



## Models 41-220; 41-225

### SPECIFICATIONS

Models 41-220 and 41-225 are six (6) tube alternating current (A. C.) or direct current (D. C.) operated super-heterodyne radios, employing the Philco Built-in American and Overseas aerial system.

In general, these models are similar in design with the exceptions of the cabinets and tuning mechanisms.

Model 41-220, is manually tuned and employs two tuning ranges covering 540 to 1600 K. C. and 1.6 to 3.3 M. C.

Model 41-225 has Electric Push-button tuning in addition to Manual tuning and two tuning ranges covering the same frequencies as Model 41-220. The electric push-button mechanism consists of six (6) push-buttons. One push-button is used to turn the power source OFF and ON and the remaining five (5) for automatically tuning in broadcasting stations. The procedure for adjusting and operating push-button tuning will be found in the instruction Part No. 39-6868 supplied with the receiver.

Additional features included in each model are:—Philco loktal tubes; R. F. stage; Beam power audio stage and a dust-proof speaker.

INTERMEDIATE FREQUENCY: 455 K. C.

AUDIO OUTPUT: 1 watt.

POWER SUPPLY: 115 volts A. C. or D. C. current.

PHILCO TUBES: 7C7 R. F. stage; 7A8 Oscillator; 1st detector; 7B7, I. F. stage; 7C6, 2nd detector, A. V. C. first audio; 35A5, audio output and a 35Z3 rectifier.

CABINET DIMENSIONS:	Height	Width	Depth
Model 41-220 .....	7"	12½"	6¼"
Model 41-225 .....	8"	13⅞"	7"

OUTSIDE AERIAL: Connections are also provided on the rear of the chassis for an outside aerial to be used in locations such as steel reinforced buildings, and other shielded locations where signal strength is weak. For installation of this type the Philco Utility aerial Part. No. 40-6834 is recommended.

### ALIGNMENT OF R. F. AND I. F. COMPENSATORS

The following procedure is the same for both models:

#### EQUIPMENT REQUIRED

1. **Signal Generator:** Covering the frequency range of the receiver, such as Philco Models 077 or 177.
2. **Aligning Indicator:** Either a vacuum tube voltmeter or an audio output meter may be used as an aligning indicator. Philco Models 027 and 028 circuit testers contain both these meters.
3. **Tools:** Philco Fiber Screw Driver, Part No. 45-2610.

#### CONNECTING ALIGNING INSTRUMENTS

**Audio Output Meter:** If this type of aligning meter is used, connect it to the voice coil terminals of the speaker or from the plate of the 35A5 tube to the chassis. Adjust the meter for the 0 to 10 volt scale.

**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.

**Signal Generator:** When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to the stator plate lug of the antenna section of the tuning condenser. Connect the ground or low side of the generator to the chassis.

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 signal generator is then placed close to the loop of the radio.

The receiver can be adjusted in the cabinet or removed from the cabinet.

