PHILCO . . . . RADIO SERVICE BULLETIN No. 351

RADIO MANUFACTURERS SERVICE — Your Guarantee of Best Radio Service — A PHILCO SERVICE PLAN

Models 41-240, 41-245; Code 121

SPECIFICATIONS

Model 41-240

TYPE OF CIRCUIT: Model 41-240, Code 121, is a seven (7) tube A. C. operated super-heterodyne radio employing the Philco Built-in American and Overseas Aerial system. Provisions are also provided for an outside aerial. The Philco Outdoor aerial, Part No. 45-2817 is especially designed for use with this radio and is recommended for maximum performance. In addition, other features of design are:—two tuning ranges; two I. F. stages; Philco loktal tubes; variable tone control; automatic volume control, and a pentode audio output stage.
TUNING RANGES: 540 to 1720 K. C.: 9 to 12 M. C.
INTERMEDIATE FREQUENCY: 455 K. C.
POWER SUPPLY: 115 volts A. C., 60 cycles. To operate the radio on 115 Volt, 25 cycle current, it will be necessary to change power transformers as indicated in the parts list.
AUDIO OUTPUT: 2 watts.
PHILCO TUBES USED: one XXL, 1st detector; one XXL, oscillator; one 7B7, 1st I. F.; one 7B7, 2nd I. F.; one 7C6, 2nd detector, 1st audio, A. V. C.; one 7B5, audio output and a 7Y4 rectifier.
CABINET DIMENSIONS: Height, 11"; Width, 15¼"; Depth, 9⅛".

Model 41-245

TYPE OF CIRCUIT: Model 41-245, Code 121, is a seven (7) tube A. C. operated super-heterodyne radio with electric push button tuning. In addition, the radio employs the Philco Built-in American and Overseas Aerial system for operation without an outside aerial. Provisions are also provided for an outside aerial for sections where signal strength is weak, such as in steel reinforced buildings and other shielded locations. For installations of this type the Philco 1941 Outdoor Aerial, Part No. 45-2817, is recommended. This aerial can be conveniently connected to the radio by inserting the plug attached to the transformer unit into the socket provided at the rear of the chassis. A ground is not required with either type of installation. Other features of design included in the radio are three tuning ranges; covering standard, police, and shortwave frequencies; two I. F. stages, Philco loktal tubes; variable tone control; automatic volume control; and a pentode audio output stage. Six (6) electric tuning push buttons are provided for automatically selecting stations. Five of the push buttons are used for broadcast stations, and one for turning the power of the set "on" and "off". The procedure for adjusting the push buttons will be found in the instructions supplied with the Radio.
TUNING RANGES:
540 to 1720 K. C.; 2.0 to 7.0 M. C.; 9 to 12.0 M. C.
INTERMEDIATE FREQUENCY: 455 K. C.
POWER SUPPLY: 115 volts A. C., 60 cycles. To operate the radio on 115 volt, 25 cycle current, it is necessary to change the power transformers as indicated in the parts list.
AUDIO OUTPUT: 2 watts.
PHILCO TUBES USED: one XXL, 1st detector; one XXL, oscillator; one 7B7, 1st I. F.; one 7B7, 2nd I. F.; one 7C6, 2nd detector, 1st audio, A. V. C.; one 7B5, audio output and a 7Y4 rectifier.
CABINET DIMENSIONS:
Height, 11¾"; Width, 16½"; Depth, 9⅛".

ALIGNING R. F. AND I. F. COMPENSATING CONDENSERS

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 7B5 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 aerial section (stator plates) 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. If adjustments are made outside the cabinet a Service Tuning Scale, Part No. 45-2821, will be required. This scale is placed underneath the pointer on the metal dial plate.

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 ass shown in the tabulation for each model below. Locations of the compensators are shown in the schematic diagram. If the indicating meter pointer goes off scale when adjusting the compensator, reduce the strength of the signal from the generator.

