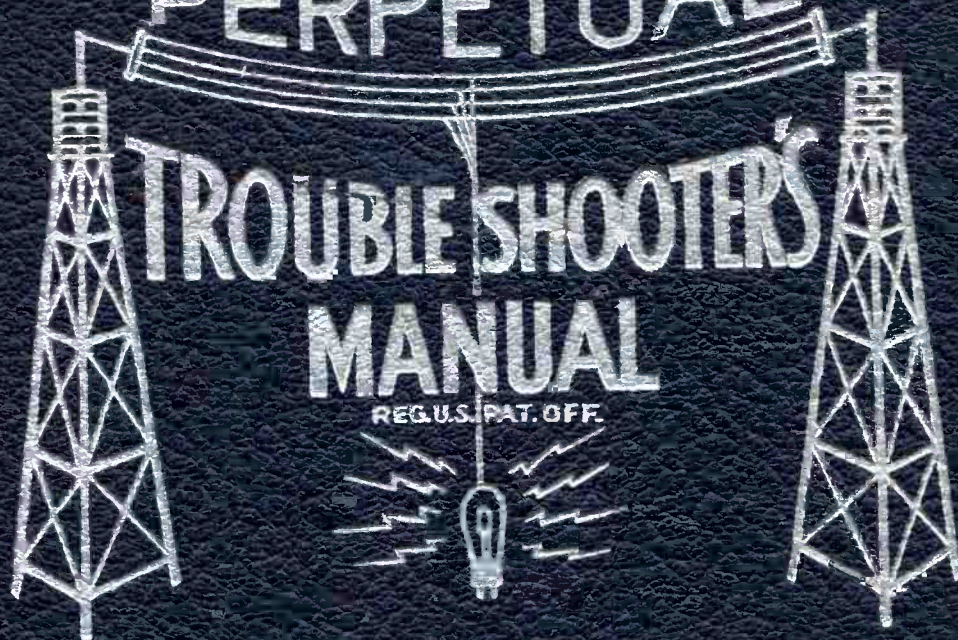


VOLUME XII

PERPETUAL

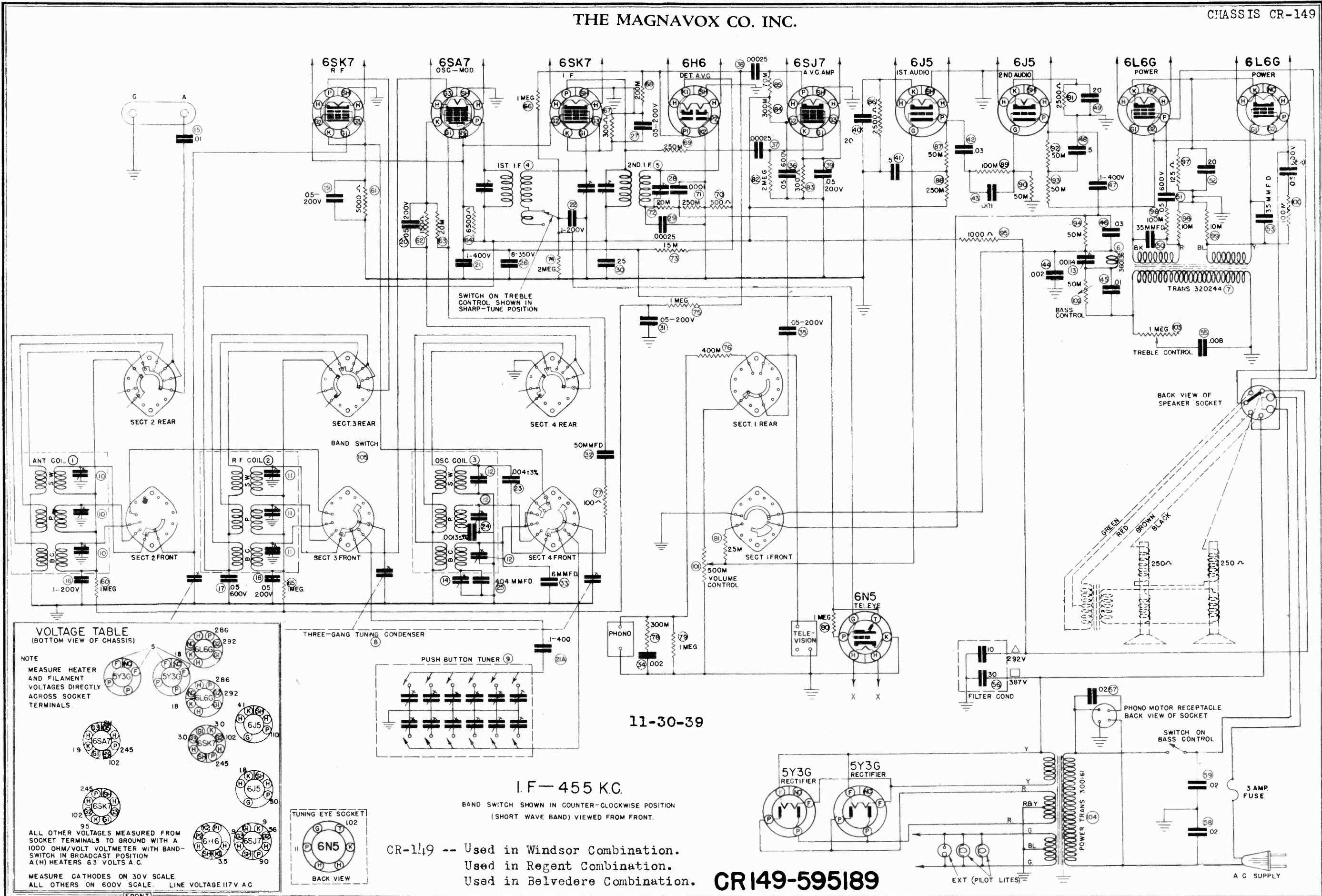


**TROUBLE SHOOTER'S
MANUAL**

REG. U.S. PAT. OFF.

JOHN F. RIDER

THE MAGNAVOX CO. INC.



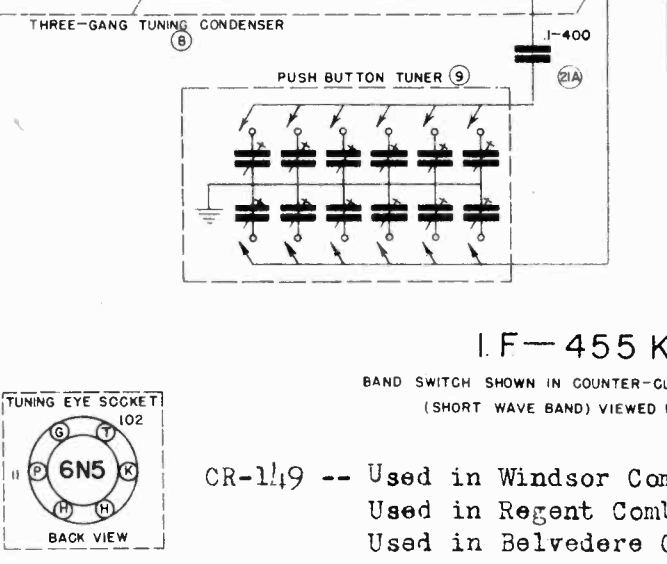
VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

NOTE
MEASURE HEATER AND FILAMENT VOLTAGES DIRECTLY ACROSS SOCKET TERMINALS.

18	286	292
19	245	102
245	102	95
102	3.5	90

ALL OTHER VOLTAGES MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM/VOLT VOLTMETER WITH BAND-SWITCH IN BROADCAST POSITION A (H) HEATERS 63 VOLTS A.C.

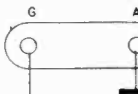
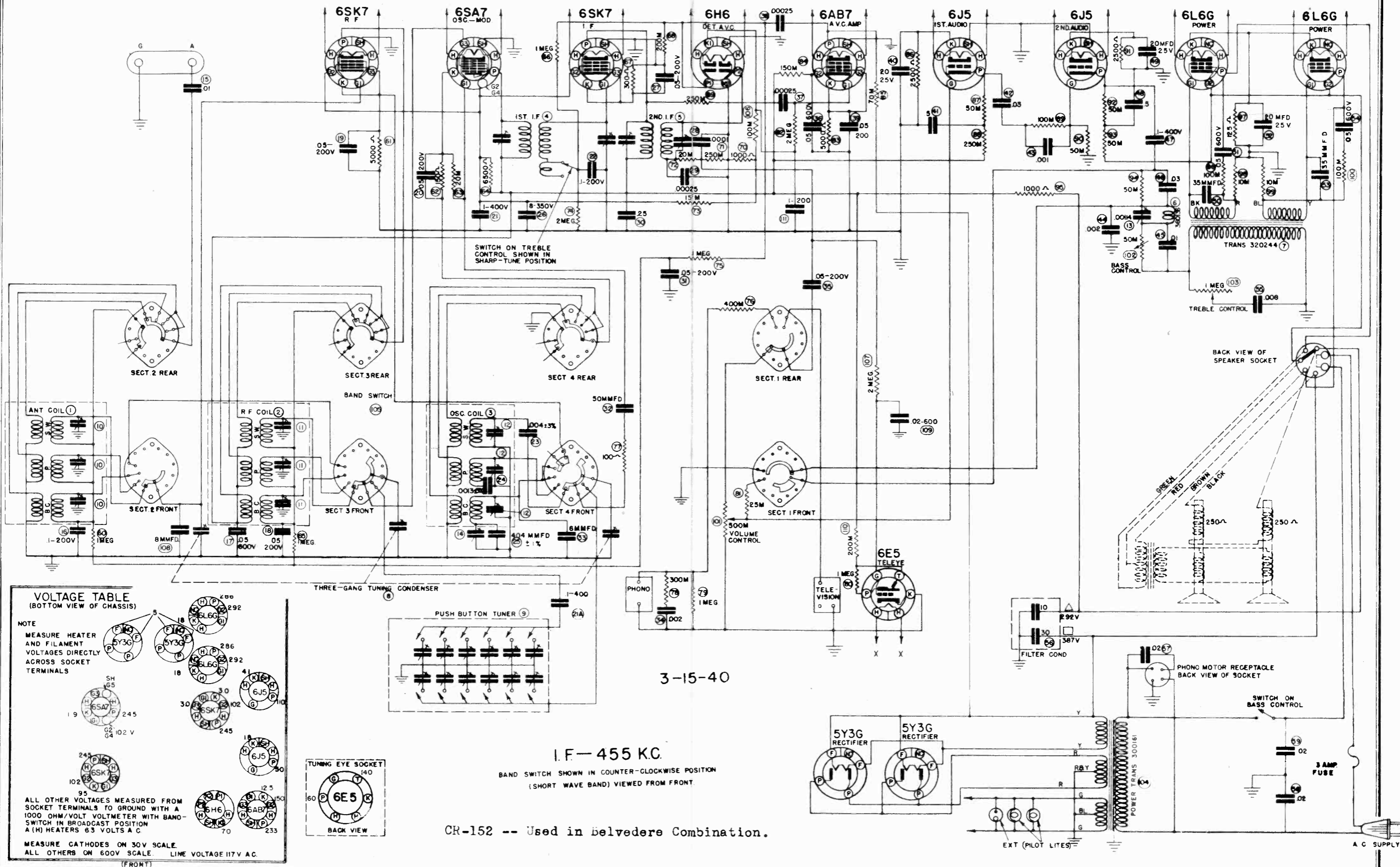
MEASURE CATHODES ON 30V SCALE. ALL OTHERS ON 600V SCALE. LINE VOLTAGE 117V A.C.



CR-149 -- Used in Windsor Combination.
Used in Regent Combination.
Used in Belvedere Combination. **CR149-595189**

CHASSIS CR-152
CR-161

THE MAGNAVOX CO. INC.



SECT. 2 REAR

SECT. 3 REAR

SECT. 4 REAR

SECT. 1 REAR

SECT. 2 FRONT

SECT. 3 FRONT

SECT. 4 FRONT

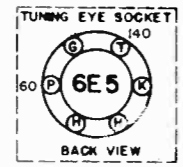
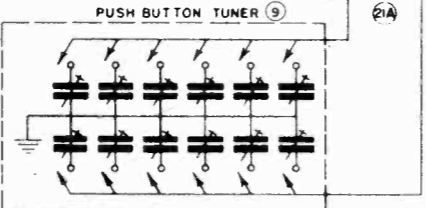
SECT. 1 FRONT

VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

NOTE
MEASURE HEATER AND FILAMENT VOLTAGES DIRECTLY ACROSS SOCKET TERMINALS

18 292
19 245
24 245
25 245
26 286
27 292
30 102
31 245
32 245
33 245
34 245
35 245
36 245
37 245
38 245
39 245
40 245
41 245
42 245
43 245
44 245
45 245
46 245
47 245
48 245
49 245
50 245
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74 245
75 245
76 245
77 245
78 245
79 245
80 245
81 245
82 245
83 245
84 245
85 245
86 245
87 245
88 245
89 245
90 245
91 245
92 245
93 245
94 245
95 245
96 245
97 245
98 245
99 245
100 245

ALL OTHER VOLTAGES MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM/VOLT VOLTMETER WITH BAND SWITCH IN BROADCAST POSITION
A(H) HEATERS 63 VOLTS A.C.
MEASURE CATHODES ON 30V SCALE
ALL OTHERS ON 600V SCALE. LINE VOLTAGE 117V A.C.
(FRONT)

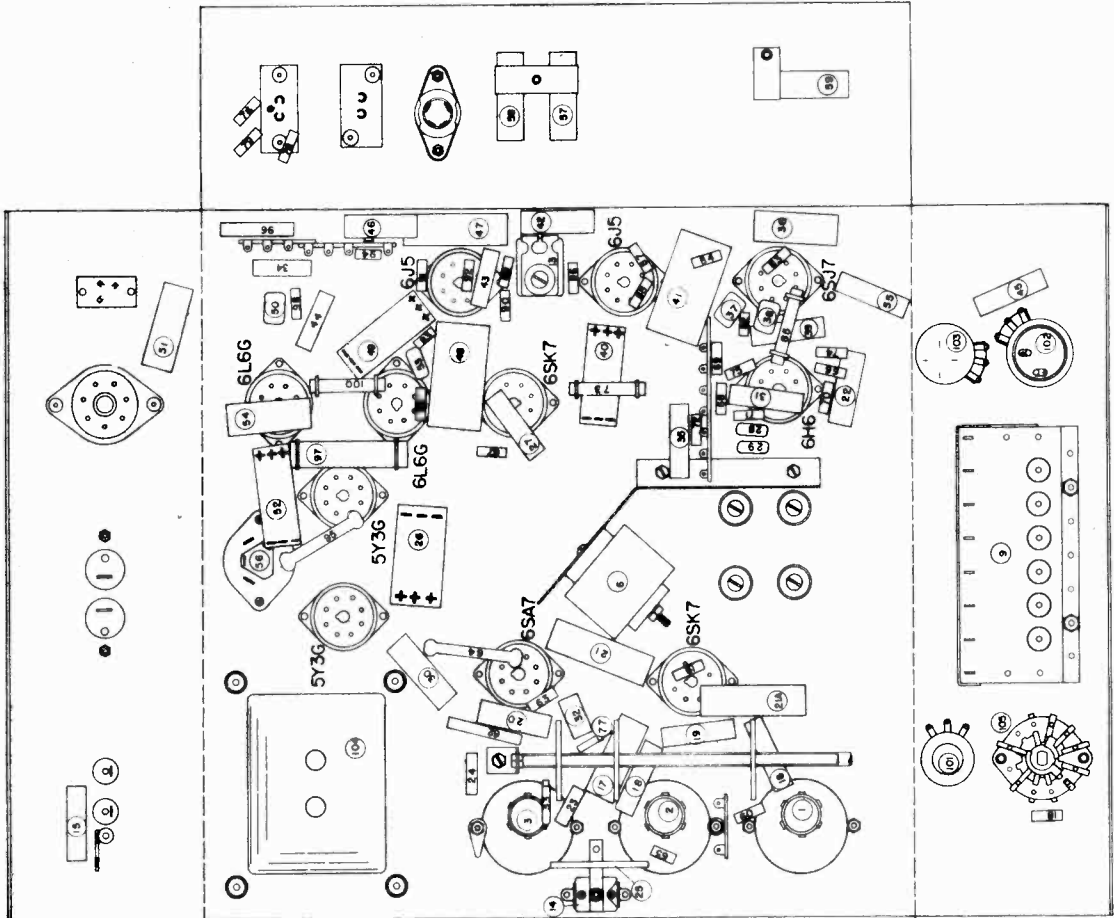
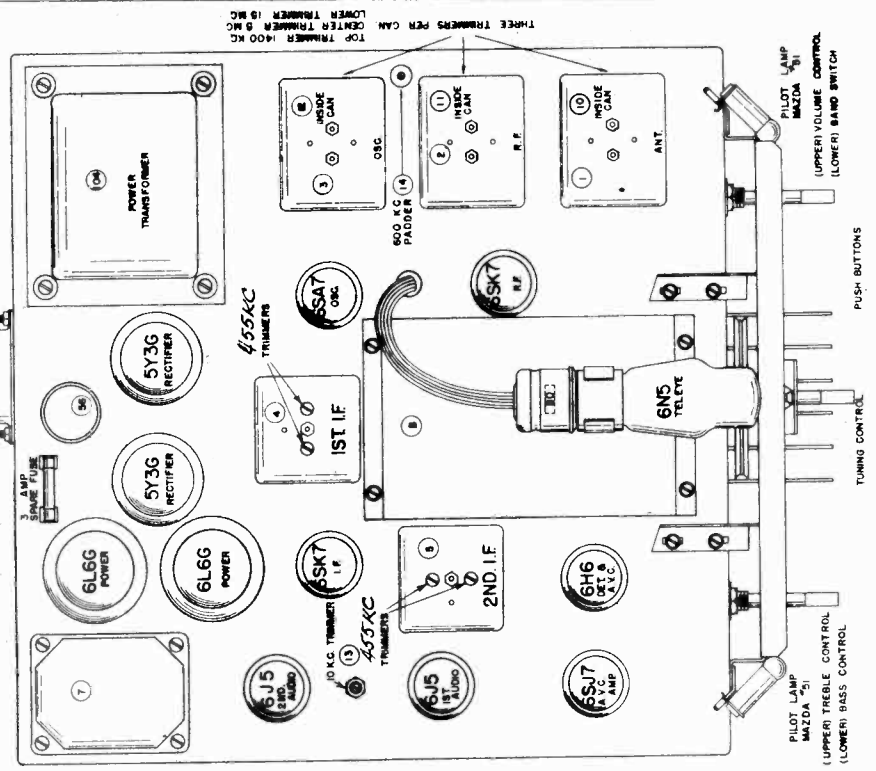


CR-152 -- Used in Belvedere Combination.

SPECIFICATIONS

Primary voltage...117 V. AC; Intermediate frequency.....455 KC;
 Power consumption...180 watts; Tuning frequency range: 535 - 1720 KC;
 1667 - 5680 KC;
 Speaker (12C131): 5.6 - 18.4 MC;
 Field Coil...250 ohms; Circuit: Superheterodyne with three tuning
 ranges, treble and bass controls, I.F. band
 expansion, A.V.C., inverse feedback circuit,
 Transformer...NONE
 Speaker (302):
 Field Coil...250 ohms; bass compensation in volume control for phono-
 Transformer... 5K ohms; graph pickup, push button condenser-type tuner
 (for dual speakers) temperature stabilized.

CONVENTIONAL ALIGNMENT
 SEE SPECIAL SECTION VOLUME VIII
CR149 595189



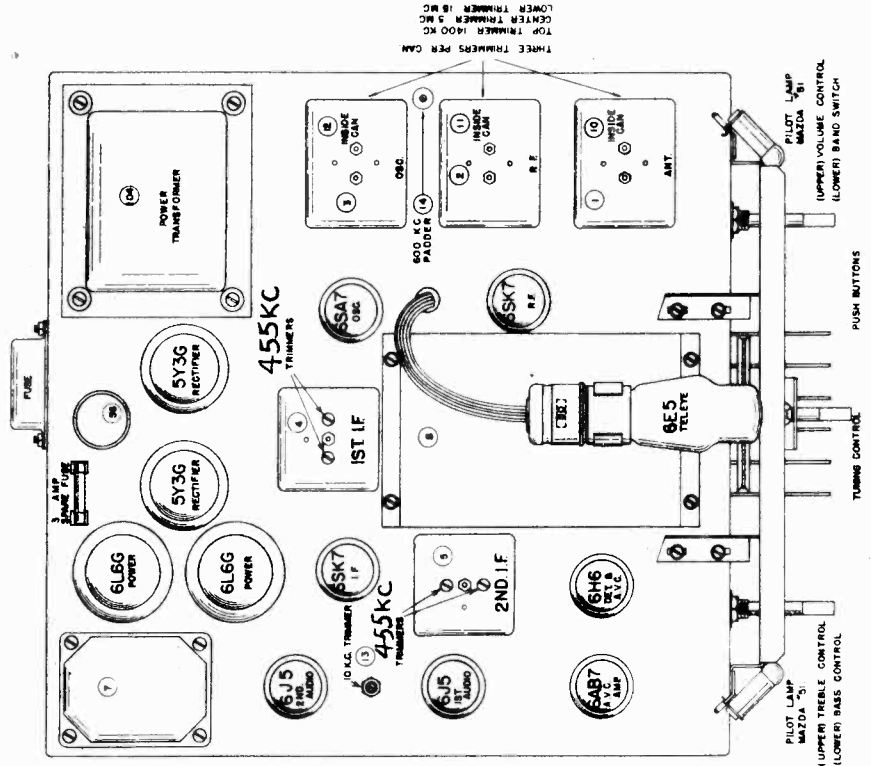
CHASSIS CR-152
CR-161

THE MAGNAVOX CO. INC.

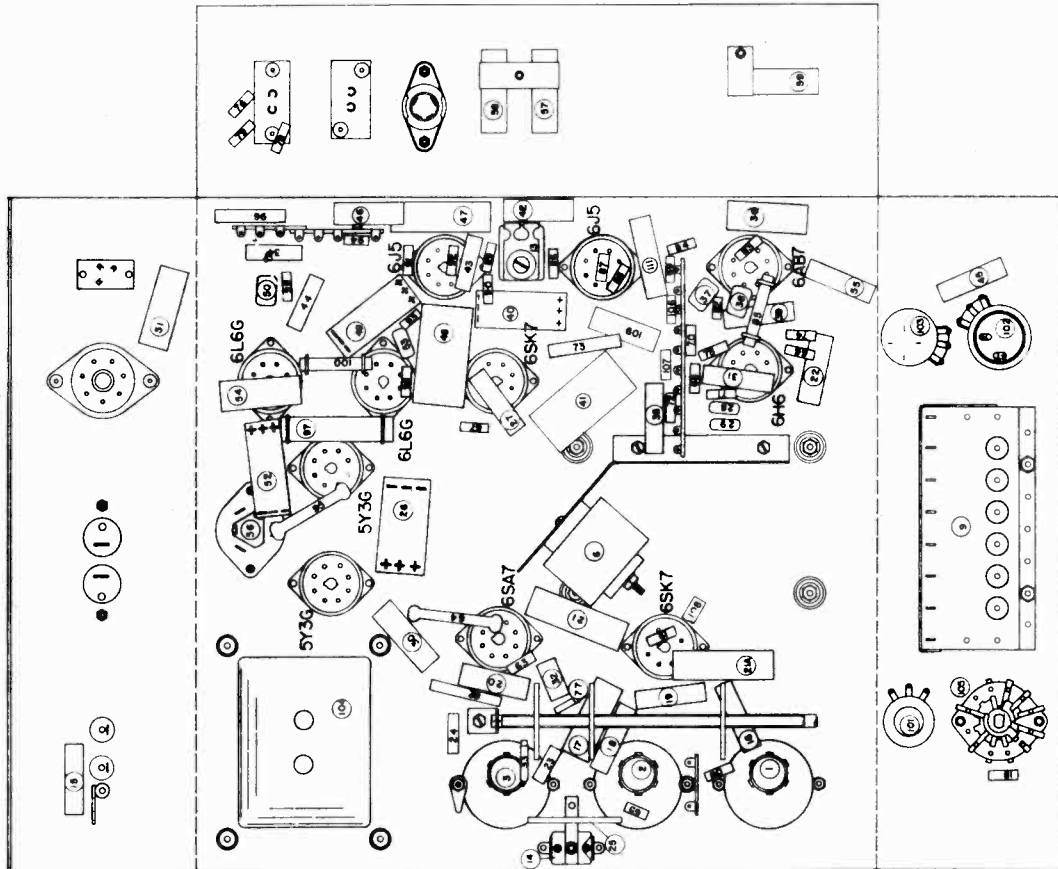
SPECIFICATIONS

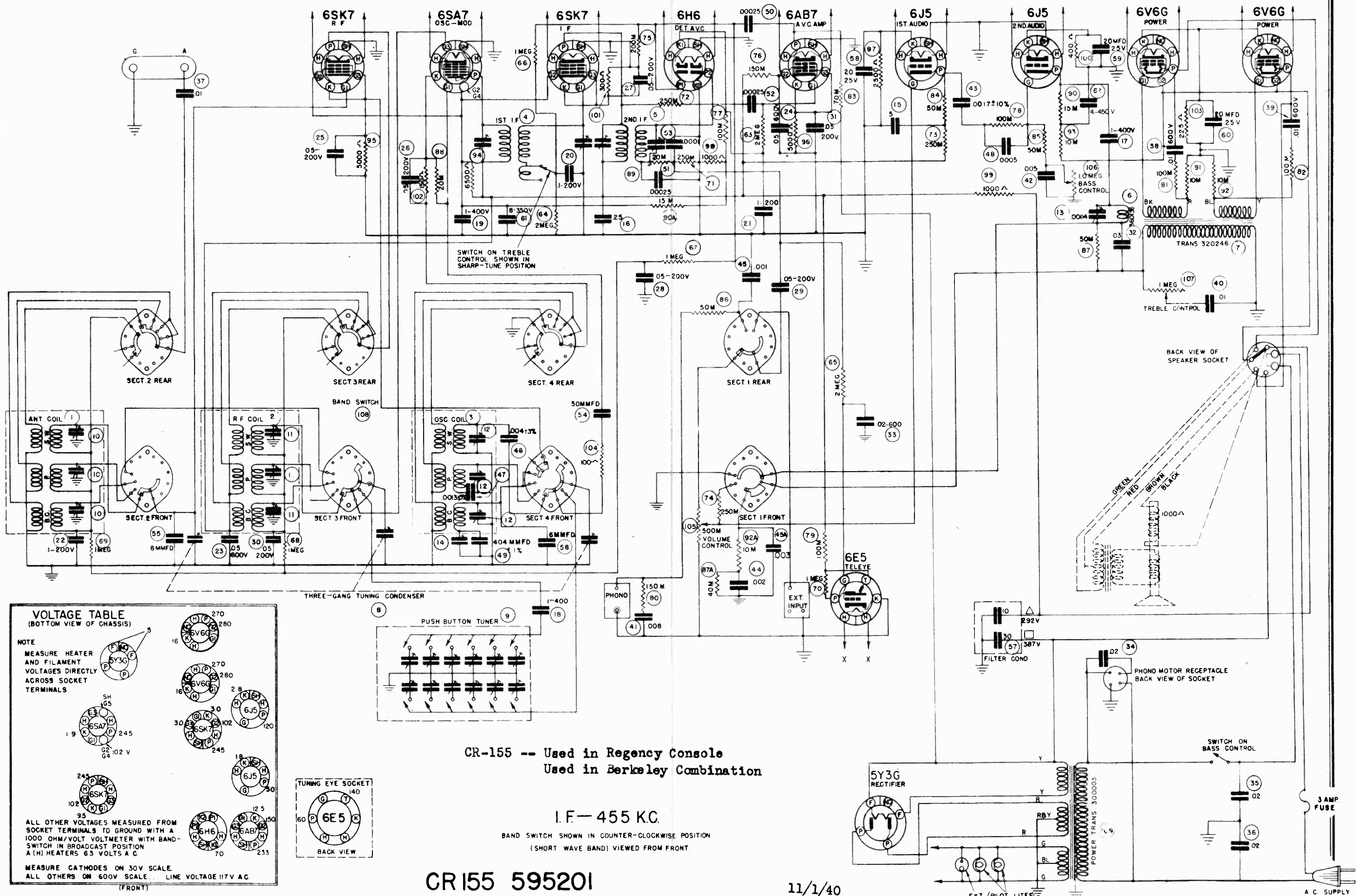
Primary voltage.....117 V. AC; Intermediate frequency.....465 KC;
Power consumption.....180 watts; Tuning frequency range:
535 - 1720 KC;
1687 - 1720 KC;
5.6 - 18.4 KC;
Speaker (12C131);
Field Coil..... 260 ohms; Circuit: Superheterodyne with three tuning
Transformer..... NONE
Transformer (302);
Field Coil..... 260 ohms; Circuit, amplified A.V.C., inverse feedback
Transformer..... 5M ohms; for phonograph pickup, push button condenser-
(for dual speakers) type tuner temperature stabilized.

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII.
BE SURE THAT THE BAND EXPANDER SWITCH IS SET IN "SHARP-TUNE" POSITION, WHEN
ALIGNING THE SET. THIS IS DONE BY ROTATING THE TREBLE CONTROL TO THE LEFT
AS FAR AS POSSIBLE.



CR152 595195





VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

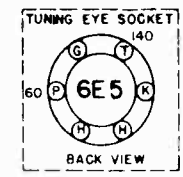
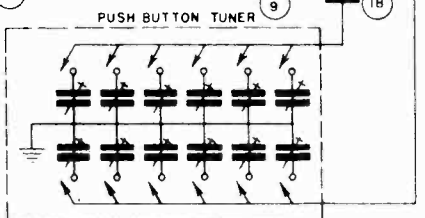
NOTE
MEASURE HEATER AND FILAMENT VOLTAGES DIRECTLY ACROSS SOCKET TERMINALS.

270	280
270	280
245	245
245	245
245	245
120	120
120	120
233	233

ALL OTHER VOLTAGES MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM/VOLT VOLTMETER WITH BAND SWITCH IN BROADCAST POSITION A(H) HEATERS 6.3 VOLTS A C

MEASURE CATHODES ON 30V SCALE. ALL OTHERS ON 600V SCALE. LINE VOLTAGE 117V AC

(FRONT)



CR-155 -- Used in Regency Console
Used in Berkeley Combination

I.F. - 455 K.C.

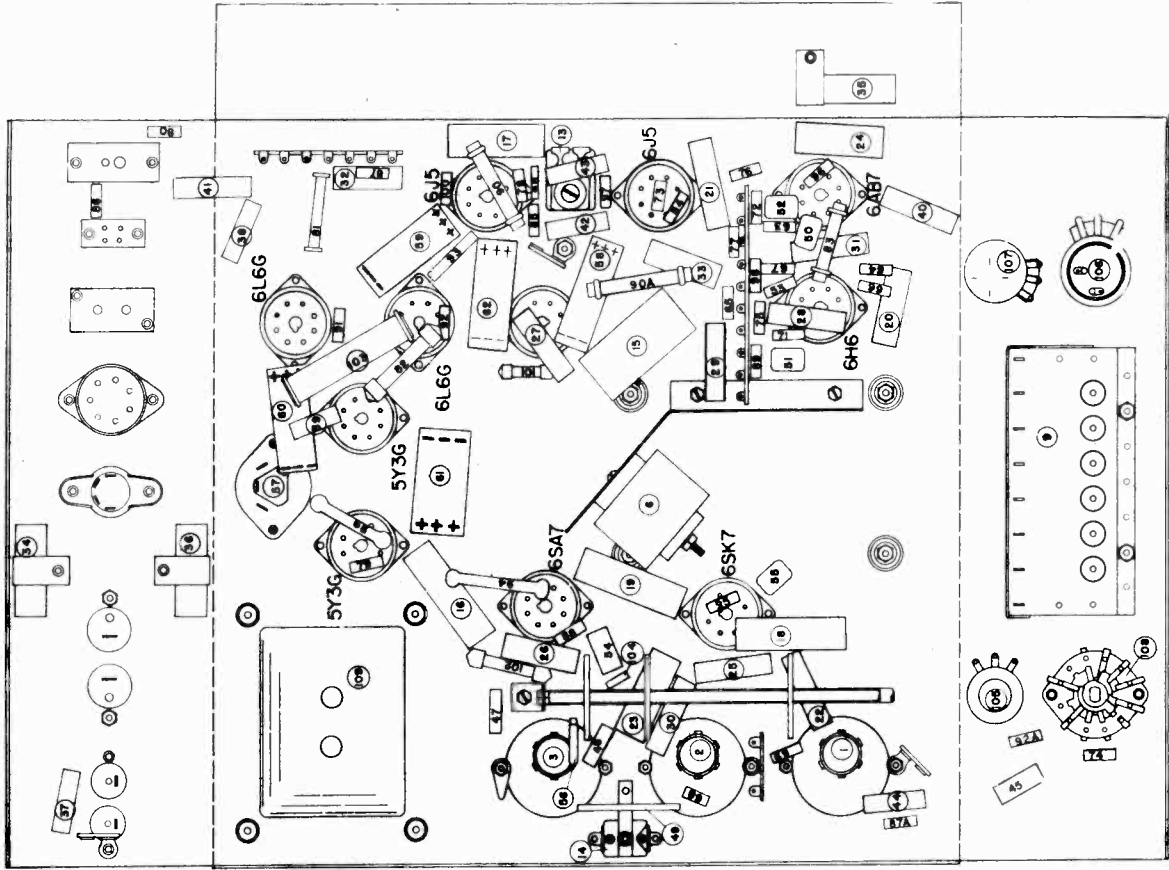
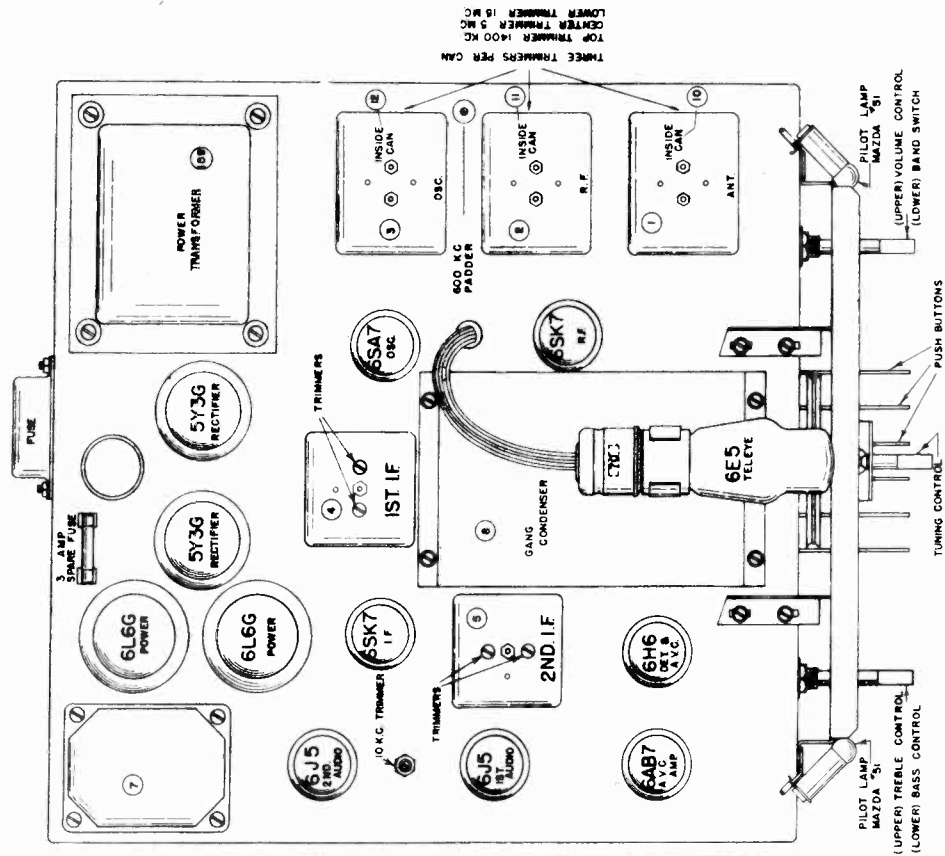
BAND SWITCH SHOWN IN COUNTER-CLOCKWISE POSITION
(SHORT WAVE BAND) VIEWED FROM FRONT

CR155 595201

11/1/40

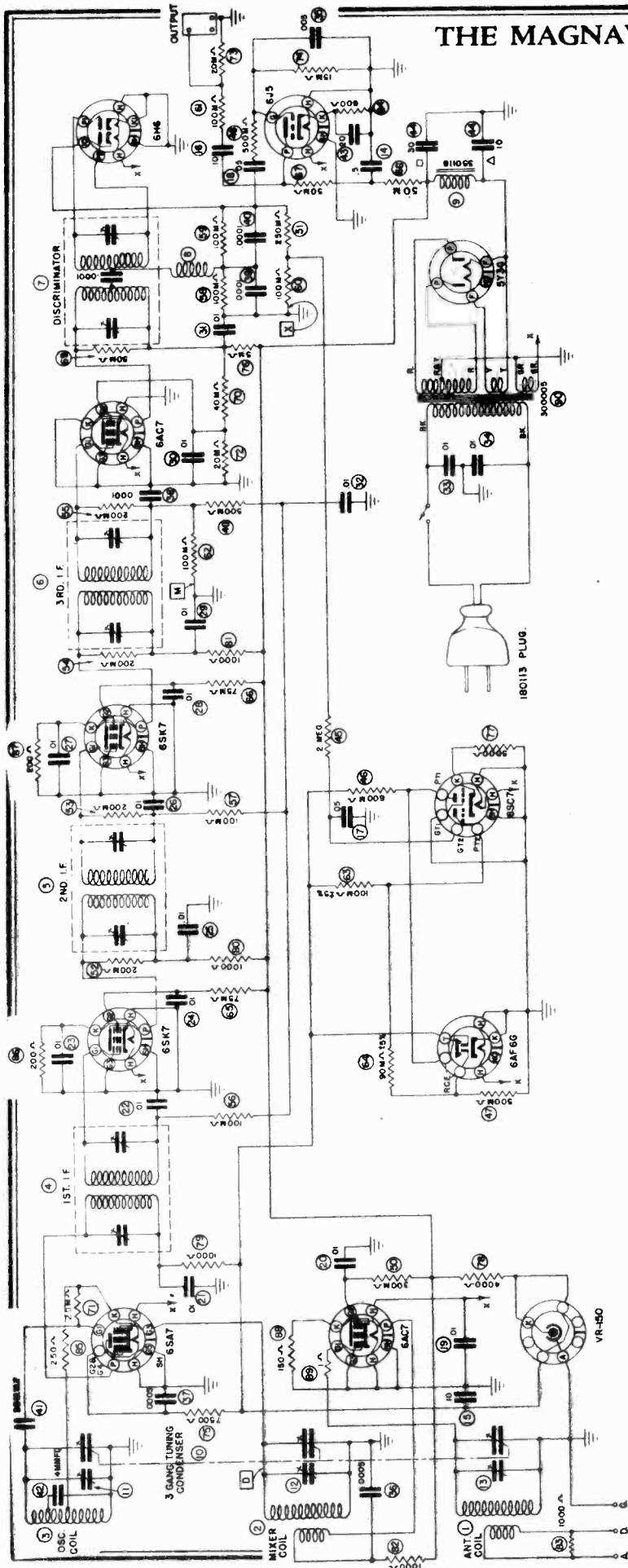
THE MAGNAVOX CO. INC.

CHASSIS CR-154



THE MAGNAVOX CO. INC.

CHASSIS CR-158



F. M. TUNER

I.F. — 4.3 MC.

BAND RANGE — 41.25 — 50.70 MC.

VOLTAGE TABLE

(BOTTOM VIEW OF CHASSIS)

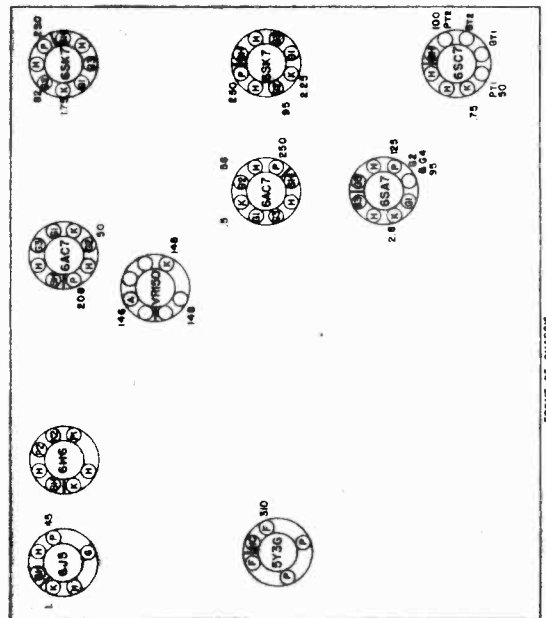
MEASURE FILAMENT VOLTAGES DIRECTLY ACROSS SOCKET TERMINALS.

ALL OTHER VOLTAGES MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM/VOLT VOLTMETER.

(H) MEASURES 6.3 VOLTS A.C.

MEASURE CATHODES ON 50V SCALE. ALL OTHERS ON 500V SCALE.

LINE VOLTAGE 117V. A.C.

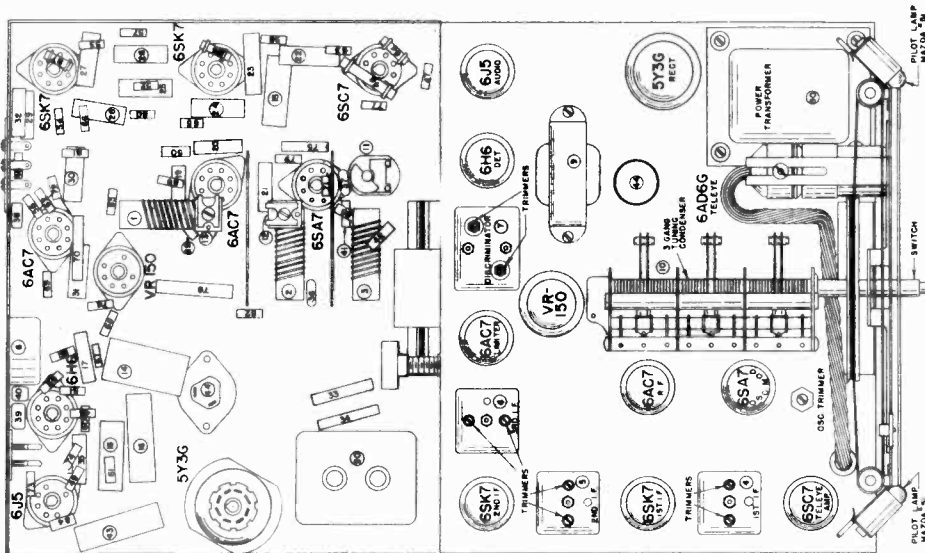


FRONT OF CHASSIS

CR-158
595204

cessary to connect an antenna to the receiver and use a F.M. transmitter for the frequency standard, preferably one between 47 mc. and 50 mc.

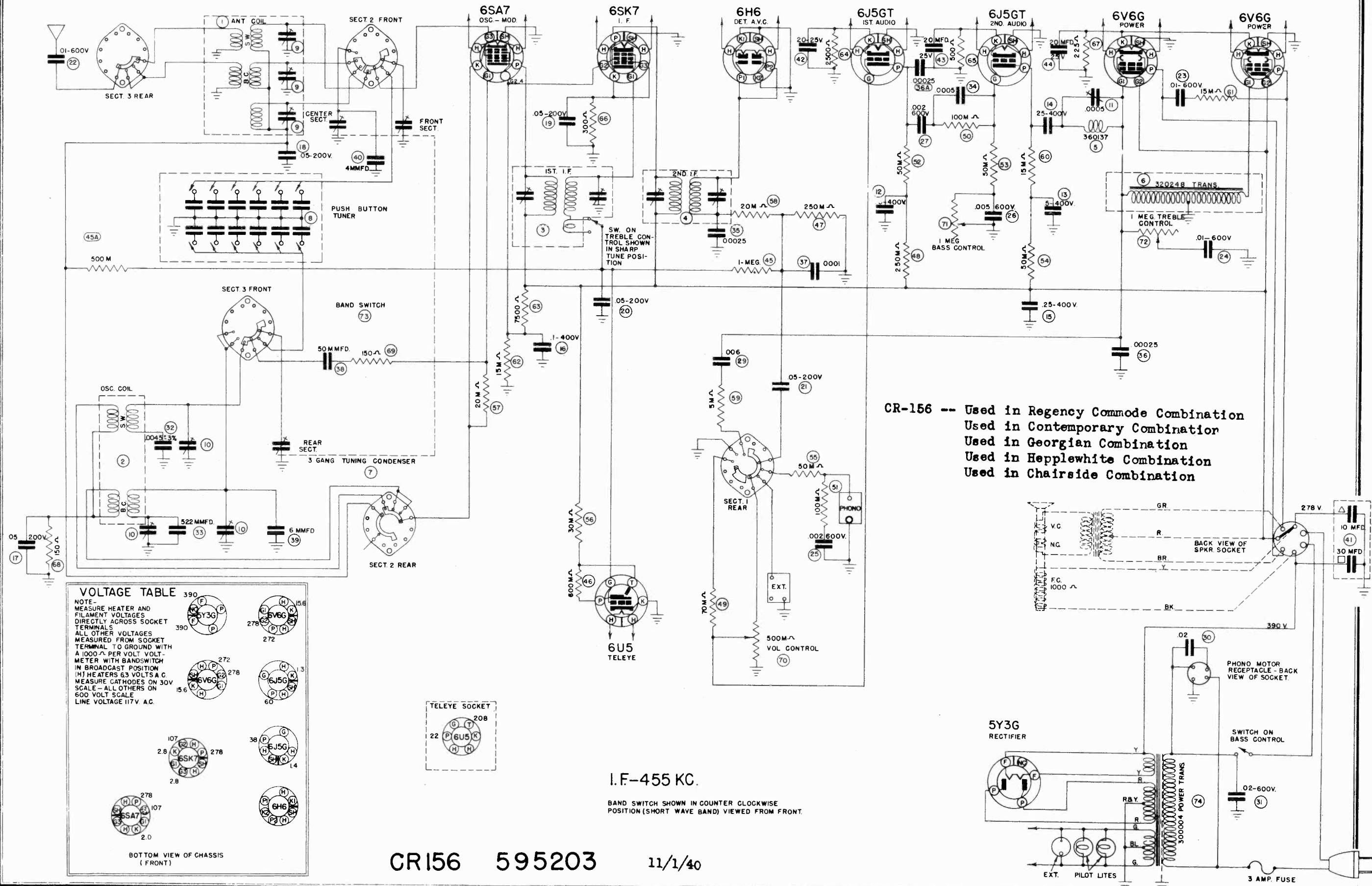
- Set the dial to the known frequency of the transmitter and adjust the oscillator air trimmer (11) until the signal produces a maximum reading on the microammeter. Then adjust the trimmers (12) and (13) on the mixer and antenna coils for maximum reading. If too much signal is fed to the receiver, it will appear at several settings of the dial and confuse the adjusting. These trimmers should align rather loosely. If they are tightened so that the frequency of the R.F. circuit equals the oscillator frequency, spurious oscillations and responses are produced. The oscillator frequency is normally 4300 kc. Lower than the signal frequency. When the above adjustments are completed and the 100,000 ohm resistor (60) is again removed, the receiver has been aligned.



- Connect the "high" side of the generator output to the grid (62) of the 6SA7 converter, and the "low" side of the generator to the ground of the chassis. The connection to the grid is most easily made by connecting to the stator of middle condenser in the tuning gang. If it is found that the generator does not furnish enough signal, it will be necessary to make this connection directly to the control grid of the 6SA7 tube and to disconnect the mixer coil from this grid. This point is indicated at "b" on the schematic diagram.
- Connect a 0-50 or 0-200 microammeter in series with the "ground" end of the 100,000 ohm resistor (62). This is point "a" on the diagram. Connect the positive terminal of the meter to ground. This will measure the grid current of the 6AC7 tube. A reading of 30 to 100 microamperes is all that should be expected at this point. If an Analyt or a D.C. electronic voltmeter is available, it can be connected directly across this 100,000 ohm resistor (62) without disconnecting the resistor. This measures the limiter grid bias voltage. A reading of 3 to 10 volts should be considered normal.
- Set the generator at 4300 kc. and align the I.F. trimmers for maximum grid current in the 6AC7 tube as indicated by the microammeter or voltmeter.
- The I.F. stages are now aligned. Remove the microammeter and re-connect the 100,000 ohm resistor (62) as it was before.
- The discriminator will be adjusted next. Connect the microammeter in series with the "ground" end of the 100,000 ohm resistor (60). This is indicated as point "x" on the diagram. The positive side of the meter is connected to ground. Instead of this, a high impedance electronic voltmeter, such as an Analyt or similar device, can be connected across this resistor. This measures the detector output current or voltage.
- Adjust the test generator to 4375 kc. Adjust both trimmers on the discriminator transformer (7) for a peak. Adjust the output of the generator so that the meter reads at least 60 microamperes or 6 volts. Readjust the oscillator to 4300 kc. Adjust the trimmer nearest the 6H6 tube until the current or voltage is zero. A non-metallic screwdriver is essential; this is an extremely important operation. Re-set the oscillator to 4375 kc. and note the meter reading.
- Now reverse the meter connections so that the negative terminal is connected to ground. Set the generator to 4225 kc. and the meter reading should be within 10% of being the same. If not, the tuning of the discriminator transformer was not done carefully enough and must be repeated. This completes the adjustment of the discriminator. Re-connect the 100,000 ohm load resistor (60) to restore the circuit to its original condition.
- Re-connect the control grid of the 6SA7 to the mixer coil if this connection had been removed and disconnect the generator from this point.
- The antenna, mixer, and oscillator coils are now ready to be aligned. Check to see that the dial pointer is at the end of the dial calibration (41.25 mc.) when the tuning gang is fully meshed.
- Prepare to measure the limiter grid current by again connecting the microammeter as described in paragraph 2.
- If an extremely accurate signal generator is available, it may be used for setting the oscillator to the dial calibration. The generator is connected to the antenna post through a 70 ohm resistor. Otherwise it will be ne-

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CHASSIS CR-156



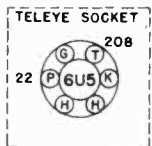
CR-156 -- Used in Regency Commode Combination
 Used in Contemporary Combination
 Used in Georgian Combination
 Used in Hepplewhite Combination
 Used in Chairside Combination

VOLTAGE TABLE

NOTE - MEASURE HEATER AND FILAMENT VOLTAGES DIRECTLY ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED FROM SOCKET TERMINAL TO GROUND WITH A 1000-Ω PER VOLT VOLT-METER WITH BANDSWITCH IN BROADCAST POSITION. (H) HEATERS 6.3 VOLTS A.C. MEASURE CATHODES ON 30V SCALE - ALL OTHERS ON 600 VOLT SCALE. LINE VOLTAGE 117V. A.C.

390	15.6
390	272
272	1.3
272	278
15.6	60
107	2.8
278	1.4
2.8	2.8
278	107
2.0	

BOTTOM VIEW OF CHASSIS (FRONT)

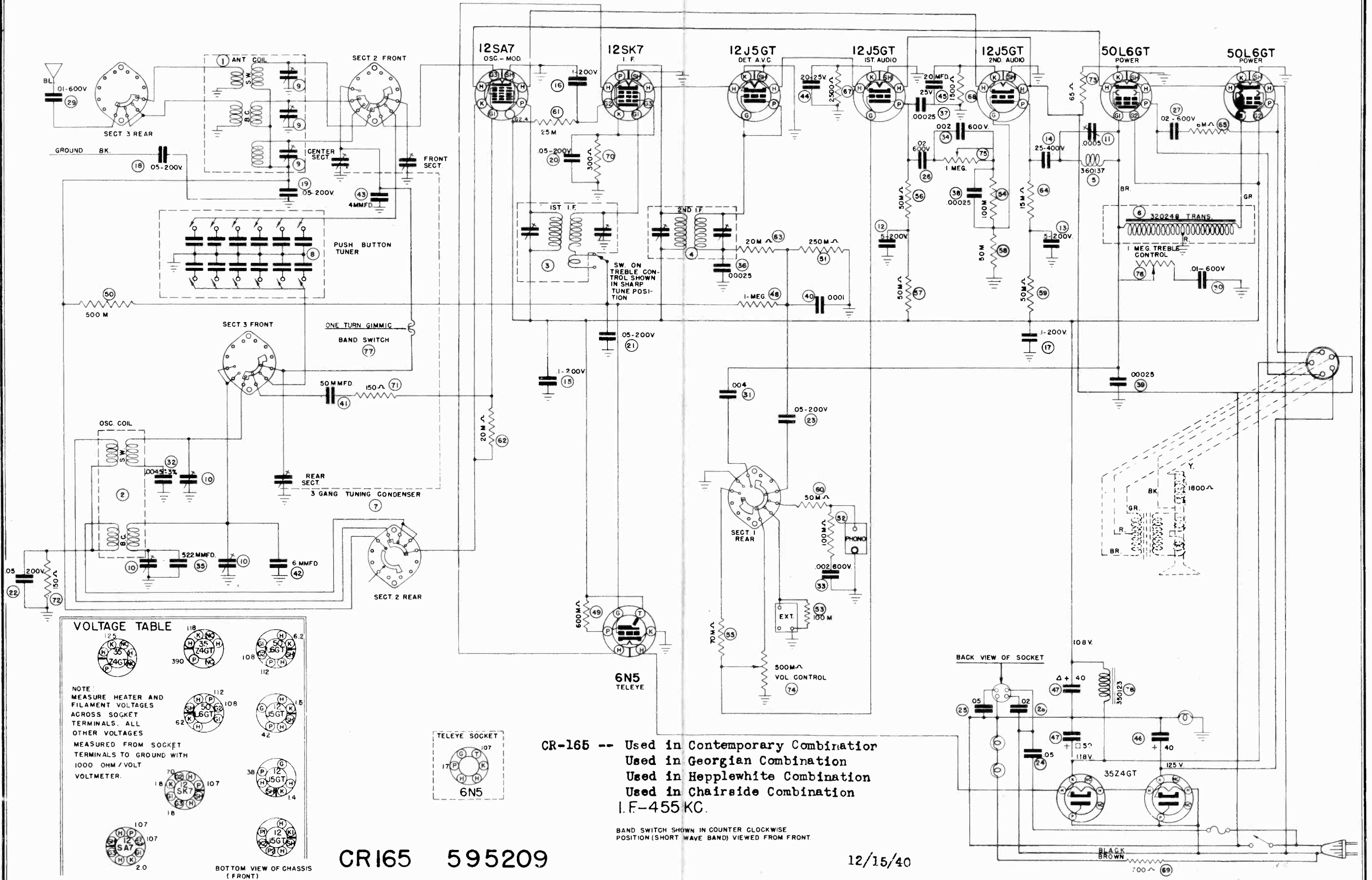


I.F.-455 KC.
 BAND SWITCH SHOWN IN COUNTER CLOCKWISE POSITION (SHORT WAVE BAND) VIEWED FROM FRONT.

CR156 595203 11/1/40

CHASSIS CR-165

THE MAGNAVOX CO. INC.

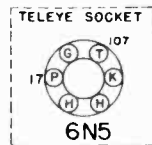


VOLTAGE TABLE

NOTE: MEASURE HEATER AND FILAMENT VOLTAGES ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED FROM SOCKET TERMINALS TO GROUND WITH 1000 OHM/VOLT VOLTMETER.

12.5 118 35 24GT	112 108 50 16GT	6.2 112 5 42
107 18 12 5GT	107 18 12 5GT	1.4 107 12 5GT
107 2.0 12 5GT		

BOTTOM VIEW OF CHASSIS (FRONT)



CR-165 -- Used in Contemporary Combination
 Used in Georgian Combination
 Used in Hepplewhite Combination
 Used in Chairside Combination
 I.F.-455 KC.

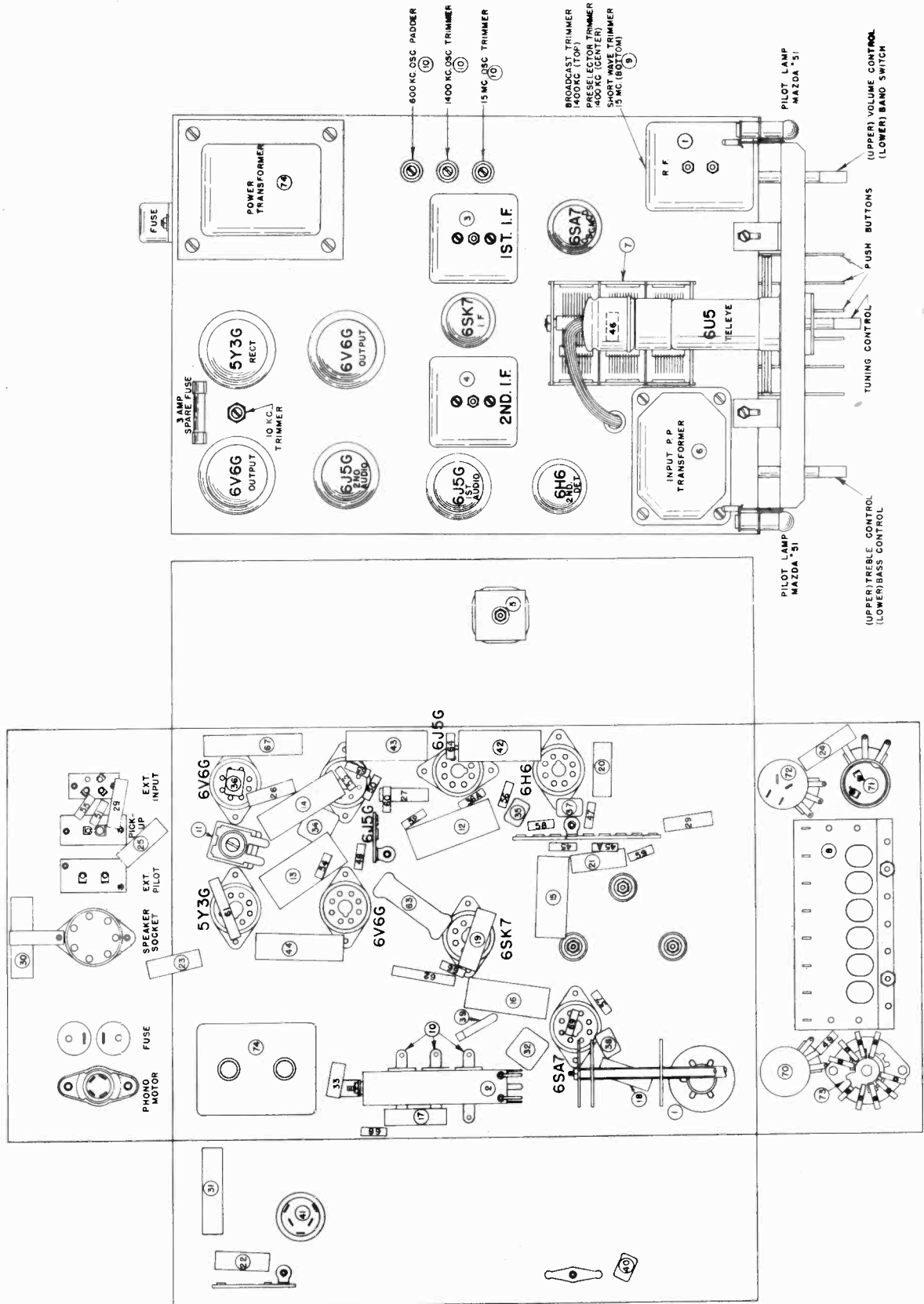
BAND SWITCH SHOWN IN COUNTER CLOCKWISE POSITION (SHORT WAVE BAND) VIEWED FROM FRONT.

CR165 595209

12/15/40

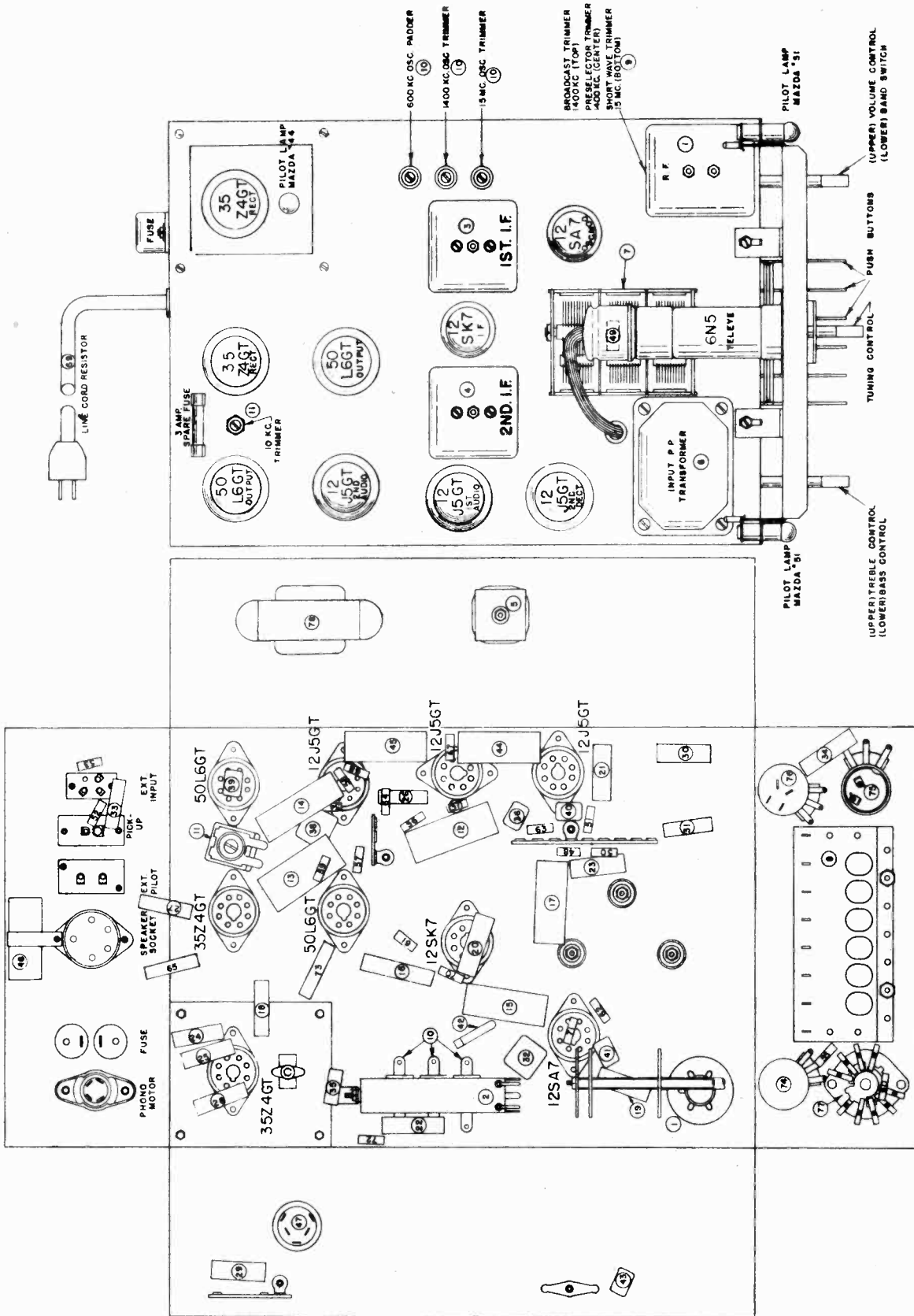
THE MAGNAVOX CO. INC.

CHASSIS CR-156



CHASSIS CR-165

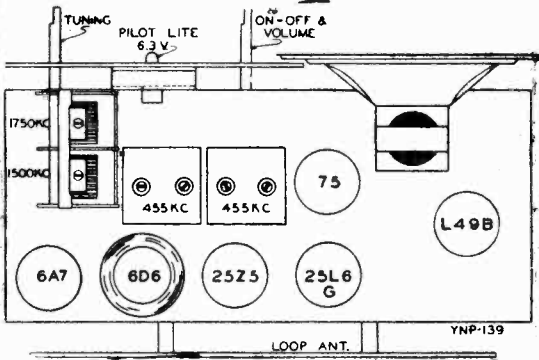
THE MAGNAVOX CO. INC.



