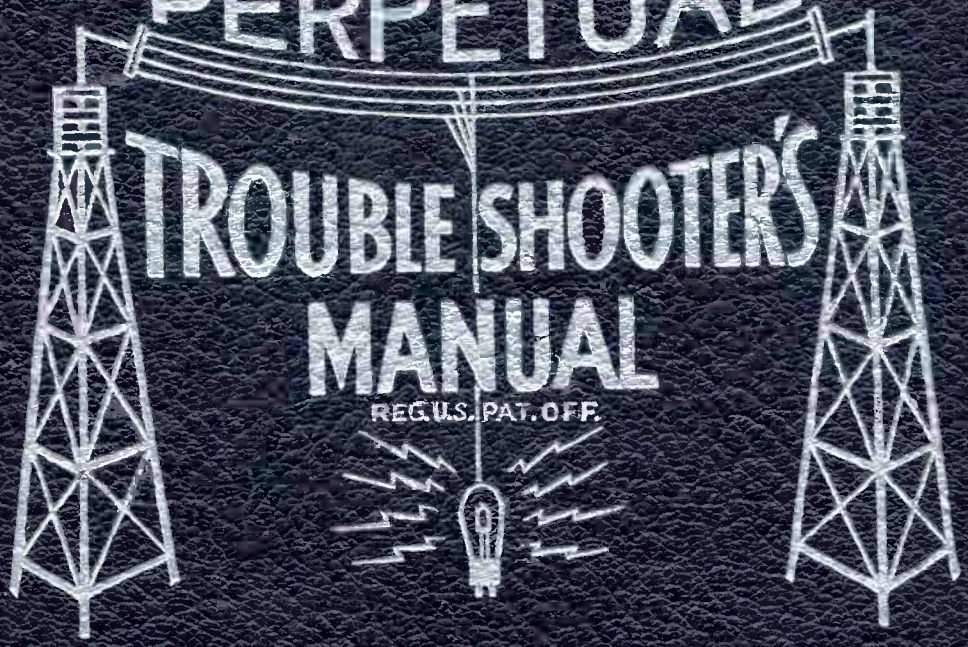
VOLUME VII

PERPETUAL TROUBLE SHOOTER'S MANUAL

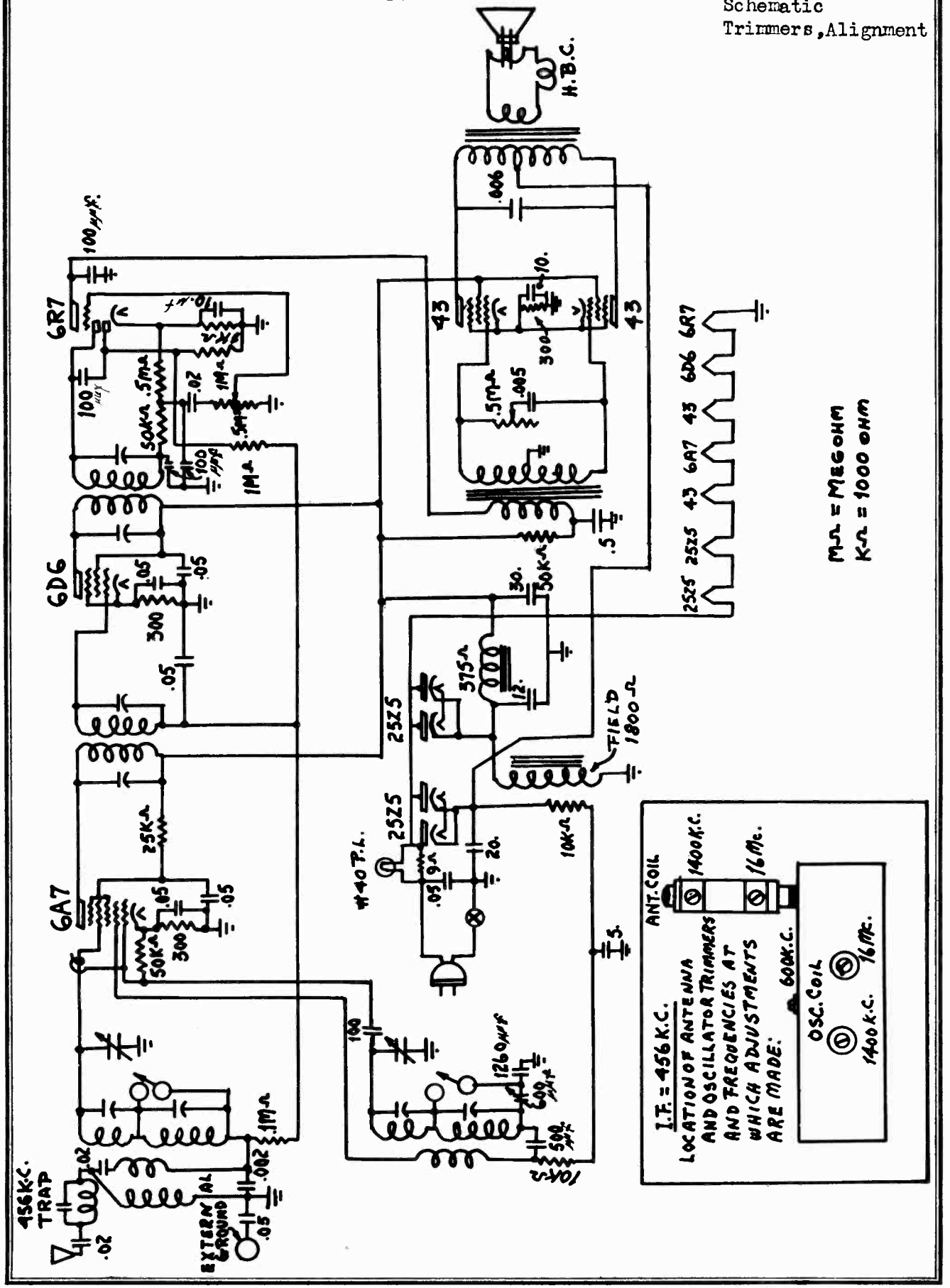
REG. U.S. PAT. OFF.



JOHN F. RIDER

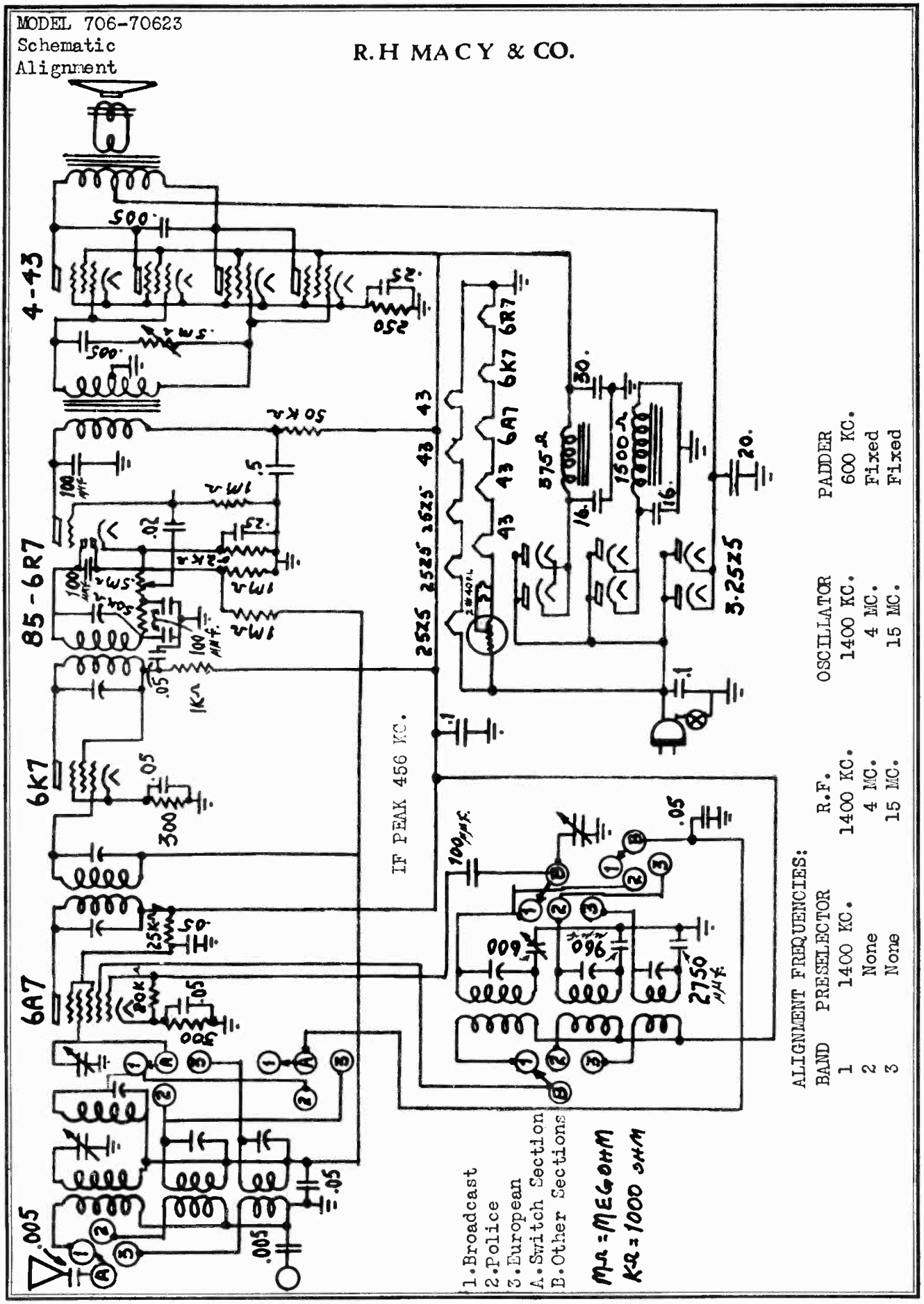
R.H MACY & CO.

MODEL 410 AC-DC
Schematic
Trimmers, Alignment



MODEL 706-70623
Schematic
Alignment

R.H MACY & CO.

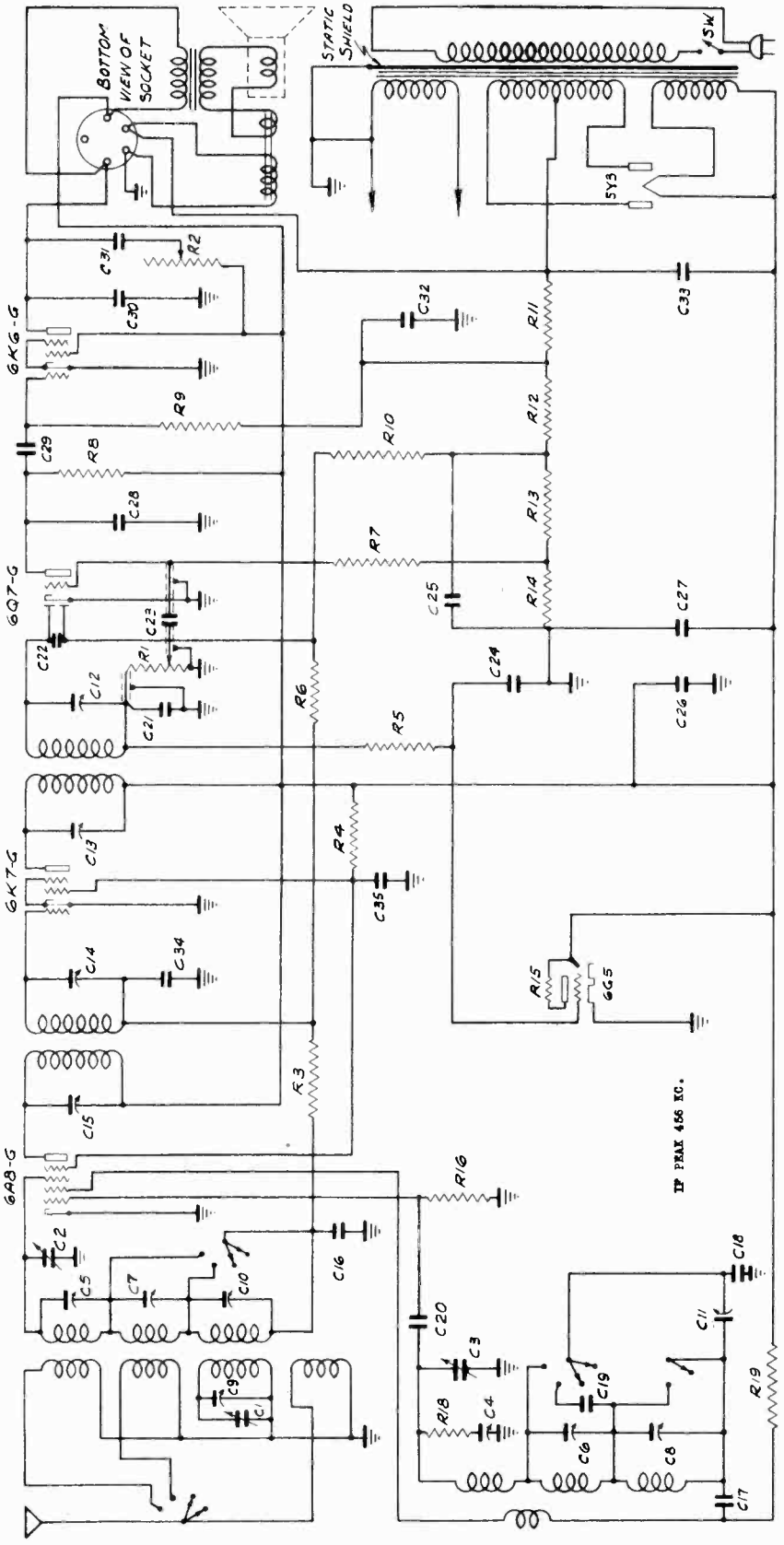


ALIGNMENT FREQUENCIES:

BAND	PRESELECTOR	R.F.	OSCILLATOR	PADDER
1	1400 KC.	1400 KC.	1400 KC.	600 KC.
2	None	4 MC.	4 MC.	Fixed
3	None	15 MC.	15 MC.	Fixed

MAJESTIC RADIO & TELEV. CO.

MODELS 65,66,650
Schematic
Parts List

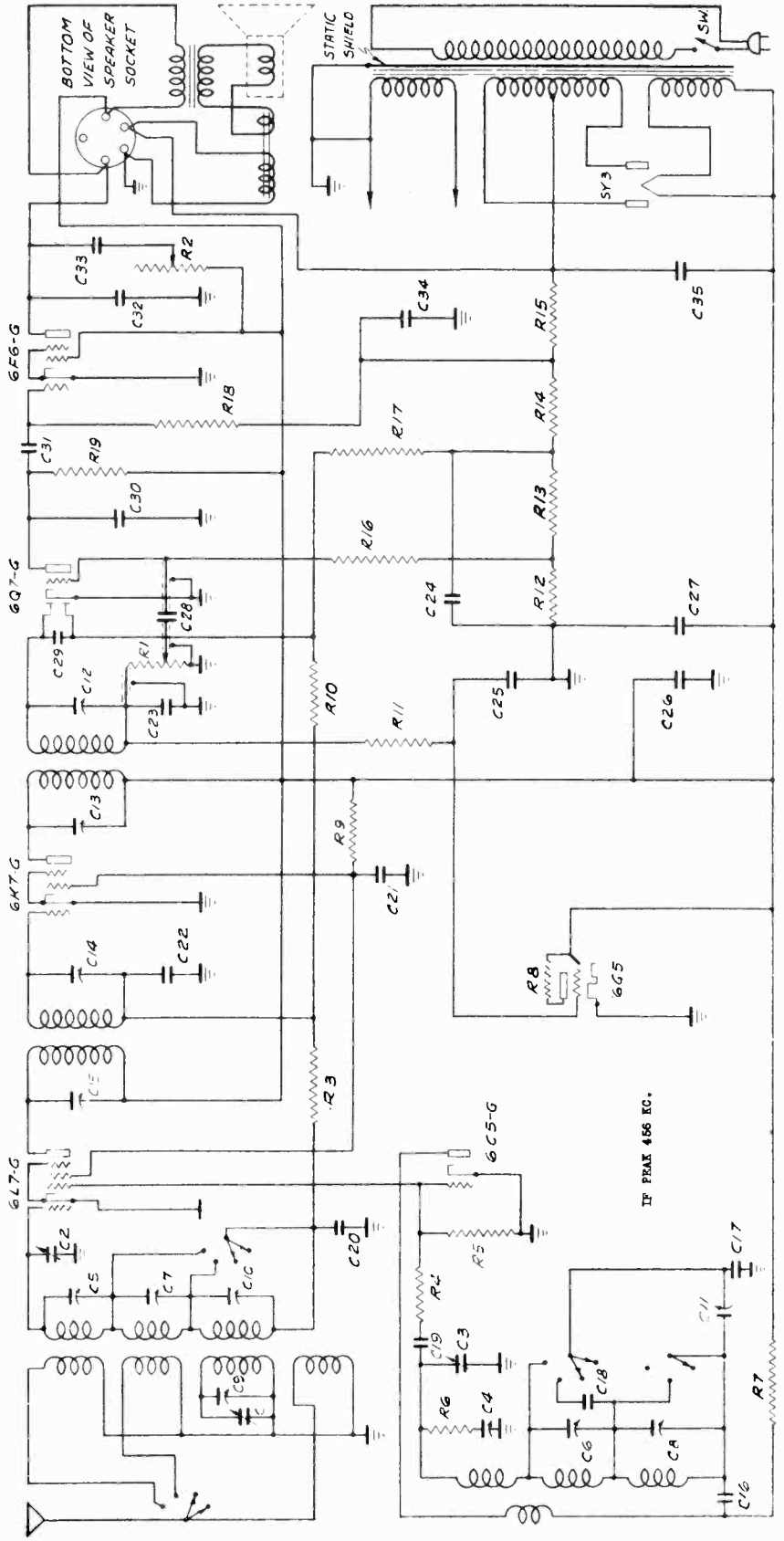


C24	15763	Condenser Tubular	.01 MF	200 V	
C31	15764	Condenser Tubular	.03 MF	400 V	
C32	15770	Condenser Tubular	.2 MF	200 V	
C30	15771	Condenser Tubular	.004 MF	600 V.	
R2	B 16540-2	Control, Tone 150 M Ω.			
R1	B 16542-2	Control, Volume And Line Switch			
R4	15301	Resistor Carbon	25M Ω.	1W ± 20%	
R8	15312	Resistor Carbon	250M Ω.	1/4W ± 20%	
R3	15315	Resistor Carbon	100M Ω.	1/4W ± 20%	
R5 R6 Remarks	15319	Resistor Carbon	1 Megohm	1/4W ± 20%	
R9	15320	Resistor Carbon	500M Ω.	1/4W ± 20%	
R6	15316	Resistor Carbon	50M Ω.	1/4W ± 20%	
R13 R14	15317	Resistor Carbon	20M Ω.	1/4W ± 20%	
R19	15318	Resistor Carbon	10M Ω.	1/2W ± 20%	
R7	15319	Resistor Carbon	3 Megohm	1/4W ± 20%	
R12	15602	Resistor Carbon	250M Ω.	1/4W ± 10%	
R11	15603	Resistor Carbon	900M Ω.	1/4W ± 10%	
R18	3320	#38 D.C.C. Manganin Wire			

C1 C2 C3	B 16461-3	Condenser Variable Gang			
C4 C6 C8	A 16473	Condenser Trimmer	3-30 MMF.	Triple Strip Bakelite	
C5 C9 C12	A 16474	Condenser Trimmer	3-30 MMF.	Ceramic Base	
C7	A 15246-2	Condenser Trimmer	3-30 MMF.	Bakelite Base	
C11	A 16477	Condenser Variable	Padder	340 MMF - 860 MMF.	
C33	B 16466	Condenser Wet Electrolytic	16 MFF.	350 V.	
C27	B 16467	Condenser Wet Electrolytic	8 MFF.	250 V.	
C28	15918	Condenser Mica	100 MMF	± 20 %	0
C21	15928	Condenser Mica	250 MMF	± 20 %	C
C20 C22	15929	Condenser Mica	50 MMF	± 20 %	D
C17	15930	Condenser Mica	2000 MMF	± 20 %	M
C18	15931	Condenser Mica	4300 MMF	± 5 %	N
C19	15932	Condenser Mica	1760 MMF	± 5 %	N
C26	15750	Condenser Tubular	.25 MF	400 V.	
C16 C34	15750	Condenser Tubular	.05 MF	200 V.	
C23 C29	15754	Condenser Tubular	.01 MF	400 V.	
C35	15757	Condenser Tubular	.1 MF	400 V.	
C25	15761	Condenser Tubular	.1 MF	200 V.	

MODELS 75,76,750
Schematic
Parts List

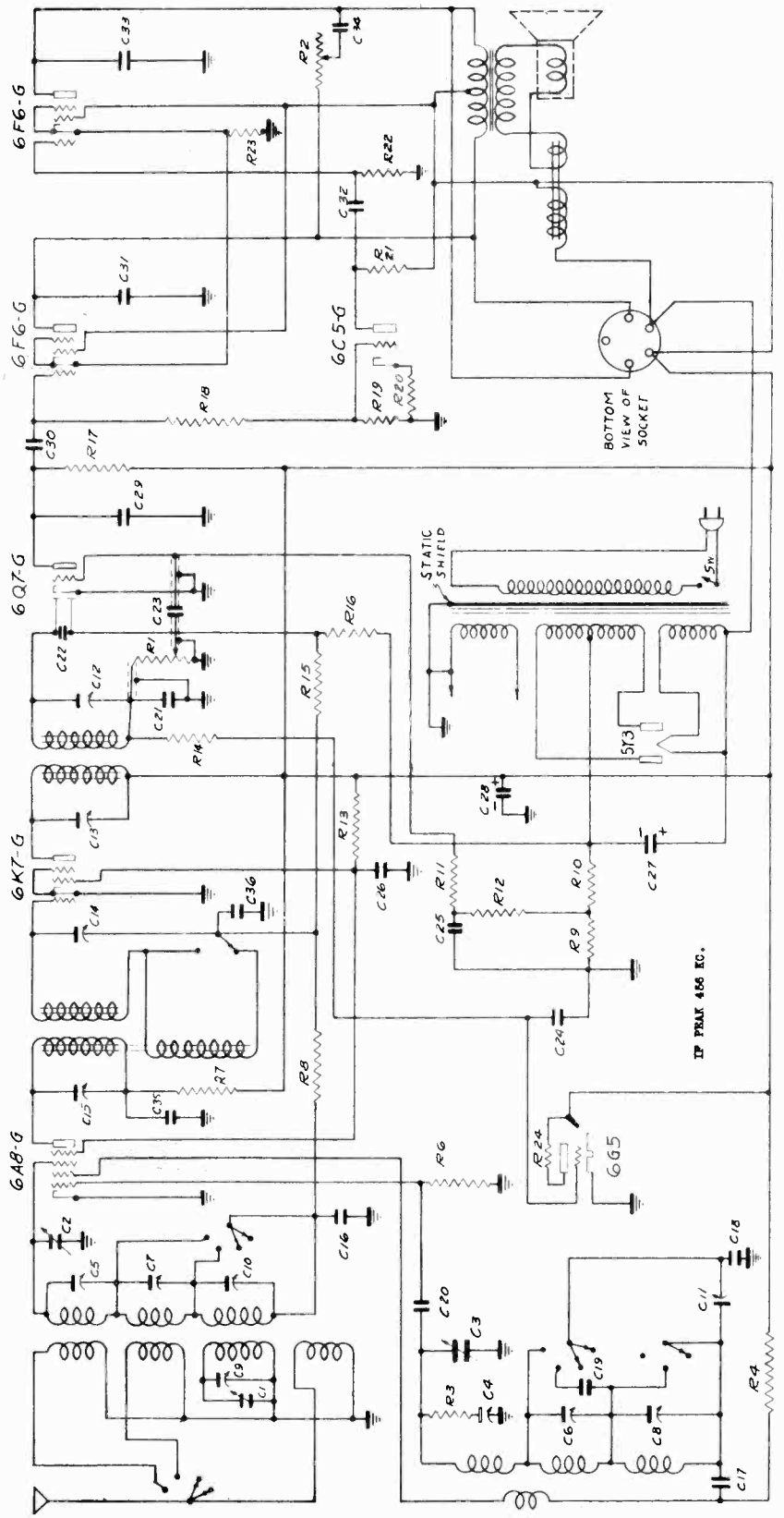
MAJESTIC RADIO & TELEV. CO.



C1 C2 C3	B-16461-3	CONDENSER VARIABLE GANG	C18	15932	CONDENSER MICA 1760 MMF ± 5% TYPE W	R19	15512	RESISTOR CARBON 250M OHMS ± 20% 1/4W
C4 C6 C8	A-16473	CONDENSER TRIMMER 3-30 MMF TRIPLE STRIP BAKELITE	C26	15750	CONDENSER TUBULAR .25 MF 400 VOLTS	R5 R10 R8 R11	15515	RESISTOR CARBON 100 OHMS - 20% ½ W
C5 C9 C10	A-16474	CONDENSERS TRIMMER 3-30 MMF CERAMIC BASE	C20 C22	15752	CONDENSER TUBULAR .05 MF 200 VOLTS	R17	15517	RESISTOR CARBON 1 MEGOHM ± 20% 1/4 W
C7	A-15846-2	CONDENSER TRIMMER 3-30 MMF BAKELITE BASE	C28 C31	15754	CONDENSER TUBULAR .01 MF 400 VOLTS	R18	15520	RESISTOR CARBON 500M OHMS ± 20% 1/4 W
C11	A-16472	CONDENSER VARIABLE PADDER	C21	15757	CONDENSER TUBULAR .1 MF 400 VOLTS	R5	15552	RESISTOR CARBON 30M OHMS ± 20% 1/4 W
C12 C13	A-16631	CONDENSER 2ND I.F. TRIMMER (PART OF I.F. ASS'Y	C24	15761	CONDENSER TUBULAR .1 MF 200 VOLTS	R15	15554	RESISTOR CARBON 500M OHMS ± 20% 1/4 W
C14 C15	A-16630	CONDENSER 2ND I.F. TRIMMER (PART OF I.F. ASS'Y	C25	15763	CONDENSER TUBULAR .01 MF 200 VOLTS	R14	15555	RESISTOR CARBON 125M OHMS ± 10% 1/4 W
C27	B-16467	CONDENSER WET ELECTROLYTIC 8 MFD 250 VOLT	C33	15764	CONDENSER TUBULAR .03 MF 400 VOLTS	R13	15556	RESISTOR CARBON 10M OHMS ± 10% 1/4 W
C35	B-16466	CONDENSER WET ELECTROLYTIC 16 MMF 350 VOLT	C34	15770	CONDENSER TUBULAR .2 MF 200 VOLTS	R12	15557	RESISTOR CARBON 20M OHMS ± 10% 1/4 W
C30	15918	CONDENSER MICA 100 MMF ± 20% TYPE 0		15771	CONDENSER TUBULAR .004 MF 600 VOLTS	R16	15558	RESISTOR CARBON 10M OHMS ± 20% 1/2 W
C23	15926	CONDENSER MICA 250 MMF ± 20% TYPE 0	C32	B-16540-2	CONTROL, TONE	R4	15559	RESISTOR CARBON 5 MEGOHMS ± 20% 1/4 W
C19 C29	15929	CONDENSER MICA 50 MMF ± 20% TYPE 0	R2	B-16542-2	CONTROL, VOLUME WITH 110 V. SWITCH	R4	15601	RESISTOR CARBON 100 OHMS ± 20% 1/4 W
C16	15930	CONDENSER MICA 2000 MMF ± 20% TYPE W	R1	15512	RESISTOR CARBON 25M OHMS ± 20% 1W	R6	3320	#38 D.C.C. MANGANIN WIRE 2 OHMS
C17	15931	CONDENSER MICA 4300 MMF ± 5% TYPE W	R9					

MAJESTIC RADIO & TELEV. CO.

MODELS 85,86,850
Schematic
Parts List

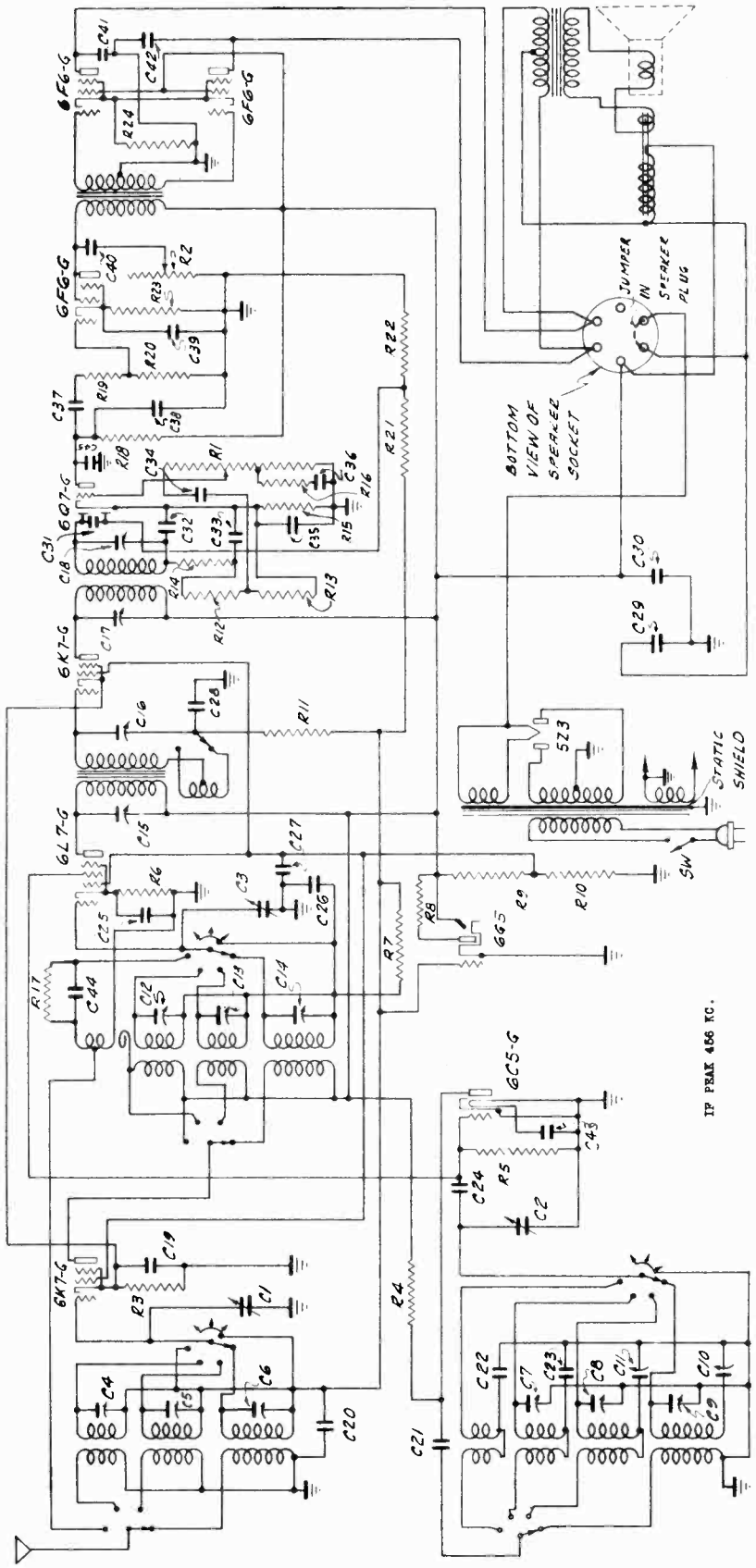


CIRCUIT CONSTANTS
85-86-850

SCHEMATIC LOCATION	PART NO.	DESCRIPTION
C1 C2 C5	B-16461-3	Condenser Variable Gang Model 85-86
C1 C2 C5	A-16545-2	Condenser Variable Gang Model 850
C3	A-15472	Condenser Padder 340 mmf. 960 mmf.
C4 C6 C8	A-15475	Condenser Trimmer 5-50 mmf. triple strip
C7	A-15246-2	Condenser Trimmer 5-50 mmf. bakelite base
C9 C9 C10	A-16471	Condenser Trimmer 5-50 mmf. ceramic base
C27	A-15236-5	Condenser Wet Electrolytic 25 MFD. 400 volts
C28	A-15237-2	Condenser Wet Electrolytic 10 MFD. 300 volts
C29	15918	Condenser Mica 100 MMFD. ± 20% type O
C31	15928	Condenser Mica 280 MMFD. ± 20% type O
C32 C22	15929	Condenser Mica 50 MMFD. ± 20% type O
C33	15930	Condenser Mica 2000 MMFD. ± 20% type M
C34	15931	Condenser Mica 4500 MMFD. ± 5% type M
C35	15932	Condenser Mica 1750 MMFD. ± 5% type M
C36	15762	Condenser Tubular .05 MFD. 200 volts
C36 C36	15763	Condenser Tubular .002 MFD. 600 volts
C37 C50 C52	15764	Condenser Tubular .01 MFD. 400 volts
C38	15767	Condenser Tubular .1 MFD. 200 volts
C39	15765	Condenser Tubular .01 MFD. 200 volts
C54	15764	Condenser Tubular .03 MFD. 400 volts
C25	15770	Condenser Tubular .2 MFD. 200 volts
C26	15773	Condenser Tubular .2 MFD. 400 volts
R2	R-16559-2	Control tone with hi-fidelity switch Model 85-86
R2	R-16540-2	Control tone Model 850
R1	R-15542-2	Control Volume
R13	15601	Resistor Carbon 25,000 ± 20% 1 watt
R12	15611	Resistor Carbon 50,000 ± 20% 1/4 watt
R17	15512	Resistor Carbon 250,000 ± 20% 1/4 watt
R8	15615	Resistor Carbon 100,000 ± 20% 1/4 watt
R14 R15 R16 R24	15617	Resistor Carbon 1 meg ± 20% 1/4 watt
R7	15542	Resistor Carbon 1,000 ± 20% 1/4 watt
R22	15554	Resistor Carbon 500,000 ± 10% 1/4 watt
R4	15558	Resistor Carbon 10,000 ± 20% 1/2 watt
R11	15569	Resistor Carbon 3 meg. ± 20% 1/4 watt
R5	5320	#36 D.C.C. Manganin wire 2 ohms
R18	15604	Resistor Carbon 435,000 ± 10% 1/4 watt
R19	15605	Resistor Carbon 100,000 ± 10% 1/4 watt
R20	15606	Resistor Carbon 5,000 ± 10% 1/2 watt
R25	15607	Resistor Carbon 250 ± 10% 2 watt
R12	15608	Resistor Carbon 50,000 ± 10% 1/4 watt
R6	15552	Resistor Carbon 80,000 ± 20% 1/4 watt
R9 R10	A-16564	Resistor Candohm 27.5 and 15 ohms .245 watts

MODEL 1050
Schematic
Parts List

MAJESTIC RADIO & TELEV. CO.



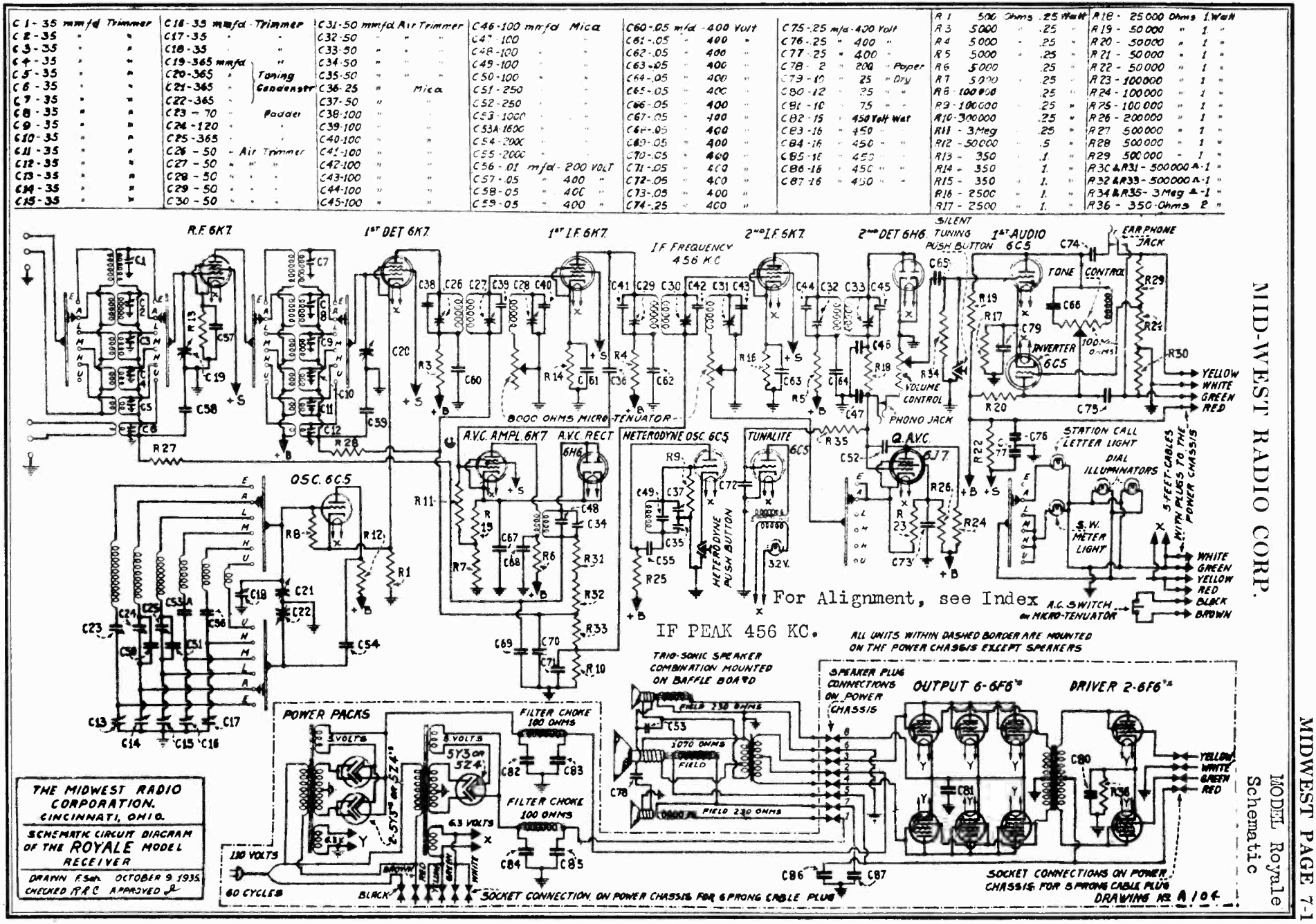
CIRCUIT CONSTANTS

Model 1050

SYMBOL	PART NO.	DESCRIPTION
C1 C2 C3	C-16543-2	Gang Condenser
C4 C5 C6	A-16552	3-30 Mmf. triple strip trimmer
C7 C8 C9	A-16552	3-30 " " " "
C12 C13 C14	A-16552	3-30 " " " "
C10 C11	B-16580	Dual padding condenser
C15 C16	B-16559-4	1st I.F. Trimmer-part of I.F. assembly
C17 C18	B-16560-4	2nd " " " " " "
C19	15770	Tubular condenser .2 mfd. 200 volts
C20	15761	" " .1 mfd. 200 volts
C21 C41 C42	15753	" " .002 mfd. 600 volts
C22 C44	15934	Mica condenser 650 MMF 20% +-
C23	15936	" " 3000 MMF 5% +-
C24 C31	15929	" " 50 MMF 20% +-
C25 C26 C28	15725	Tubular condenser .05 MFD. 200 volts
C27	15757	Wet electrolytic .1 MFD. 400 volts
C29	B-16554-2	" " 50 MFD. 450 volts
C30	B-15427	" " 16 MFD. 350 volts
C32 C33 C45 C46	15918	Mica Condenser 100 MMF. 20%+-
C34	15763	Tubular condenser .01 MFD. 200 volts
C35	B-16551-3	" Dry Electrolytic 12 MFD. 18 volts
C39	B-16551-3	" " " 25 volts
C40	15756	Tubular Condenser .05 400 volts
R1	B-16553-2	Volume Control with switch 2 megohms
R2	B-16540-2	Tone control 150,000 ohms
R3	15609	Resistor Carbon 300 ± 10% 1/4 watt
R4	15513	" " 20,000 ± 20% 1/2 watt
R5	15552	" " 30,000 ± 20% 1/4 watt
R6	15610	" " 900 ± 10% 1/4 watt
R7 R11	15515	" " 100,000 ± 20% 1/4 watt
R8 R21 R22	15517	" " 1 meg ± 20% 1/4 watt
R9	A-16615	Candohm wire wound 6500 ohms
R10	A-16615	" " 5300 "
R12 R13	15612	Resistor Carbon 250,000 ± 20% 1/4 watt
R14	15510	" " 20,000 ohms ± 20% 1/4 watt
R15	15611	" " 3000 ohms ± 10% 1/4 watt
R16	15511	" " 50,000 ohms ± 20% 1/4 watt
R18	15523	" " 200,000 ohms± 20% 1/4 watt
R19	15549	" " 300,000 ohms ± 20% 1/4 watt
R17 R20	15520	" " 300,000 ohms ± 20% 1/4 watt
R23	15563	" " 500 ohms ± 10% 1/2 watt
R24	15562	" " 325 ohms ± 10% 2 watt

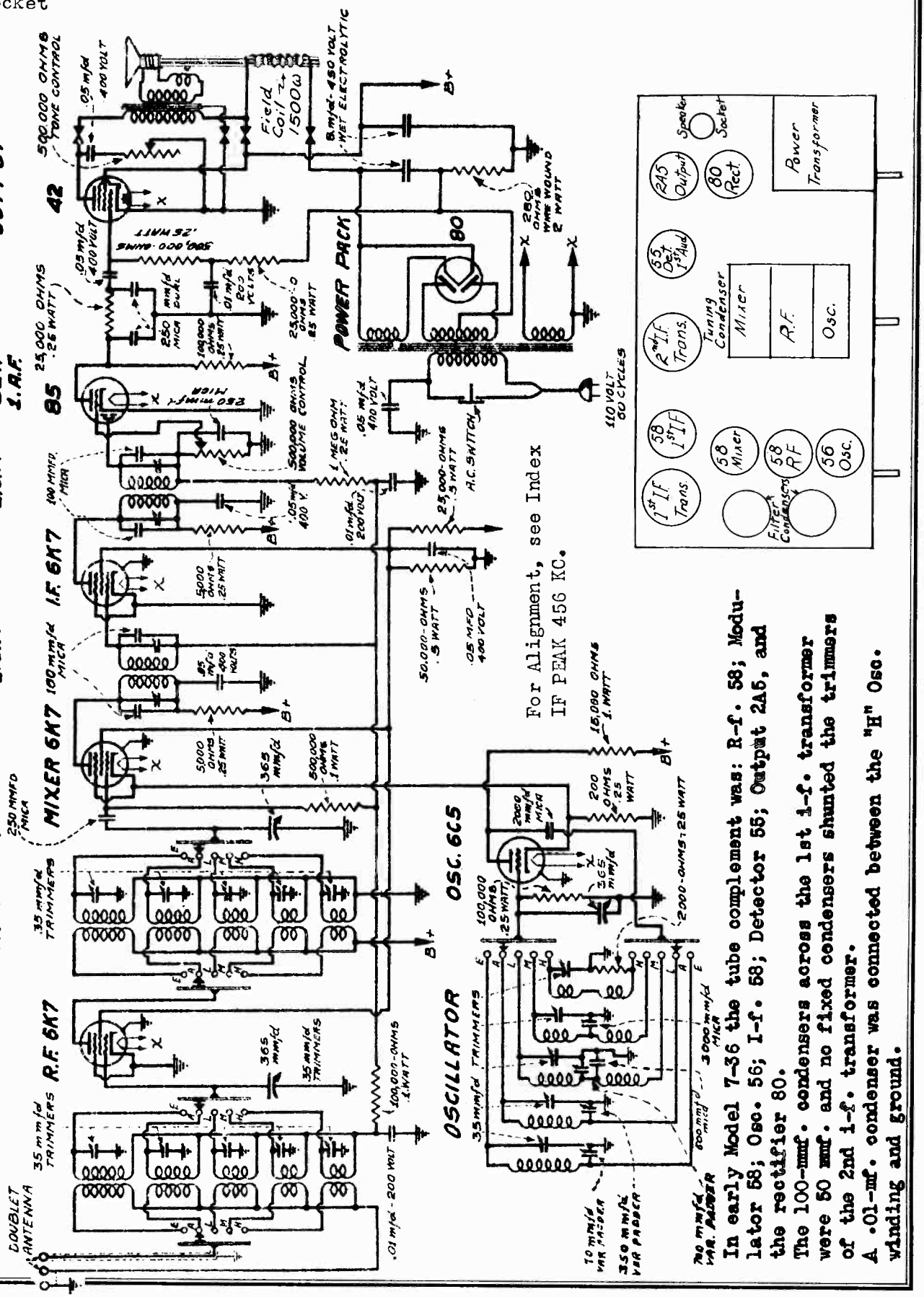
MODEL Royale
Schematic

MID-WEST RADIO CORP.



MODEL 7-36 Early, Late
Schematic
Socket

MID-WEST RADIO CORP.

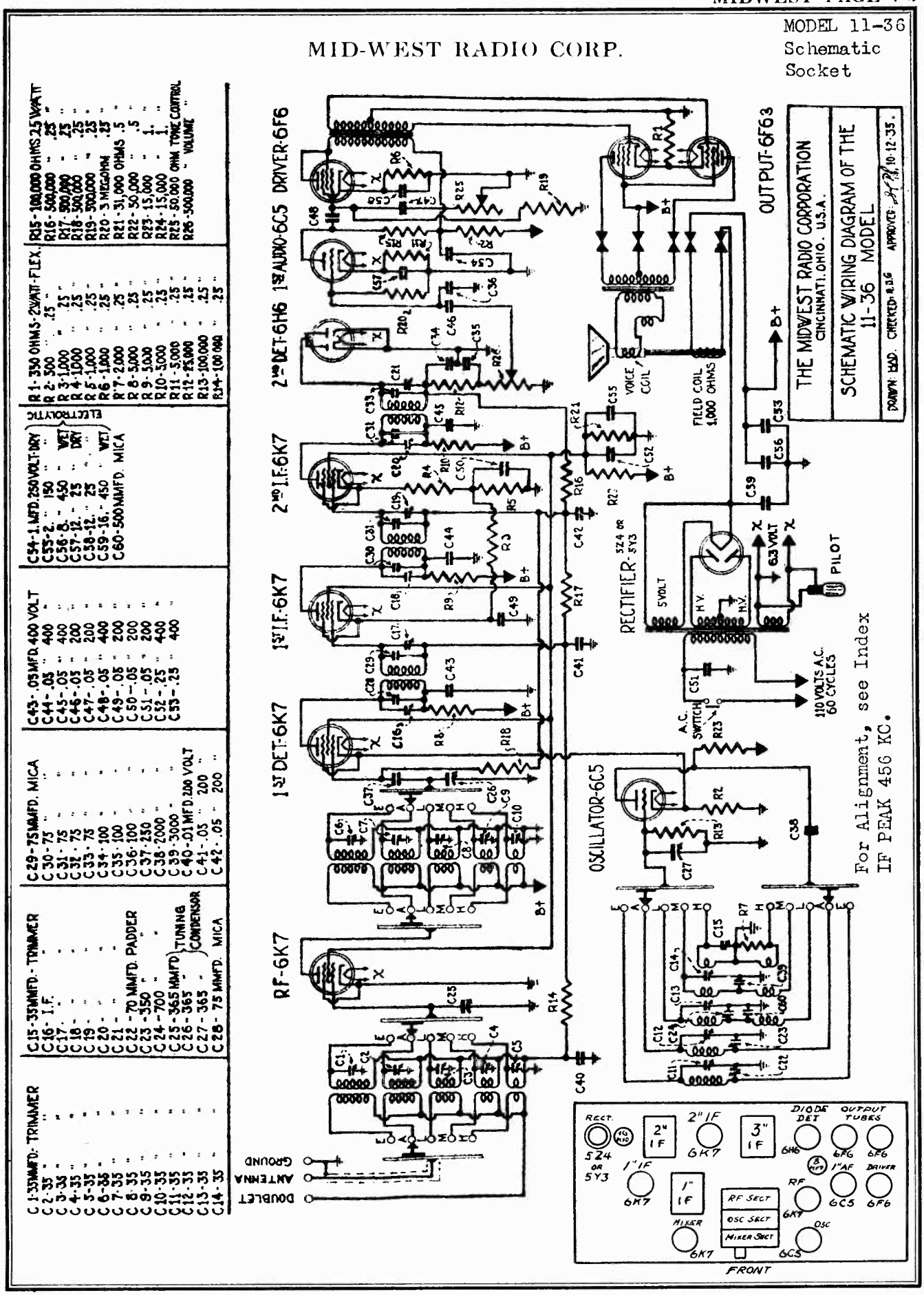


For Alignment, see Index
IF PEAK 456 KC.

In early Model 7-36 the tube complement was: R-f. 58; Modulator 58; Osc. 56; I-f. 58; Detector 55; Output 2A5, and the rectifier 80.
The 100-mmf. condensers across the 1st i-f. transformer were 50 mmf. and no fixed condensers shunted the trimmers of the 2nd i-f. transformer.
A .01-mf. condenser was connected between the "H" Osc. winding and ground.

MODEL 11-36
Schematic
Socket

MID-WEST RADIO CORP.



MODEL Royale
MODEL 7-36
MODEL 11-36
MODEL 18-36
Alignment

MID-WEST RADIO CORP.

INSTRUCTIONS FOR ALIGNING THE MIDWEST 24 TUBE RECEIVER (ROYALE)

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 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) Set the selectivity control to the maximum right hand position
(5) Using a weak signal approximately 20 micro-volts, align the I.F. transformers to maximum output.
(6) Increase the input from the generator to approximately 100 micro-volts. Align the A.V.C. transformer for minimum output.
(7) Repeat using weaker signal strengths for the I.F. and stronger signal strength for the A.V.C. adjustment until an absolute peak is assured.

This completes the alignment of the I.F. in the sharp position.

(1) Turn the selectivity control to the extreme left position.
(2) Adjust the two I.F. trimmers underneath the chassis for minimum output.
(3) Check this setting on the air for a symmetrical selectivity curve, (ie, that the tuning is broadened the same amount on both sides of the station being received.

This completes the alignment of the I.F. Amplifier.

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

(1) Set the wave change switch to the "E" band.
(2) Set the signal generator to 525 k.c.
(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 155 k.c. and rotate the receiver dial to 155 k.c.
(5) Adjust the A band padder for maximum signal.
(6) Repeat the adjustment of trimmers and padders 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 padder for maximum signal.
(6) Repeat the adjustment of trimmers and padders 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 mc.
(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 padder for maximum signal.
(6) Repeat the adjustment of trimmers and padder 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.

(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 "O" band.
(2) Set the signal generator to 60 m.c.
(3) Tune receiver until signal is received.
(4) Adjust the "O" band R.F. and the "O" band mixer trimmers for maximum gain.

This completes the alignment of the "O" band.

INSTRUCTIONS FOR ALIGNING THE MIDWEST 7 TUBE 1936 AND 11 TUBE 1936 MODEL RECEIVERS

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 20 micro-volts, align the I.F. transformers to maximum output.
(5) Increase the input from the generator of approximately 100 micro-volts. Align the A.V.C. transformer for minimum output.
(6) Repeat using weaker signal strengths for the I.F. and stronger signal strength for the A.V.C. adjustment until an absolute peak is assured.

This completes the alignment of the I.F. amplifier.

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

(1) Set the wave change switch to the "E" band.
(2) Set the signal generator to 525 k.c.
(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 155 k.c. and rotate the receiver dial to 155 k.c.
(5) Repeat the adjustment of trimmers and padders 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 k.c.
(5) Adjust the "A" Band padder for maximum signal.
(6) Repeat the adjustment of trimmers and padders 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 1.5 m.c. and rotate the receiver dial to 1.6 m.c.
(5) Adjust the "L" Band padder for maximum signal.
(6) Repeat the adjustment of trimmers and padders 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.

(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 "O" Band.
(2) Set the signal generator to 60 m.c.
(3) Adjust the "O" Band R.F. and the "O" Band mixer trimmers for maximum gain.

This completes the alignment of the "O" Band.

(4) Using a moderately weak signal approximately 40 micro-volts, align the three I.F. transformers to maximum output.
(5) Keep decreasing the oscillator input and realigning for maximum gain.

This completes the alignment of the I.F. amplifier.

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

(1) Set the wave change switch to the "E" Band.
(2) Set the signal generator to 525 k.c.
(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 155 k.c. and rotate the receiver dial to 155 k.c.
(5) Adjust the "E" Band padder for maximum signal.
(6) Repeat the adjustment of trimmers and padders 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 k.c.
(5) Adjust the "A" Band padder for maximum signal.
(6) Repeat the adjustment of trimmers and padders 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 1.5 m.c. and rotate the receiver dial to 1.6 m.c.
(5) Adjust the "L" Band padder for maximum signal.
(6) Repeat the adjustment of trimmers and padders until the adjustment of one does not effect the adjustment of the other.

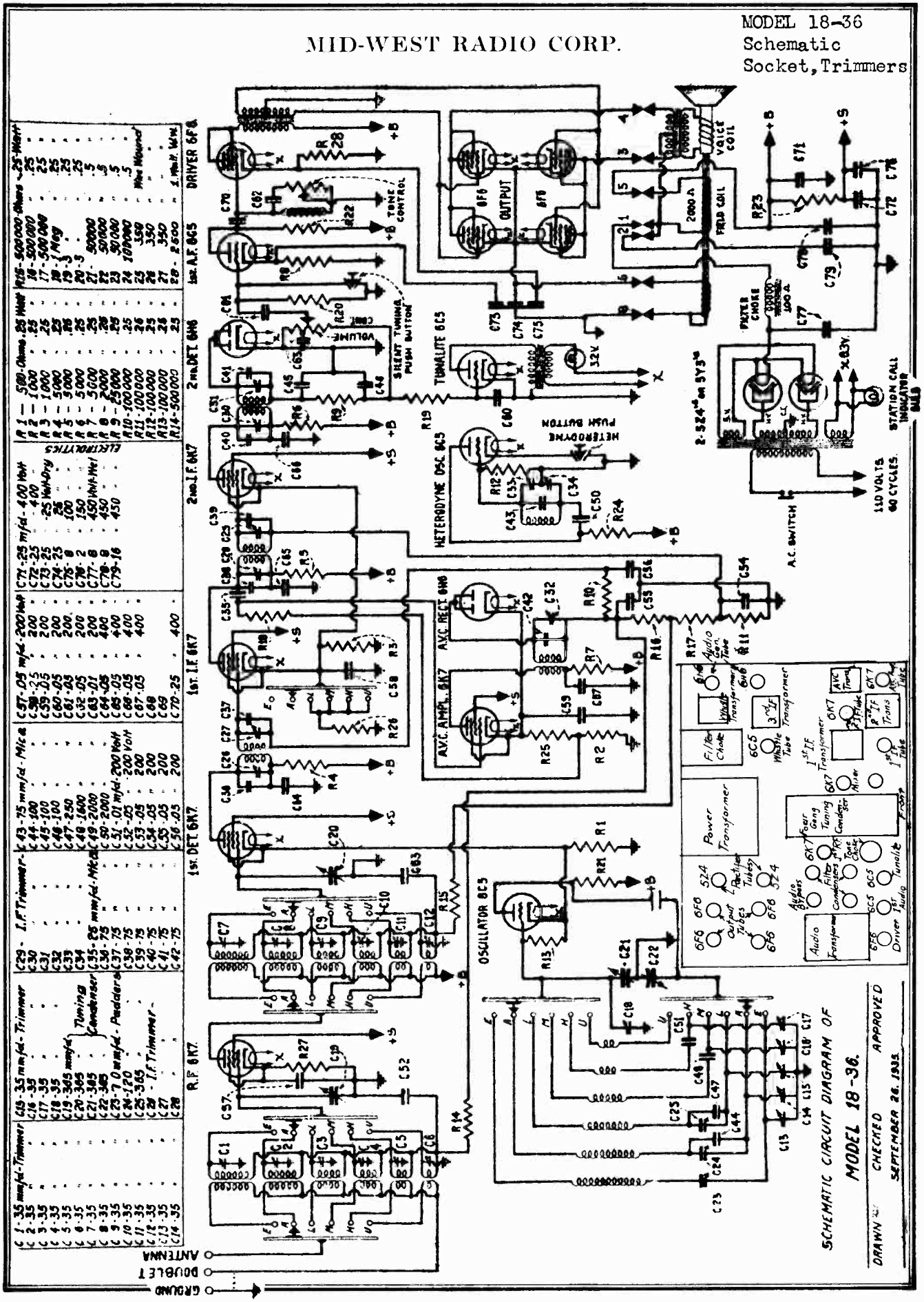
This completes the alignment of the "L" Band.

(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.

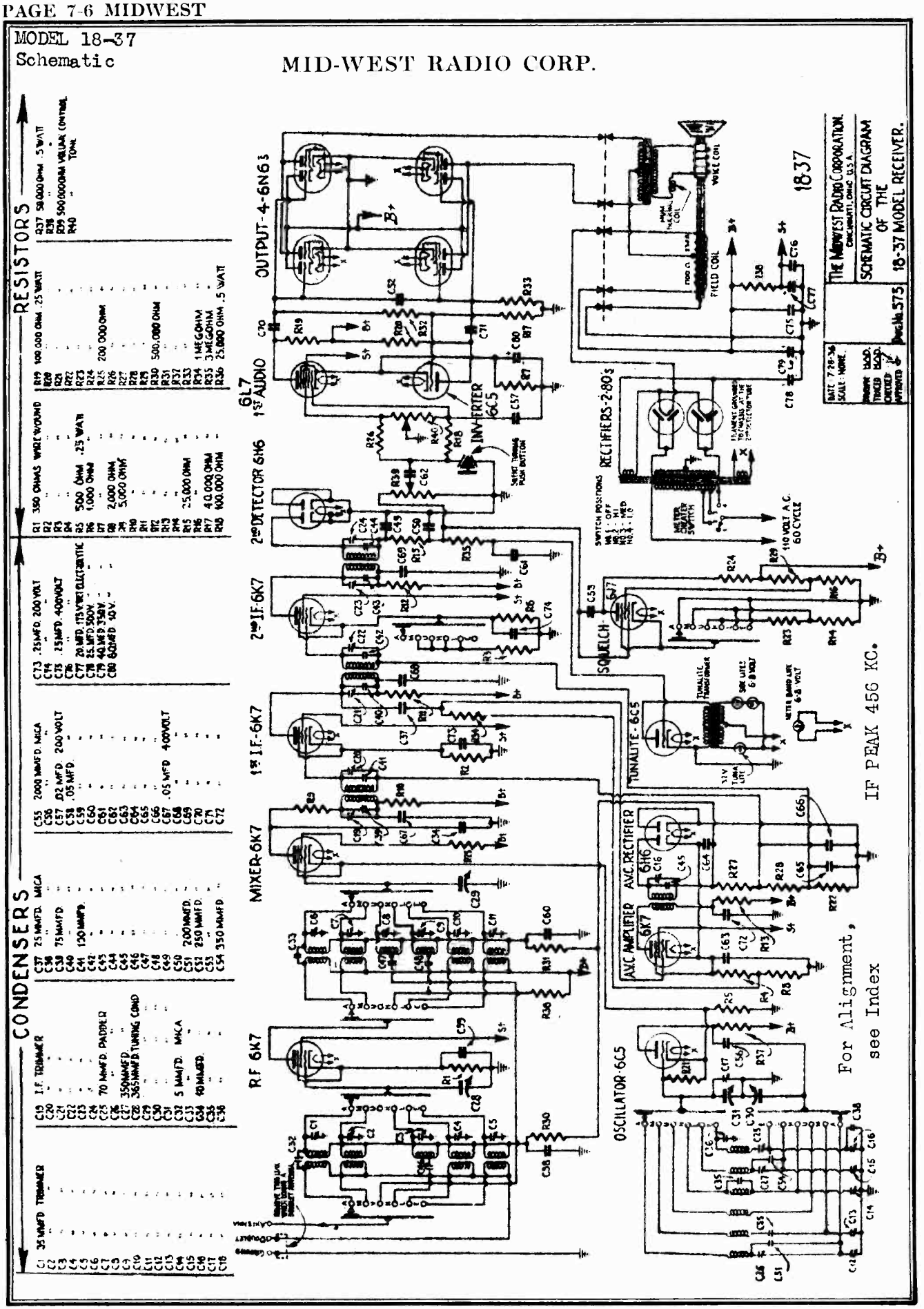
(1) Set the wave change switch to the "H" Band.
(2) Set the signal generator to 28 m.c.
(3) Adjust the "H" Band oscillator trimmer to maximum gain, then adjust the "H" Band R.F. and the "H" Band mixer trimmers for maximum gain.

This completes the alignment of the "H" Band.



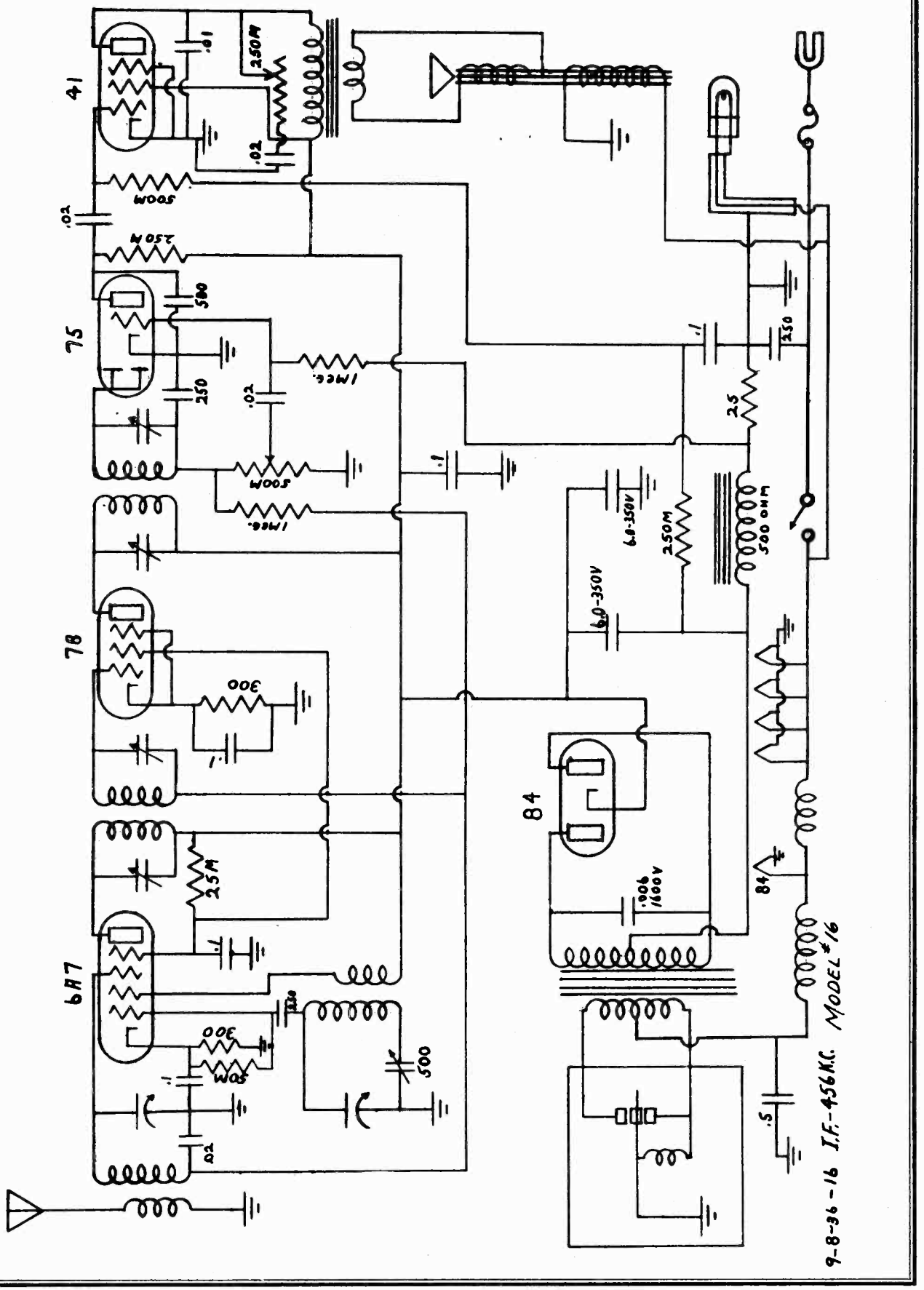
MODEL 18-37
Schematic

MID-WEST RADIO CORP.