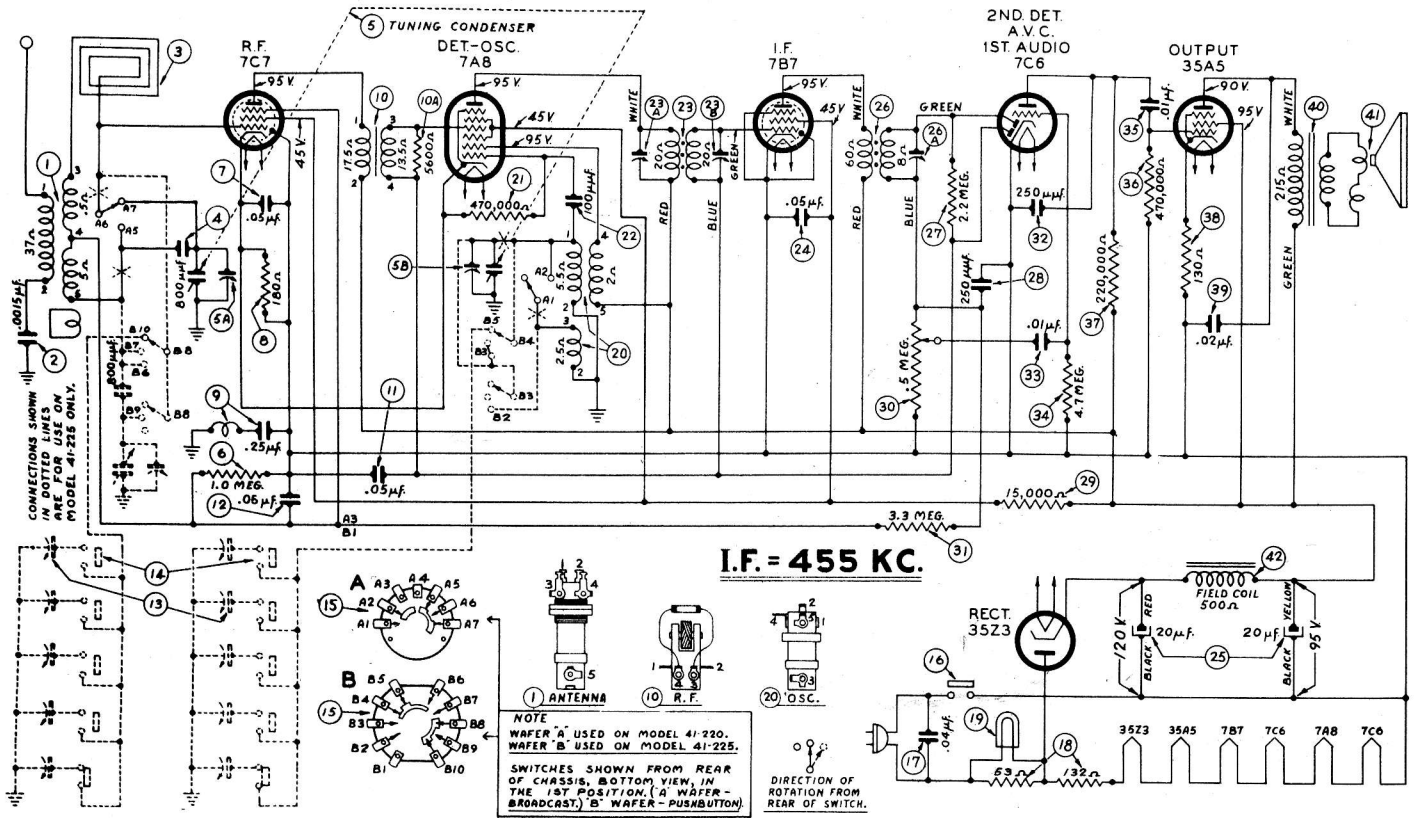
When adjusting the radio outside the cabinet the loop aerial should be placed in approximately the same position around or near the chassis as when assembled.

After connecting the aligning instruments adjust the compensators as shown in the tabulation below. Locations of the compensators are shown in the Parts location diagram.

If the indicating meter pointer goes off scale when adjusting the compensator, 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	Ant. Section of Tuning Cond.	455 K. C.	540 K. C. Tuning Cond. Closed	Vol. Max. Range Switch "Brdcst"	26A, 23B, 23A	
2	Loop—See above Instructions	1600 K. C.	1600 K. C.	Vol. Max. Range Switch "Brdcst"	5B Tuning Condenser	Note A
3	Loop—See above Instructions	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst"	5A Tuning Condenser	

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.



