MODELS 40-140 and 40-145

SPECIFICATIONS

TYPE OF CIRCUIT: Models 40-140 and 40-145 are six (6) tube alternating current superheterodyne models employing the new Philco built-in super aerial system which eliminates an outside aerial and reduces local interference to a minimum.

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. A feature of the built-in broadcast band statically shielded loop is that the receiver may be turned to the position in which it picks up a minimum amount of interference, or if interference is not present the receiver may be set in the position where best reception is obtained.

In addition, other features of design are: Three tuning ranges; special high gain R. F. stage; Philco high-efficiency Loktal tubes; automatic volume control, tone control and a Beam power audio output stage. In general, these models are similar but differ in their tuning mechanisms and cabinets.

Model 40-140 is dial tuned and assembled in cabinet type "T" (Table model).

Model 40-145 is equipped with six electric push buttons for automatically selecting stations in addition to dial tuning. Five push buttons are used for stations one of which can be used in combination with special type PHILCO TELEVISION receivers for reception of television sound programs. The sixth push button selects dial tuning.

The procedure for adjusting the push buttons to broadcast stations will be found on page 9. The frequency coverage of each push button is as follows:

540 to 1030 K. C. 740 to 1300 K. C.
650 to 1100 K. C. 900 to 1470 K. C.
1160 to 1600 K. C.

Philco television sets and record players contain information for adjusting the push button on the 40-145.

TUNING RANGES:
540 to 1550 K. C. 1.5 to 3.3 M. C. 5.7 to 18.0 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: 115 volts A. C., 60 cycle.

POWER CONSUMPTION: 38 watts.

AUDIO OUTPUT: 2 watts.

PHILCO TUBES USED: 1232, R. F.; 7J7, converter; 7B7, I. F.; 7C6, second detector, AVC and first audio; 7B5, audio output and 7Y4, rectifier.

CABINET DIMENSIONS: Height, 10⅛"; Width, 14⅛"; Depth, 8".

ALIGNING R. F. AND I. F. COMPENSATORS

(See page 9 for Push Button Adjustments)

EQUIPMENT REQUIRED

1. **Signal Generator** with a frequency range from 115 to 36,000 K. C., such as Philco Model 077.

2. **Aligning Indicator,** Philco Model 027 or 028, vacuum tube voltmeter and circuit tester incorporates sensitive audio output meters and vacuum tube voltmeters. Either of these instruments can be used as an aligning indicator.

3. **Fibre Handle Screw Driver,** Philco Part No. 45-2610. When using the vacuum tube voltmeter for aligning the receiver, an aligning adaptor Part No. 45-2767 is required.

CONNECTING ALIGNING METERS

1. **Audio Output Meter:** If the Philco Models 027 and 028 audio output meters are used, they are connected to the speaker voice coil terminals or the plate and screen terminals of the 7B5 tube. Adjust the meter to use the 0 to 10 volt A. C. scale.

2. **Vacuum Tube Voltmeter:** To use the vacuum tube voltmeter as an aligning indicator make the following connections:

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 light colored wire which protrudes from the side of the adaptor. Attach the positive terminal of the vacuum tube voltmeter to the black wire of the adaptor.

Adjusting R. F. Circuit: To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 second detector tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the paragraph above. With the voltmeter connected in this manner, a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted.

After connecting the aligning adaptors, adjust the compensators as shown in the tabulation below. Locations of the compensators are shown in Schematic Diagram. If the aligning meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