MAJESTIC RADIO & TELEV. CORP. MODEL 1D59-L
 MODELS 2D60, 5CAA
 MODELS 250, 250M

MODEL 1D59-I

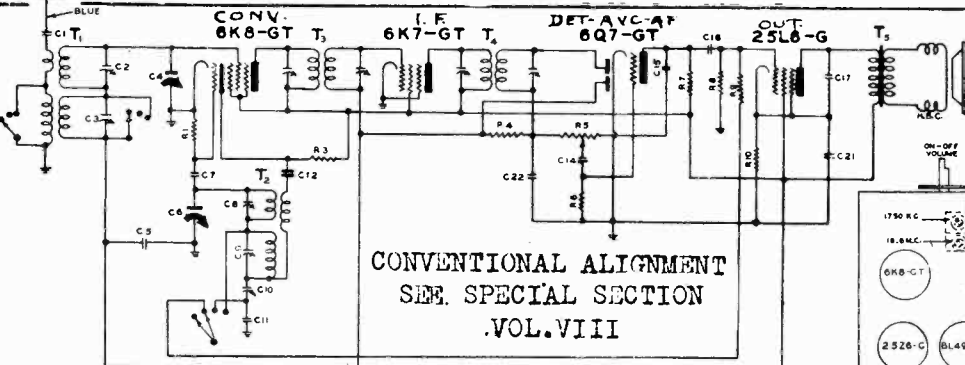
CONVENTIONAL ALIGNMENT
 SEE SPECIAL SECTION
 VOLUME VIII



IF PEAK 455 KC

Location	Part No.	Description
R1	R-15531	Carbon res. 10K ohm 1/4 W 20%
R2	R-15515	Carbon res. 100K ohm 1/4 W 20%
R3	R-15511	Carbon res. 50K ohm 1/4 W 20%
R4	R-53	Carbon res. 15K ohm 1/4 W 20%
R5	R-15500	Carbon res. 2 meg. 1/4 W 20%
R6	Y-VC-30	Volume Control
R7	R-79	Carbon res. 15 meg. 1/4 W 20%
R8, R9	R-15520	Carbon res. 500K ohm 1/4 W 20%
R10	R-80	Carbon res. 110 ohm 1/4 W 20%
C4	CM-29	Mica cond. 50 mmf. 30%
C10, C12	CM-30	Mica cond. 250 mmf. 30%
C1, C13, C20	C-15574	Tubular cond. .01 mfd. 400V
C11	C-15774	Tubular cond. .002 mfd. 400V
C2, C14	C-15760	Tubular cond. .02 mfd. 400V
C5, C15	C-15752	Tubular cond. .05 mfd. 200V
C19	C-15756	Tubular cond. .05 mfd. 400V
C17, C18	Y-CE-50	Electrolytic Condenser

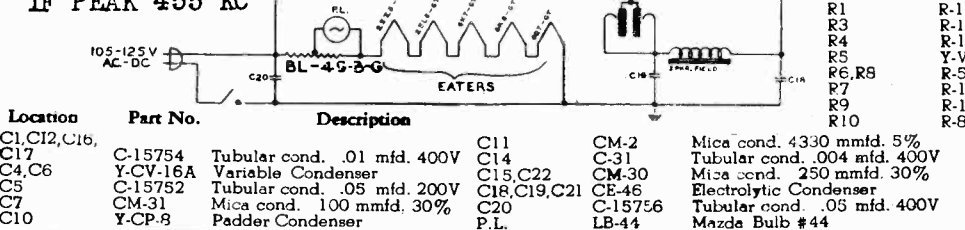
- 1-6A7 CONVERTER
- 1-6D6 I.F. AMP.
- 1-75 DET. AVC. AF.
- 1-25L6G OUTPUT
- 1-25Z5 RECTIFIER
- 1-L49B BALLAST



CONVENTIONAL ALIGNMENT
 SEE SPECIAL SECTION
 VOL. VIII

MODEL 2D60
 5CAA

IF PEAK 455 KC



Location	Part No.	Description
C1, C12, C16, C17	C-15754	Tubular cond. .01 mfd. 400V
C4, C6	Y-CV-16A	Variable Condenser
C5	C-15752	Tubular cond. .05 mfd. 200V
C7	CM-31	Mica cond. 100 mmf. 30%
C10	Y-CP-8	Padder Condenser

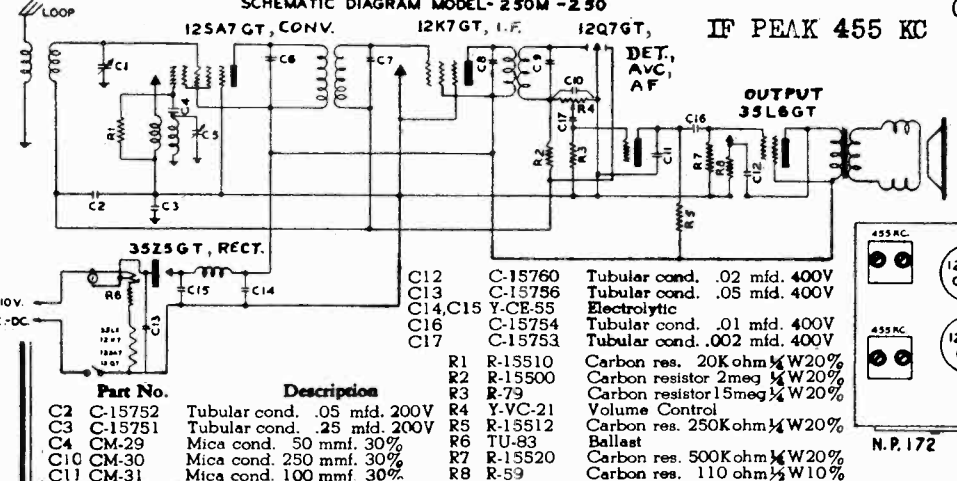
Location	Part No.	Description
C11	CM-2	Mica cond. 4330 mmf. 5%
C14	C-31	Tubular cond. .004 mfd. 400V
C15, C22	CM-30	Mica cond. 250 mmf. 30%
C18, C19, C21	CE-46	Electrolytic Condenser
C20	C-15756	Tubular cond. .05 mfd. 400V
P.L.	LB-44	Mazda Bulb #44

- R1 R-15511 Carbon res. 50K ohm 1/4 W 20%
- R3 R-15531 Carbon res. 10K ohm 1/4 W 20%
- R4 R-15500 Carbon resistor 2meg 1/4 W 20%
- R5 Y-VC-21 Volume Control and Switch
- R6, R8 R-50 Carbon resistor 5meg 1/4 W 20%
- R7 R-15504 Carbon res. 150K ohm 1/4 W 20%
- R9 R-15500 Carbon res. 20K ohm 1/4 W 20%
- R10 R-80 Carbon res. 110 ohm 1/4 W 20%
- T1 Y-ANA-10 Antenna Assembly
- T2 Y-OSA-10 Oscillator Assembly
- T3 Y-IFA-10 1st I. F. Transformer
- T4 Y-IFA-11 2nd I. F. Transformer

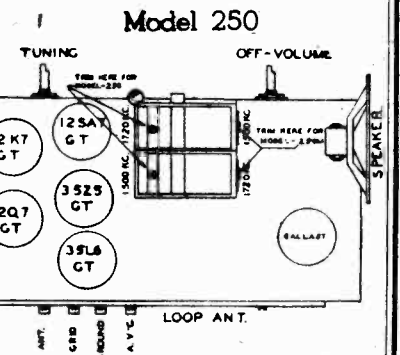
SCHEMATIC DIAGRAM MODEL-250M-250

IF PEAK 455 KC

CONVENTIONAL ALIGNMENT
 SEE SPECIAL SECTION
 VOLUME VIII

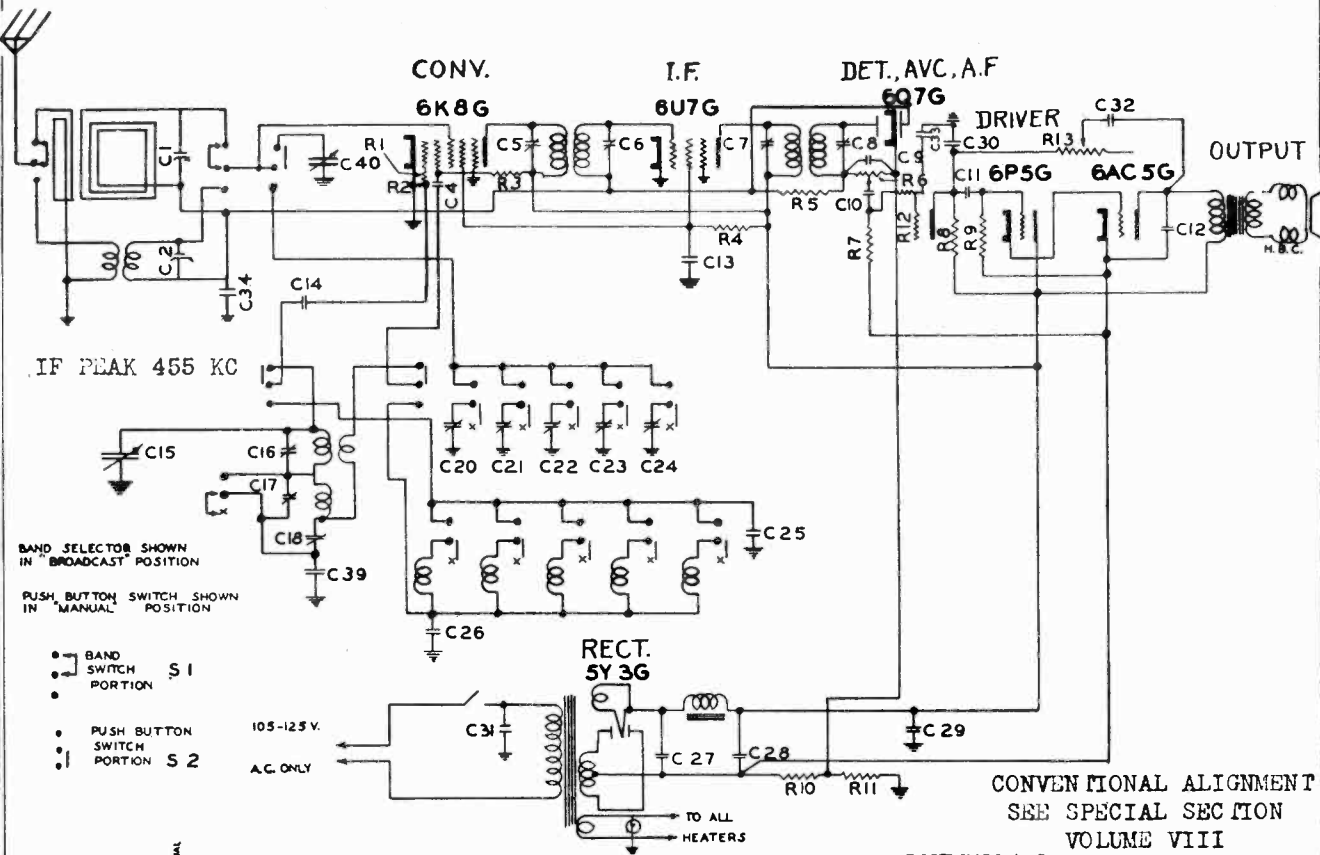


Part No.	Description
C2	C-15752 Tubular cond. .05 mfd. 200V
C3	C-15751 Tubular cond. .25 mfd. 200V
C4	CM-29 Mica cond. 50 mmf. 30%
C10	CM-30 Mica cond. 250 mmf. 30%
C17	CM-31 Mica cond. 100 mmf. 30%
R1	R-15510 Carbon res. 20K ohm 1/4 W 20%
R2	R-15500 Carbon resistor 2meg 1/4 W 20%
R3	R-79 Carbon resistor 15meg 1/4 W 20%
R4	Y-VC-21 Volume Control
R5	R-15512 Carbon res. 250K ohm 1/4 W 20%
R6	TU-83 Ballast
R7	R-15520 Carbon res. 500K ohm 1/4 W 20%
R8	R-59 Carbon res. 110 ohm 1/4 W 10%



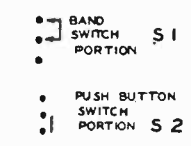
MODELS 2C60A.P
260

MAJESTIC RADIO & TELEV. CO. CORP.

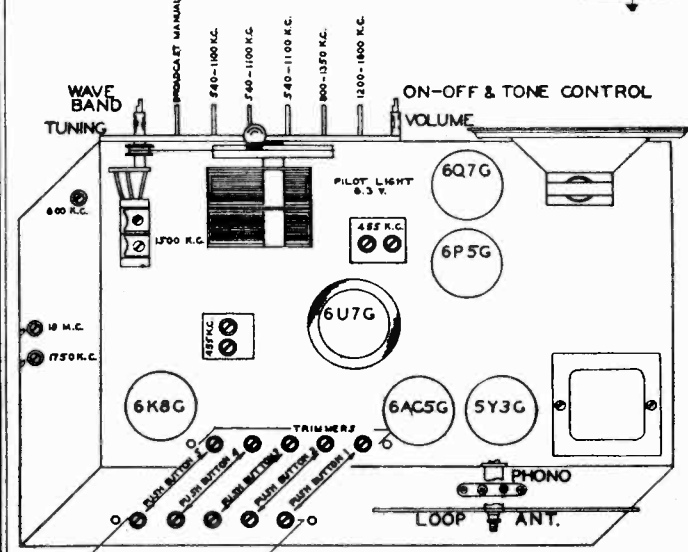


IF PEAK 455 KC

BAND SELECTOR SHOWN IN "BROADCAST" POSITION
PUSH BUTTON SWITCH SHOWN IN "MANUAL" POSITION



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII



TUBE LAYOUT—MODEL 2C60A.P-260

FOR SETTING PUSH BUTTONS SEE INDEX.

REPLACEMENT PARTS LIST

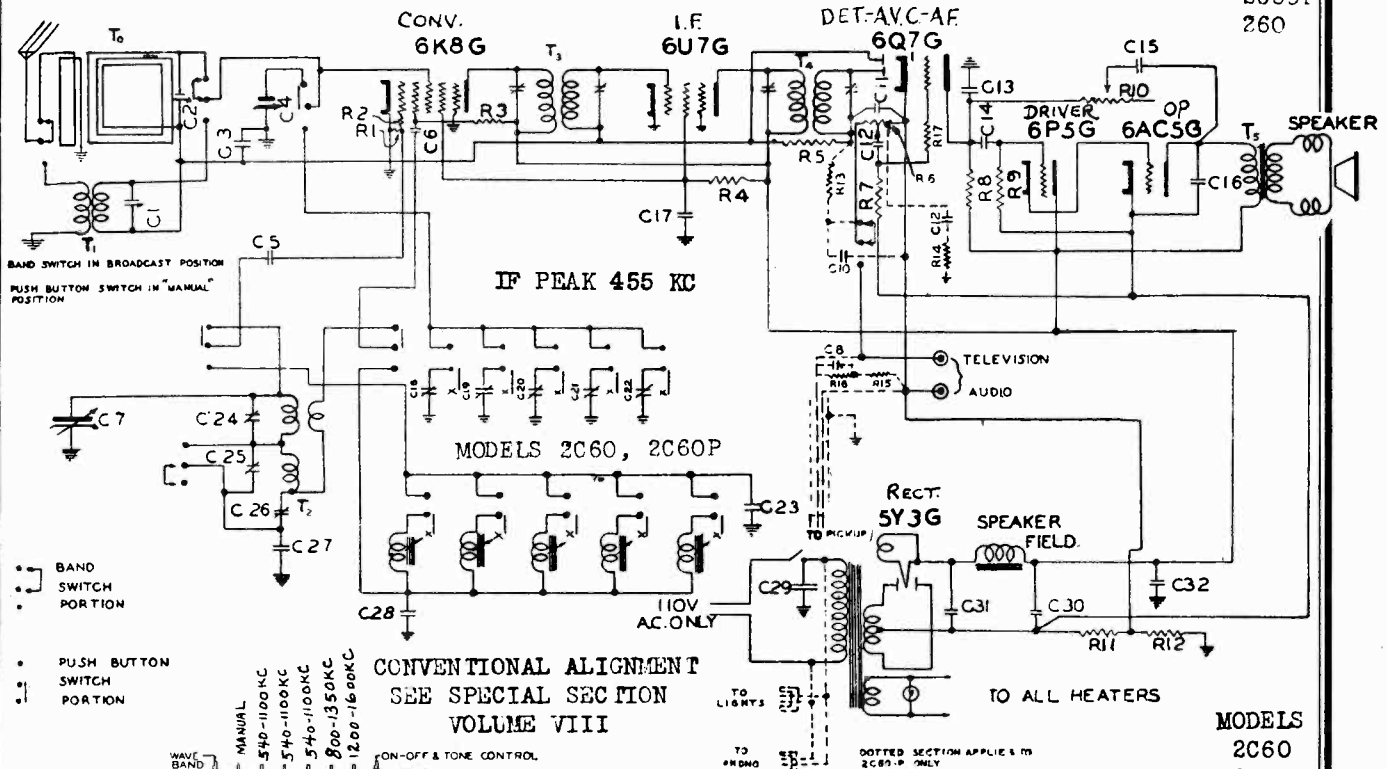
Schematic

Location	Part Number	Condensers
C1, C2—C16, C17	Y-CT-24	Trimmer
C40, C15	Y-CV-33	Variable
C4, C11, C12	C-15754	.01 mfd. 400 V. Tubular
C10	C-49	.005 mfd. 400 V. Tubular
C13, C29	C-15756	.05 mfd. 400 V. Tubular

CONDENSERS	
C34	C-15752 .05 mfd. 200 V. Tubular
C9, C30	CM-31 100 mmfd. 30% Mica
C14	CM-29 50 mmfd. 30% Mica
C18	Y-CT-27 Padder Condenser
C20, C21, C22,	Y-CT-31 Trimmer Strip
C23, C24	CM-34 150 mmfd. 5% Silvered Mica
C25	CM-33 250 mmfd. 5% Silvered Mica
C26	Y-CE-43 Electrolytic Condenser
C27, C28	C-18 .01 mfd. 400 V. Tubular
C31	CM-30 250 mmfd. 30% Mica
C32, C33	CM-9 5500 mmfd. 5% Mica
RESISTORS	
R1	R-15601 100 ohm 1/4 W 20% Carbon
R2	R-54 50K ohm 1/4 W 20% Carbon
R3	R-15541 5K ohm 1/2 W 20% Carbon
R4	R-15544 15K ohm 1 W 20% Carbon
R5	R-15500 2 megohm 1/4 W 20% Carbon
R6	Y-VC-33 Volume Control
R7, R9	R-15517 1 megohm 1/4 W 20% Carbon
R8, R12	R-15512 250K ohm 1/4 W 20% Carbon
R10, R11	R-87 70 ohm 1/4 W 20% Carbon
CONTROLS	
R13	Y-VC-33 Tone Control
S1	Y-SW-25 2 pos. band switch
S2	Y-SW-19 6 button Switch

MAJESTIC RADIO & TELEV. CO. CORP.

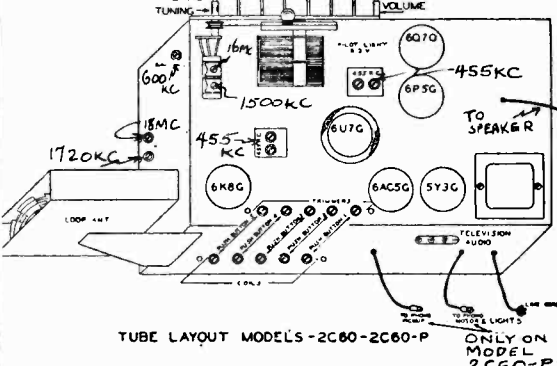
MODELS 2C60
2C60P
260



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

PRE-SETTING OF PUSH BUTTONS

The push-buttons may be easily set to receive any five stations desired provided that three of them lie between 540 and 1100 KC, one of them between 800 and 1350 KC, and one of them between 1200 and 1600 KC. Note on the diagram that push button number 1 covers the range 1200-1600 KC. If the station selected lies between those frequencies then push the button in as far as possible and with a small screwdriver adjust the screw from the back of the receiver that corresponds to that button until the station desired can be heard as loudly as possible. Complete the adjustment by adjusting the corresponding trimmer from the top of the chassis until maximum volume again results. In making these adjustments, it is desirable to keep the volume control turned down to low volume. By pressing button number 2, the corresponding coil adjusting screw and trimmer condenser may be adjusted to the next station and the same process repeated for the balance of the buttons.



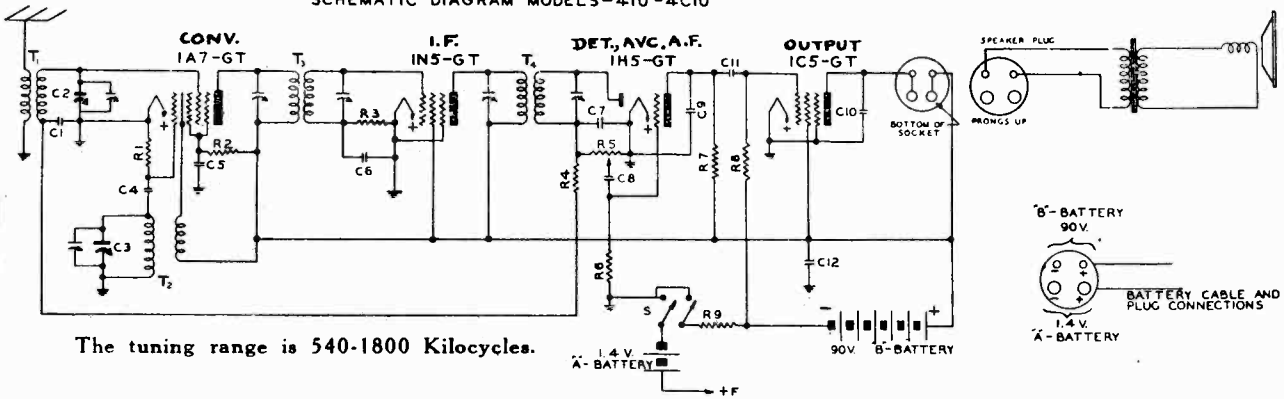
TUBE LAYOUT MODELS-2C60-2C60-P

Schematic Location	Part No.	Condensers	Resistor	Description
C1, C2, C24	Y-CT-24	Trimmer		
C25				
C7, C4	Y-CV-33	Variable Condenser	R2	100 ohm 1/4 W 20% Carbon
C18, C19, C20, C21, C22	Y-CT-31	Trimmer strip	R1, R13, R14	50K ohm 1/4 W 20% Carbon
C26	Y-CT-27	Padder Condenser	R3	5K ohm 1/2 W 20% Carbon
C3	C-15761	.1-200 V Tubular	R4	15K ohm 1 W 20% Carbon
C6, C10, C12, C14	C-15754	.01-400 V Tubular	R5, R16	2 megohm 1/4 W 20% Carbon
C16	C-15769	.01-600 V Tubular	R6, R10	Volume and Tone Controls (Model 2C60 only)
C17, C32	C-15756	.05-400 V Tubular	R6, R10	Volume and Tone Controls (Model 2C60-P only)
C29	C-18	.01-400 V Molded	R7, R9	1 megohm 1/4 W 20% Carbon
C30, C31	Y-CE-43	Electrolytic Condenser (Model 2C60 only)	R8, R15, R17	250K ohm 1/4 W 20% Carbon
C30, C31	Y-CE-60	Electrolytic Condenser (Model 2C60-P only)	R11, R12	70 ohm 1/4 W 20% Carbon
C5	CM-29	50 mmfd. 30% Mica	To	Y-CS-100 Loop Antenna
C11, C13	CM-31	100 mmfd. 30% Mica	T1	Y-CS-96 Short Wave Antenna Coil
C8, C15	CM-30	250 mmfd. 30% Mica	T2	Y-CS-71 Oscillator Coil
C23	CM-34	150 mmfd. 5% Mica	T3	Y-CI-43 1st I.F. Transformer
C27	CM-9	5500 mmfd. 5% Mica	T4	Y-CI-44 2nd I.F. Transformer
C28	CM-33	250 mmfd. 5% Mica	T5	Speaker Output Transformer
				LB-G-11W Lights for Phono Compartment

MODELS 4C10, 410
MODEL 5ADA

MAJESTIC RADIO & TELEV. CO. CORP.

SCHEMATIC DIAGRAM MODELS-4-10-4C10

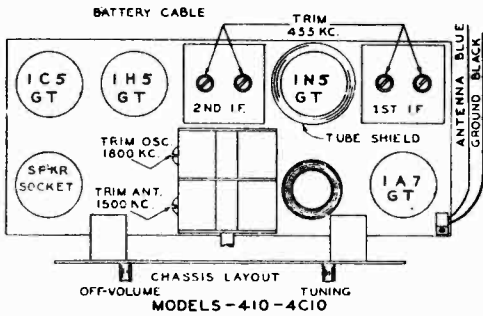


The tuning range is 540-1800 Kilocycles.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

IF PEAK 455 KC

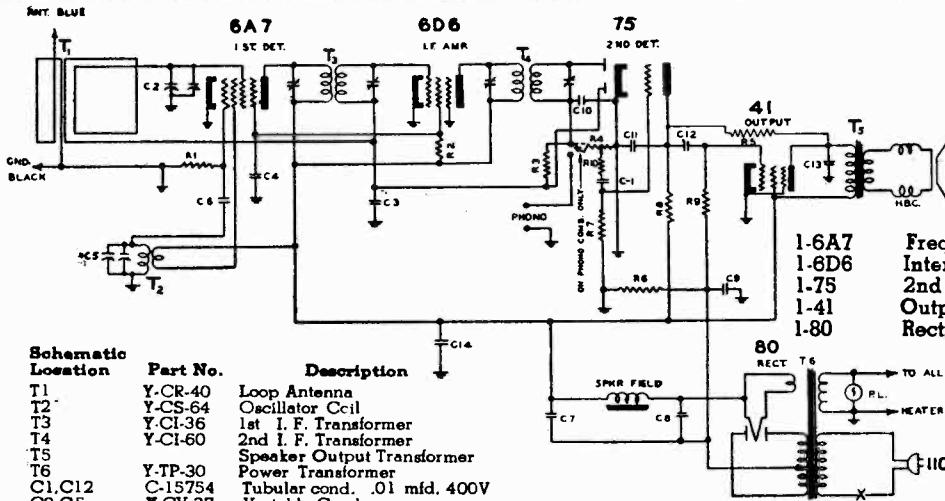
The battery packs recommended to be used:
Burgess No. 17GD60 or equivalent
Eveready No. 748 or equivalent
Ray-O-Vac No. AB-82 or equivalent



Schematic Location

Schematic Location	Part No.	Description
C2, C3	Y-CV-26	Variable Condenser
C1, C5	C-15752	Tubular cond. .05 mfd. 200V
C6, C8, C11	C-15763	Tubular cond. .01 mfd. 200V
C10	C-15774	Tubular cond. .002 mfd. 400V
C12	CE-35	8 mfd. 150V Electrolytic cond.
C4, C7, C9	CM-31	Mica cond. 100 mmfd. 30%
T1	Y-CS-62	Antenna Coil
T2	Y-OSA-11	Oscillator Assembly
T3	Y-CI-29	1st I. F. Assembly
T4	Y-CI-30	2nd I. F. Assembly
R1	R-15523	Carbon res. 200Kohm 1/4 W20%
R2	R-44	Carbon res. 70K ohm 1/4 W10%
R3, R4	R-15500	Carbon resistor 2meg 1/4 W20%
R6	R-15559	Carbon resistor 3meg 1/4 W20%
R7	R-15520	Carbon res. 500Kohm 1/4 W20%
R8	R-15517	Carbon resistor 1meg 1/4 W20%
R9	R-72	Carbon res. 60G ohm 1/4 W20%
R5	Y-VC-43	Volume Control

MODEL 5ADA

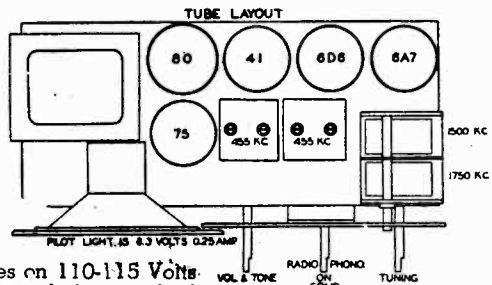


The tubes used are:
1-6A7 Frequency converter
1-6D6 Intermediate frequency amplifier
1-75 2nd detector, AVC, and audio driver
1-41 Output
1-80 Rectifier

IF PEAK 455 KC

Schematic Location	Part No.	Description
T1	Y-CR-40	Loop Antenna
T2	Y-CS-64	Oscillator Coil
T3	Y-CI-36	1st I. F. Transformer
T4	Y-CI-60	2nd I. F. Transformer
T5		Speaker Output Transformer
T6	Y-TP-30	Power Transformer
C1, C12	C-15754	Tubular cond. .01 mfd. 400V
C2, C5	Y-CV-37	Variable Condenser
C3	C-15752	Tubular cond. .05 mfd. 200V
C4	C-15756	Tubular cond. .05 mfd. 400V
C6	CM-29	Mica cond. 50 mmfd. 30%
C10, C11	CM-30	Mica cond. 250 mmfd. 30%
C7, C8, C9	Y-CE-43	Electrolytic Condenser
C13	C-25	Tubular cond. .006 mfd. 400V
C14	C-15757	Tubular cond. .1 mfd. 400V
R1	R-15511	Carbon res. 50K ohm 1/4 W20%
R2	R-83	Carbon res. 35K ohm 1/4 W20%
R3	R-15500	Carbon resistor 2meg 1/4 W20%
R4	Y-VC-30	Volume Control
R5	R-15559	Carbon resistor 3meg 1/4 W20%
R6	R-117	Carbon res 275 ohm 1/4 W20%
R7	R-109	Carbon resistor 5meg 1/4 W20%
R8, R9	R-15520	Carbon res. 500Kohm 1/4 W20%
R10	R-15515	Carbon res. 100Kohm 1/4 W20%
P.L.	LB-44	Pilot Light Mazda #44

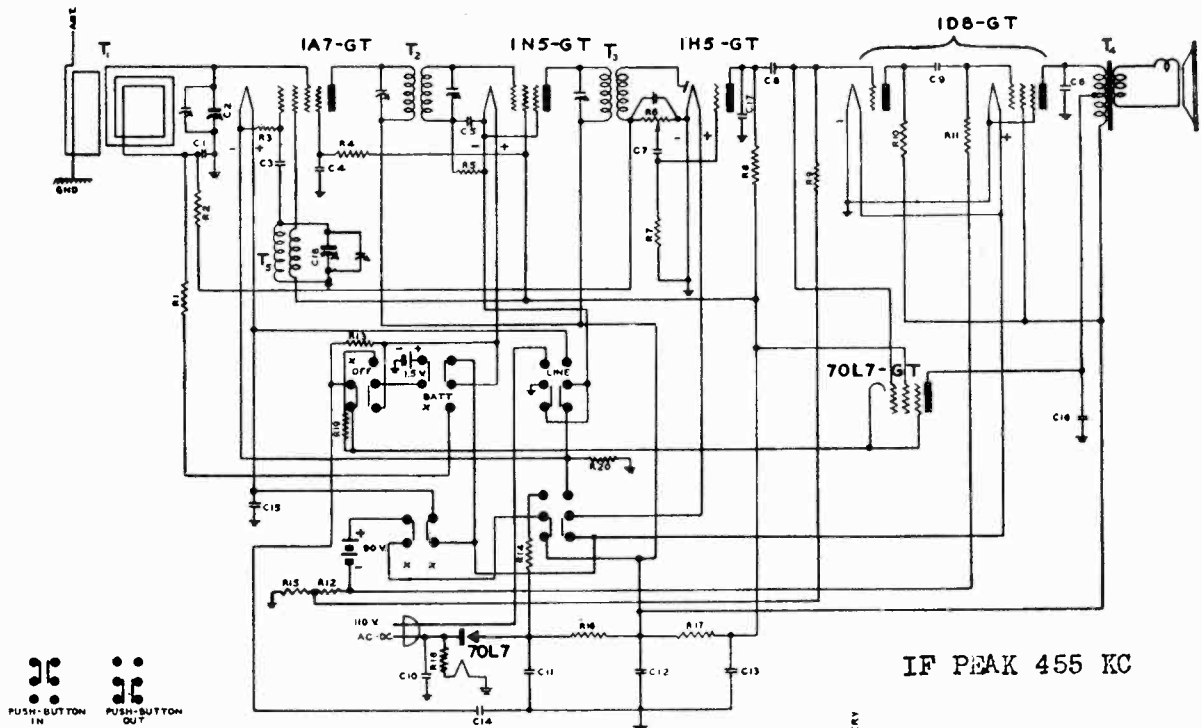
CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII.



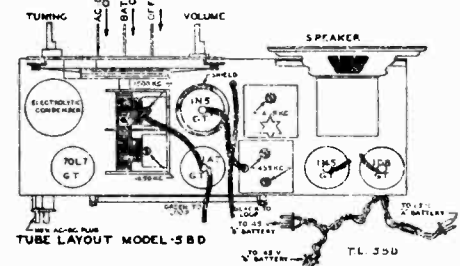
This is a five (5) tube Alternating Current (AC) receiver. This set operates on 110-115 Volts 60 Cycles current. The tuning range is from 540 to 1750 kilocycles. This includes standard broadcast and most city police stations. This set is equipped with automatic volume control and a Majestic Hi-Q Loop Antenna shielded by a Faraday screen.

MAJESTIC RADIO & TELEV. CO. CORP. MODELS 5BD, 5BDR, 5ULBD

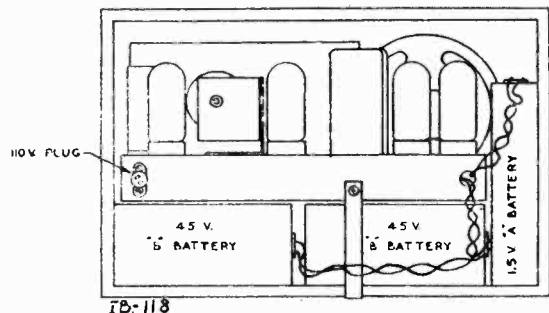
SCHMATIC DIAGRAM MODEL -5BD



Schematic Location	Part No.	Description
C1	C-15752	Tubular cond. .05 mfd. 200V
C2, C18	Y-CV-46B	Variable Condenser
C3	CM-29	Mica cond. 50 mmfd.
C4, C5, C8		
C9, C16	C-15754	Tubular cond. .01 mfd. 400V
C6, C7	C-15753	Tubular cond. .002 mfd. 600V
C10	C-15756	Tubular cond. .05 mfd. 400V
C11	CE-62	Electr. cond. 15 mfd. 150V
C12	CE-62	Electr. cond. 40 mfd. 150V
C13	CE-62	Electr. cond. 10 mfd. 150V
C14	CE-62	Electr. cond. 100 mfd. 25V
C15	C-15761	Tubular cond. .1 mfd. 200V
C17	CM-30	Mica cond. 250 mmfd.
R1	R-63	Carbon resistor 1 meg $\frac{1}{2}$ W 20%
R2, R5	R-15500	Carbon resistor 2 meg $\frac{1}{2}$ W 20%
R3	R-15523	Carbon res. 200K ohm $\frac{1}{2}$ W 20%
R4	R-15511	Carbon res. 50K ohm $\frac{1}{2}$ W 20%
R7	R-109	Carbon resistor 5 meg $\frac{1}{2}$ W 20%
R8, R10, R11	R-15517	Carbon resistor 1 meg $\frac{1}{2}$ W 20%
R9	R-15512	Carbon res. 250K ohm $\frac{1}{2}$ W 20%
R-15, R-19	R-15601	Carbon res. 100 ohm $\frac{1}{2}$ W 20%
R-13	R-28	Carbon res. 10 ohm $\frac{1}{2}$ W 20%
R-14	R-15542	Carbon res 100 ohm $\frac{1}{2}$ W 20%
R-17	R-15570	Carbon res. 200 ohm $\frac{1}{2}$ W 20%
R12	R-72	Carbon res. 600 ohm $\frac{1}{2}$ W 20%
R16	R-121	Carbon res. 300 ohm $\frac{1}{2}$ W 20%
R20	R-15600	Carbon res. 200 ohm $\frac{1}{2}$ W 20%
R6	Y-VC-38A	Volume Control
T1	Y-LOA-11	Loop Antenna
T2	Y-IFA-17	1st I. F. Assembly
T3	Y-IFA-16	2nd I. F. Assembly
T4	Y-SPA-71	Output Transformer
T5	Y-OSC-11	Oscillator Coil
T6	SW-43	Push-Button Switch



BATTERY LAYOUT MODELS -5BD & 5ULBD

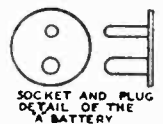
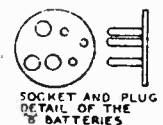


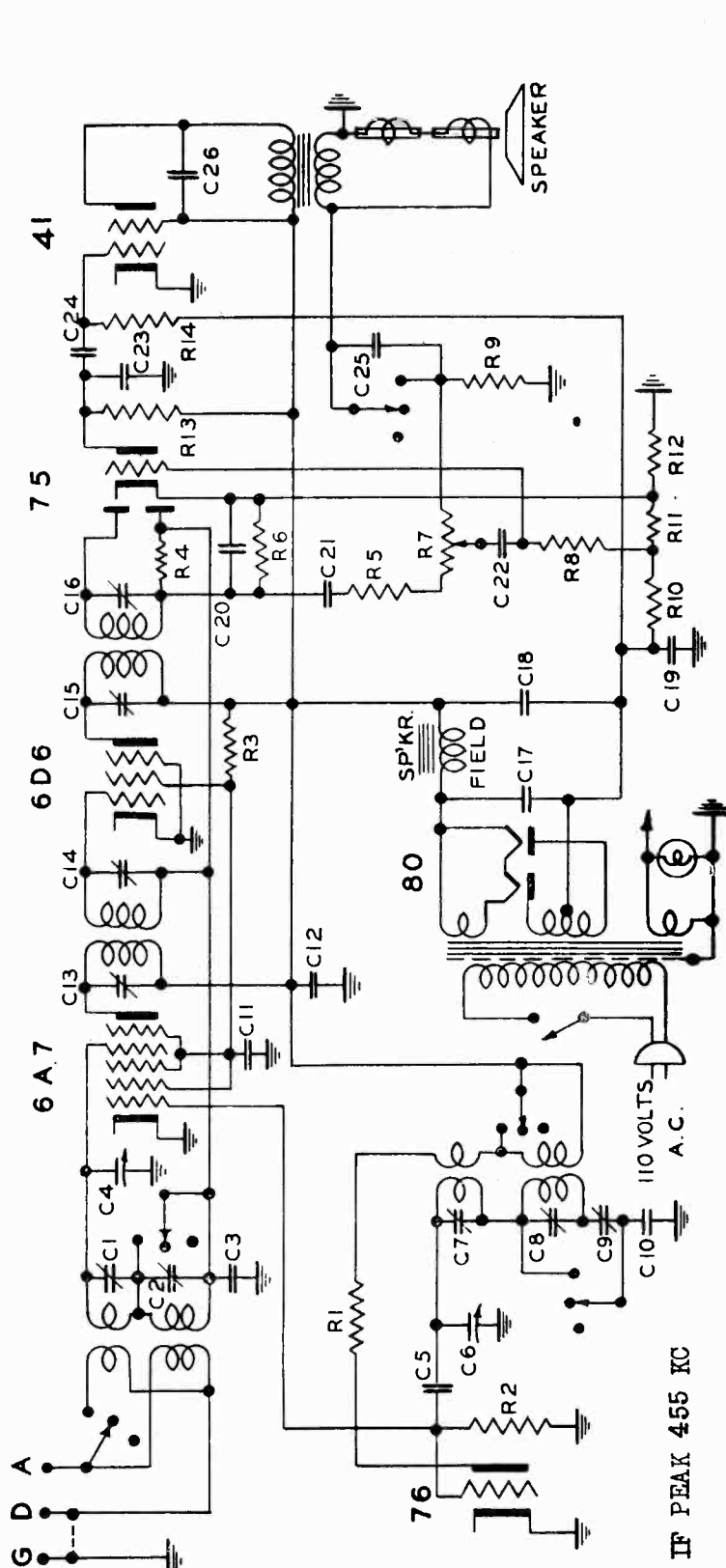
The frequency coverage is from 540 to 1650 kilocycles, i.e. from 555 to 182 meters. This includes the standard broadcast band and some police calls.

The tubes used are:

- 1—1A7GT Converter.
- 1—1N5GT I. F. Amplifier.
- 1—1H5GT 2nd Detector, AVC, and A. F. Amplifier.
- 1—1D8GT 2nd A. F. Amplifier and Output Tube Used on Battery Operation only.
- 1—70L7GT Output and Rectifier Tubes Used on Line Operation Only.

The receiver is equipped with three push buttons. The first from the right is for line operation. The middle push button is for battery operation. The left hand push button is to turn the set off.





IF PEAK 455 KC

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII.

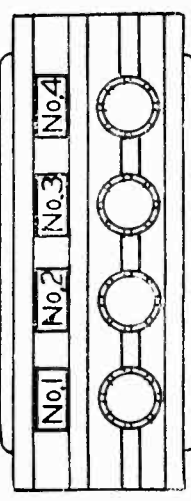
The tubes used are:

- 1-6A7 First detector
- 1-76 Oscillator
- 1-6D6 I. F. Amplifier
- 1-75 Second detector, automatic volume control and first audio amplifier
- 1-41 Output
- 1-80 Rectifier

Schematic Location

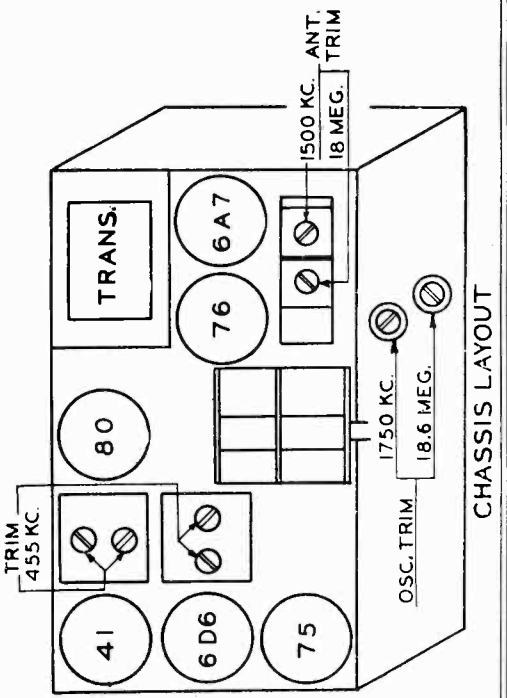
- C3 C15752 Tubular cond. .05 mid. 200 V
- C11,C12 C-15756 Tubular cond. .05 mid. 400 V
- C21,C22 C-15754 Tubular cond. .01 mid. 400 V
- C24,C26 C-15772 Tubular cond. .02 mid. 200 V
- C25 CM-15929 Mica cond. 250 mmf. Type "O"
- C20 CM-15928 Mica cond. 250 mmf. Type "O"
- C23 CM-15918 Mica cond. 100 mmf. Type "O"
- C10 CM-17 Pre set mica cond. 4330 mmf. 3% 12 mid., 300 V
- C17,C18,C19 Y-CE-43 Elect. cond. 8 mid. 300 V. 20 mid. 25V.
- C4,C6 Y-CV-19-A Variable condenser (2 gang)
- R2 R-15511 Carbon resistor 50K 1/4 W 20%
- R3 R-69 Carbon resistor 7.5K 2 W 20%
- R5,R13 R-15512 Carbon resistor 250K 1/4 W 20%
- R6,R14 R-15520 Carbon resistor 500K 1/4 W 20%
- R4,R8 R-15500 Carbon resistor 2 Meg 1/4 W 20%
- R1 R-15601 Carbon resistor 100 ohms 1/4 W 20%
- R9 R-65 Carbon resistor 10K 1/4 W 20%
- R10,R11 R12 RC-6 Candohm resistor
- R7 Y-V-24 Volume control
- C1,C2,C7,C8 Y-DB-24 Trimmer cond.
- C9 Y-CP-16472 Padder cond.
- C13,C14 Y-CF-1 Trimmer cond. 1st I. F.
- C15,C16 Y-CF-1 Trimmer cond. 2nd I. F.

STATION INDICATORS



STATION SELECTORS

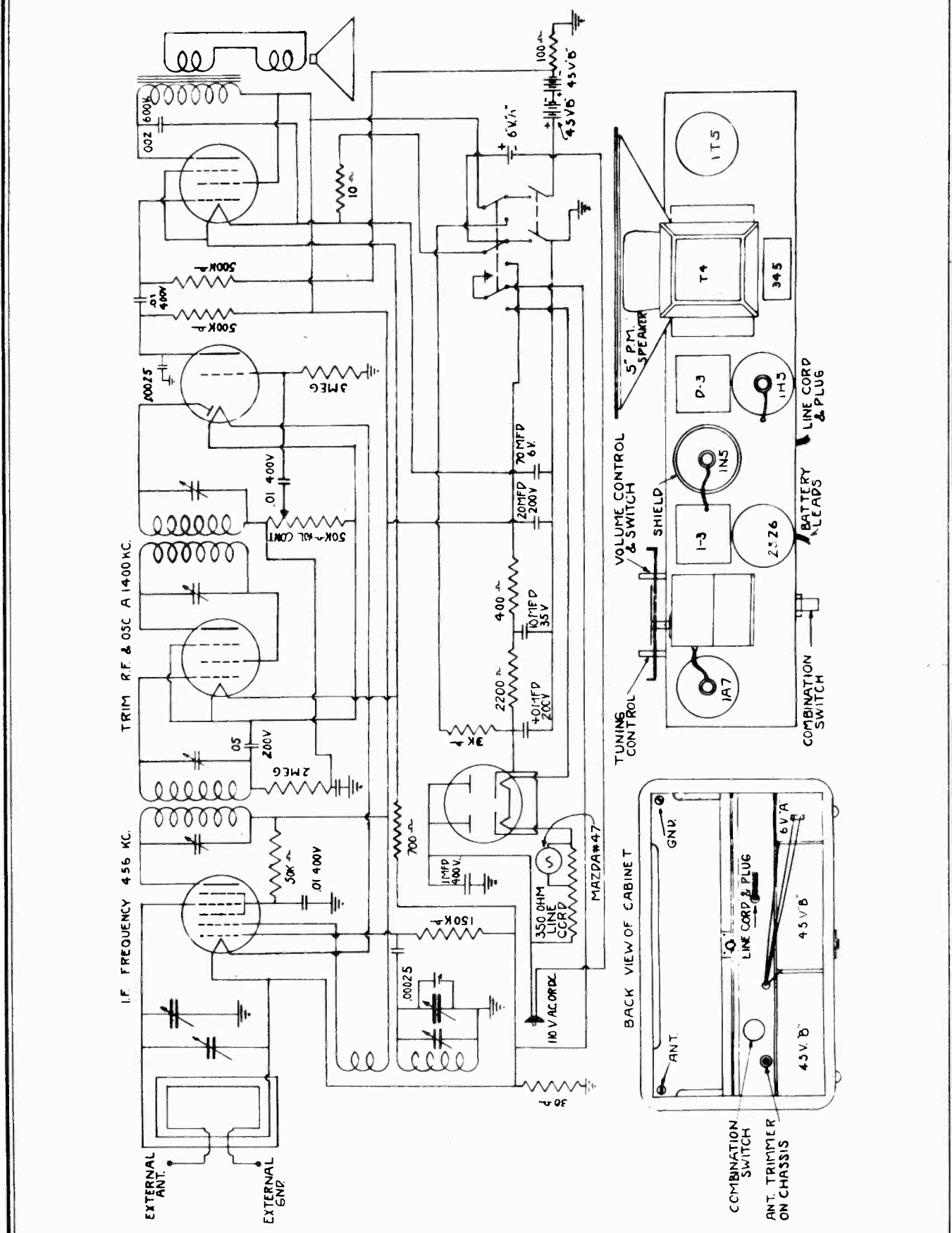
Setting Up Of Buttons see Index



CHASSIS LAYOUT

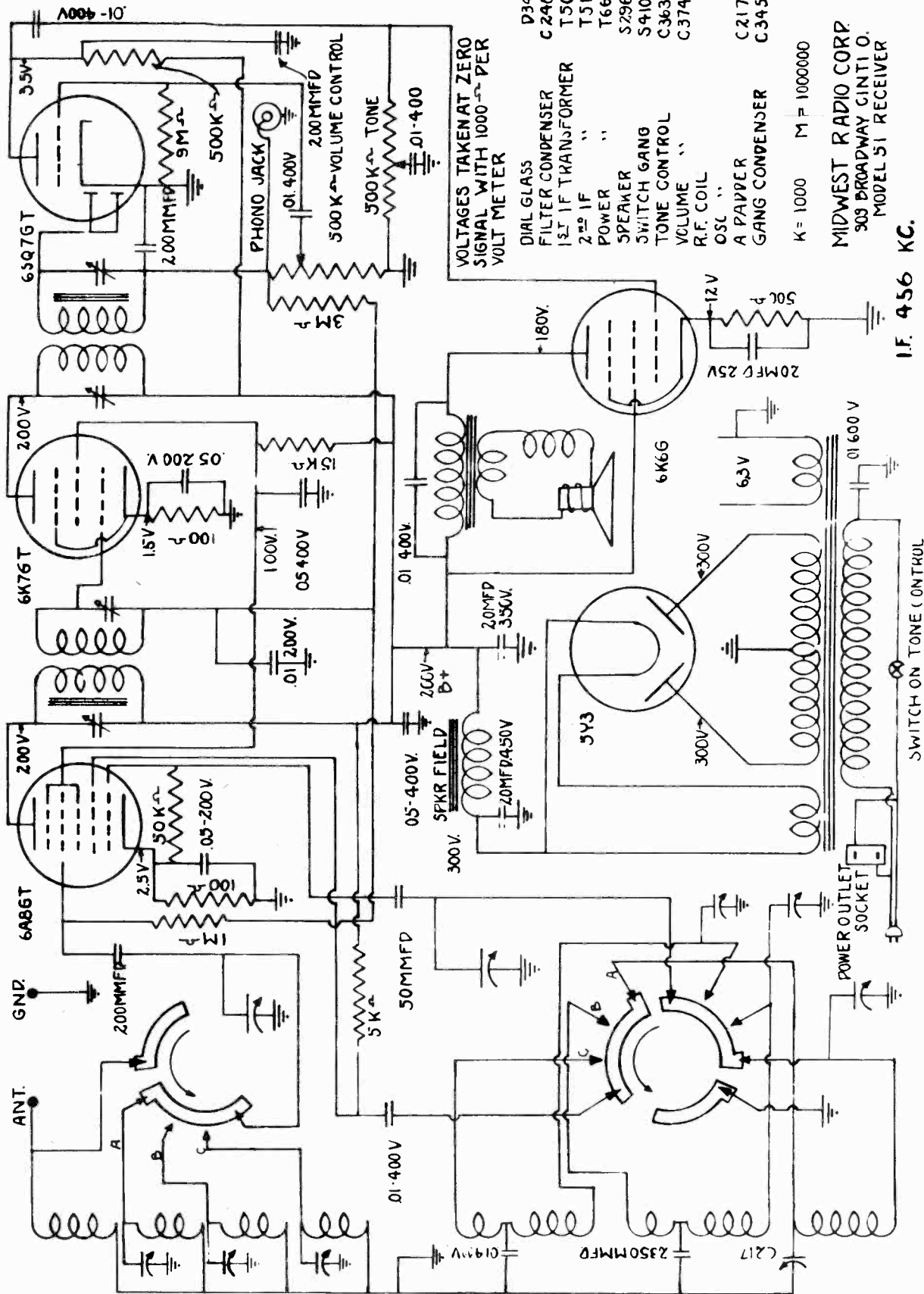
MIDWEST RADIO CORP.

MODEL 1940
Portable



MODEL 51

MIDWEST RADIO CORP.



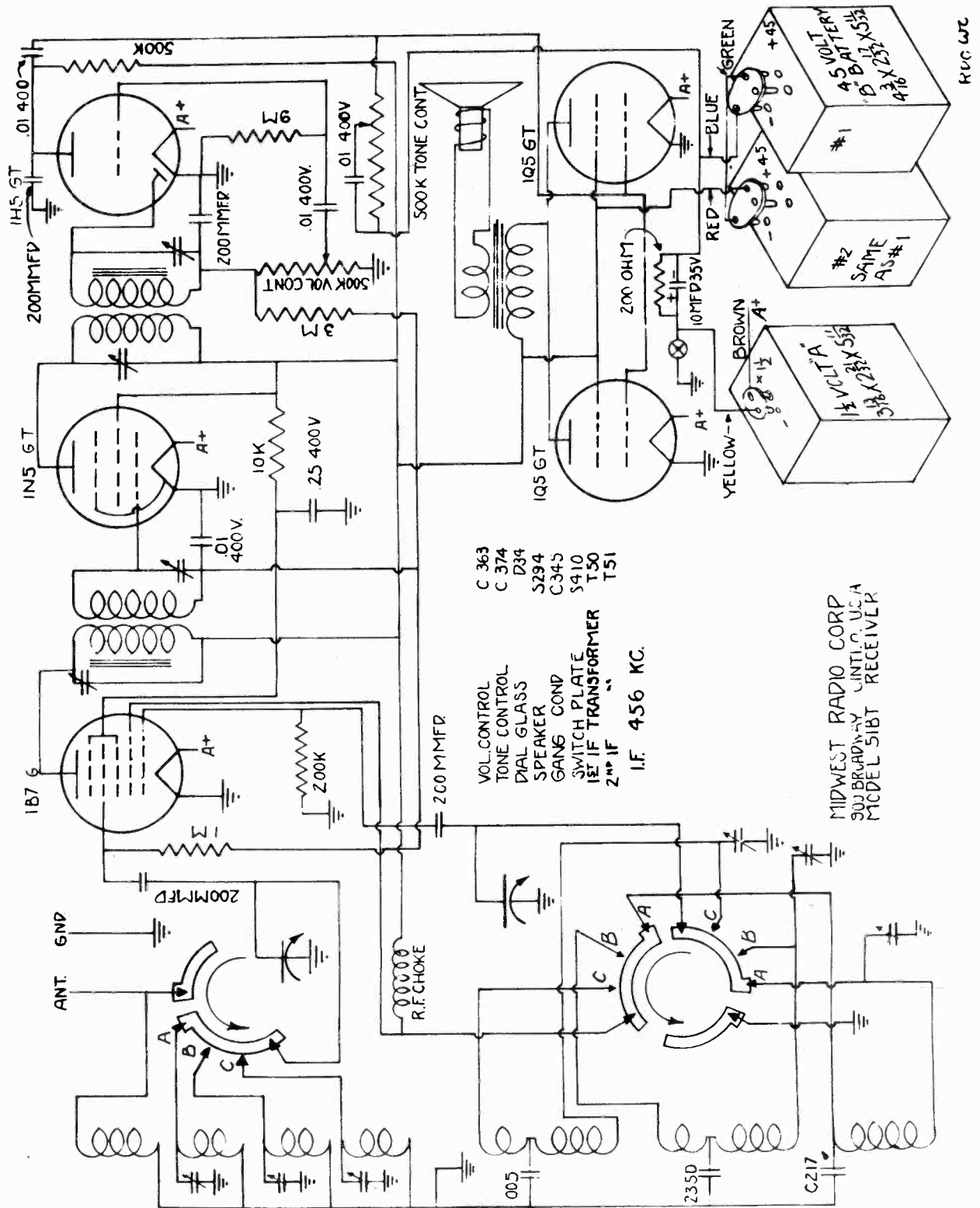
- VOLTAGES TAKEN AT ZERO SIGNAL WITH 1000Ω PER VOLT METER
- DIAL GLASS D34
 - FILTER CONDENSER C246
 - 1ST IF TRANSFORMER T50
 - 2ND IF " T51
 - POWER " T66
 - SPEAKER S296
 - SWITCH GANG S410
 - TONE CONTROL C363
 - VOLUME " C374
 - R.F. COIL " "
 - OSC " " "
 - A PAPERER C217
 - GANG CONDENSER C345
- K = 1000 M = 1000000

MIDWEST RADIO CORP.
309 BROADWAY GINTI O.
MODEL 51 RECEIVER

I.F. 456 KC.

82L RPS W.R.C.

MIDWEST RADIO CORP.



- C 363
- C 374
- D 34
- S 294
- C 345
- S 410
- T 50
- T 51

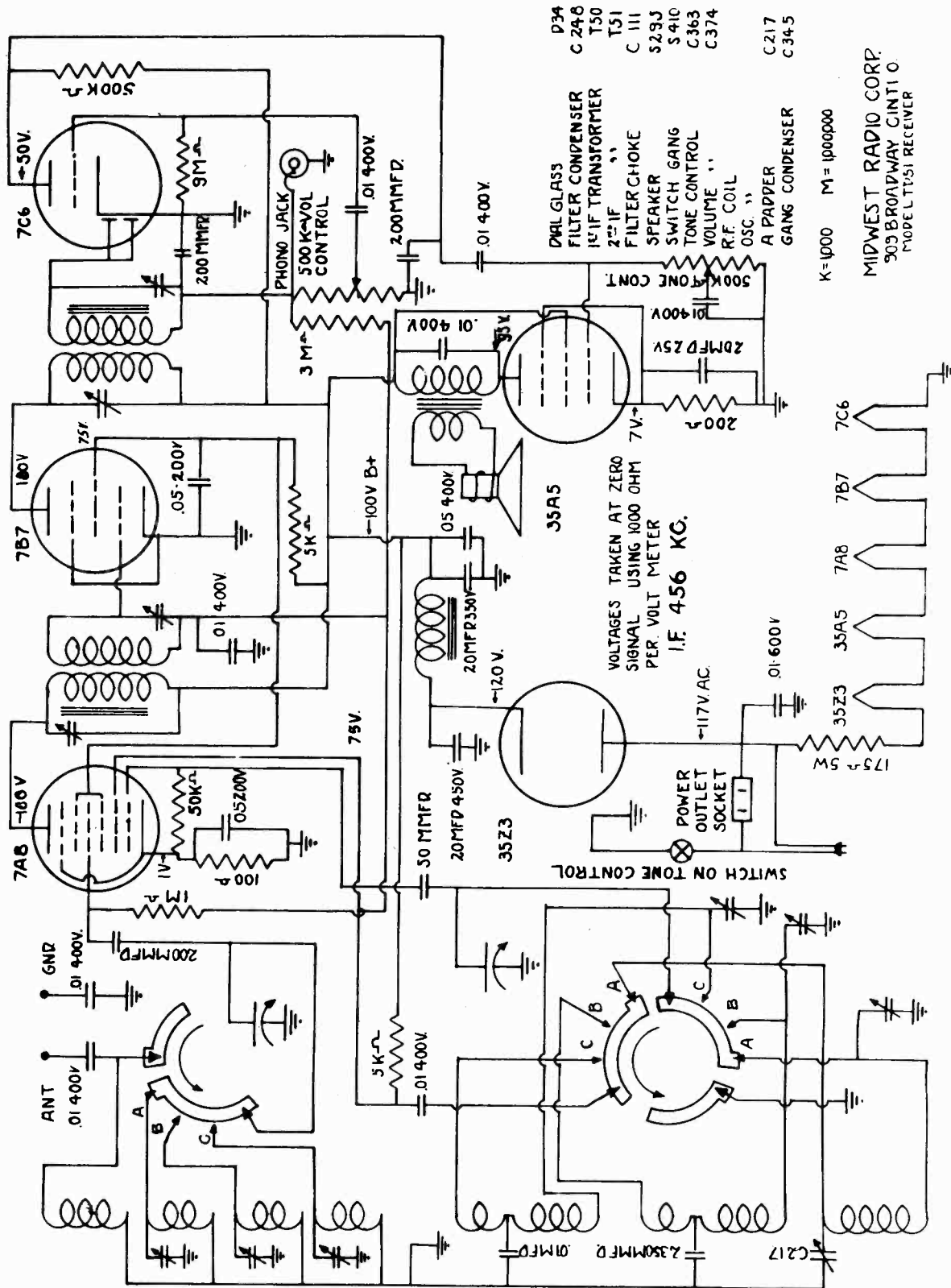
- VOL. CONTROL
- TONE CONTROL
- DIAL GLASS
- SPEAKER
- GANG COND
- SWITCH PLATE
- 1ST IF TRANSFORMER
- 2ND IF "
- I.F. 456 KC.

MIDWEST RADIO CORP.
 300 BROADWAY
 LITTLE ROCK, U.S.A.
 MODEL 51BT RECEIVER

RUC WC

MODEL TD51

MIDWEST RADIO CORP.



- D34 500K
- C 248 500K
- T50 500K
- T51 500K
- C 111 500K
- S 293 500K
- S 410 500K
- C 363 500K
- C 374 500K
- C 217 500K
- C 34-5 500K

- DUAL GLASS
- FILTER CONDENSER
- 10:1F TRANSFORMER
- 2:2:1F
- FILTER CHOKE
- SPEAKER
- SWITCH GANG
- TONE CONTROL
- VOLUME "
- R.F. COIL
- OSC "
- A PAPPER
- GANG CONDENSER

VOLTAGES TAKEN AT ZERO SIGNAL USING 1000 OHM PER. VOLT METER I.F. 456 KG.

POWER OUTLET SOCKET SWITCH ON TONE CONTROL

K=1000 M=1000000

MIDWEST RADIO CORP.
305 BROADWAY CINTI O.
MODEL TD51 RECEIVER

REV. 1/4, 1935

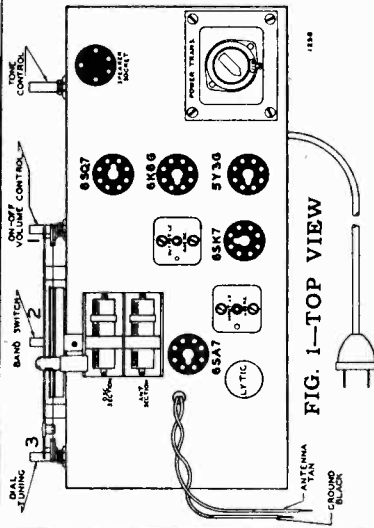


FIG. 1—TOP VIEW

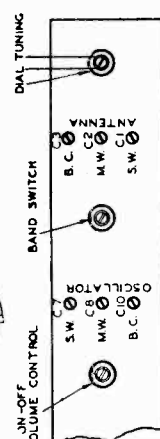


FIG. 3—FRONT OF CHASSIS

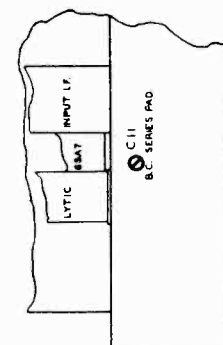
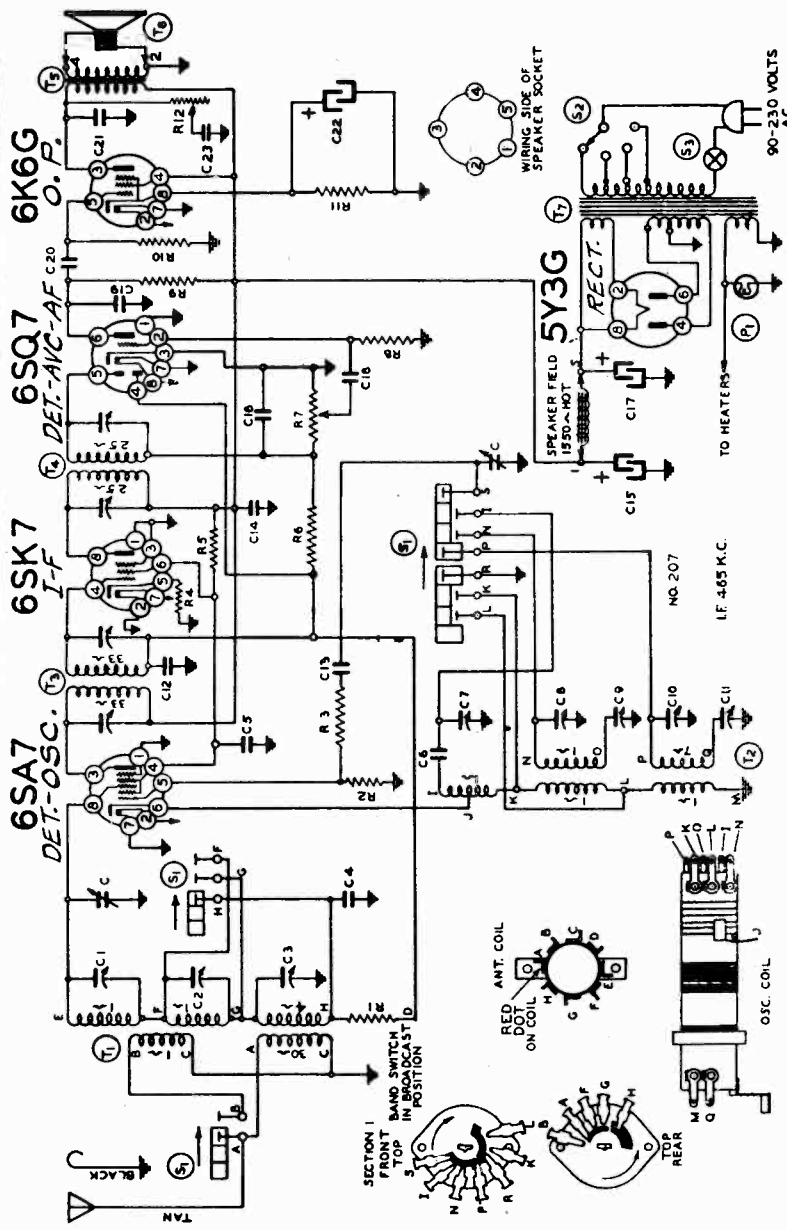


FIG. 4—REAR OF CHASSIS



Schematic Ref. Part No. Description

- C12 BE10026 .02 x 400 v.
- C13 BE1295 .0001 Mica
- C14 BE1001 .1 x 400 v.
- C15 BE119103 40 mid. lytic
- C16 BE1295 .0001 Mica
- C17 BE119103 10 mid. lytic
- C18 BE10025 .002 x 600 v.
- C19 BE1292 .005 Mica
- C20 BE10026 .02 x 400 v.
- C21 BE119103 .04 x 600 v.
- C22 BE119103 20 mid. lytic x 25 w. v.
- C23 BE10026 .02 x 400 v.

