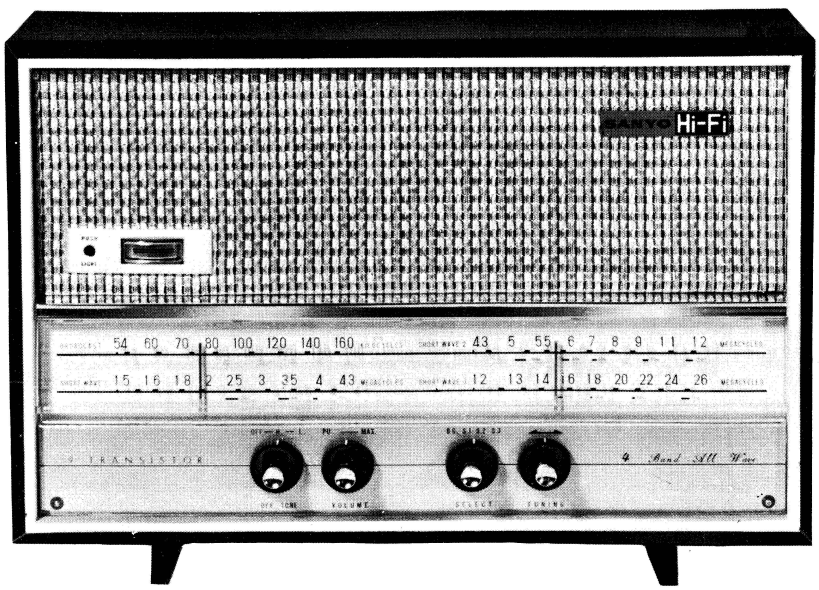
SANYO

MODEL
9X-200

All-transistor Radio

Service Manual



SPECIFICATIONS

FREQUENCY RANGE

BC	535 - 1605 Kc/s
SW1	1.5 - 4.3 Mc/s
SW2	4.3 - 12 Mc/s
SW3	12 - 26.1 Mc/s

INTERMEDIATE FREQUENCY

455 Kc/s

POWER SOURCE

9 volts (6 standard flashlight batteries)

CURRENT DRAIN

No signal	18 mA
Maximum	220 mA

RADIATION SENSITIVITY

Lower limit for 10mW output

BC	200 μV/m
SW1	150 μV/m
SW2	25 μV
SW3	50 μV

POWER OUTPUT

Undistorted	0.9 W
Maximum	1.5 W

LOUDSPEAKER

6¼ inches permanent dynamic speaker

TRANSISTORS

(1)	2SA222	Local Oscillator
(2)	2SA223	Frequency Converter
(3)	2SA202	1st IF Amplifier
(4)	2SA203	2nd IF Amplifier
(5)	2SB188	AF Pre-amplifier
(6)	2SB188	AF Amplifier
(7)	2SB188	Driver
(8)	2SB272×2	Power Amplifier (B class pushpull)

GERMANIUM DIODES & VARISTOR

(1)	1N-60	Diode; Detector & A.G.C.
(2)	1N-60	Diode; A.G.C.
(3)	1N-60	Diode; Oscillation Limiter
(4)	SV-30	Varistor; Temperature Compensator

DIMENSIONS

Width	18 inches
Height	13 inches
Depth	6¼ inches

WEIGHT

8⅜ lbs approx.

SANYO ELECTRIC CO., LTD.

PART NO.	STOCK NO.	DESCRIPTION

ELECTROLYTIC CAPACITORS

C 8		30 μF	6WV
C12		200 ,,	,,
C13		30 ,,	,,
C16		30 ,,	,,
C22		5 ,,	,,
C23		5 ,,	,,
C24		30 ,,	,,
C26		30 ,,	,,
C27		30 ,,	,,
C28		120 ,,	10WV
C32		120 ,,	,,
C33		100 ,,	6WV
C34		30 ,,	,,
C35		30 ,,	,,