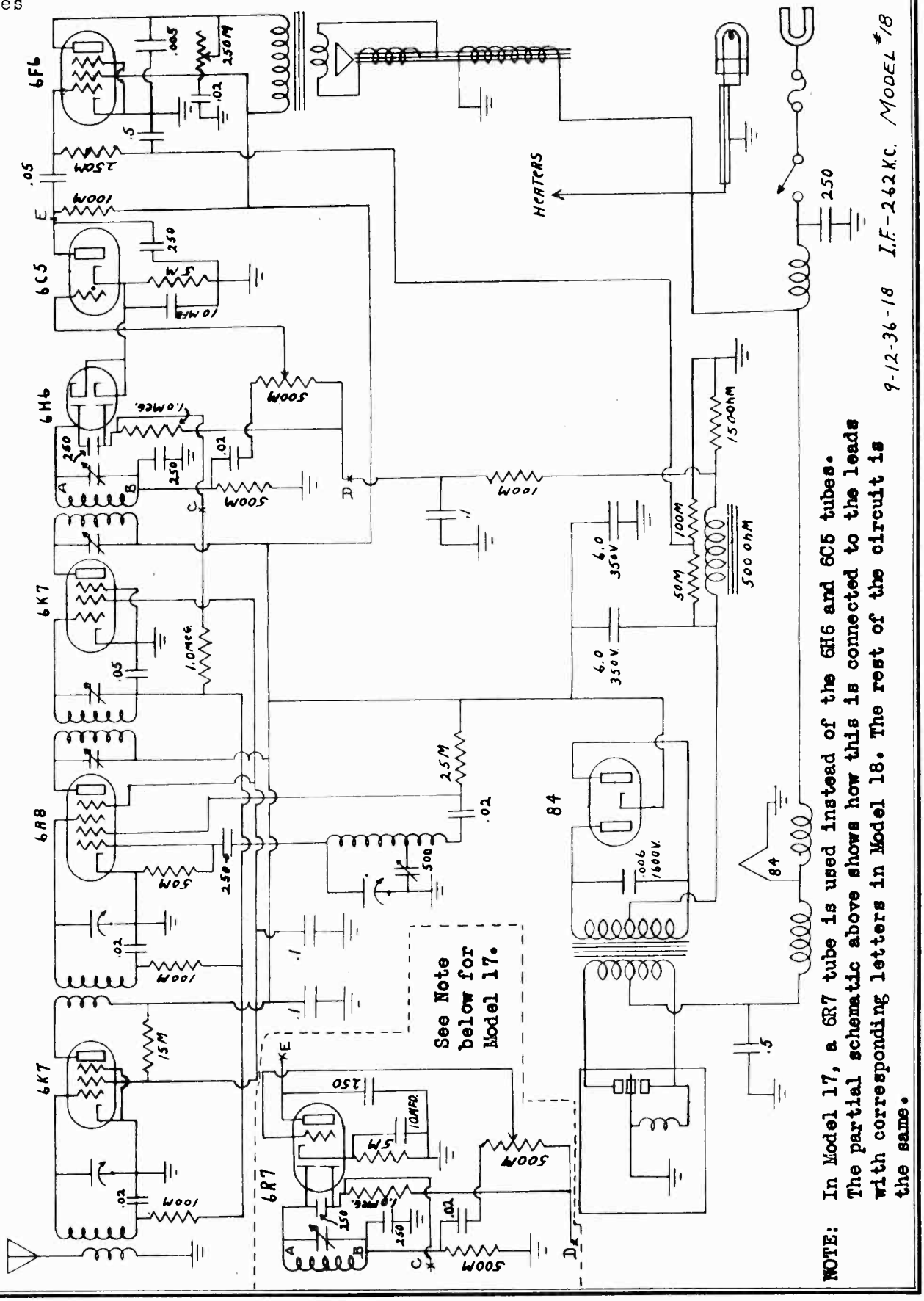
MISSION BELL RADIO MFG. CO., INC.

MODEL 16 Auto
Schematic



MODELS 17,18
Schematic
Notes

MISSION BELL RADIO MFG. CO., INC.



NOTE: In Model 17, a 6R7 tube is used instead of the 6H6 and 6C5 tubes. The partial schematic above shows how this is connected to the leads with corresponding letters in Model 18. The rest of the circuit is the same.

MONTGOMERY-WARD & CO.

MODEL 62-70, 62-70X
62-72, 62-72X
Schematic, Parts

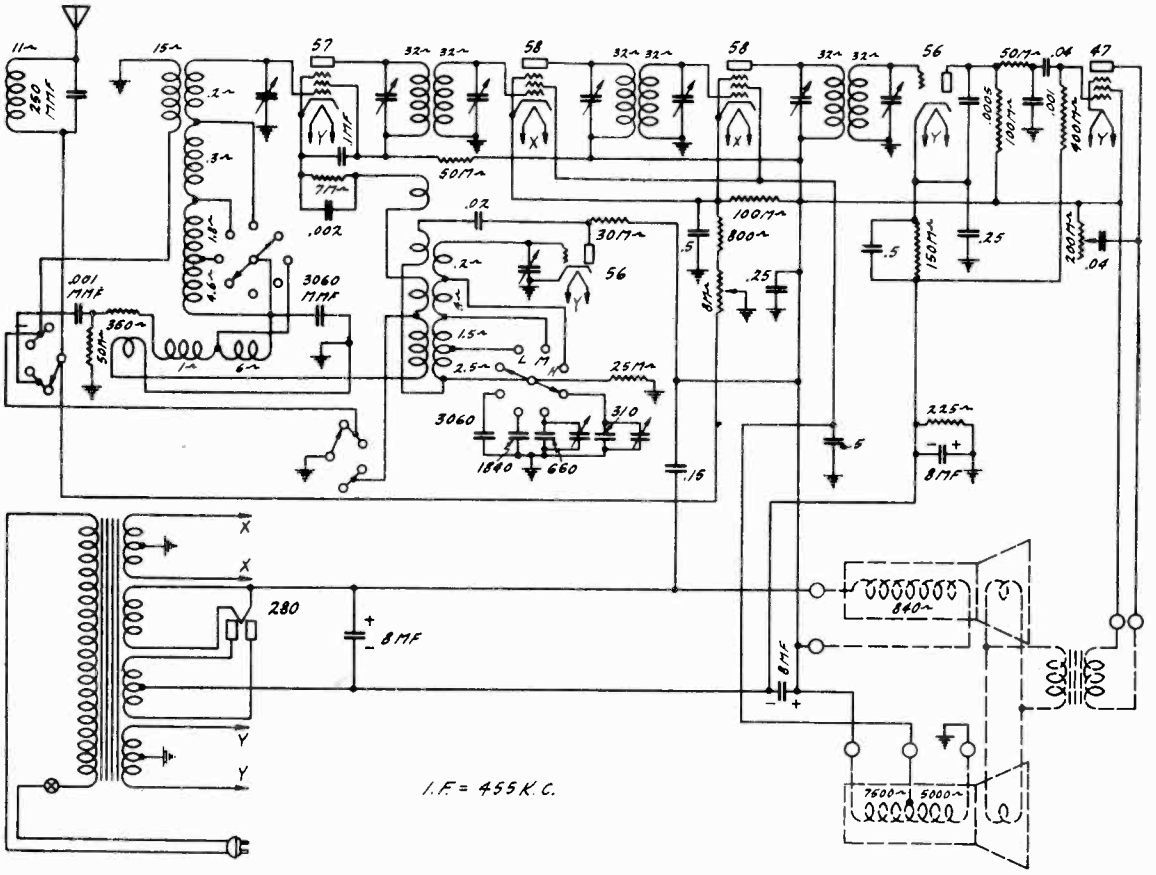


Figure 1—SCHEMATIC CIRCUIT DIAGRAM Sept. 1932

Part No.	Description	No. Used in Set
U 115	Pilot Light Lamp	1
U 678	Ground Binding Post	1
U 701	Tube Socket—280	1
U 705	Resistor, 25,000 Ohm, Carbon, 1 Watt	1
U 861	Attachment Cord and Plug	1
U 929	Resistor, 50,000 Ohm, Carbon, 1 Watt	2
U 962	Grid Cap	3
U1346	Resistor, 7,000 Ohm, Carbon, 1 Watt	1
U1348	Resistor, 100,000 Ohm, Carbon, 1 Watt	2
U1960	Resistor, 350 Ohm, Candohm	1
U2240	Resistor, 400,000 Ohm, Carbon, 1 Watt	1
U2333	Antenna Binding Post	1
U2716	Condenser, .01 Mfd. Tubular	1
U2757	Tube Socket—247	1
U2832	Trimmer Condenser, Oscillator	2
U2851	Condenser, .04 Mfd. Tubular	2
U2876	Walnut Knob, Station Selector, Tone Control, Volume Control	3
U3063	Resistor, 30,000 Ohm, Carbon, 1 Watt	1
U3122	Condenser, .5 Mfd. Bypass	1
U3358	Vertical Insulated Terminal	5
U3441	Power Transformer, 105-125 Volts, 60 Cyc.	1
U3443	Power Transformer, 105-125 Volts, 25 Cyc.	1
U3475	Resistor, 800 Ohm, Candohm	1
U3704	Condenser, .002 Mfd. Bypass	1
U3853	Resistor, 50,000 Ohm, Carbon, .1 Watt	1
U3963	Condenser, .5 Mfd. Bypass	2
U4116	Filter Condenser, Dual 8 Mfd., Dry Electrolytic	1
U4117	Tube Socket—57	1
U4118	Tube Socket—58	2
U4119	Condenser, Dry Electrolytic, 8 Mfd. 150 Volt, Bypass	1
U4130	Tube Socket—56	2
U4197	Condenser, .25 Mfd. Tubular	1
U4254	Condenser, 1000 Mmfd.	2
U4255	Condenser, 500 Mmfd.	1
U4411	Resistor, 150,000 Ohm, Carbon, .1 Watt	1
U4419	Image Suppressor Coil with Terminal Strip	1
U4429	Oscillator Coil Shield Can	1
U4435	Condenser, .02 Mfd. Tubular	1
U4467	Tube Shield Base—280	1
U4468	Tube Shield—280	1
U4471	Tube Shield Base—56, 57 and 58	5

Part No.	Description	No. Used in Set
U4472	Tube Shield Can—57 and 58	3
U4473	Tube Shield Cap—57 and 58	3
U4474	Tuning Condenser, Two-gang	1
U4481	Condenser, 3060 Mmfd.	2
U4482	Condenser, 1840 Mmfd.	1
U4483	Condenser, 660 Mmfd.	1
U4484	Condenser, 310 Mmfd.	1
U4487	Condenser, 250 Mmfd.	1
U4488	Tone Control & Power Switch, 200,000 Ohm	1
U4489	Volume Control, 8,000 Ohm	1
U4491	Resistor, 225 Ohm, Candohm	1
U4492	Tube Shield—56	1
U4494	8" Electrodynamic Speaker with Input Transformer	1
U4495	8" Electrodynamic Speaker without Input Transformer	1
U4496	6" Electrodynamic Speaker with Input Transformer	1
U4497	6" Electrodynamic Speaker without Input Transformer	1
U4516	Oscillator Transformer, Purple and Green Frequency Bands	1
U4518	Walnut Knob, Band Selector Switch	1
U4519	Antenna Transformer, Purple and Green Frequency Bands	1
U4522	Antenna Wave Trap, 455 Kc., with 250 Mmfd. Condenser	1
U4530	Speaker Socket, 5-Contact	1
U4531	3rd I. F. Transformer, Complete with Shield Can	1
U4532	1st I. F. Transformer, Complete with Shield Can	1
U4533	2nd I. F. Transformer, Complete with Shield Can	1
U4540	Band Selector Switch, with 3060 Mmfd. and 1840 Mmfd. Condensers and All Leads	1
U4557	Drive Plate with Dial Chart	1
U4558	Drive Disc, with Pilot Lamp Socket and Indicator	1
U4563	Antenna Transformer, Red and Black Frequency Bands	1
U4564	Oscillator Transformer, Red and Black Frequency Bands	1
U4650	Condenser, .15 Mfd.	1

MODEL 62-70,62-70X
62-72,62-72X
Socket,Circuit Data
Voltage,Alignment

MONTGOMERY-WARD & CO.

7 Tube Long and Short Wave Dual Speaker Super-Heterodyne
No. 62-70, 62-72 (Catalogue No. 62-45, 62-47)

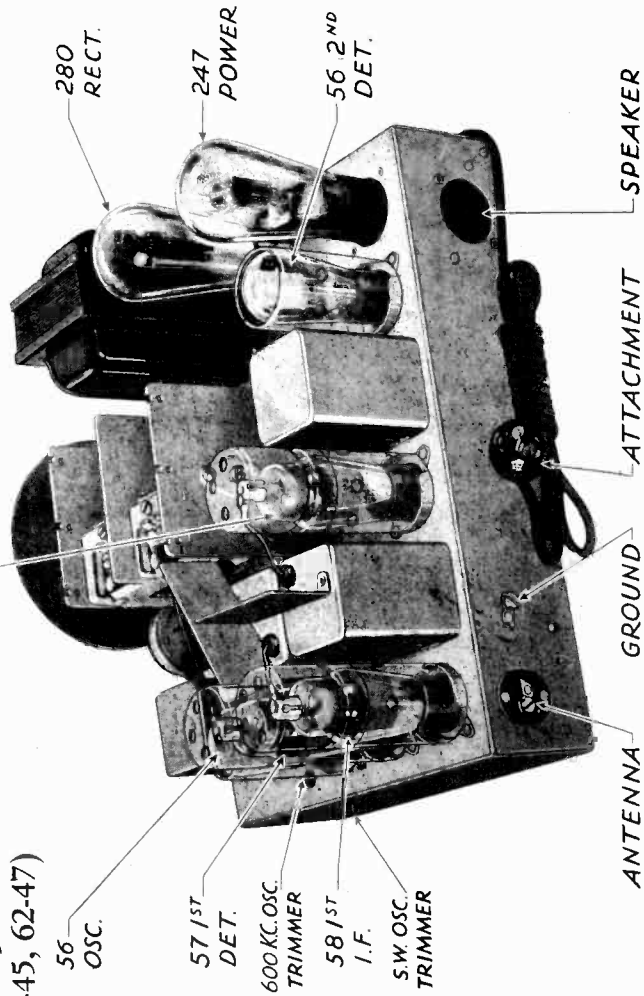


Figure 2—TOP VIEW OF CHASSIS

Voltages

With line voltage of 115 Volts, wave change switch on broadcast band, volume control at maximum; no signal being received; the following voltages (with slight variations) should be obtained on a 1000 Ohm per volt voltmeter.

PLATE VOLTAGES

Ground to plate of 57 1st Det.	153
Ground to plate of 58 1st I.F.	260
Ground to plate of 58 2nd I.F.	260
Ground to plate of 56 2nd Det.	172
Ground to plate of 47 Audio	238
Ground to plate of 56 Oscillator	60

SCREEN VOLTAGES

Ground to screen of 57 1st. Det.	153
Ground to screen of 58 1st. I.F.	95
Ground to screen of 58 2nd I.F.	95
Ground to screen of 47 Audio	250

BIAS VOLTAGES

Ground to cathode of 57 1st Det.	7.9
Ground to cathode of 58 1st I.F.	6.9
Ground to cathode of 58 2nd I.F.	6.9
Ground to cathode of 56 2nd Det.	9.5
47 Audio	16.5
(Measured across 225 Ohm Candohm)	
Ground to grid of 56 Oscillator	22.5

A. C. VOLTAGES

Rectifier filament	5.0 A.C.
Other filaments	2.4 A.C.

Circuit Description

The antenna feeds into a 455 K.C. wave trap which tends to prevent any 455 K.C. signals from entering the I.F. amplifier and causing interference. A lead from this coil connects to one of the movable arms of the band changing switch and from there through the primary of the R.F. transformer to ground when the switch is thrown to the purple or green high frequency band. When receiving on the broadcast and red bands, the antenna is directly coupled to the secondary of the first R.F. transformer, through the .001M.M.F. series condenser, the 350 ohm resistor and image suppressor coil. An 8000 ohm potentiometer is connected from the movable arm of the antenna switch to ground. This volume control performs a dual function by controlling the grid bias to the two type 58 intermediate frequency tubes as well as varying the signal input to the first radio frequency transformer.

The type 57 first detector or mixer is self biased by the 7000 ohm resister connected in series with the cathode and ground.

The intermediate frequency transformers are of the conventional type and are plainly shown in the diagram figure 1.

Bias voltage for the second detector type 56 is obtained by the voltage drop across the 150,000 ohm and 225 ohm resister connected between the cathode and ground.

The 47 audio stage is of the conventional type and receives its bias from the voltage drop across the 225 ohm Candohm resistor connected between the 400,000 ohm grid resistor and ground.

Short Wave Switch

Four circuits are switched with each change of the wave band switch. Diagram Figure 1, shows the position of each one of these switches when receiving on the broadcast band. Although this diagram may at first glance, appear complicated, it is comparatively simple if the receiver is first considered as a regular broadcast receiver with the switches in the position shown in the diagram Figure 1. In this position the antenna is directly coupled to the secondary of the first R.F. transformer, and the total secondary inductance of the first R.F. transformer as well as the secondary of the oscillator transformer are connected in circuit. When the wave band switch is changed to the shorter wave length, the wave band switch merely cuts out part of the secondary of the R.F. transformer, and secondary of the oscillator transformer and at the same time, short circuits or dead-ends the unused portion of these coils. The first R.F. stage consists of fixed inductances and fixed condensers which are automatically in resonance on the shorter wave band. If the receiver is operating properly on the broadcast band, no adjustments are necessary in this stage when the switch is in any one of the short wave positions. The oscillator stage is tuned automatically in like manner with the exception that one trimming condenser is provided for operation on the short wave band.

Condenser Alignment

This receiver is aligned on the broadcast band in the same manner as any of our other superheterodynes previously described. Turn the wave band changing switch to the black or broadcast band and align the R.F., oscillator, and I.F., stages, either on a broadcast signal or an oscillator as explained in the Blue Service manual insert on aligning. The 600 kilocycle tracking condenser is located adjacent to the 56 oscillator tube. If the broadcast circuits are properly aligned the short wave band circuits automatically are in alignment unless there is a defect in the short wave section of the R.F. coil or oscillator coil, or unless one of the oscillator fixed tracking condensers are defective. Only one aligning adjustment is provided for the short wave band, this is the oscillator tracking condenser and is located on the side of the chassis directly beneath the 600 kilocycle tracking condenser adjustment. In order to properly adjust the short wave band oscillator tracking condenser, turn the band selector switch to the red band and tune in a short wave station such as a police broadcast or a broadcasting station of approximately 1500 to 1350 kilocycles and adjust the oscillator tracking condenser for maximum speaker volume, at the same time rocking the tuning dial slowly back and forth across the signal. In order to make this adjustment it is necessary to remove the chassis from the cabinet. It is advisable to use a bakelite or non metallic screw driver when adjusting these screws.

Twenty-Five Cycle Chassis

The 25 cycle chassis uses 25 cycle power transformer, part No. U3443 instead of power transformer No. U3441,

MONTGOMERY-WARD & CO.

MODEL 62-192, 62-195
Schematic

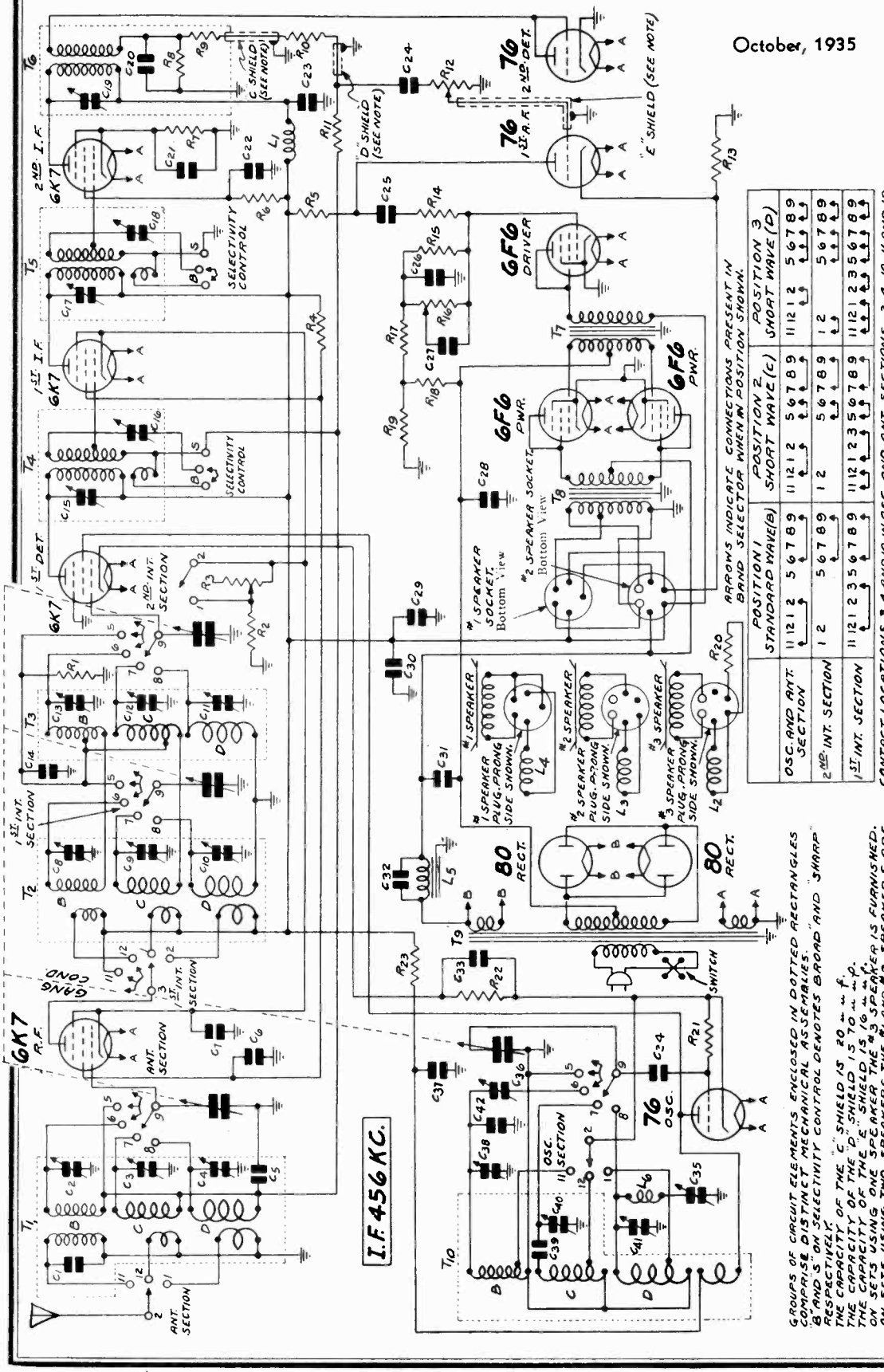
Power Consumption - 140 Watts (At 115 volts 60 cycles)

Power Output - - - - - 15 Watts Undistorted

Tuning Frequency Range

B Range - - - - - - - - - 535 to 1730 KC.
C Range - - - - - - - - - 1715 to 5800 KC.
D Range - - - - - - - - - 5750 to 18300 KC.

October, 1935



	POSITION 1 STANDARD WAVE(B)	POSITION 2 SHORT WAVE(C)	POSITION 3 SHORT WAVE(D)
OSC. AND ANT. SECTION	11 12 1 2 5 6 7 8 9	11 12 1 2 5 6 7 8 9	11 12 1 2 5 6 7 8 9
2ND INT. SECTION	1 2 5 6 7 8 9	1 2 5 6 7 8 9	1 2 5 6 7 8 9
1ST INT. SECTION	11 12 1 2 3 5 6 7 8 9	11 12 1 2 3 5 6 7 8 9	11 12 1 2 3 5 6 7 8 9

CONTACT LOCATIONS 3,4 AND 10 IN OSC. AND ANT. SECTIONS, 3,4,10, 11 AND 12 IN 2ND INT. SECTION AND 4 AND 10 IN 1ST INT. SECTION ARE BLANK.

GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES.
"B" AND "S" ON SELECTIVITY CONTROL DENOTES BROAD AND "SHARP" RESPECTIVELY.
THE CAPACITY OF THE "C" SHIELD IS 20 mmf.
THE CAPACITY OF THE "D" SHIELD IS 70 mmf.
THE CAPACITY OF THE "E" SHIELD IS 16 mmf.
ON SETS USING ONE SPEAKER THE #3 SPEAKER IS FURNISHED.
ON SETS USING TWO SPEAKERS THE #1 AND #2 SPEAKERS ARE FURNISHED.

C1	250 mmf.	C13	2-25 mmf.	C25	.05 mf. 360 V.	C37	.25 mf. 360 V.	R 5	60,000 ohm 0.5 watt	R18	128 ohm 2.5 watt	T 6 3rd I.F. Trans.
C2	2-25 mmf.	C14	.05 mf. 180 V.	C26	.25 mf. 180 V.	C38	2-25 mmf.	R 6	100,000 ohm 0.5 watt	R19	145 ohm 3.0 watt | Wire-Wound	T 7 Push-Pull Input Trans.
C3	2-25 mmf.	C15	150-250 mmf. | One	C27	.004 mf. 600 V.	C39	1400 mmf.	R 7	500 ohm 0.2 watt	R20	2800 ohm 12.0 watt	T 8 Push-Pull Output Trans.
C4	2-25 mmf.	C16	150-250 mmf. | Unit	C28	125.0 mf. 45 V. Electrolytic	C40	2-25 mmf.	R 8	200,000 ohm 0.5 watt	R21	80,000 ohm 0.2 watt	T 9 Power Trans.
C5	.05 mf. 180 V.	C17	150-250 mmf. | One	C29	18.0 mf. 250 V. Electrolytic	C41	2-25 mmf.	R 9	100,000 ohm 0.2 watt	R22	2,500 ohm 0.2 watt	T10 Osc. Inductors
C6	.70 mf. 360 V.	C18	150-250 mmf. | Unit	C30	.25 mf. 360 V.	C42	10 mmf.	R10	100,000 ohm 0.2 watt	R23	27,000 ohm 1.0 watt	
C7	.25 mf. 180 V.	C19	70-150 mmf.	C31	30.0 mf. 450 V. Electrolytic	R11	2.0 megohm 0.2 watt					L 1 2nd I.F. Plate Isolating Reactor
C8	2-25 mmf.	C20	50 mmf.	C32	.15 mf. 280 V. A.C.	R13	200 ohm 0.5 watt	T 1	Ant. R.F. Trans.			L 2 No. 3 Speaker Field (1000 ohm)
C9	2-25 mmf.	C21	.05 mf. 180 V.	C33	.05 mf. 180 V.	R14	250,000 ohm 0.2 watt	T 2	1st Interstage R.F. Trans.			L 3 No. 2 Speaker Field (1000 ohm)
C10	2-25 mmf.	C22	.05 mf. 360 V.	C34	35 mmf.	R15	250,000 ohm 0.2 watt	T 3	2nd Interstage R.F. Trans.			L 4 No. 1 Speaker Field (6400 ohm)
C11	2-25 mmf.	C23	.10 mf. 360 V.	C35	40-100 mmf. | One	R16	3.0 megohm | Control	T 4	1st I.F. Trans.			L 5 Choke Coil
C12	2-25 mmf.	C24	.01 mf. 480 V.	C36	300-600 mmf. | Unit	R17	100,000 ohm 0.2 watt	T 5	2nd I.F. Trans.			L 6 Osc. Tracking Coil

MODELS 62-192, 62-195
Socket, Trimmers
Voltage, Phono., Changes

MONTGOMERY-WARD & CO.

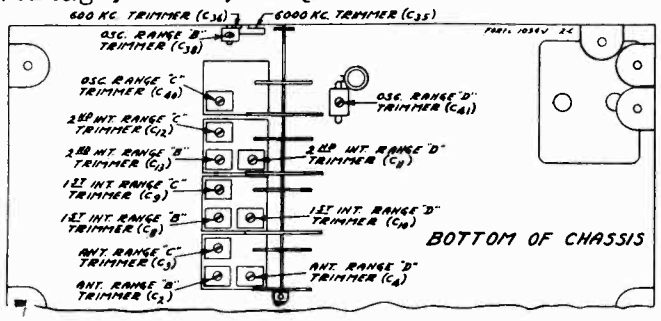


Fig. 3—Location of Trimmers

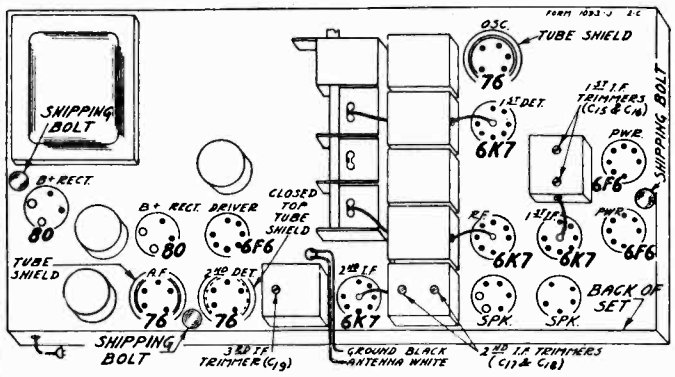


Fig. 5—Location of Tubes

VOLTAGES AT SOCKETS

Line Voltage 115 - Antenna Shorted to Ground
Volume Control at Maximum

Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cath. to Ground	Cath. M A
6K7	R. F.	6.2	245	80	2.8	7.6
6K7	1st Det.	6.2	245	90	6.5	2.6
76	Osc.	6.2	90			5.3
6K7	1st I. F.	6.2	245	80	2.8	7.6
6K7	2nd I. F.	6.2	245	74	3.9	7.0
76	2nd Det.	6.2				
76	1st A. F.	6.2	110		5.6	2.1
6F6	Driver	6.2	235	230	20.0(1)	27.0
6F6	Power	6.2	345	345	38.0(2)	22.5
80	Rectifier	5.1	500(3)			140.0(4)

(1) As read across R19
(2) Grid to Ground
(3) Plate to Center Tap
(4) Two tubes in parallel

Phonograph Connections

The connections are made by opening the diode circuit at the volume control. Unsolder the condenser C24 from the lug on the volume control and reconnect this condenser to the new terminal strip provided (see parts list). This terminal strip should be secured to the inside of the front panel of the chassis base at a point near the volume control and should be soldered in position. From the terminal lug on the above strip, and from the volume control lug from which the condenser C24 was removed, connect leads to the phono switch on the rear panel of the chassis as shown in Fig. 7. Before connecting these two leads permanently to the switch, twist them together and enclose them in the shielded sleeving provided, being sure to ground the shielding at the extreme ends to the chassis base. At the point where the shielding passes the electrolytic condenser cover the cable with insulating tape. Complete the connections as shown in Fig. 7.

A high impedance phonograph pickup of good quality should be used. If a low impedance pickup is used, a step-up transformer will be required for sufficient volume. The volume control and tone control of the set will regulate the phono volume and tone.

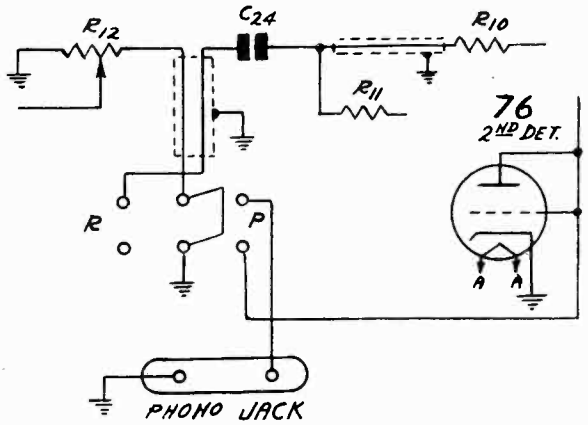


Fig. 7—Phonograph Connections

Changes in Early Models

In early models all chassis had two speaker sockets as shown in the schematic diagram—Fig. 2. In later models the 5 prong socket (No. 1 in schematic) is not in the chassis. The leads shown between the two speaker sockets, the lead from the B+ line and the lead from the Output Transformer to this socket are, therefore, eliminated. In both types of chassis the same speaker is used (No. 3 speaker with 6 prong plug).

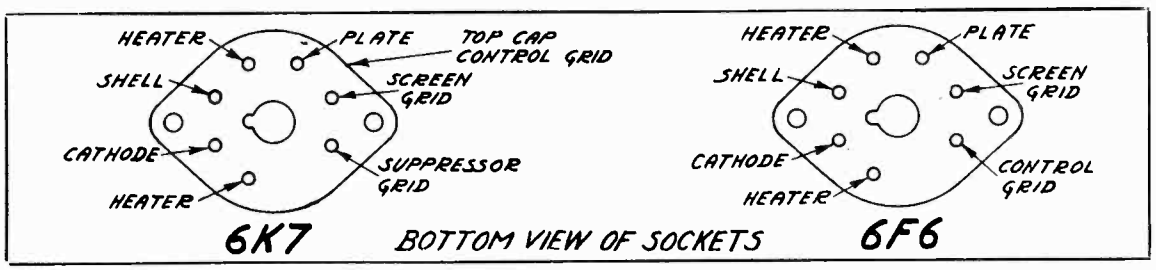


Fig. 6—Metal Tubes—Bottom View of Sockets

MONTGOMERY-WARD & CO.

MODELS 62-192, 62-195
Coil Data, Resistance

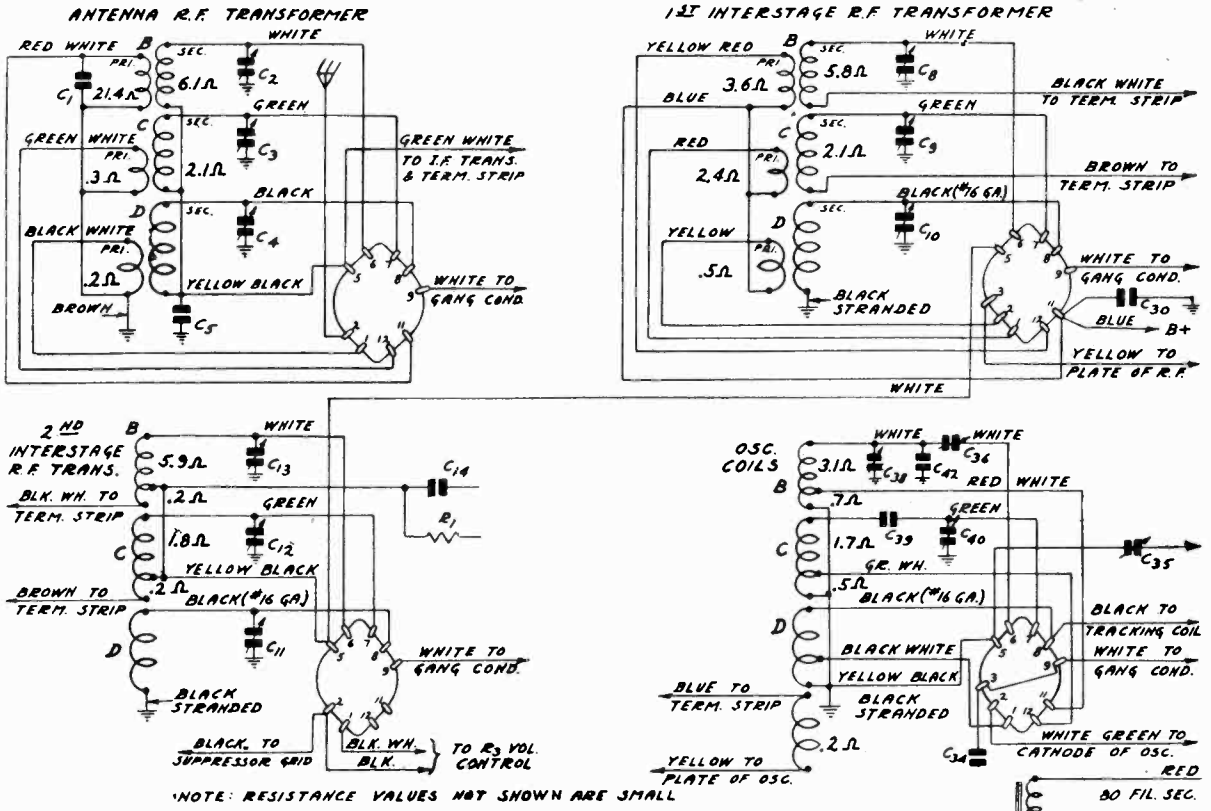
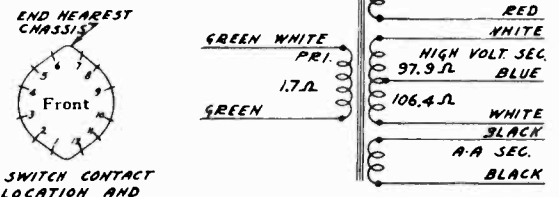


Fig. 4—Color Coding of Coil Wires and D. C. Resistance of Windings. (Also see complete D. C. Resistance List)



D. C. Resistance of Windings

Refer to Figs. 4 & 2

Following are the D. C. resistances of the various windings in the chassis. The values given below will vary slightly in different sets.

Part No.	Winding	Code	D. C. Resistance in Ohms
P-9A418	Antenna R. F. Transformer	T1	
	Range B Primary Winding		21.4
	Range C Primary Winding		0.3
	Range D Primary Winding		0.2
	Range B Secondary Winding		6.1
	Range C Secondary Winding		2.1
	Range D Secondary Winding		Small
P-9A411	1st Interstage R. F. Transformer	T2	
	Range B Primary Winding		3.6
	Range C Primary Winding		2.4
	Range D Primary Winding		0.5
	Range B Secondary Winding		5.8
	Range C Secondary Winding		2.1
	Range D Secondary Winding		Small
P-9A412	2nd Interstage R. F. Coils	T3	
	Range B Section		
	Long Portion		5.9
	Short Portion		0.2
	Range C Section		
	Long Portion		1.8
	Short Portion		0.2
	Range D Section		Small
P-9A413	1st I. F. Transformer	T4	
	Primary Winding		4.4
	Coupling Winding		0.3
	Secondary Winding		
	Tap to Condenser Side		2.3
	Tap to Switch Side		2.3
P-9A414	2nd I. F. Transformer	T5	
	Primary Winding		4.3
	Coupling Winding		0.3
	Secondary Winding		
	Tap to Condenser Side		2.3
	Tap to Switch Side		2.3
P-9A415	3rd I. F. Transformer	T6	
	Primary Winding		9.8
	Secondary Winding		30.0
P-50X24	Audio Input Transformer	T7	
	Primary Winding		415.0
	Secondary Winding		
	Center Tap to Inside		211.7
	Center Tap to Outside		288.5
P-51X26	Audio Output Transformer	T8	
	Primary Winding		
	Center Tap to Inside		135.5
	Center Tap to Outside		155.3
	Secondary Winding		
	Tap to Upper Side		0.16
	Tap to Ground Side		0.12
P-53X82	Power Transformer (115 Volt-60 Cycle)	T9	
	Primary Winding		1.7
	Tube Filament Secondary (A-A)		Small
	Tube Filament Secondary (B-B) (80)		Small
	High Voltage Secondary Winding		
	Center Tap to Inside		97.9
	Center Tap to Outside		106.4
P-9A427	Oscillator Coils	T10	
	Range B Grid Coil		
	Red White Tap to White		3.1
	Red White Tap to Ground		0.7
	Range C Grid Coil		
	Green White Tap to Green		1.7
	Green White Tap to Ground		0.5
	Range D Grid Coil		
	Black White Tap to Black		Small
	Black White Tap to Ground		Small
	Oscillator Plate Coil		0.2
P-9A400	2nd I. F. Plate Isolating Reactor	L1	34.7
P-12A226	12" Dynamic Speaker (No. 3—See Fig. 2)		
	Speaker Field	L2	1000.
	Voice Coil		Small
P-52X39	Reactor Assembly	L5	143.6
P-9A391	High Frequency Oscillator Tracking Coil	L6	1.0

MODELS 62-192, 62-195
Alignment, Parts

MONTGOMERY-WARD & CO.

Alignment and Calibration

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Correct alignment is extremely important in connection with all wave receivers. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment.

A signal generator that will provide an accurately calibrated signal at 456, 1730, 1500, 600, 5800, 5000, 18,300, 15,000 and 6000 KC and an output indicating meter are required. It will be practically impossible to align the receiver if unsatisfactory apparatus is used. If a station is tuned in with the selectivity control in the broad position and this control is then turned to the sharp position, the station may disappear. This is not an indication that the receiver is out of alignment.

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

I. F. Adjustment

Set the signal generator for a signal of 456 KC.

Connect the output of the signal generator to the grid of the 1st detector through a 0.1 MF condenser.

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

Turn the band selector to the Range B position (standard wave band—purple dial color).

Turn the selectivity control to the sharp position and keep it in this position for all adjustments.

Turn the volume control to the maximum position

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

Then adjust the five I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 5.

Range B Alignment

1730 KC Adjustment

Set the signal generator for 1730 KC.

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

Keep the band selector in the standard wave position.

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

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

Adjust the oscillator Range B trimmer (C38) until maximum output is obtained. The location of this trimmer is shown in Fig. 3.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Loosen the pointer set screw and set the large pointer at the 1500 KC mark on the standard wave band scale. Retighten the set screw.

Adjust the 1st and 2nd interstage Range B trimmers (C8 and C13) and antenna Range B trimmer (C2) to maximum.

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

600 KC Adjustment

Set the signal generator for 600 KC.

Turn the tuning condenser rotor until maximum output is obtained.

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

Be sure to use a non-metallic screwdriver for this adjustment.

Range C Alignment

5800 KC Adjustment

Set the signal generator for 5800 KC.

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

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

Turn the band selector to the Range C position (1st short wave band—green dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range C trimmer (C40) 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 1st and 2nd interstage Range C trimmers (C9 and C12) and antenna Range C trimmer (C3) to maximum.

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

Range D Alignment

18,300 KC Adjustment

Set the signal generator for 18,300 KC.

Keep the antenna lead of the receiver connected through the 400 ohm resistor to the output of the signal generator.

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

Turn the band selector to the Range D position (2nd short wave band—red dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range D trimmer (C41) 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 1st and 2nd interstage Range D trimmers (C10 and C11) and antenna Range D trimmer (C4) to maximum.

When adjusting the 2nd interstage Range D trimmer, it will be necessary at the same time to turn the tuning condenser rotor slowly back and forth until the peak of greatest intensity is obtained.

Then go back and repeat the procedure as given for the 18,300 KC adjustment. If it is found necessary to make any appreciable change in the setting of the oscillator Range D trimmer, the 15,000 KC adjustment must be repeated.

Do not make any further change in 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.

Use a non-metallic screwdriver for this adjustment.

Twenty-five Cycle Receivers

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

The twenty-five cycle receiver can be operated satisfactorily from a sixty cycle power supply. However, the reverse is not true, the sixty cycle receiver cannot be operated from a twenty-five cycle power supply.

A 115-230 Volt, 40 to 60 cycle as well as other power transformers with special power ratings are also available for this model.

TRANSFORMERS AND COILS

Part No.	Code	Description	Selling Price
P-9A418	T1	Antenna R. F. Transformer Assembly	$1.42
P-9A411	T2	1st Interstage R. F. Transformer Assembly	1.20
P-9A412	T3	2nd Interstage R. F. Coil Assembly	1.30
P-9A413	T4	1st I. F. Transformer	1.08
P-9A414	T5	2nd I. F. Transformer	1.08
P-9A415	T6	3rd I. F. Transformer	1.08
P-50X34	T7	Audio Input Transformer	1.20
P-51X26	T8	Audio Output Transformer	1.26
P-53X82	T9	Power Transformer—115 Volt 60 Cycle	3.86
P-53X83	T9	Power Transformer—115 Volt 25 Cycle	6.20
P-9A427	T10	Oscillator Coil Assembly	1.28
P-9A400	L1	2nd I. F. Plate Isolating Resetor	.28
P-52X39	L5	Filter Reactor	1.12
P-9A391	L6	High Frequency Osc. Tracking Coil Assem.	.12

NOTE: The R. F., Oscillator and I. F. Assemblies are sold complete with can.

RESISTORS

Part No.	Code	Resistance	Wat's	Type	Selling Price
P-A95253	R1	25,000 Ohms	0.2	Carbon	$ .06
P-A94151	R2	150 Ohms	0.2	Carbon	.08
P-36X210	R3	2,500 Ohms		Dual Volume Control and Switch	.84
	R12	2.0 Megohms			
P-C91503	R4	50,000 Ohms	1.0	Carbon	.09
P-B95603	R5	60,000 Ohms	0.5	Carbon	.06
P-B94104	R6	100,000 Ohms	0.5	Carbon	.08
P-A94701	R7	500 Ohms	0.2	Carbon	.06
P-B94204	R8	200,000 Ohms	0.5	Carbon	.08
P-A95104	R9	100,000 Ohms	0.2	Carbon	.06
P-A95104	R10	100,000 Ohms	0.2	Carbon	.06
P-A95205	R11	2.0 Megohms	0.2	Carbon	.06
P-B94201	R13	200 Ohms	0.5	Carbon	.08
P-A94254	R14	250,000 Ohms	0.2	Carbon	.08
P-A94354	R15	350,000 Ohms	0.2	Carbon	.08
P-40X296	R16	3.0 Megohms		Tone Control	.36
P-A95104	R17	100,000 Ohms	0.2	Carbon	.06
P-43X44	R18	128 Ohms	2.5	Armored Wire Wound	.28
	R19	145 Ohms	3.0		
	R20	7,800 Ohms	12.0	(Part of speaker assembly P-12A226)	
P-A94803	R21	80,000 Ohms	0.2	Carbon	.08
P-A91252	R22	2,500 Ohms	0.2	Carbon	.08
P-C94273	R23	27,000 Ohms	1.0	Carbon	.08

CONDENSERS

Part No.	Code	Capacity	Voltage	Type	Selling Price
P-47X59	C1	250 mmf.		Moulded	$ .08
P-17A36	C2	2-25 mmf.		Range B Antenna Trimmer	.06
P-17A36	C3	2-25 mmf.		Range C Antenna Trimmer	.06
P-17A36	C4	2-25 mmf.		Range D Antenna Trimmer	.06
P-46X80	C5	0.05 mf.	180	Tubular	.08
P-46X128	C6	0.7 mf.	360	Tubular	.28
P-46X97	C7	0.25 mf.	180	Tubular	.14
P-17A36	C8	2-25 mmf.		Range B 1st Interstage Trimmer	.06
P-17A36	C9	2-25 mmf.		Range C 1st Interstage Trimmer	.06
P-17A36	C10	2-25 mmf.		Range D 1st Interstage Trimmer	.06
P-17A36	C11	2-25 mmf.		Range B 2nd Interstage Trimmer	.06
P-17A36	C12	2-25 mmf.		Range C 2nd Interstage Trimmer	.06
P-17A36	C13	2-25 mmf.		Range D 2nd Interstage Trimmer	.06
P-46X80	C14	0.05 mf.	180	Tubular	.08
P-17A30	C15	150-250 mmf.		1st I. F. Trimmer Condensers	.22
	C16	150-250 mmf.			
P-17A30	C17	150-250 mmf.		2nd I. F. Trimmer Condensers	.22
	C18	150-250 mmf.			
P-17A40	C19	70-150 mmf.		3rd I. F. Primary Trimmer	.14
P-47X56	C20	50 mmf.		Moulded	.06
P-46X80	C21	0.05 mf.	180	Tubular	.08
P-46X130	C22	0.05 mf.	360	Tubular	.10
P-46X105	C23	0.10 mf.	360	Tubular	.10
P-46X109	C24	0.01 mf.	480	Tubular	.08
P-46X119	C25	0.05 mf.	360	Tubular	.10
P-46X117	C26	0.25 mf.	180	Tubular	.12
P-46X114	C27	0.004 mf.	600	Tubular	.08
P-44X20	C28	125 mf.	45	Wet Electrolytic	.54
P-44X11	C29	10.0 mf.	250	Wet Electrolytic	.52
P-46X127	C30	0.25 mf.	360	Tubular	.16
P-44X21	C31	20.0 mf.	450	Wet Electrolytic	.78
P-46X129	C32	0.15 mf.	280	AC Tubular	.20
P-46X80	C33	0.05 mf.	180	Tubular	.08
P-47X53	C34	35 mmf.		Moulded	.06
P-17A35	C35	40-100 mmf.	6000 KC	Padding Condenser	.22
	C36	300-600 mmf.	600 KC	Padding Condenser	
P-46X121	C37	0.25 mf.	360	Tubular	.14
P-17A41	C38	2-25 mmf.		Oscillator Range B Trimmer	.06
P-17A41	C41	2-25 mmf.		Oscillator Range D Trimmer	.06
P-47X60	C39	1400 mmf.		Moulded	.14
P-17A36	C40	2-25 mmf.		Oscillator Range C Trimmer	.06
P-47X63	C42	10 mmf.		Moulded	.08
P-25A39		4 Section Gang Condenser and Drive Assembly—Less Dial Assembly			4.18

DIAL AND DRIVE ASSEMBLY

Part No.	Description	Selling Price
P-5A27	Gang Condenser Bracket and Bearing	$ .22
P-26X222	Drive Shaft	.08
P-24X207	Drive Pulley with set screw	.06
P-30X270	Main Shaft and Pointer Stud	.04
P-24X205	Gear (Rotary)	.04
P-24X210	Gear (Stationary)	.04
P-28X35	Gear Spreader Spring	.04
P-26X205	Main Pointer Shaft Assembly	.22
P-26X209	Micrometer Pointer Shaft Assembly	.26
P-24X209	Compound Gear Assembly	.12
P-27X33	Tension Pulley Arm Assembly	.08
P-28X42	Tension Pulley Spring Only	.04
P-8X36	Drive Belt	.10
P-15X27	Small Pointers	.04
P-28X41	Torsion Spring	.04
P-10X12	11" Black Drive Cord Dozen	.10
P-29X20	Brass Collars & Set Screws for securing above cord to shaft	.04
P-30X43	Dial Clamp to secure Dial Strip to frame (with 6-32x3/16" mounting screw)	.06
P-58X87	Dial Strip Only	.24
P-15X23	Double End Pointer	.06
P-15X26	Micrometer Pointer	.04
P-7A26	Pilot Lamp Bulb (6-8V)	.08
P-7A27	Pilot Lamp Sockets & Spring Clips	.06

NOTE: The Gang Condenser and Drive Assembly, less Dial Assembly, can be purchased complete—see Condenser List.

MISCELLANEOUS

Part No.	Description	Selling Price
P-3A210	Type 6F6 Tube Socket (7 Prong) Metal Tube	$ .08
P-3A211	Type 6K7 Tube Socket (7 Prong) Metal Tube	.08
P-3A129	Type 80 Tube Socke, (4 Prong) Glass Tube	.05
P-3A126	Type 76 Tube Socket (5 Prong) Glass Tube	.06
P-3A58	5 Prong Speaker Socket	.05
P-3A206	6 Prong Speaker Socket	.06
P-32X32	Tube Shield (6 Osc. & 1st A. F.)	.08
P-32X50	Tube Shield (6 2nd Det.)	.06
P-32X30	Tube Shield Bases for above Shields	.04
P-12A226	12" Dynamic Speaker—6 Prong Plug (No. 3, Fig. 2)	4.76
P-10A54	"Tone" Control Knob; Small Push-on Type	.08
P-10A55	"Volume" Control Knob; Small Push-on Type	.08
P-10A56	"Station Selector" Knob; Large Set Screw Type	.10
P-10A57	"Band Selector" Knob; Large Set Screw Type	.10
P-10A47	Selectivity Control Knob; Special Set Screw Type	.22
P-17X8	Glass Crystal	.10
P-28X40	Crystal Retaining Ring	.04
P-5A39	Band Change Switch	1.20
P-2A47	Selectivity Control Switch	.22
P-30X44	Grid Clip Only—for Metal Tubes	.04
P-8X23	Rubber Chassis Mounting Cushions	.08
P-4A49	Single Lug Terminal Strip (Mtg. hole used)	.04
P-4A39	Two Lug Terminal Strip (Mtg. Foot in center—Ground Lug extended	.04
P-4A53	Three Lug Terminal Strip (All Lugs insulated)	.04
P-4A17	Single Lug Terminal Strip (Mtg. Foot Used)	.04
P-13X214	Antenna & Ground Lead Assembly	.14
P-13X80	Line Cord & Plug	.28

PHONO ATTACHMENT PARTS

Part No.	Description	Selling Price
P-2AJ1	Phono Switch (Double Pole Double Throw Switch)	.30
P-3A12	Phono Jack	.06
P-10A36	Switch Knob	.10
P-4A17	Terminal Strip	.04
	10 Inches of No. 866G Shielded Steering (5/16" Dia.)	.10

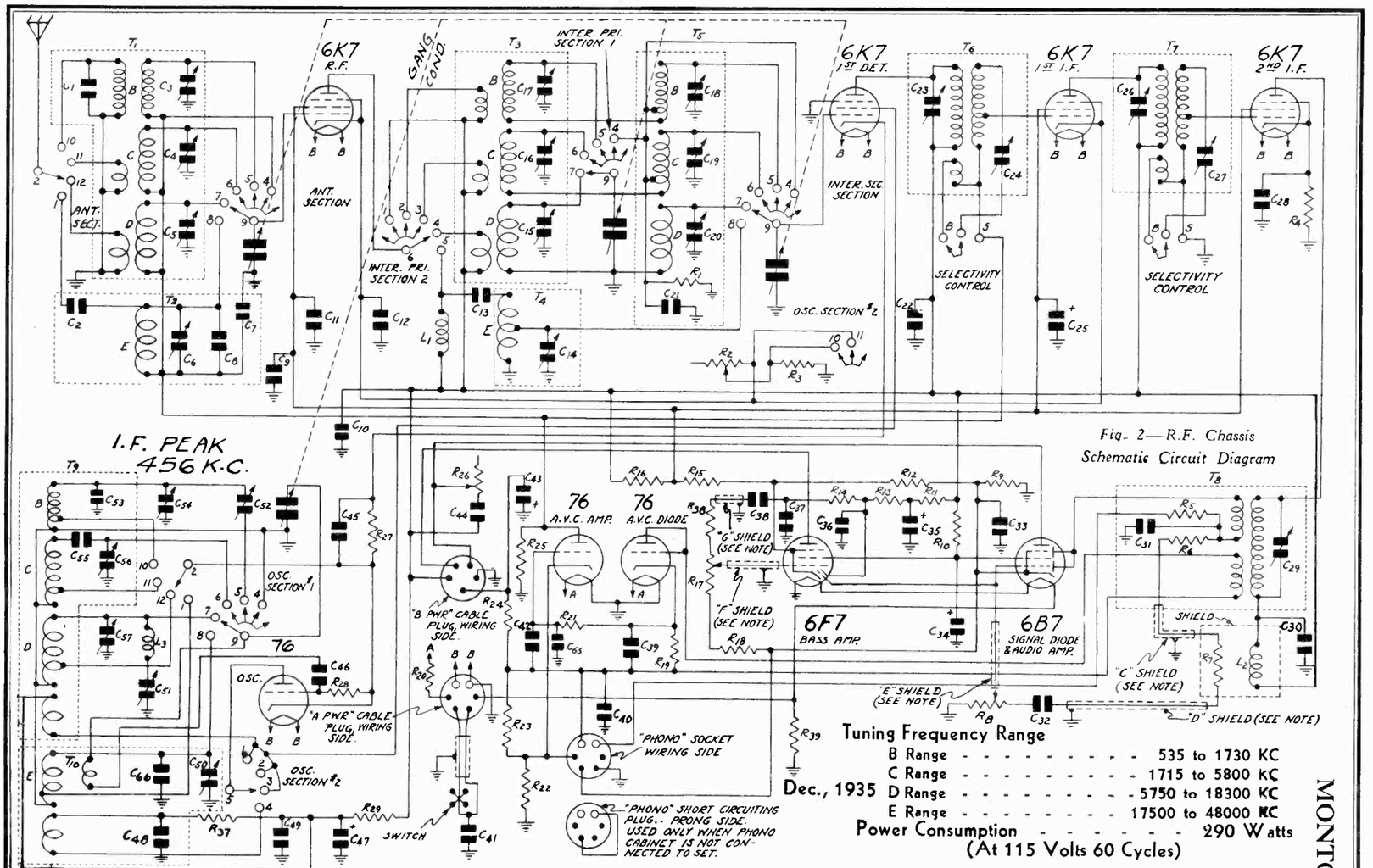


Fig. 2—R.F. Chassis Schematic Circuit Diagram

Tuning Frequency Range

B Range	535 to 1730 KC
C Range	1715 to 5800 KC
D Range	5750 to 18300 KC
E Range	17500 to 48000 KC

Power Consumption - - - - - - - - 290 Watts
(At 115 Volts 60 Cycles)

Power Output - - - - **30 Watts Undistorted**

Dec., 1935

C 1	250 mmf.	C26	150-250 mmf. Dual	C56	2-25 mmf.	R 1	25,000 ohm 0.2 watt
C 2	35 mmf.	C27	150-250 mmf. Dual	C57	2-25 mmf.	R 3	150 ohm 0.2 watt
C 3	2-25 mmf.	C28	.05 mf. 180 V.	C58	60 mf. 150 V. Electrolytic	R 4	500 ohm 0.2 watt
C 4	2-25 mmf.	C29	70-150 mmf.	C59	.63 mf. 180 V.	R 5	100,000 ohm 0.2 watt
C 5	2-25 mmf.	C30	.10 mf. 480 V.	C60	.35 mf. 280 V.	R 6	100,000 ohm 0.2 watt
C 6	2-25 mmf.	C31	50.0 mmf.	C61	30. mf. 400 V. Electrolytic	R 7	100,000 ohm 0.2 watt
C 7	.05 mf. 180 V.	C32	.01 mf. 360 V.	C62	30. mf. 400 V. Electrolytic	R10	60,000 ohm 1.0 watt
C 8	35 mmf.	C33	.05 mf. 180 V.		4.0 mf. 250 V. Dry Electrolytic Block	R11	40,000 ohm 0.5 watt
C 9	250 mmf.	C35	12.0 mf. 300 V. Electrolytic		16.0 mf. 150 V. Dry Electrolytic Block	R13	60,000 ohm 0.5 watt
C10	.05 mf. 480 V	C36	.10 mf. 360 V.	C34	4.0 mf. 250 V. Dry Electrolytic Block	R14	40,000 ohm 0.2 watt
C11	.25 mf. 180 V.	C37	.02 mf. 360 V.	C43	16.0 mf. 150 V. Dry Electrolytic Block	R18	150,000 ohm 0.2 watt
C12	.25 mf. 180 V.	C38	.005 mf. 360 V	C47	4.0 mf. 250 V. Dry Electrolytic Block	R19	100,000 ohm 0.2 watt
C13	.05 mf. 480 V.	C39	100 mmf.	C52	300-600 mmf. Dual	R20	2.0 ohm 1.0 watt armored wire wound
C14	2-25 mmf.	C40	.50 mf. 180 V.	C51	40-100 mmf. Dual	R21	2.0 megohm 0.2 watt
C15	2-25 mmf.	C41	.02 mf. 600 V.	C63	30. mf. 400 V. Electrolytic	R22	160,000 ohm 0.2 watt
C16	2-25 mmf.	C42	.05 mf. 180 V.	C64	30. mf. 400 V. Electrolytic	R23	25,000 ohm 0.2 watt
C17	2-25 mmf.	C44	.01 mf. 360 V.	C65	500 mmf.	R24	25,000 ohm 0.2 watt
C18	2-25 mmf.	C45	.05 mf. 180 V.	C66	20 mmf.	R25	500,000 ohm 0.2 watt
C19	2-25 mmf.	C46	35 mmf.	C67	.70 mf. 280 V (Block)	R26	1.0 megohm Tone Control
C20	2-25 mmf.	C48	.05 mf. 360 V.	C68	.70 mf. 280 V. (Block)	R27	2,500 ohm 0.2 watt
C21	.05 mf. 180 V.	C49	.10 mf. 360 V.			R28	30,000 ohm 0.2 watt
C22	.25 mf. 480 V.	C50	2-25 mmf. Dual			R29	15,000 ohm 3.0 watt
C23	150-250 mmf. Dual	C53	10 mmf.			R30	50,000 ohm 0.2 watt
C24	150-250 mmf. Dual	C54	2-25 mmf.			R31	2,000 ohm 0.2 watt
C25	60.0 mf. Electrolytic	C55	1400 mmf.			R32	2,000 ohm 0.2 watt
						R33	200,000 ohm 0.2 watt
						R34	200,000 ohm 0.2 watt
						R35	2,000 ohm 0.2 watt
						R36	2,000 ohm 0.2 watt
						R37	150 ohm 0.2 watt
						R38	500,000 ohm 0.2 watt
						R 2	2,500 ohm Volume Control
						R 8	2.0 megohm Volume Control
						R17	1.0 megohm Volume Control
						R 9	60 ohm Armored Wire Wound
						R12	70 ohm Armored Wire Wound
						R15	2,500 ohm Armored Wire Wound
						R16	4,000 ohm Armored Wire Wound
						R39	130 ohm 2.5 watt armored wire wound

T 1	Ant. R.F. Trans.
T 2	"E" Range Ant. R.F. Trans.
T 3	1st Interstage R.F. Trans.
T 4	"E" Range Int. R.F. Trans.
T 5	2nd Interstage R.F. Trans.
T 6	1st I.F. Trans.
T 7	2nd I.F. Trans.
T 8	3rd I.F. Trans.
T 9	Osc. Inductors
T10	"E" Range Osc. Inductor
T11	Bias and Heater Power Trans.
T12	"B" Power Trans.
T13	P-P Input Trans.
T14	P-P Output Trans.
B 1	Block Cond. and 10 KC Filter
L 1	"E" Range Int. Plate Reactor
L 2	2nd I.F. Plate Isolating Reactor
L 3	Osc. Tracking Coil
L 4	Filter Reactor
L 5	Filter Reactor
L 6	Filter Reactor
L 7	Speaker Field 4500 ohm
L 8	Speaker Field 4500 ohm

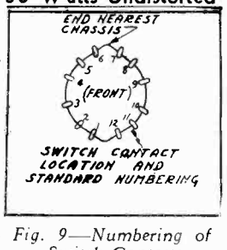


Fig. 9—Numbering of Switch Contacts

ARROWS INDICATE CONNECTIONS PRESENT IN BAND SW. WHEN IN POS. SHOWN.

	POSITION 1 STANDARD WAVE (B)	POSITION 2 SHORT WAVE (C)	POSITION 3 SHORT WAVE (D)	POSITION 4 SHORT WAVE (E)
OSC. SECT. 1 & ANT. SECT.	10 11 12 1 2 4 5 6 7 8 9	10 11 12 1 2 4 5 6 7 8 9	10 11 12 1 2 4 5 6 7 8 9	10 11 12 1 2 4 5 6 7 8 9
OSC. SECT. 2	10 11 1 2 3 4 5	10 11 1 2 3 4 5	10 11 1 2 3 4 5	10 11 1 2 3 4 5
INTER. SEC. SECTION	4 5 6 7 8 9	4 5 6 7 8 9	4 5 6 7 8 9	4 5 6 7 8 9
INTER. PRI. SECT. 2	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
INTER. PRI. SECT. 1	4 5 6 7 9	4 5 6 7 9	4 5 6 7 9	4 5 6 7 9

IN ALL SECT. CONTACT LOCATIONS NOT NUMBERED ARE BLANK EXCEPT CONTACT LOCATION 3 IN OSC. SECT. 1 WHICH IS USED AS A WIRING TERMINAL.

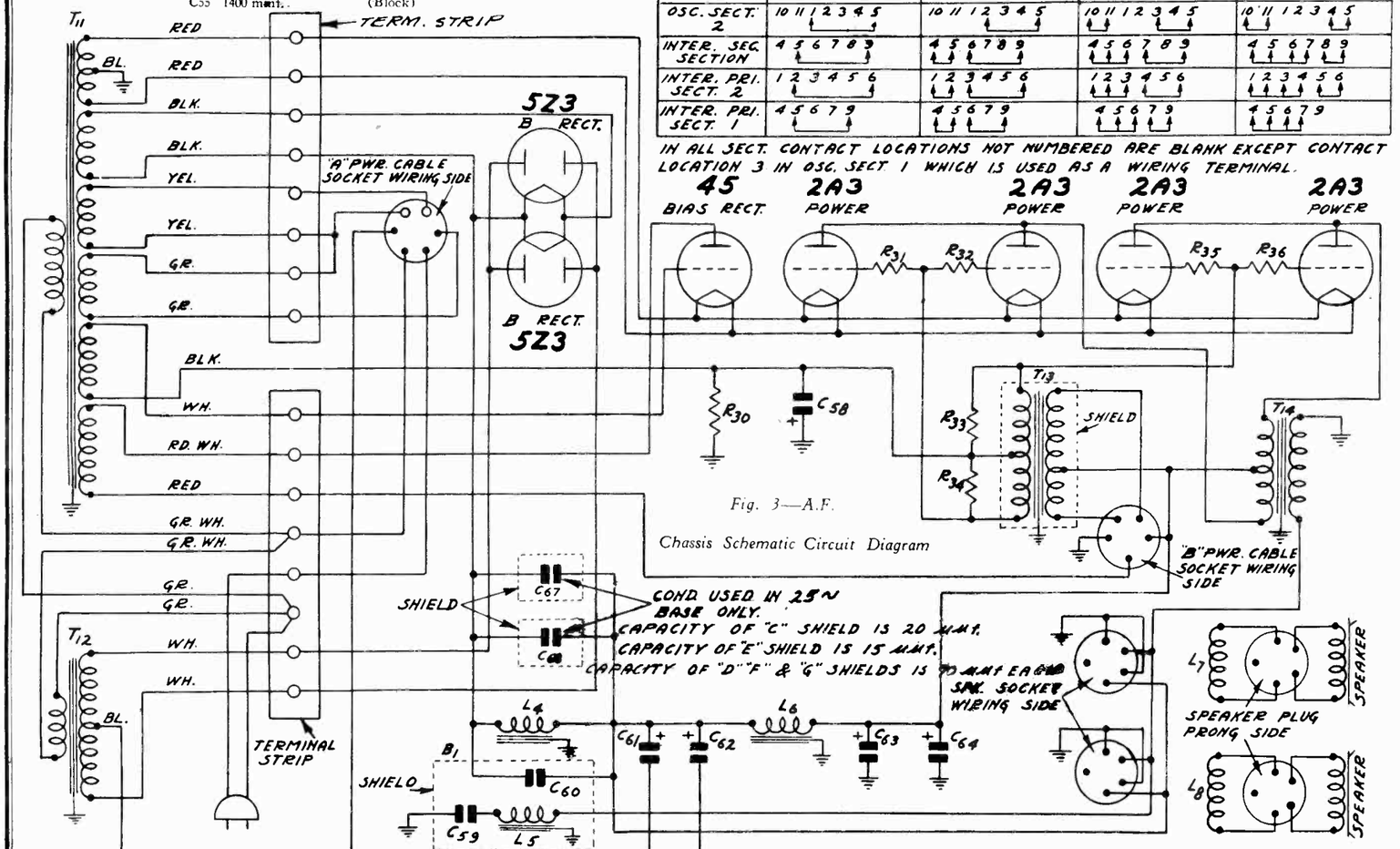


Fig. 3—A.F. Chassis Schematic Circuit Diagram

MONT. WARD PAGE 7-7, 7-8
MODEL 62-197
Schematic

MODEL 62-197
Trimmers, Voltage
Socket, Chassis Views

MONTGOMERY-WARD & CO.

