2017-0021

RCA VICTOR



Model P-337

Battery-Operated Transistor Radio

MODEL P-337
SERVICE DATA

— 1959 No. 5 —

ISSUED BY
SERVICE DIVISION
RCA VICTOR COMPANY, LTD.
MONTREAL, CANADA

GENERAL DESCRIPTION

The Model P-337 is a personal radio recevier, using eight transistors and a crystal diode. The tuning range features the standard broadcast (Medium Range) and a Short Wave Band from 3.8 to 12 megacycles (25 to 75 meters). A built in antenna is used for Broadcast reception and a pull out extension antenna is used for Short Wave.

The output circuit is push-pull "Class B" enabling high output to be obtained with minimum battery drain. Two output jacks permit headphones or an external speaker to be used either alone or in conjunction with the self-contained speaker.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

TUNING RANGE:

Standard Broadcast (MW)	540 — 1600 Kcs
Short Wave (SW)	3.8 Mcs — 12.5 Mcs
Intermediate Frequency	455 Kcs

TRANSISTOR COMPLEMENT:

SYMBOL	TYPE	FUNCTION
TR-1	2S-93A	RF Mixer
TR-2	2S-92A	Oscillator
TR-3	2S-53	1st IF Amplifier
TR-4	2S-49	2nd IF Amplifier
TR-5	2S-54	1st Audio Driver
TR-6	2S-54	2nd Audio Driver
TR-7	2S-56	Push-Pull Output
TR-8	2S-56	Push-Pull Output

A type 1N60 crystal diode is used as a 2nd Detector.

BATTERY:

Type VS-034 (4 req'd)	**1.5 volts**
Current consumption (with no signal)	**Approx. 7 ma**
Useful life (intermittent service)	**Approx. 150 hours**

LOUDSPEAKER:

Size and type	**2½" P.M.**
Voice coil impedance	**7 ohms at 1,000 cycles**

Provision is made for connection of a low impedance earphone or speaker, if desired.

POWER OUTPUT:

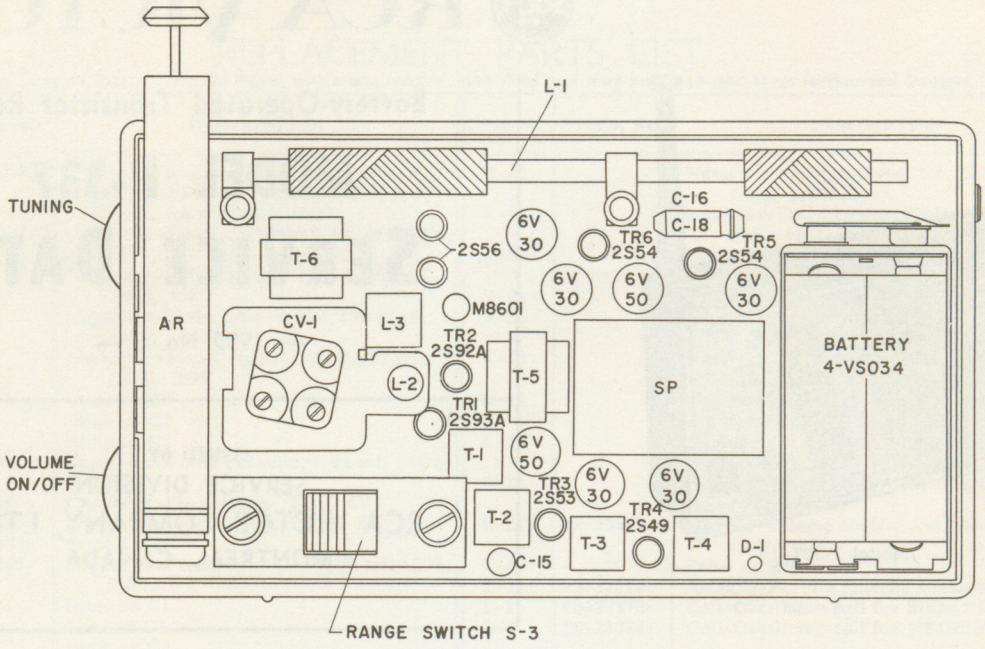
Undistorted	**90 milliwatts**
Maximum	**110 milliwatts**