SEPT. 1940

Schematic Ref. Part No. Description

- RESISTORS**
- R1 BE13011 250M ohm— $\frac{1}{2}$ w.
 - R2 BE13014 35M ohm— $\frac{1}{2}$ w.
 - R3 BE13029 50 ohm— $\frac{1}{2}$ w.
 - R4 BE13029 250 ohm— $\frac{1}{2}$ w.
 - R5 BE13024 12M ohm— $\frac{1}{2}$ watt
 - R6 BE1304 3 megohm— $\frac{1}{2}$ watt
 - R7 BE10208 1 megohm— $\frac{1}{2}$ w.
 - R8 BE13023 10 megohm— $\frac{1}{2}$ w.
 - R9 BE13011 250M ohm— $\frac{1}{2}$ w.
 - R10 BE13019 1 megohm— $\frac{1}{2}$ w.
 - R11 BE13070 500 ohm— $\frac{1}{2}$ w.
 - R12 BE101237 150 ohm—Tone control
- CONDENSERS**
- C1 BE102124 Two Gang Variable Condenser
 - C2 BE124124 S. W. Antenna Trimmer
 - C3 BE124124 M. W. Antenna Trimmer
 - C4 BE1009 .05 x 200 v.
 - C5 BE1001 .1 x 400 v.
 - C6 BE129153 .006-S. W. Padder (Set at Factory)
 - C7 BE124123 S. W. Oscillator Trimmer
 - C8 BE124123 M. W. Oscillator Trimmer
 - C9 BE124123 .0025 M. W. Padder
 - C10 BE124123 B. C. Oscillator Trimmer
 - C11 BE129155 B. C. Padder

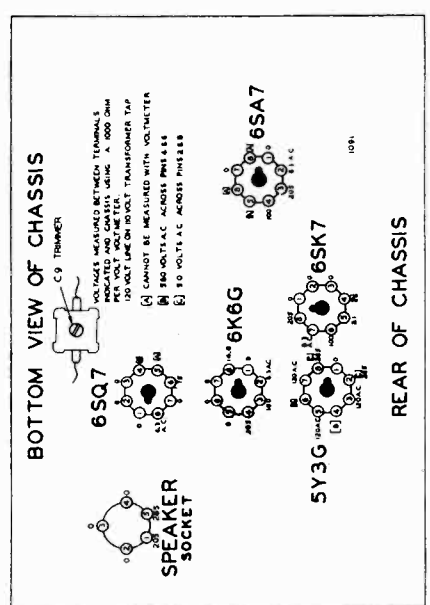


FIG. 5

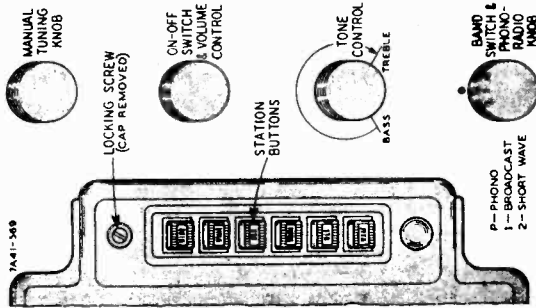
PARTS

- T1 BE11169 Antenna Coil
- T2 BE110143 Oscillator Coil
- T3 BE108169B Input I. F.
- T4 BE108170 Output I. F.
- T5 BE108575 Output Transformer
- T6 BE114176 6" Dynamic Speaker (1550 ohm field)
- T7 BE104193 Power Transformer 40-60 cycles 90-230 volts
- S1 BE125105 Band Switch
- S2 Voltage Switch on Power Transformer
- S3 Volume Control—On-Off switch
- P1 BE10794 Pilot Light Bulb T-44

MODEL O4BR-389T

MONTGOMERY WARD & CO.

MODELS O4WG-728
O4WG-732



knob so that the dial pointer moves toward 1550 KC until the stop is reached. Then, with a **SMALL HANDLED** screwdriver, turn the locking screw in a clockwise direction until it is tight. Tighten the locking screw firmly but not excessively to avoid stripping the threads. Replace the cap over the hole.

Remove the correct station call letter tabs from the sheets supplied by bending the sheet back and forth at the score mark until the tab can be broken off. Press the tab all the way to the bottom of the space provided in the button. Cover the call letter tab with a celluloid tab, pressing this in until it snaps into place.

If at any time you wish to change the setting of a button from one station to another, repeat the above procedure. Changing the setting of one button will not affect the setting of any of the other buttons.

ALIGNMENT PROCEDURE MODEL O4BR-389T

- The following equipment is required for aligning:
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
 - Output indicating meter.
 - Non-metallic screwdriver.
 - Dummy antennas—1 Mf., 200 Mmf., 400 Ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6SK7 I. F. Tube	Broadcast	Rotor full open (Plates full open)	Two trimmers on top (See Fig. 3)	Output	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6SA7	Broadcast (Extreme Left Rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND	21 Mc.	400 ohms	Antenna lead	Short Wave (Extreme Right Rotation)	Set Dial at 21 Mc	Trimmer (C7) (See Fig. 3)	Short wave oscillator	See Note "A" Adjust to maximum output
	21 Mc.	400 ohms	Antenna lead	Short Wave (Extreme Right Rotation)	Set Dial at 21 Mc	Trimmer (C3) (See Fig. 3)	Short wave antenna	Adjust to maximum output
MEDIUM WAVE BAND	6 Mc.	400 ohms	Antenna lead	Medium Wave	Set Dial at 6 Mc	Trimmers (C8, C2) (See Fig. 3)	Medium wave oscillator and antenna	Adjust to maximum output
	2.3 Mc.	400 ohms	Antenna lead	Medium Wave	Set Dial at 2.3 Mc	Trimmer (C9) (See Fig. 5)	Medium wave osc. series pad	Adjust to maximum rock dial. (See note "B")
BROAD-CAST BAND	1750 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme Left Rotation)	Rotor full open (Plates out of mesh)	Trimmer (C10) (See Fig. 3)	Broadcast oscillator	Adjust to maximum output
	1500 Kc.	200 mmf.	Antenna lead	Broadcast	Set Dial at 1500 Kc.	Trimmer (C3) (See Fig. 3)	Broadcast oscillator	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast	Set Dial at 600 Kc.	Trimmer (C4) (See Fig. 4)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "B")

Test Frequencies Used	Kilocycles	Meters
I. F.	465	645.1
Short Wave	21000	14.2
Medium Wave	6000	50
Medium Wave	2500	140
Broadcast	1750	173.4
Broadcast	1500	200
Broadcast	600	500

BAND	FREQUENCY RANGE	Meters
Broadcast	540-1750 Kc. (555-1734 Meters)	14.2-50
Medium Wave	2.2-7 Mc. (196-728 Meters)	140-173.4
Short Wave	5.0-23.0 Mc. (45-13 Meters)	200-500

Power Consumption	Watts
Undistorted	55
Maximum	117

NOTE "A"—It is extremely necessary when making this adjustment that the fundamental oscillator signal be tuned in and not the image frequency which will fall below the fundamental.

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

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

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

Setting the Station Buttons

Select the first station from the list you have prepared, and carefully tune in this station by rotating the manual tuning knob until the signal is clearest and strongest.

With one hand, hold the manual tuning knob to prevent it from turning and with the other hand, push one of the station buttons shown in the illustration all the way in. It is better to start with the top button.

Hold this button all the way in. With the other hand, see whether or not this station is still accurately tuned in by turning the tuning knob a slight amount back and forth. Be sure to hold the button all the way in.

Repeat the above procedure for each station on your list. After all the stations are set, it will be necessary to lock the mechanism so that the settings will not change. Turn the manual tuning knob so that the dial pointer moves toward 1550 KC until the stop is reached. At the top of the escutcheon (from the front) will be seen a cap which covers a hole in the escutcheon—See illustration. Pry up this cap. At the end of the tube in back of the hole in the escutcheon is the locking screw. Using a small handled screwdriver, unhook the mechanism by turning this screw in a counter-clockwise direction several turns.

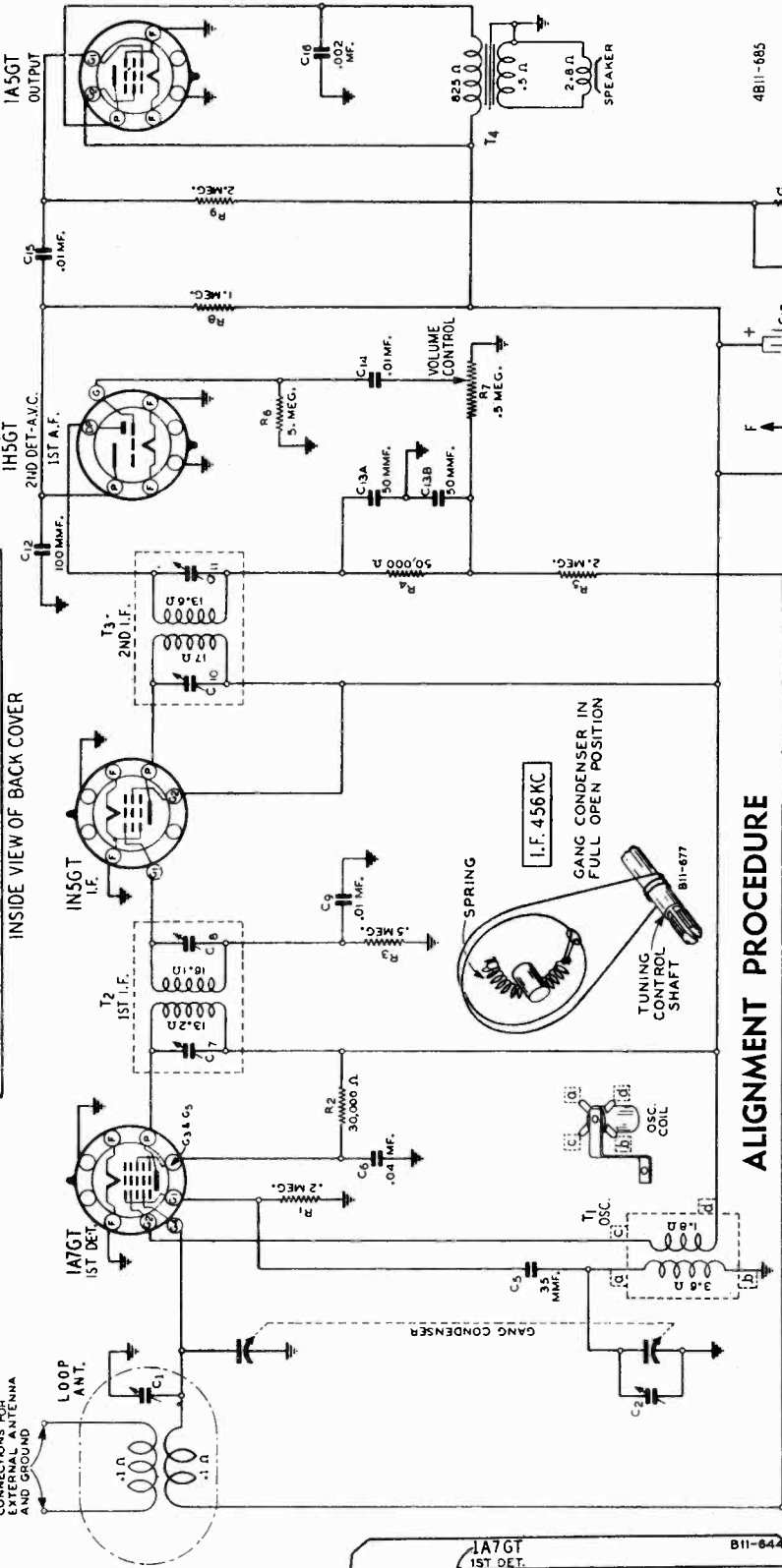
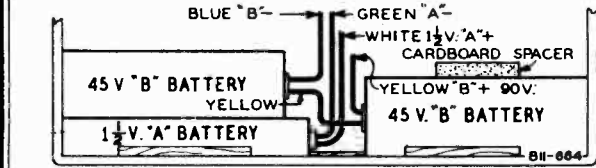
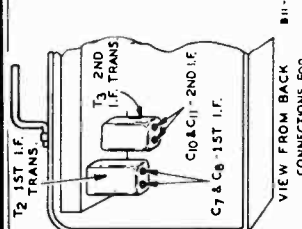
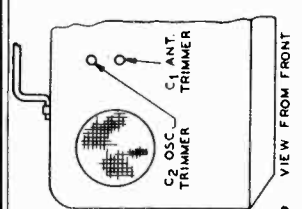
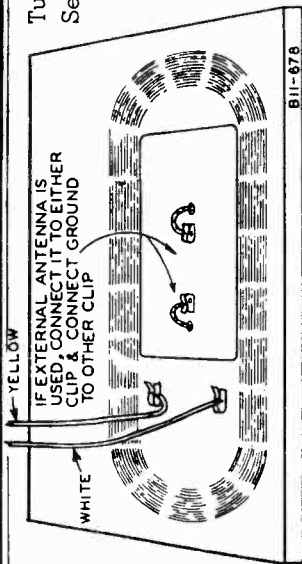
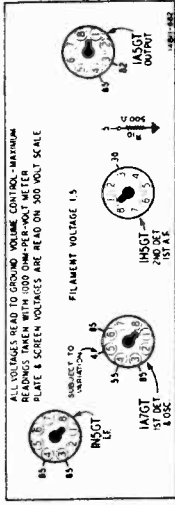
TO SET STATIONS ACCURATELY, DO NOT JAR THE RADIO OR BUTTONS WHILE THE MECHANISM IS UNLOCKED.

Release the button slowly after the station is tuned in.

CAUTION—Do not touch this button again while the mechanism is unlocked as the setting may be altered. Carefully tune in the second station on your list. Then hold the tuning knob and push the second button slowly and firmly all the way in. Check for accurate tuning.

Proceed in the same manner to set any additional stations on your list on the remaining station buttons. After all the stations are set, it will be necessary to lock the mechanism so that the settings will not change. Turn the manual tuning knob so that the dial pointer moves toward 1550 KC until the stop is reached. Then, with a **SMALL HANDLED** screwdriver, turn the locking screw in a clockwise direction until it is tight. Tighten the locking screw firmly but not excessively to avoid stripping the threads. Replace the cap over the hole.

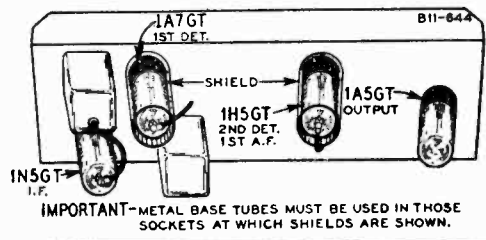
Tuning Frequency Range - - - 540 to 1600 KC
Sensitivity (For .05 Watt Output)
External Antenna 50 Microvolts Average



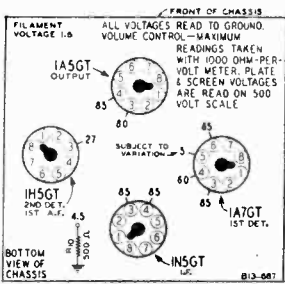
ALIGNMENT PROCEDURE

SIGNAL GENERATOR FREQUENCY SETTING	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration page 3)
456 KC Signal Grid of 1st Det. (Top Cap)	.1 mf.	Turn rotor to full open	1st I.F. (C7) & (C8) 2nd I.F. (C10) & (C11)
1600 KC Signal Grid of 1st Det.	.1 mf.	Turn rotor to full open	Oscillator (C2)
1500 KC None—See Note A		Turn rotor to max. output Antenna (C1)	

Power Output
70 Milliwatts Undistorted
160 Milliwatts Maximum
Selectivity - -
50 KC Broad at
1000 Times Signal



CALIBRATION—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, pull pointer off shaft, set pointer at the 800 KC mark and push back

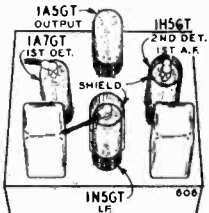
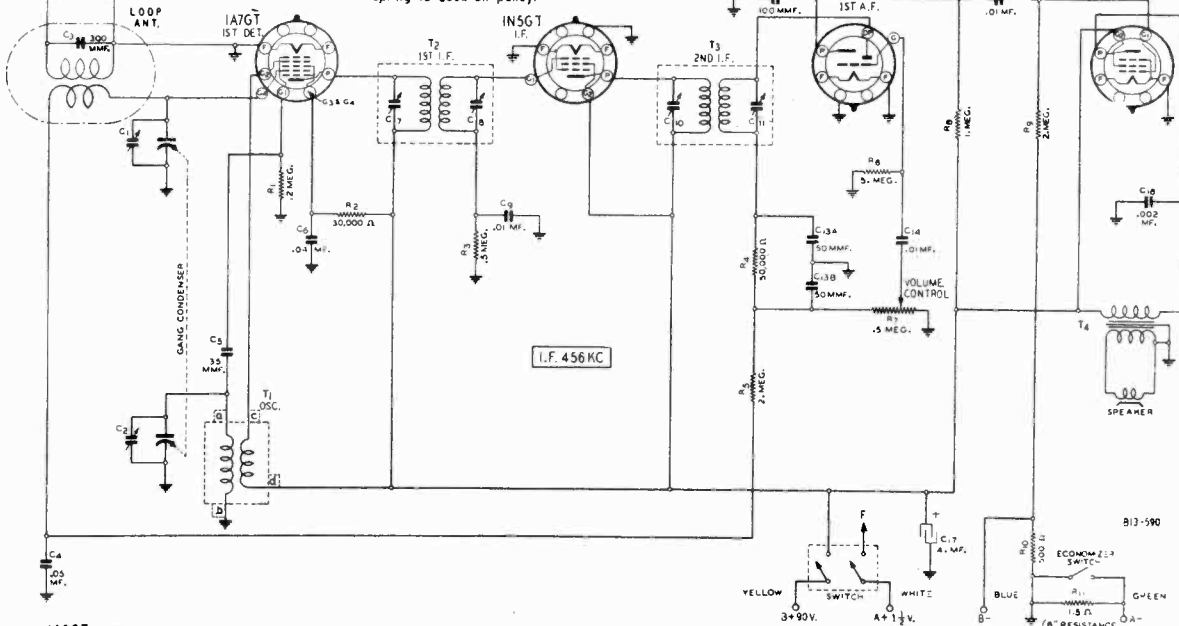
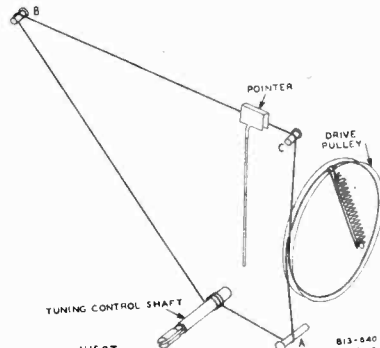


DRIVE CORD REPLACEMENT

Tie a knot with a small loop at each end of new drive cord. The distance between knots should be 36/4 inches. Turn gang condenser to full open position—See illustration.

Thread one end of drive cord down through hole in groove of drive pulley. Place loop on hook on pulley. Wind other end of cord 1/4 turn counter-clockwise (from pulley side of chassis) around drive pulley. Pass cord under idler stud A. Wind 3 turns clockwise (from front of chassis) around tuning control shaft. Turns should progress away from chassis.

Continue cord over idler studs B and C as shown. Then wind cord 1/4 turn counter-clockwise (from drive pulley side of chassis) around drive pulley. This turn should be on left side (from rear of chassis) of pulley groove. Thread cord through hole in drive pulley. Hook loop on tension spring. Fasten other end of spring to hook on pulley.

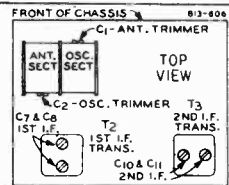


SPECIFICATIONS

Input Voltages and Currents	Intermediate Frequency	456 KC
"A" Battery	Speaker	5" P.M. Dynamic
"B" Batteries	Tuning Frequency Range	528 to 1600 KC
Power Output	Sensitivity (For .05 Watt Output)	External Antenna
70 Milliwatts Undistorted		40 Microvolts Average
160 Milliwatts Maximum		
Selectivity		
40 KC Broad at 1000 Times Signal		

ALIGNMENT PROCEDURE

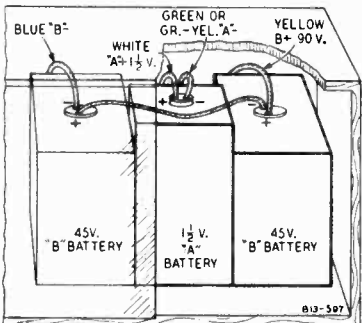
Volume Control—Maximum All Adjustments.
 Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.
 Allow Chassis and Signal Generator to "Heat Up" for several minutes.
 The following equipment is required for aligning:
 A Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
 Output Indicating Meter — Non-Metallic Screwdriver.
 Dummy Antennas—.1 mf. & 100 mmf.



FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)
456 KC	Signal Grid of 1st Det (Top Cap)	.1 mf.	Turn rotor to full open	1st I.F. (C7) & (C8) 2nd I.F. (C10) & (C11)
1600 KC	Signal Grid of 1st Det	.1 mf.	Turn rotor to full open	Oscillator (C2)
1400 KC	External Antenna Clip On Loop — See Note A	100 mmf.	Turn Rotor to Max. Output Set Indicator to 1400 KC — See Note B	Antenna (C1)

NOTE A—Re-assemble chassis in cabinet. Replace back on cabinet. Connect ground post of signal generator to external ground clip on loop.

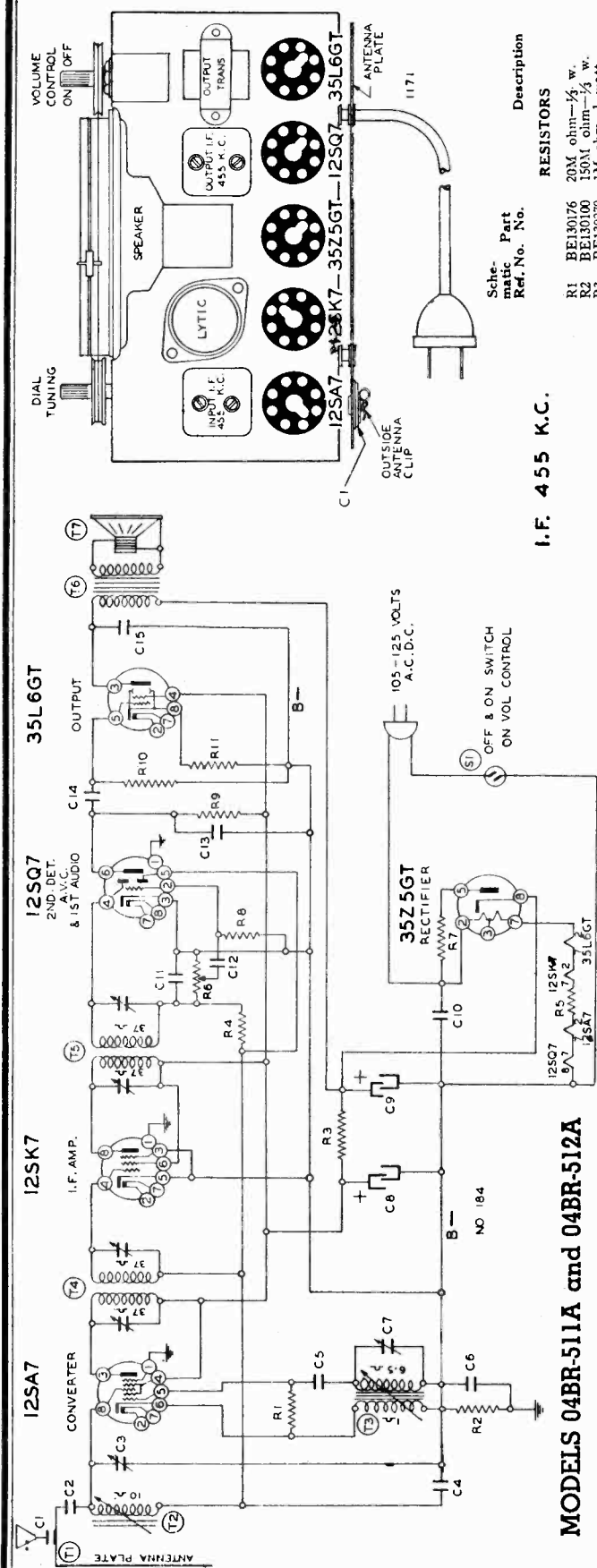
NOTE B—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.



MONTGOMERY WARD & CO.

MODELS 04BR-511A,
04BR-512A

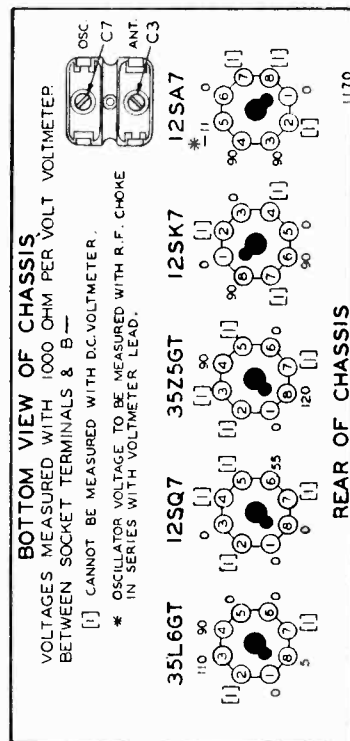
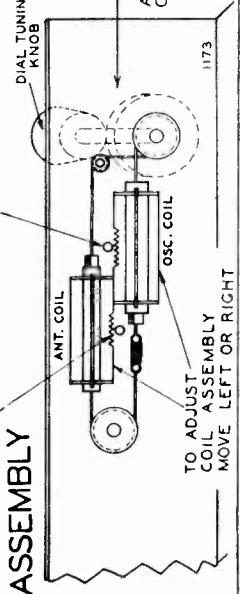
above ser. #OE428700



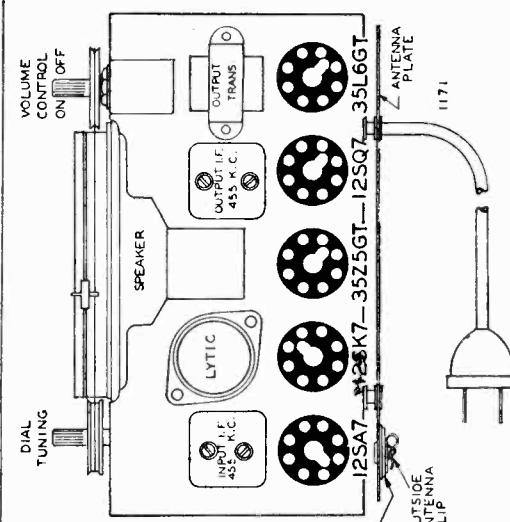
MODELS 04BR-511A and 04BR-512A
SERIES A (SERIAL No. OE428700 and UP)

- Selectivity - 85 KC Broad at 1000 Times Signal at 1000 KC
- Tuning Frequency Range 535 to 1720 KC
- Intermediate Frequency 455 KC
- Speaker 4 in. P. M. Dynamic
- Power Consumption 35 Watts
- Power Output 800 Milliwatts Undistorted
- Sensitivity (for .05 Watts Output) - 30 Microvolts Average

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



I.F. 455 K.C.



Schematic Part Ref. No. No. Description

- RESISTORS**
- R1 BE130176 20M ohm-1/2 w.
 - R2 BE130100 150M ohm-1/2 w.
 - R3 BE130279 1M ohm-1 watt
 - R4 BE130288 50 ohm-1/2 w.
 - R5 BE130288 50 ohm-1/2 w.
 - R6 BE101220 500 ohm volume control and Switch
 - R7 BE130240 30 ohm-1/2 w.
 - R8 BE130257 5 megohm-1/2 w.
 - R9 BE130100 150M ohm-1/2 w.
 - R10 BE130101 250M ohm-1/2 w.
 - R11 BE130166 150 ohm-1/2 w.
- CONDENSERS**
- C1 BE131262 .0001 washer condenser (antenna clip on back plate)
 - C2 BE129114 .0003 mica
 - C3 BE124137 Trimmer on antenna coil
 - C4 BE119939 .05 x 200 v.
 - C5 BE119939 .05 x 200 v.
 - C6 BE119939 .05 x 200 v.
 - C7 BE124137 15 x 40 mica
 - C8 BE119922 20 mid. lyric x 150 w. v.
 - C9 BE119922 20 mid. lyric x 150 w. v.
 - C10 BE119922 20 mid. lyric x 150 w. v.
 - C11 BE10013 .05 x 400 v.
 - C12 BE12912 .00025 mica
 - C13 BE10025 .002 x 600 v.
 - C14 BE1292 .0005 mica
 - C15 BE10011 .01 x 400 v.
 - C16 BE10011 .01 x 400 v.
 - C17 BE10011 .01 x 400 v.
 - C18 C8 and C9 in same unit
 - C19 C8 and C9 in same unit

PARTS

- T1 BE11597-18 Antenna plate-walnut or Antenna plate-ivory
- T2 BE11597-9 Antenna permeability coil
- T3 BE11597-1 Oscillator permeability coil
- T4 BE10817 H Output I.F. Coil-45 Kc.
- T5 BE10817 I Output I.F. Coil-45 Kc.
- T6 BE10510 Output Transformer
- T7 BE14199 4" P.M. Speaker
- S1 Switch on volume control

Service Notes

All voltages as indicated on the circuit diagram are measured with 1170 antenna systems, low line voltage, de-volt A.C. or D.C. line. Resistances of coil windings are in ohms on the schematic circuit diagram.

CAUTION:—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, condensers and resistors.

MODELS 04BR-511A
04BR-512A
above ser.#OE428700

MONTGOMERY WARD & CO.

MODEL 04BR-570A

Models No. 04BR-511A and 04BR-512A ALIGNMENT PROCEDURE

IMPORTANT: See Aligning Instructions

- Volume control—Maximum all adjustments.
 - Connect B—of radio chassis to ground post of signal generator through .1 Mfd. condenser.
 - Connect dummy antenna value in series with generator output lead.
 - Connect output meter across primary of output transformer.
 - Allow chassis and signal generator to "heat up" for several minutes.
- The following equipment is required for aligning.
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
 - Output indicating meter.
 - Non-metallic screwdriver.
 - Dummy antennas—.1 Mfd., and 200 Mmf.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Iron Cores (Dial Setting)	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD.	Metal Antenna Backplate Connect to Antenna Backplate	Iron Cores All the way out	Two trimmers on top of output I. F. can	Output I. F.	Adjust to maximum output
	455 Kc.	.1 MFD.	Metal Antenna Backplate Connect to Antenna Backplate	Iron Cores All the way out	Two trimmers on top of input I. F. can	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1720 Kc.	.1 MFD.	Metal Antenna Backplate Connect to Antenna Backplate	Iron Cores All the way out	Trimmer (C7) (See bottom of chassis view)	Oscillator	Adjust to maximum output
	1720 Kc.	200 MMF.	Outside Antenna Clip Connect to Antenna Clip	Iron Cores All the way out	Trimmer (C3) (See bottom of chassis view)	Antenna	Adjust to maximum output (See Note "A")
	1400 Kc.	200 MMF.	Outside Antenna Clip Connect to Antenna Clip	Turn Dial to 1400 Kc.	Adjust position of antenna coil (See coil assembly view)	Antenna Coil Adjustment	Adjust to maximum output
	1720 Kc.	200 MMF.	Outside Antenna Clip Connect to Antenna Clip	Turn Dial to 1720 Kc.	Adjust trimmer (C3) (See bottom of chassis view)	Antenna	Check for tracking (See Note "B")

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

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

Model No. 04BR-570A

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

ALIGNMENT PROCEDURE

- The following equipment is required for aligning:
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
 - Output indicating meter.
 - Non-metallic screwdriver.
 - Dummy antennas—.1 Mfd., and 200 Mmf.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD.	Grid of 6S7G I. F. Tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Top View)	Output I. F.	Adjust to maximum output
	455 Kc.	.1 MFD.	Grid of 6D8G	Rotor full open (Plates out of mesh)	Two trimmers on top (See Top View)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1650 Kc.	.1 MFD.	Grid of 6D8G	Rotor full open (Plates out of mesh)	Trimmer—Top of gang (See Top View)	Oscillator	Adjust to maximum output
	1400 Kc.		(See Note "A")	Set dial at 1400 Kc.	Trimmer—Top of gang (See Top View)	Antenna	Adjust to maximum output

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

Loop aerial should be connected when aligning receiver and should be the same distance from the chassis as when mounted in the cabinet

MONTGOMERY WARD & CO.

MODELS 04BR-513A,

04BR-514A

above ser #428000

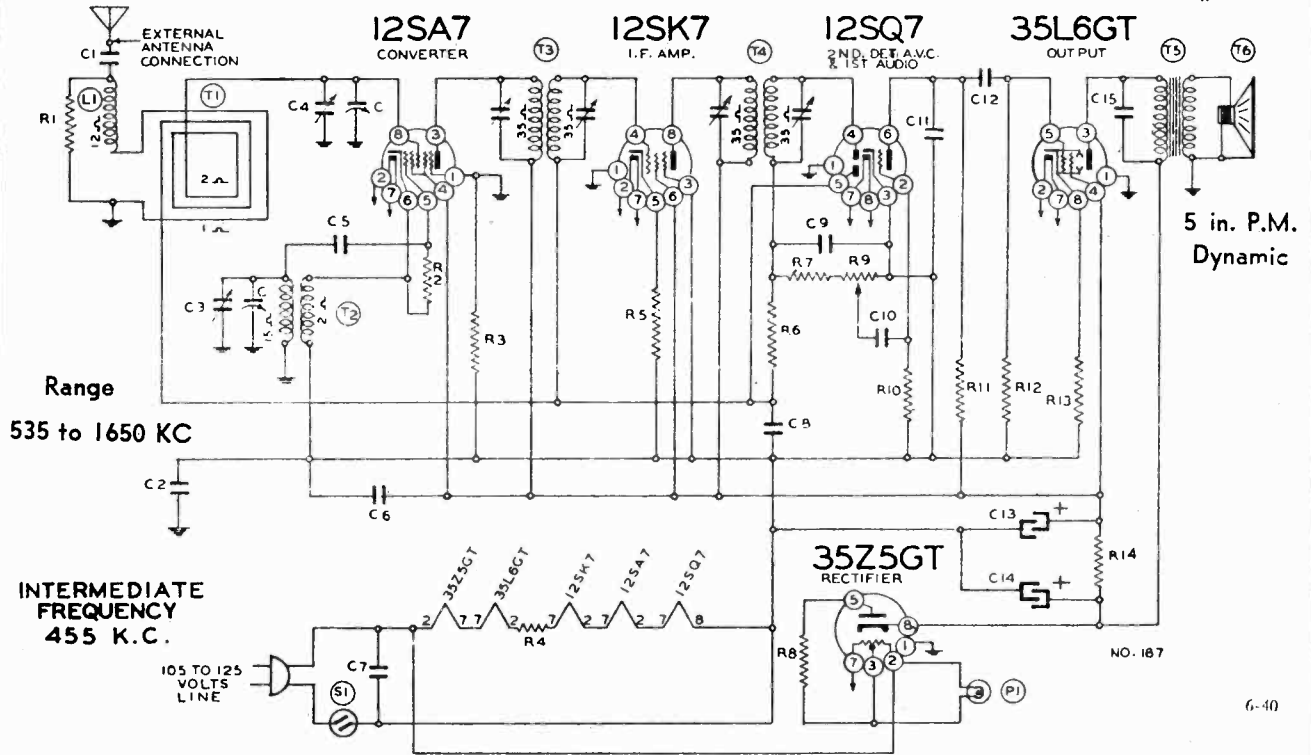


Diagram Part Ref. No. RESISTORS

R1	BE130314	2200 ohm—1/2 w.
R2	BE13094	50M ohm—1/2 w.
R3	BE1309	200M ohm—1/2 w.
R4	BE130315	75 ohm—1/2 w.
R5	BE130203	40 ohm—1/2 w.
R6	BE1304	3 megohm—1/2 w.
R7	BE1301	25M ohm—1/2 w.
R8	BE130215	25 ohm—1/2 w.
R9	BE101198	1 megohm volume contr
R10	BE130257	5 megohm—1/2 w.
R11	BE1303	500M ohm—1/2 w.
R12	BE1303	500M ohm—1/2 w.
R13	BE130166	150 ohm—1/2 w.
R14	BE130287	1200 ohm—1 w.

CONDENSERS

C1	BE102132	2 gang variable condenser
C2	BE10011	.01 x 400 v.
C3	BE10091	.15 x 400 v.
C4		Oscillator trimmer on gang
C5		Antenna trimmer on gang
C6	BE1009	.05 x 200 v.
C7	BE1001	.1 x 400 v.
C8	BE1009	.05 x 200 v.
C9	BE1295	.0001 mfd. mica
C10	BE10025	.002 x 600 v.
C11	BE12912	.00025 mfd. mica
C12	BE100106	.004 x 600 v.
C13	BE11992	20 mfd. lytic x 150 w. v.
C14	BE11992	40 mfd. lytic x 150 w. v.
C15	BE10026	.02 x 400 v.

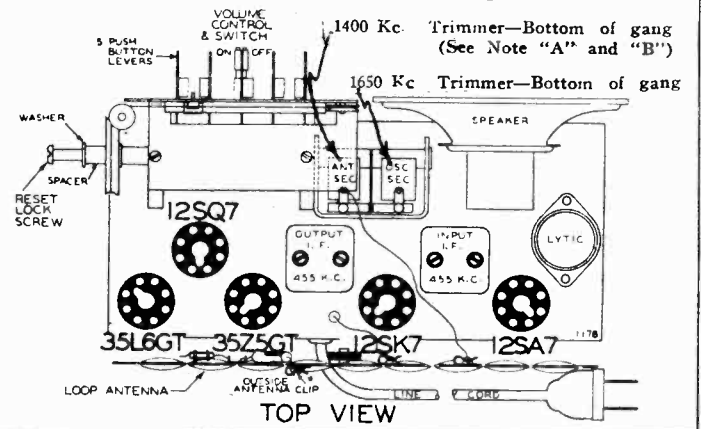
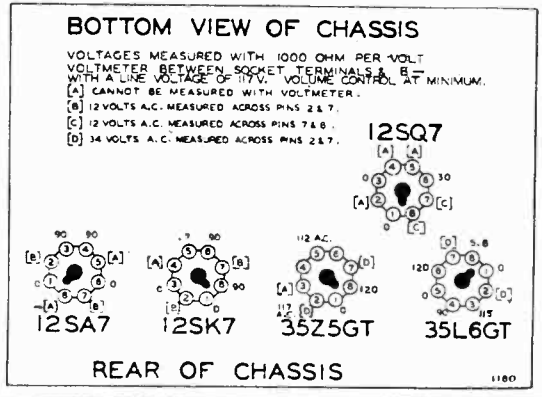
Power Consumption - - - - 35 watts
 Power Output - - - 800 Milliwatts Undistorted
 Sensitivity for 50 Milliwatt Output:
 20 Microvolts Average
 Selectivity - 65 KC Broad at 1000 Times Signal at 1000 KC

Loop aerial should be connected when aligning receiver.
 NOTE "A"—Mount the chassis and the loop antenna in the cabinet, connect the loop antenna to the chassis. Adjust the antenna trimmer through hole in bottom of cabinet.
 NOTE "B"—Lay the output lead from the signal generator in back of the loop antenna. Turn up the output of the generator, picking up the energy in the loop antenna without any electrical connection from the signal generator.

PARTS

T1	BE11182	Loop antenna—complete assembly
T2	BE110145	Oscillator coil
T3	BE108140I	Input I. F.—455 kc.
T4	BE108141D	Output I. F.—455 kc.
T5	BE105104	Output Transformer
T6	BE114201	5" P. M. Speaker
L1	BE12311	Loading coil
S1		On-off switch on volume control
P1	BE107249	Pilot light bulb T47

C13 and C14 are in same unit



SEE MODEL NUMBERS BELOW

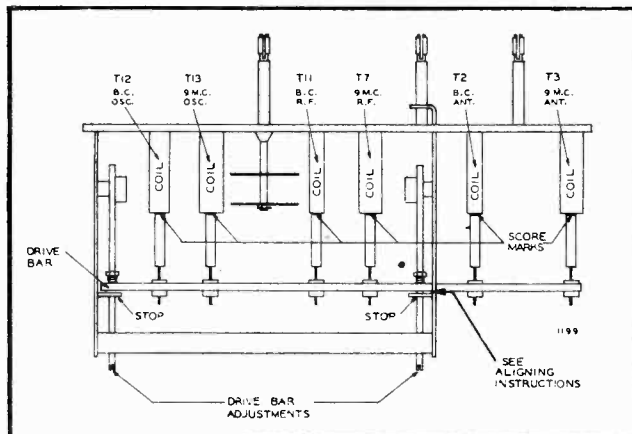
MONTGOMERY WARD & CO.

MODELS 675A, 676A, 903A,
907A, 904A, 906A**SETTING PUSHBUTTONS**

Make a list of your 6 favorite stations. Push out the call letters of these stations from the call letter sheets supplied. Insert a call letter in the slot on top of each pushbutton.

Next pull one of the pushbuttons all the way out as far as it will come (pull, with fingers on top and bottom of button). Now tune in the station you want with the tuning knob—Tune back and forth until the station is clear and distinct. Now push the button **hard** all the way in to lock the station in place. (push directly on front of button) Continue setting each pushbutton in the same way. Pressing the proper button will now tune the station you want. If it does not do so you did not push the button hard enough to lock in place when setting up the station.

To change stations simply repeat the procedure above.



IRON CORE ADJUSTMENT VIEW

MODELS 903A, 907A, 904A, 906A, 1105A, 1106A

REPLACING PUSH-BUTTONS

Should it ever be necessary to replace a broken or lost pushbutton you will notice they are made in two parts, a clear front and a brown body. To separate the two portions first take off the escutcheon. Push the button in—Next push the brown body of the button back until it snaps free from the clear front. You can now lift the clear portion off and take out the brown body. To replace the pushbutton, reverse the procedure.

HOW TO REMOVE CHASSIS

Should it ever be necessary to take the chassis out of the cabinet be sure to pull the plug from the light socket. Next pull the control knobs off the shafts and take the escutcheon off.

Turn the spring clips clear of the back and take the back off—be sure to disconnect the loop aerial and the speaker plug, also the plugs from the phono unit. Remove the chassis mounting screws and lift the chassis out.

SERVICE NOTES

Voltages taken from different points of circuit to chassis are measured with volume control at minimum, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt.

Resistances of coil windings are indicated in ohms on the schematic circuit diagram.

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

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

ALIGNING INSTRUCTIONS

CAUTION:—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltage, defective tubes, condensers and resistors. In order to properly align this radio, the chassis should be removed from the cabinet. Although the short wave bands on this radio are of the band spread type the Alignment Procedure is not difficult. However because each short wave scale covers only a small portion of the short wave spectrum you must do the work carefully and your oscillator must be accurate.

Do not realign the band spread scales unless you are positive they are out of adjustment. When adjustment is necessary proceed as follows.

First refer to the "Iron Core Adjustment View" now turn the tuning knob until the drive bar comes within 1/64 to 1/32 from the stops. (A piece of blotting paper is about the right thickness and will serve as a gauge). The clearance of the bar must be the same at both stops. If far off you can raise one drive screw gently and equalize them. Minor adjustments may be made with the drive bar adjustments.

Next rotate each iron core until the fine score marks are even with the edge of the coil forms.

You are now ready to continue with the trimmer adjustments as shown on the alignment chart.

MODELS 903A, 907A, 1105A, 1106A

PHONOGRAPH-TELEVISION AND FM. JACK

Should you wish to use an external phonograph it should be plugged into the phono jack shown in the top view—The on-off radio-phono knob on the

front panel will then switch from radio to phono operation.

If television or frequency modulation (FM) programs ever become available in your community this radio may still be used in conjunction with the necessary converters.

The jack marked phono-television-FM in the top view will accommodate either the Phono or a television or FM converter.

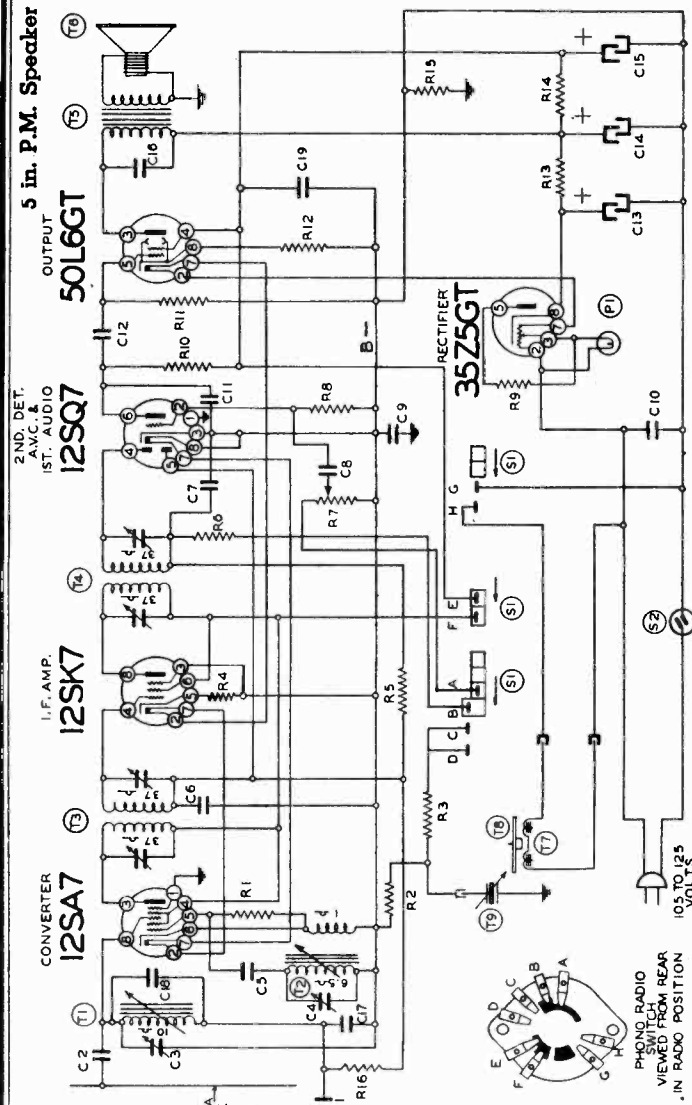
MODELS 513A, 514A

SETTING THE AUTOMATIC PUSHBUTTONS

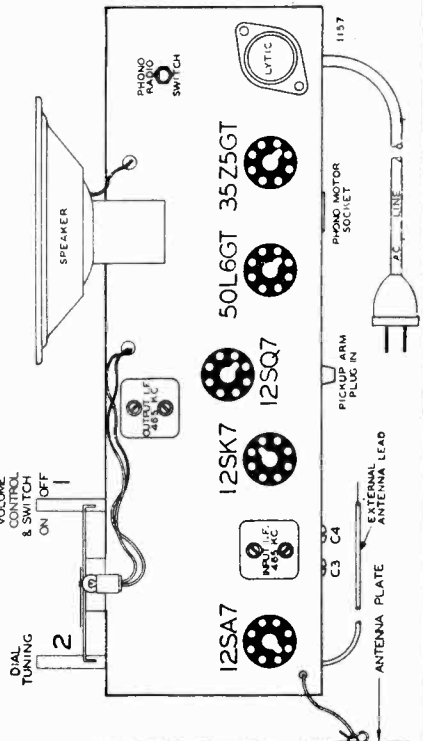
Make a list of your 5 favorite stations. Push out the call letters of these stations from the call letter sheets supplied. Insert a call letter in the front of each pushbutton.

Press one of the buttons all the way down and hold it **FIRMLY**. Now tune in the station you want with the tuning knob. Tune back and forth until the station is clear, then release the button. **NOTE:** *If the tuning knob turns quite hard when the button is held down firmly (loosen the reset lock screw several turns with a screwdriver or coin (quarter).*

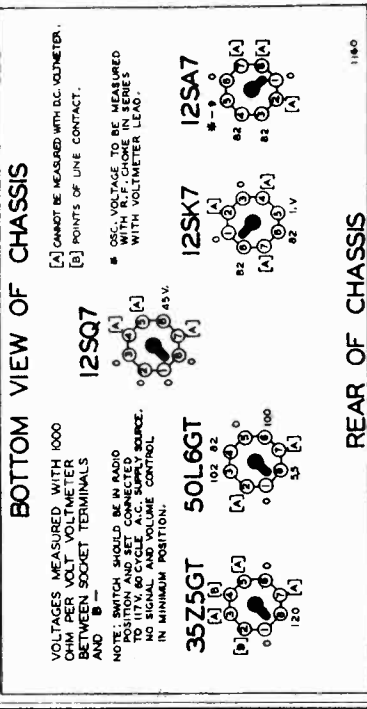
Continue, setting each of the remaining pushbuttons in the same way. Now turn the tuning knob all the way to the right and tighten the reset lock screw. This screw prevents the pushbuttons from slipping off the stations you have set. To change stations loosen lock screw and proceed as above.



NO. 185
Power Consumption 900 Milliwatts Undistorted
Power Output 50 Watts
Sensitivity (for .5 Watts Output)
 Broadcast Band—40 Microvolts Average
Selectivity - 65 KC Broad at 1000 Times Signal at 1000 KC
Tuning Frequency Range 535 to 1690 KC



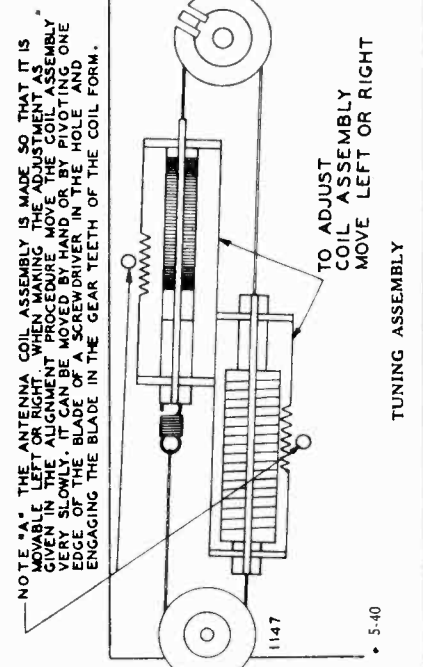
- Diagram Ref. No. Part No. Description**
- RESISTORS**
 R1 BE13076 20M ohm—1/2 w.
 R2 BE13018 60M ohm—1/2 w.
 R3 BE13018 60M ohm—1/2 w.
 R4 BE13056 100 ohm—1/2 w.
 R5 BE13070 3 megohm—1/2 w.
 R6 BE13071 2 megohm—1/2 w.
 R7 BE13057 25 ohm—1/2 w.
 R8 BE13025 25 ohm—1/2 w.
 R9 BE13037 250 ohm—1/2 w.
 R10 BE13037 250 ohm—1/2 w.
 R11 BE13037 250 ohm—1/2 w.
 R12 BE130166 150 ohm—1/2 w.
 R13 BE13092 1200 ohm—1 watt
 R14 BE130287 200M ohm—1/2 w.
 R15 BE1309 200M—1/2 w.
 R16 BE1309 200M—1/2 w.
- CONDENSERS**
 C1 BE1295 .0001 Mica Condenser
 C2 BE129114 .0003 mid. mica
 C3 BE124136 Antenna Trimmer
 C4 BE124136 Oscillator Trimmer
 C5 BE1295 .0001 mica
 C6 BE1295 .0001 mica
 C7 BE1295 .0001 mica
 C8 BE1025 .002 x 600 v.
- TUBES**
 T1 BE10019 Converter
 T2 BE12767 Antenna Coil—Permeability tuning assembly complete
 T3 BE108140F Input I. F. Coil—465 kc.
 T4 BE108145D Output I. F. Coil—465 kc.
 T5 BE105108 Output Transformer
 T6 BE14198 5" P.M. Speaker
 T7 BE104208 Phonotable
 T8 BE12258 Phonograph Pick up arm
 T9 BE12154 Pilot light
 T10 BE125113 Switch on volume control
 T11 BE107249 Pilot light
 T12 and T2 in same unit
- OTHER PARTS**
 C9 BE10019 1 x 400 v.
 C10 BE1001 1 x 400 v.
 C11 BE12912 .00025 mica
 C12 BE10019 .006 x 600 v.
 C13 BE11994 20 mid. lyric—150 w. v.
 C14 BE11994 20 mid. lyric—150 w. v.
 C15 BE10011 .01 x 400 v.
 C16 BE10011 .0008 Mica Condenser
 C17 BE129162 .000025 Ceramicon Condenser
 C18 BE129163 .06 x 40 cond.
 C19 BE10013 .06 x 40 cond.
 C13, C14 and C15 are in same unit
 ANTENNA PLATE
 R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16
 T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, T11, T12
 S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S20, S21, S22, S23, S24, S25, S26, S27, S28, S29, S30, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45, S46, S47, S48, S49, S50, S51, S52, S53, S54, S55, S56, S57, S58, S59, S60, S61, S62, S63, S64, S65, S66, S67, S68, S69, S70, S71, S72, S73, S74, S75, S76, S77, S78, S79, S80, S81, S82, S83, S84, S85, S86, S87, S88, S89, S90, S91, S92, S93, S94, S95, S96, S97, S98, S99, S100



Aligning Instructions

CAUTION:—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltage, defective tubes, condensers and resistors. In order to properly align this radio, the chassis should be removed from the cabinet.

To remove chassis from the cabinet pull tuning knob and volume knob off their shafts. Remove the four mounting screws that hold the chassis to the cabinet. Move the chassis toward back of cabinet so that control shafts and dial assembly clear holes in cabinet, then chassis can be slipped out.



MODEL O4BR-515, A & B
above ser.#OE507100
MODEL O4BR-579A

MONTGOMERY WARD & CO.

Model No. 04BR-515A

- Volume control—Maximum all adjustments.
- Connect — B of radio chassis to ground post of signal generator through .1 Mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

The following equipment is required for aligning:

- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antennas—1 Mfd., and 200 Mmi.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Iron Cores (Dial Setting)	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Connect to Antenna Plate See Trimmer View	Iron Cores All the way out	Two trimmers on top (See Top View)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Connect to Antenna Plate See Trimmer View	Iron Cores All the way out	Two trimmers on top (See Top View)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1690 Kc.	.1 MFD.	Connect to Antenna Plate See Trimmer View	Iron Cores All the way out	Trimmer (C4) (See Trimmer View)	Oscillator	Adjust to maximum output
	1690 Kc.	200 MMF.	Connect to Antenna Lead See Trimmer View	Iron Cores All the way out	Trimmer (C3) (See Trimmer View)	Antenna	Adjust to maximum output
	1400 Kc.	200 MMF.	Connect to Antenna Lead See Trimmer View	Turn Dial to 1400 Kc.	Adjust position of antenna coil right or left.	Antenna Coil Adjustment	Adjust to maximum output (See Note "A")
	1690 Kc.	200 MMF.	Connect to Antenna Lead See Trimmer View	Turn Dial to 1690 Kc.	Adjust trimmer (C3) (See Trimmer View)	Antenna	Adjust to maximum output Check for tracking (See Note "B")

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

NOTE "B"—After the antenna coil has been tracked at 1400 Kc. it is necessary to check the antenna trimmer (C3) adjustment again at 1690 Kc. If no appreciable change in trimmer adjustment is made the coil is in track, if the trimmer requires considerable change it will be necessary to again adjust the position of the antenna coil at 1400 Kc. These two adjustments should be tried several times until no change of trimmer adjustment is required at 1690 Kc.

Model Nos. 04BR-679A

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

The following equipment is required for aligning:

- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antennas—1 mf., 175 mmi.

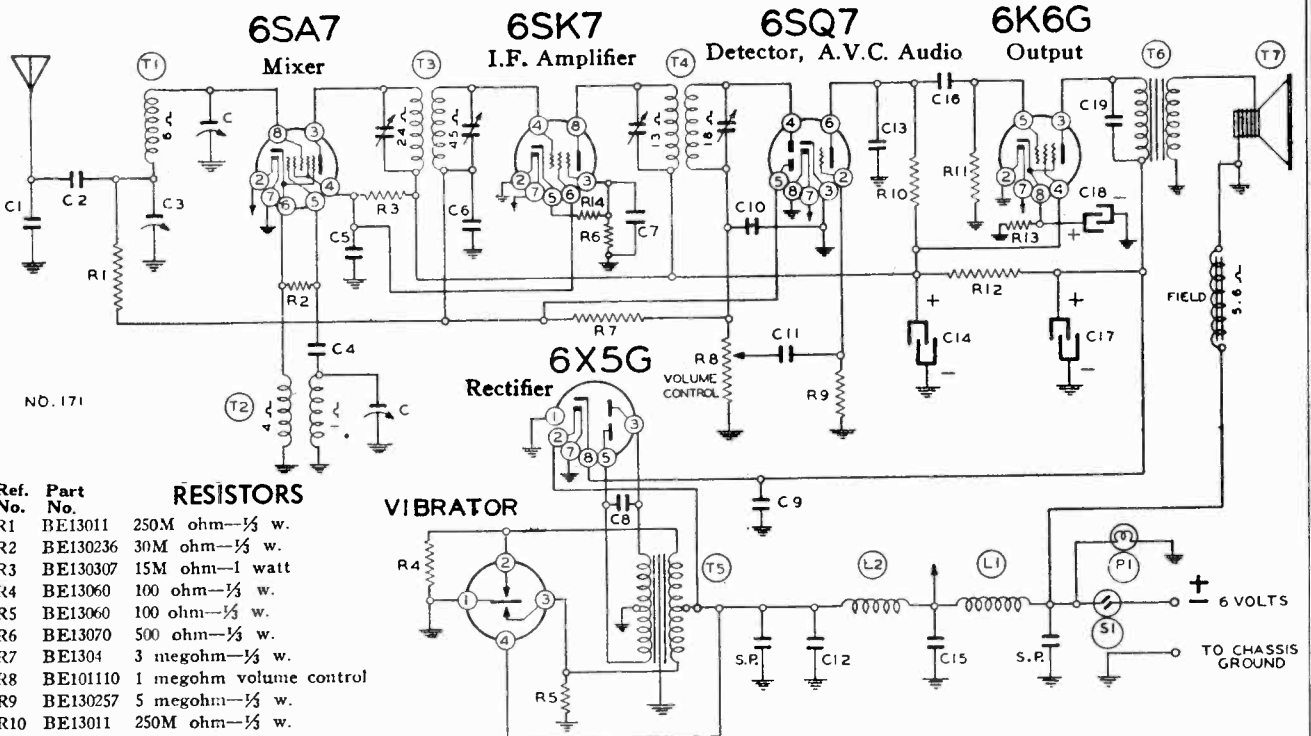
BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.5 MFD.	Grid of 6K7G I.F. Tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Output I. F.	Adjust to maximum output
	455 Kc.	.5 MFD.	Grid of 6A8G	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 2)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1550 Kc.	175 mmi.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Top of Middle section of gang (See Fig. 2)	Oscillator	Adjust to maximum output
	1400 Kc.	175 mmi.	Antenna lead	Set dial at 1400 Kc.	Trimmers—Top of front and rear section of gang (See Fig. 2)	Antenna and R. F.	Adjust to maximum output
	600 Kc.	175 mmi.	Antenna lead	Set dial at 600 Kc.	B.C. Series Pad (See Fig. 2)	Oscillator series pad	Adjust to maximum rock dial. (See note "A")

NOTE "A" Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained. Trimmer is located on top of chassis along side of gang. Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each band is completed, repeat the procedure as a final check. Do not bend plates of variable condenser to correct tracking.

MONTGOMERY WARD & CO.

MODEL 04BR-567A
above ser.#225040



RESISTORS

Ref. No.	Part No.	Value
R1	BE13011	250M ohm—1/2 w.
R2	BE130236	30M ohm—1/2 w.
R3	BE130307	15M ohm—1 watt
R4	BE13060	100 ohm—1/2 w.
R5	BE13060	100 ohm—1/2 w.
R6	BE13070	500 ohm—1/2 w.
R7	BE1304	3 megohm—1/2 w.
R8	BE101110	1 megohm volume control
R9	BE130257	5 megohm—1/2 w.
R10	BE13011	250M ohm—1/2 w.
R11	BE1303	500M ohm—1/2 w.
R12	BE130199	1500 ohm—1 watt
R13	BE130308	750 ohm—1 watt
R14	BE130174	50 ohm—1/2 w.

CONDENSERS

C	BE10269	2 gang variable condenser
C1	BE1293	.00002 mica
C2	BE10055	.01 x 400 volts
C3	BE12434	Adj. Antenna Trimmer
C4	BE12921	.0002 mica
C5	BE100115	.05 x 400 v.
C6	BE1009	.05 x 200 v.
C7	BE10020	.1 x 200 v.
C8	BE10034	.005 x 1200 v.
C9	BE12912	.00025 mica
C10	BE1295	.0001 mica
C11	BE10025	.02 x 600 v.

C12	BE10031	.5 x 120 v.
C13	BE1292	.0005 mica
C14	BE119105	15 mfd. lytic x 350 v. v.
C15	BE10031	.5 x 120 v.
C16	BE10078	.01 x 200 v.
C17	BE119105	15 mfd. lytic x 350 v. v.
C18	BE119105	20 mfd. lytic x 25 v. v.
C19	BE10087	.01 x 600 v.

C14, C17 and C18 in same unit

I.F. 465 K.C.

T7	BE114114R	5" Dynamic Speaker (5.6 ohm field)
L1	BE10568	"A" Choke
L2	BE10566	"A" Choke
S1		Switch on volume control
P1	BE10797	Pilot light (T51) 6-8 volts
S.P.	BE11749	(2) Spark Plates

PARTS

T1	BE11195B	Antenna Coil
T2	BE110146	Oscillator Coil
T3	BE108139	Input I.F. Coil—465 kc.
T4	BE108121B	Output I. F. Coil—465 kc.
T5	BE104131	Power Transformer
T6	BE10567	Output Transformer

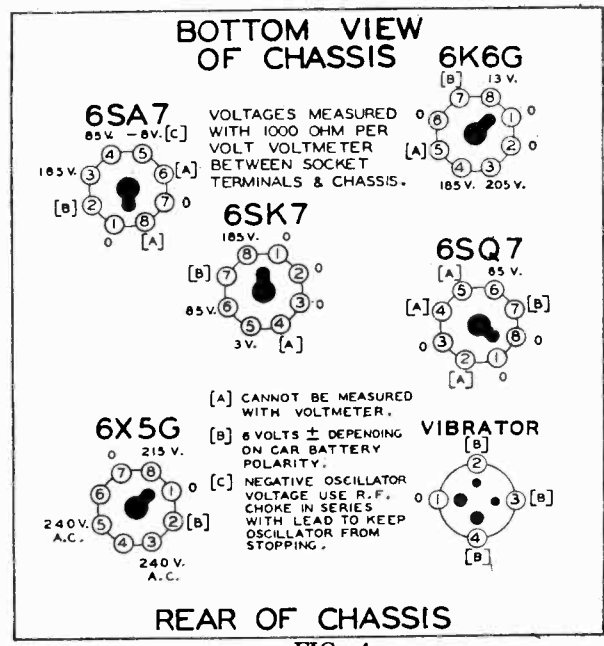


FIG. 4

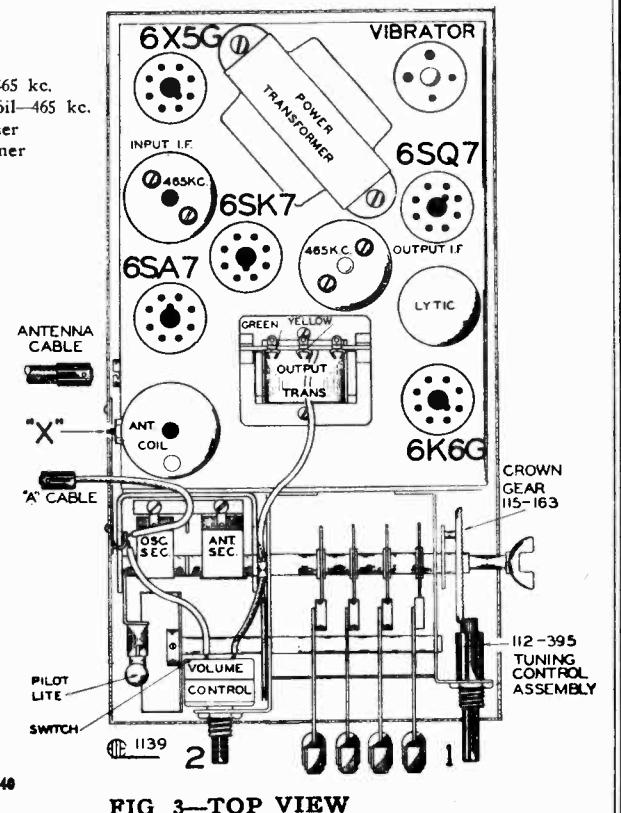


FIG. 3—TOP VIEW

MODEL 04BR-567A
above ser.#225040

MONTGOMERY WARD & CO.

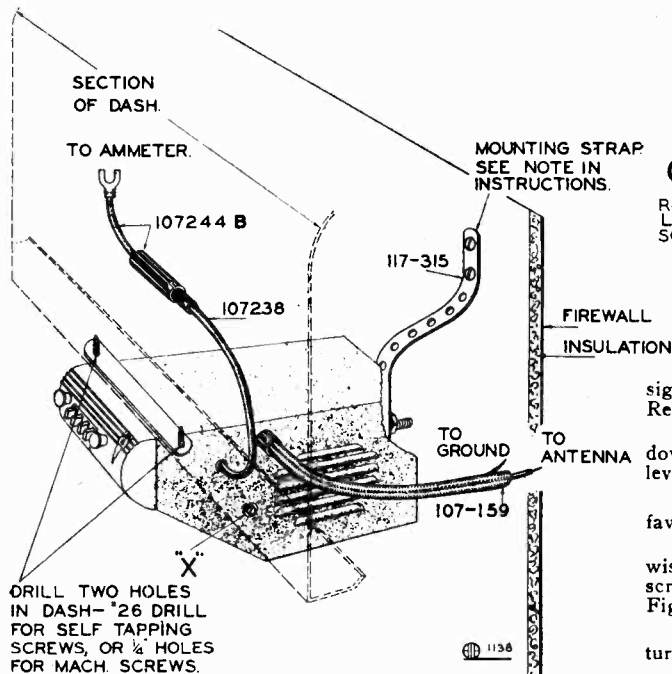


FIG. 1—GENERAL INSTALLATION VIEW

RADIO LOCATION

Determine the most desirable mounting location, (See Fig. 1—General Installation View, page 2).

In the majority of installations it will be found that the radio can be mounted under the dash panel directly to the left of the steering column.

BONDING

Cars with floating power must have the motor bonded to the bulkhead and again to the frame to provide a direct path for the high frequency interference developed in the ignition system. 5/8" copper braid will be necessary, SMALL DIAMETER WIRE WILL NOT DO. Bond flexible shaft leads, such as free wheeling, choke wires, etc., which pick up motor noise and reradiate it into the car. Free wheeling cables should be grounded at the point at which they go through the fire wall of the car. In extreme cases it has been found necessary to ground the steering column.

