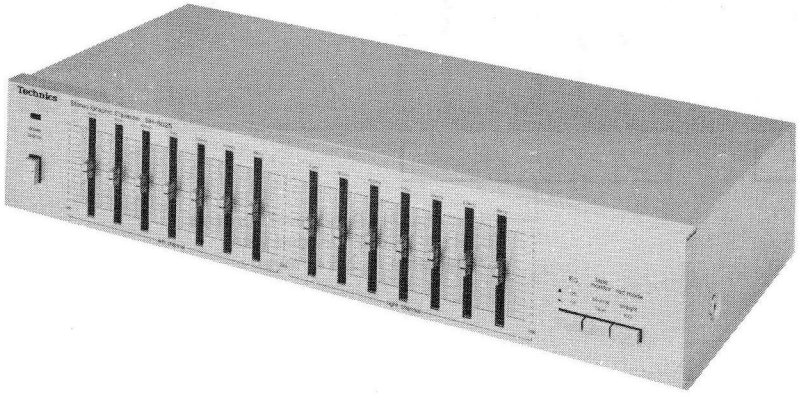
ORDER NO. SD83012372C1

Service Manual

Stereo Graphic Equalizer

SH-8025

[M], [MC]



Areas

* [M] is available in U.S.A.
* [MC] is available in Canada.

Specifications

(Specifications are subject to change without notice for further improvement.)
Weights and dimensions shown are approximate.

IHF '78

Frequency response (center position)	: 5 Hz~100 kHz, −1 dB
Maximum output voltage	: 8 V (1 kHz, THD 0.01%)
Rated output voltage	: 1 V
Rated total harmonic distortion	: 0.005% (20 Hz~20 kHz) 0.003% (1 kHz)
Input sensitivity	: 1 V
Signal-to-noise ratio	: 100 dB (110 dB, IHF' A)
Maximum input voltage	: 8 V (1 kHz)
Input impedance	: 47 kΩ
Gain	: 0±1 dB
Band level controls	: +12 dB~−12 dB (7 elements continuously variable per channel)
Center frequency	: 63 Hz, 160 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6.3 kHz, 16 kHz

GENERAL

Power supply	: AC 120 V, 60 Hz
Power consumption	: 8 W
Dimensions (H×W×D)	: 85×430×200 mm (3-11/32"×16-15/16"×7-7/8")
Weight	: 2.3 kg (5.1 lb)

■ CONTENTS

Technics

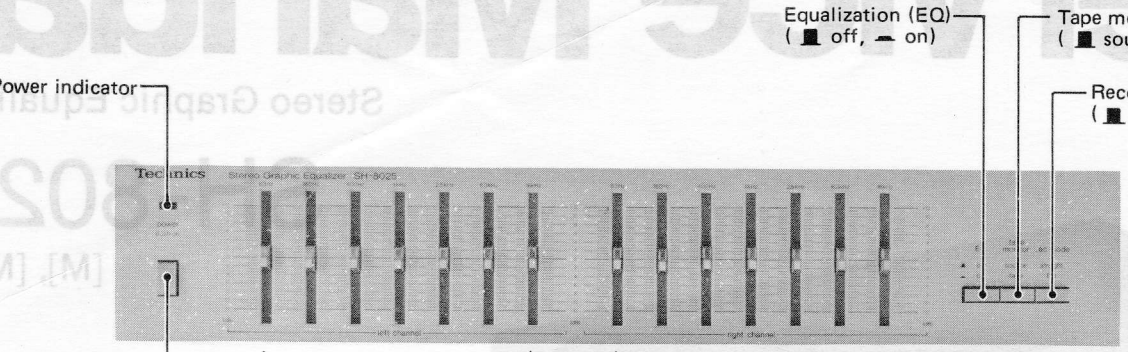
Matushita Engineering and Service Company
50 Meadowland Parkway,
Secaucus.
New Jersey 07094

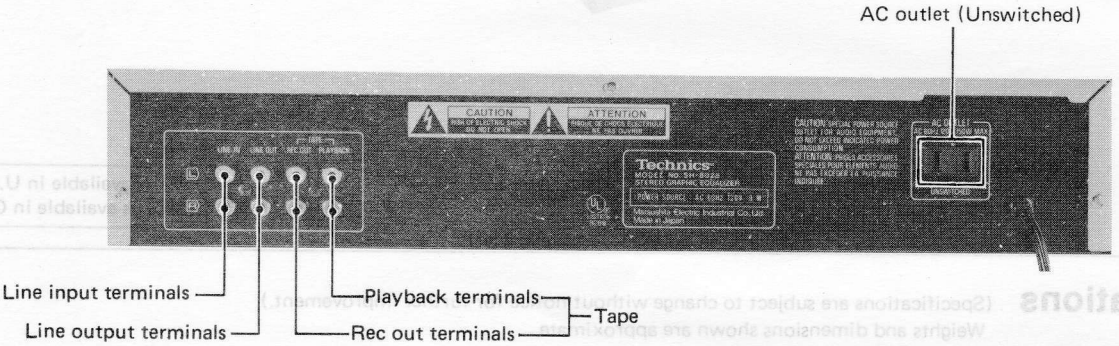
Panasonic Hawaii, Inc.
91-238 Kauhi St., Ewa Beach
P.O. Box 774
Honolulu, Hawaii 96808-0774

Panasonic Canada
Division of Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Panasonic Sales Company
Division of Matsushita Electric of Puerto Rico, Inc.
Ave, 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

■ LOCATION OF CONTROLS



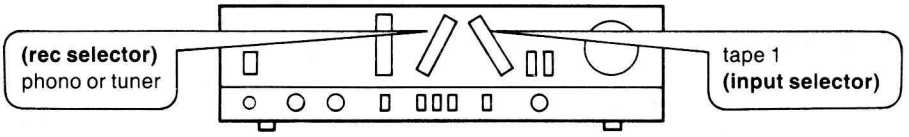


■ OPERATION OF CONTROL SWITCHES

		EQ switch	tape monitor switch	rec mode switch
To listen to corrected sound of phono discs or radio	Corrections and recordings can be made.	"on" (■→▬)	"source" (▬→■)	"EQ" (■→▬)
	Recordings without corrections are also possible.			"straight" (▬→■)
To listen to corrected sound from a tape deck	Recordings without corrections of the source sound are possible.		"tape" (■→▬)	"straight" (▬→■)
To listen to uncorrected sound from a tape deck	Recordings can be made with corrections of the source sound.			"EQ" (■→▬)
Press the equalization switch (EQ) in to the "off" (▬→■) position to listen to uncorrected sound, or when recording.				

Note:

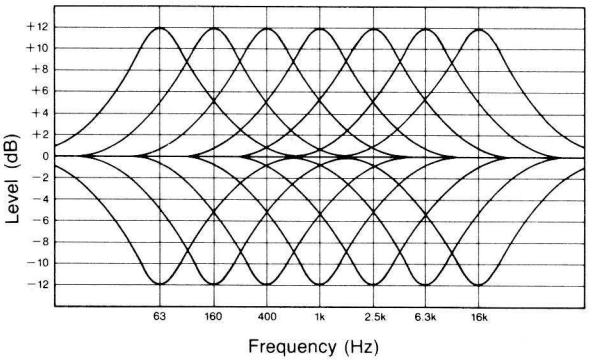
- **If the amplifier has a recording mode selector and an input selector:** (Make setting as shown in the figure.)



- If your amplifier has terminals (GRAPHIC EQ./EXTERNAL) for connection of other equipment, use of the recording selector is unnecessary.

