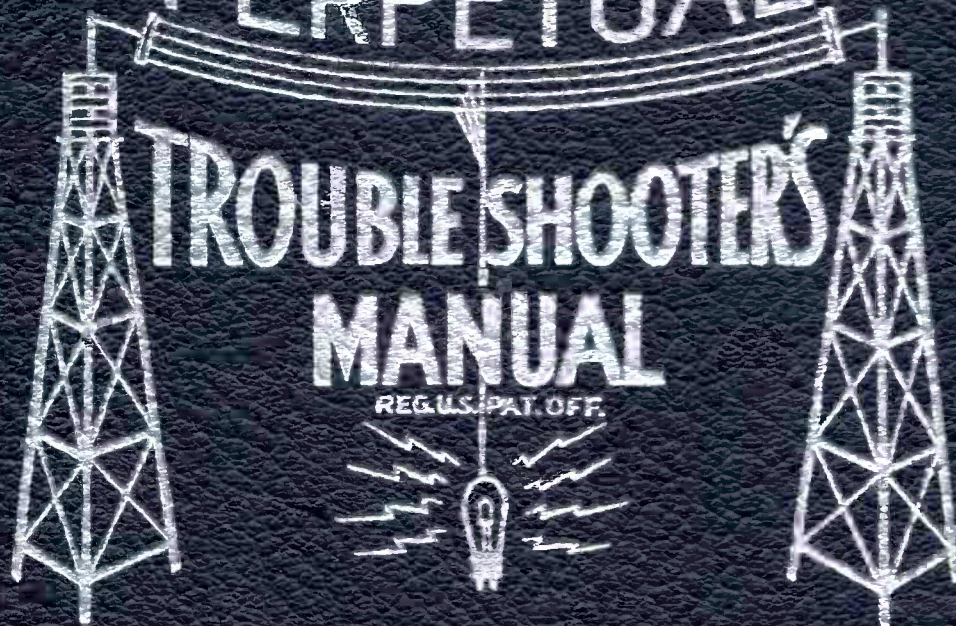


VOLUME IX

PERPETUAL



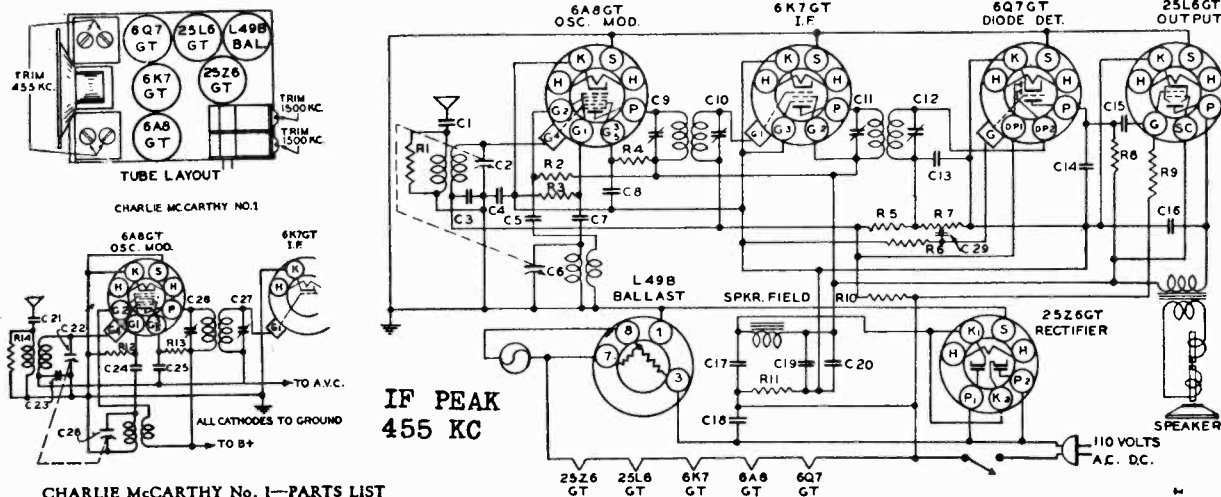
JOHN F. RIDER

Schematics, Socket, Trimmers
Parts

MAJESTIC RADIO & TELEV. CO MODEL 42
MODEL 52

MODELS Charlie McCarthy 1,2

CHARLIE MCCARTHY NO. 2

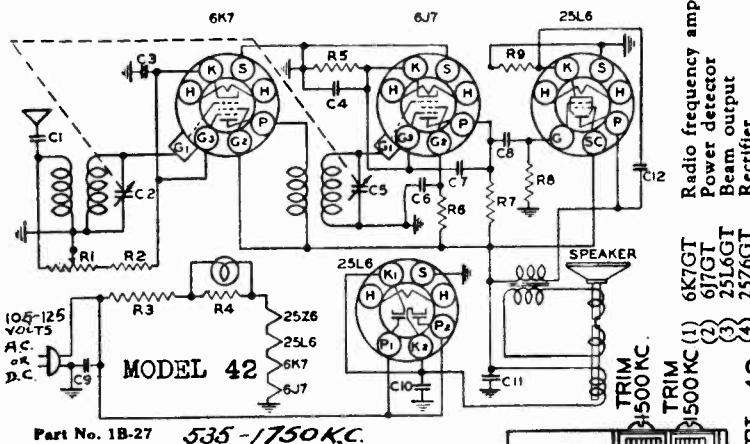
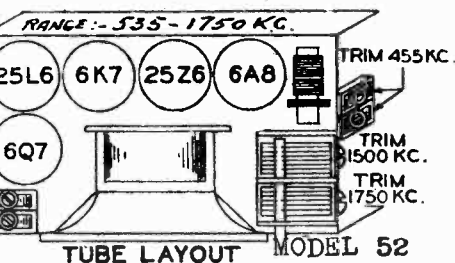


CHARLIE MCCARTHY No. 1—PARTS LIST
No. 2—PARTS LIST

Schematic Location	Part No.	Description
C15, C29	C-15754	Tubular cond. .01 mfd. 400 V
C14	C-18	Tubular cond. .01 mfd. 400 V
C23	C-15752	Tubular cond. .05 mfd. 200 V Paper
C20, C25	C-15756 C-19	Tubular cond. .05 mfd. 400 V Paper (mold case)
C16, C18	C-23	Tubular cond. .02 mfd. 600 V Paper (mold case)
C24	CM-15929	Mica cond. 30 mmf 20%
C13	CM-15928	Mica cond. 250 mmf 20%
C14	CM-15918	Mica cond. 100 mmf 20%
C17	CE-42	Electro. cond. 40 mfd. 200 V
C19	CE-1	Electro. cond. 16 mfd. 150 V
C26, 27, C9, C10	Y-CT-18	Trimmer cond. 1st I.F.
C11, 12	Y-CT-18	Trimmer cond. 2nd I.F.
C22, 28, C1, C6	Y-CV-18	Variable gang condenser
R11	R-67	Wire wound resistor 100 ohms 1W 10%
R12, R3	R-54	Carbon resistor 50K 1/4 W 20%
R13, R4	R-31	Carbon resistor 15K 1/4 W 20%
R8	R-33	Carbon resistor 300K 1/4 W 20%
R9	R-32	Carbon resistor 400K 1/4 W 20%
R5	R-55	Carbon resistor 2 meg 1/4 W 20%
R10	R-50	Carbon resistor 5 meg 1/4 W 20%
R6	R-49	Carbon resistor 15 meg 1/4 W 20%
R14, R1	R-65	Carbon resistor 10K 1/4 W 20%
R7	Y-VC-15	Volume control .5 meg.
R2	R-68	Carbon Res. 7500 Ohms 1/4 W 20%
C4	C10	Tubular cond. .25 mfd. 500 V Paper mold case
C8	C21	Tubular cond. .005 mfd. 400 V Paper mold case
C18	C24	Tubular cond. .1 mfd. 300 V Paper mold case

PARTS FOR MAJESTIC MODEL 42

Schematic Location	Part No.	Description
C2, C3	Y-CV-14	Variable gang condenser
C7, C18	C-15761	Tubular cond. .1 mfd. 200 V
C4	C-15752	Tubular cond. .05 mfd. 200 V
C9, C1	C-15754	Tubular cond. .01 mfd. 400 V
C15	C-15757	Tubular cond. .1 mfd. 400 V
C11	C-15772	Tubular cond. .02 mfd. 400 V
C14	C-15754	Tubular cond. .01 mfd. 400 V
C16	CE-32	Tubular dry elec. cond. 40 mfd.
C17	CE-33	Tubular dry elec. cond. 16 mfd.
C5, C6	Y-CT-16	Trimmer cond. 1st I.F.
C8, C10	Y-CT-17	Trimmer cond. 2nd I.F.
C9, C10, C13	CM-15928	Mica cond. 250 mmf 20%
C12	CM-15919	Mica cond. 30 mmf 20%
R1	R-54	Carbon resistor 50K 1/4 W 20%
R2	R-33	Carbon resistor 15K 1/4 W 20%
R3	R-35	Carbon resistor 2 meg 1/4 W 20%
R5	R-49	Carbon resistor 15 meg 1/4 W 20%
R6	R-50	Carbon resistor 5 meg 1/4 W 20%
R7	R-51	Carbon resistor 500K 1/4 W 20%
R8	R-32	Carbon resistor 300K 1/4 W 20%
R11	R-36	Carbon resistor 100 ohms 1/2 W 10%
R10	R-57	Wire wound flex. resistor 40 ohms
R9	LC-8	141 ohms in line cord
R4	Y-VC-15	.5 meg volume control

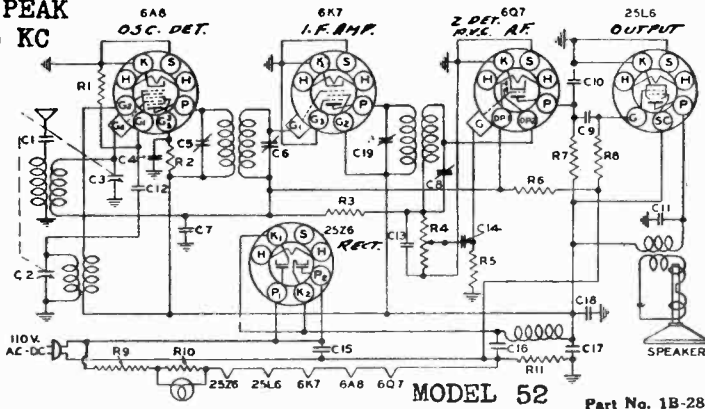


Part No. 1B-27 535-1750 KC.

PARTS FOR MAJESTIC MODEL 42

Schematic Location	Part No.	Description
C2, C3	Y-CV-15	Variable gang condenser
C1, C8, C12	C-15760	Tubular cond. .01 mfd. 400 V
C3, C6	C-15761	Tubular cond. .1 mfd. 200 V
C4	C-15751	Tubular cond. .25 mfd. 200 V
C9	C-15757	Tubular cond. .1 mfd. 400 V
C10, C11	CE-32	Tubular dry elec. cond. 16 mfd. 150 V.W.
C7	CM-15918	Mica cond. 100 mmf 20%
R1	Y-VC-16	Volume control 50,000 ohms
R2	LC-9	300 ohms in volume control
R3	LC-9	162 ohms in line cord
R4	R-57	Wire wound flex. resistor 40 ohms
R5	R-60	Carbon resistor 25K 1/4 W 20%
R6	R-58	Carbon resistor 3 meg 1/4 W 20%
R7	R-43	Carbon resistor 1 meg 1/4 W 20%
R8	R-31	Carbon resistor 500K 1/4 W 20%
R9	R-59	Carbon resistor 110 ohms 1/2 W 10%

IF PEAK
455 KC

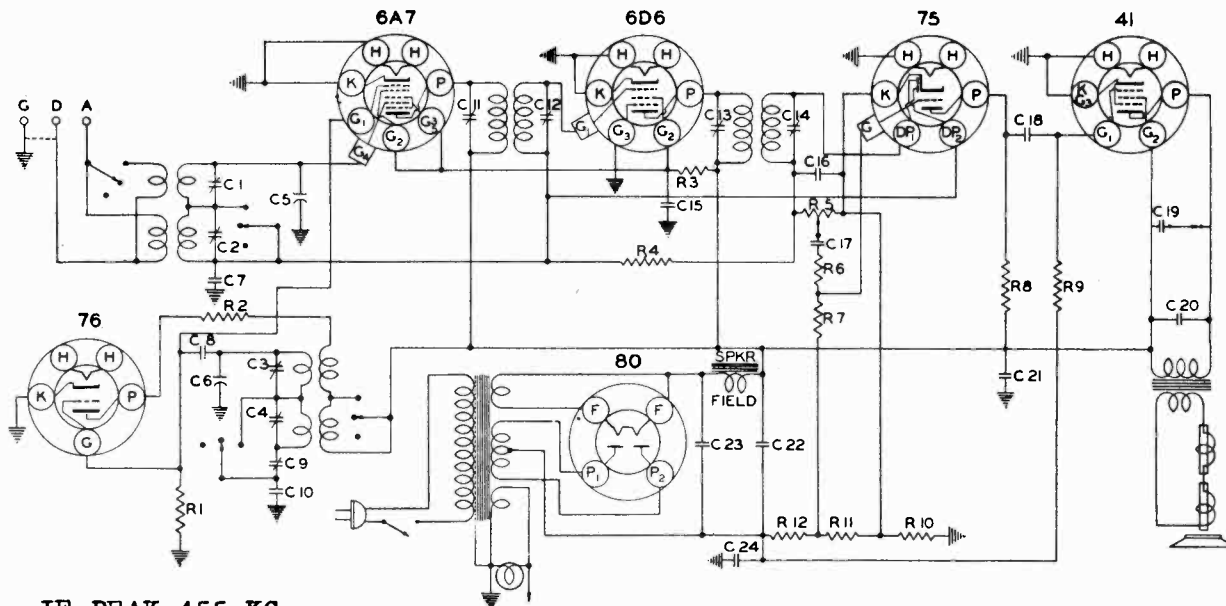


Part No. 1B-28

MODEL 62A
Schematic, Socket
Tuner, Parts

MAJESTIC RADIO & TELEV. CO.

SCHEMATIC DIAGRAM MODEL 62A



IF PEAK 455 KC

MODEL 62A

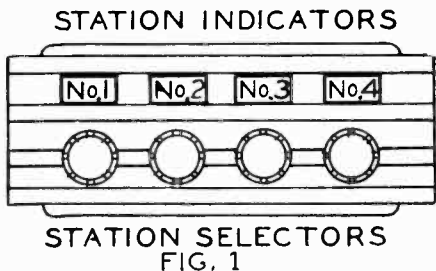
REPLACEMENTS PARTS LIST — MODEL 62A

This receiver operates on alternating current of 110 volts 60 cycles. Where only 50 cycles current is available, the receiver can be altered for that frequency at the factory. It is a 6 tube superheterodyne. Its frequency ranges are 538 to 1750 KC'S and 5.8 to 18.6 megacycles. This includes standard American broadcast, most city police, foreign and American short wave broadcast. The receiver is equipped with automatic volume control and mechanical push button tuning.

Schematic Location	Part No.	Description
R1	R-15511	50K 1/4 W 20%
R2	R-15601	100 1/4 W 20%
R3	R-49	7.5K 1/4 W 20%
R4	R-15500	2 Meg. 1/4 W 20%
R5	Y-VC-18	Volume control 1 meg
R6, R8	R-15512	250K 1/4 W 20%
R7		1 Meg.
R9	R-15520	500K 1/4 W 20%
R10	61	Ohms
R11	33	Ohms
R12	150	Ohms
C1, C2	Y-CP-2	Trimmer cond.
C3, C4	Y-CV-19	Variable gang cond.
C5, C6	C-15752	Tubular cond. .05 mfd. 200 V
C7	CM-15929	Mica cond. .50 mfd 20%
C8	CM-16472	Padder cond.
C9	CM-17	Mica cond. 4330
C10	Y-CT-1	Trimmer cond.
C11, C12	Y-CT-1	Trimmer cond.
C13, C14	Y-CT-1	Trimmer cond.
C15, C21	C-15756	Tubular cond. .05 mfd. 400 V
C16	CM-15928	Mica cond. 250 mfd 20%
C17, C18, C19	C-15734	Tubular cond. .01 mfd. 400 V
C20	C-15759	Tubular cond. .006 mfd. 400 V
C22		8.300 V
C23	CE-43	12.300 V
C24		20.25 V

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



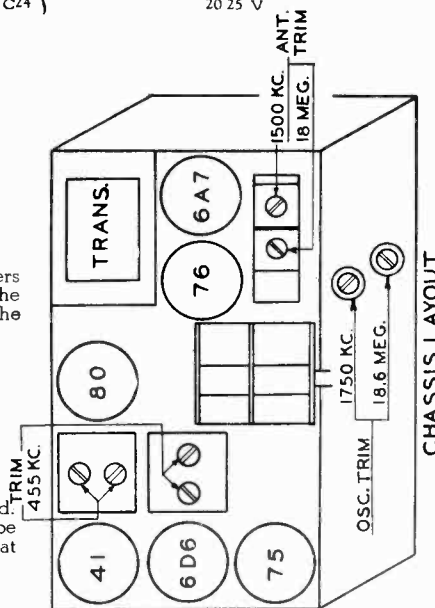
Operations For Setting Up Of Buttons

- (1) Decide which station you desire to hear on any one button.
- (2) Loosen this button by turning it to the left.
- (3) Tune in your desired station manually until it is heard with best quality.
- (4) Push in the button while holding the manual tuning knob fixed on the station.
- (5) Tighten the button by turning it to the right while the button is pushed all the way in.
- (6) Repeat this procedure to set up the other buttons.

To change any one setting at any time repeat the above procedure. After the push buttons are adjusted to your desired station, cut out the proper station call letters from the enclosed station call letter sheet, and snap them into the rectangular opening above the push button by bending them slightly between two fingers and allowing them to snap into the proper opening. These openings are shown in Fig. 1 as No. 1, No. 2, No. 3 and No. 4.

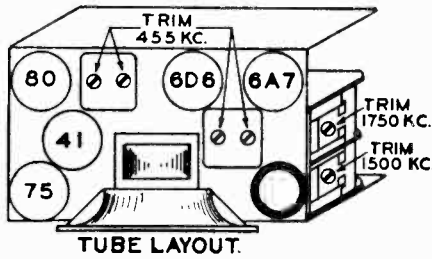
CAUTION

Push button should be used in the same position of the tone control in which they were adjusted. Thus, if the buttons were set up in the mellow tone position of the tone control, they should be used in that position. If this is not done, turning the tone control may detune the set slightly at frequencies higher than 1200 kilocycles.



MAJESTIC RADIO & TELEV. CO.

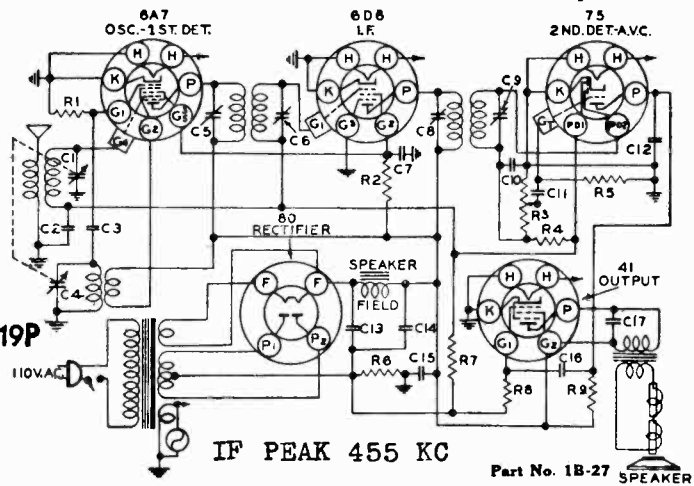
MODELS 511, 511A, 519P
 MODEL 551
 Schematics, Socket
 Trimmers, Parts



Models 511-511A-519P

PARTS FOR MAJESTIC MODEL 511

Location	Part No.	Description
C1, C4	Y-CV-17	Variable gang condenser
C2	C-15752	Tubular cond. .1 mfd. 200 V
C7, C15	C-11756	Tubular cond. .05 mfd. 400 V
C11, C16	C-15754	Tubular cond. .1 mfd. 400 V
C17	C-15769	Tubular cond. .01 mfd. 600 V
C3	OM-15929	Mica cond. 50 mmf 20%
C10	CM-15918	Mica cond. 100 mmf 20%
C12	CM-15918	Mica cond. 250 mmf 20%
C13, C14	CE-34	Tubular dry elec. cond. 8 mfd. 300 V
C5, C6	Y-CT-1	1st I.F. Trimmer cond.
C8, C9	Y-CT-1	2nd I.F. Trimmer cond.
R1	R-15511	Carbon resistor 50K 1/4 W 20%
R2	R-15544	Carbon resistor 15K 1/4 W 20%
R4	R-15500	Carbon resistor 2 meg 1/4 W 20%
R5	R-64	Carbon resistor 15 meg 1/4 W 20%
R6	R-62	Carbon resistor 300 ohms 1/2 W 10%
R7	R-63	Carbon resistor 10 meg 1/4 W 20%
R8	R-15528	Carbon resistor 400K 1/4 W 20%
R9	R-15520	Carbon resistor 500K 1/4 W 20%
R3	Y-VC-17	Vplume control 500K

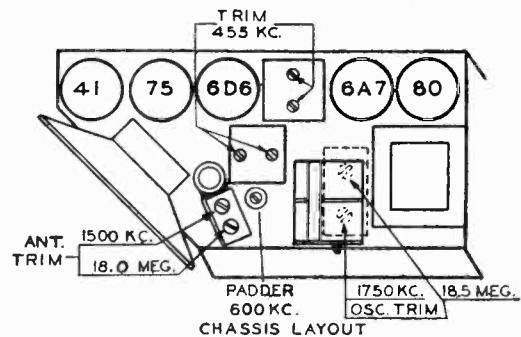
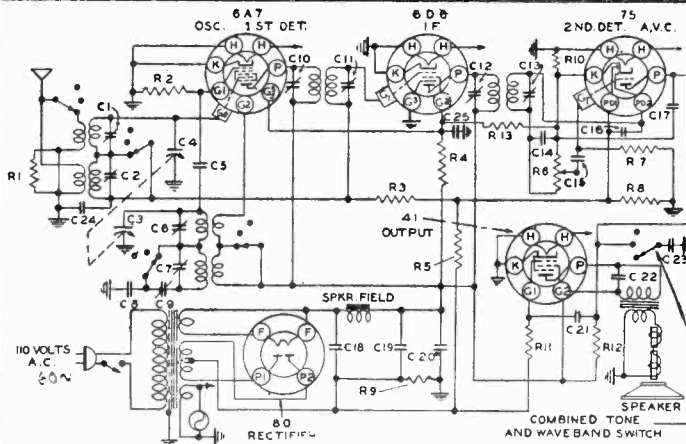


This receiver operates on alternating current of 105 to 125 Volts—60 cycles. It is also available in 50 cycles. It is a full 5 tube superheterodyne equipped with automatic volume control. Tuning range 538-1750 KC'S. This includes Standard Broadcast and City Police.

The tubes used are:

- 1—6A7 Converter tube
- 1—6D6 I. F. Amplifier
- 1— 75 Second detector, automatic volume control and audio amplifier
- 1— 41 Power output tube
- 1— 80 Rectifier

PHONOGRAPH COMBINATION: To operate on radio, throw switch on motor board to "radio" position. To operate phonograph, throw switch to "phono" position and start motor.
TO SET AUTOMATIC STOP ON PHONOGRAPH SWITCH: Place pick-up arm so that needle is in record groove near the end of the recording, then fold upright arm on switch toward pick-up arm so that further movement of pick-up toward center of record will throw switch to shut off motor.



IF PEAK 455 KC Model 551

This receiver operates on an alternating current of 60 cycles, 105 to 125 volts. Where only 50 cycles is available, it can be altered at the factory by so specifying. It is a 5 tube superheterodyne. Its frequency ranges are 538 to 1750 KC's and 5.8 to 18.6 megacycles.

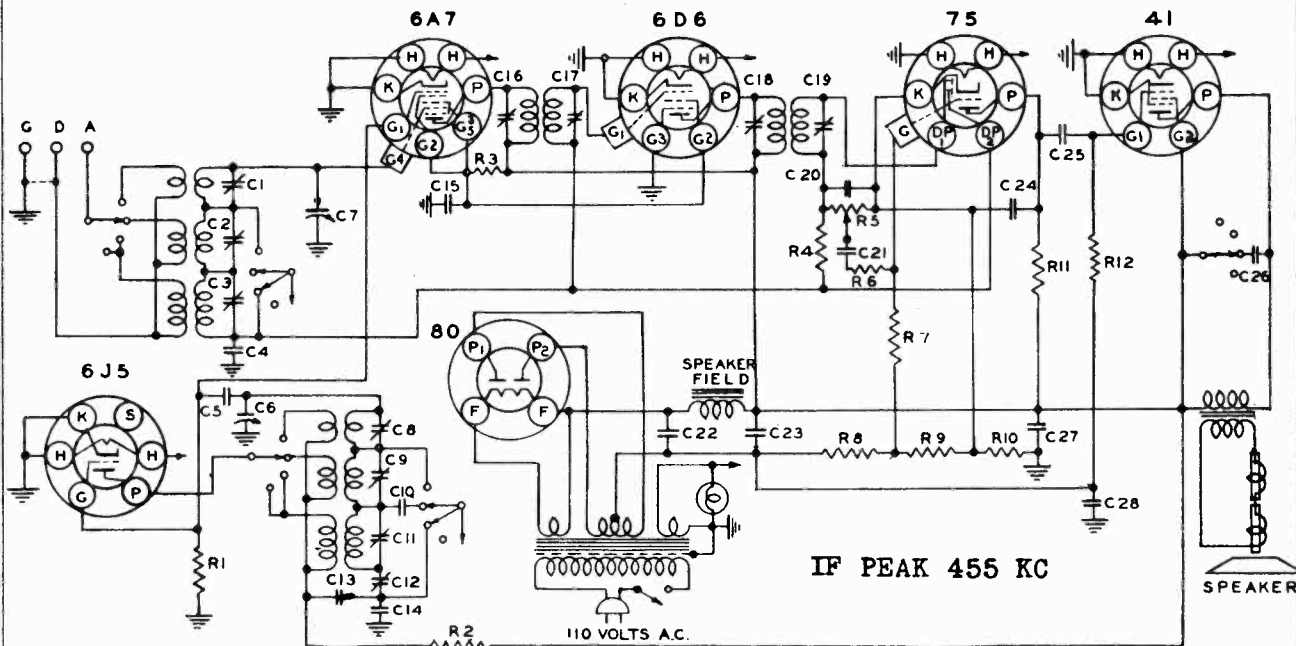
PARTS LIST — CHASSIS 1551

Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
C5, C11, C12, C13	C-15754	Tubular cond. .01 mfd. 400 V	R1	R-15531	Carbon resistor 10K 1/4 W 20%
C10, C11	C-15756	Tubular cond. .05 mfd. 400 V	R2	R-15511	Carbon resistor 50K 1/4 W 20%
C10, C11	C-15752	Tubular cond. .05 mfd. 200 V	R3, R7, R8	R-15517	Carbon resistor 1 meg 1/4 W 20%
C14	C-15774	Tubular cond. .02 mfd. 400 V	R4	R-15544	Carbon resistor 15K 1 W 20%
C5, C16	CM-15919	Mica cond. 50 mmf 20%	R5	R-15559	Carbon resistor 3 meg 1/4 W 20%
C14	CM-15918	Mica cond. 100 mmf 20%	R9	R-62	Carbon resistor 300 ohms 1/2 W 10%
C8	CM-1	Mica cond. 4350 mmf 5%	R10, R11	R-15528	Carbon resistor 400K 1/4 W 10%
C18, C19	CE-38	Tubular dry elec. cond. 8 mfd. 300 V	R12	R-15588	Carbon resistor 250K 1/4 W 20%
C1, C2	Y-CP-2	Ant Trimmer cond.	R6	Y-VC-11	Volume control 1 meg
C6, C7	Y-CP-2	Ost. Trimmer cond.			
C10, C11	Y-CT-1	Trimmer cond. 1st I.F.			
C12, C13	Y-CT-1	Trimmer cond. 2nd I.F.			
C3, C4	Y-CV-16	Variable gang condenser			
C9	Y-CP-16472	Padder cond.			

The tubes used are:

- 1-6A7 First detector and oscillator
- 1-6D6 I. F. Amplifier
- 1-75 Second detector, automatic vol cont and first audio amplifier
- 1-41 Output
- 1-80 Rectifier

SCHEMATIC DIAGRAM MODELS 639 and 639B



REPLACEMENTS PARTS LIST — MODEL 639

Schematic Location	Part No.	Description	Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
C3	CM-15929	Mica cond. 50 mmf. 20%	C13, C21	C-15754	Tubular cond. .01 mfd. 400 V	R2	R-2	Carbon resistor 5K 1/4 W 20%
C10	CM-15928	Mica cond. 250 mmf. 20%	C25, C26	C-15759	Tubular cond. .006 mfd. 400 V	R1	R-15531	Carbon resistor 50K 1/4 W 20%
C16	CM-1	Mica cond. 2550 mmf. 5%	C29	C-15759	Cond. elec. 12.8 mfd. 300 V	R3	R-69	Carbon resistor 7.5K 2 W 2%
C14	CM-17	Mica cond. 4330 mmf. 3%	C22, C23, C28	Y-CE-43	Variable gang condenser 20 mid. 25V	R6, R11	R-15512	Carbon resistor 250K 1/4 W 20%
C24	CM-15918	Mica cond. 100 mmf. 20%	C6, C7	Y-CV-19	Osc. Pad. condenser	R7	R-15517	Carbon resistor 1 meg 1/4 W 20%
C12	CP-16472	Tubular cond. .05 mfd. 200 V	C8, C9, C11	Y-CP-1	Trimmer cond. osc.	R12	R-15520	Carbon resistor 500K 1/4 W 20%
C1	C-15752	Tubular cond. .05 mfd. 400 V	C1, C2, C3	Y-CP-1	Trimmer cond. ant.	R4	R-15500	Carbon resistor 2 meg 1/4 W 20%
C15, C27	C-15756	Tubular cond. .05 mfd. 400 V	C16, C17	Y-CT-1	Trimmer cond. 1st I.F.	R8, R9, R10	RC16	Qandohm resistor
			C18, C19	Y-CT-1	Trimmer cond. 2nd I.F.	R5	Y-VC-19	Volume control

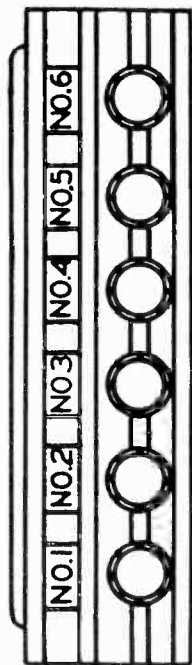
The tubes used are:

- 1-6A7 First detector
- 1-6J5 Oscillator
- 1-6D6 I. F. Amplifier
- 1-75 Second detector, automatic volume control, and first audio amplifier
- 1-41 Power Output
- 1-80 Rectifier

MODELS 639 and 639B and 739

Model 639 operates on 110 volts 60 cycles. Model 639B operates on 110 volts, 50 or 60 cycles. Both receivers are 6 tube superheterodyne; the frequency ranges are 538 to 1750 KC; 1.75 to 5.8 MC; 5.8 to 18.6 MC. This includes standard American broadcast, police and airplane, foreign and American short wave broadcasts. The receiver is equipped with automatic volume control and mechanical push button tuning and phonograph jacks.

STATION INDICATORS



STATION SELECTORS

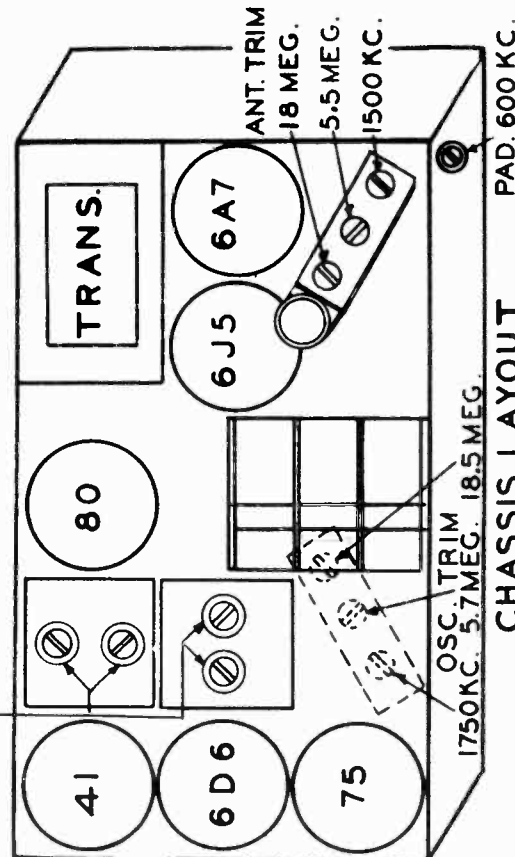
Operations For Setting Up Of Buttons

- (1) Decide which station you desire to hear on any one button.
- (2) Loosen this button by turning it to the left.
- (3) Tune in your desired station manually until it is heard with best quality.
- (4) Push in the button while holding the manual tuning knob fixed on the station.
- (5) Tighten the button by turning it to the right while the button is pushed all the way in.
- (6) Repeat this procedure to set up the other buttons.

To change any one setting at any time repeat the above procedure. To get your station, push the desired button until it has reached the end of its travel.

After the push buttons are adjusted to your desired station, cut out the proper station call letters from the enclosed station call letter sheet, and snap them into the rectangular opening above the push button by bending them slightly between two fingers and allowing them to snap into the proper opening.

TRIM
455 KC.

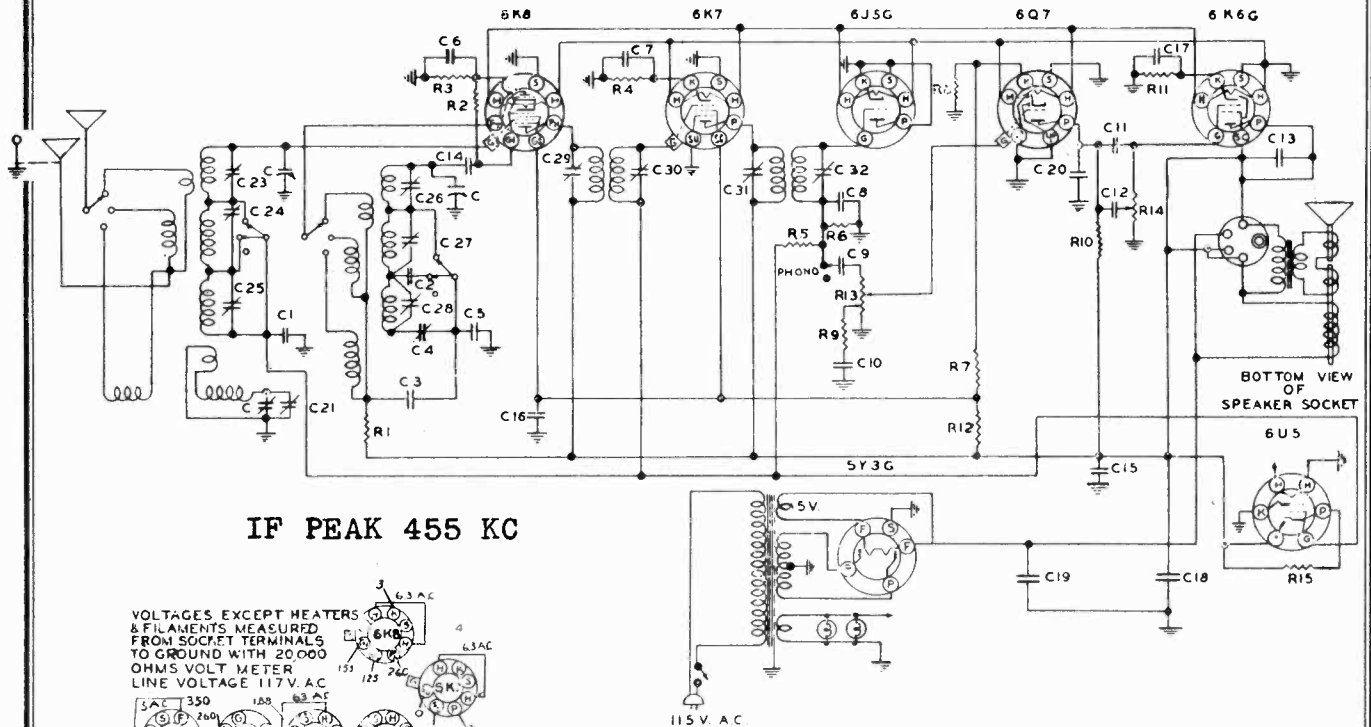


CHASSIS LAYOUT

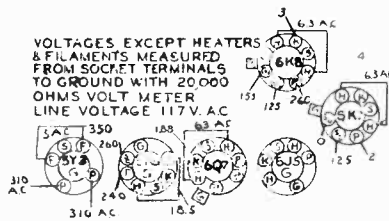
MAJESTIC RADIO & TELEV. CO.

MODEL 739
Schematic, Socket
Trimmers, Parts,
Voltage

SCHEMATIC DIAGRAM MODEL 739



IF PEAK 455 KC

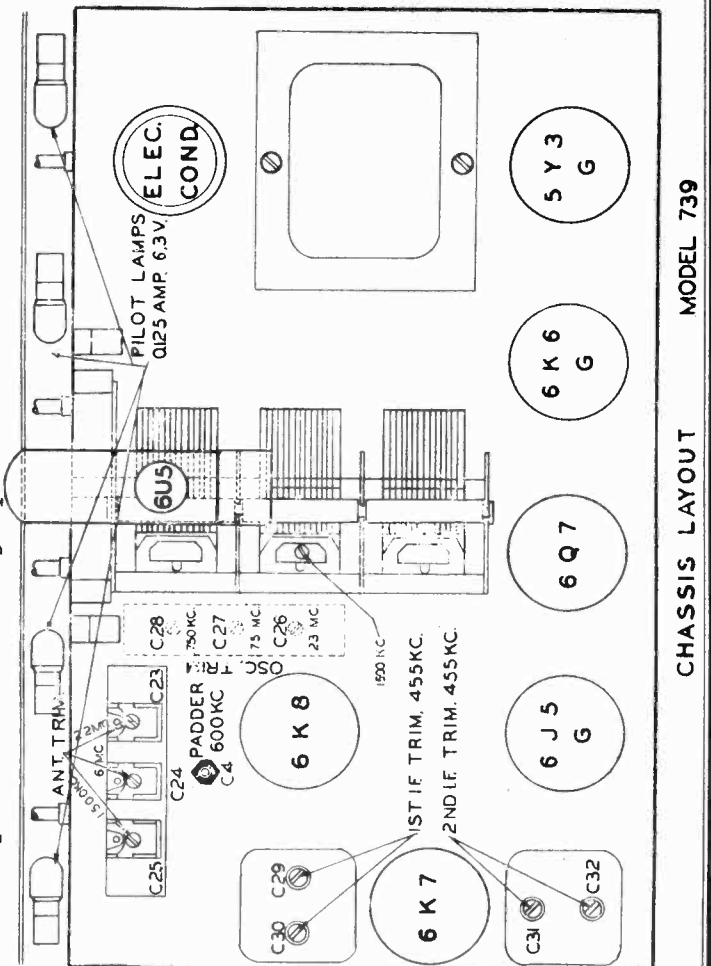


REPLACEMENTS PARTS LIST — MODEL 739

Schematic Location	Part No.	Description
C2	CM-1	Mica cond. 2550 mmf. 5%
C3	Y-CV-20	Variable gang condenser
C4	Y-CP-16472	Osc. Padder condenser
C17, C18, C19	CE-7	Electrolytic cond.
C21	Y-CP-16424	Trimmer cond.
C23, C24, C25	Y-CP-1	Trimmer cond. ant.
C26, C27, C28	Y-CP-1	Trimmer cond. osc.
C29, C30	Y-CT-2	Trimmer cond. 1st I.F.
C31, C32	Y-CT-2	Trimmer cond. 2nd I.F.
R12	R-14	Carbon resistor 10K 2W 20%
R3	R-15589	Carbon res. 220ohms 1/4 W 10%
R4	R-15537	Carbon res. 400ohms 1/4 W 10%
C3, C10	C-15754	Tubular cond. .01 mfd. 400 V
C1, C7	C-15761	Tubular cond. .1 mfd. 200 V
C6	C-15752	Tubular cond. .05 mfd. 200 V
C9, C11	C-15760	Tubular cond. .02 mfd. 400 V
C12	C-15759	Tubular cond. .006 mfd. 600 V
C13	C-15753	Tubular cond. .002 mfd. 600V
C15	C-15750	Tubular cond. .25 mfd 400V
C16	C-15756	Tubular cond. .05 mfd 400V
C20	CM-15928	Mica cond. 250 mmf. 20%
C14	CM-15918	Mica cond. 100 mmf. 20%
5	CM-15929	Mica cond. 50 mmf. 20%
	CM-2	Mica cond. 4330 mmf. 5%
R2, R9	R-15511	Carbon resistor 50K 1/4 W 20%
R5	R-15517	Carbon resistor 1 meg 1/4 W 20%
R6	R-15520	Carbon resistor 500K 1/4 W 20%
R8	R-15551	Carbon res 250ohms 1/4 W 10%
R10	R-15504	Carbon resistor 150K 1/4 W 20%
R11	R-37	Carbon res. 600ohms 1/2 W 20%
R7	R-15524	Carbon resistor 25K 1/4 W 20%
R12	R-15586	Carbon resistor 15K 1W 10%
R15		1 meg resistor in 6U5 socket
R13	Y-VC-6	Volume control
R14	Y-TC-1	Tone control

This receiver operates on alternating currents of 105 to 125 volt, 50-60 cycle. Its frequency range is 538 to 1750 KC; 2.1 to 7 1/2 MEG; 7 MEG to 23 MEG.

FOR Operations For Setting Up Of Buttons - SEE MODEL 639



MODEL 739

MODEL 939

Alignment

Phono. Data

MAJESTIC RADIO & TELEV. CO.

ALIGNMENT PROCEDURE MODEL 939

Correct alignment is extremely important. The receiver is properly aligned at the factory and should not be disturbed unless it is absolutely necessary. The procedure is as follows: Turn wave change switch to broadcast position (full counter clockwise) and rotate variable condenser until it is about 50% engaged. Apply a 455KC signal to the grid of 6K8 mixer tube through a tubular condenser on the order of .1MFD. Referring to chassis layout, adjust trimmers "Trim 455 KC" for maximum signal using of course, some sort of indicating device such as an AC volt meter or output meter across the voice coil of the speaker. It may be necessary to apply a very strong signal to "find" the signal until alignment is approached. It is advisable to maintain as low a signal input as conveniently possible in order to minimize the possibility of misalignment resulting from A.V.C. and overload effects. If a squeal is heard while tuning, rotate the gang condenser slightly and it should disappear. Naturally, the ground side of the generator should be connected to the chassis either directly or through a .1MFD condenser.

SHORT WAVE BAND

Rotate the wave band switch to full clockwise position. Connect high side of generator output to antenna lead through a 400 ohm dummy antenna. Apply 23 M.C. signal. Unscrew trimmer C33 to a minimum capacity, slowly turn the screw so that the trimmer capacity increases until the signal is heard. Apply 22 M.C. signal, and adjust C24 and C21 for maximum response. It may be found advisable to "rock" generator frequency back and forth through signal to offset detuning effect from inter action input and oscillator circuits at high frequencies. Check alignment through medium of sensitivity at 11 meg. and 9 meg. respectively. When aligning at 22 meg., it is well to point out here that the trimmer C33 may indicate two maxima. The maxima obtained with the trimmer tighter is the desired one. This can be checked by leaving the gang condenser set and shifting the generator to a higher frequency viz.: 23 megacycles, where the image should appear. If it is properly aligned, it should require about 10 times the signal voltage for the image to give the same output as the real signal.

POLICE BAND

Shift wave band switch to middle position. Apply 7.3 M.C. signal. Set dial points to 7.3 M.C. Adjust trimmer C32 in the same manner as previous band until maximum signal is heard. Apply 6 Meg. Signal, and adjust trimmers C25 and C22 until response is maximum. Check for image in same manner as previous band. Check alignment at 4.5 and 3 megacycles respectively.

BROADCAST BAND

Use a 200 MMF mica condenser for dummy antenna on this band. Shift wave change switch to full counter clockwise position. Adjust trimmer C26 and C23 to medium tight position. Rotate gang until dial pointer indicates 600KC. Apply 600KC signal and adjust paddder C14 for maximum signal. Set dial to 1500 KC and apply 1500 KC signal; adjust C31 for same. Then adjust trimmers C23 and C26 for maximum response. Shift gang to 600 KC and apply 600 KC signal. "Rock" gang condenser and adjust C14 for maximum signal. Recheck 1500 KC signal.

PHONOGRAPH

To use the phonograph connection, insert the tips of a phonograph pick-up into the phonograph jacks in the back of the chassis. Throw the phono-radio switch to phono. This switch is located near the phono jacks. If the receiver hums, reverse the two phono tips. To use the radio, throw the switch to the radio position.

ALIGNMENT PROCEDURE MODEL 739

Correct alignment is extremely important. The receiver is properly aligned at the factory and should not be disturbed unless it is absolutely necessary. The procedure is as follows: Turn wave change switch to broadcast position (full counter clockwise) and rotate variable condenser until it is about 50% engaged. Apply a 455 KC signal to the grid of 6K8 mixer tube through a tubular condenser on the order of .1MFD. Referring to chassis layout, adjust C30, C29, C31, and C32 for maximum signal using of course, some sort of indicating device such as an AC volt meter or output meter across the voice coil of the speaker. It may be necessary to apply a very strong signal to "find" the signal until alignment is approached. It is advisable to maintain as low a signal input as conveniently possible in order to minimize the possibility of misalignment resulting from A.V.C. and overload effects. If a squeal is heard while tuning, rotate the gang condenser slightly and it should disappear. Naturally, the ground side of the generator should be connected to the chassis either directly or through the .1MFD condenser.

SHORT WAVE BAND

Rotate the wave band switch to full clockwise position. Connect high side of generator output to antenna lead through a 400 ohm dummy antenna. Completely disengage variable condensers. Apply 23 MEG. signal. Unscrew trimmer C26 to a minimum capacity, slowly turn the screw so that the trimmer capacity increases until the signal is heard. Apply 22 MEG. signal, rotate gang condenser until this signal is heard. Adjust C23 for maximum response. It may be found advisable to "rock" generator frequency back and forth through signal to offset detuning effect from inter action input and oscillator circuits at high frequencies. Check alignment through medium of sensitivity at 11 meg. and 9 meg. respectively. When aligning at 22 meg., it is well to point out here that the trimmer C23 may indicate two maxima. The maxima obtained with the trimmer tighter is the desired one. This can be checked by leaving the gang condenser set and shifting the generator to a higher frequency viz.: 23 megacycles, where the image should appear. If it is properly aligned, it should require about 10 times the signal voltage for the image to give the same output as the real signal.

POLICE BAND

Shift wave band switch to middle position. Apply 7.3 meg. signal. Disengage variable condenser completely. Adjust trimmer C27 in the same manner as previous band until maximum signal is heard. Apply 6 Meg. Signal, rotate gang condenser until same is heard. Adjust trimmer C24 until response is maximum. Check for image in same manner as previous band. Check alignment at 4.5 and 3 megacycles respectively.

BROADCAST BAND

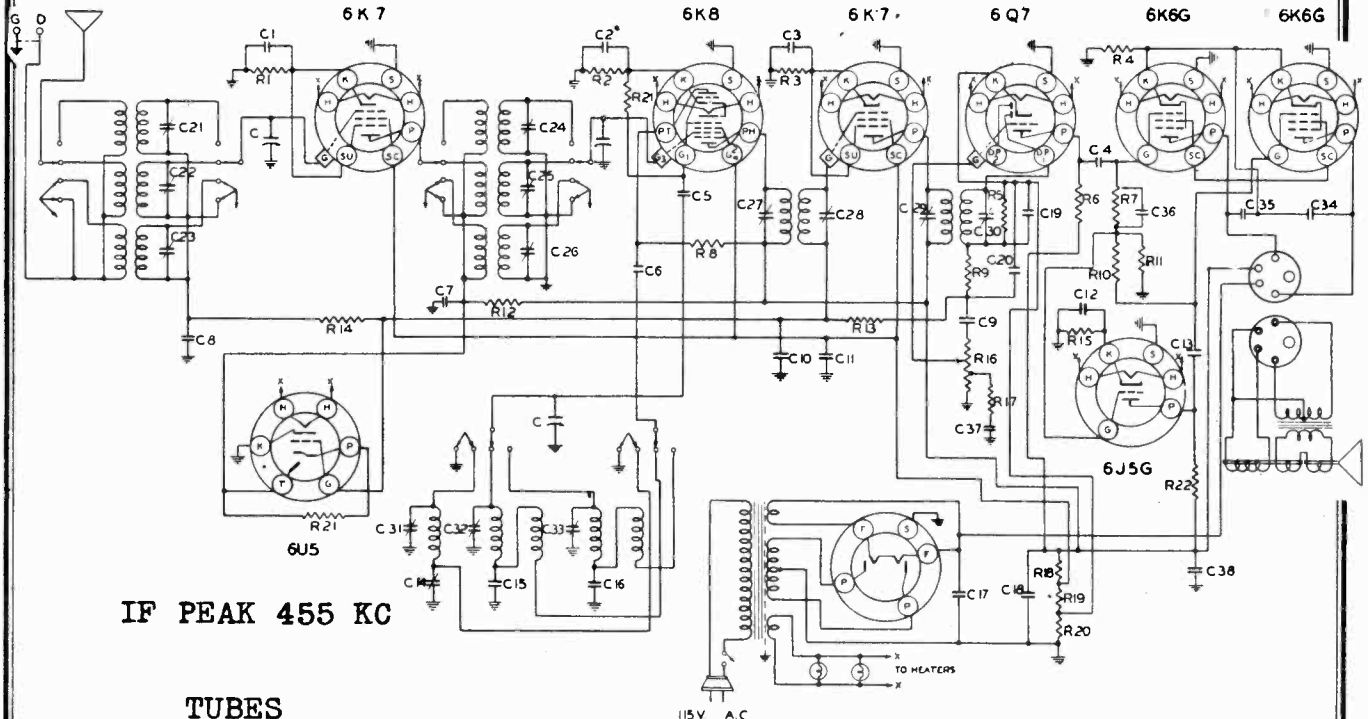
Use a 200 MMF mica condenser for dummy antenna on this band. Shift wave change switch to full counter clockwise position. Adjust trimmer C21 and C25 to medium tight position. Rotate gang until dial pointer indicates 600 KC. Apply 600 KC signal and adjust paddder C4 for maximum signal. Disengage gang completely and apply 1750 KC signal; adjust C28 for same. Apply 1500 KC signal and rotate gang until this frequency is found. Adjust trimmers C21 and C25 for maximum response. Shift gang to 600 KC and apply 600 KC signal. "Rock" gang condenser and adjust C4 for maximum signal. Disengage gang and apply 1750 KC signal; if necessary adjust C28 to bring same in.

PHONOGRAPH

To use the phonograph connection, insert the tips of a phonograph pick-up into the phonograph jacks in the back of the chassis. Throw the phono-radio switch to phono. This switch is located near the phono jacks. If the receiver hums, reverse the two phono tips. To use the radio, throw the switch to the radio position.

MAJESTIC RADIO & TELEV. CO. MODEL 939 Schematic, Socket Trimmers, Parts, Tuner

SCHEMATIC DIAGRAM MODEL 939



IF PEAK 455 KC

TUBES

- 6K7 R. F. AMP.
- 6K8 OSC. MOD.
- 6K7 I. F. AMP.
- 6J5G PHASE INVERTER.
- 6Q7 A.F. AMP., DIODE DET., and A.V.C.
- 2-6K6G OUTPUT.
- 5Y3G RECTIFIER.
- 6U5 ELECTRIC EYE.

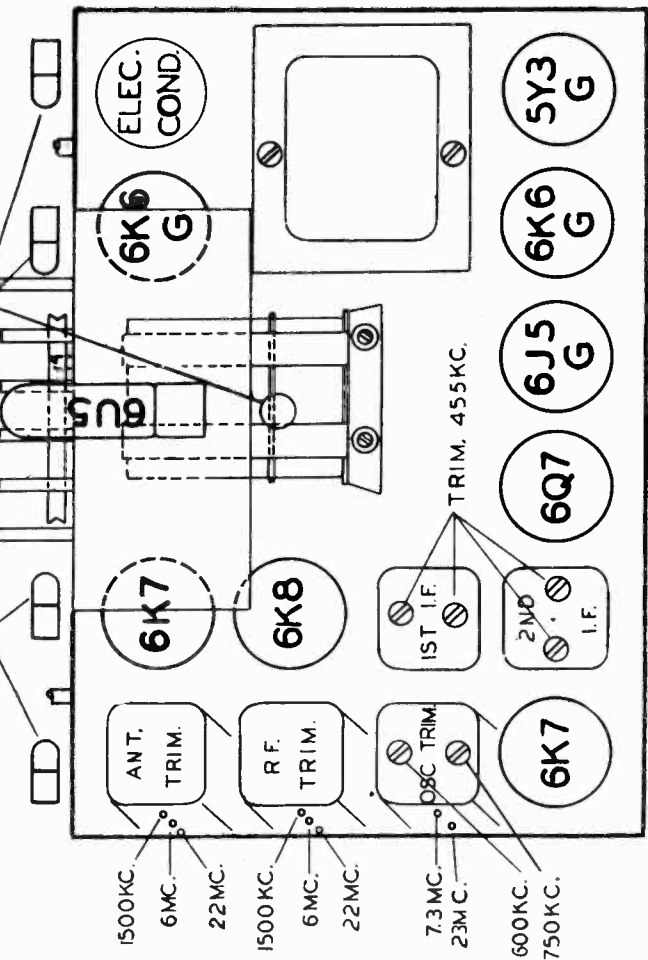
PARTS LIST — MODEL 939

Schematic Location	Part No.	Description
R20	R-15508	150 ohms 10% 1/4 W
R4	R-15584	250 ohms 10% 1 W
R1	R-15542	1 K ohms 20% 1/4 W
R3	R-15564	1.5K ohms 20% 1/4 W
R12	R-2	5 K ohms 20% 1/4 W
R18	R-70	7.5K ohms 10% 3 W
R19	R-15562	10K ohms 20% 1 W
R15	R-15531	10K ohms 20% 1/4 W
R8	R-15501	25K ohms 20% 1 W
R17, R21	R-15511	50K ohms 20% 1/4 W
R9, R14	R-15515	100K ohms 20% 1/4 W
R6, R11, R22	R-15512	250K ohms 20% 1/4 W
R10	R-15549	300K ohms 20% 1/4 W
R5	R-15520	500K ohms 20% 1/4 W
R13	R-15517	1 Meg ohms 20% 1/4 W
R2	R-15581	450 ohms 10% 1/4 W
C34, C35	C-15759	.006 mfd. 600V
C37, C4, C13	C-15754	.01 mfd. 400V
C9, C36	C-15761	.1 mfd. 200V
C8, C10, C1	C-15757	.01 mfd. 400V
C6, C3, C11	C-15750	25 mfd. 400V
C7	CM-15918	100 mmfd.
C38	CM-15929	50 mmfd.
C19, C20	CM-9	5500 mmfd.
C16	CM-18	2150 mmfd.
C15		

This receiver operates on alternating currents of 105 to 125 volts, 50-60 cycle. Its frequency range is 538 to 1750 KC; 2.1 to 7.3 MEG; 7 MEG to 23 MEG.

FOR Operations For Setting Up Of Buttons SEE MODEL 639

PILOT LAMPS 015 AMP 6.3 V



CHASSIS LAYOUT

MODELS 11056, 11058

MODEL 11356

MODEL 11656

Tune Data

MAJESTIC RADIO & TELEV. CO.

AUTOMATIC ELECTRIC TUNING—MODELS 11056,
11058, 11356, 11656

Push buttons are for use on broadcast reception. The broadcast dial scale reads, from left to right, 1750 to 550 kilocycles. The automatic buttons are similarly disposed in sequence from left to right so that any particular button may be set to a desired station within its range. Two buttons may even be set to the same station if desired. This permits setting to different programs which are very close together on the dial scale. Do not press two buttons in at one time. If this is done by mistake, move manual lever to manual tuning as shown by dial light. This releases both buttons.

Pre-setting For Desired Stations

Determine which broadcasting stations you favor for automatic tuning and set the buttons to the programs coming from the ones you regularly listen to. To do this, first turn set on and tune in one program manually, to desired volume. In tuning, observe "electric eye" which shows its narrowest shadow when receiver is correctly tuned. Program should be listened to several minutes after first turning set on in order that the tubes may warm up fully before the automatic buttons are pre-set. For the first push-button at left, begin with a desired station near left of scale, in range 1750 to 1400 kilocycles.

At the rear of cabinet there is a selector disc which has two rings, each carrying contactors corresponding to the push-buttons. Remove protective cover to expose this disc with its rings to view when pre-settings are made. The selector disc comprises two sectors separated by a visible and narrow insulated gap. When the lower gap registers with a particular contactor carried by either of the two rings the push-button connected to that contactor controls the given station setting. Use the contactor which is nearest to the insulated lower gap on disc. Loosen its support screw just enough so that this contactor can slide on its ring support and move the contactor so that its ball point rests on this gap. Then tighten support screw so that this adjustment will be fixed for repeated use. To test accuracy of pre-setting move the front lever to "electric" tuning position as shown by dial light indicator. Press in the first button at left, the one now pre-set. If correct, the selected program will be heard. If not, repeat pre-setting operation just discussed, moving the correct contactor to position at the lower disc gap. Once set, do not move this contactor.

For indexing other stations proceed similarly with the next push button and its corresponding control contactor, and so on, until all desired buttons are pre-set to the particular stations wanted. To change selection at some later time, repeat the procedure for a particular button, but leave the pre-set buttons held securely by support screws before replacing protective cover over rear disc. Exact pre-settings may be had by carefully moving the contactor connected to each push button and slightly shifting its position if required to register with lower disc gap for the desired station. Settings may be made as desired, and if you wish all or more programs in one range, ask for special instructions. It is recommended that the service man who installs your radio set up the stations you want on your push buttons. Mark each push button with proper call letter tab furnished as directed at top of tab sheet. Once pre-set, you may leave lever in electric tuning position for all broadcast tuning, either manually or automatically.

NOTE: For receivers equipped with automatic frequency control. Most exact pre-settings may be made when lever is in manual position without this control. Do not pre-set to a weak station very close on dial scale to a powerful station, as the control will pull in the strong station when too close. Use your manual control for weak distant stations commonly subject to fading in and fading out of volume, as well for short wave reception. Another convenient way to pre-set stations is to first tune manually to a sequence of desired programs and then (for each station) just move the nearest contactor over to fit on the control disc gap. The stations will repeat as pre-set, so place the proper index letters on each button position.

RANGE—MODELS 11056, 11058 POWER SUPPLY—MODELS 11056, 11058, 11356, 11656

A-Band—538-1860 KC

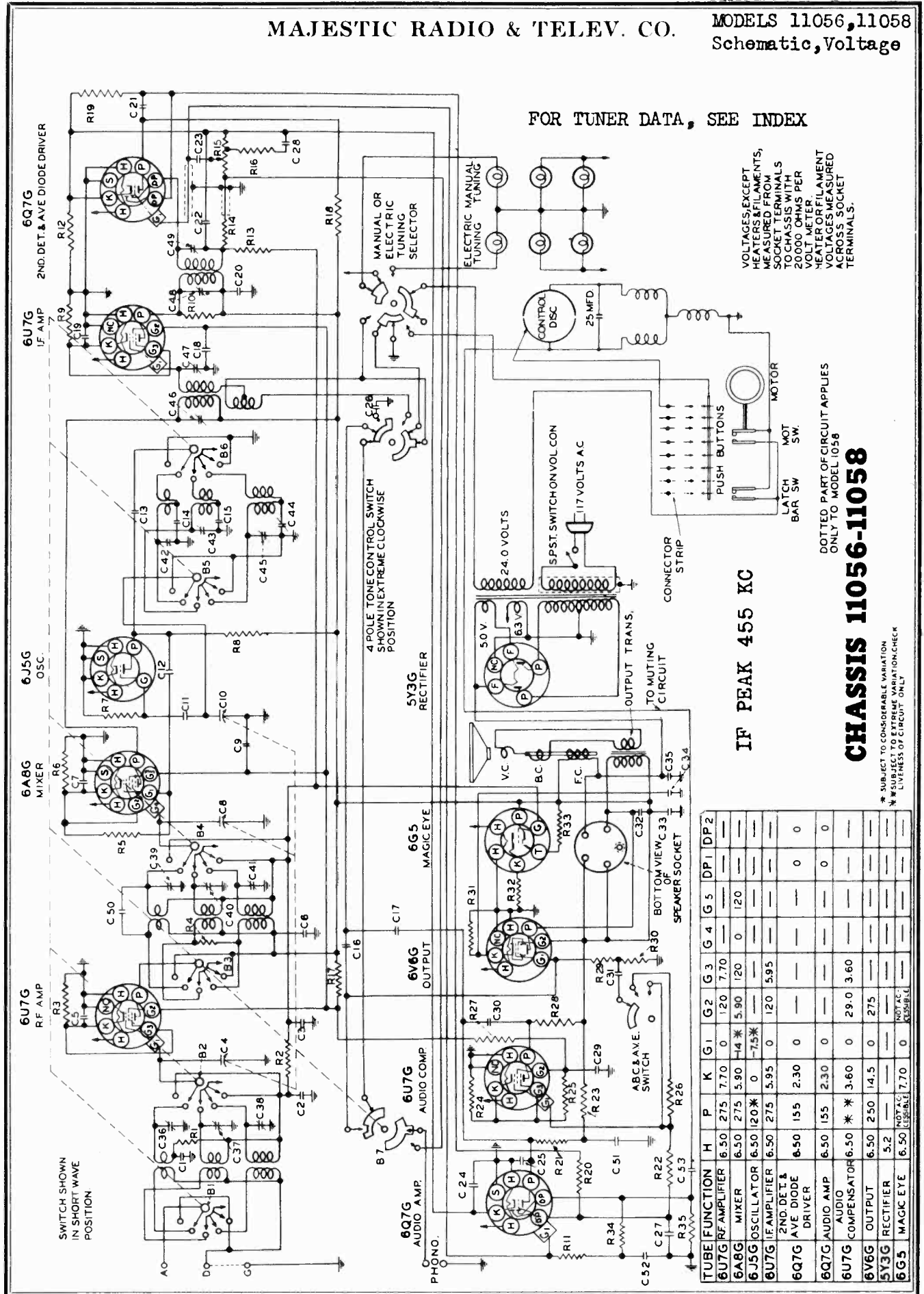
B-Band—1770 KC to 6.0 M. C.

C-Band—5.8 M.C.-18.5 M.C.

This receiver is designed for use on power supplies whose frequencies range from 50-60 cycles and whose voltages range from 105-130 volts AC. It should not be operated from a power line higher than 130 volts AC.

MAJESTIC RADIO & TELEV. CO.

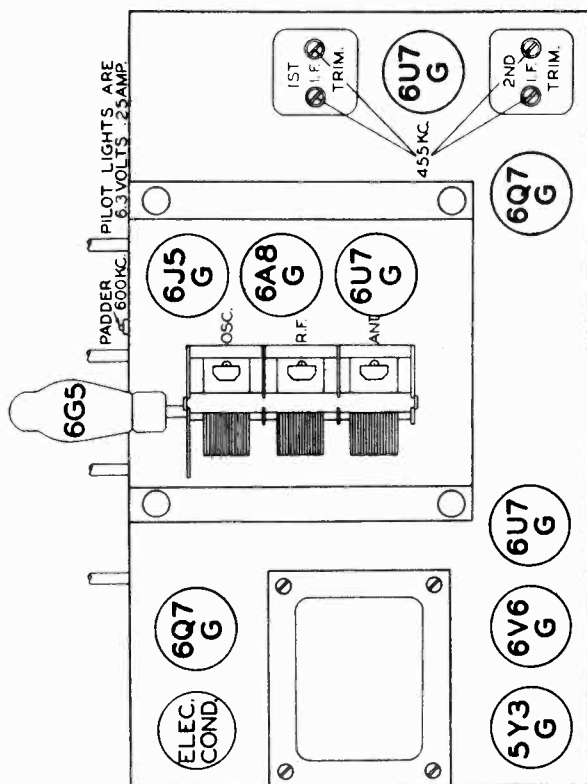
MODELS 11056, 11058
Schematic, Voltage



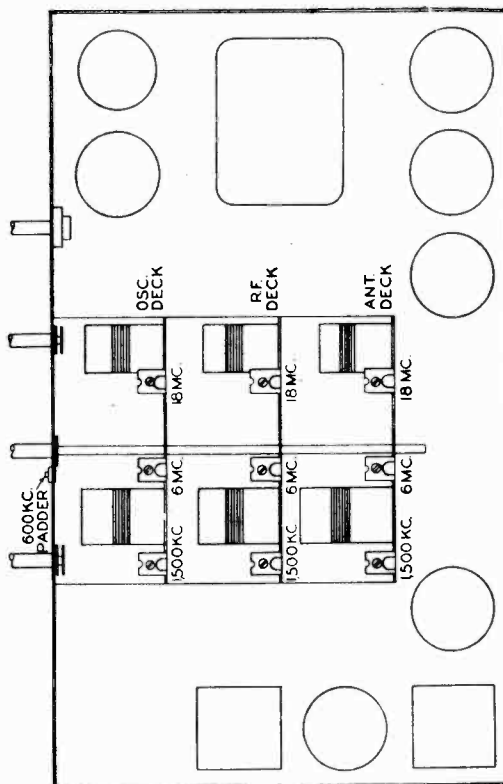
MODEL 11056, 11058

Socket, Trimmers
Parts, Alignment

MAJESTIC RADIO & TELEV. CO.



CHASSIS LAYOUT (TOP VIEW)
MODELS 11056, 11058



CHASSIS LAYOUT (BOTTOM VIEW)
MODELS 11056, 11058

REPLACEMENT PARTS LIST Chassis Nos. 11056, 11058

Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
C4, C8, C10	Y-CV-7	Con. 3 Gang Variable	R31	R-15584	Resistor Carbon 250 Ohms 1 W. 10%
C1, C13, C6	C-5	Cond. Tub. .01 MFD. 400 V.	R9	R-15519	Resistor Carbon 700 Ohms 1/4 W. 10%
C2, C3, C5, C7, C9	C-6	Cond. Tub. .05 MFD. 200 V.	R16	R-15557	Resis. Car. 20 M. 1/4 W. 10%
C19, C29, C52	C-15761	Cond. Tub. .1 MFD. 200 V.	R12	R-40	Resistor Carbon 4000 Ohms 1/4 W. 10%
C18	C-15757	Cond. Tub. .1 MFD. 400 V.	R34, R35	R-15520	Resistor Carbon .5 Meg. 20%
C21, C23, C31	C-15754	Cond. Tub. .01 MFD. 400 V.	R33		1 Meg. Internal Connection in Magic Eye Socket
C26, C30, C32	C-15759	Cond. Tub. .006 MFD. 600 V.	R1, B2, B3, B4}	Y-B-6	Band Switch
C51, C20	C-15750	Cond. Tub. .25 MFD. 400 V.	B5, B6, B7 }		
C-27	C-15751		Y-TP-10	Power Transformer	
C28	C-15772	Cond. Tub. .02 MFD. 200 V.	Y-CI-6	1st I. F. Coil Assembly	
C53	C-15752	Cond. Tub. .05 MFD. 200 V.	Y-CI-5	2nd I. F. Coil Assembly	
C17	C-15756	Cond. Tub. .05 MFD. 400 V.	AM-70	Ant. Bank Assembly	
C12	CM-7	Cond. Mica 250 MMF. 5%	AM-71	R. F. Bank Assembly	
C11	CM-15919	Cond. Mica 50 MMF. 10%	AM-72	Osc. Bank Assembly	
C14	CM-5	Cond. Mica 2830 MMF. 5%	P15089	Pilot Light Mazda No. 44	
C15	CM-6	Cond. Mica 1350 MMF. 5%	ES-4	Escutcheon	
C16	CM-15939	Cond. Mica 1000 MMF. 20%			
C22, C25	CM-15906	Cond. Mica 100 MMF. 10%			
C50	CM-10	Cond. Mica 10 MMF. 5%			
C24	CE-25	Con. Dry Elec. 10 MFD. 25 V.			
C33, C34, C35	Y-CE-10	Cond. Tub. .10 MFD. 25 V.			
C44	Y-CT-4	Dry Elec. .16 MFD. 400 V.			
C36, C37, C38		Cond. Padder 440 MMF.			
C39, C40, C41	Y-CT-3				
C42, C43, C45		Cond. Trimmer 3-30 MMF.			
C46, C47	Y-CT-2				
C48, C49	Y-CT-2	Cond. 1st I. F. Trimmers			
R15	Y-CV-5	Cond. 2nd I. F. Trimmers			
R4	R-15530	Vol. Control 500,000 Ohms			
R27	R-15513	Resistor Carbon 2500 Ohms 1/4 W. 10			
R6	R-15571	Resis. Car. 20 M. 1/4 W. 20%			
R3	R-15543	Resistor Carbon 500 Ohms 1/4 W. 10%			
R11, R13, R19, R26	R-15517	Resistor Carbon 1000 Ohms 1/4 W. 10			
R17	R-26	Resis. Car. 1 MEG. 1/4 W. 10%			
R18, R28, R29	R-15528	Resis. Car. 10 M. 3 W. 10%			
R5, R7, R14	R-15511	Resis. Car. 400 M. 1/4 W. 20%			
R20	R-15500	Resis. Car. 50 M. 1/4 W. 20%			
R21, R10, R22	R-15549	Resis. Car. 2 MEG. 1/4 W. 10%			
R32	R-16	Resis. Car. 300 M. 1/4 W. 20%			
R25	R-15576	Resistor Carbon 8000 Ohms 1/4 W. 20%			
R24	R-15533	Resistor Carbon 5000 Ohms 1/4 W. 10%			
R8	R-15501	Resistor Carbon 600 Ohms 1/4 W. 10%			
R1, R2, R23, R30	R-15515	Resistor Carbon 25 M. 1 W. 20%			
		Resis. Car. 100 M. 1/4 W. 20%			

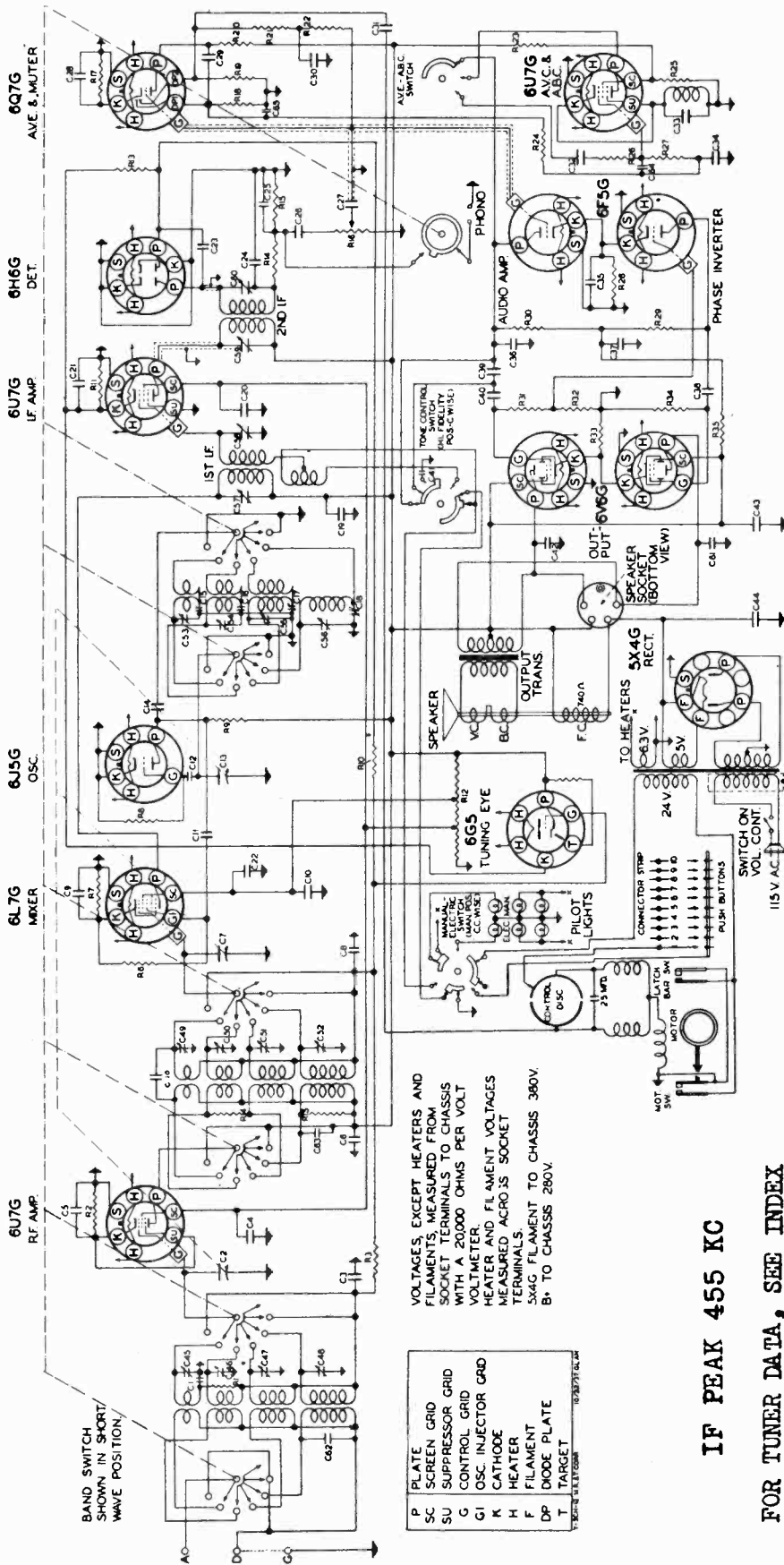
The following tube types are employed:

TUBE	PURPOSE
6U7G	Radio Frequency Amplifier
6A8G	Modulator
6J5G	Oscillator
6U7G	Intermediate Frequency Amplifier
6Q7G	Diode Detector and A.V.E. Diode Driver
6U7G	Audio Compensator
6V6G	Power Output
6G5	Tuning Eye
6Q7G	Audio Amplifier
5Y3G	Rectifier

MODEL 11356
Schematic, Voltage

MAJESTIC RADIO & TELEV. CO.

SCHEMATIC WIRING DIAGRAM - CHASSIS 11356



BAND SWITCH SHOWN IN SHORT/WAVE POSITION.

VOLTAGES, EXCEPT HEATERS AND FILAMENTS, MEASURED FROM SOCKET TERMINALS TO CHASSIS WITH A 20000 OHMS PER VOLT VOLTMETER.
HEATER AND FILAMENT VOLTAGES MEASURED ACROSS SOCKET TERMINALS.
5X4G FILAMENT TO CHASSIS 380V.
B1 TO CHASSIS 280V.

- P PLATE
- SC SCREEN GRID
- SU SUPPRESSOR GRID
- G CONTROL GRID
- GI OSC INJECTOR GRID
- K CATHODE
- H HEATER
- F FILAMENT
- DF DIODE PLATE
- T TARGET

IF PEAK 455 KC

FOR TUNER DATA, SEE INDEX

TUBE	FUNCTION	VOLTAGE TABLE				
		P	SC	SU	K	H OR F
6U7G	RF AMPLIFIER	280	100	6	6.3	DF2
6L7G	MIXER	280	150	0	6.3	
6J5G	OSCILLATOR	125	100	0	6.3	
6U7G	IF AMPLIFIER	280	100	0	6.3	
6H6G	DETECTOR	135	100	0	6.3	
6Q7G	AVE & MUTER	175	175	0	6.3	
6U7G	AVE & ABC	175	175	0	6.3	
6F5G	AUDIO AMPLIFIER	200	280	0	6.3	
6F5G	PHASE INVERTER	200	280	0	6.3	
6V6G	OUTPUT (2)	265	280	0	6.3	
6S50	TUNING EYE	280	280	0	6.3	
5X4G	RECTIFIER	330	280	0	4.8	

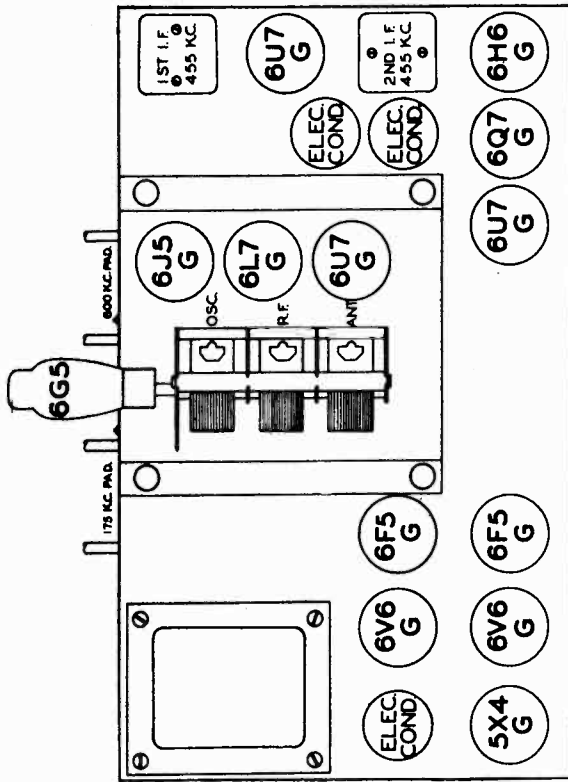
TUNING RANGE—MODEL 11356

The tuning range of this receiver is from 138 KC to 18.5 MC in four convenient bands divided as follows:

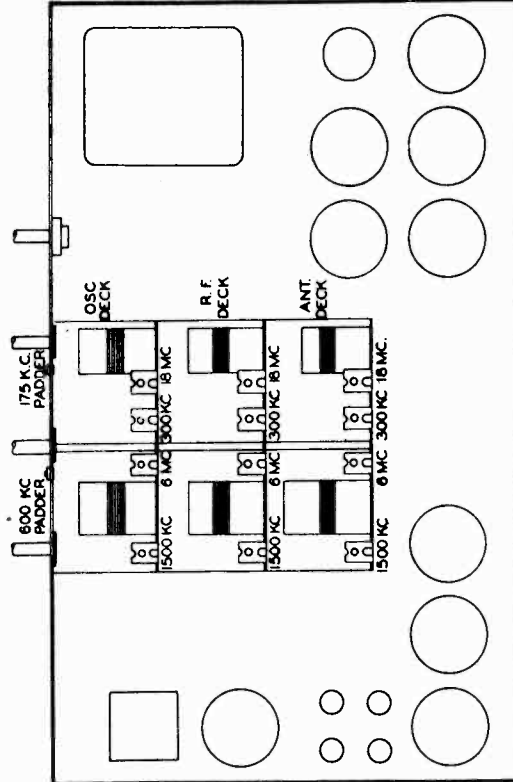
- Weather-band—138-325 KC—United States weather broadcasts, airplane beacons, and European long wave broadcasts.
- A-Band—538-1800 KC—Standard American broadcast and some of the low frequency police stations.
- B-Band—1770 KC to 6.0 MC—All police stations, some amateur and practically all airplane communications.
- C-Band—5.8 MC-18.5 MC—Foreign and Domestic short wave stations.

MODEL 11356
Socket, Trimmers
Parts, Alignment

MAJESTIC RADIO & TELEV. CO.



CHASSIS LAYOUT (TOP VIEW)
MODEL 11356



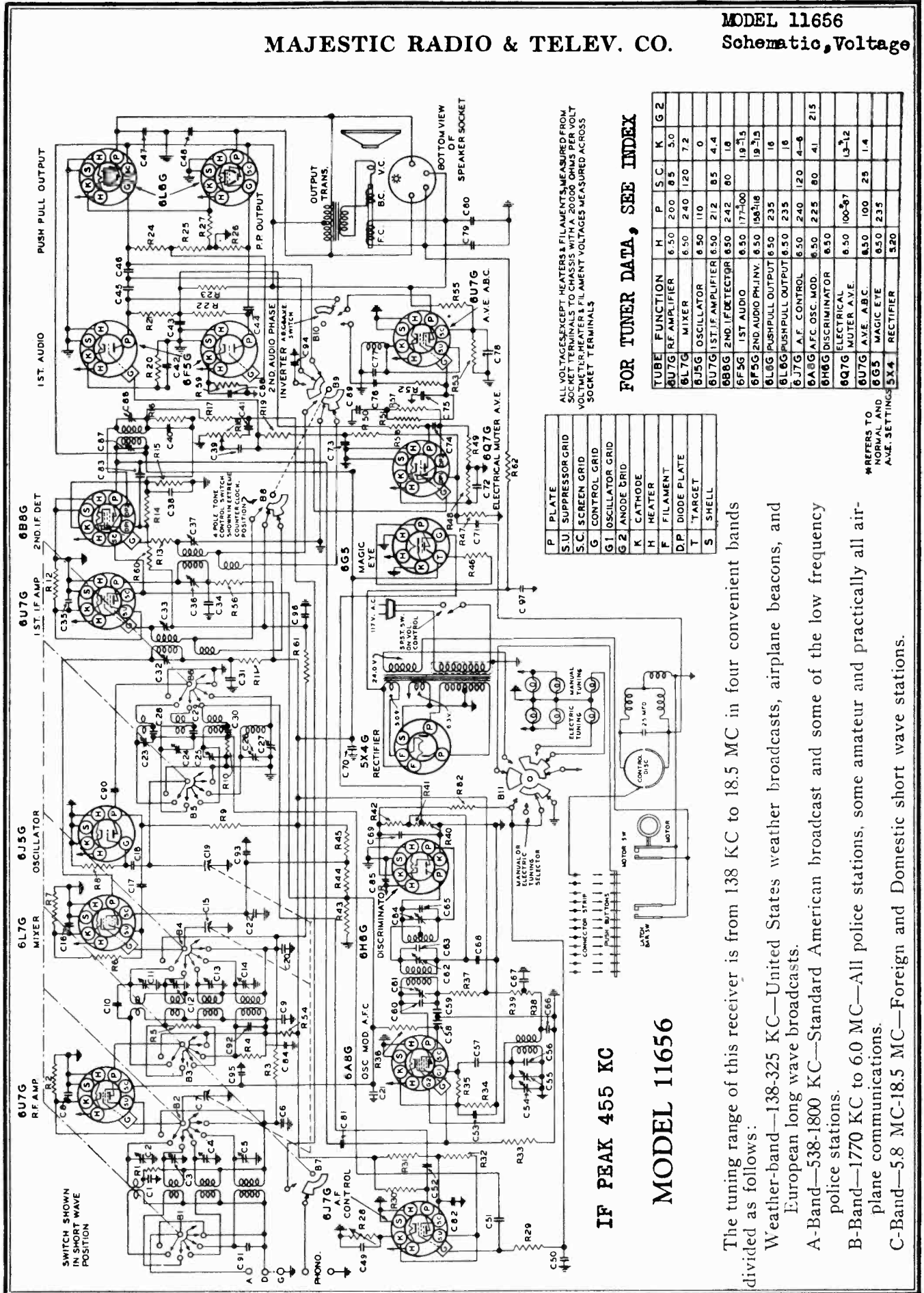
CHASSIS LAYOUT (BOTTOM VIEW)
MODEL 11356

REPLACEMENTS PARTS LIST - CHASSIS 11356

Schematic Location	Part No.	Description
C7, C13	Y-CV-7	Cond. 1 Gang, Variable
C8, C14	C-5	Cond. Tub. .05 MF. 200 V. (H.F.)
C9, C10	C-5	Cond. Tub. .01 MF. 400 V. (H.F.)
C19	C-15750	Cond. Tub. .25 MF. 400 V.
C22	C-15771	Cond. Tub. .004 MF. 600 V.
C36, C38, C40	C-15760	Cond. Tub. .02 MF. 600 V.
C39	C-15767	Cond. Tub. .001 MF. 600 V.
C20, C29	C-15756	Cond. Tub. .05 MF. 400 V.
C21, C30	C-9	Cond. Tub. 1.15 MF. 200 V.
C32, C61	C-15761	Cond. Tub. .03 MF. 600 V.
C37	C-11164	Cond. Tub. .03 MF. 600 V.
C38	C-15766	Cond. Tub. .03 MF. 600 V.
C31	C-15770	Cond. Tub. .06 MF. 200 V.
C15	CM-5	Cond. Tub. .05 MF. 200 V.
C16	CM-6	Cond. Mica 1350 M.M.F. 5%
C12, C23, C36, C62, C65	CM-15919	Cond. Mica 2830 M.M.F. 5%
C24, C25	CM-15918	Cond. Mica 50 M.M.F. 10%
C11, C63, C64	CM-15919	Cond. Mica 100 M.M.F. 20%
C45, C46, C47	CM-15918	Cond. Mica 250 M.M.F. 20%
C49, C50, C51	CM-15928	Cond. Ant. Trim. 3-30 M.M.F.
C33, C34, C55	Y-CT-3	{ Cond. R.F. Trim. 3-30 M.M.F. Cond. Osc. Trim. 30-300 M.M.F. Cond. R.F. Trim. 40-100 M.M.F. Cond. Osc. Trim. 40-100 M.M.F. }
C52	Y-CT-7	Cond. 1st I.F. Trim.
C57, C58	Y-CT-2	Cond. 2nd I.F. Trim.
C43	Y-CE-13	Cond. Wet. Elec. 40 MF. 300 V.
C44	Y-CE-15	Cond. Wet. Elec. 30 MF. 415 V.
C35	Y-CE-23	Cond. Dry Elec. 120 MF. 25 V.
C28	Y-CE-23	Cond. Dry Elec. 110 MF. 25 V.
C37	CE-26	Cond. Tub. Dry Elec. 4 MF. 300 V.
C17	Y-CT-4	Cond. Variable Padder 200-600 M.M.F.
C18	Y-CT-6	Cond. Variable Padder 100-200 M.M.F.
R8, R14, R35	R-15511	Resistor Carbon 25K. $\frac{1}{2}$ W. 20%
R9	R-15501	Resistor Carbon 25K. $\frac{1}{2}$ W. 20%
R1, R3, R6, R30	R-15515	Resistor Carbon 100K. $\frac{1}{2}$ W. 20%
R2, R5	R-15510	Resistor Carbon 100K. $\frac{1}{2}$ W. 20%
R4, R5	R-15537	Resistor Carbon 900 Ohms $\frac{1}{2}$ W. 10%
R11	R-15520	Resistor Carbon 2500 Ohms $\frac{1}{2}$ W. 10%
R15, R21, R19	R-15517	Resistor Carbon 400 Ohms $\frac{1}{2}$ W. 10%
R18, R22, R24, R26	R-15512	Resistor Carbon 1 Meg. $\frac{1}{2}$ W. 20%
R27	R-15512	Resistor Carbon 250 K. $\frac{1}{2}$ W. 10%
R20, R29	R-15602	Resistor Carbon 250 K. $\frac{1}{2}$ W. 10%
R17	R-15611	Resistor Carbon 5000 Ohms $\frac{1}{2}$ W. 10%
R23	R-21	Resistor Carbon 75 K. $\frac{1}{2}$ W. 10% W. 10%
R28, R34	R-15554	Resistor Carbon 500 Ohms $\frac{1}{2}$ W. 10%
R31	R-15554	Resistor Carbon 8000 Ohms $\frac{1}{2}$ W. 10%
R32	R-15607	Resistor Carbon 250 Ohms $\frac{1}{2}$ W. 10%
R24	R-24	Resistor Carbon 5000 Ohms $\frac{1}{2}$ W. 20%
R10, R13	R-43	Resistor Carbon 1 Meg. $\frac{1}{2}$ W. 20%
R12	Y-RC-3	(Insulated type)
R16	Y-VC-9	Resistor Candohm 7000, 2250, 5800 Ohms
AM-88	AM-88	Volume Control 1 Meg.
AM-89	AM-89	Ant. Bank Assembly
AM-90	AM-90	R. F. Bank Assembly
Y-CT-6	Y-CT-6	Osc. Bank Assembly
Y-CT-5	Y-CT-5	1st I.F. Coil Assembly
Y-B-7	Y-B-7	2nd I.F. Coil Assembly
Y-B-9	Y-B-9	Band Switch
Y-B-11	Y-B-11	Tone and High Fidelity Switch
Y-B-11	Y-B-11	Volume Control Switch
Y-SP-9	Y-SP-9	M.B.C. (Electric) Switch
SPA-16	SPA-16	Dynamic Speaker 12"
SPA-17	SPA-17	Speaker Voice Coil and Cone
Y-TP-7	Y-TP-7	Speaker Transformer
DC-3	DC-3	Power Transformer
ES-16	ES-16	Dial Crystal (Croglax)
P-15089	P-15089	Escutcheon
P-16589	P-16589	Pilot Light Mazda No. 44 (4)
Y-CK-5	Y-CK-5	Pilot Light Mazda No. 51 (2)
		Filter Choke (A.V.E.-A.B.C.)

MAJESTIC RADIO & TELEV. CO.

MODEL 11656
Schematic, Voltage



ALL VOLTAGES EXCEPT HEATERS & FILAMENTS MEASURED FROM SOCKET TERMINALS TO CHASSIS WITH A 20,000 OHMS PER VOLT VOLTMETER. HEATER & FILAMENT VOLTAGES MEASURED ACROSS SOCKET TERMINALS

FOR TUNER DATA, SEE INDEX

TUBE	FUNCTION	H	P	S	C	K	G	E
6U7G	RF AMPLIFIER	6.50	2.00	0.5	3.0			
6L7G	MIXER	6.50	2.40	1.20	7.2			
6J5G	OSCILLATOR	6.50	1.10	0	0			
6U7G	1ST. I.F. AMPLIFIER	6.50	2.12	0.5	4.4			
6B8G	2ND. I.F. DETECTOR	6.50	2.42	0.0	1.8			
6F5G	1ST. AUDIO	6.50	1.77-3.00		1.9-3.5			
6F5G	2ND. AUDIO PH. INV.	6.50	1.58-1.18		1.9-3.5			
6L6G	PUSH PULL OUTPUT	6.50	2.35		1.6			
6J7G	A.F. CONTROL	6.50	2.40	1.20	4-6			
6A8G	A.F.C. OSC. MOD.	6.50	2.25	0.0	4.1			
6H6G	DISCRIMINATOR	6.50						
6Q7G	ELECTRICAL MUTER	6.50	100-87		1.3-1.2			
6U7G	A.V.C. A.B.C.	6.50	1.00	2.5	1.4			
6G5	MAGIC EYE	6.50	2.35					
6X4G	RECTIFIER	5.20						

- P PLATE
- S.U. SUPPRESSOR GRID
- S.C. SCREEN GRID
- G CONTROL GRID
- G1 OSCILLATOR GRID
- G2 ANODE GRID
- K CATHODE
- H HEATER
- F FILAMENT
- DP DIODE PLATE
- T TARGET
- S SHELL

* REFERS TO GRID NUMBER AND A.V.C. SETTINGS

IF PEAK 455 KC

MODEL 11656

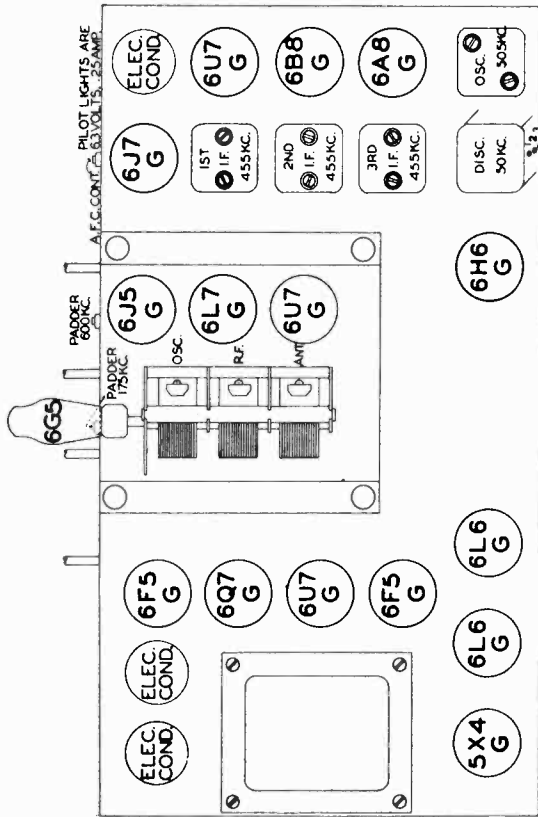
The tuning range of this receiver is from 138 KC to 18.5 MC in four convenient bands divided as follows:

- Weather-band—138-325 KC—United States weather broadcasts, airplane beacons, and European long wave broadcasts.
- A-Band—538-1800 KC—Standard American broadcast and some of the low frequency police stations.
- B-Band—1770 KC to 6.0 MC—All police stations, some amateur and practically all air-plane communications.
- C-Band—5.8 MC-18.5 MC—Foreign and Domestic short wave stations.

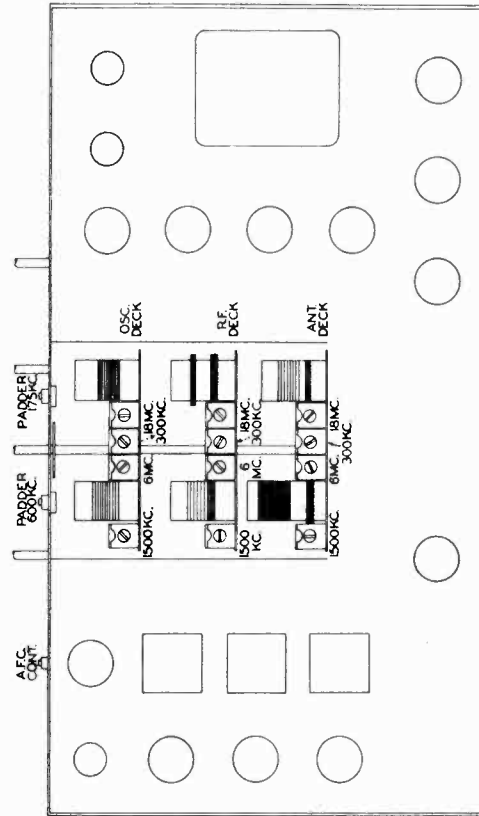
MODEL 11656

Socket, Trimmers
Parts, Alignment

MAJESTIC RADIO & TELEV. CO.



CHASSIS LAYOUT (TOP VIEW)
MODEL 11656



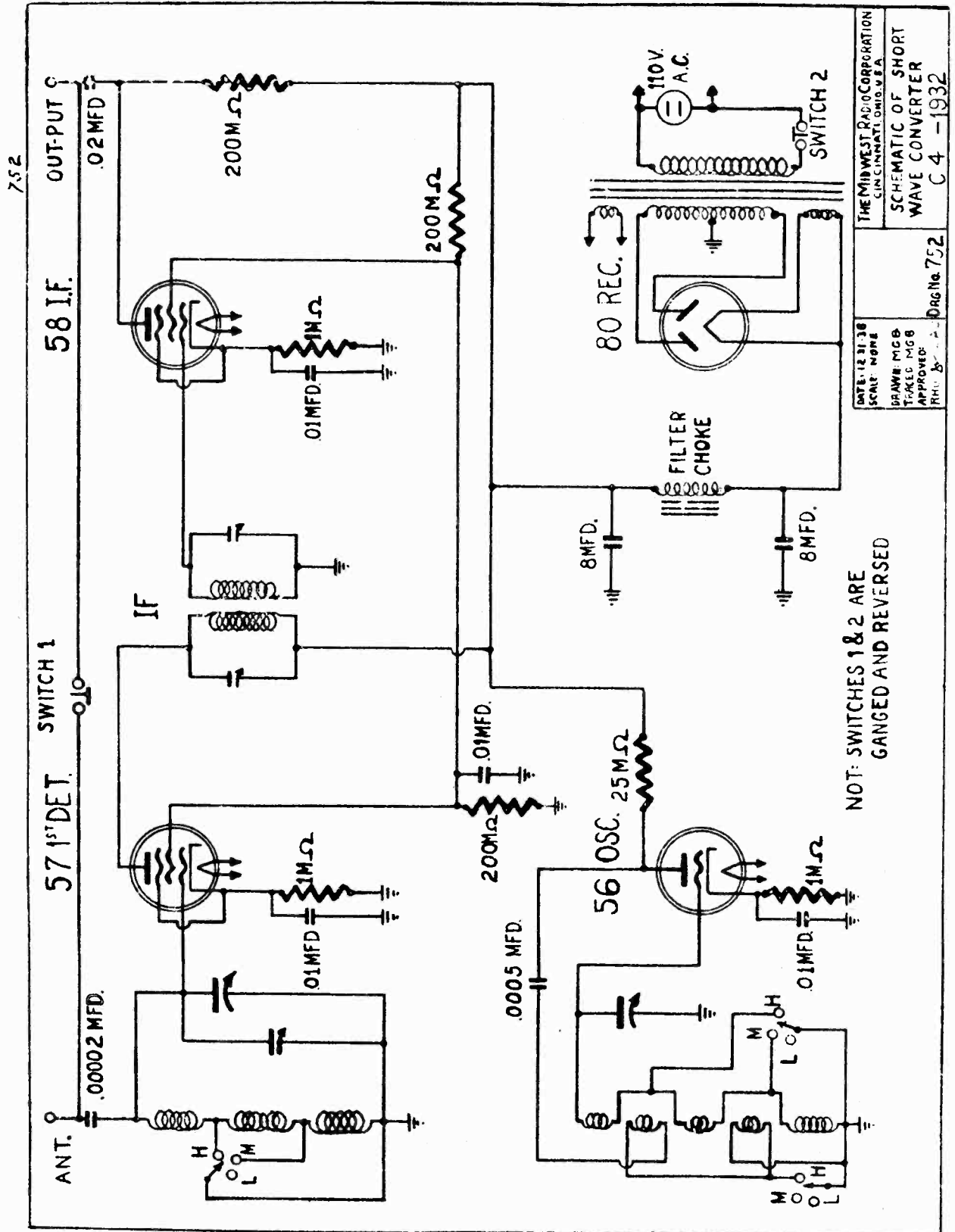
CHASSIS LAYOUT (BOTTOM VIEW)
MODEL 11656

REPLACEMENTS PARTS LIST-CHASSIS 11656

Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
C7, C15, C19	Y-CV-7	Cond. 3 Gang Variable	R8, R17, R23, R35	R-15511	Carbon Resistor 50 K. 1/4 W. 20%
C68, C69	C-15772	Cond. Tub. .02 MFD. 200 V.	R4, R5	R-15530	Carbon Resistor 2500 Ohms 1/4 W. 10%
C1, C90	C-5	Cond. Tub. .01 MFD. 400 V.	R2, R7	R-15610	Carbon Resistor 900 Ohms 1/4 W. 10%
C6, C8, C9, C16, C22, C95, C20	C-6	Cond. Tub. .05 MFD. 200 V. (H.F.)	R1, R3, R6, R21	R-15515	Carbon Resistor 100 K. 1/4 W. 20%
C71	C-15752	Cond. Tub. .05 MFD. 200 V.	R30, R31, R32	R-15510	Carbon Resistor 20 K. 1/4 W. 20%
C31, C34, C58, C59, C66, C67	C-15757	Cond. Tub. .1 MFD. 400 V.	R14, R19, R42, R49, R52, R57, R60, R61	R-15517	Carbon Resistor 1 MEG. 1/4 W. 20%
C35, C38, C73, C78, C84, C96	C-15761	Cond. Tub. .1 MFD. 200 V.	R16, R24, R26, R29, R40, R41, R47, R50	R-15520	Carbon Resistor 500 K. 1/4 W. 20%
C39	C-15764	Cond. Tub. .03 MFD. 400 V.	R11, R53, R56	R-2	Carbon Resistor 5000 Ohms 1/4 W. 20%
C89	C-15770	Cond. Tub. .2 MFD. 200 V.	R12	R-15519	Carbon Resistor 700 Ohms 1/4 W. 10%
C21	C-15775	Cond. Tub. .5 MFD. 200 V.	R15, R34	R-15551	Carbon Resistor 250 Ohms 1/4 W. 10%
C76	C-15771	Cond. Tub. .004 MFD. 600 V.	R36	R-15566	Carbon Resistor 2000 Ohms 1/4 W. 10%
C47, C48	C-15	Cond. Tub. .002 MFD. 800 V.	R33, R62	R-15500	Carbon Resistor 2 MEG. 1/4 W. 20%
C85	C-14	Cond. Tub. .5 MFD. 120 V.	R22, R51, R58	R-15512	Carbon Resistor 250 K. 1/4 W. 20%
C94	C-15759	Cond. Tub. .006 MFD. 600 V.	R20, R38, R39, R54, R59	R-15556	Carbon Register 10000 Ohms 1/4 W. 10%
C70	C-15750	Cond. Tub. .25 MFD. 400 V.	R37, R48	R-15617	Carbon Resistor 3000 Ohms 1/4 W. 20%
C77	C-9	Cond. Tub. .15 MFD. 200 V.	R25	R-16	Carbon Resistor 8000 Ohms 1/4 W. 20%
C46	C-15767	Cond. Tub. .001 MFD. 600 V.	R55	R-15524	Carbon Resistor 50 K. 1 W. 10%
C41, C44, C45, C50	C-15760	Cond. Tub. .02 MFD. 400 V.	R28	Y-PA-12	Variable Resistor 1000 Ohms
C49, C53, C74, C82	C-15756	Cond. Tub. .05 MFD. 400 V.	R18	Y-VC-9	Volume Control 1 MEG.
C51	CM-11	Cond. Mica 500 MMF. 10%	R27	Y-RC-5	Candohm Resistor
C56	CM-16	Cond. Mica 150 MMF. 10%	R43, R44, R45	Y-RC-3	Candohm Resistor
C60, C63, C65	CM-15917	Cond. Mica 650 MMF. 5%	R46		1 MEG. Internal connection in magic eye socket
C18, C40, C57, C81, C83, C91	CM-15919	Cond. Mica 50 MMF. 10%	B1, B2, B3, B4, B5, B6, B7	Y-B-7	Band Switch
C28	CM-5	Cond. Mica 2830 MMF. 5%	B8, B9	Y-B-8	Tone Control and Hi. Fidelity Switch
C29	CM-6	Cond. Mica 1350 MMF. 5%	B10	Y-B-11	A.B.C. and A.V.E. Switch
C17, C75, C92	CM-7	Cond. Mica 250 MMF. 5%	B11	Y-B-12	Manual or Electric Switch
C10	CM-10	Cond. Mica 10 MMF. 5%		Y-CK-5	A.B.C. Filter Choke
C52	CM-15906	Cond. Mica 100 MMF. 10%		Y-TF-8	Power Transformer
C42, C72, C86	CE-25	Cond. Tub. Dry Elec. 10 MFD. 25 V.		Y-SF-10	Speaker 12"
C43	CE-27	Cond. Tub. Dry Elec. 4 MFD. 300 V.		Y-CI-7	1st and 2nd I.F. Coil Assembly
C79	CE-15	Cond. Wet Elec.		Y-CI-9	3rd I.F. Coil Assembly
C80	CE-13	Cond. Wet Elec.		Y-CI-10	Discriminator Coil Assembly
C93	B-17042	Cond. Wet Elec.		AM-88	Oscillator Coil Assembly
C54, C55	Y-CT-5	Cond. Air Trimmer		AM-89	Antenna Bank Assembly
C2, C3, C4, C11, C12, C13, C23, C24, C25	Y-CT-3	Cond. Trimmer 3-30 MMF.		AM-90	R.F. Bank Assembly
C5, C14, C26	Y-CT-7	Cond. Trimmer 40-100 MMF.		SPA-18	Osc. Bank Assembly
C30	Y-CT-4	Cond. Trimmer		SPA-19	Speaker voice coil and cone
C27	Y-CT-6	Cond. Trimmer		ES-7	Speaker Trans.
C61, C62, C64	Y-CP-3	Cond. Padder		DC-3	Escutcheon
C32, C33, C36, C37, C87, C88	Y-CT-2	I.F. Trimmer		P-15089	Dial Crystal
R13	R-39	Carbon Resistor 750 K. 1/4 W. 20%		P-16589	Pilot light Mazda No. 44
R10	R-41	Carbon Resistor 75 Ohms 1/4 W. 10%			Pilot light Mazda No. 51
R9	R-15501	Carbon Resistor 25 K. 1 W. 20%			

MIDWEST RADIO CORP.

MODEL C4-1932 Converter Schematic



DATE: 12 31 '38
 SCALE: NONE
 DRAWN: MGB
 CHECKED: MGB
 APPROVED: R.H. B.

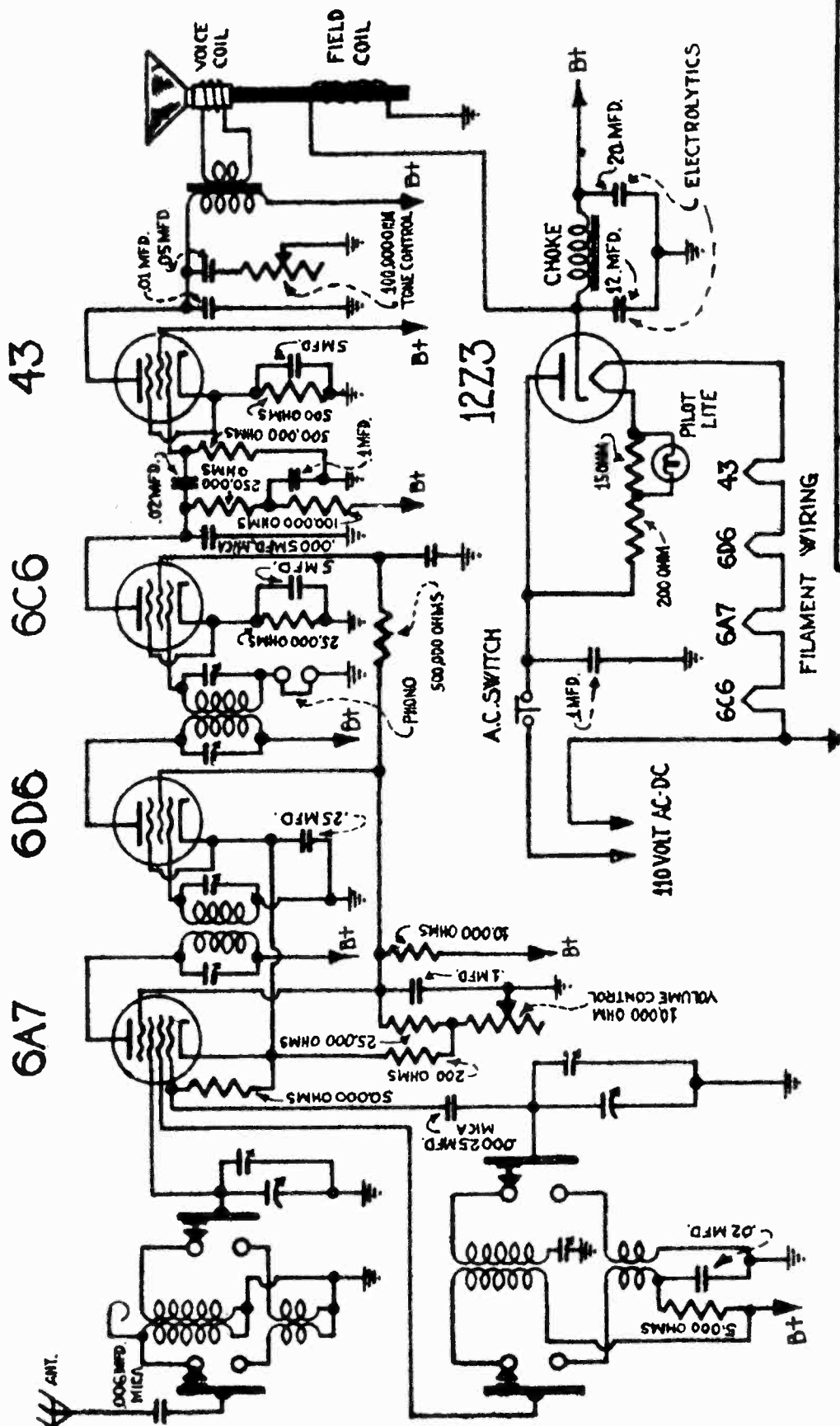
THE MIDWEST RADIO CORPORATION
 CINCINNATI, OHIO, U.S.A.

SCHEMATIC OF SHORT
 WAVE CONVERTER
 C 4 - 1932

DRG No 752

MODEL 35-5SW Late, 35SW
Schematic

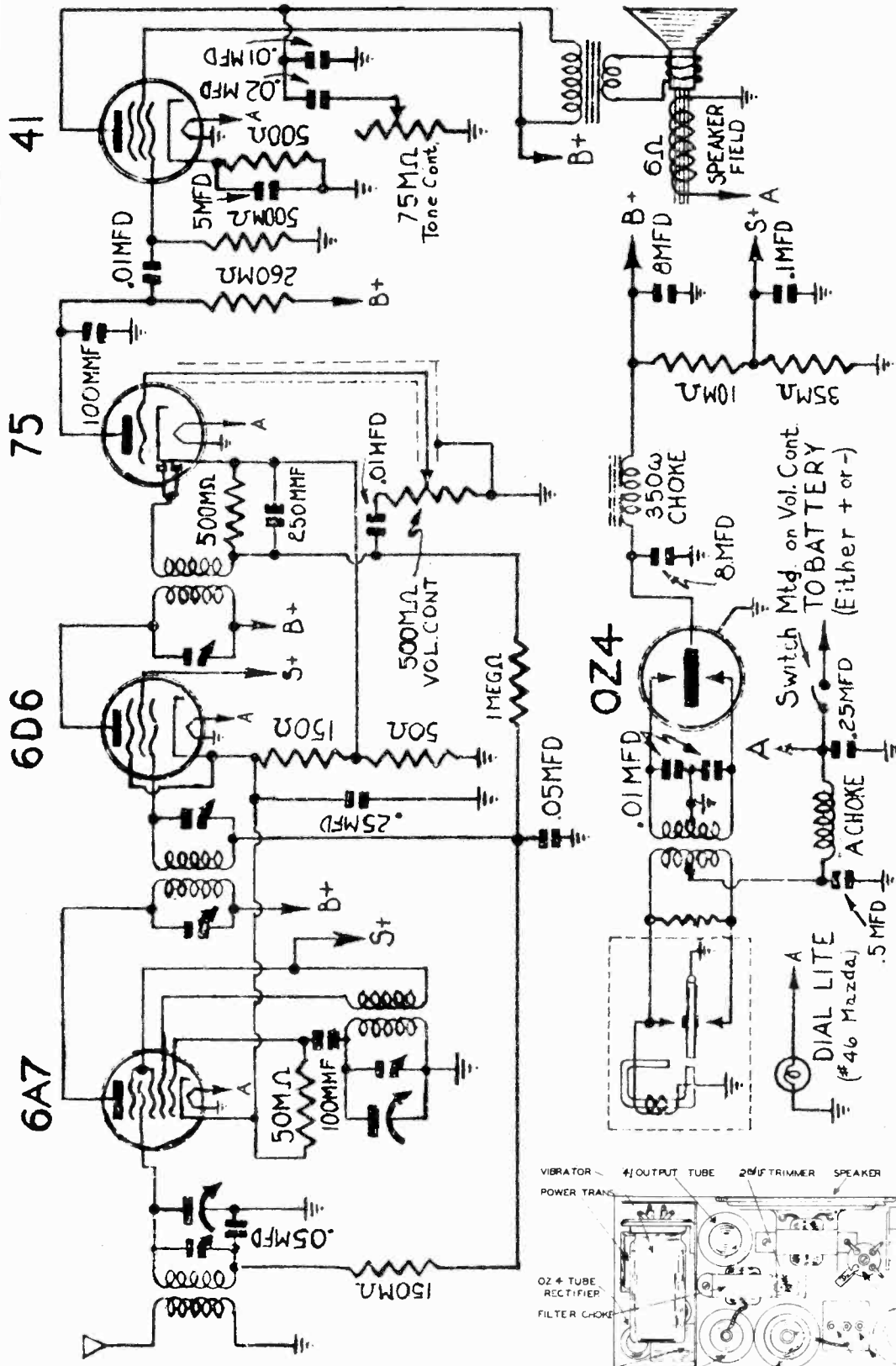
MIDWEST RADIO CORP.



THE MIDWEST RADIO CORPORATION CINCINNATI, OHIO.	SCHEMATIC WIRING DIAGRAM OF THE 35-S.W. MODEL.
DATE: 10-17-35. SCALE: NONE.	DRAWN: HAD. TRACED: HAD. CHECKED: [Signature] APPROVED: [Signature]
Drawing No. A-119	
35-5-SW LATE	

MIDWEST RADIO CORP.

