

Philco Radio & Television Corp.

Model: 40-200

Chassis:

Year: Pre August 1939

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

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SEE MODELS
BELOW

PHILCO RADIO & TELEVISION CORP.

SETTING AND OPERATING ELECTRIC PUSH-BUTTON TUNING

In order to adjust the electric automatic tuning push-button accurately for reception of broadcast stations, a signal generator, such as Philco Model 077, and a padding screw driver, Philco Part No. 45-2610, are required. With this equipment at hand, proceed as follows:—

1—Select five (5); seven (7) or eight (8) of the most popular stations received in the locality (depending on the number of push-buttons on the model to be adjusted). 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 station in the extreme right button. Each push-button is adjusted by two set screws. These set screws are located on the rear of the chassis or push-button unit. Each set of screws is numbered and covers a frequency range as follows:—

FREQUENCY RANGES OF PUSH-BUTTONS

Models 40-100, 40-110		Models 40-195, 40-200		Models 40-160, 40-165	
Push-Button	Frequency Range	Push-Button	Frequency Range	Push-Button	Frequency Range
1	540-1030 K. C.	1, 2, 3	540-1030 K. C.	1	540-1000 K. C.
2	650-1100 K. C.	4, 5	670-1100 K. C.	2	650-1100 K. C.
3	650-1100 K. C.	6, 7, 8	900-1600 K. C.	3	740-1300 K. C.
4	740-1240 K. C.			4	900-1500 K. C.
5	1160-1600 K. C.			5	1100-1600 K. C.
6	Dial				

Models 40-124, 40-125, 40-135, 40-145, 40-303, 40-506, 40-507, 40-525 (121), 40-526 (121)		Models 40-150, 40-155, 40-180, 40-185, 40-190, 40-508, 40-509	
Push-Button	Frequency Range	Push-Button	Frequency Range
1	540-1030 K. C.	1, 2, 3	540-1060 K. C.
2	650-1100 K. C.	4, 5	650-1110 K. C.
3	740-1240 K. C.	6, 7	920-1600 K. C.
4	900-1470 K. C.		
5	1160-1600 K. C.		
6	Dial		

Looking at the front of the cabinet, the first button on the left is adjusted by "Osc." and "Ant." set screws No. 1; the next push-button by "Osc." and "Ant." set screws No. 2, and the remaining push-buttons in order.

2—Turn the receiver "on" and set the "Tuning Range Selector" or push-button for "Dial" tuning.

3—Set up the Model 077 signal generator about 3 feet from the receiver and connect a loop aerial (made from a few turns of wire 12 inches 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 on the radio the first station to be set up; (usually No. 1 push-button first). 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.

5—Turn the receiver tuning range selector to "push-button" and press in No. 1 button. (Models without a tuning range selector, simply press in push-button to be set up). Using the insulated screw

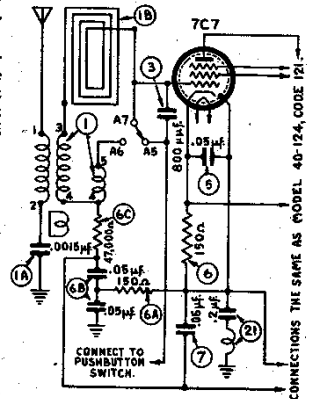
driver, turn the No. 1 "Osc." screw until the broadcast station identified by the signal generator is heard; then turn signal generator indicator off the frequency of the station.

6—Readjust No. 1 "Osc." and "Ant." screws until the station is heard clearly and distinctly. The adjustment of No. 1 push-button is then complete. After setting up the first station the same procedure as outlined above is used for the remaining stations.

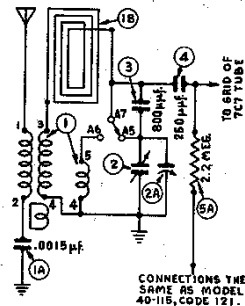
While the above procedure is satisfactory in setting up push-buttons for stations, a very accurate adjustment can be obtained with a vacuum tube voltmeter. The instructions for using a vacuum tube voltmeter will be found on page 10 under "Using Vacuum Tube Voltmeter for Aligning Compensators and Adjusting Push-Buttons."

