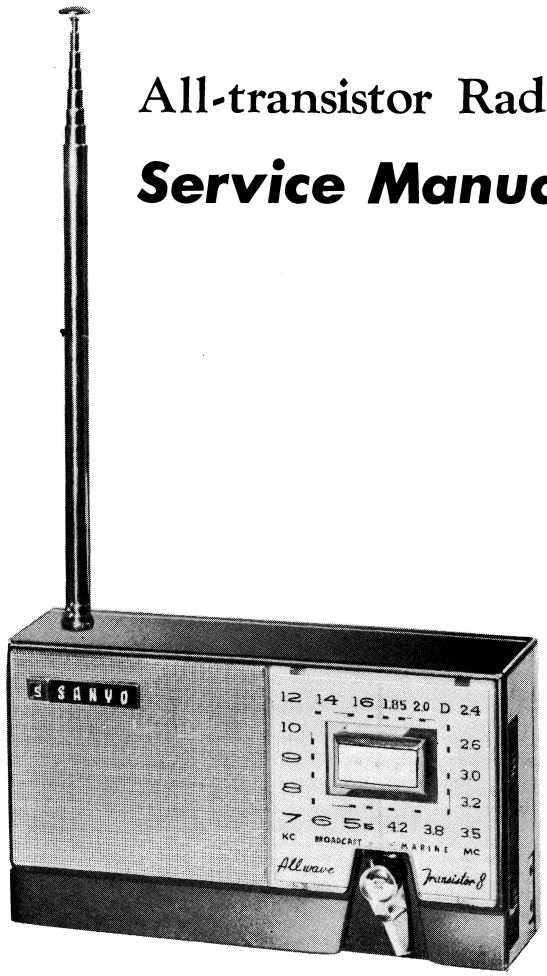
SANYO

MODEL
8M-P20



All-transistor Radio

Service Manual

SPECIFICATIONS

TUNING RANGE

Standard Broadcast Band	540Kc/s–1600Kc/s
Marine Band	1.85Mc/s–4.2Mc/s

INTERMEDIATE FREQUENCY 455Kc/s

TRANSISTOR COMPLEMENT

2SA218 (2SA93)	Converter
2SA202	1st IF Amplifier
2SA203	2nd IF Amplifier
2SB188	A. G. C. Amplifier
2SB185	1st AF Amplifier
2SB187	2nd AF Amplifier
2SB187×2	Power Amplifier (B class push-pull)

GERMANIUM DIODES & VARISTOR

1N-60	Diode, Osc. Voltage Limiter
1N-60	Diode, Detector
SV 31	Varistor, Temperature Compensator

OUTPUT POWER

Undistorted	150 mW
Maximum	250 mW

RADIATION SENSITIVITY

B C	450μV/m (Lower limit for 10mW output)
M B	250μV/m (Lower limit for 10mW output)

BATTERY

Type	6 volts (4 penlight batteries)	
Current drain	No signal	10 mA
	Maximum	65 mA

LOUDSPEAKER

Size & type	$2\frac{1}{2}$ inches, Permanent dynamic
Voice coil impedance	7 ohms at 1000c/s

DIMENSIONS

Width	158 mm ($6\frac{1}{2}$″)
Height	90 mm ($3\frac{1}{2}$″)
Depth	45 mm ($1\frac{3}{4}$″)

WEIGHT

Approximately 660 grams ($1\frac{1}{4}$ lbs)

SANYO ELECTRIC CO., LTD.

PART NO.	STOCK NO.	DESCRIPTION

RESISTORS (Continued)

R 23		Mold 150 ohms ±10% ½W
R 24		Mold 5 ohms ±10% ½W
R 25		Carbon 3.9K ohms ± 5% ¼W
R 26		Mold 100 ohms ±20% ½W
R 27		Mold 60 ohms ±20% ¼W
R 28		Mold 200 ohms ±20% ½W
R 29		Mold 100 ohms ±20% ¼W

Latest change R-23 150 → 220.

