

Models 101, 101A

Radio Receivers

Specifications

Frequency Range:

Broadcast Band
Green: 1.5 to 3.6 megacycles
Red: 3.3 to 9 megacycles
Blue: 8 to 20 megacycles

I.F.:

482.5 K.C.

Tubes:

Type	Position
58	1st Detector
58	1st I.F. Amplifier
58	2nd I.F. Amplifier
58	3rd I.F. Amplifier
56	2nd Detector
56	A.F. Amplifier
56	Oscillator
2-245	Push-Pull Power Output
280	Power Rectifier

Power Supply:

Model 101—105 to 125 volts A.C., 60 cycles
Model 101A—105 to 125 volts A.C.,
25-60 cycles

A.V.C.:

Applied to three type 58 tubes, 1st Detector, 1st and 2nd I.F. Amplifiers from type 56, 2nd Detector.

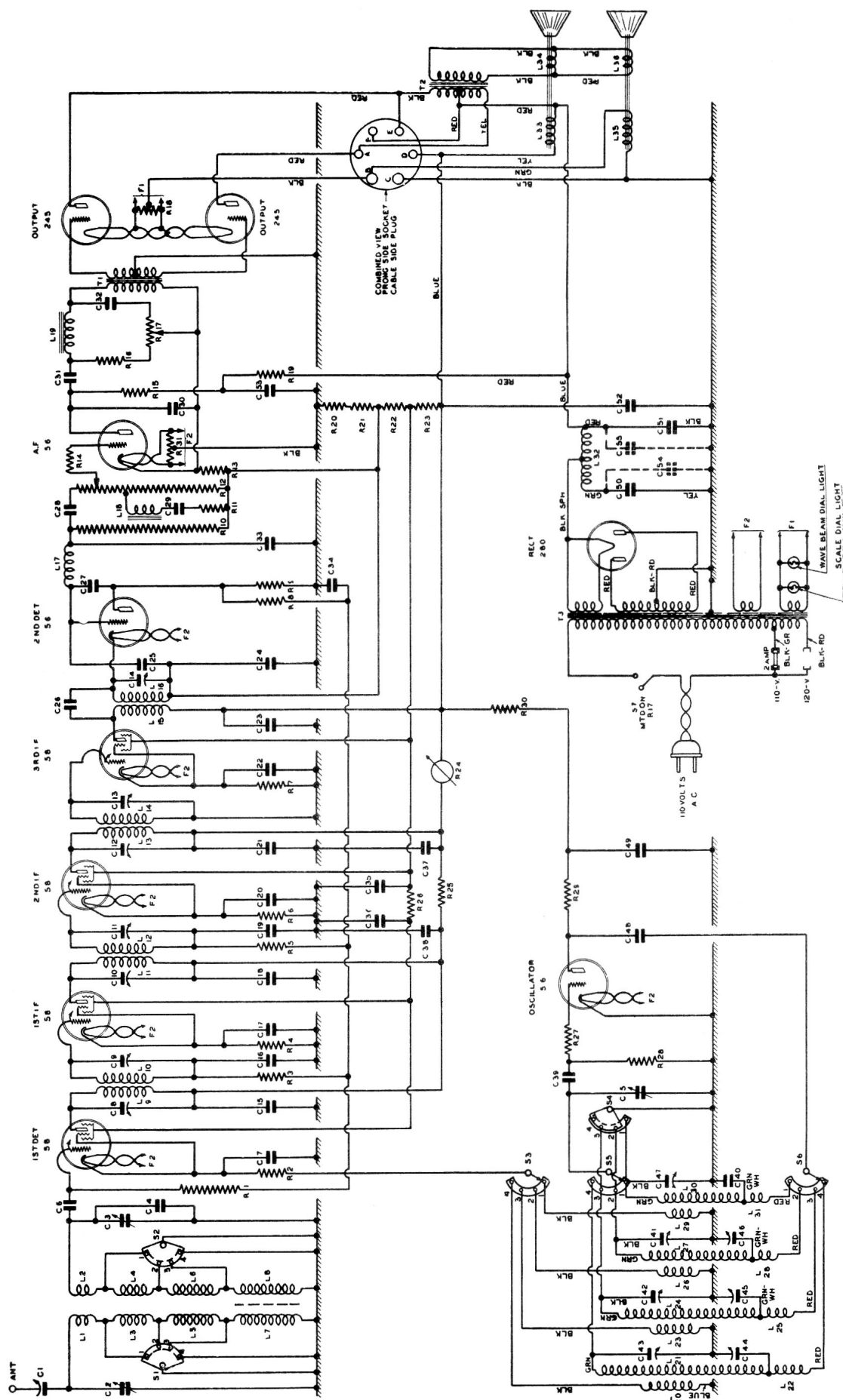
Controls:

Left to Right: Volume control; A.C. switch and tone control; wave change switch; tuning control.

