

# MODELS 41-221 AND 41-226

## SPECIFICATIONS

Models 41-221 and 41-226 are six (6) tube alternating current (A. C.) or direct current (D. C.) operated super-heterodyne radios, covering Standard, Police and Shortwave Broadcast stations. The PHILCO Built-in American and Overseas Aerial system is also included in each model.

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

Model 41-221 is manually tuned and is assembled in two type (C & CI) cabinets. Type "C" is a diagonal grain Sapel wood cabinet with carrying handle. Cabinet Type "CI" use diagonal grained walnut wood with ivory finished bezel, knobs and trim.

Model 41-226 incorporates Electric Push-button tuning in addition to manual tuning and is assembled in a sliced Walnut Cabinet. The electric push-button mechanism consists of six (6) push-buttons. One push-button is used to turn the power off and on. The remaining five (5) push-buttons automatically tune in stations. The procedure for adjusting and operating the push-buttons will be found in the instructions Part No. 38-6895 supplied with the receiver.

Additional features included in these Models:—PHILCO Loktal tubes; new noise reducing converter tube (Type XXD);

two I. F. stages; A. V. C.; Beam power audio output stage and a dust proof speaker.

INTERMEDIATE FREQUENCY: 455 K. C.

TUNING RANGES: Two, 540 to 1720 K. C.; 9 to 12 M. C.

AUDIO OUTPUT: 1 watt.

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

PHILCO TUBES USED: XXD, converter; two 7B7, 1. F. amplifiers; 7C6, 2nd detector A. V. C. first audio; 35A5, audio output and a 35Z3 rectifier.

CABINET DIMENSIONS:

Model 41-221—Height, 7 $\frac{1}{2}$ " ; Width, 13 $\frac{3}{8}$ " ; Depth, 6 $\frac{1}{2}$ ".

Model 41-226—Height, 8" ; Width, 13 $\frac{1}{4}$ " ; Depth, 6 $\frac{1}{4}$ ".

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 installations requiring an outside aerial the PHILCO aerial Part No. 40-6370 is recommended.

## ALIGNING R. F. AND I. F. COMPENSATORS

The following procedure is used 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 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 schematic diagram.

If the indicating 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	Ant. Section of tuning	455 K. C.	540 K. C. Tuning Cond. Closed	Vol Max. Range Switch Brdcast.	37A, 31A, 31B, 25A, 25B	
2	Loop see above instructions	1600 K. C.	1600 K. C.	Vol. Max. Range Switch Brdcast.	15	Note A
3	Loop see above instructions	1500 K. C.	1500 K. C.	Vol. Max. Range Switch Brdcast.	6	
4	Loop see above instructions	12 M. C.	12 M. C.	Range Switch "S. W."	15A, 8	Roll (8) for Max. Note B

**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 small dot below 550 K. C.

**NOTE B—**When adjusting oscillator compensator 15A, tune for maximum on the first signal peak from Tight position (compensator closed).

### PRODUCTION CHANGES

To prevent Modulation hum a .05 mfd. condenser Part No. 30-4519 is connected across the pilot lamp leads at resistor (48).

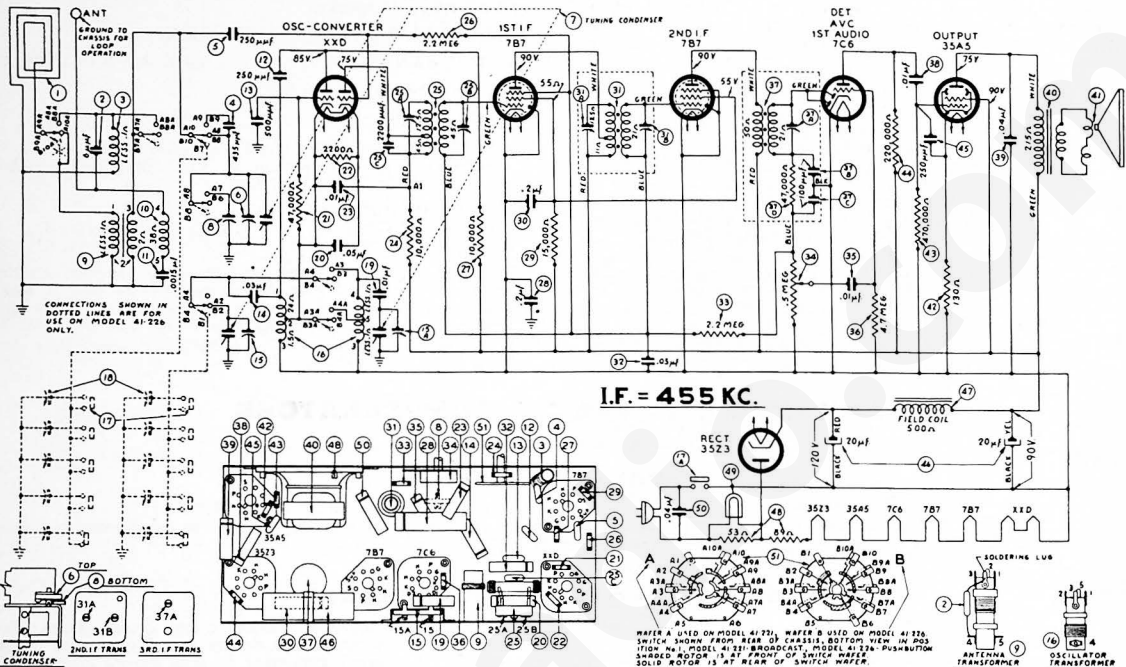
In cases where hum is present, changing the pilot lamp socket from Part No. 37-9825 to Part No. 76-1177 will eliminate the condition.