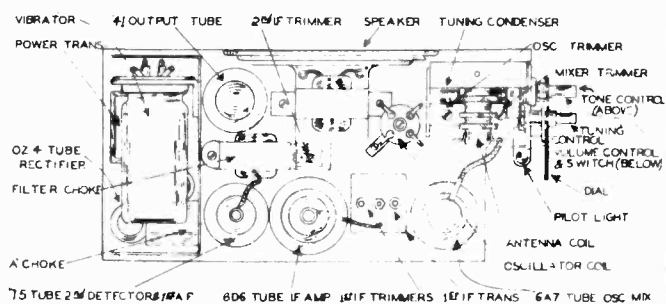
MODEL 5-36 Auto
Schematic, Socket
Trimmers



DATE: 8-31-37	THE MIDWEST RADIO CORPORATION CINCINNATI, OHIO, U.S.A.
SCALE: NONE	SCHMATIC CIRCUIT DIAGRAM
DRAWN: F.H.U.	OF THE 5-36 AUTO
TRACED: F.H.U.	DRG. NO. 996
CHECKED: M.A.D.	
APPROVED: [Signature]	

IF-456

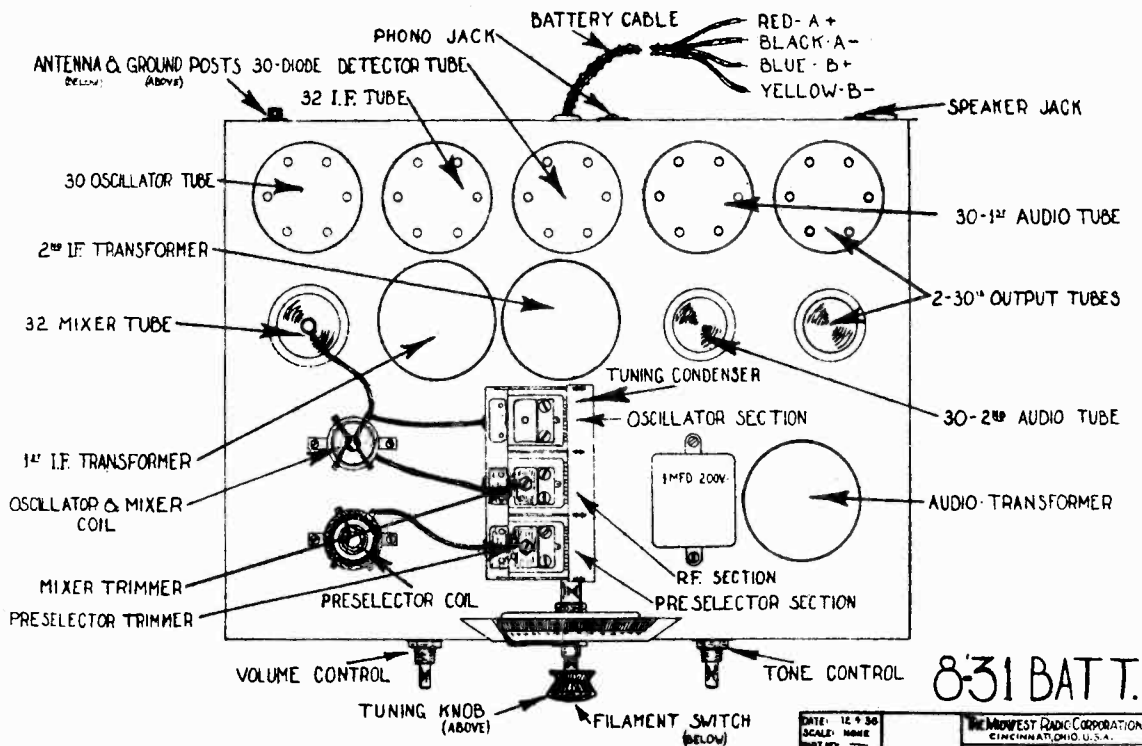
FOR ALIGNMENT, SEE INDEX



TOP VIEW OF 5-36
AUTO RADIO

MODEL 8-31 Batt.
Socket, Trimmers

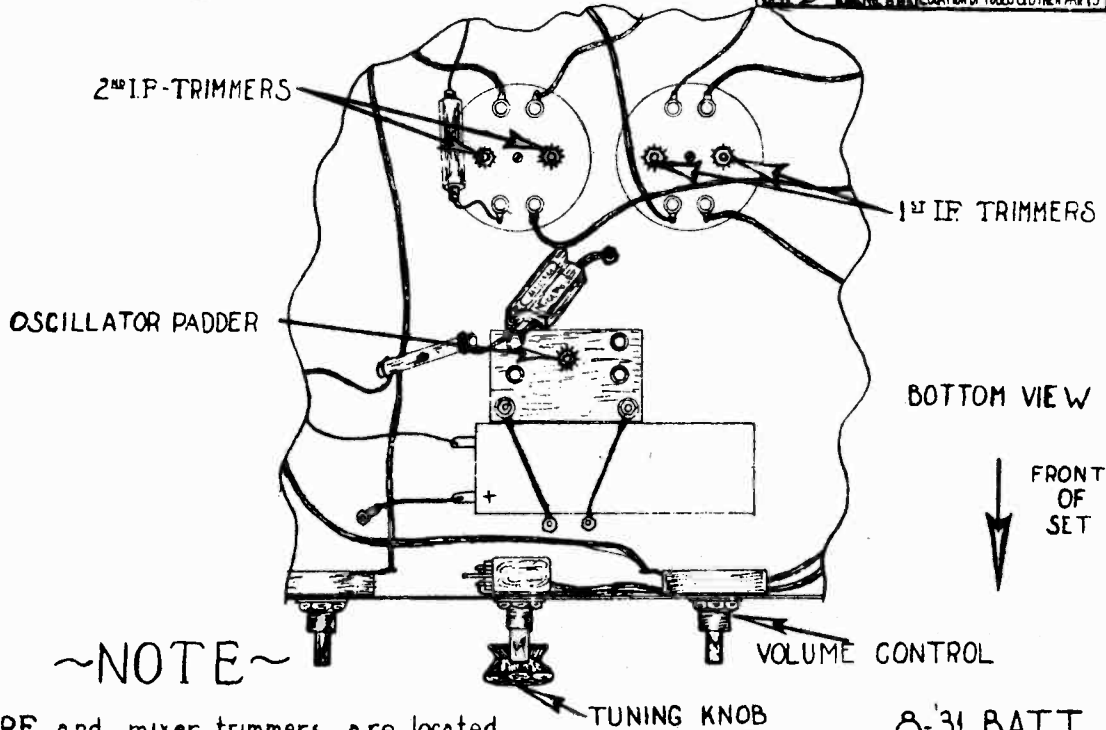
MIDWEST RADIO CORP.



8-31 BATT.

FOR SCHEMATIC SEE INDEX

DATE: 12-9-36	THE MIDWEST RADIO CORPORATION CINCINNATI, OHIO, U.S.A.
SCALE: NONE	
PART NO: ---	
DRAWN: F.M.U.	TOP VIEW OF THE 8-31 BATT MODEL RECEIVER SHOWING LOCATION OF TUBES & OTHER PARTS
TRACED: F.M.U.	
APPROVED: Y.C.D.	
Org. No. 692	



~NOTE~

RF. and mixer trimmers are located on top of condenser gang.
For relative positions see top-view.

8-31 BATT.

DATE: 12-3-36	THE MIDWEST RADIO CORPORATION CINCINNATI, OHIO, U.S.A.
SCALE: NONE	
PART NO: ---	
DRAWN: F.M.U.	TRIMMER & PADDER LOCATIONS FOR THE 8-31 BATT. MODEL RECEIVER
TRACED: F.M.U.	
APPROVED: Y.C.D.	
Org. No. 692	

MODEL 5-36 Auto Alignment

MIDWEST RADIO CORP

MODEL 8-38 Batt.
MODEL 8-38 AC-DC, Export
MODEL 8-38 AC-DC Domestic Voltage

1938 EXPORT - 8 TUBE AC-DC MIDWEST RECEIVER

OPERATING VOLTAGES

Note:- These voltages were taken with no signal input and with the volume control off.

TUBE	PLATE 54*	SCREEN	SUPPRESSOR	CATHODE	HEATER
6A8 Mixer-Osc.	94	50	.2	1	4.5
6K7 I.F. Amp.	90	94	1	1	4.5
6Q7 Diode Audio	30			.6	4.5
6C5 Phase Inverter	42			2.2	4.5
25B6 Output	90	100		15	22
25Z5 Rectifier	100				22
K17 Ballast	40 V. drop				

*Plate #2

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter

FOR OTHER DATA - SEE INDEX

INSTRUCTIONS FOR ALIGNMENT OF THE MIDWEST 36 MODEL 5 TUBE AUTOMOBILE RECEIVER
I.F. ALIGNMENT

(1) Set signal generator to 456 k.c. and connect output to grid of 6A7 tube. Connect output meter from plate of 41 tube to ground. Ground stator of oscillator section (rear section) of variable condenser. Adjust both grid and plate trimmers of 1st I.F. transformer and 2nd I.F. trimmer, located near speaker, for maximum gain on output meter.

This completes the I.F. Alignment of the receiver.

R.F. ALIGNMENT

(2) Connect signal generator to antenna post on set through a standard dummy antenna. Remove short circuit from condenser. Set generator and dial to 1500 k.c. and peak variable condenser trimmer for maximum output on meter.

This completes the R.F. Alignment.

NOTE: To ensure more accurate trimmer setting always use lowest possible test oscillator output consistent with readable output meter scale deflection.

1938 DOMESTIC - 8 TUBE BATTERY MIDWEST RECEIVER

OPERATING VOLTAGES

Note:- These voltages were taken with no signal input and with the volume control off.

TUBE	PLATE 70*	SCREEN	SUPPRESSOR	CATHODE	HEATER
6D8 Mixer-Osc.	134	58	.2	1.2	5.6
6S7 I.F. AMP.	134	58	1.2	1.2	5.6
6L5 2nd Det.					5.6
6L5 1st Audio	134			5.4	5.6
6L5 Phase Inv.	50	130		3	5.6
1J6 Output	134				2
6G5 Tuning Eye	136				5.6
#4A Ballast	4 V. Drop				

* Plate #2

1938 - 8 TUBE AC-DC MIDWEST RECEIVER

OPERATING VOLTAGES

Note:- These voltages were taken with no signal input and with the volume control off.

TUBE	PLATE	SCREEN	SUPPRESSOR	CATHODE	HEATER
6A8 Mic-Osc.	100	50	Internal Connection	1.5	6.3
6K8 1st I.F. 2nd Det.	95	100	1.5	1.5	6.3
6Q7 1st Audio	25				6.3
25B6 Output	90	100	Internal Connection	%	25
25Z5 Rectifier	115AC			100	25
6G5 Tuning Ind.	95				6.3
K 92B-Ballast	85 V. drop				
K 78B-Ballast	60 V. drop				

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

MODEL 6-38 AC-DC
 MODEL 7-38 Batt.Export
 MODEL 7-38 AC-DC

MIDWEST RADIO CORP.

MODEL 10-38 AC-DC
 Voltage

FOR OTHER DATA SEE INDEX

1938 DOMESTIC - 10 TUBE AC-DC MIDWEST RECEIVER

OPERATING VOLTAGES

Note:- These voltages were taken with no signal input and with the volume control off.

TUBE	PLATE	SCREEN	SUPPRESSOR	CATHODE	HEATER
6A8 Mixer-Osc.	54* 94	50	.2	1	5.6
6K7 I.F. Amp.	90	94	1	1	5.6
6Q7 2nd Det.	30			.6	5.6
6C5 Phase Inv.	42			2.2	5.6
25B6 Outputs	90	94		16	22
25Z5 Rectifier	94				22
K92B Ballast	85 V. drop				
L49B Ballast	40 V. drop				
6G5 Tuning Eye	94				5.6

* Plate #2

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

1938 - 7 TUBE AC-DC MIDWEST RECEIVER

TUBE	PLATE	SCREEN	SUPPRESSOR	CATHODE	HEATER
6A8 Mix-Osc.	100	50	Internal Connection	1.5	6.3
6K7 1st I.F.	95	100	1.5	1.5	6.3
6Q7 2nd Det Audio	25				6.3
25B6 Output	90	100	Internal Connection		25
25Z5 Rectifier	115Ac			100	25
K92 B- Ballast	85 V. drop				
K78 B- Ballast	60 V. drop				

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

1938 EXPORT- 6 TUBE AC-DC MIDWEST RECEIVER

OPERATING VOLTAGES

Note:- These voltages were taken with no signal input and with the volume control off.

TUBE	PLATE	SCREEN	SUPPRESSOR	CATHODE	HEATER
6A8 Mixer-Osc.	96 56*	44	2	1.4	5.4
6K7 I.F. Amp.	92	97	1.4	1.4	5.4
6Q7 Diode Aud.	24			.6	5.4
25B6 Output	90	98			22
25Z5 Rectifier	98				22
L49B Ballast	42 V. drop				

* Plate #2

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

1938 EXPORT - 7 TUBE BATTERY MIDWEST RECEIVER

OPERATING VOLTAGES

Note:- These voltages were taken with no signal input and with the volume control off.

TUBE	PLATE	SCREEN	SUPPRESSOR	CATHODE	HEATER
6D8 Mixer-Osc.	70* 134	58	.2	1.2	5.6
6S7 I.F. Amp.	134	58	1.2	1.2	5.6
6L5 1st Audio	134			5.4	5.6
6L5 2nd Det.					5.6
6L5 Phase Inv.	50	130		3	5.6
LJ6 Output	134				2
6G5 Tuning Eye	136				5.5

* Plate #2

MODEL 12-38

Alignment

MODELS 9-38 AC-DC, Export, Domestic

Voltage

MIDWEST RADIO CORP

MODELS 7-8-9-10, 1938 AC-DC

MODELS 6-7-8-9, 1938 AC-DC Export

MODELS 7-8, 1938 Batt.

Alignment

FOR OTHER DATA SEE INDEX

INSTRUCTIONS FOR ALIGNING THE 12AC - 38 MIDWEST RECEIVER

INTERMEDIATE FREQUENCY ALIGNMENT

Remove the Oscillator tube. The I.F.'s should be peaked at 456 kc. for maximum gain. The third I.F. transformer must be re-aligned to obtain a f.c. voltage. Turn tone control to right half; insert 5 ma. meter in series with 6J7 control tube cathode and note reading. Turn tone control switch to left half and adjust diode trimmer of third I.F. so that this reading is again obtained.

BAND ALIGNMENT

The "E" band covers 125 kc. to 350 kc. This band should be padded at 155 kc. and trimmed at 340 kc. Adjust R.F. and Mixer trimmers for maximum gain at 340 kc.

The "A" band covers 550 kc. to 1500 kc. This band should be padded at 540 kc. and trimmed at 1400 kc. Adjust R.F. and Mixer trimmers for maximum gain at 1400 kc.

The "L" band covers from 1.5 mc. to 4.5 mc. This band should be padded at 1.8 mc. and trimmed at 4.0 mc. The R.F. trimmer should be adjusted at 4.0 mc. for maximum gain.

The "M" band covers from 4.0 mc. to 12 mc. This band has a fixed pad and should be trimmed at 11.5 kc. Adjust R.F. and Mixer trimmer for maximum gain at 11.5 mc.

The "H" band covers from 12 mc. to 30 mc. This band has a fixed pad and should be trimmed at 26 mc. Adjust R.F. trimmer at 26 mc. for maximum gain.

Note:- When aligning bands a dummy antenna, consisting of a 200 ohm resistance and 10 mmfd. condenser in parallel, should be connected in series with output of signal generator.

1938 EXPORT - 9 TUBE AC-DC MIDWEST RECEIVER

TUBE	PLATE 54*	SCREEN	SUPPRESSOR	CATHODE	HEATER
6A8 Mixer-Osc.	84#	50	.2	1	4.5
6K7 I.F. Amp.	90	94	1	1	4.5
6Q7 Diode Audio	30			.6	4.5
6C5 Phase Inver.	42			2.2	4.5
25B6 Output	90	100		15	22
6C5 Tuning Eye	90				4.5
25Z5 Rectifier	100				22
K17 Ballast	40 V. drop				

* Plate #2

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

INSTRUCTIONS FOR ALIGNING THE 1938 MIDWEST

- 7-8-9-10 DOMESTIC AC-DC SETS
- 6-7-8-9- EXPORT AC-DC SETS
- 7-8 BATTERY SETS

INTERMEDIATE FREQUENCY ALIGNMENT

The I.F.'s should be peaked at 456 kc. for maximum output. Connect signal generator grid of 6A8 tube leaving grid cap on tube. Use smallest possible input consistent with a readable output.

BAND ALIGNMENT

Inside band "A", covers from 550 to 1700 kc. This band should be padded at 600 kc. and trimmed at 1400 kc. Radio Frequency trimmer should be adjusted at 1400 kc. for maximum gain.

Middle band "L", covers from 1.7 to 5.5 megacycles. This band should be padded at 1.8 mc. and trimmed at 4.5 mc. The R.F. trimmer should be adjusted at 5.5 mc. for maximum gain.

Note:- On EXPORT sets the above band is called "E" and covers 125 kc. to 350 kc. Pad at 155 kc. and trim at 340 kc. Adjust R.F. trimmer at 340 kc. for maximum gain.

Outside band "M", covers from 5.5 mc. to 18 mc. This band has a fixed pad and should be trimmed at 13 mc. Adjust R.F. trimmer at 13 mc. for maximum gain.

Note:- When aligning bands a dummy antenna, consisting of a 200 ohm resistance and 10 mmfd. Condenser in parallel, should be connected in series with output of signal generator.

1938 DOMESTIC - 9 TUBE AC-DC MIDWEST RECEIVER

TUBE	PLATE 54*	SCREEN	SUPPRESSOR	CATHODE	HEATER
6A8 Mixer-Osc.	94	50	.2	1	5.6
6K7 I.F. Amp.	90	94	1	1	5.6
6Q7 2nd Det.	30			.6	5.6
6C5 Phase Inv.	42			2.2	5.6
25B6 Outputs	90	94		16	22
25Z5 Rectifier	94				22
K92B Ballast	85 V. drop				
L49B Ballast	40 V. drop				

* Plate #2

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

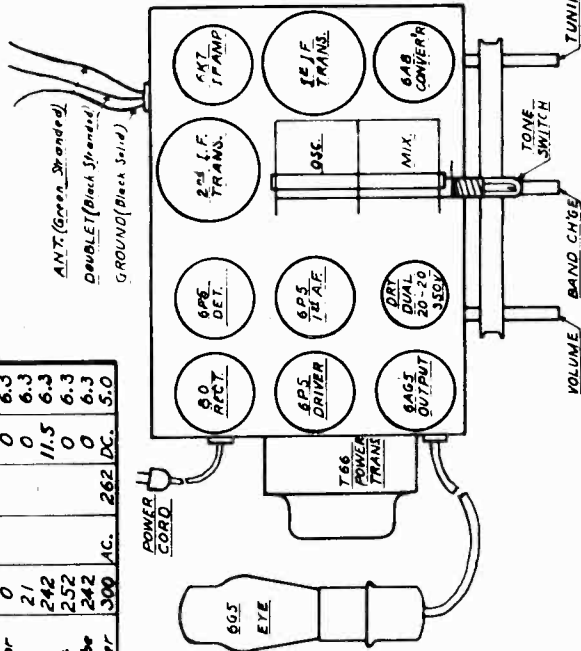
MODEL 8-39
Schematic, Voltage
Socket, Parts

MIDWEST RADIO CORP.

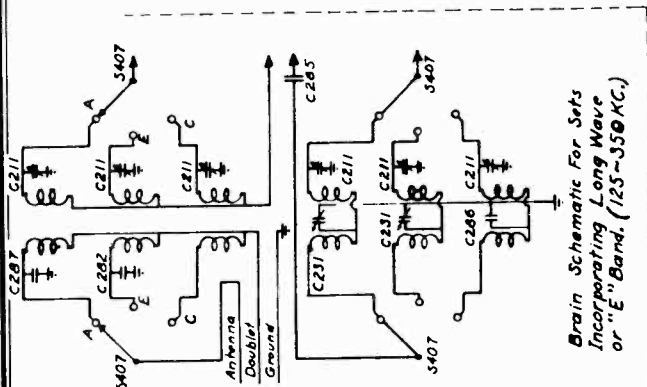
E34	Eye Clamp
E35	Eye Socket, Cable
K4	P. Button Key
K24	1/4 Inch Knob
A46	Pilot Light 6-0
R12	500 Ohm 1/4 W.
R13	1000 " "
R17	25M. " "
R18	50M. " "
R19	100M. " "
R21	500M. " "
R22	1M. " "
R22	15M. " 1 W.
S302	Speaker 6"
S319	Tension Spring
S333	Printer Assembly
S407	Band Switch
S445	Tone Switch
T66	Power Transformer
T164	1st I.F. " "
T165	2nd I.F. " "
C282	500 Mmfd. Mica
C231	Osc. Pedder

C26	Power Cord
C21	3 Gang Trimmer
C226	I.F. Pedder
C232	Osc. Pedder
C240	Dual Dry-20-20
C280	100 mmfd mica
C285	2000 " "
C286	3000 " "
C287	200 " "
C289	1200 " "
C290	60 " dual
C291	250 " dual
C301	.01 mfd. 200 V.
C302	.05 " "
C303	.25 " 400 V.
C311	.01 " "
C314	.05 " "
C349	2 Gang Variable
C363	Vol. Cont. & Sw.
C379	Tuning Shaft
C401	Cord Belt
D5	Dial Disk
E8	Escutcheon
E16	Eye Escutcheon
E33	Eye Bracket

IF PEAK 456 KC

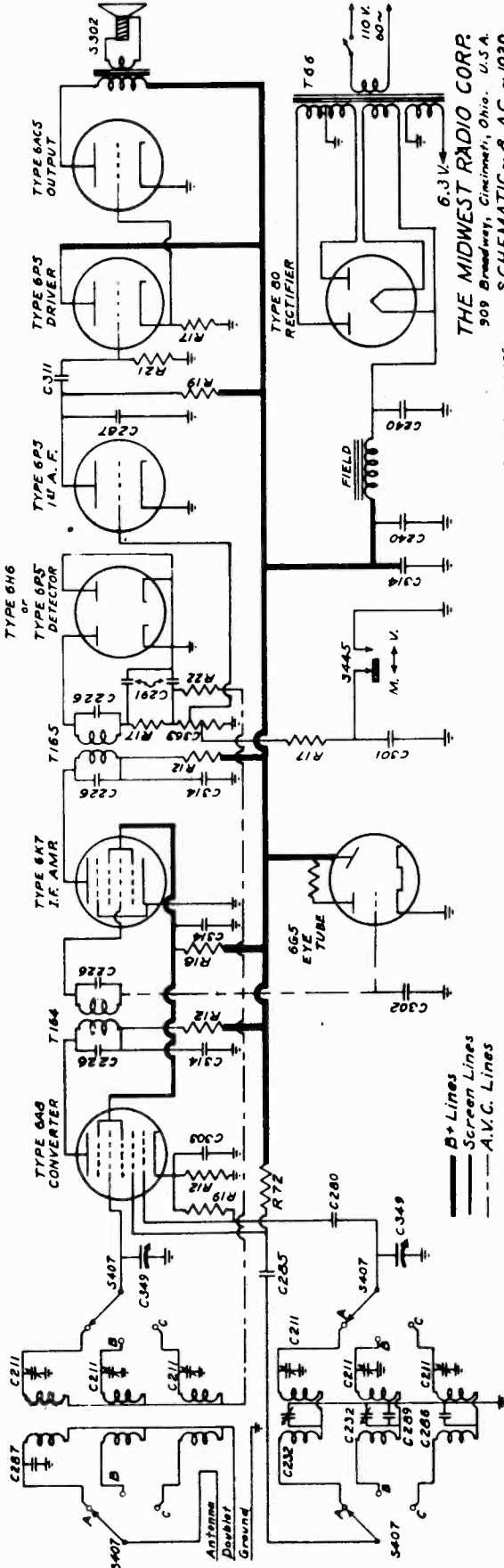
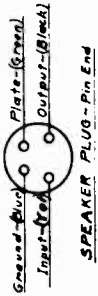


No Signal. Volume Control Turned Off.			
Line Voltage - 117 Volts, 60 Cycles.			
Meter Used - 20,000 Ohms per Volt.			
TUBE	PLATE SUPPLY	SUPR. CATH HEAT	RES.
6A6 Converter	234	75	192
6K7 I.F. Ampl.	237	75	0
6H6 Detector	0	0	0
6P5 1st A.F.	21	0	0
6P5 Driver	242	11.5	6.3
6G5 Eye Tube	252	0	0
6G5 Eye Tube	242	0	0
60 Rectifier	300	AC.	262 DC.
			5.0



Brain Schematic For Sets
Incorporating Long Wave
or "E" Band. (125-350 KC.)

Standard Brain Below
Incorporates Police Band.
1.7-5.5 MC.



— B+ Lines
— Screen Lines
- - - A.V.C. Lines

THE MIDWEST RADIO CORP.
909 Broadway, Cincinnati, Ohio, U.S.A.
SCHEMATIC - 8 AC. - 1939

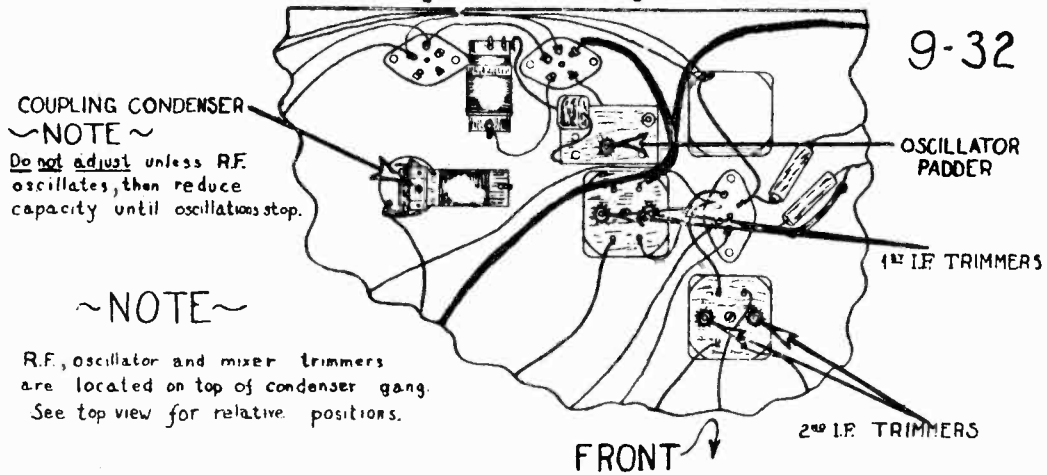
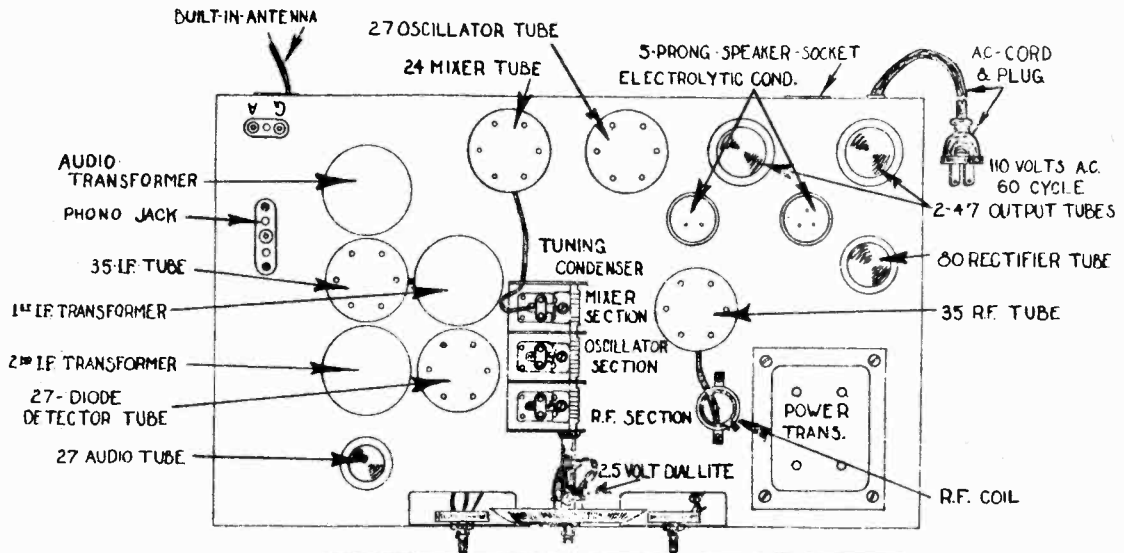
Drawn 9-29-39 '65

MIDWEST RADIO CORP.

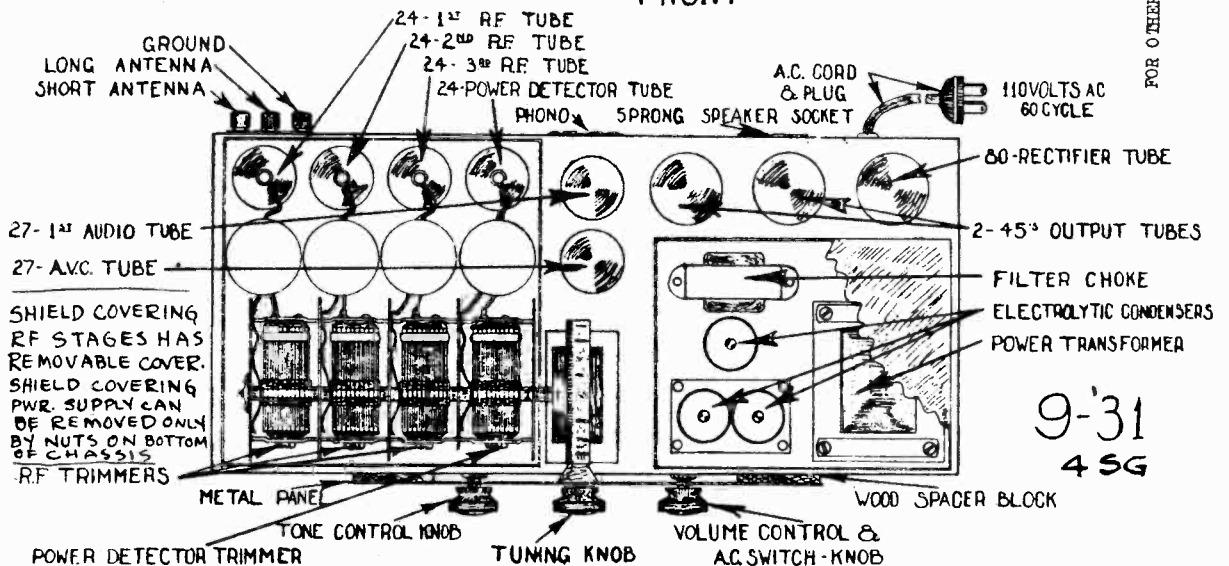
MODEL 9-31 (4 SG)

MODEL 9-32

Socket, Trimmers



~NOTE~
R.F., oscillator and mixer trimmers are located on top of condenser gang. See top view for relative positions.



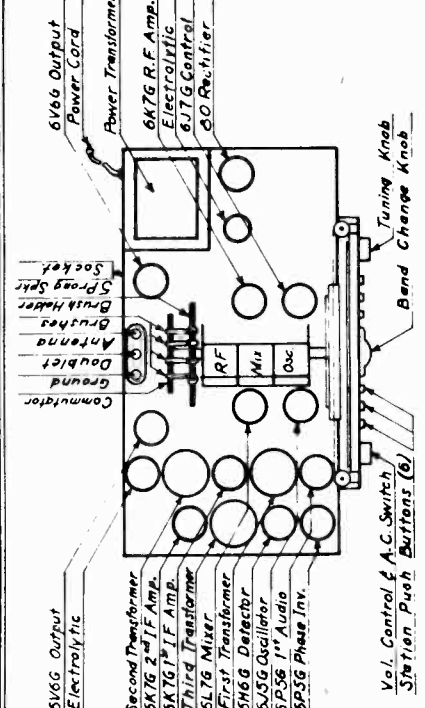
9-31
4 SG

FOR OTHER DATA SEE INDEX

MODEL 12-39

Schematic, Socket Voltage, Parts

MIDWEST RADIO CORP.



IF PEAK
456 KC

R47 25M. Ohm, 1/2 W.
R48 50M " 1 W.
R72 15M " 1 W.
R108 200 Ohm, 2 W.

THE MIDWEST RADIO CORP.
909 Broadway, Cincinnati, Ohio, U.S.A.
SCHEMATIC DIAGRAM-12-39
Drawn 8-19-38 cad

C314	.05Mfd 400V.
C350	300V Variable
C369	Control, Volume
C401	Fish Line, Belts
D 3	Dial Background
D 4	Dial Glass
K24	Knob, 1 inch
K25	Knob, 2 inch
M23	Motor
P 9	Panel, Milled
P48	Pilot Light-6.0
P59	Printer/Slide
R11	200 Ohm, 1/2 W.
R12	300 " "
R13	1000 " "
R14	2,000 " "
R15	5,000 " "
R17	25M. " "
R18	50M. " "
R19	100M. " "
R20	200M. " "
R21	500M. " "
R22	1 Megohm " "
R23	1/2 " "
R25	40M. ohms " "

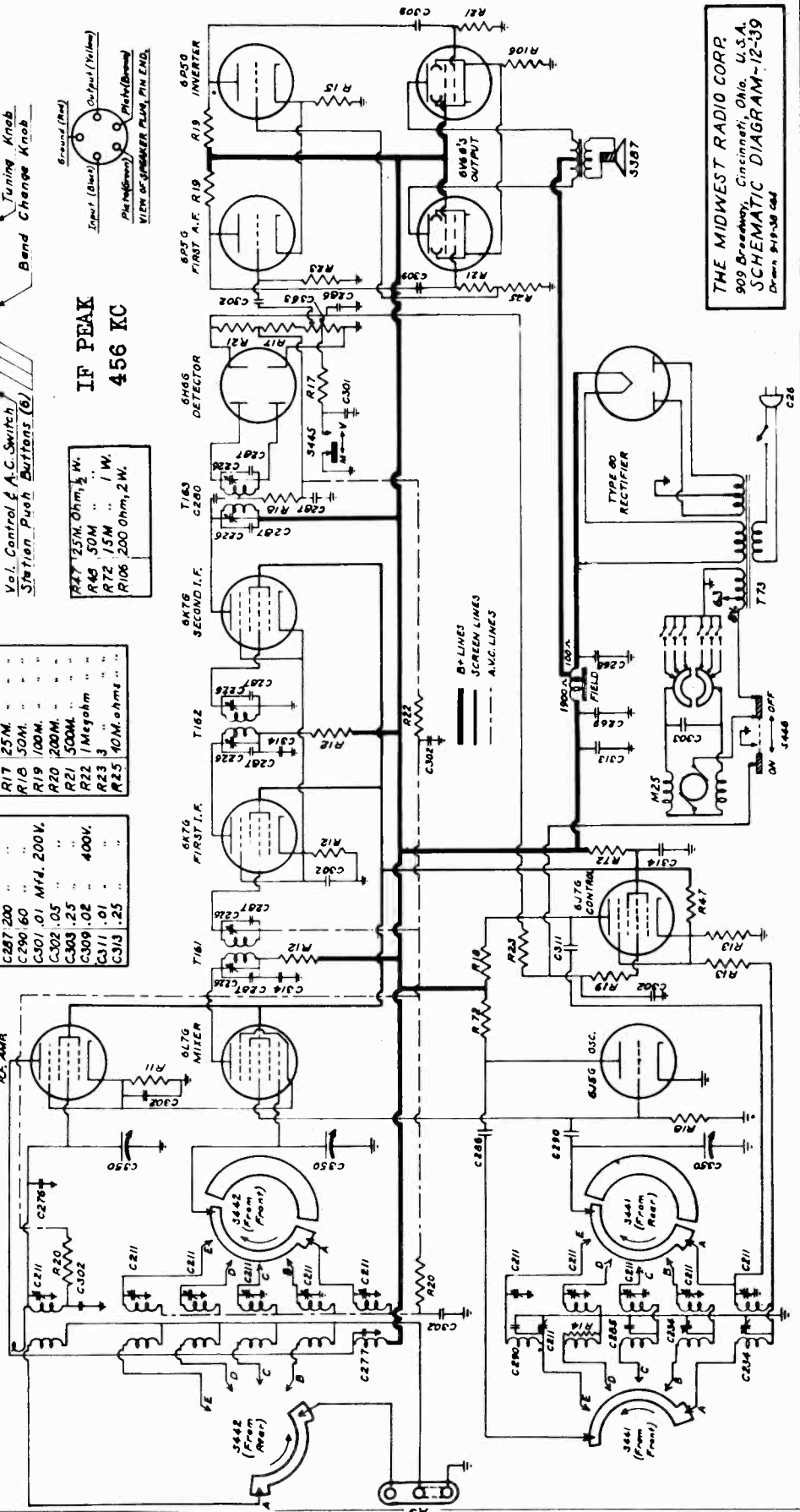
A 9	Antenna Strip
B 26	Brush Holder
B 27	Brush Clip
B 28	Brush Contact
C 26	Cable & Plug, A.C.
C 45	Commutator Disk
C 146	Commutator Spring
C 211	30V Trimmer
C 226	I.F. Padder
C 234	Osc. Padder
C 269	40 Mfd. 350V
C 276	10 Mfd. Mica
C 277	25 " "
C 280	100 " "
C 285	2000 " "
C 286	3000 " "
C 287	200 " "
C 290	60 " "
C 301	.01 Mfd. 200V.
C 302	.05 " "
C 303	.25 " "
C 309	.02 " "
C 311	.01 " "
C 313	.25 " "

S 319	Spring, Bell Ten
S 367	Speaker, 12 inch
S 441	Coil Switch, Osc.
S 442	" " R.F.
S 443	Switch, Clicker
S 445	Tone Switch
S 446	Motor Switch
T 73	Power Trans.
T 161	1 E.I.F. Trans.
T 162	25 " "
T 163	30 " "
W 51	Window, Tuning
W 52	Volume Motor
W 53	" " " "
W 54	" " " "
W 55	" " " "

OPERATING VOLTAGES

No Signal. Volume Control Turned Off. Motor Switch in Off Position. Line Voltage 117 Volts, 60 Cycles. Meter Used - 20,000 Ohms per Volt.

TUBE	PLATE	SCREEN	SUPR.	CATH.	HEATER
6K7 R.F.	230	78	2.4	2.4	6.0
6L7 Mixer	233	78		2.4	6.0
6J5 Osc.	125			0	6.0
6J7 Control	188	78	4.4	4.4	6.0
6K7 1 st I.F.	230	78	4.4	4.4	6.0
6K7 2 nd I.F.	230	78	4.4	4.4	6.0
6H6 2 nd Det.					6.0
6P5 1 st A.F.	135			8.6	6.0
6P5 Inverter	135			8.6	6.0
6V6 Outputs	280	220		12.5	6.0
6D Rectifier	350	(A.C.)		300	4.8



MIDWEST RADIO CORP. MODELS 12-16-18-20, 1938
 Alignment
 MODEL 18-38
 MODEL 20-38
 Voltage

FOR OTHER DATA
 SEE INDEX

Note: - These voltages were taken with no signal input and with the volume control off.

The "Night Foreign" band covers 10.4 mc. to 5.2 mc. This band has a fixed paddor and should be trimmed at 10.3 mc. Adjust R.F. trimmer at 5.3 mc. for maximum gain at 10.3 mc.

The "Aviation" band covers from 5.4 mc. to 2.7 mc. This band should be padded at 2.9 mc. and trimmed at 5.3 mc. Adjust the R.F. trimmer at 5.3 mc. for maximum gain.

The "Police" band covers from 3.0 mc. to 1.5 mc. This band should be padded at 1.7 mc. and trimmed at 2.9 mc. Adjust the R.F. trimmer at 2.9 mc. for maximum gain.

The "Weather" band covers from 125 kc. to 350 kc. This band should be padded at 135 kc. and trimmed at 340 kc. The R.F. trimmer should be adjusted at 340 kc. for maximum gain.

Note: - When aligning bands a dummy antenna, consisting of a 200 ohm resistance and 10 mfd. condenser in parallel, should be connected in series with output of signal generator.

1938 - 20-TUBE AC MIDWEST RECEIVER

TUBE	PLATE	SCREEN	SUPPRESSOR	CATHODE	HEATER
6K7 R.F. Amp.	200	65	1.5	1.5	6.3
6L7 Mixer	200	65	Internal Connection	1.5	6.3
6C5 Oscillator	100				6.3
6J7 Osc. Control	150	65	3	3	6.3
6K7 1st I.F.	200	65			6.3
6K7 2nd I.F.	200	65	3	3	6.3
6H6 2nd Det.				4.5*	6.3
6K7 A.F.C. Amp.	200	65	2	2	6.3
6H6 A.F.C. Rect.					6.3
6C5 1st Audio	100			4.5	6.3
6C5 Phase Inv.	100			4.5	6.3
6R7 Expander	90			4.5	6.3
6C5 Expander Control	75		Internal	#	6.3
6V6 Output	275	200	Connection	11	6.3
#80 Rectifier	350AC per plate			#350	5V.
6C5 Tunalite	150				6.3

* M2 Band Only
 # Zero at Expander positions otherwise 3 Volts

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

INSTRUCTIONS FOR ALIGNING THE 16-TUBE, 18-TUBE AND 20-TUBE AND 12-TUBE 1938 MIDWEST RECEIVERS

INTERMEDIATE FREQUENCY ALIGNMENT

Remove the Oscillator tube. I.F. alignment should not be attempted without the use of an Oscilloscope. Align the third I.F. to obtain characteristic resonance curve across 2nd detector diode load. Likewise, align 2nd I.F. to obtain resonance in 2nd I.F. stage. These are taken from an audio voltage. The discriminator and 1st I.F. transformer are aligned with an A. F. C. voltage. Do not attempt to change A.F.C. alignment unless you are familiar with characteristic curves necessary for correct alignment.

BAND ALIGNMENT

The "American Broadcast Band" covers 550 kc. to 1500 kc. This band should be padded at 540 kc. and trimmed at 1400 kc. R.F. and Mixer trimmers should be adjusted for maximum gain at 1400 kc.

The "Day Foreign" band covers from 20 mc. to 10 mc. This band has a fixed paddor and should be trimmed at 18 mc. Adjust R.F. and Mixer trimmer for maximum gain at 18 mc.

1938 - 18 TUBE AC MIDWEST RECEIVER

TUBE	PLATE	SCREEN	SUPPRESSOR	CATHODE	HEATER
6K7 R.F. Amp.	200	65	1.5	1.5	6.3
6L7 Mixer	200	65	2	2	6.3
6C5 Osc.	100				6.3
6J7 Osc. Control	120	65	3	3	6.3
6K7 1st I.F.	200	65			6.3
6K7 2nd I.F.	200	65	3	3	6.3
6H6 2nd Det.				4.5*	6.3
6K7 A.F.C. Amp.	200	65	2	2	6.3
6H6 A.F.C. Rect.					6.3
6C5 1st Audio	100			4.5	6.3
6C5 Phase Inv.	100			4.5	6.3
6V6 Outputs	250	200	Internal Connection	11.5	6.3
#80 Rectifier	350 AC Per plate				6.3
6C5 Tunalite	150AC				6.3

* M2 Band

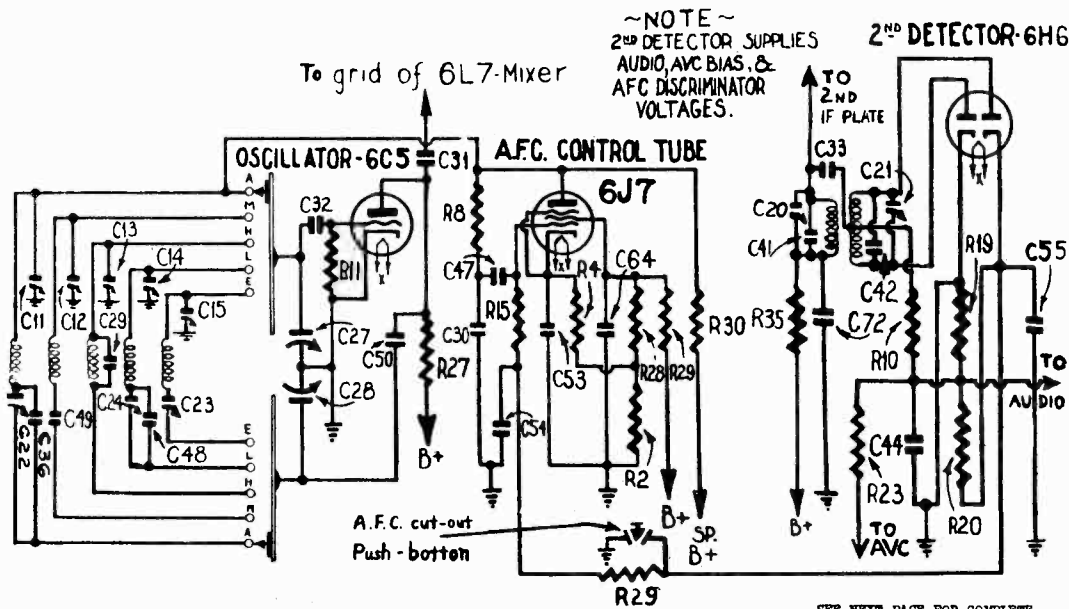
All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

Note: - These voltages were taken with no signal input and with the volume control off.

MODEL 12-38
 MODEL 16-38
 Voltage

MIDWEST RADIO CORP.

MODEL 16-37 AFC
 AFC 2nd Det. Schematic



Midwest AFC circuit 1637 AFC

1938 - 12 TUBE AC MIDWEST RECEIVER

1938 - 16 TUBE AC MIDWEST RECEIVER

OPERATING VOLTAGES

OPERATING VOLTAGES

Note:- These voltages were taken with no signal input and with the volume control off.

Note:- These voltages were taken with no signal input and with the volume control off.

FOR OTHER DATA SEE INDEX

TUBE	PLATE	SCREEN	SUPPRESSOR	CATHODE	HEATER
6K7 R.F. Amp.	200	45			6.3
6L7 Mixer	200	45	1.5	1.5	6.3
6C5 Osc.	125				6.3
6J7 Osc. Control	125	95	3	3	6.3
6K7 1st I.F.	200	45			6.3
6K7 2nd I.F.	200	45			6.3
6H6 2nd Det.	275*				6.3
6C6 Phase Inv.	125#			3	6.3
6V6 Outputs	275	200	Internal Connection	11	6.3
#80 Rectifiers	350AC per plate			300	5.0
6C5 Tunalite	145AC				6.3

* Plate #1
 # Plate #2

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

TUBE	PLATE	SCREEN	SUPPRESSOR	CATHODE	HEATER
6K7 R.F. Amp.	225	70	1.5	1.5	6.3
6L7 Mixer	225	70	Internal Connection	2	6.3
6C5 Osc.	100				6.3
6J7 Osc. Control	175	70	3	3	6.3
6K7 1st I.F.	225	70			6.3
6K7 2nd I.F.	225	70	3.5	3.5	6.3
6H6 2nd Det.				4.5 *	6.3
6K7 A.F.C. AMP.	225	70		2	6.3
6H6 A.F.C. Rect.					6.3
6C5 1st Audio	100			4.5	6.3
6C5 Phase Inv.	100			4.5	6.3
6V6 Outputs	300	225	Internal Connection	13	6.3
#80 Rectifiers	350AC per plate			350	5.0
6C5 Tunalite	150AC				6.3

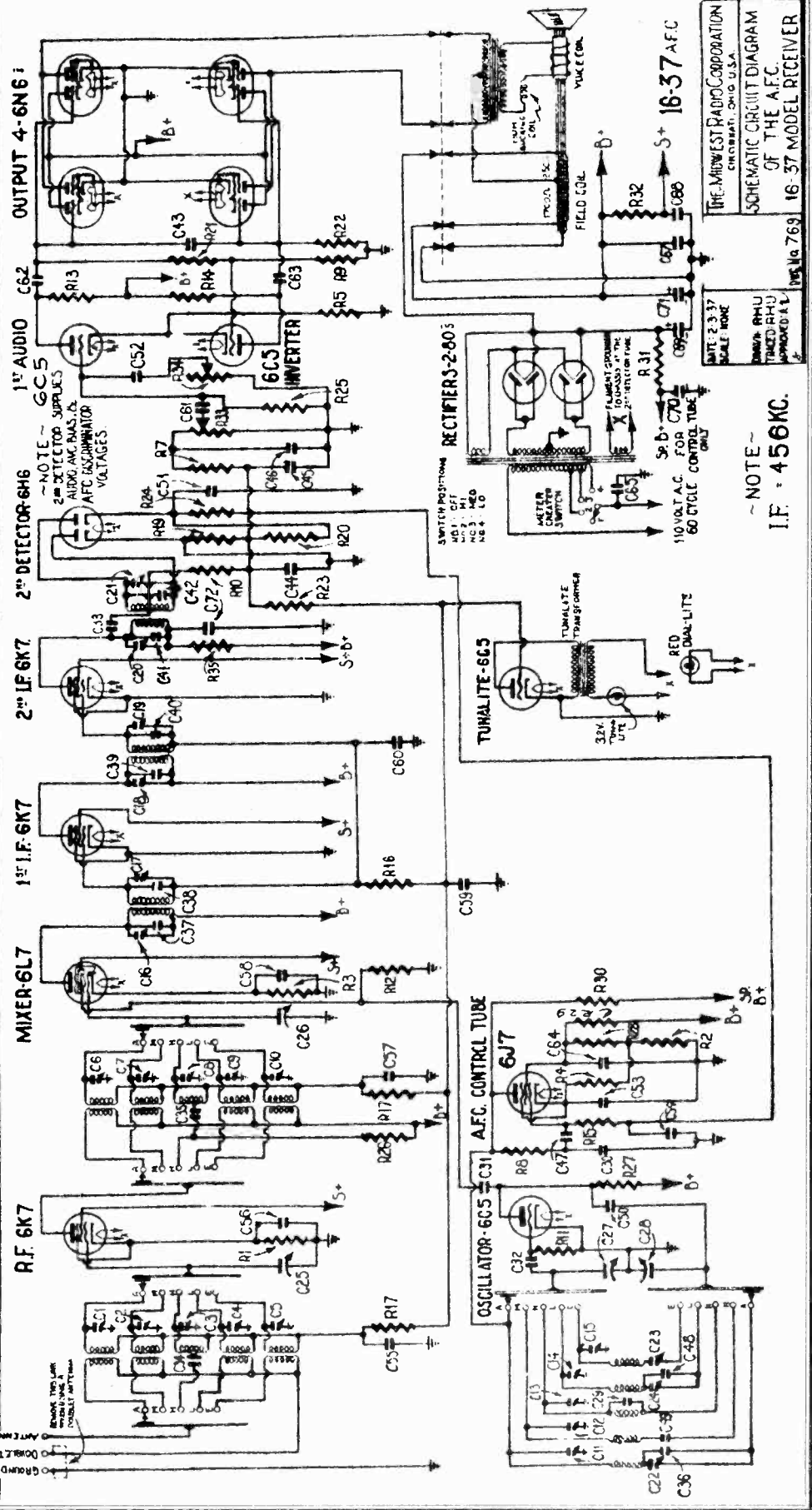
* M2 Band Only

All voltages taken with 110 V. line voltage and 1000 ohm per volt meter.

MIDWEST RADIO CORP.

MODEL 16-37 AFC, Type 1
Schematic, Parts

CONDENSERS		RESISTORS	
C1	35MMFD TRIMMERS	R1	350 OHMS
C2	I.F. TRIMMERS	R2	350 OHMS WIRE WOUND
C3	70MMFD PAPER	R3	500 OHMS
C4	350MMFD	R4	2500 OHMS
C5	350MMFD	R5	2500 OHMS
C6	350MMFD TUNING CONDENSER	R6	25000 OHMS
C7	350MMFD	R7	25000 OHMS
C8	350MMFD	R8	40,000 OHMS
C9	10MMFD MICA	R9	50,000 OHMS
C10	10MMFD	R10	50,000 OHMS
C11	50MMFD MICA	R11	100,000 OHMS
C12	50MMFD	R12	100,000 OHMS
C13	100MMFD	R13	500,000 OHMS
C14	100MMFD	R14	500,000 OHMS
C15	150MMFD	R15	500 OHM
C16	200MMFD	R16	500 OHM
C17	200MMFD	R17	500 OHM
C18	200MMFD	R18	500,000 OHMS
C19	200MMFD	R19	500,000 OHMS
C20	200MMFD	R20	500,000 OHMS
C21	200MMFD	R21	500,000 OHMS
C22	200MMFD	R22	500,000 OHMS
C23	200MMFD	R23	500,000 OHMS
C24	200MMFD	R24	500,000 OHMS
C25	200MMFD	R25	500,000 OHMS
C26	200MMFD	R26	500,000 OHMS
C27	200MMFD	R27	500,000 OHMS
C28	200MMFD	R28	500,000 OHMS
C29	200MMFD	R29	500,000 OHMS
C30	200MMFD	R30	500,000 OHMS
C31	200MMFD	R31	500,000 OHMS
C32	200MMFD	R32	500,000 OHMS
C33	200MMFD	R33	500,000 OHMS
C34	200MMFD	R34	500,000 OHMS
C35	200MMFD	R35	500,000 OHMS
C36	200MMFD	R36	500,000 OHMS
C37	200MMFD	R37	500,000 OHMS
C38	200MMFD	R38	500,000 OHMS
C39	200MMFD	R39	500,000 OHMS
C40	200MMFD	R40	500,000 OHMS
C41	200MMFD	R41	500,000 OHMS
C42	200MMFD	R42	500,000 OHMS
C43	200MMFD	R43	500,000 OHMS
C44	200MMFD	R44	500,000 OHMS
C45	200MMFD	R45	500,000 OHMS
C46	200MMFD	R46	500,000 OHMS
C47	200MMFD	R47	500,000 OHMS
C48	200MMFD	R48	500,000 OHMS
C49	200MMFD	R49	500,000 OHMS
C50	200MMFD	R50	500,000 OHMS
C51	200MMFD	R51	500,000 OHMS
C52	200MMFD	R52	500,000 OHMS
C53	200MMFD	R53	500,000 OHMS
C54	200MMFD	R54	500,000 OHMS
C55	200MMFD	R55	500,000 OHMS
C56	200MMFD	R56	500,000 OHMS
C57	200MMFD	R57	500,000 OHMS
C58	200MMFD	R58	500,000 OHMS
C59	200MMFD	R59	500,000 OHMS
C60	200MMFD	R60	500,000 OHMS
C61	200MMFD	R61	500,000 OHMS
C62	200MMFD	R62	500,000 OHMS
C63	200MMFD	R63	500,000 OHMS
C64	200MMFD	R64	500,000 OHMS
C65	200MMFD	R65	500,000 OHMS
C66	200MMFD	R66	500,000 OHMS
C67	200MMFD	R67	500,000 OHMS
C68	200MMFD	R68	500,000 OHMS
C69	200MMFD	R69	500,000 OHMS
C70	200MMFD	R70	500,000 OHMS
C71	200MMFD	R71	500,000 OHMS
C72	200MMFD	R72	500,000 OHMS
C73	200MMFD	R73	500,000 OHMS
C74	200MMFD	R74	500,000 OHMS
C75	200MMFD	R75	500,000 OHMS
C76	200MMFD	R76	500,000 OHMS
C77	200MMFD	R77	500,000 OHMS
C78	200MMFD	R78	500,000 OHMS
C79	200MMFD	R79	500,000 OHMS
C80	200MMFD	R80	500,000 OHMS
C81	200MMFD	R81	500,000 OHMS
C82	200MMFD	R82	500,000 OHMS
C83	200MMFD	R83	500,000 OHMS
C84	200MMFD	R84	500,000 OHMS
C85	200MMFD	R85	500,000 OHMS
C86	200MMFD	R86	500,000 OHMS
C87	200MMFD	R87	500,000 OHMS
C88	200MMFD	R88	500,000 OHMS
C89	200MMFD	R89	500,000 OHMS
C90	200MMFD	R90	500,000 OHMS
C91	200MMFD	R91	500,000 OHMS
C92	200MMFD	R92	500,000 OHMS
C93	200MMFD	R93	500,000 OHMS
C94	200MMFD	R94	500,000 OHMS
C95	200MMFD	R95	500,000 OHMS
C96	200MMFD	R96	500,000 OHMS
C97	200MMFD	R97	500,000 OHMS
C98	200MMFD	R98	500,000 OHMS
C99	200MMFD	R99	500,000 OHMS
C100	200MMFD	R100	500,000 OHMS



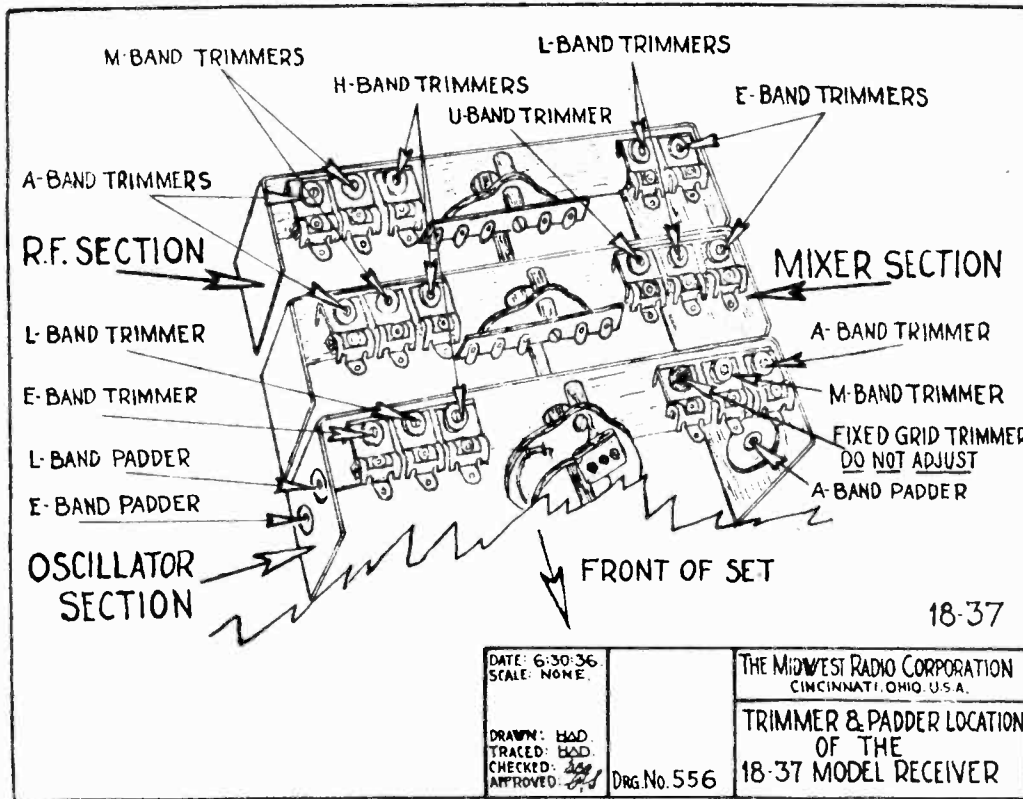
THE MIDWEST RADIO CORPORATION
CLEVELAND, OHIO U.S.A.
SCHEMATIC CIRCUIT DIAGRAM
OF THE A.F.C.
MODEL 16-37
16-37 MODEL RECEIVER
PAGE No. 769

DATE: 2-3-37
SCALE: NONE
DRAWN: R.H.U.
TRACED: R.H.U.
APPROVED: A.L.V.

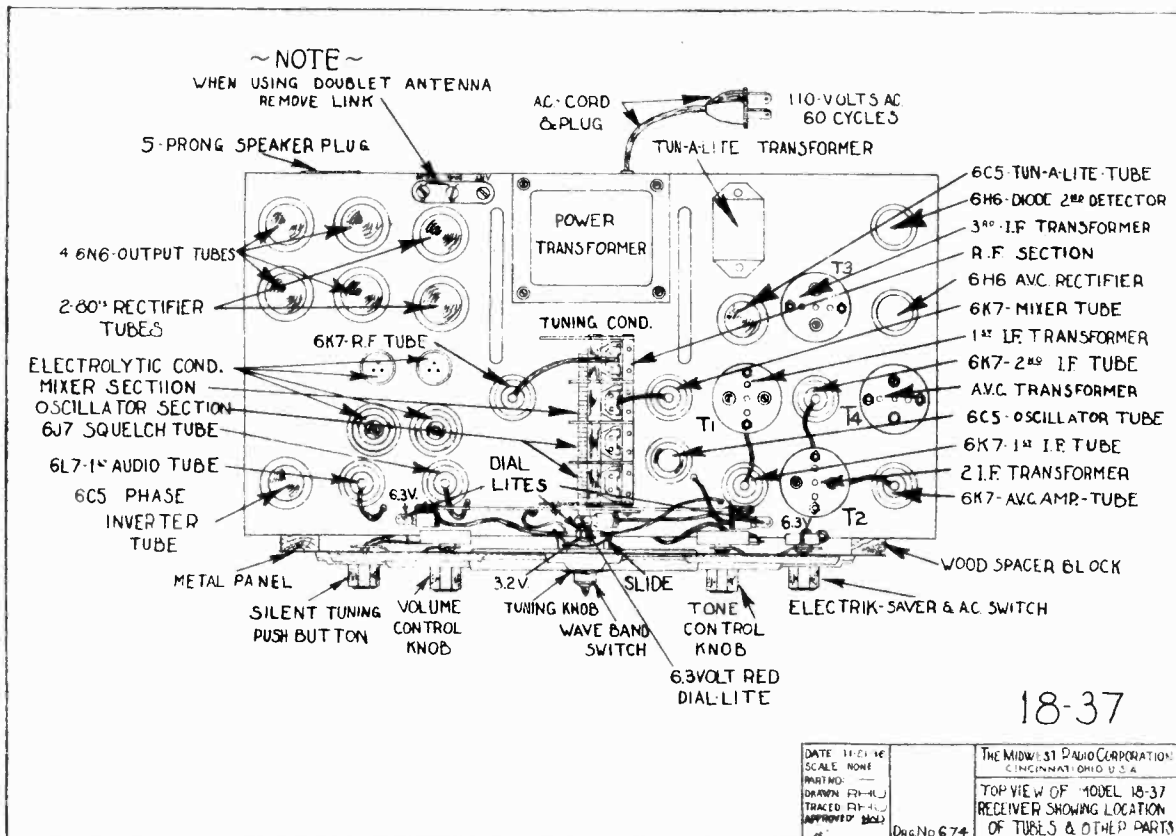
NOTE ~
I.F. = 456KC.
110 VOLT A.C. FOR CONTROL TUBE ONLY
60 CYCLE CONTROL TUBE ONLY
METER SWITCH OPERATED AT THE 2nd DETECTOR TUBE
R 31
S.P. B+ C70 C71 C72 C73 C74 C75 C76 C77 C78 C79 C80

MODEL 18-37 Early
Socket, Trimmers

MIDWEST RADIO CORP.



SEE INDEX FOR SCHEMATIC



MIDWEST RADIO CORP.

MODEL 18-37 Early Alignment, Voltage

INSTRUCTIONS FOR ALIGNING THE MIDWEST 18 - 37 RECEIVER

A good signal generator with accurate frequency calibration and an output meter are required. An intermediate frequency of 456 k.c. is used.

- (1) Set the signal generator to 456 k.c. and connect it from the mixer grid to ground.
- (2) Remove the oscillator tube from the receiver.
- (3) Connect the output meter from the plate of the output tube to positive B, or from the plates of one pair of tubes to the plates of the other pair of tubes.
- (4) Using a weak signal approximately 40 microvolts, align the I.F. transformers to maximum output.
- (5) Gradually decrease signal and realign I. F. amplifier.
- (6) Increase the input from the generator of approximately 100 microvolts. Align the A.V.C. transformer for minimum output.
- (7) Repeat using weaker signal strengths for the I.F. and stronger signal strengths for the A.V.C. adjustment until an absolute peak is assured.

This completes the alignment of the I. F. amplifier in the 18 - 37 set.

Insert the oscillator tube. Connect the signal generator between antenna and ground. Connect mixer lead to grid of mixer tube.

- (1) Set the wave change switch to the "E" band.
- (2) Set the signal generator to 325 k.c., and also the dial.
- (3) Adjust the "E" oscillator trimmer to maximum gain, then adjust the "E" band R.F. and the "E" band mixer trimmers for maximum gain.
- (4) Reset the signal generator to 135 k.c. and rotate the receiver dial to 135 k.c.
- (5) Adjust the "E" band paddor for maximum signal.

- (6) Repeat the adjustment of trimmers and paddors until the adjustment of one does not effect the adjustment of the other.

This completes the alignment of the "E" band.

- (1) Set the wave change switch to the "A" band.
- (2) Set the signal generator to 1490 k.c.
- (3) Adjust the "A" oscillator trimmer to maximum gain, then adjust the "A" band R.F. and the "A" band mixer trimmers for maximum gain.
- (4) Reset the signal generator to 550 k.c. and rotate the receiver dial to 550 kc.
- (5) Adjust the "A" band paddor for maximum signal.
- (6) Repeat the adjustment of trimmers and paddors until the adjustment of one does not effect the adjustment of the other.

This completes the alignment of the "A" band.

- (1) Set the wave change switch to the "L" band.
- (2) Set the signal generator to 3.8 m.c.
- (3) Adjust the "L" oscillator trimmer to maximum gain, then adjust the "L" band R.F. and the "L" band mixer trimmers for maximum gain.
- (4) Reset the signal generator to 1.6 m.c. and rotate the receiver dial to 1.6 m.c.
- (5) Adjust the "L" band paddor for maximum signal.
- (6) Repeat the adjustment of trimmers and paddor until the adjustment of one does not effect the adjustment of the other.

This completes the alignment of the "L" band.

- (1) Set the wave change switch to the "M" band.
- (2) Set the signal generator to 11.5 m.c.
- (3) Adjust the "M" oscillator trimmer to maximum gain, then adjust the "M" band R.F. and the "M" band mixer trimmers for maximum gain.

This completes the alignment of the "M" band.

THE MIDWEST RADIO CORPORATION		Cincinnati, O.				
LIST OF VOLTAGES OF TUBES						
37 MODEL 18 TUBE RECEIVER						
ALL TESTS MADE WITH NO SIGNAL INPUT						
TYPE	POSITION	PLATE V.	SCREEN V.	SUPP. V.	CATHODE V.	FIL. V.
6K7	R.F.	210	50	1.0	1.0	6.5
6K7	Mixer	210	45	3.5	3.5	6.5
6C5	Osc.	95	---	---	3.5	6.5
6K7	1st I.F.	210	50	1.2	1.2	6.5
6K7	2nd I.F.	210	50	3.0	3.0	6.5
6K7	AVC AMP.	210	50	6.0	6.0	6.5
6H6	Audio Rect.	0	---	---	0	6.5
6H6	Audio Rect.	0	---	---	6.0	6.5
6C5	Tunelite	AC	---	---	0	6.5
6J7	Squelch	150	20	AC-0	4.0	6.5
6L7	1st Audio	100	50	---	4.0	6.5
6C5	Inverter	90	---	---	4.0	6.5
6N6	Output	300	---	---	4.0	6.5
6N6	Output	300	---	---	0	6.5
6N6	Output	300	---	---	0	6.5
6N6	Output	300	---	---	0	6.5
80	Rectifier	280AC	---	---	---	5.0
80	Rectifier	280AC	---	---	---	5.0
LINE VOLTAGE 115 VOLTS A.C. 60 CYCLES. B PLUS 225 VOLTS						
1000 ohm per volt meter used on all D. C. measurements from ground. Voltages plus or minus 15% depending upon line voltage.						

- (1) Set the wave change switch to the "H" band.
 - (2) Set the signal generator to 28 m.c.
 - (3) Adjust the "H" band oscillator trimmer to maximum gain, then adjust the "H" band R.F. and the "H" band mixer trimmers for maximum gain.
- This completes the alignment of the "H" band.
- (1) Set the wave change switch to the "U" band.
 - (2) Set the signal generator to 60 m.c.
 - (3) Tune receiver until signal is received.
 - (4) Adjust the "U" band mixer trimmer for maximum gain.
- This completes the alignment of the "U" band.

MODEL 18-37 AFC
Schematic, Parts

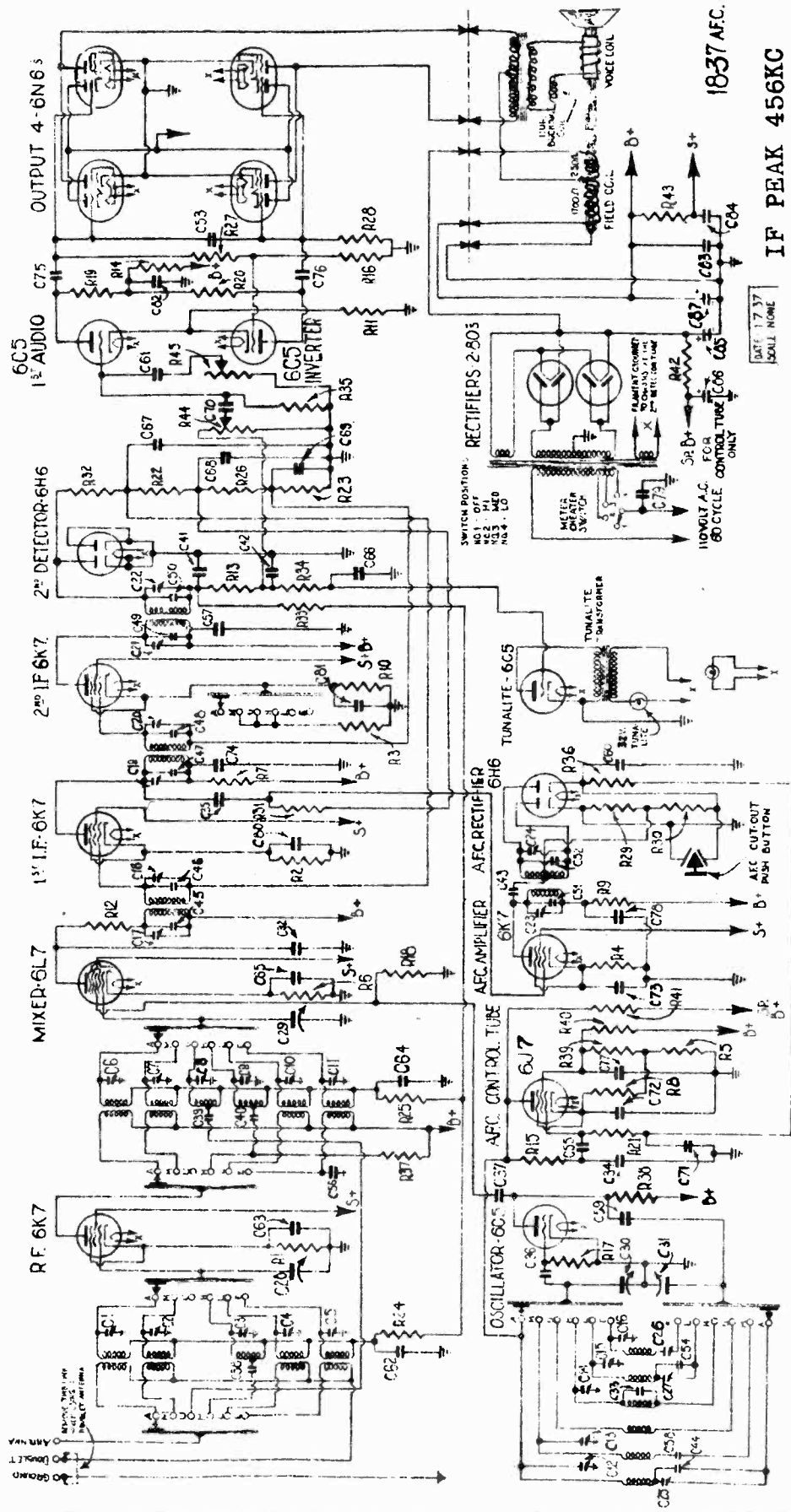
MIDWEST RADIO CORP.

RESISTORS

R37	25000 OHM	1/2 WATT	R19	350 OHM	WIDEWOUND
R36	50000 OHM	1 WATT	R20	10000 OHM	.25 WATT
R40	15000 OHM	1 WATT	R21	20000 OHM	
R41	50000 OHM		R22	20000 OHM	
R42	50000 OHM		R23	390 OHM ± 2%	.25 WATT
R43	100000 OHM	VOLUME CONT.	R24	500 OHM	.25 WATT
R44	100000 OHM	TONE CONT.	R25	1000 OHM	
R45	500000 OHM		R26	1000 OHM	
			R27	1000 OHM	
			R28	1000 OHM	
			R29	5000 OHM	
			R30	251000 OHM	
			R31	1000 OHM	
			R32	1000 OHM	
			R33	1000 OHM	
			R34	1000 OHM	
			R35	1000 OHM	
			R36	1000 OHM	
			R37	1000 OHM	
			R38	1000 OHM	
			R39	1000 OHM	
			R40	1000 OHM	
			R41	1000 OHM	
			R42	1000 OHM	
			R43	1000 OHM	
			R44	1000 OHM	
			R45	1000 OHM	
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			R47	1000 OHM	
			R48	1000 OHM	
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			R59	1000 OHM	
			R60	1000 OHM	
			R61	1000 OHM	
			R62	1000 OHM	
			R63	1000 OHM	
			R64	1000 OHM	
			R65	1000 OHM	
			R66	1000 OHM	
			R67	1000 OHM	
			R68	1000 OHM	
			R69	1000 OHM	
			R70	1000 OHM	
			R71	1000 OHM	
			R72	1000 OHM	
			R73	1000 OHM	
			R74	1000 OHM	
			R75	1000 OHM	
			R76	1000 OHM	
			R77	1000 OHM	
			R78	1000 OHM	
			R79	1000 OHM	
			R80	1000 OHM	
			R81	1000 OHM	
			R82	1000 OHM	
			R83	1000 OHM	
			R84	1000 OHM	
			R85	1000 OHM	
			R86	1000 OHM	
			R87	1000 OHM	
			R88	1000 OHM	
			R89	1000 OHM	
			R90	1000 OHM	
			R91	1000 OHM	
			R92	1000 OHM	
			R93	1000 OHM	
			R94	1000 OHM	
			R95	1000 OHM	
			R96	1000 OHM	
			R97	1000 OHM	
			R98	1000 OHM	
			R99	1000 OHM	
			R100	1000 OHM	

CONDENSERS

C1	30MFD	TRIMMER	C35	500MHF	MICA
C2	50MHF		C36	2000MHF	
C3	100MHF		C37	50MHF	
C4	100MHF		C38	100MHF	
C5	100MHF		C39	100MHF	
C6	100MHF		C40	100MHF	
C7	100MHF		C41	100MHF	
C8	IF TRIMMER		C42	100MHF	
C9	IF TRIMMER		C43	100MHF	
C10	IF TRIMMER		C44	100MHF	
C11	IF TRIMMER		C45	100MHF	
C12	IF TRIMMER		C46	100MHF	
C13	IF TRIMMER		C47	100MHF	
C14	IF TRIMMER		C48	100MHF	
C15	IF TRIMMER		C49	100MHF	
C16	IF TRIMMER		C50	100MHF	
C17	IF TRIMMER		C51	100MHF	
C18	IF TRIMMER		C52	100MHF	
			C53	100MHF	
			C54	100MHF	
			C55	100MHF	
			C56	100MHF	
			C57	100MHF	
			C58	100MHF	
			C59	100MHF	
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			C92	100MHF	
			C93	100MHF	
			C94	100MHF	
			C95	100MHF	
			C96	100MHF	
			C97	100MHF	
			C98	100MHF	
			C99	100MHF	
			C100	100MHF	

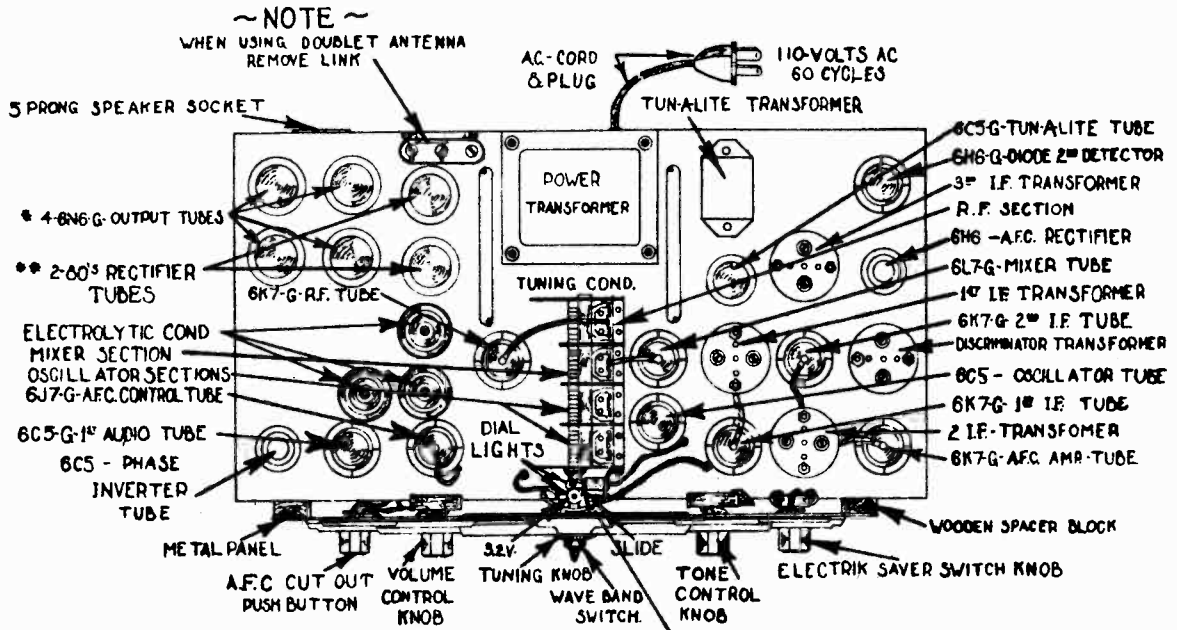


IF PEAK 456KC

DATE 17 37
SHEET NONE

MIDWEST RADIO CORP.

MODEL 18-37 AFC
Socket, Trimmers
Voltage



~NOTE~

WHEN USING DOUBLET ANTENNA REMOVE LINK
This chassis is shown equipped with the best tube combination available
* Metal, metal-glass, or glass counter-part tubes may be used. For example the output tubes shown are glass counter-part tubes numbered -6N6-G; metal glass tubes would be numbered -6N6-MG and metal tubes would be numbered -6N6.
** Use only 80 type Rectifier tubes.

6.3VOLT-RED DIAL-LITE

18-37-A.F.C.

DATE: 1-12-37
SCALE: NONE
DRAWN: R.H.M.
TRACED: R.H.M.
APPROVED: R.H.M.

THE MIDWEST RADIO CORPORATION
CINCINNATI, OHIO, U.S.A.
TOP VIEW OF THE 18-37 AFC
MODEL RECEIVER SHOWING
LOCATION OF TUBES & OTHER PARTS

THE MIDWEST RADIO CORPORATION Cincinnati, O.		LIST OF VOLTAGES OF TUBES 37 MODEL 18 TUBE A.F.C. RECEIVER				
TYPE	POSITION	ALL TESTS MADE WITH NO SIGNAL INPUT				
		PLATE VOLTS	SCREEN VOLTS	SUPP. VOLTS	CATHODE VOLTS	FIL. VOLTS
6K7	R.F.	210	40	0.8	0.8	6.5
6L7	Mixer	210	40	1.0	1.0	6.5
6C5	Osc.	95	--	---	0	6.5
6K7	1st I.F.	210	40	1.2	1.2	6.5
6K7	2nd I.F.*	210	40	1.0 to 2.0	1.0 to 2.0	6.5
6K7	AFC Amp.	210	40	1.0	1.0	6.5
6H6	2nd Det.	0	--	---	---	6.5
6H6	A.F.C. Rect.	0	--	---	---	6.5
6C5	Tunalite	AC	--	---	0	6.5
6J7	Control	160	90	4.0	4.0	6.5
6C5	1st Audio	60	--	---	2.5	6.5
6C5	Inverter	60	--	---	2.5	6.5
6H6	Output	300	210	---	0	6.5
6N6	Output	300	210	---	0	6.5
6N6	Output	300	210	---	0	6.5
6N6	Output	300	210	---	0	6.5
80	Rectifier	280AC	---	---	---	5.0
80	Rectifier	280AC	---	---	---	5.0

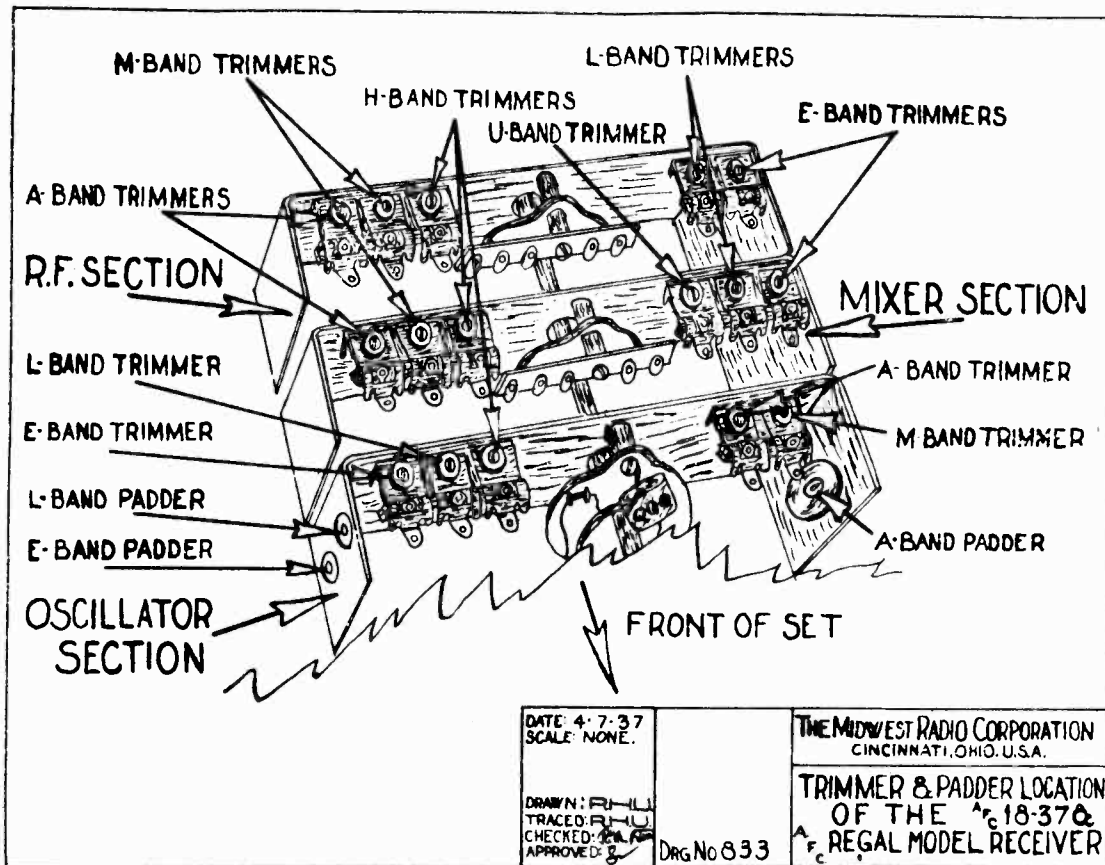
* 1.0 Volt Bias when on "M"- "y" and "H" bands.

LINE VOLTAGE 115 VOLTS A.C. 60 CYCLES

1000 ohm per volt meter used on all D.C. measurements from ground. Voltage plus or minus 15% depending upon line voltage.

MODEL 18-37 AFC
 MODEL Regal-37 AFC
 Alignment, Trimmers

MID-WEST RADIO CORP.



INSTRUCTIONS FOR ALIGNING THE MIDWEST 18-37 A.F.C. RECEIVER AND A.F.C. REGAL (1937)

A good signal generator with accurate frequency calibration, and output meter, and a 0-10 DC milliammeter are required. An intermediate frequency of 456 kc is used.

- (1) Remove grid cap from mixer tube. Set the signal generator to 456 kc and connect it from the mixer grid to ground
 - (2) Remove the oscillator tube from the receiver.
 - (3) Connect the output meter from the plate of the output tube to Positive B, or from the plates of one pair of tubes to the plates of the other pair of tubes.
 - (4) Using as weak a signal as will give a definite reading on the output meter, align the I.F. transformer for maximum output.
 - (5) Decrease the input signal and realign.
 - (6) Connect the 0-10 milliammeter in series with the cathode of the 6J7 A.F.C. control tube.
 - (7) Turn off A.F.C. by pressing push button. If meter kicks up or down adjust plate trimmer for maximum deflection, either up or down, from the false zero. If no kick is noted turn diode trimmer slightly (about 1/8 turn) and proceed as above.
 - (8) Adjust diode trimmer for false zero.
 - (9) Flip A.F.C. off and on noting reading of milliammeter. If meter kicks up or down the diode trimmer is not properly aligned. This adjustment is very critical and must be done very carefully if the A.F.C. is to function properly.
- This completes the alignment of the I.F. Amplifier.

Insert the oscillator tube. Connect the signal generator between antenna and ground. Connect the mixer lead to grid of mixer tube. Turn off A.F.C. by depressing push button.

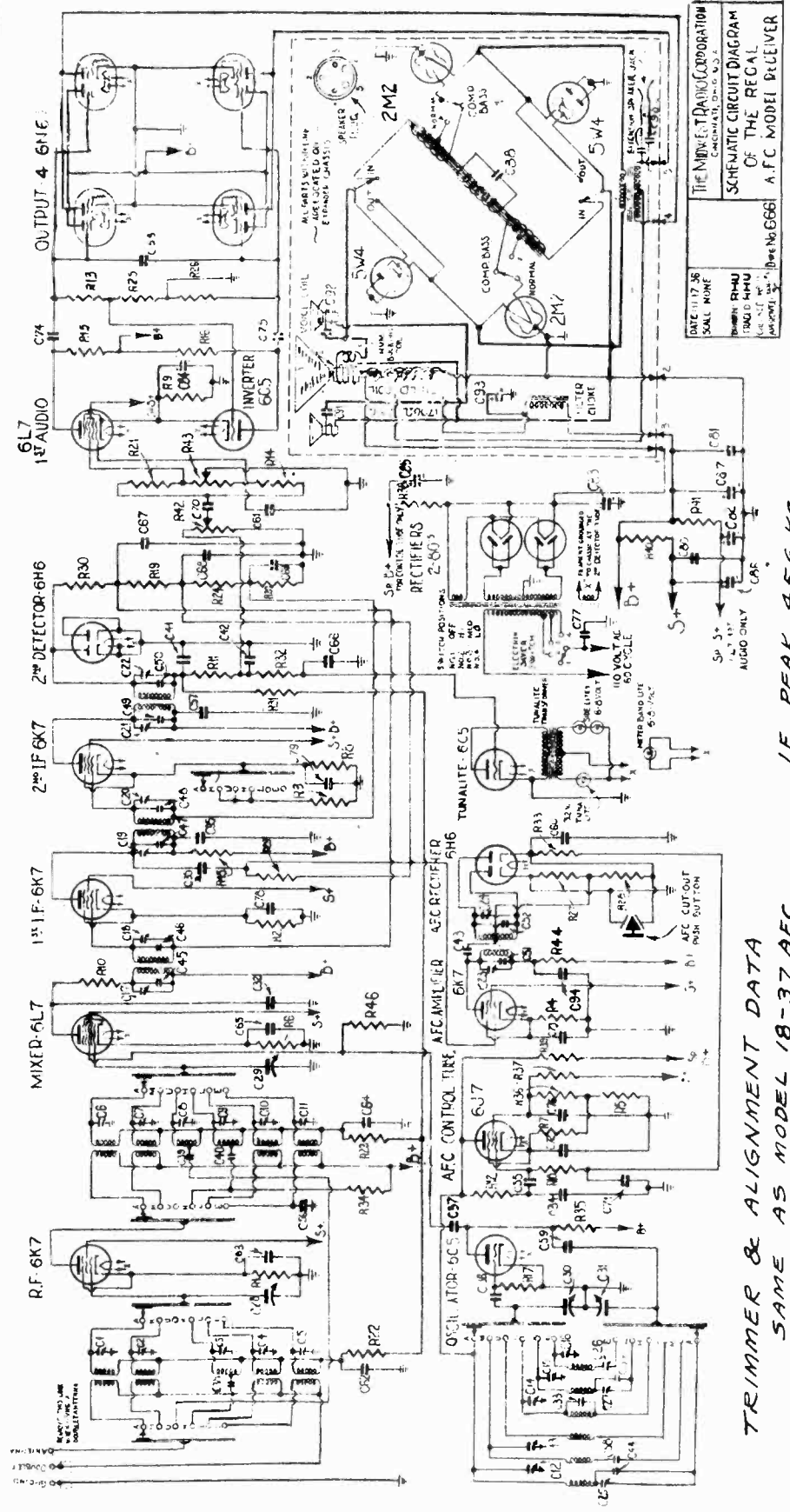
- (1) Set the wave change switch to the "E" band.
- (2) Set signal generator and dial to 340 kc.
- (3) Adjust "E" oscillator trimmer to peak and adjust R.F. and mixer trimmers for maximum gain.

- (4) Reset signal generator and dial to 135 kc.
 - (5) Adjust "E" padder for peak.
 - (6) Repeat adjustment of oscillator trimmer and padder until one does not effect the other.
- This completes the alignment on the "E" band.
- (1) Set wave change switch to "A" band.
 - (2) Set signal generator and dial to 1490 kc.
 - (3) Adjust "A" oscillator trimmer for peak and adjust R.F. and mixer trimmers for maximum gain.
 - (4) Reset signal generator and dial to 550 kc.
 - (5) Adjust "A" padder for peak.
 - (6) Repeat adjustment of oscillator trimmer and padder until one does not effect the other.
- This completes alignment of the "A" band.
- (1) Set wave change switch to "L" band.
 - (2) Set signal generator and dial to 4 mc.
 - (3) Adjust "L" oscillator trimmer for peak and adjust R.F. and mixer trimmers for maximum gain.
 - (4) Reset signal generator and dial to 1.3 mc.
 - (5) Adjust "L" padder for peak.
 - (6) Repeat adjustment of "L" oscillator trimmer and padder until one does not effect the other.
- This completes the alignment of the "L" band.
- (1) Set wave change switch to "M" band.
 - (2) Set signal generator and dial to 11.5 mc.
 - (3) Adjust "M" oscillator trimmers for maximum gain.
- This completes the alignment of the "M" band.
- (1) Set wave change switch to "H" band.
 - (2) Set signal generator and dial to 26 mc.
 - (3) Adjust "H" oscillator trimmer to fundamental peak and adjust R.F. and mixer trimmers for maximum gain.
- This completes the alignment of the "H" band.
- (1) Set wave change switch to "U" band.
 - (2) Set signal generator switch to "U" band.
 - (3) Turn dial generator to 60 mc.
 - (4) Adjust "U" mixer trimmer for maximum gain.
- This completes the alignment of the receiver.

MIDWEST RADIO CORP.

MODEL Regal-37 AFC Schematic, Parts

CONDENSERS		RESISTORS	
C1 35 MMF TRIMMER	C38 100MHF MICA	R1 .50 OHM WIRE WOUND	R20 20000 OHM .25WATT
C2 35 MMF TRIMMER	C39 100MHF MICA	R2 350 OHM .25 WATT	R21 20000 OHM .25WATT
C3 35 MMF TRIMMER	C40 100MHF MICA	R3 350 OHM .25 WATT	R22 20000 OHM .25WATT
C4 35 MMF TRIMMER	C41 100MHF MICA	R4 350 OHM .25 WATT	R23 20000 OHM .25WATT
C5 35 MMF TRIMMER	C42 100MHF MICA	R5 350 OHM .25 WATT	R24 20000 OHM .25WATT
C6 35 MMF TRIMMER	C43 100MHF MICA	R6 350 OHM .25 WATT	R25 20000 OHM .25WATT
C7 35 MMF TRIMMER	C44 100MHF MICA	R7 350 OHM .25 WATT	R26 20000 OHM .25WATT
C8 35 MMF TRIMMER	C45 100MHF MICA	R8 350 OHM .25 WATT	R27 20000 OHM .25WATT
C9 35 MMF TRIMMER	C46 100MHF MICA	R9 350 OHM .25 WATT	R28 20000 OHM .25WATT
C10 35 MMF TRIMMER	C47 100MHF MICA	R10 350 OHM .25 WATT	R29 20000 OHM .25WATT
C11 35 MMF TRIMMER	C48 100MHF MICA	R11 350 OHM .25 WATT	R30 20000 OHM .25WATT
C12 35 MMF TRIMMER	C49 100MHF MICA	R12 350 OHM .25 WATT	R31 20000 OHM .25WATT
C13 35 MMF TRIMMER	C50 100MHF MICA	R13 350 OHM .25 WATT	R32 20000 OHM .25WATT
C14 35 MMF TRIMMER	C51 100MHF MICA	R14 350 OHM .25 WATT	R33 20000 OHM .25WATT
C15 35 MMF TRIMMER	C52 100MHF MICA	R15 350 OHM .25 WATT	R34 20000 OHM .25WATT
C16 35 MMF TRIMMER	C53 100MHF MICA	R16 350 OHM .25 WATT	R35 20000 OHM .25WATT
C17 35 MMF TRIMMER	C54 100MHF MICA	R17 350 OHM .25 WATT	R36 20000 OHM .25WATT
C18 35 MMF TRIMMER	C55 100MHF MICA	R18 350 OHM .25 WATT	R37 20000 OHM .25WATT
C19 35 MMF TRIMMER	C56 100MHF MICA	R19 350 OHM .25 WATT	R38 20000 OHM .25WATT

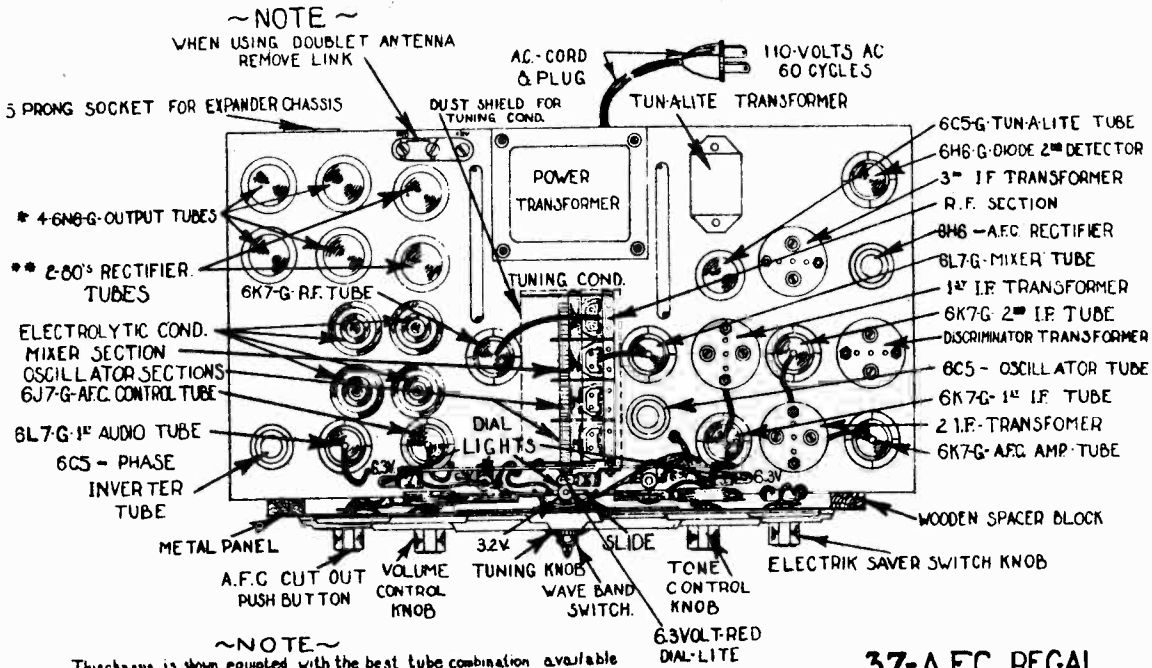


THE MIDWEST RADIO CORPORATION
 GENERAL OFFICES
 1501 N. W. 17th St.
 MIAMI, FLA.
 SCALE NONE
 DRAWN R.M.H.
 CHECKED J.H.H.
 APPROVED J.H.H.
 PROJECT No. 6666 A.F.C. MODEL RECEIVER

TRIMMER & ALIGNMENT DATA
 SAME AS MODEL 18-37 AFC
 IF PEAK 45.6 KC

MODEL Regal-37 AFC
Socket, Trimmers
Voltage

MIDWEST RADIO CORP.



~NOTE~
This chassis is shown equipped with the best tube combination available
* Metal, metal-glass, or glass counter part tubes may be used. For example the output tubes shown are glass counter-part tubes numbered -6N6-G; metal glass tubes would be numbered -6N6-MG and metal tubes would be numbered -6N6.
** Use only 80 type Rectifier tubes.

37-A.F.C. REGAL

DATE: R-10-38	THE MIDWEST RADIO CORPORATION
SCALE NONE	CINCINNATI, OHIO, U.S.A.
PART NO. 11	TOP VIEW OF THE REGAL AFC
DESIGNED BY: RML	MODEL RECEIVER SHOWING
APPROVED: RML	LOCATION OF TUBES & OTHER PARTS
DRG No. 747	

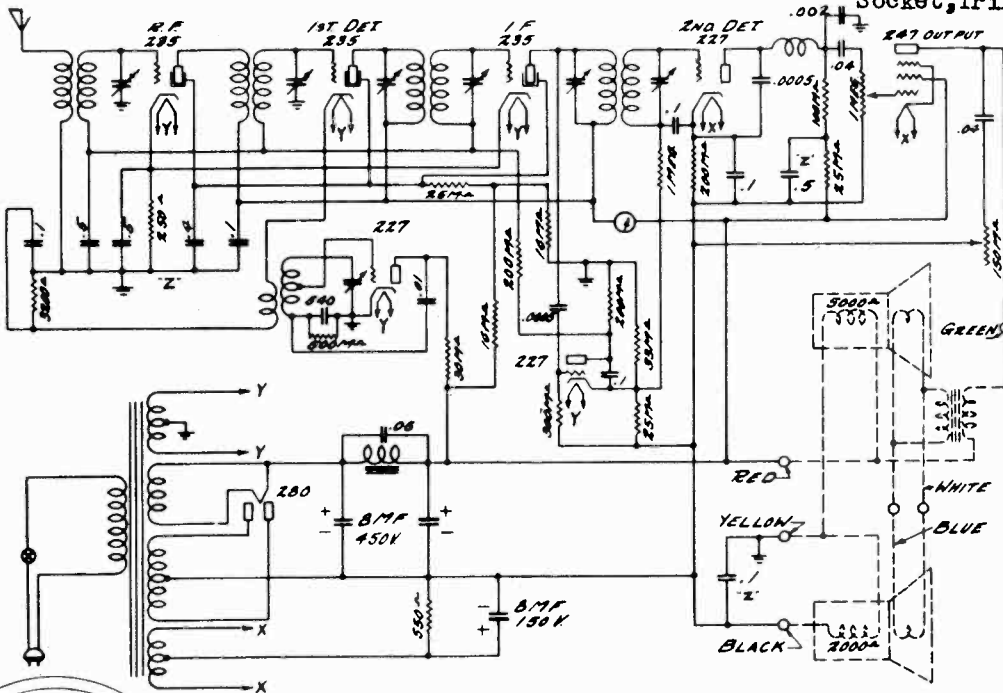
THE MIDWEST RADIO CORP.		CINCINNATI, OHIO				
LIST OF TUBE VOLTAGES OF 37 MODEL REGAL RECEIVER						
ALL TESTS MADE WITH NO SIGNAL INPUT						
TYPE	POSITION	PLATE VOLTS	SCREEN VOLTS	SUPP. VOLTS	CATHODE VOLTS	FIL VOLTS
6K7	R. F.	210	50	1.0	1.0	6.5
6K7	Mixer	210	45	3.5	3.5	6.5
6C5	Osc.	95	--	--	3.5	6.5
6K7	1st I.F.	210	50	1.2	1.2	6.5
6K7	2nd I.F.	210	50	3.0	3.0	6.5
6K7	AFC Amp.	210	50	6.0	6.0	6.5
6H6	2nd Det.	0	--	--	0	6.5
6H6	Audio Rect.	0	--	--	6.0	6.5
6C5	Tunalite	AC	--	--	0	6.5
6J7	Squelch	150	20	AC-0	4.0	6.5
6L7	1st Audio	100	50	--	4.0	6.5
6C5	Inverter	90	--	--	4.0	6.5
6N6	Output	300	--	--	4.0	6.5
6N6	Output	300	--	--	0	6.5
6N6	Output	300	--	--	0	6.5
6N6	Output	300	--	--	0	6.5
80	Rect.	280AC	--	--	--	5.0
80	Rect.	280AC	--	--	--	5.0
2M2	Var. Res.	---	--	--	---	---
2M2	Var. Res.	---	--	--	---	---
5W4	Fixed Res.	---	--	--	---	---
5W4	Fixed Res.	---	--	--	---	---
LINE VOLTAGE 115 VOLTS A.C. 60 CYCLES, B PLUS 225 VOLTS						
1000 Ohm per volt meter used on all D. C. measurements from ground. Volume control at maximum position.						

MONTGOMERY WARD & CO.

MODEL 62-34, Washington
Schematic, Voltage
Socket, Trimmers

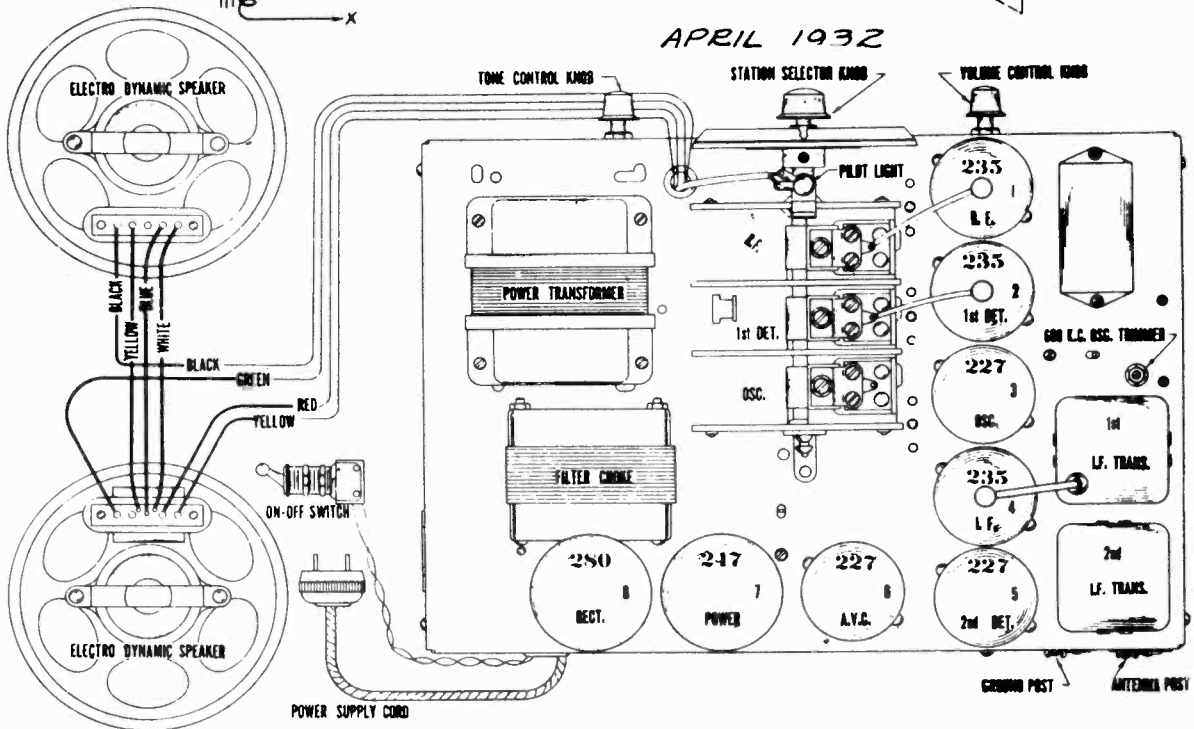
25 CYCLE CHASSIS

The 25 Cycle chassis use 25 Cycle Power Transformer, Part No. U 3974 instead of Power Transformer U 3925 and choke condenser No. U 1375 instead of U 2854.



NOTE: CONDENSERS MARKED "Z" ARE IN ONE UNIT.

APRIL 1932



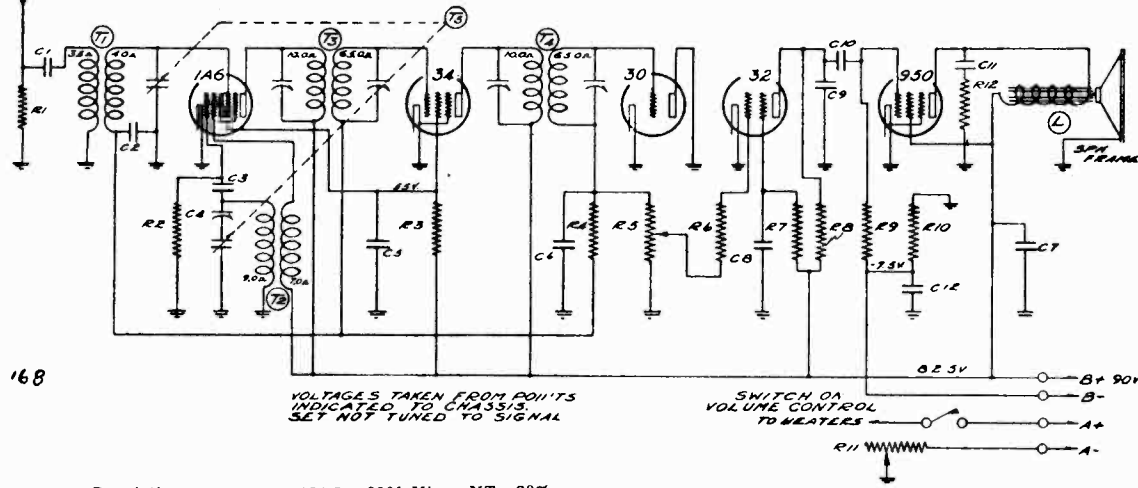
VOLTAGES AT SOCKETS—LINE VOLTAGE 115 VOLTS

Type of Tube	Position of Tube	Function	"A" Volts	"B" Volts	Control Grid "C" Volts	Screen Volts	Screen Current MA	Cathode Volts	Plate Current MA	Grid Test
235	1	R. F.	2.3	185	.4	45	4	2.0	2.3	4
235	2	1st Det.	2.3	185	5.4	42	4	5.4	1.0	1.4
227	3	Osc.	2.3	105	10-25 (1)				3.1	3.2
235	4	I. F.	2.3	185	.4	45	4	2	2.3	4
227	5	2nd Det.	2.35	145	10				.4	.4
227	6	A.V.C.	2.25	80 (2)	45 (3)				29	32
247	7	Power	2.45	265	19 (4)	290	5		42	
280	8	Rect.	5.0						Per Plate	

(1) Measured across 500 M ohm osc. bias resistor. Bias voltage varies from 10—25 volts between 1500 and 550 K. C.
 (2) Measured from B— to A.V.C. plate
 (3) Measured from B— to A.V.C. cathode.
 (4) Measured from B— to X fil. across 550 ohm resistor.

MODELS 62-230, 62-240
Schematic, Voltage
Socket, Trimmers, Alignment

MONTGOMERY WARD & CO.

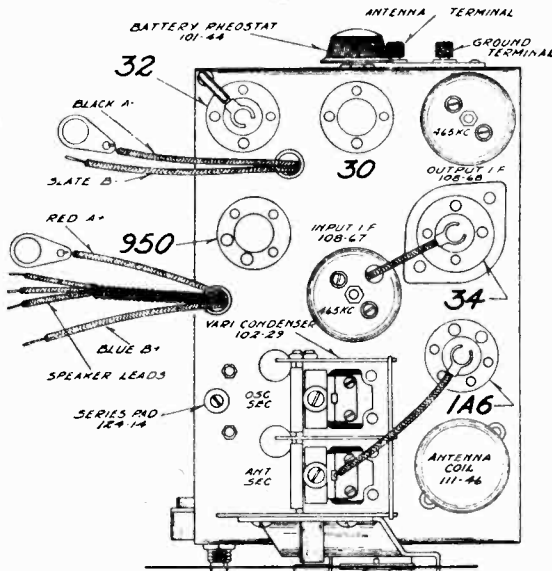


168

VOLTAGES TAKEN FROM POINTS INDICATED TO CHASSIS SET NOT TUNED TO SIGNAL

SWITCH ON VOLUME CONTROL TO HEATERS TO WEATERS

No.	Part No.	Description	Part No.	Description
RESISTORS				
R1	130-17	10M Ohm - 1/4 Watt - 20% - 20 Volt - Carbon	C8	129-5 .0001 Mica - MT - 20%
R2	130-52	50M Ohm - 1/4 Watt - 20% - 10 Volt - Carbon	C7	100-6 .25 x 200 Volt
R3	130-17	10M Ohm - 1/4 Watt - 20% - 20 Volt - Carbon	C9	100-9 .05 x 200 Volt - 25%
R4	130-38	2 Meg Ohm - 1/4 Watt - 20% 100 Volt - Carbon	C10	100-11 .01 x 400 Volt - 25%
R5	101-43	1 Meg Ohm Volume Control and Switch	C11	100-11 .01 x 400 Volt - 25%
R6	130-52	50M Ohm - 1/4 Watt - 20% 10 Volt - Carbon	C12	119-22 10.0 Mfd. x 25 Volts - Working Voltage
R7	130-19	1 Meg Ohm - 1/4 Watt - 20% 100 Volt - Carbon	PARTS	
R8	130-9	200M Ohm - 1/4 Watt - 20% - 20 Volt - Carbon	T1	111-16 Antenna Coil
R9	130-19	1 Meg Ohm - 1/4 Watt - 20% 100 Volt - Carbon	T2	110-36 Oscillator Coil
R10	130-93	450 Ohm - 1/4 Watt - 10% 10 Volt - Carbon	T3	108-67 Input I.F. Coil 465 K.C.
R11	101-44	4.75 Ohms - Rheostat	T4	108-68 Output I.F. Coil 465 K.C.
R12	130-52	50M Ohm - 1/4 Watt - 20% 10 Volt - Carbon	T5	102-29 Two Gang Condenser
CONDENSERS				
C1	100-11	.01 x 400 Volt - 25%	L	114-19 Six Inch Magnetic Speaker
C2	100-22	.05 x 200 Volt - 25%		
C3	129-12	.00025 Mica - MT - 20%		
C4	124-14	Series Pad		
C5	100-9	.05 x 200 Volt - 25%		



Serial No. 6C225276 and up

DESCRIPTION

TUBES:

The tube complement of this chassis is as follows:

- 1 Type 1A6—first detector oscillator.
- 1 Type 34—I.F. amplifier. 465 K. C.
- 1 Type 30—second detector. A. V. C.
- 1 Type 32—audio.
- 1 Type 950—output.

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.

All voltages as indicated on diagram, are measured with a new set of batteries.

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.

ALIGNING INSTRUCTIONS

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

In order to properly align this chassis, an oscillator (generator) is necessary.

All adjustments should be made with a non-metallic screw driver.

ALIGNING I.F. TRANSFORMERS: (465 K.C.)

1. With volume control full on and with variable condenser at its minimum capacity position, plates entirely out of mesh, and with external oscillator set at 465 K.C. connected in series with a .1 mfd. condenser, to the grid of the 1A6 tube (cap at top of tube), adjust I.F. transformers, parts number 108-67 and 108-68, to resonance. Both of these transformers have two (2) adjustments each, they are accessible from the tops of the cans (for location see top view).

Use as a resonance indicator an output meter connected across the outside terminals of the speaker or by means of an adapter to the plate and screen of the type 950 output tube. Maximum deflection of the volt meter indicates resonance.

Use only enough signal to get a readily readable output.

A low range output meter or the low scale of a multi-range meter should be used.

BROADCAST BAND ALIGNMENT:

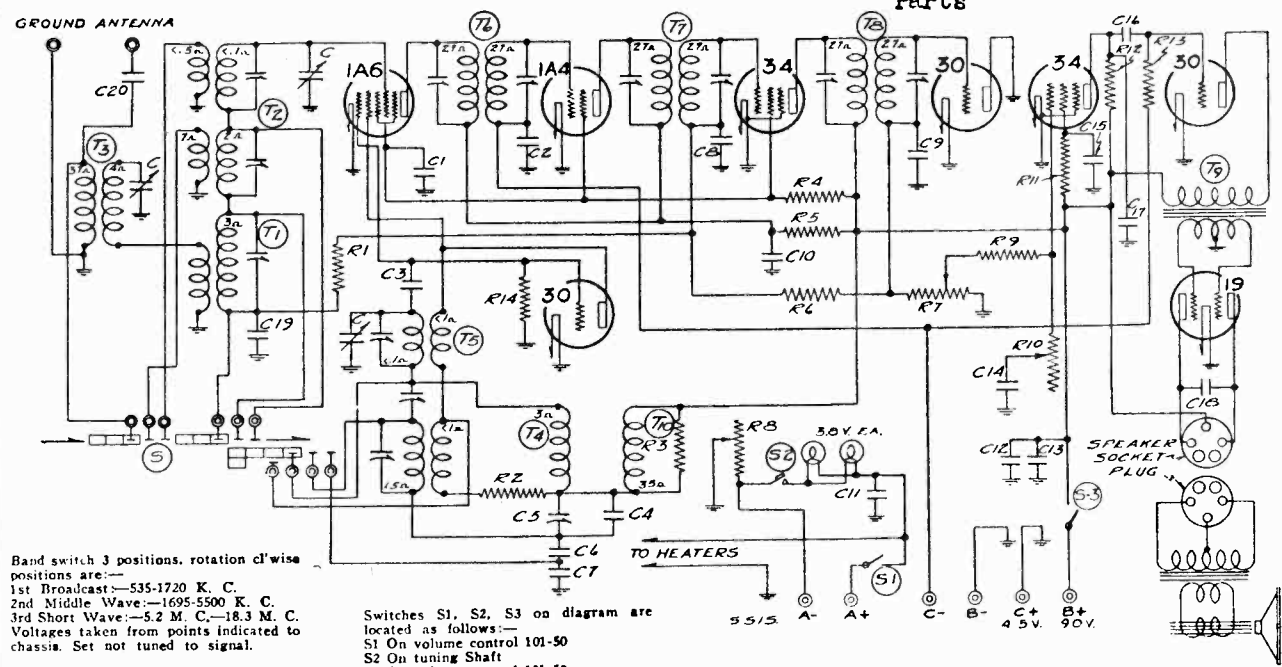
1. Set external oscillator to 1720 K.C. and connect it in series with a 200 mfd. condenser to the antenna and ground posts.
 - (a) With variable condenser in its minimum capacity position, plates entirely out of mesh, adjust oscillator trimmer (rear section of variable condenser) to resonance.
 - (b) Re-set external oscillator to 1400 K.C. Rotate variable condenser, pick up signal and adjust antenna trimmer (front section of variable condenser) to resonance.
 - (c) Re-set external oscillator to 600 K.C., move dial pointer to 600 K.C., and adjust series pad, part number 124-14 (see top view), to resonance. While making this adjustment, slowly rock variable condenser to and fro until maximum output is obtained.
 - (d) Check for sensitivity at 1400, 1000, 600 K.C. DO NOT BEND PLATES.

