



Models 40-195, 40-200

SPECIFICATIONS

TYPE OF CIRCUIT: Models 40-195 and 40-200 are Electric Push-Button and dial tuned radios incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. These models are also designed to receive the sound of a television program tuned in by special type Philco Television Sets.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

Included in the built-in aerial system is a statically shielded loop for broadcast band reception and a short wave receiving loop. The feature of the built-in broadcast band statically shielded loop is that it may 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.

In general, both radios are similar with the exception of the number of tubes used and cabinet design. Models 40-195 and 40-200 employ ten and eleven tubes respectively.

In addition, other features of design are: Continuously variable tone control; three tuning ranges covering the frequencies listed below; automatic bass compensation and degenerative push-pull pentode audio output circuit. Outside aerial connections are also provided for remote localities where station signal strength is very weak.

Each receiver is equipped with eight electric tuning push buttons for automatically selecting stations. Seven of the push buttons are used for broadcast stations and one push button (left hand push button preferably) may be set up for use with a Philco wireless Record Player or the sound programs tuned in by Special Philco Television sets.

POWER SUPPLY: 115 Volts, 25 and 60 cycle A. C.

POWER CONSUMPTION: 110 watts.

FREQUENCY TUNING RANGES: (Three)

540 to 1550 K. C. 1.5 to 4.0 M. C. 6.0 to 18 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

AUDIO OUTPUT: 5 watts.

PHILCO TUBES USED: Model 40-195

1232, R. F.; 7J7, Converter; 7B7, I. F.; 7C6, Second Detector, A. V. C., and First Audio; 37, Phase Inverter; two 37, Drivers; two 42, Audio Power Outputs; 80, Rectifier.

Model 40-200

1232, R. F.; 7J7, Converter; 7B7, I. F.; 7A6 Detector A. V. C.; 7C6 First Audio; 37, Phase Inverter; two 37, Audio Drivers; two 42, Power Outputs; 80, Rectifier.

CABINET DIMENSIONS:	Height	Width	Depth
Model 40-195 type "XX".....	38"	29½"	13¾"
Model 40-200 type "RX".....	36¾"	34¾"	14¾"

Adjusting Electric Push Button Tuning

In order to adjust the electric push buttons accurately for reception of broadcast stations, a vacuum tube voltmeter such as Philco Model 027 and 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 eight of the most popular stations received in the locality. Insert the station call letters into the windows above the buttons. The station with the lowest frequency is placed in the first button on the left and the highest frequency is placed in the button on the extreme right. Each push button is adjusted by two set screws located on the rear of the push button unit. Each set of screws is numbered and covers a frequency range as follows:

Push-Button	Frequency Range
1, 2, 3	540-1030 K. C.
4, 5	670-1160 K. C.
6, 7, 8	900-1600 K. C.

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

1. Remove the 7C6 A.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 wire which protrudes from the side of the adaptor. Attach the positive terminal of the voltmeter to the chassis.

2. Turn the receiver on and set the tuning range disc to "Broadcast" (Manual Tuning).

3. Set up the Model 077 Station Setter about 3 feet from the receiver and connect a loop constructed out of about 6 feet of wire 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". Manually tune in the first station to be set up on push button No. 1. After doing this set the indicator of the 077 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. Turn the receiver tuning range disc to "Push Button" and press in No. 1 button. Using the insulated screw driver turn the No. 1 "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. Station No. 1 is now adjusted properly. After setting up the first station the same procedure as outlined above is used for the remaining stations.

When this model is to be set up to receive the sound of a television program tuned in by the special type Philco television sets or when it is to be used in conjunction with a Philco Record Player, push-button No. 1 should be used. To tune in these programs, the same procedure as given for ordinary broadcast stations as outlined above is used.

Further details for setting up this receiver for operation with Philco Television sets and Record Players are supplied with the instruments.

