



## Models 33, 35, 37, 40

### SPECIFICATIONS — MODEL 35

**TYPE OF CIRCUIT:** Model 35 is a five (5) tube alternating current superheterodyne receiver. It incorporates such features of design as: Three tuning ranges as listed below; five Philco high-efficiency loktal tubes; automatic tone compensation; automatic volume control; two position tone control; and a pentode audio circuit.

**TUNING RANGES:** Three. 540 to 1600 K.C.; 2.3 to 7.0 M.C.; 6.8 to 24.0 M.C.

**INTERMEDIATE FREQUENCY:** 460 K.C.

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

**POWER CONSUMPTION:** 30 watts.

**AUDIO OUTPUT:** 1.5 watts.

**PHILCO TUBES USED:** (Five) 7A8E, converter; 7B7E, I.F., amplifier; 7B6, second detector, A.V.C. and first audio; 7B5E, audio power output and 7Y4, rectifier.

**CABINET DIMENSIONS:** Height 10 $\frac{1}{4}$ "; Width 14"; Depth 6 $\frac{1}{2}$ "; Bakelite.

### SPECIFICATIONS — MODEL 33, 37, 40

**TYPE OF CIRCUIT:** Models 33, 37 and 40 are six (6) tube alternating current superheterodyne receivers. Models 37 and 40 are equipped with six electric tuning push buttons. Pressing the left hand button turns the receiver off. Pressing any other button turns the receiver on. The other buttons are used for five favorite broadcast stations. Model 33 has the power switch incorporated in the two position tone control. All three models include such additional features as: Three tuning ranges as listed below; six Philco high-efficiency loktal tubes; automatic tone compensation; automatic volume control; two position tone control; and a pentode audio output circuit.

**TUNING RANGES:** (Three). 540 to 1600 K.C.; 2.3 to 7.0 M.C.; 6.8 to 24.0 M.C.

**INTERMEDIATE FREQUENCY:** 460 K.C.

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

**POWER CONSUMPTION:** 40 watts.

**AUDIO OUTPUT:** 1.5 watts.

**PHILCO TUBES USED:** (six) 7A7E, R.F. amplifier; 7J7E, converter; 7B7E, I.F. amplifier; 7B6, second detector, A.V.C. and first audio; 7B5E audio power output, and 7Y4 rectifier.

**CABINET DIMENSIONS:** Model 40—Height 36 $\frac{3}{4}$ "; width 23 $\frac{3}{4}$ "; depth 10 $\frac{1}{8}$ ". Models 33 and 37—Height 11 5/16"; width 15 $\frac{5}{8}$ "; depth 7".

### PROCEDURE FOR SETTING AND OPERATING THE ELECTRIC PUSH BUTTON TUNING

The automatic tuning mechanism of Models 37 and 40 is identical and consists of six (6) electrical push buttons, five (5) of the push buttons are used for selecting broadcast stations, and one as the power control (On-Off switch).

Select five of your favorite broadcast stations and remove

their call letters from the station call letter tab sheets supplied. Place each call letter tab in the tab space above each button which includes the frequencies of the desired stations. The frequency range of the buttons and corresponding padders is as follows:

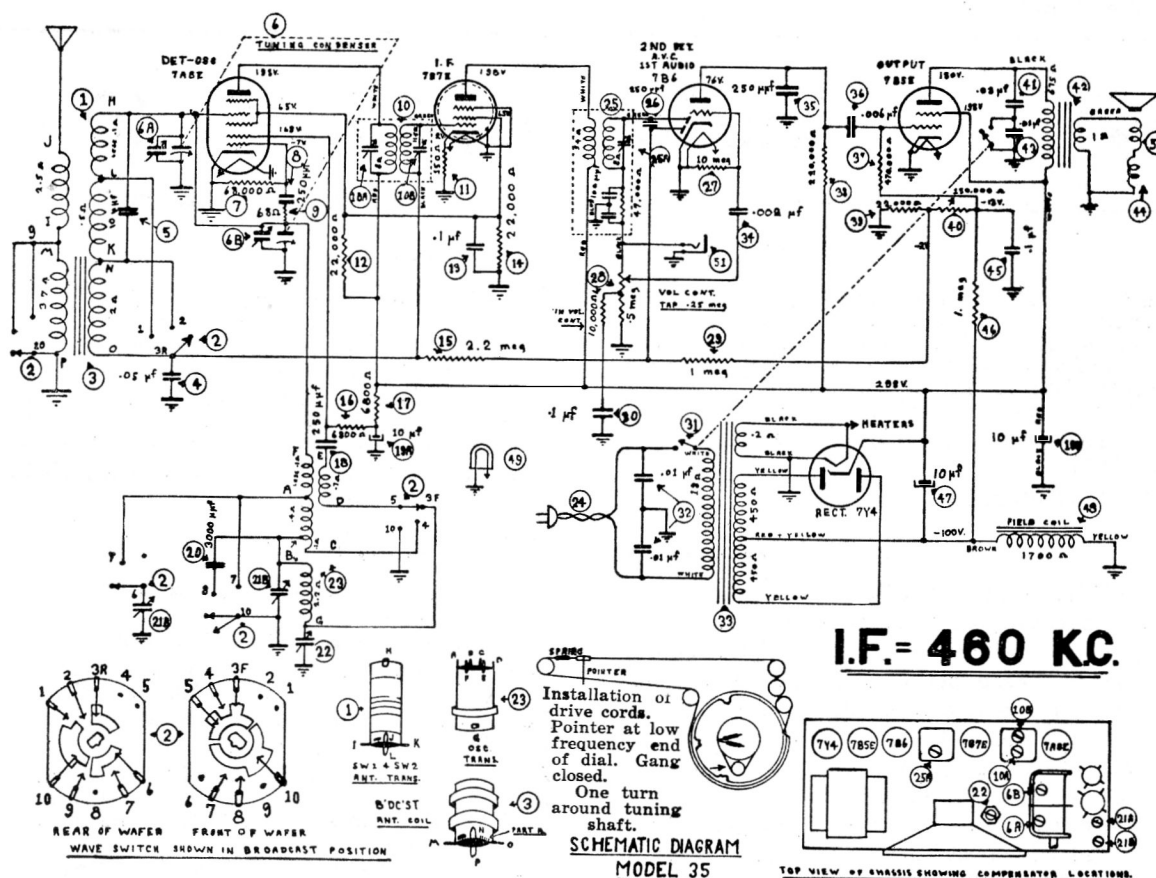
Padders (right to left from rear)	Circuit	Buttons (left to right from front)	Frequency Range
1	Ant. }	1	Power Switch
2	Osc. }	2	540-1030 K.C.
3	Ant. }	3	540-1030 K.C.
4	Osc. }	4	650-1150 K.C.
5	Ant. }	5	900-1420 K.C.
6	Osc. }	6	1160-1600 K.C.
7	Ant. }		
8	Osc. }		
9	Ant. }		
10	Osc. }		

The second button from the left looking at the front of the cabinet corresponds to the two right-hand padder screws looking at the rear and covers the lowest frequency range. With the "Tuning Range Selector" in broadcast position, tune in the station whose call letters appear above the second button. Then depressing the second button and turning the "Tuning Range Selector" to push button position, tune in this station by rotating the No. 2 "OSC" screw (next to the right end of the unit looking at the rear of the chassis). (NOTE: Inherent characteristics of these padders may cause some of them to cover a lower range than required to cover the broadcast band. This may cause the radio to howl or flutter when a station button is depressed. To correct this, loosen the "ANT" padder corresponding to the depressed station button.) Turn the "OSC" screw slowly and listen carefully or the station may be passed without noticing it. After the "OSC" screw has been adjusted for maximum volume, the corresponding "ANT" screw should be adjusted for maxi-

mum. For some stations, it may be necessary to readjust the "OSC" screw after the "ANT" screw has been set. Switching the "Tuning Range Selector" from broadcast position to the automatic push button position will enable you to make sure you have the correct station tuned in. When the first station has been set, the same procedure should be followed for the remaining buttons, first tuning in the desired station by means of the Station Selector.

