

DENON

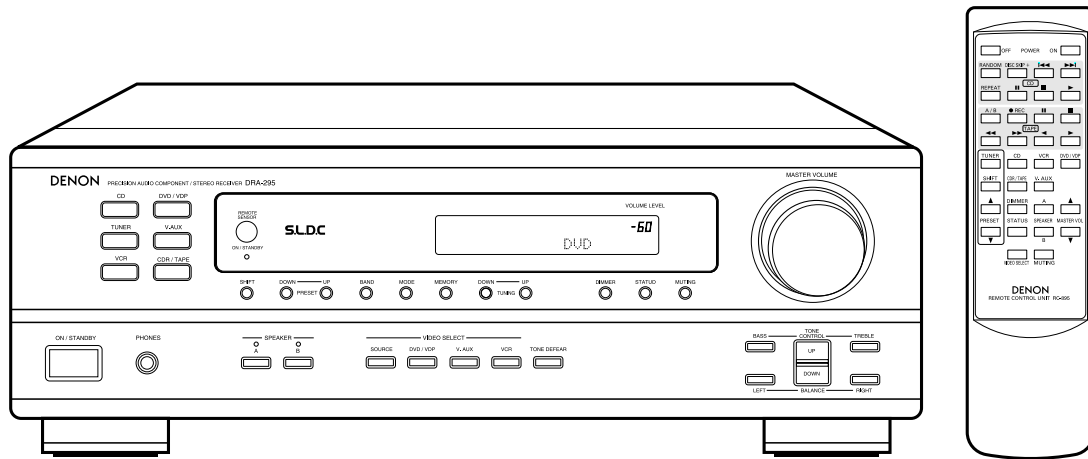
For U.S.A., Canada
& Europe model

Hi-Fi AM-FM Stereo Receiver

SERVICE MANUAL

MODEL DRA-295

AM-FM STEREO RECEIVER



— TABLE OF CONTENTS —

SAFETY PRECAUTIONS	36	PARTS LIST OF PACKING & ACCESSORIES	63
SPECIFICATIONS	36	WIRING DIAGRAM	64
DISASSEMBLY	37	SCHEMATIC DIAGRAMS	65-69
ADJUSTMENT	38,39	(1/5) INPUT UNIT	65
BLOCK DIAGRAM	40	VIDEO UNIT	65
LEVEL DIAGRAM	41	(2/5) VOLUME UNIT	66
SEMICONDUCTORS	42-46	CONNECTOR UNIT	66
PRINTED WIRING BOARDS	47-51	(3/5) MAIN UNIT	67
NOTE FOR PARTS LIST	52	(4/5) FRONT UNIT	68
PARTS LIST OF P.W.B. UNIT ASS'Y	53-59	SWITCH UNIT	68
EXPLODED VIEW	60	POWER SW/HP UNIT	68
PARTS LIST OF EXPLODED VIEW	61,62	(5/5) TUNER UNIT	69
PACKING VIEW	63		

• Some illustrations using in this service manual are slightly different from the actual set.

NIPPON COLUMBIA CO., LTD.

14-14, AKASAKA 4-CHOME, MINATO-KU, TOKYO 107-8011 JAPAN
Telephone: 03 (3584) 8111

SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 460 kohms, the unit is defective.

SPECIFICATIONS

• Audio Section

(Power Amplifier)

Rated output: 50W + 50W (8Ω/ohms, 20Hz ~ 20kHz with 0.08% T.H.D.)
Output terminals: A or B 4 to 16Ω/ohms
 A + B 8 to 16Ω/ohms

(Analog)

LINE input - PRE OUT

Input sensitivity/input impedance: 200mV/47kΩ/kohms
Frequency response: 10Hz ~ 50kHz: ±1.5dB
S/N ratio: 98 dB (IHF-A weighted)
Total harmonic distortion: 0.009% (-3dB at rated output, 8Ω/ohms) (1kHz)
Rated output: 1.2V

• Video Section (U.S.A. & Canada model)

(Standard Video Jacks)

Input/output level and impedance: 1V p-p, 75Ω/ohms
Frequency response: 5Hz ~ 10MHz +1, -3dB

• Tuner Section

	[FM] (note: μV at 75Ω/ohms, 0dBf = 1×10 ⁻¹⁵ W)	[AM]
Receiving range:		
U.S.A. & Canada model	87.50MHz ~ 107.90MHz	520kHz ~ 1710kHz
Europe model	87.50MHz ~ 108.00MHz	522kHz ~ 1611kHz
Usable sensitivity:	1.4μV (14.2dBf)	18μV
50dB quieting sensitivity:	MONO 2.8μV (20.2dBf) STEREO 23μV (38.5dBf)	
S/N ratio:	MONO 80dB (IHF-A weighted) STEREO 75dB (IHF-A weighted)	
Total harmonic distortion:	MONO 0.15% (1kHz) STEREO 0.3% (1kHz)	

• General

Power supply: AC120V, 60Hz (For U.S.A. & Canada model)
 AC230V, 50Hz (For Europe model)
Power consumption: 3.0A (For U.S.A. & Canada model)
 150W (For Europe model)
Maximum external dimensions: 434 (W) × 147 (H) × 417 (D) mm (17-3/32" × 5-25/32" × 16-27/64")
Weight: 9.2kg (20lbs 4.5oz)

• Remote Control Unit

RC-895 (For U.S.A. & Canada model)
 RC-907 (For Europe model)
Batteries: R06P/AA Type (two batteries)
External dimensions: 50 (W) × 179 (H) × 22 (D) mm (1-31/32" × 7-3/64" × 55/64")
Weight: 125g (Approx. 7.5 oz) (including batteries)

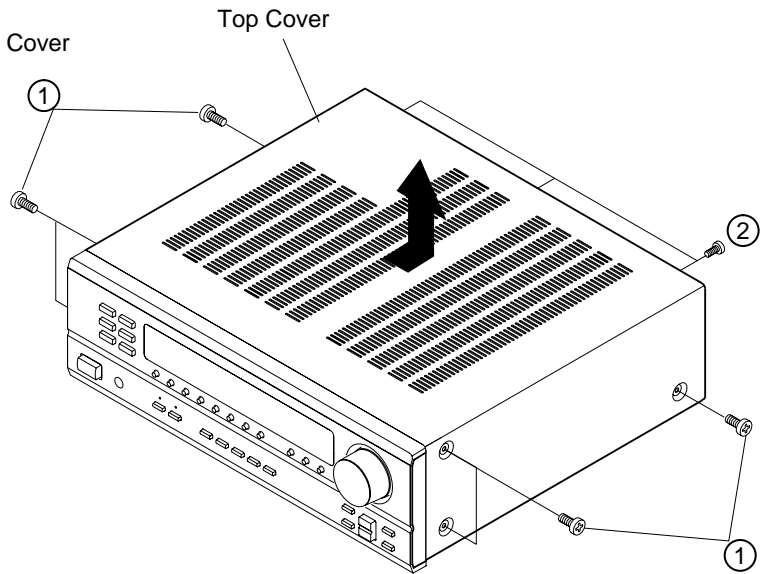
* For purposes of improvement, specifications and design are subject to change without notice.

DISASSEMBLY

(Follow the procedure below in reverse order when reassembling)

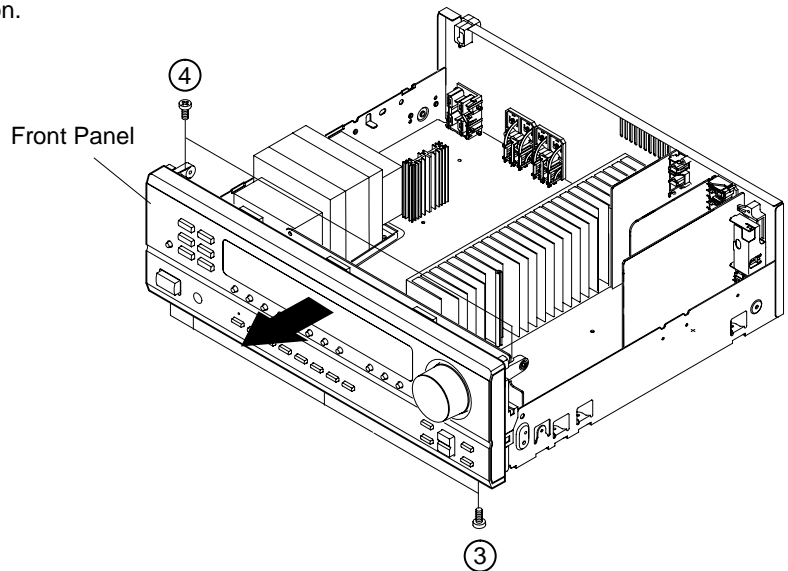
Top Cover

Remove 6 screws ① and 3 screws ②, detach the Top Cover in the arrow direction.