Loudspeaker:

Dual loudspeakers.

THE MODEL 101 AND 101-A ALL-WAVE RECEIVERS



Schematic Diagram—Models 101 and 101A Receivers

NOMENCLATURE

CONDENSERS:—

- C-1 7-70 M.M.F. Antenna Tuning Condenser
 C-2 Three Gang Var. Cond. R.F. Transformer Primary Tuning
 C-3 Three Gang Var. Cond. R.F. Transformer Sec. Tuning
 C-4 Three Gang Var. Cond. Trimmer for Sec. Tuning
 C-5 Three Gang Var. Cond. Main Oscillator Tuning
 C-6 100 M.M.F. Grid Coupling Condenser
 C-7 .05 M.F. 200 volt—1st Det. Cathode By-Pass
 C-8 70-140 M.M.F. Var. Primary Trimmer 1st I.F. Amp.
 C-9 70-140 M.M.F. Var. Sec. Trimmer 1st I.F. Amp.
 C-10 70-140 M.M.F. Var. Primary Trimmer 2nd I.F. Amp.
 C-11 70-140 M.M.F. Var. Sec. Trimmer 2nd I.F. Amp.
 C-12 70-140 M.M.F. Var. Primary Trimmer 3rd I.F. Amp.
 C-13 70-140 M.M.F. Var. Sec. Trimmer 3rd I.F. Amp.
 C-14 70-140 M.M.F. Var. Sec. Trimmer Fourth I.F. Amp.
 C-15 .005-Mica—1st Det. Plate Filter
 C-16 .005-Mica—1st I.F. Grid Filter
 C-17 .05-200V.—1st I.F. Cathode By-Pass
 C-18 .005-Mica—1st I.F. Plate Filter
 C-19 .005-Mica—2nd I.F. Grid Filter
 C-20 .05-200V.—2nd I.F. Cathode By-Pass
 C-21 .005-Mica—2nd I.F. Plate Filter
 C-22 .05-200V.—3rd I.F. Cathode By-Pass
 C-23 .005-Mica—3rd I.F. Plate Filter
 C-24 .05-200V.—I.F. By-Pass (2nd Det. Grid Filter)
 C-25 .0001-Mica—I.F. By-Pass (2nd Det.)
 C-26 .001-Mica—I.F. Coupling
 C-27 .05-200V.—I.F. & A.F. By-Pass
 C-28 .05-200V.—A.F. Coupling Condenser
 C-29 .003-200V.—Tone Compensator Condenser
 C-30 .001-Mica—First A.F. Plate By-Pass (I.F.)
 C-31 .5 mfd. 200V.—A.F. Coupling Condenser (D.C. Blocking)
 C-32 .05-200V.—Tone Control Series Cond.
 C-33 .0001-Mica—I.F. By-Pass Cond.
 C-34 .25-200V.—I.F. & A.F. By-Pass
 C-35 .05-200V.—Screen Filter
 C-36 .05-200V.—Screen Filter
 C-37 .05-400V.—1st and 2nd I.F. Plate Filter
 C-38 .05-400V.—1st and 2nd I.F. Plate Filter
 C-39 .0001-Mica—Oscillator Grid Cond.
 C-40 .006-Mica—8 to 20 meg. Band Lagging Condenser Fixed
 C-41 7-70 M.M.F.—3.5 to 8 meg. Band Parallel Pad
 C-42 7-70 M.M.F.—1.6 to 3.5 meg. Band Parallel Pad
 C-43 7-70 M.M.F.—.55 to 1.5 meg. Broadcast Band Parallel Pad
 C-44 375-475 M.M.F.—.55 to 1.5 meg. Broadcast Band lagging
 C-45 600-1600 M.M.F.—1.6 to 3.5 meg. Band Lagging-variable
 C-46 1000-2000 M.M.F.—3.5 to 8 meg. Band Lagging-variable
 C-47 7-70 M.M.F.—8 to 20 meg. Band Parallel Condenser
 C-48 .05-200V.—Oscillator Plate Feed Condenser
 C-49 .25-200V.—Oscillator Plate Filter
 C-50 8 Mfd. (Dry Electrolytic)—(Power Choke)—Filter Condenser
 C-51 8 Mfd. (Dry Electrolytic)—(Second Power Choke)—(Filter Condenser)
 C-52 4 Mfd. (Dry Electrolytic)—Filter Cond. (Speaker Field L-29)
 C-53 4 Mfd. (Dry Electrolytic)—Audio Plate Filter
 C-54 8 Mfd. (Dry Electrolytic)—Extra First (Choke) Filter
 C-55 4 Mfd. (Dry Electrolytic)—Extra Second (Choke) Filter

