ORDER NO. SD7910-1625

Service Manual

FM/AM Stereo Receiver

SA-101

(M), (MC)

Simulated wood cabinet

* The model SA-101 (M) is available in U.S.A.
* The model SA-101 (MC) is available in Canada.

TECHNICAL SPECIFICATIONS

Specifications are subject to change without notice for further improvement.

AMPLIFIER SECTION

Rated minimum sine wave RMS power output
40 Hz ~ 20 kHz both channels driven
0.04% total harmonic distortion.
18 W per channel (8 ohms)

1 kHz continuous power output	
both channels driven	
0.04% total harmonic distortion	19 W per channel (8 ohms) 20 W per channel (4 ohms)
Dynamic headroom	1.4dB (8 ohms)
Total harmonic distortion	
rated power at 40 Hz ~ 20 kHz	0.04% (8 ohms)
half power at 40 Hz ~ 20 kHz	0.025% (8 ohms)
half power at 1 kHz	0.009% (8 ohms)
SMPTE intermodulation distortion	0.04% (8 ohms)
Frequency response	
PHONO	RIAA standard curve ±0.8 dB
TUNER, AUX, TAPE	7 Hz ~ 45 kHz, −1 dB 20 Hz ~ 20 kHz, +0.8 dB, −0.8 dB
Input sensitivity	
PHONO	0.6 mV (2.5 mV, IHF '66)
TAPE	35 mV (150 mV, IHF '66)
S/N (IHF, A)	
PHONO	76 dB (78 dB, IHF '66)
TUNER, AUX, TAPE	80 dB (95 dB, IHF '66)
Maximum input voltage	
PHONO	75 mV (130 mV, 1 kHz)
Input impedance	
PHONO	47 kilohms
TAPE	27 kilohms
Tone controls	
BASS	50 Hz, +10 dB ~ −10 dB
TREBLE	20 kHz, +10 dB ~ −10 dB
Loudness control (volume at −30 dB)	50 Hz, +9 dB
Output voltage	
REC OUT	150 mV
Low frequency damping factor	20 (8 ohms) 10 (4 ohms)
Load impedance	
MAIN or REMOTE	4 ~ 16 ohms
MAIN and REMOTE	8 ~ 16 ohms

FM TUNER SECTION

Frequency range	88 ~ 108 MHz
Sensitivity	10.8 dBf (1.9 μV, IHF '58)
50 dB quieting sensitivity	
MONO	14.8 dBf (3.0 μV, IHF '58)
STEREO	38.3 dBf (45 μV, IHF '58)
Total harmonic distortion	
100 Hz	0.18% (MONO), 0.35% (STEREO)
1 kHz	0.18% (MONO), 0.3% (STEREO)
6 kHz	0.3% (MONO), 0.4% (STEREO)
S/N	
MONO	75 dB
STEREO	70 dB
Frequency response	20 Hz ~ 15 kHz, +1 dB, −2 dB
Alternate channel selectivity	65 dB
Capture ratio	1.2 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	70 dB
Spurious response rejection at 98 MHz	80 dB
AM suppression	50 dB
Stereo separation	
1 kHz	45 dB
10 kHz	35 dB
Carrier leak	
19 kHz	−40 dB
38 kHz	−50 dB
Antenna terminals	300 ohms (balanced) 75 ohms (unbalanced)

AM TUNER SECTION

Frequency range	525 ~ 1605 kHz
Sensitivity	30 μV, 300 μV/m
Selectivity	30 dB
Image rejection at 1000 kHz	50 dB
IF rejection at 1000 kHz	40 dB

GENERAL

Power consumption	110 W
Power supply	AC 120V, 60 Hz
Dimensions (W x H x D)	440 x 133 x 280 mm (17 5/16" x 5 1/4" x 11 1/32")
Weight	5.6 kg (12.3 lb.)

Weights and dimensions shown are approximate.

Technics

Panasonic Company
Division of Matsushita Electric
Corporation of America
One Panasonic Way, Secaucus,
New Jersey 07094

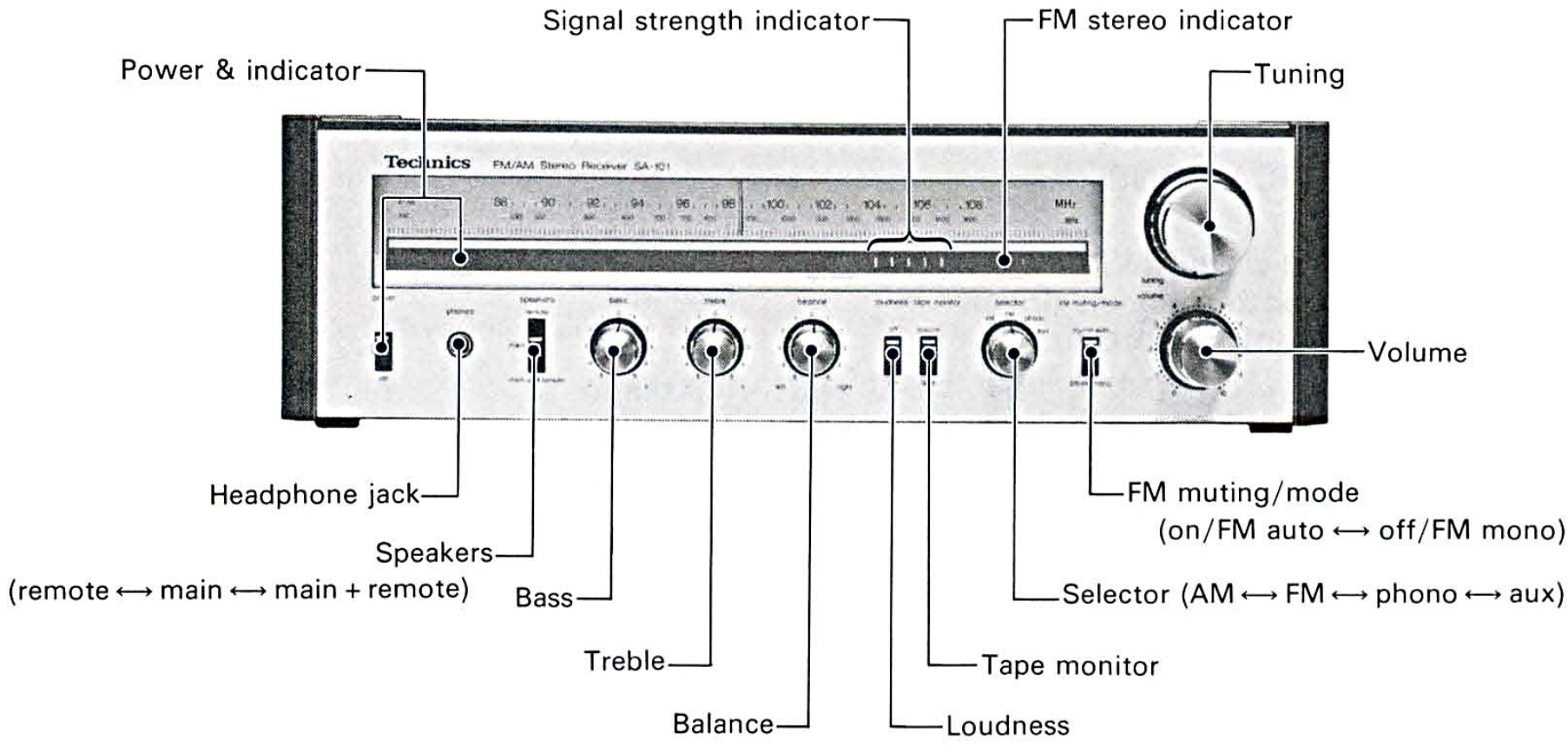
Panasonic Hawaii, Inc.
320 Waiakamilo Road, Honolulu,
Hawaii 96817

Matsushita Electric of Canada Ltd.
5770 Ambler Drive,
Mississauga, Ontario L4W 2T3