When any of these models are to be set up to receive the sound of a television program, tuned in by special type Philco television sets, or if they are to be used in conjunction with a Philco Record Player, push-button No. 1 should be used. To adjust the push-button on these instruments, the same procedure 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.



CONNECTIONS FOR MODEL 40-124 CODE 122



CONNECTIONS FOR MODEL 40-115 CODE 122

MODEL 40-124, CODE 122

Model 40-124, Code 122, is similar to Code 121 with the addition of a loop aerial mounted inside the cabinet and several part changes in the aerial circuit. These changes are shown in the following circuit diagram and parts list. The service information in RIDER'S VOLUME XI, for Model 40-124, Code 121, with these changes, applies to Model 40-124, Code 122.

SCHEMATIC NUMBER	DESCRIPTION	PART No. CODE 122
1	Antenna Transformer	32-3404
1A	Tubular Condenser (.0015 mfd.)	30-4555
1B	Loop Assembly	32-3411
2	Tuning Condenser	31-2450
3	Mica Condenser (800 mmfd.)	30-1135
4	Not used.	
5	Tubular Condenser (.05 mfd.)	30-4519
6	Resistor (150 ohm, 1/2 watt)	33-115336
6A	Resistor (150 ohm, 1/2 watt)	33-115336
6B	Tubular Condenser (.05, .05 mfd.)	30-4522
6C	Resistor (47,000 ohms, 1/2 watt)	33-347339
7	Tubular Condenser (.05 mfd.)	30-4519
21	Choke and Condenser Assembly (2 mfd.)	76-1034

Model 40-115, Code 122, is similar to Code 121 with the addition of a loop aerial mounted inside the cabinet and several part changes in the aerial circuit. These changes are shown in the following circuit diagram and parts list. The service information in RIDER MANUAL VOL. XI for Model 40-115, Code 121, with these changes, applies to Model 40-115, Code 122.

SCHEMATIC NUMBER	DESCRIPTION	PART No. CODE 122
1	Antenna Transformer	32-3404
1A	Tubular Condenser (.0015 mfd.)	30-4555
1B	Loop Assembly	32-3405
2	Tuning Condenser	31-2450
3	Mica Condenser (800 mmfd.)	30-1135
	Cabinet	10432B

MODELS 39-30,39-35
 MODELS 40-150,40-155
 MODEL 40-160
 MODELS 40-180,40-185,40-190
 MODELS 40-195,40-200

PHILCO RADIO & TELEV. CORP.

MODEL 108
 Tuner Data
 MODELS 40-120,40-125
 Alignment, Trimmers

EQUIPMENT REQUIRED: MODELS 40-120,40-125.

- (1) Signal Generator; Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36,000 K. C. is the correct instrument for this purpose.
- (2) Output Meter; Philco Models 027 or 028 Vacuum Tube Voltmeters and Circuit Testers incorporate a sensitive output meter and are recommended.
- (3) Philco Fiber Handle Screw Driver, Part No. 45-2610. Aligning adapter Part No. 45-2767.

OUTPUT METER: The Philco 027 or 028 Output Meter is connected to the plate and screen terminals of the type 35A5 tube and adjusted for the 0 to 30 V. A. C. scales.

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

Remove the 7C6 tube from its socket and insert the aligning adapter, Part No. 45-2767, 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. The positive terminal is connected to the chassis. After connecting the output meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on Fig. 2. 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	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	7C7 See Note C	.1 mf.	455 K. C.	550 K. C.	Vol. Cont. Max.	14A, 14B, 15A	Push "IN" Manual Button Model 40-125
2	Ant. Ter.	10 mmf.	1600 K. C.	1600 K. C.	Vol. Cont. Max.	2B	See Note B See Note C
3	Ant. Ter.	10 mmf.	1400 K. C.	1400 K. C.	Vol. Cont. Max.	2A	

NOTE A — The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (High side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B — **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, the tuning pointer is set horizontal at the low frequency end of the scale (540 K. C.).

