PHILCO . . . . RADIO SERVICE BULLETIN No. 353

RADIO MANUFACTURERS SERVICE — Your Guarantee of Best Radio Service — A PHILCO SERVICE PLAN

Model 55

SPECIFICATIONS

Model 55T is an eight (8) tube A.C. operated superheterodyne receiver employing eight tuning ranges. Three standard tuning ranges and five band spread ranges cover the complete radio spectrum, from 540 to 22,000 kilocycles.

The five spread-band ranges are designed as to give ease of tuning on short wave broadcast bands.

The five spread-band tuning section is tuned by a three-gang permeability tuner, with shunt aligning compensators for each spread band.

Each tuning range dial scale is printed on an individual glass section, the range that is in use being the only section that is illuminated.

Other features of design include a tuned R.F. stage, permeability tuned iron core I.F. coils, variable tone control, bass compensation, automatic volume control, phase inverter, push-pull pentode audio system, and phonograph input connector fed in on one position of the band switch.

TUNING RANGES—540-1700 K.C.
2.3-7.2 M.C.
7.2-22 M.C.
9.4-9.9 M.C.
11.4-12 M.C.
14.8-15.6 M.C.
17.3-18.2 M.C.
20.9-21.9 M.C.

INTERMEDIATE FREQUENCY—460 K.C.

POWER SUPPLY—115 volts A.C. 25 cycles
115 volts A.C. 60 cycles

AUDIO POWER OUTPUT—3 watts.

PHILCO TUBES USED—7A7E R.F. Amplifier
7J7E 1st Det. and oscillator
7A7E I.F. Amp.
75 2nd det., A.V.C., 1st audio
76 phase inverter
two-42E push-pull output
80 rectifier

ADJUSTMENT OF IRON CORES IN BANDSPREAD SECTIONS

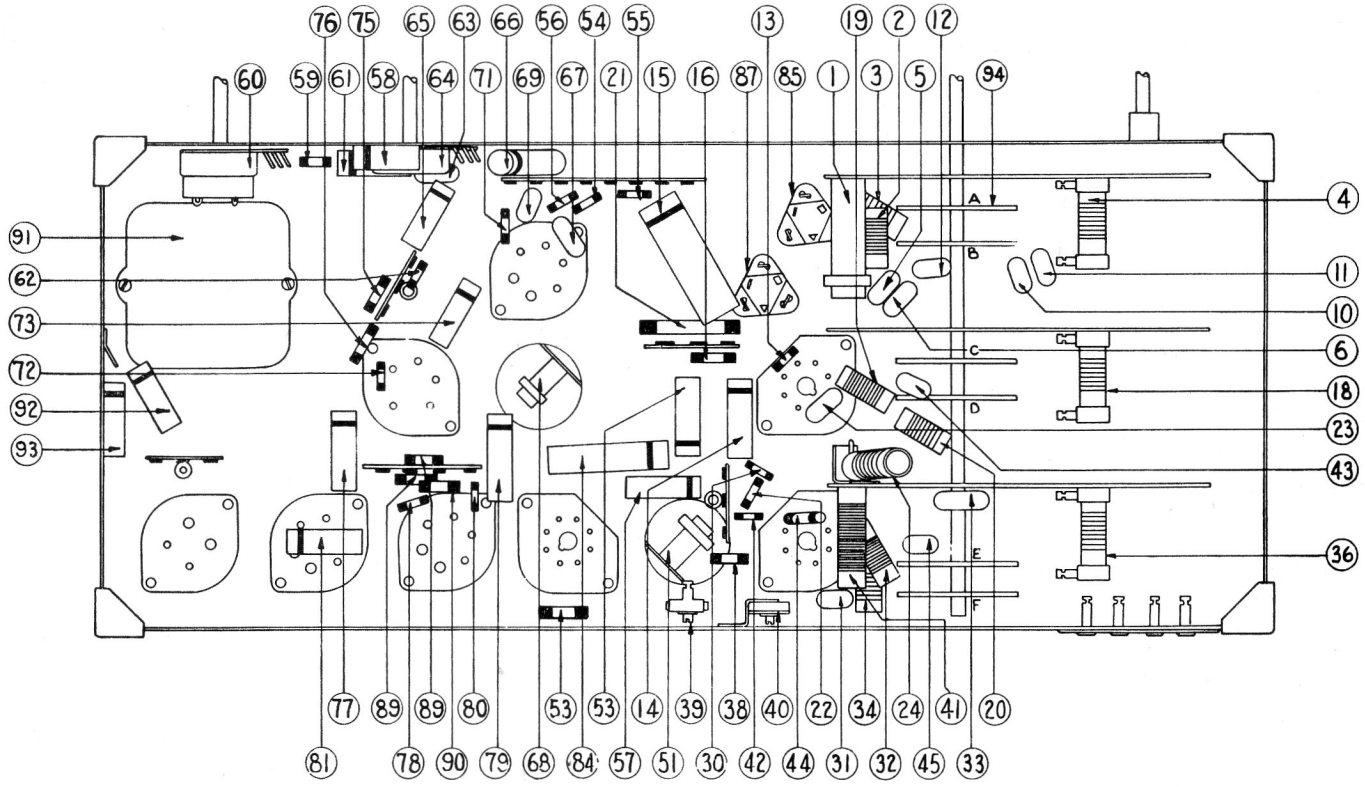
MECHANICAL ADJUSTMENT—Before the padders on the band-spread tuning ranges can be adjusted, the slugs must be adjusted as follows:

(1) Turn the band-spread tuning control to extreme clockwise position (highest frequency).

(2) Loosen the screw which holds the iron core bracket, then slide the bracket until the ends of R.F. and antenna slugs are 1/32" inside the end of the transformers.

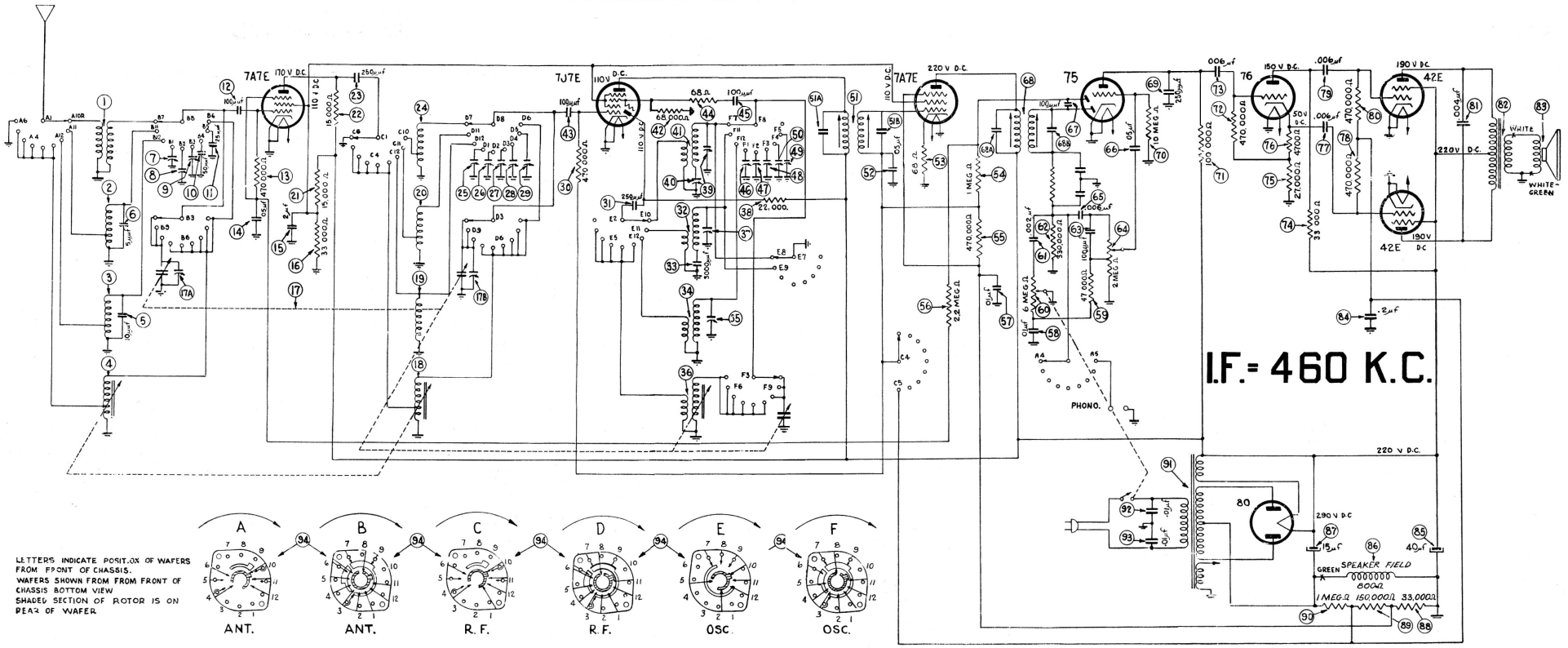
(3) The oscillator transformer is adjusted in the same manner as operation No. 2 except that the slug is adjusted ¼" beyond the end of the transformer. This is necessary so that the correct coverage may be obtained.