CABINET

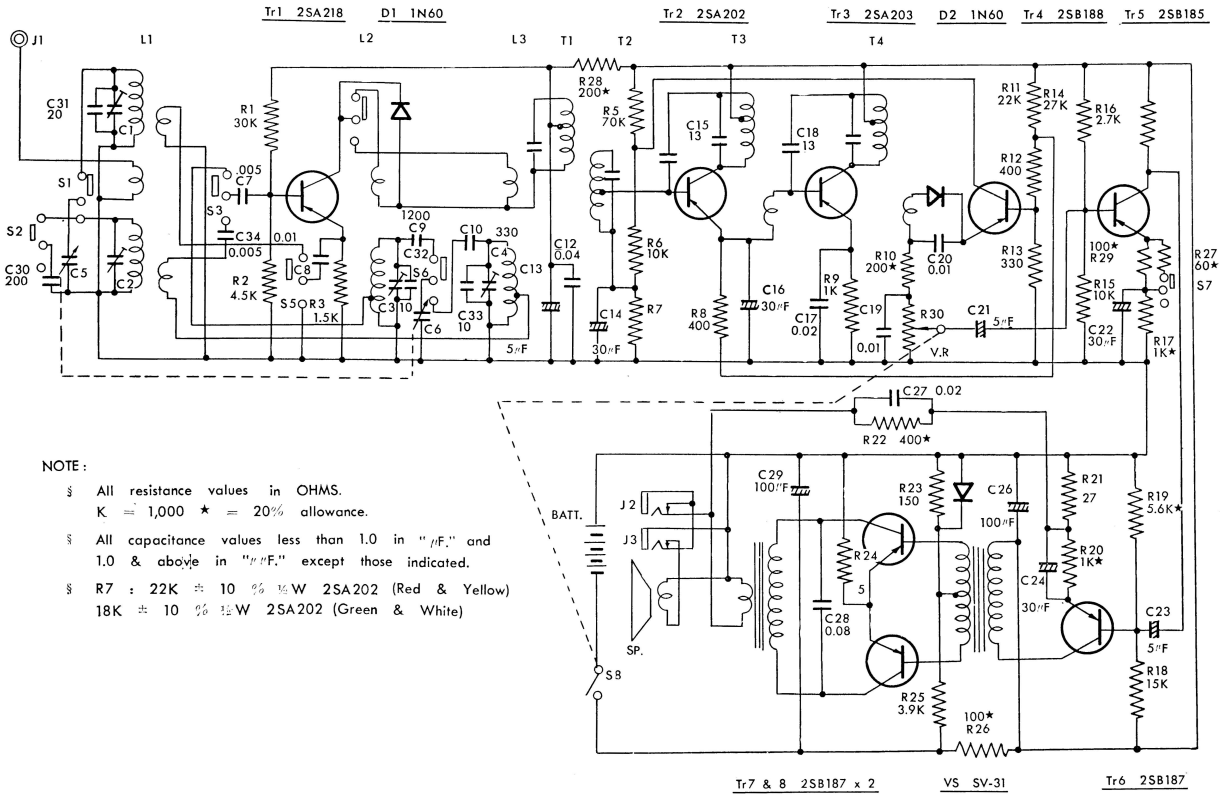
	R-31395	Cabinet
	R-39015a	Speaker Net
	R-421518	Spacer
	R-26342	Decoration Panel
	R-32194	Dial Panel
	R-23465	Decoration Metal
	R-23600	" SANYO " Badge
	R-31396	Back Cover
	R-24031a	Fixing Bolt for Back Cover
	R-13004La	Washer (C)

MISCELLANEOUS

	R-S1042	Telescoping Antenna
	R-S8265	Antenna Stick-on Rubber Cup
	R-S2081	Earphone Socket
	R-S6199	Earphone with Plug (Fk)
	R-S8019	Battery Case
	R-S2025La	Antenna Socket
	R-26343	Pointer Disk
	R-31185	Tuning Knob
	R-31186	Volume Control Knob
	R-28006bL	Band Selector Knob

Printed in Japan

CIRCUIT DIAGRAM



NOTE :

§ All resistance values in OHMS.
K = 1,000 ★ = 20% allowance.

§ All capacitance values less than 1.0 in "μF." and 1.0 & above in "μμF." except those indicated.