To tune the set with the "Push Buttons", turn "Tuning Range Selector" to push button position and press in the button which corresponds to the call letters of the desired station. The volume of the program may be controlled with the manual volume control.

When this model is to be set up to receive the sound from television stations, the lowest frequency push button is used. Further details for setting up this receiver for operation with Philco Television Models will be supplied with these instruments, when they become available.



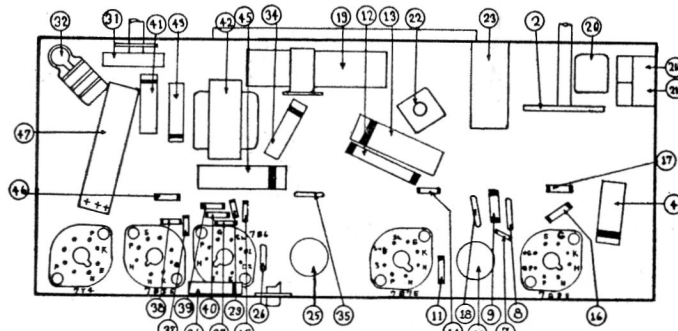
NOTE: Voltages shown on schematic diagram were measured with a 1000 ohm per volt meter such as Philco Model 026 or 028. Line voltage was 115 volts, volume control maximum, tone control high, tuning condenser closed and wave switch in "B'DC'ST" position.

### REPLACEMENT PARTS — MODEL 35

Schem. No.	Description	Part No.
1	Short Wave Ant. Transformer	32-3395
2	Wave Switch	42-1560
3	Broadcast Ant. Transformer	32-3165
4	Tubular Cond. (.05 mfd.)	30-4519
5	Mica Cond. (Part of S.W. Ant. Trans.)	
6	Tuning Condenser	31-2440
7	Resistor (68,000 ohm, 1/3 watt)	33-368244
8	Mica Condenser (250 mmfd.)	60-125157
9	Resistor (68 ohm, 1/2 watt)	33-068344
10	1st I.F. Trans. Assembly	32-3297
11	Resistor (150 ohm, 1/2 watt)	33-115344
12	Resistor (22,000 ohm, 1 watt)	33-322444
13	Tubular Cond. (.1 mfd.)	30-4586
14	Resistor (22,000 ohm, 1/3 watt)	33-322244
15	Resistor (2.2 meg., 1/3 watt)	33-522244
16	Resistor (6,800 ohm, 1/2 watt)	33-268344
17	Resistor (6,800 ohm, 1/2 watt)	33-268344
18	Mica Cond. (250 mmfd.)	60-125157
19	Electrolytic Cond. (10-10 mfd.)	30-2487
20	Mica Cond. (3,000 mmfd.)	60-230124
21	Dual Compensator	31-6343
22	Compensator	31-6289
23	Oscillator Transformer	32-3296
24	Line Cord	L-3199C
25	2nd I.F. Trans. Assembly	32-3399
26	Mica Cond. (250 mmfd.)	60-125157
27	Resistor (10 meg., 1/3 watt)	33-610244
28	Vol. Control (.5 meg., tap .25 meg.)	33-5391
29	Resistor (1 meg., 1/3 watt)	33-510244
30	Tubular Cond. (.1 mfd.)	30-4586
31	Power Switch and Tone Control	42-1520
32	Line Cond. (.01-.01 mfd. Bakelite)	3903-ODG
33	Power Trans. (50-60 cycle)	32-8055
34	Power Trans. (25-40 cycle)	32-8076
35	Tubular Cond. (.002 mfd.)	30-4579
36	Mica Cond. (250 mmfd.)	60-125157
37	Tubular Cond. (.006 mfd.)	30-4591
38	Resistor (470,000 ohm, 1/3 watt)	33-447244
39	Resistor (220,000 ohm, 1/3 watt)	33-422244
40	Resistor (22,000 ohm, 1/3 watt)	33-322244
41	Resistor (150,000 ohm, 1/3 watt)	33-415244
42	Tubular Cond. (.03 mfd.)	30-4517
43	Output Transformer	32-8063