K-782

Use only on Model 101-A for 25 cycle K-811

RESISTORS:—

- R-1 .5 meg. $\frac{1}{2}$ watt—First Det. Grid Resistor
 R-2 5000 ohms $\frac{1}{2}$ watt—First Det. Cathode Bias
 R-3 .1 meg. $\frac{1}{2}$ watt—First I.F. Grid Filter
 R-4 350 ohms 1 watt—First I.F. Cathode Bias
 R-5 .1 meg. $\frac{1}{2}$ watt—Second I.F. Grid Filter

- R-6 2000 ohms $\frac{1}{2}$ watt—Second I.F. Cathode Bias
 R-7 2000 ohms $\frac{1}{2}$ watt—Third I.F. Cathode Bias
 R-8 .5 meg. $\frac{1}{2}$ watt AVC Filter
 R-9 1. meg. $\frac{1}{2}$ watt AVC Load
 R-10 .1 meg. $\frac{1}{2}$ watt—Load Resistor (Diode)
 R-11 15,000 ohm $\frac{1}{2}$ watt Tone Compensator
 R-12 .5 meg. (Variable) Volume Control (Tapped at .1 meg.)
 R-13 1500—1 watt—AF Cathode Bias
 R-14 .1 meg. $\frac{1}{2}$ watt Suppressor (A.F. Grid)
 R-15 25,000 $\frac{1}{2}$ watt—A.F. Coupling (Plate)
 R-16 10,000 $\frac{1}{2}$ watt—Tone Control Resistor
 R-17 .1 meg. (variable) Tone Control
 R-18 6 ohms Centre Tap
 R-19 10,000 ohms $\frac{1}{2}$ watt—Audio Plate Filter
 R-20 1400 ohms (tap) Divider Resistor
 R-21 110 ohms (tap) Divider Resistor
 R-22 2270 ohms (tap) Bias Resistor
 R-23 3700 ohms—Screen Resistor
 R-24 240-310 ohm (13 m.a.) Tuning Meter
 R-25 1000 $\frac{1}{2}$ watt—Plate Filter
 R-26 10,000 $\frac{1}{2}$ watt—Screen Filter
 R-27 150 ohms $\frac{1}{2}$ watt—Oscillator Grid Suppressor
 R-28 50,000 ohms $\frac{1}{2}$ watt—Oscillator Grid Resistor
 R-29 10,000 ohms $\frac{1}{2}$ watt—Oscillator Plate Filter
 R-30 10,000 ohms $\frac{1}{2}$ watt—Oscillator Plate Filter
 R-31 6 ohms Centre Tap