MONTGOMERY-WARD & CO.

MODELS 62-251, 62-255, 62-328

62-338, 62-428

Schematic, Socket, Trimmers Parts



Band switch 3 positions, rotation clockwise positions are:
 1st Broadcast—535-1720 K. C.
 2nd Middle Wave—1695-5500 K. C.
 3rd Short Wave—5.2 M. C.—18.3 M. C.
 Voltages taken from points indicated to chassis. Set not tuned to signal.

Switches S1, S2, S3 on diagram are located as follows:
 S1 On volume control 101-50
 S2 On tuning Shaft
 S3 On volume control 101-50

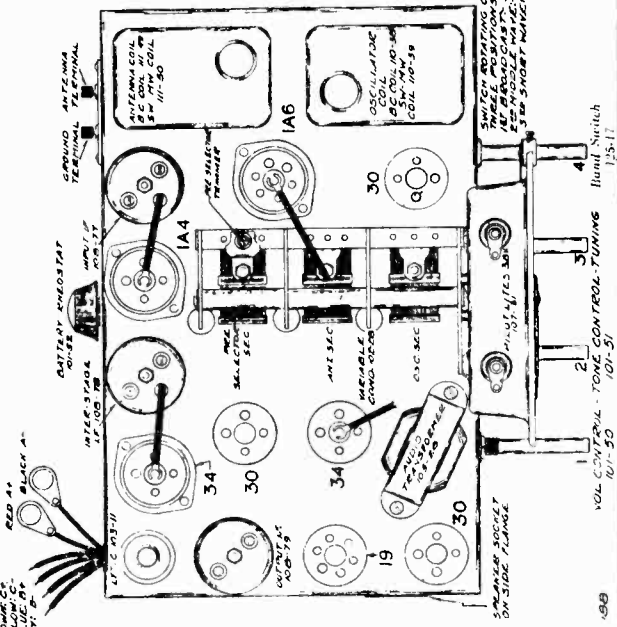
LIST OF REPAIR PARTS (Serial No. 6E 247201 and up)
 Use Only Genuine Factory Replacement Parts

Part No.	Schematic Reference	Description	No. Used In Set	Selling Price Each
CONDENSERS				
BE 100-5B	C11	1.0 x 120 Volt Tubular with Bracket	1	.30
BE 100-6	C1	.25 x 200 Volt Tubular less Bracket	1	.15
BE 100-6B	C13	.25 x 200 Volt Tubular with Bracket	1	.15
BE 100-11	C14, C16, C20	.01 x 400 Volt Tubular	1	.11
BE 100-20	C10	.1 x 200 Volt Tubular	1	.11
BE 100-22	C2, C8, C18, C19	.05 x 200 Volt Tubular	4	.10
BE 100-25	C18	.002 x 600 Volt Tubular	1	.09
BE 103-11	C12	8 Mfd. x 200 Volt Electrolytic	1	.40
BE 129-5	C17	.0001 Mica—Type MT—20%	1	.09
BE 129-12	C9	.00025 Mica—Type MT—20%	1	.12
BE 129-50	C3	.00004 Mica—Type MT—30%	1	.09
BE 129-54	C7	.003 Mica—Type MW—2 1/4 %	1	.25
BE 129-55	C6	.0034 Mica—Type MW—2 1/4 %	1	.25
BE 129-65	C4	.00065 Mica—Type MT—5%	1	.10
RESISTORS				
BE 130-11	R12	250M Ohm—1/4 Watt—20%—50 Volt Carbon	1	.08
BE 130-12	R3, R9, R14	50M Ohm—1/4 Watt—20%—20 Volt Carbon	3	.08
BE 130-19	R5, R11, R13	1 Meg Ohm—1/4 Watt—20%—100 Volt Carbon	3	.08
BE 130-20	R1	100M Ohm—1/4 Watt—20%—50 Volt Carbon	1	.08
BE 130-27	R2	50 Ohm—1/4 Watt—20%—3 Volt Carbon	1	.10
BE 130-31	R5	1500 Ohm—1/4 Watt—20%—10 Volt Carbon	1	.08
BE 130-109	R4	7500 Ohm—1/4 Watt—20%—50 Volt Carbon	1	.08
COILS				
BE 108-77	T4	Input I.F. complete with Can	1	.60
BE 108-78	T7	Interstage I.F. complete with Can	1	.60
BE 108-79	T8	Output I.F. complete with Can	1	.60
BE 110-38	T4	Broadcast Oscillator Coil Complete	1	.36
BE 110-39	T5	Mid-Wave & Short Wave Oscillator Coil Comp.	1	.76
BE 111-49	T1	Broadcast Antenna Coil Assembly Complete	1	.40
BE 111-50	T2	Mid-Wave & Short Wave Antenna Coil Assem. Comp.	1	.80
BE 111-51	T3	Broadcast Preselector Coil	1	.35
BE 123-3	T10	R.F. Choke Coil	1	.20
SOCKETS				
BE 121-6		Six Prong Socket—Marked "1A6"	1	.09
BE 121-8		Six Prong Socket—Marked "19"	1	.09
BE 121-8		Five Prong Socket—Marked "Spkr"	1	.08
BE 121-9		Four Prong Socket—Marked "34"	2	.08
BE 121-9		Four Prong Socket—Marked "30"	3	.08
BE 121-9		Four Prong Socket—Marked "1A4"	1	.08
SPEAKERS				
BE 114-38		Six Inch Permanent Magnet Dynamic (Mantle)	1	3.80
BE 114-39		Eight Inch Permanent Magnet Dynamic(Console)	1	3.80
MISCELLANEOUS				
BE 101-50	R7	Volume Control and Switch (250 M ohm)	1	.60
BE 101-51	R10	Tone Control (300 M ohm)	1	.40
BE 101-62	R8	Filament Rheostat (2 ohm)	1	.30
BE 103-28	C	Three Gang Variable Condenser	1	2.50
BE 105-28	T9	Audio Input Transformer	1	1.00
BE 113-34		Ant.-Gnd. Strip	1	.10
BE 115-35		Antenna-Oscillator, Shield	2	.12
BE 115-46		Shield Cap for Part 115-49	2	.02
BE 115-49		Tube Shield for Types 1A4—1A6 Tubes	1	.10
BE 115-55		Tube Shield for Type 34 Tube	1	.16
BE 124-28	C5	J-3 Series Pad	1	.35
BE 125-17	S	Band Switch	1	.18
BE 128-44		"Volume" Knob with Spring—Wood	1	.08
BE 128-45		"Tone" Knob with Spring—Wood	1	.08
BE 128-46		"Band Switch" Knob with Spring—Wood	1	.08
BE 128-47S		"Tuning" Knob with Set Screw—Wood	1	.08
BE 131-12		Bakelite Knob with Arrow	1	.07

TUBES:

The tube complement of this chassis is as follows:
 1—Type 1A6 Pentagrid Mixer, First Detector.
 1—Type 1A4 Tetrode First I.F. Amplifier (465 K.C.)
 1—Type 34 Remote Cut-Off Pentode, 2nd I.F. Amplifier (465 K.C.)
 1—Type 30 Oscillator.
 1—Type 30 Second Detector and A. V. C.
 1—Type 34 A.F. Amplifier.
 1—Type 30 Driver Amplifier.
 1—Type 19 Class "B" Push-Pull Output Amplifier.

FOR ALIGNMENT SEE INDEX

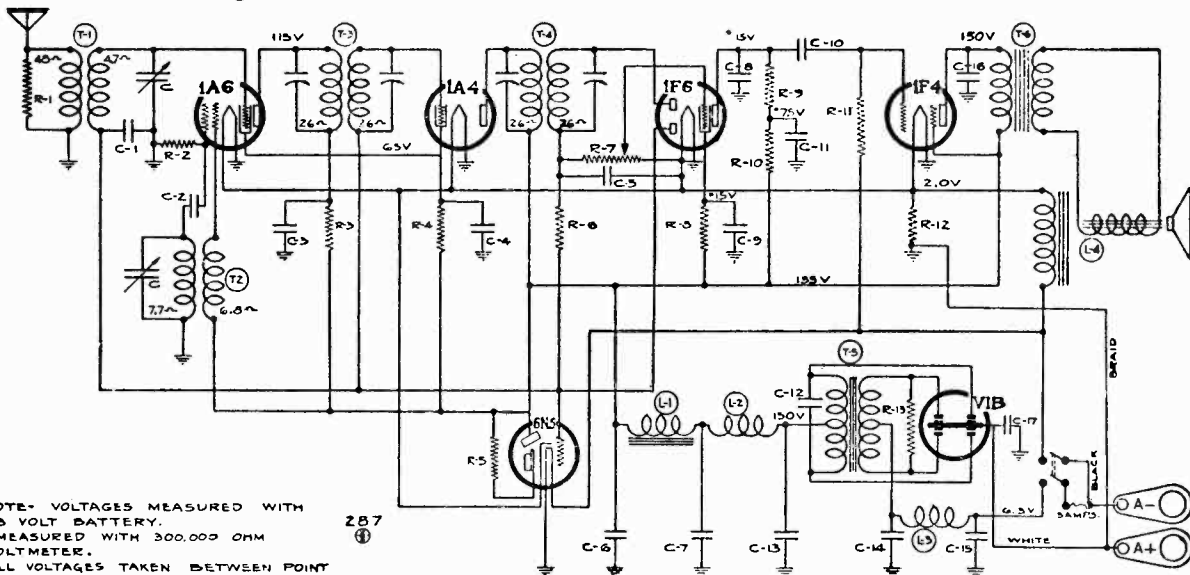


FOR ALIGNMENT, SEE INDEX

MODEL 62-264

Schematic, Voltage, Parts
Socket, Trimmers, Alignment

MONTGOMERY-WARD & CO.



NOTE: VOLTAGES MEASURED WITH
6.3 VOLT BATTERY.
* MEASURED WITH 300,000 OHM
VOLTMETER.
ALL VOLTAGES TAKEN BETWEEN POINT
INDICATED AND GROUND.

No.	Part No.	Description
C1	100-22	.05x200 v.
C2	129-21	.0002 Mica
C3	100-9	.05x200 v.
C4	100-20	.1x200 v.
C5	129-12	.00025 Mica
C6	119-31	5.0x200 v. lytic
C7	119-31	5.0x200 v. lytic
C8	129-5	.0001 Mica
C9	100-20	.1x200 v.
C10	100-26	.02x400 v.
C11	100-9	.05x200 v.
C12	100-34	.005x1200 v.
C13	100-20	.1x200 v.

C14	100-40	.5x200 v.
C15	100-40	.5x200 v.
C16	100-19	.006x500 v.
C17	100-35	.5x200 v.
RESISTORS		
R1	130-132	10M ohm—1/3 W. Insulated
R2	130-12	50M ohm—1/3 W.
R3	130-17	10M ohm—1/3 W.
R4	130-133	15M ohm—1/2 W.
R5	130-110	1 megohm—1/10 W.
R6	130-4	3 megohm—1/3 W.
R7	101-64	1 megohm—Volume Control
R8	130-134	1 megohm—1/3 W. Insulated
R9	130-100	150M ohm—1/3 W.
R10	130-135	150M ohm—1/3 W. Insulated

R11	130-37	750M ohm—1/3 W.
R12	106-32	3.5 ohm—1/4 W.
R13	130-136	200 ohm Insulated—1/2 W.
MISCELLANEOUS PARTS		
T1	111-58	Antenna Coil
T2	110-51	Oscillator Coil
T3	108-89	Input I. F.
T4	108-90	Output I. F.
T5	104-79	Power Transformer
T6	114-55	Output transformer (see speaker)
L1	105-34	Filter Choke
L2	105-35	R. F. "B" Choke
L3	105-19	Choke
L4	114-55	4.6 ohm speaker field

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.

ALIGNING I. F. TRANSFORMERS: (465 K.C.)

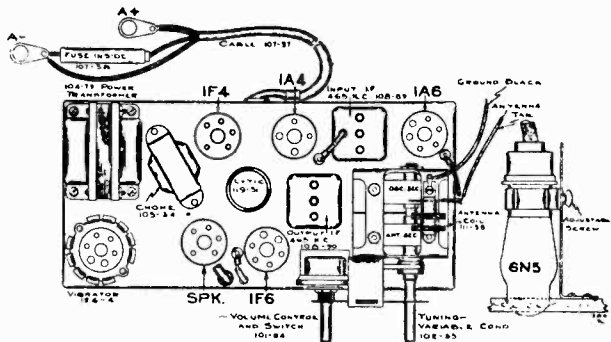
Part No. 108-90. Output I.F. Transformer
Part No. 108-89. Input I.F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see top view—Fig. 1, page 2).

- With volume control full on (the extreme right of its rotation), and with the variable condenser set to minimum capacity position, make the following adjustments:
 - Connect external oscillator set at 465 kilocycles, in series with "Dummy 1", to the control grid cap of the type 1A4 tube, and adjust the output I.F. transformer No. 108-90 to resonance.
 - Move oscillator output clip from grid of 1A4 to grid cap of 1A6 and adjust input I.F. transformer (No. 108-89) to resonance.
 - With oscillator still connected to 1A6, readjust output I.F. transformer (108-90) if necessary.

R. F. ALIGNMENT: (535-1720 K.C.)

- With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with "Dummy 2", to tan antenna and black ground leads and make the following adjustments:
 - With external oscillator set at 1720 kilocycles, adjust oscillator trimmer (rear section of gang condenser).
 - Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance (front section of gang condenser).
 - Check sensitivity at 600 and 1000 kilocycles.



TOP VIEW

The tube complement of this chassis consists of the following tubes:

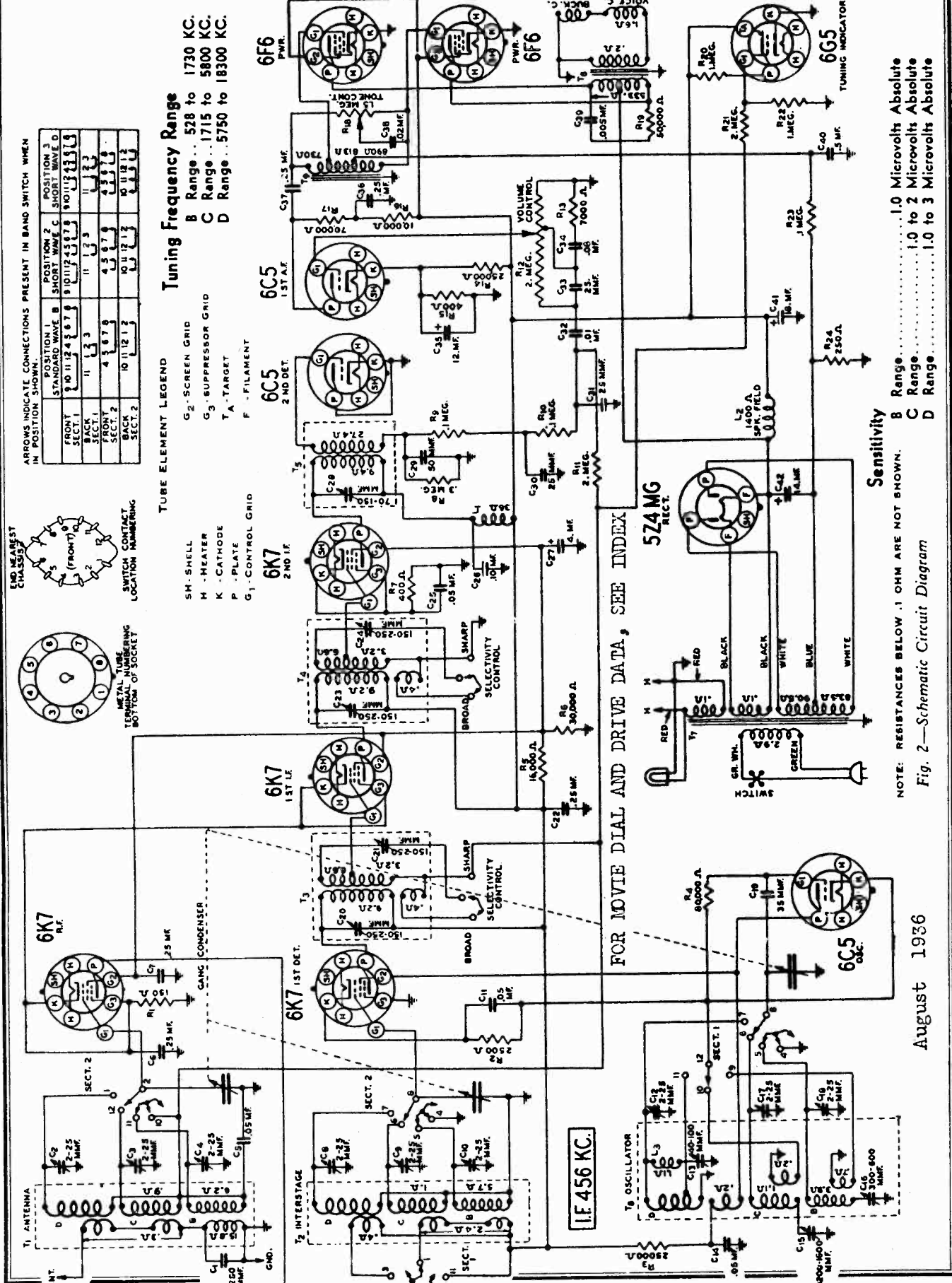
- The type and function of each tube is as follows:
- 1—Type 1A6 Pentagrid Mixer, First Detector-oscillator
 - 1—Type 1A4 Super-control R.F. Pentode, I.F. Amplifier (465 K.C.)
 - 1—Type 1F6 Duplex Diode Pentode Second Detector, A.V.C. and First Audio.
 - 1—Type 1F4 Pentode Output Amplifier.
 - 1—Type 6N5 Cathode-Ray Tuning Eye.

DUMMY ANTENNAS:

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1" and "Dummy 2."

- Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.
- Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser and a 20 ohm resistor connected in series with each other and in series with the external oscillator.

MONTGOMERY-WARD & CO. Schematic
 MODELS 62-261, 62-311, 62-411

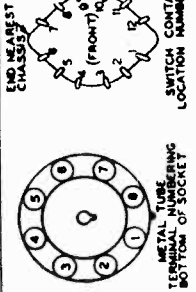


ARROWS INDICATE CONNECTIONS PRESENT IN BAND SWITCH WHEN IN POSITION SHOWN.

	POSITION 1 STANDARD WAVE	POSITION 2 SHORT WAVE C	POSITION 3 SHORT WAVE D
FRONT BACK SECT. 1	9 10 11 12 4 8 7 9	9 10 11 12 4 8 7 9	9 10 11 12 4 8 7 9
FRONT BACK SECT. 2	11 1 3 3	11 1 3 3	11 1 3 3
FRONT BACK SECT. 2	4 3 6 7 9	4 3 6 7 9	4 3 6 7 9
FRONT BACK SECT. 2	10 11 12 1 2	10 11 12 1 2	10 11 12 1 2

Tuning Frequency Range
 B Range... 528 to 1730 KC.
 C Range... 1715 to 5800 KC.
 D Range... 5750 to 18300 KC.

- TUBE ELEMENT LEGEND**
- G₂ - SCREEN GRID
 - G₃ - SUPPRESSOR GRID
 - T.A. - TARGET
 - F - FILAMENT
 - S.H. - SHELL
 - H - HEATER
 - K - CATHODE
 - P - PLATE
 - G₁ - CONTROL GRID



FOR MOVIE DIAL AND DRIVE DATA, SEE INDEX

Sensitivity
 B Range... 1.0 Microvolts Absolute
 C Range... 1.0 to 2 Microvolts Absolute
 D Range... 1.0 to 3 Microvolts Absolute

NOTE: RESISTANCES BELOW .1 OHM ARE NOT SHOWN.

Fig. 2—Schematic Circuit Diagram

MODELS 62-261, 62-311
62-411
Socket, Trimmers
Voltage, Coils

MONTGOMERY WARD & CO.

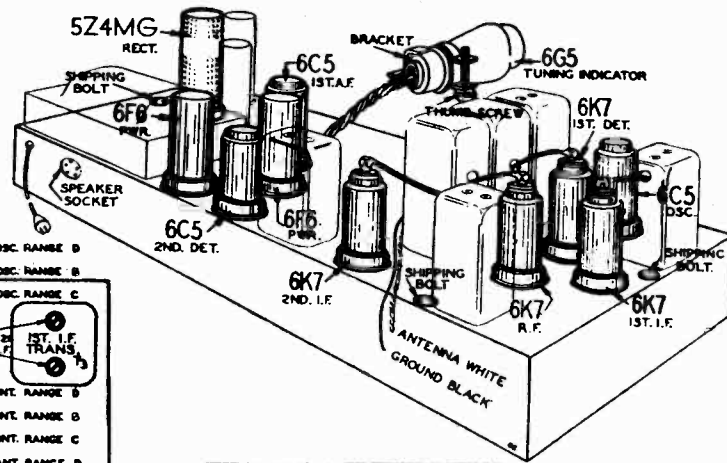


Fig. 6—Location of Tubes

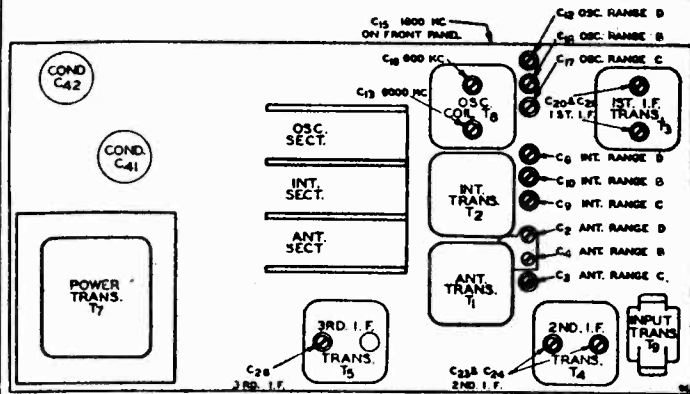


Fig. 3—Location of Trimmers

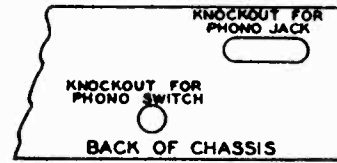
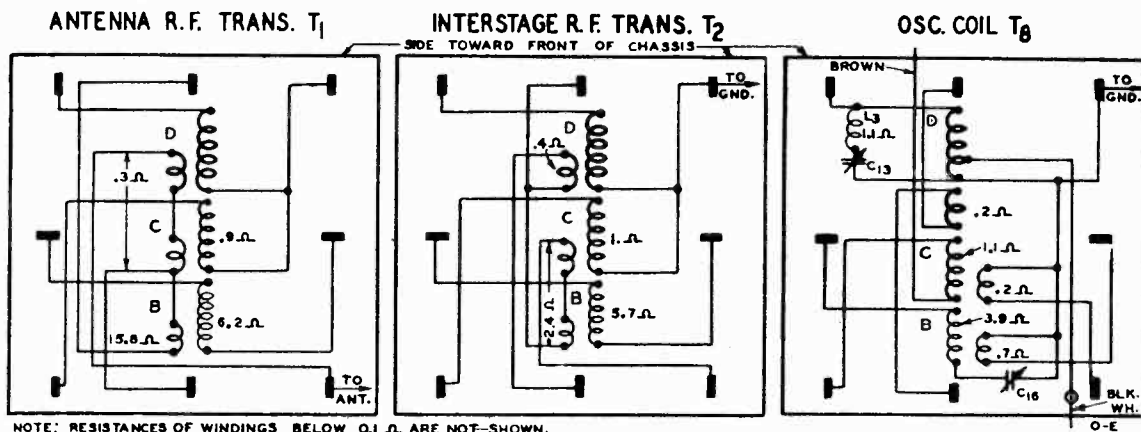


Fig. 8—Location of Phono Knockouts



NOTE: RESISTANCES OF WINDINGS BELOW 0.1 Ω ARE NOT SHOWN.

Fig. 4—R. F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

Line Voltage: 115
Volume Control: Maximum

Antenna Shorted to Ground
Position of Band Switch: Standard Wave

TUBE	FUNCTION	VOLTAGE BETWEEN SOCKET PRONGS AND GROUND (Unless otherwise indicated)							
		Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Prong No. 8
6K7	R.F.	0	6.1(1)	250	100	2.5	...	6.1(1)	2.5
6K7	1st Det.	0	6.1(1)	250	120	0	...	6.1(1)	9
6C5	Osc.	0	6.1(1)	120	...	...	...	6.1(1)	0
6K7	1st I.F.	0	6.1(1)	250	100	2.5	...	6.1(1)	2.5
6K7	2nd I.F.	0	6.1(1)	250	100	3	...	6.1(1)	3
6C5	2nd Det.	0	6.1(1)	0	...	...	...	6.1(1)	0
6C5	1st A.F.	0	6.1(1)	110	...	...	...	6.1(1)	4.5
6F6	Power Amp.	0	6.1(1)	330	250	25(2)	...	6.1(1)	0
5Z4MG	Rect.	0	4.8(3)	...	640(4)	...	640(4)	...	4.8(3)

6G5 | Tuning Indicator | Plate to Ground 20(5) | Target to Ground 250 | Cathode to Ground 0 | Across Heater 6.1 A.C.

(1) A.C. voltage as read across heater terminals 2 and 4.
(2) As read across resistor R24.
(3) A.C. voltage as read across heater terminals 2 and 8.

(4) A.C. voltage as read across terminals 4 and 6.
(5) As read with 500,000 ohm meter.

I. F. Adjustment

Set the signal generator for a signal of 416 KC. Connect the output of the signal generator through a .1 mf. condenser to the grid of the 1st detector. Connect the ground lead of the receiver to the ground post of the signal generator. Turn the band switch to the Range B position (standard wave band). Turn the selectivity control to the sharp position and keep it in this position for all adjustments. Turn the volume control to the maximum position. Attenuate the signal from the signal generator to prevent the levelling-off action of the AVC. Then adjust the five I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis and the location is shown in Fig. 3.

Range B Alignment

After the procedure for the alignment of each range, as explained below, is completed, it is advisable to repeat the procedure as a final check.

1730 KC Adjustment

Set the signal generator for 1730 KC. Turn the rotor of the tuning condenser to the full open position. Keep the band switch in the standard wave position.

Connect the antenna lead of the receiver through a .200 mmf. condenser to the output of the signal generator.

For this and all subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent AVC action.

Adjust the oscillator Range B trimmer (C18) until maximum output is obtained. The location of this trimmer is shown in Fig. 3.

1500 KC Adjustment

Set the signal generator for 1500 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained.

In sets using pointers, loosen the screw of the large pointer and set the pointer at the 1500 KC mark on the standard wave band scale. Retighten the screw.

In sets using the moving beam of light, there is a moving light assembly held to the front of the drive drum by means of a screw. Loosen this screw and move the light assembly until it is at the 1500 KC mark on the dial. Retighten the screw.

Adjust the interstage Range B trimmer (C10) and antenna Range B trimmer (C4) to maximum.

Do not change the setting of the oscillator Range B trimmer.

600 KC Adjustment

Set the signal generator for 600 KC. Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 600 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Range C Alignment

CAUTION—When aligning the short wave bands be sure NOT to adjust at the image frequency. This can be checked as follows. Set the signal generator at 5000 KC. The signal will then be heard at 7000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC. It may be necessary to increase the input signal to hear the image.

5800 KC Adjustment

Set the signal generator for 5800 KC. Connect the antenna lead of the receiver through a 400 ohm resistor to the output of the signal generator.

Turn the rotor of the tuning condenser to the full open position.

Turn the band switch to the Range C position (first short wave band).

Adjust the oscillator Range C trimmer (C17) until maximum output is obtained. See Fig. 3 for location of this trimmer.

5000 KC Adjustment

Set the signal generator for 5000 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range C trimmer (C9) and antenna Range C trimmer (C3) to maximum.

1800 KC Adjustment

Set the signal generator for 1800 KC. Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 1800 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Range D Alignment

18,300 KC Adjustment

Set the signal generator for 18,300 KC. Keep the antenna lead of the receiver connected through the 400 ohm resistor to the output of the signal generator.

Turn the rotor of the tuning condenser to the full open position.

Turn the band switch to the Range D position (second short wave band).

Adjust the oscillator Range D trimmer (C12) until maximum output is obtained. See Fig. 3 for location of this trimmer.

15,000 KC Adjustment

Set the signal generator for 15,000 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range D trimmer (C8) and antenna Range D trimmer (C2) to maximum.

When adjusting the interstage and antenna Range D trimmers, it will be necessary at the same time to turn the tuning condenser rotor slowly back and forth until the peak of greatest intensity is obtained.

Do not change the setting of the oscillator Range D trimmer.

6000 KC Adjustment

Set the signal generator for 6000 KC. Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 6000 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Trimmer Replacement

If one trimmer of the gang trimmer strip should become defective, it is not necessary to replace the entire strip. A single trimmer P-17A36, as shown in the replacement parts list, may be used. Disconnect the lead from the coil side (side not grounded) of the defective trimmer in the strip. This connection is then made to the single trimmer. Connect it to the side of the trimmer not in contact with the adjusting screw. The other side of the single trimmer is then connected to a good ground, using a piece of heavy wire in order to support the trimmer adequately. In replacing a trimmer, be sure to keep both leads as short as possible and keep the ungrounded lead as far from ground as possible.

Planetary Drive Assembly

The planetary assembly is the unit that is integral with the tuning shaft.

If the nut on the back end of this assembly is too tight, the drive will be jerky and will turn hard in high speed. If this condition exists, back off this nut one or two turns and note the effect.

If this nut is too loose, the drive will slip in slow speed. The remedy in this case, of course, is to tighten the nut.

Should the condenser drive cord slip when the planetary pulley is turning, inspect the tuning condenser, drive drum and gears to see if they are turning properly or if they are being obstructed in some way.

If the drive turns unevenly (rough in spots), this may mean that the planetary assembly is defective or damaged internally and a new unit will be required.

Phonograph Connections

Phonograph connections can be made as shown in Fig. 7. The parts required are shown in the parts list. Knockouts are provided in the back panel of the chassis for mounting the phono jack and phono switch—See Fig. 8.

The phono switch must be mounted with one set of terminals nearest the bottom of the chassis base.

The connections are made by opening the diode return circuit at the volume control. This is done by removing the white wire connected to the insulated lug of the terminal strip on which one end of con-

denser C32 is also connected. The terminal strip is located at the back of the volume control. This wire is then connected to the phono switch as shown in Fig. 7. A wire is then connected from the lug on the above mentioned terminal strip to the phono switch, as shown in Fig. 7. Both of the above wires are connected to the switch terminals nearest the chassis base and should be twisted together as far

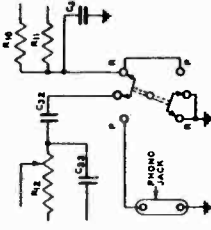


Fig. 7—Phonograph Connections

as possible and run as close to the back of the chassis base as possible.

The lead to condenser C32, after turning away from the back of the chassis base, should be run close to the 6C5 tube sockets.

Complete the other connections as illustrated in Fig. 7, using the lugs in the chassis base, located near the phono switch and jack, for grounding purposes.

The control grid lead of the 6F6 power tube near the back of the chassis should be removed and a longer lead substituted. This lead is run from the tone control to the back of the chassis, along the lower edge and is then brought to the grid terminal by being routed between the speaker socket and the tubular condenser next to it.

If a hum is heard when the phono pickup is touched, reverse the two pickup leads.

Switch Contact Location Numbering

A standard arrangement for switch contact location numbering has been adopted. This numbering is illustrated in Fig. 2. In contact locations not used, the number applying to that particular location is not employed.

Voltage Chart

The voltage readings are taken with a voltmeter having a resistance of 1000 ohms per volt.

The standard metal tube socket terminal numbering system (bottom of socket) is shown in Fig. 5. On the schematic circuit diagram, Fig. 2, is a list giving the complete names of the tube elements and the corresponding symbols as used on the sockets on the schematic.

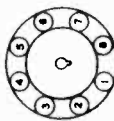


Fig. 5—Metal Tube Terminal numbering (bottom of socket)

MODELS 62-261,62-311
62-411

MONTGOMERY-WARD & CO.

Notes, Parts

Referring to the 1st and 2nd I.F. transformers T3 and T4 in Fig. 2, it will be noted that there are coupling windings shown below the primaries in the illustration.

When the selectivity control is in the sharp position, the coupling windings are open circuited and the loose coupling which exists between the primary and secondary of these transformers results in high selectivity.

When the selectivity control is in the broad position, the coupling winding which is wound under the primary is connected in series with the secondary. This provides overcoupling which results in a greatly widened resonance curve. Passage of a wide range of audio frequencies is thus obtained.

Across the volume control resistor R12 is a filter composed of condensers C33 and C34 and resistor R13. A tap connection near the low potential end of the volume control is connected between the two condensers. At high volume settings, the filter is not effective. At the low volume settings, as the movable arm approaches the tap, the higher frequencies are by-passed through condenser C34. Very high frequencies are transmitted through condenser C33 to compensate for the reduction of these frequencies. At low volume settings the low frequency amplitudes are increased as a result.

Transformer coupling is used between the first audio stage and the output stage which employs two type 6F6 output pentode tubes in a stage of push-pull amplification. A type 5Z4MG (metal glass tube) full wave rectifier is used in the power unit.

The 6G5 tuning indicator tube is wired as shown in the schematic. This tube contains a triode and cathode ray section in one envelope.

The cathode ray is produced by the attraction of electrons from the upper end of the cathode to the coated target or anode, which is operated at a high positive potential. When this electron stream strikes the target the coating glows. The electron stream is controlled by an additional element, or control electrode, in the tube.

As a signal is tuned in, the control grid of the triode section of the 6G5 cathode ray tube becomes increasingly negative, the negative bias voltage being taken from the AVC line. The AVC voltage is reduced to a suitable value by the potentiometer arrangement of the 1 and 2 megohm resistors. The increased bias voltage reduces the triode plate current. This reduces the voltage drop across the 1 megohm plate resistor and raises the triode plate voltage. The triode plate is connected to the control electrode of the cathode ray section of the tube.

The shape and size of the area on the target struck by the cathode ray is governed by the voltage of the control electrode. When the signal is tuned to resonance, practically no plate current flows and the voltage of the control electrode is the same as that of the target. There is no opposition to the flow of electrons to the target. Tuning off resonance decreases the control electrode voltage and causes the darkened sector of the target to widen, because of the opposition to the flow of electrons in the direction of the control electrode.

NOTICE—There is a large letter on the chassis which identifies the set as to major part changes. When ordering parts, please be sure to mention the series number and this large letter.

Prices subject to change without notice

TRANSFORMERS AND COILS

Part No.	Code	Description	List Price
P-9A422	T1	Antenna Transformer and Can Assembly	\$1.90
P-9A423	T2	R. F. Interstage Transformer and Can Assembly	1.85
P-9A425	T3	1st I. F. Transformer and Can Assembly	1.85
P-9A426	T4	2nd I. F. Transformer and Can Assembly	1.85
P-9A427	T8	3rd I. F. Transformer and Can Assembly	1.50
P-51X41	T6	Output Transformer (Part of Speaker Assembly)	2.45
P-53X113	T7	115 Volt, 60 Cycle, Power Transformer	4.40
P-53X124	T7	115 Volt, 25 Cycle, Power Transformer	7.20
P-53X127	T7	115-230 Volt, 40-60 Cycle Power Transformer	6.20
P-9A424	T8	Oscillator Coil and Can Assembly	2.85
P-50X34	T9	Input Transformer	1.25
P-9A496	L1	2nd I. F. Plate Isolating Reactor	.75

CONDENSERS

TUBULAR

Part No.	Code	Capacitance	Voltage	List Price
P-46X80	C5	.05 mf.	180	\$0.15
P-46X117	C6	.25 mf.	180	.25
P-46X104	C7	.25 mf.	240	.25
P-46X80	C11	.05 mf.	180	.15
P-46X119	C14	.05 mf.	340	.20
P-46X121	C22	.25 mf.	340	.30
P-46X80	C25	.05 mf.	180	.15
P-46X106	C26	.10 mf.	340	.15
P-46X120	C32	.01 mf.	340	.15
P-46X176	C34	.08 mf.	180	.15
P-49X10	C36	.25 mf.	340	.60
P-46X120	C37	.25 mf.	340	.15
P-46X120	C38	.01 mf.	340	.15
P-46X174	C39	.005 mf.	1000	.20
P-46X191	C40	.5 mf.	180	.30

ELECTROLYTIC

Part No.	Code	Capacitance	Voltage	List Price
P-46X213	C27	4 mf.	150	.95
	C35	12 mf.	25	Dry
P-46X11	C41	18 mf.	290	Wet
P-46X10	C42	14 mf.	400	Wet

MOLDED

Part No.	Code	Capacitance	Voltage	List Price
P-47X69	C1	250 mmf.		.15
P-47X83	C19	35 mmf.		.10
P-47X86	C29	50 mmf.		.10
P-47X72	C30	25 mmf.		.10
P-47X72	C31	25 mmf.		.10
P-47X72	C33	25 mmf.		.10

TRIMMER

Part No.	Code	Capacitance	Range	Description	List Price
P-17A45 Trimmer Strip	C2	2-25 mmf.	Range "D"	Antenna Trimmer	.95
	C3	2-25 mmf.	Range "C"	Antenna Trimmer	
	C4	2-25 mmf.	Range "B"	Antenna Trimmer	
	C8	2-25 mmf.	Range "D"	Interstage Trimmer	
	C9	2-25 mmf.	Range "C"	Interstage Trimmer	
	C10	2-25 mmf.	Range "B"	Interstage Trimmer	
	C12	2-25 mmf.	Range "D"	Oscillator Trimmer	
	C17	2-25 mmf.	Range "C"	Oscillator Trimmer	
C18	2-25 mmf.	Range "B"	Oscillator Trimmer		

See Part Number 17A36 for replacement of any one section.

Part No.	Code	Capacitance	Range	Description	List Price
P-17A35	C13	40-100 mmf.	Range "D"	Oscillator Padding Condenser	.45
	C16	300-600 mmf.	Range "B"	Oscillator Padding Condenser	
P-17A47	C15	1200-1600 mmf.	Range "C"	Oscillator Padding Condenser	.45
P-17A30	C20	150-250 mmf.		1st I. F. Trimmers	.45
	C21	150-250 mmf.			
P-17A30	C23	150-250 mmf.		2nd I. F. Trimmers	.45
	C24	150-250 mmf.			
P-17A40	C28	70-150 mmf.		3rd I. F. Trimmer	.30

MISCELLANEOUS

P-17A36		2-25 mmf. (to be used for replacement of any one section of Trimmer Strip P-17A45)	.10
P-14A52		3 Gang Condenser, Less Dial and Drive Assembly	3.60

RESISTORS

CARBON

Part No.	Code	Resistance	Wattage	List Price
P-A94151	R1	150 Ohms	0.2	\$0.15
P-A95252	R2	2,500 Ohms	0.2	.10
P-C94253	R3	25,000 Ohms	1.0	.15
P-A94803	R4	80,000 Ohms	0.2	.15
P-D93163	R5	14,000 Ohms	2.0	.45
P-C94303	R6	30,000 Ohms	1.0	.15
P-A94401	R7	400 Ohms	0.2	.15
P-A94304	R8	300,000 Ohms	0.2	.15
P-A95104	R9	100,000 Ohms	0.2	.10
P-A95104	R10	100,000 Ohms	0.2	.10
P-A94205	R11	2.0 Megohms	0.2	.15
P-A94702	R13	7,000 Ohms	0.2	.15
P-E94253	R14	25,000 Ohms	3.0	.30
P-A94401	R15	400 Ohms	0.2	.15
P-A95103	R16	10,000 Ohms	0.2	.10
P-B95703	R17	70,000 Ohms	0.5	.10
P-C95503	R19	50,000 Ohms	1.0	.10
P-A95105	R20	1.0 Megohms	0.2	.10
P-A94205	R21	2.0 Megohms	0.2	.15
P-A94105	R22	1.0 Megohms	0.2	.15
P-A95104	R23	100,000 Ohms	0.2	.10

WIRE WOUND

P-43X56	R24	250 Ohms	3.0	.30
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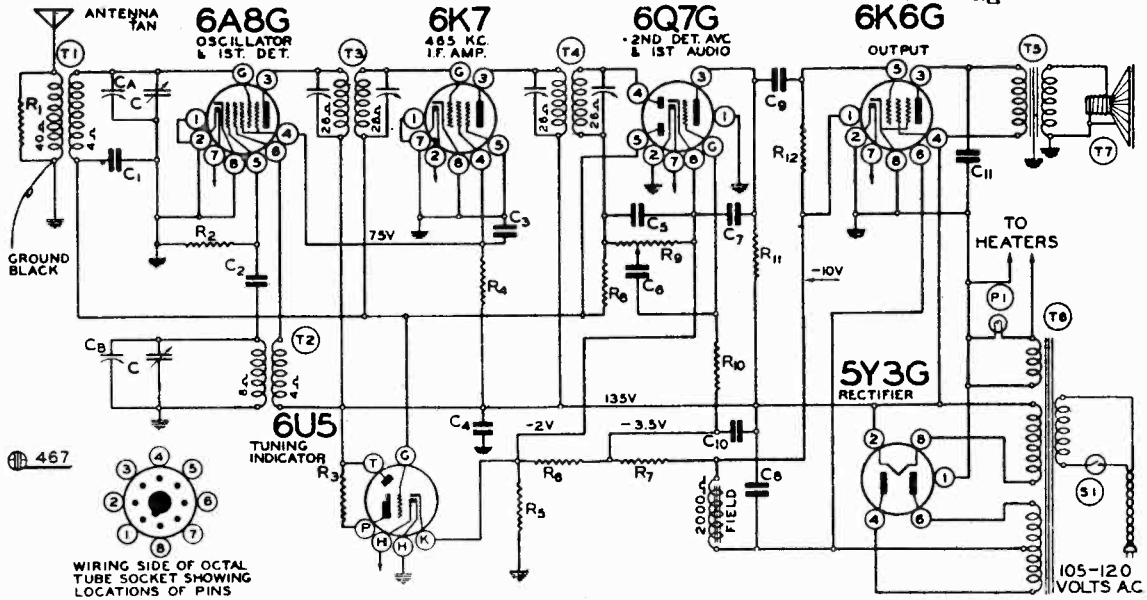
VARIABLE

P-36X219	R12	2.0 Megohms	Volume Control and On-Off Switch	1.10
P-40X213	R18	1.5 Megohms	Tone Control and Selectivity Switch	1.30

MONTGOMERY-WARD & CO.

MODELS 62-274, 62-288, 62-290

Issue A
Schematic, Socket, Trimmers
Parts, Voltage



LIST OF REPAIR PARTS (Serial No. 107300 and up)
USE ONLY GENUINE FACTORY REPLACEMENT PARTS

Bin No.	Part No.	schematic reference	Description	No. Used in set	Selling price each	Bin No.	Part No.	schematic reference	Description	No. Used in set	Selling price each
CONDENSERS											
10979	BE100-1	C3	.1x400 volt Tubular	1	.10	BE128-12W			Ivory bakelite cabinet complete including baffle, grill cloth and carton		5.00
11367	BE100-9	C1	.05x200 volt Tubular	1	.10	BE128-12BR			Walnut bakelite cabinet complete, including baffle, grill cloth and carton		3.00
11256	BE100-11	C6, C9	.01x400 volt Tubular	2	.09	BE128-129			Grill cloth back and front (specify color of cabinet)	2	.08
BE100-13	C4	.05 x 400 Volt Tubular	1	.10	BE128-129B			Cloth for end (specify color of cabinet)	1	.04	
10925	BE100-19	C11	.006x500 volt Tubular	1	.09	BE128-129C			Cloth for end (specify color of cabinet - Small)	1	.04
BE119-4B	C8, C10	5 Mfd. x 200 w.v.; 5 Mfd. x 250 w.v. Electrolytic Filter	1	.70	BE128-132B			Baffle Board	1	.03	
10930	BE129-2	C7	.0005 Mica - Type - 20%	1	.09	BE128-132			No. 6x32x 1/4 bottom plate and chassis mounting screws	5	dz. .04
11335	BE129-5	C5	.0001 Mica - Type - 20%	1	.09	BE134-48			Rubber grommet (for bottom plate)	4	.02
10928	BE129-12	C2	.00025 Mica - Type - 20%	1	.10	DIAL PARTS LIST					
RESISTORS											
BE106-35	R5, R6, R7	65 Ohm, 45 Ohm, 220 Ohm metal Clad Resistor	1	.20	11122	BE107-94			Automatic Tuning Unit Complete Including Levers, Dial Scale and Indicator Film But Less Gang Condenser		4.00
11097	BE130-9	R11	200 M Ohm-1/3 watt-20% Carbon	1	.08	BE107-68			Pilot Light Bulb		.08
11068	BE130-12	R2	50 M Ohm-1/3 watt-20% Carbon	1	.08	11075	BE112-347		Pilot Light Bracket and Socket		.05
11353	BE130-17	R1	10M Ohm-1/3 watt. 20% Carbon	1	.08	BE112-347			Dial Scale (Calibrated)		.30
BE130-118	R12	600M Ohm-1/3 watt-20% Carbon	1	.08	10851	BE131-43			Cinch Buttons for Fastening Dial Scale to Automatic Tuning Housing		.01
11094	BE130-149	R4	15M Ohm-1/3 watt-20% Carbon	1	.08	BE112-343			Indicator Film		.15
11090	BE130-170	R8, R10	3 Megohm-1/3 watt-25% Carbon	2	.08	BE120-162			Take-up Spring for Indicator Film		.04
COILS											
10534	BE108-82D	T3	Input I.F. Coil Assembly Complete with Can	1	.60	BE128-126			Tuning Knob (Bakelite) (Specify Color)		.12
10536	BE108-83D	T4	Output I.F. Coil Assembly Complete with Can	1	.60	BE117-192			Locking Screw for Tuning Knob		.06
BE110-72	T2	Oscillator Coil Assembly Complete	1	.40	BE112-341			Idler Pulley and Shaft for Indicator Film		.09	
BE111-58B	T1	Antenna Coil Assembly Complete	1	.40	BE134-58			Felt Shield for Levers		.04	
SOCKETS											
BE121-27		Eight Prong Octal Socket—Marked "6K7"	1	.10	BE120-143			Take-up Spring for Levers		.03	
10234	BE121-15	Five Prong Octal Socket—Marked "5Y3"	1	.08	BE112-339			Special Flexible Coupling Unit (Couple Gang Condenser to Automatic Tuner Assembly)		.20	
BE121-22		Eight Prong Octal Socket—Marked "6A8"	1	.10	10730	BE120-9			Drive String for Indicator Film		.04
BE121-86		Eight Prong Octal Socket—Marked "6K6"	1	.10	10956	BE120-151			Take-up Spring for 120-9 Drive String		.04
BE121-21		Eight Prong Octal Socket—Marked "6Q7"	1	.10	BE112-348			Set of 4 Sheets Station Call Letter Tabs		Set .10	
TRANSFORMERS											
10077	BE104-100B	T6	Power Transformer 50/60 cycle 105-120 volt	1	1.50	BE112-336			Clear Pyralin Tabs for Station Call Letter Tabs		Doz. .05
BE104-102		Universal Transformer 50/60 cycle primary			BE128-128			Buttons for Automatic Levers		.05	
BE104-103		Power Transformer 25 cycle, 105-120 volt			CATHODE RAY TUNING EYE PARTS						
BE104-104		Universal Transformer 25 cycle primary			BE107-109	R3			Cable and Socket Assembly Complete with 250M Resistor	1	.34
BE104-99B		Universal Transformer 40 cycle primary			BE117-143				Clamp and Wing Bolt for Tuning Eye Socket	1	.10
SPEAKER											
BE114-106	T7	Five Inch Dynamic (2000 Ohm Field)	1	2.00							
MISCELLANEOUS											
11130	BE101-101	R9, S1	Volume Control and Switch (1 Megohm)	1	.50						
BE102-64	C	Two Gang Variable Condenser	1	.50							
BE105-55	T5	Output Transformer for Speaker (Mounted on Chassis)	1	.24							
BE107-98		Line Cord and Plug	1	.30							
BE118-69		Bottom Cover Plate for Chassis	1	.01							
BE117-133		Brass Bushings for mounting bottom plate	4	.12							
11325	BE128-126E		Black Bakelite Tuning Knob	1	.12						
11530	BE128-128W		Ivory Bakelite Tuning Knob	1	.12						
11569	BE128-126BR		Walnut Bakelite Tuning Knob	1	.12						
11570	BE128-134E		Black Bakelite Knob	1	.06						
11120	BE128-134W		Ivory Bakelite Knob	1	.06						
11121	BE128-134BR		Walnut Bakelite Knob	1	.06						
BE128-127E		Black Bakelite cabinet complete, including baffle, grill cloth and carton	1	3.00							

FOR TUNER DATA
SEE INDEX

MODELS 62-274, 62-288, 62-290

Issue B, Above Ser. 207500

Schematic, Voltage, Socket

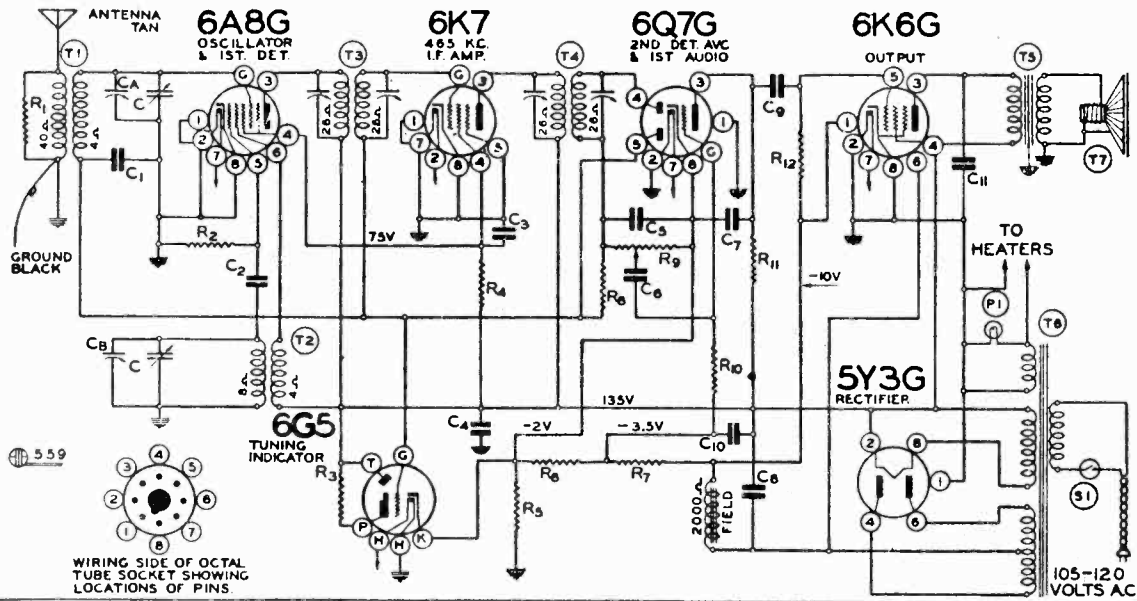
MONTGOMERY-WARD & CO.

Trimmers, Parts

Issues A and B, Alignment

ISSUE B

FOR TUNER DATA, SEE INDEX



WIRING SIDE OF OCTAL TUBE SOCKET SHOWING LOCATIONS OF PINS

ISSUE B

LIST OF REPAIR PARTS (Serial No. 207500 and up)

Part No.	Part No.	Schematic reference	Description	No. Used in set	Selling price each
CONDENSERS					
10079	BE100-1	C3	.1x400 volt Tubular	1	.10
11387	BE100-9	C1	.05x200 volt Tubular	1	.10
11256	BE100-11	C6, C9	.01x400 volt Tubular	2	.09
	BE100-13	C4	.05 x 400 Volt Tubular	1	.10
10928	BE100-19	C11	.006x600 volt Tubular	1	.09
	BE119-47B	C8, C10	5 Mfd. x 200 v.w.; 5 Mfd. x 250 v.w. Electrolytic Filter	1	.70
10930	BE129-2	C7	.0005 Mica - Type - 20%	1	.09
11335	BE129-5	C5	.0001 Mica - Type - 20%	1	.09
10928	BE129-12	C2	.00025 Mica - Type - 20%	1	.10
RESISTORS					
	BE106-35	R5, R6, R7	65 Ohm, 45 Ohm, 220 Ohm metal Clad Resistor	1	.20
11099	BE130-9	R11	200 M Ohm-1/3 watt-20% Carbon	1	.08
11066	BE130-12	R2	50 M Ohm-1/3 watt-20% Carbon	1	.08
11333	BE130-17	R1	10M Ohm-1/3 watt- 20% Carbon	1	.08
	BE130-11B	R12	600M Ohm-1/3 watt-20% Carbon	1	.08
11094	BE130-21	R4	20M Ohm-1/3 watt-20% Carbon	1	.08
11090	BE130-170	R8, R10	3 Megohm-1/3 watt-25% Carbon	2	.08
COILS					
10534	BE108-82D	T3	Input I.F. Coil Assembly Complete with Can	1	.60
10536	BE108-83D	T4	Output I.F. Coil Assembly Complete with Can	1	.60
	BE110-72	T2	Oscillator Coil Assembly Complete	1	.40
	BE111-102	T1	Antenna Coil Assembly Complete	1	.40
	BE121-93		Eight Prong Octal Sockets	4	.10
10234	BE121-95		Five Prong Octal Sockets	1	.08
TRANSFORMERS					
9077	BE104-100B	T6	Power Transformer 50/60 cycle 105-120 volt	1	1.50
	BE104-108B		Power Transformer 25 cycle, 105-120 volt		
	BE104-104B		Universal Transformer 25 cycle primary		
	BE104-99C		Universal Transformer 40 cycle primary		

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: ISSUES "A" AND "B"

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

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 6K6G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

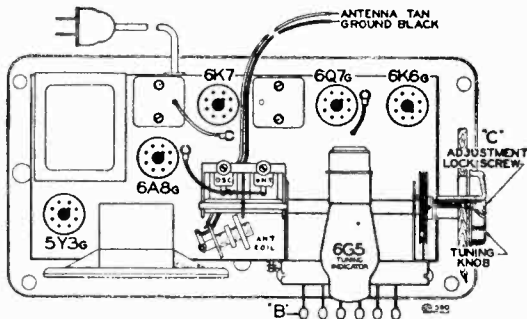
ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-83D Output I.F. Transformer
Part No. 108-82D Input I.F. Transformer
These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

- With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 - Connect external oscillator set at 465 kilocycles, in series with .1 mfd. condenser, to the control grid cap of the type 6K7 tube, and adjust the output I. F. transformer (No. 108-83D) to resonance.
 - Move oscillator output clip from grid of 6K7 to grid of 6A8G and adjust input I.F. transformer (No. 108-82D) to resonance.
 - With oscillator still connected to 6A8G, readjust output I.F. transformer (108-83D) if necessary.

R.F. ALIGNMENT: (535-1720 K.C.)

- With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 200 mmf. condenser to the antenna lead and chassis ground and make the following adjustments:
 - With external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance. This adjustment is on the top of rear section of variable gang condenser. (See Fig. 1).
 - Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
 - Check sensitivity at 600 and 1000 kilocycles.



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.

All voltages as indicated on diagram are measured with 115 volts on the primary of the power transformer.

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

MONTGOMERY-WARD & CO.

MODELS 62-274, 62-288, 62-290
 MODEL 62-280
 MODELS 62-350, 62-351, 62-352
 MODEL 62-361
 Tuner Data

MODELS 62-274, 62-288 and 62-290

MODEL 62-280

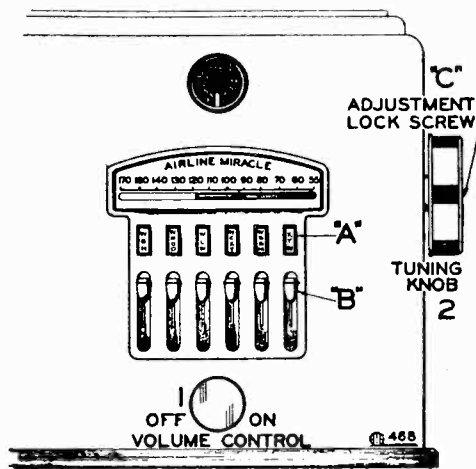


FIG. 2—FRONT VIEW

MODELS 62-350, 62-351

and 62-352

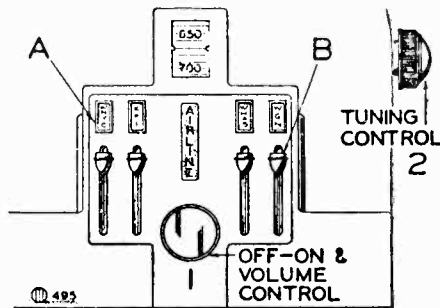


FIG. 2—FRONT VIEW

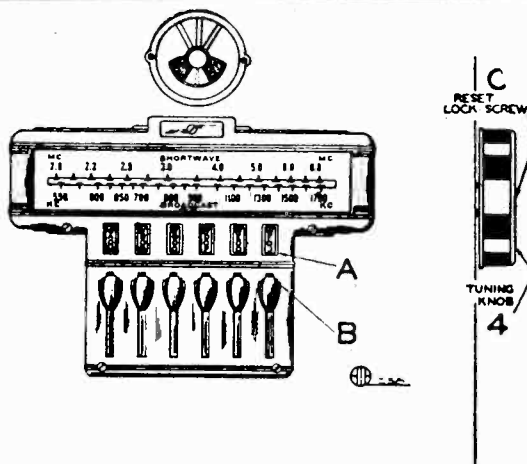


FIG. 2—FRONT VIEW

PROCEDURE FOR SETTING THE AUTOMATIC LEVERS:

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

Press down any one of the levers. Holding it down, tune in by means of tuning knob No. 2 any one of your favorite stations. Turn the tuning knob very slowly back and forth until signal is clearest. The station will then be accurately tuned in. Adjust the volume by means of the volume control knob to the desired intensity.

Release this lever and press down any other lever. Hold this lever down and tune in by means of knob No. 2 another favorite station.

Follow this procedure until stations have been set on all the levers. Hold tuning knob securely with left hand to prevent it from turning and with a coin or screw driver, tighten the special locking screw ("C") in the center of the tuning knob,

This screw will lock in place all the stations you have selected on the 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, hold the tuning knob securely and loosen locking screw ("C") one or two turns; select the new station as explained.

BE SURE TO RETIGHTEN THE LOCKING SCREW, otherwise the stations will not stay adjusted to the levers.

Above each lever an opening in the cabinet is provided for inserting station call letters, (See "A", Fig. 2).

Punch the correct station call letter tabs from the set of sheets supplied and insert them into the rectangular openings in the cabinet above each of the levers. One of the small, clear celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

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

MODEL 62-361

PROCEDURE FOR SETTING THE AUTOMATIC LEVERS:

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

Press down any one of the six Automatic levers. Holding it down, tune in by means of tuning knob No. 4 any one of your favorite stations. Turn the tuning knob very slowly back and forth noting the width of the shadow indicated on the screen of the cathode-ray tuning eye. Minimum width indicates the ideal tuning position (resonance). The station will then be accurately tuned in.

Release this lever and press down any other lever. Hold this lever down and tune in by means of knob No. 4 another favorite station.

Follow this procedure until stations have been set on all the levers. Hold tuning knob securely with left hand to prevent it from turning and with a coin or screw driver, tighten the special locking screw ("C") in the center of the tuning knob, (See Fig. 1).

This screw will lock in place all the stations you have selected on the Automatic 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, hold the tuning knob securely and loosen locking screw ("C") one or two turns; select the new station as explained.

BE SURE TO RETIGHTEN THE LOCKING SCREW, otherwise the stations will not stay adjusted to the levers.

Above each Automatic lever an opening in the cabinet is provided for inserting station call letters, (See "A", Fig. 2).

Punch the correct station call letter tabs from the set of sheets supplied and insert them into the rectangular openings in the cabinet above each of the levers. One of the small, clear celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

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

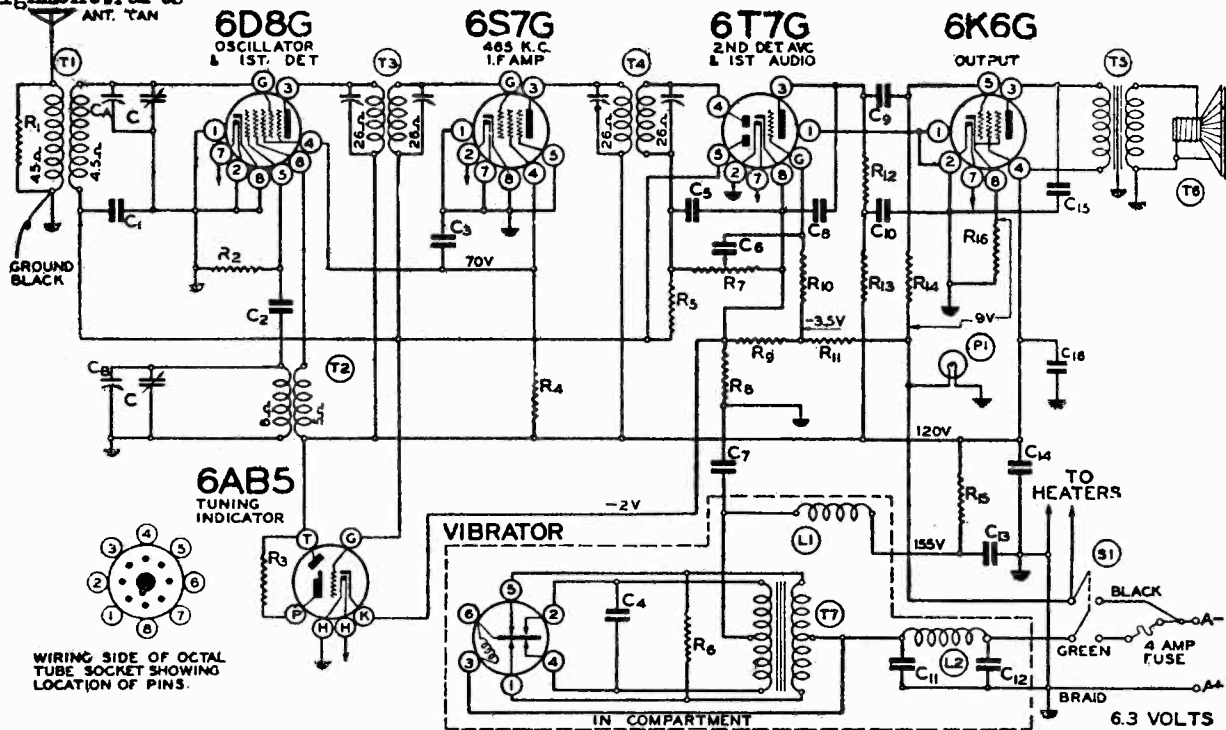
TO TURN THE RADIO OFF:

Turn the on-off switch and volume control knob No. 3 to the left until a click is heard. The receiver will then be turned off.

MODEL 62-280

Schematic, Voltage
Socket, Trimmers
Alignment, Parts

MONTGOMERY-WARD & CO.



FOR TUNER DATA, SEE INDEX

P/N No.	Part No.	Schematic Reference	Description	No. Used In Set	Selling Price Each
CONDENSERS					
11387	BE100-9	C1	.05x200 Volt Tubular	1	.10
11256	BE100-11	C6, C9, C3, C7	.01x400 Volt Tubular	2	.09
11115	BE100-20	C10	.1x200 Volt Tubular	3	.10
11495	BE100-34	C4	.005x1200 Volt Tubular	1	.09
	BE100-37	C15	.003x600 Volt Tubular	1	.10
11488	BE100-40	C11, C12	.5x200 Volt Tubular	2	.20
	BE119-46	C13, C14	Dual 5 Mfd x 250 w. Volt Fuser	1	.60
11335	BE129-5	C5	.0001 Mica - Type MT - 20%	1	.09
10928	BE129-12	C2, C8	.00025 Mica - Type MT - 20%	2	.10
RESISTORS					
		R8, R9			
	BE106-44	R11	50 Ohm, 25 Ohm, 75 Ohm Metal Clad Strip	1	.20
11116	BE130-4	R5, R10	3 Megohm-1/3 Watt-20% - Carbon	2	.08
11068	BE130-12	R2	50M Ohm-1/3 Watt-20% - Carbon	1	.08
11353	BE130-17	R1	10M Ohm-1/3 Watt-20% - Carbon	1	.08
11188	BE130-19	R14	1 Megohm-1/3 Watt-20% - Carbon	1	.08
	BE130-48	R4	15M Ohm-1/3 Watt-10% - Carbon	1	.08
11489	BE130-84	R6, R16	200 Ohm-1/3 Watt-20% - Carbon	2	.08
11050	BE130-100	R12	150M Ohm-1/3 Watt-20% - Carbon	1	.08
	BE130-103	R13	100M Ohm-1/3 Watt-10% - Carbon	1	.08
	BE130-199	R15	150 Ohm-1 Watt-10%	1	.08
COILS					
	BE108-82C	T3	Input I.F. Coil Assembly complete with can	1	.60
	BE108-83D	T4	Output I.F. Coil Assembly complete with can	1	.60
	BE110-72	T2	Oscillator Coil Assembly complete	1	.30
	BE111-85	T1	Antenna Coil Assembly complete	1	.60
CHOKE COILS					
	BE105-19	L2	A Choke Coil	1	.08
	BE105-35	L1	R. F. "B" Choke Coil	1	.16
TRANSFORMER					
	BE104-62D	T7	Power Transformer for Vibrator	1	1.50

SERVICE NOTES:

Voltage 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.

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.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

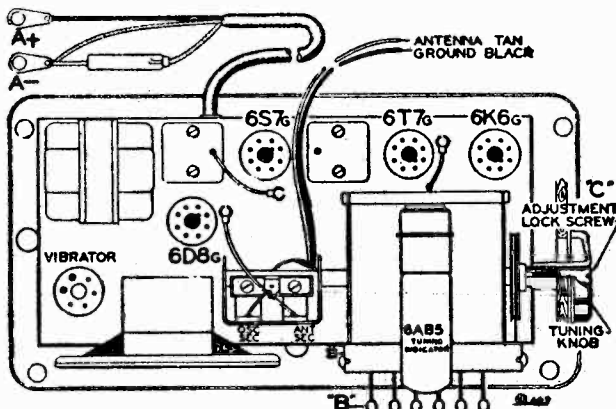
Part No. 108-83D Output I. F. Transformer
Part No. 108-82C Input I. F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

- With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 - Connect external oscillator set at 465 kilocycles, in series with .1 mfd. condenser, to the control grid cap of the type 6S7G tube, and adjust the output I.F. transformer (No. 108-83D) to resonance.
 - Move oscillator output clip from grid of 6S7G to grid of 6D8G and adjust input I.F. transformer (No. 108-82C) to resonance.
 - With oscillator still connected to 6D8G, readjust output I.F. transformer (108-83D) if necessary

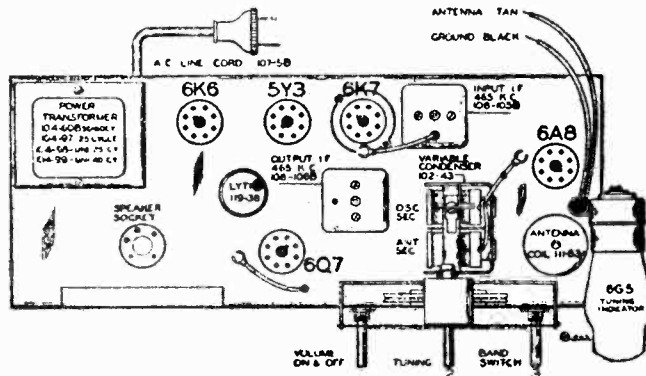
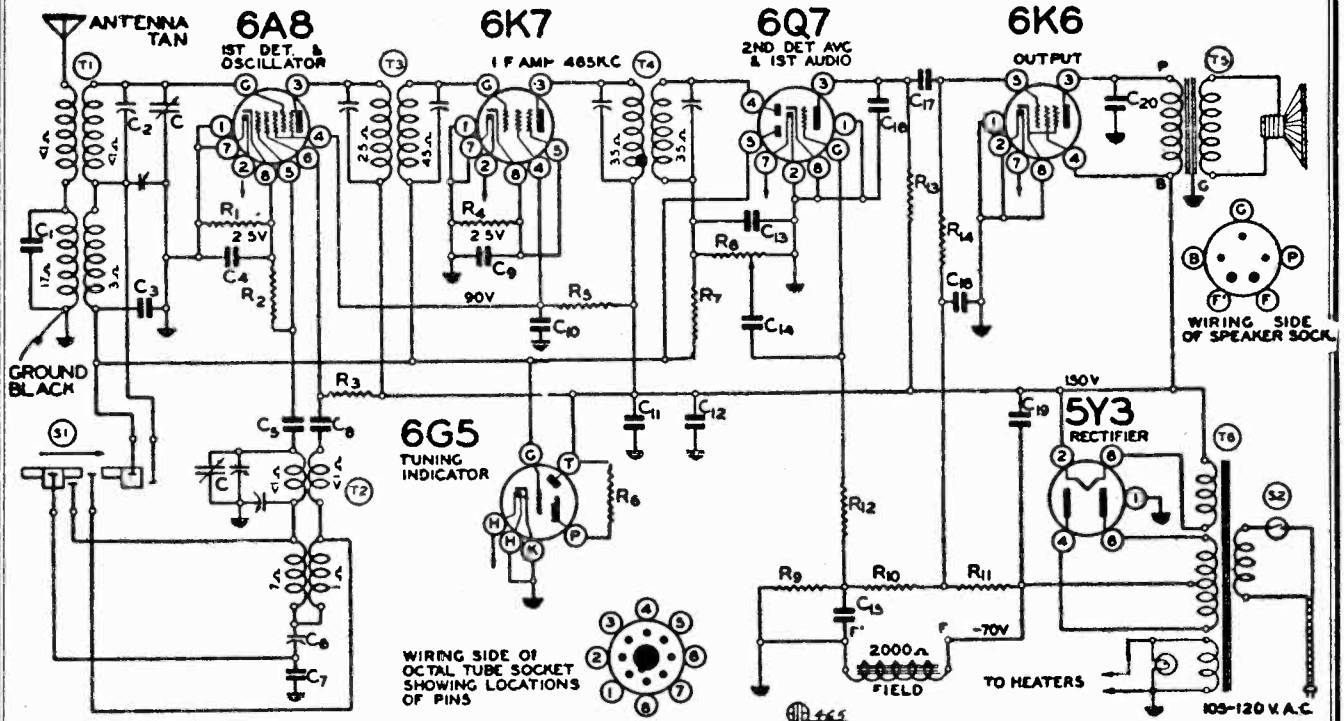
R.F. ALIGNMENT: (535-1720 K. C.)

- With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 200 mmf. condenser to the antenna lead and chassis ground and make the following adjustments:
 - with external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance. This adjustment is on the top of rear section of variable gang condenser. (See Fig. 1).
 - Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
 - Check sensitivity at 600 and 1000 kilocycles



MONTGOMERY-WARD & CO.
MODEL 62-276

MODEL 62-276
Schematic, Voltage
Socket, Trimmers
Parts



- | | | |
|-----|--------|--------------------------------|
| C5 | 129-39 | .0005 Mica 20% |
| C6 | 124-38 | Adjustable Series Pad 600 mmf. |
| C7 | 129-54 | .003 x 2-1/2" Mica |
| C8 | 100-25 | .002 x 600 v. - 20% |
| C9 | 100-20 | .1 x 200 v. 25% |
| C10 | 100-1 | .1 x 400 v. 50% - 10% |
| C11 | 119-38 | 5.0 mfd. - 250 w.v. lytic |
| C12 | 100-13 | .05 x 400 v. 25% |
| C13 | 129-5 | .0001 Mica 20% |
| C14 | 100-11 | .01 x 400 v. 25% |
| C15 | 100-20 | .1 x 200 v. 25% |
| C16 | 129-2 | .0005 - 20% Mica |
| C17 | 100-26 | .02 x 400 v. 25% |
| C18 | 100-20 | .1 x 200 v. 25% |
| C19 | 119-38 | 5.0 mfd. - 250 w.v. 'Lytic |
| C20 | 100-37 | .003 x 600 v. 10% |
- C11 & C19 in same unit

RESISTORS

Code	Part No.	Description
R1	130-83	300 ohm - 1/3 w. 10%
R2	130-12	50M - 1/3 w. - 20%
R3	130-17	10M ohm - 1/3 w. 20%
R4	130-93	450 ohm - 1/3 w. 10%
R5	130-149	15M ohm - 1/3 w. 20%
R6	130-186	250M ohm - 1/10 w. 20% In tuning indicator socket
R7	130-4	3 megohm - 1/3 w. 20%
R8	101-71	1 meg volume control
R9	130-176	20M ohm - 1/3 w. 10%
R10	130-80	150M ohm - 1/3 w. 10%
R11	130-46	800M ohm - 1/3 w. 10%
R12	130-4	3 megohm - 1/3 w. 20%
R13	130-9	200M ohm - 1/3 w. 20%
R14	130-3	500M ohm - 1/3 w. 20%

CONDENSERS

Code	Part No.	Description
C	102-43	2 Gang Variable
C1	129-5	.0001 - 20% Mica
C2	124-39	2-25 mmf. Adjustable cond.
C3	100-22	.05 x 200 v. 25%
C4	100-20	.1 x 200 v. 25%

PARTS

Code	Part No.	Description
T1	111-83	B.C. & S.W. Antenna Coil
T2	110-66	B.C. & S.W. Osc. Coil
T3	108-105B	Input I.F. 465 kc.
T4	108-106B	Output I.F. 465 kc.
T5	114-61	6" Dynamic speaker
T6	104-60B	Power Transformer
S1	125-37	Wave Band Switch
S2		On-Off Switch on Volume Control

IN ORDER TO PREVENT SIGNAL FROM ACTING UPON AVC AND AFFECTING ACCURACY OF VOLTAGE MEASUREMENTS, AERIAL AND GROUND LEADS SHOULD BE SHORT CIRCUITED WHILE MAKING MEASUREMENTS.

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

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

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

MODELS 62-251, 62-255, 62-328
62-338, 62-428

MONTGOMERY-WARD & CO.

MODEL 62-276

Trimmers, Alignment

MODEL 62-276

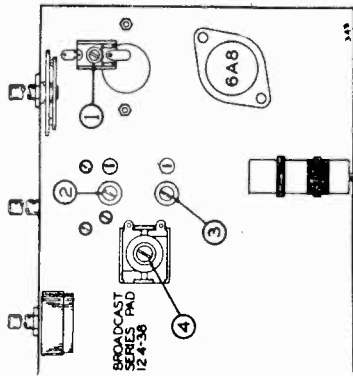


FIG. 3—BOTTOM VIEW SHOWING TRIMMERS

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer or by means of an adapter between the plate and screen terminals of the type 6K6G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

DUMMY ANTENNAS:

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1", "Dummy 2", and "Dummy 3".

- Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.
- Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser and a 20 ohm resistor connected in series with the external oscillator.
- Dummy 3: (Short Wave)—Consists of a .1 mfd. condenser and a 400 ohm resistor connected in series with the external oscillator.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-106B Output I.F. Transformer
Part No. 108-105B Input I.F. Transformer
These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see top view).

1. With volume control full on, (the extreme right of its rotation), the band changing switch in the broadcast position, (extreme left of its rotation), and with the variable condenser in its minimum capacity position, plates entirely out of mesh, make the following adjustments:

- (b) With "Dummy 1" still connected, move oscillator output clip from grid of 34 to grid cap to 4, and re-adjust I.F. transformer (No. 108-78) to resonance.
- (c) Move oscillator to grid cap of 1A6 and adjust input I.F. transformer (No. 108-77).

BROADCAST BAND ALIGNMENT:

535 to 1720 Kilocycles

1. With band changing switch in the broadcast position, extreme left of its rotation, and with gang condenser in its minimum capacity position, plates entirely out of mesh, and with external oscillator connected in series with "Dummy 2", to antenna and ground posts, make following adjustments:
 - (a) Set external oscillator to 1720 K.C. and adjust broadcast oscillator trimmer to resonance. (Adjustment number 1; see bottom view of coil assembly, Fig. 3)
 - (b) Re-set external oscillator to 1600 K.C., rotate antenna trimmer (adjustment number 2) to resonance; also adjust preselector trimmer which is mounted on the top of the rear section of the three gang variable tuning condenser to resonance. (See top view of chassis, Fig. 1, for location of this adjustment.)
 - (c) Re-set external oscillator to 600 K.C. and adjust broadcast series pad to resonance by rotating condenser to approximately 600 K.C., rocking it slowly to and fro until by adjusting series pad maximum output is attained. This adjustment is located on the bottom of the chassis directly under the variable tuning condenser. (See top view of chassis, Fig. 3.)
 - (d) Repeat adjustments "a" and "b" until sensitivity is at its maximum.
 - (e) Check for tracking and sensitivity at 1000 kilocycles. Under no circumstances bend plates of variable condenser sections to correct tracking.

SHORT WAVE BAND ALIGNMENT:

5.2 to 18.3 Megacycles

1. With band changing switch in the short wave position, extreme right of its rotation, and with external oscillator set at 17 megacycles and connected in series with "Dummy 3", to antenna and ground posts, make the following adjustments:
 - (a) Move dial pointer to 17 megacycles and adjust short wave oscillator (adjustment number 3), and short wave antenna (adjustment number 4), to resonance.
 - (b) Pick up signal from 18.3 megacycles and check sensitivity by rotating variable condenser and check output.
 - (c) Re-set external oscillator and check set at 18.1 megacycles and 5.3 megacycles for band coverage.
- NOTE: It is extremely necessary in making all of these adjustments that the fundamental oscillator signal be tuned in and not the image frequency which will fall in the range of the fundamental. If the fundamental signal of this fundamental 18.3 megacycles signal can be tuned in not only at 18.3 on the dial but also at approximately 17.4 megacycles.

MIDDLE WAVE BAND ALIGNMENT:

1695 to 5500 Kilocycles

1. With band changing switch in the middle wave position, extreme left of its rotation, and with external oscillator set at 5000 kilocycles and connected in series with "Dummy 2", to antenna and ground posts make the following adjustments:
 - (a) Move dial pointer to 5000 kilocycles and adjust middle wave oscillator (adjustment number 2) and middle wave antenna (adjustment number 5) to resonance.
 - (b) Re-set external oscillator to 1800 kilocycles and pick up signal by rotating variable condenser and adjust antenna trimmer (adjustment number 3) to resonance.
 - (c) Re-set external oscillator and check set at 5400 kilocycles and 1700 kilocycles for band coverage.

MODELS 62-251, 62-255, 62-328
62-338 AND 62-428

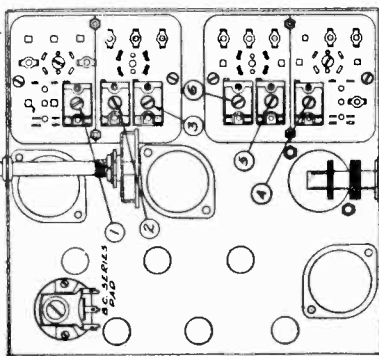


FIG. 3—BOTTOM VIEW SHOWING TRIMMERS

All adjustments should be made with a non-metallic screw driver.

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer or by means of an adapter between the two plate terminals of the type 19 output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

DUMMY ANTENNAS

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1", "Dummy 2", and "Dummy 3".

- Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.
- Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser and a 20 ohm resistor connected in series with the external oscillator.
- Dummy 3: (Middle and Short Wave)—Consists of a .1 mfd. condenser and a 400 ohm resistor connected in series with each other and in series with the external oscillator.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-79 Output I.F. Transformer
Part No. 108-78 Interstage I.F. Transformer
Part No. 108-77 Input I.F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see top view).

1. With volume control full on, (the extreme right of its rotation), the band changing switch in the broadcast position, (extreme left of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 - (a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1", to antenna and ground posts, and adjust the output I.F. transformer (No. 108-79) to resonance.

- (a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1", to the control grid cap of the type 6K7G tube, and adjust the output I.F. transformer (No. 108-106B) to resonance.
- (b) With "Dummy 1" still connected, move oscillator output clip from grid of 6K7G to grid cap of 6A8C and adjust input I.F. transformer (No. 108-105B) to resonance.

SHORT WAVE BAND ALIGNMENT:

5.5 to 18.1 Megacycles

1. With band changing switch in the short wave position, extreme right of its rotation, and with external oscillator set at 17 megacycles and connected in series with "Dummy 3", to the antenna and ground leads, make the following adjustments:
 - (a) Move dial pointer to 17 megacycles and adjust short wave oscillator trimmer to resonance.

This adjustment is the trimmer mounted on the top of rear section of the variable gang condenser (see Fig. 1, top view).

- (b) Adjust short wave antenna trimmer (Adjustment Number 1), to resonance (see Fig. 3, bottom view).

BROADCAST BAND ALIGNMENT:

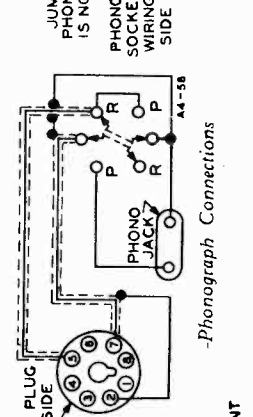
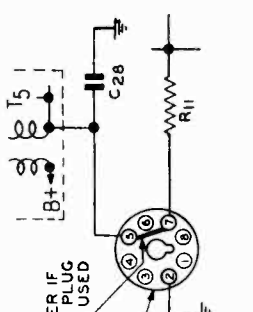
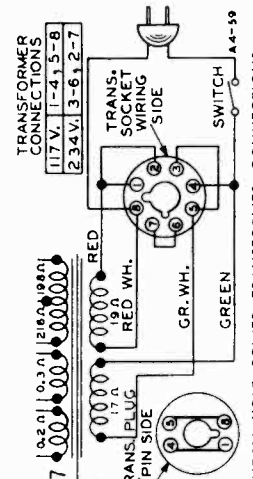
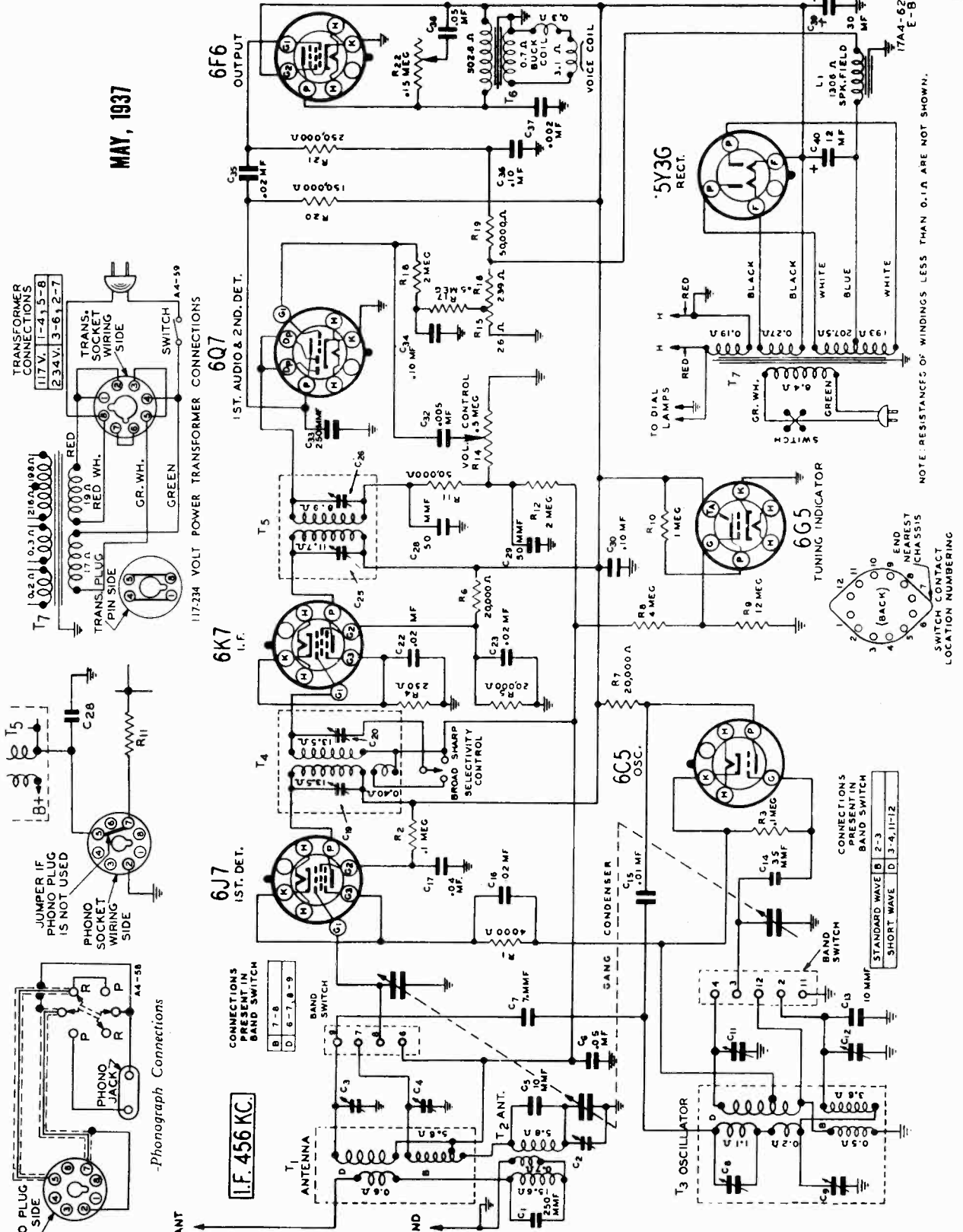
535 to 1720 Kilocycles

1. With band changing switch in the broadcast position, extreme left of its rotation, and with gang condenser in its minimum capacity position, plates entirely out of mesh, and with external oscillator connected in series with "Dummy 2", to antenna and ground leads, make following adjustments:
 - (a) Set external oscillator to 1720 K.C. and adjust broadcast oscillator trimmer to resonance. (Adjustment number 3, see bottom view of chassis, Fig. 3).
 - (b) Re-set external oscillator to 1400 K.C., rotate variable gang condenser and pick up signal. Adjust broadcast antenna trimmer (adjustment number 2), to resonance.
 - (c) Re-set external oscillator to 600 K.C. and adjust broadcast series pad (adjustment number 4) to resonance by rotating condenser to approximately 600 K.C., rocking it slowly to and fro until by adjusting series pad maximum output is attained. This adjustment is located on the bottom of the chassis directly under the variable tuning condenser. (See bottom view of chassis, Fig. 3.)
 - (d) Repeat adjustments "a" and "b" until sensitivity is at its maximum.
 - (e) Check for tracking and sensitivity at 1400, 1900, and 600 kilocycles. Under no circumstances bend plates of variable condenser sections to correct tracking.

MONTGOMERY WARD & CO.

Schematic, Phono., Specifications

MAY, 1937



Power Consumption - 67 Watts (At 117 volts 60 cycles)
Power Output - 2.5 Watts Undistorted
4.5 Watts Maximum
Selectivity - 28 KC Broad at 1000 times Signal
(Sharp)
Intermediate Frequency - 456 KC.
Speaker - 6" Dynamic—Mantel Models
8" Dynamic—Console Models

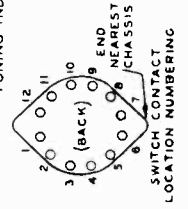
Tuning Frequency Range

B Range 528 to 1830 KC.
D Range 5750 to 19800 KC

Sensitivity

B Range 7 Microvolts Average
D Range 9 Microvolts Average

NOTE: RESISTANCES OF WINDINGS LESS THAN 0.1 Ω ARE NOT SHOWN.



MODELS 62-297, 62-357, 62-367

62-457, 62-467, 62-497

MONTGOMERY-WARD & CO.

Socket, Trimmers, Alignment
Voltage, Coils, Notes

MODEL 62-297 ALIGNMENT PROCEDURE 62-367 62-467
62-357 62-457 62-497

Volume Control—Maximum All Adjustments.
Selectivity Control—Sharp Position All Adjustments.
Connect Radio Chassis to Ground Post of Signal Generator With a Short Heavy Lead.
Allow Chassis and Signal Generator to "Heat Up" for Several Minutes.

The following equipment is required for aligning:
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output indicating Meter; Non-Metallic Screwdriver.
Dummy Antennas — .1 mf., 200 mmf., and 400 ohms.

STEP (Follow Order as Given)	BAND SWITCH SETTING	DUMMY ANTENNA	SIGNAL GENERATOR		TRIMMERS ADJUSTED See Illustration	PROCEDURE	
			FREQUENCY SETTING	CONNECTION AT RADIO		INITIAL STEPS	ADJUSTMENT
I.F.							
1st I.F.	Range B	.1 mf.	456 KC	Grid of I.F. Tube	2nd I.F. (C25) & (C26)	Turn Rotor to Full Open	Adjust to Maximum Output
2nd I.F.	Range B	.1 mf.	456 KC	Grid of 1st Det.	1st I.F. (C19) & (C20)	Turn Rotor to Full Open	Adjust to Maximum Output
Range B							
1830 KC	Range B	200 mmf.	1830 KC	Antenna Lead	Oscillator Range B (C12)	Turn Rotor to Full Open	Adjust to Maximum Output
1500 KC	Range B	200 mmf.	1500 KC	Antenna Lead	1st Ant. Range B (C2) 2nd Ant. Range B (C4)	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note A	Adjust to Maximum Output
600 KC	Range B	200 mmf.	600 KC	Antenna Lead	600 KC (C9)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor—See Note B
Range D							
19800 KC	Range D	400 ohm	19800 KC	Antenna Lead	Oscillator Range D (C11)	Turn Rotor to Full Open	Adjust to Maximum Output
16000 KC	Range D	400 ohm	16000 KC	Antenna Lead	Ant. Range D (C3)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor—See Note B
6000 KC	Range D	400 ohm	6000 KC	Antenna Lead	6000 KC (C8)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor—See Note B

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

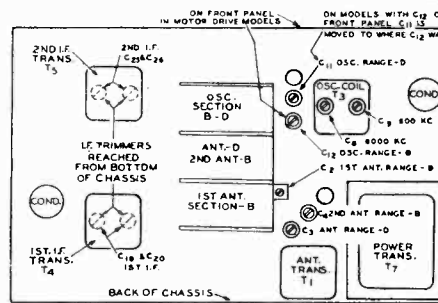
After each range is completed, repeat the procedure as a final check.

NOTE A—In sets using the finger tip tuning dial, remove the retaining ring which holds the dial scale in position. Readjust rotor to maximum output. Hold the station selector ring and turn the dial scale until the pointer is at the 1500 KC mark. Replace the retaining ring.

NOTE B—Turn the rotor back and forth and adjust

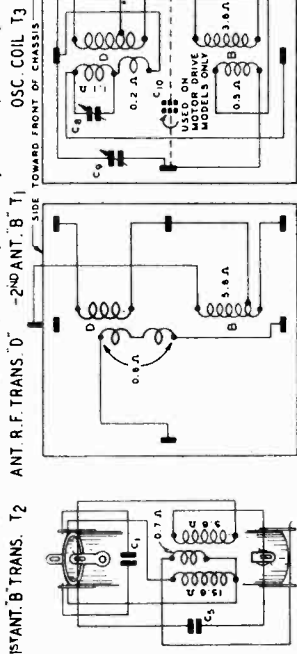
the trimmer until the peak of greatest intensity is obtained.

CAUTION—When aligning the short wave 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.



Location of Trimmers

MODELS 62-297, 62-357, 62-367, 62-457, 62-467, 62-497.

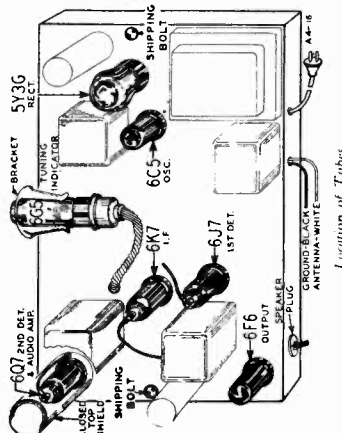
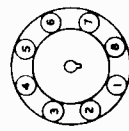


Coil Terminal Arrangement and D.C. Resistance of Windings

Twenty-Five Cycle Models

The twenty-five cycle receiver differs from the sixty cycle receiver only in the fact that a different power transformer is used.
The twenty-five cycle receiver can be operated satisfactorily from a sixty cycle power supply. However, the reverse is not true, the sixty cycle receiver cannot be operated from a twenty-five cycle power supply.

Coil Tube Terminal Numbering (Bottom of socket).



VOLTAGES AT SOCKETS
Line Voltage: 117—Volume Control; Maximum Readings taken with 1000 Ohm-per-volt meter

TUBE	FUNCTION	VOLTAGE BETWEEN SOCKET PRONG AND GROUND (Unless otherwise indicated)																		
		Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Prong No. 8	Prong No. 9	Prong No. 10									
6J7	1st Det.	0	6.2(1)	230	145	9.5	6.2(1)	9.5	6.2(1)	9.5	6.2(1)	9.5	6.2(1)	9.5	6.2(1)	9.5	6.2(1)	9.5	6.2(1)	9.5
6K7	I.F.	0	6.2(1)	230	100	2.0	6.2(1)	2.0	6.2(1)	2.0	6.2(1)	2.0	6.2(1)	2.0	6.2(1)	2.0	6.2(1)	2.0	6.2(1)	2.0
6C5	Os.	0	6.2(1)	140	100	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0
607	1st Audio & 2nd Det.	0	6.2(1)	100	230	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0
6F6	Power Amp.	0	6.2(1)	210	230	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0	6.2(1)	0
5Y3G	Rectifier	0	5.0(4)	230	630(5)	0	630(5)	0	630(5)	0	630(5)	0	630(5)	0	630(5)	0	630(5)	0	630(5)	0
665	Tuning Indicator	Plate to Ground 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
(1) A.C. voltage as read across heater terminals 2 and 7.
(2) Bias (1.5 volts) as read across resistor R15.
(3) Bias (14 volts) as read across resistors R15 and R16.
(4) A.C. voltage as read across heater terminals 2 and 8.
(5) A.C. voltage as read across terminals 4 and 6.

MODELS 62-370, 62-470, 62-700
Installation of Model 62-298

MONTGOMERY-WARD & CO.

MODEL 62-298
Remote Control Unit
Description

MODEL 62-298

FOR USE WITH AIRLINE RADIO

MODELS—62-370	62-403	62-700
62-390	62-470	62-900
62-401	62-490	62-1100

DESCRIPTION

The control consists of three main units, namely, the Remote Push-Button Assembly, the Magnet Assembly and the Relay Assembly.

Fig. 1 shows the three units with their proper names indicated. Also, attention is directed to various parts of each unit to which names have been assigned for the purpose of making reference in the installation procedure which is given step by step for each radio model on the following pages.

To attach the units to any of the radio models listed above, proceed in accordance with the instructions given for each model. Read over very carefully the procedure and study the illustrations to become familiar with the few important items of installation, such as the armature arms, plungers, latch bar, locating pins and locating holes.

Any stations which have been set up on the automatic tuning buttons at the radio may be selected at the remote position. Station call letters are supplied for the Remote Push-Button Assembly. Punch out from the sheets of station call letter tabs the call letters of the stations which have been set up for the automatic push-buttons on the front of the radio.

Pressing the button on the Remote Push-Button Assembly nearest the end from which the connector cable comes out will select the extreme right hand automatic push-button on the front of the radio cabinet. The second button from the cable end of the Remote Push-Button Assembly will select the second automatic push-button from the right hand side of the radio and so on.

Moisten the back of the station call letter tabs and paste them into the rectangular openings in the Remote Push-Button Assembly alongside their respective buttons.

LOCATION

The location of each unit is plainly shown in the illustrations of the radio models on the following pages of this instruction booklet.

In general, the Magnet Assembly is mounted on the top of the radio chassis over a rectangular hole which is covered with a removable cover plate. The purpose of this unit is to electrically operate the automatic push-buttons on the front of the radio, from a remote location. The Relay Assembly is mounted by means of two wood screws to the underside of the chassis cabinet shelf, (on mantle models mount the relay beside the radio chassis). The purpose of this unit is to control the Magnet Assembly.

CAUTION

Withdraw the A. C. line cord plug for the radio from the house lighting current and do not re-insert it or the A. C. line cord plug for the Remote Control Assembly until all of the steps incidental to the actual installation of the Remote Control units to the radio have been completed.

INSTALLATION AND OPERATING SUGGESTIONS

In the Installation Procedure, you will note certain tubes have been removed. This was done to render the top of the chassis more accessible for the actual installation of the Magnet Assembly. NOTE: If difficulty is encountered installing the Magnet Assembly on the top of the chassis while mounted in the cabinet, remove the radio chassis from the cabinet. Be sure to replace the tubes in their proper sockets and connect the grid cap wire to the cap of any tubes of this type which were removed.

After the Remote Control units are completely installed and the radio placed in operation, stations can be selected automatically by pressing any one of the buttons of the Remote Control Assembly. The stations, of course, must first be set up by adjusting the setting screws on the front of the radio. For specific information, see the instructions on this procedure in the Operating Instruction book supplied with the radio.

To select a station from the Remote Control Push-Button Assembly, press down on the button. DO NOT HOLD THE BUTTON DOWN. Press only one push-button at a time. Continual abuse of pushing down more than one button at a time or holding down buttons for a longer period than 30 seconds may result in the tube in the Relay Assembly burning out or damage to the coils in the Magnet Assembly.

INSTALLATION PROCEDURE

1. Disconnect the power supply cord for the radio from the house lighting current and do not re-insert the plug until the following procedure for installing the remote control units has been fully completed.
2. Remove the push button escutcheon plate on the front of the radio cabinet and unscrew all six station setting screws all the way out (counterclockwise).
3. Referring to Fig. 2, note that the following four tubes have been removed:
6K6G Output Tube
6Q7G 2nd Detector Tube
6U7G I. F. Tube
6A8C 1st Detector Tube
4. Remove the cover plate on the top of the chassis by taking out four screws. Fig. 3 is a view of the chassis showing the cover plate removed.
5. Pick up the Magnet Assembly (see Fig. 1)—note that there are six armature arms, each of which is slotted.
6. Before placing the Magnet Assembly in position, put the four screws which were used to hold the cover plate to the chassis into the mounting holes of the frame of the Magnet Assembly. Four very thin fibre washers are supplied which are used to hold the mounting screws in the mounting holes until the Magnet Assembly is lowered into position. For details on how to use these fibre washers to the best advantage, see drawing Fig. D, Page 8.

7. Referring to Fig. 3, place the Magnet Assembly in position as shown so that the slots in the armatures are directly over the plungers. Now, carefully lower the Magnet Assembly so that the plungers enter the slots in the armatures. A screw-driver will be helpful in lining up any armature which may not be directly over the plungers.
8. The armatures must slip over the plunger between the latch bar and the shoulder of the plunger (see Fig. 3), also, refer to drawing (Fig. A, Page 8) which illustrates this point more clearly.

9. Rest the Magnet Assembly on the chassis base and move it slightly toward the back of the radio until the locating pins (see Fig. 1) on each side of the Magnet Assembly frame slip into the locating holes at both sides of the opening in the chassis base (see Fig. 3).
10. Hold the Magnet Assembly in place and fasten it securely to the chassis base by means of the four screws.
11. Referring to Fig. 4, mount the relay to the underside of the chassis shelf, using the two wood screws and two spacer washers supplied. On mantle models mount the relay beside the radio chassis. Place the spacer washers between the base of the Relay Assembly and the cabinet shelf, passing the wood screws through the holes in the spacer washers. Arrange the wire connector cables to the Magnet Assembly and Relay Assembly beside the tube socket base as shown in Fig. 4 and put the four tubes which were removed back into their respective sockets. CAUTION—be sure to put the tubes back into the proper sockets.
12. Reset stations for the automatic push-buttons, by means of the station setting screws on the front of the radio. For the complete procedure on this subject, consult the instruction book supplied with the radio.

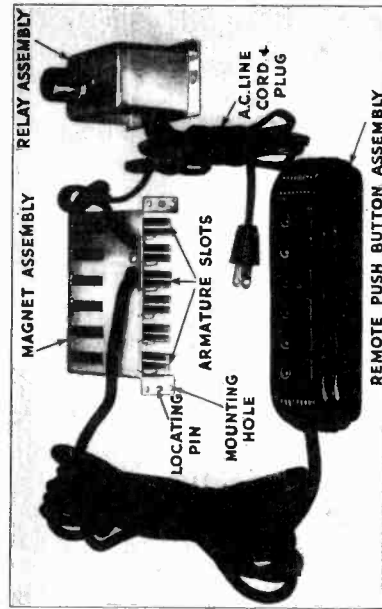


FIG. 1 GENERAL VIEW

MODEL 62-298

Installation in

MODELS 62-390, 62-490, 62-900

MONTGOMERY-WARD & CO.

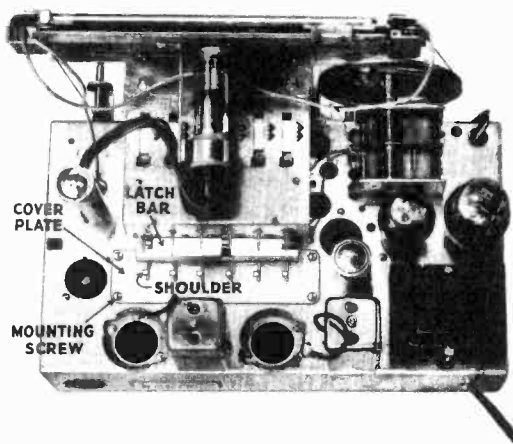


FIG. 2

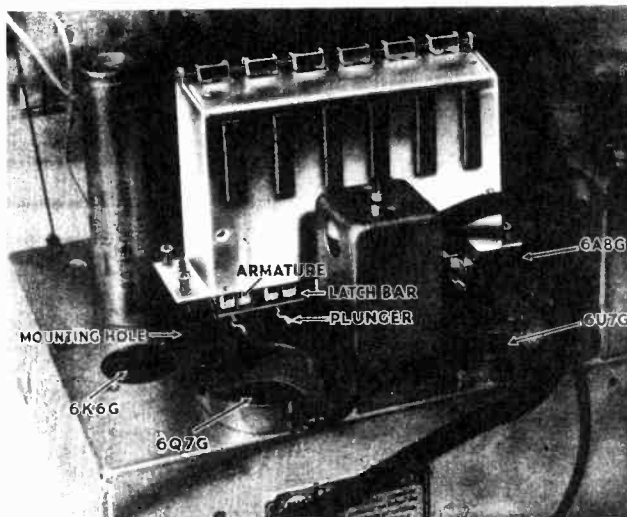


FIG. 3

MODELS 62-390, 62-490, and 62-900

9 TUBE MANTLE and CONSOLE

INSTALLATION PROCEDURE

1. Disconnect the power supply cord for the radio from the house lighting current and do not re-insert the plug until the following procedure for installing the remote control units has been fully completed.
2. Referring to Fig. 5, note that the following two tubes have been removed:
 5Y3G Rectifier Tube
 6J5G Second Detector Tube
3. Remove the cover plate on the top of the chassis by taking out four screws. Fig. 5 is a view of the chassis showing the cover plate removed.
4. Before placing the Magnet Assembly in position, put the four screws which were used to hold the cover plate to the chassis into the mounting holes of the frame of the Magnet Assembly. Four very thin fibre washers are supplied which are used to hold the mounting screws in the mounting holes until the Magnet Assembly is lowered into position. For details on how to use these fibre washers to the best advantage, see drawing Fig. 1, Page 8.
5. Pick up the Magnet Assembly (see Fig. 1)—note that there are six armature arms, each of which is slotted.
6. Referring to Fig. 5, place the Magnet Assembly in position as shown, so that the slots in the armatures are directly over the plungers. Now, carefully lower the Magnet Assembly so that the plungers enter the slots in the armatures. A screwdriver will be helpful in lining up any armature which may not be directly over the plungers.
7. The armatures must slip over the plunger in front of the shoulder of the plunger (see Fig. 5); also, refer to drawing (Fig. C, Page 8) which illustrates this point more clearly.
8. Reset the Magnet Assembly on the chassis base and move it slightly toward the back of the radio until the locating pins (see Fig. 1) on each side of the Magnet Assembly frame slip into the locating holes at both sides of the opening in the chassis base (see Fig. 5).
9. Hold the Magnet Assembly in place and fasten it securely to the chassis base by means of the four screws.
10. Referring to Fig. 6, mount the relay to the underside of the chassis shelf, using the two wood screws and two spacer washers supplied. On mantle radios, mount the relay beside the radio chassis. Place the spacer washers between the base of the Relay Assembly and the cabinet shelf, passing the wood screws through the holes in the spacer washers.
11. Arrange the wire connector cables to the Magnet Assembly and Relay Assembly as shown in Fig. 6 and put the two tubes which were removed back into their respective sockets.

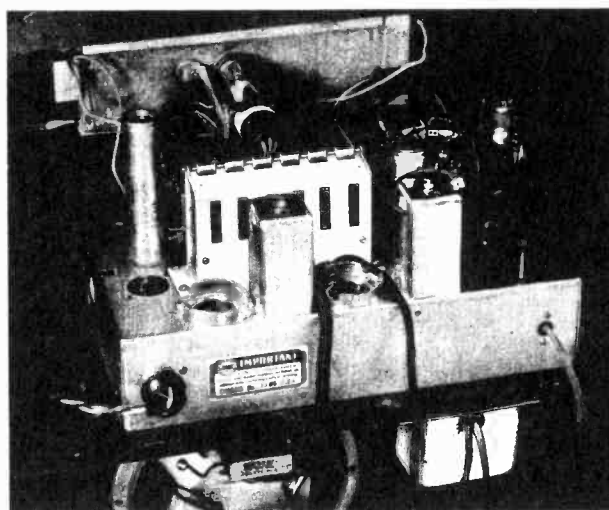


FIG. 4

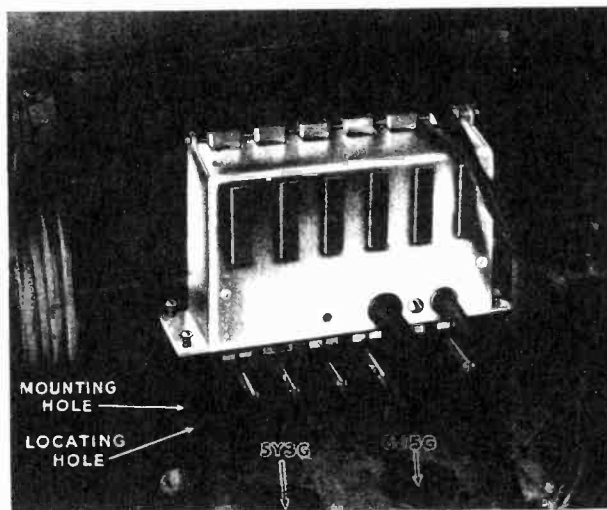


FIG. 5

MONTGOMERY-WARD & CO.

MODEL 62-298
 Installation in
 MODELS 62-401, 62-1100
 MODEL 62-403

INSTALLATION PROCEDURE

MODELS 62-401 and 62-1100—11 TUBE CONSOLE

1. Disconnect the power supply cord for the radio from the house lighting current and do not re-insert the plug until the following procedure for installing the remote control units has been completed.

2. Referring to Fig. 7 note that the 6U7G I.F. tube has been removed.

3. Remove the cover plate on the top of the chassis by taking out four screws. Fig. 7 shows the cover plate removed and the Magnet Assembly in position to be lowered into place.

4. Pick up the Magnet Assembly (see Fig. 1)—note that there are six armature arms, each of which is slotted.

5. Before placing the Magnet Assembly in position, put the four screws which were used to hold the cover plate to the chassis into the mounting holes of the frame of the Magnet Assembly. Four very thin fibre washers are supplied which are used to hold the Magnet Assembly lowered into position. For details on how to use these fibre washers to the best advantage see drawing Fig. D, Page 8.

6. Referring to Fig. 7, place the Magnet Assembly in position as shown so that the slots in the armature arms are directly over the plungers. Now, carefully lower the Magnet Assembly so that the plungers enter the slots in the armatures. A screwdriver will be helpful in lining up any armature which may not be directly over the plungers.

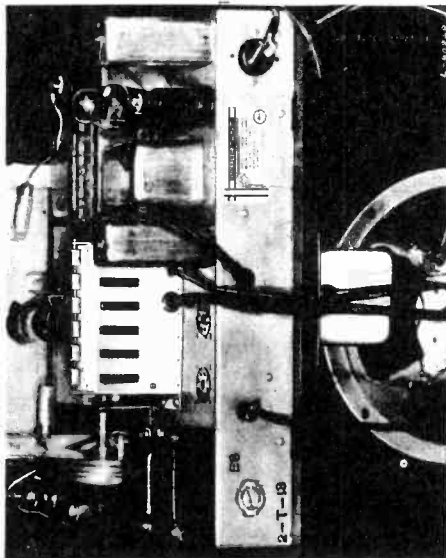


FIG. 5

7. The armatures must slip over the plungers between the latch bar and the shoulder of the plunger (see Fig. 7); also, refer to drawing (Fig. 1, Page 8) which illustrates this point more clearly.

8. Rest the Magnet Assembly on the chassis base and move it slightly toward the back of the radio until the locating pins (see Fig. 1) on each side of the Magnet Assembly frame slip into the locating holes at both sides of the opening in the chassis base (see Fig. 7).

9. Hold the Magnet Assembly in place and fasten it securely to the chassis base by means of the four screws.

10. Referring to Fig. 8, mount the Relay Assembly to the underside of the chassis shelf, using the two wood screws and two spacer washers supplied. Place the spacer washers between the base of the Relay Assembly and the cabinet shelf, passing the screws through the holes in the spacer washers. Arrange the wire connector cables to the Magnet Assembly and Relay Assembly as shown in Fig. 8 and put the 6U7G tube back in the pocket.

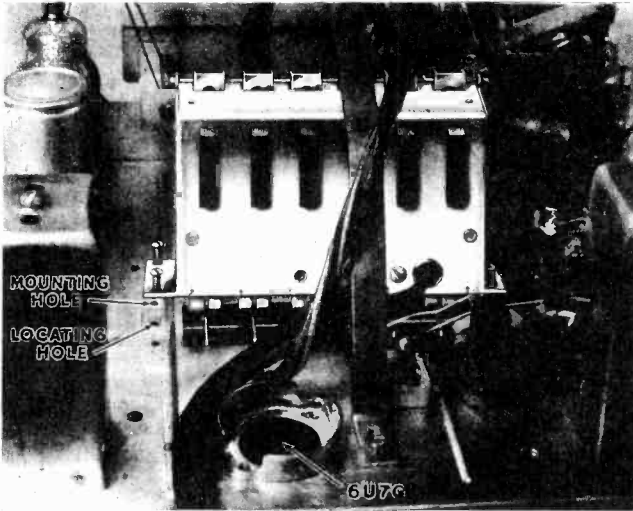


FIG. 6

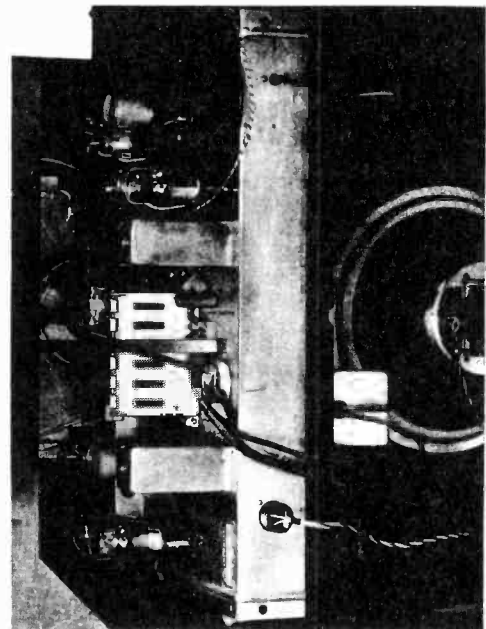


FIG. 8

INSTALLATION PROCEDURE MODEL 62-403—13 TUBE CONSOLE

1. Disconnect the power supply cord for the radio from the house lighting current and do not re-insert the plug until the following procedure for installing the remote control units has been completed:

2. Referring to Fig. 9, note that the following two tubes have been removed:
 6U7G 1st I.F. Tube
 6U7G 2nd I.F. Tube

3. Remove the cover plate on the top of the chassis by taking out four screws. Before placing the Magnet Assembly in position, put the four screws which were used to hold the cover plate to the chassis into the mounting holes of the frame of the Magnet Assembly. Four very thin fibre washers are supplied which are used to hold the mounting screws in the mounting holes until the Magnet Assembly is lowered into position. For details on how to use these fibre washers to the best advantage, see drawing Fig. D, Page 8.

Fig. 9 shows the cover plate removed and the Magnet Assembly placed to the left of the opening in the chassis tipped slightly forward to illustrate the method of getting it into proper position under the bracket which supports the movie dial lamp assembly. **Precaution should be taken when placing the Magnet Assembly in place—not to scratch the dial film of the movie dial.**

4. Pick up the Magnet Assembly and move it to the right so that it is directly over the opening in the chassis. Fig. 10 shows the Magnet Assembly in proper position

for lowering. Note that there are six armature arms, each of which is slotted.