Front Panel

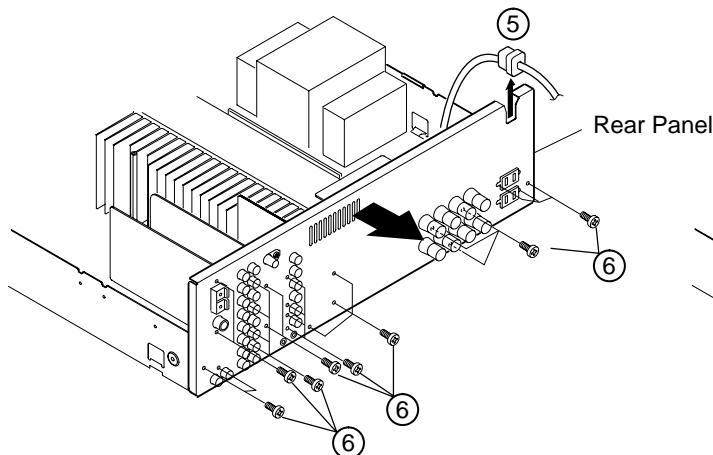
1. Remove 4 screws ③ and 2 screws ④.
2. Detach the Front Panel in the arrow direction.



Rear Panel

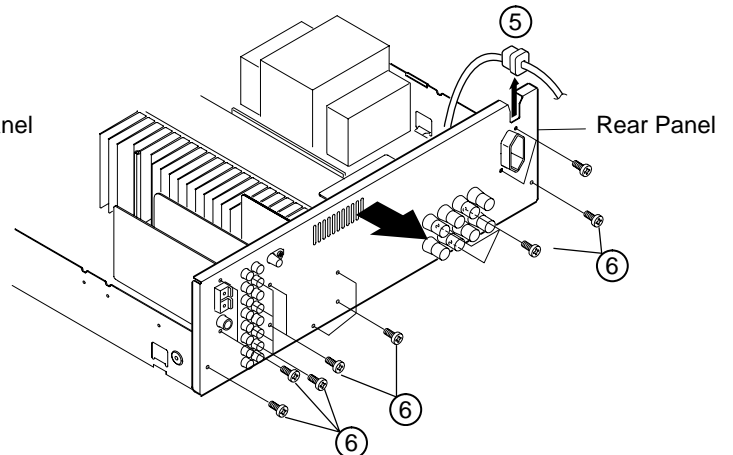
U.S.A. & Canada model

1. Remove cord bushing ⑤ from the Rear Panel.
2. Remove 23 screws ⑥.
3. Detach the Rear Panel in the arrow direction.



Europe model

1. Remove cord bushing ⑤ from the Rear Panel.
2. Remove 17 screws ⑥.
3. Detach the Rear Panel in the arrow direction.

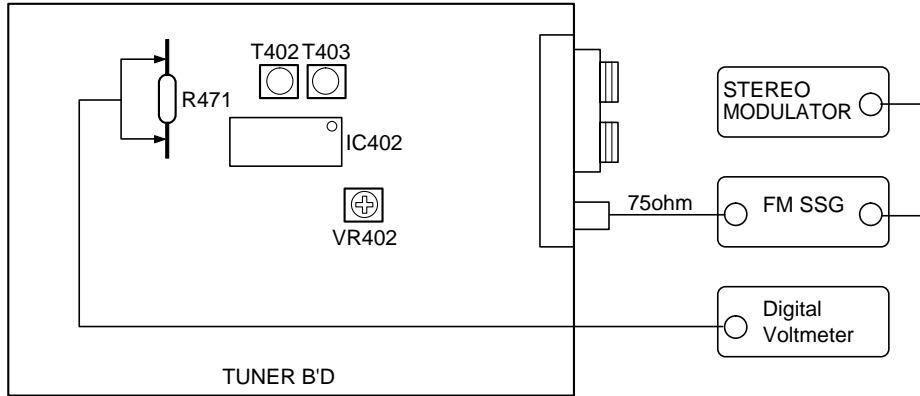


ADJUSTMENT

Tuner Section

CONNECTION DIAGRAM OF MEASURING INSTRUMENTS

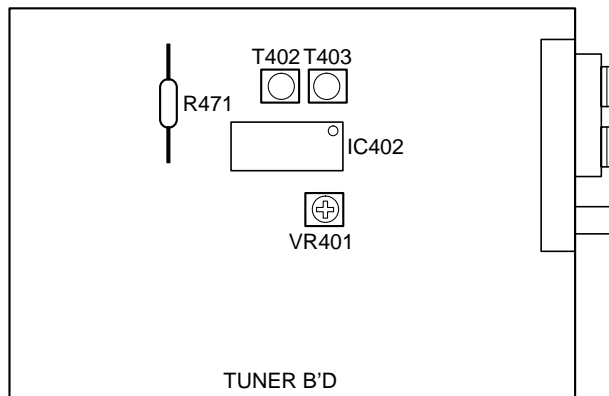
● FM



FM ALIGNMENT

Step	Alignment Item	Tuning Frequency Setting	Input					Output		Adjustment	
			Type	Frequency	Input Level	Modulation	Coupling	Type	Connect to	Points	Adjust to
1	Center Adjustment	98.1MHz (98.0MHz)	FM SSG	98.1MHz	60dBμ	Mono 1kHz 100%	Antenna Terminal	Digital Voltmeter	R471	T402	± 50mV
2	Distortion	98.1MHz (98.0MHz)	FM SSG	98.1MHz	60dBμ	Mono 1kHz 100%	Antenna Terminal	Distortion Meter	Output Terminal (L)	T403	Minimum Distortion
3	Repeat Steps 1 and 2										
4	Signal Level	98.1MHz (98.0MHz)	FM SSG	98.1MHz	20dBμ	OFF	Antenna Terminal	Light "TUNED" on FL Display	VR402		20 ⁺¹⁴ / ₋₁₀ dB

● AM



AM ALIGNMENT

Step	Alignment Item	Frequency	Input	Output		Adjustment		Remarks
				Type	Connect to	Points	Adjust to	
1	Signal Level	999 (1000) kHz	AM SSG	—	—	VR401	Light "TUNED" on FL Display	SSG OUTPUT 74dBμ (EMF)

Audio Section

Idling Current

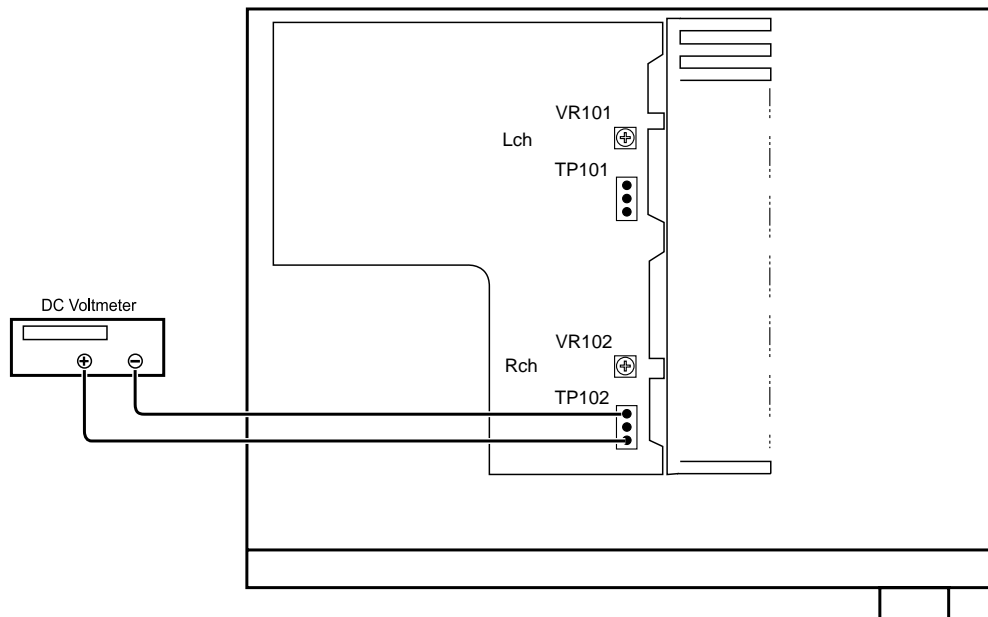
Required measurement equipment : DC Voltmeter

