ORDER NO. SD 7704-1214

Service Manual

FM/AM STEREO RECEIVER
SA-5070
(M), (MC)

Simulated wood cabinet

* The model SA-5070[M] is available in America only.
* The model SA-5070[MC] is available in Canada only.

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
0.8% total harmonic distortion

	18W per channel (4 ohms)
	15W per channel (8 ohms)
1 kHz continuous power output	
both channels driven	
0.8% total harmonic distortion	20W per channel (4 ohms)
	18W per channel (8 ohms)
Total harmonic distortion	
	0.8% at rated power (40 Hz~20 kHz)
	0.5% at half power (40Hz ~20kHz)
	0.1% at half power (1 kHz)
Intermodulation distortion	0.8%
Damping factor	16 (4 ohms), 32 (8 ohms)
Input sensitivity and impedance	
PHONO	2.5mV/47kilohms
AUX	150mV/27kilohms
TAPE (PLAYBACK)	150mV/27kilohms
PHONO maximum input voltage (1 kHz, RMS)	130mV
S/N (IHF,A)	
PHONO	77 dB
AUX	94 dB
Frequency response	
PHONO	RIAA standard curve ±1.0 dB
AUX	20 Hz~ 20 kHz, ±0.8 dB
	10Hz ~35kHz, +0 dB, −1.0 dB
Tone controls	
BASS	50 Hz +10 dB~−10 dB
TREBLE	10 kHz, +10 dB~−10 dB
Loudness control (volume at −30 dB)	50 Hz, +10 dB
Output voltage	
TAPE (REC OUT)	150mV
Load impedance	
MAIN or REMOTE	4~16 ohms

FM TUNER SECTION

Frequency range	88~108 MHz
Sensitivity	11.2 dBf, (2.0μV IHF '58)
50 dB quieting sensitivity	
MONO	16.1 dB f, (3.5μV IHF '58)
STEREO	37.3 dB f, (40μV IHF '58)
Total harmonic distortion	
MONO	0.15% (100Hz), 0.15% (1kHz), 0.4% (6kHz)
STEREO	0.4% (100Hz), 0.3% (1kHz), 0.5% (6kHz)
S/N	MONO 70 dB, STEREO 65 dB
Frequency response	20 Hz~15 kHz, $^{+1.0}_{-2.0}$ dB
Alternate channel selectivity	58 dB
Capture ratio	1.5 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	80 dB
Spurious response rejection at 98 MHz	75 dB
AM suppression	55 dB
Stereo separation	42 dB (1kHz), 35 dB (10kHz)
Leak carrier (19kHz, 38kHz)	−40 dB
Antenna terminals	300 ohms (Balanced)
	75 ohms (Unbalanced)

AM TUNER SECTION

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

GENERAL

Power consumption	80W (only for America)
	110W (only for Canada)
Power supply	AC 120V 60Hz
Dimensions (W x H x D)	18 1/32" x 5 25/32" x 10 1/4"
	(458 x 147 x 260) mm
Weight	17.2 lb. (7.8 kg)

Weights and dimensions shown are approximate.

Technics by Panasonic

Panasonic Company
Division of Matsushita Electric
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Matsushita Electric of Hawaii, Inc.
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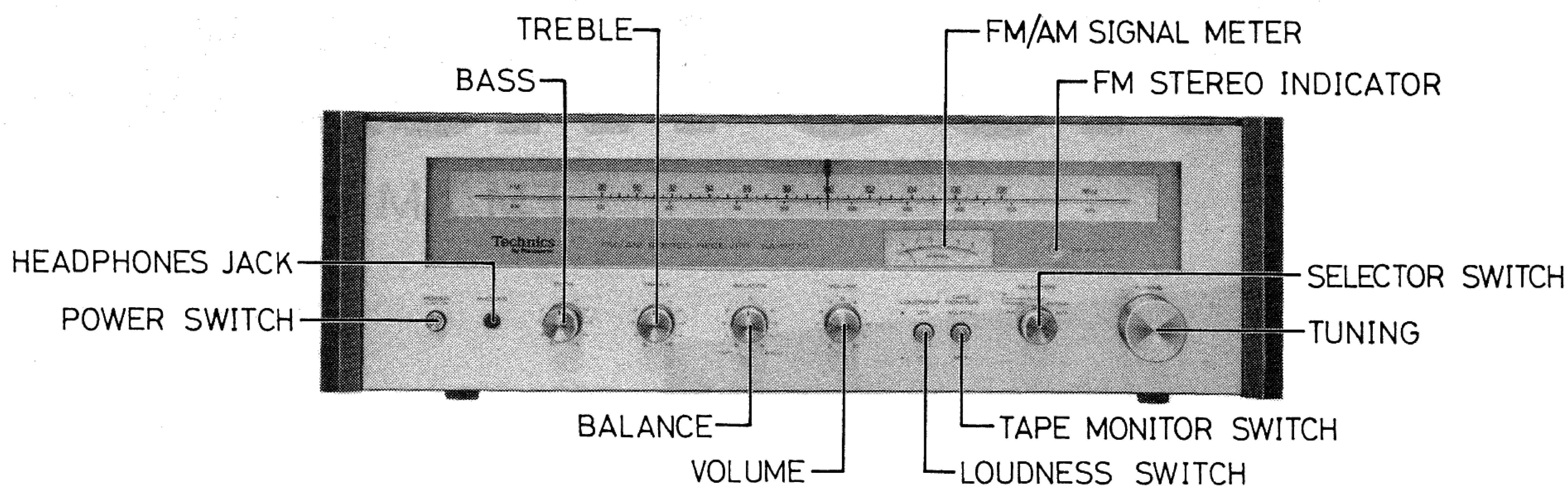
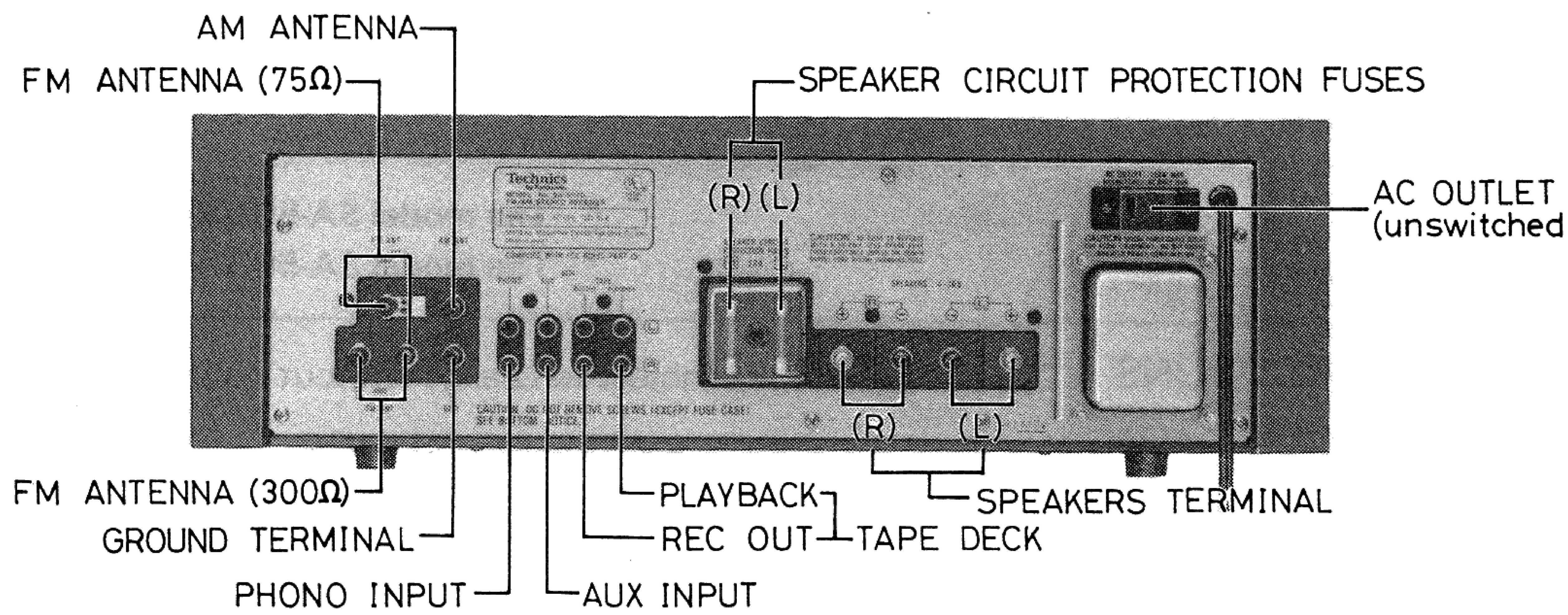
Hawaii 96817

Matsushita Electric of Canada Ltd.
40 Ronson Drive, Rexdale,
Ontario, Canada M9W 1B5

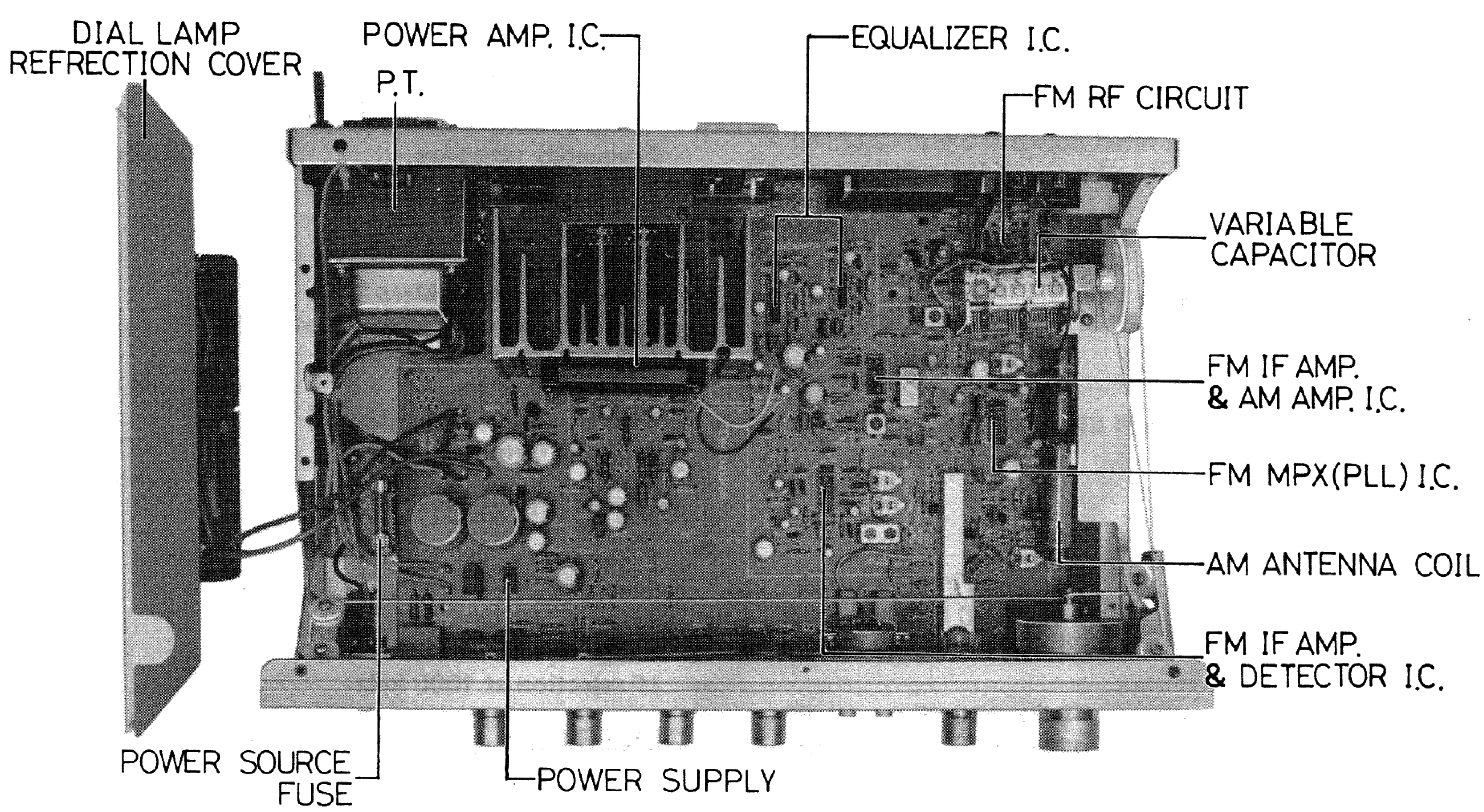
■ LOCATION OF CONTROLS



Front Panel View



Rear Panel View



Chassis View

■ SPEAKER CIRCUIT PROTECTION FUSES

NOTE:

The unit is provided with the speaker circuit protection fuses at the right and left channels respectively.

The fuse is to provent the power integrated circuit (IC601) from destruction, should the speaker terminals be short circuited.

Accordingly, if the unit fails to function upon completion of the speaker connections, check the speaker circuit protection fuses first of all for possible blowing.

■ ALIGNMENT INSTRUCTIONS ... FM AND AM TUNER CIRCUIT

Note: For adjustment, proceed with the bottom board attached as it is.

Notes:
1. Selector switch .... {AM (AM Alignment) / FM AUTO (FM Alignment)}
2. Maintain line voltage at 120 volts.
3. Tape monitor switch .... Source
4. Volume control .... Variable
5. Output of signal generator should be no higher than necessary to obtain an output reading
6. 300Ω FM dummy antenna ..... Refer to fig.

