUTPUT TRANSFORMER
R-3	33Ω RESISTOR 1/2W 20	S	4" PM SPEAKER
R-4	2200Ω RESISTOR 1/2W 10	V.C.	VOICE COIL
R-5	33MΩ RESISTOR 1/2W 20	L-1	OSC. COIL
R-6	10MΩ RESISTOR 1/2W 20	L-2	OSC. COIL
R-7	10MΩ RESISTOR 1/2W 20	C-1	50MMFD. MICA
R-8	470Ω RESISTOR 1/2W 20	C-2	50MMFD. MICA
R-9	22MΩ RESISTOR 1/2W 20	C-3	50MMFD. MICA
R-10	22MΩ RESISTOR 1/2W 20	C-4	50MMFD. MICA
C-1	50MMFD. CONDENSER 400V	CO-1	LC
C-2	50MMFD. CONDENSER 200V	TU-32	35Z3-50L6-12SA7-12SQ7
C-3	50MMFD. MICA		
C-4	50MMFD. MICA		
C-5	50MMFD. CONDENSER 600V		
C-6	50MMFD. CONDENSER 400V		
C-7	50MMFD. CONDENSER 400V		
C-8	50MMFD. CONDENSER 400V		
C-9	50MMFD. ELECTROLYTIC COND.		
EC-12	50MMFD.		

TUBE AND TRIMMER LOCATION



ALIGNMENT AND SERVICE DATA

(See Fig. No. 1 For Trimmer Location)

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1700 KC. An output meter should be connected across the speaker.

The volume control of the receiver should be turned to maximum during the I. F. and all subsequent alignment and the generator output as low as possible to prevent the A. V. C. from working and giving false readings.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the tuner through a .1 MFD. condenser. The ground lead from the generator must be connected to "B" minus under the chassis. Turn the tuner to complete minimum capacity. Set the generator to 455 KC. Adjust the trimmers of the I. F. transformer until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1700 KC. Adjust the OSC. trimmer until the 1700 KC. signal is tuned in. The tuner must be at complete minimum capacity for this adjustment.

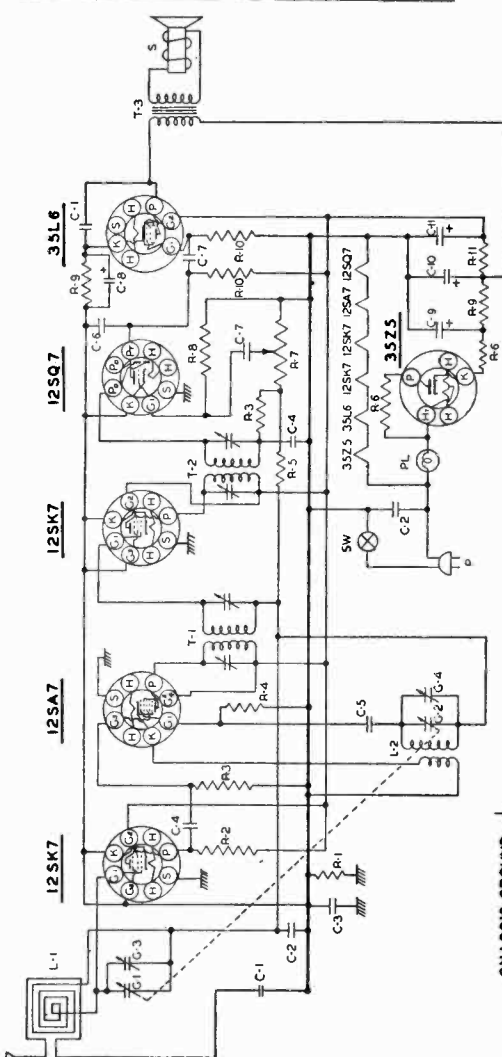
THIRD STEP: Remove the generator hot lead and connect it to the antenna bank terminal strip through a 200 MMFD. condenser. With the receiver and generator set at 1400 KC., increase the generator output. Adjust the ANT. trimmer until a maximum signal is noted on the output meter. No further adjustment should be made as the coils in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

OPERATING INSTRUCTIONS

POWER SOURCES: This receiver may be operated on alternating current (AC) of 110 to 125 volts at 60 cycles or on direct current (DC) of 110 to 125 volts. When used on DC, if the tubes light up but set does not play, reverse the cord plug in the power outlet.

CAUTION: Always predetermine voltage of power source. Never try to plug this receiver into a 220 volt line, as this will cause serious damage.

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
PC-7	10MFD CONDENSER 400 V	R-4	22M ^Ω RESISTOR 1/2W 20%
PC-5	10MFD CONDENSER 400 V	R-5	33M ^Ω RESISTOR 1/2W 20%
PC-8	10MFD CONDENSER 400 V	R-6	33 ^Ω RESISTOR 1/2W 20%
MC-2	0001 MICA CONDENSER	R-7	1MEG. VOLUME CONTROL
MC-4	00005 MICA CONDENSER	R-8	2.2MEG. RESISTOR 1/2W 20%
MC-5	00005 MICA CONDENSER	R-9	220 ^Ω RESISTOR 1/2W 10%
PC-6	10MFD CONDENSER 600 V	R-10	470M ^Ω RESISTOR 1/2W 20%
EC-2	40MFD. 25WV ELECTROLYTIC	R-11	330 ^Ω RESISTOR 1/2W 10%
EC-14	40MFD. ELECTROLYTIC 150 W V	G-1	GANG CONDENSER
IR-20	220M ^Ω RESISTOR 1/2W 20%	G-2	ANT TRIMMER
IR-22	3900 ^Ω RESISTOR 1/2W 10%	G-3	OSC TRIMMER
IR-0	47M ^Ω RESISTOR 1/2W 20%	G-4	OSC TRIMMER
LI-5	INPUT I.F. TRANSFORMER	L-3	LOOP ANT
LI-7	OUTPUT I.F. TRANSFORMER	L-2	OSC COIL
SPK-12	SWITCH ON VOLUME CONTROL		
	OUTPUT TRANSFORMER		
	5" P.H. SPEAKER		
PB-1	#47 PILOT BULB		
CO-1	LINE CORD		



ALIGNMENT

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

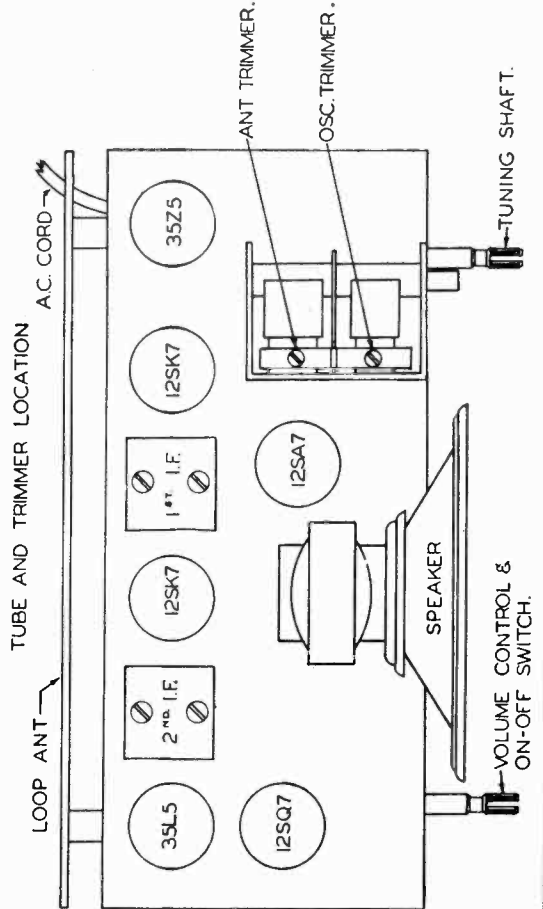
Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

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

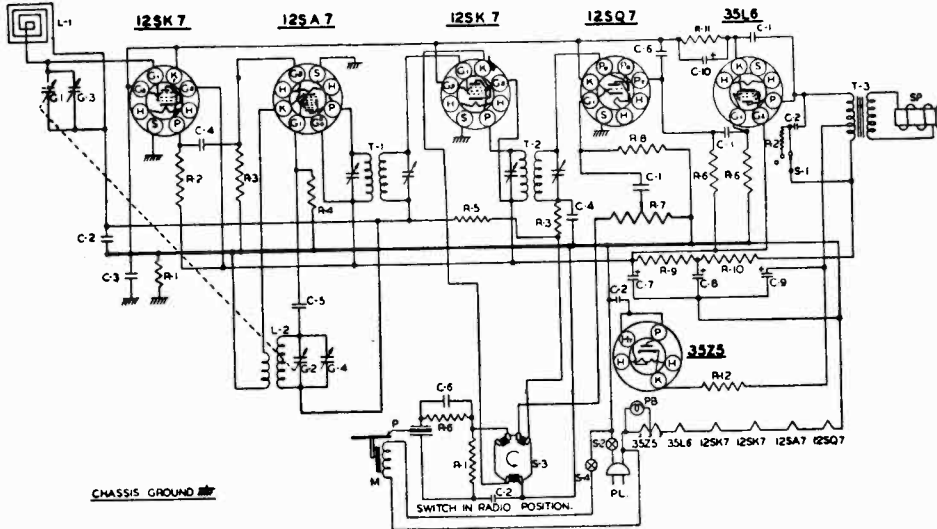
FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the chassis must be connected to the floating ground buss under the generator. Turn the gang condenser to complete minimum capacity. Adjust the generator to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

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



MODEL 6040

TRAV-LER RADIO CORP.



ALIGNMENT DATA

Remove the chassis from the cabinet. A Signal Generator with the following frequencies is required: 455 KC, 1400 KC and 1720 KC.

The receiver volume control should be turned to maximum during the I.F. and all subsequent alignments to keep the A.V.C. from working and giving false readings. Turn the tone control to complete left hand position. Keep the generator output as low as possible to prevent overloading.

Connect an output meter across the voice coil of the speaker.

Connect a 20,000 ohm resistor across the loop connector terminals to reflect proper loop impedance.

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

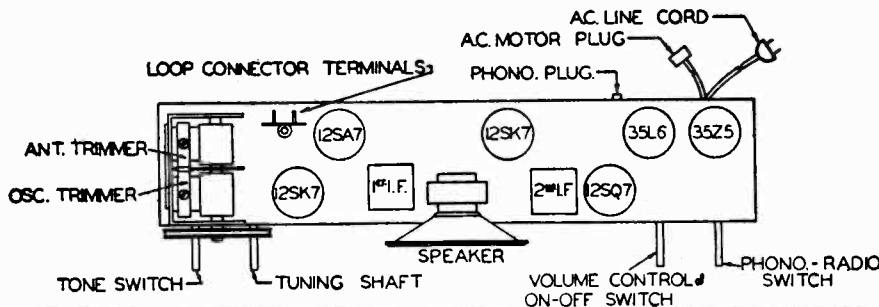
SECOND STEP: With the leads from the generator connected in the same manner as in I.F. alignment, adjust the signal generator to 1720 KC. The "O.S.C." trimmer is located on the front section of the gang condenser. Adjust this trimmer until the signal is tuned in. The gang condenser should be at complete minimum capacity for this setting.

THIRD STEP: Remove the generator leads from the chassis. Remove the 20,000 ohm resistor from the loop connector terminals. Reinstall the chassis in the cabinet, connect the loop leads, motor plug and phono pickup leads.

Connect the generator leads to a transmitting loop, made of a few turns of wire, and loosely couple to the receiver loop antenna which is located on the back end of the cabinet. Adjust the generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The "ANT." trimmer is located on the rear section of the gang condenser. Adjust this trimmer until a maximum signal is noted on the output meter.

No further adjustment should be necessary, unless the receiver has been damaged, as the coils and tuning condenser have been specially handled at the factory to insure proper alignment at the lower frequencies.

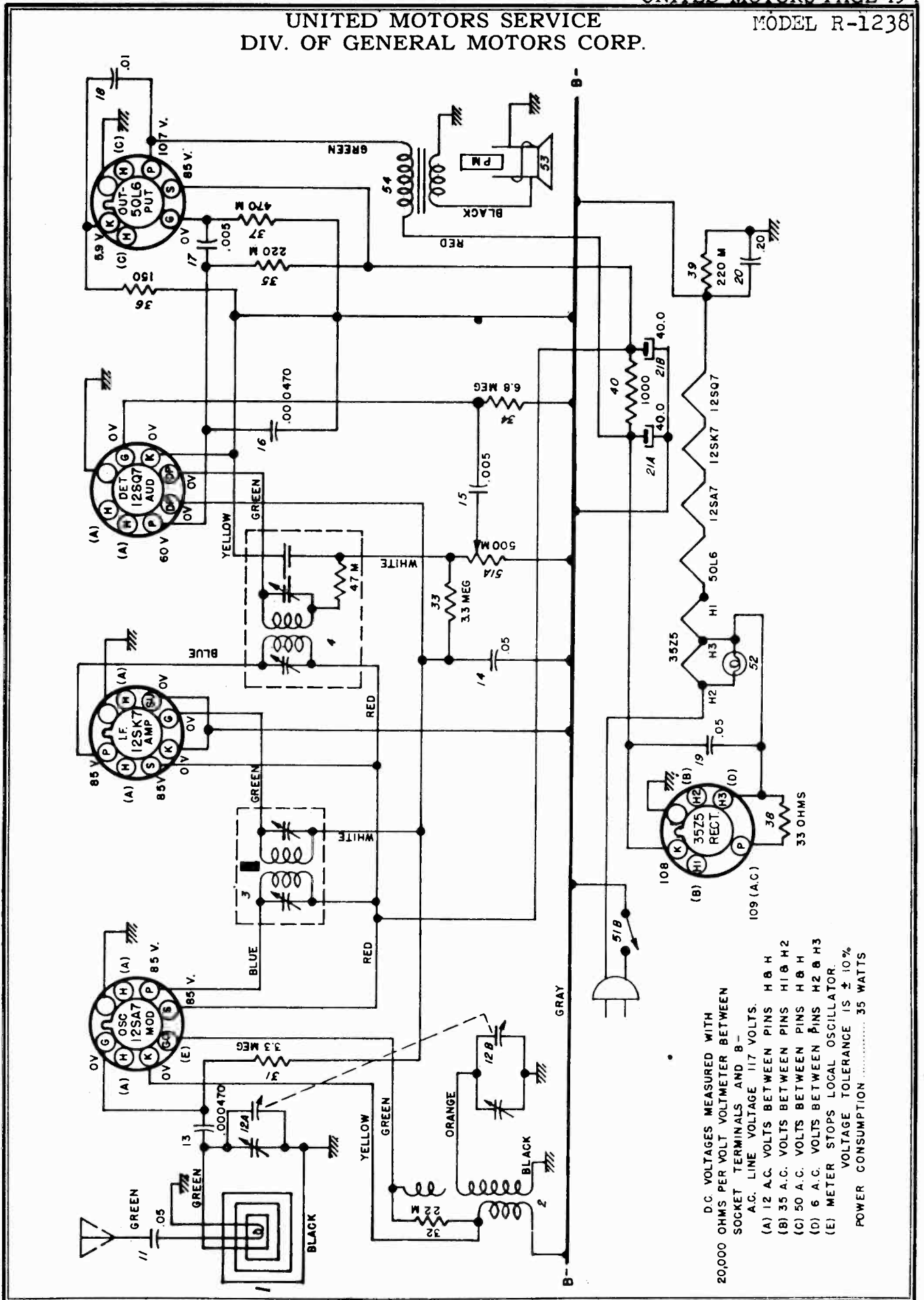
TUBE AND TRIMMER LOCATION



PART NO.	DESCRIPTION
PC-7	C-1 0.1 MFD. CONDENSER 400 V.
PC-5	C-2 .05 MFD. CONDENSER 400 V.
PC-8	C-3 .1 MFD. CONDENSER 400 V.
MC-2	C-4 100 MMFD. MICA CONDENSER
MC-4	C-5 50 MMFD. MICA CONDENSER
MC-5	C-6 500 MMFD. MICA CONDENSER
C-7	20 MFD.
EC-14	C-8 40 MFD. 150 WV. ELECTROLYTIC
	C-9 40 MFD.
EC-2	C-10 10 MFD. 25 WV. ELECTROLYTIC
IR-20	R-1 220M Ω RESISTOR 1/2W 20%
IR-15	R-2 2200 Ω RESISTOR 1/2W 20%
IR-10	R-3 47M Ω RESISTOR 1/2W 20%
IR-9	R-4 22M Ω RESISTOR 1/2W 20%
IR-23	R-5 3.3 MEG. RESISTOR 1/2W 20%
IR-1	R-6 470M Ω RESISTOR 1/2W 20%
VC-4	R-7 1 MEG. VOLUME CONTROL
IR-13	R-8 12.2 MEG. RESISTOR 1/2W 20%
IR-1	R-9 470 Ω RESISTOR 1/2W 20%
IR-42	R-10 1000 Ω RESISTOR 1 W 10%
IR-14	R-11 150 Ω RESISTOR 1/2 W 20%
IR-17	R-12 33 Ω RESISTOR 1/2 W 20%
GC-5	G-1 GANG CONDENSER
	G-2 ANT. TRIMMER
	G-3
	G-4 OSC. TRIMMER
LI-6	T-1 INPUT I.F. TRANSFORMER
LI-7	T-2 OUTPUT I.F. TRANSFORMER
	T-3 OUTPUT TRANSFORMER
LL-17	L-1 LOOP ANT.
LO-15	L-2 OSC. COIL
SPK-12	SP 5" PM. SPEAKER
SW-2	S-1 TONE SWITCH
	S-2 SWITCH ON VOLUME CONTROL
	S-3 PHONO-RADIO SWITCH
	S-4 SWITCH ON RECORD CHANGER
AC-M-7	M RECORD CHANGER MOTOR
AC-PU-7	P CRYSTAL PICKUP ARM. CARTRIDGE 54
	PB #47 PILOT BULB
CO-2	PL LINE CORD

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL R-1238



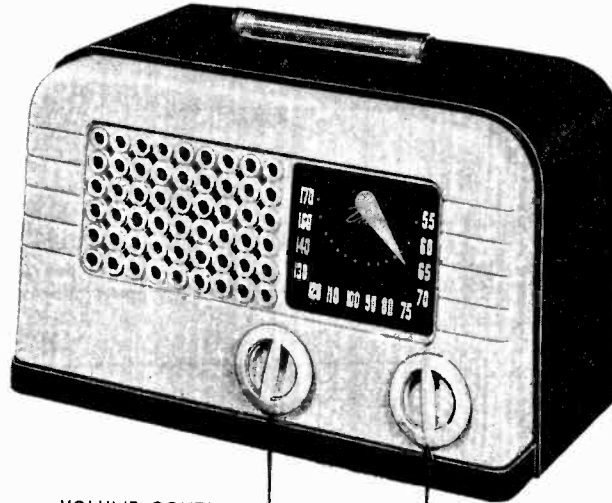
D.C. VOLTAGES MEASURED WITH
20,000 OHMS PER VOLT VOLTMETER BETWEEN
SOCKET TERMINALS AND B -
A.C. LINE VOLTAGE 117 VOLTS.
(A) 12 A.C. VOLTS BETWEEN PINS H & H
(B) 35 A.C. VOLTS BETWEEN PINS H1 & H2
(C) 50 A.C. VOLTS BETWEEN PINS H & H
(D) 6 A.C. VOLTS BETWEEN PINS H2 & H3
(E) METER STOPS LOCAL OSCILLATOR.
VOLTAGE TOLERANCE IS $\pm 10\%$
POWER CONSUMPTION 35 WATTS

MODEL R-1238

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

GENERAL:

CIRCUIT AC - DC Superheterodyne
 TUBES 4 Plus Rectifier
 TUNING Manual
 TUNING RANGE 540 - 1720 KC
 POWER SUPPLY
 105/125 Volts AC - DC
 POWER CONSUMPTION 35 Watts

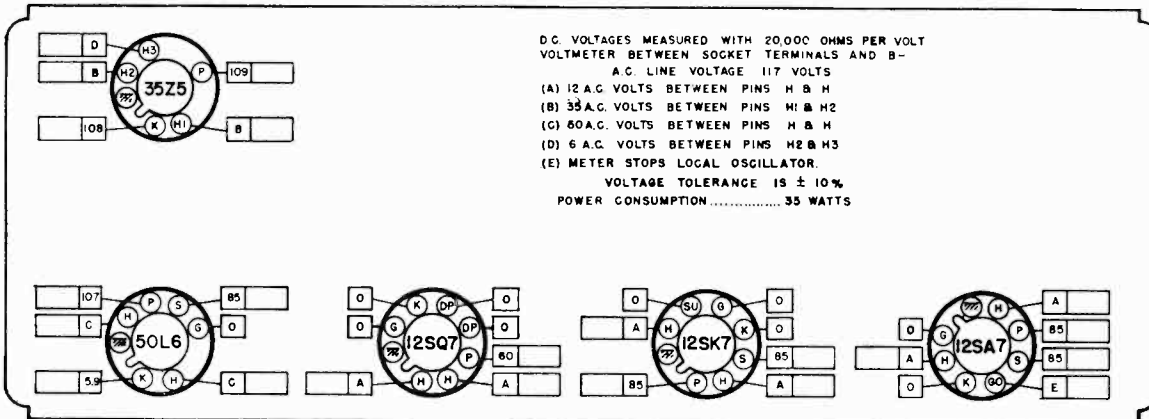


VOLUME CONTROL
AND SWITCH

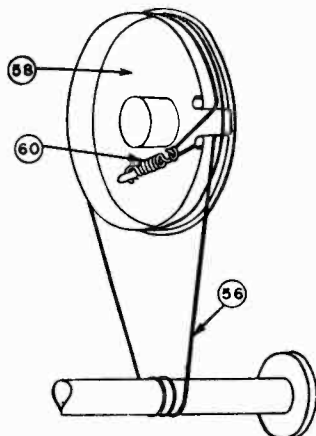
TUNING CONTROL

TUBE SOCKET VOLTAGE CHART

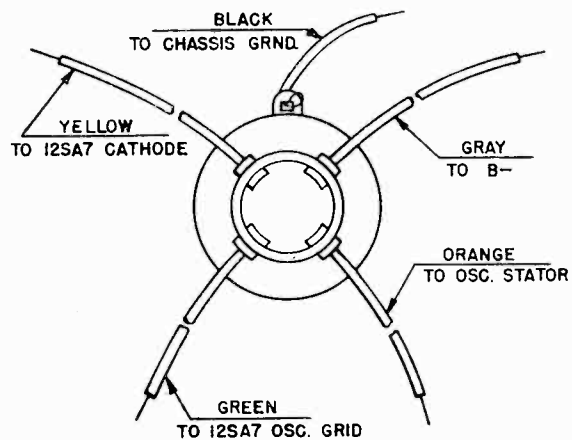
The tube socket voltages, as measured at the factory, are shown below. The blank spaces are provided so the service man may fill in actual voltage readings as measured with his own equipment. A normal operating radio should be used for these measurements.



Volt Meter Resistance
 Line Voltage
 Voltage Tolerance $\pm 10\%$
 Ohms Per Volt
 Volts



DIAL CORD SYSTEM



OSCILLATOR COIL

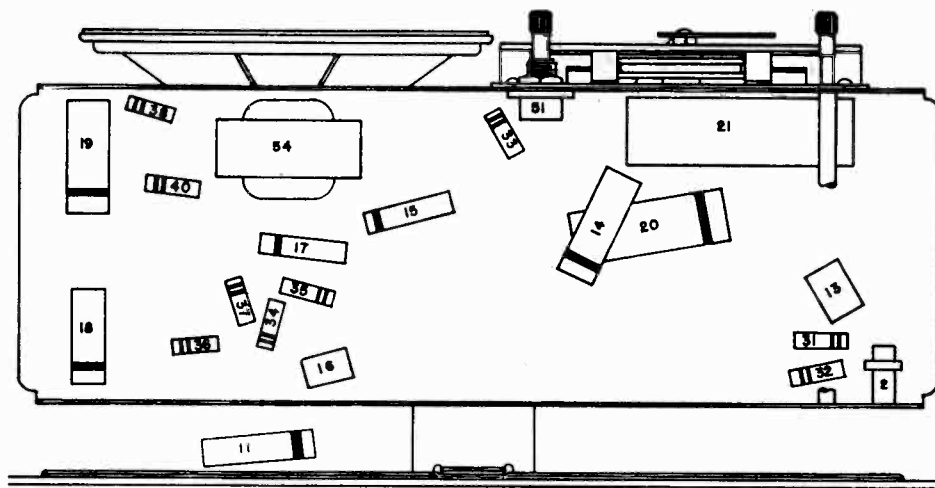
UNITED MOTORS SERVICE
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MODEL R-1238

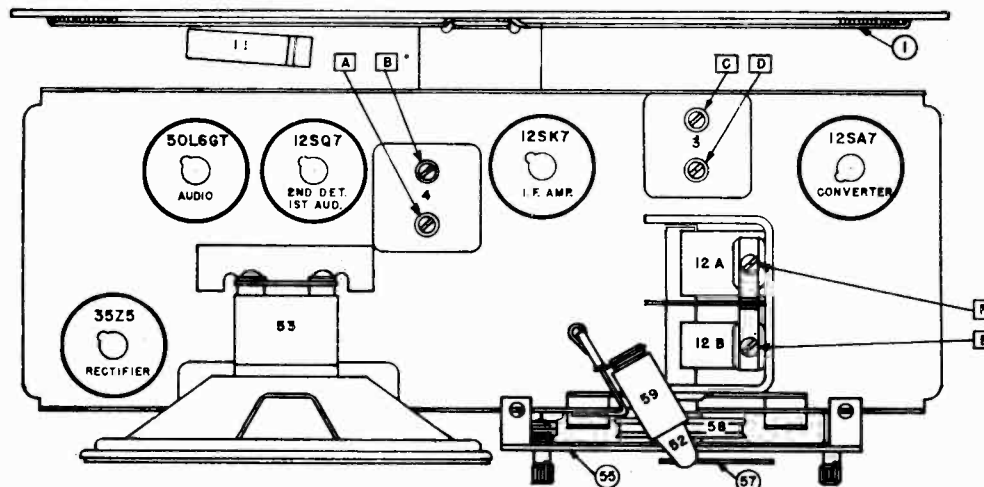
ALIGNMENT PROCEDURE:

Output Meter Connections Across Voice Coil Winding
 Signal Generator Ground To Chassis through .01 MFD
 Dummy Antenna In series with generator
 Volume Control Position Fully on
 Signal Generator Output Minimum

Steps	Series Condenser or Dummy Antenna	Connect Signal Generator To	Adjust Signal Generator To	Turn Radio Dial To	Adjust Trimmers
1	0.1 Mfd.	12SA7 Grid (Pin #8) Ground Generator to B- (not chassis)	456 KC	Quiet Point near H. F. end	A-B (2nd IF Trans) C-D (1st IF Trans)
2	.000200 Mfd.	Ant. lead	1720 KC	1720 KC	E (Osc.)
3	.000200 Mfd.	Ant. lead	1400 KC	1400 KC	F (Ant.)



PARTS LAYOUT — CHASSIS VIEW



PARTS LAYOUT — TUBE VIEW

MODEL R-1238

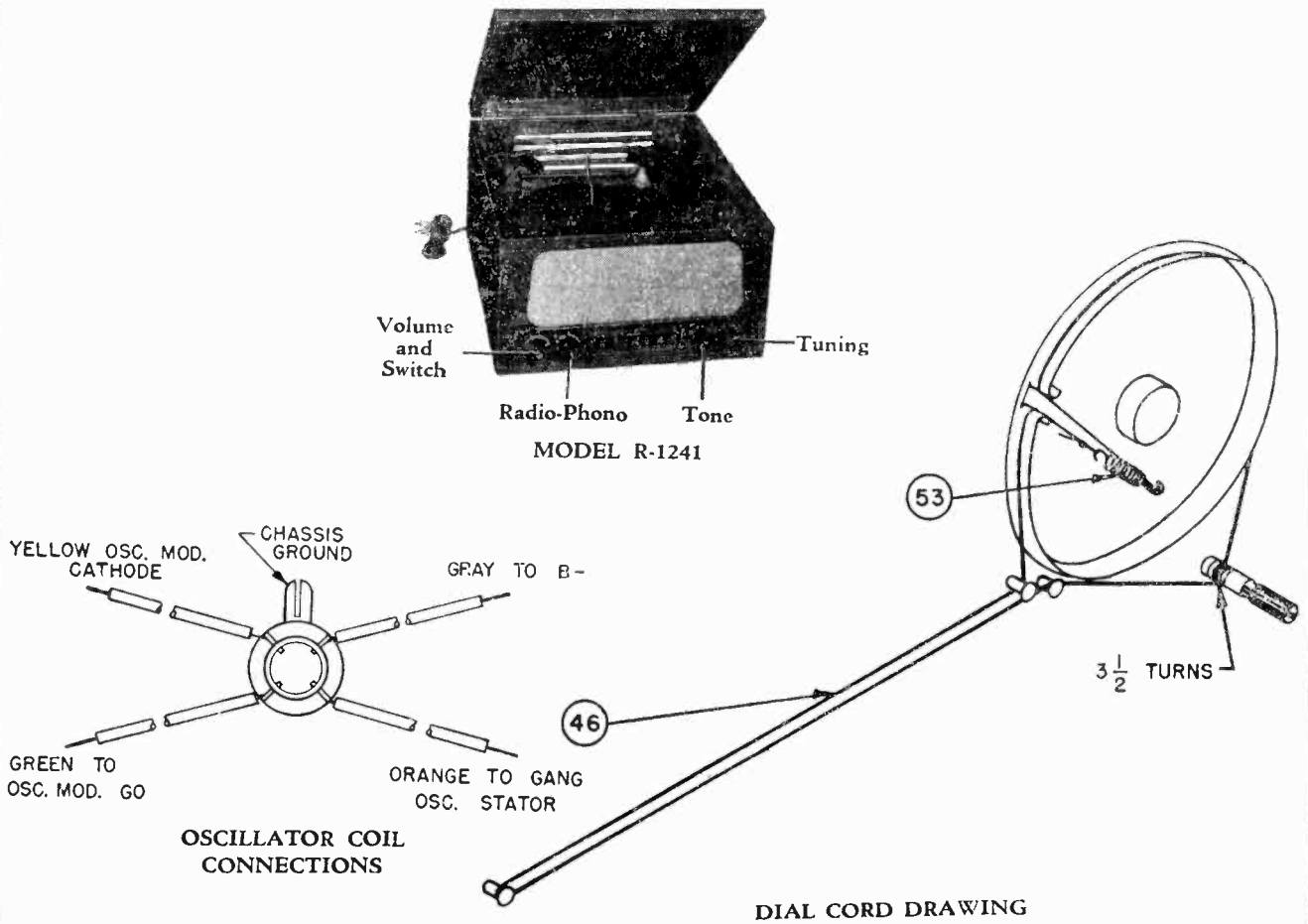
UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

SERVICE PARTS LIST

Illus. No.	Prod. Part No.	Service Part No.	Part Description
ELECTRICAL PARTS			
COILS			
1	1217910	1217910	Antenna - Loop Assy. (Includes Illus. 11)
2	1217905	1217905	Oscillator Coil
3	1217886	1217972	1st I. F.
4	1217887	1217973	2nd I. F.
CONDENSERS			
11	7236842	E503	0.05 Mfd. 200V Tubular (In Illus. 1)
12	1217917	1217917	Variable Condenser 12A Antenna Section 12B Oscillator Section
13	7238879	G471	0.000470 Mfd. Molded Mica
14	7236842	E503	0.05 200V Tubular
15	7231212	E502	0.005 600V Tubular
16	7238879	G471	0.000470 Molded Mica
17	7231212	E502	0.005 Mfd. 600V Tubular
18	1216513	E103	0.01 Mfd. 600V Tubular
19	7230592	E503	0.05 Mfd. 600V Tubular
20	7238787	E204	0.2 Mfd. 400V Tubular
21	1216527	J908	Electrolytic Condenser 40 Mfd. 150V 40 Mfd. 150V
21A			
21B			
RESISTORS			
31	1214564	A335	3.3 Meg. Ohms ½Watt Insulated
32	1214550	A223	22,000 Ohm ½Watt Insulated
33	1214564	A335	3.3 Meg. ½Watt Insulated
34	1215563	A685	6.8 Meg. Ohms ½Watt Insulated
35	1214555	A224	220,000 Ohm ½Watt Insulated
36	1213220	A151	150 Ohm ½Watt Insulated
37	1214559	A474	470,000 Ohm ½Watt Insulated
38	1213224	A330	33 Ohm ½Watt Insulated
39	1214555	A224	220,000 Ohm ½Watt Insulated
40	1211037	B102	1000 Ohm 1Watt Insulated
TUBE COMPLEMENT			
	1213809	5341	12SA7
	1213812	5348	12SK7
	1213813	5350	12SQ7
	1214366	5451	50L6GT
	1213848	5408	35Z5GT
MISCELLANEOUS ELECTRICAL PARTS			
51	1217883		Control, Volume and Switch
51A		8123	Volume Control
51B		8201	Switch, On-off
	1216512	1216512	Cord, Power
52	435433	47	Lamp, Dial
53	1216563	1216563	Speaker, 5" P. M
54	1217884	1217884	Transformer, Output
MISCELLANEOUS MECHANICAL PARTS			
55	1217888	1217888	Backplate Assy. Dial
56	1216994	1212233	Cord, 13" Dial Drive
	1217900	1217900	Cabinet Assy
	1217970	1217970	Dial Glass
	1217892	1217892	Knob
57	1217891	1217891	Pointer, Dial
58	1217238	1217238	Pulley, Dial Drive
59	1217839	1217839	Socket, Dial Light, with Leads
	1217403	7236279	Socket, Octal Tube
60	1217323	1217323	Spring, Dial Tension

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL R-1241



ALIGNMENT PROCEDURE:

Output Meter Connections Across Voice Coil
 Generator Return To B—
 Dummy Antenna In Series With Generator
 Volume Control Position Maximum Volume
 Tone Control Position Treble
 Generator Output Minimum for Readable Indication

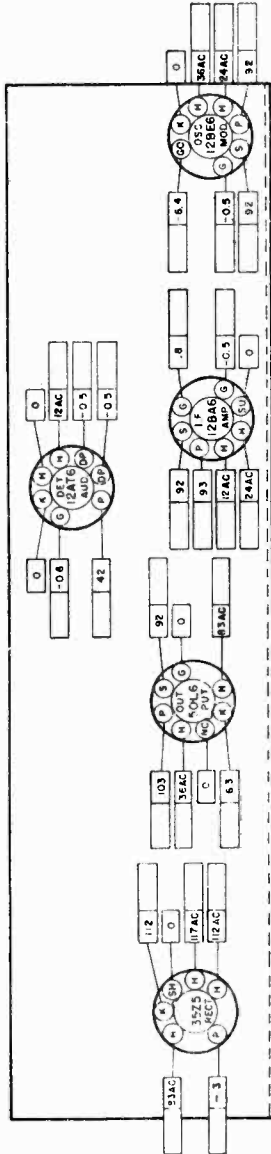
Steps	Series Condenser or Dummy Antenna	Connect Generator To	Signal Generator Frequency	Tune Receiver To	Adjust in Sequence for Max. Output
1	0.1 Mfd	Stator Lug RF Section of Gang	456 KC	High Frequency Stop	A, B, C, D
2	0.000220 Mfd	Stator Lug RF Section of Gang	1615 KC	High Frequency Stop	E
3	0.000220 Mfd	External Antenna Connection	1400 KC	Signal Generator Signal	F

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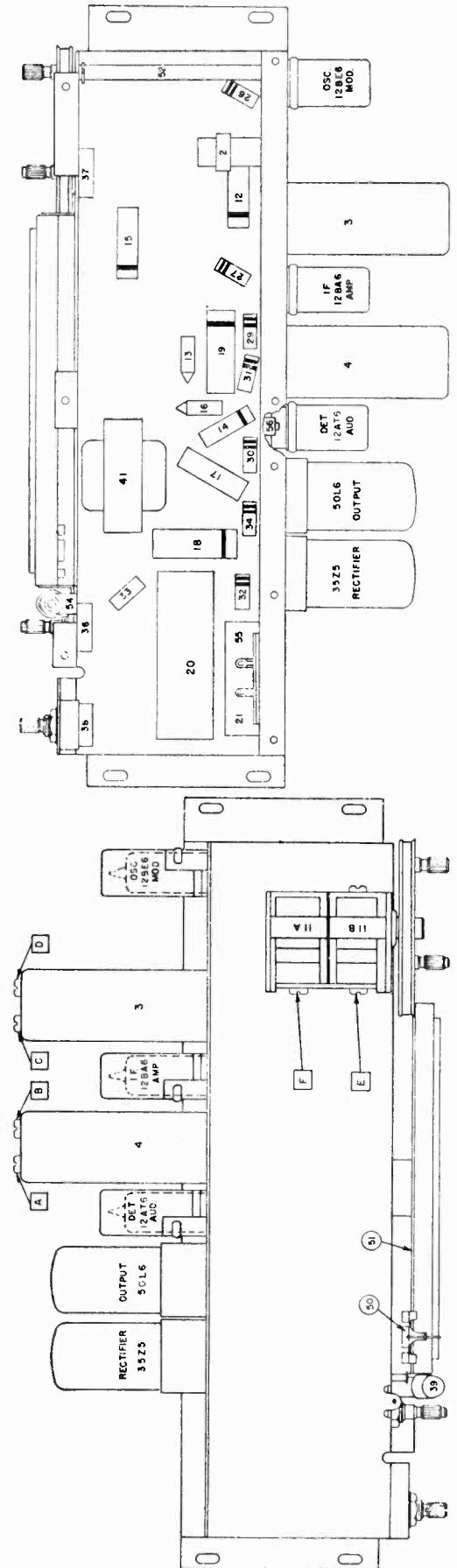
MODEL R-1241

TUBE SOCKET VOLTAGE CHART

The tube socket voltages, as measured at the factory and under the conditions shown on the schematic diagram, are shown below. The blank spaces are provided so the service man may fill in actual voltage readings as measured with his own equipment. A normal operating radio should be used for these measurements.