FIXED CAPACITORS

C 1		0.01 μF	+30−20%	100WV Mylar
C 2		0.02 ,,	,, ,,	,, ,,
C 3		70 pF	±10%	250WV Ceramic
C 4		0.01 μF	+80−20%	25WV ,,
C 5		250 pF	±10%	150WV Titacon
C 6		0.04 μF	+80−20%	25WV Ceramic
C 7		50 pF	±10%	250WV ,,
C 9		460 ,,	±3.5%	500WV Titacon
C10		1200 ,,	±10%	250WV Styrol
C11		3600 ,,	,,	1000WV ,,
C14		13 ,,	,,	25WV Ceramic
C19		7 ,,	,,	,, ,,
C25		0.1 μF	+30−20%	100WV Mylar
C29		0.004 ,,	,, ,,	,, ,,
C30		0.004 ,,	,, ,,	,, ,,
C31		0.04 ,,	,, ,,	,, ,,
C36		13 pF	±10%	25WV Ceramic
C37		0.04 μF	+80−20%	,, ,,

FIXED RESISTORS

R 1		30 K ohms	± 5%	¼W	Carbon film
R 2		4.7 K ,,	,,	,,	,,
R 3		1.5 K ,,	±10%	½W	Mold
R 4		33 ,,	± 5%	¼W	Carbon film
R 5		15 K ,,	±10%	½W	Mold
R 6		4.7 K ,,	,,	,,	,,
R 7		1.2 K ,,	,,	,,	,,
R 8		100 ,,	,,	,,	,,
R 9		150 ,,	,,	,,	,,
R 10		56 K ,,	,,	,,	,,
R 12		68 K ,,	,,	,,	,,
R 14		2.2 K ,,	,,	,,	,,
R 15		36 K ,,	± 5%	¼W	Carbon film
R 18		5.6 K ,,	±10%	½W	Mold
R 21		33 K ,,	,,	,,	,,
R 22		10 K ,,	,,	,,	,,
R 23		820 ,,	,,	,,	,,
R 24		1.5 K ,,	,,	,,	,,
R 25		22 K ,,	,,	,,	,,
R 26		8.2 K ,,	,,	,,	,,
R 27		820 ,,	,,	,,	,,

PART NO.	STOCK NO.	DESCRIPTION

FIXED RESISTORS (Continued)

R 28		10 ohms	±10%	½W	Mold
R 29		390 ,,	,,	,,	,,
R 30		6.8 K ,,	,,	,,	,,
R 31		130 ,,	,,	,,	,,
R 32		4.7 ,,	± 5%	¼W	Carbon film
R 33		680 ,,	±10%	½W	Mold
R 34		220 ,,	±20%	,,	,,
R 35		680 ,,	±10%	,,	,,
R 36		1 M ,,	,,	,,	,,
R 37		270 K ,,	±20%	,,	,,
R 38		6.8 K ,,	±10%	,,	,,
R 40		390 ,,	± 5%	¼W	Carbon film
R 41		10 ,,	±10%	½W	Mold

RESISTOR & CAPACITOR PACKED

	R-C-XC-018	1K ohms 5% 0.04 μF+80−20% 25WV
	R-C-XC-011	5.6K ohms 10% 0.04 μF+80−20% 25WV
	R-C-XC-004	1K ohms 10% 0.04 μF+80−20% 25WV