■ TOTAL FREQUENCY RESPONSE

Frequency response (± 12 dB position)

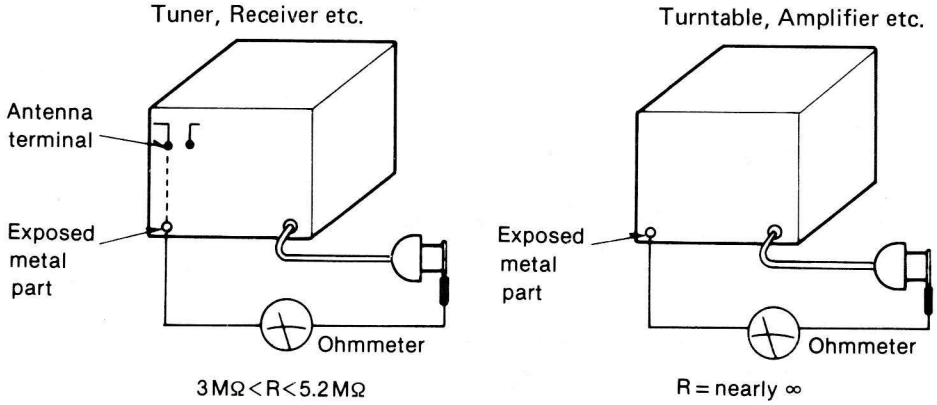


■ SAFETY PRECAUTION

1. Before servicing (such as replacement of components), unplug the power supply cord to prevent an electric shock.
2. Use only manufacturer's recommended components for safety. Check condition of power cord and replace if wear or damage is evident.
3. After servicing, be sure to restore the following to the condition in which they were originally installed.
   (1) the lead dress and
   (2) insulation barriers, insulation papers, shields and the like.
4. Before returning a serviced apparatus to a customer, make the following insulation resistance test to prevent a customer from being exposed to a shock hazard.

• Insulation resistance test (See figure below.)

1. Unplug the power supply cord and connect a jumper wire between the two prongs on the plug.
2. Turn on the power switch of the apparatus.
3. Measure the resistance value (with an ohmmeter) between the jumpered AC plug and each exposed metalic cabinet part on the apparatus, such as screwheads, antenna, control shafts, handle brackets, etc.
   The reading should be as shown in figure below. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the apparatus should be repaired and rechecked before it is returned to a customer.



where, R: resistance value

■ DISASSEMBLY INSTRUCTIONS

- **How to remove the cabinet and front panel**
  1. Remove the 2 screws on the side of the cabinet, and 3 screws on the back. [Fig. 1: Ⓐ]
  2. Remove the cabinet.
  3. Remove the 2 screws which connect the chassis and the front panel. [Fig. 1: Ⓑ]
  4. Remove the setscrews [Fig. 2: Ⓒ] of the power switch.
  5. Remove the front panel in the direction of the arrow [Fig. 1].
     (The front panel is fitted to the circuit board with the connector as in Fig. 6. (A))

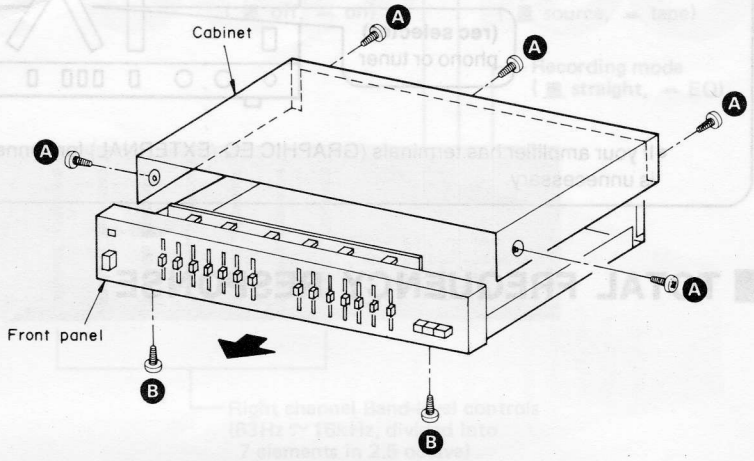


Fig. 1

- **How to remove the main P.C.B.**
  1. Remove the cabinet and front panel.
  2. Remove the 5 screws [Fig. 2: Ⓓ] from the chassis.

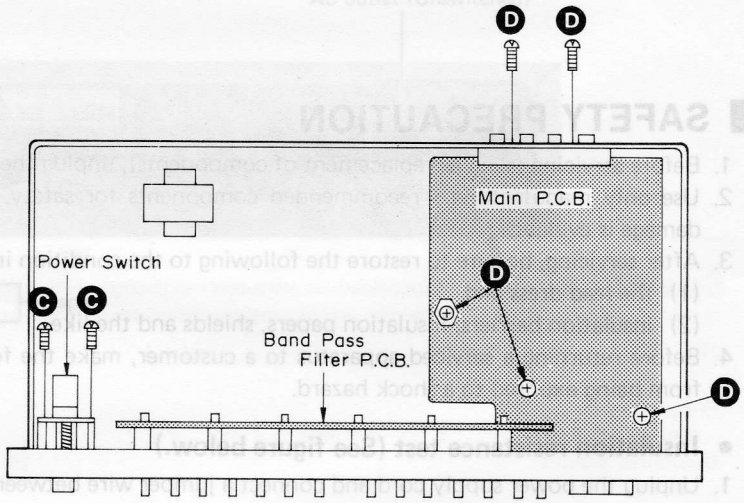


Fig. 2

- **How to remove the band pass filter P.C.B.**
  1. Remove the cabinet and front panel from the chassis.
  2. Release the claw at part Ⓧ and remove the LED circuit board from the front panel. [Fig. 3]
  3. Remove the 8 screws [Fig. 3: Ⓔ] and remove the P.C.B. holder from the front panel.
  4. Pull out the 14 band level control knobs as in Fig. 4.
  5. Bend the 12 claws shown by arrows (→) as in Fig. 5, then separate the P.C.B. from the P.C.B. holder.

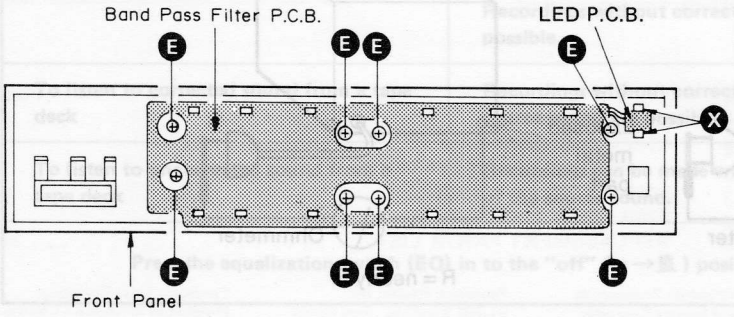


Fig. 3

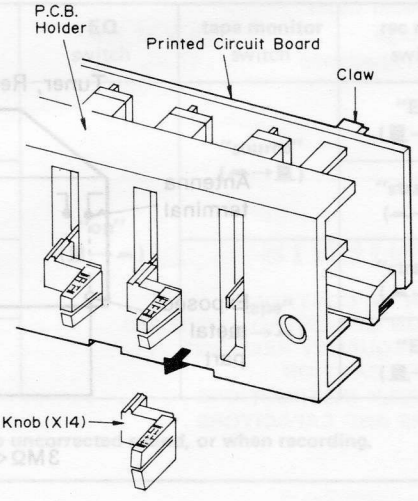


Fig. 4

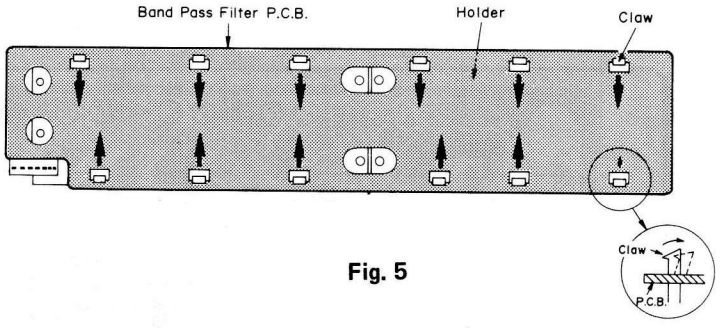


Fig. 5

- **Precautions for panel installation**

The band pass filter P.C.B. is fitted to the main P.C.B. with the connector as in Fig. 6 (A).
To install the front panel, insert the part Ⓨ into the chassis as shown by the arrow so that the connector is completely fitted as in Fig. 6 (B).