§ R7 : 22K ± 10 % ½W 2SA202 (Red & Yellow)
18K ± 10 % ½W 2SA202 (Green & White)

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 AVC function.

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	ADJUST FOR MAX. OUTPUT
IF ALIGNMENT				
1	High side thru 0.1μF capacitor to antenna stator lug on tuning gang. Low side to chassis.	455 Kc	lower end	IF transformer T4 T3 T2 T1
BROADCAST RF ALIGNMENT				
2	Fashion loop of several turns of wire and radiate signal into loop antenna.	530 Kc	lower end	Osc. coil L 3
3	〃	1650 Kc	upper end	Osc. trimmer C 4
4	〃	Repeat steps 2 and 3.		
5	〃	600 Kc	600 Kc	Ant. coil L1b
6	〃	1400 Kc	1400 Kc	Ant. trimmer C 2
7	〃	Repeat steps 5 and 6.		
SHORTWAVE RF ALIGNMENT				
8	Fashion loop of several turns of wire and radiate signal into loop antenna.	1.8 Mc	lower end	Osc. coil L 2
9	〃	4.3 Mc	upper end	Osc. trimmer C 3
10	〃	Repeat steps 8 and 9.		
11	〃	2 Mc	2 Mc	Ant. coil L1s
12	〃	4 Mc	4 Mc	Ant. trimmer C 1
13	〃	Repeat steps 11 and 12.		

PART NO.	STOCK NO.	DESCRIPTION

TRANSISTORS

Tr	1	2SA218	Converter
Tr	2	2SA202	1st IF Amplifier
Tr	3	2SA203	2nd IF Amplifier
Tr	4	2SB188	A.G.C. Amplifier
Tr	5	2SB185	1st AF Amplifier
Tr	6	2SB187	2nd AF Amplifier
Tr	7	2SB187	Power Amplifier
Tr	8	2SB187	Power Amplifier

DIODES & VARISTOR

D	1	1N60	Oscillator & Voltage Limiter
D	2	1N60	Detector
V	A	SV31	Temperature Compensation

Latest change Varistor SV-31 → Themistor STD-20.

COILS

L	1	R-W2040	Antenna Coil
L	2	R-W3037	SW Oscillator Coil
L	3	R-W8011	MW Oscillator Coil (red code)

TRANSFORMERS

T	1	R-W5T045	IF Transformer (pink code) 200K ohms
T	2	R-W5T046	IF Transformer (blue code) 2K ohms
T	3	R-W5T047	IF Transformer (white code) 70K ohms : 400 ohms
T	4	R-W5T048	IF Transformer (black code) 60K ohms : 5K ohms
I P T		R-W6021	Input Transformer 3K ohms : 2K ohms
O P T		R-W6022	Output Transformer 300 ohms : 7 ohms

CONTROLS

V	C	R-C1025	Variable Capacitor
V	R	R-R11606	Volume Control w/switch 5K ohms
C1,2,3,4		R-S8412	4-gang Trimmer, complete
S	W	R-S4048a	Band Switch

