

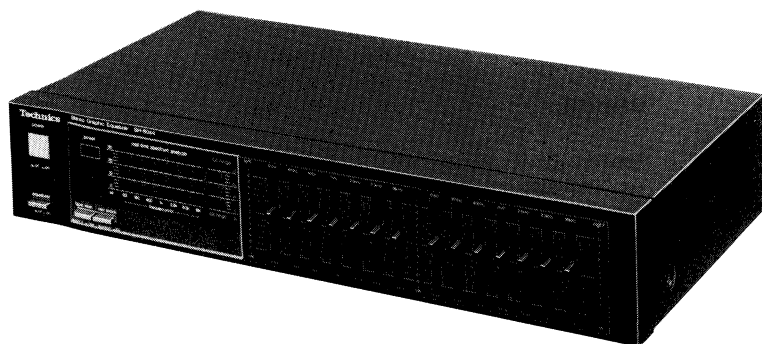
Service Manual

Stereo Graphic Equalizer

Equalizer SH-8044

Color

(K) Black Type
(S) Silver Type



Color	Area
(K) (S)	[E] Scandinavia, Switzerland
(K) (S)	[EH] Holland
(K) (S)	[EB] Belgium
(K) (S)	[EF] France
(K) (S)	[EK] United Kingdom
(K) (S)	[EGA] F.R. Germany
(K) (S)	[Ei] Italy
(K) (S)	[PA] Far East PX
(K) (S)	[PE] European Military
(K) (S)	[XL] Australia
(K) (S)	[XA] Asia, Latin America, Middle Near East, Africa & Oceania
(K) (S)	[NX] Tourist in Japan

Please use this manual together with the service manual for Model No. SH-8044, Order No. HAD84072836C1.

SPECIFICATIONS

(DIN 45 500)

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 : 33 k Ω
Gain : 0 \pm 1 dB
Channel balance
250 Hz~6300 Hz : \pm 0.5 dB
Channel separation
1 kHz : 70 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 50 Hz/60 Hz, 240 V
(For United Kingdom and Australia)
AC 50 Hz/60 Hz, 220 V
(For continental Europe)
AC 50 Hz/60 Hz, 110 V/120V/220V/240V
(For other areas)
Power consumption : 18 W
Dimensions
(H \times W \times D) : 86 \times 430 \times 234 mm,
(3-3/8" \times 16-15/16" \times 9-7/32")
Weight : 2.8 kg (6.2 lb)

Specifications are subject to change without notice for further improvement.

www.manualscenter.com

Technics

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shiba-koen, Minato-ku, Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

TECHNISCHE DATEN**(DIN 45 500)**

Frequenzgang (mittelstellung)	: 5 Hz~100 kHz, -1 dB
Maximalausgangsspannung	: 8 V (1 kHz, THD 0,01%)
Nennausgangsspannung	: 1 V
Nennklirrfaktor	: 0,005% (20 Hz~20 kHz) 0,003% (1 kHz)
Eingangsspannung	: 1 V
Geräuschabstand	: 100 dB (110 dB, IHF, A)
Maximaleingangsspannung	: 8 V (1 kHz)
Eingangsimpedanz	: 33 kΩ
Verstärkung	: 0±1 dB
Kanalsymmetrie	
250 Hz~6300 Hz	: ±0,5 dB
Kanaltrennung 1kHz	: 70 dB

Frequenzgangregler	: +12 dB~-12 dB (7 Regler, stufenlos verstellbar)
Mittelfrequenzen	: 63 Hz, 160 Hz, 400 Hz, 1 kHz, 2,5 kHz, 6,3 kHz, 16 kHz

ALLGEMEINE DATEN

Stromversorgung	: Wechselstrom 50 Hz/60 Hz, 220 V (Für Kontinentaleuropa) Wechselstrom 50 Hz/60 Hz, 110 V/120 V/220 V/240 V (Für andere Länder)
Leistungsaufnahme	: 18 W
Abmessungen (H×B×T)	: 86×430×234 mm (3 ³ / ₈ "×16 ¹ / ₁₆ "×9 ⁷ / ₃₂ "
Gewicht	: 2,8 kg (6,2 lb.)

Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.

CARACTERISTIQUES**(DIN 45 500)**

Réponse de fréquence (position centrale)	: 5 Hz~100 kHz, -1 dB
Tension de sortie maximale	: 8 V (1 kHz, THD 0,01%)
Tension de sortie nominale	: 1 V
Distortion harmonique totale	: 0,005% (20 Hz~20 kHz) 0,003% (1 kHz)
Sensibilité d'entrée	: 1 V
Signal/Bruit	: 100 dB (110 dB, IHF' A)
Tension d'entrée maximale	: 8 V (1 kHz)
Impédance d'entrée	: 33 kΩ
Gain	: 0±1 dB
Equilibrage de canal	
250 Hz~6300 Hz	: ±0,5 dB
Séparation de canal	
1 kHz	: 70 dB

Commandes de niveau de gamme

: +12 dB~-12 dB
(7 éléments, continuellement variables)

Fréquences charnières : 63 Hz, 160 Hz, 400 Hz, 1 kHz,
2,5 kHz, 6,3 kHz, 16 kHz

GENERALITES

Alimentation	: CA 50 Hz/60 Hz, 220 V (Pour l'Europe) CA 50 Hz/60 Hz, 110V/120V/220V/240V (Autres)
Consommation	: 18 W
Dimensions (h×l×pr) mm	: 86×430×234 mm (3-3/8"×16-15/16"×9-7/32")
Poids	: 2,8 kg (6,2 lb)

Sujet à changement sans préavis.

ESPECIFICACIONES**(DIN 45 500)**

Respuesta de frecuencia (posición central)	: 5 Hz~100 kHz, -1 dB
Tensión de salida máxima	: 8 V (1 kHz, THD 0,01%)
Tensión de salida de régimen	: 1 V
Distorsión armónica total nominal	: 0,005% (20 Hz~20 kHz) 0,003% (1 kHz)
Sensibilidad de entrada	: 1 V
Relación de señal ruido	: 100 dB (110 dB, IHF' A)
Tensión de entrada máxima	: 8 V (1 kHz)
Impedancia de entrada	: 33 kΩ
Ganancia	: 0±1 dB
Equilibrio de canales	
250 Hz~6300 Hz	: ±0,5 dB
Separación de canales	
1 kHz	: 70 dB

Controles de nivel de banda

: +12 dB~-12 dB
(7 elementos, continuamente variables)

Frecuencia central : 63 Hz, 160 Hz, 400 Hz, 1 kHz,
2,5 kHz, 6,3 kHz, 16 kHz

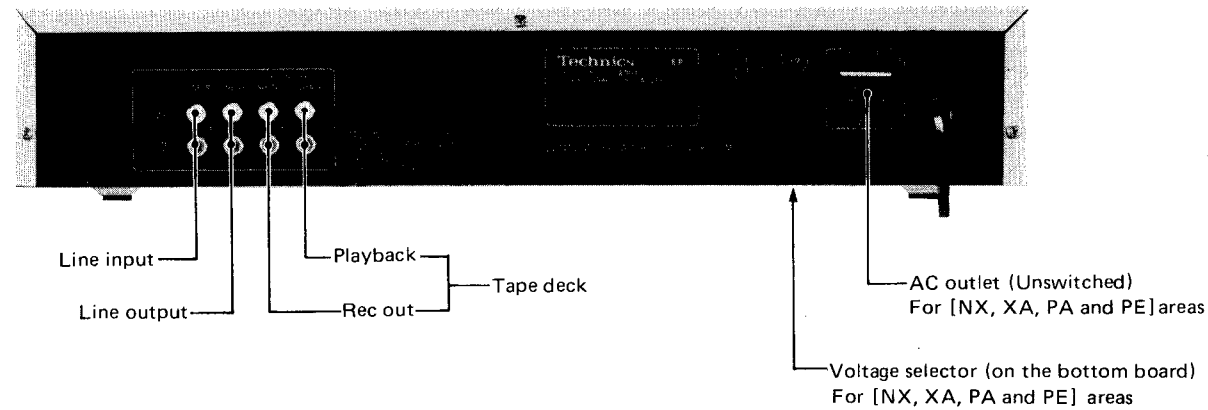
EN GENERAL

Alimentación de corriente	: CA 50 Hz/60 Hz, 220 V (Para Europa continental) CA 50 Hz/60 Hz, 110V/120V/220V/240V (Para otros países)
Consumo de corriente	: 18 W
Dimensiones (alto×ancho×prof.)	: 86×430×234 mm (3-3/8"×16-15/16"×9-7/32")
Peso	: 2,8 kg (6,2 lb)

Estas especificaciones están sujetas a cualquier cambio sin previo aviso.

LOCATION OF CONTROLS

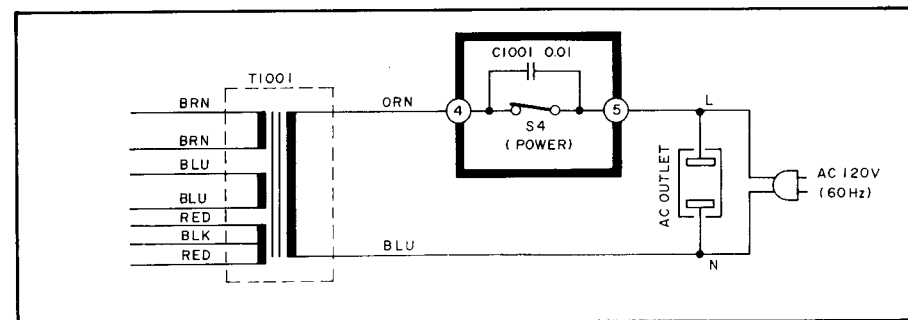
- Rear panel



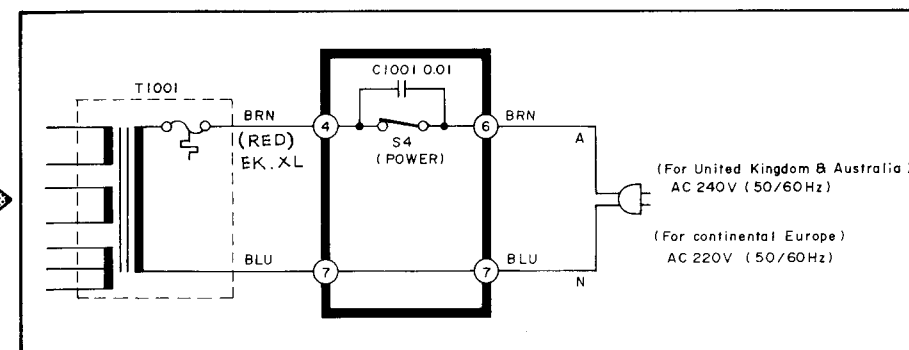
CHANGE IN SCHEMATIC DIAGRAM

- Power source circuit

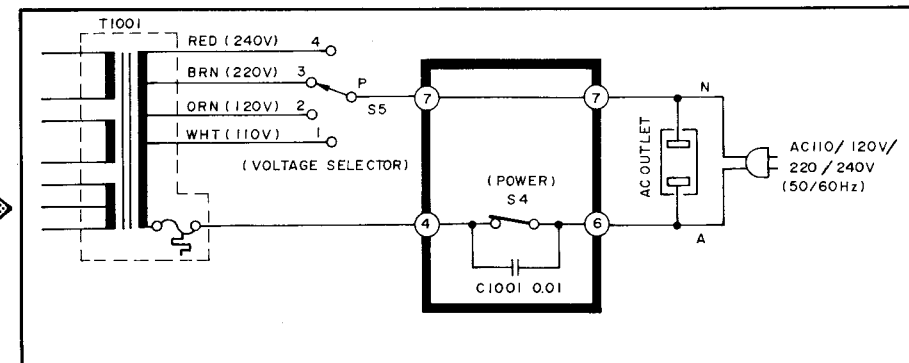
For the U.S.A. [M]



For continental Europe, United Kingdom [EK] and Australia [XL]



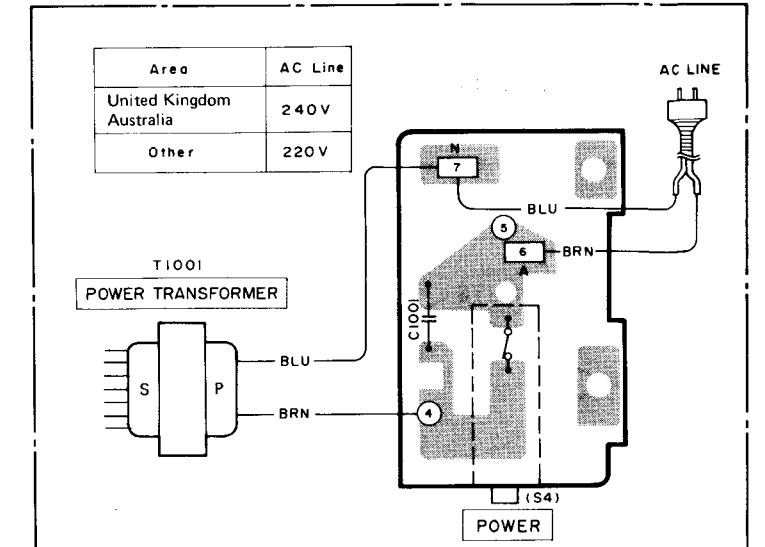
For other areas [XA, PA, PE & NX]



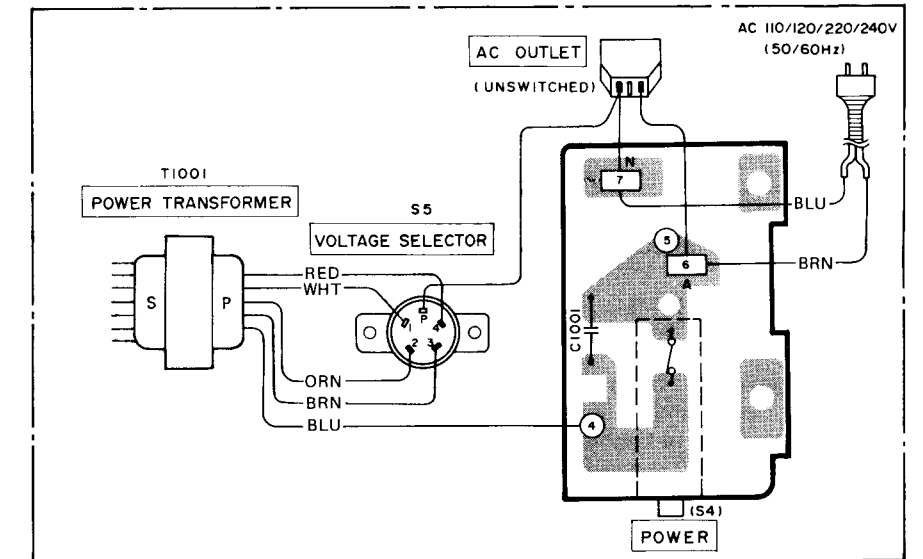
PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

- Power source circuit

For continental Europe, United Kingdom [EK] and Australia [XL]



For other areas [XA, PA, PE & NX]



CHANGE IN REPLACEMENT PARTS LIST

- Note: 1. Mentioned in this parts list are only those changed in Model No. SH-8044 for destination [M] area.
2. ⊗ - marked parts are used for black only, while ○ - marked parts are for silver type only.
3. Part other than ⊗ - and ○ - marked are used for both black and silver type.
4. Bracketed indications in Ref. No. Columns specify the area. Parts without these indications can be used for all areas.