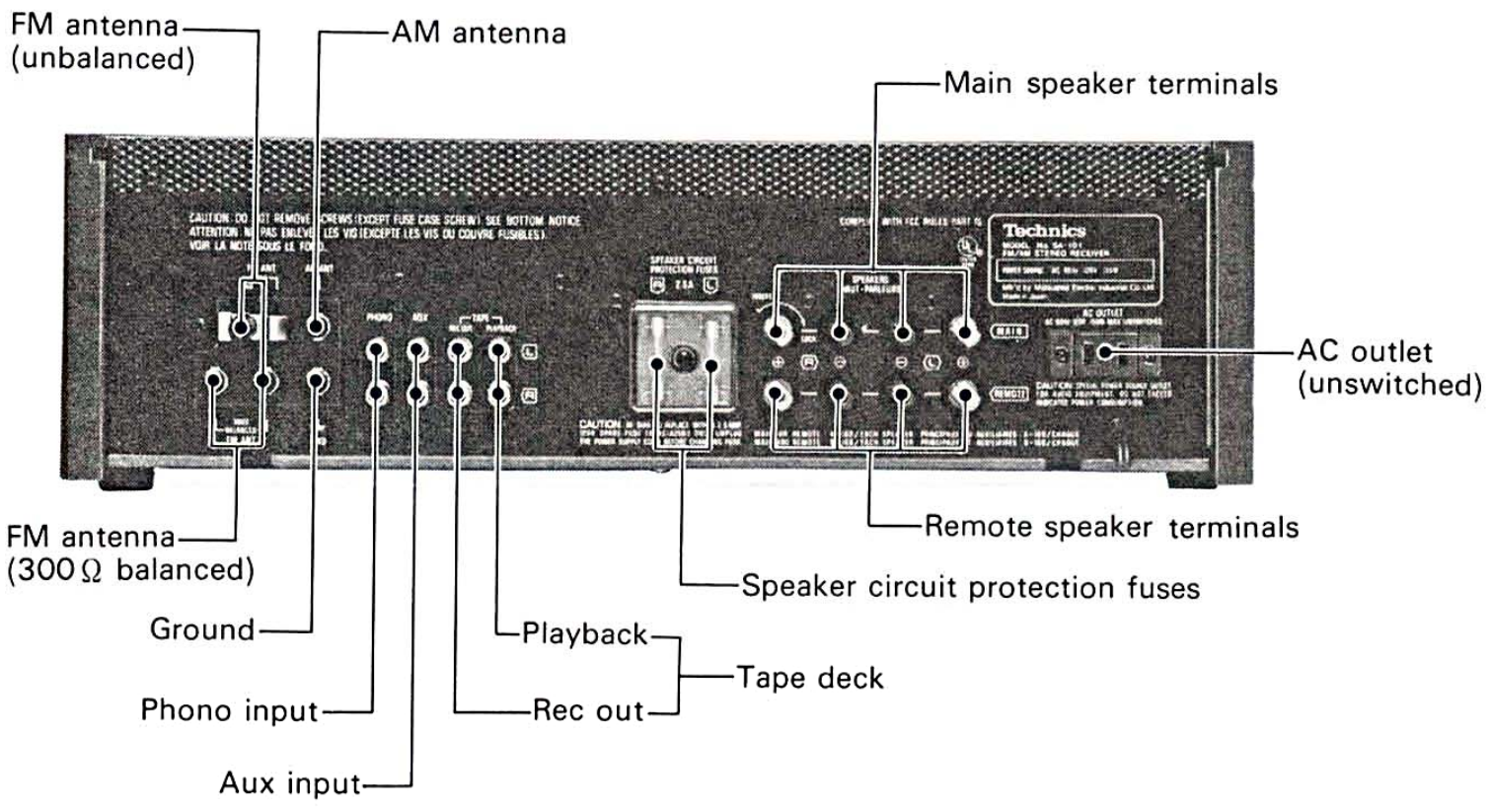
■ CONTENTS

■ LOCATION OF CONTROLS

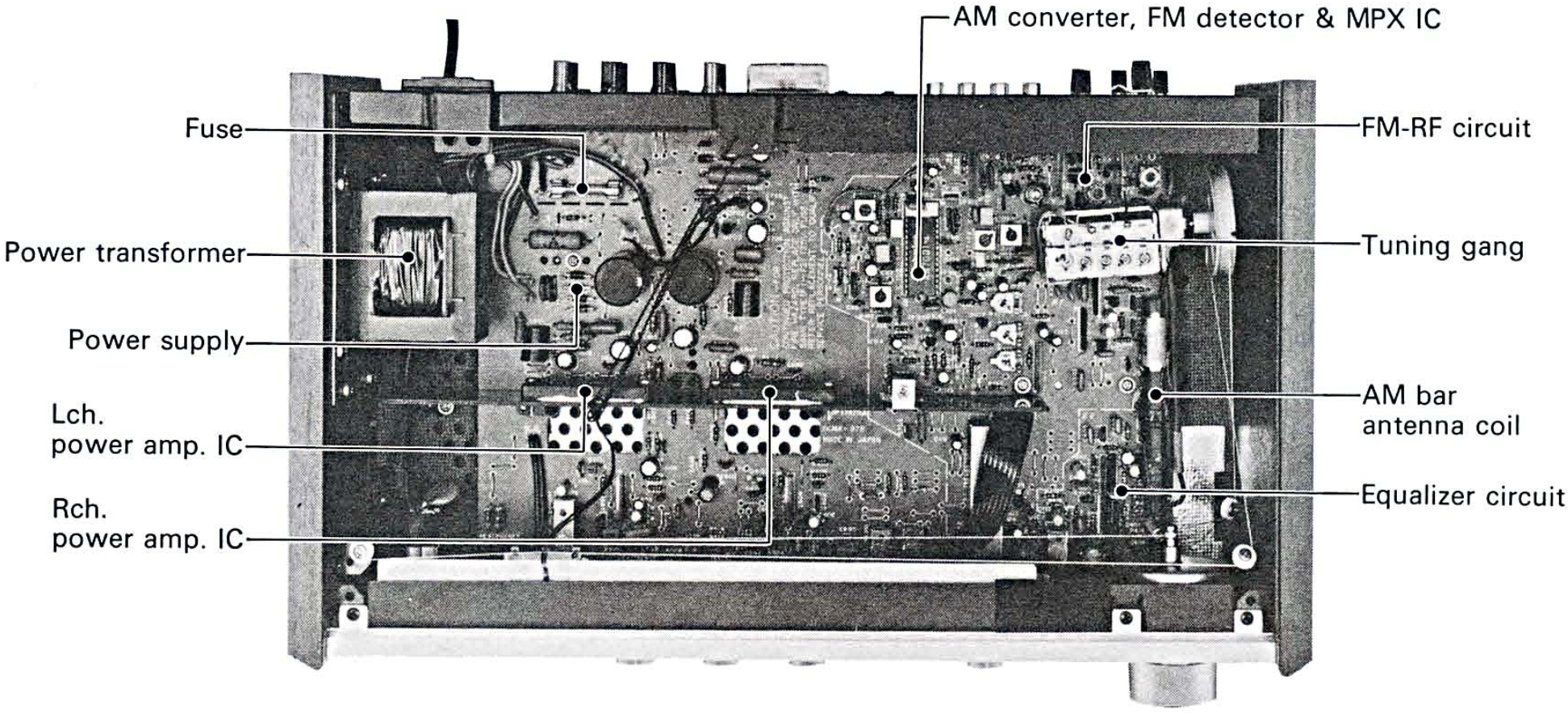
- **Front side view**



- **Rear side view**



• Inside view



■ HOW TO REMOVE THE TOP BOARD

1. Remove the 3 setscrews [Fig. 1: ①~③] holding the top board and ventilation.
2. Move the top board and ventilation slightly toward the rear of the unit [Fig. 1:]

■ HOW TO REMOVE THE FRONT PANEL AND THE BOTTOM BOARD

1. Loosen the 4 setscrews holding the left and right side boards.
2. Remove the 3 setscrews [Fig. 1: ④~⑥] holding the front panel and remove the 3 setscrews [Fig. 2: ⑦~⑨] holding the bottom board.
3. Pull out the 6 knobs. (Tuning, Volume, Selector, Balance, Treble & Bass)
4. Pull the front panel outward from the front of the unit.
5. To remove the bottom board, remove the 9 setscrews [Fig. 2: ⑩~⑱] holding the bottom board.

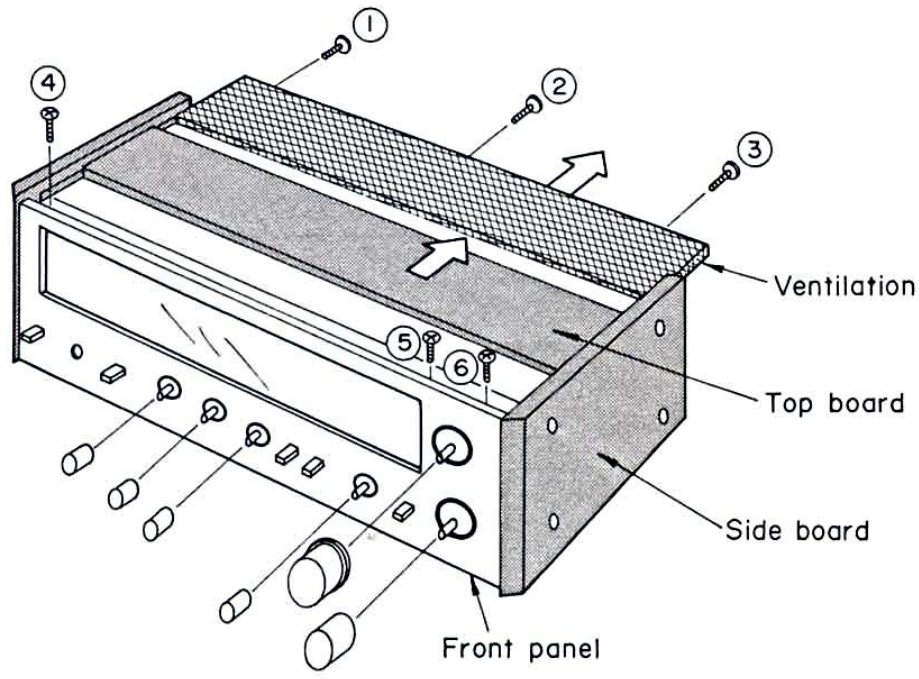


Fig. 1

Note: When turning on the power supply with the top board removed, stop the indicator lamp retaining spring with tape as shown in Fig. 3 so that it will not come off the rear panel.
Remove the tape before mounting the top board.

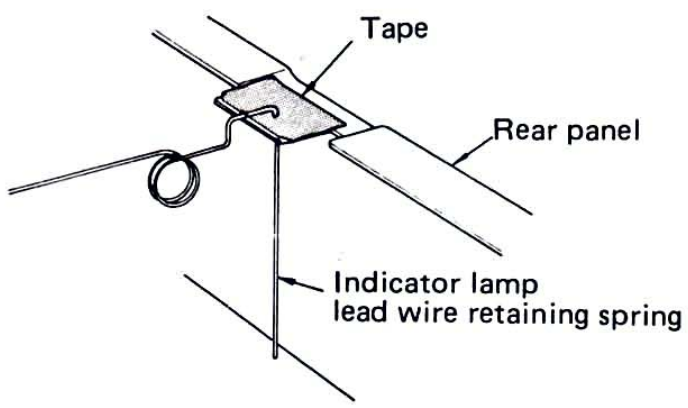


Fig. 3

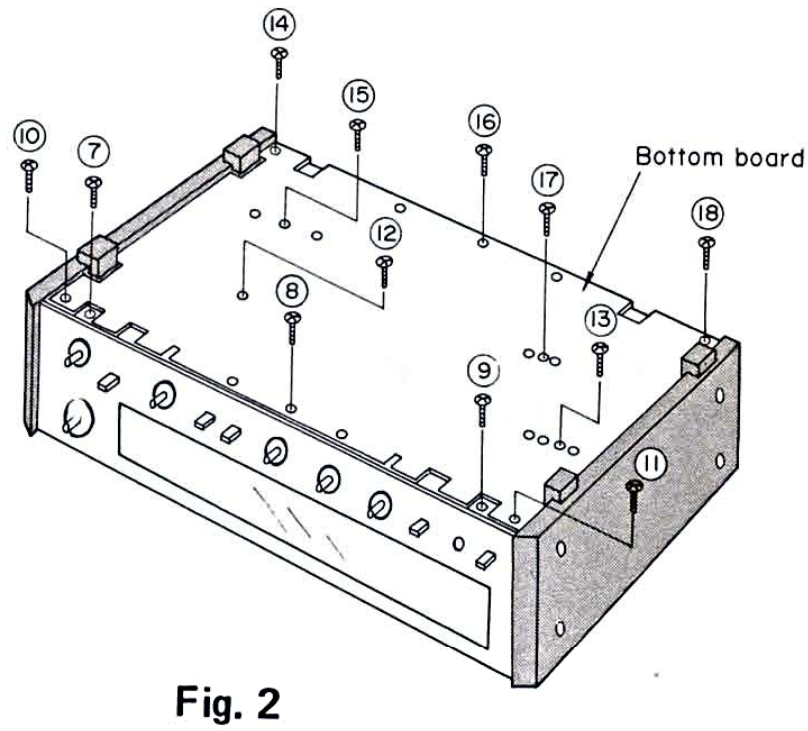
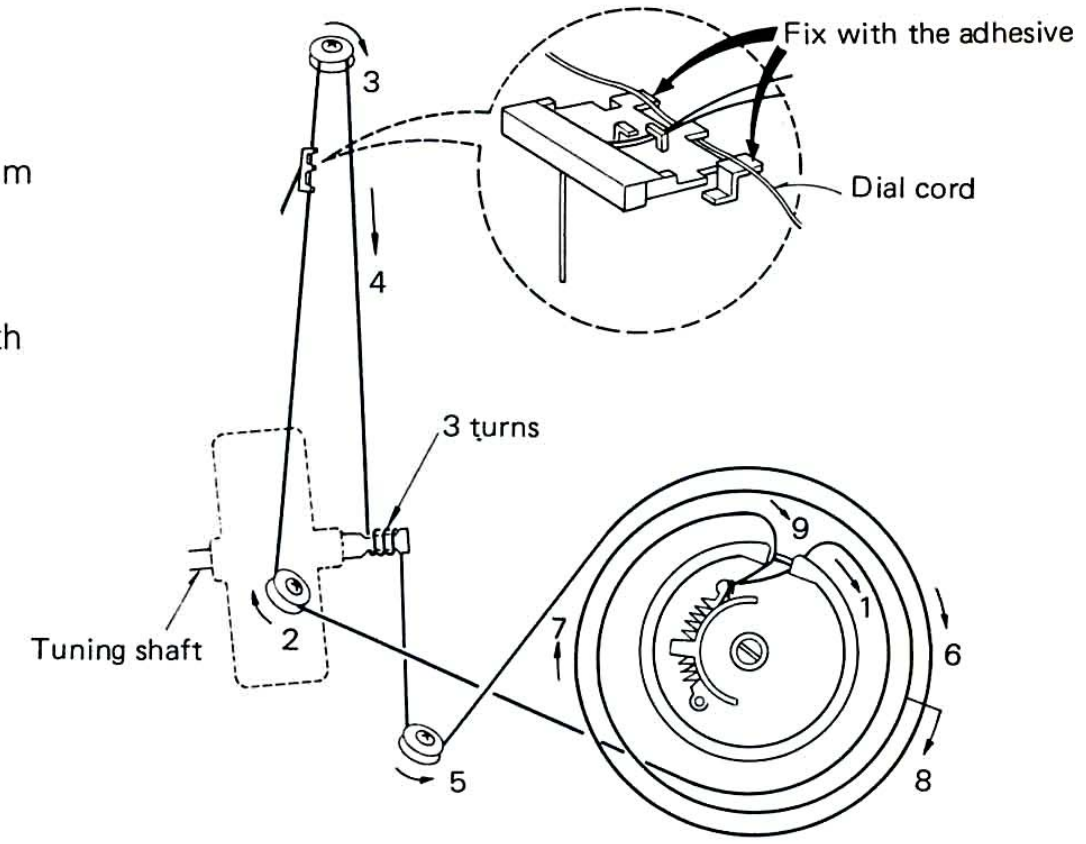