	AM/FM SIGNAL GENERATOR CONNECTION	AM/FM SIGNAL GENERATOR FREQUENCY	DIAL SETTING	INDICATOR (VTVM or SCOPE) (DISTORTION METER)	ADJUSTMENT POINTS	REMARKS
				AM ALIGNMENT		
1	AM signal generator high side through 0.001μF to AM antenna terminal.	455kHz (30% Mod. with 400Hz)	Point of non-inter-ference	Connect VTVM or scope to speaker terminal(L or R) or TP201 of set.	T201 (1st IFT) T203 (2nd IFT)	Adjust for maximum output.
2	Fashion loop of several turns of wire and radiate signal into loop of tuner.	600kHz (30% Mod. with 400Hz)	600kHz	Connect VTVM or scope to speaker terminal(L or R) or TP201 of set.	L202 (OSC Coil) L201 (ANT Coil)	Adjust for maximum output. Adjust L201 by moving coil bobbin along ferrite core.
3	Fashion loop of several turns of wire and radiate signal into loop of tuner.	1500kHz (30% Mod. with 400Hz)	1500kHz	Connect VTVM or scope to speaker terminal (L or R) or TP201 of set.	CT202 (OSC Trimmer) CT201 (ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
				FM IF ALIGNMENT		
4		No signal	Point of non-inter-ference	Connect DC voltmeter between TP103 and TP104.	T101 (Discri IFT) Primary [A]	Adjust for 0mV of DC voltmeter indication.
				FM RF ALIGNMENT		
5	Connect FM signal generator to 300Ω FM antenna terminals through FM dummy antenna. Apply 40dB (0.1mV) to set	90MHz (100% Mod. with 400Hz)	90MHz	Signal meter of receiver (or connect scope to TP101 through 0.1μF)	L5 (OSC Coil) L3 (DET Coil) L1 (ANT Coil)	Adjust for maximum indication of signal meter or adjust for maximum output.
6	Connect FM signal generator to 300Ω FM antenna terminals through FM dummy antenna. Apply 40dB (0.1mV) to set.	106MHz (100% Mod. with 400Hz)	106MHz	Signal meter to receiver (or connect scope to TP101 through 0.1μF)	CT3 (OSC Trimmer) CT2 (DET Trimmer) CT1 (ANT Trimmer)	Adjust for maximum indication of signal meter or adjust for maximum output. Repeat steps (5) and (6).
				FM MONO DISTORTION ALIGNMENT		
7	Connect FM signal generator to 300Ω FM antenna terminals through FM dummy antenna.	100MHz (100% Mod. with 400Hz)	100MHz	Connect distortion meter to speaker terminal (L or R) of set.	T101 (Discri IFT) Secondary [B]	Tuning at 100MHz and adjust for minimum distortion. Repeat steps (4) and (7).
				SIGNAL METER ALIGNMENT		
8	Connect FM signal generator to 300Ω FM antenna terminals through FM dummy antenna. Apply 100dB (0.1V) to set.	100MHz (100% Mod. with 400Hz)	100MHz	Signal meter of receiver	VR106	Selector switch to "FM MONO" Adjust VR106 for about 4.7 point of signal meter indication.
				FM MUTING LEVEL ALIGNMENT		
9	Connect FM signal generator to 300Ω FM antenna terminals through FM dummy antenna. Apply 13dB (4.5μV)to set. SG indication are 25dB(IHF)	100MHz (100% Mod. with 400Hz)	100MHz	Connect VTVM or scope to speaker (L or R) terminal of set.	VR117	Selector switch to "FM AUTO" Adjust so that output can be obtained.

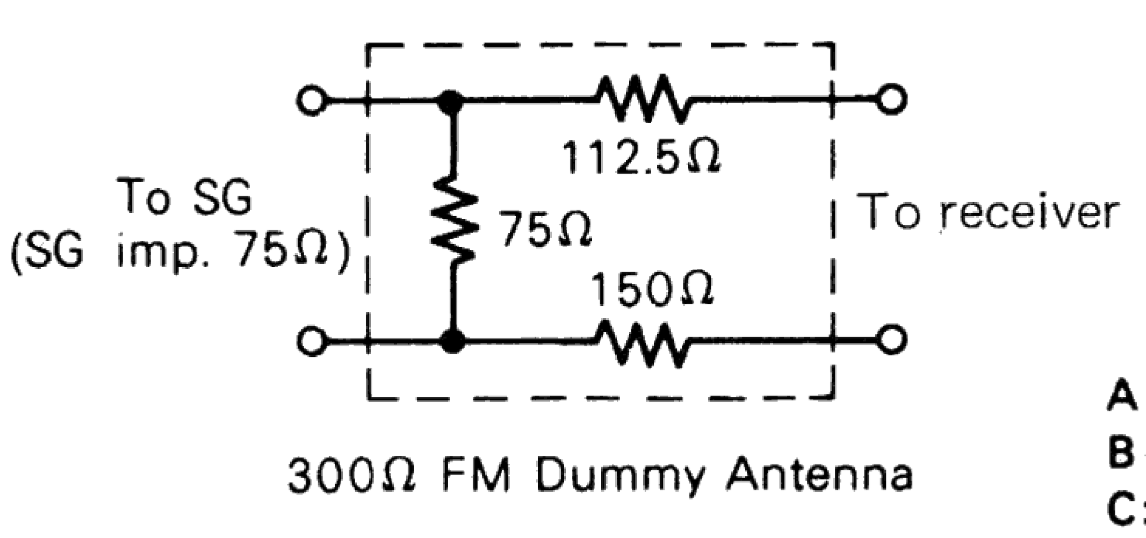
FM MPX PILOT ALIGNMENT

	Using a frequency counter	Using alternate system
10	1. 98MHz Non-modulated mono signal applied to set. 2. Selector switch to "FM AUTO" 3. Connect frequency counter to **TP301** through resistor (100 kΩ). 4. Adjust VR302 to 19kHz±30Hz.	1. Apply stereo signal from generator or stereo station to tuner. 2. Adjust VR302 until stereo indicator lights up. Cement arm of VR302 as shown in fig. 2.

STEREO SEPARATION ALIGNMENT

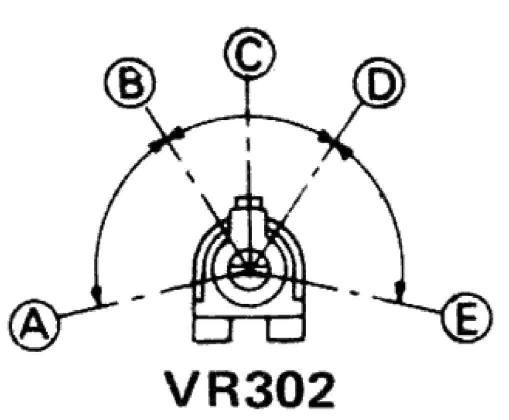
Notes:
1. Stereo modulator .... • Connect stereo modulator output to EXT. MOD. terminal of signal generator. • Internal OSC ..... 1kHz • Pilot signal modulation 10%
2. FM signal generator .... • Frequency approximately 98MHz. • Output level to 72dB (IHF) • Modulation mode to FM
3. Selector switch of receiver ...... FM AUTO

	FM SIGNAL GENERATOR CONNECTION	STEREO MODULATOR MODE AND MOD. RATE	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINT	REMARK
11	300Ω FM antenna terminals through FM dummy antenna	L (and R) 30% Modulation	Connect VTVM or scope to speaker terminals through low pass filter. Refer to fig. 3.	VR322	Adjust for minimum **right** (and left) output



300Ω FM Dummy Antenna

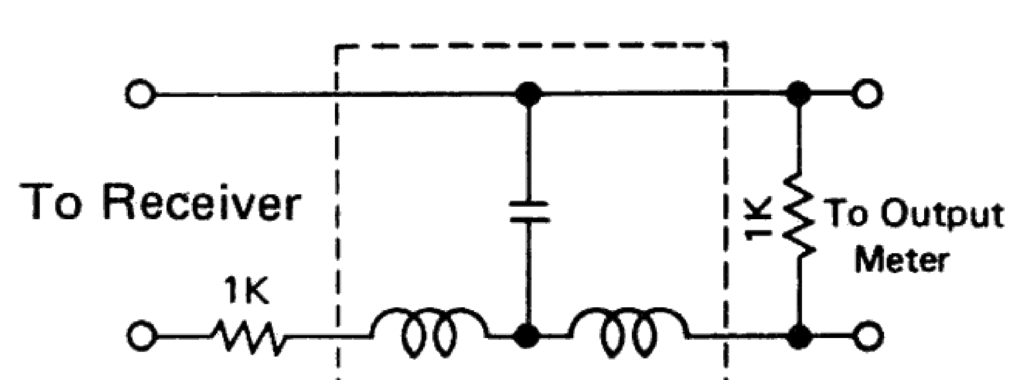
Fig. 1



VR302

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

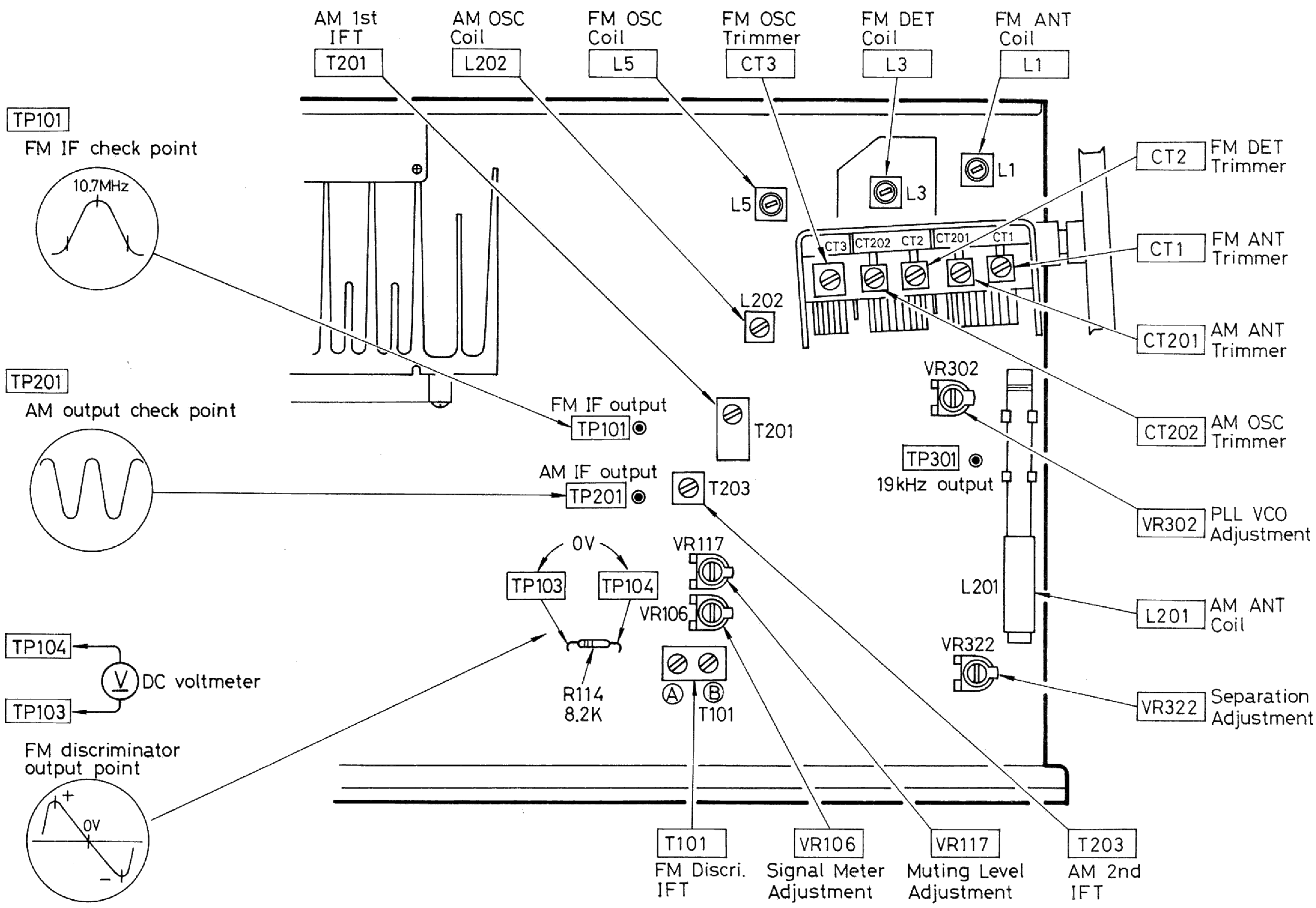
Fig. 2



LOW PASS FILTER
(fc = 15kHz ~19kHz)

Fig. 3

■ ALIGNMENT POINTS



Note: Before adjustment, remove "dial lamp refrection cover".

■ TO REMOVE CABINET

1. Remove four (4) cabinet-mounting screws (① ~ ④), as shown in fig. 4.
2. Remove cabinet from chassis.
3. When installing the front panel, insert the cabinet edge into grove of front panel as shown in fig. 5.