Preparation

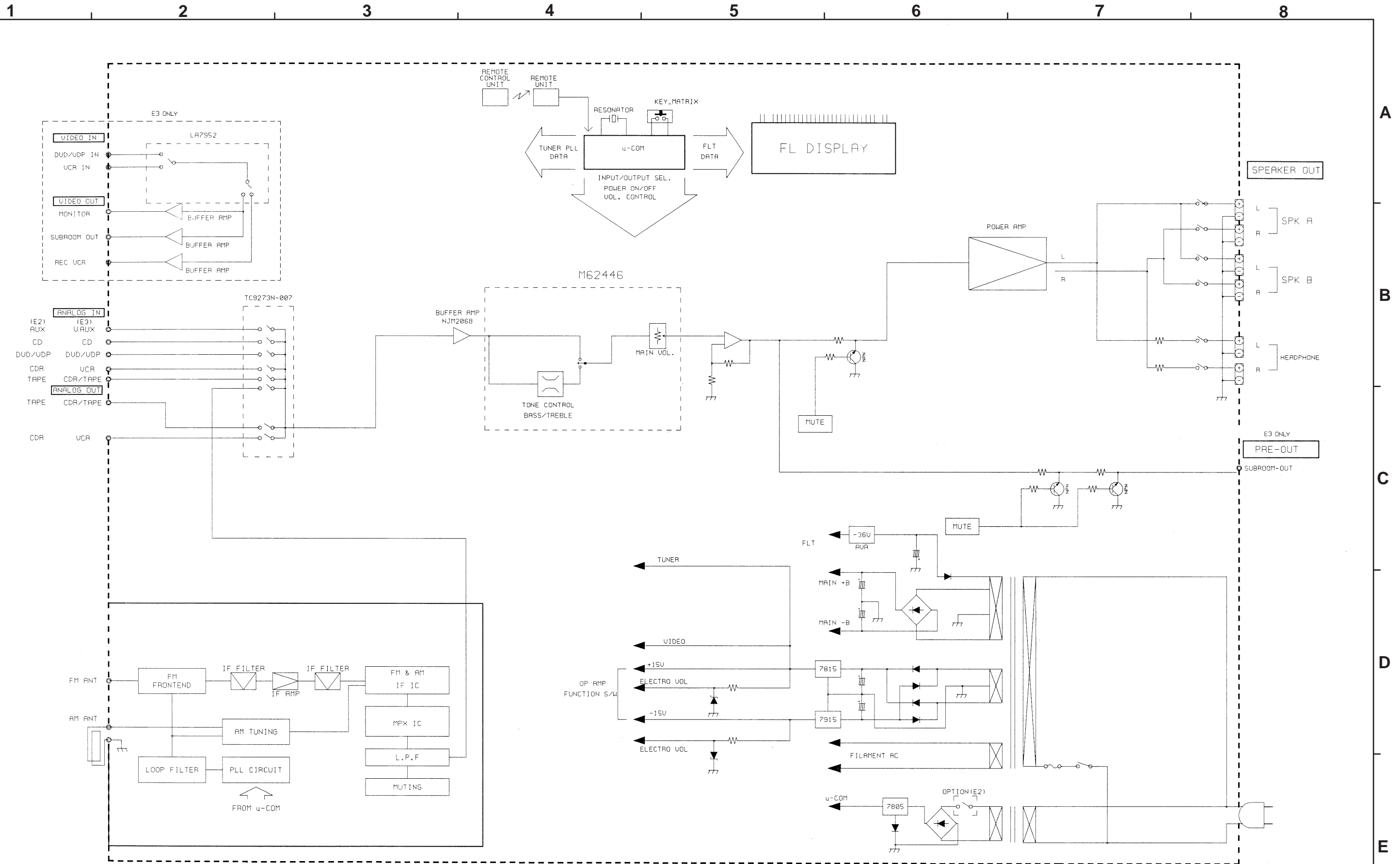
- (1) Avoid direct blow from an air conditioner or an electric fan, and adjust the unit at normal room temperature 15 °C ~ 30 °C (59 °F ~ 86 °F).
- (2) Presetting
 - POWER (Power source switch) → OFF
 - SPEAKER (Speaker terminal) → No load (Do not connect speaker, dummy resistor, etc.)

Adjustment

- (1) Remove top cover and set VR101, VR102 on Amp. Unit at full counterclockwise (⚙) position.
- (2) Connect DC Voltmeter to test points (Lch: TP101, Rch: TP102).
- (3) Connect power cord to AC Line, and turn power switch "ON".
- (4) Presetting. MASTER VOLUME : "---" counterclockwise (⚙ min.)
 FUNCTION : CD
- (5) Within 2 minutes after the power on, turn VR101 clockwise (⚙) to adjust the TEST POINT voltage to 1.5 mV \pm 0.5 mV DC.
- (6) After 10 minutes from the preset above, turn VR101 to set the voltage to 2.5 mV \pm 0.5 mV DC.
- (7) Adjust the Variable Resistors of other channels in the same way.

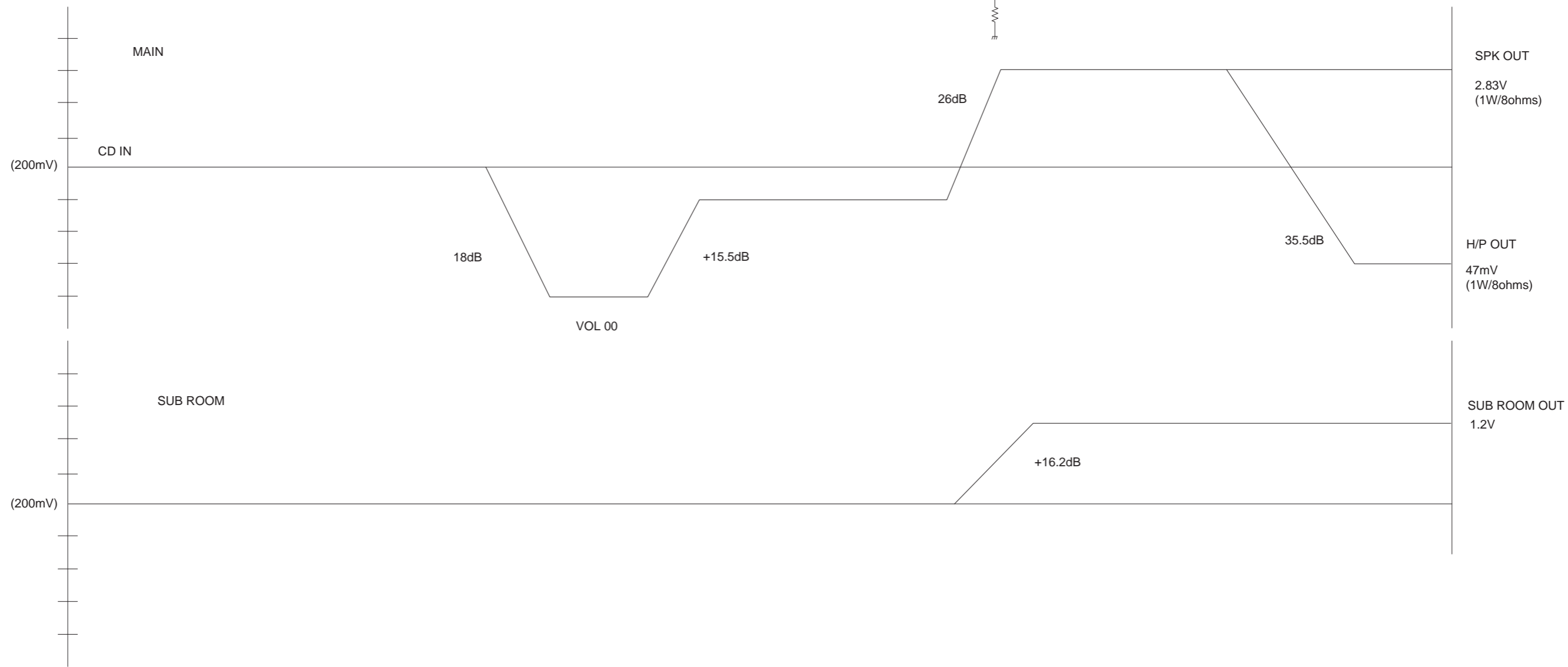
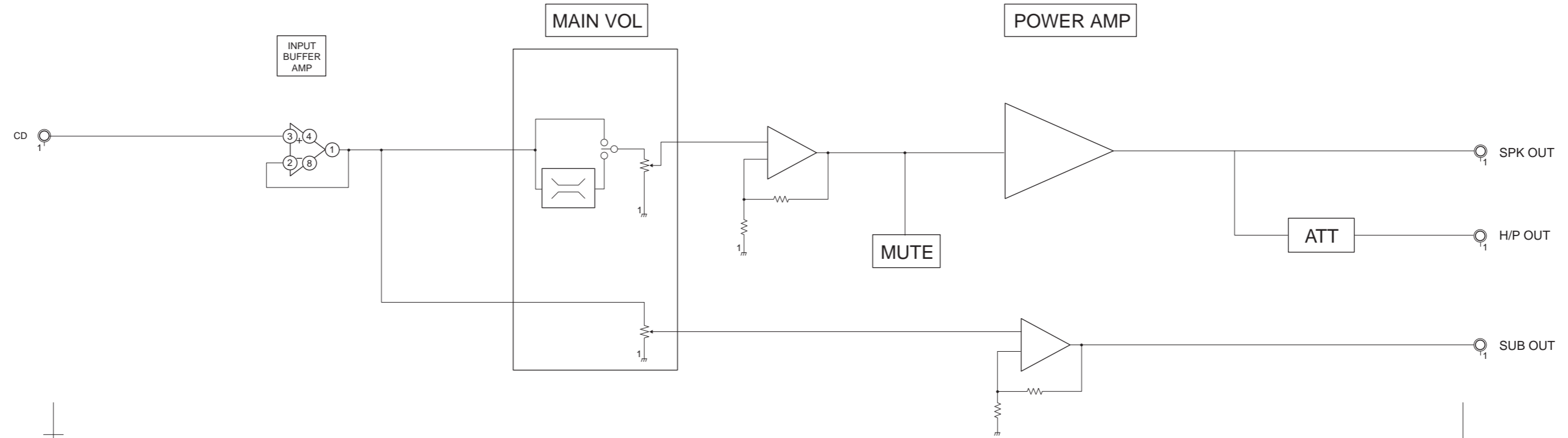


