MODEL 40-160

SPECIFICATIONS

Type of Circuit: Model 160 is a six tube Push-Button and dial tuned receiver 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, two tuning ranges covering the frequencies listed below; and 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.

Power Supply: 115 V., 25 and 60 Cyc. A. C.

Power Consumption: 45 watts.

Frequency Tuning Ranges: (Two) 540 to 1550 K.C. 1500 to 3350 K.C.

Intermediate Frequency: 455 K.C.

Audio Output: 2 watts.

Philco Tubes Used: 7C7, R.F.; 7A8, Converter; 7B7, I. F.; 7C6, Second Detector, A.V.C., and First Audio; 41, Audio Power Output; 84 Rectifier.

Cabinet Dimensions: Model 40-160; Type F; Height 37"; Width 23¾"; Depth 9¾".

Electric Push-button Adjustments:
See page 9 for adjustment of electric push-buttons.

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 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. These testers also contain an audio output meter which may be used as an indicating device. (3) Aligning Tools. Fiber handle screw driver Philco Part No. 45-2610 and 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.: Remove the 7C7 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. Padders: To adjust the R.F. padders, insert the aligning adaptor in the 7C6 socket and place the tube in the adaptor. The vacuum voltmeter remains connected to the adaptor as given in the Adjusting I.F. above.

With the voltmeter connected in this manner a very sensitive indication of the output 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 41 type tube and adjust the output meter for the 0 to 30 A.C. scale.

After connecting the output 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. 60. 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 loop 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.

SIGNAL GENERATOR			RECEIVER				
Operations in Order	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	adjust compensators		Special Instructions
1	High Side to No. 1 Ter. Loop Panel	455 K.C.	580 K.C.	Vol. Max. Range Switch "Broadcast." Dial push button "In"	28A 28B	25 A 25 B	See Paragraph on Signal Generator Above
2	Use Loop on Generator	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "Broadcast"	16A	22	Note A

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.

PRODUCTION CHANGES

Run 3 — To prevent oscillation on push-button tuning, resistors (9) Part No. 33-268339 were removed from R. F. transformer (9) secondary. A new resistor Part No. 33-260339 is now added across primary winding of the same transformer.

Circuit differences between sets used on 25 and 60 cycle power supplies.