Ref. No.	Change of Part No.		Description	
	SH-8044 [M]	SH-8044 Europe, Other	Color	Area
SWITCH				
S5	Addition	ESE3787		[NX, XA, PA & PE] only Voltage Selector
TRANSFORMER				
T1001	SLTK5J24-W	SLTK5J25-W		[NX, XA, PA & PE]
		SLTK5J27-W		[XL & EK]
		SLTK5J26-W		[Other] area
RESISTORS				
R73 ~ R76	Addition	ERD10TJ102		[EGA] only 1kΩ, 1/8W, Carbon

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 Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
 3. \otimes -marked parts are used for black only, while \circ -marked parts are for silver type only.
 4. Part other than \otimes - and \circ -marked are used for both black and silver type.
 5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
 6. The "S" mark is service standard parts and may differ from production parts.
 7. The parenthesized numbers in the column of description stand for the quantity per set.

Ref. No.	Change of Part No.		Description		
	SH-8044 [M]	Color	SH-8044 Europe, Other	Color	Area
CAPACITORS					
C67 ~ C70	Addition		ECCD1H151K		[EGA] only 150pF, 50V, Ceramic
C71, 72	Addition		ECKD1H331KB		[EGA] only 330pF, 50V, Ceramic
C73, 74	Addition		ECKD1H223ZF		[EGA] only 0.022 μ F, 50V, Ceramic
CABINET and CHASSIS PARTS					
5	SBWK22	\circ	SBWK22		Button, Volume (Use for both black and silver types)
	SBWK23	\otimes			
6	SGXK94		SGXK93		Cloth, Light Shielding
7	SGXK91-2	\circ	SGXK91-1	\circ	Sub Panel
	SGXK91	\otimes	SGXK91	\otimes	
16	RHR111		SHR129		[EK] only Bushing, AC Cord
			SHR127		[Other] area
17	SJS9221-1		SJS9221-1		[NX, XA, PA & PE] only Socket, AC Outlet
			Deletion		[Other]
18	RJA9YA		QFC1205M		[EK] AC Cord, Power Source
			QFC1208M		[XL]
			RJA52YA		[PA, PE]
			SJA138-3		[Other]
20	SGPKH8044M		SGPKH8044X		[NX, XA, PA & PE] Rear Panel, (w/Feet)
			SGPKH8044E		[E]
			SGPKH8044K		[EK]
			SGPKH8044L		[XL]
			SGPKH8044G		[Other]
SCREW					
N13	Addition		XTB3+8BFN		[NX, XA, PA & PE] only Voltage Selector M'tg.
ACCESSORIES					
A2	SQFK10071		SQFK10074		[EGA] Instruction Book
			SQFK10075		[Ei]
			SQFK10076		[PA, PE]
			SQFK10073		[Other]
A3	Addition		SJP9215		[PA, PE] only Plug Adaptor, AC (U \rightarrow B), (U \rightarrow C)
A4	Addition		SJP5213-1		[XA, NX] only Plug Adaptor, AC (C \rightarrow U)
PACKING PARTS					
P1	SPGK137		SPGK138	\circ	[EK] only Carton Box, Silver Type
			SPGK137	\circ	[Other] area
P1	SPGK140		SPGK142	\otimes	[EK] Carton Box, Black Type
			SPGK139	\otimes	[EF]
			SPGK140	\otimes	[Other] area

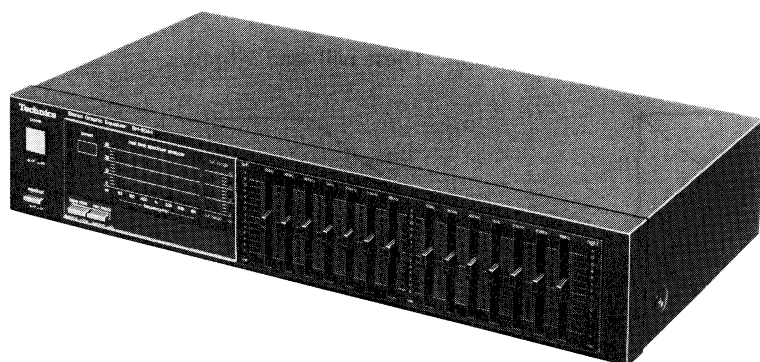
Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS			DIODES			COMPONENT COMBINATIONS		
IC1, 2, 502~506	SVITA75559S	Control Amp., Buffer & Spectrum Analyzer B.P.F.	D5	MA167	Rectifier	Z4	RGSD8X472X	4.7k Ω (\times 8)
IC501	AN78N12	12V Regulator	D6~9, 501~508	SVD1SS119-04	Switching & Detector	Z5	RGHD12X562K	1/4W, 5.6k Ω (\times 12)
IC507	M54832AP	Channel Selector	D101~114	LN251RCP	LED, Volume	SWITCHES		
IC508	SVIHA12010	FL Driver	D509, 510	SVD1SR35200	Rectifier	S1, 2	SSHK47	Rec mode, Tape Monitor
TRANSISTORS			D511	20A90	Bias	S3	SSHK46	Equalization
Q1	2SD1406-Y	Regulator	D512	MA4120H	12V Zener	S4	SSH1071	Power source
Q2	2SB1015-Y	Regulator	D514	LN81CPH	LED, Power	S5(NX, XA, PA, PE)	ESE3787	Voltage Selector
Q3	2SC1815-G	Muting	VARIABLE RESISTORS			TRANSFORMER		
Q4, 509, 511~518	2SA1015Y	Muting, Buffer & Inverter	VR1~14	EVAJN3J15G25	Band Level Control, 200k Ω (G)	T1001(NX, XA, PA, PE)		
Q5, 6, 510	2SC2878A-T	Muting	FLUORESCENT DISPLAY TUBE			T1001(XL, EK)	SLTK5J27-W	Power Transformer
Q501~508	2SA1246T-A	Muting	FL	SADB2392K	Display	T1001(other)	SLTK5J26-W	Power Transformer
Q519~530	UN4115	Sampling Gate Buffer	COMPONENT COMBINATIONS			SCREWS and WASHERS		
DIODES			Z1	RGSD7X104K	100k Ω (\times 7)	N3	\circ XTB3+8BFN	Tapping, \otimes 3 \times 8 (3)
D1, 2	MA4150H	15V Zener	Z2	RGSD8X104K	100k Ω (\times 8)	N3	\otimes XTB3+8BFZ	Tapping, \otimes 3 \times 8 (3)
D3	SVD1B4B42	Rectifier	Z3	PJB7XC331M	330pF(\times 7)	N4	\circ XTB3+8BFN	Tapping, \otimes 3 \times 8 (2)
CABINET and CHASSIS PARTS			CABINET and CHASSIS PARTS			ACCESSORIES		
1	\circ SGU419-3	Transparent Plate (1)	18(PA, PE)	Δ RJA52YA	AC Cord, Power Source (1)	A1	SJPK2201	Cord, Pin-Pin (2)
1	\otimes SGU419-1	Transparent Plate (1)	18(other)	Δ SJA138-3	AC Cord, Power Source (1)	A2(EGA)	SQFK10074	Instruction Book (1)
2	SGXK92	Grille (1)	19	SJF3055-1N	Terminal Board, In/Out (1)	A2(Ei)	SQFK10075	Instruction Book (1)
3	SDUK11	Filter (1)	20(NX, XA, PA, PE)	SGPKH8044X	Rear Panel, (W/Feet) (1)	A2(PA, PE)	SQFK10076	Instruction Book (1)
4	SDUK12	Sheet, Front Panel (1)	20(E)	SGPKH8044E	Rear Panel, (W/Feet) (1)	A2(other)	SQFK10073	Instruction Book (1)
5	SBWK22	Button (1)	20(EK)	SGPKH8044K	Rear Panel, (W/Feet) (1)	A3(PA, PE)	SJP9215	Plug Adaptor (1)
6	SGXK93	Cloth, Shielding (1)	20(XL)	SGPKH8044L	Rear Panel, (W/Feet) (1)	A4(XA, NX)	SJP5213-1	Plug Adaptor (1)
7	\circ SGXK91-1	Sub Panel (1)	20(other)	SGPKH8044G	Rear Panel, (W/Feet) (1)	PACKING PARTS		
7	\otimes SGXK91	Sub Panel (1)	[20-1]	(SHS2481)	Foot (4)	P1(EK)	\circ SPGK138	Carton Box (1)
8	\circ SGWK280SA	Front Panel (1)	21	SJT783	Terminal (1)	P1(other)	\circ SPGK137	Carton Box (1)
8	\otimes SGWK280BA	Front Panel (1)	22	SJS5811	Socket (2)	P1(EK)	\otimes SPGK142	Carton Box (1)
9	SHR9728	Holder, FL (2)	23	SJT3809	Connector (2)	P1(EF)	\otimes SPGK139	Carton Box (1)
10	SBC666	Button, Power SW (1)	24	SJT5807	Connector (1)	P1(other)	\otimes SPGK140	Carton Box (1)
11	SUB81	Rod, Connection Power SW (1)	25	SJT3319	Connector, J7 (1)	P2	SPSK69	Pad, Front (1)
12	SBC315-4T	Button (3)	25	SJT3415	Connector, J8 (1)	P3	SPSK70	Pad, Rear (1)
13	SBZK33	Guide, Light (1)	25	SJT3511	Connector, J3 (1)	P4	SPSK74	Pad, Upper (1)
14	\circ SKCK130S	Cabinet (1)	25	SJT3611	Connector, J11, 12 (1)	P5	\circ SPP719	Polyethylene Sheet (1)
14	\otimes SKCK130BB	Cabinet (1)	25	SJT3709	Connector, J1, 2, 10 (3)	P5	\otimes SPP659	Polyethylene Sheet (1)
15	SMNK17	Cover, Power SW (1)	25	SJT3809	Connector, J9 (1)	SCREWS and WASHERS		
16(EK)	SHR129	Bushing, AC Cord (1)	26	SJS5339	Socket, J7 (1)	N1	\circ XTB3+8BFZ	Tapping, \otimes 3 \times 8 (3)
16(other)	SHR127	Bushing, AC Cord (1)	26	SJS5433	Socket, J8 (1)	N2	\circ SNE2095-4	Cabinet (2)
17(NX, XA, PA, PE)	SJS9221-1	Socket, AC Outlet (1)	26	SJS5531	Socket, J3 (1)	N2	\otimes SNE2095-5	Cabinet (2)
18(EK)	Δ QFC1205M	AC Cord, Power Source (1)	26	SJS5635	Socket, J11, 12 (2)			
18(XL)	Δ QFC1208M	AC Cord, Power Source (1)	26	SJS5719	Socket, J1, 2, 10 (3)			

Service Manual

Equalizer

SH-8044

Stereo Graphic Equalizer
(With Spectrum Analyzer)



Color

(S) Silver Type
(K) Black Type

Color	Area
(S),(K)	[M] U.S.A.
(K)	[MC] Canada

- System (U.S.A.)
SC-7170E

SPECIFICATIONS

(IHF '78)

Center Frequency:	63Hz, 160Hz, 400Hz, 1kHz, 2.5kHz, 6.3kHz and 16kHz
Frequency Response: (center position)	5Hz ~ 100kHz (-1dB)
Band Level Controls:	+12dB ~ -12dB (7 continuously variable elements per channel)
Rated Total Harmonic Distortion:	0.005% (20Hz ~ 20kHz) 0.003% (1kHz)
Input Impedance:	33k ohms
Rated Output Voltage:	1V
Maximum Output Voltage:	8V (1kHz, THD 0.01%)
Input Sensitivity:	1V
Signal to Noise Ratio:	110dB (IHF'A)
Maximum Input Voltage:	8V (1kHz)
Gain:	0 ± 1dB

■ General

Power Supply:	120V AC, 60Hz
Power Consumption:	20 W
Weight:	6.2 lb (2.8 kg)
Dimensions:	Width; 16-15/16" (430mm) Height; 3-3/8" (86mm) Depth; 9-7/32" (234mm)

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

www.manualscenter.com

Technics

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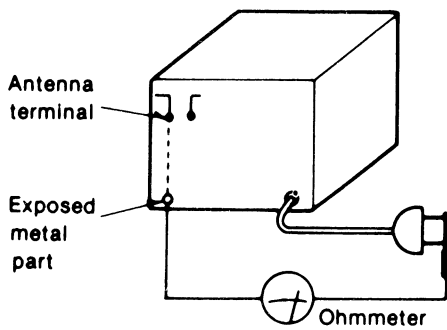
SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

INSULATION RESISTANCE TEST

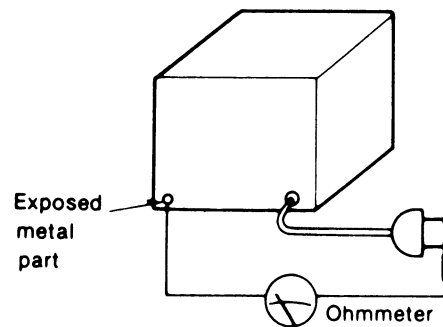
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between $3M\Omega$ and $5.2M\Omega$ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = $3M\Omega - 5.2M\Omega$



(Fig. B)

Resistance = Approx ∞

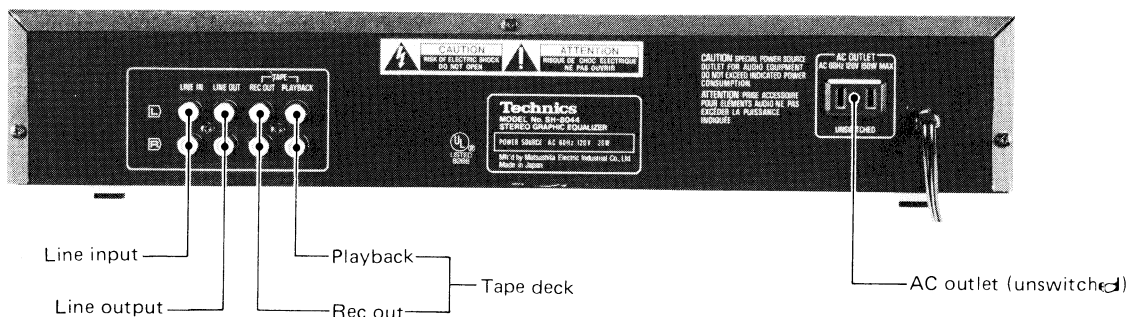
4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

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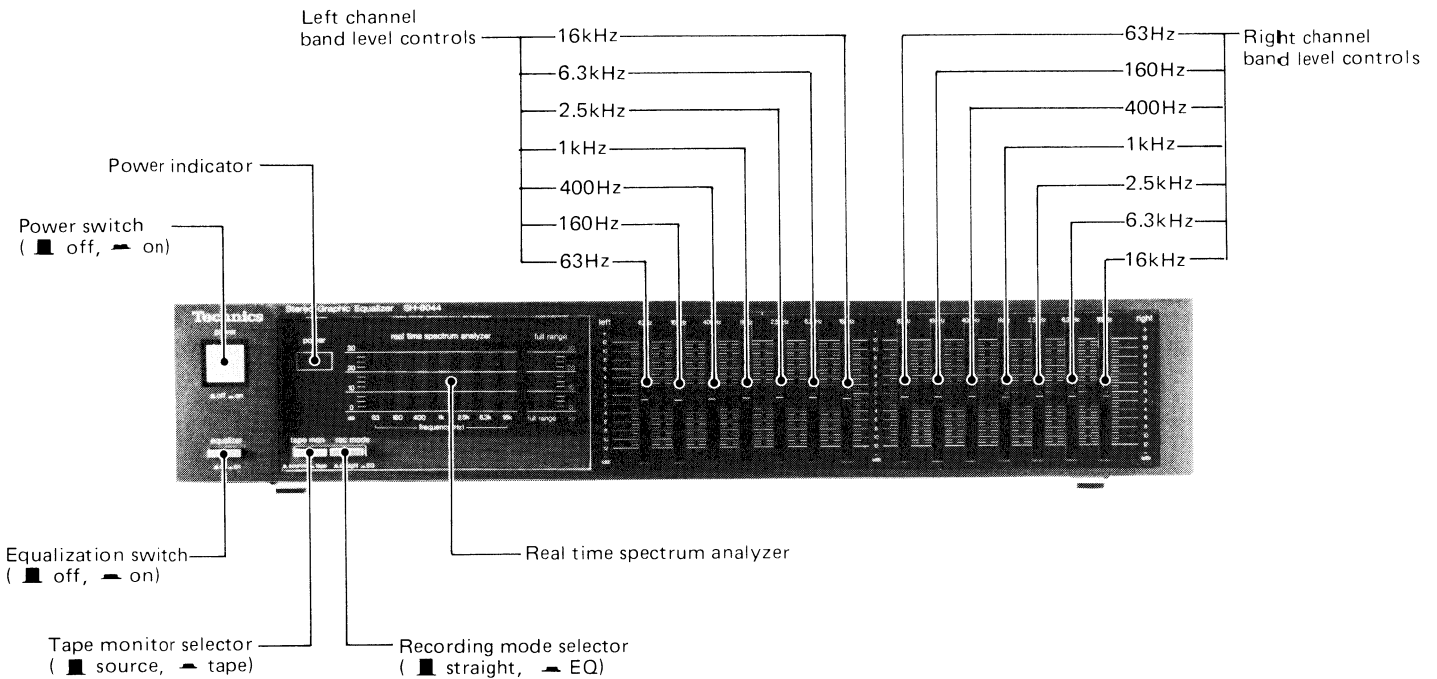
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LOCATION OF CONTROLS

- Rear panel



• Front panel



• Power switch

This switch is used to turn the power on and off.