NOTE C — Compensators 2A and 2B are at the top of the tuning condenser. Compensator 2A is on the front section and compensator 2B on the rear section. When padding the I. F. the signal generator can be attached to the 7C7 grid on the front section of the tuning condenser.

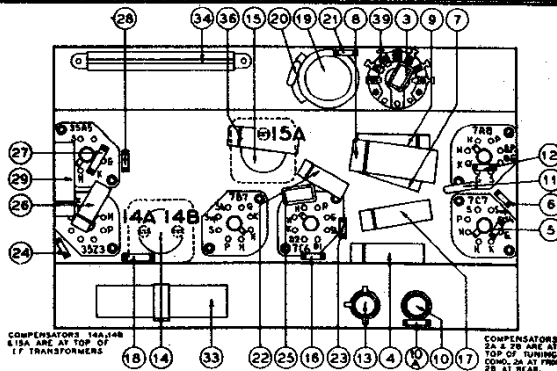


Fig. 1

Adjusting Push Button Tuning - MODELS 39-30,39-35,108 (CODE 121); 40-150,40-155; 40-160; 40-195,40-200;40-180,40-185,40-190.(FOR BUTTON ADJUSTMENT FREQUENCIES FOR MODELS 39-30,39-35, & 108 (CODE 121); SEE PARTS LISTS OF THESE MODELS).

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:

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:

MODEL 40-160

Push Button	Frequency Range
1	540-1000 K. C.
2	650-1100 K. C.
3	740-1300 K. C.
4	900-1500 K. C.
5	1100-1600 K. C.

MODELS 40-195, 40-200

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

MODELS 40-150,40-155,40-180,40-185,40-190.

Push-Button	Frequency Range
1, 2, 3	540-1060 K. C.
4, 5	650-1110 K. C.
6, 7	920-1600 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.

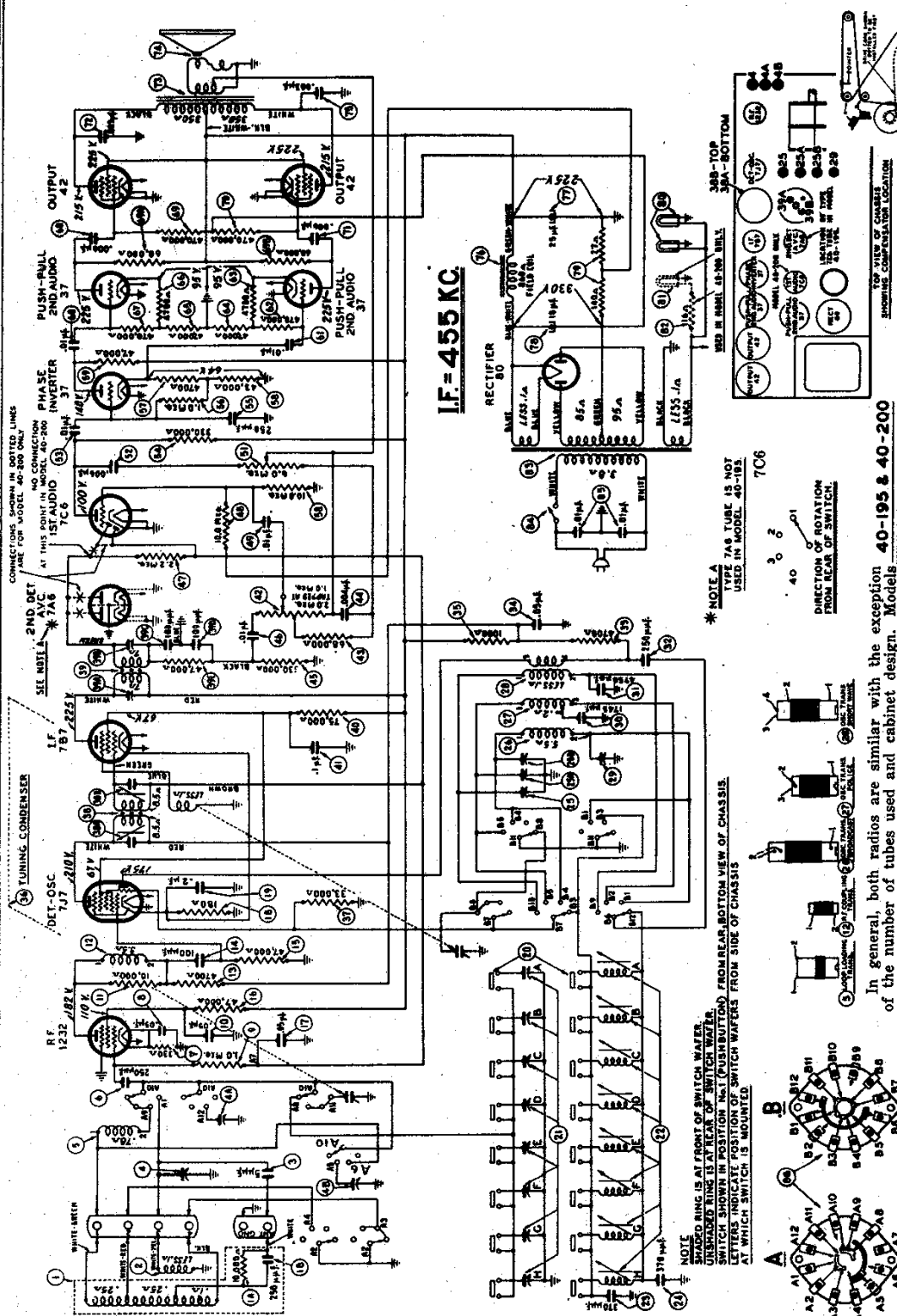
1. Remove the 7C6 A.F. tube from its socket and insert the aligning adapter, then replace the tube in the adapter. Connect the negative terminal of the vacuum tube voltmeter to the wire which protrudes from the side of the adapter. Attach the positive terminal of the voltmeter to the chassis.

