



FOR MEMBERS OF RADIO MANUFACTURERS SERVICE A PHILCO SERVICE PLAN

SERVICE BULLETIN No. 269

Electrical Specifications

Type of Circuit: Superheterodyne, with magnetic tuning control on the broadcast range, and a push-pull pentode audio output circuit.

Dial Mechanism: Philco Automatic Dial Tuning System.

Power Supply: Voltage	Frequency Cycles	Consumption
115	50 to 60	110 watts
115	25 to 40	110 watts

Intermediate Frequency: 470 K. C.

Undistorted Output: 5 watts.

Philco Tubes Used: Nine. Two 6K7G; one 6A8G; one 6N7G; one 6H6G; one 6Q7G; two 6F6G, and one 5Y4G.

Tuning Ranges: Three. Range 1—530 to 1720 K. C.; Range 2—2.3 to 7.4 M. C.; Range 3—7.35 to 22 M. C.

Tone Control: 3 positions.

Speaker: H-30.

Alignment of Compensators

EQUIPMENT REQUIRED: (1) Signal Generator; **Philco Model 088** (fundamental frequency 110 to 20,000 K. C.) is the correct instrument for this purpose; (2) Output meter; **Philco Model 025 Circuit Tester** incorporates a sensitive output meter and is recommended; (3) Fibre handle screw-driver (Philco Part No. 27-7059); (4) Special variable condenser (Philco Part No. 45-2325).

OUTPUT METER: The 025 Output Meter is connected to the plate and cathode terminals of one of the (6F6G) tubes. Adjust the meter to use the (0-30) volt scale.

INTERMEDIATE FREQUENCY CIRCUIT

1. Set controls as follows:

- Magnetic Tuning "off" (19)
- Bass compensation minimum
- Volume control maximum (67)
- Receiver Dial 580 K. C.
- Signal Generator 470 K. C.
- Range switch position 1

2. Adjust the I. F. compensators for maximum with signal generator output lead connected through a .1 mfd. condenser to the grid of the tubes as follows:

Input Point	Compensators in Order
6A8G—1st Det.	(54) (53P) (43S) (43P)

RADIO FREQUENCY CIRCUIT

Tuning Range 530 to 1720 K. C.

1. Connect the signal generator output lead through a .1 mfd. condenser to terminal 1 and the generator ground to terminal 3 on aerial input panel. Terminals 2 and 3 must be connected with the shorting link provided on the aerial panel.

2. Other controls set as given under intermediate frequency circuit, with the exception of those as follows:

Adjust compensators for maximum output as follows:

Range Switch	Signal Generator	Receiver Dial	Compensators in Order
1	1600 K. C.	1600 K. C.	(21) (36B) (36A)
1	580 K. C.	580 K. C.	(22) Roll gang through signal when padding this compensator
1	1600 K. C.	1600 K. C.	(21)
1	1500 K. C.	1500 K. C.	(36A) (36B)

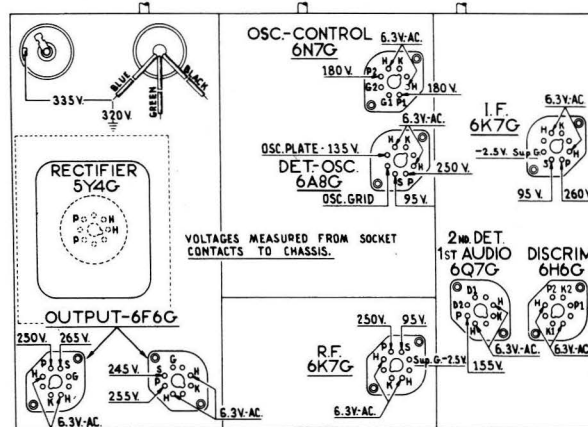


Fig. 1—Receiver Socket Voltages

The voltages indicated by arrows were measured with a **Philco 025 Circuit Tester** which contains a voltmeter having a resistance of 1000 ohms per volt. Volume Control at minimum, range switch in broadcast position, line voltage 115 A. C.

Tuning Range 2.3 to 7.4 M. C.