SCHEMATIC DIAGRAM MODELS 41-220 & 41-225

Replacement Parts — Models 41-220, 41-225

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.			
1	Aerial Transformer	32-344d	<b>MISCELLANEOUS PARTS</b>								
2	Condenser (.0015 mfd., 200 volts)	30-4555					Cabinet (41-220C)	10487A		Spring (Drive Cord Assembly)	28-8954
3	Loop Aerial (Model 41-220)	32-3521					Cabinet (41-220C I)	10487B		Socket (Tubes)	55-0875
3	Loop Aerial (Model 41-225)	32-3480					Cabinet (41-225C)	10489A		Socket Assembly (Pilot Lamp)	38-9825
4	Mica Condenser (800 mmfd.)	60-180127					Card (Power)	L-3199		Tab (Off-On) 41-225	27-5623
5	Tuning Condenser (Model 41-220)	31-2492					Clip (Coil Mounting)	28-5002		Tab Kit Stations	40-6593
5	Tuning Condenser (Model 41-225)	31-2493					Dial Scale (Model 41-220)	27-5621	<b>MOUNTING PARTS</b>		
6	Resistor (1 megohm)	33-510339					Dial Scale (Model 41-225)	27-5622		Clip (R. F. Coil Mounting)	28-5002
7	Condenser (.05 mfd., 200 volts)	30-4519					Drive Cord (Tuning)	31-2370		Clamp (Electro-Condenser)	56-1346
8	Resistor (180 ohms)	33-118336					Drive Shaft (Tuning)	27-4868		Paint (Vol. Cont. Drive Shaft Mtg.)	W-2157
9	Condenser (.25 mfd.) and Choke	38-9851					Escutcheon (Push-button)	31-2489		Paint (1st and 2nd I. F. Mounting)	W-1949
10	R. F. Transformer	32-3273					Knob (Tuning-Volume) 41-220	56-1893		Sleeve (Switch and Padder Mounting)	28-5665
10B	Resistor (5600 ohms) Part of 10	30-4519					Knob (Range Switch) 41-220	27-4809		Sleeve (Tuning Condenser)	28-5883
11	Condenser (.05 mfd., 200 volts)	30-4519					Knob (Push-buttons)	34-4005		Screw (Dial Scale Mounting)	W-685
12	Condenser (.05 mfd., 200 volts)	30-4519						54-4002		Screw Chassis Mounting)	W-2030
13	Compensator Assembly (Push-buttons)	31-6376					Screw (Push-button Bezel)	W-2071			
14	Push-button Switch Assembly (Model 41-225 Only)	42-1591									
15	Range Switch (Model 41-220)	42-1505									
15	Range Switch (Model 41-225)	42-1590									
16	Off-On Switch (Part of 14)										
17	Condenser (.04 mfd., 400 volts)	30-4119									
18A	Resistor (53-132 ohms)	33-3375									
19	Pilot Lamp	34-2068									
20	Oscillator Transformer	32-3256									
21	Resistor (47,000 ohms)	33-347339									
22	Condenser (100 mmfd.)	60-110157									
23	1st I. F. Transformer	32-3489									
24	Condenser (.05 mfd.)	30-4519									
25A	Electrolytic Cond. (20 mfd., 20 mfd.)	30-2403									
25B	Electrolytic Cond. (20 mfd., Part of 25A)										
26	2nd I. F. Transformer	32-3304									
27	Resistor (2.2 megohm)	33-522154									
28	Mica Condenser (250 mmfd.)	60-125157									
29	Resistor (15,000 ohms)	33-315339									
30	Volume Control (Model 41-220)	33-5404									
31	Volume Control (Model 41-225)	33-5411									
32	Resistor (3.3 megohm)	33-533339									
33	Condenser (100 mfd.)	61-0033									
34	Condenser (.01 mfd., 200 volts)	30-4479									
35	Resistor (4.7 megohms)	33-547154									
36	Condenser (.01 mfd., 400 volts)	30-4572									
37	Resistor (470,000 ohms)	33-447339									
38	Resistor (220,000 ohms)	33-422339									
39	Resistor (130 ohms)	33-113336									
40	Condenser (.02 mfd., 400 volts)	30-4516									
41	Output Transformer	32-8144									
42	Cone Assembly (for Speaker 36-1512-9)	36-4167									
	Field Coil (Replace Speaker 36-1512)										

PART LOCATIONS, UNDERSIDE OF CHASSIS