2. 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.

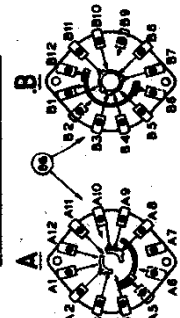
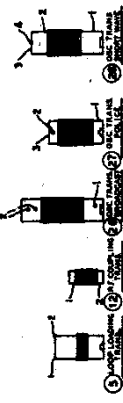
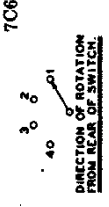
When this model is to be set up to receive the sound of a television program tuned in by the special type Philco television sets or when it is to be used in conjunction with a Philco Record Player, push-button No. 1 should be used. To tune in these programs, the same procedure as given for ordinary broadcast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

MODELS 40-195
40-200
40-201(121, 122)



I.F. 455 KC.

* NOTE A TYPE 7A6 TUBE IS NOT USED IN MODEL 40-195.



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.

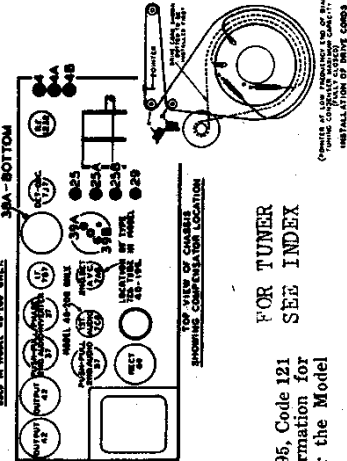
MODEL 40-201XX

Models 40-200XXS and 40-201XX, Code 121 are similar with the exception of the cabinets. The service information for Model 40-200, Code 121 also applies to Model 40-201XX, Code 121.

MODEL 40-201, CODE 122

Model 40-201, Code 122 is similar to Model 40-195, Code 121 with the exception of the cabinet. Service information for Model 40-201, Code 122 is the same as that for the Model 40-195.

FOR TUNER
SEE INDEX



(REMOVE ALL THE WIREWORK FROM THE SET AT THIS POINT.)
INSTALLATION OF DRIVE CONDENSER

PHILCO RADIO & TELEV. CORP.