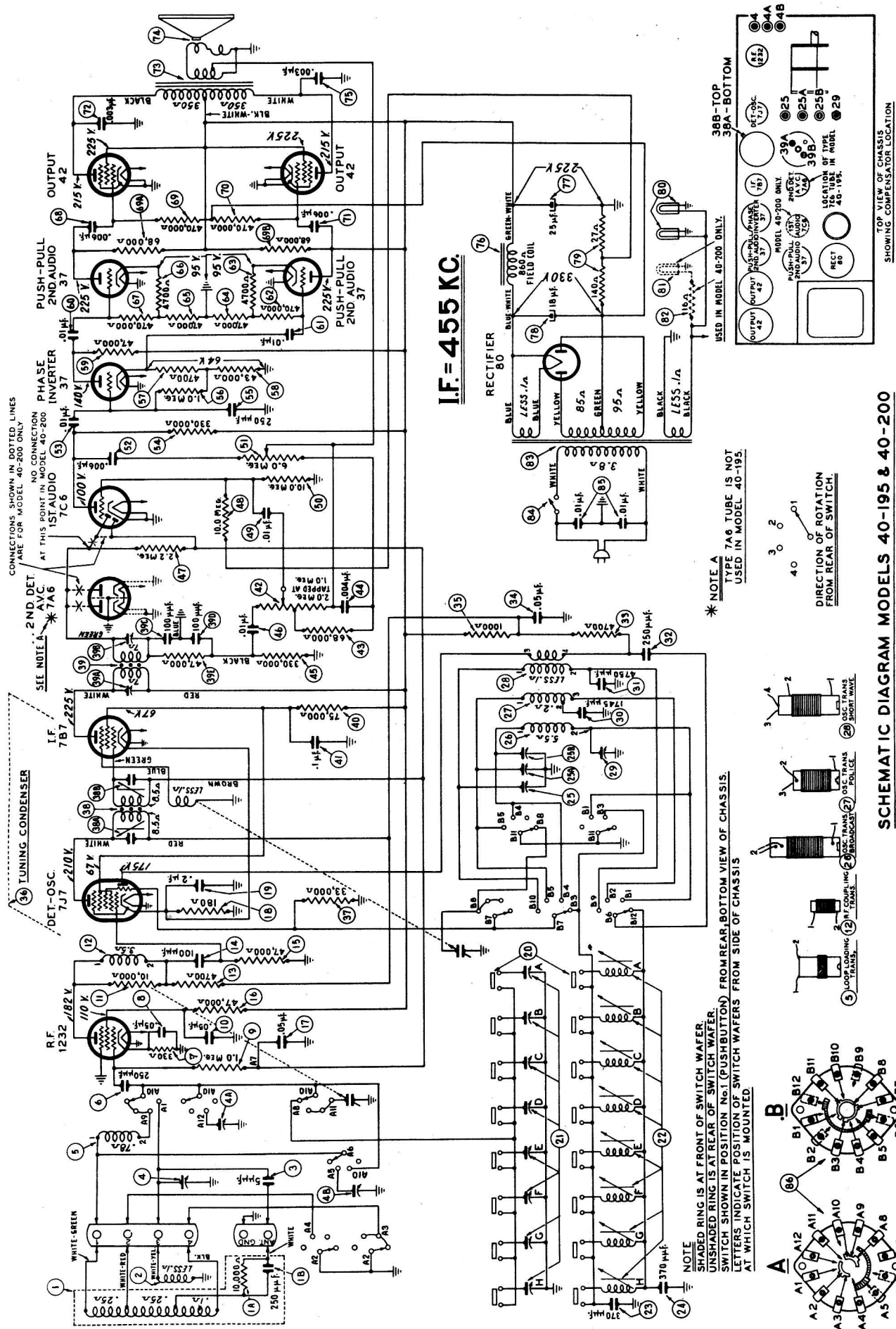


Fig. 1 — Schematic Diagram

The voltages indicated were measured with a Philco Model 027 Voltmeter (1000 ohms per volt) — Power supply 115 volts, 60 cycle — Volume control minimum — No signal being received — Range switch “Brdst.”

