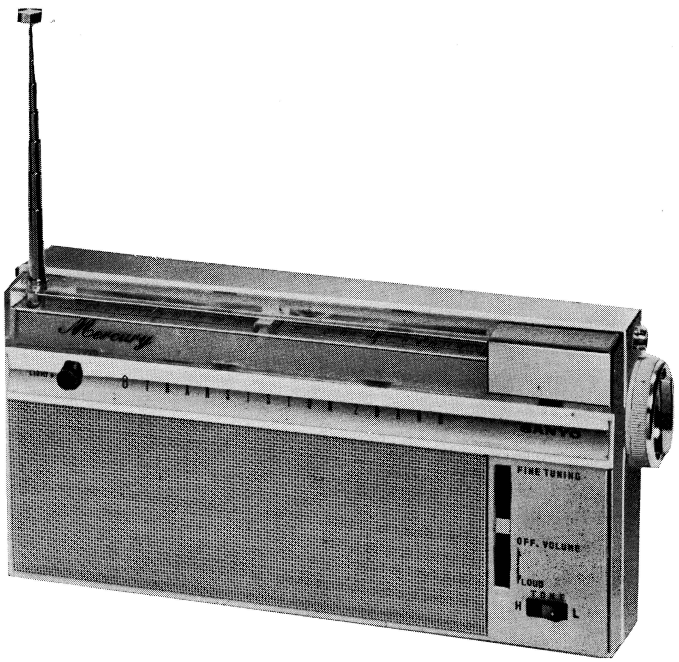
SANYO

MODEL
8S-P23

All-transistor Radio
Service Manual



SPECIFICATIONS

FREQUENCY RANGE

BC	535Kc/s–1605Kc/s
SW	3.8Mc/s–12.0Mc/s

INTERMEDIATE FREQUENCY 455Kc/s

TRANSISTOR COMPLEMENT

(1)	2SA324	RF amplifier
(2)	2SA221	frequency converter
(3)	2SA202	1st IF amplifier
(4)	2SA203	2nd IF amplifier
(5)	2SB188	1st AF amplifier
(6)	2SB186	2nd AF amplifier
(7)	2SB22×2	power amplifier (output transformer–less system)

DIODE USED

1N–60	oscillation voltage limiter
1N–60	detector & AGC

OUTPUT POWER

undistorted	270 mW
maximum	640 mW

SENSITIVITY

BC	30 μV/m (average for 10mW output)
SW	20 μV/m (average for 10mW output)

BATTERY

6V (four $1\frac{1}{2}$–volt size C flashlight batteries)

current drain	no signal	15 mA
	maximum	150 mA

LOUDSPEAKER

$3\frac{1}{2}$" permanent dynamic speaker
voice coil impedance 7 ohms

CABINET DIMENSIONS

$9\frac{1}{2}$" wide × $4\frac{3}{4}$" high × 2" thick

WEIGHT

Approximately 2 pounds

SANYO ELECTRIC CO., LTD.

PART NO.	STOCK NO.	DESCRIPTION

FIXED CAPACITORS

C	1		0.004μF+30−20% 50WV Mylar Square
C	2		0.001μF+30−20% 50WV Mylar Tubular
C	3		0.04μF+80−20% 25WV Ceramic
C	5		0.04μF+80−20% 25WV Ceramic
C	6		0.04μF+80−20% 25WV Ceramic
C	7		0.002μF+30−20% 50WV Mylar Square
C	8		0.001μF+30−20% 50WV Mylar Square
C	9		2150pF+10% 35WV Styrol Tubular
C	10		330pF±10% 125WV Styrol Tubular
C	11		0.04μF+80−20% 25WV Ceramic
C	14		0.04μF+80−20% 25WV Ceramic
C	15		0.04μF+80−20% 25WV Ceramic
C	16		15pF±10% 25WV Ceramic Square
C	17		12pF±10% 25WV Ceramic Square
C	18		0.01μF+80−20% 25WV Ceramic
C	19		0.01μF+80−20% 25WV Ceramic
C	22		0.003μF+30−20% 50WV Mylar Square
C	23		0.005μF+30−20% 50WV Mylar Square
C	28		500pF+30−20% 50WV Mylar Tubular
C	29		0.001μF+30−20% 50WV Mylar Square
C	30		500pF+30−20% 50WV Mylar Tubular
C	31		3pF±0.5pF 25WV Ceramlc