5. Hold the Magnet Assembly so that the slots in the armatures are directly over the plungers. Now, carefully lower the Magnet Assembly so that the plungers enter the slots in the armatures. A screwdriver will be helpful in lining up any armature which may not be directly over the plungers. The armatures must slip over the plunger between the latch bar and the shoulder of the plunger (see Fig. 10); also, refer to drawing (Fig. B, Page 8) which illustrates this point more clearly.

6. Rest the Magnet Assembly on the chassis base and move it slightly toward the back of the radio until the locating pins (see Fig. 1) on each side of the Magnet Assembly frame slip into the locating holes at both sides of the opening in the chassis base (see Fig. 10).

7. Hold the Magnet Assembly in place and fasten it securely to the chassis base by means of the four screws.

8. Referring to Fig. 11, mount the relay to the underside of the chassis shelf, using the two wood screws and two spacer washers supplied. Place the spacer washers between the base of the Relay Assembly and the cabinet shelf, passing the screws through the holes in the spacer washers. Arrange the wire connector cables to the Magnet Assembly and Relay Assembly as shown in Fig. 11 and put the two tubes which were removed back into their respective sockets.

MODEL 62-298

Assembly, Schematic
Parts, Data

MONTGOMERY-WARD & CO.

LIST OF REPAIR PARTS

Bin No.	Part Reference	Description	No. Used	Selling Price Each
RE11248	RE11248	RELAY ASSEMBLY COMPLETE	1	3.50
RE11248	RE11248	Relay Assembly Complete (Less Tube)	1	.70
RE11248	RE11248	Five Prong Outlet Socket for 2W4 or 5W4	1	.10
RE11248	RE11248	Tube	1	.10
RE11248	RE11248	Housing Cover for Relay Assembly	1	.04
RE11248	RE11248	Bracket for Relay Assembly	1	.04
RE11248	RE11248	Relay Coil Unit and Switch Assembly	1	1.20
RE11248	RE11248	Switch and Contact Assembly for Relay	1	.20
RE11248	RE11248	Stud on Mounting Housing Cover	1	.06
RE11248	RE11248	Relay Assembly to Magnet Assembly	1	.10
RE11248	RE11248	Line Cord and Plug (8 Feet)	1	.21
RE11248	RE11248	Steel Spacer Washer (Used for Mounting)	2	.01
RE11248	RE11248	MAGNET ASSEMBLY PARTS		
RE11248	RE11248	Magnet Assembly Complete with 6 Coils	1	2.50
RE11248	RE11248	and 6 Armatures Mounted on 11598 Frame	1	.20
RE11248	RE11248	Frame for Magnet Assembly	1	.21
RE11248	RE11248	Insulating Strip (Mounts Under Terminal Strip)	1	.04
RE11248	RE11248	Coil Windings for Magnet Assembly	6	.25
RE11248	RE11248	Support Rod for Armatures	6	.12
RE11248	RE11248	Spring for Armatures	6	.03
RE11248	RE11248	Thin Flange Washer (Used for Mounting)	4	.08
RE11248	RE11248	Magnet Assembly to Chassis	1	Form 294-3M 7.38

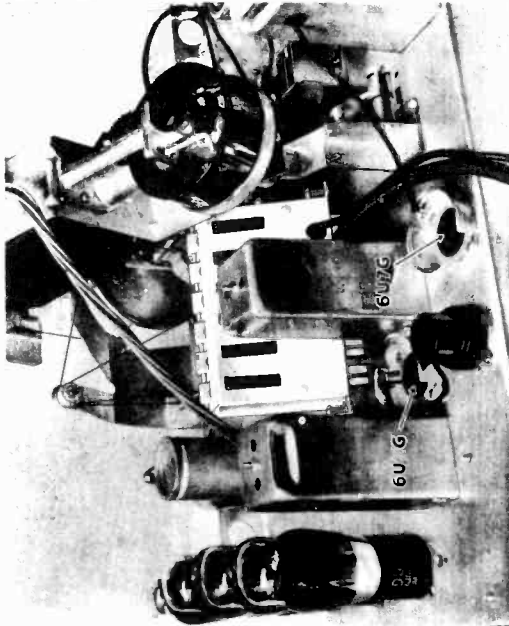
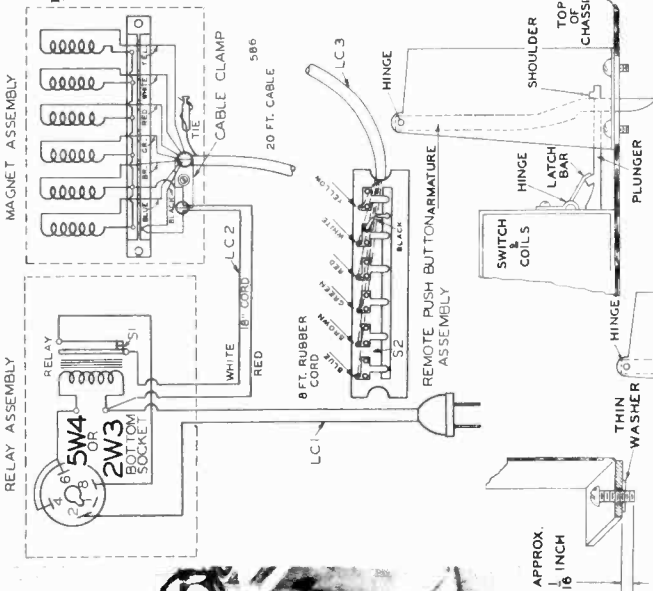


FIG. 9

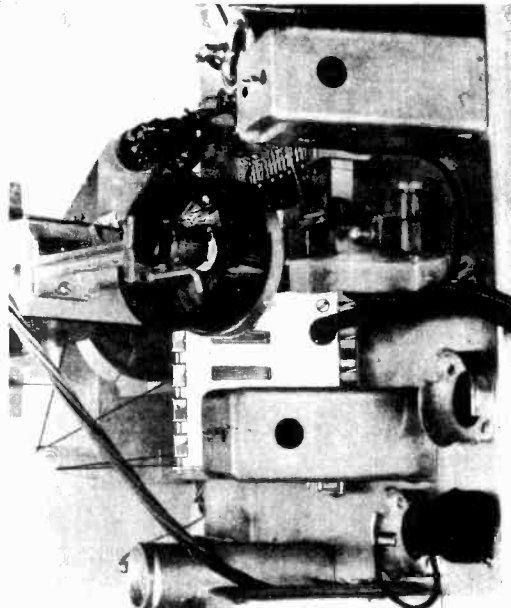


FIG. 10

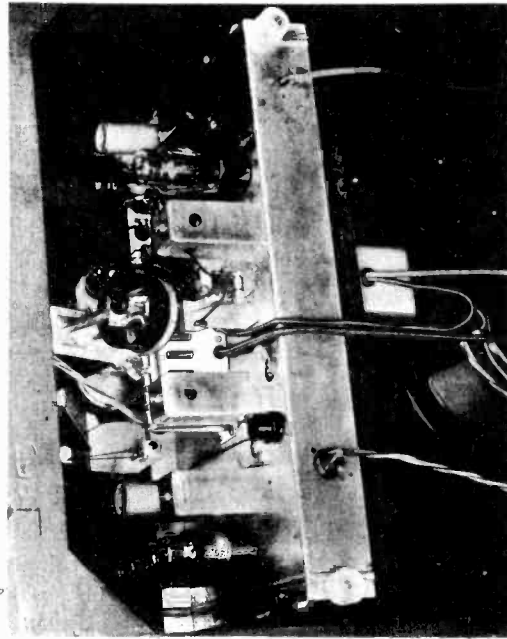
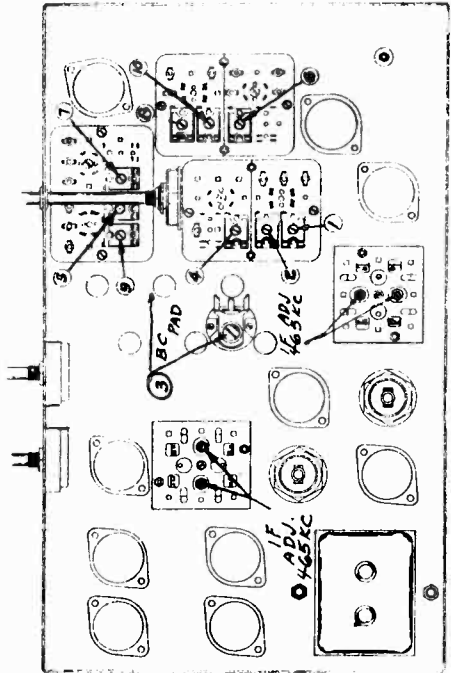
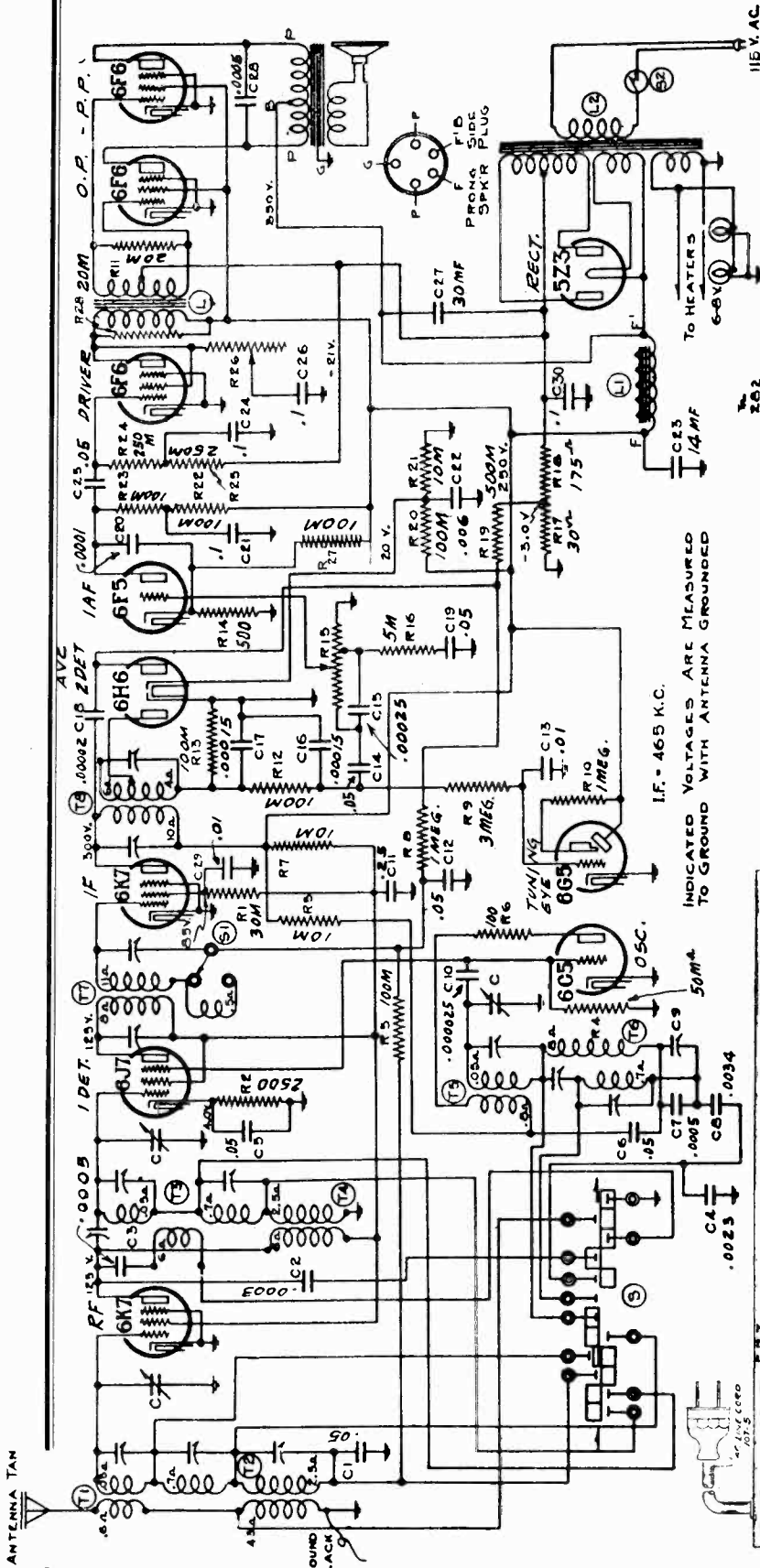


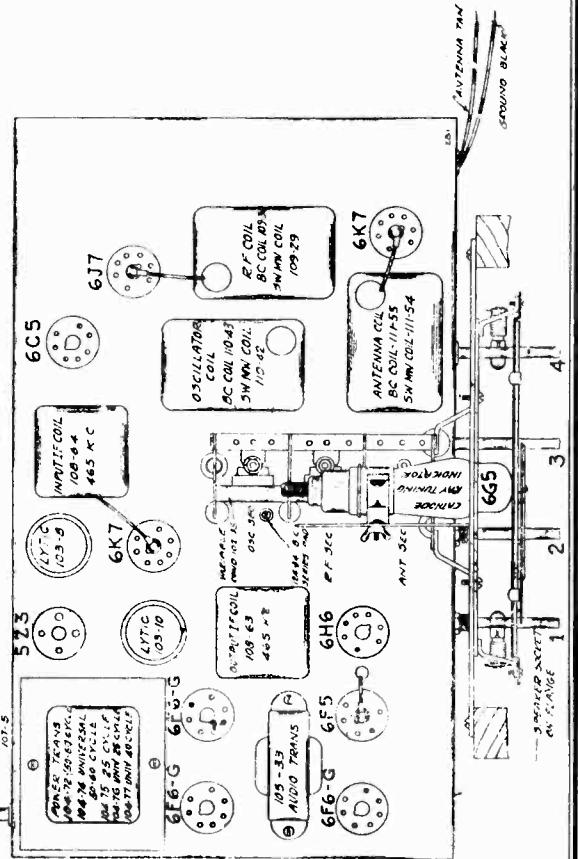
FIG. 11

MONTGOMERY-WARD & CO. Schematic, Socket, Trimmers

BAND CHANGE SWITCH THREE ARE:
 1st BROADCAST: 535-1720 K.C.
 2nd MIDDLE WAVE: 1690-5300 K.C.
 3rd SHORT WAVE: 5.2-18.1 M.C.



- BOTTOM VIEW SHOWING TRIMMERS



MODELS 62-301, 62-301X
Alignment

MONTGOMERY-WARD & CO.

MODELS 62-305, 62-385,
62-405, 62-414, 62-495
Trimmers, Alignment

MODELS 62-301 and 62-301X

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-83 Output I.F. Transformer
Part No. 108-84 Input I.F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the underside of chassis (see bottom view, Fig. 3).

1. With volume control full on, (the extreme right of its rotation), the wave changing switch in the broadcast position, (extreme left of its rotation), the tone control on "Hi" part of the sharp position (as much right rotation as possible without operating the Hi Fidelity switch), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:

(a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1", to the control grid cap of the type 6K7 tube, located between the two I.F. transformers, and adjust the output I.F. transformer 108-83 to resonance.

(b) With "Dummy 3" still connected, move oscillator output clip from grid of 6K7 to grid cap to 617 and adjust input I.F. transformer (108-84) to resonance.

(c) With oscillator still connected to 617, re-adjust output I.F. transformer if necessary.

DUMMY ANTENNAS:

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1", "Dummy 2", and "Dummy 3".

Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.

Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser and a 20 ohm resistor connected in series with each other and in series with the external oscillator.

Dummy 3: (Middle and Short Wave)—Consists of a .1 mfd. condenser and a 400 ohm resistor connected in series with each other and in series with the external oscillator.

BROADCAST BAND ALIGNMENT:

535 to 1720 Kilocycles

1. With band changing switch in the broadcast position, extreme left of its rotation, and with external oscillator set at 600 kilocycles and connected in series with "Dummy 2" to the tan antenna and black ground lead, make the following adjustments:

(a) Adjust broadcast series pad (adjustment number 3) to resonance with oscillator. Keep set in tune with on-

oscillator by slowly rocking to and fro the variable condenser until maximum output is obtained. Note: This adjustment is accessible from the top of the chassis and is located between the variable condenser and the 108-83 output I.F. transformer. See top view, Fig. 1.

(b) Re-set external oscillator to 1400 K.C., move dial pointer to 1400 K.C. and adjust oscillator (adjustment number 4), R.F. (adjustment number 5) and antenna (adjustment number 7) to resonance. See bottom view for location of these adjustments, Fig. 3

(c) Repeat adjustments "a" and "b" until sensitivity is at its maximum.

(d) Check for tracking and sensitivity at 1000 kilocycles. Under no circumstances bend plates of variable condenser sections to correct tracking.

SHORT WAVE BAND ALIGNMENT:

42 to 18.1 Megacycles

1. With band changing switch in the short wave position, extreme right of its rotation, and with external oscillator set at 17 megacycles and connected in series with "Dummy 3" to the tan antenna and black ground lead, make the following adjustments:

(a) Move dial pointer to 17 megacycles and adjust short wave oscillator (adjustment number 1), short wave R.F. (adjustment number 8) and short wave antenna (adjustment number 9) to resonance.

(b) Re-set external oscillator to 6 megacycles and pick up signal by rotating variable condenser and check for sensitivity.

NOTE: It is extremely necessary in making all of these adjustments that the fundamental oscillator signal be tuned in and not the image frequency which will fall below the fundamental on the receiver dial. As an example of this a fundamental 18.3 megacycle can be tuned in not only at 18.3 on the dial, but also at approximately 17.4 megacycles.

MIDDLE WAVE BAND ALIGNMENT:

1600 to 5300 Kilocycles

1. With band changing switch in the middle wave position, center of its rotation, and with external oscillator set at 5 M.C. and connected in series with "Dummy 3" to the tan antenna and black ground lead, make the following adjustments:

(a) Rotate condenser, pick up signal and adjust middle wave R.F. (adjustment number 10), middle wave antenna (adjustment number 5), and middle wave oscillator (adjustment number 2) to resonance.

(b) Re-check broadcast alignment and if it is found necessary to re-adjust either R.F. or antenna trimmers, repeat the 17 M.C. short wave and 5 M.C. middle wave adjustments.

MODELS 62-305, 62-385, 62-405, 62-414 AND 62-495

(a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1", to the control grid cap of the type 1D5G Interstage I. F. tube, and adjust the output I.F. transformer (No. 108-79B) to resonance.

(b) With "Dummy 1" still connected, move oscillator output clip from grid of 1D5G to grid cap to 1D5G input I.F. Tube and adjust interstage I.F. transformer (No. 108-78U) to resonance.

(c) Move oscillator to grid cap of 1D7G oscillator, first detector tube and adjust input I.F. transformer (No. 108-77B) to resonance.

SHORT WAVE BAND ALIGNMENT:

2000 to 7000 Kilocycles

1. With band changing switch in the short wave position, extreme right of its rotation, and with external oscillator set at 6 megacycles and connected in series with "Dummy 3" to the antenna and ground leads, make the following adjustments:

(a) Move dial pointer to 6 megacycles and adjust short wave oscillator trimmer to resonance.

This adjustment is the trimmer mounted on the top of rear section of the variable gang condenser (see Fig. 1, top view).

(b) Adjust short wave antenna trimmer (Adjustment Number 1), to resonance (see Fig. 3, bottom view).

BROADCAST BAND ALIGNMENT:

535 to 1720 Kilocycles

1. With band changing switch in the broadcast position, extreme left of its rotation, and with gang condenser in its minimum capacity position, plates entirely out of mesh, and with external oscillator connected in series with "Dummy 2" to antenna and ground leads make following adjustments:

(a) Set external oscillator to 1720 K.C. and adjust broadcast oscillator trimmer to resonance. (Adjustment number 3), (see bottom view of Chassis, Fig. 3).

(b) Re-set external oscillator to 1400 K.C., rotate variable gang condenser and pick up signal. Adjust broadcast antenna trimmer (adjustment number 2), to resonance.

(c) Re-set external oscillator to 600 K.C., and adjust broadcast series pad (adjustment number 4), to resonance by rotating condenser to approximately 600 K.C., rocking it slowly to and fro until by adjusting series pad maximum output is attained. This adjustment is located on the bottom of the chassis directly under the variable gang condenser. (See bottom view of chassis, Fig. 3)

(d) Repeat adjustments "a" and "b" until sensitivity is at its maximum.

(e) Check for tracking and sensitivity at 1400, 1000, and 600 kilocycles. Under no circumstances bend plates of variable condenser sections to correct tracking.

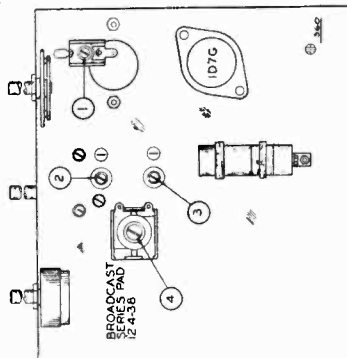


FIG. 3.—BOTTOM VIEW SHOWING TRIMMERS

RESONANCE INDICATOR.

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 1G5G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

DUMMY ANTENNAS:

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1", "Dummy 2", and "Dummy 3".

Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.

Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser and a 20 ohm resistor connected in series with each other and in series with the external oscillator.

Dummy 3: (Short Wave)—Consists of a .1 mfd. condenser and a 400 ohm resistor connected in series with each other and in series with the external oscillator.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-77B Input I. F. Transformer

Part No. 108-78B Interstage I. F. Transformer

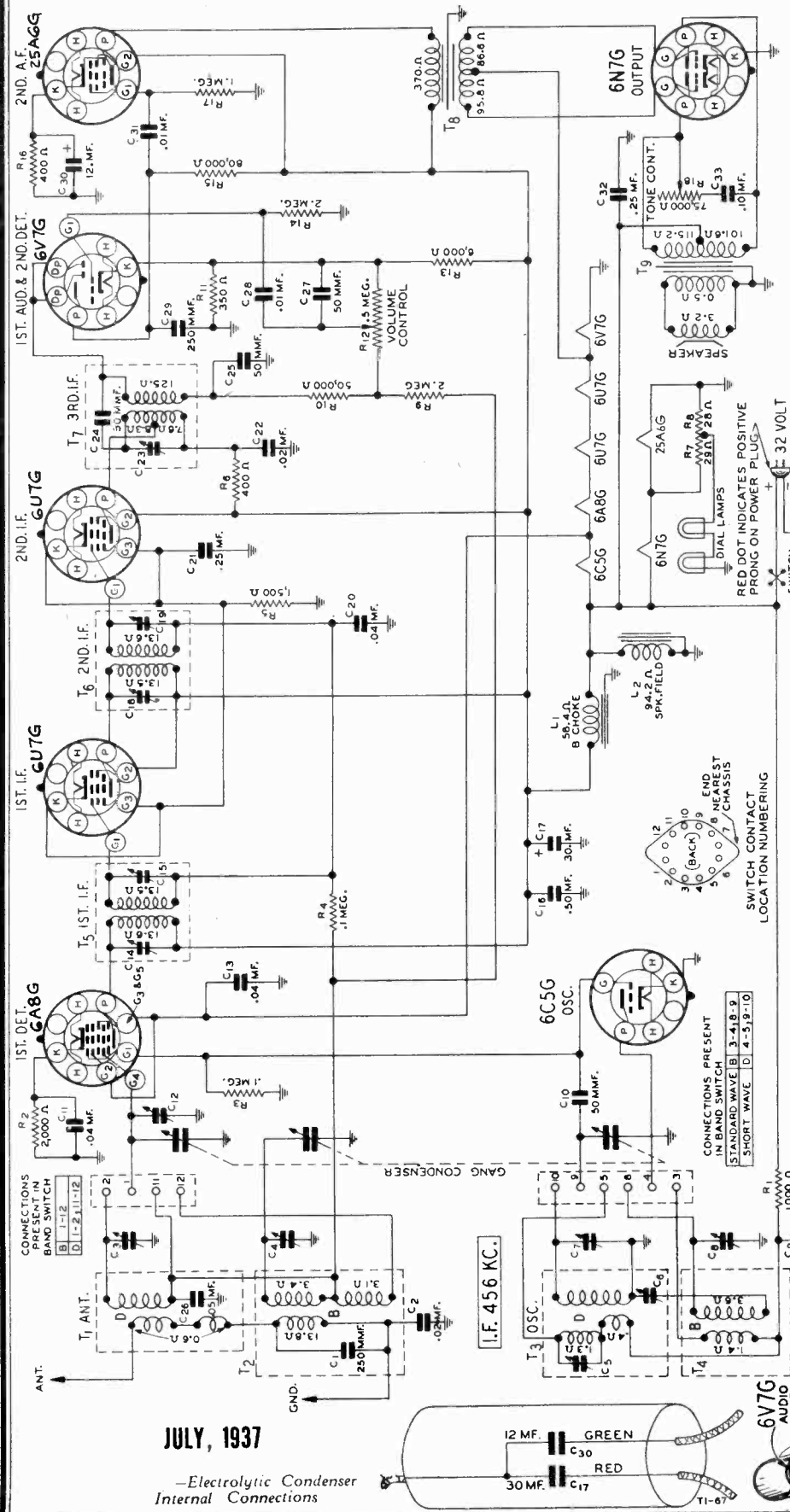
Part No. 108-79B Output I. F. Transformer

These I. F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1, top view).

1. With volume control full on, (the extreme right of its rotation), the band changing switch in the broadcast position, (extreme left of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:

MONTGOMERY-WARD & CO.

MODELS 62-302, 62-312,
62-442, 62-452
Schematic, Voltage, Socket



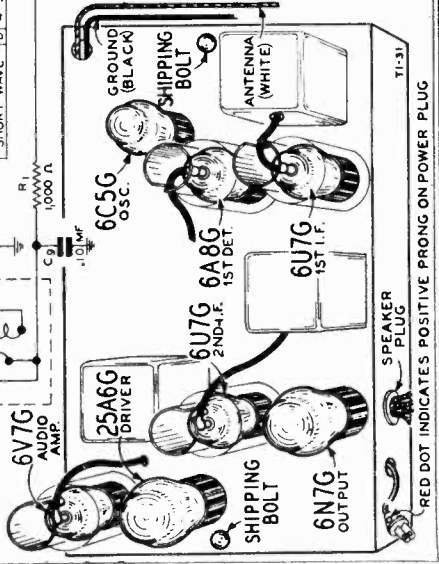
NOTE: RESISTANCES OF WINDINGS LESS THAN 0.1 Ω ARE NOT SHOWN.

TUBE	FUNCTION	Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Prong No. 8
6A8G	1st Det.	6.4(1)	31	25					2
6C5G	Osc.	6.4(1)	31						3
6U7G	1st I.F.	6.4(1)	31	31					3
6U7G	2nd I.F.	6.4(1)	31	31					2
6V7G	1st Aud. & 2nd Det.	6.4(1)	13						3.5
25A6G	2nd A.F.	25.9(1)	29	31					30.5
6N7G	Output	6.1(1)	30.5	6.1					6.1(1)

(1) As measured across prongs 2 and 7.

JULY, 1937
—Electrolytic Condenser
Internal Connections

CONNECTIONS PRESENT IN BAND SWITCH
STANDARD WAVE B | 3-4 | 8-9
SHORT WAVE D | 4-5 | 9-10



MODELS 62-302, 62-312
62-442, 62-452
Coils, Trimmers, Alignment

MONTGOMERY-WARD & CO. Socket, Trimmers, Voltage Alignment
MODELS 62-304, 62-404

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

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

Allow Chassis and Signal Generator to "Heat Up" for Several Minutes.

The following equipment is required for aligning:

An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter; Non-Metallic Screwdriver.
Dummy Antennas — .1 mf., 200 mmf., and 400 ohms.

STEP (Follow Order as Given)	BAND SWITCH SETTING	DUMMY ANTENNA	SIGNAL GENERATOR		TRIMMERS ADJUSTED See Illustration	PROCEDURE	
			FREQUENCY SETTING	CONNECTION AT RADIO		INITIAL STEPS	ADJUSTMENT
I.F.	Range B	.1 mf.	456 KC	Grid of 1st Det.	1st I.F. (C14) & (C15) 2nd I.F. (C18) & (C19) 3rd I.F. (C23)	Turn Rotor to Full Open	Adjust to Maximum Output
RANGE B							
1730 KC	Range B	200 mmf.	1730 KC	Antenna Lead	Oscillator Range B (C8)	Turn Rotor to Full Open	Adjust to Maximum Output
1500 KC	Range B	200 mmf.	1500 KC	Antenna Lead	1st Ant. Range B (C4) 2nd Ant. Range B (C12)	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note A	Adjust to Maximum Output
600 KC	Range B	200 mmf.	600 KC	Antenna Lead	600 KC (C6)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor — See Note B
RANGE D							
18300 KC	Range D	400 Ohm	18300 KC	Antenna Lead	Oscillator Range D (C7)	Turn Rotor to Full Open	Adjust to Maximum Output
15000 KC	Range D	400 Ohm	15000 KC	Antenna Lead	Ant. Range D (C3)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor — See Note B
6000 KC	Range D	400 Ohm	6000 KC	Antenna Lead	6000 KC (C5)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor — See Note B

MODEL 62-302 62-442
" 62-312 62-452

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.

After alignment of Range D has been completed, do not make any adjustments of the Range B trimmers. If this is done, it will be necessary to realign Range D.

NOTE A—In sets using the finger tip tuning dial, remove the retaining ring which holds the dial scale in position. Readjust rotor to maximum output. Hold the station selector ring and turn the dial scale until the pointer is at the 1500 KC mark. Replace the retaining ring.

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

CAUTION—When aligning the short wave 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.

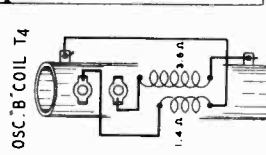
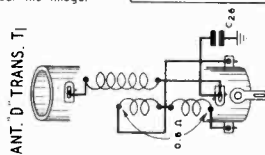
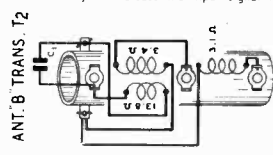
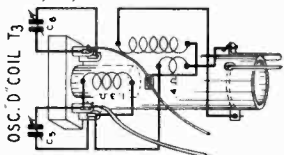
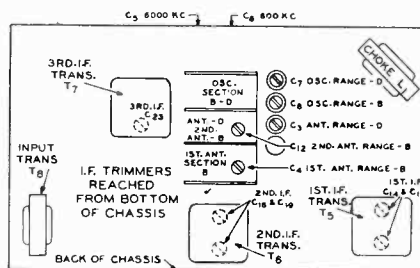


Fig. 7—Coil Terminal Arrangement and D.C. Resistance of Windings

Model 62-304 " 62-404 **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:

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. and 200 mmf.

STEP (Follow Order as Given)	DUMMY ANTENNA	SIGNAL GENERATOR		TRIMMERS ADJUSTED See Illustration	PROCEDURE	
		FREQUENCY SETTING	CONNECTION AT RADIO		INITIAL STEPS	ADJUSTMENT
I. F.	.1 mf.	456 KC	Grid of 1st Det.	2nd I. F. (C9) & (C10) 1st I. F. (C6) & (C7)	Turn rotor to full open	Adjust to Maximum Output
1730 KC Adj.	200 mmf.	1730 KC	Antenna Lead.	Osc. (C4)	Turn rotor to full open	Adjust to Maximum Output
1500 KC Adj.	200 mmf.	1500 KC	Antenna Lead	Ant. (C3)	Turn Rotor to Max. Output	Adjust to Maximum Output

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

NOTE—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, note

the position of the pointer and remove the chassis from the cabinet. Loosen the pointer screw and set the pointer so that it will be at the 800 KC mark. Tighten the pointer screw and replace the chassis in the cabinet. If the pointer is not at the 800 KC mark another adjustment will be necessary.

VOLTAGES AT SOCKETS
Volume Control: Maximum Antenna Shorted to Ground
"A" Battery — 2 Volts

Tube	Function	Across Filament	Plate to Ground	Screen to Ground	Control Grid
ID7G	1st Det.-Osc.	2.0	B7 B7(1)	64	3.5(2)
ID5G	I.F.	2.0	B7	64	3.5(2)
IH6G	2nd Det.-1st Audio	2.0	32(1)		1.25(4)
IF5G	Power	2.0	B2	B7	3.5(2)

(1) Anode Grid (G2) to ground
(2) As read across R6 and R7
(3) As read on 100 volt scale (1000 ohm per volt meter). Subject to variation.
(4) As read across R7

Tube Arrangement

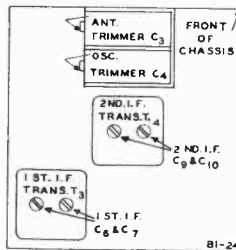
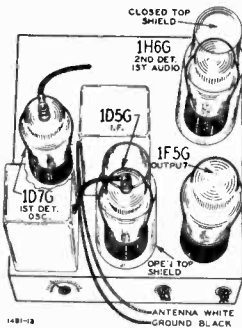


Fig. 3—Trimmer Location

MONTGOMERY-WARD & CO.

MODELS 62-304, 62-404
Schematic, Coils, Batt. Data
Drive Cord Data

Input Voltages and Currents

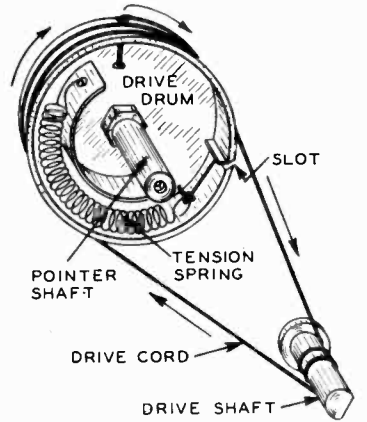
"A" Battery 2 Volts—3 Amperes
"B" Battery 90 Volts—11.5 to 15 Ma.
Power Output 135 Milliwatts Undistorted
Selectivity 40 KC Broad at 1000 Times Signal

Intermediate Frequency

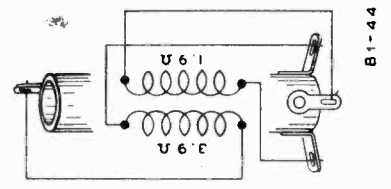
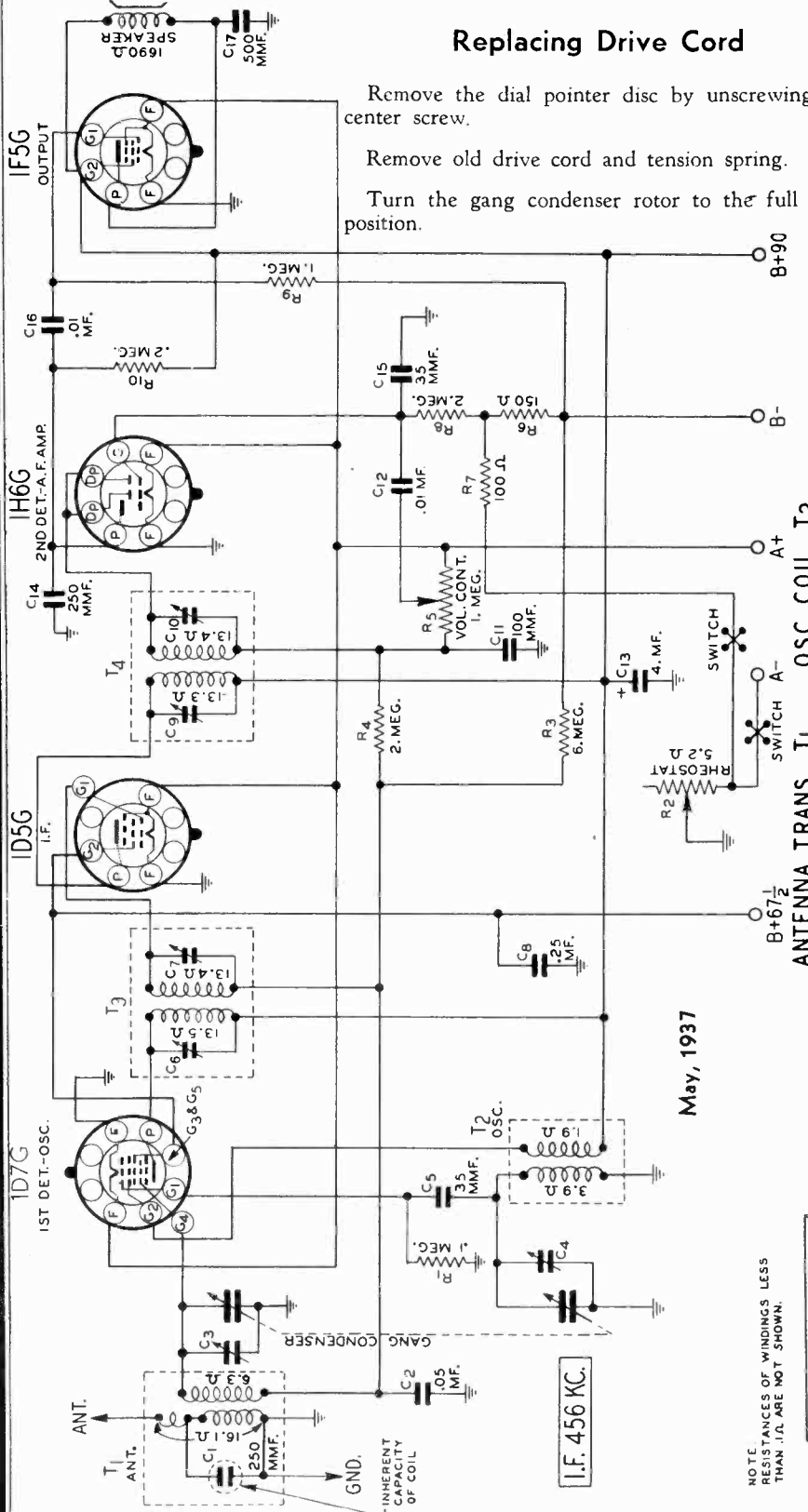
..... 456 KC.
Speaker 5" Magnetic
Tuning Frequency Range 528 to 1730 KC.
Sensitivity 40 Microvolts

Replacing Drive Cord

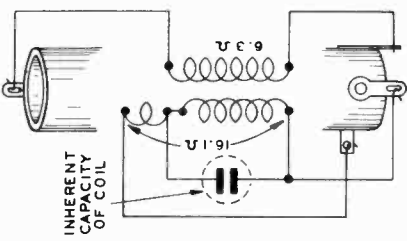
Remove the dial pointer disc by unscrewing the center screw.
Remove old drive cord and tension spring.
Turn the gang condenser rotor to the full open position.



-Drive Cord Replacement

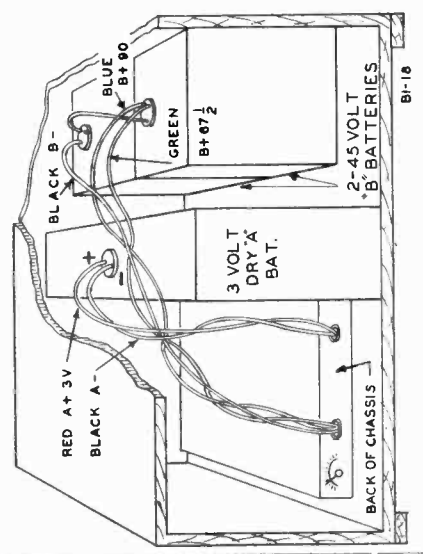


B1-44



ANTENNA TRANS. T1 OSC. COIL T2

May, 1937



-Battery Arrangement and Plug Connections

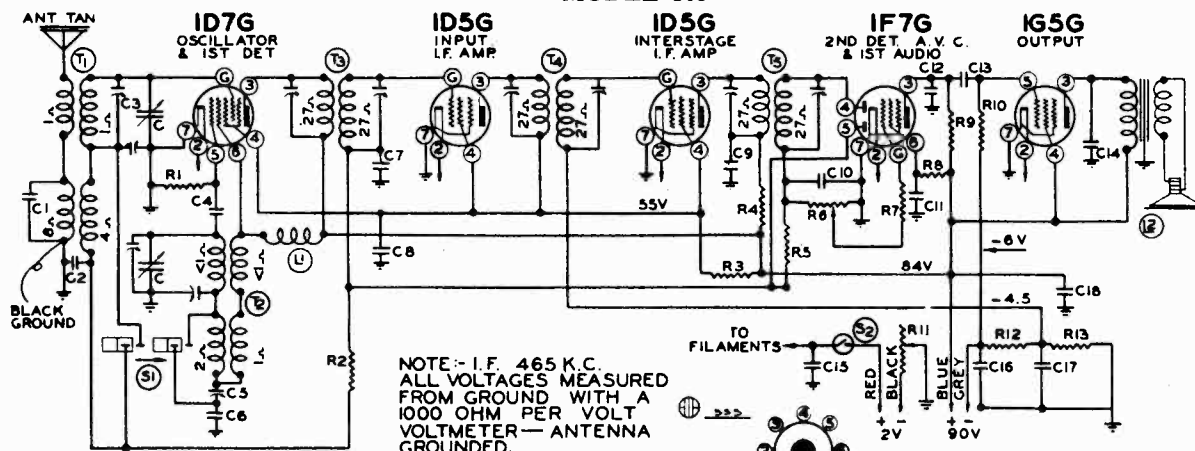
NOTE: RESISTANCES OF WINDINGS LESS THAN 1.0 ARE NOT SHOWN.

MODELS 62-305, 62-385, 62-405
62-414, 62-495

MONTGOMERY-WARD & CO.

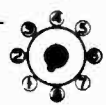
Schematic, Socket, Trimmers
Parts

MODEL 305



FOR ALIGNMENT SEE INDEX

BOTTOM VIEW OF SOCKETS SHOWING LOCATION OF LUGS.



No. Part No.	Description	No. Part No.	Description	No. Part No.	Description
CONDENSERS					
C	102-43 One Section of Gang Condenser	C14	100-12 .003 x 600 v. 25%	R10	130-19 1 megohm - 1/3 w. 20%
C1	129-12 .00025 Mica 20%	C15	100-6 .25 x 200 v. 20%	R11	101-79 4.75 ohm Rheostat
C2	100-22 .05 x 200 v. 25%	C16	119-22 10 mfd. x 25 w. v.	R12	106-39 150 ohm
C3	124-39 Adjustable trimmer 2-20 mmf. 25%	C17	100-20 1 x 200 v. 25%	R13	106-39 300 ohm
C4	129-5 .0001 Mica 20%	C18	100-64 .25 x 200 v. 20%	R12 and R13 in same unit	
C5	124-38 Series Pad - 600 mmf.	RESISTORS			
C6	129-74 .0015 Mica 2 1/2%	R1	130-12 50M ohm - 1/3 w. 20%	T1	111-75 Antenna Coil complete
C7	100-26 .02 x 400 v. 25%	R2	130-20 100M ohm - 1/3 w. 20%	T2	110-60 Oscillator Coil Complete
C8	100-20 .1 x 200 v. 25%	R3	130-167 7500 ohm - 1/3 w. 20%	T3	108-77B Input I. F. Complete
C9	100-20 .1 x 200 v. 25%	R4	130-85 3000 ohm - 1/3 w. 20%	T4	108-78B Interstage I. F. Complete
C10	129-60 .00015 Mica 20%	R5	130-4 3 megohm - 1/3 w. 20%	T5	108-79B Output I. F. Complete
C11	100-9 .05 x 200 v. 25%	R6	101-78 250M ohm volume control	L1	123-3 R. F. "B" Choke
C12	129-2 .0005 Mica 20%	R7	130-12 50M ohm - 1/3 w. 20%	L2	114-76 Speaker 6" P. M.
C13	100-11 .01 x 400 v. 25%	R8	130-19 1 megohm - 1/3 w. 20%	S1	125-30 Band switch
		R9	130-11 250M ohm - 1/3 w. 20%	S2	Switch on volume control

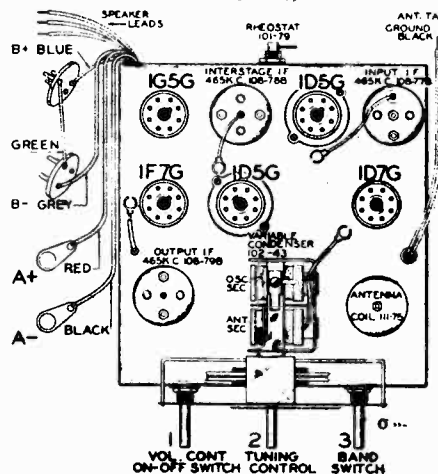
LIST OF REPAIR PARTS (Serial No. 575000 and up)

Use Only Genuine Factory Replacement Parts

Part No.	Schematic Reference	Description	No. Used in Set	Selling Price Ea.	Part No.	Schematic Reference	Description	No. Used in Set	Selling Price Ea.
CONDENSERS									
BE100-6	C15	.25 x 200 Volt Tubular	1	.16	BE101-78	R6, S2	Volume Control and Switch (250M Ohm)	1	.60
BE100-9	C11	.05 x 200 Volt Tubular	1	.10	BE101-79	R11	Filament Rheostat complete (4.75 Ohm)	1	.30
BE100-11	C13	.01 x 400 Volt Tubular	1	.09	BE102-43	C	Two Gang Variable Condenser	1	1.50
BE100-12	C14	.003 x 600 Volt Tubular	1	.11	BE115-22		Tube Shield	2	.10
BE100-20	C8, C9, C17	.1 x 200 Volt Tubular	3	.11	BE123-3	L1	R. F. Choke Coil	1	.30
BE100-22	C2	.05 x 200 Volt Tubular	1	.10	BE124-38	C3	Series Padder Condenser (600 mmf)	1	.20
BE100-26	C7	.02 x 400 Volt Tubular	1	.10	BE124-39	C5	Antenna Coil Trimmer Condenser (2-20 mmf)	1	.10
BE100-64	C18	.25 x 200 Volt Tubular	1	.16	BE125-30	S1	Band Switch	1	.24
BE119-22	C16	10 mfd. x 25 w. Volt Electrolytic	1	.40	BE121-35		"B" Battery Plug	2	.08
BE129-2	C12	.0005 Mica-Type MT-20%	1	.09	BE128-44		"Volume" Knob with Spring	1	.08
BE129-5	C4	.0001 Mica-Type MT-20%	1	.09	BE128-46		"Band Switch" Knob with Spring	1	.08
BE129-12	C1	.00025 Mica-Type MT-20%	1	.10	BE128-47		"Tuning" Knob with Spring	1	.08
BE129-60	C10	.00015 Mica-Type MT-20%	1	.10	BE131-95		Battery Lug Marked A-	1	.02
BE129-74	C6	.0015 Mica-Type MW-2 1/2%	1	.20	BE131-96		Battery Lug Marked A+	1	.02
RESISTORS									
BE106-39	R12, R13	150 Ohm, 300 Ohm Metal Clad Resistor	1	.20	DIAL PARTS LIST				
BE130-4	R5	3 Meg Ohm-1/3 Watt-20%-Carbon	1	.08	BE112-274		Dial Bracket and Tuning Shaft Assembly including	1	.25
BE130-11	R9	250M Ohm-1/3 Watt-20%-Carbon	1	.08			1-No. 117-122 Dial Scale Bracket		
BE130-12	R1, R7	50M Ohm-1/3 Watt-20%-Carbon	2	.08			1-No. 117-123 Bracket Brace		
BE130-19	R8, R10	1 Meg Ohm-1/3 Watt-20%-Carbon	2	.08			1-No. 117-125 Tuning Shaft Bushing		
BE130-20	R2	100M Ohm-1/3 Watt-20%-Carbon	1	.08			1-No. 112-263 Tuning Shaft		
BE130-85	R4	3M Ohm-1/3 Watt-20%-Carbon	1	.08			1-No. 117-116 Drive Pulley		
BE130-167	R3	7500 Ohm-1/3 Watt-20%-Carbon	1	.08	MISCELLANEOUS				
COILS									
BE108-77B	T3	Input I. F. Coil Assembly complete with can	1	.60	BE101-78	R6, S2	Volume Control and Switch (250M Ohm)	1	.60
BE108-78B	T4	Interstage I. F. Coil Assembly complete with can	1	.60	BE101-79	R11	Filament Rheostat complete (4.75 Ohm)	1	.30
BE108-79B	T5	Output I. F. Coil Assembly complete with can	1	.60	BE102-43	C	Two Gang Variable Condenser	1	1.50
BE110-60	T2	Oscillator Coil Assembly complete	1	.50	BE115-22		Tube Shield	2	.10
BE111-75	T1	Antenna Coil Assembly complete with can	1	.70	BE123-3	L1	R. F. Choke Coil	1	.30
SOCKETS									
BE121-58		Eight Prong Octal Socket-Marked "1D7"	1	.10	BE124-38	C3	Series Padder Condenser (600 mmf)	1	.20
BE121-59		Seven Prong Octal Socket-Marked "1D5"	2	.10	BE124-39	C5	Antenna Coil Trimmer Condenser (2-20 mmf)	1	.10
BE121-60		Eight Prong Octal Socket-Marked "1F7"	1	.10	BE125-30	S1	Band Switch	1	.24
BE121-61		Eight Prong Octal Socket-Marked "1G5"	1	.10	BE121-35		"B" Battery Plug	2	.08
SPEAKER									
BE114-76	L2	Six Inch P. M. Dynamic Speaker	1	3.00	BE128-44		"Volume" Knob with Spring	1	.08

FREQUENCY RANGE

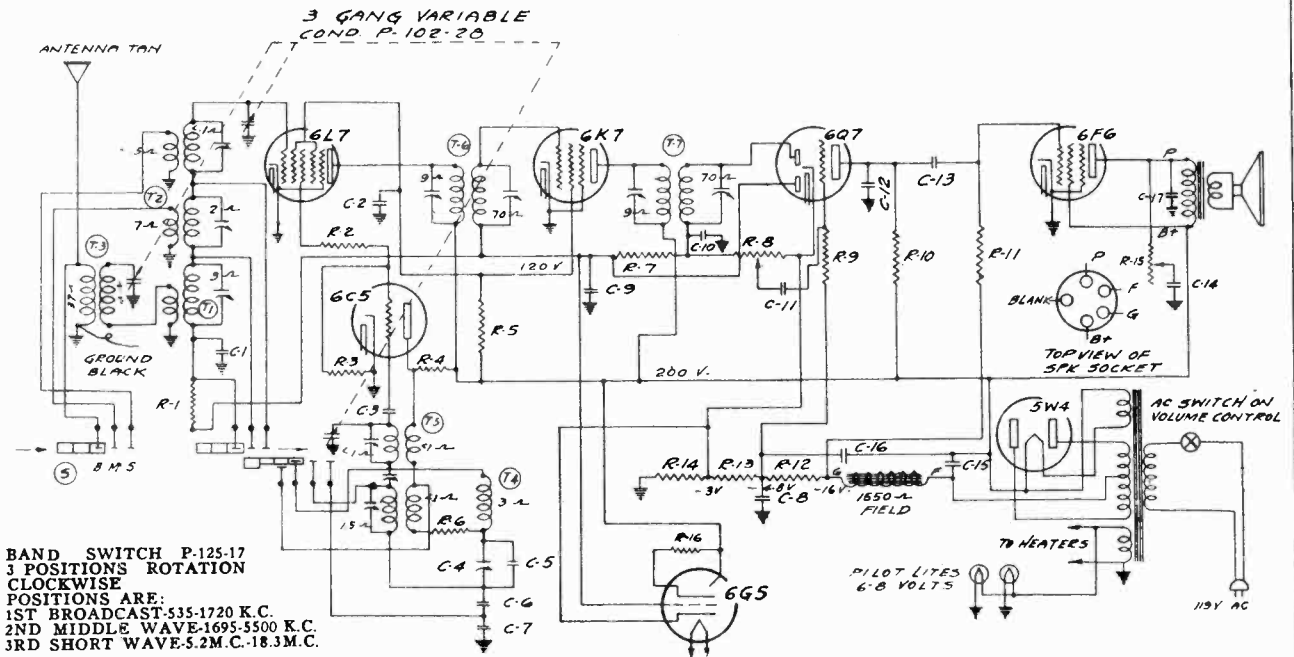
535 to 1720 K.C. (Kilocycles)
2000 to 7000 K.C. (Kilocycles)



MONTGOMERY WARD & CO.

MODELS 62-307, 62-407 Schematic, Voltage, Parts

BAND	DIAL SCALE	FREQUENCY RANGE
Broadcast	Outer Scale — Blue	535 to 1720 K.C. (Kilocycles)
Middle Wave	Center Scale — Green	1695 to 5500 K.C. (Kilocycles)
Short Wave	Inner Scale — Buff	5.2 to 18.3 M.C. (Megacycles)



BAND SWITCH P-125-17
3 POSITIONS ROTATION
CLOCKWISE
POSITIONS ARE:
1ST BROADCAST-535-1720 K.C.
2ND MIDDLE WAVE-1695-5500 K.C.
3RD SHORT WAVE-5.2M.C.-18.3M.C.

Power Transformer 50-60 Cycle P-104-52 25 Cycle P 104-53
Universal 25 Cycle P-104-54
Universal 40 Cycle P-104-55

LIST OF REPAIR PARTS (Serial No. 6E249976 and up)

Use Only Genuine Factory Replacement Parts

Part No.	Schematic Reference	Description	No. Used	Selling Price Ea.	Part No.	Schematic Reference	Description	No. Used	Selling Price Ea.					
CONDENSERS														
BE 100-11	C-1, C-13	.01 x 400 Volt Tubular	2	\$0.09	BE 102-28		Three Gang Variable Condenser	1	2.50					
BE 100-20	C-2; C-8	.1 x 200 Volt Tubular	2	.11	BE 107-6		Line Cord and Plug	1	.30					
BE 100-22	C-1; C-9	.05 x 200 Volt Tubular	2	.10	BE 115-35		Antenna, Oscillator, Shield	2	.12					
BE 100-25	C-17	.002 x 600 Volt Tubular	1	.09	BE 124-28	C-4	J-S Series Pad 3 Pl. (80-225)	1	.16					
BE 100-27	C-14	.025 x 600 Volt Tubular	1	.10	BE 125-17		Band Switch	1	.35					
BE 103-6	C-15	8 Mfd. x 350 Volt Electrolytic	1	.50	128-44		"Volume" Knob with Spring	1	.08					
BE 103-7	C-16	8 Mfd. x 300 Volt Electrolytic	1	.44	128-46		"Band Switch" Knob with Spring	1	.08					
BE 129-2	C-12	.0005 Mica—Type MT—20%	1	.09	128-47		"Tuning" Knob with Spring	1	.08					
BE 129-12	C-10	.00025 Mica—Type MT—20%	1	.12	CATHODE RAY TUNING INDICATOR PARTS									
BE 129-39	C-3	.00005 Mica—Type MT—20%	1	.12	RF 107-35		Cable and Socket Assembly	1	\$0.40					
BE 129-54	C-7	.003 Mica—Type MW—2 1/2%	1	.25	BE 112-158		Metal Oval Escutcheon	1	.15					
BE 129-55	C-8	.0034 Mica—Type MW—2 1/2%	1	.25	BE 117-57		Holder and Clamp	1	.15					
BE 129-56	C-5	.00055 Mica—Type MT—10%	1	.10	BE 130-110		1 Meg Ohm—1/10 Watt—10%—100 Volt Carbon	1	.08					
RESISTORS														
BE 106-26	R-12; R-13; R-14	(R-12, 220 Ohm) (R-13, 32 Ohm) (R-14, 52 Ohm) Metal Clad Resistor	1	.24	DIAL PARTS LIST									
BE 130-4	R-9	3 Meg Ohm—1/2 Watt—20%—100 Volt Carbon	1	.08	ASSEMBLIES									
BE 130-12	R-3	50M Ohm—1/2 Watt—20%—100 Volt Carbon	1	.08	BE 117-41		Drive Bracket including:	1	\$0.06					
BE 130-19	R-7	1 Meg Ohm—1/2 Watt—20%—100 Volt Carbon	1	.08	1—No. 117-19—Tuning Shaft Bushing Switch Disc and Link Assembly, including: 1—No. 117-12—Switch Arm 1—No. 117-35—Bushing with Screws 1—No. 117-40B—Switch Link 3—No. 131-26—Spring Washers 3—No. 162-5—Rivets 1—No. 112-144—Switch Disc—Inc. Red Tape									
BE 130-20	R-1	100M Ohm—1/2 Watt—20%—50 Volt Carbon	1	.08										
BE 130-27	R-6	50 Ohm—1/2 Watt—20%—3 Volt Carbon	1	.10										
BE 130-102	R-11	500M Ohm—1/2 Watt—10%—50 Volt Carbon	1	.10										
BE 130-103	R-10	100M Ohm—1/2 Watt—10%—50 Volt Carbon	1	.10										
BE 130-104	R-4; R-5	9M Ohm—1 Watt—20%—100 Volt Carbon	2	.10										
BE 130-105	R-2	150 Ohm—1/2 Watt—20%—10 Volt Carbon	1	.10										
BE 130-110	R-16	1 Meg Ohm—1/10 Watt—10%—100 Volt Carbon	1	.08										
COILS														
BE 108-73	T-7	Output I.F. Coil Assem. Comp. with Can.	1	.90						BE 112-125		Drive Belt	1	.10
BE 108-74	T-6	Input I.F. Coil Assem. Comp. with Can.	1	.90	BE 112-145		Oval Escutcheon complete with Celluloid Crystal	1	.50					
BE 110-38	T-4	Broadcast Oscillator Coil Assem. Comp. with Can.	1	.35	BE 112-148A		Dial Scale complete with Fastener, Pointer Disc, and Screw	1	.24					
BE 110-39	T-5	Mid Wave and Short Wave Oscillator Assem. less Can.	1	.75	BE 112-147		Tuning Shaft	1	.06					
BE 111-49	T-1	Broadcast Antenna Coil Assem. Comp. with Can.	1	.40	BE 112-151		Pointer complete with Screw	1	.06					
BE 111-50	T-2	Mid Wave and Short Wave Antenna Coil Assem. less Can.	1	.80	BE 112-156		Pilot Light Assembly	2	.02					
BE 111-51	T-3	Broadcast Preselector Coil Assembly	1	.35	BE 116-13		6.8 Volt T-51 Pilot Light	2	.08					
SOCKETS														
BE 121-8		Five Prong Socket—Marked "SPKR"	1	.05	BE 117-20A		Tuning Shaft Pulley	1	.03					
BE 121-12		Seven Prong Socket—Marked "6K7"	1	.10	BE 117-38		Stud, for take-up Spring	1	.08					
BE 121-14		Seven Prong Socket—Marked "6F6"	1	.10	BE 117-39		Pulley, for take-up Spring	1	.02					
BE 121-15		Five Prong Socket—Marked "3W4"	1	.08	BE 120-14		Take-up Spring	1	.02					
BE 121-17		Six Prong Socket—Marked "6G5"	1	.09	BE 134-9		Horse Shoe Washer	1	.01					
BE 121-18		Seven Prong Socket—Marked "6L7"	1	.10	BE 134-40		Rubber Grommet	2	.02					
BE 121-26		Seven Prong Socket—Marked "6Q7"	1	.10	Note: Speakers cannot be ordered, defective speakers must be repaired. All resistors and mica condensers are RMA color coded — specify value and/or resistor or condenser (per schematic diagram) and model number. Mica condensers are coded with an additional dot indicating tolerance: Tolerance Percent Color of Dot 2 1/2% White 5% Green 10% Blue 15% Yellow 20% Red More than—20% None									
SPEAKER														
BE 114-45		Eight Inch Dynamic	2	6.00										
TRANSFORMERS														
BE 104-52		Power Transformer, 50/60 Cycle	1	2.00										
BE 104-53		Power Transformer, 25 Cycle	1	2.50										
BE 104-54		Universal Power Transformer, 25 Cycle Primary	1	2.50										
BE 104-55		Universal Power Transformer, 40 Cycle Primary	1	3.00										
MISCELLANEOUS														
BE 101-46	R-8	Volume Control and Switch (1 Meg Ohm)	1	\$0.60										
BE 101-53	R-15	Tone Control 50M Ohm	1	.30										

RF 107-35 Cable and Socket Assembly 1 \$0.40
 BE 112-158 Metal Oval Escutcheon 1 .15
 BE 117-57 Holder and Clamp 1 .15
 BE 130-110 1 Meg Ohm—1/10 Watt—10%—100 Volt Carbon 1 .08

Part No.	Schematic Reference	Description	No. Used	Selling Price Ea.
BE 102-28		Three Gang Variable Condenser	1	2.50
BE 107-6		Line Cord and Plug	1	.30
BE 115-35		Antenna, Oscillator, Shield	2	.12
BE 124-28	C-4	J-S Series Pad 3 Pl. (80-225)	1	.16
BE 125-17		Band Switch	1	.35
128-44		"Volume" Knob with Spring	1	.08
128-46		"Band Switch" Knob with Spring	1	.08
128-47		"Tuning" Knob with Spring	1	.08

BE 112-125 Drive Belt 1 .10
 BE 112-145 Oval Escutcheon complete with Celluloid Crystal 1 .50
 BE 112-148A Dial Scale complete with Fastener, Pointer Disc, and Screw 1 .24
 BE 112-147 Tuning Shaft 1 .06
 BE 112-151 Pointer complete with Screw 1 .06
 BE 112-156 Pilot Light Assembly 2 .02
 BE 116-13 6.8 Volt T-51 Pilot Light 2 .08
 BE 117-20A Tuning Shaft Pulley 1 .03
 BE 117-38 Stud, for take-up Spring 1 .08
 BE 117-39 Pulley, for take-up Spring 1 .02
 BE 120-14 Take-up Spring 1 .02
 BE 134-9 Horse Shoe Washer 1 .01
 BE 134-40 Rubber Grommet 2 .02

MODELS 62-307, 62-407

Socket, Trimmers Alignment

MONTGOMERY-WARD & CO.

- (a) Set external oscillator to 1720 K.C. and adjust broadcast oscillator trimmer to resonance (Adjustment number 1; see bottom view of coil assembly, Fig. 3).
- (b) Re-set external oscillator to 1550 K.C., rotate variable gang condenser and pick up signal. Adjust broadcast antenna trimmer (Adjustment number 4) to resonance, also adjust prescaler trimmer which is mounted on the top of the rear section of the three gang variable tuning condenser to resonance. (See top view of chassis; Fig. 1, for location of this adjustment).
- (c) Re-set external oscillator to 600 K.C., and adjust broadcast series pad to resonance by rotating condenser to approximately 600 K.C., rocking it slowly to and fro until by adjusting series pad maximum output is attained. This adjustment is located on the bottom of the chassis directly under the variable gang condenser. (See bottom view of chassis, Fig. 3).
- (d) Repeat adjustments "a," and "b," until sensitivity is at its maximum.
- (e) Check for tracking and sensitivity at 1000 kilocycles. Under no circumstances bend plates of variable condenser sections to correct tracking.

SHORT WAVE BAND ALIGNMENT:
5.2 to 18.3 Megacycles

- 1. With band changing switch in the short wave position, extreme right of its rotation, and with external oscillator set at 17 megacycles and connected in series with "Dummy 3" to the antenna and black ground lead, make the following adjustments:
 - (a) Move dial pointer to 17 megacycles and adjust short wave oscillator (Adjustment number 3) and short wave antenna (Adjustment number 6) to resonance.
 - (b) Re-set external oscillator to 6 megacycles and pick up signal by rotating variable condenser and check sensitivity.
 - (c) Re-set external oscillator and check set at 18.1 megacycles and 5.3 megacycles for band coverage.

NOTE: It is extremely necessary in making all of these adjustments that the fundamental oscillator signal be tuned in and not the image frequency which will fall below the fundamental on the receiver dial. As an example of this a fundamental 18.5 megacycle can be tuned in not only at 18.3 on the dial, but also at approximately 17.4 megacycles.

MIDDLE WAVE BAND ALIGNMENT:
1695 to 5500 Kilocycles

- 1. With band changing switch in the middle wave position, center of its rotation, and with external oscillator set at 5000 kilocycles and connected in series with "Dummy 3" to the antenna and black ground lead, make the following adjustments:
 - (a) Move dial pointer to 5000 kilocycles and adjust middle wave oscillator (adjustment number 2) and middle wave antenna (adjustment number 5) to resonance.
 - (b) Re-set external oscillator to 1800 kilocycles and pick up signal by rotating variable condenser and check sensitivity.
 - (c) Re-set external oscillator and check set at 5,000 kilocycles and 1700 kilocycles for band coverage.

No aligning adjustments should be attempted with the chassis in the cabinet. Remove the knobs and the four bolts which are used to fasten the chassis.

All adjustments should be made with a non-metallic screw driver.

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 6F6 output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

DUMMY ANTENNAS:

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1," "Dummy 2," and "Dummy 3."

Dummy 1: (I.F.)—Consists of a 1 mfd. condenser connected in series with the external oscillator.

Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser and a 20 ohm resistor connected in series with each other and in series with the external oscillator.

Dummy 3: (Middle and Short Wave)—Consists of a 1 mfd. condenser and a 400 ohm resistor connected in series with each other and in series with the external oscillator.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-73 Output I.F. Transformer
Part No. 108-74 Input I.F. Transformer
These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see top view).

- 1. With volume control full on (the extreme right of its rotation), the band changing switch in the broadcast position, (extreme left of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 - (a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1," to the control grid cap of the type 6K7 tube, and adjust the output I.F. transformer (No. 108-73) to resonance.
 - (b) With "Dummy 1" still connected, move oscillator output clip from grid of 6K7 to grid cap to 6L7 and adjust input I.F. transformer (No. 108-74) to resonance.
 - (c) With oscillator still connected to 6L7, readjust output I.F. transformer (108-73) if necessary.

BROADCAST BAND ALIGNMENT:
533 to 1720 Kilocycles

- 1. With band changing switch in the broadcast position, extreme left of its rotation, and with gang condenser in its minimum capacity position, plates entirely out of contact and antenna trimmer connected in series with "Dummy 3" to the antenna lead and black ground lead, make following adjustments:

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 voltages, defective tubes, condensers and resistors. In order to properly align this chassis, an oscillator (generator) is absolutely necessary.

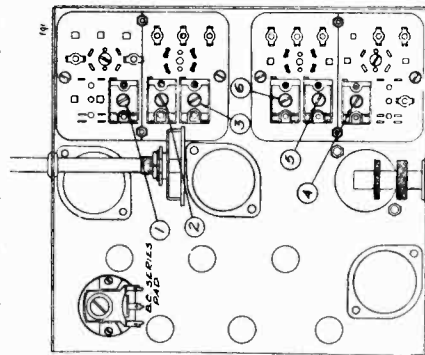


FIG. 3—BOTTOM VIEW SHOWING TRIMMERS

TUBES:

The tube complement of this chassis consists of the latest metal type tubes.

- The type and function of each tube is as follows:
 - 1—Type 6L7 Pentagrid Mixer, First Detector.
 - 1—Type 6C5 Oscillator.
 - 1—Type 6K7 Remote Cut-Off Pentode, I. F. Amplifier (465 K.C.)
 - 1—Type 6Q7 Duplex Diode Triode Second Detector, A.V.C. and First Audio.
 - 1—Type 6F6 Pentode Output Amplifier.
 - 1—Type 5W4 High Vacuum Rectifier.
 - 1—Type 6G5 Cathode-Ray Tuning Eye.

Transformers are available and chassis are sometimes equipped with universal transformers for operation on 40 and 50 cycles and with primary taps for 108, 125, 150, 220 and 250 volts (see parts list) and also sometimes equipped with 25 cycle transformers with 105-110 volt or 220 volt primaries, not universal.

SERVICE NOTES:

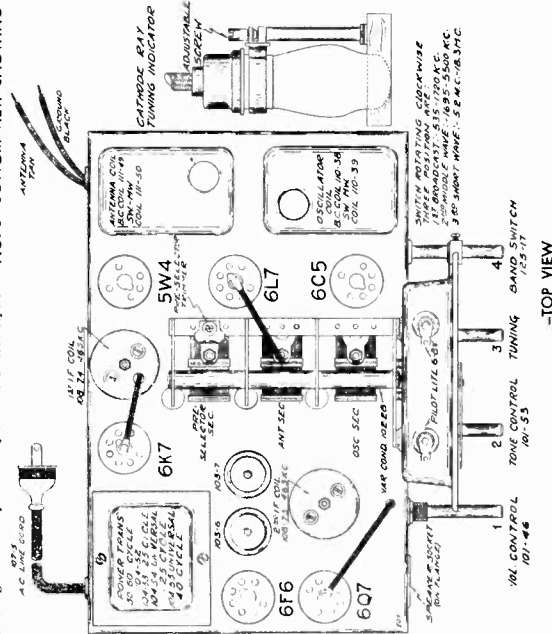
Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt.

All voltages as indicated on diagram are measured with 119 volts on the primary of the power transformer.

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

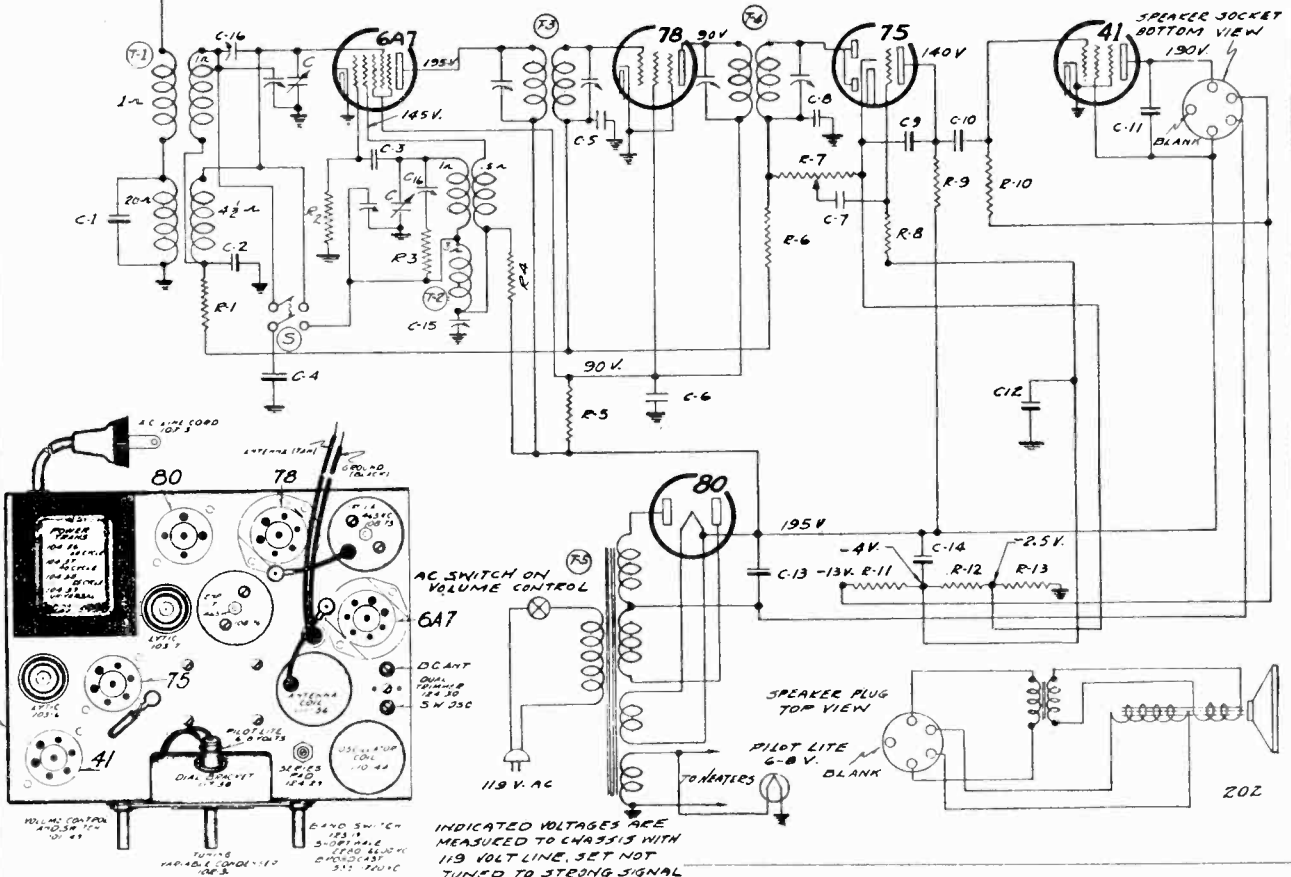


—TOP VIEW

MONTGOMERY WARD & CO.

MODELS 62-315, 62-415
Schematic, Voltage
Socket, Trimmers, Parts

BAND DIAL SCALE FREQUENCY RANGE
Broadcast..... Upper Scale—Blue 535 to 1720 K.C. (Kilocycles)
Short Wave..... Lower Scale—Buff 2280 to 6600 K.C. (Kilocycles)



LIST OF REPAIR PARTS (Serial No. 6E248475 and up)

Use Only Genuine Factory Replacement Parts

IF PEAK 465KC

Part No.	Schematic Reference	Description	No. Used in Set	Selling Price Ea.
CONDENSERS				
BE 100-6	C-12: C-8	.25 x 200 Volt Tubular—Without Bracket	2	\$0.18
BE 100-9	C-5	.05 x 200 Volt Tubular	1	.10
BE 100-11	C-10: C-7	.01 x 400 Volt Tubular	2	.09
BE 100-19	C-11	.006 x 600 Volt Tubular	1	.09
BE 100-26	C-2	.02 x 400 Volt	1	.10
BE 103-6	C-12	8 Mfd. x 350 Volt Electrolytic	1	.50
BE 103-7	C-14	8 Mfd. x 300 Volt Electrolytic	1	.44
BE 129-5	C-9	.0001 Mica—Type O—20%	1	.09
BE 129-12	C-8	.00025 Mica—Type O—20%	1	.12
BE 129-41	C-4	.0017 Mica—Type W—2 1/2%	1	.20
BE 129-62	C-3	.00003 Mica—Type O—10%	1	.10
BE 129-63	C-1	.0004 Mica—Type W—10%	1	.10
RESISTORS				
BE 106-26	R-11: R-12; R-13	220 Ohm (R-11), 33 Ohm (R-12), 52 Ohm (R-13), Metal Clad Resistor	1	.24
BE 130-12	R-2	50M Ohm— 1/2 Watt—20%—20 Volt—Carbon	1	.08
BE 130-20	R-9	100M Ohm— 1/2 Watt—20%—50 Volt—Carbon	1	.08
BE 130-22	R-4	5M Ohm— 1/2 Watt—20%—10 Volt—Carbon	1	.08
BE 130-77	R-5	10M Ohm— 1 Watt—20%—100 Volt—Carbon	1	.08
BE 130-100	R-10	150M Ohm— 1/2 Watt—20%—50 Volt—Carbon	1	.08
BE 130-110	R-6	1 Meg Ohm—1/10 Watt—10%—100 Volt—Carbon	1	.08
BE 130-111	R-1	100M Ohm—1/10 Watt—20%—50 Volt—Carbon	1	.08
BE 130-112	R-3	100 Ohm—1/10 Watt—20%—10 Volt—Carbon	1	.08
BE 130-113	R-8	2 Meg Ohm—1/10 Watt—20%—100 Volt—Carbon	1	.08
COILS				
BE 108-75	T-3	465 K.C. Input I.F. Coil Assembly Complete with Can	1	.66
BE 108-76	T-4	465 K.C. Output I.F. Coil Assembly Complete with Can	1	.75
BE 110-44	T-2	Oscillator Coil Assembly Complete with Can	1	.66
BE 111-56	T-1	Antenna Coil Assembly Complete with Can	1	.80
SOCKETS				
BE 121-6		Six Prong Socket—Marked "78"	1	.09
BE 121-6		Six Prong Socket—Marked "75"	1	.09
BE 121-6		Six Prong Socket—Marked "41"	1	.09
BE 121-7		Seven Prong Socket—Marked "6A7"	1	.10
BE 121-8		Five Prong Socket—Marked "5YK3"	1	.09
BE 121-9		Four Prong Socket—Marked "80"	1	.08
SPEAKER				
BE 114-16		Five Inch Dynamic Speaker	1	\$0.00

Part No.	Schematic Reference	Description	No. Used in Set	Selling Price Ea.
TRANSFORMERS				
BE 104-58	T-5	60 Cycle—110 Volt Power Transformer	1	1.74
BE 104-37		40 Cycle—110 Volt Power Transformer		2.50
BE 104-58		25 Cycle—110 Volt Power Transformer		2.50
BE 104-59		40 Cycle Primary—Universal Power Transformer		3.00

TUBES: FOR ALIGNMENT SEE INDEX

The tube complement of this chassis consists of the following tubes.

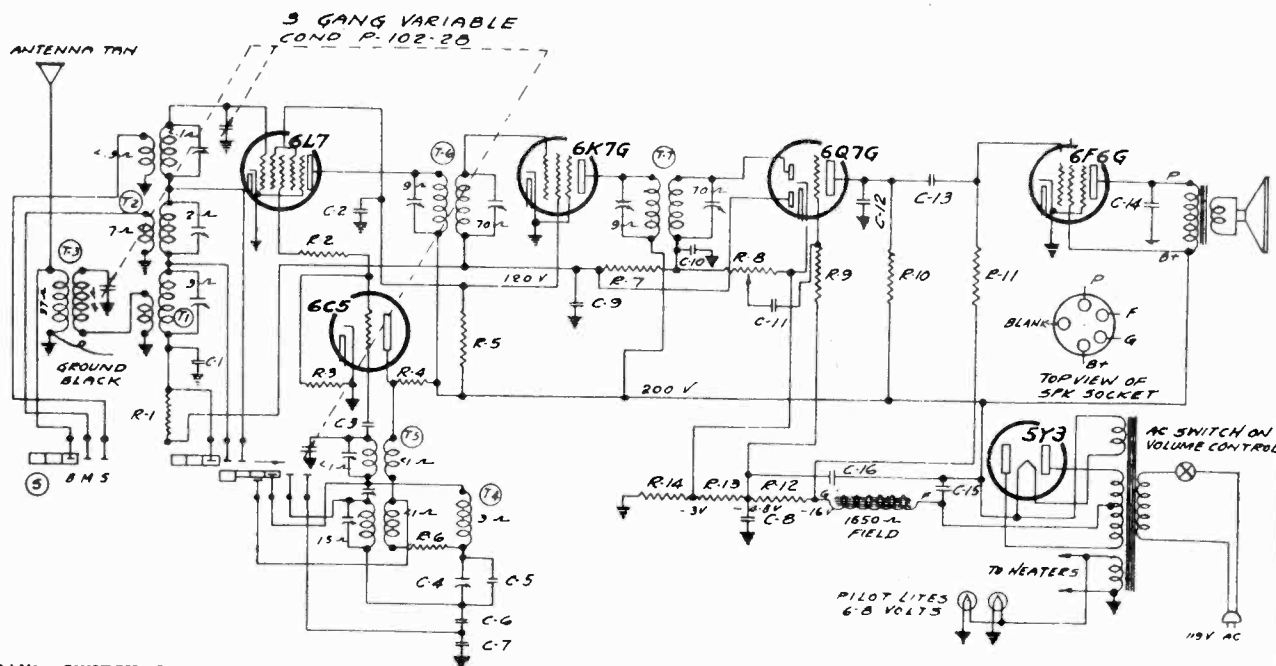
The type and function of each tube is as follows:

- 1—Type 6A7 Pentagrid Mixer, First Detector-oscillator
- 1—Type 78 Remote Cut-Off Pentode, I. F. Amplifier (465 K.C.)
- 1—Type 75 Duplex Diode Triode Second Detector, A.V.C. and First Audio.
- 1—Type 41 Pentode Output Amplifier.
- 1—Type 80 High Vacuum Rectifier.

Transformers are available and chassis are sometimes equipped with universal transformers for operation on 40 and 60 cycles and with primary taps for 108, 125, 150, 220 and 250 volts (see parts list) and also sometimes equipped with 25 cycle transformers with 105-115 volt or 220 volt primaries, not universals.

MODELS 62-316, 62-416
Schematic, Voltage, Parts

MONTGOMERY WARD & CO.



BAND SWITCH P-125-17
3 POSITIONS ROTATION CLOCKWISE
POSITIONS ARE:
1ST BROADCAST 535-1720 K.C.
2ND MIDDLE WAVE 1695-5500 K.C.
3RD SHORT WAVE 5.2M.C.-18.3M.C.

POWER TRANSFORMER 50-60 CYCLE P-104-52 25 CYCLE P-104-53
UNIVERSAL 25 CYCLE P-104-54
UNIVERSAL 40 CYCLE P-104-55

BAND	DIAL SCALE	FREQUENCY RANGE
Broadcast	Outer Scale—Blue	535 to 1720 K.C. (Kilocycles)
Middle Wave	Center Scale—Green	1695 to 5500 K.C. (Kilocycles)
Short Wave	Inner Scale—Buff	5.2 to 18.3 M.C. (Megacycles)

LIST OF REPAIR PARTS (Serial No. 6E249476 and up)

Use Only Genuine Factory Replacement Parts

Part No.	Schematic Reference	Description	No. Used in Set	Selling Price Ea.
CONDENSERS				
BE 100-11	C-11: C-13	.01 x 400 Volt Tubular	2	\$0.09
BK 100-20	C-2: C-8	.1 x 200 Volt Tubular	2	.11
BE 100-22	C-1: C-9	.05 x 200 Volt Tubular	2	.10
BE 100-19	C-14	.006 x 600 Volt Tubular	1	.10
BE 103-6	C-15	8 Mfd. x 350 Volt Electrolytic	1	.50
BE 103-7	C-18	8 Mfd. x 300 Volt Electrolytic	1	.44
BE 129-2	C-12	.0005 Mica—Type MT—20%	1	.02
BE 129-12	C-10	.00025 Mica—Type MT—20%	1	.12
BE 129-39	C-2	.0005 Mica—Type MT—20%	1	.12
BE 129-54	C-7	.003 Mica—Type MW—2 1/2%	1	.08
BE 129-55	C-8	.0034 Mica—Type MW—2 1/2%	1	.08
BE 129-56	C-5	.00055 Mica—Type MT—10%	1	.10
RESISTORS				
BE 106-26 R-12: R-15:	R-12: R-15	(R-12, 220 Ohm) (R-15, 32 Ohm) (R-14, 52 Ohm)	1	.24
BE 130-4	R-9	3 Meg Ohm—1/2 Watt—20%—100 Volt Carbon	1	.08
BE 130-12	R-3	50M Ohm—1/2 Watt—20%—20 Volt Carbon	1	.08
BE 130-19	R-7	1 Meg Ohm—1/2 Watt—20%—100 Volt Carbon	1	.08
BE 130-20	R-1	100M Ohm—1/2 Watt—20%—50 Volt Carbon	1	.08
BE 130-27	R-6	50 Ohm—1/2 Watt—20%—3 Volt Carbon	1	.10
BE 130-102	R-11	500M Ohm—1/2 Watt—10%—50 Volt Carbon	1	.10
BE 130-103	R-10	100M Ohm—1/2 Watt—10%—50 Volt Carbon	1	.10
BE 130-104	R-4: R-5	9M Ohm—1/2 Watt—20%—100 Volt Carbon	2	.10
BE 130-105	R-2	150 Ohm—1/2 Watt—20%—10 Volt Carbon	1	.10
COILS				
BE 108-73	T-7	Output I.F. Coil Assem. Comp. with Can.	1	.90
BE 108-74	T-6	Input I.F. Coil Assem. Comp. with Can.	1	.90
BE 110-38	T-4	Broadcast Oscillator Coil Assem. Comp. with Can.	1	.35
BE 110-39	T-5	Mid Wave and Short Wave Oscillator Assem. less Can.	1	.75
BE 111-49	T-1	Broadcast Antenna Coil Assem. Comp. with Can.	1	.40
RF 111-50	T-2	Mid Wave and Short Wave Antenna Coil Assem. less Can.	1	.80
BE 111-51	T-3	Broadcast Preselector Coil Assembly	1	.35
SOCKETS				
BE 121-8		Five Prong Socket—Marked "SPER"	1	.08
BE 121-12		Seven Prong Socket—Marked "6F7"	1	.10
BE 121-14		Seven Prong Socket—Marked "6F6"	1	.10
BE 121-15		Five Prong Socket—Marked "5Y3"	1	.08
BE 121-17		Six Prong Socket—Marked "6C5"	1	.09
BE 121-18		Seven Prong Socket—Marked "6L7"	1	.10
BE 121-26		Seven Prong Socket—Marked "6Q7"	1	.10
SPEAKER				
BE 114-15		Six Inch Dynamic	1	3.00
TRANSFORMERS				
BE 104-52		Power Transformer, 50/60 Cycle	1	2.00
BE 104-53		Power Transformer, 25 Cycle	1	2.50
BE 104-54		Universal Power Transformer, 25 Cycle Primary	1	3.00
BE 104-55		Universal Power Transformer, 40 Cycle Primary	1	3.00

Part No.	Schematic Reference	Description	No. Used in Set	Selling Price Ea.
MISCELLANEOUS				
BE 101-46	R-8	Volume Control and Switch (1 Meg Ohm)	1	\$0.60
BE 102-28		Three Gang Variable Condenser	1	.30
BE 107-5		Line Cord and Plug	1	.30
BE 115-35		Antenna, Oscillator, Shield	2	.12
BE 124-28	C-4	J-B Series Pad 3 Pl.	1	.16
BE 125-17		Wave Change Switch	1	.35
128-44		"Volume" Knob with Spring	1	.08
128-46		"Band Switch" Knob with Spring	1	.08
128-47		"Tuning" Knob with Spring	1	.08

DIAL PARTS LIST

Part No.	Description	No. Used in Set	Selling Price Ea.
ASSEMBLIES			
BE 117-41	Drive Bracket including: 1—No. 117-19—Tuning Shaft Bushing	1	\$0.08
BE 117-66	Switch Disc and Link Assembly, including: 1—No. 117-12—Switch Arm 1—No. 117-35—Bushings with Screws 1—No. 117-40B—Switch Link 3—No. 121-26—Spring Washers 3—No. 162-5—Rivets 1—No. 112-144—Switch Disc—Inc. Red Tape	1	.12
DIAL PARTS ONLY			
BE 112-125	Drive Belt	1	.10
BE 112-143	Oval Eschutcheon complete with Celluloid Crystal	1	.50
BE 112-148A	Dial Scale complete with Fastener, Pointer Disc, and Screw	1	.24
BE 112-147	Tuning Shaft	1	.06
BE 112-151	Pointer complete with Screw	1	.02
BE 112-156	Pilot Light Assembly	2	.06
BE 116-13	6.8 Volt T-51 Pilot Light	2	.08
BE 117-20A	Tuning Shaft Pulley	1	.03
BE 117-38	Stud, for take-up Spring	1	.02
BE 117-39	Pulley, for take-up Spring	1	.02
BE 120-14	Take-up Spring	1	.02
BE 134-9	Horse Shoe Washer	1	.01
BE 134-40	Rubber Grommet	2	.02

Note: Speakers cannot be ordered, defective speakers must be repaired.
All resistors and mica condensers are RMA color coded—specify value and/or resistor or condenser (per schematic diagram) and model number.
Mica condensers are coded with an additional dot indicating tolerance:
Tolerance Percent Color of Dot
2 1/2% White
5% Green
10% Blue
15% Yellow
20% Red
More than—20% None

When ordering condensers, specify part number, tolerance and/or schematic reference number.
When ordering parts, always specify part and model number as well as serial number of chassis.

8017 3500 8-36

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MONTGOMERY WARD & CO.

MODELS 62-316, 62-416
Socket, Trimmers, Notes
Alignment

MODELS 62-316 and 62-416

- (a) Set external oscillator to 1720 K.C. and adjust broadcast antenna trimmer to resonance (Adjustment number 1; see bottom view of coil assembly, Fig. 3)
- (b) Re-set external oscillator to 1550 K.C., rotate variable gang condenser and pick up signal. Adjust broadcast antenna trimmer (Adjustment number 4) to resonance; also adjust preselector trimmer which is mounted on the top of the rear section of the three gang variable tuning condenser to resonance. (See top view of chassis, Fig. 1, for location of this adjustment)
- (c) Re-set external oscillator to 600 K.C., and adjust broadcast series pad to resonance by rotating condenser to approximately 600 K.C., rocking it slowly to and fro until by adjusting series pad maximum output is obtained. This adjustment is located on the bottom of the chassis directly under the variable gang condenser. (See bottom view of chassis, Fig. 3).
- (d) Repeat adjustments "a" and "b" until sensitivity is at its maximum.
- (e) Check for tracking and sensitivity at 1000 kilocycles. Under no circumstances bend plates of variable condenser sections to correct tracking.

No aligning adjustments should be attempted with the chassis in the cabinet. Remove the knobs and the four bolts which are used to fasten the chassis.

All adjustments should be made with a non-metallic screw driver.

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 6F6G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

DUMMY ANTENNAS:

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1," "Dummy 2," and "Dummy 3."

Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.

Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser and a 20 ohm resistor connected in series with each other and in series with the external oscillator.

Dummy 3: (Middle and Short Wave)—Consists of a .1 mfd. condenser and a 400 ohm resistor connected in series with each other and in series with the external oscillator.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-73 Output I.F. Transformer
Part No. 108-74 Input I.F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see top view).

1. With volume control full on (the extreme right of its rotation), the band changing switch in the broadcast position, (extreme left of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:

- (a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1" to the control grid cap of the type 6K7G tube; and adjust the output I.F. transformer (No. 108-73) to resonance.
- (b) With "Dummy 1" still connected, move oscillator output clip from grid of 6K7G to grid cap to 6L7 and adjust input I.F. transformer (No. 108-74) to resonance.
- (c) With oscillator still connected to 6L7, readjust output I.F. transformer (108-73) if necessary.

BROADCAST BAND ALIGNMENT:

- 1. With band changing switch in the broadcast position, (extreme left of its rotation), and with gang condenser in its minimum capacity position, plates entirely out of mesh, and with external oscillator connected in series with "Dummy 2" to tan antenna lead and black ground lead, make following adjustments:

535 to 1720 Kilocycles

SHORT WAVE BAND ALIGNMENT:

- 1. With band changing switch in the short wave position, extreme right of its rotation, and with external oscillator set at 17 megacycles and connected in series with "Dummy 3" to the tan antenna and black ground lead, make the following adjustments:

- (a) Move dial pointer to 17 megacycles and adjust short wave antenna (Adjustment number 3) and short wave oscillator (Adjustment number 6) to resonance.
- (b) Re-set external oscillator to 6 megacycles and pick up signal by rotating variable condenser and check sensitivity.
- (c) Re-set external oscillator and check set at 18.1 megacycles and 6.3 megacycles for band coverage.

NOTE: It is extremely necessary in making all of these adjustments that the fundamental oscillator signal be tuned in and not the image frequency which will fall below the fundamental on the receiver dial. As an example of this a fundamental 18.3 megacycle signal can be tuned in not only at 18.3 on the dial but also at approximately 17.4 megacycles.

MIDDLE WAVE BAND ALIGNMENT:

- 1. With band changing switch in the middle wave position, center of its rotation, and with external oscillator set at 5000 kilocycles and connected in series with "Dummy 3" to the tan antenna and black ground lead, make the following adjustments:

- (a) Move dial pointer to 5000 kilocycles and adjust middle wave oscillator (adjustment number 2) and middle wave antenna (adjustment number 5) to resonance.
- (b) Re-set external oscillator to 1800 kilocycles and pick up signal by rotating variable condenser and check sensitivity.
- (c) Re-set external oscillator and check set at 5400 kilocycles and 1700 kilocycles for band coverage.

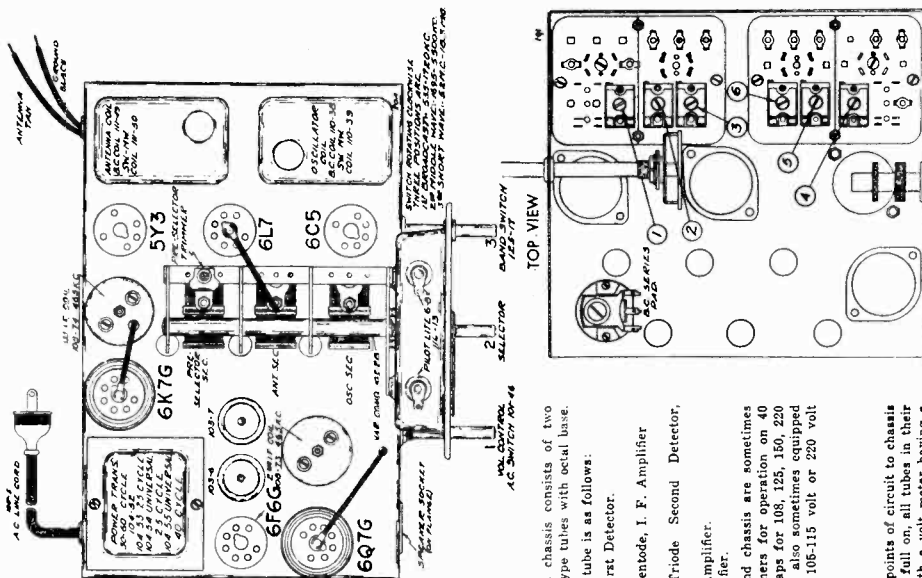


FIG. 3.—BOTTOM VIEW SHOWING TRIMMERS

POWER SUPPLY:

Caution:—This radio, unless otherwise marked, must be operated from 105-115 volts, 60 cycle A.C. supply only. If you are in doubt as to the voltage and frequency rating of the power supply, consult your local power company before inserting plug. Do not insert plug unless all tubes and speaker are in their proper sockets.

Receivers of this model which are to be used on voltages or frequencies other than 105-115 volts, 60 cycles are so marked. The power consumption of this receiver is 55 watts.

TUBES:

The tube complement of this chassis consists of two metal type tubes, and four glass type tubes with octal base.

The type and function of each tube is as follows:

- 1—Type 6L7 Pentagrid Mixer, First Detector.
- 1—Type 6C5 Oscillator.
- 1—Type 6K7G Remote Cut-Off Pentode, I. F. Amplifier (465 K.C.)
- 1—Type 6Q7G Duplex Diode Triode Second Detector, A.V.C. and First Audio
- 1—Type 6F6G Pentode Output Amplifier.
- 1—Type 5Y3 High Vacuum Rectifier.

Transformers are available and chassis are sometimes equipped with universal transformers for operation on 40 and 60 cycles and with primary taps for 108, 125, 150, 220 and 250 volts (see parts list) and also sometimes equipped with 25 cycle transformers with 106-115 volt or 220 volt primaries, not universal.

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.

All voltages as indicated on diagram are measured with 119 volts on the primary of the power transformer.

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

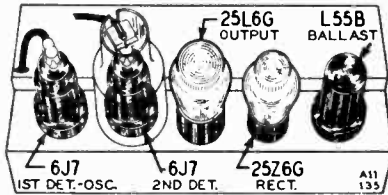
To check for open by-pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating, which is known to be good, until the defective unit is located.

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 tones.

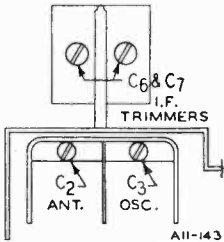
MODELS 62-320, 62-325

Schematic, Voltage Alignment, Socket

DC OPERATION—Filament and ballast tube voltages will be the same as AC (for 117 volt line). The plate, screen and bias voltages will be slightly lower than those shown above. When operated on DC, the rectifier tube acts as a low resistance resistor with a drop of approximately 6 volts between plate and cathode.



CAUTION—In any service work on the AC-DC chassis, keep it on a wood or other insulated surface to avoid contacts with ground.



MAY, 1938

Tuning Frequency Range - 530 to 1730 KC
Sensitivity - 180 Microvolts Average

Power Consumption - 48 Watts (At 117 volts AC Supply)
Power Output - .8 Watts Undistorted
Selectivity - 30 KC Broad at 100 times Signal

ALIGNMENT PROCEDURE

Volume Control—Maximum. All Adjustments. Allow Chassis and Signal Generator to "Heat Up" for Several Minutes.	
SIGNAL GENERATOR FREQUENCY CONNECTION SETTING	ADJUST TRIMMERS TO MAXIMUM (See Illustration)
456 KC Grid of 1st Det.	I.F. (C6) & (C7)
1730 KC Antenna Lead	Oscillator (C3)
1500 KC Antenna Lead	Antenna (C2)

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

NOTE—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, loosen the pointer screw, set the pointer at the 800 KC mark and retighten the pointer screw.

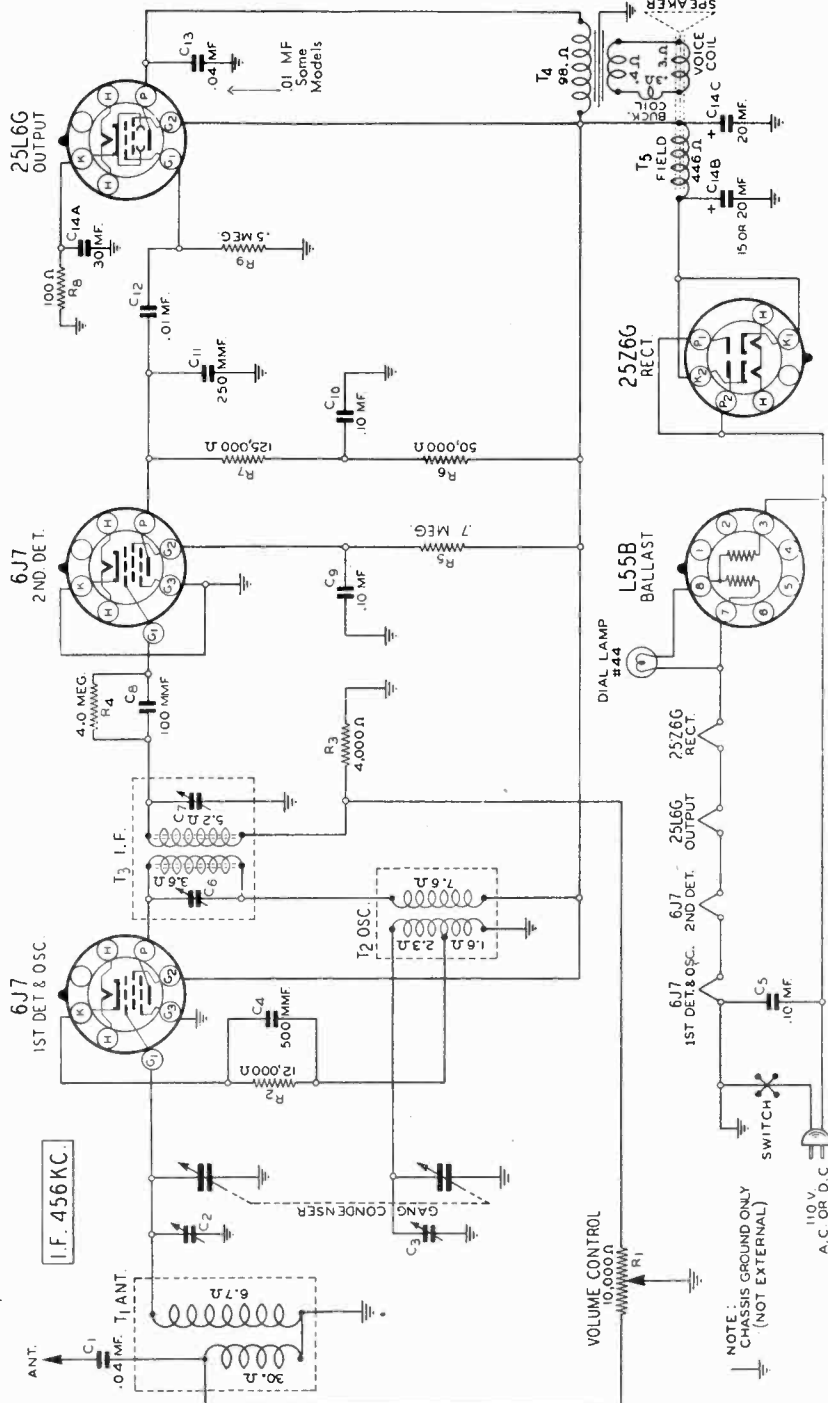
MONTGOMERY WARD & CO.

VOLTAGES AT SOCKETS FOR 117 VOLT AC LINE

See Note Below Regarding Voltages when Operated on DC
Volume Control Maximum—Antenna Lead Grounded—Readings taken with 1000 Ohm-per-volt Meter.

TUBE	FUNCTION	Voltage Between Socket Prong and Ground (Unless Otherwise Indicated)							
		Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Prong No. 8
6J7	1st Det. & Osc.		6.3(1)	98	98			6.3(1)	6.0
6J7	2nd Det.		6.3(1)	10	13			6.3(1)	
25L6G	Output		24(1)	92	98			24(1)	5
25Z6G	Rectifier		24(1)	117(2)	125	117(2)		24(1)	125
L55B	Ballast			56.6(3)				56.6(3)	4.5(4)

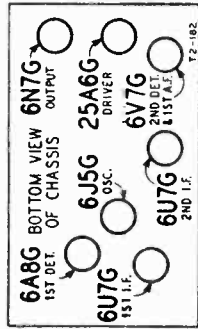
- (1) AC voltage across terminals 2 and 7.
- (2) AC voltage to ground.
- (3) AC voltage across terminals 3 and 7.
- (4) AC voltage across terminals 7 and 8.



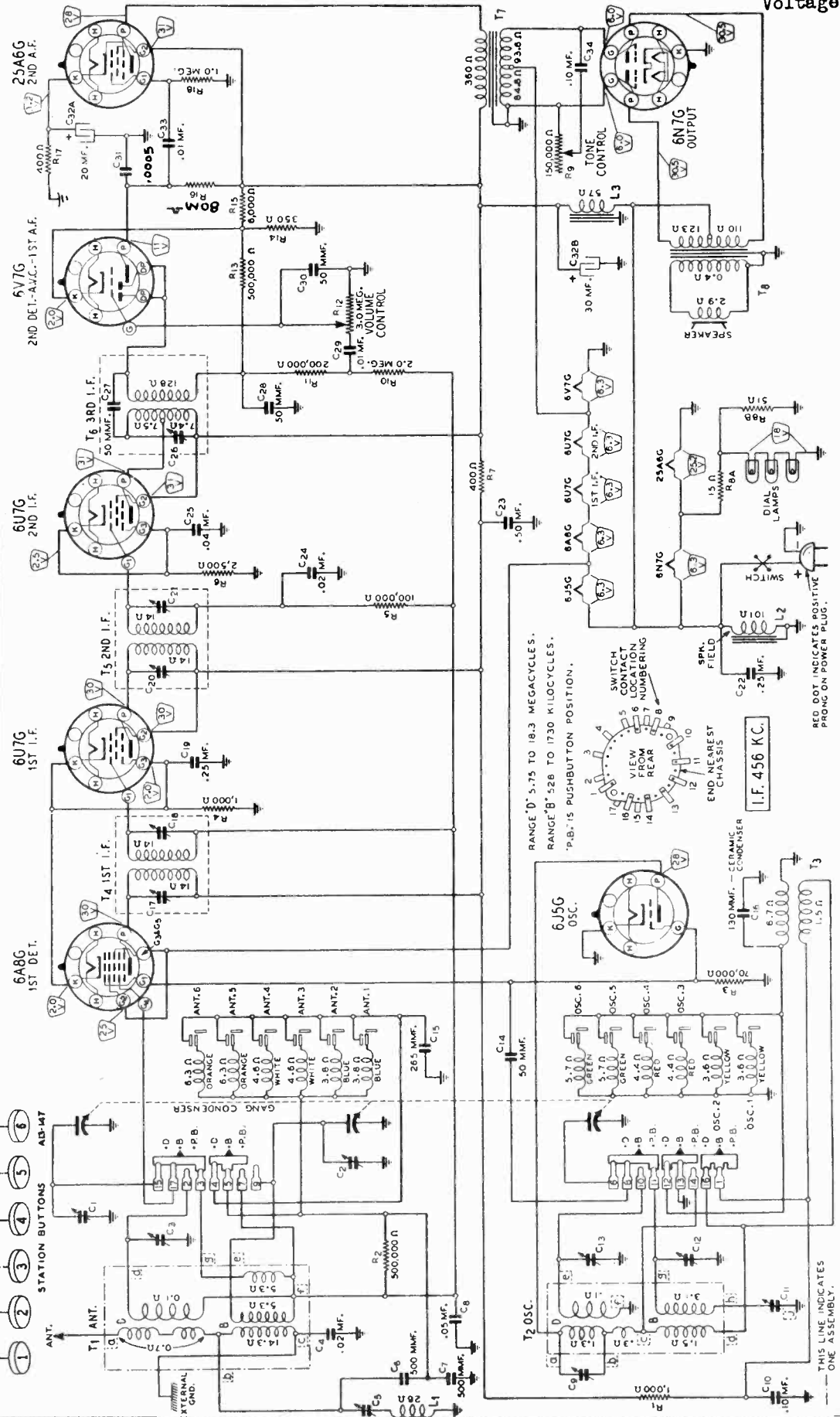
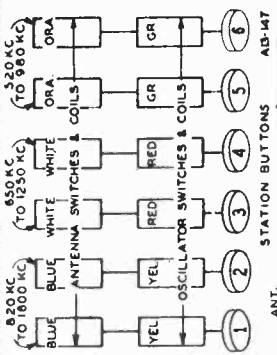
MONTGOMERY WARD & CO.

MODELS 62-322, 62-422
Schematic, Socket, Tuner
Voltage

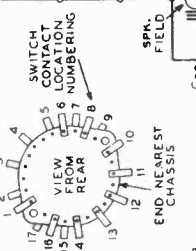
7 Tube 32 Volt Radio



VIEW FROM TOP
FRONT OF CHASSIS



RANGE D' 5.75 TO 18.3 MEGACYCLES.
 RANGE B' 528 TO 1730 KILOCYCLES.
 P.B. IS PUSHBUTTON POSITION.



SWITCH CONTACT LOCATION FROM REAR VIEW
 END NEAREST CHASSIS
 I.F. 456 KC.

RED DOT INDICATES POSITIVE PHONO IN POWER PLUG.

THIS LINE INDICATES ONE ASSEMBLY.

MODELS 62-322, 62-422
Trimmers, Alignment

MONTGOMERY WARD & CO.

MODELS 62-402, 62-1101
Trimmers, Coils, Alignment
Notes

Model 62-322
62-422

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.
Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.
Allow Chassis and Signal Generator to "Heat Up" for several minutes.
The following equipment is required for aligning:
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antennas—1 mf., 200 mmf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY SETTING AT RADIO	DUMMY ANTENNA	BAND SWITCH	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (Unless otherwise specified)
455 KC Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C17) & (C18) 2nd I.F. (C20) & (C21) 3rd I.F. (C26)
RANGE B				
1730 KC Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C12)
1500 KC Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note A	1st Ant. Range B (C2) 2nd Ant. Range B (C1)
600 KC Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	400 KC (C11) Rock Rotor—See Note B
WAVE TRAP				
455 KC Antenna Lead	200 mmf.	B Range	Turn Rotor to 600 KC Adjust Sig. Gen.—See Note C	Wave Trap (C5) Adjust for MINIMUM Output
RANGE D				
18,300 KC Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C13)
15,000 KC Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1)
6000 KC Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	5000 KC (C9) Rock Rotor—See Note B
PERMEABILITY TUNING UNIT				
BUTTON DEPRESS (Lead 2-1/2 in. Push Button Position)				
1100 KC Antenna Lead	200 mmf.	No. 1	Setting Screw No. 1	Antenna Coil No. 1
1100 KC Antenna Lead	200 mmf.	No. 2	Setting Screw No. 2	Antenna Coil No. 2
850 KC Antenna Lead	200 mmf.	No. 3	Setting Screw No. 3	Antenna Coil No. 3
850 KC Antenna Lead	200 mmf.	No. 4	Setting Screw No. 4	Antenna Coil No. 4
700 KC Antenna Lead	200 mmf.	No. 5	Setting Screw No. 5	Antenna Coil No. 5
700 KC Antenna Lead	200 mmf.	No. 6	Setting Screw No. 6	Antenna Coil No. 6

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

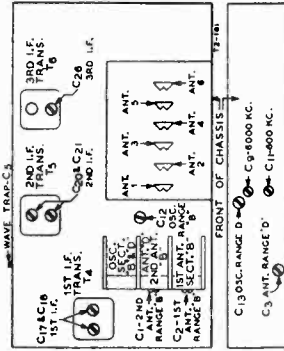
After each range is completed, repeat the procedure for the other range.
NOTE A—If the pointer is not at 1500 KC on the dial, loosen the 2 clamps which hold the pointer assembly on the cord, move the pointer to the 1500 KC mark, and tighten the clamps.

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

NOTE C—Loosen condenser rotor at the 400 KC setting and adjust the signal generator until maximum output is obtained at or near 455 KC.

NOTE D—At the top of the permeability tuning unit can be seen six "W" openings. Insert the end of the "W" long nose of the proper button and adjust the position of the antenna (rear) coil by twisting the pillars or screwdriver until maximum output is obtained.

CAUTION—When aligning the short wave band be sure NOT to adjust at the image frequency. The frequency dial should be set for Let us try the signal generator is set for



15,000 KC. The signal will then be heard at 15,000 less 912 KC, or 14,088 KC on the dial. The frequency dial should be set for the input signal, which is much weaker, will be heard at

MODEL 62-402
ALIGNMENT PROCEDURE "62-1101"

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.
Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antennas—1 mf., 200 mmf., and 400 ohms.
IMPORTANT—Follow procedure in the order shown.

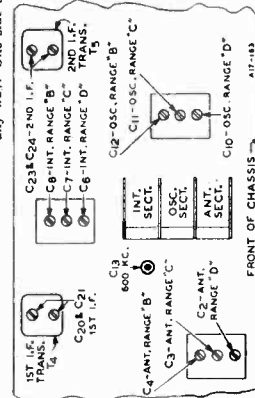
SIGNAL GENERATOR FREQUENCY SETTING AT RADIO	DUMMY ANTENNA	BAND SWITCH	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
455 KC Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	2nd I.F. (C23) & (C24) 1st I.F. (C20) & (C21)
18,300 KC Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C16)
15,000 KC Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C4) Int. Range D (C6) Rock Rotor—See Note A
RANGE C				
5400 KC Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C11)
5000 KC Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Antenna Range C (C3) Int. Range C (C7)
RANGE B				
1600 KC Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C12)
1400 KC Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC— See Note B	Ant. Range B (C4) Int. Range B (C8)
600 KC Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	400 KC (C13) Rock Rotor—See Note A

Phonograph Connections

Phonograph connections are made as shown in the schematic circuit diagram—Fig. 3. On the top of the chassis base and between two of the 7/8 tube sockets is a round knockout which is mounted in this knockout opening and wired as shown in the schematic.

Tone Control

There are 3 wiring lugs on the tone control. One of the end lugs connects to one end of the tone control resistor. The center lug connects to the slider. The other end lug on the tone control is used for external wiring purposes only and is not connected to the tone control resistor in any way. One side of the tone control resistor is connected to ground.



Location of Trimmers

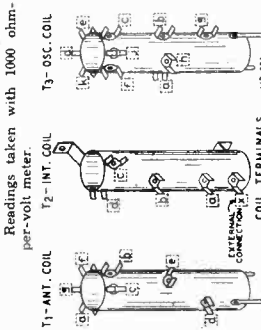
Twenty-Five Cycle Models

The twenty-five cycle receiver differs from the sixty cycle receiver only in the fact that a different power transformer is used.

Voltages at Sockets

The voltages at sockets are shown on the schematic circuit diagram. Unless otherwise specified, the voltage indicated is between the socket terminal and ground.

These voltages are read under the following conditions:
Line Voltage—117.
Volume Control—Maximum.
Antenna Shorted to Ground.
Readings taken with 1000 ohm-per-volt meter.



COIL TERMINALS

MONTGOMERY WARD & CO.