Volt Meter Resistance Ohms Per Volt
 Line Voltage Volts
 Voltage Tolerance ±10%



PARTS LAYOUT — CHASSIS VIEW

PARTS LAYOUT — TUBE VIEW

MODEL R-1241

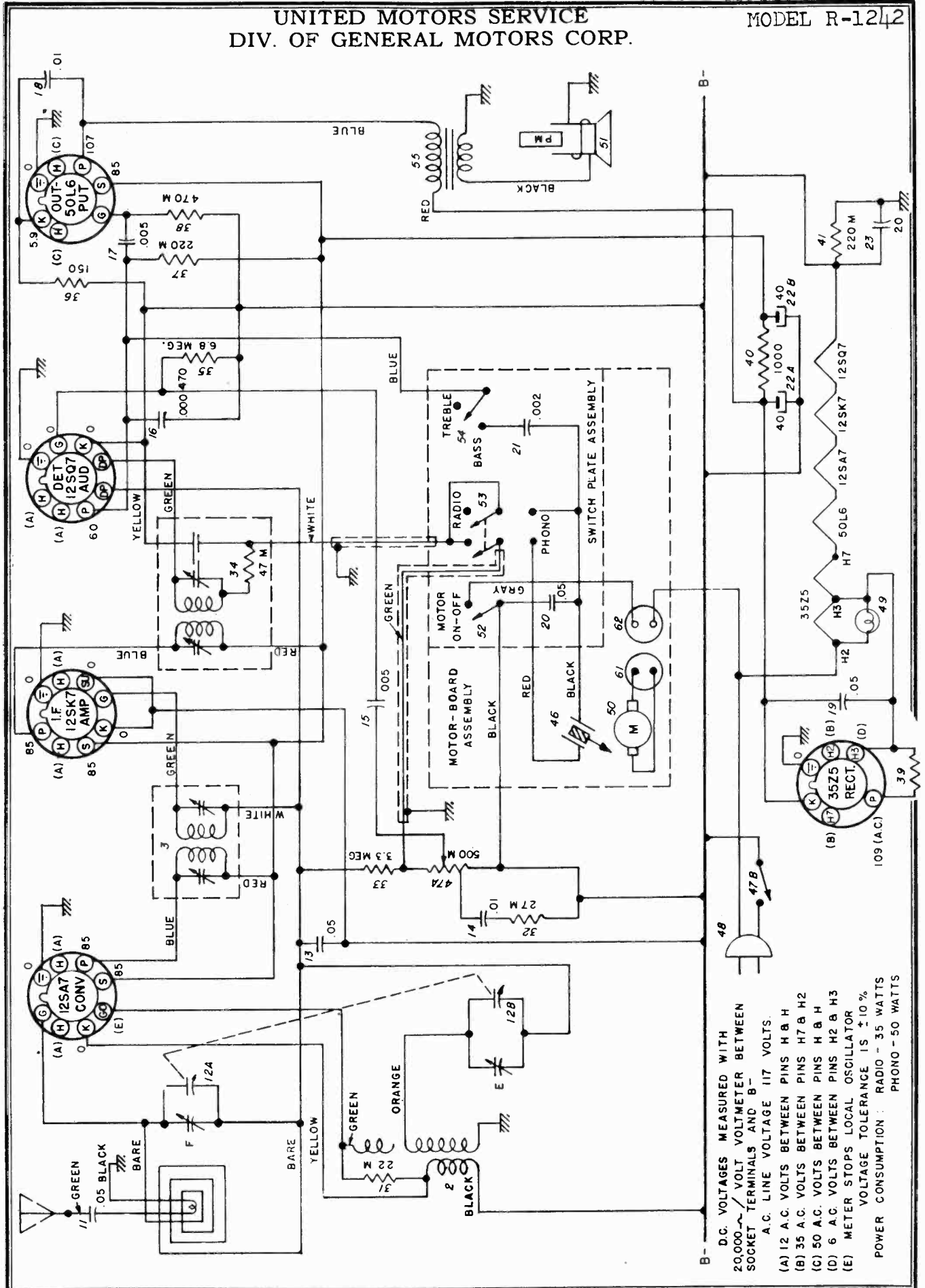
UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description	Illus. Production No.	Service Part No.	Description	Tubes
ELECTRICAL PARTS							
Coils							
1	1218776	1218776	Loop Antenna	36	1218062	Control - "Radio-Phono"	50L6GT
2	1218781	1218781	Oscillator	37	1218806	Control - Tone	12AT6
3	1218766	1217972	1st I.F.	38	1218758	Control - Volume and Switch	12BE6
4	1218767	1217973	2nd I.F.	38A		Volume Control	12BA6
				38B		Switch	3Z5GT, Rectifier
Condensers							
11	1219130	1219130	Variab. Condenser and Pulley	39	435433	Lamp - Dial Light	
11A			R.F. Section	40	1218817	Speaker	
11B			Oscillator Section	41	1217884	Transformer - Output	
12	7236842	E 503	0.05 Mfd. 200 V. Tubular				
13	1218258	E 502	Capristor				
13A		A 685	0.005 Mfd. Ceramic				
13B		A 685	6.8 Megohms 1/2 W Insulated				
14	1217790	E 102	0.001 Mfd. 600 V Tubular				
15	1216132	E 302	0.003 Mfd. 600 V Tubular				
16	1218259	E 502	Capristor				
16A		A 474	0.005 Mfd. Ceramic				
16B		E 103	470,000 Ohms 1/2 W Insulated				
17	7238790	E 503	0.01 Mfd. 200 V Tubular				
18	7230592	E 503	0.05 Mfd. 600 V Tubular				
19	7230592	J 908	Electrolytic				
20	1217027	E 201	40 Mfd. 150 V				
20A			40 Mfd. 150 V				
20B			0.2 Mfd. 400 V Tubular				
21	7238787	E 201	0.2 Mfd. 400 V Tubular				
Resistors							
13	1218258	E 502	Capristor				
13A		A 685	0.005 Mfd. Ceramic				
13B		A 685	6.8 Megohms 1/2 W Insulated				
16	1218259	E 502	Capristor				
16A		A 474	0.005 Mfd. Ceramic				
16B		A 223	470,000 Ohms 1/2 W Insulated				
26	1214550	A 223	22,000 Ohms 1/2 W Insulated				
27	1213217	A 101	100 Ohms 1/2 W Insulated				
28	1214553	A 473	47,000 Ohms 1/2 W Insulated				
29	1214564	A 335	3.3 Megohms 1/2 W Insulated				
30	1213220	A 151	150 Ohms 1/2 W Insulated				
31	1214555	A 224	220,000 Ohms 1/2 W Insulated				
32	1214538	A 330	33 Ohms 1/2 W Insulated				
33	1213282	A 105	1 Megohm 1/2 W Insulated				
34	1211037	B 102	1000 Ohms 1 W Insulated				
MECHANICAL PARTS							
Chassis							
		1217104	Clip - Fahnestock				
		6040	Cord - Dial				
		1216512	Cord - Power				
		1217515	Plug - Phono Motor				
		1851850	Plug - Pickup Lead				
		1218737	Pointer				
		1218756	Pointer Backplate				
		1218073	Shaft - Tuning				
		7242189	Spring - Pointer Cord Tension				
		1217839	Socket - Dial Light				
		1216925	Socket - Phono Motor				
		7236279	Socket - Octal Tube				
		1216747	Socket - Phono Pickup Lead				
		1218071	Socket - Seven pin miniature tube				
Cabinet							
		1219131	Cabinet Assy.				
		1218818	Dial				
		1218084	Knob - Volume Control, Tone Control and "Radio-Phono"				
		1218085	Knob - Tuning				

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL R-1242



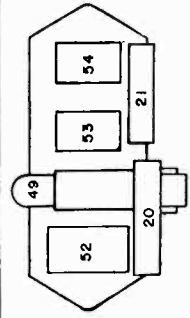
D.C. VOLTAGES MEASURED WITH
20,000-Ω VOLT VOLTMETER BETWEEN
SOCKET TERMINALS AND B-
A.C. LINE VOLTAGE 117 VOLTS.

(A) 12 A.C. VOLTS BETWEEN PINS H & H
(B) 35 A.C. VOLTS BETWEEN PINS H7 & H2
(C) 50 A.C. VOLTS BETWEEN PINS H & H
(D) 6 A.C. VOLTS BETWEEN PINS H2 & H3
(E) METER STOPS LOCAL OSCILLATOR
VOLTAGE TOLERANCE 15 ± 10 %

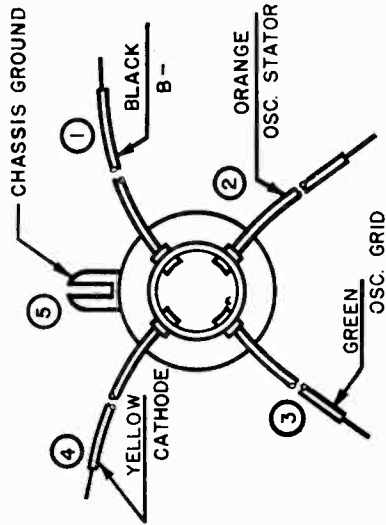
POWER CONSUMPTION : RADIO - 35 WATTS
PHONO - 50 WATTS

MODEL R-1242

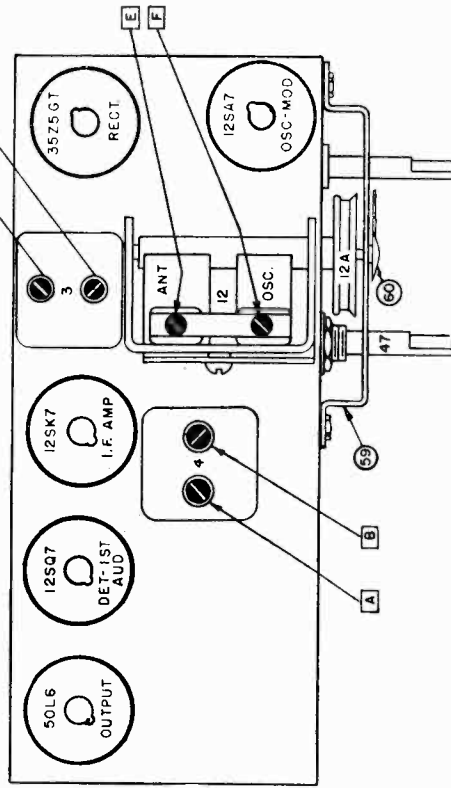
UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



PARTS LAYOUT—SWITCH PLATE
(BOTTOM VIEW)



OSCILLATOR COIL CONNECTIONS

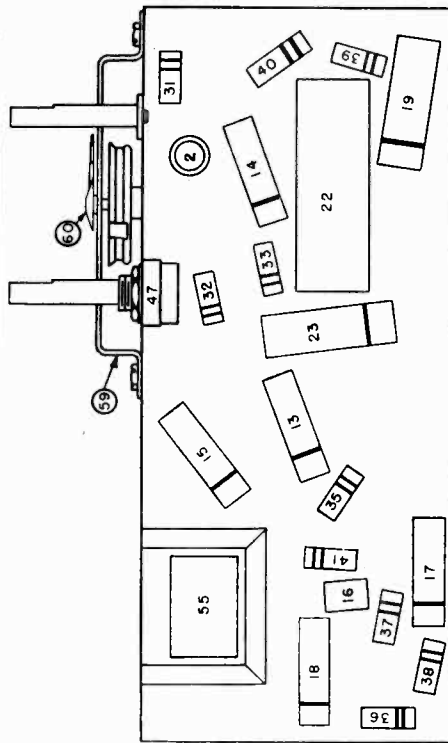


CHASSIS PARTS LAYOUT—TUBE VIEW

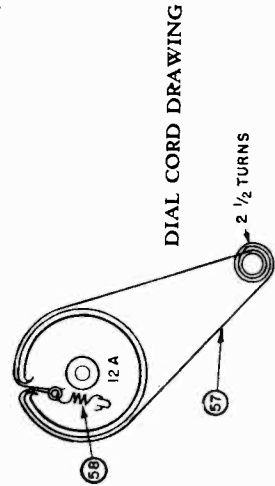
ALIGNMENT PROCEDURE:

Output Meter Connections Across Voice Coil Winding
 Generator Ground To Chassis through .01 MFD
 Dummy Antenna In Series with generator
 Volume Control Position Fully on

Steps	Series Condenser or Dummy Antenna	Connect Signal Generator To	Adjust Signal Generator To	Turn Radio Dial To	Adjust Trimmers
1	.02 Mfd.	12SA7 Grid (Pin #8)	456 KC	Quiet Point near H. F. end	A-B (2nd IF Trans) C-D (1st IF Trans)
2	.000200 Mfd.	Ant. lead	1720 KC	1720 KC	E (Osc.)
3	.000200 Mfd.	Ant. lead	1400 KC	1400 KC	F (Ant.)



CHASSIS PARTS LAYOUT—CHASSIS VIEW



DIAL CORD DRAWING

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL R-1242

GENERAL:

AC RADIO - RECORD PLAYER

POWER SUPPLY 105/125 Volts AC

RADIO

TUBES 4, Plus Rectifier

SPEAKER 5" PM

TUNING Manual

TUNING RANGE 540 to 1720

POWER CONSUMPTION 35 Watts

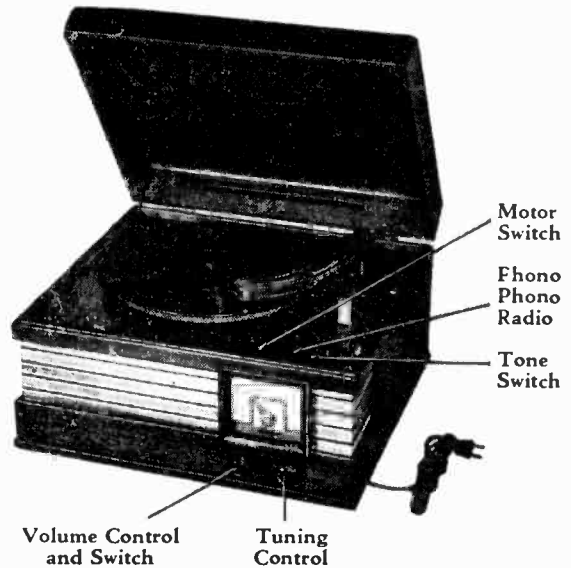
RECORD PLAYER

TYPE Manual

PICKUP UNIT Crystal

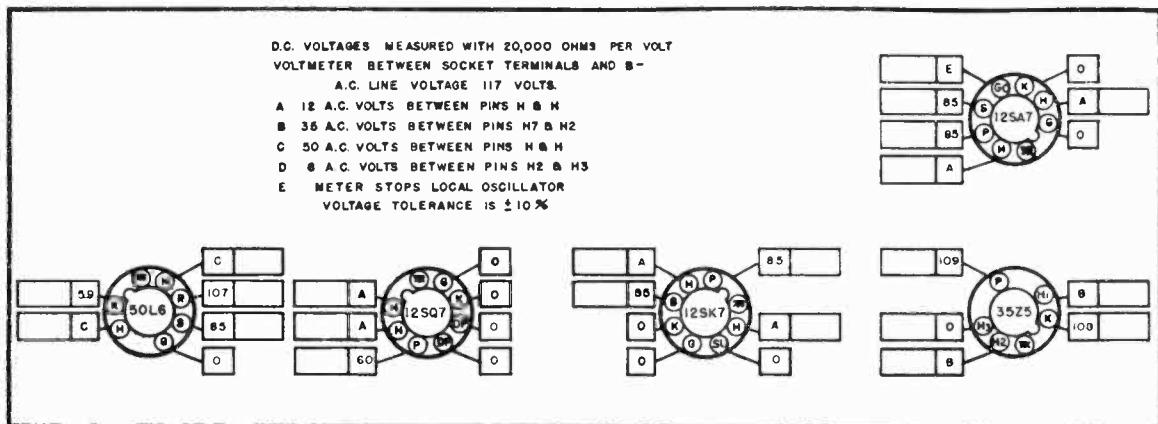
NEEDLE Changeable

MOTOR POWER CONSUMPTION.....
..... 15 Watts



TUBE SOCKET VOLTAGE CHART

The tube socket voltages, as measured at the factory, are shown below. This chart provides blank spaces so the radio serviceman can enter the voltage readings as taken with his own equipment for permanent reference. A normal operating radio-record player should be used to make these measurements.



SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS			
COILS			
1	1217697	1217697	Antenna - Loop and Mounting Board (Includes Condenser Illus. #11)
2	1216518	1216518	Oscillator Coil
3	1217592	1217972	1st I. F. Assy.
4	1217594	1217973	2nd I. F. Assy. (Includes Resistor Illus. #34)
CONDENSERS			
11	7236842	E503	0.05 mfd. 200V Tubular (In Illus. #1)
12	1217391	1217391	Variable Cond. and Pulley Package Condenser

UNITED MOTORS SERVICE

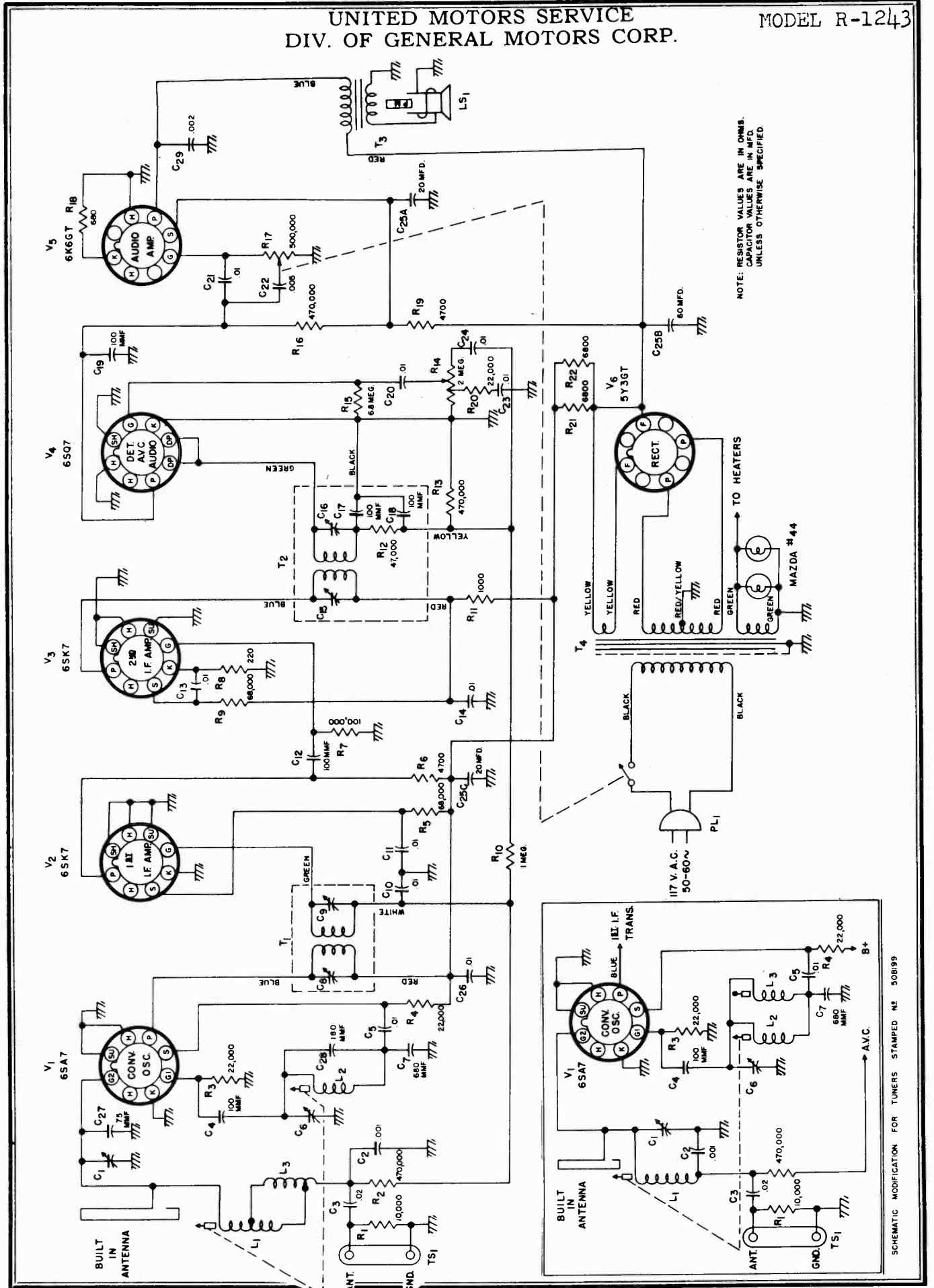
DIV. OF GENERAL MOTORS CORP.

MODEL R-1242

Illus. No.	Production Part No.	Service Part No.	Description
12A	1217810	1217810	Pulley Grommet (3) Spacer Sleeve (3) Screw (3)
13	7236842	E503	0.05 mfd. 200V Tubular
14	7238881	E103	0.01 mfd. 400V Tubular
15	7231212	E502	0.005 mfd. 600V Tubular
16	7238879	G471	0.000470 mfd. Molded Mica
17	7231212	E502	0.005 mfd. 600V Tubular
18	1216513	E103	0.01 mfd. 600V Tubular
19	7230592	E503	0.05 mfd. 600V Tubular
20	7239185	E503	0.05 mfd. 400V Tubular
21	7236756	E202	0.002 mfd. 600V Tubular
22	1217027	J908	Electrolytic Cond., two section 22A—40 mfd. 150V 22B—40 mfd. 150V Common Negative
23	7238787	E204	0.2 mfd. 400V Tubular
RESISTORS			
31	1214550	A223	22,000 ohm 1/2W Insulated
32	1214551	A273	27,000 ohm 1/2W Insulated
33	1214564	A335	3.3 Megohm 1/2W Insulated
34	1214553	A473	47,000 ohm 1/2W Insulated (In 2nd I. F. Ass'y)
35	1215563	A685	6.8 Megohm 1/2W Insulated
36	1213220	A151	150 ohm 1/2W Insulated
37	1214555	A224	220,000 ohm 1/2W Insulated
38	1214559	A474	470,000 ohm 1/2W Insulated
39	1214538	A330	33 ohm 1/2W Insulated
40	1211037	B102	1,000 ohm 1W Insulated
41	1214555	A224	220,000 ohm 1/2W Insulated
TUBE COMPLEMENT			
	1213809	5341	12SA7
	1213812	5348	12SK7
	1213813	5350	12SQ7
	1214366	5451	50L6GT
	1213848	5408	35Z5GT
MISCELLANEOUS ELECTRICAL PARTS			
47	1216936		Control, Volume and Switch
47A		8156	Volume Control (0.5 Megohm tapped at 100 Megohms)
47B		8201	On-off switch
48	1216512	1216512	Cord, power
49	435433	47	Lamp, dial
51	1216588	1216563	Speaker, 5" P. M.
55	1216571	1217511	Transformer, output
MECHANICAL PARTS			
57	1217323	1217323	Spring, dial tension
58	1216763	1212233	Cord, 9" Dial Drive
	1216905	1216905	Crystal, dial
59	1217501	1217501	Dial scale and plate
	1216826	1216826	Knob
60	1216831	1216831	Pointer, dial
	1217839	1217839	Socket, dial light
	7236279	7236279	Socket, octal tube
	1218218	1218218	Cabinet Assy. - Includes Motor Board
RECORD - PLAYER PARTS			
46	1216574	1216574	Pickup Arm Assy.
	1217517	1217517	Cartridge, crystal
50	1217512	1217512	Motor and drive mechanism
	1217513	1217513	Idler Wheel Package
52	1216974	1216974	Switch, SDST - Motor on-off
53	1216695	1216695	Switch, DPDT - Radio - Phono.
54	1216696	1216696	Switch, SPDT - Tone
	1217514	1217514	Turn-Table
61	1217515	1217515	Connector, plug
62	1217516	1217516	Connector, socket

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL R-1243



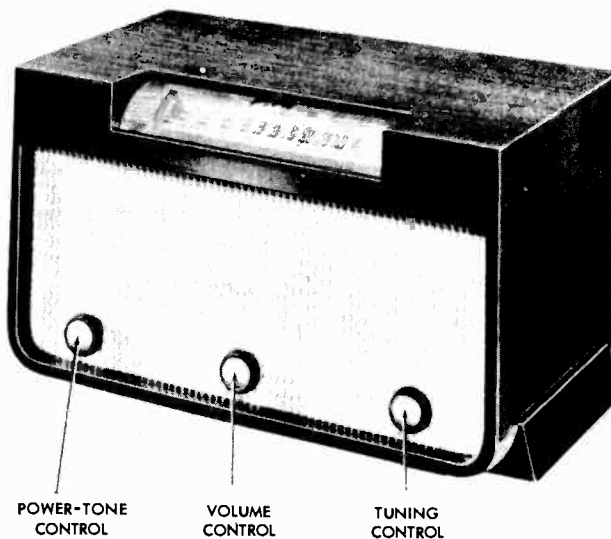
NOTE: RESISTOR VALUES ARE IN OHMS.
CAPACITOR VALUES ARE IN MFD.
UNLESS OTHERWISE SPECIFIED.

MODEL R-1243

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

GENERAL

TUBES Six
 SPEAKER 5" x 7" Elliptical P.M.
 Dynamic
 TUNING Manual
 TUNING RANGE 535-1620 KC
 ANTENNA Built-in Antenna Plate
 and External.
 POWER SUPPLY 105-125 V. A.C. 60
 Cycles.
 POWER CONSUMPTION 50 Watts.



ALIGNMENT PROCEDURE

Output Meter Connections Across Voice Coil
 Generator Ground To Chassis
 Dummy Antenna In Series With Generator
 Volume Control Position Maximum
 Tone Control Position Treble

NOTE: Reset Ant. Trimmer after installing receiver in cabinet and connecting up cabinet antenna.

USE THIS ALIGNMENT PROCEDURE WHEN ALIGNING RECEIVERS WITH TUNER STAMPED 50B225.

Series Cond. or Dummy Antenna	Connection at Radio	Set Generator At	Tune Receiver To	Adjust Screws At	To Obtain
.00025 Mfd	Antenna	455 KC	1000 KC	A 2nd IF B trimmers	Max. Output
		455 KC	1000 KC	C 1st IF D trimmers	
		1625 KC	High Freq. Stop	E Osc & Ant F trimmers	
		1400 KC	Signal Generator	G Ant coil, slide up or down	

Repeat last two steps until no improvement in output can be made. Caution—Do not change the position of the oscillator coil (H). Adjustment of Ant coil (G) is sufficient.

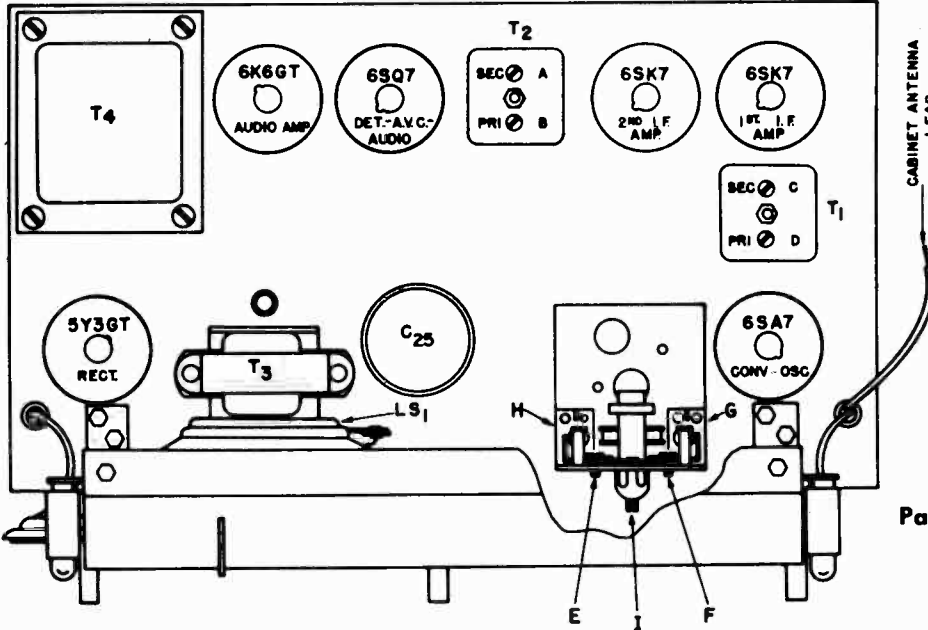
USE THIS ALIGNMENT PROCEDURE WHEN ALIGNING RECEIVERS WITH TUNER STAMPED 50B199.

Series Cond. or Dummy Antenna	Connection at Radio	Set Generator At	Tune Receiver To	Adjust Screws At	To Obtain
.00025 Mfd	Antenna	455 KC	1000 KC	A 2nd IF B trimmers	Max. Output
		455 KC	1000 KC	C 1st IF D trimmers	
		1660 KC	High Freq. Stop	E Osc & Ant F trimmers	
		1400 KC	Signal Generator	H Ant coil, slide up or down	
		Repeat last two steps carefully.			
		600 KC	Signal Generator	I Osc slug. Rock tuner thru signal	

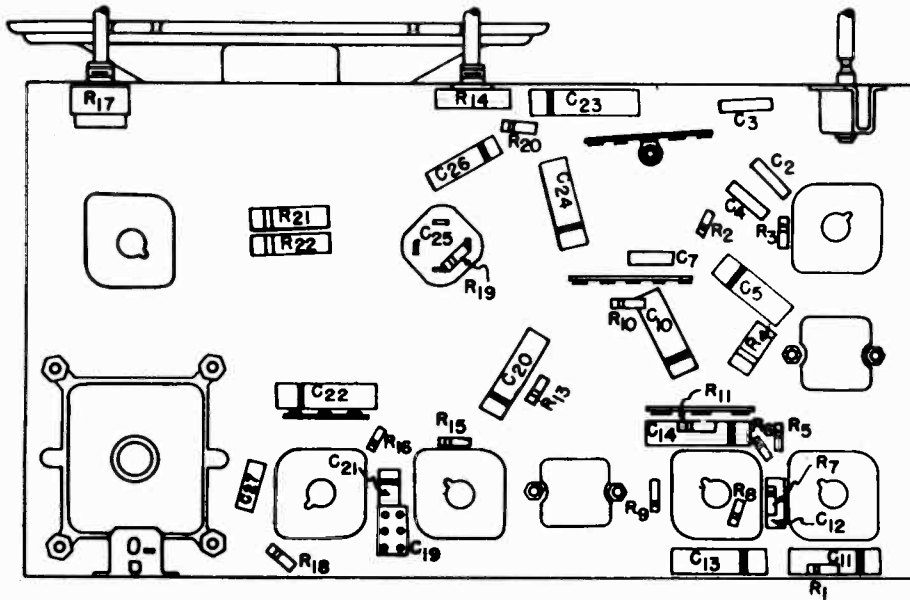
Caution—Do not change the position of the oscillator coil (G). Adjustment of the antenna coil (H) is sufficient.

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL R-1243



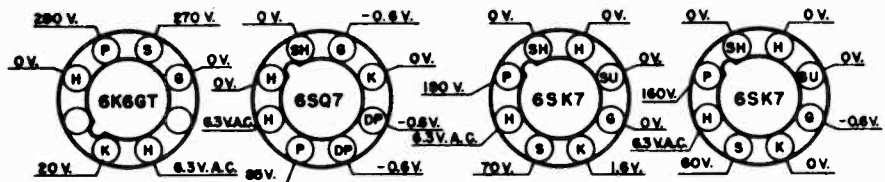
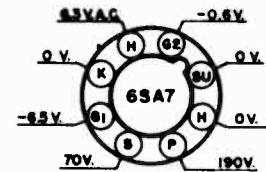
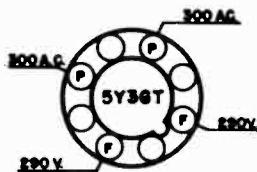
Parts Layout—Top view.



Parts Layout—Bottom view.

BOTTOM VIEW OF CHASSIS

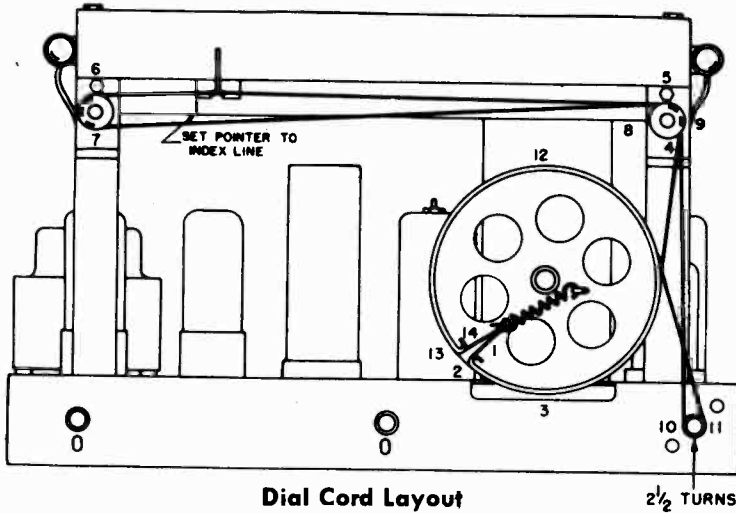
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
D.C. VOLTAGES MEASURED WITH ELECTRONIC VOLT-METER
BETWEEN SOCKET TERMINALS AND CHASSIS.
A.C. LINE VOLTAGE 117 VOLTS.



Tube Socket Voltages

MODEL R-1243

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



RESTRINGING DIAL CORD

To replace the dial drive cord, cut a 48" length of 18 lb. test dial cord, tie one end to the tension spring and follow the stringing sequence. A series of numbers are used to show the path of the cord. Stretch the tension spring slightly and tie the finished end of the dial cord securely as shown. To position the pointer, turn the tuning shaft to the left as far as it will go and line up the pointer with the index line stamped on the left hand end of the pointer rail.

SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description	Illus. No.	Production Part No.	Service Part No.	Description	
ELECTRICAL PARTS								
COILS AND TRANSFORMERS								
*L-1, L-2, L-3	50B225	1217451	Permeability Tuner Assembly	V-4	90X6SQ7	5231	6SQ7	
†L-1, L-2, L-3	{ 50B225 22C197	1217509	Permeability Tuner Assembly with Calibrated Glass Dial	V-5	90X6K6GT	5196	6K6GT	
T-1	50B196-6	1217453	1st I.F. Transformer	V-6	90X5Y3GT	5122	5Y3GT	
T-2	50B211-1	1217454	2nd I.F. Transformer					
T-3	55B104	1217504	Output Transformer					
T-4	50C130-1	1217459	Power Transformer					
CONDENSERS				MISCELLANEOUS ELECTRICAL PARTS				
C-2	CM20A102M	G102	.001 Mfd. 500 V. Mica	R-14	25B620	1217448	Control, Volume	
C-3	46AU203J	E203	.02 Mfd. 600 V. Tubular	R-17	25B639	1217446	Control, Tone and Switch	
C-4, 12, 19	CM20A101M	G101	.0001 Mfd. 500 V. Mica			44	Lamp, Dial Light—Mazda No. 44	
C-5, 10, 11, 13, 14, 20, 21, 23, 24, 26	46AY103F	E103	.01 Mfd. 600 V. Tubular	LS-1	85C067	1217458	Speaker, 5" x 7" Elliptical	
C-7	CM20A681M	G681	.000680 Mfd. 500 V. Mica	PL-1	87B1574	1217433	Power Cord and Plug	
C-22	46AY502F	E502	.005 Mfd. 600 V. Tubular	MECHANICAL PARTS				
C-25	45B113	1217457	60-20-20 Mfd. Electrolytic	CHASSIS PARTS				
C-29	46AZ202J	E202	.002 Mfd. 600 V. Tubular			7236279	Socket, Tube	
RESISTORS						86A058	1217443	Socket, Dial Lamp
R-1	RC20AE103M	A103	10,000 Ohms 1/2 Watt Insulated			41X10203	1217456	Dial Support Assembly (right)
R-2, 13, 16	RC20AE474M	A474	470,000 Ohms 1/2 Watt Insulated			41X10204	1217505	Dial Support Assembly (left)
R-3, 20	RC20AE223M	A223	22,000 Ohms 1/2 Watt Insulated			67B770	1217506	Rail, Pointer
R-4	RC40AE223M	C223	22,000 Ohms 2 Watts Insulated			74A205	1217439	Shaft, Drive
R-5, 9	RC20AE683M	A683	68,000 Ohms 1/2 Watt Insulated			4A269	1217447	"C" Washer, Drive Shaft
R-6, 19	RC20AE472M	A472	4,700 Ohms 1/2 Watt Insulated			28A042	1217441	Pulley, Tuner Drive
R-7	RC20AE104M	A104	100,000 Ohms 1/2 Watt Insulated				1212233	Cord, Dial Drive (48" length)
R-8	RC20AE221M	A221	220 Ohms 1/2 Watt Insulated			75A012	1217323	Spring, Cord Tension
R-10	RC20AE105M	A105	1 Meg-ohm 1/2 Watt Insulated			82A144	1217442	Pointer, Dial
R-11	RC20AE102M	A102	1,000 Ohms 1/2 Watt Insulated			63C317	1217507	Plate, Dial Background
R-15	RC20AE685M	A685	6.8 Meg-ohm 1/2 Watt Insulated	CABINET PARTS				
R-18	RC30AE681M	B681	680 Ohms, 1 Watt Insulated			66D408	1217503	Cabinet, Wood
R-21, 22	RC40AE682M	C682	6,800 Ohms 2 Watts Insulated			22C196	1217452	Dial, Glass (Calibrated for tuner 50B199)
TUBE COMPLEMENT						22C197	1217449	Dial, Glass (Calibrated for tuner 50B225)
V-1	90X6SA7	5222	6SA7			76A386	1217440	Fastener, Dial Glass
V-2, 3	90X6SK7	5229	6SK7			15B093-1	1217455	Knob, Tone, Tuning and Volume
						7B064	1217508	Speaker Grill and Sound Board Assembly
						32C420	1217444	Cabinet Back

*Use when replacing Tuners stamped 50B225.
†Use when replacing Tuners stamped 50B199.

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DIV. OF GENERAL MOTORS CORP.

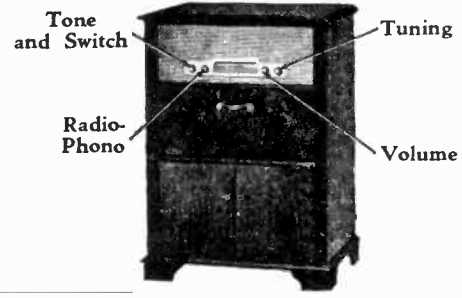
MODELS R-1244,
R-1245, R-1246

GENERAL:

- TUBES—Five, Plus Rectifier.
- SPEAKER—5" x 7" Elliptical Permanent Magnet.
- TUNING—Manual.
- TUNING RANGE—550-1600 KC.
- POWER SUPPLY—105/125 Volts, 60 Cycle A. C.

CABINETS:

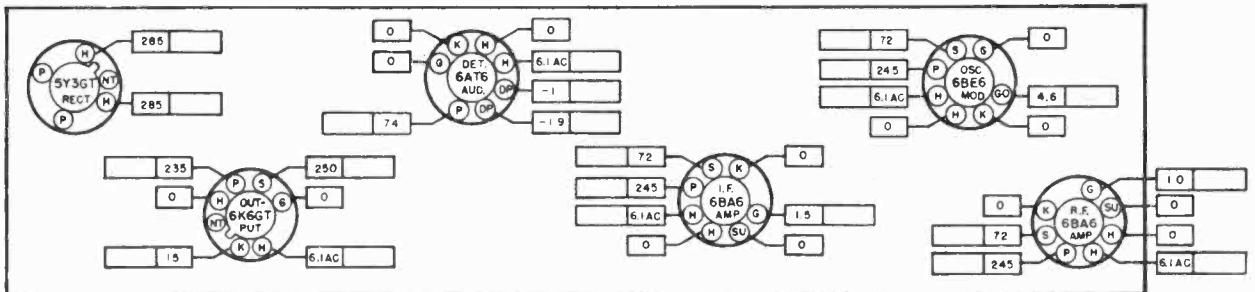
- R-1244—Walnut
- R-1245—Walnut
- R-1246—Mahogany



MODELS R-1245 and R-1246

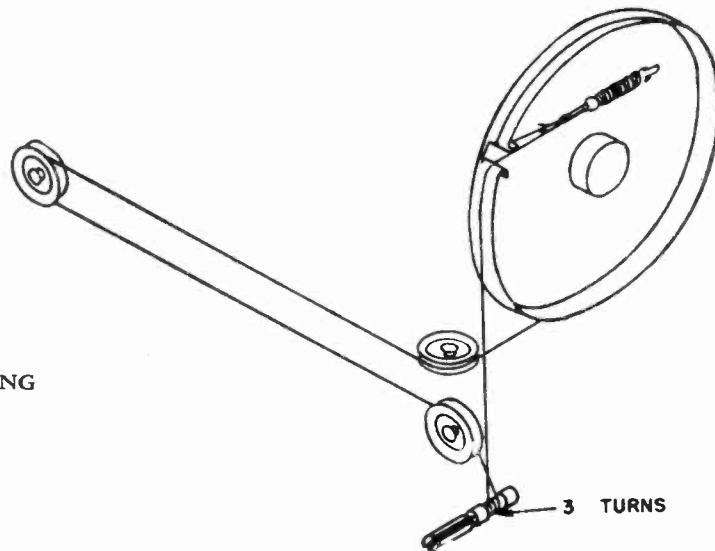
TUBE SOCKET VOLTAGE CHART

The tube socket voltages, as measured at the factory and under the conditions shown on the schematic diagram, are shown below. The blank spaces are provided so the service man may fill in actual voltage readings as measured with his own equipment. A normal operating radio should be used for these measurements.