Model 41-240

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	Ant. Section of Tuning Condenser	455 K. C.	Tuning Cond. closed	Vol. Max. Range Switch "Brdcst"	28A, 15A, 14A, 14B	Note A
2	Loop to Radio Loop See Sig. Gen. above	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst"	20A, 6	Note B
3	Loop to Radio Loop See Sig. Gen. above	580 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst"	20	Rock Comp. to "max." Recheck Operation No. 2
4	Loop to Radio Loop See Sig. Gen. above	9.5 M. C.	9.5 M. C.	Range Switch "S. W."	19, 6A	Note C
5	Loop to Radio Loop See Sig. Gen. above	12 M. C.	12 M. C.	Range Switch "S. W."	19, 6A	Note D

Model 41-245

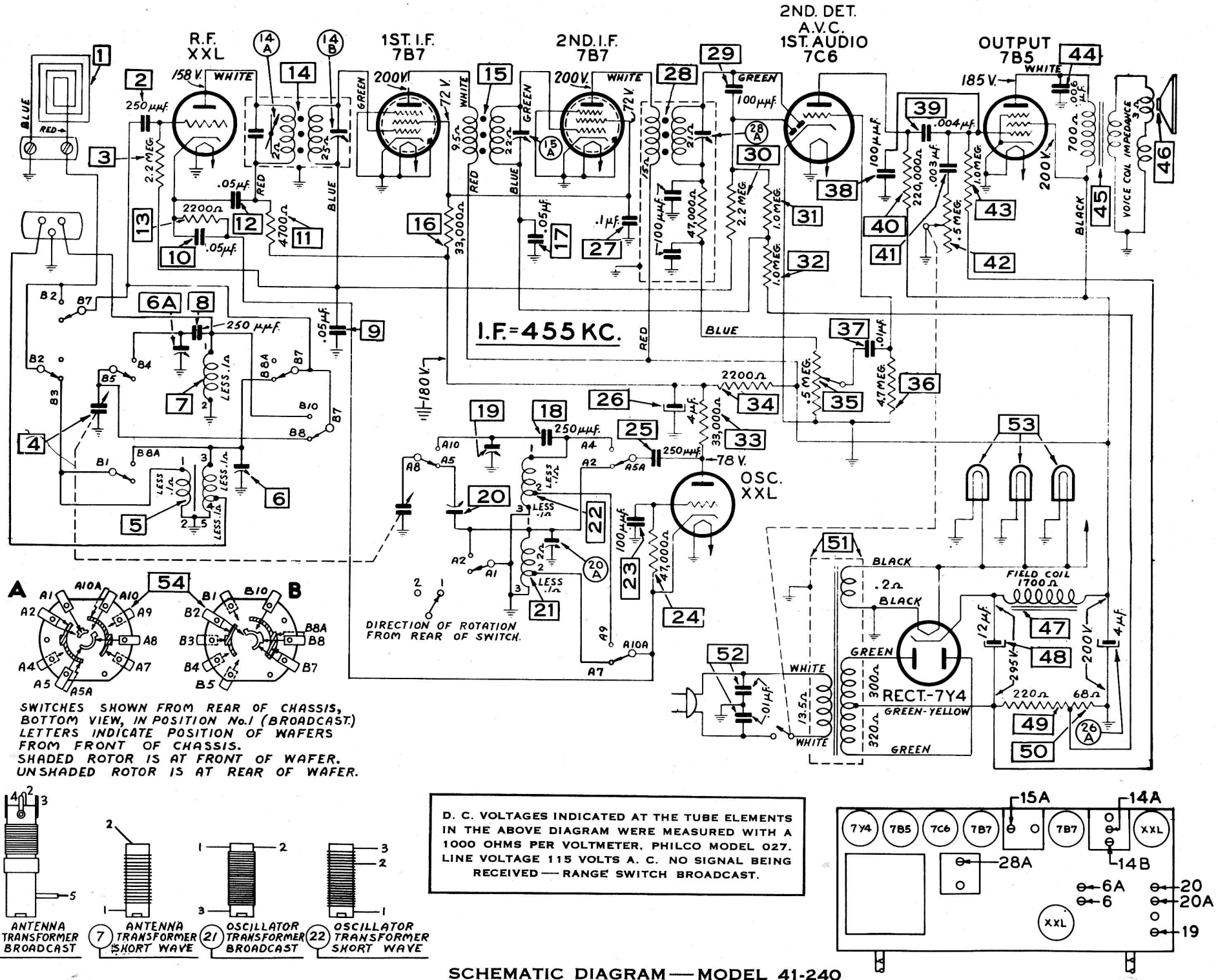
1	Ant. Section of Tuning Condenser	455 K. C.	Tuning Cond. closed	Vol. Max. Range Switch "Brdcst"	33A, 30A, 29A, 29B	Note A
2	Loop to Radio Loop See Sig. Gen. above	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst"	17A, 9	Note B
3	Loop to Radio Loop See Sig. Gen. above	580 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst"	17	Rock Comp. to "max." Recheck Operation No. 2
4	Loop to Radio Loop See Sig. Gen. above	6 M. C.	6 M. C.	Range Switch "Police"	19	Rock Comp. to "max."
5	Loop to Radio Loop See Sig. Gen. above	9.5 M. C.	9.5 M. C.	Range Switch "S. W."	19A, 5	Note C
6	Loop to Radio Loop See Sig. Gen. above	12 M. C.	12 M. C.	Range Switch "S. W."	19A, 5	Note D