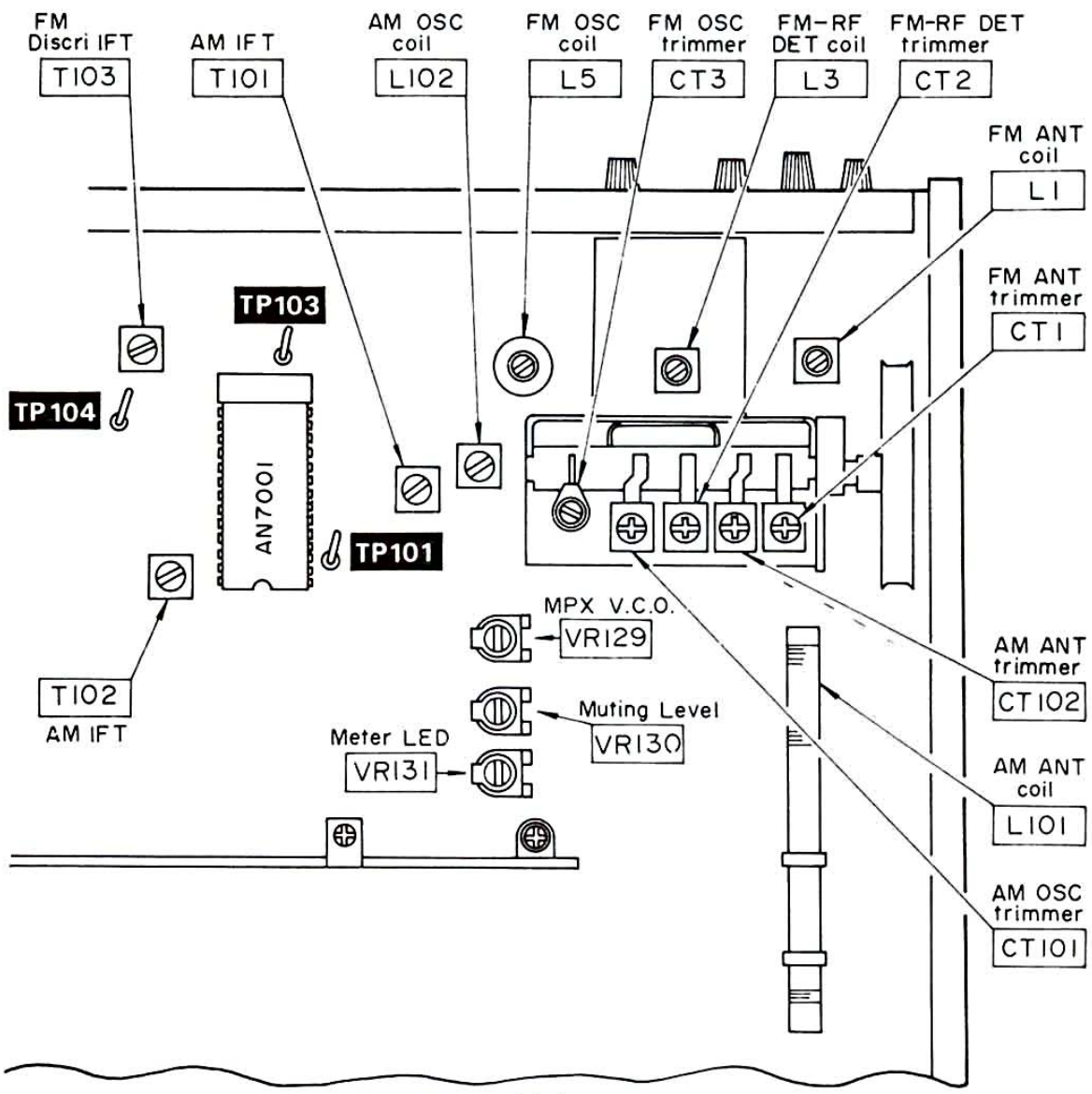
Fig. 2

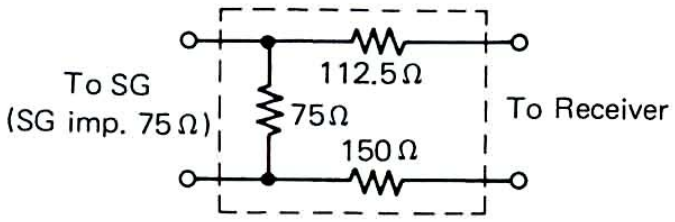
■ DIAL CORD INSTALLATION GUIDE

- For threading a fresh cord, proceed as follows.
  1. Prepare a fresh cord more than 180cm (70-15/16") in length.
  2. Bring the variable capacitor into a state where the drum is completely turned to the right (maximum capacity and lowest frequency for the variable capacitor).
  3. Direct the cord in the order from 1 to 9.
  4. Stretch the cord in such a tension as the spring length is elongated by 1.5 times that of the original state.
  5. Fix the knot of the cord with the adhesive.



■ ALIGNMENT POINTS





300Ω FM dummy antenna
Fig. 1

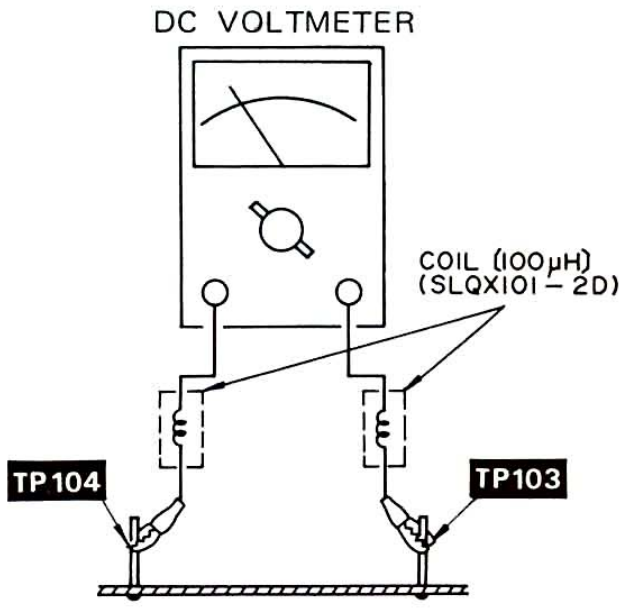
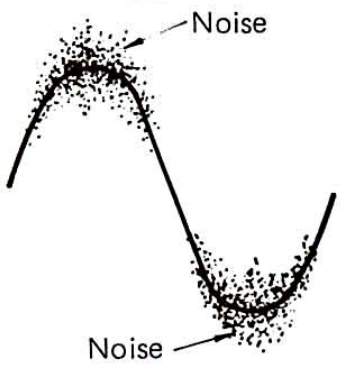
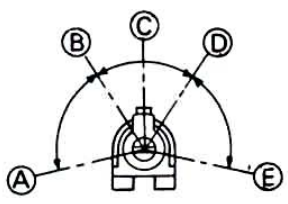


Fig. 2



AF output wave form
Fig. 3



VR129

A–B,D–E: Stereo OFF Position.
B–D: Stereo ON Position (Indicator Lighting).
C: Adjust Point of MPX Circuit.

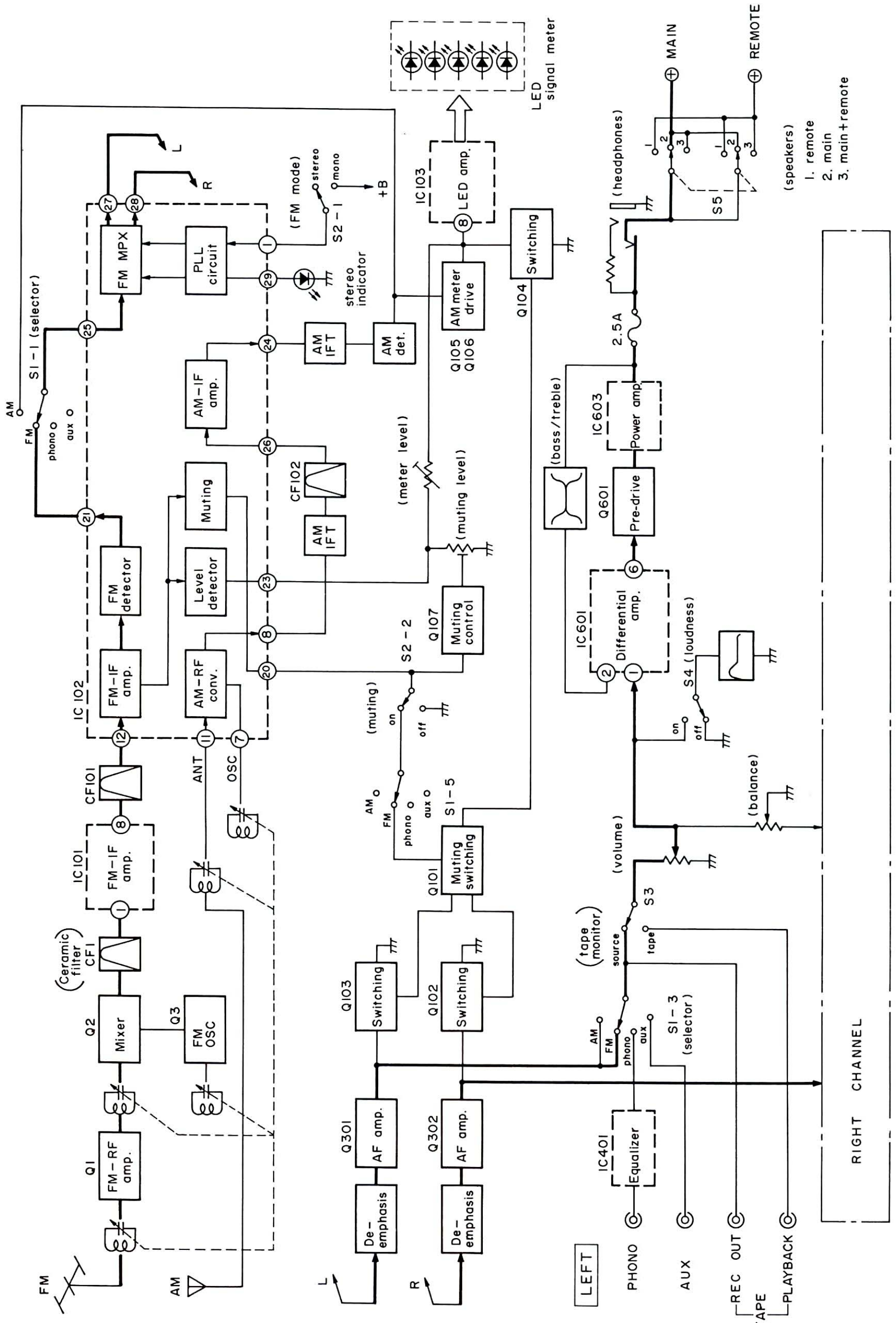
Fig. 4

■ ALIGNMENT INSTRUCTIONS

Notes:
1. Band selector switch . . . . . { AM (AM Alignment) / FM (FM Alignment)
2. FM muting & mode switch . . . . . off/mono
3. Maintain line voltage at 120 volts.
4. 300Ω FM dummy antenna . . . . . Refer to fig. 1.
5. Output of signal generator should be no higher than necessary to obtain an output reading.
6. Fix the bottom board before adjustment to chassis.