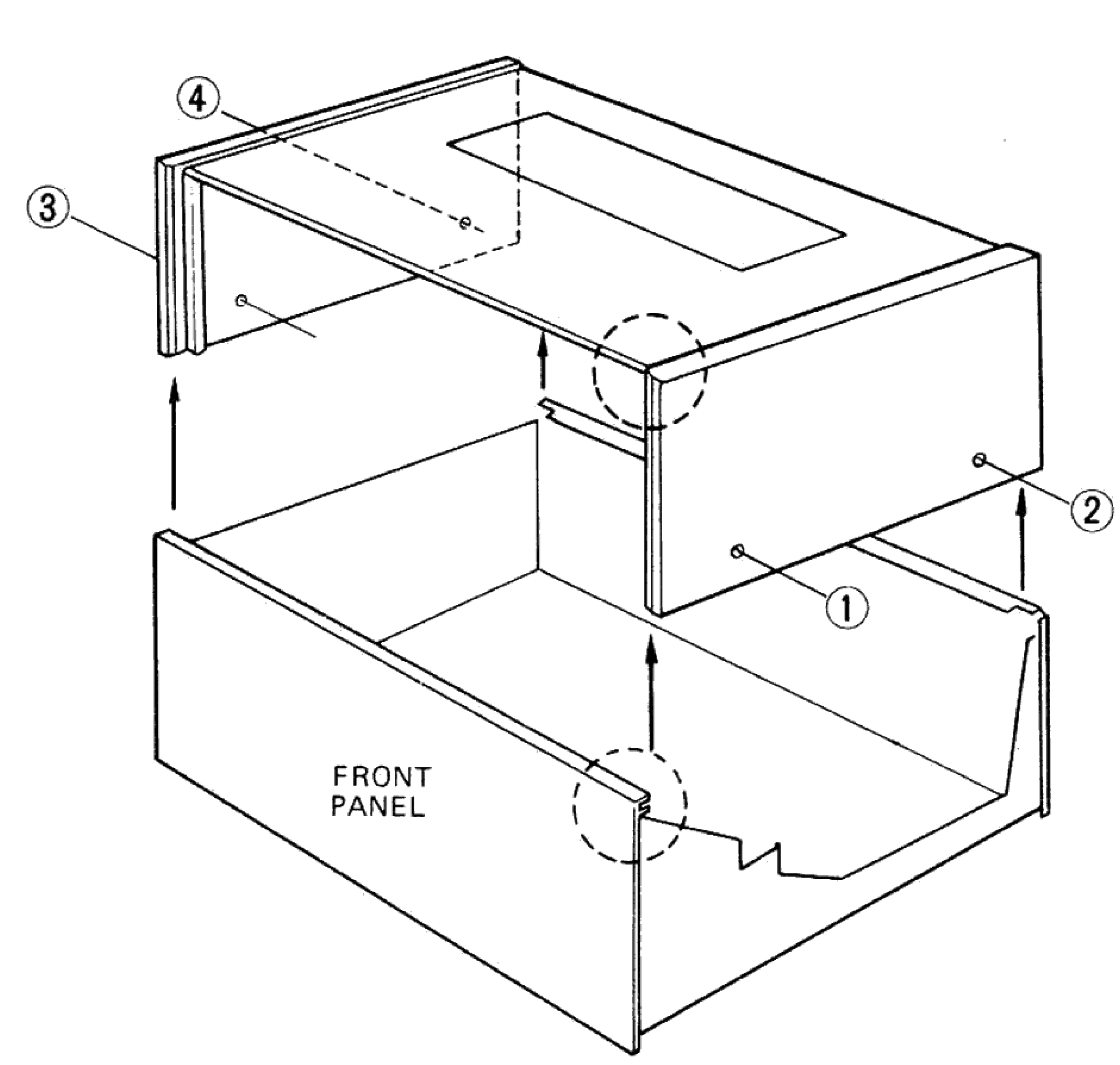


Fig. 4

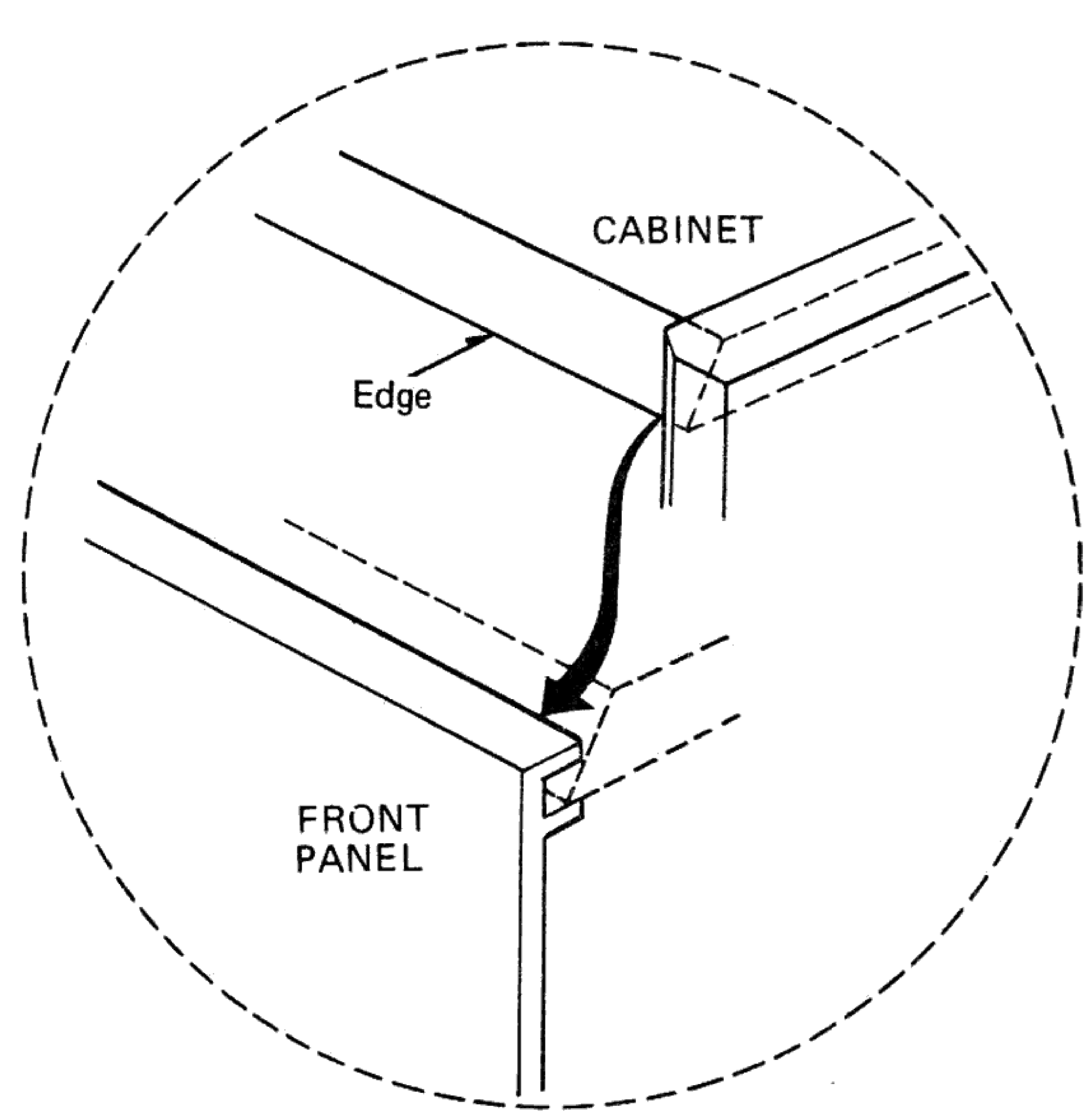


Fig. 5

Printed Circuit Board

TR1
2SK83
FM RF Amplifier

TR2
2SC1047
FM Mixer

TR3
2SC1047
FM Oscillator

IC401,402
SVITA7129P
Equalizer Amplifier

1	2 V	5	0.7 V
2	0.6 V	6	13.5 V
3	0.01 V	7	22 V
4	0 V		

IC201
AN217
FM IF Amp.& AM Conv.

1	0 V	9	6.8 V
2	0 V	10	1.5 V
3	0 V	11	0.8 V
4	7.1 V	12	6.9 V
5	1.1 V	13	0.7 V
6	0 V	14	1.7 V
7	1.1 V	15	5.1 V
8	11.1 V	16	0.8 V

IC301
AN363
FM MPX

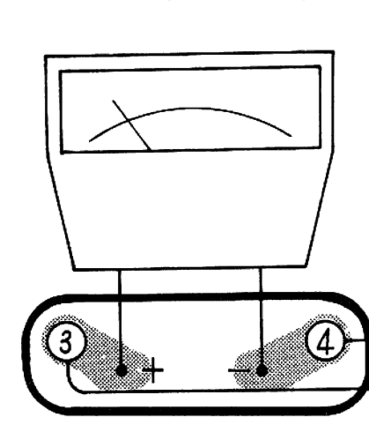
	FM MONO	STEREO		FM MONO	STEREO
1	9.1 V	8.7 V	9	1.7 V	1.7 V
2	3.1 V	3 V	10	0 V	1.9 V
3	5.2 V	5 V	11	1.9 V	1.9 V
4	9 V	8.7 V	12	1.5 V	1.5 V
5	9 V	10.7 V	13	1.9 V	1.9 V
6	10.1 V	10.7 V	14	1.9 V	1.9 V
7	0 V	0 V	15	1.9 V	1.9 V
8	1.5 V	1.4 V	16	3.4 V	3.3 V

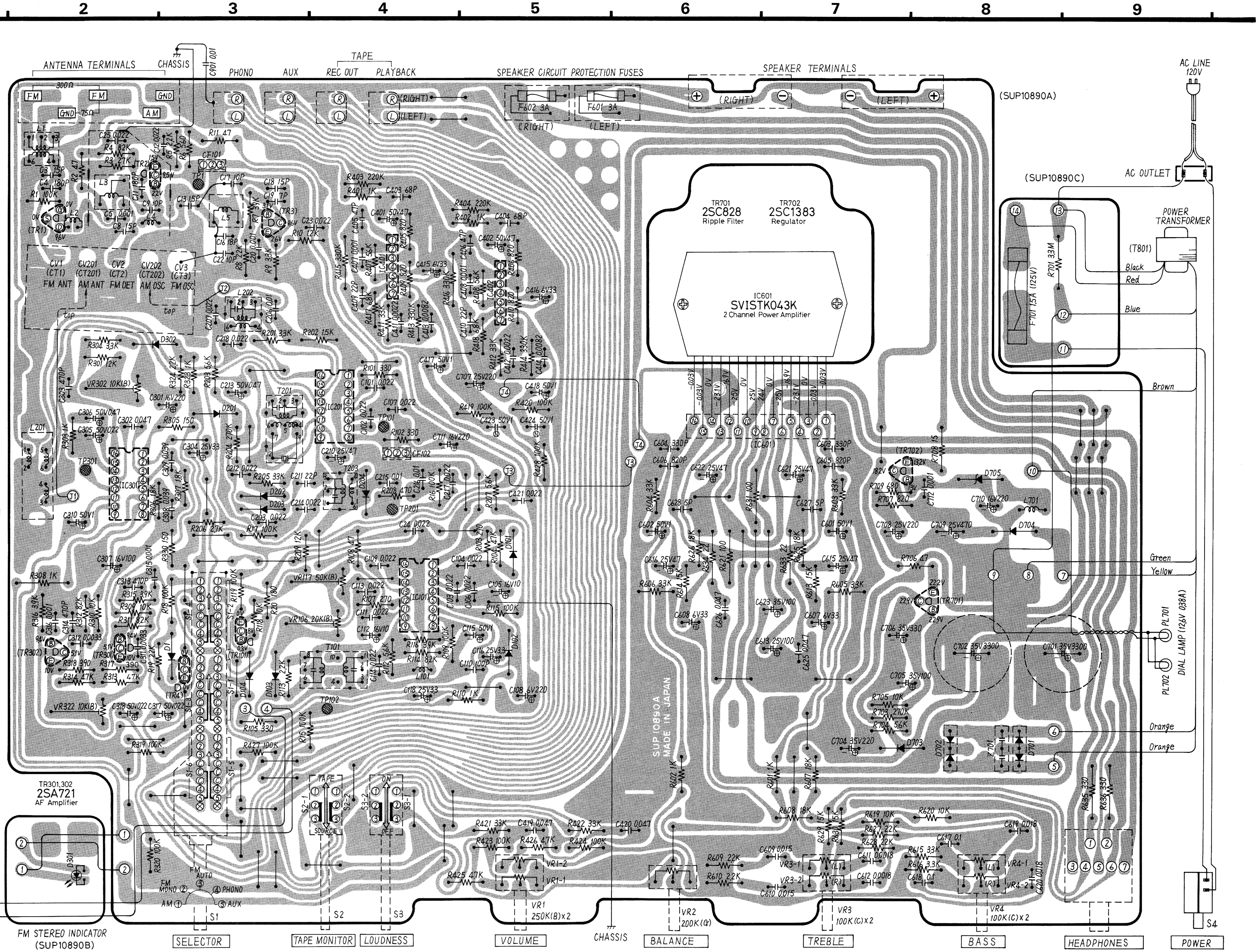
IC101
AN377
FM IF Amp.& Detector

1	2.1 V	9	5.7 V
2	2.1 V	10	5.8 V
3	2.1 V	11	9.7 V
4	0 V	12	2.8 V
5	0 V	13	0.8 V
6	7 V	14	0 V
7	6.8 V	15	5 V
8	5.8 V	16	0 V

TR4
2SC828
Shock Noise Muting

TR101
2SC828
Muting Switching


FM/AM SIGNAL METER
(SUP10890E)