• Power indicator

This indicator will illuminate when the power switch is turned on.

• Real time spectrum analyzer

- The same 7-band frequency divider as for the band level controls allows the levels of the frequency components of voices, music, etc., to be visually displayed.
- The "full range" area on the right side displays the combined level of all of the frequency bands.

(The indication is the combined value of the left and right input signals.)

• Band-level controls

These controls are used to adjust the 7 frequency levels. When these levers are moved in the "+ dB" direction, peak frequency characteristics are obtained. When they are moved in the "- dB" direction, dip frequency characteristics are obtained. These characteristics can be adjusted a maximum of ± 12 dB.

• Equalization switch

This switch is used to turn the equalization circuitry on and off.

on (\Rightarrow): Set to this position for equalizer correction.

off (\Rightarrow): Set to this position to turn off equalizer correction. By turning this switch on and off, the equalizer effect can also be checked. When this switch is in the "off" position, signals will still pass through the unit and be emitted, regardless of whether the power switch is in the "on" or "off" position.

By turning this switch on and off, the equalizer effect can also be checked. When this switch is in the "off" position, signals will still pass through the unit and be emitted, regardless of whether the power switch is in the "on" or "off" position.

• Tape-monitor selector

source (\Rightarrow): Set to this position to listen to the radio or a disc.

tape (\Rightarrow): Set to this position to listen to a tape deck.

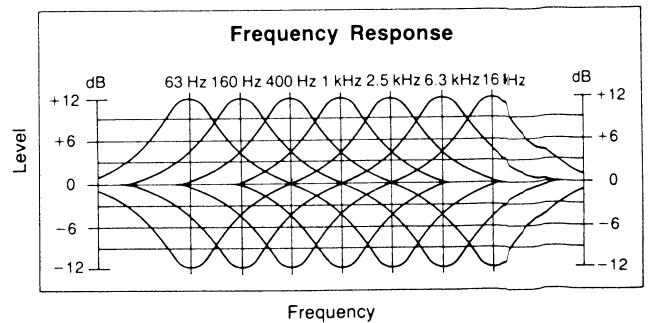
• Recording mode selector

straight (\Rightarrow): Set to this position to record without equalizer correction.

EQ (\Rightarrow): Set to this position to make a tape recording of a radio broadcast or a disc while controlling the frequency response.

Note: The equalization switch must be set to the "on" position and then the tape-monitor selector must be set to the "source" position, otherwise the frequency response cannot be controlled.

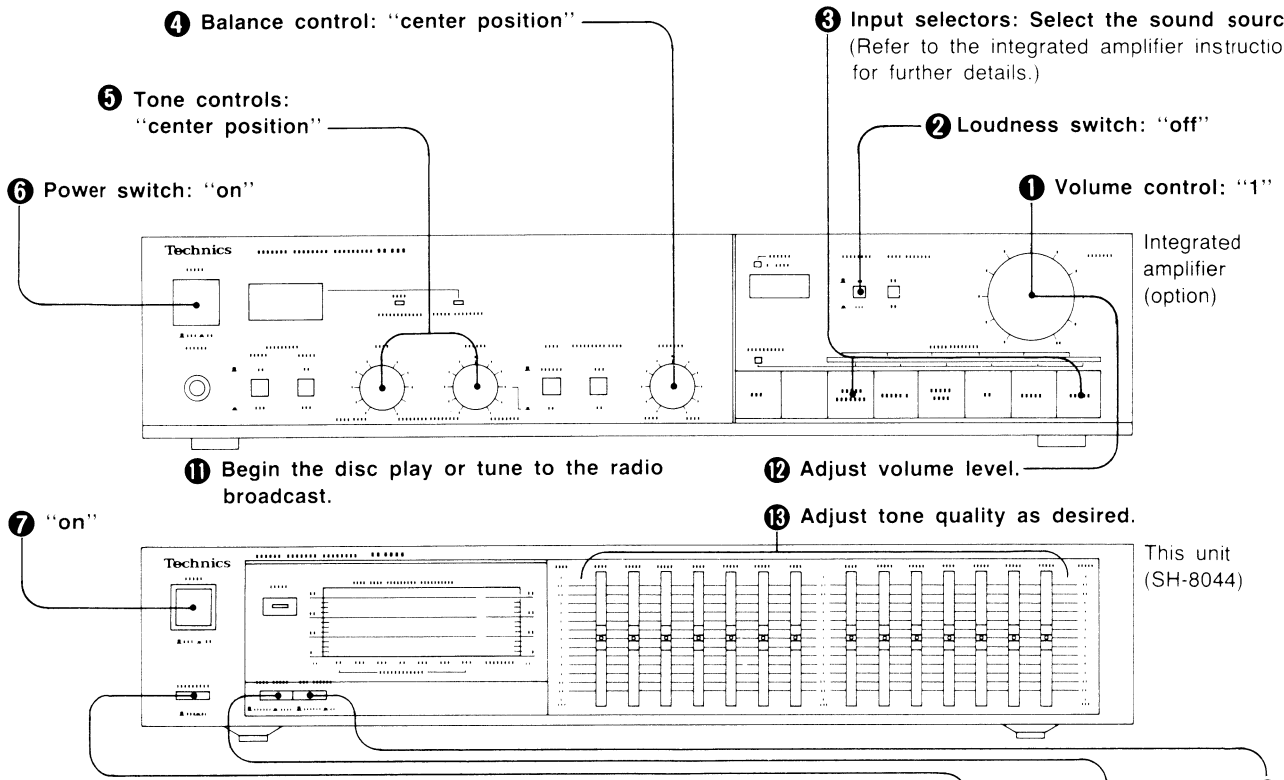
• Total frequency response









SH-8044

OPERATION

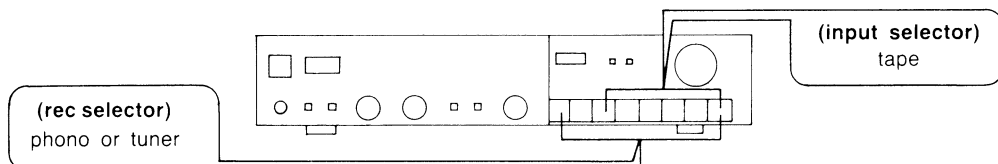
- Connection of the input/output terminals (LINE OUT/LINE IN) of this unit to the external input/output terminals (EXT OUT/EXT IN) terminals of an integrated amplifier.



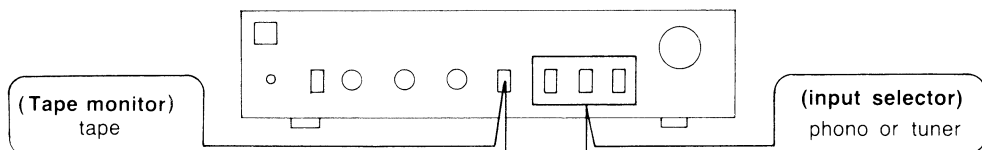
	8 equalizer	9 tape mon	10 rec mode
To listen to corrected sound of phono discs or radio.	"on" ()	"source" ()	Set to any position
To record corrected sound of phono discs or from radio.			"EQ" ()
To record the uncorrected sound of phono discs or from the radio.		"straight" ()	
To listen to corrected sound from a tape deck.		"tape" ()	Set to any position
Press the equalization switch (equalizer) in to the "off" () position to listen to uncorrected sound, or when recording.			

- Connection of the input/output (LINE OUT/LINE IN) terminals of this unit to the tape input/output terminals (PLAYBACK/REC OUT) of an amplifier (amplifier operation changes from that shown in the figure above to that described below).

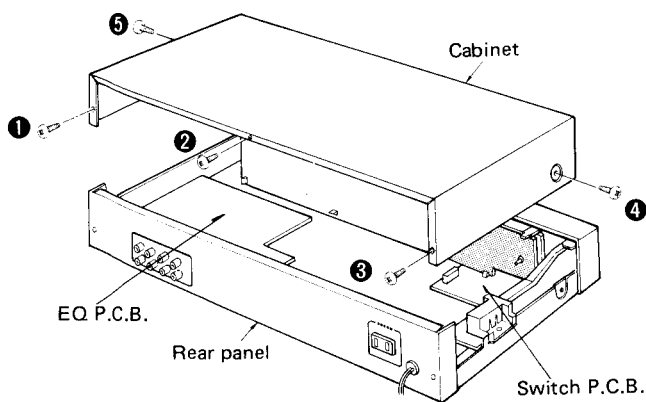
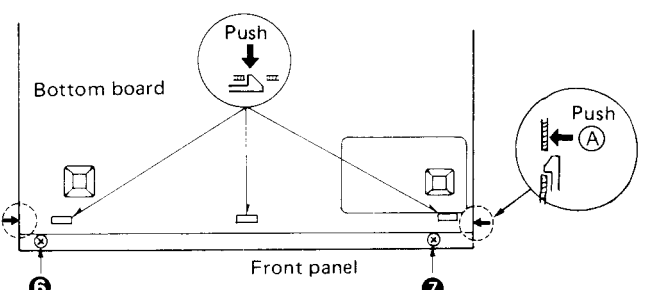
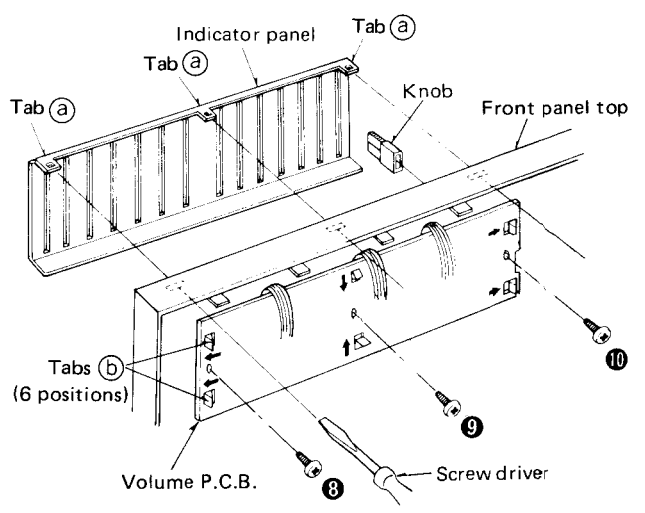
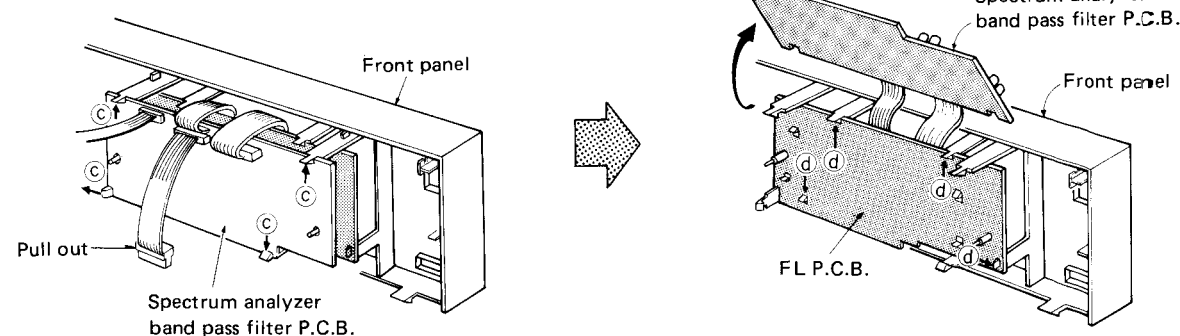
- If the amplifier has a recording mode selector and an input selector. (Make setting as shown in the figure.)



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



DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet.	Ref. No. 2	How to remove the front panel.
Procedure 1	<ul style="list-style-type: none"> Remove the 5 screws. (① ~ ⑤) 	Procedure 1 → 2	<ul style="list-style-type: none"> Pull out the 4 connectors (J1 ~ J3 and J8) from EQ P.C.B. Pull out the 2 connectors (J7 and J12) from switch P.C.B. Remove the 2 screws. (⑥ ~ ⑦) Push the 2 tabs on the right and left sides of the front panel in the direction of arrow (A). The tabs which project (at positions) from the front panel are engaged with the bottom board. Remove the front panel from chassis. 
Ref. No. 3	How to remove the band level control volume P.C.B.		
Procedure 1 → 2 → 3	<ul style="list-style-type: none"> Move the 3 tabs in. (a). Remove the indicator panel. Remove the 14 knobs. Remove the 3 screws. (⑧ ~ ⑩) Move the 6 tabs to the side (b). Remove the P.C.B. 		
Ref. No. 4	How to remove the FL (display tube) P.C.B.	<ul style="list-style-type: none"> Move the 4 tabs aside (d). Remove the FL P.C.B. 	
Procedure 1 → 2 → 4	<ul style="list-style-type: none"> Move the 4 tabs aside (c). Remove the band pass filter P.C.B. 		

TECHNICAL INFORMATION

• Band level control circuit

(for varying the center frequency by $\pm 12\text{dB}$)

The equalizer circuit of this unit is shown in Fig. 1. When the control volume (VR) is turned in the direction of $\rightarrow (+)$, NF level lowers with the connection shown in Fig. 2, causing the gain of operation amplifier to increase, then the "peak" appears. Contrarily, when VR is turned in the direction of $\leftarrow (-)$, the input impedance of operation amplifier becomes lowered with the connection shown in Fig. 3. Then the frequency level is "dip".

