

Models 81, 81A

Radio Receivers

Specifications

Frequency Range:

Broadcast

Green: 1.5 to 4 megacycles

Red: 3.5 to 9 megacycles

Blue: 8 to 20 megacycles

I.F.:

482.5 K.C.

Tubes:

Type	Position
58	1st Detector
56	Oscillator
58	1st I.F. Amplifier
58	2nd I.F. Amplifier
55	2nd Detector, A.V.C.
45	Push-Pull Output
45	Push-Pull Output
80	Power Rectifier

Power Supply:

Model 81: 110 to 120 volts A.C. 60 cycles

Model 81A: 110 to 120 volts A.C. 25 to 60
cycles

A.V.C.:

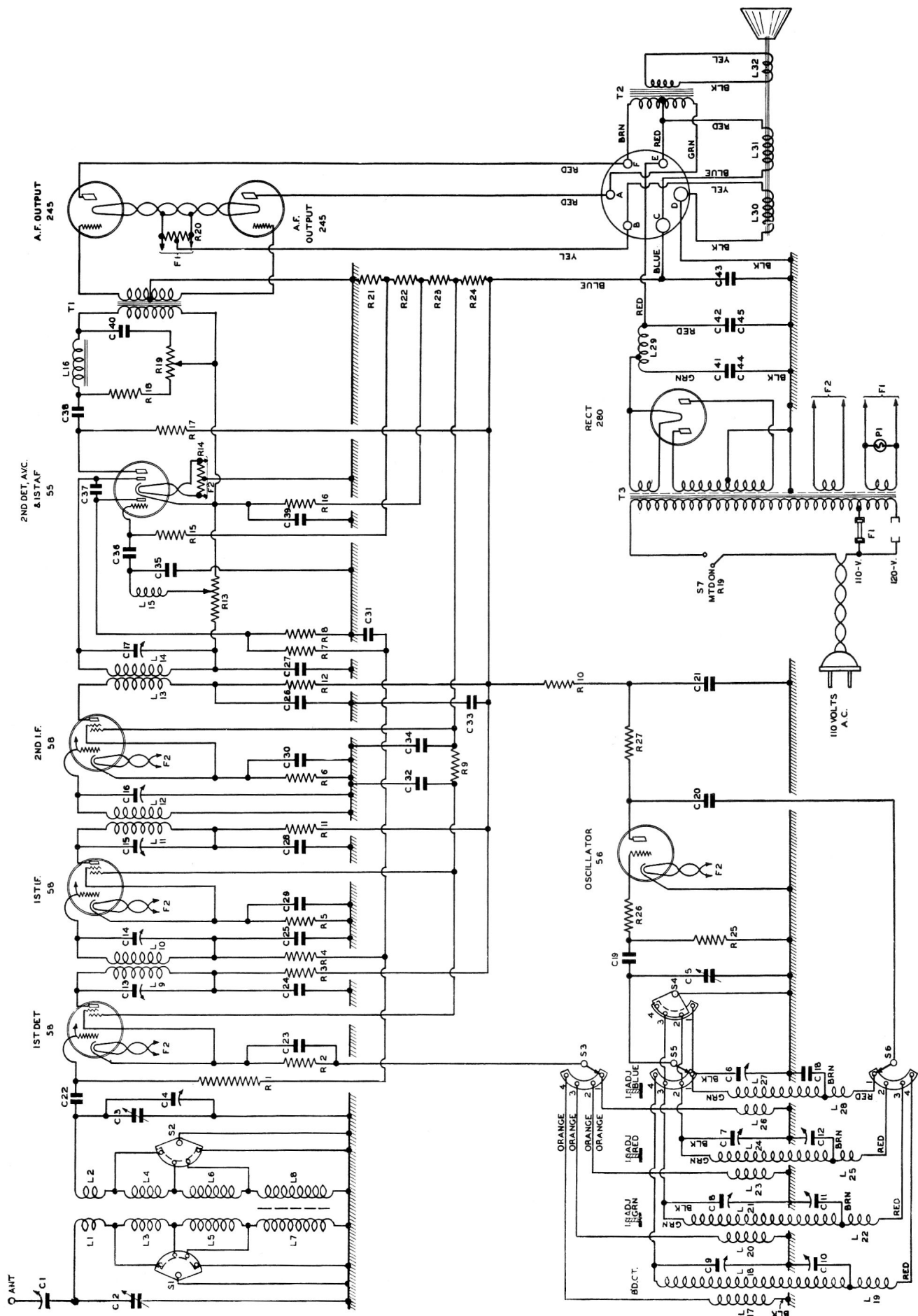
On types 58 tubes, 1st Detector and 1st I.F.