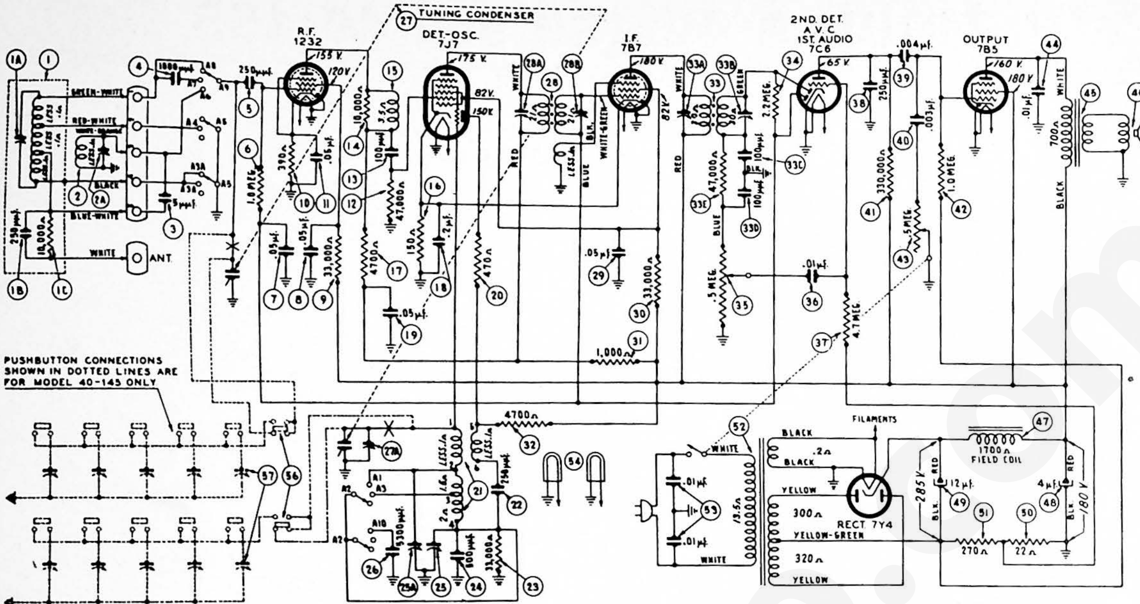
Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	No. 1 Ter. on Loop Panel Note B	455 K. C.	580 K. C.	Vol. Cont. Max. Range Switch "Brdcst"	33A, 33B, 28A, 28B	Dial Push-Button "In" Model 40-145
2	Use Loop, Note C	18.0 M. C.	18.0 M. C.	Vol. Cont. Max. Range Switch "S.W."	27A, 2A, Note D	Check Image at 17.090 K. C.
3	Use Loop, Note C	1500 K. C.	1500 K. C.	Range Switch "Brdcst"	25A, 1A	Note A
4	Use Loop, Note C	580 K. C.	580 K. C.	Range Switch "Brdcst"	25	Roll Tuning Condenser
5	Use Loop, Note C	1500 K. C.	1500 K. C.	Range Switch "Brdcst"	25A, 2A	
6	Use Loop, Note C	18.0 M. C.	18.0 M. C.	Range Switch "S.W."	2A, Note D	Roll Tuning Condenser & Adjust Padder to First Peak from Tight Position

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.

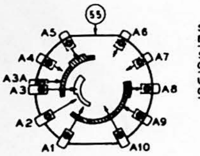
NOTE B — When adjusting the I. F. padders the high side of the signal generator output is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the generator is connected to the chassis of the receiver.

NOTE C — When aligning the R. F. Circuits a loop is made from a few turns of wire and connected to the generator output terminals; the signal generator is then placed two or three feet from the loop in the cabinet.

NOTE D — S. W. Oscillator compensator (27A) is located on top of the tuning condenser. Antenna compensators (1A) and (2A) are located on the loop. When adjusting the "Ant" compensators, the receiver loop should be held in place against the back of the cabinet.



I.F.=455 KC.



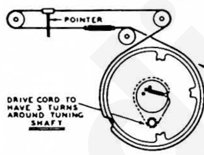
SWITCH SHOWN FROM REAR OF CHASSIS, BOTTOM VIEW, IN POSITION No.1 B'DCAST.

SHADED AREA INDICATES RING AT FRONT OF SWITCH WAFER.

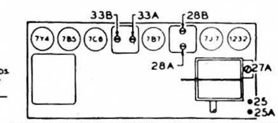
UNSHADED AREA INDICATES RING AT REAR OF SWITCH WAFER.

DIRECTION OF ROTATION FROM REAR OF SWITCH.

(21) OSC. TRANS.