Adjust compensators for maximum output as follows:

Range Switch	Signal Generator	Receiver Dial	Compensators in Order
2	6 M. C.	6 M. C.	(21A)

Tuning Range 7.35 to 22 M. C.

Adjust compensators for maximum output as follows:

Range Switch	Signal Generator	Receiver Dial	Compensators in Order
3	18 M. C.	18 M. C.	(21B) Check image at 17.06 M. C.
3	18 M. C.	18 M. C.	(10) (4) Use shunt condenser on (21B) or rock gang through signal when padding compensator No. 10
3	18 M. C.	18 M. C.	(21B)

MAGNETIC TUNING ADJUSTMENT—Set the range switch in position one (530 to 1720 K. C.) and the magnetic tuning switch in the "out" position. Now turn the signal generator and receiver dial to any frequency in the Broadcast band. The receiver dial must be adjusted very accurately for maximum output.

Set the magnetic tuning control in the "on" position (clockwise). Compensator (53S) of the magnetic tuning transformer is now adjusted for maximum output.

The above adjustment is now checked for accuracy, by turning the magnetic tuning control "off" and "on." When this is done, there should be no change in the tone of the received signal. If a change of tone or hiss develops, it indicates a shift in frequency and the adjustment must be made again.

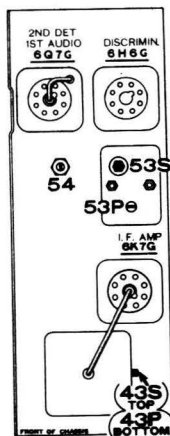


Fig. 2—I. F. Compensators

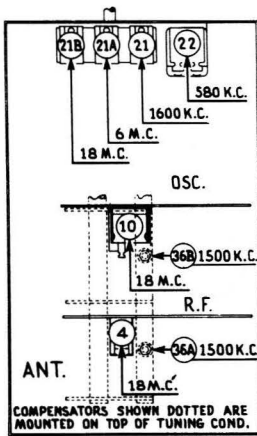


Fig. 3—R. F. Compensators

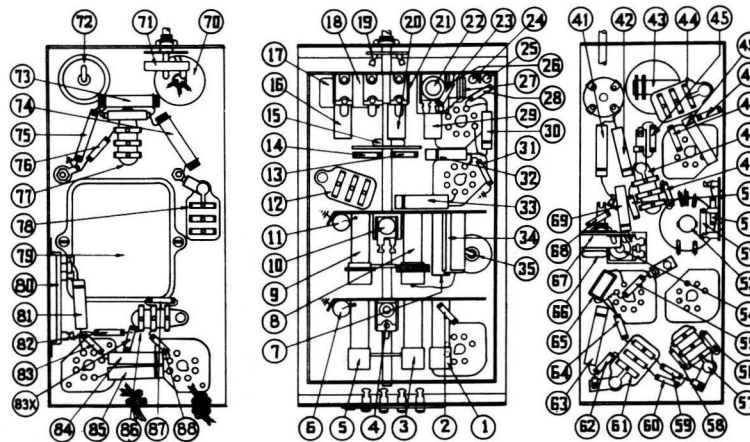


Fig. 4—Part Locations, Underside of Chassis

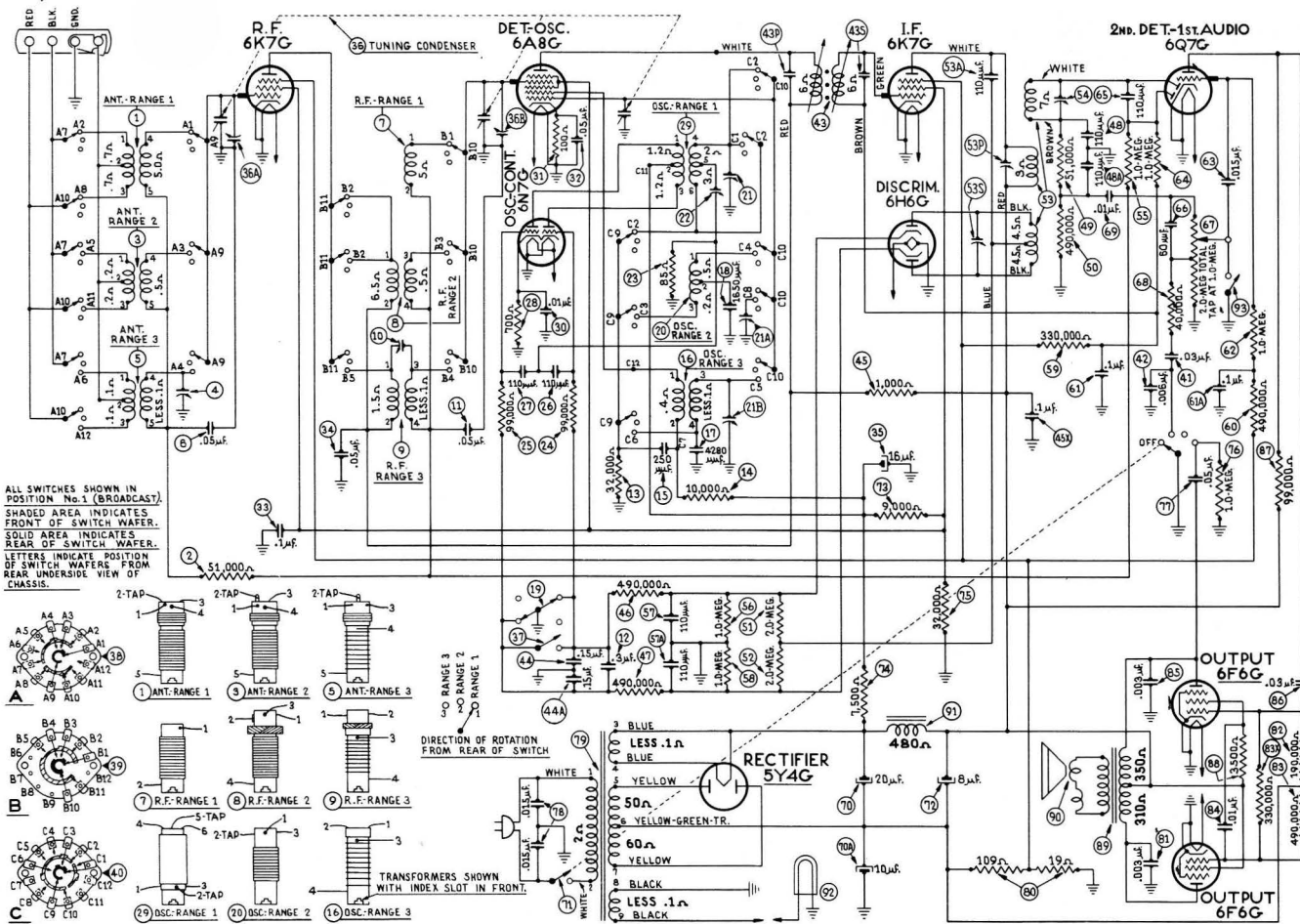


Fig. 5—Schematic Diagram

Replacement Parts—Model 37-9

Schem. No.	Description	Part No.	List Price	Schem. No.	Description	Part No.	List Price	Schem. No.	Description	Part No.	List Price
1	Antenna Transformer (Range 1)	32-2378	\$1.60	51	Resistor (2 megohm, 1/2 watt)	33-520339	\$0.20	31-1960	Automatic Dial (complete)	31-1960	\$25.00
2	Resistor (51,000 ohms, 1/2 watt)	33-351339	.20	52	Resistor (2 megohm, 1/2 watt)	33-520339	.20	28-4119	Brace	28-4119	.05