Volt Meter Resistance Ohms Per Volt
 Line Voltage Volts
 Voltage Tolerance ±10%

DIAL CORD DRAWING



UNITED MOTORS SERVICE
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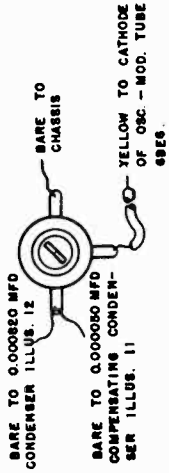
MODELS R-1244,
R-1245, R-1246

ALIGNMENT PROCEDURE:

Output Meter Connections Across Voice Coil
 Generator Return To Receiver Chassis
 Dummy Antenna In Series With Generator
 Volume Control Position Maximum Volume
 Tone Control Position Treble
 Generator Output Minimum For Readable Indication

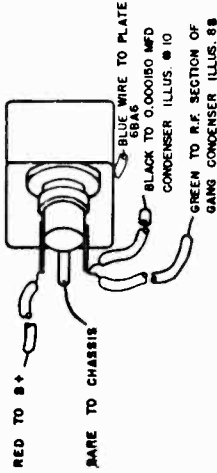
Steps	Series Condenser or Dummy Antenna	Connect Generator To	Signal Generator Frequency	Tune Receiver To	Adjust in Sequence for Max. Output
1	0.1 Mfd.	Stator Lug RF Section of Gang	262 KC	High Frequency Stop	A, B, C, D
2	0.000220 Mfd.	Stator Lug RF Section of Gang	1615 KC	High Frequency Stop	E
3	0.000220 Mfd.	External Antenna Connection	1400 KC	Signal Generator Signal	F, G
4	0.000220 Mfd.	External Antenna Connection	600 KC	Signal Generator Signal	*H
5	0.000220 Mfd.	External Antenna Connection	1615 KC	High Frequency Stop	E
6	0.000220 Mfd.	External Antenna Connection	1400 KC	Signal Generator Signal	F, G

*During this Adjustment rock-in the gang condenser

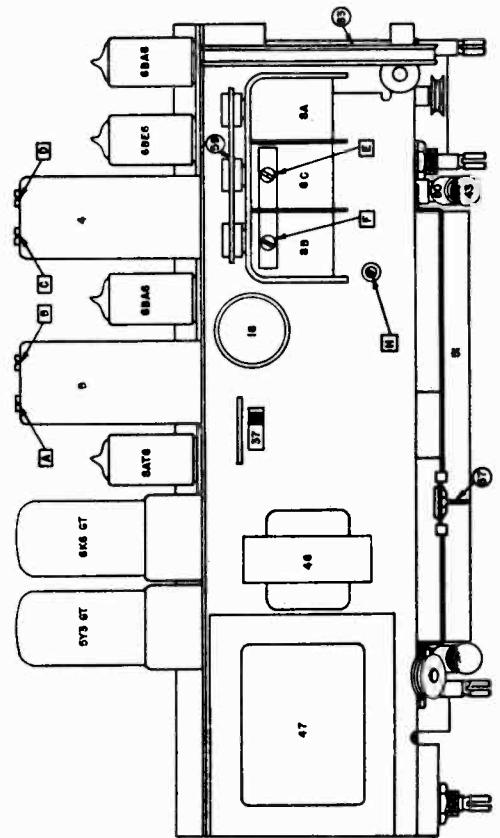


OSCILLATOR

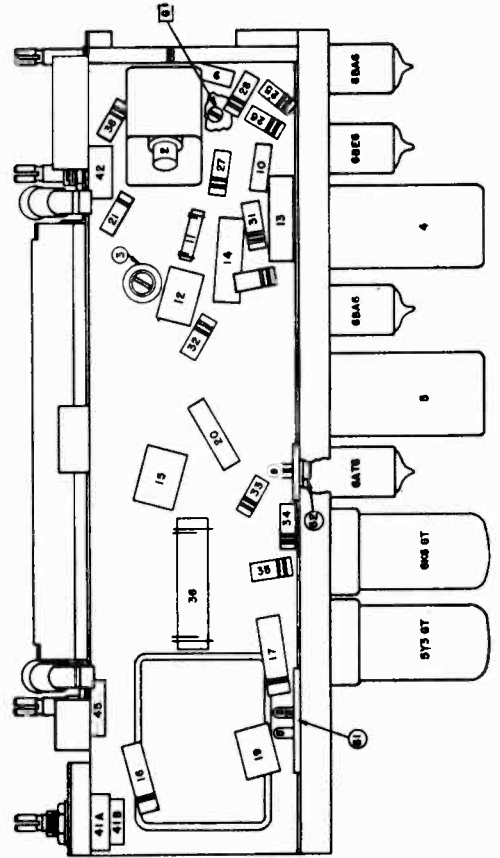
COIL CONNECTIONS



R. F. COIL CONNECTIONS



PARTS LAYOUT — TUBE VIEW



PARTS LAYOUT — CHASSIS VIEW

MODELS R-1244,
R-1245, R-1246

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

Illus. No.	Prod. Part No.	Service Part No.	Part Description
ELECTRICAL PARTS			
COILS			
1	1218390	1218390	Loop Assy. - Antenna
2	1218677	1218677	R.F. Oscillator
3	1218679	1218679	1st I.F. Assy.
4	1218086	1218086	2nd I.F. Assy.
5	1218088	1218088	
CONDENSERS			
8	1218095	1218673	Variable Condenser and Pulley
8A			Antenna Section
8B			R.F. Section
8C			Oscillator Section
9	1218121	G151	0.000150 Mfd. Ceramic
10	1218121	G151	0.000150 Mfd. Ceramic
11	7238511	G821	0.000051 Mfd. Compensating
12	1217742	G821	0.000821 Mfd. Molded
13	7238788	E104	0.1 Mfd. 400 V. Tubular
14	7236842	E503	0.05 Mfd. 200 V. Tubular
15	1218204		Couplate
15A		E103	0.01 Mfd. 450 V.
15B		G271	0.000250 Mfd. 450 V.
15C		A274	250,000 Ohms 1/5 W.
15D		A474	500,000 Ohms 1/5 W.
16	7237836	E202	0.002 Mfd. 600 V. Tubular
17	1209307	H203	0.02 Mfd. 1000 V. Tubular
18	7240724	M908	Electrolytic
18A			20 Mfd. 25 V.
18B			20 Mfd. 400 V.
18C			20 Mfd. 400 V.
19	1217227	E103	0.01 Mfd. 600 V. Tubular
20	1217748	G472	0.004700 Mfd. Molded
21	1216558	E502	0.005 Mfd. (used only on R-1245 and R-1246)
RESISTORS			
15	1218204		Couplate
15A		E103	0.01 Mfd. 450 V.
15B		G271	0.000250 Mfd. 450 V.
15C		A274	250,000 Ohms 1/5 W.
15D		A474	500,000 Ohms 1/5 W.
25	1214563	A225	2.2 Megohms 1/2 W. Insulated
26	1214563	A225	2.2 Megohms 1/2 W. Insulated
27	1213217	A101	100 Ohms 1/2 W. Insulated
28	1214550	A223	22,000 Ohms 1/2 W. Insulated
29	7233653	C153	15,000 Ohms 2 W. Insulated
30	1214553	A473	47,000 Ohms 1/2 W. Insulated (Included in 2nd I.F. Assy.)
31	1215282	A105	1 Megohm 1/2 W. Insulated
32	1214559	A474	470,000 Ohms 1/2 W. Insulated
33	1215263	A685	6.8 Megohms 1/2 W. Insulated
34	1214537	A220	22 Ohms 1/2 W. Insulated
35	1216150	B471	470 Ohms 1 W. Insulated
36	1218241		800 Ohms 10 W. Insulated
37	1213489	A470	47,000 Ohms 1/2 W. Insulated
38	7240731	A473	R-1245 and R-1246)
MISCELLANEOUS ELECTRICAL			
	1218078	1218078	Control-Tone and Switch
	1218536	1218536	Tone Control Switch
	51	51	Control-Volume
	1218090	1218090	Lamp-Dial
	1218062	1218062	Speaker—5 x 7 Elliptical PM
	1218118	1218118	Switch DPDT "Radio-Phono"
	1217165	1217165	Transformer-Output
			Transformer-Power
MECHANICAL PARTS			
	1218076	1218076	Backplate-Pointer
	6040	6040	Cord—Pointer Drive
	1216512	1216512	Cord—Power
	1215418	1215418	Plug—Antenna Loop
	1851850	1851850	Plug—Pick Up Arm
	1217515	1217515	Plug—Phono Motor
	1218065	1218065	Pointer
	1218073	1218073	Shaft—Manual Tuning
	1216962	1216962	Socket—Antenna Loop
	1217839	1217839	Socket—Dial Light
	7236279	7236279	Socket—Octal Tube
	1216925	1216925	Socket—Phono Motor
	1216747	1216747	Socket—Phono Pick Up Arm
	1218071	1218071	Socket—Seven Pin Miniature Tube
	7242189	7242189	Spring—Pointer Cord Tension
CABINET PARTS			
	1218675	1218675	Cabinet Assy. (R-1244)
	1218865	1218865	Cabinet Assy. (R-1245)
	1218871	1218871	Cabinet Assy. (R-1246)
	1218131	1218131	Dial
	1218085	1218085	Knob—Volume or Tuning
	1218084	1218084	Knob—"Radio-Phono" or Tone
	1218873	1218873	Handle—Record Player Drawer (R-1245 & R-1246)
	1218874	1218874	Knob—Cabinet Door (R-1245 & R-1246)
	1218875	1218875	Track—Record Player Drawer (R-1245 & R-1246)
	1218876	1218876	Tee Nut (R-1245 & R-1246)
	1218877	1218877	Tee Bolt (R-1245 & R-1246)
TUBES			
	5252	5252	6BA6
	5253	5253	6BE6
	5261	5261	6AT6
	5196	5196	6K6GT
	5123	5123	5Y3GT

MODEL R-1410

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

ALIGNMENT PROCEDURE:

Output Meter Connections Across Voice Coil
 Generator Return To Receiver Chassis
 Dummy Antenna In Series With Generator
 Volume Control Position Maximum Volume
 Generator Output Minimum for Readable Indication

(For best results align receiver in cabinet with battery in place)

Steps	Series Condenser or Dummy Antenna	Connect Generator To	Signal Generator Frequency	Tune Receiver To	Adjust in Sequence for Max. Output
1	.000220 Mfd	Stator Lug RF* Section of Gang	262 KC	High Frequency Stop	A, B, C, D
2	.000220 Mfd	Stator Lug RF Section of Gang	1615 KC	High Frequency Stop	E
3	.000220 Mfd	Stator Lug of RF Section of Gang	1400 KC	Signal Generator Signal	F
4	.000220 Mfd	Stator Lug of RF Section of Gang	600 KC	Signal Generator Signal	G**
5	None	Test Loop***	1400 KC	Signal Generator Signal	H
6	None	Test Loop	600 KC	Signal Generator Signal	J

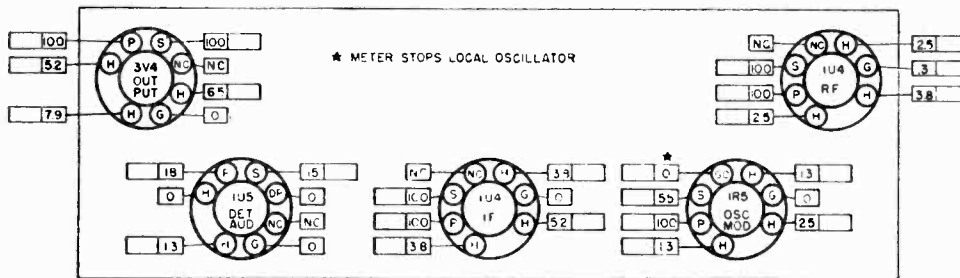
*With loop antenna terminal lugs shorted or loop connected for Steps 1, 2, 3, and 4.

**During this adjustment rock-in gang condenser

***The signal generator may be coupled to the receiver by placing a loop electrically across the output of the signal generator and physically near the receiver loop. This loop may be a loop from another radio, a home made loop of 10 or 15 turns, or other similar devices.

TUBE SOCKET VOLTAGE CHART

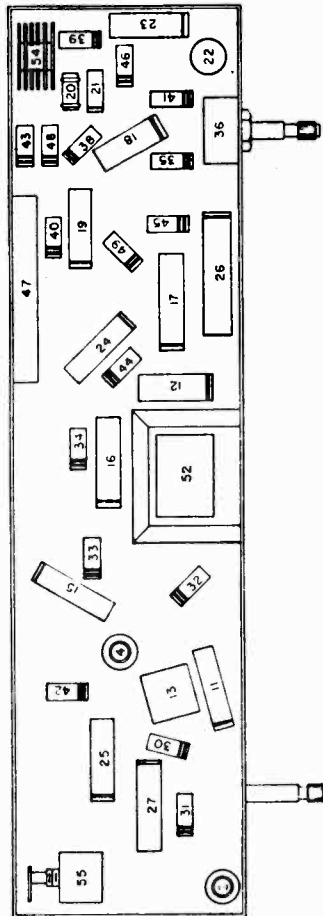
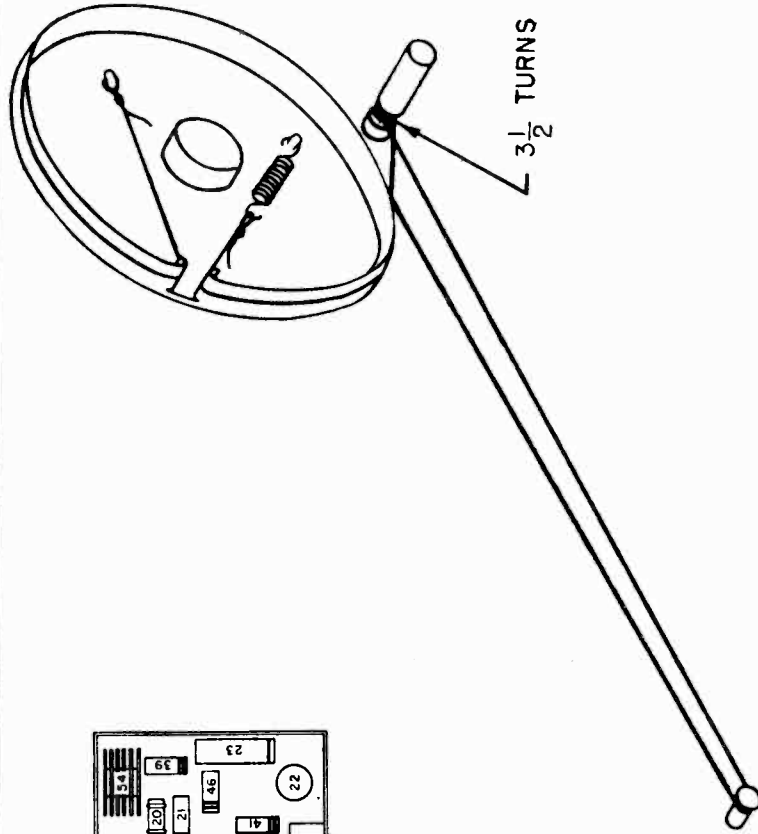
The tube socket voltages, as measured at the factory and under the conditions shown on the schematic diagram, are shown below. The blank spaces are provided so the service man may fill in actual voltage readings as measured with his own equipment. A normal operating radio should be used for these measurements.



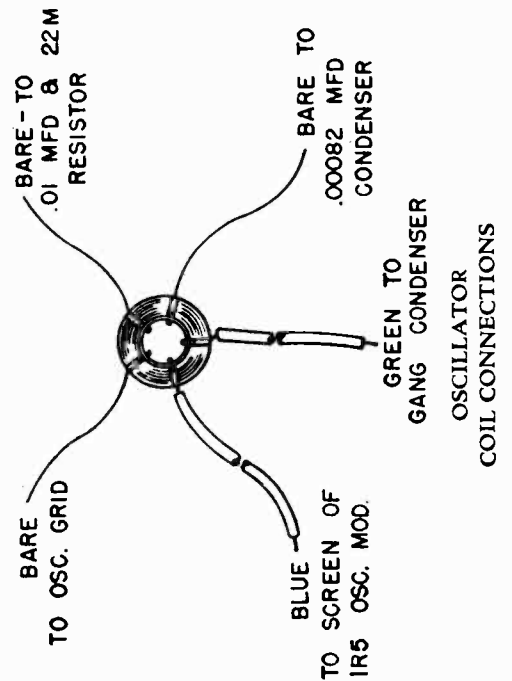
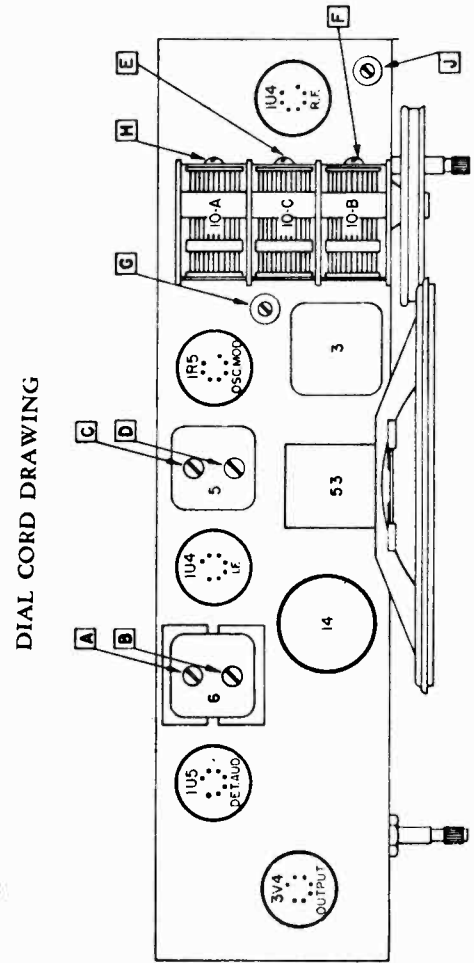
Volt Meter Resistance Ohms Per Volt
 Line Voltage Volts
 Voltage Tolerance ±10%

UNITED MOTORS SERVICE
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MODEL R-1410



PARTS LAYOUT — CHASSIS VIEW



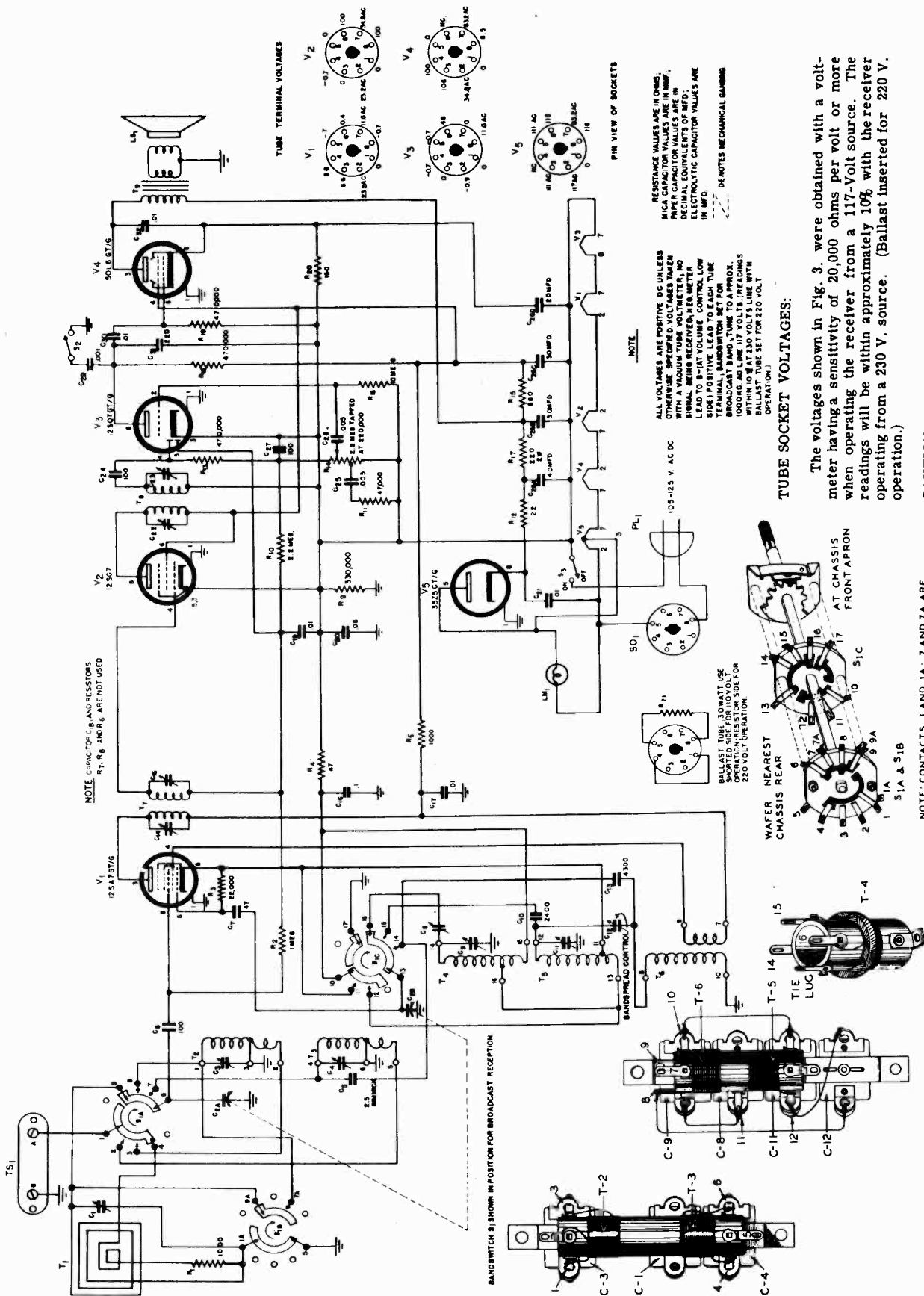
MODEL R-1410

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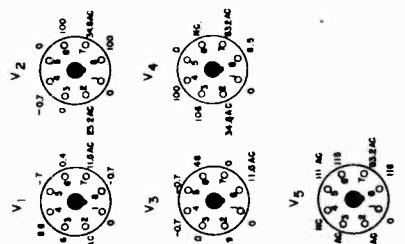
Illus. No	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS			
Coils			
1			Loop Antenna (available only with cabinet assy.)
2	1219147	1219147	Loop Compensating Coil
3	1218573	1218573	R. F.
4	1218576	1218576	Oscillator
5	1218705	1218705	1st I. F.
6	1218707	1218707	2nd I. F.
Condensers			
10	1218578	1218578	Variable Condenser and Pulley
10A			Antenna Section
10B			R.F. Section
10C			Oscillator Section
11	7236842	E 503	.05 mfd 200 V. Tubular
12	7236842	E 503	.05 mfd 200 V. Tubular
13	1218142	G 821	.00082 mfd Mica Molded
14	1218721	1218721	Electrolytic
14A			40 mfd 150 V.
14B			200 mfd 25 V.
14C			40 mfd 150 V.
14D			200 mfd 25 V.
15	7238790	E 103	.01 mfd 200 V. Tubular
16	7238790	E 103	.01 mfd 200 V. Tubular
17	7238789	E 104	.1 mfd 200 V. Tubular
18	1216513	E 103	.01 mfd 600 V. Tubular
19	7238790	E 103	.01 mfd 200 V. Tubular
20	1217925	G 101	.0001 mfd Ceramic
21	1218141	G 102	.001 mfd Ceramic
22	1218298	G 472	.005 mfd Ceramic
23	7238789	E 104	.1 mfd 200 V. Tubular
24	7238789	E 104	.1 mfd 200 V. Tubular
25	1216513	E 103	.01 mfd 600 V. Tubular
26	7238787	E 204	.2 mfd 400 V. Tubular
27	7238789	E 104	.1 mfd 200 V. Tubular
Resistors			
30	1216947	A 395	3.9 Megohms 1/2 W. Insulated
31	7238873	A 105	1 Megohm 1/2 W. Insulated
32	1211192	A 223	22,000 Ohms 1/2 W. Insulated
33	1211118	A 104	100,000 Ohms 1/2 W. Insulated
34	1216947	A 395	3.9 Megohms 1/2 W. Insulated
35	7238873	A 105	1 Megohm 1/2 W. Insulated
37	1211118	A 104	100,000 Ohms 1/2 W. Insulated (Included in 2nd I. F. Coil Assy.)
38	7241937	A 685	6.8 Megohms 1/2 W. Insulated
39	1216947	A 395	3.9 Megohms 1/2 W. Insulated
40	1216947	A 395	3.9 Megohms 1/2 W. Insulated
41	7238873	A 105	1 Megohm 1/2 W. Insulated
42	1215570	B 470	47 Ohms 1 W. Insulated
43	1215566	B 220	22 Ohms 1 W. Insulated
44	1214543	A 681	680 Ohms 1/2 W. Insulated
45	1213485	A 471	470 Ohms 1/2 W. Insulated
46	1213486	A 471	470 Ohms 1/2 W. Insulated
47	1218570	1218570	2500 Ohms 10 W. Wire Wound
48	1211037	B 102	1,000 Ohms 1 W. Insulated
49	7240732	A 334	330,000 Ohms 1/2 W. Insulated
Miscellaneous Electrical Parts			
36	1218575	1218575	Volume Control and Switch
52	1218709	1218709	Transformer-Output
53	1218586	1218586	Speaker
54	1218683	1218683	Selenium Rectifier
55	1218571	1218571	Switch and Lever (Battery or Line)
MECHANICAL PARTS			
Chassis			
	1218071	1218071	Socket—7 Pin Miniature Tube
	1218565	1218565	Socket—Shock Proof—Miniature
	1218564	1218564	Drive Shaft—Tuning
	7245333	7245333	"C" Washer—Drive Shaft
		6040	Drive Cord
	7242189	7242189	Spring—Pointer Cord Tension
	1218574	1218574	Dial Pointer
56	1219148	1219148	Battery Plug and Shell
57	1216512	1216512	Power Cord

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 508



TUBE TERMINAL VOLTAGES



PIN VIEW OF SOCKETS

RESISTANCE VALUES ARE IN OHMS.
MICA CAPACITOR VALUES ARE IN PPM,
PAPER CAPACITOR VALUES ARE IN MICRO,
DECIMAL EQUIVALENTS OF MFD.
ELECTROLYTIC CAPACITOR VALUES ARE
IN MFD.

DE NOTES MECHANICAL BANDING

NOTE

ALL VOLTAGES ARE POSITIVE DC UNLESS
OTHERWISE SPECIFIED. VOLTAGES TAKEN
WITH A VOLUME CONTROL SET TO
MINIMUM. VOLTAGE MEASUREMENTS
LEAD TO B+ AT VOLUME CONTROL LOW
SIDE POSITIVE LEAD TO EACH TUBE
TERMINAL. BANDWIDTH SET FOR
BROADCAST BAND. TUNE TO APPROX.
1000 KC. AG LINE 107 VOLTS. (READINGS
TAKEN WITH BALLAST TUBE SET FOR
OPERATION.)

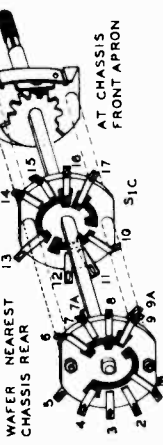
TUBE SOCKET VOLTAGES:

The voltages shown in Fig. 3, were obtained with a volt-
meter having a sensitivity of 20,000 ohms per volt or more
when operating the receiver from a 117-Volt source. The
readings will be within approximately 10% with the receiver
operating from a 230 V. source. (Ballast inserted for 220 V.
operation.)

CAUTION - The negative meter lead normally connected to the
chassis must be connected to the low side of the volume con-
trol (electrical ground) in this receiver as in all AC/DC
receivers.

NOTE CAPACITOR C1 AND RESISTORS
R7, R8 AND R6 ARE NOT USED

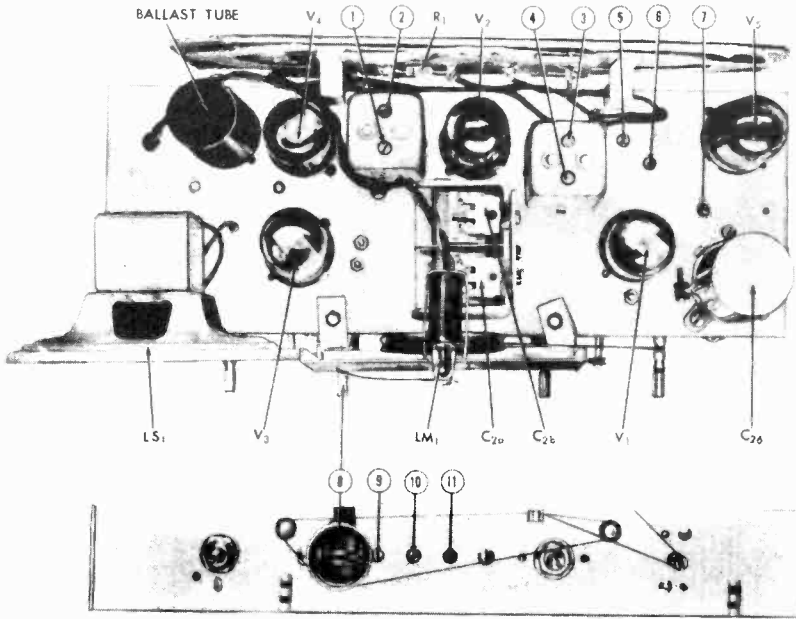
105-125 V. AC DC



NOTE: CONTACTS 1 AND 1A; 7 AND 7A ARE
INSULATED FROM EACH OTHER.
CONTACTS 9 AND 9A ARE COMMON.

MODEL 508

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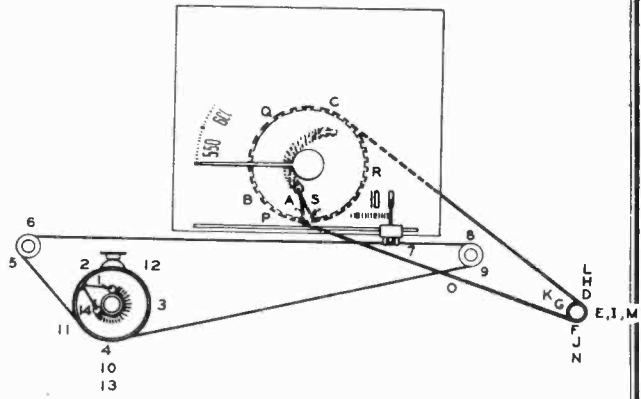


Alignment Points.

RESTRINGING DIAL CORD:

To restring the main tuning dial cord, cut a 25-inch length of 18 lb test dial cord and tie one end to the tension spring of the main tuning condenser drive pulley at position "A" on the diagram. Follow the letters "A" through "S", winding the cord on the pulley and drive shaft. At position "S", stretch the tension spring and tie the cord securely. With the tuning condenser at maximum capacity, set the pointer as shown in the diagram.

To restring the bandspread tuning dial cord, cut a 30-inch length of 18 lb test dial cord and follow the procedure outlined above, except follow the sequence starting at position "1" and ending at "14". With the pulley in the position shown (maximum clockwise), attach the pointer and index it at zero on the bandspread dial scale. Next loosen the pulley set screws and adjust the pulley shaft so that the signals on the 6.9 to 22 megacycle range follow the dial calibration on the general coverage dial. Reset the set screws with the bandspread pointer set at zero.



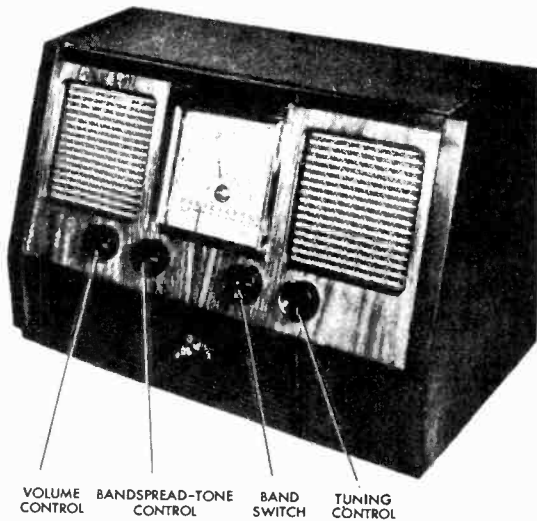
Dial Stringing Detail.

POWER SUPPLY:

CAUTION: This radio must be operated from a 105-125 V. or 210-250 V. 60 cycle AC supply or DC supply only. The ballast tube must be correctly inserted in its socket for the line voltage used. When operating from a 210-250 V. supply, the ballast tube must be correctly inserted in its socket for this line voltage ("230 V") to avoid damaging the receiver. If you are in doubt as to the voltage and frequency (AC) rating of the power supplied to your home, consult the local power company representative before connecting the radio to the wall outlet.

BAND SWITCH CONTROL:

The position of the band switch control determines the range of frequencies tuned by the receiver. In position 1 the receiver tunes the 550-1600 KC range. Note that a zero must be added to the dial reading to obtain the frequency of reception in kilocycles. In position 2 and 3 the receiver tunes the ranges 2.2-7.0 MC and 7-22 MC respectively. The frequency of reception for these bands is shown directly in megacycles on the dial scale.



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ALIGNMENT:

Output meter connections..... Across speaker voice coil (3 ohms)
 Generator ground..... To "G" terminal on ant. terminal strip.
 Generator output..... See chart.
 Volume control..... Maximum volume.
 Bandsread tuning..... At zero.

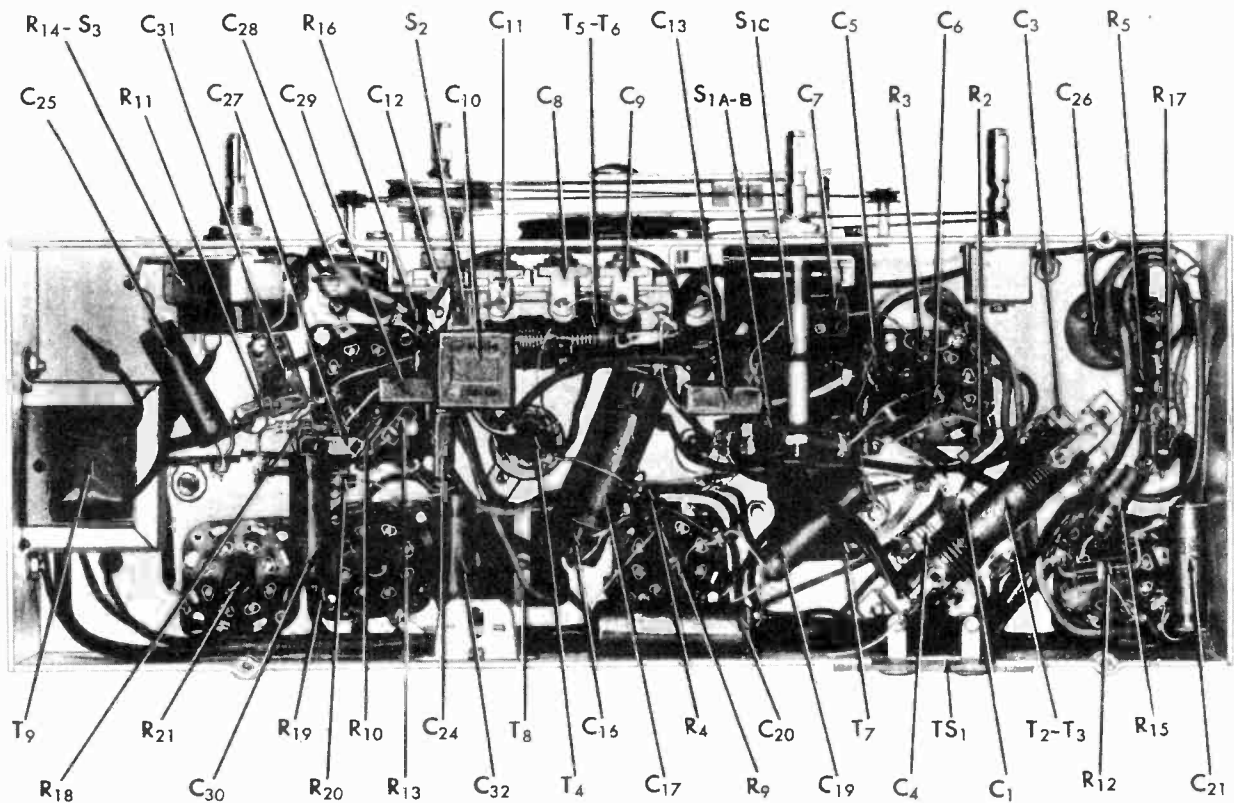
CAUTION - Check the line ballast. It must be corretly inserted in its socket to correspond to the line voltage of the power source.

ALIGNMENT CHART:

Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Switch Pos.	Radio Dial Setting	Adjust	Remarks
1.	.01 mfd. cap.	To stator plates of tuning cond; mixer section	455 kc	1	1500 kc	1,2,3, and 4.	Adjust for max. output
2.	Std RMA dummy	To terminals "A" and "G" of antenna terminal strip	1500 kc	1	1500 kc	*11,6	Adjust for max. output
			600 kc	1	600 kc	*10	
3.	Std RMA dummy	See step 2.	22 mc	3	22 mc	*8	Set oscillator adjustment (8) with the bandsread indicator drive pulley set screw loosened and the pointer set at zero. After making the adjustment, tighten the set screw.
			20 mc	3	20 mc	5	
4.	Std RMA dummy	See step 2.	6 mc	2	6 mc	*9,7	Adjust for max. output.

*Note - Calibration adjustment.

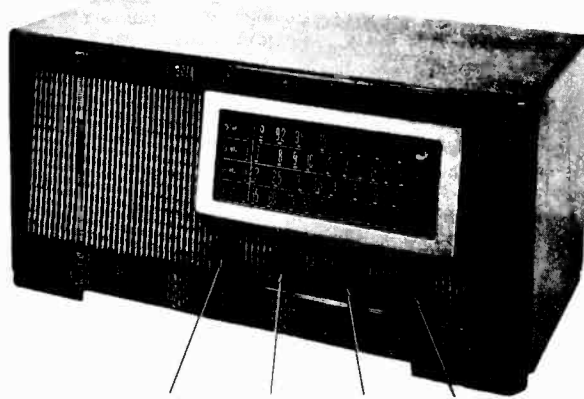
Note - Step 3 must be completed before making the adjustments shown in step 4.



Parts Layout.

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MODEL 608



POWER-TONE CONTROL VOLUME CONTROL TUNING CONTROL BAND SELECTOR

POWER SUPPLY:

This radio operates from a 105-125 volt or 210-250 volt, 50/60 cycle AC supply only. If you are in doubt as to the voltage and frequency rating of the power available at the outlets, consult the local power company. **CAUTION: BEFORE PLUGGING THE POWER CORD INTO THE WALL OUTLET, CHECK TO SEE THAT THE LINE VOLTAGE SWITCH (SW2) IS SET FOR THE LINE VOLTAGE AVAILABLE.** Refer to Fig. 5 for the location of this switch. The power receptacle provided for a record player supplies 110 V. AC regardless of the setting of the 110/220 V. switch on the receiver or the source to which the receiver has been connected.

Metal structures concealed in walls, radiators, or other large metal objects near the receiver prevent best possible pickup of radio signals. Locate your receiver as far as possible from such objects.

For best results, especially at remote points from broadcast stations, an outside antenna about 25 to 100 feet long, including lead-in, may be necessary. The lead-in wire is connected to the terminal marked "A" located on the rear apron of the chassis. To avoid excessive electrical noise, erect the antenna so that its length runs at right angles to nearby power lines, streetcar lines, and other similar types of electrical apparatus. For some installations it will be found desirable to connect a ground wire between the "G" terminal and a suitable ground such as a water pipe or radiator.

ANTENNA:

A loop antenna has been installed inside the cabinet of the receiver and for reception of local and nearby stations no other additional antenna is usually required.

LOCATION: Do not place the radio in a warm location, such as on a radiator or over a hot air register. When placing the radio against a wall, leave sufficient clearance for the circulation of air.

BAND SELECTOR - The band selector knob has five positions which perform the following functions in the order of its rotation from left to right.

Position 2 - BROADCAST Band - The receiver will tune the standard broadcast band in this position. The receiver frequency is read from the dial scale marked BROADCAST.

Position 1 - Phono - When a record player is connected to the power and pick-up receptacle on the rear apron of the receiver, the receiver will operate as a phonograph. The volume and tone controls function as they do for radio reception.