GENERATOR INTERFERENCE

Remove the generator cutout mounting screw and fasten the condenser (100-81) bracket on the generator cutout mounting lug. Replace the cutout mounting screw and tighten down securely.

Connect the condenser lead to the battery terminal of the cutout. The generator condenser is absolutely necessary as it is used to eliminate a high pitched whining noise which would otherwise be heard as the motor is accelerated.

PROCEDURE FOR SETTING THE AUTOMATIC LEVERS

There are five levers on the dial by means of which five stations may be selected, (See "B" Fig. 2).

Make a list of local stations you tune in regularly; any number up to and including five.

Punch out from the set of station call letter tabs supplied, the call letters of the stations you have selected.

On the front of each automatic tuner lever an opening is provided for inserting the call letter tabs, (See "A" Fig. 2).

Insert the call letter tabs in the rectangular openings of each of the automatic tuner levers. One of the small celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

Press DOWN ALL THE WAY any one of the automatic tuner levers. Holding it down FIRMLY, tune in by means of the tuning knob (No. 1) the station you have assigned to this lever. Turn the tuning knob very slowly back and forth (while still holding lever in downward position) until the

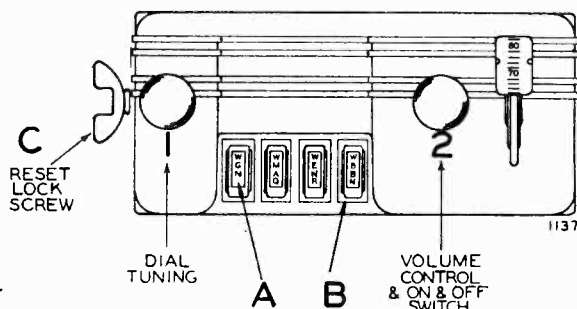


FIG. 2—FRONT VIEW

signal is clearest. The station will then be accurately tuned in. Release the lever.

Press down another automatic tuner lever. Holding it down FIRMLY, carefully tune in the station assigned to this lever. Release this lever.

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

Now rotate the tuning knob (No. 1) to the right (clockwise) as far as it will turn, and tighten the special locking screw ("C") located on left side of tuner dial assembly (See Fig. 2).

It is VERY IMPORTANT that this locking screw is turned until it is ABSOLUTELY TIGHT.

This screw will lock in place all the stations you have selected on the automatic tuner levers. (Note: Locking screw "C" is loose when radio is shipped from factory).

If you should desire to change any station you selected to another, loosen the locking screw "C" one or two turns, select the new station as explained. Be sure to retighten the locking screw, otherwise the stations you have selected will not stay adjusted to the levers.

The automatic dial is now set up for quick tuning. Press down on the lever and your favorite station is selected.

ADJUST ANTENNA TRIMMER

Tune in a weak signal at approximately 600 K.C. with volume control about three-fourths on. Adjust trimmer screw "X" until maximum output is obtained. (See Fig. 1, Adjustment "X" on right side of radio).

I.F. ALIGNMENT: (465 K.C.)

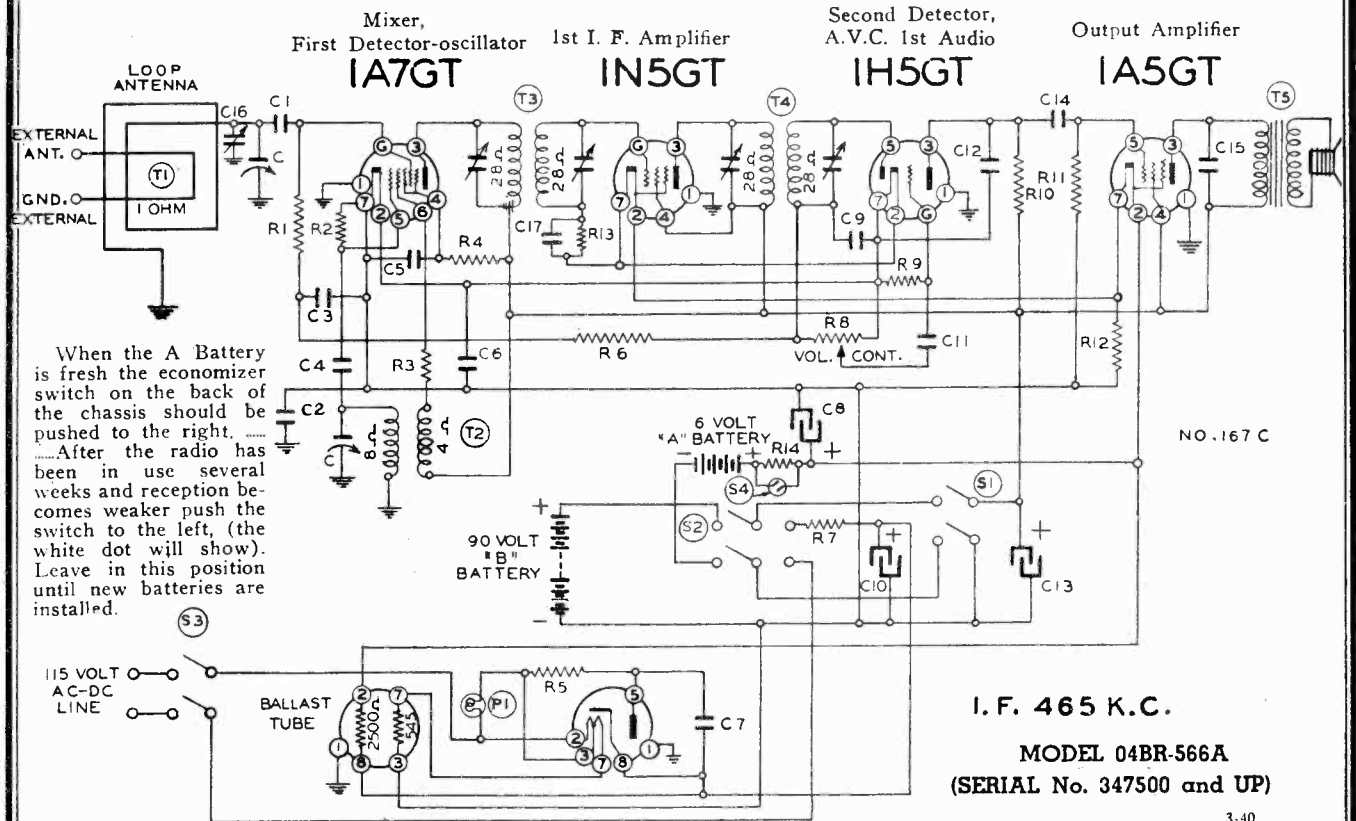
1. With variable condenser in its minimum capacity position (plates entirely out of mesh) and with volume control full on, connect test oscillator set at 465 K.C. in series with I.F. dummy antenna, to grid of 6SK7 I.F. tube.
2. Adjust trimmer condensers of output I.F. transformer No. 108121 to resonance with oscillator.
3. Move test oscillator connection to grid of 6SA7 tube and adjust trimmer condensers of input I.F. transformer No. 108139 to resonance with oscillator. There are two adjustments on each and they are accessible from the top of the transformer shield and should be adjusted with an insulated screw driver. (See Fig. 3—top view, page 3.)

BROADCAST ALIGNMENT

1. With variable condenser in its minimum capacity position, connect test oscillator set at 1550 K.C. in series with broadcast dummy to the antenna lead of receiver.
2. Adjust oscillator trimmer of variable condenser to resonance. (This adjustment is the rear section of the two-gang condenser—see top view, Fig. 3).
3. Shift test oscillator to 1400 K.C. and pick up signal by rotating condenser and adjust antenna trimmer (front section of gang condenser) to resonance (see top view, Fig. 3).
4. Re-set test oscillator to 600 K.C. and rotate variable condenser to 600 K.C. Adjust series pad in the antenna circuit for maximum gain. This pad is mounted on the side of the antenna can, adjustment "X."
5. Go back and check 1400 K.C. If adjustment is made here, check 600 K.C. again.
6. Check for sensitivity at 1000 K.C. by setting test oscillator to this frequency and picking up the signal by rotating variable condenser. Under no circumstances bend plates of variable condenser sections to correct tracking.

MONTGOMERY WARD & CO.

MODEL 04BR-566A
above ser.#347500



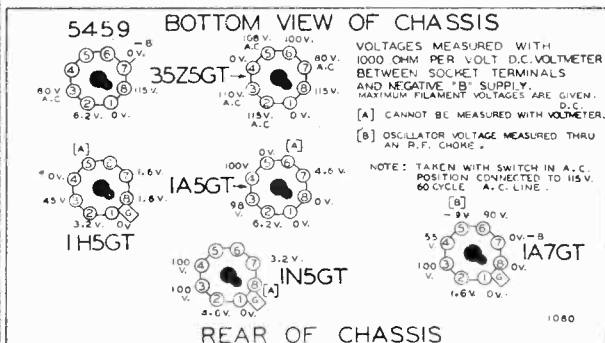
When the A Battery is fresh the economizer switch on the back of the chassis should be pushed to the right. After the radio has been in use several weeks and reception becomes weaker push the switch to the left, (the white dot will show). Leave in this position until new batteries are installed.

5459
Ballast Resistor

35Z5GT
Rectifier

Circuit Diagram Ref. No.	Part No.	Value
C7	BE10011	.01 x 400 v.
C8	BE119104	Lytic 200 mfd. x 6 w. v.
C9	BE1295	.0001 mfd.
C10	BE119104	Lytic 40 mfd. x 150 w. v.
C11	BE10025	.002 x 600 v.
C12	BE1292	.0005 mfd.
C13	BE119104	Lytic 20 mfd. x 150 w. v.
C14	BE10011	.01 x 400 v.
C15	BE10025	.002 x 600 v.
C16	BE124116	Adjustable antenna trimmer
C17	BE10026	.02 x 400 v.

C8, C10 and C13 in same unit



Ref. No.	Part No.	Value
R1	BE13038	2 megohm-1/2 w.
R2	BE130266	200M ohm-1/2 w.
R3	BE13018	4M ohm-1/2 w.
R4	BE130208	40M ohm-1/2 w.
R5	BE130215	25 ohm-1/2 w.
R6	BE130170	3 megohm-1/2 w.
R7	BE130129	2500 ohm-1/2 w.
R8	BE101210	1 megohm volcontrol
R9	BE130257	5 megohm-1/2 w.
R10	BE1303	500M ohm-1/2 w.
R11	BE13038	2 megohm-1/2 w.
R12	BE13092	1M ohm-1/2 w.
R13	BE130100	150M ohm-1/2 w.
R14	BE130197	20 ohm-1/2 w.

Ref. No.	Part No.	Value
C	BE102125	2 gang variable cond
C1	BE12912	.00025
C2	BE100110	.2 mfd. x 400 v.
C3	BE1009	.05 x 200 v.
C4	BE12912	.00025
C5	BE1009	.05 x 200 v.
C6	BE10020	.1 x 200 v.

Specifications

- Power Consumption - "A" Battery 50 MA; "B" Battery 8 MA. (On A.C. or D.C. 35 Watts)
- Power Output - 100 Milliwatts, Undistorted; 200 Milliwatts, Maximum
- Sensitivity (for .05 Watts) - 50 Microvolts Average
- Selectivity - 52 Kc. Broad at 1000 Times Signal at 1000 Kc.
- Tuning Range - 540 to 1550 Kc.
- Intermediate Frequency - 465 Kc.
- Speaker - 5 in. P. M. Dynamic

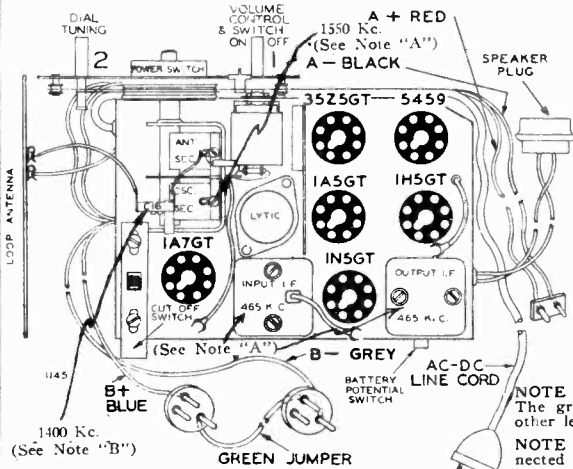


FIG. 2—TOP VIEW

CONVENTIONAL ALIGNMENT
NOTE "A"—The loop antenna need not be connected to the radio when making these adjustments. The ground of the signal generator is connected to the negative "B" wire of the radio and the other lead from the signal generator is in series with .1 MFD. dummy to the grid of the 1A7GT tube.
NOTE "B"—This adjustment should be made with the ground lead of the signal generator connected to the ground terminal of the loop assembly. The other lead of the signal generator is connected in series with a 200 Mmf. dummy to the antenna terminal of the loop assembly.
It is important when making this adjustment that the same distance between the loop antenna and the chassis be maintained as when the chassis and loop are installed in the cabinet.

MONTGOMERY WARD & CO.

MODEL O4WG-569
MODEL O4WG-568

MODEL O4WG-569
Input Voltages and Currents—Battery Operation
Speaker..... 50 KC Broad at 1000 Times Signal
Intermediate Frequency..... 456 KC
"A" Battery..... 6 Volts—50 Ma.
"B" Batteries..... 90 Volts—9.5 Ma.
Power Consumption (At 117 volt AC Supply) 28 Watts
Tuning Frequency Range..... 540 to 1600 KC
Sensitivity (For .05 Watt Output)
External Antenna..... 50 Microvolts Average

MODEL O4WG-568
Input Voltages and Currents..... 6" P.M. Dynamic
Speaker..... 528 to 1600 KC
Tuning Frequency Range
B Range..... 5750 to 18800 KC
D Range.....
Sensitivity—External Antenna—(For .05 Watt output)
B Range..... 6 Microvolts Average
D Range..... 10 Microvolts Average

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

FREQUENCY SETTING	SIGNAL GENERATOR ANTENNA CONNECTION	DUMMY ANTENNA CONNECTION	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
456 KC	Signal Grid (Top Cap)	Point "X" (Top Cap)	Turn Rotor to full open	1st I.F. [C15] & [C12] 2nd I.F. [C13] & [C14]
1600 KC	Signal Grid	Same as above	Turn Rotor to full open	Oscillator (C1)
1400 KC	None—See Note A	None—See Note A	Turn Rotor to max. output	Antenna (C2)

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

FREQUENCY SETTING	BAND SWITCH	DUMMY ANTENNA CONNECTION	CONDENSER OR DIAL SETTING	ADJUST TRIMMERS TO MAXIMUM
456 KC	B Range	Grid of 1st Det.	Turn Rotor to Full Open	3rd I.F. [C15] & [C16] 1st I.F. [C11] & [C12]
RANGE B	B Range	External Antenna Clip	Turn Rotor to Full Open	Oscillator Range B (C4)
1600 KC	B Range	External Antenna Clip	Turn Rotor to Max. Output Set Indicator to 400 KC—See Note A	Ant. Range B (C7)
1400 KC	B Range	External Antenna Clip—See Note B	Turn Rotor to Max. Output	400 KC (C5)
RANGE D	D Range	External Antenna Clip	Turn Rotor to Full Open	Oscillator Range D (C3)
16,000 KC	D Range	External Antenna Clip	Turn Rotor to Max. Output	Ant. Range D (C2)
6000 KC	D Range	External Antenna Clip	Turn Rotor to Max. Output	4000 KC (C3) Recit. Rotor—See Note C
LOOP RANGE B	B Range	External Antenna Clip—See Note D	Turn Rotor to Max. Output	Ant. Range B (C7)

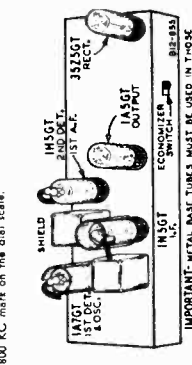
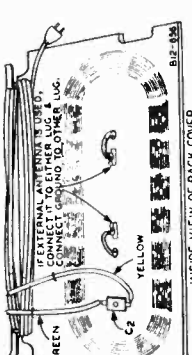
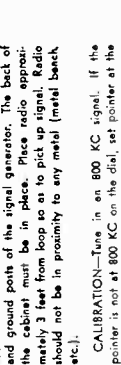
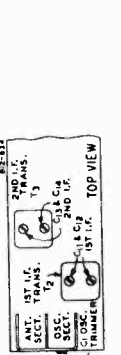
NOTE A—Chassis must be in cabinet. Connect a loop approximately one foot in diameter across the antenna and ground post of the signal generator. The back of the cabinet must be in place. Place radio approx. midway 3 feet from loop so as to pick up signal. Radio should not be in proximity to any metal (metal bench etc.).

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

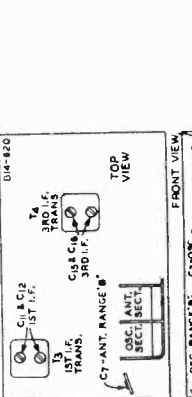
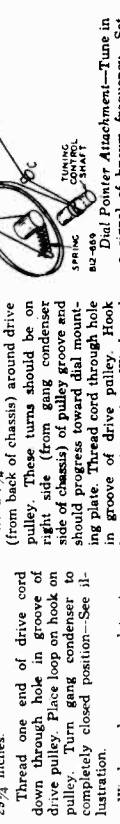
NOTE B—By means of wooden blocks, stretch the loop aerial assembly upright exactly 3 inches from the back of the chassis.

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

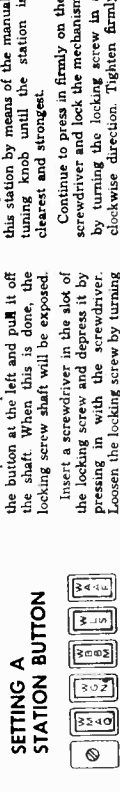
NOTE D—Re-assemble chassis in cabinet. Replace back on cabinet. Connect ground post of signal generator to external ground clip on loop antenna.



DRIVE CORD REPLACEMENT
Wind 3/4 turns clockwise (from back of chassis) around tuning control shaft. These turns should progress toward chassis.
Wind 1/2 turns counter-clockwise (from back of chassis) around drive pulley. These turns should be on right side (from gang condenser side of chassis) of pulley groove and should progress toward dial mounting plate. Thread cord through hole in groove of drive pulley. Hook loop on tension spring. Wind clockwise around drive pulley shaft—See illustration. Fasten free end of spring to hook on pulley.



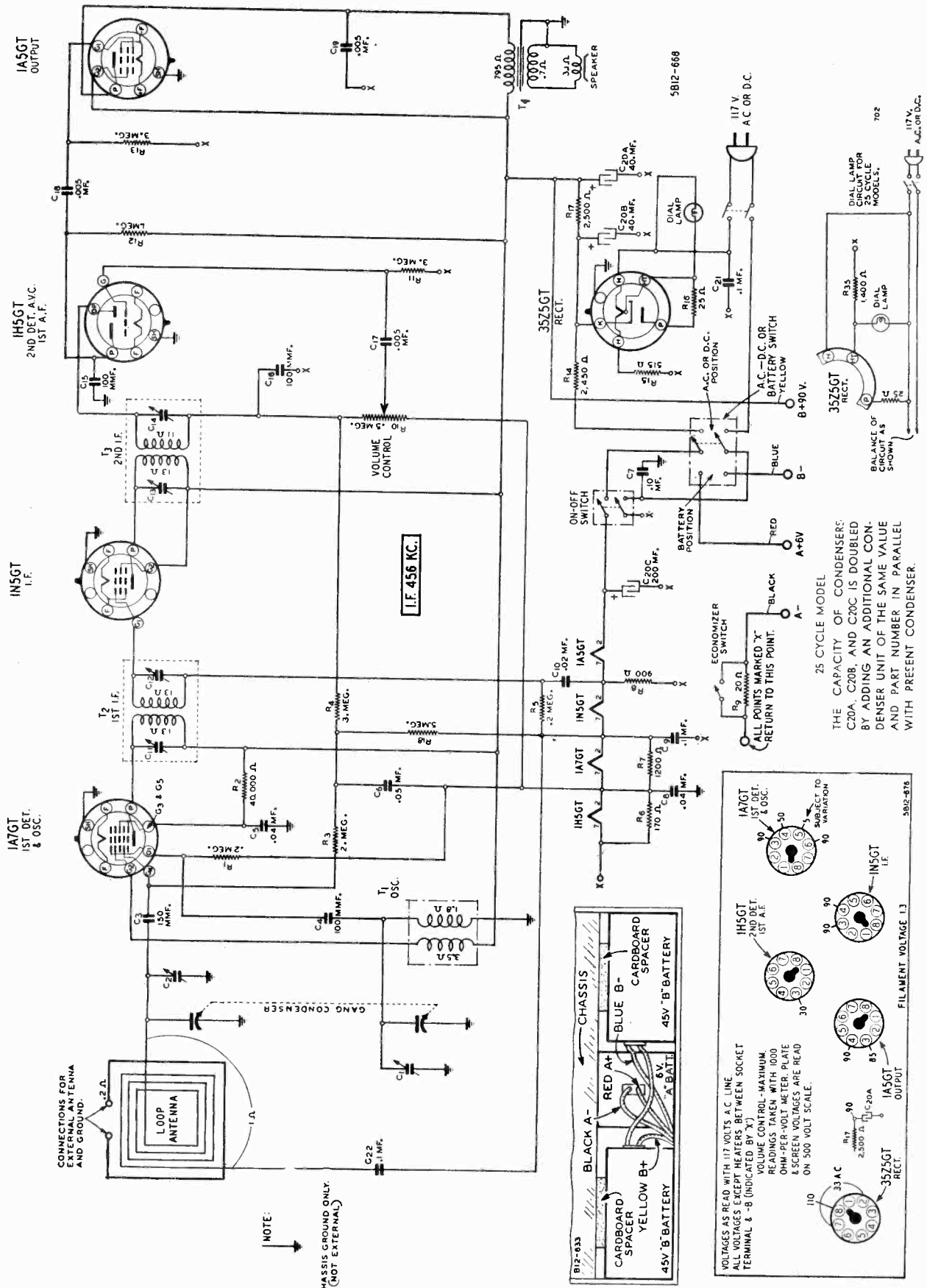
SETTING A STATION BUTTON
Grasp the top and bottom of the button at the left and pull it off the shaft. When this is done, the locking screw shaft will be exposed. Insert a screwdriver in the slot of the locking screw and depress it by pressing in with the screwdriver. Loosen the locking screw by turning 3 or 4 turns in a counter-clockwise direction. Continue to press in firmly on the screwdriver, thus holding the locking screw shaft depressed. Select the first station from the list you



LOCKING SCREW
Proceed in the same manner to set stations on any of the remaining buttons.

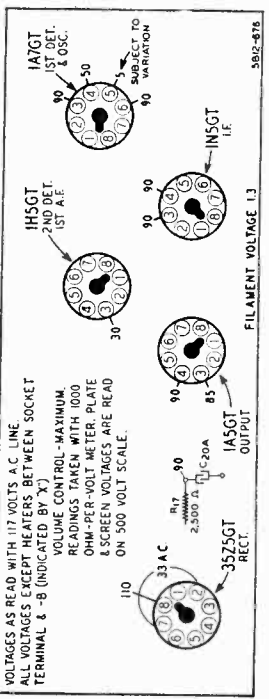
MODEL O4WG-569

MONTGOMERY WARD & CO.



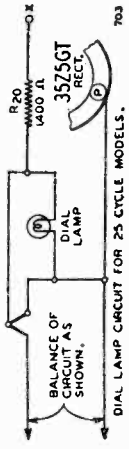
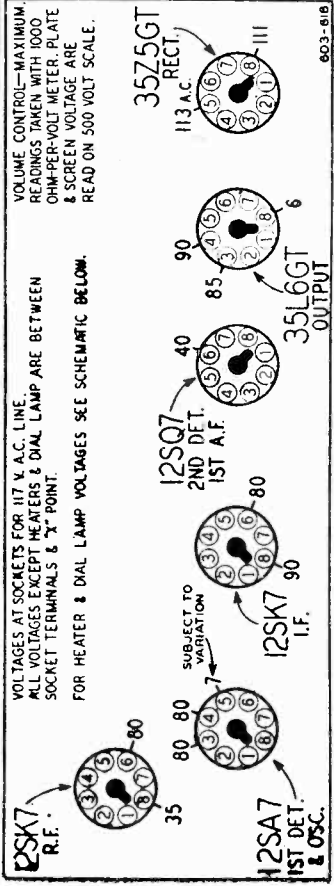
NOTE:
CHASSIS GROUND ONLY
(NOT EXTERNAL)

THE CAPACITY OF CONDENSERS:
C20A, C20B, AND C20C IS DOUBLED
BY ADDING AN ADDITIONAL CON-
DENSER UNIT OF THE SAME VALUE
AND PART NUMBER IN PARALLEL
WITH PRESENT CONDENSER.

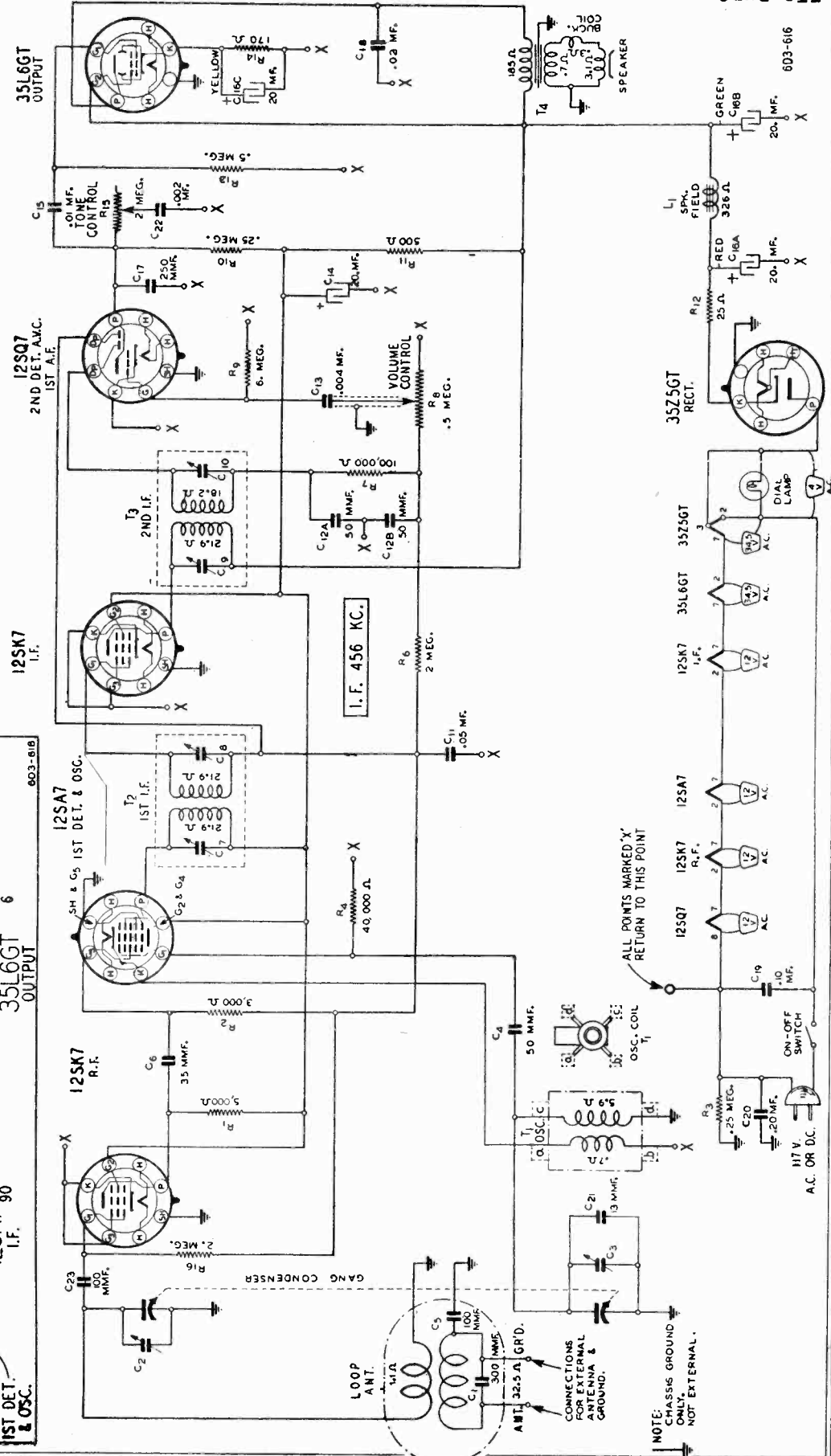


MONTGOMERY WARD & CO.

MODEL 04WG-610,
04WG-611



25 CYCLE MODELS
CONDENSER UNIT C16A, C16B, C16C IS REPLACED BY NEW UNIT HAVING CAPACITIES 50 MF., 40 MF., AND 20 MF. RESPECTIVELY—SEE PARTS LIST.



NOTE: CHASSIS GROUND ONLY. NOT EXTERNAL.

ALL POINTS MARKED "X" RETURN TO THIS POINT

603-616

MODELS 04WG-610, 04WG-611
04WG-612, 04WG-614

MONTGOMERY WARD & CO.

ALIGNMENT PROCEDURE				MODEL 04WG-612	
FREQUENCY SETTING	SIGNAL GENERATOR ANTENNA CONNECTION	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.	Signal Grid of 1st Det. Connect or remove Large Cond. Section.	Point "X" (125K7-1st A.F. Prong No. 3)	B Range	Turn Rotor to full open	1st I.F. (C14) & (C15) 3rd I.F. (C18) & (C19)
RANGE B	Signal Grid of 1st Det. Connect or remove Large Cond. Section.	Point "X"	B Range	Turn Rotor to full open	Oscillator Range B (C3)
1400 KC	External Antenna Clip On Loop —See Note A	External Ground Clip	B Range	Turn Rotor to max. output	Antenna Range B (C8)
600 KC	External Antenna Clip —See Note A	External Ground Clip	B Range	Turn Rotor to max. output	600 KC (C3) Rock Rotor—See Note B
RANGE C	External Antenna Clip	External Ground Clip	C Range	Turn Rotor to full open	Oscillator Range C (C5)
6500 KC	External Antenna Clip	External Ground Clip	C Range	Turn Rotor to max. output	Ant. Range C (C4) Rock Rotor—See Note B

ALIGNMENT PROCEDURE MODEL 04WG-614

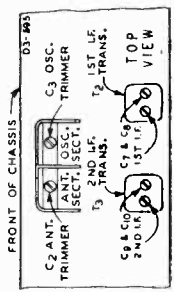
Volume Control—Maximum All Adjustments. Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead. Allow Chassis and Signal Generator to "Heat Up" for several minutes. Dummy Antennas—1 mf., 100 mmf., and 400 ohm.

FREQUENCY SETTING	SIGNAL GENERATOR ANTENNA CONNECTION	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
488 KC	Grid of 1st Det. External Antenna Clip	1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C13) & (C14) 3rd I.F. (C18) & (C19)
1800 KC	External Antenna Clip	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C11)
1400 KC	External Antenna Clip	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicated—See Note A	Ant. Range B (C8)
600 KC	External Antenna Clip —See Note B	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C7) Rock Rotor—See Note C
RANGE D	External Antenna Clip	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C4)
17000 KC	External Antenna Clip	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1)
1400 KC	External Antenna Clip —See Note D	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C8)

MODEL 04WG-610 MODEL 04WG-611
Speaker 5" Electro Dynamic
Power Output8 Watt Undistorted
Tuning Frequency Range 528 to 1600 KC
Sensitivity (For 05 Watt Output) 1.25 Watts Maximum
Intermediate Frequency 456 KC
External Antenna 10 Microvolts Average

CAUTION
The metal chassis is connected to one side of the line through a 2 mfd. condenser. Both AC and DC power lines are generally grounded on one side. If the side of the line not connected to the metal chassis through this condenser is grounded and the other insulated surface to avoid contact with ground. The person working on the set should avoid getting in contact with any ground.

ALIGNMENT PROCEDURE			
FREQUENCY SETTING	SIGNAL GENERATOR ANTENNA CONNECTION	DUMMY ANTENNA	CONDENSER SETTING
456 KC	Control Grid (125K7-I.F.)	Point "Y" (125K7-I.F. Prong No. 3)	Turn Rotor to full open
456 KC	Control Grid (125A7-1st Det. Above)	Same As Above	Turn Rotor to full open
1600 KC	Control Grid (125A7-1st Det. Above)	Same As Above	Turn Rotor to full open
1800 KC	External Antenna Clip On Loop —See Note A	External Ground Clip On Loop	Turn Rotor to Max. Output Set Indicated—See Note B
			Oscillator (C3)
			Antenna (C1)



NOTE A—By means of wooden blocks stand the loop aerial assembly upright exactly 1/4 inches from the back of the chassis.

NOTE B—If the pointer is not at 1800 KC on the dial, tune in a 1500 KC signal. Set pointer at the 1800 KC mark on the dial.

MODEL 04WG-612
Power Consumption28 Watts (At 117 volts AC Supply)
Power Output8 Watt Undistorted
Sensitivity (For 05 Watt Output) 1.25 Watts Maximum
Intermediate Frequency 456 KC
Speaker 5" Electro-Dynamic

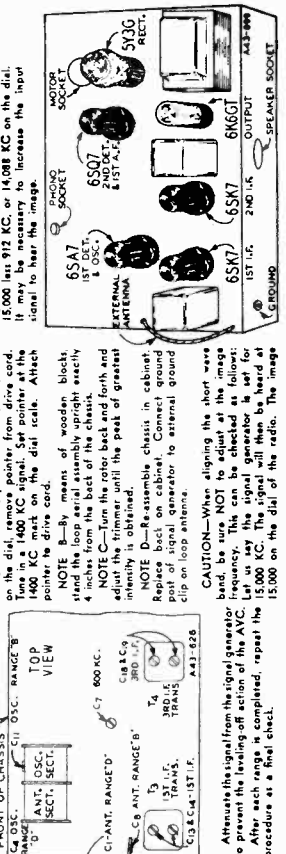
CAUTION
The metal chassis is connected to one side of the line through a 2 mfd. condenser. Both AC and DC power lines are generally grounded on one side. If the side of the line not connected to the metal chassis through this condenser is grounded and the other insulated surface to avoid contact with ground. The person working on the set should avoid getting in contact with any ground.

Therefore, in any service work on the chassis, keep it on a wood or other insulated surface to avoid contact with ground. The person working on the set should avoid getting in contact with any ground.

If pointer is not at the 800 KC mark on the dial scale, set pointer at 800 KC mark.

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

CAUTION—Tune in an 800 KC signal.



NOTE A—If the pointer is not at 1400 KC on the dial, tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive card.

NOTE B—By means of wooden blocks stand the loop aerial assembly upright exactly 1/4 inches from the back of the chassis. The signal which will then be heard at 1400 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 1400 less 912 KC, or 488 KC on the dial. It may be necessary to increase the input signal to hear this image.

NOTE C—Reassemble chassis in cabinet. Replace signal on cabinet. Connect ground post of signal generator to external ground clip on loop antenna.

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let the signal which will then be heard at 15000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 15000 less 912 KC, or 14088 KC on the dial. It may be necessary to increase the input signal to hear this image.



NOTE A—If the pointer is not at 1400 KC on the dial, tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive card.

NOTE B—By means of wooden blocks stand the loop aerial assembly upright exactly 1/4 inches from the back of the chassis. The signal which will then be heard at 1400 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 1400 less 912 KC, or 488 KC on the dial. It may be necessary to increase the input signal to hear this image.

NOTE C—Reassemble chassis in cabinet. Replace signal on cabinet. Connect ground post of signal generator to external ground clip on loop antenna.

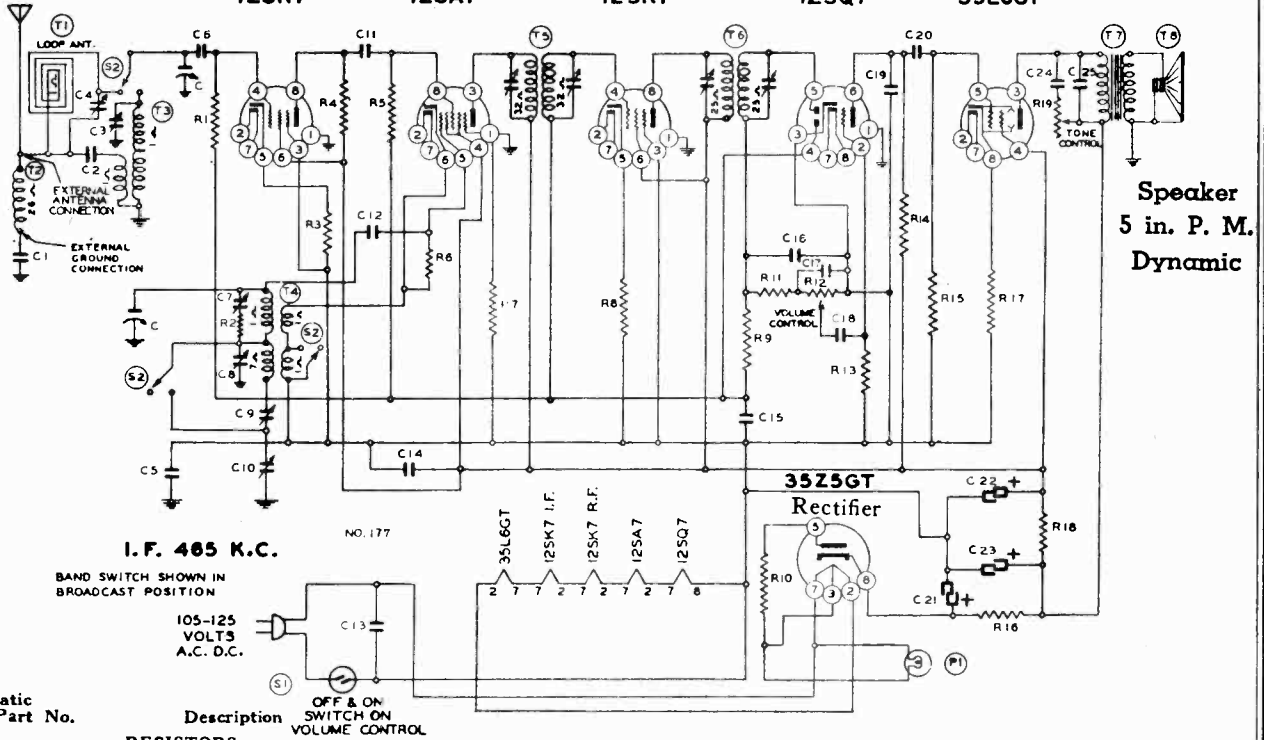
CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let the signal which will then be heard at 15000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 15000 less 912 KC, or 14088 KC on the dial. It may be necessary to increase the input signal to hear this image.

MONTGOMERY WARD & CO.

MODEL 04BR-609A

Series A, Above

Mixer, First R. F. Amp 12SK7
 Detector-oscillator I. F. Amp 12SA7
 Second Detector, A.V.C. First Audio 12SQ7
 Output Ser.#OB341400 35L6GT



2-40

Schematic Ref. Part No. No.

RESISTORS

R1	BE13019	1 megohm—1/2 w.
R2	BE130166	150 ohm—1/2 w.
R3	BE130248	40 ohm—1/2 w.
R4	BE130218	5M ohm—1/2 w.
R5	BE13020	100M ohm—1/2 w.
R6	BE13012	50M ohm—1/2 w.
R7	BE1309	200M ohm—1/2 w.
R8	BE130248	40 ohm—1/2 w.
R9	BE1304	3 megohm—1/2 w.
R10	BE130215	25 ohm—1/2 w.
R11	BE1301	25M ohm—1/2 w.
R12	BE101195	1 megohm volume control
R13	BE130257	5 megohm—1/2 w.
R14	BE1303	500M ohm—1/2 w.
R15	BE1303	500M ohm—1/2 w.
R16	BE130296	200 ohm—1 watt
R17	BE130166	150 ohm—1/2 w.
R18	BE130287	1200 ohm—1 watt
R19	BE101194	200M ohm tone control

CONDENSERS

C	BE102127	2 gang variable condenser
C1	BE10013	.05 x 400 v.
C2	BE12954	.003 Mica
C3	BE124127	Short Wave Band Antenna Trimmer
C4	BE124127	B.C. Antenna Trimmer
C5	BE10024	.25 x 400 v.
C6	BE1292	.0005 mica
C7	BE124125	Short Wave Band Oscillator Trimmer
C8	BE124125	B.C. Oscillator Trimmer
C9	BE124126	B.C. Oscillator Pad
C10	BE124126	Short Wave Band Oscillator Pad
C11	BE1295	.0001 Mica
C12	BE12912	.00025 mica
C13	BE1001	.1 x 400 v.
C14	BE1009	.05 x 200 v.
C15	BE1009	.05 x 200 v.
C16	BE1295	.0001 Mica
C17	BE12938	.00005 mica
C18	BE10071	.004 x 600 v.
C19	BE12912	.00025 mica
C20	BE10078	.01 x 200 v.
C21	BE11994	40 mid.—150 w.v.
C22	BE11994	20 mid.—150 w.v.
C23	BE11994	20 mid.—150 w.v.
C24	BE1009	.05 x 200 v.
C25	BE10026	.02 x 400 v.

C3 and C4 in one unit C7 and C8 in one unit
 C9 and C10 in one unit C21, C22 and C23 in same unit

PARTS

T1	BE11144	Loop Antenna Assembly
T2	BE10535	R.F. Choke
T3	BE11172	Antenna Coil
T4	BE110147	B.C. S.W. Oscillator Coil
T5	BE108140G	Input I.F. Coil—465 kc.
T6	BE108145	Output I.F. Coil—465 kc.
T7	BE10589B	Output Transformer
T8	BE114177	5 in. P.M. Speaker
S1	BE101195	Volume Control and Switch
S2	BE125108	Wave Band Change Switch
P1	BE107249	6.3 volt T47 pilot light

MODEL 04BR-609A SERIES A (SERIAL No. OB341400 and UP)

Power Consumption - - - - - 35 Watts
 Power Output - - - - - 1 Watt Undistorted
 Sensitivity (for .5 Watts Output) - -
 Broadcast Band—35 Microvolts Average
 Shortwave Band—50 Microvolts Average
 Selectivity - 48 KC Broad at 1000 Times Signal at 1000 KC
 Tuning Frequency Range - - - - - 540 to 1550 KC
 1.95 to 7 MC

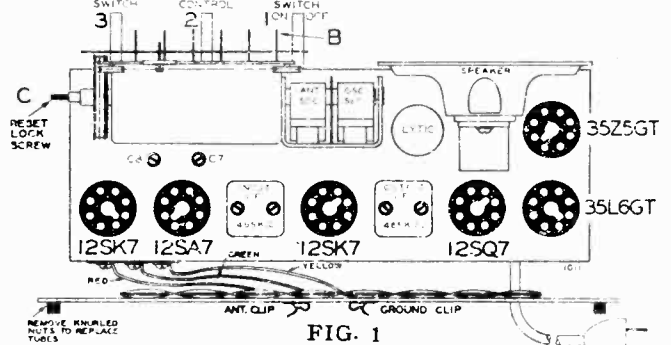


FIG. 1

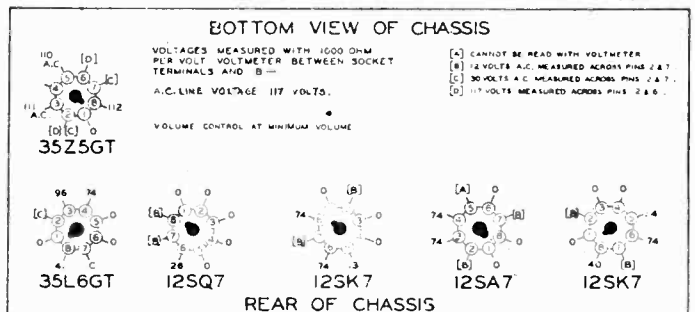


FIG. 4—BOTTOM VIEW

MODEL O4BR-609A
above ser.#OB341400

MONTGOMERY WARD & CO.

- Loop antenna connected to radio.
- Volume control—Maximum all adjustments.
- Connect radio ground to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator-output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

The following equipment is required for aligning.

- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antennas—1 mf., 200 mmf.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 12SK7 I. F. Mixer	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 12SA7 Mixer	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND	7000 Kc.	200 mmf.	Antenna Clip	Short Wave	Rotor full open (Plates out of mesh)	Trimmer C7 (See Fig. 3)	Short Wave oscillator	Adjust to maximum output
	6000 Kc.	200 mmf.	Antenna Clip	Short Wave	Set Dial at 6 Mc.	Trimmer C3 (See Fig. 3)	Short Wave antenna	Adjust to maximum output
	2200 Kc.	200 mmf.	Antenna Clip	Short Wave	Set Dial at 2.2 Mc.	Trimmer C10 (See Fig. 3)	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "A")
BROADCAST BAND	1550 Kc.	200 mmf.	Antenna Clip	Broadcast	Rotor full open (Plates out of mesh)	Trimmer C8 (See Fig. 3)	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna Clip	Broadcast	Set Dial at 1400 Kc.	Trimmer C4 (See Fig. 3)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna Clip	Broadcast	Set Dial at 600 Kc.	Trimmer C9 (See Fig. 3)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "B")

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

Procedure for Setting the Automatic Pushbuttons

- There are six pushbuttons on the front of the radio by means of which six stations may be selected (see "B," Fig. 2).
1. Make a list of local stations you tune in regularly; any number up to and including six.
 2. Punch out from the set of station call letter tabs supplied, the call letters of the stations you have selected.
 3. On the front of each automatic tuner button an opening is provided for inserting the call letter tabs. (See "A," Fig. 2.)
 4. Insert the call letter tabs in the rectangular openings in each of the automatic tuner pushbuttons. One of the small celluloid tabs supplied should be snapped into place over each of the station call letter tabs.
 5. Press in **ALL THE WAY** any one of the automatic tuner pushbuttons. Holding it in **FIRMLY**, tune in by means of the tuning knob (No. 4) the station you have assigned to this pushbutton. Turn the tuning knob very slowly back and forth (while still holding button in downward position) until the signal is clearest. The station will then be accurately tuned in. Release the pushbutton.
 6. Press in another automatic tuner pushbutton. Holding it in **FIRMLY**, carefully tune in the station assigned to this pushbutton. Release this pushbutton.
7. Follow this procedure until you have selected all of your favorite stations.
8. Now rotate the tuning knob to the right (clockwise) as far as it will turn, and with a coin (quarter), tighten the special locking screw ("C") in the center of the tuning knob, (see Fig. 2).
- It is **VERY IMPORTANT** that this locking screw is turned until it is **ABSOLUTELY TIGHT**.
- This screw will lock in place all the stations you have selected on the pushbuttons. (Note: Reset Lock Screw "C" is loose when radio is shipped from factory.)
- If you should desire to change any station you selected to another, loosen the reset locking screw two or three complete turns; select the new station as explained. (Note: If the dial mechanism works hard when setting up a new station for one of the automatic tuner pushbuttons, it is due to the locking screw being too tight. Loosen the reset locking screw until the dial mechanism works freely with the tuner pushbutton pressed in.)
- BE SURE TO RETIGHTEN THE RESET LOCK SCREW, otherwise the stations will not stay adjusted to the pushbuttons.**
- The automatic dial is now set up for quick tuning.

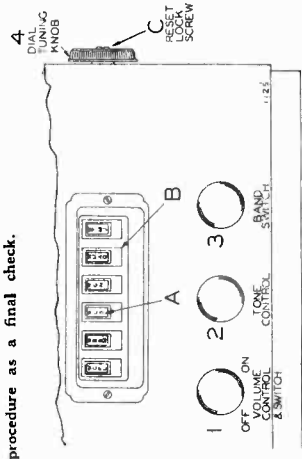


FIG. 2

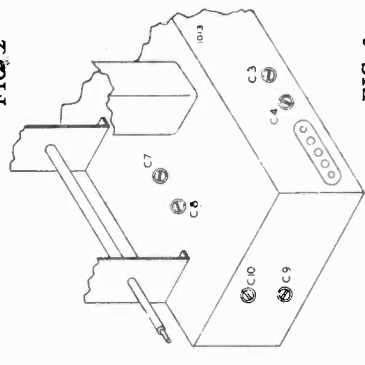
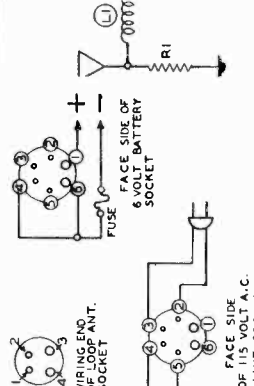
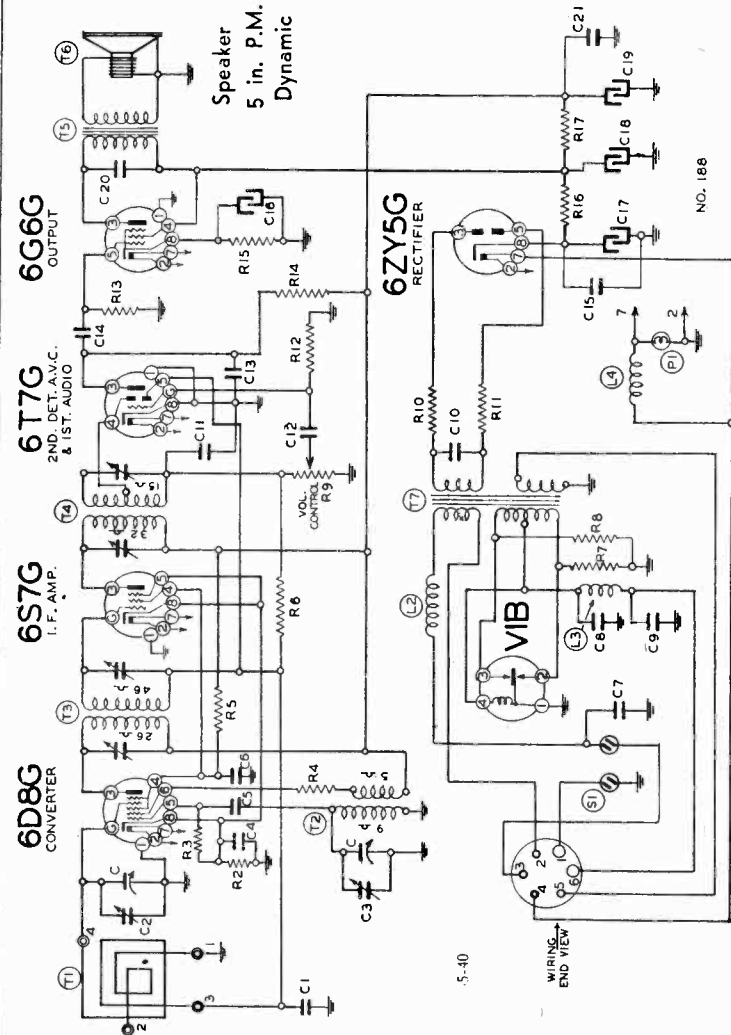


FIG. 3



INTERMEDIATE FREQUENCY 455 K.C.

- CONDENSERS**
- C1 BE102134 2 gang variable condenser .05 x 200 volts
 - C2 BE1069 Antenna trimmer on gang
 - C3 BE10020 1 x 200 v.
 - C4 BE1295 1 x 200 v.
 - C5 BE10020 1 x 200 v.
 - C6 BE10013 .05 x 400 v.
 - C7 BE10031 .5 x 120 v.
 - C8 BE10031 .5 x 120 v.
 - C9 BE10073 .008 x 1200 v.
 - C10 BE12951 .000125 mica
 - C11 BE10012 .003 x 600 v.
- PARTS**
- C13 BE12060 .00015 mica
 - C14 BE10011 .01 x 400 v.
 - C15 BE10020 1 x 200 v.
 - C16 BE119111 20 mid. lyric-25 w. v.
 - C17 BE119111 40 mid. lyric-200 w. v.
 - C18 BE119111 20 mid. lyric-200 w. v.
 - C19 BE10019 .006 x 600 v.
 - C20 BE10020 1 x 200 v.

SETTING THE AUTOMATIC PUSHBUTTONS

Pry out the metal button in cabinet opposite pushbutton locking screw.

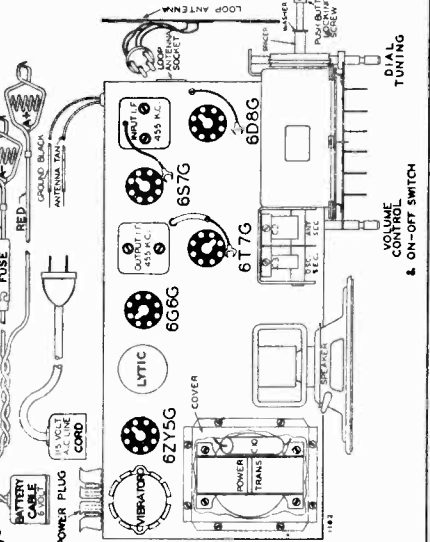
Press one of the buttons all the way down and hold it FIRMLY. Now tune in the station you want with the tuning knob. Tune back and forth until the station is clear, then release the button. **NOTE: If the tuning knob turns quite hard when the button is held down firmly, loosen the pushbutton locking screw several turns with a screwdriver.**

Continue, setting each of the remaining pushbuttons in the same way. Now turn the tuning knob all the way to the right and tighten the pushbutton locking screw. This screw prevents the pushbuttons from slipping off the stations you have set. To change stations loosen locking screw and proceed as above.

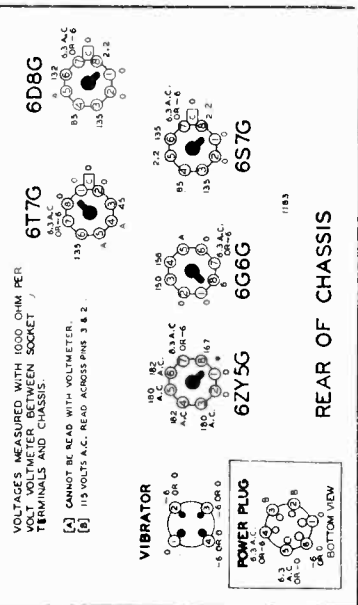
MODEL 04BR-570A (SERIAL No. OE528700 and UP)

Power Consumption - 30 Watts
 Battery Drain - 2 1/2 Amps
 Power Output - 700 Milliwatts Undistorted
 Sensitivity for 50 Milliwatt Output: 15 Microvolts Average
 Selectivity - 50 KC Broad at 1000 Times Signal at 1000 KC
 Tuning Frequency Range - 535 to 1650 KC

To remove the chassis pull the loop antenna plug from the chassis. Pull the pushbuttons, the tuning and volume knobs off their shafts. Take out the 4 screws in bottom of cabinet and lift chassis out.

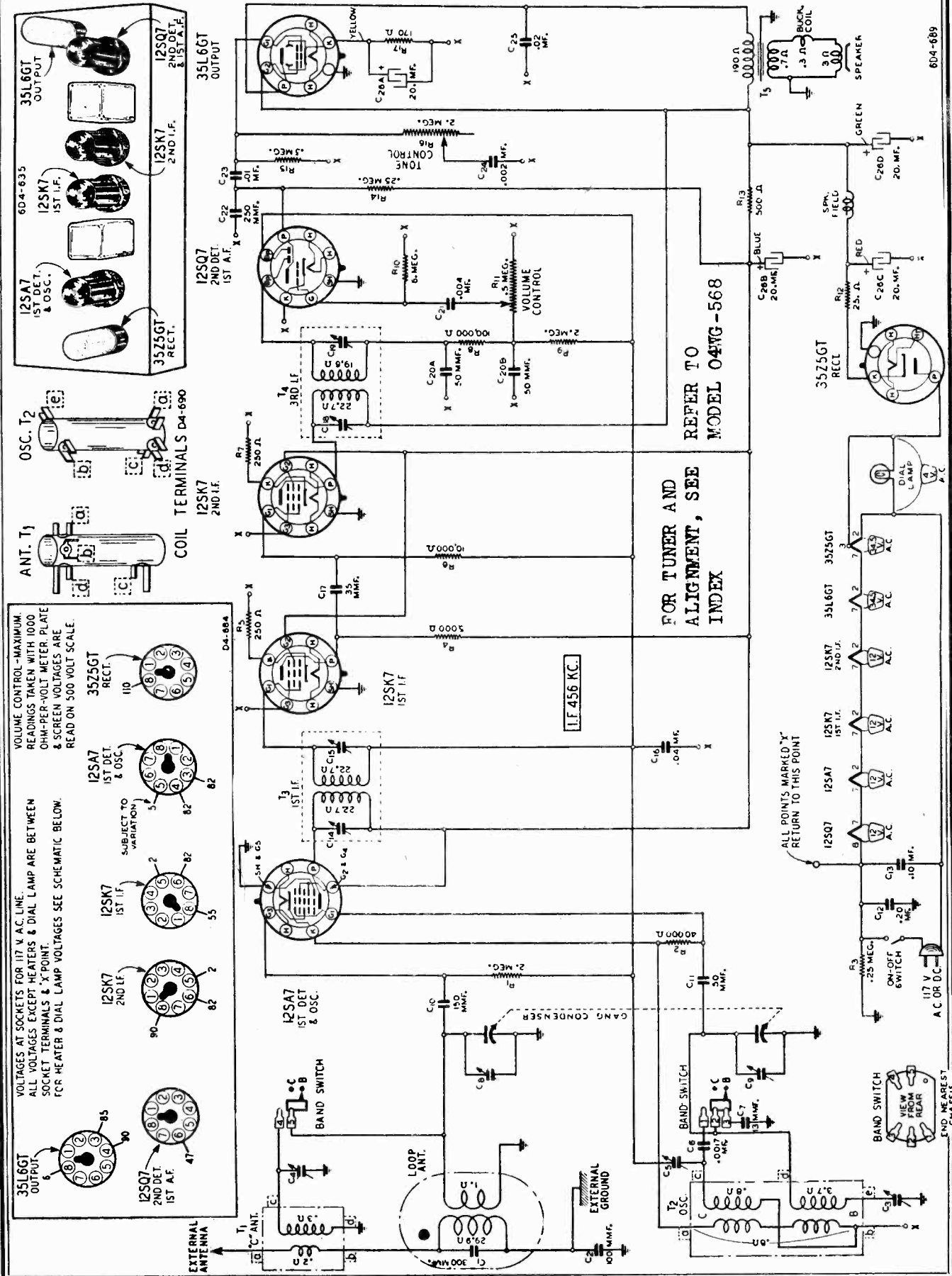


BOTTOM VIEW OF CHASSIS



MONTGOMERY WARD & CO.

MODEL O4WG-612



MONTGOMERY WARD & CO

MODEL 04WG-614

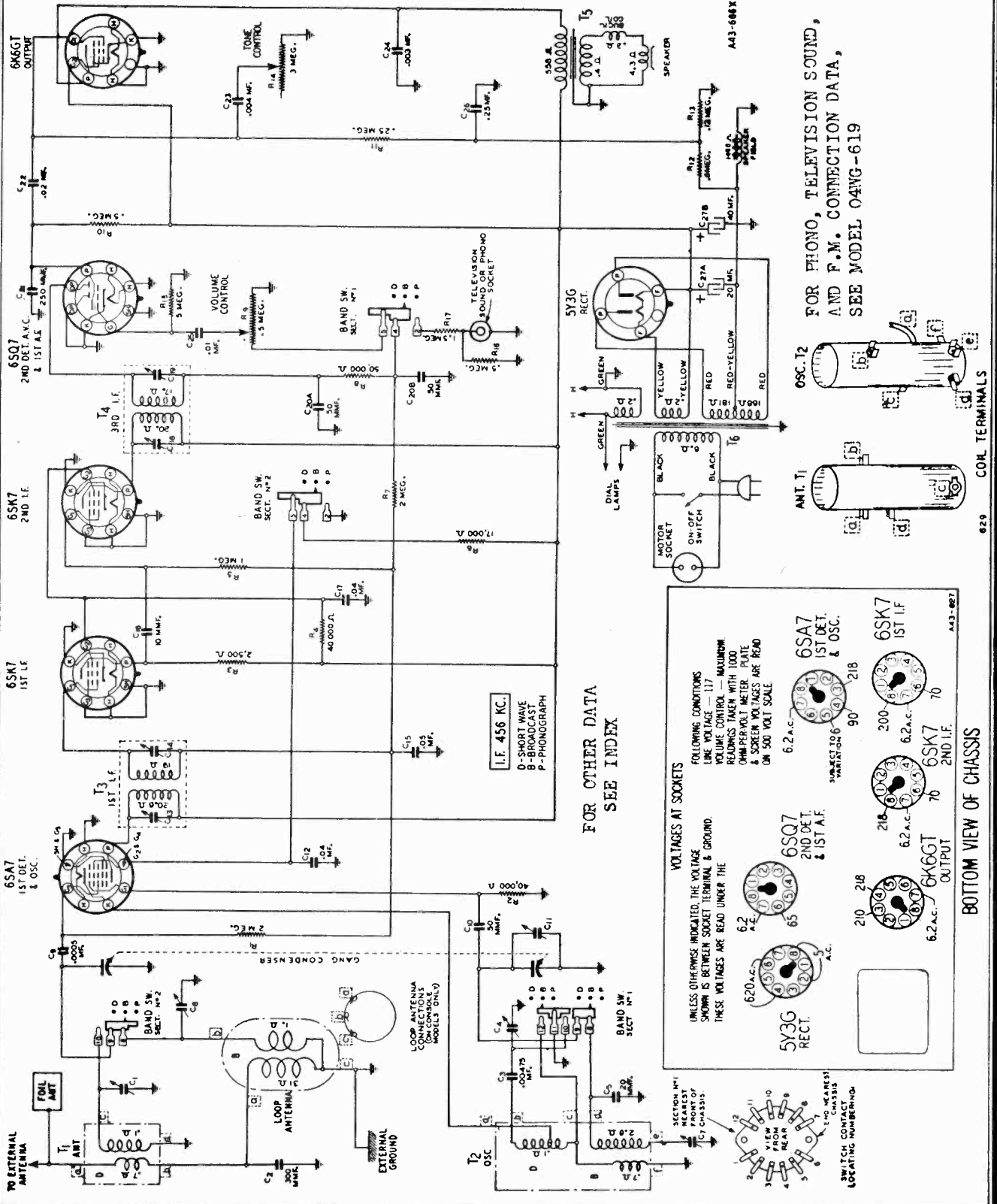
Power Consumption 57 Watts (At 117 volts 60 cycles)
 73 Watts (Phonograph Operating)
 Power Output..... 1.7 Watts Undistorted
 2.5 Watts Maximum
 Selectivity..... 40 KC Broad at 1000 times Signal
 Intermediate Frequency..... 456 KC
 Speaker..... 6" or 8" Electro-Dynamic

Tuning Frequency Range

B Range..... 528 to 1600 KC
 D Range..... 5750 to 18300 KC

Sensitivity—External Antenna—(For 0.5 Watt output)

B Range..... 7 Microvolts Average
 D Range..... 15 Microvolts Average



MONTGOMERY WARD & CO.

MODEL 04BR-615A
above ser #565300

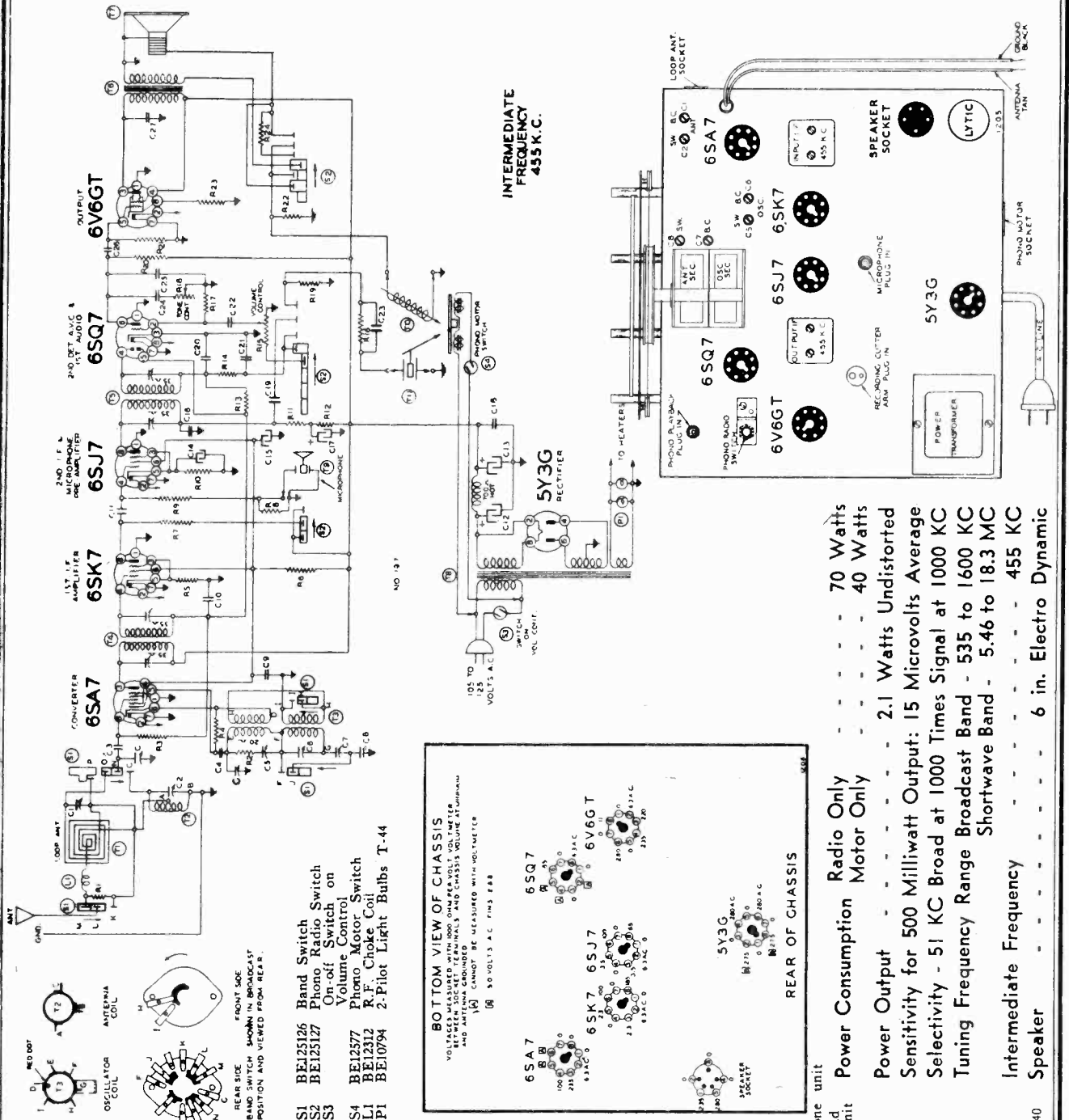
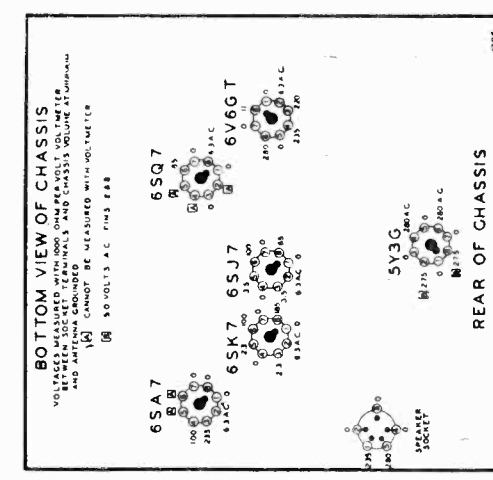


Diagram Ref. No.	Part No.	Description
R1	BE130321	3500 ohms—1/2 W.
R2	BE130197	20 ohms—1/4 W.
R3	BE1304	3 megohm—1/2 W.
R4	BE13076	30M ohms—1/2 W.
R5	BE13097	200 ohms—1/2 W.
R6	BE130165	15M ohms—1/2 W.
R7	BE13022	5M ohms—1/2 W.
R8	BE13019	1 megohm—1/2 W.
R9	BE13012	50M ohms—1/2 W.
R10	BE130192	2M ohms—1/2 W.
R11	BE1302	75M ohms—1/2 W.
R12	BE1301	25M ohms—1/2 W.
R13	BE1304	3 megohm—1/2 W.
R14	BE13012	50M ohms—1/2 W.
R15	BE10142	1 megohm volume control
R16	BE13028	730M ohm—1/2 W.
R17	BE13025	5 megohm—1/2 W.
R18	BE10143	Tone control
R19	BE13019	1 megohm—1/2 W.
R20	BE13011	250M ohm—1/2 W.
R21	BE1303	500M ohm—1/2 W.
R22	BE130322	10 ohm—1 W.
R23	BE130227	250 ohm—1 W.
R24	BE130203	40 ohm—1/2 W.

