Models 42-853, 42-854

SPECIFICATIONS

CIRCUIT DESCRIPTION: Models 42-853 and 42-854 are seven (7) tube portable superheterodyne radios having two tuning ranges covering standard broadcasts and short wave stations. These radios can be operated by either dry batteries or an Alternating Current (A.C.) or Direct Current (D.C.) power supply. In general these models are similar with the exception of the cabinets. In addition these models include: a Philco built-in low impedance loop aerial; two I.F. amplifier stages; pentode audio output stage; Philco LOKTAL TUBES; High output permanent magnet speaker.

TUNING RANGES: 540 to 1600 K.C.; 5.7 to 15.5 mc.

INTERMEDIATE FREQUENCY: 445 K.C.

POWER SUPPLY: For battery operation two Philco "A" batteries type P-100 and two Philco "B" batteries type P-200 are required. When operating these radios with the batteries wrap the power line cord around its holder clamp on the back of the cabinet and insert the plug end into the socket provided on the chassis. To operate on a 115 volt A.C. or D.C. power supply, remove the power line cord plug from the socket on the chassis and insert it into a power receptacle.

PHILCO TUBES USED: 1LE3, converter; 1LE3, oscillator; 1LN5, 1st I.F. amplifier; 1LN5, 2nd I.F. amplifier; 1LH4, 2nd detector, 1st audio; 1LB4, audio output and a 117Z6G, Rectifier.

CABINET DIMENSIONS:	Height	Width	Depth
Model 42-853	10 1/2"	13 3/8"	7"
Model 42-854	12 1/8"	13 7/8"	7 1/4"

OUTSIDE AERIAL AND GROUND

Under ordinary operating conditions, an outside aerial or ground is not required with these models. In some locations, however, such as steel reinforced buildings, remote camps and other shielded areas where signal strength is weak, an additional aerial should be used. To connect a regular outside aerial connections are provided on the side of the cabinet for inserting a special aerial coupler, part No. 76-1230.

The PHILCO Auxiliary Plug-in Loop Aerial, Part No. 45-2878, may be also plugged into the outside aerial connections. This type of aerial is ideal for portable use (on trains and in hotels) or semi-permanent installations. Instructions are supplied with the auxiliary aerial for installation.

ALIGNING R. F. AND I. F. COMPENSATORS

The following procedure covers all Models in this Bulletin.

EQUIPMENT REQUIRED

1. **SIGNAL GENERATOR,** such as Philco Model 070 A.C. operated or Model 177 battery operated. These signal generators cover all frequencies required in aligning the radios.
2. **INDICATING DEVICE:** To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube voltmeter similar to Philco Models 027 and 028 is recommended. These instruments also contain an audio output meter which may be used as an indicating device. The method of connecting either of these instruments is listed below.
3. **ALIGNING TOOLS:** Fiber handle screwdriver, Philco Part No. 45-2610.

CONNECTING ALIGNING METERS

AUDIO OUTPUT METER: If an audio output meter is used, connect it across the plate and screen terminals of the output tubes. Adjust the meters to use the 0 to 10 scale. Terminal No. 1 on the rear of the chassis which connects to the speaker is also provided for connecting the audio output meter. If this terminal is used, the lowest scale of the meter should be used when aligning.

VACUUM TUBE VOLTMETER: If a vacuum tube voltmeter is used as an aligning indicator, the negative (—) terminal is connected to the A. V. C. circuit of the receiver through a 2 megohm resistor. The positive (+) terminal is connected to the chassis or ground.

SIGNAL GENERATOR: When adjusting the "I. F." padders the high side of the signal generator is connected through a .1 mfd. condenser to the loop tuning condenser stator lug which connects to the grid of the converter tube. The ground or low side of the signal generator is connected to the chassis of the receiver.

When aligning the R. F. padders of the portable models a loop aerial is made from a few turns of wire and connected to the signal generator output terminals. The signal generator is then placed a few feet from the set. The loop aerial of the receiver should be assembled in the cabinet together with the battery when adjusting the R. F. padders.

