SANYO

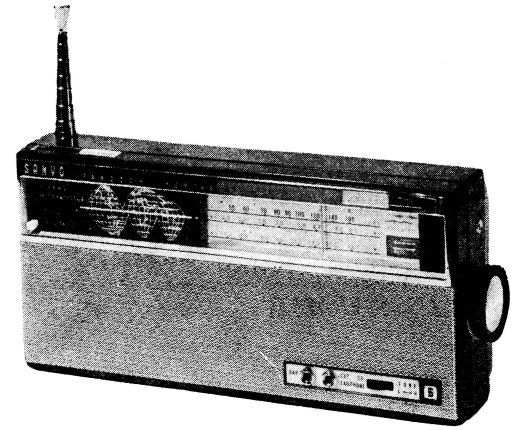
10-Transistor, BC/SW Portable Radio

MODEL 10S-PION

SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

INTERNATIONAL DIVISION: SANYO ELECTRIC TRADING CO., LTD.
OSAKA, JAPAN.



SPECIFICATIONS

FREQUENCY RANGE

BC1 .....535—1,605Kc/s
SW .....2— 6Mc
SW2.....6—18Mc

INTERMEDIATE FREQUENCY 455 Kc/s

TRANSISTOR COMPONENTS

2SA60	Local Oscillator
2SA60	Mixer
2SA202	1st IF Amplifier
2SA203	2nd IF Ampilfier
2SB188	Detector & AGC
2SB185	1st AF Amplifier
2SB185	2nd AF Amplifier
2SB187	3rd AF Amplifier
2SB22×2	Power Amplifier (B class pushpull)

OUTPUT POWER

Undistorted 260 mW
Maximum 380 mW

RADIATION SENSITIVITY

Lower limit for 10mW output

BC	200μV/m
SW1	140μV/m
SW2	320μV/m

BATTERY USED

Four 1½-volt size C flashlight batteries
Current droin No signal 15 mA
Maximum 110 mA

LOUDSPEAKER

3½" permanent dynamic speaker
Voice coil impedance 7 ohms

DIMENSIONS

Width	9 inches
Height	4½ inches
Depth	2 inches

WEIGHT

Approximately 2.18 pounds (excluding battery)

ALIGNMENT PROCEDURES

Output meter alignment: Connect the VTVM (Vacuum tube volt meter) across the voice coil, and set the volume control at its maximum.

Signal-Generator : For all alignment operation, connect the low side of the Signal-Generator with the receiver printed base and keep the oscillator output as low as possible to avoid A.G.C. function.

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENT	RADIO DIAL SETTING	ADJUST FOR MAX. OUTPUT
Set Band Selector Switch to Standard broadcasting band				
1	Connection lug of CV1 in series with 0.1μF	455 Kc/s	Quiet point near 530 Kc/s	IF Trans. T-3 T-2 T-1
2	Short wire placed near antenna for Signal Radiation	530 Kc/s	Gang VC fully close	BC Osc. Coil L6
3	//	1,650 Kc/s	Gang VC fully open	BC Osc. Trimmer Ct6
4	//	Repeat steps 2 and 3.		
5	//	600 Kc/s	600 Kc/s signal	BC Ant. Coil L3
6	//	1,400 Kc/s	1400 Kc/s signal	BC Ant. Trimmer Ct3
7	//	Repeat steps 5 and 6.		
Set Band Selector Switch to shortwave 1 band (2-6 Mc/s)				
8	Short wire placed near antenna for Signal Radiation	6.2 Mc/s	Gang VC fully open	SW1 Osc. Trimmer Ct5
9	//	1.95 Mc/s	Gang VC fully close	SW1 Osc. Coil L5
10	//	Repeat steps 8 and 9.		
11	//	5.5 Mc/s	5.5 Mc/s signal	SW1 Ant. Trimmer Ct2
12	//	2.5 Mc/s	2.5 Mc/s	SW1 Ant. Coil L2
13	//	Repeat steps 11 and 12.		
Set Band Selector Switch to shortwave 2 band (6-18 Mc/s)				
14	Short wire placed near antenna for Signal Radiation	18.5 Mc/s	Gang VC fully open	SW2 Osc. Trimmer Ct4
15	//	58. Mc/s	Gang VC fully close	SW2 Osc. Coil L4
16	//	Repeat steps 14 and 15.		
17	//	17.5 Mc/s	17.5Mc/s signal	SW2 Ant. Trimmer Ct1
18	//	6.5 Mc/s	6.5Mc/s	SW2 Ant Coil L1
19	//	Repeat steps 17 and 18.		