Part No.	Description
S1	BE125126 Band Switch
S2	BE125127 Phono Radio Switch
S3	Volume Control
S4	BE12577 Phono Motor Switch
L1	BE12312 R.F. Choke Coil
P1	BE10794 2-Pilot Light Bulbs T-44



Radio Only	Motor Only	Radio and Motor
Power Consumption	70 Watts	40 Watts
Power Output	2.1 Watts Undistorted	15 Microvolts Average
Sensitivity for 500 Milliwatt Output	51 KC Broad at 1000 Times Signal	535 to 1600 KC
Selectivity	6" Dynamic Speaker	Shortwave Band - 5.46 to 18.3 MC
Tuning Frequency Range	Recording Arm Plug In	Intermediate Frequency
Speaker	Phono Pick-up arm	455 KC

Part No.	Description
C1	2 gang variable condenser
C2	B.C. Antenna Trimmer
C3	S.W. Antenna Trimmer
C4	.0005 mica
C5	.0015 mica
C6	S.W. Oscillator trimmer
C7	B.C. Oscillator trimmer
C8	BE124146 B.C. Oscillator series paider
C9	BE10013 S.W. Oscillator series paider
C10	BE10099 .05 x 400 v. condenser
C11	BE12921 .0002 mica
C12	BE11914 15 mid. x 400 v. lytic
C13	BE11914 15 mid. x 400 v. lytic
C14	BE11914 20 mid. x 25 v. lytic
C15	BE11914 10 mid. x 300 v. lytic
C16	BE1292 .0005 mica
C17	BE11907 8 mid. x 450 v. lytic
C18	BE1001 1 x 400 v. condenser
C19	BE129161 .0001 mica
C20	BE129161 .0001 mica
C21	BE10012 .003 x 600 v. condenser
C22	BE1292 .0005 mica
C23	BE10089 .048 x 800 v.
C24	BE1292 .0005 mica
C25	BE10026 .02 x 400 v.
C26	BE1001 .01 x 400 v.
C27	BE1001 .01 x 400 v.

Part No.	Description
T1	BE11204 Loop Antenna Assembly
T2	BE11184 S.W. Antenna Coil
T3	BE11073 B.C. S.W. Oscillator Coil
T4	BE108169D Input I.F. Coil Complete
T5	BE108108T Output I.F. Coil Complete
T6	BE105118 Output Transformer
T7	BE114212 6" Dynamic Speaker
T8	BE104225 Power Transformer
T9	BE114214 Microphone and Cable
T10	BE104230 Recording and playback unit complete 60 cycle
T11	Phono Pick-up arm

MODEL 04BR-615A
 above ser.#565300
 MODELS 04BR-675A,
 04BR-676A

MONTGOMERY WARD & CO.

Model No. 04BR-615A

ALIGNMENT PROCEDURE

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD.	Grid of 6S17 I. F.	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Top View)	Output I. F.	Adjust to maximum output
	455 Kc.	.1 MFD.	Grid of 6SA7 Mixer	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Top View)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND (See Note A)	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C5	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C2	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 6 Mc.	Trimmer C8	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "C")
BROAD-CAST BAND (See Note A)	1600 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full open (Plates out of mesh)	Trimmer C6	Broadcast oscillator	Adjust to maximum output
	535 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full closed	Trimmer C7	Broadcast oscillator series pad	Adjust to maximum output
LOOP ALIGN-MENT (See Note B)	1400 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 1400 Kc.	Trimmer C1 (See Top View)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 600 Kc.	Trimmer C7 (See Top View)	Broadcast osc. Series Pad	Adjust to maximum output

NOTE "A"—The signal generator is connected to the "ANT." and "GND." leads when aligning the Short Wave Band and to the grid of the 6SA7 tube and ground terminal when setting the Broadcast Band oscillator and frequencies, (1600 and 535 K. C.).

The loop antenna should be connected to the radio when making these adjustments.

NOTE "B"—Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected. The signal generator is connected to the "ANT." and "GND." terminals.

NOTE "C"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained. Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC. After each band is completed, repeat the procedure as a final check.

MODEL 04BR-675A and 04BR-676A

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD.	Grid of 6S7 I. F.	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Top View)	Output I. F.	Adjust to maximum output
	455 Kc.	.1 MFD.	Grid of 6SA7 Mixer	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Top View)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C4	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C1	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 6 Mc.	Trimmer C7	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "A")
BROAD-CAST BAND	1600 Kc.	.1 mmf.	Grid of 6SA7	Broadcast	Rotor full open (Plates out of mesh)	Trimmer C5	Broadcast oscillator	Adjust to maximum output
	535 Kc.	.1 mmf.	Grid of 6SA7	Broadcast	Set Dial at 535 K. C.	Trimmer C6	Broadcast oscillator series pad	Adjust to maximum output
LOOP ALIGN-MENT	1400 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 1400 K. C.	Trimmer C2 (See Top View)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 600 K. C.	Trimmer T3 (See Top View)	Iron Core Tracking Coil	Adjust to maximum output

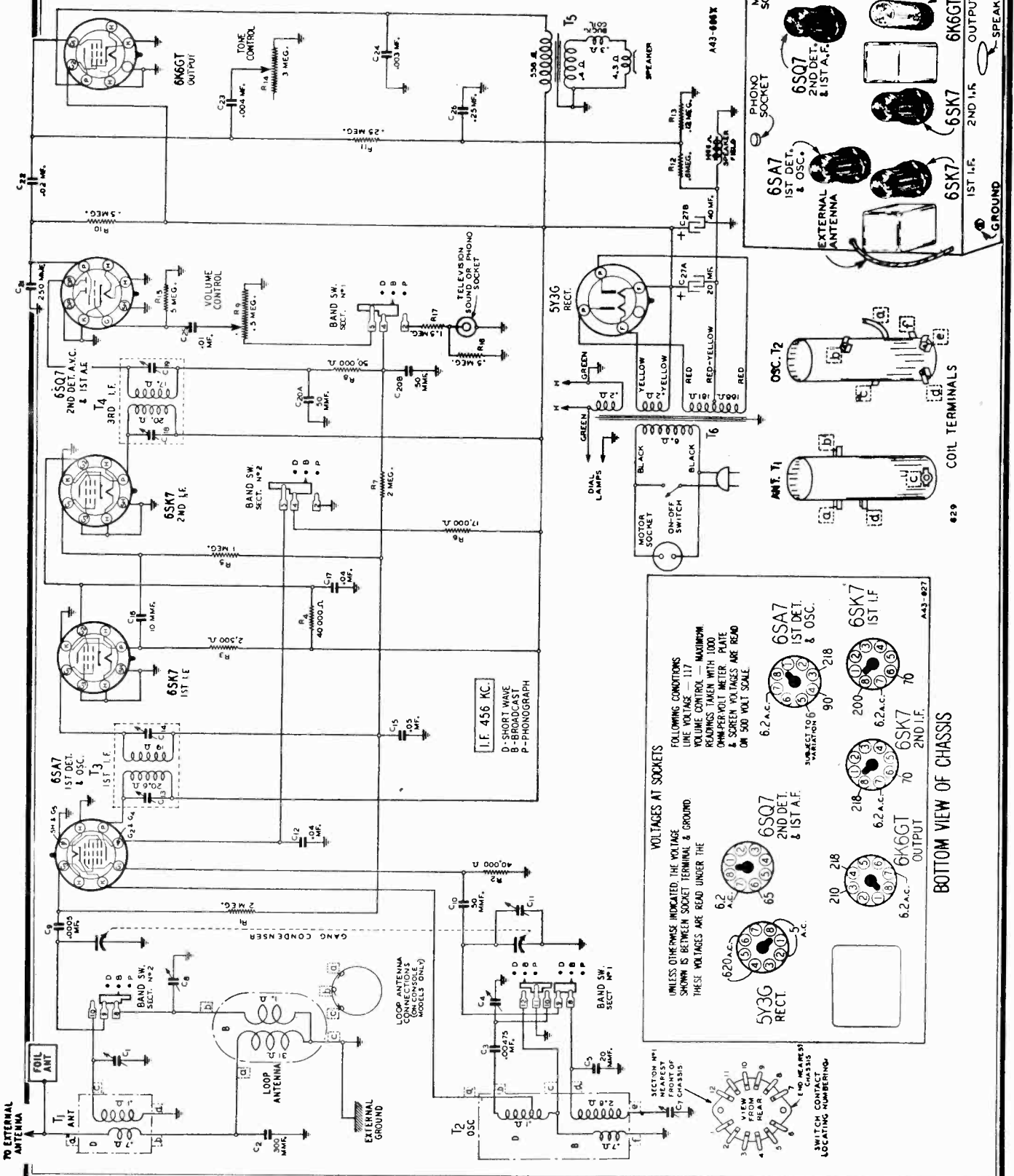
The loop antenna should be connected to the radio when making all adjustments.—Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected.

NOTE "A"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained. Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC. After each band is completed, repeat the procedure as a final check.

MONTGOMERY WARD & CO. MODELS 04WG-619, 04WG-621, 04WG-821NI

PHONOGRAPH CONNECTIONS: Insert phono pickup cable into phono socket (top of chassis). An a-c phono motor socket can be used to operate the record player motor.

TELEVISION SOUND AND F.M. CONNECTIONS: Audio amplifier and speaker of the receiver used to reproduce television sound or FM programs. Connect television picture receiver and sound converter or FM converter to phono socket. Turn knob to phono position.



VOLTAGES AT SOCKETS

UNLESS OTHERWISE INDICATED THE VOLTAGE SHOWN IS BETWEEN SOCKET TERMINAL & GROUND. THESE VOLTAGES ARE READ UNDER THE FOLLOWING CONDITIONS:
 LINE VOLTAGE — 117
 VOLUME CONTROL — MAXIMUM.
 READINGS TAKEN WITH 1000 OHM-PER-VOLT METER PLATE & SCREEN VOLTAGES ARE READ ON 500 VOLT SCALE

6SA7 1ST DET. & OSC.	6SK7 1ST I.F.
6.2 A.C. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)	210 218 200 218 70
6SQ7 2ND DET. & 1ST A.F.	6.2 A.C. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)
6.2 A.C. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)	210 218 70
6K6GT OUTPUT	6.2 A.C. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)
6.2 A.C. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)	210 218 70

ANT. T1
ANT. T2
OSC. T2
COIL TERMINALS
829

BOTTOM VIEW OF CHASSIS

MODELS 04WG-819,
04WG-621, 04WG-621NI

MONTGOMERY WARD & CO.

MODEL 04BR-620A

SPECIFICATIONS—Model No. 04BR-620A

Power Consumption Radio Only - - - - - 70 Watts
Radio and Motor - - - - - 90 Watts
Power Output - - - - - 2.1 Watts Undistorted
Sensitivity for 500 Milliwatt Output: 15 Microvolts Average
Selectivity - 51 KC Broad at 1000 Times Signal at 1000 KC

Tuning Frequency Range Broadcast Band - 530 to 1600 KC
Shortwave Band - 5.46 to 18.3 MC
Intermediate Frequency - - - - - 455 KC
Speaker - - - - - 8 in. Electro Dynamic

ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect radio ground to ground post of signal generator with a short heavy lead.
- Connect dummy antenna valve in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

- The following equipment is required for aligning.
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
 - Output indicating meter.
 - Non-metallic screwdriver.
 - Dummy antennas—1 mf., 200 mmf., 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD	Grid of 6SA7 Mixer	Broadcast	Rotor full open (Plates out of mesh)	Trimmers on top (See Chassis View)	Input and Output I. F.	Adjust to maximum output
SHORT WAVE BAND (See Note A)	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C1	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C1	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 6 Mc.	Trimmer C7	Short Wave oscillator series pad	Adjust to maximum rock dial (See note "C")
BROADCAST BAND (See Note A)	1400 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full open (Plates out of mesh)	Trimmer C5	Broadcast oscillator	Adjust to maximum output
	530 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full closed	Trimmer C6	Broadcast oscillator series pad	Adjust to maximum output
LOOP ALIGNMENT (See Note B)	1400 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 1400 Kc.	Trimmer C2 (See Chassis View)	Broadcast antenna	Adjust to maximum output
	400 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 400 Kc.	Trimmer C6 (See Chassis View)	Broadcast oscillator series pad	Adjust to maximum output

NOTE "A"—The signal generator is connected to the "ANT." and "GND." leads when aligning the Short Wave Band and to the grid of the 6SA7 tube and ground terminal when setting the Broadcast Band oscillator and frequencies. (1600 and 530 K.C.)
The loop antenna should be connected to the radio when making these adjustments.
NOTE "B"—Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected. The signal generator is connected to the "ANT." and "GND." leads.

NOTE "C"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.
Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.
After each band is completed, repeat the procedure as a final check.

SPECIFICATIONS

Power Consumption 57 Watts (At 117 volts 60 cycles)
Power Output 1.7 Watts Undistorted
2.5 Watts Maximum
Selectivity 40 KC Broad at 1000 times Signal
Intermediate Frequency 456 KC
Speaker 6" or 8" Electro-Dynamic

Tuning Frequency Range
B Range 528 to 1600 KC
D Range 5750 to 18300 KC
Sensitivity—External Antenna—(For 0.5 Watt output)
B Range 7 Microvolts Average
D Range 15 Microvolts Average

MODEL 04WG-619
" 04WG-621
" 04WG-621NI

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.
Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.
Allow Chassis and Signal Generator to "Heat Up" for several minutes.

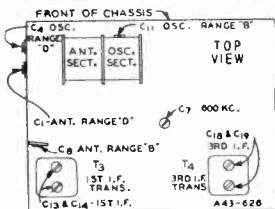
The following equipment is required for aligning:
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antennas—1 mf., 100 mmf., and 400 ohms.

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

Console Model—It is not necessary to remove chassis from cabinet. Merely remove chassis mounting screws so that chassis may be turned to reach oscillator trimmer on gang condenser.

DRIVE CORD REPLACEMENT

Turn gang condenser to full open position—See illustration. Use a new drive cord 42 inches in length.
The one end of cord to tension spring. Pass other end of cord up through hole in groove of drive pulley. Pull cord through hole until spring is flush against inside of pulley rim.
Wind cord 1/4 turn counter-clockwise (from pulley side of chassis) around drive pulley. Then wind 4 1/2 turns clockwise (from front of chassis) around tuning control shaft. These turns should progress toward chassis. Pass cord over idler studs A and B as shown, then wind cord 3/4 turn counter-clockwise (from pulley side of chassis) around drive pulley. This turn should be on left side (from front of chassis) of pulley groove.
Pass cord through hole in groove of drive pulley. Tie cord to tension spring. Fasten other end of spring to hook on drive pulley.
DIAL POINTER ATTACHMENT—Tune in a signal of known frequency. Set pointer at this frequency mark on dial scale. Fasten pointer to drive cord—See illustration.

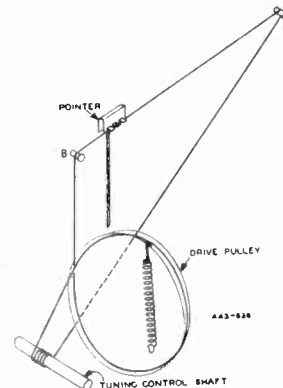


Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.
After each range is completed, repeat the procedure as a final check.
NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

NOTE B—(Table Model) By means of wooden blocks, stand the loop aerial assembly upright exactly 4 inches from the back of the chassis.
NOTE C—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.
NOTE D—(Table Model) Re-assemble chassis in cabinet. Replace back on cabinet. Connect ground post of signal generator to external ground clip on loop antenna (Table Model) or ground screw on chassis (Console Model).
CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.

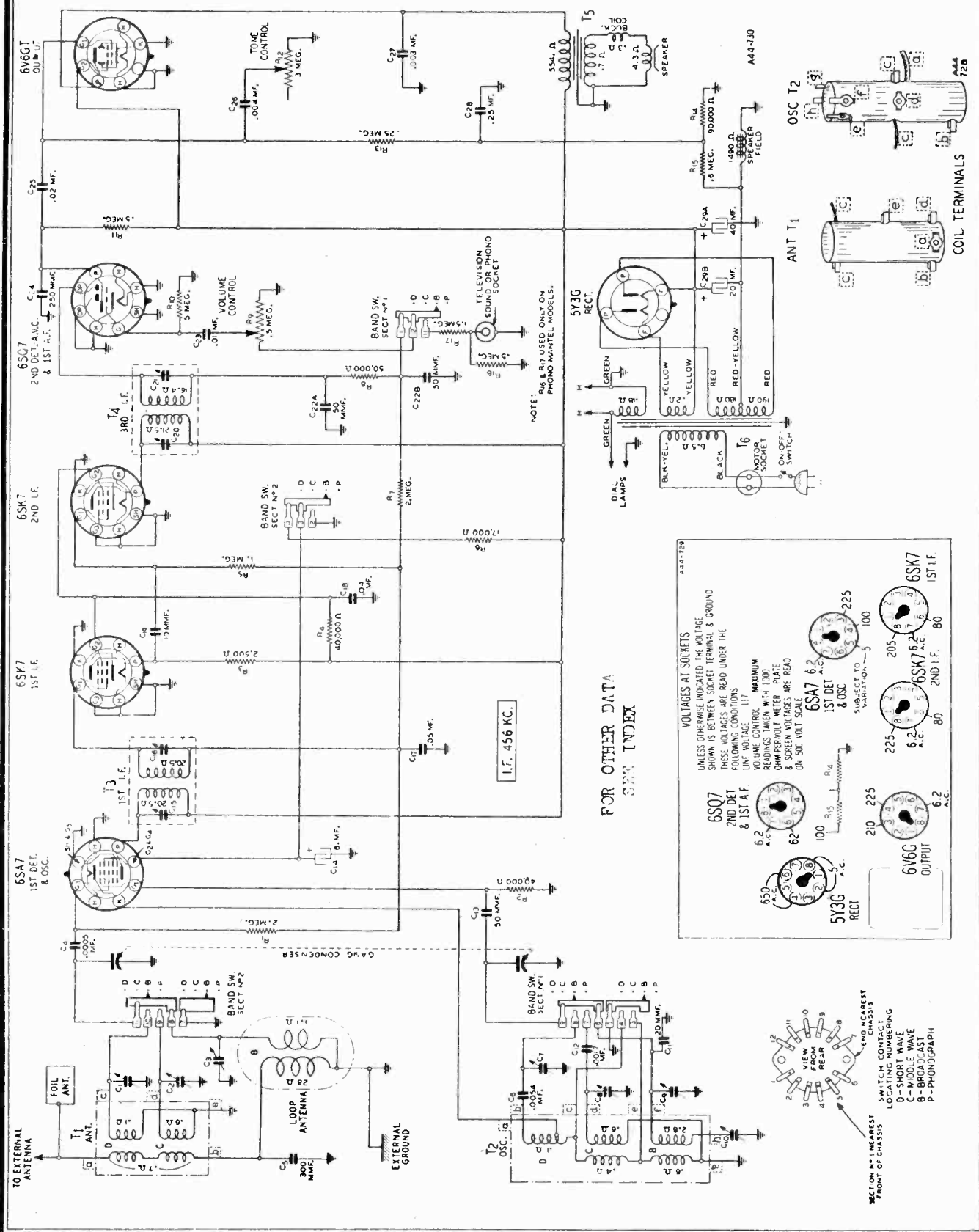
ANTENNA

Two built-in Air Wave Aerials are used with this radio.
One of these aerials is a loop type and is used for broadcast band reception. The other is a counterpoise foil aerial and is used for reception on the short wave band. For the reception of local or nearby stations, an outside antenna and ground are usually not required.
For best reception of short wave stations, an outside antenna is recommended.
For best results, an outside antenna 50 to 60 feet long, including the lead-in, should be used.



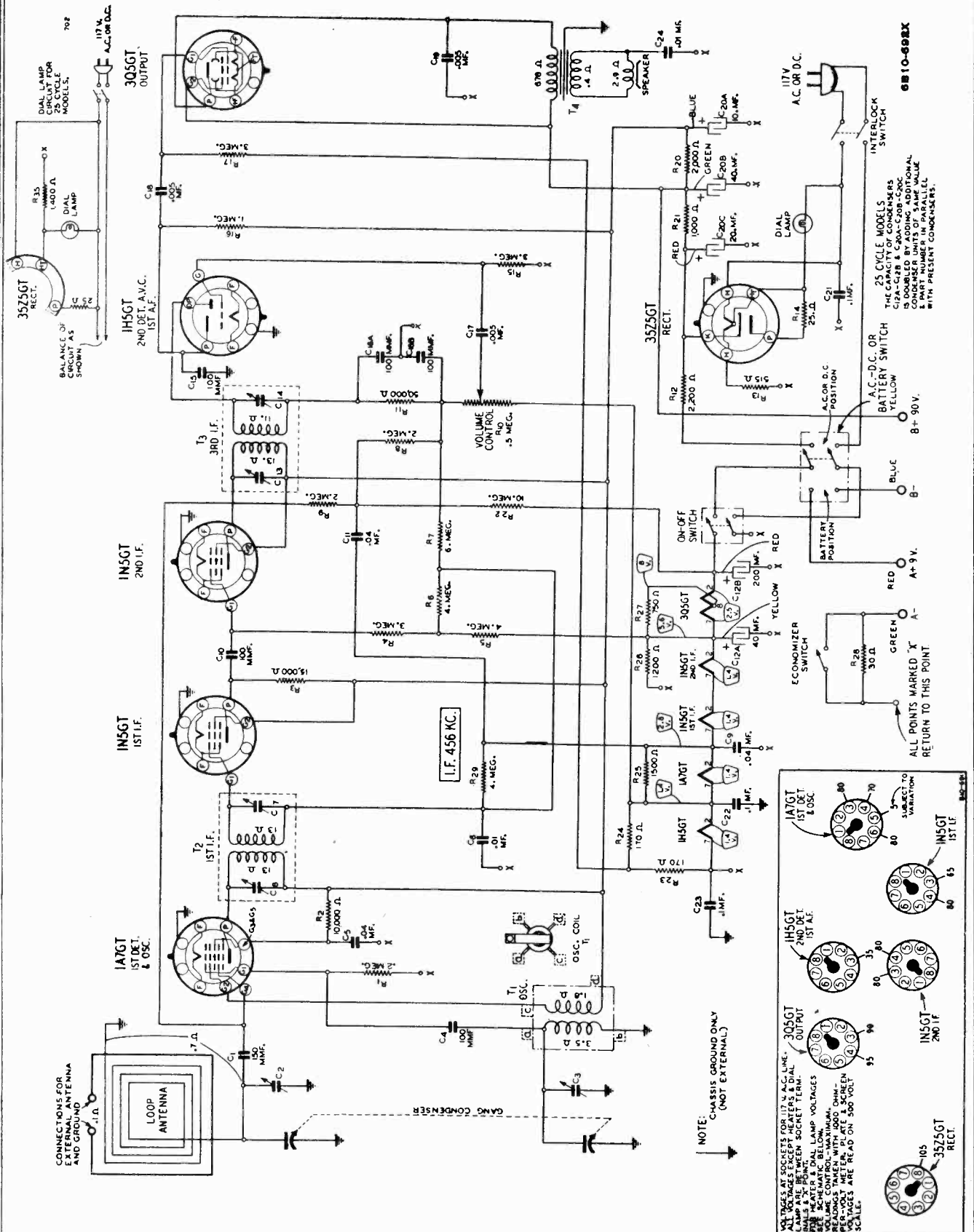
MONTGOMERY WARD & CO.

MODELS 04WG-622A, 04WG-623A

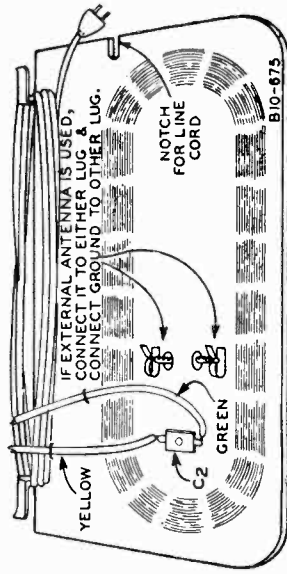
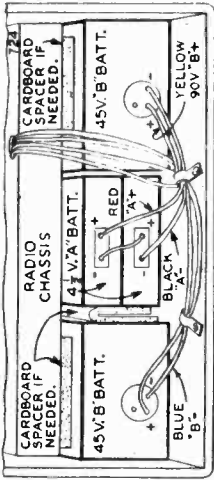


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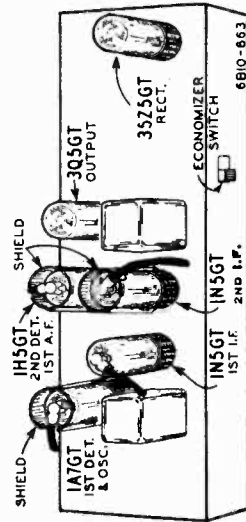
MODEL O4WG-672



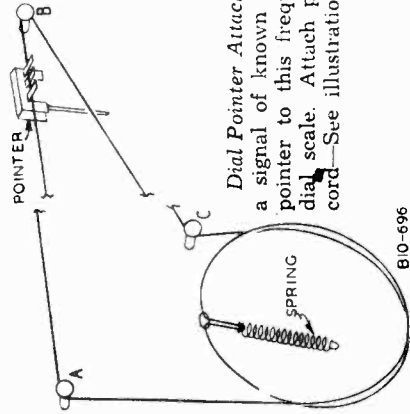
MODEL O4WG-672



INSIDE VIEW OF BACK COVER



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



B10-696

SPECIFICATIONS

- Input Voltages and Currents—Battery Operation
- "A" Batteries..... 9 Volts—50 Ma.
- "B" Batteries..... 90 Volts—11.5 Ma.
- Power Consumption (At 117 volts AC Supply) 28 Watts
- Power Output
- Battery Operation - - - 150 Mw. Undistorted
- - - 350 Mw. Maximum
- AC Operation - - - 200 Mw. Undistorted
- - - 400 Mw. Maximum
- Selectivity - 50 KC Broad at 1000 Times Signal
- Intermediate Frequency - - - - 456 KC
- Speaker - - - - - 6" P.M. Dynamic
- Tuning Frequency Range - - 540 to 1600 KC
- Sensitivity (For .05 Watt Output)
- External Antenna - - - 10 Microvolts Average

ALIGNMENT PROCEDURE

The following equipment is required for aligning:
 A Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
 Output Indicating Meter—Non-Metallic Screwdriver.
 Dummy Antennas—.1 mf., 200 mmf.

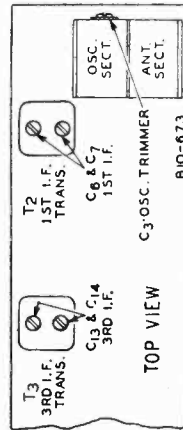
FREQUENCY SETTING	SIGNAL GENERATOR ANTENNA CONNECTION	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration below)
456 KC	External Antenna Clip on Loop	External Ground Clip on Loop	Turn Rotor to full open	1st I.F. (C6) & (C7) 3rd I.F. (C13) & (C14)
1600 KC	External Antenna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

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

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

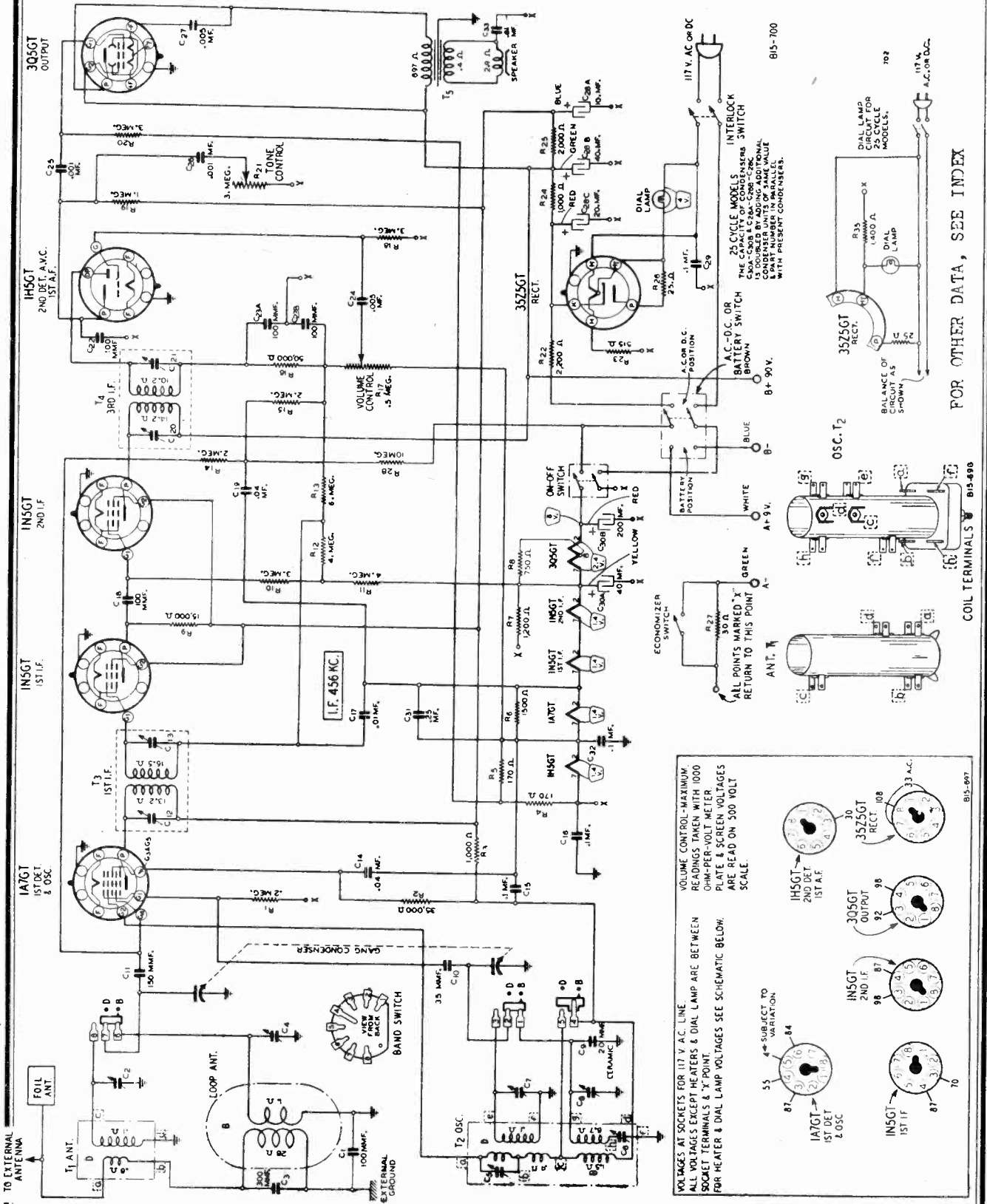
DRIVE CORD REPLACEMENT

Use a new drive cord 28 inches in length; tie one end to tension spring. Thread other end through hole in groove of drive pulley and pull spring flush against inside of pulley rim. Turn gang condenser to full open position—See illustration.



Wind cord 3/4 turn clockwise (from back of chassis) around drive pulley. Pass cord over idler studs A, B, & C, as shown. Then wind cord 3/4 turn clockwise (from back of chassis) around drive pulley. This turn should be on left side (from gang condenser side of chassis).

Thread cord through hole in pulley groove and tie to tension spring. Attach other end of spring to hook on drive pulley.



SPECIFICATIONS

Input Voltages and Currents—Battery Operation
 "A" Battery 9 Volts—50 Ma.
 "B" Batteries 90 Volts—11.5 Ma.
 Power Consumption (At 117 volts AC Supply) 28 Watts
 Power Output
 Battery Operation 150 Mw. Undistorted
 350 Mw. Maximum
 AC Operation 200 Mw. Undistorted
 400 Mw. Maximum
 Selectivity 38 KC Broad at 1000 Times Signal

Intermediate Frequency 456 KC
 Speaker 6" or 8" P.M. Dynamic
 Tuning Frequency Range
 B Range 528 to 1600 KC
 D Range 5750 to 18300 KC
 Sensitivity—External Antenna—(For .05 Watt output)
 B Range 12 Microvolts Average
 D Range 20 Microvolts Average

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.
 Allow Chassis and Signal Generator to "Heat Up" for several minutes.
IMPORTANT—Follow procedure in the order shown.
 The equipment in column at right is required for aligning:

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

FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER OR DIAL SETTING	ADJUST TRIMMERS TO MAXIMUM
Loop Aerial must be connected to chassis during all adjustments. Mantel Model—Take out hinge screws from cabinet back as well as other screws and remove chassis and back intact from cabinet.						
I. F.		Point "X"				
456 KC	External Antenna Wire	{ 1H5GT—2nd Det. Prong No. 7 }	.1 mf.	B Range	Turn Rotor to Full Open	3rd I.F. (C20) & (C21) 1st I.F. (C12) & (C13)
RANGE B						
1600 KC	External Antenna Wire	External Ground Wire	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C8)
1400 KC	External Antenna Wire—See Note B	External Ground Wire	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC— See Note A	Ant. Range B (C4)
600 KC	External Antenna Wire—See Note B	External Ground Wire	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C6) Rock Rotor—See Note C
RANGE D						
18,300 KC	External Antenna Wire	External Ground Wire	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C7)
16,000 KC	External Antenna Wire	External Ground Wire	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C2) Rock Rotor—See Note C
6000 KC	External Antenna Wire	External Ground Wire	400 Ohm	D Range	Turn Rotor to Max. Output	6000 KC (C5) Rock Rotor—See Note C
LOOP RANGE B						
1400 KC	External Antenna Wire—See Note D	External Ground Wire	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C4)

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

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

NOTE A—If the pointer is not at 1400 KC on the dial, tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale.

NOTE B (Mantel Model Only)—By means of wooden blocks, stand the loop aerial assembly upright exactly 1 3/4 inches from the back of the chassis.

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

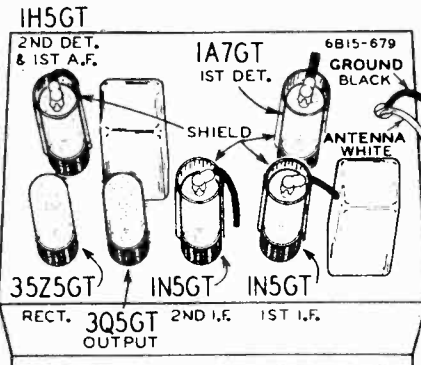
NOTE D—Re-assemble chassis in cabinet. Mantel Model—Replace back on cabinet. Antenna Range B trimmer may be reached through narrow slot in cabinet back.

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

hole until spring is flush against inside of pulley rim.

Pass cord under small pulley A—See illustration. Then wind 4 turns counter-clockwise (from back of chassis) around tuning control shaft. These turns should progress toward dial mounting plate. Pass cord over pulleys B, C, and D as shown. Then wind cord 3/4 turn counter-clockwise (from drive pulley side of chassis) around drive pulley. This turn should be on left side (from back of chassis) of pulley groove.

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

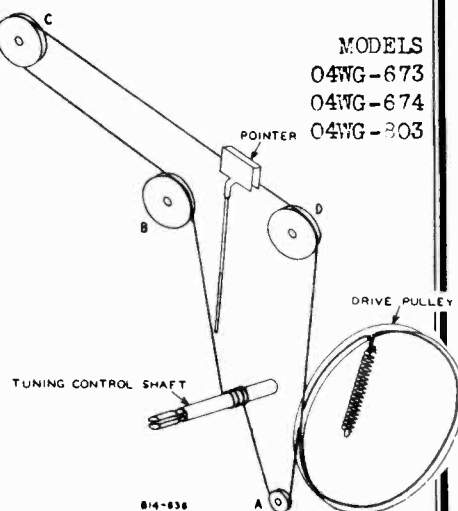


IMPORTANT—METAL BASE TUBES MUST BE USED IN THOSE SOCKETS AT WHICH SHIELDS ARE SHOWN.

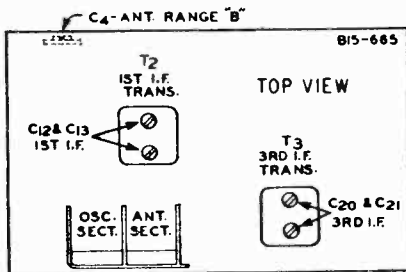
DRIVE CORD REPLACEMENT

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

Tie one end of cord to tension spring. Pass other end of cord up through hole in groove of drive pulley. Pull cord through



MODELS
 04WG-673
 04WG-674
 04WG-303



MONTGOMERY WARD & CO.

MODEL O4BR-620A

Code Part No. Description

RESISTORS

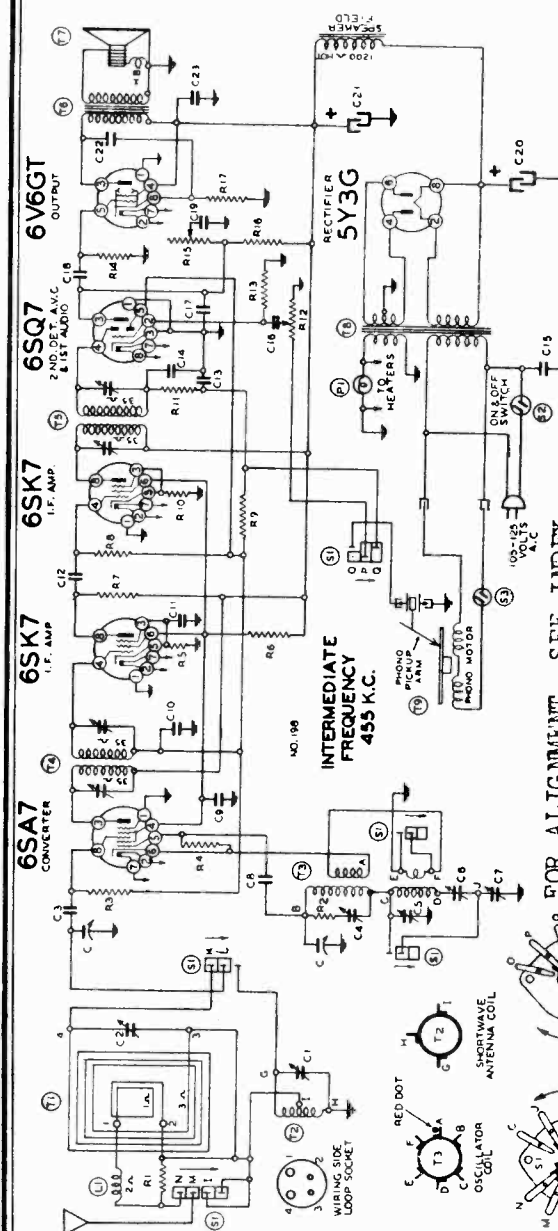
- BE13071 4000 Ohm—1/4 w.
- BE13012R 20 Ohm—1/2 w.
- BE13019 1 Megohm—1/4 w.
- BE130236 30M Ohm—1/4 w.
- BE130283 750 Ohm—1/4 w.
- BE130324 18M Ohm—1 watt
- BE130218 5M Ohm—1/4 w.
- BE13020 100M Ohm—1/4 w.
- BE130170 3 Megohm—1/4 w.
- BE130222 350 Ohm—1/4 w.
- BE13012 50M Ohm—1/4 w.
- BE101232 1 Megohm Volume Control
- BE13023 10 Megohm—1/4 w.
- BE1303 500M Ohm—1/4 w.
- BE101231 1 Megohm Tone Control
- BE130172 250M Ohm—1/4 w.
- BE130323 270 Ohm—1 watt

CONDENSERS

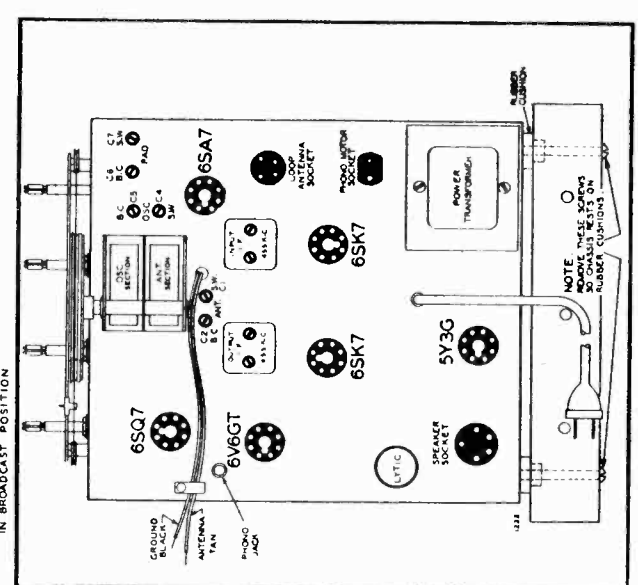
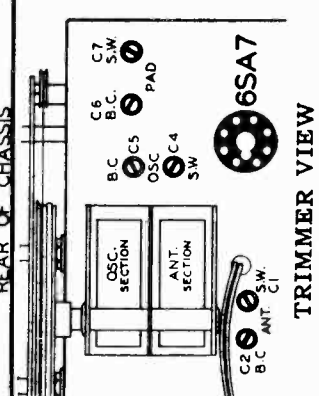
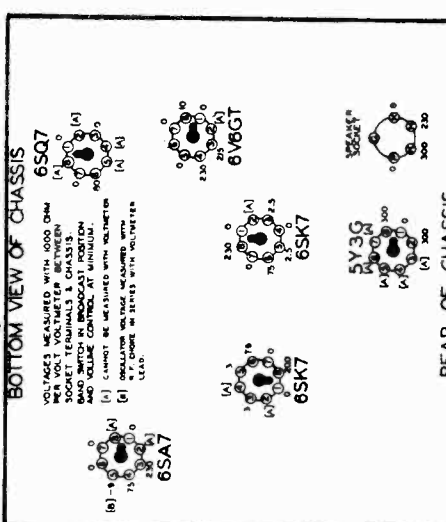
- BE102137 Two Gang Variable Condenser
 - BE124149 S.W. Antenna Trimmer
 - BE124149 B.C. Antenna Trimmer
 - BE1292 .0005 Mica
 - BE124142 S.W. Oscillator Trimmer
 - BE124142 B.C. Oscillator Trimmer
 - BE124146 B.C. Padding Condenser
 - BE12960 150 mmfd. Mica
 - BE10013 .05 x 400 v.
 - BE10022 .05 x 200 v.
 - BE1009 .05 x 200 v.
 - BE1292 .0005 Mica
 - BE129161 .0001 Mica
 - BE129161 .0001 Mica
 - BE10061 .02 x 600 v.
 - BE10025 .002 x 600 v.
 - BE12912 .00025 Mica
 - BE10026 .02 x 400 v.
 - BE10071 .004 x 600 v.
 - BE119115 16 mfd. x 400 w. v. lytic
 - BE119115 16 mfd. x 400 w. v. lytic
 - BE10019 .006 x 600 v.
 - BE1001 1 x 400 v.
- C1 and C2 are in same unit C4 and C5 in same unit
C3 and C7 are in same unit C13 and C14 in same unit
C20 and C21 are in same unit

PARTS

- T1 BE111208 Loop Antenna Assembly
- T2 BE11184 S.W. Antenna Coil
- T3 BE110154 B.C. and S.W. Oscillator Coil
- T4 BE108169E Input I.F. Coil—455 kc.
- T5 BE108169 Output I.F. Coil—455 kc.
- T6 BE10518 Output Transformer
- T7 BE114216 8" Electro Dynamic Speaker
- T8 BE104225B 60 Cycle Power Transformer
- T9 BE104228 60 Cycle Power Transformer and Phono Assembly
- and BE104229 25 Cycle Seeburg Record Changer and Phono Assembly
- S1 BE125132 Phono-band Switch
- S2 BE125132 Switch on Volume Control
- S3 BE12312 R.F. Choke Coil
- P1 BE10794 Pilot Light Bulb No. T-44



FOR ALIGNMENT, SEE INDEX
BRC-Series A—Form 6263—5250—8-40
Pto. 209



CHASSIS VIEW

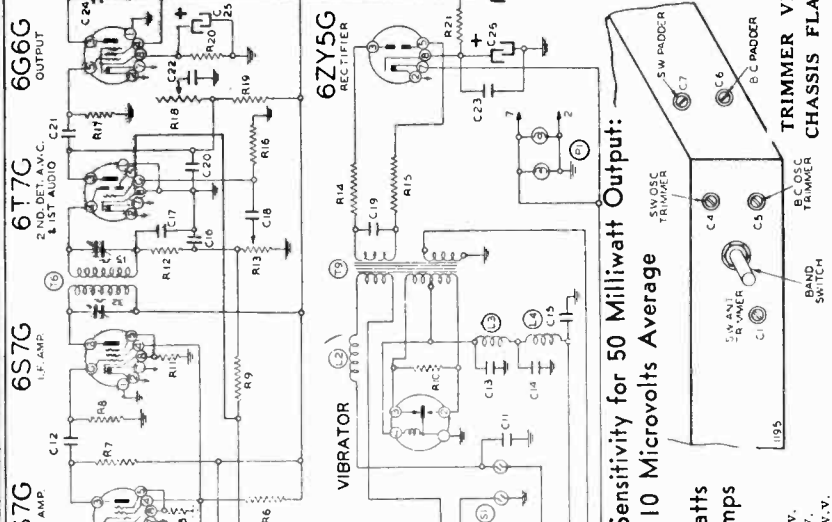
TRIMMER VIEW

MODELS 04BR-675A,

MONTGOMERY WARD & CO.

04BR-676A

Speaker Mantel
6 in. P.M. Dynamic
Console
8 in. P.M. Dynamic



Sensitivity for 50 Milliwatt Output:
10 Microvolts Average

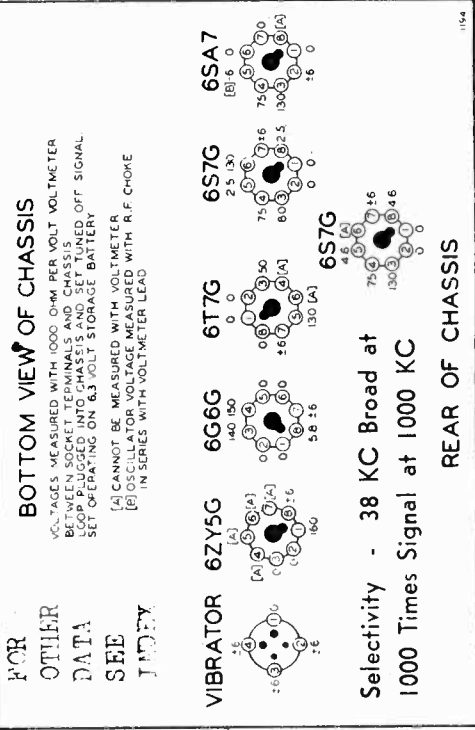
Power Output
700 Milliwatts Undistorted
Power consumption
A. C. Operation - 30 Watts
Battery Operation - 2.9 Amps

C4 and C5 in one unit
C6 and C7 in one unit
C25, C26, C27 and C28 in one unit

Range 535 to 1600 KC
5.6 to 18.3 MC

PARTS

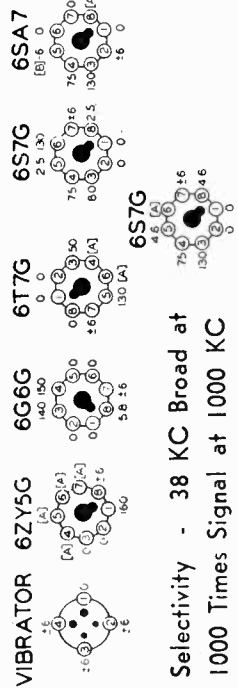
- BE11194 Loop Ant. Assembly (Mantel)
- BE11196 Loop Ant. Assembly (Console)
- BE11193 S.W. Ant. Coil
- BE11183 Loop Adj. Coil
- BE110160 B.C. S.W. Oscillator Coil
- BE108183 Input I.F. Coil—455 kc.
- BE108180 Output I.F. Coil—455 k.c.
- BE114210 6" Speaker P.M. (Mantel)
- BE104216 Power Transformer (Console)
- BE125119 Wave Band Switch
- BE12312 R.F. Choke Coil
- BE108102 "A" Choke Coil
- BE105102 "A" Choke Coil
- BE107259 (2) T-7 Pilot Light Bulbs



FOR OTHER DATA SEE JUNE

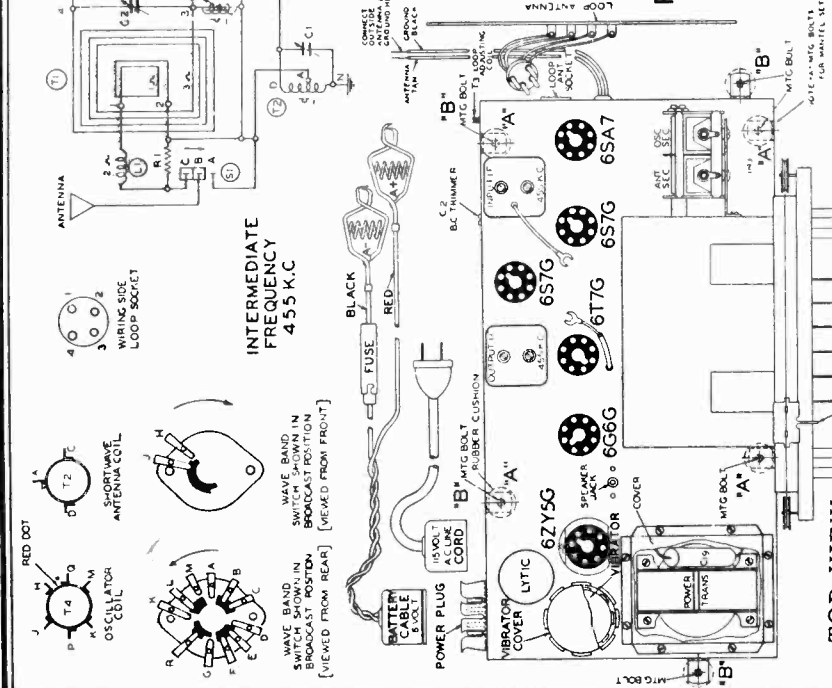
BOTTOM VIEW OF CHASSIS
VOLTAGES MEASURED WITH 1000 OHM PER VOLT METER
VOLTAGE MEASURED AT TERMINALS AND CHASSIS
LOOP PLUGGED INTO CHASSIS AND SET TUNED OFF SIGNAL
SET OPERATING ON 6.3 VOLT STORAGE BATTERY

(A) CANNOT BE MEASURED WITH VOLT-METER
(B) OSCILLATOR VOLTAGE MEASURED WITH R.F. CHOKE
IN SERIES WITH VOLT-METER LEAD



Selectivity - 38 KC Broad at
1000 Times Signal at 1000 KC

REAR OF CHASSIS



CONDENSERS

- BE102133 2 Gang Variable Condenser
- BE124116 S.W. Antenna Trimmer
- BE124111 B.C. Antenna Trimmer
- BE12921 S.W. Oscillator Trimmer
- BE124142 B.C. Oscillator Trimmer
- BE124140 B.C. Pad Trimmer T1
- T2 T3 T4 T5 T6 T7 T8 T9 S1 L1 L2 L3 L4 P1
- BE10099 .05 x 200 v.
- BE10093 .0005 mica
- BE12922 5 x 120 v.
- BE10031 5 x 120 v.
- BE10031 5 x 120 v.
- BE129161 .0001 mica
- BE130233 60 ohm—1/2 w.
- BE130223 100 megohm—1/4 w.
- BE1303 500M ohm—1/4 w.
- BE101228 2 megohm (Iron)
- BE130266 200M ohm—1/2 w.
- BE13079 400 ohm—1/2 w.
- BE13022 350 ohm—1/2 w.
- BE130235 1500 ohm—1/2 w.

RESISTORS

- R1 RE130193 3M ohm—1/2 w.
- R2 RE130276 10 ohm—1/2 w.
- R3 BE13019 1 megohm—1/2 w.
- R4 BE130236 30M ohm—1/2 w.
- R5 BE13070 500 ohm—1/2 w.
- R6 BE13067 9M ohm—1/2 w.
- R7 RE130157 12M ohm—1/2 w.
- R8 RE13019 12M ohm—1/2 w.
- R9 BE13070 3 megohm—1/2 w.
- R10 BE13092 2M ohm—1/2 w.
- R11 BE13092 2M ohm—1/2 w.
- R12 BE13020 100M ohm—1/2 w.
- R13 BE101227 Volume Control
- R14 RE130233 60 ohm—1/2 w.
- R15 RE130223 60 ohm—1/2 w.
- R16 BE130223 100 megohm—1/4 w.
- R17 BE1303 500M ohm—1/4 w.
- R18 RE101228 2 megohm (Iron)
- R19 BE130266 200M ohm—1/2 w.
- R20 BE13079 400 ohm—1/2 w.
- R21 RE13022 350 ohm—1/2 w.
- R22 BE130235 1500 ohm—1/2 w.

MODEL O4BR-678C
above ser #15927

MONTGOMERY WARD & CO.

ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
 - Connect radio chassis to ground post of signal generator with a short heavy lead.
 - Connect dummy antenna value in series with generator output lead.
 - Connect output meter across primary of output transformer
 - Allow chassis and signal generator to "heat up" for several minutes.
- The following equipment is required for aligning:
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
 - Output indicating meter.
 - Non-metallic screwdriver.
 - Dummy antennas—1 mt., 125 mmf.

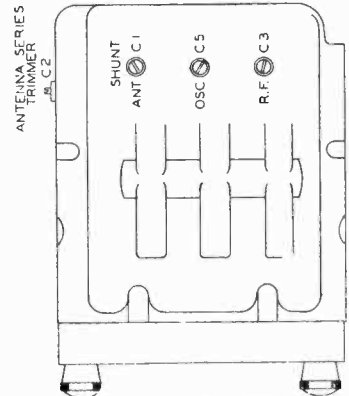
BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Remote Tuner Dial Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6SK7 I. F. Tube	Set dial at 1400 Kc.	Trimmers C19, C20 (See Fig. 3)	Output I. F.	See note "A" Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6SK7	Set dial at 1400 Kc.	Trimmer C21 (See Fig. 3)	Output I. F.	See note "B" Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6A8CT	Set dial at 1400 Kc.	Trimmers C14, C15 (See Fig. 3)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1565 Kc.	125 mmf.	Antenna lead	Set dial at 1505 Kc.	Trimmer C5 (See Fig. 4)	Oscillator	Adjust to maximum output
	1400 Kc.	125 mmf.	Antenna lead	Set dial at 1400 Kc.	Trimmers C1, C3 (See Fig. 4)	Antenna and R. F.	Adjust to maximum output
	600 Kc.	125 mmf.	Antenna lead	Set dial at 600 Kc.	Trimmer C2 (See Fig. 4)	Antenna series adj.	See note "C"

NOTE "A" IMPORTANT: To align the output I. F. transformer without using a cathode ray oscillograph a 10M ohm resistor must be shunted across the diode tuned circuit. Connect the resistor as indicated by points "X" and "Y" on the circuit diagram and the bottom view of the radio chassis Fig. 5. A red dot on top of output I. F. can designate location of trimmer "C1".

NOTE "B" Before adjusting trimmer C21 disconnect the 10M ohm resistor. Under no circumstances re-adjust trimmers C19 or C20 after the 10M ohm resistor has been removed.

For alignment of the output I. F. transformer using a cathode ray oscillograph the 10M ohm resistor is not used.

NOTE "C" Maximum gain for this adjustment depends on the capacity of the antenna system of the car in which the radio is installed. For the proper alignment of this adjustment see "Adjusting Antenna Trimmer".



ALIGNMENT OF THE IRON CORES
The iron cores for the antenna, R. F. and oscillator permeability coils have been very carefully adjusted at the factory and require no further adjustment, unless it becomes necessary to replace a coil, or if the adjustments have been tampered with.
The procedure for aligning the iron cores will be supplied with replacement coils when ordered.

IMPORTANT—ADJUSTING ANTENNA TRIMMER:
Tune in any weak station between 600 and 800 kc.
Make sure that the antenna shunt trimmer on the Bottom of the Remote Tuner is turned all the way out (counter clockwise), (see adjustment "C1," Fig. 4)
Adjust antenna series trimmer on the side of the remote Tuner Unit. For maximum output. (See adjustment "C2," Fig. 4)

NOTE: If resonance (maximum output) cannot be obtained within the range of the antenna series trimmer "C2," turn the adjustment screw all the way out (counter clockwise) and then adjust the antenna shunt trimmer "C1" on the bottom of the remote tuner unit for a peak of maximum output.
The above arrangement will cover any antenna capacity that is now in use.

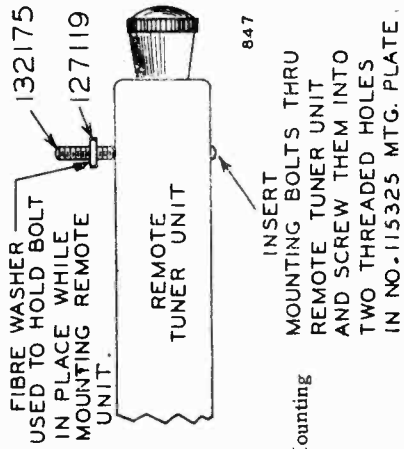
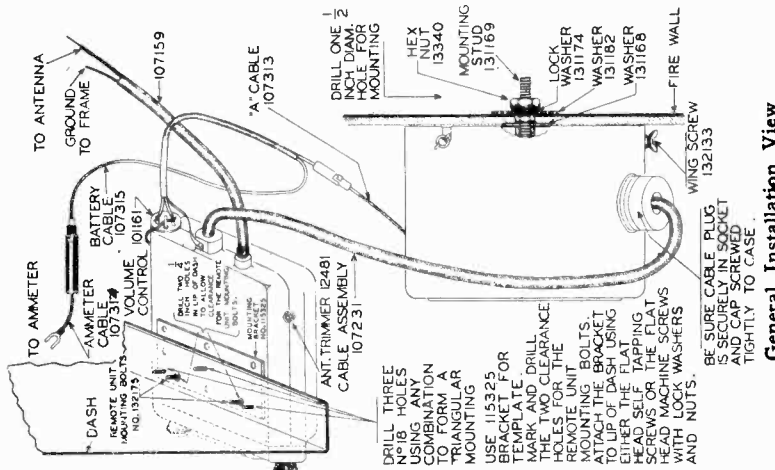


Fig. 4.—Bottom View of Remote Tuner
IMPORTANT—ADJUSTING ANTENNA TRIMMER:
Tune in any weak station between 600 and 800 kc.
Make sure that the antenna shunt trimmer on the Bottom of the Remote Tuner is turned all the way out (counter clockwise), (see adjustment "C1," Fig. 4)
Adjust antenna series trimmer on the side of the remote Tuner Unit. For maximum output. (See adjustment "C2," Fig. 4)
NOTE: If resonance (maximum output) cannot be obtained within the range of the antenna series trimmer "C2," turn the adjustment screw all the way out (counter clockwise) and then adjust the antenna shunt trimmer "C1" on the bottom of the remote tuner unit for a peak of maximum output.
The above arrangement will cover any antenna capacity that is now in use.

General Installation View

MONTGOMERY WARD & CO.

MODEL O4BR-678C
Above Ser.#15927**PROCEDURE FOR SETTING THE AUTOMATIC PUSHBUTTONS:**

There are six pushbuttons on the Remote Tuner Unit by means of which six stations may be set up for automatic tuning (see B, Fig. 2).

Make a list of local stations you tune in regularly; any number up to and including six.

Punch out from the set of station call letter tabs supplied, the call letters of the stations you have selected.

On the top of each pushbutton a slot is provided for inserting the call letter tabs, (see A, Fig. 2).

Insert the call letter tabs.

NOW, PROCEED AS FOLLOWS:—

1. Push the dial tuning knob in hard enough to make it latch in.
2. Rotate the dial tuning knob to the left (counter-clockwise), until the knob can not be turned any further without forcing.

You will note that as the knob is rotated it will turn easily until the pointer reaches the end of the dial scale and then a slight amount of force will be required to actually start unlocking the tuner mechanism. Beyond this point the knob will turn quite easily again until the tuner mechanism is completely unlocked. At this point do not force the knob any further. The tuner mechanism is now unlocked.

(NOTE:—Automatic tuner mechanism is locked tight when radio is shipped from the factory.)

3. Push in all the way any one of the pushbuttons and at the same time hold in firmly the dial tuning knob. Both the dial tuning knob and the pushbutton should be pushed hard enough to make them stay latched in. The reason for holding the dial tuning knob in firmly when the pushbutton is pressed in is due to the latching mechanism in the Remote Tuner unit which is so constructed to release the dial tuning knob entirely when a pushbutton is pressed in. When setting up stations for automatic tuning, however, it is necessary that both the dial tuning knob and the pushbutton be latched in together.
4. Press in on the pushbutton which is latched in. Holding it in firmly, tune in by means of the dial tuning knob the station indicated on the station call letter tab on this pushbutton. Turn the dial tuning knob very slowly back and forth (while still pressing in firmly on the pushbutton), until the station is clearest. The station will then be accurately tuned in.

5. Push in all the way another pushbutton, at the same time holding the dial tuning knob in so that both the pushbutton and the dial tuning knob are latched in together. Holding the pushbutton in firmly, tune in the station indicated on the call letter tab on this pushbutton.
6. Follow this procedure until you have tuned in all of your favorite stations.
7. When the last pushbutton has been properly set up, it is necessary to release it from the latched-in position before the tuner mechanism can be locked. To release this pushbutton, press the pushbutton release pin on the bottom of the tuner unit. This will trip the latching mechanism and all the pushbuttons will be released to out position, (See Fig. 2A).
8. Now, Press on the dial tuning knob hard enough to make it latch in. Rotate the dial tuning knob to the right (clockwise) until the knob can not be turned any further without forcing it. This will lock the tuner mechanism and all the stations that have been set up on the pushbuttons will be locked in place for automatic tuning.
9. Press in any one of the pushbuttons and—YOUR FAVORITE STATION IS SELECTED.

The important steps to remember when setting up stations on the pushbuttons for automatic tuning are:

1. To unlock the tuner mechanism press on the dial tuning knob hard enough to make it stay latched in. Rotate the dial tuning knob to the left (counterclockwise) until the knob cannot be turned any further without forcing it.
2. To set a pushbutton, Push in all the way and hold in firmly both the pushbutton and the dial tuning knob so that both latch in. Hold in firmly the pushbutton and tune in the station by means of the dial tuning knob. Set all the pushbuttons in the same manner.
3. To release the last pushbutton press the pushbutton release pin on the bottom of the tuner unit.
4. To lock the tuner mechanism push on the dial tuning knob hard enough to make it stay latched in. Rotate the dial tuning knob to the right (clockwise) until the knob can not be turned any further without forcing it. (NOTE: All the pushbuttons must be in out position when locking the tuner mechanism.)

SERVICE NOTES:

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

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

All voltages are to be measured with 6.3 volts input to receiver. Resistances of coils and transformer windings are indicated in ohms on schematic circuit diagram.

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

Failure to operate, noisy or weak reception is usually due to defective tubes, the tubes making poor contact with sockets or grid clips making poor contact with the caps of the tubes. Tubes may be checked very easily by replacing with other tubes which are known to be good. If fuse blows out frequently, the trouble is probably in the vibrator, it should be replaced. Do not attempt to make any adjustments on the vibrators.