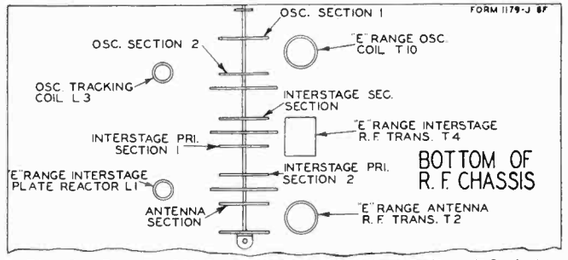


Fig. 5—Bottom View of Chassis Showing Coil and Switch Section Location

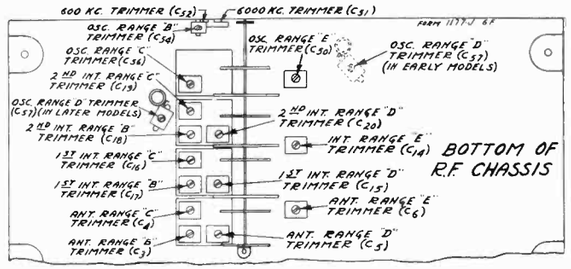


Fig. 6—Trimmer Location

VOLTAGES AT SOCKETS

Antenna Shorted to Ground - Line Voltage 110
Volume Control Maximum

Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cathode to Ground	Cathode M. A.
6K7	R. F.	5.8	300	110	4.1	10.5
6K7	1st Det.	5.8	300	142	10.0	3.5
76	Osc.	5.8	142			10.0
6K7	1st I. F.	5.8	300	110	4.1	10.5
6K7	2nd I. F.	5.8	300	110	3.7	10.0
6B7	Sig. Diode & Audio Amp.	5.8(1) 5.6(2)	300	115	3.6	4.5
6F7	Bass Amp.	5.8(1) 5.6(2)	275(3) 125(4)	115	7.2	9.0
76	A.V.C. Diode	4.9				
76	A.V.C. Amp.	4.9	0		-62.0	
2A3	Power	2.35	300		60(5)	60.0(6)
5Z3	'B' Rect.	4.8				375.0(7)
45	Bias Rect.	2.4				

(1) Measured with A. C. Voltmeter—early models with letter "A" under chassis.
(2) Measured with D. C. Voltmeter—later models with letter "B" under chassis.
(3) Pentode Plate
(4) Triode Plate
(5) Control Grid to ground.
(6) Each Side of push-pull Circuit—120 Ma. total for 4 tubes.
(7) Total for both tubes—Milliameter in series with 1st Choke.

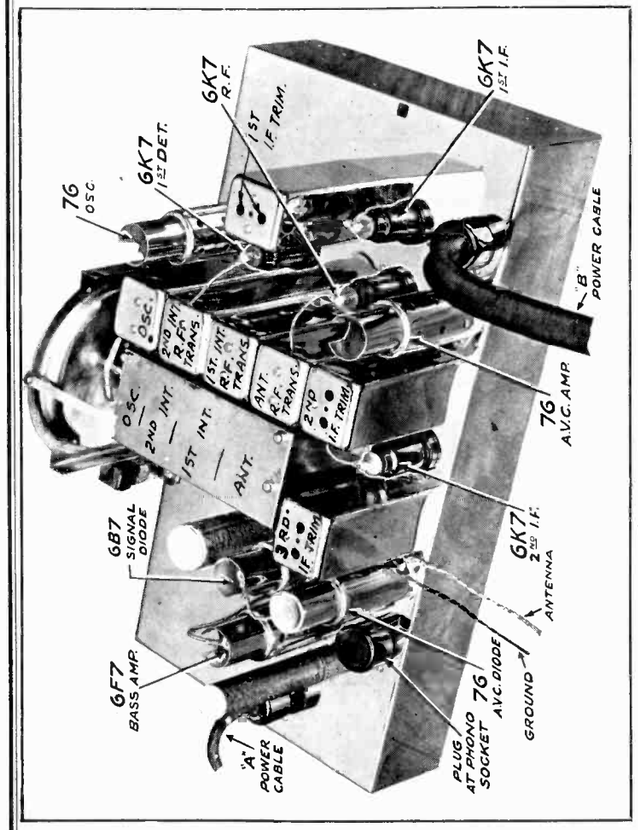


Fig. 10—Tube Arrangement in R.F. Chassis

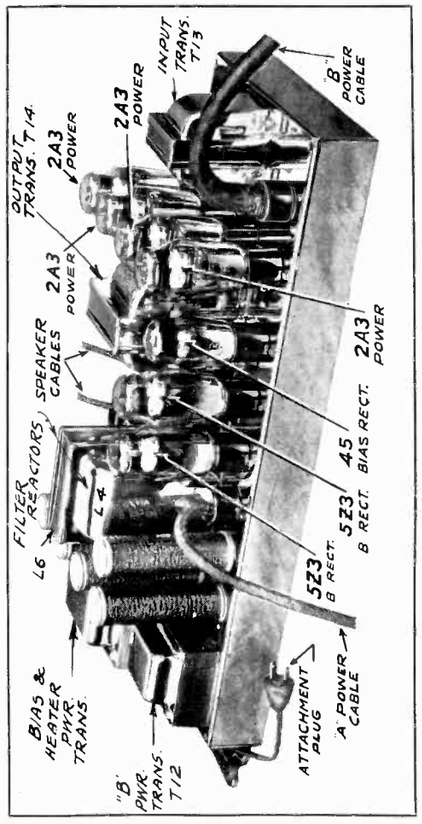


Fig. 11—Tube Arrangement in A.F. Chassis

MODEL 62-197
Alignment, Phono. Changes

MONTGOMERY-WARD & CO.

Alignment and Calibration

I. F. Adjustment

Set the signal generator for a signal of 456 KC.

Connect the output of the signal generator to the grid of the 1st detector through a 0.1 mf. condenser.

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

Turn the band selector to the Range B position (standard wave band—purple dial color).

Turn the selectivity control to the sharp position and keep it in this position for all adjustments.

Turn the volume control to the maximum position.

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

Then adjust the five I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 4.

Range B Alignment

1730 KC Adjustment

Set the signal generator for 1730 KC.

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

Keep the band selector in the standard wave position.

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

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

Adjust the oscillator Range B trimmer (C54) until maximum output is obtained. The location of this trimmer is shown in Fig. 6.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Loosen the pointer set screw and set the large pointer at the 1500 KC mark on the standard wave band scale. Re-tighten the set screw.

Adjust the 1st and 2nd interstage Range B trimmers (C17 and C18) and antenna Range B trimmer (C3) 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. 6 for location of this trimmer.

Be sure to use a non-metallic screwdriver for this adjustment.

Range C Alignment

5800 KC Adjustment

Set the signal generator for 5800 KC.

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

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

Turn the band selector to the Range C position (1st short wave band—green dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range C trimmer (C56) until maximum output is obtained. See Fig. 6 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 1st and 2nd interstage Range C trimmers (C16 and C19) and antenna Range C trimmer (C4) to maximum.

Do not change the setting of the oscillator Range C 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 .00 ohm resistor to the output of the signal generator.

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

Turn the band selector to the Range D position (2nd short wave band—red dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range D trimmer (C57) until maximum output is obtained. See Fig. 6 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 1st and 2nd interstage Range D trimmers (C15 and C20) and antenna Range D trimmer (C5) to maximum.

When adjusting the 2nd interstage Range D trimmer, it will be necessary at the same time to turn the tuning condenser rotor slowly back and forth until the peak of greatest intensity is obtained.

Then go back and repeat the procedure as given for the 18,300 KC adjustment. If it is found necessary to make any appreciable change in the setting of the oscillator Range D trimmer, the 15,000 KC adjustment must be repeated.

Do not make any further change in 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. 6 for location of this trimmer.

Use a non-metallic screwdriver for this adjustment.

Range E Alignment

48,000 KC Adjustment

Set the signal generator for 48,000 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 selector to the Range E position (3rd short wave band—brown dial color).

Adjust the oscillator Range E trimmer (C50) until maximum output is obtained. See Fig. 6 for location of this trimmer.

40,000 KC Adjustment

Set the signal generator for 40,000 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range E trimmer (C14) and antenna Range E trimmer (C6) to maximum.

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

Twenty-five Cycle Receivers

The twenty-five cycle receiver differs from the sixty cycle receiver in the fact that special twenty-five cycle filament and "B" power transformers must be used. It also has two additional condensers in the power unit—C67 and C68 as illustrated in Fig. 3. The twenty-five cycle transformers and the condensers are shown in the parts list.

The twenty-five cycle receiver can be operated satisfactorily from a sixty cycle power supply if the two condensers C67 and C68 are removed. However, the reverse is not true, that is, a sixty cycle receiver cannot be operated from a twenty-five cycle power supply.

115-230 Volt, 40 to 60 cycle filament and "B" power transformers are also available for this model.

Changes in Early Models

In the early models condenser C65, shown in the R.F. Schematic Fig. 2, was not used. A 20 mmf. condenser, also designated as C65, was connected in parallel with condenser C14.

Condenser C10 from B+ to ground was not used in early models. Another condenser in the early models, also designated as C10 and 250 mmf. in value, was connected from the A.V.C. amplifier plate to ground.

Resistor R38 was not used in early models.

On the A.F. chassis the speaker sockets were wired with ground to the opposite side of voice coil.

A phonograph socket is provided on the R.F. chassis by means of which phonograph connections can be made without electrical changes in the chassis. The receiver is shipped from the factory with a plug in this socket. If no phonograph is used this plug must be inserted as it completes the signal diode circuit for radio reception.

Two sets of accessories are supplied for phonograph connections for this model. One set is used when the phonograph is contained in a separate cabinet, and the other set is used when the phonograph and radio are in a combination cabinet. The electrical connections are the same in both cases and are illustrated in Fig. 13 (A). Parts required in either case are shown in the parts list in this manual.

Phonograph in Separate Cabinet

For this assembly, a 5 conductor cable and a small metal panel assembly are supplied. This assembly has the radio-phono switch, tip jacks for pick-up leads and terminal plate for phono cable.

The phono panel is mounted at the most convenient place in the cabinet at which connections can be completed. The switch is secured to the motor board as illustrated in Fig. 14.

The socket at the end of the cable is secured to the terminal plate on the panel and the plug at the other end of the cable is inserted into the phono socket on the R.F. chassis.

When the switch is thrown to the radio side, the phono pick-up is excluded from the signal diode circuit. When it is thrown to the phono side, the signal diode circuit is opened and the phonograph connections completed to this circuit. Resistor R23 is short circuited. This brings the grid and cathode of the 76 A.V.C. amplifier to the same potential and causes a plate current in this tube of sufficient intensity to bring the R.F. and 1st I.F. tubes to the point of cut off (See article on circuit for further information regarding operation of A.V.C. system).

Phonograph and Radio in Combination Cabinet

For this assembly, a number of separate items as shown in the parts list are supplied. The phono short circuiting plug supplied with the receiver is used after certain changes have been made.

First take off the shell of this plug by twisting the shell in either direction. The shell is then drilled and equipped with a rubber grommet as shown in Fig. 13 (B). Next unsolder and remove the jumper wire from the plug as shown in Fig. 13 (A). Extend the leads through the hole in the shell and solder the leads to the prongs on the plug as illustrated. Complete the connections to the switch and tip jacks as shown. The switch is mounted on the motor board and the tip jacks at the nearest convenient place.

The description of the connections as given for the separate phonograph cabinet also applies to the combination.

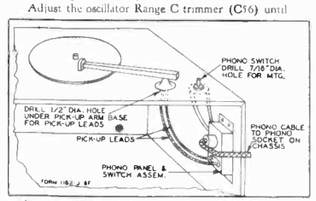


Fig. 14—Phonograph Connections Using Phono Cable and Panel Assembly

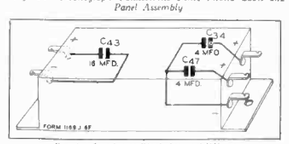


Fig. 8—Condenser Block Internal Wiring

Phonograph Connections

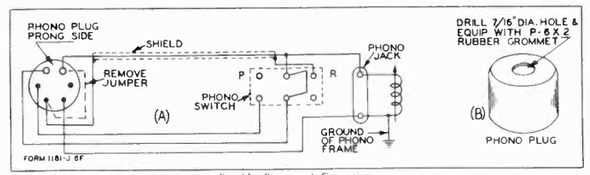


Fig. 13—Phonograph Connections

D. C. Resistance of Windings

Refer to Figs. 12, 2 & 3.

Following are the D. C. resistances of the various windings in the chassis. The values given below will vary slightly in different sets.

Part No.	Winding	Code	D. C. Resistance in Ohms
P-9A428	Antenna R.F. Transformer	T1	
	Range B Primary Winding		22.8
	Range C Primary Winding		0.35
	Range D Primary Winding		0.2
	Range B Secondary Winding		6.1
	Range C Secondary Winding		1.8
	Range D Secondary Winding		Small
P-9A435	"E" Range Antenna R.F. Coil	T2	Small
P-9A429	1st Interstage R.F. Transformer	T3	
	Range B Primary Winding		3.7
	Range C Primary Winding		2.5
	Range D Primary Winding		0.5
	Range B Secondary Winding		5.8
	Range C Secondary Winding		1.8
	Range D Secondary Winding		Small
P-9A436	"E" Range Interstage R.F. Coil	T4	
	Tap to either side		Small
P-9A430	2nd Interstage R.F. Coils	T5	
	Range B Section		
	Long Portion		5.6
	Short Portion		0.2
	Range C Section		
	Long Portion		1.9
	Short Portion		0.2
	Range D Section		Small
P-9A432	1st I.F. Transformer	T6	
	Primary Winding		4.4
	Coupling Winding		0.3
	Secondary Winding		
	Tap to Condenser Side		3.0
	Tap to Switch Side		1.3
P-9A433	2nd I.F. Transformer	T7	
	Primary Winding		4.4
	Coupling Winding		0.3
	Secondary Winding		
	Tap to Condenser Side		3.0
	Tap to Switch Side		1.3
P-9A434	3rd I.F. Transformer	T8	
	Primary Winding (Yellow to Blue)		9.7
	Signal Diode Secondary		12.4
	A.V.C. Secondary (Brown to Green)		7.0
P-9A431	Oscillator Coils	T9	
	Range B Grid Coil		
	Red-White tap to White		3.0
	Red-White tap to Black-Yellow		0.8
	Range C Grid Coil		
	Green-White tap to Green		1.7
	Green-White tap to Black-Yellow		0.5
	Range D Grid Coil		
	Black-White tap to Black		Small
	Black-White tap to Black-Yellow		Small
	Oscillator Range D Plate Coil		0.2
P-9A437	"E" Range Oscillator Coils	T10	
	Range E Grid Coil		Small
	Range E Plate Coil		.4
	Range E Series Grid Coil		Small
P-53X88	Filament Transformer (115 Volts 60 Cycles)	T11	
	Primary Winding		4.4
	Filament Transformer Secondaries, below		
	Red to Red		Small
	Black to Black		Small
	Yellow to Yellow		Small
	Green to Green		Small
	Black to White		22.8
	Red-White to Red		32.9

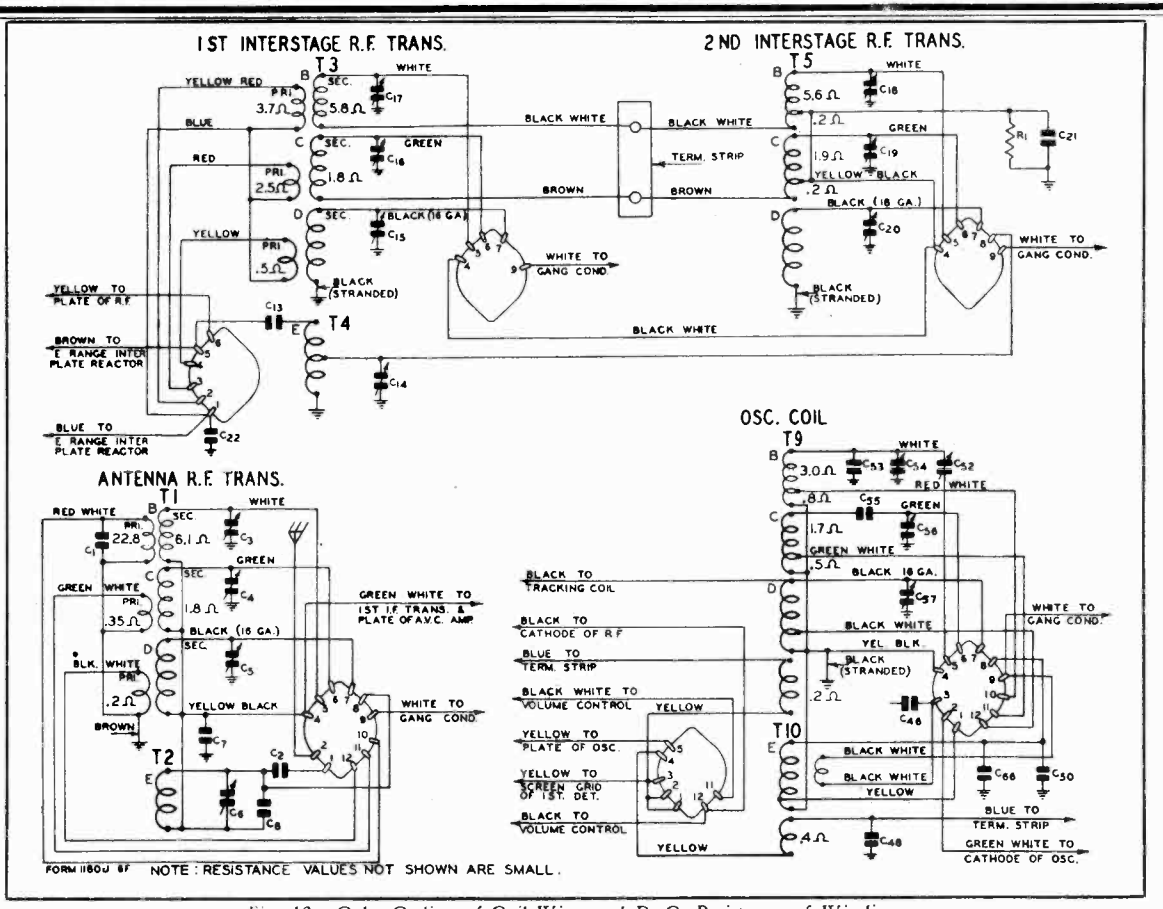


Fig. 12—Color Coding of Coil Wires and D. C. Resistances of Windings

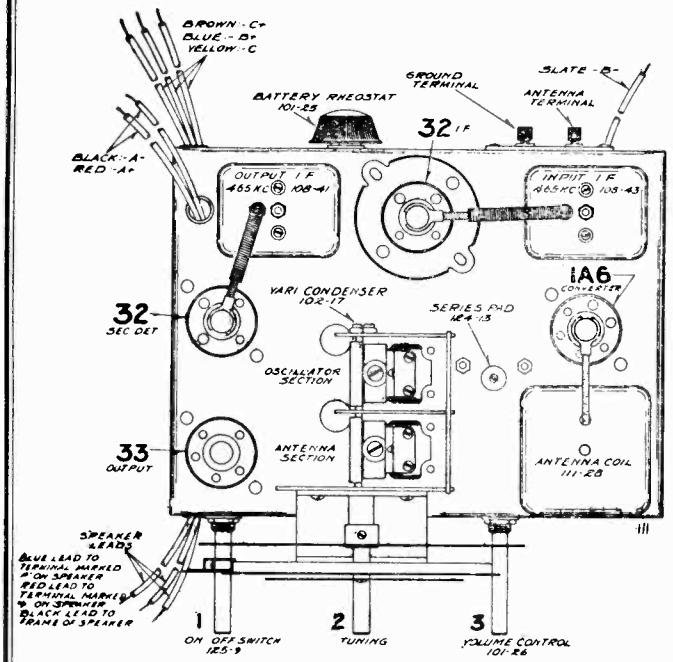
Part No.	Winding	Code	D. C. Resistance in Ohms
P-53X85	"B" Power Transformer (115 Volts 60 Cycles)	T12	
	Primary Winding		1.9
	Secondary Winding		
	Center Tap to Inside		48.0
	Center Tap to Outside		53.1
P-50X25	Audio Input Transformer	T13	
	Primary Winding		
	Tap to Plate of 6F7		6600.
	Tap to Tone Control and Plate of 6B7		4650.
	Secondary Winding		
	Center Tap to Inside		2840.
	Center Tap to Outside		3260.
P-51X33	Audio Output Transformer	T14	
	Primary Winding		
	Center Tap to Inside		19.7
	Center Tap to Outside		22.4
	Secondary Winding		0.4

Part No.	Winding	Code	D. C. Resistance in Ohms
P-12A206	12" Dynamic Speaker		
	Speaker Voice Coil		6.3
	Speaker Field	L7	4500.
P-12A213	12" Dynamic Speaker		
	Speaker Voice Coil		6.3
	Speaker Field	L8	4500.
P-9A391	"E" Range Interstage Plate Reactor	L1	1.0
P-9A456	2nd I.F. Plate Isolating Reactor	L2	35.0
P-9A391	High Frequency Oscillator Tracking Coil	L3	1.0
P-52X35	Filter Reactor	L4	51.6
P-52X36	Filter Reactor	L6	11.2
P-48X201	Block Condenser & 10 KC Reactor Assembly	B1	
	10 KC Reactor	L5	0.6

MODELS 62-169, 62-171
Schematic, Socket
Trimmers, Voltage
Alignment

MONTGOMERY-WARD & CO.

TOP VIEW

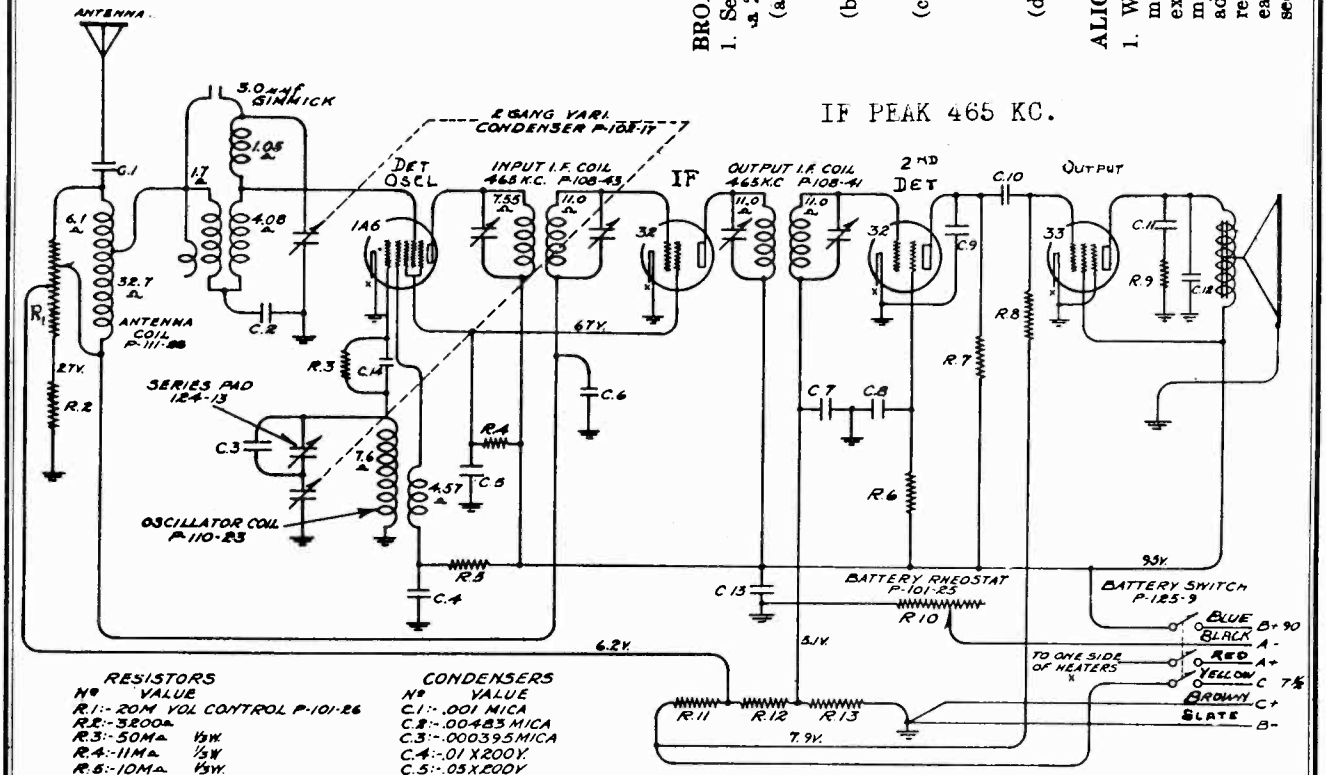


BROADCAST BAND ALIGNMENT:

1. Set external oscillator to 1720 K.C. and connect it in series with a 200 mmfd. 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 124-13 (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 800, 1000, 1200 K.C. DO NOT BEND PLATES.

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 108-41 and 108-43, 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).



RESISTORS

No	VALUE
R.1	20M VOL CONTROL P-101-26
R.2	3200Ω
R.3	50MΩ ½W
R.4	11MΩ ½W
R.5	10MΩ ½W
R.6	3 MEGΩ ½W
R.7	750MΩ ½W
R.8	500MΩ ½W
R.9	35MΩ ½W
R.10	4Ω BAT. RHEOSTAT P-101-25
R.11	1300Ω
R.12	1920Ω
R.13	5800Ω ½W

CONDENSERS

No	VALUE
C.1	.001 MICA
C.2	.00483 MICA
C.3	.000395 MICA
C.4	.01 X 200V.
C.5	.05 X 200V
C.6	.25 X 200V.
C 7	.05 X 200V
C.8	.01 X 200V
C 9	.00025 MICA
C.10	.01 X 400V
C.11	.01 X 400V
C.12	.0005 MICA
C.13	.25 X 200V
C.14	.00025 MICA

- NOTE -
R. 2, R. 11, R 12 ARE IN ONE UNIT P-106-21
C.4, C.5 ARE IN ONE UNIT P-118-11
C.6, C.13 " " " " P-118-3
C 7, C 8 " " " " P-118-11
NUMBERS PREFIXED BY LETTER 'P' ARE PART Nos
ALL VOLTAGES INDICATED ARE WITH NEW BATTERIES, VOLUME CONTROL ON FULL

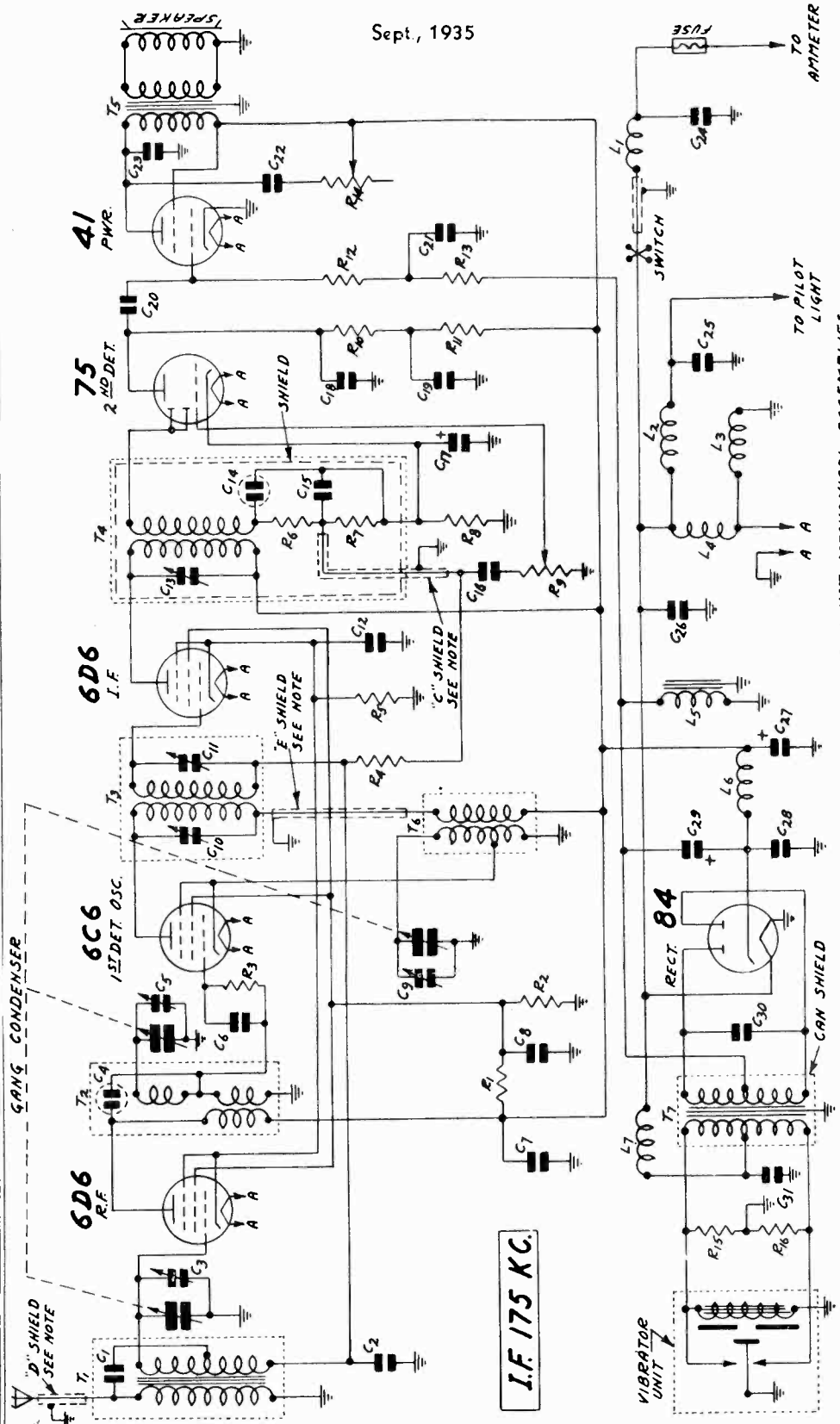
MONTGOMERY-WARD & CO.

MODEL 62-202
Schematic
Alignment

Power Consumption - - 6.5 Amperes at 6.3 Volts
Power Output - - - - - 3 Watts Undistorted
Sensitivity - - - - - - 1.0 Microvolt Absolute
Selectivity - - 45 KC Broad at 1000 Times Signal

Tuning Frequency Range - 530-1650 KC
Intermediate Frequency - - - 175 KC
Speaker - - - - - - - 6 Inch Dynamic

Sept., 1935



GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES. CIRCUIT ELEMENTS ENCLOSED IN DOTTED CIRCLES DO NOT EXIST AS DISTINCT UNITS BUT OCCUR AS A RESULT OF THE MUTUAL POSITION OF OTHER CIRCUIT ELEMENTS OR THEIR PARTS. THE CAPACITY OF "C" SHIELD IS 37 MMF, THE CAPACITY OF "D" SHIELD IS 85 MMF AND THE CAPACITY OF "E" SHIELD IS 15 MMF.

C 1 21 mmf.
C 2 .05 mf. 180 V.
C 3 Gang Trimmer
C 4 40 mmf.
C 5 Gang Trimmer
C 6 33 mmf.
C 7 .10 mf. 360 V.
C 8 .10 mf. 180 V.
C 9 Gang Trimmer
C10 70-150 mmf. } One
C11 70-150 mmf. } Unit
C12 .10 mf. 180 V.
C13 70-150 mmf.
C14 230 mmf.
C15 230 mmf.
C16 .01 mf. 360 V.
C18 230 mmf.
C19 .10 mf. 360 V.
C20 .01 mf. 360 V.
C21 .25 mf. 180 V.
C22 .02 mf. 600 V.
C23 .002 mf. 600 V.
C24 .50 mf. 180 V.
C25 2000 mmf.
C26 2000 mmf.
C28 .01 mf. 360 V.
C30 .0075 mf. 1600 V.
C31 .50 mf. 180 V.
C17 4.0 mf. 25 V. } Electrolytic
C27 5.0 mf. 350 V. } Block
C29 8.0 mf. 350 V.

R 1 17000 ohm 1.0 W.
R 2 20000 ohm .5 W.
R 3 .50 Megohm .2 W.
R 4 1.0 Megohm .2 W.
R 5 350 ohm .2 W.
R 6 50000 ohm .2 W.
R 7 500000 ohm .2 W.
R 8 6000 ohm .2 W.
R 9 2.0 Megohm Volume Control
R10 150000 ohm .2 W.
R11 50000 ohm .2 W.
R12 .50 Megohm .2 W.
R13 100000 ohm .2 W.
R14 150000 ohm Tone Control
R15 50 ohm .5 W.
R16 50 ohm .5 W.

T 1 Antenna Trans.
T 2 R. F. Interstage Trans.
T 3 1st I. F. Trans.
T 4 2nd I. F. Trans.
T 5 Output Trans.
T 6 Osc. Inductor
T 7 Power Trans.

L 1 Motor Noise Reactor
L 2 Pilot Light Reactor
L 3 Speaker Field 5.3
L 4 Filament Reactor
L 5 Filter Choke
L 6 "B" Reactor
L 7 Vibrator Reactor

ALIGNMENT: Align IF at 175 KC. Adjust trimmers of 1st. Det. and Ant. at 1400 KC. Adjust trimmers of Osc. section of gang condenser at 1650 KC.

MODEL 62-202
Voltage, Resistance
Socket, Trimmers
Coil Data

MONTGOMERY-WARD & CO.

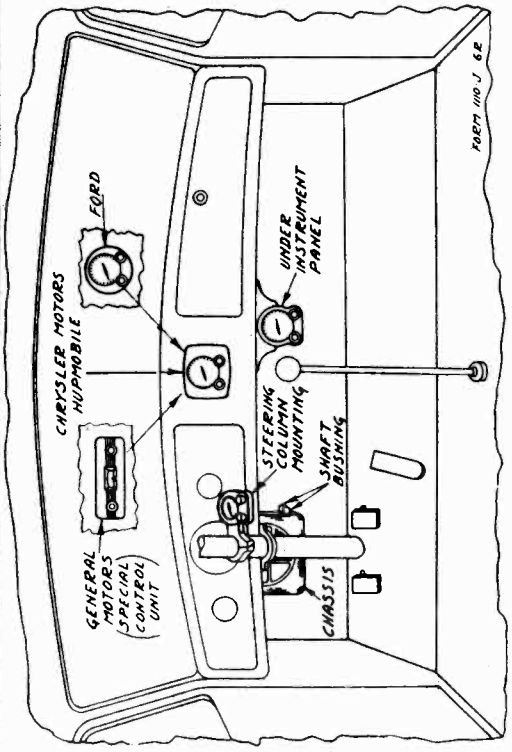


Fig. 5—Various Control Unit Mountings

VOLTAGES AT SOCKETS

Antenna Disconnected **Battery 6 Volts Under Load**

Type of Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cathode to Ground	Cathode Current M. A.
6D6	R. F. Amp.	5.8	220	90	4 5	6 3
6C6	1st Det. Osc.	5.8	220	90	0	2.4
6D6	I. F. Amp.	5.8	220	90	4.5	6.3
75	2nd Det.	5.8	130(1)		1.2	0.3
41	Power	5.8	210	220	16(2)	><
84	Rectifier	5.8				50.0

(1) With 250,000 Ohm Meter
(2) As read across filter choke.

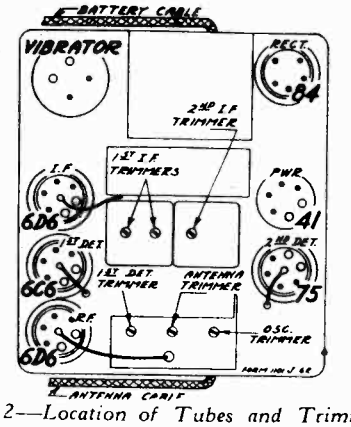


Fig. 2—Location of Tubes and Trimmers

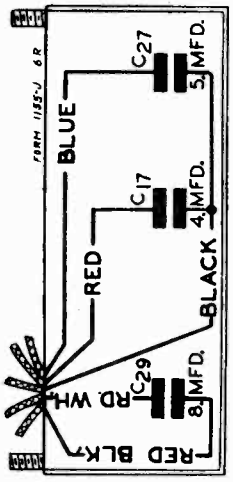


Fig. 4—Condenser Block—Internal Wiring

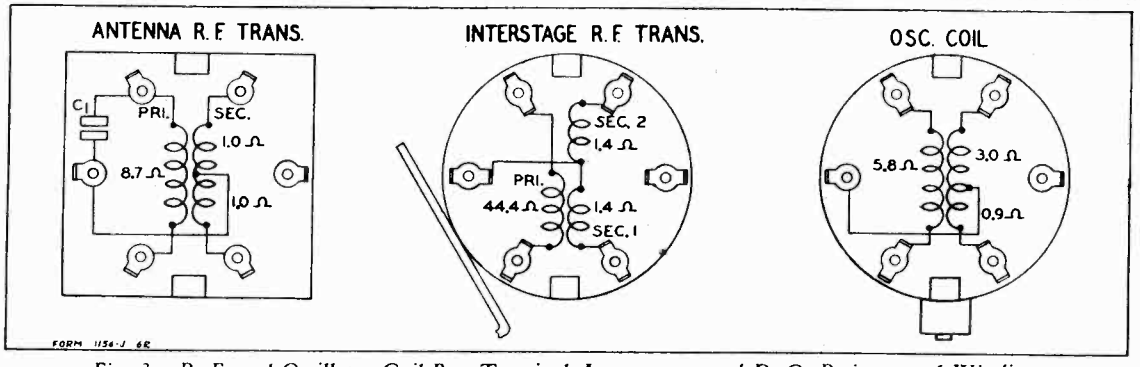


Fig. 3—R. F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

D. C. Resistance of Windings

Following are the D. C. resistances of the various windings in the chassis. The values given below will vary slightly in different sets.

Part No.	Winding	Code	D. C. Resistance in Ohms
P-9A443	Antenna Transformer	T1	
	Primary Winding		8.7
	Secondary Winding—Either Portion		1.0
P-9A439	Interstage Transformer	T2	
	Primary Winding		44.4
	Secondary Winding—Either Portion		1.4
P-9A441	1st I. F. Transformer	T3	
	Primary Winding		93.5
	Secondary Winding		97.6
P-9A442	2nd I. F. Transformer	T4	
	Primary Winding		44.1
	Secondary Winding		49.6
P-12A227	Dynamic Speaker		
	Output Transformer Primary	T5	416.6
	Output Transformer Secondary	T5	Small
	Speaker Field	L3	5.3
	Speaker Voice Coil		Small
P-9A440	Oscillator Coils	T6	
	Grid Coil		
	Long Portion		3.0
	Short Portion		0.9
	Plate Coil		5.8
P-53X108	Power Transformer	T7	
	Primary Winding		
	Center Tap to Inside		Small
	Center Tap to Outside		Small
	Secondary Winding		
	Center Tap to Inside		200.
	Center Tap to Outside		200.
P-9A444	Motor Noise Reactor	L1	Small
P-9A448	Pilot Light Line Reactor	L2	Small
P-9A446	Filament Reactor	L4	Small
P-52X42	Filter Choke	L5	312.5
P-9A447	R. F. "B" Plate Reactor	L6	4.1
P-9A445	Vibrator Filter Reactor	L7	Small

MONTGOMERY-WARD & CO.

MODELS 62-207, 62-209
62-221
Schematic

Nov., 1935

Input Voltages

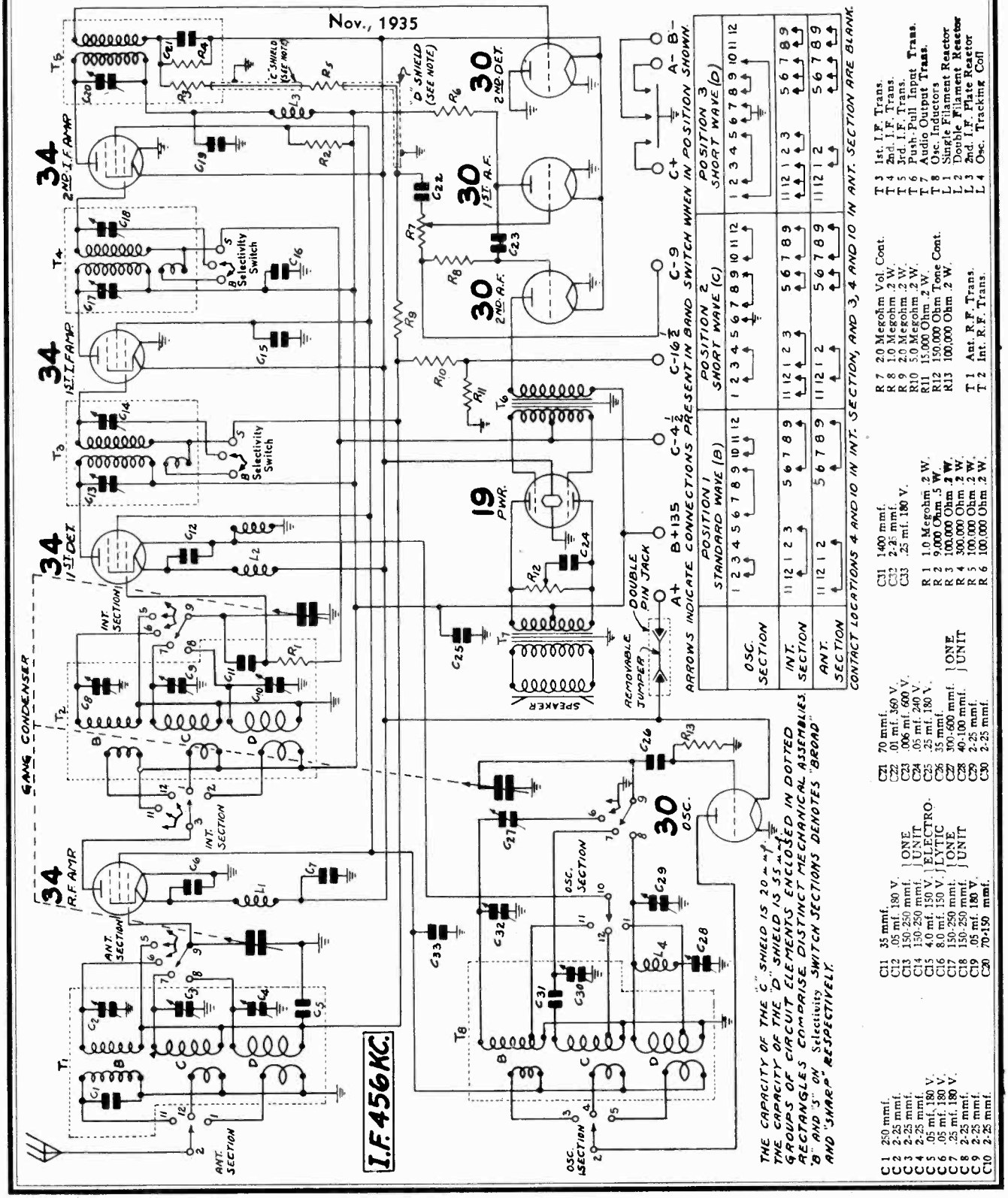
"A" Battery	2 Volts (0.74 Amperes)
"B" Batteries	135 Volts
"C" Batteries	4½, 9 and 16½ Volts
Power Output	1.5 Watts Undistorted
Selectivity-20 KC Broad at 1000 times Signal (Sharp)	
Intermediate Frequency	456 KC.
Speaker	8" Permanent Magnet Dynamic

Tuning Frequency Range

B Range	535 to 1730 KC.
C Range	1680 to 4800 KC.
D Range	5650 to 16000 KC.

Sensitivity

B Range Average	1.0 Microvolts Absolute
C Range Average	4.0 Microvolts Absolute
D Range Average	7.0 Microvolts Absolute



C1 250 mmf.
C2 2-25 mmf.
C3 2-25 mmf.
C4 2-25 mmf.
C5 .05 mf. 180 V.
C6 .05 mf. 180 V.
C7 .25 mf. 180 V.
C8 2-25 mmf.
C9 2-25 mmf.
C10 2-25 mmf.
C11 35 mmf.
C12 .05 mf. 180 V.
C13 150-250 mmf. } ONE
C14 150-250 mmf. } UNIT
C15 4.0 mf. 150 V. } ELECTRO-
C16 8.0 mf. 150 V. } LYTIC
C17 150-250 mmf. } ONE
C18 150-250 mmf. } UNIT
C19 .05 mf. 180 V.
C20 70-150 mmf.
C21 70 mmf.
C22 .01 mf. 360 V.
C23 .006 mf. 600 V.
C24 .05 mf. 240 V.
C25 .25 mf. 180 V.
C26 35 mmf.
C27 300-600 mmf. } ONE
C28 40-100 mmf. } UNIT
C29 2-25 mmf.
C30 2-25 mmf.
C31 1400 mmf.
C32 2-25 mmf.
C33 .25 mf. 180 V.

R 1 1.0 Megohm .2 W.
R 2 9,000 Ohm .5 W.
R 3 100,000 Ohm .2 W.
R 4 300,000 Ohm .2 W.
R 5 100,000 Ohm .2 W.
R 6 100,000 Ohm .2 W.
R 7 2.0 Megohm Vol. Cont.
R 8 1.0 Megohm .2 W.
R 9 2.0 Megohm .2 W.
R10 5.0 Megohm .2 W.
R11 15,000 Ohm .2 W.
R12 150,000 Ohm Tone Cont.
R13 100,000 Ohm .2 W.

T 1 Ant. R.F. Trans.
T 2 Int. R.F. Trans.
T 3 1st. I.F. Trans.
T 4 2nd. I.F. Trans.
T 5 3rd. I.F. Trans.
T 6 Push-Pull Input Trans.
T 7 Audio Output Trans.
T 8 Osc. Inductors
L 1 Single Filament Reactor
L 2 Double Filament Reactor
L 3 2nd. I.F. Plate Reactor
L 4 Osc. Tracking Coil

MODELS 62-207, 62-209
62-221
Voltage, Socket, Trimmers
Battery Data

MONTGOMERY-WARD & CO.

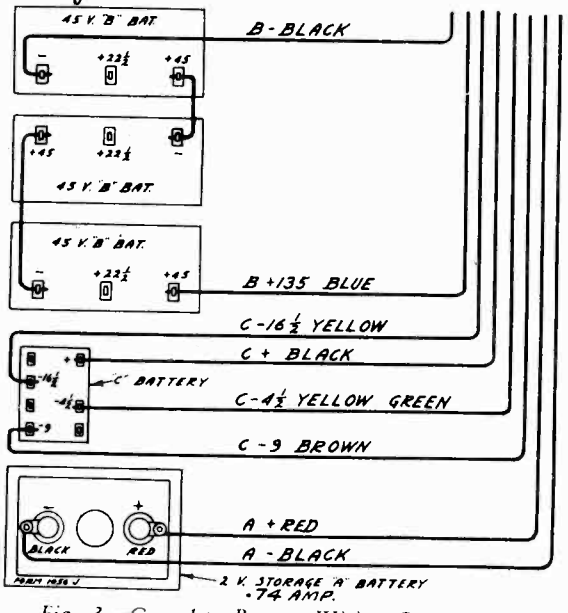


Fig. 3—Complete Battery Wiring Connections

VOLTAGES AT SOCKETS
Antenna Shorted to Ground

Type of Tube	Function	Across Filament	Plate to Ground	Screen to Ground	Control Grid to Ground	Normal Plate M. A.
34	R. F.	2.0	135	80	4.7(1)	2.4
34	1st. Det.	2.0	135	80	4.5(2)	2.2
30	Oscillator	2.0	80			3.4
34	1st I. F.	2.0	135	80	4.7(1)	2.4
34	2nd I. F.	2.0	135	80	4.5	2.2
30	2nd Det.	2.0				
30	1st Audio	2.0	90		9.0(3)	0.17
30	2nd Audio	2.0	132		9.0(4)	2.5
19	Power	2.0	135		4.5	1.5 (per plate)

(1) Computed figure—cannot be read with ordinary voltmeter.
(2) As read at 4½ volt tap on "C" battery.
(3) Volume Control at minimum.
(4) As read at 9 volt tap on "C" battery.

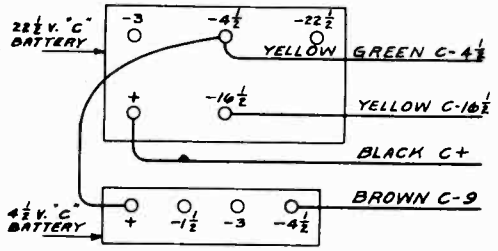


Fig. 4—"C" Battery Connections

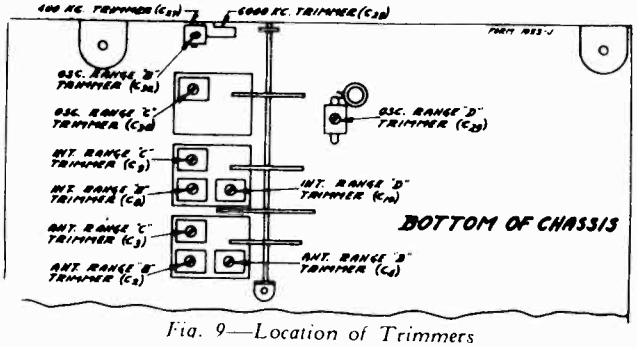


Fig. 9—Location of Trimmers

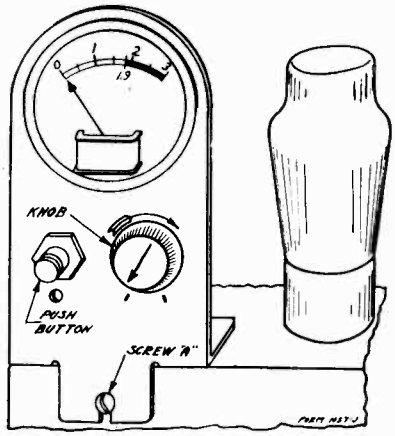


Fig. 5—Voltage Regulator in Position

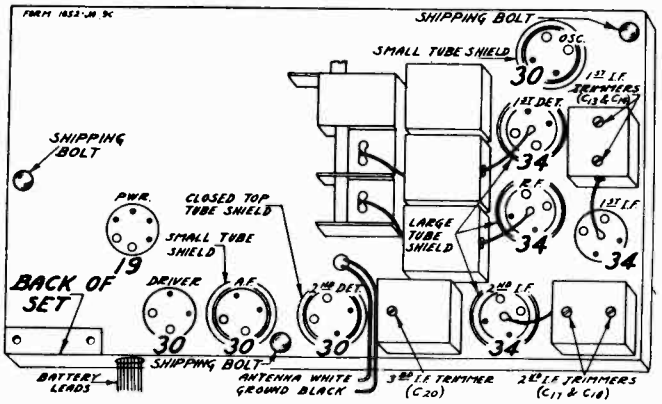


Fig. 11—Location of Tubes

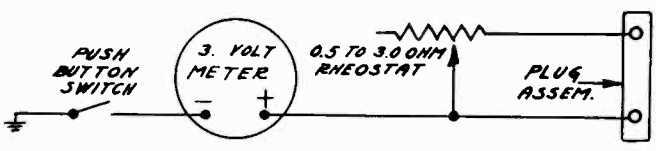


Fig. 6—Schematic Diagram of Voltage Regulator

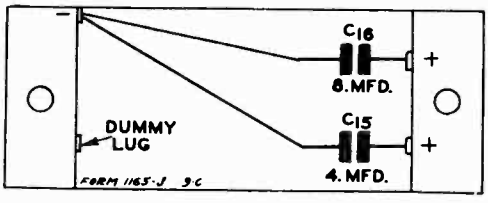


Fig. 12—Condenser Block—Internal Wiring

MONTGOMERY-WARD & CO.

MODELS 62-207, 62-209
62-221
Coil Data, Resistance

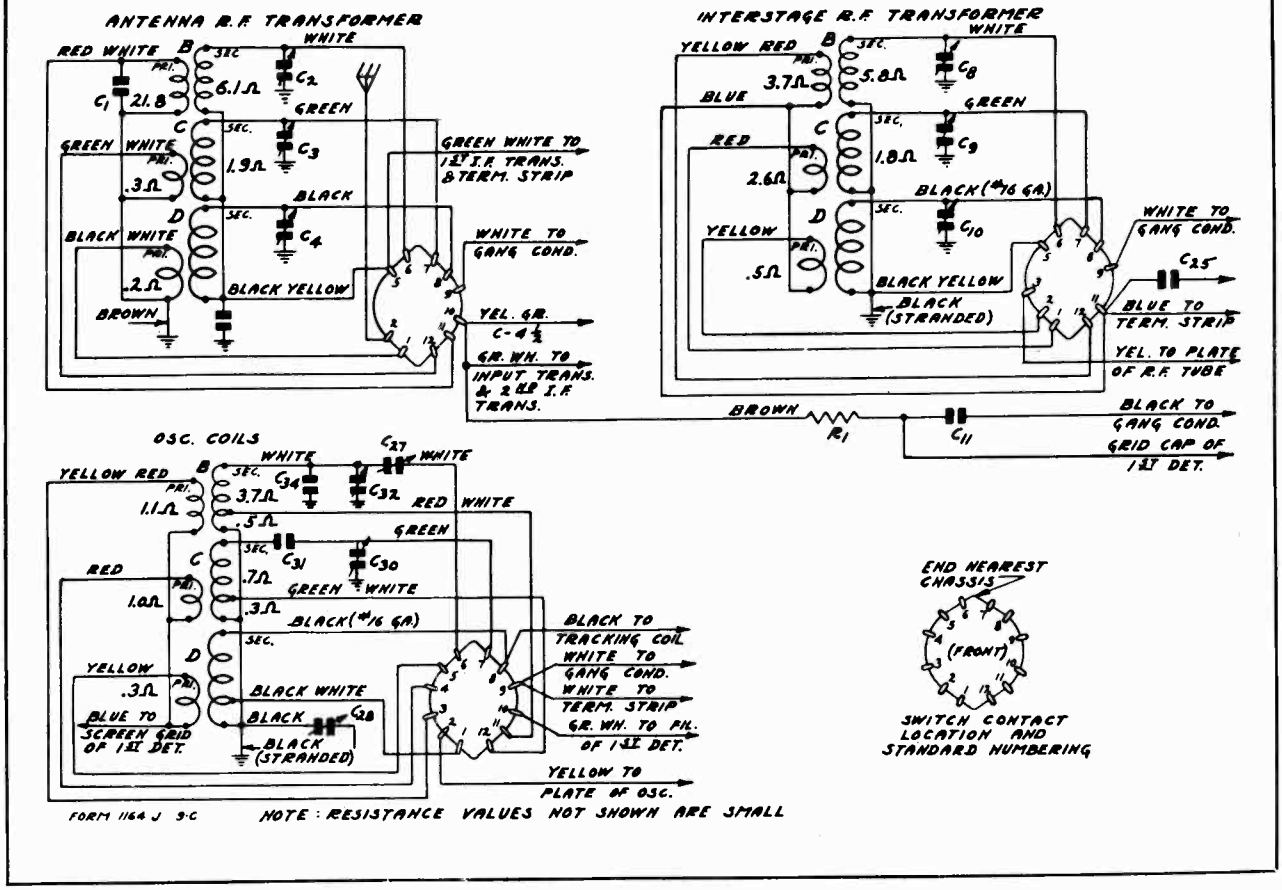


Fig. 10—Color Coding of Coil Wires and D. C. Resistance of Windings. (Also See Complete D. C. Resistance List Below)

D. C. Resistance of Windings
Refer to Figs. 10 & 2

Following are the D. C. resistances of the various coil windings in the chassis. The values given below will vary slightly in different sets.

Part No.	Item	Code	D. C. Resistance in Ohms
P-9A417	Antenna R. F. Transformer	T1	
	Range B Primary Winding		21.8
	Range C Primary Winding		0.3
	Range D Primary Winding		0.2
	Range B Secondary Winding		6.1
	Range C Secondary Winding		1.9
	Range D Secondary Winding		Small
P-9A449	Interstage R. F. Transformer	T2	
	Range B Primary Winding		3.7
	Range C Primary Winding		2.6
	Range D Primary Winding		0.5
	Range B Secondary Winding		5.8
	Range C Secondary Winding		1.8
	Range D Secondary Winding		Small
P-9A406	Oscillator Inductors	T8	
	Range B Plate Coil		1.1
	Range C Plate Coil		1.0
	Range D Plate Coil		0.3
	Range B Grid Coil		
	Red White Tap to White		3.7
	Red White Tap to Ground		0.5
	Range C Grid Coil		
	Green White Tap to Green		0.7
	Green White Tap to Ground		0.3
P-9A406	Oscillator Inductors cont'd	T8	
	Range D Grid Coil		
	Black White Tap to Black		Small
	Black White Tap to Ground		Small
P-9A407	1st I. F. Transformer	T3	
	Primary Winding		8.9
	Secondary Winding		8.9
	Coupling Winding		0.5
P-9A408	2nd I. F. Transformer	T4	
	Primary Winding		8.9
	Secondary Winding		8.9
	Coupling Winding		0.5
P-9A409	3rd I. F. Transformer	T5	
	Primary Winding		9.9
	Secondary Winding		27.3
P-50X11	Audio Input Transformer	T6	
	Primary Winding		1005.0
	Secondary Winding		
	Center Tap to Inside		580.0
	Center Tap to Outside		630.0
P-12A224	Permanent Magnet Dynamic Speaker		
	Speaker Voice Coil		1.6
	Audio Output Transformer	T7	
	Primary Winding		
	Center Tap to Inside		199.2
	Center Tap to Outside		224.3
	Secondary Winding		Small
P-9A281	Single Filament Reactor	L1	Small
P-9A410	Double Filament Reactor—Either Section	L2	Small
P-9A400	2nd I. F. Plate Isolating Reactor	L3	35.9
P-9A391	High Frequency Oscillator Tracking Coil	L4	1.0

MODELS 62-207, 62-209
62-221
Alignment, Parts

MONTGOMERY-WARD & CO.

Alignment and Calibration

Correct alignment is extremely important in connection with all wave receivers. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment.

A signal generator that will provide an accurately calibrated signal at 456, 1730, 1500, 600, 4800, 4200, 16,000, 15,000 and 6000 KC and an output indicating meter are required. It will be practically impossible to align the receiver if unsatisfactory apparatus is used. If a station is tuned in with the selectivity control in the broad position and this control is then turned to the sharp position, the station may disappear. This is not an indication that the receiver is out of alignment.

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

I. F. Adjustment

Set the signal generator for a signal of 456 KC.

Connect the output of the signal generator through a 0.1 mf. condenser to the switch end of condenser C11—see Fig. 2. There is a lead which goes to the lug on top of the center stator section of the tuning condenser—see Fig. 11. The connection can be made at this lug.

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

Turn the band selector to the Range B position (standard wave band—purple dial color).

Turn the selectivity control to the sharp position and keep it in this position for all adjustments.

Turn the volume control to the maximum position.

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

Then adjust the five I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 11.

Range B Alignment

1730 KC Adjustment

Set the signal generator for 1730 KC.

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

Keep the band selector in the standard wave position.

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

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

Adjust the oscillator Range B trimmer (C32) until maximum output is obtained. The location of this trimmer is shown in Fig. 9.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Loosen the pointer set screw and set the large pointer at the 1500 KC mark on the standard wave band scale. Retighten the set screw.

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

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

600 KC Adjustment

Set the signal generator for 600 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 600 KC trimmer until the peak of greatest intensity is obtained. See Fig. 9 for location of this trimmer.

Be sure to use a non-metallic screwdriver for this adjustment

Range C Alignment

4800 KC Adjustment

Set the signal generator for 4800 KC.

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

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

Turn the band selector in the Range C position (1st short wave band—green dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range C trimmer (C30) until maximum output is obtained. See Fig. 9 for location of this trimmer.

4200 KC Adjustment

Set the signal generator for 4200 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

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

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

Range D Alignment

16,000 KC Adjustment

Set the signal generator for 16,000 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 selector to the Range D position (2nd short wave band—red dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range D trimmer (C29) until maximum output is obtained. See Fig. 9 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 (C10) and antenna Range D trimmer (C4) to maximum.

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

Then go back and repeat the procedure as given for the 16,000 KC adjustment. If it is found necessary to make any appreciable change in the setting of the oscillator Range D trimmer, the 15,000 KC adjustment must be repeated.

Do not make any further change in 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. 9 for location of this trimmer.

Use a non-metallic screwdriver for this adjustment.

Batteries Required

The batteries and voltages required are shown in Figs. 2 and 3. The "A" drain is .74 amperes at 2 volts while the "B" drain is discussed below.

"B" Battery

Class "B" amplification is used in the output stage and the "B" battery consumption will, therefore, depend upon the output volume. The "B" consumption will also depend, to some extent, upon the strength of the incoming signal as the latter affects the A.V.C. voltage. When no signal is being received the "B" drain is 20 milliamperes. When the volume control is at maximum and with high output volume, the "B" drain can become 40 milliamperes. **A milliammeter in the "B" line will quickly determine if the "B" drain is excessive or normal.**

"C" Batteries

For the "C" battery a special battery with 4½, 9 and 16½ volt taps as indicated in Fig. 3 may be used, or one standard 22½ volt and one standard 4½ volt "C" battery can be connected as shown in Fig. 4 to supply the necessary voltages.

"A" Battery and Regulator

This receiver is designed to operate with a 2 volt storage cell, but may be operated with a 3 volt dry "A" battery if used with a voltage regulator. The receiver may also be used with an air cell "A" battery provided a series resistor is used.

3 Volt "A" Battery—The voltage regulator required with this type of battery as illustrated in Fig. 5 is not supplied with the receiver unless specified. This device consists of a rheostat which controls the voltage, a voltmeter for measuring its value as supplied to the receiver and a small push button switch for cutting the voltmeter in and out of the circuit. It has two prongs at the bottom which plug into the socket at the rear left corner of the chassis. The circuit diagram of the regulator is shown in Fig. 6.

When a new 3 volt "A" battery is connected, the adjusting knob must be turned to the left hand position and then turned up until the voltmeter indicates 1.9 to 2 volts. The push button must be held in until the adjustment is completed. **Caution the user never to operate the receiver with the adjustment beyond 2 volts.**

Air Cell "A" Battery—If an air cell "A" battery is used, a series resistor will be required to reduce the voltage to the proper level of 2 volts for the tube filaments. Although the voltage regulator mentioned above can be used, the series resistor is cheaper and is satisfactory as the voltage of one of these batteries drops very little during the useful life of the battery.