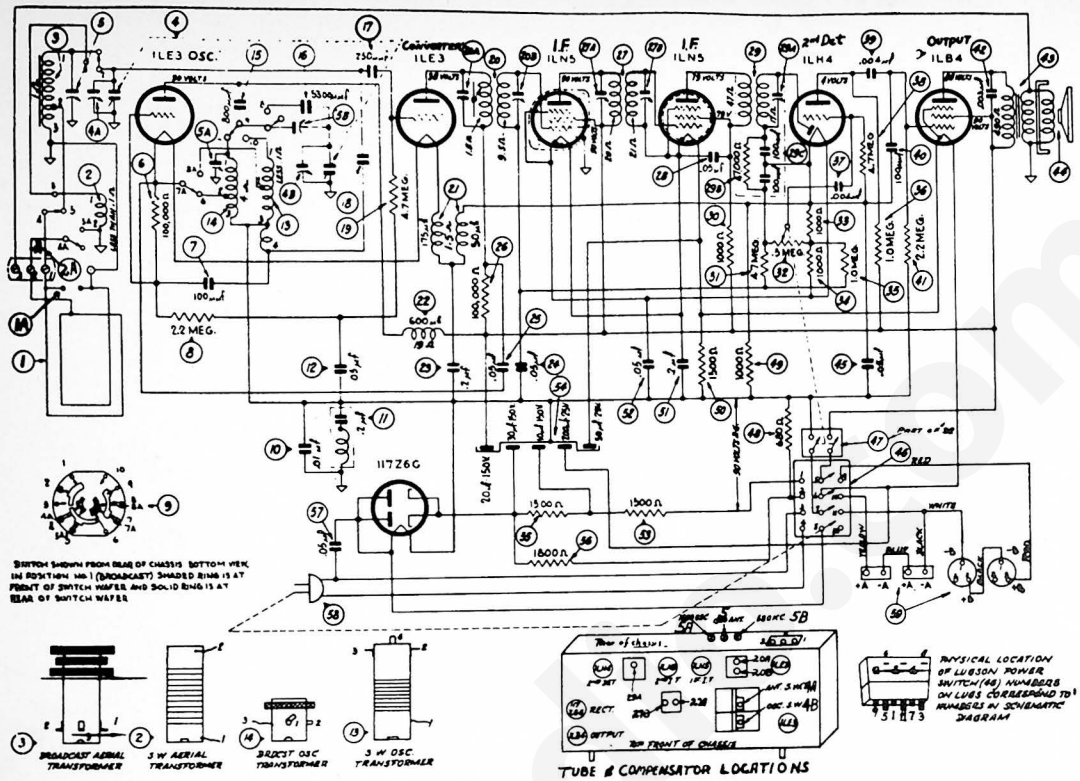
These models may be adjusted when operated by battery or 115 volts A.C.-D.C. power.

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1.	See paragraph on Signal Generator above	455 K.C.	540 K.C.	Vol. Max. Band—Broadcast	20A, 20B, 27A, 27B, 29A	Note A
2.	Loop on Generator	15 mc.	15 mc.	Band—S.W.	4B, 4A	Note B
3.	Loop on Generator	1600 K.C.	1600 K.C.	Band—Broadcast	5A	
4.	Loop on Generator	1500 K.C.	1500 K.C.	Band—Broadcast	5	Note C
5.	Loop on Generator	580 K.C.	580 K.C.	Band—Broadcast	5B	Roll Tuning Condenser
	Repeat operation 3					

NOTE A: DIAL CALIBRATION — Before adjusting the R. F. padders the dial must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: With the tuning condenser in the closed position (maximum capacity), set the dial pointer on the small dot below 540 K.C.

NOTE B: When adjusting the S. W. oscillator compensator be sure to tune in the fundamental signal (15 mc.) instead of the image signal. If the compensator is correctly adjusted, the image signal will be found by turning the signal generator dial 910 mc. below the fundamental signal which will be 14.090 mc.

NOTE C: To adjust the aerial compensator (5) to maximum, first set signal generator to 1500 K.C., then tune in this signal on the radio. The aerial compensator is then adjusted to maximum output.