ELECTROLYTIC CAPACITORS

C	4		120μF+100− 5% 6WV Vertical Type
C	12		30μF+150−10% 3WV Vertical Type
C	13		30μF+150−10% 3WV Vertical Type
C	20		0.1μF+ 50−20% 25WV AluminiumSoilc' Electrolytic Square
C	21		30μF+150−10% 3WV Vertical Type
C	24		30μF+150−10% 3WV Vertical Type
C	25		200μF+100− 5% 6WV Vertical Type
C	26		200μF+100− 5% 6WV Vertical Type
C	27		200μF+100− 5% 6WV Vertical Type

PART NO.	STOCK NO.	DESCRIPTION

FIXED RESISTORS

R	1		1.5K ohms ±10% ½W Solid
R	2		47K ohms ±10% ½W Solid
R	3		5.6K ohms ±10% ½W Solid
R	4		1K ohms ±10% ¼W Carbon P Type
R	5		220 ohms ±10% ½W Solid
R	6		27K ohms ±10% ½W Solid
R	7		18K ohms ±10% ½W Solid
R	8		1.2K ohms ±10% ½W Solid
R	9		5.6K ohms ±10% ½W Solid
R	10		56K ohms ±10% ½W Solid
R	12		3.9K ohms ±10% ½W Solid
R	13		27K ohms ±10% ½W Solid
R	14		2.2K ohms ±10% ½W Solid
R	15		390 ohms ±10% ½W Solid
R	16		5.6K ohms ±10% ½W Solid
R	17		1K ohms ±20% ½W Solid
R	19		39K ohms ±10% ½W Solid
R	20		6.8K ohms ±10% ½W Solid
R	21		22K ohms ±10% ½W Solid
R	22		120 ohms ±10% ½W Solid
R	23		27K ohms ±10% ½W Solid
R	24		150 ohms ±10% ¼W Carbon P Type
R	25		120 ohms ±20% ½W Solid
R	26		1K ohms ±10% ¼W Carbon P Type
R	27		68 ohms ±10% ½W Solid
R	28		2.2 ohms ± 5% ¼W Carbon P Type
R	29		1K ohms ±10% ¼W Carbon P Type
R	30		68 ohms ±10% ½W Solid
R	31		2.2 ohms ± 5% ¼W Carbon P Type
R	32		150K ohms ±10% ½W Solid
R	33		3.9K ohms ±10% ½W Solid

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

printed in Japan

ALIGNMENT PROCEDURES

Apply volt-meter across the voice coil. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain output reading in order to avoid AGC function.

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	ADJUST FOR MAXIMUM OUTPUT
IF ALIGNMENT				
1	Positive side thru 0.1 μF capacitor to antenna stator lug on tuning gang. Negative side to ground.	455 Kc	lower end	IF transformer T 3 T 2 T 1
BROADCAST RF ALIGNMENT				
2	Make loop of several turns of wire and feed signal into it.	520 Kc	lower	Osc. coil L8
3		1,650 Kc	upper	Osc. trimmer Ct5
4		Repeat steps 2 and 3.		
5		600 Kc	600 Kc	Inter-stage coil L6
6		1,400 Kc	1,400 Kc	Inter-stage trim. Ct3
7		Repeat steps 5 and 6.		
* 8	Make radio tune in 600kc signal (signal level 4mV/m) and adjust volume control so as to have 10mW output across voice coil. And then, stop modulating the signal and access tuning wand to antenna coil (L2). Adjust location of coil winding so as to have noise increase at access of both ferrite core end and brass end.			
* 9	Make radio tune in 1400kc signal (signal level 4mV/m) and adjust volume control so as to have 10mW output across voice coil. After stopping modulating the signal, adjust antenna trimmer (Ct1) so as to get noise increase at access of both ferrite core end and brass end of tuning wand.			
*10	Repeat steps 8 and 9.			