3	Antenna Transformer (Range 2)	32-2381	1.20	53	2nd I. F. Transformer (Discrim)	32-2376	3.30	L-2183	Cable (A. C.)	L-2183	.40
4	Compensator (Single)	31-6161	.30	54	Compensator	31-6147	.40	41-3258	Cable (speaker)	41-3258	.50
5	Antenna Transformer (Range 3)	32-2384	1.20	55	Resistor (1 megohm, 1/2 watt)	33-510339	.20	31-1661	Coupling (Tuning Condenser)	31-1661	.80
6	Condenser (.05 mfd. tubular)	30-4444	.20	56	Resistor (1 megohm, 1/2 watt)	33-510339	.20	28-7198	Coupling (Range Switch)	28-7198	.15
7	R. F. Transformer (Range 1)	32-2379	.40	57	Condenser (110 mmfd. dual bakelite)	8035-DG	.25	28-4394	Clip (Volume Shaft)	28-4394	.01
8	R. F. Transformer (Range 2)	32-2382	1.00	58	Resistor (1 megohm, 1/2 watt)	33-510339	.20	31-1898	Control Screws (Station Index)	31-1898	.15
9	R. F. Transformer (Range 3)	32-2385	1.20	59	Resistor (330,000 ohms, 1/2 watt)	33-433339	.20	27-5283	Dial	27-5283	.40
10	Compensator (Single)	31-6160	.30	60	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20	45-2924	Dial Escutcheon Assembly	45-2924	.60
11	Condenser (.05 mfd. tubular)	30-4020	.20	61	Condenser (.1 mfd. dual bakelite)	4989-DG	.40	45-2347	Gear "Front" (Dial Assembly)	45-2347	.40
12	Condenser (.15 double bakelite both sections used)	6287-DU	.40	62	Resistor (1 megohm, 1/2 watt)	33-510339	.20	45-2348	Gear "Rear" (Dial Assembly)	45-2348	.60
13	Resistor (32,000 ohms, 1/2 watt)	33-332339	.20	63	Condenser (.015 mfd. tubular)	30-4358	.20	28-4118	Guide (Mask)	28-4118	.25
14	Resistor (10,000 ohms, 1/2 watt)	33-310339	.20	64	Resistor (1 megohm, 1/2 watt)	33-510339	.20	45-2389	Handle (Dial)	45-2389	.50
15	Condenser (250 mmfd. mica)	30-1032	.25	65	Condenser (110 mmfd. mica)	30-1031	.20	45-2344	Hub Assembly (Handle)	45-2344	.50
16	Oscillator Transformer (Range 3)	32-2386	.60	66	Condenser (60 mfd. mica)	30-1040	.20	28-7196	Housing (Control Screws)	28-7196	1.00
17	Condenser (3500 mmfd.)	31-6156	.60	67	Volume Control	33-5158	1.00	45-2401	Mask and Link Assembly	45-2401	.20