ALIGNING INSTRUCTIONS:

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

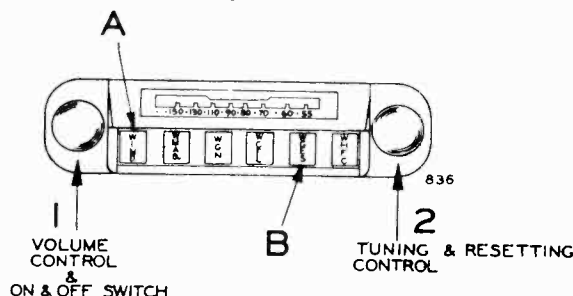


Fig. 2—Front View of Remote Tuner Unit

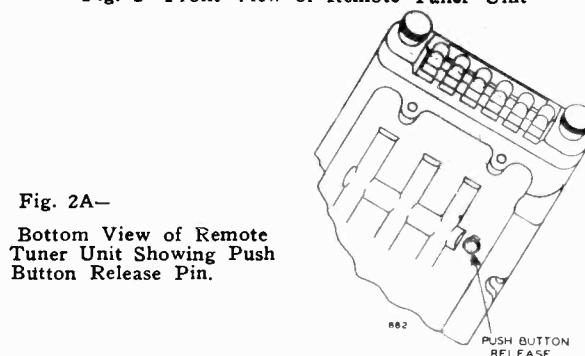


Fig. 2A—
Bottom View of Remote
Tuner Unit Showing Push
Button Release Pin.

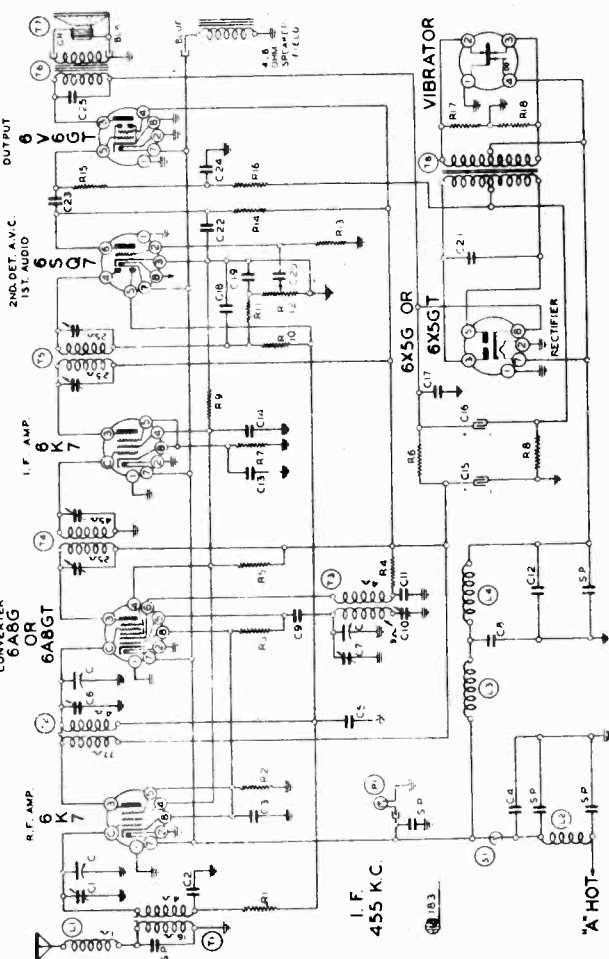
MODEL 04BR-679A
above ser.#5000

MONTGOMERY WARD & CO.

Schematic Ref. No.	Part No.	Description
C1	BE10020	1 x 200 v.
C2	BE10031	5 x 120 v.
C3	BE10020	1 x 200 v.
C4	BE10053	25 x 400 v.
C5	BE11963C	16 mid. lyric x 350 w. v.
C6	BE11965C	16 mid. lyric x 350 w. v.
C7	BE10011	0.1 x 400 v.
C8	BE1285	.0001 mica
C9	BE1285	.0001 mica
C10	BE10025	.002 x 600 v.
C11	BE10010	.008 x 1000 v.
C12	BE12912	.0025 mica
C13	BE10019	.006 x 600 v.
C14	BE10019	.006 x 600 v.

C13 and C14 are in same unit
C15 and C16 in same unit

Schematic Ref. No.	Part No.	Description
R1	BE13020	100M ohm-1/4 w.
R2	BE13064	500 ohm-1/4 w.
R3	BE13012	50M ohm-1/4 w.
R4	BE130208	40M ohm-1/4 w.
R5	BE130196	30M ohm-1 watt
R6	BE130279	1M ohm-1 watt
R7	BE130153	700 ohm-1/4 w.
R8	BE130220	300 ohm-1/4 w.
R9	BE130208	40M ohm-1/4 w.
R10	BE13038	2 megohm-1/4 w.
R11	BE13012	50M ohm-1/4 w.
R12	BE130223	10 megohm-1/4 w.
R13	BE1309	200M ohm-1/4 w.
R14	BE1305	300M ohm-1/4 w.
R15	BE130141	250M ohm-1/4 w.
R16	BE13060	100 ohm-1/4 w.
R17	BE13060	100 ohm-1/4 w.
R18	BE13060	100 ohm-1/4 w.



Power Consumption 6.4 Amps AT-6.3 Volts
 Power Output 2.5 Watts Undistorted
 Sensitivity (for 1 Watt) 5 Microvolts Average
 Selectivity - 48 Kc. Broad at 1000 Kc. FOR ALIGNMENT
 Tuning Range Broadcast 540-1555 Kc. SEE INDEX
 Intermediate Frequency 455 Kc.
 Speaker 5 in. Dynamic

MODEL 04BR-679A SERIES A (SERIAL No. 5000 and UP)

RESISTORS

Schematic Ref. No.	Part No.	Description
C	BE102100	3 gang variable condenser
C1	BE10043	Antenna Trimmer on gang condenser
C2	BE10043	1 x 200 v.
C3	BE10031	5 x 120 v.
C4	BE10020	.05 x 200 v.
C5	BE10031	.00025 mica
C6	BE10022	R.F. Trimmer on gang condenser
C7	BE10031	Oscillator Trimmer on gang condenser
C8	BE10031	.5 x 120 v.
C9	BE12912	.0025 mica
C10	BE12437	350 nimid. W.C. Series Pad

CONDENSERS

Schematic Ref. No.	Part No.	Description
T1	BE11171	Antenna Coil
T2	BE10935	R.F. Coil
T3	BE11057	Oscillator Coil
T4	BE1096B	Input I.F.-455 kc.
T5	BE10898	Output I.F.-455 kc.
T6	BE10561B	Output Transformer
T7	BE10519B	Dynamic Speaker
T8	BE10519B	Power Transformer
L1	BE11176	Antenna Filter Choke
L2	BE10526	"A" Choke
L3	BE10524	"A" Choke
L4	BE10519	"A" Choke
S1	BE10797	On-off switch on volume control
P1	BE10797	6-8 volt pilot light

PARTS

Schematic Ref. No.	Part No.	Description
VIBRATOR	6K7	6K7
REAR OF CHASSIS	6X5G	6X5G
REAR OF CHASSIS	6X5GT	6X5GT

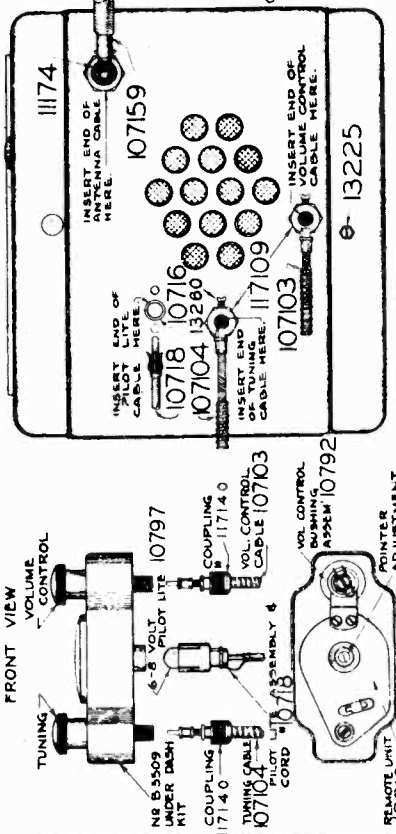


FIG. 1—SIDE VIEW

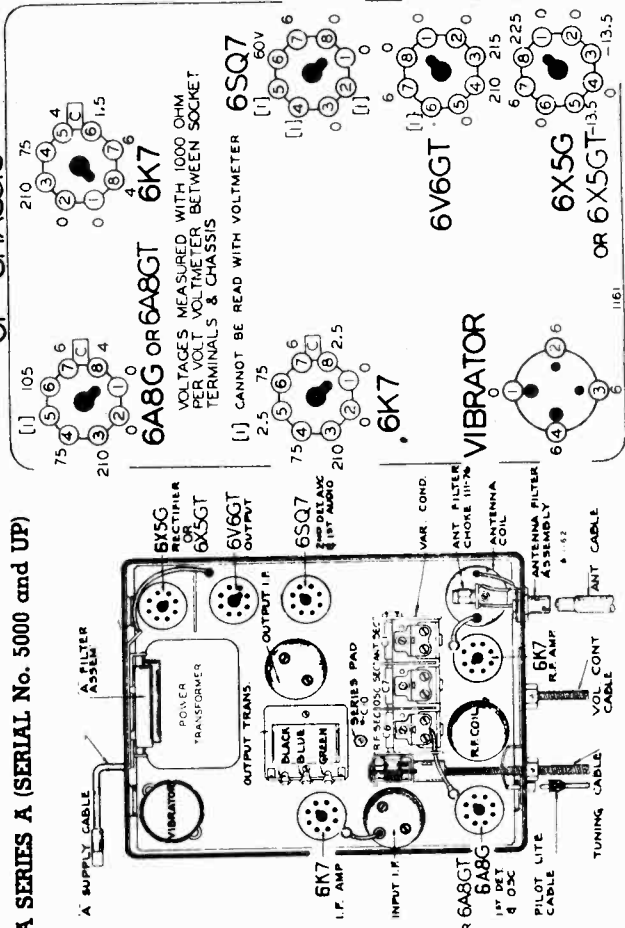
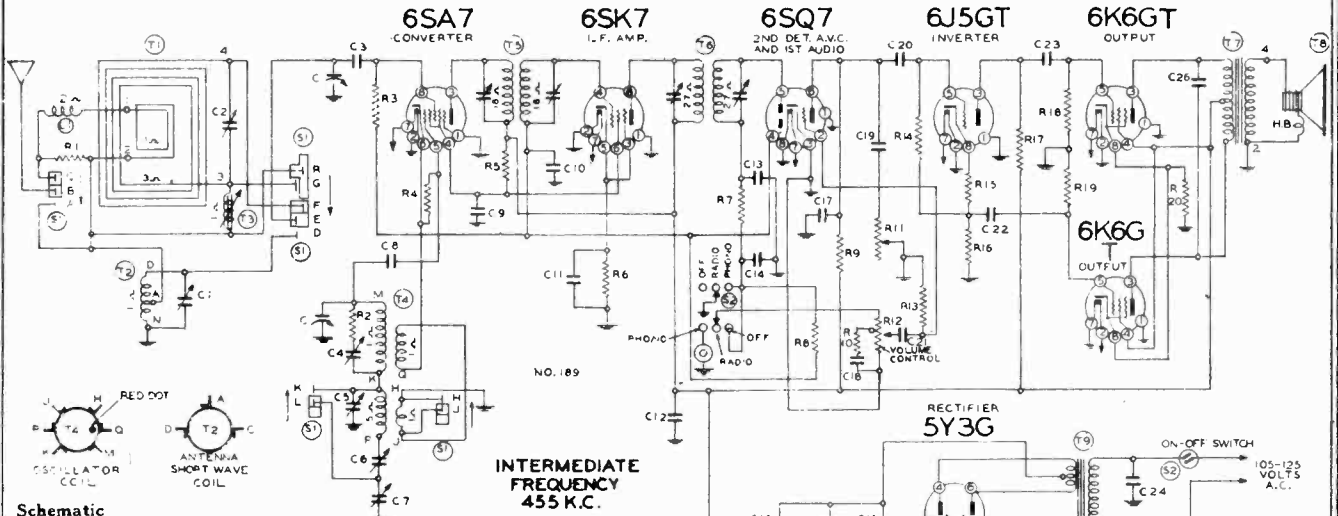


FIG. 2—TOP VIEW

MONTGOMERY WARD & CO.

MODELS 04BR-729A, 04BR-730A

Above Ser.#OE509600



Schematic Diagram Part Ref. No. No.

Description

RESISTORS

R1	BE13064	3500 ohm—1/2 w.
R2	BE130276	10 ohm—1/2 w.
R3	BE1304	3 megohm—1/2 w.
R4	BE130236	30M ohm—1/2 w.
R5	BE130307	15M ohm—1 w.
R6	BE13083	300 ohm—1/2 w.
R7	BE13012	50M ohm—1/2 w.
R8	BE13038	2 megohm—1/2 w.
R9	BE13011	250M ohm—1/2 w.
R10	BE130149	15M ohm—1/2 w.
R11	BE101223	Tone Control—1 megohm
R12	BE101224	Volume control—1/2 megohm
R13	BE130257	5 megohm—1/2 w.
R14	BE1303	500M ohm—1/2 w.
R15	BE130218	5M ohm—1/2 w.
R16	BE130103	100M ohm—1/2 w.
R17	BE130103	100M ohm—1/2 w.
R18	BE1303	500M ohm—1/2 w.
R19	BE1303	500M ohm—1/2 w.
R20	BE130320	320 ohm—1 w.

CONDENSERS

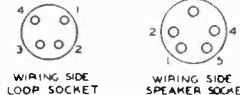
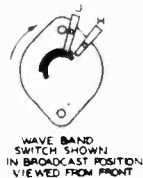
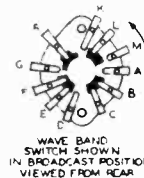
C	BE102133	2 gang variable condenser
C1	BE124116	Short wave antenna trimmer
C2	BE124141	B.C. Antenna Trimmer
C3	BE1292	.0005 mica
C4	BE124142	Dual Adj. Trimmer—S.W. Osc. Trimmer
C5	BE124142	Dual Adj. Trim.—B.C. Osc. Trimmer
C6	BE124140	Dual Adj. Cond.—B.C. Pad
C7	BE124140	Dual Adj. Cond.—S.W. Pad
C8	BE12960	.00015 mica
C9	BE10013	.05 x 400 v.
C10	BE1009	.05 x 200 v.
C11	BE1009	.05 x 200 v.
C12	BE1001	.1 x 400 v.
C13	BE129161	Dual—.0001 Mica
C14	BE129161	Dual—.0001 Mica
C15	BE119108	16 mfd. x 450 v.w. lytic cond.
C16	BE119108	16 mfd. x 450 v.w. lytic cond.
C17	BE1295	.0001 mica
C18	BE100120	.035 x 200 v.
C19	BE10019	.006 x 600 v.
C20	BE10026	.02 x 400 v.
C21	BE10019	.006 x 600 v.
C22	BE10013	.05 x 400 v.
C23	BE10013	.05 x 400 v.
C24	BE10061	.02 x 600 v.
C25	BE10061	.02 x 600 v.
C26	BE10019	.006 x 600 v.

C4 and C5, C6 and C7, and C13 and C14 are in same unit.

PARTS

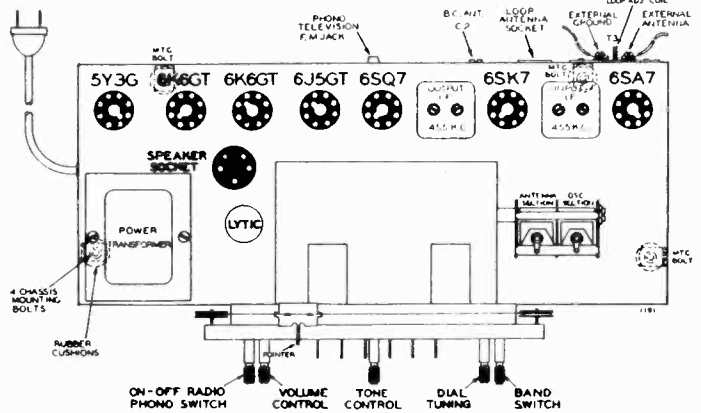
T1	BE111185	Loop Antenna Assembly
	BE111186	Round loop antenna assembly
T2	BE111184	Short Wave Antenna Coil
T3	BE111183	Loop Adj. Coil
T4	BE110154	B.C.—S.W. Oscillator coil
T5	BE108178	Input I.F. Coil—455 kc.
T6	BE108179	Output I.F. Coil—455 kc.
T7	BE105112	Output Transformer
T8	BE114203	6" Dynamic Speaker
	BE114204	10" Dynamic Speaker
T9	BE104212	Power Transformer
L1	BE12312	R.F. Choke Coil
S1	BE125119	Wave Band Switch
S2	BE125120	Radio-Phono On-off switch
P1	BE10794	(2) Pilot light bulbs T-44

INTERMEDIATE FREQUENCY 455 K.C.



MODEL 04BR-729A and 04BR-730A (SERIAL NO. OE509600 AND UP)

Power consumption - - - - - 75 Watts
 Power Output - - - - - 3 Watts Undistorted
 Sensitivity for 500 Milliwatt Output: 20 Microvolts Average
 Selectivity - 45 KC Broad at 1000 Times Signal at 1000 KC
 Tuning Frequency Range Broadcast - 535 to 1600 KC
 Shortwave - 5.4 to 18.4 MC
 Speaker Mantel - - - - - 6" Electro Dynamic
 Console - - - - - 10" Electro Dynamic



BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS. LOOP CONNECTED, RECEIVER OFF CARRIER.

SPEAKER SOCKET



- [A] CANNOT BE MEASURED WITH VOLTMETER.
- [B] ON 250 VOLT SCALE
- [C] 4.0 VOLTS BETWEEN *6 PIN ON 6K6G & *6 PIN ON 6J5GT = 6 PIN IS +
- [D] 3.0 VOLTS A.C. BETWEEN PINS *2 & *8



REAR OF CHASSIS

MODELS O4BR-728A, O4BR-730A
above ser.#OE509600

MONTGOMERY WARD & CO.

ALIGNMENT PROCEDURE

- The following equipment is required for aligning:
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
 - Output indicating meter.
 - Non-metallic screwdriver.
 - Dummy antennas—1 mfd., 200 mmf., 400 ohms.

- Volume control—Maximum all adjustments.
- Connect radio ground to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	1 MFD.	Grid of 6SK7 I. F.	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Top View)	Output I. F.	Adjust to maximum output
	455 Kc.	1 MFD.	Grid of 6SA7 Mixer	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Top View)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND (See Note A)	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C4	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C1	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 6 Mc.	Trimmer C7	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "C")
BROADCAST BAND (See Note A)	1600 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full open (Plates out of mesh)	Trimmer C5	Broadcast oscillator	Adjust to maximum output
	535 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Set Dial at 532 Kc.	Trimmer C6	Broadcast oscillator series pad	Adjust to maximum output
LOOP ALIGNMENT (See Note B)	1400 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 1400 Kc.	Trimmer C2 (See Top View)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 600 Kc.	Trimmer T3 (See Top View)	Iron Core Tracking Coil	Adjust to maximum output

NOTE "A"—The signal generator is connected to the "ANT." and "GND." terminals on the rear of the chassis when aligning the Short Wave Band and to the grid of the 6SA7 tube and ground terminal when setting the Broadcast Band oscillator end frequencies, (1600 and 535 K. C.).

The loop antenna should be connected to the radio when making these adjustments. NOTE "B"—Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected. The signal generator is connected to the "ANT." and "GND." terminals.

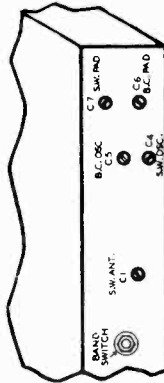
HOW TO REMOVE CHASSIS

Should it ever be necessary to take the chassis out of the cabinet be sure to first pull the plug from the light socket. Next pull off all control knobs and take off the es-cutcheon. Pull out the loop aerial and speaker plugs, then remove the 4 chassis mounting screws and lift the chassis out.

NOTE—On the Mantel Model it is necessary to remove the screws and take the back off.

PUSHBUTTON TUNING

Pull one of the pushbuttons all the way out as far as it will come (pull, with fingers on top and bottom of button). Now tune in the station you want with the tuning knob—Tune back and forth until the station is clear and distinct. Now push the button hard all the way in to lock the station in place. (push directly on front of button) Continue setting each pushbutton in the same way.



TRIMMER VIEW FRONT CHASSIS FLANGE

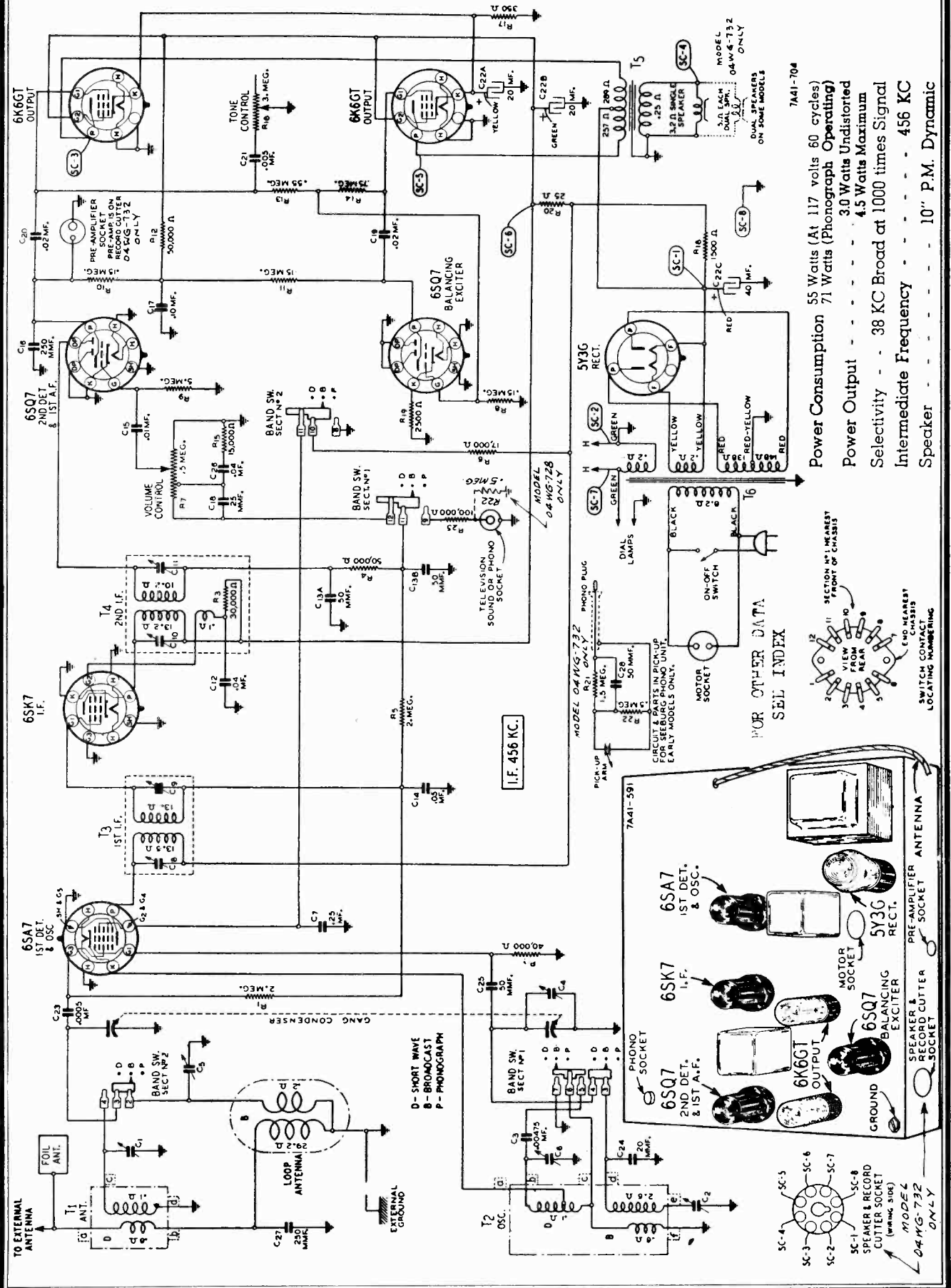
Pressing the proper button will now tune the station you want. If it does not do so you did not push the button hard enough to lock it in place when setting up the station.

To change stations simply repeat the procedure above.

NOTE "C"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained. Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

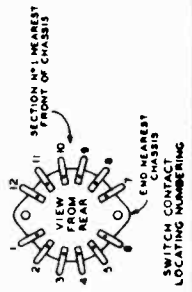
After each band is completed, repeat the procedure as a final check.

MONTGOMERY WARD & CO. MODELS 04WG-728, 04WG-732



7A41-704
 Power Consumption 55 Watts (At 117 volts 60 cycles)
 71 Watts (Phonograph Operating)
 Power Output 3.0 Watts Undistorted
 4.5 Watts Maximum
 Selectivity 38 KC Broad at 1000 times Signal
 Intermediate Frequency 456 KC
 Speaker 10" P.M. Dynamic

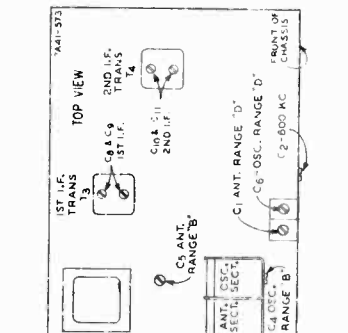
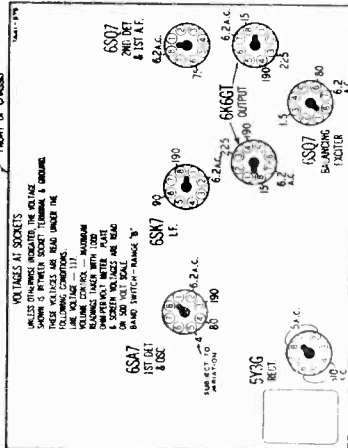
PUR OTHER DATA
 SEE INDEX



ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.
Connect Radio Chassis to Ground Post of Signal Generator.
after with a Short Heavy Lead.
Allow Chassis end Signal Generator to "Heat Up" for several minutes.

SIGNAL GENERATOR FREQUENCY CONNECTION AT RADIO SETTING	DUMMY ANTENNA	RADIO SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
Remove chassis and top plate from cabinet as explained in the article on this subject. Remove top plate from chassis. Then plug can be reinserted in the loop sockets on the chassis.				
I. F.	456 KC Grid of 1st Det.	1 mf		
RANGE B	Antenna Lead	100 mmf.		
1400 KC	Antenna Lead	100 mmf.		
1800 KC	Antenna Lead	100 mmf.		
RANGE D	Antenna Lead	400 Ohm		
17,000 KC	Antenna Lead	400 Ohm		
LOOP RANGE B	Antenna Lead	100 mmf.		
1400 KC Note: See Note C	Antenna Lead	100 mmf.		



Operating the Automatic Phonograph

The operation of the phonograph is simple but the phonograph instruction folder packed with this record and understood before an attempt is made to place the record changer in operation.
The record changer is entirely automatic in its action after it has started operating. Any number up to fourteen 10 inch or ten 12 inch records may be played consecutively without need of attention by the listener. Start-lead 10 inch or 12 inch records may be used but only one size may be played at a time. Each record must have a run-off groove

so that the record changer will operate properly. This groove is the one which carries the tone arm toward the center of the record after the record has stopped playing. The volume and tone controls are used in the same manner for phonograph reproduction as they are for radio reception—See article "Operating the Radio."
To Turn the Phonograph On
Turn the on-off switch knob to the right.
A click will be heard and the dial will light. Wait 30 seconds for the tubes to heat.

Turn the Phonograph-Radio knob, the automatic record changer as given in the article "Turning Off Changer" in the phonograph instruction folder. Be sure to turn the radio on-off switch knob to the left. A click will be heard and the dial lamps will be off.

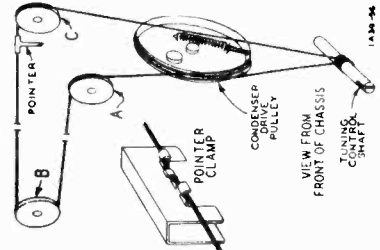
For detailed instructions regarding the operation of the automatic record changer, see the phonograph instruction folder.

NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord, 1400 KC mark on the dial. Attach pointer to drive cord.
NOTE B—Turn the rotor back and forth and adjust the pointer until the peak of greatest intensity is obtained.
NOTE C—Reset all set in cabinet. Connect a loop approximately one foot in diameter across the antenna and ground pads of the antenna. Place signal generator so that the distance between 3 and 10 feet from loop in cabinet.
CAUTION—When aligning the short wave band, be sure NOT to adjust at the image frequency. This can be checked as follows: Let the signal from the signal generator be 15,000 KC. The signal will then be heard at 16,500 KC. The signal which is heard at 16,500 KC, which is much weaker, will be heard at 15,000 KC. If the signal is heard at 15,000 KC, it may be necessary to increase the input signal to hear the image.
Antenna—The signal from the signal generator to prevent the twisting-off action of the AVC. After each range is completed, repeat the procedure at a final check.

Tuning Frequency Range
B Range ... 528 to 1400 KC
D Range ... 5750 to 18300 KC

Sensitivity—External Antenna—
(For 0.5 Watt Output)
B Range ... 15 Microvolts Average
D Range ... 45 Microvolts Average

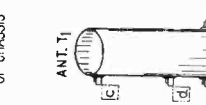
Drive Cord Replacement
Use a drive cord approximately 70 inches in length. Tie a large knot with a small loop at one end of the new cord up through hole in rim of condenser drive pulley. Pull cord through hole until large knot is flush against pulley rim.
Turn gang condenser to completely closed position.
Wind 1/4 turn in clockwise direction (on right side of chassis) around condenser drive pulley. Wind cord over pulleys A and B as shown in illustration. Pass cord between dial lamp brackets and mounting plate and then over pulley C. Wind 4 1/4 turns in a clockwise direction (from front of chassis) around tuning control shaft. Turns should progress toward the chassis.
Turn gang condenser to full open position. Wind 1 1/4 turns in a clockwise direction (from right side of chassis) around condenser drive pulley. This turn should be at left side (from front of chassis) of pulley groove. Pass cord through hole in pulley rim. Secure tension spring



Home Recorder - Television Frequency Modulation

This radio is designed so that you may take advantage of a new and extremely interesting form of entertainment. By replacing the recorder changer unit in this radio with a unit which includes a record cutter and a record changer, the new world of making your own records is opened to you.
Your favorite radio programs, comedy, dance or symphony may be permanently recorded. By means of a microphone attachment, voice or music of your own production may be recorded.
For detailed information regarding this record cutter unit, get in touch with your local Montgomery Ward store or the nearest Mail Order House.
Television Sound Connections
If television programs ever become available in your community, this radio may be used to reproduce of this radio sound in conjunction with any "Television Picture Receiver and Sound Converter."
On the top of the chassis base is a

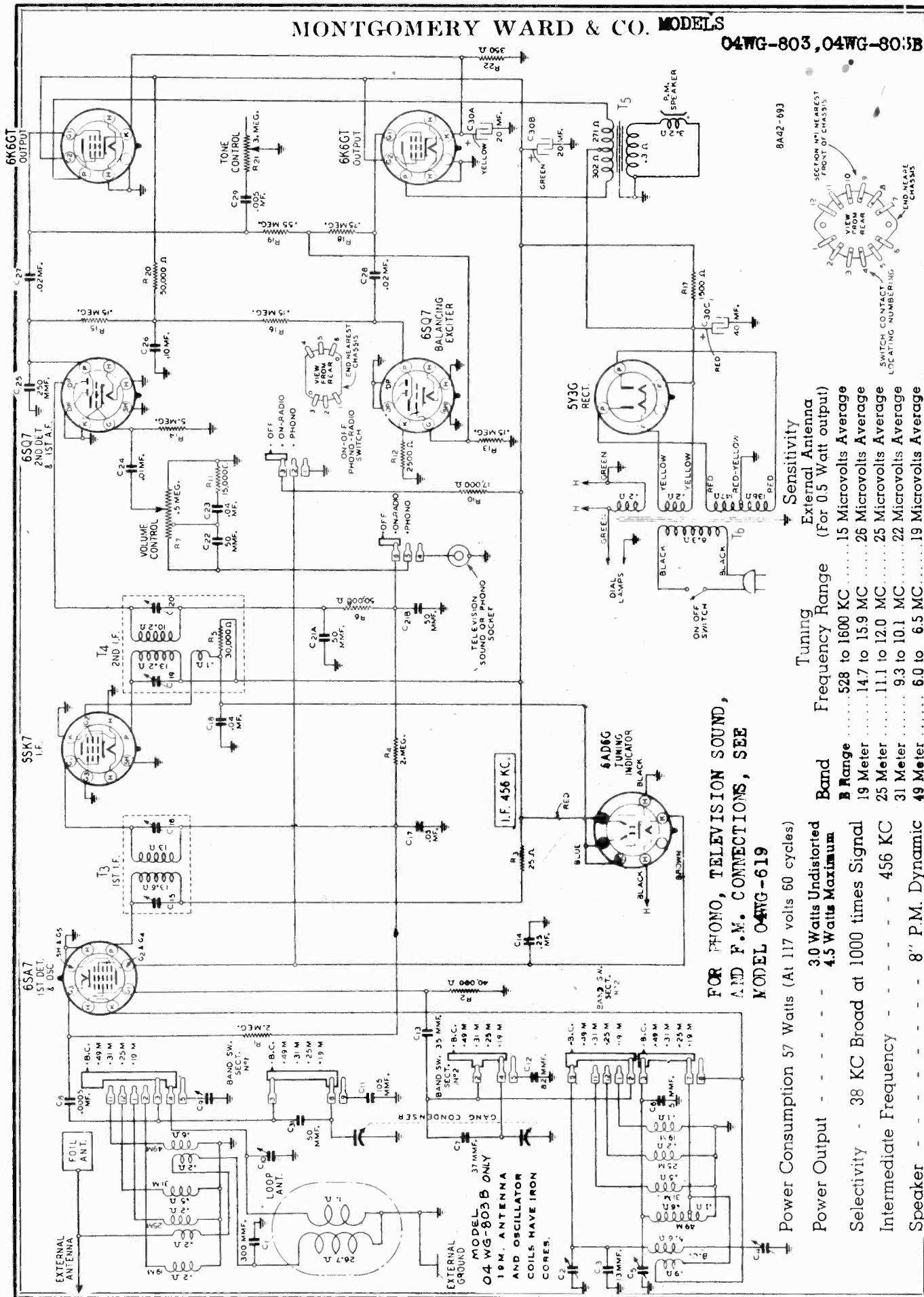
HOME RECORDER - TELEVISION FREQUENCY MODULATION



socket to which is connected the phono cable shielded pin tip. Upon removal of this pin tip, the connector on the cable from a television receiver can be inserted in the socket. (The cable connector must be a single shielded pin tip type, Pat. No. 6A224.)
When Television sound reproduction is desired, the Phonograph-Radio knob should be turned to the Phonograph (P) position. For radio reception, the knob should be in one of the two Radio positions.
Frequency Modulation Connections
If Frequency Modulated programs ever become available in your community, the audio amplifier and speaker of this radio may be used to reproduce these programs in conjunction with any Frequency Modulation Converter.
The connection to the chassis is exactly the same as explained in the preceding article "Television Sound Connection."
When Frequency Modulated programs are desired, the Phonograph-Radio knob should be turned to the Phonograph (P) position. For radio reception, the knob should be in one of the two Radio positions.

MONTGOMERY WARD & CO. MODELS

04WG-803, 04WG-803B



FOR PHONO, TELEVISION SOUND,
AND F.M. CONNECTIONS, SEE
MODEL 04WG-619

Power Consumption	57 Watts (At 117 volts 60 cycles)
Power Output	30 Watts Undistorted 4.5 Watts Maximum
Selectivity	38 KC Broad at 1000 times Signal
Intermediate Frequency	456 KC
Speaker	8" P.M. Dynamic
Tuning Frequency Range	528 to 1600 KC
Band	19 Meter 14.7 to 15.9 MC 25 Meter 11.1 to 12.0 MC 31 Meter 9.3 to 10.1 MC 49 Meter 6.0 to 6.5 MC
Sensitivity	External Antenna (For 0.5 Watt output) 15 Microvolts Average 26 Microvolts Average 25 Microvolts Average 22 Microvolts Average 19 Microvolts Average

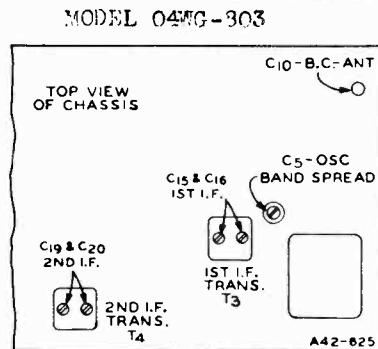
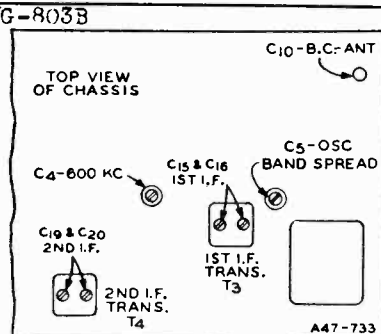
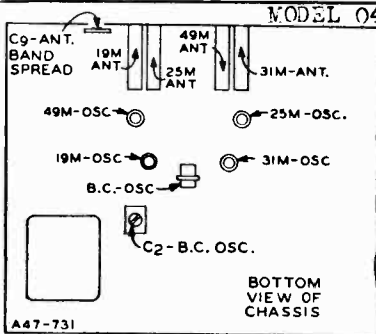
MODELS 04WG-803, 04WG-803B

MONTGOMERY WARD & CO.

Volume Control—Maximum All adjustments.

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

SIGNAL GENERATOR FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
Remove chassis from cabinet but do not disconnect leads to loop aerial.					
I. F.					
456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C15) & (C16) 2nd I.F. (C19) & (C20)
RANGE B					
1600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C2)
1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC— See Note A	Ant. Range B (C10)
600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C4) Rock Rotor—See Note B
SHORT WAVE BANDS					
6300 KC	Antenna Lead	400 Ohm	49 Meter	Turn Tuning Knob until Pointer is at 6.3 MC	Oscillator Band Spread (C5)
6300 KC	Antenna Lead	400 Ohm	49 Meter	Leave Setting as above	Antenna Band Spread (C9)
LOOP RANGE B					
1400 KC	Antenna Lead See Note C	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C10)



CAUTION—Two of the coils in the band spread coil assembly, the 19 Meter Antenna and Oscillator coils, have adjustable iron cores in the "B" and later issues of this model. One of the adjusting screws extends out from the front panel of the chassis base at the left of the band switch. The other adjusting screw extends up from the chassis base in back of the tuning condenser.

DO NOT CHANGE THE POSITION OF THESE ADJUSTING SCREWS as they have been properly set at the factory and cannot be satisfactorily re-adjusted in the field.

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

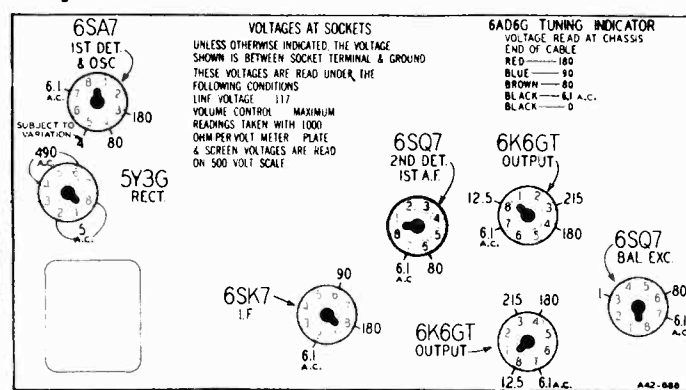
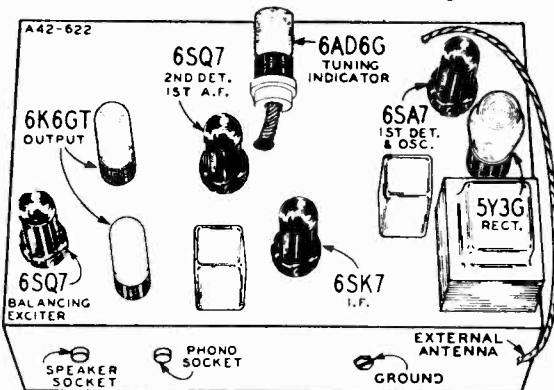
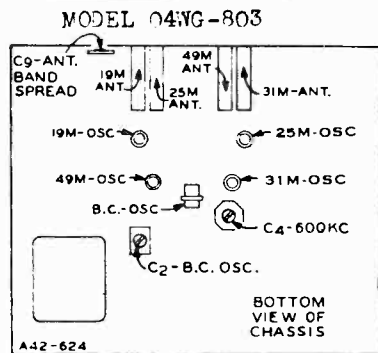
After each range is completed, repeat the procedure as a final check.

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

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

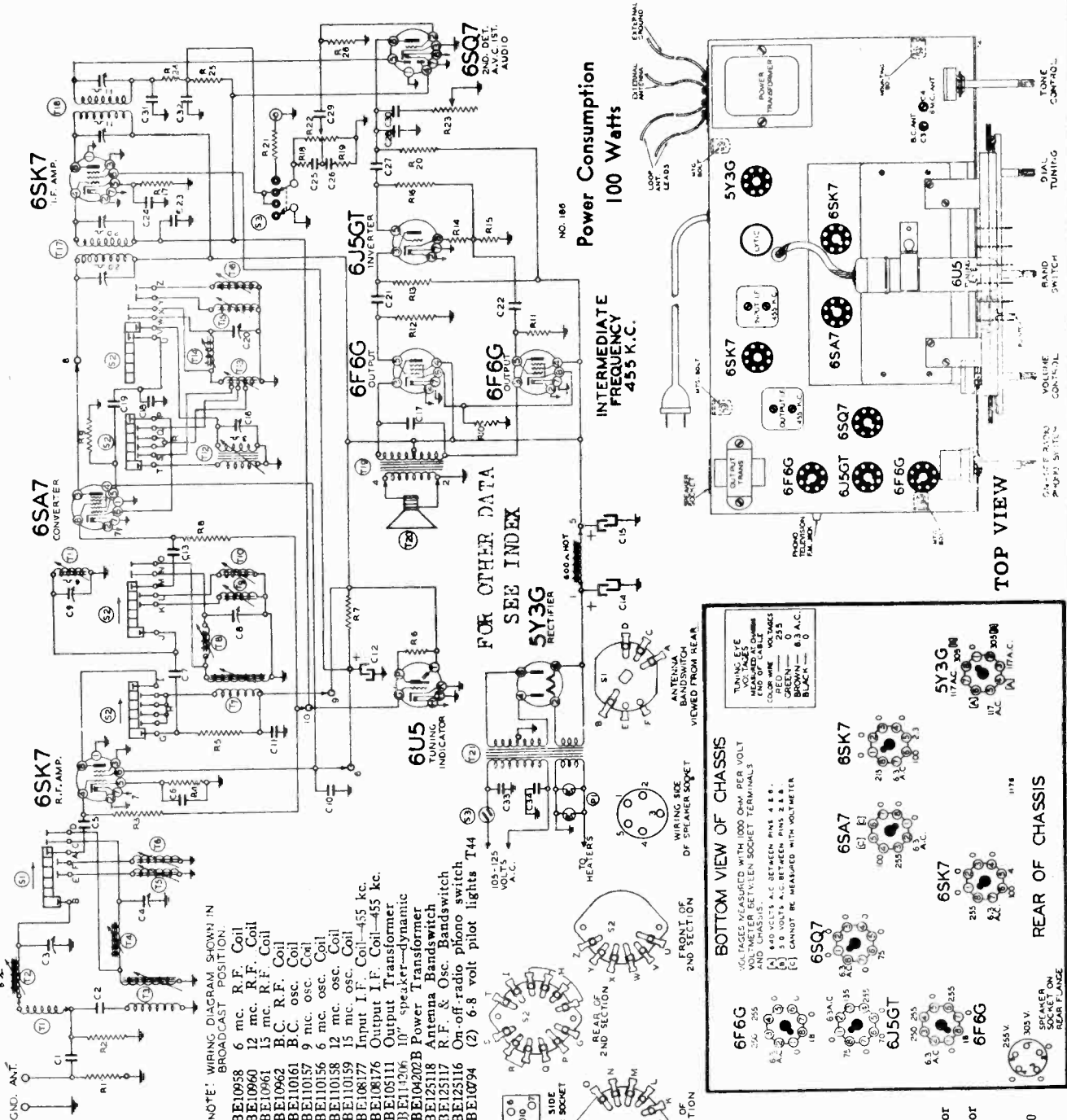
NOTE C—Re-assemble chassis in cabinet.

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



MONTGOMERY WARD & CO. MODELS

04BR-903A, 04BR-907A
above ser #519000



Power Consumption
100 Watts

INTERMEDIATE
FREQUENCY
455 K.C.

FOR OTHER DATA
SEE INDEX

NOTE: WIRING DIAGRAM SHOWN IN
BROADCAST POSITION.

T8 BE10958 6 mc. R.F. Coil
 T9 BE10960 12 mc. R.F. Coil
 T10 BE10961 13 mc. R.F. Coil
 T11 BE10962 B.C. osc. Coil
 T12 BE110157 9 mc. osc. Coil
 T13 BE110156 6 mc. osc. Coil
 T14 BE110158 12 mc. osc. Coil
 T15 BE110159 15 mc. osc. Coil
 T16 BE108176 Input I.F. Coil—455 kc.
 T17 BE108177 Output Transformer
 T18 BE108176 10" speaker—dynamic
 T19 BE105111 On-off radio pilot lights T44
 T20 BE114206 10" speaker—dynamic
 T21 BE104202B Power Transformer
 T22 BE125118 Antenna Bandswitch
 T23 BE125117 R.F. & Osc. Bandswitch
 T24 BE125116 On-off radio pilot switch
 T25 BE10794 (2) 6-8 volt pilot lights T44

CONDENSERS

- BE1292 .0005 mica
- BE10047 .02 x 600 v.—10%
- BE124143 B.C. Antenna Trimmer
- BE124143 9 mc. Antenna Trimmer
- BE1292 .0005 mica
- BE129168 .1 x 200 v. tubular
- BE124138 9 mc. R.F. Trimmer
- BE124139 B.C. R.F. Trimmer
- BE10074 .1 x 400 v.
- BE10074 .1 x 400 v.
- BE11909 10.0 x 350 v.v.
- BE1292 .0005 mica
- BE11909 15.0 x 450 v.v.
- BE11909 15.0 x 450 v.v.
- BE124144 B.C. Oscillator trimmer
- BE10071 .004 x 600 v.
- BE129167 .0002 silver mica
- BE129165 .00005 mica
- BE124145 9 mc. osc. trimmer
- BE10013 .05 x 200 v.
- BE1009 .05 x 200 v.
- BE10026 .02 x 400 v.
- BE10020 .1 x 200 v.
- BE129114 .0003 mica
- BE10022 .03 x 200 v.
- BE10026 .02 mica
- BE10021 .002 mica
- BE10019 .006 x 600 v.
- BE10019 .006 x 600 v.
- BE129165 .00005 mica
- BE10061 .02 x 600 v. Bakelite
- BE10061 .02 x 600 v. Bakelite

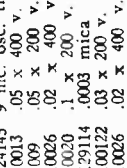
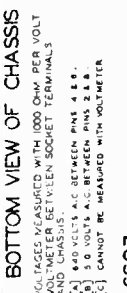
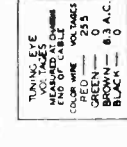
PARTS

- TI BE111188 Loop Antenna Assembly for 62903
- BE111201 Loop Antenna Assembly for 62907
- T2 BE111195 B.C. Antenna Coil
- T3 BE111190 9 mc. Antenna Coil
- T4 BE111189 6 mc. Antenna Coil
- T5 BE111191 12 mc. Antenna Coil
- T6 BE111192 15 mc. Antenna Coil
- T7 BE110959 9 mc. R.F. Coil

BOTTOM VIEW OF CHASSIS
VOLTAGES MEASURED WITH 1000 OHM PER VOLT
VOLT-METER BETWEEN SOCKET TERMINALS
AND CHASSIS:
(A) 400 VOLTS A.C. BETWEEN PINS 2 & 3.
(B) 250 VOLTS A.C. BETWEEN PINS 2 & 4.
(C) CANNOT BE MEASURED WITH VOLT-METER.



REAR OF CHASSIS
1718

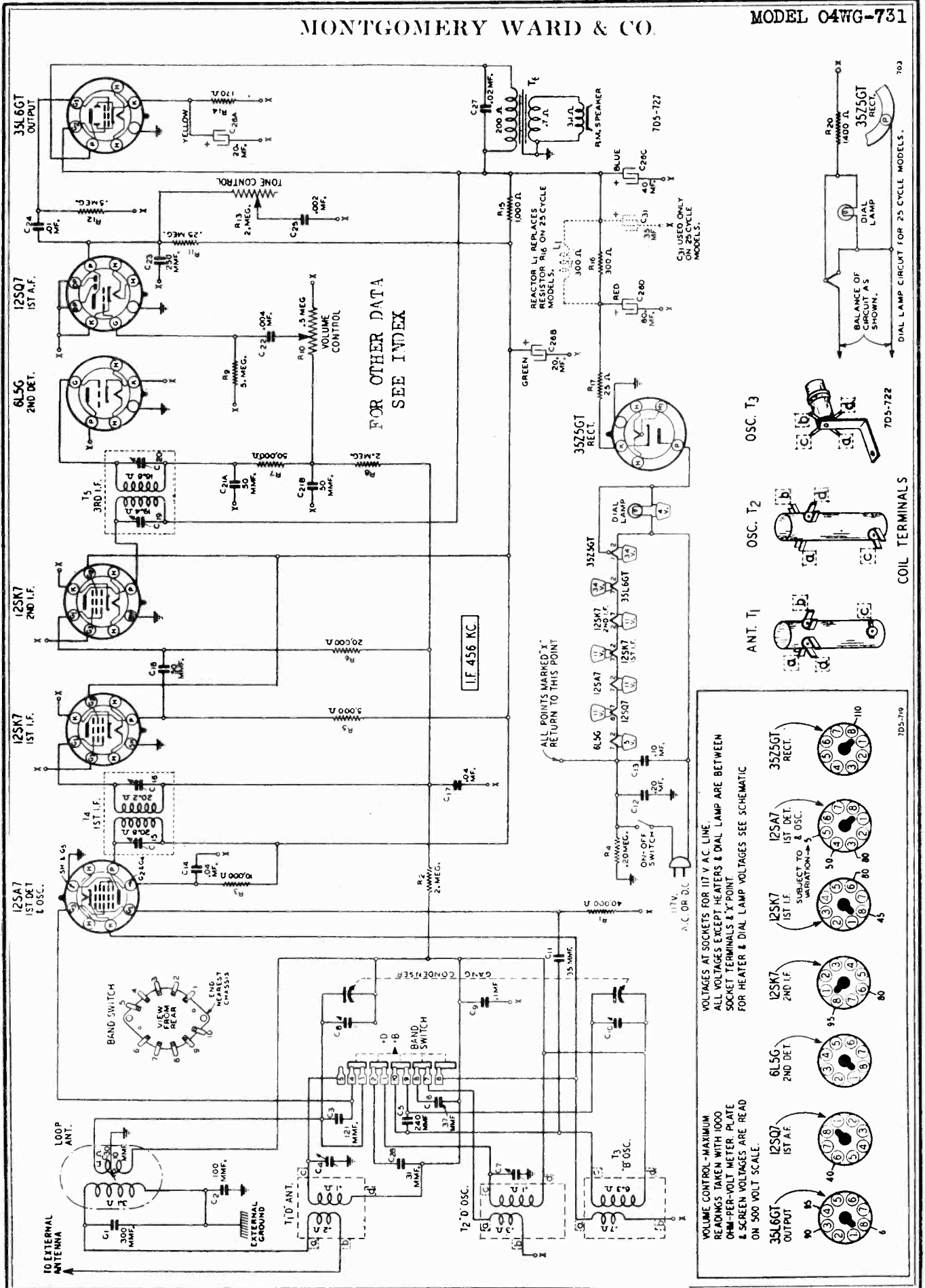


RESISTORS

- R1 BE1301 25M ohm—1/4 w.
- R2 BE1301 25M ohm—1/4 w.
- R3 BE13019 1 megohm—1/4 w.
- R4 BE130239 250 ohm—1/4 w.
- R5 BE130218 5M ohm—1/4 w.
- R6 1 megohm—in tuning indicator cable
- R7 BE10662 12,500 ohm—3 w.
- R8 BE13019 1 megohm—1/4 w.
- R9 BE130232 25M ohm—1/4 w.
- R10 BE130220 300 ohm—1 w.
- R11 BE1303 500M ohm—1/4 w.
- R12 BE1303 500M ohm—1/4 w.
- R13 BE130103 100M ohm—1/4 w.
- R14 BE130103 100M ohm—1/4 w.
- R15 BE13010 1 megohm—1/4 w.
- R16 BE13010 1 megohm—1/4 w.
- R17 BE13070 500 ohm—1/4 w.
- R18 BE13011 250M ohm—1/4 w.
- R19 BE130149 15M ohm—1/4 w.
- R20 BE13011 250M ohm—1/4 w.
- R21 BE1303 500M ohm—1/4 w.
- R22 BE101221 1/2 megohm (volume)
- R23 BE101226 1 megohm (tone)
- R24 BE13012 50M ohm—1/4 w.
- R25 BE1304 3 megohm—1/4 w.
- R26 BE130257 5 megohm—1/4 w.

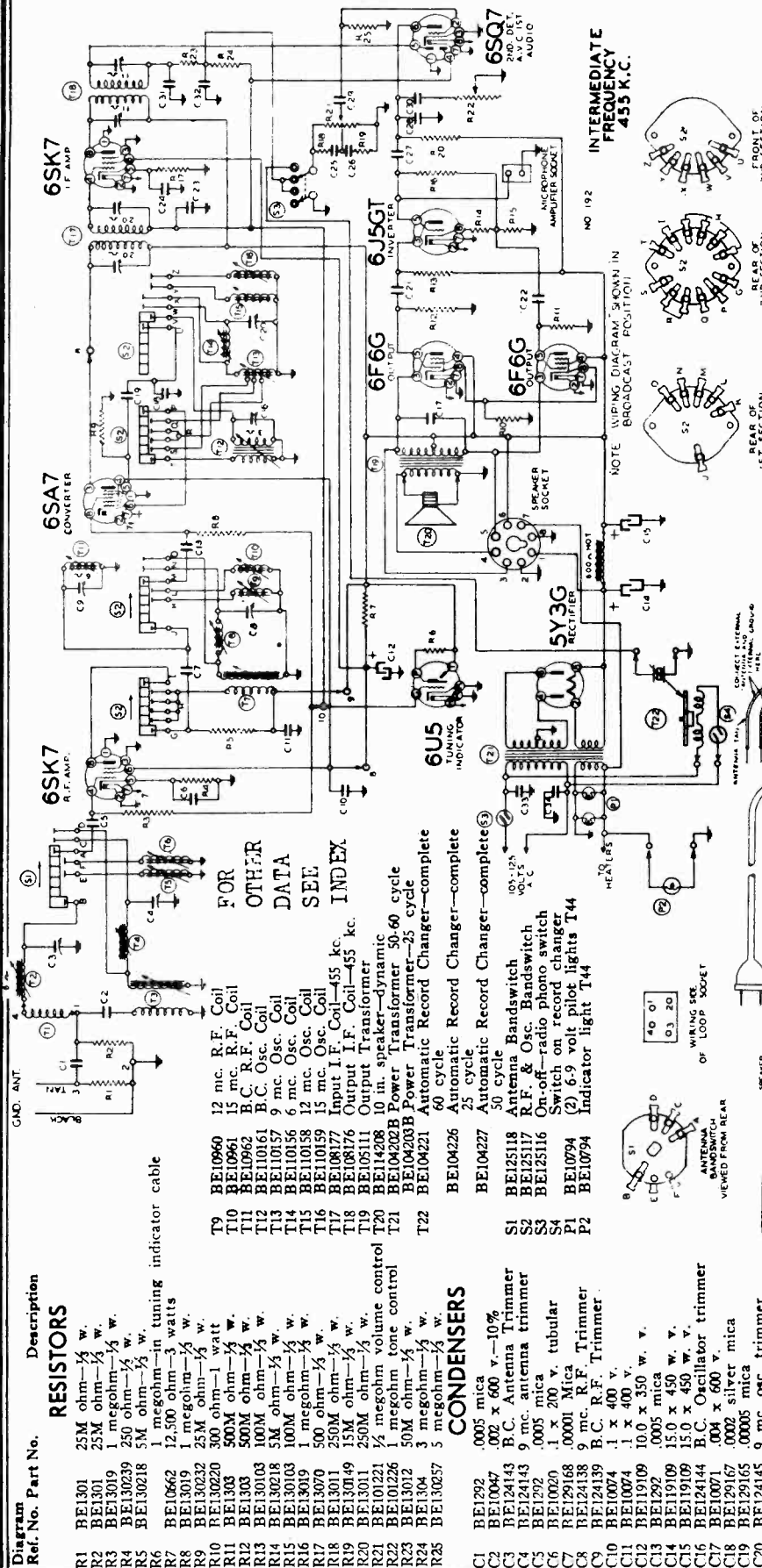
MONTGOMERY WARD & CO.

MODEL O4WG-731



MODELS 04BR-904A,
04BR-906A

MONTGOMERY WARD & CO.



FOR OTHER DATA SEE INDEX

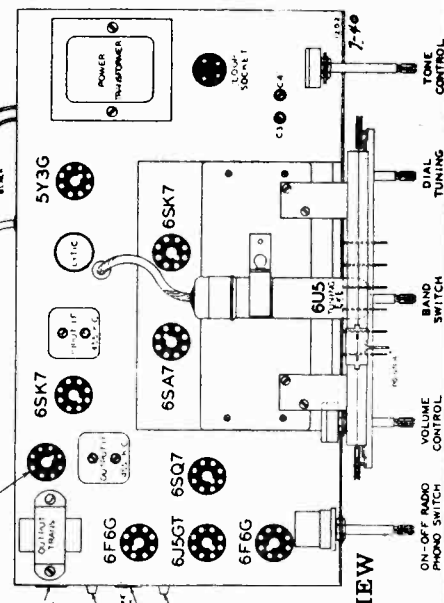
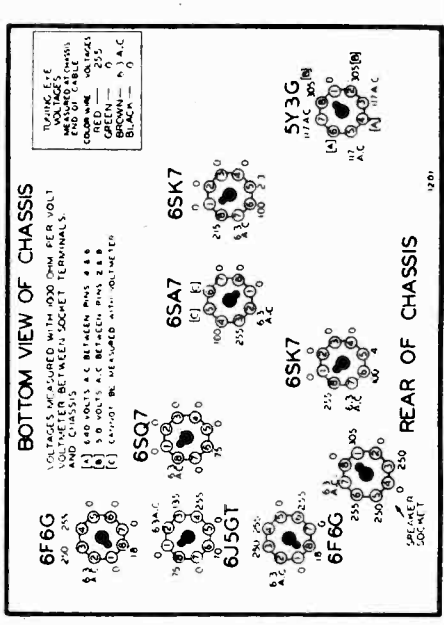
- T9 BE10960 12 mc. R.F. Coil
- T10 BE10961 15 mc. R.F. Coil
- T11 BE10962 B.C. R.F. Coil
- T12 BE110161 B.C. Osc. Coil
- T13 BE110157 9 mc. Osc. Coil
- T14 BE110158 6 mc. Osc. Coil
- T15 BE110159 15 mc. Osc. Coil
- T16 BE108177 Input I.F. Coil—455 kc.
- T17 BE105111 Output Transformer
- T18 BE114208 10 in. speaker—dynamic
- T19 BE104203B Power Transformer—50-60 cycle
- T20 BE104203B Power Transformer—25 cycle
- T21 BE104221 Automatic Record Changer—complete
- T22 BE104226 Automatic Record Changer—complete

CONDENSERS

- C1 BE1292 .0005 mica
- C2 BE10047 .002 x 600 v.—10%
- C3 BE124143 B.C. Antenna Trimmer
- C4 BE124143 9 mc. antenna trimmer
- C5 BE1292 .005 mica
- C6 BE10020 1.0 x 200 v. tubular
- C7 BE129168 .0001 Mica
- C8 BE124139 1 mc. R.F. Trimmer
- C9 BE10074 B.C. R.F. Trimmer
- C10 BE10074 1 x 400 v.
- C11 BE10074 1 x 400 v.
- C12 BE119109 10.0 x 350 v. v.
- C13 BE1292 .0005 mica
- C14 BE119109 15.0 x 450 v. v.
- C15 BE119109 15.0 x 450 v. v.
- C16 BE124144 B.C. Oscillator trimmer
- C17 BE10071 .004 x 600 v.
- C18 BE129167 .0002 silver mica
- C19 BE129165 .0005 mica
- C20 BE124145 9 mc. osc. trimmer
- C21 BE10013 .05 x 400 v.
- C22 BE1009 .05 x 200 v.
- C23 BE10026 .02 x 400 v.
- C24 BE10020 1.1 x 200 v.
- C25 BE129114 .003 mica
- C26 BE10022 .03 x 20 v.
- C27 BE10026 .02 x 400 v.
- C28 BE10026 .02 x 400 v.
- C29 BE10021 .002 mica
- C30 BE10019 .006 x 600 v.
- C31 BE129165 .0005 mica
- C32 BE129165 .0005 mica
- C33 BE10061 .02 x 600 v. bakelite
- C34 BE100961 .02 x 600 v. bakelite

PARTS

- T1 BE11198 Loop antenna assembly for Model 62904
- T2 BE11199 B.C. Antenna Coil
- T3 BE11190 9 mc. Antenna Coil
- T4 BE11189 6 mc. Antenna Coil
- T5 BE11191 12 mc. Antenna Coil
- T6 BE11192 15 mc. Antenna Coil
- T7 BE10959 9 mc. R.F. Coil
- T8 BE10958 6 mc. R.F. Coil



Power Consumption
Radio Only 100 W
Motor Only 20 W

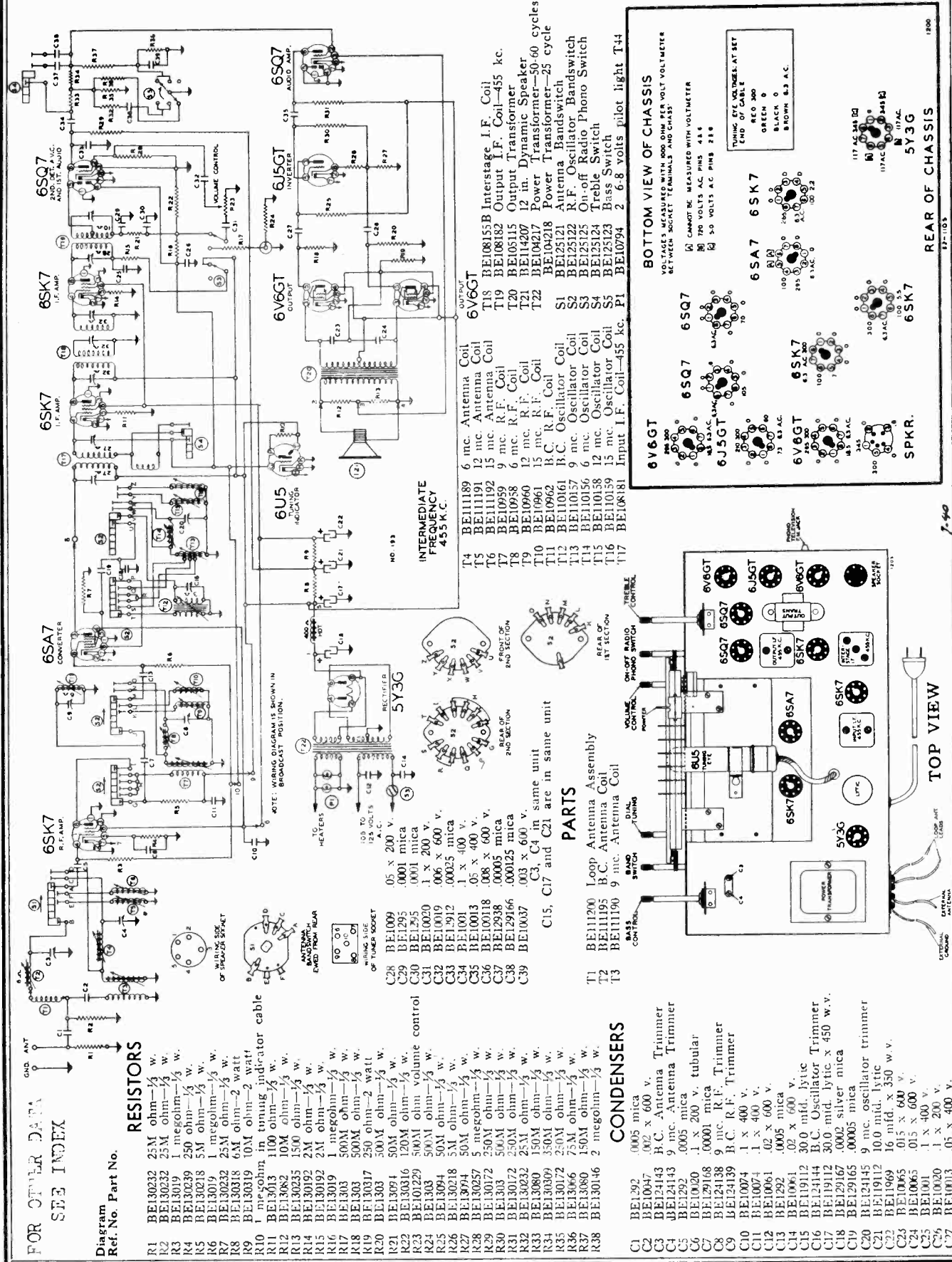
WIRING FOR TUNER SOCKET
WIRING FOR LOOP SOCKET

ON-OFF RADIO PHONO SWITCH
VOLUME CONTROL
BAND SWITCH
DIAL TUNING
TONE CONTROL

MONTGOMERY WARD & CO.