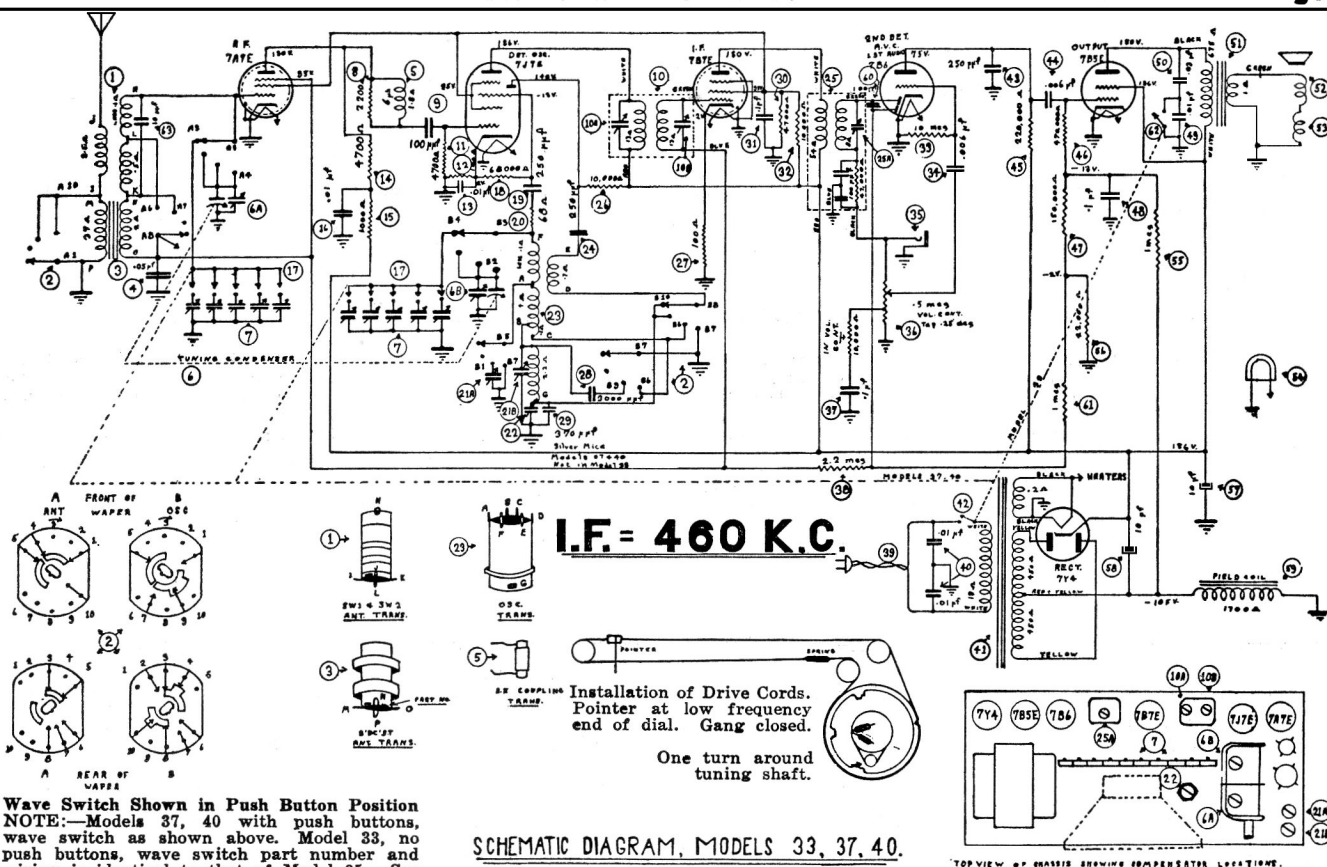
Schem. No.	Description	Part No.
43	Tubular Cond. (.01 mfd.)	30-4572
44	Hum Bucking Coil Speaker Part No.	32-9575
45	Tubular Cond. (.1 mfd.)	30-4586
46	Resistor (1 meg., 1/3 watt)	33-510244
46	Resistor (1 meg., 1/3 watt)	33-510244