18	Condenser (1650 mmfd.)	31-6155	.40	68	Resistor (40,000 ohms, 1/2 watt)	33-340339	.20	45-2349	Plate (Drive Mtg. Assembly)	45-2349	.20
19	Switch (Magnetic Tuning, manual)	42-1281	.75	69	Condenser (.01 mfd. tubular)	30-4479	.20	38-7706	Pilot Lamp Assembly	38-7706	.35
20	Oscillator Transformer (Range 2)	32-2383	.70	70	Electrolytic Condenser (10, 20 mfd.)	30-2183	2.00	28-4630	Reflector Ring	28-4630	.25
21	Compensator (Three section)	31-6170	.75	71	Tone Control and A. C. Switch	42-1267	7.5	28-7195	Ring (Retaining Mask Assembly)	28-7195	.20
22	Compensator (Osc. series)	31-6151	.40	72	Electrolytic Condenser (8 mfd.)	30-2024	1.10	27-4116	Rubber (Chassis Mtg.)	27-4116	.08
23	Resistor (85 ohms, 1/2 watt)	33-085339	.20	73	Resistor (9,000 ohms, 2 watt)	33-290539	.30	27-4360	Rubber Spacer (Chassis Mtg.)	27-4360	.04
24	Resistor (99,000 ohms, 1/2 watt)	33-399339	.20	74	Resistor (7,500 ohms, 3 watt)	33-275639	.30	31-1968	Screen Holder Assembly	31-1968	.20
25	Resistor (99,000 ohms, 1/2 watt)	33-399339	.20	75	Resistor (32,000 ohms, 1/2 watt)	33-332339	.20	28-4626	Shield (Chassis Bottom)	28-4626	.30
26	Resistor (99,000 ohms, 1/2 watt)	33-399339	.20	76	Resistor (1 megohm, 1/2 watt)	33-510339	.20	28-2726	Shield (Tube—Square)	28-2726	.10
27	Condenser (110 mmfd. mica)	30-1031	.20	77	Condenser (.05 mfd. bakelite)	8326-SU	.35	8005	Shield (Tube—Round)	8005	.10
28	Condenser (110 mmfd. mica)	30-1031	.20	78	Condenser (.015 mfd. dual bakelite)	3793-DG	.40	38-8285	Shaft (Volume Control)	38-8285	.50
29	Resistor (700 ohms, 1/2 watt)	33-170339	.20	79	Power Transformer (115 A. C., 50 to 60 cycles)	32-7606	6.25	42-1287	Shaft and Plate (Range Switch)	42-1287	.50
30	Osc. Transformer (Range 1)	32-2373	1.60		(115 A. C., 25 to 40 cycles)	32-7607	9.00	28-4117	Spring (Volume Shaft)	28-4117	.40
31	Condenser (.01 mfd. tubular)	30-4479	.20	80	Resistor Bias (128 ohms)	33-3280	.30	27-6057	Socket (7 prong)	27-6057	.11