	AM/FM SIGNAL GENERATOR		DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
	CONNECTION	FREQUENCY				
	AM ALIGNMENT					
1	Higher side through 0.001μF to **AM** antenna trimmer terminal. Common to chassis.	450kHz (30% Mod. with 400 Hz)	Point of non-inter-ference	Connect AC VTVM or scope to "SPEAKER" terminals.	T101 (1st IFT) T102 (2nd IFT)	Adjust for maximum output.
2	Fashion loop of several turns of wire and radiate signal into loop of receiver.	600kHz (30% Mod. with 400Hz)	600kHz	Connect AC VTVM or scope to "SPEAKER" terminals.	L102 (OSC Coil) L101 (ANT Coil)	Adjust for maximum output, Adjust L101 by moving coil bobbin along ferrite core.
3	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500kHz (30% Mod. with 400Hz)	1500kHz	Connect AC VTVM or scope to "SPEAKER" terminals.	CT101 (OSC Trimmer) CT102 (ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
	FM RF ALIGNMENT					
4	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	90MHz (100% Mod. with 400Hz) weak input.	90MHz	Connect scope to "SPEAKER" terminal.	L5 (OSC Coil) L3 (RF DET Coil) L1 (ANT Coil)	• Add weak input so that noise is included in the output wave form. • Make the adjustment so that the output wave form is vertically symmetrical. (Fig. 3) • Repeat the steps (4) and (5) until the frequency correctly matches the dial scale.
5		106MHz (100% Mod. with 400Hz) weak input.	106MHz	Connect scope to "SPEAKER" terminal.	CT3 (OSC Trimmer) CT2 (RF DET Trimmer) CT1 (ANT Trimmer)	
	FM-IF ALIGNMENT					
6	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	No-Signal	100MHz	Connect DC VTVM to between **TP104** and **TP103** through choke coil. Refer to fig. 2.	T103 (Discriminator IFT)	• Adjust T103 core so that voltage measured in signal mode is 0V in 300mV range.
7		100MHz (100% Mod. with 400Hz) weak input.	100MHz	Connect DC VTVM to between **TP104** and **TP103** through choke coil. Connect scope to "SPEAKER" terminal.		• Add week input so that noise is included in the output wave form. • Make the tuning so that the output wave form is vertically symmetrical. (Fig. 3) • Adjust T103 core so that voltage measured in signal mode is 0V in 300mV range. • Repeat steps (6) and (7).
	SIGNAL METER LED (Light Emitting Diode) INDICATOR ALIGNMENT					
8	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. Apply 45dB(178μV) to receiver.	100MHz (100% Mod. with 400Hz)	100MHz	Signal meter LED	VR131 (Meter LED)	• Adjust VR131 while observing the signal meter LED so that the indicator at 5th is about to turn on.
	FM MUTING LEVEL ALIGNMENT					
9	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. Apply 16 dB (6.3μV) to receiver.	100MHz (100% Mod. with 400Hz)	100MHz	Connect AC VTVM or scope to "SPEAKER" terminals.	VR130 (Muting Level)	• FM muting/mode switch to "on/auto". • Adjust so that output can be obtained.
	FM MPX V.C.O. ALIGNMENT					
	Using a frequency counter			Using alternate system		
10	**1** 100MHz Non-modulated mono signal applied to receiver. **2** FM muting/mode switch to "on/FM auto". **3** Connect frequency counter to **TP101** through resistor (100kΩ). **4** Adjust **VR129** to 19kHz, ±30Hz.			**1** Apply stereo signal from generator or stereo station to receiver. **2** Adjust **VR129** until stereo indicator lights up. Cement arm of **VR129** as shown in fig. 4.		