MODEL 04BR-1105A

above ser.#532000



FOR OTHER DATA
SEE INDEX

Diagram
Ref. No. Part No.

RESISTORS

- R1 BE130232 25M ohm-1/2 W.
- R2 BE130232 25M ohm-1/2 W.
- R3 BE13019 25M ohm-1/2 W.
- R4 BE130239 250 ohm-1/2 W.
- R5 BE130218 5M ohm-1/2 W.
- R6 BE130019 1 megohm-1/2 W.
- R7 BE130232 25M ohm-1/2 W.
- R8 BE130318 6M ohm-2 watt
- R9 BE130319 10M ohm-2 watt
- R10 1 megohm in tuning indicator cable
- R11 BE13013 100 ohm-1/2 W.
- R12 BE13082 10M ohm-1/2 W.
- R13 BE130235 1500 ohm-1/2 W.
- R14 BE130192 2M ohm-1/2 W.
- R15 BE130192 2M ohm-1/2 W.
- R16 BE13019 1 megohm-1/2 W.
- R17 BE13019 1 megohm-1/2 W.
- R18 BE1303 500M ohm-1/2 W.
- R19 BE1303 500M ohm-1/2 W.
- R20 BE1303 500M ohm-1/2 W.
- R21 BE13074 50M ohm-1/2 W.
- R22 BE130316 120M ohm-1/2 W.
- R23 BE101229 500M ohm volume control
- R24 BE1303 500M ohm-1/2 W.
- R25 BE13094 50M ohm-1/2 W.
- R26 BE130218 5M ohm-1/2 W.
- R27 BE13074 50M ohm-1/2 W.
- R28 BE130257 5 megohm-1/2 W.
- R29 BE130172 250M ohm-1/2 W.
- R30 BE1303 500M ohm-1/2 W.
- R31 BE130172 25M ohm-1/2 W.
- R32 BE13080 150M ohm-1/2 W.
- R33 BE13080 150M ohm-1/2 W.
- R34 BE13080 150M ohm-1/2 W.
- R35 BE13072 75M ohm-1/2 W.
- R36 BE13080 150M ohm-1/2 W.
- R37 BE13080 150M ohm-1/2 W.
- R38 BE130146 2 megohm-1/2 W.

CONDENSERS

- C1 BE1292 .0005 mica
- C2 BE10047 .002 x 600 V.
- C3 BE124143 B.C. Antenna Trimmer
- C4 BE124143 9 mc. Antenna Trimmer
- C5 BE1292 .0005 mica
- C6 BE10020 1 x 200 v. tubular
- C7 BE129168 .0001 mica
- C8 BE124138 9 mc. R.F. Trimmer
- C9 BE124139 B.C. R.F. Trimmer
- C10 BE10074 1 x 400 V.
- C11 BE10074 1 x 400 V.
- C12 BE10061 .02 x 600 V.
- C13 BE1292 .0005 mica
- C14 BE10061 .02 x 600 V.
- C15 BE119112 30.0 mid. lytic
- C16 BE124144 B.C. Oscillator Coil
- C17 BE119112 30.0 mid. lytic x 450 w.v.
- C18 BE129167 .0002 silver mica
- C19 BE129165 .0005 mica
- C20 BE124145 9 mc. oscillator trimmer
- C21 BE119112 10.0 mid. lytic
- C22 BE11962 16. mid. x 350 w.v.
- C23 BE10065 .015 x 400 V.
- C24 BE10065 .015 x 600 V.
- C25 BE1001 1 x 400 V.
- C26 BE10020 1 x 200 V.
- C27 BE10013 .05 x 400 V.

PARTS

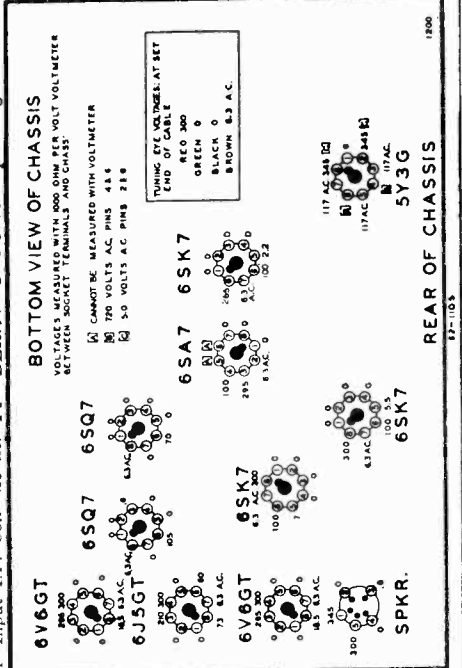
- T1 BE11200 Loop Antenna Assembly
- T2 BE11195 B.C. Antenna Coil
- T3 BE11190 9 mc. Antenna Coil

CONDENSERS

- C1 BE1292 .0005 mica
- C2 BE10047 .002 x 600 V.
- C3 BE124143 B.C. Antenna Trimmer
- C4 BE124143 9 mc. Antenna Trimmer
- C5 BE1292 .0005 mica
- C6 BE10020 1 x 200 v. tubular
- C7 BE129168 .0001 mica
- C8 BE124138 9 mc. R.F. Trimmer
- C9 BE124139 B.C. R.F. Trimmer
- C10 BE10074 1 x 400 V.
- C11 BE10074 1 x 400 V.
- C12 BE10061 .02 x 600 V.
- C13 BE1292 .0005 mica
- C14 BE10061 .02 x 600 V.
- C15 BE119112 30.0 mid. lytic
- C16 BE124144 B.C. Oscillator Coil
- C17 BE119112 30.0 mid. lytic x 450 w.v.
- C18 BE129167 .0002 silver mica
- C19 BE129165 .0005 mica
- C20 BE124145 9 mc. oscillator trimmer
- C21 BE119112 10.0 mid. lytic
- C22 BE11962 16. mid. x 350 w.v.
- C23 BE10065 .015 x 400 V.
- C24 BE10065 .015 x 600 V.
- C25 BE1001 1 x 400 V.
- C26 BE10020 1 x 200 V.
- C27 BE10013 .05 x 400 V.

INTERMEDIATE FREQUENCY 455 K.C.

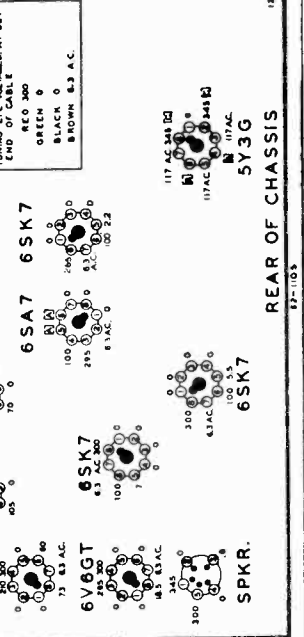
- T4 BE11189 12 mc. Antenna Coil
- T5 BE11191 15 mc. Antenna Coil
- T6 BE11192 9 mc. R.F. Coil
- T7 BE10959 9 mc. R.F. Coil
- T8 BE10958 6 mc. R.F. Coil
- T9 BE10960 12 mc. R.F. Coil
- T10 BE10961 15 mc. R.F. Coil
- T11 BE10962 B.C. R.F. Coil
- T12 BE11001 B.C. Oscillator Coil
- T13 BE110157 6 mc. Oscillator Coil
- T14 BE110156 12 mc. Oscillator Coil
- T15 BE110138 12 mc. Oscillator Coil
- T16 BE110139 15 mc. Oscillator Coil
- T17 BE108181 Input I.F. Coil-455 kc.



BOTTOM VIEW OF CHASSIS

VOLTAGE MEASURED WITH 500 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS

- (A) 70 VOLTS AC RMS 454
- (B) 50 VOLTS AC RMS 218

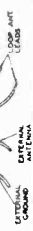


REAR OF CHASSIS

1200
12-105

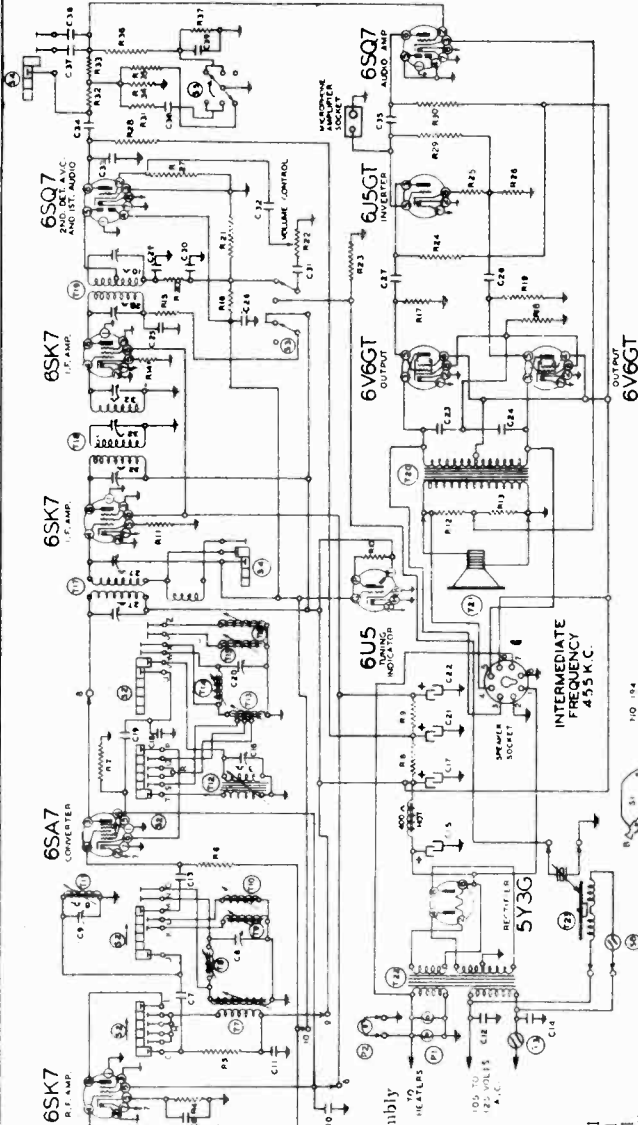
J-40

TOP VIEW



MODEL O4BR-1106A
above ser.#535050

MONTGOMERY WARD & CO.



NOTE: WIRING DIAGRAM SHOWN IN BROADCAST POSITION

WIRING FOR LOOP SOCKET

WIRING FOR TUBER SOCKET

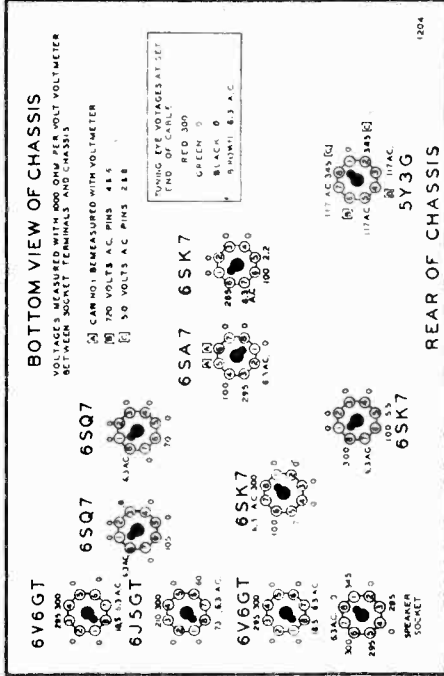
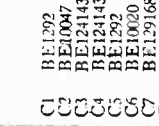
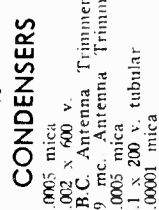
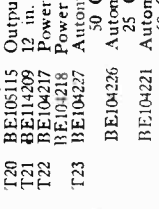
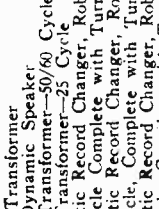
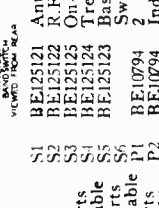
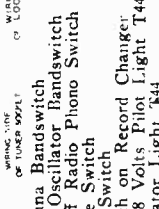
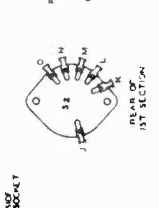
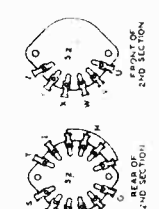
WIRING FOR ANTENNA SOCKET

WIRING FOR TUNING CONTROL

WIRING FOR PHONO SWITCH

WIRING FOR RECORD CHANGER

WIRING FOR PILOT LIGHT



BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED WITH 400 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS

CAUTION: REMEASURED WITH VOLTMETER

100 700 VOLTS A.C. PINS 411

50 VOLTS A.C. PINS 211

TUNING EYE VOLTAGES AT SET

END OF CHASSIS

RED 300

GREEN 0

BLACK 0

WHITE 0.1 A.C.

117.0 250 V. AC

117.0 250 V. AC

117.0 250 V. AC

117.0 250 V. AC

117.0 250 V. AC

117.0 250 V. AC

117.0 250 V. AC

117.0 250 V. AC

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117.0 250 V. AC

117.0 250 V. AC

117.0 250 V. AC

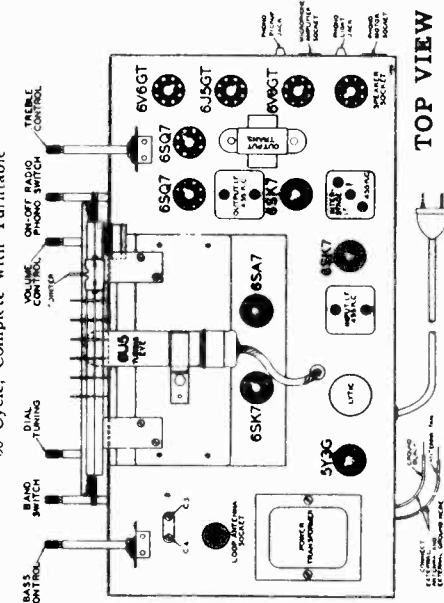
117.0 250 V. AC

- RESISTORS**
- R1 BE130232 25M ohm-1/2 w.
 - R2 BE130232 25M ohm-1/2 w.
 - R3 BE130239 250 ohm-1/2 w.
 - R4 BE130218 5M ohm-1/2 w.
 - R5 BE130219 1 megohm-1/2 w.
 - R6 BE130232 25M ohm-1/2 w.
 - R7 BE130232 25M ohm-1/2 w.
 - R8 BE130232 25M ohm-1/2 w.
 - R9 BE130219 1 megohm in tuning indicator cable
 - R10 BE130232 25M ohm-1/2 w.
 - R11 BE130232 25M ohm-1/2 w.
 - R12 BE130232 25M ohm-1/2 w.
 - R13 BE130232 25M ohm-1/2 w.
 - R14 BE130232 25M ohm-1/2 w.
 - R15 BE130232 25M ohm-1/2 w.
 - R16 BE130232 25M ohm-1/2 w.
 - R17 BE130232 25M ohm-1/2 w.
 - R18 BE130232 25M ohm-1/2 w.
 - R19 BE130232 25M ohm-1/2 w.
 - R20 BE130232 25M ohm-1/2 w.
 - R21 BE130232 25M ohm-1/2 w.
 - R22 BE130232 25M ohm-1/2 w.
 - R23 BE130232 25M ohm-1/2 w.
 - R24 BE130232 25M ohm-1/2 w.
 - R25 BE130232 25M ohm-1/2 w.
 - R26 BE130232 25M ohm-1/2 w.
 - R27 BE130232 25M ohm-1/2 w.
 - R28 BE130232 25M ohm-1/2 w.
 - R29 BE130232 25M ohm-1/2 w.
 - R30 BE130232 25M ohm-1/2 w.
 - R31 BE130232 25M ohm-1/2 w.
 - R32 BE130232 25M ohm-1/2 w.
 - R33 BE130232 25M ohm-1/2 w.
 - R34 BE130232 25M ohm-1/2 w.
 - R35 BE130232 25M ohm-1/2 w.
 - R36 BE130232 25M ohm-1/2 w.
 - R37 BE130232 25M ohm-1/2 w.

- CONDENSERS**
- C1 0005 mica
 - C2 0002 x 600 v.
 - C3 B.C. Antenna Trimmer
 - C4 BE129443 9 mc. Antenna Trimmer
 - C5 BE12942 0005 mica tubular
 - C6 BE10020 1 x 200 v.
 - C7 BE129168 9 mc. R.F. Trimmer
 - C8 BE124138 B.C. R.F. Trimmer
 - C9 BE10074 1 x 400 v.
 - C10 BE10074 1 x 400 v.
 - C11 BE10074 1 x 400 v.
 - C12 BE10074 1 x 400 v.
 - C13 BE10074 1 x 400 v.
 - C14 BE10074 1 x 400 v.
 - C15 BE10074 1 x 400 v.
 - C16 BE10074 1 x 400 v.
 - C17 BE10074 1 x 400 v.
 - C18 BE129167 0002 silver mica
 - C19 BE129165 0005 mica
 - C20 BE124145 9 mc. oscillator trimmer
 - C21 BE119112 10.0 mid. lytic
 - C22 BE11969 16 mid. x 350 v.
 - C23 BE10065 015 x 600 v.
 - C24 BE10065 015 x 600 v.
 - C25 BE10065 015 x 600 v.
 - C26 BE10065 015 x 600 v.
 - C27 BE10065 015 x 600 v.
 - C28 BE10065 015 x 600 v.
 - C29 BE10065 015 x 600 v.
 - C30 BE10065 015 x 600 v.
 - C31 BE10065 015 x 600 v.
 - C32 BE10065 015 x 600 v.
 - C33 BE12912 00025 mica
 - C34 BE1001 1 x 400 v.

- PARTS**
- T1 BE11107 Loop Antenna Assembly
 - T2 BE11195 B.C. Antenna Coil
 - T3 BE11190 9 mc. Antenna Coil
 - T4 BE11189 6 mc. Antenna Coil
 - T5 BE11191 12 mc. Antenna Coil
 - T6 BE11192 15 mc. Antenna Coil
 - T7 BE10959 9 mc. R.F. Coil
 - T8 BE10958 6 mc. R.F. Coil
 - T9 BE10960 12 mc. R.F. Coil
 - T10 BE10961 15 mc. R.F. Coil
 - T11 BE10962 B.C. R.F. Coil
 - T12 BE11061 B.C. Oscillator Coil
 - T13 BE11052 9 mc. Oscillator Coil
 - T14 BE11056 6 mc. Oscillator Coil
 - T15 BE11058 12 mc. Oscillator Coil
 - T16 BE10159 15 mc. Oscillator Coil
 - T17 BE108181 Input I.F. Coil-455 kc.
 - T18 BE108155B Interstage I.F. Coil
 - T19 BE108182 Output I.F. Coil-455 kc.
 - T20 BE105115 Output Transformer
 - T21 BE114209 12 in. Dynamic Speaker
 - T22 BE104217 Power Transformer-50/60 Cycles
 - T23 BE104218 Power Transformer-25 Cycles
 - T24 BE104227 Automatic Record Changer, Roberts
 - T25 BE104226 Automatic Record Changer, Roberts
 - T26 BE104221 Automatic Record Changer, Roberts
 - T27 BE104221 Automatic Record Changer, Roberts
 - T28 BE104221 Automatic Record Changer, Roberts
 - T29 BE104221 Automatic Record Changer, Roberts
 - T30 BE104221 Automatic Record Changer, Roberts
 - T31 BE104221 Automatic Record Changer, Roberts
 - T32 BE104221 Automatic Record Changer, Roberts
 - T33 BE104221 Automatic Record Changer, Roberts
 - T34 BE104221 Automatic Record Changer, Roberts
 - T35 BE104221 Automatic Record Changer, Roberts
 - T36 BE104221 Automatic Record Changer, Roberts
 - T37 BE104221 Automatic Record Changer, Roberts
 - T38 BE104221 Automatic Record Changer, Roberts
 - T39 BE104221 Automatic Record Changer, Roberts
 - T40 BE104221 Automatic Record Changer, Roberts
 - T41 BE104221 Automatic Record Changer, Roberts
 - T42 BE104221 Automatic Record Changer, Roberts
 - T43 BE104221 Automatic Record Changer, Roberts
 - T44 BE104221 Automatic Record Changer, Roberts
 - T45 BE104221 Automatic Record Changer, Roberts
 - T46 BE104221 Automatic Record Changer, Roberts
 - T47 BE104221 Automatic Record Changer, Roberts
 - T48 BE104221 Automatic Record Changer, Roberts
 - T49 BE104221 Automatic Record Changer, Roberts
 - T50 BE104221 Automatic Record Changer, Roberts
 - T51 BE104221 Automatic Record Changer, Roberts
 - T52 BE104221 Automatic Record Changer, Roberts
 - T53 BE104221 Automatic Record Changer, Roberts
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 - T58 BE104221 Automatic Record Changer, Roberts
 - T59 BE104221 Automatic Record Changer, Roberts
 - T60 BE104221 Automatic Record Changer, Roberts
 - T61 BE104221 Automatic Record Changer, Roberts
 - T62 BE104221 Automatic Record Changer, Roberts
 - T63 BE104221 Automatic Record Changer, Roberts
 - T64 BE104221 Automatic Record Changer, Roberts
 - T65 BE104221 Automatic Record Changer, Roberts
 - T66 BE104221 Automatic Record Changer, Roberts
 - T67 BE104221 Automatic Record Changer, Roberts
 - T68 BE104221 Automatic Record Changer, Roberts
 - T69 BE104221 Automatic Record Changer, Roberts
 - T70 BE104221 Automatic Record Changer, Roberts
 - T71 BE104221 Automatic Record Changer, Roberts
 - T72 BE104221 Automatic Record Changer, Roberts
 - T73 BE104221 Automatic Record Changer, Roberts
 - T74 BE104221 Automatic Record Changer, Roberts
 - T75 BE104221 Automatic Record Changer, Roberts
 - T76 BE104221 Automatic Record Changer, Roberts
 - T77 BE104221 Automatic Record Changer, Roberts
 - T78 BE104221 Automatic Record Changer, Roberts
 - T79 BE104221 Automatic Record Changer, Roberts
 - T80 BE104221 Automatic Record Changer, Roberts
 - T81 BE104221 Automatic Record Changer, Roberts
 - T82 BE104221 Automatic Record Changer, Roberts
 - T83 BE104221 Automatic Record Changer, Roberts
 - T84 BE104221 Automatic Record Changer, Roberts
 - T85 BE104221 Automatic Record Changer, Roberts
 - T86 BE104221 Automatic Record Changer, Roberts
 - T87 BE104221 Automatic Record Changer, Roberts
 - T88 BE104221 Automatic Record Changer, Roberts
 - T89 BE104221 Automatic Record Changer, Roberts
 - T90 BE104221 Automatic Record Changer, Roberts
 - T91 BE104221 Automatic Record Changer, Roberts
 - T92 BE104221 Automatic Record Changer, Roberts
 - T93 BE104221 Automatic Record Changer, Roberts
 - T94 BE104221 Automatic Record Changer, Roberts
 - T95 BE104221 Automatic Record Changer, Roberts
 - T96 BE104221 Automatic Record Changer, Roberts
 - T97 BE104221 Automatic Record Changer, Roberts
 - T98 BE104221 Automatic Record Changer, Roberts
 - T99 BE104221 Automatic Record Changer, Roberts
 - T100 BE104221 Automatic Record Changer, Roberts

- FOR OTHER DATA SEE INDEX**
- S1 Antenna Bandswitch
 - S2 R.F. Oscillator Bandswitch
 - S3 On-off Radio Phono Switch
 - S4 Treble Switch
 - S5 Bass Switch
 - S6 Switch on Record Changer
 - P1 2 6-8 Volts Pilot Light T44
 - P2 Indicator Light T44

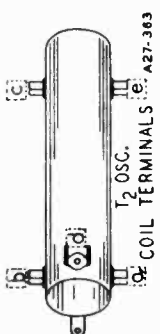


TOP VIEW

6-40

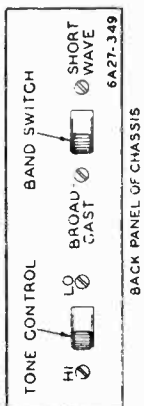
MONTGOMERY WARD & CO.

MODEL 93WG-604, 93WG-605



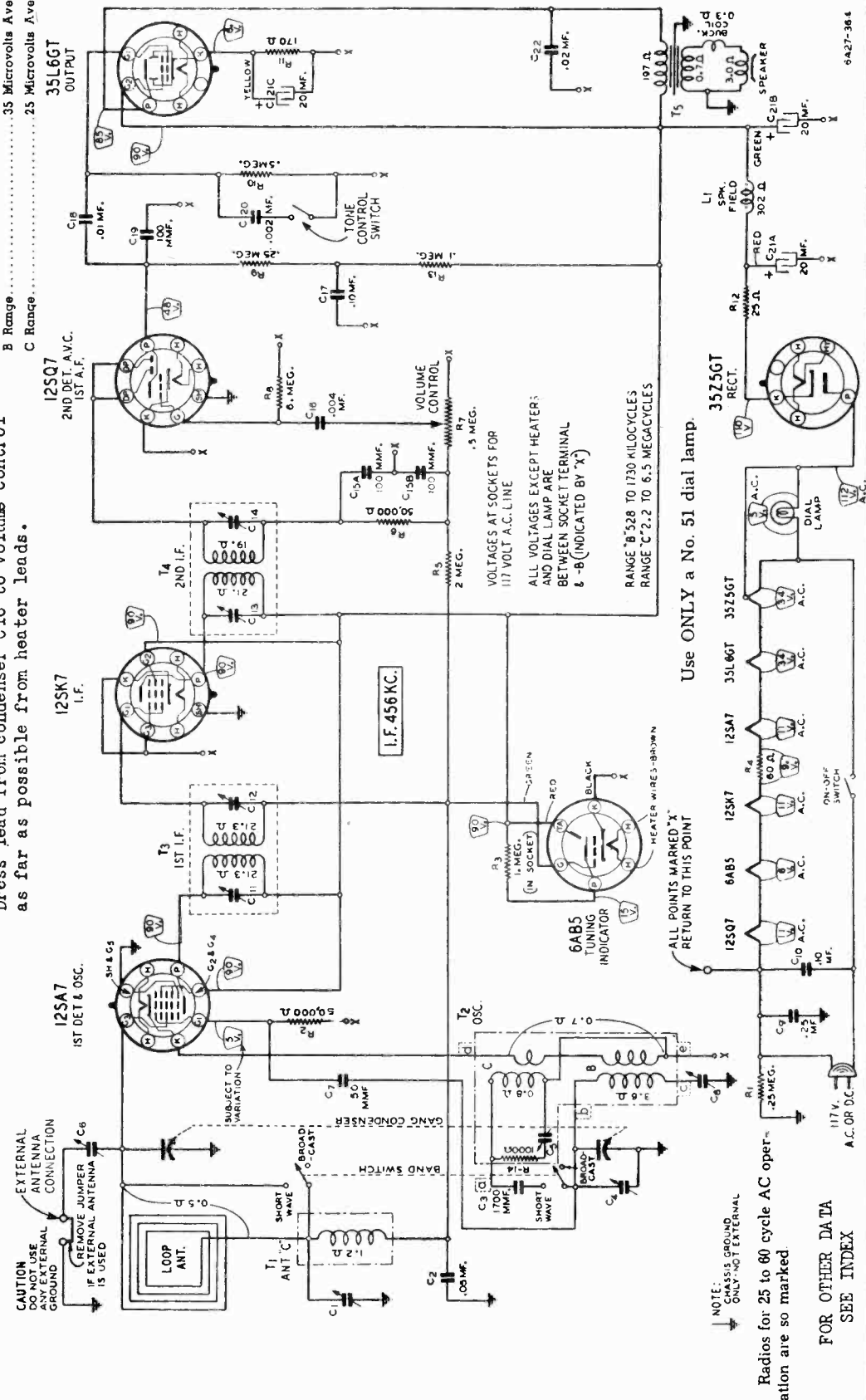
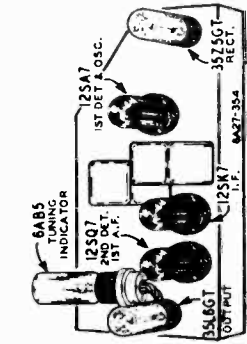
Power Consumption - 28 Watts (At 117 volt AC Supply)
 Power Output - 8 Watt Undistorted, 1.25 Watts Maximum
 Selectivity - 50 KC Broad at 1000 times Signal

Tuning Frequency Range
 B Range..... 528 to 1730 KC
 C Range..... 2200 to 6500 KC
 Sensitivity (For .05 watt output)
 B Range..... .35 Microvolts Average
 C Range..... .25 Microvolts Average



TO REDUCE MODULATION HUM:
 Insulate dial-lamp clip from mounting bracket.
 Return condenser C2 to B- (point X on schematic) instead of to chassis ground.
 Dress lead from condenser C16 to volume control as far as possible from heater leads.

MODEL 93WG-604
 " 93WG-605



CAUTION
 DO NOT USE
 ANY EXTERNAL
 ANTENNA
 CONNECTION
 IF EXTERNAL ANTENNA
 IS USED

EXTERNAL
 ANTENNA
 CONNECTION

REMOVE JUMPER
 IF EXTERNAL ANTENNA
 IS USED

EXTERNAL
 ANTENNA
 CONNECTION

REMOVE JUMPER
 IF EXTERNAL ANTENNA
 IS USED

EXTERNAL
 ANTENNA
 CONNECTION

REMOVE JUMPER
 IF EXTERNAL ANTENNA
 IS USED

EXTERNAL
 ANTENNA
 CONNECTION

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REMOVE JUMPER
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EXTERNAL
 ANTENNA
 CONNECTION

REMOVE JUMPER
 IF EXTERNAL ANTENNA
 IS USED

EXTERNAL
 ANTENNA
 CONNECTION

REMOVE JUMPER
 IF EXTERNAL ANTENNA
 IS USED

EXTERNAL
 ANTENNA
 CONNECTION

VOLTAGES AT SOCKETS FOR
 117 VOLT A.C. LINE
 ALL VOLTAGES EXCEPT HEATER
 AND DIAL LAMP ARE
 BETWEEN SOCKET TERMINAL
 8-B (INDICATED BY 'X')

RANGE "B" 528 TO 1730 KILOCYCLES
 RANGE "C" 2.2 TO 6.5 MEGACYCLES

Use ONLY a No. 51 dial lamp.

NOTE: CHASSIS GROUND
 ONLY-NO EXTERNAL

Radios for 25 to 60 cycle AC opera-
 tion are so marked

FOR OTHER DATA
 SEE INDEX

Setting a Station Button

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

At the right side of the cabinet (from the front) will be seen a cap which covers a hole in the cabinet—See illustration. Pry off this cap, being careful not to scratch the cabinet. Removal of the cap will expose a large locking screw. Using a screwdriver, loosen the mechanism by turning this screw in a counter-clockwise direction. The screw will turn easily until the dial stops rotating. Then exert a slight amount of additional pressure and continue to turn the screw about one and one-half complete turns.

With one hand, hold the manual tuning control to prevent it from turning and with the other hand, push one of the station buttons shown in the illustration *all the way down*. It will go down easily at first and then a firm gentle pressure must be applied to push it down the rest of the way. It is better to start with the left hand button.

Hold *this* button all the way down. With the other hand, see whether or not this station is still accurately tuned in by moving the tuning control a slight amount back and forth while observing the tuning eye. *Be sure to hold the button all the way down.*

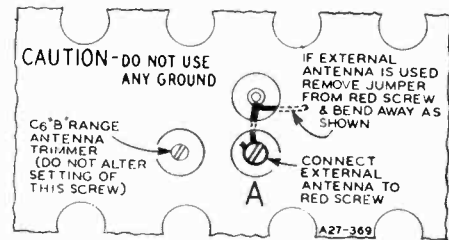
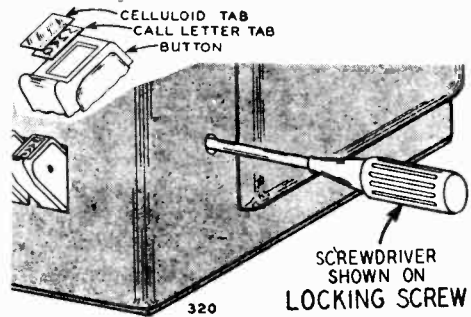
Release the button after the station is tuned in.

Carefully tune in the second station on your list. Then hold the tuning control and push the second button slowly and firmly all the way down. Check for accurate tuning.

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

After all the stations are set, it will be necessary to lock the mechanism so that the settings will not change. Do this by turning the locking screw in a clockwise direction until it is tight. It will turn easily until the dial stops rotating—then additional pressure must be exerted. Tighten firmly but not excessively. Replace the cap over the hole.

If at any time you wish to change the setting of a button from one station to another, repeat the above procedure. Changing the setting of one button will not affect the setting of any of the other buttons.



ALIGNMENT PROCEDURE

Remove Jumper on Loop Antenna for All Adjustments. The following equipment is required for aligning:
Volume Control—Maximum All Adjustments.
Connect Ground Post of Signal Generator to B—(12SK7—Prong No. 3) in Chassis.
Allow Chassis and Signal Generator to "Heat Up" for several minutes.

An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antenna—.1 mf.

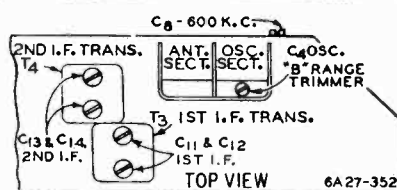
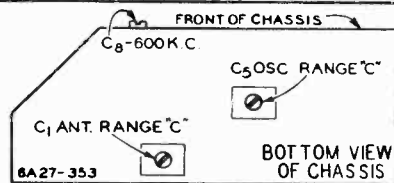
SIGNAL GENERATOR		DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustrations)
FREQUENCY SETTING	CONNECTION AT RADIO				
I. F.					
456 KC	Signal Grid of 1st Det. Connect at Stator of Large Gang Section.	.1 mf.	B Range	Turn Rotor to full open	1st I.F. (C11) & (C12) 2nd I.F. (C13) & (C14)
RANGE B					
1730 KC	Signal Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to full open	Oscillator Range B (C4)
1500 KC	Red Antenna Screw at Back of Loop	.1 mf.	B Range	Turn Rotor to max. output	Antenna Range B (C6)—See Illustration Page 1
606 KC	Same as Above	.1 mf.	B Range	Turn Rotor to max. output	600 KC (C8) Rock Rotor—See Note A
RANGE C					
6500 KC	Same as Above	.1 mf.	C Range	Turn Rotor to full open	Oscillator Range C (C5)
6000 KC	Same as Above	.1 mf.	C Range	Turn Rotor to max. output	Ant. Range C (C1) Rock Rotor—See Note A

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

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

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

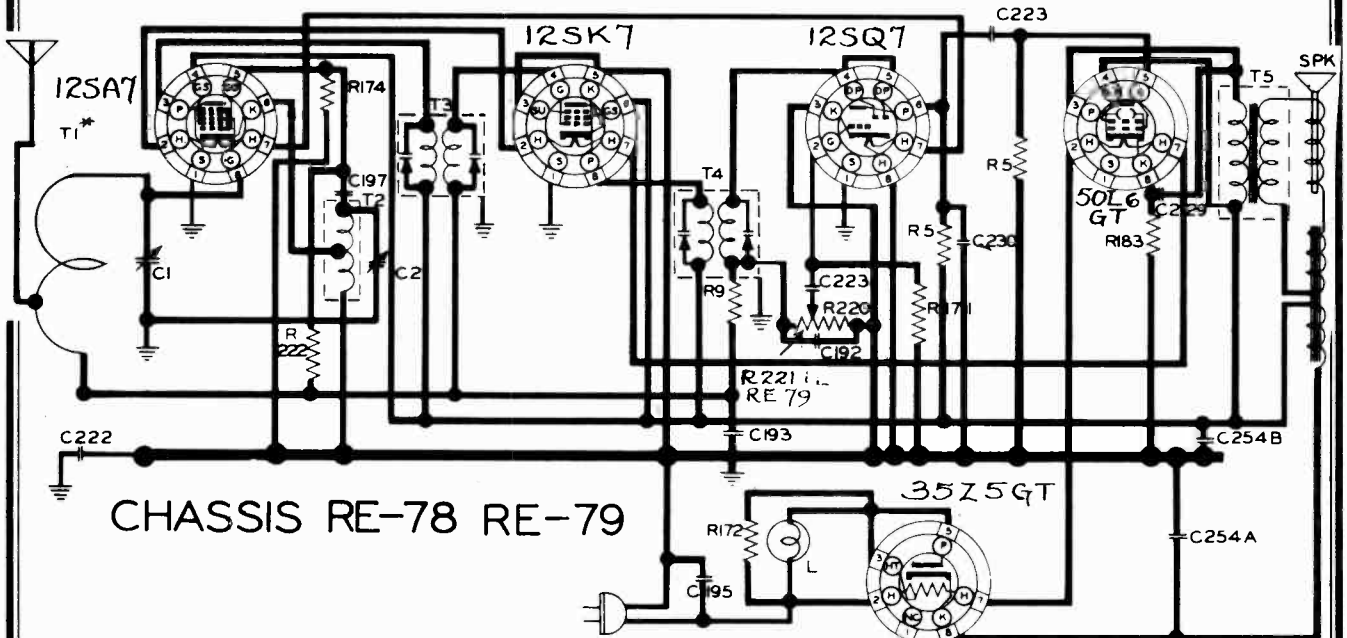
CAUTION—When aligning the short wave bands be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for



5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard

at 5000 less 912 KC, or 4088 KC on the dial. It may be necessary to increase the input signal to hear the image.

NOBLITT-SPARKS INDUSTRIES, INC. MODELS 622, 622A, Ch. RE-78
632, Ch. RE-79
Chassis RE-91

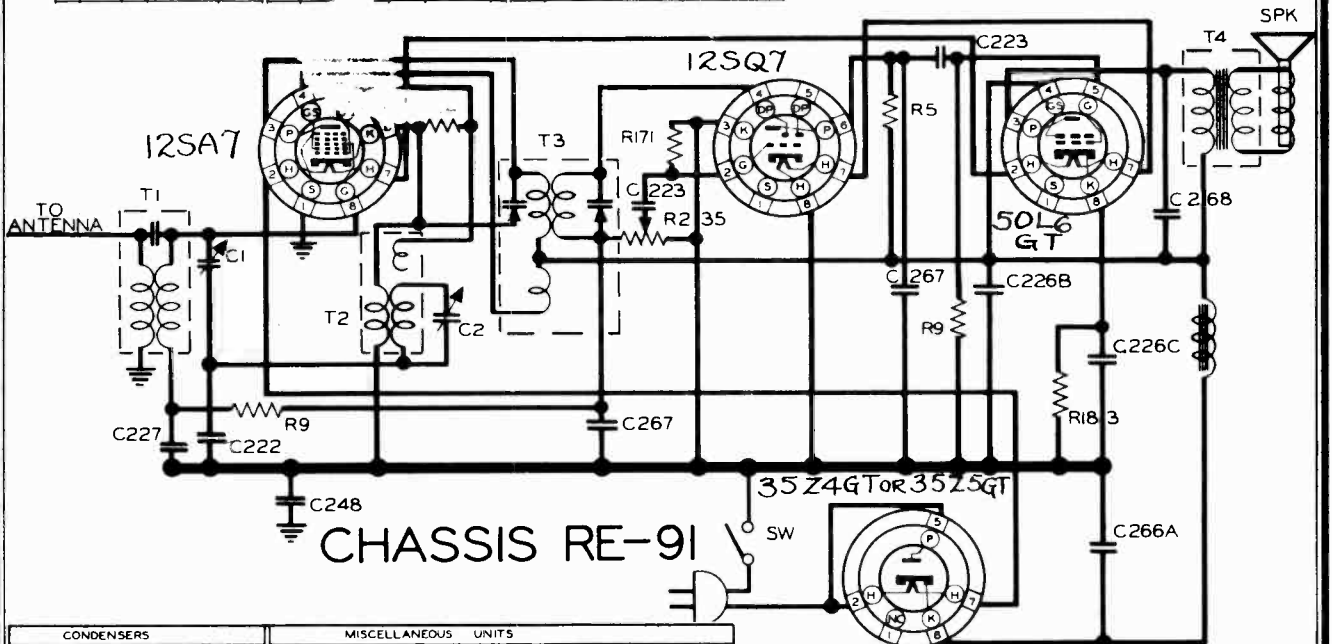


RESISTORS				CONDENSERS			TRANSFORMERS			MISCELLANEOUS UNITS			
R	OHM	W	PART NO.	C	CAPACITY	VOLT	PART NO.	T	TYPE	PART NO.	SYMBOL	DESCRIPTION	PART NO.
220	1M	V.C.	17-16878	1	TWO GANG		17-16841	1	ANTENNA LOOP	00-16862	L	DIAL LIGHT BULB MAZDA #47	17-16378
5	500K	1/4	17-2070	2	VARIABLE			2	OSCILLATOR COIL	00-16891	P	LINE CORD & PLUG ASSY	17-16874
183	150	1/4	17-14316	254A	20 MFD.	150	17-14376	3	FIRST I.F. COIL	00-16885	SPK	SPEAKER ASSY.	17-16867
174	20K	1/4	17-14291	254B	10 MFD.	150		4	SECOND I.F. COIL	00-16888			
172	100	1/4	17-14289	192	.00025	400	17-14273	5	OUTPUT TRANSF.	00-16883			
222	10M	1/4	17-14377	195	.05	400	17-14276						
9	1M	1/4	17-2080	222	.2	400	17-14317						
				229	.02	400	17-14327						
				223	.002	400	17-14318						
				193	.05	200	17-14274						
				197	.0001	800	17-14275						
				230	.000*	400	17-14328						

*In Chassis RE-79

#In Chassis RE79
1 ANT LOOP 30-16900

IF PEAK 455 KC.
BALANCE 1400 KC. - CHECK AT 600 K.C.
NOBLITT-SPARKS INDUSTRIES, INC.
COLUMBUS, INDIANA



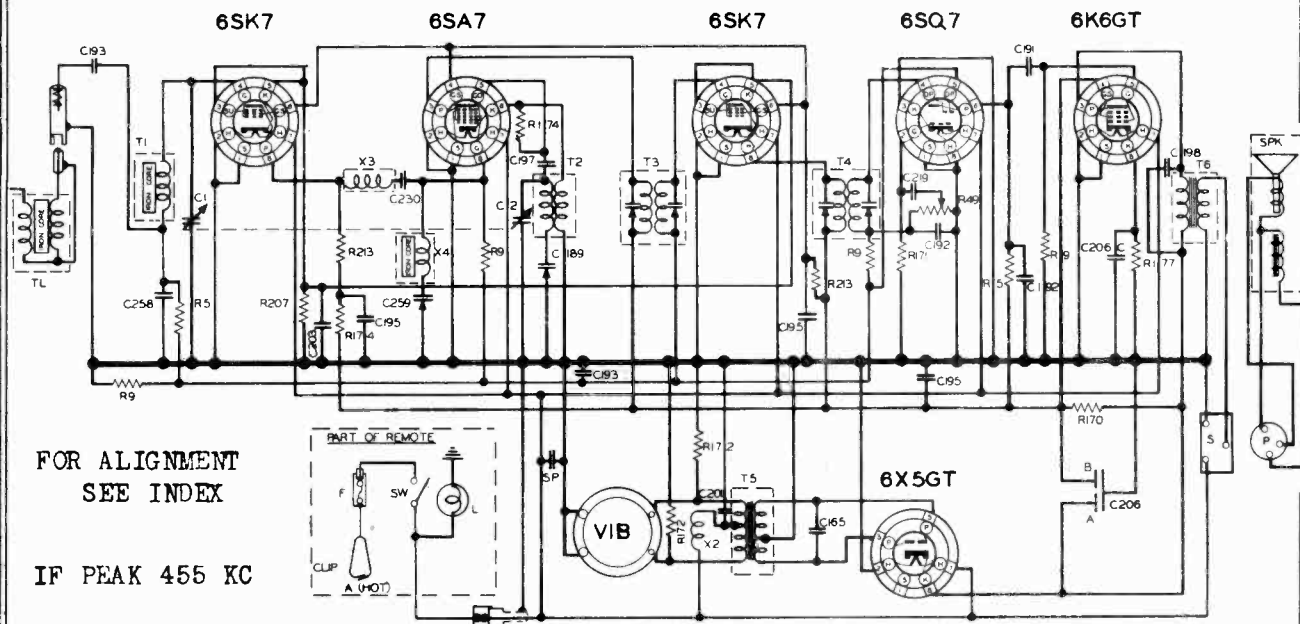
CONDENSERS				MISCELLANEOUS UNITS		
C	CAPACITY	VOLT	PART NO.	SYMBOL	DESCRIPTION	PART NO.
222	.2	400	17-14317	T1	ANTENNA COIL	00-17130
227	.05	200	17-14323	T2	OSCILLATOR COIL	00-17119
248	.05	400	17-14368	T3	I.F. COIL	00-17120
				T4	OUTPUT TRANSFORMER	00-17131
				SPK.	SPEAKER	17-17132
223	.002	400	17-14318			
268	.03	400	17-14382			
1	TWO GANG		17-17114			
2	VARIABLE					
266A	20 MFD.	150				
266B	10 MFD.	150	17-14390			
266C	20 MFD.	25				
267	.0005	400	17-14381			
	.0005	400				

RESISTORS			
R	OHM	W	PART NO.
174	20K	1/4	17-14291
9	1M	1/4	17-2080
171	15M	1/4	17-14288
5	500K	1/4	17-2070
183	150	1/4	17-14316
235	2M	V.C.	17-17117

FREQUENCY RANGE
1750 TO 540 KC.
NOBLITT-SPARKS INDUSTRIES, INC.
COLUMBUS, INDIANA

MODEL 720 Ch. RE-86

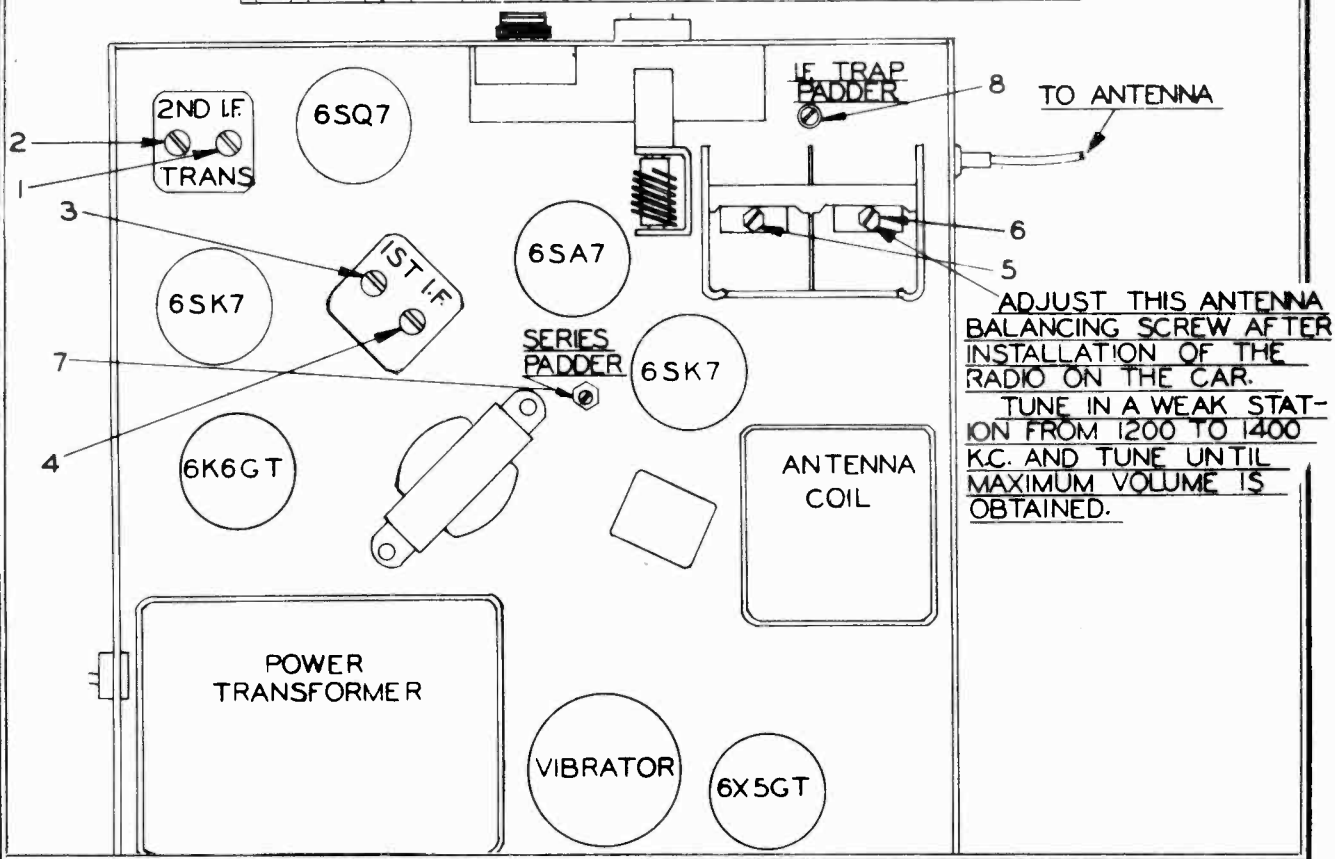
NOBLITT-SPARKS INDUSTRIES, INC.



FOR ALIGNMENT
SEE INDEX
IF PEAK 455 KC

RESISTORS			CONDENSERS			CHOSES & TRANSFORMERS			MISCELLANEOUS UNITS		
R (OHMS)	W	PART NO.	C	CAPACITY	VOLT	T X	TYPE	PART NO.	SYMBOL	DESCRIPTION	PART NO.
5	500Ω	1/4	1	TWO GANG	17-4234	1	ANTENNA COIL	00-4218	F	FUSE - 20 AMPS	17-2228
5	1M	1/4	2	VARIABLE		2	CONVERTER COIL	00-1000	L	DEAL LIGHT BULB MAR20W NO. 5	17-3804
45	500Ω	1/4	3		17-4230	3	1ST IF COIL	00-1001	S	SPEAKER PLUG	17-4260
20	100Ω	1/4	4		17-4238	4	2ND IF COIL	00-1008	5	SPEAKER SOCKET	17-1831
17	15M	1/4	5		17-4232	5	DET. TRANSFORMER	00-4253	SP	SPEAKER ASSEMBLY	17-1813
22	100Ω	1/4	6		17-4273	6	OUTPUT TRANSFORMER	00-4208	SW	POWER SWITCH	
17	20M	1/4	7		17-4274				T	TRANSMISSION LINE	00-4883
17	650Ω	1/4	8		17-4278				SP	SPEAKER PLATE	17-1814
210	50K	1/4	9		17-4280	7	500Ω		VIB	VIBRATOR	
680	500Ω	1/4	10		17-4282	8	SUPPLY SHUNT CHOKE	28-3459			
			11	208A	10 MFD	300	3 TRAP CHOKE	00-4892			
			12	208B	10 MFD	300	4 TRAP CHOKE	00-4897			
			13	208C	40 MFD	115					
			14	230	0.001	400					
			15	258	00.4	850					
			16	251	100	17-4235					
			17	249	4-40 MAFD PAD	17-4383					
			18	187	0.001	800					
			19	198	0.05	400					

IF PEAK 455 K.C.
FREQUENCY RANGE 1575 TO 540 K.C.
NOBLITT-SPARKS INDUSTRIES, INC.
COLUMBUS, INDIANA



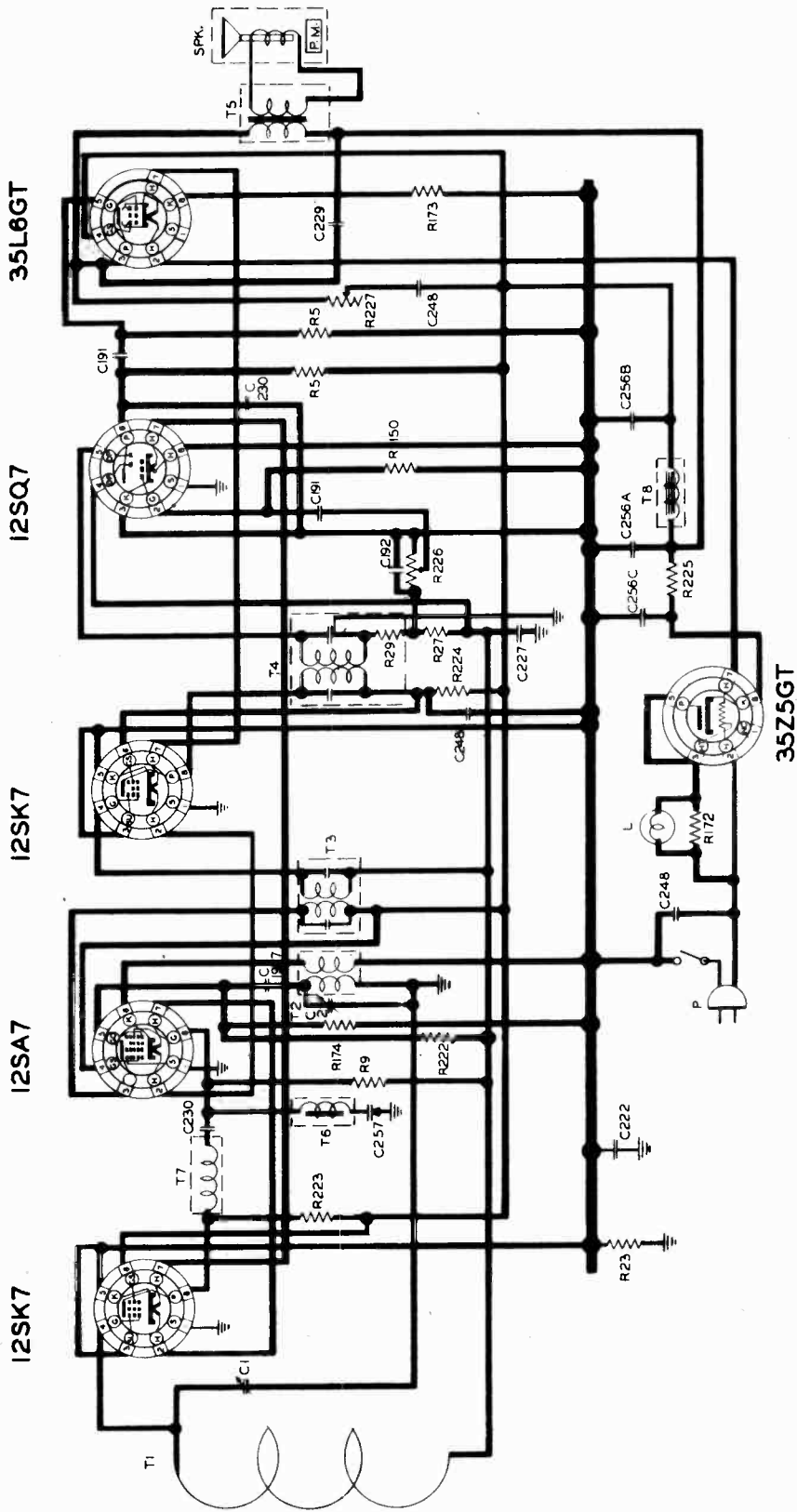
ADJUST THIS ANTENNA
BALANCING SCREW AFTER
INSTALLATION OF THE
RADIO ON THE CAR.

TUNE IN A WEAK STA-
TION FROM 1200 TO 1400
K.C. AND TUNE UNTIL
MAXIMUM VOLUME IS
OBTAINED.

NOBLITT-SPARKS INDUSTRIES, INC.

MODELS 722, 722A, 732
Ch. RE-80

ARVIN HOME RADIO CHASSIS RE-80



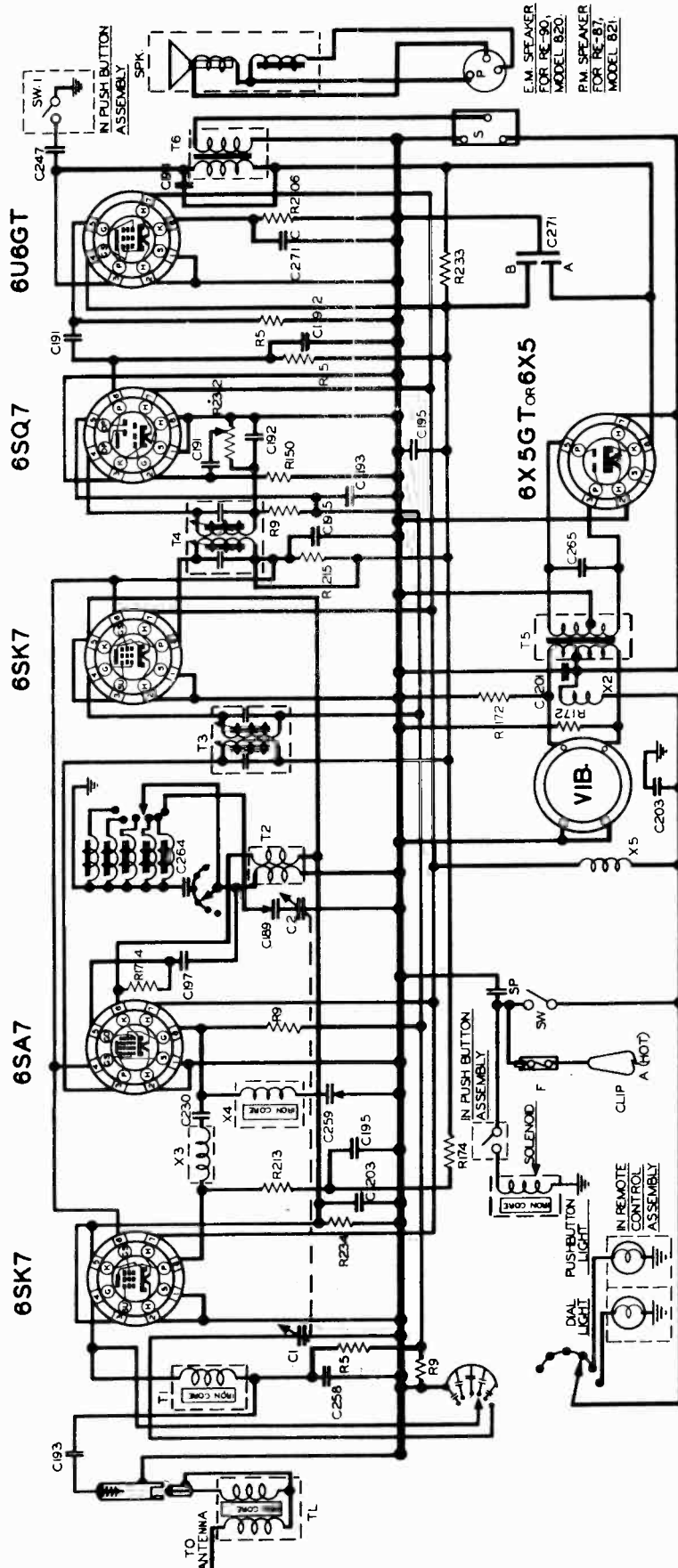
RESISTORS		CONDENSERS		TRANSFORMERS		MISCELLANEOUS UNITS	
R	OHM W PART NO	C	CAPACITY	T	DESCRIPTION	S	SYMBOL
228	4000 1/4 17-4987	230	0003	1	ANTENNA LOOP	1	17-0878
231	100K 1/4 17-3001	222	2	2	OSCILLATOR COIL	2	17-0879
232	100K 1/4 17-3001	223	400	3	SEC. IF COIL	3	00-8842
233	100K 1/4 17-3001	224	200	4	SEC. IF COIL	4	00-8843
234	100K 1/4 17-3001	225	200	5	TRAP CHOKES	5	00-8844
235	100K 1/4 17-3001	226	200	6	TRAP CHOKES	6	00-8845
236	100K 1/4 17-3001	227	200	7	TRAP CHOKES	7	00-8846
237	100K 1/4 17-3001	228	200	8	TRAP CHOKES	8	00-8847
238	100K 1/4 17-3001	229	200	9	TRAP CHOKES	9	00-8848
239	100K 1/4 17-3001	230	200	10	TRAP CHOKES	10	00-8849
240	100K 1/4 17-3001	231	200	11	TRAP CHOKES	11	00-8850
241	100K 1/4 17-3001	232	200	12	TRAP CHOKES	12	00-8851
242	100K 1/4 17-3001	233	200	13	TRAP CHOKES	13	00-8852
243	100K 1/4 17-3001	234	200	14	TRAP CHOKES	14	00-8853
244	100K 1/4 17-3001	235	200	15	TRAP CHOKES	15	00-8854
245	100K 1/4 17-3001	236	200	16	TRAP CHOKES	16	00-8855
246	100K 1/4 17-3001	237	200	17	TRAP CHOKES	17	00-8856
247	100K 1/4 17-3001	238	200	18	TRAP CHOKES	18	00-8857
248	100K 1/4 17-3001	239	200	19	TRAP CHOKES	19	00-8858
249	100K 1/4 17-3001	240	200	20	TRAP CHOKES	20	00-8859
250	100K 1/4 17-3001	241	200	21	TRAP CHOKES	21	00-8860
251	100K 1/4 17-3001	242	200	22	TRAP CHOKES	22	00-8861
252	100K 1/4 17-3001	243	200	23	TRAP CHOKES	23	00-8862
253	100K 1/4 17-3001	244	200	24	TRAP CHOKES	24	00-8863
254	100K 1/4 17-3001	245	200	25	TRAP CHOKES	25	00-8864
255	100K 1/4 17-3001	246	200	26	TRAP CHOKES	26	00-8865
256	100K 1/4 17-3001	247	200	27	TRAP CHOKES	27	00-8866
257	100K 1/4 17-3001	248	200	28	TRAP CHOKES	28	00-8867
258	100K 1/4 17-3001	249	200	29	TRAP CHOKES	29	00-8868
259	100K 1/4 17-3001	250	200	30	TRAP CHOKES	30	00-8869
260	100K 1/4 17-3001	251	200	31	TRAP CHOKES	31	00-8870
261	100K 1/4 17-3001	252	200	32	TRAP CHOKES	32	00-8871
262	100K 1/4 17-3001	253	200	33	TRAP CHOKES	33	00-8872
263	100K 1/4 17-3001	254	200	34	TRAP CHOKES	34	00-8873
264	100K 1/4 17-3001	255	200	35	TRAP CHOKES	35	00-8874
265	100K 1/4 17-3001	256	200	36	TRAP CHOKES	36	00-8875
266	100K 1/4 17-3001	257	200	37	TRAP CHOKES	37	00-8876
267	100K 1/4 17-3001	258	200	38	TRAP CHOKES	38	00-8877
268	100K 1/4 17-3001	259	200	39	TRAP CHOKES	39	00-8878
269	100K 1/4 17-3001	260	200	40	TRAP CHOKES	40	00-8879
270	100K 1/4 17-3001	261	200	41	TRAP CHOKES	41	00-8880
271	100K 1/4 17-3001	262	200	42	TRAP CHOKES	42	00-8881
272	100K 1/4 17-3001	263	200	43	TRAP CHOKES	43	00-8882
273	100K 1/4 17-3001	264	200	44	TRAP CHOKES	44	00-8883
274	100K 1/4 17-3001	265	200	45	TRAP CHOKES	45	00-8884
275	100K 1/4 17-3001	266	200	46	TRAP CHOKES	46	00-8885
276	100K 1/4 17-3001	267	200	47	TRAP CHOKES	47	00-8886
277	100K 1/4 17-3001	268	200	48	TRAP CHOKES	48	00-8887
278	100K 1/4 17-3001	269	200	49	TRAP CHOKES	49	00-8888
279	100K 1/4 17-3001	270	200	50	TRAP CHOKES	50	00-8889
280	100K 1/4 17-3001	271	200	51	TRAP CHOKES	51	00-8890
281	100K 1/4 17-3001	272	200	52	TRAP CHOKES	52	00-8891
282	100K 1/4 17-3001	273	200	53	TRAP CHOKES	53	00-8892
283	100K 1/4 17-3001	274	200	54	TRAP CHOKES	54	00-8893
284	100K 1/4 17-3001	275	200	55	TRAP CHOKES	55	00-8894
285	100K 1/4 17-3001	276	200	56	TRAP CHOKES	56	00-8895
286	100K 1/4 17-3001	277	200	57	TRAP CHOKES	57	00-8896
287	100K 1/4 17-3001	278	200	58	TRAP CHOKES	58	00-8897
288	100K 1/4 17-3001	279	200	59	TRAP CHOKES	59	00-8898
289	100K 1/4 17-3001	280	200	60	TRAP CHOKES	60	00-8899
290	100K 1/4 17-3001	281	200	61	TRAP CHOKES	61	00-8900
291	100K 1/4 17-3001	282	200	62	TRAP CHOKES	62	00-8901
292	100K 1/4 17-3001	283	200	63	TRAP CHOKES	63	00-8902
293	100K 1/4 17-3001	284	200	64	TRAP CHOKES	64	00-8903
294	100K 1/4 17-3001	285	200	65	TRAP CHOKES	65	00-8904
295	100K 1/4 17-3001	286	200	66	TRAP CHOKES	66	00-8905
296	100K 1/4 17-3001	287	200	67	TRAP CHOKES	67	00-8906
297	100K 1/4 17-3001	288	200	68	TRAP CHOKES	68	00-8907
298	100K 1/4 17-3001	289	200	69	TRAP CHOKES	69	00-8908
299	100K 1/4 17-3001	290	200	70	TRAP CHOKES	70	00-8909
300	100K 1/4 17-3001	291	200	71	TRAP CHOKES	71	00-8910
301	100K 1/4 17-3001	292	200	72	TRAP CHOKES	72	00-8911
302	100K 1/4 17-3001	293	200	73	TRAP CHOKES	73	00-8912
303	100K 1/4 17-3001	294	200	74	TRAP CHOKES	74	00-8913
304	100K 1/4 17-3001	295	200	75	TRAP CHOKES	75	00-8914
305	100K 1/4 17-3001	296	200	76	TRAP CHOKES	76	00-8915
306	100K 1/4 17-3001	297	200	77	TRAP CHOKES	77	00-8916
307	100K 1/4 17-3001	298	200	78	TRAP CHOKES	78	00-8917
308	100K 1/4 17-3001	299	200	79	TRAP CHOKES	79	00-8918
309	100K 1/4 17-3001	300	200	80	TRAP CHOKES	80	00-8919
310	100K 1/4 17-3001	301	200	81	TRAP CHOKES	81	00-8920
311	100K 1/4 17-3001	302	200	82	TRAP CHOKES	82	00-8921
312	100K 1/4 17-3001	303	200	83	TRAP CHOKES	83	00-8922
313	100K 1/4 17-3001	304	200	84	TRAP CHOKES	84	00-8923
314	100K 1/4 17-3001	305	200	85	TRAP CHOKES	85	00-8924
315	100K 1/4 17-3001	306	200	86	TRAP CHOKES	86	00-8925
316	100K 1/4 17-3001	307	200	87	TRAP CHOKES	87	00-8926
317	100K 1/4 17-3001	308	200	88	TRAP CHOKES	88	00-8927
318	100K 1/4 17-3001	309	200	89	TRAP CHOKES	89	00-8928
319	100K 1/4 17-3001	310	200	90	TRAP CHOKES	90	00-8929
320	100K 1/4 17-3001	311	200	91	TRAP CHOKES	91	00-8930
321	100K 1/4 17-3001	312	200	92	TRAP CHOKES	92	00-8931
322	100K 1/4 17-3001	313	200	93	TRAP CHOKES	93	00-8932
323	100K 1/4 17-3001	314	200	94	TRAP CHOKES	94	00-8933
324	100K 1/4 17-3001	315	200	95	TRAP CHOKES	95	00-8934
325	100K 1/4 17-3001	316	200	96	TRAP CHOKES	96	00-8935
326	100K 1/4 17-3001	317	200	97	TRAP CHOKES	97	00-8936
327	100K 1/4 17-3001	318	200	98	TRAP CHOKES	98	00-8937
328	100K 1/4 17-3001	319	200	99	TRAP CHOKES	99	00-8938
329	100K 1/4 17-3001	320	200	100	TRAP CHOKES	100	00-8939

IF PEAK 455 KC.
BALANCE 1400 KC-CHECK AT 600 KC.
NOBLITT-SPARKS INDUSTRIES, INC.
COLUMBUS, INDIANA

MODEL 820 Ch. RE-90
MODEL 821 Ch. RE-87

NOBLITT-SPARKS INDUSTRIES, INC.