PARTS LIST

SYMBOL NO.	STOCK NO.	DESCRIPTIONS
TRANSISTORS		
Tr 1	2SA60	Local Oscillator
Tr 2	2SA60	Mixer
Tr 3	2SA202	1st IF Amplifier
Tr 4	2SA203	2nd IF Amplifier
Tr 5	2SB188	Detector & AGC
Tr 6	2SB185	1st AF Amplifier
Tr 7	2SB185	2nd AF Amplifier
Tr 8	2SB187	3rd AF Amplifier
Tr 9	2SB22	Power Amplifier (B class push-pull)
Tr 10	2SB22	Power Amplifier (B class push-pull)
COILS		
L 1, 2, 3	R-W2104	Antenna Coil
L 4	R-W8105	Oscillator Coil (SW2)
L 5	R-W8036	Oscillator Coil (SW1)
L 6	R-W8014	Oscillator Coil (BC)
TRANSFORMERS		
T 1	R-W5T008	IF transformer (yellow)
T 2	R-W5T039	IF transformer (white)
T 3	R-W5T060	IF transformer (black)
T 4	R-W6154	Input transformer
CONTROLS		
S 1/7	R-S4124	Rotary switch
	R-R11604	Volume control
S 8, 9	R-S4192	Slide switch
R 7	R-R11006	Semi-variable resistor
Ct 1, 6	R-C0013	Dual trimmer
Cv 1, 2	R-C1029a	Tuning gang } Either one of these
	R-C1046	Tuning gang } is used
S 12	R-S4177a	Pilot lamp switch

Latest change R-R11006 →R-R11007

ELECTROLYTIC CAPACITORS			
C 4		10 μF	3 WV
C 8		30 μF	3 WV
C 16		5 μF	6 WV
C 18		10 μF	3 WV
C 21		100 μF	6 WV
C 22		30 μF	3 WV
C 23		10 μF	3 WV
C 24		30 μF	3 WV
C 25		120 μF	10 WV
C 26		100 μF	6 WV
C 27		120 μF	10 WV
C 46		200 μF	6 WV
FIXED CAPACITORS			
C 2		0.002μF ±20%	100WV Mylar MX
C 5		15pF ±10%	100WV Titacon
C 6		0.01μF ±20%	100WV Mylar MFL
C 9		10pF ±10%	100WV Titacon
C 11		0.04μF ±20%	100WV Mylay MFL
C 12		0.04μF ±20%	100WY Mylar MFL
C 13		0.01μF ±20%	100WV Mylar MFL
C 14		0.04μF +30-20%	100WV Mylar MFL
C 15		0.01μF ±20%	100WV Mylar MFL
C 19		0.04μF ±20%	100WV Mylar MFL
C 28		0.01μF ±20%	100WV Mylar MFL
C 29		0.0025μF ±20%	100WV Mylar MFL
C 30		0.001μF +30-20%	100WV Mylar MX
C 31		0.005μF ±20%	100WV Mylar MX
C 32		500pF ±20%	100WV Mylar MX
C 33		0.002μF ±20%	100WV Mylar MX
C 34		0.005μF ±20%	100WV Mylar MX
C 35		3100pF ±10%	100WV Stycon
C 36		1000pF ±10%	125WV Stycon
C 37		330pF ±10%	125WV Stycon
C 38		3pF ±10%	100WV Titacon
C 39		5pF ±10%	100WV Titacon
C 40		0.04μF ±20%	100WV Mylar MFL
C 41		3pF ±10%	100WV Titacon
C 43		5pF ±10%	100WV Titacon
C 44		0.002μF ±20%	100WV Mylar MX
C 45		0.005μF ±20%	100WV Mylar MX
C 47		0.04μF +80-20%	25WV Titacon