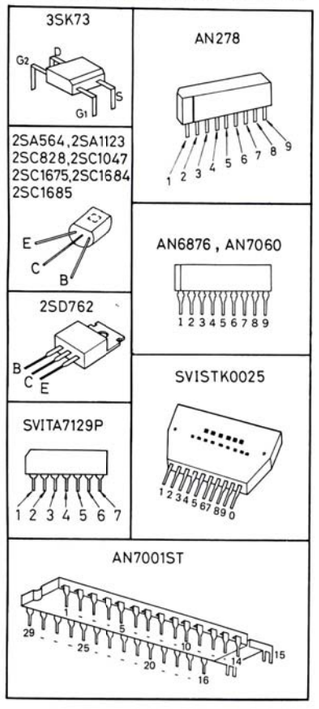
■ BLOCK DIAGRAM

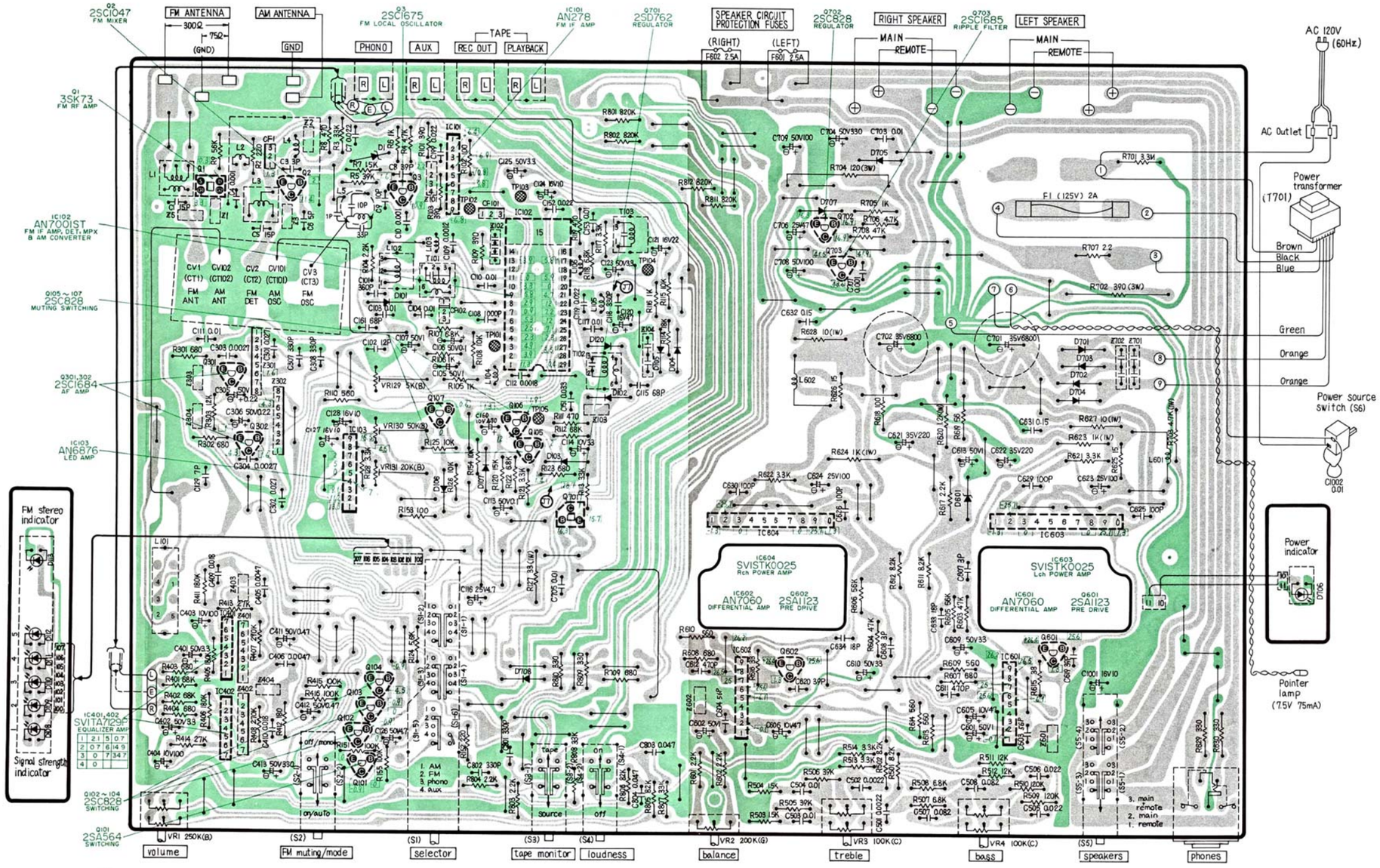


■ PRINTED CIRCUIT BOARD WIRING VIEW

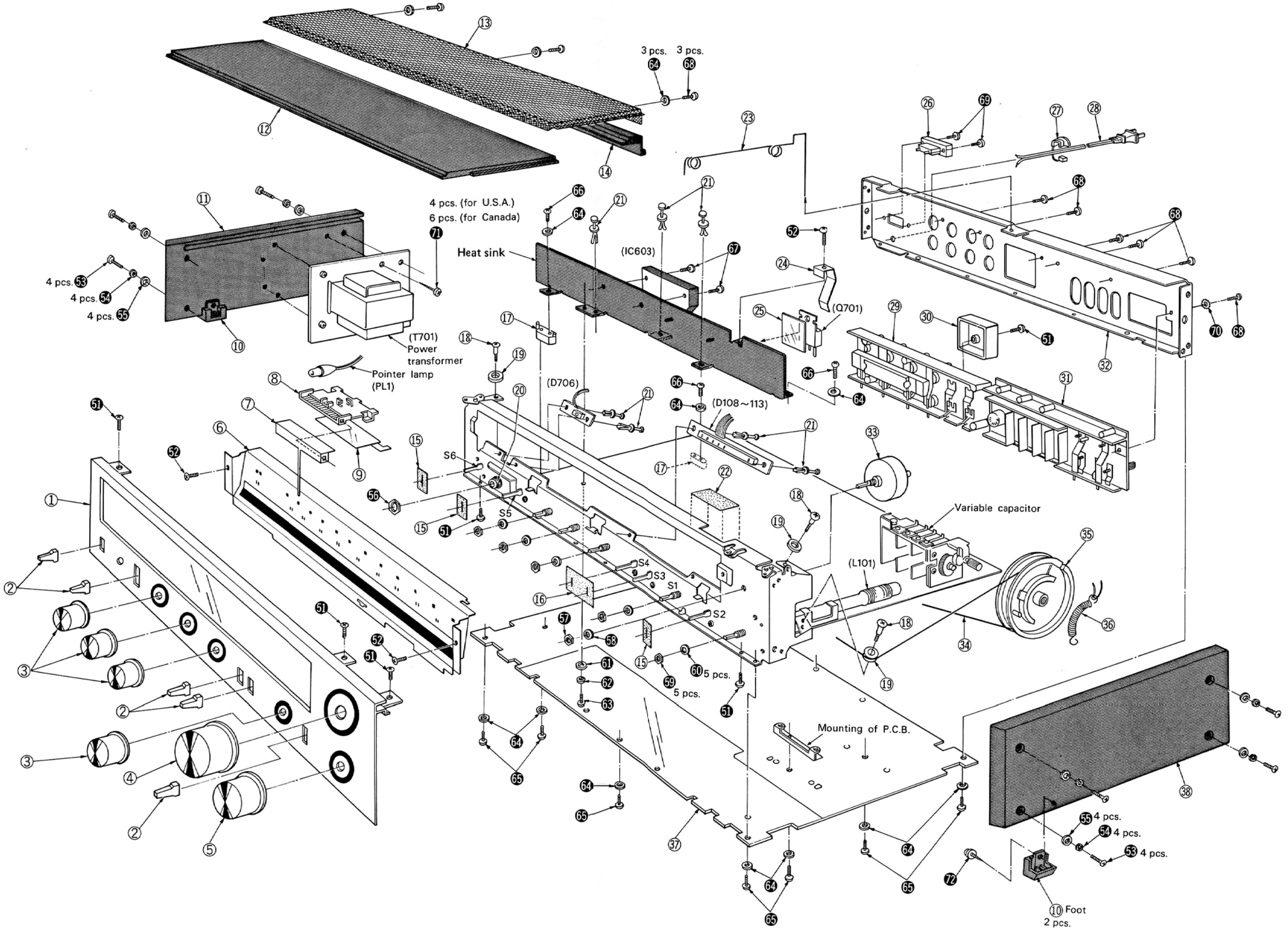
Earth (Ground) lines

• Terminal guide of transistors and IC's





■ EXPLODED VIEW



■ REPLACEMENT PARTS LIST ·····Cabinet & Chassis Parts

NOTES: 1. Part numbers are indicated on most mechanical parts
Please use this part number for parts orders
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.

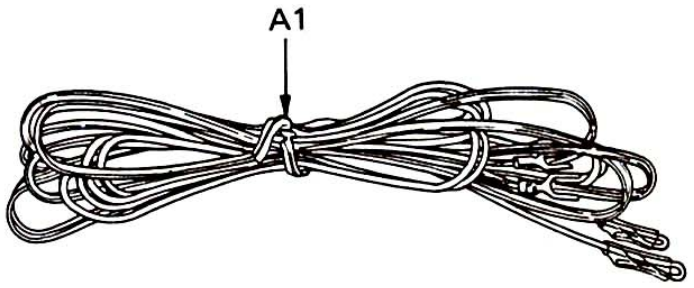
Ref. No.		Part No.	Part Name & Description
		CABINET and CHASSIS PARTS	
1		SGWA101M	Panel, Front (Ass'y)
2		SBD29	Knob, Lever Switches
3		SBN873	Knob, Bass, Treble, Balance & Selector
4		SBN869	Knob, Tuning
5		SBN871	Knob, Volume
6		SKD3830	Scale, Dial
7		SDP5077	Pointer, Dial
8		SDP927	Bracket, Pointer & Pointer Lamp
9		SDA85	Slider, Pointer
10		SKL233	Foot
11		SKZ1621	Side Board, Right
12		SYK757	Top Board
13		SGM73	Ventilation
14		SGX6759	Escutcheon, Ventilation
15		SHS2425	Fiber, Power, Speaker & Mode Switch
16		SHS2427	Fiber, Loudness & Tape monitor Switch
17		SHE101	Mounting, Heat sink & P.C.B.
18		SHD3X21F–1	Shaft, Dial Pulley
19		**RDR14–2**	Pulley, Dial
20		XCJS6P21E–A	Jack, Headphones
21		SHR401–1	Latch, LED P.C.B. & Heat sink M'tg
22		SHS1033	Fiber
23		SUL31	Mounting, Pointer Lamp Lead Wire
24		SUS181	Spring, Transistor (Q701) Press
25		SMX181	Mica Plate, Transistor (Q701)
26	⚠	SJS9205–1	Socket, AC Outlet
27		SFHK040L	Bushing, AC Cord
28	⚠	RJA9YA	AC Cord, Power Source
29		SJF8021	Terminal, Speakers
30		SUV337	Cover, Speaker Circuit Fuses
31		SJF8019	Terminal, Input & Antenna
32	JPN	SGP2070A	Panel, Rear (Made in Japan)
32	MSA	SGP2070B	Panel, Rear (Made in Singapore)
33		SDT8063	Shaft, Tuning
34		SDZ051–2	Cord, Dial (1.8m)
35		SDD47–1	Drum, Variable Capacitor
36		**SDS4121**	Spring, Dial Cord
37		SYU217	Bottom Board
38		SKZ1623	Side Board, Left
		SCREWS, NUTS and WASHERS	
㊶		**XTB3+8BFZ**	Screw, Front Panel & Fuse Cover M'tg
㊷		**XTB3+8BFN**	Screw, Dial Scale & Transistor Spring M'tg
㊸		**XSN4+20BVS**	Screw, Side Board M'tg
㊹		**XWA4BFZ**	Washer, Spring
㊺		**XWG4FZ**	Washer
㊻		**XNS12**	Nut, Headphone Jack M'tg
㊼		**XNS11**	Nut, Tuning Shaft M'tg
㊽		**XWV11**	Washer
㊾		**XNS8**	Nut, Volume, Selector etc. M'tg
㊿		**XWV8**	Washer
(61)		**XWG3FN**	Washer
(62)		**XWA3BFN**	Washer, Spring
(63)		**XTB3+10BFN**	Screw, Heat Sink M'tg
(64)		**XWG3**	Washer
(65)		**XTV3+12BFN**	Screw, Bottom Board M'tg
(66)		**XTV3+10BFN**	Screw, P.C.B. & Heat Sink M'tg
(67)		**XTB3+16BFN**	Screw, Power IC M'tg
(68)		**XTB3+10BFZ**	Screw, Terminals, Ventilation M'tg
(69)		**XTN3+8BFZ**	Screw, AC Outlet M'tg
(70)		**XWC3B**	Washer
(71)		**XTN5+12B**	Screw, Power Transformer M'tg
(72)		**XMA31+13**	Screw, Foot M'tg

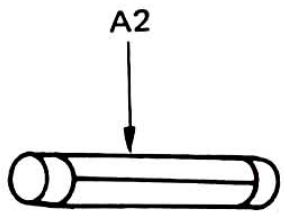
Ref. No.		Part No.	Part Name & Description
		ACCESSORIES	
A1		SSA267	Cord, FM Indoor Antenna
A2	⚠	XBAS1A2501	Fuse, Speaker Circuit (125V 2.5A)
		PACKING PARTS	
P1		SPP495	Polyethylene Bag
P2		SPS2371	Pad, Left & Right
P3 [M]	JPN	SPG2245	Carton Box, Products for U.S.A. (Made in Japan)
P3 [M]	MSA	SPG2295	Carton Box, Products for U.S.A. (Made in Singapore)
P3 [MC]		SPG2247	Carton Box, Products for Canada
P4 [M]		SQF10273	Instructions Book, Printed Matter Products for U.S.A.
P4 [MC]		SQF10275	Instructions Book, Printed Matter Products for Canada

(M) is available in U.S.A.
(MC) is available in Canada.

JPN: Made in Japan.
MSA: Made in Singapore.

• Accessories





■ REPLACEMENT PARTS LIST ·····Electric Parts

NOTES: 1. Part numbers are indicated on most mechanical parts
Please use this part number for parts orders
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Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUIT			
IC101		AN278	IC, FM IF Amplifier
IC102		AN7001ST	IC, AM Converter, FM IF Amplifier, Detector & Stereo Decoder (MPX)
IC103		AN6876	IC, LED Amplifier
IC401, 402		SVITA7129P	IC, Equalizer Amplifier
IC601, 602		AN7060	IC, Differential Amplifier
IC603, 604		SVISTK0025K	IC, Power Amplifier
TRANSISTORS			
Q1		3SK73–GR	Transistor, FM RF Amplifier
Q2		**2SC1047–C**	Transistor, FM Mixer
Q3		2SC1675–L1	Transistor, FM Local Oscillator
Q101		**2SA666AI–R**	Transistor, Switching
Q102~107, 702		**2SC1328–T**	Transistor, Switching & Regulator
Q301, 302		2SC1684–R	Transistor, AF Amplifier (Use in ranks R, S or T)
Q601, 602		2SA1123–R	Transistor, Pre Drive (Use in ranks R, S or T)
Q701		2SD762–O	Transistor, Regulator (Use in ranks O or P)
Q703		2SC1685–T	Transistor, Ripple Filter (Use in ranks S or T)
DIODES			
D1		**SVDMZ303B**	Diode, 3V Zener
D101, 103~106 708		**MA162A**	Diode, AGC & Switching
D102		**2–OA99**	Diode, AM Detector
D108~113		LN07111P	Light Emitting Diode, Ass'y Signal Strength & Stereo Indicator
D120, D107		**RVDKB262C**	Diode, Muting & Meter detector
D601		**RVDEQA0106S**	Diode, 6V Zener
D701~705	⚠	**SVDSR1K2**	Rectifier
D707		**SVDRD16EB**	Diode, 16V Zener
COILS and TRANSFORMERS			
L1		SLA4N15	Coil, FM Antenna
L2		**RLQY25S2**	Coil, Choke
L3		SLD4P13	Coil, FM RF Detector
L4		**RLQY15G5**	Coil, Choke
L5		SLO4P63–P	Coil, Oscillator
L101		SLF2C27	Coil, AM Antenna
L102		SLO2CI7	Coil, MW Oscillator
L103		SLQX101–3M	Coil, Choke
L104		SLQX393–1Z	Coil, Choke
L105		SLQX471–M	Coil, Choke
L106		SLQX180–2	Coil, Choke
L601, 602		SLQY15G–3P	Coil, Power Amplifier Output
T101		SLI2C129R–M	Transformer, AM IF
T102		SLI2C413R	Transformer, AM IF
T103		SLI4C509–P	Transformer, FM Discriminator
T701 [M]	⚠	SLT5M99	Transformer, Power Source (for U.S.A.)
T701 [MC]	⚠	SLT5M99–1	Transformer, Power Source (for Canada)
COMPONENT COMBINATIONS			
Z1		EXRP102Z223C	Component Combination, 22kΩ & 0.001μF
Z2		EXRP181K682C	Component Combination, 6.8kΩ & 180pF
Z3		EXRP103P102C	Component Combination, 1kΩ & 0.01μF
Z5		EXRP220K104C	Component Combination, 100kΩ & 22pF
Z101		EXF3YL01C	Component Combination, 0.01μF (x3)
Z102		EXF3SL04C	Component Combination, 0.01μF (x3)
Z103		EXRP103P472C	Component Combination, 4.7kΩ & 0.01μF
Z104, 701, 702		EXRFS203ZS	Component Combination, 0.01μF (x2)
Z301, 302		EXBH85085K	Component Combination, 10kΩ (x2) & 4.7kΩ (x3)
Z303, 304		EXRP182K104C	Component Combination, 100kΩ & 0.0018μF
Z401, 402		EXA6SD01C	Component Combination, Equalizer
Z403, 404		EXRP331K153C	Component Combination, 15kΩ & 330pF
Z601, 602		EXRP820K104C	Component Combination, 100kΩ & 82pF
Z603, 604 [MC] only		ECQJ0518	Component Combination, 10Ω & 0,15μF