Controls:

Left to right—volume control; A.C. switch
and tone control; wave change switch;
tuning control.

Loudspeaker:

10 inch moving coil.



Schematic Diagram—Models 81 and 81-A Receivers
NOTE:—Picture of Loudspeaker Plug is a combined view—Prong Side of Socket and Cable Side of Plug.

REPLACEMENT PARTS LIST

CONDENSERS:—

	Part No.
C-1 Antenna Tuning—7-70 mmf.....	K-1028-1
C-2 R.F. Transformer Primary.....	Three Section Gang
C-3 R.F. Transformer Secondary.....	
C-4 Trimmer for R.F. Transformer Secondary.....	
C-5 Main Oscillator Tuning.....	K-1082
C-6 8-20 Megacycle Band Parallel Pad—7-70 mmf.....	K-1028-1
C-7 3.5-8 Megacycle Band Parallel Pad—7-70 mmf.....	K-1028-1
C-8 1.6-3.5 Megacycle Band Parallel Pad—7-70 mmf.....	K-1028-1
C-9 .54-1.6 Megacycle Band (Broadcast) Parallel Pad—7-70 mmf.....	K-1018-3
C-10 .54-1.6 Megacycle Band (Broadcast) Lagging (Series) 375-475.....	
C-11 1.6-3.5 Megacycle Band Lagging (Series) 600-1600 mmf.....	K-1028-2
C-12 3-5.8 Megacycle Band Lagging (Series) 1000-2000 mmf.....	K-1028-3
C-13 Trimmer 1st I.F. Transformer Primary 7-80 mmf.....	K-1018-2
C-14 Trimmer 1st I.F. Transformer Secondary 7-80 mmf.....	
C-15 Trimmer 2nd I.F. Transformer Primary 7-80 mmf.....	K-1018-2
C-16 Trimmer 2nd I.F. Transformer Secondary 7-80 mmf.....	
C-17 Trimmer Diode Coil—7-80 mmf.....	K-1018-4
C-18 8-20 Megacycle Lagging (fixed)—.006 mfd. Mica.....	K-1010-5
C-19 Oscillator Grid—.0001 mfd. Mica.....	K-1611-2
C-20 Blocking—.05 mfd. 200 volts.....	K-2227-8
C-21 Oscillator Plate Filter—.25 mfd. 350 volts.....	K-2228-10
C-22 Grid Coupling—.0001 mfd. Mica.....	K-1611-2
C-23 1st Det. Cathode By-Pass—.05 mfd. 200 volts.....	K-2227-8
C-24 1st Det. Plate Filter—.005 mfd. Mica.....	K-1010-4
C-25 1st I.F. Grid Filter—.005 mfd. Mica.....	K-1010-4
C-26 2nd I.F. Plate Filter—.005 mfd. Mica.....	K-1010-4
C-27 2nd Det. Grid Filter—.0001 mfd. Mica.....	K-1611-2
C-28 1st I.F. Plate Filter—.005 mfd. Mica.....	K-1010-4
C-29 1st I.F. Cathode By-Pass—.05 mfd. 200 volts.....	K-2227-8
C-30 2nd I.F. Cathode By-Pass—.05 mfd. 200 volts.....	K-2227-8
C-31 A.V.C. Filter—.05 mfd. 200 volts.....	K-2227-8
C-32 Screen Filter—.05 mfd. 200 volts.....	K-2227-8
C-33 Plate By-Pass—.05 mfd. 400 volts.....	K-2228-8
C-34 Screen Filter—.05 mfd. 400 volts.....	K-2228-8
C-35 I.F. Filter—.0001 mfd. Mica.....	K-1611-2
C-36 D.C. Blocking (audio coupling)—.05 mfd. 200 volts.....	K-2227-8
C-37 D.C. Blocking (diode parallelling)—.0001 mfd. Mica.....	K-1611-2
C-38 D.C. Blocking (audio coupling)—.5 mfd. 400 volts.....	K-1135
C-39 2nd Det. Cathode By-Pass—.05 mfd. 200 volts.....	K-2227-8
C-40 Tone Control—.1 mfd. 200 volts.....	K-2227-9
C-41 Power Filter—6 mfd. Dry Elect. 60 cycles.....	K-1083-1
C-42 Power Filter—6 mfd. Dry Elect. 60 cycles.....	
C-43 Power Filter—4 mfd. Dry Elect. only.....	