Schematic Diagram ... Model SA-5070

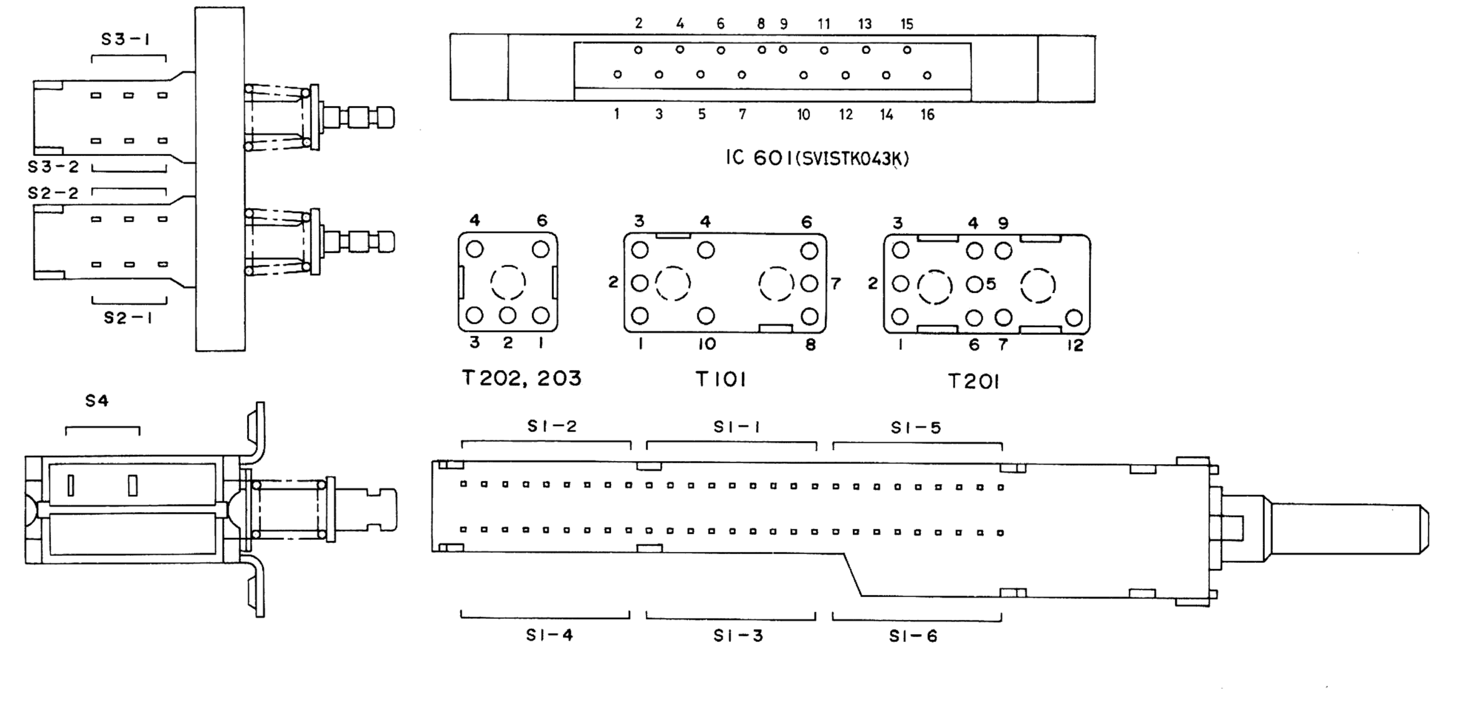
Notes:

1. **S1-1—S1-6:** Selector switch in **"AUX"** position.
   ① AM ↔ ② FM MONO ↔ ③ FM AUTO ↔ ④ PHONO ↔ ⑤ AUX
2. **S2-1, S2-2:** Tape monitor switch in **"SOURCE"** position.
3. **S3-1, S3-2:** Loudness switch in **"OFF"** position.
4. **S4:** Power source switch in **"OFF"** position.
5. Indicated voltage values 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.
   ▭ Indicated voltage values. . . . . AM/FM No-signal condition
   〈 〉 Indicated voltage values. . . . . FM stereo signal reception
6. This schematic diagram may be modified at any time with the development of new technology.

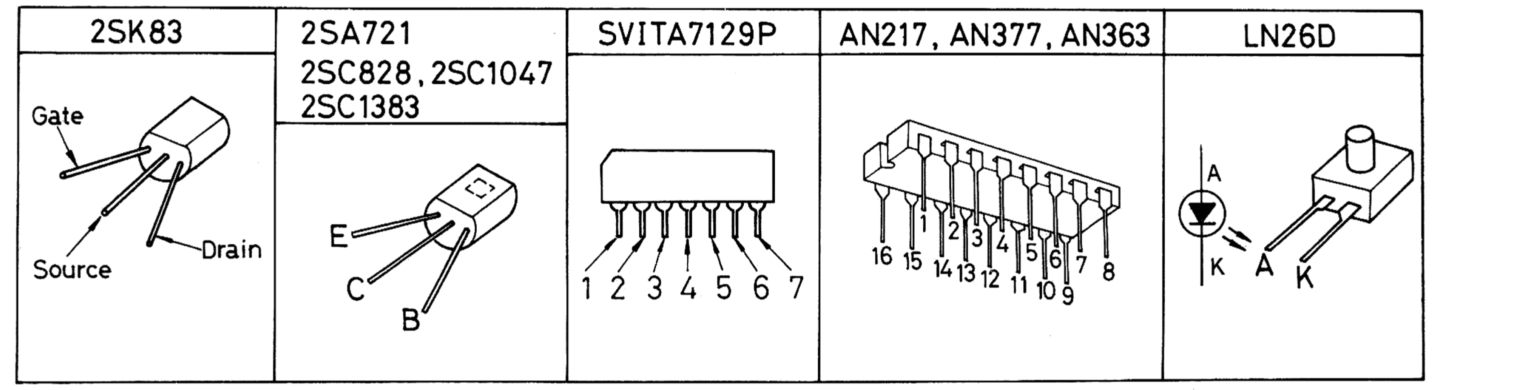
IMPORTANT SAFETY NOTICE

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.