* Note : in order to obtain high S/N ratio, alignment method different from usual one is taken.

SHORTWAVE RF ALIGNMENT

11	Make loop of several turns of wire and feed signal into it.	3.8 Mc	lower end	Osc. coil L9
12		12.5 Mc	upper end	Osc. trimmer Ct6
13		Repeat steps 11 and 12.		
14		4Mc	4 Mc	Inter-stage coil L7 Ant. coil L4,5
15		11Mc	11 Mc	Inter-stage trimmer Ct4 Ant. trimmer Ct2
16		Repeat steps 13 and 14.		

Adjustment of Semi-fixed Resistor

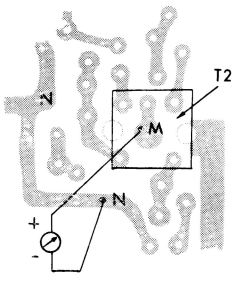
Set the value of semi - fixed resistor(S.VR) at minimum and make a receiver tune in no signal (station).

Apply 6 volts to the receiver as power source.

Connect an ammeter(range : 1mA) between two points M and N as illustrated.

Adjust the value of S.VR in order to obtain 350μA deflection.

Short-circuit the two points by soldering after adjustment.



PART NO.	STOCK NO.	DESCRIPTION

TRANSISTORS

Tr 1	2SA324	RF amplifier
Tr 2	2SA221	Frequency converter
Tr 3	2SA202	1st IF amplifier
Tr 4	2SA203	2nd IF amplifier
Tr 5	2SB188	1st AF amplifier
Tr 6	2SB186	2nd AF amplifier
Tr 7	2SB22	Power amplifier
Tr 8	2SB22	Power amplifier

DIODES

D 1	1N-60	Oscillation voltage limiter
D 2	1N-60	Detector & AGC

COILS

L1 - 5	R-S8487b	Antenna coil
L 6	R-W4017	BC inter-stage coil FMN 2120AC
L 7	R-W4016	SW inter-stage coil GAN 2262AQ
L 8	R-W8080	BC oscillator coil FTO 5221A
L 9	R-W8081	SW oscillator coil SMO-256A

TRANSFORMERS

T 1	R-W5T008	1st IF transformer C-6038A yllw
T 2	R-W5T009	2nd IF transformer C-6029A wht
T 3	R-W5T043	3rd IF transformer C-6156A blk
T 4	R-W6175	Input transformer 1K : 300 ohms

CONTROLS

R 18	R - R11620	Volume control 5K ohms with switch
R 11	R - R11006	Semi-fixed resistor 40K ohms
CV1-3	R - C1077	Tuning capacitor
	R - C1070	Fine tuning capacitor
	R - C0030	Dual trimmer
	R - C0034	4-block trimmer
	R - S4209	Tone switch
	R - S4210b	Rotary switch