CONDENSERS (Cont'd.)

	Part No.
C-44 Power Filter—10 mfd. Dry Elect. (25 cycles only).....	K-1083-2
C-45 Power Filter—10 mfd. Dry Elect. (25 cycles only).....	

(K-1083-2 also includes 4 mfd. condenser C.43.)

RESISTORS:—

R-1 1st Det. Grid Filter—.5 meg. ½ watt.....	K-2226-3
R-2 1st Det. Cathode Bias—5000 ohms ½ watt.....	K-2226-12
R-3 1st Det. Plate Filter—1000 ohms ½ watt.....	K-2226-16
R-4 1st I.F. Grid Filter—100,000 ohms ½ watt.....	K-2226-5
R-5 1st I.F. Cathode Bias—750 ohms ½ watt.....	K-2226-17
R-6 2nd I.F. Cathode Bias—1000 ohms ½ watt.....	K-2226-16
R-7 A.V.C. Filter—.5 meg. ½ watt.....	K-2226-3
R-8 A.V.C. Load—1 meg. ½ watt.....	K-2226-2
R-9 Screen—10,000 ohms ½ watt.....	K-2226-10
R-10 Oscillator Plate Filter—10,000 ohms ½ watt.....	K-2226-10
R-11 1st I.F. Plate Filter—1,000 ohms ½ watt.....	K-2226-14
R-12 2nd I.F. Plate Filter—1,000 ohms ½ watt.....	K-2226-14
R-13 Volume Control (variable). .5 meg.....	K-1092-1
R-14 R.F. & I.F. Tube Centre Tap—6 ohms.....	K-1025-1
R-15 Grid Leak—.5 meg. ½ watt.....	K-2226-3
R-16 2nd Det. Cathode Bias—1,500 ohms, ½ watt.....	K-2226-15
R-17 A.F. Plate—15,000 ohms, ½ watt.....	K-2226-9
R-18 Series Tone Control—10,000 ohms, ½ watt.....	K-2226-10
R-19 Tone Control (variable)—.1 meg.....	K-1093-1
R-20 Audio Centre Tap—6 ohms.....	K-1025-1
R-21 A.V.C. Delay Bias—2590 ohms.....	K-1084-1
R-22 1st A.F. Grid Bias—210 ohms.....	
R-23 A.V.C. Delay Bias—5240 ohms.....	
R-24 Screen—7320 ohms.....	K-2226-6
R-25 Oscillators Grid—50,000 ohms, ½ watt.....	
R-26 Oscillator Grid Suppressor, 150 ohms, ½ watt.....	K-2226-23
R-27 Oscillator Plate Filter—10,000 ohms, ½ watt.....	K-2226-10

COILS:—

L-1 R.F. Transformer, Primary; 8-20 meg. band.....	K-1080-1
L-2 R.F. Transformer Secondary; 8-20 meg. band.....	
L-3 R.F. Transformer Primary; 3.5-8 meg. band.....	K-1080-2
L-4 R.F. Transformer Secondary; 3.5-8 meg. band.....	
L-5 R.F. Transformer Primary; 1.6-3.5 meg. band.....	K-1081
L-6 R.F. Transformer Secondary; 1.6-3.5 meg. band.....	
L-7 R.F. Transformer Primary; .54-1.5 meg. band.....	S.A.-103730
L-8 R.F. Transformer Secondary; .54-1.5 meg. band.....	
L-9 1st I.F. Transformer Primary.....	K-1078-1
L-10 1st I.F. Transformer Secondary.....	
L-11 2nd I.F. Transformer Primary.....	K-1078-2
L-12 2nd I.F. Transformer Secondary.....	
L-13 3rd I.F. Transformer Primary.....	K-1078-3
L-14 3rd I.F. Transformer Secondary.....	
L-15 I.F. Choke.....	K-1086
L-16 Tone Control Reactor (.125 henry: 98 ohms).....	K-1099-1

COILS (Cont'd.)