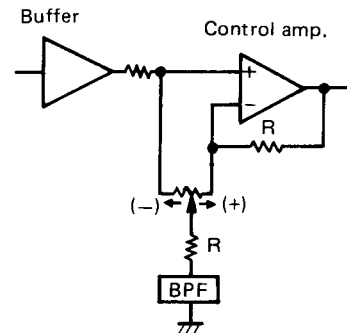


Fig. 1

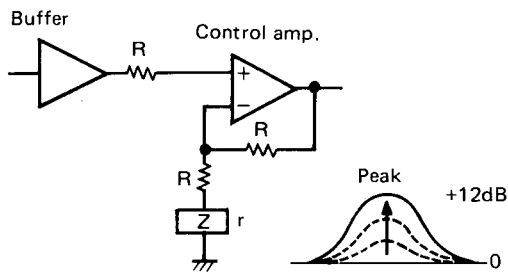


Fig. 2

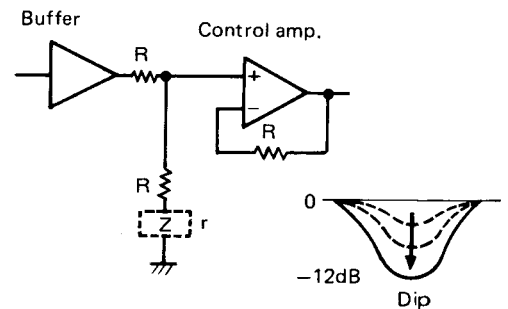
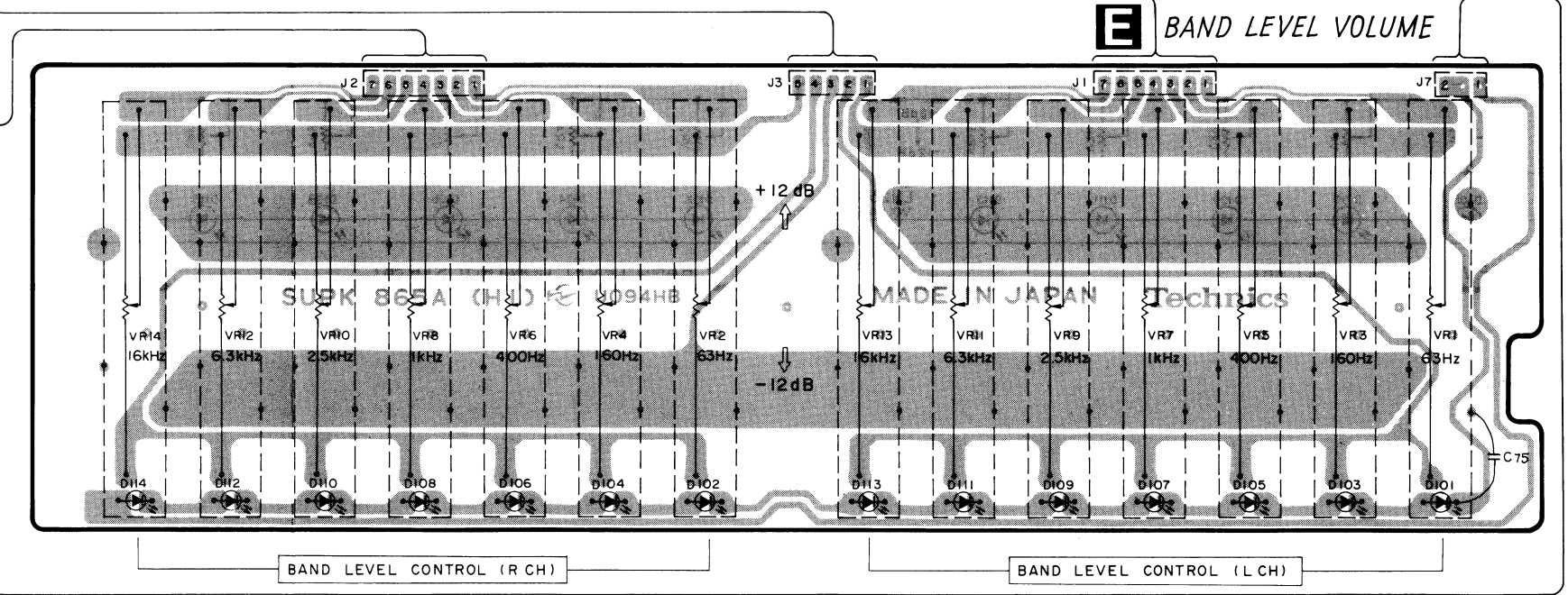
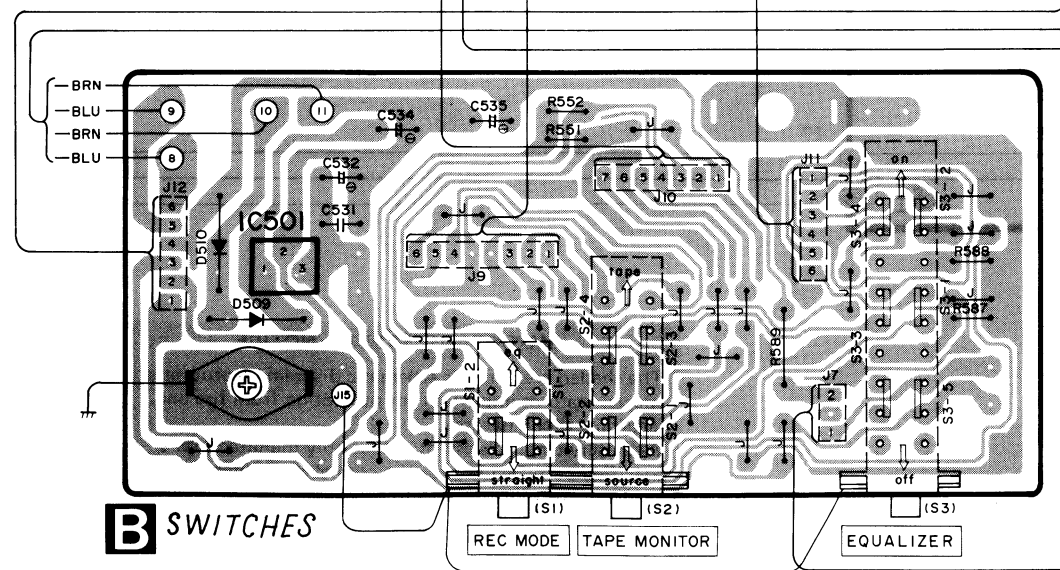
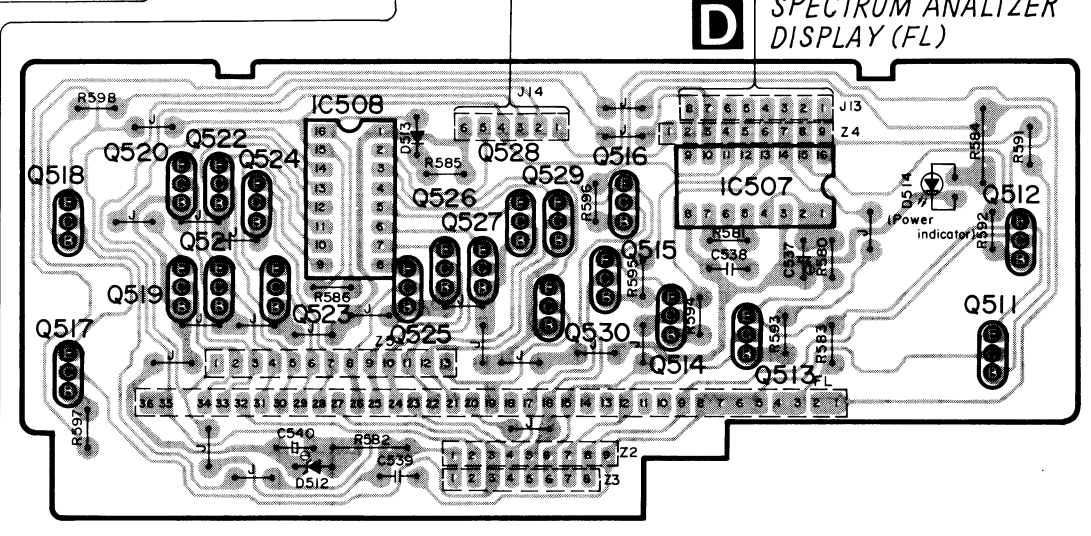
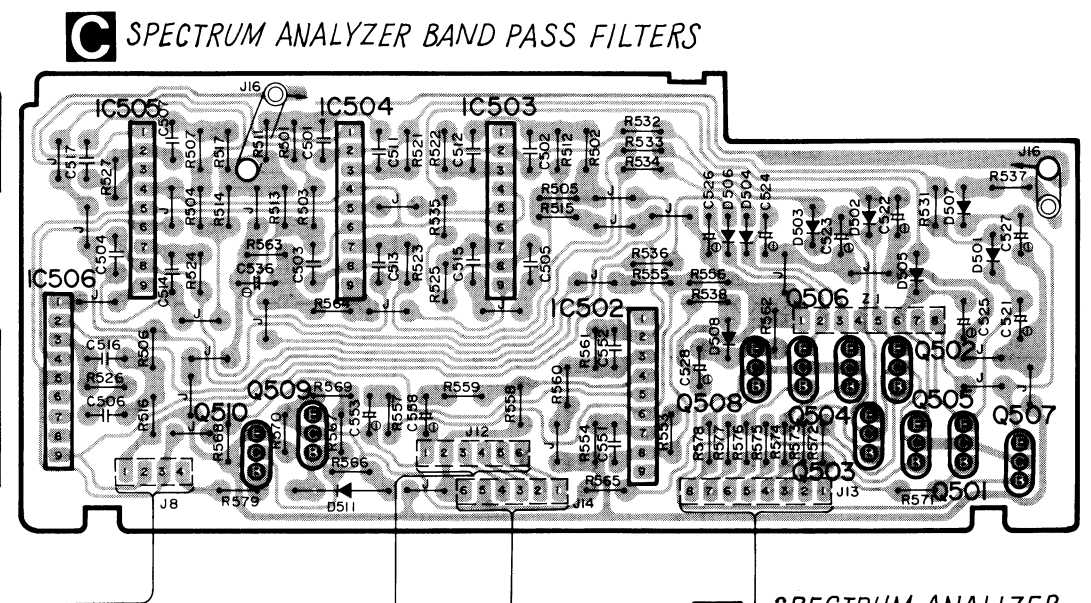
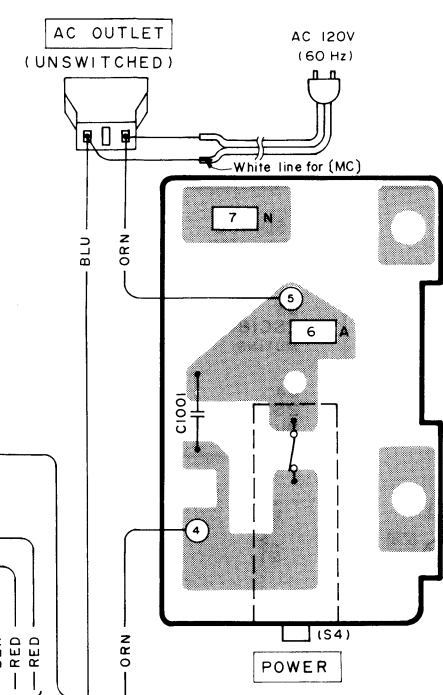
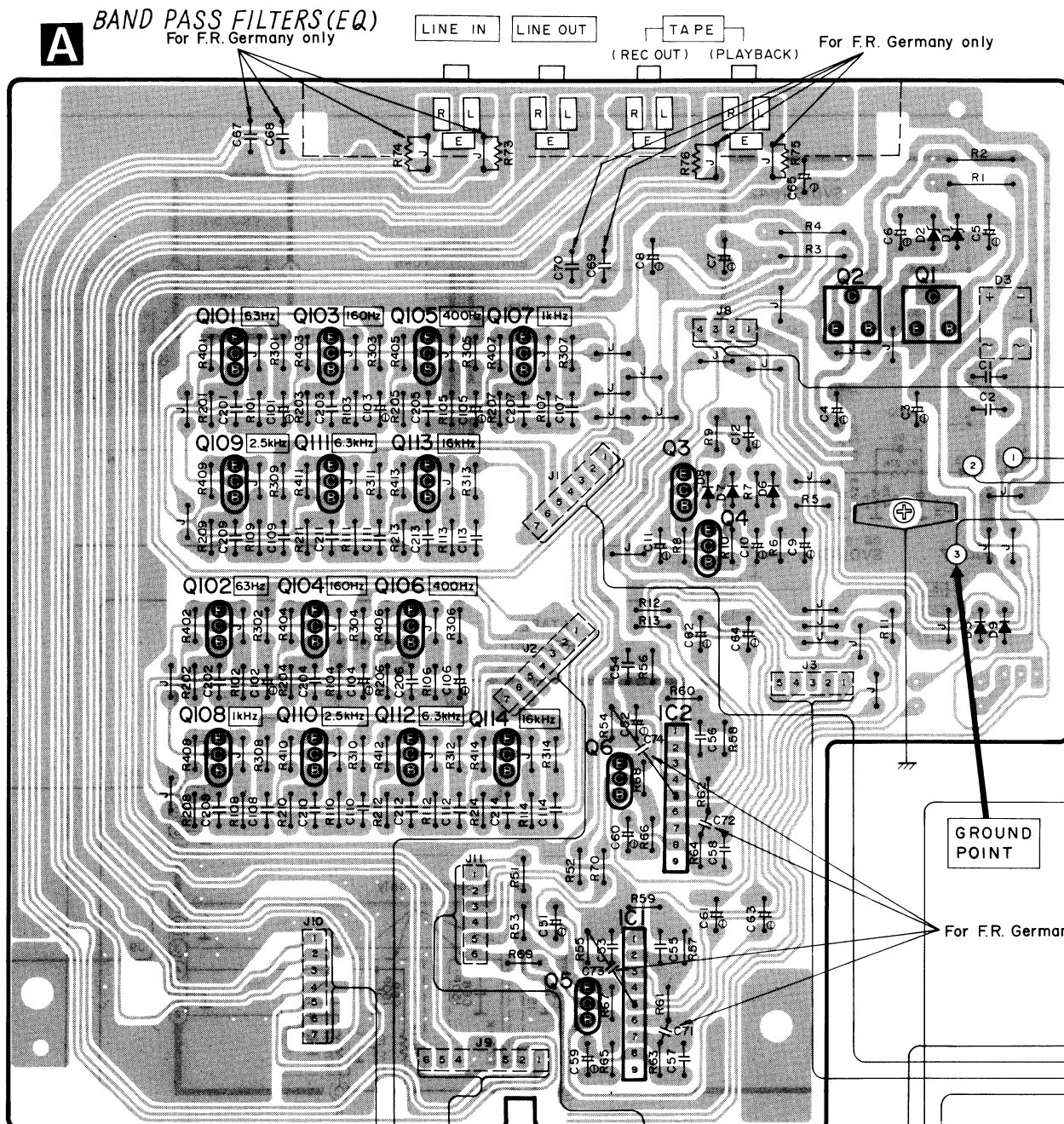