NOTE A — Compensator (14A) Model 41-240, must be adjusted before (14B) Model 41-240, and should be done in the following manner. Turn 14A all the way up, then slowly turn down and select the first I. F. peak. Padder 14B is now adjusted to maximum. This procedure applies also to Model 41-245, padder 29A should be adjusted before 29B.

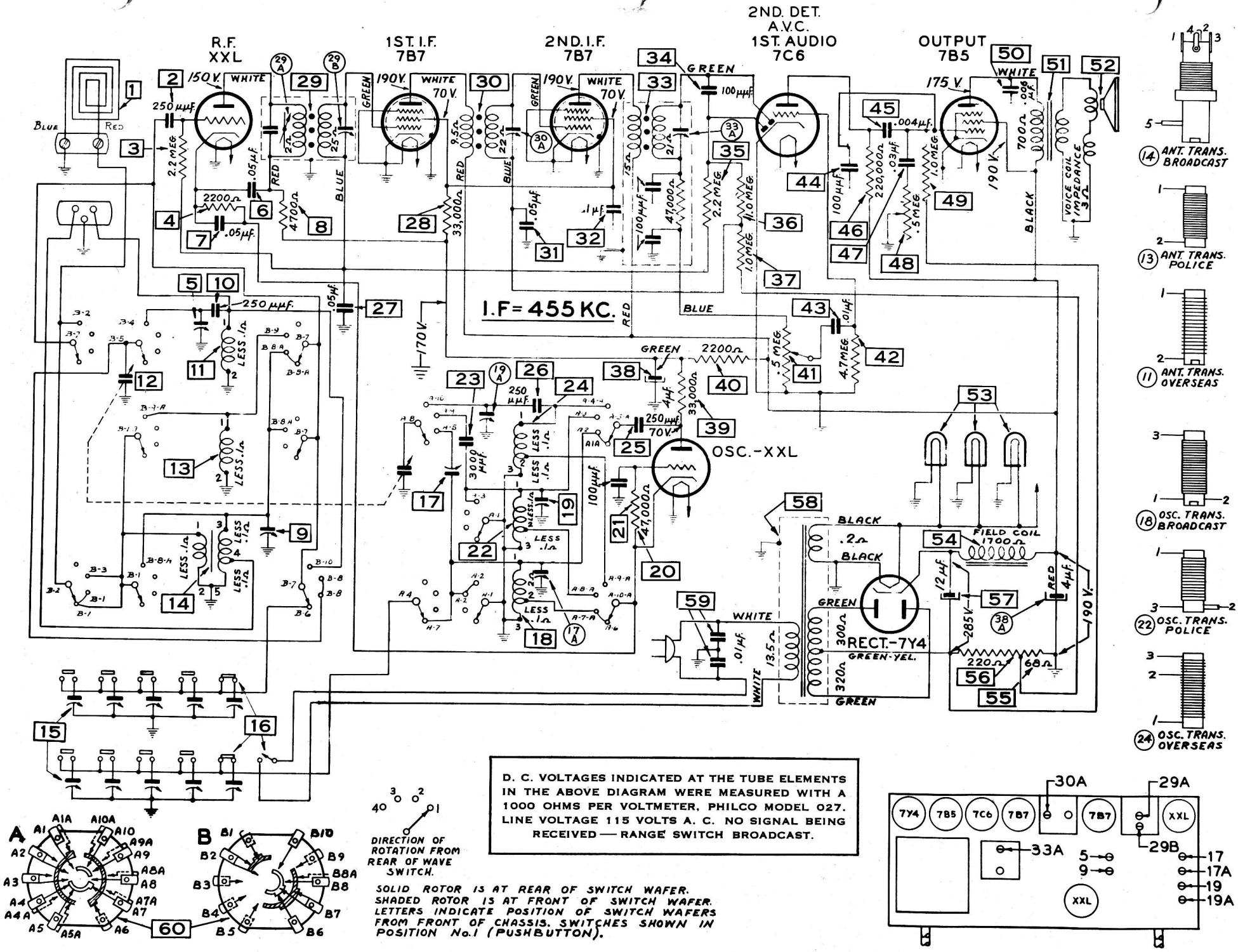
NOTE B — DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To do this, proceed as follows: Turn the tuning condenser to the maximum capacity position (plates fully meshed). With the condenser in this position, set the tuning pointer on the extreme left index line at the low frequency end of the broadcast scale.