	115 V., 25 Cycles	115 V., 60 Cycles
Power Transformer	32-8076	32-8055

MODEL 40-160

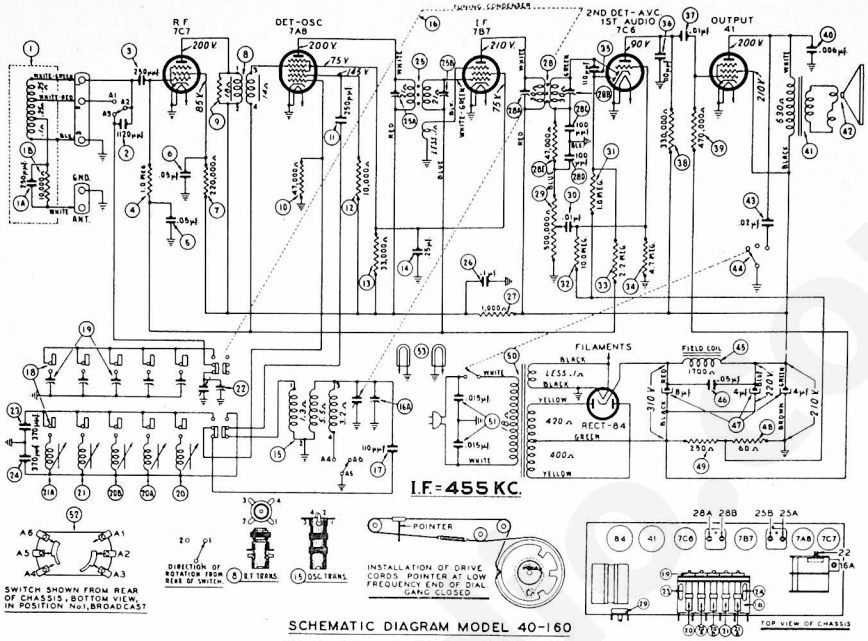

Fig. 1—Schematic Diagram Model 40-160

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.
1	Loop Ass'y	38-9897
1A	Mica Cond. (250 mmfd.)	61-0033
1B	Resistor (10,000 ohms, ½ watt)	33-310339
2	Mica Cond. (1120 mmfd.)	30-1140
3	Mica Cond. (250 mmfd.)	61-0033
4	Resistor (1.0 meg., ½ watt)	33-510339
5	Tubular Cond. (.05 mfd.)	30-4519
6	Tubular Cond. (.05 mfd.)	30-4123
7	Resistor (220,000 ohms, ½ watt)	33-422339
8	R. F. Trans.	32-3283
9	Resistor (6800 ohms, ½ watt)	33-268339
10	Resistor (470,000 ohms, ½ watt)	33-447339
11	Mica Cond. (250 mmfd.)	61-0033
12	Resistor (10,000 ohms, ½ watt)	33-310339
13	Resistor (33,000 ohms, ½ watt)	33-333339
14	Tubular Cond. (.25 mfd.)	30-4448
15	Oscillator Trans.	32-3212
16	Tuning Cond.	31-2374
17	Mica Cond. (110 mmfd.)	30-1130
18	Push Button Switch	42-1493
19	Padder Strip and Bracket Assy.	31-6325
20	Coil No. 1—540-1000 K.C.	
20A	Coil No. 2 - 650-1100 K.C.	32-3042
20B	Coil No. 3 740-1300 K.C.	
21	Coil No. 4—900-1500 K.C.	
21A	Coil No. 5—1100-1600 K.C.	32-3041
22	Compensator	31-6308
23	Silver Mica Cond. (370 mmfd.)	30-1110
24	Silver Mica Cond. (370 mmfd.)	30-1110
25	1st I.F. Trans.	32-3210
26	Tubular Cond. (.1 mfd.)	30-4455
27	Resistor (1000 ohms, ½ watt)	33-210339
28	2nd I.F. Trans. Assy.	32-3211
29	Volume Control	33-5319
30	Tubular Cond. (.01 mfd.)	30-4572
31	Resistor (1.0 meg., ½ wattt)	33-510339
32	Resistor (10.0 meg., ½ watt)	33-610339
33	Resistor (2.2 meg., ½ watt)	33-522339
34	Resistor (4.7 meg., ½ watt)	33-547339
35	Mica Cond. (110 mmfd.)	30-1130
36	Mica Cond. (110 mmfd.)	30-1130
37	Tubular Cond. (.01 mfd.)	30-4572
38	Resistor (330,000 ohms, ½ watt)	33-433339
39	Resistor (470,000 ohms, ½ watt)	33-447339
40	Tubular Cond. (.006 mfd.)	30-4504
41	Output Trans.	32-8056
42	Cone and Voice Coil Assy. (Spkr. Part No. 36-1480-3)	36-4086
43	Tubular Cond. (.02 mfd.)	30-4599
44	Tone Control and On-Off Switch	42-1520
45	Field Coil (Replace Spkr. Part No. 36-1480)	
46	Tubular Cond. (.05 mfd.)	30-4123
47	Electrolytic Cond. (8-4-4 mfd.)	30-2400
48	Resistor (60 ohms, ½ watt)	33-060339
49	Resistor (250 ohms, ½ watt)	33-125339
50	Power Transformer (115 volt, 60 cycles)	32-8055
	(115 volt, 25 cycles)	32-8076
51	Line Cond. (.015-.015 mfd.)	3903-DG
52	Wave Switch	42-1494
53	Pilot Lamps	34-2064

MISCELLANEOUS PARTS

DESCRIPTION	PART No.
Bezel	27-4842
Cabinet	10398A
Cable and Plug (Power Supply)	L-3199
Clip (Coil Mtg.)	28-5002
Dial	27-5506
Drive Cord Assy. (Pointer)	31-2382
Drive Cord Assy. (Tuning Cond.)	31-2400
Escutcheon (Push Button)	27-4843
Insulating Bushing (Insulate Drive Shaft)	27-9437
Knobs (Tuning, Tone, Volume, Wave Switch)	27-4332
Knobs (Push Buttons)	27-4824
Pilot Lamp Socket Assy.	38-9908
Pointer	56-1479
Reflector (Pilot Lamp)	27-9455
Rubber Hose (Tuning Cond. Drive)	27-9432
Spring (Tuning, Drive Cord)	28-8751
Spring (Pointer, Drive Cord)	28-8953
Spring (Drive Shaft, Grounding)	28-8955
Screw (Bezel Mtg.)	W-1834
Speaker	36-1480
Socket (Type 84 Tube)	27-6035
Socket (Type 41 Tube)	27-6036
Socket (Loktal, Type 7A8 Tube)	27-6129
Socket (Loktal, Type 7C7, 7B7, 7C6 Tubes)	27-6131
Tab (Dial)	27-5528
Tab (Television)	27-9451
Tab Kit	40-6474
Tuning Shaft	56-6052
Tuning Drive Drum Assy.	38-9883
Washer ("C" Type, Tuning Shaft)	28-2043

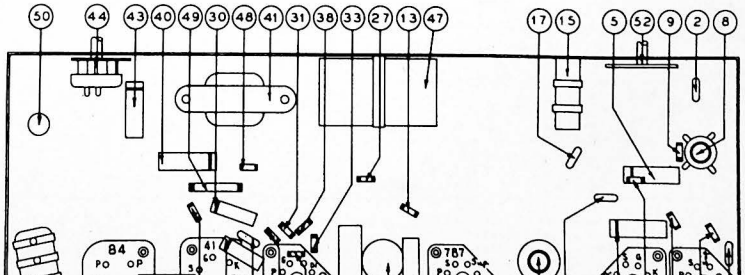

Fig. 2—Part Locations, Underside of Chassis