INSTALLATION OF DRIVE CORDS. POINTER AT LOW FREQUENCY END OF DIAL GANG CLOSED



TOP VIEW OF CHASSIS SHOWING COMPENSATOR LOCATION

SCHEMATIC DIAGRAM MODEL 40-140 & 40-145

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly (Broadcast)	38-9892
1A	Compensator	31-6318
1B	Mica Cond. (250 mmfd.)	61-0033
1C	Resistor (10,000 ohms, ½ watt)	33-310339
2	Loop Assembly (Short Wave)	38-9893
2A	Compensator	31-6320
3	Mica Cond. (5 mmfd.)	30-1097
4	Mica Cond. (1000 mmfd.)	30-1063
5	Mica Cond. (250 mmfd.)	61-0033
6	Resistor (1.0 meg., ½ watt)	33-510339
7	Tubular Cond. (.05 mfd.)	30-4518
8	Tubular Cond. (.05 mfd.)	30-4518
9	Resistor (33,000 ohms, ½ watt)	33-333339
10	Resistor (390 ohms, ½ watt)	33-139331
11	Tubular Cond. (.05 mfd.)	30-4518
12	Resistor (47,000 ohms, ½ watt)	33-347339
13	Mica Cond. (100 mmfd.)	30-1128
14	Resistor (10,000 ohms, ½ watt)	33-310339
15	R. F. Transformer	32-3194
16	Resistor (150 ohms, ½ watt)	33-115331
17	Resistor (4700 ohms, ½ watt)	33-247339
18	Tubular Cond. (.2 mfd.)	30-4536
19	Tubular Cond. (.05 mfd.)	30-4518
20	Resistor (470 ohms, ½ watt)	33-147339
21	Oscillator Transformer	32-3195
22	Mica Cond. (250 mmfd.)	61-0033
23	Resistor (33,000 ohms, ½ watt)	33-333339
24	Silver Mica Cond. (500 mmfd.)	30-1138
25	Compensator (2 section)	31-6317
26	Mica Cond. (5300 mmfd.)	30-1134
27	Tuning Condenser	31-2375
28	1st I. F. Trans. Assy.	32-3210
29	Tubular Cond. (.05 mfd.)	30-4518
30	Resistor (33,000 ohms, ½ watt)	33-333339
31	Resistor (1,000 ohms, ½ watt)	33-210339
32	Resistor (4700 ohms, ½ watt)	33-247339
33	2nd I. F. Trans. Assy.	32-3281
34	Resistor (2.2 meg., ½ watt)	33-522339
35	Volume Control (.5 meg.)	33-5319
36	Tubular Cond. (.01 mfd.)	30-4572
37	Resistor (4.7 meg., ½ watt)	33-547339
38	Mica Cond. (250 mmfd.)	61-0033
39	Tubular Cond. (.004 mfd.)	30-4578
40	Tubular Cond. (.003 mfd.)	30-4580
41	Resistor (330,000 ohms, ½ watt)	33-433339
42	Resistor (1.0 meg., ½ watt)	33-510339
43	Tone Control (.5 meg.) & On-Off Switch	33-5333
44	Tubular Cond. (.01 mfd.)	30-4572
45	Output Transformer	32-8063
46	Cone and Voice Coil Assy. (Spkr. Part No. 36-1478-3)	36-4085
47	Field Coil (Replace Spkr. Part No. 36-1478)	
48	Electrolytic Cond. (4 mfd., 400 V.)	30-2401
49	Electrolytic Cond. (12 mfd., 400 V.)	30-2409
	Electrolytic Condenser (20 mfd., 400 V., 25 cycle)	30-2438
50	Resistor (22 ohms, ½ watt)	33-022331
51	Resistor (270 ohms, 1 watt)	33-127431
52	Power Trans. (115 V., 50-60 cycles)	32-8064
	Power Transformer (115 V., 25 cycle)	32-8075
	Power Transformer (220 V., 60 cycle)	32-8093
53	Line Condenser (.01-.01 mfd.)	3903-ODQ
54	Pilot Lamps	34-2064
55	Wave Switch	42-1495
56	Push Button Switch (Model 40-145 only)	42-1528
57	Padder Strip (Model 40-145 only)	31-6316
	Insulating Bushing (Drive Shaft)	27-9437
	Knobs (Tuning, Tone, Vol., Wave Switch)	27-4332
	Knobs (Pushbuttons, Model 40-145)	27-4824
	Pilot Lamp Socket Assy.	38-9904
	Pointer	56-1532
	Rubber Bushing (Tuning Cond. Drive)	27-9432
	Spring (Tuning, Drive Cord)	28-8751
	Spring (Pointer, Drive Cord)	28-8953
	Spring (Tuning Shaft Assy.)	28-8955
	Speaker	36-1478
	Sockets (Loktal Tubes)	55-0575
	Tuning Shaft	56-6052
	Tuning Drive Drum Assy.	38-9883
	Tab (Dial, Model 40-145)	27-5526
	Tab (Television, Model 40-145)	27-9450
	Tab Kit (Model 40-145)	40-6473
	Washer ("C" Type, Tuning Shaft)	28-2043

