

**MODELS 107, 111**

**Chassis U6F**

**EMERSON RADIO & PHONO. CORP.**

**Schematic, Voltage, Notes**

**VOLTAGE ANALYSIS**

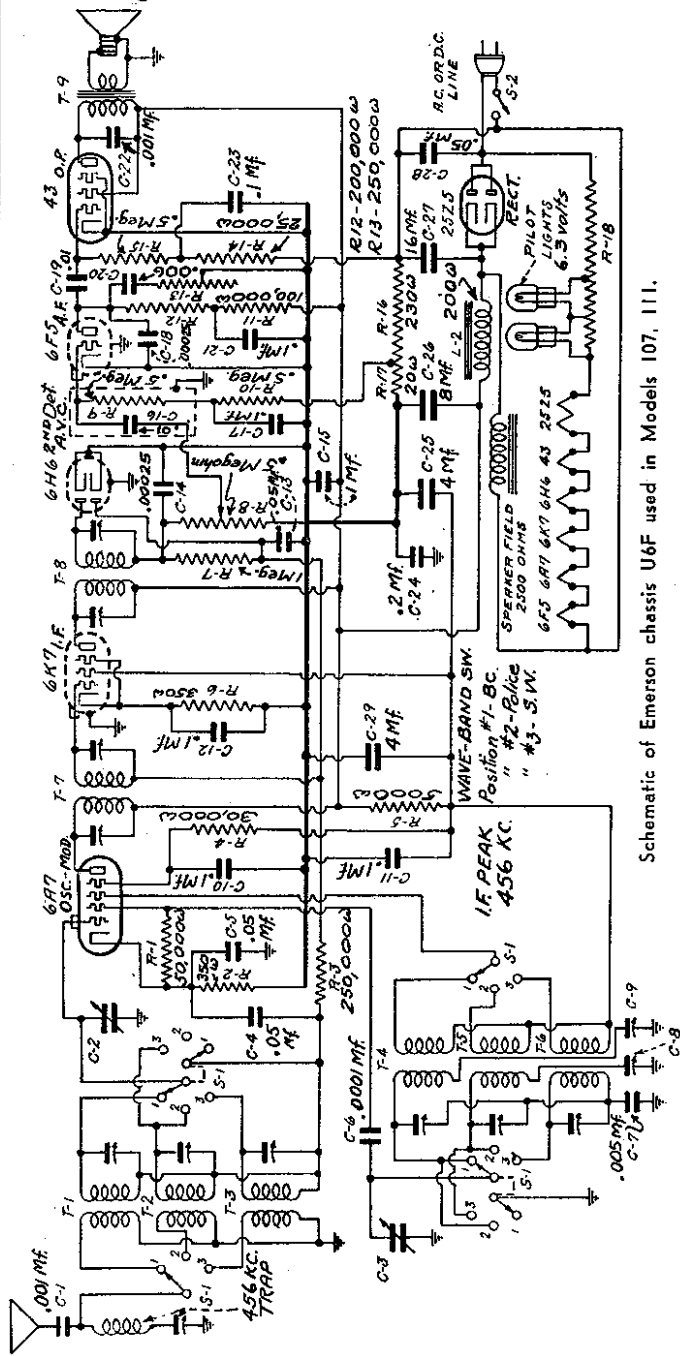
Readings should be taken with a 1000 ohms-per-volt meter. Voltages listed below are from point indicated to cathode of the 43 tube (B minus). Line voltage for these readings was 117.5 volts, 60 cycles, a.c.

Tube	Plate	Screen	Cathode	Osc. Plate	Fil.
6A7	99	43	1.1	80	6.3
6K7	99	80	1.8	—	6.3
6H6	—	—	0	—	6.3
6F5	50	—	0	—	6.3
43	87	99	0	—	24

Voltage across speaker field (black and yellow leads)—120  
 Voltage across filter choke—9.5

The 250 ohm bias resistor, R16 and R17 on schematic diagram, is located underneath the chassis deck near volume control.