Vitreous Enamel

COILS:—

- L-1 R.F. Transformer Primary—S.W. Band 8 to 20 megacycles
 L-2 R.F. Transformer Sec.—S.W. Band 8 to 20 megacycles
 L-3 R.F. Transformer Primary—S.W. Band 3.3 to 9 megacycles
 L-4 R.F. Transformer Sec.—S.W. Band 3.3 to 9 megacycles
 L-5 R.F. Transformer Primary—S.W. Band 1.5 to 3.6 megacycles
 L-6 R.F. Transformer Sec.—S.W. Band 1.5 to 3.6 megacycles
 L-7 R.F. Transformer Primary—Broadcast Band .54 to 1.6 meg. (103730)
 L-8 R.F. Transformer Sec.—Broadcast Band .54 to 1.6 megacycles (103730)
 L-9 Primary First I.F. Transformer
 L-10 Secondary First I.F. Transformer
 L-11 Primary Second I.F. Transformer
 L-12 Secondary Second I.F. Transformer
 L-13 Primary Third I.F. Transformer
 L-14 Secondary Third I.F. Transformer
 L-15 Primary Second Detector Coil (Untuned)
 L-16 Secondary Second Detector Coil
 L-17 R.F. Choke
 L-18 Automatic Tone Compensator Choke
 L-19 Manual Tone Control Choke
 L-20 Pick-up Coil (Oscillator) Broadcast Band .54 to 1.6 megacycles (103797)
 L-21 Oscillator Grid Coil Broadcast Band .54 to 1.6 meg. (103797)
 L-22 Oscillator Plate Coil Broadcast Band .54 to 1.6 meg. (103797)
 L-23 Pick-up Coil (Oscillator) S.W. Band 1.5 to 3.6 megacycles (103820)
 L-24 Oscillator Grid Coil S.W. Band 1.5 to 3.6 megacycles (103820)
 L-25 Oscillator Plate Coil S.W. Band 1.5 to 3.6 megacycles (103820)
 L-26 Pick-up Coil (Oscillator) S.W. Band 3.9 to 9 megacycles (103821)
 L-27 Oscillator Grid Coil S.W. Band 3.3 to 9 megacycles (103821)
 L-28 Oscillator Plate Coil S.W. Band 3.3 to 9 megacycles (103821)
 L-29 Pick-up Coil (Oscillator) S.W. Band 8 to 20 megacycles (103822)
 L-30 Oscillator Grid Coil S.W. Band 8 to 20 megacycles (103822)
 L-31 Oscillator Plate Coil S.W. Band 8 to 20 megacycles (103822)
 L-32 Power Filter Choke (Tapped)

NOMENCLATURE

COILS (Cont'd)

- L-33 Speaker Field—2500 ohms
 L-34 Voice Coil for 2500 ohms
 L-35 Speaker Field—750 ohms
 L-36 Voice Coil for 750 ohms

SWITCHES:—

- S-1 R.F. Trans. Primary Selector and Short-Circuiting Switch (Part of) (103570)
 S-2 R.F. Trans. Sec. Selector and Short-Circuiting Switch (Part of) (103570)
 S-3 Pick-up Coil Selector Switch (Part of) (103570)
 S-4 Oscillator Coil Short Circuiting Switch (Part of) (103570)
 S-5 Oscillator Grid Coil Selector Switch (Part of) (103570)

SWITCHES (Cont'd)

- S-6 Oscillator Plate Coil Selector Switch (Part of) (103570)
 S-7 A.C. "On-Off" Power Switch (Mounted on Tone Control cannot be supplied separately)

TRANSFORMERS:—

- T-1 Input Transformer
 T-2 Output Transformer
 T-3 Power Transformer—60 cycles K-848
 25 cycles K-847

SCHEMATIC DIAGRAM CORRECTIONS:—

- (1) Trimmer Condenser C-4 should be shown as variable.
 (2) Wave Change Switch S-6 should point to contact number one instead of number four as shown.

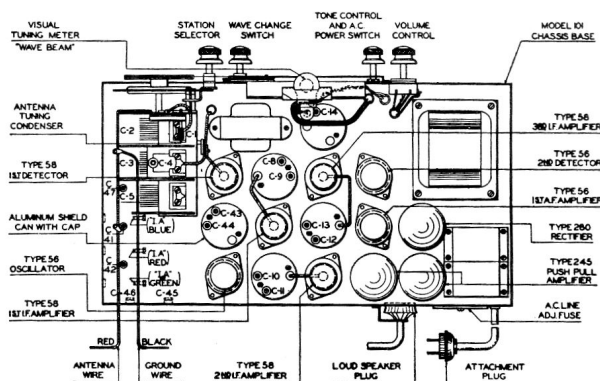
SOCKET VOLTAGE AND CURRENT READINGS

Tube	Position	Fil.	Plate	Screen	Cont. Grid or C-Bias	Cathode	Plate Current	
							Bias	Reduced Bias
56	Oscillator.....	2.4	65	—	—	—	7.0	7.5
58	1st Detector.....	2.4	180	70	6.0	+12	2.0	3.5
58	1st I.F.....	2.4	195	90	20.0	+ 1	2.0	8.0
58	2nd I.F.....	2.4	190	95	20.0	+ 6	2.0	7.5
58	3rd I.F.....	2.4	190	92	8.0	+16	5.5	8.2
56	2nd Detector.....	2.4	—15	—	1.5	+44	—	—
56	Audio.....	2.4	125	—	1.5	+50	4.0	5.0
245	Push-Pull.....	2.4	260	—	50.0	—	32.0	38.0
245	Push-Pull.....	2.4	260	—	50.0	—	36.0	40.0
280	Rectifier.....	4.6	700A.C.	—	—	—	68.0 (One Plate)	

Line Voltage 114-V., 60 cycles.