NOTE C — Set pointer at 9.5 M. C. and adjust padders (19) Model 240, and (19A) Model 245 to the second peak from tight. Adjust padders (6A) Model 240 and (5A) Model 245 to first peak from tight. (This gives the approximate correct setting of padders for next operation.)

NOTE D — Tune in the 2nd signal peak from the tight position. Padder 19 Model 240, 19A Model 245, then roll padder 6A Model 41-240, 5 Model 41-245, slowly to maximum on the first peak from tight position.



SCHEMATIC DIAGRAM — MODEL 41-240



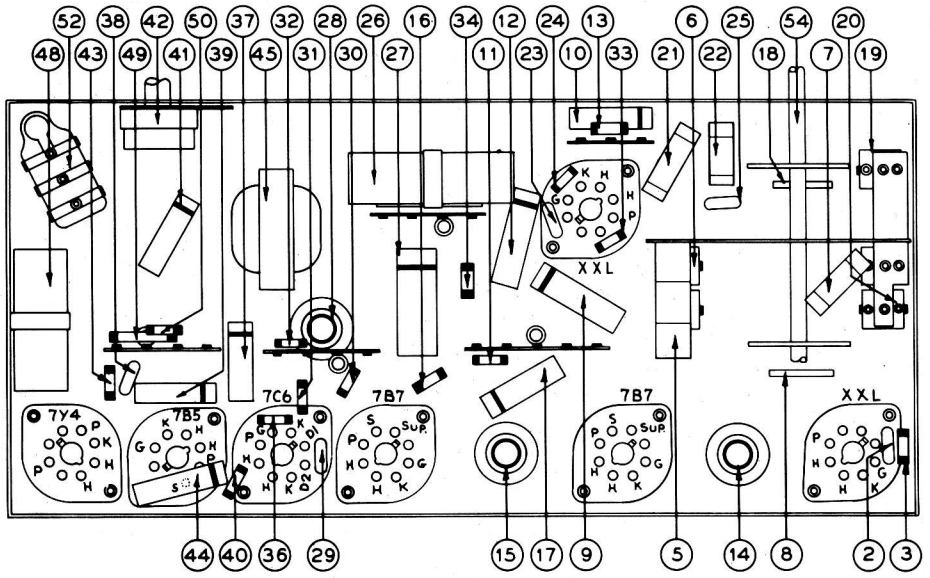
SCHEMATIC DIAGRAM — MODEL 41-245

Replacement Parts — Model 41-240

SCHE. No.	DESCRIPTION	PART No.
1	Loop Aerial	76-1092
2	Mica Condenser (250 mmfd.)	60-125257
3	Resistor (2.2 megohms)	33-522154
4	Tuning Condenser	31-2481
	Mounting Rubber	27-4596
5	Aerial Transformer (Broadcast)	32-3461
6	Comp. (Aerial Broadcast) Dual Capacity	31-6373
6A	Compensator (Aerial S. W.) (Part of 6)	
7	Aerial Transformer (S. W.)	32-3462
8	Mica Condenser (250 mmfd.)	30-1179
9	Tubular Condenser (.05 mfd., 200 volts)	30-4519
10	Tubular Condenser (.05 mfd., 200 volts)	30-4519
11	Resistor (4700 ohms, ½ watt)	33-247339
12	Tubular Condenser (.05 mfd., 400 ohms)	30-4518
13	Resistor (2200 ohms, ½ watt)	33-222339
14	1st I. F. Transformer	32-3465
15	2nd I. F. Transformer	32-3466
16	Resistor (33,000 ohms, ½ watt)	33-333339
17	Tubular Condenser (.05 mfd., 200 volts)	30-4519
18	Mica Condenser (250 mmfd.)	30-1179
19	Compensator (S. W. Osc.)	31-6360
20	Compensator Series (Broadcast, Osc.)	31-6352
20A	Comp. Shunt (Brdcst, Osc.) (Part of 20)	
21	Osc. Transformer (Broadcast)	32-3464
22	Osc. Transformer (S. W.)	32-3460
23	Mica Condenser (100 mmfd.)	60-110257
24	Resistor (47,000 ohms, ½ watt)	33-347339
25	Mica Condenser (250 mmfd.)	60-125257
26	Electrolytic Condenser, Dual (4-4 mfd.)	30-2477
26A	Electrolytic Condenser (Part of 26)	
27	Tubular Condenser (.1 mfd., 400 volts)	30-4455
28	3rd I. F. Transformer	32-3467
29	Mica Condenser (100 mmfd.)	60-110157
30	Resistor (2.2 megohms)	33-522339
31	Resistor (1 megohm)	33-510339
32	Resistor (1 megohm)	33-510339
33	Resistor (33,000 ohms)	33-333339
34	Resistor (2200 ohms)	33-222339
35	Volume Control (500,000 ohms)	33-5332
	Palnut	W-2157
36	Resistor (4.7 megohms)	33-547339