DIMENSIONS: (overall)

Height 3¾" Width 6" Depth 1-13/16"

IMPORTANT

THE PROCEDURE TO BE USED IN SERVICING TRANSISTOR RADIOS IS VERY MUCH THE SAME AS USED WITH VACUUM TUBE RADIOS ALTHOUGH CERTAIN PRECAUTIONS MUST BE OBSERVED. THE SERVICE HINTS GIVEN ON PAGE 3 SHOULD BE CAREFULLY READ BEFORE ATTEMPTING TO SERVICE THIS RADIO RECEIVER.



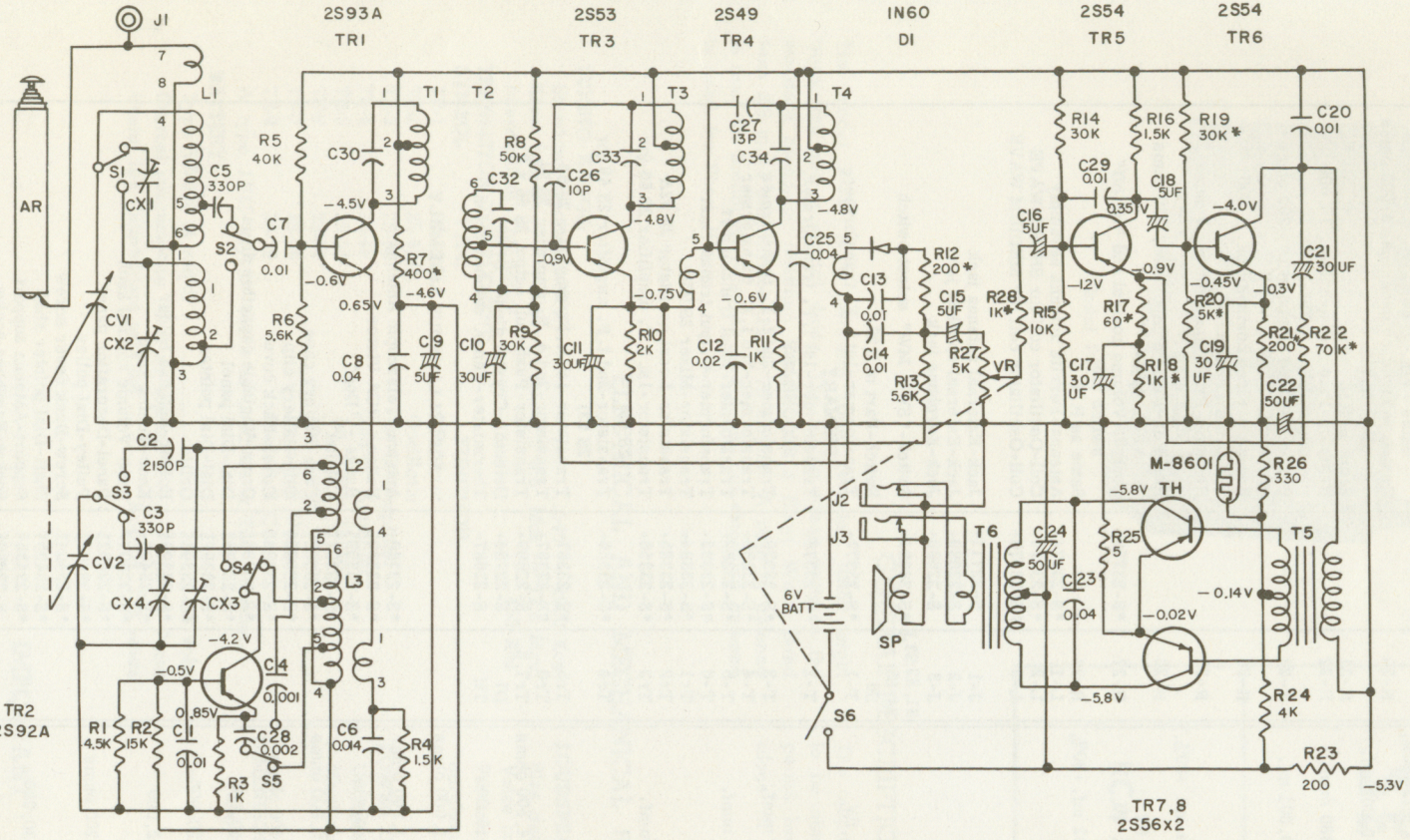
Chassis Layout

ALIGNMENT PROCEDURE

Output Meter Alignment

Connect volt-meter with both ends of speaker voice coil, and set the volume control at maximum. Low side of output terminal of Signal Generator shall be grounded to the chassis ground, and output voltage of Signal Generator shall be set at low level so that the AGC shall not function.

	Connect HIGH Side of Sig. Gen. to	Selector Switch	Sig. Gen. Output	Dial Point Setting	Adjust for Maximum output
1.	Connect lug of C5 (ANT side section of gang) in series with 0.1 mf	M.W.	455 KC	Quiet point near 1600 KC	I.F. Trans. T-4, T-3 T-2, T-1
2.	Short wire placed near antenna for radiated signal	M.W.	530 KC	Gang MAX Capacitance	OSC COIL L-3
3.	"	M.W.	1650 KC	Gang fully open	MW OSC trimmer Ct-4
4.	"	Repeat Steps 2 and 3			
5.	"	M.W.	600 KC	600KC	ANT Coil L-1
6.	"	M.W.	1400 KC	1400KC	ANT Trimmer Ct-2
7.	"	Repeat Steps 5 and 6			
8.	"	S.W.	3.8 MC	Gang MAX Capacitance	OSC Coil L-2
9.	"	S.W.	12.5 MC	Gang fully open	OSC Trimmer Ct-3
10.	"	Repeat Steps 8 and 9			
11.	"	S.W.	4.2 MC	4.2 MC	ANT Coil L-1
12.	"	S.W.	12 MC	12 MC	Ant. Trimmer Ct-1 1
13.	"	Repeat Steps 11 and 12			



Schematic Diagram

SERVICE HINTS

Extreme care should be used to avoid accidental shorting of transistor elements to circuit ground.

It is possible to damage a transistor when testing circuit continuity. Since a transistor needs only low voltage applied to its terminals for conduction, testing continuity of a circuit which includes a transistor can result in misleading continuity indications. To avoid transistor damage and misleading continuity indications, remove the transistor from the chassis before making continuity tests of its circuit.