MISCELLANEOUS PARTS

Cable and Plug Assy. (Power Supply)	L-3199
Cabinet (Model 40-140)	10395A
Cabinet (Model 40-145)	10395B
Clip (Mtg. Osc. Coil)	28-5003
Drive Cord Assy. (Pointer)	31-2399
Drive Cord Assy. (Tuning Cond.)	31-2400
Dial	27-5507
Escutcheon (Pushbuttons, Model 40-145)	28-5742
Escutcheon Pin (Model 40-145)	W-1074

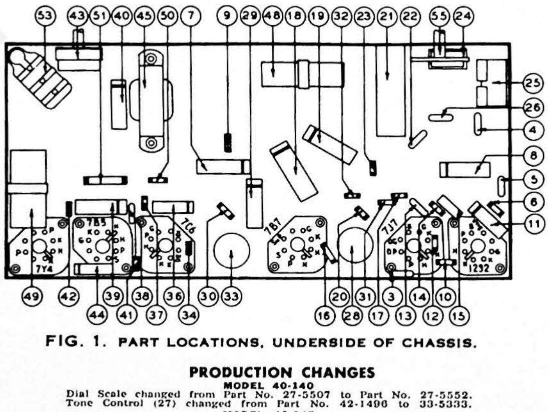


FIG. 1. PART LOCATIONS, UNDERSIDE OF CHASSIS.

PRODUCTION CHANGES

MODEL 40-140

Dial Scale changed from Part No. 27-5507 to Part No. 27-5552.
Tone Control (27) changed from Part No. 42-1496 to 33-5333.

MODEL 40-145

Dial Scale changed from Part No. 27-5507 to Part No. 27-5552.
Tone Control (27) changed from Part No. 42-1496 to 33-5333.

MODELS 40-140, 40-145

Operating on 115 Volt, 25 Cycle and 220 Volt, 60 Cycle Current

To operate Model 40-140 and 40-145 on 115 volts, 25 cycle current the power transformer (52) Part No. 32-8064, 115 volts, 60 cycle listed in the Service Bulletin, must be changed to Part No. 32-8075, 115 volts, 25 cycle. In addition, Electrolytic Condenser (49) Part No. 30-2409, 12 mfd., 400 volts must be changed to Part No. 30-2438, 20 mfd., 400 volts.

Model 40-140 can be operated on 220 volts, 60 cycle current by changing the power transformer (52), Service Bulletin 328, from Part No. 32-8064, 115 volts, 60 cycle to Part No. 32-8093, 220 volts, 60 cycle. The new transformer Part No. 32-8093 can be operated on either 115 or 220 volts, 60 cycle current by connecting the primary wiring as listed below:

Power Supply: 220 Volts—Red and Yellow to White. 110 Volts—Red to White.
Connect together: 220 Volts—Black and White to Red. 110 Volts—Black and White to Red and Yellow.

To prevent oscillation at the low end of the broadcast band the 2nd I. F. transformer (33) changed from Part No. 32-3281 to Part No. 32-3382.

The cabinet and B. C. loop assembly was changed on late production receivers as follows:

Model 40-140	Original Part No.	New Part No.
Cabinet	10395A	10464A
B. C. Loop	38-9892	76-1009

Model 40-145	Original Part No.	New Part No.
Cabinet	10395B	10464B
B. C. Loop	38-9892	76-1009