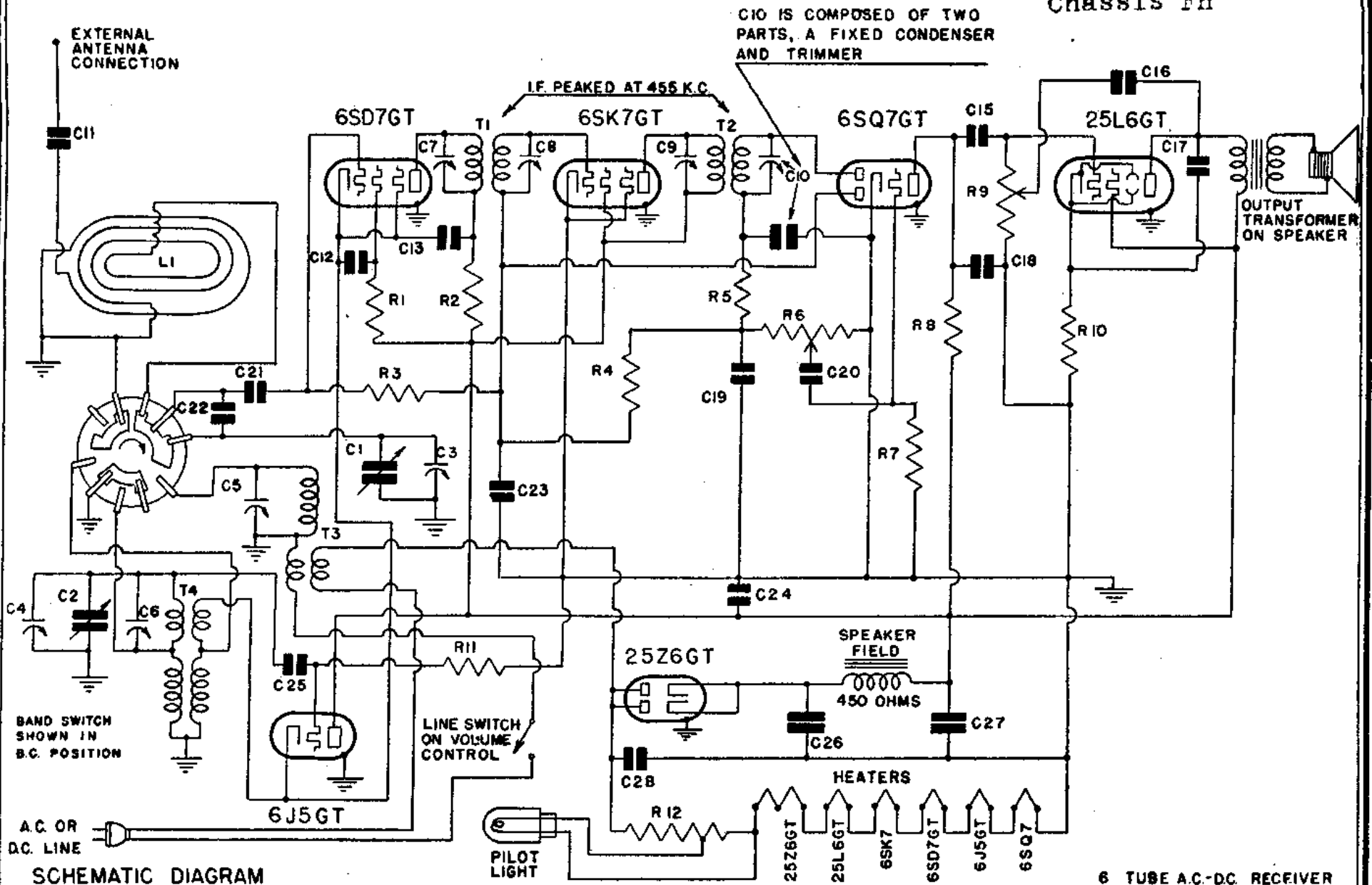


EMERSON RADIO & PHONOGRAPH CORP. MODELS FH413, FH440,  
Chassis FH



SCHEMATIC DIAGRAM

6 TUBE A.C.-D.C. RECEIVER

LOCATION OF TRIMMERS

NO. 191

TYPE: Two-band superheterodyne.  
FREQUENCY RANGES:

540-1620 kc. (555-185 meters)  
8.8-12.2 (16.3-24.5 meters)

POWER SUPPLY: A.C. or D.C.

VOLTAGE RATING: 105-125 volts.

POWER CONSUMPTION: 30 watts.