SCHEMATIC DIAGRAM, MODELS 42-853, 42-854

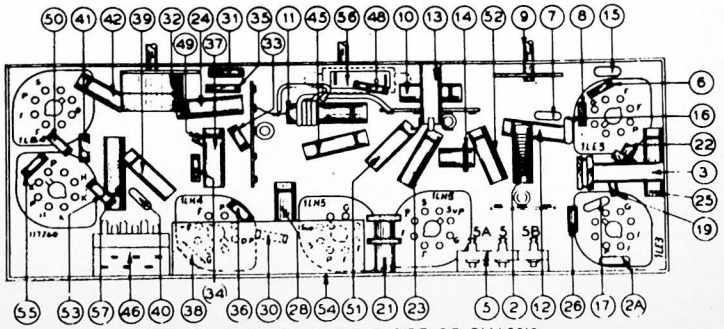
The tube socket voltages indicated on the diagram were measured with a 1000 ohm per volt meter, Phico Model 027. Batteries in full voltage condition.

Replacement Parts — Models 42-853, 42-854

SCHE. No.	DESCRIPTION	PART No.
1.	Loop Aerial (42-853)	76-1278
	Mtg. Screw	W-2071
1A.	External Loop Aerial Socket	27-6175
2.	Aerial Transformer (S.W.)	32-3718
	Mtg. Clip	28-5002
2A.	Mica Condenser 15 mmfd.	60-015137
3.	Aerial Transformer (Broadcast)	32-3717
	Mtg. Clip	28-5002
4.	Tuning Condenser	31-2555
	Mtg. Spacer	28-5665
	Mtg. Grommet	27-5496
	Tuning Shaft	56-6136
	"C" Washer	28-5990
	Pointer (Dial)	27-4868
	Spring (Cond. Drive)	28-8882
	Drive Cord	31-2546
	Washer Mtg. Cond.	W-151
	Lockwashers Mtg. Cond.	W-388
	Screw Mtg. Cond.	W-523
	Nuts Mtg. Cond.	W-1543
5.	Compensator (Brdcst. Aerial Trans.)	31-6427
6.	Resistor (100,000 ohms)	33-410339
7.	Mica Condenser (100 mmfd.)	60-110157
8.	Resistor (2.2 megohms)	33-522339
9.	Band Switch	42-1670
	Mtg. Nut	W-2157
10.	Condenser (.01 mfd., 400 volts)	30-4572
11.	Condenser (.2 mfd. and R. F. choke)	76-1227
12.	Condenser (.05 mfd., 200 volts)	30-4519
13.	Oscillator Transformer (S. W.)	32-3720
14.	Oscillator Transformer (Brdcst.)	32-3719
15.	Mica Condenser (800 mmfd.)	60-180157
16.	Mica Condenser (5300 mmfd.)	60-253224
17.	Mica Condenser (250 mmfd.)	60-125157
18.	Condenser, Consisting of a lug mounted on contact 2, Band Switch	
19.	Resistor (4.7 megohms)	33-547339
20.	1st I. F. Transformer	32-3620
21.	Filament Choke	32-3632
22.	Oscillator Plate Choke	32-3615
23.	Condenser (.2 mfd., 200 volts)	30-4536
24.	Condenser (.05 mfd., 200 volt)	30-4519
25.	Condenser (.05 mfd., 200 volts)	30-4519
26.	Resistor (100,000 ohms)	33-410339
27.	2nd I. F. Transformer	32-3621
	Mtg. Nut	W-1949
28.	Condenser (.05 mfd., 200 volts)	30-4519
29.	3rd I. F. Transformer	32-3631
29A.	Compensator part of 29	
29B.	Resistor 47,000 ohms part of 29	31-347339
29C.	Condenser (100 mmfd.) part of 29	
30.	Resistor (1,000 ohms)	33-210339
31.	Resistor (4.7 megohms)	33-547339
32.	Volume Control	33-5436
	Mtg. Nut	W-2157
33.	Resistor (1,000 ohms)	33-210339
34.	Resistor (1,000 ohms)	33-210339
35.	Resistor (1 megohm)	33-510339
36.	Resistor (1 megohm)	33-510339
37.	Condenser (.004 mfd., 400 volts)	30-4578
38.	Resistor (4.7 megohms)	33-547339
39.	Condenser (.004 mfd., 400 volts)	30-4578
40.	Mica Condenser (100 mmfd.)	60-110157
41.	Resistor (2.2 megohms)	33-522339
42.	Condenser (.003 mfd., 1,000 volts)	30-4469
43.	Output Transformer	32-8169
44.	Cone Assembly (for speaker 36-1540-3)	36-4205
45.	Condenser (.05 mfd., 200 volts)	30-4519
46.	Battery and Powerline Changeover Switch	42-1650
	Mtg. Spacers	57-0194
	Screws	W-1395
	Spacers	57-0194
47.	OFF-ON Switch (part of 32)	
48.	Resistor (680 ohms)	33-168336
49.	Resistor (1,000 ohms)	33-210339
50.	Resistor (1,500 ohms)	33-215339
51.	Condenser (.2 mfd., 200 volts)	30-4587
52.	Condenser (.05 mfd., 200 volts)	30-4519
53.	Resistor (1500 ohms)	33-215339
54.	Electrolytic Condenser 10 mfd.-150 volts; 20 mfd.-150 volts 30 mfd.-150 volts; 50 mfd.- 25 volts 200 mfd.-25 volts	30-2498
	Clamp (Mtg. Elect. Cond.)	56-1452
55.	Resistor (1,500 ohms)	33-215339
56.	Resistor (1,800 ohms)	33-3424
57.	Condenser (.05 mfd., 400 volts)	30-4518
58.	Power Cord (A.C.-D.C.)	L-3199
59.	Battery Cable	41-3570

