Electrical Specifications

TYPE OF CIRCUIT: Superheterodyne with automatic volume control and a pentode audio output circuit.

POWER SUPPLY:

Voltage	Frequency	Consumption
115	50 to 60 cycles	65 watts
115	25 to 40 cycles	65 watts
115/220	50 to 60 cycles	

Different transformers are required for operation on the frequencies listed above. They are shown on the parts list.

INTERMEDIATE FREQUENCY: 470 K. C.

UNDISTORTED OUTPUT: 3 watts.

PHILCO TUBES USED: Six; one 6U7G, R. F. amp.; one 6A8G, Det. Osc.; one 6K7G, I. F. amp.; one 6Q7G, 2nd Det. 1st audio; one 6F6G, output, and one 5Y4G, Rectifier.

TUNING RANGES) Two—Range one 530 to 1650 K. C.
Range two 1500 to 3700 K. C.

TONE CONTROL: Two positions.

SPEAKERS: Type S in B cabinet.
Type HS in K cabinet.

Alignment of Compensators

EQUIPMENT REQUIRED: (1) Signal Generator—Philco Model 077 Signal Generator—using fundamental frequency from 115 to 36000 K. C. is the correct instrument for the purpose; (2) Output Meter, Philco Model 026 circuit tester incorporates a sensitive output meter and is recommended; (3) Philco Fibre Handle Screw Driver, part No. 27-7059 and Fibre Wrench part No. 3164.

OUTPUT METER: The 026 output meter is connected to the plate and cathode terminals of the 6F6G tube. Adjust the meter to use the (0-30) volt scale and advance attenuator control of the generator until a readable indication is noted.

DIAL CALIBRATION: In order to adjust this receiver correctly the dial must be aligned to track properly with the tuning condenser. To do this proceed as follows:

1. Turn the tuning condenser to the maximum capacity position. Then loosen dial hub, set screws and rotate the dial (condenser at maximum capacity) until the glowing beam indicator is center on second index line at the low frequency end of the broadcast scale.

2. With dial in this position, tighten dial hub set screws.

INTERMEDIATE FREQUENCY CIRCUIT

Insert the signal generator output lead in the med. jack, and connect the other end through a .1 mfd. condenser to the grid of the 6A8G det. osc. tube. The ground connection of the signal generator is connected to the chassis. Set the signal generator controls and adjust the I. F. compensators as follows:

a. Set 077 Signal Generator indicator at 470 K. C. Turn the multiplier control to 1000, and set the gain control for maximum output.
b. Receiver Dial 580 K. C.
c. Receiver volume control full "on".
d. Adjust compensator (24B), (24A), (16B) and (16A) for maximum output.

If the output meter goes off scale when adjusting the compensators retard signal generator attentuator.

RADIO FREQUENCY CIRCUIT

Tuning Range 530 to 1650 K. C.

1. Insert the signal generator output lead in the "medium jack" on the panel, and connect the other end through the .1 mfd. condenser to the antenna terminal of the receiver. The output lead ground must be connected to the chassis.

2. Leave the receiver volume control full on. Then set the controls and adjust the R. F. compensators as follows:

Range Switch Position	Signal Generator and Receiver Dial	Compensators In Order
1	1500 K. C.	(5C), (5B), (5A)
1	580 K. C.	(10) (See Note A)
1	1500 K. C.	(5C), (5B), (5A)

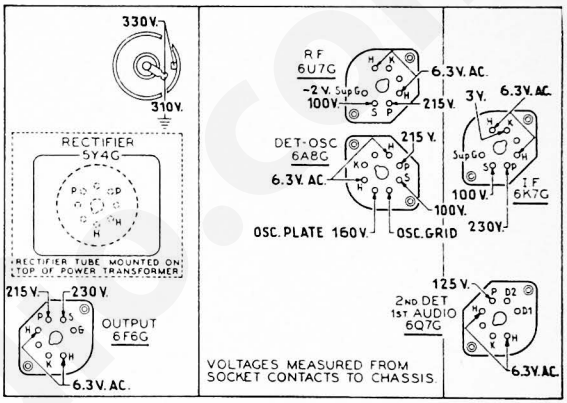

Fig. 1. Socket Voltages under side of chassis

The voltages indicated by arrows were measured with a **Philco 026 Circuit Tester** which contains an accurate voltmeter. Volume control at minimum, range switch in broadcast position, line voltage 115 A. C.

Tuning Range 1500 to 3700 K. C.

The alignment of this tuning range is taken care of by the Range 1 adjustments.