TYPE OF TUBES:

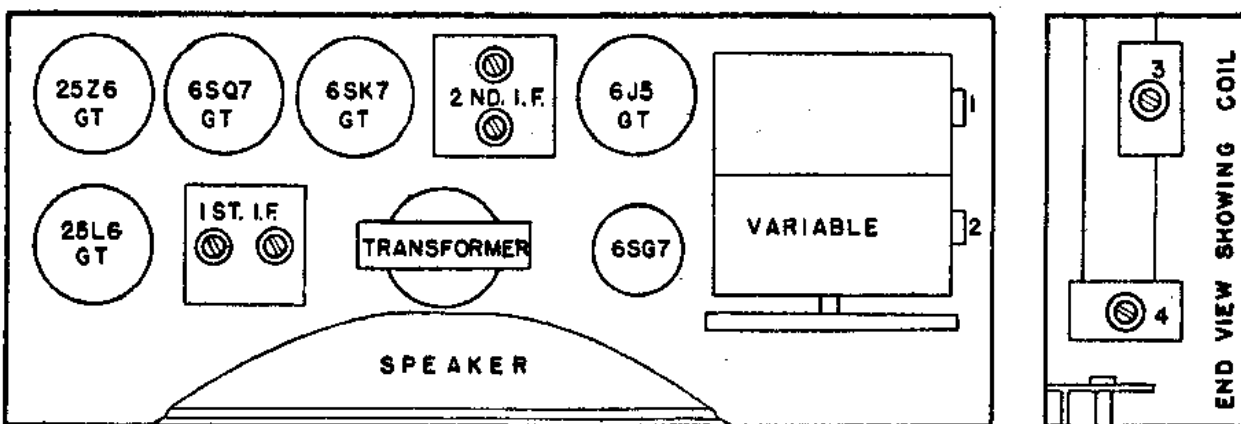
- 1—6SG7 or 6SD7
- 1—6J5, oscillator
- 1—6SK7, i-f amplifier
- 1—6SQ7, diode detector, a-f amplifier, a.v.c.
- 1—25L6, beam power output
- 1—25Z6, half-wave rectifier

Voltage at 25Z6 cathode—150 volts.

Voltage across speaker field—32 volts.

Voltage across pilot light—4.5 volts.

FIGURES SHOW FREQUENCIES AT WHICH EACH BAND IS ALIGNED. READ "ALIGNMENT PROCEDURE"



1. BROADCAST OSCILLATOR TRIMMER  
1600 K.C.

2. BROADCAST LOOP ANTENNA TRIMMER  
1600 K.C.

3. SHORT WAVE OSCILLATOR TRIMMER  
12 M.C.

4. SHORT WAVE ANTENNA TRIMMER  
12 M.C.

VOLTAGE ANALYSIS

Tube	Plate	Screen	Cathode	Fil.
6SG7 or 6SD7	92	63	0	6.3
6J5	102	—	0	6.3
6SK7	102	102	0	6.3
6SQ7	30	—	—	6.3
25L6	92	102	6.5	25

Readings should be taken with a 1000 ohms-per-volt meter. Voltages listed below are from point indicated to B minus (line switch) with the volume control turned on full and no signal. Line voltage for these readings was 117.5 volts, 60 cycles, a.c. All readings except heaters and cathodes were taken on 250 volt scale. Measurements made with 117.5 volts d.c. will be lower than those given below.

MODELS FH413, FH440  
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ADJUSTMENTS

An oscillator with frequencies of 455, 600, 1600 and 12,000 kc is required.

An output meter should be used across the voice coil or output transformer for observing maximum response.

Always use as weak a test signal as possible when aligning the receiver.

I-f Alignment

Swing the variable condenser to the minimum capacity position. Feed 455 kc to the grid of the 6SD7 tube through a .01 mf condenser and adjust the four i-f trimmers for maximum response.

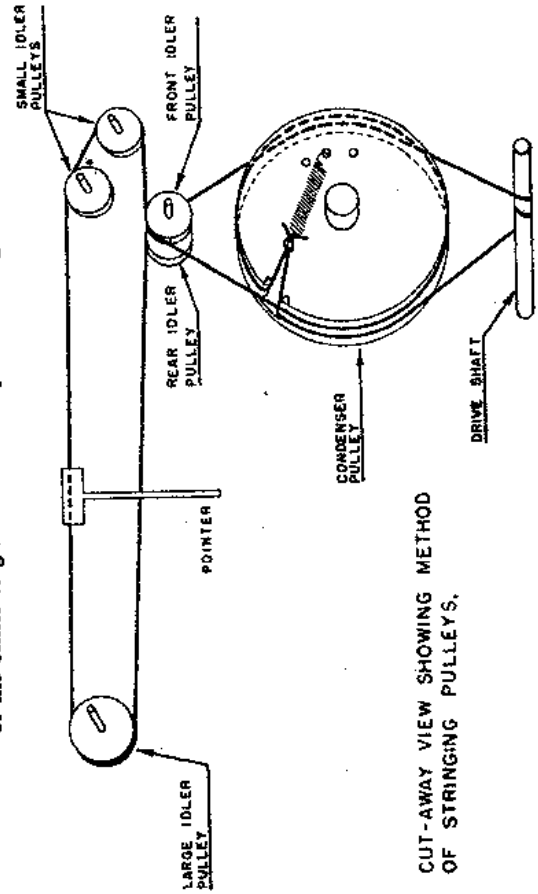
Note: The grid of the 6SD7 tube is the No. 4 pin.