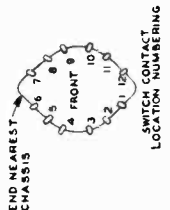
MODELS 62-331, 62-441
Schematic, Specifications

Power Consumption - - 2.0 Amperes at 6.3 Volts
Power Output - - - - 1.0 Watt Undistorted
Selectivity - - - 21 KC Broad at 1000 times Signal
(Sharp)
Intermediate Frequency - - - - - 456 KC.
Speaker - - - - - 8" P.M. Dynamic

Tuning Frequency Range
B Range 528 to 1730 KC.
C Range 1710 to 5800 KC.
D Range 5750 to 18300 KC.
Sensitivity
B Range 1 to 3 Microvolts Absolute
C Range 1 to 4 Microvolts Absolute
D Range 1 to 7 Microvolts Absolute

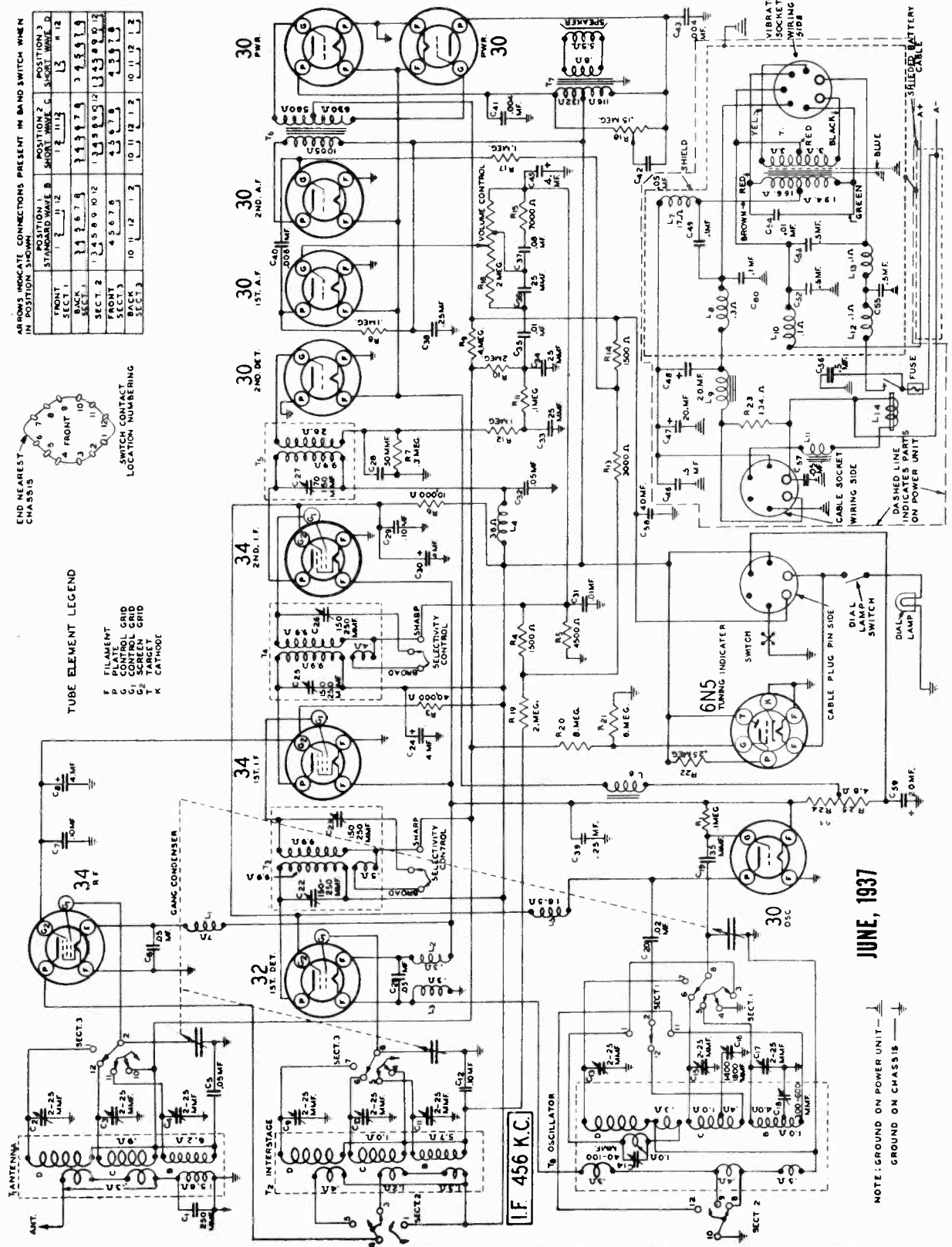
ARROWS INDICATE CONNECTIONS PRESENT IN BAND SWITCH WHEN IN POSITION SHOWN

POSITION 1	POSITION 2	POSITION 3
STANDARD WAVE B	SHORT WAVE C	SHORT WAVE D
FRONT SECT. 1	1 2 11 13	1 5
BACK SECT. 1	3 4 6 7 8	3 4 5 6 7 8
FRONT SECT. 2	3 4 5 6 9 10 12	3 4 5 6 9 10 12
BACK SECT. 2	4 5 6 7 8	4 5 6 7 8
FRONT SECT. 3	10 11 12 1 2	10 11 12 1 2
BACK SECT. 3	10 11 12 1 2	10 11 12 1 2



TUBE ELEMENT LEGEND

- F FILAMENT
- P PLATE
- C CONTROL GRID
- S SCREEN GRID
- T TARGET
- K CATHODE



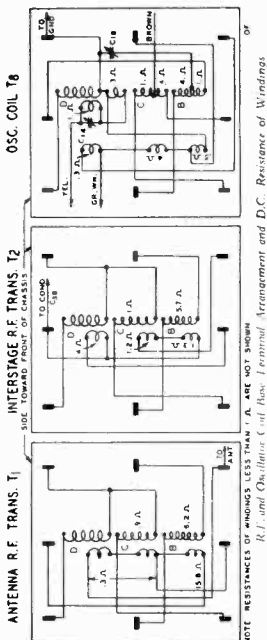
JUNE, 1937

NOTE: GROUND ON POWER UNIT - GROUND ON CHASSIS -

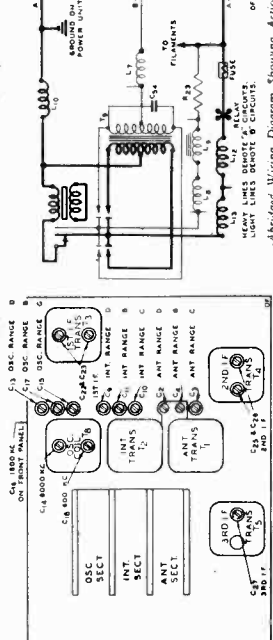
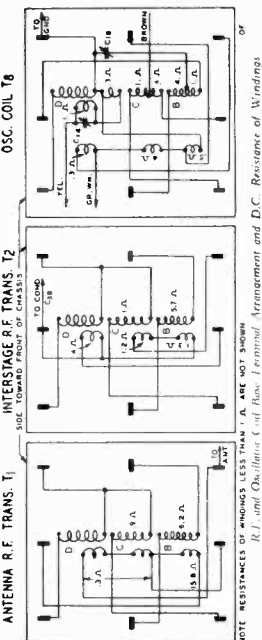
MODELS 62-331, 62-441
Socket, Trimmers, Coils
Voltage, Alignment
Vibrator Data

MONTGOMERY WARD & CO.

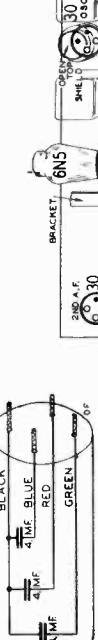
MODELS 62-331 & 62-441
INTERSTAGE R.F. TRANS. T2



ANTENNA R.F. TRANS. T1



Abridged Wiring Diagram Showing Action of Synchronous Vibrator



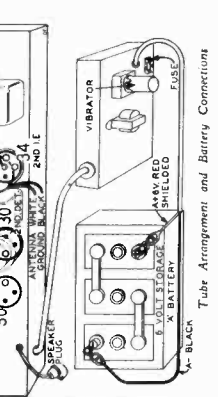
Electrolytic Condenser, Integral Connections

Tube	Function	Across Filament	Screen to Grid
34	R. F.	2.0	140
34	1st Det.	2.0	140
30	Osc.	2.0	90
34	1st I. F.	2.0	140
30	2nd Det.	2.0	140
30	1st A. F.	2.0	50
30	2nd A. F.	2.0	135
30	Power	2.0	140

VOLTAGES AT SOCKETS

Socket	Minimum	Maximum
6N5	6.2	30
34	11	4
30	13	5
30	14	5

Tube Arrangement and Battery Connections



MODEL 62-331
" 62-441
Alignment and Calibration

I.F. Adjustment

Set the signal generator for a signal of 456 KC. Connect the output of the signal generator through a .1 mf. condenser to the grid of the 1st detector. Connect the ground lead of the receiver to the ground post of the signal generator. Turn the band switch to the Range B position (standard wave band). Turn the sensitivity control to the sharp position and keep it in this position for all adjustments. Adjust the signal frequency of the signal generator to prevent the level-off action of the AVC trimmer to output is obtained. Then adjust the five I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis and the location is shown in Fig. 3.

Range B Alignment

After the procedure for the alignment of each range, as explained below, is completed, it is advisable to repeat the procedure as a final check.

1730 KC Adjustment

Set the signal generator for 1730 KC. Turn the rotor of the tuning condenser to the full open position. Keep the band switch in the standard wave position. Connect the antenna lead of the receiver through a 200 mf. condenser to the output of the signal generator. For this and all subsequent adjustments keep the volume control at the maximum position and strenuously the signal from the signal generator to prevent AVC action of the signal generator to prevent maximum output is obtained. The location of this trimmer is shown in Fig. 3.

1500 KC Adjustment

Set the signal generator for 1500 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained. Turn the calibration screw (under color filter) until the 1500 KC mark on the dial scale is at the vertical red line on the screen. If the film drum cannot be turned a sufficient amount by means of the calibration screw, loosen the 2 screws inside the drum which hold it in place. Adjust the position of the drum and tighten the screws. The early models do not have the calibration screw mentioned above. These models must be adjusted by loosening the drum screws.

Adjust the interstage Range B trimmer (C11) and antenna Range B trimmer (C4) to maximum. Do not change the setting of the oscillator Range B trimmer.

600 KC Adjustment

Set the signal generator for 600 KC. Turn the tuning condenser rotor until maximum output is obtained. Turn the rotor slowly back and forth, at the same time adjusting the 600 KC trimmer, until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Range C Alignment

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

generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC. It may be necessary to increase the input signal to hear the image.

5800 KC Adjustment

Set the signal generator for 5800 KC. Connect the antenna lead of the receiver through a 400 ohm resistor to the output of the signal generator. Turn the rotor of the tuning condenser to the full open position. Turn the band switch to the Range C position (first short wave band). Adjust the oscillator Range C trimmer (C15) until maximum output is obtained. See Fig. 3 for location of this trimmer.

5000 KC Adjustment

Set the signal generator for 5000 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained. Adjust the interstage Range C trimmer (C10) and antenna Range C trimmer (C3) to maximum. Do not change the setting of the oscillator Range C trimmer.

1800 KC Adjustment

Set the signal generator for 1800 KC. Turn the tuning condenser rotor until maximum output is obtained. Turn the rotor slowly back and forth, at the same time adjusting the 1800 KC trimmer, until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Range D Alignment

18,000 KC Adjustment

Set the signal generator for 18,000 KC. Keep the antenna lead of the receiver connected through the 400 ohm resistor to the output of the signal generator. Turn the rotor of the tuning condenser to the full open position. Turn the band switch to the Range D position (second short wave band). Adjust the oscillator Range D trimmer (C13) until maximum output is obtained. See Fig. 3 for location of this trimmer.

15,000 KC Adjustment

Set the signal generator for 15,000 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained. Adjust the interstage Range D trimmer (C9) and antenna Range D trimmer (C2) to maximum. When adjusting the interstage and antenna Range D trimmers, it will be necessary at the same time to turn the tuning condenser rotor slowly back and forth until the peak of greatest intensity is obtained. Do not change the setting of the oscillator Range D trimmer.

6000 KC Adjustment

Set the signal generator for 6000 KC. Turn the tuning condenser rotor until maximum output is obtained. Turn the rotor slowly back and forth, at the same time adjusting the 6000 KC trimmer, until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

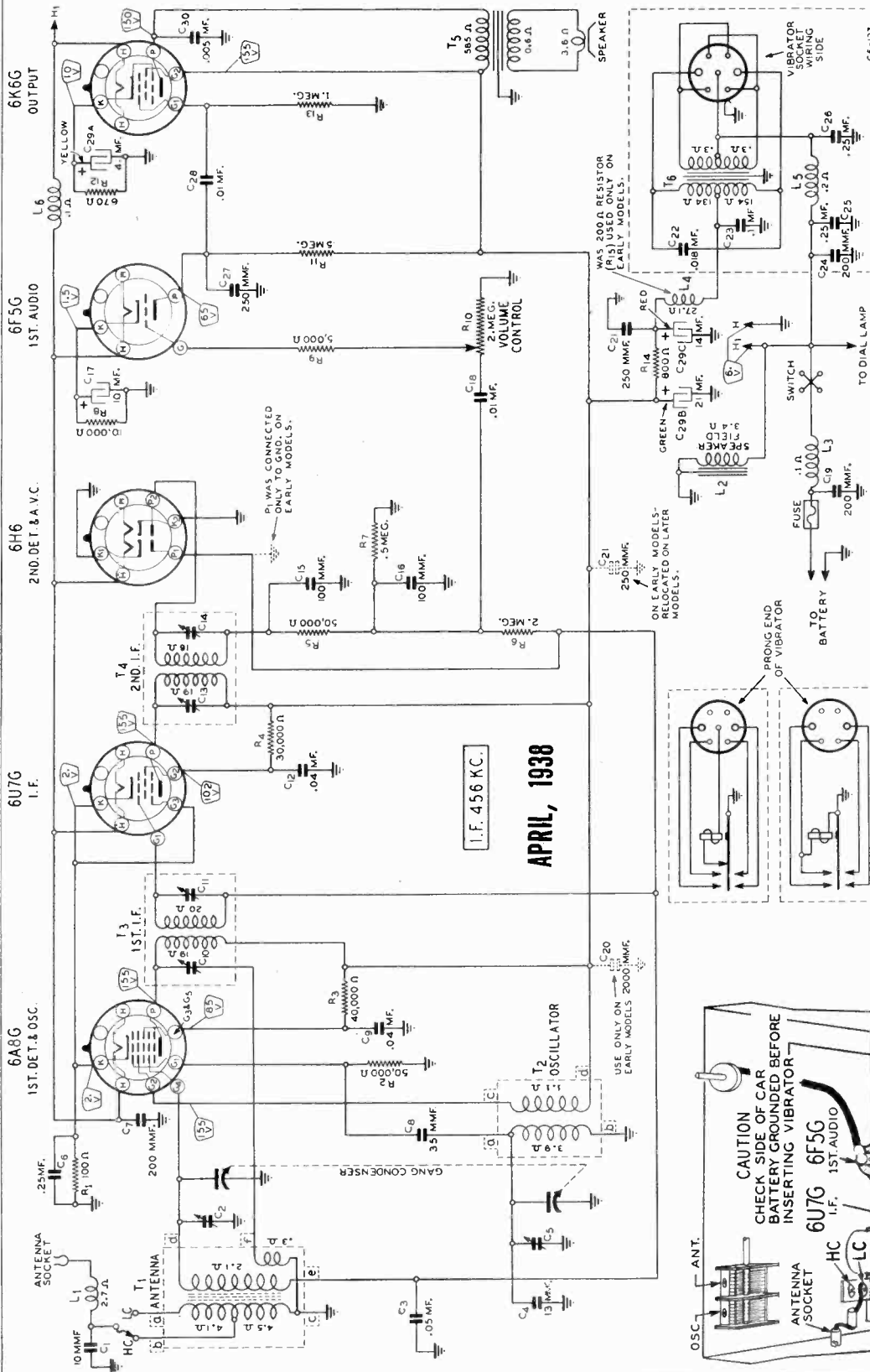
Trimmer, Alignment
Coils, Specifications

MONTGOMERY WARD & CO.

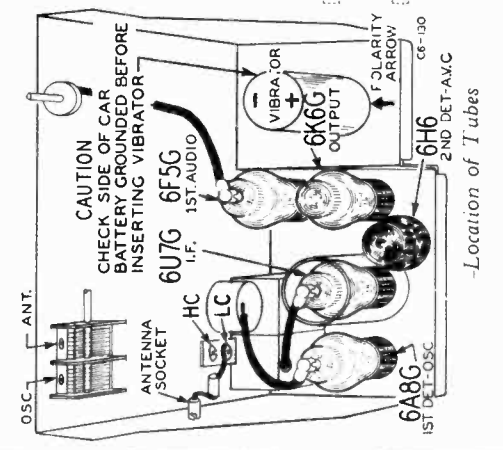
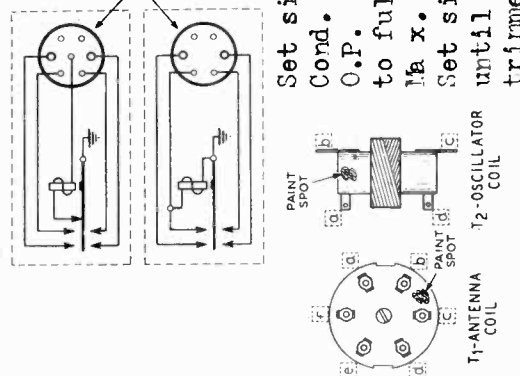
MODEL 62-334
Schematic, Socket

Power Consumption - - 5.5 Amperes at 6.3 Volts
Power Output - - - - - .8 Watt Undistorted
Sensitivity - - 10 Microvolts at .5 Watt Output
Selectivity - 42.5 KC Broad at 1000 Times Signal

Tuning Frequency Range - - - 528 to 1550 KC
Intermediate Frequency - - - - - 456 KC
Speaker - - - - - 6" Dynamic



Set sig. gen. at 456 KC and connect O.P. thru .05 IF Cond. to 1st det. grid. Adj. 4 I.F. trimmers for Max. O.P. Set sig. gen. at 1550 KC- Tuning cond. rotor to full open pos.-and adj. osc. gang cond. trimmer for Max. O.P. -
Set sig. gen. at 1400 KC - Turn tuning cond. rotor until Max. O.P. is obtained. Adj. ant. gang cond. trimmer for Max. O.P.



MODEL 62-334

Antenna, Mounting Data
Tuner, Notes

MONTGOMERY-WARD & CO.

cut the antenna cable to about 30 inches in length. This will be found to be of sufficient length in practically all cases.

To shorten the cable, pull the wire end of the cable from the plug end. Then cut the shielding and loom to the correct length. Cut the pigtail off the excess pieces of cable and solder it to the shield at the end of the shortened cable. Insert the wire in the cable again and cut the wire to the correct length.

pending on whether a high or low capacity antenna is used.

The following tabulation explains what is meant by High Capacity (HC) and Low Capacity (LC) antennas.

Antenna

IMPORTANT—Inside of the chassis as shown in Fig. 3 is a terminal strip with letters HC and LC on it.

The antenna lead must be properly connected at the terminal strip, de-

- SIZE OF DRILL HOLES
- CONNECTED AT THE TERMINAL STRIP, de-
- FRONT CHASSIS STUDS—TWO $\frac{3}{16}$ " HOLES $\frac{4\frac{1}{2}$ " CENTER TO CENTER
- BOLT AT TOP OF STRAP—ONE $\frac{1}{2}$ " HOLE
- SPEAKER STUD—ONE $\frac{15}{16}$ " HOLE

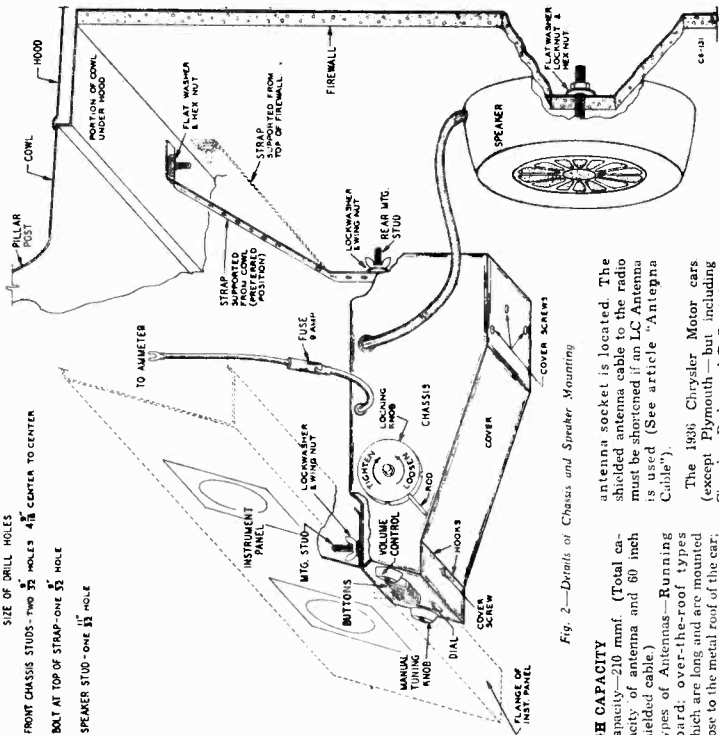


Fig. 2.—Details of Chassis and Speaker Mounting

HIGH CAPACITY

Capacity—210 mmf. (Total capacity of antenna and 60 inch shielded cable).

LOW CAPACITY

Capacity—60 mmf. (Total capacity of antenna and shielded cable cut to about 30 inch length).

Types of Antennas—Door hinge; fishpole; over-the-roof types which are mounted quite a distance from the metal roof of the car.

Most of the 1937 and 1938 cars have steel roofs and it will be necessary to use a door hinge, fish pole, over-the-roof, or running board antenna. In all of the above installations, the antenna should be mounted on the same side of the car the radio is mounted or the same side as the

must be shielded the entire distance from the radio to the point where the lead goes through the car body to the outside. In the case of the running board antenna, the antenna lead shielding must extend all the way to the antenna.

When the antenna cable is connected to an antenna lead coming down the pillar post, the shielded cable should be pushed several inches up into the pillar post.

Procedure for Setting the Station Buttons

There are 4 buttons on the automatic tuning dial by means of which 4 stations may be set.

Any button may be used for any station you can receive.

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

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

Grasp the locking knob shown in Fig. 2. In most cases, this knob can be reached with the hand from the right side of the radio.

Push the tab on the call letters can properly read when viewed from the driver's seat. Push the tab all the way to the front of the slot. Slip one of the celluloid tabs over the call letter tab. Then push the button back on its shaft making sure the shaft goes into the center opening in the button.

Carefully tune in the second station on your list. Then hold the manual tuning knob and push the second button slowly and firmly all the way in. Check for accurate tuning and insert the station call letter tab exactly as explained above.

When pushing the button on its shaft, care should be taken not to push in one of the adjacent buttons.

After all the stations are set, it will be necessary to lock the mechanism so that the settings will not change.

Grasp the locking knob shown in Fig. 2 or, use the metal rod previously mentioned, and rotate the station by means of the manual tuning knob.

With one hand, hold the manual tuning knob to prevent it from turning and with the other hand, push

Keep the antenna cable as far away from car wiring as possible and ground the pigtail of the antenna cable shield at the antenna end, otherwise ignition noise may be picked up. The length of the pigtail from the grounding point to the end of the antenna cable should be kept as short as possible, preferably not over one inch.

For the door hinge and over-the-roof type antenna, the antenna lead

HIGH AND LOW TENSION LEADS—In some cases, the high and low tension leads between the coil and distributor are run close together. In some cars they are in the same conduit. If this is the case, move the low tension lead from this conduit. In any event, keep the high and low tension leads as far apart from each other as possible. If separating the two leads is not sufficient, shield and ground the shield of the low tension lead.

GROUNDING MOTOR AND OTHER PARTS—The motor must, in every case, be well grounded to the frame of the car. If not, use a very heavy bridged lead for this purpose, similar to a storage battery ground lead. In like manner, it may be necessary to check the grounding of the metal fire wall, instrument panel, transmission, radiator hood, fender and muffler to the frame of the automobile. To obtain a good electrical connection, scrape off the paint, if necessary, at the point where ground contact is made.

DOME LIGHT LEAD—Noise due to radiation from the dome light lead is generally experienced only when a roof antenna is being used. Disconnect the dome light lead connection at the back of the instrument panel and ground this wire. If this is found to reduce the noise noticeably, interference is being radiated by the dome light lead. Reconnect the dome light lead and then connect a .5 mfd. bypass condenser between the point at which this lead leaves the pillar post and ground.

BYPASS CONDENSERS—Try a .5 mfd. bypass condenser from the ammeter to ground and see if interference is reduced. Install this condenser if it does not reduce the interference. Try a .5 mfd. condenser from the "Hot" side of the coil primary to ground.

The electric gauges used for oil, water, and gas are often a source of interference and gas condensers should be tried.

Wheel or Brake Station

Noise from this source is generally experienced only when an under car antenna is being used. To determine if noise is being caused from this source, set the car in motion, then with the motor shut off and the clutch disengaged, apply the brakes. If the noise stops, the source of the static is in the wheels. The use of a front or rear wheel static eliminator will generally end the trouble.

"Hot" side of the coil primary to ground permanently if there is an improvement.

In like manner, try a .5 mfd. condenser from fuse to ground.

light connections to ground, windshield wiper and various other 6 volt connections to ground, noting what effect these condensers have on the noise pick-up.

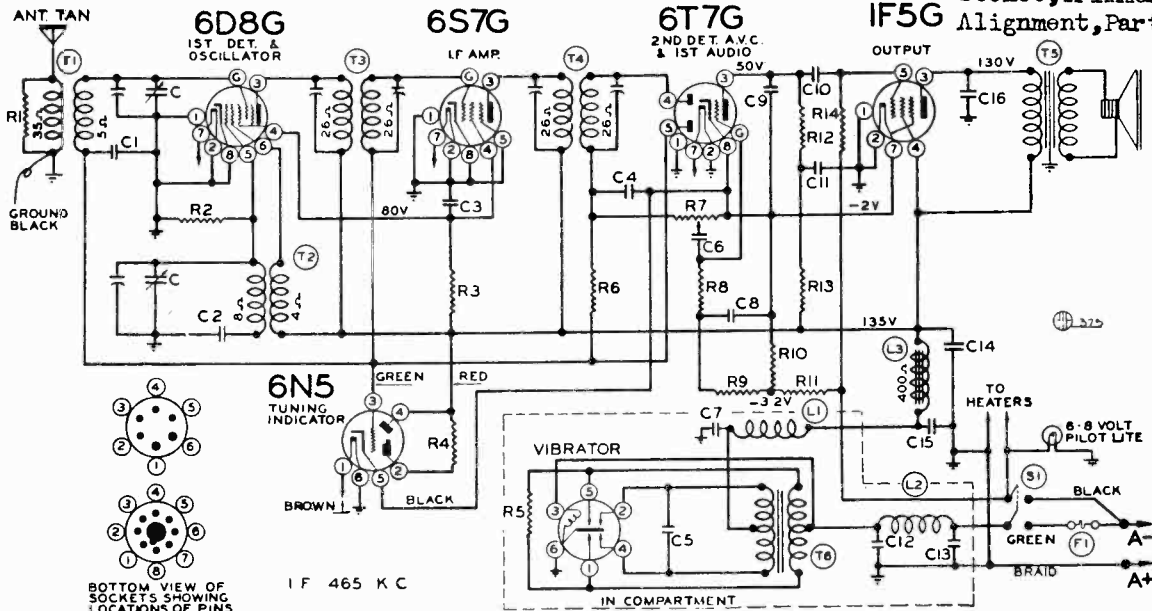
WHEEL OR BRAKE STATION—Noise from this source is generally experienced only when an under car antenna is being used. To determine if noise is being caused from this source, set the car in motion, then with the motor shut off and the clutch disengaged, apply the brakes. If the noise stops, the source of the static is in the wheels. The use of a front or rear wheel static eliminator will generally end the trouble.

"Hot" side of the coil primary to ground permanently if there is an improvement.

In like manner, try a .5 mfd. condenser from fuse to ground. light connections to ground, windshield wiper and various other 6 volt connections to ground, noting what effect these condensers have on the noise pick-up.

MONTGOMERY-WARD & CO.

MODEL 62-345
Schematic, Voltage
Socket, Trimmer
Alignment, Parts



No.	Part No.	Description	Value	Tolerance
CONDENSERS				
C1	102-52	2 Gang Variable		
C2	100-9	.05x200 v.		25%
C2	129-75	.0003386 Compy. Cond. (+-1% Padder)		
C3	100-33	.1x200 v.		-50-10%
C4	129-5	.0001 Mica		20%
C5	100-34	.005x1200		10%
C6	100-11	.01x400		25%
C7	100-33	.1x200		-50-10%
C8	100-11	.01x400		25%
C9	129-12	.00025 Mica		20%
C10	100-11	.01x400		25%
C11	100-33	.1x200 v.		-50-10%
C12	100-40	.5x200		20%
C13	100-40	.5x200		20%
C14	119-40	5.0 lytic 200 w. v.		
C15	119-40	5.0 lytic 200 w. v.		
C16	100-37	.003x600 v.		10%
C14 and C15 in same unit.				
RESISTORS				
R1	130-17	10M 1/3		20%
R2	130-12	50M 1/3		20%
R3	130-149	15M 1/3		20%
R4		250M in tuning indicator socket		
R5	130-84	200 ohm - 1/3 w.		20%
R6	130-4	3 meg 1/3		20%
R7	101-80	1 meg volume control		
R8	130-19	1 meg - 1/3		20%
R9	130-19	1 meg - 1/3		20%
R10	106-40	10 ohm		
R11	106-40	21 ohm		
R12	130-100	150M ohm - 1/3 w.		20%
R13	130-20	100M ohm - 1/3 w.		20%
R14	130-19	1 meg - 1/3 w.		20%
R10 and R11 in same unit.				
PARTS				
T1	111-78	Antenna Coil Complete		
T2	110-62	Oscillator Coil Complete		
T3	108-82B	Input I.F. Coil—465 kc.		
T4	108-83B	Output I.F. Coil—465 kc.		
T5	114-74	5" P.M. Speaker		
T6	104-62D	Power Transformer		
L1	105-35	R.F. "B" Choke		
L2	105-19	"A" Choke		
L3	105-30C	Filter Choke		
Vibrator	126-4	Vibrator		
F1	131-79	4 amp. fuse (type 3AG) On Volume Control		

SERVICE NOTES:

Voltage 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.

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 and insulating sleeve has been properly placed over fuse, the trouble is probably in the vibrator, it should be replaced. Do not attempt to make any adjustments on the vibrators.

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

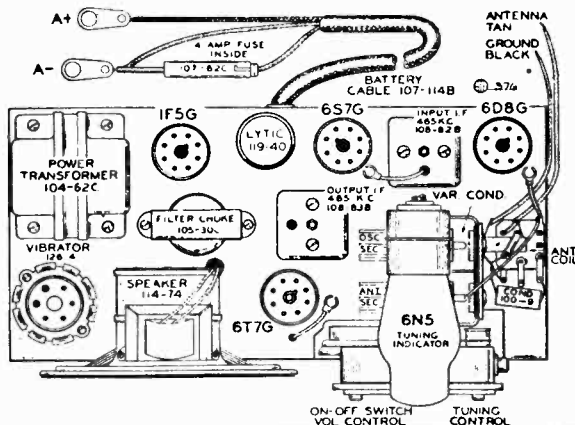
- Part No. 108-83B Output I.F. Transformer
- Part No. 108-82B Input I.F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

- With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 - Connect external oscillator set at 465 kilocycles, in series with .1 mfd. condenser, to the control grid cap of the type 6S7G tube, and adjust the output I.F. transformer (No. 108-83B) to resonance.
 - Move oscillator output clip from grid of 6S7G to grid of 6A8G and adjust input I.F. transformer (No. 108-82B) to resonance.
 - With oscillator still connected to 6A8G, readjust output I.F. transformer (108-83B) if necessary.

R.F. ALIGNMENT: (535-1720 K.C.)

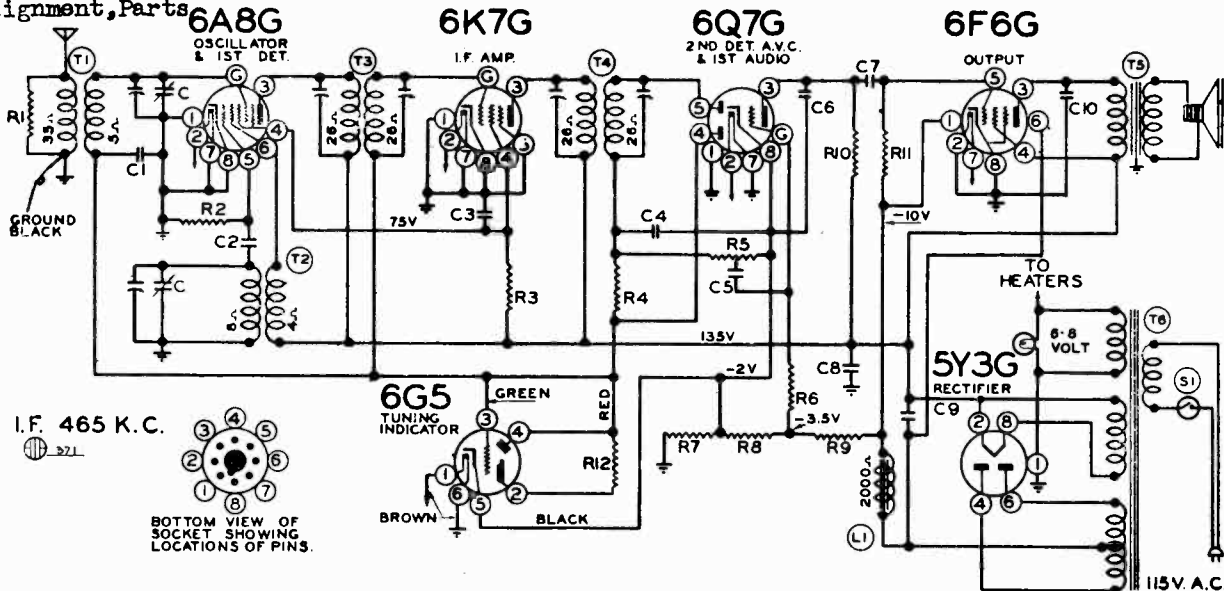
- With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 200 mfd. condenser to the antenna lead and chassis ground and make the following adjustments:
 - With external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance. This adjustment is on the top of rear section of variable gang condenser. (See Fig. 1).
 - Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
 - Check sensitivity at 600 and 1000 kilocycles.



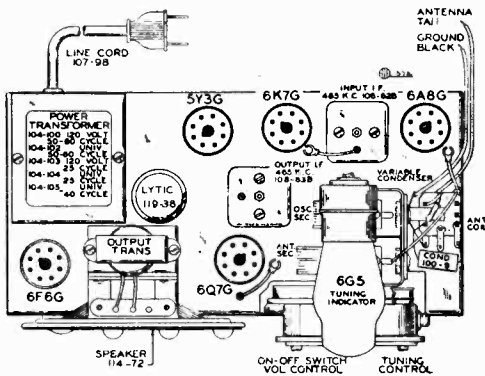
MODEL 62-346

Schematic, Voltage
Socket, Trimmer
Alignment, Parts

MONTGOMERY-WARD & CO.



No.	Part No.	Description	Values	Notes
CONDENSERS				
C	102-49	2 Gang Variable		
C1	100-9	.05 x 200 v.	25%	
C2	129-12	.00025 Mica	20%	
C3	100-1	.1 x 400 v. -50	10%	
C4	129-5	.0001 Mica	20%	
C5	100-11	.01 x 400 v.	25%	
C6	129-2	.0005 Mica	20%	
C7	100-11	.01 x 400 v.	25%	
C8	119-38	5.0 x 200 vv. lytic		
C9	119-38	5.0 x 250 vv. lytic		
C10	100-19	.006 x 600 v.	25%	
RESISTORS				
R1	130-17	10M ohm - 1/3 w.	20%	
R2	130-12	50M ohm - 1/3 w.	20%	
R3	130-149	15M ohm - 1/3 w.	20%	
R4	130-170	3 megohm - 1/3 w.	25%	
R5	101-77	1 megohm volume control		
R6	130-170	3 megohm - 1/3 w.	25%	
R7	106-35	65 ohm		
R8	106-35	45 ohm		
R9	106-35	220 ohm		
R10	130-9	200M ohm - 1/3 w.	20%	
R11	130-118	600M ohm - 1/3 w.	20%	
R12		250M ohm Resistor (in Cathode-Ray Eye Socket)		
PARTS				
T1	111-58B	Antenna Coil Complete		
T2	110-46	Oscillator Coil Complete		
T3	108-82B	Input I.F. Complete		
T4	108-83B	Output I.F. Complete		
T5	114-72	5" Dynamic Speaker		
T6	104-100	Power Transformer		
L1		Speaker Field (2000 ohm)		
S1		Switch on Volume Control		



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

- Part No. 108-83B Output I.F. Transformer
- Part No. 108-82B Input I.F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

- With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 - Connect external oscillator set at 465 kilocycles, in series with .1 mfd. condenser, to the control grid cap of the type 6K7G tube, and adjust the output I.F. transformer (No. 108-83B) to resonance.
 - Move oscillator output clip from grid of 6K7G to grid of 6A8G and adjust input I.F. transformer (No. 108-82B) to resonance.
 - With oscillator still connected to 6A8G, readjust output I.F. transformer (108-83B) if necessary.

R.F. ALIGNMENT: (535-1720. K.C.)

- With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 200 mmf. condenser to the antenna lead and chassis ground and make the following adjustments:
 - With external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance. This adjustment is on the top of rear section of variable gang condenser. (See Fig. 1).
 - Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
 - Check sensitivity at 600 and 1000 kilocycles.

ALIGNING INSTRUCTIONS:

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

All adjustments should be made with a non-metallic screw-driver.

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 6F6G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

SERVICE NOTES:

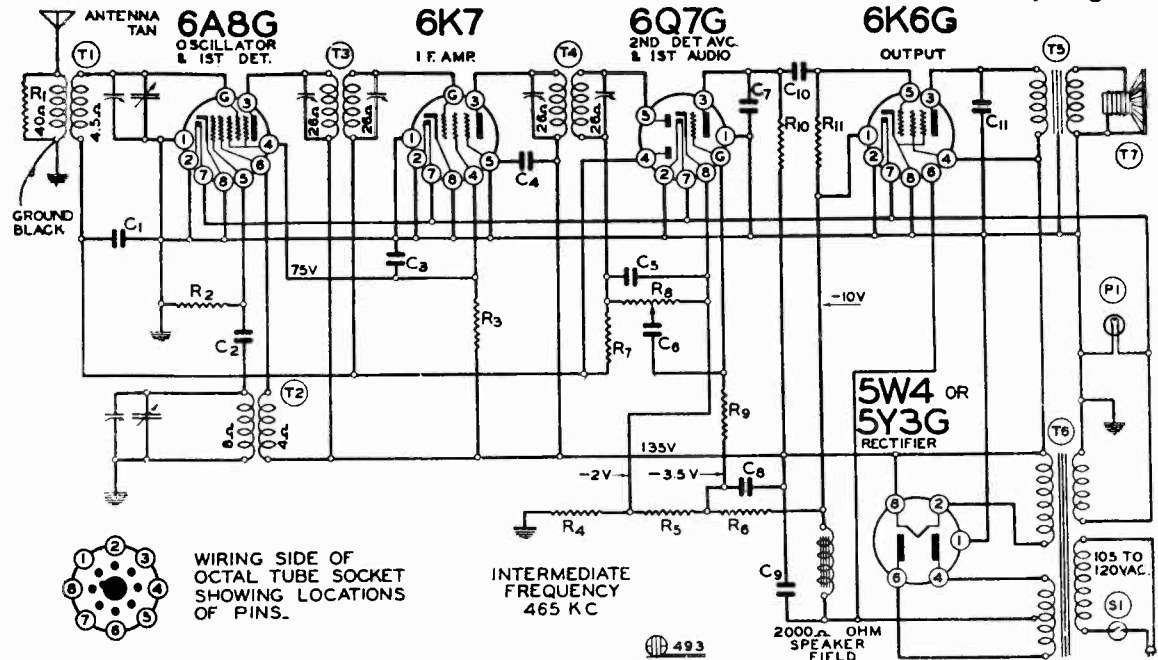
Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt.

All voltages as indicated on diagram are measured with 115 volts on the primary of the power transformer.

MONTGOMERY-WARD & CO.

MODELS 62-350, 62-351, 62-352
Schematic, Voltage, Parts
Socket, Trimmer, Alignment

FOR TUNER DATA SEE INDEX

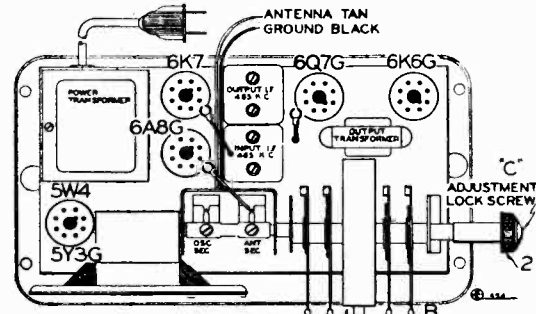


LIST OF REPAIR PARTS (SERIAL No. 961600 and UP)

Use Only Genuine Factory Replacement Parts

Bin No.	Part No.	schematic reference	Description	No. Used in set	Selling price each
CONDENSERS					
10979	BE100-1	C3	.1x400 volt Tubular	1	.10
11387	BE100-9	C1	.05x200 volt Tubular	1	.10
11256	BE100-13	C6, C10	.01x400 volt Tubular	2	.09
	BE100-13	C4	.05x400 volt Tubular	1	.10
	BE100-19	C11	.006x600 volt Tubular	1	.09
	BE119-47C	C8, C9	Dual 5 Mfd x 250 w. v. Filter Condenser	1	.70
10930	BE129-2	C7	.0005 Mica Type 20%	1	.09
11335	BE129-5	C5	.0001 Mica Type 20%	1	.09
10928	BE129-12	C2	.00025 Mica Type 20%	1	.10
RESISTORS					
	BE106-35	R4, R5, R6	65 Ohm, 45 Ohm, 220 Ohm Metal Clad Strip	1	.20
11097	BE130-9	R10	200M Ohm-1/3 watt-20% Carbon	1	.08
11068	BE130-12	R2	50M Ohm-1/3 watt-20% Carbon	1	.08
	BE130-21	R1	20M Ohm-1/3 watt-20% Carbon	1	.08
	BE130-118	R11	600M Ohm-1/3 watt-20% Carbon	1	.08
11094	BE130-149	R3	15M Ohm-1/3 watt-20% Carbon	1	.08
11093	BE130-170	R7, R9	3 Megohm-1/3 watt-20% Carbon	2	.08
COILS					
	BE108-82E	T3	Input I.F. Coil Assembly Complete with can	1	.60
	BE108-83E	T4	Output I.F. Coil Assembly Complete with can	1	.60
	BE110-73	T2	Oscillator Coil Assembly Complete	1	.30
	BE111-92	T1	Antenna Coil Assembly Complete	1	.40
SOCKETS					
	BE121-93		Eight Prong Octal Socket for 6K6	1	.10
	BE121-93		Eight Prong Octal Socket for 6Q7	1	.10
	BE121-93		Eight Prong Octal Socket for 6K7	1	.10
	BE121-93		Eight Prong Octal Socket for 6A8	1	.10
	BE121-93		Eight Prong Octal Socket for 5Y3 or 5W4	1	.10
TRANSFORMERS					
	BE104-100E	T6	Power Transformer 50/60 Cycle -105-120 volt	1	1.50
	BE104-108E		Power Transformer 25 cycle 105-120 volt		
	BE104-104E		Universal Transformer 25 cycle primary		
	BE104-99E		Universal Transformer 40 cycle primary		
MISCELLANEOUS					
	BE101-106	R8, S1	Volume Control and Switch (1 megohm)	1	.50
	BE102-67	C	Two Gang Variable Condenser	1	2.00
	BE105-55B	T5	Output Transformer for Speaker	1	.50

SPEAKER		
BE114-108A & B T7	Five inch Dynamic (2000 ohm field)	1 2.00
BE105-55B T5	Output Transformer for Speaker	1 .50



ALIGNING I.F. TRANSFORMERS: (465 K.C.):

- Part No. 108-83E Output I.F. Transformer
Part No. 108-82E Input I.F. Transformer
- These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).
- With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 - Connect external oscillator set at 465 kilocycles, in series with .1 mfd. condenser, to the control grid cap of the type 6K7 tube, and adjust the output I. F. transformer (No. 108-83E) to resonance.
 - Move oscillator output clip from grid of 6K7 to grid of 6A8G and adjust input I.F. transformer (No. 108-82E) to resonance.
 - With oscillator still connected to 6A8G, readjust output I.F. transformer (108-83E) if necessary.

R.F. ALIGNMENT: (535-1720 K.C.)

- With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 200 mmf. condenser to the antenna lead and chassis ground and make the following adjustments:
 - With external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance. This adjustment is on the top of rear section of variable gang condenser. (See Fig. 1).
 - Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
 - Check sensitivity at 600 and 1000 kilocycles.

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.

All voltages as indicated on diagram are measured with 115 volts on the primary of the power transformer.

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.

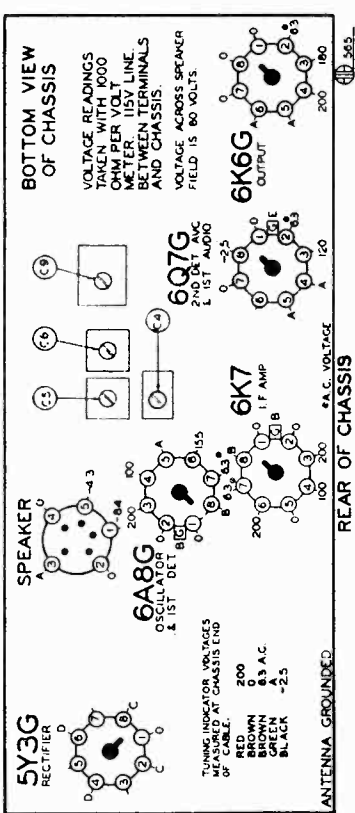
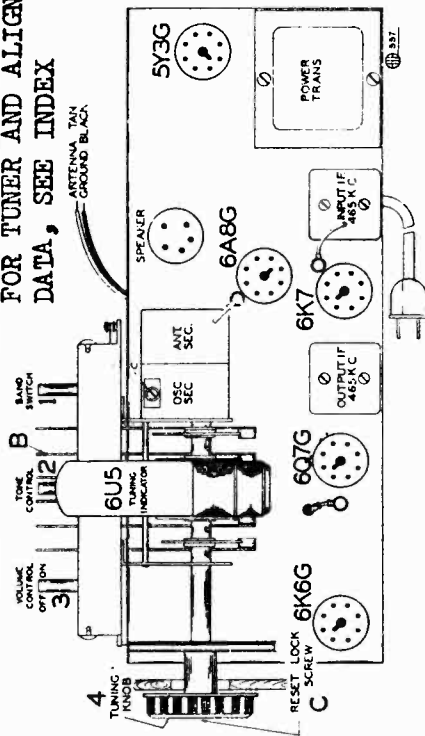
Excessive hum, stuttering, low volume and a reduction in all D.C. voltages is usually caused by a shorted electrolytic condenser; open by-pass condensers frequently cause oscillation and distorted tone.

MODEL 62-361, Issue A
Schematic, Socket, Parts
Trimmer, Voltage

MONTGOMERY-WARD & CO.

BAND **DIAL SCALE** **FREQUENCY RANGE**
 Broadcast Lower 535 to 1720 K. C. (Kilocycles)
 Short Wave Upper 2000 to 7000 K. C. (Kilocycles)

FOR TUNER AND ALIGNMENT
DATA, SEE INDEX



CONDENSERS

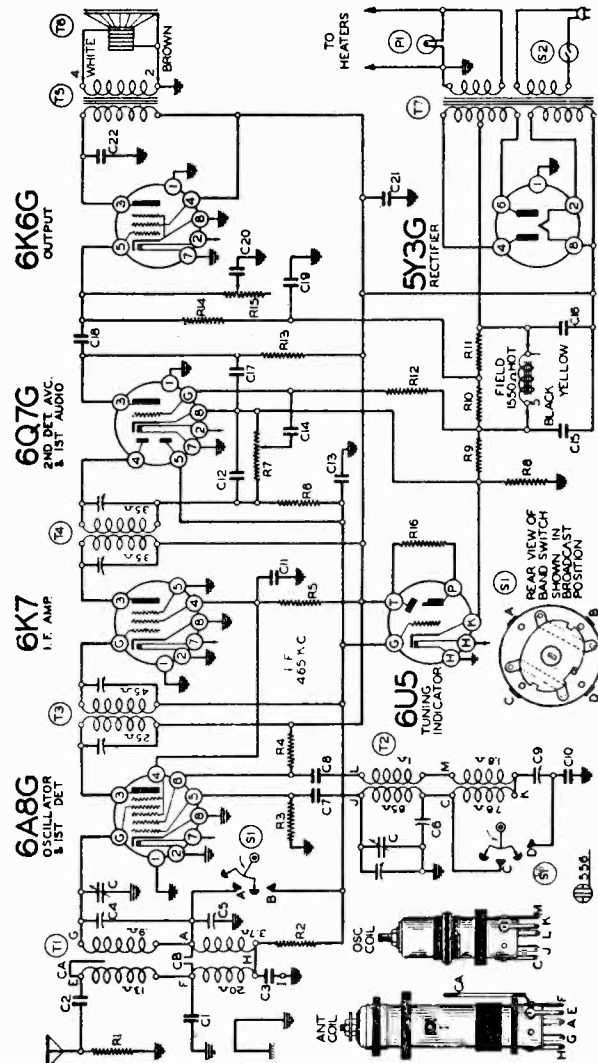
CA and CB	Description
C	Coupling Capacities
C1	2 gang variable condenser
C2	.00038 mica
C3	.000105 mica
C4	.00304 x 600 v.
C5	2-25 mmf. adjustable condenser
C6	2-10 mmf. dual adjustable condenser
C7	.0001 mica
C8	.003 x 600 v.
C9	450 mmf. working capacity series pad
C10	.0016-compression type
C11	.25 x 400 v.
C12	.0001 mica
C13	.05 x 200 v.
C14	.01 x 400 v.
C15	8. mid.-350 w. v. lytic
C16	4. mid.-350 w. v. lytic
C17	.0005 mica
C18	.01 x 400 v.
C19	.1 x 200 v.
C20	.004 x 600 v.
C21	.05 x 400 v.
C22	.006 x 600 v.

PARTS

Code No.	Description
R8	50 ohm-1/2 w.
R9	40 ohm-1/2 w.
R10	100M ohm-1/2 w.
R11	800M ohm-1/2 w.
R12	3 megohm-1/2 w.
R13	200M ohm-1/2 w.
R14	500M ohm-1/2 w.
R15	1 megohm-tone control
R16	1 megohm-in tuning indicator socket

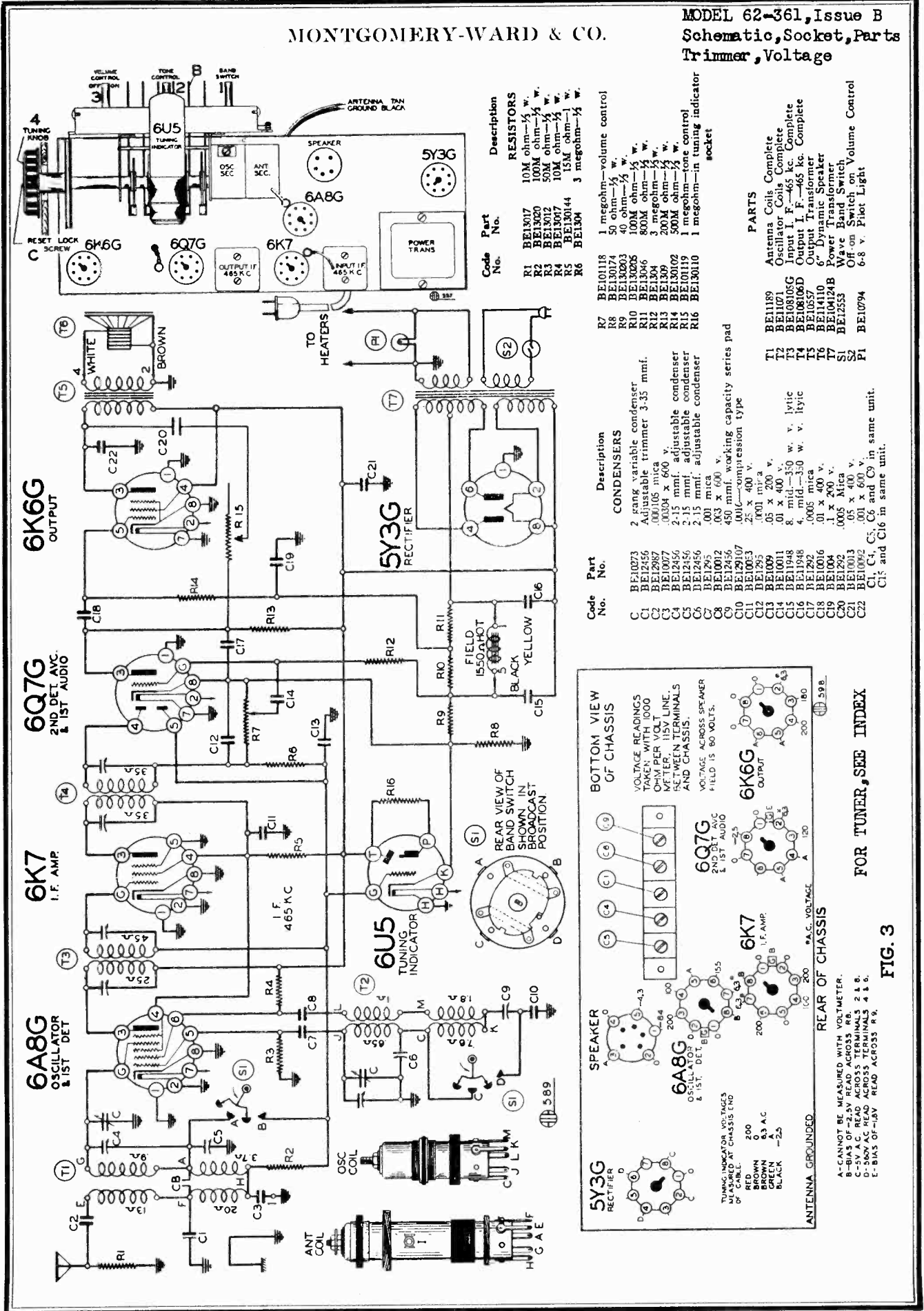
FIG. 3

Code No.	Description
R1	13017 10M ohm-1/2 w.
R2	13020 100M ohm-1/2 w.
R3	13012 50M ohm-1/2 w.
R4	13017 10M ohm-1/2 w.
R5	13042 20M ohm-1/2 w.
R6	1304 3 megohm-1/2 w.
R7	10118 1 megohm-volume control



MONTGOMERY-WARD & CO.

MODEL 62-361, Issue B
Schematic, Socket, Parts
Trimmer, Voltage



RESISTORS

Code No.	Description
R1	10M ohm— $\frac{1}{4}$ w.
R2	100M ohm— $\frac{1}{4}$ w.
R3	50M ohm— $\frac{1}{4}$ w.
R4	10M ohm— $\frac{1}{4}$ w.
R5	15M ohm— $\frac{1}{4}$ w.
R6	3 megohm— $\frac{1}{4}$ w.

CONDENSERS

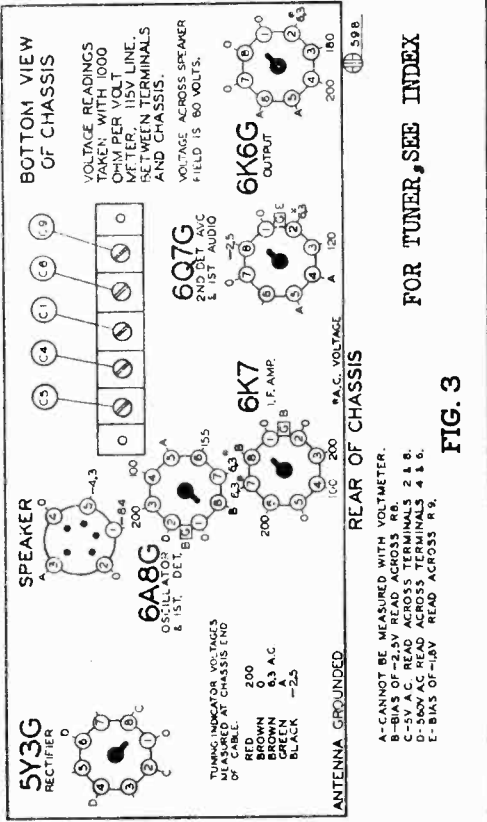
Code No.	Description
C1	2 rang variable condenser
C2	Adjustable trimmer 3.35 mmf.
C3	.000105 mica
C4	.00304 x 600 v.
C5	2-15 mmf. adjustable condenser
C6	2-15 mmf. adjustable condenser
C7	.001 mica
C8	.03 x 600 v.
C9	480 mmf. working capacity series pad
C10	250 x 400 v.
C11	250 x 400 v.
C12	1000 mica
C13	.05 x 200 v.
C14	.01 x 400 v.
C15	8, mid-350 w. v. lytic
C16	4, mid-350 w. v. lytic
C17	.0005 mica
C18	.01 x 400 v.
C19	.005 mica
C20	.005 Mica
C21	.001 x 400 v.
C22	.001 x 600 v.

TRANSFORMERS

Code No.	Description
T1	Antenna Coils Complete
T2	Oscillator Coils Complete
T3	Input I. F.—465 kc. Complete
T4	Output I. F.—465 kc. Complete
T5	6" Dynamic Speaker
T6	Power Transformer
T7	Wave Band Switch

SOCKETS

Code No.	Description
S1	Off on Switch on Volume Control
S2	6-8 v. Pilot Light



FOR TUNER, SEE INDEX

FIG. 3

MODEL 62-361

Issues A and B
Alignment, Notes

MONTGOMERY-WARD & CO.

ALIGNMENT PROCEDURE ISSUE A

- Volume control—Maximum all adjustments.
- Connect radio chassis 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., and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6A8	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	6 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Rotor full open (Plates out of mesh)	Trimmer (C) Top of front section of gang	Short wave oscillator	Adjust to maximum output
	6 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Dial set at 6 MC	Trimmer (C4) (See Fig. 3)	Short wave Antenna	Adjust to maximum output
BROAD- CAST BAND	1720 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Trimmer (C6) (See Fig. 3)	Broadcast Oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set dial at 1400 Kc.	Trimmer (C3) (See Fig. 3)	Broadcast Antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set dial at 600 Kc.	Trimmer (C9) (See Fig. 3)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
IMAGE REJECTION ADJUST- MENTS	1890 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Pick up signal at 900 Kc. on dial	Wire Capacitor (CB) (See circuit diagram)	Image rejection	Adjust by twisting for mini- mum output. (See note "B")
	2630 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Pick up signal at 1700 Kc. on dial	Wire capacitor (CA) (See circuit diagram)	Image rejection	Adjust by moving for mini- mum output. (See note "C")

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

NOTE "B": 900KC is the image frequency of 1890KC. Adjust wire capacity (CB) by twisting the two wires until a minimum output is obtained.

NOTE "C": 1700KC is the image frequency of 2630KC. Adjust wire capacity (CA) by moving the wire either toward or away from the antenna coil winding until a minimum output is obtained on the output meter.

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.

BAND SWITCH	BAND	FREQUENCY RANGE
Extreme Right Rotation	Short Wave	200 to 7000 KC (2-7MC)
Extreme Left Rotation	Broadcast	535 to 1720 KC.
Power Consumption	50 Watts (At 115 volts 50-60 cycles)	
	1.2 Watts Undistorted, 2.5 Watts Maximum	
Intermediate Frequency		465 KC.

DESCRIPTION:

TUBES:

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

The type and function of each tube is as follows:

- 1—Type 6AB6 Pentagrid Mixer, First Detector-oscillator.
- 1—Type 6K7 Remote Cut-Off Pentode, I. F. Amplifier (465 K. C.)
- 1—Type 6Q7 Duplex Diode Triode Second Detector, A. V. C. and First Audio.
- 1—Type 6K6G Pentode Output Amplifier.
- 1—Type 5Y3G High Vacuum Rectifier.
- 1—Type 6U5 Cathode-Ray Tuning Eye.

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

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.

All voltages as indicated on the voltage chart are measured with 115 volts on the primary of the power transformer.

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 voltages, defective tubes, condensers and resistors. In order to properly align this chassis, an oscillator (generator) is absolutely necessary. No aligning adjustments should be attempted with the chassis in the cabinet.

To remove the chassis from the cabinet, remove the four bolts which are used to fasten the chassis to the cabinet bottom, pull the knobs off their shafts and pull off the six button lever keys on front of dial.

To remove the chassis from the cabinet, remove the four bolts which are used to fasten the chassis to the cabinet bottom; remove the special locking screw in the center of the tuning knob on the side of the cabinet; pull the knobs off their shafts and pull off the six button lever keys on front of dial.

ALIGNMENT PROCEDURE ISSUE B

- Volume control—Maximum all adjustments.
- Connect radio chassis 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., and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6A8	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	7 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Rotor full open (Plates out of mesh)	Trimmer (C) Top of front section of gang	Short wave oscillator	Adjust to maximum output
	6 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Dial set at 6 MC	Trimmer (C4) (See Fig. 3)	Short wave Antenna	Adjust to maximum output
BROAD- CAST BAND	1720 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Trimmer (C6) (See Fig. 3)	Broadcast Oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set dial at 1400 Kc.	Trimmer (C3) (See Fig. 3)	Broadcast Antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set dial at 600 Kc.	Trimmer (C9) (See Fig. 3)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
IMAGE REJECTION ADJUST- MENT	2330 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Pick up signal at 1400 Kc. on dial	Trimmer (C1) (See Fig. 3)	Image rejection	Adjust for minimum mum output. (See note "B")

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

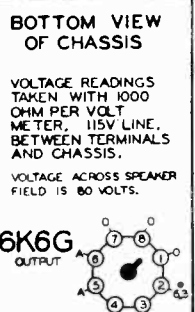
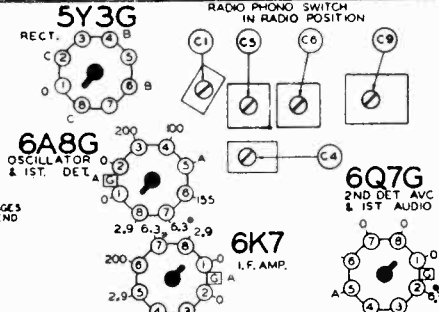
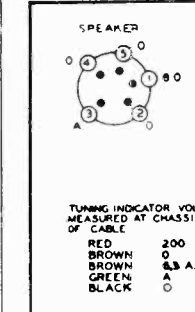
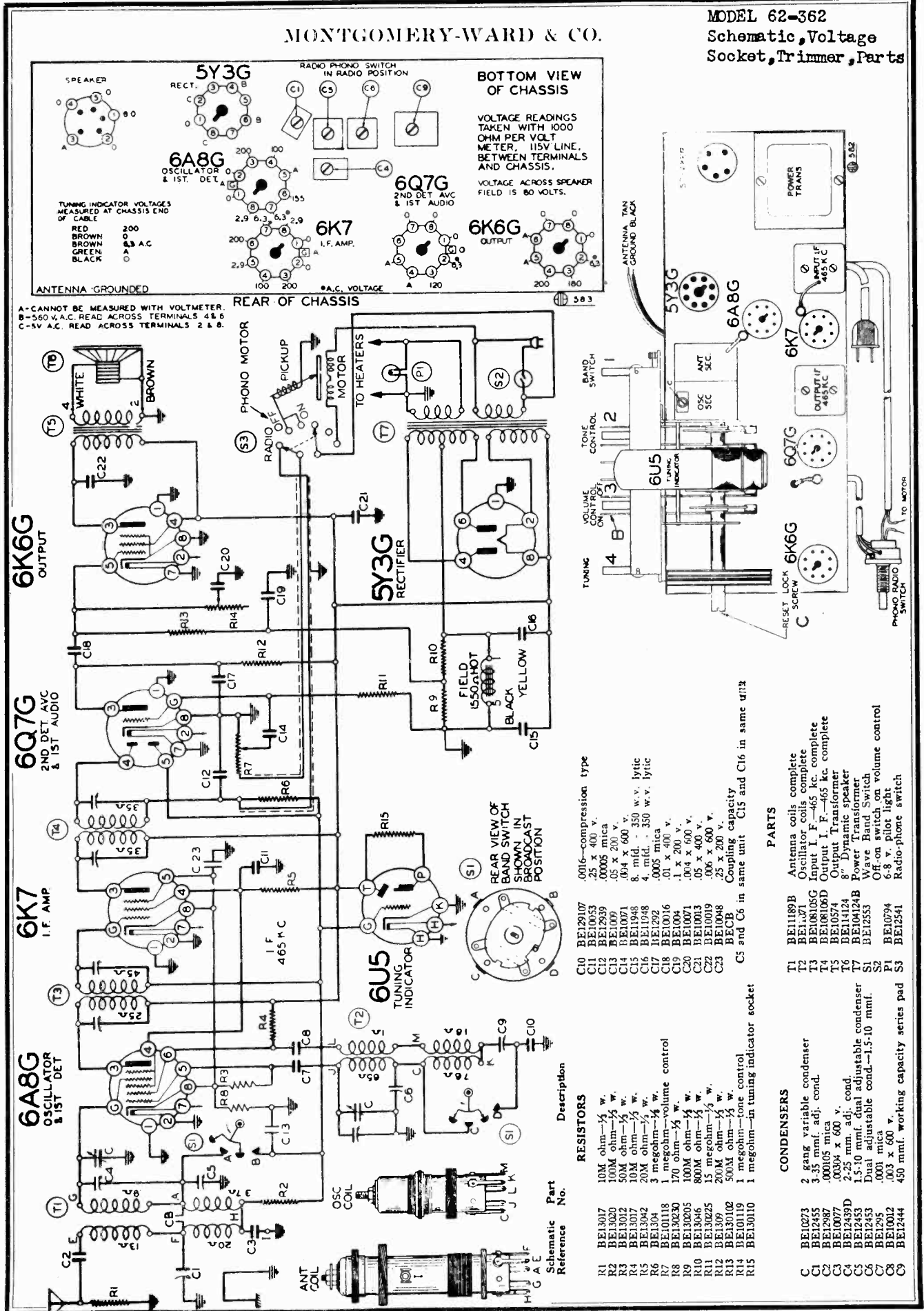
NOTE "B": 2330KC is the image frequency of 1400KC. Adjust Trimmer C1 until a minimum output is obtained.

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.

BAND SWITCH	BAND	FREQUENCY RANGE
Extreme Right Rotation	Short Wave	2000 to 7000 KC (2-7MC)
Extreme Left Rotation	Broadcast	535 to 1720 KC.
Power Consumption	50 Watts (At 115 volts 50-60 cycles)	
	1.2 Watts Undistorted, 2.5 Watts Maximum	
Intermediate Frequency		465 KC.

MONTGOMERY-WARD & CO.

MODEL 62-362
Schematic, Voltage
Socket, Trimmer, Parts



A-CANNOT BE MEASURED WITH VOLTMETER.
B-560 V.A.C. READ ACROSS TERMINALS 4 & 6
C-5V A.C. READ ACROSS TERMINALS 2 & 8.

- RESISTORS**
- | | | |
|-----|----------|-------------------------------------|
| R1 | BEL3017 | 10M ohm-1/2 w. |
| R2 | BEL3020 | 100M ohm-1/2 w. |
| R3 | BEL3012 | 50M ohm-1/2 w. |
| R4 | BEL3017 | 10M ohm-1/2 w. |
| R5 | BEL3042 | 20M ohm-1/2 w. |
| R6 | BEL304 | 3 megohm-1/2 w. |
| R7 | BEL10118 | 1 megohm-volume control |
| R8 | BEL30230 | 170 ohm-1/2 w. |
| R9 | BEL30205 | 100M ohm-1/2 w. |
| R10 | BEL3046 | 800M ohm-1/2 w. |
| R11 | BEL30225 | 15 megohm-1/2 w. |
| R12 | BEL309 | 200M ohm-1/2 w. |
| R13 | BEL30102 | 500M ohm-1/2 w. |
| R14 | BEL10119 | 1 megohm-tone control |
| R15 | BEL30110 | 1 megohm-in tuning indicator socket |

- CONDENSERS**
- | | | |
|----|-----------|---------------------------------------|
| C1 | BEL10273 | 2 gang variable condenser |
| C2 | BEL12465 | .035 mmf. adj. cond. |
| C3 | BEL12697 | .00105 mmf. |
| C4 | BEL12438D | 2.25 x .060 v. cond. |
| C5 | BEL12453 | 1.5-10 mmf. dial adjustable condenser |
| C6 | BEL1295 | Dual adjustable cond.-1.5-10 mmf. |
| C7 | BEL10012 | .001 mica |
| C8 | BEL10012 | .003 x 600 v. |
| C9 | BEL12444 | 450 mmf. working capacity series pad |

MODEL 62-362
Alignment

MONTGOMERY-WARD & CO. Trimmer, Alignment
MODELS 62-363, 62-463, 62-650

ALIGNMENT PROCEDURE MODEL 62-362

- Volume control—Maximum all adjustments.
- Connect radio chassis 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., and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6A8	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	6 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Set dial at 6 MC	Trimmer (C)	Short wave oscillator	Adjust to maximum output
	6 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Dial set at 6 MC	Trimmer (C4) (See Fig. 3)	Short wave Antenna	Adjust to maximum output
BROAD-CAST BAND	1720 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Trimmer (C5) (See Fig. 3)	Broadcast Oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set dial at 1400 Kc.	Trimmer (C5) (See Fig. 3)	Broadcast Antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set dial at 600 Kc.	Trimmer (C9) (See Fig. 3)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
IMAGE REJECTION ADJUSTMENT	2330 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Pick up signal at 1400 Kc. on dial	Trimmer (C1) (See Fig. 3)	Image rejection	Adjust for minimum mum output. (See note "B")

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

NOTE "B" 2330KC is the image frequency of 1400KC. Adjust Trimmer C1 until a minimum output 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.

BAND SWITCH

Extreme Right Rotation
Extreme Left Rotation

BAND

Short Wave
Broadcast

FREQUENCY RANGE

2000 to 7000 KC (2-7MC)
535 to 1720 KC.

Power Consumption.....60 Watts (At 115 volts 50-60 cycles)
Power Output.....1.2 Watts Undistorted, 2.5 Watts Maximum
Intermediate Frequency.....465 KC.

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

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.

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.

All voltages as indicated on the voltage chart are measured with 115 volts on the primary of the power transformer.

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

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

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

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

The following equipment is required for aligning:
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter—Non-Metallic Screwdriver, Dummy Antennas—.1 mf., 200 mmf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY SETTING	DUMMY ANTENNA CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.	Grid of 1st. Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C15) & (C16) 2nd I.F. (C21) & (C22)
RANGE B	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C7)
1720 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note A	Ant. Range B (C5)
1500 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C8) Rock Rotor—See Note B
600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range D (C4) Ant. Range D (C3) Rock Rotor—See Note B
18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	
15,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	
PERMEABILITY TUNING UNIT				TURN SETTING SCREW TO MAXIMUM OUTPUT (Based Switch in Push Button Position) —See Instruction Book	
1100 KC	Antenna Lead	200 mmf.	No. 1	Setting Screw No. 1	Antenna Coil No. 1
1100 KC	Antenna Lead	200 mmf.	No. 2	Setting Screw No. 2	Antenna Coil No. 2
850 KC	Antenna Lead	200 mmf.	No. 3	Setting Screw No. 3	Antenna Coil No. 3
850 KC	Antenna Lead	200 mmf.	No. 4	Setting Screw No. 4	Antenna Coil No. 4
700 KC	Antenna Lead	200 mmf.	No. 5	Setting Screw No. 5	Antenna Coil No. 5
700 KC	Antenna Lead	200 mmf.	No. 6	Setting Screw No. 6	Antenna Coil No. 6

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

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

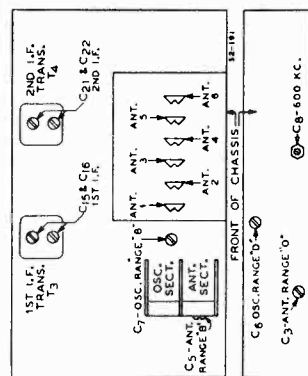
NOTE A—If the pointer is not at 1500 KC on the dial, loosely on the cord, move the pointer to the 1500 KC mark, and tighten the clamps.

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

NOTE C—At the top of the permeability tuning unit, on the "W" opening, insert the end of a pair of long nose pliers or a screwdriver in the "W" opening of the proper button and adjust the position of the antenna (rear) coil by twisting the pliers or screwdriver until maximum output is obtained.

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 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 KC.

No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltages, defective tubes, condensers and resistors. In order to check the alignment of the chassis, the generator should be absolutely necessary. No aligning adjustments should be attempted with the chassis in the cabinet.



To remove the chassis from the cabinet, remove the four bolts which are used to fasten the chassis to the cabinet bottom; pull the knobs off their shafts and pull off the six button lever keys on front of dial.

MODELS 62-390, 62-490, 62-900

Tuner Data

MONTGOMERY-WARD & CO.

MODEL 62-362

MODEL 62-372

This means that any station which has a kilocycle number lying between 530 and 800 K.C. can be set up on either Button P1 or Button P2. Any station which has a kilocycle number lying between 770 and 870 K.C. can be set up on either Button P3 or Button P4. Any station which has a kilocycle number lying between 980 and 1550 K.C. can be set on either Button P5 or Button P6.

A typical station list of stations which may be selected in the vicinity of Chicago, for example, is as follows:

Station	Frequency	Button
WMAQ	670 K.C.	Button P1
WGN	720 K.C.	Button P2
WBBM	770 K.C.	Button P3
WENR	870 K.C.	Button P4
WJJD	1130 K.C.	Button P5
WHFC	1420 K.C.	Button P6

After you have made up your list of stations, turn manual-automatic switch (knob No. 1) to manual position "B", and tune in the first station with the manual tuning knob. Then turn the manual-automatic switch (knob No. 1) to automatic position "A". Push in the station call letter tabs and the screw driver turn the adjusting screw (see "A", Fig. 2) above the button to the right (clockwise). Turn the screw until the proper station is tuned in. Check by turning the manual-automatic switch to the manual position to make sure you have the same station.

Switch back to automatic position and by means of the adjusting screw carefully tune in the station watching the cathode-ray tuning eye to indicate perfect tuning.

Turn the manual-automatic switch (knob No. 1) back to manual position and tune in the second station with the manual tuning knob. Then turn the manual-automatic switch to automatic position. Push in button P2 and with a small screw driver turn the adjusting screw above button P2 to the right (clockwise). Turn the screw until the proper station is tuned in.

Check by turning the manual-automatic switch to the manual position to make sure you have the same station. Switch back to automatic position and by means of the screw driver, very carefully tune in the station watching the cathode-ray eye for accurate tuning.

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

Over the adjustment screw "A" a rectangular opening in the escutcheon has been provided for the station call letter tabs. Punch out the station call letter tabs from the set of sheets supplied and insert them into the rectangular openings in the escutcheon. One of the small, clear celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

Check by turning the manual-automatic switch to the manual position to make sure you have the same station. Switch back to automatic position and by means of the screw driver, very carefully tune in the station watching the cathode-ray eye for accurate tuning.

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

Over the adjustment screw "A" a rectangular opening in the escutcheon has been provided for the station call letter tabs. Punch out the station call letter tabs from the stations you have set up for the automatic buttons from the set of sheets supplied and insert them into the rectangular openings in the escutcheon. One of the small, clear celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

After you have made up your list of stations, turn manual-automatic switch (knob No. 3) to manual position, and tune in the first station with the manual tuning knob. Then turn the manual-automatic switch (knob No. 3) to automatic position. Push in the top automatic button (see Fig. 2) above the top button to the right (clockwise). Turn the screw until the proper station is tuned in. Check by turning the manual-automatic switch to the manual position to make sure you have the same station.

Switch back to automatic position and by means of the screw driver very carefully tune in the station watching the cathode-ray tuning eye to indicate perfect tuning.

Turn the manual-automatic switch (knob No. 3) back to manual position and tune in the second station with the manual tuning knob. Then turn the manual-automatic switch to automatic position. Push in the top automatic button (see Fig. 2) above the top button to the right (clockwise). Turn the screw until the proper station is tuned in. Check by turning the manual-automatic switch to the manual position to make sure you have the same station.

MODELS 62-390, 62-490 and 62-900

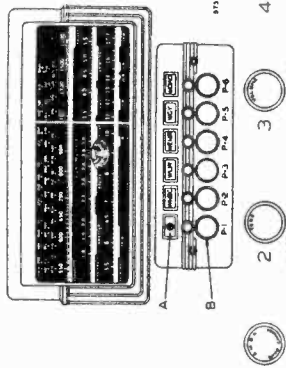


FIG. 2—FRONT VIEW PROCEDURE FOR SETTING THE AUTOMATIC STATION SELECTOR BUTTONS:

There are six buttons on the dial by means of which six standard wave stations may be selected. (See B, Fig. 2).

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

List the station with the lowest kilocycle number first and stations with higher kilocycle numbers in order, the station with the highest kilocycle number last.

The automatic station selector buttons are grouped to cover specific frequency ranges.

The frequency ranges of the buttons starting with the right hand button P1 are as follows:

- Button P1—530 K.C. to 800 K.C.
- Button P2—530 K.C. to 800 K.C.
- Button P3—700 K.C. to 1100 K.C.
- Button P4—700 K.C. to 1100 K.C.
- Button P5—980 K.C. to 1550 K.C.
- Button P6—980 K.C. to 1550 K.C.

MODEL 62-372

PROCEDURE FOR SETTING THE AUTOMATIC STATION SELECTOR BUTTONS:

There are six buttons on the dial by means of which six standard wave stations may be selected. (See Fig. 2).

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

The automatic station selector buttons are grouped to cover specific frequency ranges.

The frequency ranges of the buttons starting with the top button are as follows:

- Top button—980 K.C. to 1550 K.C.
- 2nd button—980 K.C. to 1550 K.C.
- 3rd button—700 K.C. to 1100 K.C.
- 4th button—700 K.C. to 1100 K.C.
- 5th button—530 K.C. to 800 K.C.
- Lower button—530 K.C. to 800 K.C.

This means that any station which has a kilocycle number lying between 980 and 1550 K.C. can be set up on either of the two upper buttons. Any station which has a kilocycle number lying between 700 and 1100 K.C. can be set up on either of the two center buttons. Any station which has a kilocycle number lying between 530 and 800 K.C. can be set up on either of the two lower buttons.

A typical station list of stations which may be selected in the vicinity of Chicago, for example is as follows:

MODEL 62-362

Release this lever and press down any other lever. Hold this lever down and tune in by means of knob No. 4 another favorite station.

Follow this procedure until stations have been set on all the levers.

Rotate the tuning knob (No. 4) to the right (clockwise) as far as it will turn. Now remove from the right side of the dial the manual tuning knob, the set locking screw inserted through the hole. Loosen the set locking screw by turning the "C" (see Fig. 1). 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, the tuning knob and the Reset 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 reset locking screw "C", four or five complete turns. Then turn the dial mechanism works hard when setting up a new station for one of the automatic tuner levers, it is due to the locking screw being too tight. Loosen the reset locking screw "C" until the dial mechanism works freely with the tuner lever pressed down).

BE SURE TO RETIGHTEN THE RESET LOCK SCREW, otherwise the stations will not stay adjusted to the levers.

Loosen each lever an opening in the cabinet is provided for inserting station call letters. (See "A", Fig. 2).

Punch the correct station call letter tabs from the set of sheets supplied and insert them into the rectangular openings in the cabinet. One of the small, clear celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

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

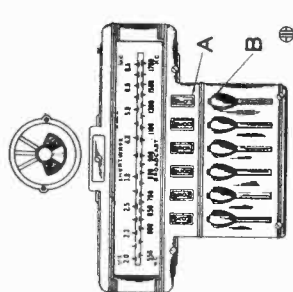


FIG. 2—FRONT VIEW PROCEDURE FOR SETTING THE AUTOMATIC LEVERS:

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

Press down any one of the six Automatic levers. Holding it down, tune in by means of tuning knob No. 4 any one of your favorite stations. When the tuning knob very slowly back to the original position, the station will be accurately tuned in.

Repeat this procedure for each lever until you have selected all of your stations.

Follow this procedure for each button until you have selected all of your stations.

Over the adjustment screw "A" a rectangular opening in the escutcheon has been provided for the station call letter tabs. Punch out the station call letter tabs from the stations you have set up for the automatic buttons from the set of sheets supplied and insert them into the rectangular openings in the escutcheon. One of the small, clear celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

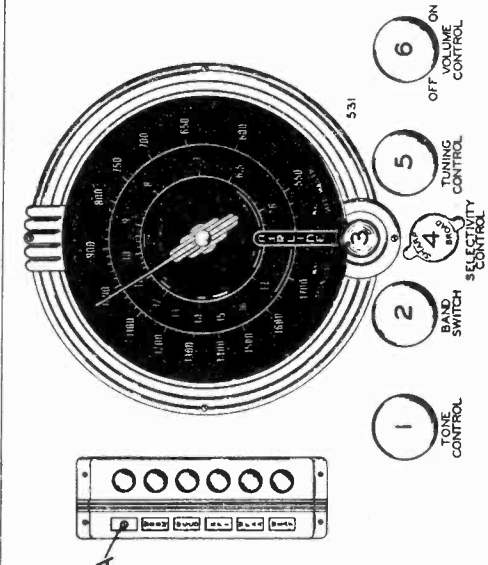
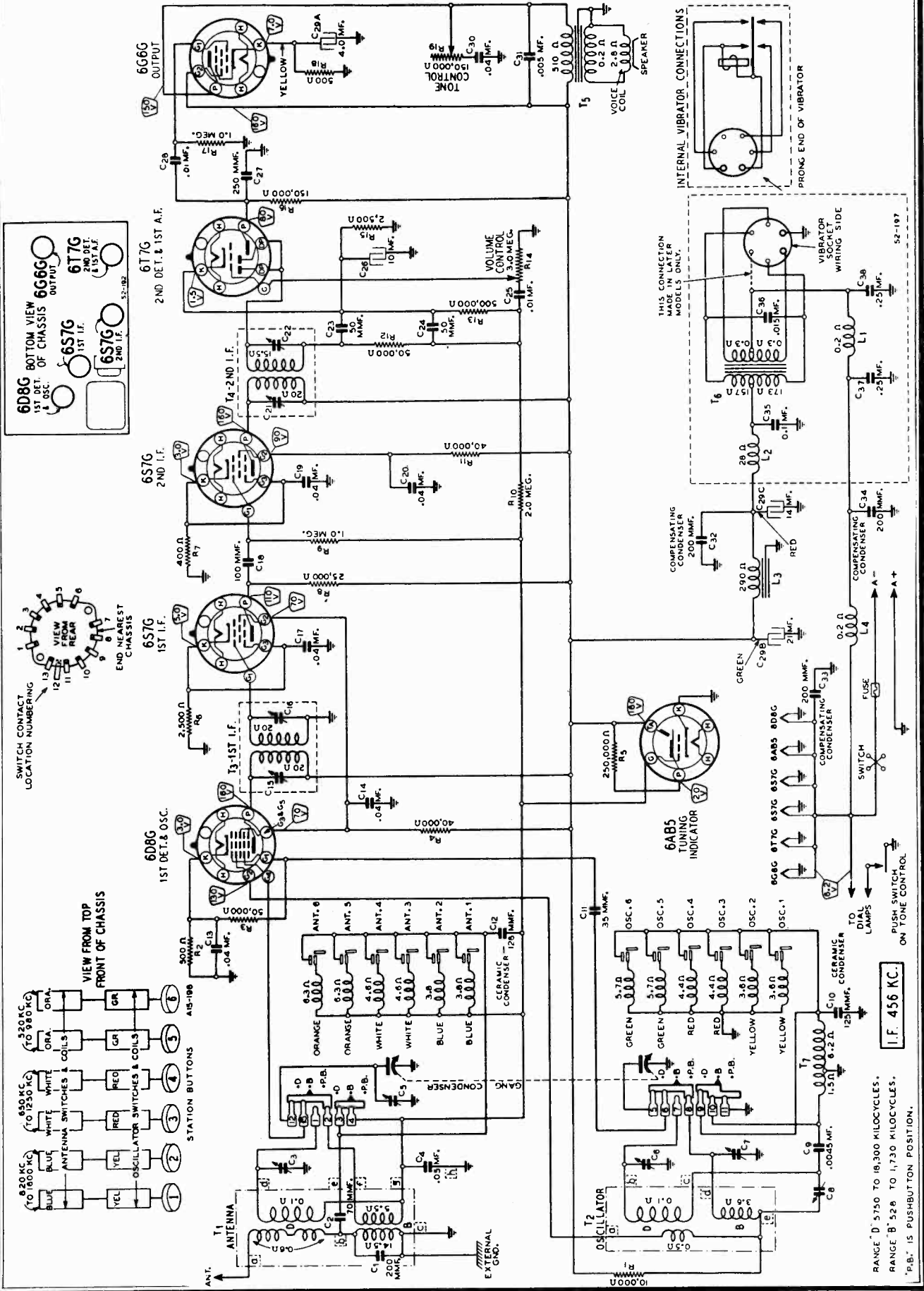


Fig. 2—Front View, Arrangement of Controls

MODELS 62-363, 62-463,
62-650

MONTGOMERY-WARD & CO.

Schematic, Voltage
Socket



RANGE D 5750 TO 18,300 KILOCYCLES.
 RANGE B 528 TO 1,730 KILOCYCLES.
 P.B. IS PUSHBUTTON POSITION.

I.F. 456 KC.

PUSH SWITCH
ON TONE CONTROL

TO DIAL
LAMPS

COMPENSATING
CONDENSER

COMPENSATING
CONDENSER

COMPENSATING
CONDENSER

COMPENSATING
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COMPENSATING
CONDENSER

MONTGOMERY-WARD & CO.

MODEL 62-372
Schematic, Parts
Socket, Voltage

VOLTAGES AT SOCKETS

Line Voltage: 117—Volume Control: Maximum
Readings taken with 1000 Ohm-per-volt meter

Antenna Shorted to Ground
Position of Band Switch: Standard Wave

TUBE	FUNCTION	VOLTAGE BETWEEN SOCKET PRONG AND GROUND (Unless otherwise indicated)							
		Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Prong No. 8
6I7	1st Det.	0	6.2(1)	90	90	5	6.2(1)	5	
6K7	I.F.	0	6.2(1)	230	100	2.0	6.2(1)	2.0	
6C5	Osc.	0	6.2(1)	140			6.2(1)	0	
6Q7	1st Audio & 2nd Det.	0	6.2(1)	100			6.2(1)	0(12)	
6F6	Power Amp.	0	6.2(1)	210	230		6.2(1)	0(13)	
5Y3G	Rectifier	0	5.0(4)		630(5)		630(5)	5.0(4)	
			Plate to Ground	Target to Ground	Cathode to Ground	Across Heater			
6G5	Tuning Indicator	20		230	0		6.2	A.C.	

- (1) A.C. voltage as read across heater terminals 2 and 7.
- (2) Bias (15 volts) as read across resistor R15.
- (3) Bias (14 volts) as read across resistors R15 and R16.
- (4) A.C. voltage as read across heater terminals 2 and 8.
- (5) A.C. voltage as read across terminals 4 and 6.

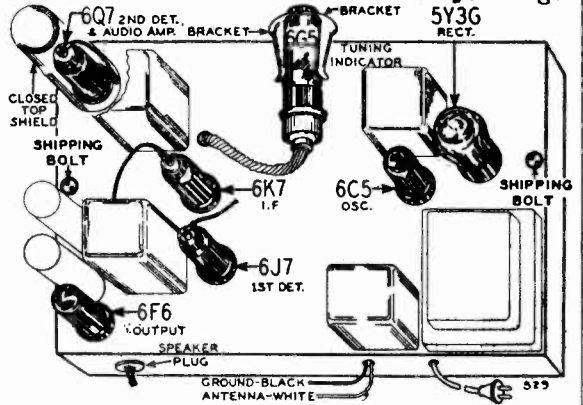
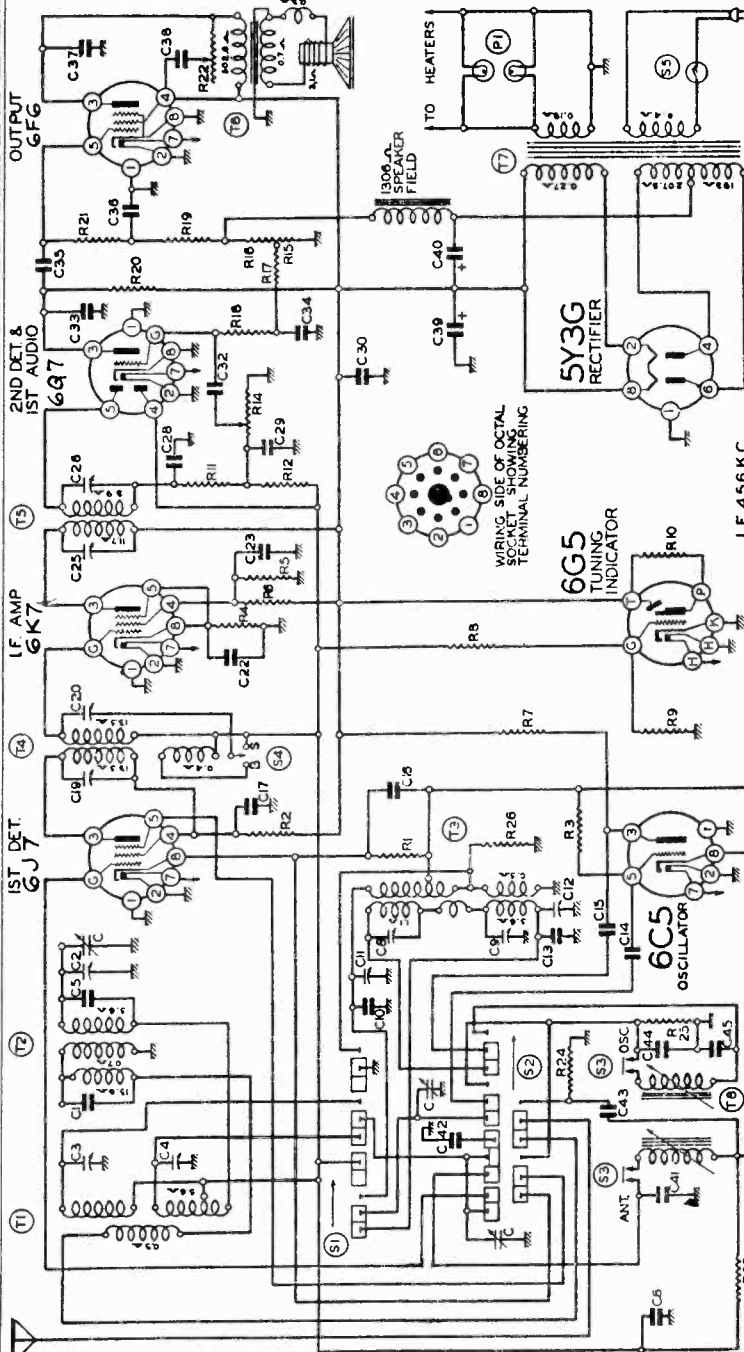


Fig. 1.—Location of Tubes; Top View of Chassis



FOR ALIGNMENT SEE INDEX

- C40 44x31 12 mid. 340 v. wet lytic
- C41 129-98 471 mmf. mica condenser - 1%
- C42 100-22 .05 x 200 v. tubular condenser
- C43 100-78 .01 x 200 v. tubular condenser
- C44 129-99 285 mmf. mica condenser - 1%
- C45 129-100 800 mmf. mica condenser - 2-1/2%
- C46 129-71 2070 mmf. mica condenser - 2-1/2%

PARTS

- Antenna Transformer and can assm.
- 1st antenna coil and can assm.
- Oscillator coil and can assm.
- 1st I.F. Transformer and can assm.
- 2nd I.F. Transformer and can assm.
- Output Transformer (See 'Speakers')
- 117 v. 60 cycle power transformer
- 1550 to 960 kc. antenna and oscillator permeability coils
- 1110 to 700 kc. antenna and oscillator permeability coils
- 840 to 530 kc. antenna and oscillator permeability coils
- Band change switch
- Manual to automatic change switch
- Push button switch for automatic tuner
- Selectivity Switch
- "On - Off" Switch
- 6-8 v. bayonet type pilot dial lamp

FOR TUNER DATA, SEE INDEX

- C40 44x31 12 mid. 340 v. wet lytic
- C41 129-98 471 mmf. mica condenser - 1%
- C42 100-22 .05 x 200 v. tubular condenser
- C43 100-78 .01 x 200 v. tubular condenser
- C44 129-99 285 mmf. mica condenser - 1%
- C45 129-100 800 mmf. mica condenser - 2-1/2%
- C46 129-71 2070 mmf. mica condenser - 2-1/2%
- T1 9A813 Antenna Transformer and can assm.
- T2 9A812 1st antenna coil and can assm.
- T3 9A814 Oscillator coil and can assm.
- T4 9A815 1st I.F. Transformer and can assm.
- T5 9A816 2nd I.F. Transformer and can assm.
- T6 53X144 Output Transformer (See 'Speakers')
- T7 110-81 117 v. 60 cycle power transformer
- T8 110-81 1550 to 960 kc. antenna and oscillator permeability coils
- T9 110-81 1110 to 700 kc. antenna and oscillator permeability coils
- T10 110-82 840 to 530 kc. antenna and oscillator permeability coils
- T11 110-83 840 to 530 kc. antenna and oscillator permeability coils
- T12 110-83 840 to 530 kc. antenna and oscillator permeability coils
- T13 110-83 840 to 530 kc. antenna and oscillator permeability coils
- S1 2A84 Band change switch
- S2 125-49 Manual to automatic change switch
- S3 125-50 Push button switch for automatic tuner
- S4 2A78 Selectivity Switch
- S5 "On - Off" Switch
- 7A32 Pilot Dial Lamp
- P1 6-8 v. bayonet type pilot dial lamp

MODEL 62-372
Trimmers, Alignment
MODELS 62-434, 62-435
Alignment, Tuner

MONTGOMERY-WARD & CO.

MODEL 62-465
Alignment

ALIGNMENT PROCEDURE MODEL 62-372

Volume Control—Maximum All Adjustments.
 Selectivity Control—Sharp Position All Adjustments.
 Connect Radio Chassis to Ground Post of Signal Generator With a Short Heavy Lead
 Allow Chassis and Signal Generator to "Heat Up" for Several Minutes.

The following equipment is required for aligning:
 An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed
 Output Indicating Meter; Non-Metallic Screwdriver.
 Dummy Antennas — .1 mf., 200 mmf., and 400 ohms

is on the top of rear section of variable gang condenser. (See Fig. 1).
 (b) Re-set external oscillator to 1400 kilocycles, rotate plates in series with a 200 mmf. condenser and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
 (c) Check sensitivity at 600 and 1000 kilocycles.

R.F. ALIGNMENT: (535-1720 K.C.) (CONT.)
 1. With gang condenser in its minimum capacity position, connect an external oscillator in series with a 200 mmf. condenser and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
 (a) Just oscillator trimmer to resonance. This adjustment

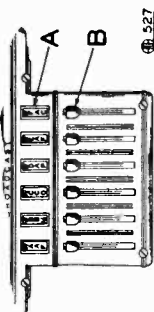
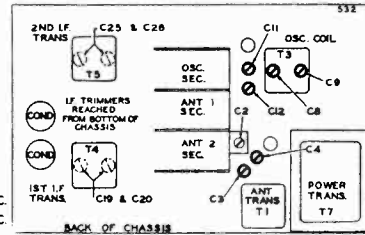
STEP (Follow Order as Given)	BAND SWITCH SETTING	DUMMY ANTENNA	SIGNAL GENERATOR		TRIMMERS ADJUSTED See Illustration	PROCEDURE	
			FREQUENCY SETTING	CONNECTION AT RADIO		INITIAL STEPS	ADJUSTMENT
I.F.							
2nd I.F.	Range B	.1 mf.	456 KC	Grid of I.F. Tube	2nd I.F. (C25) & (C26)	Turn Rotor to Full Open	Adjust to Maximum Output
1st I.F.	Range B	.1 mf.	456 KC	Grid of 1st Det.	1st I.F. (C19) & (C20)	Turn Rotor to Full Open	Adjust to Maximum Output
Range B							
1750 KC	Range B	200 mmf.	1750 KC	Antenna Lead	Oscillator Range B (C12)	Turn Rotor to Full Open	Adjust to Maximum Output
1400 KC	Range B	200 mmf.	1400 KC	Antenna Lead	1st Ant. Range B (C2) 2nd Ant. Range B (C4)	Turn Rotor to Max. Output Set Indicator to 1400 KC—	Adjust to Maximum Output
600 KC	Range B	200 mmf.	600 KC	Antenna Lead	600 KC (C9)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor—See Note A
Range D							
16000 KC	Range D	400 ohm	16000 KC	Antenna Lead	Oscillator Range D (C11)	Set Dial to 16 MC	Adjust to Maximum Output
16000 KC	Range D	400 ohm	16000 KC	Antenna Lead	Ant. Range D (C3)	Set Dial to 16 MC	Adjust to Maximum Output Rock Rotor—See Note A
6000 KC	Range D	400 ohm	6000 KC	Antenna Lead	6000 KC (C8)	Turn Rotor to Max. Output	Adjust to Maximum Output 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.

Power Consumption - 67 Watts (At 117 volts 60 cycles)
Power Output - 2.5 Watts Undistorted
Selectivity - 28 KC Broad at 1000 times Signal (Sharp)
Intermediate Frequency - 456 KC.

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.



PROCEDURE FOR SETTING THE AUTOMATIC LEVERS:
 There are six levers on the dial by means of which six stations may be selected. (See "B", Fig. 2).
 Press down any one of the six levers. Holding it down, tune in by means of tuning knob No. 3 any one of your favorite stations. Turn the tuning knob very slowly back and forth until signal is clearest. The station will then be accurately tuned in. Adjust the volume by means of the volume control knob to the desired intensity.
 Release this lever and press down any other lever. Hold this lever down and tune in by means of knob No. 3 another favorite station.
 Follow this procedure until stations have been set on all the levers.
 Rotate the tuning knob (No. 3) to the right (clockwise) as far as it will turn. Now remove from the right side of the cabinet the metal button, and with a screw driver inserted between the button and the tuning knob, turn the tuning knob clockwise until the tuning screw is turned until it is ABSOLUTELY TIGHT. This screw will lock in place all the stations you have selected on the levers. (Note: "Reset Lock Screw" 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 "5" four or five complete turns; select the new station as explained. (Note: If the reset locking screw is not loosened when setting up a new station for one of the automatic tuning levers, the reset locking screw will be too tight. Loosen the reset locking screw "5" until the dial mechanism works freely with the tuner lever pressed down).

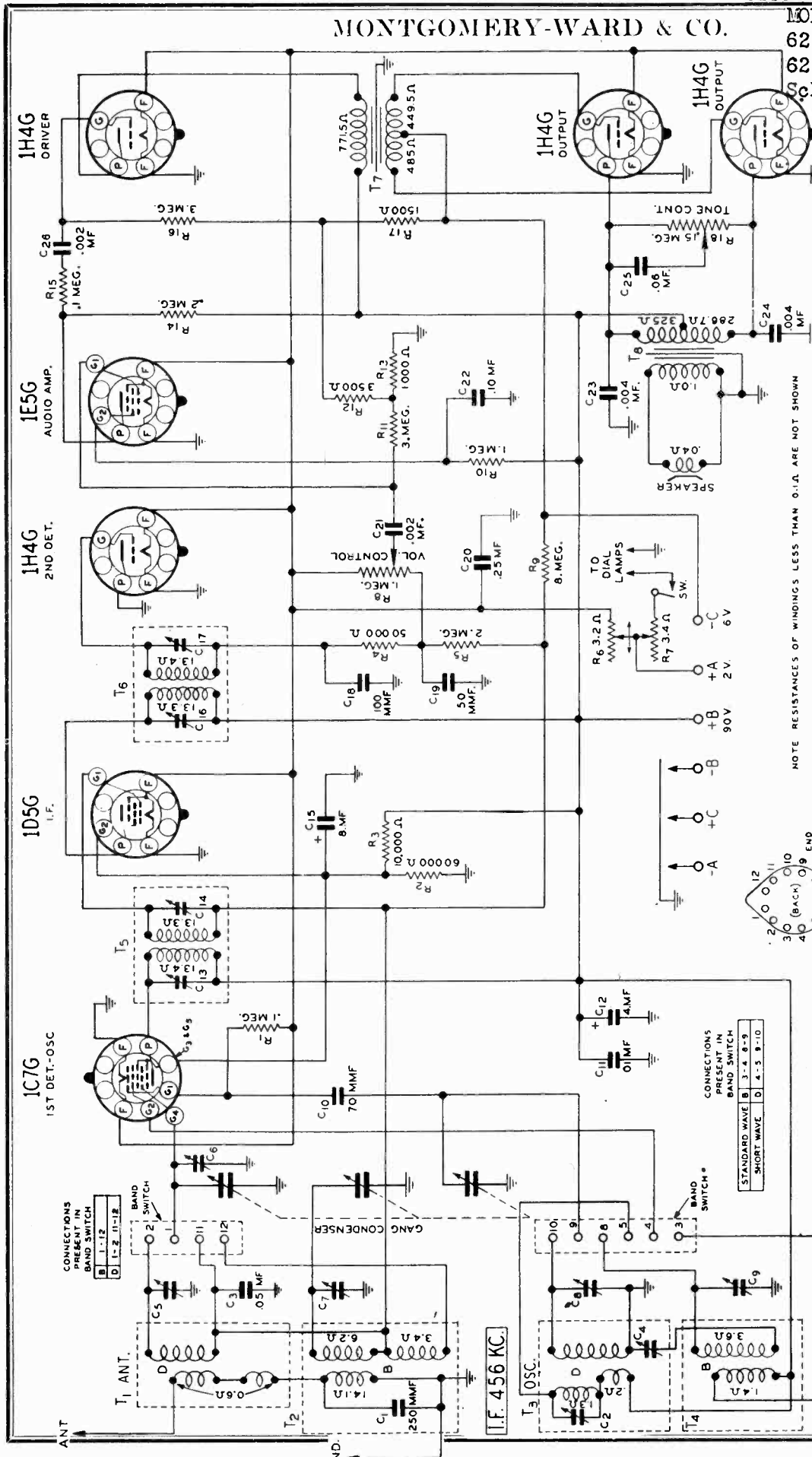
BE SURE TO RTIGHTEN THE RESET LOCK SCREW, otherwise the stations will not stay adjusted to the levers.
 Above each lever an opening in the cabinet is provided for inserting station call letters. (See "A", Fig. 2).
 Punch the correct station call letter tabs from the set of sheets supplied and insert them into the rectangular openings in the cabinet above each of the levers. One of the small, clear celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):
 Part No. 108-83B Output I.F. Transformer
 Part No. 108-82B Input I.F. Transformer
 These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).
 1. With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 (a) Connect external oscillator set at 465 kilocycles, in series with a 200 mmf. condenser and adjust the control grid I.F. transformer (No. 108-83B) to resonance.
 (b) Move oscillator output clip from grid of (57G) to grid of 6A8C and adjust input I.F. transformer (No. 108-82B) to resonance.
 (c) With oscillator still connected to 6A8C, readjust output I.F. transformer (108-83B) if necessary.

MODELS 62-434 AND 62-435
DUMMY ANTENNAS:
 The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1", "Dummy 2", and "Dummy 3".
 Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.
 Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser and a 200 ohm resistor connected in series with each other and in series with the external oscillator.
 Dummy 3: (Short Wave)—Consists of a .1 mfd. condenser and a 500 ohm resistor connected in series with each other and in series with the external oscillator.

ALIGNING I. F. TRANSFORMERS: (465 K.C.):
 Part No. 108-79C Output I. F. Transformer
 Part No. 108-78C Interstage I. F. Transformer
 Part No. 108-116 Input I.F. Transformer
 These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1 Top View).
 1. With volume control full on (the extreme right of its rotation), the band changing switch in the broadcast position (denser left of its rotating), and with the variable condenser set to minimum capacity (plates out of mesh), make the following adjustments:
 (a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1", to the control grid cap of the type transformer (No. 108-79C) to resonance.
 (b) With "Dummy 1" still connected, move oscillator output clip from grid of (D57G) to grid of (D57C) and adjust interstage I.F. transformer (No. 108-78C) to resonance.
 (c) Move oscillator to grid cap of (C7G) and adjust input I.F. transformer (No. 108-116).

SHORT WAVE BAND ALIGNMENT:
55 to 181 Mcgacycles
 1. With band changing switch in the short wave position, extreme right of its rotation, and with external oscillator set at 17 megacycles and connected in series with "Dummy 3", to the antenna and ground leads, make the following adjustments:
 (a) Move dial pointer to 17 megacycles and adjust short wave oscillator trimmer to resonance.
 This adjustment is the trimmer mounted on the top of front section of the variable gang condenser. (see Fig. 1, top view).
 (b) Adjust short wave antenna trimmer (Adjustment "Z") to resonance (see Fig. 3, bottom view).
BROADCAST BAND ALIGNMENT:
535 to 1750 Kilocycles
 1. With band changing switch in the broadcast position, extreme left of its rotation, and with external oscillator connected in series with "Dummy 2", to antenna and ground leads, make following adjustments:
 (a) Set external oscillator and dial on radio to 1400 K.C. and adjust broadcast oscillator trimmer to resonance. (Adjustment "Y"), (see bottom view of Chassis, Fig. 3). Tune gang condenser slowly back and forth while making this adjustment.
 (b) Reset external oscillator to 600 K.C. and adjust broadcast series pad adjustment "X" to resonance by rotating condenser to approximately 600 K.C.; rock the tuning series pad adjustment "X" until maximum output is obtained. This adjustment is made on the front flange of the chassis. (See bottom view of chassis, Fig. 3).
 (c) Reset adjustment "u" and "v" until sensitivity is at its maximum, also check to see that radio tunes to 1750 K.C.
 (d) Check for tracking and sensitivity at 1400, 1000, and 600 kilocycles. Under no circumstances bend plates of variable condenser sections to correct tracking.



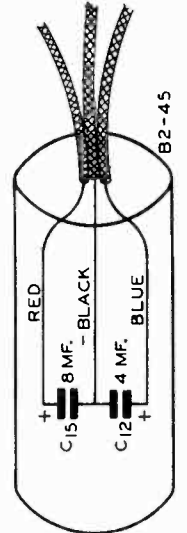
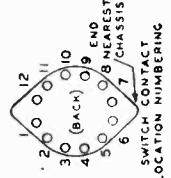
NOTE RESISTANCES OF WINDINGS LESS THAN 0.1 Ω ARE NOT SHOWN

MAY, 1937

Speaker - 6" P.M. Dynamic-Mantel Models
8" P.M. Dynamic-Console Models

Tuning Frequency Range
B Range 528 to 1730 KC
D Range 5750 to 18300 KC

Sensitivity
B Range 13.5 Microvolts Average
D Range 21.0 Microvolts Average



GROUPS OF ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPREHEND MECHANICAL ASSEMBLIES.

Input Voltages and Currents
"A" Battery 2 Volts—48 Amperes
"B" Batteries 90 Volts—13 to 23.0 Ma.
"C" Battery 5 Volts

Power Output
360 Milliwatts Undistorted
725 Milliwatts Maximum

Selectivity - - 35 KC Broad at 1000 times Signal

MODELS 62-377, 62-387, 62-477 MONTGOMERY-WARD & CO.
62-487, 62-607, 62-617

Socket, Trimmer, Alignment
Coils, Voltage, Dial Drive Data

ALIGNMENT PROCEDURE

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

The following equipment is required for aligning:
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter; Non-Metallic Screwdriver.
Dummy Antennas — .1 mf., 200 mmf., and 400 ohms.

STEP (Follow Order as Given)	BAND SWITCH SETTING	DUMMY ANTENNA	SIGNAL GENERATOR		TRIMMERS ADJUSTED See Illustration	PROCEDURE	
			FREQUENCY SETTING	CONNECTION AT RADIO		INITIAL STEPS	ADJUSTMENT
I.F.	Range B	.1 mf.	456 KC	Grid of 1st Det.	1st I.F. (C13) & (C14) 2nd I.F. (C16) & (C17)	Turn Rotor to Full Open	Adjust to Maximum Output
RANGE B	Range B	200 mmf.	1730 KC	Antenna Lead	Oscillator Range B (C9)	Turn Rotor to Full Open	Adjust to Maximum Output
1730 KC	Range B	200 mmf.	1730 KC	Antenna Lead	1st Ant. Range B (C7) 2nd Ant. Range B (C6)	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note A	Adjust to Maximum Output
1500 KC	Range B	200 mmf.	1500 KC	Antenna Lead	600 KC (C4)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor—See Note B
600 KC	Range B	200 mmf.	600 KC	Antenna Lead	Oscillator Range D (C8)	Turn Rotor to Full Open	Adjust to Maximum Output
RANGE D	Range D	400 Ohm	18300 KC	Antenna Lead	Ant. Range D (C5)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor—See Note B
18300 KC	Range D	400 Ohm	18300 KC	Antenna Lead	6000 KC (C2)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor—See Note B
15000 KC	Range D	400 Ohm	15000 KC	Antenna Lead			
6000 KC	Range D	400 Ohm	6000 KC	Antenna Lead			

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.

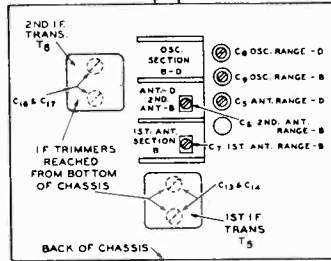
After alignment of Range D has been completed, do not make any adjustments of the Range B trimmers. If this is done, it will be necessary to realign Range D.

NOTE A—In sets using the finger tip tuning dial, remove the retaining ring which holds the dial scale in position. Reposition rotor to maximum output. Hold the station selector ring and turn the dial scale until the pointer is at the 1500 KC mark. Replace the retaining ring.

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

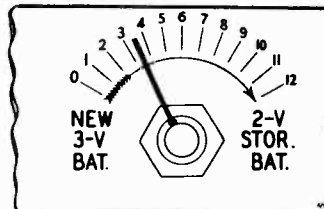
CAUTION—When aligning the short wave band be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal,

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.
C₉ 8000 KC C₄ 600 KC

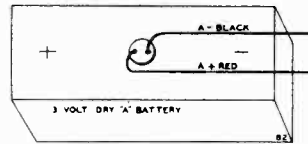


Location of Trimmers

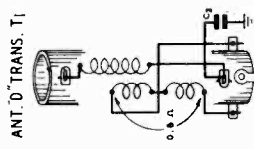
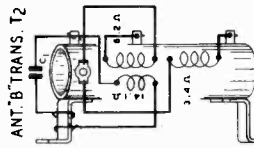
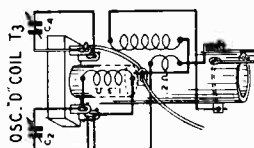
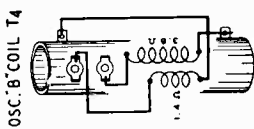
"A" Battery Voltage Regulator



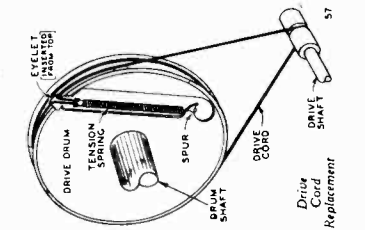
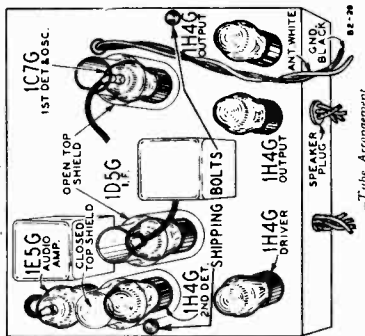
3 V Bru "A" Battery Connection



Then bring the cord up from drive shaft pulley and place it on the drum rim in front of the cord already on. When this is done, hook the free end of the tension spring on the spur provided for it on the drive drum.



NOTE: RESISTANCES OF WINDINGS LESS THAN 1.0 Ω ARE NOT SHOWN
Coil Terminal Arrangement and D.C. Resistance of Windings



VOLTAGES AT SOCKETS

Volume Control: Maximum
Readings taken with 1000 Ohm-per-volt meter.

TUBE	FUNCTION	VOLTAGE BETWEEN SOCKET PRONG AND GROUND (Unless otherwise indicated)					
		Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7
1C7G	1st Det.—Osc.	0	90	66		90	Control Grid Bias
1D5G	I.F.	0	90	66		2	
1H4G	2nd Det.	0	0			2	
1E5G	Audio Amp.	0	40(1)			2	1.0 Across R13
1H4G	Driver	0	89			2	4.5 Across R12 & R13
1H4G	Output	0	90		6	2	—C to Ground

(1) As read on 1000 volt scale.