ARVIN CAR RADIO — CHASSIS RE-90 & RE-87



E.M. SPEAKER FOR RE-90, MODEL 820.
P.M. SPEAKER FOR RE-87, MODEL 821.

RESISTORS		CONDENSERS		CHOICES & TRANSFORMERS		MISCELLANEOUS UNITS	
A	W	C	TYPE	T-X	TYPE	SYMBOL	DESCRIPTION
5	500 K 1/4	1	ANTENNA COIL	1	ANTENNA COIL	F	FUSE .20 AMPS
6	1 M 1/4	2	VARIABLE	2	OSCILLATOR COIL	L	DIAL LIGHT BULB - MAXIDA # 31
7	250 K 1/4	3	0	3	FIRST LF COIL	P	SPEAKER PLUG
8	1 M 1/4	4	100-500MMFD	4	SECOND LF COIL	S	SPEAKER SOCKET
9	500 K 1/4	5	100-500MMFD	5	POWER TRANSF	SPK	SPEAKER ASSEMBLY RE-90 MODEL 820
10	500 K 1/4	6	100-500MMFD	6	OUTPUT TRANSF	TL	TRANSMISSION LINE
11	500 K 1/4	7	100-500MMFD	7	CHOKES	SP	SPARK PLATE
12	500 K 1/4	8	100-500MMFD	8	CHOKES	VIB	VIBRATOR
13	500 K 1/4	9	100-500MMFD	9	CHOKES	SW 1	1 TONE CONTROL SWITCH
14	500 K 1/4	10	100-500MMFD	10	CHOKES	SW 2	2 TONE CONTROL SWITCH
15	500 K 1/4	11	100-500MMFD	11	CHOKES	SW 3	3 TONE CONTROL SWITCH
16	500 K 1/4	12	100-500MMFD	12	CHOKES	SW 4	4 TONE CONTROL SWITCH
17	500 K 1/4	13	100-500MMFD	13	CHOKES	SW 5	5 TONE CONTROL SWITCH
18	500 K 1/4	14	100-500MMFD	14	CHOKES	SW 6	6 TONE CONTROL SWITCH
19	500 K 1/4	15	100-500MMFD	15	CHOKES	SW 7	7 TONE CONTROL SWITCH
20	500 K 1/4	16	100-500MMFD	16	CHOKES	SW 8	8 TONE CONTROL SWITCH
21	500 K 1/4	17	100-500MMFD	17	CHOKES	SW 9	9 TONE CONTROL SWITCH
22	500 K 1/4	18	100-500MMFD	18	CHOKES	SW 10	10 TONE CONTROL SWITCH
23	500 K 1/4	19	100-500MMFD	19	CHOKES	SW 11	11 TONE CONTROL SWITCH
24	500 K 1/4	20	100-500MMFD	20	CHOKES	SW 12	12 TONE CONTROL SWITCH
25	500 K 1/4	21	100-500MMFD	21	CHOKES	SW 13	13 TONE CONTROL SWITCH
26	500 K 1/4	22	100-500MMFD	22	CHOKES	SW 14	14 TONE CONTROL SWITCH
27	500 K 1/4	23	100-500MMFD	23	CHOKES	SW 15	15 TONE CONTROL SWITCH
28	500 K 1/4	24	100-500MMFD	24	CHOKES	SW 16	16 TONE CONTROL SWITCH
29	500 K 1/4	25	100-500MMFD	25	CHOKES	SW 17	17 TONE CONTROL SWITCH
30	500 K 1/4	26	100-500MMFD	26	CHOKES	SW 18	18 TONE CONTROL SWITCH
31	500 K 1/4	27	100-500MMFD	27	CHOKES	SW 19	19 TONE CONTROL SWITCH
32	500 K 1/4	28	100-500MMFD	28	CHOKES	SW 20	20 TONE CONTROL SWITCH
33	500 K 1/4	29	100-500MMFD	29	CHOKES	SW 21	21 TONE CONTROL SWITCH
34	500 K 1/4	30	100-500MMFD	30	CHOKES	SW 22	22 TONE CONTROL SWITCH
35	500 K 1/4	31	100-500MMFD	31	CHOKES	SW 23	23 TONE CONTROL SWITCH
36	500 K 1/4	32	100-500MMFD	32	CHOKES	SW 24	24 TONE CONTROL SWITCH
37	500 K 1/4	33	100-500MMFD	33	CHOKES	SW 25	25 TONE CONTROL SWITCH
38	500 K 1/4	34	100-500MMFD	34	CHOKES	SW 26	26 TONE CONTROL SWITCH
39	500 K 1/4	35	100-500MMFD	35	CHOKES	SW 27	27 TONE CONTROL SWITCH
40	500 K 1/4	36	100-500MMFD	36	CHOKES	SW 28	28 TONE CONTROL SWITCH
41	500 K 1/4	37	100-500MMFD	37	CHOKES	SW 29	29 TONE CONTROL SWITCH
42	500 K 1/4	38	100-500MMFD	38	CHOKES	SW 30	30 TONE CONTROL SWITCH
43	500 K 1/4	39	100-500MMFD	39	CHOKES	SW 31	31 TONE CONTROL SWITCH
44	500 K 1/4	40	100-500MMFD	40	CHOKES	SW 32	32 TONE CONTROL SWITCH
45	500 K 1/4	41	100-500MMFD	41	CHOKES	SW 33	33 TONE CONTROL SWITCH
46	500 K 1/4	42	100-500MMFD	42	CHOKES	SW 34	34 TONE CONTROL SWITCH
47	500 K 1/4	43	100-500MMFD	43	CHOKES	SW 35	35 TONE CONTROL SWITCH
48	500 K 1/4	44	100-500MMFD	44	CHOKES	SW 36	36 TONE CONTROL SWITCH
49	500 K 1/4	45	100-500MMFD	45	CHOKES	SW 37	37 TONE CONTROL SWITCH
50	500 K 1/4	46	100-500MMFD	46	CHOKES	SW 38	38 TONE CONTROL SWITCH
51	500 K 1/4	47	100-500MMFD	47	CHOKES	SW 39	39 TONE CONTROL SWITCH
52	500 K 1/4	48	100-500MMFD	48	CHOKES	SW 40	40 TONE CONTROL SWITCH
53	500 K 1/4	49	100-500MMFD	49	CHOKES	SW 41	41 TONE CONTROL SWITCH
54	500 K 1/4	50	100-500MMFD	50	CHOKES	SW 42	42 TONE CONTROL SWITCH
55	500 K 1/4	51	100-500MMFD	51	CHOKES	SW 43	43 TONE CONTROL SWITCH
56	500 K 1/4	52	100-500MMFD	52	CHOKES	SW 44	44 TONE CONTROL SWITCH
57	500 K 1/4	53	100-500MMFD	53	CHOKES	SW 45	45 TONE CONTROL SWITCH
58	500 K 1/4	54	100-500MMFD	54	CHOKES	SW 46	46 TONE CONTROL SWITCH
59	500 K 1/4	55	100-500MMFD	55	CHOKES	SW 47	47 TONE CONTROL SWITCH
60	500 K 1/4	56	100-500MMFD	56	CHOKES	SW 48	48 TONE CONTROL SWITCH
61	500 K 1/4	57	100-500MMFD	57	CHOKES	SW 49	49 TONE CONTROL SWITCH
62	500 K 1/4	58	100-500MMFD	58	CHOKES	SW 50	50 TONE CONTROL SWITCH
63	500 K 1/4	59	100-500MMFD	59	CHOKES	SW 51	51 TONE CONTROL SWITCH
64	500 K 1/4	60	100-500MMFD	60	CHOKES	SW 52	52 TONE CONTROL SWITCH
65	500 K 1/4	61	100-500MMFD	61	CHOKES	SW 53	53 TONE CONTROL SWITCH
66	500 K 1/4	62	100-500MMFD	62	CHOKES	SW 54	54 TONE CONTROL SWITCH
67	500 K 1/4	63	100-500MMFD	63	CHOKES	SW 55	55 TONE CONTROL SWITCH
68	500 K 1/4	64	100-500MMFD	64	CHOKES	SW 56	56 TONE CONTROL SWITCH
69	500 K 1/4	65	100-500MMFD	65	CHOKES	SW 57	57 TONE CONTROL SWITCH
70	500 K 1/4	66	100-500MMFD	66	CHOKES	SW 58	58 TONE CONTROL SWITCH
71	500 K 1/4	67	100-500MMFD	67	CHOKES	SW 59	59 TONE CONTROL SWITCH
72	500 K 1/4	68	100-500MMFD	68	CHOKES	SW 60	60 TONE CONTROL SWITCH
73	500 K 1/4	69	100-500MMFD	69	CHOKES	SW 61	61 TONE CONTROL SWITCH
74	500 K 1/4	70	100-500MMFD	70	CHOKES	SW 62	62 TONE CONTROL SWITCH
75	500 K 1/4	71	100-500MMFD	71	CHOKES	SW 63	63 TONE CONTROL SWITCH
76	500 K 1/4	72	100-500MMFD	72	CHOKES	SW 64	64 TONE CONTROL SWITCH
77	500 K 1/4	73	100-500MMFD	73	CHOKES	SW 65	65 TONE CONTROL SWITCH
78	500 K 1/4	74	100-500MMFD	74	CHOKES	SW 66	66 TONE CONTROL SWITCH
79	500 K 1/4	75	100-500MMFD	75	CHOKES	SW 67	67 TONE CONTROL SWITCH
80	500 K 1/4	76	100-500MMFD	76	CHOKES	SW 68	68 TONE CONTROL SWITCH
81	500 K 1/4	77	100-500MMFD	77	CHOKES	SW 69	69 TONE CONTROL SWITCH
82	500 K 1/4	78	100-500MMFD	78	CHOKES	SW 70	70 TONE CONTROL SWITCH
83	500 K 1/4	79	100-500MMFD	79	CHOKES	SW 71	71 TONE CONTROL SWITCH
84	500 K 1/4	80	100-500MMFD	80	CHOKES	SW 72	72 TONE CONTROL SWITCH
85	500 K 1/4	81	100-500MMFD	81	CHOKES	SW 73	73 TONE CONTROL SWITCH
86	500 K 1/4	82	100-500MMFD	82	CHOKES	SW 74	74 TONE CONTROL SWITCH
87	500 K 1/4	83	100-500MMFD	83	CHOKES	SW 75	75 TONE CONTROL SWITCH
88	500 K 1/4	84	100-500MMFD	84	CHOKES	SW 76	76 TONE CONTROL SWITCH
89	500 K 1/4	85	100-500MMFD	85	CHOKES	SW 77	77 TONE CONTROL SWITCH
90	500 K 1/4	86	100-500MMFD	86	CHOKES	SW 78	78 TONE CONTROL SWITCH
91	500 K 1/4	87	100-500MMFD	87	CHOKES	SW 79	79 TONE CONTROL SWITCH
92	500 K 1/4	88	100-500MMFD	88	CHOKES	SW 80	80 TONE CONTROL SWITCH
93	500 K 1/4	89	100-500MMFD	89	CHOKES	SW 81	81 TONE CONTROL SWITCH
94	500 K 1/4	90	100-500MMFD	90	CHOKES	SW 82	82 TONE CONTROL SWITCH
95	500 K 1/4	91	100-500MMFD	91	CHOKES	SW 83	83 TONE CONTROL SWITCH
96	500 K 1/4	92	100-500MMFD	92	CHOKES	SW 84	84 TONE CONTROL SWITCH
97	500 K 1/4	93	100-500MMFD	93	CHOKES	SW 85	85 TONE CONTROL SWITCH
98	500 K 1/4	94	100-500MMFD	94	CHOKES	SW 86	86 TONE CONTROL SWITCH
99	500 K 1/4	95	100-500MMFD	95	CHOKES	SW 87	87 TONE CONTROL SWITCH
100	500 K 1/4	96	100-500MMFD	96	CHOKES	SW 88	88 TONE CONTROL SWITCH
101	500 K 1/4	97	100-500MMFD	97	CHOKES	SW 89	89 TONE CONTROL SWITCH
102	500 K 1/4	98	100-500MMFD	98	CHOKES	SW 90	90 TONE CONTROL SWITCH
103	500 K 1/4	99	100-500MMFD	99	CHOKES	SW 91	91 TONE CONTROL SWITCH
104	500 K 1/4	100	100-500MMFD	100	CHOKES	SW 92	92 TONE CONTROL SWITCH

IF PEAK 4.55 K.C.
FREQUENCY RANGE 1575 TO 540 K.C.
NOBLITT-SPARKS INDUSTRIES, INC.
COLUMBUS, INDIANA

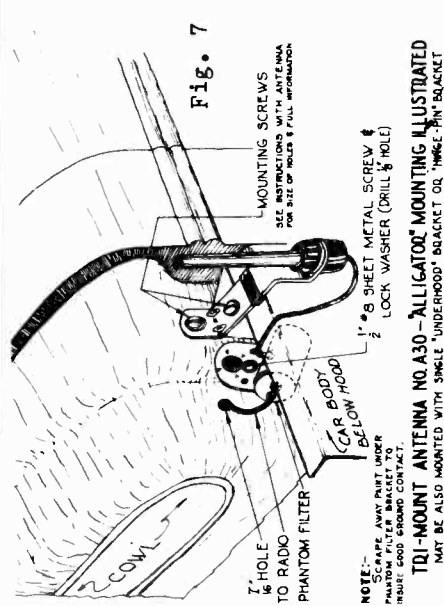


Fig. 7

NOTE:-
SCRAPE AWAY PAINT UNDER
PHANTOM FILTER BRACKET TO
HERE: GOOD GROUND CONTACT.
TQ1-MOUNT ANTENNA NO. A30 - ALLIGATOR MOUNTING ILLUSTRATED
MAY BE ALSO MOUNTED WITH SINGLE 'UNDERHOOD' BRACKET OR 'HUGE-FIN' BRACKET

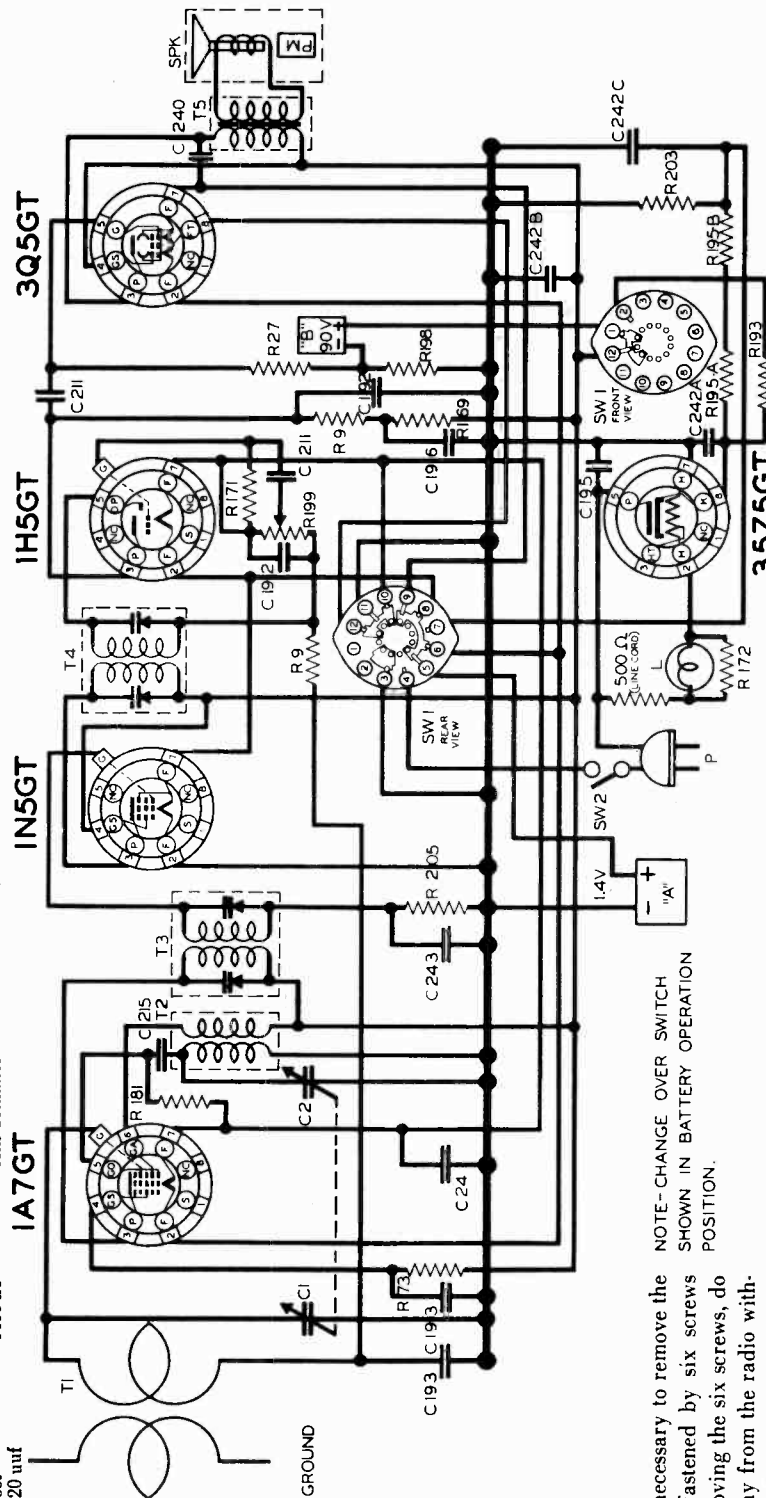
NOBLITT-SPARKS INDUSTRIES, INC.

MODEL 822 Ch. RE-82

RADIO CHASSIS RE-82

All sensitivities given for 50 milliwatts output = .4 volts across Voice Coil.

Operation No.	Connect Bal. Oscillator to	Balance Oscillator Frequency	Adjust	Dial Setting
1	1A7 Grid	455 kc	1st & 2nd I. F. Trimmers	550 kc
2	Ant Post Through 20 uuf	1400 kc	Osc. Trimmer	1400 kc
3	Ant Post Through 20 uuf	1400 kc	Ant Trimmer	1400 kc



Installation of Batteries:

To install batteries it will be necessary to remove the back of the cabinet which is fastened by six screws (three on each side). After removing the six screws, do not attempt to pull the back away from the radio without first disconnecting the pin jacks from the loop antenna.

When the back has been removed, turn the cabinet upside down (handle to the bottom).

Note the battery cable extending from the right side of the chassis. This cable terminates in one two-prong plug for the long "A" battery and two three-prong plugs for the smaller "B" batteries.

NOTE - CHANGE OVER SWITCH SHOWN IN BATTERY OPERATION POSITION.

RESISTORS		CONDENSERS		TRANSFORMERS		MISCELLANEOUS UNITS	
R	OHM W PART NO	C	CAPACITY VOLT PART NO	T	TYPE PART NO	S	SYMBOL DESCRIPTION PART NO
1	1M 1/2 17-2080	1	TWO-GANG 17-1649	1	ANTENNA LOOP 100-1873	A	1.5 VOLT "B" BATTERIES 17-1833
2	2M 1/2 17-4188	2	VARIABLE 17-14273	2	OSCILLATOR COIL 100-1404	B	140 45 VOLT "B" BATTERIES 17-1852
3	30K 1/2 17-4276	3	100025 600 17-14274	3	FIRST I. F. COIL 200-1516	D	DIAL LIGHT BULB - WAZDA 47 17-1876
4	100 150K 1/2 17-4282	4	200 17-14274	4	SECOND I. F. COIL 200-1517	P	LINE CORD & PLUG ASSEMBLY 17-18492
5	171 15M 1/2 17-4286	5	400 17-14276	5	OUTPUT TRANS 200-1586	SPK	SPEAKER ASSEMBLY - 5" PERMANENT MAGNET 17-1883
6	172 100 1/2 17-14289	6	200 17-14277			SW1	AC DC BATTERY SWITCH 17-18564
7	181 100K 1/2 17-14303	7	01 200 17-14306			SW2	VOLUME CONTROL & LINE SWITCH 17-14330
8	182 460 2 1/2 17-14331	8	200 17-14310				
9	183 1500 5 1/2 17-14343	9	200 17-15042A				
10	193 400 1/2 17-14343	10	400 17-43568				
11	193 450 1/2 17-14350	11	240 203				
12	203 450 1/2 17-14354	12	240 203				
13	193 25 1/2 17-14337	13	240 203				
14	203 3W 1/2 17-14356	14	240 203				
15		15	240 203				

IF PEAK 455 K.C.
BALANCE 1400 K.C. - CHECK AT 600 K.C.
NOBLITT-SPARKS INDUSTRIES, INC.,
COLUMBUS, INDIANA.

MODEL 720
MODEL 820
MODEL 821

NOBLITT-SPARKS INDUSTRIES, INC.

(3) Adjust (with screwdriver) Oscillator Adjustment Screw No. 1A (see Fig. 7) until the broadcast signal of the desired station is received. Turning the Oscillator Adjustment Screws in a clockwise direction lowers the frequency and turning in a counter clockwise direction increases the frequency.

(4) Adjust Antenna Trimmer No. 1B to position where maximum volume is attained. The entire range of the Antenna Trimmers is covered within three counter clockwise turns of the screw from tight position. Do not back screws out more than three turns. Clockwise rotation lowers the frequency. Counter clockwise rotation increases the frequency.

The preceding instructions outline completely the steps for setting up station selector position No. 1. For positions No. 2, No. 3, No. 4 and No. 5 the same general procedure is to be used.

Below is a table showing five Station Selector positions, the kilocycle range covered by each position and the Oscillator screws and Antenna Trimmers by adjustment of which any desired station within the given range may be tuned in.

It will be noted that, even though the power switch is off and the radio not play-

Position of Automatic Station Selector

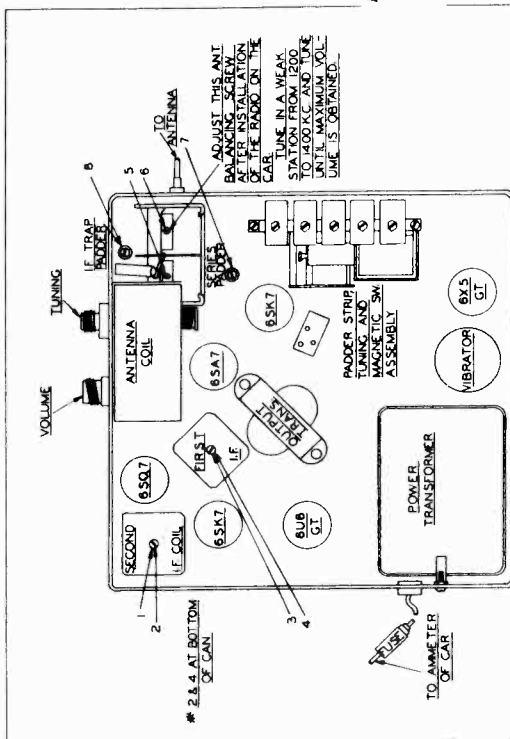
Broadcast Range In Kilocycles
Oscillator Screw To Select Station
Antenna Trimmer To Adjust for Maximum Volume

1	900 to 1600	1A	1B
2	800 to 1800	2A	2B
3	650 to 1100	3A	3B
4	540 to 1000	4A	4B
5	535 to 850	5A	5B

IMPORTANT: Before attempting to balance radio, be sure the Automatic Station Selector (push button control) is set to "DIAL" position.

All sensitivities given for 1 watt output equals 1.65 V. across voice coil.

Operation No.	Connect Bal. Oscillator to 6SA7 Grid	Bal. Oscillator Frequency 455 kc.	Adjust Podder No. 1, 2, 3 & 4	Dial Setting 550 kc	Sensitivity 50 uv
2	Through 20 uf	455 kc.	8	550 kc	min. sig
3	Through 20 uf	1400 kc.	5, then 6	1400 kc	10 uv
4	Through 20 uf	600 kc.	7	600 kc	10 uv



Synchronizing Station Selector Controls

- (1) Disconnect the push button control cable (cloth covered cable) by pulling out the plug from the radio case.
- (2) Turn on the power switch and set the Automatic Station Selector Control to "Dial" position -- that is, to the position where the word "Dial" appears at the window of the control.
- (3) Plug the cloth covered cable back into the radio.

The three preceding steps will have synchronized the Automatic Station Selector control system so that the numerals on the control dial correspond to the positions of the magnetic tuning switch in the radio.

The remote control Automatic Station Selector can be set to tune in five broadcast stations (preferably powerful local stations) of your choice. The dial of the control unit carries the numbers 1 to 5 to designate the stations.

To tune in stations with push buttons

- (1) Set the Automatic Station Selector to position No. 1 (the numeral "1" appearing on the dial of the control unit). With the Selector in this position the set may be tuned to any station whose broadcast frequency lies between 900 and 1600 kilocycles.
- (2) Remove the Slot Cover on the front of the set below the speaker grille for access to the Oscillator Adjustment Screws and Antenna Trimmers, by adjustment of which the tuning is accomplished. See Fig. 7.

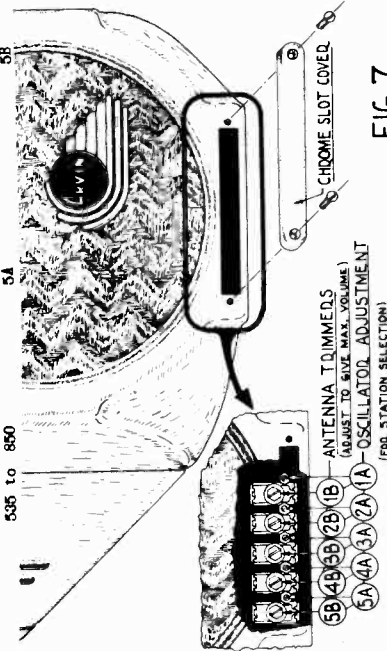
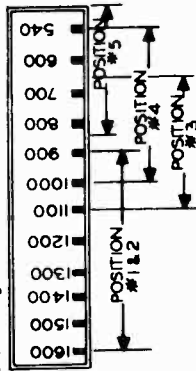
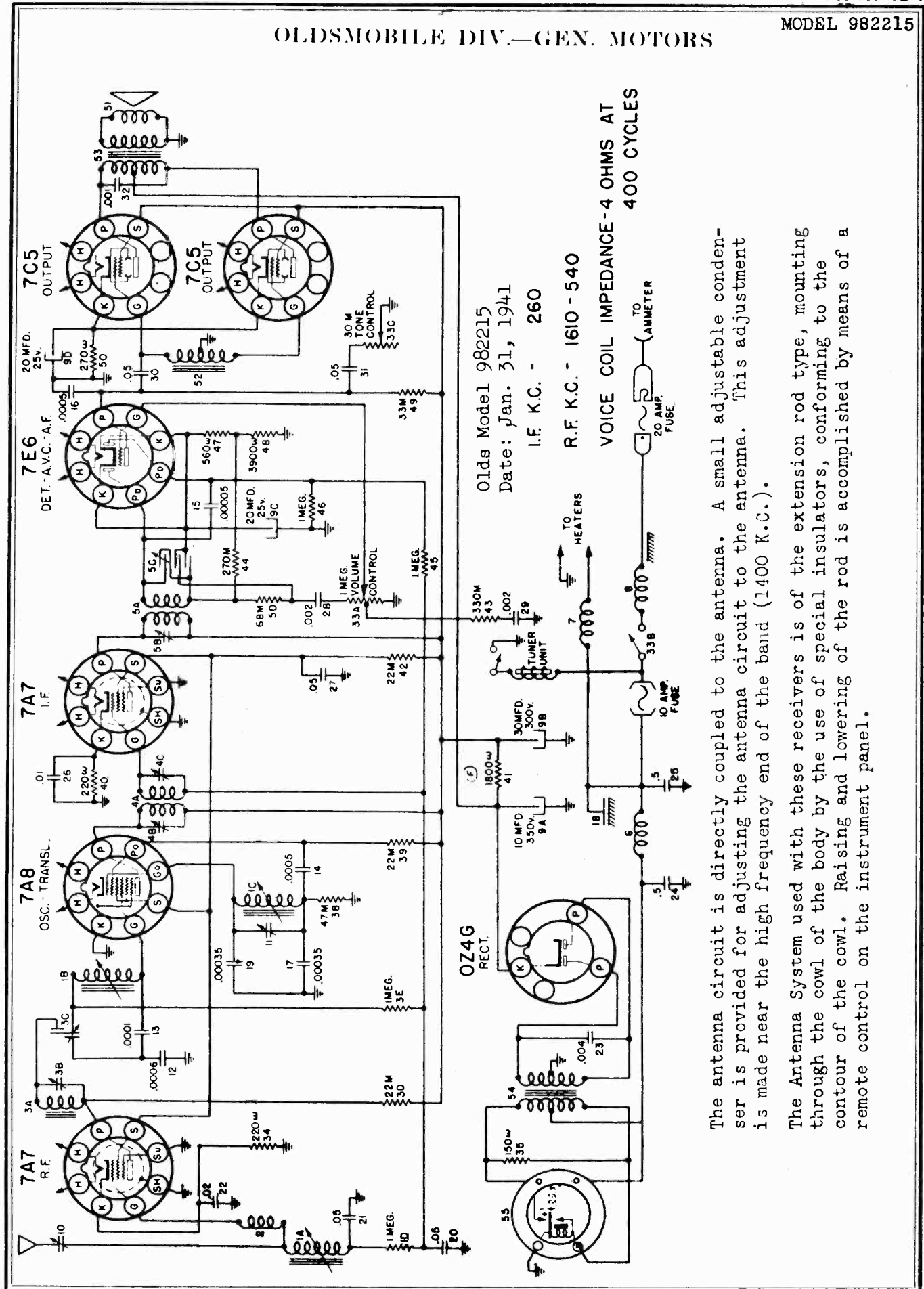


FIG. 7

OLDSMOBILE DIV.—GEN. MOTORS

MODEL 982215



Olds Model 982215
 Date: Jan. 31, 1941
 I.F. K.C. - 260
 R.F. K.C. - 1610 - 540

VOICE COIL IMPEDANCE-4 OHMS AT
 400 CYCLES

The antenna circuit is directly coupled to the antenna. A small adjustable condenser is provided for adjusting the antenna circuit to the antenna. This adjustment is made near the high frequency end of the band (1400 K.C.).

The Antenna System used with these receivers is of the extension rod type, mounting through the cowl of the body by the use of special insulators, conforming to the contour of the cowl. Raising and lowering of the rod is accomplished by means of a remote control on the instrument panel.

MODEL 982215

OLDSMOBILE DIV.—GEN. MOTORS

(c) Adjust the trimmer "H" for minimum deflection on the output meter. (It may be necessary to increase the signal from the test oscillator when making this adjustment.)

NOTE: With permeability tuning it is necessary to adjust the capacity at only one frequency. The coils are so wound that tracking is automatic and the usual low frequency adjustments are not necessary.

If the entire alignment procedure has been accomplished accurately, the receiver should be uniformly sensitive over the entire frequency range.

Lock screw "E" maintains the location of the mechanical stop at the high frequency end of the band.

New frequency assignments to 1600 K.C. make it desirable for the receiver to cover this range, but due to local ordinances it is not permissible in all locations. The high frequency stop is set at 1560 K.C. in production and after aligning the receiver, reset the stop to this frequency which is accomplished by loosening lock screw "E", tune in manually to 1560 K.C. and tighten screw.

Where ordinances permit, the high frequency stop may be set at any frequency up to 1600 K.C.

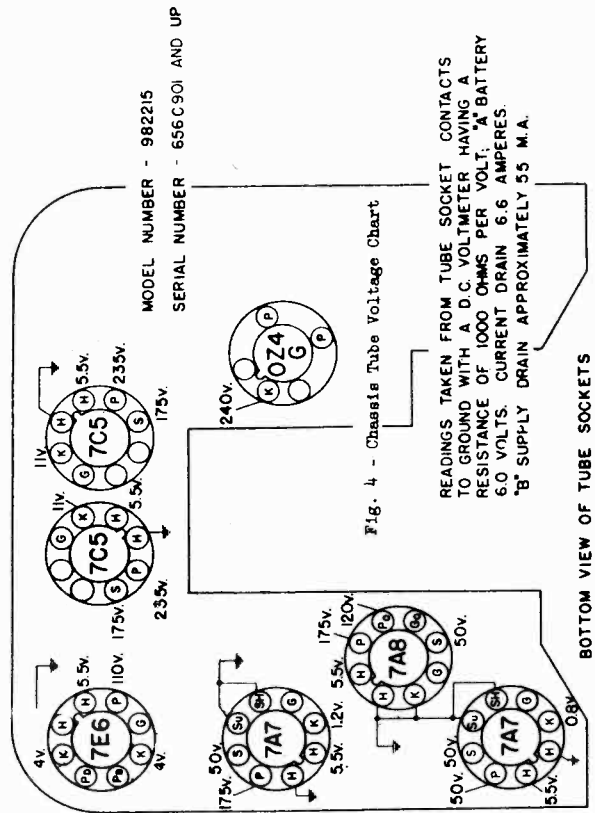


Fig. 4 - Chassis Tube Voltage Chart

READINGS TAKEN FROM TUBE SOCKET CONTACTS TO GROUND WITH A D. C. VOLTMETER HAVING A RESISTANCE OF 1000 OHMS PER VOLT. "A" BATTERY 6.0 VOLTS. CURRENT DRAIN 6.6 AMPERES. "B" SUPPLY DRAIN APPROXIMATELY 55 M.A.

CIRCUIT ALIGNMENT

All of the adjustable condensers in this receiver are very accurately adjusted at the factory and will need no further adjustment (excepting antenna condenser "G") unless tampered with or a defective coil has been replaced. If realignment is found to be necessary, the circuits can be properly adjusted only with the use of a calibrated test oscillator or signal generator and an output meter.

DO NOT ATTEMPT TO PEAK THE I-F STAGES OF THIS RECEIVER WITHOUT CAREFULLY NOTING THE INSTRUCTIONS BELOW:

1. Aligning I-F Stages at 260 Kilocycles
 - (a) Turn volume control to the maximum position.
 - (b) Connect the signal lead of the test oscillator through a .1 mfd. condenser to terminal X, which is the grid prong of the 7A8 tube.
 - (c) Connect the ground lead of the test oscillator to the chassis frame.
 - (d) Connect the output meter across the speaker voice coil at the terminal board mounted on the speaker.
 - (e) Set the test oscillator to exactly 260 Kilocycles.
 - (f) Adjust the trimmers "A", "B", "C" and "D" on the I-F Transformers for maximum output. These adjustments should be repeated several times and during alignment the test oscillator output should be kept to as low a value as is consistent with obtaining a readable indication on the output meter.
2. Aligning at 1610 Kilocycles
 - (a) Remove the signal lead of the test oscillator from the grid of the 7A8 tube and connect to the antenna terminal of the receiver THROUGH a .000075 mfd. MICA CONDENSER connected in place of the .1 mfd. condenser previously used. (It is very important that a .000075 mfd. mica condenser be used when aligning the antenna stage of these receivers in order that this circuit can be made to track properly.)
 - (b) Loosen lock screw "E" and tune the receiver by means of the manual control to the extreme high frequency position, against the stop, and tighten screw "E".
 - (c) Set the test oscillator to 1610 Kilocycles.
 - (d) Adjust the condenser "F" for maximum output. (It is very important that this frequency be set accurately as a slight missetting will cause the receiver to be out of track over the high frequency end of the dial.)
 - (e) Adjust the antenna compensating condenser "G" for maximum output.
 - (f) Adjust the R.F. trimmer condenser "J" for maximum output.
3. Adjusting the I-F Wave Trap
 - (a) Leave the test oscillator lead the same as for aligning at 1610 K.C.
 - (b) Set the test oscillator to exactly 260 K.C.

OLDSMOBILE DIV.—GEN. MOTORS

Fig. 5 - Tuning Unit

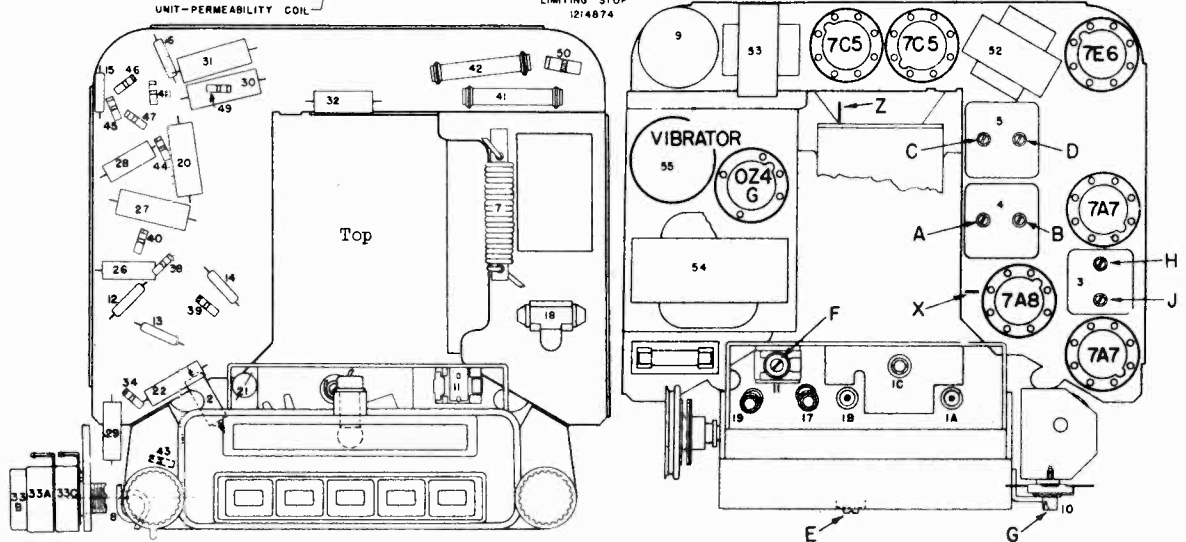
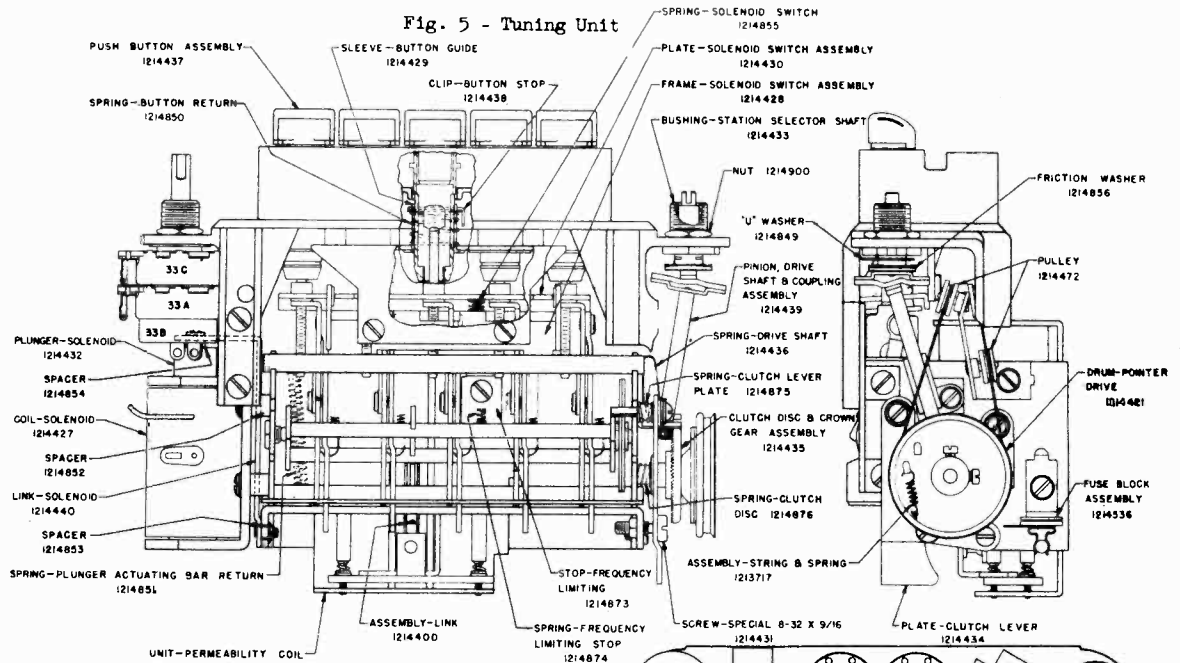


Fig. 1 - Chassis Parts Layout - 982215

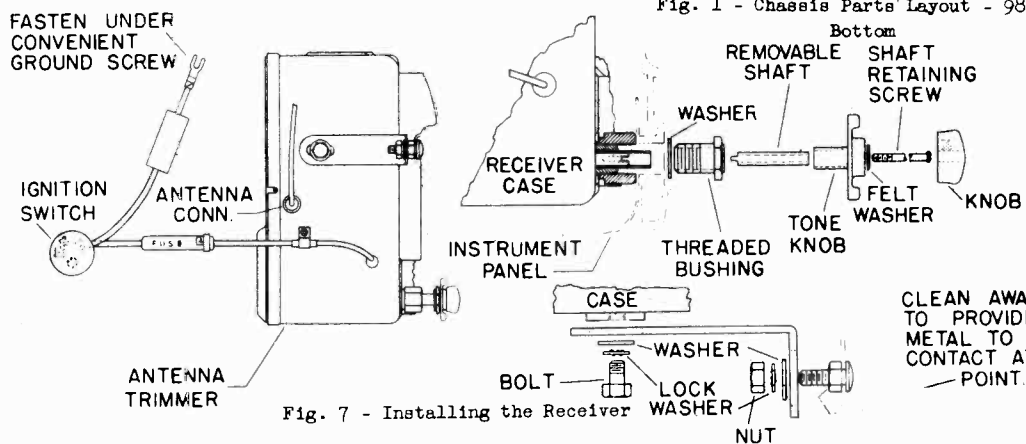
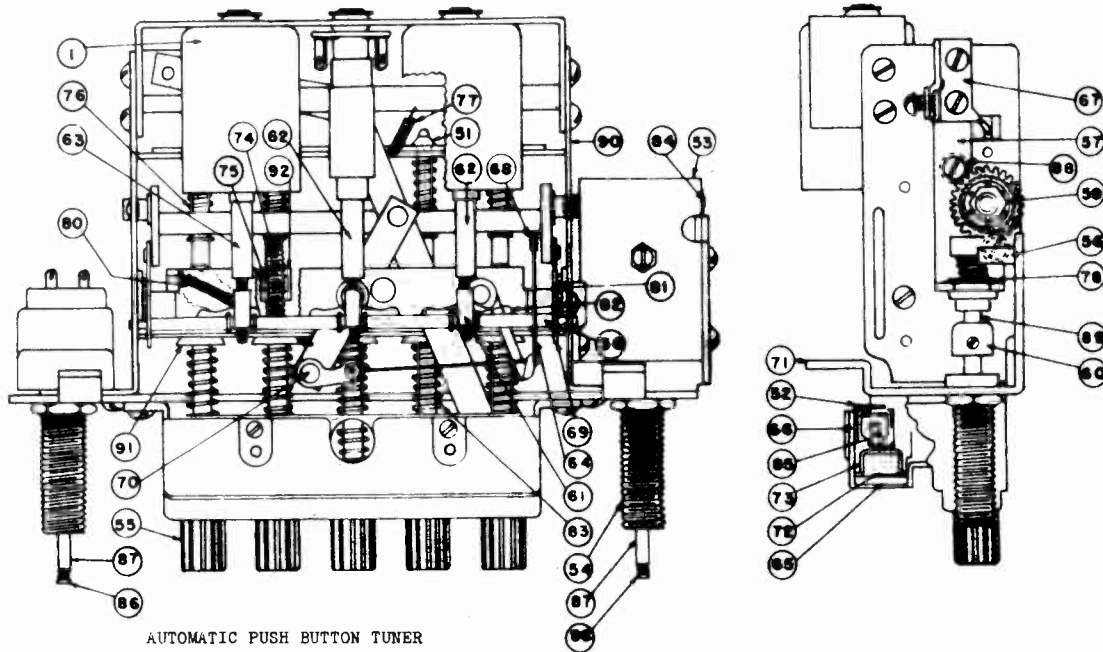


Fig. 7 - Installing the Receiver

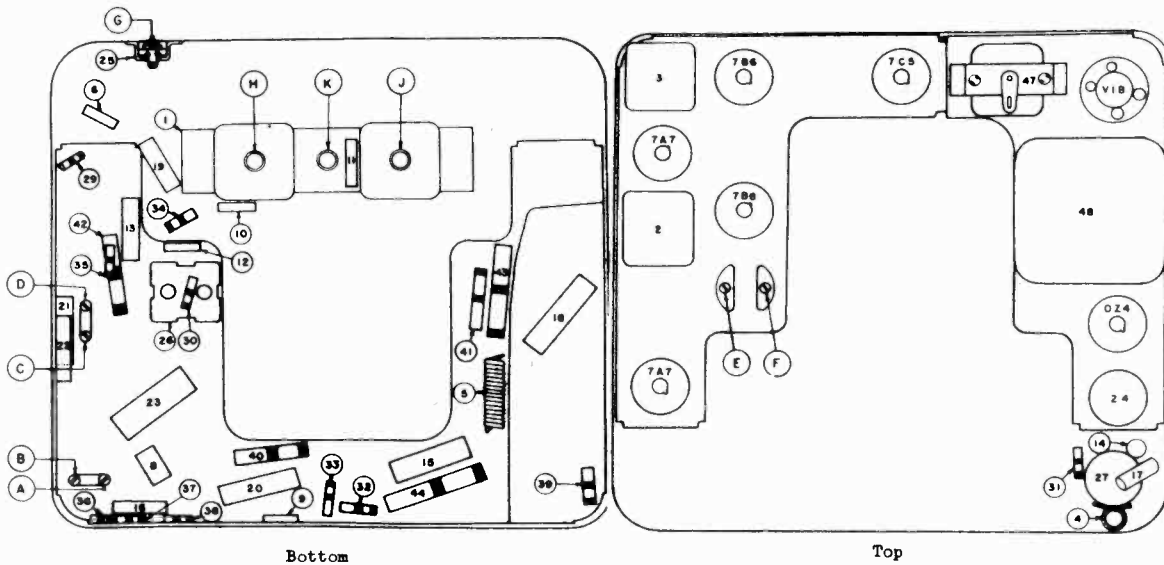
MODEL 982216

OLDSMOBILE DIV.—GEN. MOTORS



AUTOMATIC PUSH BUTTON TUNER

The iron cored automatic tuner consists of three coils with variable iron cores actuated by a rugged mechanical device for varying the position of the cores in the coils. Changing the position of the cores changes the inductance of the antenna, R.F. and oscillator coils, and provides a means of tuning the radio over the entire broadcast band. A special compensating condenser is employed in the oscillator circuit to prevent the set from drifting off station due to normal variations in car voltage and radio temperatures.

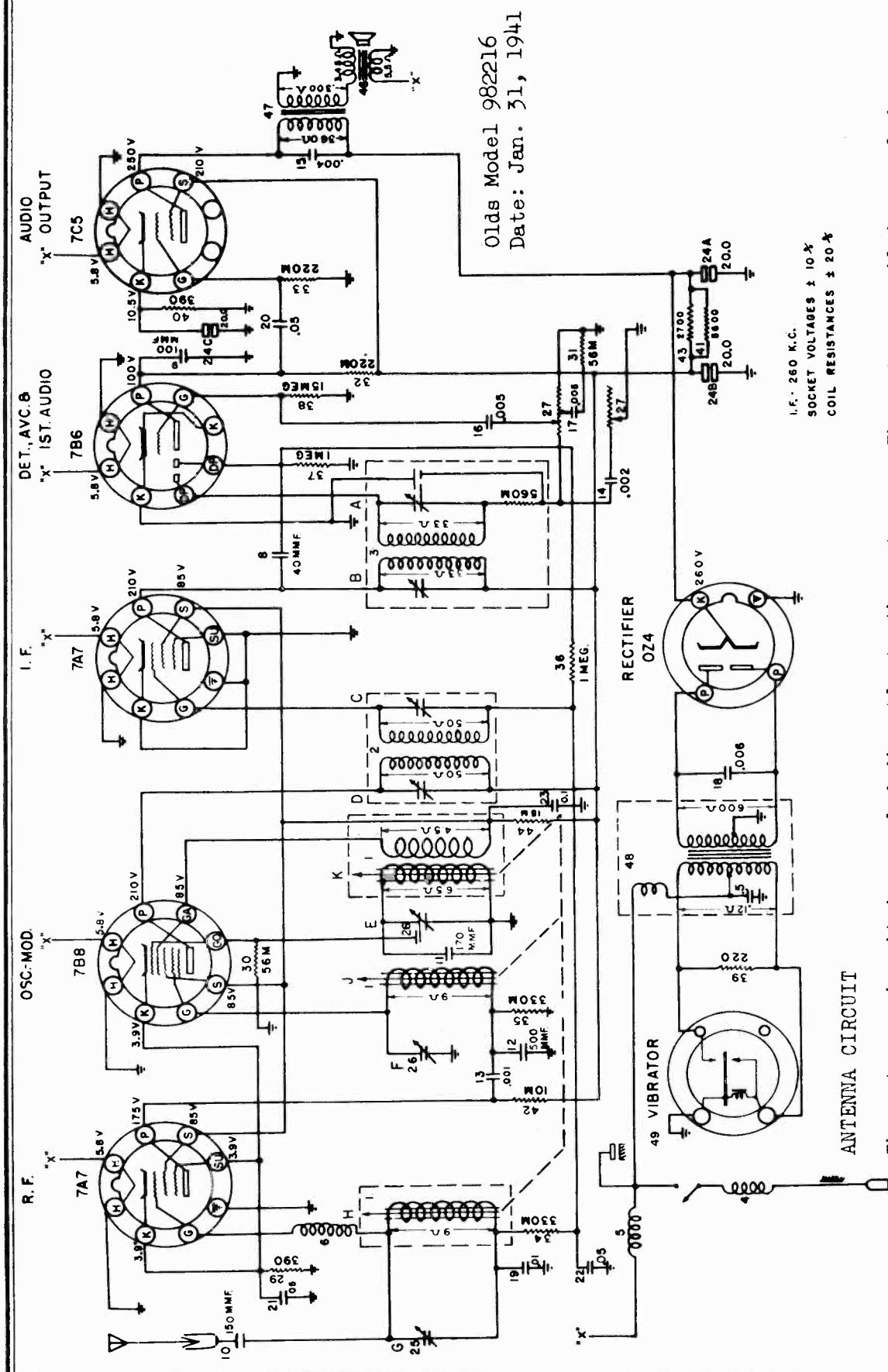


Bottom

Top

OLDSMOBILE DIV.—GEN. MOTORS

MODEL 982216



Olds Model 982216
Date: Jan. 31, 1941

I.F. 260 K.C.
SOCKET VOLTAGES ± 10 %
COIL RESISTANCES ± 20 %

ANTENNA CIRCUIT

The antenna circuit is coupled directly to the antenna. The antenna coil is coupled to the grid of the R.F. amplifier through a high frequency filter which minimizes ignition and other high frequency interferences. Due to the antenna circuit being directly coupled to the antenna, the antenna adjustment screw must be adjusted to give maximum volume when the receiver is tuned to a weak station which is received between 130 and 150 on the dial.

MODEL 982216

OLDSMOBILE DIV.—GEN. MOTORS

CIRCUIT ALIGNMENT

Alignment Procedure: The trimmer condensers in this receiver have been carefully adjusted at the factory and should require no further adjustment (except the antenna trimmer) unless tampered with or a defective coil has been replaced. It is advisable not to attempt any adjustment unless it is definitely known that an adjustment is necessary.

An accurately calibrated test oscillator or signal generator and an output meter must be used to align the receiver circuits correctly. To make all alignment adjustments the front and back covers must be removed. All trimmers are readily accessible. The antenna trimmer is adjusted through a hole in the end of the case.

Due to the fact that the iron cores have been sealed in place at the factory only the trimmer adjustments as outlined under capacity alignment should be made unless the coils of the iron core-d tuning unit are changed.

CAPACITY ALIGNMENT

1. I.F. Alignment at 260 K.C.

- (a) Connect an output meter across the speaker voice coil, leaving speaker connected.
- (b) Connect the ground lead of the signal generator to the chassis frame.
- (c) Connect the signal lead of the signal generator to the 7B8 tube grid side of the R.F. Trimmer Condenser F through a 0.1 mfd. condenser.
- (d) Turn set volume control on full and tone control to the extreme treble end. Set the signal generator at 260 K.C. Tune the receiver to a frequency where no squeals or beat notes may be heard and so that when the tuning control is moved in narrow limits no appreciable change in output may be noted.
- (e) Adjust the I.F. trimmers A, B, C, and D for maximum output.

2. Alignment at 1560 K.C.

- (a) Connect the signal lead of the signal generator to the receiver antenna connection through a 75 mmfd condenser.
- (b) Turn the manual tuning control of the receiver to the stop at the extreme high frequency end of the dial.
- (c) Set the signal generator to 1560 K.C.
- (d) Adjust the oscillator trimmer "E" for maximum output.
- (e) Adjust the R.F. trimmer "F" for maximum output.
- (f) Adjust the antenna trimmer "G" for maximum output.

3. Alignment at 1400 K.C.

- (a) Set the signal generator to 1400 K.C.
- (b) Turn the receiver to the signal and readjust the trimmers F and G for maximum output. Signal generator signal should be as low as possible and still give a satisfactory meter reading.

This type of tuning circuit does not require alignment at 600 K.C.

4. Alignment with Car Antenna

Antenna trimmer G must be adjusted to match car antenna when receiver is installed; use a weak station signal near 1400 K.C. The antenna should be fully extended when making this adjustment.

CAPACITY AND INDUCTANCE ALIGNMENT

To be used only when there is definite evidence of iron cores being out of adjustment.

1. I.F. Alignment at 260 K.C.

Follow the procedure as outlined under I.F. Alignment at 260 K.C. Capacity Alignment.

2. Alignment at 1560 K.C.

- (a) Connect the signal lead of the signal generator to the antenna connection of the set through a 70 mmfd condenser.
- (b) Set signal generator to 1560 Kilocycles.
- (c) Rotate the manual tuning mechanism until the high frequency stop is reached. Mechanically align the iron cores K, H, and J by setting each core so that its front edge sticks out 1-1/16" from the end of the coil form and the antenna and R.F. cores H and J stick out 1-13/32" from the end of the respective coil windings.
- (d) Adjust the oscillator trimmer E, R.F. trimmer F, and antenna trimmer G for maximum output.

3. Alignment at 1400 K.C.

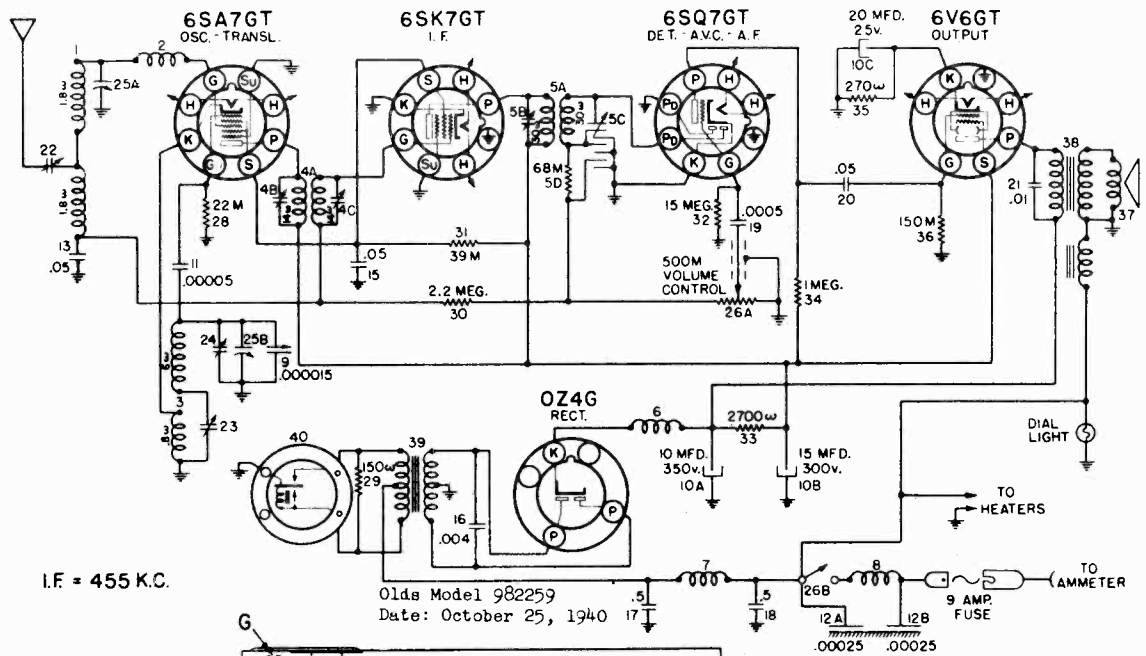
- (a) Set signal generator to 1400 K.C. and tune set to this signal.
 - (b) Adjust the R.F. core J for maximum output.
 - (c) Adjust the antenna core H for maximum output.
4. Realignment at 1560 and 1400 K.C.
- (a) Repeat alignment of trimmer E and trimmers F and G at 1560 K.C.
 - (b) Repeat alignment of cores H and J at 1400 K.C. Apply shellac to the core screws sealing the adjustment.

5. Alignment with Car Antenna

Antenna trimmer G must be adjusted to match car antenna when receiver is installed; use a weak station signal near 1400 K.C. The antenna should be fully extended when making this adjustment.

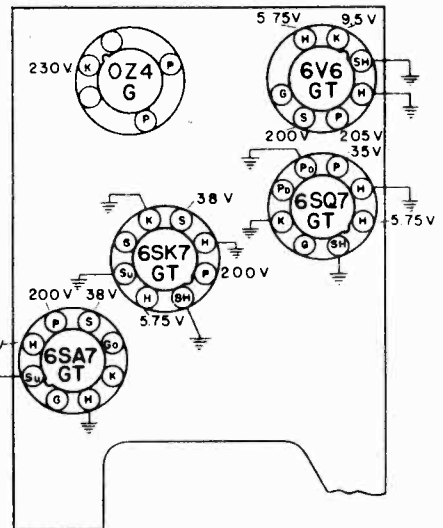
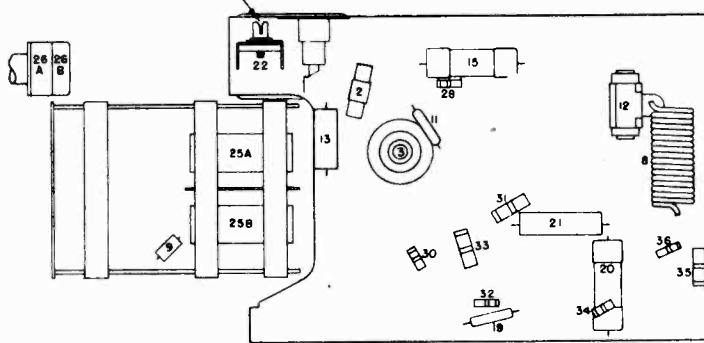
OLDSMOBILE DIV.—GEN. MOTORS

MODEL 982259



I.F. = 455 K.C.

Olds Model 982259
Date: October 25, 1940



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 6.0 AMP "B" SUPPLY DRAIN APPROXIMATELY 45 M.A.

Chassis Parts Layout

MODEL NUMBER -- 982259
SERIAL NUMBER -- 687C101 & UP
TUBE COMPLEMENT -- 6SA7GT, 6SK7GT,
6SQ7GT, 6V6GT, OZ4G.
BATTERY CURRENT - 6.0 AMPERES

B+ VOLTS - 230 VOLTS
I.F. K.C. - 455
R.F. K.C. - 1560 TO 540
VIBRATOR TYPE - NON SYNCHRONOUS

MODEL 982259

OLDSMOBILE DIV.—GEN. MOTORS

1. Aligning I-F Stages at 455 Kilocycles

- (a) Connect the signal lead of the test oscillator to terminal "X" on variable condenser 25-A (See Parts Layout), which is the grid lead of the 6SA7GT tube, through a .1 mfd. condenser.
- (b) Connect the ground lead of the test oscillator to the chassis frame.
- (c) Connect the output meter across the voice coil of the speaker.
- (d) Set the test oscillator to exactly 455 K.C.
- (e) Turn volume control to maximum.
- (f) Adjust the trimmers "A", "B", "C" and "D" on the I-F Transformers for maximum output. (See Parts Layout). These adjustments should be repeated several times and during alignment the test oscillator output should be kept to as low a value as is consistent with obtaining a readable indication on the output meter.

2. Aligning at 1560 Kilocycles

- (a) Leave the test oscillator leads connected the same as for aligning the I-F circuits.
- (b) Turn the rotor plates of the gang condenser all the way out and against the high frequency stop "H" (See Parts Layout).
- (c) Set the test oscillator to 1560 Kilocycles.
- (d) Adjust the condenser "E" (See Parts Layout) for maximum output. (It is very important that this frequency be set accurately as a slight missetting will cause the receiver to be out of track over the entire high frequency end of the dial.)

3. Aligning the Antenna Stage

- (a) Remove the signal lead of the test oscillator from the grid of the 6SA7GT tube and connect to the Antenna Terminal of the receiver THROUGH a .000075 mfd. MICA CONDENSER connected in place of the .1 mfd. condenser previously used. (It is very important that a .000075 mfd. mica condenser be used when aligning the antenna stage of these receivers in order that this circuit can be made to track properly.)
 - (b) Set the test oscillator to 1400 K.C.
 - (c) Turn the condenser rotor plates until this frequency is tuned in with maximum output.
 - (d) Adjust the Antenna Trimmer "G" (See Parts Layout) for maximum output.

4. Aligning at 600 Kilocycles

- Peak the oscillator padding condenser at 600 K.C. in order to make the receiver track properly and to secure full sensitivity.
- (a) Set the test oscillator at 600 K.C.
 - (b) Turn the condenser rotor plates until the signal from the test oscillator is tuned in with maximum output.

- (c) Maintain a low output signal from the test oscillator and adjust the oscillator padding condenser "F" (See Parts Layout) while rocking the variable condenser gang tuning shaft back and forth through the signal. This operation should be continued until no further increase in output can be obtained.
- (d) After the above operation turn the condenser rotor plates to the high frequency stop position. Check the 1560 K.C. setting and if necessary readjust trimmer "E". Then return to 1400 K.C. for final antenna trimmer adjustment.

NOTE: If the entire alignment procedure has been accomplished correctly, the receiver should be uniformly sensitive over the entire frequency range.

In addition to manual tuning, there are four push buttons which may be adjusted to tune-in the local broadcasting stations.

It is not necessary to set the buttons in order of broadcasting stations frequency, but for convenience it is desirable.

To adjust the buttons, proceed as follows:

1. Turn on receiver for ten minutes or more.
2. Loosen the four push buttons by turning each button counter clockwise about half a turn.
3. Tune in the first desired station manually and press in the first push button as far as it will go.
4. With the button held all the way in, tighten it gently. Then release it and tighten it securely.
5. Proceed in the same manner for the remaining stations.
6. After all of the buttons have been adjusted, recheck the setting. Push each button and see if the station may be tuned-in more accurately manually. If so, loosen button and re-set it.
7. A station setting may be changed at any time by loosening the push button, tuning in the new station and resetting the button.
8. After the push buttons have been adjusted, insert the call letter tabs for the stations in their proper places above the buttons.