Voltage across the two outside terminals of this resistor—11.5  
 Voltage from cathode of 43 tube to central terminal of resistor—1.0



Schematic of Emerson chassis U6F used in Models 107, 111.

The schematic diagram of the receiver tubes. The output transformer (Part bearing these model numbers, shown on No. 2LT-221 and T-9 on the diagram) heading "Adjustments" on Emerson page 6-15 of *Rider's Volume VI*, is for Chassis U6A. A note on that page makes reference to chassis U6F that carries the same model numbers, and its schematic is shown in the accompanying illustration.

The filament dropping resistor (Part No. 2LR-212) is of the cylindrical plug-in type and is located on top of the chassis between the 6H6 and 25Z5 tubes.

The output transformer, part no. 2LT-221 (T9 on schematic diagram) and the filter choke, part no. 2CT-207A (L2 on schematic diagram) are located in the square on top of the chassis to the left of the speaker.

The various paragraphs under the heading "Adjustments" on Emerson page 6-16 applies to this chassis also, with the exception of the locations of the trimmers for the antenna coils. These are as follows: Short-wave coil, upper trimmer; police band, central trimmer, and that for the broadcast band is the lower trimmer. While adjusting the short-wave antenna trimmer (the upper one) for maximum response, rock the variable condenser.

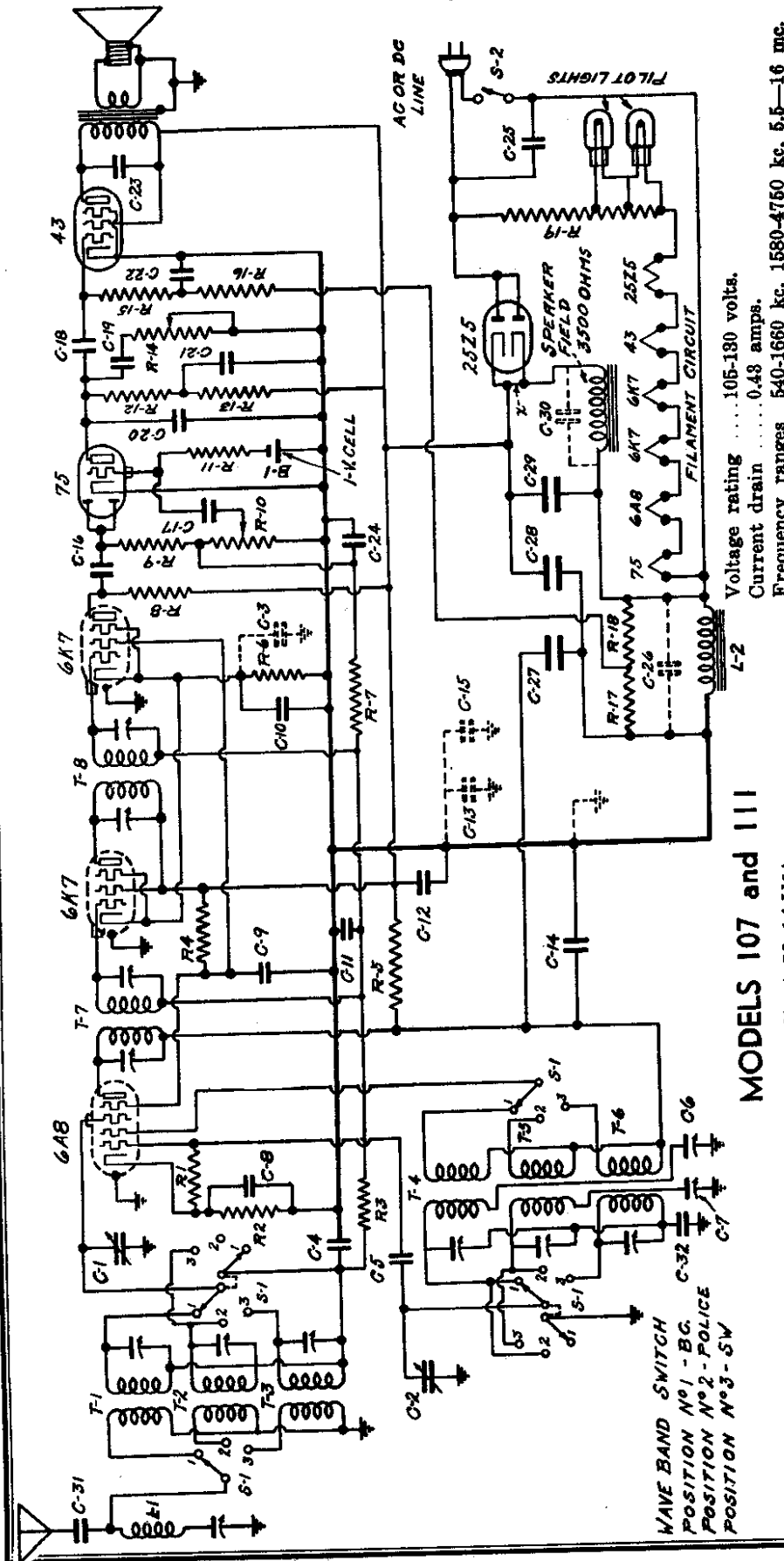
Voltage rating .... 105-130 volts ac-dc  
 Current drain ..... 0.43 amps.

