

MODEL 40-165

SPECIFICATIONS

TYPE OF CIRCUIT: Model 165 is a six tube Push-Button and dial tuned set incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. The model is also designed to receive the sound of a television program tuned in by special type Philco Television sets.

In addition, other features of design are: Tone control, three tuning ranges covering the frequencies listed below; and a pentode audio output circuit. Outside aerial connections are also provided for remote localities where station signal strength is very weak.

The receiver is equipped with six electric tuning push buttons for automatically selecting stations. Five of the push buttons are used for broadcast stations and one for selecting dial tuning. One of the station push buttons (low frequency push button preferably) may be set up for use with a Philco Wireless Record Player or the sound programs of Philco Television models.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

Included in the built-in super 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.

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

POWER CONSUMPTION: 45 watts.

FREQUENCY TUNING RANGES: (Three)

540 to 1550 K. C. 1.5 to 3.5 M. C. 6.0 to 18.0 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

AUDIO OUTPUT: 2 watts.

PHILCO TUBES USED: 1232, R. F.; 6J8G, Converter; 7B7, I. F.; 7C5, Second Detector; A. V. C. and First Audio; 41, Audio Power Output; 84, Rectifier.

CABINET DIMENSIONS: Type F; Height, 37"; Width, 23 3/4"; Depth, 9 3/4".

ADJUSTING ELECTRIC PUSH-BUTTON TUNING:

The procedure for adjusting the electric tuning push-buttons in this model is covered on page 9.

ALIGNING R. F. AND I. F. COMPENSATORS

(See page 9 for Push Button Adjustments)

EQUIPMENT REQUIRED

(1) **Signal Generator.** In order to properly adjust this receiver a 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) **Aligning Indicator.** To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube volt-

meter and circuit tester such as Philco Models 027 and 028 is recommended. 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. When using the vacuum tube voltmeter for adjusting the set, an aligning adaptor Part No. 45-2767 is required.

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 in the socket, 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 voltmeter to the black wire.

2. **Adjusting R. F. Circuit:** To adjust the R. F. padders, insert the aligning adaptor in the 7C5 socket and place the tube in the adaptor. The vacuum voltmeter remains connected to the adaptor as given when adjusting I. F. With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted.

Audio Output Meter: If an audio output meter is used, connect it to the plate and screen terminals of the 41 type tube and adjust the output meter for the 0 to 30 A. C. scale.

After connecting the aligning meter, 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 antenna is made from a few turns of wire and connected to the signal generator output terminals; the generator is then placed two or three feet from the loop in the cabinet. Do not remove the receiver loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

Opera- tions in Order	SIGNAL GENERATOR			RECEIVER		
	Output Connections to Receiver	Frequency Setting	Dial Setting	Control Settings	Adjust Compensators	Special Instructions
1	High Side to No. 1 Ter. Loop Panel	455 K. C.	580 K. C. No Signal	Range Switch "Brdcast." Vol. Max., Dial Push-Button "In"	37A, 37B, 34A, 34B	See paragraph on signal generator above
2	Use Loop on Generator	18.0 M. C.	18.0 M. C.	Range Switch "SW"	61A	Note A. Image should be 910 K.C. below 18 M.C.
3	Use Loop on Generator	1500 K. C.	1500 K. C.	Range Switch Brdcast.	26, 25	
4	Use Loop on Generator	580 K. C.	580 K. C.	Range Switch Brdcast.	26A	Roll tuning condenser
5	Use Loop on Generator	1500 K. C.	1500 K. C.	Range Switch Brdcast.	26, 25	
6	Use Loop on Generator	18.0 M. C.	18.0 M. C.	Range Switch "SW"	2A	Note B, Note C

NOTE A — 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 Schematic Diagram.

NOTE B — Turn loop padder to closed position (maximum capacity), then adjust to the first signal peak from this position; at the same time roll the tuning condenser. See Note C.

PRODUCTION CHANGES

Run 1 — Beginning with Run 1 receivers the converter tube was changed from a 7J7 loktal type to a 6J8G octal type. Tube sockets change from 27-6129 loktal to 27-6120 octal.

Run 2 — Additional condenser Part No. 30-4123 added across condenser (54) to reduce hum.