Later production chassis of Models 41-221 and 41-226, were assembled with a new rubber mounting tuning condenser and

dial scale. The part numbers of the tuning condensers and parts are as follows:

Dial Scale (New Type) 27-5678	Mounting Sleeve . . . . . 28-5583
Tuning Cond. (41-221) 31-2522	Lockwasher . . . . . W-223
Tuning Cond. (41-226) 31-2523	Nut . . . . . W-1543
Rubber Grommet . . 27-4610	Washer . . . . . W-495

# MODELS 41-221 AND 41-226 (CONTINUED)



SCHEMATIC DIAGRAM MODEL 41-221 & 41-226

## Replacement Parts — Models 41-221, 41-226

SCHEM. No.	DESCRIPTION	PART No.	SCHEM. No.	DESCRIPTION	PART No.	SCHEM. No.	DESCRIPTION	PART No.
1	Loop Aerial (Model 41-221)	76-1098	25	1st I. F. Transformer	32-3508	<b>MISCELLANEOUS PARTS</b>		
1	Loop Aerial (Model 41-226)	76-1102	26	Resistor (2.2 megohms)	33-522339		Cord (Power)	L-3199
2	Condenser (6 mfd., Mounted on 9)	60-006177	27	Resistor (10,000 ohms, 1/2 watt)	33-310339		Clip (R. F. Transformer Mounting)	28-5002
3	Aerial Transformer (Short Wave)	32-3523	28	Condenser (.2 mfd., 200 volts)	30-4536		Clamp (Electrolytic Condenser Mounting)	56-1346
4	Condenser (.435 mfd.)	30-1185	29	Resistor (15,000 ohms, 1/2 watt)	33-315339		Cabinet (Model 41-226)	10490A
5	Condenser (.250 mfd.)	60-125157	30	Condenser (.2 mfd., 400 volts)	30-4594		Cabinet (Model 41-221C)	10488A
6	Compensator (Broadcast-Aerial)	31-6367	31	2nd I. F. Transformer	32-3509		Cabinet Back (41-226)	27-9789
7	Tuning Condenser (41-226)	31-2494	32	Condenser (.05 mfd., 200 volts)	30-4519		Cabinet Back (41-221C)	27-9787
8	Tuning Condenser (41-221)	31-2490	33	Resistor (2.2 megohms)	33-522339		Dial Scale	27-5649
8	Compensator (Short Wave Aerial)	31-6375	34	Volume Control (41-226)	33-5411		Drive Cord	31-2489
9	Aerial Transformer (Broadcast)	32-3507	35	Volume Control (41-221)	33-5405		Escutcheon (Push-button)	56-1893
10	Aerial Transformer (Part of 9)		36	Condenser (.01 mfd., 400 volts)	30-4572		Knob (Band Switch, Model 41-221C)	24-4008
11	Condenser (.0015 mfd., 400 volts)	30-4555	38	Resistor (4.7 megohms)	33-547339		Knob (Tuning Volume, Model 41-221C)	27-4950
12	Mica Condenser (250 mfd.)	60-125157	37	3rd I. F. Transformer	32-3510		Knob (Wave Switch)	54-4005
13	Mica Condenser (500 mfd.)	60-150157	38	Condenser (.01 mfd., 400 volts)	30-4572		Knob (Tuning Volume)	27-4809
14	Condenser (.03 mfd.)	30-4449	39	Condenser (.04 mfd., 400 volts)	30-4119		Knob (Push-button)	27-4824
15	Comp. (Oscillator-Broadcast) Dial Sec.	31-6355	40	Output Transformer	32-8144		Pointer (Dial)	27-4891
16	Oscillator Transformer	32-3506	41	Cone Assembly (For Speaker 36-1512-9)	36-4167		Rubber Grommet (Switch & Padder Mtg.)	27-4810
17	Push-button Switch (Model 21-226 Only)	42-1591	42	Resistor (130 ohms, 1/2 watt)	33-113336		Spring (Drive Cord)	28-8954
18	Push-button Padder Strip (Model 41-226 Only)	31-6381	43	Resistor (470,000 ohms, 1/2 watt)	33-447339		Spring Screw (Chassis Mounting)	W-2030
19	Condenser (.01 mfd., 400 volts)	30-4572	44	Resistor (220,000 ohms, 1/2 watt)	33-422339		Spring Screw (Escutcheon Mounting)	W-2073
20	Condenser (.05 mfd., 200 volts)	30-4519	45	Mica Condenser (250 mfd.)	60-125157		Socket Assembly (Pilot Lamp)	38-9925
21	Resistor (47,000 ohms, 1/2 watt)	33-347339	46	Electrolytic Condenser (20-20 mfd.)	30-2491		Socket (Tubes)	27-6159-2
22	Resistor (2500 ohms, 1/2 watt)	33-222339	47	Field Coil (Replace Speaker 36-1512)			Tuning Shaft	31-2370
23	Condenser (.01 mfd., 400 volts)	30-4572	48	Resistor (89-53 ohms)	33-3394		Tab Kit	40-6593
24	Resistor (10,000 ohms, 1/2 watt)	33-310339	49	Pilot Lamp	34-2068		Tab (Off-On)	27-56239
			50	Condenser (.04 mfd., 400 volts)	30-4119		Tab (Television)	27-5643
			51	Band Switch (Model 41-221)	42-1598		Washer (Chassis Mounting)	W-410
				Band Switch (Model 41-221)	42-1593			