MODELS 40-195, 40-200
Schematic, Voltage, Socket
Trimmers

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.

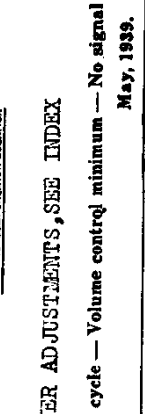
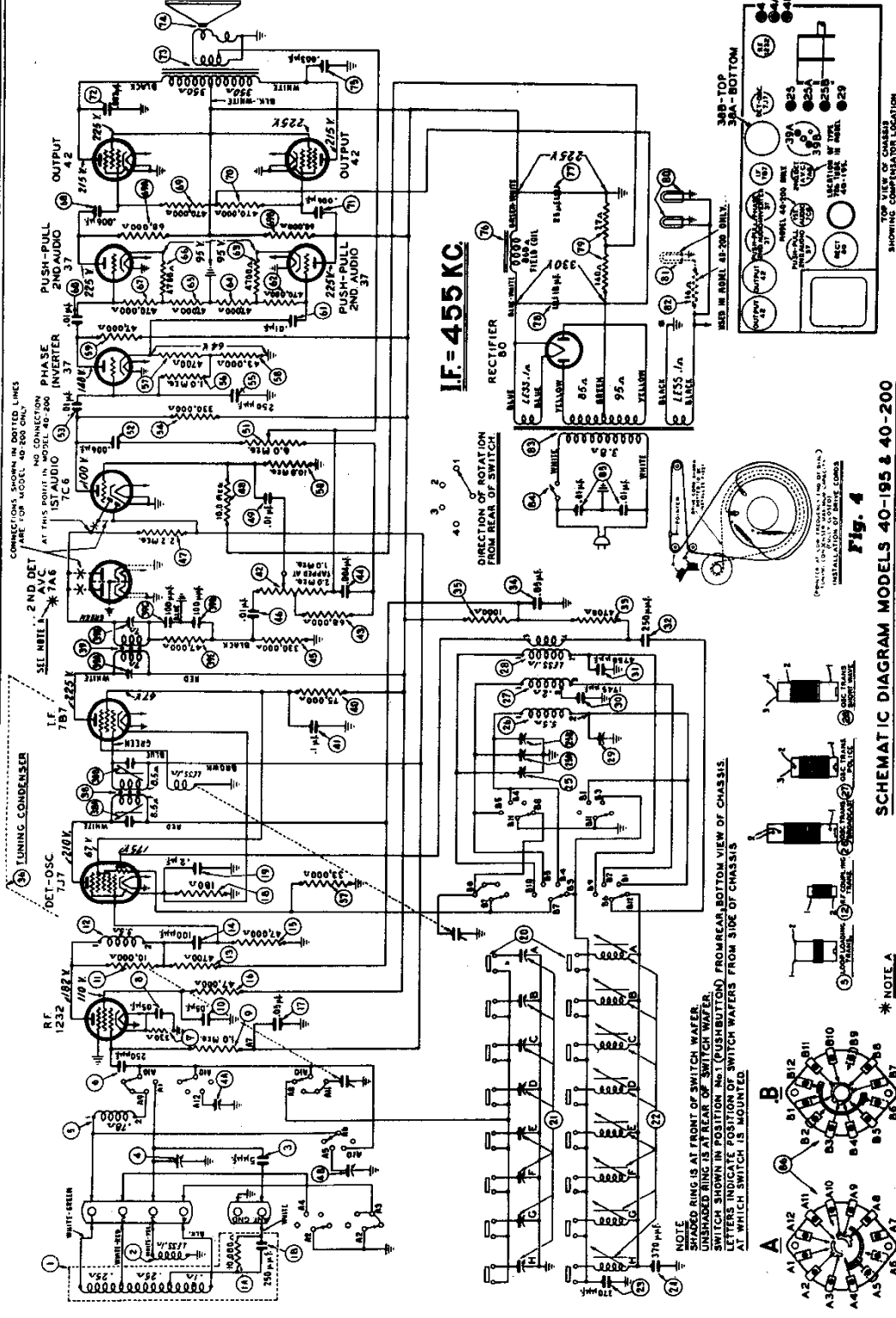


Fig. 4
TOP VIEW OF CHASSIS
SHOWING COMPONENT LOCATION

Fig. 1 — Schematic Diagram
FOR TUNER ADJUSTMENTS, SEE INDEX
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 — "Brdest."
May, 1939.