37	Tubular Condenser (.01 mfd., 400 volts)	30-4572
38	Mica Condenser (100 mmfd.)	60-110157
39	Tubular Condenser (.004 mfd., 400 volts)	30-4578
40	Resistor (220,000 ohms, ½ watt)	33-422339
41	Condenser (.003 mfd., 400 volt)	30-4469
42	Tone Control	33-5333
43	Resistor (1 megohm)	33-510339
44	Tubular Condenser (.006 mfd.)	30-4591
45	Output Transformer	32-8063
46	Cone Assembly (for Speaker 36-1510-3)	36-4163
47	Field Coil (Replace Speaker 36-1510)	
48	Electrolytic Condenser (12 mfd.)	30-2477
49	Resistor (220 ohms, 1 watt)	33-122436
50	Resistor (68 ohms, ½ watt)	33-068336
51	Power Transformer (110 volts, 60 cycle)	32-8064
	Power Transformer (110 volts, 25 cycle)	32-8075
52	Bakelite Condenser, Dual (.01 mfd.)	3903-ODG
53	Pilot Lamps	34-2068
54	Range Switch	42-1589
	Palnut (Range Switch)	W-2157

MISCELLANEOUS PARTS

	Bezel (Dial)	27-4975
	Bezel Speed Clip	56-1877
	Cabinet	1049-1A
	Dial Scale	27-5617
	Dial Scale Speed Clips (5 required)	56-1876
	Dial Scale Fibre Washer	27-9382
	Dial Pointer	56-1819
	Drive Drum (Tuning Condenser)	38-9883
	Drive Cord (Tuning Condenser Drive)	31-2400
	Drive Cord (Pointer Drive)	31-2473
	Indicator Light Bracket	56-1815
	Indicator Light Shield	56-1816
	Indicator C Washer (Indicator Plate Mtg.)	56-1818
	Indicator Socket Assembly	76-1063
	Indicator Spring (Dial Indicator)	56-1826
	Indicator Spring (Indicator Drive Mtg.)	56-6088
	Indicator Drive Cord (Long)	31-2477
	Indicator Drive Cord (Short)	31-2478
	Knob Assembly (Tuning, Volume, Etc.)	27-4332
	Mtg. Clips (Electrolytic Cond.) (2 req.)	56-1346
	Mtg. Clips (Electrolytic Cond.) (1 req.)	56-1466
	Nut (L. F. Mtg., Tuning Cond. Mtg.)	W-1949
	Shield (Power Transformer)	56-1525
	Shield Base (Power Transformer)	56-1526
	Socket (Tubes)	27-6138
	Socket Assembly (Pilot Light) (2 required)	76-1062
	Spring (Condenser Drive)	28-8751
	Spring (Pointer Drive)	28-8953
	Spring (Drive Shaft Mounting)	57-1468
	Speaker	36-1510
	Tuning Shaft	56-6086
	Tuning Shaft Insulator	27-9437
	Tuning Shaft Rubber Coupling	27-9432
	Tuning Shaft "C" Washer	28-2043
	Terminal Panel (Loop)	38-6533
	Terminal Panel Aerial)	76-1065
	Washer (Chassis Mounting)	W-410
	Screw (Power Transformer Mounting)	W-453
	Screw (Chassis Mounting)	W-2067
	Screw (Speed Clip Mounting)	W-2023