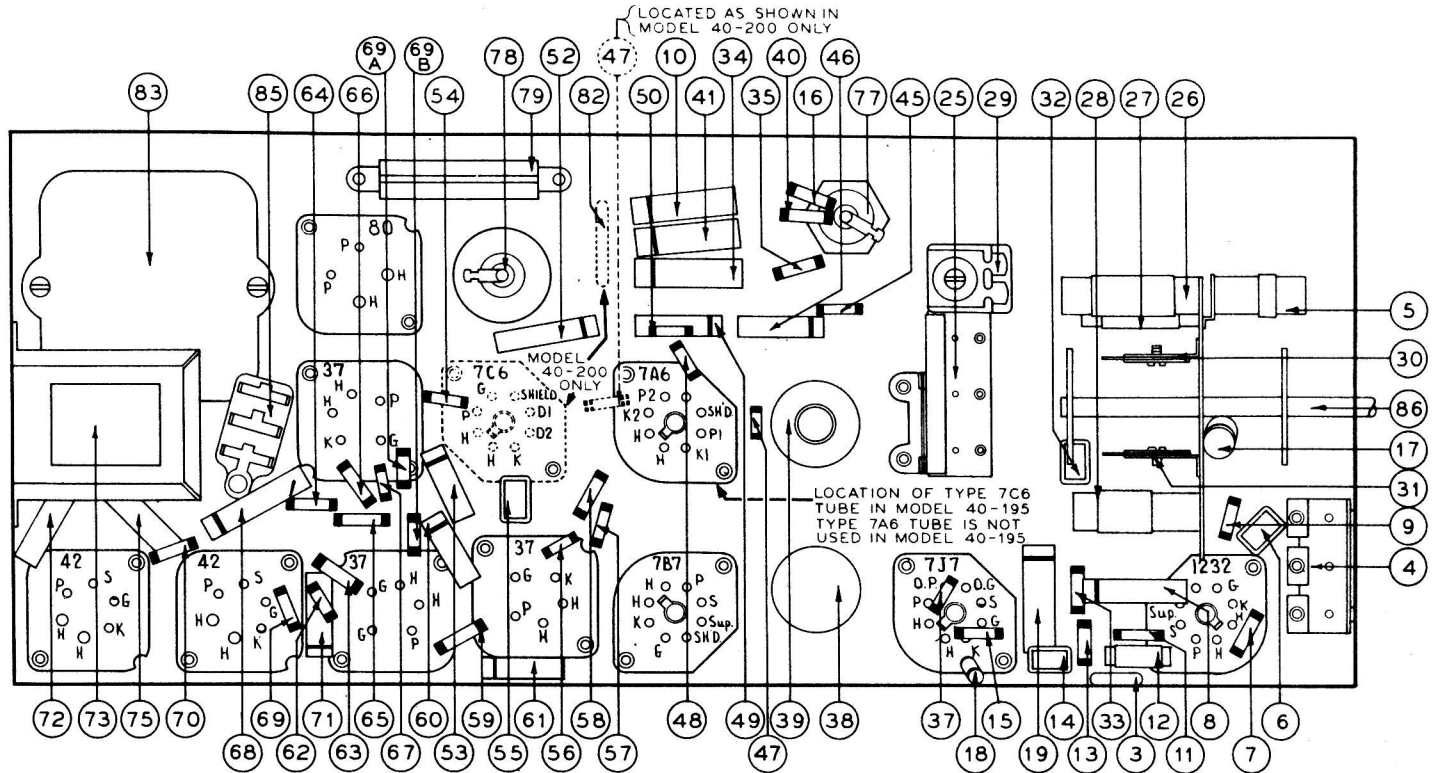


Fig. 2

**Replacement Parts
Models 40-195 and 40-200**

SCHE. No.	DESCRIPTION	PART No.	LIST PRICE	SCHE. No.	DESCRIPTION	PART No.	LIST PRICE
1	Loop Assy. (Broadcast)	38-9881		39C	Part of No. 39		
1A	Resistor (10,000 ohms, 1/2 watt)	33-310339	.17	39D	Part of No. 39		
1B	Mica Cond. (250 mmfd.)	61-0033	.20	39E	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
2	Loop Assy. (Short Wave)	38-9867		40	Resistor (75,000 ohms, 1/2 watt)	33-375339	.17
3	Mica Cond. (5 mmfd.)	30-1097	.20	41	Tubular Cond. (.1 mfd.)	30-4455	.20
4	Compensator (3 section)	31-6305		42	Volume Control (2 meg.)	33-5286	1.00
4A	Part of No. 4			43	Resistor (68,000 ohms, 1/2 watt)	33-368339	.17
4B	Part of No. 4			44	Tubular Cond. (.004 mfd.)	30-4334	.15
5	Loop Loading Coil	32-3252		45	Resistor (330,000 ohms, 1/2 watt)	33-433339	.17
5	Mica Cond. (250 mmfd.)	61-0033	.20	46	Tubular Cond. (.01 mfd.)	30-4572	.15
7	Resistor (330 ohms, 1/2 watt)	33-133339	.17	47	Resistor (2.2 meg., 1/2 watt)	33-522339	.17
8	Tubular Cond. (.05 mfd.)	30-4444	.15	48	Resistor (10.0 meg., 1/2 watt)	33-610339	.17
9	Resistor (1.0 meg., 1/2 watt)	33-510339	.17	49	Tubular Cond. (.01 mfd.)	30-4572	.15
10	Tubular Cond. (.05 mfd.)	30-4518	.15	50	Resistor (10.0 meg., 1/2 watt)	33-610339	.17
11	Resistor (10,000 ohms, 1/2 watt)	33-310339	.17	51	Tone Control (6 meg.)	33-5325	
12	R. F. Coupling Coil	32-3194		52	Tubular Cond. (.006 mfd.)	30-4445	.15
13	Resistor (4700 ohms, 1/2 watt)	33-247339	.17	53	Tubular Cond. (.01 mfd.)	30-4572	.15
14	Mica Cond. (100 mmfd.)	30-1128	.15	54	Resistor (330,000 ohms, 1/2 watt)	33-433339	.17