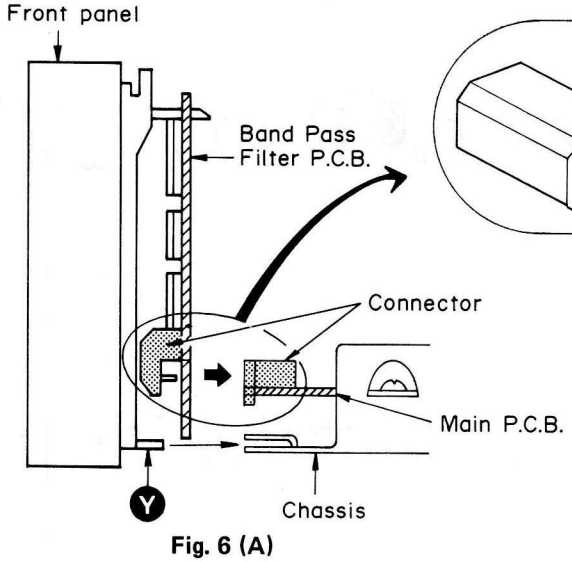


Fig. 6 (A)

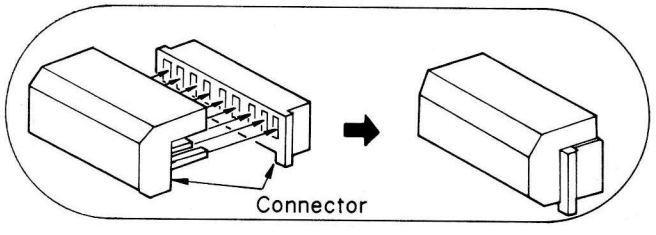


Fig. 6 (B)

■ RESISTORS AND CAPACITORS

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The "**S**" mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω (ohm). K = 1000Ω, M = 1000kΩ.
5. The unit of capacitance is μF (microfarad). P = 10^{-6} μF.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type (Carbon)	Wattage (1/4W)	Shape	Tolerance	Value (100Ω)
	S1 (1/2W)			

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F	ECEA	50	Z	R47
Type	Voltage	Value	Tolerance	Peculiarity	Type	Voltage	Peculiarity use	Value

Capacitor Type		Voltage		Tolerance
		ECEA Type	Others	
ECEA	: Electrolytic	1A : 10V	1H : 50V DC	K : ± 10%
ECCD	: Ceramic	1C : 16V	KC : 400VAC	Z : +80%, –20%
ECKD	: Ceramic	1E : 25V	ECFTD: 25V DC	P : +100%, –0%
ECF	: Semi conductor	1V : 35V		
		1H : 50V		
		50 : 50V		
		25 : 25V		

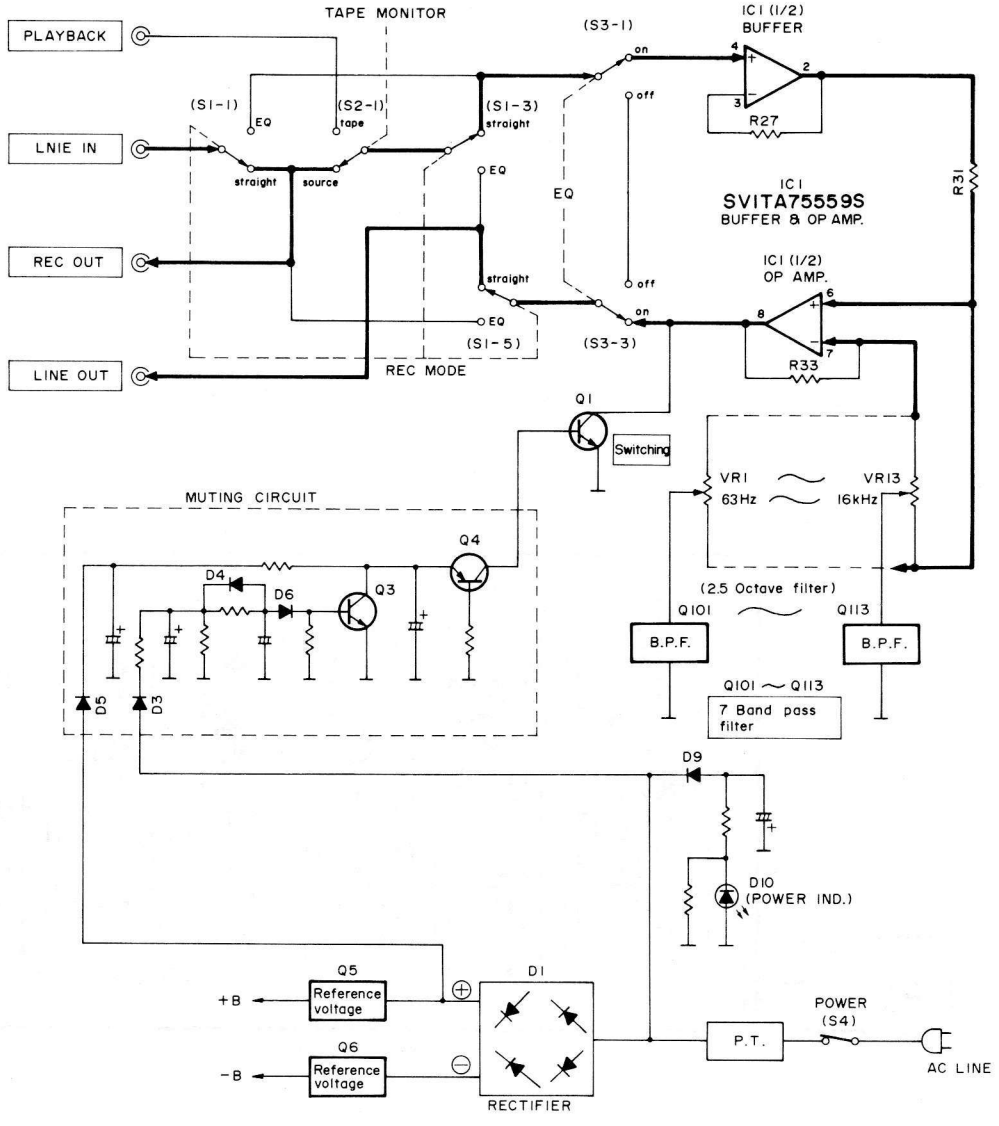
Ref. No.		Part No.	Value
RESISTORS			
R1, 2	S	ERD25TJ224	220K
R3, 4	S	ERD25TJ333	33K
R5, 6	S	ERD25TJ824	820K
R11, 12	S	ERD25TJ224	220K
R13, 14	S	ERD25TJ104	100K
R21, 22	S	ERD25FJ102	1K
R23, 24	S	ERD25TJ154	150K
R25, 26	S	ERD25TJ104	100K
R27, 28	S	ERD25FJ472	4.7K
R29, 30	S	ERD25TJ104	100K
R31, 32	S	ERD25FJ822	8.2K
R33, 34	S	ERD25FJ822	8.2K
R35, 36	S	ERD25FJ222	2.2K
R37, 38	S	ERD25TJ104	100K
R39, 40	S	ERD25FJ181	180
R51	S	ERD25FJ222	2.2K
R52	S	ERD25FJ472	4.7K
R53	S	ERD25TJ273	27K
R54	S	ERD25TJ123	12K
R55	S	ERD25FJ562	5.6K
R56	S	ERD25FJ103	10K
R57, 58	S	ERD25FJ102	1K
R61	⚠	ERDS1FJ821	820
R62	⚠	ERDS1FJ681	680
R71, 72	S ⚠	ERD25FJ471	470
R73, 74	S ⚠	ERD25FJ330	33