BLOCK DIAGRAM



LEVEL DIAGRAM

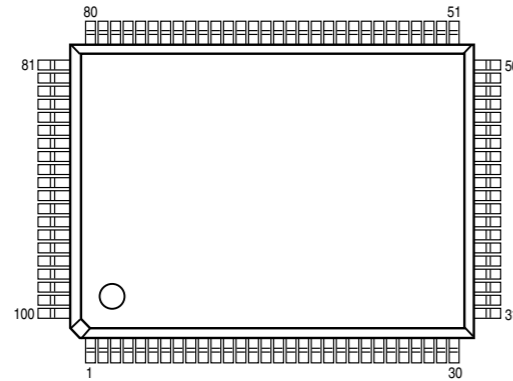
1 2 3 4 5 6 7 8



A
B
C
D
E

SEMICONDUCTORS

- IC's
- CXP82840-321Q (IC900)

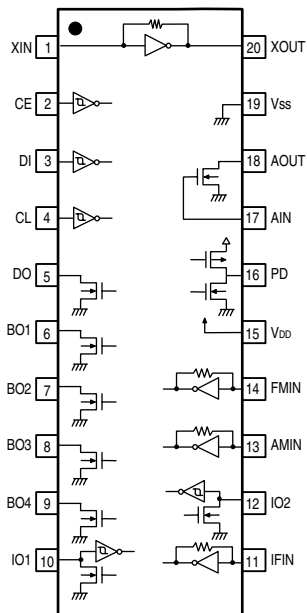


CXP82840-321Q Terminal Function

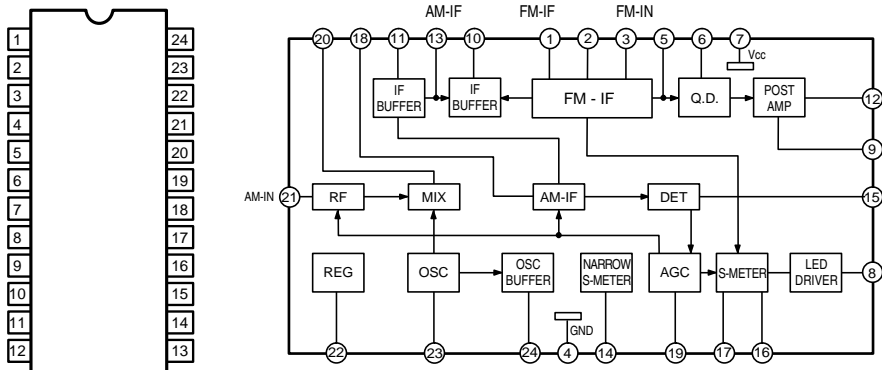
Pin No.	Pin Name	I/O	Function
1	G2/A1	O	FL G02
2	G1/A0	O	FL G01
3	NC(Vdd)	I	NC(Connect to Vdd)
4	POWER DOWN	I	AC OFF Detect
5	ENC VOLUME UP	I	Encoder VOLUME UP
6	RDS CLOCK	I	RDS clock input(TDA7330)
7	ENC VOLUME DOWN	I	Encoder VOLUME DOWN
8	REMOCON	I	Remote signal input.
9	PROTECTION	I	Protection detecting input.
10	SUB ZONE2 LED	O	Not used.
11	SUB ZONE1 LED	O	Not used.
12	62446 LATCH	O	Electronic volume control.(M62446 LATCH)
13	FUNCTION SW 1 CE	O	Function IC control.(TC9273 ST)
14	FUNCTION 1/2 DATA	O	Function IC control.(TC9273 DATA)
15	FUNCTION 1/2 CLOCK	O	Function IC control.(TC9273 CLOCK)
16	VOLUME,PLL,4094,DATA	O	LC72131,M62446,TC4094(DATA)
17	VOLUME,PLL,4094,CLOCK	O	LC72131,M62446,TC4094(CLOCK)
18	TUNED	I	TUNED signal in.
19	STEREO	I	STEREO signal in.
20	IF COUNT	I	PLL data in.(LC72131)
21	TUNER MUTE	O	Tuner mute output.
22	PLL CE	O	LC72131(CE)
23	4094 STB	O	TC4094(STB)
24	VOLUME STB	O	Not used.
25	SUB 1 MUTE	O	Not used.
26	MAIN MUTE	O	MAIN,Subwoofer mute output.
27	POWER RELAY	O	Power supply relaycontrol.
28	AV REF.	I	Reference voltage input for A/D converter.
29	1511 DATA	O	Not used.
30	RDS DATA	I	RDS data input(TDA7330)
31	KEY IN 1	I	Key input 1
32	KEY IN 2	I	Key input 2
33	KEY IN 3	I	Key input 3
34	STEP OPTION	I	Area select.
35	SET OPTION	I	Model select.
36	SPEAKER A LED 1	O	SPEAKER A LED indicator control
37	A VSS	I	A/D converter GND.
38	RESET	I	Low-level active,system reset.
39	EXTAL	I	EXTAL(10MHz)
40	XTAL	O	XTAL(10MHz)
41	VSS	I	GND
42	NC(TX)	O	Not used.
43	G(TEX)	I	GND
44	VDD	I	Vcc SUPPLY.
45	VFDP	I	FDP voltage supply.

Pin No.	Pin Name	I/O	Function
46	SPEAKER B LED 2	O	SPEAKER B LED indicator control
47	STBY LED 3	O	STANDBY LED indicator control
48	PD2/A53	O	FL P38
49	PD3/A52	O	FL P37
50	PD4/A51	O	FL P36
51	PD5/A50	O	FL P01
52	PD6/A49	O	FL P02
53	PD7/A48	O	FL P03
54	PF0/A47	O	FL P04
55	PF1/A46	O	FL P05
56	PF2/A45	O	FL P06
57	PF3/A44	O	FL P07
58	PF4/A43	O	FL P08
59	PF5/A42	O	FL P09
60	PF6/A41	O	FL P10
61	PF7/A40	O	FL P11
62	PG0/A39	O	FL P12
63	PG1/A38	O	FL P13
64	PG2/A37	O	FL P14
65	PG3/A36	O	FL P15
66	PG4/A35	O	FL P16
67	PG5/A34	O	FL P17
68	PG6/A33	O	FL P18
69	PG7/A32	O	FL P19
70	PH0/A31	O	FL P20
71	PH1/A30	O	FL P21
72	PH2/A29	O	FL P22
73	PH3/A28	O	FL P23
74	PH4/A27	O	FL P24
75	PH5/A26	O	FL P25
76	PH6/A25	O	FL P26
77	PH7/A24	O	FL P27
78	A23	O	FL P28
79	A22	O	FL P29
80	A21	O	FL P30
81	A20	O	FL P31
82	A19	O	FL P32
83	A18	O	FL P33
84	A17	O	FL P34
85	A16	O	FL P35
86	G16	O	FL G16
87	G15	O	FL G15
88	G14	O	FL G14
89	Vdd	I	Vcc SUPPLY.
90	G13	O	FL G13
91	G12	O	FL G12
92	G11	O	FL G11
93	G10	O	FL G10
94	G9	O	FL G09
95	G8	O	FL G08
96	G7	O	FL G07
97	G6	O	FL G06
98	G5	O	FL G05
99	G4	O	FL G04
100	G3	O	FL G03