SPEAKER

	R - S6198	$3\frac{1}{2}$" permanent dynamic 7 ohms 0.4W

PART NO.	STOCK NO.	DESCRIPTION

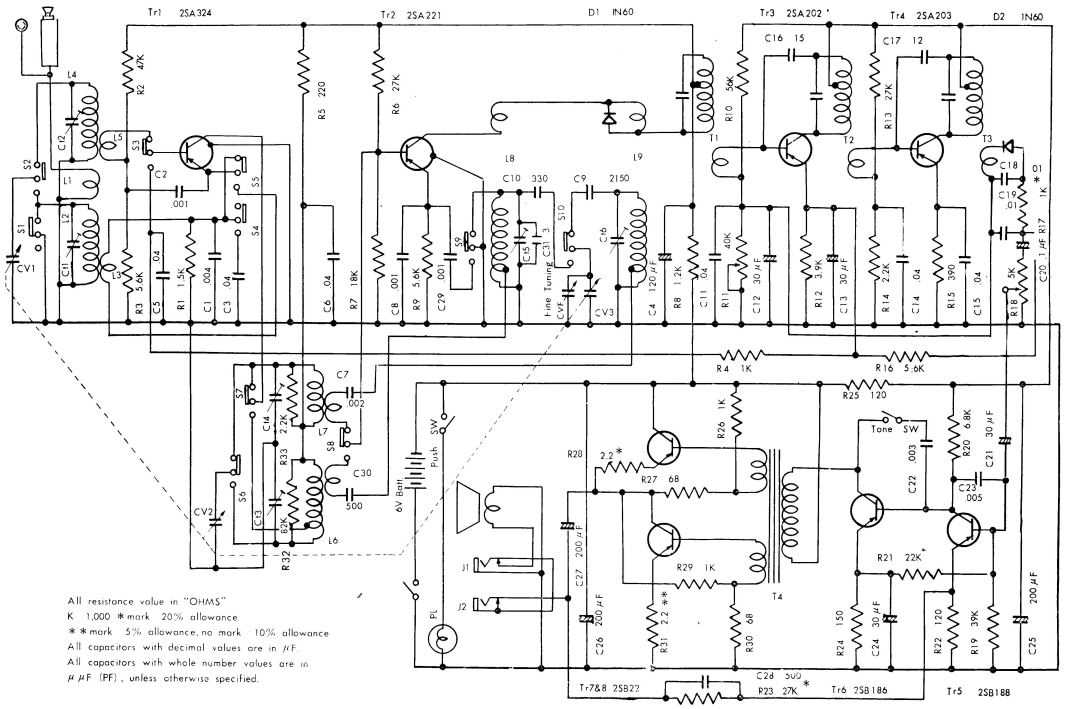
CABINET

	R—31468	Cabinet
	R—32284	Dial plate
	R—32283a	Transparent dial cover
	R—26578	Golden metal strip
	R—26579	Perforated decoration panel
	R—26580	Knob section panel
	R—31469	Back cover
	R—26581	Specification metal panel
	R—24031b	Screw to fix back cover
	R—13004aL	Lock washer for above screw
	R—39054	Tuning control knob
	R—26583	Ring metal for above knob
	R—28040	Band selector knob
	R—33336	Fine tuning knob
	R—39053	Volume control knob
	R—32287	Pilot light button