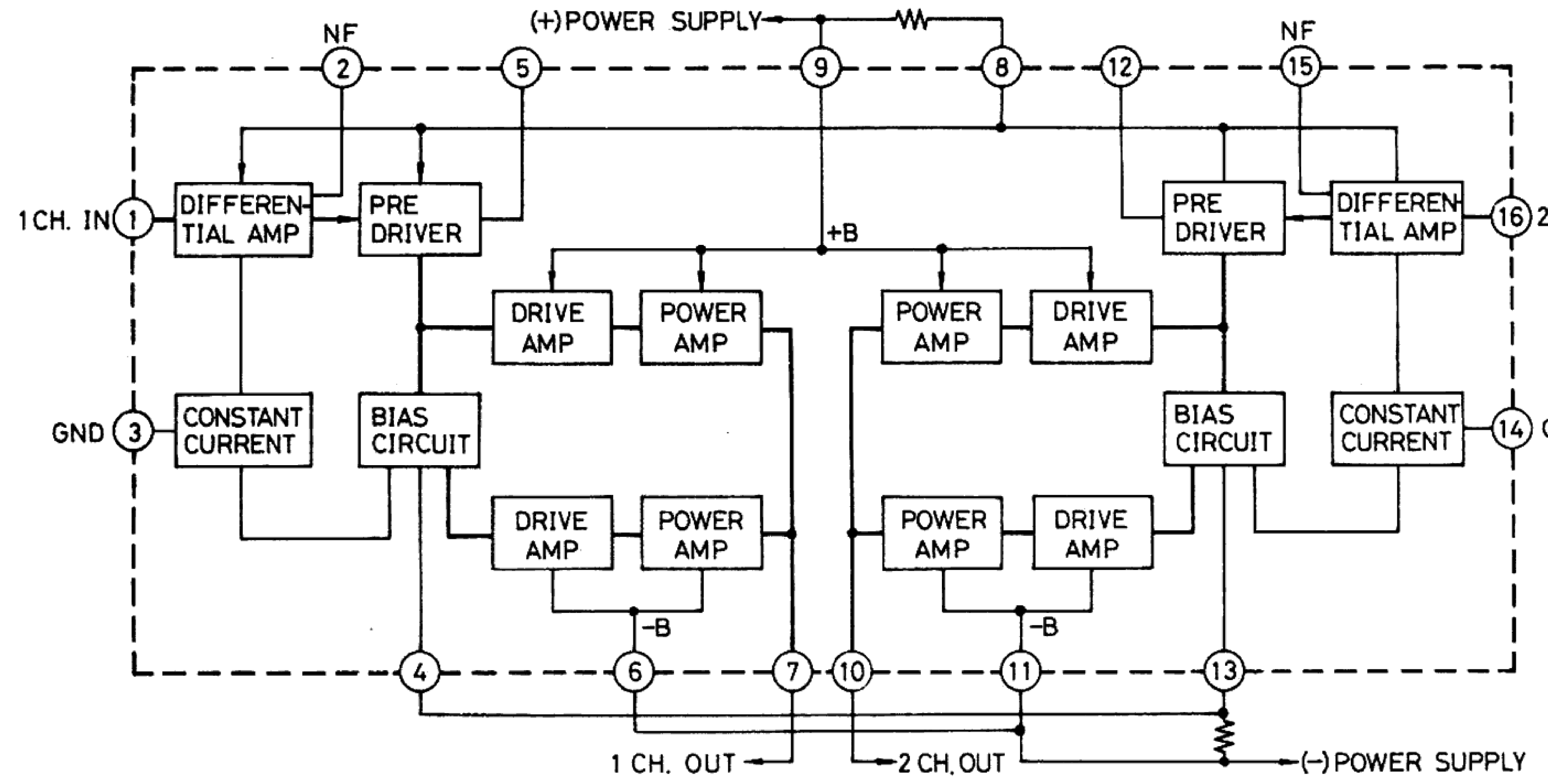
■ BOTTOM VIEWS



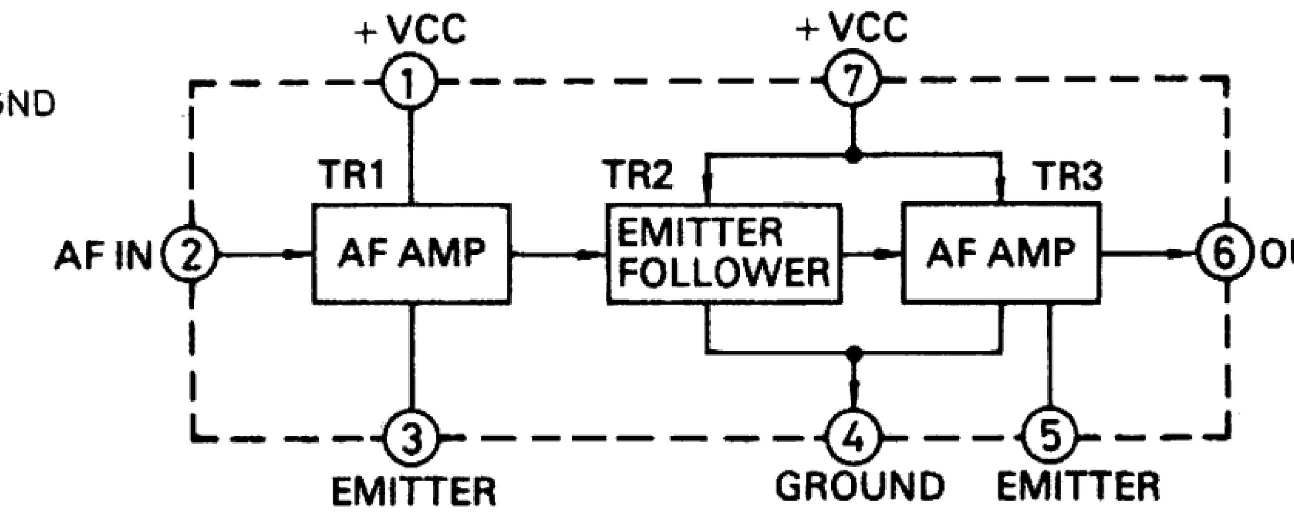
■ TERMINAL GUIDE



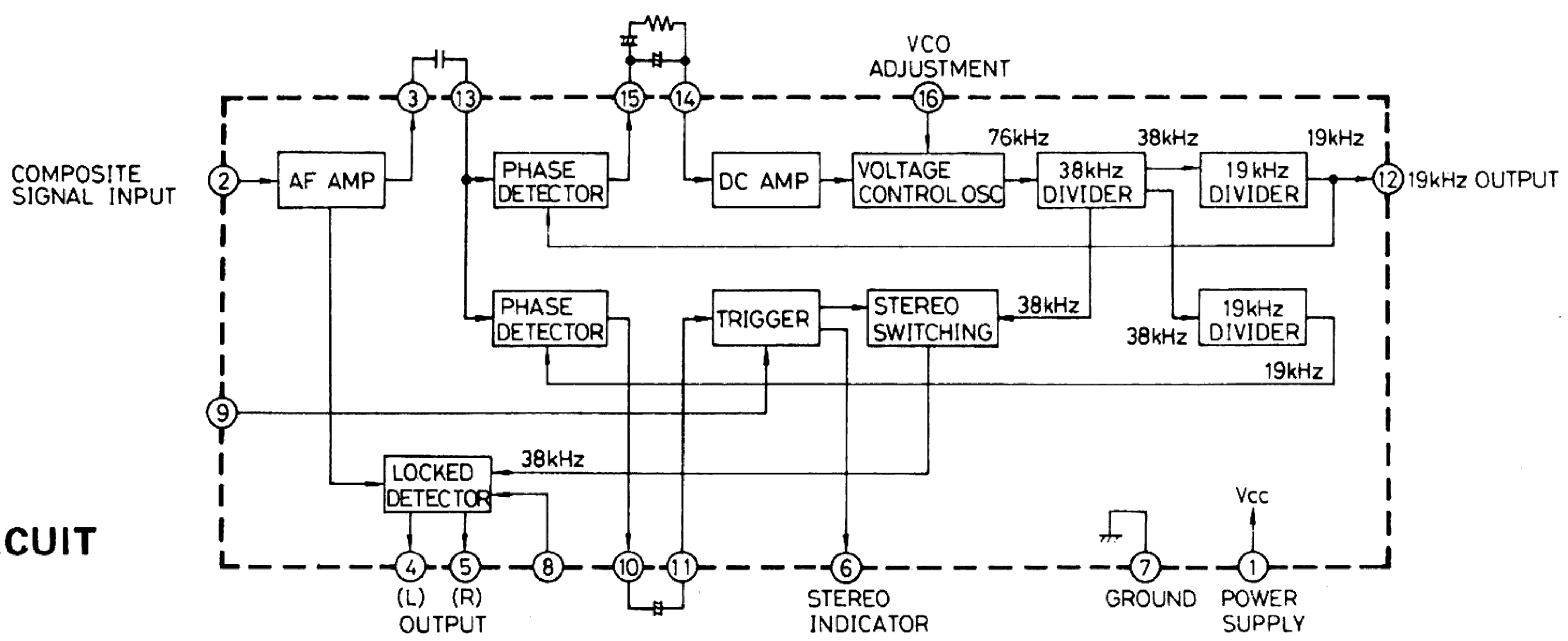
■ BLOCK DIAGRAMS OF INTEGRATED CIRCUITS



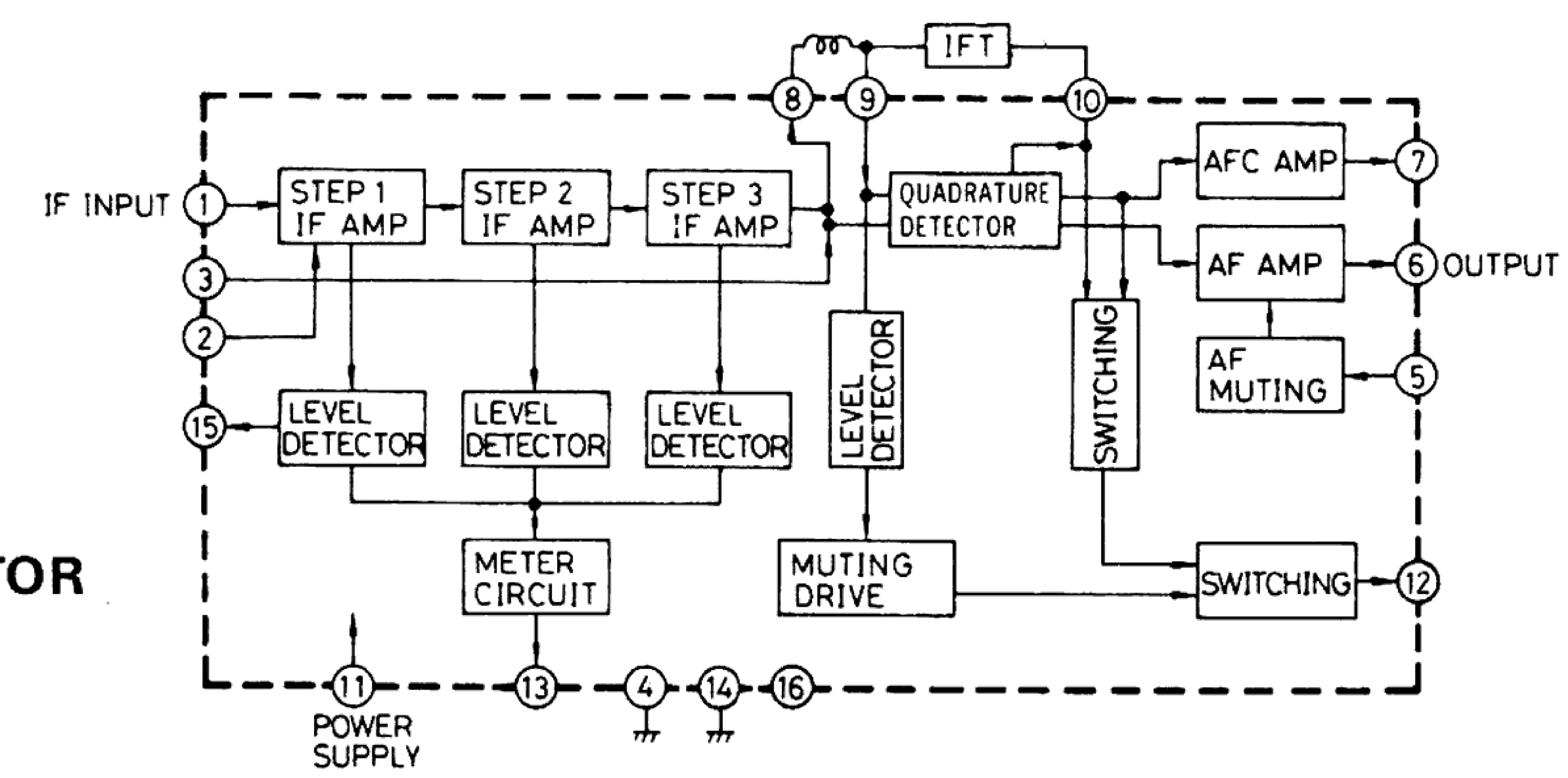
IC601 (SVISTK043K)
2 CHANNEL POWER AMPLIFIER CIRCUIT



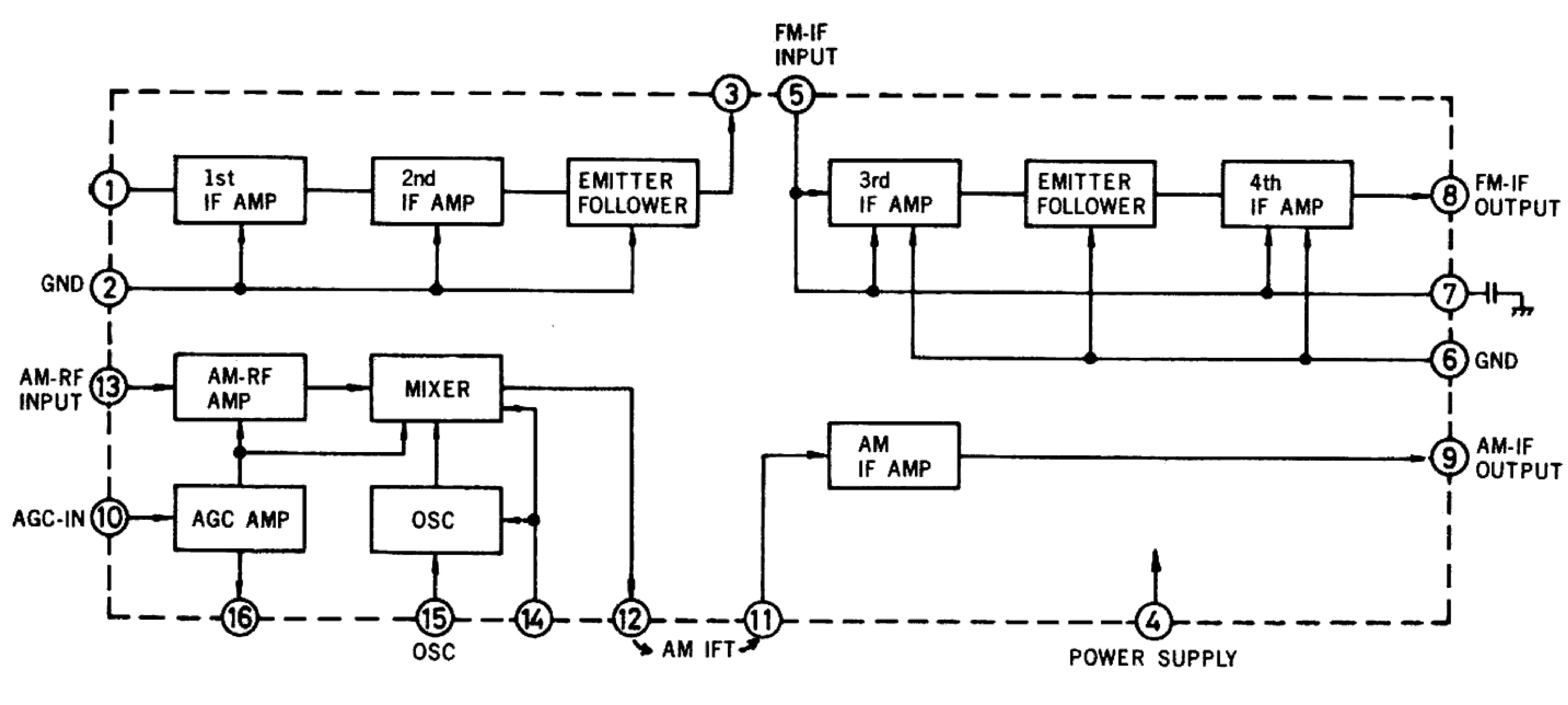
IC401, 402 (SVITA7129P)
EQUALIZER AMPLIFIER CIRCUIT



IC301 (AN363)
PLL FM MULTIPLEX CIRCUIT

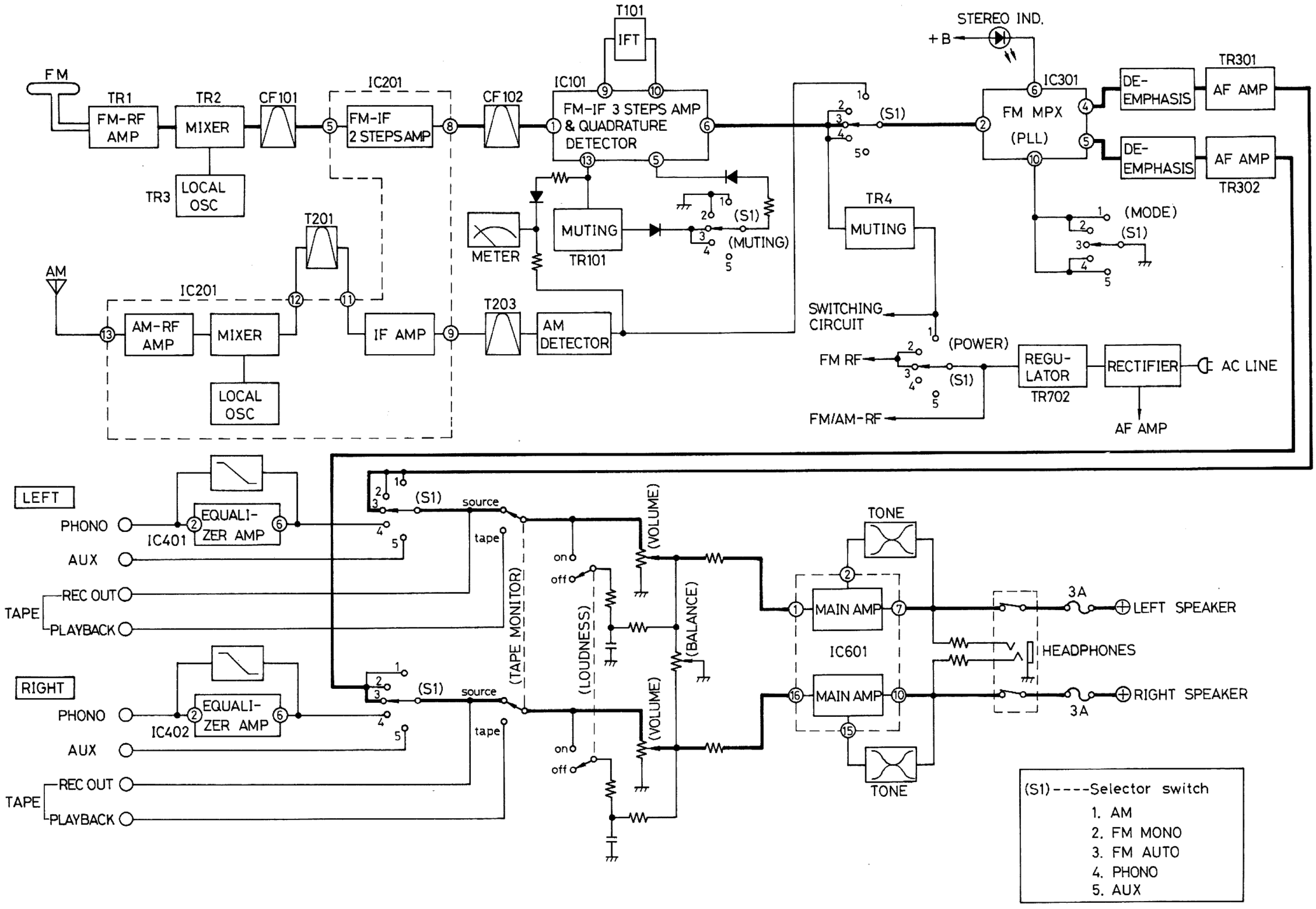


IC101 (AN377)
FM IF AMPLIFIER & DETECTOR CIRCUIT



IC201 (AN217)
FM 2 STEPS IF AMPLIFIER & AM CONVERTER CIRCUIT

■ BLOCK DIAGRAM



■ TO REMOVE BOTTOM BOARD

1. Remove seven (7) bottom board-mounting screws (① ~ ⑦), as shown in fig. 6.
2. When the bottom board is to be removed for repair, never remove any screws other than set screws for the bottom board. Energization of the unit with screws other than the bottom board set screws removed may result in troubles in the circuit.