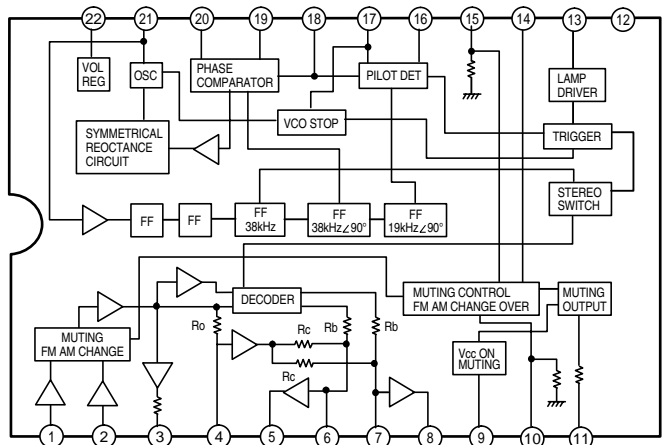
LC72131M (IC401)



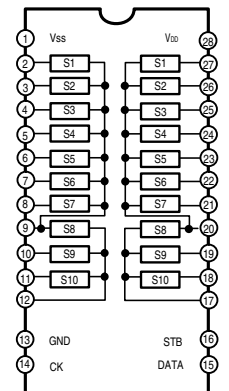
LA1266 (IC402)



LA3401 (IC403)



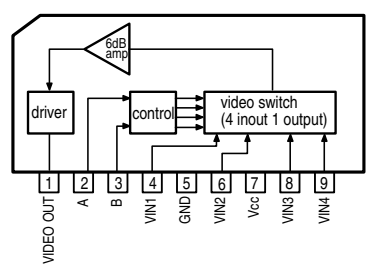
TC9273N-007 (IC300)



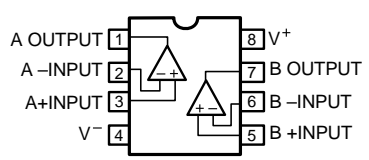
● TC9273N Terminal Function

Pin No	Symbol	Name	Function
1	Vss	+Power Terminal	Dual Power Use: VDD = 8.0-17 V Single Power Use: VDD = 8.0-18V GND=0V
13	GND	Digital Ground	
28	VDD	+Power Terminal	Vss=8.0-17V
2-12 12-27	S1-S10	I/O Terminal	Input terminal of analog switch.
14	CK	Clock Input	Clock input for data transfer.
15	DATA	Data Input	Serial input for switch setting.
16	STB	Strobe Input	Strobe Input Strobe input for data writing.

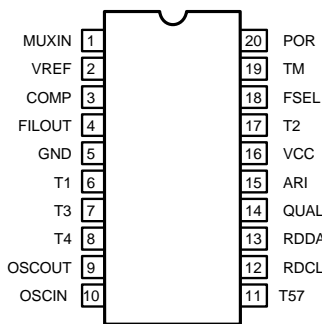
LA7952 (IC500)
(U.S.A./Canada model)



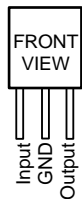
NJM2068DD (IC301,602)



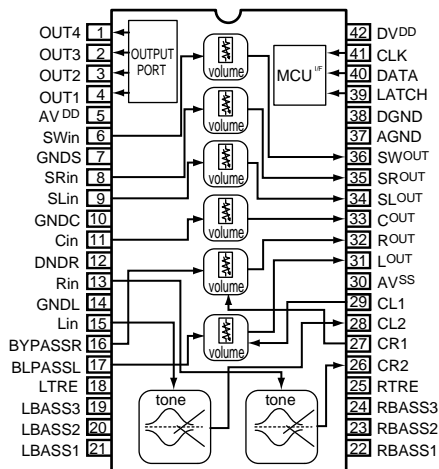
TDA7330B (IC901)
(Europe model only)



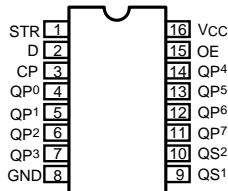
NJM7805FA (IC104)
NJM7812FA (IC502)
(U.S.A./Canada model)
KIA7815AP (IC101)



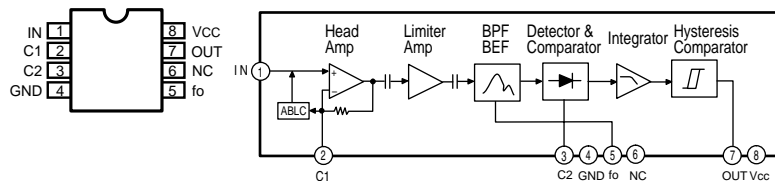
M62446FP (IC601)



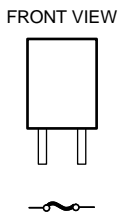
PC74HC4094 (IC600)



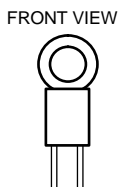
CXA1511M (IC501)
(U.S.A./Canada model)



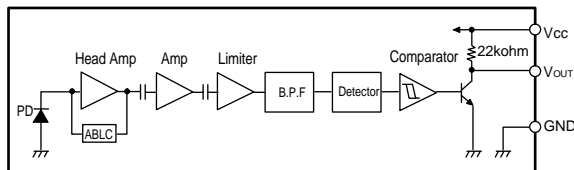
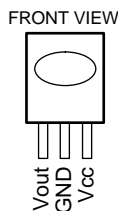
● **IC PROTECTOR**
ICP-N15 (IC105)



● **POSISTOR**
P43T7D330BW16

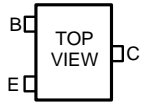


● **IR SENSOR**
NJL64H380A (RMC900)

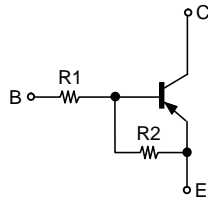


● TRANSISTORS

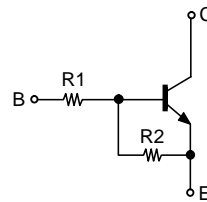
DTA114EK
DTA114YK
DTC114YK



DTA series



DTC series



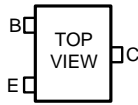
DTA114ES
DTA144ES
DTC114ES
DTC114YS
DTC144ES

	R1	R2
DTA114EK	10kohm	10kohm
DTA114ES	10kohm	10kohm
DTA114YK	10kohm	47kohm
DTA114ES	47kohm	47kohm

	R1	R2
DTC114ES	10kohm	10kohm
DTC114YK	10kohm	47kohm
DTC114YS	10kohm	47kohm
DTC144ES	47kohm	47kohm



KTC3880S



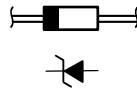
2SD947F
KTA1266Y
KSA992F
KSC1845F
KTC3200BL
KTC3198Y
KTA1268BL
KSA916Y
2SC1740S
KTC2874B

2SB1559
2SD2389

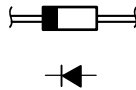


● DIODES (LED Included)

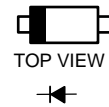
MTZJ3.3B
MTZJ5.1B
MTZJ5.6B
MTZJ6.2B
MTZJ6.8B
MTZJ7.5A
MTZJ7.5B
MTZJ18B
MTZJ20B



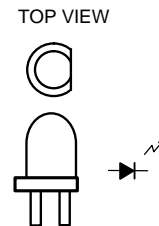
1N4007
1SS133



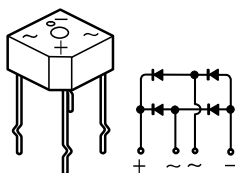
KDS160



HL-50RDRF4

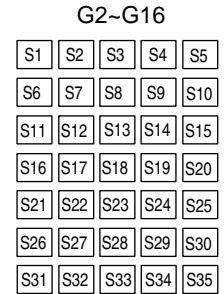
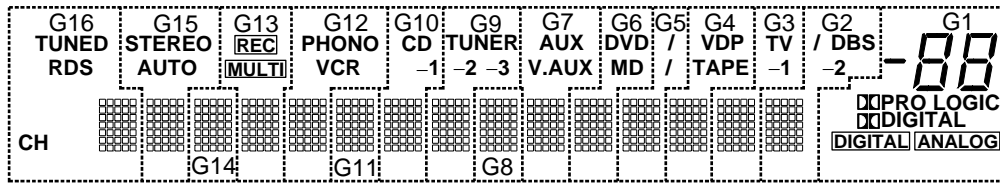
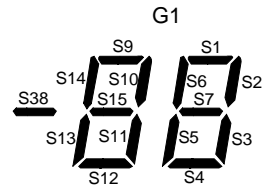
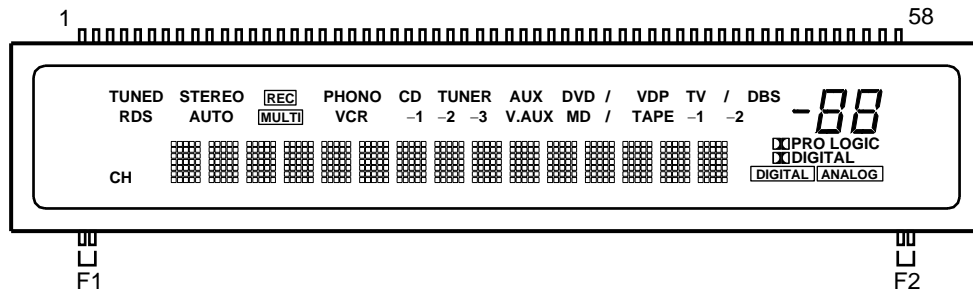