LOUDSPEAKER

S	P	R-S6027b	2½" PM type, 7 ohms voice coil

PART NO.	STOCK NO.	DESCRIPTION

CAPACITORS

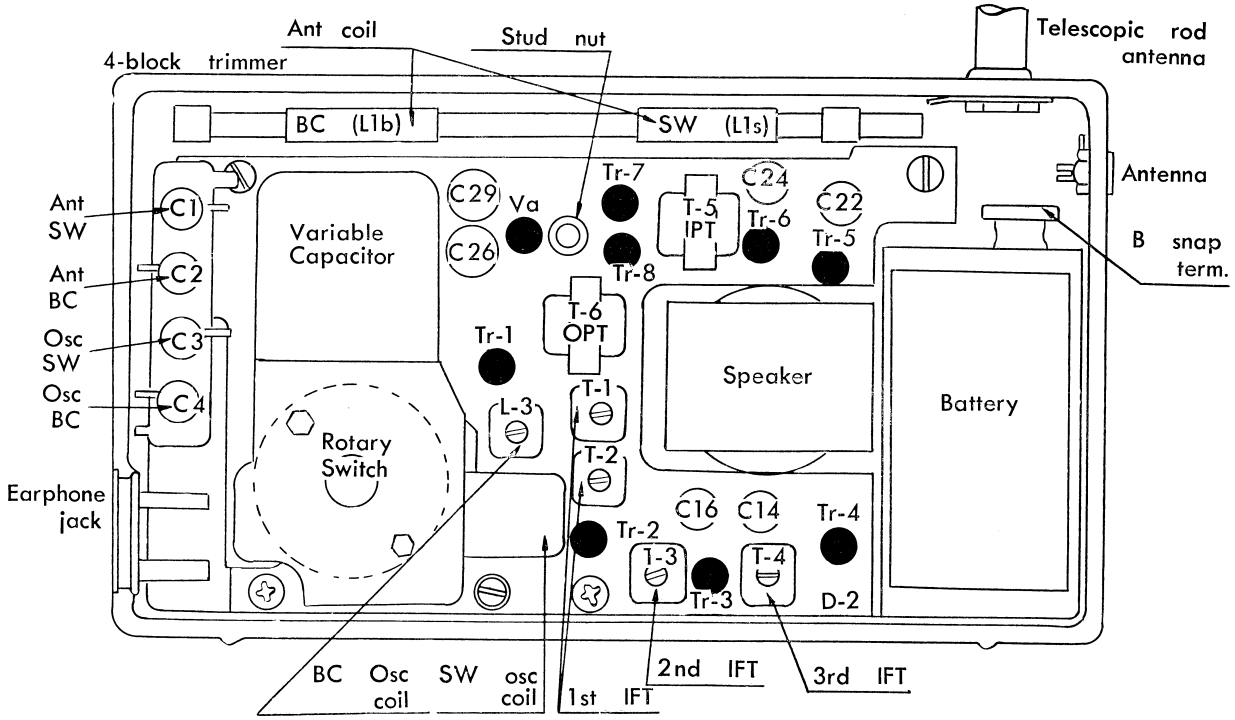
C	7		Mylar	0.005μF	+30–20%	100WV
C	8		Mylar	0.01μF	+30–20%	100WV
C	9		Styrol	1200pF	±10%	
C	10		Styrol	330pF	±10%	
C	12		Ceramic	0.04μF	+80–20%	25WV
C	13		Electrolytic	5μF		6WV
C	14		Electrolytic	30μF		6WV
C	15		Ceramic	13pF	±10%	250WV
C	16		Electrolytic	30μF		6WV
C	17		Ceramic	0.02μF	+80–20%	25WV
C	18		Ceramic	13pF	±10%	250WV
C	19		Ceramic	0.01μF	+80–20%	25WV
C	20		Ceramic	0.01μF	+80–20%	25WV
C	21		Electrolytic	5μF		6WV
C	22		Electrolytic	30μF		6WV
C	23		Electrolytic	5μF		6WV
C	24		Electrolytic	30μF		6WV
C	26		Electrolytic	100μF		6WV
C	27		Ceramic	0.02μF	+80–20%	25WV
C	28		Ceramic	0.04μF	+80–20%	25WV
C	29		Electrolytic	100μF		6WV
C	30		Ceramic	200pF	±10%	250WV
C	31		Ceramic	20pF	±10%	250WV
C	32		Ceramic	10pF	±10%	250WV
C	33		Ceramic	10pF	±10%	250WV
C	34		Mylar	0.005μF	+30–20%	100WV