Ref. No.		Part No.	Part Name & Description
CERAMIC FILTERS			
CF1, 101		SVFE107MS8–A	Ceramic Filter, Red, 10.7MHz
		SVFE107MS8–B	Ceramic Filter, Blue, 10.67MHz
		SVFE107MS8–C	Ceramic Filter, Orange, 10.73MHz
		SVFE107MS8–D	Ceramic Filter, Black, 10.64MHz
		SVFE107MS8–E	Ceramic Filter, White, 10.76MHz
			(Use pair ranks as same as CF1 and CF101)
CF102		SVFSFU450B3	Ceramic Filter, AM 450kHz
FUSES			
F1	⚠	XBA1F20NU14	Fuse, 2A (125V) P.T. Primary
F601, 602	⚠	XBAS1A2501	Fuse, 2.5A (125V) Speaker Circuit
LAMP			
PL1		SWL71–3	Lamp, Dial (w/colour Cap)
SWITCHES			
S1		SSR147	Swithch, Program Selector
S2		SSL149	Swithch, FM Muting/Mode
S3		SSL147	Swithch, Tape Monitor
S4		SSL149	Switch, Loudness
S5		SSL163	Switch, Speakers Selector
S6	⚠	SSL133	Switch, Power Source
VARIABLE RESISTORS			
VR129		EVTS3MA00B53	PLL Voltage Adjustment, 5kΩ (B)
VR130		**EVLS3AA00B54**	FM Muting Level Adj., 50kΩ (B)
VR131		**EVLS3AA00B24**	Meter Sensitivity Adj., 20kΩ (B)
VR1		EWJEKA092BF5	Volume Control, 250kΩ (B)
VR2		EVHFDA505G25	Balance Control, 200kΩ (G)
VR3, 4		EWKGSA091C15	Treble & Bass Control, 100kΩ (C)
VARIABLE CAPACITOR			
CV1, 2, 3, 101, 102 [CT1, 2, 3, 101, 102]		ECV5MD34X71G	Tuning Gang, FM & AM (with Trimmer)

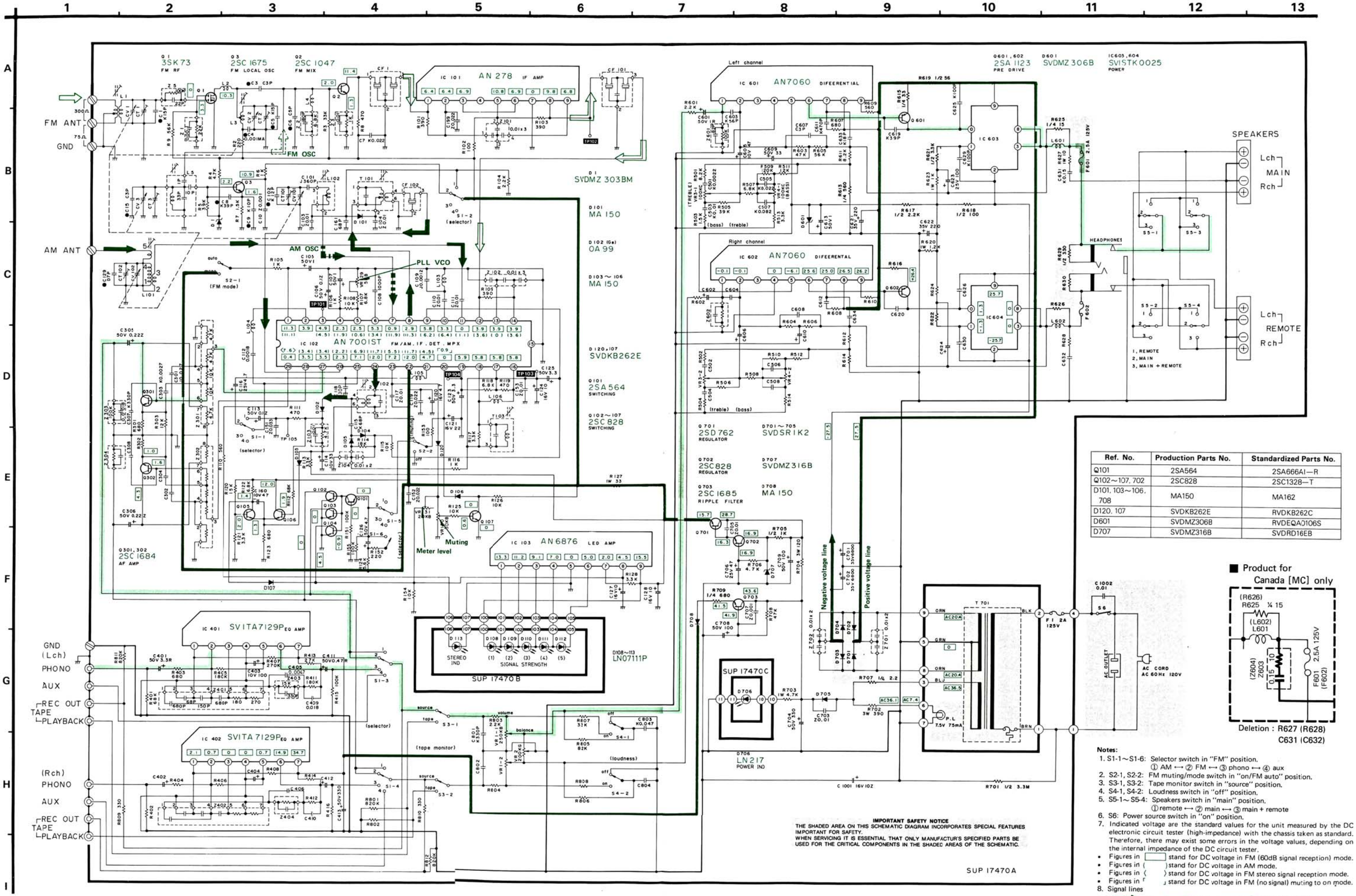
(M) is available in U.S.A.
(MC) is available in Canada.

Ref. No.		Part No.	Part Name & Description		
RESISTORS					
R2		**ERD25FJ221**	Carbon,	220Ω,	1/4W, ± 5%
R3		**ERD25TJ333**	Carbon,	33kΩ,	1/4W, ± 5%
R4		**ERD25FJ472**	Carbon,	4.7kΩ,	1/4W, ± 5%
R5		**ERD25TJ393**	Carbon,	39kΩ,	1/4W, ± 5%
R6		**ERD25FJ102**	Carbon,	1kΩ,	1/4W, ± 5%
R7		**ERD25FJ152**	Carbon,	1.5kΩ,	1/4W, ± 5%
R8		**ERD25FJ471**	Carbon,	470Ω,	1/4W, ± 5%
R9		**ERD25TJ563**	Carbon,	56kΩ,	1/4W, ± 5%
R101		**ERD25FJ391**	Carbon,	390Ω,	1/4W, ± 5%
R102		**ERD25FJ101**	Carbon,	100Ω,	1/4W, ± 5%

Ref. No.		Part No.	Part Name & Description
R103		**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R104		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R105, 106		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R107		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R108		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R109		**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R110		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R111		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R112		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R113		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R114		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R115		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R116		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R117		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R118		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R119		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R120		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R121		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R122		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R123		**ERD25FJ681**	Carbon, 680Ω, 1/4W, ± 5%
R124		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R125, 126		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R127		**ERG1ANJ330**	Metal Oxide, 33Ω, 1W, ± 5%
R128		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R151		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R152		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R153		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R154		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R155		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R301, 302		**ERD25FJ681**	Carbon, 680Ω, 1/4W, ± 5%
R303		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R401, 402		**ERO25CKF6802**	Metal Film, 68kΩ, 1/4W, ± 1%
R403, 404		**ERD25FJ681**	Carbon, 680Ω, 1/4W, ± 5%
R405, 406		**ERO25CKF1803**	Metal Film, 180kΩ, 1/4W, ± 1%
R407, 408		**ERO25CKF2703**	Metal Film, 270kΩ, 1/4W, ± 1%
R411, 412		**ERD25TJ184**	Carbon, 180kΩ, 1/4W, ± 5%
R413, 414		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R415, 516		**ERO25CKF1003**	Metal Film, 100kΩ, 1/4W, ± 1%
R501, 502		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R503, 504		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R505, 506		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R507, 508		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R509, 510		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R511, 512		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R513, 514		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R601, 602		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R603, 604		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R605, 606		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R607, 608		**ERD25FJ681**	Carbon, 680Ω, 1/4W, ± 5%
R609, 610		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R611, 612		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R613, 614	⚠	**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R615, 616	⚠	**ERD25FJ330**	Carbon, 33Ω, 1/4W, ± 5%
R617	⚠	**ERD50FJ222**	Carbon, 2.2kΩ, 1/2W, ± 5%
R618	⚠	**ERD50FJ101**	Carbon, 100Ω, 1/2W, ± 5%
R619	⚠	**ERD50FJ560**	Carbon, 56Ω, 1/2W, ± 5%
R620		**ERG1ANJ122**	Metal Oxide, 1.2kΩ, 1W, ± 5%
R621, 622	⚠	**ERD50FJ332**	Carbon, 3.3kΩ, 1/2W, ± 5%
R623, 624		**ERG1ANJ102**	Metal Oxide, 1kΩ, 1W, ± 5%
R625, 626	⚠	**ERD25FJ150**	Carbon, 15Ω, 1/4W, ± 5%
R627, 628[M] only		**ERG1ANJ100**	Metal Oxide, 10Ω, 1W, ± 5%
R629, 630	⚠	**ERD50FJ331**	Carbon, 330Ω, 1/2W, ± 5%
R701	⚠	**ERC12ZGK335**	Solid, 3.3MΩ, 1/2W, ± 10%
R702		**ERG3ANJ391**	Metal Oxide, 390Ω, 3W, ± 5%
R703		**ERG1ANJ472**	Metal Oxide, 4.7kΩ, 1W, ± 5%
R704		**ERG3ANJ121**	Metal Oxide, 120Ω, 3W, ± 5%
R705	⚠	**ERD50FJ102**	Carbon, 1kΩ, 1/2W, ± 5%
R706		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R707	⚠	ERD25FAJ2R2	Carbon, 2.2Ω, 1/4W, ± 5%
R708		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R709	⚠	**ERD25FJ681**	Carbon, 680Ω, 1/4W, ± 5%
R801, 802		ERO50CKF8203	Metal Film, 820kΩ, 1/2W, ± 1%
R803, 804		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R805, 806		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R807, 808		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R809, 810		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R811, 812		ERO50CKF8203	Metal Film, 820kΩ, 1/2W, ± 1%