Power Transformer on 110-V Tap.

Readings taken on Weston Type 566 Analyser. Volume Control Maximum; Tone Control treble.



Chassis Lay-out, Model 101-A, showing
 realigning positions.

NOMENCLATURE

REALIGNING

REALIGNING:— It is not expected that full realigning will ever be found necessary in field service work on this Model, unless in the isolated case where it may be necessary to change the I.F. frequency from the present one of 482.5 K.C., or where the set has been thrown out of alignment through having been tampered with. Realigning must not be attempted without an oscillator capable of producing the I.F. frequency from the fundamental or a harmonic, and in the same manner capable of giving an output at 2.5, 3.2, 4.6, 8, 10, 13 and 15 megacycles, and, of course, the standard broadcast band from .54 to 1.6 megacycles. Both on the I.F. and higher frequencies it will generally be possible to obtain the desired frequency by utilizing the harmonics of the various fundamentals available from any standard or custom built oscillator.

1. I. F. TRANSFORMERS:—

- (a) Volume Control Maximum; Tone control Treble.
- (b) Ground Antenna Lead.
- (c) Adjust external oscillator to 482.5 K.C. and connect its output to control grid first Detector Tube with clip lead removed.
- (d) Align C-8, 9, 10, 11, 12, 13 and 14.

2. BROADCAST BAND OSCILLATOR:—

- (a) Set external oscillator to 1400 K.C. and connect to Antenna Lead.
- (b) Set receiver dial to 1.4 megacycles.
- (c) Align C-43 (Tune to signal with trimmer far out as possible. Point where trimmer full in is incorrect as will be 917.5 K.C., whereas it is 1882.5 K.C. that is required).
- (d) Align antenna trimmer C-1 and first detector trimmer C-4.
- (e) Set external oscillator to 600 K.C. and receiver dial pointer to .6 megacycles.
- (f) Align C-44 (vary pointer slightly above and below .6 mark until maximum output obtained; if dial out, reset at .6 m.c.).
- (g) Check alignment at 1000 K.C. (1.0 on dial). If necessary, adjust inductance trimmer inside oscillator coil and reached through underside of chassis.

3. SHORT-WAVE BAND 1.5 to 3.6 M.C. (GREEN BAND):

- (a) Set external oscillator to 3.2 m.c. and connect output to control grid of first detector tube.

- (b) Set wave change switch to green band and receiver dial pointer to 3.0.
- (c) Align C-42.
- (d) Set external oscillator and receiver dial pointer to 1.6 m.c. and feed to antenna lead.
- (e) Align C-45.
- (f) Set external oscillator to 2.5 m.c. and receiver dial pointer to 2.47 m.c.
- (g) Adjust inductance trimmer "I.A. GREEN" if necessary. (If variation of this trimmer increases output, it will be necessary to recheck at 3.2 and 1.6 m.c. as above).

4. SHORT-WAVE BAND 3.3 to 9 M.C. (RED BAND):

- (a) Set external oscillator to 8 m.c. and connect output to control grid of first Detector Tube.
- (b) Set wave change switch to Red Band and receiver dial pointer to 7.75 m.c.
- (c) Align C-41.
- (d) Set external oscillator and receiver dial pointer to 4 m.c. and feed to antenna lead.
- (e) Align C-46.
- (f) Set external oscillator and receiver dial pointer to 6 m.c.
- (g) Adjust inductance trimmer "I.A. RED" if necessary (if variation of this trimmer increases output, it will be necessary to recheck at 8 and 4 m.c. as above).

5. SHORT-WAVE BAND 8 to 20 M.C. (BLUE BAND):

- (a) Set external oscillator to 15 M.C. and connect output to control grid of first Detector Tube.
- (b) Set wave change switch to blue band and receiver dial pointer to 14.5 m.c.
- (c) Align C-40 (C-40 on schematic fig. 2 and C-47 on chassis layout fig. 1).
- (d) Set external oscillator and receiver dial pointer to 13 m.c. and feed output to antenna lead.
- (e) Adjust inductance trimmer "I.A. BLUE" if necessary.
- (f) Align at 10 m.c. and recheck at 15 m.c. if necessary for final operation.

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, for the Model 101 Receiver has been so designed that the maximum of effective short wave operation is obtainable through perfect alignment.