CABINET

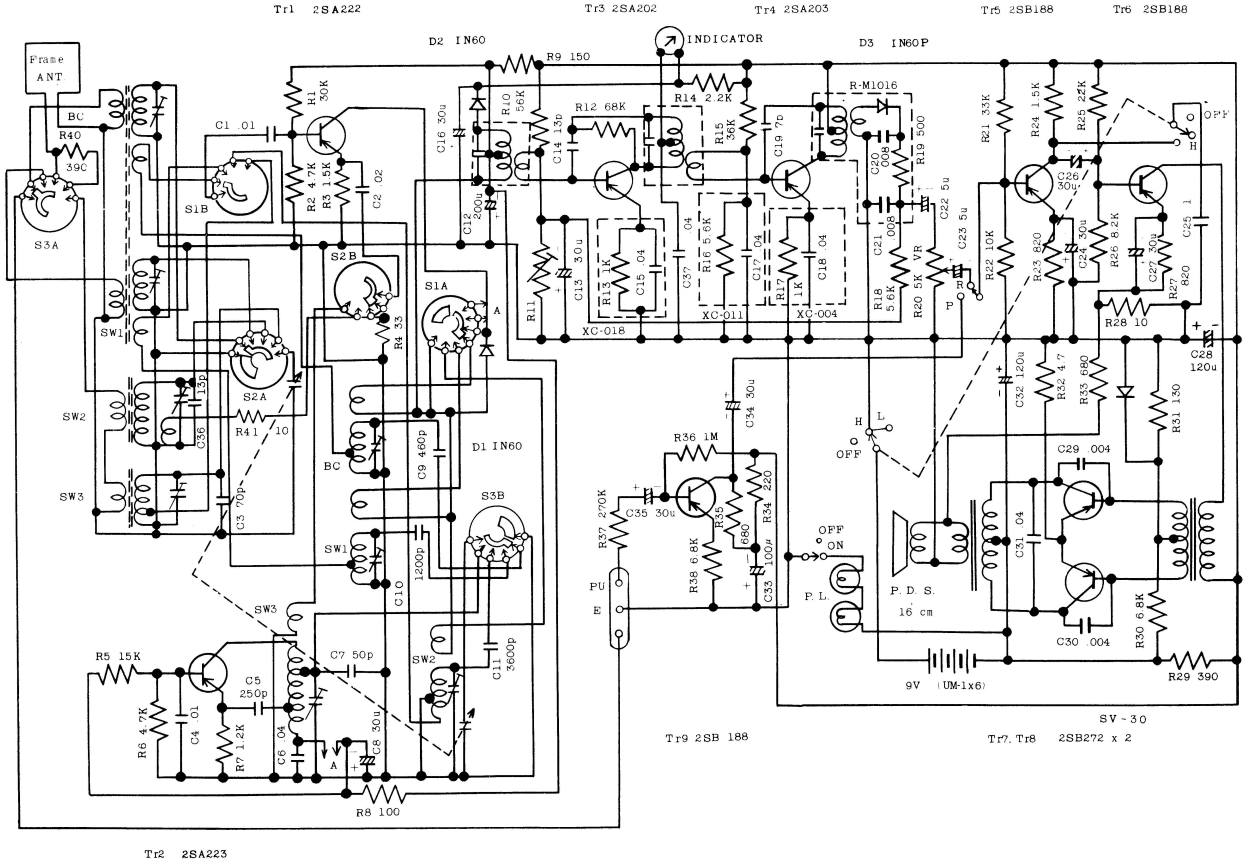
	R-46283a	Cabinet
	R-46284	Baffle plate
	R-26457	Back screen —alminium
	R-31429	Dial panel —plastic
	R-26455	Metal strip
	R-23544	Badge "SANYO Hi-Fi"
	R-S8341	Knob
	R-421917	Back cover
	R-47276	Battery instruction sheet
	R-26525	Check meter frame

MISCELLANEOUS

	R-S8296	+ terminal case
	R-S8041	− terminal case
	R-35174	Battery inserting tube
	R-S8342	Pointer assembly
	R-15039	Dial tension spring
	R-26573	Eyelet for dial cord stringing
	R-44007	Rubber grommet —chassis mtg.
	R-44004	,, ,, —tuning gang
	R-32130	Polystyrol bushing —trimmer mtg.
	R-S8300	Antenna lead
	R-S3099	Pick-up terminal board
	R-26511	Metal frame antenna
	R-S3011	Terminal lug strip 2 strips
	R-S3007	Terminal lug strip 4 terminals
	R-S2042	Pilot lamp socket
	R-S5044	Pilot lamp
	R-S5509a	Check meter
	R-S8025	Drum