(4) When installing a new transformer or slug assembly make sure that the slugs slide freely in transformers. It is important to do this so as to eliminate backlash in the tuning mechanism.



PART LOCATIONS — BOTTOM VIEW OF CHASSIS

SCHEMATIC DIAGRAM MODEL 55



REPLACEMENT PARTS LIST — MODEL 55

1	Broadcast antenna transformer	32-3661
2	Police band antenna transformer	32-3664
3	Short wave antenna transformer	32-3667
4	Bandspread antenna transformer	32-3670
5	Mica condenser (10 mmfd.)	60-010337
7	9.6 M.C. padder	31-6412
8	12 M.C. padder (part of 7)	
9	15 M.C. padder (part of 7)	
10	Silver mica condenser (50 mmfd.)	30-1199
11	Silver mica condenser (25 mmfd.)	30-1147
12	Mica condenser (100 mmfd.)	60-110357
13	Resistor (470,000 ohms, ½ watt)	33-447254
14	Tubular condenser (.05 mfd., 200 volts)	30-4519
15	Tubular condenser (.2 mfd., 400 volts)	30-4594
16	Resistor (15,000 ohms, ½ watt)	33-333334
17	Tuning condenser	31-2535
18	Bandspread R.F. transformer	32-3671
19	Short wave R.F. transformer	32-3668
20	Police band, R.F. transformer	32-3665
21	Resistor (15,000 ohms, 1 watt)	33-315454
22	Resistor (15,000 ohms, ½ watt)	33-315354
23	Mica condenser (250 mmfd.)	60-125337
24	Broadcast R.F. transformer	32-3662
25	9.6 M.C. bandspread R.F. padder	31-6412
26	12 M.C. bandspread R.F. padder	(part of 25)
27	15 M.C. bandspread R.F. padder	(part of 25)
28	18 M.C. bandspread R.F. padder	(part of 25)
29	21 M.C. bandspread R.F. padder	(part of 25)
30	Resistor (470,000 oohms, ½ watt)	33-447254
31	Mica condenser (250 mmfd.)	60-125357
32	Police band oscillator coil	32-3666
33	Mica condenser (3000 mmfd.)	60-230124
34	Short wave osc. transformer	32-3669
35	7 M.C. padder	31-6350
36	Band spread osc. transformer	32-3672
37	7 M.C. police band padder	(part of 35)
38	Resistor (22,000 ohms, ½ watt)	33-322354
39	Broadcast padder	(part of 35)
40	Broadcast tracking padder	31-6308
41	Broadcast oscillator coil	32-3663
42	Resistor (68,000 ohms, ½ watt)	33-368254
43	Mica condenser (100 mmfd.)	60-110357
44	Resistor (68 ohms, ½ watt)	33-068354
45	Mica condenser (100 mmfd.)	60-110357
46	9.6 M.C. bandspread oscillator padder	31-6412
47	12 M.C. bandspread oscillator padder	(part of 46)
48	15 .C. bandspread oscillator padder	(part of 46)
49	18 M.C. bandspread oscillator padder	31-6413
50	21 M.C. bandspread oscillator padder	(part of 49)
51	1st I.F. transformer	32-3659
52	Tubular condenser (.05 mfd., 200 volts)	30-4519
53	Resistor (68 ohms, ½ watt)	33-068354
54	Resistor (1 meg., ½ watt)	33-510334
55	Resistor (470,000 ohms, ½ watt)	33-447254
56	Resistor (2.2 meg., ½ watt)	33-522254
57	Tubular condenser (.01 mfd., 400 volts)	30-4572
58	Tubular condenser (.01 mfd., 400 volts)	30-4572
59	Resistor (470,000 ohms, ½ watt)	33-447254
60	Tone control 6 meg.	33-5439
61	Tubular condenser (.002 mfd., 400 volts)	30-4579
62	Resistor (330,000 ohms, ½ watt)	33-433254
63	Mica condenser (100 mmfd.)	60-110357
64	Volume control 2 meg.	33-5439
65	Tubular condenser (.006 mfd., 400 volts)	30-4591
66	Tubular condenser (.05 mfd., 200 volts)	30-4519
67	Mica condenser (250 mmfd.)	60-110357
68	2nd I.F. transformer	32-3660
69	Mica condenser (250 mmfd.)	60-125337
70	Resistor (10 meg., ½ watt)	33-610254
71	Resistor (100,000 ohms, ½ watt)	33-410254
72	Resistor (470,000 ohms, ½ watt)	33-447254
73	Tubular condenser (.006 mfd., 400 volts)	30-4591
74	Resistor (470,000 ohms, ½ watt)	33-447254
75	Recesistor (27,000 ohms, ½ watt)	33-327334
76	Resistor (4700 ohms, ½ watt)	33-347334
77	Tubular condenser (.006 mfd., 400 volts)	30-4591
78	Resistor (470,000 ohms, ½ watt)	33-447254
79	Tubular condenser (.006 mfd., 400 volts)	30-4591
80	Resistor (470,000 ohms, ½ watt)	33-447254
81	Tubular condenser (.004 mfd., 400 volts)	30-4578
82	Output transformer	12-0044
83	Speaker	36-1453
84	Tubular condenser (.2 mfd., 200 volts)	30-4538
85	Electrolytic condenser (40 mfd.)	30-2445
86	Speaker field (part of 83—not replaceable)	
87	Electrolytic condenser (15 mfd.)	30-2465
88	Resistor (33,000 ohms, ½ watt)	33-333334
89	Resistor (150,000 ohms, ½ watt)	33-415334
90	Resistor (1 meg., ½ watt)	33-510344
91	Power Transformer, 60 cycle	12-0042
	25 cycle	12-0043
92	Tubular condenser (.01 mfd., 400 volts)	30-4572
93	Tubular condenser (.01 mfd., 400 volts)	30-4572
94	Wave switch assembly	42-1660
	Tuning condenser drive cord	31-2537
	Band indicator drive cord	31-2538
	Pointer	56-2134FCP
	Iron core (bandspread antenna and R.F. stage)	56-6129
	Iron core (bandspread oscillator stage)	56-6130
	Hairpin clip (bandspread coil mounting)	57-0985FA3
	Dial scale assembly	76-1237
	Dial plate assembly	76-1238
	Rod (iron core carrier)	56-2138
	Drive cord spring	28-3954
	Band indicator spring	28-3936
	Knob	27-4332
	Five prong sockets	07-0043
	Six prong sockets	07-0044
	Special rubber LOKTAL socket	27-6129
	LOKTAL socket	27-6158
	Grid cap	28-2114
	Speaker plug contact	28-4528
	Speaker cable plug	27-4419
	A.C. cord	03-0017
	Pilot lamp	34-2064
	Spring clip (coil mounting)	28-5002
	Cone and voice coil assembly	25-0046