Ref. No.		Part No.	Value
R101, 102	S	ERD25FJ821	820
R103, 104	S	ERD25FJ122	1.2K
R105, 106	S	ERD25FJ122	1.2K
R107, 108	S	ERD25FJ152	1.5K
R109, 110	S	ERD25FJ122	1.2K
R111, 112	S	ERD25FJ152	1.5K
R113, 114	S	ERD25FJ152	1.5K
R201, 202	S	ERD25FJ821	820
R203, 204	S	ERD25TJ124	120K
R205, 206	S	ERD25TJ124	120K
R207, 208	S	ERD25TJ823	82K
R209, 210	S	ERD25TJ683	68K
R211, 212	S	ERD25TJ563	56K
R213, 214	S	ERD25TJ563	56K
R301, 302	S	ERD25FJ181	180
R303, 304	S	ERD25FJ391	390
R305, 306	S	ERD25FJ391	390
R307, 308	S	ERD25FJ121	120
R309, 310	S	ERD25FJ391	390
R311, 312	S	ERD25FJ151	150
R313, 314	S	ERD25FJ221	220
R401, 402	S	ERD25FJ122	1.2K
R403, 404	S	ERD25FJ272	2.7K
R405, 406	S	ERD25FJ272	2.7K
R407, 408	S	ERD25FJ272	2.7K
R409, 410	S	ERD25FJ272	2.7K
R411, 412	S	ERD25FJ272	2.7K
R413, 414	S	ERD25FJ272	2.7K

Ref. No.		Part No.	Value
CAPACITORS			
C5	S	ECEA1AS101	100
C11, 12	S	ECEA25Z4R7	4.7
C13, 14	S	ECCD1H101K	100P
C15, 16	S	ECCD1H101K	100P
C17, 18	S	ECCD1H101K	100P
C19, 20	S	ECEA25Z4R7	4.7
C21, 22	S	ECEA1ES220	22
C23, 24	S	ECEA1ES220	22
C31	S	ECEA50Z1	1
C32	S	ECEA1AS101	100
C33	S	ECEA1ES101	100
C34	S	ECEA1HS100	10
C35	S	ECEA1VS330	33
C41, 42	⚠ S	ECKD1H223ZF	0.022
C43, 44	S	ECEA1VS471	470
C45, 46	S	ECEA1CS331	330
C47, 48	S	ECEA1CS102	1000
C101, 102	S	ECEA50Z1	1
C103, 104	S	ECEA50ZR33	0.33
C105, 106	S	ECEA50ZR15	0.15
C107, 108		ECFTD683JX	0.068
C109, 110		ECFTD273JX	0.027
C111, 112		ECFTD103JX	0.01
C113, 114		ECFTD392JX	0.0039
C201, 202	S	ECEA1HS100	10
C203, 204		ECFTD223JX	0.022

Ref. No.		Part No.	Value
C205, 206		ECFTD822JX	0.0082
C207, 208		ECFTD332JX	0.0033
C209, 210		ECFTD222JX	0.0022
C211, 212	S	ECKD1H821KB	820P
C213, 214	S	ECKD1H331KB	330P
C1001	⚠	ECKDKC103PF2	0.01

■ BLOCK DIAGRAM

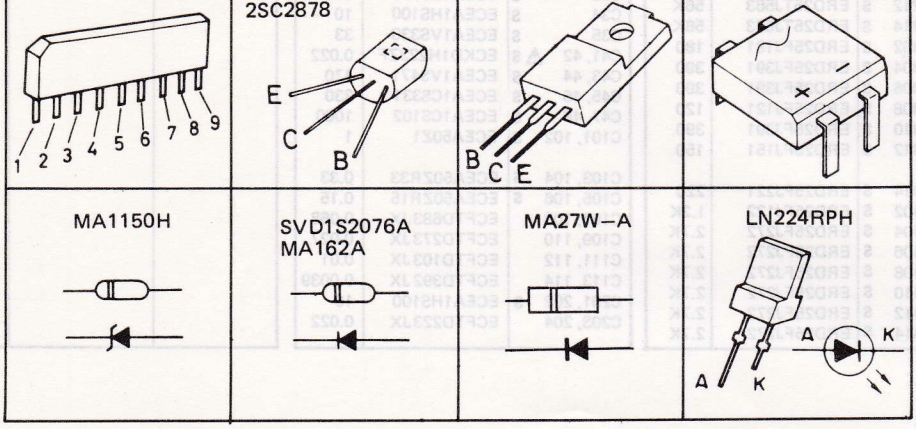


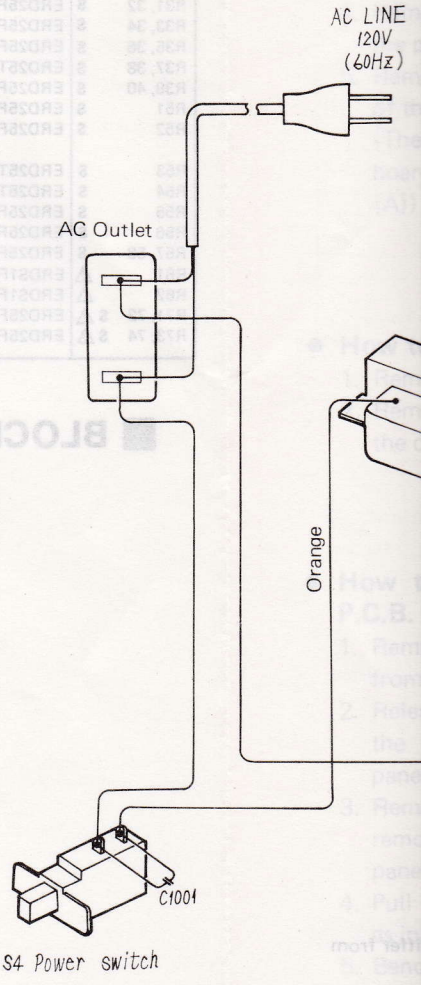
■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