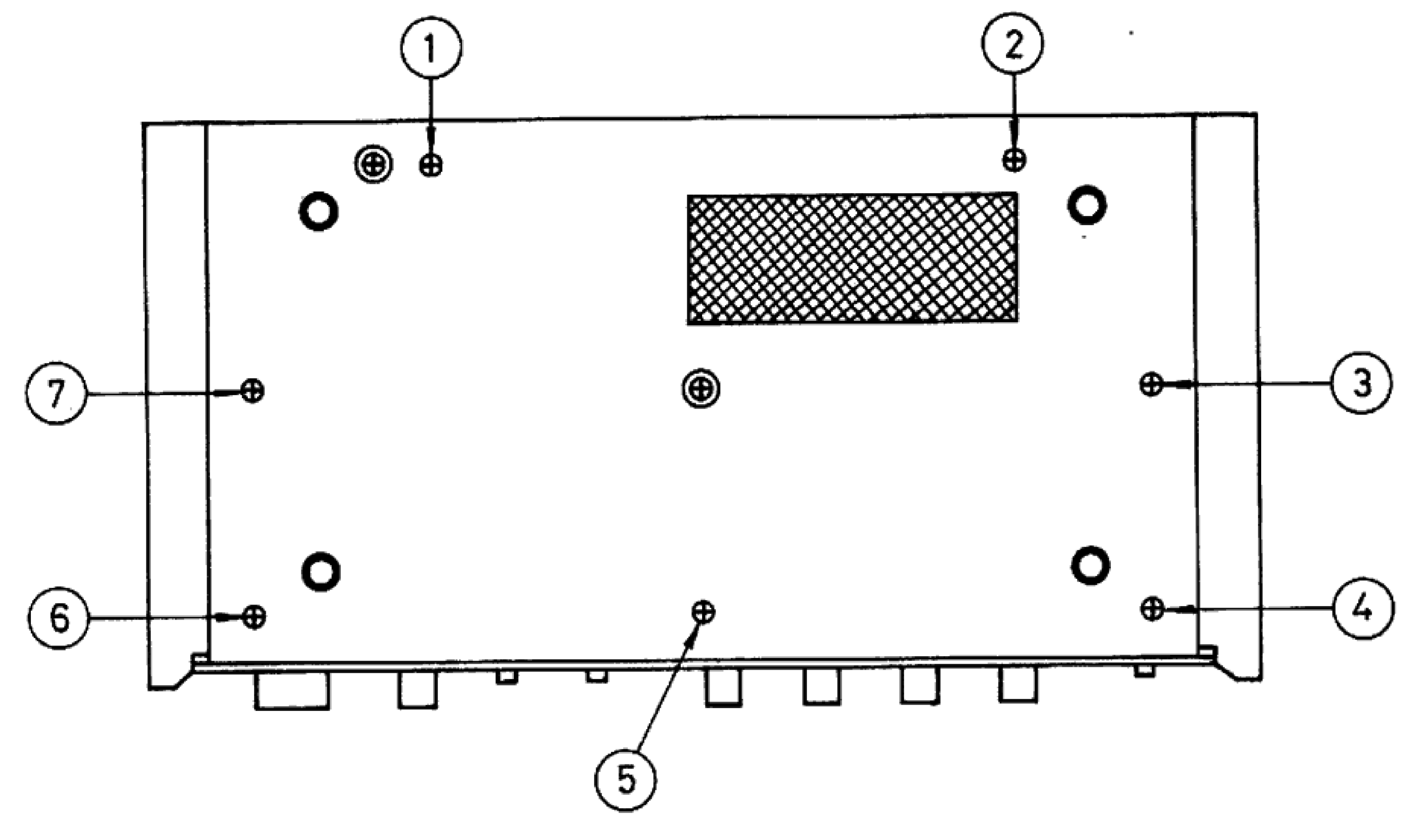


Fig. 6

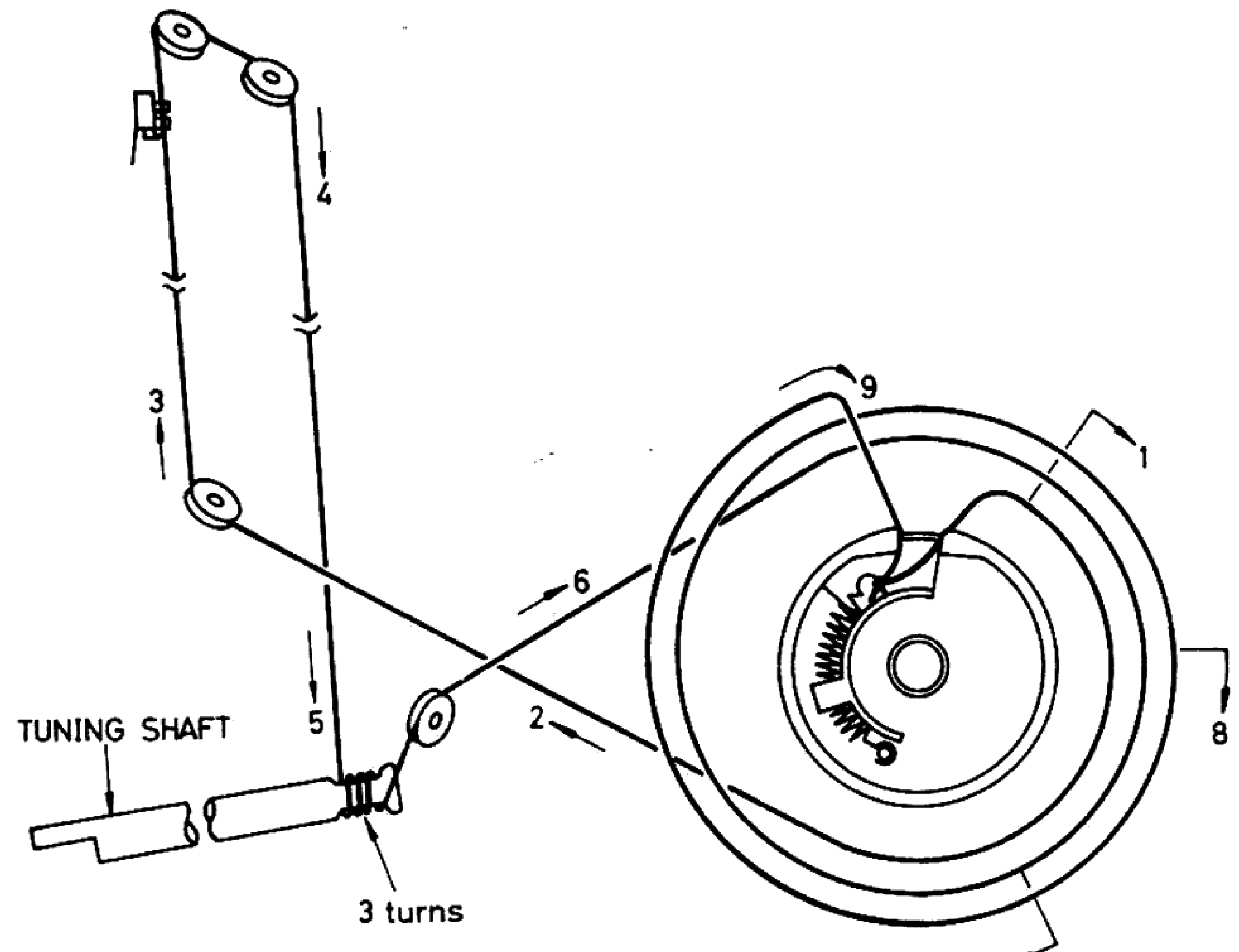


Fig. 7

■ DIAL CORD INSTALLATION GUIDE

1. Dial cord length is 200cm (78-3/4").
2. Tuning gang is positioned at maximum capacity. (Frequency is minimum)
3. Arrow marks (1~9) indicated correct order and direction of stringing dial cord.

■ REPLACEMENT PARTS LIST

Important Safety Notice
Components identified by shaded area have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

NOTE: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		INTEGRATED CIRCUITS		
IC101	AN377	IC, FM IF Amplifier, Muting & Meter Drive	1	
IC201	AN217-BB	IC, FM IF & AM IF Amplifier Converter	1	
IC301	AN363A	IC, FM Mpx	1	
IC401, 402	SVITA7129P	IC, Equalizer Amprifier	2	
IC601	SVISTK043K	IC, Power Amplifier	1	○
		TRANSISTORS		
TR1	2SK83-R1	Transistor (FET), FM RF Amplifier (Use in ranks R1 or R2)	1	
TR2, 3	**2SC1047-C**	Transistor, FM Oscillator & FM Converter (Use in ranks C or D)	2	
TR4, 101, 701	**2SC1328-T**	Transistor, Muting & Ripple Filter (Use in ranks S, T or U)	3	
TR301, 302	**2SA902S-F**	Transistor, AF Amplifier	2	
TR702	**2SC1384A-Q**	Transistor, Regulator (Use in ranks Q or R)	1	
		DIODES		
D1	SVDMA26-2	Diode	1	
D101, 104, 201, 302, 703	MA150	Diode, Switching & Muting	5	
D102, 202, 203, 204	OA99	Diode, Switching, AGC & detector	4	
D103	SVDKB262E	Diode, Switching	1	
D301	LN26D	Light Emitting Diode, Stereo Indicator	1	
D701	SVD1D2Z1	Rectifier	1	
D702	SVD1D2C1	Rectifier	1	
D704	SVDRA-1Z	Rectifier	1	
D705	SVDMZ314	Zener Diode, 14V	1	
		COILS and TRANSFORMERS		
L1	SLA4P25	Antenna Coil, FM	1	
L2	RLQY25S5	Coil, Choke	1	
L3	SLD4P13	Coil, Collector (TR1)	1	
L4	RLQY15G5	Coil, Choke	1	
L5	SLO4P31	Oscillator Coil, FM	1	
L101	SLQX180-1	Coil, Choke	1	
L201	SLF2C1 A	Ferrite Antenna Coil, AM	1	○
L202	SLO2C3P	Oscillator Coil, AM	1	
L701	SLQX101-2D	Coil, Choke	1	
T101	SLI4D513	IFT, FM Discriminator	1	
T201	SLI7D101-M	IFT, AM 1st	1	
T203	RLI2C450	IFT, AM 2nd	1	
T801	SLT5N187	Power Transformer	1	○
		CERAMIC FILTERS		
CF101, 102	SVFE107MA8A	Ceramic Filter, 10.7MHz, Red	each 2	
	SVFE107MA8B	Ceramic Filter, 10.67MHz, Blue		
	SVFE107MA8C	Ceramic Filter, 10.73MHz, Orange		
	SVFE107MA8D	Ceramic Filter, 10.64MHz, Black		
	SVFE107MA8E	Ceramic Filter, 10.76MHz, White		
	(Use pair ranks as same as CF101 and CF102)			

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		COMPONENT COMBINATION		
Z701	RXAF103P22HD	Component Combination, 0.01μF (X2)	1	
		RESISTORS		
R1	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R2	**ERD25TJ470**	Carbon, 47Ω, 1/4W, ±5%	1	
R3	**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ±5%	1	
R4	**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ±5%	1	
R5	**ERD25TJ222**	Carbon, 2.2kΩ, 1/4W, ±5%	1	
R6	**ERD25TJ561**	Carbon, 560Ω, 1/4W, ±5%	1	
R7	**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ±5%	1	
R8	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ±5%	1	
R9	**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ±5%	1	
R10	**ERD25TJ122**	Carbon, 1.2kΩ, 1/4W, ±5%	1	
R11	**ERD25TJ470**	Carbon, 47Ω, 1/4W, ±5%	1	
R15	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R16	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R17	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R18	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R19	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ±5%	1	
R20	**ERD25TJ181**	Carbon, 180Ω, 1/4W, ±5%	1	
R101	**ERD25TJ331**	Carbon, 330Ω, 1/4W, ±5%	1	
R102	**ERD25TJ331**	Carbon, 330Ω, 1/4W, ±5%	1	
R103	**ERD25TJ271**	Carbon, 270Ω, 1/4W, ±5%	1	
R104	**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ±5%	1	
R105	**ERD25TJ331**	Carbon, 330Ω, 1/4W, ±5%	1	
R107	**ERD25TJ271**	Carbon, 270Ω, 1/4W, ±5%	1	
R108	**ERD25TJ470**	Carbon, 47Ω, 1/4W, ±5%	1	
R109	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R110	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ±5%	1	
R112	**ERD25TJ562**	Carbon, 5.6kΩ, 1/4W, ±5%	1	
R113	**ERD25TJ222**	Carbon, 2.2kΩ, 1/4W, ±5%	1	
R114	ERD18ZJ822	Carbon, 8.2kΩ, 1/8W, ±5%	1	
R115	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R116	**ERD25TJ392**	Carbon, 3.9kΩ, 1/4W, ±5%	1	
R118	**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ±5%	1	
R119	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R201	**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ±5%	1	
R202	**ERD25TJ152**	Carbon, 1.5kΩ, 1/4W, ±5%	1	
R203	**ERD25TJ562**	Carbon, 5.6kΩ, 1/4W, ±5%	1	
R204	**ERD25TJ274**	Carbon, 270kΩ, 1/4W, ±5%	1	
R205	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%	1	
R206	**ERD25TJ272**	Carbon, 2.7kΩ, 1/4W, ±5%	1	
R207	**ERD25TJ562**	Carbon, 5.6kΩ, 1/4W, ±5%	1	
R208	**ERD25TJ471**	Carbon, 470Ω, 1/4W, ±5%	1	
R209	**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ±5%	1	
R301	**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ±5%	1	
R303	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ±5%	1	
R304	**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ±5%	1	
R305	**ERD25TJ151**	Carbon, 150Ω, 1/4W, ±5%	1	
R306	**ERD25TJ182**	Carbon, 1.8kΩ, 1/4W, ±5%	1	
R307	**ERD25TJ182**	Carbon, 1.8kΩ, 1/4W, ±5%	1	
R308	**ERD50TJ102**	Carbon, 1kΩ, 1/2W, ±5%	1	
R309	**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ±5%	1	
R310	**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ±5%	1	