NOTE A—First tune compensator (10) for maximum output, then vary the tuning condenser of the receiver for maximum output about the 580 K. C. dial mark. Now turn compensator (10) slightly to the right or left and vary the receiver tuning condenser for maximum output. If the out reading increases, turn compensator (10) in the same direction a trifle more, and again vary the tuning condenser for maximum output. If the output decreases, set the compensator in the opposite direction. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

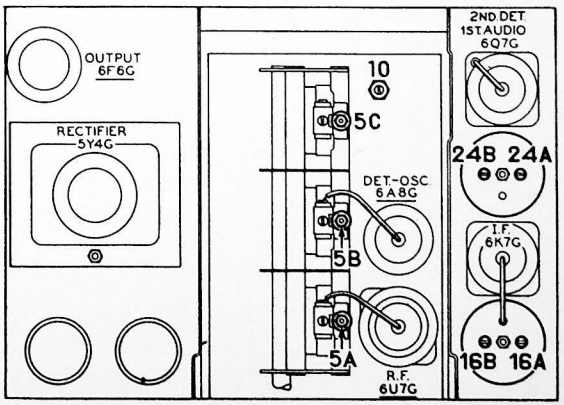

Fig. 2. Locations of Compensators. Top of chassis

Replacement Parts

Schem. No.	Description	Part No.	List Price
1	Antenna transformer	32-2592	
2	Condenser (0.05 mf. tubular)	30-4519	$0.20
3	Resistor (51,000 ohms, ½ watt)	33-351339	.20
4	Condenser (0.05 mf. tubular)	30-4519	.20
5	Tuning Condenser assembly	31-2033	
6	Condenser (1.0 mmf. twisted wire)		
7	R. F. transformer	32-2128	.70
8	R. F. choke coil	32-2139	.35
9	Wave Switch	42-1334	
10	Compensator	31-6056	.55
11X	Condenser (10 mmf. mica)	30-1065	.20
11	Oscillator transformer	32-2120	1.00
12	Condenser (410 mmf. mica)	30-1000	.25
13	Resistor (120,000 ohms, ½ watt)	33-412339	.20
14	Condenser (250 mmf. mica)	30-1032	.25
15	Resistor (20,000 ohms, ½ watt)	33-320339	.20
16	1st I. F. transformer	32-2580	2.20
17	Condenser (0.05 mf. tubular)	30-4123	.20
18	Resistor (1,000 ohms, ½ watt)	33-210339	.20
19	Resistor (400 ohms, 1 watt, wire wound)	33-1211	.20
20	Condenser (0.25 mf. tubular)	30-4446	.25
21	Condenser (0.1 mf. tubular)	30-4455	.25
22	Resistor (51,000 ohms, ½ watt)	33-351, 339	.20
23	Resistor (20,000 ohms, ½ watt)	33-320, 339	.20
24	2nd I. F. transformer	32-2582	2.20
25	Condenser (110 mmf. mica)	30-1031	.20
26	Condenser (110 mmf. mica)	30-1031	.20
27	Resistor (51,000 ohms, ½ watt)	33-351,339	.20
28	Volume Control	33-5157	1.00
29	Condenser (110 mmf. mica)	30-1031	.20
30	Resistor (1.0 meg., ½ watt)	33-510, 339	
31	Condenser (0.015 mf. tubular)	30-4358	.20
32	Resistor (1.0 meg., ½ watt)	33-510, 339	.20
33	Condenser (0.1 mf. tubular)	30-4122	.20
34	Resistor (490,000 ohms, ½ watt)	33-449, 339	.20
35	Resistor (1.0 meg., ½ watt)	33-510, 339	.20
36	Condenser (0.015 mf. tubular)	30-4226	.20
37	Resistor (120,000 ohms, ½ watt)	33-412, 339	.20
38	Resistor (1.0 meg., ½ watt)	33-510, 339	.20
39	Resistor (120,000 ohms, ½ watt)	33-412, 339	.20
40	Condenser (0.25 mf. tubular)	30-4449	.20
41	Output transformer	32-7019	.85
42	Cone and voice coil assembly (S16)	36-3014	1.00
	Cone and voice coil assembly (HS3)	36-3796	
43	Tone control and power switch	42-1180	
44	Condenser (0.03 mf. bakelite)	8328-SU	.35
45	Condenser (0.008 mf. tubular)	30-4317	.20
46	Condenser (electrolytic, 8 mf.)	30-2211	
47	Bias resistor	33-3284	.30
48	Field coil assembly (S16)	36-3664	
	Field coil assembly (HS3)	36-3928	
49	Condenser (0.05 mf. tubular)	30-4020	.20
50	Condenser (electrolytic, 12 mf.)	30-2210	
51	Power transformer (115 v., 50-60 cycles)	32-7583	4.50
	(115 v., 25-40 cycles)	32-7584	6.50
	(115/230 v., 50-60 cycles)	32-7585	6.50
52	Condensers (0.015 mf. dual bakelite)	3793-DG	.40
53	Pilot Lamp	34-2064	.07
	Cable (Power)	L-2778	
	Cable (Speaker)	L-2181	.25
	Dial	27-5204	.35
	Dial Hub	28-7152	.10
	Dial Clamp	28-2837	.10
	Dial Set Screws	W-1506	2.00c
	Knob (Tuning)	27-4321	.10
	Knob (Vol., Range, Tone)	27-4322	.10
	Mtg. Spacer Bushing	27-4359	.02
	Mtg. Rubber Chassis	5189	.03
	Pilot Lamp Assembly	38-7706	.35
	Screen Bracket assembly	31-1878	