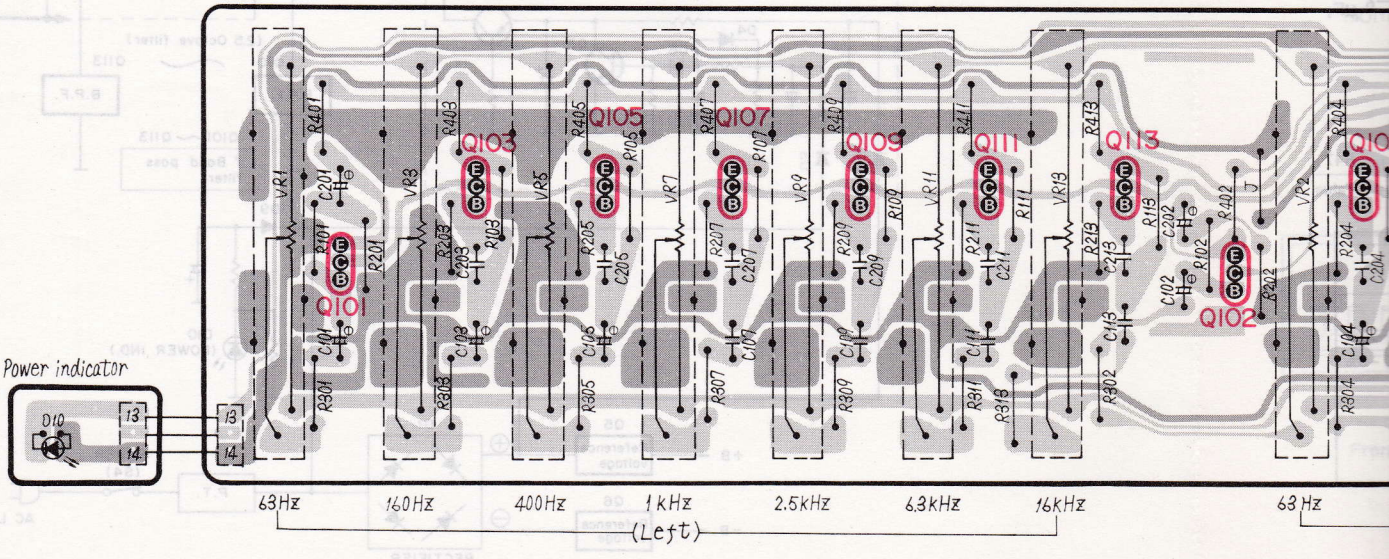
Ground (Earth) line

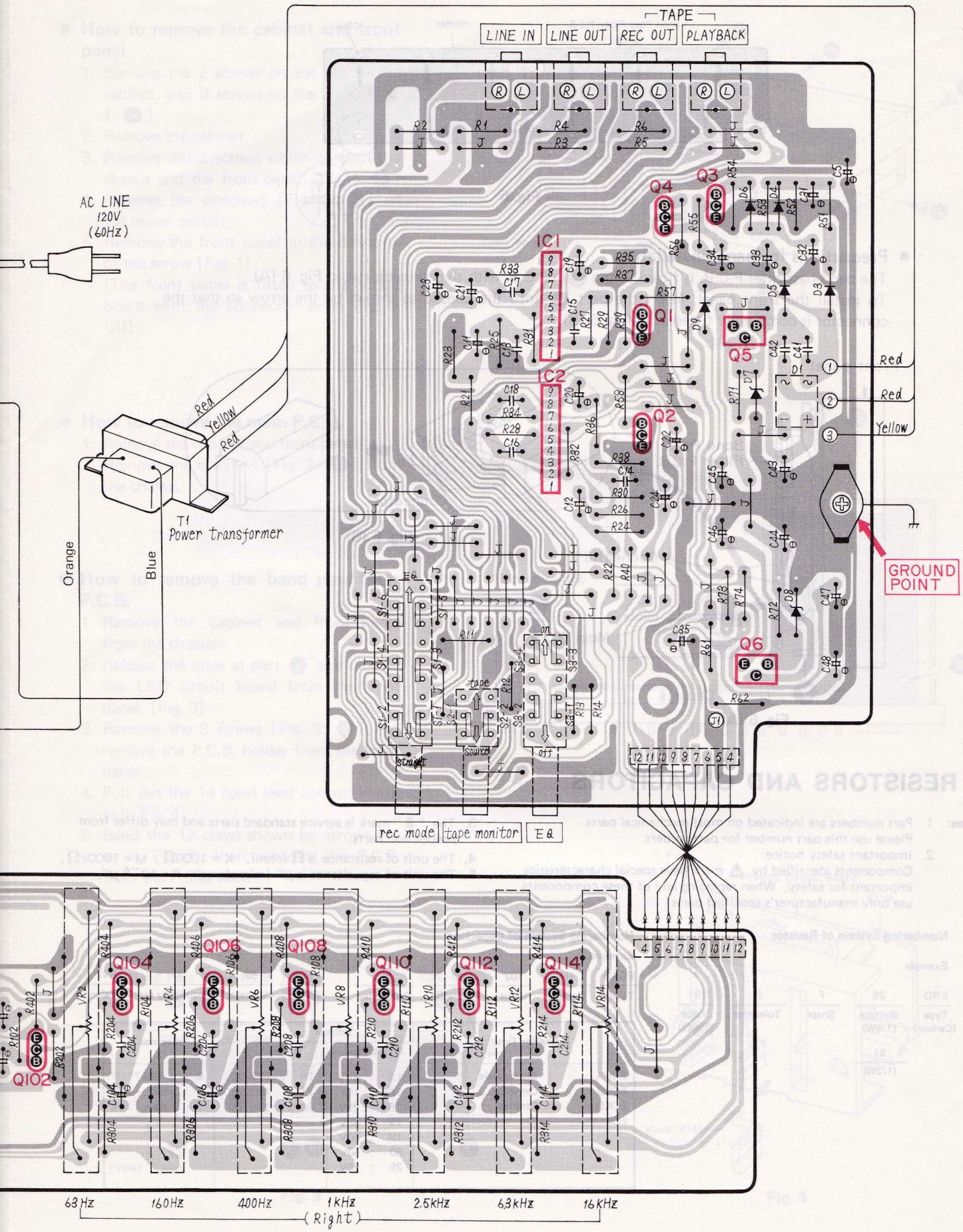
- Terminal guide of transistors, IC and diodes

