Model 44

SPECIFICATIONS

Model 44 is an alternating current (A.C.) operated super-heterodyne radio incorporating **Electric Push-Button** and **Manual Tuning**, and the new Philco **Built-in Domestic and Overseas Aerial system.** This model is also designed to receive the sound of a **television program** tuned in by special type Philco television radios when these become available. This model is exceptionally sensitive and selective on all tuning frequencies covered.

Model 44 employs eleven (11) tubes. Other features of design included are: Philco Loktal tubes; new noise-reducing converter tube (XXL), four (4) tuning bands; two I.F. stages; continuously variable tone control; audio bass compensation in the volume control circuit; degenerative push-pull pentode audio output, operated by a push-pull driver stage; movable band indicator; "off" power switch controlled by a push-button and a new 14" balanced field electro-dynamic speaker.

ELECTRIC PUSH-BUTTON TUNING: The automatic tuning mechanism of this model consists of eight (8) electric tuning push-buttons; seven (7) of the push-buttons are used for selecting broadcast stations, and one as the power control; (Off switch).

The lowest frequency station push-button labeled "Television" can be adjusted for reception of the sound channel of a television program received by Philco television sets when these are available.

AEREIAL CONNECTIONS: The built-in loop aerial system is designed to operate without an outside aerial or ground, and to give exceptionally sensitive receiving performance on stations on standard and shortwave frequencies. Another feature is its noise-reducing characteristic. The loop can be turned to the position in which it picks up a minimum amount of interference, or if interference is not present, the loop may be set in the position where best reception is obtained.

When operating the radio in steel reinforced buildings and other shielded locations, the Philco 1941 Outdoor Aerial, Part No. 45-2817, is recommended for maximum receiving performance. The outdoor aerial can be easily connected to the radio by inserting the plug attached to the transformer unit into the socket provided at the rear of the chassis. This aerial can be obtained from your local Philco distributor. A ground connection is not required with either type of installation.

POWER SUPPLY: 115 volts, 60 cycles A.C.; 115 volts, 25 cycle A.C.

POWER CONSUMPTION: Model 44—110 watts.

FREQUENCY TUNING RANGES: 540 to 1720 K.C.; 2.3 to 7.0 M.C.; 9.0 to 12.0 M.C.; 13.5 to 18.0 M.C.

INTERMEDIATE FREQUENCY: 460 K.C.

AUDIO OUTPUT: 5 watts.

PHILCO TUBES USED: Model 44, Eleven tubes: XXL, R.F. Mixer; XXL, oscillator; two 7B7E I.F. amplifiers; 7C6, 2nd detector, 1st audio, A.V.C.; two 37, audio drivers; 37, phase inverter; two 42E audio output; and an 80, rectifier.

CABINET DIMENSIONS: Model 44—Height 35½", width 35", depth 13⅞"

REMOVING CHASSIS

To remove the chassis from the cabinet, it will be necessary to take off the bezel and remove the two screws which hold the front of the chassis to the cabinet. In addition, the four shipping bolts underneath the chassis shelf must also be removed.

ADJUSTING ELECTRIC PUSH BUTTON TUNING

To adjust the electric push buttons accurately for reception of broadcast stations, a vacuum tube voltmeter such as Philco Model 028 should be used. In addition, an insulated padding screw driver, Part No. 45-2610, and Loktal aligning adapter, Part No. 45-2767, are required. With this equipment at hand proceed as follows:

Select seven of the most popular stations received in the locality. Insert the station call letters into the spaces above the buttons. The station with the lowest frequency is placed in the second button on the left and the highest frequency is placed in the eighth push button on the right. Each push button is adjusted by two adjusting screws located on the rear of the chassis. Each set of screws is numbered and labeled "Ant.", "Osc." and covers a frequency range as follows:

Push Button	Frequency Range
1, 2, 3	540-1030 K.C.
4, 5,	650-1160 K.C.
6, 7	900-1600 K.C.

Looking at the front of the cabinet, the second button on the left is adjusted by adjusting screw No. 1. The next push button by adjusting screw No. 2 and the remaining push buttons in order.

1. Remove the 7C6 A.F. tube from its socket and insert the aligning adapter, then replace the tube in the adapter. Connect the negative terminal of the vacuum tube voltmeter to the wire which protrudes from the side of the adapter. Attach the positive terminal of the voltmeter to the chassis.