ALIGNING R.F. AND I.F. COMPENSATORS

EQUIPMENT REQUIRED

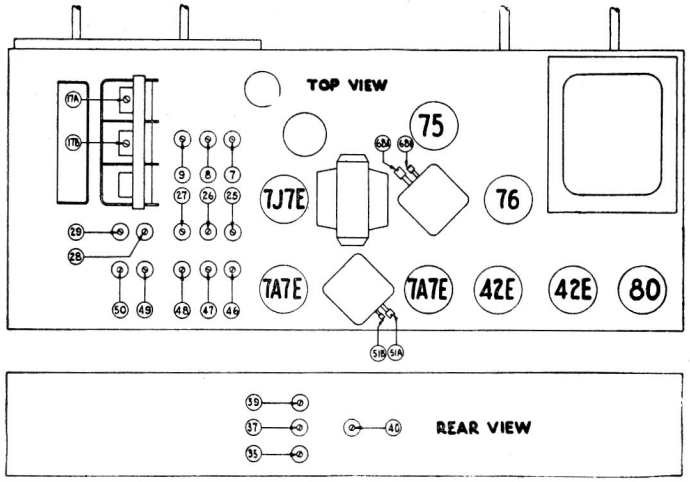
1. **SIGNAL GENERATOR:** Covering the frequency range of the receiver, such as Philco Model 070.
2. **ALIGNING INDICATOR:** Either a vacuum tube voltmeter or an audio output meter may be used as an aligning indicator. Philco Model 028 circuit tester contains both these meters.
3. **TOOLS:** Philco Fibre Screw Driver, Part No. 45-2610. Philco Fibre Wrench, Part No. 3164.

CONNECTING ALIGNING INSTRUMENTS

Either a vacuum tube voltmeter or an audio output meter may be used as a signal indicator when adjusting the receiver.

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator, make the following connections: Attach the negative (—) terminal of the voltmeter to any point in the circuit where the A.V.C. voltage can be obtained. Connect the positive (+) terminal of the vacuum tube voltmeter to the chassis.