The filament dropping resistor, part number 2LR-212, is of the cylindrical plug-in type and is located on top of the chassis between the 6H6 and 25Z5 tubes.

The output transformer, part no. 2LT-221 (T9 on schematic diagram) and the filter choke, part no. 2CT-207A (L2 on schematic diagram) are located in the square on top of the chassis to the left of the speaker.

# EMERSON RADIO AND PHONOGRAPH CORPORATION

MODELS 107, 111  
Chassis U6A  
Schematic  
Voltage



## MODELS 107 and 111

Chassis Model U6A

These service notes apply only to chassis model U6A. Different service notes are available for chassis model U6F also used in the models 107 and 111 cabinets. The chassis model number for this receiver is the group of symbols before the dash in the serial number printed on the license plate.

Readings should be taken with a 1000 ohms-per-volt meter. Voltages listed below are from point indicated to B minus (cathode of 43 tube). Line voltage for these readings was 117.5 volts, a.c., 60 cycles.

Tube	Plate	Screen	Cathode	Osc. Plate	Fil.
6A8	82	50	2	82	6
6K7 1st i-f	107	107	5	—	6
6K7 2nd i-f	65	50	5	—	6
75	50	—	0	—	6
43	95	107	0	—	24

Voltage across speaker field (25Z5 cathode to line switch) — 107 volts.

Voltage across choke (43 cathode to line switch) — 22 volts.

Voltage rating .... 105-180 volts.  
Current drain .... 0.43 amps.  
Frequency ranges 540-1660 kc, 1580-4760 kc, 5.5-16 mc.

I.P. 456 K.C.

- The tube complement is as follows:
- 1—6A8 (metal) Pentagrid oscillator-modulator.
  - 1—6K7 (metal) 1st i-f amplifier.
  - 1—6K7 (metal) 2nd i-f amplifier (adjacent to 75).
  - 1—75 (glass) 2nd detector—a-f amplifier—a.v.c.
  - 1—43 (glass) Power output pentode.
  - 1—25Z5 (glass) Half-wave rectifier.