2. Press any one of the station push buttons. Turn "Band Selector" to "broadcast" position.

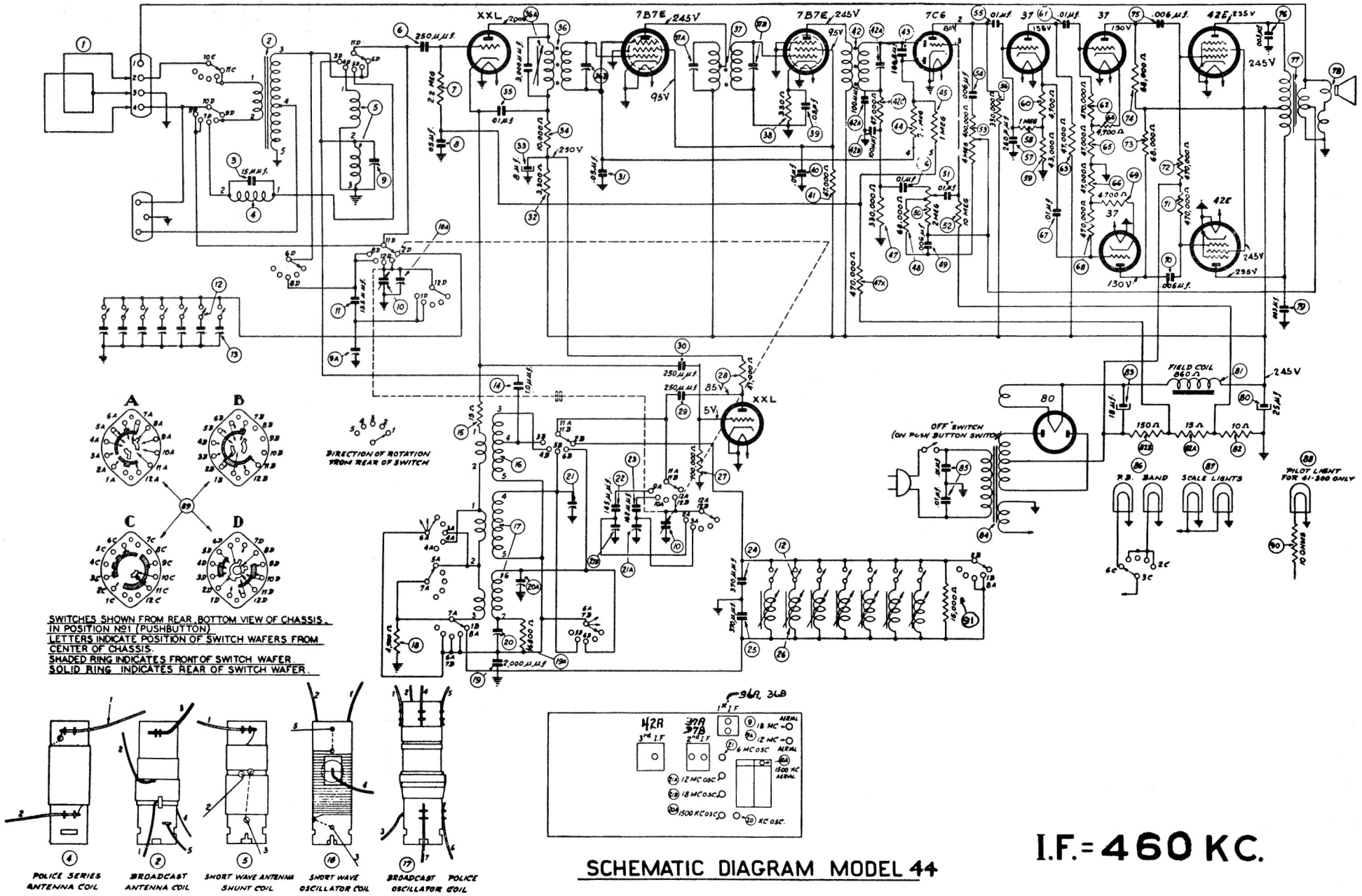
3. Set up the Model 177 Signal Generator near the receiver and connect a loop aerial (made from a few turns of wire 12 inch in diameter) to the high and ground output jacks of the signal generator. Turn the output controls to maximum and set the modulation control to "MOD. ON."

4. Manually tune in the station to be set up on the first push button. After doing this set the indicator of the 177 Signal Generator to the frequency of the station being received. As the indicator approaches the frequency of the station a whistle will be heard; leave the indicator at this point.