Positions 3, 4, 5 - SHORTWAVE Bands - The receiver tunes the shortwave ranges (A-2.2 to 7 mc), (B-7 to 22 mc), and (C-9 to 12 mc) on these last three positions and dial scales SHORTWAVE A, B, and C respectively are used to indicate the receiver frequency directly in megacycles.

CONDITIONS AFFECTING OPERATION

Though your radio may be functioning perfectly, there are circumstances under which perfect radio reception is not possible. These are not always subject to control by any presently known means. In general, the effect on reception is usually greatest when the radio is tuned to a weak station.

DAY AND NIGHT RECEPTION:

You will notice that you are able to receive several more stations during the night than during the day. This is a phenomenon due to the sun's effect on the ionosphere. It is not a peculiarity of your receiver.

STATION INTERFERENCE:

Because of the limited number of channels to which broadcasting stations can be assigned it has been necessary to assign more than one station to a channel. This results in interference between the stations particularly if the desired station is not powerful or if it tends to fade. The interference will take the form of whistles or growls and in some cases the interfering station will actually be louder than the desired station. There is no remedy for this other than to tune to a different station at another point on the dial.

FADING:

Fading will be encountered only on distant stations. It will be recognized by a gradual diminishing of volume, sometimes to a point where the signal is no longer heard, followed by a gradual return to normal volume. This happens without any change of the controls of the radio. It is often accompanied by distortion or "garbling" of the signal. By means of the automatic volume control in your receiver this effect is reduced considerably. In severe cases it will be necessary to tune to some other station.

LOCAL INTERFERENCE:

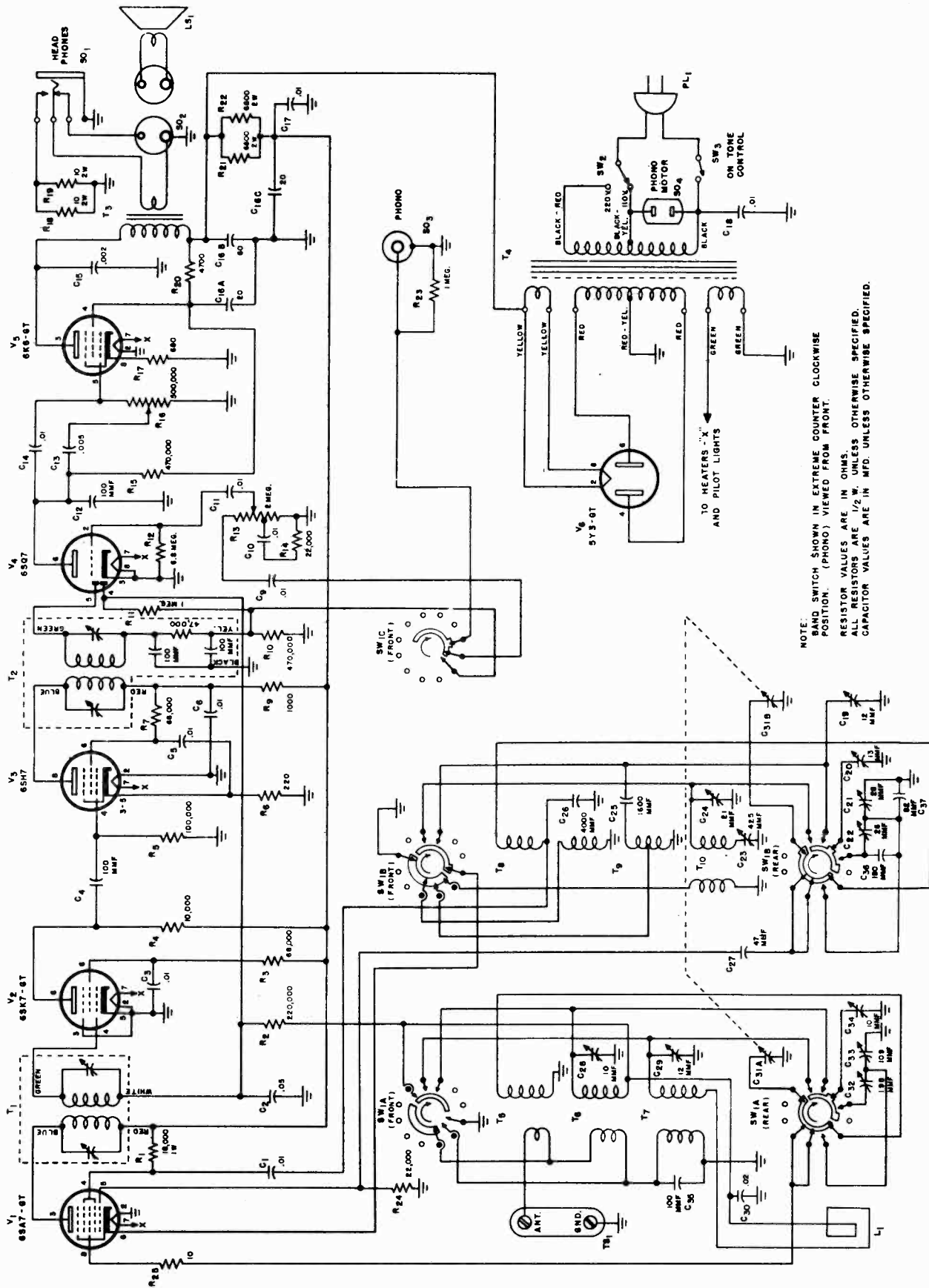
Interference caused by electrical apparatus is known as local or "man made" static. Though somewhat similar to static it can usually be distinguished by its regularity or by some peculiar tone. It is caused by arcing or leaking of current in industrial equipment, appliances, high tension power lines, automobile ignition systems, electric razors, etc. It is usually much more prevalent in cities or industrial areas although rural power lines are a common source.

STATIC:

Static, like fading, is not attributable to a defective receiver. It is caused by electrical disturbances in the atmosphere (lightning flashes will be heard as severe static) and the more sensitive the receiver the more static will be heard. It is usually most prevalent in the summer and during storm periods.

Local interference can be controlled to some extent by proper filtering of appliances and equipment and to this end present day manufacturers of such equipment are contributing a great deal in improved designs. Power companies are also helpful and cooperative in seeking out and eliminating interference where their equipment is at fault.

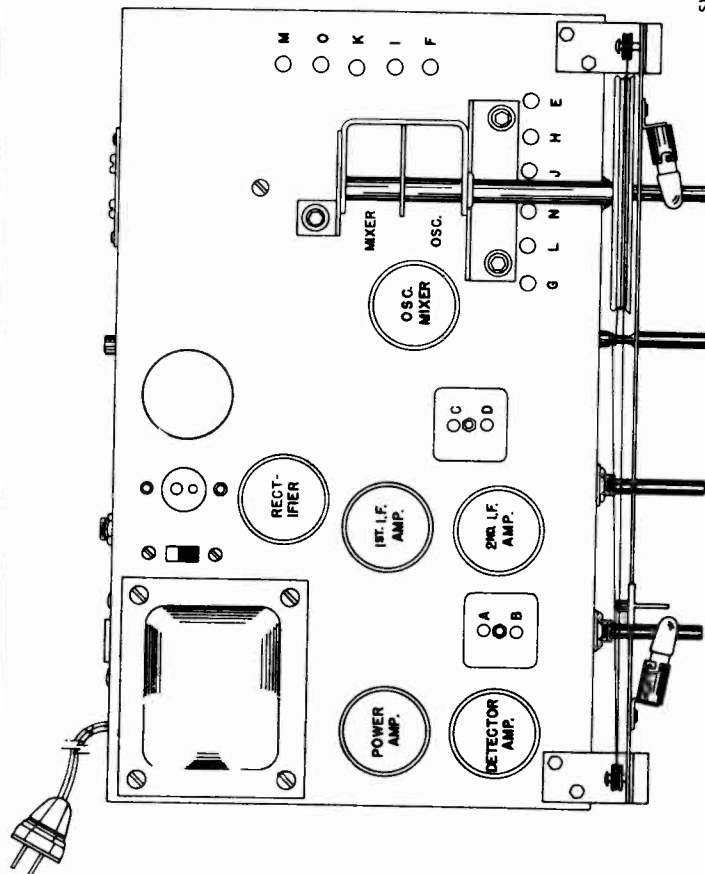
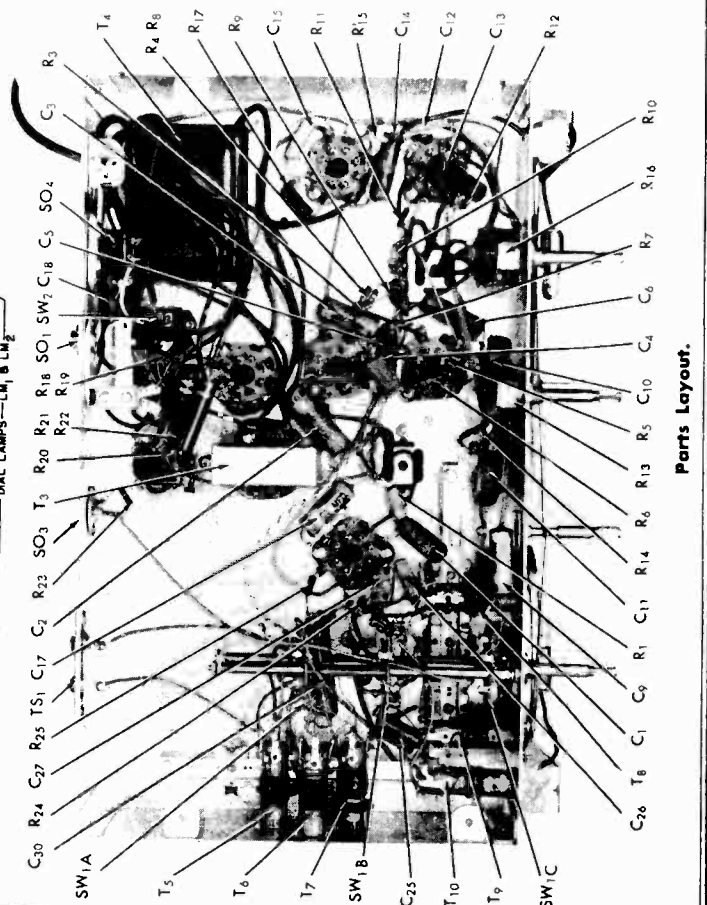
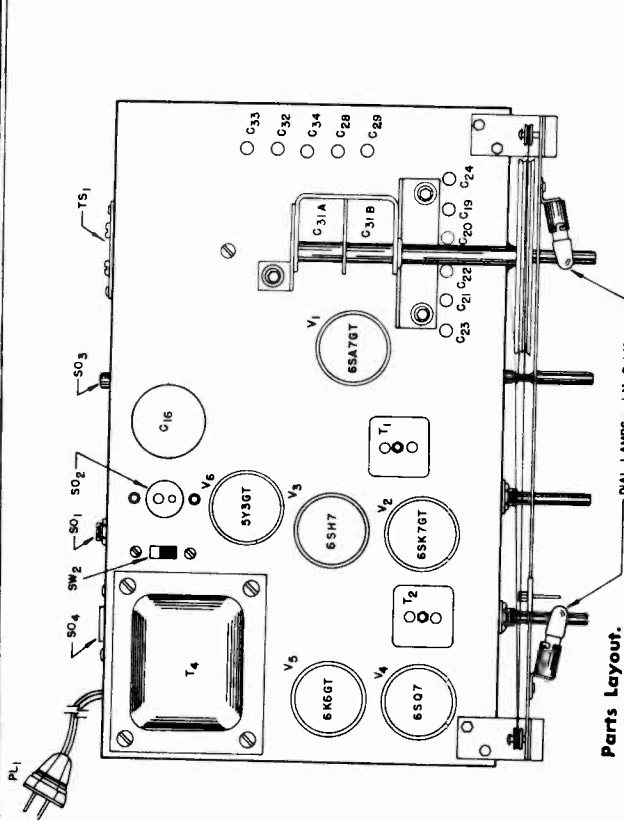
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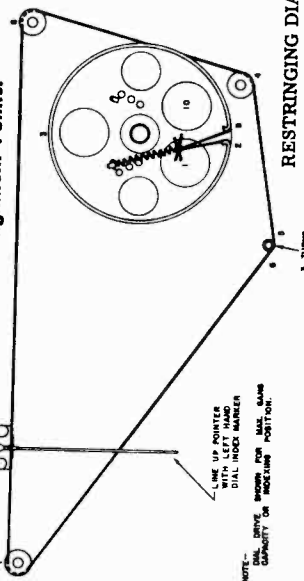
NOTE:
BAND SWITCH SHOWN IN EXTREME COUNTER CLOCKWISE POSITION. (PHONO) VIEWED FROM FRONT.
RESISTOR VALUES ARE IN OHMS.
ALL RESISTORS ARE 1/2 W. UNLESS OTHERWISE SPECIFIED.
CAPACITOR VALUES ARE IN MFD. UNLESS OTHERWISE SPECIFIED.

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Alignment Points.



Restring the dial drive with 30 lb. test dial cord. Tie one end to the tension spring and follow the sequence outlined in Fig. 4. Stretch the tension spring and tie the end of the cord securely to the spring as shown. Set the tuning condenser at maximum capacity (closed), attach the pointer to the string and line it up with the left hand index mark on the dial scale.

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TUBES AND DIAL LAMP REPLACEMENT:

The types of tubes required and their relative position in the receiver are shown in Fig. 5. When installing a replacement tube, insert the center guide pin into the center hole of the tube socket. Rotate the tube until the key on the guide pin drops into the notch in the socket hole. Push down until the base of the tube rests firmly on the socket. To replace dial lamps it will be necessary to remove the chassis from the cabinet. Replace lamps with 6-8 V. Mazda #44 (Blue bead) or equivalent.

SOCKET VOLTAGES:

The voltages shown in the voltage chart were obtained with a 20,000 ohm per volt meter when operating the receiver from a 117-volt a-c source. All voltages are to be measured between the tube pin and chassis. Blanks are provided for your meter readings to establish an average set of readings for this receiver as measured with your test equipment. The normal power consumption for the receiver is 55 watts.

ALIGNMENT:

All connections and adjustments necessary for alignment are accessible from the top of the chassis. The output transformer is located on the under side of the chassis, hence, the output meter connection should be made at the speaker socket. Output voice coil impedance is 3 ohms.

Make all alignment adjustments at maximum volume and refer to the alignment chart for the dial and band switch settings.

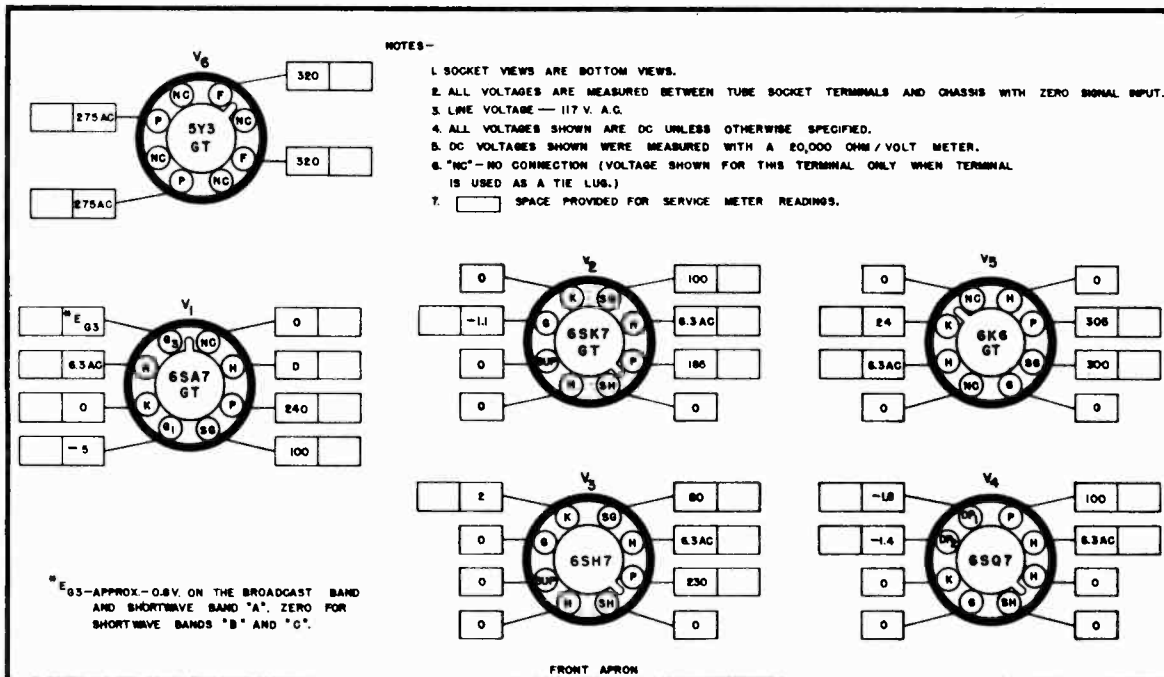
The standard RMA dummy antenna specified in the alignment chart consists of a 200 mmf condenser in series with a 20 uh r-f choke which is shunted by a 400 mmf condenser in series with a 400-ohm carbon resistor.

CAUTION - The loop antenna must be connected during alignment.

ALIGNMENT CHART:

Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Switch Setting	Receiver Dial Setting	Adjust
1	.01 mfd capacitor	Connect to rear section stator of tuning cap.	455 kc	BC	1000 kc	ABCD
2	Std RMA dummy	Connect to terminals "A" and "G" of antenna terminal strip TS ₁ .	1500 kc	BC	1500 kc	E*F
			600 kc		600 kc	G*
3	Std RMA dummy	See step 2.	6 mc	SW(A)	6 mc	H*I
4	Std RMA dummy	See step 2.	20 mc	SW(B)	20 mc	J*K
5	Std RMA dummy	See step 2.	11.5 mc	SW(C)	11.5 mc	L*M
			9.2 mc		9.2 mc	N*O

* Note - Calibration adjustment.



Voltage Chart.

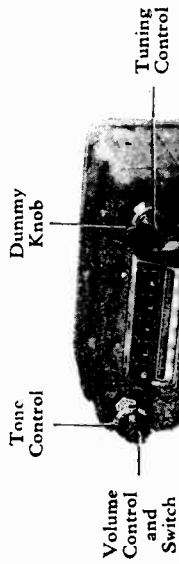
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MODEL 608

Illustration No.	Production Part No.	Service Part No.	Description	Illustration No.	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS							
TRANSFORMERS AND COILS							
T-1	50C365		Transformer, 1st I.F.	R-18,19	RC40AE100M	C100	10 ohms 2 watt, insulated
T-2	50C364		Transformer, Detector Stage	R-20	RC20AE472M	A472	4700 ohms 1/2 watt, insulated
T-3	55B104-1		Transformer, Audio Output	R-21,22	RC40AE682M	C682	6800 ohms 2 watt, insulated
T-4	52C149		Transformer, Power	R-25	RC20AE151K	A100	10 ohms 1/2 watt, insulated
T-5	51B1018		Transformer, Antenna Stage, SW (B) (C)	TUBES AND RECTIFIER COMPLEMENT			
T-6	51B960		Transformer, Antenna Stage, SW (A)	V-1	90X6SA7GT	5223	6SA7GT, mixer
T-7	51B1060		Transformer, Antenna Stage, BC	V-2	90X6SK7GT	5230	6SK7GT, 1st I.F.
T-8	51B964		Transformer, Oscillator	V-3	90X6SH7	5255	6SH7, 2nd I.F.
T-9	51B963		Transformer, Oscillator Stage, SW (B) (C)	V-4	90X6SQ7	5231	6SQ7, Detector and 1st Audio
T-10	51B962		Transformer, Oscillator Stage, SW (A)	V-5	90X6K6GT	5196	6K6GT, audio power amp.
			Transformer, Oscillator Stage, BC	V-6	90X5Y3GT	5123	5Y3GT, rectifier
CONDENSERS							
C-1,3,5,6,9,10,11,14,17	46AZ103F	E103	.01 mfd. 600 V., tubular	R-13	25B621		Control, volume
C-2	46AY503F	E503	.05 mfd. 600 V., tubular	R-16	25B640		Control, tone, includes power switch SW-3
C-4,12,35	CM20A101M	G101	100 mmf. 500 V., mica	LM-1,2	39A003	44	Lamp 6-8V., 250 Ma Mazda #44
C-13	46AZ502J	E502	.005 mfd. 500 V., tubular	PL-1	87A078		Line cord and plug
C-15	46AZ202J	E202	.002 mfd. 600 V., tubular	LS-1	85C063		Speaker, P.M.
C-16	45B113		60-20-20 mfd. 450 V., electrolytic	SW-1	60B290		Band switch assembly
C-18	46AG103J		.01 mfd. 600 V., molded oscillator stage	SW-2	60A228		Line voltage switch, S.P.D.T
C-19,20,21,22,23,24	44B217		Trimmer assembly, 6 section, oscillator stage	TS-1	88A327		Terminal strip, antenna
C-25	CM30C162G		1600 mmf. 7% 500 V., mica	MISCELLANEOUS ELECTRICAL PARTS			
C-26	CM35A402J		4000 mmf. 5% 500 V., mica				
C-27	CM20A470M	G470	47 mmf. 500 V., mica				
C-28,29,32,33,34	44B216		Trimmer assembly, 5 section, antenna stage				
C-30	46AY203F		.02 mfd. 150 V., tubular	MECHANICAL PARTS			
C-31	48B184		Tuning condenser, 2 section	CHASSIS PARTS			
C-36	CM20A820J		82 mmf. 5% 500 V., mica	1217671	76A299		Lock, line cord
C-37	CM20A181J		180 mmf. 5% 500 V., mica	1217624	75A006		Cord, dial drive (54")
R-1	RC30AE183M	B183	18,000 ohms 1 watt, insulated		67B727		Rail, pointer
R-2	RC20AE224M	A224	220,000 ohms 1/2 watt, insulated		83C322		Dial scale
R-3,7	RC20AE683M	A683	68,000 ohms 1/2 watt, insulated		82A135		Dial pointer
R-4	RC30AF103M	B103	10,000 ohms 1 watt, insulated		22B189		Dial glass
R-5	RC20AE104M	A104	100,000 ohms 1/2 watt, insulated		36A036-1		Receptacle, headphone jack
R-6	RC20AE221M	A221	220 ohms 1 watt, insulated	SO-1	88A072		Receptacle, speaker
R-9	RC20AE102M	A102	1000 ohms 1 watt, insulated	SO-2	36A029		Receptacle, phono
R-10,15	RC20AE474M	A474	470,000 ohms 1/2 watt, insulated	SO-3	10A015		Receptacle, phono motor
R-11,23	RC20AE105M	A105	1 megohm 1 watt, insulated	SO-4	6A190		Socket, octal (tube)
R-12	RC20AE655M	A685	6.8 megohm 1/2 watt, insulated		86A054		Socket, dial light
R-14,24	RC20AE223M	A223	22,000 ohms 1 watt, insulated	CABINET PARTS			
R-17	RC30AE681M	B681	680 ohms 1 watt, insulated		66F542		Cabinet, wood
					32C440		Cover, back
					7C061		Escutcheon
					15B068-3		Knob, volume, tone and tuning
					15B137		Knob, band switch
					57C120		Loop antenna

MODEL 980782

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



MODEL 980782

GENERAL MOUNTING—All 1949 Buick Cars.
TUBES—Six. Plus Synchronous Vibrator.
SPEAKER—8" Round, Permanent Magnet.
TUNING—Manual and 5 P. B. Mechanical.
ANTENNA TRIMMER COMPENSATION—For Antennas Between 0.000052 — 0.000068 Mfd.
TUNING RANGE—550-1600 KC.

PUSH BUTTON SETUP PROCEDURE

Pull Push Button to the left and out. Tune in desired station manually. Push button all the way in.

ALIGNMENT PROCEDURE

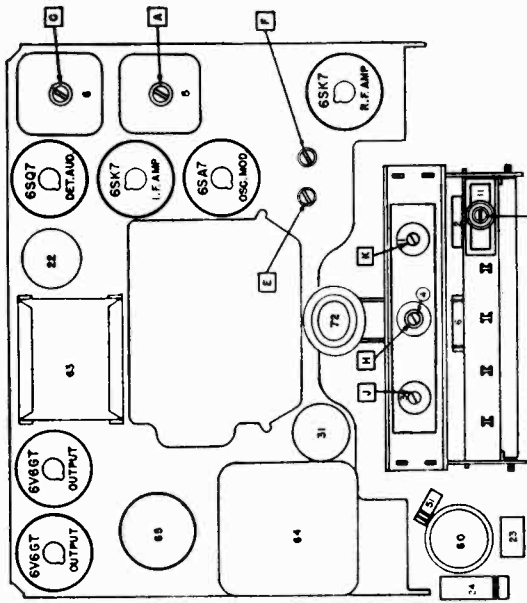
- Output Meter Connections Across Voice Coil
- Generator Return To Receiver Chassis
- Dummy Antenna In Series With Generator
- Volume Control Position Maximum Volume
- Tone Control Position Treble
- Generator Output Minimum for Readable Indication

Steps	Series Condenser or Dummy Antenna	Connect Signal Generator to	Signal Generator Frequency	Tune Receiver To	Adjust in Sequence For Max. Output
1	0.1 Mfd.	7Q7 Grid (Pin #6)	260 KC	High Frequency Stop	A, B, C, D
2	0.000056 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	*E, F, G
3	0.000056 Mfd.	Antenna Connector	1400 KC	Signal Generator Signal	J, K
4	0.000056 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	F, G
5	0.000056 Mfd.	Antenna Connector	1000 KC	Signal Generator Signal	L**

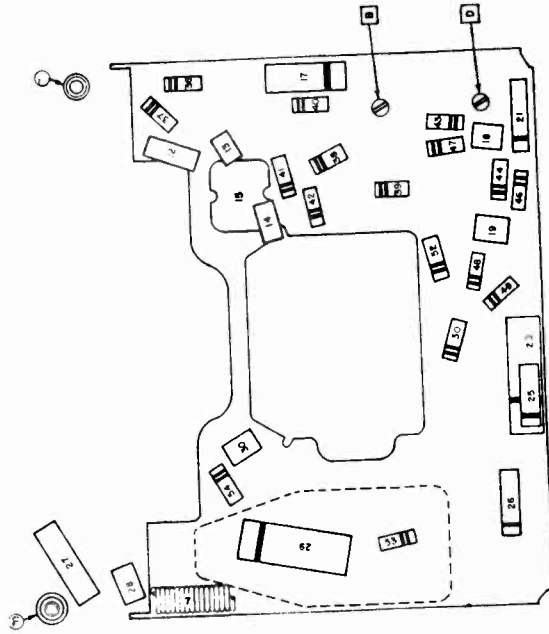
*Before making this adjustment check mechanical setting of oscillator core "H." The rear of the core should be 1/25/32" from the mounting end of the coil form. (This measurement is readily made by inserting a suitable plug in the mounting end of the coil form.) Core adjustments should be made with an insulated screw driver, and core studs should be cemented in place with glyptal or household cement after alignment.

**L is the pointer adjustment screw which is on the connecting link, between the pointer assembly and the parallel guide bar. It should be adjusted so that the dial pointer corresponds with the 1000 KC mark on the dial. (On first "0" of "100.")

With the radio installed and the car antenna plugged in adjust the antenna trimmer "G" for maximum volume with the radio tuned to a weak station near 1400 KC (see sticker on case).



PARTS LAYOUT — TUBE VIEW

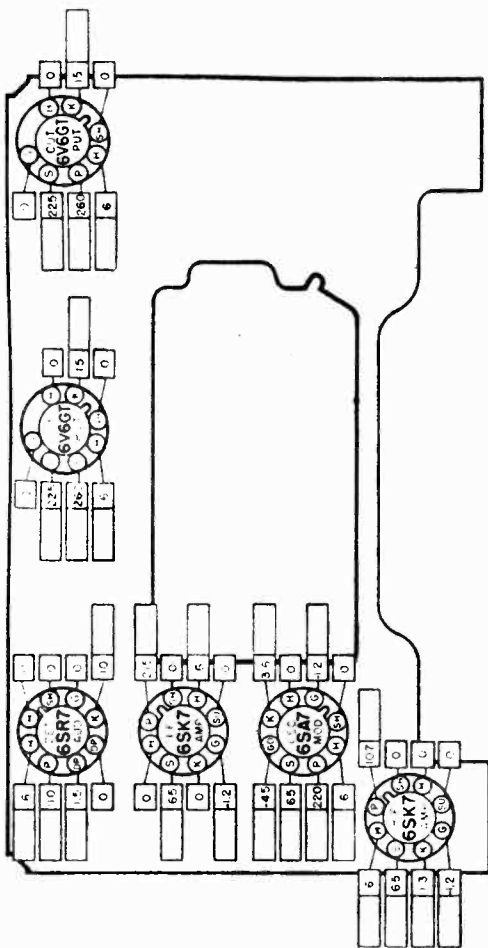


PARTS LAYOUT — CHASSIS VIEW

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MODEL 980782

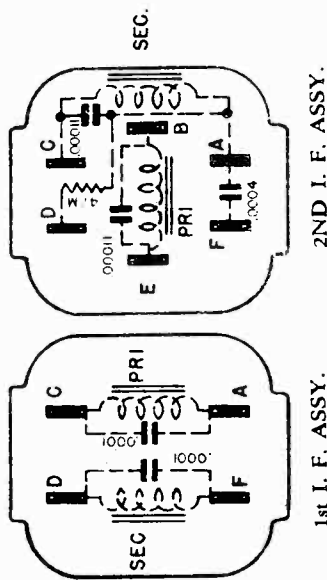
TUBE SOCKET VOLTAGE CHART



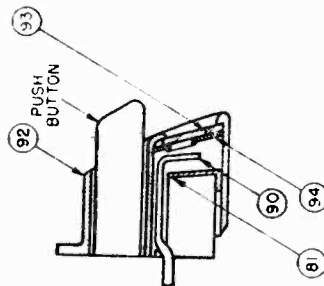
VOLT METER RESISTANCE PER VOLT. READINGS TAKEN WITH AT SPARK PLATE. VOLTAGES MEASURED FROM SOCKET TERMINALS TO CHASSIS AND ARE POSITIVE UNLESS MARKED OTHERWISE.

The tube socket voltages, as measured at the factory and under the conditions shown on the schematic diagram on Page 3 are shown.

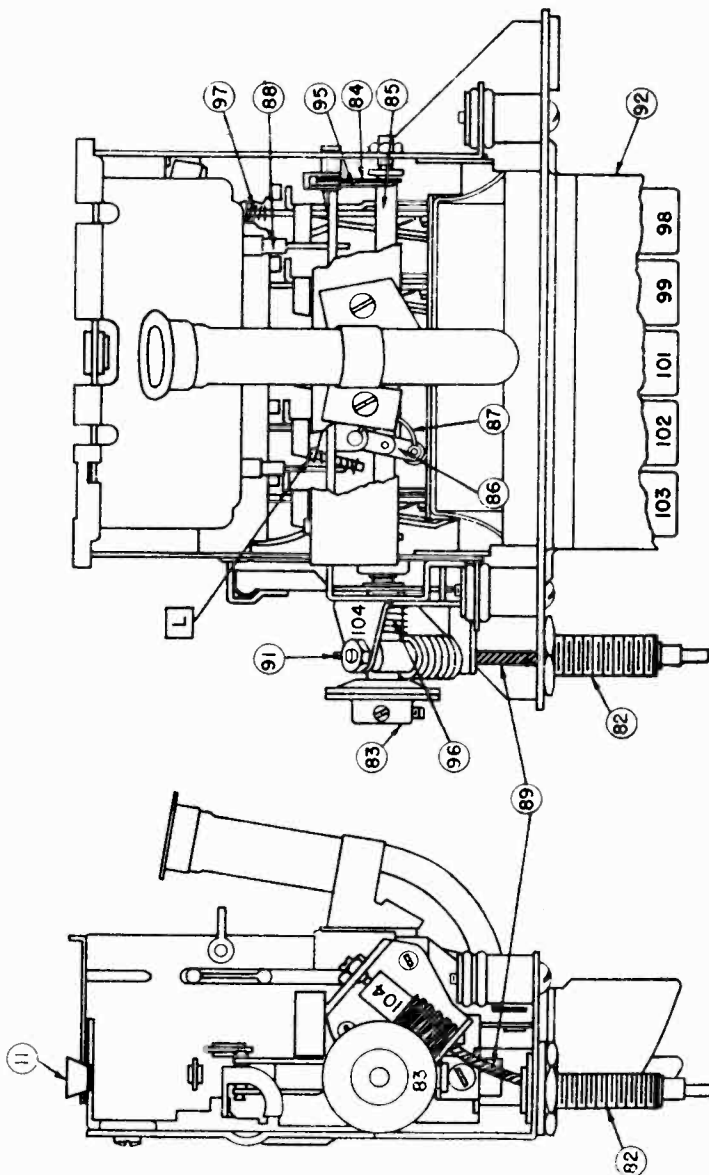
The blank spaces are provided so the serviceman may fill in the actual voltage readings as taken with his own equipment. A normal operating radio should be used for these measurements.



I. F. COIL CONNECTIONS



ESCUTCHEON CROSS SECTION



TUNER

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 980782

SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS			
Coils			
1	7257979	7257979	Antenna
2	7240251	7240251	Antenna Spark Choke
3	7257979	7257979	R. F.
4	7258148	7258148	Oscillator
5	7238546	7238546	1st I. F.
6	7240467	7240467	2nd I. F.
7	7241701	7241701	"A" Spark Choke
Condensers			
11	7256905	7256905	Antenna Trimmer
12	7236842	E 503	0.05 mfd. 200 V Tubular
13	7236105	G 221	0.000220 mfd. Molded
14	7258221	G 390	0.000039 mfd. Ceramic
15	7242454	7242454	Dual Trimmer
15A			R. F. Section
15B			Oscillator Section
16	7258162	7258162	0.000300 mfd. Compensating
17	7238788	E 104	0.1 mfd. 400 V Tubular
18	7233313	G 470	0.000047 mfd. Molded
19	7236105	G 221	0.000220 mfd. Molded
20	7240579	E 204	0.2 mfd. 400 V Tubular
21	7232956	E 502	0.005 mfd. 600 V Tubular
22	7238553	7238553	Electrolytic
22A			20 mfd. 25 V
22B			20 mfd. 25 V
22C			20 mfd. 25 V
23	7240577	G 121	0.000120 mfd. Molded
24	7240578	7240578	0.0025 mfd. 400 V Tubular
25	1211232	1211232	0.025 mfd. 400 V Tubular
26	7236134	7236134	0.0015 mfd. 800 V Tubular
27	7236621	E 504	0.5 mfd. 200 V Tubular
28	7240566	7240566	0.000560 mfd. Hi-Q Mica
29	7257439	7257439	0.007 mfd. 3000 V Buffer
30	7240566	7240566	0.000560 mfd. Hi-Q Mica
31	7240612	7240612	Electrolytic
31A			20 mfd. 400 V.
31B			20 mfd. 400 V
Resistors			
36	1213217	A 101	100 Ohms 1/2 W Insulated
37	1214563	A 225	2.2 Megohms 1/2 W Insulated
38	7233653	C 153	15,000 Ohms 2 W Insulated
39	1215563	A 685	6.8 Megohms 1/2 W Insulated
40	7237595	B 153	15,000 Ohms 1 W Insulated
41	1214557	A 334	330,000 Ohms 1/2 W Insulated
42	1214550	A 223	22,000 Ohms 1/2 W Insulated
43	1213282	A 105	1 Megohm 1/2 W Insulated
44	1213342	B 273	27,000 Ohms 1 W Insulated
45	1214553	A 473	47,000 Ohms 1/2 W Insulated
46	1214555	A 224	220,000 Ohms 1/2 W Insulated
47	1213282	A 105	1 Megohm 1/2 W Insulated
48	1213224	A 331	330 Ohms 1/2 W Insulated
49	1214543	A 681	680 Ohms 1/2 W Insulated
50	1214545	A 222	2200 Ohms 1/2 W Insulated
51	1213844	A 683	68,000 Ohms 1/2 W Insulated
52	1214572	C 331	330 Ohms 2 W Insulated
53	1216154	B 682	6800 Ohms 1 W Insulated
54	1214573	{ C 272 B 562	1800 Ohms { Replace with 2700 Ohm 2 W and 5600 Ohm 1 W in parallel
Tubes			
	1213793	5241	6V6GT
	1218107	5233	6SR7
	7237751	5229	6SK7
	7237752	5222	6SA7

MODEL 980782

**UNITED MOTORS SERVICE
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SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description
Miscellaneous Electrical			
60	7256847	7256847	Control, Volume, Tone and Switch
60A			Volume Control
60B			Tone Control
60C			Switch
61	125588	55	Lamp - Dial Light
62	7255895	7255895	Speaker - 8" round, PM
63	7240464	7240464	Transformer - Input-Output
64	7256939	7256939	Transformer - Power
65	7238525	8630	Vibrator - Synchronous
MECHANICAL PARTS			
Chassis			
70	7242034	7242034	Connector - "A" Lead
71	7242035	7242035	Connector - Antenna
72	1217841	1217841	Socket - Dial Light
73	7236279	7236279	Socket - Octal Tube
74	7238539	7238539	Socket - Vibrator
Tuner			
81	7257606	7257606	Backplate - Pointer
82	7256874	7256874	Bushing - Drive Shaft
83	7258072	7258072	Clutch Disc - Driven
84	7258203	7258203	Connecting Link - Core Bar
85	7258211	7258211	Core Guide Bar - Parallel
86	7256271	7256271	Pointer Connecting Link
87	7255992	7255992	Spring - Pointer Connecting Link
88	7258468	7258468	Core - Powdered Iron
89	7256871	7256871	Drive Shaft - Manual
90	7256861	7256861	Pointer Assembly
	1219093	1219093	Pointer Tip Package
91	7256102	7256102	Gear and Bushing - Clutch
92	7256883	7256883	Escutcheon Assy.
93	7256885	7256885	Dial
94	7256886	7256886	Backplate - Dial
95	7257415	7257415	Spring - Core Bar Connecting Link
96	7255991	7255991	Spring - Clutch
97	7255984	7255984	Spring - Slide Return
98	1218036	1218036	Pushbutton and Tuner Slide "B" (Gray)
98A	1219150	1219150	Pushbutton and Tuner Slide "B" (Black)
99	1218037	1218037	Pushbutton and Tuner Slide "U" (Gray)
99A	1219151	1219151	Pushbutton and Tuner Slide "U" (Black)
101	1218038	1218038	Pushbutton and Tuner Slide "I" (Gray)
101A	1219152	1219152	Pushbutton and Tuner Slide "I" (Black)
102	1218039	1218039	Pushbutton and Tuner Slide "C" (Gray)
102A	1219153	1219153	Pushbutton and Tuner Slide "C" (Black)
103	1218040	1218040	Pushbutton and Tuner Slide "K" (Gray)
103A	1219154	1219154	Pushbutton and Tuner Slide "K" (Black)
	1219124	1219124	Pushbutton Insert - Chrome "B"
	1219125	1219125	Pushbutton Insert - Chrome "U"
	1219126	1219126	Pushbutton Insert - Chrome "I"
	1219127	1219127	Pushbutton Insert - Chrome "C"
	1219128	1219128	Pushbutton Insert - Chrome "K"
104	7256866	7256866	Worm Gear and Bracket
INSTALLATION PARTS			
	1321178	1321178	"A" Lead and Fuse Connector
	1336763	6015	Condenser - Generator
	1910147	6015	Condenser - Ignition Coil
	120151	120151	Fuse - 15 amperes
	1334393	1334393	Knob - Control
	1320577	1320577	Knob - Dummy
	1320576	1320576	Knob - Tone Control
	1853686	6008	Suppressor Adapter
	1207820	6001	Suppressor - Distributor

MODEL 982420,
Early, Late;
Oldsmobile

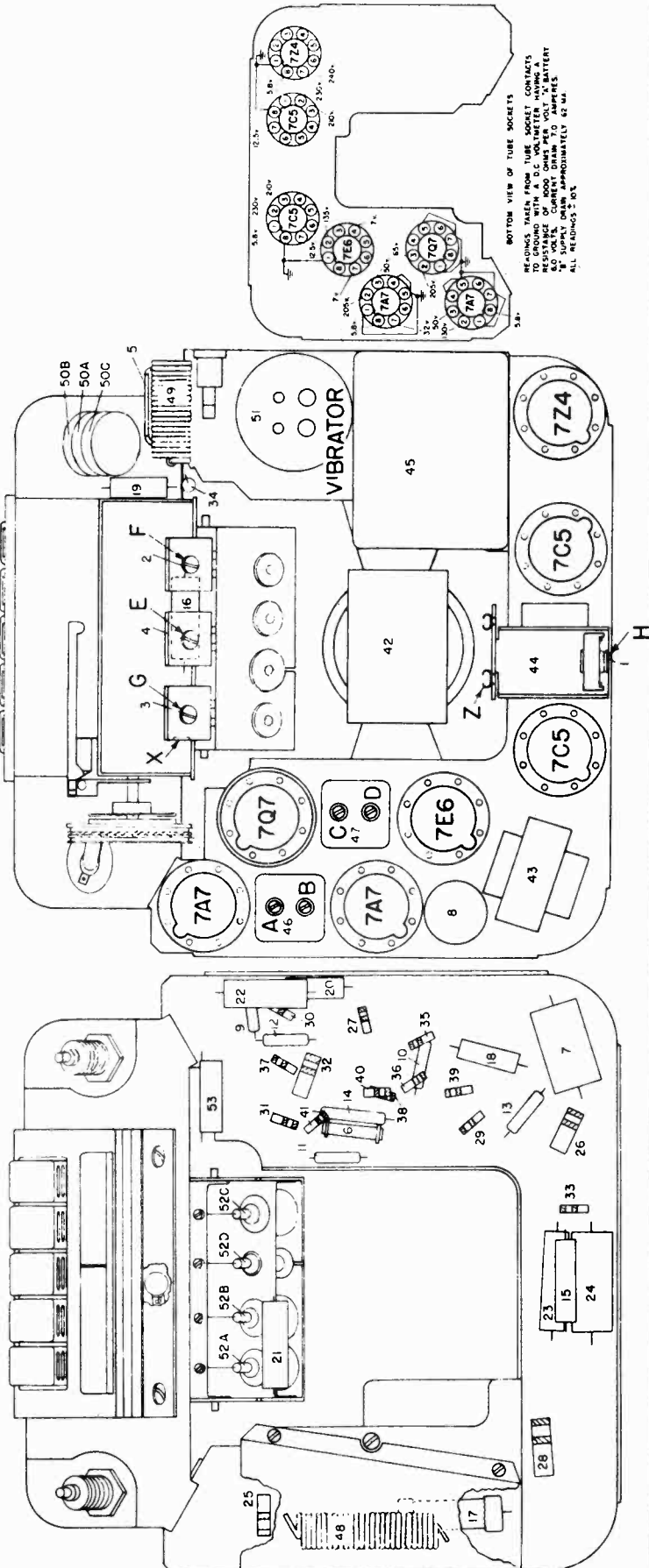
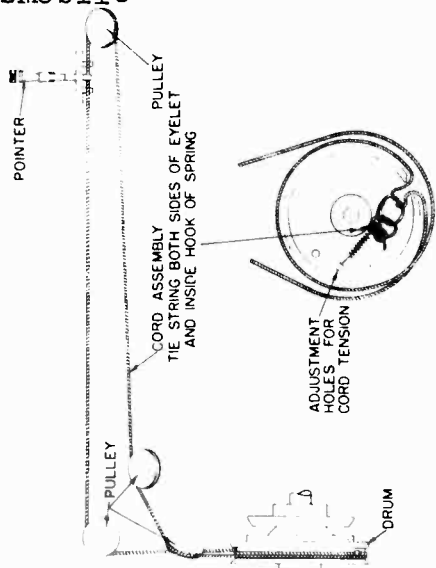
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ALIGNMENT PROCEDURE

Volume Control maximum.
Tone Control on high position.
Signal Generator Output minimum for satisfactory output indication.