Fig. 3

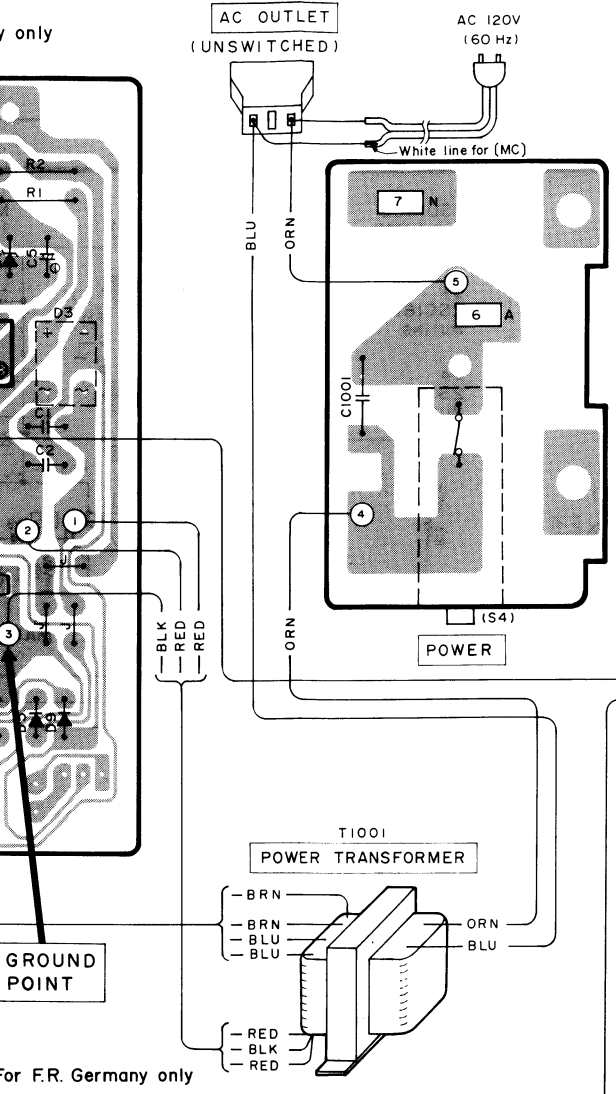
TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

<p>SVITA75559S</p>	<p>AN78N12</p>	<p>M54832AP SVIHA12010</p>	<p>2SA1015, 2SC2878, 2SC1815, 2SA1246</p>
<p>UN4115</p>	<p>2SD1406, 2SB1015</p>	<p>MA4150, MA4120</p>	<p>SVD1B4B42</p>
<p>MA167, SVD1SS119-04 SVD1SR35200</p>	<p>LN251RCP</p>	<p>LN81CPH</p>	

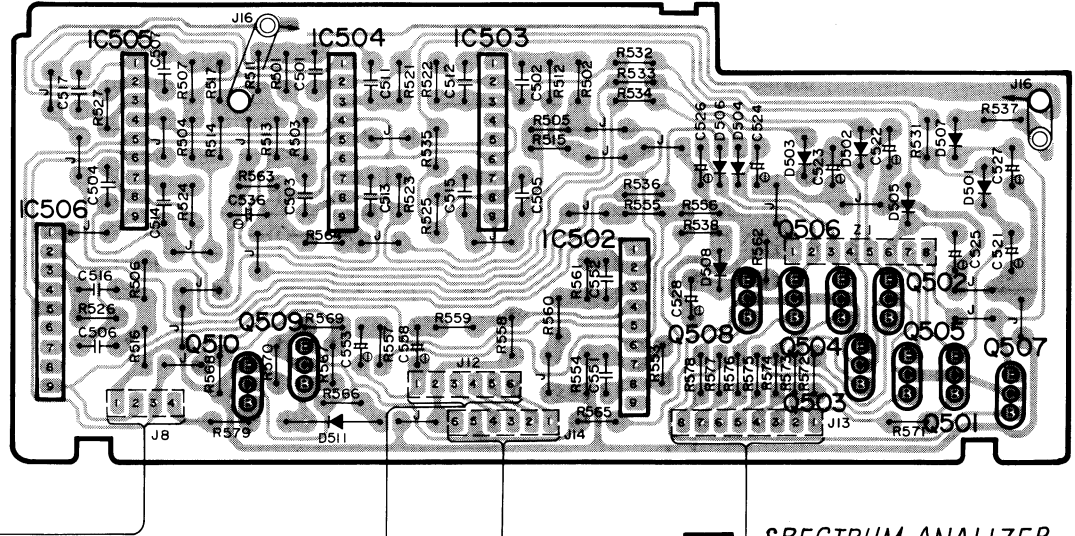
CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



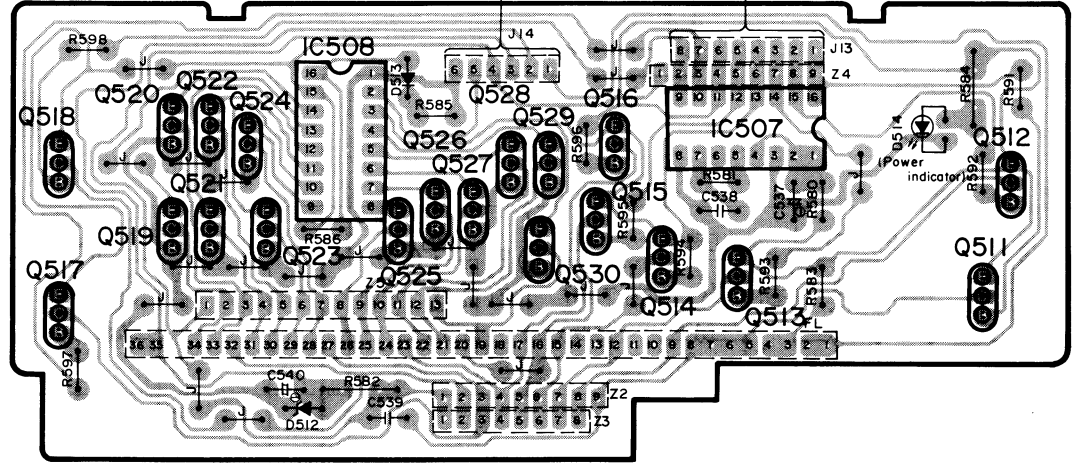
IC502 Full range band level amplifier
 SVITAT7559S LEVEL AMP.
 IC502 (2/2)
 Signal Det. D508



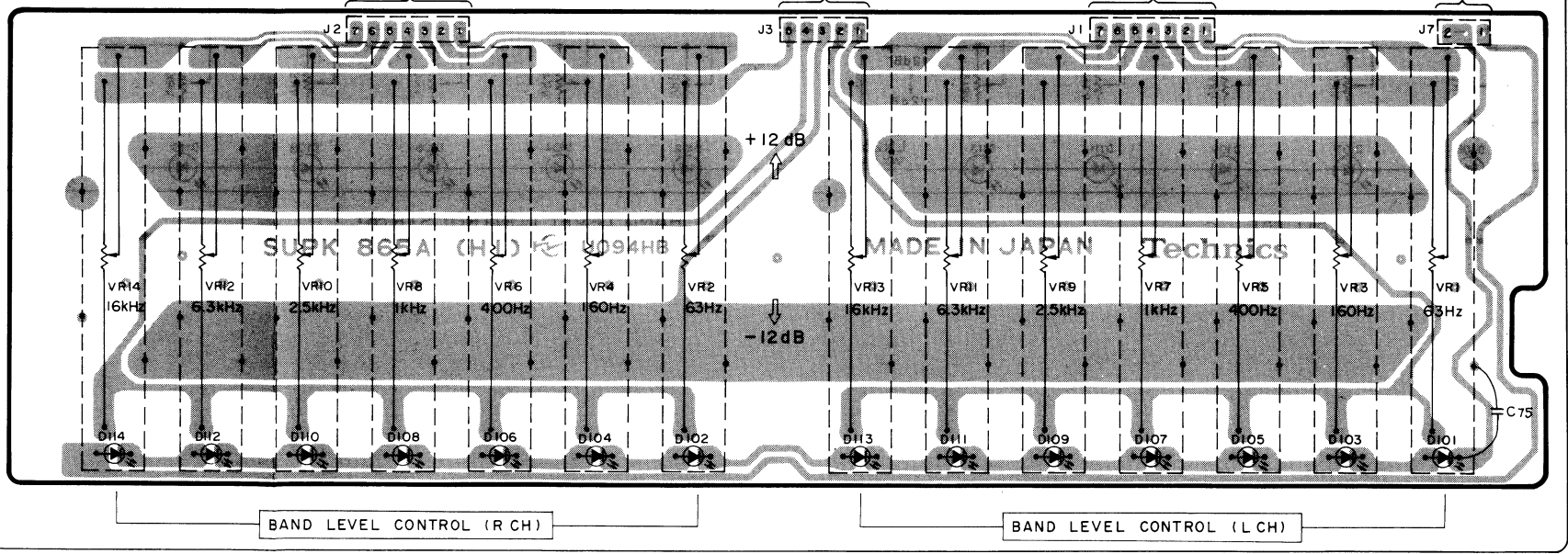
C SPECTRUM ANALYZER BAND PASS FILTERS



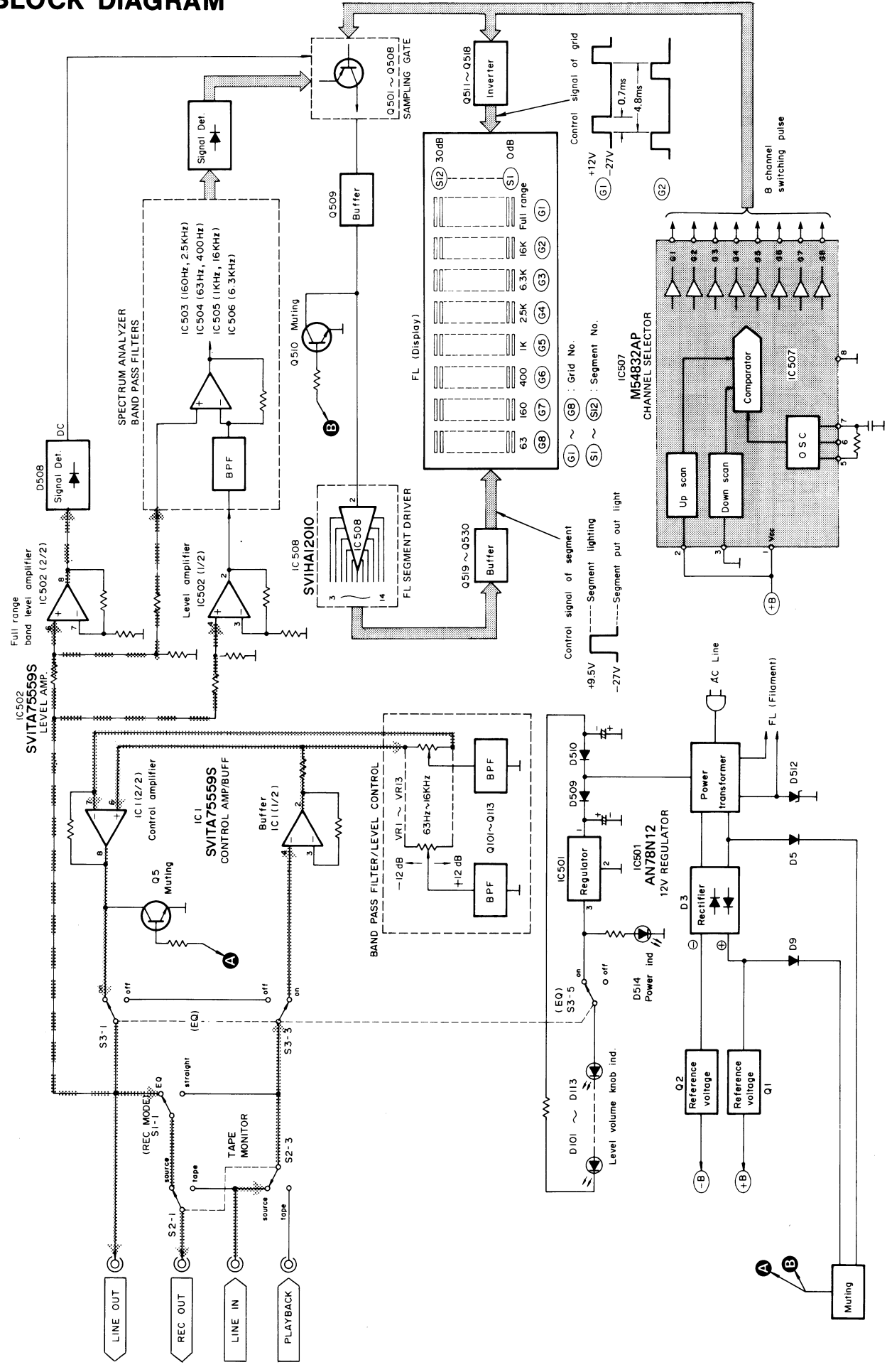
D SPECTRUM ANALYZER DISPLAY (FL)