MODELS 107,111  
Chassis U6A  
Alignment, Parts  
Changes

EMERSON RADIO AND PHONOGRAPH  
CORPORATION

REPLACEMENT PARTS

Part No.	DESCRIPTION	List Price Effective Sep. 1st, 1935
MMT-149	456 kc adjustable wave-trap	.35
ZZT-196	Filter choke—400 ohm	.60
ZZT-192A	Three-hand antenna coil assembly	1.80
ZZT-193	Three-hand oscillator coil assembly	1.80
ZZT-194	456 kc first I-F transformer	1.16
ZZT-195	456 kc second I-F transformer	1.16
KR-55	500,000 ohm, 1/4 watt carbon resistor	.16
FFB-128	1 resistor, 1/4 watt wire-wound resistor	.16
KR-57	30,000 ohm, 1/4 watt carbon resistor	.16
ZZB-196	30,000 ohm, 1/4 watt carbon resistor	.16
LR-66	10,000 ohm, 1/4 watt carbon resistor	.16
ZZB-197	950 ohm, 1/4 watt wire-wound resistor	.16
ZR-54	100,000 ohm, 1/4 watt carbon resistor	.16
LR-61	Volume control with line switch—0.5 megohms	.16
ZZB-191A	20,000 ohm, 1/4 watt carbon resistor	.16
KR-56	500,000 ohm, 1/4 watt carbon resistor	.16
LR-64	5,000 ohm, 1/4 watt carbon resistor	.16
ZZB-192A	Wire-wound ballast resistor—130 ohms	.40
ZZC-184	Two-range variable condenser	1.80
AC-6	0.1 mf, 200 volt tubular condenser	.16
BC-54A	0.0001 mf mica condenser	.16
JUC-144C	Dual adjustable padding condenser	.60
	C2—250 to 500 mmf.	
ZZC-191B	Seven-section condenser block	1.05
	C8—0.1 mf, 200 v.	C12—0.1 mf, 200 v.
	C9—0.1 mf, 200 v.	C13—0.1 mf, 200 v.
	C10—0.2 mf, 200 v.	C14—0.1 mf, 200 v.
	C11—0.36 mf, 200 v.	
ZZC-205	0.02 mf, 200 v. tubular condenser	.16
AC-14	0.00025 mf mica condenser	.16
ZZC-217	0.01 mf, 200 v. tubular condenser	.16
ZZC-213	0.010 mf, 200 v. tubular condenser	.16
AA-C-114	0.005 mf, 200 v. tubular condenser	.16
BC-13	0.25 mf, 200 v. tubular condenser	.16
ZZC-192A	4, 6 and 16 mf electrolytic filament condenser block	.25
	C27—1 mf, 150 v.	
	C28—3 mf, 150 v.	
YF-58A	Tubular 4 mf, 150 v. electrolytic condenser	.70
ZZC-206	0.005 mf mica condenser	.16
ZZS-128A	5" dynamic speaker	3.75
ZZS-129A	Wave-band switch	1.05
KL-6	150 light, 6.5 volt, 15 amp.	.55
ZZD-26A	Airplane dial	.85
KXZ-213	Bias coil, one volt.	.16
ZZD-209	Escutcheon with crystal	.20

When ordering replacement parts specify part number.

Production Changes

In early production, runs C3 was a 0.03 mf, 200 v. condenser. Later it was changed to a 0.1 mf, 200 v. condenser and subsequently removed entirely from the circuit.

In later production runs, the following changes were made:

- C80 added and circuit broken at X; 8Z55 cathodes separated (see schematic). C26 removed.
- B minus grounded to chassis. C15 and C18 removed. C22 placed in the condenser block.
- R11 changed from 1 megohm carbon resistor to 0.5 megohm, 1/4 watt carbon resistor, our part KR-56.
- R16 changed from 0.5 megohm carbon resistor to 0.35 megohm, 1/4 watt carbon resistor, our part KR-55.

\* Item number locates the article on the schematic diagram.

GENERAL NOTES

- To take the chassis out of the Model 107 cabinet first remove the knobs (knobs are of push-on type), and then the cabinet bottom. Remove the two wood screws and four nuts holding the chassis to the cabinet. With the receiver bottom side up, slide the chassis towards the back and lift out of cabinet.
- If replacements are made or the wiring disturbed in the r-f section of the circuit, the receiver should be carefully re-aligned.
- Bias for the grid of the audio section of the 75 tube is obtained by means of a very small one-volt battery (bias cell). The cell assembly is mounted on a bakelite strip in the front corner of the chassis. To adjust the bias control, do not put a voltmeter across this bias cell. Check it by temporarily replacing with a new cell, or some other source, and noting results. To remove the bias cell, simply pull up on the spring clip and lift the cell from its cup.