Run 3 — 6J8G converter tube socket Part No. 27-6120 re-

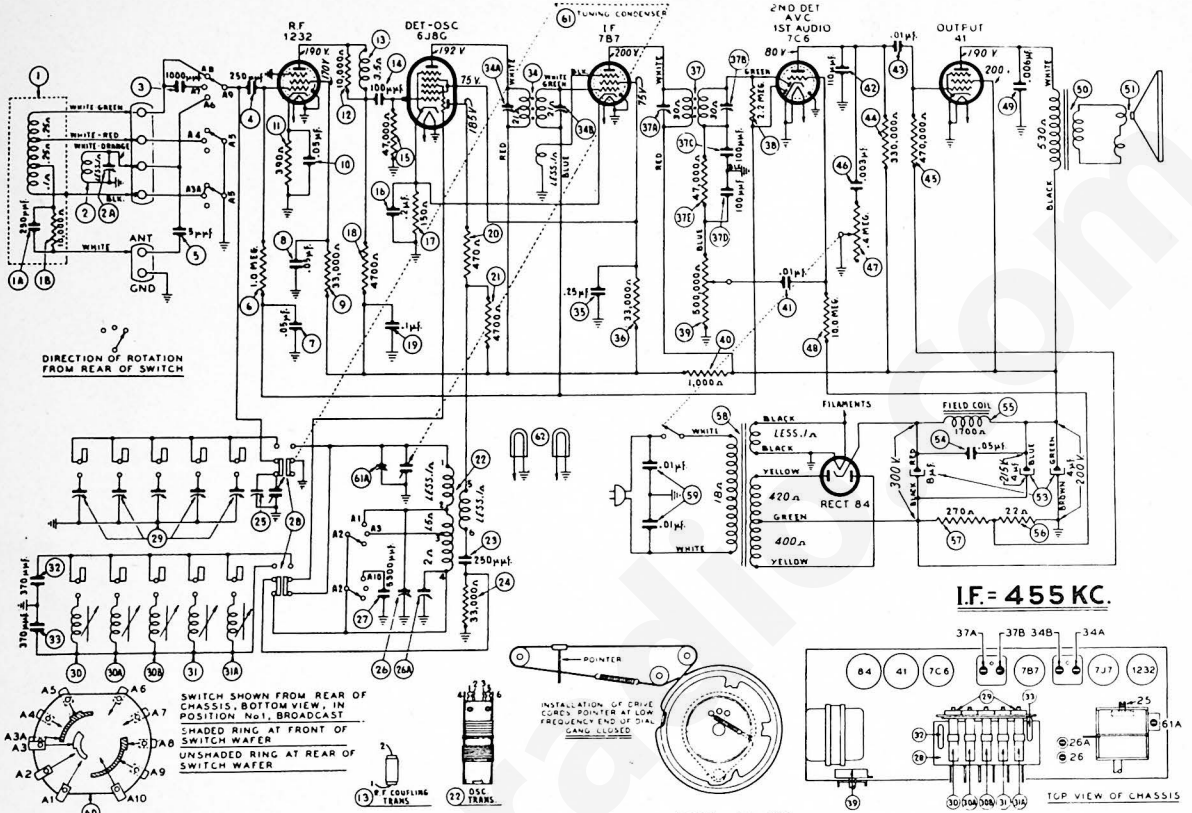
NOTE C — When adjusting the low frequency compensator of Range One (Broadcast) or the antenna compensators of the high frequency tuning ranges, the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output. Now turn the compensator slightly to the right or left. Continue turning compensator in the direction that gives greatest signal 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.

Reversed 180 degrees to prevent oscillation at 18 M. C. This reversed the position of the socket as wired in Run 1 receiver.

Run 4 — Converter tube changed back to a 7J7 loktal type from a 6J8G tube. This change makes the set correspond to the circuit diagram in the Service Bulletin.