Replacement Parts List

TRANSFORMERS AND COILS

Part No.	Code	Description	Selling Price
P-9A417	T1	Antenna R. F. Transformer and Can Assembly	$1.42
P-9A449	T2	Interstage R. F. Transformer and Can Assembly	1.46
P-9A406	T8	Oscillator Coil & Can Assembly	1.24
P-9A407	T3	1st I. F. Transformer and Can Assembly	.94
P-9A408	T4	2nd I. F. Transformer and Can Assembly	.94
P-9A409	T5	3rd I. F. Transformer and Can Assembly	1.10
P-50X11	T6	Audio Input Transformer	2.02
P-51X22	T7	Audio Output Transformer (Part of Speaker Assembly—may be purchased separately	1.30
P-9A281	L1	Single Filament Reactor	.12
P-9A410	L2	Double Filament Reactor	.24
P-9A400	L3	2nd I. F. Plate Isolating Reactor	.28
P-9A291	L4	High Frequency Oscillator Tracking Coil	.12

VOLTAGE REGULATOR

Part No.	Description	Selling Price
P-23A15	Complete Plug-In Voltage Regulator	$2.54
P-2X42	Special Fiber Washer with Offset Insulation	.04
P-2A36	Switch Push Button	.12
P-43X18	Rheostat	.32
P-10A7	Rheostat Knob	.06
P-16A10	0-3 Volt D. C. Voltmeter	.96
P-6A12	Double Pin Plug Assembly	.06

RESISTORS

Part No.	Code	Resistance	Wattage	Type	Selling Price
P-A95105	R1	1.0 Megohm	0.2	Carbon	$ .06
P-B94652	R2	6,500 Ohms	0.5	Carbon	.08
P-A95104	R3	100,000 Ohms	0.2	Carbon	.05
P-A94304	R4	300,000 Ohms	0.2	Carbon	.08
P-A95104	R5	100,000 Ohms	0.2	Carbon	.06
P-A94104	R6	100,000 Ohms	0.2	Carbon	.08
P-36X208	R7	2.0 Megohms	Volume Control & Switch		.58
P-A95105	R8	1.0 Megohm	0.2	Carlwn	.06
P-A94205	R9	2.0 Megohms	0.2	Carbon	.09
P-A94505	R10	5.0 Megohms	0.2	Carbon	.08
P-A95153	R11	15,000 Ohms	0.2	Carlwn	.06
P-40X203	R12	150,000 Ohms	Tone Control		.36
P-A96104	R13	100,000 Ohms	0.2	Carbon	.08
P-43X52		0.400 Ohms	0.5	Wire Wound—for use with the Air Cell Dry "A" Battery	.10

CONDENSERS

Part No.	Code	Capacity	Voltage	Type	Selling Price
P-47X59	C1	250 mmf.		Moulded	$ .08
P-17A36	C2	2-25 mmf.		Antenna Range B Trimmer	.06
P-17A36	C3	2-25 mmf.		Antenna Range C Trimmer	.06
P-17A36	C4	2-25 mmf.		Antenna Range D Trimmer	.06
P-46X80	C5	0.05 mf.	180	Tubular	.08
P-46X80	C6	0.05 mf.	180	Tubular	.09
P-46X117	C7	0.25 mf.	180	Tubular	.12
P-17A36	C8	2-25 mmf.		Interstage Range B Trimmer	.06
P-17A36	C9	2-25 mmf.		Interstage Range C Trimmer	.06
P-17A36	C10	2-25 mmf.		Interstage Range D Trimmer	.06
P-47X53	C11	35 mmf.		Moulded	.07
P-46X80	C12	0.05 mf.	180	Tubular	.08
P-17A30	C13	150-250 mmf.		1st I. F. Trimmer Condensers	.22
	C14	150-250 mmf.			
P-45X46	C15	4.0 mf.	150	Dry Electrolytic	.60
	C16	8.0 mf.	150		
P-17A30	C17	150-250 mmf.		2nd I. F. Trimmer Condensers	.22
	C18	150-250 mmf.			
P-46X80	C19	0.05 mf.	180	Tubular	.08
P-17A40	C20	70-150 mmf.		3rd I. F. Primary Trimmer	.14
P-47X62	C21	70 mmf.		Moulded	.06
P-46X120	C22	0.01 mf.	360	Tubular	.05
P-46X101	C23	0.006 mf.	600	Tubular	.08
P-46X103	C24	0.05 mf.	240	Tubular	.09
P-46X117	C25	0.25 mf.	180	Tubular	.12
P-47X53	C26	35 mmf.		Moulded	.06
P-17A35	C27	300-600 mmf.	600	KC Osc. Padding Cond.	.22
	C28	40-100 mmf.	6000	KC Osc. Padding Cond.	
P-17A41	C29	2-25 mmf.		Oscillator Range D Trimmer	.06
P-17A36	C30	2-25 mmf.		Oscillator Range C Trimmer	.06
P-47X60	C31	1400 mmf.		Moulded	.14
P-17A41	C32	2-25 mmf.		Oscillator Range B Trimmer	.06
P-46X117	C33	0.25 mf.	180	Tubular	.12
P-47X64	C34	5 mmf.		Moulded	.08
P-25A38		3 Section Gang Condenser Complete with Drive Assembly—Less Dial Assembly			3.90

DIAL AND DRIVE ASSEMBLY

Part No.	Description	Selling Price
P-5A27	Gang Condenser Bracket and Bearing	$ .22
P-26X208	Drive Shaft	.08
P-24X207	Drive Pulley with set screw	.06
P-20X70	Main Shaft Pointer Stud	.04
P-24X205	Gear (Rotary)	.04
P-24X210	Gear (Stationary)	.01
P-26X35	Gear Spreader Spring	.04
P-26X205	Main Pointer Shaft Assembly	.22
P-26X209	Micrometer Pointer Shaft Assembly	.26
P-24X209	Compound Gear Assembly	.12
P-37X33	Tension Pulley Arm Assembly	.06
P-28X27	Tension Pulley Spring	.02
P-28X23	Torsion Spring	.04
P-8X35	Drive Belt	.10
P-15X27	Small Pointers	.04
P-10X8	11" Black Drive Cord	Dozen .10
P-29X20	Brass Collars & Set Screws for securing above cord to shaft	.04
P-36X36	Dial Clamp to secure Dial Strip to frame (with 6-32x3/16" mounting screw)	.06
P-15A49	Dial Bracket Assembly Complete	1.86
P-58X88	Dial Strip Only	.24
P-15X24	Double End Pointer	.06
P-15X26	Micrometer Pointer	.04

NOTE: The Gang Condenser and Drive Assembly, less Dial Assembly, can be purchased complete—see Condenser List.

MISCELLANEOUS

Part No.	Description	Selling Price
P-3A64	Type 30 Tube Socket	$ .06
P-3A55	Type 34 Tube Socket	.06
P-3A110	Type 19 Tube Socket	.06
P-4A47	Single Lug Terminal Strip (Mounting Foot to Right of Lug)	.04
P-4A38	Single Lug Terminal Strip (Mounting Foot to Left of Lug)	.04
P-4A39	Two Lug Terminal Strip (Both Lugs Insulated—Ground Lug in Center Extended as Mtg. Foot)	.04
P-4A49	Single Lug Terminal Strip (Mounting Hole Used)	.04
P-2A45	Selectivity Control Switch	.22
P-2A46	Band Selector Switch complete with shielding fin	1.08
P-11X214	Antenna and Ground Lead Assembly	.14

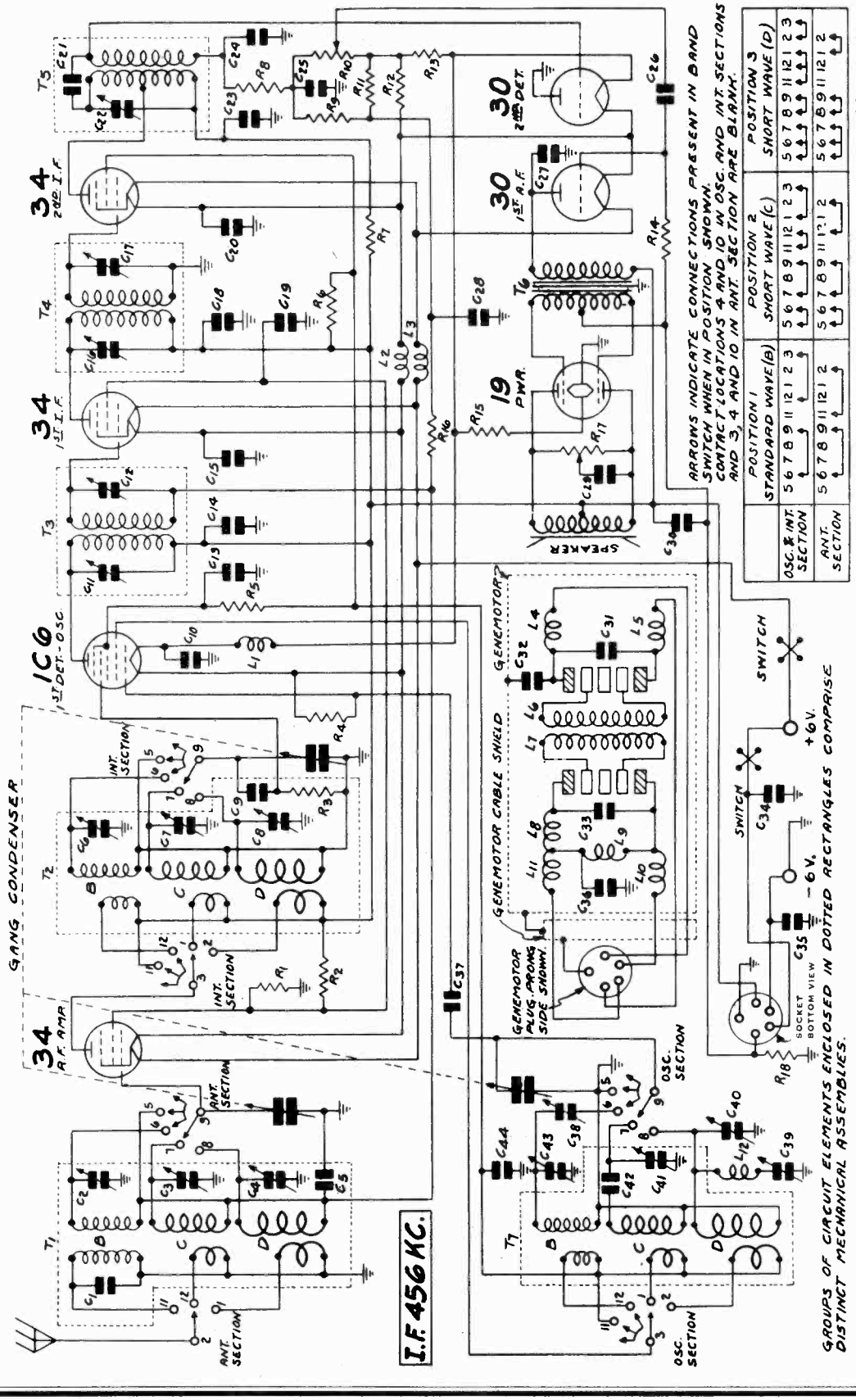
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODEL 62-215
Schematic

MONTGOMERY-WARD & CO.

Power Consumption - 1.8 Amperes at 6.3 Volts
Power Output - - - - - - 1 Watt Undistorted

Tuning Frequency Range
B Range - - - - - - - - - - 535 to 1730 KC.
C Range - - - - - - - - - - 1680 to 4800 KC.
D Range - - - - - - - - - - 5650 to 16000 KC.



	POSITION 1 STANDARD WAVE (B)	POSITION 2 SHORT WAVE (C)	POSITION 3 SHORT WAVE (D)
OSC. & INT. SECTION	5 6 7 8 9 11 12 1 2 3	5 6 7 8 9 11 12 1 2 3	5 6 7 8 9 11 12 1 2 3
ANT. SECTION	5 6 7 8 9 11 12 1 2	5 6 7 8 9 11 12 1 2	5 6 7 8 9 11 12 1 2

Nov., 1935

C 1 .250 mmf.
C 2 2-25 mmf.
C 3 2-25 mmf.
C 4 2-25 mmf.
C 5 .05 mf. 180 V.
C 6 2-25 mmf.
C 7 2-25 mmf.
C 8 2-25 mmf.
C 9 .35 mmf.
C10 .25 mf. 180 V.
C11 70-150 mmf. } ONE
C12 70-150 mmf. } UNIT
C13 .05 mf. 180 V.
C14 20.0 mf. 150 V. Electrolytic
C15 .25 mf. 180 V.
C16 70-150 mmf. } ONE
C17 70-150 mmf. } UNIT
C18 .50 mf. 180 V.
C19 .85 mf. 180 V.
C20 .05 mf. 180 V.
C21 .50 mmf.
C22 40-100 mmf.
C23 .05 mf. 180 V.
C24 100 mmf.
C25 .50 mmf.
C26 .002 mf. 600 V.
C27 .250 mmf.
C28 .01 mf. 180 V.
C29 .05 mf. 240 V.
C30 20.0 mf. 150 V. Electrolytic
C31 .25 mf. 180 V.
C32 .05 mf. 180 V.
C33 .25 mf. 180 V.
C34 .25 mf. 180 V.
C35 .25 mf. 180 V.
C36 .50 mf. 180 V.
C37 .35 mmf.
C38 300-600 mmf. } ONE
C39 40-100 mmf. } UNIT
C40 2-25 mmf.
C41 2-25 mmf.
C42 1400 mmf.
C43 2-25 mmf.
C44 .25 mf. 18 V.
R 1 100,000 ohm .2 W.
R 2 60,000 ohm .2 W.
R 3 1 megohm .2 W.
R 4 100,000 ohm .2 W.
R 5 5,000 ohm .2 W.
R 6 10,000 ohm .5 W.
R 7 1,000 ohm .2 W.
R 8 60,000 ohm .2 W.
R 9 3 megohm .2 W.
R10 1 megohm Vol. Control
R11 1 megohm .2 W.
R14 3 megohm .2 W.
R16 500,000 ohm .2 W.
R17 150,000 ohm Tone Control
R12 12.5 ohm 1.0 W. } ARMORED
R13 12.5 ohm 1.0 W. } WIRE-WOUND
R15 .70 ohm .50 W. } RESISTOR
R18 150 ohm 2.0 W. } RESISTOR
T 1 Ant. R. F. Trans.
T 2 Interstage R. F. Trans.
T 3 1st I. F. Trans.
T 4 2nd I. F. Trans.
T 5 3rd I. F. Trans.
T 6 Push Pull Input Trans.
T 7 Osc. Inductors
L 1 Single Filament Reactor
L 2 } Double Filament
L 3 } Reactor
L 4 "B" Choke
L 5 "B" Choke
L6, L7, L8 & L9 Genemotor Windings
L10 "A" Choke
L11 "A" Choke
L12 Osc. Tracking Coil

MODEL 62-215
Voltage, Socket Trimmers, Battery Data

MONTGOMERY-WARD & CO.

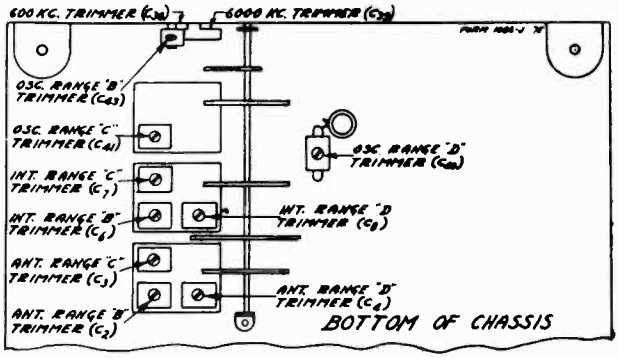


Fig. 3—Arrangement of Trimmers

VOLTAGES AT SOCKETS
Antenna Shorted to Ground—Battery 6 Volts under load
Volume Control at Maximum

Type of Tube	Function	Across Filament	Plate to Ground	Screen to Ground	Bias Voltage (see Notes)	Normal Plate M. A.
34	R. F.	2.0	135	45	1.5(1)	1.7
1C6	1st Det.	2.0	135 80(2)	70	2.0(3)	3.2 1.7(2)
34	1st I. F.	2.0	135	45	1.5(1)	1.7
34	2nd I. F.	2.0	135	80	4.0(3)	3.2
30	2nd Det.	2.0				
30	1st A. F.	2.0	135		8.0(4)	2.3
19	Power	2.0	135		3.9(5)	2.3 (per plate)

(1) As read from negative filament leg to low potential end of resistor R12.
(2) Anode Grid
(3) As read from negative filament leg to ground.
(4) Total voltage drop from negative filament leg to ground and across R18.
(5) As read across R18.

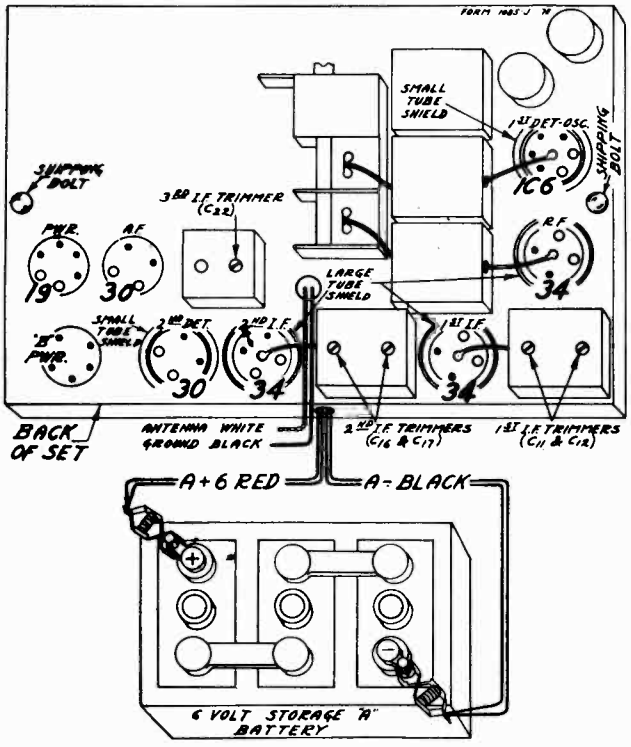


Fig. 4—Tube Arrangement and Battery Connections

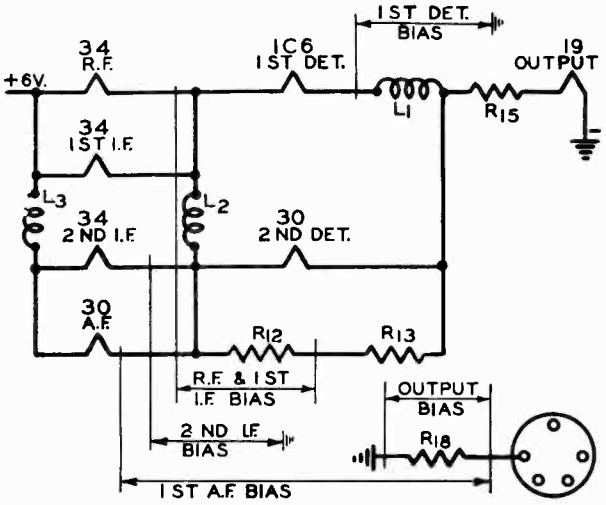


Fig. 6—Abridged Wiring Diagram showing Filament Wiring System and Points at which No-Signal Bias Voltages are obtained.

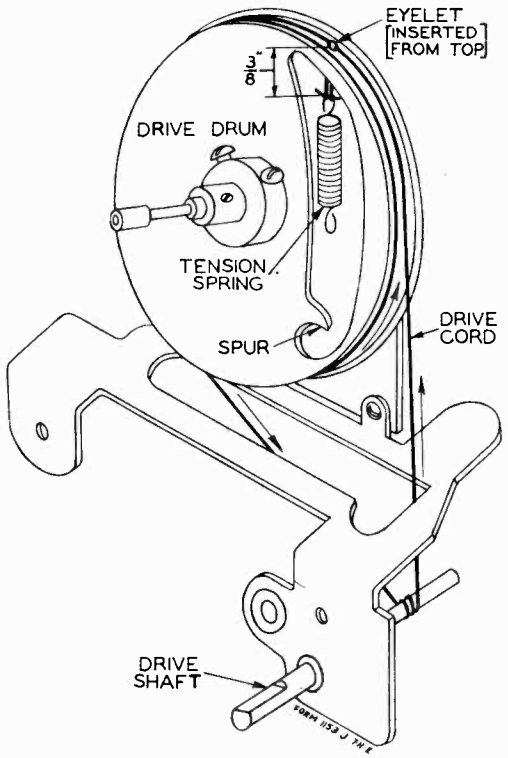


Fig. 7—Drive Cord Replacement

Battery Connections—CAUTION

CAUTION: Do not turn the switch on unless ALL the tubes are in the sockets.

CAUTION: Be sure that the battery clips are properly connected to the battery. If the connections are reversed, the receiver may be damaged.

MODEL 62-215

MONTGOMERY-WARD & CO.

Coil Data, Resistance

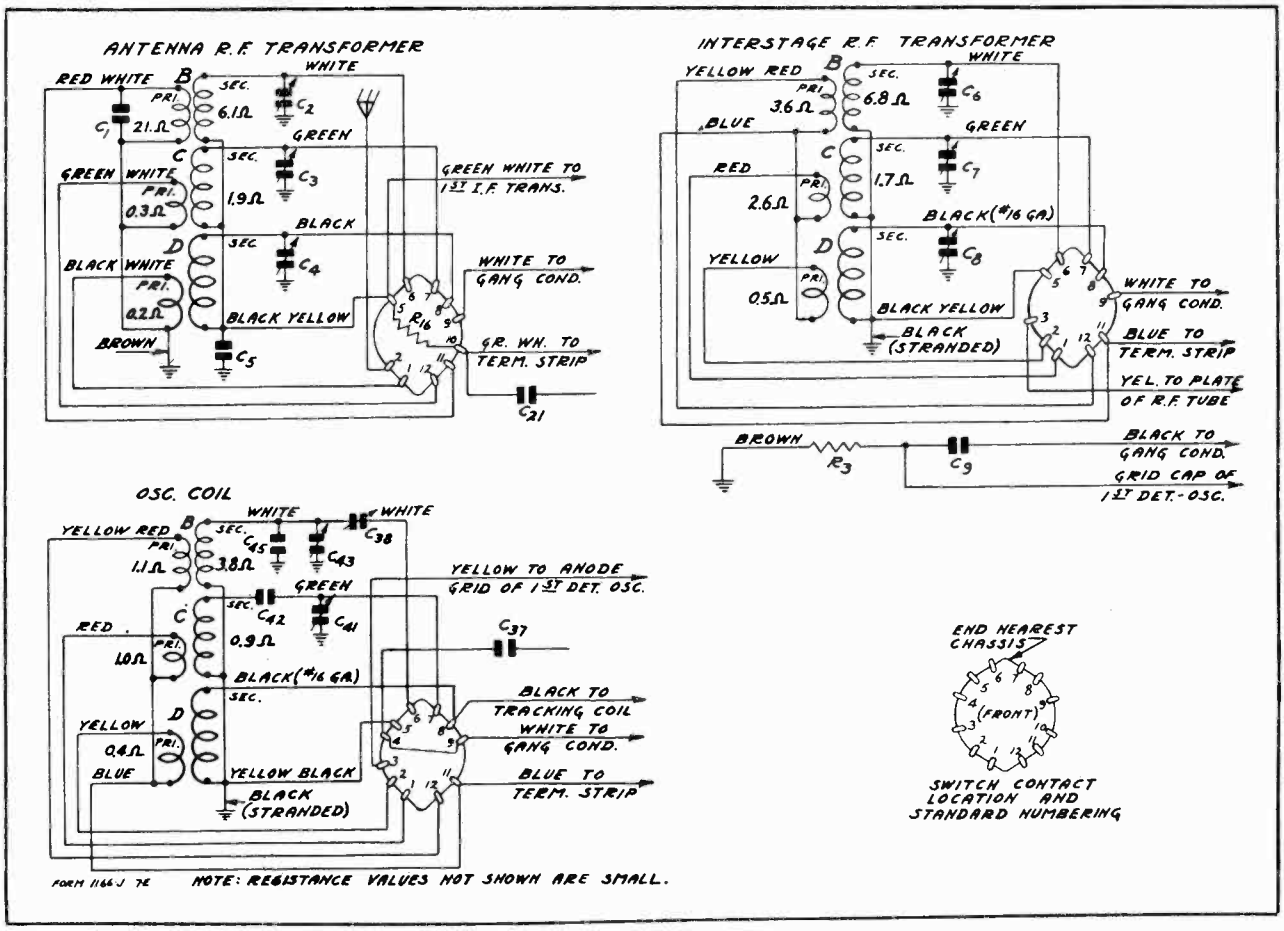


Fig. 5—Color Coding of Coil Wires and D. C. Resistance of Windings.
(Also see complete D. C. Resistance List Below)

D. C. Resistance of Windings

Refer to Figs. 5 & 2

Following are the D. C. resistances of the various coil windings in the chassis. The values given below will vary slightly in different sets.

Part No.	Winding	Code	D. C. Resistance in Ohms
P-9A419	Antenna R. F. Transformer	T1	
	Range B Primary Winding		21.0
	Range C Primary Winding		0.3
	Range D Primary Winding		0.2
	Range B Secondary Winding		6.1
	Range C Secondary Winding		1.9
	Range D Secondary Winding		Small
P-9A420	Interstage R. F. Transformer	T2	
	Range B Primary Winding		3.6
	Range C Primary Winding		2.6
	Range D Primary Winding		0.5
	Range B Secondary Winding		6.8
	Range C Secondary Winding		1.7
	Range D Secondary Winding		Small
P-9A421	Oscillator Coils	T7	
	Range B Plate Coil		1.1
	Range C Plate Coil		1.0
	Range D Plate Coil		0.4
	Range B Grid Coil		3.8
	Range C Grid Coil		0.9
	Range D Grid Coil		Small
P-9A422	1st I. F. Transformer	T3	
	Primary Winding		11.4
	Secondary Winding		11.4
P-9A423	2nd I. F. Transformer	T4	
	Primary Winding		11.4
	Secondary Winding		11.4
P-9A424	3rd I. F. Transformer	T5	
	Primary Winding (either section)		8.4
	Secondary Winding		130.8
P-50X11	Audio Input Transformer	T6	
	Primary Winding		1005.0
	Secondary Winding		
	Center Tap to Inside		580.0
	Center Tap to Outside		630.0
*P-12A218	8 Inch Magnetic Speaker		
	Speaker Coil		
	Center Tap to Inside		275.0
	Center Tap to Outside		300.0
P-9A403	Single Filament Reactor	L1	.65
P-9A404	Double Filament Reactor - (either section)	L2 & L3	.65
P-9A391	High Frequency Oscillator Tracking Coil	L12	0.7

*Speakers with other part numbers may have slightly different values of D. C. Resistance.

MODEL 62-215
Alignment, Drive Cord
Parts List

MONTGOMERY-WARD & CO.

Alignment and Calibration

A signal generator that will provide an accurately calibrated signal at 456, 1730, 1500, 600, 4800, 4200, 16,000, 15,000 and 6000 KC and an output indicating meter are required. It will be practically impossible to align the receiver if unsatisfactory apparatus is used.

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

I. F. Adjustment

Set the signal generator for a signal of 456 KC.

Connect the output of the signal generator through a 0.1 mf. condenser to the switch end of condenser C9—see Fig. 2. There is a lead which goes to the lug on the top of the center stator section of the tuning condenser—see Fig. 4. The connection can be made at this lug.

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

Turn the band selector to the Range B position (standard wave band—purple dial color).

Turn the volume control to the maximum position. Attenuate the signal from the signal generator to prevent the levelling-off action of the A.V.C.

Then adjust the five I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 4.

Range B Alignment

1730 KC Adjustment

Set the signal generator for 1730 KC.

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

Keep the band selector in the standard wave position.

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

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

Adjust the oscillator Range B trimmer (C43) until maximum output is obtained. The location of this trimmer is shown in Fig. 3.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Loosen the pointer set screw and set the large pointer at the 1500 KC mark on the standard wave band scale. Retighten the set screw.

Adjust the interstage Range B trimmer (C6) and antenna Range B trimmer (C2) to maximum.

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

600 KC Adjustment

Set the signal generator for 600 KC.

Turn the tuning condenser rotor until maximum output is obtained.

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

Be sure to use a non-metallic screwdriver for this adjustment.

Range C Alignment

4800 KC Adjustment

Set the signal generator for 4800 KC.

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

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

Turn the band selector to the Range C position (1st short wave band—green dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range C trimmer (C41) until maximum output is obtained. See Fig. 3 for location of this trimmer.

4200 KC Adjustment

Set the signal generator for 4200 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range C trimmer (C7) and antenna Range C trimmer (C3) to maximum.

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

Range D Alignment

16,000 KC Adjustment

Set the signal generator for 16,000 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 selector to the Range D position (2nd short wave band—red dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range D trimmer (C40) 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 (C4) to maximum.

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

Then go back and repeat the procedure as given for the 16,000 KC adjustment. If it is found necessary to make any appreciable change in the setting of the oscillator Range D trimmer, the 15,000 KC adjustment must be repeated.

Do not make any further change in 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.

Use a non-metallic screwdriver for this adjustment.

Replacing Drive Cord

Remove the chassis from the cabinet.

Take off the station pointer by removing the screw at the center of the dial.

Loosen the two set screws in the collar on the band selector shaft.

Loosen the dial assembly by taking out the two screws which secure the bottom of this assembly to the chassis and one screw at the top which secures this assembly to the bracket.

Pull the dial assembly forward until the collar is free of the band selector shaft; and lay the assembly face downward in front of the chassis.

Turn the drive drum until the opening in this drum is approximately vertical and with the hole at the top as shown in Fig. 7.

Remove the tension spring and the old drive cord.

When replacing this drive cord a 30 lb. test cord as regularly supplied by the factory should be used.

See that the eyelet is in the hole in the drive drum as shown in Fig. 7. Insert one end of the new drive cord from the outside through the hole in the eyelet in the drive drum.

Tie the end of the cord, which has been inserted through the hole, to one end of the tension spring.

Wrap the cord in a counter clockwise direction (facing front of chassis) around the drive drum approximately one and one half turns, progressing toward the front.

Then tilt the chassis up on its back panel and bring the cord mentioned in the previous paragraph down to the drive shaft. Wrap it two and one half times around this shaft as shown in Fig. 7, progressing toward the back of chassis.

Wrap the cord on directly in line with the drive drum above.

Then bring this cord up to the drive drum until it is up to the eyelet in the drive drum as shown in the illustration.

Now insert the free end of the cord through the hole in the eyelet and tie it to the end of the tension spring. The end of the spring when hanging free and with the slack taken out of the drive cord should be ⅛" or less from the flange of the drum as shown in Fig. 7. Cut off the surplus length of cord after it is knotted.

Then secure the other end of the tension spring over the spur on the drive drum.

Turn the drive shaft back and forth several times.

Replace the dial assembly and pointer.

Replace the chassis in the cabinet.

Replacement Parts List

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

RESISTORS

Part No.	Code	Resistance	Wattage	Type	Selling Price
P-A94104	R1	100,000 Ohms	0.2	Carbon	$ .08
P-A94603	R2	60,000 Ohms	0.2	Carbon	.08
P-A95105	R3	1.0 Megohm	0.2	Carbon	.08
P-A94104	R4	100,000 Ohms	0.2	Carbon	.08
P-A95502	R5	5,000 Ohms	0.2	Carbon	.08
P-B94103	R6	10,000 Ohms	0.5	Carbon	.08
P-A95102	R7	1,000 Ohms	0.2	Carbon	.06
P-A95603	R8	60,000 Ohms	0.2	Carbon	.06
P-A94305	R9	3.0 Megohms	0.2	Carbon	.08
P-36X209	R10	1.0 Megohm		Volume Control and Switch	.56
P-A94105	R11	1.0 Megohm	0.2	Carbon	.08
P-43X43	R12	12.5 Ohms	1.0	Armored Wire Wound	.32
	R13	12.5 Ohms	1.0		
	R14	0.7 Ohms	0.5		
	R15	150.0 Ohms	2.0		
P-A95305	R14	3.0 Megohms	0.2	Carbon	.06
P-A95504	R16	500,000 Ohms	0.2	Carbon	.06
P-40X203	R17	150,000 Ohms		Tone Control	.36

CONDENSERS

Part No.	Code	Capacity	Voltage	Type	Selling Price
P-47X59	C1	250 mmf.		Moulded	$ .08
P-17A36	C2	2-25 mmf.		Antenna Range B Trimmer	.06
P-17A36	C3	2-25 mmf.		Antenna Range C Trimmer	.06
P-17A36	C4	2-25 mmf.		Antenna Range D Trimmer	.06
P-56X80	C5	0.05 mf.	180	Tubular	.08
P-17A36	C6	2-25 mmf.		Interstage Range B Trimmer	.06
P-17A36	C7	2-25 mmf.		Interstage Range C Trimmer	.06
P-17A36	C8	2-25 mmf.		Interstage Range D Trimmer	.06
P-47X53	C9	35 mmf.		Moulded	.06
P-46X117	C10	0.25 mf.	180	Tubular	.12
P-17A33	C11	70-150 mmf.		1st I.F. Trimmer Condensers	.18
	C12	70-150 mmf.			
P-46X80	C13	0.05 mf.	180	Tubular	.08
P-44X17	C14	20.0 mf	150	Wet Electrolytic (Insulated Mtg.)	.46
P-46X117	C15	0.25 mf.	180	Tubular	.12
P-17A33	C16	70-150 mmf.		2nd I.F. Trimmer Condensers	.18
	C17	70-150 mmf.			
P-46X123	C18	0.50 mf.	180	Tubular	.14
P-46X125	C19	0.85 mf.	180	Tubular	.24
P-46X80	C20	0.05 mf.	180	Tubular	.08
P-47X56	C21	50 mmf.		Moulded	.06
P-17A38	C22	40-100 mmf.		3rd I.F. Primary Trimmer	.12
P-46X80	C23	0.05 mf.	180	Tubular	.08
P-47X57	C24	100 mmf.		Moulded	.06
P-47X56	C25	50 mmf.		Moulded	.06
P-46X100	C26	0.002 mf.	600	Tubular	.08
P-47X52	C27	250 mmf.		Moulded	.08
P-46X124	C28	0.01 mf.	180	Tubular	.08
P-46X101	C29	0.05 mf.	240	Tubular	.08
P-44X17	C30	20.0 mf.	150	Wet Electrolytic (Insulated Mtg.)	.46
P-46X117	C31	0.25 mf.	180	Tubular (In Genemotor)	.12
P-46X80	C32	0.05 mf.	180	Tubular (In Genemotor)	.08
P-46X117	C33	0.25 mf.	180	Tubular (In Genemotor)	.12
P-46X117	C34	0.25 mf.	180	Tubular	.12
P-46X117	C35	0.25 mf.	180	Tubular	.12
P-46X123	C36	0.50 mf.	180	Tubular (In Genemotor)	.14
P-47X53	C37	35 mmf.		Moulded	.06
P-17A35	C38	300-600 mmf.		600 KC Osc. Padding Cond.	.22
	C39	40-100 mmf.		6000 KC Osc. Padding Cond.	
P-17A41	C40	2-25 mmf.		Oscillator Range D Trimmer	.06
P-17A36	C41	2-25 mmf.		Oscillator Range C Trimmer	.06
P-47X60	C42	1400 mmf.		Moulded	.14
P-17A41	C43	2-25 mmf.		Oscillator Range B Trimmer	.06
P-46X117	C44	0.25 mf.	180	Tubular	.12
P-47X64	C45	5 mmf.		Moulded	.08
P-34A41	3 Section Gang Condenser				1.82

GENEMOTOR AND PARTS

Part No.	Description	Selling Price
P-22A203	Genemotor Complete with Filter Units, Case and Cover	$12.22
P-22A202	Genemotor in case with cover and condensers (C31 and C33), less Filter	10.40
P-13X216	Shielded Four Wire Cable and Plug	.32
P-46X117	0.25 mf. 180 Volt Tubular Condensers (C31 & C33), ea.	.12
P-46X123	0.50 mf. 180 Volt Tubular Condenser (C36)	.14
P-46X80	0.05 mf. 180 Volt Tubular Condenser (C32)	.08
P-9A368	"B" R.F. Choke Coils (L4 and L5), each	.06
P-9A402	"A" Choke Coils (L10 and L11), each	.26

DIAL AND DRIVE ASSEMBLY

Part No.	Description	Selling Price
P-5AZ7	Gang Support & Bearing Assembly	$ .22
P-36X222	Drive Shaft	.08
P-19X21	Horse Shoe Washer	.04
P-26X212	Pointer Shaft	.04
P-24X204	Drive Drum & Hub with Set Screw	.18
P-28X27	Drive Tension Spring	.04
P-10X13	26 Inch Black Drive Cord	.04
P-28X23	Torsion Spring	.04
P-10X9	4½ Inch Black Indicator Drive Cord	.02
P-29X20	Brass Collars for securing above cords to Control Shafts	.04
P-30X36	Dial Clamp & Mtg. Screw	.06
P-58X84	Dial Strip	.26
P-15X27	Small Pointers	.04
P-15X24	Large Double End Pointer	.04

TRANSFORMERS AND COILS

Part No.	Code	Description	Selling Price
P-9A419	T1	Antenna R.F. Transformer and Can Assembly	$1.44
P-9A420	T2	Interstage R.F. Transformer and Can Assembly	1.50
P-9A421	T7	Oscillator Coil and Can Assembly	1.28
P-9A422	T3	1st I.F. Transformer and Can Assembly	.82
P-9A423	T4	2nd I.F. Transformer and Can Assembly	.82
P-9A424	T5	3rd I.F. Transformer and Can Assembly	.82
P-50X11	T6	Audio Input Transformer	1.02
P-9A403	L1	Single Filament Reactor	.10
P-9A404	L2	Double Filament Reactor	.24
	L3		
P-9A368	L4	"B" R.F. Choke Coil (in Genemotor)	.06
P-9A368	L5	"B" R.F. Choke Coil (in Genemotor)	.06
P-9A402	L10	"A" Choke Coil (in Genemotor)	.26
P-9A402	L11	"A" Choke Coil (in Genemotor)	.26
P-9A391	L12	High Frequency Oscillator Tracking Coil	.12

MODEL 62-229

MONTGOMERY-WARD & CO.

Schematic

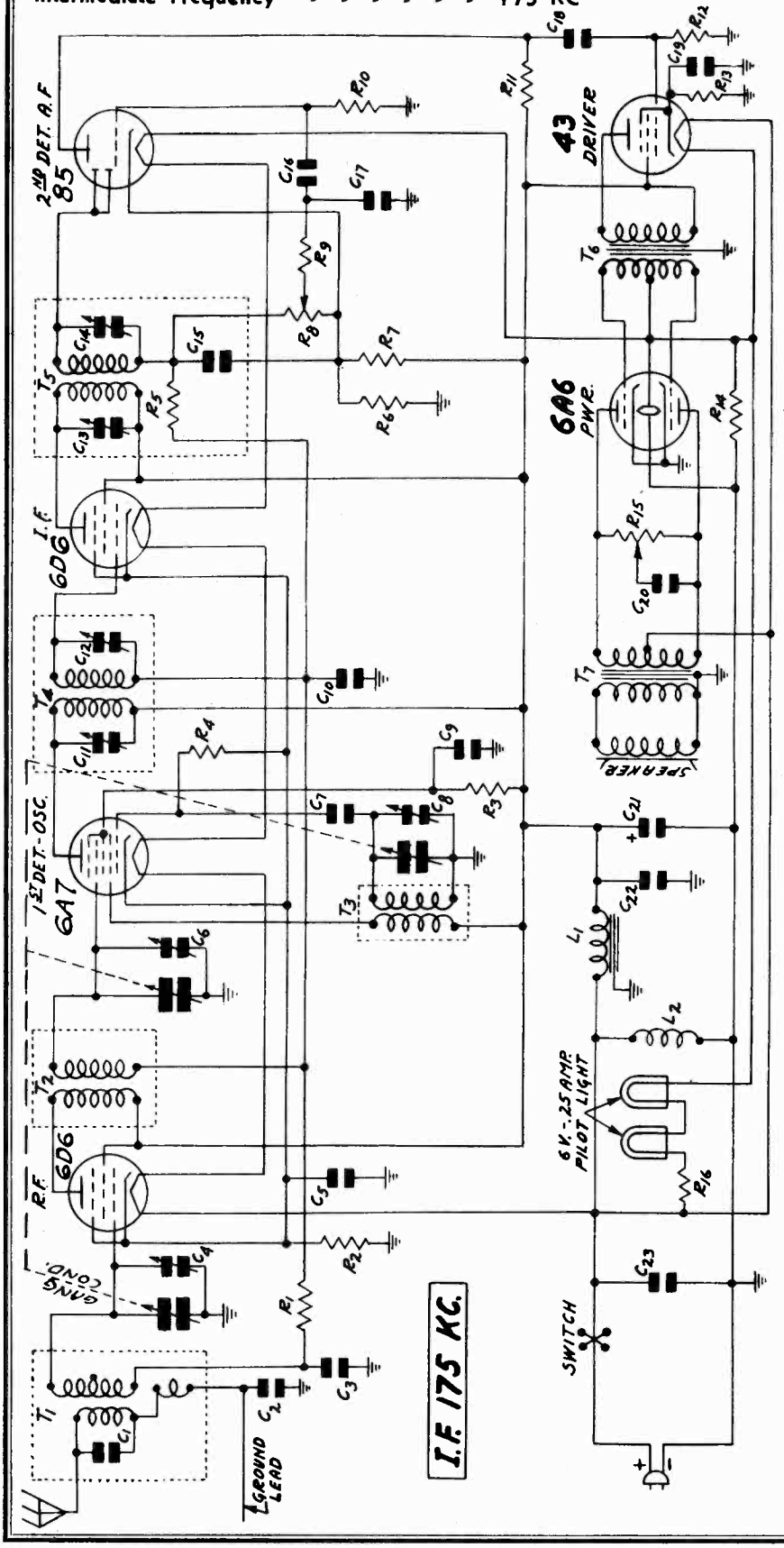
Tuning Range - - - - - - - - 530 to 1750 KC

Intermediate Frequency - - - - - - - 175 KC

Power Consumption - 1.2 Amperes at 32 Volts DC

Power Output - - - - - - .25 Watts Undistorted

Nov., 1935



GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES.

C1 250 MMF MOULDED
C2 .05 MF 180 V.
C3 .05 MF 180 V.
C4 GANG TRIMMER
C5 .05 MF 180 V.
C6 GANG TRIMMER
C7 35 MMF MOULDED
C8 GANG TRIMMER
C9 .05 MF 180 V.
C10 .05 MF 180 V.
C11 40-100 MMF } DUAL P-17A39
C12 40-100 MMF }
C13 40-100 MMF } DUAL P-17A39
C14 40-100 MMF }
C15 100 MMF MOULDED
C16 .01 MF 180 V.
C17 50 MMF MOULDED
C18 .01 MF 180 V.
C19 12. MF 25 V. DRY ELECTROLYTIC P-45F207
C20 .10 MF 180 V.
C21 30 MF 50 V. WET ELECTROLYTIC P-44K25
C22 .25 MF 180 V.
C23 25 MF 180 V.

R1 100 000 OHM .2 W.
R2 450 OHM .2 W.
R3 30 000 OHM .2 W.
R4 100 000 OHM .2 W.
R5 1.0 MEGOHM .2 W.
R6 350 OHM .2 W.
R7 6 000 OHM .2 W.
R8 .50 MEGOHM VOL. CONTROL P-36K213
R9 50 000 OHM .2 W.
R10 2.0 MEGOHM .2 W.
R11 80 000 OHM .2 W.
R12 1.0 MEGOHM .2 W.
R13 400 OHM 2 W.
R14 180 OHM 1.0 W.
R15 75000 OHM TONE CONTROL
R16 67 OHM 4.0 W ARMORED WIRE WOUND

T1 ANTENNA INTERSTAGE TRANS. P-9A452
T2 INTERSTAGE R.F TRANS P-9A453
T3 OSC. INDUCTORS
T4 1ST I.F. TRANS.
T5 2ND I.F. TRANS.
T6 INPUT TRANS.
T7 OUTPUT TRANS

L1 FILTER REACTOR P-52X33
L2 SPEAKER FIELD 100 OHM.

MODEL 62-229
Alignment, Parts
Drive Cord & Noise Data

MONTGOMERY-WARD & CO.

Alignment and Calibration

I. F. Adjustment

Set the signal generator for a signal of 175 KC.

Connect the output lead 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 volume control to the maximum position.

Then adjust the four I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 4.

As stated above, use a non-metallic screwdriver to make the adjustments.

1750 KC Adjustment

Set the signal generator for 1750 KC.

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

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

Keep the volume control at the maximum position.

Adjust the trimmer of the oscillator section of the three gang condenser until maximum output is obtained. The location of this trimmer is shown in Fig. 4.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Loosen the pointer screw and set the pointer at the 1500 KC mark on the dial scale. Retighten the pointer screw.

Adjust the 1st detector and antenna trimmers for maximum output.

Do not change the setting of the oscillator trimmer.

32 Volt Power Supply

This receiver is designed for use on farms and in those places where the power supply consists of a 32 volt direct current generating plant.

Polarity of Power Supply

There is a red mark on the plug at the end of the power supply cord of the receiver. The prong of the plug at which the red mark is placed must be plugged into the positive side of the line.

Use a receptacle on the 32 volt line from which the plug will not have to be removed after it has once been inserted correctly.

If the polarity of the line is not known, that is, if it is not known which side of the line is positive, a meter may be used to indicate the polarity. A voltmeter of 50 volt range or up is used. Connect the meter across the line. If the pointer deflects correctly, then the positive post of the meter is connected to the positive side of the line.

If the polarity of the line is not known and there is no way of determining it, insert the power supply plug, turn on the set, advance the volume control and proceed to tune the receiver. If the tubes are all lighted and no sounds are heard from the speaker after the plug has been in two minutes, withdraw the plug, turn it around and re-insert it. This time sounds should be heard after the tubes have been heated up.

Caution

If used on any other type of power supply than 32 volt D.C., severe damage may be done to the receiver.

Do not turn the set on unless all of the tubes and the pilot lamps are in their proper sockets. Use only a No. 46 Pilot Lamp (6.3 volt .25 amp.).

Do not leave the plug inserted for more than five minutes if it is found that the set does not operate.

Line Voltage Range

The receiver will operate satisfactorily within a line voltage range of 25 to 42 volts.

Series Resistor

If the line voltage is higher than 42, it will be necessary to use a series resistor to cut it down. If the voltage varies, a variable resistor may be required.

Starting Current

When first turned on the drain for a few seconds is slightly higher than normal until the tubes heat up. Some automatic plants are adjusted to start under a load of 200 to 300 watts. If a number of devices such as lights or motors are being used and the radio set is turned on the total drain may be sufficient to start the plant.

Replacing Drive Cord

Take off the station pointer by removing the screw at the center of the dial.

Remove the pilot lamp assembly by pulling the socket clips upward off the dial assembly.

Loosen the dial assembly by removing the two screws which secure this assembly to the chassis brackets.

Then lay the complete dial assembly face down in front of the chassis. It is not necessary to remove the volume control and tone control collars which hold the indicator cords of these two controls in position.

Turn the drive drum until the opening in this drum is approximately vertical and with the hole at the top as shown in Fig. 6.

Remove the tension spring and the old drive cord.

See that the eyelet is in the hole in the drive drum as shown in Fig. 6. Insert one end of the new drive cord from the outside through this eyelet in the drive drum.

Tie the end of the cord which has been inserted through the eyelet to one end of the tension spring.

Wrap the cord in a counter clockwise direction (facing front of chassis) around the drive drum approximately one and one-quarter turns progressing toward the front.

Then tilt the chassis up on its back panel and bring the cord mentioned in the previous paragraph down to the drive shaft. Wrap this cord **directly below the drive drum** three and one-half turns around the drive shaft, as shown in Fig. 6, progressing toward the back of chassis.

Then bring this cord up to the drive drum and wrap it around the drum in back of cord already on the drum until it is up to the eyelet as shown in Fig. 6.

Now insert the free end of the cord through the hole in the eyelet and tie it to the end of the spring. The end of the spring when hanging free and with all slack removed from the drive cord should be 3/8" or less from the flange of the drum, as shown in Fig. 6. Cut off the surplus length of cord after it is tied to the spring.

Then secure the other end of the tension spring over the spur on the drive drum.

Turn the drive shaft back and forth several times.

Replace the dial assembly, pointer and pilot lamp assembly.

Eliminating Ignition and Generator Noise

After the receiver is in working order, the following procedure must be followed in practically all cases to eliminate ignition and generator noise caused by the charging plant. If the charging plant causes no noise, then of course, these steps do not have to be taken.

One spark plug suppressor must be placed on each spark plug of the engine. One spark plug for example would be required on a one-cylinder engine and four must be used on a four-cylinder engine. To connect the spark plug suppressor, remove the wire from the top of the plug, put the suppressor on and attach the wire to the other end of the suppressor.

A generator condenser must be used. This consists of two .5 mfd. sections in one unit. The two sections have one side grounded to the metal case of the condenser. Mount the condenser on the frame of charging plant. This will ground it. Then connect the two leads to the charging switch, one on each side of the line.

In some large installations, where the charging unit is on only two or three times a week, the above steps do not have to be taken, as interference is only caused when the generating plant is in operation.

PRICES SUBJECT TO CHANGE
WITHOUT NOTICE

Noisy Operation

Noisy operation may be due to a faulty antenna system. The action of the automatic volume control, due to the low pickup, causes the set to operate at its maximum sensitivity, thereby increasing noisy reception due both to external pickup and internal conditions.

The receiver may be partially detuned, causing it to operate at maximum sensitivity. The signal should be very carefully tuned in until it is clearest and strongest.

If the reception is noisy only when the generating plant is in operation, then the noise is due to the latter and several things can be done. There may be loose parts in the generator plant rubbing together. Tighten up all parts and be sure that all parts of the engine are well grounded. Dirty spark plugs may cause noise. Clean and respace the plugs or try out a new set. In some instances it may be necessary to filter the power supply line to the receiver.

If any motor driven devices, such as pumps, are operated from the 32 volt line, the motor may cause noisy reception in the receiver. This can be corrected in most cases by connecting one of the dual .5 mfd. condensers mentioned above across the line at the motor. The common connection to the two condensers which is grounded to the can is grounded externally by mounting the unit on the motor frame.

CAUTION—Read the Following

To avoid the danger of damage to the receiver and accidental short circuit, the following facts should be understood.

The metal chassis is connected to one side of the line—See Fig. 2. 32 volt lines are generally grounded on one side—either side may be used. If the side of the line, not connected to the metal chassis, is grounded and the metal chassis comes in contact with the external ground, the line will be short circuited and an excessive current may result.

In any service work, therefore, on this chassis keep it on a wood or other insulated surface. Disconnect the antenna and ground leads to avoid the possibility of any external ground contacts with the chassis. The person working on the set should avoid coming in contact with any ground

Replacement Parts List

TRANSFORMERS AND COILS

Part No.	Code	Description	Selling Price
P-9A451	T1 & T2	Antenna & Interstage Transformer and Can Assembly Complete	$1.16
P-9A452	T1	Antenna R.F. Transformer Only	.72
P-9A453	T2	Interstage R.F. Transformer Only	.36
P-1A28		Dual Coil Can Assembly for above Transformers Only	.08
P-9A454	T3	Oscillator Coil and Can Assembly	.36
P-9A455	T4	1st I.F. Transformer and Can Assembly	.72
P-9A456	T5	2nd I.F. Transformer and Can Assembly	.82
P-50X22	T6	Audio Input Transformer	.88
P-51X23	T7	Audio Output Transformer (Part of 6" Speaker Assembly 12A219—May be Purchased Separately)	1.18
P-51X98	T7	Audio Output Transformer (Part of 8" Speaker Assembly 12A220—May be Purchased Separately)	1.18
P-52X33	L1	Filter Choke (Iron Core)	.64

RESISTORS

Part No.	Code	Resistance	Wattage	Type	Selling Price
P-A95104	R1	100,000 Ohms	0.2	Carbon	$ .06
P-A94451	R2	450 Ohms	0.2	Carbon	.08
P-A95303	R3	30,000 Ohms	0.2	Carbon	.06
P-A95104	R4	100,000 Ohms	0.2	Carbon	.06
P-A95105	R5	1.0 Megohm	0.2	Carbon	.09
P-A94151	R6	150 Ohms	0.2	Carbon	.08
P-A94402	R7	6,000 Ohms	0.2	Carbon	.08
P-36X213	R8	500,000 Ohms		Volume Control & Switch	.50
P-A95503	R9	50,000 Ohms	0.2	Carbon	.06
P-A95305	R10	2.0 Megohms	0.2	Carbon	.06
P-A95806	R11	80,000 Ohms	0.2	Carbon	.06
P-A95105	R12	1.0 Megohm	0.2	Carbon	.09
P-A94401	R13	400 Ohms	0.2	Carbon	.08
P-C93181	R14	180 Ohms	1.0	Carbon	.10
P-46X209	R15	75,000 Ohms		Tone Control	.54
P-43X48	R16	67 Ohms	4.0	Armored Wire Wound	.18

CONDENSERS

Part No.	Code	Capacity	Voltage	Type	Selling Price
P-47X69	C1	250 mmf.		Moulded	$ .03
P-46X80	C2	0.05 mf.	180	Tubular	.08
P-46X80	C3	0.05 mf.	180	Tubular	.08
	C4	Antenna Trimmer—Part of Gang Condenser			
P-46X80	C5	0.05 mf.	180	Tubular	.08
	C6	Interstage Trimmer—Part of Gang Condenser			
P-47X53	C7	.35 mmf.		Moulded	.06
	C8	Oscillator Trimmer—Part of Gang Condenser			
P-46X80	C9	0.05 mf.	180	Tubular	.08
P-46X80	C10	0.05 mf.	180	Tubular	.08
P-17A39	C11	40-100 mmf.	1st I.F. Trimmer Condensers		.18
	C12	40-100 mmf.			
	C13	40-100 mmf.			
P-17A39	C14	40-100 mmf.	2nd I.F. Trimmer Condensers		.18
P-47X57	C15	100 mmf.		Moulded	.06
P-46X124	C16	0.01 mf.	180	Tubular	.58
P-47X56	C17	50 mmf.		Moulded	.06
P-46X124	C18	0.01 mf.	180	Tubular	.08
P-45X207	C19	12.0 mf.	25	Dry Electrolytic	.34
P-46X98	C20	0.10 mf.	180	Tubular	.10
P-44X25	C21	30.0 mf.	50	Wet Electrolytic	.40
P-46X97	C22	0.25 mf.	180	Tubular	.10
P-46X157	C23	0.25 mf.	180	Tubular	.12
P-44A55	3 Section Gang Condenser				1.84

DIAL AND DRIVE ASSEMBLY

Part No.	Description	Selling Price
P-5A30	Dial and Drive Assembly Complete—Less Gang Condenser (Includes all following Items)	$1.98
P-24X212	Drive Drum and Hub Assembly Only	.14
P-15A55	Dial Bracket Only	.44
P-28X41	Torsion Springs Only	.04
P-26X27	Drive Cord Tension Spring	.04
P-10X13	26" Black Drive Cord	.10
P-26X215	Drive Shaft	.08
P-19X21	Horse Shoe Lock to secure Drive Shaft	.04
P-58X95	Dial Strip	.2[illegible]
P-30X36	Dial Clamps to secure above Dial Strip to Frame	.0[illegible]
P-15X24	Large Double End Pointer	.04
P-15X27	Small Pointer	.03
P-10X10	16" Lengths Indicator Cord to drive small pointers	.10
P-29X20	Brass Collars to secure above drive cord to Volume Control & Tone Control shafts	.04

INTERFERENCE ELIMINATION PARTS

Part No.	Description	Selling Price
P-2A32	Spark Plug Suppressor	$ .25
P-48X34	Dual 0.5 mf. Generator Condenser	.60

MONTGOMERY-WARD & CO.

MODEL 62-229
Voltage, Socket
Resistance, Coil Data

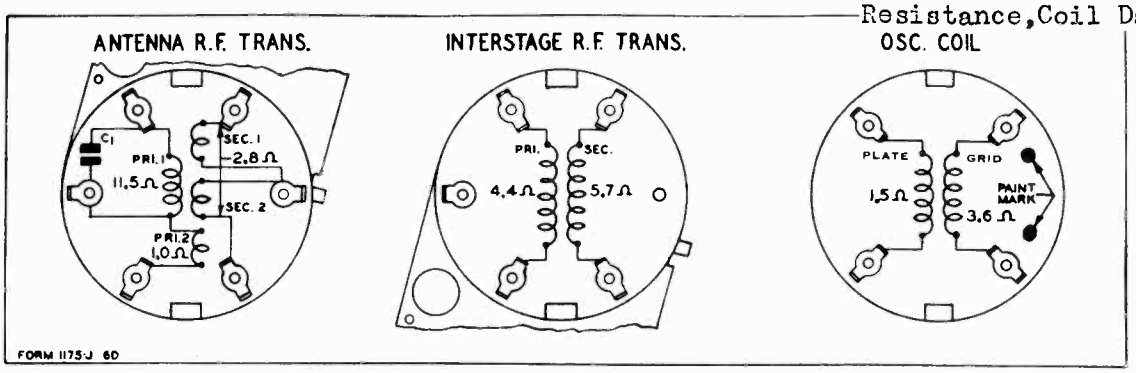


Fig. 3—R.F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

D. C. Resistance of Windings

Refer to Fig. 3

Following are the D. C. resistances of the various windings in the chassis. The values given below will vary slightly in different sets.

Part No.	Winding	Code	D. C. Resistance in Ohms
P-9A452	Antenna R.F. Transformer	T1	
	Primary No. 1		11.5
	Primary No. 2		1.0
	Secondary Windings in Series		2.8
P-9A453	Interstage R.F. Transformer	T2	
	Primary Winding		4.4
	Secondary Winding		5.7
P-9A454	Oscillator Coil	T3	
	Grid Coil		3.6
	Plate Coil		1.5
P-9A455	1st I.F. Transformer	T4	
	Primary Winding		102.0
	Secondary Winding		99.
P-9A456	2nd I.F. Transformer	T5	
	Primary Winding		101.
	Secondary Winding		102.
P-50X22	Audio Input Transformer	T6	
	Primary Winding		380.
	Secondary Winding		
	Center Tap to Inside		85.
	Center Tap to Outside		95.
P-12A219	Dynamic Speaker		
	Speaker Field	L2	100.
	Speaker Voice Coil		3.1
	Audio Output Transformer (51X23)	T7	
	Primary Winding		
	Center Tap to Inside		152.
	Center Tap to Outside		176.
	Secondary Winding		1.4
P-52X33	Filter Choke	L1	50.

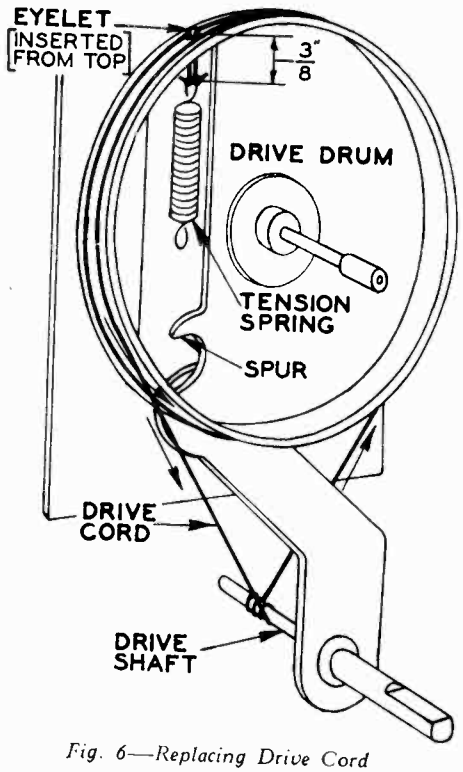


Fig. 6—Replacing Drive Cord

VOLTAGES AT SOCKETS

Volume Control at Maximum — Antenna Connected to Ground LEAD

Type of Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cathode to Ground	Normal Plate MA.
6D6	R.F.	6.4	31	31	2	1.5
6A7	1st Det. & Osc.	6.4	31 31(1)	18	2	.2 .65(1)
6D6	I.F.	6.4	31	31	2	1.5
85	2nd Det.	6.4	12.5		1.8	.20
43	1st Audio	25.6	28	31	3.5	7
6A6	Output	6.4	31		0	11 (per plate)

(1) Anode Grid

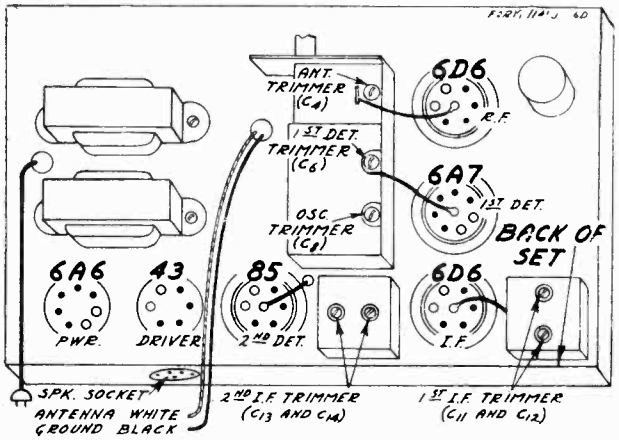


Fig. 4—Tube Arrangement

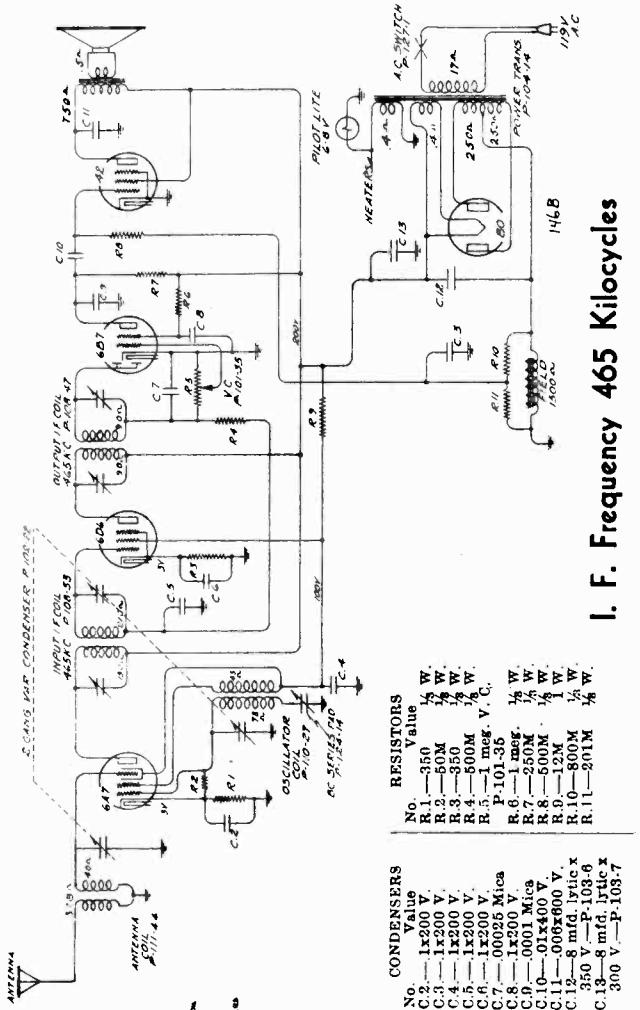
MODEL 62-233
Schematic, Socket
Trimmers, Alignment

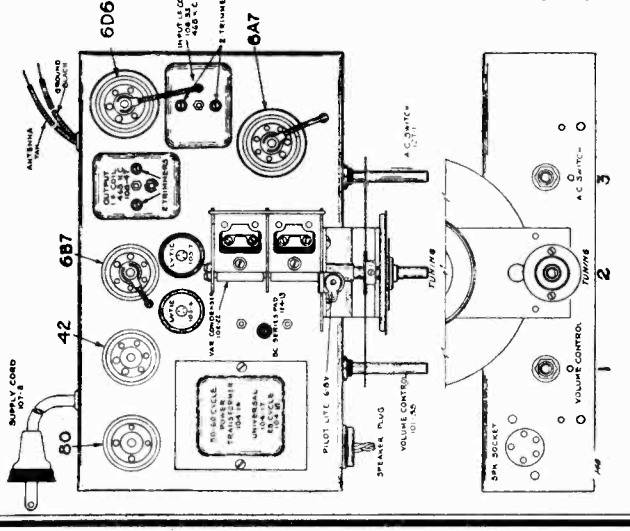
MONTGOMERY-WARD & CO.

TUBES:

The Tube complement of this chassis is as follows:

1 Type 6A7—pentagrid electron coupled oscillator and first detector.
1 Type 6D6—remote cut-off pentode as I.F. amplifier.
1 Type 6B7—duplex diode pentode as diode detector, A.V.C. and A.F.
1 Type 42—pentode output tube.
1 Type 80—high vacuum rectifier.





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 voltmeter having a resistance of 1000 ohms per volt. These voltages are clearly indicated on the circuit diagram.

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

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

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 illustrations) and also sometimes equipped with 25 cycle transformers with 105-115 volt or 220 volt primaries, not universals.

Aligning Instructions

Description of various dummy antennas used and referred to in these instructions:

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

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

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 42 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 voltmeter should be used.

ALIGNMENT:

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 align this chassis properly, an oscillator (generator) is absolutely necessary. No aligning adjustments should be attempted with the chassis in the cabinet. To remove the knobs, pull them off. To take the chassis out of the cabinet, remove the three bolts by which it is fastened and the speaker plug which you will find on the front flange of the chassis panel.

Aligning I. F. Transformers

1. With gang condenser in its minimum capacity position, and plates entirely out of mesh, connect an external oscillator in series with broadcast dummy antenna to tan antenna and black ground leads and make the following adjustments:
   (a) Connect external oscillator which has been adjusted to 465 kilocycles in series with I.F. dummy antenna, to the control grid cap of the type 6D6 tube and chassis ground. Adjust output I.F transformer, part number 108-47, to resonance.
   (b) Move generator output clip from grid of 6D6 to grid cap of 6A7 tube and align input I.F. transformer, part number 108-53.
   (c) With generator connected to grid of type 6A7 tube, readjust output I.F. transformer, part number 108-47, to resonance.