Printed in Japan

Model 9X-200 Circuit Diagram



ALIGNMENT PROCEDURES

Apply volt-meter across the voice coil. Volume control should be at maximum position. Output of signal generator (SG) 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	High side through 0.1 mf capacitor to antenna stator lug on tuning gang. Low side to chassis.	455 Kc	530 Kc	DET Module IF Trans. 2 IF Trans. 1
BROADCAST RF ALIGNMENT				
2	Fashion loop of several turns of wire and radiate signal into loop antenna.	530 Kc	left end	BC OSC Coil
3		1,650 Kc	right end	BC OSC Trimmer
4		Repeat steps 2 and 3.		
5		600 Kc	600 Kc	BC Ant. Coil
6		1400 Kc	1400 Kc	BC Ant. Trimmer
7		Repeat steps 5 and 6.		
SHORTWAVE 1 RF ALIGNMENT				
8	Fashion loop of several turns of wire and radiate signal into loop antenna.	1.4 Mc	left end	SW1 OSC Coil
9		4.5 Mc	right end	SW1 OSC Trimmer
10		Repeat steps 8 and 9.		
11		1.6 Mc	1.6 Mc	SW1 Ant. Coil
12		4.0 Mc	4.0 Mc	SW1 Ant. Trimmer
13		Repeat steps 11 and 12.		

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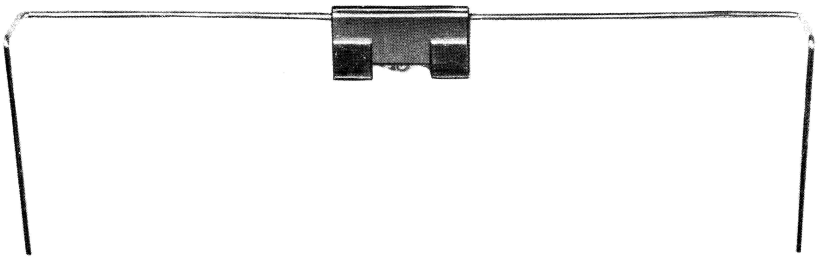

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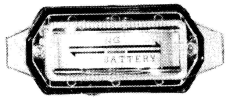
(R-S8300)

(R-S5509a)



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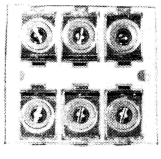
(R-C0009)



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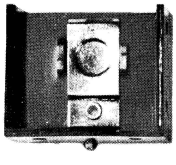


(R-CXC018)

PART NO.	STOCK NO.	DESCRIPTION

TRANSISTORS

Tr 1	2SA222	Local Oscillator
Tr 2	2SA223	Frequency Converter
Tr 3	2SA202	1st IF Amplifier
Tr 4	2SA203	2nd IF Amplifier
Tr 5	2SB188	AF Pre-amplifier
Tr 6	2SB188	AF Amplifier
Tr 7	2SB188	Driver
Tr 8	2SB272	Power Amplifier (B class push-pull)
Tr 9	2SB272	Power Amplifier (B class push-pull)

DIODES & VARISTOR

	1N - 60	AGC
	1N - 60	Oscillation limiter
	SV - 30	Temperature compensator

COILS

L1,L2	R-S8369	Antenna coil BC & SW1
L 3	R-W2115	Antenna coil SW2
L 4	R-W2116	Antenna coil SW3
L 5	R-W8041	Oscillator coil BC 6363
L 6	R-W8056	,, ,, SW1 TO-18S
L 7	R-W8057	,, ,, SW2 TO-19S
L 8	R-W8058	,, ,, SW3 TO-20S

PART NO.	STOCK NO.	DESCRIPTION

TRANSFORMERS

T 1	R-W5T008	1st IF transformer 6038A
T 2	R-W5T009	2nd IF transformer 6029A
T 3	R-M1016	IF transformer with Det. circuit
T 4	R-W6134①	Input transformer 3.5K : 1.5K
T 5	R-W6153b	Output transformer 150 : 8 ohms