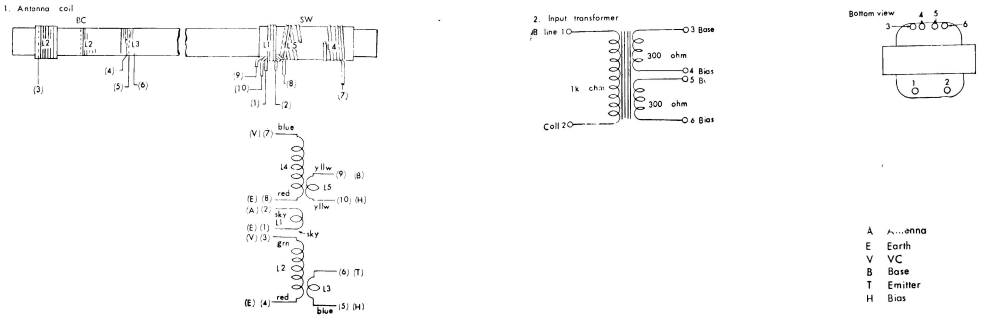
MISCELLANEOUS

	R—S1148	Telescopic antenna
	R—S1107al	Pilot lamp 6V 20mA
	R—S8265	Antenna lead with stick-on rubber
	R—S2081	Dual earphone jack
	R—S6199	Earphone
	R—S2025aL	Antenna jack
	R—35173	Battery holder
	R—48082	Leather case
	R—S8492	Shoulder strap
	R—48083	Earphone case
	R—47106	Battery Instruction sheet
	R—47417	Operating Instruction sheet
	R—32282	Back plate
	R—S8486a	Pointer needle
	R—33226	Drum
	R—S8354	(—) terminal for battery
	R—23367	(+) terminal for battery
	R—44046	Cushion seat for tuning gang
	R—12011	Lead clamp
	R—15041	Tension spring
	R—25150	Spring metal } for pilot switch
	R—34055	Insulator } for pilot switch
	R—23594	Contact metal } for pilot switch
	R—12102	C clip for strap
	R—24548a	Strap hanging screw
	R—23596	Spade lug for telescopic antenna
	R—25155	U metal - pilot lamp mtg.
	R—12088	Speaker mtg. metal L type
	R—25026	Speaker mtg. metal
	R—24098	Stud nut - Speaker mtg.
	R—24310	Stud nut - back cover mtg.
	R—S3063	Soldering lug for (—) terminal