R-f Alignment

Rotate the wave-band switch counter-clockwise to the short-wave position. Set the dial pointer at 12 megacycles and using a 300 ohm carbon resistor as a dummy antenna feed 12 megacycles from the generator to the external antenna lead emerging from the rear of the chassis. Adjust first the short-wave oscillator trimmer and then the short-wave antenna trimmer for maximum response.

Rotate the wave-band switch clockwise to the broadcast position. Set the dial pointer at 160 and feed 1600 kc from the signal generator into a loop of wire about 12 inches in diameter. Hold this radiating loop about 12 inches from the loop antenna and advance the signal generator until a deflection is obtained on the output meter. Adjust first the oscillator trimmer (rear section of the variable condenser) and then the antenna trimmer (front section of the variable condenser) for maximum response.

If the loop has been replaced it may be necessary to adjust the loop inductance as follows: Align at 1600. Set the pointer at 60 and feed 600 kc into the radiating loop. A portion of the outside turn of the loop may then be swung to either side of the center to give maximum response. Realign at 1600.



CUT-AWAY VIEW SHOWING METHOD OF STRINGING PULLEYS.

REPLACEMENT PARTS LIST

When ordering, specify part numbers. List price each effective as of December 15, 1941. Subject to change without notice.

Item	Part No.	DESCRIPTION	PRICE
L1	9HW-338	Loop antenna assembly (see production change no. 1a)	.65
T1	8CT-566B	Double-tuned 455 kc first i-f transformer	.85
T2	9HT-615	Double-tuned 455 kc second i-f transformer (see production change no. 1b)	1.15
T3	9HT-616	Short-wave antenna coil	.30
T4	9HT-614	Two-band oscillator coil	1.05
R1, R11	KR-53	50,000 ohm 1/4 watt carbon resistor	.16
R2	LR-64	5,000 ohm 1/4 watt carbon resistor	.16
R3, R4	NNR-220	3 megohm 1/4 watt carbon resistor	.16
R5		50,000 ohm 1/4 watt carbon resistor, part of T2	
R6	9HR-441	Volume control: .5 megohm	.80
R7	3RR-275	10 megohm 1/4 watt carbon resistor	.16
R8	KR-56	500,000 ohm 1/4 watt carbon resistor	.16
R9	9HR-442	Tone control: 400,000 ohm	.60
R10	3FR-293	140 ohm 1/2 watt wire-wound resistor	.16
R12	9HR-443	Ballast resistor, 155 ohm	.50
C1, C2	9HC-530	Two-gang variable condenser	2.35
T3, C4		Trimmers, part of variable condenser	
T3		Trimmer, part of T3	
T6		Trimmer, part of T4	
T7, C8, C9		Trimmers, part of i-f transformers	
T10		Trimmer and 0.0001 mf, mica condenser, part of T2	
C10		0.002 mf, 600 volt tubular condenser	.20
C11, C20	3HC-274	0.02 mf, 200 volt tubular condenser	.20
C12	FC-29	0.05 mf, 200 volt tubular condenser	.20
C13	BC-12	0.02 mf, 400 volt tubular condenser	.20
C15, C17	LC-65	0.00022 mf, mica condenser	.20
C16, C18, C21	4XC-394A	0.05 mf, 400 volt tubular condenser	.20
C28	LC-64	0.00011 mf, mica condenser	.20
C19, C25	5LC-410A	0.00046 mf, mica condenser	.20
C22	9HC-331	0.1 mf, 200 volt tubular condenser	.20
C23	AC-6	0.01 mf, 400 volt tubular condenser	.20
C24	KC-58	Dual 20 mf, 150 volt dry electrolytic condenser	.90
C26, C27	6JC-426R	Dynamic speaker	4.35
	9HS-549	Dynamic speaker for Model 440	3.50
	9HS-541	Band switch	.80

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

†Not supplied separately.

PRODUCTION CHANGES

- Chassis bearing serial numbers above 4,671,200 use:
  - a-9HW-376 loop antenna..... .65
  - b-9HT-638 second i-f transformer..... 1.25