CONTROLS

	R-S4182	Band selector
	R-S4039	Tone selector
VC	R-C1051	Tuning capacitor
Ct 1-4 Ct 6,7	R-C0009	6-block trimmer
VR R 20	R-R12472	Volume control with switch 5K ohms
R 11	R-R11006	Semi-fixed resistor 50K ohms
	R-S4169	Pilot light switch
Ct 5 Ct 8	R-C0013	2-block trimmer

LOUDSPEAKER

SP	R-S6164	6¼″ permanent dynamic

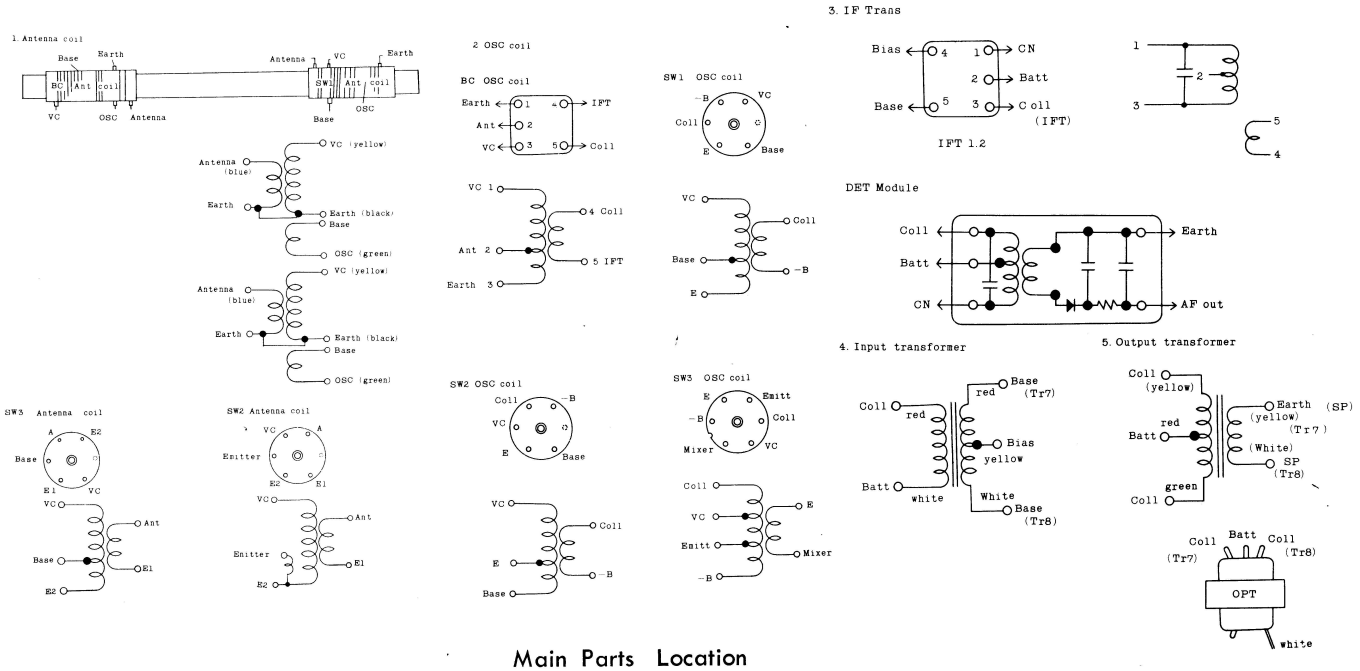
SHORTWAVE 2 RF ALIGNMENT

14	High side through dummy antenna to antenna terminal. Low side to chassis.	4.1 Mc	left end	SW2 OSC Coil
15		12.4 Mc	right end	SW2 OSC Trimmer
16		Repeat steps 14 and 15.		
17		4.5 Mc	4.5 Mc	SW2 Ant. Coil
18		11.0 Mc	11.0 Mc	SW2 Ant. Trimmer
19		Repeat steps 17 and 18.		