Schem. No.	Description	Part No.
47	Electrolytic Cond. (10 mfd.)	30-2459
48	Field Coil, Speaker Part No.	32-9574
49	Pilot Bulb	34-2064
50	Voice Coil & Cone Replacement Kit	36-4126
51	Phono Jack	27-6149



Description	Part No.
Clip (Mtg. Osc. Trans.)	28-5003
Clip (Mtg. Ant. Trans.)	28-5002
Drive Cord (Pointer)	31-2460
Drive Cord (Tuning Cond.)	31-2441
Spring (Pointer Drive Cord)	28-8953
Spring (Tuning Shaft Assembly)	28-8751
Drum (Pointer Drive Cord)	38-9883
Pointer	56-1276
Scale	27-5586
Knob	27-4332

Description	Part No.
Speaker	36-1504
Loktal Socket	55-0575
Tuning Shaft	56-6052FA2
Insulating Bushing (Drive Shaft)	27-9437
Rubber Hose (Tuning Shaft)	57-1468FA2
Hairpin Clip (Tuning Shaft)	28-2043FA2
Washer ("C" Type, Tuning Shaft)	76-1115
Pilot Lamp Socket	10478F



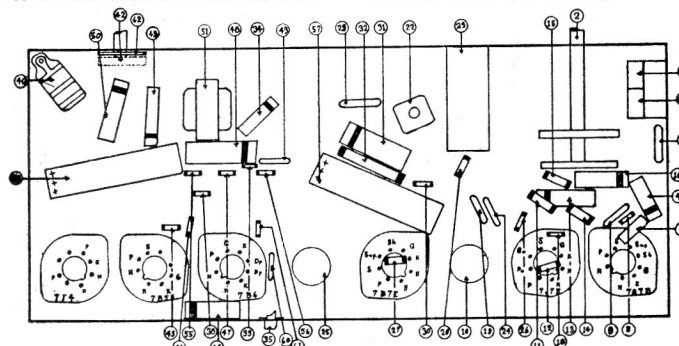
NOTE: Voltages shown on schematic diagram were measured with a 1000 ohm per volt meter such as Philco Model 026 or 028. Line voltage was 115 volts, volume control maximum, tone control high, tuning condenser closed and wave switch in "B'DC'ST" position.