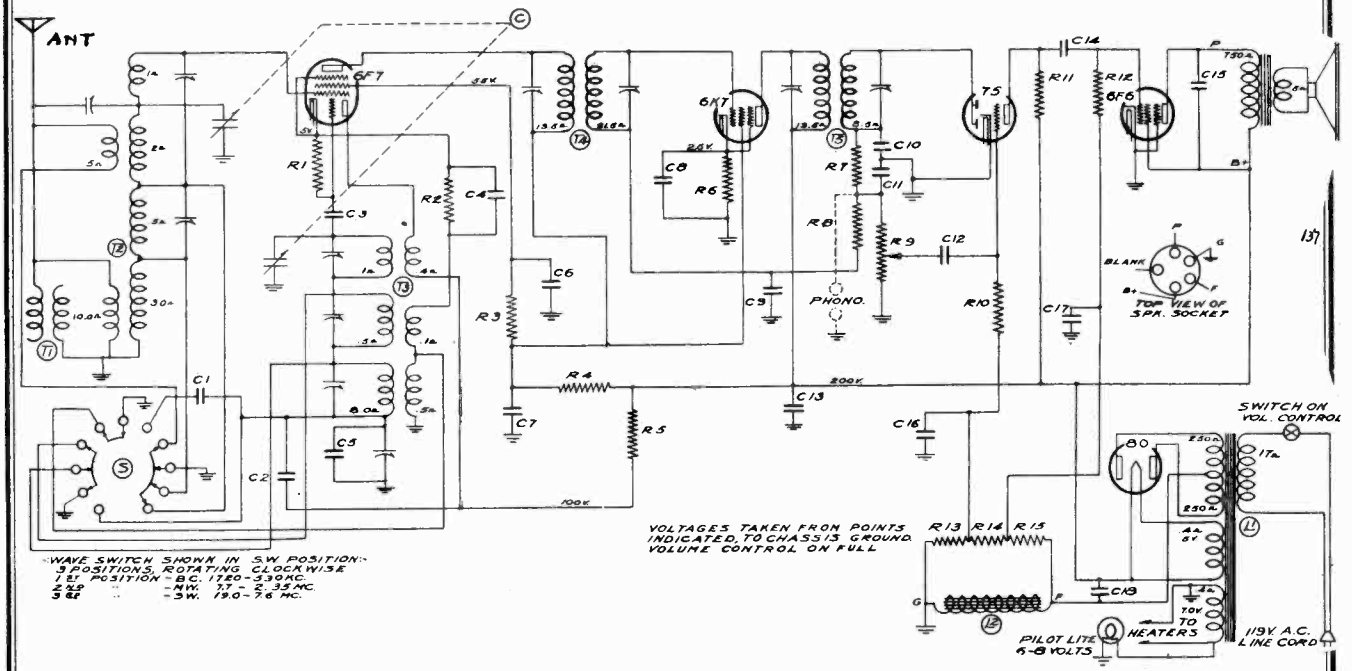
R. F. Alignment—
(530 - 1720 Kilocycles)

1. With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with broadcast dummy antenna to tan antenna and black ground leads and make the following adjustments:
   (a) With external oscillator set at 1720 kilocycles, adjust oscillator trimmer, (rear of gang condenser).
   (b) Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance, (front section of gang condenser).
   (c) Re-set external oscillator to 600 kilocycles and adjust series pad to resonance, rotate condenser and move dial pointer to 600 kilocycles by gently rocking condenser to and fro. Pick up oscillator signal while adjusting series pad to resonance, maximum deflection on an output meter. This adjustment is accessible from the top of the chassis and is located between variable condenser and power transformer.

25 Cycle Chassis differ only from 60 cycle chassis in that part number 104-18 transformer is used in place of 50/60 cycle transformer, part number 104-14.

MONTGOMERY-WARD & CO.

MODELS 62-235, 62-248
Schematic, Voltage
Socket, Trimmers



C.6, C.8 in dual unit P-118-1
C.7, C.9 in dual unit P-118-1
C. 16, C. 17 in dual unit P-118-1

Numbers prefixed by letter "P" are part Nos.

Voltages taken from points indicated to chassis ground. Volume control on full.

Wave switch P-125-6, 3 positions rotating clockwise:
1st position—BC. 1720—530 KC.
2nd position—MW. 7.7—2.35 MC.
3rd position—SW. 19.0—7.6 MC.

Switch shown at SW. position

Serial No. 5G136270D and up

CONDENSERS

No.	Value
C.1	2000 mmf
C.2	.1x200v
C.3	100 mmf mica
C.4	.1x200v
C.5	380 mmf
C.6	.1x200v
C.7	.1x200v
C.8	.1x200v
C.9	.1x200v
C.10	100 mmf mica
C.11	100 mmf mica
C.12	.05x200v
C.13	8.0 mfdx300v (P-103-7)
C.14	.01x400v
C.15	.006x600v
C.16	.1x200v
C.17	.1x200v
C.18	8.0 mfdx350v (P-103-6)

RESISTORS

No.	Value
R.1	50M ½w
R.2	700 ½w
R.3	100M ½w
R.4	25M ½w
R.5	20M ½w
R.6	250 ½w
R.7	50M ½w
R.8	500M ½w
R.9	500M vol. cont.
R.10	1 meg ½w
R.11	250M ½w
R.12	250M ½w
R.13	15M ½w
R.14	180M ½w
R.15	800M ½w

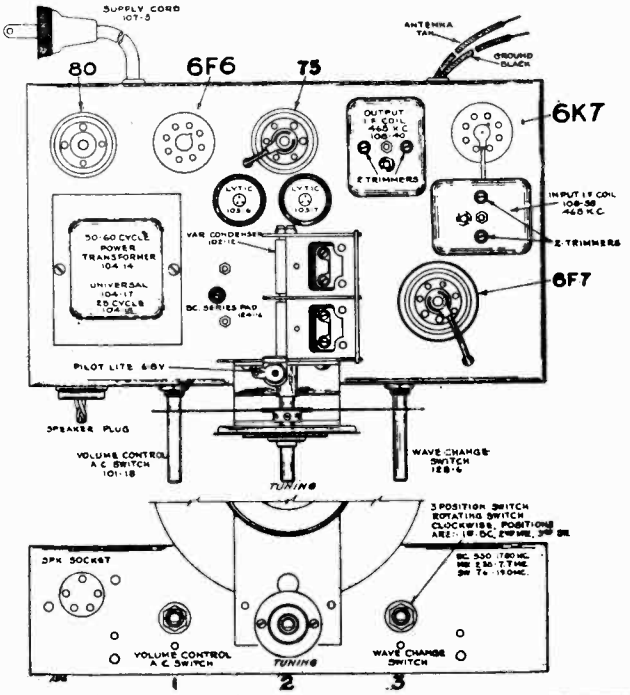
TUNING RANGE—

Standard Broadcast Band
530-1720 Kilocycles.

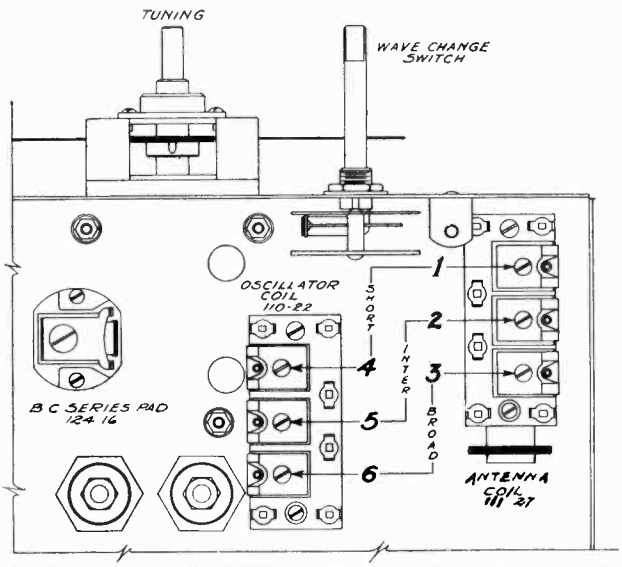
Intermediate Band
2350-7700 Kilocycles.

Short Wave Band
7.6-19.0 Megacycles.

I. F. FREQUENCY
465 K. C.



BOTTOM VIEW OF CHASSIS



MODELS 62-235, 62-248
Alignment

MONTGOMERY-WARD & CO.

DESCRIPTION

The Tube complement of this chassis is as follows:
1 Type 6F7—triode pentode as oscillator and first detector.
1 Type 6K7—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 6F6—pentode output tube.
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 instructions) and also sometimes equipped with 25 cycle transformers with 105-115 volt or 220 volt primaries, not universals.

ALIGNING INSTRUCTIONS

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 knobs, pull them off and to take the chassis out of the cabinet, remove the three bolts by which it is fastened and the speaker plug which you will find on the front flange of the chassis panel.

Aligning I. F. Transformers

1. With volume control full on, the extreme right of its rotation, and with wave changing switch in the broadcast position, extreme left of its rotation, and with variable condenser at its minimum capacity position, plates entirely out of mesh, adjust the I.F. transformers (two adjustments at the top of parts number 108-38 and 108-40—see top view).
   (a) Connect external oscillator which has been adjusted to 465 kilocycles in series with I.F. dummy antenna, to the control grid cap of the type 6K7 tube and chassis ground. Adjust output I.F. transformer, part number 108-40, to resonance.
   (b) Move generator output clip from grid of 6K7 to grid cap of type 6F7 tube and align input I.F. transformer, part number 108-38.
   (c) With generator connected to grid of type 6F7 tube, readjust output I.F. transformer, part number 108-40, to resonance.

Broadcast Band Alignment—
(540 - 1720 Kilocycles)

1. With wave 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, connect an external oscillator in series with broadcast dummy antenna to tan antenna and black ground leads and make the following adjustments:
   (a) With external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance, for location of this adjustment, number 6, see diagram.
   (b) Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. For location of this adjustment, number 3, see diagram.
   (c) Re-set external oscillator to 600 kilocycles and adjust series pad to resonance, rotate condenser and move dial pointer to 600 kilocycles by gently rocking condenser to and fro. Pick up oscillator signal while adjusting series pad to resonance, maximum deflection on an output meter. This adjustment is accessible from the top of the chassis and is located between variable condenser and power transformer, see top view—part number 124-16.
   (d) Check for tracking and sensitivity at 1000 kilocycles.

NOTE (Series "B", "C" and "D" only)

Short Wave Band Alignment—
(7.6 - 19.0 Megacycles)

1. This band is aligned after the I.F. adjustments have been completed. Set wave changing switch to short wave position, extreme right of its rotation, set dial pointer to 18 megacycles.
   (a) With external oscillator adjusted to 18 megacycles and connected in series with short wave dummy antenna to tan antenna and black ground leads, adjust the oscillator short wave trimmer until generator signal is picked up. For location of this adjustment, number 4, see diagram.
   (b) Adjust short wave antenna trimmer to resonance. For location of this adjustment, number 1, see diagram.
   (c) Re-set external oscillator to 9 megacycles, rotate condenser, move dial pointer to 9 megacycles and check for tracking and sensitivity. Do not bend plates. NOTE: It is extremely necessary in making all of the above adjustments that the fundamental signal of the oscillator be tuned in and not the image frequency, which will fall below the fundamental.

Intermediate Band Alignment—
(2.35 - 7.7 Megacycles)

1. With wave changing switch in center position, and with dial pointer set to 7 megacycles, make the following adjustments:
   (a) With external oscillator set at 7 megacycles and connected in series with short wave dummy antenna, as for short wave adjustments, adjust trimmer of oscillator coil, part number 110-22 until 7 megacycle signal is picked up. For location of this adjustment, number 5, see diagram.
   (b) Adjust antenna trimmer to resonance, adjustment number 2, see diagram.
   (c) Re-set external oscillator to 2.5 megacycles (2500 kilocycles), rotate variable condenser, move pointer, pick up oscillator signal and check for tracking and sensitivity. NOTE: It is extremely necessary in making all of the above adjustments that the fundamental signal of the oscillator be tuned in and not the image frequency, which will fall below the fundamental.

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

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.

All voltages are to be measured with 119 volts on the primary of the power transformer.

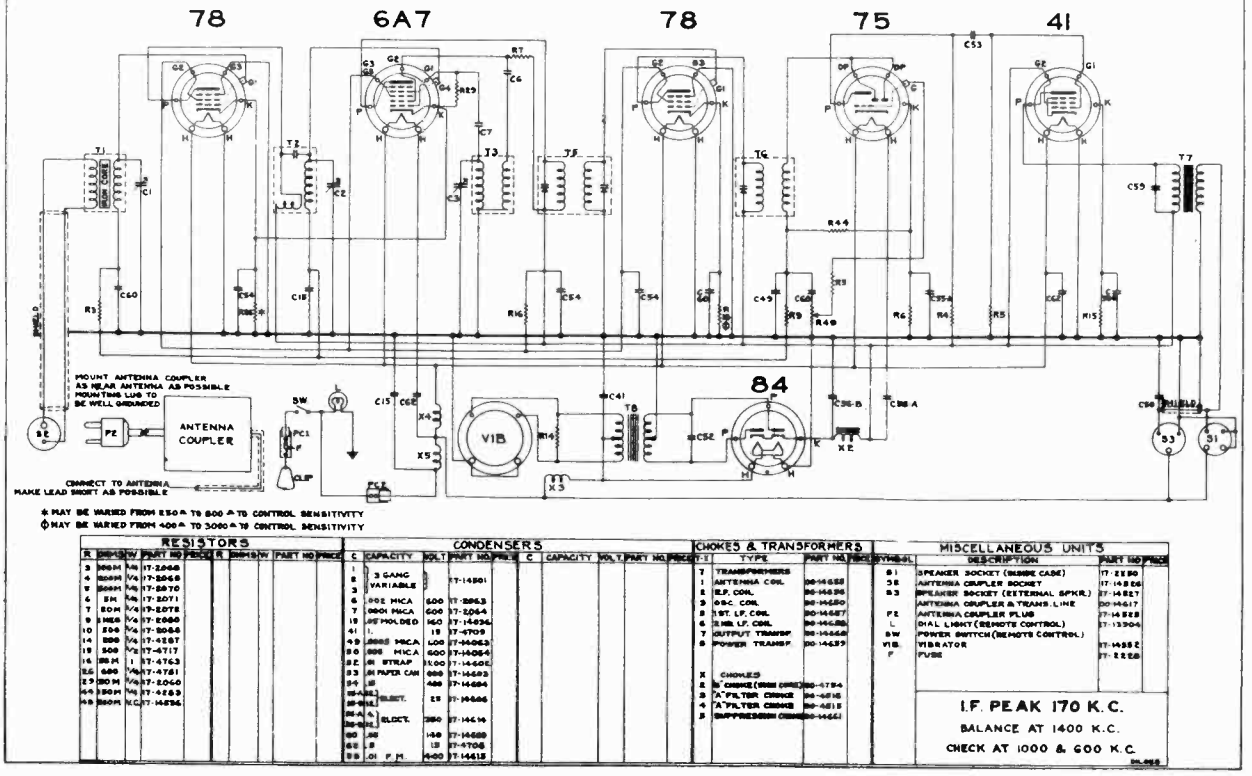
Resistances of coils and transformer windings are indicated in ohms on schematic circuit diagrams.

25 Cycle Chassis differ only from 60 cycle chassis in that part number 104-18 transformer is used in place of 50/60 cycle transformer, part number 104-14.

NOBLITT SPARKS INDUSTRIES

MODEL 18
Schematic, Parts
Voltage, Resistance
Coil Data

SCHEMATIC CIRCUIT DIAGRAM
ARVIN CAR RADIO MODEL 18



MODEL 18 SOCKET VOLTAGES

Tube	Heater	Cathode	Suppressor Grid	Screen Grid	Plate	†Oscillator Grid	Anode Grid	*Diode Plates
78	6.3	3.5	0	90	195	.....	.....	.....
6A7	6.3	3.5	.....	90	195	2-5	120	.....
78	6.3	2.3	0	90	195	.....	.....	.....
75	6.3	1.6	.....	.....	110	.....	.....	1.9
41	6.3	14.5	.....	195	192	.....	.....	.....
84	6.3	200.0	.....	.....	215	.....	.....	.....

†Measured at 1500 K. C.
*Measured with Vacuum Tube Voltmeter

POINT TO POINT RESISTANCES

78—R. F. Amplifier

Heater	0
Heater	∞
Cathode	600 Ω
Suppressor	0
Screen to B+	50,000 Ω
Plate to B+	35 Ω
Control Grid	1,250,000 Ω

6A7—1st Det. Oscillator

Heater	0
Heater	∞
Cathode	600 Ω
Osc. Grid	50,600 Ω
Anode Grid to B+	20,000 Ω
Screen Grid to B+	50,000 Ω
Plate to B+	115 Ω
Control Grid	1,150,000 Ω

78—I. F. Amplifier

Heater	0
Heater	∞
Cathode	500 Ω
Suppressor	0
Screen to B+	50,000 Ω
Plate to B+	85 Ω
Control Grid	115 Ω

75—2nd Det.; 1st Audio

Heater	0
Heater	∞
Cathode	5,000 Ω
Diode	150,000 Ω
Diode	150,000 Ω
Plate to B+	200,000 Ω
Control Grid V.C. on	1,000,000 Ω
V.C. off	500,000 Ω

41—Power Output

Heater	0
Heater	∞
Cathode	500 Ω
Control Grid	500,000 Ω
Screen to B+	0
Plate to B+	625 Ω

84—Rectifier

Heater	0
Heater	∞
Cathode to B+	165 Ω
Plate	250 Ω
Plate	270 Ω
Plate to Plate	520 Ω

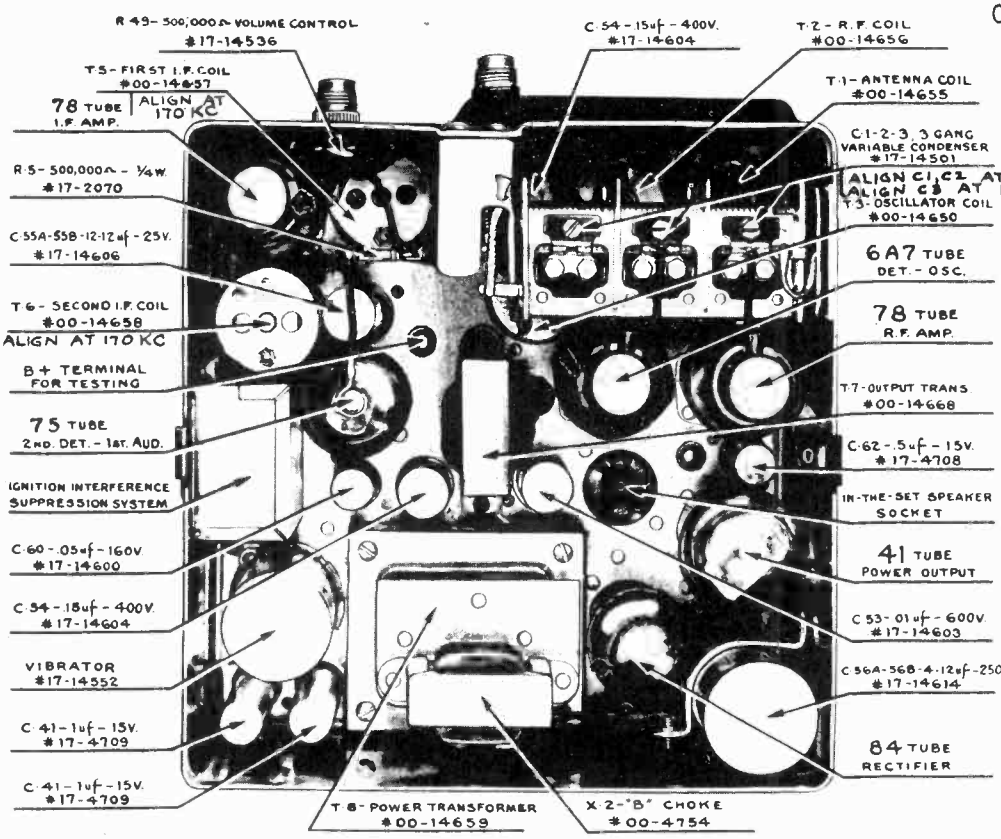
COIL AND TRANSFORMER RESISTANCES

Antenna Pri. .72	Oscillator Sec. 2.60	Second I. F. Sec. 85.00	Power Tr. Sec. 250-270—520
Antenna Sec. 2.80	First I. F. Pri. 115.00	Output Tr. Pri. 625.00	"B" Choke 165.00
R. F. Coil Pri. 113.00	First I. F. Sec. 115.00	Output Tr. Sec. 0.40	Antenna Coupler Pri. 6.20
R. F. Coil Sec. 4.00	Second I. F. Pri. 85.00	Power Tr. Pri. .07	Antenna Coupler Sec. .50
Oscillator Pri. 1.60			

MODELS 28 & 33
Alignment

NOBLITT SPARKS INDUSTRIES

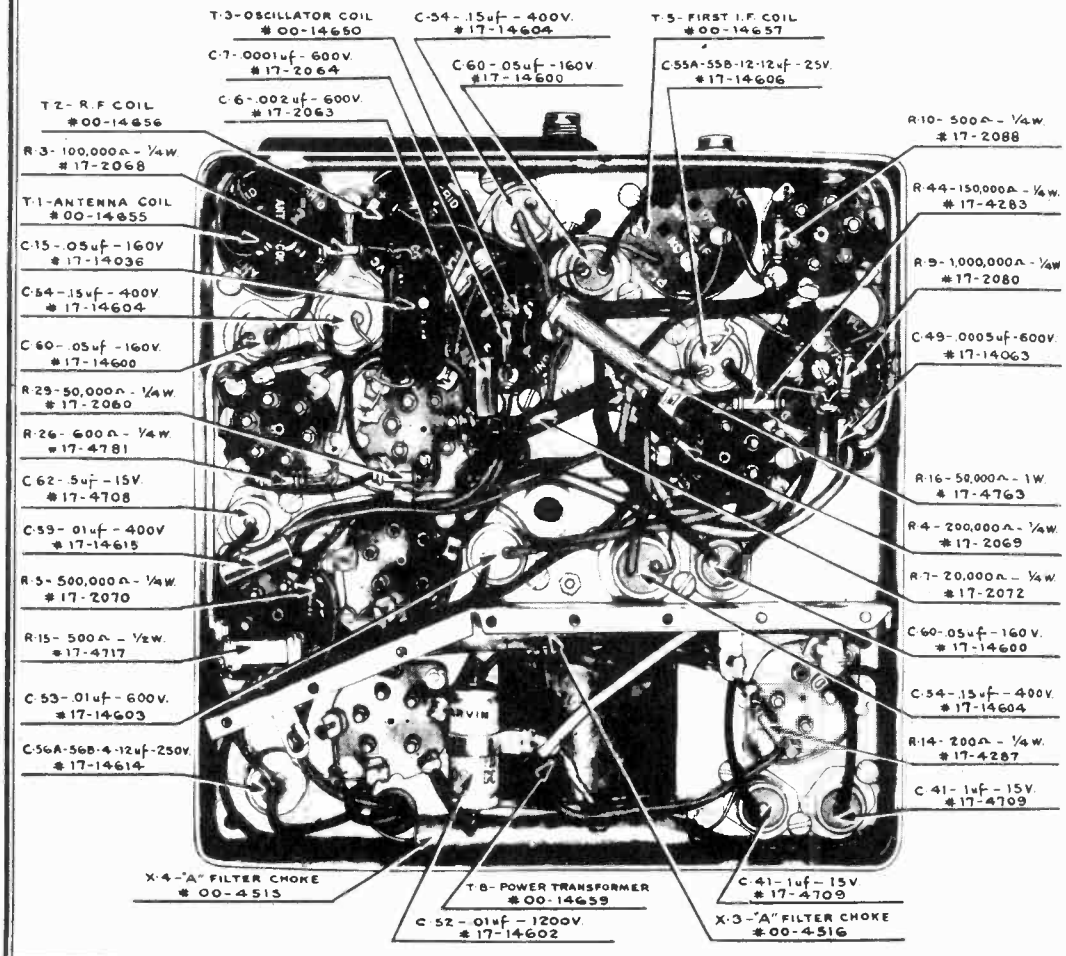
MODEL 18
Socket, Trimmers
Chassis, Alignment



Padder No.	Connect Balancing Oscillator to	Balancing Osc. Frequency	Set Dial to
1	6A7 grid cap	170 K. C.	.....
2	6A7 grid cap	170 K. C.	.....
3	6A7 grid cap	170 K. C.	.....
4	Antenna Terminal of Transmission Line	1560 K. C.	1560 K. C.
5	Antenna Terminal of Transmission Line	1400 K. C.	1400 K. C.
6	Antenna Terminal of Transmission Line	1400 K. C.	1400 K. C.

BALANCING INSTRUCTIONS
MODELS 18-28-33

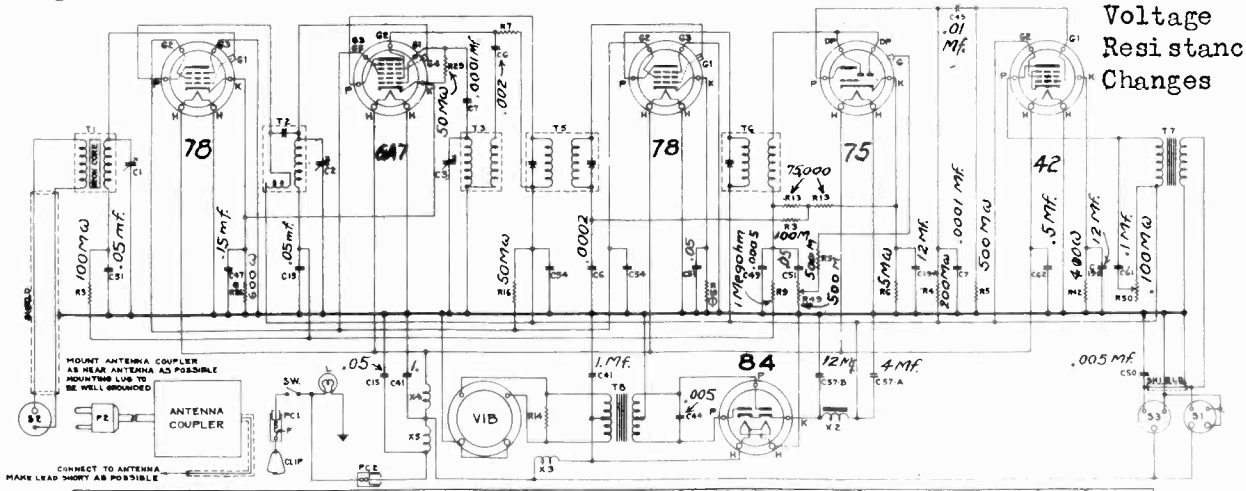
Use an output meter for all adjustments. All Models 18-28-33 Arvin Car Radios must be balanced in conjunction with an Arvin Type T Transmission line available to Service Stations at $1.50 list. ORDER FROM YOUR JOBBER.



MODEL 33 Changes

NOBLITT SPARKS INDUSTRIES

MODEL 28 Schematic Voltage Resistance Changes



RESISTORS

R	OHMS	W	PART NO.	PRICE
1	100 M	1/2	17-2068	
2	500 M	1/2	17-2069	
3	250 M	1/2	17-2070	
4	2 M	1/2	17-2071	
5				
6				
7	1 MEG	1/2	17-2060	
8	500	1/2	17-2066	
9				
10	75 M	1/2	17-2067	
11				
12				
13	50 M	1	17-4763	
14				
15				
16	600	1/2	17-4781	
17	50 M	1/2	17-2060	
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42	400	1/2	17-4189	
43				
44				
45				
46				
47				
48	800 M	1/2	17-14536	
49	100 M	1/2	17-14505	
50				
51				
52				
53				
54				
55 A				
55 B				
56				
57 A				
57 B				
58				
59				
60				
61				
62				
63				

CONDENSERS

C	CAPACITY	VOLT	PART NO.	PRICE
1	3 GANG VARIABLE		17-14501	
2				
3				
4				
5				
6	.005 MICA	600	17-2063	
7	.0001 MICA	600	17-2064	
8				
9				
10				
11				
12				
13				
14	.05 MOLDED	140	17-14036	
15				
16				
17	.0025 MICA	600	17-14063	
18	.005 MICA	1500	17-14064	
19 A	.05	150	17-14841	
19 B	12 ELECT	25	17-4707	
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42	.008	1500	17-14057	
43	.01 CAN	600	17-14059	
44				
45	.15 CAN	400	17-14061	
46				
47				
48	.0025 MICA	600	17-14063	
49	.0005 MICA	1500	17-14064	
50	.05	150	17-14841	
51				
52				
53				
54				
55 A				
55 B				
56				
57 A	8 ELECT	350	17-14611	
57 B				
58				
59				
60				
61				
62	.5	1500	17-14639	
63		25	17-4708	

CHOKES & TRANSFORMERS

T-X	TYPE	PART NO.	PRICE
T	TRANSFORMERS		
1	ANTENNA COIL	80-14653	
2	R.F. COIL	80-14656	
3	OSC. COIL	80-14610	
4			
5	1ST. I.F. COIL	80-14657	
6	2ND I.F. COIL	80-14658	
7	OUTPUT TRANSF.	80-14663	
8	POWER TRANSF.	80-14662	
9			
10			
X	CHOKES		
1			
2	"B" CHOKE (Main Unit)	100-4784	
3	"A" FILTER CHOKE	80-4815	
4	"A" FILTER CHOKE	80-4812	
5	SUPPRESSION CHOKE	80-14661	
6			
7			
8			

MISCELLANEOUS UNITS

SYMBOL	DESCRIPTION	PART NO.	PRICE
	ANTENNA COUPLER & TRANS. LINE	17-14667	
S1	SPEAKER SOCKET (INSIDE CASE)	17-11750	
S3	SPEAKER SOCKET (EXTERNAL SPKR)	17-14927	
P2	ANTENNA COUPLER PLUG	17-14525	
S2	ANTENNA COUPLER SOCKET	17-14526	
	DIAL LIGHT (REMOTE CONTROL)	17-13904	
SW	POWER SWITCH (REMOTE CONTROL)		
VIB	VIBRATOR	17-14552	
F	FUSE	17-2228	

I.F. PEAK 170 K.C.
BALANCE AT 1400 K.C.
CHECK AT 1000 & 600 K.C.
MODEL 28 (AUTO)

POINT TO POINT RESISTANCES

SEE INDEX FOR ALIGNMENT

78—R. F. Amplifier

Heater	0
Heater	∞
Cathode	600 Ω
Suppressor	0
Screen to B+	50,000 Ω
Plate to B+	35 Ω
Control Grid	1,255,000 Ω

6A7—1st Det. Oscillator

Heater	0
Heater	∞
Cathode	600 Ω
Osc. Grid	50,600 Ω
Anode Grid to B+	20,000 Ω
Screen to B+	50,000 Ω
Plate to B+	115 Ω
Control Grid	1,155,000 Ω

78—I. F. Amplifier

Heater	0
Heater	∞
Cathode	500 Ω
Suppressor	0
Screen to B+	50,000 Ω
Plate to B+	85 Ω
Control Grid	185,000 Ω

75—Det. 1st Audio

Heater	0
Heater	∞
Cathode	5,000 Ω
Diode	155,000 Ω
Diode	155,000 Ω
Plate to B+	200,000 Ω
Control Grid V.C. on	1,000,000 Ω
V.C. off	500,000 Ω

41—Power Output

Heater	0
Heater	∞
Cathode	500 Ω
Control Grid	500,000 Ω
Screen to B+	0
Plate to B+	625 Ω

84—Rectifier

Heater	0
Heater	∞
Cathode to B+	165 Ω
Plate	175 Ω
Plate	150 Ω
Plate to Plate	325 Ω

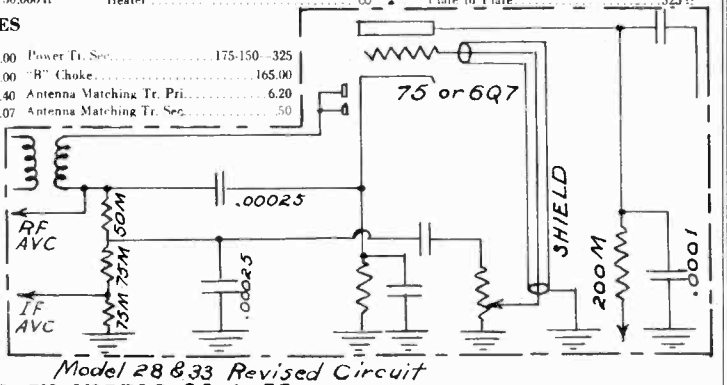
COIL AND TRANSFORMER RESISTANCES

Antenna Pri.	.72	Oscillator Sec.	2.60	Second I. F. Sec.	.85.00
Antenna Sec.	2.80	First I. F. Pri.	115.00	Output Tr. Pri.	.625.00
R. F. Coil Pri.	113.00	First I. F. Sec.	115.00	Output Tr. Sec.	0.40
R. F. Coil Sec.	4.0	Second I. F. Pri.	85.00	Power Tr. Pri.	.07
Oscillator Pri.	1.60			Power Tr. Sec.	175-150-325
				"B" Choke	165.00
				Antenna Matching Tr. Pri.	6.20
				Antenna Matching Tr. Sec.	.50

MODEL 28 SOCKET VOLTAGES

Tube	Heater	Cathode	Plate	*Diode Plates	Screen	Anode †Oscillator Grid	* Grid
78	6.3	4.0	235	.....	90	.....	.....
6A7	6.3	4.0	235	.....	90	160	3-5V
78	6.3	2.3	235	.....	90	.....	.....
75	6.3	1.6	120	2.0	.....	.....	.....
41	6.3	16.0	230	.....	235	.....	.....
84	6.3	240	275	.....	.....	.....	.....

*Measured with Vacuum Tube Voltmeter
†Reading taken at 1500 K. C.



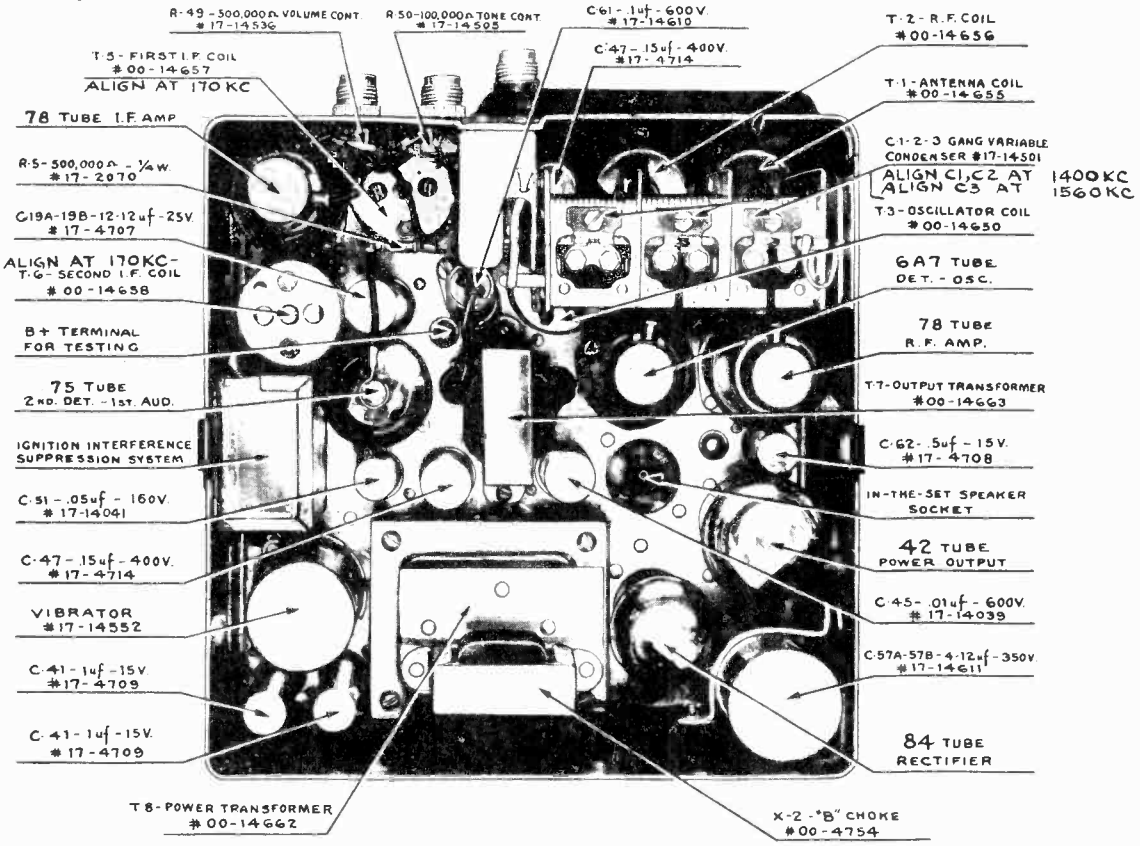
Model 28 & 33 Revised Circuit

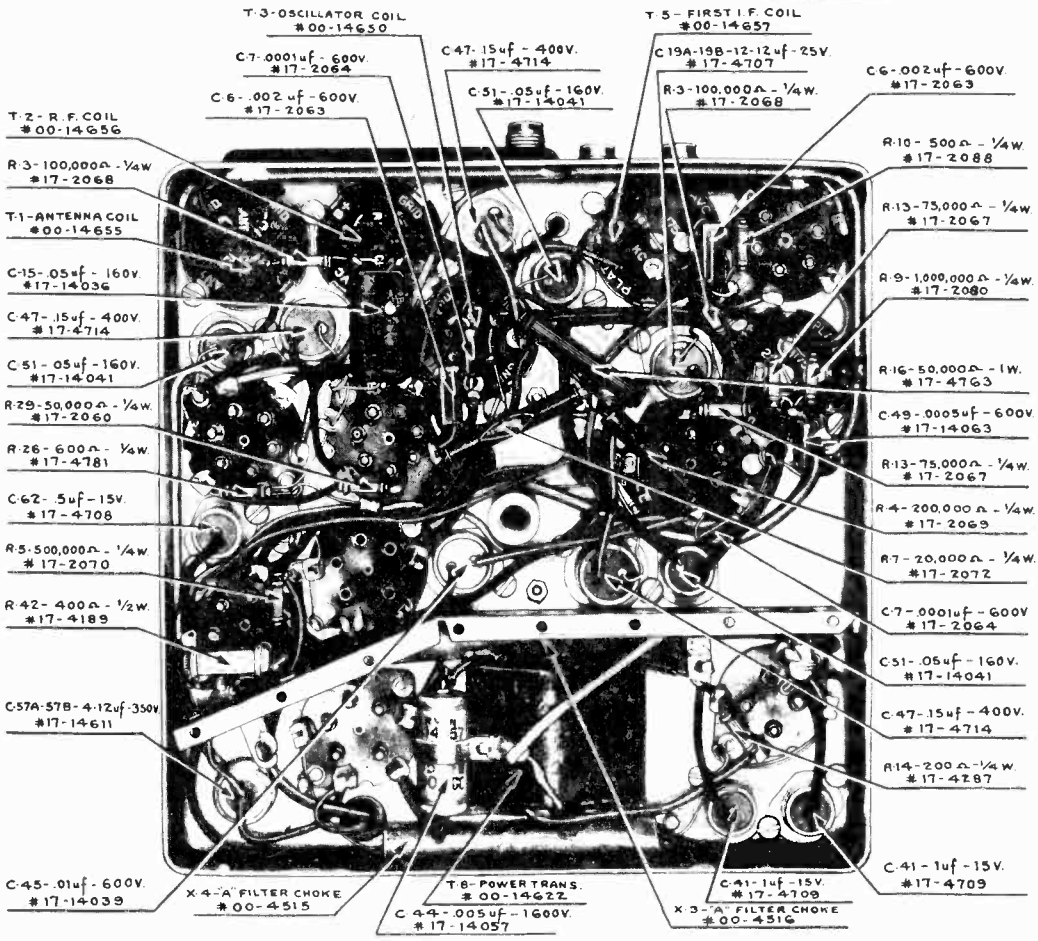
CHANGES IN MODELS 28 & 33

50,000 OHM $\frac{1}{4}$ W res. added in series with two 75000 OHM res. originally in AVC ckt 500,000 OHM $\frac{1}{4}$ W res. removed from lead running bet. vol. cont. and grid cap of 75 or 6Q7 tube. Shield added over grid lead wire running from vol. cont. to grid cap of 6Q7 or 75 tube. .0005 mfd. Mica cond. bypassing AVC res. removed. Replaced by .00025 mfd. Mica cond. connected bet. brown lead of 2nd I.F. trans. and cathode of 75 or 6Q7. .0005 mfd. Mica cond. bypassing 75 or 6Q7 200,000 OHM plate res. removed. Replaced by .0001 mfd. Mica cond. .00025 mfd. Mica con. added to bypass junction of 50,000 OHM res. and 75,000 OHM res. in AVC network to ground. Shield added around 75 tube. Vol. cont. coupling cond. connected to junction of 50,000 OHM and 75,000 OHM res. instead of directly to brown lead of second I.F. transformer.

MODEL 28
Socket, Trimmers
Chassis

NOBLITT SPARKS INDUSTRIES

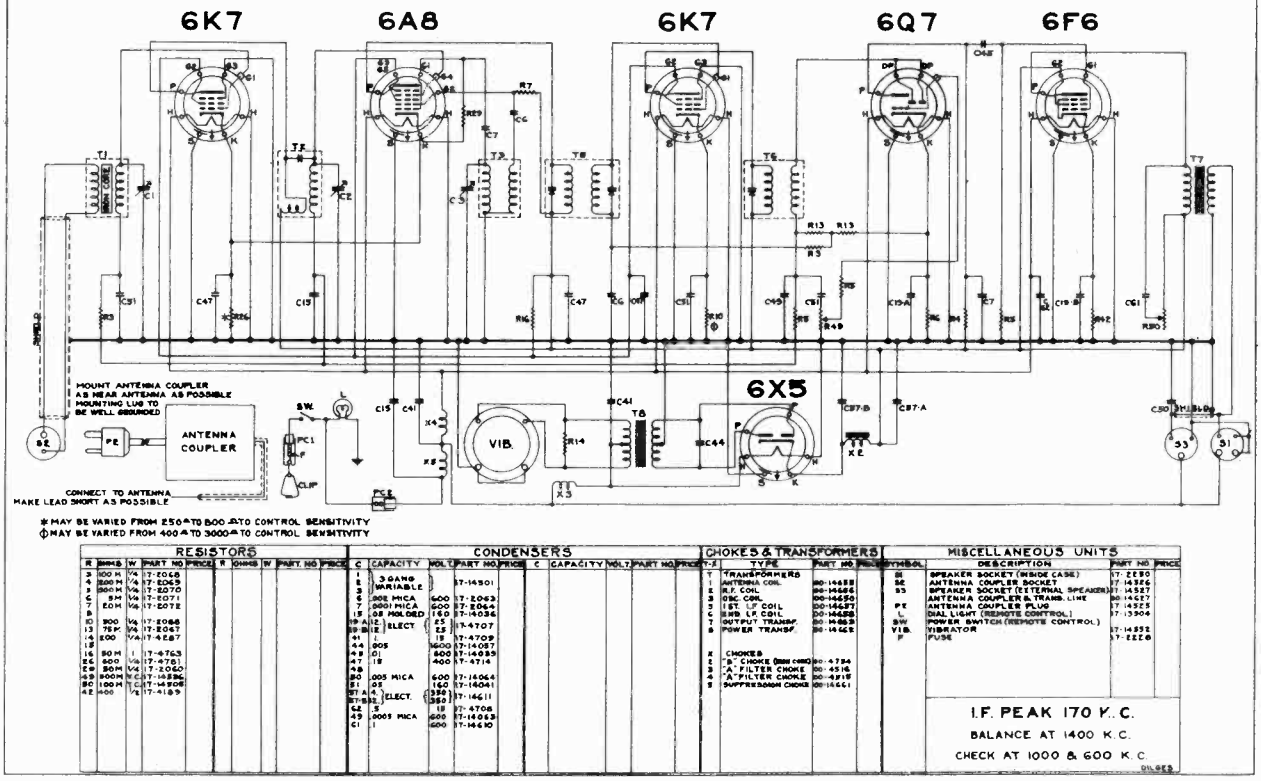




NOBLITT SPARKS INDUSTRIES

MODEL 33
Schematic, Voltage
Resistance, Coils
Parts

SCHEMATIC CIRCUIT DIAGRAM
ARVIN CAR RADIO ~ MODEL 33



SEE INDEX FOR ALIGNMENT

MODEL 33 SOCKET VOLTAGES

Tube	Heaters	Cathode	Plate	Screen	Anode Grid	*Oscillator Grid—1500 K. C.	†*Diodes
6K7	6.3	4.0	235	90	.....	.....	.....
6A8	6.3	4.0	235	90	140	2-5	.....
6K7	6.3	2.7	235	90	.....	.....	.....
6Q7	6.3	2.3	120	.....	.....	.....	2.8
6F6	6.3	16.0	230	235	.....	.....	.....
6X5	6.3	240	265 A. C.	.....	.....	.....	.....

*Measured with Vacuum Tube Voltmeter
†No Signal

POINT TO POINT RESISTANCES

6K7—R. F. Amplifier

Heater	0
Shell	0
Heater	∞
Cathode	600 Ω
Suppressor Grid	0
Screen to B+	50,000 Ω
Plate to B+	35 Ω
Control Grid	1,255,000 Ω

6A8—1st Det. Oscillator

Heater	0
Shell	0
Heater	∞
Cathode	600 Ω
Oscillator Grid	50,600 Ω
Anode to B+	20,000 Ω
Screen to B+	50,000 Ω
Plate to B+	115 Ω
Control Grid	1,155,000 Ω

6K7—I. F. Amplifier

Heater	0
Shell	0
Heater	∞
Cathode	500 Ω
Suppressor Grid	0
Screen to B+	50,000 Ω
Plate to B+	85 Ω
Control Grid	180,000 Ω

6Q7—2nd Det. 1st Aud. Amp.

Heater	0
Shell	0
Heater	∞
Cathode	5,000 Ω
Diode Plate	155,000 Ω
Diode Plate	155,000 Ω
Plate to B+	200,000 Ω
Control Grid—V. C. On	1,000,000 Ω
V. C. Off	500,000 Ω

6F6—Power Output

Heater	0
Shell	0
Heater	∞
Cathode	500 Ω
Screen to B+	0
Plate to B+	625 Ω
Control Grid	500,000 Ω

6X5—Rectifier

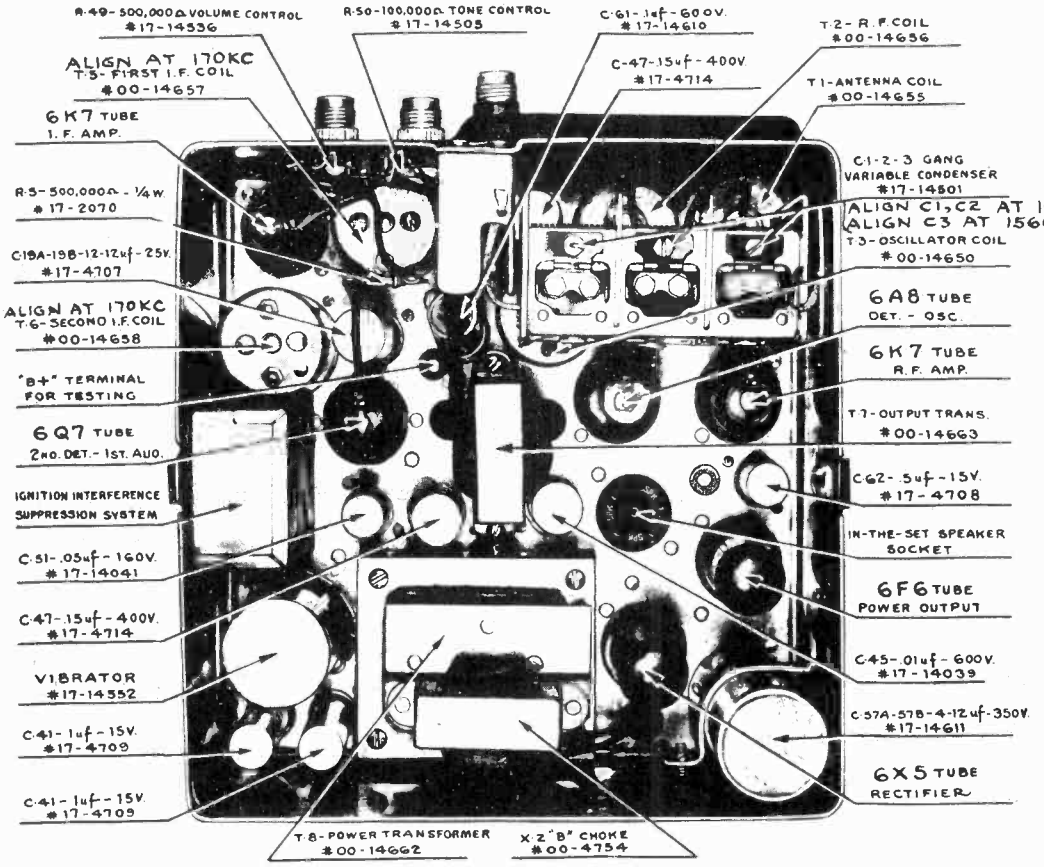
Heater	0
Shell	0
Heater	∞
Plate	175 Ω
Plate	150 Ω
Plate to Plate	325 Ω
Cathode to B+	165 Ω

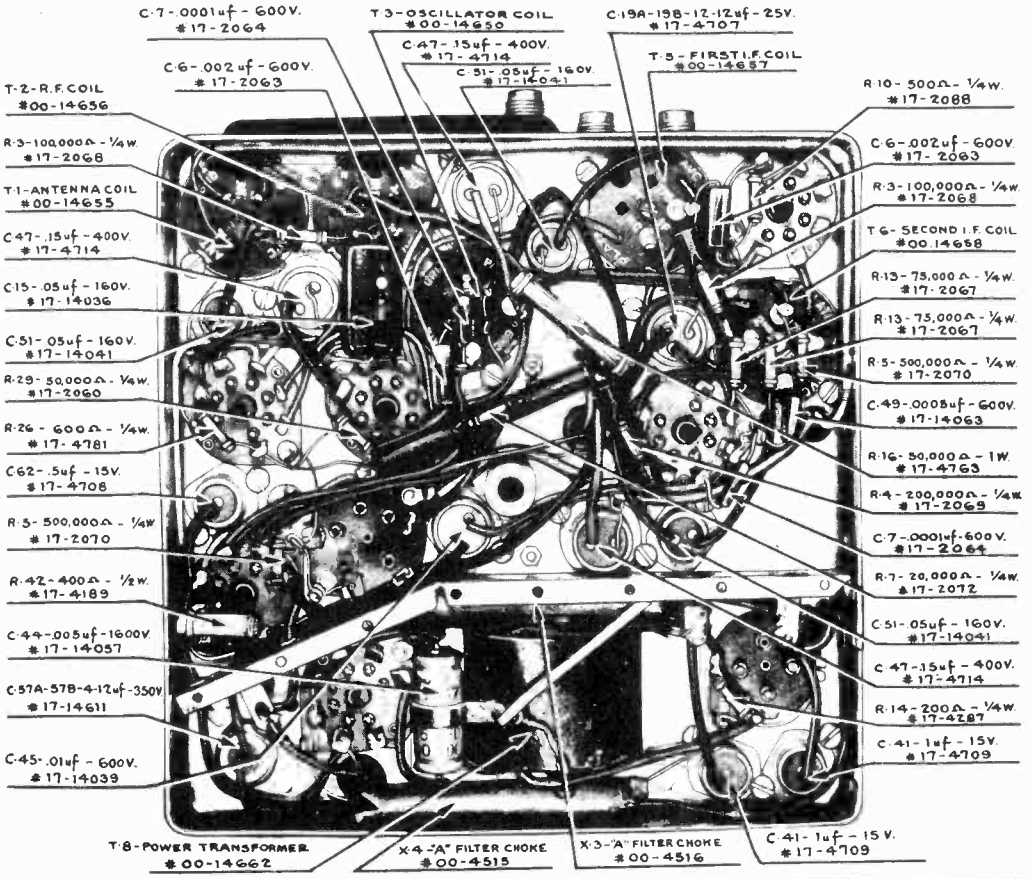
COIL AND TRANSFORMER RESISTANCES

Antenna Primary	.72
Antenna Secondary	2.8
R. F. Primary	113
R. F. Secondary	4.0
Oscillator Primary	1.6
Oscillator Secondary	2.6
First I. F. Primary	115
First I. F. Secondary	115
Second I. F. Primary	85
Second I. F. Secondary	85
Output Transformer Primary	625
Output Transformer Secondary	.4
Power Transformer Primary	.07
Power Transformer Secondary 175-150—325	
Audio Input Choke	300-2700—5000
"B" Filter Choke	165
Antenna Coupler Primary	6.2
Antenna Coupler Secondary	.5

MODEL 33
Socket, Trimmers
Chassis

NOBLITT SPARKS INDUSTRIES





Socket, Trimmers Alignment, Coil, Resistance

NOBLITT SPARKS INDUSTRIES

MODEL 41
MODEL 51
Voltage

MODEL 41 SOCKET VOLTAGES

(INPUT VOLTAGE 115 RMS)

Tube	Heater	Plate	Screen	Cathode	Triode Plate	Anode Grid	Oscillator Grid 1500 KC
6A7	6.3 AC	265	90	3.0*	.....	155	3-5
6F7	6.3 AC	265	90	4.0*	40	.....	.....
41	6.3 AC	250	265	17.0	.....	.....	.....
80	5.0 AC	330 AC	.....	.....	.....	.....	.....

*Volume control full on

POINT TO POINT RESISTANCES

Tubes removed and speaker connected.

All readings taken to ground unless otherwise specified.

6A7

Heater	.1
Heater	.1
Anode Grid to B+	20,000
Plate to B+	17.0
Screen to B+	50,000
Cathode	200*
Control Grid	2.6
Oscillator Grid	50,200

6F7

Heater	.1
Heater	.1
Plate to B+	17.0
Screen to B+	50,000
Cathode	300*
Control Grid	1,100,000
Triode Grid	1,000,000
Triode Plate to B+	550,000

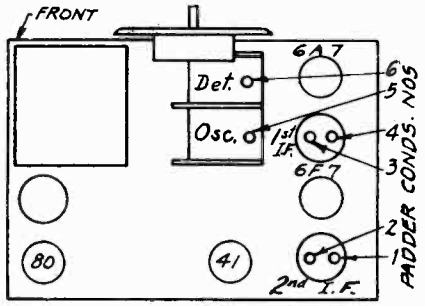
*Volume control in full on position

80

Filament to B+	1750
Filament to B+	1750
Plate	143
Plate	132
Plate to Plate	275
Filament to Filament	.1
Heater	.1
Heater	.1
Plate to B+	390
Screen to B+	0
Cathode	500
Control Grid	1,000,000

COIL, TRANSFORMER AND SPEAKER RESISTANCES

Speaker Field (Hot)	1750	T6 2nd IF Primary	17.0
Speaker Voice Coil	3.0	T6 2nd IF Secondary	17.0
T1 Ant. Primary	14.5	T7 Output Primary	390.0
T1 Ant. Secondary	2.6	T7 Output Secondary	.4
T3 Osc. Primary	2.6	T8 Power Primary	5.9
T3 Osc. Secondary	1.4	T8 Power Secondary (Hi Volt)	275.0
T5 1st IF Primary	17.0	T8 Power Secondary 6V	.2
T5 1st IF Secondary	17.0	T8 Power Secondary 5V	.1



Location of trimmers on Arvin Model 41

Alignment:

Adjust padders 1, 2, 3 and 4 with the test oscillator connected to the grid cap of the 6A7. Frequency of test oscillator is 456 kc

Adjust No. 5 with the oscillator connected to the antenna wire (red) and the ground side to the set's ground wire. Set the oscillator and the dial to 1500 kc.

Adjust No. 6 with the oscillator connected as above with the same settings to 1500 kc.

Trimmer	Test Osc. Frequency	Set Radio Dial to	Set Wave Switch to
5	1,500 kc.	150	Broadcast .55—1.75
	"	"	"
7	600 kc.	0.60	"
8*	15 mc.	15.0	Short Wave 18—5.5 mc.
9	"		"
10**	456 kc.	.0	Broadcast

* To adjust oscillator padder on 6-18 mc. band, unscrew padder wide open, then tighten until first signal is reached and tuned to resonance.

** Balance for minimum signal. Wave trap to eliminate 456-kc. code signal.

For the remainder of the adjustments the test oscillator is connected to the antenna and ground wires of the receiver

Alignment:

Set test oscillator to 456 kc. Connect to 6A7 grid cap. Adjust trimmers 1, 2, 3, and 4 in the order named.

MODEL 51 SOCKET VOLTAGES

Tube	Heaters	Plate	Screen	Cathode	Oscillator Grid 1500 KC	Anode Grid
6A7	6.3	265	100	3.0	3-5	150
6D6	6.3	265	100	3.0	.....	.....
75	6.3	135	.....	1.7	.....	.....
41	6.3	251	265	17.0	.....	.....
80	5.0	330 AC	.....	.....	.....	.....

POINT TO POINT RESISTANCES

All readings taken to ground unless otherwise stated.

Tubes removed and speaker connected. Volume control in full on position.

6A7

Heater	.1
Heater	.1
Cathode	400
Oscillator Grid	50,000
Anode Grid to B+	20,000
Screen Grid to B+	15,000
Plate to B+	17.0
Control Grid	1,305,000

6D6

Heater	.1
Heater	.1
Cathode	400
Suppressor Grid	400
Screen Grid to B+	15,000
Plate to B+	17.0
Control Grid	1,205,000

80

Filament to B+	1750
Plate	143
Plate	132
Plate to Plate	275

75

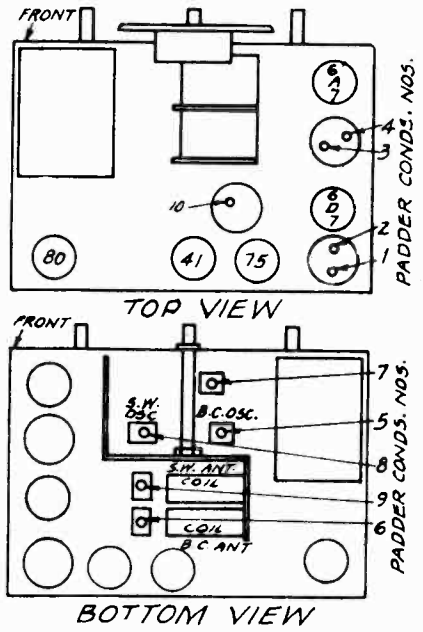
Heater	.1
Heater	.1
Cathode	5,000
Diodes	205,000
Plate to B+	200,000
Control Grid	1,000,000

41

Heater	.1
Heater	.1
Cathode	500
Screen Grid to B+	0
Plate to B+	390
Control Grid	500,000
Screen Grid to Ground	35,000

COIL, TRANSFORMER AND SPEAKER RESISTANCES

Speaker Field (Hot)	1750	T5 1st IF Primary	17.0
Voice Coil	.3	T5 1st IF Secondary	17.0
T1B Ant. Primary	14.5	T6 2nd IF Primary	17.0
T1B Ant. Secondary	2.6	T6 2nd IF Secondary	17.0
T1A	.1	T7 Output Primary	390.0
T1A	.05	T7 Output Secondary	.4
T3B Osc. Primary	2.6	T8 Power Primary	5.9
T3B Osc. Secondary	1.4	T8 Power Secondary (Hi Volt)	275.0
T3A	.1	T8 Power Secondary 6V	.2
T3A	.05	T8 Power Secondary 5V	.1

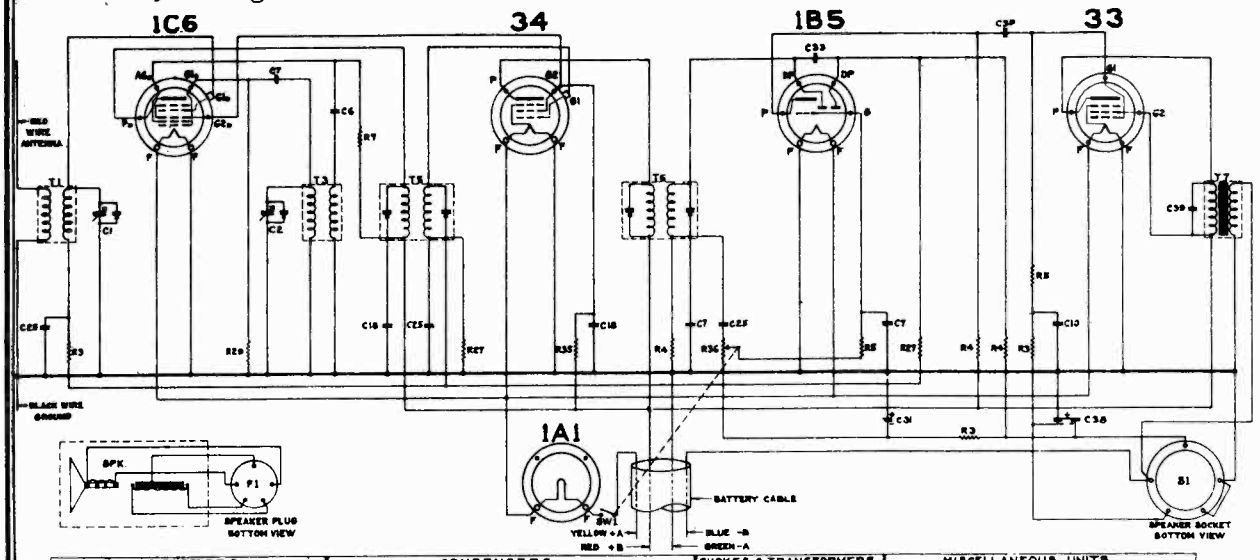


Socket layout and trimmer locations of the Arvin Model 51

MODEL 51-B
Schematic, Socket
Trimmers, Voltage

NOBLITT SPARKS INDUSTRIES

Resistance, Coils
Alignment, Parts



RESISTORS

R	OHMS	W	PART NO.	PRICE
1	100 M	½	17-2068	
2	1000 M	½	17-2070	
3	2000 M	½	17-2079	
4	5			
5	20M	½	17-2072	
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27	2 MEG.	½	17-9788	
28				
29	50 M	½	17-2060	
30A				
30B				
31				
32				
33				
34	20 M	½	17-14049	
35	500 M	½	17-13308	
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				

CONDENSERS

C	CAPACITY	VOLT	PART NO.	PRICE
1	E-GANG TUNING		17-13500	
2				
3				
4				
5				
6	.002 MICA	600	17-2063	
7	.0001 MICA	600	17-2064	
8				
9				
10	.1 CAN	400	17-14034	
11				
12				
13				
14				
15				
16				
17				
18	.1 CAN	400	17-14009	
19				
20				
21				
22				
23				
24				
25	.08 CAN	160	17-14006	
26				
27				
28				
29				
30				
31				
32				
33	.00005 MICA	600	17-14047	
34				
35				
36				
37				
38	12-12-12 ELECT.	600	17-14083	
39	8-8-8 ELECT. DUAL	600	17-14055	

CHOKES & TRANSFORMERS

T-X	TYPE	PART NO.	PRICE
1	TRANSFORMER		
2	ANTENNA COIL	29-13617	
3			
4	OSCILLATOR	29-13618	
5			
6	FIRST I.F. COIL	00-13800	
7	SECOND I.F. COIL	00-13801	
8	OUTPUT TRANSF.	00-13826	

MISCELLANEOUS UNITS

SYMBOL	DESCRIPTION	PART NO.	PRICE
SPK.	DYNAMIC SPEAKER - MODEL 81B	17-13130	
S1	SPEAKER SOCKET	17-6183	
P1	SPEAKER PLUG FURNISHED WITH SPK.	— —	
SW. 1	BATT. SWITCH & VOLUME CONTROL (SEE R36)	17-13306	

Padder No. Connect Balancing Balancing Adjust Radio

	Oscillator to	Osc. Freq.	Dial to
1	1C6 Grid Cap	456 K. C.	
2	1C6 Grid Cap	456 K. C.	
3	1C6 Grid Cap	456 K. C.	
4	1C6 Grid Cap	456 K. C.	
5	Red Antenna Wire Black Ground Wire	1500 K. C.	1.5
6	Red Antenna Wire Black Ground Wire	1400K.C.	1.4

Adjust padders only in order shown

POINT TO POINT RESISTANCES

All resistances taken to ground unless otherwise specified.