ADJUSTMENTS

An oscillator with frequencies of 456, 600, 1600, 1700, 4570 and 15,000 kc should be used. In addition, an output meter should be used across the voice coil or output transformer for observing maximum response.

I-F Alignment

The I-F transformers ZZT-194 and ZZT-195 are located on the top of the chassis. The four trimmers, two for each I-F transformer, are located at the top of the cans. Set the wave-band switch to broadcast (clockwise position) and rotate variable condenser to minimum. Feed 456 kc to grid of the 6A8 tube and adjust the four I-F trimmer screws for maximum response. Then feed 456 kc through the antenna and adjust the wave-trap trimmer for minimum response. The trimmer is on the wave-trap, which is located on top of the chassis behind the speaker.

Location of Coils

The antenna coils for the three bands are wound on one form and mounted on top of the chassis to the right of the speaker. The three trimmers for these coils are mounted on a bakelite strip above the tubing. The trimmer furthest from the speaker is for the broadcast antenna coil. The center trimmer is for the police antenna coil and the trimmer furthest from the speaker is for the wave-band antenna coil.

The oscillator coils for the three bands are wound on one form and mounted underneath the chassis deck on the right-hand wall with the trimmer screws available through three holes in the chassis wall. The trimmer furthest from the front is for the broadcast antenna coil, the center trimmer is for the police oscillator coil and the trimmer furthest from the front is for the short-wave oscillator coil.

The adjusting screws for the dual paddler are also available at the right-hand chassis wall. The screw closer to the front is for the broadcast band and the other is for the police band. The short-wave band has no adjustable paddler.

Broadcast Alignment

Set the wave-band switch to broadcast position (extreme clockwise) and dial pointer to 600. Feed 600 kc through antenna lead and adjust the trimmer (lower row on right wall, closest to front) for maximum response. Set pointer to 1600, feed 1600 kc and adjust the trimmer (top row on right wall, closest to front) for maximum response. Set pointer to 4560, feed 4560 kc and adjust the trimmer (bottom row on right wall, furthest from speaker). Return pointer to 600 and rock the variable condenser (rotate condenser back and forth through the range of maximum capacity) for maximum response. If a readjustment is necessary return to 1600 and realign the antenna and oscillator trimmers.

Police Alignment

Set the wave-band switch to police (central position). Pointer to 1700 and feed 1700 kc through antenna lead. Adjust police band paddler (furthest from front on right wall, lower row) for maximum response. Set pointer to 4500 and feed 4500 kc. Adjust police band oscillator trimmer (central trimmer on right wall, lower row) for maximum response. If two peaks are heard, select the one of minimum capacity (see General Instructions below) for maximum response. If antenna trimmer (central one on top) for maximum response, selecting the peak of maximum capacity. Set pointer to 1700, rock variable condenser and adjust police band paddler for maximum response. Realign at 4500 if necessary.

Short-Wave Alignment

Set wave-band switch to counter-clockwise (short-wave) position and pointer at 15 megacycles. Feed 15,000 kc through antenna. Adjust short-wave oscillator trimmer (furthest from front on right wall, top row) for maximum response. If two peaks are obtained, select the one of minimum capacity. Check all three bands for dead spots or incorrect image responses.

General Instructions

The set's oscillator is higher in frequency than the signal on all three bands. Images, therefore, should be observed on the low-frequency side of the signal.

Always choose the minimum capacity peak on oscillator trimmer and maximum capacity peaks on antenna and I-F trimmers. The last motion in adjusting trimmers should always be a tightening one.

Never leave a trimmer with the outside plate so loose that there is no tension on the screw. Either bend the plate up or remove the screw entirely. Loose screws are a source of noise, frequency drift and microphonism.

In aligning antenna trimmers on the high-frequency signals there is usually a tendency for the oscillator to drift, due to interlocking. To compensate for this, always keep re-tuning the variable condenser.