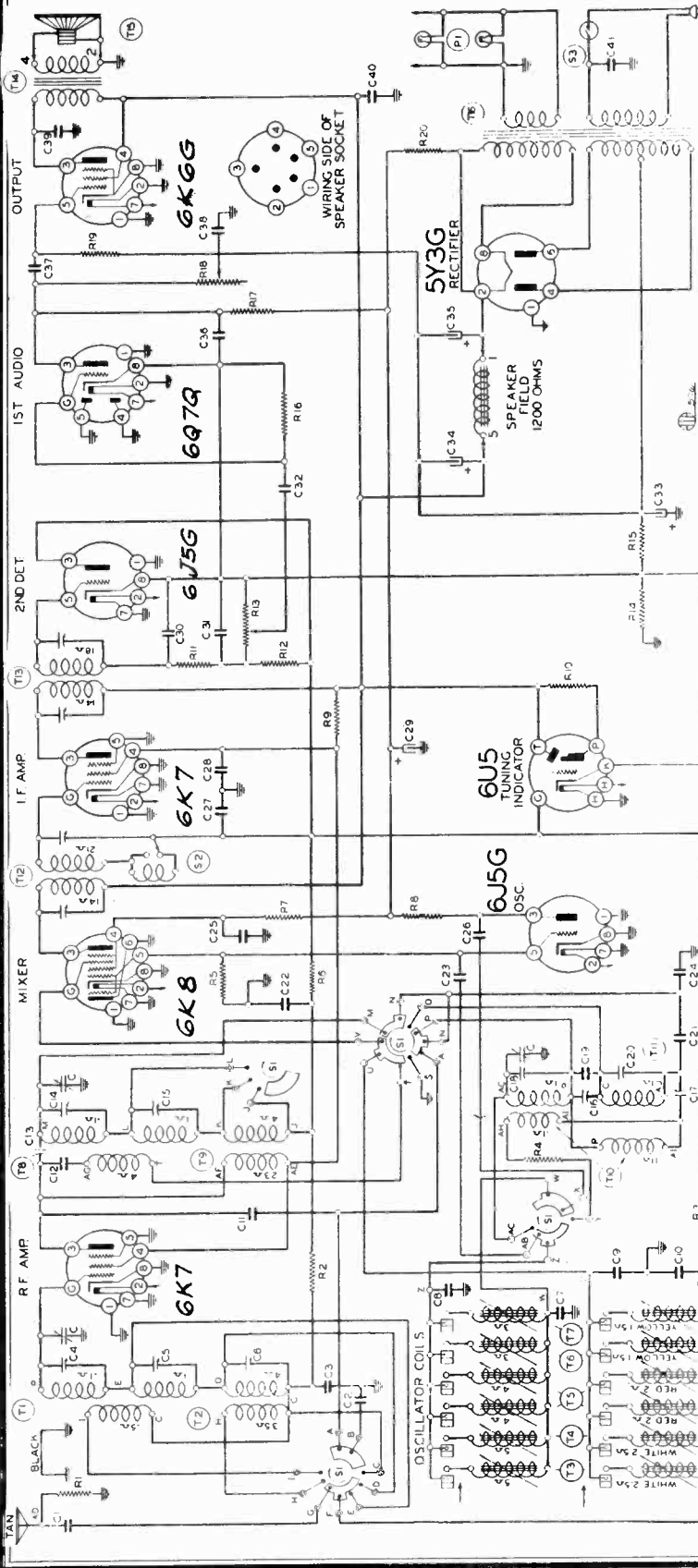
rim. Be sure that the cord is also placed through the small brass eyelet. Pull the cord through as far as it will go.
Bring the looped cord out and over the finger tip dial ring in such a manner that the loop encircles the drum shaft.
Take one side of the looped cord and make one complete revolution on the drum rim clockwise in

Replacing Drive Cord
Remove the old drive cord and spring. Rotate the dial until the condenser is completely closed.
The both ends of the new drive cord to one end of the spring. The length from the knot to the end of the cord loop should be exactly 12 inches.
Place the loop end of the cord through the hole in the drive drum rim from underneath the drum

MONTGOMERY-WARD & CO. MODELS 62-390, 62-490, 62-900

Schematic, Socket, Trimmer Voltage, Parts

Broadcast **Upper Scale** **535 to 1720 KC. (Kilocycles)**
Middle Wave **Center Scale** **1.69 to 5.6 MC. (Megacycles)**
Short Wave **Lower Scale** **5.5 to 18.0 MC (Megacycles)**



RESISTORS

BE10074	.1 x 400 v.
BE10075	.02 x 600 v.
BE10076	.02 x 400 v.
BE10077	.25 x 400 v.
BE10078	12 mid. 350 w. v. lyric
BE10079	.0005 mica
BE10080	.0005 mica
BE10081	.0005 mica
BE10082	.0005 mica
BE10083	.0005 mica
BE10084	.0005 mica
BE10085	.0005 mica
BE10086	.0005 mica
BE10087	.0005 mica
BE10088	.0005 mica
BE10089	.0005 mica
BE10090	.0005 mica
BE10091	.0005 mica
BE10092	.0005 mica
BE10093	.0005 mica
BE10094	.0005 mica
BE10095	.0005 mica
BE10096	.0005 mica
BE10097	.0005 mica
BE10098	.0005 mica
BE10099	.0005 mica
BE10100	.0005 mica
BE10101	.0005 mica
BE10102	.0005 mica
BE10103	.0005 mica
BE10104	.0005 mica
BE10105	.0005 mica
BE10106	.0005 mica
BE10107	.0005 mica
BE10108	.0005 mica
BE10109	.0005 mica
BE10110	.0005 mica
BE10111	.0005 mica
BE10112	.0005 mica
BE10113	.0005 mica
BE10114	.0005 mica
BE10115	.0005 mica
BE10116	.0005 mica

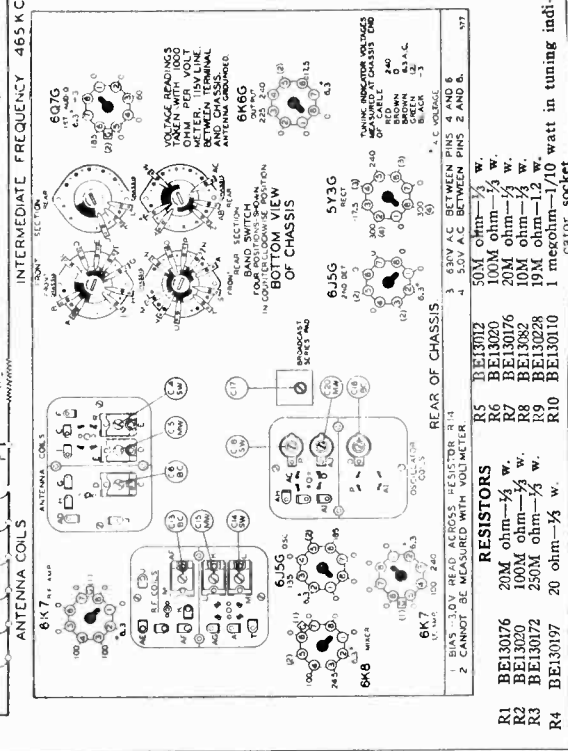
CONDENSERS

BE10276	3 .002 x 400 v.
BE10025	.02 x 600 v.
BE10026	.05 mica
BE129103	SW. Antenna Adj. Trimmer
BE129104	MV. Antenna Adj. Trimmer
BE129105	BC. Antenna Adj. Trimmer
BE129106	BC. Antenna Adj. Trimmer
BE129107	BC. Antenna Adj. Trimmer
BE129108	BC. Antenna Adj. Trimmer
BE129109	BC. Antenna Adj. Trimmer
BE129110	BC. Antenna Adj. Trimmer
BE129111	BC. Antenna Adj. Trimmer
BE129112	BC. Antenna Adj. Trimmer
BE129113	BC. Antenna Adj. Trimmer
BE129114	BC. Antenna Adj. Trimmer
BE129115	BC. Antenna Adj. Trimmer
BE129116	BC. Antenna Adj. Trimmer
BE129117	BC. Antenna Adj. Trimmer
BE129118	BC. Antenna Adj. Trimmer
BE129119	BC. Antenna Adj. Trimmer
BE129120	BC. Antenna Adj. Trimmer
BE129121	BC. Antenna Adj. Trimmer
BE129122	BC. Antenna Adj. Trimmer
BE129123	BC. Antenna Adj. Trimmer
BE129124	BC. Antenna Adj. Trimmer
BE129125	BC. Antenna Adj. Trimmer
BE129126	BC. Antenna Adj. Trimmer
BE129127	BC. Antenna Adj. Trimmer
BE129128	BC. Antenna Adj. Trimmer
BE129129	BC. Antenna Adj. Trimmer
BE129130	BC. Antenna Adj. Trimmer
BE129131	BC. Antenna Adj. Trimmer
BE129132	BC. Antenna Adj. Trimmer
BE129133	BC. Antenna Adj. Trimmer
BE129134	BC. Antenna Adj. Trimmer
BE129135	BC. Antenna Adj. Trimmer
BE129136	BC. Antenna Adj. Trimmer
BE129137	BC. Antenna Adj. Trimmer
BE129138	BC. Antenna Adj. Trimmer
BE129139	BC. Antenna Adj. Trimmer
BE129140	BC. Antenna Adj. Trimmer
BE129141	BC. Antenna Adj. Trimmer
BE129142	BC. Antenna Adj. Trimmer
BE129143	BC. Antenna Adj. Trimmer
BE129144	BC. Antenna Adj. Trimmer
BE129145	BC. Antenna Adj. Trimmer
BE129146	BC. Antenna Adj. Trimmer
BE129147	BC. Antenna Adj. Trimmer
BE129148	BC. Antenna Adj. Trimmer
BE129149	BC. Antenna Adj. Trimmer
BE129150	BC. Antenna Adj. Trimmer

PARTS

BE11104	SW. MW.—Antenna Coil
BE11105	BC. Antenna Coil
BE11106	P. B. Tuner—L. F. Coil
BE11107	P. B. Tuner—M. F. Coil
BE11108	P. B. Tuner—H. F. Coil
BE11109	P. B. Tuner—H. F. Coil
BE11110	P. B. Tuner—H. F. Coil
BE11111	P. B. Tuner—H. F. Coil
BE11112	P. B. Tuner—H. F. Coil
BE11113	P. B. Tuner—H. F. Coil
BE11114	P. B. Tuner—H. F. Coil
BE11115	P. B. Tuner—H. F. Coil
BE11116	P. B. Tuner—H. F. Coil
BE11117	P. B. Tuner—H. F. Coil
BE11118	P. B. Tuner—H. F. Coil
BE11119	P. B. Tuner—H. F. Coil
BE11120	P. B. Tuner—H. F. Coil
BE11121	P. B. Tuner—H. F. Coil
BE11122	P. B. Tuner—H. F. Coil
BE11123	P. B. Tuner—H. F. Coil
BE11124	P. B. Tuner—H. F. Coil
BE11125	P. B. Tuner—H. F. Coil
BE11126	P. B. Tuner—H. F. Coil
BE11127	P. B. Tuner—H. F. Coil
BE11128	P. B. Tuner—H. F. Coil
BE11129	P. B. Tuner—H. F. Coil
BE11130	P. B. Tuner—H. F. Coil
BE11131	P. B. Tuner—H. F. Coil
BE11132	P. B. Tuner—H. F. Coil
BE11133	P. B. Tuner—H. F. Coil
BE11134	P. B. Tuner—H. F. Coil
BE11135	P. B. Tuner—H. F. Coil
BE11136	P. B. Tuner—H. F. Coil
BE11137	P. B. Tuner—H. F. Coil
BE11138	P. B. Tuner—H. F. Coil
BE11139	P. B. Tuner—H. F. Coil
BE11140	P. B. Tuner—H. F. Coil
BE11141	P. B. Tuner—H. F. Coil
BE11142	P. B. Tuner—H. F. Coil
BE11143	P. B. Tuner—H. F. Coil
BE11144	P. B. Tuner—H. F. Coil
BE11145	P. B. Tuner—H. F. Coil
BE11146	P. B. Tuner—H. F. Coil
BE11147	P. B. Tuner—H. F. Coil
BE11148	P. B. Tuner—H. F. Coil
BE11149	P. B. Tuner—H. F. Coil
BE11150	P. B. Tuner—H. F. Coil

FOR TUNER, SEE INDEX



MODELS 62-390, 62-490, 62-900

Alignment

MODELS 62-401, 62-1100

Trimmers, Alignment

MONTGOMERY-WARD & CO.

Transformers are available and chassis are sometimes equipped with universal transformers for operation on 24, 40 and 60 cycles and with primary taps for 110, 130, and 230 volts, (see parts list).

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.

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

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

MODELS 62-390, 62-490 and 62-900

NOTE—On the back of the string dial drum a calibrated scale is provided for aligning this chassis to the frequencies listed in the alignment procedure. Attach a pointer so that it will indicate proper dial setting in respect to the position of the variable condenser.

ALIGNMENT PROCEDURE

- Tone control—in sharp position.
- Volume control—Maximum all adjustments.
- Connect radio chassis 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 mfd., 200 mmf., and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7	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 6K8	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1720 Kc.	200 mmf.	Antenna lead	Broadcast	Rotor full open (Plates out of mesh)	Trimmer (C16) (See Fig. 3)	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast	Set dial at 1400 Kc.	Trimmer (C6, C13) (See Fig. 3)	Broadcast antenna and R. F.	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast	Set dial at 600 Kc.	Trimmer (C17) (See Fig. 3)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
SHORT WAVE BAND	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Set dial at 17 MC	Trimmer (C18) (See Fig. 3)	Short wave oscillator	Adjust to maximum output
	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Dial set at 17 MC	Trimmer (C4, C14) (See Fig. 3)	Short wave antenna and R. F.	Adjust to maximum output
MIDDLE WAVE BAND	5 Mc.	400 ohms	Antenna lead	Middle Wave	Set dial at 5 MC	Trimmer (C20) (See Fig. 3)	Middle wave oscillator	Adjust to maximum output
	5 Mc.	400 ohms	Antenna lead	Middle Wave	Dial set at 5 MC	Trimmer (C3, C15) (See Fig. 3)	Middle wave antenna and R. F.	Adjust to maximum output

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

BAND FREQUENCY RANGE

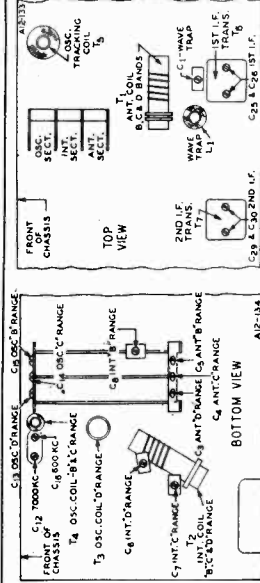
Broadcast	535 to 1720 KC
Middlewave	1.69 to 5.6 MC
Short Wave	5.5 to 18.0 MC

Power Consumption—80 Watts (At 115 volts 50-60 cycles)
 Power Output—3 Watts Undistorted, 5 Watts Maximum
 Selectivity—40 KC Broad at 100 KC, 1000 Times Signal Strength
 Intermediate Frequency—465 KC

ALIGNMENT PROCEDURE MODEL 62-401

The following equipment is required for aligning:
 An All Wave Signal Generator which will provide an accurately calibrated signal of the test frequencies as listed.
 Output Indicating Meter—Non-Metallic Screwdriver, Dummy Antennas—.1 mfd., 200 mmf., and 400 ohms.

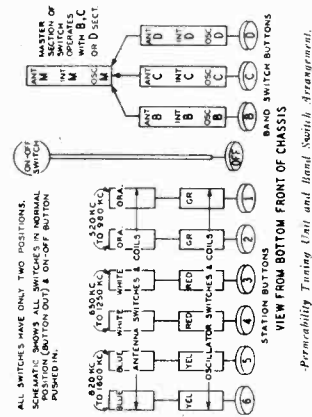
SIGNAL GENERATOR FREQUENCY SETTING	DUMMY ANTENNA	CONNECTION AT RADIO	BUTTON DEPRESSED	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (Unless otherwise specified)
I. F.	.1 mfd.	Grid of 1F Tube	B Range	Turn Rotor to Full Open	2nd I.F. (C27) & (C20)
	.1 mfd.	Grid of 1F Tube	B Range	Turn Rotor to Full Open	1st I.F. (C25) & (C26)
RANGE B					
1830 KC	200 mmf.	Antenna Lead	B Range	Turn Rotor to Full Open	Oscillator Range B (C15)
1500 KC	200 mmf.	Antenna Lead	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC—See Note A	Ant. Range B (C5)
600 KC	200 mmf.	Antenna Lead	B Range	Turn Rotor to Max. Output	600 KC (C16) Rock Rotor—See Note B
WAVE TRAP					
456 KC	200 mmf.	Antenna Lead	B Range	Turn Rotor to 600 KC Adjust Sig. Gen.—See Note C	Wave Trap (C1) Adjust for MINIMUM Output
RANGE C					
6350 KC	400 Ohm	Antenna Lead	C Range	Turn Rotor to Full Open	Oscillator Range C (C14)
6000 KC	400 Ohm	Antenna Lead	C Range	Turn Rotor to Max. Output	Ant. Range C (C4)
RANGE D					
22,000 KC	400 Ohm	Antenna Lead	D Range	Turn Rotor to Full Open	Oscillator Range D (C13)
20,000 KC	400 Ohm	Antenna Lead	D Range	Turn Rotor to Max. Output	Ant. Range D (C3) Int. Range D (C6) Rock Rotor—See Note B
7000 KC	400 Ohm	Antenna Lead	D Range	Turn Rotor to Max. Output	7000 KC (C17) Rock Rotor—See Note B
PERMEABILITY TUNING UNIT					
700 KC	200 mmf.	Antenna Lead	No. 1	Setting Screw No. 1	Antenna Coil No. 1
700 KC	200 mmf.	Antenna Lead	No. 2	Setting Screw No. 2	Antenna Coil No. 2
850 KC	200 mmf.	Antenna Lead	No. 3	Setting Screw No. 3	Antenna Coil No. 3
850 KC	200 mmf.	Antenna Lead	No. 4	Setting Screw No. 4	Antenna Coil No. 4
1100 KC	200 mmf.	Antenna Lead	No. 5	Setting Screw No. 5	Antenna Coil No. 5
1100 KC	200 mmf.	Antenna Lead	No. 6	Setting Screw No. 6	Antenna Coil No. 6



CAUTION—When aligning the short wave band, be sure NOT to adjust at the range of 5000 KC. The signal will then be heard at 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio, the inphase signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC on the dial. This may be the inphase signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC on the dial. NOTE—Re-alignment is necessary if glass tubes are replaced by their equivalent in metal tubes, or vice versa, in the R. F. and I. F. stages.

MONTGOMERY-WARD & CO.

MODELS 62-401, 62-1100
Schematic, Coils, Socket
Specifications, Phono.
Turner



Voltagess at Sockets

The voltages at sockets are shown on the schematic circuit diagram. Unless otherwise specified, the voltage indicated is between the socket terminal and ground.

These voltages are read under the following conditions:

- Line Voltage—117.
- Volume Control—Maximum.
- Antenna Shorted to Ground.
- Readings taken with 1000 ohm-per-volt meter.

Phonograph Connections

Phonograph connections are made as shown in the schematic circuit diagram. On the back panel of the chassis base is a round knockout $1\frac{1}{4}$ inches in diameter. An octal base socket is then mounted in this knockout opening.

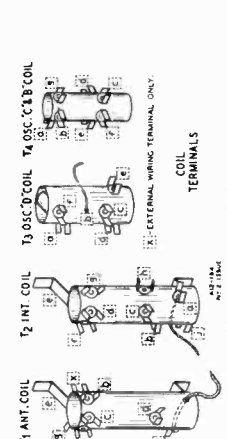
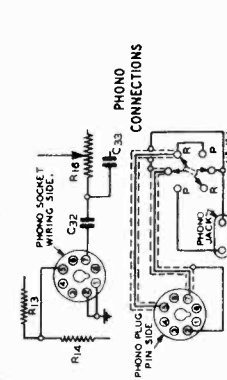
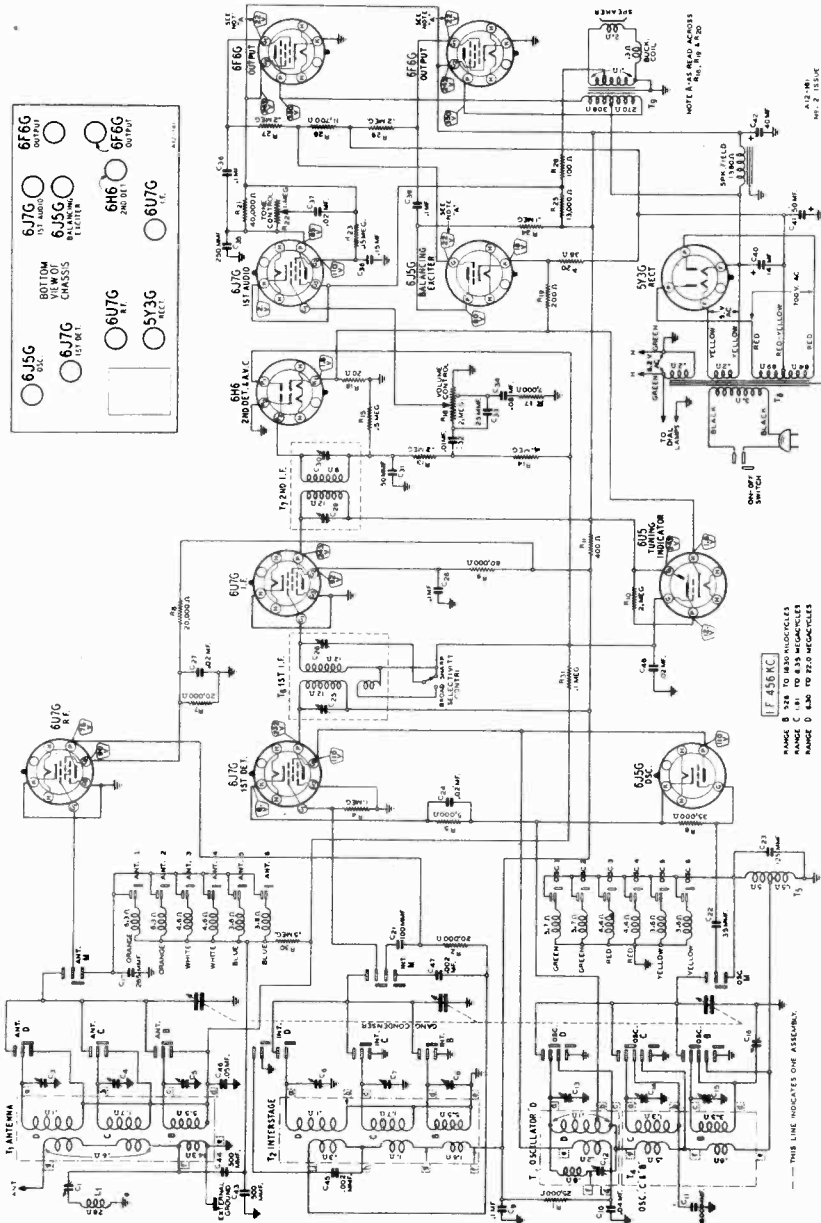
A phono cable assembly may then be purchased (See parts list). On one end of this cable is an octal plug and on the other end is a phonograph-radio switch and double tip jack.

ATTACHING DIAL POINTER

Tune in a 1500 KC signal. Move the pointer to the 1500 KC mark on the dial and clamp it tightly over the fabric tubing on the eord.

Twenty-Five Cycle Models

The twenty-five cycle receiver differs from the sixty cycle receiver only in the fact that a different power transformer is used.



JUNE, 1938

11 TUBE • 3 BAND • ALL WAVE
WITH AUTOMATIC TUNING

Intermediate Frequency 456 KC.

Speaker 12" Dynamic

Tuning Frequency Range

B Range (Manual Tuning)	528 to 1830 KC
C Range (Automatic Tuning)	530 to 2550 KC
D Range (Manual Tuning)	530 to 2550 KC
Buttons 1 & 2 (Automatic Tuning)	530 to 800 KC
Buttons 3 & 4 (Automatic Tuning)	850 to 1250 KC
Buttons 5 & 6 (Automatic Tuning)	820 to 1600 KC

Power Consumption - 100 Watts (A117 volt 60 cycles)

Power Output 8.5 Watts Undistorted
..... 11.0 Watts Maximum

Selectivity 32 KC Broad at 1000 times Signal

Sensitivity (Sharp)

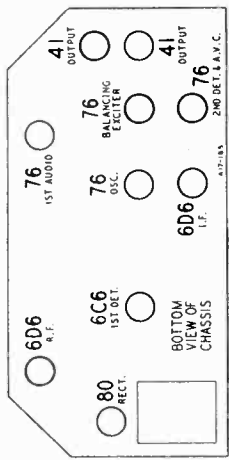
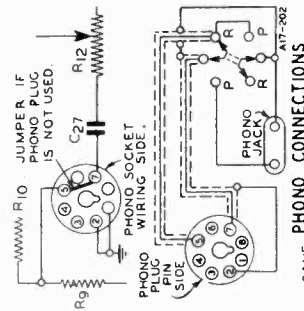
B Range (Manual Tuning)	2.0 Microvolts Average
C Range (Automatic Tuning)	2.0 Microvolts Average
D Range	4.0 Microvolts Average

MODELS 62-402, 62-1101

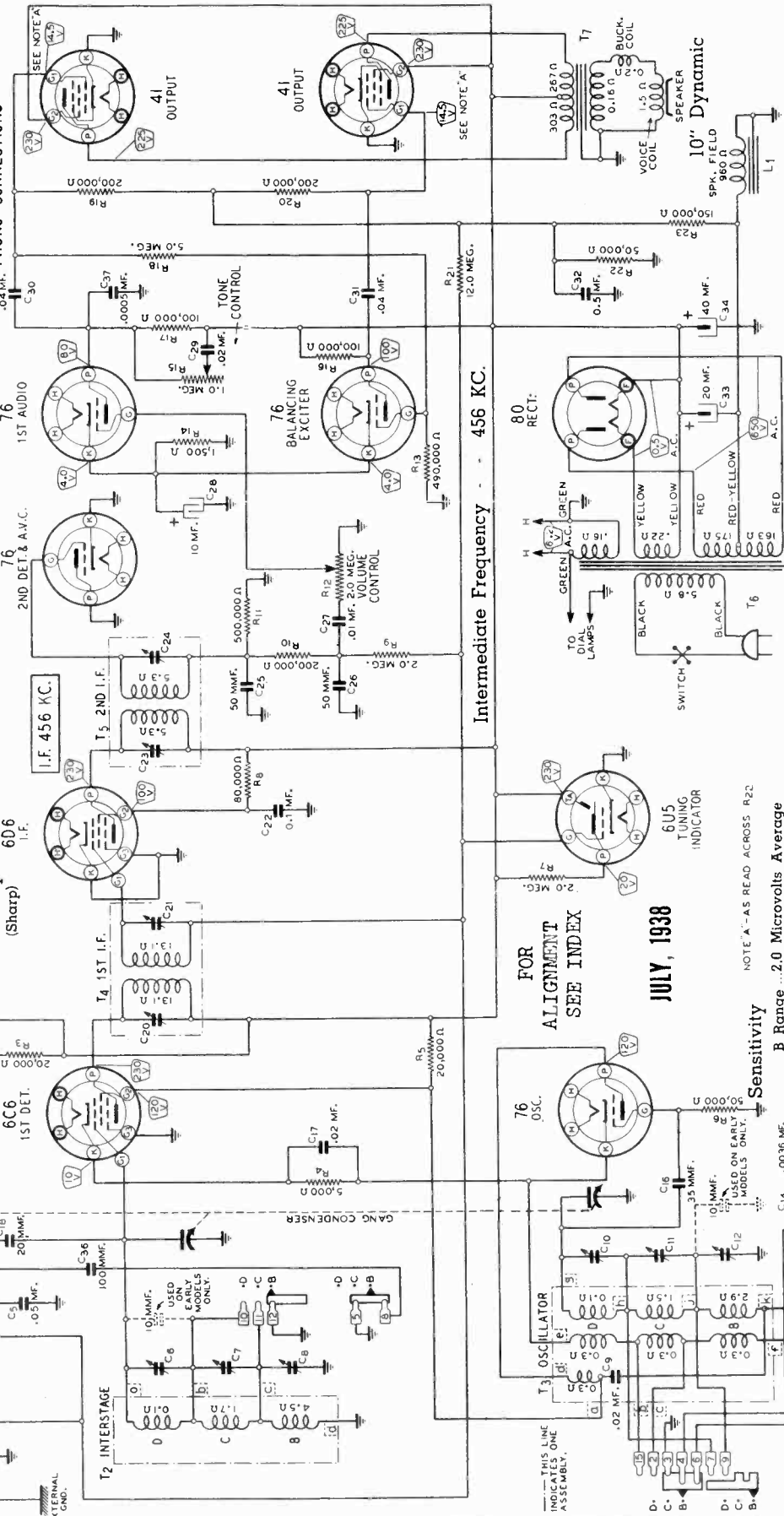
Schematic, Voltage Socket Phono.

MONTGOMERY-WARD & CO.

RANGE B 528 TO 1,600 KILOCYCLES.
 RANGE C 1,585 TO 5,400 KILOCYCLES.
 RANGE D 5,350 TO 18,300 KILOCYCLES.



Power Output
 Selectivity (Sharp)
 5.0 Watts Undistorted
 5.5 Watts Maximum
 32 KC Broad at 1000 times Signal
 I.F. 456 KC.



Intermediate Frequency - 456 KC.

FOR ALIGNMENT SEE INDEX
 JULY, 1938

Sensitivity
 B Range ... 2.0 Microvolts Average
 C Range ... 3.0 Microvolts Average
 D Range ... 8.0 Microvolts Average

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

MONTGOMERY-WARD & CO.

MODEL 62-425
Schematic, Voltage
Alignment, Parts

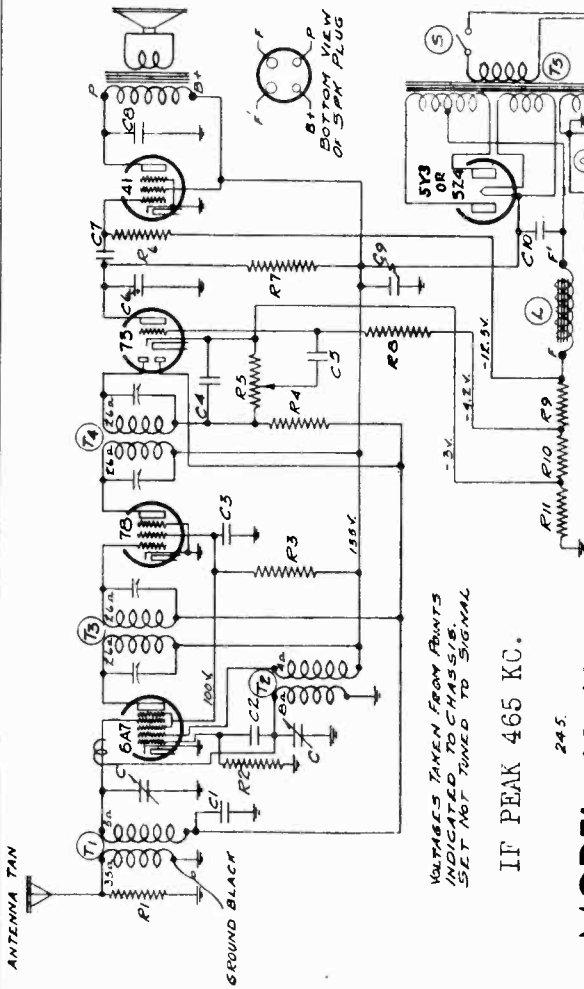
TUBES:

The Tube complement of this chassis is as follows:
1 Type 6A7—pentagrid oscillator and first detector.
1 Type 78 —remote cut-off pentode as I.F. amplifier.

1 Type 75 —duplex diode triode as diode detector, A.V.C. and A.F.
1 Type 41 —pentode output tube.
1 Type 5Z4 or 5Y3—high vacuum rectifier.

R. F. ALIGNMENT: (535-1720 K. C.)

- With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 200 mmf. condenser to an antenna and black ground leads and make the following adjustments:
 - With external oscillator set at 1720 kilocycles, adjust oscillator trimmer (rear of gang condenser).
 - Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance (front section of gang condenser).
 - Check sensitivity at 600 and 1000 kilocycles.



IF PEAK 465 KC.

245.

MODEL 62-425
Frequency Range — 535 - 1720 Kilocycles

Part No.	Schematic Reference	Description	No. Used In Set	Selling Price Ea.
BE 101-34	R-5	Volume Control and Switch 1 meg ohm	1	.34
BE 102-33	C	Two Gang Variable Condenser	1	1.30
BE 107-39		Line Cord & Plug	1	.20
BE 131-2		Bakelite Knob	1	.06
BE 131-8		Spring for above knob	1	.01
DIAL PARTS LIST				
BE 107-28		Pilot Light Socket	1	.04
BE 112-15		Dial Crystal only—less eucutcheon	1	.04
BE 112-160		Dial Pointer Complete with screw	1	.10
BE 112-164		Bakelite Eucutcheon complete with crystal	1	.15
BE 112-167A		Dial Scale	1	.08
BE 116-13		6.8 Volt, T-51 Pilot Light Bulb	1	.03
BE 117-59		Pointer Bushing Stud	1	.01
BE 117-60		Pointer Bushing Assembly	1	.10
BE 117-61		Drive Pulley	1	.05
BE 117-68		Dial Bracket	1	.02
BE 120-7A		Take-up Spring	1	.05
BE 131-52		Drive Belt	1	.02
BE 134-9		Horse Shot Washer	1	.01

Note: Speakers cannot be ordered, defective speakers must be repaired.
All resistors and mica condensers are RMA color coded—specify value and/or resistor or condenser (per schematic diagram) and model number.
Mica condensers are coded with an additional dot indicating tolerance:
Tolerance Percent
2 1/2% White
5% Green
10% Blue
20% Yellow
30% Red
More than—20% None
When ordering condensers, specify part number, tolerance and/or schematic reference number.
When ordering parts, always specify part and model number as well as serial number of chassis.
Form 5900 1590 8-16

ALIGNING INSTRUCTIONS:
CAUTION:—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltages, defective tubes, condensers and resistors. In order to properly align this chassis, an oscillator (generator) is absolutely necessary. No aligning adjustments should be attempted with the chassis in the cabinet. Remove the knobs and the two bolts which are used to fasten the chassis.
All adjustments should be made with a non-metallic screw driver.

RESONANCE INDICATOR:
Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 41 output tube. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range voltmeter should be used.

ALIGNING I. F. TRANSFORMERS: (465 K. C.)
Connect external oscillator which has been adjusted to 465 kilocycles in series with .1 mfd. condenser, to the control grid cap of the type 6A7 tube. Ground the chassis to the oscillator. Adjust output I.F. transformer (No. 108-88) and input I.F. transformer (No. 108-82) to resonance. See label on bottom of cabinet for location of these transformers.

LIST OF REPAIR PARTS (Serial No. 6F275000 and up)

Part No.	Schematic Reference	Description	No. Used In Set	Selling Price Ea.
BE 100-11	C-5;C-7	.01 x 400 Volt Tubular	2	\$0.09
BE 100-19	C-8	.006 x 600 Volt Tubular	1	.09
BE 100-20	C-1	.1 x 200 Volt Tubular	1	.11
BE 100-22	C-1	.05 x 200 Volt Tubular	1	.10
BE 119-24	C-9;C-10	Dual 5 mfd. x 200 Volt Electrolytic	1	.74
BE 129-5	C-6	.0001 Mica—Type MT—20%	1	.09
BE 129-12	C-2;C-4	.00025 Mica—Type MT—20%	2	.12
BE 106-29	R-9;R-10;	(R9, 200 ohm); (R10, 33 ohm); (R11, 100 ohm)	1	.16
BE 130-17	R-11	10M Ohm-1/3 Watt-20% 20 V. Carbon	1	.08
BE 130-22	R-3	5M Ohm-1/3 Watt-20% 10 V. Carbon	1	.06
BE 130-117	R-2	50M Ohm-1/10 Watt-20% 50 V. Carbon	1	.06
BE 130-118	R-6	600M Ohm-1/3 Watt-20% 100 V. Carbon	1	.06
BE 130-121	R-4;R-8	3.2 Meg Ohm-1/3 Watt-30% 100 V. Carbon	2	.06
BE 130-122	R-7	210 Ohm-1/10 Watt-30% 20% 50 V. Carbon	1	.06
BE 108-82	T3	Input I.F. Coil Assem. Comp. with Can.	1	.60
BE 108-83	T4	Output I.F. Coil Assem. Comp. with Can.	1	.60
BE 110-46	T2	Oscillator Coil Assem. Complete.	1	.30
BE 111-58	T1	Antenna Coil Assem. Complete.	1	.36
BE 121-6	L	Six Prong Socket—Marked "41"	1	.09
BE 121-6	L	Six Prong Socket—Marked "75"	1	.09
BE 121-6	L	Six Prong Socket—Marked "78"	1	.09
BE 121-7	L	Seven Prong Socket—Marked "6A7"	1	.10
BE 121-9	L	Four Prong Socket—Marked "SPKR"	1	.08
BE 121-16	L	Five Prong Socket—Marked "5Z4" (Octal)	1	.08
BE 114-42	L	Five Inch Dynamic Speaker	1	2.70
BE 104-60	T5	TRANSFORMERS		
BE 104-64	T5	50-60 Cycle—105-115 Volt Power Trans.	1	1.34
BE 104-67	T5	25 Cycle—105-115 Volt Power Trans.	1	2.33
BE 104-67	T5	25 Cycle—Universal Power Transformer	1	3.00

MODELS 62-434, 62-435
Schematic, Voltage, Parts
Socket, Trimmers

MONTGOMERY-WARD & CO.

The tube complement of this chassis consists of the following tubes.

The type and function of each tube is as follows:

- 1—Type 1C7G Pentagrid Mixer, First Detector-oscillator
- 1—Type 1D5G Remote Cut-Off Pentode, 1st I.F. Amplifier (465 K. C.)
- 1—Type 1D5G Remote Cut-Off Pentode, 2nd I.F. Amplifier (465 K. C.)
- 1—Type 1F7G Duplex Diode Pentode Second Detector, A. V. C. and First Audio.
- 1—Type 1G5G Pentode Output Amplifier.

Voltagcs 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.

All voltages as indicated on diagram, are measured with a new set of batteries.

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.

The approximate current consumption is as follows: "A"—420 ma., "B"—16 ma.

FOR ALIGNMENT AND TUNER, SEE INDEX

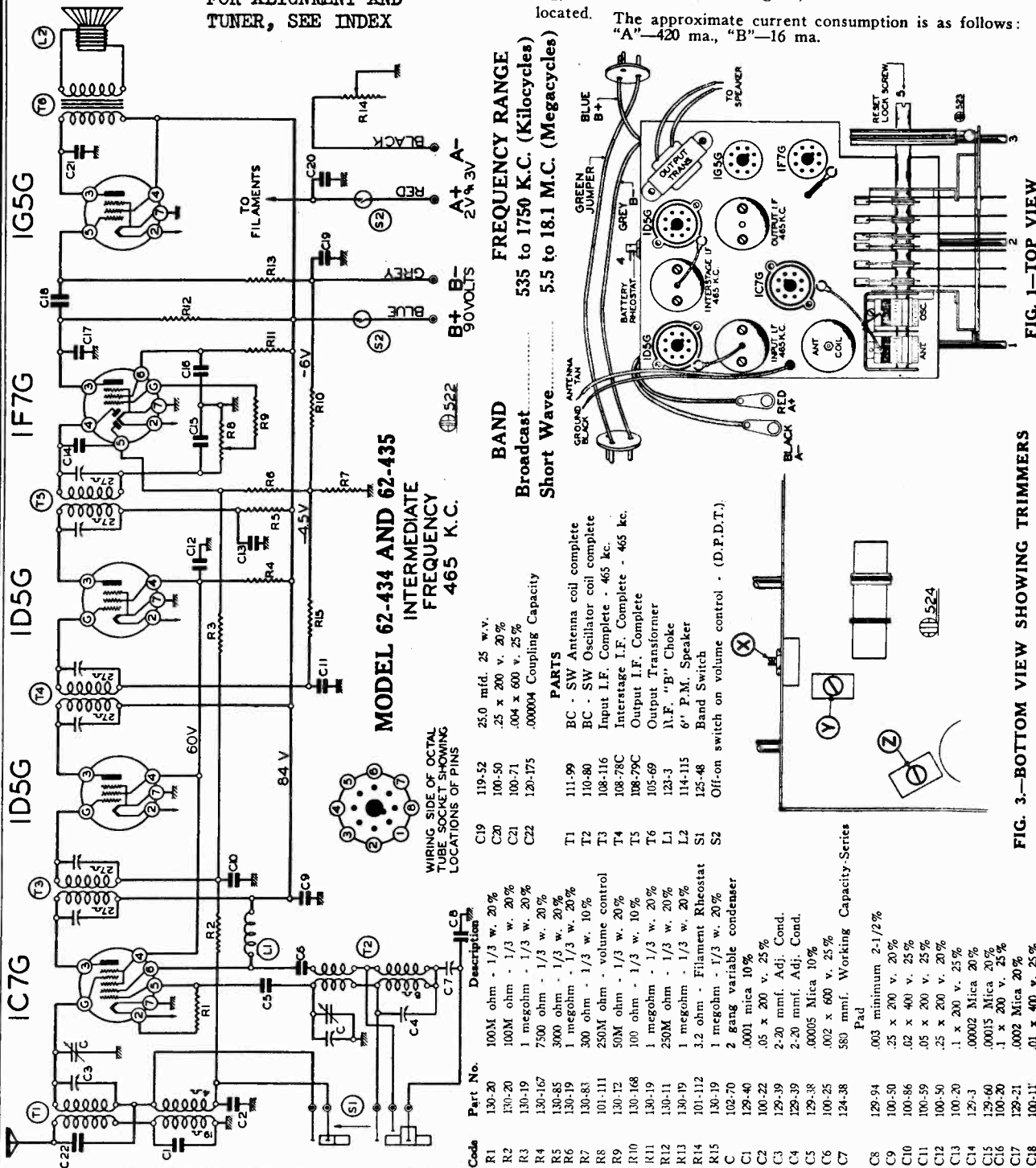


FIG. 1—TOP VIEW

FIG. 3—BOTTOM VIEW SHOWING TRIMMERS

MONTGOMERY-WARD & CO.

MODEL 62-403
Schematic, Voltage
Socket, Alignment Notes

ALIGNMENT

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

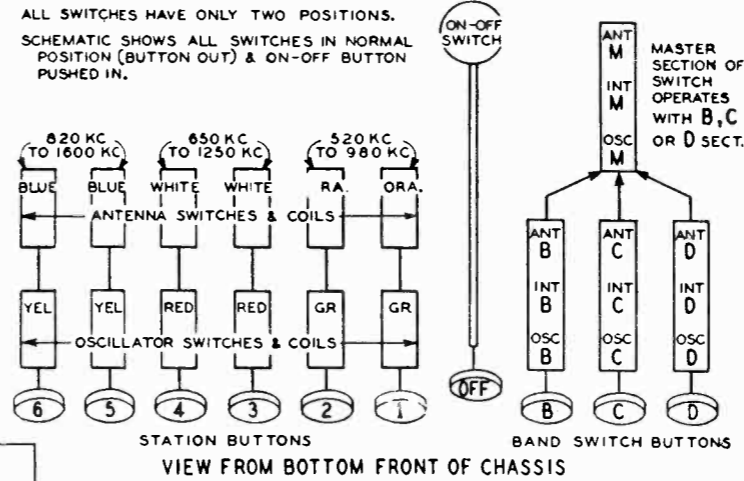
After each range is completed, repeat the procedure as a final check.

NOTE A—Hold the tuning knob and turn the film drum until it is at the 1500 KC mark on the dial.

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

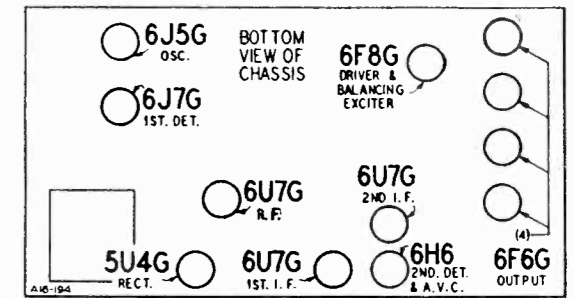
NOTE C—At the bottom of the permeability tuning unit can be seen six "W" openings. Insert the end of a pair of long nose pliers or a screwdriver in the "W" opening of the proper button and adjust the position of the antenna (rear) coil by twisting the pliers or screwdriver until maximum output is

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows:



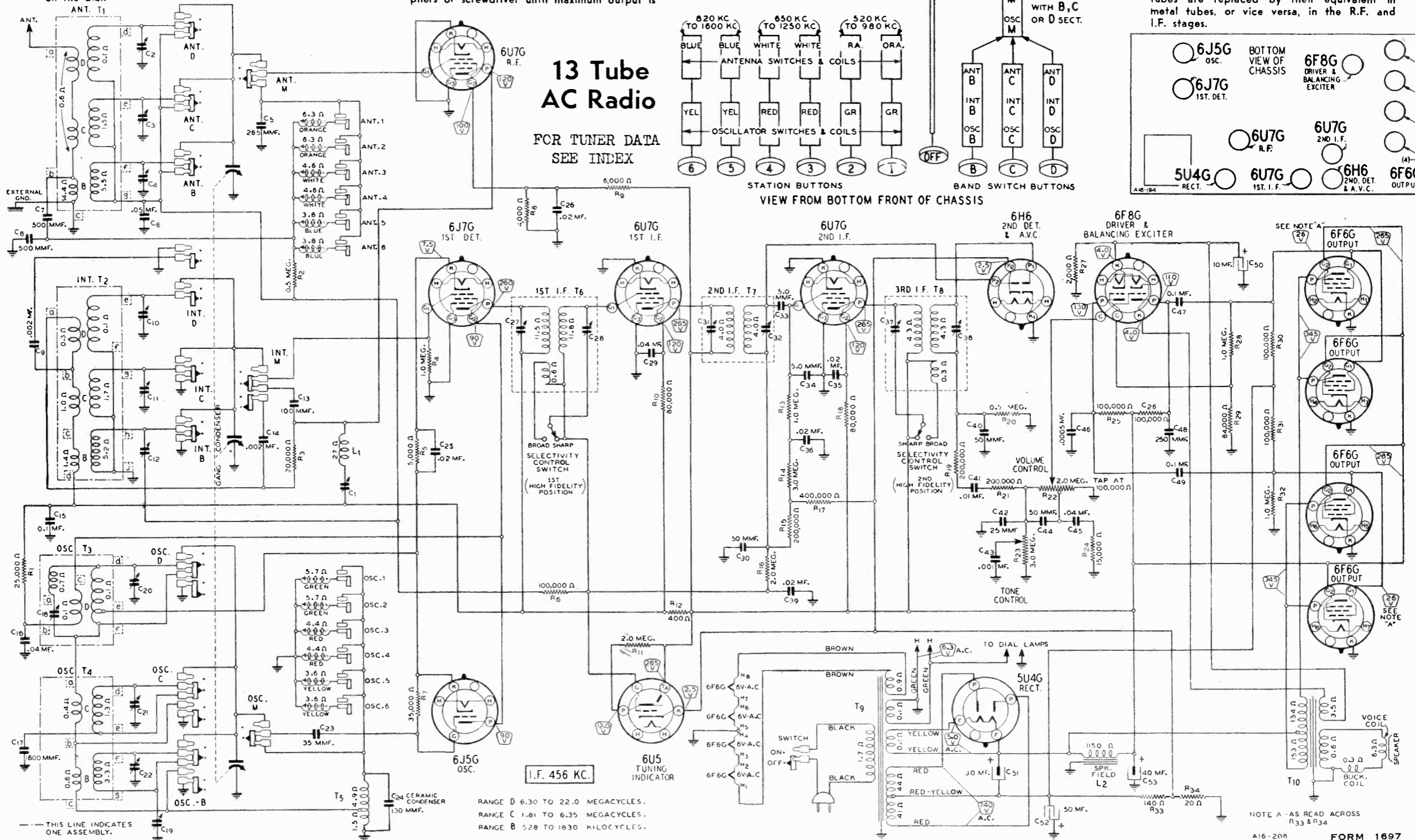
Let us say the signal generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC on the dial. It may be necessary to increase the input signal to hear the image.

NOTICE—Re-alignment is necessary if glass tubes are replaced by their equivalent in metal tubes, or vice versa, in the R.F. and I.F. stages.



13 Tube AC Radio

FOR TUNER DATA SEE INDEX



RANGE D 6.30 TO 22.0 MEGACYCLES.
RANGE C 1.81 TO 6.35 MEGACYCLES.
RANGE B 528 TO 1830 KILOCYCLES.

NOTE A—AS READ ACROSS R33 & R34

FORM 1697

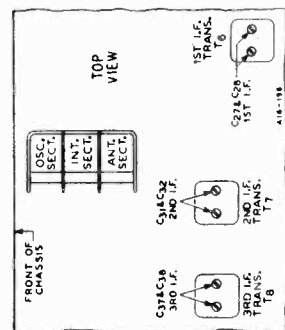
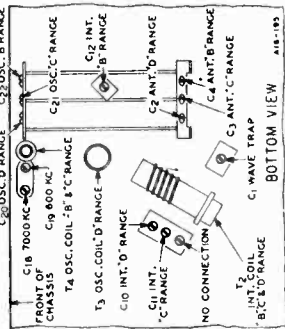
MONTGOMERY-WARD & CO.

MODEL 62-403 Trimmers, Alignment MODELS 62-315, 62-415 Alignment

MODEL 62-403

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments. An All Wave Signal Generator which will provide a Selectivity Control—Sharp Position All Adjustments. Output Indicating Meter—Non-Metallic Screwdriver. Allow Chassis and Signal Generator to "Heat Up" for several minutes.



Model 62-403

SHORT WAVE OSCILLATOR ADJUSTMENT:

With band switch in the short wave band position, extreme right of its rotation, and with the gang condenser in its minimum capacity position, plates entirely out of mesh, and with the external oscillator connected in series with "Dummy 1" to grid cap of the 6A7 tube, make the following adjustment:

- (a) Set external oscillator to 6.6 megacycles and adjust short wave oscillator trimmer to resonance. This adjustment is marked "S.W. Osc." (see top view of chassis, Fig. 1, for location of this adjustment).

NOTE: Make certain that the fundamental 6.6 megacycles signal has been tuned in and not the image frequency, noting that the image appears when the tuning knob is moved to approximately 5.7 megacycles.

BROADCAST BAND OSCILLATOR ADJUSTMENT:

- 1. With band switch in the broadcast position, extreme left of its rotation, and with the gang condenser in its minimum capacity position, plates entirely out of mesh, and with external oscillator connected in series with "Dummy 1" to grid cap of the 6A7 tube, make the following adjustments:

- (a) Set external oscillator to 1720 K.C. and adjust broadcast oscillator trimmer to resonance. This adjustment is the trimmer mounted on the front section of the variable gang condenser.

BROADCAST BAND ANTENNA ADJUSTMENT:

- 1. With the band switch still in the broadcast position, move the external oscillator from the grid cap of the 6A7 tube to the antenna lead and black ground lead, in series with "Dummy 2" and make the following adjustments:

- (a) Set external oscillator to 1550 K.C., rotate variable gang condenser and pick up signal. Adjust broadcast antenna trimmer to resonance. This adjustment is marked "B.C. Ant." (See top view of chassis, Fig. 1, for location of this adjustment).
- (b) Re-set external oscillator to 600 K.C. and adjust broadcast series pad to resonance by rotating condenser to approximately 600 K.C., rocking it slowly to and fro until, by adjusting series pad, maximum output is attained. This adjustment is located on the top of the chassis directly in front of the antenna coil. (See top view of chassis, Fig. 1).
- (c) Repeat adjustments "a" and "b" until sensitivity is at its maximum.

SHORT WAVE BAND ANTENNA ADJUSTMENT:

- 1. With the band switch in the short wave position, and with external oscillator connected in series with "Dummy 3" to the antenna lead and black ground lead, make following adjustment:

- (a) Set external oscillator to 6 megacycles and adjust the short-wave antenna trimmer to resonance. This adjustment is the trimmer mounted on the rear section of the variable gang condenser.

MODELS 62-315 and 62-415

SHORT WAVE OSCILLATOR ADJUSTMENT:

With band switch in the short wave band position, extreme right of its rotation, and with the gang condenser in its minimum capacity position, plates entirely out of mesh, and with the external oscillator connected in series with "Dummy 1" to grid cap of the 6A7 tube, make the following adjustment:

- (a) Set external oscillator to 6.6 megacycles and adjust short wave oscillator trimmer to resonance. This adjustment is marked "S.W. Osc." (see top view of chassis, Fig. 1, for location of this adjustment).

NOTE: Make certain that the fundamental 6.6 megacycles signal has been tuned in and not the image frequency, noting that the image appears when the tuning knob is moved to approximately 5.7 megacycles.

BROADCAST BAND OSCILLATOR ADJUSTMENT:

- 1. With band switch in the broadcast position, extreme left of its rotation, and with the gang condenser in its minimum capacity position, plates entirely out of mesh, and with external oscillator connected in series with "Dummy 1" to grid cap of the 6A7 tube, make the following adjustments:

- (a) Set external oscillator to 1720 K.C. and adjust broadcast oscillator trimmer to resonance. This adjustment is the trimmer mounted on the front section of the variable gang condenser.

BROADCAST BAND ANTENNA ADJUSTMENT:

- 1. With the band switch still in the broadcast position, move the external oscillator from the grid cap of the 6A7 tube to the antenna lead and black ground lead, in series with "Dummy 2" and make the following adjustments:

- (a) Set external oscillator to 1550 K.C., rotate variable gang condenser and pick up signal. Adjust broadcast antenna trimmer to resonance. This adjustment is marked "B.C. Ant." (See top view of chassis, Fig. 1, for location of this adjustment).
- (b) Re-set external oscillator to 600 K.C. and adjust broadcast series pad to resonance by rotating condenser to approximately 600 K.C., rocking it slowly to and fro until, by adjusting series pad, maximum output is attained. This adjustment is located on the top of the chassis directly in front of the antenna coil. (See top view of chassis, Fig. 1).
- (c) Repeat adjustments "a" and "b" until sensitivity is at its maximum.

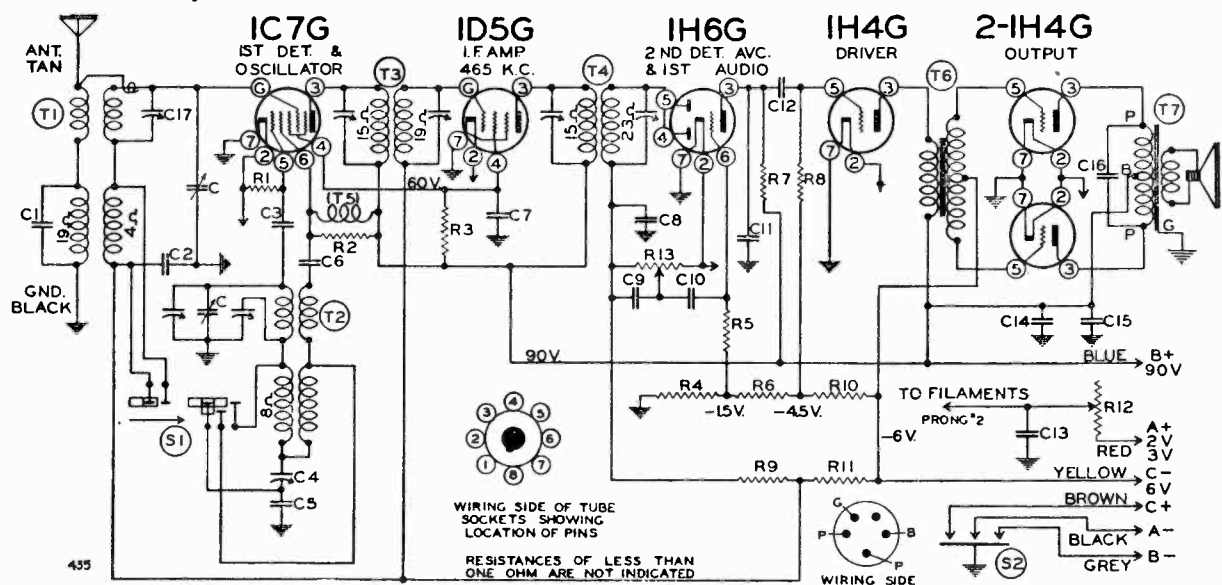
SHORT WAVE BAND ANTENNA ADJUSTMENT:

- 1. With the band switch in the short wave position, and with external oscillator connected in series with "Dummy 3" to the antenna lead and black ground lead, make following adjustment:

- (a) Set external oscillator to 6 megacycles and adjust the short-wave antenna trimmer to resonance. This adjustment is the trimmer mounted on the rear section of the variable gang condenser.

MODELS 62-506, 62-516 Schematic, Voltage Socket, Trimmers, Parts

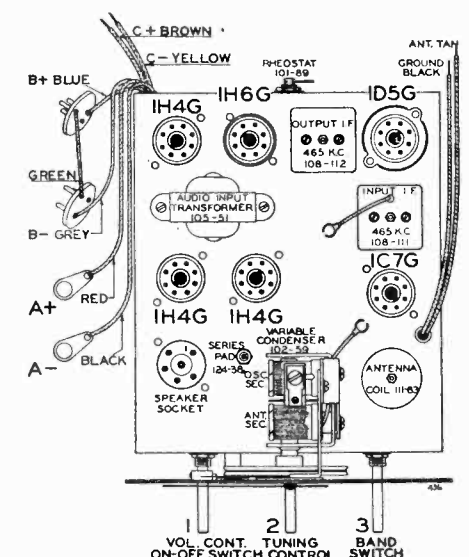
MONTGOMERY-WARD & CO.



LIST OF REPAIR PARTS (Serial No. 7J837000 and up) USE ONLY GENUINE FACTORY REPLACEMENT PARTS

Table with columns: Bin No., Part No., Schematic Reference, Description, No. Selling used price in set each, Bin No., Part No., Schematic Reference, Description, No. Selling used price in set each. Includes sections for CONDENSERS, RESISTORS, COILS, SOCKETS, SPEAKERS, and MISCELLANEOUS.

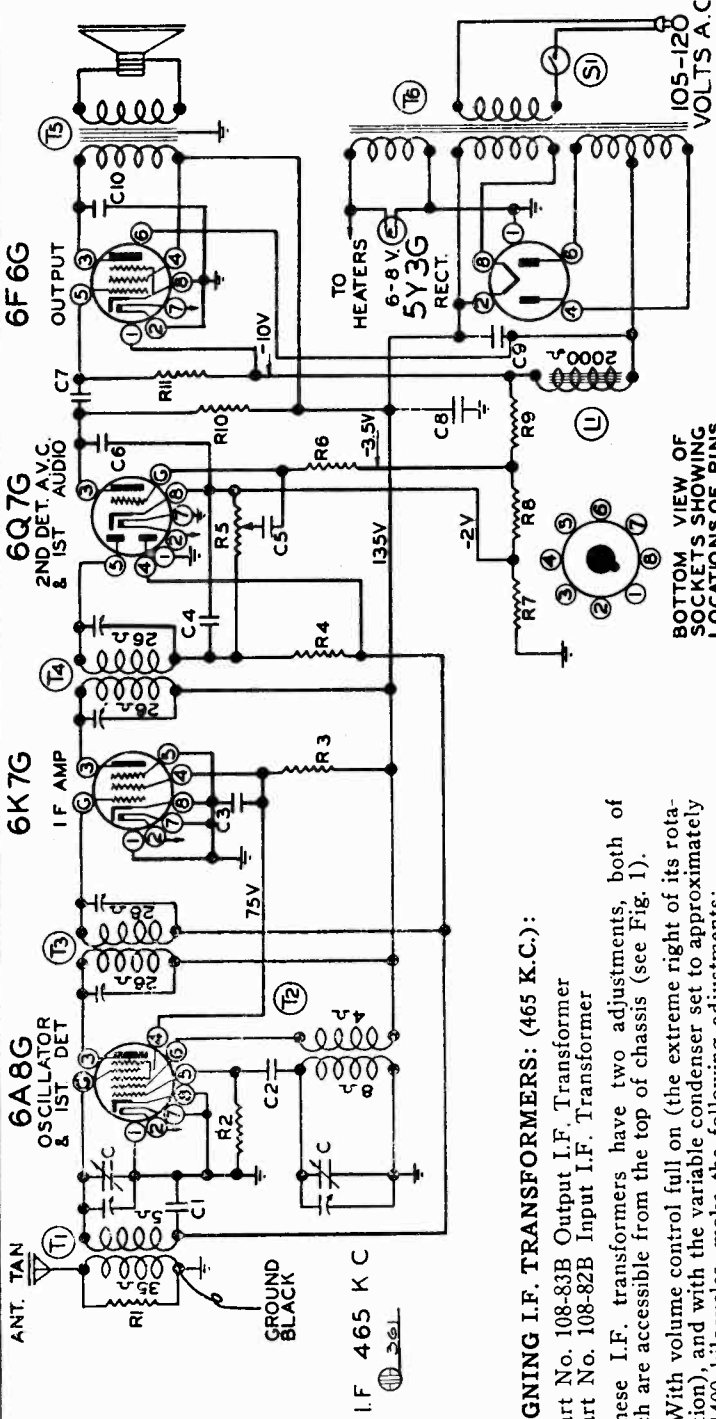
FOR ALIGNMENT, SEE INDEX



MONTGOMERY WARD & CO.

MODELS 62-445, 62-455
62-475
Schematic, Socket
Voltage, Trimmers
Alignment, Parts

No.	Part No.	Description	C10	100-19	006 x 600 v. C8 and C9 in one unit	25% R10	130-9	200M ohm — 1/3 w. 20%
CONDENSERS								
	102-49	2 Gang Variable					130-118	600M ohm — 1/3 w. 20%
	100-9	.05 x 200 v.	25% R1	130-17	10M ohm — 1/3 w. 20%			R7, R8 and R9 in one unit.
	129-12	.00025 Mica	20% R2	130-12	50M ohm — 1/3 w. 20%			
	100-1	.1 x 400 v. —50	10% R3	130-149	15M ohm — 1/3 w. 20%	T1	111-58B	PARTS
	129-5	.0001 Mica	20% R4	130-170	3 megohm — 1/3 w. 25%	T2	110-46	Antenna Coil Complete
	100-11	.01 x 400 v.	25% R5	101-77	1 megohm volume control	T3	108-82B	Oscillator Coil Complete
	129-2	.0005 Mica	20% R6	130-170	3 megohm — 1/3 w. 25%	T4	108-83B	Input I.F. Complete
	100-11	.01 x 400 v.	25% R7	106-35	65 ohm	T5	114-72	Output I. F. Complete
	119-38	5.0 x 200 vv. lytic	R8	106-35	45 ohm	T6	104-100	5" Dynamic Speaker
	119-38	5.0 x 250 vv. lytic	R9	106-35	220 ohm	L1		Power Transformer
						S1		Speaker Field (2000 ohm) Switch on Volume Control



MODELS 62-475, 62-445 and 62-455
Frequency Range — 535 - 1720 Kilocycles

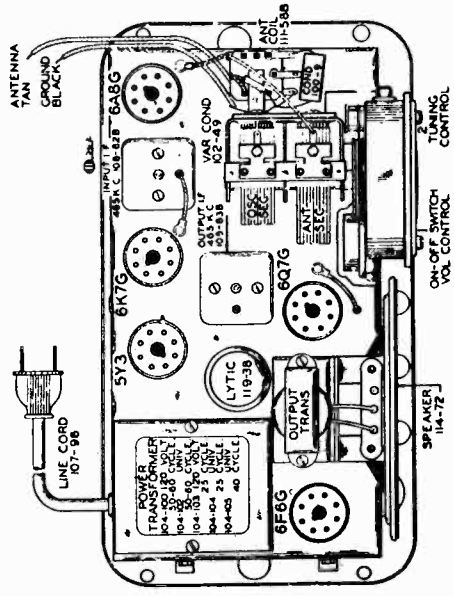


FIG. 1—TOP VIEW

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-83B Output I.F. Transformer
Part No. 108-82B Input I.F. Transformer
These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

1. With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 - (a) Connect external oscillator set at 465 kilocycles, in series with .1 mfd condenser, to the control grid cap of the type 6K7G tube, and adjust the output I.F. transformer (No. 108-83B) to resonance.
 - (b) Move oscillator output clip from grid of 6K7G to grid of 6A8G and adjust input I.F. transformer (No. 108-82B) to resonance.
 - (c) With oscillator still connected to 6A8G, readjust output I.F. transformer (108-83B) if necessary.

R.F. ALIGNMENT: (535-1720 K.C.)

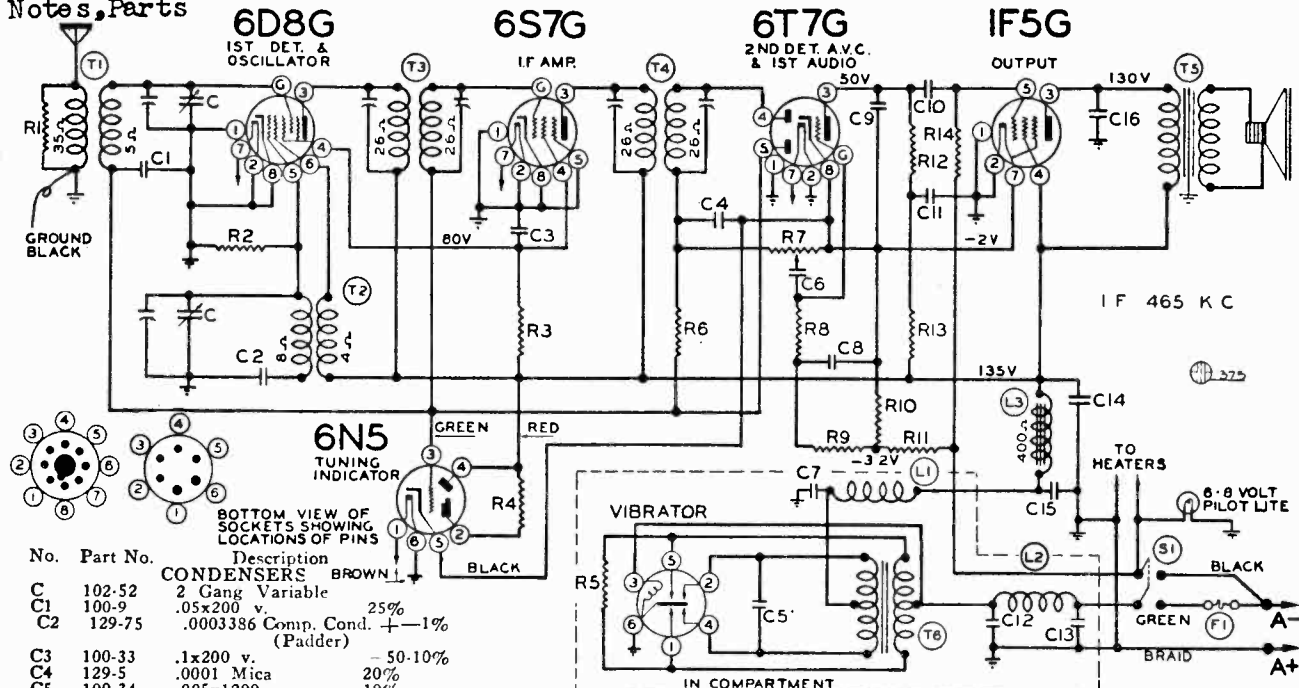
1. With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 200 mmf. condenser to the antenna lead and chassis ground and make the following adjustments:
 - (a) With external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance. This adjustment is on the top of rear section of variable gang condenser. (See Fig. 1).
 - (b) Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
 - (c) Check sensitivity at 600 and 1000 kilocycles.

MODEL 62-465

Schematic, Voltage
Socket, Trimmers

MONTGOMERY-WARD & CO.

Notes, Parts



No.	Part No.	Description	Tolerance
C	102-52	2 Gang Variable	
C1	100-9	.05x200 v.	25%
C2	129-75	.0003386 Comp. Cond. (Padder)	+ -1%
C3	100-33	.1x200 v.	-50-10%
C4	129-5	.0001 Mica	20%
C5	100-34	.005x1200	10%
C6	100-11	.01x400	25%
C7	100-33	.1x200	-50-10%
C8	100-11	.01x400	25%
C9	129-12	.00025 Mica	20%
C10	100-11	.01x400	25%
C11	100-33	.1x200 v.	-50-10%
C12	100-40	.5x200	20%
C13	100-40	.5x200	20%

No.	Part No.	Description	Tolerance
C14	119-40	5.0 lytic 200 w. v.	
C15	119-40	5.0 lytic 200 w. v.	
C16	100-37	.003x600 v.	10%

C14 and C15 in same unit.

No.	Part No.	Description	Tolerance
R1	130-17	10M 1/3	20%
R2	130-12	50M 1/3	20%
R3	130-149	15M 1/3	20%

No.	Part No.	Description	Tolerance
R4		250M in tuning indicator socket	
R5	130-84	200 ohm — 1/3 w.	20%
R6	130-4	3 meg 1/3	20%
R7	101-80	1 meg volume control	
R8	130-19	1 meg — 1/3	20%
R9	130-19	1 meg — 1/3	20%
R10	106-40	10 ohm	
R11	106-40	21 ohm	
R12	130-100	150M ohm—1/3 w.	20%
R13	130-20	100M ohm—1/3 w.	20%
R14	130-19	1 meg — 1/3 w.	20%

R10 and R11 in same unit.

TUBES:

The tube complement of this chassis consists of the following Octal Base Glass Tubes:

- The type and function of each tube is as follows:
- 1—Type 6D8G or 6A8G Pentagrid Mixer, First Detector-oscillator.
- 1—Type 6S7G Remote cut-off R.F. Pentode, I.F. Amplifier (465 K.C.)
- 1—Type 6T7G Duplex Diode Triode Second Detector, A.V.C. and First Audio.
- 1—Type 1F5G Output Amplifier.
- 1—Type 6N5 Cathode-Ray Tuning Eye.

MODEL 62-465

SERVICE NOTES:

Voltage 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.

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 and insulating sleeve has been properly placed over fuse, the trouble is probably in the vibrator, it should be replaced. Do not attempt to make any adjustments on the vibrators.

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.

PARTS

No.	Part No.	Description
T1	111-78	Antenna Coil Complete
T2	110-62	Oscillator Coil Complete
T3	108-82B	Input I.F. Coil—465 kc.
T4	108-83B	Output I.F. Coil—465 kc.
T5	114-74	5" P.M. Speaker
T6	104-62D	Power Transformer
L1	105-35	R.F. "B" Choke
L2	105-19	"A" Choke
L3	105-30C	Filter Choke
		Vibrator 126-4
F1	131-79	4 amp. fuse (type 3AG)
S1		On Volume Control

FOR ALIGNMENT, SEE INDEX

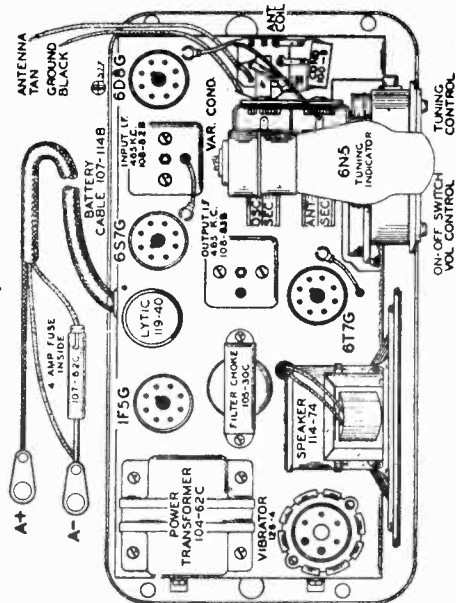
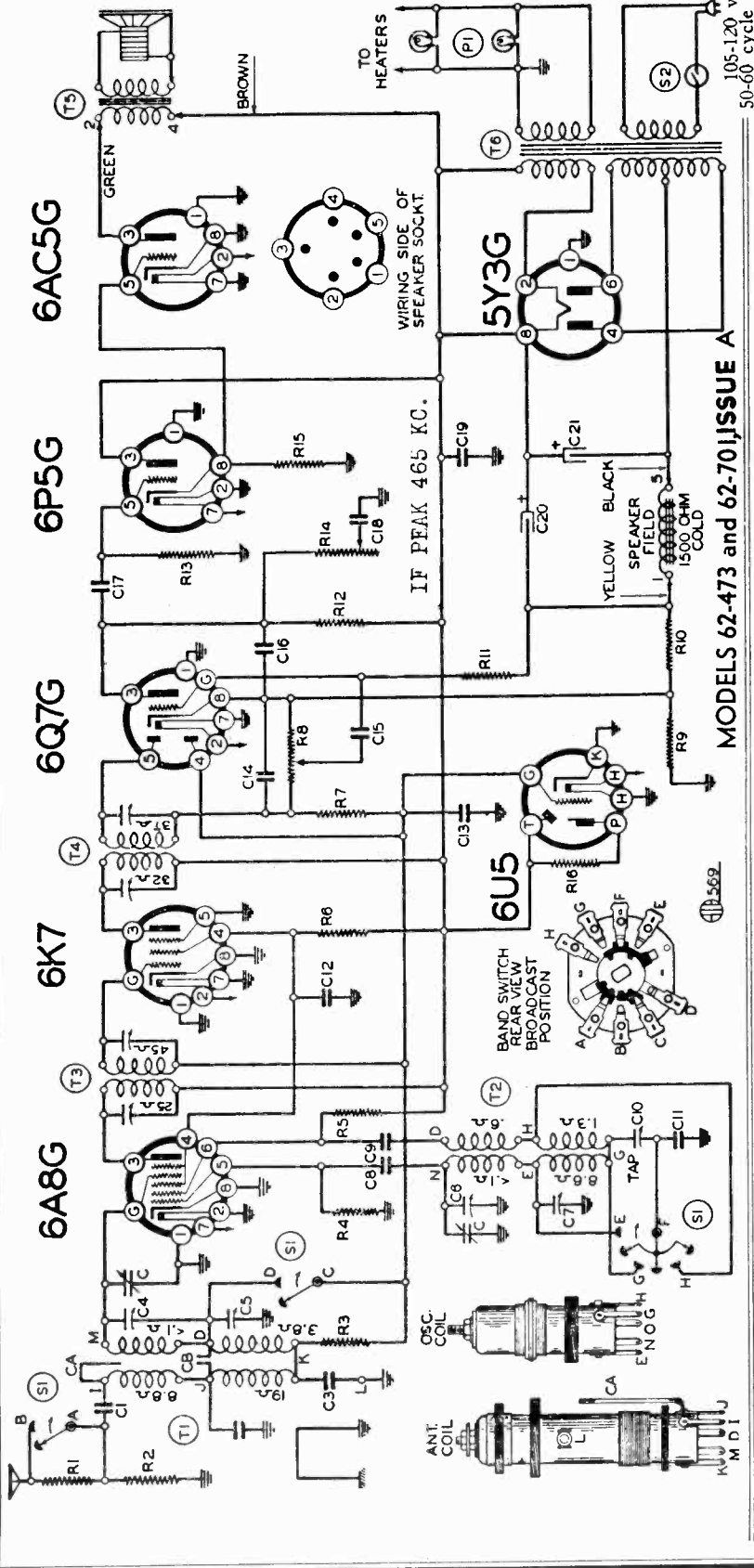


FIG. 1-TOP VIEW

MONTGOMERY-WARD & CO.

MODELS 62-473, 62-701 Early Schematic, Voltage, Socket Parts, Coils

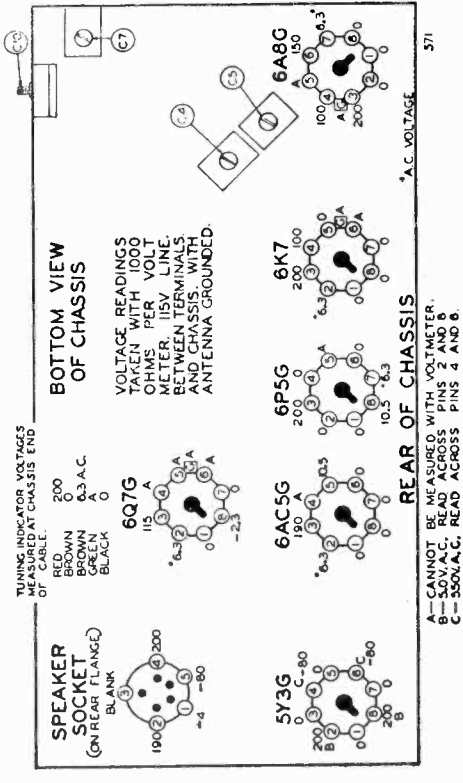
Broadcast 540 to 1720 KC. (Kilocycles)
Short Wave 5.65 to 18.3 MC. (Megacycles)



MODELS 62-473 and 62-701 ISSUE A

Code No.	Part No.	Description
C6	BE12437E	Trimmer on gang
C7	BE12939	2.25 mmf. Adj. Cond.
C8	BE10025	.0005 mica
C9	BE10025	.002 x 600 v.
C10	BE12151	350 mmf. w. cap. series pad
C11	BE12993	.00348 comp. type mica
C12	BE10001	.1 x 400 v.
C13	BE10090	.02 x 400 v.
C14	BE12935	.0001 mica
C15	BE12935	.002 x 400 v.
C16	BE12935	.002 x 400 v.
C17	BE10011	.01 x 400 v.
C18	BE10011	.006 x 600 v.
C19	BE10003	.05 x 400 v.
C20	BE11963	12 mid.-350 w. v. lytic
C21	BE11963	8 mid.-350 w. v. lytic
C22	C20 and C21	in same unit
T1	BE11993	BC. SW. Ant. Coil complete
T2	BE11074	BC. SW. Osc. Coil complete
T3	BE10810S	Input I. F. Coil complete-465 Kc.
T4	BE10810B	Output I. F. Coil complete-465 Kc.
T5	BE10445	8-Drum T. M. Speaker
T6	BE10474C	Power Transformer
S1	BE12556	Band Switch
S2	BE12556	Off-On Switch on tone control
P1	BE10794	6-8 v. Pilot Light (two)

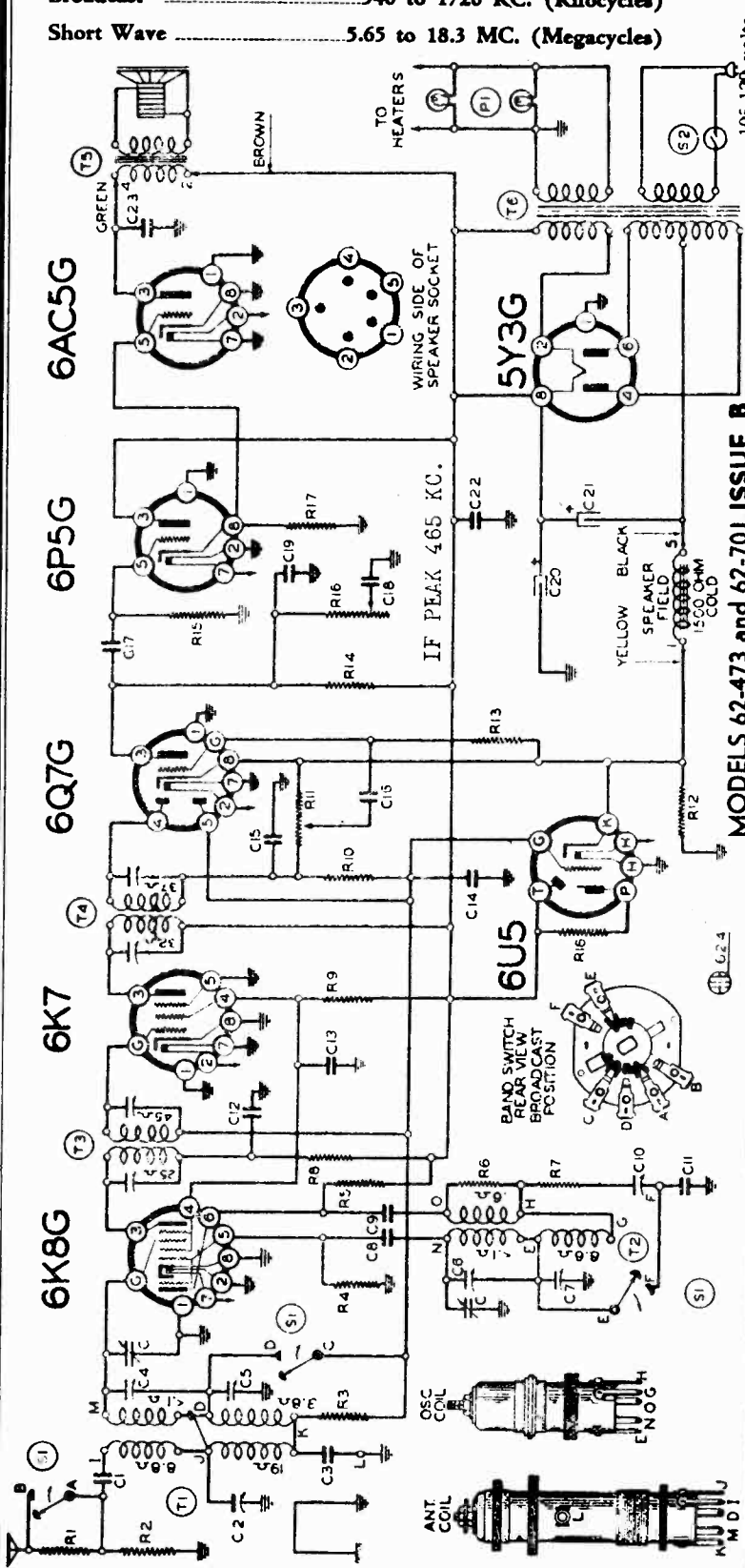
Co's No.	Part No.	Description
R1	BE13041	RESISTORS
R2	BE13017	800 ohm-1/2 w.
R3	BE13020	100M ohm-1/2 w.
R4	BE13021	50M ohm-1/2 w.
R5	BE13017	10M ohm-1/2 w.
R6	BE13041	20M ohm-1/2 w.
R7	BE13041	3 megohm volume control
R8	BE10124	50 ohm-1/2 w.
R9	BE13017	40 ohm-1/2 w.
R10	BE13023	1 megohm-1/2 w.
R11	BE13019	200M ohm-1/2 w.
R12	BE1309	1 megohm-1/2 w.
R13	BE13019	1 megohm-1/2 w.
R14	BE10125	250M ohm tone control
R15	BE13096	25M ohm-1/2 w.
R16	BE13048	1 megohm-1/10 w. in tuning indicator socket
Ca	BE10277	CONDENSERS
Cb	BE12847	Wire capacitor
C1	BE12847	2 gang variable
C2	BE10005	.0005 mica
C3	BE10037	.003 x 500 v.
C4	BE12437B	2.25 mmf. Adj. Cond.
C5	BE12434	2-20 mmf. Adj. Cond.



MODELS 62-473, 62-701 Late
Schematic, Voltage, Socket
Coils, Parts

MONTGOMERY-WARD & CO.

Broadcast 540 to 1720 KC. (Kilocycles)
Short Wave 5.65 to 18.3 MC. (Megacycles)

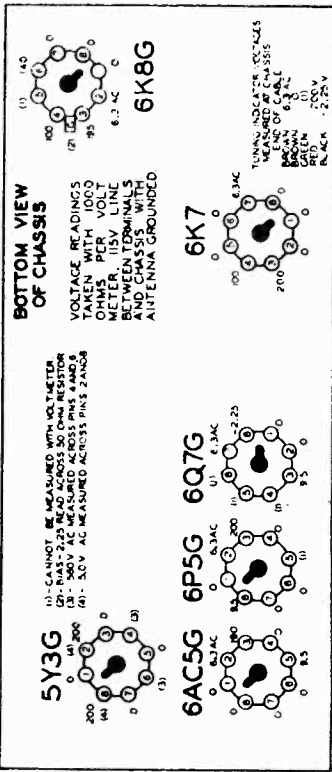


MODELS 62-473 and 62-701, ISSUE B

Code No.	Part No.	Description
C8	BE12959	.00050 Mica
C9	BE12925	.002 x 600 v.
C10	BE12917	Dual Compression Mica 418 mmf.
C11	BE12460	Dual Compression Mica 3100 mmf.
C12	BE10026	.02 x 400 v.
C13	BE10001	.1 x 400 v.
C14	BE10096	.02 x 200 v.
C15	BE1295	.0001 mica
C16	BE10019	.006 x 600 v.
C17	BE10001	.01 x 400 v.
C18	BE10019	.006 x 600 v.
C19	BE1292	.005 Mica
C20	BE11949	16 mid. lyric
C21	BE10003	.05 x 400 v.
C22	BE10019	.006 x 600 v.

Code No.	Part No.	Description
R1	BE130250	800 ohm-1/4 w.
R2	BE130249	100M ohm-1/4 w.
R3	BE130279	100M ohm-1/4 w.
R4	BE130282	1500 ohm-1/4 w.
R5	BE130283	1500 ohm-1/4 w.
R6	BE130235	30 ohm-1/4 w.
R7	BE130240	20M ohm-1/4 w.
R8	BE130276	30 ohm-1/4 w.
R9	BE130174	15 megohm-1/4 w.
R10	BE1304	3 megohm-1/4 w.
R11	BE10137	Volume Control-1 Megohm
R12	BE130174	50 ohm-1/4 w.
R13	BE130225	15 megohm-1/4 w.
R14	BE13009	20M ohm-1/4 w.
R15	BE13019	1 megohm-1/4 w.
R16	BE130136	1 megohm-1/4 w.
R17	BE130136	25M ohm-1/4 watt
R18	BE130146	1 megohm-in tuning indicator socket-1/10 w.

Code No.	Part No.	Description
T1	BE1193E	BC-SW. Antenna Coil
T2	BE11089B	BC-SW. Oscillator Coil
T3	BE108122	Input I.F.-465 kc.
T4	BE10406J	Output I.F.-465 kc.
T5	BE10406J	Dynamic Speaker (1500 ohm field)
T6	BE104124F	Power Transformer-30/60 cycle
S1	BE12566	Band Switch
S2	BE10794	Off-on switch on tone control
P1	BE10794	6-8 v. Pilot Lights (2)



REAR OF CHASSIS
FIG. 3

MONTGOMERY WARD & CO.

MODELS 62-473, 62-701
Early, Late
Trimmers, Alignment

MODELS 62-473 and 62-701 EARLY AND LATE MODELS

DESCRIPTION:

TUBES:

The tube complement of this chassis consists of the following octal base glass and metal tubes:
The type and function of each tube is as follows:
1—Type 6A8G Pentagrid Mixer, First Detector-oscillator
1—Type 6K7 Remote Cut-Off Pentode, I. F. Amplifier (465 K. C.)

1—Type 6Q7G Duplex Diode Triode Second Detector, A. V. C. and First Audio.
1—Type 6P5G Driver Stage
1—Type 6AC5G Positive Grid Triode Output Amplifier.
1—Type 5Y3G High Vacuum Rectifier.
1—Type 6U5 Cathode-Ray Tuning Eye.
Transformers are available and chassis are sometimes equipped with universal transformers for operation on 25, 40 and 60 cycles and with primary taps for 110, 130, and 230 volts, (see parts list).

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.

All voltages as indicated on the voltage chart are measured with 115 volts on the primary of the power transformer.

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.

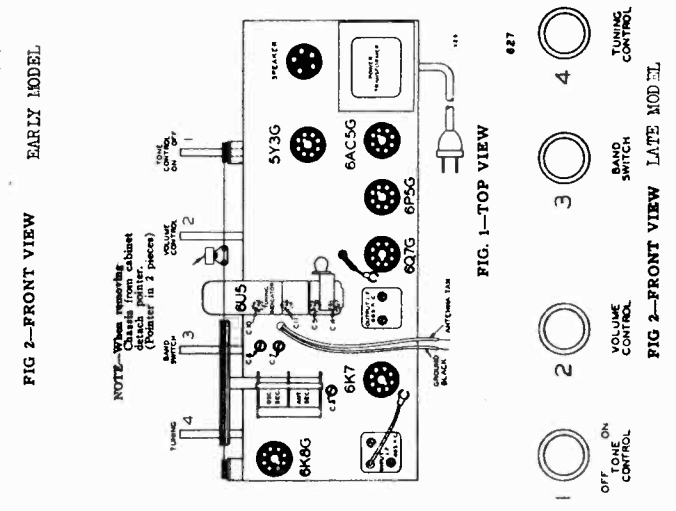
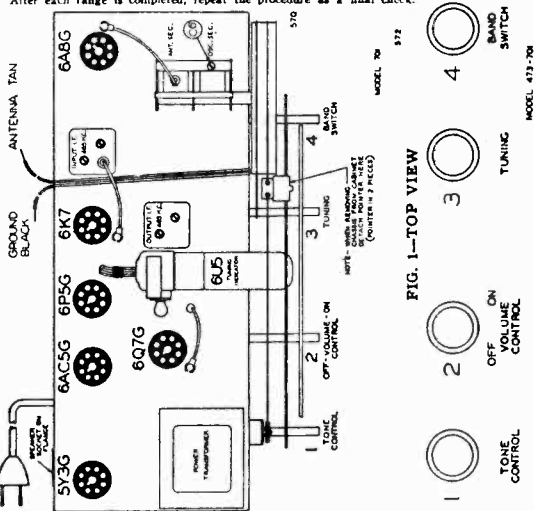
The following equipment is required for aligning:

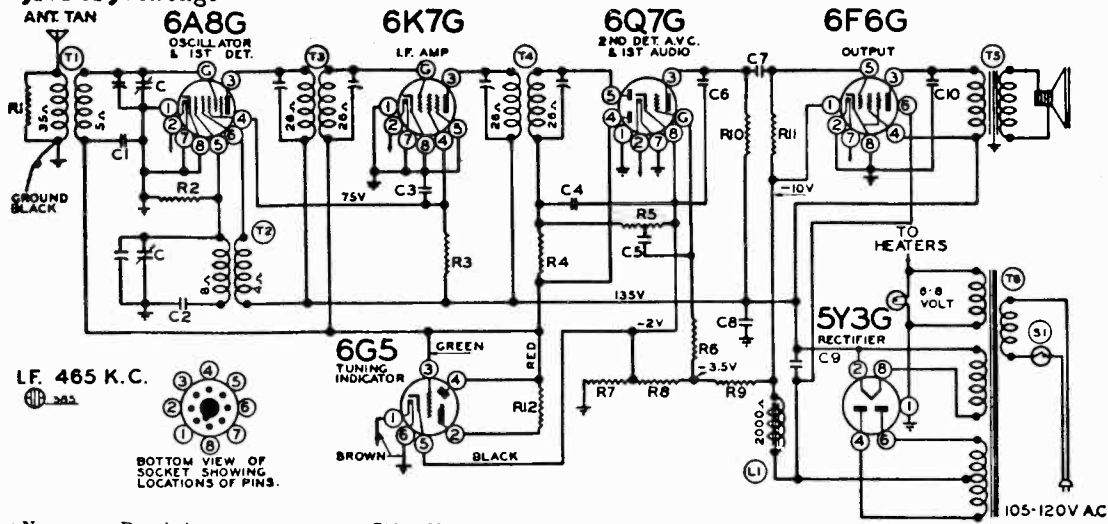
- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antenna—1 mf., 200 mmf. and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6A8	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	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme left rotation)	Set Dial at 17 MC	Trimmer (C6) (See Fig. 3)	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Dial Set at 17 MC	Trimmer (C4) (See Fig. 3)	Short Wave antenna	Adjust to maximum output
BROADCAST BAND	1720 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Trimmer (C7) (See Fig. 1)	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 1400 Kc.	Trimmer (C5) (See Fig. 1)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 600 Kc.	Trimmer (C10) (See Fig. 3)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
IMAGE REJECTION ADJUSTMENTS	2100 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Pick up signal at 1120 Kc. on dial	Wire Capacitor (CB) (See circuit diagram)	Image rejection	Adjust by twisting for minimum output. (See note "B")
	2630 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Pick up signal at 1700 Kc. on dial	Wire capacitor (CA) (See circuit diagram)	Image rejection	Adjust by twisting for minimum output. (See note "C")
I. F.	465 Kc.	.1 MFD.	Grid of 6K7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6K8	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Set Dial at 17 MC	Trimmer (C6) (See Fig. 1)	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme left rotation)	Dial Set at 17 MC	Trimmer (C4) (See Fig. 1)	Short Wave antenna	Adjust to maximum output
BROADCAST BAND	1720 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Trimmer (C7) (See Fig. 1)	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 1400 Kc.	Trimmer (C5) (See Fig. 1)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 600 Kc.	Trimmer (C10) (See Fig. 1)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
IMAGE REJECTION ADJUSTMENTS	2330 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Pick up signal at 1400 kc. on dial	Trimmer (C2) (See Fig. 1)	Image rejection	Adjust for minimum output. (See note "B")

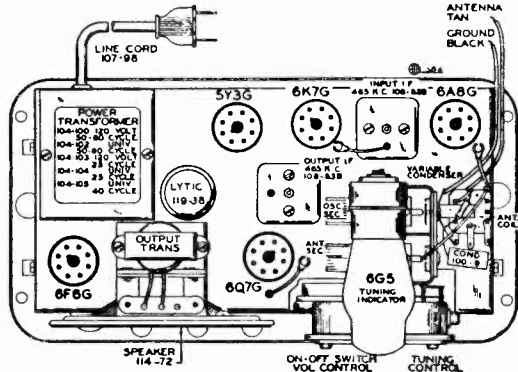
NOTE "A" Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.
NOTE "B" 2100KC is the image frequency of 1170KC. Adjust wire capacity (CB) by twisting the two wires until a minimum output is obtained.
NOTE "C" 2630KC is the image frequency of 1700KC. Adjust wire capacity (CA) by moving the wire either toward or away from the antenna coil winding until a minimum output is obtained on the output meter.
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.

BAND SWITCH	BAND	FREQUENCY RANGE
Extreme Right Rotation	Short Wave	565 to 18.3 MC
Extreme Left Rotation	Broadcast	535 to 1720 KC.
Power Consumption	45 Watts (At 115 volts 50-60 cycles)	
Power Output	1.6 Watts Undistorted, 3 Watts Maximum	
Selectivity	58 KC. Broad at 1000 KC. 1000 Times Signal Strength	
Intermediate Frequency	465 KC.	





No.	Part No.	Description	Value	Tolerance
CONDENSERS				
C	102-52	2 Gang Variable		
C1	100-9	.05x200	25%	
C2	129-75	.0003386—1%—compression type mica padder		
C3	100-1	.1x400	50-10%	
C4	129-5	.0001 Mica	20%	
C5	100-11	.01x400	25%	
C6	129-2	.0005 Mica	20%	
C7	100-11	.01x400	25%	
C8	119-38	5.0x200 wv. lytic		
C9	119-38	5.0x250 wv. lytic		
RESISTORS				
C10	100-19	.006x600	25%	
C8 and C9		in one unit		
R1	130-17	10M ohm—1/3 w.	20%	
R2	130-12	50M ohm—1/3 w.	20%	
R3	130-149	15M ohm—1/3 w.	20%	
R4	130-170	3 megohm—1/3 w.	25%	
R5	101-77	1 megohm volume control		
R6	130-170	3 megohm—1/3 w.	25%	
R7	106-35	65 ohm		
R8	106-35	45 ohm		
R9	106-35	220 ohm		
R10	130-9	200M ohm—1/3 w.	20%	
R11	130-118	600M ohm—1/3 w.	20%	
R12		500M ohm—in tuning indicator socket		
PARTS				
T1	111-78	Antenna Coil Complete		
T2	110-62	Oscillator Coil Complete		
T3	108-82B	Input I.F. Complete		
T4	108-83B	Output I.F. Complete		
T5	114-72	5" Dynamic Speaker		
T6	104-100	Power Transformer		
L1		Speaker Field (2000 ohm)		
S1		Switch on Volume Control		



6 TUBE INCLUDING CATHODE-RAY TUNING EYE
Broadcast Band A.C. Superheterodyne Receiver
Frequency Range — 535 - 1720 Kilocycles

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 6F6G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

- Part No. 108-83B Output I.F. Transformer
- Part No. 108-82B Input I.F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

- With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
 - Connect external oscillator set at 465 kilocycles, in series with .1 mfd. condenser, to the control grid cap of the type 6K7G tube, and adjust the output I.F. transformer, (No. 108-83B) to resonance.
 - Move oscillator output clip from grid of 6A8G and adjust input I.F. transformer (No. 108-82B) to resonance.
 - With oscillator still connected to 6A8G, readjust output I.F. transformer (108-83B) if necessary.

R.F. ALIGNMENT: (535-1720 K.C.)

- With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 200 mmf. condenser to the antenna lead and chassis ground and make the following adjustments:
 - With external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance. This adjustment is on the top of rear section of variable gang condenser. (See Fig. 1).
 - Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
 - Check sensitivity at 600 and 1000 kilocycles.

Transformers are available and chassis are sometimes equipped with universal transformers for operation on 25, 40 and 60 cycles and with primary taps for 108, 127, 150, 225, and 260 volts, (see instructions) and also sometimes equipped with 25 cycle transformers with 105-115 volt or 220 volt primaries, not universals.

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.

All voltages as indicated on diagram are measured with 115 volts on the primary of the power transformer.

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.

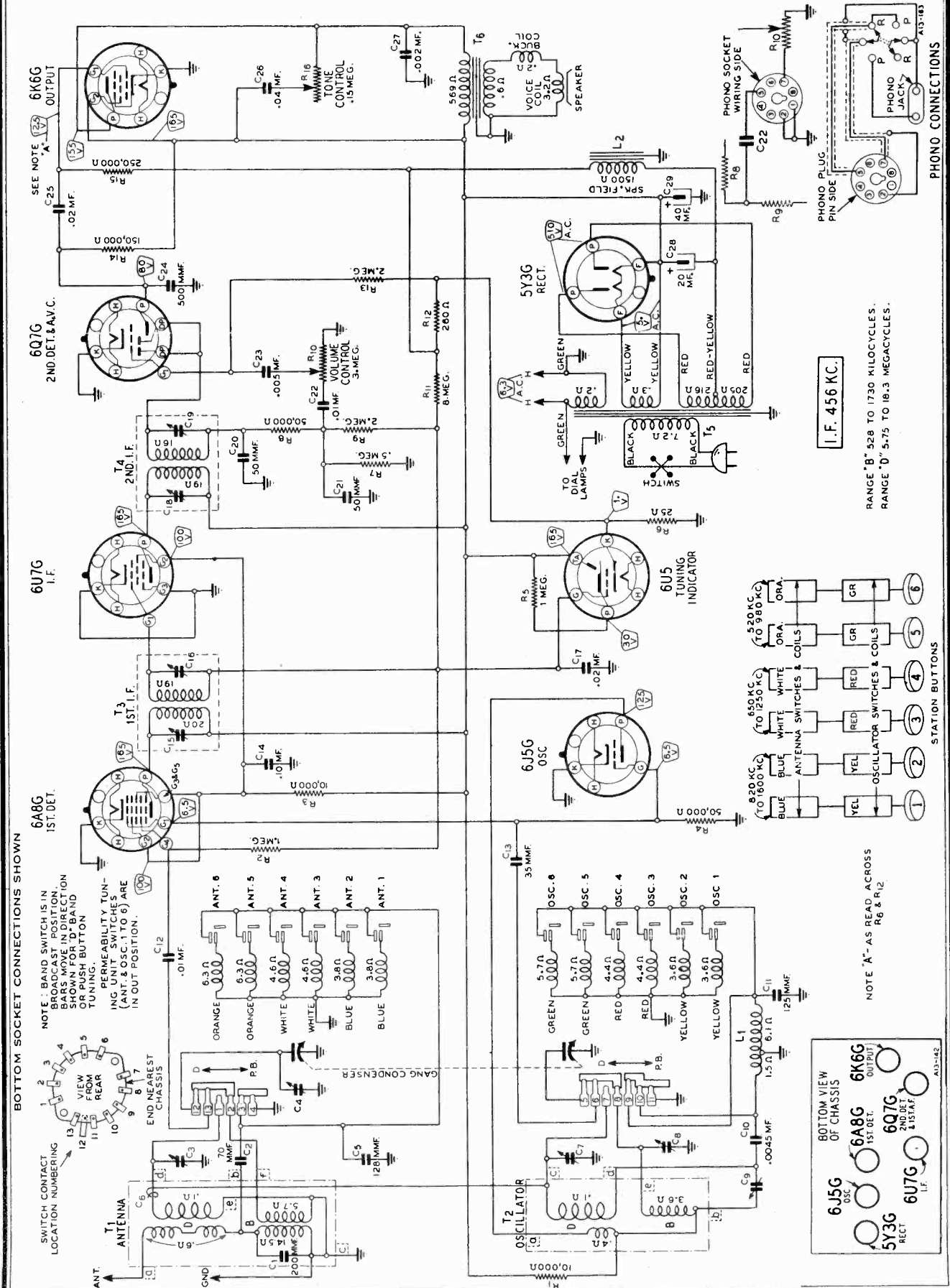
Excessive hum, stuttering, low volume and a reduction in all D.C. voltages is usually caused by a shorted electrolytic condenser; open by-pass condensers frequently cause oscillation and distorted tone.

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 voltages, defective tubes, condensers and resistors. In order to properly align this chassis, an oscillator (generator) is absolutely necessary. No aligning adjustments should be attempted with the chassis in the cabinet.

MONTGOMERY WARD & CO.

MODEL 62-479
Schematic, Voltage
Socket



MODEL 62-479

Trimmers, Coils

MONTGOMERY WARD & CO.

Alignment, Specifications

Power Consumption - 50 Watts (At 117 volts 60 cycles)

Power Output - 1.0 Watts Undistorted
2.0 Watts Maximum

Selectivity - 38 KC Broad at 1000 times Signal

Sensitivity

B Range (Manual Tuning).....15 Microvolts Average
B Range (Automatic Tuning).....15 Microvolts Average
D Range25 Microvolts Average

Intermediate Frequency - - - - - 456 KC

Speaker - - - - - 6" or 8" Dynamic

Tuning Frequency Range

B Range (Manual Tuning).... 528 to 1730 KC (Kilocycles)
D Range (Manual Tuning)....5750 to 18300 KC (Kilocycles)
Buttons 1 and 2 (Automatic Tuning).....820 to 1600 KC
Buttons 3 and 4 (Automatic Tuning).....650 to 1250 KC
Buttons 5 and 6 (Automatic Tuning)..... 520 to 980 KC

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

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

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

The following equipment is required for aligning:

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

Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antennas—.1 mf., 200 mmf., and 400 ohms.

SIGNAL GENERATOR		DUMMY ANTENNA	BAND SWITCH	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
FREQUENCY SETTING	CONNECTION AT RADIO				
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. (C18) & (C19)
RANGE B					
1730 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C8)
1500 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note A	Ant. Range B (C4)
600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C9) Rock Rotor—See Note B
RANGE D					
18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C7)
15,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C3) Rock Rotor—See Note B
PERMEABILITY TUNING UNIT					
			BUTTON DEPRESSED (Band Switch in Push Button Position)	TURN SETTING SCREW TO MAXIMUM OUTPUT —See Instruction Book	ADJUST COIL POSITION TO MAXIMUM OUTPUT —See Note C
1100 KC	Antenna Lead	200 mmf.	No. 1	Setting Screw No. 1	Antenna Coil No. 1
1100 KC	Antenna Lead	200 mmf.	No. 2	Setting Screw No. 2	Antenna Coil No. 2
850 KC	Antenna Lead	200 mmf.	No. 3	Setting Screw No. 3	Antenna Coil No. 3
850 KC	Antenna Lead	200 mmf.	No. 4	Setting Screw No. 4	Antenna Coil No. 4
700 KC	Antenna Lead	200 mmf.	No. 5	Setting Screw No. 5	Antenna Coil No. 5
700 KC	Antenna Lead	200 mmf.	No. 6	Setting Screw No. 6	Antenna Coil No. 6

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

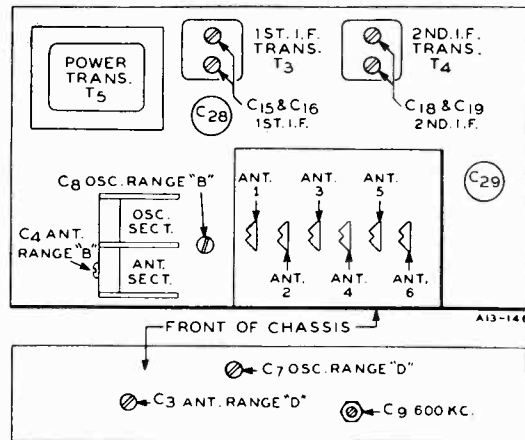
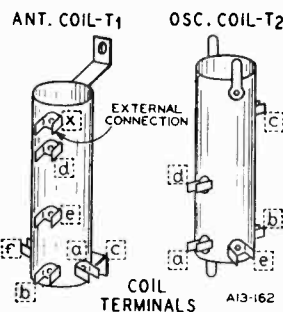
After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1500 KC on the dial, loosen the 2 clamps which hold the pointer assembly on the cord, move the pointer to the 1500 KC mark, and tighten the clamps.

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

NOTE C—At the top of the permeability tuning unit can be seen six "W" openings. Insert the end of a pair of long nose pliers or a screwdriver in the "W" opening of the proper button and adjust the position of the antenna (rear) coil by twisting the pliers or screwdriver until maximum output is obtained.

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.

MODEL 62-500
Schematic, Socket
Parts

Broadcast.....535 to 1720 K. C. (Kilocycles)
Short Wave.....5.5 to 18.1 M. C. (Megacycles)

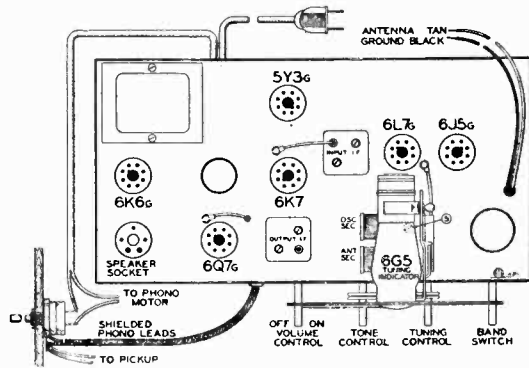


FIG. 1—TOP VIEW

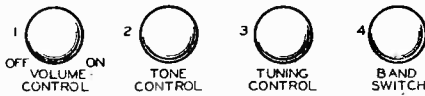
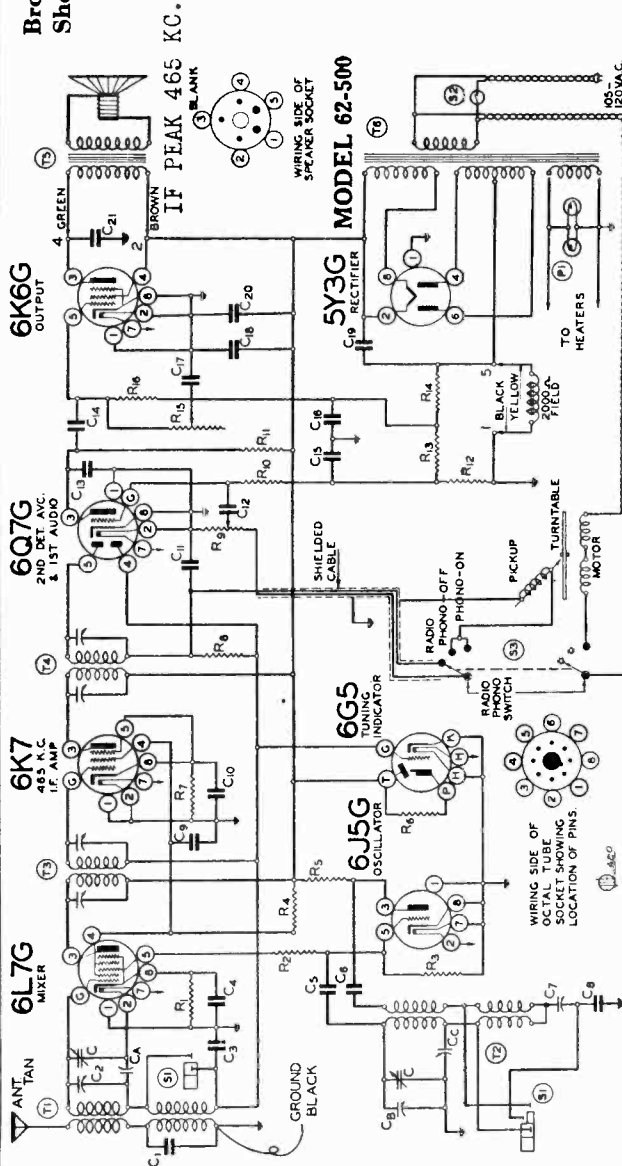


FIG. 2—FRONT VIEW



LIST OF REPAIR PARTS (Serial No. 7M917950 and up)
USE ONLY GENUINE FACTORY REPLACEMENT PARTS

Bin No.	Part No.	Schematic Reference	Description	No. in set	Price
10979	BE100-1	C9	1. x 400 Volt Tubular Condenser	1	.10
11387	BE100-9	C4, C10	.05 x 200 Volt Tubular Condenser	2	.09
11256	BE100-11	C12	.01 x 400 Volt Tubular Condenser	1	.09
10949	BE100-13	C18	.05 x 400 Volt Tubular Condenser	1	.10
10925	BE100-19	C21	.06 x 600 Volt Tubular Condenser	2	.10
10929	BE100-20	C15, C16	.1 x 200 Volt Tubular Condenser	2	.10
11106	BE100-20	C3	.02 x 200 Volt Tubular Condenser	1	.09
11044	BE100-25	C6	.02 x 400 Volt Tubular Condenser	1	.10
10988	BE100-71	C17	.04 x 600 Volt Tubular Condenser	1	.20
10909	BE119-38C	C7	Dual 5 MFD Electrolytic Filter	1	.70
	BE124-38	C7	Series Padder Condenser	1	.20
	BE124-39	C2	Adjustable Trimmer Condenser (2.20mmf)	1	.10
10930	BE129-2	C13	.005 Mica Type Condenser - 20%	1	.09
	BE129-3	C5	.0002 Mica Type Condenser - 20%	1	.09
11335	BE129-5	C1	.001 Mica Type Condenser - 20%	1	.09
10625	BE129-9	C1	.0005 Mica Type Condenser - 20%	1	.10
10932	BE129-54	C8	.003 Mica Type Condenser - 2 1/4%	1	.25
	BE130-3	R16	500M Ohm - 1/3 Watt - 20% - Carbon	1	.08
11116	BE130-4	R8, R10	3 Meg Ohm - 1/3 Watt - 20% - Carbon	2	.08
11097	BE130-9	R11	200M Ohm - 1/3 Watt - 20% - Carbon	1	.08
11277	BE130-46	R14	800M Ohm - 1/3 Watt - 10% - Carbon	1	.08
11123	BE130-70	R1	500 Ohm - 1/3 Watt - 10% - Carbon	1	.08
11094	BE130-79	R2	400 Ohm - 1/3 Watt - 10% - Carbon	1	.08
11045	BE130-82	R3	100M Ohm - 1/3 Watt - 10% - Carbon	2	.08
11065	BE130-84	R4, R3	10M Ohm - 1/3 Watt - 10% - Carbon	1	.08
11060	BE130-176	R12	20M Ohm - 1/3 Watt - 10% - Carbon	1	.08
	BE130-200	R7	700 Ohm - 1/3 Watt - 10% - Carbon	1	.08
	BE130-171	R6	500M Ohm 1/10 Watt (in tuning eye socket)	1	.08
BE108-105F	T3		Input I.F. Coil Assembly complete with can 1	1	.75
BE108-106D	T4		Output I.F. Coil Assembly complete with can 1	1	.75
10979	BE101-8	T1	Five Prong Octal Socket - Marked "SPKR"	1	.10
	BE121-15	T1	Seven Prong Octal Socket - Marked "5Y3"	1	.08
	BE121-18	T1	Eight Prong Octal Socket - Marked "6L7"	1	.10
	BE121-21	T1	Eight Prong Octal Socket - Marked "6Q7"	1	.10
	BE121-27	T1	Eight Prong Octal Socket - Marked "6K7"	1	.10
	BE121-86	T1	Eight Prong Octal Socket - Marked "6K6"	1	.10
	BE121-89	T1	Seven Prong Octal Socket - Marked "6J5"	1	.10
	BE104-100C	T6	Power Transformer 50/60 Cycle, 105-120 Volt	1	1.50
	BE104-108C	T6	Power Transformer 25 Cycle, 105-120 Volt	1	1.50
	BE104-104C	T6	Universal Transformer 25 Cycle Primary	1	2.70
	BE104-99D	T6	Universal Transformer 40 Cycle Primary	1	2.70
	BE114-61A	T5	SIX INCH DYNAMIC SPEAKER (Field 2000 Ohms)	1	9.50
BE101-95	R9, S2		Volume Control and Switch (1 Meg Ohm)	1	.36
BE101-98	R15		Tone Control and Switch (1 Meg Ohm)	1	.36
BE107-5D	C		1.40 Gang Variable Condenser	1	1.50
BE107-5F	C		1.20 Gang Variable Condenser	1	.24
BE124-38	C7		Series Padder Condenser	1	.20
BE124-39	C2		Adjustable Trimmer Condenser	1	.10
BE125-38	S1		Band Change Switch	1	.30
BE128-44			"Volume" Knob (Spring Type)	1	.08
BE128-45			"Tone" Knob (Spring Type)	1	.08
BE128-46			"Band Switch" Knob (Spring Type)	1	.08
BE128-47			"Tuning" Knob (Spring Type)	1	.08
PHONOGRAPH PARTS LIST					
	BE104-128		Motor Complete with Metal Mounting Plate, Turntable, and Mounting Screws, Washers, Etc.	1	9.50
	BE107-138		Phono Connector Cable	1	.12
	BE107-145		Motor Connector Cable	1	.12
	BE115-102		Needle Cup (Copper Oxide Finish)	2	.06
	BE115-103		Cover For One Needle Cup	1	.04
	BE114-100		Pick-up Arm and Cable	1	4.90
	BE112-335		Phono-Radio Indicator Plate	1	.10
	BE117-209		Bracket; Rest for Pickup Arm	1	.10

MODEL 62-500

MODELS 62-506, 62-516

Trimmers, Alignment

MONTGOMERY WARD & CO.

MODEL 62-500

DESCRIPTION:

The tube complement of this chassis consists of the following: octal base glass and Metal Tubes:

- 1—Type 625 Cathode-Ray Tube, Eye
- 1—Type 625 Cathode-Ray Tube, Eye
- 1—Type 687 Remote-Cut-Off Pentode, I.F. Amplifier (465 K.C.)
- 1—Type 6Q7G Duplex Diode Triode Second Detector, A.V.C. and First Audio
- 1—Type 6K6G Pentode Output Amplifier
- 1—Type 5Y30 High Vacuum Rectifier
- 1—Type 6L7G Pentagrid Mixer, First Detector

Transformer (No. 108-112) 1400 kilocycles, make the following adjustments:

- (a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1", to the control grid cap of the type 1D5G I. F. tube, and adjust the output I.F. transformer (No. 108-112) to resonance.
- (b) Move oscillator to grid cap of 1C7G oscillator, first detector tube and adjust input I.F. transformer (No. 108-111) to resonance.

SERVICE NOTES:

Volts taken from different points of circuit to chassis are as follows: (a) 100 ohms per volt. All 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.

all I.F. stages usually caused by 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 and resistors. In order to properly align this chassis, an oscillator (Generator) is absolutely necessary. No aligning adjustment should be attempted until the chassis is checked out.

All adjustments should be made with a non-metallic screwdriver.

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 6K6G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

DUMMY ANTENNAS:

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1", "Dummy 2", and "Dummy 3":

- Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.
- Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser with each other and in series with the external oscillator.
- Dummy 3: (Short Wave)—Consists of a .1 mfd. condenser and a 400 ohm resistor connected in series with each other and in series with the external oscillator.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-110D Output I.F. Transformer
Part No. 108-105F Input I.F. Transformer
These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

MODELS 62-506 AND 62-516

DESCRIPTION:

The tube complement of this chassis consists of the following: octal base glass and Metal Tubes:

- 1—Type 625 Cathode-Ray Tube, Eye
- 1—Type 625 Cathode-Ray Tube, Eye
- 1—Type 687 Remote-Cut-Off Pentode, I.F. Amplifier (465 K.C.)
- 1—Type 6Q7G Duplex Diode Triode Second Detector, A.V.C. and First Audio
- 1—Type 6K6G Pentode Output Amplifier
- 1—Type 5Y30 High Vacuum Rectifier
- 1—Type 6L7G Pentagrid Mixer, First Detector

Transformer (No. 108-112) 1400 kilocycles, make the following adjustments:

- (a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1", to the control grid cap of the type 1D5G I. F. tube, and adjust the output I.F. transformer (No. 108-112) to resonance.
- (b) Move oscillator to grid cap of 1C7G oscillator, first detector tube and adjust input I.F. transformer (No. 108-111) to resonance.