SVITA75559S	2SA1015, 2SC1815, 2SC2878	2SB941, 2SD1265	SVDIB4B42
MA1150H	SVD1S2076A MA162A	MA27W–A	LN224RPH



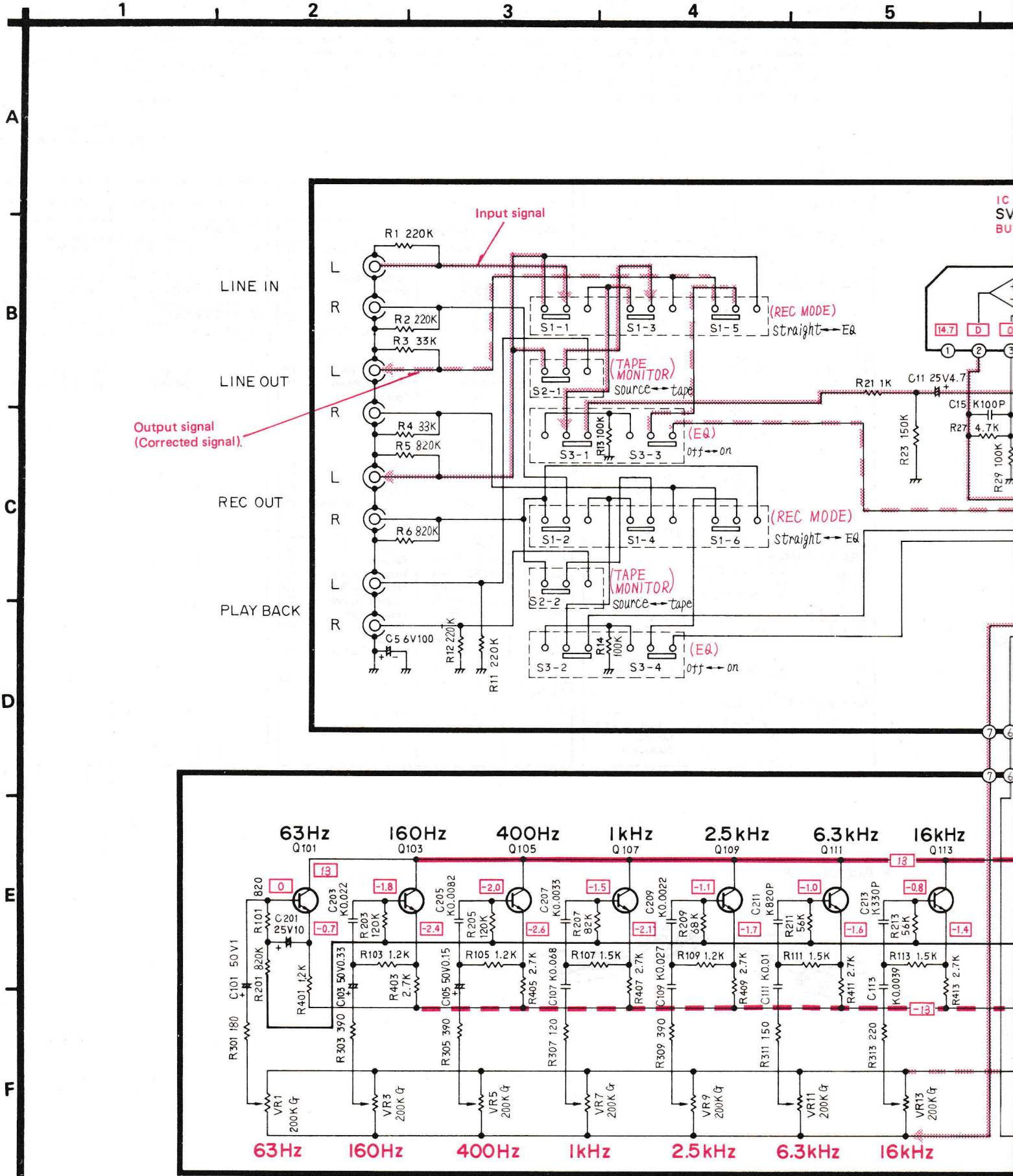





TAPE
LINE IN
LINE OUT
REC OUT
PLAYBACK
AC LINE
120V
(60Hz)
Red
Yellow
Red
T1
Power transformer
Orange
Blue
IC1
IC2
Q1
Q2
Q3
Q4
Q5
Q6
Red
Red
Yellow
GROUND POINT
rec mode
tape monitor
EQ
Q102
Q104
Q106
Q108
Q110
Q112
Q114
63Hz
160Hz
400Hz
1kHz
2.5kHz
6.3kHz
16kHz
(Right)