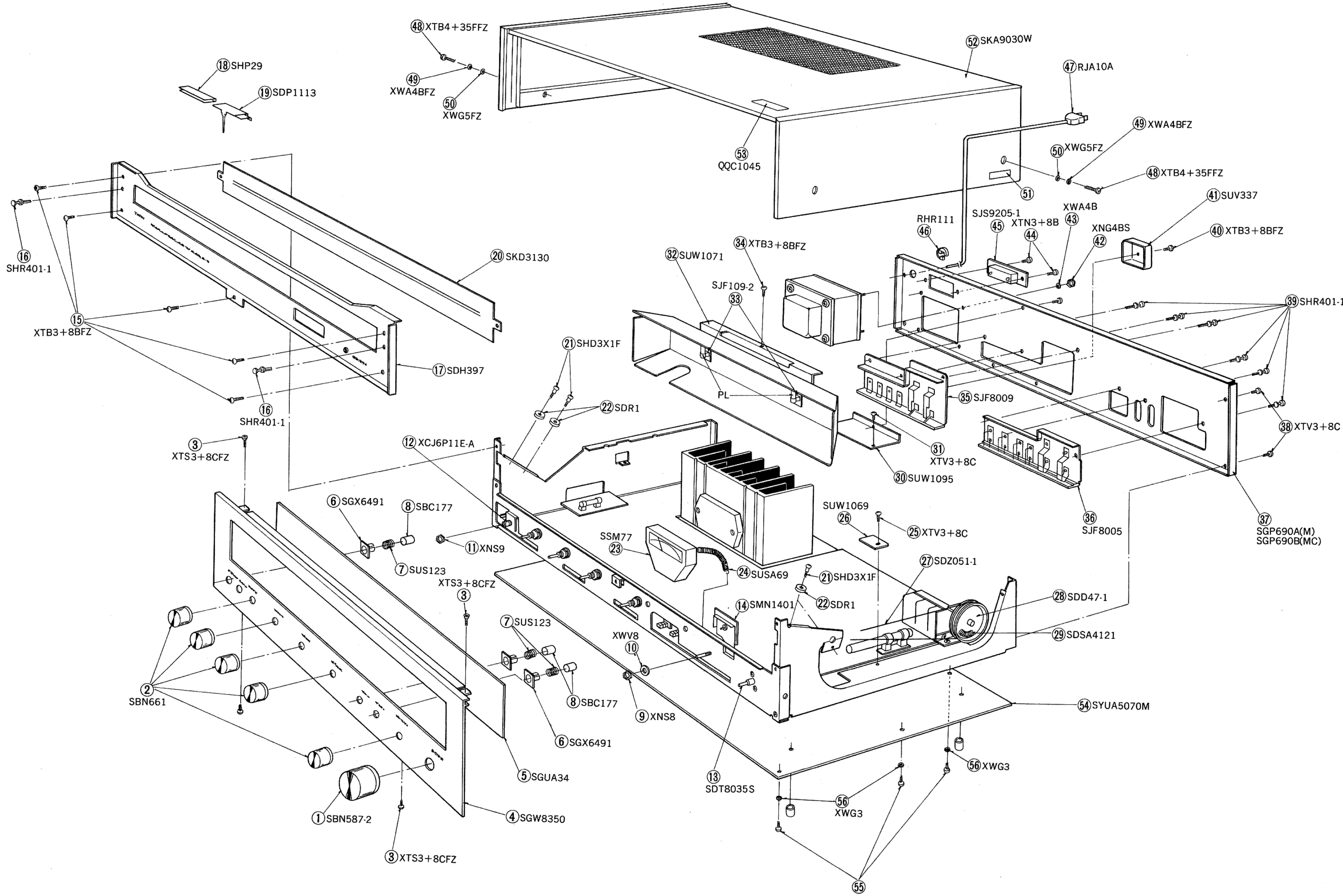
Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R311	**ERD25TJ822**	Carbon, 8.2kΩ, 1/4W, ±5%	1	
R312	**ERD25TJ822**	Carbon, 8.2kΩ, 1/4W, ±5%	1	
R313	**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ±5%	1	
R314	**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ±5%	1	
R315	**ERD25TJ392**	Carbon, 3.9kΩ, 1/4W, ±5%	1	
R316	**ERD25TJ392**	Carbon, 3.9kΩ, 1/4W, ±5%	1	
R317	**ERD25TJ391**	Carbon, 390Ω, 1/4W, ±5%	1	
R318	**ERD25TJ391**	Carbon, 390Ω, 1/4W, ±5%	1	
R319	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R320	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R323	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ±5%	1	
R324	**ERD25TJ222**	Carbon, 2.2kΩ, 1/4W, ±5%	1	
R330	**ERD25TJ151**	Carbon, 150Ω, 1/4W, ±5%	1	
R401	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ±5%	1	
R402	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ±5%	1	
R403	**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ±5%	1	
R404	**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ±5%	1	
R405	**ERD25TJ821**	Carbon, 820Ω, 1/4W, ±5%	1	
R406	**ERD25TJ821**	Carbon, 820Ω, 1/4W, ±5%	1	
R407	**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ±5%	1	
R408	**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ±5%	1	
R409	**ERD25TJ821**	Carbon, 820Ω, 1/4W, ±5%	1	
R410	**ERD25TJ821**	Carbon, 820Ω, 1/4W, ±5%	1	
R411	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%	1	
R412	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%	1	
R413	**ERD25TJ334**	Carbon, 330kΩ, 1/4W, ±5%	1	
R414	**ERD25TJ334**	Carbon, 330kΩ, 1/4W, ±5%	1	
R415	ERD12TSJ334	Carbon, 330kΩ, 1/2W, ±5%	1	
R416	ERD12TSJ334	Carbon, 330kΩ, 1/2W, ±5%	1	
R417	**ERD25TJ682**	Carbon, 6.8kΩ, 1/4W, ±5%	1	
R418	**ERD25TJ682**	Carbon, 6.8kΩ, 1/4W, ±5%	1	
R419	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R420	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R421	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%	1	
R422	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%	1	
R423	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R424	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R425	**ERD25TJ472**	Carbon, 4.7kΩ, 1/4W, ±5%	1	
R426	**ERD25TJ472**	Carbon, 4.7kΩ, 1/4W, ±5%	1	
R427	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R428	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%	1	
R601	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ±5%	1	
R602	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ±5%	1	
R603	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%	1	
R604	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%	1	
R605	**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ±5%	1	
R606	**ERD25TJ332**	Carbon; 3.3kΩ, 1/4W, ±5%	1	
R607	**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ±5%	1	
R608	**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ±5%	1	
R609	**ERD25TJ222**	Carbon, 2.2kΩ, 1/4W, ±5%	1	
R610	**ERD25TJ222**	Carbon, 2.2kΩ, 1/4W, ±5%	1	
R613	**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ±5%	1	
R614	**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ±5%	1	
R615	**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ±5%	1	
R616	**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ±5%	1	
R619	**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ±5%	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R620	**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ±5%	1	
R621	ERD12FJ101	Carbon, 100Ω, 1/2W, ±5%	1	
R625	**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ±5%	1	
R626	**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ±5%	1	
R627	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ±5%	1	
R628	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ±5%	1	
R629	**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ±5%	1	
R630	**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ±5%	1	
R631	ERD12FJ101	Carbon, 100Ω, 1/2W, ±5%	1	
R633	ERD12FJ220	Carbon, 22Ω, 1/2W, ±5%	1	
R634	ERD12FJ220	Carbon, 22Ω, 1/2W, ±5%	1	
R635	ERD12FJ331	Carbon, 330Ω, 1/2W, ±5%	1	
R636	ERD12FJ331	Carbon, 330Ω, 1/2W, ±5%	1	
R701	**ERC12ZGK335**	Solid, 3.3MΩ, 1/2W, ±10%	1	
R703	**ERD25TJ274**	Carbon, 270kΩ, 1/4W, ±5%	1	
R704	**ERD25TJ562**	Carbon, 5.6kΩ, 1/4W, ±5%	1	
R705	**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ±5%	1	
R706	**ERD18FJ470**	Carbon, 47Ω, 1/8W, ±5%	1	
R707	**ERD25TJ821**	Carbon, 820Ω, 1/4W, ±5%	1	
R708	**ERD14FJ150**	Carbon, 15Ω, 1/4W, ±5%	1	
R709	**ERD25TJ681**	Carbon, 680Ω, 1/4W, ±5%	1	
		VARIABLE RESISTORS		
VR1-1, 1-2	EWKBJAF25BF5	Volume Control, 250kΩ (B)	1	
VR2	EVHGPAF25G25	Balance Control, 250kΩ (G)	1	
VR3-1, 3-2 4-1, 4-2	EWKB9AF25C15	Bass & Treble Control, 100kΩ (C)	2	
VR106	EVLS3MA00B24	Meter Sensitivity Adjustment 20kΩ (B)	1	
VR117	EVLS3MA00B54	Muting Adjustment, 50kΩ (B)	1	
VR302	EVTS3MA00B14	PLL Voltage Control Oscillator Adjustment 10kΩ (B)	1	
VR322	EVTS3MA00B14	Separation Adjustment, 10kΩ (B)	1	
		CAPACITORS		
C3	ECCD1H150KC	Ceramic, 15pF, 50V, ±10%	1	
C4	ECCD1H181K	Ceramic, 180pF, 50V, ±10%	1	
C5	ECKD1H102PF	Ceramic, 0.001μF, 50V, $^{+100}_{-0}$%	1	
C8	ECCD1H150KC	Ceramic, 15pF, 50V, ±10%	1	
C9	ECCD1H100KC	Ceramic, 10pF, 50V, ±10%	1	
C11	ECCD1H181K	Ceramic, 180pF, 50V, ±10%	1	
C12	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C13	ECCD1H1R5CC	Ceramic, 1.5pF, 50V, ±0.25pF	1	
C16	ECCD1H180KR	Ceramic, 18pF, 50V, ±10%	1	
C17	ECCD1H100KC	Ceramic, 10pF, 50V, ±10%,	1	
C18	ECCD1H150KC	Ceramic, 15pF, 50V, ±10%	1	
C19	ECCD1H070DC	Ceramic, 7pF, 50V, ±0.5pF	1	
C20	ECKD1H102PF	Ceramic, 0.001μF, 50V, $^{+100}_{-0}$%	1	
C22	ECCD1H100KC	Ceramic, 10pF, 50V, ±10%	1	
C23	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C24	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C25	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C101	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C102	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C103	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C104	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C105	ECEA16V10	Electrolytic, 10μF, 16V	1	
C106	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C107	ECKD1H223PF	Ceramic, 0.022μF 50V, $^{+100}_{-0}$%	1	
C108	**ECEA6V220V**	Electrolytic, 220μF, 6.3V	1	
C109	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C110	ECCD1H101K	Ceramic, 100pF, 50V, ±10%	1	
C111	ECKD1H223DF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C112	ECEA16V10	Electrolytic, 10μF, 16V	1	
C113	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C114	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C115	ECEA50V1	Electrolytic, 1μF, 50V	1	
C116	ECEA25V3R3	Electrolytic, 3.3μF 25V	1	
C118	ECEA25V3R3	Electrolytic, 3.3μF, 25V	1	
C203	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C206	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%	1	
C207	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C210	ECEA25V4R7	Electrolytic, 4.7μF, 25V	1	
C211	ECCD1H220K	Ceramic, 22pF, 50V, ±10%	1	
C212	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C213	ECEA50VR47	Electrolytic, 0.47μF, 50V	1	
C214	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C215	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%	1	
C216	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%	1	
C217	ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%	1	
C218	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C301	**ECEA16V220V**	Electrolytic, 220μF, 16V	1	
C302	ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%	1	
C303	ECQS05471JZ	Styrol, 470pF, 50V, ±5%	1	
C304	ECEA25V3R3	Electrolytic, 3.3μF, 25V	1	
C305	**ECEA50ZR22**	Electrolytic, 0.22μF, 50V	1	
C306	**ECEA50ZR47**	Electrolytic, 0.47μF, 50V	1	
C307	**ECEA16V100V**	Electrolytic, 100μF, 16V	1	
C308	ECQM1H393KZ	Polyester, 0.039μF, 50V, ±10%	1	
C309	ECQM1H393KZ	Polyester, 0.039μF, 50V, ±10%	1	
C310	ECEA50V1	Electrolytic, 1μF, 50V	1	
C311	ECQM1H332KZ	Polyester, 0.0033μF, 50V, ±10%	1	
C312	ECQM1H332KZ	Polyester, 0.0033μF, 50V, ±10%	1	
C313	ECKD1H471KB	Ceramic, 470pF, 50V, ±10%	1	
C314	ECKD1H471KB	Ceramic, 470pF, 50V, ±10%	1	
C315	ECQM1H102KZ	Polyester, 0.001μF, 50V, ±10%	1	
C316	ECQM1H102KZ	Polyester, 0.001μF, 50V, ±10%	1	
C317	**ECEA50ZR22**	Electrolytic, 0.22μF, 50V	1	
C318	**ECEA50ZR22**	Electrolytic, 0.22μF, 50V	1	
C401	ECEA50M4R7R	Electrolytic, 4.7μF, 50V	1	O
C402	ECEA50M4R7R	Electrolytic, 4.7μF, 50V	1	O
C403	ECCD1H680K	Ceramic, 68pF, 50V, ±10%	1	
C404	ECCD1H680K	Ceramic, 68pF, 50V, ±10%	1	
C405	ECCD1H470K	Ceramic, 47pF, 50V, ±10%	1	
C406	ECCD1H470K	Ceramic, 47pF, 50V, ±10%	1	
C407	ECKD1H102PF	Ceramic, 0.001μF, 50V, $^{+100}_{-0}$%	1	
C408	ECKD1H102PF	Ceramic, 0.001μF, 50V, $^{+100}_{-0}$%	1	
C409	ECCD1H220K	Ceramic, 22pF, 50V, ±10%	1	
C410	ECCD1H220K	Ceramic, 22pF, 50V, ±10%	1	