KBPC604



● FL DISPLAY

16-st-42GNK (FL900)



Pin Assignment

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CONNECTION	F1	F1	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18
PIN NO.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CONNECTION	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38
PIN NO.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58		
CONNECTION	G16	G15	G14	G13	G12	G11	G10	G9	G8	G7	G6	G5	G4	G3	G2	G1	F2	F2		

F1,F2 : Filament
 G1~G16 : Grid
 S1~S38 : Anode

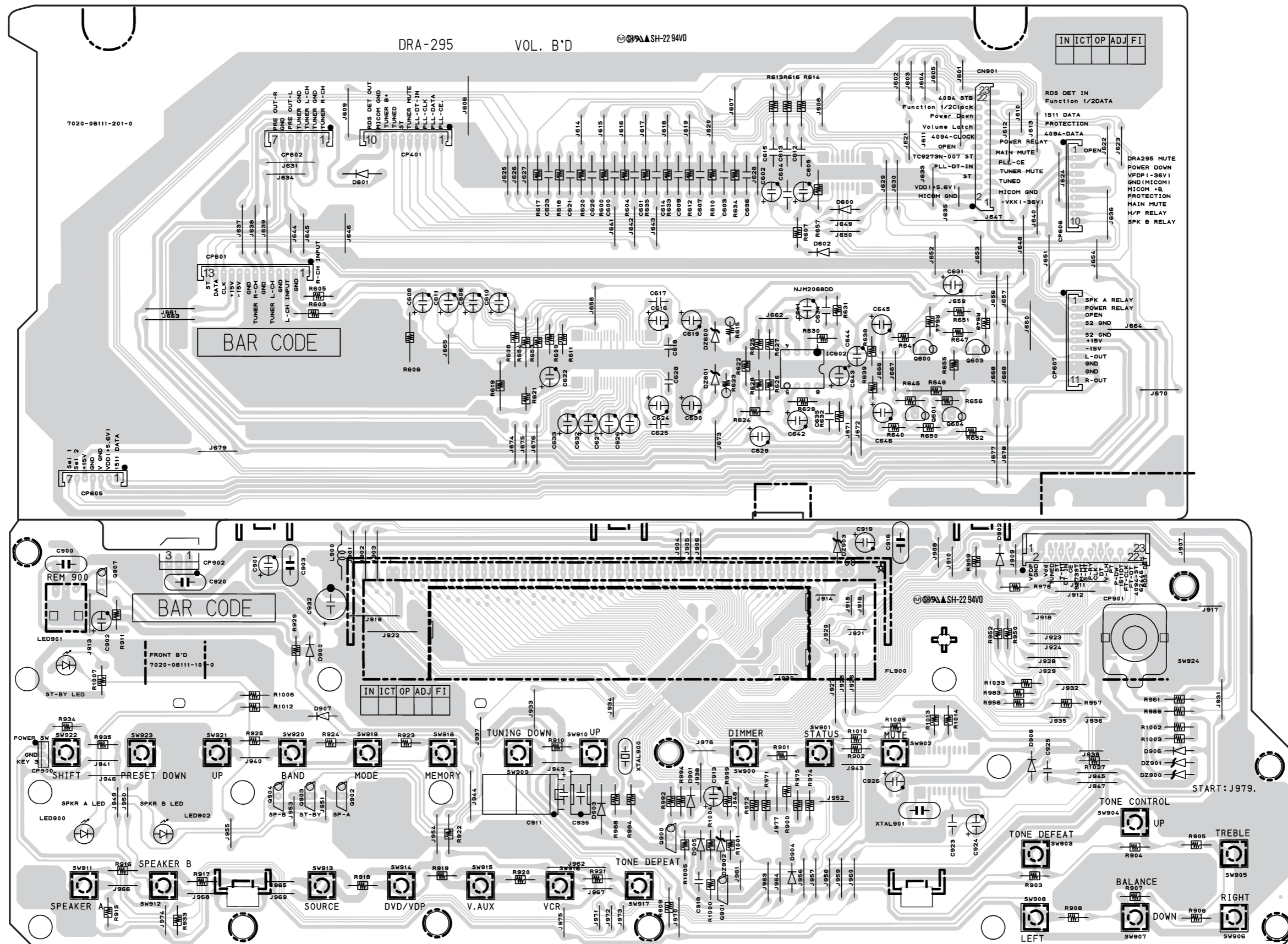
Anode & Grid Assignment

	G1	G2~G16		G1	G2~G16		G1	G2~G16		G1	G2~G16
S1	S1	S1	S10	S10	S10	S19	—	S19	S28	—	S28
S2	S2	S2	S11	S11	S11	S20	—	S20	S29	—	S29
S3	S3	S3	S12	S12	S12	S21	—	S21	S30	—	S30
S4	S4	S4	S13	S13	S13	S22	—	S22	S31	—	S31
S5	S5	S5	S14	S14	S14	S23	—	S23	S32	—	S32
S6	S6	S6	S15	S15	S15	S24	—	S24	S33	—	S33
S7	S7	S7	S16	—	S16	S25	—	S25	S34	—	S34
S8	—	S8	S17	DIGITAL	S17	S26	—	S26	S35	—	S35
S9	S9	S9	S18	PRO LOGIC	S18	S27	—	S27			

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16
S36	DIGITAL	/	TV	VDP	/(DVD)	DVD	AUX	—	TUNER	CD	—	PHONO	REC	—	STEREO	TUNED
S37	ANALOG	-2	-1	TAPE	/(MD)	MD	V.AUX	—	-2	-1	—	VCR	MULTI	—	AUTO	RDS
S38	S38	DBS	—	—	—	—	—	—	-3	—	—	—	—	—	—	CH