1. When the receiver is inoperative, the first thing to do is check the batteries. The voltage at the two battery lead terminals, with the receiver turned on, should be approximately 6 volts with new dry batteries. The receiver can be expected to operate if the total battery voltage checks between 4 volts and 6 volts with the proper polarity.
   Check to make sure that every cell is inserted in the right direction.
2. To check for a circuit defect which would cause excessive battery drain, an overall current measurement and supplementary voltage measurement should be made. For reasons explained above, continuity measurements can be misleading.
3. Signal tracing by injection of a signal from a signal generator is done on transistor radios in exactly the same manner as with the conventional vacuum tube radios. The signal generator should be connected (as in past practice) in series with a capacitor to avoid shorting out bias voltages. With the transistors used in this receiver, the BASE is the signal input terminal (corresponding to signal grid of tubes), the COLLECTOR is the signal output terminal (corresponding to plate of tubes), and the EMITTER is the common terminal (corresponding to cathode of tubes).
4. The output of this receiver is of the "Class B" type. It should be noted that in "Class B" output the battery current increases noticeably with increased signal input.
5. Transistors and the printed circuit board can be damaged by excessive heat. Whenever soldering is necessary on the printed circuit board, use a soldering iron which is both HOT AND CLEAN. This minimizes the amount of heat which will be radiated from the point of soldering.
6. Oscillator performance can not be judged by measurement of a d-c voltage developed across a resistor. Measurement of oscillator signal strength with a-c voltmeter at the input of Tr. 1 (base contact) will give an indication of oscillator performance.
7. D-c voltage measurements should be made only with a sensitive voltmeter, such as an RCA VoltOhmyst®.
8. Interchanging transistors in the I-F stages may necessitate realignment.