### REPLACEMENT PARTS — MODELS 33, 37 and 40

Schem. No.	Description	Part No.
1	Short Wave Ant. Trans.	32-3395
2	Wave Switch, Models 37 & 40	42-1615
	Model 33	42-1560
3	Broadcast Ant. Transf.	32-3166
4	Tubular Cond. (.05 mfd.)	30-4519
5	R.F. Coupling Trans.	32-3397
6	Tuning Cond.	31-2440
7	Push Button Padder Strip (Models 37 & 40)	31-6372
8	Resistor (2200 ohm, 1/3 watt)	33-222244
9	Mica Cond. (100 mmfd.)	60-110157
10	1st I.F. Trans. Assembly	32-3398
11	Resistor (4700 ohm, 1/2 watt)	33-247344
12	Resistor (100 ohm, 1/2 watt)	33-110344
13	Tubular Cond. (.01 mfd.)	30-4572
14	Resistor (4700 ohm, 1/2 watt)	33-247344
15	Resistor (10,000 ohm, 1/3 watt)	33-310244
16	Tubular Cond. (.01 mfd.)	30-4572
17	Push Button Switch and Power Switch (Models 37 & 40)	22-0003
18	Resistor (68,000 ohm, 1/3 watt)	33-368244
19	Mica Cond. (250 mmfd.)	60-125157
20	Resistor (68 ohm, 1/2 watt)	33-068344
21	Dual Compensator	31-6343
22	Compensator, Models 37 & 40	31-6248
	Model 33	31-6289
23	Osc. Transformer	32-3296
24	Mica Cond. (250 mmfd.)	60-125157
25	2nd I.F. Trans. Assembly	32-3399
26	Resistor (10,000 ohm, 1/3 watt)	33-310244
27	Resistor (100 ohm, 1/2 watt)	33-110344
28	Mica Cond. (3000 mmfd.)	60-230124
29	Silver Mica Cond. (370 mmfd.) (Models 37 & 40 only)	30-1157
30	Resistor (47,000 ohm, 1/3 watt)	33-347244
31	Tubular Cond. (.1 mfd.)	30-4586
32	Resistor (10,000 ohm, 1 watt)	33-310444
33	Resistor (10 meg., 1/3 watt)	33-610244
34	Tubular Cond. (.006 mfd.)	30-4591
35	Phono Jack	27-6149
36	Vol. Control (.5 meg., Tap .25 meg.)	33-5391
37	Tubular Cond. (.1 mfd.)	30-4586
38	Resistor (2.2 meg., 1/3 watt)	33-522244
39	Line Cord	L-3199C
40	Line Cord	3903-ODG
41	Power Trans., 60 cycle	32-8055
	25 cycle	32-8076
42	Power Switch—Models 37 & 40, on Push Button Switch	
	Model 33, on Tone Control	
43	Mica Cond. (250 mmfd.)	60-125157

Schem. No.	Description	Part No.
44	Tubular Cond. (.006 mfd.)	30-4591
45	Resistor (220,000 ohm, 1/3 watt)	33-422244
46	Resistor (470,000 ohm, 1/3 watt)	33-447244
47	Resistor (150,000 ohm, 1/3 watt)	33-415244
48	Tubular Cond. (.1 mfd.)	30-4586
49	Tubular Cond. (.01 mfd.)	30-4572
50	Tubular Cond. (.03 mfd.)	30-4517
51	Output Transformer	32-8063
52	Voice Coil and Cone Replacement Kit	
	Models 33 & 37	36-4126
	Model 40	36-4169
53	Hum Bucking Coil, Models 33 & 37	32-9575
	Model 40	32-9581

Schem. No.	Description	Part No.
54	Pilot Bulb	34-2064
55	Resistor (1 meg., 1/3 watt)	33-510244
56	Resistor (22,000 ohm, 1/3 watt)	33-322244
57	Electrolytic Cond. (10 mfd.)	30-2459
58	Electrolytic Cond. (10 mfd.)	30-2459
59	Field Coil, Models 33 & 37	32-9574
	Model 40	32-9580
60	Mica Cond. (100 mmfd.)	60-110157
61	Resistor (1 meg., 1/3 watt)	33-510244
62	Tone Control, Models 37 & 40	42-1614
	Tone Control & Power Switch, Model 33	42-1520
63	Mica Cond. (10 mmfd.)	60-010337



### PART LOCATIONS, UNDERSIDE OF CHASSIS MISCELLANEOUS PARTS — MODELS 33, 37 and 40

Description	Part No.
Clip (Mtg. Osc. Coil)	28-5003
Clip (Mtg. Ant. Coil)	28-5002
Drive Cord (Pointer)	31-2442
Drive Cord (Tuning Cond.)	31-2441
Spring (Pointer Drive Cord)	28-8953
Spring (Tuning Shaft Drive)	28-8751
Drum (Pointer Drive Cord)	38-9883FA3
Pointer	56-1673
Scale, Models 37 & 40	27-5644
Model 33	27-5569
Knob	27-4332

Description	Part No.
Speaker, Models 33 & 37	36-1504
Model 40	36-1513
Loktal Socket	55-0575
Tuning Shaft	56-6052FA3
Insulating Bushing (Tuning Shaft)	27-9437
Rubber Hose (Tuning Shaft)	27-9432
Hairpin Clip (Tuning Shaft)	57-1468FA3
Washer ("C" Type, Tuning Shaft)	28-2043FA3
Pilot Lamp Socket	76-1115
Cabinet Model 33	01-0004
Model 37	01-0005
Model 40	01-0007
Bakelite Front, Model 33	27-4962