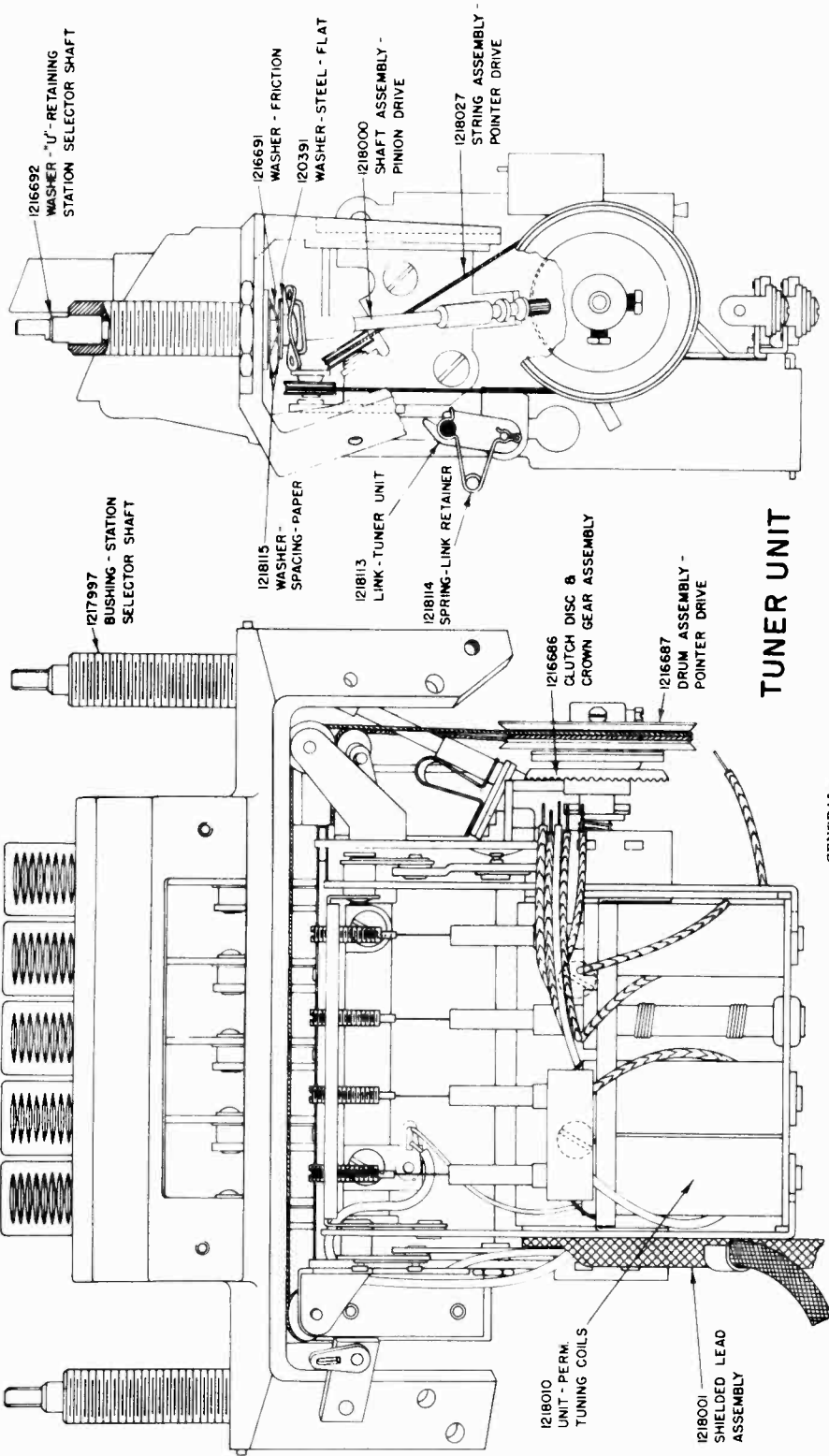
Series Capacitor Or Dummy Antenna	Connect To	Signal Generator Frequency	Adjust Screws In Order
0.1 mfd.	Terminal X (See Parts Layout)	257.5 KC	A, B, C, D
.000070 mfd.	Antenna Terminal	1610 KC	E, H, F, G

Low frequency alignment not required.
Adjust Trimmer "H" to match car antenna (1400 KC) when radio is installed.



MODEL 982420,
Late; Oldsmobile

UNITED MOTORS SERVICE
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TUNER UNIT

GENERAL:
"The 1949 version of Model 982420 (identified by serial number prefix 'B-59') is identically the same as the 1948 version of Model 982420 (identified by serial number prefix 'B-58') except for the following TUBE, MOUNTING & INSTALLATION PARTS and MISCELLANEOUS CHASSIS PARTS changes:"

SERVICE PARTS LIST

PRODUCTION PART NUMBER	SERVICE PART NUMBER	DESCRIPTION
554516		Nut - 1/2-28 Hex.
419511		Washer - Felt - 9/32 I.D. (Anti-Rattle)
1562090		Tone Control
554518		Washer - Felt - 3/16 I.D. (Anti-Rattle)
554520		Bracket - Receiver Mounting
1910147		Condenser - Ignition Coil
122159		Screw - #8-32 x 1/4 - Rd. Head
121841		Washer - Lock - #8 (Split)
1218424		Tube - 774 Rectifier

DELETIONS

7255287		Nut - 1/2-28 Hex.
7257400		Washer - Wave - 3/16 I.D. (Anti-Rattle)
7256654		Tuning & Volume Control
555437 or		Bracket - Receiver Mounting
1912751		Condenser - Ignition Coil
7256684		Gasket - Speaker Baffle
164349		Screw - #8-32 x 1/4 - Phillips Hd.
1912900		Self Tapping
1211924		Condenser - Voltage Regulator
5003		Tube - OZ4 Rectifier
1219086		Socket - 8 Prong Octal (Rectifier)

ADDITIONS

		Nut - 1/2-28 Hex.
		Washer - Wave - 3/16 I.D. (Anti-Rattle)
		Tuning & Volume Control
		Bracket - Receiver Mounting
		Condenser - Ignition Coil
		Gasket - Speaker Baffle
		Screw - #8-32 x 1/4 - Phillips Hd.
		Self Tapping
		Condenser - Voltage Regulator
		Tube - OZ4 Rectifier
		Socket - 8 Prong Octal (Rectifier)

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 982420,
Early, Late;
Oldsmobile
Description

Illus. No.	Service Part No.	Production Part No.	Description
<u>CAPACITORS</u>			
1		1218002	Antenna - Trimmer - Capacitor
2		1218047	Grid Trimmer - Capacitor
3		1218046	R. F. Trimmer - Capacitor
4		1218043	Oscillator - Trimmer - Capacitor
5		1212278	Spark - Capacitor
6		1217993	305 Mmfd. Compensating Capacitor
7	J100	1217998	Electrolytic - 10 Mfd. 25 Volt
8		1218009	Electrolytic
8A			10 Mfd. 350 Volt
8B			15 Mfd. 350 Volt
8C			20 Mfd. 25 Volt
9	G100	7234242	.00001 Mfd. Mica
10	G470	1207625	.00005 Mfd. Mica
11	G470	1207625	.00005 Mfd. Mica
12	G151	7230893	.00015 Mfd. Mica
13	G471	7238879	.0005 Mfd. Mica
14		1218015	.0011 Mfd. Mica - Silver
15	E302	7234126	.003 Mfd. 800 Volt
16	E102	7236134	.0015 Mfd. 800 Volt
17	H402	1217875	.004 Mfd. 1500 Volt
18	E103	1208600	.01 Mfd. 60C Volt
19	E502	7230912	.005 Mfd. 60C Volt
20	E103	1208600	.01 Mfd. 60C Volt
21	E503	7230592	.05 Mfd. 60C Volt
22	E503	7230592	.05 Mfd. 60C Volt
23	E503	7230592	.05 Mfd. 60C Volt
24		7234127	.2 Mfd. 200 Volt
<u>RESISTORS</u>			
25	B151	1211005	150 Ohm - 1 Watt
26	B271	1213846	270 Ohm - 1 Watt
27	A122	1213236	1200 Ohm - 1/2 Watt
28	C182	1214573	1800 Ohm - 2 Watt
29	A392	1214546	3900 Ohm - 1/2 Watt
30	A223	1214550	22,000 Ohm - 1/2 Watt
31	A473	1214553	47,000 Ohm - 1/2 Watt
32	A333	1213845	33,000 Ohm - 1/2 Watt
33	A333	1213845	33,000 Ohm - 1/2 Watt
34	A563	1213267	56,000 Ohm - 1/2 Watt
35	A823	1214554	82,000 Ohm - 1/2 Watt
36	A224	1214555	220,000 Ohm - 1/2 Watt
37	A105	1213282	1 Megohm - 1/2 Watt
38	A105	1213282	1 Megohm - 1/2 Watt
39	A105	1213282	1 Megohm - 1/2 Watt
40	A335	1214564	3.3 Megohm - 1/2 Watt
41	A685	1215563	6.8 Megohm - 1/2 Watt
<u>MISCELLANEOUS ELECTRICAL PARTS</u>			
42		1218060	Speaker - 6" x 9" Elliptical Permanent-Dynamic
43		1218029	Transformer - Audio Input
44		1218059	Transformer - Audio Output
45		1218008	Transformer & Filter Assembly
45A			Transformer - Power
45B			Hash - Choke
45C			.5 Mfd. 100 Volt
45D			.5 Mfd. 100 Volt
46		1218033	1st I. F. Transformer Assembly
46A			I. F. Coil Assembly
46B			Primary Trimmer
46C			Secondary Trimmer
47		1218035	2nd I. F. Transformer Assembly
47A			I. F. Coil Assembly
47B			Primary Trimmer
47C			Secondary Trimmer
47D			56,000 Ohm - 1/2 Watt
48		1217996	Filament Choke
49		1217995	Spark Choke
50		1218005	Control - Volume - Tone On-Off Switch
50A			Volume Control - 1 Megohm
50B			Tone Control - 30,000 Ohm
50C			On-Off Switch
51	8542	1218006	Vibrator

Illus. No.	Service Part No.	Production Part No.	Description
<u>TUNER UNIT & PARTS</u>			
52		1218010	Unit - Perm. Tuning Coil
52A			Antenna Coil
52B			Preselector Coil
52C			R. F. Coil
52D			Oscillator Coil
		1217997	Bushing - Station Selector Shaft
		1218044	Tuner Unit Assembly - Mechanical Portion only - Includes Push Buttons, Clutch Disc, Crown Gear and Drum Assembly
		1216686	Clutch Disc & Crown Gear Assy.
		1208004	Dial Glass - Calibrated
		1218042	Escutcheon Assy. & Light Shields Without Dial (for service only)
		1216687	Drum Assembly - Pointer Drive
		1218001	Lead Assembly - Shielded
		1218000	Shaft Assembly - Drive Pinion
		1218030	Pointer & Slide Assembly
		1216692	Washer - "U" Retaining - Station Selector Shaft
		1216691	Washer - Friction - Station Selector Shaft
		1217999	Actuator Plate Assembly
		1217994	Lever Assembly
		1217992	Screw - #10-32 Special
		1218027	String Assembly - Pointer Drive
		1218041	Connector Assembly - Antenna
		121391	Washer - Steel - Flat
		1218115	Washer - Spacing - Paper
		1218113	Link - Tuner Unit
		1218114	Spring - Link Retaining
		1214382	Antenna Choke
53			
<u>TUBES</u>			
5290	1213583	7A7 - R. F. Amplifier	
5301	1213853	7Q7 - Oscillator-Translator	
5290	1213583	7A7 - I. F. Amplifier	
5298	1213852	7E6 - Detector AVC - 1st Audio	
5295	1213586	7C5 - Audio Output	
5295	1213586	7C5 - Audio Output	
5308	1218424	7Z4 - Rectifier	
<u>MOUNTING & INSTALLATION PARTS</u>			
414997			Washer - Flat 33/64 I. D.
554516			Nut - 1/2-28 Hex
419512			Washer - Rubber - 9/32 I. D. (Anti-Rattle) Dummy Control
419511			Washer - Felt - 9/32 I. D. (Anti-Rattle) Tone Control
554515			Knob - Tone & Dummy
1562090			Washer - Felt - 3/16 I.D. (Anti-Rattle) Tuning & Volume Control
7256702			Knob (Tuning & Volume Control) Included Set Screw
554518			Bracket - Receiver Mounting
554519			Bracket - Side Mounting
554690			Bolt - 1/4-20 x 3/8 long Truss Head
120706			Bolt - 1/4-20 x 1/2 long - Hex Hd.
121797			Bolt - 1/4-20 x 3/8 long - Hex Hd.
120392			Washer - Flat - 17/64 I.D. 5/8 O.D.
120423			Washer - Lock - 1/4 (Internal Tooth Type "B")
103319			Washer - Lock - 1/4 (Split)
554691			"A" Lead Connector & Filter Condenser Assembly
120151			Fuse - "A" Lead 15 Amp. 25 Volt
1910147			Condenser - Ignition Coil
1911095			Condenser - Generator - .5 Mfd.
7257239			Distributor Suppressor - 15,000 Ohm
414237			Grommet - Distributor Suppressor
415823			Static Collector (Front Wheel)
122159			Screw - #8-32 x 1/4 - Rd. Hd.
121841			Washer - Lock - #8 (Split)
554339			Panel - Radio Control
554520			Gasket - Speaker Baffle
7256717			Spacer - Instrument Panel to Gasket
555348			Hood Grounding Clip
<u>MISCELLANEOUS CHASSIS PARTS</u>			
1216041			Socket - Vibrator
7238455			Socket - Tube - 8 Prong Lock-In
1217991			Shield - Tube
1218007			Cover Assembly - Case Back

MODEL 982421,
Oldsmobile

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

GENERAL

MOUNTING—All 1949 Oldsmobile Cars.

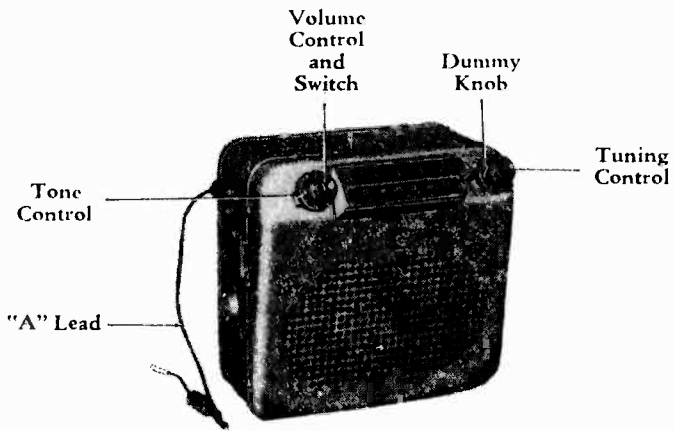
TUBES—Six, Plus Rectifier.

SPEAKER—6"x 9" Elliptical Permanent Magnet.

TUNING—Manual and 5 P. B. Mechanical.

ANTENNA TRIMMER COMPENSATION—For Antennas Between 0.000050 — 0.000070 Mfd.

TUNING RANGE—550 - 1600 KC.



MODEL 982421

PUSHBUTTON SET-UP

Pull pushbutton to the left and out. Tune in desired station manually. Push button all the way in.

ALIGNMENT PROCEDURE:

Output Meter Connections Across Voice Coil
 Generator Return To Receiver Chassis
 Dummy Antenna In Series With Generator
 Volume Control Position Maximum Volume
 Tone Control Position Treble
 Generator Output Minimum for Readable Indication

Steps	Series Condenser or Dummy Antenna	Connect To	Signal Generator Frequency	Tune Receiver To	Adjust in Sequence For Max. Output
1	0.1 Mfd.	7Q7 Grid (Pin #6)	260 KC	High Frequency Stop	A, B, C, D
2	0.1 Mfd.	7Q7 Grid (Pin #6)	1615 KC	High Frequency Stop	*E
3	0.000068 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	F, G, H
4	0.000068 Mfd.	Antenna Connector	1400 KC	Signal Generator Signal	K, L, M
5	0.000068 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	F, G, H
6	0.000068 Mfd.	Antenna Connector	1000 KC	Signal Generator Signal	**N

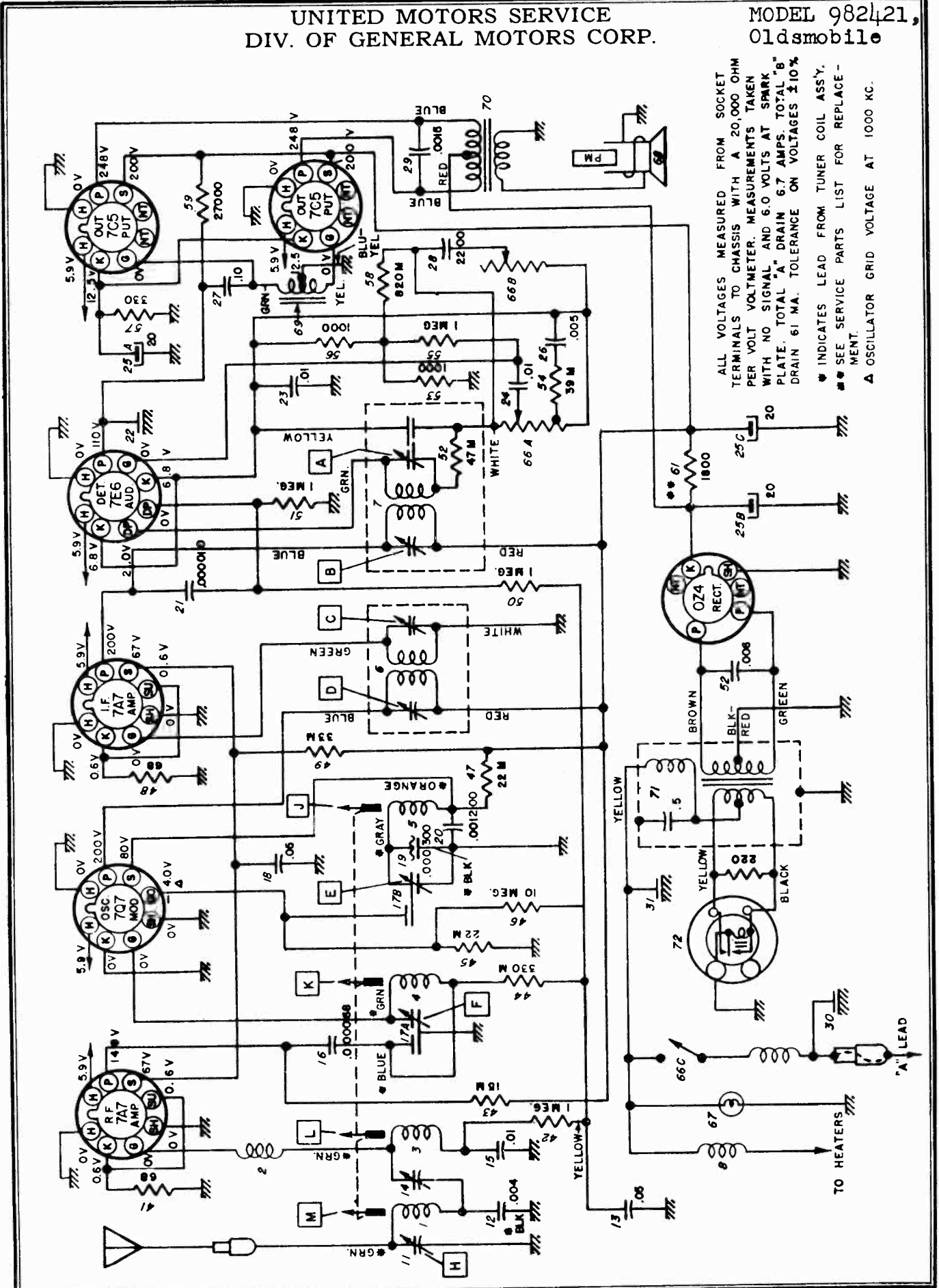
*Before making this adjustment check the mechanical setting of the oscillator core "J." The slotted end of core should be 1 21/32" from the mounting end of the coil form. (This measurement is readily made by inserting a suitable plug in the mounting end of the coil form.) Core adjustments should be made with an insulated screwdriver and core studs should be cemented in place with glyptal or household cement after alignment.

**"N" is the pointer adjustment screw which is on the pointer connecting link (see tuner drawing) and should be adjusted so the pointer reads 1000 KC. (On first "C" of "100.")

With the radio installed and the car antenna plugged in adjust the antenna trimmer "H" for maximum volume with the radio tuned to a weak station near 1400 KC. (See sticker on case.)

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MODEL 982421,
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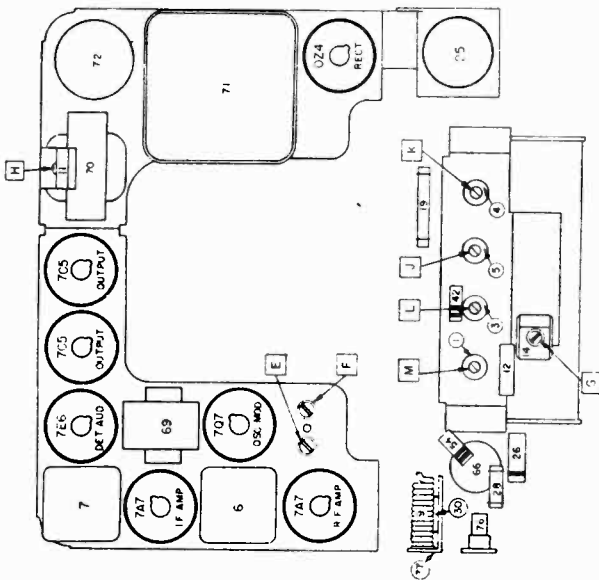


ALL VOLTAGES MEASURED FROM SOCKET TERMINALS TO CHASSIS WITH A 20,000 OHM PER VOLT VOLTMETER. MEASUREMENTS TAKEN WITH NO SIGNAL AND 6.0 VOLTS AT SPARK PLATE. TOTAL "A" DRAIN 6.7 AMPS. TOTAL "B" DRAIN 61 MA. TOLERANCE ON VOLTAGES ±10%

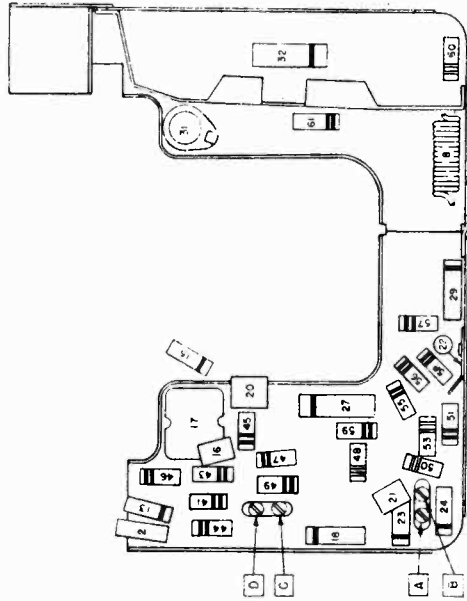
◆ INDICATES LEAD FROM TUNER COIL ASSY.
◆ SEE SERVICE PARTS LIST FOR REPLACEMENT.
▲ OSCILLATOR GRID VOLTAGE AT 1000 KC.

MODEL 982421,
Oldsmobile

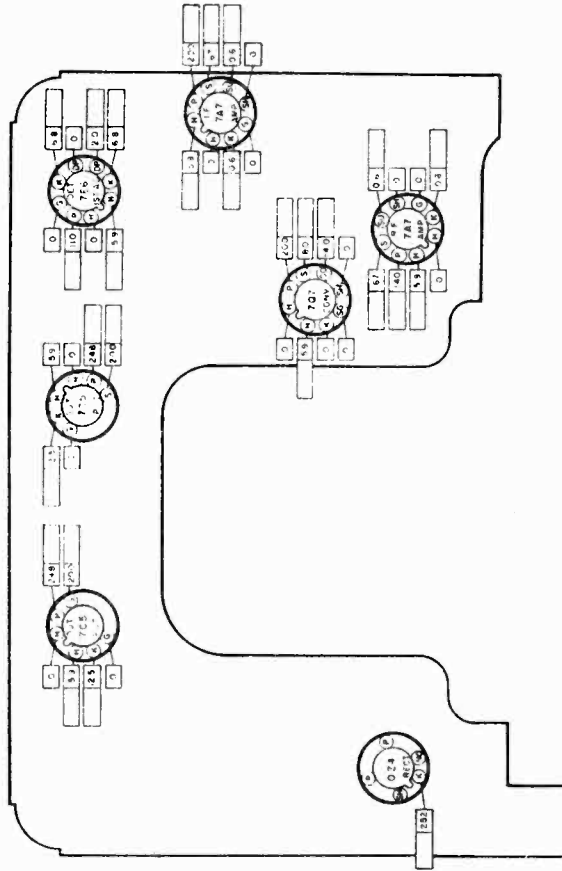
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PARTS LAYOUT — TUBE VIEW



PARTS LAYOUT — CHASSIS VIEW



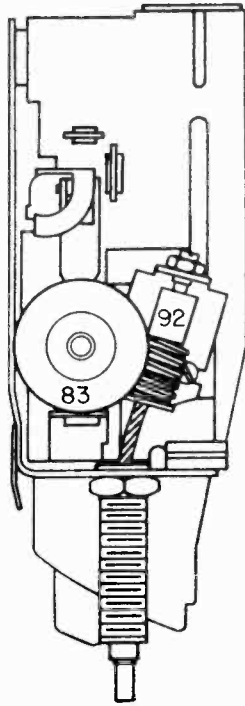
TUBE SOCKET VOLTAGE CHART

The tube socket voltages as measured at the factory and under the conditions shown on the schematic diagram are shown here. The blank spaces are provided so the serviceman may fill in the actual readings as taken with his own equipment. A normal operating radio should be used for these measurements.

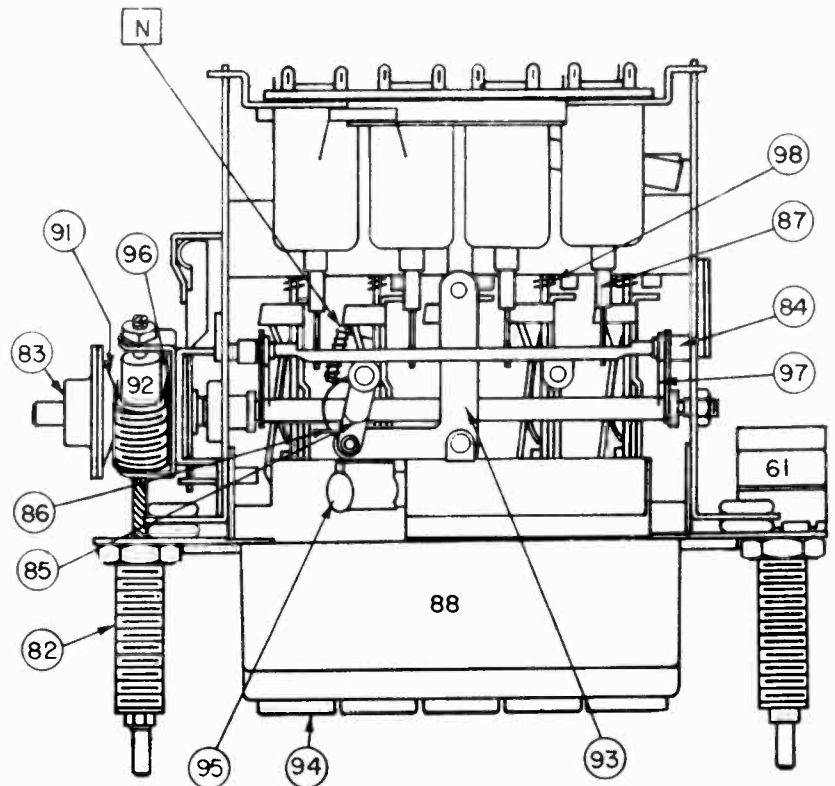
VOLTMETER RESISTANCE PER VOLT. READING TAKEN WITH VOLTS AT SPARK PLATE. THE VOLTAGES ARE MEASURED FROM TUBE SOCKET TERMINALS TO CHASSIS AND ARE POSITIVE UNLESS MARKED OTHERWISE.

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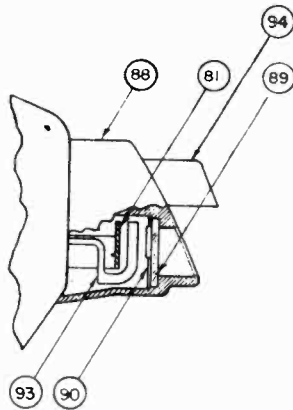
MODEL 982421,
 Oldsmobile



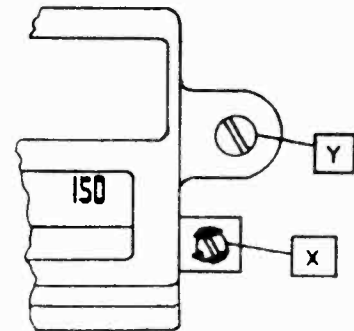
ESCUTCHEON MOUNTING



TUNER



ESCUTCHEON CROSS SECTION



ESCUTCHEON MOUNTING

SPECIAL INSTRUCTIONS

Unless special precautions are taken in removing the dial escutcheon, there is a possibility that the dial pointer tip will be broken. Therefore in removal of the escutcheon the following procedure is recommended.

1. Loosen but do not remove the two screws holding the pointer back plate ("X" in Escutcheon Mounting Drawing Above) and loosen the shellac so that the back plate is free to move.
2. Remove the escutcheon mounting screws "Y" (see Escutcheon Mounting).
3. Carefully lift off the escutcheon (DO NOT FORCE). If the dial backplate is free to move slightly downward the escutcheon will come off easily.

The same caution should be exercised when replacing the escutcheon.

MODEL 982421,
OldsmobileUNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS			
Coils			
1	7258375	7258375	Antenna (Sheet Metal Coil Cans)
1A	7258367	7258367	Antenna (Die Cast Coil Cover)
2	7240251	7240251	Antenna Spark Choke
3	7258375	7258375	1st R. F. (Sheet Metal Coil Cans)
3A	7258367	7258367	1st R. F. (Die Cast Coil Cover)
4	7258375	7258375	2nd R. F. (Sheet Metal Coil Cans)
4A	7258367	7258367	2nd R. F. (Die Cast Coil Cover)
5	7258376	7258376	Oscillator (Sheet Metal Coil Cans)
5A	7258568	7258568	Oscillator (Die Cast Coil Cover)
6	7257832	7257832	1st I. F. Assy.
7	7256932	7256932	2nd I. F. Assy.
8	1217846	1217846	Hash Choke
9	7258434	7258434	"A" Spark Choke, Fuse Connector and spark plate condenser.
Condensers			
11	7258160	7258160	Antenna Trimmer.
12	7258286	E 402	0.004 Mfd. 600 V Tubular
13	7236842	E 503	0.005 Mfd. 200 V Tubular
14	7258213	7258213	1st R. F. Trimmer
15	7239738	E 103	0.01 Mfd. 400 V Tubular
16	7236104	G 680	0.000068 Mfd. Molded
17	7258372	7258372	Dual Trimmer
17A			2nd R. F. Section
17B			Oscillator Section
18	7230892	E 503	0.05 Mfd. 200 V Tubular
19	7258445	7258445	0.000300 Mfd. Compensating
20	1217743	G 122	0.001200 Mfd. Molded
21	1215189	G 100	0.000010 Mfd. Molded
22	1217848	1217848	Chassis Plate Condenser
23	7237870	E 103	0.01 Mfd. 400 V Tubular
24	7237870	E 103	0.01 Mfd. 400 V Tubular
25	7241198	7241198	Electrolytic
25A			20 Mfd. 25 V
25B			20 Mfd. 400 V
25C			20 Mfd. 400 V
26	7232956	E 502	0.005 Mfd. 600 V Tubular
27	7238788	E 104	0.1 Mfd. 400 V Tubular
28	1217436	G 222	0.002200 Mfd. Ceramic
29	7236134	7236134	0.0015 Mfd. 800 V Tubular
30	1212278	1212278	Spark Condenser (Included in 7258434)
31	1217848	1217848	Chassis Plate Condenser
32	7240906	H 602	0.006 Mfd. 1600 V Buffer
Resistors			
41	1215558	A 680	68 Ohms 1/2 W Insulated
42	1213282	A 105	1 Megohm 1/2 W Insulated
43	7237595	B 153	15,000 Ohms 1 W Insulated
44	1214557	A 334	330,00 Ohms 1/2 W Insulated
45	1214550	A 223	22,000 Ohms 1/2 W Insulated
46	1215548	A 106	10 Megohms 1/2 W Insulated
47	1216156	B 223	22,000 Ohms 1 W Insulated
48	1215558	A 680	68 Ohms 1/2 W Insulated
49	7242447	B 333	33,000 Ohms 1 W Insulated
50	1213282	A 105	1 Megohm 1/2 W Insulated
51	1213282	A 105	1 Megohm 1/2 W Insulated
52	1214553	A 473	47,000 Ohms 1/2 W Insulated
53	1213235	A 102	1,000 Ohms 1/2 W Insulated
54	1213480	A 393	39,000 Ohms 1/2 W Insulated
55	1213282	A 105	1 Megohm 1/2 W Insulated
56	1213235	A 102	1,000 Ohms 1/2 W Insulated
57	7233773	B 331	330 Ohms 1 W Insulated
58	1214561	A 824	820,000 Ohms 1/2 W Insulated
59	1213342	B 273	27,000 Ohms 1 W Insulated
60	7237994	B 221	220 Ohms 1 W Insulated
61	1214573	{ C 272 B 562	1800 Ohms { Replace with 2700 ohms 2 W and 5600 ohms 1 W in parallel

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 982421,
Oldsmobile

SERVICE PARTS LIST (Cont.)

Illus. No.	Production Part No.	Service Part No.	Description
Tubes			
	1211924	5003	0Z4—Rectifier
	1213980	5293	7E6
	1213568	5295	7C5
	1213562	5290	7A7
	1213981	5301	7Q7
Miscellaneous Electrical			
66	7256697	7256697	Control—Volume, Tone, and Switch
66A			Volume Control
66B			Tone Control
66C			Switch
67	187189	44	Lamp—Dial Light
68	7258146	7258146	Speaker—6 x 9 Elliptical PM
69	7256432	7256432	Transformer—Input
70	7258182	7258182	Transformer—Output
71	7255881	7255881	Transformer—Power
72	7239124	8542	Vibrator—Non-synchronous
MECHANICAL PARTS			
Chassis			
76	7256742	7256742	Connector—Antenna
77	7258434	7258434	Connector—"A" Lead, Fuse Holder and Spark Plate Condenser
	7241356	7241356	Socket—Loctal Tube
	7236279	7236279	Socket—Octal Tube
	7239125	7239125	Socket—Vibrator
Tuner			
81	7256688	7256688	Backplate—Pointer
	115529	115529	Ball Bearing Pkg.
82	7258492	7258492	Bushing and Manual Drive Shaft
83	7258072	7258072	Clutch Disc—Driven
84	7258366	7258366	Core Guide Bar—Parallel
85	7256271	7256271	Pointer Connecting Link
86	7255992	7255992	Spring—Pointer Connecting Link
87	7258214	7258214	Core—Powdered Iron
88	7258371	7258371	Escutcheon
89	7258154	7258154	Dial (Dark Numbers)
89A	7258596	7258596	Dial (Light Numbers)
90	7258369	7258369	Backplate—Dial
91	7256495	7256495	Gear and Bushing—Clutch
92	7256705	7256705	Gear and Bracket—Worm
93	7257898	7257898	Pointer Assy.
	1219174	1219174	Pointer Tip Pkg.
94	1219173	1219173	Pushbutton and Slide Assy. (Chrome)
94A	1219200	1219200	Pushbutton and Slide Assy. (Black)
95	1217820	1217820	Socket—Dial Light
96	7256488	7256488	Spring—Clutch
97	7257415	7257415	Spring—Core Bar Connecting Link
98	7255984	7255984	Spring—Slide Return
INSTALLATION PARTS			
	554339	554339	Trim Plate—Instrument Panel
	554691	554691	"A" Lead, Condenser, and Fuse Connector, male
		6016	Condenser, "A" Lead
	1911095	6015	Condenser, Generator
	1912757	6015	Condenser, Ignition Coil
	1912900	1912900	Condenser, Voltage Regulator
	120151	120151	Fuse, 15 amperes
	555348	555348	Hood Ground Clip
	7256702	7256702	Knob—Control
	554515	554515	Knob—Tone Control and Dummy
	7240138	6013	Static Collector
	7257239	7257239	Suppressor—Distributor
	414237	414237	Suppressor Insulator

MODEL 982454,
Oldsmobile

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

GENERAL

MOUNTING—All 60 and 70 Series 1948 Oldsmobile Cars.