REPLACEMENT PARTS LIST

Insist on Genuine Factory Tested Parts, which are readily identified and may be purchased from Authorized Dealers.

SYMBOL	STOCK NO.	DESCRIPTION
C-1, C-2 Ct1, Ct2, Ct3, Ct4	*S-23369+	Capacitor-Variable tuning capacitor Capacitor-Variable mica trimmer, 3-10 mmf. (part of Cv1, Cv2)
C-1	*S-23344+	Capacitor-Fixed, ceramic, 0.01 mf. +80%, 25V
C-2		Capacitor-Fixed, mylar-film, 0.002 mf. ±20%, 100V
C-3		Capacitor-Fixed, poly-styrol, 330 mmf. ±10%, 125V
C-4		Capacitor-Fixed, mylar-film, 0.001 mf. ±20%, 100V
C-5		Same as C3
C-6		Same as C1
C-7		Same as C1
C-8	*S-23343+	Capacitor-Fixed, ceramic, 0.04 mf. +80%, 25V
C-9	*S-23347+	Capacitor-Electrolytic, 5 mf. 6V
C-10	S-22685+	Capacitor-Electrolytic, 30 mf. 6V
C-11	S-22685+	Same as C10
C-12	*S-23345+	Capacitor-Fixed, ceramic, 0.02 mf. +80%, 25V
C-13		Same as C1
C-14		Same as C1
C-15		Same as C9
C-16		Same as C9
C-17	S-22685+	Same as C10
C-18		Same as C9
C-19	S-22685+	Same as C10
C-20		Same as C1
C-21	S-22685+	Same as C10
C-22	*S-23370+	Capacitor-Electrolytic, 50 mf. 6V
C-23		Same as C8
C-24		Same as C22
C-25		Same as C8
C-26	*S-23371+	Capacitor-Fixed, ceramic, 10 mmf. ±10%, 25V
C-27	*S-23372+	Capacitor-Fixed, ceramic, 13 mmf. ±10%, 25V
C-28		Same as C2
C-29		Same as C29
C-30		Capacitor-Fixed ceramic 200 mmf. ±10%, 25V (part of T1)
C-31		Same as C30 (part of T2)
C-32		Same as C30 (part of T3)
C-33		Same as C30 (part of T4)
R-1		Resistor-Fixed, composition, 4,500 ohms ±10%, 1/2W
R-2		Resistor-Fixed, composition, 15,000 ohms, ±10%, 1/2W
R-3		Resistor-Fixed, composition, 1,000 ohms ±10%, 1/2W
R-4		Resistor-Fixed, composition, 1,500 ohms ±10%, 1/2W
R-5		Resistor-Fixed, composition, 40,000 ohms ±10%, 1/2W
R-6		Resistor-Fixed, composition, 5,600 ohms ±10%, 1/2W
R-7		Resistor-Fixed, composition, 400 ohms ±20%, 1/2W
R-8		Resistor-Fixed, composition, 50,000 ohms ±10%, 1/2W
R-9		Resistor-Fixed, composition, 20,000 ohms ±10%, 1/2W
R-10		Resistor-Fixed, composition, 2,000 ohms ±10%, 1/2W
R-11		Same as R3
R-12		Resistor-Fixed, composition, 200 ohms ±20%, 1/2W
R-13		Same as R6
R-14		Resistor-Fixed, composition, 30,000 ohms ±10%, 1/2W
R-15		Resistor-Fixed, composition, 10,000 ohms ±10%, 1/2W
R-16		Same as R4
R-17		Resistor-Fixed, composition, 60 ohm ± 20%, 1/2W
R-18		Resistor-Fixed, composition, 1,000 ohms ±20%, 1/2W
R-19		Resistor-Fixed, composition, 30,000 ohms ±20%, 1/2W