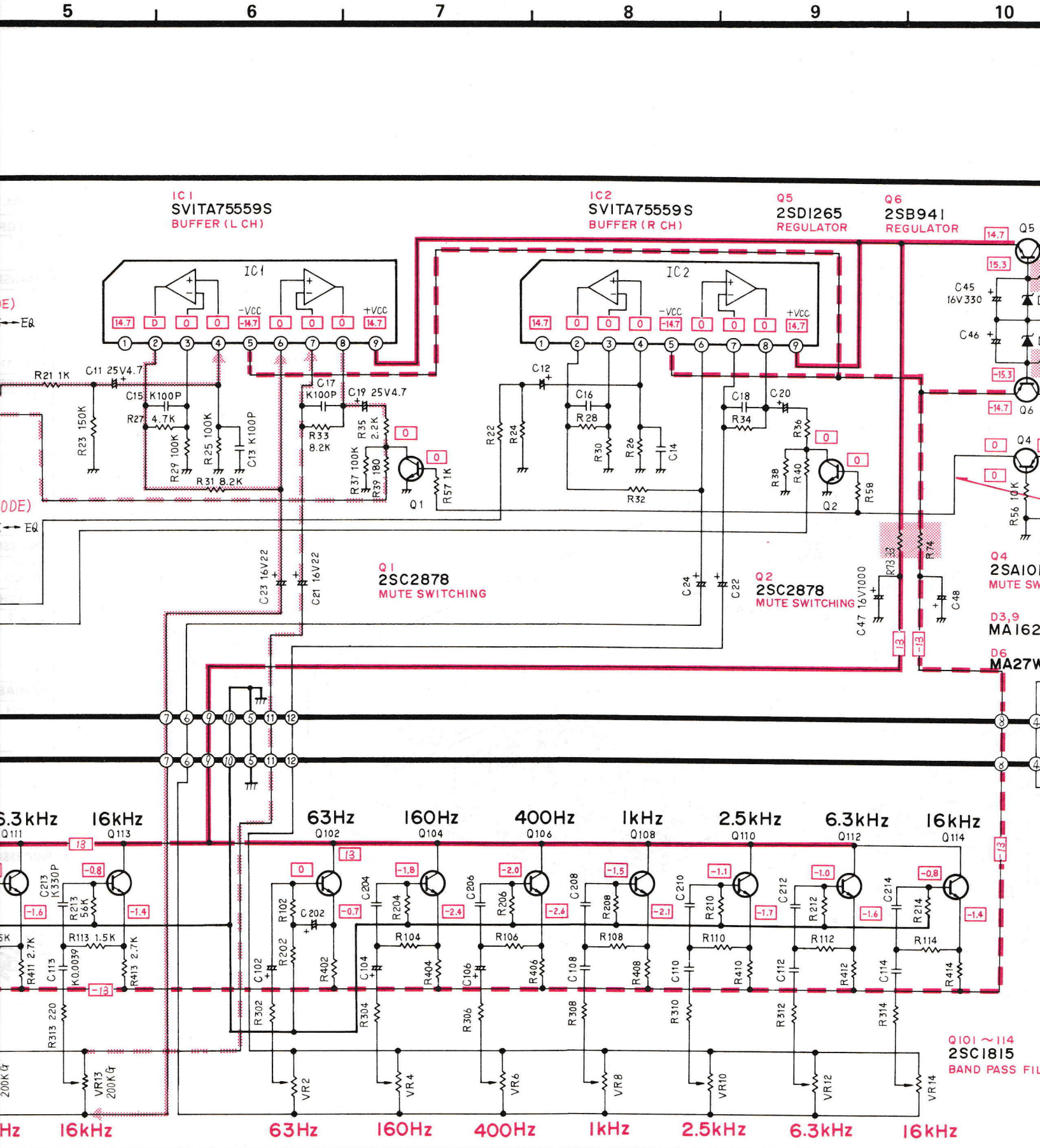
SCHEMATIC DIAGRAM

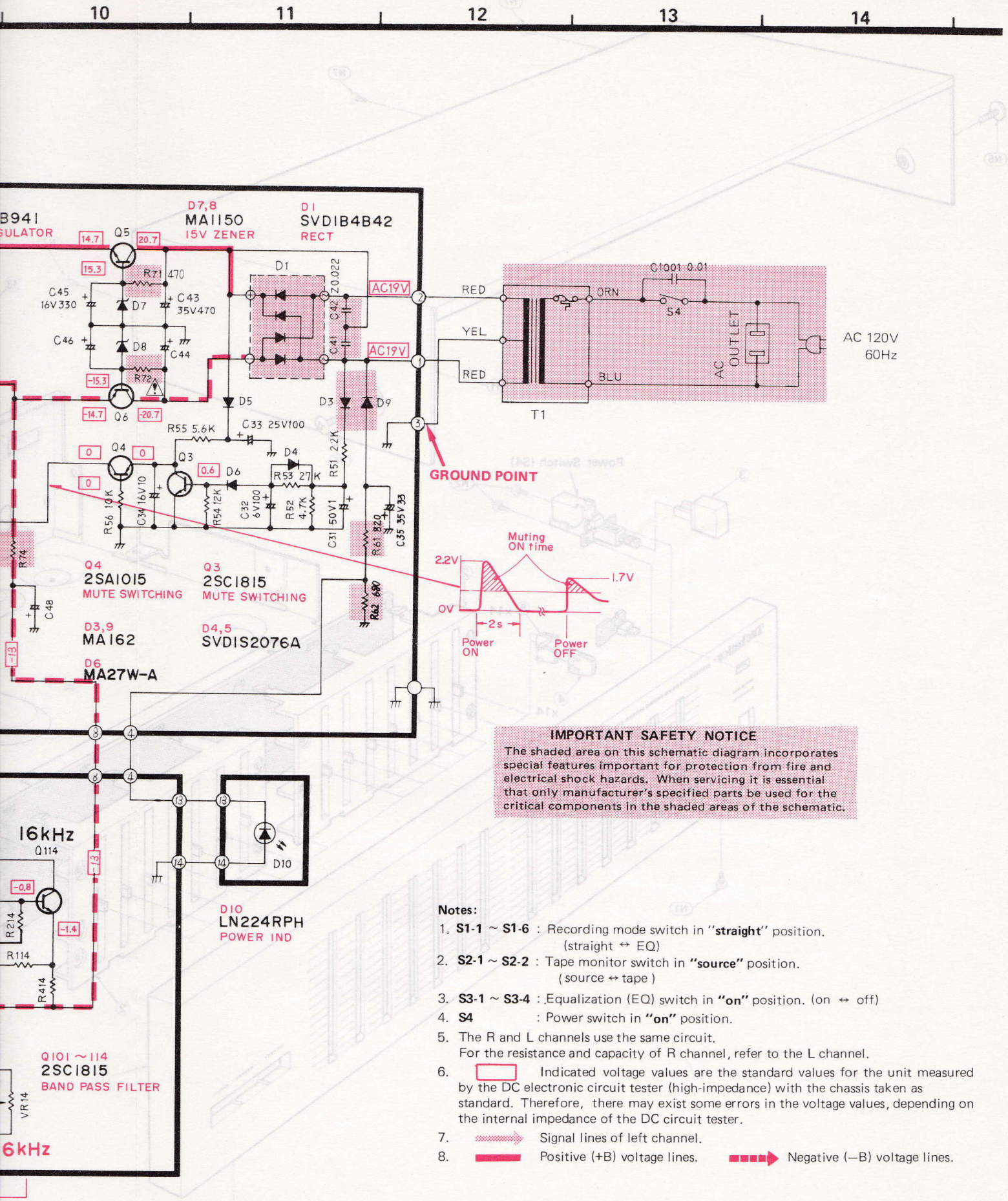
(This schematic diagram may be modified at any time with the development of new technology



LEFT CHANNEL BAND PASS FILTERS

elopment of new technology.)