	Part No.
L-17 Oscillator Pick-up—.54-1.5 meg. band.....	K-1077
L-18 Oscillator Grid—.54-1.5 meg. band.....	
L-19 Oscillator Plate—.54-1.5 meg. band.....	
L-20 Oscillator Pick-up—1.5-3.5 meg. band.....	
L-21 Oscillator Grid—1.5-3.5 meg. band.....	K-1079-3
L-22 Oscillator Plate—1.5-3.5 meg. band.....	
L-23 Oscillator Pick-Up—3.5-8 meg. band.....	K-1079-2
L-24 Oscillator Grid—3.5-8 meg. band.....	
L-25 Oscillator Plate—3.5-8 meg. band.....	
L-26 Oscillator Pick-up—8-20 meg. band.....	K-1079-1
L-27 Oscillator Grid—8-20 meg. band.....	
L-28 Oscillator Plate—8-20 meg. band.....	
L-29 Power Filter Choke, tapped.....	K-1087
L-30 Loudspeaker Field—750 ohms.....	K-1089
L-31 Loudspeaker Field—4300 ohms.....	
L-32 Voice Coil & Diaphragm Assembly	complete
K-1091.....	K-1088

TRANSFORMERS:—

	Part No.
T-1 Input Transformer.....	K-1100-1
T-2 Output Transformer.....	K-1065
T-3 Power Transformer—60 cycles.....	K-1066-1
25 cycles.....	K-1066-2

SWITCHES:—

S-1 R.F. Transformer Primary.....	SA-105228
S-2 R.F. Transformer Secondary.....	
S-3 Oscillator Pick-up Coils.....	
S-4 Oscillator Coil Shunt Circuits.....	
S-5 Oscillator Grid Coils.....	Wave
S-6 Oscillator Plate Coils.....	Change
S-7 A.C. "on-off" Switch (on R-19)....	Switch
	Part of K-1093-1

MISCELLANEOUS:—

P-1 Pilot Lamp.....	K-1024-1
F-1 Fuse—two amps.....	K-1327-5

REALIGNING DETAILS

Realigning the Model 81 "Wide Range" receiver should not be attempted without an oscillator capable of producing the I.F. frequency of 482.5 K.C. from the fundamentals, giving an output at 2.5, 3.2, 4, 8, 10, 13, and 15 megacycles and of course the standard broadcast band from .54 to 1.6 megacycles. Proceed as follows:—

1. I.F. Adjustments:

- Set volume control to maximum, tone control to treble, and ground antenna lead.
- Connect output meter across voice coil of loudspeaker for I.F. and all other band adjustments.
- Adjust external oscillator to 482.5 and connect its output to control grid terminal first detector tube with grid clip off.
- Align C-31, C-14, C-15, C-16 and C-17.
- Repeat second time for close adjustment.

2. Broadcast Band Oscillator:

- Check for maximum capacity gang with receiver dial at 153 approx.
- Adjust receiver dial to 1.4 meg.
- Set external oscillator to 1400 K.C. and connect to first detector grid.
- Align C-9 (adjust to highest frequency peak where trimmer farthest out).
- Connect oscillator output to receiver antenna.
- Align antenna trimmer C-1 and R.F. transformer secondary trimmer C-4.
- Set external oscillator to 575 K.C.; set receiver dial pointer to .575 meg.
- Align oscillator series trimmer C-10 varying pointer slightly above and below .575 mark until maximum output obtained; if dial is out, reset at .575 megacycles.