5. Turn "Band Selector" down to the position where the call letters are illuminated. Using the insulated screw driver, turn the "Osc." screw until the broadcast station identified by the signal generator is heard; at this point, turn the indicator of the signal generator away from the frequency of the station. Readjust No. 1 "Osc." and "Ant." screws for maximum deflection of the vacuum tube voltmeter pointer. The push button is adjusted properly to the station at this point.

After setting up the first station the same procedure as outlined above is used for the remaining stations. If this model is set up to receive the sound of a television program tuned in by special type Philco Television Sets, the lowest frequency push button should be used. To set up these programs, the same procedure as given for broadcast stations above is used.

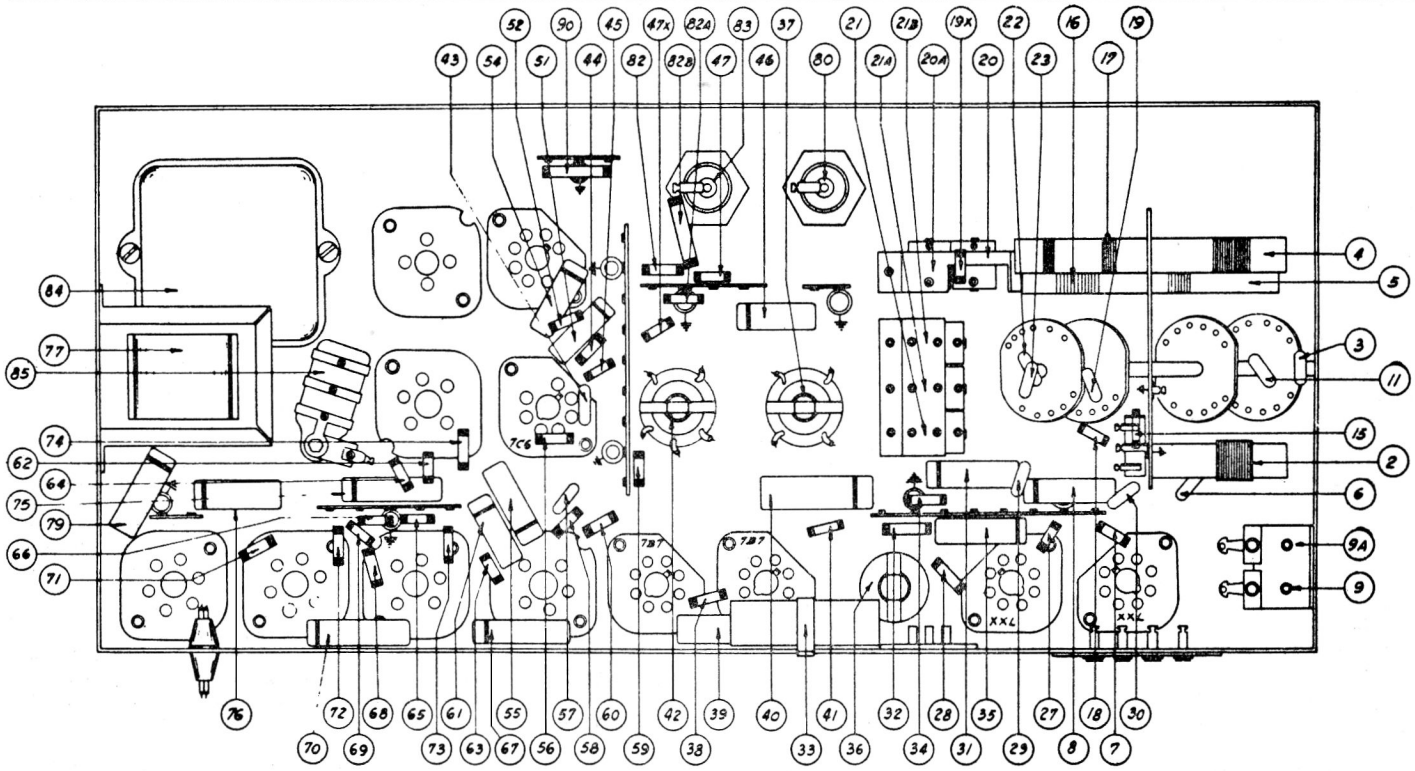
Further details for setting up this receiver for operation with Philco Television Sets will be supplied with the instruments when they are available.



SCHEMATIC DIAGRAM MODEL 44

I.F. = 460 KC.