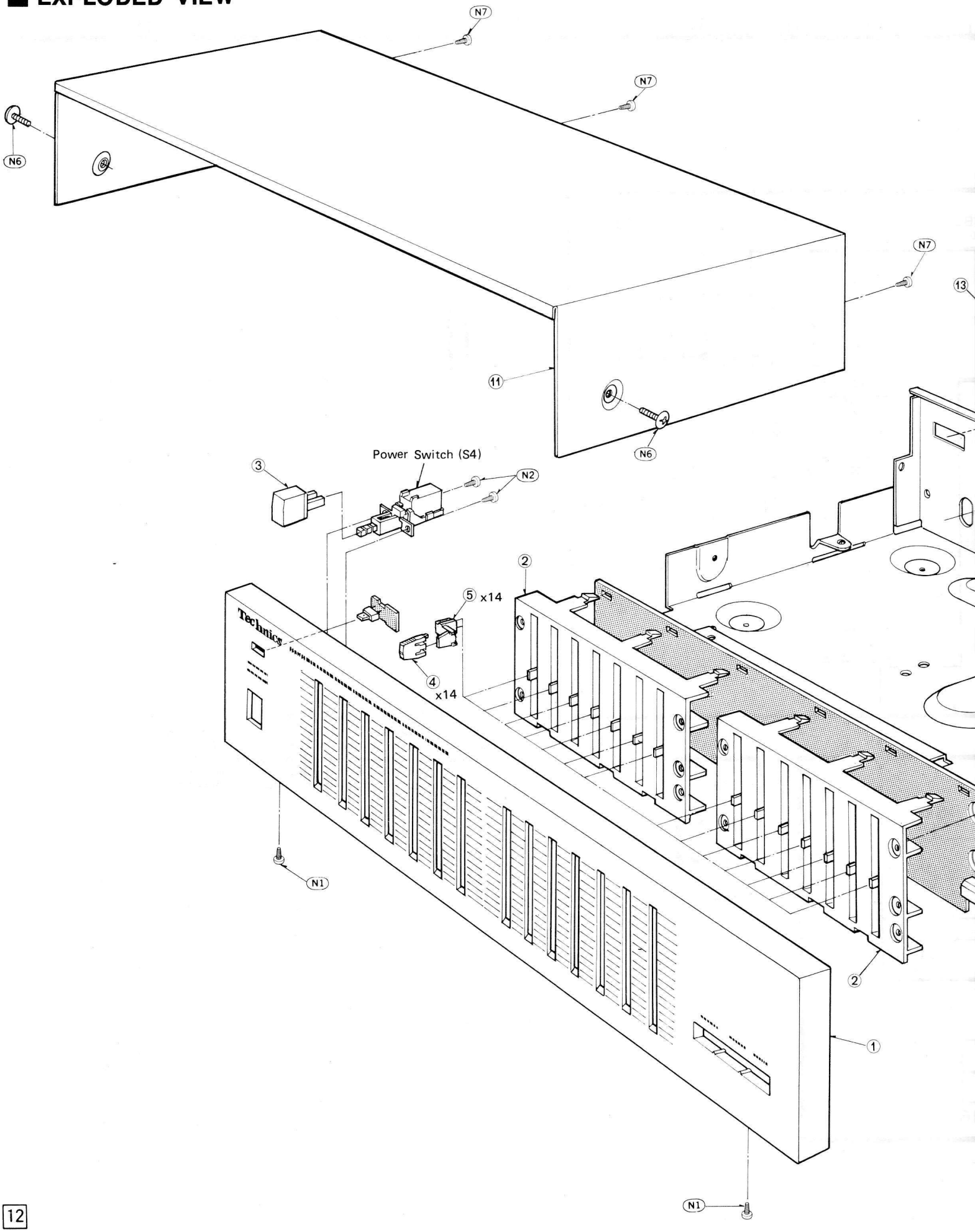
IMPORTANT SAFETY NOTICE

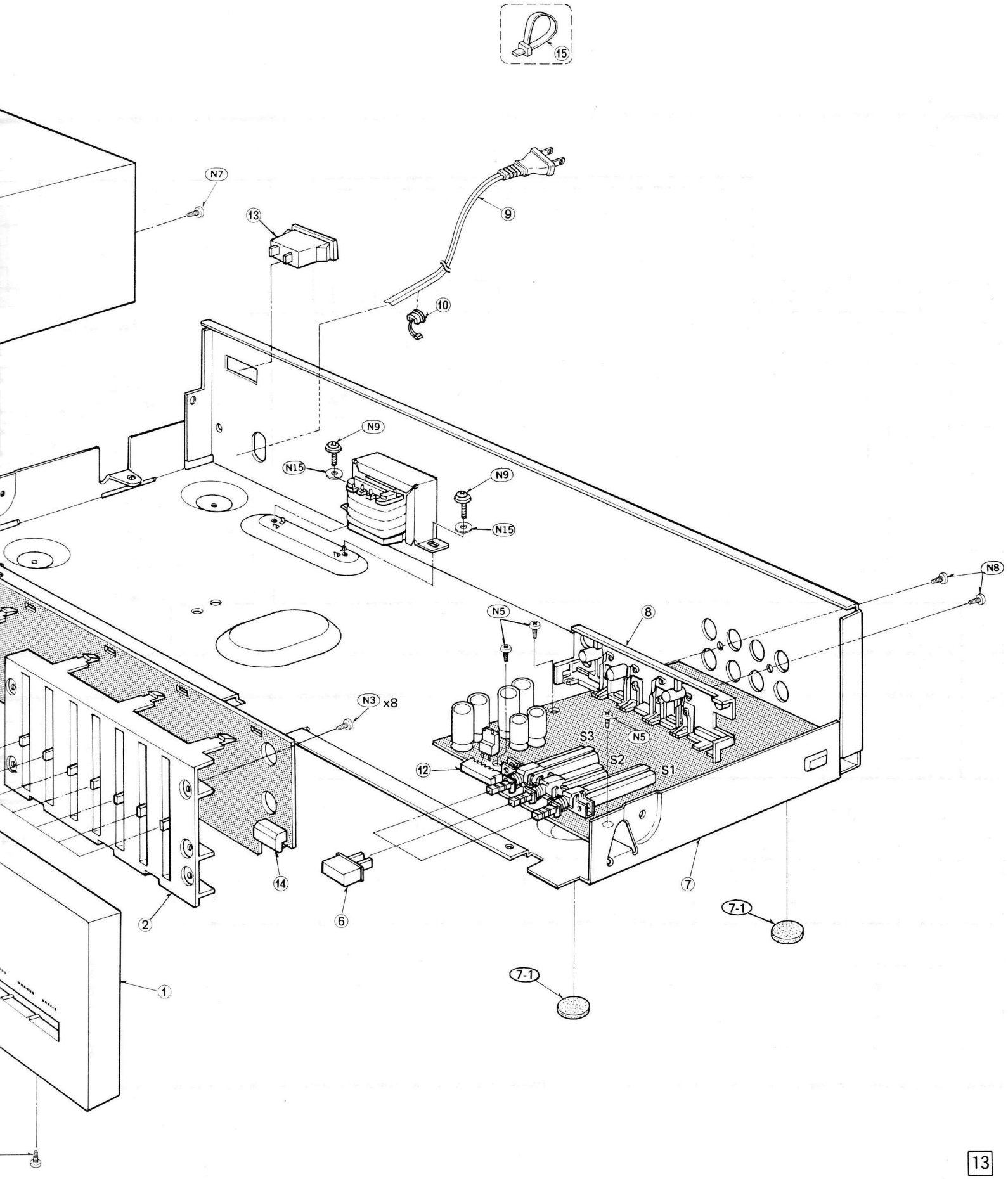
The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

Notes:

1. **S1-1 ~ S1-6** : Recording mode switch in "**straight**" position. (straight ↔ EQ)
2. **S2-1 ~ S2-2** : Tape monitor switch in **"source"** position. (source ↔ tape)
3. **S3-1 ~ S3-4** : Equalization (EQ) switch in **"on"** position. (on ↔ off)
4. **S4** : Power switch in **"on"** position.
5. The R and L channels use the same circuit. For the resistance and capacity of R channel, refer to the L channel.
6. ▭ 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.
7. ⇒ Signal lines of left channel.
8. ▬ Positive (+B) voltage lines. ▬▸ Negative (−B) voltage lines.

■ EXPLODED VIEW




15
N7
13
9
10
N9
N15
N9
N15
N8
N5
8
N3 x8
S3
N5
S2
S1
12
14
2
6
7
7-1
7-1
1

■ REPLACEMENT PARTS LIST

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "**S**" mark is service standard parts and may differ from production parts.
5. The parenthesized numbers in the column of description stand for the quantity per set.

Areas

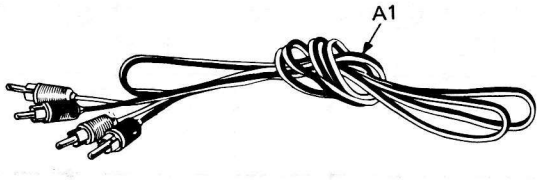
* [M] is available in U.S.A.
* [MC] is available in Canada.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1, 2	SVITA75559S	Operation/Buffer Amplifier
TRANSISTORS		
Q1, 2	2SC2878A–T	Mute Switching
Q3	2SC1815L–G	Mute Switching
Q4	2SA1015–Y	Mute Switching
Q5	2SD1265–0	Regulator
Q6	2SB941–P	Regulator
Q101~114	2SC1815L–G	Band Pass Filter
DIODES		
D1 ⚠	SVD1B4B42	Rectifier
D3 S	MA162A	Rectifier , Muting
D4, 5	SVD1S2076A	Power Supply, Muting
D6	MA27W–A	Switching, Muting
D7, 8	MA1150H	15V Zener
D9 S	MA162A	Power Supply, LED
D10	LN224RPH	Light Emitting Diode
TRANSFORMERS		
T1 [M] ⚠	SLTK5J14–Z	Power Source
T1 [MC] ⚠	SLTKSJ17–Z	Power Source
SWITCHES		
S1, 2, 3	SSHK31	EQ, Tape Monitor, Rec Mode
S4 ⚠	SSH1071	Power Source
VARIABLE RESISTORS		
VR1~14	EVAD03C10G25	Frequency Level Control, 200kΩ(G)

Ref. No.	Part No.	Description & Pcs	
CABINET and CHASSIS PARTS			
1	SGWKH8025E	Panel Front Ass'y	(1)
2	SGXK68	Holder	(2)
3	SBC337–1	Button, Power	(1)
4	SBD79	Button	(14)
5	SUBK11	Connection Rod	(3)
6	SBC433–1	Button	(3)
7	SGPKH8025M	Panel, Rear Ass'y (w/Feet)	(1)
7-1	SKLK1	Foot	(4)
8	SJF3055–1N	Terminal Board	(1)
9 ⚠S	RJA9Y	AC Cord, Power Source	(1)
10	RHR111	Bushing	(1)
11	SKC1370S	Cabinet	(1)
12	SJS5901	Connector	
13 [M] ⚠	SJS9221–1	Socket	(1)
13 [MC] ⚠	SJS9223	Socket	(1)
14	SJT3911	Connector	(1)
15	SHR301	Clamper, Lead Wire	(2)
SCREWS			
N1 S	XTS3+8BFZ	Tapping, ⊕ 3x8	(2)
N2 S	XTB3+8BFN	Tapping, ⊕ 3x8	(2)
N3 S	XTB3+8BFN	Tapping, ⊕ 3x8	(2)
N4 S	XTB3+8BFN	Tapping, ⊕ 3x8	(2)
N5 S	XTB3+8BFN	Tapping, ⊕ 3x8	(1)
N6	SNE2095–2	Tapping, Cabinet	(2)
N7 S	XTB3+8BFZ	Tapping, ⊕ 3x8	(2)
N8 S	XTB3+10BFZ	Tapping, ⊕ 3x10	(2)
N9 S	XTB3+6BFN	Tapping, ⊕ 3x6	(2)
WASHER			
N15 S	XWG3	Plain φ3	(2)

Ref. No.	Part No.	Description & Pcs	
ACCESSORIES			
A1	SJP2129–5	Cord, Connection	(2)
A2 [M]	SQFK10029	Instruction Book	(1)
A2 [MC]	SQFK10030	Instruction Book	(1)
PACKING PARTS			
P1 [M]	SPGK107	Carton Box	(1)
P1 [MC]	SPGK106	Carton Box	(1)
P2	SPSK54	Pad (Left)	(1)
P3	SPSK55	Pad (Right)	(1)
P4	SPP719	Polyethylene Sheet	(1)

• Accessories



Printed in Japan
830104400 ® IM