15	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17	55	Mica Cond. (250 mmfd.)	61-0033	.20
16	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17	56	Resistor (1.0 meg., 1/2 watt)	33-510339	.17
17	Tubular Cond. (.05 mfd.)	30-4519	.15	57	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
18	Resistor (180 ohms, 1/2 watt)	33-118339	.17	58	Resistor (43,000 ohms, 1/2 watt)	33-343339	.17
19	Tubular Cond. (.2 mfd.)	30-4587	.20	59	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
20	Push Button Switch	42-1515		60	Tubular Cond. (.01 mfd.)	30-4572	.15
21	Compensator Strip	31-6313		61	Tubular Cond. (.01 mfd.)	30-4572	.15
Compensator				62	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
21A	No. 1 (540-1030 K.C.)	Part of 31-6313		63	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
21B	No. 2 (540-1030 K.C.)			64	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
21C	No. 3 (540-1030 K.C.)			65	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
21D	No. 4 (670-1160 K.C.)			66	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
21E	No. 5 (670-1160 K.C.)			67	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
21F	No. 6 (900-1600 K.C.)			68	Tubular Cond. (.006 mfd.)	30-4583	.15
21G	No. 7 (900-1600 K.C.)			69	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
21H	No. 8 (900-1600 K.C.)			70	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
22	Coil Strip (Complete)	32-3042	.50	71	Tubular Cond. (.006 mfd.)	30-4583	.15
22A	Coil No. 1 (540-1030 K.C.)	32-3042	.50	72	Tubular Cond. (.003 mfd.)	30-4469	.20
22B	Coil No. 2 (540-1030 K.C.)	32-3042	.50	73	Output Trans.	32-7981	1.80