E BAND LEVEL VOLUME



BLOCK DIAGRAM

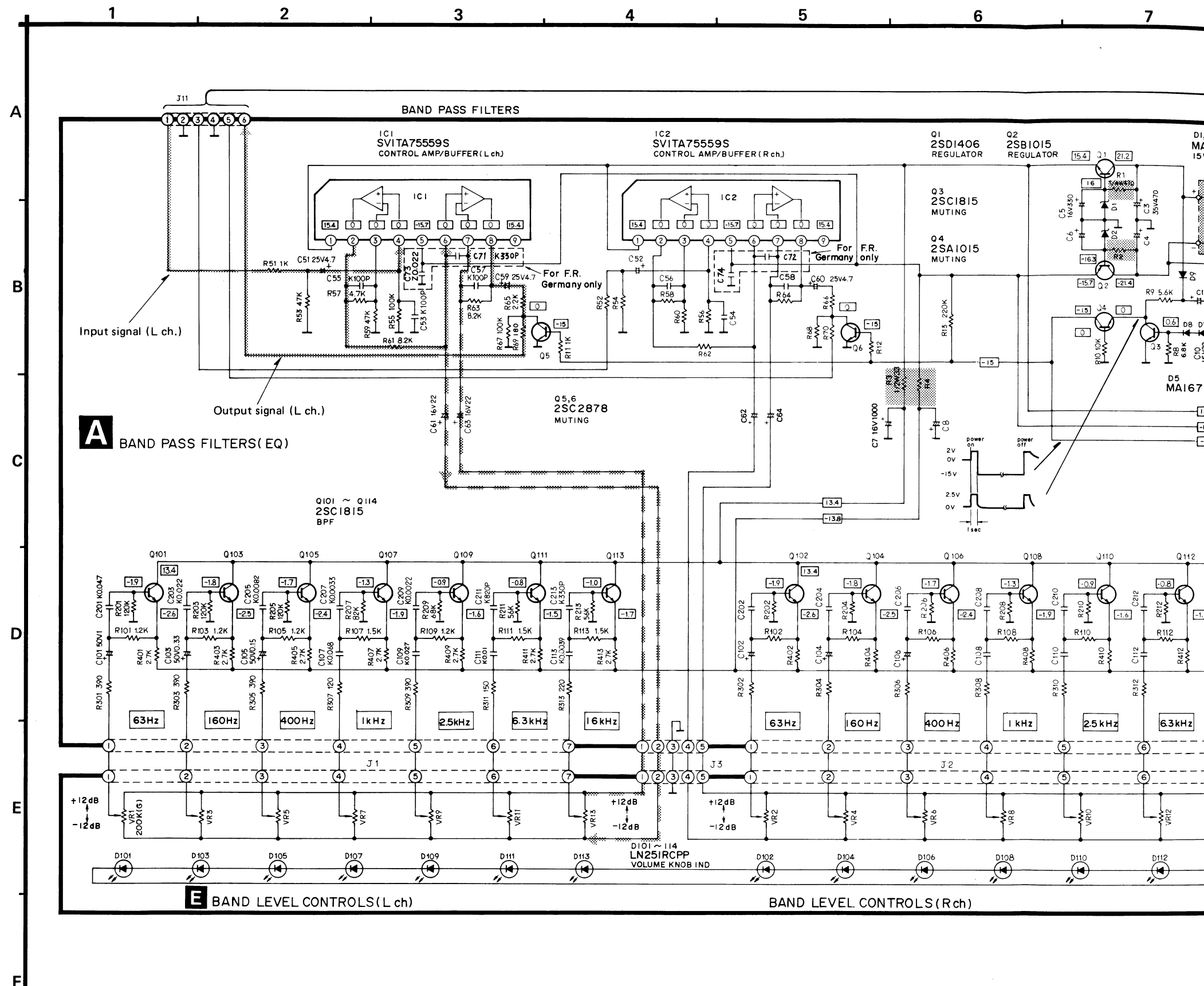
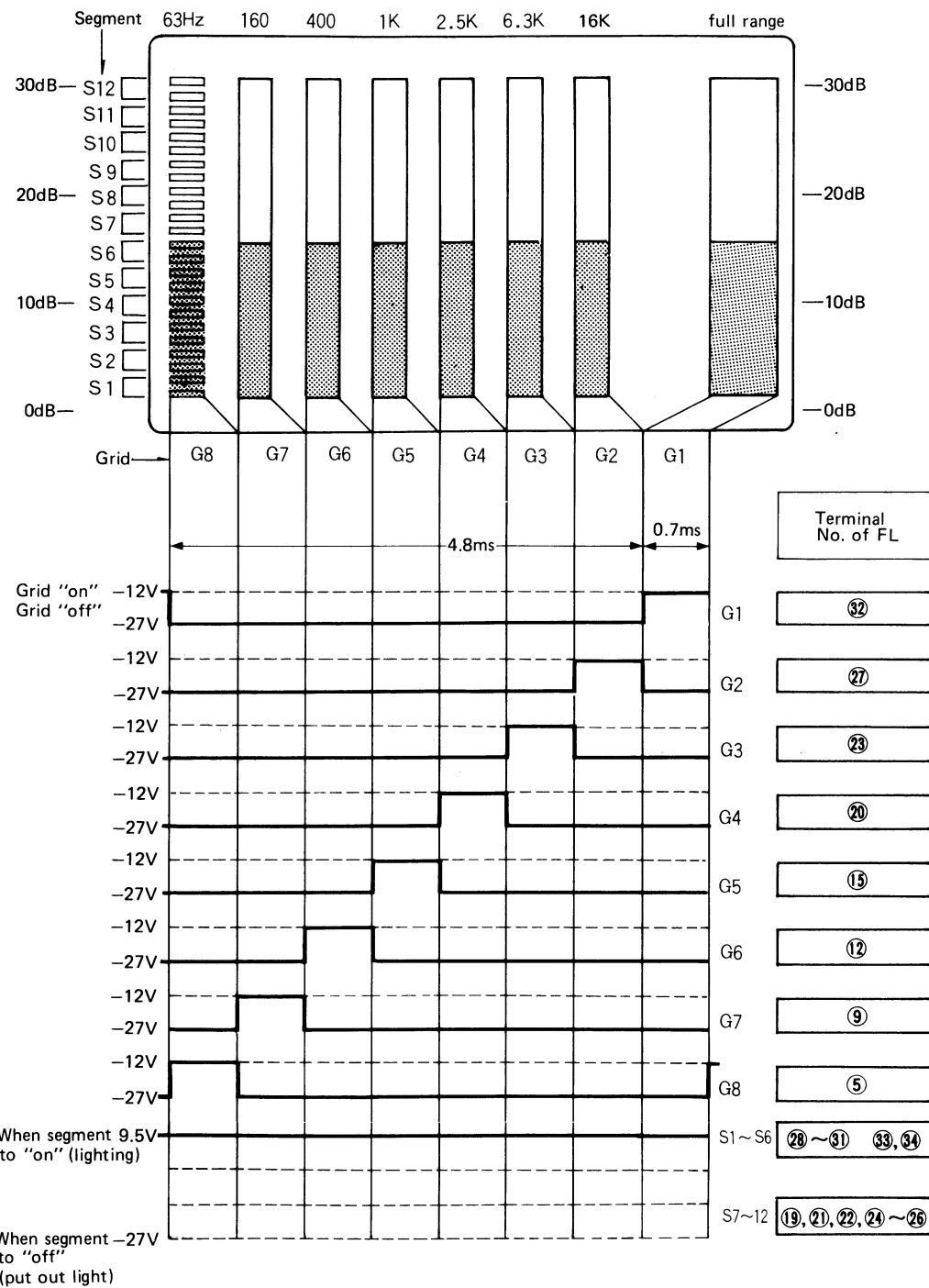


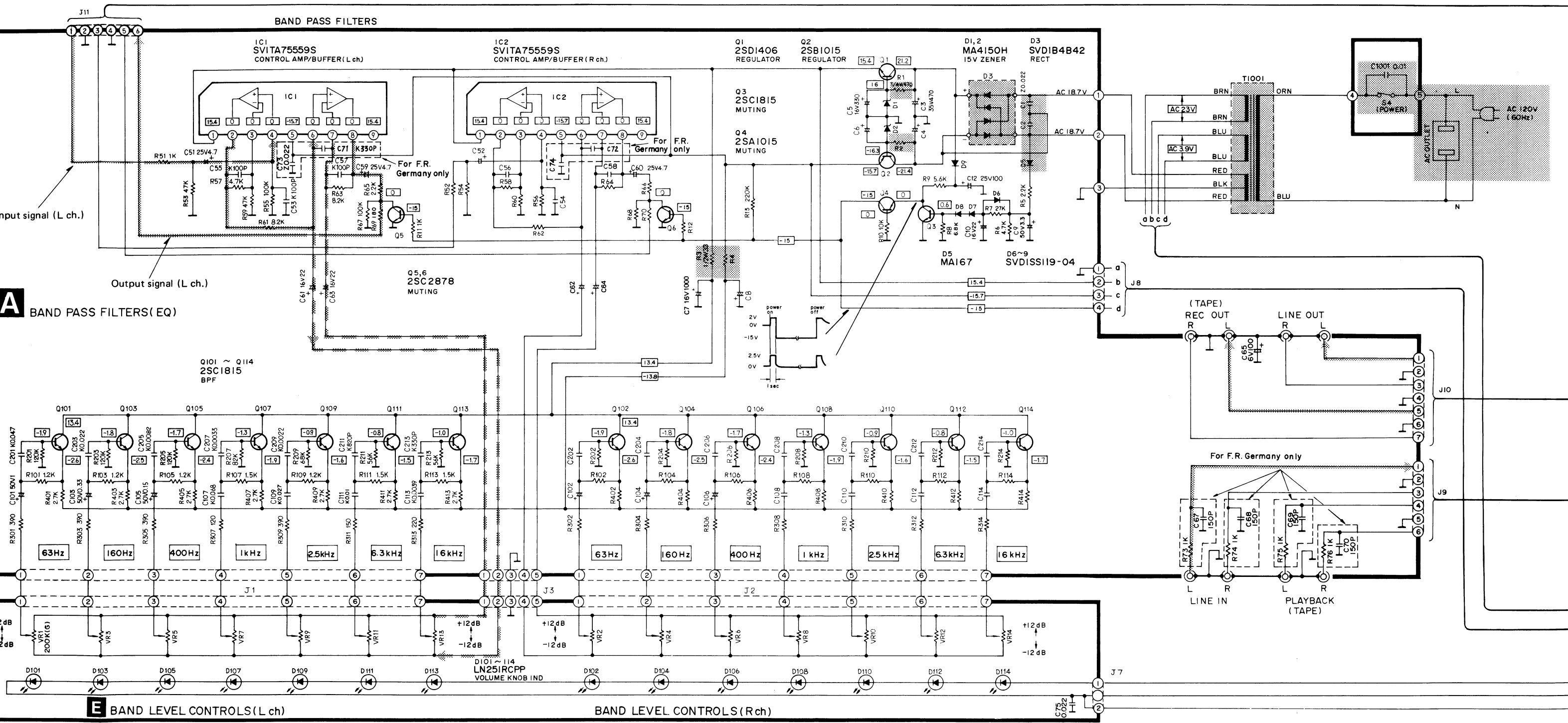
SCHEMATIC DIAGRAM

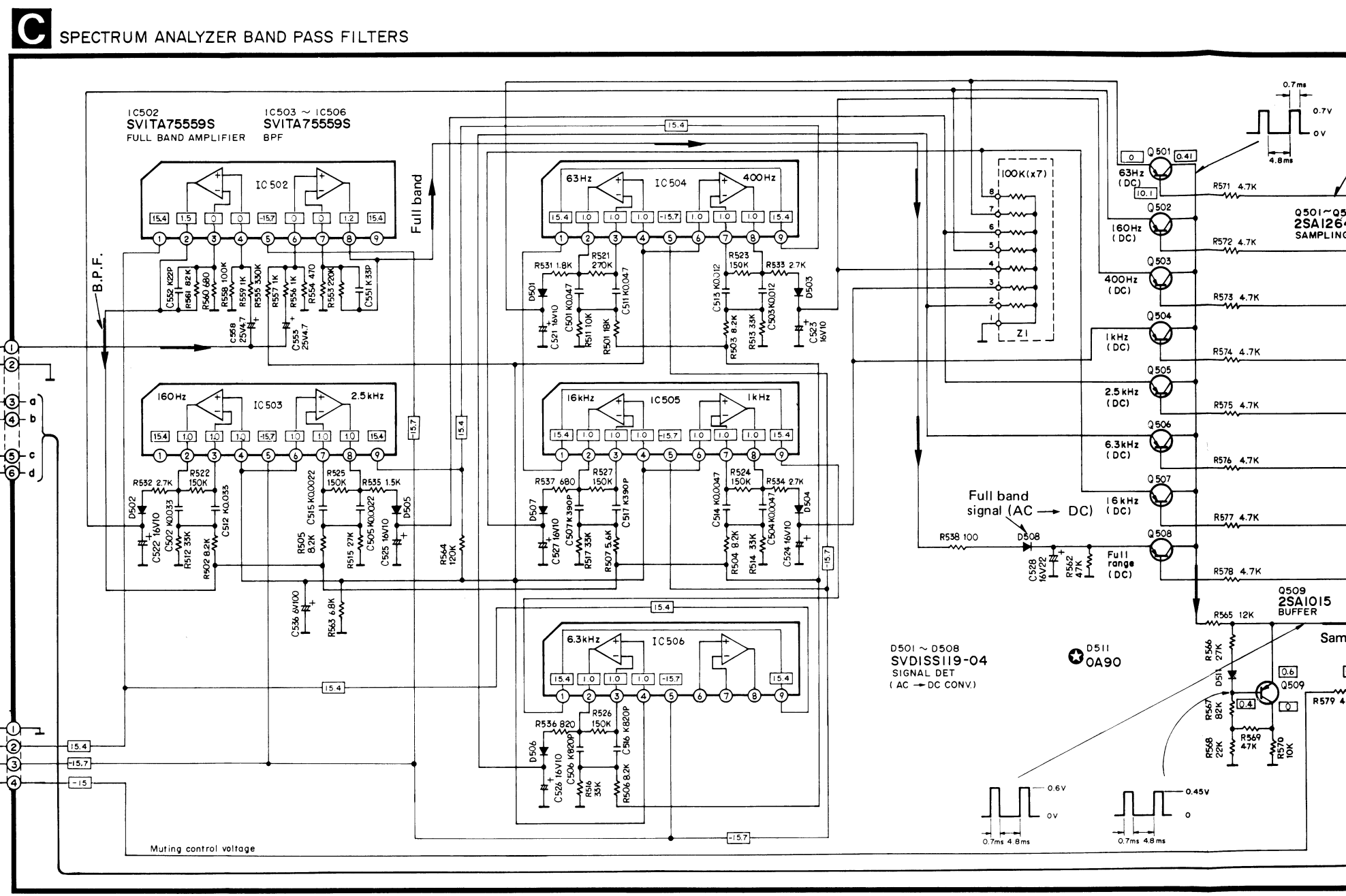
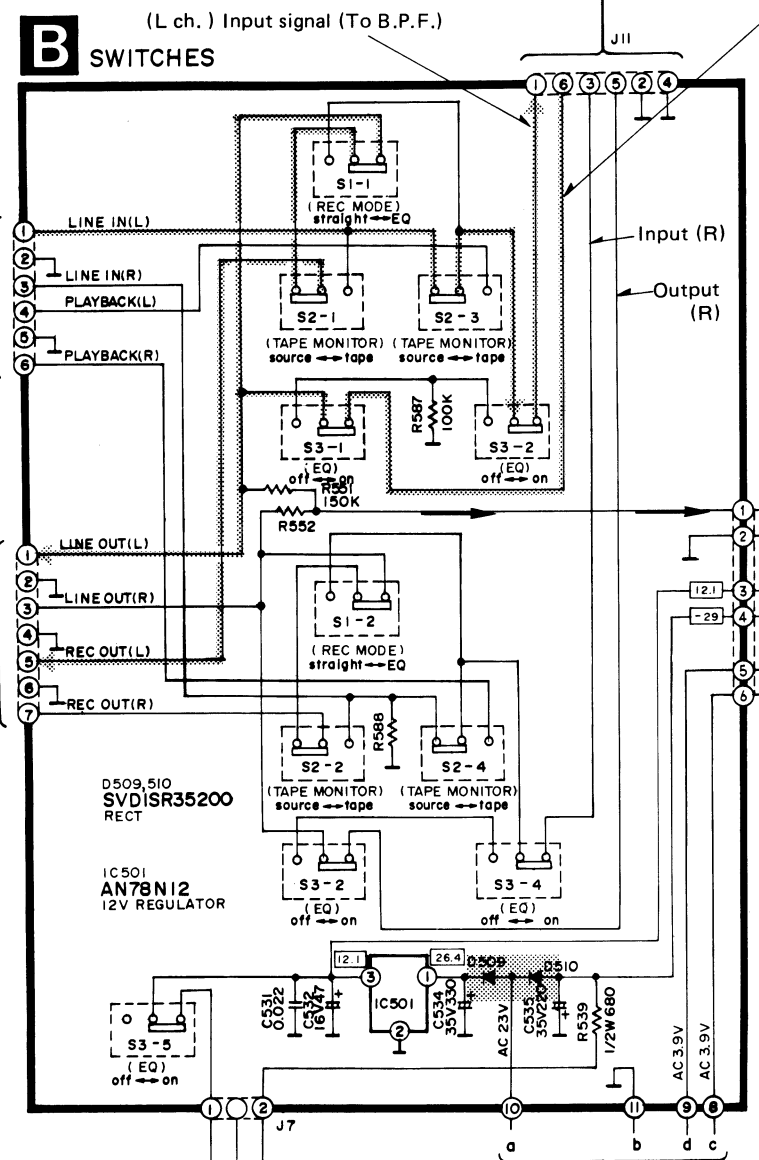
(This schematic diagram may be modified at any time with the development of new technology.)