TUBES—Five, plus rectifier.

SPEAKER — 6" x 9" Elliptical, Permanent Magnet.

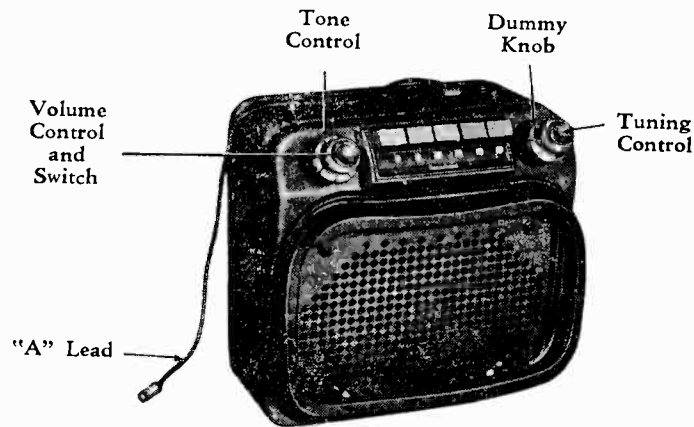
TUNING—Manual and 5 P. B. Mechanical.

ANTENNA TRIMMER COMPENSATION — For Antennas Between 0.000060 — 0.000080 Mfd.

TUNING RANGE—550-1600 K.C.

PUSH BUTTON SETUP PROCEDURE

Pull Push Button to the left and out. Tune in desired station manually. Push button all the way in.



MODEL 982454

ALIGNMENT PROCEDURE

- Output Meter Connections Across Voice Coil
- Generator Return To Receiver Chassis
- Dummy Antenna In Series With Generator
- Volume Control Position Maximum Volume
- Tone Control Position Treble
- Generator Output Minimum for Readable Indication

Steps	Series Condenser or Dummy Antenna	Connect Signal Generator to	Signal Generator Frequency	Tune Receiver To	Adjust In Sequence For Max. Output
1	0.1 Mfd.	7Q7 Grid (Pin #6)	260 KC	High Frequency Stop	A B, C, D
2	0.000068 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	*E, F, G
3	0.000068 Mfd.	Antenna Connector	600 KC	Signal Generator Signal	J, K
4	0.000068 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	F, G
5	0.000068 Mfd.	Antenna Connector	600 KC	Signal Generator Signal	L**

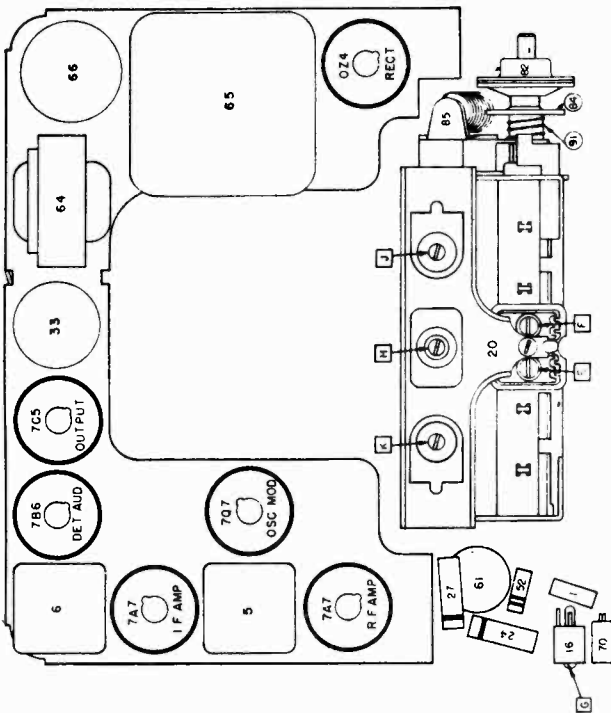
*Before making this adjustment check mechanical setting of oscillator core "H." The rear of the core should be 1 3/4" from the mounting end of the coil form. (This measurement is readily made by inserting a suitable plug in the mounting end of the coil form.) Core adjustments should be made with an insulated screw driver, and core studs should be cemented in place with glyptal or household cement after alignment.

**L is the pointer adjustment screw which is on the connecting link, Illus. #88, between the pointer assembly and the parallel guide bar. It should be adjusted so that the dial pointer corresponds with the 600 KC mark on the dial. (Between the "6" and the "0".)

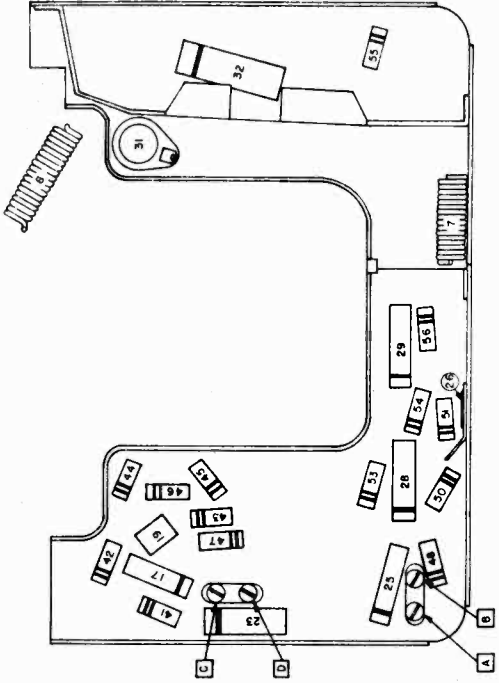
With the radio installed and the car antenna plugged in adjust the antenna trimmer "G" for maximum volume with the radio tuned to a weak station near 1400 KC (see sticker on case).

MODEL 982454,
Oldsmobile

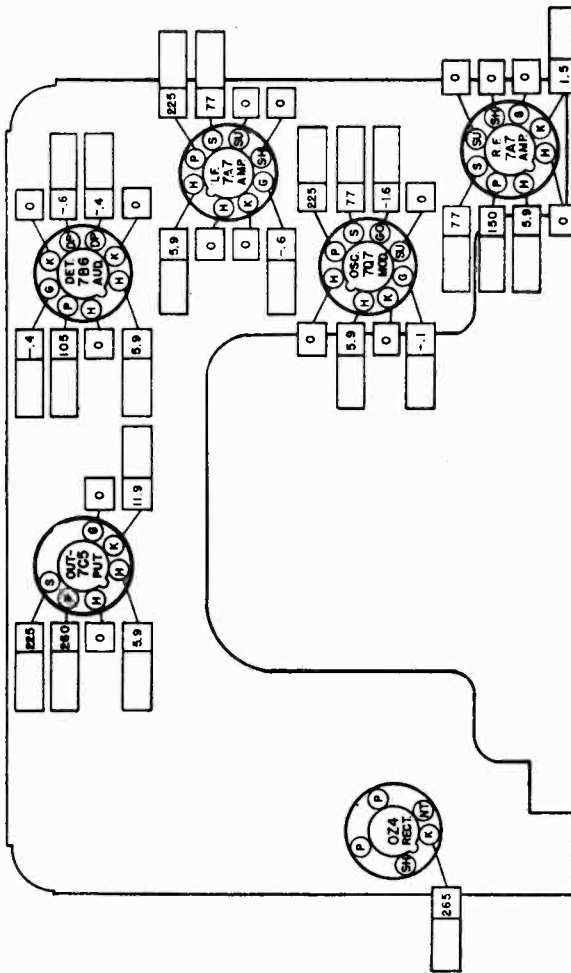
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PARTS LAYOUT — TUBE VIEW



PARTS LAYOUT — CHASSIS VIEW



TUBE SOCKET VOLTAGE CHART

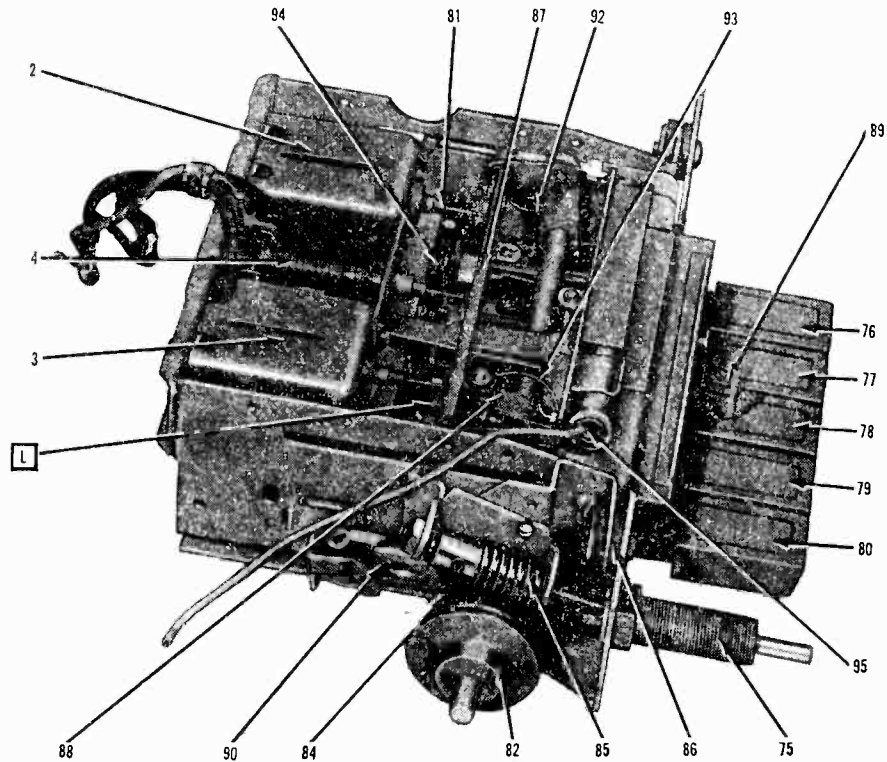
The tube socket voltages, as measured at the factory and under the conditions shown on the schematic diagram

The blank spaces are provided so the serviceman may fill in the actual voltage readings as taken with his own equipment. A normal operating radio should be used for these measurements.

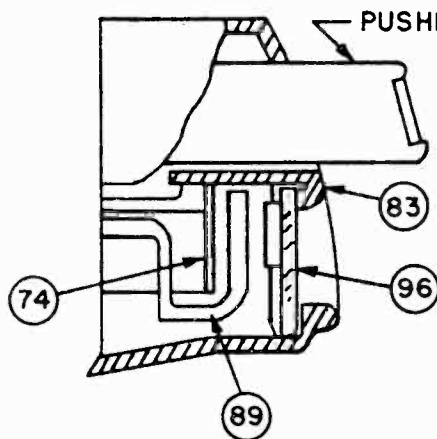
VOLT METER RESISTANCE _____ OHMS
PER VOLT. READINGS TAKEN WITH _____ VOLTS
AT SPARK PLATE.
VOLTAGES MEASURED FROM SOCKET TERMINALS TO CHASSIS AND ARE POSITIVE.

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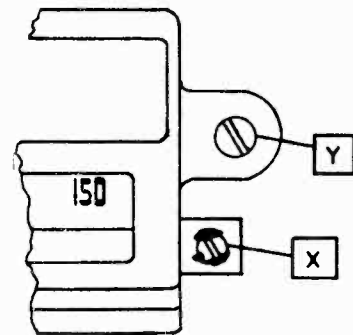
MODEL 982454,
 Oldsmobile



TUNER



ESCUTCHEON CROSS SECTION



ESCUTCHEON MOUNTING

SPECIAL INSTRUCTIONS

Unless special precautions are taken in removing the dial escutcheon, there is a possibility that the dial pointer tip will be broken. Therefore in removal of the escutcheon the following procedure is recommended.

1. Loosen but do not remove the two screws holding the pointer back plate ("X" in Escutcheon Mounting Drawing Above) and loosen the shellac so that the back plate is free to move.
2. Remove the escutcheon mounting screws "Y" (see Escutcheon Mounting).
3. Carefully lift off the escutcheon (DO NOT FORCE). If the dial backplate is free to move slightly downward the escutcheon will come off easily.

The same caution should be exercised when replacing the escutcheon.

MODEL 982454,
Oldsmobile

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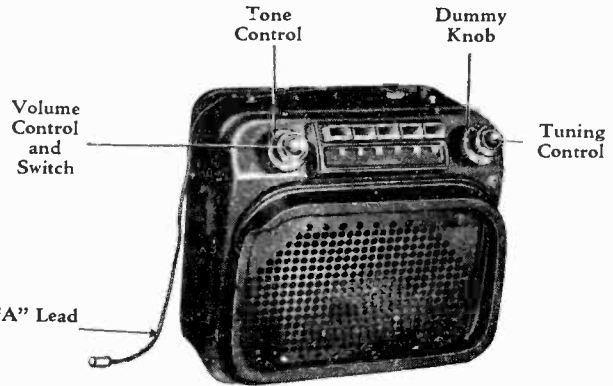
Illus. No.	Production Part No.	Service Part No.	Description	Illus. No.	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS							
COILS							
1	7240251	7240251	Antenna Noise Choke	61	7257526	7257526	Control — Volume, Tone and Switch
2	7257391	7257391	Antenna Coil	61A			Volume Control
3	7257391	7257391	R. F. Coil	61B			Tone Control
4	7257386	7257386	Oscillator Coil	61C			On-off Switch
5	7257832	7257832	1st I. F. Assy.	62	187189	44	Lamp, Dial (Mazda 44)
6	7256662	7256662	2nd I. F. Assy.	63	7257645	7257645	Speaker, 6 x 9 Elliptical, Permanent Magnet
7	7241708	7241708	Hash Choke	64	7256664	7256664	Transformer, Output
8	1217846	1217846	"A" Spark Noise Choke	65	7255881	7255881	Transformer, Power
				66	7239124	8542	Vibrator
CONDENSERS							
16	7242013	7242013	Antenna Trimmer and Bracket	70	7256742	7256742	Connector, Antenna
17	7236842	E503	.05 Mfd. 200V Tubular		7241356	7241356	Socket, Octal Tube
18	1217744	G222	.002200 Mfd. Ceramic		7236279	7236279	Socket, Octal Tube
19	1212359	G680	.000068 Mfd. Molded		7239125	7239125	Socket, Vibrator
20	7242454	7242454	Dual Trimmer				
20A			R. F. Section — Fixed Capacity .000300 Mfd.				
20B			Osc. Section — Fixed Capacity .000100 Mfd.				
21	1217735	G330	.000033 Mfd. Molded				
22	7257424	7257424	.000180 Mfd. Temperature Compensating				
23	7230892	E503	.05 Mfd. 400V Tubular	74	7257535	7257535	Backplate, Pointer
24	7236756	E202	.002 Mfd. 600V Tubular	75	1218277	1218277	Bushing and Drive Shaft Assy.
25	7232456	E502	.005 Mfd. 600V Tubular	76	1218270	1218270	Button and Slide Assy. No. 1 Button
26	1217848	1217848	Chassis Plate Condenser	77	1218271	1218271	Button and Slide Assy. No. 2 Button
27	7232956	E502	.005 Mfd. 600V Tubular	78	1218272	1218272	Button and Slide Assy. No. 3 Button
28	7230892	E503	.05 Mfd. 400V Tubular	79	1218273	1218273	Button and Slide Assy. No. 4 Button
29	7233243	7233243	.004 Mfd. 800V Tubular	80	1218274	1218274	Button and Slide Assy. No. 5 Button
30	7241259	7241259	Spark Plate Assy.	81	7257392	7257392	Core, Tuning
31	1217848	1217848	Chassis Plate Condenser	82	7256105	7256105	Disc, Clutch
32	7240906	H602	.006 Mfd. 1600V Buffer	83	7257536	7257536	Escucheon Assy.
33	7241198	7241198	Electrolytic	84	7257534	7257534	Dial
33A			20 Mfd. 400V	85	7256495	7256495	Gear and Bushing Assy.
33B			20 Mfd. 400V	86	7256705	7256705	Gear and Bracket (Worm Gear)
33C			20 Mfd. 25V	87	7237172	7237172	Grommer, Tuner Mounting
41	1213224	A331	330 Ohms 1/2 W Insulated	88	7256179	7256179	Parallel Guide Bar Assy.
42	1214563	A225	2.2 Megohm 1/2 W Insulated	89	7256271	7256271	Pointer Adjuster Assy.
43	7237595	B153	15,000 Ohms 1 W Insulated				Pointer Tip Package
44	1214557	A334	330,000 Ohms 1/2 W Insulated				Pointer Tip
45	1214550	A223	22,000 Ohms 1/2 W Insulated				Screw, Nut, and Lockwasher
46	1215563	A685	6.8 Megohm 1/2 W Insulated	90	7255989	7255989	Spring, Cam Return
47	7233653	C153	15,000 Ohms 2 W Insulated	91	7256488	7256488	Spring, Clutch
48	1213282	A105	1 Megohm 1/2 W Insulated	92	7257415	7257415	Spring, Connecting Link, Guide Bar
49	1214557	A334	330,000 Ohms 1/2 W Insulated (In 2nd I. F.)	93	7255992	7255992	Spring, Connecting Link, Pointer
50	1213289	A156	15 Megohm 1/2 W Insulated	94	7255984	7255984	Spring, Slide Return
51	1214555	A224	220,000 Ohm 1/2 W Insulated	95	1217820	1217820	Socket and Lead, Dial Light
52	1213480	A393	39,000 Ohms 1/2 W Insulated				
53	1216149	B391	390 Ohms 1 W Insulated				
54	1214555	A224	220,000 Ohms 1/2 W Insulated				
55	7237994	B231	220 Ohms 1 W Insulated				
56	1214573	{ C272 }	Replace Illus. { 2700 Ohm 2 W Insulated }				
		{ B562 }	56 with parallel { 5600 Ohm 1 W Insulated }				
TUBES							
		5290	7A7				Condenser, "A" Lead
		5301	7Q7				Condenser, Generator
							Condenser, Ignition Coil
							Fuseholder
							Fuse, 15 Amp.
							Insulator, Distributor Suppressor
							Knob
							Knob (Dummy)
							Knob, Tone Control
							Static Collector
							Suppressor, Distributor
MISCELLANEOUS ELECTRICAL PARTS							
MECHANICAL PARTS							
CHASSIS							
TUNER PARTS							
INSTALLATION PARTS							

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 982455,
Oldsmobile

GENERAL

- MOUNTING All 60 and 70 Series 1948 Oldsmobiles
- TUBES Six, Plus Rectifier
- SPEAKER 6" x 9" Elliptical Permanent Magnet
- TUNING Manual and 5 P. B. Mechanical
- ANTENNA TRIMMER COMPENSATION — For Antennas Between 0.000060 — 0.000080 Mfd.
- TUNING RANGE 550 - 1600 KC. "A" Lead



MODEL 982455

PUSHBUTTON SET-UP

Pull pushbutton to the left and out. Tune in desired station manually. Push button all the way in.

ALIGNMENT PROCEDURE:

- Output Meter Connections Across Voice Coil
- Generator Return To Receiver Chassis
- Dummy Antenna In Series With Generator
- Volume Control Position Maximum Volume
- Tone Control Position Treble
- Generator Output Minimum for Readable Indication

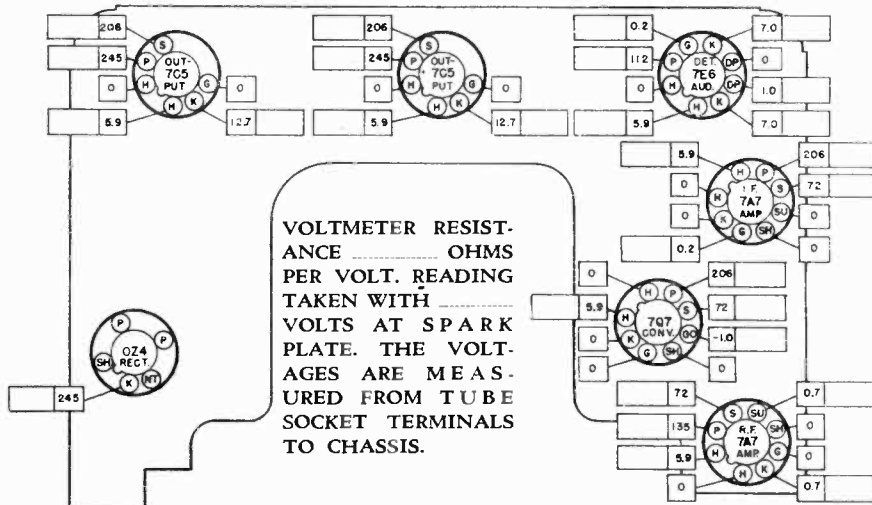
Steps	Series Condenser or Dummy Antenna	Connect To	Signal Generator Frequency	Tune Receiver To	Adjust In Sequence For Max. Output
1	0.1 Mfd.	7Q7 Grid (Pin. #6)	260 KC	High Frequency Stop	A, B, C, D
2	0.000068 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	*E, F, G
3	0.000068 Mfd.	Antenna Connector	600 KC	Signal Generator Signal	J, K
4	0.000068 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	F, G
5	0.000068 Mfd.	Antenna Connector	600 KC	Signal Generator Signal	**L

*Before making this adjustment check the mechanical setting of the oscillator core "H". The slotted end of core should be 1 3/4" from the mounting end of the coil form. (This measurement is readily made by inserting a suitable plug in the mounting end of the coil form.) Core adjustments should be made with an insulated screwdriver and core studs should be cemented in place with gypal or household cement after alignment.

**L is the pointer adjustment screw which is on the pointer connecting link (illustration #88, see tuner picture) and should be adjusted so the pointer reads 600 KC. (Between the "6" and the "0".)

With the radio installed and the car antenna plugged in adjust the antenna trimmer "G" for maximum volume with the radio tuned to a weak station near 1400 KC. (See sticker on case.)

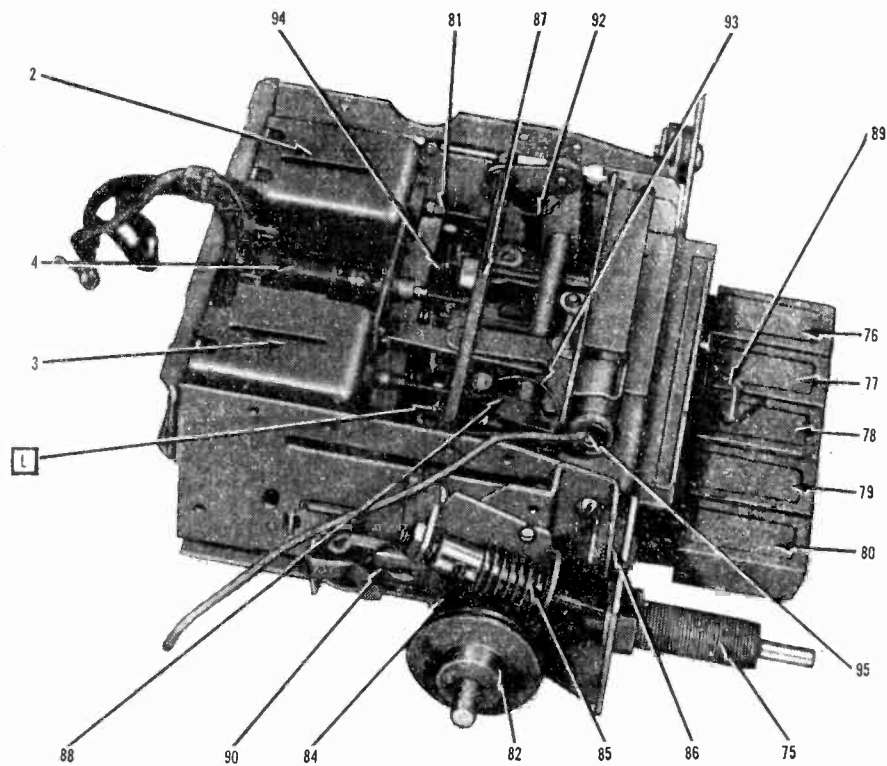
The tube socket voltages as measured at the factory and under the conditions shown on the schematic diagram. The blank spaces are provided so the serviceman may fill in the actual readings as taken with his own equipment. A normal operating radio should be used for these measurements.



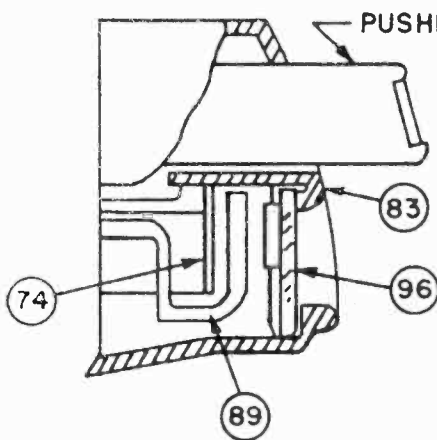
TUBE SOCKET VOLTAGE CHART

UNITED MOTORS SERVICE
 DIV. OF GENERAL MOTORS CORP.

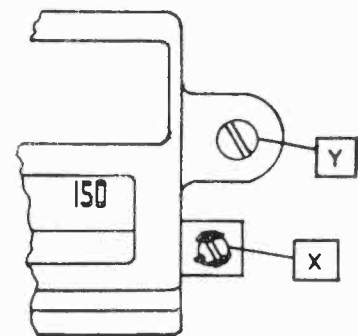
MODEL 982455,
 Oldsmobile



TUNER



ESCUTCHEON CROSS SECTION



ESCUTCHEON MOUNTING

SPECIAL INSTRUCTIONS

Unless special precautions are taken in removing the dial escutcheon, there is a possibility that the dial pointer tip will be broken. Therefore in removal of the escutcheon the following procedure is recommended.

1. Loosen, but do not remove, the two screws holding the pointer backplate ("X" in Escutcheon Mounting Drawing Above) and loosen the shellac so that the backplate is free to move.
2. Remove the escutcheon mounting screw "Y", (See Escutcheon Mounting).
3. Carefully lift off the escutcheon (DO NOT FORCE.) If the dial backplate is free to move slightly downward the escutcheon will clear the backplate and come off easily without breaking the pointer tip.

The same caution should be used when replacing the escutcheon.

MODEL 982455,
Oldsmobile

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS			
COILS			
1	7240251	7240251	Antenna Choke
2	7257391	7257391	Antenna Coil
3	7257391	7257391	R. F. Coil
4	7257386	7257386	Oscillator Coil
5	7257832	7257832	1st I. F. Assembly
6	7256932	7256932	2nd I. F. Assembly (Contains Illus. #48)
7	7241708	7241708	Hash Choke
8	1217846	1217846	"A" Spark Noise Choke
CONDENSERS			
16	7242013	7242013	Antenna Trimmer and Bracket
17	7236842	E503	.05 Mfd. 200 V. Tubular
18	1217744	G222	.002200 Mfd. Ceramic
19	1212359	G680	.000068 Mfd. Molded
20	7242454	7242454	Dual Trimmer
20A			R. F. Section - Fixed Capacity .000300 Mfd.
20B			Osc. Section - Fixed Capacity .000100 Mfd.
21	1217735	G330	.000033 Mfd. Molded
22	7257424	7257424	.000180 Mfd. — Temperature Compensating
23	7230892	E505	.05 Mfd. 400 V. Tubular
24	1215189	G100	.000010 Mfd. Molded
25	7236756	E202	.002 Mfd. 600 V. Tubular
26	7237870	E103	.01 Mfd. 400 V. Tubular
27	7237870	E103	.01 Mfd. 400 V. Tubular
28	7232956	E502	.005 Mfd. 600 V. Tubular
29	1217848	1217848	Chassis Plate Condenser
30	7238788	E104	0.1 Mfd. 400 V. Tubular
31	7236134	7236134	.0015 Mfd. 800 V. Tubular
32	7241259	7241259	Spark Plate
33	1217848	1217848	Chassis Plate Condenser
34	7240906	H602	.006 Mfd. 1600 V. Buffer
35	7241198	7241198	Electrolytic Condenser
35A			20 Mfd. 400 V.
35B			20 Mfd. 400 V.
35C			20 Mfd. 25 V.
RESISTORS			
39	1213217	A101	100 Ohms 1/2 W. Insulated
40	1214563	A225	2.2 Megohm 1/2 W. Insulated
41	7237595	B153	15,000 Ohms 1 W. Insulated
42	1214557	A334	330,000 Ohms 1/2 W. Insulated
43	1214550	A223	22,000 Ohms 1/2 W. Insulated
44	1214565	A395	3.9 Megohm 1/2 W. Insulated
45	7233653	C153	15,000 Ohms 2 W. Insulated
47	1213282	A105	1 Megohm 1/2 W. Insulated
48	1214553	A473	47,000 Ohms 1/2 W. Insulated
49	1213282	A105	(Included in 2nd I. F. Assy.)
50	1213235	A102	1 Megohm 1/2 W. Insulated
51	1213235	A102	1,000 Ohms 1/2 W. Insulated
52	1214561	A824	1,000 Ohms 1/2 W. Insulated
53	1213282	A105	820,000 Ohms 1/2 W. Insulated
54	1213480	A393	1 Megohm 1/2 W. Insulated
55	7233773	B331	39,000 Ohms 1/2 W. Insulated
56	1213342	B273	330 Ohms 1 W. Insulated
57	7237994	B221	27,000 Ohms 1 W. Insulated
58	1214573	{ C272 }	220 Ohms 1 W. Insulated
		{ B562 }	Replace Illus. { 2700 Ohms 2 W. Insulated }
			58 with parallel { 5600 Ohms 1 W. Insulated }
TUBES			
	1213562	5290	7A7
	1213981	5301	7Q7
	1213980	5298	7E6
	1213568	5295	7C5
	1211924	5003	0Z4

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 982455,
Oldsmobile

Illus. No.	Production Part No.	Service Part No.	Description
MISCELLANEOUS ELECTRICAL PARTS			
61	7257526	7257526	Control - Volume, Tone and Switch
61A			Volume Control
61B			Tone Control
61C			On - Off Switch
62	187189	44	Lamp, Dial (Mazda 44)
63	7257654	7257654	Speaker, 6 x 9 Elliptical, Permanent Magnet
64	7256432	7256432	Transformer, Input
65	7240453	7240453	Transformer, Output
66	7255881	7255881	Transformer Assy., Power
67	7239124	8542	Vibrator

MECHANICAL PARTS

CHASSIS

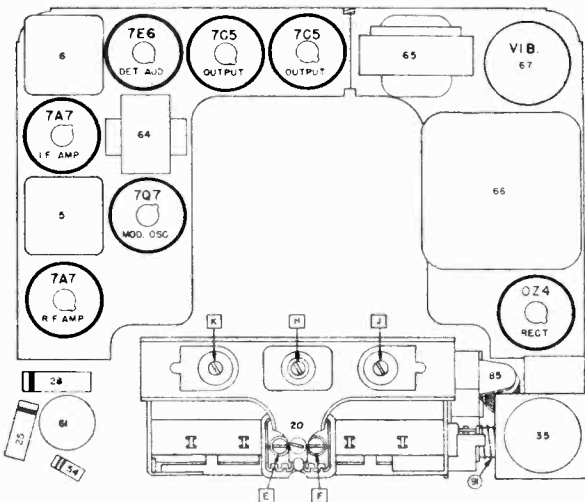
70	7256742	7256742	Connector, Antenna
	7241356	7241356	Socket, Octal Tube
	7236279	7236279	Socket, Octal Tube
	7239125	7239125	Socket, Vibrator

TUNER PARTS

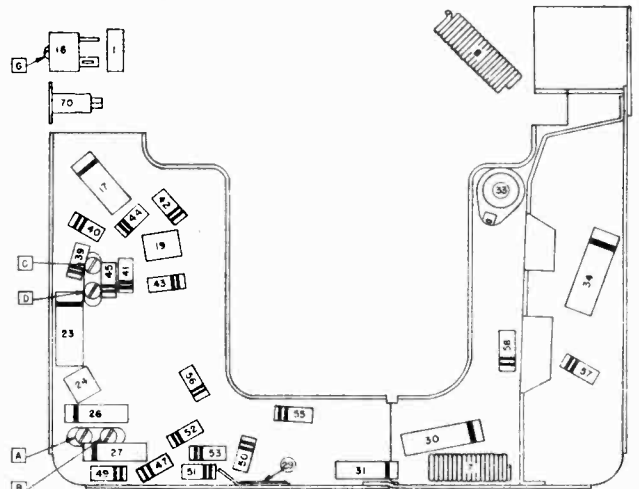
74	7257535	7257535	Backplate, Pointer
75	1218277	1218277	Bushing and Drive Shaft Assy.
81	7257392	7257392	Core, Tuning
82	7256105	7256105	Disc, Clutch
83	7257514	7257514	Escutcheon Assy.
	7257534	7257534	Dial
84	7256495	7256495	Gear and Bushing Assy.
85	7256705	7256705	Gear and Bracket (Worm Gear)
86	7237172	7237172	Grommet, Tuner Mounting
87	7256179	7256179	Parallel Guide Bar Assy.
88	7256271	7256271	Pointer Adjuster Assy.
89	1218269	1218269	Pointer Tip Package
			Pointer Tip
			Screw, Nut, and Lockwasher
90	7255989	7255989	Spring, Cam Return
91	7256488	7256488	Spring, Clutch
92	7257415	7257415	Spring, Connecting Link, Guide Bar
93	7255992	7255992	Spring, Connecting Link, Pointer
94	7255984	7255984	Spring, Slide Return
95	1217820	1217820	Socket and Lead, Dial Light
	1218461	1218461	Pushbutton Insert - Chrome

INSTALLATION PARTS

7255608	6016	Condenser, "A" Lead
1911095	6015	Condenser, Generator
1910147	6015	Condenser, Ignition Coil
1218333	1218333	Fuseholder
120151	120151	Fuse, 15 Amp.
414237	414237	Insulator, Distributor
7256702	7256702	Knob
7257427	7257427	Knob, Dummy
7256692	7256692	Knob, Tone Control
7240138	6013	Static Collector
7257239	7257239	Suppressor, Distributor



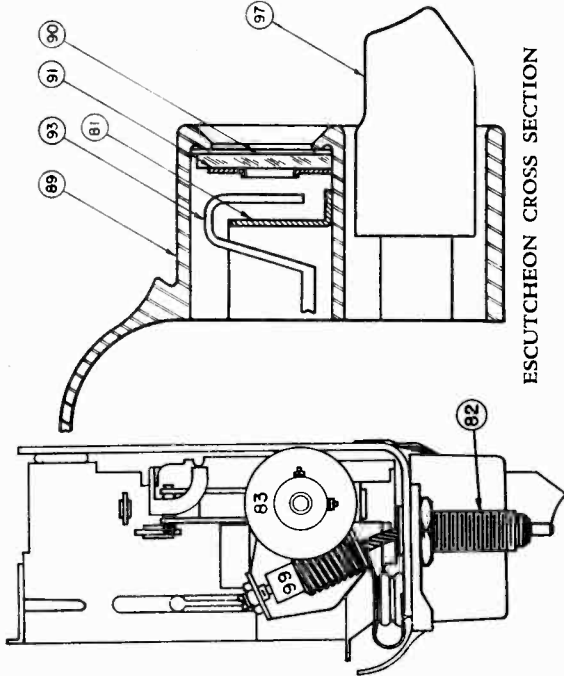
PARTS LAYOUT — TUBE VIEW



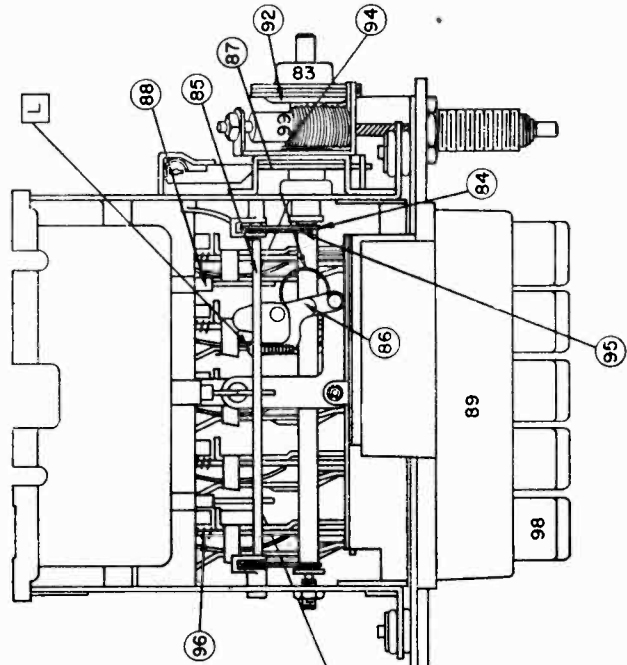
PARTS LAYOUT — CHASSIS VIEW

MODEL 984296,
Pontiac

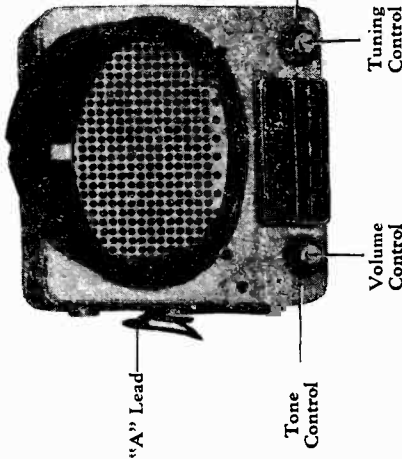
UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



ESCUTCHEON CROSS SECTION



TUNER



MODEL 984296

GENERAL
MOUNTING—All 1949 Pontiac Cars.
TUBES—Seven, Plus Rectifier.
SPEAKER—6" x 9" Elliptical, Permanent Magnet.
TUNING—Manual and 5 Push Button Mechanical.
ANTENNA TRIMMER COMPENSATION — For Antennas Between 0.000060 - 0.000090 Mfd.
TUNING RANGE — 550-1600 KC.

PUSHBUTTON SET-UP

Pull button to the right and out. Tune in desired station manually. Push button in as far as it will go.

ALIGNMENT PROCEDURE

Output Meter Connections Across Voice Coil
 Generator Ground Receiver Chassis
 Dummy Antenna In Series With Generator
 Volume Control Position Maximum Volume
 Tone Control Position Treble
 Generator Output Minimum for Readable Indication

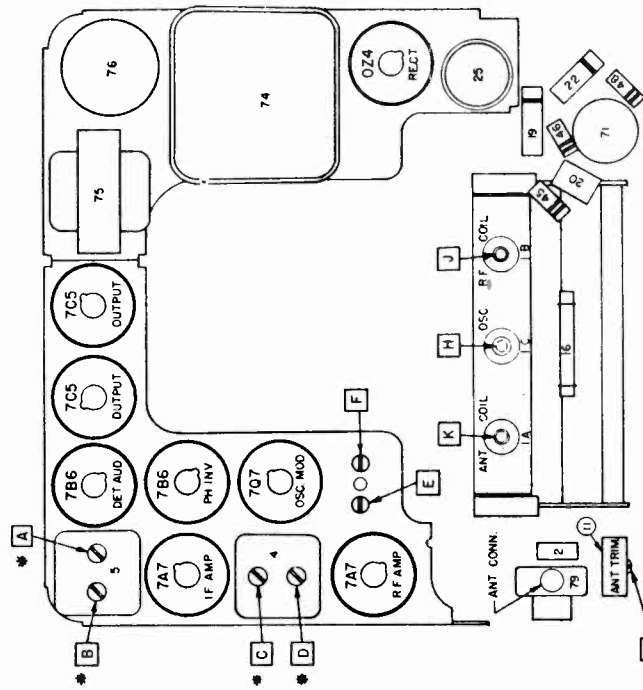
Steps	Series Condenser or Dummy Antenna	Connect To	Signal Generator Frequency	Tune Receiver To	Adjust in Sequence for Max. Output
1	0.1 Mfd.	7Q7 Grid (Pin #6)	260 KC	High Freq. Stop	A, B, C, D
2	0.000068 Mfd.	Antenna Connector	1615 KC	High Freq. Stop	*E, F, G
3	0.000068 Mfd.	Antenna Connector	1000 KC	Signal Gen. Signal	J, K
4	0.000068 Mfd.	Antenna Connector	1615 KC	High Freq. Stop	F, G
5	0.000068 Mfd.	Antenna Connector	1000 KC	Signal Gen. Signal	L**

*Before making this adjustment check the mechanical setting of the oscillator core "H". The slotted end of the core should be 1/25/32" from the mounting end of the coil form. (This measurement is readily made by inserting a suitable plug in the mounting end of the coil form). Core adjustments are made from the mounting end of the coil form with an insulated screwdriver, and core studs should be sealed with glyptal or household cement after alignment.