MODELS 40-195, 40-200
Chassis, Tuner Unit Chassis
Parts List

PHILCO RADIO & TELEV. CORP.

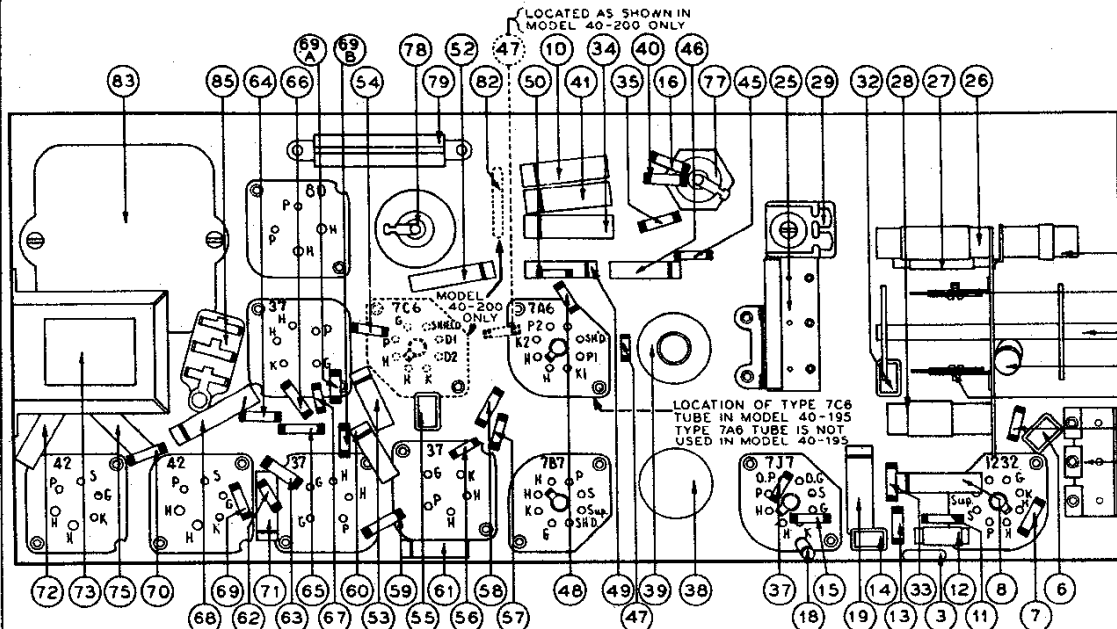


Fig. 2

**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)	33-6881		29C	Part of No. 39		
1A	Resistor (10,000 ohms, 1/2 watt)	33-310339	.17	29D	Part of No. 39		
2	Mica Cond. (250 mmfd.)	61-0033	.20	29E	Resistor (47,000 ohms, 1/2 watt)	33-247339	.17
3	Loop Assy. (Short Wave)	38-9857		40	Resistor (75,000 ohms, 1/2 watt)	33-378339	.17
4	Mica Cond. (5 mmfd.)	30-1097	.20	41	Tubular Cond. (.1 mfd.)	30-4488	.20
4A	Compensator (3 section)	31-6308		42	Volume Control (2 sec.)	33-8286	1.00
4B	Part of No. 4			43	Resistor (88,000 ohms, 1/2 watt)	33-368339	.17
5	Loop Loading Coil	33-3252		44	Tubular Cond. (.004 mfd.)	30-4324	.18
6	Mica Cond. (250 mmfd.)	61-0033	.20	45	Resistor (330,000 ohms, 1/2 watt)	33-822339	.17
7	Resistor (250 ohms, 1/2 watt)	30-4444	.15	46	Tubular Cond. (.01 mfd.)	30-4872	.15
8	Tubular Cond. (.05 mfd.)	33-510339	.17	47	Resistor (2.2 meg., 1/2 watt)	33-822339	.17
9	Resistor (1.0 meg., 1/2 watt)	30-4518	.15	48	Resistor (10.0 meg., 1/2 watt)	33-822339	.17
10	Tubular Cond. (.05 mfd.)	30-4518	.15	49	Tubular Cond. (.01 mfd.)	30-4872	.15
11	Resistor (10,000 ohms, 1/2 watt)	33-310339	.17	50	Resistor (10.0 meg., 1/2 watt)	33-110339	.17
12	R. F. Coupling Coil	33-3184		51	Tone Control (8 meg.)	33-8328	.20
13	Resistor (4700 ohms, 1/2 watt)	33-247339	.17	52	Tubular Cond. (.006 mfd.)	30-4448	.15
14	Mica Cond. (100 mmfd.)	30-1128	.15	53	Tubular Cond. (.01 mfd.)	30-4872	.15
15	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17	54	Resistor (330,000 ohms, 1/2 watt)	33-433339	.17
16	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17	55	Mica Cond. (250 mmfd.)	61-0033	.20
17	Tubular Cond. (.05 mfd.)	30-4519	.15	56	Resistor (1.0 meg., 1/2 watt)	33-10339	.17
18	Resistor (150 ohms, 1/2 watt)	33-118339	.17	57	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
19	Tubular Cond. (.2 mfd.)	30-4527	.20	58	Resistor (83,000 ohms, 1/2 watt)	33-343339	.17
20	Push Button Switch	42-1215		59	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
21	Compensator Strip	31-6313		60	Tubular Cond. (.01 mfd.)	30-4872	.15
Compensator				61	Tubular Cond. (.01 mfd.)	30-4872	.15
21A	No. 1 (840-1030 K.C.)	Part of 33-6313		62	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