22C	Coil No. 3 (540-1030 K.C.)	32-3042	.50	74	Cone and Voice Coil Assy. (for Speaker 36-1450-2)	36-4089	2.50
22D	Coil No. 4 (670-1160 K.C.)	32-3042	.50		(for Speaker 36-1450-4)	36-4111	2.50
22E	Coil No. 5 (670-1160 K.C.)	32-3042	.50	75	Tubular Cond. (.003 mfd.)	30-4469	.20
22F	Coil No. 6 (900-1600 K.C.)	32-3041	.50	76	Field Coil (Replace Spkr. No. 36-1450)	30-2333	1.00
22G	Coil No. 7 (900-1600 K.C.)	32-3041	.50	77	Electrolytic Con. (25 mfd., 250V.)	30-2335	1.35
22H	Coil No. 8 (900-1600 K.C.)	32-3041	.50	78	Electrolytic Con. (18 mfd., 400V.)	30-2335	1.35
23	Silvered Mica Cond. (370 mmfd.)	30-1110	.45	79	B. C. Resistor	33-3376	
24	Silvered Mica Cond. (370 mmfd.)	30-1110	.45	80	Pilot Lamps	34-2064	.09
25	Compensator (3 section)	31-6092	.60	81	Pilot Lamps	34-2210	.18
25A	Part of No. 25			82	Resistor (16 ohms, pilot lamp)	33-016431	.20
25B	Part of No. 25			83	Power Trans. (110V, 60 cycle)	32-8059	
26	Broadcast Oscillator Coil	32-3240		84	A. C. Switch	42-1517	
27	Police Oscillator Coil	32-3052	.75	85	Line Con. (.01-.01 mfd., Bakelite)	3903-DG	.30
28	Short Wave Oscillator Coil	32-3242		86	Wave Switch	42-1507	
29	Compensator	31-6230	.40				
30	Tracking Cond. (1745 mmfd.)	31-6307					
31	Tracking Cond. (4750 mmfd.)	31-6306					
32	Mica Cond. (250 mmfd.)	61-0033	.20				
33	Resistor (4700 ohms, 1/2 watt)	33-247339	.17				
34	Tubular Cond. (.05 mfd.)	30-4518	.15				
35	Resistor 1000 ohms, 1/2 watt)	33-210339	.17				
36	Tuning Cond. Assy.	31-2389					
37	Resistor (33,000 ohms, 1/2 watt)	33-333339	.17				
38	1st I. F. Trans. Assy.	32-3243					
39	2nd I. F. Trans. Assy.	32-3250					
39A	Part of No. 39						
39B	Part of No. 39						