1C6

Filament	0
Filament	∞
Oscillator Grid	50,000 Ω
Anode Grid to B+	20,000 Ω
Screen to B+	20,000 Ω
Plate to B+	19.5
Control Grid	1,150,000

34

Filament	0
Filament	∞
Screen to B+	20,000
Plate to B+	19.5
Control Grid	1,050,000

1B5

Filament	0
Filament	∞
Control Grid:	
V. C. on	1,100,000 Ω
V. C. off	600,000 Ω
Diode Plate	100,000 Ω
Diode Plate	200,000 Ω
Plate to B+	200,000 Ω

33

Filament	0
Filament	∞
Control Grid	600,000 Ω
Screen to B+	0
Plate to B+	385

1A1

Filament to Filament	.1 Ω

BATTERY CABLE COLOR CODE

Yellow	A+
Green	A—
Blue	B—
Red	B+

COIL AND TRANSFORMER RESISTANCES

Antenna Primary	14.0
Antenna Secondary	4.4
Oscillator Primary	1.35
Oscillator Secondary	2.4
First I. F. Primary	19.5
First I. F. Secondary	19.5
Second I. F. Primary	19.5
Second I. F. Secondary	19.5
Output Transformer Primary	385
Output Transformer Secondary	.24
Speaker Field—400-100	500

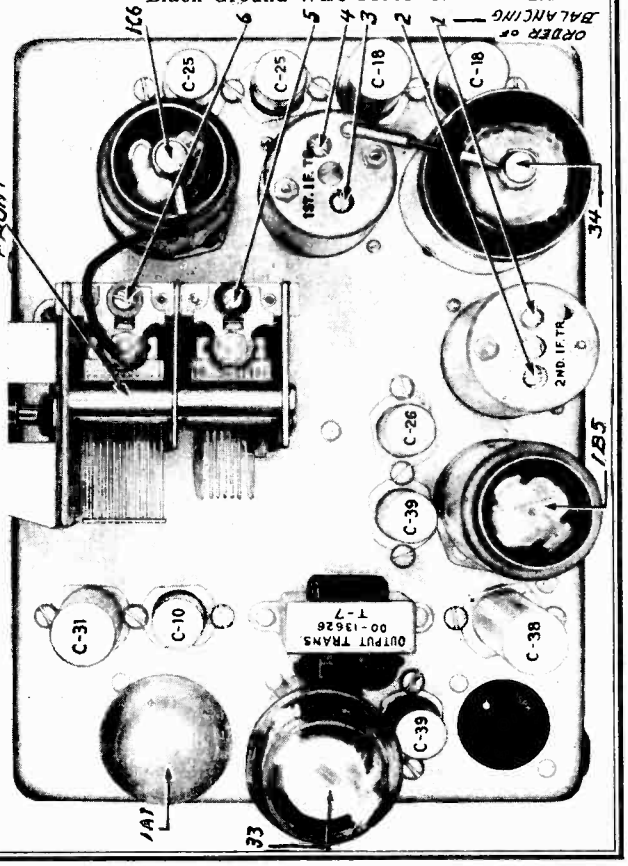
MODEL 51B SOCKET VOLTAGES

Tube	Filament	Screen Grid	Plate	*Control Grid	*Oscillator Grid 1500 KC	Anode Grid
1C6	2.2	70	117	1.5	4	80
34	2.2	70	117	3	.....	.....
1B5	2.2	.....	40	3	.....	.....
33	2.2	117	115	18	.....	.....
1A1	2.2	.....	.....	.....	.....	.....

*Measured with Vacuum Tube Voltmeter.

Socket Voltages to be taken with 135 Volts of B Battery and Eveready Air Cell.

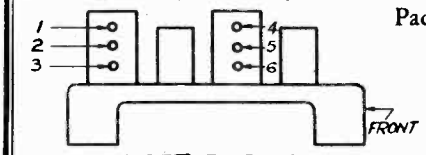
CAUTION—Use only 135 volts of B Battery for testing. If these are not available a 5000 Ω Resistor in series with the B supply of an average A. C. Radio will supply sufficient voltage for testing



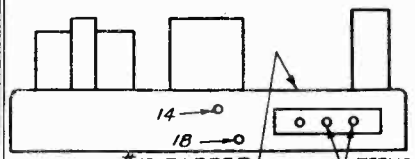
NOBLITT SPARKS INDUSTRIES

MODELS 61, 61M, 62, 62M
81, 81M
Voltage, Resistance
Alignment, Coils

Arvin 61, 61M, 62, 62M, 81, 81M



LEFT END VIEW



REAR VIEW

The locations of the trimmers of the Arvin 61 series are shown in the left end and rear views.

Padders numbered 7, 8, 9, 11, 12, 13, 15, 16, and 17 are accessible from the bottom of the chassis, where their locations are plainly indicated on the tuning unit cover label, through which holes must be punched in order to adjust the padders.

I-f Alignment:

I-f. peak is 456 kc. for all models. For Models 61, 62, and 81 connect the signal generator to the 6A7 tube and for Models 61M, 62M and 81M connect to the 6A8 tube. Adjust padders in their numerical order, *i.e.* 1, 2, 3, 4, 5, and 6.

R-f. Alignment:

Connect signal generator to terminals A-A on rear of chassis. Adjust padders in the following order only:

Padder Number	Signal Gen. Frequency	Adjust Radio Dial to	Set Wave Switch to Standard Broadcast
7	1500 kc.	1.5	.55—1.7
8	"	"	"
9	"	"	"
10	600 kc.	.60	"
			Aviation-Police
11	4.7 mc.	4.7	1.8—5.5
12	"	"	"
13	"	"	"
14	1.9 mc.	1.9	"
			S-W. Foreign
15	15.0 mc.	15.	6.0—18.0
16	"	"	"
17	"	"	"
18	6.0 mc.	6.0	"

Note: To adjust oscillator padder on 6-18 mc. band, unscrew wide open, then tighten until first signal is reached and tuned to resonance.

MODEL 61-62 SOCKET VOLTAGES

Tube	Heaters	Cathode	Suppressor Grid	Screen Grid	Plate	*Oscillator Grid 1500 KC	*Anode Grid	Diode Plates
78-6D6	6.3	3.0	3.0	90	250	.....	.....	.....
6A7	6.3	3.0	.....	90	250	3-10	180	.....
6D6	6.3	3.0	3.0	90	250			.....
75	6.3	1.5	.....	.....	120	DROP ACROSS SPEAKER FIELD—60 V.		†2.9
42	6.3	18.0	.....	250	240	*—Measured with Vacuum Tube Voltmeter		
80	5.0	3.0	.....	.....	300 A.C.	†—No Signal		

POINT TO POINT RESISTANCES

6D6-78

Heater	.01 ohm
Heater	.01 ohm
Cathode	300 ohms
Suppressor	300 ohms
Screen to B+	30,000 ohms
Plate to B+	.9 Ω .72 Ω .5 Ω
Control Grid	705,000
Screen to GND	100,000

6A7

Heater	.01 ohm
Heater	.01 ohm
Cathode	400 ohms
Osc. Grid	50,300 ohms
Osc. Anode to B+	20,000 ohms
Screen to B+	30,000 ohms
Plate to B+	1000 Ω
Control Grid	5.5 Ω .50 Ω .05 Ω
Screen to GND	100,000 Ω

6D6

Heater	.01 ohm
Heater	.01 ohm
Cathode	400 ohms
Suppressor	400 ohms
Screen to B+	100,000 ohms
Plate to B+	9 Ω
Control Grid	705,000 ohms

75

Heater	.01 Ω
Heater	.01 Ω
Cathode	5000 Ω
Diode Plate	105,000 Ω
Diode Plate	305,000 Ω
Plate to B+	200,000 Ω
Control Grid:	
V. C. on 1,000,000; V. C. off 500,000	

42

Heater	.01 Ω
Heater	.01 Ω
Cathode	400 Ω
Control Grid	250,000 Ω
Screen Grid to B+	0
Plate to B+	310 Ω

80

Filament to B+	1400 Ω
Filament to B+	1400 Ω
Plate	135 Ω
Plate	145 Ω

All resistances taken to ground unless otherwise specified. Three readings following control grid of 6A7 and plate of 6D6 signify A, B, and C wave band position resistances.

COIL AND TRANSFORMER RESISTANCES

A Band Ant. Pri.	19.0	B Band Ant. Sec.	.55	C Band R. F. Sec.	.05	Power Trans. 5 V. Sec.	.01
A Band Ant. Sec.	4.7	B Band R. F. Pri.	.72	C Band Osc. Pri.	.50	Power Trans. 6 V. Sec.	.01
A Band R. F. Pri.	.9	B Band R. F. Sec.	.50	C Band Osc. Sec.	.05	Power Trans. HI. V. Sec.	135-145—280
A Band R. F. Sec.	5.5	B Band Osc. Pri.	.58	1st I. F. Pri.	9.0	Output Transformer Pri.	310
A Band Osc. Pri.	8.2	B Band Osc. Sec.	.47	1st I. F. Sec.	13.5	Output Transformer Sec.	.4
A Band Osc. Sec.	.67	C Band Ant. Pri.	.26	2nd I. F. Pri.	9.0	Speaker Field	1400
B Band Ant. Pri.	.43	C Band Ant. Sec.	.05	2nd I. F. Sec.	13.5	Speaker Voice Coil	.47
		C Band R. F. Pri.	.50	Power Trans. Pri.	6.5	Speaker Field Used As B Filter Choke.	

MODEL 61M-62M SOCKET VOLTAGES

Tube	Heaters	Cathode	Suppressor Grid	Screen Grid	Plate	*Oscillator Grid 1500 KC	*Anode Grid	Diode Plates
6K7	6.3	3.0	3.0	90	250	.....	.....	.....
6A8	6.3	3.0	.....	90	250	3-10	180	.....
6K7	6.3	3.0	3.0	90	250			.....
6H6	6.3	.....	.....	.....	.....	DROP ACROSS SPEAKER FIELD—60 V.		†2.9
6F5	6.3	1.5	.....	.....	120	*—Measured with Vacuum Tube Voltmeter		.....
6F6	6.3	18.0	.....	250	240	†—No Signal		.....
5Z4	5.0	310	.....	.....	.....	.....	.....	.....

POINT TO POINT RESISTANCES

6K7

Heater	.01
Shell	0
Heater	.01
Cathode	400
Suppressor	400
Screen to B+	30,000
Screen to GND	100,000
Plate to B+	.9 .72 .50
Control Grid	705,000

6A8

Heater	.01
Shell	0
Heater	.01
Cathode	300
Osc. Grid	50,300
Anode to B+	20,000
Screen to B+	30,000
Screen to GND	100,000
Plate to B+	1000
Control Grid	5.5 .50 .05

6K7

Heater	.01
Shell	0
Heater	.01
Cathode	400
Suppressor	400
Screen to B+	100,000
Plate to B+	9
Control Grid	700,000

6H6

Heater	.01
Shell	0
Heater	.01
Cathode	0
Cathode	0
Plate	100,000
Plate	300,000

6F5

Heater	.01
Shell	0
Heater	.01
Cathode	5000
Plate to B+	200,000
Control Grid:	
V. C. on 1,000,000; V. C. off 500,000	

6F6

Heater	.01
Shell	0
Heater	.01
Cathode	400
Screen to B+	0
Plate to B+	310
Control Grid	250,000

5Z4

Heater to B+	1400
Shell	0
Heater to B+	1400
Plate	115
Plate	125
Cathode to B+	1400

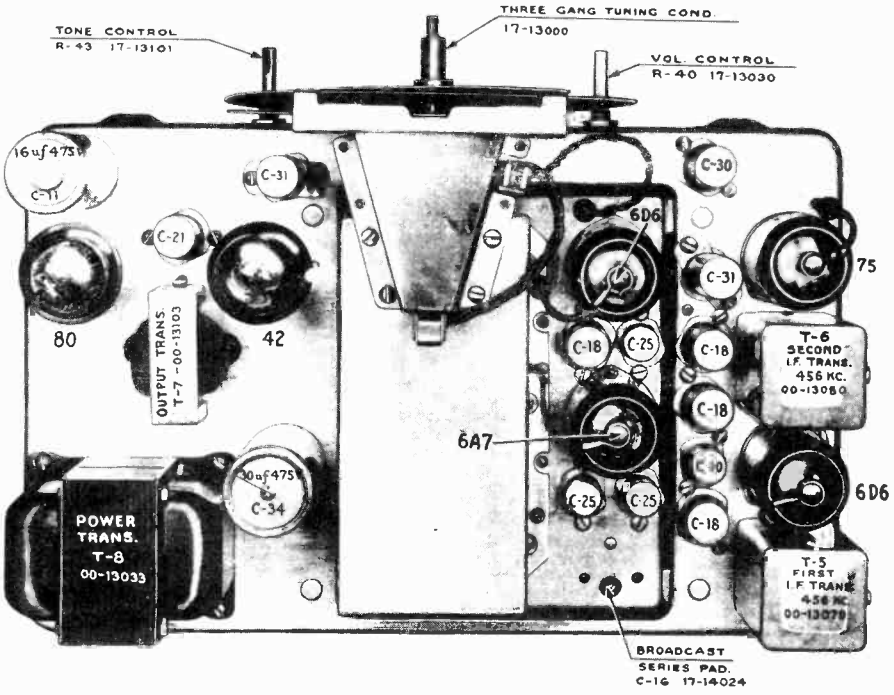
All resistances taken to ground unless otherwise specified. Three readings following grid of 6A8 and plate of 6K7 signify A, B, and C, wave band positions.

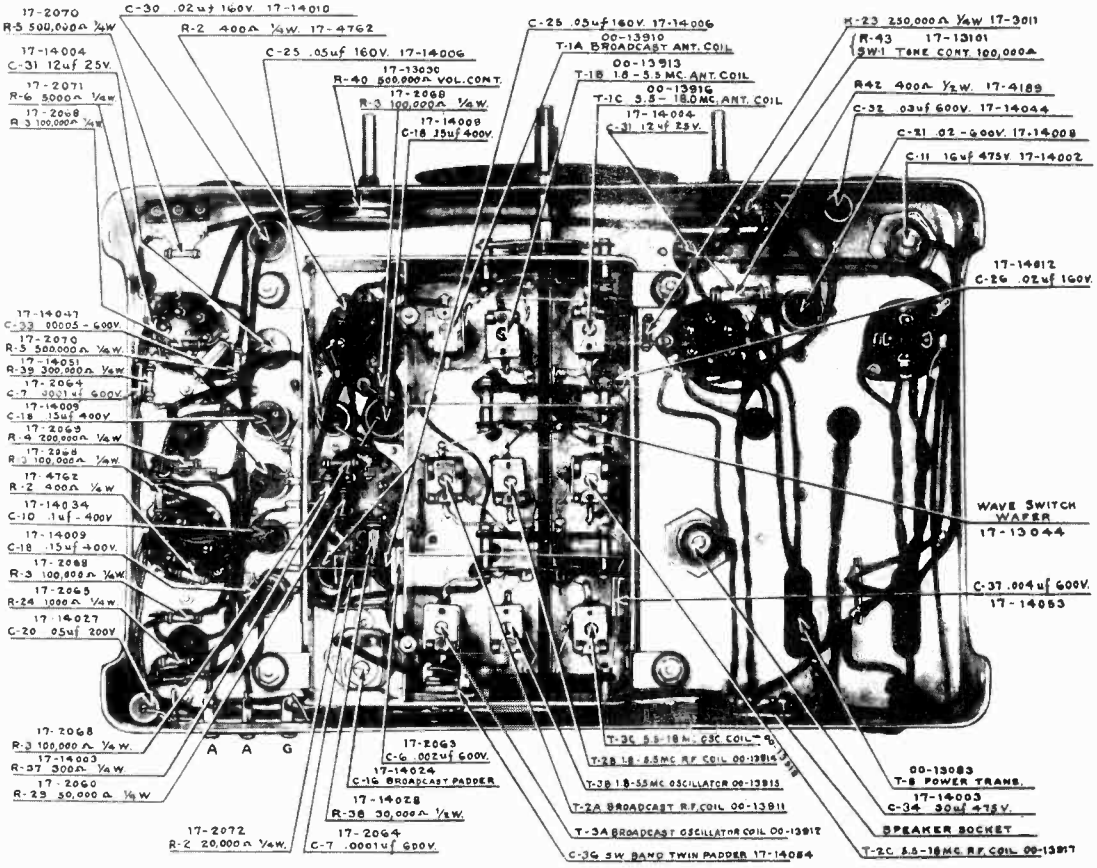
COIL AND TRANSFORMER RESISTANCES

A Band Ant. Pri.	19.0	B Band R. F. Pri.	.72	C Band Osc. Pri.	.50	Power Trans. 6 V. Sec.	.01
A Band Ant. Sec.	4.7	B Band R. F. Sec.	.50	C Band Osc. Sec.	.05	Power Trans. HI. V. Sec.	125-135—260
A Band R. F. Pri.	.9	B Band Osc. Pri.	.58	1st I. F. Pri.	9.0	Output Transformer Pri.	310
A Band R. F. Sec.	5.5	B Band Osc. Sec.	.47	1st I. F. Sec.	13.5	Output Transformer Sec.	.4
A Band Osc. Pri.	8.2	C Band Ant. Pri.	.26	2nd I. F. Pri.	9.0	Speaker Field	1400
A Band Osc. Sec.	.67	C Band Ant. Sec.	.05	2nd I. F. Sec.	13.5	Speaker Voice Coil	.47
B Band Ant. Pri.	.43	C Band R. F. Pri.	.50	Power Trans. Pri.	6.5	Speaker Field Used As B Filter Choke.	
B Band Ant. Sec.	.55	C Band R. F. Sec.	.05	Power Trans. 5 V. Sec.	.01		

MODELS 61, 62
Socket, Trimmers
Chassis

NOBLITT SPARKS INDUSTRIES

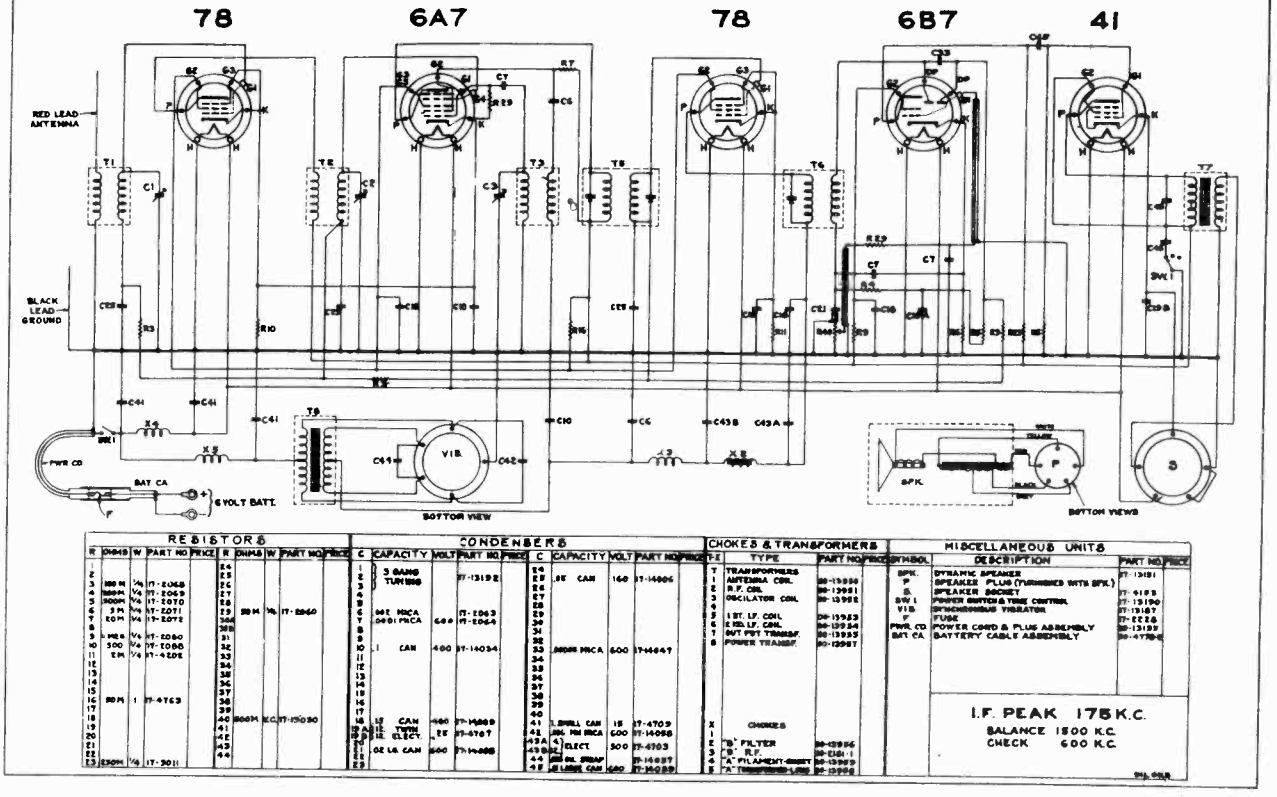




NOBLITT SPARKS INDUSTRIES

MODELS 61-B, 62-B
Schematic, Voltage
Alignment, Resistance
Coils, Parts

SCHEMATIC CIRCUIT DIAGRAM
ARVIN HOME RADIO ~ MODEL 61B & 62B



VOLTAGES

MODELS 61B AND 62B

Tube	Heater	Plate	Screen Grid	Cathode	Anode Grid	Oscillator Grid	Suppressor Grid
78	6.3	225	85	3.0	.....	.....	3.0
6A7	6.3	225	85	3.0	140	*2-8	.....
78	6.3	225	85	3.6	.....	.....	3.6
6B7	6.3	35	20	2.1	.....	.....	.....
41	6.3	222	225	15.0	.....	.....	.....

BALANCING

Adjust Radio Dial to	Connect Balancing Oscillator to	Balancing Oscillator Frequency	Padder No.
	6A7 Grid Cap	175 K. C.	1
	6A7 Grid Cap	175 K. C.	2
	6A7 Grid Cap	175 K. C.	3
	6A7 Grid Cap	175 K. C.	4
1.5	Terminals A-A	1500 K. C.	5
1.4	Terminals A-A	1400 K. C.	6
1.4	Terminals A-A	1400 K. C.	7

Make all adjustments with output meter

POINT TO POINT RESISTANCES

78

Heater	0
Heater	∞
Cathode	500 Ω
Suppressor Grid	500 Ω
Screen to B+	50,000 Ω
Plate to B+	1.3 Ω
Control Grid	1,700,000 Ω

6A7

Heater	0
Heater	∞
Cathode	500 Ω
Osc. Grid	50,500 Ω
Anode Grid to B+	20,000 Ω
Screen Grid to B+	50,000 Ω
Plate to B+	65 Ω
Control Grid	1,600,000 Ω

78

Heater	0
Heater	∞
Cathode	2,000 Ω
Suppressor	2,000 Ω
Screen to B+	50,000 Ω
Plate to B+	100 Ω
Control Grid	1,500,000 Ω

6B7

Heater	0
Heater	∞
Cathode	5,000 Ω
Diode	205,000 Ω
Diode	500,000 Ω
Screen to B+	1,000,000 Ω
Plate to B+	250,000 Ω
Control Grid	
Vol. Control On	550,000 Ω
Vol. Control Off	50,000 Ω

41

Heater	0
Heater	∞
Cathode	540 Ω
Control Grid	500,000 Ω
Screen to B+	0
Plate to B+	500 Ω

Vibrator

Heater to B+	160 Ω
Heater to B+	175 Ω
Cathode to "A" Lead	.02 Ω
Grid	0
Plate to "A" Lead	.02 Ω

(Pin arrangement same as 37 tube)

All readings taken to ground unless otherwise specified.
Vibrator should be removed but speaker connected to socket on rear of chassis.
Heater readings are taken with all tubes and dial light bulb removed.

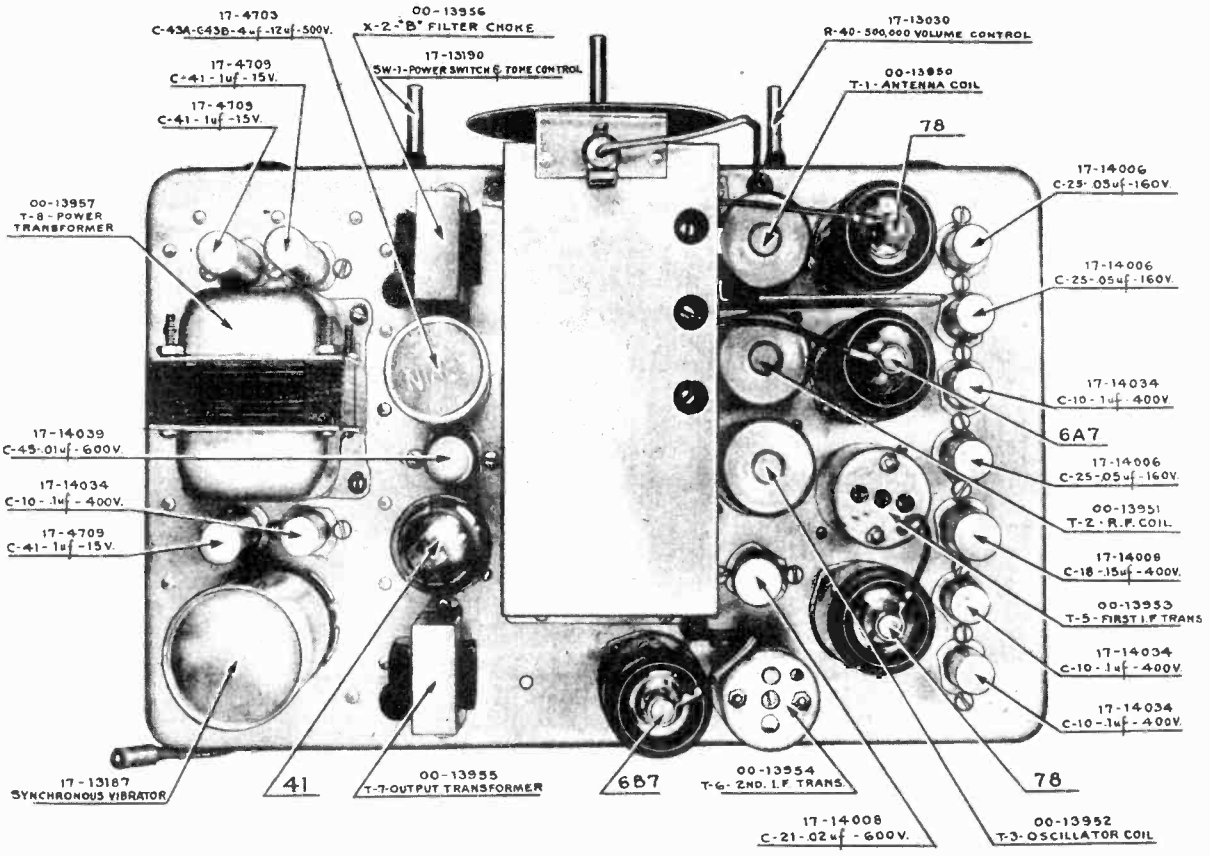
COIL AND TRANSFORMER RESISTANCES

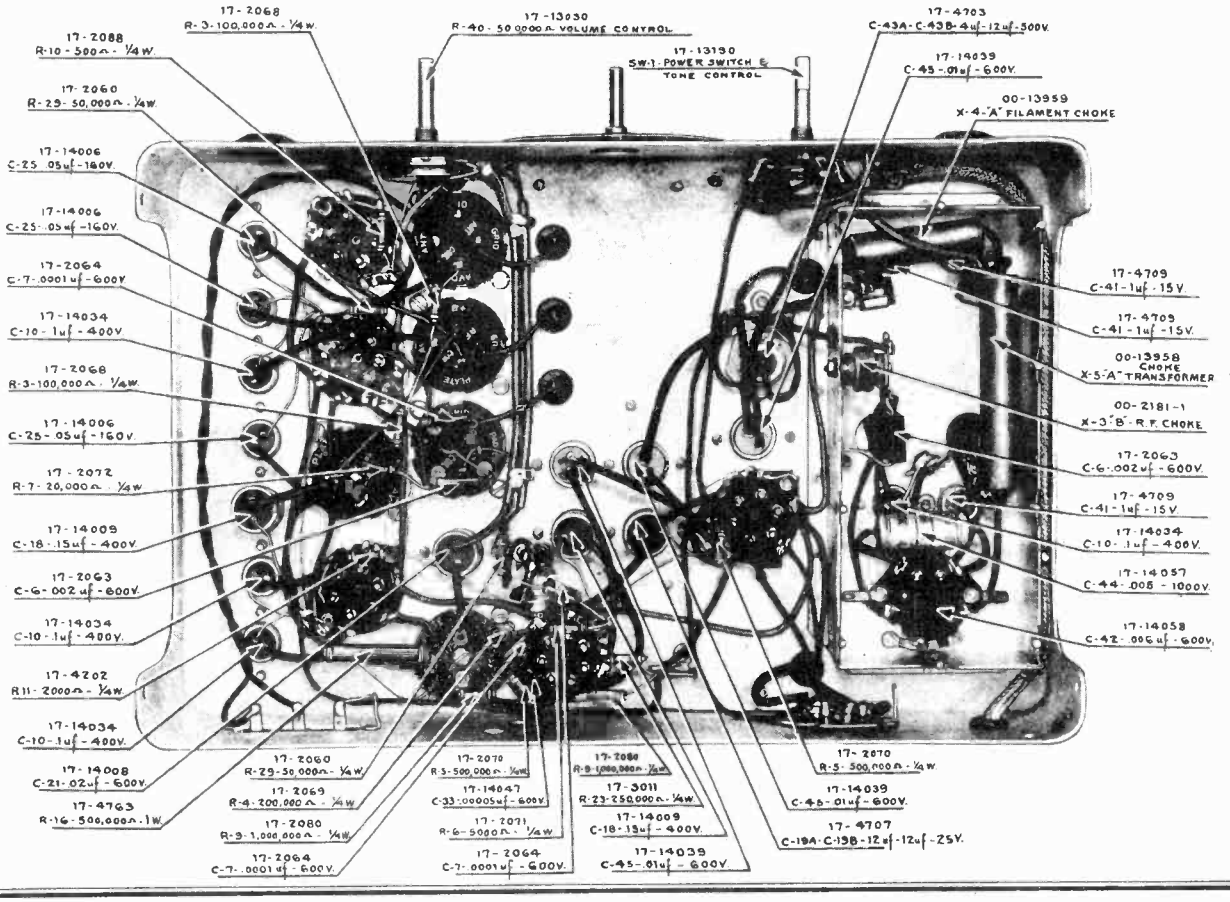
Antenna Pri.	19.5 Ω
Antenna Sec.	5.0 Ω
R. F. Pri.	1.3 Ω
R. F. Sec.	5.0 Ω
Oscillator Pri.	1.7 Ω
Oscillator Sec.	8.2 Ω
1st I. F. Trans. Pri.	65.0 Ω
1st I. F. Trans. Sec.	65.0 Ω
2nd I. F. Trans. Pri.	100.0 Ω
2nd I. F. Trans. Sec.	100.0 Ω
Output Trans. Pri.	490.0 Ω
Output Trans. Sec.	1.25 Ω
Power Trans. Pri.	.05 Ω
Power Trans. Sec.	160-175—335 Ω
Speaker Field	540-8—548 Ω
Speaker Voice Coil	.65 Ω
Filter Choke	145 Ω

CAUTION—This radio is polarized and will operate only when the chassis (cable shield) is connected to the negative pole and the yellow A lead wire connected to the positive pole of a six volt storage battery.

MODELS 61-B, 62-B
Socket, Trimmers
Chassis

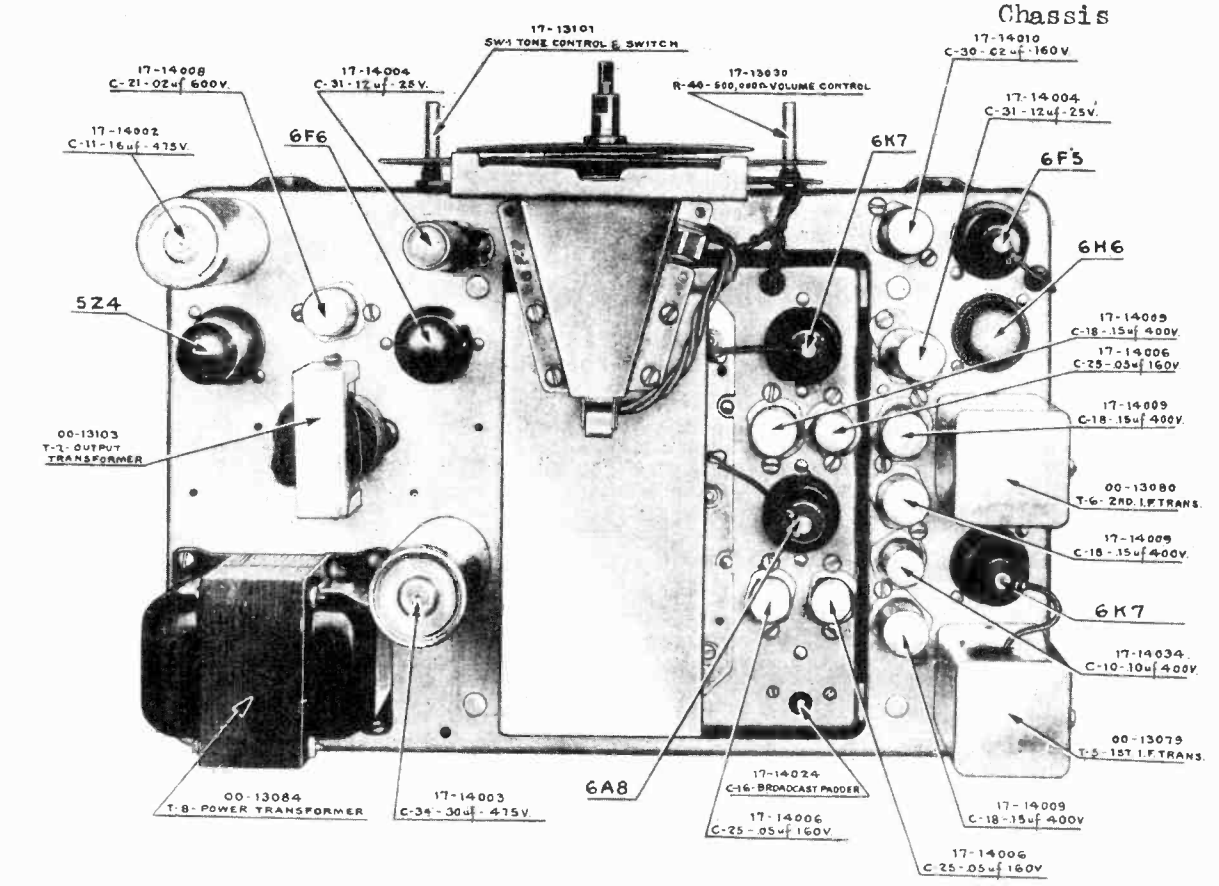
NOBLITT SPARKS INDUSTRIES

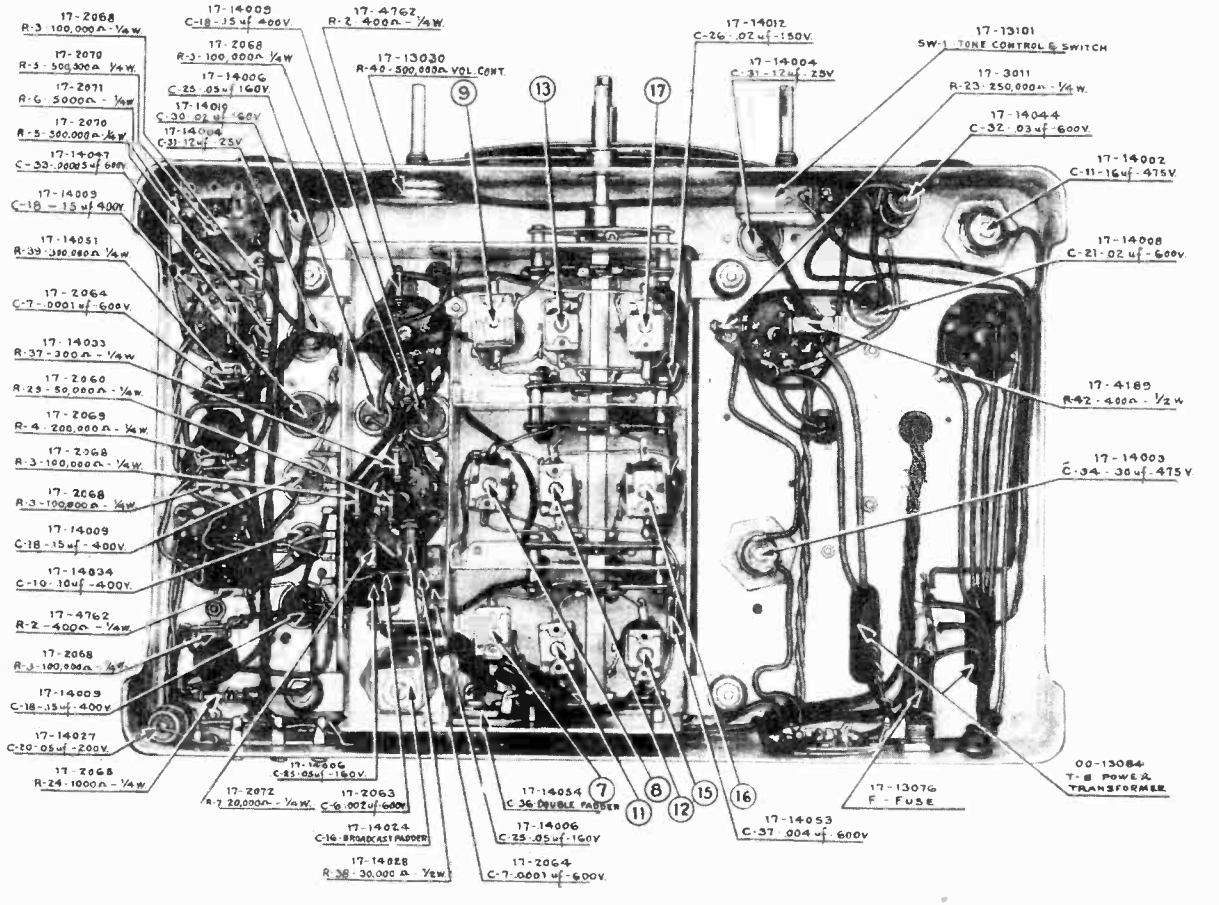




NOBLITT SPARKS INDUSTRIES

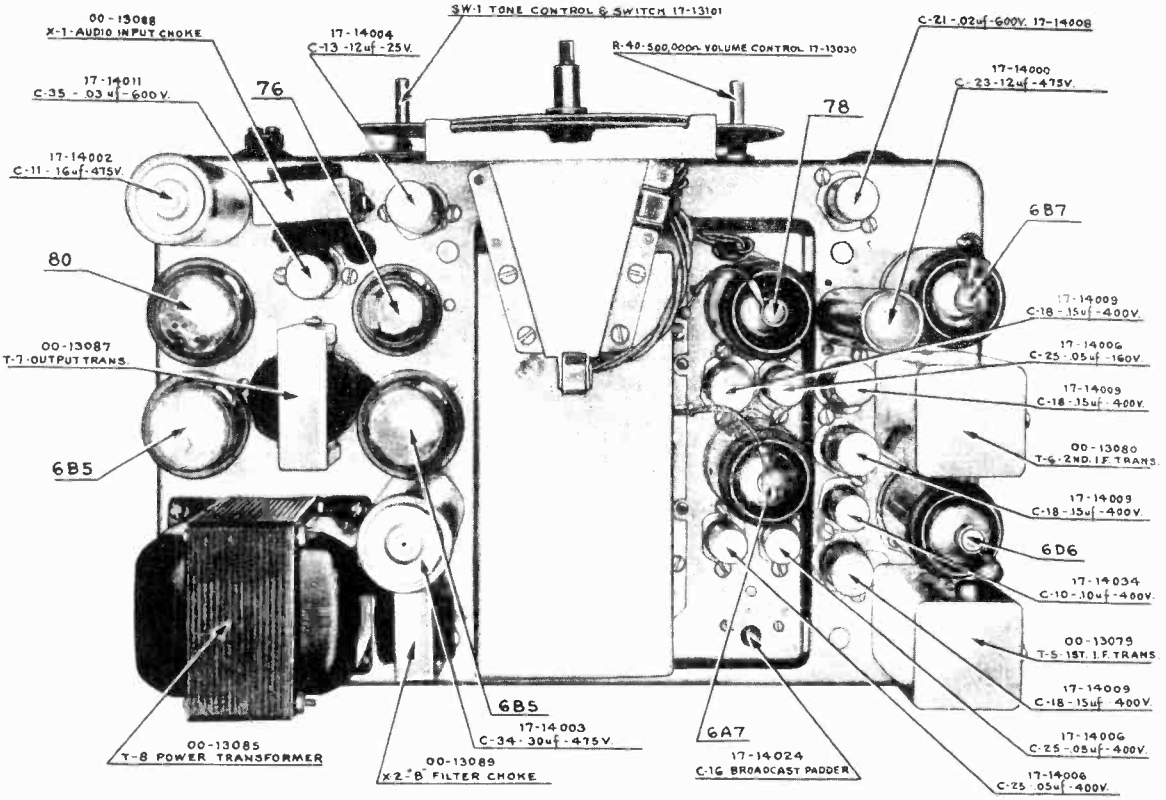
MODEL 61-M, 62-M
Socket, Trimmers
Chassis

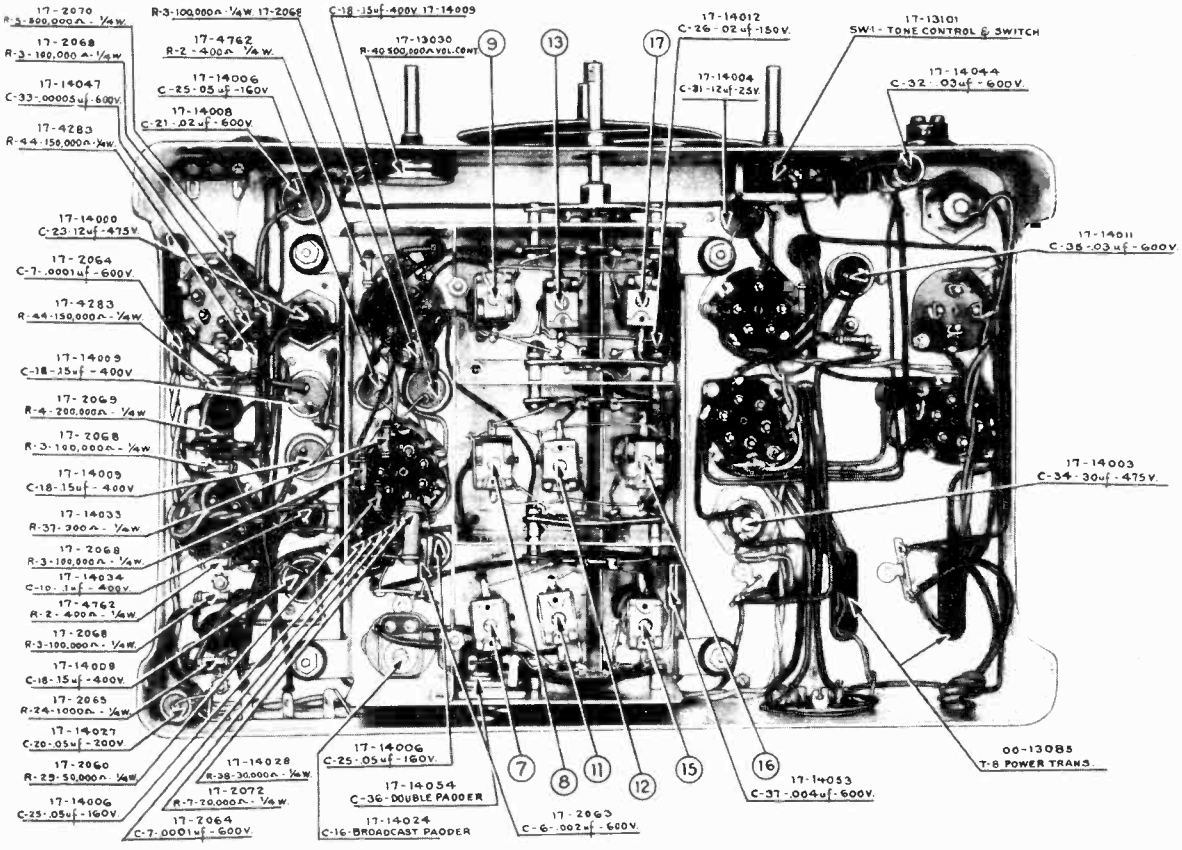




MODEL 81
Socket, Trimmers
Chassis

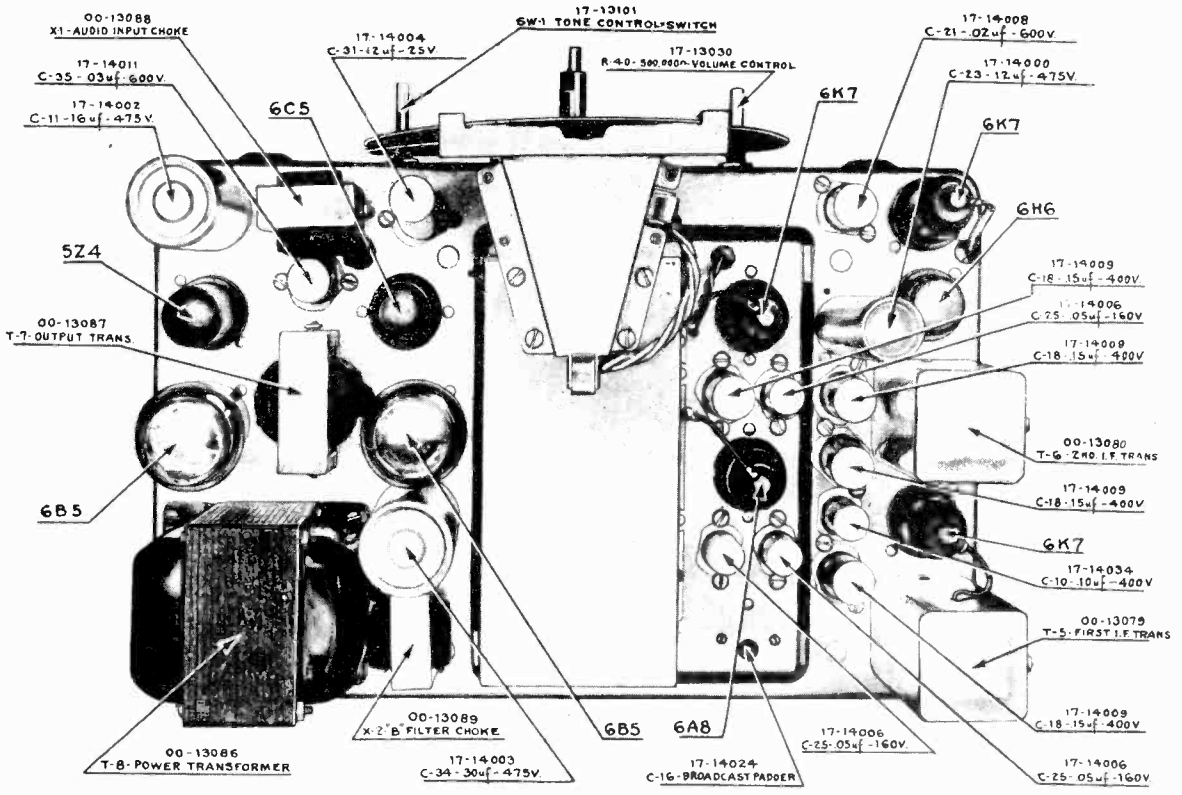
NOBLITT SPARKS INDUSTRIES

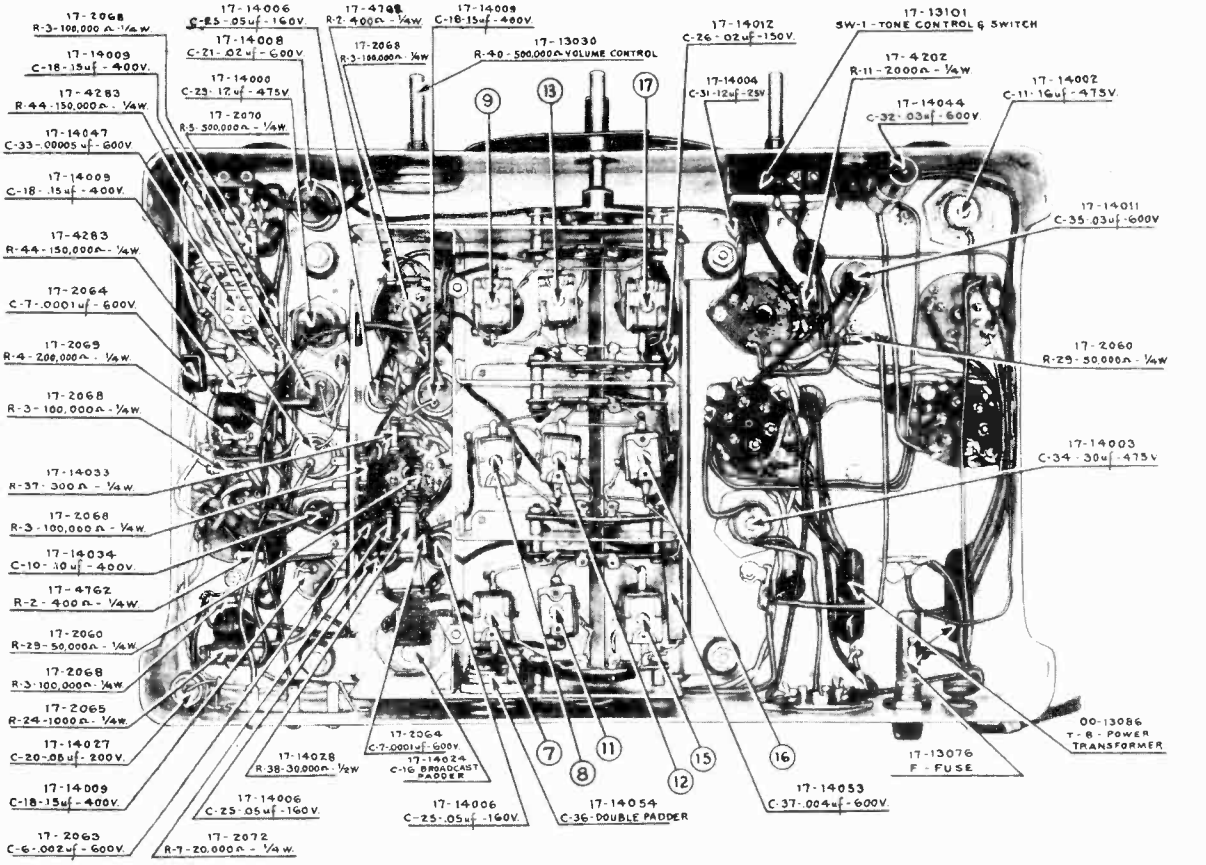




NOBLITT SPARKS INDUSTRIES

MODEL 81-M
Socket, Trimmers
Chassis





MODELS 81 & 81-M
Voltage, Resistance
Coil Data

NOBLITT SPARKS INDUSTRIES

MODEL 81 SOCKET VOLTAGES

Tube	Heaters	Cathode	Suppressor Grid	Screen Grid	Plate	*Oscillator Grid 1500 KC	*Anode Grid
6D6-78	6.3	3.0	3.0	90	250	.....	.....
6A7	6.3	3.0	.....	90	250	4-12	180
6D6	6.3	3.0	3.0	90	250	.....	.....
6B7	6.3	1.5	.....	15	15	.....	.....
76	6.3	8.0	.....	.....	195	.....	.....
6B5	6.3	0	.....	250	240	.....	.....
6B5	6.3	0	.....	250	240	.....	.....
80	5.0	310	.....	.....	300 A.C.	.....	.....

*Measured with V. T. Voltmeter Only.

POINT TO POINT RESISTANCES

6D6
Heater ..... .01 ohm
Heater ..... .01 ohm
Cathode ..... 400 ohms
Suppressor ..... 400 ohms
Screen to B+ ..... 30,000 ohms
Screen to Ground ..... 100,000 ohms
Plate to B+ ..... .9 Ω .72 Ω .5 Ω
Control Grid ..... 700,000 Ω

6A7
Heater ..... .01 Ω
Heater ..... .01 Ω
Cathode ..... 300 Ω
Osc. Grid ..... 50,300 Ω
Osc. Anode to B+ ..... 20,000 Ω
Screen to B+ ..... 30,000 Ω
Screen to GND ..... 100,000 Ω
Plate to B+ ..... 1000 Ω
Control Grid ..... 5.5 Ω .50 Ω .05 Ω

6D6
Heater ..... .01 Ω
Heater ..... .01 Ω
Cathode ..... 400 Ω
Suppressor ..... 400 Ω
Screen to B+ ..... 100,000 Ω
Plate to B+ ..... 9 Ω
Control Grid ..... 700,000 Ω

6B7
Heater ..... .01 Ω
Heater ..... .01 Ω
Cathode 0
Diode ..... 100,000 Ω
Diode ..... 300,000 Ω
Screen to B+ ..... 200,000 Ω
Plate to B+ ..... 200,000 Ω
Control Grid ..... 150,000 Ω

76
Heater ..... .01 Ω
Heater ..... .01 Ω
Cathode ..... 2000 Ω
Grid ..... V. C. on 500,000 Ω; V. C. off 0
Plate to B+ ..... 10,000 Ω

6B5
Heater ..... .01 Ω
Heater ..... .01 Ω
Cathode 0
Control Grid ..... 2700 Ω
Plate No. 1 to B+ ..... 120 Ω
Output Plate ..... 340 Ω

6B5
Heater ..... .01 Ω
Heater ..... .01 Ω
Cathode 0
Control Grid ..... 2300 Ω
Plate No. 1 ..... 120 Ω
Output Plate ..... 320 Ω

80
Filament to B+ ..... 1020 Ω
Filament to B+ ..... 1020 Ω
Plate ..... 130 Ω
Plate ..... 140 Ω

ALL READINGS TAKEN TO GROUND UNLESS OTHERWISE SPECIFIED.
SPEAKER SHOULD BE LEFT CONNECTED.

Three readings following control grid of 6A7 and plate of 6D6 signify A, B, and C, wave band position resistances.

COIL AND TRANSFORMER RESISTANCES

A Band Ant. Pri. 19.0
A Band Ant. Sec. 4.7
A Band R. F. Pri. 9
A Band R. F. Sec. 5.5
A Band Osc. Pri. 8.2
A Band Osc. Sec. ..... .67
B Band Ant. Pri. ..... .43
B Band Ant. Sec. ..... .55
B Band R. F. Pri. ..... .72
B Band R. F. Sec. ..... .50
B Band Osc. Pri. ..... .58
B Band Osc. Sec. ..... .47
C Band Ant. Pri. ..... .26
C Band Ant. Sec. ..... .05
C Band R. F. Pri. ..... .50
C Band R. F. Sec. ..... .05
C Band Osc. Pri. ..... .50
C Band Osc. Sec. ..... .05
1st I. F. Pri. 9.0
1st I. F. Sec. 13.5
2nd I. F. Pri. 9.0
2nd I. F. Sec. 13.5
Power Trans. Pri. 3.65
Power Trans. 5 V. Sec. ..... .01
Power Trans. 6 V. Sec. ..... .01
Power Trans. HI. V. Sec. ..... 140-130—270
Output Trans. Pri. ..... 220-200—420
Output Trans. Sec. ..... .08
B Filter Choke 120
Speaker Field 900
Speaker Voice Coil 2
Audio Input Trans. ..... 2300-2700—5000

MODEL 81M SOCKET VOLTAGES

Tube	Heaters	Cathode	Suppressor Grid	Screen Grid	Plate	Oscillator Grid 1500 KC	Anode Grid	Shell
6K7	6.3	3.0	3.0	90	250	.....	.....	0
6A8	6.3	3.0	.....	90	250	4-12	150	0
6K7	6.3	3.0	3.0	90	250	.....	.....	0
6H6	6.3	0	.....	.....	.....	.....	.....	0
6K7	6.3	0	0	13	13	.....	.....	0
6C5	6.3	6.0	.....	.....	110	.....	.....	0
6B5	6.3	0	.....	250	240	.....	.....	0
6B5	6.3	0	.....	250	240	.....	.....	0
5Z4	5.0	310	.....	.....	300 A.C.	.....	.....	0

POINT TO POINT RESISTANCES

6K7
Heater ..... .01
Heater ..... .01
Shell 0
Cathode 400
Suppressor 400
Screen 100,000
Plate to B+ ..... .9 .72 .50
Control Grid 700,000
Screen to B+ 30,000

6A8
Heater ..... .01
Heater ..... .01
Shell 0
Osc. Grid 50,300
Anode Grid to B+ 20,000
Screen 100,000
Plate to B+ 1000
Control Grid ..... 5.5 .50 .05
Cathode 300
Screen to B+ 30,000

6K7
Heater ..... .01
Heater ..... .01
Shell 0
Cathode 400
Suppressor 400
Screen to B+ 100,000
Plate to B+ 9
Control Grid 700,000

6H6
Heater ..... .01
Heater ..... .01
Shell 0
Cathode 0
Cathode 0
Plate 100,000
Plate 300,000

6K7
Heater ..... .01
Heater ..... .01
Shell 0
Cathode 0
Suppressor 0
Screen to B+ 200,000
Plate 200,000
Control Grid 150,000

6C5
Heater ..... .01
Heater ..... .01
Shell 0
Cathode 2000
Control Grid:
..... V. C. on 500,000; V. C. off 0
Plate to B+ 50,000

6B5
Heater ..... .01
Heater ..... .01
Cathode 0
Plate to B+ 0
Output Plate to B+ 220
Control Grid 2300

6B5
Heater ..... .01
Heater ..... .01
Cathode 0
Plate to B+ 0
Output Plate to B+ 200
Control Grid 2700

5Z4
Heater to B+ 900
Heater to B+ 900
Shell 0
Cathode to B+ 900
Plate 110
Plate 110

All readings taken to ground unless otherwise specified. Speaker should be left connected.
Three readings following control grid of 6A8 and plate of 6K7 signify A, B, and C wave band position resistances.

COIL AND TRANSFORMER RESISTANCES

A Band Ant. Pri. 19.0
A Band Ant. Sec. 4.7
A Band R. F. Pri. 9
A Band R. F. Sec. 5.5
A Band Osc. Pri. 8.2
A Band Osc. Sec. ..... .67
B Band Ant. Pri. ..... .43
B Band Ant. Sec. ..... .55
B Band R. F. Pri. ..... .72
B Band R. F. Sec. ..... .50
B Band Osc. Pri. ..... .58
B Band Osc. Sec. ..... .47
C Band Ant. Pri. ..... .26
C Band Ant. Sec. ..... .05
C Band R. F. Pri. ..... .50
C Band R. F. Sec. ..... .05
C Band Osc. Pri. ..... .50
C Band Osc. Sec. ..... .05
1st I. F. Pri. 9.0
1st I. F. Sec. 13.5
2nd I. F. Pri. 9.0
2nd I. F. Sec. 13.5
Power Trans. Pri. 3.65
Power Trans. 5 V. Sec. ..... .01
Power Trans. 6 V. Sec. ..... .01
Power Trans. HI. V. Sec. ..... 110-120—230
Output Trans. Pri. ..... 220-200—420
Output Trans. Sec. ..... .08
Audio Input Trans. ..... 2300-2700—5000
B Filter Choke 120
Speaker Field 900
Speaker Voice Coil 2
A Band Designates St. Bdcst. ... 55-1.8 M.C.
B Band Designates Commercial . 1.8-5.5 M.C.
C Band Designates Foreign Bcst. 5.5-18M.C.

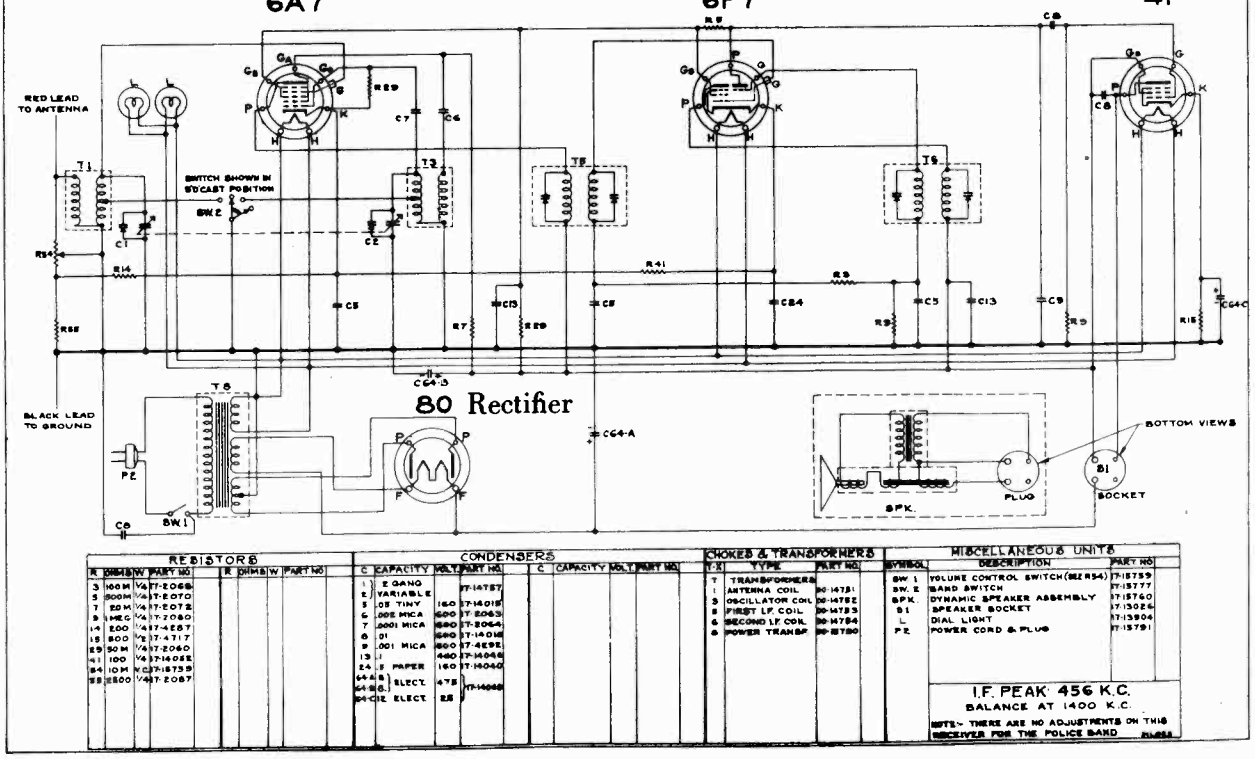
SEE INDEX FOR ALIGNMENT & TRIMMER LOCATIONS

MODELS 417,467
Schematic,Voltage
Resistance,Coils
Parts List

NOBLITT SPARKS INDUSTRIES

SCHEMATIC CIRCUIT DIAGRAM
ARVIN HOME RADIO MODELS 417 & 467

1st Detector-Oscillator 6A7 — I. F. Amplifier, Detector, Bias Rectifier 6F7 — Audio Output 41



RESISTORS

R	OHMS	W	PART NO.	R	OHMS	W	PART NO.
3	100 M	½	17-2068				
5	500M	½	17-2070				
7	20 M	½	17-2072				
9	1 MEG	½	17-2080				
14	200	½	17-4267				
15	800	½	17-4717				
39	50 M	½	17-2060				
41	100	½	17-1405S				
54	10 M	½	17-1673S				
55	2500	½	17-2087				

CONDENSERS

C	CAPACITY	VOLT.	PART NO.
1	2 GANG VARIABLE		17-1675T
2	.03 TINY	160	17-1401S
5	.005 MICA	500	17-2063
7	.0001 MICA	500	17-2064
8	.01	500	17-1401S
9	.001 MICA	500	17-4692
13		440	17-1404S
24	.5 PAPER	160	17-1404S
64-A	8 ELECT.	475	17-1404S
64-B	8 ELECT.	25	
64-C	12 ELECT.		

CHOKES & TRANSFORMERS

T-X	TYPE	PART NO.
T	TRANSFORMER	
1	ANTENNA COIL	30-1473
3	OSCILLATOR COIL	30-1475
5	FIRST I.F. COIL	30-1473
6	SECOND I.F. COIL	30-1784
8	POWER TRANSF.	30-1579

MISCELLANEOUS UNITS

SYMBOL	DESCRIPTION	PART NO.
SW. 1	VOLUME CONTROL SWITCH (SEE R54)	17-1575
SW. 2	BAND SWITCH	17-1577
SPK.	DYNAMIC SPEAKER ASSEMBLY	17-1576
S1	SPEAKER SOCKET	17-1302
L	DIAL LIGHT	17-1390
P.E.	POWER CORD & PLUG	17-1579

I.F. PEAK 456 K.C.
BALANCE AT 1400 K.C.
NOTE:- THERE ARE NO ADJUSTMENTS ON THIS RECEIVER FOR THE POLICE BAND

MODEL 417-467 SOCKET VOLTAGES

(INPUT VOLTAGE 115 RMS)

Tube	Heater	Plate	Screen	Cathode	Triode Plate	Anode Grid
6A7	6.3 A. C.	275	98	3.15†	....	200
6F7	6.3 A. C.	275	98	3.75†	32	.....
41	6.3 A. C.	245	278	19.0	....	.....
80	5.0 A. C.	393 A. C.	.....	392.0	....	.....

†Volume control full on.

POINT TO POINT RESISTANCES

All readings taken to ground unless otherwise specified.

Tubes removed and speaker connected.