Latest change C35 ±10% → ±5%

FIXED RESISTORS			
R 1		Mold 56K ohms	±10% ½W
R 2		Mold 1.5K ohms	±10% ½W
R 3		Mold 33K ohms	±10% ½W
R 6		old 8.2K ohms	±20% ½W
R 8		Mold 390 ohms	±20% ½W
R 9		Mold 47K ohms	±10% ½W
R 10		Mold 10K ohms	±10% ½W
R 11		Mold 1K ohms	±10% ½W
R 12		Mold 68K ohms	±10% ½W
R 13		Mold 220 ohms	±10% ½W
R 14		Mold 220 ohms	±20% ½W
R 15		Mold 22K ohms	±10% ½W
R 16		Mold 390 ohms	±10% ½W
R 17		Mold 5.6K ohms	±10% ½W
R 19		Mold 27K ohms	±10% ½W
R 20		Mold 5.6K ohms	±10% ½W
R 21		Mold 1.5K ohms	±10% ½W
R 22		Mold 100 ohms	±20% ½W
R 23		Mold 560 ohms	±10% ½W
R 24		Mold 2.2K ohms	±10% ½W
R 25		Mold 3.3K ohms	±10% ½W
R 26		Mold 180 ohms	±10% ½W
R 28		Mold 27K ohms	±10% ½W
R 30		Mold 220 ohms	±20% ½W
R 31		Mold 180 ohms	±10% ½W
R 32		Mold 2.2 ohms	±10% ½W
R 33		Mold 2.7K ohms	±10% ½W
R 34		Mold 180 ohms	±10% ½W
R 35		Mold 2.7K ohms	±10% ½W
R 36		Mold 2.2 ohms	±10% ½W
R 37		Mold 15 ohms	±20% ½W
R 38		Mold 15K ohms	±10% ½W
R 39		Mold 4.7K ohms	±10% ½W
R 40		Mold 1.2K ohms	±10% ½W
R 41		Mold 33 ohms	±10% ½W
R 42		Mold 330 ohms	±20% ½W
R 43		Mold 3.3K ohms	±10% ½W
R 44		Mold 22K ohms	±10% ½W

Latest change R 9 47K ohms → 33K ohms
R11 1K ohms → 1.2K ohms
R41 33 ohms → 68 ohms

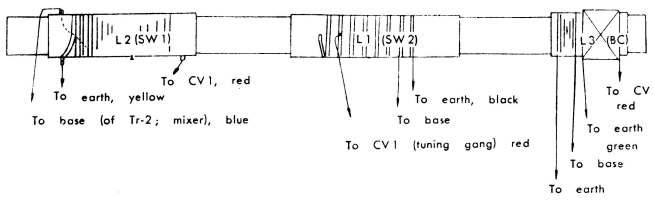
LOUDSPEAKER		
S P	R-S6163	3½″ speaker
CABINET		
	R-31365	Cabinet
	R-31366	Back cover
	R-32154	Dial cover-polystyrol
	R-28018	Dial frame
	R-26277L	Front panel
	R-41151a	Speaker grille net
	R-36055	Indicator plate
	R-26279aL	Back panel
	R-39027	Band selector knob
	R-26524	Disc metal for band selector knob
	R-33230	Volume control knob
	R-33226	Drum
	R-33182	Tuning control knob
MISCELLANEOUS		
	R-26278	Volume indicator plate
	R-24233	Stud nut C
	R-25060a	Speaker fixing metal
	R-25026	Speaker fixing metal
	R-S2025La	Antenna jack
	R-24031b	Screw to fix back cover to cabinet
	R-13004L	Lock washer for above screw
	R-26251a	Badge
	R-43004	Knob felt
	R-35173	Battery inserting tube
	R-48071	Leather case
	R-26283aL	Dial plate
	R-S8218	Pointer assembly
	R-23477a	Positive terminal
	R-S8220	Negative terminal
	R-24310	Stud nut K
	R-24499	Stud nut M-shield plate mtg. (two)
	R-24311	Brass bushing (two)
	R-35081	Polyethylene washer
	R-35082	Extruded polyethylene washes
	R-35175	Telescopic Ant. insulating cap
	R-15041	Tension spring
	R-24144	Stud nut-dial plate mtg.
	R-24265	Stud nut G-volume control mtg.
	R-44046	Cushion seat for tuning gang
	R-34025	Stud nut H-volume control mtg.
	R-35077b	Antenna holder
	R-23204	Soldering lug for antenna
	R-111145 }	Shield plate for tuning gang } R-C1029a
	R-111320 }	Either one } R-C1046
	R-S1093	Telescopic rod antenna
	R-S8265	Antenna lead with stick-on rubber
	R-S2040L	Earphone jack
	R-S6199	Earphone
	R-S5503	Tuning indicator
	R-S1099	Pilot lamp (3V)