- Spectrum analyzer (Frequency level display) & terminal voltage of grid and segment

Example







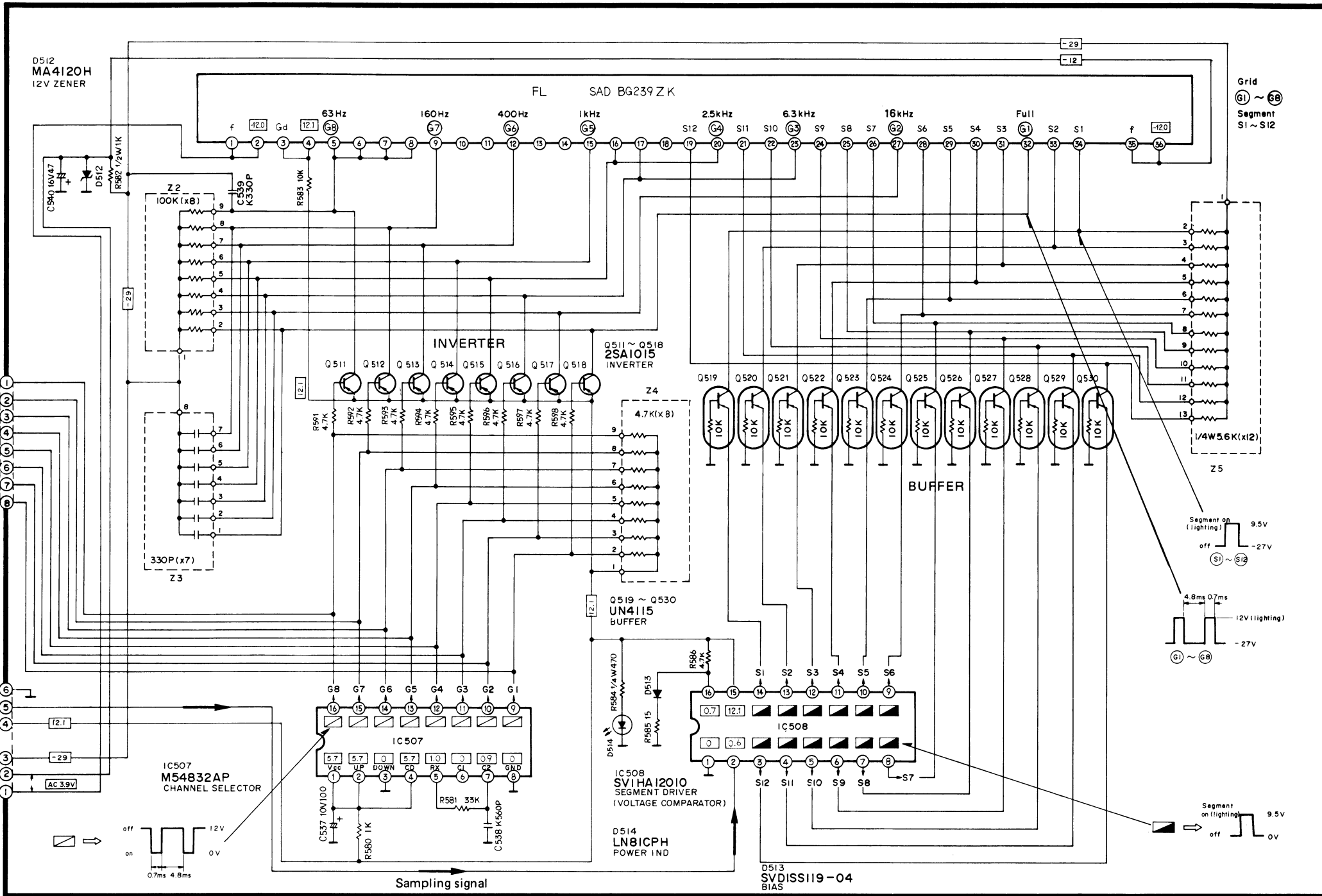
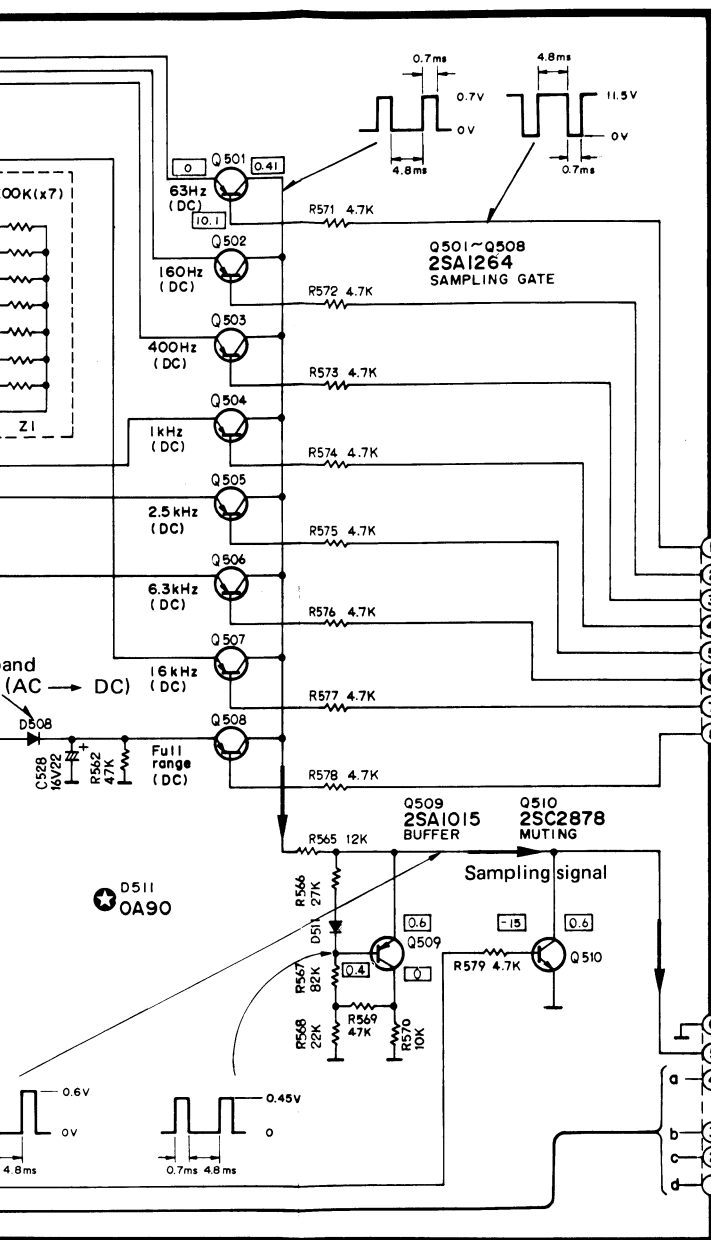
www.manualscenter.com

Notes:

- 1. S1-1 ~ S1-2: Recording mode selector in "EQ" position, straight ↔ EQ
- 2. S2-1 ~ S2-4: Tape-monitor selector in "source" position, source ↔ tape
- 3. S3-1 ~ S3-5: Equalization switch in "on" position, on ↔ off
- 4. S4: Power source switch in "on" position, on ↔ off
- 5. Indicated voltage values are standard values for the unit measured by the DC electronic circuit tester (high impedance) with the chassis taken standard.
- 6. Positive and Negative voltage supply line.
- 7. Signal line (Left channel)

- 8. The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with Ⓢ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.

D SPECTRUM ANALYZER DISPLAY



RESISTORS & 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 Δ 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 unit of resistance is OHM (Ω).
 K = 1000 Ω , M = 1000K Ω
 6. The unit of capacitance is MICROFARAD (μ F).
 P = 10⁻⁶ μ F

Numbering System of Capacitor

Example

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

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon	25 : 1/4W 10 : 1/8W 50 : 1/2W S1 : 1/4W	J : \pm 5%

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA : Electrolytic	0J : 6.3V	1H : 50V DC	K : \pm 10%
ECCD : Ceramic	1A : 10V	KC : 125V AC	Z : +80%, -20%
ECKD : Ceramic	1C : 16V		P : +100%, -0%
ECF : Semi Conductor	1E : 25V 1V : 35V 1H : 50V 50 : 50V		

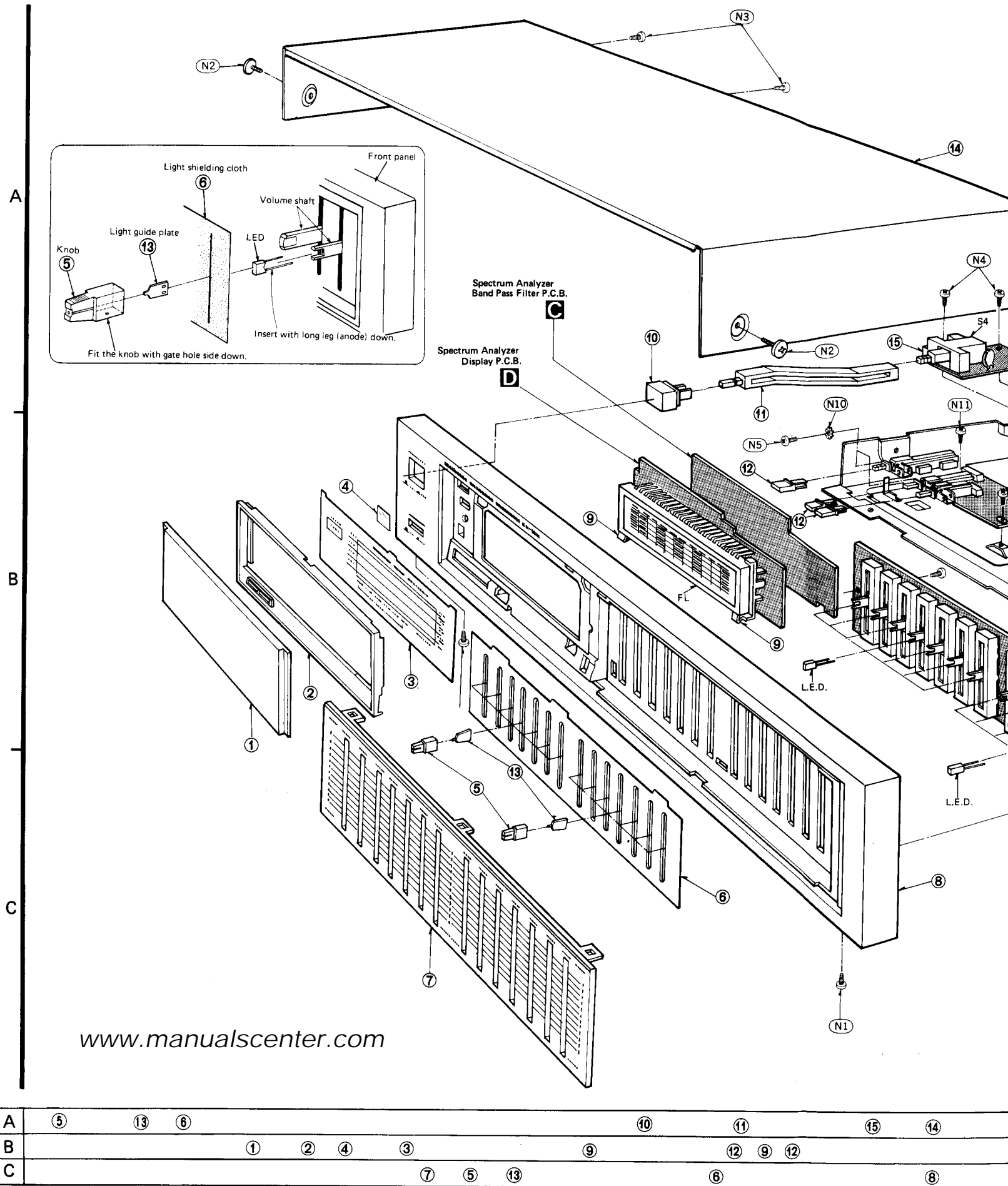
RESISTORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R1,2	ERD25FJ471	470	R201,202	ERD10TJ124	120K	R512,513	ERD10TJ333	33K	R565	ERD10TJ123	12K
R3,4	ERD50FJ330	33	R203,204	ERD10TJ124	120K	R514	ERD10TJ333	33K	R566	ERD10TJ273	27K
R5	ERD10TJ222	2.2K	R205,206	ERD10TJ124	120K	R515	ERD10TJ273	27K	R567	ERD10TJ823	82K
R6	ERD10TJ472	4.7K	R207,208	ERD10TJ823	82K	R516,517	ERD10TJ333	33K	R568	ERD10TJ223	22K
R7	ERD10TJ273	27K	R209,210	ERD10TJ683	68K	R521	ERD10TJ274	270K	R569	ERD10TJ473	47K
R8	ERD10TJ682	6.8K	R211,212	ERD10TJ563	56K	R522,523	ERD10TJ154	150K	R570	ERD10TJ103	10K
R9	ERD10TJ562	5.6K	R213,214	ERD10TJ563	56K	R524,525	ERD10TJ154	150K	R571,572	ERD10TJ472	4.7K
R10	ERD10TJ103	10K	R301,302	ERD10TJ391	390	R526,527	ERD10TJ154	150K	R573,574	ERD10TJ472	4.7K
R11,12	ERD10TJ102	1K	R303,304	ERD10TJ391	390	R531	ERD10TJ182	1.8K	R575,576	ERD10TJ472	4.7K
R13	ERD10TJ224	220K	R305,306	ERD10TJ391	390	R532,533	ERD10TJ272	2.7K	R577,578	ERD10TJ472	4.7K
R51,52	ERD10TJ102	1K	R307,308	ERD10TJ121	120	R534	ERD10TJ272	2.7K	R579	ERD10TJ472	4.7K
R53,54	ERD10TJ473	47K	R309,310	ERD10TJ391	390	R535	ERD10TJ152	1.5K	R580	ERD10TJ471	470
R55,56	ERD10TJ104	100K	R311,312	ERD10TJ151	150	R536	ERD10TJ821	820	R581	ERD10TJ333	33K
R57,58	ERD10TJ472	4.7K	R313,314	ERD10TJ221	220	R537	ERD10TJ681	680	R582	ERDS1F102	1K
R59,60	ERD10TJ473	47K	R401,402	ERD10TJ272	2.7K	R538	ERD10TJ101	100	R583	ERD10TJ103	10K
R61,62	ERD10TJ822	8.2K	R403,404	ERD10TJ272	2.7K	R551,552	ERD10TJ154	150K	R584	ERD25FJ471	470
R63,64	ERD10TJ822	8.2K	R405,406	ERD10TJ272	2.7K	R553	ERD10TJ224	220K	R585	ERD10TJ150	15
R65,66	ERD10TJ222	2.2K	R407,408	ERD10TJ272	2.7K	R554	ERD10TJ471	470	R586	ERD10TJ472	4.7K
R67,68	ERD10TJ104	100K	R409,410	ERD10TJ272	2.7K	R555	ERD10TJ334	330K	R587,588	ERD10TJ104	100K
R69,70	ERD10TJ181	180	R411,412	ERD10TJ272	2.7K	R556,557	ERD10TJ102	1K	R589	ERDS1TJ681	680
R101,102	ERD10TJ122	1.2K	R413,414	ERD10TJ272	2.7K	R558	ERD10TJ104	100K	R591,592	ERD10TJ472	4.7K
R103,104	ERD10TJ122	1.2K	R501	ERD10TJ183	18K	R559	ERD10TJ102	1K	R593,594	ERD10TJ472	4.7K
R105,106	ERD10TJ122	1.2K	R502,503	ERD10TJ822	8.2K	R560	ERD10TJ681	680	R595,596	ERD10TJ472	4.7K
R107,108	ERD10TJ152	1.5K	R504,505	ERD10TJ822	8.2K	R561	ERD10TJ154	150K	R597,598	ERD10TJ472	4.7K
R109,110	ERD10TJ122	1.2K	R506	ERD10TJ822	8.2K	R562	ERD10TJ473	47K			
R111,112	ERD10TJ152	1.5K	R507	ERD10TJ562	5.6K	R563	ERD10TJ682	6.8K			
R113,114	ERD10TJ152	1.5K	R511	ERD10TJ103	10K	R564	ERD10TJ124	120K			

CAPACITORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
C1,2	ECKD1H223ZF	0.022	C101,102	ECEA50Z1	1	C503	ECFTD123KXL	0.012	C528	ECEA1CU220	22
C3,4	ECEA1VU471	470	C103,104	ECEA1HSR33	0.33	C504	ECFTD472JXL	0.0047	C531	ECKD1H223ZF	0.022
C5,6	ECEA1CU331	330	C105,106	ECEA1HSR15	0.15	C505	ECFTD222KXL	0.0022	C532	ECEA1CU470	47
C7,8	ECEA1CU102	1000	C107,108	ECFTD683KXL	0.068	C506	ECKD1H821KB	820P	C534	ECEA1VU331	330
C9	ECEA50Z3R3	3.3	C109,110	ECFTD273KXL	0.027	C507	ECKD1H391KB	390P	C535	ECEA1VU221	220
C10	ECEA1CU220	22	C111,112	ECFTD103KXL	0.01	C511	ECFTD473KXL	0.047	C536	ECEA0JU101	100
C12	ECEA1EU101	100	C113,114	ECFTD392KXL	0.0039	C512	ECFTD333KXL	0.033	C537	ECEA1AK101	100
C51,52	ECEA1EU4R7	4.7	C201,202	ECFTD473KXL	0.047	C513	ECFTD123KXL	0.012	C538	ECKD1H561KB	560P
C53,54	ECCD1H101K	100P	C203,204	ECFTD223KXL	0.022	C514	ECFTD472JXL	0.0047	C539	ECKD1H331KB	330P
C55,56	ECCD1H101K	100P	C205,206	ECFTD822KXL	0.0082	C515	ECFTD222KXL	0.0022	C540	ECEA1CU470	47
C57,58	ECCD1H101K	100P	C207,208	ECFTD332KXL	0.0033	C516	ECKD1H821KB	820P	C551	ECCD1H330K	33P
C59,60	ECEA1EU4R7	4.7	C209,210	ECFTD222KXL	0.0022	C517	ECKD1H391KB	390P	C552	ECCD1H220K	22P
C61,62	ECEA1CU220	22	C211,212	ECKD1H821KB	820P	C521,522	ECEA1CU100	10	C553,554	ECEA1EU4R7	4.7
C63,64	ECEA1CU220	22	C213,214	ECKD1H331KB	330P	C523,524	ECEA1CU100	10	C1001	ECKDKC103PF2	0.01
C65	ECEA0JU101	100	C501	ECFTD473KXL	0.047	C525,526	ECEA1CU100	10			
C75	ECKD1H223ZF	0.022	C502	ECFTD333KXL	0.033	C527	ECEA1CU100	10			

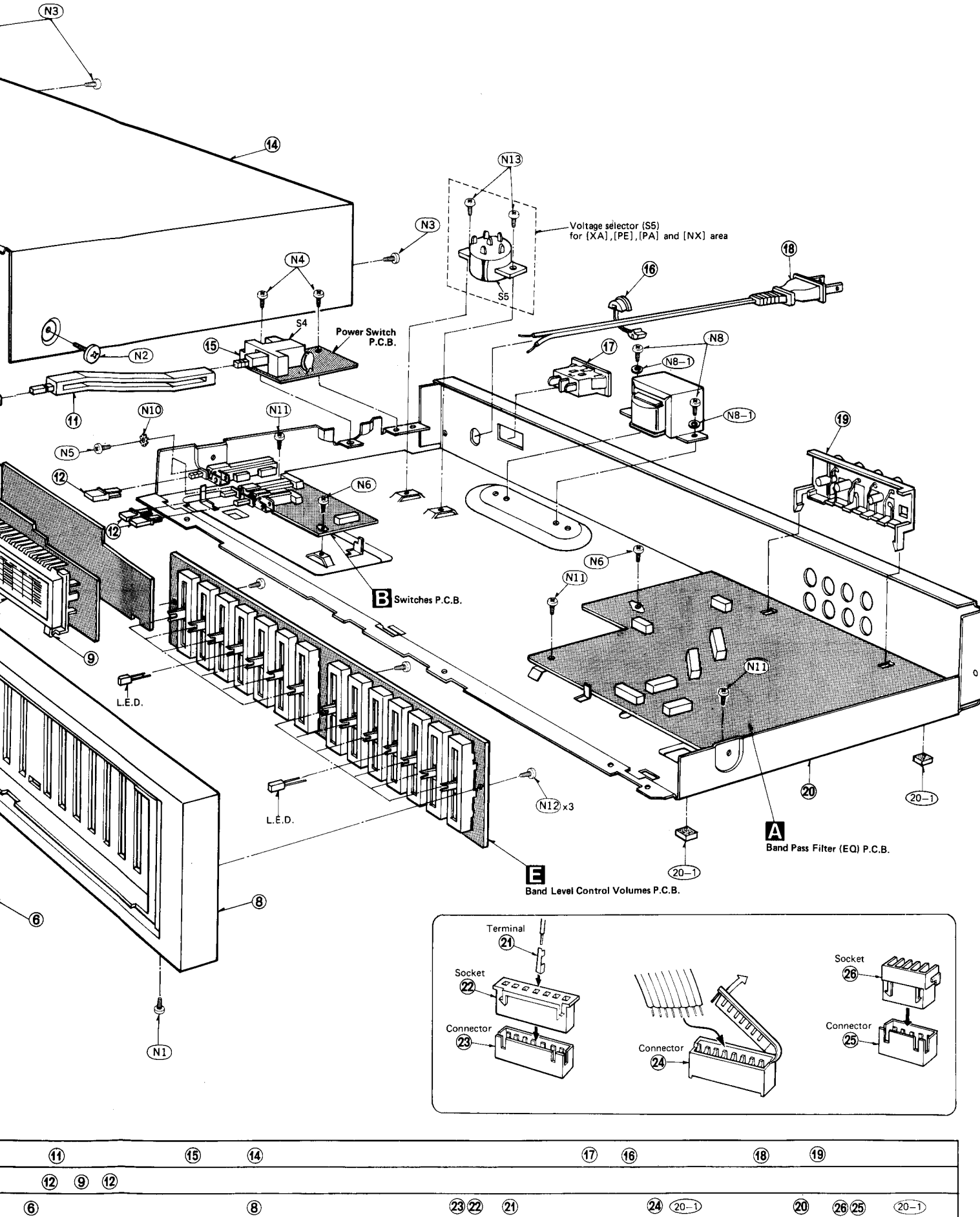
EXPLODED VIEWS



REPLACEMENT PARTS LIST

- Notes:**
- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
 - Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
 - The $\text{\textcircled{S}}$ mark is service standard parts and may differ from production parts.

- The parenthesized numbers in the column of description stand for the quantity per set.
- Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
- $\text{\textcircled{O}}$ -marked parts are used for silver type only.
- $\text{\textcircled{K}}$ -marked parts are used for black type only.
- Part other than $\text{\textcircled{O}}$ and $\text{\textcircled{K}}$ -marked are used for both black and silver types.



Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS			DIODES			COMPONENT COMBINATIONS		
IC1,2,502~506	SVITA75559S	Control Amp., Buffer & Spectrum Analyzer B.P.F.	D1,2	MA4150H	15V Zener Rectifier	Z1	RGSD7X104K	100k Ω (\times 7)
IC501	AN78N12	12V Regulator	D3	Δ SVD1B4B42	Rectifier	Z2	RGSD8X104K	100k Ω (\times 8)
IC507	M54832AP	Channel Selector	D5	MA167	Rectifier	Z3	PJB7XC331M	330pF(\times 7)
IC508	SVIHA12010	FL Driver	D6~9,501~508	SVD1SS119-04	Switching & Detector	Z4	RGSD8X472X	4.7k Ω (\times 8)
TRANSISTORS			VARIABLE RESISTORS			SWITCHES		
Q1	2SD1406-Y	Regulator	D101~114	LN251RCPP	LED, Volume Rectifier	S1,2	SSHK47	Rec mode, Tape Monitor
Q2	2SB1015-Y	Regulator	D509,510	Δ SVD1SR35200	Rectifier Bias	S3	SSHK46	Monitor Equalization
Q3	2SC1815G	Muting	D511	$\text{\textcircled{S}}$ 20A90	12V Zener LED, Power	S4	Δ SSH1071	Power source
Q4,509,511~518	2SA1015Y	Muting, Buffer & Inverter	FLUORESCENT DISPLAY TUBE			TRANSFORMER		
Q5,6,510	2SC2878A-T	Muting	VR1~14	EVAJN3J15G25	Band Level Control, 200k Ω (G)	T1001	Δ SLTK5J24-W	Power Transformer
Q501~508	2SA1246T-A	Sampling Gate	COMPONENT COMBINATIONS					
Q519~530	UN4115	Buffer	FL	SADBG239ZK	Display			

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS			CABINET and CHASSIS PARTS			SCREWS and WASHERS		
1	$\text{\textcircled{O}}$ SGU419-3	Transparent Plate (1)	17(M)	Δ SJS9221-1	Socket, AC Outlet (1)	N1	$\text{\textcircled{S}}$ XTBS3+8BFZ	Tapping, $\text{\textcircled{+}}$ 3 \times 8 (2)
1	$\text{\textcircled{K}}$ SGU419-1	Transparent Plate (1)	17(MC)	Δ SJS9223	Socket, AC Outlet (1)	N2	$\text{\textcircled{O}}$ SNE2095-4	Cabinet (2)
2	SGXK92	Grille (1)	18(M)	Δ RJA9YA-K	AC Cord, Power Source (1)	N2	$\text{\textcircled{K}}$ SNE2095-5	Cabinet (2)
3	SDUK11	Filter (1)	18(MC)	Δ SJA169	AC Cord, Power Source (1)	N3	$\text{\textcircled{S}}$ XTBS3+8BFN	Tapping, $\text{\textcircled{+}}$ 3 \times 8 (2)
4	SDUK12	Sheet, Front Panel (1)	18(MC)	Δ SJA169	AC Cord, Power Source (1)	N3	$\text{\textcircled{K}}$ XTBS3+8BFZ	Tapping, $\text{\textcircled{+}}$ 3 \times 8 (3)
5	$\text{\textcircled{O}}$ SBWK23	Button (14)	19	SJF3055-1N	Terminal Board, In/Out (1)	N4	$\text{\textcircled{S}}$ XTBS3+8BFN	Tapping, $\text{\textcircled{+}}$ 3 \times 8 (2)
5	$\text{\textcircled{K}}$ SBWK22	Button (14)	20	SGPKH8044M	Rear Panel Ass'y (W/Feet) (1)	N5	$\text{\textcircled{S}}$ XTBS3+6BFN	Tapping, $\text{\textcircled{+}}$ 3 \times 6 (2)
6	SGXK94	Cloth, Shielding (1)	20-1	(SHS2481)	Foot (4)	N6	$\text{\textcircled{S}}$ XTBS3+8CFYR1	Tapping, $\text{\textcircled{+}}$ 3 \times 8 (W/Detent) (2)
7	$\text{\textcircled{O}}$ SGXK91-2	Sub Panel (1)	21	SJT783	Terminal (14)	N7	$\text{\textcircled{S}}$ XSN3+8S	Screw, $\text{\textcircled{+}}$ 3 \times 8 (1)
7	$\text{\textcircled{K}}$ SGXK91	Sub Panel (1)	22	SJS5811	Socket (2)	N7-1	$\text{\textcircled{S}}$ XWA3B	Washer, Spring ϕ 3 (1)
8	$\text{\textcircled{O}}$ SGWK280SA	Front Panel (1)	23	SJT3809	Connector (2)	N7-2	$\text{\textcircled{S}}$ XWG3	Washer, ϕ 3 (1)
8	$\text{\textcircled{K}}$ SGWK280BA	Front Panel (1)	24	SJT5807	Connector (1)	N8	$\text{\textcircled{S}}$ XTN3+6B	Tapping, $\text{\textcircled{+}}$ 3 \times 6 (2)
9	SHR9728	Holder, FL (2)	25	SJT3319	Connector, J7 (1)	N8-1	$\text{\textcircled{S}}$ XWG3	Washer, ϕ 3 (2)
10	SBC666	Button, Power SW (1)	25	SJT3415	Connector, J8 (1)	N9	$\text{\textcircled{S}}$ XTBS3+10BFZ	Tapping, $\text{\textcircled{+}}$ 3 \times 10 (2)
11	SUB81	Rod, Connection Power SW (1)	25	SJT3511	Connector, J3 (1)	N10	$\text{\textcircled{S}}$ XWC3B	Stop Ring (2)
12	SBC315-4T	Button (3)	25	SJT3611	Connector, J11,12 (1)	N11	XTBS3+8BFYR	Tapping, $\text{\textcircled{+}}$ 3 \times 8 (3)
13	SBZK33	Guide, Light (14)	25	SJT3709	Connector, J1,2,10 (3)	N12	XTBS3+8BFYR	Tapping, $\text{\textcircled{+}}$ 3 \times 8 (3)
14	$\text{\textcircled{O}}$ SKCK130S	Cabinet (1)	25	SJT3809	Connector, J9 (1)	ACCESSORY		
14	$\text{\textcircled{K}}$ SKCK130BB	Cabinet (1)	26	SJS5339	Socket, J7 (1)	A1	SJPK2201	Cord, Pin Pin (2)
15	SMNK17	Cover, Power SW (1)	26	SJS5433	Socket, J8 (1)	PACKING PARTS		
16	RHR111	Bushing, AC Cord (1)	26	SJS5531	Socket, J3 (1)	P1(M)	$\text{\textcircled{O}}$ SPGK137	Carton Box (1)
			26	SJS5635	Socket, J11,12 (2)	P1(M)	$\text{\textcircled{K}}$ SPGK140	Carton Box (1)
			26	SJS5719	Socket, J1,2,10 (3)	P1(MC)	$\text{\textcircled{K}}$ SPGK141	Carton Box (1)
						P2	SPSK69	Pad, Front (1)
						P3	SPSK70	Pad, Rear (1)
						P4	SPSK74	Pad, Upper (1)
						P5	$\text{\textcircled{O}}$ SPP719	Poyethylene Sheet (1)
						P5	$\text{\textcircled{K}}$ SPP659	Poyethylene Sheet (1)
						P6(M)	SQFK10071	Instruction Book (1)
						P6(MC)	SQFK10072	Instruction Book (1)

[M] only
 * SD-7170E(SC-7170E)
 SU-Z800, ST-Z400, RS-B50
 SL-QL5, SH-8044
 Outer Carton Box SPG5056
 Spacer SPS4497