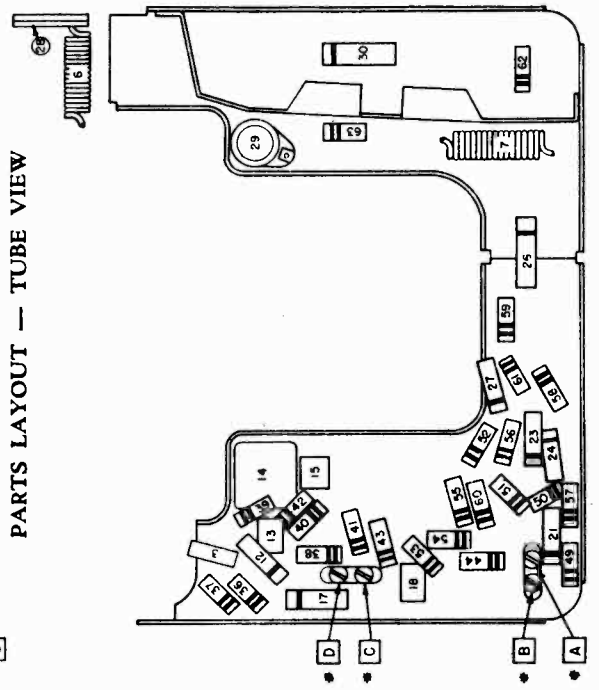
**"L" is the pointer adjustment screw on the pointer connecting link (see tuner drawing). Adjust so pointer reads 1000 KC. With the radio installed and the car antenna plugged in adjust antenna trimmer "C" (see sticker on case) for maximum volume with the radio tuned to a weak station near 1400 KC.

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 984296,
Pontiac

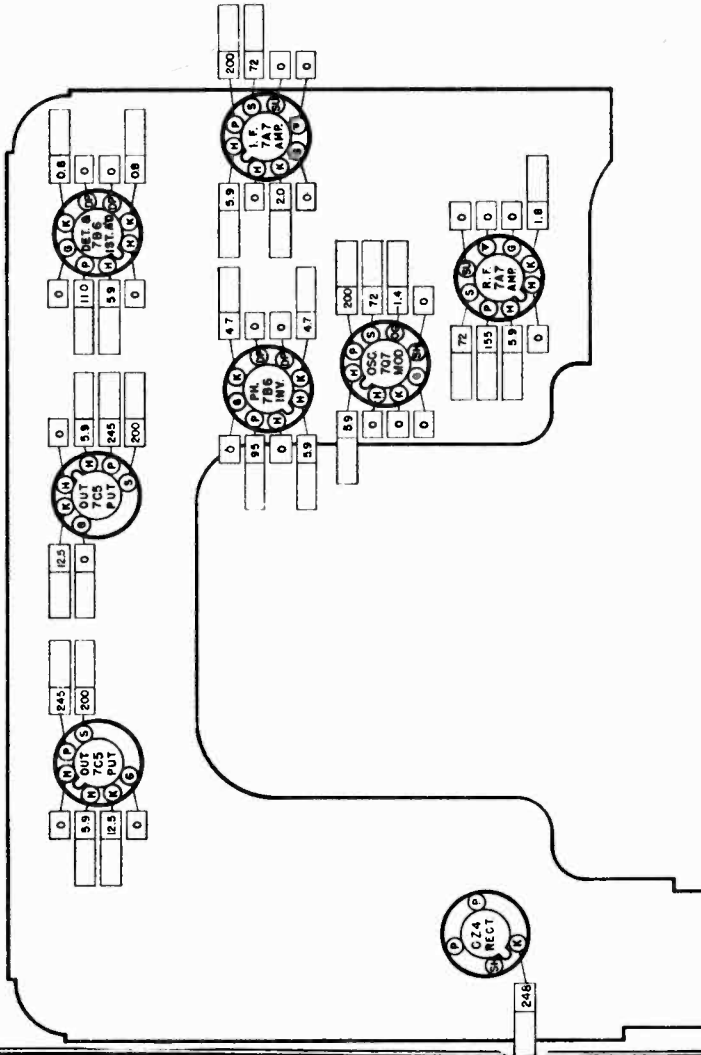


PARTS LAYOUT — TUBE VIEW



PARTS LAYOUT — CHASSIS VIEW

TUBE SOCKET VOLTAGE CHART



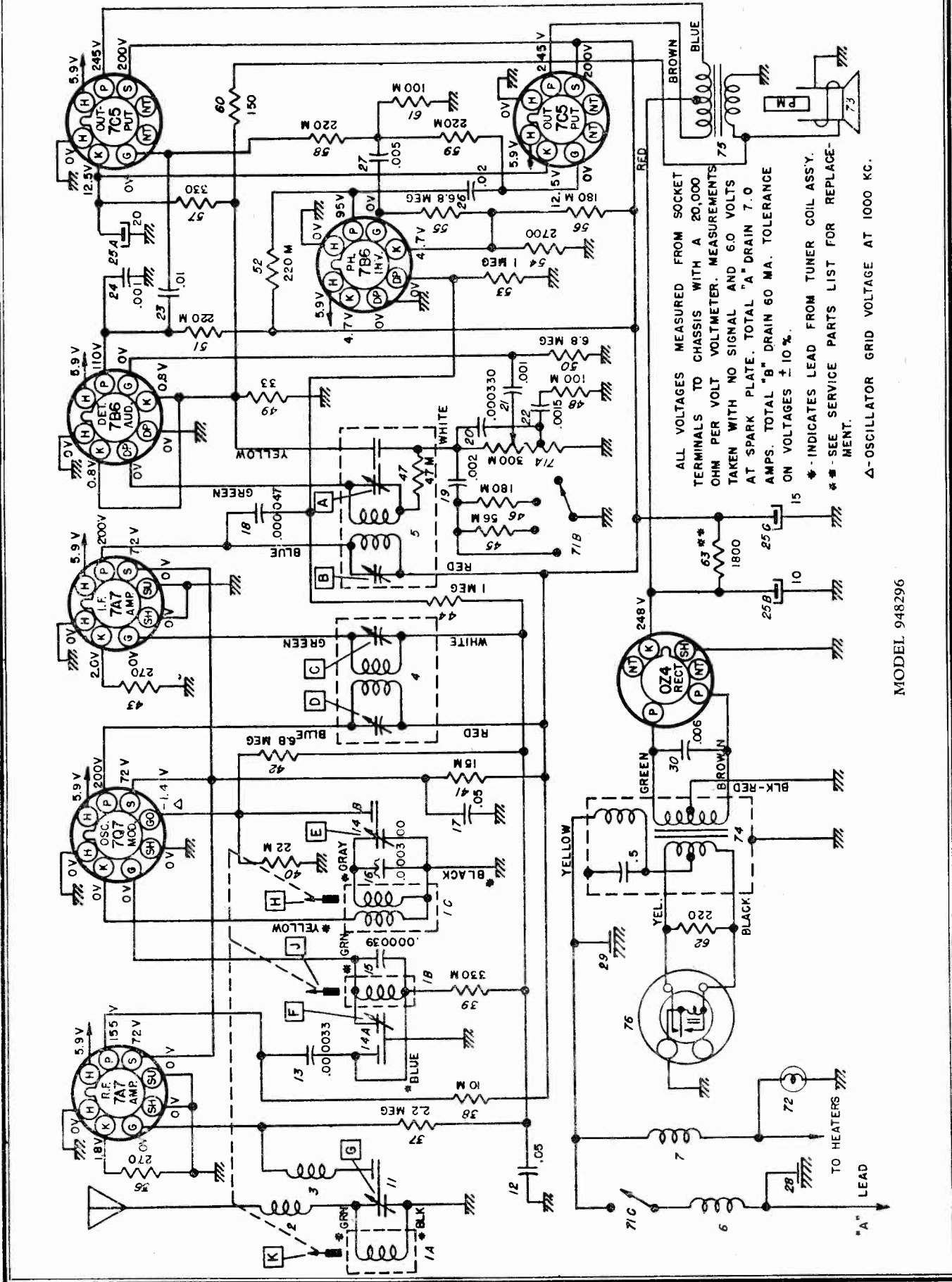
The tube socket voltages, as measured at the factory and under the conditions shown on the Schematic Diagram on Page 3, are shown above. The blank spaces are provided so the serviceman may fill in actual voltage readings as taken with his own equipment. A normal operating radio should be used for these measurements.

Voltmeter resistance is _____ ohms per volt. Voltages taken with _____ volts at the spark plate. Tolerance on voltages is $\pm 10\%$. All readings are taken from socket terminals to chassis.

*Radios with serial numbers starting with "6" have these trimmers on the PARTS side of chassis. Radios with serial numbers starting with "B" have these trimmers on TUBE side of chassis.

MODEL 984296,
Pontiac

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



MODEL 948296

UNITED MOTORS SERVICE
 DIV. OF GENERAL MOTORS CORP.
 SERVICE PARTS LIST

MODEL 984296,
 Pontiac

Illus. No.	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS			
Coils			
1	7257956	7257956	Coil Assy. - Tuning
1A			Antenna
1B			R. F.
1C			Oscillator
2	7255738	7255738	Antenna Series Choke
3	7240251	7240251	Antenna Spark Choke
4	7257832	7257832	1st I. F.
5	7256932	7256932	2nd I. F.
6	7241701	7241701	"A" Spark Choke
7	7241708	7241708	Hash Choke
Condensers			
11	7257959	7257959	Antenna Trimmer
12	7236842	E 503	0.05 Mfd. 200 V. Tubular
13	1218348	G 330	0.000033 Mfd. Ceramic
14	7242454	7242454	Dual Trimmer
14A			R. F. Section
14B			Oscillator Section
15	7258221	G 390	0.000039 Mfd. Ceramic
16	7258162	7258162	0.000300 Mfd. Compensating
17	7258125	E 503	0.05 Mfd. 400 V. Tubular
18	7233313	G 470	0.000047 Mfd. Molded
19	7237954	E 202	.002 Mfd. 600 V. Tubular
20	7232957	G 331	0.000330 Mfd. Molded
21	7239188	E 102	0.001 Mfd. 600 V. Tubular
22	1218499	1218499	0.0015 Mfd. 200 V. Tubular
23	1209309	E 103	0.01 Mfd. 400 V. Tubular
24	7239188	E 102	.001 Mfd. 600 V. Tubular
25	7238830	M 908	Electrolytic
25A			20 Mfd. 25 V.
25B			10 Mfd. 400 V.
25C			15 Mfd. 400 V.
26	7258124	E 203	0.02 Mfd. 400 V. Tubular
27	7230767	E 502	0.005 Mfd. 600 V. Tubular
28	7241259	7241259	Spark Plate
29	1217848	1217848	Chassis Plate Condenser
30	7240906	H 602	0.006 Mfd. 1600 V. Buffer
Resistors			
36	1214542	A 271	270 Ohms 1/2 W. Insulated
37	1214563	A 225	2.2 Megohms 1/2 W. Insulated
38	1211085	B 103	10,000 Ohms 1 W. Insulated
39	1214557	A 334	330,000 Ohms 1/2 W. Insulated
40	1214550	A 223	22,000 Ohms 1/2 W. Insulated
41	7233653	C 153	15,000 Ohms 2 W. Insulated
42	1215563	A 685	6.8 Megohms 1/2 W. Insulated
43	1214542	A 271	270 Ohms 1/2 W. Insulated
44	1213282	A 105	1 Megohm 1/2 W. Insulated
45	1213267	A 563	56,000 Ohms 1/2 W. Insulated
46	1215560	A 184	180,000 Ohms 1/2 W. Insulated
47	1214553	A 473	47,000 Ohms 1/2 W. Insulated
48	1213270	A 104	100,000 Ohms 1/2 W. Insulated (in 2nd I. F. Can)
49	1214538	A 330	33 Ohms 1/2 W. Insulated
50	1215563	A 685	6.8 Megohms 1/2 W. Insulated
51	1214555	A 224	220,000 Ohms 1/2 W. Insulated
52	1214555	A 224	220,000 Ohms 1/2 W. Insulated
53	1213282	A 105	1 Megohm 1/2 W. Insulated
54	1213240	A 272	2700 Ohms 1/2 W. Insulated
55	1215563	A 685	6.8 Megohms 1/2 W. Insulated
56	1215560	A 184	180,000 Ohms 1/2 W. Insulated
57	7233773	B 331	330 Ohms 1 W. Insulated
58	1214555	A 224	220,000 Ohms 1/2 W. Insulated
59	1214555	A 224	220,000 Ohms 1/2 W. Insulated
60	1213220	A 151	150 Ohms 1/2 W. Insulated
61	1213270	A 104	100,000 Ohms 1/2 W. Insulated
62	7237994	B 221	220 Ohms 1 W. Insulated
63	1214573	{ C 272	1800 Ohms } Replace with 2700 Ohms 2 W. and { B 562 } 5600 Ohm 1 W. in parallel

MODEL 984296,
PontiacUNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description
Tubes			
	1213565	5292	7B6
	1213568	5295	7C5
	1213981	5301	7Q7
	1213562	5290	7A7
	1211924	5003	OZ4
Miscellaneous Electrical			
71	7257708	7257708	Control - Volume, Tone and Switch
71A			Volume Control
71B			Tone Control
71C			Switch
72	187189	44	Lamp - Dial Light
73	7256355	7256355	Speaker - 6 x 9 Elliptical, Permanent Magnet
74	7255881	7255881	Transformer - Power
75	7240453	7240453	Transformer - Output
76	7239124	8542	Vibrator - Nonsynchronous

MECHANICAL PARTS

Chassis			
79	7257746	7257746	Socket - Antenna
	7241356	7241356	Socket - Octal Tube
	7236279	7236279	Socket - Octal Tube
	7239125	7239125	Socket - Vibrator
Tuner			
81	7257722	7257722	Backplate - Pointer
82	7258494	7258494	Bushing and Manual Drive Shaft
83	7258072	7258072	Clutch Disc - Driven
84	7258203	7258203	Connecting Link - Core Bar
85	7258210	7258210	Core Guide Bar - Parallel
86	7256271	7256271	Pointer Connecting Link
87	7255992	7255992	Spring - Pointer Connecting Link
88	7258468	7258468	Core - Powdered Iron
89	7257717	7257717	Escutcheon Assy.
90	7257721	7257721	Dial
	7257719	7257719	Backplate - Dial
	7257718	7257718	Spring, Dial Retainer
91	7256495	7256495	Gear and Bushing - Clutch
92	7257742	7257742	Pointer Assy.
	1219120	1219120	Pointer Tip Pkg.
93	7256488	7256488	Spring Clutch
94	7257415	7257415	Spring - Core Bar Connecting Link
95	7255984	7255984	Spring - Slide Return
96	1218884	1218884	Socket - Dial Light
97	1218885	1218885	Push Button and Tuner Slide
98	7257711	7257711	Worm Gear and Bracket

INSTALLATION PARTS

1911948	6015	Condenser, "A" Lead
1911095	6015	Condenser, Generator
147685	147685	Fuse, 14 Amps
511834	511834	Knob, Control
511831	511831	Knob, Dummy
511833	511833	Knob, Tone Control
511836	511836	Trim Plate, Radio

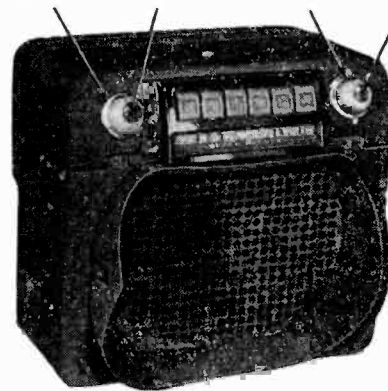
UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 984249,
Pontiac

GENERAL

- MOUNTING—All 1948 Pontiac Cars.
- TUBES—Seven, Plus Rectifier.
- SPEAKER—6" x 9" Elliptical, Permanent Magnet.
- TUNING—Manual and 5 P. B. Solenoid Operated.
- ANTENNA TRIMMER CONDENSATION — For Antennas Between 0.000060 - 0.000095 Mfd.
- TUNING RANGE — 550-1600 KC.

Dummy Knob Tuning Control Volume Control Tone Control



MODEL 984249

PUSHBUTTON SET-UP

Pull button off. Push set up knob all the way in and release. Turn set up knob until desired station is tuned in. Replace button.

ALIGNMENT PROCEDURE

- Output Meter Connections Across Voice Coil
- Generator Ground Receiver Chassis
- Dummy Antenna In Series With Generator
- Volume Control Position Maximum Volume
- Tone Control Position Treble
- Generator Output Minimum For Readable Indication

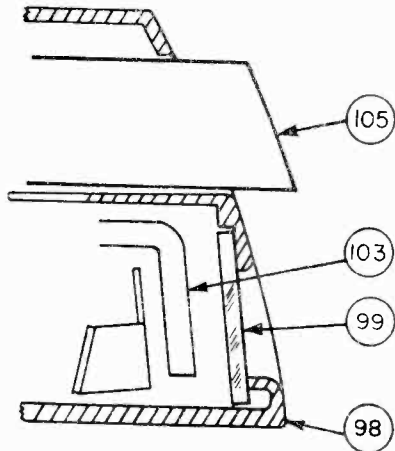
Steps	Dummy Antenna or Series Condenser	Connect To	Signal Generator Frequency	Tune Receiver To	Adjust In Order For Max. Output
1	0.1 Mfd.	6SA7 Grid (Pin #8)	260 KC	High Frequency Stop	A, B, C, D
2	0.000068 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	*F, G
3	0.000068 Mfd.	Antenna Connector	1200 KC	Signal Generator Sig.	J, K
4	0.000068 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	F, G

*Before making this adjustment check setting of oscillator core "H." This should be adjusted so that the end opposite the core stud is 1 1/2" from the terminal board end of the coil form. (This measurement is readily made by inserting a suitable plug in the coil form.)

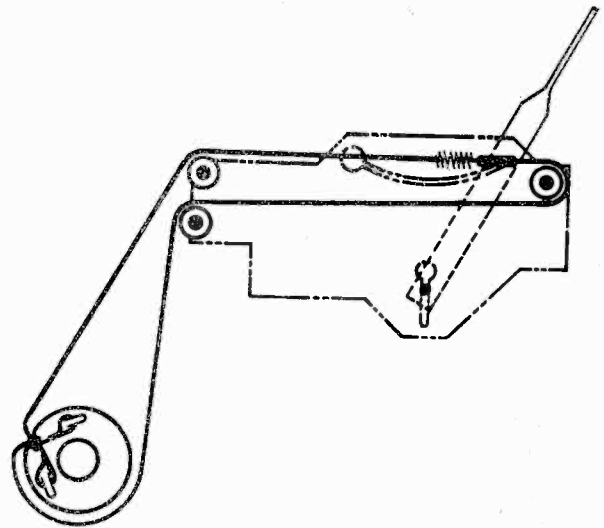
With radio installed and the antenna plugged in adjust trimmer "G" for maximum volume with the radio tuned to a weak station near 1400 KC.

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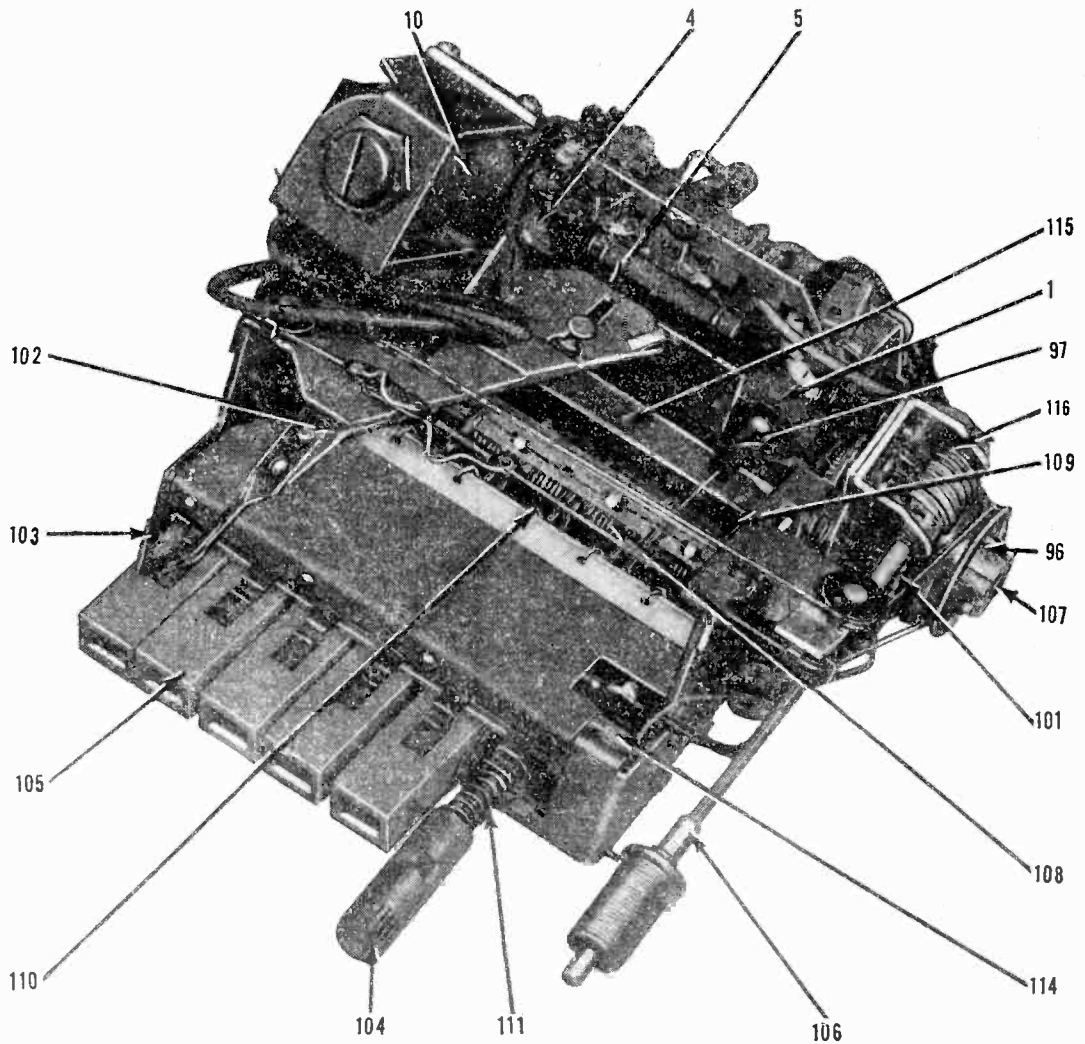
MODEL 984219,
Pontiac



ESCUTCHEON CROSS SECTION



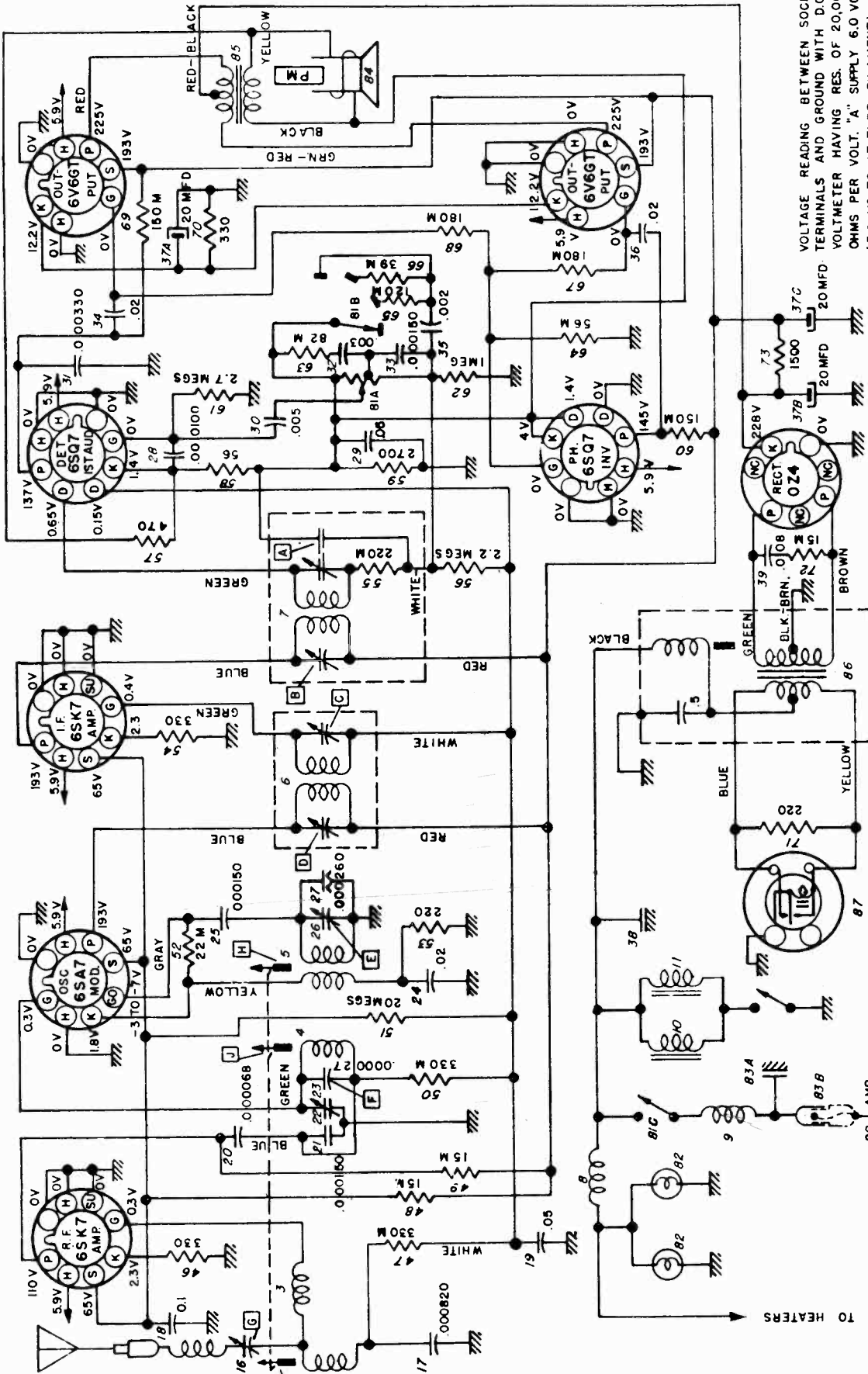
DIAL CORD DRAWING



TUNER

MODEL 984249,
Pontiac

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



VOLTAGE READING BETWEEN SOCKET
TERMINALS AND GROUND WITH D.C.
VOLTMETER HAVING RES. OF 20,000
OHMS PER VOLT. "A" SUPPLY 6.0 VOLTS
(5.9 VOLTS AT TUBE FILAMENT).
CURRENT DRAIN WITH SPEAKER AND
DIAL LIGHT 7.9 AMPERES. "B" SUPPLY
DRAIN 60 MA.
TOLERANCE ON VOLTAGES ±10%
TUBE SOCKETS VIEWED FROM TERMINAL SIDE

UNITED MOTORS SERVICE
 DIV. OF GENERAL MOTORS CORP.
 SERVICE PARTS LIST

MODEL 984249,
 Pontiac

Illus. No.	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS			
COILS			
1	7255738	7255738	Antenna Choke
2	7257603	7257603	Antenna
3	7257558	7257558	R. F. Choke
4	7257603	7257603	R. F.
5	7257605	7257605	Oscillator
6	7257988	7257988	1st I. F.
7	7257594	7257594	2nd I. F.
8	1217846	1217846	Hash Choke
9	7257096	7257096	"A" Choke
10	1216431	1216431	Solenoid
11	1214463	1214463	Clutch

CONDENSERS			
16	1215074	1215074	Antenna Trimmer (Included in Antenna Connector Illus. #91)
17	1217742	G821	.000820 Mfd. Molded
18	7238788	E104	.1 Mfd. 400 V. Tubular
19	7236842	E503	.05 Mfd. 200 V. Tubular
20	1212359	G680	.000068 Mfd. Molded
21	7230893	G151	.000150 Mfd. Molded
22	1214456	1214456	Trimmer — R. F.
23	7256259	G270	.000027 Mfd. Ceramic
24	7236107	E203	.02 Mfd. 200 V. Tubular
25	7230893	G151	.000150 Mfd. Molded
26	1214456	1214456	Trimmer — Oscillator
27	7257567	7257567	.000260 Mfd. Compensating
28	1210275	G101	.000100 Mfd. Molded
29	7236842	E503	.05 Mfd. 200 V. Tubular
30	7230767	E502	.005 Mfd. 600 V. Tubular
31	7232957	G331	.000330 Mfd. Molded
32	7232954	E302	.003 Mfd. 600 V. Tubular
33	7230893	G151	.000150 Mfd. Molded
34	7231542	E203	.02 Mfd. 400 V. Tubular
35	7237954	E202	.002 Mfd. 600 V. Tubular
36	7231542	E203	.02 Mfd. 400 V. Tubular
37	7240724	M908	3 Section Electrolytic
37A			20 Mfd. 25 V.
37B			20 Mfd. 400 V.
37C			20 Mfd. 400 V.
38	1217848	1217848	Chassis Plate Condenser
39	1215191	H802	.008 Mfd. 1600 V. Tubular

RESISTORS			
46	1213224	A331	330 Ohms 1/2 W. Insulated
47	1214557	A334	330,000 Ohms 1/2 W. Insulated
48	7233653	C153	15,000 Ohms 2 W. Insulated
49	7237595	B153	15,000 Ohms 1 W. Insulated
50	1214557	A334	330,000 Ohms 1/2 W. Insulated
51	7242581	7242581	20 Megohms 1/2 W. Insulated —
52	1214550	A223	22,000 Ohms 1/2 W. Insulated
53	7237835	A221	220 Ohms 1/2 W. Insulated
54	1213224	A331	330 Ohms 1/2 W. Insulated
55	1214555	A224	220,000 Ohms 1/2 W. Insulated
56	1214563	A225	2.2 Megohms 1/2 W. Insulated
57	1213486	A471	470 Ohms 1/2 W. Insulated
58	1214540	A560	56 Ohms 1/2 W. Insulated
59	1213240	A272	2700 Ohms 1/2 W. Insulated
60	1213272	A154	150,000 Ohms 1/2 W. Insulated
61	7241614	A275	2.7 Megohms 1/2 W. Insulated
62	1213282	A105	1 Megohm 1/2 W. Insulated
63	1214554	A823	82,000 Ohms 1/2 W. Insulated
64	1213267	A563	56,000 Ohms 1/2 W. Insulated
65	1213271	A124	120,000 Ohms 1/2 W. Insulated
66	1213480	A393	39,000 Ohms 1/2 W. Insulated
67	1215560	A184	180,000 Ohms 1/2 W. Insulated
68	1215560	A184	180,000 Ohms 1/2 W. Insulated
69	1213272	A154	150,000 Ohms 1/2 W. Insulated
70	7233773	B331	330 Ohms 1 W. Insulated
71	7237994	B221	220 Ohms 1 W. Insulated
72	7237595	B153	15,000 Ohms 1/2 W. Insulated
73	1216125	C152	1500 Ohms 2 W. Insulated

Replace With 2
 A106 Resistors
 In Series

MODEL 984249,
PontiacUNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

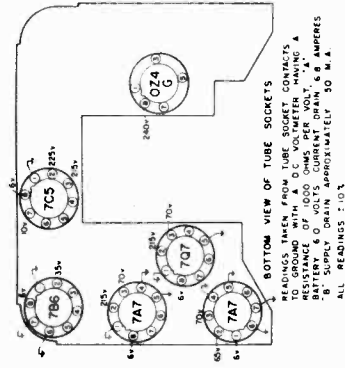
SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description
TUBE COMPLEMENT			
	7237251	5229	6SK7
	7237752	5222	6SA7
	7237753	5131	6SQ7
	1213793	5241	6V6GT
	1211924	5003	0Z4
MISCELLANEOUS ELECTRICAL PARTS			
81	7257655	7257655	Control — Volume, Tone, and Switch
81A			Volume Control, 1 Meg. tapped at 250,000
81B			Tone Control
81C			Switch
82	115273	51	Lamp — Dial (Mazda #51)
83	7240797	7240797	Spark Plate, "A" Choke, and "A" Connector
83A			Spark Plate
9			"A" Choke
83B			"A" Connector
84	1216432	1216432	Speaker — 6" x 9" Elliptical, Permanent Magnet
85	7257220	7257220	Transformer — Output
86	1215807	1215807	Transformer — Power
87	7242449	8542	Vibrator
MECHANICAL PARTS			
CHASSIS			
	7239125	7239125	Socket — Vibrator
	7236279	7236279	Socket — Octal Tube
91	1214494	1214494	Socket — Antenna (Includes Illus. #16 Trimmer)
92	7257836	7257836	Socket — Dial Light
TUNER			
96	7256995	7239125	Clutch Jaw — Driven
97	1215810	1215810	Core — Iron
98	7257627	7257627	Escutcheon Assy.
99	7257561	7257561	Dial
101	1216092	1216092	Gear and Disc
102	7256996	7256996	Pointer Bracket and Cord
		1212233	Cord (48 Inches)
		7238860	Spring
103	1215826	1215826	Pointer Tip
104	1215814	1215814	Pushbutton Setup Knob
105	1215813	1215813	Pushbutton
106	7256962	7256962	Shaft — Manual Drive (Includes Bushing)
107	1215828	1215828	Shaft — Clutch and Drive Gear
108	1215827	1215827	Slide Assy., Pushbutton Tuning
109	7257171	7257171	Spring — Connecting Link
110	1216441	1216441	Spring — Side Return
111	1216118	1216118	Spring — Setup Knob
	7257598	7257598	Spring — Treadle Bar Lock
	1214466	1214466	Spring — Clutch
114	1214460	1214460	Stop Rail and Switch Contact
115	7256967	7256967	Treadle Bar and Gear
116	7256983	7256983	Worm Gear and Bracket
INSTALLATION PARTS			
	7257464	7257464	"A" Lead and Fuse Connector
	1885292	6015	Condenser — "A" Lead
	1911095	6015	Condenser — Generator
	106653	106653	Fuse — 20 Amperes
	507505	507505	Knob — Control
	507510	507510	Knob — Dummy
	507511	507511	Knob — Tone Control
	7257478	7257478	Station Tabs
	508583	508583	Trim Plate
	*1207821	6000	Suppressor — Distributor
	*1853686	6008	Suppressor Adaptor
	*509129	509129	Suppressor Insulator

*Cars having a distributor with the center tower of the distributor cap 1 1/8" high instead of 7/8" high have a built in distributor suppressor and should not have an external suppressor installed. These distributors are marked "Radio" on the lower flange.

MODEL 984273,
Pontiac

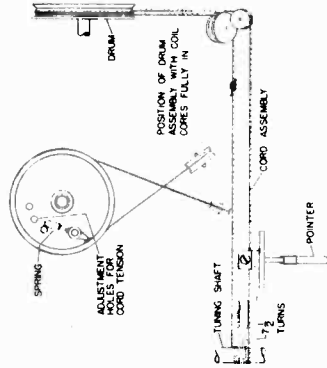
UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



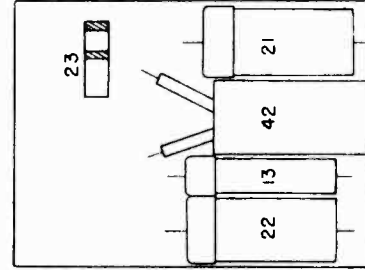
SOCKET VOLTAGES

Series Capacitor Or Dummy Antenna	Connect To	Signal Generator Frequency	Adjust Screws In Order
0.1 mfd.	Terminal X (See Parts Layout)	257.5 KC	A, B, C, D
.000070 mfd.	Antenna Terminal	1610 KC	E, F, G

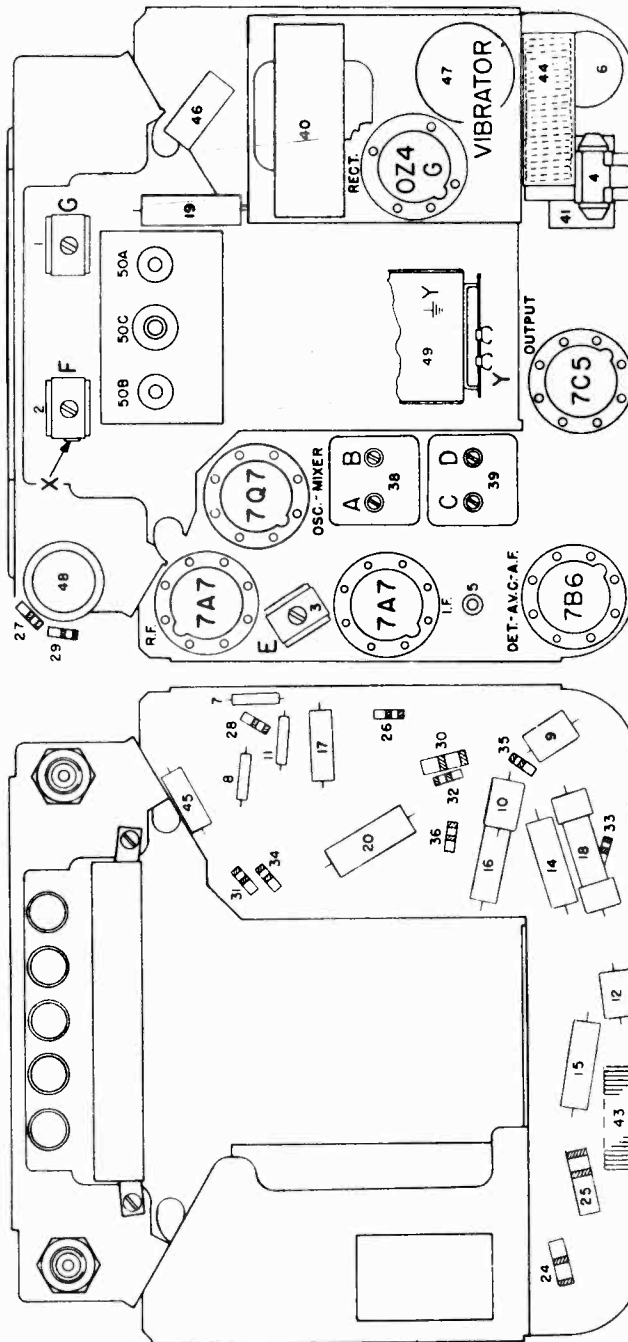
Low frequency alignment not required.
Adjust trimmer G to match car antenna (1400 KC) when radio is installed.



DIAL CORD HOOKUP



POWER PACK LAYOUT



PARTS LAYOUT

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 984273,
Pontiac

PUSH BUTTON SET-UP

Turn counter clockwise - tune in manually - depress loosened button - turn button clockwise to tighten.