RESISTORS

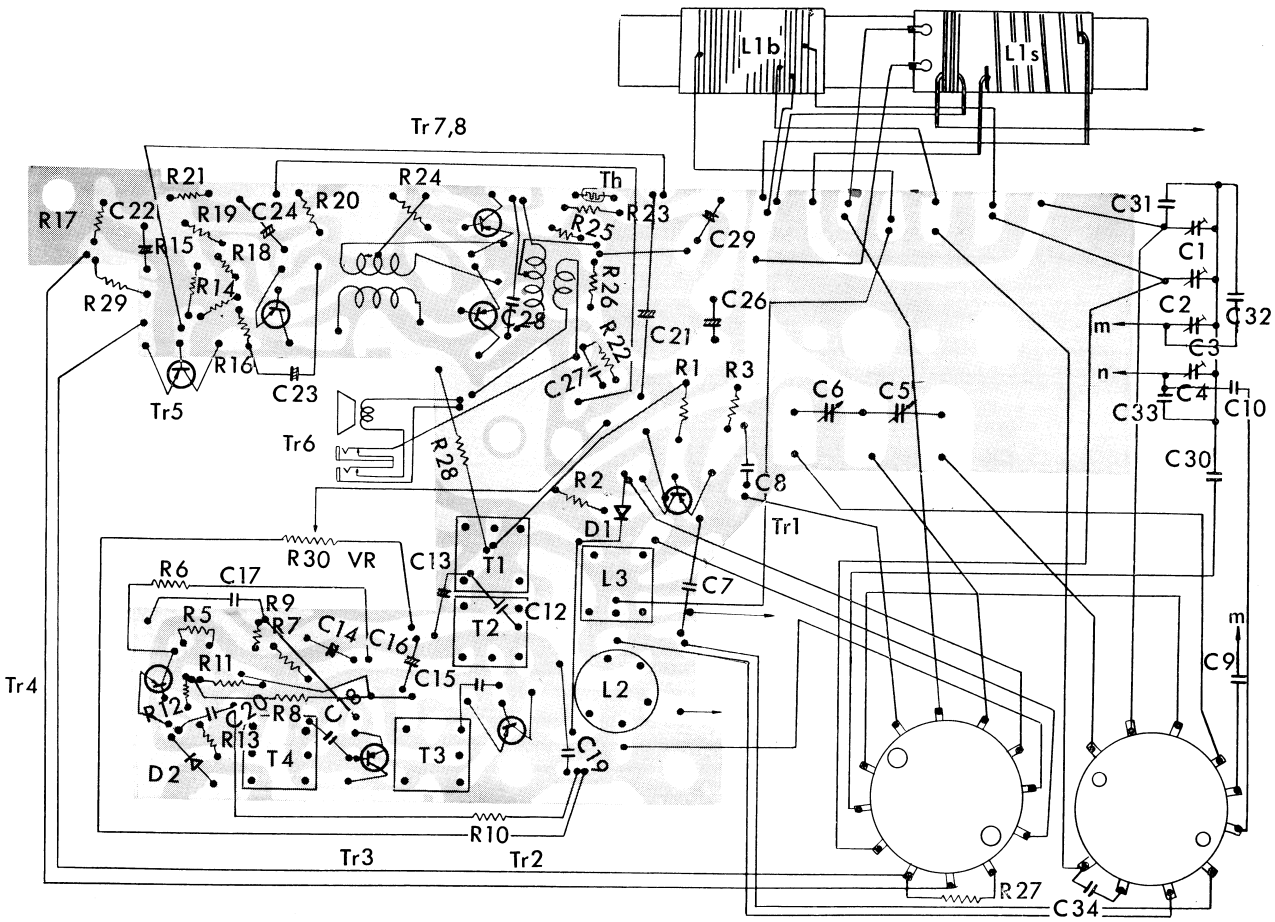
R	1		Mold	30K ohms	±10%	½W
R	2		Mold	4.5K ohms	±10%	½W
R	3		Mold	1.5K ohms	± 5%	½W
R	5		Mold	70K ohms	±10%	½W
R	6		Mold	10K ohms	±10%	½W
R	7		Mold	18K ohms	±10%	½W Green
			Mold	22K ohms	±10%	½W Red
R	8		Mold	400 ohms	±10%	½W
R	9		Mold	1K ohms	±10%	½W
R	10		Mold	200 ohms	±20%	½W
R	11		Mold	22K ohms	±10%	½W
R	12		Mold	400 ohms	±10%	¼W
R	13		Mold	330 ohms	±10%	½W
R	14		Mold	27K ohms	±10%	½W
R	15		Mold	10K ohms	±10%	½W
R	16		Mold	2.7K ohms	±10%	½W
R	17		Mold	1K ohms	±20%	½W
R	18		Mold	15K ohms	±10%	½W
R	19		Mold	5.6K ohms	±20%	½W
R	20		Mold	1K ohms	±20%	½W
R	21		Mold	27 ohms	±20%	½W
R	22		Mold	400 ohms	±10%	½W