Ref. No.		Part No.	Part Name & Description
CAPACITORS			
C1		ECCD1H150KC	Ceramic, 15pF, 50V, ±10%
C3		ECCD1H030CC	Ceramic, 3pF, 50V, ±0.25pF
C4		ECKD1H102MDA	Ceramic, 0.001μF, 50V, ±20%
C5		ECCD1H150KC	Ceramic, 15pF, 50V, ±10%
C6		ECCD1H050CC	Ceramic, 5pF, 50V, ±0.25pF
C7		ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%
C8		ECCD1H390KC	Ceramic, 39pF, 50V, ±10%
C9		ECCD1H100KC	Ceramic, 10pF, 50V, ±10%
C10		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20%
C15		ECCD1H030CC	Ceramic, 3pF, 50V, ±0.25pF
C101		ECQP1361JZ	Polypropylene, 360pF, 100V, ± 5%
C102		ECCD1H120KC	Ceramic, 12pF, 50V, ±10%
C103, 104		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C105		**ECEA50Z1**	Electrolytic, 1μF, 50V
C106		**ECEA50ZR1**	Electrolytic, 0.1μF, 50V
C107		**ECEA50Z1**	Electrolytic, 1μF, 50V
C108		ECQS1102JZ	Styrol, 1000pF, 125V, ± 5%
C109		ECQM1H122JZ	Polyester, 0.0012μF, 50V, ± 5%
C110, 111		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C112		ECQM1H182JZ	Polyester, 0.0018μF, 50V, ± 5%
C113		**ECEA50ZR1**	Electrolytic, 0.1μF, 50V
C114		**ECEA1CS330**	Electrolytic, 33μF, 16V
C115		ECCD1H680K	Ceramic, 68pF, 50V, ±10%
C116		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C117		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C118		ECKD1H331KB	Ceramic, 330pF, 50V, ±10%
C119		ECKD1H223ZF	Cermic, 0.022μF, 50V, +80 −20%
C120		**ECEA1ES470**	Electrolytic, 47μF, 25V
C121		**ECEA1ES220**	Electrolytic, 22μF, 25V
C123		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C124		**ECEA1HS100**	Electrolytic, 10μF, 50V
C125		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C126		**ECEA1JS4R7**	Electrolytic, 4.7μF, 63V
C127		**ECEA1HS100**	Electrolytic, 10μF, 50V
C128		**ECEA1HS100**	Electrolytic, 10μF, 50V
C129		ECCD1H070DC	Ceramic, 7pF, 50V, ±0.5pF
C151		ECKD1H333ZF	Ceramic, 0.033μF, 50V, +80 −20%
C152		ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%
C153		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C160		**ECEA1AS470**	Electrolytic, 47μF, 10V
C161		ECCD1H680K	Ceramic, 68pF, 50V, ±10%
C199		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20%
C301, 302		ECQM1H273JZ	Polyester, 0.027μF, 50V, ± 5%
C303, 304		ECQM1H272KZ	Polyester, 0.0027μF, 50V, ±10%
C305, 306		**ECEA50ZR22**	Electrolytic, 0.22μF, 50V
C307, 308		ECKD1H331KB	Ceramic, 330pF, 50V, ±10%
C401, 402		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V
C403, 404		**ECEA1AS101**	Electrolytic, 100μF, 10V
C405, 406		ECQM1H472JZ	Polyester, 0.0047μF, 50V, ± 5%
C409, 410		ECQM1H183JZ	Polyester, 0.018μF, 50V, ± 5%
C411, 412		**ECEA50MR47R**	Electrolytic, 0.47μF, 50V
C413		**ECEA1HS331**	Electrolytic, 330μF, 50V
C501, 502		ECQM1H222KZ	Polyester, 0.0022μF, 50V, ±10%
C503, 504		ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%
C505, 506		ECKD1H223KZ	Ceramic, 0.022μF, 50V, ±10%
C507, 508		ECKD1H823KZ	Ceramic, 0.082μF, 50V, ±10%
C601, 602		**ECEA50M1R**	Electrolytic, 1μF, 50V
C603, 604		ECCD1H560K	Ceramic, 56pF, 50V, ±10%
C605, 606		**ECEA1AS470**	Electrolytic, 47μF, 10V
C607, 608		ECCD1H030CC	Ceramic, 3pF, 50V, ±0.25pF
C609, 610		**ECEA1JS330**	Electrolytic, 33μF, 63V
C611, 612		ECKD1H471KB	Ceramic, 470pF, 50V, ±10%
C613		**ECEA50Z1**	Electrolytic, 1μF, 50V
C619, 620		ECCD1H390K	Ceramic, 39pF, 50V, ±10%
C621, 622		**ECEA1VS221**	Electrolytic, 220μF, 35V
C623, 624		**ECEA1ES101**	Electrolytic, 100μF, 25V
C625, 626		ECCD1H101K	Ceramic, 100pF, 50V, ±10%
C629, 630		ECCD1H101K	Ceramic, 100pF, 50V, ±10%
C631, 632[M] only		ECQM1H154KZ	Polyester, 0.15μF, 50V, ±10%
C633, 634		ECCD1H180K	Ceramic, 18pF, 50V, ±10%
C701, 702		ECETS1VV682U	Electrolytic, 6800μF, 35V
C703		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C704		**ECEA1HS331**	Electrolytic, 330μF, 50V
C705		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20%
C706		**ECEA1ES470**	Electrolytic, 47μF, 25V
C707		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20%
C708, 709		**ECEA1HS101**	Electrolytic, 100μF, 50V
C801, 802		ECKD1H331KB	Ceramic, 330pF, 50V, ±10%
C803, 804		ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C1001		**ECEA16Z10**	Electrolytic, 10μF, 16V
C1002	⚠	ECKDMY103PF	Ceramic, 0.01μF, 125VAC, +100 −0%

■ **SCHEMATIC DIAGRAM ····· MODEL SA-101** * This schematic diagram may be modified at any time with the development of new technology.



Ref. No.	Production Parts No.	Standardized Parts No.
Q101	2SA564	2SA666AI—R
Q102~107, 702	2SC828	2SC1328—T
D101, 103~106, 708	MA150	MA162
D120, 107	SVDKB262E	RVDKB262C
D601	SVDMZ306B	RVDEQA0106S
D707	SVDMZ316B	SVDRD16EB

■ Product for Canada [MC] only

Deletion : R627 (R628)
C631 (C632)

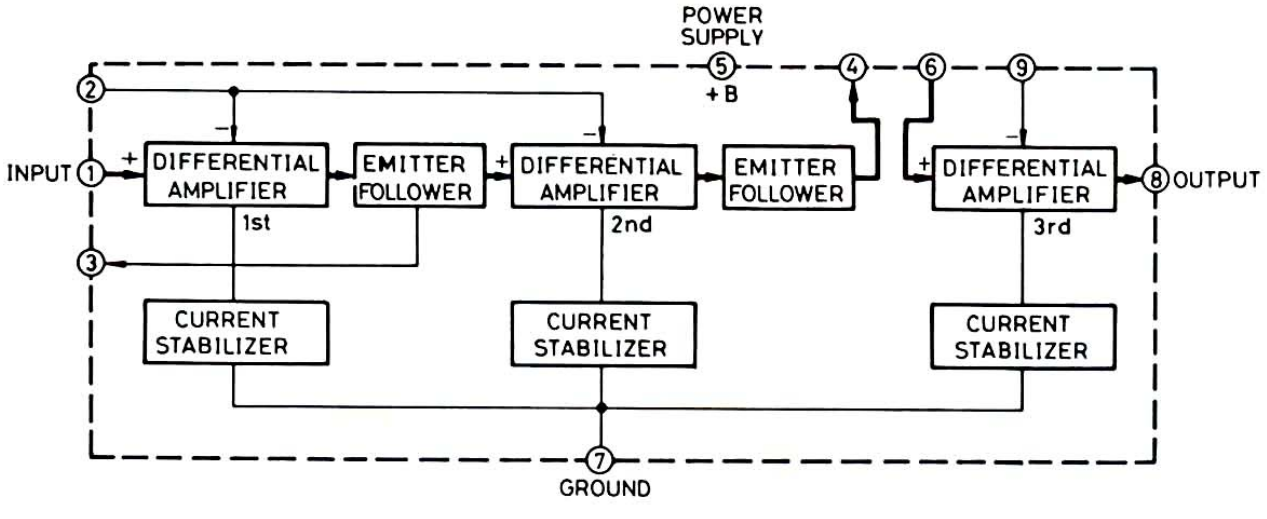
IMPORTANT SAFETY NOTICE
THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR SAFETY.
WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTUR'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.

Notes:

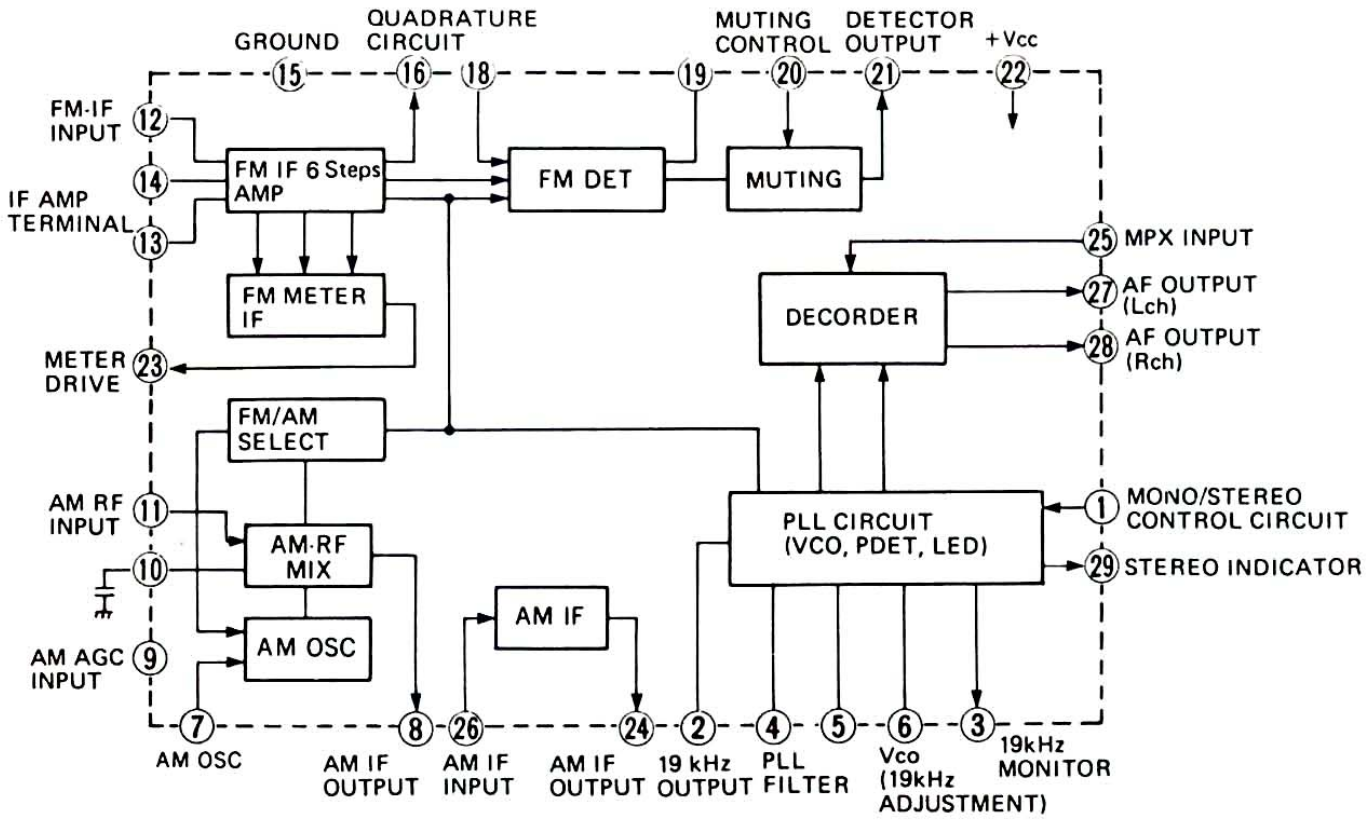
1. S1-1~S1-6: Selector switch in "FM" position.
   ① AM ⟷ ② FM ⟷ ③ phono ⟷ ④ aux
2. S2-1, S2-2: FM muting/mode switch in "on/FM auto" position.
3. S3-1, S3-2: Tape monitor switch in "source" position.
4. S4-1, S4-2: Loudness switch in "off" position.
5. S5-1~S5-4: Speakers switch in "main" position.
   ① remote ⟷ ② main ⟷ ③ main + remote
6. S6: Power source switch in "on" position.
7. Indicated voltage are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
   - Figures in [ ] stand for DC voltage in FM (60dB signal reception) mode.
   - Figures in ( ) stand for DC voltage in AM mode.
   - Figures in ⟨ ⟩ stand for DC voltage in FM stereo signal reception mode.
   - Figures in ⌜ ⌟ stand for DC voltage in FM (no signal) muting to on mode.
8. Signal lines
   ⇨ FM ➡ AM ➡ Audio Frequency
9. ▬ Positive voltage lines