The voltages indicated were measured with a Philco Model 028 Voltmeter (1000 ohms per volt)—Power supply 115 volts—Volume Control minimum
No signal being received—Range switch "Broadcast"



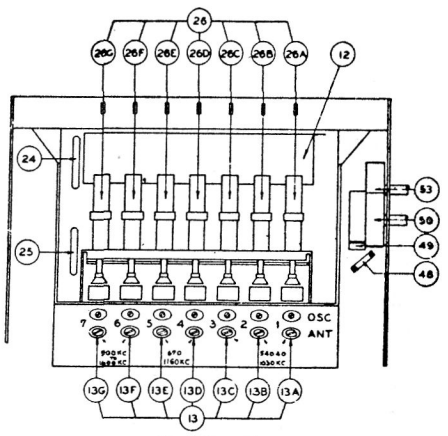
PART LOCATIONS — UNDERSIDE OF CHASSIS

REPLACEMENT PARTS — MODEL 44

Schem. No.	Description	Philco Part No.
1	Loop Antenna	76-1089
	Sleeve (1 required)	56-1907
	Sleeve (2 required)	28-2257
	Spring Washer	28-4186
	Washer	W-151
	Screw	W-288
2	Aerial Transformer (Broadcast)	32-3496
3	Mica Condenser (15 mmfd.)	60-015337
4	Aerial Series Trans. (Police)	32-3498
5	Aerial Transformer (Short Wave)	32-3497
6	Mica Condenser (250 mmfd.)	60-125157
7	Resistor (2.2 megohms, 1/3 watt)	33-522244
8	Tubular Cond. (.05 mfd. 200 volts)	30-4519
9	Compensator (Aerial 18 M.C.)	31-6359
9A	Compensator (Aerial Short Wave 12 M.C.)	
10	Tuning Condenser	31-2483
	Grommet (Mounting)	27-4771
	Coupling Assembly	31-2291
	Cable Drum and Shaft Ass.	38-9716
10A	Comp. (Aerial 1500 K.C.) Part of 10	
11	Mica Cond. (155 mmfd.)	30-1176
12	Push Button and Power Switch Ass.	42-1592
	Grommet (Push Button Mounting)	27-4596
	Sleeve (Push Button Mounting)	28-3806
13	Push Button Comp. Strip Ass.	31-6400
14	Cond. (1 mmfd. Short Wire and Lug from Wafer Cont. 3D to Wafer Cont. 3B)	
15	Resistor (15 ohms, ½ watt)	33-015336
16	Oscillator Transf. (Short Wave)	32-3500
17	Oscillator Transf. (Broadcast Police)	32-3499
18	Resistor (4700 ohms, ½ watt)	33-247339
19	Mica Cond. (2,000 mmfd.)	60-220324
19X	Resistor (6,800 ohms, ½ watt)	33-268344
20	Compensator (580 K.C. Oscillator)	31-6365
20A	Comp. (1500 K.C. Oscillator) Part of 20	
21	Comp. (6 M.C. Oscillator)	31-6362
21A	Comp. (12 M.C. Oscillator)	
21B	Comp. (18 M.C. Oscillator)	
22	Mica Condenser (145 mmfd.)	30-1177
23	Mica Condenser (162 mmfd.)	30-1178
24	Mica Condenser (370 mmfd.)	30-1157
25	Mica Condenser (370 mmfd.)	30-1157
26	Push Button Oscillator Transformer Ass. (7 Transformers)	32-3477
26A, B, C, D, E	Push Button Oscillator Transformer (1, 2, 3, 4, 5, Push Buttons)	32-3042
26F, G,	Push Button Oscillator Transformers 6, 7, P.B.	32-3041
	Iron Core	28-6916
	Centering Cup	28-6936
	Coil Mounting Spring	28-8910
27	Resistor (100,000 ohms, 1/3 watt)	33-410244
28	Resistor (47,000 ohms, ½ watt)	33-347344
29	Mica Condenser (250 mmfd.)	60-125157
30	Mica Condenser (250 mmfd.)	60-125157
31	Tubular Cond. (.05 mfd. 200 volts)	30-4519
32	Resistor (3300 ohms, 1 watt)	33-233444
33	Electrolytic Cond. (8 mfd.)	30-2473
34	Resistor (10,000 ohms, ½ watt)	33-310344
35	Tubular Cond. (.01 mfd., 400 volts)	30-4572
36	First I.F. Transformer	32-3493