21B	No. 2 (840-1030 K.C.)			63	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
21C	No. 3 (840-1030 K.C.)			64	Resistor (47,000 ohms, 1/2 watt)	33-247339	.17
21D	No. 4 (870-1180 K.C.)			65	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
21E	No. 5 (870-1180 K.C.)			66	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
21F	No. 6 (900-1800 K.C.)			67	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
21G	No. 7 (900-1800 K.C.)		68	Tubular Cond. (.006 mfd.)	30-4583	.15	
21H	No. 8 (900-1800 K.C.)		69	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17	
22	Coil Strip (Complete)	33-3042	.50	70	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
22A	Coil No. 1 (840-1030 K.C.)	33-3042	.50	71	Tubular Cond. (.006 mfd.)	30-4583	.15
22B	Coil No. 2 (840-1030 K.C.)	33-3042	.50	72	Tubular Cond. (.003 mfd.)	30-4489	.20
22C	Coil No. 3 (840-1030 K.C.)	33-3042	.50	73	Output Trans.	33-7981	1.80
22D	Coil No. 4 (870-1180 K.C.)	33-3042	.50	74	Coupling Assy. (Voice Coil Assy. for Speaker 38-1450-3)	38-4089	2.80
22E	Coil No. 5 (870-1180 K.C.)	33-3041	.50	75	Tubular Cond. (.003 mfd.)	30-4489	.20
22F	Coil No. 6 (900-1800 K.C.)	33-3041	.50	76	Field Coil (Replace Spkr. No. 38-1450)	38-1450-3	1.00
22G	Coil No. 7 (900-1800 K.C.)	33-3041	.50	77	Electrolytic Con. (25 mfd., 250V.)	30-3333	1.00
22H	Coil No. 8 (900-1800 K.C.)	33-3041	.50	78	Electrolytic Con. (18 mfd., 400V.)	30-2333	1.25
23	Silvered Mica Cond. (370 mmfd.)	30-1110	.45	79	S. C. Resistor	33-3376	.20
24	Silvered Mica Cond. (370 mmfd.)	30-1110	.45	80	Pilot Lamps	34-2064	.09
25	Compensator (2 section)	31-6302	.60	81	Pilot Lamps (Field Lamp)	34-2210	.15
25A	Part of No. 25	31-6302	.60	82	Resistor (15 ohms, pilot lamp)	33-018431	.20
25B	Part of No. 25	32-3340		83	Power Trans. (110V. 60 cycle)	32-8059	
26	Broadcast Oscillator Coil	32-3052	.75	84	A. C. Switch	42-1217	
27	Police Oscillator Coil	32-3242		85	Line Con. (.01-.01 mfd., Bakelite)	30-03-03	.30
28	Short Wave Oscillator Coil	32-3242		86	Wave Switch	42-1807	
29	Compensator	31-6330	.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 (150 ohms, 1/2 watt)	33-210339	.17				
36	Tuning Cond. (.05 mfd.)	31-2369					
37	Resistor (33,000 ohms, 1/2 watt)	33-233339	.17				
38	1st I. F. Trans. Assy.	31-6330					
39	2nd I. F. Trans. Assy.	32-3250					
39A	Part of No. 39						
39B	Part of No. 39						