# ALIGNMENT OF COMPENSATORS

## EQUIPMENT REQUIRED

1. Signal Generator with a frequency range from 115 to 36,000 K.C., such as Philco Model 177.
2. Aligning Indicator—Philco Model 028, vacuum tube voltmeter and circuit tester incorporates sensitive audio output meter and vacuum tube

voltmeter. This instrument can be used as an aligning indicator.

3. Fibre Handle Screw Driver, Philco Part No. 45-2610. When using the vacuum tube voltmeter for aligning the receiver, an aligning adaptor Part No. 45-2767 is required.

## CONNECTING ALIGNING INSTRUMENTS

1. Audio Output Meter: If the Philco Model 028 audio output meter is used, it is connected to the speaker voice coil terminals or the plate and screen terminals of the 7B5E tube. Adjust the meter to use the 0 to 10 volt A.C. scale.

2. Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator make the following connections:

**Adjusting I.F. Circuit.** Remove the 7A7E R.F. tube from its socket and insert the aligning adaptor, then replace the tube in the adaptor. Connect the negative terminal of the vacuum tube voltmeter to the light colored wire which protrudes from the side of the adaptor. Attach the positive terminal of the vacuum tube voltmeter to the black wire of the adaptor.

**Adjusting R.F. Circuit:** To adjust the R.F. circuit, the aligning adaptor is inserted in the 7B6 second detector tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the paragraph above. With the voltmeter connected in this manner, a very sensitive indication of the A.V.C. voltage is obtained when the padders are adjusted.

After connecting the aligning adaptors, adjust the compensators as shown in the tabulation below. Locations of the compensators are shown in Schematic Diagram. If the aligning meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

## MODELS 33, 35, 37, 40

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna	Frequency Setting	Dial Setting	Control Setting	Adjust Compensators in Order See Fig.	
1	Antenna Lead	.1 mfd.	460 K.C.	580 K.C.	Vol. Max. Range Switch "B'DC'ST"	10A, 10B, 25A	
2	Antenna Lead	400 ohm	21 M.C.	21 M.C.	Vol. Max. Range Switch "SW2"	6B	Check Image at 20.080 M.C. Note "A" & "B"
3	Antenna Lead	400 ohm	21 M.C.	21 M.C.	Vol. Max. Range Switch "SW2"	6A	Pad Antenna Circuit Note C
4	Antenna Lead	400 ohm	6 M.C.	6 M.C.	Vol. Max. Range Switch "SW1"	21A	Rock Tuning Cond. Note D
5	Antenna Lead	200 mmfd.	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "B'DC'ST"	21B	Rock Tuning Cond. Note D
6	Antenna Lead	200 mmfd.	600 K.C.	600 K.C.	Vol. Max. Range Switch "B'DC'ST"	22	Rock Tuning Cond. Note D
7	Antenna Lead	200 mmfd.	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "B'DC'ST"	21B	Rock Tuning Cond. Note D

**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 left index line at the low frequency end of the broadcast scale.

**NOTE B—**To accurately adjust the high frequency compensator to the fundamental instead of the image signal, turn the oscillator compensator (on top of the rear section of the tuning condenser) 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 C—**The antenna compensator is located on top of the front section of the tuning condenser and is peaked on 21 megacycles. It may be found necessary to rock the tuning condenser to obtain maximum output while adjusting the antenna compensator. See Note D.

**NOTE D—**When adjusting the oscillator compensator for band "SW1", the oscillator compensator at the high and low ends of band "B'DC'ST" and the antenna compensator on band "SW2"; the receiver Tuning Condenser must be adjusted (rocked) 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 of the receiver is continued until there is no further gain in output reading.

# PHILCO PRODUCTS LIMITED

PARTS AND SERVICE DIVISION  
TORONTO, ONT.