■ BLOCK DIAGRAM OF IC'S

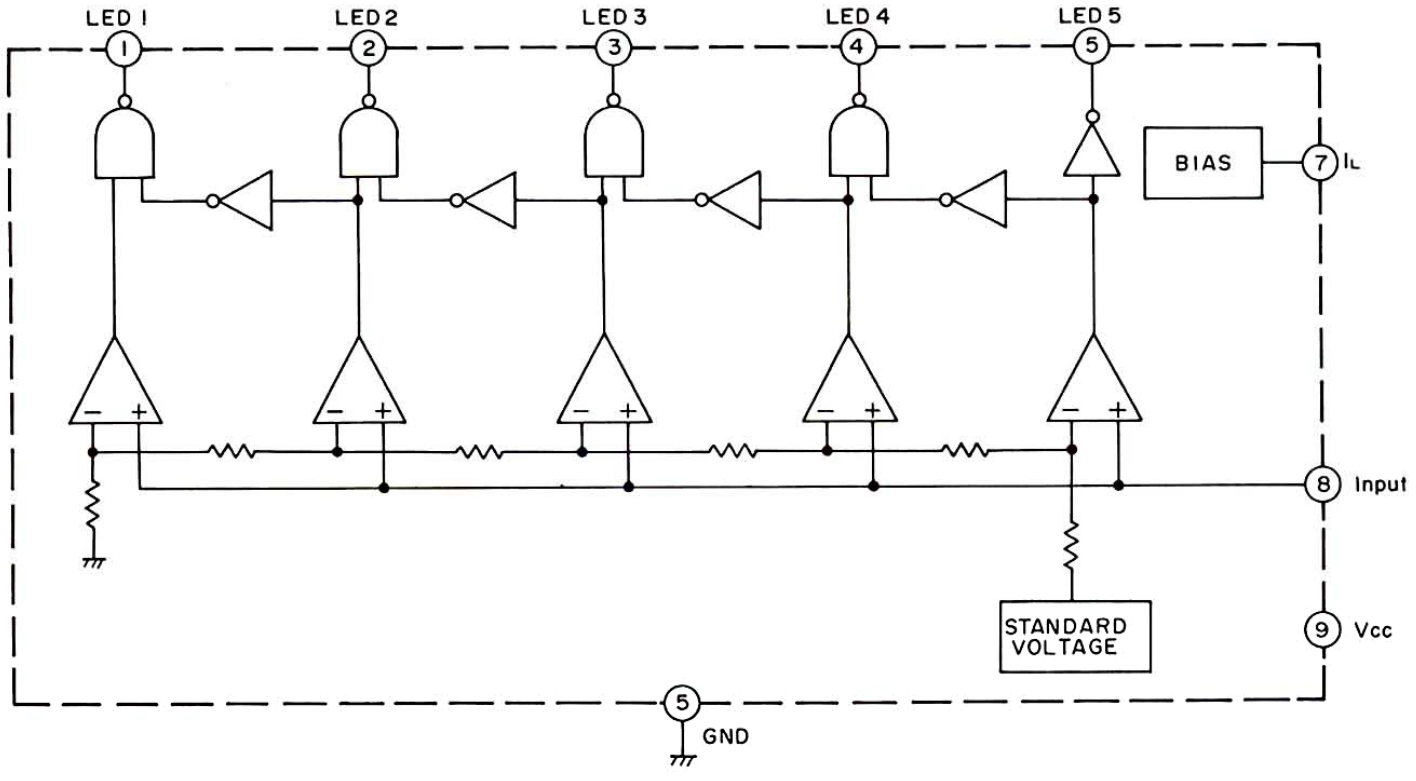
- This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.



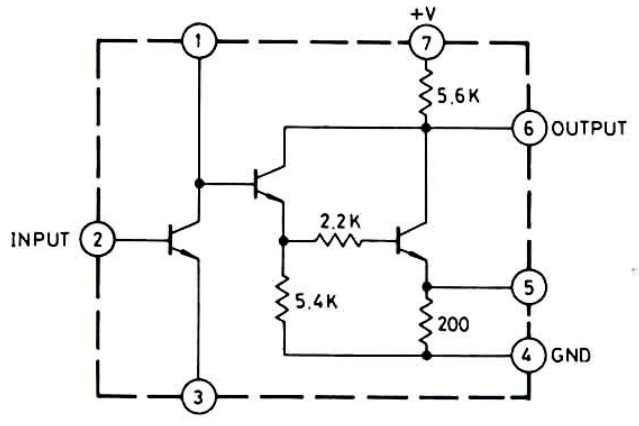
IC101 (AN278)
FM IF amplifier



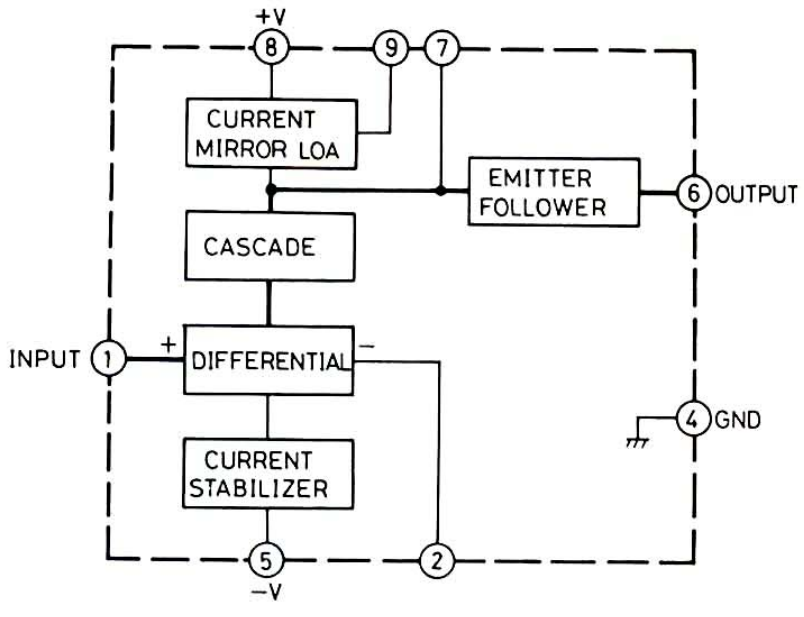
IC102 (AN7001ST)
AM converter, FM IF amplifier, detector & MPX



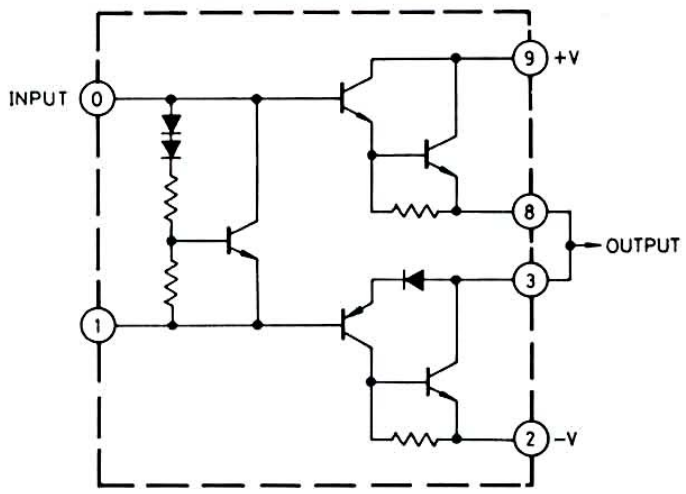
IC103 (AN6876)
LED drive amplifier



IC401, 402 (SVITA7129P)
Equalizer amplifier

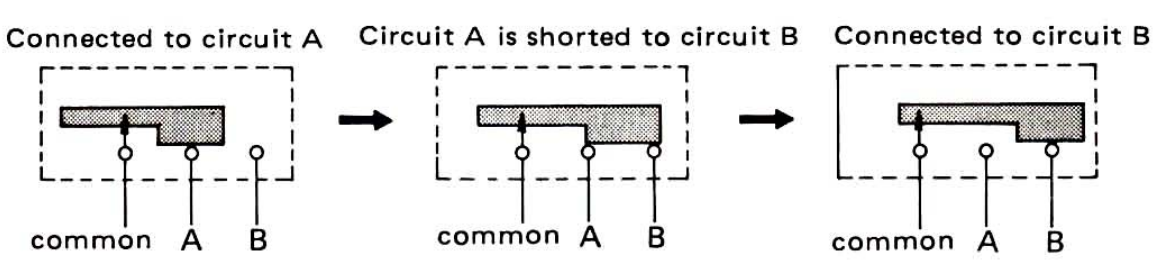


IC601, 602 (AN7060)
Differential amplifier

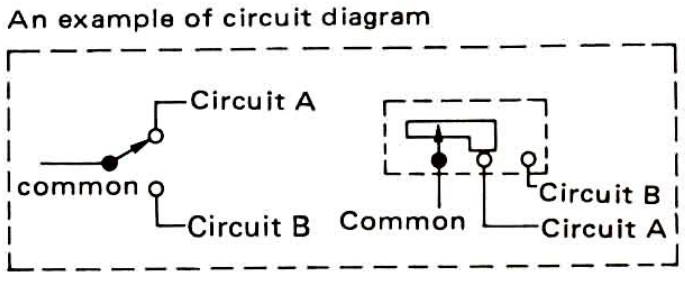


IC603, 604 (SVISTK0025)
Power amplifier

- **Shorting Switch**
  This unit uses a shorting switch. As illustrated below, the circuit is shorted to the next circuit without being opened. In the circuit diagram, the shaded area represents the common terminal.



An example of circuit diagram



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