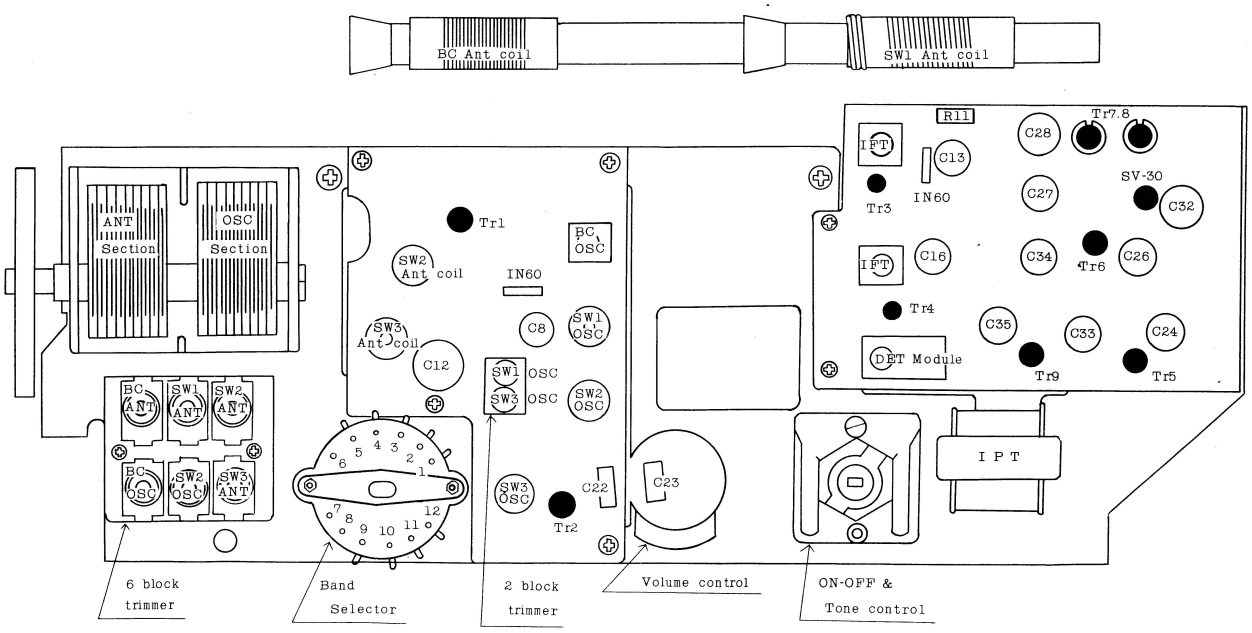
SHORTWAVE 3 RF ALIGNMENT

20	High side through dummy antenna to antenna terminal. Low side to chassis.	11.0 Mc	left end	SW3 OSC Coil
21		26.9 Mc	right end	SW3 OSC Trimmer
22		Repeat steps 20 and 21.		
23		12.0 Mc	12.0 Mc	SW3 Ant. Coil
24		26.0 Mc	26.0 Mc	SW3 Ant. Trimmer
25		Repeat steps 23 and 24.		