3. Short Wave Band 1.5 to 4 Megacycles (Green Band):

- Set external oscillator to 3.2 meg. and connect output to control grid terminal of first detector tube.
- Set receiver dial pointer to 3.2 megacycles.
- Align oscillator parallel trimmer C-8 to highest frequency.
- Set receiver dial and external oscillator to 1.6 megacycles.
- Connect external oscillator output to Receiver Antenna.

(f) Align C-11.

- Set receiver dial and external oscillator to 2.5 megacycles.
- Adjust inductance trimmer "I.A. Green" to increase sensitivity if necessary. (See Fig. 1 for location.) If variation of this trimmer increases output, it will be necessary to recheck at 3.2 and 1.6 megacycles as above.

Short Wave Band 3.5 to 9 Megacycles (Red Band):

- Set external oscillator and receiver dial pointer to 8.0 megacycles.
- Connect oscillator output to control grid terminal first detector tube.
- Align oscillator parallel trimmer C-7 to highest frequency.
- Set external oscillator and receiver dial pointer to 4.0 megacycles.
- Connect oscillator output to antenna.
- Align oscillator series (lagging) C-12.
- Set external oscillator and receiver dial pointer to 6.0 megacycles.
- Adjust inductance trimmer "I.A. Red" to increase sensitivity if necessary (see Fig. 1 for location). If variation of this trimmer increases output, it will be necessary to recheck at 8.0 and 4.0 megacycles as above.

5. Short Wave Band 8 to 20 Megacycles (Blue Band):

- Set external oscillator and receiver dial pointer to 15.0 megacycles.
- Connect oscillator output to control grid terminal first detector tube.
- Align oscillator parallel trimmer C-6 to highest frequency.
- Set external oscillator and receiver dial pointer to 13.0 megacycles and connect oscillator output to receiver antenna lead.
- Adjust inductance trimmer "I.A. Blue" if necessary.
- Recheck sensitivity at 15.0 megacycles and realign oscillator parallel trimmer C-6 if necessary.

The Inductance Trimmers for the three short wave bands are reached through holes in the left hand side of the chassis base, looking at the back and require insulated screwdriver adjustment. Care should be exercised in all realigning operations on this receiver.

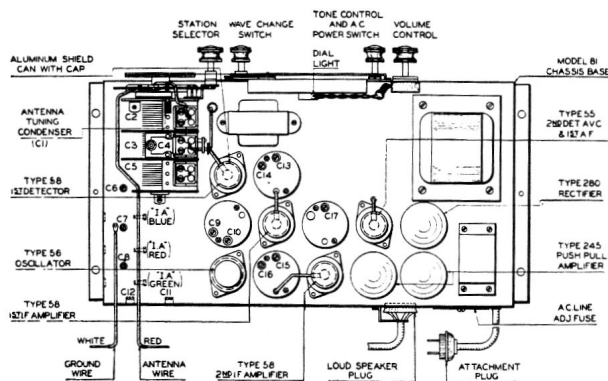
MODELS 81 AND 81-A WIDE RANGE RECEIVERS

SOCKET VOLTAGE AND CURRENT READINGS

The following readings were taken with a Weston type 566 Test Analyser at a line pressure of 113 volts, 60 cycles frequency. The volume control was adjusted to maximum for all readings.

Tube	Position	Filament	Plate	Screen	Control Grid or "C" Bias	Cathode	Plate Current	
							Bias	Reduced Bias
58	First Detector.....	2.2	175	80	2.2	+10	2.0	4.5
56	Oscillator.....	2.2	80	..	..	..	6.0	6.5
58	1st I.F. Amplifier.....	2.2	185	80	8.	+1.5	2.5	4.0
58	2nd I.F. Amplifier.....	2.2	165	95	9.6	+10.5	6.	7.5
55	2nd Det. and A.V.C.....	2.2	100	(1)—20	—2	+40	3.	5.
45	Push-Pull Output.....	2.1	250	..	50	..	33.	38.
45	Push-Pull Output.....	2.1	250	..	50	..	32.	36.
80	Rectifier.....	4.4	A.C. Volts Plate to Plate 740				One Plate 52 mil.	

(1) Diode Plate (A.V.C.) Line Fuse Adjustment on 110V.



CHASSIS LAY-OUT MODEL 81 RECEIVER