Audio Output Meter: The audio output meter is connected between the plate of one output tube and the ground of the chassis. When using these connections, the lowest A.C. scale of the meter must be used. (0 to 10 volts).



LOCATION OF COMPENSATORS

Operations in Order	SIGNAL GENERATOR			RECEIVER			
	OUTPUT CONNECTIONS	DUMMY ANTENNA (SEE NOTE)	DIAL SETTING	DIAL SETTING	CONTROL SETTING	ADJUST COMPENSATORS IN ORDER	SPECIAL INSTRUCTIONS
1	17-B Gang	1 Mfd.	460 Kc.	600 Kc.	Broadcast Band	51A—51B 68A—68B	
2	Antenna Con.	200 Mmfd.	1500 Kc.	1500 Kc.	Broadcast Band	39	Note C-A
3	Antenna Con.	200 Mmfd.	600 Kc.	600 Kc.	Broadcast Band	40	Note C
4	Antenna Con.	200 Mmfd.	1500 Kc.	1500 Kc.	Broadcast Band	17A—17B	Note E
5	Antenna Con.	400 Ohms	7 Mc.	7 Mc.	SW1	37	Note D
6	Antenna Con.	400 Ohms	18 Mc.	18 Mc.	SW2	35	
7	Antenna Con.	400 Ohms	9.6 Mc.	9.6 Mc.	SW3	46	Note D
8	Antenna Con.	400 Ohms	9.6 Mc.	9.6 Mc.	SW3	7—28	Note E
9	Antenna Con.	400 Ohms	12 Mc.	12 Mc.	SW4	47	Note D
10	Antenna Con.	400 Ohms	12 Mc.	12 Mc.	SW4	8—26	Note E
11	Antenna Con.	400 Ohms	15 Mc.	15 Mc.	SW5	48	Note D
12	Antenna Con.	400 Ohms	15 Mc.	15 Mc.	SW5	9—27	Note E
13	Antenna Con.	400 Ohms	18 Mc.	18 Mc.	SW6	50	Note D
14	Antenna Con.	400 Ohms	18 Mc.	18 Mc.	SW6	28	Note E
15	Antenna Con.	400 Ohms	22 Mc.	22 Mc.	SW7	49	Note D
16	Antenna Con.	400 Ohms	22 Mc.	22 Mc.	SW7	29	Note E

NOTE A—DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To do this, proceed as follows: Turn the tuning condenser to the maximum capacity position (plates fully meshed). With the condenser in this position, set the tuning pointer on the extreme lower index line at the low frequency end of the broadcast scale.

NOTE B—When adjusting the compensators, the high side of the signal generator is connected in series with a suitable dummy as shown in the column headed "Dummy Antenna" to the receiver at the point shown in the column headed "Output Connections". The ground or low side of the generator is connected to the chassis of the receiver.

NOTE C—When adjusting the low and high frequency oscillator compensators of Range One (Broadcast), the oscillator compensator of Range Two (Sw 1) or the Antenna and R.F. compensators of the high frequency tuning range (Sw 2), the receiver Tuning Condenser must be adjusted (rolled) as follows. First tune the compensator for maximum output, then vary the tuning condenser for maximum output. Now turn the compensator slightly to left or right and again vary the receiver tuning condenser for maximum output. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

NOTE D—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator to the maximum capacity position (clockwise). From this position slowly turn the compensator counter-clockwise until a second peak is obtained on the output meter. Adjust the compensator for maximum output at this second peak.

If the above procedure is correctly performed, the image signal will be found (much weaker) by turning the receiver dial 920 K.C. below the frequency being used on any high frequency range.

NOTE E—Due to the extreme sensitivity of this receiver, it is necessary to use a very weak signal from the signal generator in order to get an accurate peak on the R.F. and Antenna compensators.

NOTE F—The moveable iron cores in the band-spread section of this receiver are adjusted and cemented in place at the factory and require no further adjustment under normal operating conditions. Should adjustments be required, follow the instructions on page 1 of this bulletin.

MANY OF THE PARTS IN THIS PHILCO, SUCH AS CONDENSERS AND RESISTORS, ARE HELD TO MUCH CLOSER TOLERANCE THAN STANDARD REPLACEMENT PARTS. GENUINE PHILCO REPLACEMENT PARTS MUST BE USED TO OBTAIN SATISFACTORY PERFORMANCE OF THIS MODEL.

PARTS AND SERVICE DIVISION PHILCO TORONTO, CANADA

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