32	Resistor (100 ohms, 1/2 watt)	33-110339	.20	81	Condenser (.003 mfd. tubular)	30-4469	.20	27-6058	Socket (8 prong)	27-6058	.11
33	Condenser (.05 mfd. tubular)	30-4020	.20	82	Resistor (190,000 ohms, 1/2 watt)	33-419339	.20	27-6059	Socket (Rectifier)	27-6059	.11
34	Condenser (.1 mfd. tubular)	30-4455	.20	83	Resistor (330,000 ohms, 1/2 watt)	33-433339	.20	27-6062	Spacer (Wood)	27-6062	.05
35	Condenser (.05 mfd. tubular)	30-4123	.20	84	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20	27-2116	Terminal Panel (Ant.)	27-2116	.15
36	Electrolytic Condenser (16 mfd.)	30-2118	1.65	84	Condenser (.01 mfd. tubular)	30-4169	.20	38-7714	Vernier Drive	38-7714	2.40
37	Tuning Condenser	31-1963	4.00	85	Condenser (.01 mfd. tubular)	30-4469	.20	45-2342	Washer (Dial Scale)	45-2342	.01
38	Magnetic Tuning Switch (Automatic Dial)	45-2330	1.20	86	Condenser (.03 mfd. bakelite)	8318-SU	.35				
39	Range Switch (Ant.)	42-1282	.75	87	Resistor (99,000 ohms, 1/2 watt)	33-399339	.20				
40	Range Switch (R. F.)	42-1283	.75	88	Resistor (3500 ohms, 1/2 watt)	33-235339	.20				
41	Range Switch (Osc.)	42-1284	.75	89	Output Transformer (H-30)	32-7754	1.50				
42	Condenser (.03 mfd. tubular)	30-4449	.20	90	Cone and Voice Coil (H-30)	36-3801	1.20				
43	Condenser (.006 mfd. tubular)	30-4445	.20	91	Field Coil (H-30)	36-3687	4.00				
44	1st I. F. Transformer	32-2449	2.20	92	Pilot Lamp	34-2039	.07				
45	Condenser (.15 dual bakelite)	6287-DG	.40	93	Ring and Arm Insulated (Audio shorting switch)	28-2819	.15				
46	Resistor (1000 ohms, 1/2 watt)	33-210339	.20		Ring and Contact (Audio shorting switch)	45-2350	.15				
47	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20		Washer Flat Fibre	27-8361	.01				
48	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20		Washer Flat Fibre	27-8351	.01				
49	Resistor (51,000 ohms, 1/2 watt)	33-351339	.20		Collar Fibre	27-8399	.20				
50	Resistor (490,000 ohms, 1/2 watt)	33-449339	.20								

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