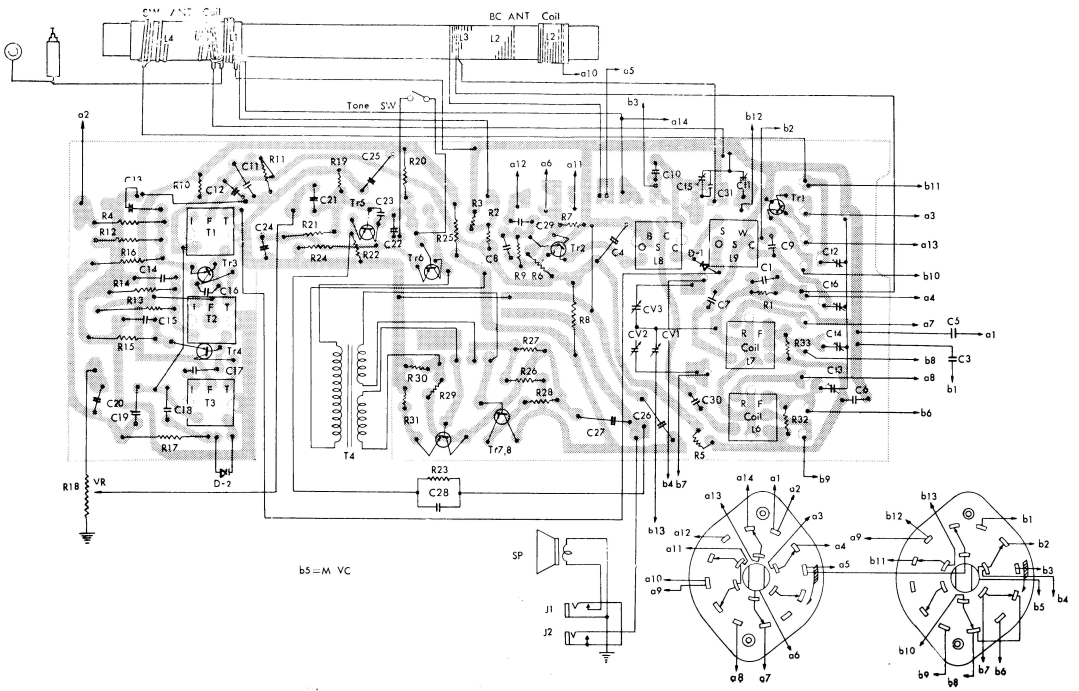
CIRCUIT DIAGRAM



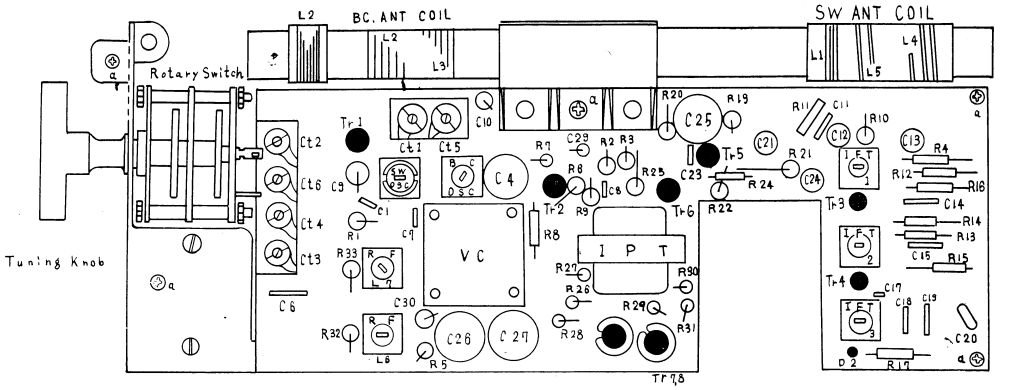
MAIN PARTS TERMINAL IDENTIFICATION



INTER PARTS WIRING ILLUSTRATION



MAIN PARTS LOCATION



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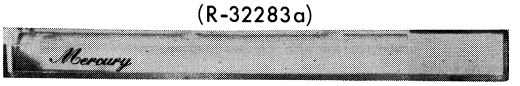

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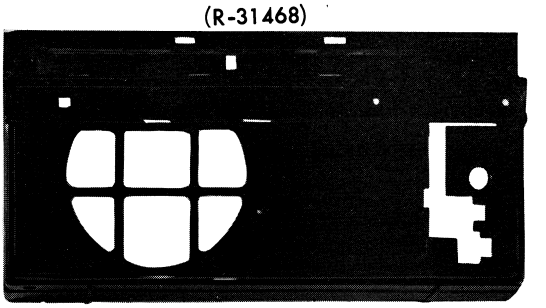

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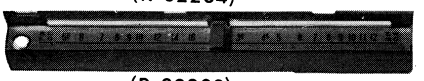

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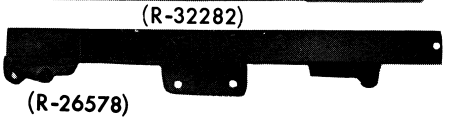

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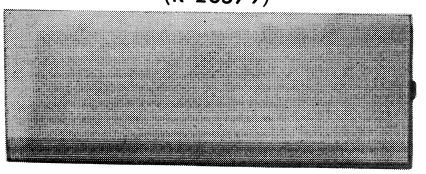

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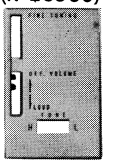

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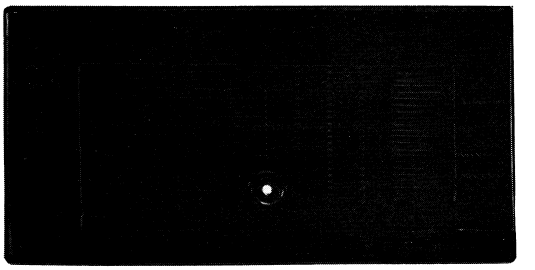

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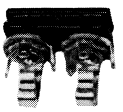

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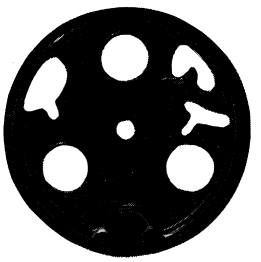

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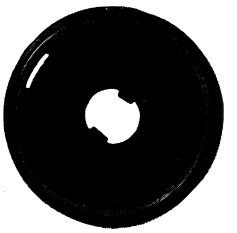

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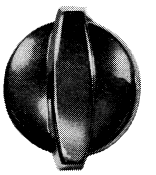
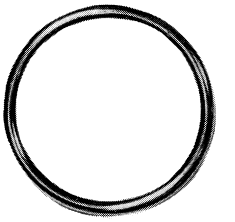
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