1 2 3 4 5 6 7 8

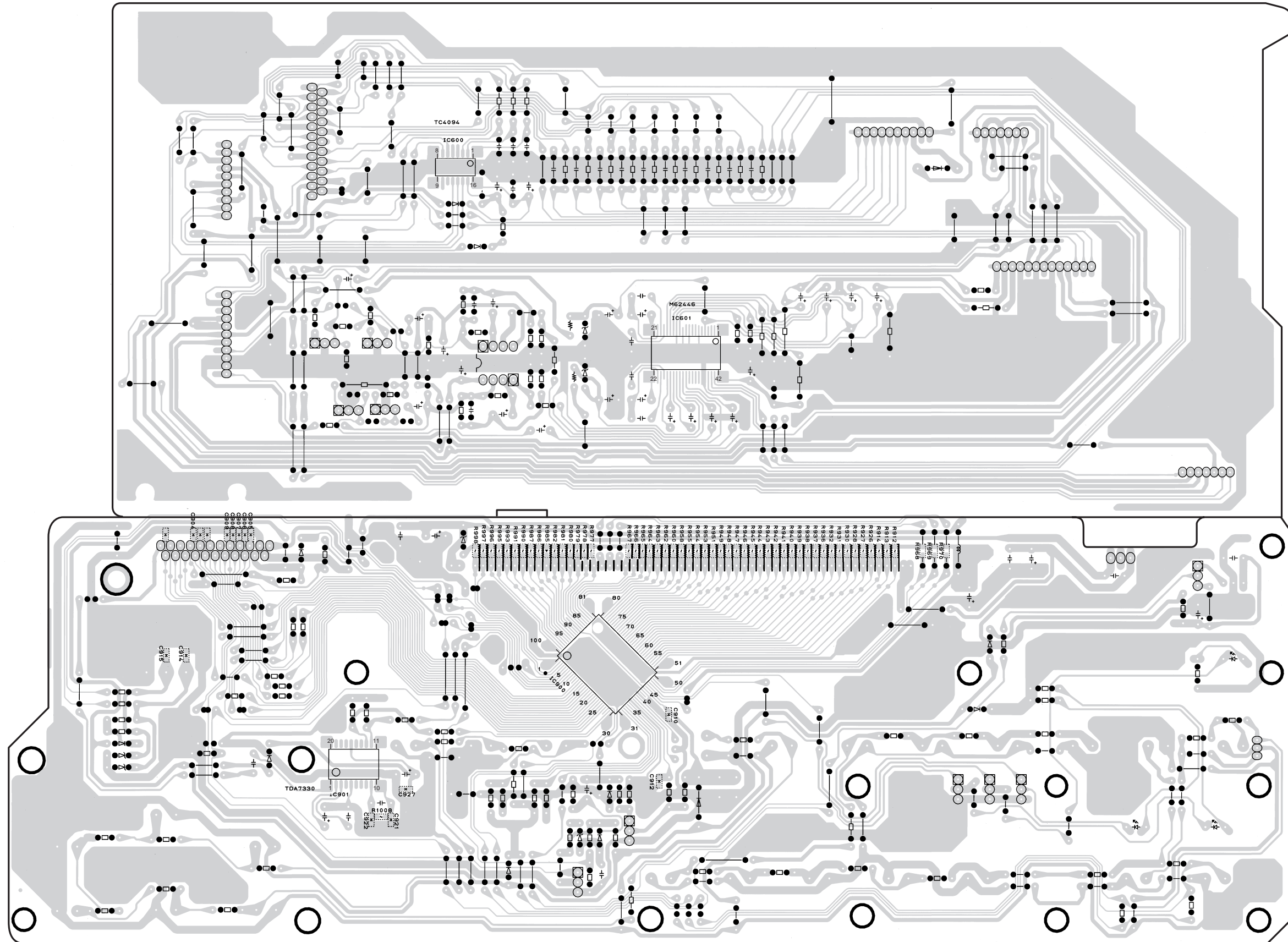
VOLUME P.W.B. UNIT Ass'y



A
B
C
D
E

COMPONENT SIDE

1 2 3 4 5 6 7 8

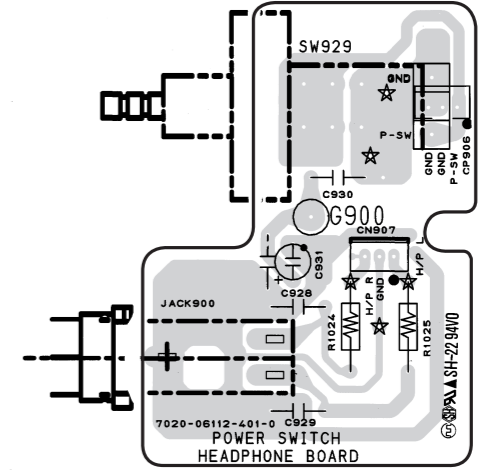
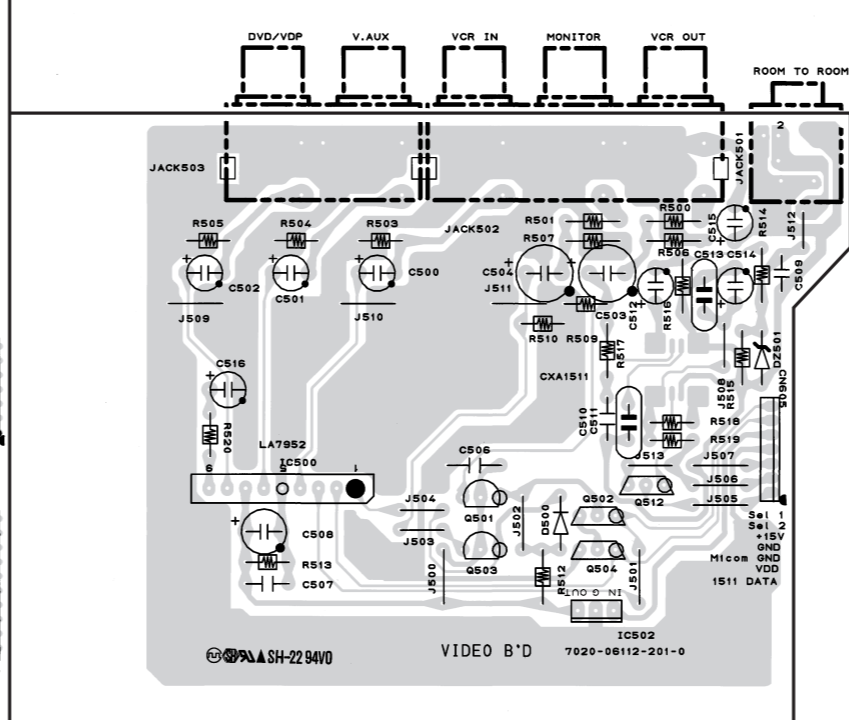
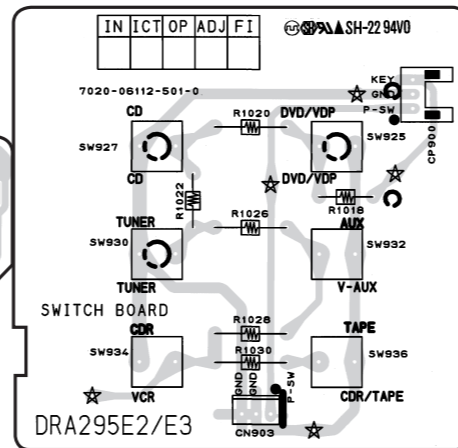
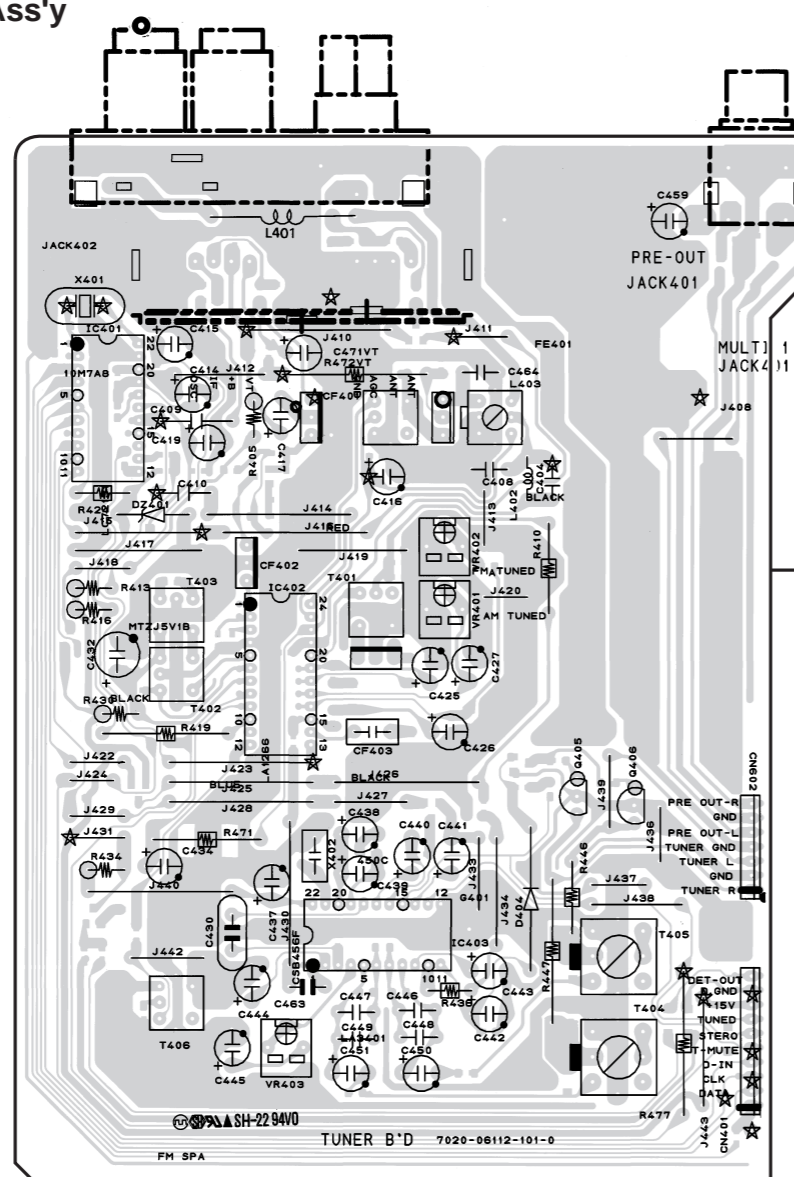