37	Second I.F. Transformer	32-3494
38	Resistor (330 ohms, ½ watt)	33-133336
39	Tubular Cond. (.05 mfd. 200 volts)	30-4519
40	Tubular Cond. (.1 mfd. 400 volts)	30-4455
41	Resistor (47,000 ohms, ½ watt)	33-347344
42	Third I.F. Transformer	32-3495
43	Mica Condenser (100 mmfd.)	60-110157
44	Resistor (2.2 megohms, 1/3 watt)	33-522244
45	Resistor (1 megohm, 1/3 watt)	33-510244
46	Tubular Cond. (.01 mfd. 400 volts)	30-4572
47	Resistor (330,000 ohms, 1/3 watt)	33-433244
48	Resistor (68,000 ohms, ½ watt)	33-368344
49	Tubular Cond. (.006 mfd. 400 volts)	30-4591
50	Volume Control (2 megohms)	33-5286
51	Tubular Cond. (.01 mfd. 400 volts)	30-4572
52	Resistor (10 megohms, 1/3 watt)	33-610244
53	Tone Control	33-5325
54	Tubular Cond. (.006 mfd. 400 volts)	30-4591
55	Tubular Cond. (.01 mfd. 400 volts)	30-4572
56	Resistor (330,000 ohms, 1/3 watt)	33-433244
57	Mica Cond. (250 mmfd.)	60-125157
58	Resistor (1 megohm, 1/3 watt)	33-510244
59	Resistor (43,000 ohms, ½ watt)	33-343344
60	Resistor (4700 ohms, ½ watt)	33-247344
61	Tubular Cond. (.01 mfd. 400 volts)	30-4572
62	Resistor (470,000 ohms, ½ watt)	33-447344
63	Resistor (47,000 ohms, ½ watt)	33-347344
64	Resistor (4700 ohms, ½ watt)	33-247344
65	Resistor (47,000 ohms, 1/3 watt)	33-347244
66	Resistor (47,000 ohms, 1/3 watt)	33-347244
67	Tubular Cond. (.01 mfd. 400 volts)	30-4572
68	Resistor (470,000 ohms, 1/3 watt)	33-447244
69	Resistor (4700 ohms, ½ watt)	33-247344
70	Tubular Cond. (.006 mfd. 400 volts)	30-4591
71	Resistor (470,000 ohms, 1/3 watt)	33-447244
72	Resistor (470,000 ohms, 1/3 watt)	33-447244
73	Resistor (68,000 ohms, ½ watt)	33-368344
74	Resistor (68,000 ohms, ½ watt)	33-368344
75	Tubular Cond. (.006 mfd. 400 volts)	30-4591
76	Tubular Cond. (.003 mfd. 1000 volts)	30-4469
77	Output Transformer	32-7981
78	Cone Assembly for Speaker	36-4160
79	Tubular Cond. (.003 mfd. 1000 volts)	30-4469
80	Electrolytic Condenser (25 mfd.)	30-2333
81	Field Coil (Replace Speaker 36-1515)	32-9587
82	Bias Resistor (10 ohms, ½ watt)	33-010336
82A	Bias Resistor (15 ohms, ½ watt)	33-015336
82B	Bias Resistor (115 ohms, 1 watt)	33-115436
83	Electrolytic Cond. (18 mfd.)	30-2472
84	Power Transformer (115 volts, 25 Cycle) 12-0011 Power Transformer (115 volts, 60 Cycle)	32-8115
85	Condenser (.01, .01 mfd.)	3903-ODG
86	Pilot Lamp (Push Button, Band Ind.)	34-2141
87	Pilot Lamp (Scale Lights)	34-2064
88	Band Switch	42-1582
89	Resistor (15,000 ohms, 1/3 watt)	33-315244

MISCELLANEOUS PARTS

Bolts (Chassis Mounting)	W-1345
Power Cord	03-0017
Speaker Cable	41-3430
Cabinet	10499A
Clip (Mounting R.F. Coil)	28-5002
Dial Scale	27-5658
Felt (Gasket Mounting)	27-9224