S. W. loop assembly in Model 40-165K is Part No. 38-9968. This differs from loops used in the "F" cabinet.

MODEL 40-165



SCHMATIC DIAGRAM MODEL 40-165

Replacement Parts — Model 40-165

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	
1	Loop Assy. (Broadcast)	38-9895	54	Tubular Cond. (.05 mfd.)	30-4123	37A	Knobs (Tuning, Tone, Volume, Wave Switch)	27-4332	
2	Mica Cond. (.250 mmfd.)	61-0033	55	Field Coil (Replace Spkr. Part No. 36-1480)	33-022331	37B	Pilot Lamp Socket Assy.	30-9908	
3	Resistor (10,000 ohms, 1/2 watt)	33-10339	56	Resistor (22 ohms, 1/2 watt)	33-127439	37C	Pointer	36-1479	
4	Loop Assy. (Short Wave)	38-9898	57	Power Trans. (115 volt, 25 cycle)	32-8055	37D	Rubber Hose (Tuning Cond. Drive)	27-9432	
5	Compensator (Part of S. W. Loop)	30-1063	58	Power Trans. (115 volt, 60 cycle)	32-8076	37E	Spring (Tuning Drive Cord)	28-8751	
6	Mica Cond. (1000 mmfd.)	61-0033	59	Line Cond. (.01-.01 mfd.)	3903-00	37F	Spring (Pointer, Drive Cord)	28-8953	
7	Mica Cond. (5 mmfd.)	30-1143	60	Wave Switch	42-1495	37G	Spring Drive Shaft, Grounding)	28-8955	
8	Mica Cond. (.250 mmfd.)	30-1143	61	Tuning Cond.	31-2375	37H	W-1834	36-1480	
9	Resistor (1.0 meg., 1/2 watt)	33-10339	62	Pilot Lamps	34-2064	37I	Screw (Bezel Mtg.)	27-6035	
10	Tubular Cond. (.05 mfd.)	30-4123	MISCELLANEOUS PARTS				37J	Socket (Type 84 Tube)	27-6036
11	Resistor (33,000 ohms, 1/2 watt)	33-23339					27-4842	Bezel	103988
12	Tubular Cond. (.05 mfd.)	30-4123	27-5199	Cabinet and Plug (Power Supply)	L-5199	37L	Socket (Type 6J8G Tube)	27-6120	
13	Resistor (380 ohms, 1/2 watt)	33-13939	28-5003	Cable and Plug (Power Supply)	L-5199	37M	Tube)	27-5528	
14	Resistor (10,000 ohms, 1/2 watt)	33-10339	28-5007	Clip (Coil Mtg.)	28-5007	37N	Tab (Dial)	27-9451	
15	1st I. F. Trans.	32-3194	31-2382	Dial	31-2382	37O	Tab (Television)	27-9451	
16	Mica Cond. (100 mmfd.)	33-34739	31-2400	Drive Cord Assy. (Pointer)	31-2400	37P	Tab Kit	40-6474	
17	Resistor (470 ohms, 1/2 watt)	33-14339	27-4843	Drive Cord Assy. (Tuning Cond.)	27-4843	37Q	Tuning Shaft	56-6052	
18	Resistor (150 ohms, 1/2 watt)	33-15339	27-4824	Insulating Bushing (Insulate Drive Shaft)	27-4824	37R	Tuning Drive Drum Assy.	38-9883	
19	Resistor (470 ohms, 1/2 watt)	33-24739	37S	Knobs (Push Buttons)	27-4824	37T	Washer ("C" Type, Tuning Shaft)	28-2043	
20	Tubular Cond. (.05 mfd.)	30-4123	FIG. 1. PART LOCATIONS, UNDERSIDE OF CHASSIS.						
21	Resistor (470 ohms, 1/2 watt)	33-14739							
22	Resistor (470 ohms, 1/2 watt)	33-14739							
23	Resistor (33,000 ohms, 1/2 watt)	33-33339							
24	Compensator (.25 section)	31-6308							
25	Mica Cond. (.5000 mmfd.)	30-1134							
26	Push Button Switch	42-1493							
27	Padder Strip and Bracket Assy.	31-6325							
28	Coil No. 1 (840-1000 K.C.)	32-3042							
29	Coil No. 2 (630-1100 K.C.)	32-3041							
30	Coil No. 3 (740-1300 K.C.)	32-3042							
31	Coil No. 4 (900-1500 K.C.)	32-3041							
32	Coil No. 5 (1100-1800 K.C.)	32-3041							
33	Silver Mica Cond. (370 mmfd.)	30-1110							
34	Silver Mica Cond. (370 mmfd.)	30-1110							
35	1st I. F. Trans.	32-3210							
36	Tubular Cond. (.25 mfd.)	31-1589							
37	Resistor (33,000 ohms, 1/2 watt)	33-33339							
38	2nd I. F. Trans.	33-22339							
39	Resistor (2.2 meg., 1/2 watt)	33-10339							
40	Volume Control (500,000 ohms)	33-10339							
41	Resistor (10,000 ohms, 1/2 watt)	33-11339							
42	Tubular Cond. (.01 mfd.)	30-4872							
43	Mica Cond. (100 mmfd.)	30-1130							
44	Tubular Cond. (.01 mfd.)	30-4872							
45	Resistor (330 ohms, 1/2 watt)	33-13339							
46	Resistor (470,000 ohms, 1/2 watt)	33-44739							
47	Tubular Cond. (.005 mfd.)	30-4872							
48	Resistor (10.0 meg., 1/2 watt)	33-48039							
49	Tubular Cond. (.005 mfd.)	30-4872							
50	Output Trans.	32-8056							
51	Coil and Yoke Coil Assy. (Epr. Part No. 36-1480-3)	36-4088							
52	Electricity Cond. (4-4-8 mfd.)	30-2066							

FIG. 1. PART LOCATIONS, UNDERSIDE OF CHASSIS.