Ref. No	Part No.	Part Name & Description	Per Set	Remarks
C411	ECQM1H222KZ	Polyester, 0.0022μF, 50V, ±10%	1	
C412	ECQM1H222KZ	Polyester, 0.0022μF, 50V, ±10%	1	
C413	ECQM1H822KZ	Polyester, 0.0082μF, 50V, ±10%	1	
C414	ECQM1H822KZ	Polyester, 0.0082μF, 50V, ±10%	1	
C415	ECEA6V33	Electrolytic, 33μF, 6.3V	1	
C416	ECEA6V33	Electrolytic, 33μF, 6.3V	1	
C417	**ECEA50Z1**	Electrolytic, 1μF, 50V	1	
C418	**ECEA50Z1**	Electrolytic, 1μF, 50V	1	
C419	ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%	1	
C420	ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%	1	
C421	ECKD1H223PF	Ceramic, 0.022μF, 50V, $^{+100}_{-0}$%	1	
C423	**ECEA50N1**	Non-Polar Electrolytic, 1μF, 50V	1	
C424	**ECEA50N1**	Non-Polar Electrolytic, 1μF, 50V	1	
C601	**ECEA50Z1**	Electrolytic, 1μF, 50V	1	
C602	**ECEA50Z1**	Electrolytic, 1μF, 50V	1	
C603	ECKD1H331KB	Ceramic, 330pF, 50V, ±10%	1	
C604	ECKD1H331KB	Ceramic, 330pF, 50V, ±10%	1	
C605	ECKD1H821KB	Ceramic, 820pF, 50V, ±10%	1	
C606	ECKD1H821KB	Ceramic, 820pF, 50V, ±10%	1	
C607	ECEA6V33	Electrolytic, 33μF, 6.3V	1	
C608	ECEA6V33	Electrolytic, 33μF, 6.3V	1	
C609	ECQM1H153KZ	Polyester, 0.015μF, 50V, ±10%	1	
C610	ECQM1H153KZ	Polyester, 0.015μF, 50V, ±10%	1	
C611	ECQM1H182KZ	Polyester, 0.0018μF, 50V, ±10%	1	
C612	ECQM1H182KZ	Polyester, 0.0018μF, 50V, ±10%	1	
C613	**ECEA25V100V**	Electrolytic, 100μF, 25V	1	
C615	**ECEA35V47V**	Electrolytic, 47μF, 35V	1	
C616	**ECEA35V47V**	Electrolytic, 47μF, 35V	1	
C617	ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C618	ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C619	ECQM1H183KZ	Polyester, 0.018μF, 50V, ±10%	1	
C620	ECQM1H183KZ	Polyester, 0.018μF, 50V, ±10%	1	
C621	**ECEA35V47V**	Electrolytic, 47μF, 35V	1	
C622	**ECEA35V47V**	Electrolytic, 47μF, 35V	1	
C623	**ECEA35V100V**	Electrolytic, 100μF, 35V	1	
C625	ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%	1	
C626	ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%	1	
C627	ECCD1H050C	Ceramic, 5pF, 50V, ±0.25pF	1	
C628	ECCD1H050C	Ceramic, 5pF, 50V, ±0.25pF	1	
C701	ECET35R332SU	Electrolytic, 3300μF, 35V	1	
C702	ECET35R332SU	Electrolytic, 3300μF, 35V	1	
C704	**ECEA25V220V**	Electrolytic, 220μF, 25V	1	
C705	**ECEA35V100V**	Electrolytic, 100μF, 35V	1	
C706	**ECEA35V330V**	Electrolytic, 330μF, 35V	1	
C707	**ECEA25V220V**	Electrolytic, 220μF, 25V	1	
C708	**ECEA25V220V**	Electrolytic, 220μF, 25V	1	
C709	**ECEA35V470V**	Electrolytic, 470μF, 35V	1	
C710	**ECEA16V220V**	Electrolytic, 220μF, 16V	1	
C711	**ECEA16V220V**	Electrolytic, 220μF, 16V	1	
C712	ECKD1H102PF	Ceramic, 0.001μF, 50V, $^{+100}_{-0}$%	1	
C901	ECKD1H103P**F**	Ceramic, 0.01μF 50V, $^{+100}_{-0}$%	1	
		VARIABLE CAPACITOR		
CV1~3,201,202 (CT1~3,201,202)	ECVC751K144	Tuning Capacitor w/Trimmer	1	

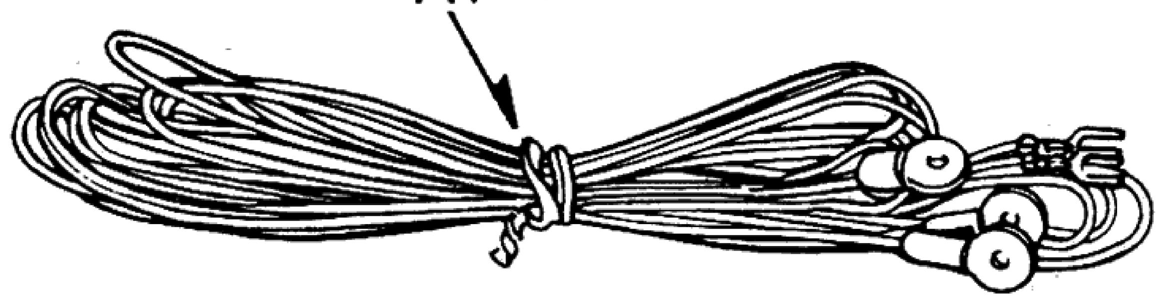
■ EXPLODED VIEWS

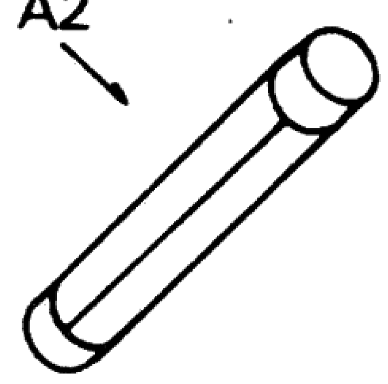


Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		LAMPS		
PL701, 702	XAMR54T	Lamp, Dial Light (12.6V 0.38A)	2	
		FUSES		
F601, 602	XBAS1A3001	Fuse, 3A (125V), Circuit Protection	2	
F701	XBA1F15NU100	Fuse, 1.5A (125V), Power Source	1	
		SWITCHES		
S1-1~1-6	SSR57-1	Switch, Selector	1	
S2-1,2-2,3-1,3-2	SSH221S	Switch, Tape monitor & Loudness	1	
S4	ESB704T	Switch, Power source	1	
		CABINET and CHASSIS PARTS		
1	SBN587-2	Knob, Tuning Control	1	
2	SBN661	Knob, Bass, Treble, Balance, Volume Control & Selector Switch	5	
3	XTS3+8CFZ	Screw, Front Panel M'tg	4	
4	SGW8350	Panel, Front	1	O
5	SGUA34	Glass PLate, Front Panel	1	
6	SGX6491	Escutcheon, Push Switch Button	3	
7	SUS123	Spring, Push Switch Button	3	
8	SBC177	Button, Push Switch	3	
9	XNS8	Nut, Bass, Treble, Balance, Volume Control & Selector Switch	5	
10	XWV8	Spring Washer, Bass, Treble, Balance Volume Control & Selector Switch	5	
11	XNS9	Nut, Headphones Jack	1	
12	XCJ6P11E-A	Jack, Headpnones	1	
13	SDT8035S	Shaft, Tuning Control Ass'y	1	*
14	SMN1401	Bracket, LED	1	*
15	XTB3+8BFZ	Screw, Dial Light Plate M'tg	5	
16	SHR401-1	Lock Pin, Dial Light	2	
17	SDH397	Plate, Dial Light	1	* O
18	SHP29	Paper, Pointer Slide	1	
19	SDP1113	Pointer, Dial	1	*
20	SKD3130	Scale, Dial	1	*
21	SHD3XIF	Screw, Pulley M'tg	4	
22	SDRI	Pulley, Dial	4	
23	SSM77	Meter, Signal	1	
24	SUSA69	Spring, Meter	1	
25	XTV3+8C	Screw, Printed Circuit Board Bracket M'tg	1	
26	SUW1069	Bracket, Printed Circuit Board Bracket	1	*
27	SDZ051-1	Coad, Dial 78¾" (2m)	1roll	
28	SDD47-1	Drum, Dial Cord	1	
29	SDSA4121	Spring, Dial Cord	1	
30	SUW1095	Bracket, Heat Sink	1	* O
31	XTV3+8C	Screw, Heat Sink Bracket M'tg	2	
32	SUW1071	Bracket, Reflector Plate	1	* O
33	SJF109-2	Holder, Lamp	2	
34	XTB3+8BFZ	Screw, Reflector Plate Bracket M'tg	1	
35	SJF8009	Terminal, Speaker	1	O
36	SJF8005	Terminal, Inputs & Antennas	1	
37 [M]	SGP690A	Rear Panel, Set for America	1	O
37 [MC]	SGP690B	Rear Panel, Set for Canada	1	O
38	XTV3+8C	Screw, Rear Panel M'tg	7	
39	SHR401-1	Lock Pin, Input, Antenna & Speaker Terminal	6	
40	XTB3+8BFZ	Screw, Circuit Protection Fuses Cover M'tg	1	
41	SUV337	Cover, Circuit Protection Fuses	1	*
42	XNG4BS	Nut, Power Transformer	4	
43	XWA4B	Washer (Spring), Power Transformer	4	
44	XTN3+8B	Screw, AC Outlet Socket	2	
45	SJS9205-1	Socket, AC Outlet	1	
46	RHR111	Bushing, AC Cord	1	
47	**RJA10A**	AC Cord	1	
48	XTB4+35FFZ	Screw, Cabinet M'tg	4	
49	XWA4BFZ	Spring Washer, Cabinet Screw	4	
50	XWG5FZ	Washer, Cabinet Screw	4	
51	SQXA4112	Caution Label, Cabinet Screw	1	
52	SKA9030W	Cabinet	1	O
53	QQC1045	Label, Cabinet	1	
54	SYUA5070M	Bottom Board with feet Ass'y	1	* O
55	XTN3+10B	Screw, Bottom Board M'tg	7	
56	XWG3	Washer, Bottom Board Screw	7	
		ACCESSORIES		
A1	SSA251	Cord, FM Feeder Antenna		
A2	XBAS1A3001	Fuse 3A (125V), Speaker Circuit Protection	1	
		PACKING PARTS		
P1	SPP511	Soft Cover	1	
P2	SPS995	Pad, Left Side, Upper	1	O
P3	SPS993	Pad, Left Side, Lower	1	O
P4	SPS999	Pad, Right Side, Upper	1	O
P5	SPS997	Pad, Right Side, Lower	1	O
P6 [M]	SPG969	Carton Box, Set for America	1	O
P6 [MC]	SPG971	Carton Box, Set for Cananda	1	O
P7 [M]	SQF1513	Printed Matter, Set for America	1	O
P7 [MC]	SQF1515	Printed Matter, Set for Canada	1	O

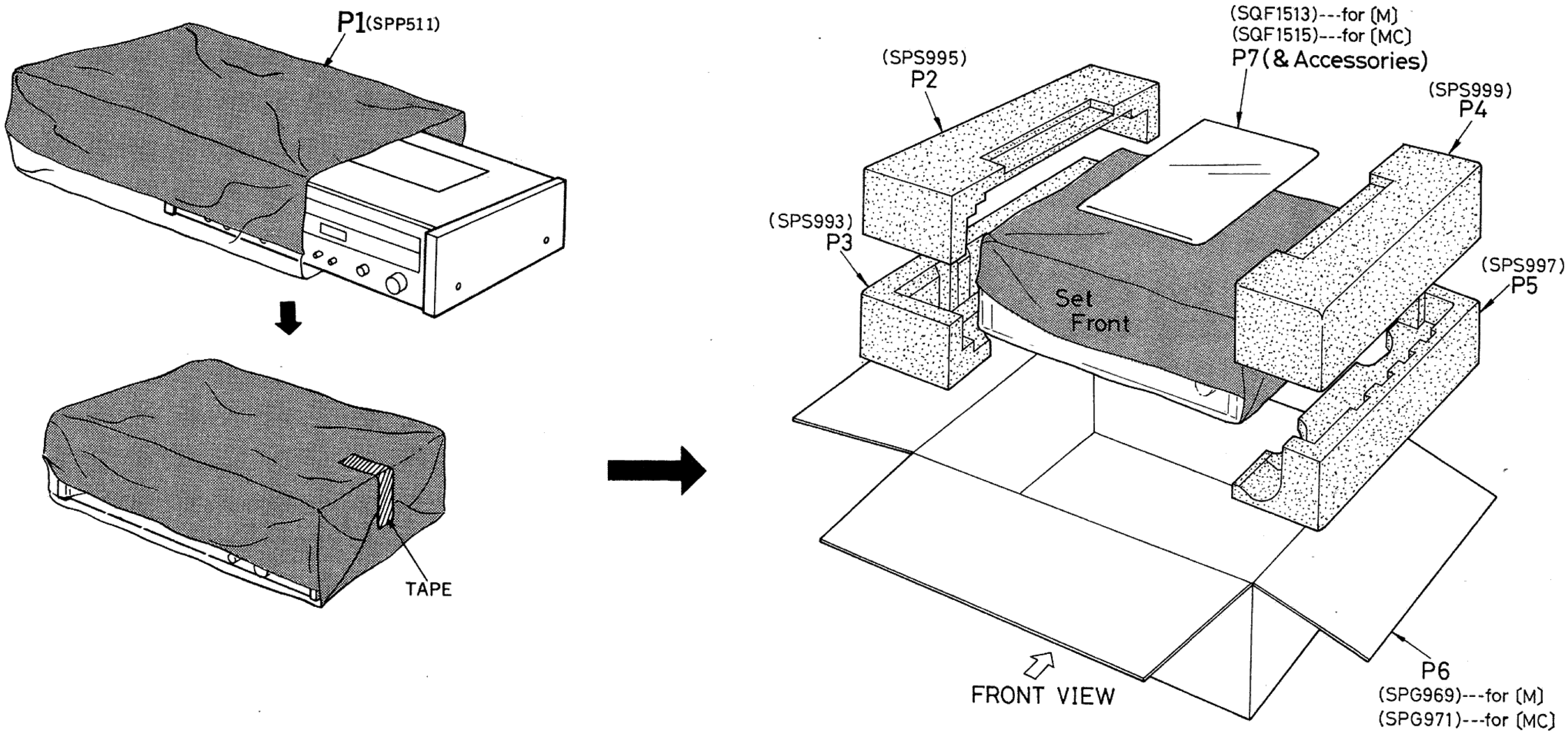
Notes:
The model [M] is available in America only.
The model [MC] is available in Canada only.

■ ACCESSORIES





■ PACKINGS



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