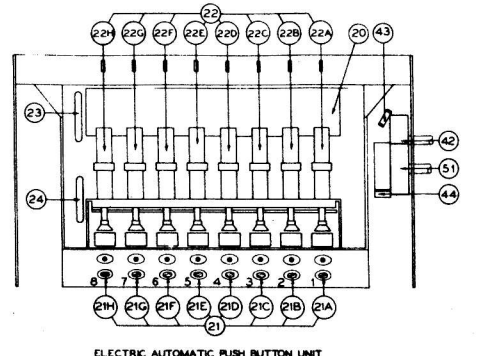


Fig. 3

SCHE. No.	DESCRIPTION	PART No.	LIST PRICE
	Coupling Assy. (Tuning Cond.)	31-2291	.35
	Dial	27-5513	
	Dial Clamp	56-1034	.05
	Dial Gasket	27-9224	.01
	Drive Cord Assy. (Pointer)	31-2316	.25
	Drive Cord Assy. (Tuning Cond.)	31-2350	.20
	Disc Control (Tuning)	27-4766	.30
	Disc Control (Volume)	27-4765	.30
	Disc Control (Tone)	27-4764	.30
	Disc Control (Wave Switch)	27-4767	.35
	Drum Assy. (Tuning Cond.)	38-9716	.60
	Drum Bracket & Bearing Assy.	38-9662	.10
	Pointer (Dial)	56-1033	.15
	Pilot Light Jewel	27-4777	.10
	Knobs (Push Buttons)	27-4852	
	Shaft (Control Drums)	28-6924	.05
	Spring (Drive Cord)	28-8913	.05
	Socket Assy. (Dial Lamp)	38-9694	.20
	Socket Assy. (Pilot Lamp)	38-9695	.20
	Socket (5 Prong, 37-Tube)	27-6035	.40
	Socket (6 Prong, 42-Tube)	27-6036	.11
	Socket (4 Prong, 80-Tube)	27-6044	.10
	Socket (Lokalt, 7J7-Tube)	27-6129	
	Socket (Lokalt, 7A6, 7C6, Tubes)	27-6131	
	Speaker	36-1450	9.00
	Tab Kit	40-6475	
	Phono Tab	27-9418	
	Dial Tab	27-5530	
MOUNTING PARTS			
	Grommet (Push Button Sw. Mtg.)	27-4596	.03
	Grommet (Tuning Unit Assy. Mtg.)	3914	.02
	Screw (Bezel Mtg.)	3915	.02
	Screw (Bezel Mtg.)	W-1834	.90 Per C.
	Nut (Spkr. Mtg.)	W-124	.35 Per C.
	Screw (Loop Mtg. Rail)	W-546	.45 Per C.

**Miscellaneous Parts
Model 40-200**

Bezel Assy.	40-6490	
Bearing (Spkr. Shaft)	56-1036	.10
Cable and Plug (Power Supply)	L-2778	.40
Cable (Speaker)	41-3430	.50

Prices subject to change without notice

Aligning of Compensating Condensers

Equipment Required

(1) Signal Generator. In order to properly adjust this receiver an accurately calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K. C. (2) Indicating Device, to obtain maximum signal strength and accurate adjustment of the padders a vacuum tube voltmeter and circuit tester such as Philco Models 027 and 028 is recommended. When using

the vacuum tube voltmeter, an aligning adaptor Philco part No. 45-2767 is necessary for connecting to the A. V. C. circuit. These testers also contain an audio output meter which may also be used as an indicating device. (3) Aligning Tools, fiber handle screw driver Philco part No. 45-2610 and fiber wrench Philco part No. 7696.

Connecting Aligning Instruments

VACUUM TUBE VOLTMETER — To use the vacuum tube voltmeter as an alignment indicator make the following connections:

1. ADJUSTING I. F. CIRCUIT:

Remove the 1232 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 wire which protrudes from the side of the adaptor. Attach the positive terminal of the voltmeter to the chassis.

2. ADJUSTING R. F. CIRCUIT:

To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 A. F. tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the above paragraph.

With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted. If an audio output meter is used, connect it to the plate and socket terminals of the 42 type tube and adjust the output meter for the 0 to 30 A. C. scale.

After connecting the aligning indicator, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on the schematic diagram page No. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

SIGNAL GENERATOR: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis 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.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order See Fig.	
1	High Side to No. 1 Ter. Loop Panel	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst."	39B, 39A 38B, 38A	See Note A
2	Use Loop on Generator		1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst."	29B, 4B	See Note B
3	Use Loop on Generator		580 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst."	29	Roll Tuning Condenser Note C
4	Use Loop on Generator		1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst."	25B, 4B	
5	Use Loop on Generator		3.5 M. C.	3.5 M. C.	Vol. Max. Range Switch "Police"	25A, 4A	
6	Use Loop on Generator		18.0 M. C.	18.0 M. C.	Vol. Max. Range Switch "S. W."	25, 4	Check Image Signal Note D

NOTE A — A "Dummy Antenna" consisting of a .1 mfd. condenser is connected in series with the signal generator output lead (high side).

NOTE B — **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 Fig. 4.

NOTE C — When adjusting the low frequency compensator of Range One (Broadcast) or the antenna and R. F. compensators of the high frequency tuning ranges; 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

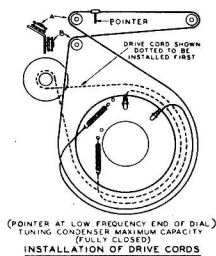


Fig. 4

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 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 910 K. C. below the frequency being used on any high frequency range.

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.

PHILCO RADIO AND TELEVISION CORPORATION

Parts and Service Division

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