6A7

Heater	.1 Ω
Heater	.1 Ω
Anode Grid to B+	20,000 Ω
Plate to B+	15 Ω
Screen to B+	50,000 Ω
Cathode	200 Ω
*Control Grid	5 Ω
Oscillator Grid	50,200

*Band Switch set in

6F7

Heater	.1 Ω
Heater	.1 Ω
Plate to B+	15 Ω
Screen to B+	50,000 Ω
Cathode	300 Ω
Control Grid	1,100,000 Ω
Triode Grid	1,000,000
Triode Plate to B+	550,000

41

Heater	.1
Plate to B+	700 Ω
Screen to B+	0
Cathode	500 Ω
Control Grid	1,000,000

80

Filament to B+	1,600 Ω
Plate	440 Ω
Plate	410 Ω
Plate to Plate	850 Ω
Filament to Filament	.1

COIL, TRANSFORMER AND SPEAKER RESISTANCES

Speaker Field	1,600 Ω	T3 Osc. Secondary	1.4 Ω	T7 Output Trans. Sec.	.7 Ω
Speaker Voice Coil	.7 Ω	T5 1st I. F. Trans. Pri.	15.0 Ω	T8 Power Trans. Pri.	19.5 Ω
T1 Ant. Primary	12 Ω	T5 1st I. F. Trans. Sec.	15.0 Ω	T8 Power Trans. Sec. Hi-volt	850 Ω
T1 Ant. Secondary	5 Ω	T6 2nd I. F. Trans. Pri.	15.0 Ω	T8 Power Trans. Sec. 6V	.2 Ω
T3 Osc. Primary	11.0 Ω	T6 2nd I. F. Trans. Sec.	15.0 Ω	T8 Power Trans. Sec. 5V	.1 Ω
		T7 Output Trans. Pri.	700 Ω		

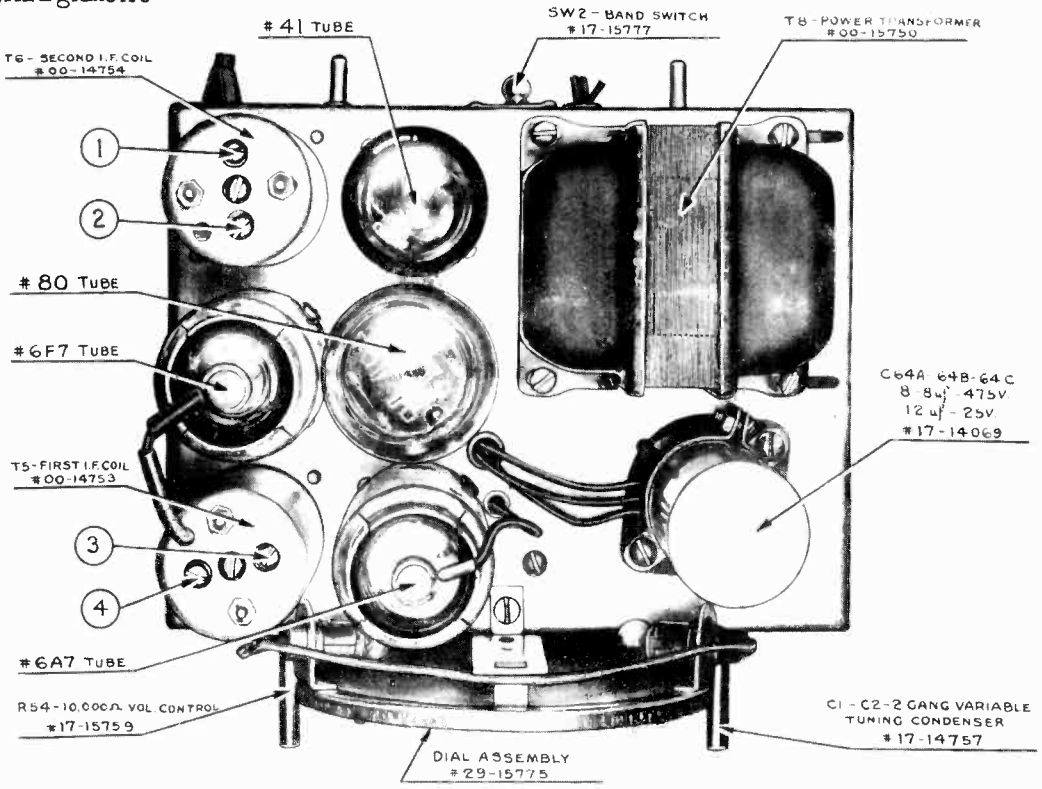
POWER OUTPUT: 3.5 Watts

SPEAKER: 5″ Dynamic Type; 3 Ohm Voice Coil

FREQUENCY RANGE: 535—1600 Kilocycles
1600—3560 Kilocycles

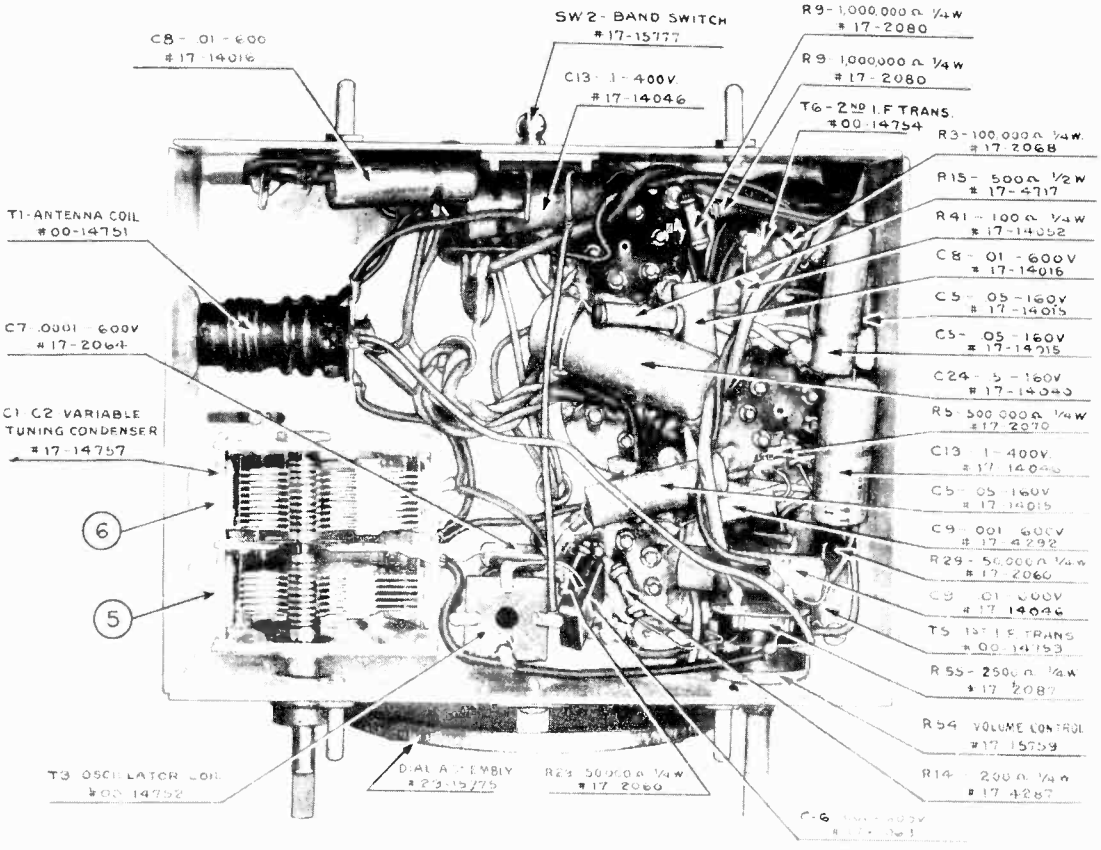
MODELS 417,467
Socket,Trimmers
Chassis,Alignment

NOBLITT SPARKS INDUSTRIES



ALIGNMENT INSTRUCTIONS

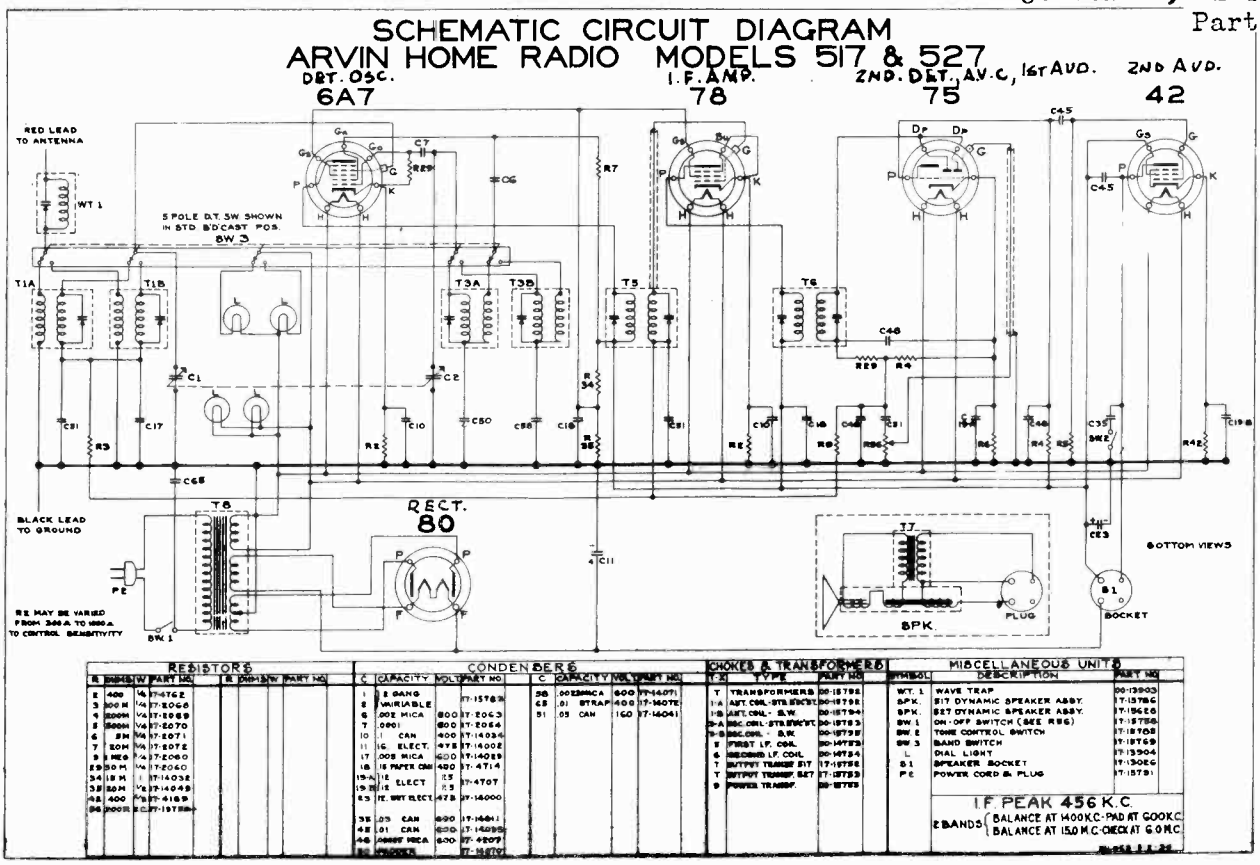
Align padders #1,2,3,4 at 456 kc, #5 at 1650 kc, and #6 at 1500 kc.



MODELS 517, 527
Schematic, Voltage
Resistance, Coils
Parts

NOBLITT SPARKS INDUSTRIES

SCHEMATIC CIRCUIT DIAGRAM
ARVIN HOME RADIO MODELS 517 & 527



RESISTORS

R	OHMS	W	PART NO.
1	400	½	17-4762
3	300 M	½	17-2066
4	2000M	½	17-2068
5	5000M	½	17-2070
6	.5M	½	17-2071
7	1.0M	½	17-2072
9	1 MEG	½	17-2060
29	30 M	½	17-2060
34	1.8 M	1	17-14032
35	.6M	½	17-14048
48	400	1	17-4169
86	2000	2	17-15788

CONDENSERS

C	CAPACITY	VOLTS	PART NO.
1	3 GANG		17-15782
2	VARIABLE		
6	.002 MICA	500	17-2063
7	.0001	500	17-2064
10	.1 CAN	400	17-14034
11	16 ELECT.	475	17-14002
17	.008 MICA	500	17-14029
18	.1 PAPER CAN	400	17-4714
19-A	.1 ELECT	25	
19-B	.1 ELECT	25	17-4707
83	.1 WAX ELECT.	475	17-14000
38	.05 CAN	600	17-14041
42	.01 CAN	600	17-14035
46	.00007 MICA	500	17-4207
80	TRIMMER		17-14030
58	.00238 MICA	600	17-14071
68	.01 STRAP	400	17-14076
81	.05 CAN	150	17-14041

CHOKES & TRANSFORMERS

T-X	TYPE	PART NO.
T	TRANSFORMER	20-15795
1-A	ANT. COIL - STD. BRDCST.	20-15798
1-B	ANT. COIL - S.W.	20-15794
2-A	OSC. COIL STD. BRDCST.	20-15793
2-B	OSC. COIL - S.W.	20-15797
5	FIRST I.F. COIL	20-14723
6	SECOND I.F. COIL	20-14724
7	OUTPUT TRANSF. SET	20-15785
7	OUTPUT TRANSF. SET	17-15753
9	POWER TRANSF.	20-15795

MISCELLANEOUS UNITS

SYMBOL	DESCRIPTION	PART NO.
WT. 1	WAVE TRAP	20-13903
SPK.	5" DYNAMIC SPEAKER ASSY.	17-15786
SPK.	SET DYNAMIC SPEAKER ASSY.	17-15626
SW. 1	ON-OFF SWITCH (SEE R86)	17-15756
SW. 2	TONE CONTROL SWITCH	17-15758
SW. 3	BAND SWITCH	17-15759
L	DIAL LIGHT	17-13904
S1	SPEAKER SOCKET	17-13026
PE	POWER CORD & PLUG	17-15791

I.F. PEAK 456 K.C.
2 BANDS { BALANCE AT 1400 K.C. - PAD AT 600 K.C.
BALANCE AT 15.0 M.C. - CHECK AT 6.0 M.C.

MODEL 517-527 SOCKET VOLTAGES

(INPUT VOLTAGE 115 RMS)

Tube	Heaters	Plate	Screen	Cathode	Oscillator Grid. 1500 KC.	Anode Grid.
6A7	6.3	270	100	5	10	195
78	6.3	270	100	4	....	.....
75	6.3	130	.....	1.5	....	.....
42	6.3	250	270	15	....	.....
80	5.0	340	.....	390	....	.....

POINT TO POINT RESISTANCES

All readings taken to ground unless otherwise stated. Tubes removed and speaker connected volume control in full on position

6A7

Heater	.0
Heater	.1
Cathode	400 ohms
Oscillator Grid	50,400 ohms
Anode Grid to B+	20,000 ohms
Screen Grid to B+	15,000 ohms
Plate to B+	15 ohms
Control Grid	1,305,000 ohms

42

Heater	.0
Heater	.1
Cathode	400 ohms
Screen Grid to B+	0
Plate to B+	700 ohms
Control Grid	500,000 ohms
Screen Grid to Ground	35,000 ohms

75

Heater	.0
Heater	.1
Cathode	5,000 ohms
Diodes	255,000 ohms
Plate to B+	200,000 ohms
Control Grid	500,000 ohms

80

Filament to B+	1,750 ohms
Plate	155 ohms
Plate	145 ohms
Plate to Plate	300 ohms

78

Heater	.0
Heater	.1
Cathode	400 ohms
Suppressor Grid	400 ohms
Screen to B+	15,000 ohms
Plate to B+	15 ohms
Control Grid	1,205,000 ohms

COIL, TRANSFORMER AND SPEAKER RESISTANCES

WT1 Wave Trap	3.0 ohms
T1A Broadcast Ant. Pri.	15.0 ohms
T1A Broadcast Ant. Sec.	3.5 ohms
T1B Short Wave Ant. Pri.	2.6 ohms
T1B Short Wave Ant. Sec.	1.7 ohms
T3A Broadcast Osc. Pri.	2.6 ohms
T3A Broadcast Osc. Sec.	1.7 ohms
T3B Shortwave Osc. Pri.	.2 ohms
T3B Shortwave Osc. Sec.	.7 ohms
T5 First I. F. Pri.	15.0 ohms
T5 First I. F. Sec.	15.0 ohms
T6 Second I. F. Pri.	15.0 ohms
T6 Second I. F. Sec.	15.0 ohms
T7 Speaker Trans. Pri.	570 ohms
T7 Speaker Trans. Sec.	2.6 ohms
Speaker Field	1,500 ohms
Speaker Voice Coil	2.6 ohms
T8 Power Trans. Pri.	6.5 ohms
T8 Power Trans. Sec. (5V)	.2 ohms
T8 Power Trans. Sec. (6V)	.2 ohms

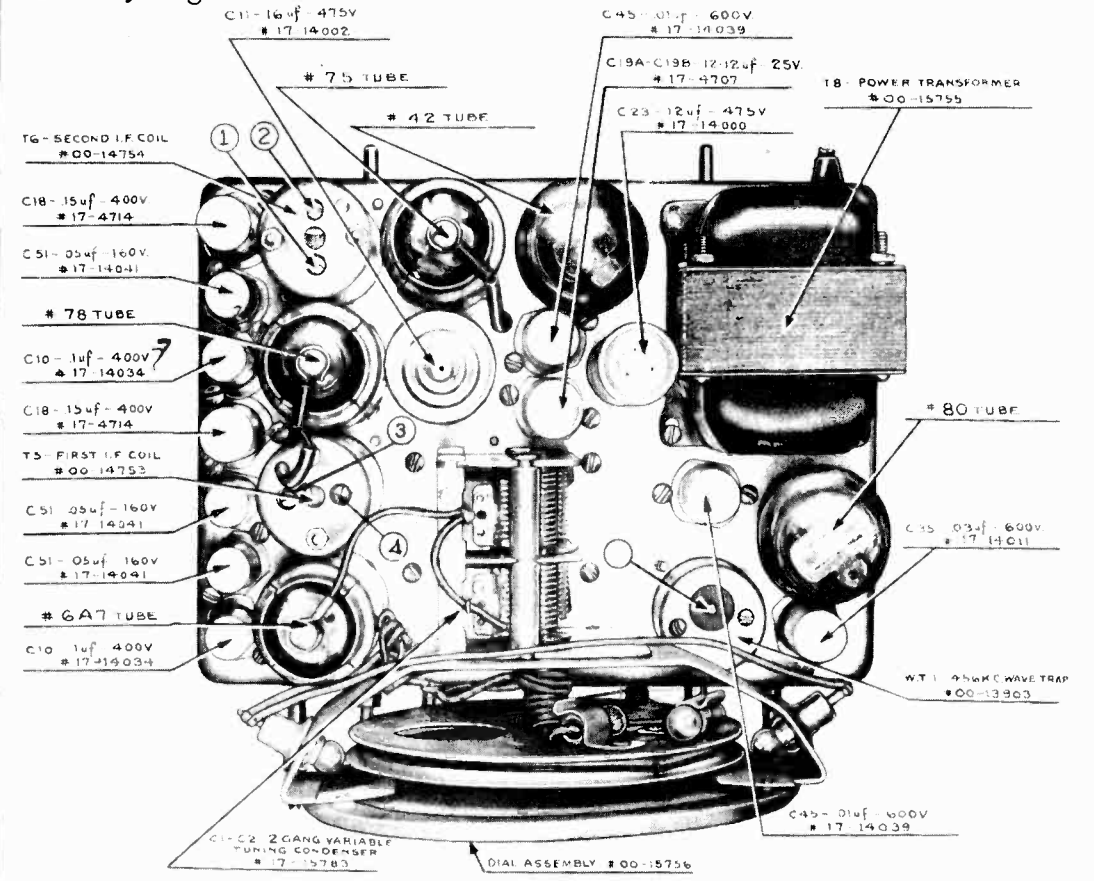
POWER OUTPUT: 3.5 Watts

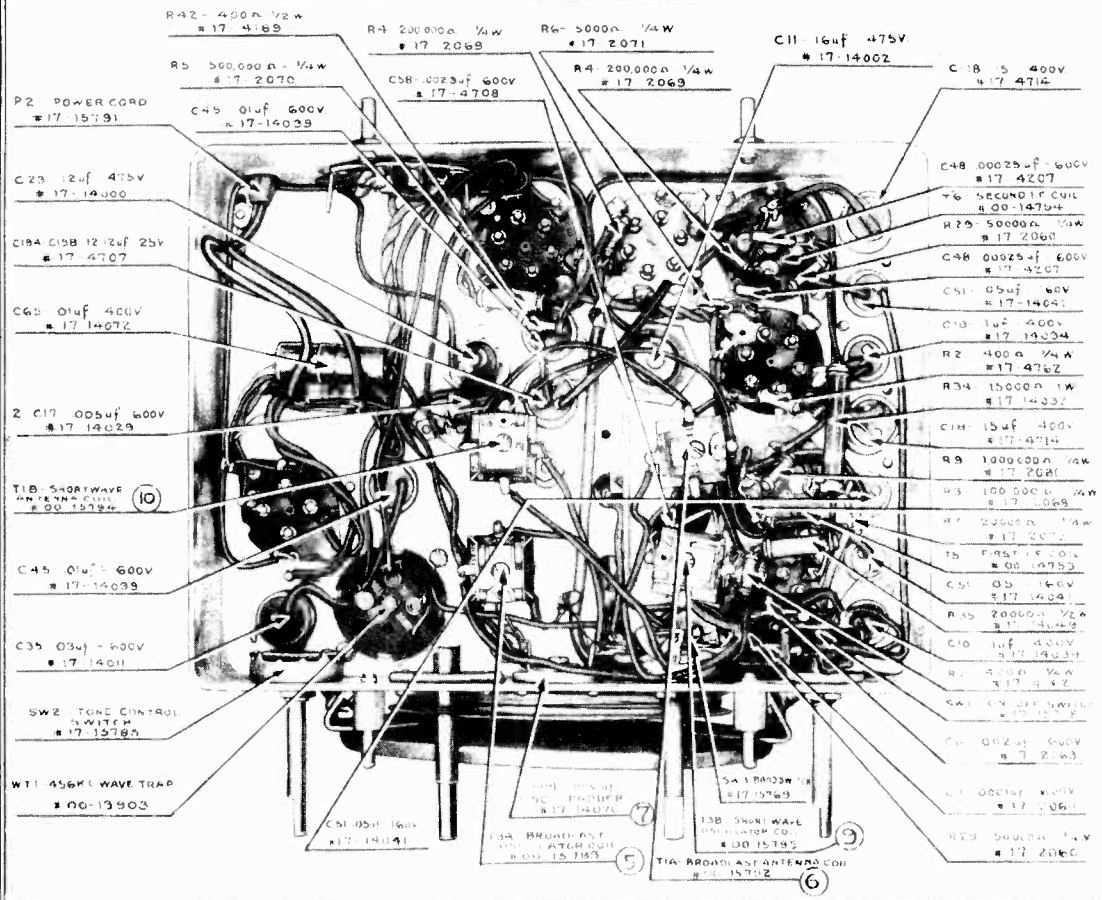
SPEAKER: 6" Dynamic; 3 Ohm Voice Coil

FREQUENCY RANGE: 535—1650 Kilocycles
5.5—18.5 Megacycles

MODELS 517,527
Socket,Trimmers
Chassis,Alignment

NOBLITT SPARKS INDUSTRIES



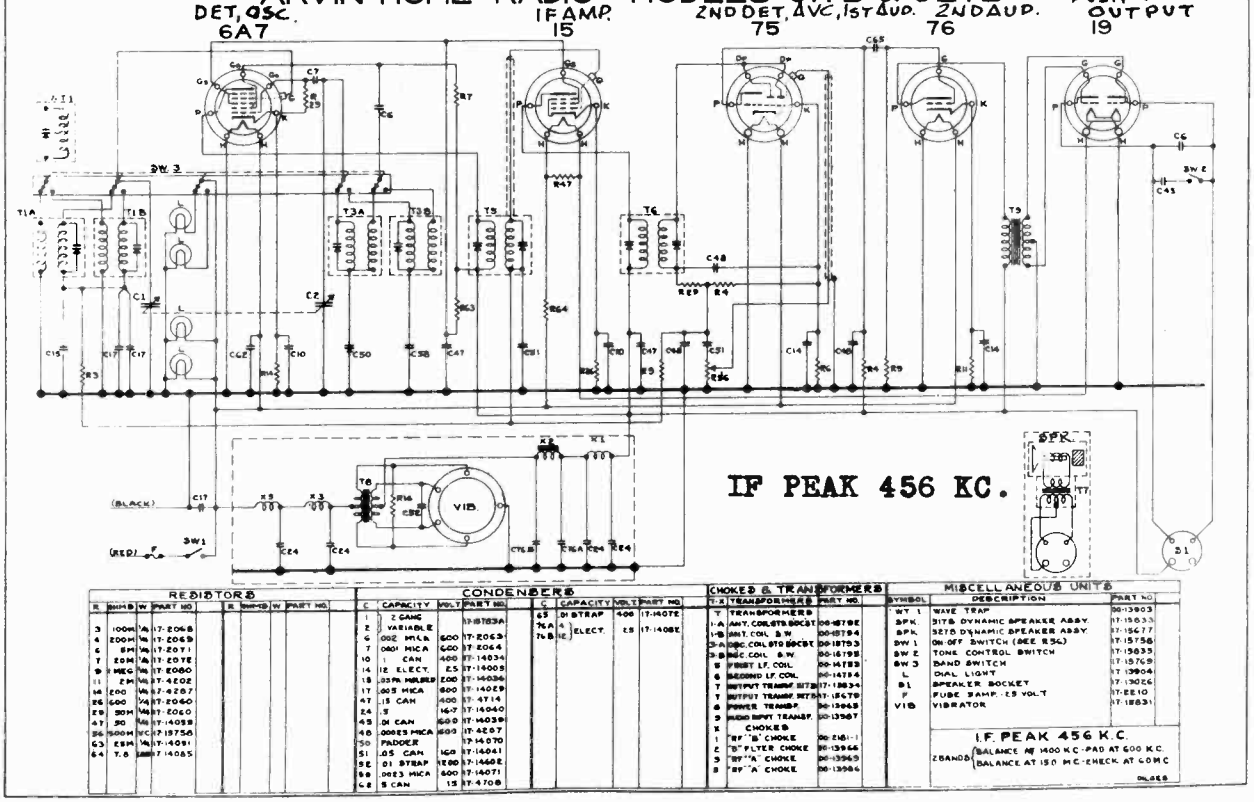


Adjust padder condensers 1,2,3 and 4 in the order designated by their numbering for maximum output. Connect oscillator to antenna lead (red wire). Rotate condenser entirely out of mesh and adjust padder number 5 for resonance at 1650 KC. Reset the balancing oscillator to 1400 KC. and rotate the tuning condenser until this signal is received. Adjust padder number 6 for maximum output. Align padder #7 at 600 KC. Align trimmer #8 at 1400 KC. Adjust trimmer #9, beginning with the trimmer set at minimum capacity and taking the first peak.

MODELS 517-B, 527-B
Schematic, Voltage
Resistance, Coils
Parts

NOBLITT SPARKS INDUSTRIES

SCHEMATIC CIRCUIT DIAGRAM
ARVIN HOME RADIO MODELS 517B & 527B



RESISTORS								CONDENSERS								CHOKES & TRANSFORMERS			MISCELLANEOUS UNITS		
R	OHMS	W	PART NO.	R	OHMS	W	PART NO.	C	CAPACITY	VOLT.	PART NO.	C	CAPACITY	VOLT.	PART NO.	T	TRANSFORMERS	PART NO.	SYMBOL	DESCRIPTION	PART NO.
3	100M	½A	17-2068					1	2 GANG		17-15153A	65	.01 STRAP	400	17-14076	1-A	ANT. COIL STG 800 CST	00-13795	WT 1	WAVE TRAP	00-13803
4	200M	½A	17-2069					2	VARIABLE			74-A	ELECT.	25	17-14086	1-B	ANT. COIL S.W.	00-13794	SPK	517B DYNAMIC SPEAKER ASSY.	17-15633
6	5M	½A	17-2071					6	.002 MICA	600	17-2063	74-B				2-A	OSC. COIL STG 800 CST	00-13793	SPK	527B DYNAMIC SPEAKER ASSY.	17-15677
7	20M	½A	17-2072					7	.0001 MICA	600	17-2064					2-B	OSC. COIL S.W.	00-13792	SW 1	ON-OFF SWITCH (SEE R34)	17-15758
9	1 MEG	½A	17-2080					10	.1 CAN	400	17-14034					5	FIRST I.F. COIL	00-14783	SW E	TONE CONTROL SWITCH	17-15635
11	2M	½A	17-4202					14	12 ELECT.	25	17-14003					6	SECOND I.F. COIL	00-14784	SW 3	BAND SWITCH	17-15769
16	200	½A	17-4267					18	.025 MFD MOLDED	200	17-14036					7	INPUT TRANSF. BT'D	17-13834	L	DIAL LIGHT	17-13904
26	600	½A	17-2060					17	.005 MICA	600	17-14029					7	INPUT TRANSF. BT'D	17-18679	S1	SPEAKER SOCKET	17-13026
29	90M	½A	17-2060					47	.15 CAN	400	17-4714					8	POWER TRANSF.	00-13965	F	FUSE &AMP. - 2.5 VOLT	17-EE10
47	30	½A	17-14058					24	.1	160	17-14040					9	AUDIO INPUT TRANSF.	00-13967	VIB	VIBRATOR	17-18631
54	500M	½C	17-15756					45	.01 CAN	600	17-14039					K	CHOKE B				
63	2.5M	½A	17-4091					48	.0005 MICA	600	17-4267	1	"RF" "B" CHOKE		00-2161-1						
64	Y.B	1W	17-14085					50	PADDER		17-14070	C	"D" FLTER CHOKE		00-13966						
								51	.05 CAN	160	17-14061	3	"RF" "A" CHOKE		00-13969						
								52	.01 STRAP	1200	17-14062	8	"RF" "A" CHOKE		00-13964						
								58	.0025 MICA	600	17-14071										
								62	8 CAN	15	17-4708										

IF PEAK 456 K.C.
2 BANDS (BALANCE AT 1400 K.C. - PAD AT 600 K.C.
BALANCE AT 150 K.C. - CHECK AT 60 M.C.

MODELS 517B-527B SOCKET VOLTAGES

Tube	Filament or Heater	Plate	Screen	Cathode	Oscillator Grid	Anode Grid
6A7	6.0	135	60	1.4	2.4	135
15	2.0	135	60	1.2	....	....
75	6.0	65	....	.8	....	....
76	6.0	140	....	5.6	....	....
19	2.0	....	....	....	....	....

POINT TO POINT RESISTANCES

All Readings Taken to Ground Unless Otherwise Specified

15

Heater	9.8 ohms
Heater	61.8 ohms
Cathode	600 ohms
Screen to B+	25,000 ohms
Plate to B+	15 ohms
Control Grid	1,205,000 ohms

75

Heater	0
Heater	2 ohms
Cathode	5,000 ohms
Diode	255,000 ohms
Diode	255,000 ohms
Plate to B+	200,000 ohms
Control Grid	500,000 ohms

76

Heater	0
Heater	2 ohms
Cathode	2,000 ohms
Control Grid	1,000,000 ohms
Plate to B+	265 ohms

19

Filament	0
Filament	60 ohms
Grid	150 ohms
Grid	150 ohms
Plate to B+	175 ohms
Plate to B+	175 ohms

6A7

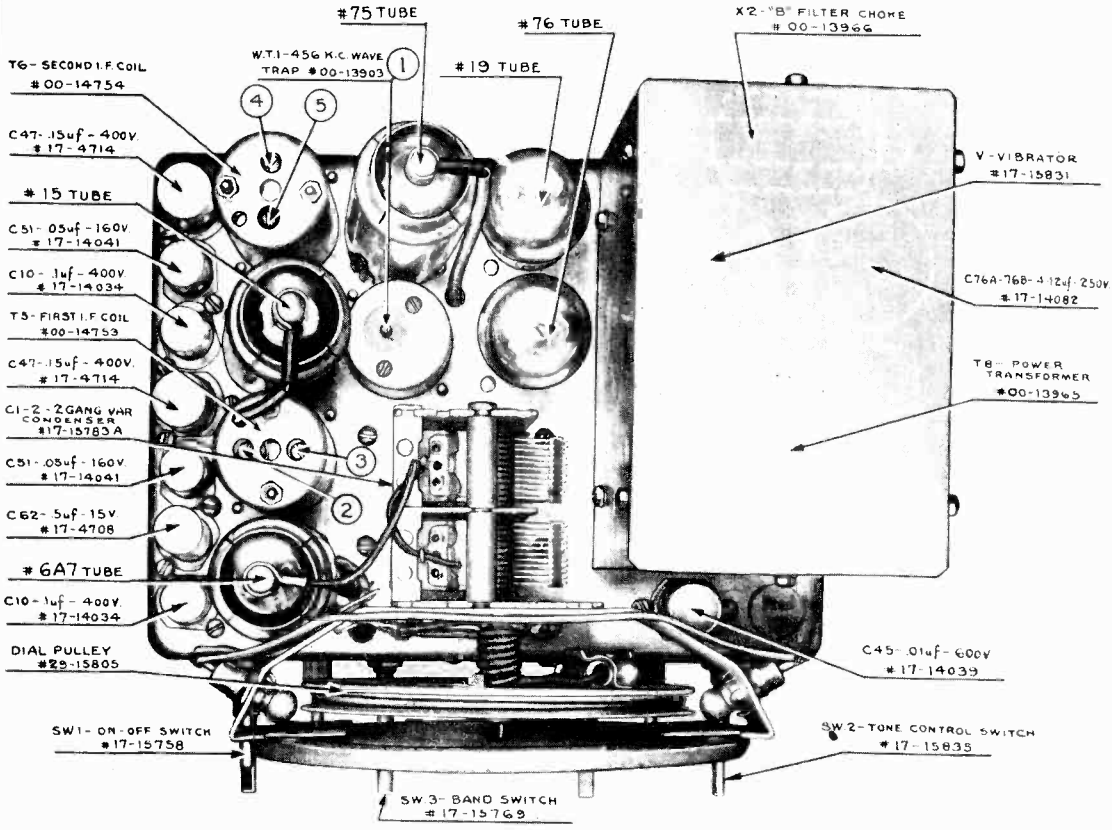
Heater	0
Heater	2 ohms
Cathode	400 ohms
Oscillator Grid	50,400 ohms
Anode Grid to B+	20,000 ohms
Screen to B+	25,000 ohms
Plate to B+	15 ohms
Control Grid	1,305,000 ohms

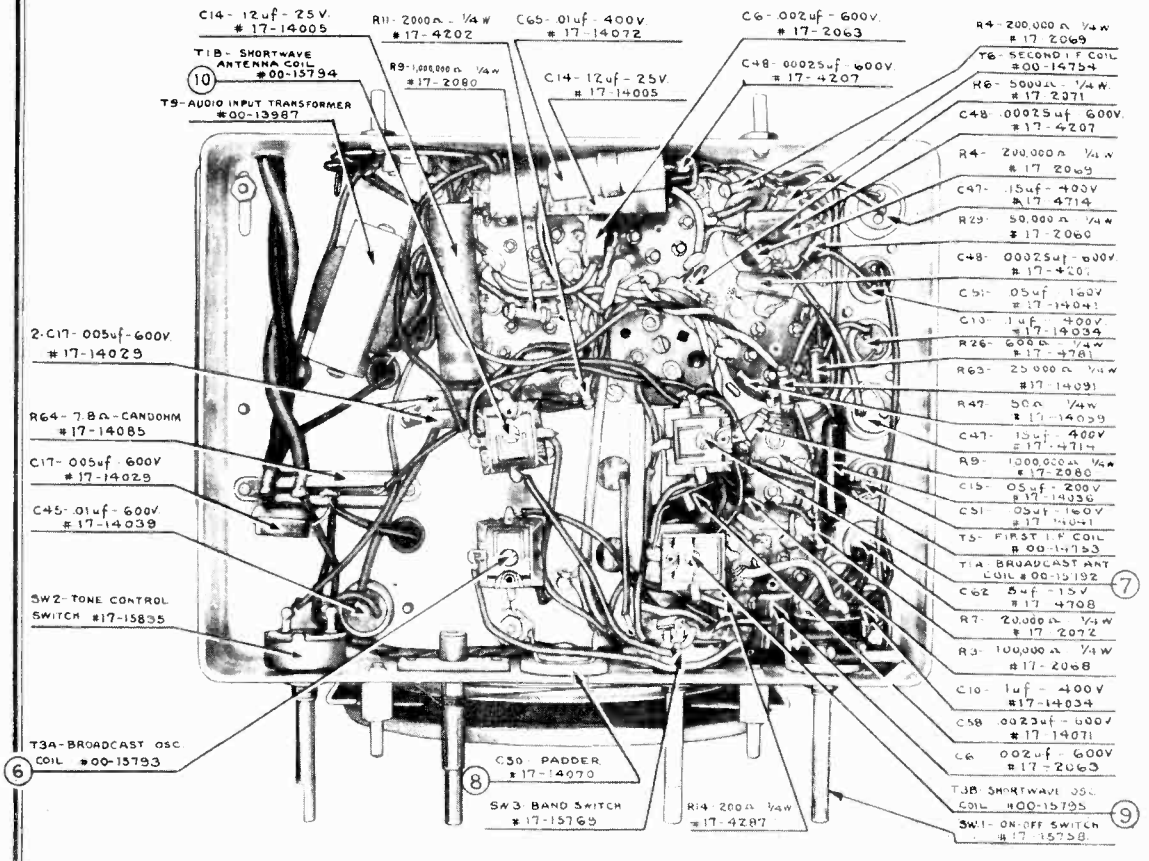
COIL, TRANSFORMER AND SPEAKER RESISTANCES

WT1 Wave Trap	3.0 ohms	T3A Broadcast Osc. Sec.	1.7 ohms	T6 Second I. F. Sec.	15.0 ohms
T1A Broadcast Ant. Pri.	15.0 ohms	T3B Shortwave Osc. Pri.	.2 ohms	T7 Speaker Trans. Pri.	570 ohms
T1A Broadcast Ant. Sec.	3.5 ohms	T3B Shortwave Osc. Sec.	.7 ohms	T7 Speaker Trans. Sec.	2.6 ohms
T1B Short Wave Ant. Pri.	2.6 ohms	T5 First I. F. Pri.	15.0 ohms	Speaker Voice Coil	2.6 ohms
T1B Short Wave Ant. Sec.	1.7 ohms	T5 First I. F. Sec.	15.0 ohms	T8 Power Trans. Pri.	.1-0-.1 ohms
T3A Broadcast Osc. Pri.	2.6 ohms	T6 Second I. F. Pri.	15.0 ohms	T8 Power Trans. Sec.	170-0-170 ohms

MODELS 517-B, 527-B
Socket, Trimmers
Chassis, Alignment

NOBLITT SPARKS INDUSTRIES



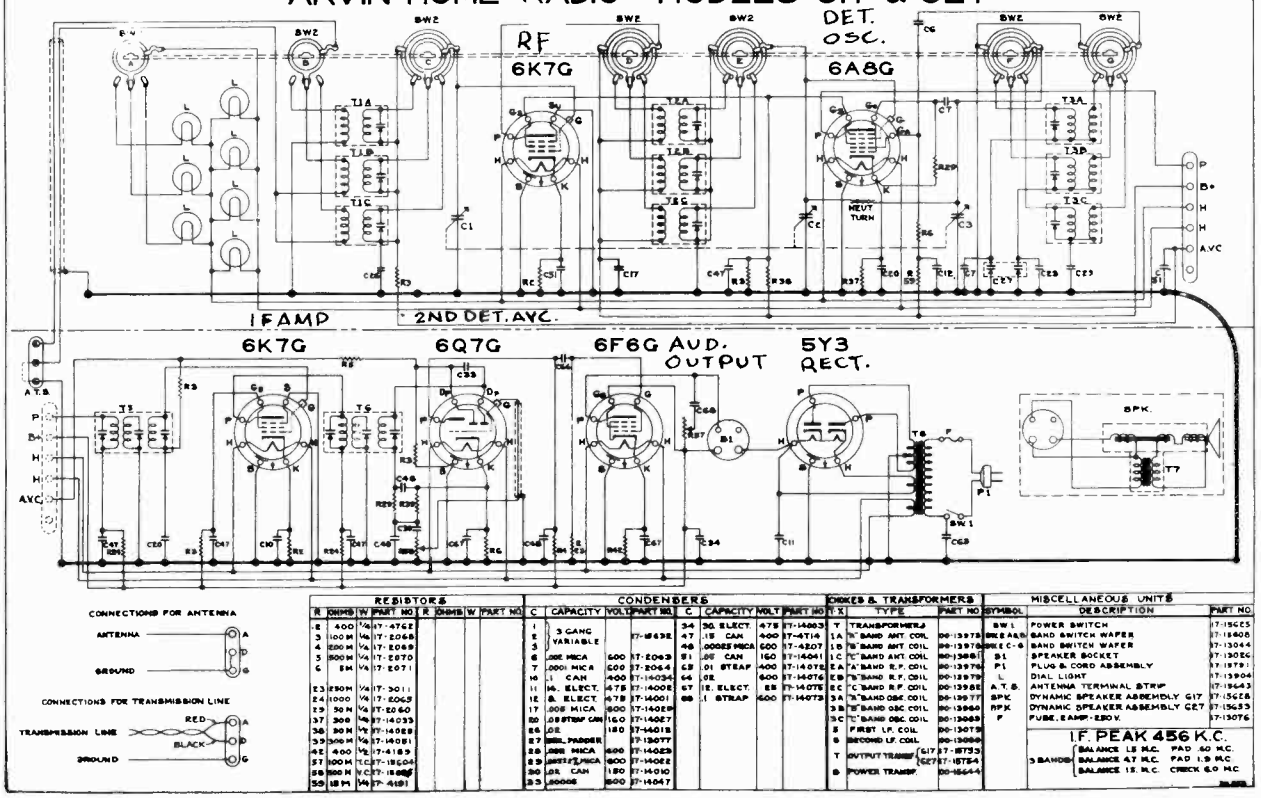


Adjust padder condensers 1,2,3 and 4 in the order designated by their numbering for maximum output. Connect cosillator to antenna lead (red wire). Rotate condenser entirely out of mesh and adjust padder number 5 for resonance at 1650 KC. Reset the balancing oscillator to 1400 KC. and rotate the tuning condenser until this signal is received. Adjust padder number 6 for maximum output. Align padder #7 at 600 KC. Align trimmer #8 at 1400 KC. Adjust trimmer #9, beginning with the trimmer set at minimum capacity and taking the first peak.

NOBLITT SPARKS INDUSTRIES

MODELS 617, 627
Schematic, Voltage
Resistance, Coils
Parts

SCHEMATIC CIRCUIT DIAGRAM
ARVIN HOME RADIO MODELS 617 & 627



RESISTORS

R	OHMS	W	PART NO.	R	OHMS	W	PART NO.
1	400	½	17-4762				
2	100 M	½	17-2068				
3	500 M	½	17-2069				
4	500 M	½	17-2070				
5	5 M	½	17-2071				
6	250 M	½	17-2011				
23	1000	½	17-2065				
24	50 M	½	17-2060				
25	300	½	17-14033				
37	50 M	½	17-14082				
38	500 M	½	17-14081				
39	400	½	17-4189				
40	100 M	1	C17-19604				
57	500 M	½	C17-18695				
58	18 M	½	17-4181				

CONDENSERS

C	CAPACITY	VOLT	PART NO.	C	CAPACITY	VOLT	PART NO.
1	3 GANG VARIABLE		17-18632	34	30 ELECT.	475	17-14003
5				47	.15 CAN	400	17-4714
6	.005 MICA	500	17-2063	48	.00025 MICA	500	17-4207
7	.0001 MICA	500	17-2064	51	.05 CAN	150	17-14041
10	.1 CAN	400	17-14034	53	.01 STRAP	400	17-14078
11	16 ELECT.	475	17-14005	64	.02	600	17-14076
12	8 ELECT.	475	17-14001	67	12 ELECT.	25	17-14075
17	.005 MICA	500	17-14029	68	.1 STRAP	600	17-14073
20	.02 STRAP CAN	150	17-14027				
25	.02	150	17-14018				
27	SEMI PADDER		17-13077				
28	.005 MICA	500	17-14029				
29	.00022 MICA	500	17-14026				
30	.05 CAN	150	17-14010				
33	.00005	500	17-14047				

CHOKES & TRANSFORMERS

T	TYPE	PART NO.	SYMBOL
T	TRANSFORMERS		SW 1
1A	"A" BAND ANT. COIL	80-13978	SW'S A&B
1B	"B" BAND ANT. COIL	80-13978	SW'S C-D
1C	"C" BAND ANT. COIL	80-13981	S1
1D	"D" BAND ANT. COIL	80-13976	P1
2A	"A" BAND R.F. COIL	80-13979	L
2B	"B" BAND R.F. COIL	80-13982	A.T.S.
2C	"C" BAND R.F. COIL	80-13985	SPK
3A	"A" BAND OSC. COIL	80-13977	SPK
3B	"B" BAND OSC. COIL	80-13980	RPK
3C	"C" BAND OSC. COIL	80-13983	F
5	FIRST I.F. COIL	80-13978	
6	SECOND I.F. COIL	80-13986	
T	OUTPUT TRANSF.	617 17-18735, 627 17-18764	
P	POWER TRANSF.	80-16644	

MISCELLANEOUS UNITS

DESCRIPTION	PART NO.
POWER SWITCH	17-15625
BAND SWITCH WAFER	17-15808
BAND SWITCH WAFER	17-13044
SPEAKER SOCKET	17-13026
PLUG & CORD ASSEMBLY	17-18791
DIAL LIGHT	17-15904
ANTENNA TERMINAL STRIP	17-18643
DYNAMIC SPEAKER ASSEMBLY 617	17-15628
DYNAMIC SPEAKER ASSEMBLY 627	17-15633
PUBE. I.AMP.-EBOX.	17-13076

I.F. PEAK 456 K.C.

3 BANDS: BALANCE 1.8 M.C. PAD .60 M.C.; BALANCE 4.7 M.C. PAD 1.9 M.C.; BALANCE 18 M.C. CHECK 6.0 M.C.

MODEL 617-627 SOCKET VOLTAGES

(INPUT VOLTAGE 115 RMS)

Tube	Heaters	Plate	Screen	Cathode	Oscillator Grid. 1500 KC.	Anode Grid.
6K7G	6.3	250	100	3.0	.....	.....
6A8G	6.3	250	100	3.0	9.0	170
6K7G	6.3	250	90	3.0	.....	.....
6Q7G	6.3	115	.....	1.3	.....	.....
6F6G	6.3	240	250	15.0	.....	.....
5Y3	5.0	330-0-330	.....	.....	.....	.....

POINT TO POINT RESISTANCES — SEE INDEX FOR ALIGNMENT

All readings taken to ground unless otherwise stated. Tubes removed, speaker connected and volume control in full on position.

6K7G

Heater	0
Shell	0
Heater	.1
Cathode	400 ohms
Suppressor Grid	0
Screen to B+	30,000 ohms
Plate to B+	135-11-9
Screen to Gnd.	100,000 ohms
Control Grid	700,000 ohms

6A8G

Heater	0
Shell	0
Heater	.1
Cathode	300 ohms
Oscillator Grid	50,300 ohms
Anode to B+	20,000 ohms
Screen to B+	30,000 ohms
Screen to Gnd.	100,000 ohms
Plate to B+	1,000 ohms
Control Grid	5-.45-.15 ohms

6K7G

Heater	0
Shell	0
Heater	.1
Cathode	400 ohms
Suppressor Grid	0
Screen to B+	100,000 ohms
Plate to B+	1,000 ohms
Screen	230,000 ohms
Control Grid	700,000 ohms

6Q7G

Heater	0
Shell	0
Heater	.1
Cathode	5,000 ohms
Diode	355,000 ohms
Diode	100,000 ohms
Plate to B+	200,000 ohms
Control Grid	500,000 ohms

6F6G

Heater	0
Shell	0
Heater	.1
Cathode	400 ohms
Control Grid	250,000 ohms
Screen to B+	0
Screen to Ground	130,000 ohms
Plate to B+	310 ohms

5Y3

Filament to B+	1,400 ohms
Shell	0
Filament to B+	1,400 ohms
Plate	155 ohms
Plate	140 ohms
Plate to Plate	295 ohms

COIL AND TRANSFORMER RESISTANCES

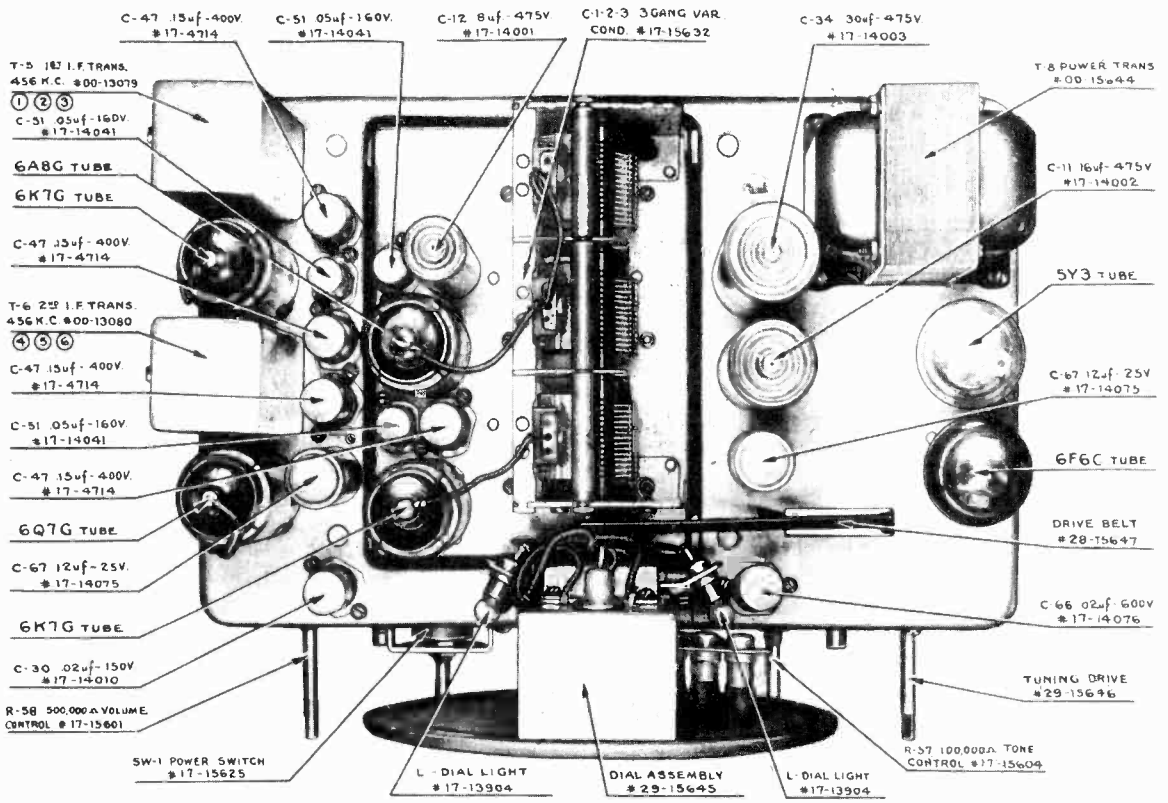
A Band Ant. Pri.	20. ohms
A Band Ant. Sec.	5. ohms
A Band R. F. Pri.	1.35 ohms
A Band R. F. Sec.	5. ohms
A Band Osc. Pri.	2.0 ohms
A Band Osc. Sec.	7.0 ohms
B Band Ant. Pri.	1. ohms
B Band Ant. Sec.	.45 ohms
B Band R. F. Pri.	1.1 ohms
B Band R. F. Sec.	.9 ohms
B Band Osc. Pri.	1.2 ohms
B Band Osc. Sec.	.75 ohms
C Band Ant. Pri.	.75 ohms
C Band Ant. Sec.	.15 ohms
C Band R. F. Pri.	.9 ohms
C Band R. F. Sec.	.2 ohms
C Band Osc. Pri.	.5 ohms
C Band Osc. Sec.	.25 ohms
1st I. F. Trans. Pri.	8.2 ohms
1st I. F. Trans. Sec.	14.2 ohms
2nd I. F. Trans. Pri.	13.0 ohms
2nd I. F. Trans. Sec.	13.0 ohms
Power Trans. 110 V. Pri.	13.0 ohms
Power Trans. 5 V. Sec.	.3 ohms
Power Trans. 6 V. Sec.	1.0 ohms
Power Trans. Hi-V. Sec.	155-0-140 ohms
Output Trans. Pri.	310 ohms
Output Trans. Sec.	.4 ohms
Speaker Filed	1400 ohms
Speaker Voice Coil	.50 ohms

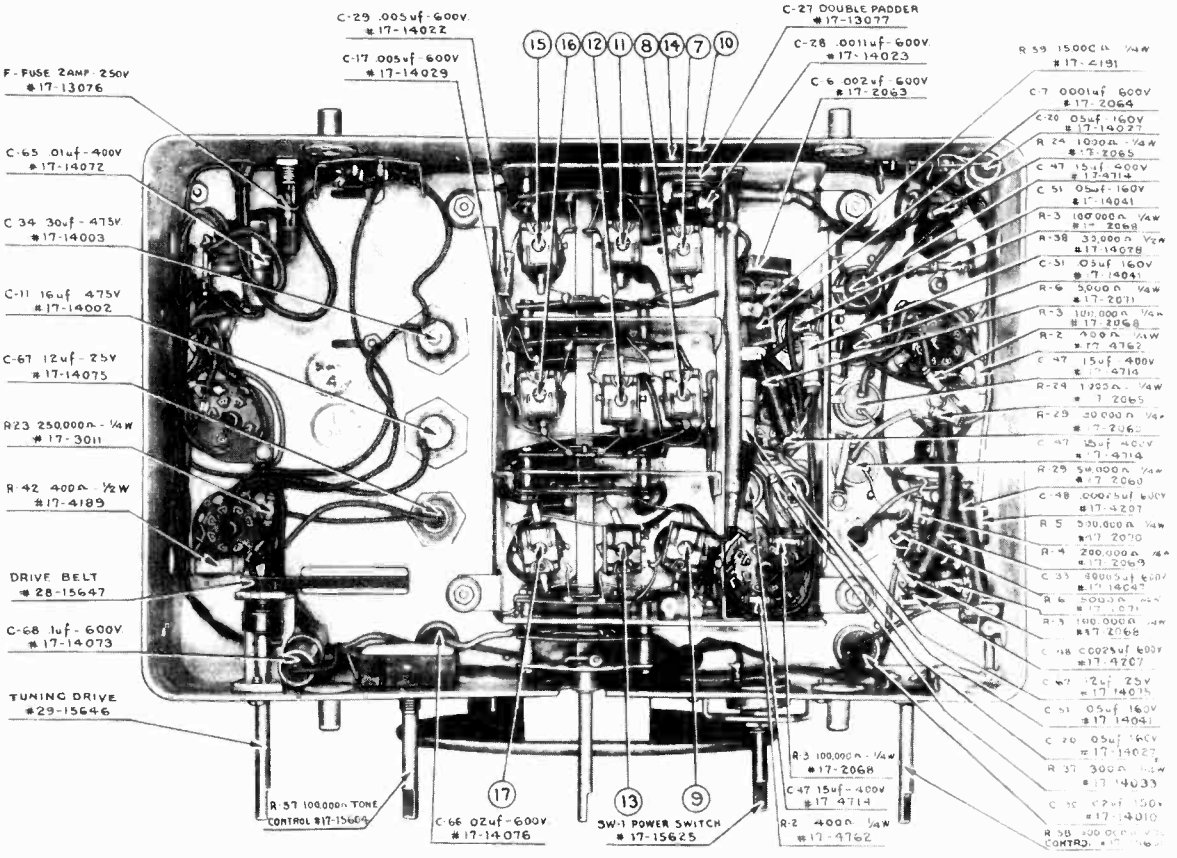
FREQUENCY RANGE: 535—1700 Kilocycles
1700—5500 Kilocycles
5.5—18.5 Megacycles

POWER OUTPUT: 3.5 Watts
VOLTAGE AND FREQUENCY: 105-125 Volts, 60 Cycles
WATTS POWER CONSUMPTION: 85 Watts

MODELS 617, 627
Socket, Trimmers
Chassis

NOBLITT SPARKS INDUSTRIES



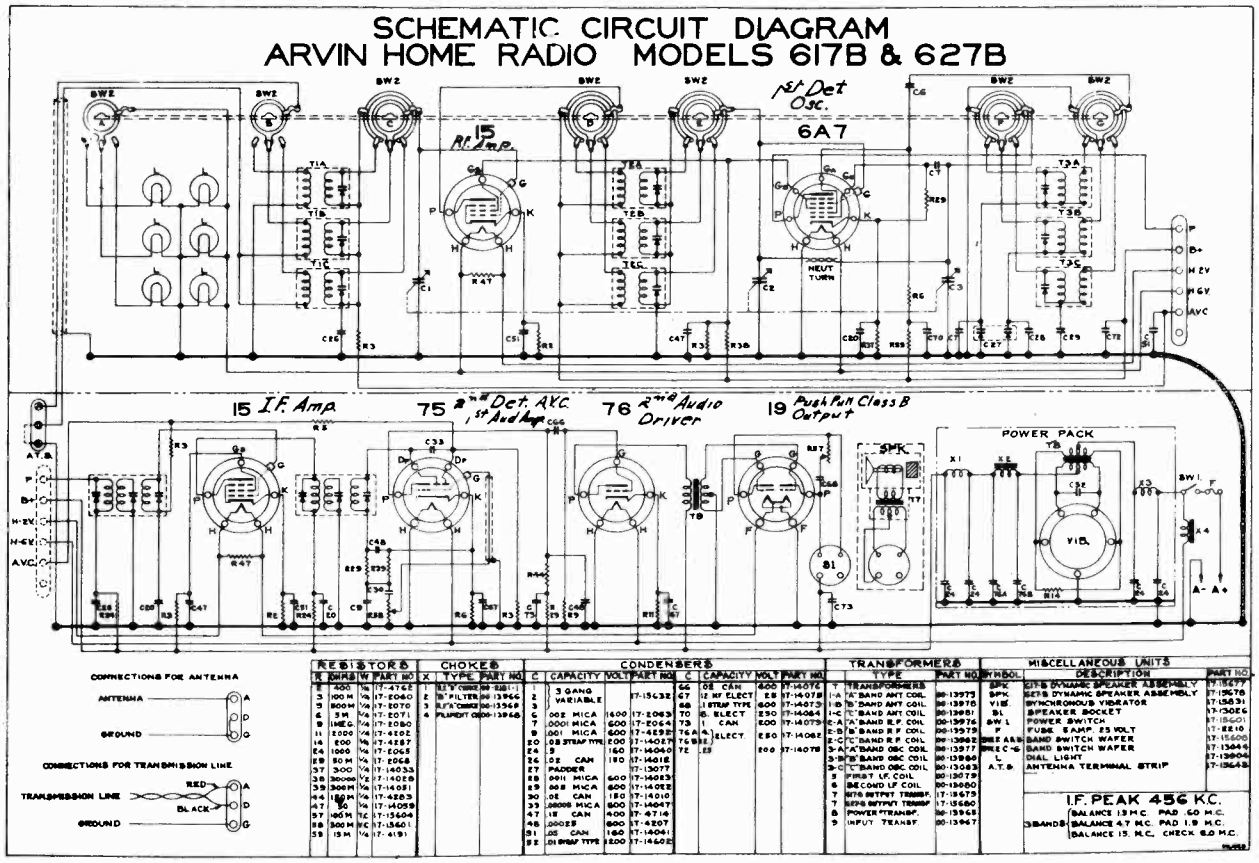


NOBLITT SPARKS INDUSTRIES

MODELS 617-B, 627-B
Schematic, Voltage
Resistance, Coils
Parts

SEE INDEX FOR ALIGNMENT

SCHEMATIC CIRCUIT DIAGRAM
ARVIN HOME RADIO MODELS 617B & 627B



RESISTORS				CHOKES			CONDENSERS						TRANSFORMERS			MISCELLANEOUS UNITS		
	OHMS	W	PART NO.		TYPE	PART NO.		CAPACITY	VOLT	PART NO.		CAPACITY	VOLT	PART NO.		TYPE	PART NO.	SYMBOL	DESCRIPTION	PART NO.
1	400	½	17-4762	1	3.5 HENRY	17-15632	1	3 GANG VARIABLE		17-15632	66	.05 CAN	600	17-14075	T	TRANSFORMERS		SPK	CITE DYNAMIC SPEAKER ASSEMBLY	17-15677
3	100 M	½	17-2040	2	15 HENRY FILTER	17-13966	3				67	.12 MF ELECT	25	17-14078	1-A	A BAND ANT COIL	20-13973	SPK	SETS DYNAMIC SPEAKER ASSEMBLY	17-15678
5	800 M	½	17-2070	3	8.5 HENRY CHOKE	17-13964					68	1 STRAP TYPE	600	17-14073	1-B	B BAND ANT COIL	20-13975	VIB.	SYNCHRONOUS VIBRATOR	17-15631
6	5 M	½	17-2071	4	FILAMENT CHOKE	17-13948	6	.002 MICA	1600	17-2063	70	15 ELECT	250	17-14064	1-C	C BAND ANT COIL	20-13981	BL	SPEAKER SOCKET	17-15601
7	1MEG.	½	17-2080				7	.0001 MICA	600	17-2064	73	1 CAN	200	17-14079	2-A	A BAND R.F. COIL	20-13976	SW 1	POWER SWITCH	17-15620
11	2000	½	17-4102				9	.001 MICA	600	17-4592	76 A & B	SELECT	250	17-14082	2-B	B BAND R.F. COIL	20-13979	F	FUSE 5 AMP. 25 VOLT	17-8210
14	200	½	17-4287	20	.03 STRAP TYPE	600	17-14027	76 B&E							2-C	C BAND R.F. COIL	20-13982	SW 2 A & B	BAND SWITCH WAFER	17-15606
24	1000	½	17-2065	24	.5	150	17-14040	76	.25						3-A	A BAND OSC. COIL	20-13977	SW 2 C-D	BAND SWITCH WAFER	17-13644
29	80 M	½	17-2068	26	.02 CAN	150	17-14018								3-B	B BAND OSC. COIL	20-13980	L	DIAL LIGHT	17-13604
37	300	½	17-14033	27	PADDER		17-13077								3-C	C BAND OSC. COIL	20-13983	A.T.S.	ANTENNA TERMINAL STRIP	17-13648
38	30000	½	17-14028	28	.001 MICA	600	17-14023								5	FIRST I.F. COIL	20-13978			
39	300 M	½	17-14021	29	.002 MICA	600	17-14022								6	SECOND I.F. COIL	20-13980			
44	150 M	½	17-4283	30	.01 CAN	150	17-14010								7	1ST INTPUT TRANSF.	17-15675			
47	30	½	17-14059	39	.00008 MICA	600	17-14047								7	2ND INTPUT TRANSF	17-15680			
57	400 M	½	17-13604	47	.1E CAN	400	17-4716								8	POWER TRANSF.	20-13968			
58	500 M	½	17-13601	48	.00025	600	17-4207								9	INPUT TRANSF.	20-13967			
59	15 M	½	17-4191	51	.05 CAN	150	17-14001													
				52	.01 STRAP TYPE	1200	17-14002													

I.F. PEAK 456 K.C.
3 BANDS: BALANCE 1.3 M.C. PAD .60 M.C.
BALANCE 4.7 M.C. PAD 1.9 M.C.
BALANCE 15. M.C. CHECK 6.0 M.C.

MODELS 617B-627B SOCKET VOLTAGES

Tube	Filament of Heater	Plate	Screen	Cathode	Oscillator Grid	Anode Grid
15	2.0	135	55	.7	....	....
6A7	6.0	135	55	1.4	2.4	135
15	2.0	135	75	1.2	....	....
75	6.0	65	....	.8	....	....
76	6.0	140	....	5.6	....	....
19	2.0	140	....	....	....	....