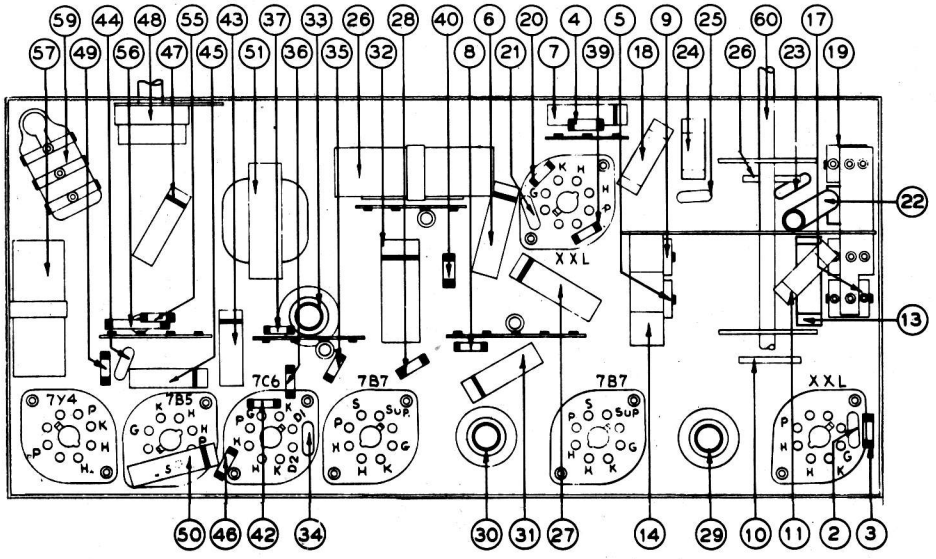
MODEL 41-240 — PART LOCATIONS, UNDERSIDE OF CHASSIS