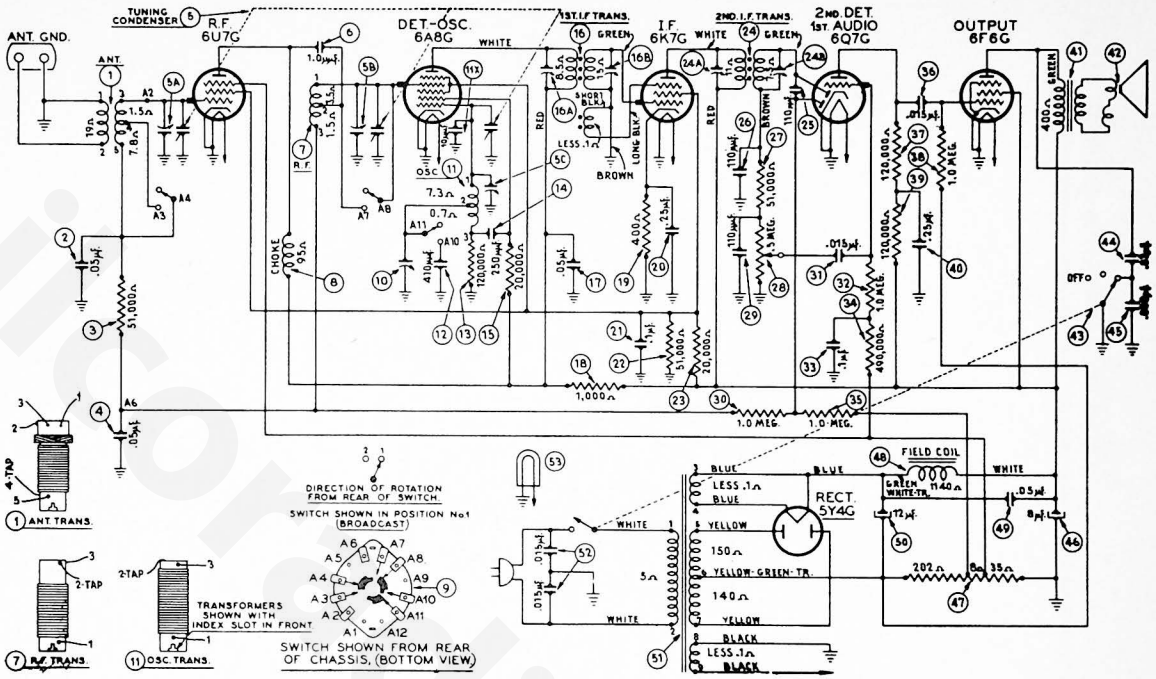

Fig. 3. Schematic Diagram Model 38-89, Code 125

Description	Part No.	List Price
Shield Tube, Round	28-5031	
Shield Tube, Square	28-2726	$0.10
Shield Base (Tube)	27-5030	.35
Shaft (Volume Control)	38-8058	.12
Socket 7 prong	27-6087	
Socket 6 prong	27-6086	
"K" CABINET		
Baffle & Silk	40-6139	
Bezel Frame & Plate	40-6130	1.00
Bezel Gasket	27-8312	.01
Bezel Glass	27-8299	.06
Bezel Ring	28-5079	
Speaker (HS3)	36-1350	
"B" CABINET		
Baffle & Silk Assembly	40-6093	
Bezel Frame & Plate Assembly	40-6117	.90
Bezel Gasket	27-8311	.01
Bezel Glass	27-8298	.05
Bezel Ring	28-5078	
Speaker (S16)	36-1225	5.75

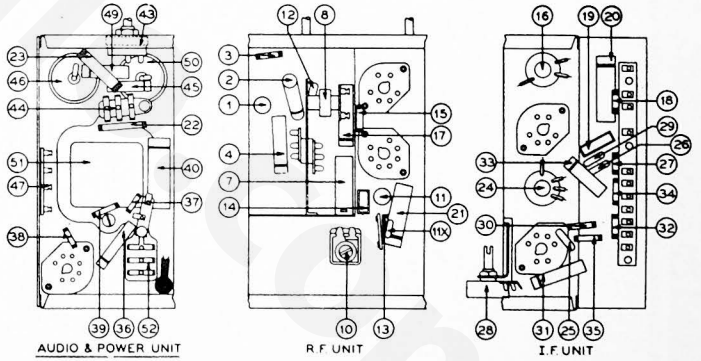

Fig. 4. Part Locations, underside of chassis.

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