MISCELLANEOUS

DESCRIPTION	PART No.
Cabinet 42-853	10537B
Cabinet 42-854	10538B
Clamp (Battery)	56-2178
Screw	W-527
Nut	W-2261
Dial Scale	27-5729
Washer	3093
Screws	W-453
Knobs	27-4970
Lock (42-853 Cabinet)	45-6184
Key	45-6203
Socket (Tubes)	27-6177
Rivets	W-239
Socket (1st I. F. Tube)	27-6174
Rubber Washer (Mtg. socket)	27-4112
Rubber Grommets	27-4707
Adapter Plate (Mtg. Socket)	56-2112
Stud	56-6120
Speaker	36-1540
Screws	W-1974
Felt	27-9439
Terminal Panel (Aerial)	38-9942
Rivets	W-207
Terminal Panel	38-9579
Terminal Panel	38-8369
Washer (Chassis Mtg.)	W-410
Screrc (Chassis Mtg.)	W-2030



LOCATION OF PARTS, UNDERSIDE OF CHASSIS

Filament Resistor Change in Models 42-842, 843, 844, 853, 854

In the above listed models, complaints may be received of a complete set of tubes testing weak. Replacement of the tubes restores normal operation for only a short time after which the same condition re-occurs.

The condition is caused by the overheating of the series filament resistor shown as No. 49 in Service Bulletin No. 391 and as No. 56 in Service Bulletin No. 388. When the overheating takes place, the resistor breaks down, its resistance value decreases, thus allowing an increased filament current to the tubes with resulting damage to the filaments.

An entirely new replacement resistor is available — Part No. 33-3424. This resistor is considerably longer than the one now in the set and is equipped with a protecting cover. The resistor is mounted vertically over one of the original holes in the chassis with a suitable drive screw. The tab on the cover is soldered to the chassis. The longer leads which are required for the installation and which should be fireproof, and not ordinary rubber covered, are brought down through the large hole in the chassis. The other large hole should be plugged up with a spring button, such as Philco Part No. W2232.

Although the Service Bulletin parts listing calls for resistor No. 33-218339, the number of the resistor which has been used is 33-3410. If a replacement is necessary, however, the new resistor No. 33-3424 should be used.