SERVICE NOTES:

Volts taken from different points of circuit to chassis are as follows: (a) 100 ohms per volt. All 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.

all I.F. stages usually caused by 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 and resistors. In order to properly align this chassis, an oscillator (Generator) is absolutely necessary. No aligning adjustment should be attempted until the chassis is checked out.

All adjustments should be made with a non-metallic screwdriver.

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 6K6G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

DUMMY ANTENNAS:

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1", "Dummy 2", and "Dummy 3":

- Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.
- Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser with each other and in series with the external oscillator.
- Dummy 3: (Short Wave)—Consists of a .1 mfd. condenser and a 400 ohm resistor connected in series with each other and in series with the external oscillator.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-110D Output I.F. Transformer
Part No. 108-105F Input I.F. Transformer
These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

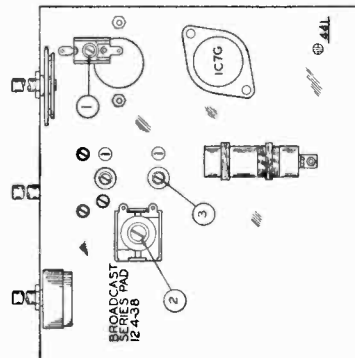


FIG. 3.—BOTTOM VIEW SHOWING TRIMMERS

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 1H4G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

DUMMY ANTENNAS:

The following dummy antennas are used in aligning and are referred to in the following alignment instructions as "Dummy 1", "Dummy 2", and "Dummy 3":

- Dummy 1: (I.F.)—Consists of a .1 mfd. condenser connected in series with the external oscillator.
- Dummy 2: (Broadcast)—Consists of a 200 mmfd. condenser with each other and in series with the external oscillator.
- Dummy 3: (Short Wave)—Consists of a .1 mfd. condenser and a 400 ohm resistor connected in series with each other and in series with the external oscillator.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-111 Input I. F. Transformer
Part No. 108-112 Output I. F. Transformer
These I. F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1, top view).

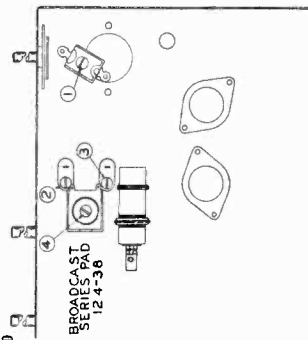


FIG. 3.—BOTTOM VIEW

With volume control full on, (the extreme right of its rotation), the band changing switch in the broadcast position, (extreme left of its rotation), and with the variable condenser in its minimum capacity position, plates entirely out of mesh, make the following adjustments:

- (a) Connect external oscillator set at 465 kilocycles, in series with "Dummy 1", to the control grid cap of the type 1D5G I. F. tube, and adjust the output I.F. transformer (No. 108-112) to resonance.
- (b) Move oscillator output clip from grid of 6K7 to grid cap of 6L7G and adjust input I.F. transformer (No. 108-105F) to resonance.
- (c) With oscillator still connected to 6L7G, readjust output I.F. transformer (108-106D) if necessary.

SHORT WAVE BAND ALIGNMENT:

With band changing switch in the short wave position, extreme right of its rotation, and with external oscillator set at 17 megacycles and connected in series with "Dummy 3", to the antenna and ground leads, make the following adjustments:

- (a) Move dial pointer to 17 megacycles and adjust short wave oscillator trimmer to resonance.
- (b) Adjust short wave antenna trimmer (Adjustment Number 1), to resonance (see Fig. 3, bottom view).

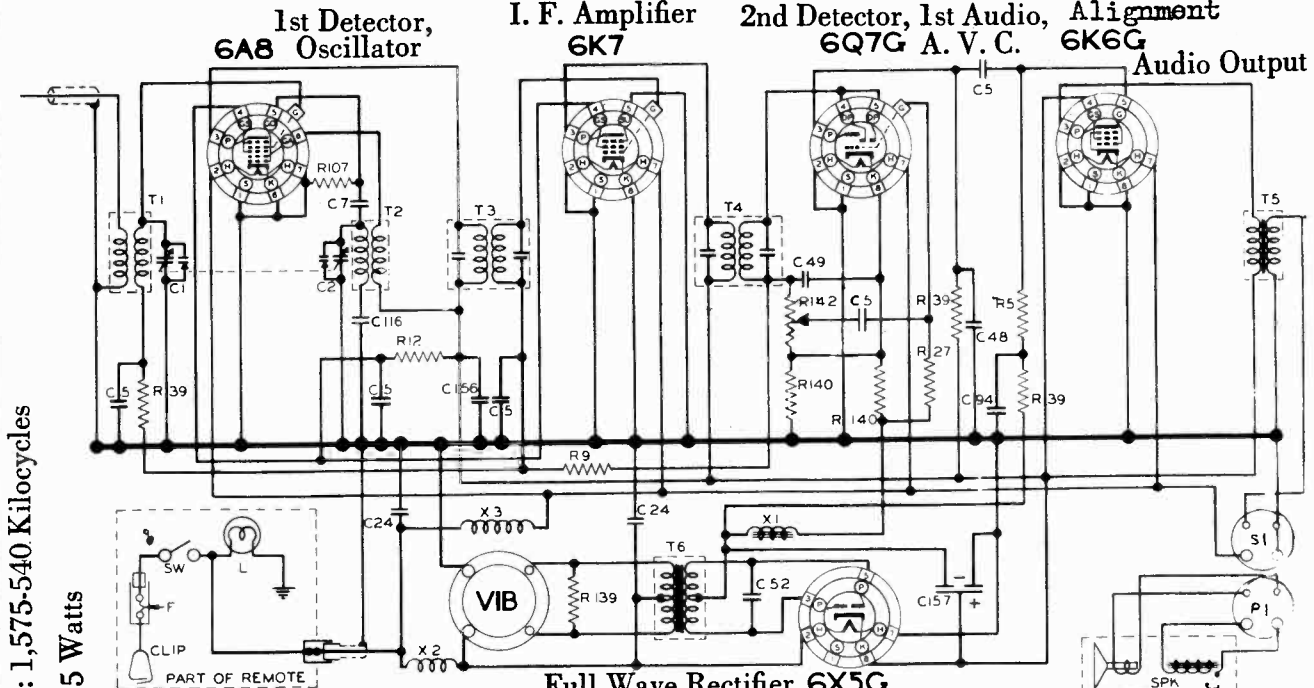
535 to 1720 Kilocycles
With band changing switch in the broadcast position, extreme left of its rotation, and with gang condensers in their minimum capacity position, plates entirely out of mesh, and with external oscillator connected in series with "Dummy 2", to antenna and ground leads make following adjustments:

- (a) Set external oscillator to 1720 K.C. and adjust broadcast oscillator trimmer to resonance. (Adjustment Number 3, see bottom view of chassis, Fig. 3).
- (b) Re-set external oscillator to 1400 K.C. rotate variable gang condenser and pick up signal. Adjust broadcast antenna trimmer (adjustment number 2), to resonance.
- (c) Re-set external oscillator to 600 K.C., and adjust broadcast series pad (adjustment number 4), to resonance by rotating condenser to approximately 600 K.C., rocking it slowly to and fro until by adjusting series pad maximum output is attained. This adjustment is located on the bottom of the chassis directly under the variable gang condenser. (See bottom view of chassis, Fig. 3).
- (d) Repeat adjustments "a" and "b" until sensitivity is at its maximum.
- (e) Check for tracking and sensitivity at 1400, 1000, and 600 kilocycles. Under no circumstances band plates of variable condenser sections to correct tracking.

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1, top view).

NOBLITT SPARKS INDUSTRIES

MODEL 5
Schematic, Parts
Alignment



FREQUENCY RANGE: 1,575-540 Kilocycles

POWER OUTPUT: 2.5 Watts

TOP RESISTORS
R = 100K X
M = 1000.000 K

R	OHMS	W	PART NO.
5	500K	1/2	17-2070
9	1M	1/2	17-2080
27	25K	1/2	17-4188
34	10K	1/2	17-4032
39	300K	1/2	17-403
42	M	1/2	17-1392
73	30K	1/2	17-4276
36	100	1/2	17-4278
140	50	1/2	17-4220
2	10K	1/2	17-4275
101	100K	1/2	17-4172

C	CAPACITY	VOLT	PART NO.
1	TWO-GANG		17-13432
2	VARIABLE		
3	0.5	200	17-14055
24	5	200	17-4040
46	0.0025	800	17-4207
49	0.005	800	17-4083
52	0.1	200	17-4802
98	1	200	17-4015
156	0.5	400	17-4397
57	4 - 4 CAGW	150	17-13419
1	0.001	800	17-2084
118	0.005	800	17-4151

T-X	TYPE	PART NO.
7	TRANSFORMERS	
1	ANTENNA COIL	00-3338
2	OSCILLATOR COIL	00-3363
3	FIRST I.F. COIL	29-3384
4	SECOND I.F. COIL	29-3385
5	OUTPUT TRANS	00-4888
8	POWER TRANS	00-4859
2	CHOKES	
1	B. FILTER	00-4887
2	A. FILTER	00-4518
3	A. FILTER	00-13373

SYMBOL	DESCRIPTION	PART NO.
F	FUSE 10A-25V	17-131
L	LAMP	17-0904
PI	PLUG-ASSEMBLED WITH SPEAKER	17-1330
SI	SPEAKER SOCKET	17-13370
SPK	SPEAKER	17-13370
SW	POWER SWITCH - IN REMOTE CONTROL	17-1177
VIB	VIBRATOR	17-1177

I.F. PEAK 455 K.C. - BALANCE AT 1400 K.C.
CHECK AT 1000 & 600 K.C.
NOBLITT-SPARKS INDUSTRIES, INC.
COLUMBUS, INDIANA

ARVIN CAR RADIO MODEL 5

ADJUSTMENT OF INTERMEDIATE FREQUENCY STAGES

1. Connect the balancing oscillator to the grid cap of the 6A8 tube through a .002 mfd. condenser. Place a 200,000 ohm resistor between the grid cap of the 6A8 and the grid clip which normally fits on the cap of the 6A8 tube. This will maintain the bias on this tube during alignment.
2. Adjust padder Nos. 1, 2, 3, and 4 for maximum output.

2. With an input frequency of 1,575 K. C. adjust Padder No. 5 to resonance.

3. Reset the balancing oscillator to 1,400 K. C. Rotate the tuning condenser until the signal is tuned to resonance. Reduce the output of the balancing oscillator until the signal barely deflects the output meter.

4. Adjust padder No. 6 until a maximum output reading is obtained. Check the sensitivity. See rating above.

5. After installation of the radio receiver in an automobile, tune in a very weak station between 1,300 and 1,500 K. C. and adjust padder No. 6 for maximum output.

ALIGNMENT OF OSCILLATOR AND ANTENNA TRIMMERS

1. Connect the balancing oscillator to the antenna lead wire through a 50 ufd. dummy antenna. Rotate the rotor plates in the radio chassis tuning condenser completely out of mesh.

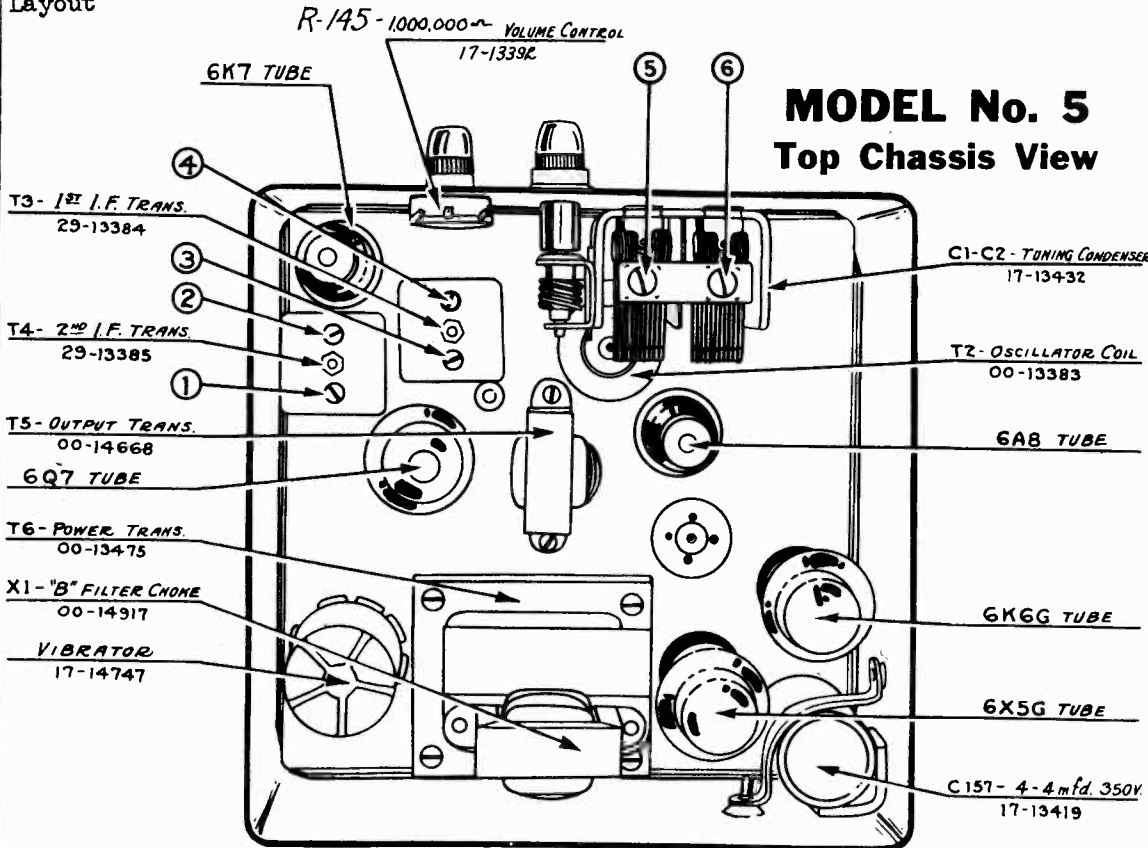
The sensitivity of this receiver may be determined by reading the number of microvolts input required to produce 500 milliwatts output. That output is obtained when a reading of 1.2 volts across the voice coil of the speaker is indicated by the output meter.

Form RS9 Jan. 1938

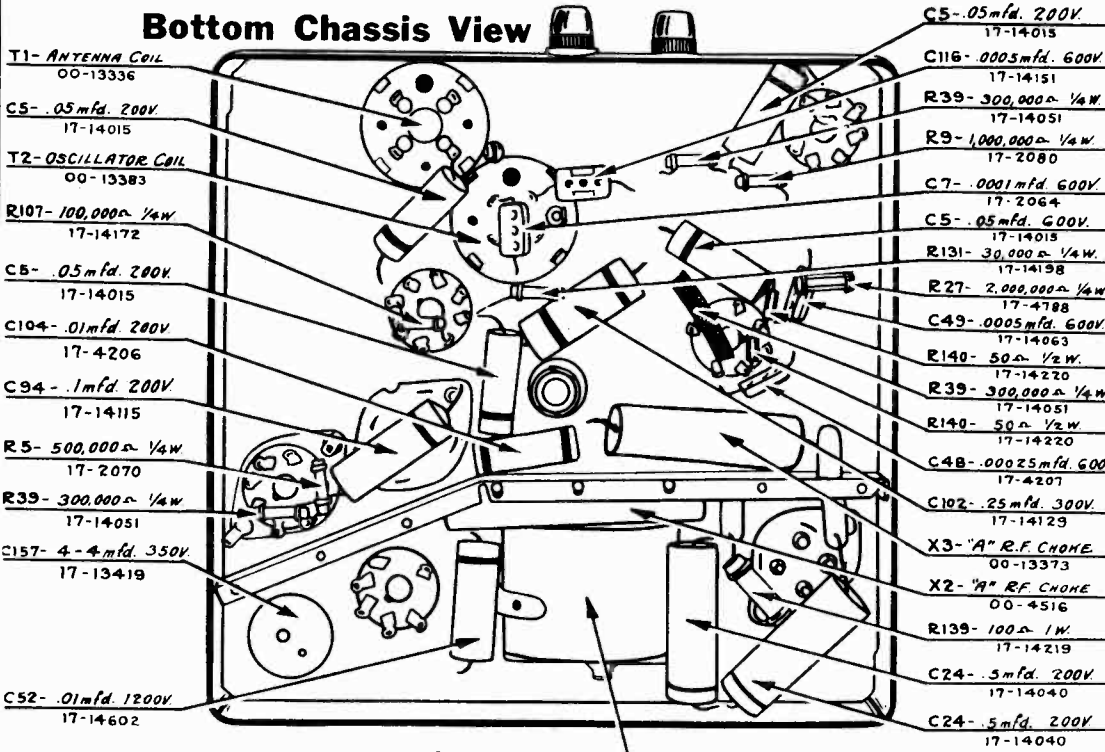
NOBLITT SPARKS INDUSTRIES

MODEL 5
Socket, Trimmers
Voltage, Specs.
Layout

MODEL No. 5
Top Chassis View



Bottom Chassis View



MODEL 5 SOCKET VOLTAGES

Tube	Heater	Cathode	Suppressor	Screen	Plate	Anode Grid	*Oscillator Grid	Grid Bias
6A8	6.3	0	.....	86	190	196	18-8	2.0
6K7	6.3	0	0	86	190	.....	.....	2.0
6Q7C	6.3	4	.....	.....	125	.....	.....	2.0
6K6C	6.3	0	.....	198	180	.....	.....	14.0
6X5C	6.3	212	.....	.....	230	.....	.....	.....

*1,400 to 600 KC

Readings taken with input of 5.8 volts (average "A" voltage of most car installations).

CONDENSER TUNING RATIO: 12:1
CHASSIS SHIPPING WEIGHT: 19 1/2 pounds
TYPE OF CONTROL: Under-panel Type

*Antenna Input (1,000 K. C.) 25 Microvolts
*50 uuf. dummy antenna input
POWER SUPPLY: 6-Volt Storage Battery
AMPERE DRAIN: 5.7 Amperes

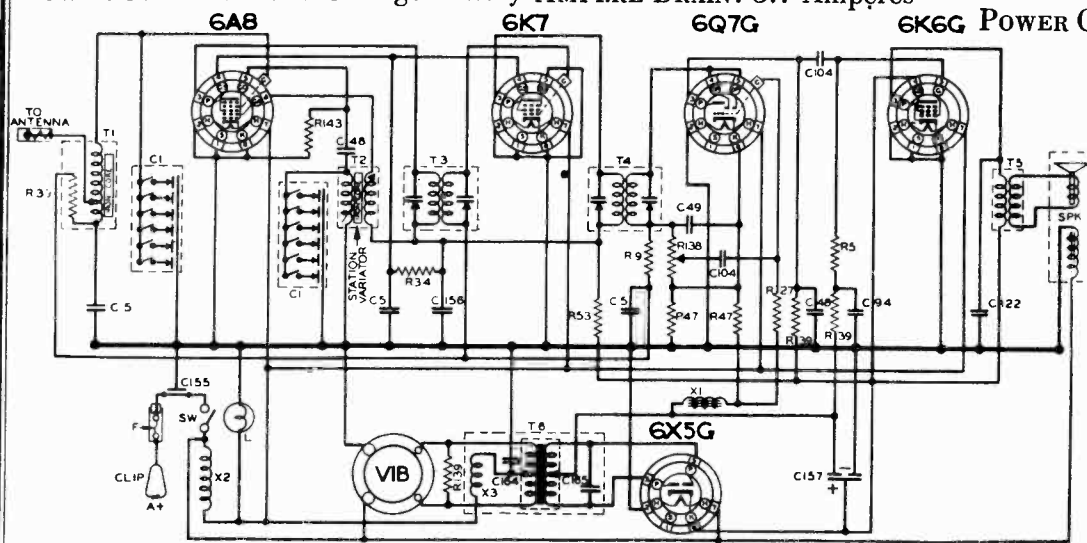
SENSITIVITY: (Given below for 500 Milliwatts output—1.2 Volts across voice coil)
6K7 I. F. Grid (455 K. C.) 5500 Microvolts
6A8 Mixer Grid (455 K. C.) 100 Microvolts
6A8 Mixer Grid (1,000 K. C.) 140 Microvolts

NOBLITT SPARKS INDUSTRIES

MODEL 6
Schematic, Parts
Voltage, Specs.
Tuner, Alignment

POWER SUPPLY: 6 Volt Storage Battery AMPERE DRAIN: 5.7 Amperes

POWER OUTPUT: 3.3 Watts



ARVIN CAR RADIO MODEL 6

MODEL 6 SOCKET VOLTAGES
All readings taken with a voltage of 5.8 at filament of tubes.

Grid Bias	2.2	2.2	2.0	15.0
Anode	165			
* Oscillator Grid	18-8			
Plate	190	190	120	187
Screen	90	90	190	215 AC
Suppressor	0			
Cathode			2.0	
Heater	5.8	5.8	5.8	5.8
Tube	6A8	6K7	6Q7G	6K6G
				6X5C

RESISTORS		CONDENSERS		CHOKES & TRANSFORMERS		MISCELLANEOUS UNITS	
QTY	RESISTANCE	TYPE	VOLTS	TYPE	PART NO.	SYMBOL	DESCRIPTION
1	100K	1	50	1	00-13443	1	FUSE 50W-250V
1	100K	2	50	2	00-13443	2	SW. LIGHT WAZER NO. 5
1	100K	1	50	3	00-13444	3	SW. SWITCH - PART OF NO. 17-15-20
1	100K	1	50	4	00-13445	4	VIBRATOR
1	100K	1	50	5	00-13446	5	
1	100K	1	50	6	00-13447	6	
1	100K	1	50	7	00-13448	7	
1	100K	1	50	8	00-13449	8	
1	100K	1	50	9	00-13450	9	
1	100K	1	50	10	00-13451	10	
1	100K	1	50	11	00-13452	11	
1	100K	1	50	12	00-13453	12	
1	100K	1	50	13	00-13454	13	
1	100K	1	50	14	00-13455	14	
1	100K	1	50	15	00-13456	15	
1	100K	1	50	16	00-13457	16	
1	100K	1	50	17	00-13458	17	
1	100K	1	50	18	00-13459	18	
1	100K	1	50	19	00-13460	19	
1	100K	1	50	20	00-13461	20	
1	100K	1	50	21	00-13462	21	
1	100K	1	50	22	00-13463	22	
1	100K	1	50	23	00-13464	23	
1	100K	1	50	24	00-13465	24	
1	100K	1	50	25	00-13466	25	
1	100K	1	50	26	00-13467	26	
1	100K	1	50	27	00-13468	27	
1	100K	1	50	28	00-13469	28	
1	100K	1	50	29	00-13470	29	
1	100K	1	50	30	00-13471	30	
1	100K	1	50	31	00-13472	31	
1	100K	1	50	32	00-13473	32	
1	100K	1	50	33	00-13474	33	
1	100K	1	50	34	00-13475	34	
1	100K	1	50	35	00-13476	35	
1	100K	1	50	36	00-13477	36	
1	100K	1	50	37	00-13478	37	
1	100K	1	50	38	00-13479	38	
1	100K	1	50	39	00-13480	39	
1	100K	1	50	40	00-13481	40	
1	100K	1	50	41	00-13482	41	
1	100K	1	50	42	00-13483	42	
1	100K	1	50	43	00-13484	43	
1	100K	1	50	44	00-13485	44	
1	100K	1	50	45	00-13486	45	
1	100K	1	50	46	00-13487	46	
1	100K	1	50	47	00-13488	47	
1	100K	1	50	48	00-13489	48	
1	100K	1	50	49	00-13490	49	
1	100K	1	50	50	00-13491	50	

- TUBES:
- 6A8 1st Detector, Oscillator
 - 6K7 I. F. Amplifier
 - 6Q7G 2nd Detector, 1st Audio, A. V. C.
 - 6K6G Audio Output
 - 6X5G Full Wave Rectifier

SENSITIVITY: (Specified for 500 milliwatts out-put. 1.2 volts across voice coil of speaker.)

- 1000 K.C.—Ant. (50 uuf dummy) 8.2 Microvolts
- 1000 K.C.—Grid Cap 6A8 Tube 130 Microvolts
- 455 K.C.—Grid Cap 6A8 Tube 110 Microvolts
- 455 K.C.—Grid Cap of 6K7 Tube, 5,200 Microvolts

FREQUENCY RANGE: 1,540-510 Kilocycles

BALANCING INSTRUCTIONS MODEL 6 ARVIN CAR RADIO

1. Connect the balancing oscillator to the grid cap of the 6A8 tube through a .0002 mfd. condenser. Place a 200,000 ohm resistor between the grid cap of the 6A8 and the grid clip which normally fits on the cap of the 6A8 tube. This will maintain the grid bias on the tube during alignment.
2. Adjust padders 1, 2, 3, and 4 for maximum output.
3. Rotate the Variator shaft to its mid-point position.
4. Reading from left to right the push buttons cover the following frequencies:

Button No.	Frequency Range	Oscillator Padder No.	Antenna Padder No.
A	1550-1050	5	6
B	1350-850	7	8
C	1350-850	9	10
D	1100-650	11	12
E	1100-650	13	14
F	950-510	15	16

Push button frequencies are adjusted by the padder screws directly above and below each individual push button. For example, suppose a station operating on 1400 K.C. was desired; this is within the range of button A only.

- a. Connect a balancing oscillator to the set antenna terminal through a 50 uuf dummy antenna.
- b. With an input frequency of 1400 K.C., adjust padder No. 5 to resonance. Adjust padder No. 6 for maximum output.

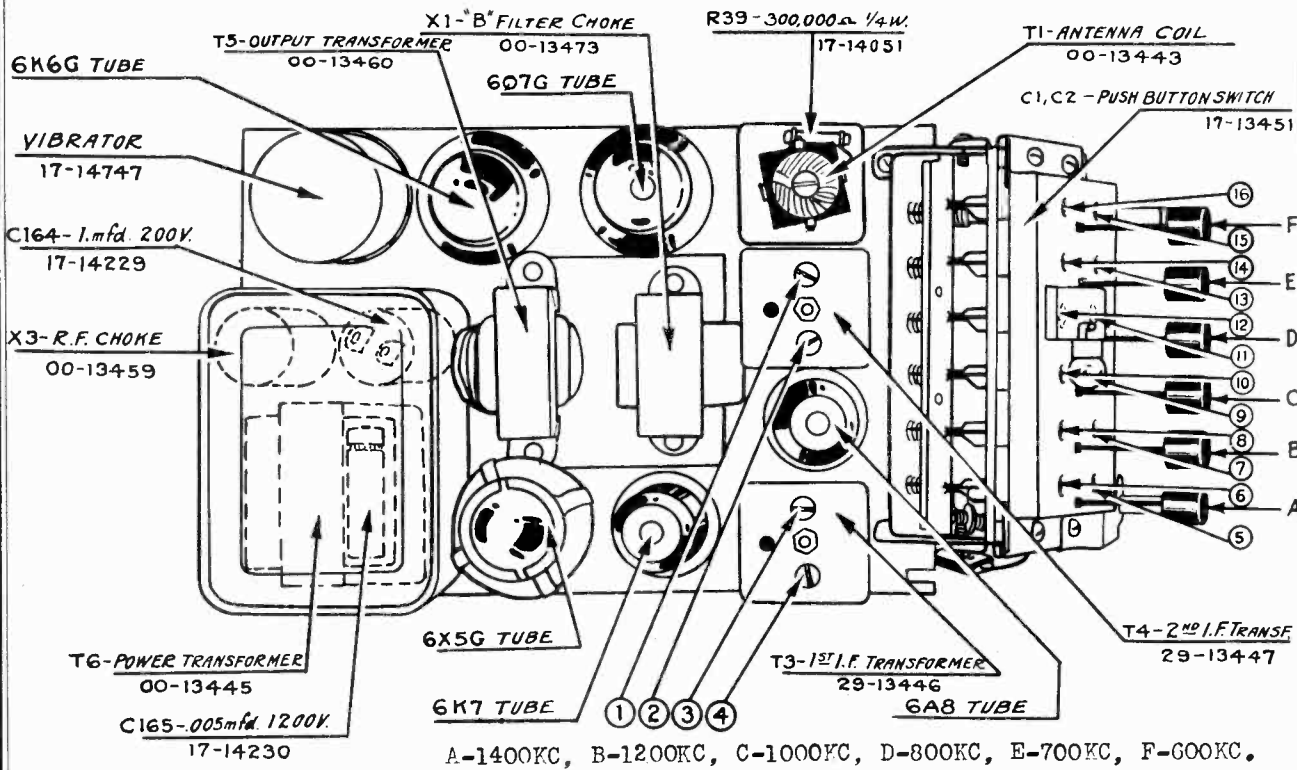
Follow the same procedure for any of the other buttons always selecting a frequency within range of the respective buttons.

5. Final adjustment of the Antenna padders should be made with the receiver installed in the car connected to the car antenna.

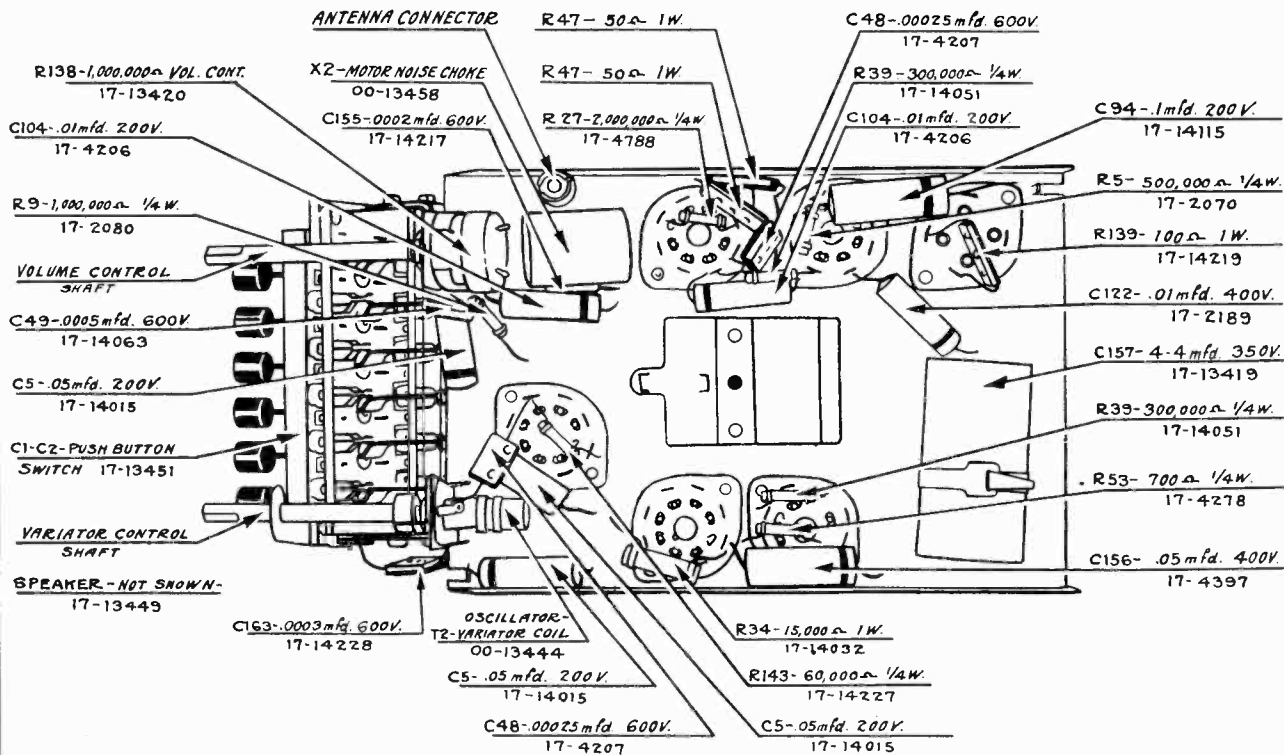
MODEL 6
Socket, Trimmers
Layout

NOBLITT SPARKS INDUSTRIES

MODEL-6 - TOP VIEW



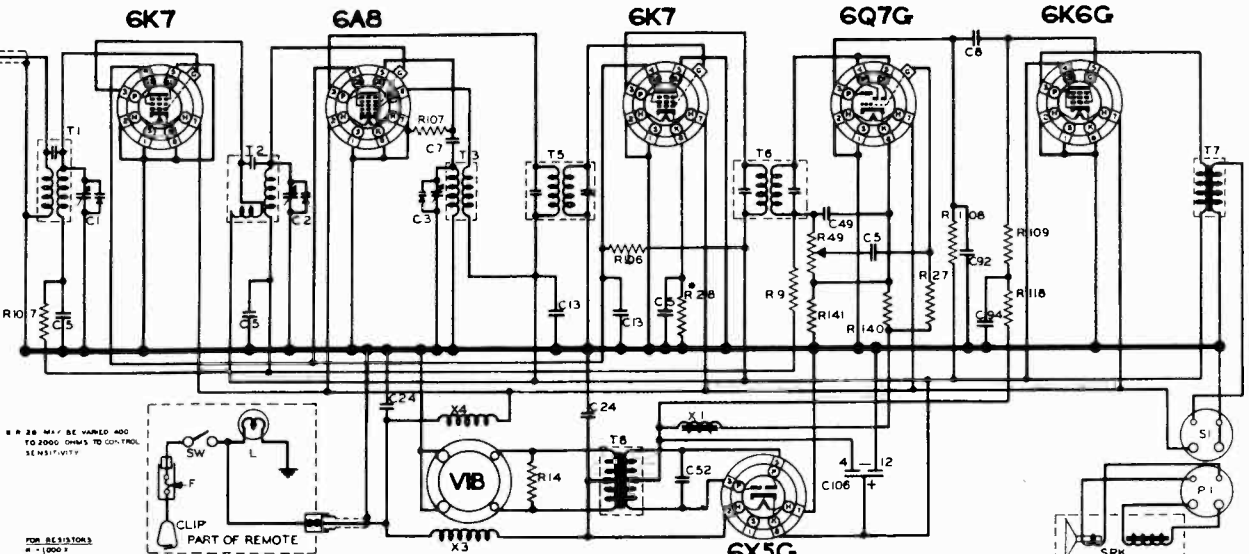
MODEL-6 - BOTTOM VIEW



NOBLITT SPARKS INDUSTRIES

MODEL 22-A
Schematic, Parts
Voltage, Alignment

POWER SUPPLY: 6-Volt Storage Battery
 AMPERE DRAIN: 5.7 Amperes
 FREQUENCY RANGE: 1,575-540 Kilocycles
 POWER OUTPUT: 3 Watts



FOR RESISTORS
R = 1000
M = 1000000

R	OHMS	W	PART NO.
8	1M	1/2	7-3080
14	200K	1/2	17-4287
48	500K	1/2	17-1433B
82	30K	1/2	17-1417
108	50K	1/2	17-1471
121	100K	1/2	17-14172
108	200K	1/2	17-14173
111	30K	1/2	17-14174
113	250K	1/2	17-14175
118	300K	1/2	17-14176
111	30K	1/2	17-14177
113	250K	1/2	17-14178
118	300K	1/2	17-14179
123	450K	1/2	17-14187
243	90K	1/2	17-44320
27	2M	1/2	17-4788
24	150K	1/2	17-4809
41	60K	1/2	17-4824

C	CAPACITY	VOLT	PART NO.
1	THREE		
2	500K	7-15726	
3	VARIABLE		
5	25	300	7-14015
6	200K	7-2004	
8	21	450	7-14016
13	1	300	7-4844
24	5	300	7-4040
43	500K	300	7-4883
53	20	300	7-4882
93	20	300	7-4013
96	1	300	7-14019
100	4-8	300	7-8132

T	TYPE	PART NO.
1	TRANSFORMER	00-1336
2	ANTENNA COIL	00-1498
3	A.F. COIL	00-1499
4	I.F. COIL	00-1499
5	1ST I.F. COIL	00-1499
6	2ND I.F. COIL	00-1499
7	OUTPUT TRANS.	00-1499
8	POWER TRANS.	00-1499
9	CHOKER	4
10	W. FILTER	00-4817
11	W. FILTER	00-438
12	W. FILTER	00-1337

SYMBOL	DESCRIPTION	PART NO.
S1	SPEAKER SOCKET	17-2730
S2	DUAL LIGHT IN REMOTE CONTROL	17-2804
VIB	VIBRATOR	17-14747
SW	POWER SWITCH IN REMOTE CONTROL	17-2387
F	FUSE 50A-250V	17-1885
SPK	SPEAKER	17-1885
P1	PLUG ASSEMBLY TO SPEAKER	

MODEL 22A SOCKET VOLTAGES

(All readings taken with an input voltage of 5.8. Heater is shown as 6.3 although 5.8 is the average voltage at filaments.)

Tube	Heater	Cathode	Suppressor	Screen	Plate	*Oscillator Grid	Anode Grid*	*Grid Bias
6K7	6.3	0	0	60	150	.....	.....	1.4
6A8	6.3	0	.....	60	150	3.6 Volts	90	1.4
6K7	6.3	2.6	0	60	150	.....	.....	2.6
6Q7G	6.3	1.35	.....	.....	120	.....	.....	2.5
6K6G	6.3	0	.....	150	150	.....	.....	11.
6X5G	6.3	150	.....	.....	190AC	.....	.....	.....

* Measured with Vacuum Tube Voltmeter—600 to 1,400 K. C.

MODEL 22A ARVIN CAR RADIO BALANCING INSTRUCTIONS

SPECIAL NOTE: Model 22A Arvin Car Radio has been designed to utilize the advantages of the exclusive Arvin Permatune Intermediate Frequency Transformers which are prebalanced at the factory and sealed to prevent frequency drift. This Arvin feature greatly simplifies balancing procedure. It is necessary, therefore, to adjust only the three screws located on the tuning condenser as follows:

1. Rotate the tuning condenser completely out of mesh. Connect the balancing oscillator to the antenna lead through a 200 uuf. dummy antenna. Ground the balancing oscillator to the antenna cable shield.
2. With the balancing oscillator set to 1,575 K. C. adjust padder No. 1 to resonance.
3. Reset the balancing oscillator to 1,400 K.

C. Rotate the tuning condenser until the signal is tuned to resonance. Reduce the output of the balancing oscillator until the signal barely deflects the output meter.

4. Adjust padders Nos. 2 and 3 until a maximum output reading is obtained.
5. After installation of the radio receiver in an automobile, tune in a very weak station between 1,300 and 1,500 K. C. and readjust padder No. 3 for maximum output.

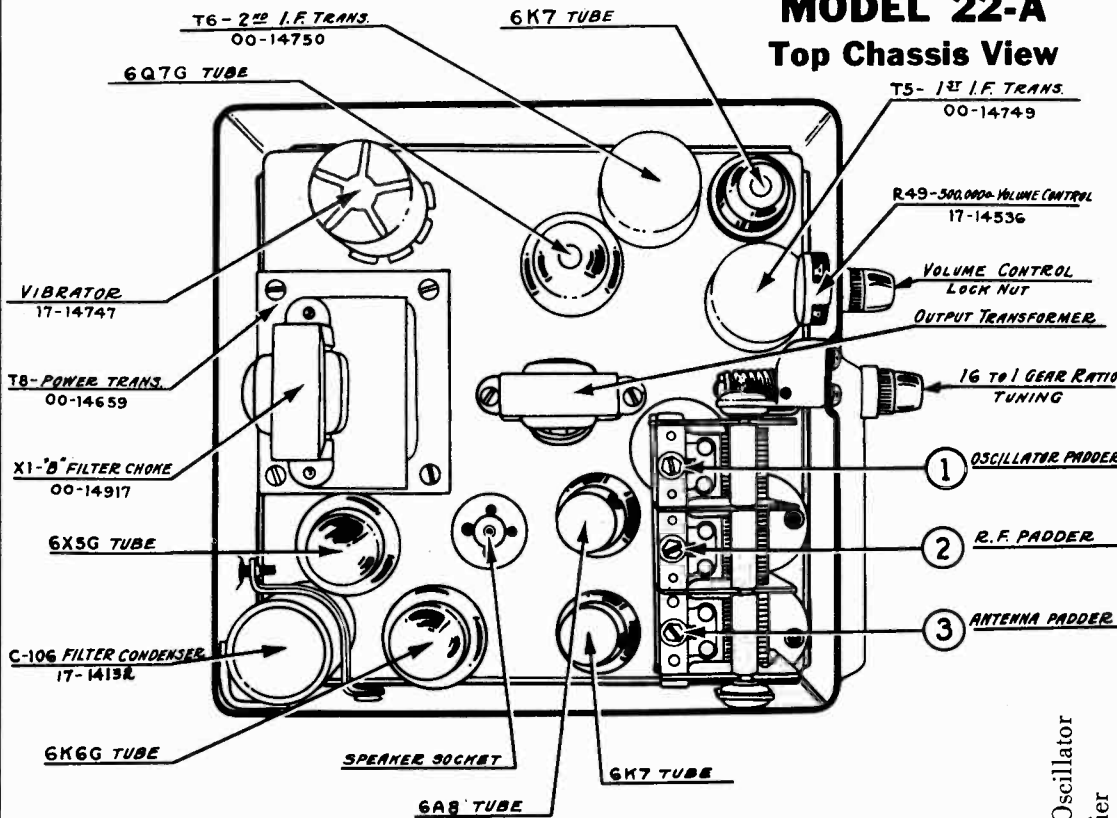
The sensitivity may be determined by reading the number of microvolts input required to produce 500 milliwatts output. That output is obtained when a reading of 1.2 volts across the voice coil of the speaker is indicated by the output meter.

Form No. RS10 Jan. 1938

MODEL 22-A
Socket, Trimmers
Layout, Specs.

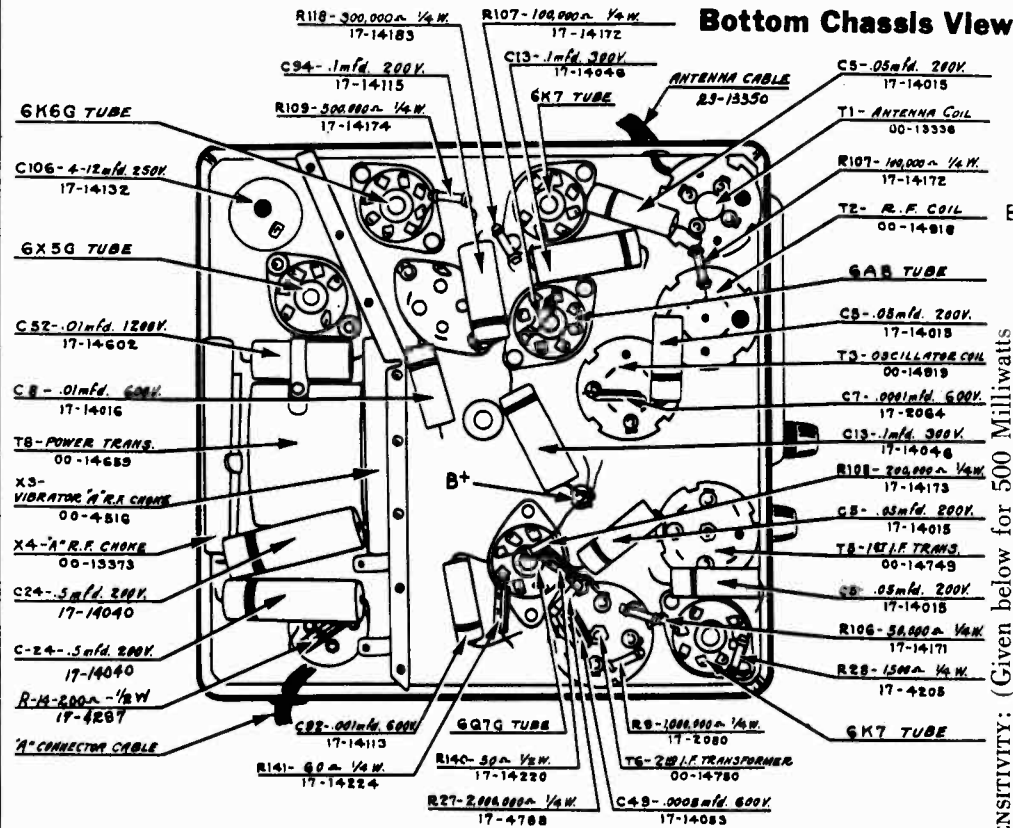
NOBLITT SPARKS INDUSTRIES

MODEL 22-A
Top Chassis View



DIAL TUNING RATIO: 16:1
CHASSIS SHIPPING WEIGHT: 19 pounds
CHASSIS DIMENSIONS: 8 1/4" x 8 1/4" x 6 5/8"

Bottom Chassis View



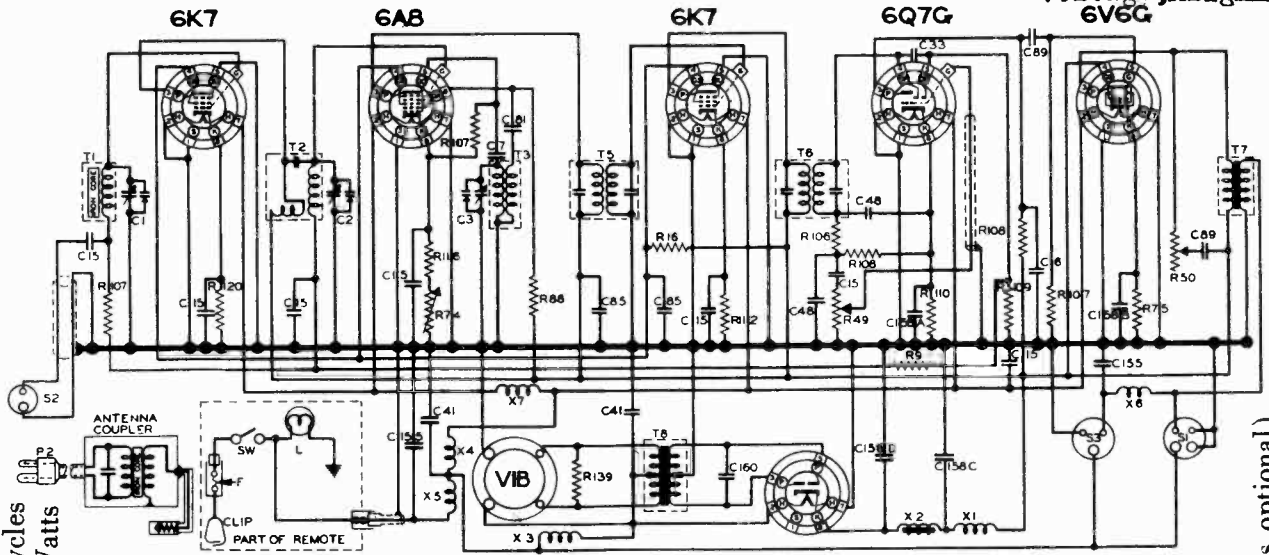
TUBES:
 6A8 1st Detector-Oscillator
 6K7 R. F. Amplifier
 6K7 I. F. Amplifier
 6Q7G 2nd Detector; 1st Audio; A. V. C.
 6K6G Audio Output
 6X5G Full Wave Rectifier
 SPEAKER: 5" Diameter, 5 Ohm Field, 3.50 Ohm Voice Coil

SENSITIVITY: (Given below for 500 Milliwatts output—1.4 Volts across speaker voice coil.)
 6K7 I. F. Grid (170 K. C.) 12,000 Microvolts
 6A8 Mixer Grid (170 K. C.) 500 Microvolts
 6A8 Mixer Grid (1,000 K. C.) 800 Microvolts
 6K7 R. F. Grid (1,000 K. C.) 35 Microvolts
 * Antenna Input (1,000 K. C.) 10 Microvolts
 * 18 uuf. dummy antenna input.

MODEL 42
Alignment

NOBLITT SPARKS INDUSTRIES

MODEL 32
Schematic, Parts
Voltage, Alignment



FREQUENCY RANGE: 1,575-540 Kilocycles
POWER OUTPUT: 5 Watts

RESISTORS			CONDENSERS			CHOKES & TRANSFORMERS			MISCELLANEOUS UNITS		
SYMBOL	VALUE	PART NO.	SYMBOL	VALUE	PART NO.	SYMBOL	DESCRIPTION	PART NO.	SYMBOL	DESCRIPTION	PART NO.
R1	50K	17-4763	C1	1000 P	17-1000P	T1	6K7	17-2200	S1	SPEAKER SOCKET (HEMISEL CASE)	17-2230
R2	500K	17-4534	C2	1000 P	17-1000P	T2	6A8	17-4102	S2	ANTENNA COUPLER SOCKET	17-4526
R3	100K	17-4102	C3	1000 P	17-1000P	T3	6K7	17-4102	S3	SPEAKER SOCKET (EXTERNAL SPEAKER)	17-4527
R4	100K	17-4102	C4	1000 P	17-1000P	T4	6Q7G	17-4102	S4	ANTENNA COUPLER PLUG & CORD ASSY	17-4434
R5	100K	17-4102	C5	1000 P	17-1000P	T5	6V6G	17-4102	S5	DIAL LIGHT (REMOTE CONTROL)	17-1904
R6	100K	17-4102	C6	1000 P	17-1000P	T6	6X5G	17-4102	S6	POWER SWITCH (REMOTE CONTROL)	17-4147
R7	100K	17-4102	C7	1000 P	17-1000P	T7	HEATER FILTER	17-4102	S7	VIBRATOR	17-4147
R8	100K	17-4102	C8	1000 P	17-1000P	T8	ANTENNA COUPLER	17-4102	S8	FUSE (0A 25VOLT)	17-2187
R9	100K	17-4102	C9	1000 P	17-1000P	T9	ANTENNA COUPLER	17-4102	S9	ANTENNA COUPLER	17-4102
R10	100K	17-4102	C10	1000 P	17-1000P	T10	ANTENNA COUPLER	17-4102	S10	ANTENNA COUPLER	17-4102

MODEL 32 SOCKET VOLTAGES

Tube	Heater	Cathode	Suppressor	Screen	Plate	Anode Grid	Oscillator Grid	Grid Bias
6K7	6.3	2.5	0	70	235	.....	.....	2.5
6A8	6.3	3.2	0	70	235	185	3-14	3.2
6K7	6.3	2.5	0	70	235	.....	.....	2.5
6Q7G	6.3	1.7	.....	.....	130	.....	.....	1.7
6V6G	6.3	10.5	.....	235	220	.....	.....	10.5
6X5G	6.3	270	.....	.....	295 A. C.	.....	.....	.....

MODEL 32 ARVIN CAR RADIO BALANCING INSTRUCTIONS

SPECIAL NOTE: Model 32 and 42 Arvin Car Radio has been designed to utilize the advantages of the Exclusive Arvin Permutance Intermediate Frequency Transformers which are pre-balanced and sealed at the factory to prevent intermediate frequency drift. This Arvin feature greatly simplifies balancing procedure. It is necessary therefore to adjust only the three screws located on the variable tuning condenser as follows:

1. Rotate the tuning condenser until the rotor plates are completely out of mesh. Connect the balancing oscillator to the antenna input lead of the Phantom Filter through a 50 uuf. dummy antenna. Ground the balancing oscillator to the Phantom Filter red junction box.
2. With the balancing oscillator set to 1,575 K. C. adjust padder No. 1 to resonance.

3. Reset the balancing oscillator to 1,400 K. C.; rotate the tuning condenser until this signal is tuned to resonance. Reduce the output of the balancing oscillator until the signal barely deflects the output meter.
4. Adjust padder Nos. 2 and 3 until a maximum output reading is obtained.
5. After installation of the radio receiver in an automobile, tune in a very weak station between 1,300 and 1,500 K. C. and readjust padder No. 3 for maximum output.

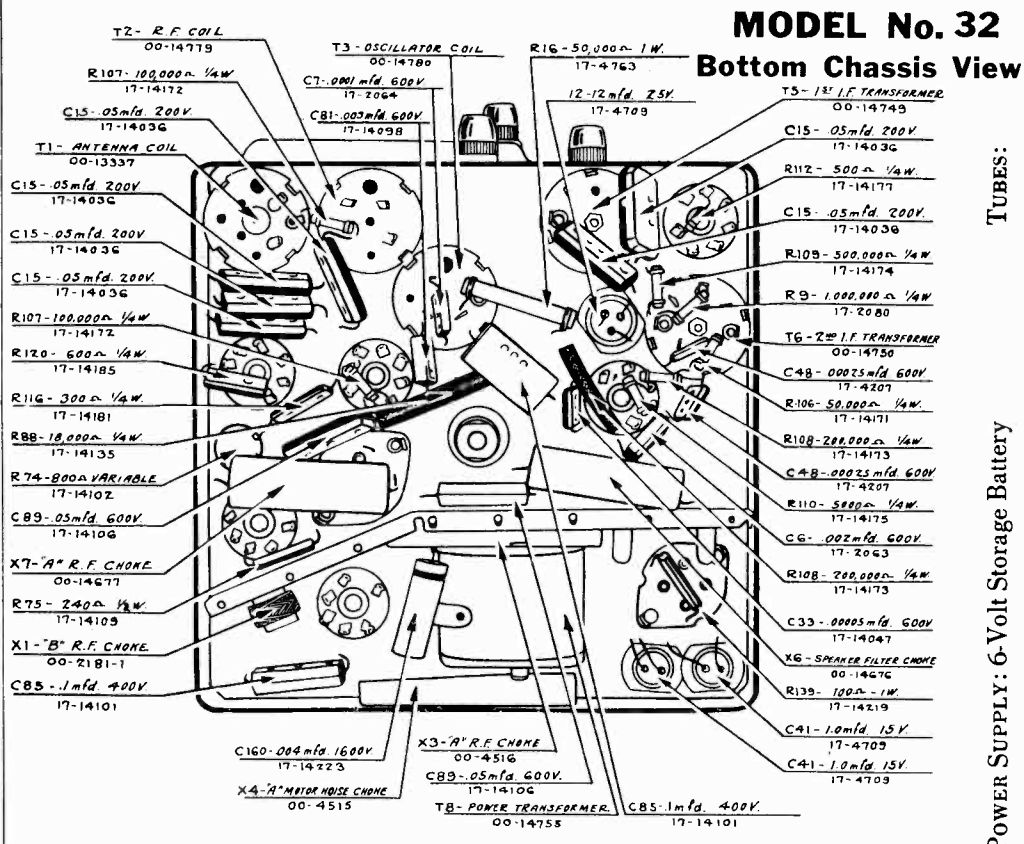
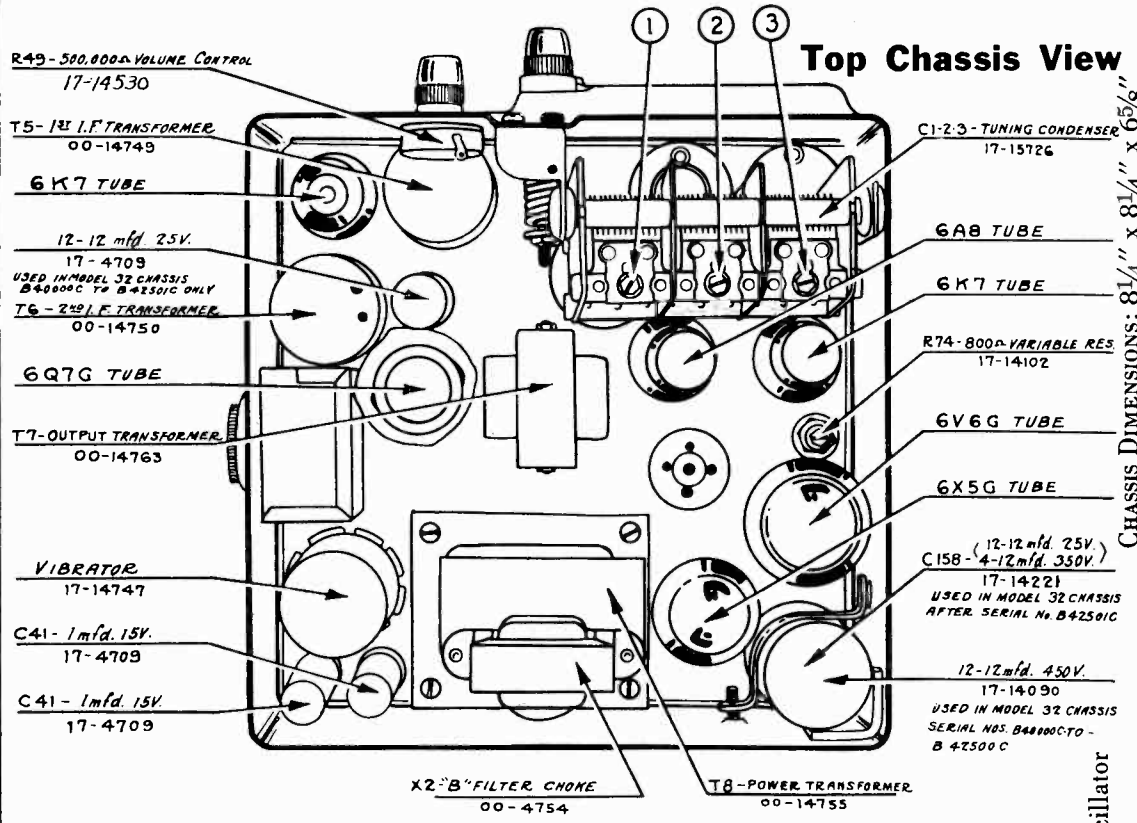
The sensitivity of this receiver may be determined by reading the number of microvolts input required to produce 100 watt output. That output is obtained when a reading of 1.9 volts across the voice coil of the speaker is indicated by the output meter.

Form No. RS11 Jan. 1938

MODEL 32

Socket, Trimmers
Layout, Specs.

NOBLITT-SPARKS INDUSTRIES, INC.



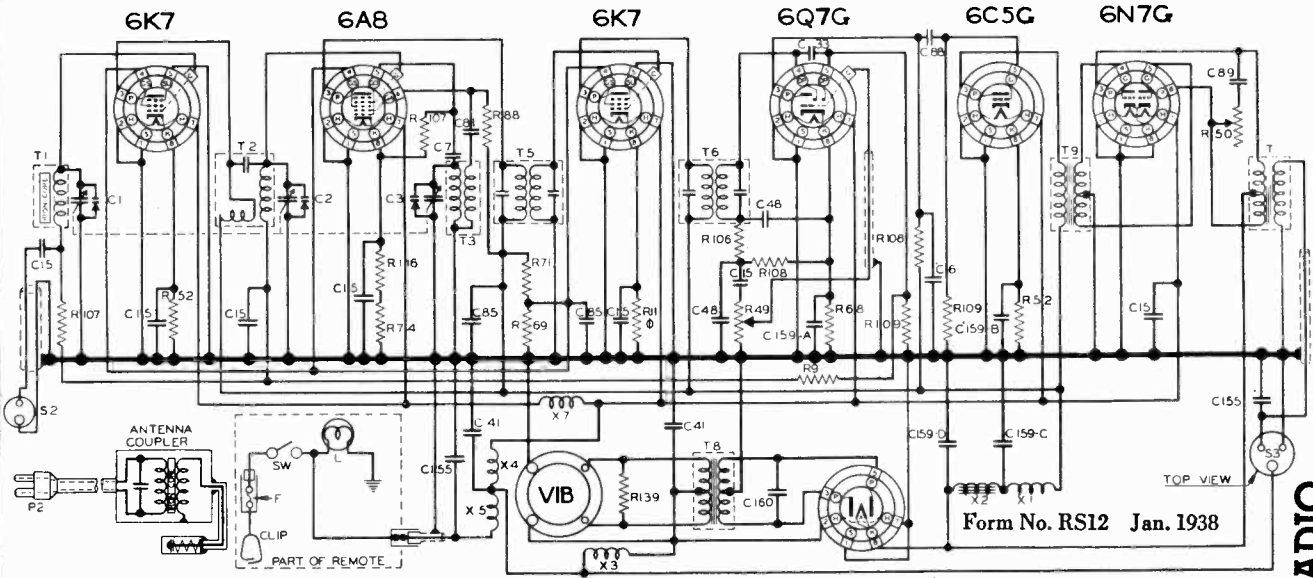
- TUBES:**
- 6K7 R. F. Amplifier
 - 6A8 1st Detector-Oscillator
 - 6K7 I. F. Amplifier
 - 6Q7G 2nd Detector; 1st Audio; A. V. C.
 - 6V6G Beam Power Output
 - 6X5G Full Wave Rectifier
- POWER SUPPLY:** 6-Volt Storage Battery
- AMPERE DRAIN:**
- 6K7 1. F. Grid (170 K. C.) 15,000 Microvolts
 - 6A8 Mixer Grid (170 K. C.) 700 Microvolts
 - 6A8 Mixer Grid (1,000 K. C.) 1,000 Microvolts
 - 6K7 R. F. Grid (1,000 K. C.) 32 Microvolts
 - Antenna Input (1,000 K. C.) 5 Microvolts

MODEL 9A
Alignment

NOBLITT-SPARKS INDUSTRIES, INC. Schematic, Parts
Voltage, Alignment

MODEL 42

Voltage, Alignment



FOR RESISTORS
R = 1000 Ω
M = 10000 Ω

⊙ MAY BE VARIED FROM 400 TO 3000 OHMS TO CONTROL SENSITIVITY

OZ4 (6X5G)

RESISTORS				CONDENSERS				CHOSES & TRANSFORMERS				MISCELLANEOUS UNITS			
TYPE	VALUE	PART NO.	DESCRIPTION	TYPE	VALUE	PART NO.	DESCRIPTION	TYPE	DESCRIPTION	TYPE	DESCRIPTION	TYPE	DESCRIPTION	PART NO.	DESCRIPTION
1	500K	17-1432	500K	1	0.001	17-1432	1	ANTENNA COIL	1	TRANSFORMER	DO-1337	F	FUSE 10AMP 25VOLT	17-208	
2	100K	17-1433	100K	2	0.002	17-2083	2	OSCILLATOR COIL	2	ANTENNA COIL	DO-14779	L	DIAL LIGHT - IN REMOTE CONTROL	17-3904	
3	50K	17-1434	50K	3	0.005	17-2084	3	FIRST I.F. COIL	3	OSCILLATOR COIL	DO-14780	P-2	ANTENNA COUPLER PLUG & CORD ASSEMBLY	17-4636	
4	25K	17-1435	25K	4	0.01	17-1435A	4	SECOND I.F. COIL	4	POWER TRANS.	DO-4786	S2	ANTENNA COUPLER SOCKET	17-4528	
5	10K	17-1436	10K	5	0.02	17-1436	5	OUTPUT TRANS.	5	INPUT TRANS.	DO-4785	S3	SPEAKER SOCKET	17-14527	
6	5K	17-1437	5K	6	0.05	17-1437	6	POWER TRANS.	6	HEATER FILTER	DO-4671	SW	POWER SWITCH - ON REMOTE CONTROL		
7	2.5K	17-1438	2.5K	7	0.1	17-1438	7	HEATER FILTER	7	VIBRATOR	17-14552	VIB	VIBRATOR		
8	1.5K	17-1439	1.5K	8	0.2	17-1439	8	WEAK CHOKE	8	WEAK CHOKE	DO-4781				
9	1K	17-1440	1K	9	0.5	17-1440	9	MEDIUM CHOKE	9	MEDIUM CHOKE	DO-4782				
10	500	17-1441	500	10	1	17-1441	10	STRONG CHOKE	10	STRONG CHOKE	DO-4783				
11	250	17-1442	250	11	2	17-1442	11	POWER TRANS.	11	POWER TRANS.	DO-4784				
12	100	17-1443	100	12	5	17-1443	12	OUTPUT TRANS.	12	OUTPUT TRANS.	DO-4785				
13	50	17-1444	50	13	10	17-1444	13	POWER TRANS.	13	POWER TRANS.	DO-4786				
14	25	17-1445	25	14	20	17-1445	14	HEATER FILTER	14	HEATER FILTER	DO-4671				
15	10	17-1446	10	15	50	17-1446	15	VIBRATOR	15	VIBRATOR	17-14552				
16	5	17-1447	5	16	100	17-1447	16	WEAK CHOKE	16	WEAK CHOKE	DO-4781				
17	2.5	17-1448	2.5	17	200	17-1448	17	MEDIUM CHOKE	17	MEDIUM CHOKE	DO-4782				
18	1.5	17-1449	1.5	18	500	17-1449	18	STRONG CHOKE	18	STRONG CHOKE	DO-4783				
19	0.5	17-1450	0.5	19	1000	17-1450	19	POWER TRANS.	19	POWER TRANS.	DO-4784				
20	0.2	17-1451	0.2	20	2000	17-1451	20	OUTPUT TRANS.	20	OUTPUT TRANS.	DO-4785				
21	0.1	17-1452	0.1	21	5000	17-1452	21	POWER TRANS.	21	POWER TRANS.	DO-4786				

IF PEAK 170K C - BALANCE AT 1400K C
CHECK AT 1000 & 600 K C.
NOBLITT-SPARKS INDUSTRIES, INC.,
COLUMBUS, INDIANA.

FOR BALANCING INSTRUCTIONS SEE ARVIN CAR RADIO MODEL 32 MODEL 42 SOCKET VOLTAGES

(All readings taken with an input voltage of 5.8. Heater voltage is shown as 6.8 although 5.8 is the average obtained in most car installations.)

Tube	Heater	Cathode	Suppressor	Screen	Plate	Anode Grid	Oscillator Grid	*Grid Bias
6K7	6.3	3.5	0	85	260			3.5
6A8	6.3	3.0			260	180	5-10 V.	3.0
6K7	6.3	5.0	0	85	260			5.0
6Q7G	6.3	1.9			160			1.9
6C5G	6.3	6.0			260			6.0
6N7G	6.3	0			275			0
6X5G	6.3	285			310			

***Taken with No. RF Signal Input MODEL 9A ARVIN CAR RADIO BALANCING INSTRUCTIONS**

SPECIAL NOTE: All Arvin 1937 model car radios are designed to use the Exclusive Arvin Permaset prebalanced intermediate frequency transformers, which require no adjustment whatsoever. This Arvin feature greatly simplifies balancing procedure. It is necessary, therefore, to adjust only the three screws located on the tuning condenser as follows:

- See page 51 for trimmer condenser locations.
1. Rotate the tuning condenser completely out of mesh. Connect the balancing oscillator to the antenna lead. Ground the balancing oscillator to the radio chassis.

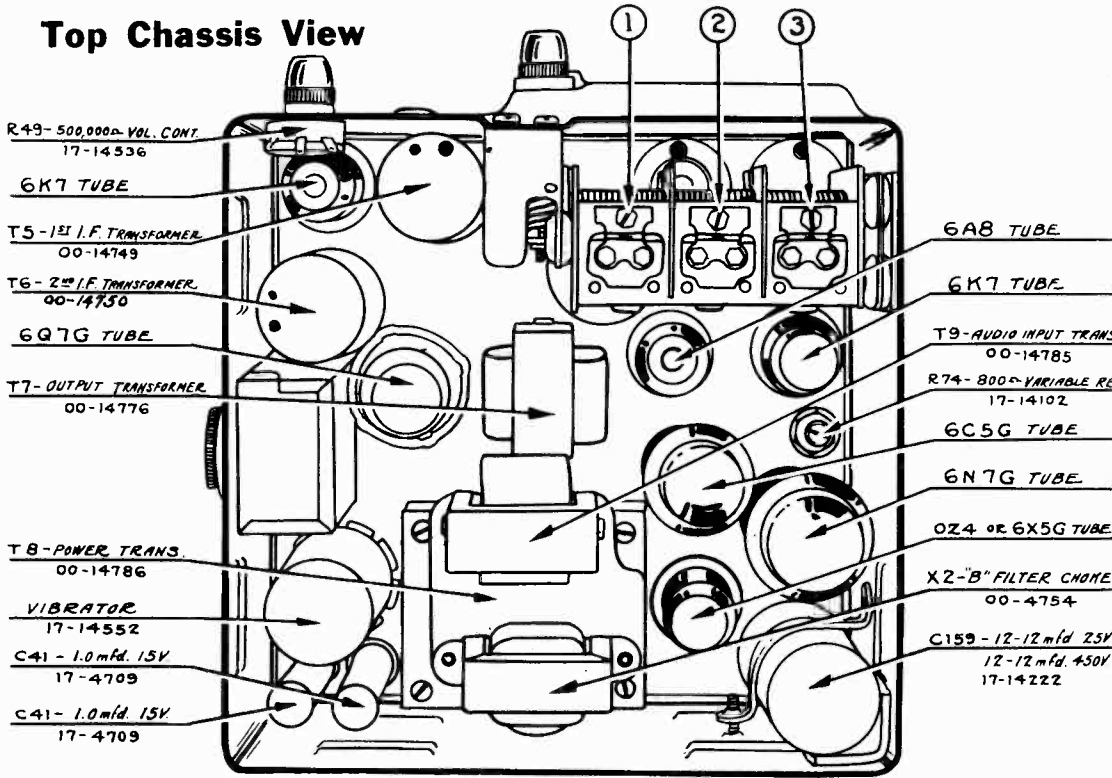
2. With the balancing oscillator set to 1575 K. C. adjust padder condenser No. 1 for maximum output.
3. Reset the balancing oscillator to 1400 K. C. Rotate the tuning condenser until this signal is tuned to resonance. Reduce the output of the balancing oscillator until the signal barely deflects the output meter.
4. Adjust padders No. 2 and No. 3 until maximum output reading is obtained.
5. After installation in car tune in a WEAK station between 1150 and 1400 K. C. and readjust padder No. 3 for maximum output.

MODEL 42 CAR RADIO

MODEL 42
Socket, Trimmers
Layout, Specs.

NOBLITT-SPARKS INDUSTRIES, INC.

Top Chassis View



6A8 Mixer Gr. (1,000 K. C.) 370.00 Microvolts
6K7 R. F. Grid (1,000 K. C.) 18.0 Microvolts
* Antenna Input (1,000 K. C.) 3.5 Microvolts
* 50 uuf. dummy antenna input

FREQUENCY RANGE: 1,575-540 Kilocycles

POWER OUTPUT: 12.0 Watts

SPEAKER: 8" separate case type; other type optional.

VOICE COIL: E-9 3 Ohms; E-10 3 Ohms

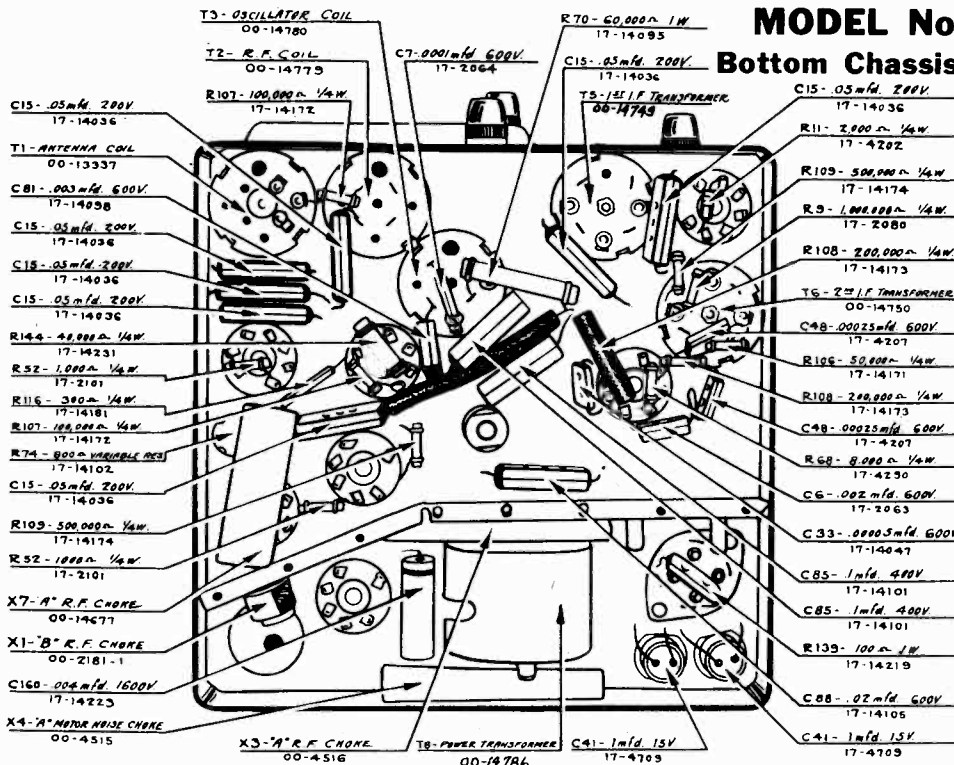
POWER SUPPLY: 6-volt storage battery

AMPERE DRAIN: 8 Amperes

DIAL TUNING RATIO: 16:1

CHASSIS SHIPPING WEIGHT: 19 pounds

**MODEL No. 42
Bottom Chassis View**



SENSITIVITY: (Given below for 1 Watt output—
1.7 Volts across speaker voice coil.)

6K7 I. F. Grid (170 K. C.) 7000.0 Microvolts
6A8 Mixer Grid (170 K. C.) 300.00 Microvolts

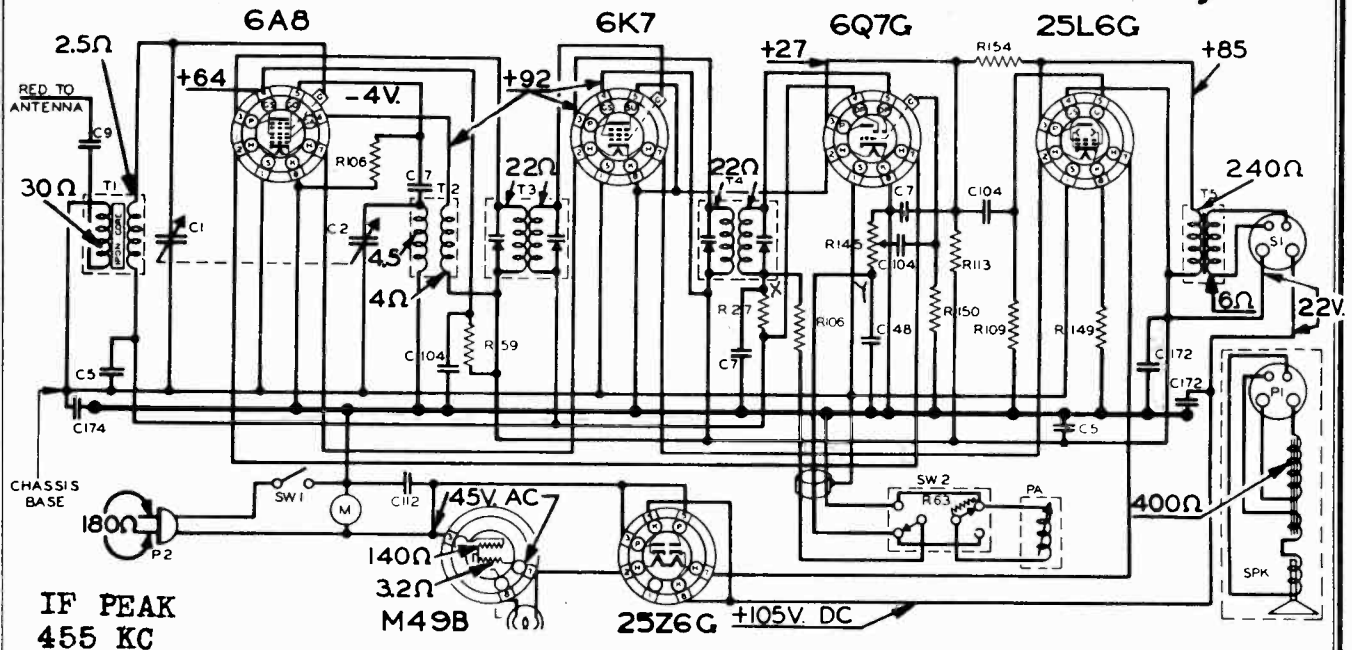
TUBES:

- 6K7 R. F. Amplifier
- 6A8 1st Detector-Oscillator
- 6K7 I. F. Amplifier
- 6Q7G 2nd Detector, 1st Audio Amplifier, A. V. C.
- 6C5G 2nd Audio Amplifier, driver
- 6N7G Push Pull Audio Output Amplifier
- 6X5G or OZ4 Full Wave Rectifier

Voltage, Alignment Specifications

NOBLITT-SPARKS INDUSTRIES, INC.

MODELS 58, 58A, 88
Chassis RE29, RE35
Schematic, Parts



IF PEAK
455 KC

All voltage readings taken to cathode terminal of 6A8 tube.

*Circuit diagram of Radio Chassis RE29 is same as above-except that R106 is connected between points X & Y and phono switch and pickup is not included.

RESISTORS			
Ref. No.	Part No.	Description	Price
R59	17-4191	15,000 ohms 1/2 watt	.20
R27	17-4788	2,000,000 ohms 1/2 watt	.20
R106	17-14171	50,000 ohms 1/2 watt	.20
R109	17-14174	500,000 ohms 1/2 watt	.20
R-113	17-14178	250,000 ohms 1/2 watt	.20
R149	17-14241	150 ohms 1/2 watt	.20
R150	17-14242	5,000,000 ohms 1/2 watt	.20
R154	17-14244	1,500,000 ohms 1/2 watt	.20
CONDENSERS			
Ref. No.	Part No.	Description	Price
C7	17-2064	.0001 mfd. 600 volt	.25
C104	17-4206	.01 mfd. 200 volt	.30
C48	17-4207	.00025 mfd. 600 volt	.25
C9	17-4292	.001 mfd. 600 volt	.25
C5	17-14015	.05 mfd. 200 volt	.30
C112	17-14139	.05 mfd. 400 volt	.40
C172 A & B	17-14239	20-20 mfd. 150 volt	2.25
C174	17-14248	.2 mfd. 400 volt	.50
C1-C2	17-15900	Tuning Condenser	3.00

COILS AND TRANSFORMERS			
Ref. No.	Part No.	Description	Price
T2	00-15979	Oscillator Coil	.75
T-5	00-15980	Output Transformer	1.50
T3	00-16060	1st I.F. Transformer	1.50
T4	00-16061	2nd I.F. Transformer	1.50
T1	00-16083	Antenna Coil	.75
SPEAKERS, DIAL PARTS, CABINETS & MISCELLANEOUS			
Part No.	Description	Price	
10-5181	Chassis Mounting Screw per dos.	.15	
28-5188	Dial drive pulley (rubber)	.05	
83-2357	Grille cloth (ivory rayon)	.15	
29-13470	Tuning shaft retaining washer	.02	
29-13583	Dial drive cord (16" long)	.20	
34-13360	Dial drive takeup spring	.05	
17-14997	Needle cup	.10	
17-14998	Needle cup cover	.05	
19-15476	Tuning condenser drive pulley	.30	

17-15791B	Line cord and plug	.40
29-15905	Cabinet (58A Ivory)	6.50
32-15907	Chassis bottom cover	.35
29-15909	Cabinet (58-Black)	3.50
32-15915	Tuning shaft bracket	.10
29-15916	Cabinet back cover	.25
17-15926A	Volume control switch	1.00
29-15929	Knob (wood-walnut finish)	.15
29-15937	Knob (walnut bakelite)	.15
23-15958	Tuning Shaft	.10
17-15973	Dial light socket and clip	.20
81-15974	Dial glass (black background)	.70
17-15983	Speaker (5" diameter)	4.00
27-15989	Speaker (6" diameter)	4.50
81-16015	Dial glass (brown background)	.70
27-16020	Cabinet (Model 88)	11.75
17-16021	Phono pickup and arm	6.25
17-16022	Phono turntable and motor	8.50
29-16024	Knob (ivory bakelite)	.15
17-16065	Radio-Phono switch	.40
29-16068	Knob (Radio-Phono switch)	.15
41-16071	Basel (Model 88)	1.00

BALANCING INSTRUCTIONS

CAUTION: The signal generator dummy antenna should be grounded to the radio chassis through a .10 mfd. condenser. Do not make a direct connection as the chassis of the radio is connected directly to one side of the 110 volt light lines and may seriously damage the balancing oscillator attenuator if connected without a blocking condenser

Operation No.	Connect Balancing Oscillator to:	Balancing Oscillator Frequency	Adjust Padder Number	Dial Setting
1.	*6A8 Grid Cap	455 KC	1,2,3,& 4	600 Kc
2.	Antenna Wire	1725 KC	5	1725 KC
3.	Antenna Wire	1400 KC	6	1400 KC

* I.F. sensitivity should be 150 microvolts minimum for 50 milliwatts output.

DIAL LIGHT - Mazda 51
FREQUENCY RANGE - 1725 to 545 KC
POWER OUTPUT - 2.0 Watts
TUBES

CABINET DIMENSIONS

Model 58-58A width 11 1/2" height 8" depth 6 1/4"
Model 88 width 14 1/4" height 10 3/4" depth 11 1/8"

SPEAKER - 5" Electrodynamic; 3 ohm voice coil
VOLTAGE and FREQUENCY - AC - 119 volts, 40-60 cycles
DC - 110 volts

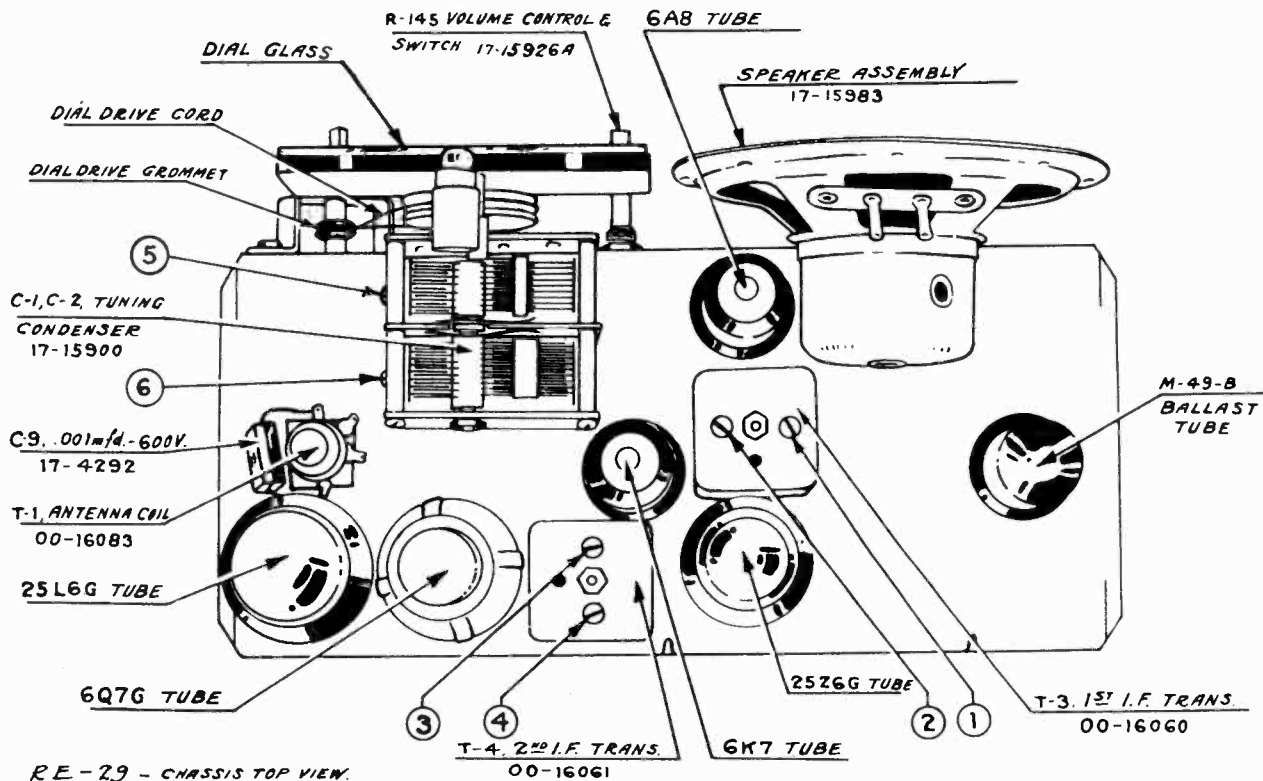
SENSITIVITY - 80 Microvolts minimum for 500 milliwatts output

WATTS POWER CONSUMPTION - 40 watts
APPROVED BY UNDERWRITERS

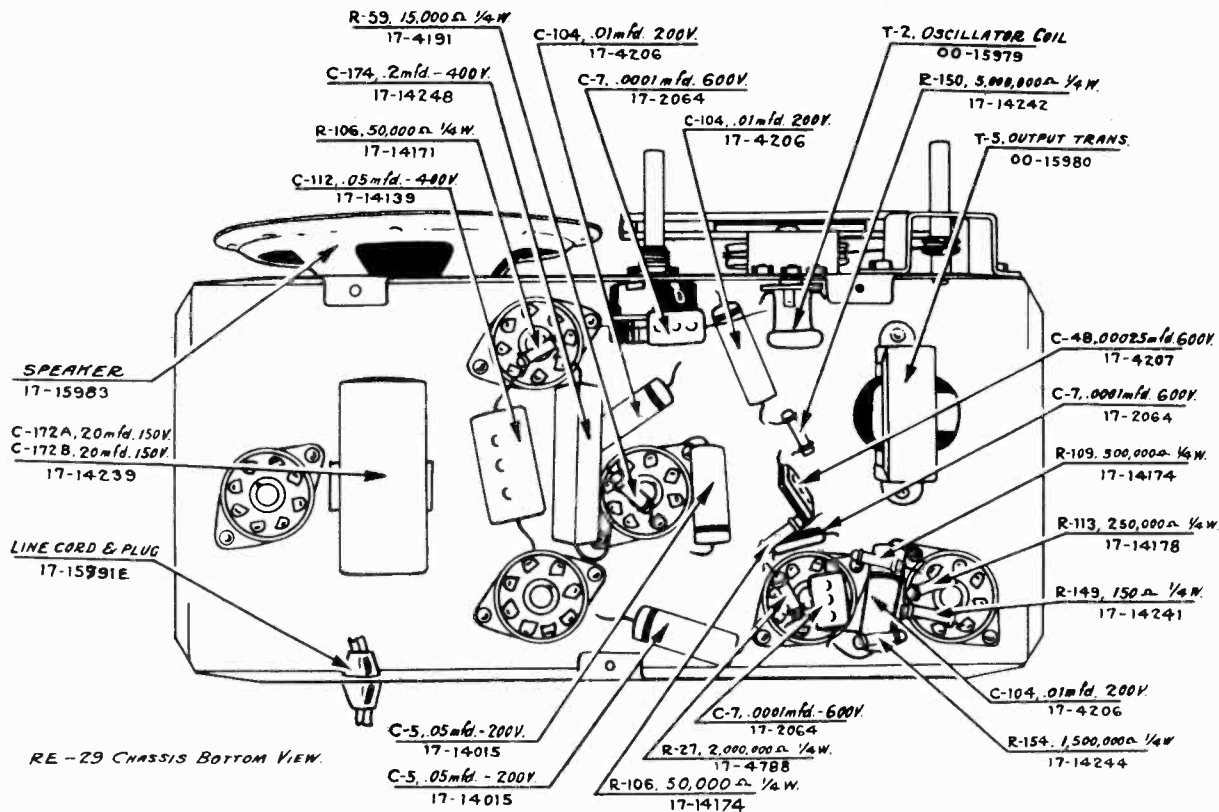
- 6A8 - 1st Detector, oscillator
- 6K7 - I.F. Amplifier
- 6Q7G - 2nd Detector, 1st audio
- 25L6G - Power output audio
- 25Z6G - Rectifier
- M-49B - Balast resistor

MODELS 58, 58A, 88
 Chassis RE29, RE35
 Socket, Trimmers
 Layout

NOBLITT-SPARKS INDUSTRIES, INC.



RE-29 - CHASSIS TOP VIEW.



RE-29 CHASSIS BOTTOM VIEW.

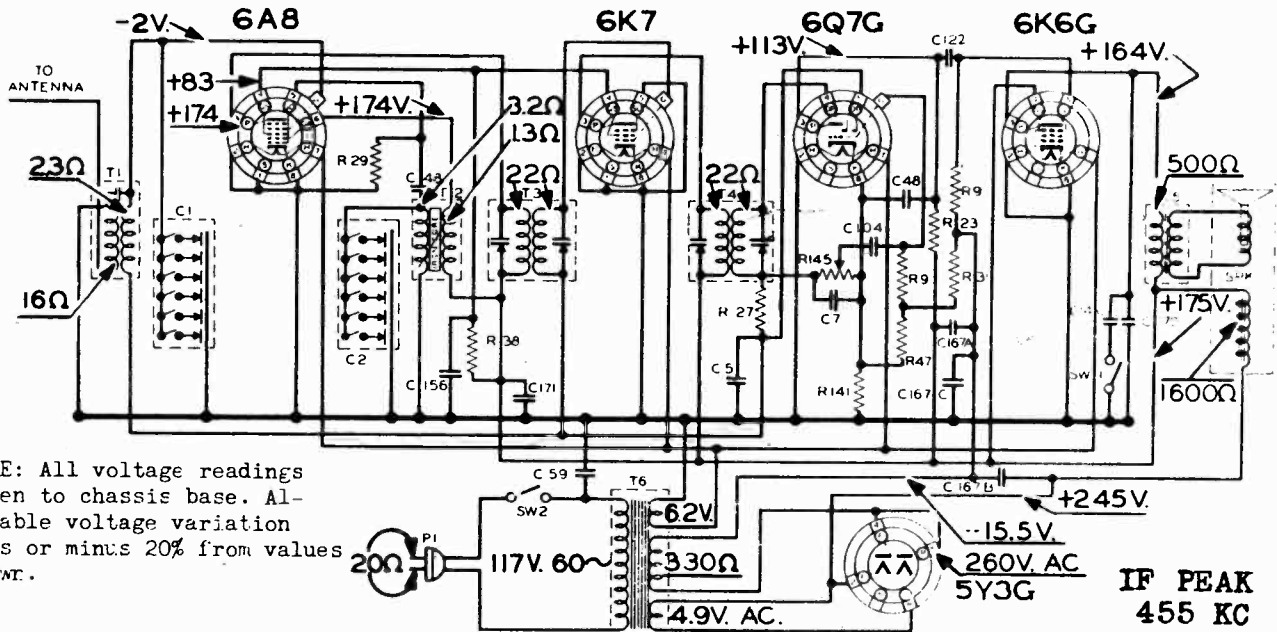
Parts, Alignment
Specifications

NOBLITT-SPARKS INDUSTRIES, INC.

MODEL 68
Chassis RE26
Schematic, Voltage

ARVIN RADIO CHASSIS RE26

RADIO MODEL NUMBER 68



NOTE: All voltage readings taken to chassis base. Allowable voltage variation plus or minus 20% from values shown.

Ref. No.	Part No.	Description	Price
R29	17-2060	50,000 ohm 1/2 watt	.20
R31	17-2066	260 ohm 1/2 watt	.20
R5	17-2070	500,000 ohm 1/2 watt	.20
R9	17-2080	1,000,000 ohm 1/2 watt	.20
R2	17-3011	250,000 ohm 1/2 watt	.20
R27	17-4788	2,000,000 ohm 1/2 watt	.20
R38	17-14028	30,000 ohm 1/2 watt	.20
R47	17-14059	50 ohm 1/2 watt	.20
R141	17-14224	60 ohm 1/2 watt	.20

Ref. No.	Part No.	Description	Price
C7	17-2064	.0001 mfd. - 600 Volt	.25
C122	17-2189	.01 mfd. - 400 Volt	.35
C140	17-2214	.02 mfd. - 400 Volt	.35
C104	17-4206	.01 mfd. - 200 Volt	.30
C48	17-4207	.00025 mfd. 600 Volt	.25
C156	17-4397	.05 mfd. - 400 Volt	.35
C5	17-14015	.05 mfd. - 200 Volt	.30
C167 A,B,C	17-14233	10-10 mfd. 450 Volt, 20 mfd. 25 Volt	2.50

Ref. No.	Part No.	Description	Price
C170	17-14237	.005 mfd. - 400 Volt	.25
C171	17-14238	1 mfd. - 400 Volt	.40
C59	17-14615	.01 mfd. - 400 Volt	.35
C1-C2	17-15925	6 button trimmer type conden.	5.00

Ref. No.	Part No.	Description	Price
T6	00-15919	Power Transformer	3.50
T5	00-15920	Output Transformer	1.50
T1	00-15921	Antenna Coil	.75
T2	00-15922	Oscillator Coil	.75
T3	00-15923	1st I.F. Transformer	1.50
T4	00-15924	2nd I.F. Transformer	1.50

Part No.	Description	Price
29-3136	Instruction sheet	.02
83-2356	Grille Cloth	.15
29-3120	Call letter sheets (per set)	.20

Part No.	Description	Price
29-3131	Carton	.35
29-3136	Instruction sheet	.02
29-13450	Knob - Push Button	.10
29-13456	Celluloid Call Letter Window Strip	.10
25-13461	Thumb Screw (acoustic/phon mounting)	.02
17-15791E	Line cord and Plug	.40
17-15904	5" Speaker	4.00
29-15908	Cabinet (walnut bakelite)	5.50
41-15914	Escutcheon Plate	.40
29-15916	Cabinet back (black fibre)	.25
17-15926A	Volume Control and Switch	1.00
17-15927	Tone Control Switch	.35
29-15937	Knob (walnut bakelite)	.15
29-15963	Knob-Variator (walnut bakelite)	.15

BALANCING INSTRUCTIONS

All adjustments to be made for maximum output. Volume and tone controls in high position. Standard output is indicated by a reading of 1.3V AC across the speaker voice coil.

Connect Oscillator To:	Balancing Oscillator Frequency	Depress Push Button No.	Adjust Padder No.	Padder Frequency Range
6A8 Grid Cap	455 KC	F	1, 2, 3, & 4	
* Red Antenna Wire	1400 KC	A	5 and 6	1725 to 1350 KC
Red Antenna Wire	1200 KC	B	7 and 8	1500 to 1150 KC
Red Antenna Wire	1000 KC	C	9 and 10	1300 to 900 KC
Red Antenna Wire	800 KC	D	11 and 12	1100 to 650 KC
Red Antenna Wire	700 KC	E	13 and 14	1100 to 650 KC
Red Antenna Wire	600 KC	F	15 and 16	900 to 550 KC

Padders 5, 7, 9, 11, 13 and 15 are oscillator padders and will cover the range of frequencies shown above.

*VARIATOR KNOB should be set to mid-position as indicated by setting white line opposite dot on cabinet front.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

TUBES

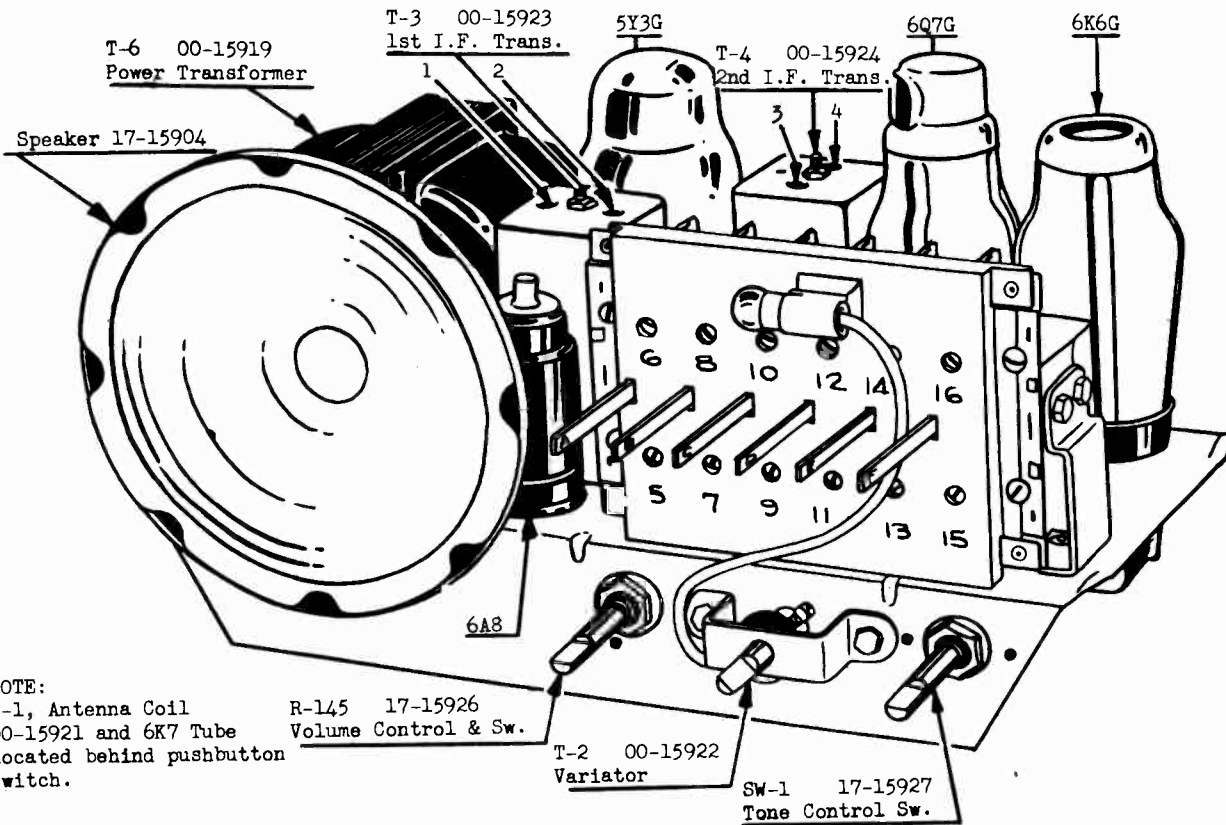
- 6A8 - 1st Detector, Oscillator
- 6K7 - I.F. Amplifier
- 6Q7G - 2nd Detector, AVC, Audio Amplifier
- 6K6G - Power Output Amplifier
- 5Y3G - Rectifier
- DIAL LIGHT: Mazda 51
- FREQUENCY RANGE: 1725 to 540 KC
- POWER OUTPUT: 2.3 Watts

- SPEAKER: 5" Electro Dynamic, 3 ohm Voice Coil 1600 Ohm field
- VOLTAGE & FREQUENCY: 117 V-60 cycles; AC only
- WATTS POWER CONSUMPTION: 45 watts
- SENSITIVITY: 20 microvolts minimum for 500 milliwatts output
- APPROVED BY: Underwriters
- LICENSED UNDER: RCA & Hazeltine Patents
- CHASSIS DIMENSIONS: width 10 3/4" height 6" depth 6 1/2"
- CABINET DIMENSIONS: width 11 1/2" height 8" depth 6 1/4"
- AUTOMATIC TUNING: 6 Push Button, Trimmer Tuned.

MODEL 68
 Chassis RE26
 Socket, Trimmer
 Layout

NOBLITT-SPARKS INDUSTRIES, INC.

MODEL RE26 CHASSIS TOP VIEW and Padder Condenser Locations



NOTE:

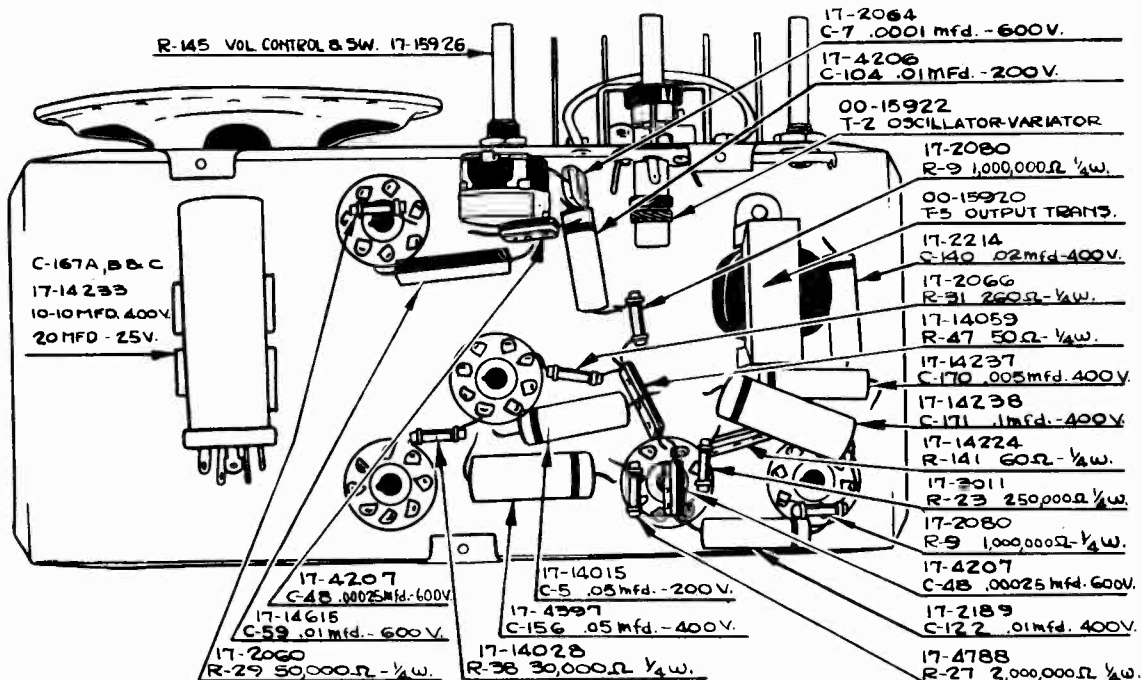
T-1, Antenna Coil
 00-15921 and 6K7 Tube
 located behind pushbutton
 switch.

R-145 17-15926
 Volume Control & Sw.

T-2 00-15922
 Variator

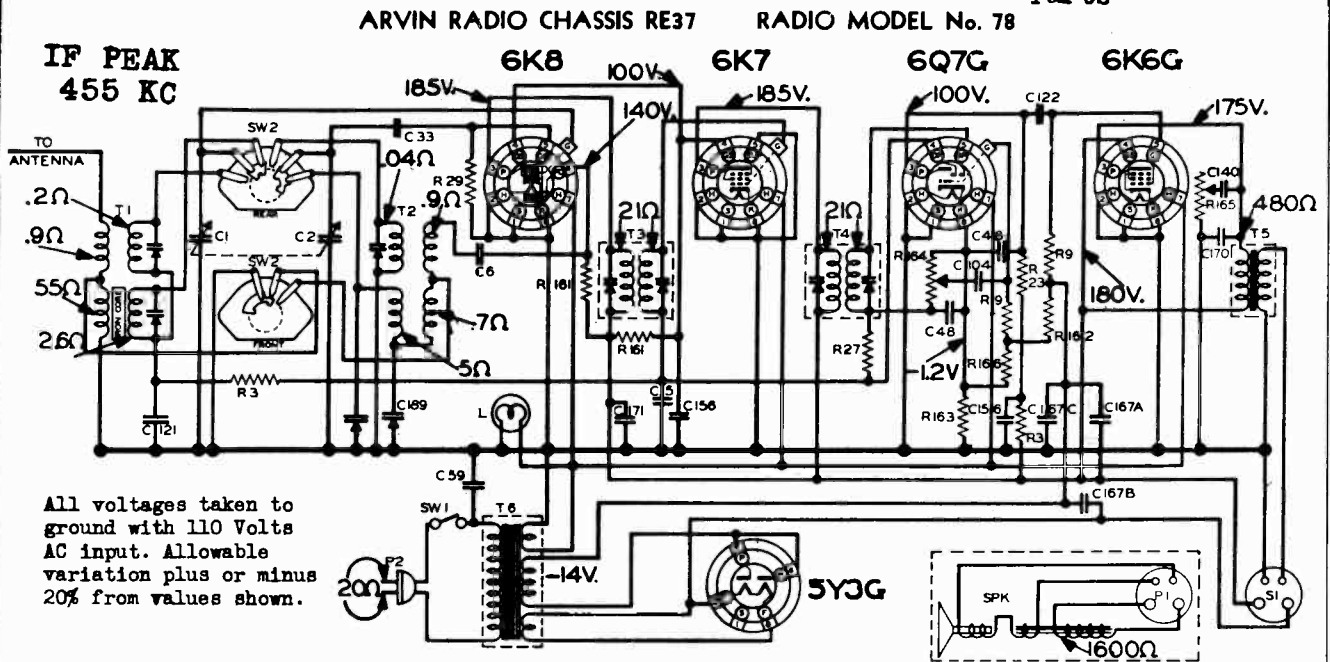
SW-1 17-15927
 Tone Control Sw.

FOR TUNER DATA
 SEE INDEX



NOBLITT-SPARKS INDUSTRIES, INC.

MODEL 78
Schematic, Voltage
Trimmers, Alignment
Parts



All voltages taken to ground with 110 Volts AC input. Allowable variation plus or minus 20% from values shown.

RESISTORS

Ref. No.	Part No.	Description	Price
R29	17-2060	50,000 ohm, 1/4 watt	.20
R3	17-2068	100,000 ohm, 1/4 watt	.20
R9	17-2080	1,000,000 ohm 1/4 watt	.20
R23	17-3011	250,000 ohm, 1/4 watt	.20
R27	17-4788	2,000,000 ohm, 1/4 watt	.20
R161	17-14267	15,000 ohm, 1/2 watt	.26
R162	17-14268	280 ohm, 1/2 watt	.20
R163	17-14269	30 ohm, 1/4 watt	.20
R166	17-14270	40 ohm, 1/4 watt	.20

CONDENSERS

Ref. No.	Part No.	Description	Price
C5	17-2063	.002 mfd. 600V	.25
C104	17-4206	.01 mfd. 200V	.30
C122	17-2189	.01 mfd. 400V	.35
C140	17-2214	.02 mfd. 400V	.35
C48	17-4207	.00025 mfd. 600V	.25
C156	17-4397	.05 mfd. 400V	.35
C5	17-14015	.05 mfd. 200V	.30
C33	17-14047	.00005 mfd. 600V	.25
C167A,B,C	17-14233	10-10 mfd. 450V	2.50
C170	17-14237	.005 mfd. 400V	.25
C171	17-14238	.1 mfd. 400V	.40
C121	17-14257	.02 mfd. 200V	.30
C189	17-14266	Series Padder	.75
C59	17-14615	.01 mfd. 400V	.35
C1 & 2	17-15990	Tuning Condenser	4.00

COILS AND TRANSFORMERS

Ref. No.	Part No.	Description	Price
T5	00-16093	Output Transformer	1.50
T1 & 2	00-16094	Antenna and oscillator coil assem	3.00
T3	00-16095	1st I.F. Transformer	1.50
T4	00-16096	2nd I.F. Transformer	1.50
T6	00-16099	Power Transformer	3.50

SPEAKER, DIAL PARTS, CABINET & MISCELLANEOUS

Ref. No.	Part No.	Description	Price
	29-3135	Carton	.50
	29-3145	Instruction sheet	.02
	29-3150	Call Letter sheets	.30
	28-5186	Dial Drive Pulley	.10
	17-13249	Speaker socket	.15
	34-13460	Dial Drive Cord Spring	.05
	29-13583	Dial Drive Cord	.10
	17-13905	Dial Light (Mazda 44)	.15
	17-15791E	Line Cord and Plug	.40
	27-15912	Cabinet	10.00
	29-15929	Knob	.15
	17-15960	Speaker	4.00
	29-16013	Knob (Push Button)	.10
	41-16055	Escutcheon Plate (Push Button)	.35
	17-16086	Band Switch	.75
	41-16088	Escutcheon (dial)	1.00
	17-16097	Volume Control	.75
	17-16098	Tone Control and Switch	1.00
	61-16100	Dial Glass	.70

BALANCING INSTRUCTIONS

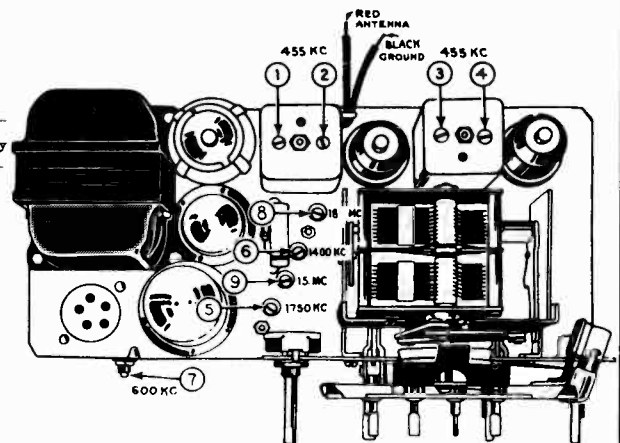
ARVIN MODEL 78 - RE37 CHASSIS

(All sensitivities given for 200 milliwatts output = .81 V.A.C. across voice coil)

Operation No.	Connect Sig. Generator To	Input Frequency	Adjust Padder No.	Dial Setting	Band Switch Position	Sensitivity
1.	6K8 GRID	455 KC	1,2,3,& 4	600 KC	Broadcast	150 uv
2.	Antenna Wire	1725 KC	5	*1725 KC	Broadcast	
3.	Antenna Wire	1400 KC	6	1400 KC	Broadcast	35 uv
4.	Antenna Wire	600 KC	7	600 KC	Broadcast	35 uv
5.	Antenna Wire	18.0 MC	8	*18.0 MC	Short Wave	
6.	Antenna Wire	15.0 MC	9	15.0 MC	Short Wave	**40 uv

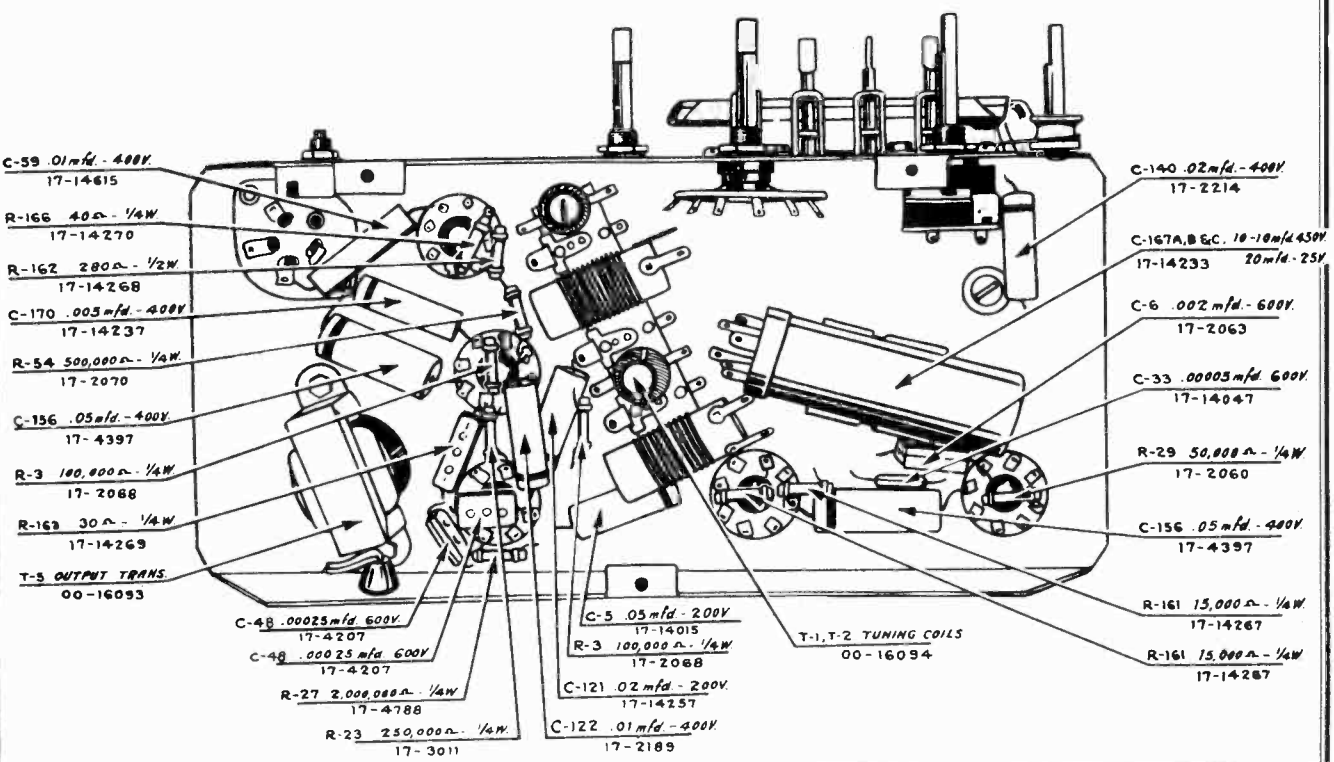
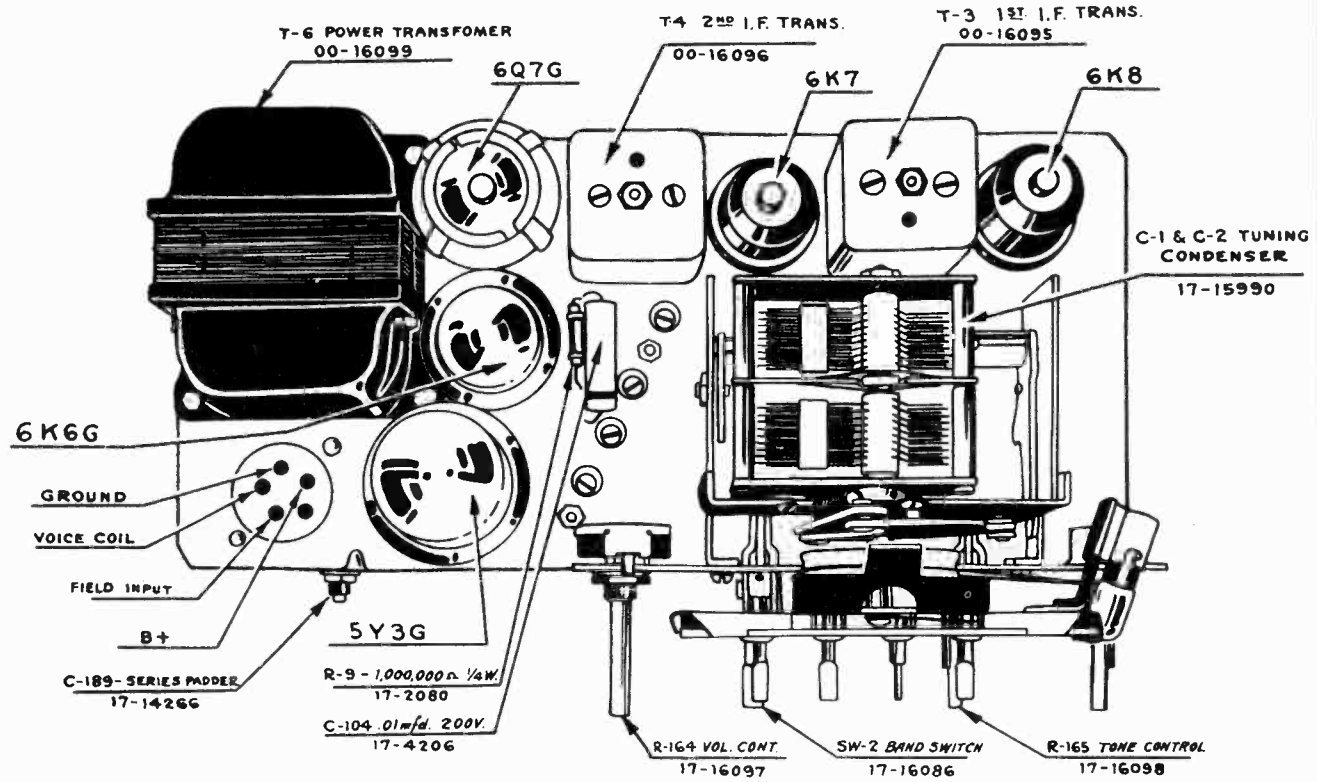
* Condenser should be wide open with dial pointer parallel to horizontal line above dial calibration.