POINT TO POINT RESISTANCES

All readings taken to ground unless otherwise specified

15

Heater	50 ohms
Heater	20 ohms
Cathode	400 ohms
Screen to B+	30,000 ohms
Screen to Ground	100,000 ohms
Plate to B+	1.35-1.1-.9 ohms
Control Grid	700,000 ohms

6A7

Heater	0
Heater	2 ohms
Cathode	300 ohms
Oscillator Grid	50,300 ohms
Anode Grid to B+	20,000 ohms
Screen to B+	30,000 ohms
Screen to Ground	100,000 ohms
Plate to B+	1,000 ohms
Control Grid	5-.45-.15 ohms

15

Heater	50 ohms
Heater	2 ohms
Cathode	400 ohms
Screen to B+	100,000 ohms
Screen to Ground	230,000 ohms
Plate to B+	1,000 ohms
Control Grid	700,000 ohms

75

Heater	0
Heater	2 ohms
Cathode	5,000 ohms
Diode	100,000 ohms
Diode	355,000 ohms
Plate to B+	200,000 ohms
Control Grid	500,000 ohms

76

Heater	0
Heater	2 ohms
Cathode	2,000 ohms
Control Grid	1,000,000 ohms
Plate to B+	265 ohms

19

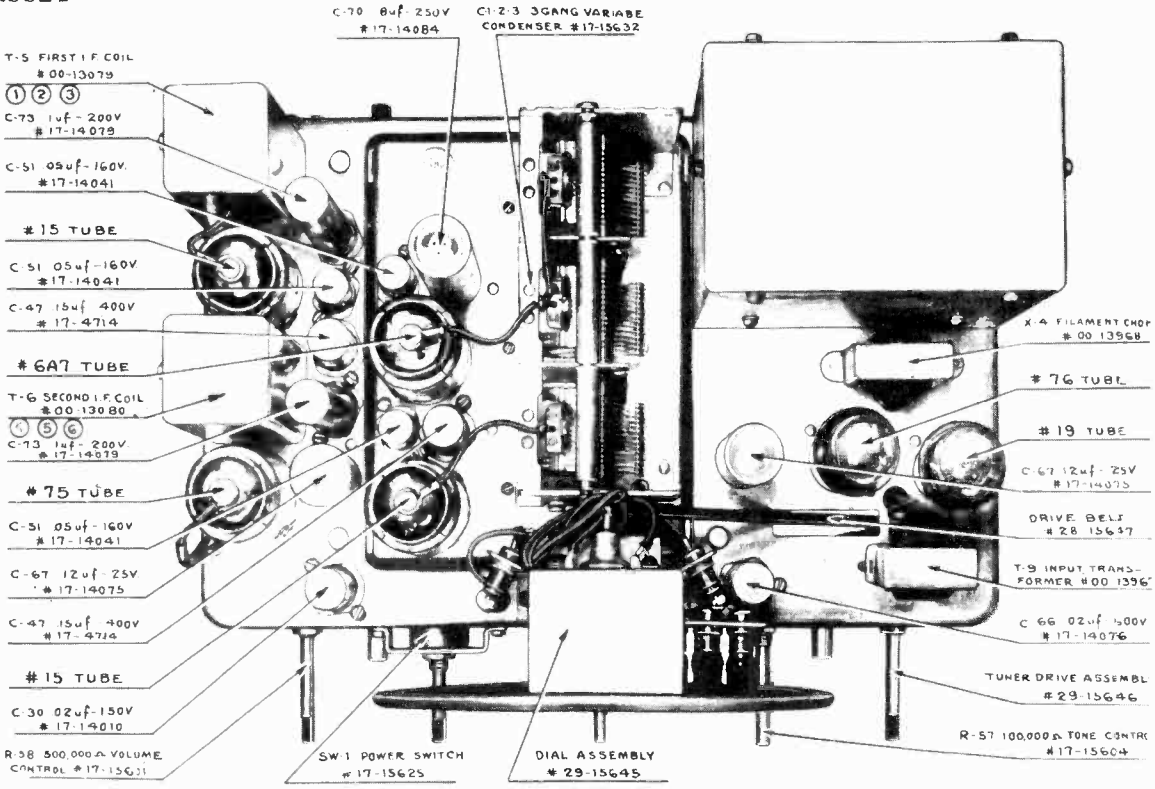
Filament	0
Filament	52 ohms
Grid	150 ohms
Grid	150 ohms
Plate to B+	175 ohms
Plate to B+	175 ohms

COIL AND TRANSFORMER RESISTANCES

A Band Ant. Pri.	20. ohms
A Band Ant. Sec.	5. ohms
A Band R. F. Pri.	1.35 ohms
A Band R. F. Sec.	5. ohms
A Band Osc. Pri.	2.0 ohms
A Band Osc. Sec.	7.0 ohms
B Band Ant. Pri.	1. ohms
B Band Ant. Sec.	.45 ohms
B Band R. F. Pri.	1.1 ohms
B Band R. F. Sec.	.9 ohms
B Band Osc. Pri.	1.2 ohms
B Band Osc. Sec.	.75 ohms
C Band Ant. Pri.	.75 ohms
C Band Ant. Sec.	.15 ohms
C Band R. F. Pri.	.9 ohms
C Band R. F. Sec.	.2 ohms
C Band Osc. Pri.	.5 ohms
C Band Osc. Sec.	.25 ohms
1st I. F. Trans. Pri.	8.2 ohms
1st I. F. Trans. Sec.	14.2 ohms
2nd I. F. Trans. Pri.	13.0 ohms
2nd I. F. Trans. Sec.	13.0 ohms
Power Trans. Pri.	1-0-1 ohms
Power Trans. Hi-V. Sec.	170-0-170 ohms
Output Trans. Pri.	175-0-175 ohms
Output Trans. Sec.	.4 ohms
Speaker Voice Coil	.50 ohms
Input Audio Trans. Pri.	265 ohms
Input Audio Trans. Sec.	150-0-150 ohms

MODELS 617-B, 627-B
Socket, Trimmers
Chassis

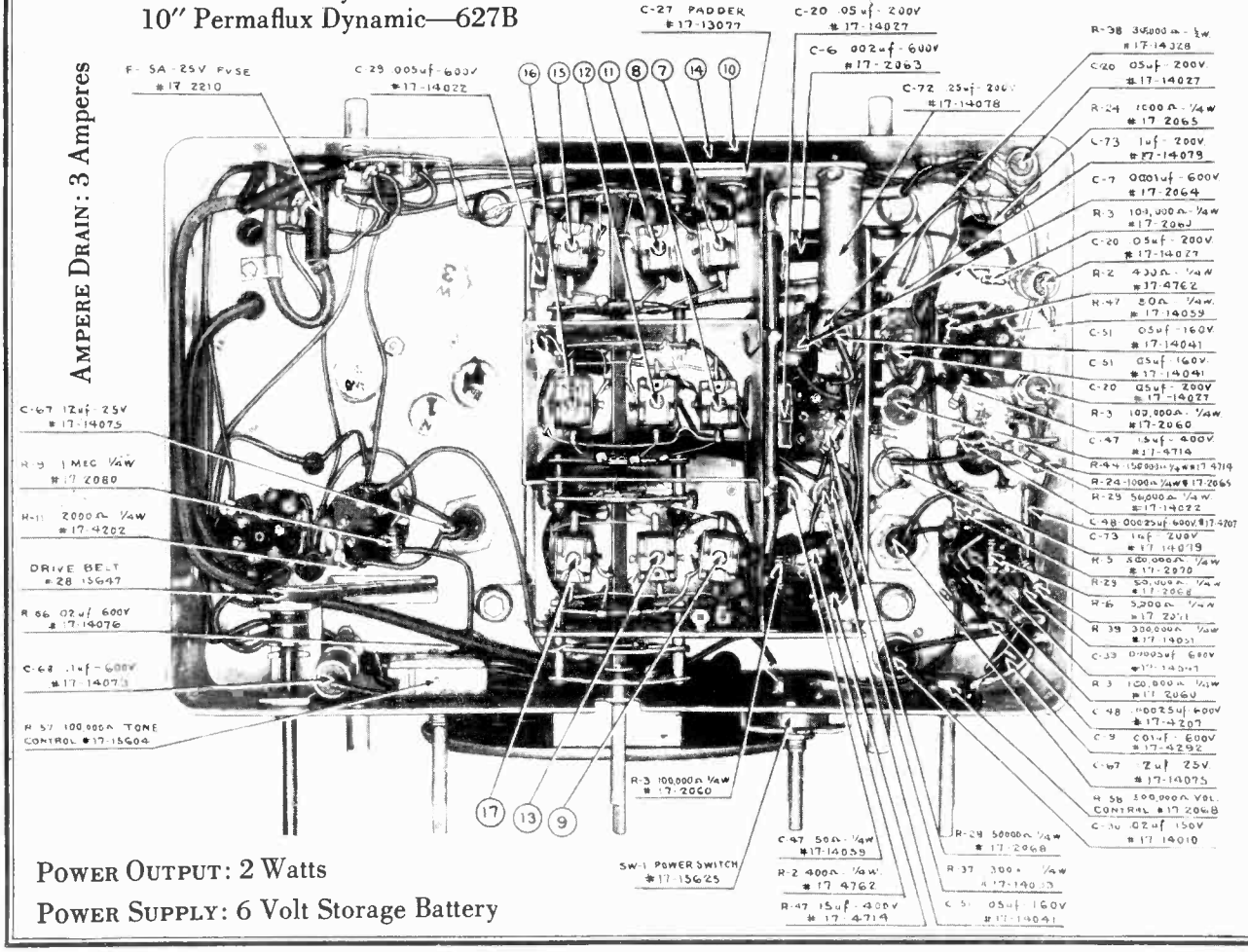
NOBLITT SPARKS INDUSTRIES



FREQUENCY RANGE: 535—1700 Kilocycles
1700—5500 Kilocycles
5.5—18.5 Megacycles

SPEAKER: 8" Permaflux Dynamic—617B
10" Permaflux Dynamic—627B

AMPERE DRAIN: 3 Amperes

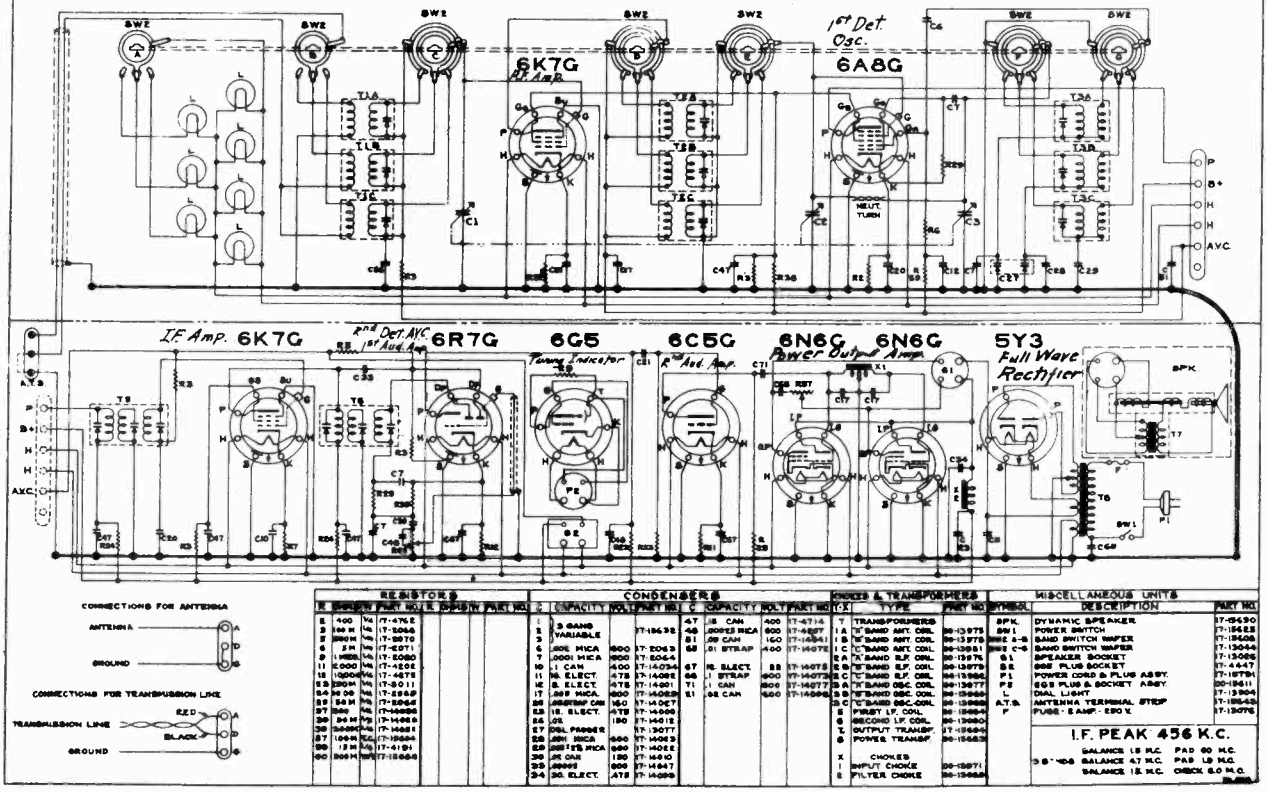


POWER OUTPUT: 2 Watts
POWER SUPPLY: 6 Volt Storage Battery

NOBLITT SPARKS INDUSTRIES

MODEL 927
Schematic, Voltage
Resistance, Coils
Parts

SCHEMATIC CIRCUIT DIAGRAM
ARVIN HOME RADIO MODEL 927



RESISTORS

R	OHMS	W	PART NO.
1	400	½	17-4752
2	100 M	½	17-5046
3	2000 M	½	17-5070
4	2 M	½	17-5071
5	1 MEG.	½	17-5080
10	12000	½	17-4206
11	10000	½	17-4078
12	200 M	½	17-5011
13	50 M	½	17-5068
14	20 M	½	17-5067
15	5 M	½	17-5064
17	500	½	17-5066
18	50 M	½	17-5065
19	20 M	½	17-5063
20	5 M	½	17-5062
21	500	½	17-5056
22	50 M	½	17-5060
23	20 M	½	17-5061
24	1 MEG.	½	17-4191
25	2 MEG.	½	17-5064

CONDENSERS

C	CAPACITY	VOLTS	PART NO.
1	3 GANG VARIABLE		17-18638
5	.005 MICA	600	17-5063
7	.0001 MICA	600	17-5064
10	.1 CAN	400	17-14034
11	.05 ELECT.	475	17-14082
12	8. ELECT.	475	17-14001
17	.002 MICA	600	17-14068
20	ADJUSTABLE CAN	150	17-14067
23	15. ELECT.	475	17-14000
26	.05	150	17-14012
27	DUAL PADDER		17-14077
28	.001 MICA	600	17-14063
29	.0001 STD. MICA	600	17-14064
30	.25 OIL	150	17-14010
33	.00005	600	17-14047
34	30. ELECT.	475	17-14088
47	.1 CAN	400	17-4714
48	.0005 MICA	600	17-14057
51	.05 CAN	150	17-14041
68	.01 STRAP	400	17-14072
67	RE. ELECT.	25	17-14073
68	.1 STRAP	400	17-14077
71	.1 CAN	600	17-14077
81	.02 CAN	600	17-14068

CHOKES & TRANSFORMERS

CH	TYPE	PART NO.
T	TRANSFORMERS	20-13975
1A	"A" BAND ANT. COIL	20-13978
1B	"B" BAND ANT. COIL	20-13979
1C	"C" BAND ANT. COIL	20-13981
2A	"A" BAND R.F. COIL	20-13976
2B	"B" BAND R.F. COIL	20-13978
3A	"A" BAND OSC. COIL	20-13982
3B	"B" BAND OSC. COIL	20-13977
3C	"C" BAND OSC. COIL	20-13980
E	FIRST I.F. COIL	20-13984
G	SECOND I.F. COIL	20-13983
L	OUTPUT TRANSF.	17-13977
S	POWER TRANSF.	20-13983
X	CHOKES	
I	INPUT CHOKE	20-13971
F	FILTER CHOKE	20-13985

MISCELLANEOUS UNITS

SYMBOL	DESCRIPTION	PART NO.
SPK.	DYNAMIC SPEAKER	27-13490
SW 1	POWER SWITCH	17-13628
SWE A-B	BAND SWITCH WAFER	17-13608
SWE C-D	BAND SWITCH WAFER	17-13044
S1	SPEAKER SOCKET	17-13005
S2	6G6 PLUG SOCKET	17-4447
P1	POWER CORD & PLUG ASSY.	17-18731
P2	6G5 PLUG & SOCKET ASSY.	20-13611
L	DIAL LIGHT	17-13004
ANT.& P	ANTENNA TERMINAL STRIP	17-18543
F	FUSE - 2 AMP. - 250 V.	17-13076

I.F. PEAK 456 K.C.

BALANCE 1.5 M.C. PAD 60 M.C.
BALANCE 47 M.C. PAD 1.5 M.C.
BALANCE 1.2 M.C. CHECK 6.0 M.C.

MODEL 927 SOCKET VOLTAGES

Tube	Heaters	Cathode	Suppressor Grid	Screen Grid	Plate	Oscillator Grid	Anode Grid	Shell
6K7G	6.3	2.5	0	95	250	..	..	0
6A8G	6.3	3.0	..	95	250	8	175	0
6K7G	6.3	3.0	0	95	250	..	..	0
6R7G	6.3	.6	..	....	65	..	..	0
6C5G	6.3	4.0	..	....	120	..	..	0
6N6G	6.3	0	..	260	250	..	..	0
6N6G	6.3	0	..	260	250	..	..	0
5Y3	5.0	.....	..	....	.....	..	..	0
6G5	6.3	0	..	....	250	..	..	..

POINT TO POINT RESISTANCES SEE INDEX FOR ALIGNMENT

6K7G

Heater	0
Shell	0
Heater	.1
Cathode	300 ohms
Suppressor	0
Screen	100,000 ohms
Plate to B+	1.35 ohms
Control Grid	700,000 ohms
Screen to B+	30,000 ohms

6A8G

Heater	0
Shell	0
Heater	.1
Cathode	400 ohms
Oscillator Grid	50,400 ohms
Anode Grid to B+	20,000 ohms
Screen	100,000 ohms
Plate to B+	1,000 ohms
Control Grid	5.-9-.2 ohms
Screen to B+	30,000 ohms

6K7G

Heater	0
Shell	0
Heater	.1
Cathode	400 ohms
Suppressor	0
Screen to B+	100,000 ohms
Plate to B+	1,900 ohms
Control Grid	700,000 ohms

6R7G

Heater	0
Shell	0
Heater	.1
Cathode	10,000 ohms
Diode	360,000 ohms
Diode	100,000 ohms
Control Grid	500,000 ohms
Plate to B+	250,000 ohms

6C5G

Heater	0
Shell	0
Heater	.1
Cathode	2,000 ohms
Control Grid	250,000 ohms
Control Grid	250,000 ohms

6N6G

Heater	0
Shell	0
Heater	.1
Cathode	0
Screen to B+	120 ohms
Plate to B+	330 ohms
Control Grid	2,500 ohms

6N6G

Heater	0
Shell	0
Heater	.1
Cathode	0
Screen to B+	120 ohms
Plate to B+	330 ohms
Control Grid	2,500 ohms

5Y3

Filament	131,000 ohms
Shell	0
Filament	131,000 ohms
Plate	110 ohms
Plate	120 ohms

6G5

Heater	0
Heater	.1
Cathode	0
Control Grid	600,000 ohms
Plate to B+	1,000,000 ohms
Target to B+	0

COIL, TRANSFORMER AND SPEAKER RESISTANCES

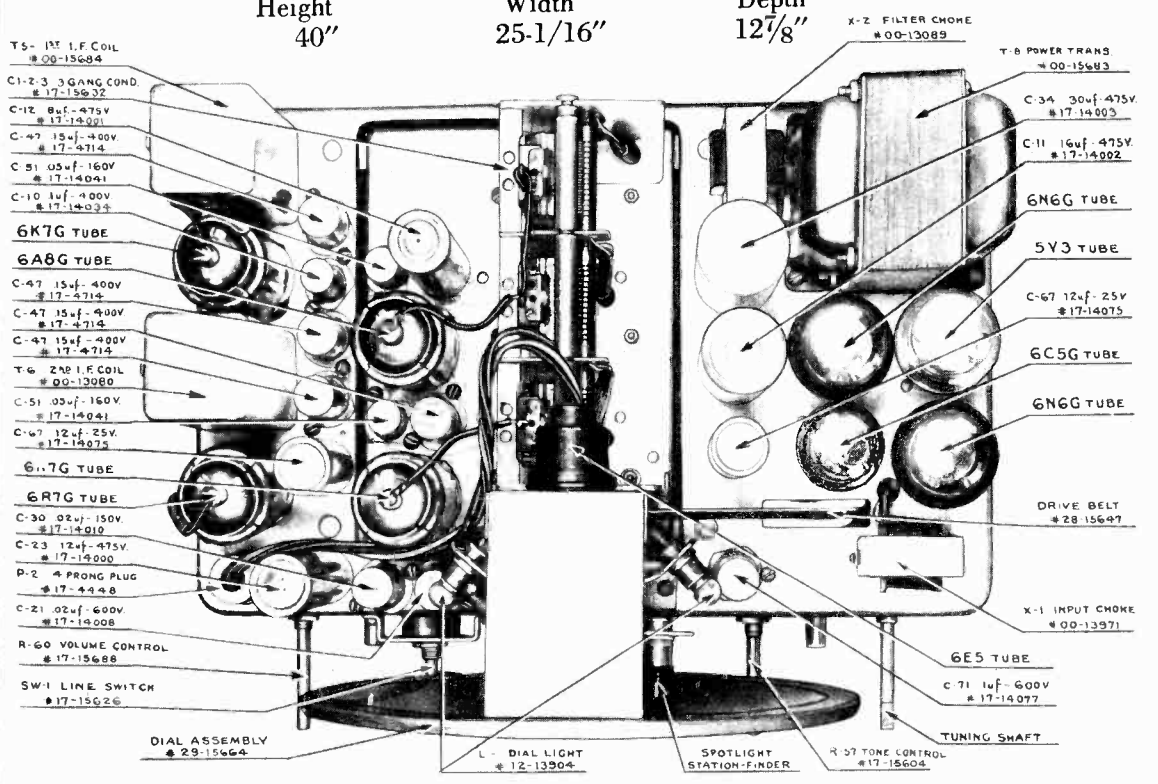
T1A Broadcast Ant. Pri.	19.00 ohms
T1A Broadcast Ant. Sec.	4.70 ohms
T1B Mid Wave Ant. Pri.	.43 ohms
T1B Mid Wave Ant. Sec.	.55 ohms
T1C Short Wave Ant. Pri.	.26 ohms
T1C Short Wave Ant. Sec.	.05 ohms
T2A Broadcast R. F. Pri.	.90 ohms
T2A Broadcast R. F. Sec.	5.50 ohms
T2B Mid Wave R. F. Pri.	.72 ohms
T2B Mid Wave R. F. Sec.	.50 ohms
T2C Short Wave R. F. Pri.	.50 ohms
T2C Short Wave R. F. Sec.	.05 ohms
T3A Broadcast Osc. Pri.	8.20 ohms
T3A Broadcast Osc. Sec.	.67 ohms
T3B Mid Wave Osc. Pri.	.58 ohms
T3B Mid Wave Osc. Sec.	.47 ohms
T3C Short Wave Osc. Pri.	.50 ohms
T3C Short Wave Osc. Sec.	.05 ohms
T5 First I. F. Pri.	9.00 ohms
T5 First I. F. Sec.	13.50 ohms
T6 Second I. F. Pri.	9.00 ohms
T6 Second I. F. Sec.	13.50 ohms
T7 Speaker Trans. Pri.	410.00 ohms
Speaker Field (Cold)	680.00 ohms
T8 Power Trans. Pri.	3.68 ohms
T8 Power Trans. 5V Sec.	.108 ohms
T8 Power Trans. 6V Sec.	.115 ohms
T8 Power Trans. H. V. Sec.	124-129-253
X2 "B" Filter Choke	120.00 ohms
X1 Audio Input Choke	1500.00 ohms

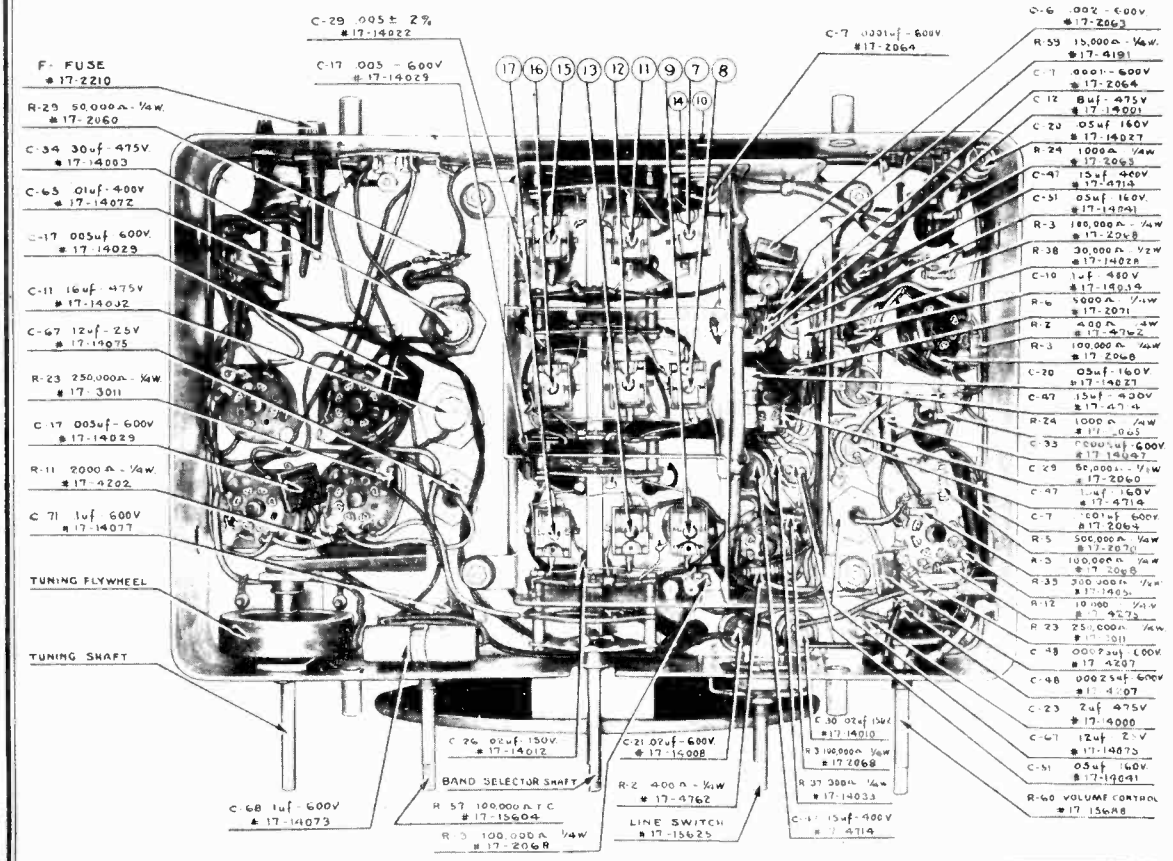
MODEL 927
Socket, Trimmers
Chassis

NOBLITT SPARKS INDUSTRIES

CABINET DIMENSIONS:

Height	Width	Depth
40"	25-1/16"	12⅞"





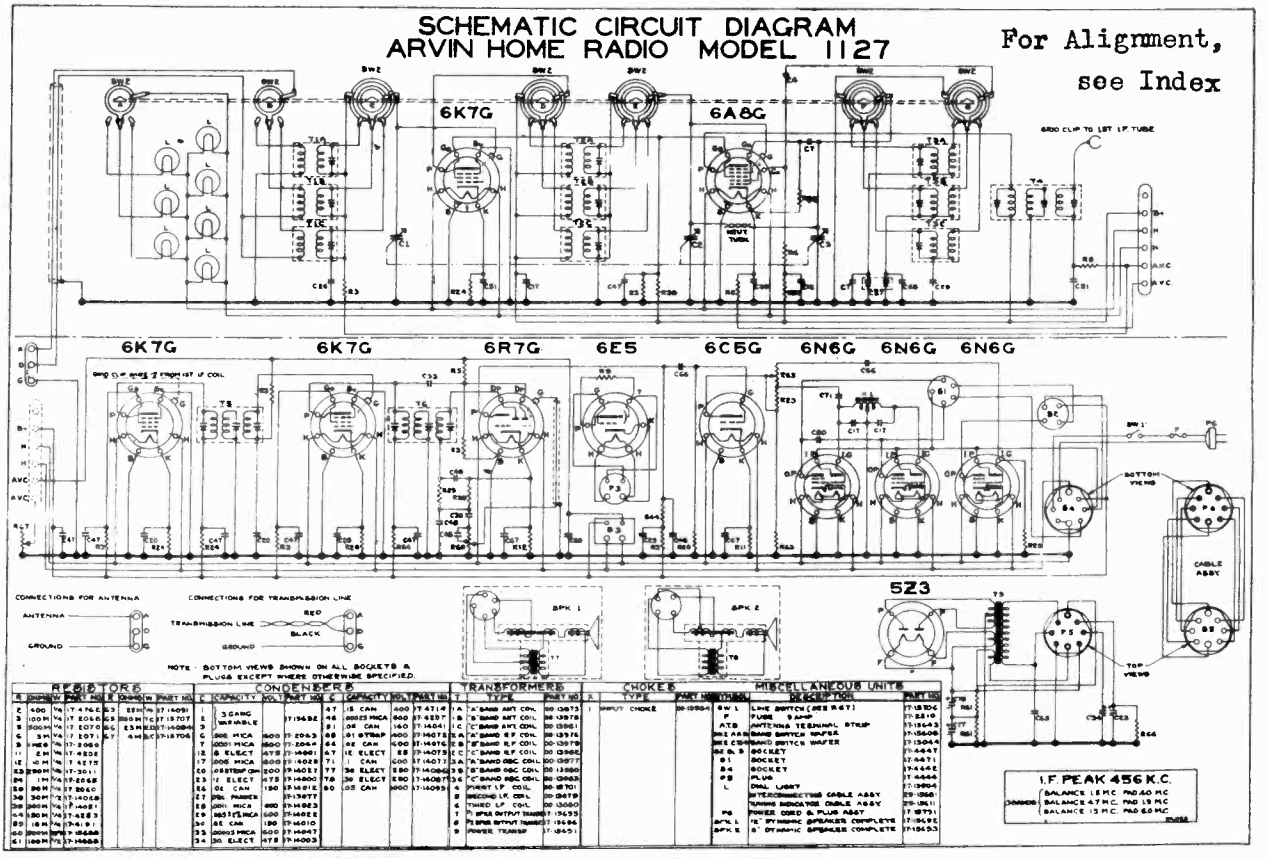
VOLTAGE AND FREQUENCY: 105-125 Volts, 60 Cycles
WATTS POWER CONSUMPTION: 120 Watts

FREQUENCY RANGE: 535—1700 Kilocycles
1700—5500 Kilocycles
5.5—18.5 Megacycles

POWER OUTPUT: 8 Watts

NOBLITT SPARKS INDUSTRIES

MODEL 1127
Schematic, Voltage
Resistance, Parts



MODEL 1127 SOCKET VOLTAGES

Tube	Heaters	Cathode	Suppressor Grid	Screen Grid	Plate	Oscillator Grid—1,500 K. C.	Anode Grid	Shell
6K7G	6.3	4.2	0	100	230	....	....	0
6A8G	6.3	3.6	....	105	235	11	140	0
6K7G	6.3	5.0	0	90	225	....	....	0
6K7G	6.3	4.8	0	100	225	....	....	0
6R7G	6.3	3.4	....	....	70	....	....	0
6C5G	6.3	5.0	....	....	155	....	....	0
6N6G	6.3	....	....	325	320	....	....	0
6N6G	6.3	....	....	325	320	....	....	0
6N6G	6.3	....	....	325	300	....	....	0
5Y3	5.0	....	....	....	....	....	....	0
6G5	6.3	0	....	....	250	....	....	0

POINT TO POINT RESISTANCES

6K7G

Heater	0
Shell	0
Heater	.5 ohms
Cathode	1,000 ohms
Suppressor	0
Screen to B+	30,000 ohms
Plate to B+	1.35-1.1-.7 ohms
Screen	100,000 ohms
Control Grid	700,000 ohms
Screen to Ground	100,000 ohms

6A8G

Heater	0
Shell	0
Heater	.5 ohms
†Cathode	400 ohms
Oscillator Grid	50,400 ohms
Anode Grid to B+	20,000 ohms
Screen to Gnd.	100,000 ohms
Screen to B+	30,000 ohms
Plate to B+	15 ohms
Control Grid	5.-9-2 ohms

6K7G

Heater	0
Shell	0
Heater	.5 ohms
Cathode	1,000 ohms
Suppressor	0
Screen to B+	100,000 ohms
Plate to B+	1,000 ohms
Control Grid	700,000 ohms

†Sensitivity Control Turned to extreme right.

6K7G

Heater	0
Shell	0
Heater	.5 ohms
Cathode	1,000 ohms
Suppressor	0
Screen to B+	100,000 ohms
Plate to B+	1,000 ohms
Control Grid	700,000 ohms

6R7G

Heater	0
Shell	0
Heater	.5 ohms
Cathode	10,000 ohms
Diode	100,000 ohms
Diode	360,000 ohms
Plate to B+	250,000 ohms
*Control Grid	500,000 ohms

6C5G

Heater	0
Shell	0
Heater	.5 ohms
Cathode	2,000 ohms
Plate to B+	25,000 ohms
Control Grid	250,000 ohms

6N6G

Heater	0
Shell	0
Heater	.5 ohms
Cathode	0

*Volume control turned to extreme right.

Screen to B+	0
Plate to B+	250 ohms
Control Grid	2,500 ohms

6N6G—Push Pull

Heater	0
Shell	0
Heater	.5 ohms
Cathode	0
Screen to B+	0
Plate to B+	250 ohms
Control Grid	2,500 ohms

6N6G—Single

Heater	0
Shell	0
Heater	.5 ohms
Cathode	0
Screen to B+	0
Plate to B+	450 ohms
Control Grid	50,000 ohms

5Z3

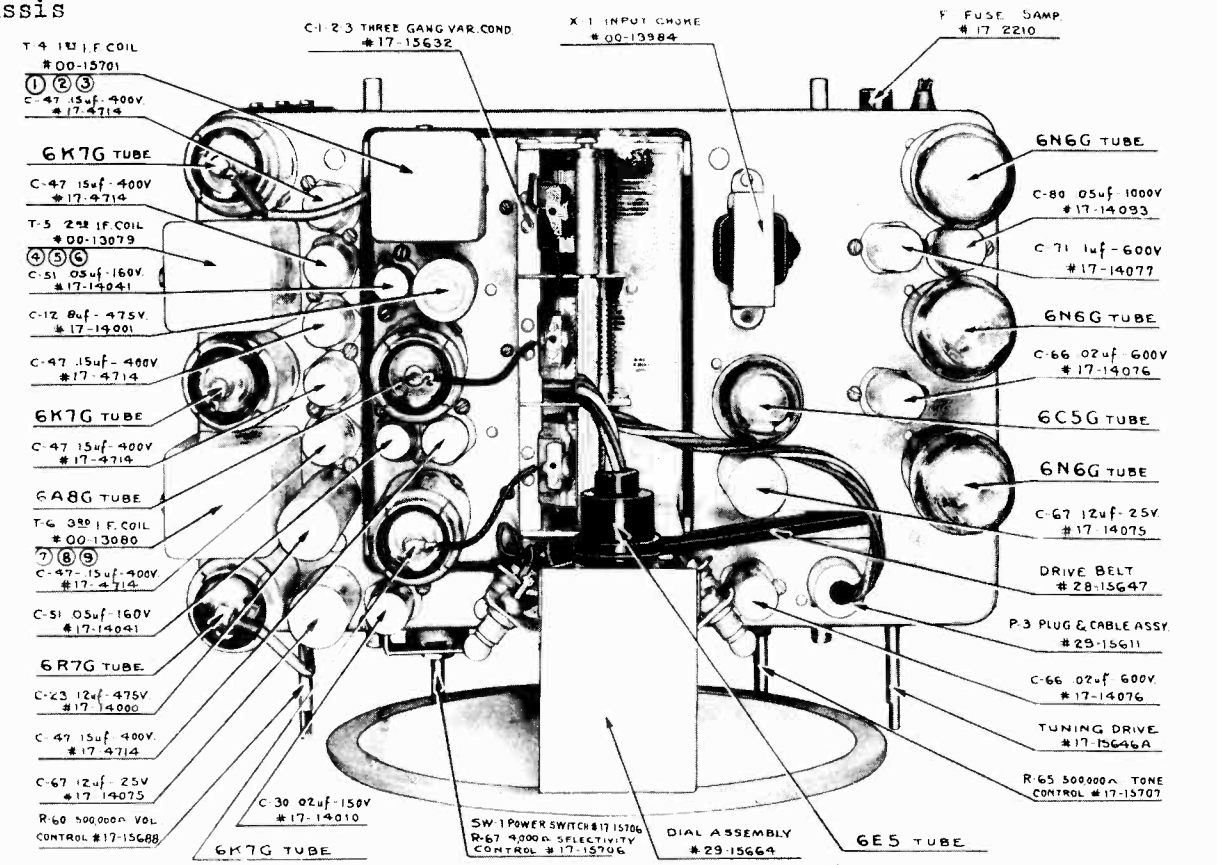
Filament to Gnd.	5,000 ohms
Filament to B+	2,090 ohms
Plate	65 ohms
Plate	65 ohms

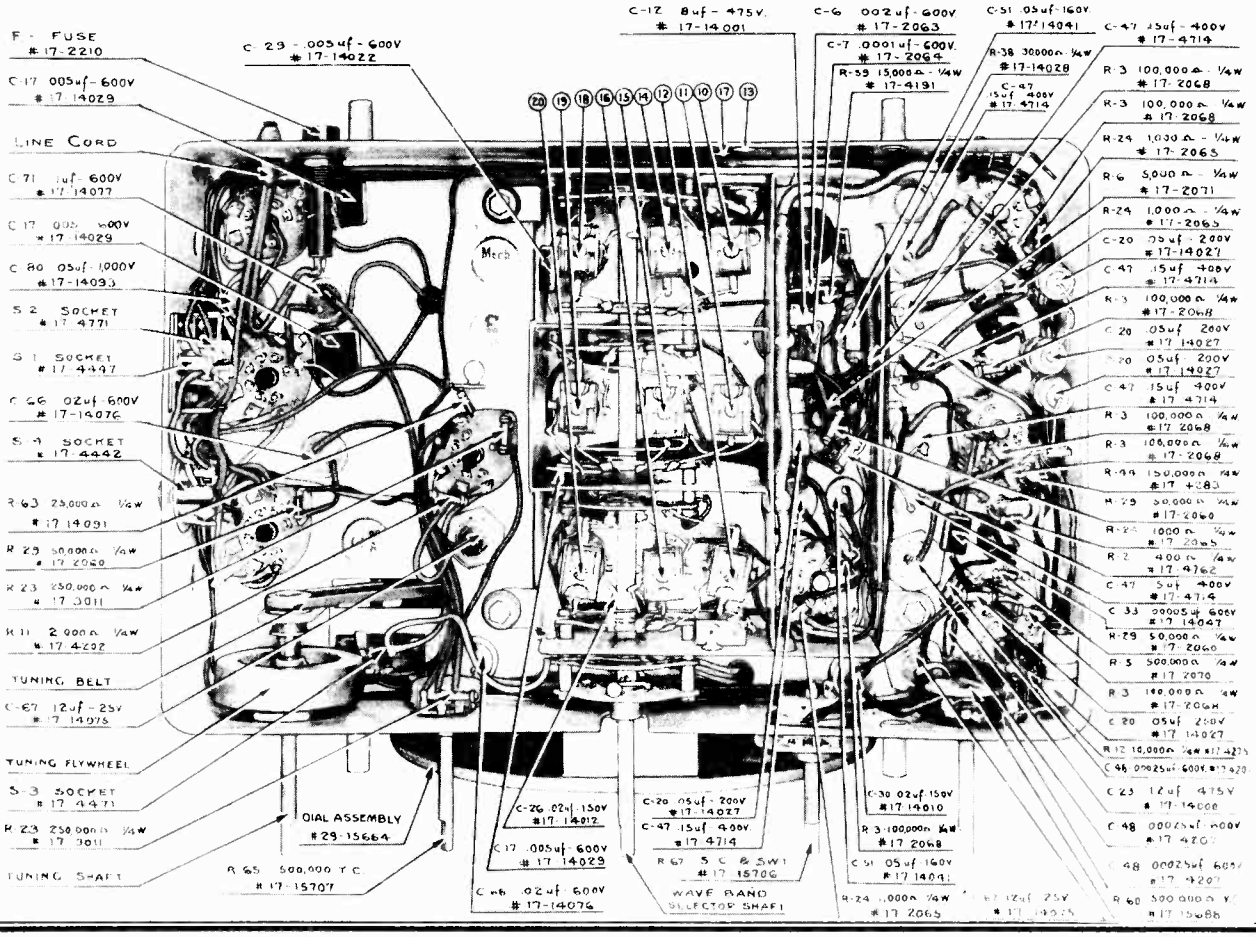
6G5

Heater	0
Heater	.5 ohms
Cathode	0
Control Grid	600,000 ohms
Target to B+	0
Plate to B+	1,000,000 ohms

MODEL 1127
Socket, Trimmers
Chassis

NOBLITT SPARKS INDUSTRIES





MODEL 1127
Coil Data
Data
Power Supply Layout

NOBLITT SPARKS INDUSTRIES

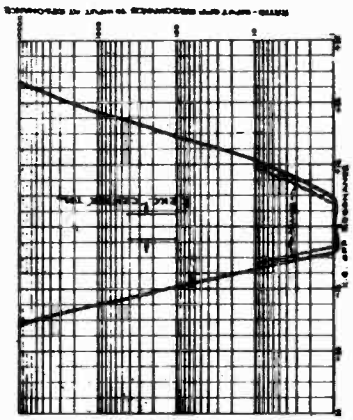
COIL, TRANSFORMER AND SPEAKER RESISTANCES

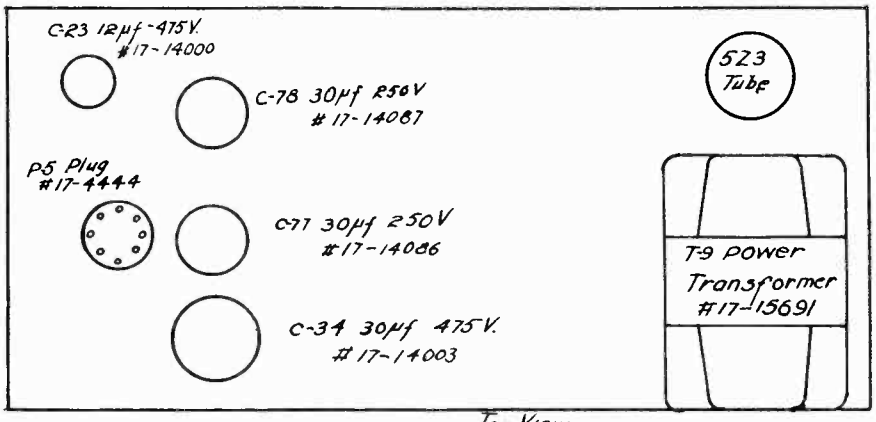
A Band Ant. Pri.	20. ohms	C Band Ant. Sec.	.15 ohms	Power Transformer 110 V. Pri.	2.2 ohms
A Band Ant. Sec.	5. ohms	C Band R. F. Pri.	.9 ohms	Power Transformer 6 V. Sec.	.5 ohms
A Band R. F. Pri.	1.35 ohms	C Band R. F. Sec.	.2 ohms	Power Transformer 5 V. Sec.	.15 ohms
A Band R. F. Sec.	5. ohms	C Band Osc. Pri.	.5 ohms	Power Transformer Hi. V. Sec.	.65-0-65 ohms
A Band Osc. Pri.	2.0 ohms	C Band Osc. Sec.	.25 ohms	Output Transformer (12" Speaker) Pri.	.250-0-250 ohms
A Band Osc. Sec.	7. ohms	1st I. F. Trans. Pri.	8.2 ohms	Output Transformer (12" Speaker) Sec.	1.3 ohms
B Band Ant. Pri.	1. ohms	1st I. F. Trans. Sec.	14.2 ohms	Output Transformer (6" Speaker) Pri.	.450 ohms
B Band Ant. Sec.	.45 ohms	2nd I. F. Trans. Pri.	8.2 ohms	Output Transformer (6" Speaker) Sec.	.8 ohms
B Band R. F. Pri.	1.1 ohms	2nd I. F. Trans. Sec.	14.2 ohms	6" Speaker Voice Coil	.6 ohms
B Band R. F. Sec.	.9 ohms	3rd I. F. Trans. Pri.	13.0 ohms	6" Speaker Field	140-0-1,600 ohms
B Band Osc. Pri.	1.2 ohms	3rd I. F. Trans. Sec.	13.0 ohms	12" Speaker Voice Coil	.4 ohms
B Band Osc. Sec.	.75 ohms	Audio Input Impedance	2,500-0-2,500 ohms	12" Speaker Field	250 ohms
C Band Ant. Pri.	.75 ohms				

ELECTRICAL DATA

TUBES:

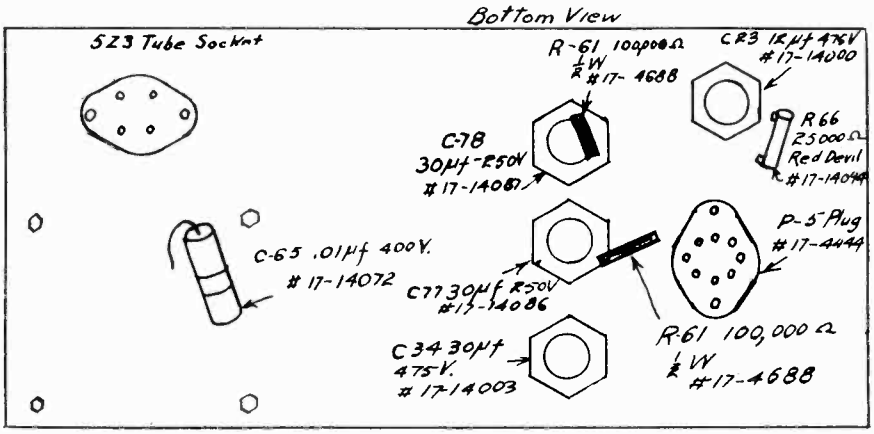
6K7G—R. F. Amplifier
6A8G—1st Detector, Oscillator
6K7G—1st I. F. Amplifier
6K7G—2nd I. F. Amplifier
6R7G—2nd Detector, Automatic Volume Control, 1st Audio Amplifier
6C5G—2nd Audio Amplifier (Low Frequency)
6N6G—Push-Pull Low Frequency Amplifier
6N6G—Push-Pull Low Frequency Amplifier
6N6G—High Frequency Amplifier
5Z3—Full Wave Rectifier
6G5—Cathode Ray Tuning Indicator





POWER SUPPLY

Top View



FREQUENCY RANGE:
535—1700 Kilocycles
1700—5500 Kilocycles
5.5—18.5 Megacycles

POWER OUTPUT: 12 Watts

VOLTAGE AND FREQUENCY: 105-125 Volts, 60 Cycles

WATTS POWER CONSUMPTION: 150 Watts

CABINET DIMENSIONS:

Height	Width	Depth
42½"	26⅝"	12-11/16"

MODELS 617,617-B,627,
627-B,927,1127
Alignment

NOBLITT SPARKS INDUSTRIES

MODELS 617, 617B, 627, 627B, and 927.

BALANCING INSTRUCTIONS

1. Connect the balancing oscillator (456 K. C.) to grid cap of the 1st Det. Connect an output meter or cathode ray oscillograph to speaker output transformer or across speaker voice coil.
2. Adjust padder condensers 1, 2, 3, 4, 5 and 6 for maximum output in the order designated by their numbering.
3. Recheck the adjustment of each padder beginning with number 1 to prevent interlocking of circuits.
4. Disconnect oscillator from Det. grid cap and replace grid clip.
5. Connect oscillator to terminal on rear of set marked "A." Ground oscillator cable shield to terminals marked "D" and "G."
6. Set the wave band switch to broadcast position. Rotate the condenser fully out of mesh and adjust padder number 7 for resonance at 1650 K. C.
7. Rotate the dial pointer until it is opposite 140 on the broadcast band and adjust padders 8 and 9 for maximum output.
8. Reset the balancing oscillator to 600 K. C. and rotate the tuning condenser until this signal is received. Adjust padder number 10 for maximum output while rotating the tuning condenser slightly to follow the drift in frequency caused by the change in padder adjustment.
9. Reset the wave switch to the mid band position (5500-1750 K. C. range). Readjust the balancing oscillator to 4800 K. C. and set the dial pointer to 4.8 on the center dial calibration.
10. Adjust padder number 11 for resonance.
11. Adjust padders 12 and 13 for maximum output.
12. Reset balancing oscillator to 1800 K. C. Set the dial point to 1.8 on the center dial calibration.
13. Adjust padder number 14 for maximum output while rotating tuning condenser slightly to follow drift in frequency caused by the change in padder adjustment.
14. Reset the band switch to the short wave position (5.5-18.5 megacycles). Readjust the balancing oscillator to 16 megacycles and set the dial pointer opposite 16 on the short wave band.
15. Unscrew screw in padder number 15 until padder condenser plates are wide open. Then tighten selecting the first resonance point reached. (The short wave band will not function unless this precaution is taken.)
16. Adjust padders 16 and 17 until maximum output is obtained.

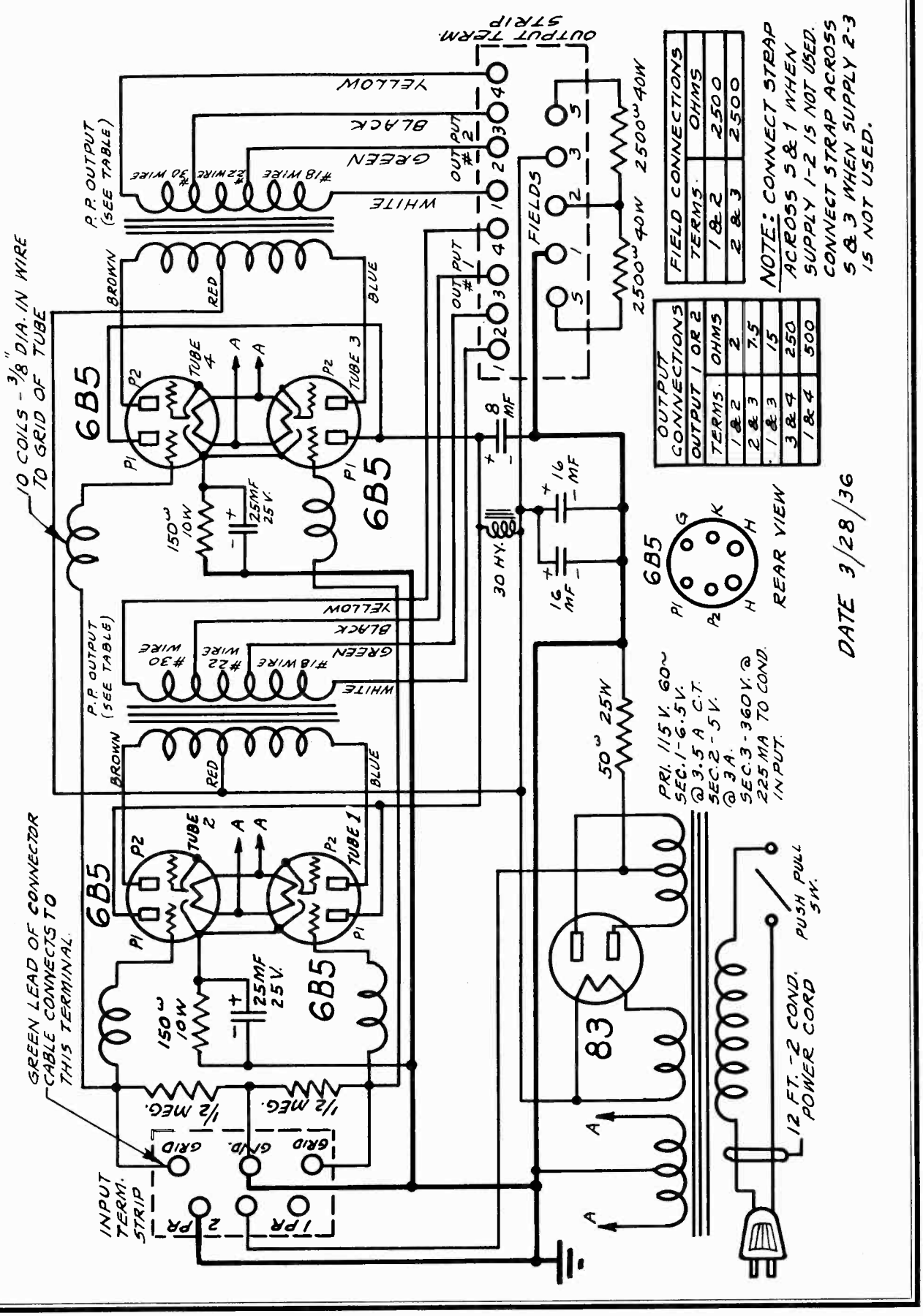
MODEL 1127

BALANCING INSTRUCTIONS

1. Connect the balancing oscillator (456 K. C.) to grid cap of the 6A8G tube. Connect an output meter or cathode ray oscillograph to speaker output transformer or plate of 6N6G tube.
2. Adjust padder condensers 1, 2, 3, 4, 5, 6, 7, 8, and 9 for maximum output in the order designated by their numbering until oscillograph trace shown in Fig. A is obtained.
3. Recheck the adjustment of each padder beginning with number 1 to prevent interlocking of circuits.
4. Disconnect oscillator from 6A8G grid cap and replace grid clip.
5. Connect oscillator to terminal on rear of set marked "A." Ground oscillator cable shield to terminals marked "D" and "G."
6. Set the wave band switch to broadcast position. Rotate the condenser fully out of mesh and adjust padder number 10 for resonance at 1650 K. C.
7. Rotate the dial pointer until it is opposite 140 on the broadcast band and adjust padders 11 and 12 for maximum output.
8. Reset the balancing oscillator to 600 K. C. and rotate the tuning condenser until this signal is received. Adjust padder number 13 for maximum output while rotating the tuning condenser slightly to follow the drift in frequency caused by the change in padder adjustment.
9. Reset the wave switch to the mid band position (5500-1750 K. C. range). Readjust the balancing oscillator to 4800 K. C. and set the dial pointer to 4.8 on the center dial calibration.
10. Adjust padder number 14 for resonance.
11. Adjust padders 15 and 16 for maximum output.
12. Reset balancing oscillator to 1800 K. C. Set the dial point to 1.8 on the center dial calibration.
13. Adjust padder number 17 for maximum output while rotating tuning condenser slightly to follow drift in frequency caused by the change in padder adjustment.
14. Reset the band switch to the short wave position (5.5-18.5 megacycles). Readjust the balancing oscillator to 16 megacycles and set the dial pointer opposite 16 on the short wave band.
15. Unscrew screw in padder number 18 until padder condenser plates are wide open. Then tighten selecting the first resonance point reached. (The short wave band will not function unless this precaution is taken).
16. Adjust padders 19 and 20 until maximum output is obtained.

OPERADIO MFG. CO.

MODEL 683-A
Schematic



FIELD CONNECTIONS	
TERMS.	OHMS
1 & 2	2500
2 & 3	2500

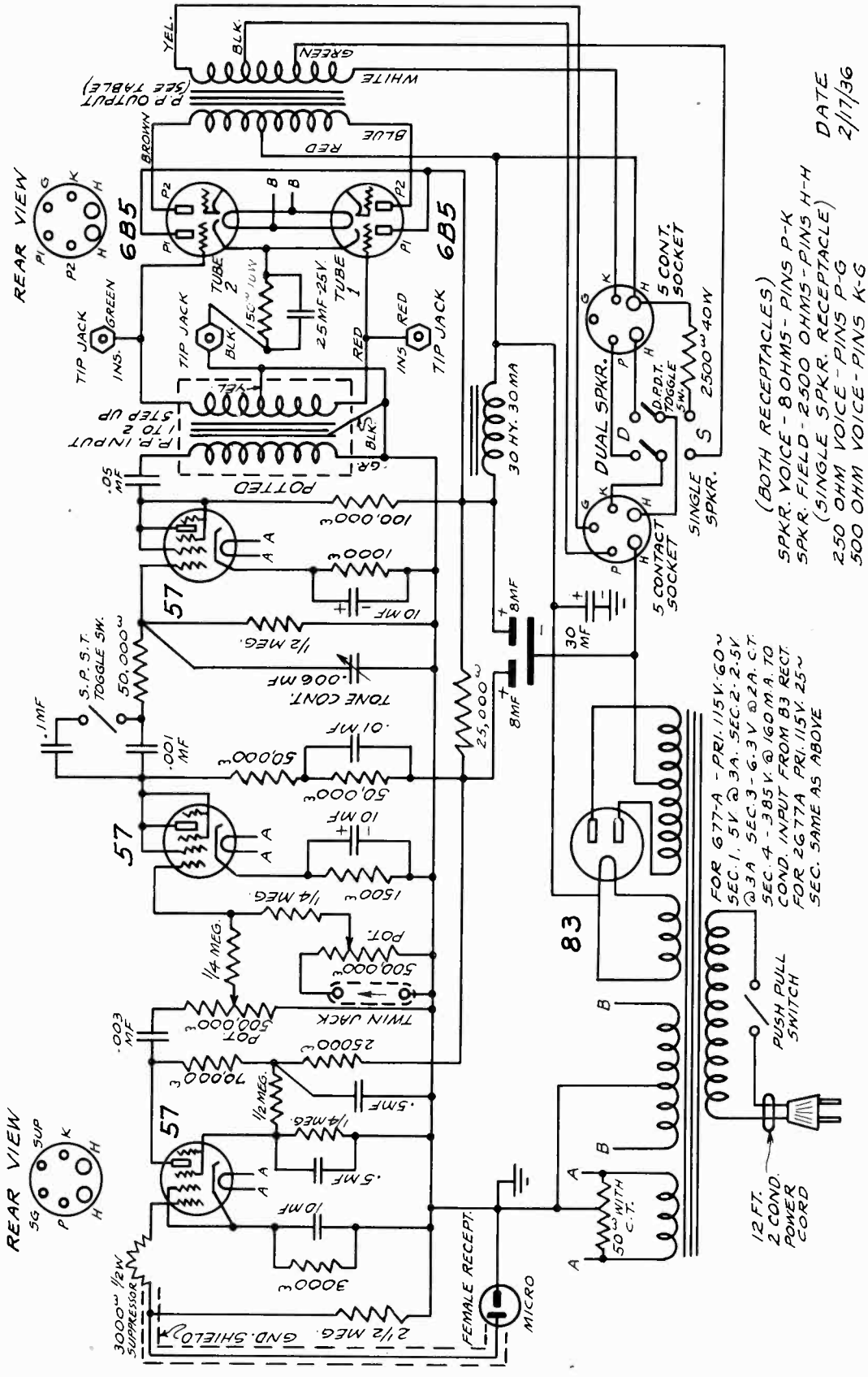
OUTPUT CONNECTIONS	
OUTPUT 1 OR 2	
TERMS.	OHMS
1 & 2	2
2 & 3	7.5
1 & 3	15
3 & 4	250
1 & 4	500

NOTE: CONNECT STRAP ACROSS 5 & 1 WHEN SUPPLY 1-2 IS NOT USED. CONNECT STRAP ACROSS 5 & 3 WHEN SUPPLY 2-3 IS NOT USED.

DATE 3/28/36

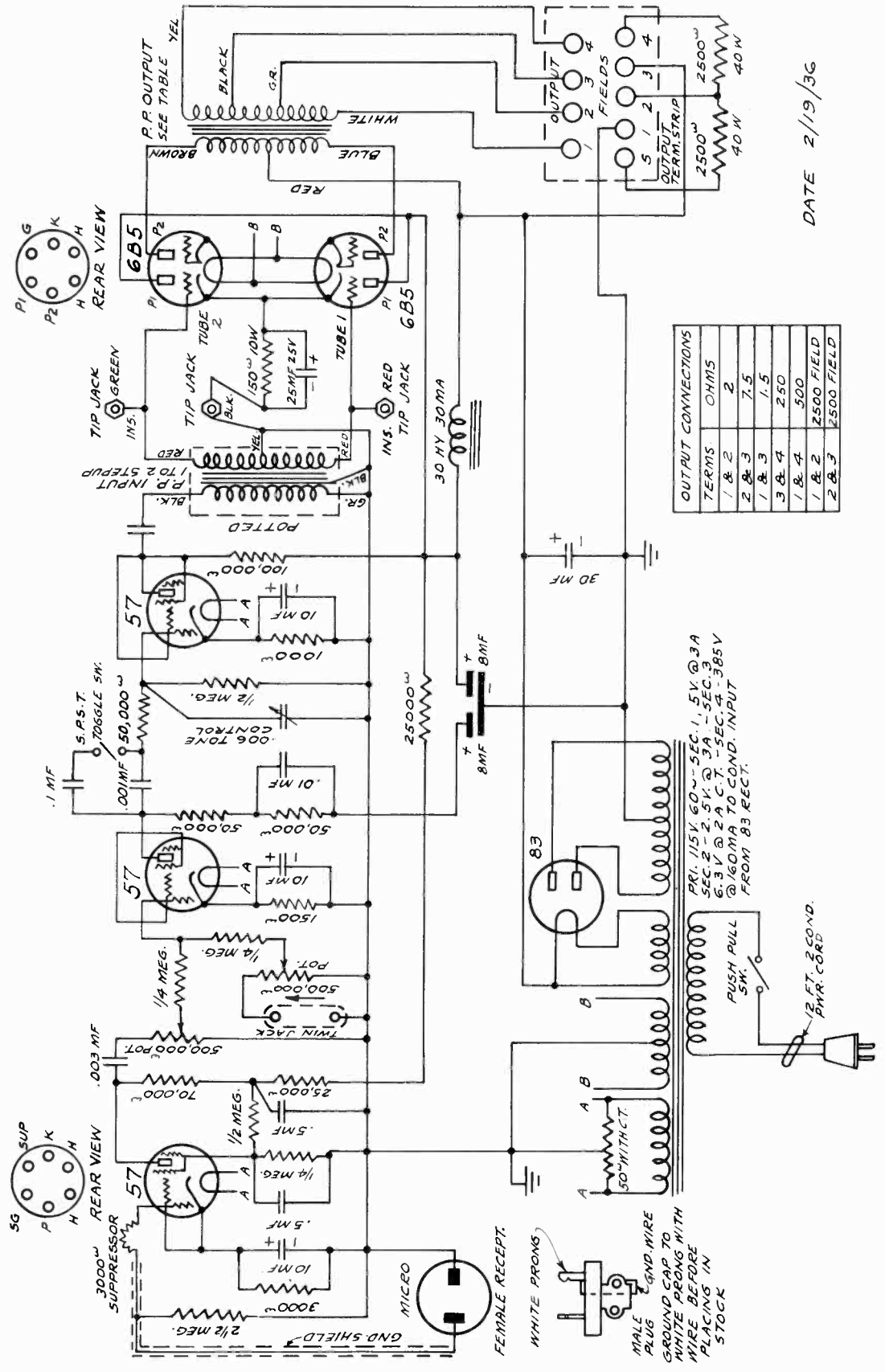
MODELS 677-A, 2677-A
Schematic

OPERADIO MFG. CO.



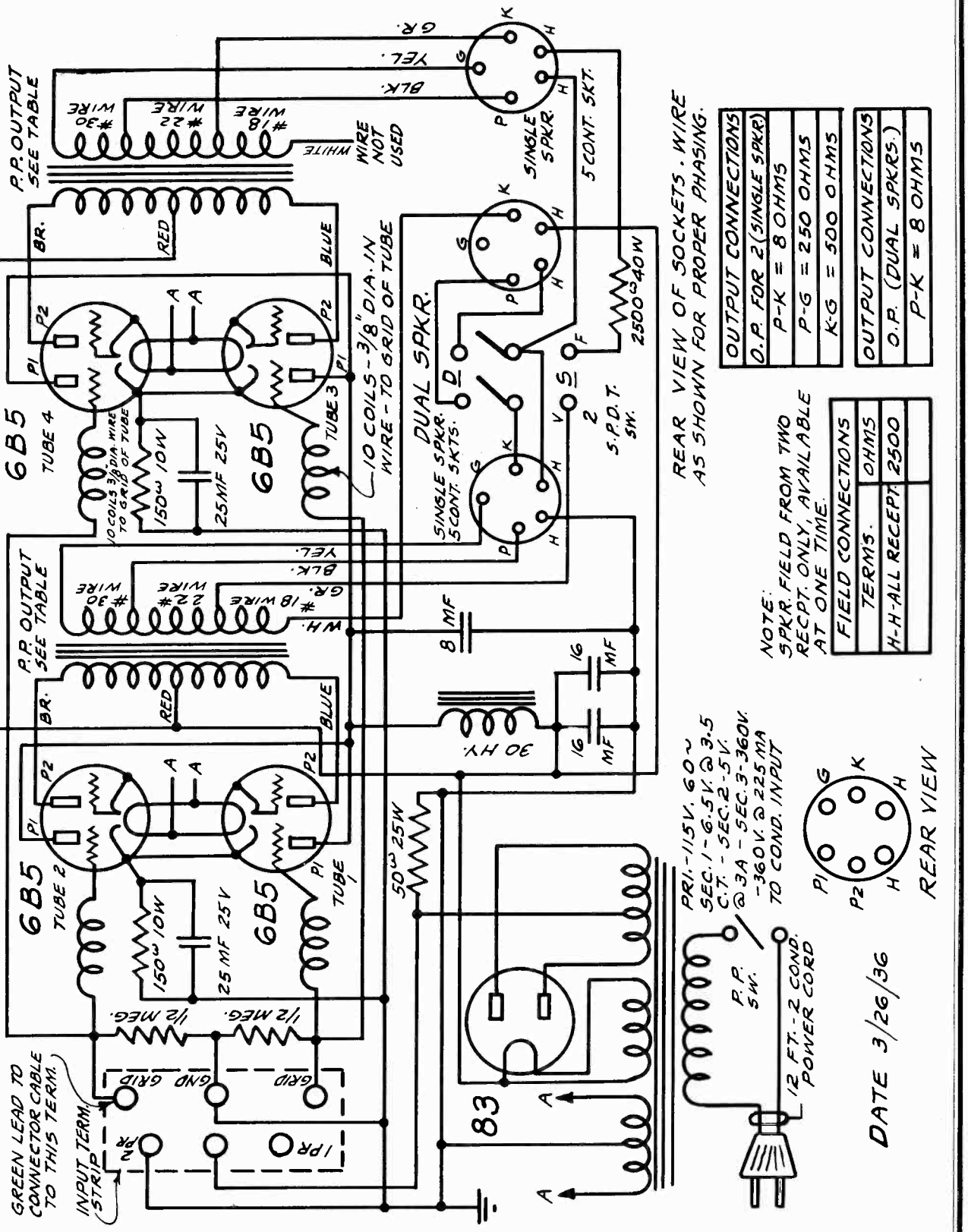
MODEL 678-A
Schematic

OPERADIO MFG. CO.



MODEL 823-A
Schematic

OPERADIO MFG. CO.



OUTPUT CONNECTIONS
O.P. FOR 2 (SINGLE SPKR)
P-K = 8 OHMS
P-G = 250 OHMS
K-G = 500 OHMS

OUTPUT CONNECTIONS
O.P. (DUAL SPKRS.)
P-K = 8 OHMS

NOTE:
SPKR. FIELD FROM TWO RECPT. ONLY, AVAILABLE AT ONE TIME.

FIELD CONNECTIONS	
TERMS.	OHMS
H-H ALL RECEPT.	2500