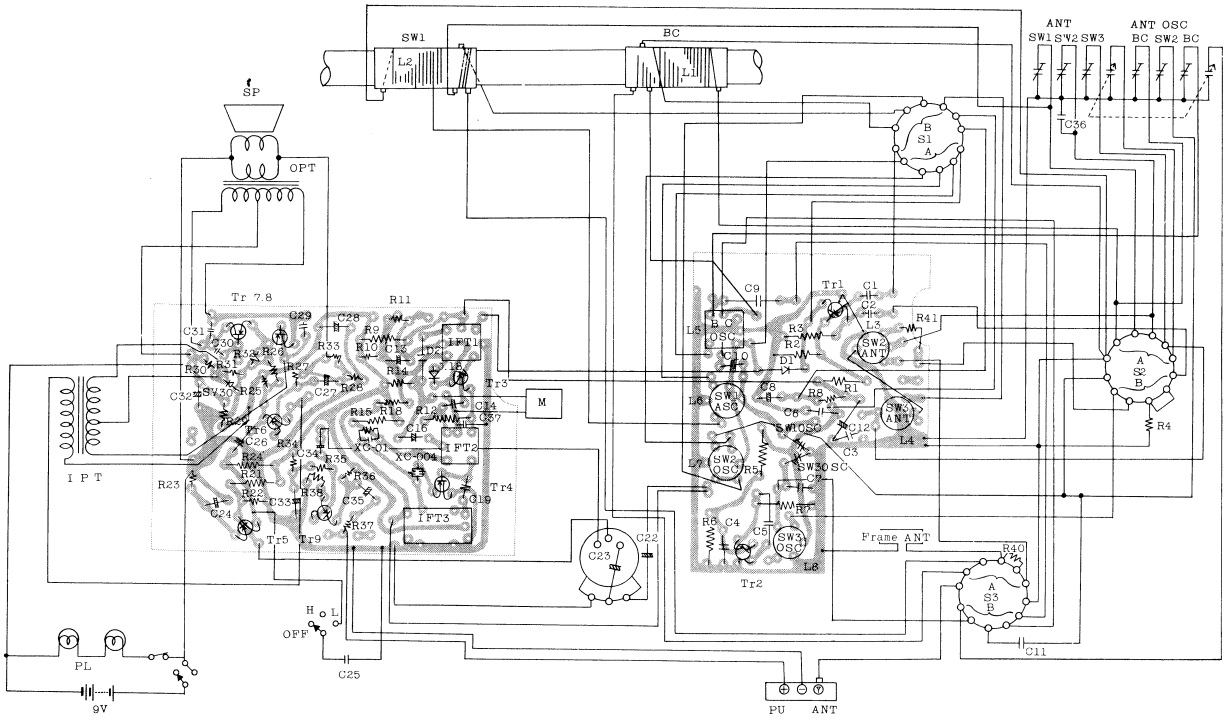
Main Parts Connection



Main Parts Location



Inter-Parts Connection



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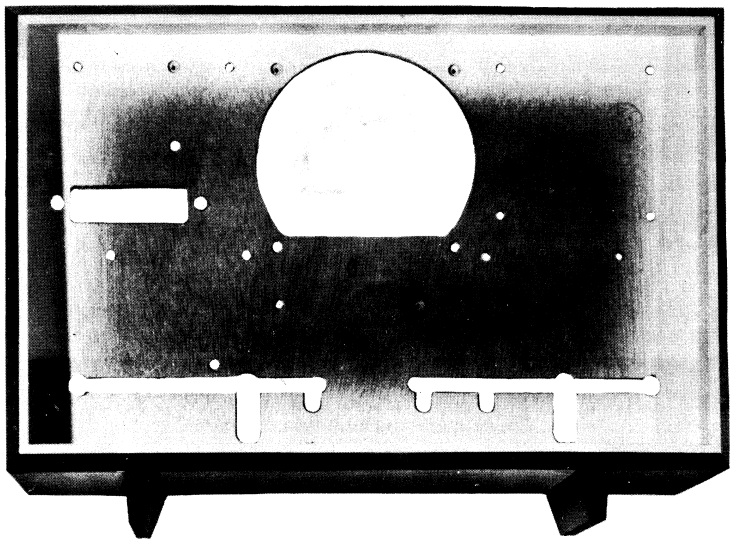

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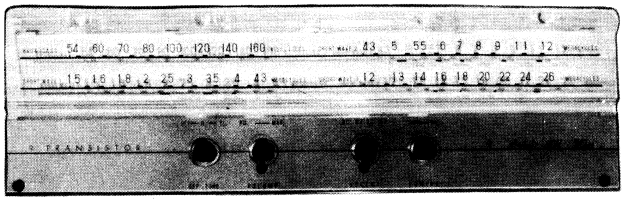
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