** Sensitivity limit at 7.0 MC = 75 uv.



MODEL 78
Chassis RE37
Socket, Layout

NOBLITT-SPARKS INDUSTRIES, INC.



NOBLITT-SPARKS INDUSTRIES, INC.
MODEL 608 ARVIN RADIO

MODEL 608
 Voltage, Alignment
 Resistance, Specs.

ELECTRICAL SPECIFICATIONS

POINT TO POINT RESISTANCES

TUBES:

- 6A7—1st Detector-Oscillator
- 6D6—1st I. F. Amplifier
- 6Q7G—2nd Detector, AVC 1st Audio Amplifier
- 25B6G—Audio Output Power Amplifier
- 25Z5—Rectifier
- BK49D—Ballast

FREQUENCY RANGE:

- Band A—550 to 1725 Kilocycles
- Band B—2.00-6.27 megacycles

POWER OUTPUT: 1.9 watts

SPEAKER: 6" Dynamic, 3 ohm voice coil

VOLTAGE AND FREQUENCY: 110 V. AC or DC;
 25 to 133 cycles

SENSITIVITY:

- Band A— 75 microvolts minimum for 50 milliwatts output
- Band B—120 microvolts minimum for 50 milliwatts output

INTERMEDIATE FREQUENCY:

150 microvolts minimum for 50 milliwatts output; 456 Kilocycles

WATTS POWER CONSUMPTION: 70 watts

MODEL 608 SOCKET VOLTAGES

Tube	Heater	Cathode	Suppressor Grid	Screen Grid	Plate	Oscillator *Grid	Anode Grid	Diode Plates	Control Grid
6A7	6.3	1.6	.....	90	100	3-7 V.	100	.....	0
6D6	6.3	1.6	1.6	100	100	.....	.....	.....	0
6Q7G	6.3	0	.....	.....	.....	.....	.....	0	1.5
25B6G	25.0	0	.....	100	100	.....	.....	.....	-15
25Z5	25.0	100	.....	.....	100 (A.C.-D.C.)	.....	.....	.....	.....
BK49D	Total drop terminals 3 to 7—41.1 volts A. C. or D. C.								

Readings taken with a vacuum tube voltmeter and no input signal. With 100,000 microvolts input 6A7 and 6D6 grid bias will be approximately 20 volts.

Oscillator grid voltage 600 K. C. to 1500 K. C.

BALANCING INSTRUCTIONS

1. Connect the balancing oscillator to the grid cap of the 6A7 tube after removing the grid clip. With an input signal of 456 K. C., adjust padders 1, 2, 3 and 4 to maximum output. The Intermediate Frequency sensitivity should be at least 150 microvolts for 50 milliwatts output.
2. Rotate the tuning condenser to wide open position. Check the dial pointer to see that it is parallel to the horizontal line across the dial face.
3. Connect the signal generator to the antenna lead wire (green) on the rear of the receiver through a 200 micromicrofarad dummy antenna. With the dial pointer set to 1400 kilocycles and a similar input from the signal generator adjust padder No. 5 to resonance. Adjust padder No. 6 to maximum output.
4. Set dial pointer to 600 K. C. and with an input frequency of 600 K. C. adjust padder No. 7 to resonance. Return to 1400 K. C. and recheck padders 5 and 6.
5. Turn band switch to short wave position. Set dial pointer to 5 megacycles and with an input of the same frequency adjust padder No. 8 to resonance. Adjust padder No. 9 for maximum output.
6. With an input of 456 K. C. into the antenna wire of the receiver adjust padder No. 10 for minimum output. This is the wave trap circuit for 456 kilocycle code interference.

25Z5	6D6
Heater to 110 V. Line Cord..... 130 Ω	Heater to 110 V. Line Cord..... 154 Ω
Cathode to B+..... 0 Ω	Cathode..... 100 Ω
Cathode to Ground..... 3,020 Ω	Suppressor..... 100 Ω
Plate to Ground..... 3,170 Ω	Screen to B+..... 0 Ω
Plate to Line Cord..... 0 Ω	Plate to B+..... 11 Ω
	Control Grid..... 1,500,000 Ω

BK49D	6Q7G
Terminal 3 to 2..... 15 Ω	Heater to 110 V. Line Cord..... 160 Ω
Terminal 3 to 8..... 150 Ω	Cathode..... 0 Ω
Terminal 3 to 7..... 30 Ω	Diode..... 0 Ω
Resistance across 110 V. plug..... 165 Ω	Diode..... 550,000 Ω
110 V. line to ground..... 265 Ω	Plate to B+..... 200,000 Ω
	Control Grid..... 2,000,000 Ω

6A7	25B6G
Heater to 110 V. Line Cord..... 148 Ω	Heater to 110 V. Line Cord..... 165 Ω
Cathode..... 100 Ω	Cathode..... 0 Ω
Oscillator Grid..... 50,100 Ω	Control Grid..... 750,000 Ω
Anode Grid to B+..... 1.4 Ω	Screen to B+..... 0 Ω
Screen to B+..... 20,000 Ω	Plate to B+..... 205 Ω
Plate to B+..... 11 Ω	
Control Grid..... 1,500,000 Ω	

All readings taken to ground unless otherwise specified.

COIL AND TRANSFORMER RESISTANCES

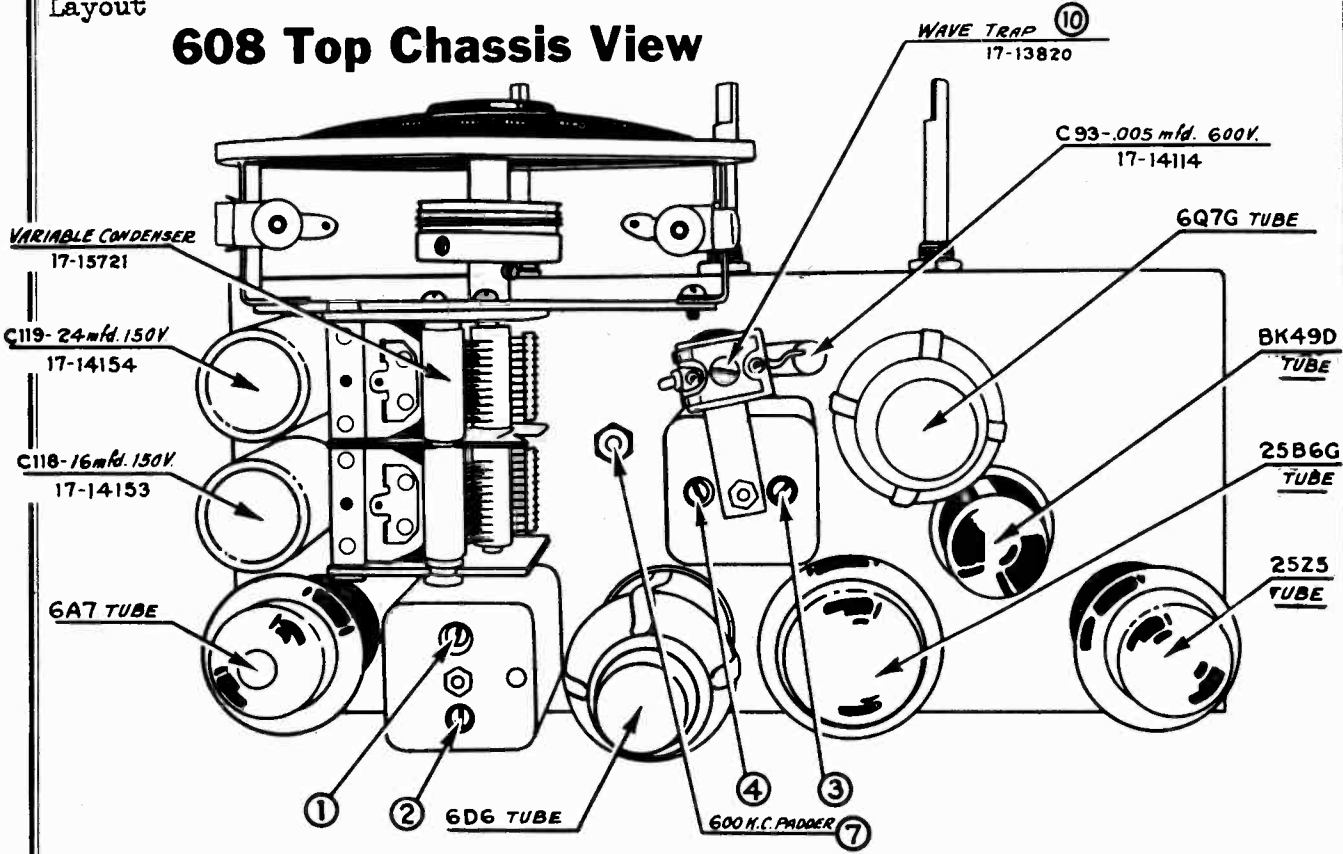
Oscillator Coil Sec. (Broadcast)..... 5.2 Ω	1st I. F. Transformer Secondary..... 11.0 Ω
Oscillator Coil Pri. (Short Wave)..... 1.4 Ω	2nd I. F. Transformer Primary..... 11.0 Ω
Oscillator Coil Sec. (Short Wave)..... .6 Ω	2nd I. F. Transformer Secondary..... 11.0 Ω
1st I. F. Transformer Primary..... 11.0 Ω	Output Transformer Primary..... 205 Ω
	Antenna Coil Primary (Broadcast)..... 60.0 Ω
	Antenna Coil Sec. (Broadcast)..... 3.0 Ω
	Antenna Coil Pri. (Short Wave)..... .03 Ω
	Antenna Coil Sec. (Short Wave)..... .02 Ω
	Oscillator Coil Pri. (Broadcast)..... 1.4 Ω
	Output Transformer Secondary..... 3 Ω
	"B" Filter Choke..... 250.0 Ω
	Wave Trap..... 14.0 Ω
	Speaker Field..... 3,000.0 Ω

FOR SCHEMATIC
 SEE INDEX

MODEL 608
Socket, Trimmers
Layout

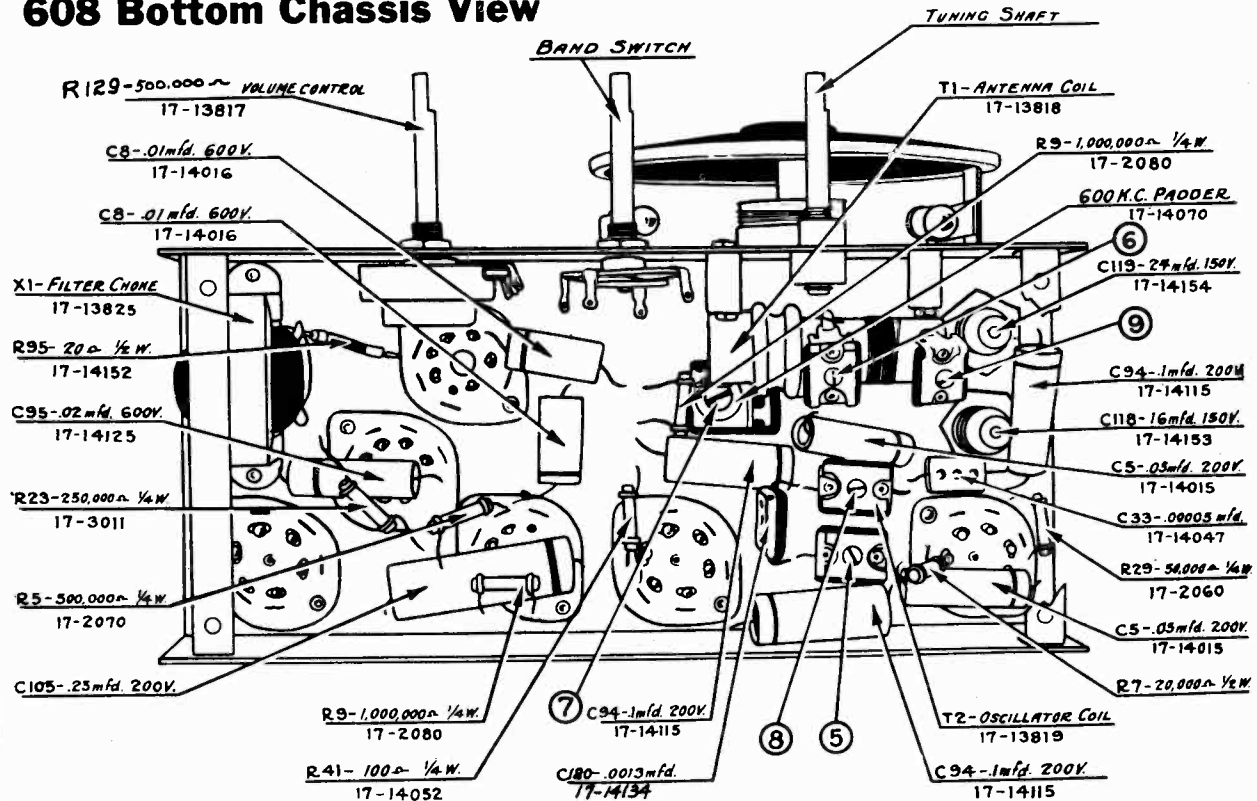
NOBLITT-SPARKS INDUSTRIES, INC.

608 Top Chassis View



FOR SCHEMATIC SEE INDEX

608 Bottom Chassis View



NOBLITT-SPARKS INDUSTRIES, INC.

MODEL Presto-Station Changer

MODEL Push-Button Tuner

Instructions, Notes

INSTRUCTIONS FOR SETTING UP ARVIN PUSH-BUTTON TUNING

rectly behind the first button until the program from the desired station is audible.

FIFTH: Adjust the paddler condenser screw on the middle row directly behind the first button for maximum closing of the electric-eye tube. Follow the same procedure for the paddler screw on the top row directly behind the first button.

SIXTH: Now readjust the bottom screw for maximum closing of the electric-eye tube and repeat on the middle and top screws. The first station is now tuned in properly on No. 1 button. Care must be taken so that the same station is tuned in on the lower paddler screw as is tuned in manually, as it is possible to confuse another station broadcasting the same program if it is a "chain program" with the original.

SEVENTH: Locate the second station on the list by manually tuning it in with the wave-band switch in the broadcast position. Then change the wave-band switch to push-button station—this time by adjusting the lower paddler screw directly behind the second button. Then follow the same procedure as when setting up the first button. Repeat this for the remaining button.

FINALLY: After all buttons are set, the middle knob should be switched to "AFC on" position and left there whenever the Push-Button Station Selector is used.

After all the stations have been selected their respective call letters may be inserted in the escutcheon plate provided in the receiver operating instruction envelope.

Cut out the call letters of the desired stations and place over them one of the small tabs of celluloid provided. Push the call letter and celluloid tab together into the slot provided in the escutcheon.

When all of the tabs have been inserted the escutcheon should be attached to the radio cabinet by the wood screws and trim washers provided.

INSTRUCTIONS FOR SETTING UP ARVIN PRESTO-STATION-CHANGER

Remove both the center knob and the center escutcheon, exposing the buttons beneath.

Tune in one of the above selected stations manually. It will be noted that the button corresponding to the band in which this station falls is now approximately at the bottom of the dial. Loosen this button by turning the bakelite cap counter-clockwise not more than two full turns. Depress the button with the index finger of the left hand and slowly rock the dial mechanism by turning the manual tuning control with the right hand, through an arc determined by the frequencies which this button covers. While the button is depressed, no signal will be heard, due to the action of the muting switch. When this button engages the gate, a distinct click will usually be heard. That this button properly engages the gate can be determined by again turning the manual tuning control with the button depressed and noting that the dial movement is limited to the arc previously described. With the station still depressed, again tune in the desired station, noting the point of exact resonance on the electric eye above. Still keeping this button depressed and "on station," tighten the bakelite cap with the right hand. During this tightening operation, observe the electric eye to be sure that its degree of closure does not change.

To determine that this button has been properly set, turn the dial off-station and, depressing the button just set, return it to its former position of engagement with the gate. The station should again be tuned in. If it is not, loosen the button and repeat the operation just described.

When the button has been properly set, remove the station identification disc from the sheets supplied in the envelope in which these instructions were found. Place this disc in the center of the bakelite cap and push down firmly all around the edge.

There will be found in the envelope containing these instructions another small envelope in which has been placed ten transparent celluloid discs. One of these celluloid discs should be placed in the bakelite cap over the station identification disc and firmly pressed in place. The operation just described for setting up this one button on the Arvin Presto-Station-Changer should be repeated for all other stations chosen as above outlined.

When all stations have been set up, replace the center escutcheon and screw on the center knob.

When using the Arvin Presto-Station-Changer to tune in your favorite stations, the switch in the center of the panel should be in its No. 2 position. To perform the act of tuning, place the index finger on the button carrying the station call letters desired, push the button in firmly and rotate the dial to left or right with this same finger until the dial locks, with this button at the bottom. Withdrawing the finger opens the muting switch, allowing the set to operate.

The Arvin Presto-Station-Changer offers a means whereby ten stations may be pre-selected and set up on the buttons so that thereafter an operator may receive any one of these ten stations by a simple direct mechanical motion applied to the dial.

Each button on the Arvin Presto-Station-Changer covers a certain group of frequencies on the dial. Identifying these buttons in a clockwise direction from the wide space between two of the buttons on the dial, each button covers a group of frequencies as follows:

- (1) End of scale to 1630 K. C.
- (2) 1630 to 1420 K. C.
- (3) 1420 to 1210 K. C.
- (4) 1210 to 1030 K. C.
- (5) 1030 to 880 K. C.
- (6) 880 to 770 K. C.
- (7) 770 to 680 K. C.
- (8) 680 to 620 K. C.
- (9) 620 to 575 K. C.
- (10) 575 K. C. to end of scale.

With these above bands in mind for each button, one should first select a station for each button whose transmission frequency falls within the band for that button. A list of these stations together with their frequencies should be made.

With this list made out, the actual operation of setting up the stations on the Arvin Presto-Station-Changer may be made. From this point on, the instructions will be general, applying to any of the buttons.

The receiver should be placed in operating condition by connecting an antenna and plugging the line cord into a suitable outlet. The receiver is turned on by means of the knob in the center of the front panel. This knob has three positions. In the full counter-clockwise position (No. 1) the receiver is "off." In the center position (No. 2) the receiver is turned "on," and the automatic frequency control circuits are in operation. In the full clockwise position (No. 3) the set remains "on," but the automatic frequency control circuit no longer functions. This third position is provided mainly as a convenience in setting up the Arvin Presto-Station-Changer, and for those who desire to accomplish exact manual tuning prior to holding the station in with the automatic frequency control circuit. To set up the Arvin Presto-Station-Changer, this center switch should then be in the maximum clockwise position, i. e. position No. 3.

The hand switch should be in the broadcast or full counter-clockwise position.

Unscrew the center knob by securely holding the escutcheon which covers the ten buttons, and turning the center knob in a counter-clockwise direction.

FIRST: Put the set in operation in accordance with the instruction sheet furnished with the receiver. Next, make a list of the stations that are desired on the push-button selector, arranging them in order as to their assigned frequencies and placing the lowest frequency station at the top of the list, etc.

SECOND: Assign the stations to the buttons, starting with the first button on the left and the station with the lowest frequency—making certain that each station falls into the assigned frequency group for each button as listed below:

10 Button	Kilocycle Coverage	Station Desired	6 Button
1.	530-610	1.	
2.	530-610	2.	
3.	590-700	3.	
4.	590-700	4.	
5.	680-900	5.	
6.	680-900	6.	
7.	800-1150	7.	
8.	800-1150	8.	
9.	1050-1550	9.	
10.	1050-1550	10.	

The above frequency coverage is only approximate for each button, as there is a tolerance at each end of the coverage so that additional stations may be accommodated should there be more stations desired in a given group than there are buttons allotted to that group.

THIRD: The actual adjustment is made as follows: (1) Turn the middle knob on the front of the set clockwise as far as it will go. (2) Tune in manually the first station on the list, then (3) Starting at the left hand side depress the first button and (4) Turn the band switch until the words "push-button" appear in the small lighted opening on the left of the dial.

FOURTH: Turning now to the back of the set:

(1) Loosen the electric-eye tube and turn it around so as to be visible from the back of the set when making adjustments. (2) With a long screw-driver, adjust the lower paddler screw di-

MODELS 1237, 1237D, 1247, 1247D

**Chassis 1237D
Alignment, Notes**

NOBLITT-SPARKS INDUSTRIES, INC.

**MODEL 1427
Alignment**

- 1st 6A8G Grid 455 K. C.
- 1st 6A8G Grid 1,000 K. C.
- R. F. 6K7G Grid 1,000 K. C.
- Antenna 1,000 K. C.
- 100 Microvolts
- 110 Microvolts
- 40 Microvolts
- 7 Microvolts

**MODELS 1237, 1237D, 1247
ARVIN HOME RADIOS**

Adjustment of Short-Wave Band Padders

1. Set band switch on short wave position. Rotate dial pointer to 15 megacycles. Adjust padder No. 17 to resonance. This may be accomplished by screwing the padder condenser to the extreme clock-wise position. Rotate counter clock-wise, selecting the second resonance point reached. This will insure that the oscillator circuit is balanced to the fundamental frequency instead of the image frequency.
2. Adjust padders 18 and 19 for maximum output.

Check the Receiver for Sensitivity

After completion of balancing procedure the radio receiver should be checked for sensitivities as follows:

Frequency	Average Sensitivity for Standard Output (1.12 volts across voice coil)
1,400 K. C.	20 Microvolts
600 K. C.	10 Microvolts
4.5 M. C.	25 Microvolts
2.0 M. C.	40 Microvolts
14 M. C.	50 Microvolts
6 M. C.	6 Microvolts

*** Special Instructions for Model 1237 Arvin Radios with Presto Station Changer**

Arvin radio chassis model 1237 with Presto Station Changer have the broadcast padders located in the coil cans rather than on the under side of the radio chassis as Model 1237-D Push Button chassis. The padders are located as follows: The oscillator padder is the top adjusting screw in the oscillator coil can, located along side the rear section of the tuning condenser. The R. F. padder condenser is located in the top position on the coil can along side the center section of the tuning condenser. The antenna padder condenser is similarly located in the coil can along side the front section of the tuning condenser. The 600 K. C. padding condenser is located in identically the same place as the series padder No. 13 on the 1237-D chassis.

Adjustment of the Mid-Band Padders

1. Substitute for the 200 mmf. dummy antenna one having 800 ohms output impedance.
2. Set band switch on mid-band position. Rotate dial pointer to 4.5 megacycles. Adjust padder No. 14 to resonance. Adjust padders 15 and 16 for maximum output.

MODELS 1237, 1237D, 1247, 1247D and 1427 ARVIN RADIOS

2. Adjust padders 18 and 19 for maximum output.
3. Rotate dial pointer to 5.0 megacycles. Adjust series padder No. 20 to resonance. It is advisable to then return to 5.0 megacycles and recheck padders No. 17, 18 and 19.

Adjustment of 7.5-12 M. C. Band Padders

(Dial Scale Printed in Red)

1. Set band switch indicator to short wave position indicated by the words "short wave" printed in red. Rotate dial pointer to 11.5 M. C. and adjust padder No. 21 to resonance. This may be accomplished by screwing the padder to the extreme clock-wise position. Rotate padder screw counter-clockwise, selecting the second resonance point reached.
2. Adjust padders No. 22 and 23 for maximum output.

Adjustment of 12.0-18.0 M. C. Band Padders

(Dial Scale Printed in Blue)

1. Set band switch indicator to short wave position indicated by the words "short wave" printed in blue. Rotate dial pointer to 16.0 M. C. and adjust padder No. 24 to resonance. This may be accomplished by screwing the padder to extreme clock-wise position. Then rotate padder screw counter clockwise, selecting the second resonance point reached.
2. Adjust padders No. 25 and 26 for maximum output.

Check the Receiver for Sensitivity

After completion of balancing procedure the radio should be checked for sensitivities as follows:

Frequency	Average Sensitivity for Standard Output (1.12 volts across voice coil)
1,400 K. C.	10 Microvolts
600 K. C.	10 Microvolts
2.0 M. C.	40 Microvolts
4.5 M. C.	20 Microvolts
5.0 M. C.	30 Microvolts
7.25 M. C.	40 Microvolts
8.0 M. C.	30 Microvolts
11.5 M. C.	40 Microvolts
13.0 M. C.	30 Microvolts
16.0 M. C.	40 Microvolts

Average Sensitivities per Stage (1.12 Volts Across Voice Coil)

Point of Input from Signal Generator	Frequency	Input Required to Produce 1.12 Volts Across Voice Coil
Diode 6H6G	100 K. C.	600,000 Microvolts
6K7G I. F. Grid	100 K. C.	25,000 Microvolts
2nd 6A8G Grid	100 K. C.	1,200 Microvolts
2nd 6A8G Grid	455 K. C.	1,500 Microvolts

BALANCING INSTRUCTIONS

All sensitivity measurements should be made with a standard output or AC voltmeter connected directly across the voice coil terminals of the speaker. For convenience in checking sensitivity, standard output is obtained when a reading of 1.12 volts is reached. For sensitivity measurements it is necessary to use a calibrated signal generator although any good balancing oscillator is satisfactory for aligning the 12-tube Arvin Radio chassis. If a calibrated signal generator is used for the balancing procedure described, a dummy antenna should be inserted between the radio chassis and the generator as follows:

- Broadcast Band: 200 mmf
 - Mid-band: 400 ohms
 - Short Wave Band: 400 ohms
- SPECIAL NOTE:** Place the receiver in operation by turning the AC switch to the extreme right. Switch is located in the center of the radio chassis.

Adjustment of 100 K. C. Intermediates Frequency Stages

Connect the signal generator to the grid cap of the 2nd 6A8G tube through a .002 mfd. condenser. Place a 200,000 ohm resistor between the grid cap of the 2nd 6A8G and the grid clip leading to the 455 K. C. I. F. Transformer. This will maintain the AVC bias on this tube during alignment.

Adjust padders 1, 2, 3 and 4 for maximum output.

Adjustment of Discriminator Circuit with a Vacuum Tube Voltmeter

1. Connect the vacuum tube voltmeter between ground and the No. 8 cathode terminal of the 6H6G discriminator bias rectifier tube.
2. Turn padder No. 5 to maximum clockwise position.
3. Adjust padder No. 6 for minimum voltage as indicated by vacuum tube voltmeter.
4. Short cathode of 6H6G tube to ground and adjust vacuum tube voltmeter to half scale reading. This is done so that voltages either positive or negative with respect to ground potential may be read without the necessity of reversing the voltmeter input terminals. Disconnect 6H6G cathode from ground.
5. Adjust padder No. 5 until same half scale reading is obtained that was selected above when the cathode of the 6H6G tube was grounded.
6. Check this adjustment further by varying the frequency of the signal generator plus and minus noting the maximum positive and negative voltages developed as indicated by the vacuum tube voltmeter. The voltages developed above and below the half scale reading should be equal or at least within 10% of each other. Disconnect the vacuum tube voltmeter.

Adjustment of 355 K. C. Oscillator Coil

1. Substitute for the 200 mmf. dummy antenna one having 800 ohms output impedance.
2. Set band switch on mid-band position. Rotate dial pointer to 4.5 megacycles. Adjust padder No. 14 to resonance. Adjust padders 15 and 16 for maximum output.

Adjustment of 4.75-7.5 M. C. Band Padders

(Dial Scale Printed in Black)

1. Set band switch indicator to short wave position indicated by the words "Short Wave" printed in black. Rotate dial pointer to 7.25 megacycles and adjust padder No. 17 to resonance. This may be accomplished by screwing the padder to the extreme clock-wise position. Rotate padder screw counter-clockwise, selecting the second resonance point reached.

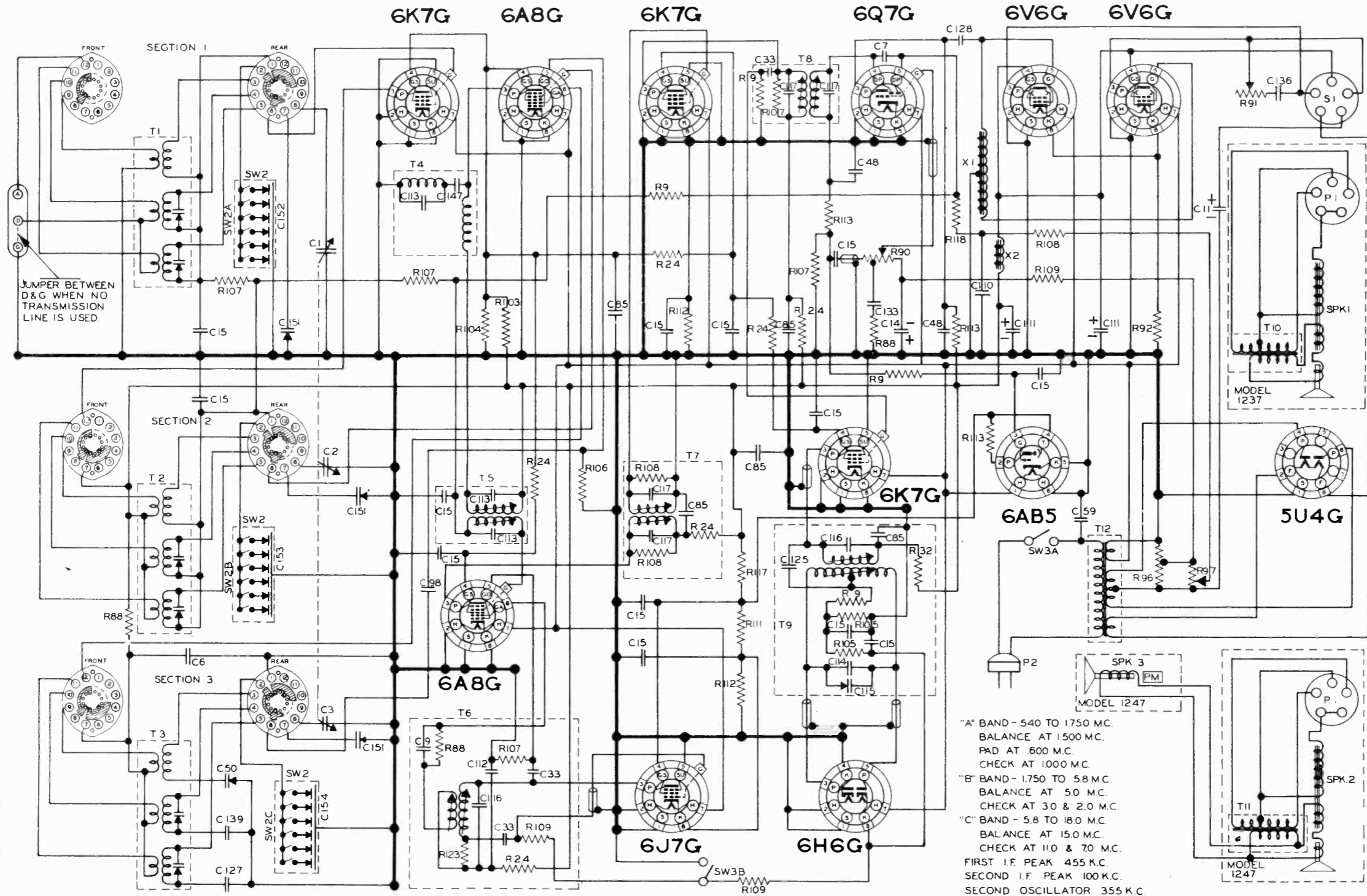
MODEL 1427 ARVIN HOME RADIO

Adjustment of the Mid-Band Padders

1. Substitute for the 200 mmf. dummy antenna one having 800 ohms output impedance.
2. Set band switch on mid-band position. Rotate dial pointer to 4.5 megacycles. Adjust padder No. 14 to resonance. Adjust padders 15 and 16 for maximum output.

NOBLITT-SPARKS INDUSTRIES, INC.

MODEL 1237D
Schematic Parts
Models 1237, 1237D, 1247, 1247D
Voltage, Coils



CONDENSERS

C	CAPACITY	VOLT	PART NO.	C	CAPACITY	VOLT	PART NO.
1	THREE		17-15720	114	.0003	800	17-14148
2	GANG			115	.00007	800	17-14149
3	VARIABLE			116	.0005	800	17-14151
7	.002	800	17-2083	117	.0004	800	17-14142
8	.0001	800	17-2084	118	.00001	800	17-14187
9	.001	800	17-2292	128	.000035	800	17-14188
11	.16	475	17-14002	127	.0032	800	17-14189
14	.12	25	17-14005	128	.03	800	17-14177
15	.05	200	17-14038	129	.001	800	17-4700
33	.00005	800	17-14047	130	2-20 MMF	800	17-13926
48	.00025	800	17-4527	131	.1	200	17-14193
50	PADDER	800	17-14070	136	.04	800	17-14196
59	.01	400	17-14815	139	.00155	600	17-14201
85	.1	400	17-14101	147	.0005	600	17-14215
88	.02	600	17-14105	151	15-35 MMF	PADDER	17-14216
98	.000075	800	17-4122	152	STRIP OF SIX PADDER	17-14212	
110	.1	200	17-14137	153	STRIP OF SIX PADDER	17-14213	
111	.16	400	17-14138	154	STRIP OF SIX PADDER	17-14214	
112	.05	400	17-14139				
113	.0002	800	17-14143				

RESISTORS

R	OHM	W	PART NO.	R	OHM	W	PART NO.
8	1M	1/4	17-2080	117	20K	1	17-14182
13	75K	1/4	17-2087	118	300K	1/4	17-4183
24	1K	1/4	17-2085	123	100	1/4	17-14188
32	3K	1/4	17-2090				
80	18K	1/4	17-14135				
90	500K	V.C.	17-13795				
91	100K	V.C.	17-13796				
92	150	2	17-14141				
98	35	1	17-14158				
97	900	VAR	17-14157				
103	8K	10	17-14164				
104	10K	2	17-14185				
105	50K	1/4	17-14189				
108	50K	1/4	17-14177				
107	100K	1/4	17-4172				
109	200K	1/4	17-4173				
108	500K	1/4	17-4174				
111	20K	1/2	17-14178				
112	500	1/4	17-14177				
113	250K	1/4	17-4178				

CHOKES

X	TYPE	PART NO.
1	AUDIO INPUT	00-13088
2	FILTER	00-13775

TRANSFORMERS

T	TYPE	PART NO.
1	ALLWAVE ANT COIL	00-15727
2	ALLWAVE R F COIL	00-15728
3	ALLWAVE OSC COIL	00-15729
4	455 K C BAND PASS	00-13853
5	455 K C I F COIL	00-13779
6	355 K C OSC COIL	00-13782
7	100 K C I F INPUT	00-13780
8	100 K C I F OUTPUT	00-13781
9	100 K C I F BANDPASS	00-13783
10	OUTPUT TRANS	17-13723
11	OUTPUT TRANS	17-13780
12	POWER TRANS	00-13774

MISCELLANEOUS UNITS

SYMBOL	DESCRIPTION	PART NO.
SW	BAND SWITCH ASSEMBLY	17-13552
SW2ACB	PUSH BUTTON SWITCH LESS PADDER	17-13580
SW2	PUSH BUTTON SWITCH ASSY WITH PADDER	29-13551
SW3	AC & AFC ON-OFF SW-TCH	17-13797
S1	SPEAKER SOCKET	17-4153
P1	SPEAKER PLUG	17-15791
P2	PLUG & LINE CORD ASSEMBLY	17-13722
SPK1	DYNAMIC SPEAKER-MODEL 1237	17-13722
SPK2	DYNAMIC SPEAKER-MODEL 1247	17-13789
SPK3	P.M. DYNAMIC SPEAKER-MODEL 1247	17-13781

"A" BAND - 540 TO 1750 MC.
BALANCE AT 1500 MC.
PAD AT 600 MC.
CHECK AT 1000 MC.
"B" BAND - 1750 TO 58 MC.
BALANCE AT 50 MC.
CHECK AT 30 & 2.0 MC.
"C" BAND - 5.8 TO 18.0 MC.
BALANCE AT 15.0 MC.
CHECK AT 11.0 & 70 MC.
FIRST I.F. PEAK 455 K.C.
SECOND I.F. PEAK 100 K.C.
SECOND OSCILLATOR 355 K.C.

Coils Listed Below Contain Other Circuit Parts Not Shown on Chassis Plan Views.

MODELS 1237, 1237D, 1247, 1247D
COIL, TRANSFORMER AND SPEAKER RESISTANCES

Coil and Transformer Resistances Table

Symbol	Type	Resistance
T4	455 K. C. Band Pass Filter	1000 Ω
T5	455 K. C. I. F. Trans.	100 Ω
T6	355 K. C. Osc. Coil	20,000 Ω
T7	100 K. C. I. F. Trans.	1,000 Ω
T8	100 K. C. 2nd I. F. Trans.	19 Ω
T9	100 K. C. Discriminator Coil	19 Ω
T10	Output Transformer	450 Ω
T11	Power Transformer	70-0.70 Ω
T12	Audio Input Choke	2,300-0.2700 Ω
SPK-1	Speaker Field	350 Ω
SPK-2	Speaker Voice Coil	31.5 Ω
SPK-3	Speaker Voice Coil	31.5 Ω

CHASSIS 1237D
ARVIN
HOME RADIO

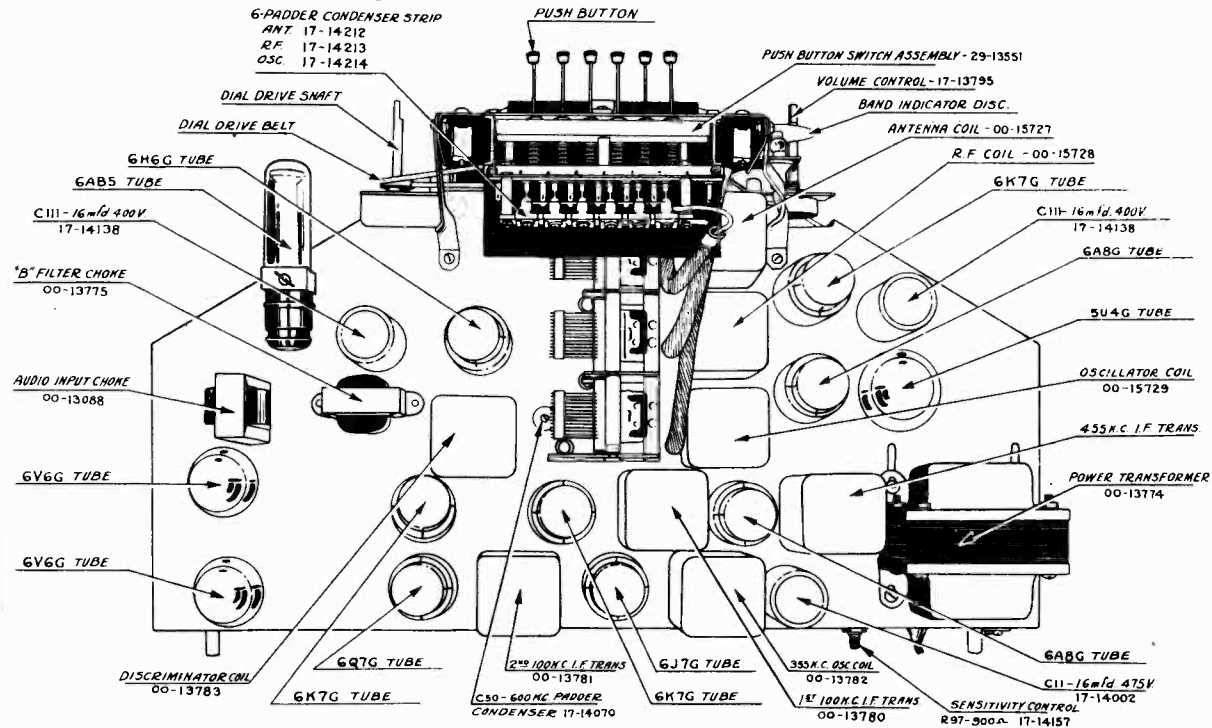
Models 1237, 1237D, 1247, 1247D Socket Voltages Table

Model	Tube	Heater	Plate	Screen	Cathode	Suppressor	Grid	Anode	Grid	Osc. Grid	Target
1237, 1237D, 1247, 1247D	6K7G	6.3	250	95	0	0	3.6				
	6A8G	6.3	250	95	0		3.6	150		-17	
	6A8G	6.3	250	90	0		3.4	165		-4	
	6K7G	6.3	250	90	4.2	0	6.1				
	6J7G	6.3	250	90	4.5	0	5.5				
	6Q7G	6.3	215	90	0	0	.7				
1247D	6H6G	6.3	130		0						
	6V6G	6.3	245	250							250
	6V6C	6.3	245	250							
	6AB5	6.3	250								
	5U4G	5.0	330				325				

* Taken through 1,000,000 Ω resistor.
† Measured with a vacuum tube voltmeter.
‡ No signal, measured with vacuum tube voltmeter

NOBLITT-SPARKS INDUSTRIES, INC.
 MODELS 1237D, 1247D
 Top Chassis View
 MODELS 1237, 1237D, 1247
 1247D
 Chassis Layout-Bottom

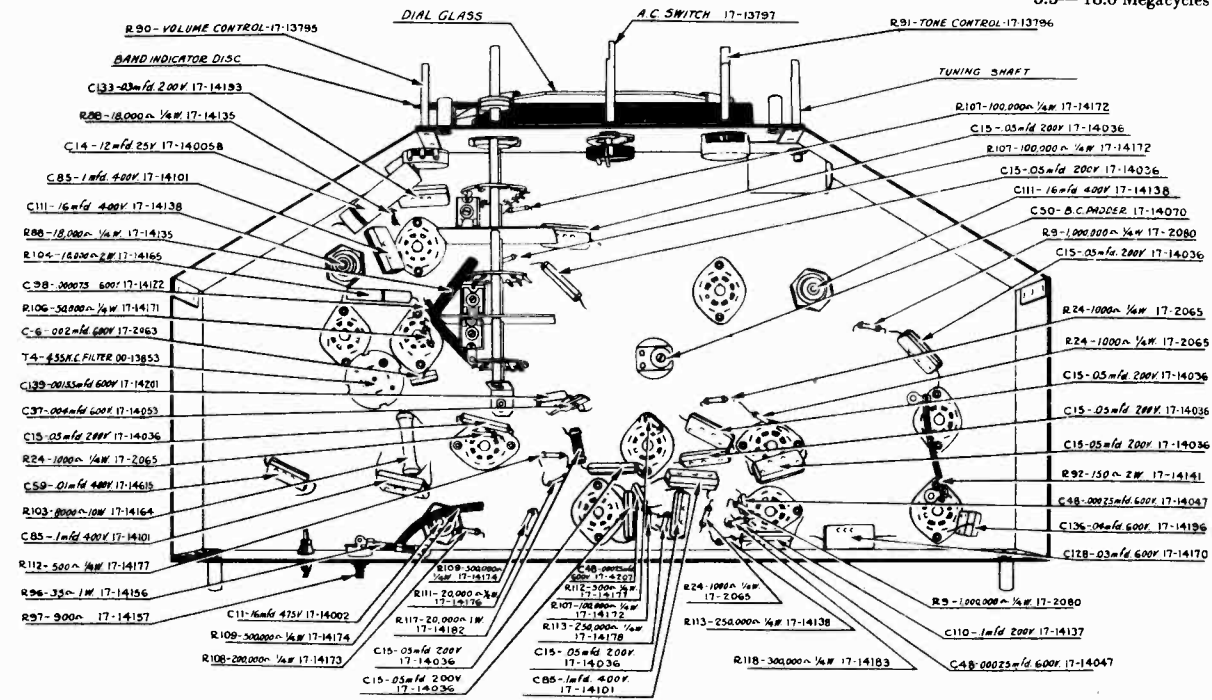
Model 1237D -- 1247D Chassis
 Top View



POWER OUTPUT: 18 Watts
 VOLTAGE AND FREQUENCY: 105-125 Volts, 60 Cycles
 WATTS POWER CONSUMPTION: 175 Watts

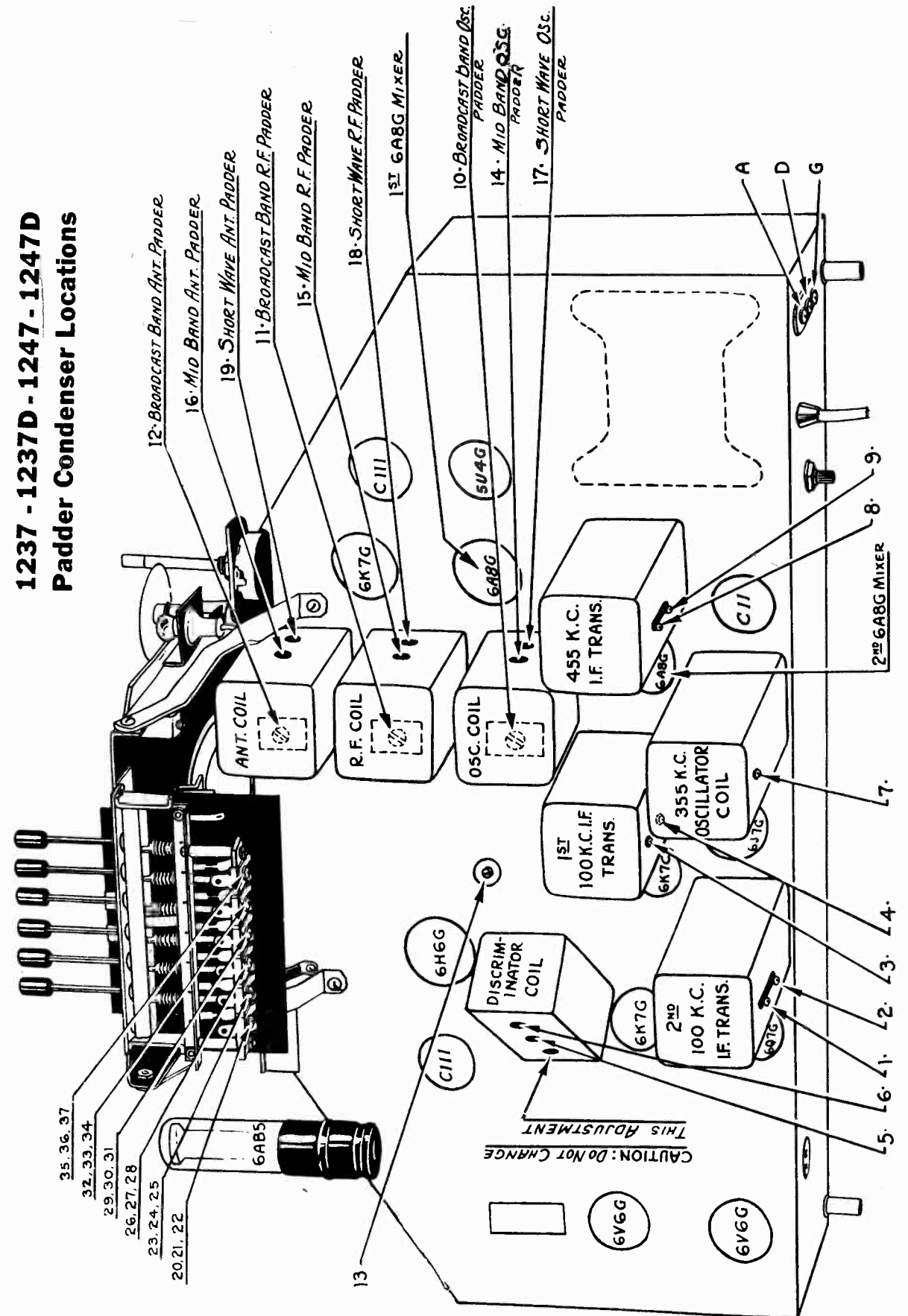
1237 - 1237D - 1247 - 1247D
 Bottom View

FREQUENCY RANGE:
 540—1,750 Kilocycles
 1,750—5,500 Kilocycles
 5.5—18.0 Megacycles



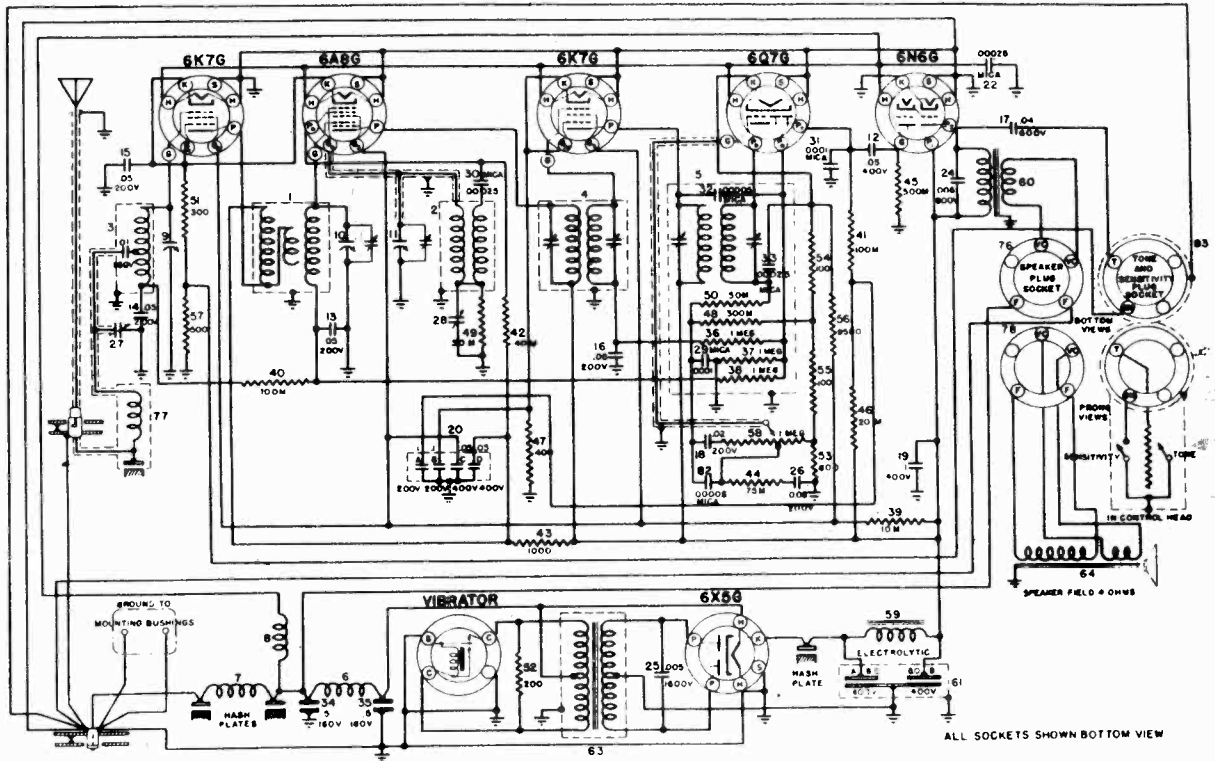
NOBLITT-SPARKS INDUSTRIES, INC.
 MODELS 1237, 1237D
 1247, 1247D
 Trimmers

1237 - 1237D - 1247 - 1247D
 Padder Condenser Locations



OLDSMOBILE MOTOR CAR CO.

MODEL 982043 Early
Schematic, Voltage
Notes



IF PEAK 262 KC.

Date: 11-1-36

FIG. 4 OLDS MODEL 982043 CIRCUIT DIAGRAM
BELOW SERIAL NO. A-20,000

TUBE SOCKET VOLTAGES

TYPE	FUNCTION	H	P	S	Gs	G1	G2	K	G
6K7G	R.F. Amplifier	5.95	236	87	3.9	-	-	3.9	0
6A8G	Translator	5.95	244	87	-	-	-	3.9	0
....	Oscillator	5.95	120	-	-	-18	+120	-	-
6K7G	I.F. Amplifier	5.95	244	87	3.9	-	-	2.5	-
6Q7G	Det. A.V.C. 1st A.F.	5.95	130	-	-	-	-	7.4	5.7
6N6G	Output	5.95	255	244	-	-	-	-	-
6X5G	Rectifier	5.95	-	-	-	-	-	254	-

Total ampere drain at 6 volts is 7.9

FOR CONNECT TERMINALS TOGETHER

DISTANCE	1 & 4		(FIGURE 1) LOCAL DISTANCE SWITCH CONNECTION
LOCAL	1 & 3		No. 1 - Connects to cable shielding.
TONE CONTROL	1 & 2		No. 2 - Connects to blue wire (tone control) No. 3 - Connects to yellow wire (local) No. 4 - Connects to red wire (distance)

*1 IS GROUND

NOTE: When peaking I.F. transformers without tone control cable plug, short No. 1 and No. 4.

MODEL 982043 Early
Socket, Trimmers
Chassis

OLDSMOBILE MOTOR CAR CO.

Voltage
(Field Change)

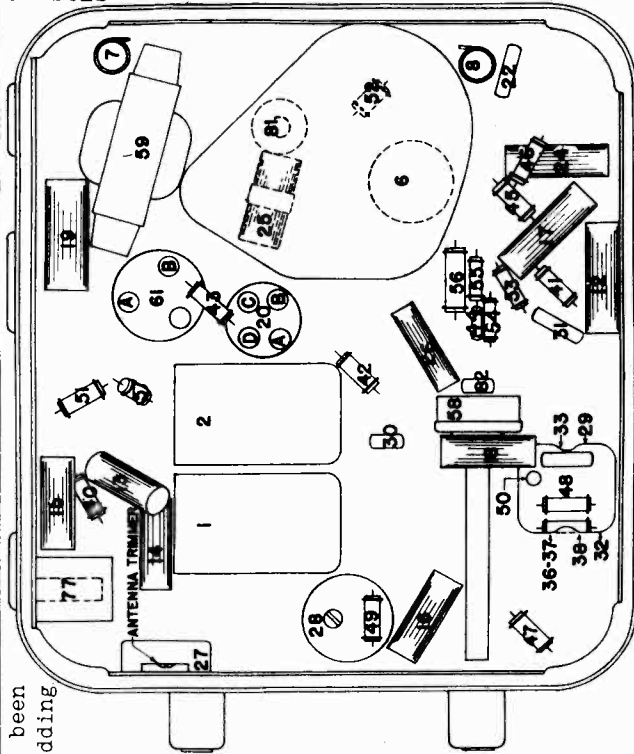


FIG. 3 PARTS LAYOUT--Bottom View

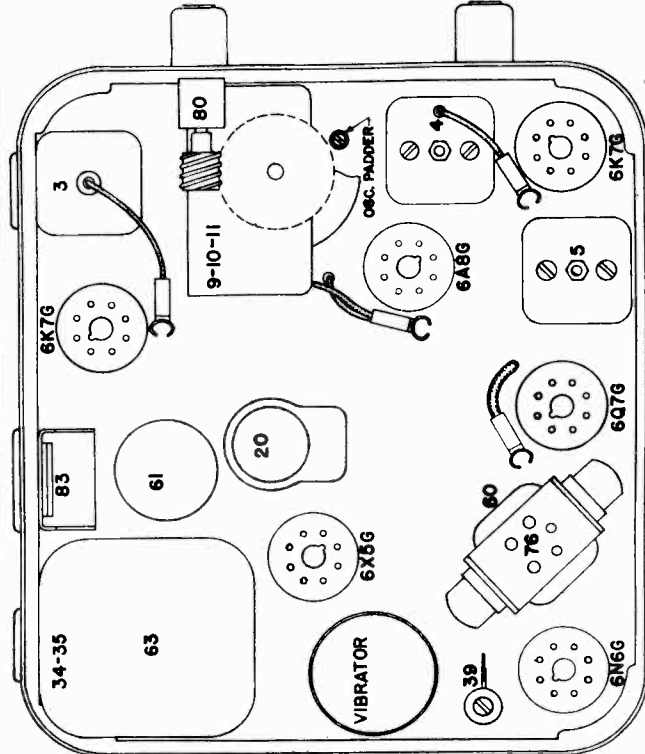
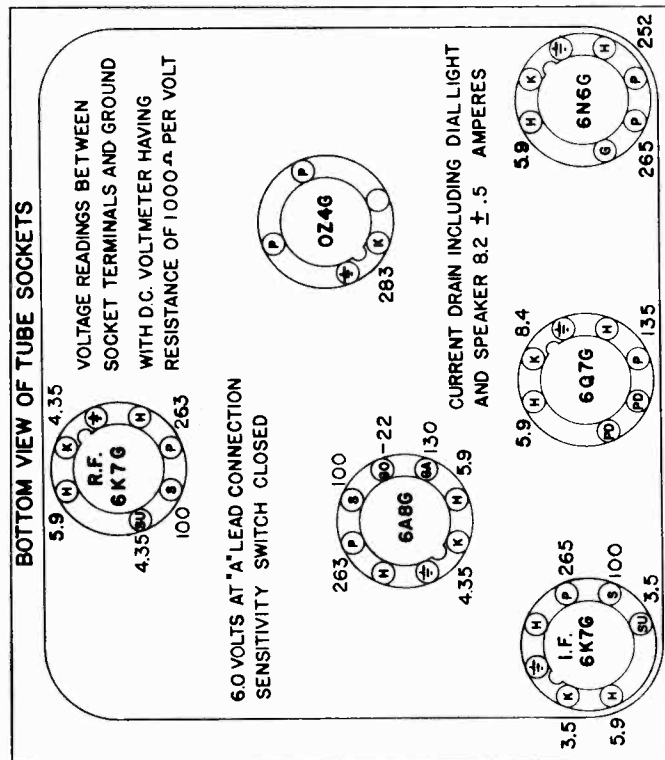


FIG. 2 PARTS LAYOUT--Top View

In order to reduce the battery drain on Model 982043, the rectifier tube 6X5G has been changed to an OZ4G rectifier tube. This change may be made in the field by adding the following items:

1 - Choke Coil, Part No. 7232229. 1 - .01 400 V. Condenser, Part No. 1209309. Shield for the OZ4G rectifier tube, Part No. 7231884.

Olds Model 982043 BELOW SERIAL NO. A-20,000
Date: 11-1-36



Olds Model 982043
Date: 5-13-37

Model 982043 Under Serial No. A-20,000

VOLTAGES WHEN OZ4G TUBE IS CHANGED IN THE FIELD.
Readings taken from tube socket contacts to ground with a D.C. Volt-meter having a resistance of 1000 OHMS per volts.

1. The connection between the K. of the 6X5G tube and the electrolytic condenser is broken and the choke coil is placed between the K. of this tube and the electrolytic condenser. The .01 condenser is placed between the K. of this same tube and ground. The small tube shield is placed over the OZ4G rectifier tube.

OLDSMOBILE MOTOR CAR CO.

MODEL 982043 Late
Above Ser. A-20,000
Schematic, Socket
Voltage, Chassis

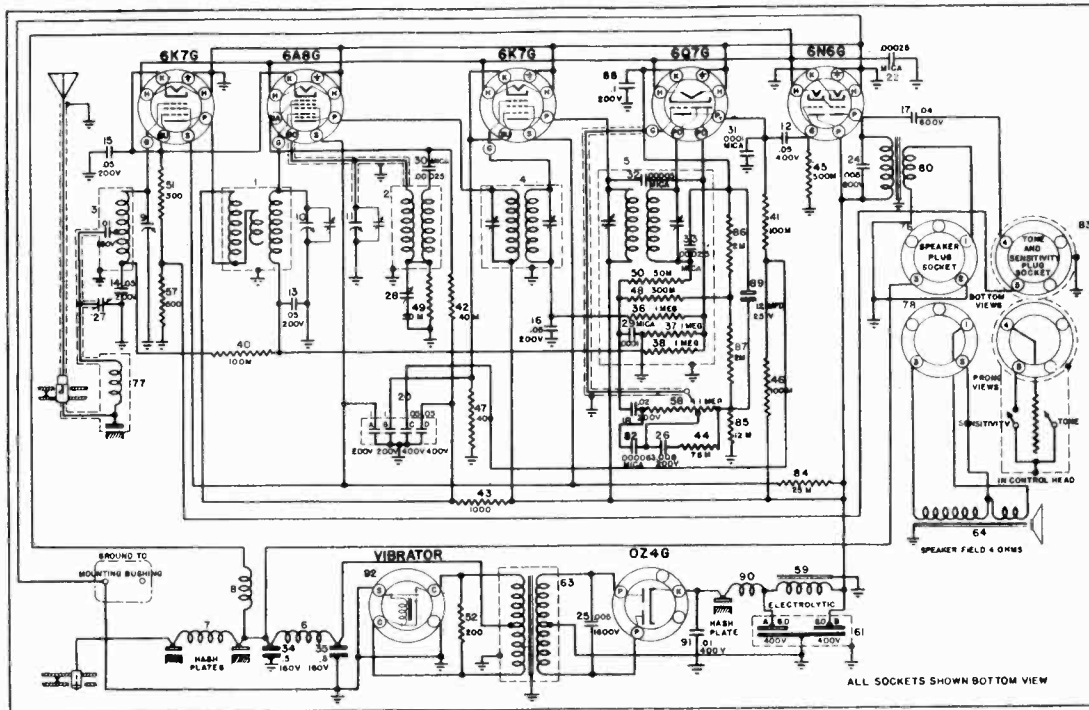
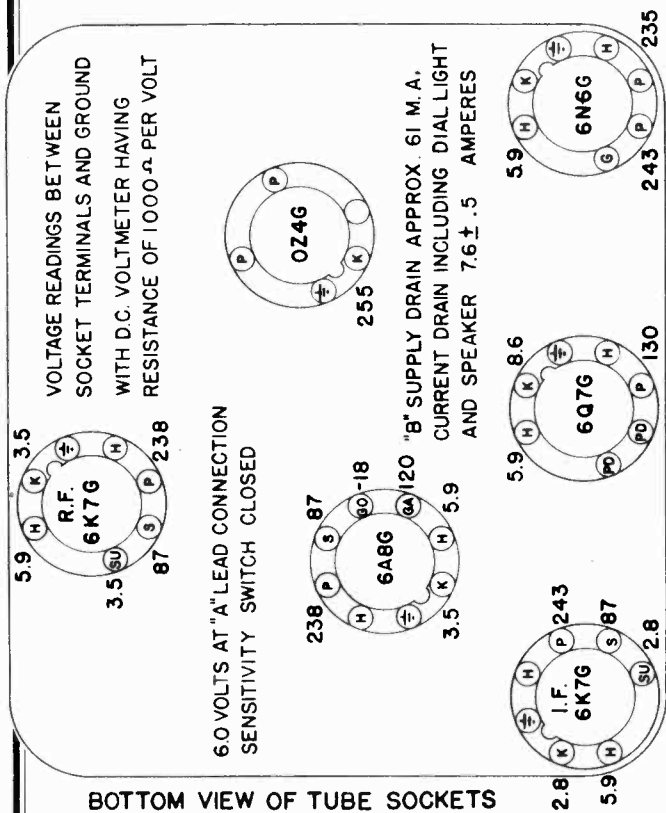


Fig. (1) Olds Model 982043 Circuit Diagram
Beginning with Serial No. A-20,000

IF PEAK 262 KC.

Date: 5-13-37

using an OZ4G Rectifier Tube in place of the 6X5G Rectifier Tube.



BOTTOM VIEW OF TUBE SOCKETS

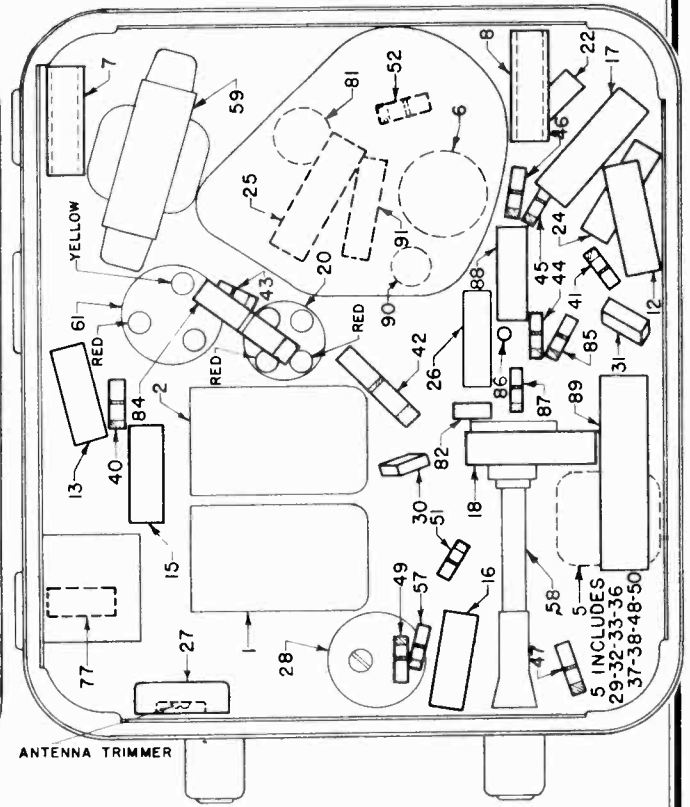


Fig. (3) Olds Model 982043 Parts Layout

MODEL 982043, Early, Late

Alignment

Parts

OLDSMOBILE MOTOR CAR CO.

Antenna Circuit

The antenna circuit is directly coupled to the antenna in contrast with the capacity coupled circuit used in some previous Oldsmobile models. 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.) instead of at the low frequency end as with the capacity coupled sets.

Part No.	Part Name	Description	Illus. No.
7230384	Coil	R.F. coil assembly	1
7230407	Coil	Oscillator coil assembly	2
7230803	Coil	Ant. coil assembly	3
7230600	Coil	1st I.F. coil assembly	4
7230375	Coil	2nd I.F. coil assembly	5

Sensitivity Control

A "Local-Distance" switch is provided on the tuning control used with this receiver. In the "Distance" position, the receiver has its maximum sensitivity. In the "Local" position, the receiver functions with reduced sensitivity. The circuit is so designed so that when the sensitivity switch is either in the "Local" or "Distance" positions, the receiver operates with the same high selectivity.

7230712	Coil	"A" filter choke	6
7230324	Coil	R.F. motor noise choke	7
7230325	Coil	R.F. motor noise choke	8
7230744	Condenser	Variable gang condenser ...9,10,11	
1209313	Condenser	Tubular .05 400 V.	12
1210697	Condenser	Tubular .05 200 V.	13,14,15,16
7230910	Condenser	Tubular .04 600 V.	17
1209307	Condenser	Tubular .02 200 V.	18
1207908	Condenser	Tubular .1 400 V.	19

All of the adjustable condensers in this receiver are very accurately adjusted at the factory and should need no further adjustment (excepting antenna condenser). If re-alignment 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.

7230276	Condenser	By-pass block	20
	Sec. A	.1 200 V.	
	Sec. B	.1 200 V.	
	Sec. C	.05 400 V.	
	Sec. D	.05 400 V.	

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

Connecting the Output Meter

Connect one terminal of the output meter to the plate of the 6N6G output tube. Insert in series with this lead a .1 mfd. or larger, 600 volt condenser. Connect the other terminal of the output meter to the chassis frame. The purpose of the series condenser is to protect the meter from damage.

7230911	Condenser	Tubular .005 800 V.	24
7230590	Condenser	.005 1600 V.	25
7230912	Condenser	.008 200 V.	26
7230247	Condenser	Ant. trimmer	27
7230314	Condenser	Oscillator padder	28

1. Peaking the I.F. stages at 262 Kilocycles

Before any attempt is made to peak the receiver, the "sensitivity" control must be in the "Distance" position.

1209055	Condenser	Moulded .00025	22,30
1210275	Condenser	Moulded .0001	31
1207625	Condenser	Moulded .00005 (incl. in 2nd I.F. assembly)	32
1209055	Condenser	Moulded .00025 (incl. in 2nd I.F. assembly)	33
1210275	Condenser	Moulded .0001	29
7230249	Condenser	Hash condenser .5 160 V.	34
7230250	Condenser	Hash condenser .5 160 V.	35

If the control head is not removed from the car, use any convenient method to short the connections of the tone control and sensitivity control receptacle.

Short circuit the connections as shown in Figure 1 with the control plug properly shorted.

(a) Connect the ground lead of the test oscillator to the chassis frame.

Connect a .1 mfd. condenser in series with the other lead and connect this lead to the grid clip of the translator 6A8G tube leaving the grid clip in place.

The .1 mfd. condenser is necessary to prevent the oscillator circuit of the receiver from affecting the I.F. adjustment.

(b) Set the test oscillator on the 262 K.C.

(c) Turn the volume control of the receiver on full.

(d) Peak both I.F. trimmers on the 2nd I.F. coil. This is part 5 in the top view of the receiver, (Figure 2).

(e) Then peak both trimmers on the 1st I.F. coil, part 4 in the drawing, (Figure 2).

(f) In order to insure accurate settings of the I.F. trimmers, the above adjustments should be repeated, using the lowest oscillator output that will give a reasonable deflection of the output meter pointer. Make all adjustments for maximum output.

ALIGNING OSCILLATOR AND R.F. STAGES

(a) Connect the signal lead of the test oscillator to the antenna connector through a .00055 mfd. condenser.

(b) Set the test oscillator at exactly 1560 K.C.

(c) Turn the gang condenser completely out of mesh.

(d) Adjust the oscillator trimmer for maximum output. (Center section of the gang condenser).

(e) Set the test oscillator at 1400 K.C.

(f) Tune the gang condenser for maximum output.

(g) Adjust the R.F. trimmer for maximum output. (Top section)

(h) Adjust the antenna compensating condenser for maximum output. (Part 27 in Figure 3.)

(i) Set the test oscillator at 600 K.C.

(j) Tune the gang condenser for maximum output.

(k) Adjust the oscillator padding condenser (Part 28 in Figure 3) and at the same time rock the gang condenser back and forth through the signal. This operation should be continued until no further increase can be obtained.

(l) Repeat E, F, G, H.

(m) If the oscillator padding condenser was materially out of adjustment, it may be necessary to repeat the entire procedure for accurate adjustment.

Olds Model 982043
Date: 11-1-36

Beginning with radio, Serial Number 20,000,
Olds Model 982043 the following parts have been removed:
Date: 5-13-37

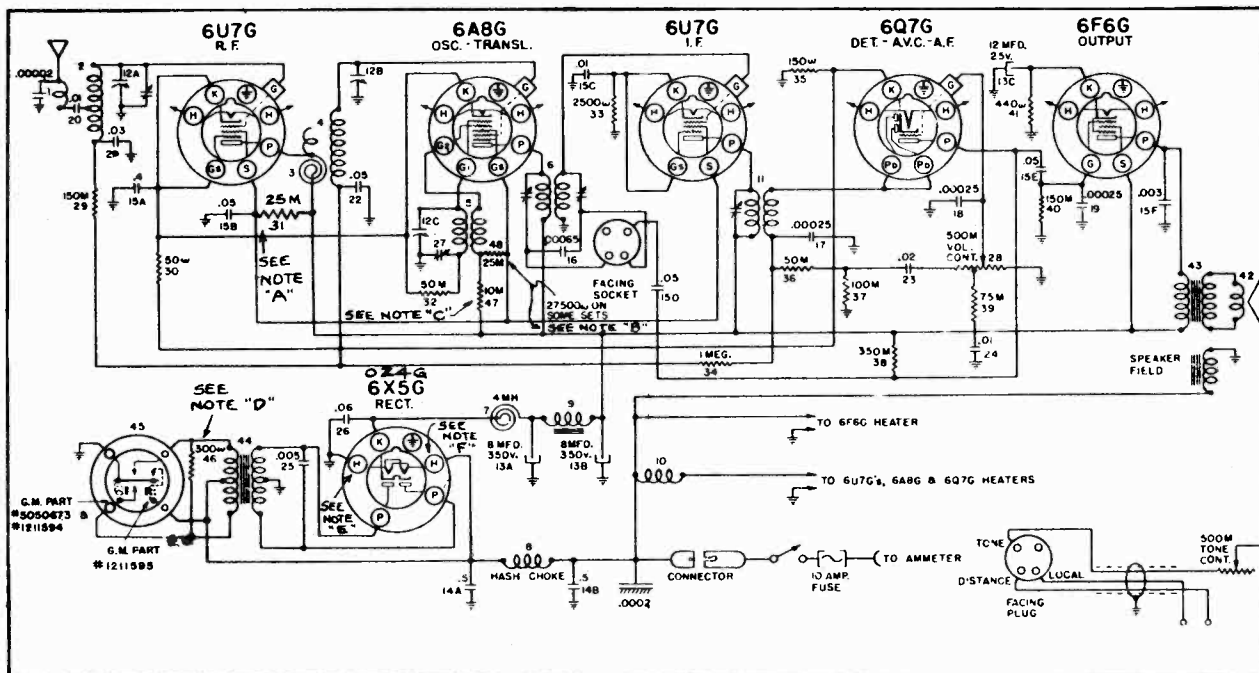
1209885	Resistor	1 meg. ohms 1/4 watt	36,37,38
7230589	Resistor	Wire wound-10,000 ohms-5 watt 39	
1209885	Resistor	100,000 ohms 1/4 watt	40,41
1211106	Resistor	40,000 ohms 1 watt	42
1211036	Resistor	1000 ohms 1/2 watt	43
1210882	Resistor	75,000 ohms 1/4 watt	44
1210470	Resistor	500 M. 1/4 watt	45
1210882	Resistor	20 M. 1/4 watt	46
1211221	Resistor	400 1/4 watt	47
1209884	Resistor	300 M. 1/4 watt	48
1210116	Resistor	50 M. 1/4 watt	49,50
1211220	Resistor	300 ohms 1/4 watt	51
1211007	Resistor	200 ohms 1/2 watt	52
1211222	Resistor	600 ohms 1/4 watt	53
1211000	Resistor	100 ohms 1/4 watt	54,55
7230289	Resistor	9500 ohms 1 watt	56
1211019	Resistor	500 ohms 1/4 watt	57
7230117	Control volume	1 meg.	58
7230287	Choke	"B" filter choke	59
7230804	Transformer	Audio output	60
7230284	Condenser	Electrolytic	61
	Sec. A	8.0 mfd. 400 V.	
	Sec. B	8.0 mfd. 400 V.	
7230228	Transformer	Vibrator transformer	63
7230859	Speaker unit only	.....	64
7230757	Grille screen	.....	65
7230843	Ant. filter choke	.....	77
7230283	Socket unmarked	.....	71
7230072	Socket	Vibrator	72
7230870	Wrap around-finished	.....	73
7230905	Case cover assembly-	.....
	chassis	.....	74
7230904	Case cover tube lid	.....	75
7230828	Speaker plug socket	.....	76
5050673	Vibrator	Non-synchronous	....

Beginning with radio, Serial Number 20,000,
the following parts have been added:

Part No.	Part Name	Description	Illus. No.
7231811	Resistor	25,000 2 watt	84
7231810	Resistor	12,000 1/4 watt	85
1211224	Resistor	2,000 1/4 watt	86
1211224	Resistor	2,000 1/4 watt	87
7231536	Condenser	.1 200 Volt	88
7231815	Condenser	12 MFD. 25 Volt	89
7231741	R.F. Rect. Choke	.....	90
1209309	Condenser	.01 MFD. 400 Volt	91
7231884	OZ4G Tube Shield	.....	..
7231596	OZ4G Tube	Rectifier	..
7232229	R.F. Rect. Choke	(Required when OZ4G tube is used on first production)	93

OLDSMOBILE MOTOR CAR CO.

MODEL 982044(3Types)
Schematic, Voltage
Changes



- Note A - R31 used only on models dated 11-1-36 and 3-7-38
- Note B - R48 used only on model dated 5-13-37
- Note C - R47 used only on model dated 5-13-37
- Note D - R46 used only on models dated 5-13-37 and 3-7-38
- Note E - Heater was grounded on models dated 11-1-36, 5-13-37 and 3-7-38
- Note F - Heater was connected to A "Hot" on models 11-1-36, 5-13-37 and 3-7-38

TUBE SOCKET VOLTAGES

Type	Function	H	P	S	Gs	G1	G2	K
6U7G	R-F Amplifier	5.75	230	60	2.5	-	-	2.5
6A8G	Translator	5.75	230	-	60	3.0	60**	2.5
6U7G	I-F Amplifier	5.75	230	60	5.0	-	-	5.0
6Q7G	Det-1st A.F.	5.75	80	-	-	-	-	1.2
6F6G	Output	5.8	220	230	-	-	-	14.0
6X5G	Rectifier	5.75	*	-	-	-	-	240

* AC

"B" supply drain approximately 52 ma***

Current drain 6.8 amperes

** G2 is 165 volts for model dated 5-13-27

*** "B" supply drain is 62MA for model dated 11-1-36

MODEL 982044(3 Types)
Socket, Trimmers
Alignment

OLDSMOBILE MOTOR CAR CO. Alignment
MODEL 982045(3 Types)

GENERAL: The Oldsmobile Model 982044 is a six tube single unit receiver with tone and sensitivity control. This receiver was designed specifically for 1937 Model Oldsmobiles and is equipped with an instrument panel tuning control having a Local-Distance switch and variable tone control in addition to the tuning and volume controls.

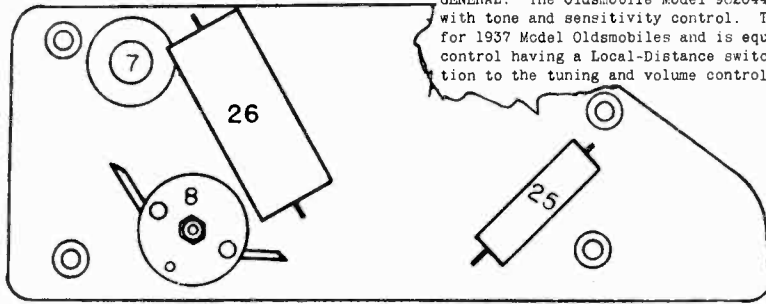
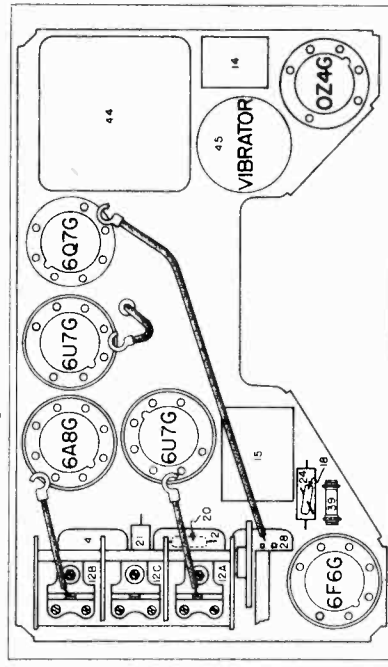
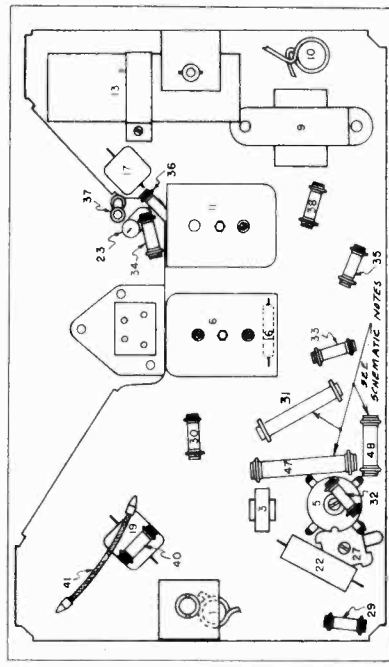


FIG. 4 PARTS
 LAYOUT UNDER SUB. PANEL 982044

5. Aligning at 600 Kilocycles
 receivers in order that this circuit can be made to track properly.) Set the signal generator to 1400 K.C. Turn the condenser rotor plates until the frequency is tuned in with maximum output. Adjust the R-F parallel trimmer on the condenser gang and the antenna compensating condenser which is the parallel trimmer on the condenser gang.



Bottom View Model 982044



Top View Model 982044

1. Aligning I-F Stages at 262 Kilocycles
ALIGNMENT FOR ALL TYPES
IMPORTANT: The "Local-Distance" switch on the tuning control used with this receiver is used to control the alignment of the first I-F coil windings. The capacity existing between the leads and the shielding of the cable connecting to the switch in the tuning control is part of the I-F tuned circuit and must be taken into consideration when aligning the I-F stages.
 (a) Connect the signal lead of the signal generator to the grid cap of the 6A8G Translater Tube through a .1 mfd. condenser, leaving the tube's grid clip in place. Connect the ground lead of the signal generator to the chassis frame.
 (b) Insert the four prong plug of the tuning control cable into the socket provided on the receiver chassis. Turn switch on tuning control to "DISTANCE" position. (If the receiver is aligned with the switch in the "local" position, the "Local-Distance" switch will operate backwards.)
 (c) Connect the output meter from the plate prong of the 6F6G to ground. Care should be taken when connecting the output meter to insert a series condenser to protect the meter from D.C. voltages.
 (d) Set the signal generator to exactly 262 K.C.
 (e) Adjust the trimmers on the I-F coils for maximum output. These adjustments should be repeated several times.

Checking I-F Band Spread

The Model 165 Cathode Ray Oscillograph should be used to check the I-F band spread after completing the "Alignment Procedure". Slight adjustment of the I-F stages may be found necessary in order to obtain a symmetrical selectivity curve.

2. Aligning at 1520 Kilocycles

Leave the signal generator leads connected the same as for aligning the I-F circuits. Turn the rotor plates of the gang condenser all the way out and against the high frequency stop. Set the signal generator to 1520 kilocycles. Adjust the parallel trimmer for the oscillator section of the condenser gang for maximum output. (It is very important that this frequency be set accurately as a slight mis-setting will cause the receiver to be out of track over the entire high frequency end of the dial.)

3. Aligning at 540 Kilocycles

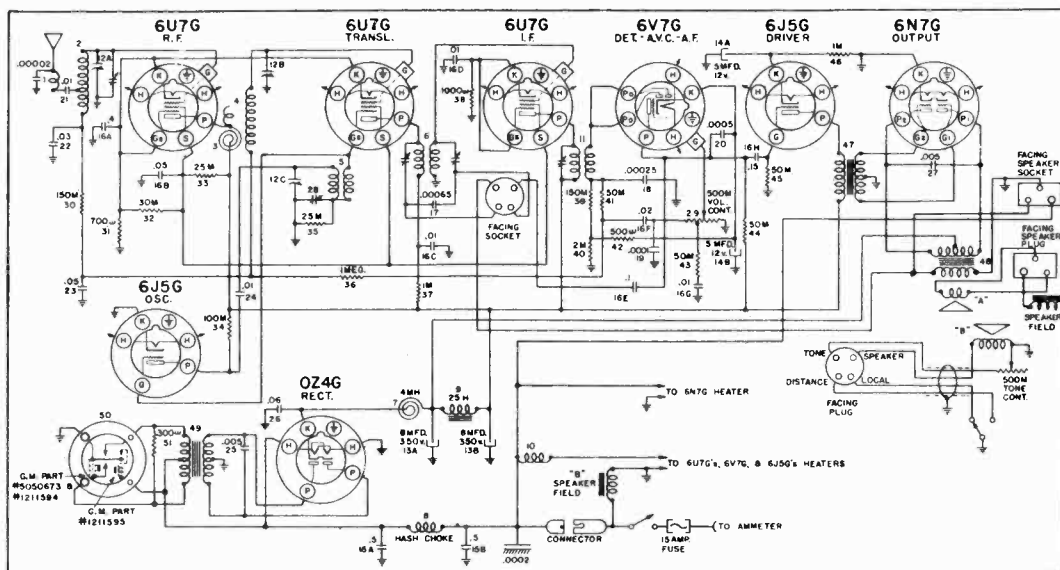
Leave signal generator leads connected the same as before. Turn the rotor plates of the gang condenser all the way into mesh so that they rest against the low frequency stop. Set the signal generator to 540 K.C. Adjust the oscillator padding condenser located on the under-side of the receiver sub-panel to maximum output.

4. Aligning at 1400 Kilocycles

Remove the signal lead of the signal generator from the grid of the translater tube and connect to the antenna terminal of the receiver THROUGH A .0005 mfd. MICA CONDENSER connected in place of the .1 mfd. condenser previously used. (It is very important that a .0005 mfd. mica condenser be used in aligning the antenna stage of these

OLDSMOBILE MOTOR CAR CO.

MODEL 982045 (3 Types)
Schematics, Voltage



Circuit Diagram Model 982045 (PRODUCTION OF 5-13-37 ONLY)

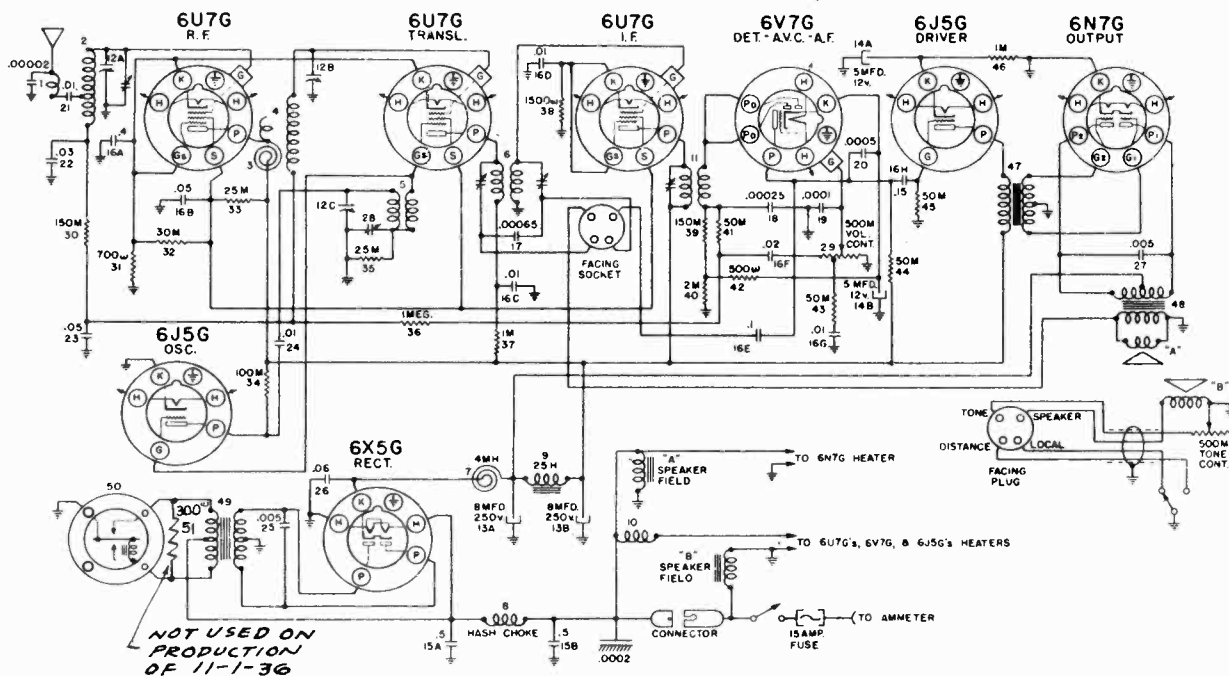


FIG. 3 OLDS MODEL 982045 CIRCUIT DIAGRAM
(PRODUCTIONS DATED 11-1-36 & 3-7-38)

TYPE	FUNCTION	H	P	S	Gs	K
6U7G	R.F. Amplifier	5.75	230	60	8.5	8.5
6U7G	Translator	5.75	230	60	-	8.5
6J5G	Oscillator	5.75	230	-	-10.0	-
6U7G	I-F Amplifier	5.75	230	60	3.6	3.6
6V7G	Det.--1st Audio	5.75	90	-	-	6.0
6J5G	Driver	5.75	230	-	-	7.5
6N7G	Output	5.8P1P2	230P1P2	-	-	-
6X5G	Rectifier	-	*	-	-	240

*AC Current 7.8 amperes. "B" supply drain approximately 52 Ma.

Reading taken with a 1000 ohms pervolt, voltmeter. "A" Battery - 6 Volts.

MODEL 982045 (3 Types)

Socket, Trimmers

Chassis, Notes

OLDSMOBILE MOTOR CAR CO.

Date: 7-2-37

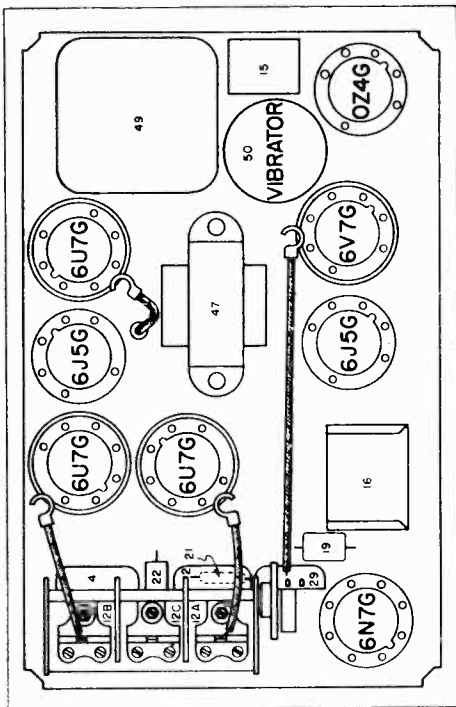
TO ELIMINATE HARMONIC TWEETS

COMPLAINT: HIGH PITCHED WHISTLE OCCURRING WHEN TUNING INTO SIDE BAND OF STATION CARRIER AT APPROX. 786 K.C.

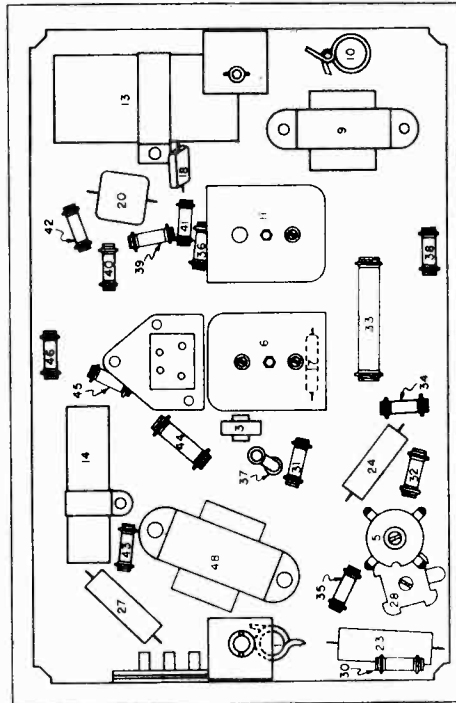
It has been found that some of the early deluxe radios, Model 982045, do have an objectional "twee" although there are a percentage which appear normal.

The remedies below will eliminate this on even the worst offenders.

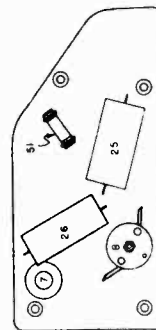
1. Move the grid lead of the 6U7G R.F. tube away from the 6N7G output tube.
2. The 1 MEG. A.V.C. filter resistance item No. 37 should be removed from the mounting strip in the front of the 2nd I.F. transformer and mounted near the sub-panel away from the I.F. transformer, to reduce coupling. (See sketch)
3. Bond the antenna connector metal case to the chassis ground.
4. Install a shield over the grid lead to the 6B7 Tube.
5. Remove the shield from the 6J5G audio tube.
6. Install a shield over the 6V7G detector tube (use same type shield as used on a 6ABG tube).



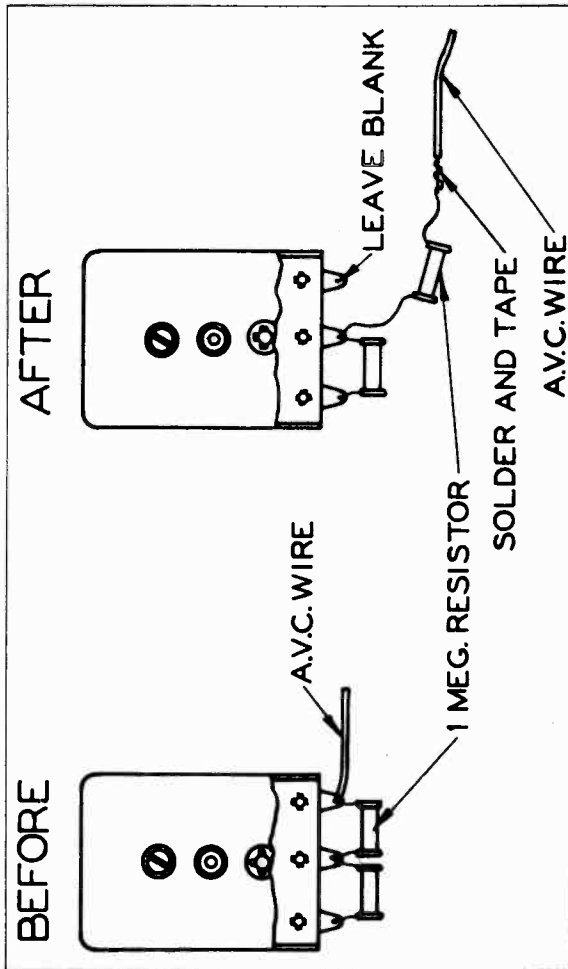
Bottom View Model 982045



Top View Model 982045

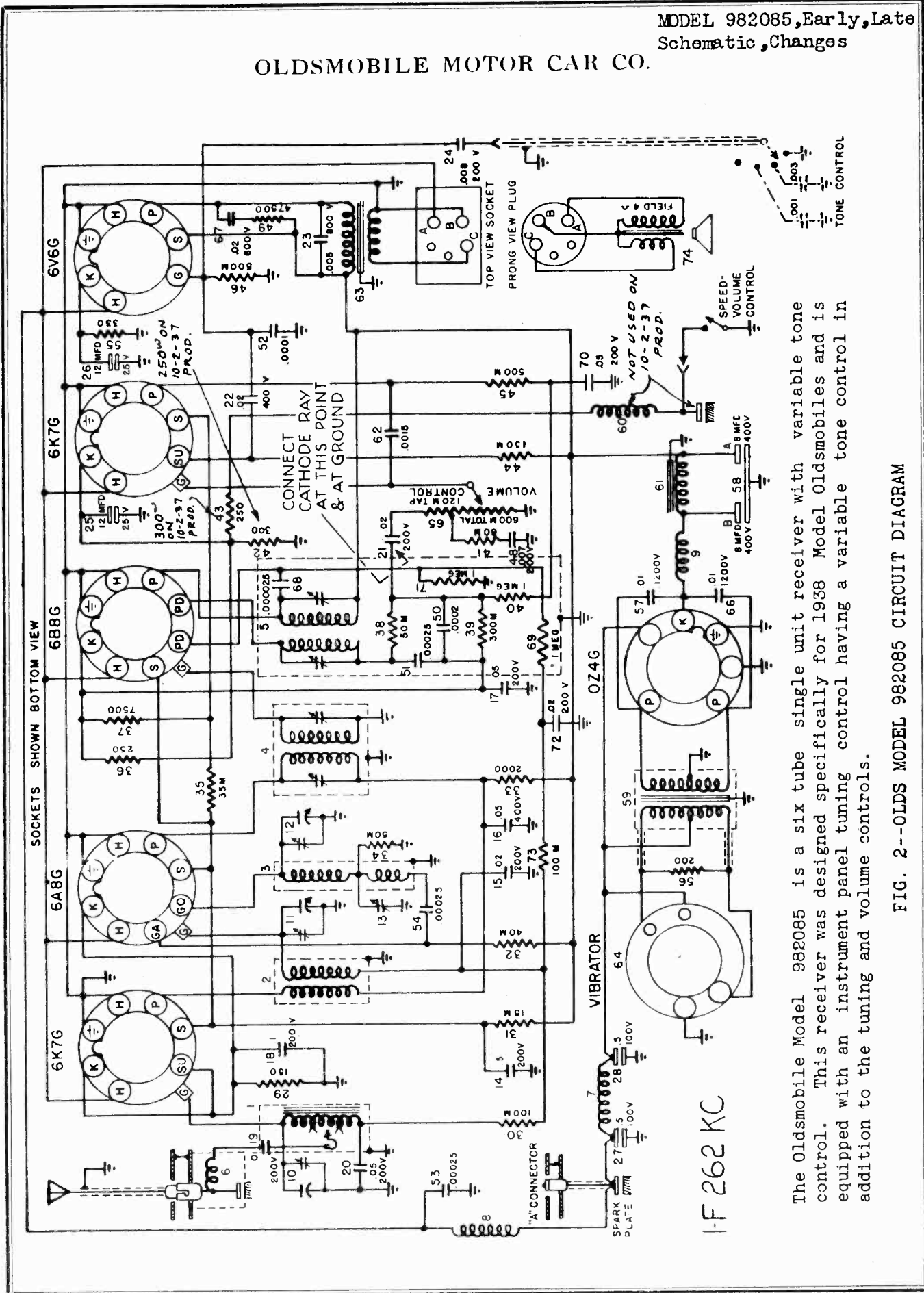


---PARTS LAYOUT--VIBRATOR FILTER



MODEL 982085, Early, Late
Schematic, Changes

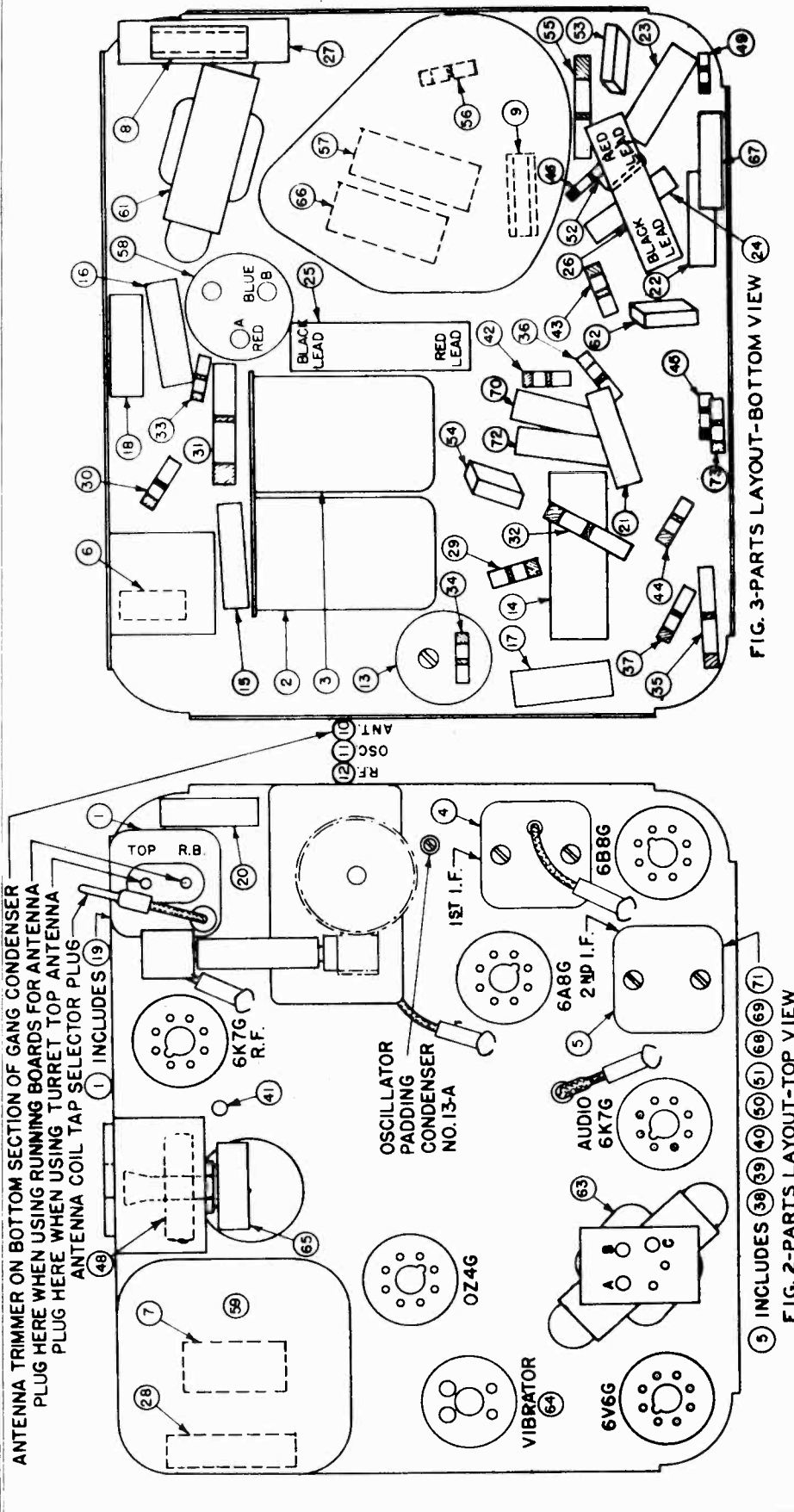
OLDSMOBILE MOTOR CAR CO.



The Oldsmobile Model 982085 is a six tube single unit receiver with variable tone control. This receiver was designed specifically for 1938 Model Oldsmobiles and is equipped with an instrument panel tuning control having a variable tone control in addition to the tuning and volume controls.

FIG. 2--OLDS MODEL 982085 CIRCUIT DIAGRAM

MODEL 982085, Early, Late
 Socket, Trimmers, Notes OLDSMOBILE MOTOR CAR CO.
 Chassis Layout



OLDSMOBILE MOTOR CAR CO Alignment, Voltage

MODEL 982085, Early, Late

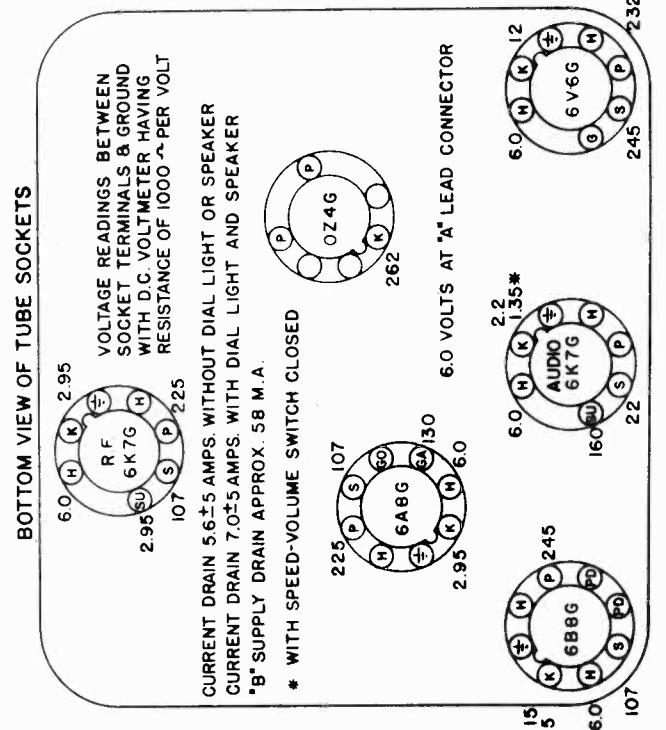
All of the adjustable condensers in this receiver are very accurately adjusted at the factory and should need no further adjustment (excepting antenna adjusting condenser when used with the Overhead (Roof) Antenna.) If realignment is found to be necessary, the circuits can be properly adjusted only with 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 FOLLOWING INSTRUCTIONS:

- NOTE:** "When the receiver leaves the factory, it is properly adjusted to obtain maximum results from the running board Antenna. No adjustment of any kind is required."
- If a **TOP ANTENNA** is to be used with this receiver, it is necessary to make two adjustments."
- "**SELECT PROPER ANTENNA COIL TAP.** Remove the front cover of the receiver. In the upper right corner (See Figure 2) is the Antenna coil assembly illustration No. 1. Two positions for the Tap Selector Plug are provided marked "R.B." and "TOP." Pull out the plug from position "R.B.," and insert in the position marked "TOP." Replace the front cover."
- "**ADJUST THE TRIMMER CONDENSER IN THE ANTENNA CIRCUIT.** This condenser is located on the side of the Variable Gang Condenser and is on the section nearest the back cover (See Figure 5). Remove the Cover Plate on the right hand side of the receiver case to expose this adjusting screw."
- "**CAUTION** - Receiver alignment may be upset if other trimmer screws are disturbed."
- "**PROCEDURE TO ADJUST ANTENNA TRIMMER CONDENSER.** Tune in a **BARELY AUDIBLE** station between 140 and 150 on the dial with the volume control **FULL-ON.** With a small screw driver, adjust the Antenna trimmer illustration No. 10, (See Figure 8) for **MAXIMUM VOLUME.**"

"No further adjustment is necessary unless the Antenna with which the receiver is now tuned is changed."

- CONNECTING THE OUTPUT METER**
- Connect one terminal of the output meter to the plate of the 6V6G output tube. Insert in series with this lead a .1 mfd., or larger, 600 Volt Condenser.
- Connect the other terminal of the output meter to the chassis frame. The purpose of the series condenser is to protect the meter from damage.
1. Aligning I-F Stages at 282 Kilocycles:
 - a. Connect the signal lead of the test oscillator to the grid cap of the 6ABG tube through a .1 mfd. condenser, leaving the tubes grid clip in place.
 - b. Connect the ground lead of the test oscillator to the chassis frame.
 - c. Set the test oscillator to exactly 282 K.C.
 - d. Turn the volume control of the receiver on full.
 - e. Peak both I-F trimmers on the 2nd I-F coil for maximum output. This is Illustration 5 in the top view of the Receiver, (Figure 2).
 - f. Then peak both trimmers on the 1st I-F coil (Illustration 4, Figure 2).
 - g. In order to insure accurate settings of the I-F trimmers, the above adjustments should be repeated several times and during alignment, the oscillator output should be kept to as low a value as is consistent with obtaining a readable indication on the output meter. Make all adjustments for maximum output.

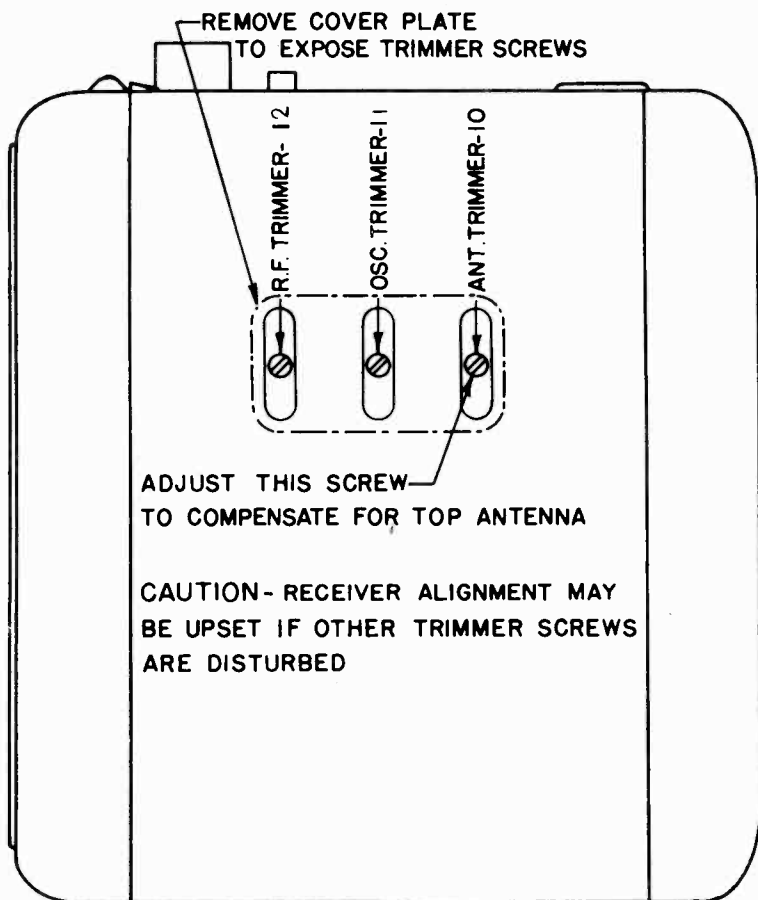


2. Aligning at 1560 K.C.:
 - a. To align the oscillator and R-F stages, connect the oscillator signal lead to the antenna connector through a .00055 mfd. condenser, leaving the ground lead of the oscillator connected to the chassis frame.
 - b. Set the test oscillator to exactly 1560 K.C.
 - c. Turn the rotor plates of the gang condenser all the way out and against the high frequency stop.
 - d. Adjust the oscillator trimmer (Illustration 11, Figure 2) (center section of gang condenser) for maximum output.
 - e. Set the test oscillator to exactly 1400 K.C.
 - f. Turn the rotor plates until the 1400 K.C. frequency from the test oscillator is tuned in with maximum output.
 - g. Adjust the R-F trimmer on the condenser gang (Illustration 12, Figure 2) (Top Section) for maximum output.
 - h. Adjust the Antenna Compensating Condenser (Illustration 10, Figure 2) (Bottom Section) on the gang condenser for maximum output.
3. Aligning at 600 K.C.:
 - a. Set the test oscillator to exactly 600 K.C.
 - b. Turn the condenser rotor plates until the 600 K.C. frequency from the test oscillator is tuned in with maximum output.
 - c. Adjust the oscillator padding condenser (Illustration 13A, Figure 2) and at the same time rock the gang condenser back and forth through the signal. This operation should be continued until no further increase can be obtained.
 - d. Repeat E-F-G-H under "ALIGNING AT 1560 K.C."
 - e. If the oscillator padding condenser was materially out of adjustment, it may be necessary to repeat the entire procedure for accurate adjustment.

FIG. 4 TUBE PRONG VOLTAGES - MODEL 982085

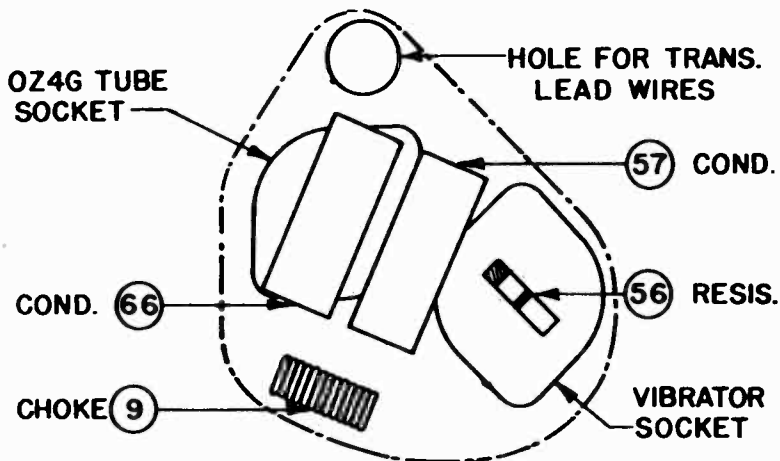
MODEL 982085, Early, Late
Data, Parts

OLDSMOBILE MOTOR CAR CO.



RIGHT SIDE VIEW OF RECEIVER

FIG. 5 GANG CONDENSER (TRIMMER ADJUSTMENT)



DETAIL OF CHASSIS UNDER
"B" SUPPLY SHIELD

FIG. 7 PARTS UNDER SUB. PANEL

TUNING CONTROL PARTS

409976	Control Unit Complete	Standard	Screw 4/36 x 3/16	Binder Head
1212484	Base	Control Assembly	Screw 6/32 x 3/8 R.H.	Lead Clamp Mounting
1212387	Cable Assembly Flexible	Station Selector	Spring	Case Retaining
1212388	Cable Assembly Flexible	Volume Control	Spring	Dial Tension
1212392	Clamp	Lead	Stud	Control Unit Mounting
1212393	Clip	Shaft Retaining	Switch	Off-On
1212394	Clutch and Dial Assy.	Idler Driving and Dial Drive	1212409	Tone Control 4 Positions
1212397	Gear and Shaft Assembly	Dial Drive (Driving Pinion)	1212410	Knob Retaining
1212396	Gear and Shaft	Off-On and Volume (Driving)	1212413	Off-On and Volume Shaft Retaining
1212398	Gear and Shaft	Off-On and Volume (Driven)	1212414	Lead Clamp Mounting
1212399	Gear and Shaft	Station Selector	131044	Pinion Gear and Shaft Mounting
1212401	Knob	Off-On and Volume Control	1212415	Dial Drive Bushing Mounting
1212402	Knob	Tone Control	1212417	Tone Control
1212403	Knob	Pilot Light	1212390	Escutcheon
115275	Lamp No. 51 Miniature	Lead Clamp Mounting	1212480	Tone Control
134530	Bayonet Base	Gear Retaining		No. 8 Lock
1212405	Nut 6/32			
	Plate			