(Continued to reverse)

MAIN PARTS LAYOUT

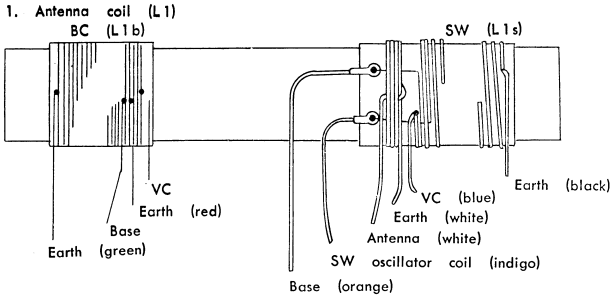


INTER - PARTS WIRING ILLUSTRATION

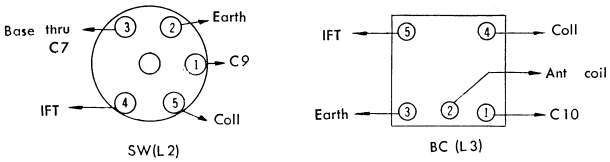


MAIN PARTS TERMINAL IDENTIFICATION

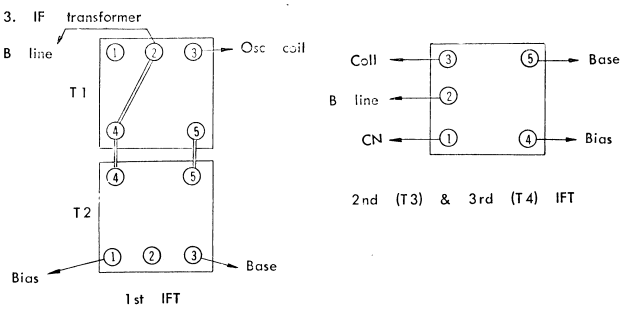
1. Antenna coil (L 1)



2. Oscillator coil

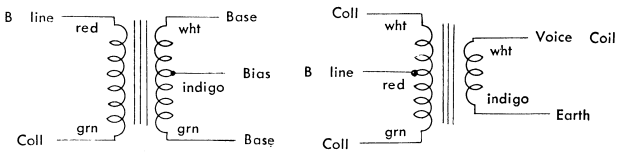


3. IF transformer



4. Input transformer

5. Output transformer



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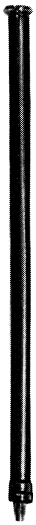

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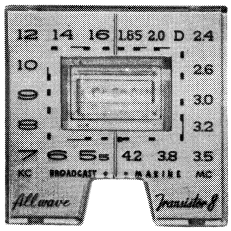

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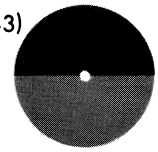

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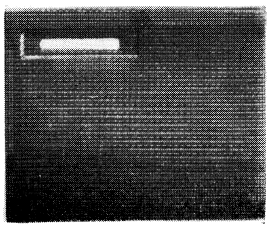

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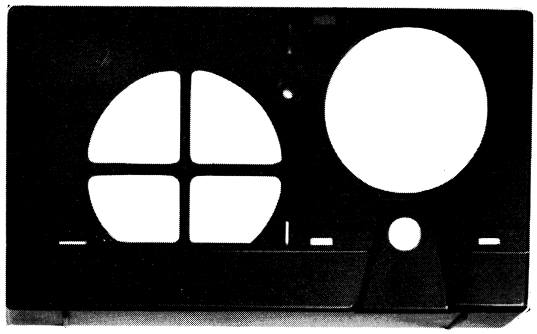
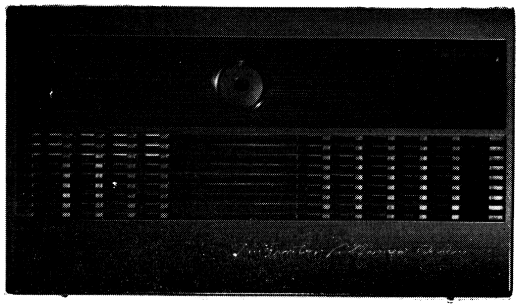
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