Latest change R-S 1099→ R-S1151 Pilot lamp (6V)

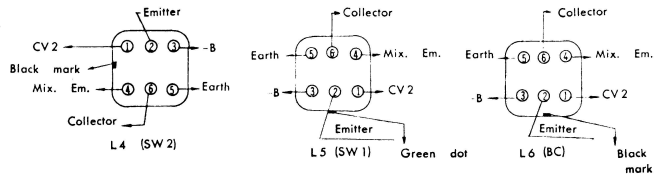
Printed in Japan

MAIN PARTS CONNECTION

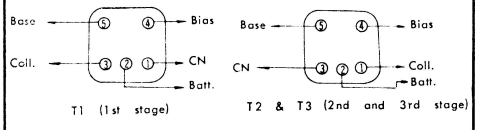
1. ANTENNA COIL



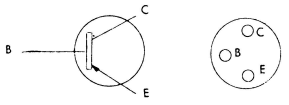
2. LOCAL OSCILLATOR COIL



3. IF TRANSFORMER

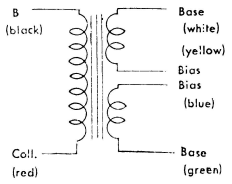


4. TRANSISTOR

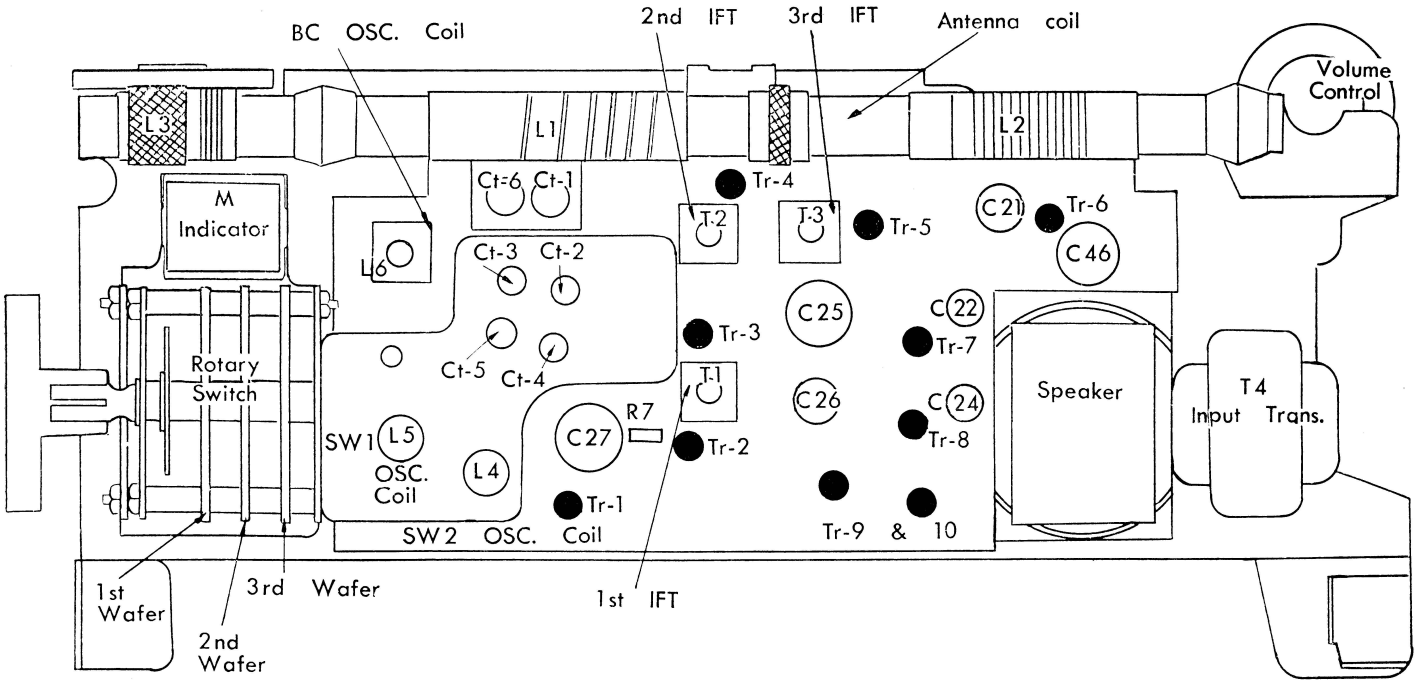


-B or Batt.; Battery
B; Base
E; Emitter
CV2; Tuning gang
C or Coll.; Collector
Mix. Em.; Emitter of mixer (Tr-2)

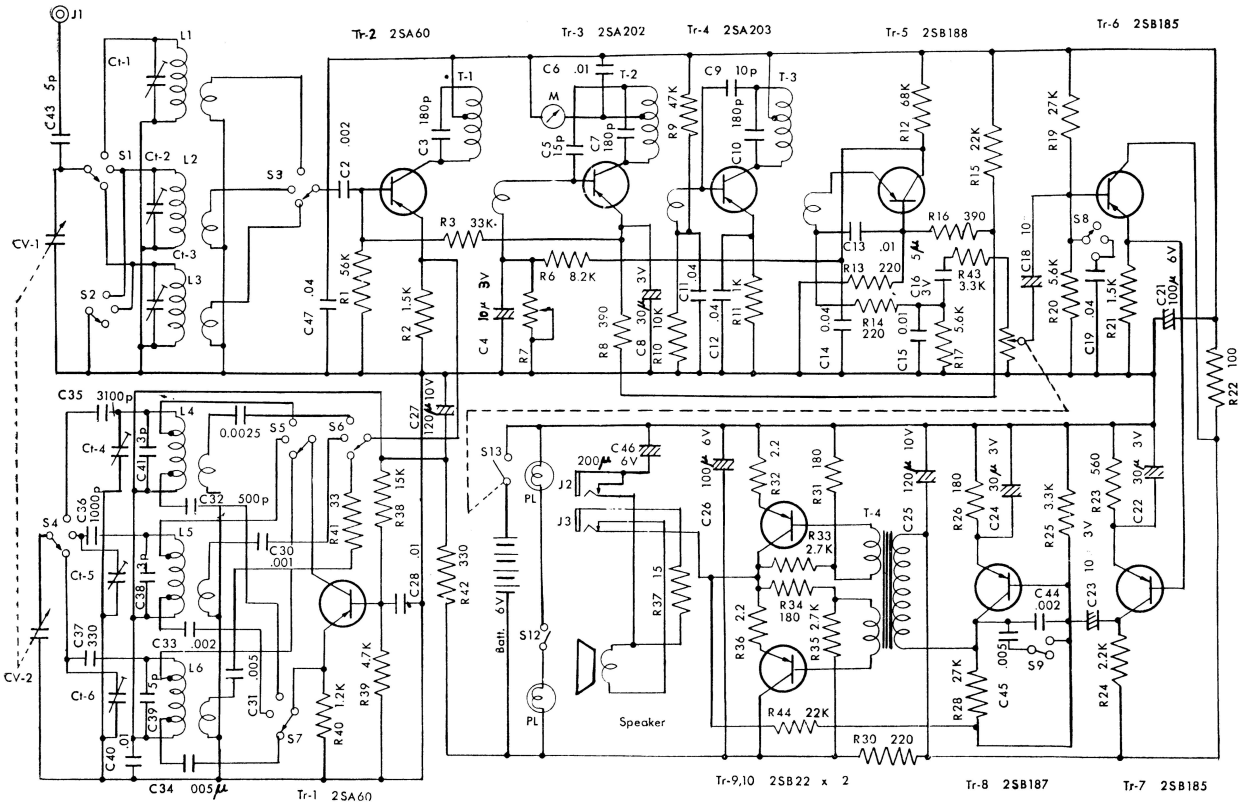
5. INPUT TRANSFORMER



MAIN PARTS LOCATION



CIRCUIT DIAGRAM



MAIN PARTS CONNECTION