Illus. No.	Service Part No.	Production Part No.	Description
<u>CAPACITORS</u>			
1		1216671	Antenna Trimmer
2		1216672	R. F. Trimmer
3		1215925	Oscillator Trimmer
4		1212278	Capacitor - Spark - 225 Mmfd.
5		1216540	Capacitor - Compensating - 265 Mmfd.
6		1213868	Electrolytic
6A			10 Mfd. 350 Volt
6B			15 Mfd. 300 Volt
6C			20 Mfd. 25 Volt
7	G100	7234242	Capacitor - Mica Moulded - 10 Mmfd.
8	G221	1209055	Capacitor - Mica Moulded - 250 Mmfd.
9	G221	1209055	Capacitor - Mica Moulded - 250 Mmfd.
10	G221	1209055	Capacitor - Mica Moulded - 250 Mmfd.
11	G271	1215553	Capacitor - Mica Moulded - 300 Mmfd.
12	G471	7238879	Capacitor - Mica Moulded - 500 Mmfd.
13	H402	1217875	Capacitor - .004 Mfd. 1500 Volt
14	H402	1212098	Capacitor - .004 Mfd. 600 Volt
15	H502	7230912	Capacitor - .005 Mfd. 600 Volt
16	H502	7230912	Capacitor - .005 Mfd. 600 Volt
17	H103	7233608	Capacitor - .01 Mfd. 600 Volt
18	H203	1207902	Capacitor - .02 Mfd. 600 Volt
19	H503	7230592	Capacitor - .05 Mfd. 600 Volt
20	H503	7230592	Capacitor - .05 Mfd. 600 Volt
21		7240248	Capacitor - .5 Mfd. 100 Volt
22		7240248	Capacitor - .5 Mfd. 100 Volt

Illus. No.	Service Part No.	Production Part No.	Description
<u>RESISTORS</u>			
23	B151	1211005	Resistor - 150 Ohm - 1 Watt
24	B271	1213846	Resistor - 270 Ohm - 1 Watt
25	C182	1214573	Resistor - 1800 Ohm - 2 Watt
26	A392	1214546	Resistor - 3900 Ohm - 1/2 Watt
27	A153	1213257	Resistor - 15,000 Ohm - 1/2 Watt
28	A223	1214550	Resistor - 22,000 Ohm - 1/2 Watt
29	A333	1213845	Resistor - 33,000 Ohm - 1/2 Watt
30	A333	7242447	Resistor - 33,000 Ohm - 1 Watt
31	A473	1214553	Resistor - 47,000 Ohm - 1/2 Watt
32	A683	1213844	Resistor - 68,000 Ohm - 1/2 Watt
33	A154	1213272	Resistor - 150,000 Ohm - 1/2 Watt
34	A105	1213282	Resistor - 1 Megohm - 1/2 Watt
35	A105	1213282	Resistor - 1 Megohm - 1/2 Watt
36	A225	1214563	Resistor - 2.2 Megohm - 1/2 Watt
37	A156	1213289	Resistor - 15 Megohm - 1/2 Watt

Illus. No.	Service Part No.	Production Part No.	Description
<u>MISCELLANEOUS ELECTRICAL PARTS</u>			
38		1215916	1st I. F. Transformer Assembly
38A			Primary Trimmer
38B			Secondary Trimmer
39		1215917	2nd I. F. Transformer Assembly
39A			Primary Trimmer
39B			Secondary Trimmer
39C			Resistor - 47,000 Ohm - 1/2 Watt
40		1214391	Transformer - Power
41		1215918	Transformer - Output
42		1213663	Choke - Hash
43		1214385	Choke - Filament
44		1217193	Choke - Spark
45		1214382	Choke - Antenna Spark
46		1218138	Coil - Antenna Choke
47		8638	Vibrator
48		1216541	Control
48A			Volume Control
48B			Tone Control
48C			On-Off Switch
49		1214389	Speaker - 6" Electro-Dynamic
49		1217417	Speaker - 6" Permanent-Dynamic (Alternate)

Illus. No.	Service Part No.	Production Part No.	Description
<u>TUNER UNIT AND PARTS</u>			
50		1218217	Tuner Unit - Perm. Tuning Coils
50A			Antenna Coil
50B			R. F. Coil
50C			Oscillator Coil

Service Part No.	Production Part No.	Description
<u>TUNER UNIT AND PARTS (CONT'D)</u>		
1215926		Bushing - Station Selector Shaft
1216535		Connector Assembly - Antenna
1218014		Connector Assembly - "A" Lead
1217919		Dial Pointer & Slide Assembly
1214471		Pulley - Wood 17/32 O. D.
1214472		Pulley - Wood 7/16 O. D.
1216587		Push Button Assembly
1215932		Shaft Assembly - Front Drive
1218019		Shaft Assembly - Rear Drive
1215936		Socket Assembly - Pilot Light
1216036		Spring - Core Driving
1215934		Spring - Rear Drive Shaft
1214386		Spring & String Assembly - Pointer Drive
1216538		Tuner Unit Assembly - Mechanical Portion only - Push Buttons Included

Service Part No.	Production Part No.	Description
<u>MISCELLANEOUS CHASSIS PARTS</u>		
187189		Bulb - Pilot Light (Mazda #44)
1215937		Cover Assembly - Case Back
1215927		Cover Assembly - Power Supply
1217918		Dial - Window
1218112		Escutcheon
7242463		Nut - 1/2-28 Mounting Spacer
1213685		Screw - Cover Retaining
7238455		Socket - Lock-In
1213684		Socket - Vibrator
1214420		Socket - Rectifier
1214399		Speaker Gasket - Rubber

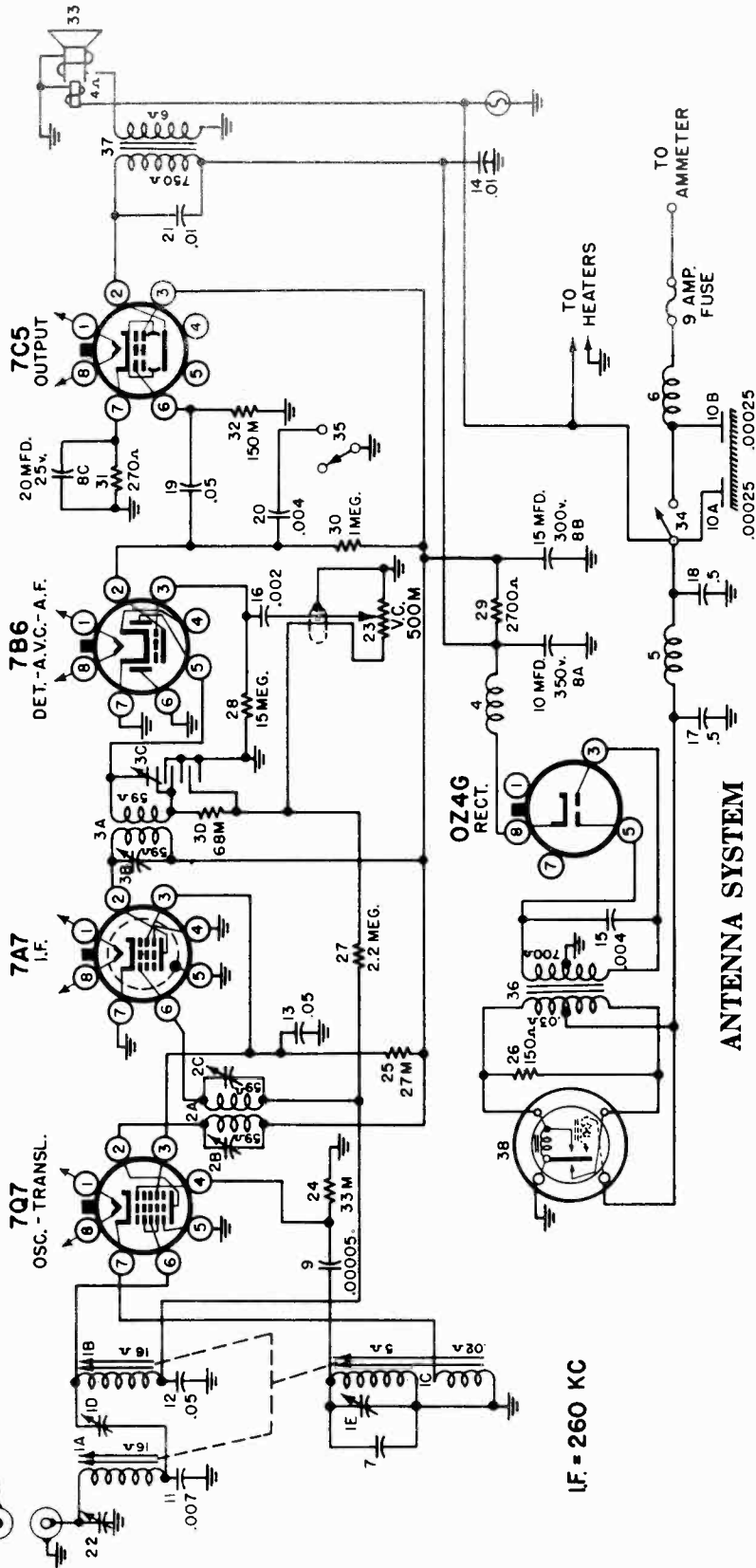
Service Part No.	Production Part No.	Description
<u>TUBES</u>		
5290	1213583	7A7 - R. F. Amplifier
5301	1213853	7Q7 - Oscillator - Translator
5290	1213583	7A7 - I. F. Amplifier
5292	1213762	7B6 - Detector AVC - 1st Audio
5295	1213586	7C5 - Audio Output
5004	7231596	024G - Rectifier

Service Part No.	Production Part No.	Description
<u>INSTALLATION AND MOUNTING PARTS</u>		
507505		Knob - Tuning & Volume Control
507510		Knob - Dummy
507511		Knob - Tone Control
1879777		Capacitor - Generator
1882758		Capacitor - Ammeter
504617		"A" Lead Assembly
7235968		Nut - 1/2"-28 Hex. - Zinc (Receiver Mounting - Front)
505630		Washer - Tone Control - Felt
7238755		Washer - Dummy Knob - Spring
505629		Screw - 1/4"-20 x 5/8" Hex. Hd.
1299232		Washer - 1/4" Flat
121753		Washer - 1/4" Ext. Tooth - Shakeproof
144722		Screw - #7 x 3/8" (Self Tapping)
147685		Fuse - 14 Ampere
501270		Tube - Fuse Insulating
1207821		Suppressor - Distributor
1853686		Adapter - Distributor Suppressor
509129		Insulator - Distributor Suppressor
508583		Plate - Control Finish

* Order parts, using service part number where shown, otherwise use production part number for service.

MODEL 986146, Serial UNITED MOTORS SERVICE
 B47-1001 and up; DIV. OF GENERAL MOTORS CORP.
 Chevrolet

For Alignment data see Chevrolet Model 985792, page 13-3.



The antenna system used with this receiver consists of a rod-type antenna with a specially designed low capacity lead-in.

TUBE COMPLEMENT

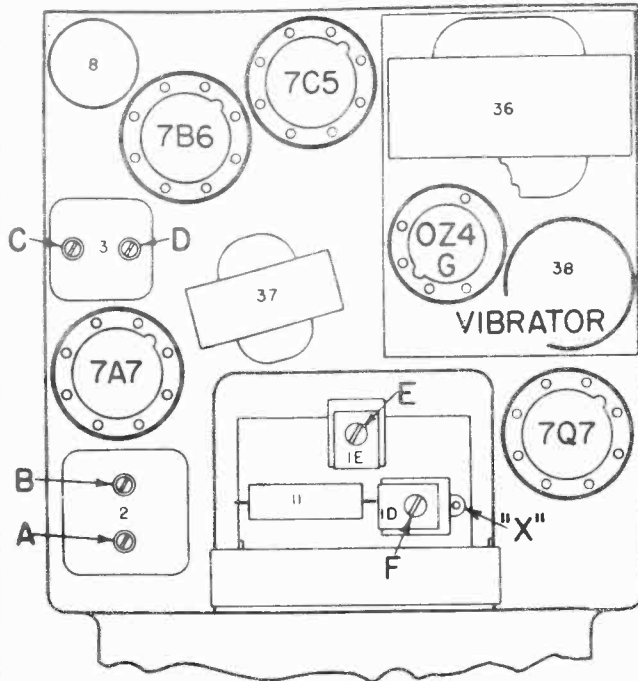
Type	Function	Type	Function
7Q7	Oscillator-Modulator	7C5	Audio Output
7A7	I.F. Amplifier	0Z4G	Rectifier
7B6	Detector A.V.C.-1st Audio		

CIRCUIT DESCRIPTION

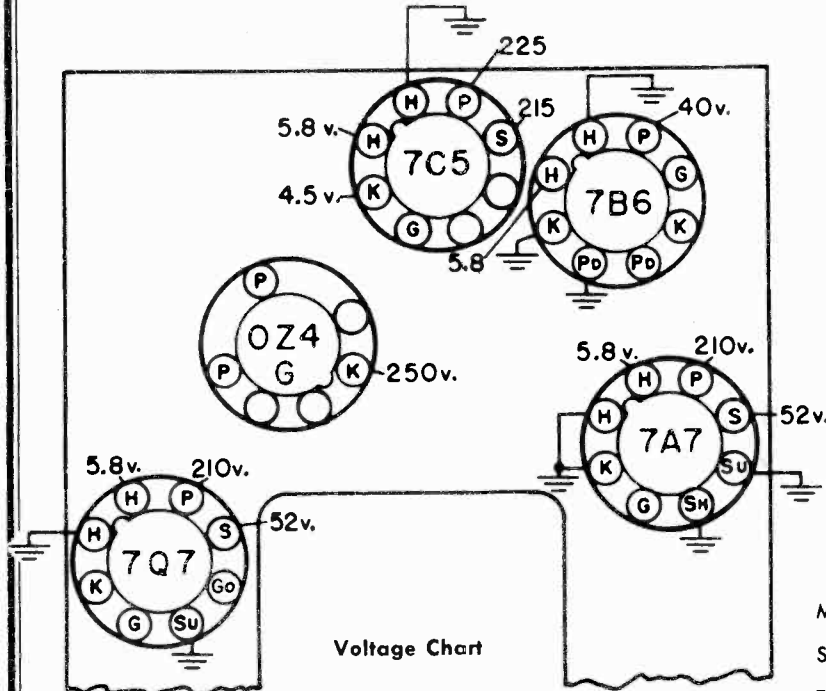
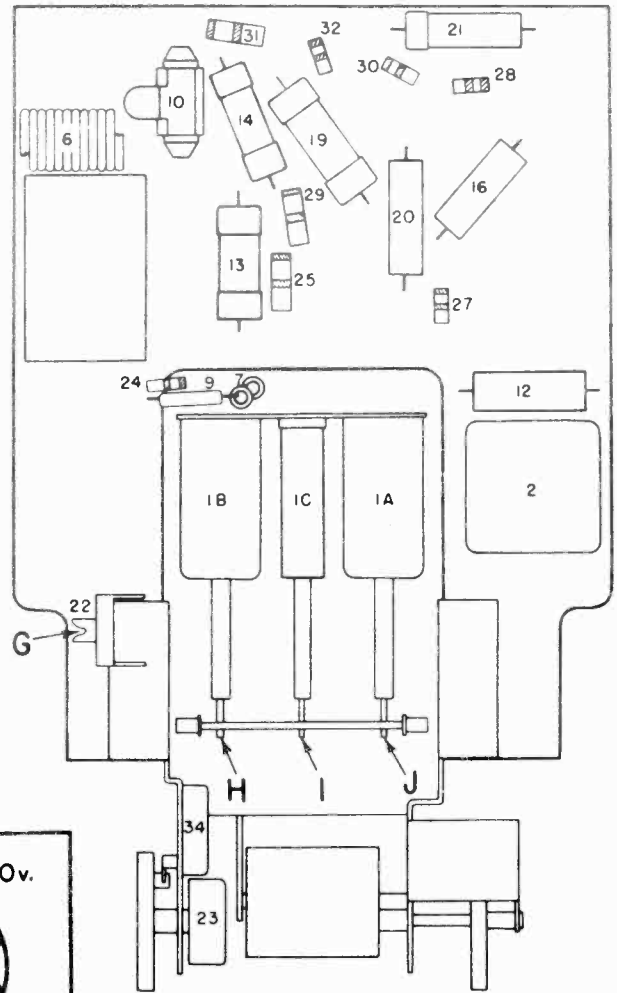
The circuit used in this receiver is the superheterodyne type, employing the permeability method of tuning. An adjustable condenser is provided for matching the antenna circuit to the antenna. This adjustment is made near the high frequency end of the band (1400 kilocycles).

UNITED MOTORS SERVICE
 DIV. OF GENERAL MOTORS CORP.

MODEL 986146, Serial
 B47-1001 and up;
 Chevrolet



Parts Layout.



Voltage Chart

BOTTOM VIEW OF TUBE SOCKETS

READINGS TAKEN FROM TUBE SOCKET CONTACTS TO GROUND WITH A D.C. VOLTMETER HAVING A RESISTANCE OF 1000 OHMS PER VOLT. ALL VOLTAGES EXCEPT THE HEATER VOLTAGES MEASURED ON THE 0-250 VOLT SCALE.

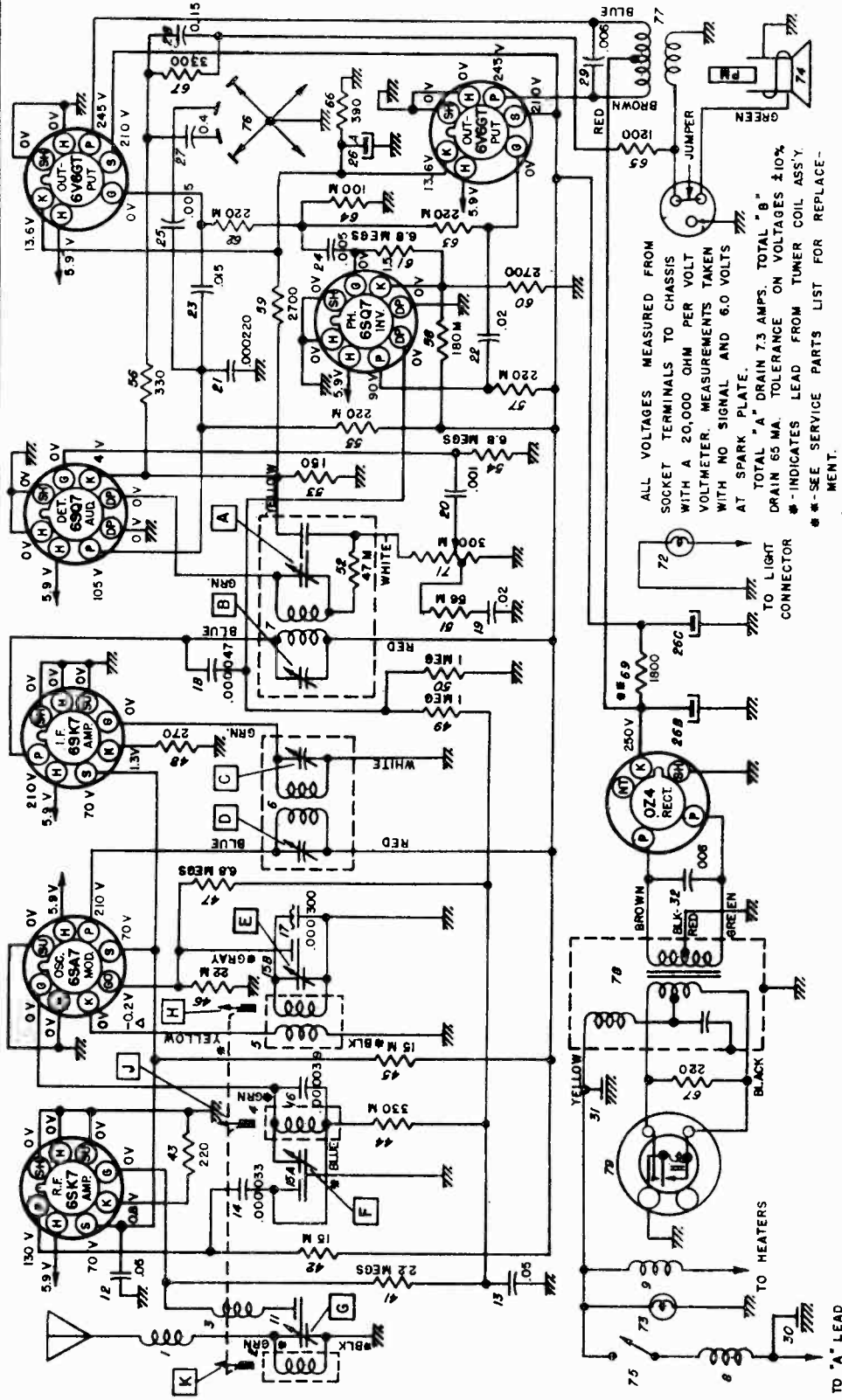
"A" BATTERY 6.0 VOLTS. CURRENT DRAIN 6.2 AMPERES.
 "B" SUPPLY DRAIN APPROXIMATELY 45 MA.

RADIO DATA

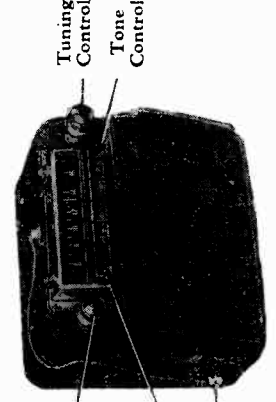
MODEL NUMBER—986146
 SERIAL NUMBER—
 TUBE COMPLEMENT—7Q7, 7A7, OZ4G, 7B6, 7C5
 BATTERY CURRENT—6.2 AMPERES
 B+ VOLTS—250 VOLTS
 I.F. KC—260
 R.F. KC—1610-540
 VIBRATOR TYPE—NON SYNCHRONOUS
 YEAR—1947 AND 1948

MODEL 7258155,
Cadillac

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



ALL VOLTAGES MEASURED FROM SOCKET TERMINALS TO CHASSIS WITH A 20,000 OHM PER VOLT VOLTMETER. MEASUREMENTS TAKEN WITH NO SIGNAL AND 6.0 VOLTS AT SPARK PLATE.
TOTAL "A" DRAIN 7.3 AMPS. TOTAL "B" DRAIN 65 MA. TOLERANCE ON VOLTAGES ±10%.
* - INDICATES LEAD FROM TUNER COIL ASS'Y.
** - SEE SERVICE PARTS LIST FOR REPLACEMENT.
Δ - OSCILLATOR GRID VOLTAGE AT 1000 KC.



Volume Control
On-Off Switch
Dial Light Lead
Tuning Control
Tone Control

MODEL 7258155

ANTENNA TRIMMER COMPENSATION — 0.000060 - 0.000085 Mfd.

TUNING RANGE—550-1600 KC.

PUSHBUTTON SET-UP

Pull pushbutton to the right and out. Tune in desired station manually. Push button all the way in.

GENERAL MOUNTING—All 1949 Cadillac Cars.
TUBES—Seven, Plus Rectifier.
SPEAKER — 6" x 9" Elliptical, Permanent Magnet.
TUNING—Manual and 5 P.B. Mechanical.

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 7258155,
Cadillac

ALIGNMENT PROCEDURE:

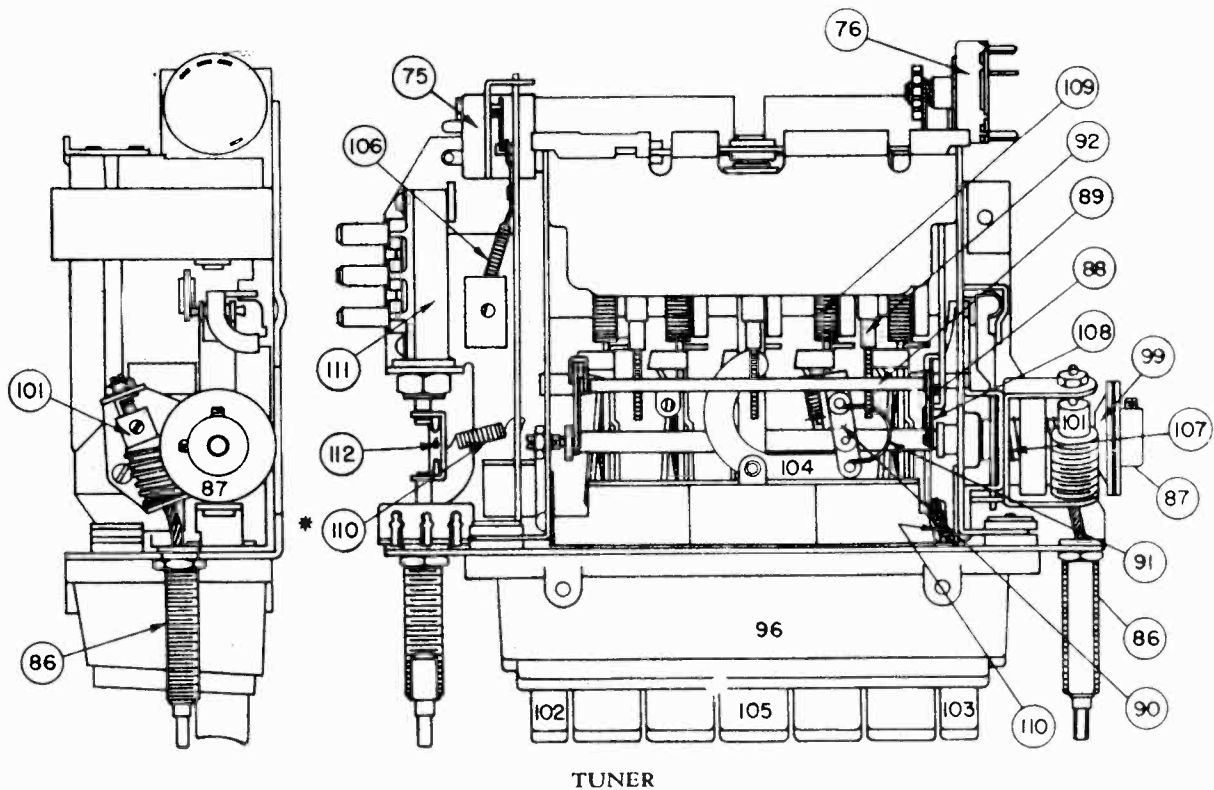
Output Meter Connection	.....	Across Voice Coil
Signal Generator Return	.....	To Chassis
Dummy Antenna	.....	In Series With Generator
Volume Control	.....	Maximum Volume
Tone Control	.....	Treble
Generator Output	.....	Minimum for Readable Indication

Steps	Series Condenser or Dummy Antenna	Connect To	Signal Generator Frequency	Tune Receiver To	Adjust in Sequence for Max. Output
1	0.1 Mfd.	6SA7 Grid (Pin #8)	260 KC	High Freq. Stop	A, B, C, D
2	0.000068 Mfd.	Antenna Connector	1615 KC	High Freq. Stop	*E, F, G
3	0.000068 Mfd.	Antenna Connector	1430 KC	Signal Gen. Signal	J, K
4	0.000068 Mfd.	Antenna Connector	1615 KC	High Freq. Stop	F, G
5	0.000068 Mfd.	Antenna Connector	1000 KC	Signal Gen. Signal	L**

*Before making this adjustment check the mechanical setting of the oscillator core "H." The slotted end of the core should be 1 25/32" from the mounting end of the coil form. (This measurement is readily made by inserting a suitable plug in the mounting end of the coil form). Core adjustments are made from the mounting end of the coil form with an insulated screwdriver, and core studs should be sealed with glyptal or household cement after alignment.

**"L" is the pointer adjustment screw on the pointer connecting link (See tuner drawing). Adjust so pointer reads 1000 KC (on the "10" calibration mark).

With the radio installed and the car antenna plugged in adjust antenna trimmer "G" (See sticker on case) for maximum volume with the radio tuned to a weak station near 1400 KC.

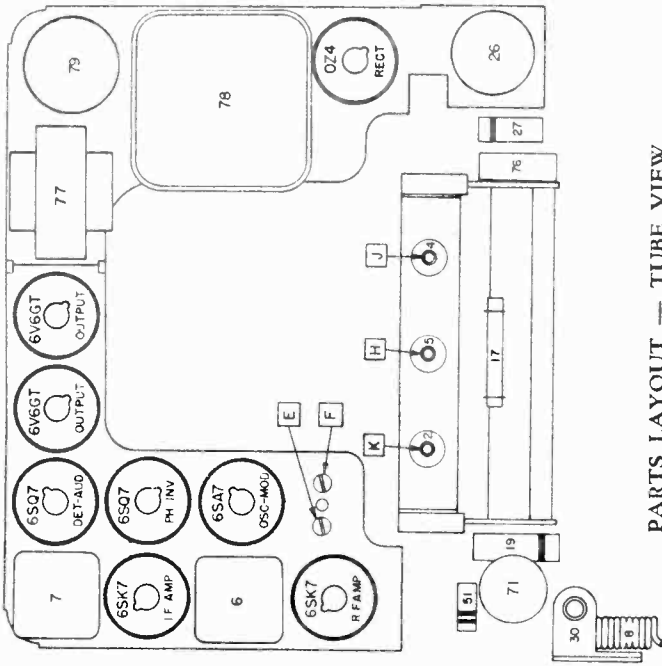


*When installing this spring be sure it is fastened through the holes in the Vacuum Valve Yoke and the "On-Off" Button and Plunger as shown.

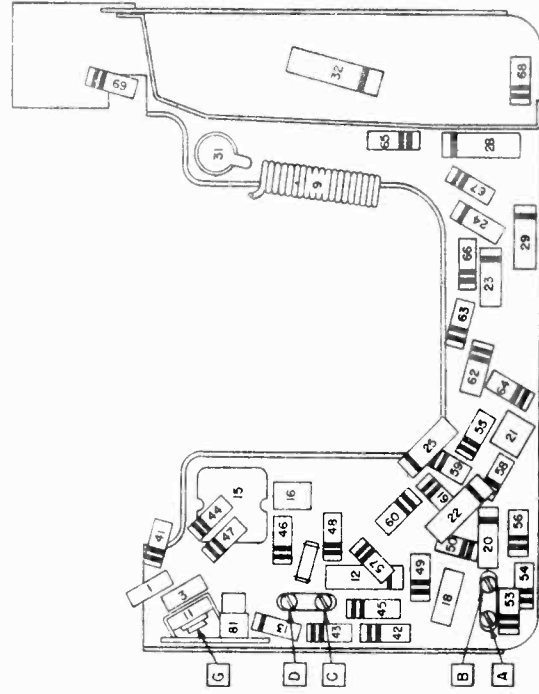


MODEL 7258155,
Cadillac

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

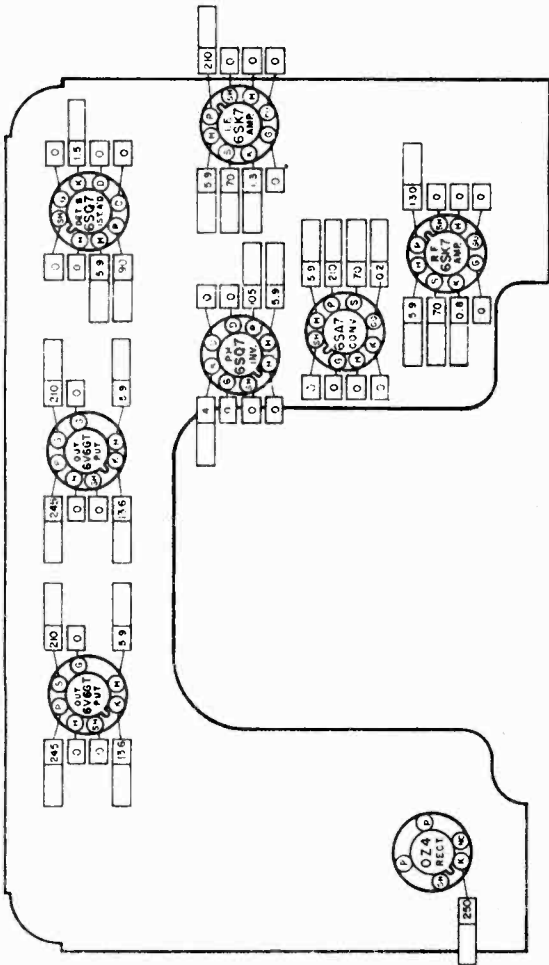


PARTS LAYOUT — TUBE VIEW



PARTS LAYOUT — CHASSIS VIEW

TUBE SOCKET VOLTAGE CHART

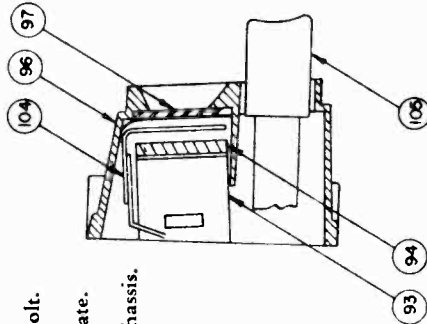


The tube socket voltages, as measured at the factory and under the conditions shown on the schematic diagram, are shown above. The blank spaces are provided so that the serviceman may fill in actual voltage readings as taken with his own equipment. A normal operating radio should be used for these measurements.

Voltmeter resistance..... Ohms Per Volt.

Readings taken with..... Volts At Spark Plate.

All voltages measured from socket terminals to chassis.



ESCUTCHEON CROSS SECTION

UNITED MOTORS SERVICE
 DIV. OF GENERAL MOTORS CORP.
 SERVICE PARTS LIST

MODEL 7258155,
 Cadillac

Illus. No.	Production Part No.	Service Part No.	Description
ELECTRICAL PARTS			
Coils			
1	7255738	7255738	Antenna Series Choke
2	7257979	7257979	Antenna
3	7240251	7240251	Antenna Spark Choke
4	7257979	7257979	R. F.
5	7258148	7258148	Oscillator
6	7257832	7257832	1st I. F. Assy.
7	7256932	7256932	2nd I. F. Assy.
8	1217846	1217846	"A" Spark Choke
9	1217846	1217846	Hash Choke
Condensers			
11	7258226	7258226	Antenna Trimmer
12	7258125	7230592	0.05 mfd 400 V Tubular
13	1210697	7230592	0.05 mfd 200 V Tubular
14	1218348	1217735	0.000033 mfd Ceramic
15	7242454	7242454	Dual Trimmer
15A			R. F. Section
15B			Oscillator Section
16	7258221	1217736	0.000039 mfd Ceramic
17	7258598	7258598	0.000300 mfd Compensating
18	1218202	7233313	0.000047 mfd Ceramic
19	7233770	7233770	0.02 mfd 600 V Tubular
20	1218883	1217790	0.001 mfd 600 V Tubular
21	1218886	7236105	0.000220 mfd Ceramic
22	7237720	7233770	0.02 mfd 400 V Tubular
23	7237719	7237719	0.015 mfd 600 V Tubular
24	7232956	7230767	0.005 mfd 600 V Tubular
25	7230767	7230767	0.005 mfd 600 V Tubular
26	7241198	7241198	Electrolytic
26A			20 mfd 25 V
26B			20 mfd 400 V
26C			20 mfd 400 V
27	1218882	1218882	0.4 mfd 100 V Tubular
28	1218880	1218880	0.15 mfd 100 V Tubular
29	1219084	1219084	0.006 mfd 800 V Tubular
30	7240797	7240797	Spark Plate and Choke Assy.
31	1217848	1217848	Chassis Plate Condenser
32	7240906	7240906	0.006 mfd 1600 V Buffer
Resistors			
41	1214563	1214563	2.2 Megohms 1/2 W Insulated
42	7233653	7233653	15,000 Ohms 2 W Insulated
43	7237835	7237835	220 Ohms 1/2 W Insulated
44	1214557	1214557	330,000 Ohms 1/2 W Insulated
45	7237595	7237595	15,000 Ohms 1 W Insulated
46	1214550	1214550	22,000 Ohms 1/2 W Insulated
47	1215563	1215563	6.8 Megohms 1/2 W Insulated
48	1214542	1214542	270 Ohms 1/2 W Insulated
49	1213282	1213282	1 Megohm 1/2 W Insulated
50	1213282	1213282	1 Megohm 1/2 W Insulated
51	1213267	1213267	56,000 Ohms 1/2 W Insulated
52	1214553	1214553	47,000 Ohms 1/2 W Insulated
53	1213220	1213220	150 Ohms 1/2 W Insulated
54	1215563	1215563	6.8 Megohms 1/2 W Insulated
55	1214555	1214555	220,000 Ohms 1/2 W Insulated
56	1213224	1213224	330 Ohms 1/2 W Insulated
57	1214555	1214555	220,000 Ohms 1/2 W Insulated
58	1215560	1215560	180,000 Ohms 1/2 W Insulated
59	1213240	1213240	2700 Ohms 1/2 W Insulated
60	1213240	1213240	2700 Ohms 1/2 W Insulated
61	1215563	1215563	6.8 Megohms 1/2 W Insulated
62	1214555	1214555	220,000 Ohms 1/2 W Insulated
63	1214555	1214555	220,000 Ohms 1/2 W Insulated
64	1213270	1213270	100,000 Ohms 1/2 W Insulated
65	1213236	1213236	1200 Ohms 1/2 W Insulated
66	1216149	1216149	390 Ohms 1 W Insulated
67	1213481	1213481	3300 Ohms 1/2 W Insulated
68	7237994	7237994	220 Ohms 1 W Insulated
69	1214573	{ 7242844 7240918	1800 Ohms { Replace with 2700 ohms 2 W and 5600 ohms 1 W in parallel

MODEL 7258155,
Cadillac

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.
SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description
Tubes			
	7237751	7237751	6SK7
	7237752	7237752	6SA7
	7237753	7237753	6SQ7
	1213793	1213793	6V6GT
	1211924	1211924	OZ4—Rectifier
Miscellaneous Electrical			
71	7258283	7258283	Control—Volume
72	125588	125588	Lamp—Dial Light
73	187189	187189	Lamp—Pilot Light
74	7258488	7258488	Speaker—6x9 Elliptical PM
75	7242411	7242411	Switch—"On-Off"
76	7258273	7258273	Switch—Tone Control
77	7258390	7258390	Transformer—Output
78	7258881	7258881	Transformer—Power
79	7239124	7239124	Vibrator—Non-synchronous
MECHANICAL PARTS			
Chassis			
81	7239475	7239475	Socket—Antenna
82	1219106	1219106	Socket—Dial Light
	7236279	7236279	Socket—Octal Tube
	7239125	7239125	Socket—Vibrator
Tuner			
36	7258496	7258496	Bushing and Manual Drive Shaft
37	7258072	7258072	Clutch Disc—Driven
88	7258203	7258203	Connecting Link—Core Bar
89	7258206	7258206	Core Guide Bar—Parallel
90	7256271	7256271	Pointer Connecting Link
91	7255992	7255992	Spring—Pointer Connecting Link
92	7258468	7258468	Core—Powdered Iron
93	1219105	1219105	Dial Backplate Assy.
94	7258254	7258254	Dial—Calibration
95	7258239	7258239	Dial Retainer Spring
96	7258270	7258270	Escutcheon
97	7258236	7258236	Dial Glass
98	7258232	7258232	Dial Retainer
99	7256760	7256760	Gear and Bushing
101	7256758	7256758	Gear and Bracket—Worm
102	7258267	7258267	Plunger and Button—"On-Off"
103	1219138	1219138	Plunger and Button—Tone Control
104	7258269	7258269	Pointer Assy.
105	1219104	1219104	Pushbutton and Slide Assy.
106	7257361	7257361	Spring—Toggle Lever
107	7256761	7256761	Spring—Clutch
108	7257415	7257415	Spring—Core Bar Connecting Link
109	7255984	7255984	Spring—Slide Return
110	7241042	7241042	Spring—Yoke
111	7258260	7258260	Vacuum Valve
112	7258229	7258229	Vacuum Valve Drive Yoke

INSTALLATION PARTS

7258542	7258542	"A" Lead and Fuse Connector
121926	121926	Bolt— $\frac{1}{4}$ -20x $\frac{1}{2}$
7258219	7258219	Bracket—Radio Mtg. (Firewall)
7258220	7258220	Bracket—Radio Mtg. (Instrument Panel)
147685	147685	Fuse—14 amps
7258400	7258400	Knob—Control
7258399	7258399	Knob—Dummy
120380	120380	Lockwasher— $\frac{1}{4}$
7258237	7258237	Nut, Spanner
157716	157716	Screw— $\frac{1}{4}$ -20x $\frac{1}{2}$
186493	186493	Screw and Lockwasher— $\frac{1}{4}$ -20x $\frac{3}{8}$
7258436	7258436	Spacer Sleeve
7258113	7258113	Suppressor—Distributor
7240808	7240808	Suppressor Insulator
7258526	7258526	Suppressor—Spark Plug
7240138	7240138	Static Collector
7234666	7234666	Washer— $\frac{1}{4}$