R-20		Resistor-Fixed, composition, 5,000 ohms ±20%, 1/2W
R-21		Same as R12
R-22		Resistor-Fixed composition, 70,000 ohms ±20%, 1/2W
R-23		Resistor-Fixed composition, 200 ohms ±10%, 1/2W
R-24		Resistor-Fixed composition, 4,000 ohms ±10%, 1/2W
R-25		Resistor-Fixed composition, 5 ohms ±10%, 1/2W
R-26		Resistor-Fixed composition, 330 ohms ±10%, 1/2W
R-27	*S-23373+	Control-Volume control and "on-off" switch (S6)
R-28		Same as R18
L-1	*S-23374+	Antenna-Ferrite antenna assembly
L-2	*S-23375+	Coil-Oscillator coil for SHORT WAVE
L-3	*S-23376+	Coil-Oscillator coil for MEDIUM WAVE
J-1	S-22711+	Jack-External antenna jack
J-2	S-22689+	Jack-External speaker jack
J-3	S-22689+	Jack-Earphone jack
S1, S2, S3, S4, S5	*S-23381+	Switch-"SW - MW" select switch
S6		Switch-Part of R27
T-1	*S-23377+	Transformer-1st I.F. transformer, PRIMARY
T-2	*S-23378+	Transformer-1st I.F. transformer, SECONDARY
T-3	*S-23379+	Transformer-2nd I.F. transformer
T-4	*S-23380+	Transformer-3rd I.F. transformer
T-5	*S-23382+	Transformer-Input transformer
T-6	*S-23383+	Transformer-Output transformer
Tr1	*S-23384+	Transistor-Mixer 2S 93A
Tr2	*S-23385+	Transistor-Local oscillator 2S 92A
Tr3	*S-23356+	Transistor-1st I.F. amplifier 2S 53 (or 2S 49)
Tr4	*S-23386+	Transistor-2nd I.F. amplifier 2S 49 (or 2S 53)
Tr5	*S-23387+	Transistor-1st A.F. amplifier 2S 54
Tr6	*S-23387+	Transistor-2nd A.F. amplifier 2S 54
Tr7, 8	S-22699+	Transistor-Push-pull output 2S 56 x 2
D1	S-22724+	Detector-Crystal diode IN 60
TH	S-22687+	Thermister-Temp. compensation
		MISCELLANEOUS ASSEMBLY
	*S-23388+	Antenna-Telescopic Antenna
	*S-23389§	Badge - RCA Victor
	*S-23359§	Badge - "Dog"
	*S-23391§	Cabinet
	*S-23392§	Case-Battery case
	*S-23362§	Clip-Battery clip
	*S-23394§	Cover-Back cover
	*S-23395§	Drum-Variable capacitor drum
	*S-23396§	Dial-Dial panel
	*S-23397§	Dial-Dial pointer
	*S-23398§	Grille
	*S-23399§	Holder-Antenna holder
	*S-23400+	Knob-Tuning knob
	*S-23401+	Knob-Volume control knob
	*S-23402§	Panel-Decoration panel
	*S-23403§	Pulley-Dial pulley
	*S-23404§	Screw-Back cover screw
	*S-23405§	Shaft-Dial pointer shaft
	*S-23435§	Support-Antenna support
	S-22689§	Socket-Earphone socket
		SPEAKER ASSEMBLY
	*S-23434+	Speaker - 2-1/2" PM speaker complete with cone and voice coil

* Indicates New Stock Items.

Only items listed under stock numbers are available as Replacement Parts.
All parts subject to change or withdrawal without notice.