Replacement Parts — Model 41-245

SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly	76-1092
2	Mica Condenser (250 mmfd., wax)	60-125257
3	Resistor (2.2 megohm, ½ watt)	33-522339
4	Resistor (2200 ohms, ½ watt)	33-222339
5	Compensator (Aerial S. W.)	31-6373
6	Condenser (.05 mfd., 400 volts)	30-4518
7	Condenser (.05 mfd., 200 volts)	30-4519
8	Resistor (4700 ohms, ½ watt)	33-247339
9	Compensator (Aerial Brdcst) (Part of 5)	
10	Mica Condenser (250 mmfd.)	30-1179
11	Aerial Transformer (S. W.)	32-3462
12	Tuning Condenser	31-2471
	Tuning Condenser Rubber Connection	27-9432
	Tuning Condenser Spacer (Mounting)	28-5665
13	Aerial Transformer (Police)	32-3463
14	Aerial Transformer (Broadcast)	32-3461
15	Push-Button Padder Strip Complete	31-6372
16	Push-Button Switch	42-1576
17	Compensator (Broadcast Series)	31-6352
18	Oscillator Transformer (Broadcast)	32-3464
19	Compensator (Police Shunt)	31-6351
19A	Compensator (S. W. Shunt) (Part of 19)	
20	Resistor (47,000 ohms, ½ watt)	33-347339
21	Mica Condenser (100 mmfd.)	60-110157
22	Oscillator Transformer (Police)	32-3459
23	Mica Condenser (3000 mmfd.)	60-230334
24	Oscillator Transformer (S. W.)	32-3460
25	Mica Condenser (250 mmfd.)	30-1119
26	Mica Condenser (250 mmfd.)	30-1179
27	Condenser (.05 mfd., 200 volts)	30-4519
28	Resistor (33,000 ohms, ½ watt)	33-333339
29	1st I. F. Transformer	32-3465
30	2nd I. F. Transformer	32-3466
31	Condenser (.05 mfd., 200 volts)	30-4519
32	Condenser (.1 mfd., 400 volts)	30-4455
33	3rd I. F. Transformer	32-3467
34	Mica Condenser (100 mmfd.)	60-110157
35	Resistor (2.2 megohms)	33-522339
36	Resistor (1 megohm)	33-510339
37	Resistor (1 megohm)	33-510339
38	Electrolytic Condenser (4-4 mfd.)	30-2477
38A	Electrolytic Condenser (Part of 38)	
39	Resistor (33,000 ohms, ½ watt)	33-333339
40	Resistor (2200 ohms, ½ watt)	33-222339
41	Volume Control	33-5332
42	Resistor (4.7 megohms, ½ watt)	33-547339
43	Condenser (.01 mfd., 400 volts)	30-4572
44	Mica Condenser (100 mmfd.)	60-110157
45	Condenser (.004 mfd., 400 volts)	30-4578
46	Resistor (220,000 ohms, ½ watt)	33-422339
47	Condenser (.003 mfd.)	30-4469
48	Tone Control	33-5404
49	Resistor (1 megohm, ½ watt)	33-510339
50	Condenser (.006 mfd., 400 volts)	30-4591
51	Output Transformer	32-8063
52	Cone Assembly	
	(for Speaker 36-1510-4)	36-4168
	(for Speaker 36-1510-3)	36-4163
53	Pilot Lamps	34-2068
54	Field Coil (Replace Speaker 36-1510)	
55	Resistor (68 ohms, 1 watt)	33-068336
56	Resistor (220 ohms, 1 watt)	33-122436
57	Electrolytic Cond. (12 mfd., 400 volts)	30-2409
58	Power Transformer (110 volts, 60 cycle)	32-8064
	Power Transformer (110 volts, 25 cycle)	32-8075
	Power Transformer Shield	56-1525
	Power Transformer Base (Shield)	56-1526
59	Condenser, Dual (.01 mfd.)	3903-ODG
60	Range Switch	42-1578

MISCELLANEOUS PARTS

SCHE. No.	DESCRIPTION	PART No.
	Bezel (Dial)	27-4975
	Bezel (Push-Button)	27-4983
	Cable (Power)	L-3199
	Cabinet	1049-2A
	Clip (Mtg. Electrolytic Cond.) (2 req.)	56-1346
	Clip (Mtg. Electrolytic Cond.) (1 req.)	56-1466
	Dial Scale	27-5618
	Dial Pointer	56-1819
	Dial Tuning Shaft	56-6086
	Dial "C" Washer	28-2043
	Drive Cord (Tuning Condenser Drive)	31-2400
	Drive Cord (Pointer)	31-2473
	Drive Cord—Long (Indicator)	31-2477
	Drive Cord—Short (Indicator)	31-2478
	Drive Drum (Tuning Condenser)	38-9883
	Knob (Tuning, Volume)	27-4332
	Knob (Push-Button)	27-4824
	Mounting Feet (Chassis)	56-1802
	Socket Assembly (Dial Light)	76-1062
	Socket Assembly (Indicator Light)	76-1063
	Socket (Tubes)	27-6138
	Spring (Dial Indicator)	56-1826
	Spring (Condenser Drive)	28-8751
	Spring (Pointer Drive)	28-8953
	Spring (Drive Shaft Mounting)	57-1468
	Speaker	36-1510
	Screw (Chassis Mounting)	W-2067
	Screw (Bezel Mounting, Push-Button)	W-2071
	Tab Kit	40-6594
	Washer (Chassis Mounting)	W-410



MODEL 41-245 — PART LOCATIONS, UNDERSIDE OF CHASSIS

Parts and Service Division PHILCO **Philadelphia, Pa.**