Part Locations
Electric Push-Button Tuning Unit

Schem. No.	Description	Philco Part No.
	Clamp	56-1034
	Pointer	56-1033
	Drive Cord (Pointer Drive)	31-2316
	Drive Cord (Tuning Drum)	31-2315
	Spring (Drive Cord)	28-8913
	Drum (Tone Control)	54-4027
	Drum (Volume Control)	54-4028
	Drum (Tuning)	54-4029
	Drum (Wave Switch)	318-2119
	Set Screw	W-2201
	Shaft (Left Hand Control Drum)	28-6924
	Shaft Bearing	56-1036
	Bracket (Left Hand)	56-1039
	Bracket (Right Hand)	56-1882
	Washer (Right Hand Drum Shaft)	28-3976
	Key Washer (Drum Shaft)	56-1029
	Spring Washer (Drum Shaft)	56-1385
	Washer, Steel (Drum Shaft)	56-1659
	Knob (Push Button)	54-4009
	Rubber Grommet (Chassis Mounting)	27-4571
	Rubber Grommet (Tuning Unit Mounting)	3914
	Rubber Grommet (Tuning Unit Mounting)	3915
	Rubber Corner (Chassis Mounting)	54-4015
	Socket (Five Prong)	07-0043
	Socket (Six Prong)	07-0044
	Socket (Four Prong)	07-0045
	Socket (Loktal-Rubber-Oscillator)	27-6158
	Socket (Three Prong Aerial)	27-6145
	Socket (Pilot Lamp-Dial)	38-9695
	Socket (Pilot Lamp-Push Button Light)	38-9904
	Speaker	36-1515
	Tab Kit (Complete)	40-6604
	Washer (Chassis Mounting)	28-5114
	Bezel	56-2060
	Gasket Assembly	38-9734

ALIGNING R.F. AND I.F. COMPENSATORS

EQUIPMENT REQUIRED

1. **SIGNAL GENERATOR:** Covering the frequency range of the receiver, such as Philco Model 177
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.

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: Terminal No. 1 is provided on the loop aerial panel for connecting one lead of the audio output meter to the voice coil of the speaker. The other lead of the meter is connected to the chassis. When using these connections, the lowest A.C. scale of the meter must be used. (0 to 10 volts).

The audio output meter can also be connected between the plate of the output tube and the ground of the chassis.

Signal Generator: When adjusting the "I.F." padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal 4 of the loop aerial terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the ground of the receiver.

When aligning the R.F. padders a loop is made from a few turns of wire and connected to the signal generator output terminals; the loop is then placed two or three feet from the loop in the cabinet. Do not remove the receiving loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

After connecting the aligning indicator, adjust the compensators in the order shown in the tabulation below. Locations of the compensators are shown on the schematic diagram. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	High Side to No. 4 Terminal Loop Panel	460 K.C.	580 K.C.	Vol. Max. Range Switch "S.W. 1" Position	36A, 36B, 37A, 37B, 42A	
2	Use Loop on Generator	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "Brdcst"	20A, 10A	Note A
3	Use Loop on Generator	580 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcst"	20	Roll Tuning Condenser Note B
4	Use Loop on Generator	Repeat Operation No. 2				
5	Use Loop on Generator	6 M.C.	6 M.C.	Range Switch "Police"	21	Note C
6	Use Loop on Generator	12 M.C.	12 M.C.	Range Switch "S.W. 1"	21A, 9A	Note D
7	Use Loop on Generator	18 M.C.	18 M.C.	Range Switch "S.W. 2"	21B, 9	Note E

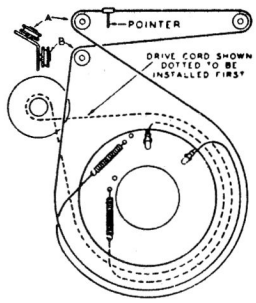
NOTE A—DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable in this position is shown in the schematic.

NOTE B—When adjusting the compensator the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output. Now turn the compensator slightly to the right or left 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 maximum output reading is obtained.

NOTE C—Adjust compensator (21) to the Second signal peak from the tight (closed) position. The tuning condenser should also be Rolled when the padder is being adjusted on this peak. See Note B on how to Roll the Condenser.

NOTE D—Adjust compensator (21A) to the First signal peak from the tight (closed) position. If the compensator is correctly adjusted the image signal will be weakly heard by leaving the receiver dial at 12 M.C. and turning the signal generator to 11.090 M.C.

NOTE E—Adjust compensator (21B) to the Second signal peak from the tight (closed) position. If the compensator is correctly adjusted the image signal will be weakly heard by leaving the receiver at 18 M.C. and turning the signal generator to 18.910 M.C. When adjusting compensator (9) roll the tuning condenser. See Note B on how to roll the condenser.



(Pointer at Low Frequency end of Dial)
Tuning Condenser Maximum Capacity
(fully closed)
INSTALLATION OF DRIVE CORD