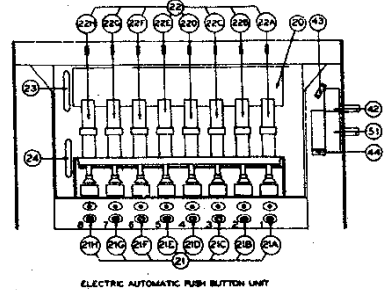


Fig. 3

SCHE. No.	DESCRIPTION	PART No.	LIST PRICE
	Coupling Assy. (Tuning Cond.)	33-2281	.35
	Dial	27-5513	
	Dial Clamp	38-1034	.08
	Dial Gasket	27-0224	.01
	Drive Cord Assy. (Pointer)	33-2316	.25
	Drive Cord Assy. (Tuning Cond.)	33-2380	.20
	Disc Control (Tuning)	27-4758	.30
	Disc Control (Volume)	27-4758	.30
	Disc Control (Tone)	27-4754	.30
	Disc Control (Wave Switch)	27-4757	.35
	Pilot Light Assy.	38-0553	.10
	Brum Bracket & Bearing Assy.	38-0682	.10
	Pointer (Dial)	27-4777	.10
	Brum Assy. (Tuning Cond.)	38-0716	.40
	Knobs (Push Buttons)	27-4852	.20
	Shaft (Control Drums)	38-0924	.05
	Spring (Drive Cord)	38-0913	.05
	Socket Assy. (Dial Lamp)	38-0855	.20
	Socket Assy. (Field Lamp)	38-0856	.40
	Socket Assy. (Dial Lamp)	38-0854	.20
	Socket (8 Prong, 37-Tube)	27-4038	.11
	Socket (6 Prong, 42-Tube)	27-4038	.11
	Socket (4 Prong, 80-Tube)	27-4044	.10
	Socket (Loktal, 7J7-Tube)	27-4129	
	Socket (Loktal, 7A6, 708, Tubes)	27-4121	
	Speaker	38-1480	9.00
	Tab Kit	40-6475	
	Phone Tab	27-9418	
	Dial Tab	27-9520	
MOUNTING PARTS			
	Grommet (Push Button Sw. Mtg.)	27-4596	.03
	Grommet (Tuning Unit Assy. Mtg.)	3934	.02
	Grommet (Tuning Unit Assy. Mtg.)	3918	.02
	Screw (Base Mtg.)	W-1234	.50 Per C.
	Nut (Spkr. Mtg.)	W-1224	.25 Per C.
	Screw (Loop Mtg. Rail)	W-544	.45 Per C.

**Miscellaneous Parts
Model 40-200**

Bezel Assy.	40-6490	
Bearing (Drum Shaft)	38-1036	.10
Cable and Plug (Power Supply)	L-2778	.40
Cable (Speaker)	41-3430	.50

Prices subject to change without notice

PHILCO RADIO & TELEV. CORP.

MODELS 40-195, 40-200
Alignment

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.

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.

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.

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"	13½"
Model 40-200 type "RX".....	36½"	34½"	14½"

**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 Connect 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

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.