A
B
C
D
E

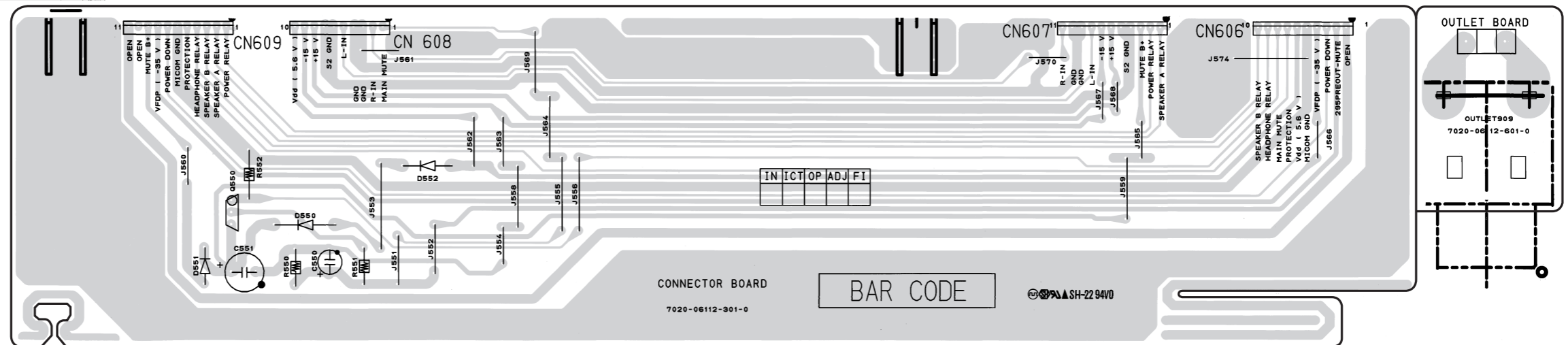
FOIL SIDE

1 2 3 4 5 6 7 8

TUNER P.W.B. UNIT Ass'y



IN	ICT	OP	ADJ	FI



BAR CODE

COMPONENT SIDE

A
B
C
D
E

1

2

3

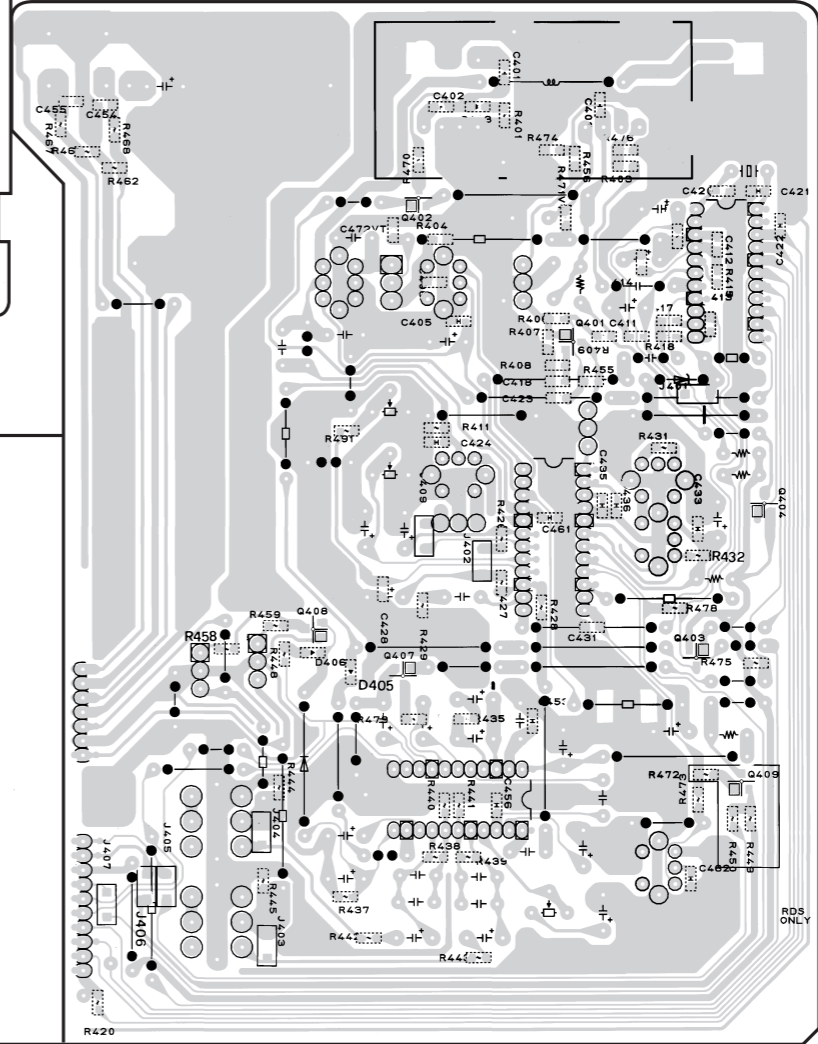
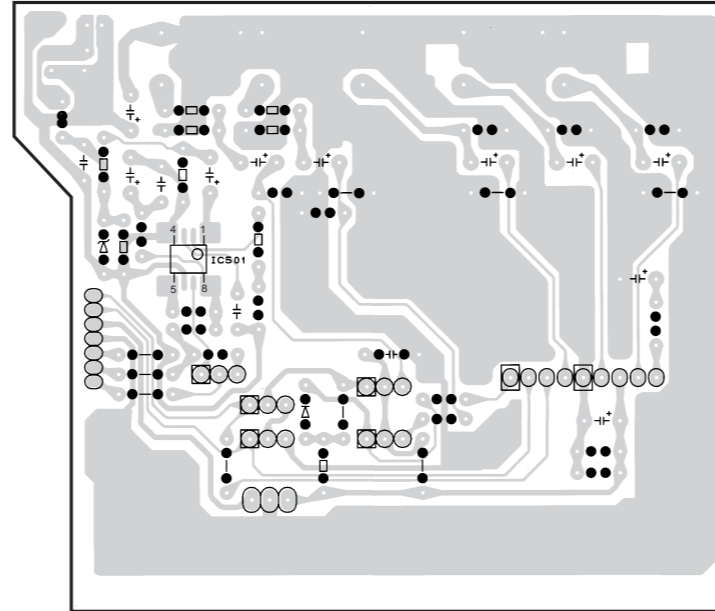
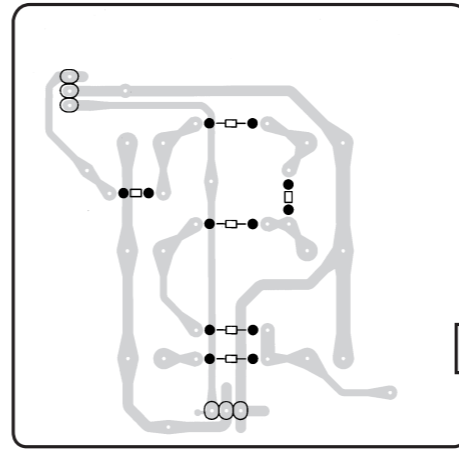
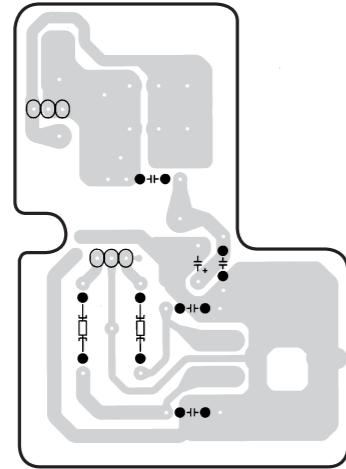
4

5

6

7

8



A

B

C

D



E

FOIL SIDE

NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol   have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

● **Resistors**

Ex.: RN 14K 2E 182 G FR
 Type Shape Power Resist- Allowable Others
 and per- ance error

RD : Carbon	2B : 1/8W	F : ±1%	P : Pulse-resistant type
RC : Composition	2E : 1/4W	G : ±2%	NL : Low noise type
RS : Metal oxide film	2H : 1/2W	J : ±5%	NB : Non-burning type
RW : Winding	3A : 1W	K : ±10%	FR : Fuse-resistor
RN : Metal film	3D : 2W	M : ±20%	F : Lead wire forming
RK : Metal mixture	3F : 3W		
	3H : 5W		

* **Resistance**

1 8 2 ⇒ 1800 ohm = 1.8 kohm
 ↑ ↑
 Indicates number of zeros after effective number.
 2-digit effective number.

• Units: ohm

1 R 2 ⇒ 1.2 ohm
 ↑ ↑
 1-digit effective number.
 2-digit effective number, decimal point indicated by R.

• Units: ohm

● **Capacitors**

Ex.: CE 04W 1H 2R2 M BP
 Type Shape Dielectric Capacity Allowable Others
 and per- strength error

CE : Aluminum foil electrolytic	0J : 6.3V	F : ±1%	HS : High stability type
CA : Aluminum solid electrolytic	1A : 10V	G : ±2%	BP : Non-polar type
CS : Tantalum electrolytic	1C : 16V	J : ±5%	HR : Ripple-resistant type
CQ : Film	1E : 25V	K : ±10%	DL : For charge and discharge
CK : Ceramic	1V : 35V	M : ±20%	HF : For assuring high frequency
CC : Ceramic	1H : 50V	Z : +80%	U : UL part
CP : Oil	2A : 100V	-20%	C : CSA part
CM : Mica	2B : 125V	P : +100%	W : UL-CSA type
CF : Metallized	2C : 160V	-0%	F : Lead wire forming
CH : Metallized	2D : 200V	C : ±0.25pF	
	2E : 250V	D : ±0.5pF	
	2H : 500V	= : Others	
	2J : 630V		

* **Capacity (electrolyte only)**

2 2 2 ⇒ 2200µF
 ↑ ↑
 Indicates number of zeros after effective number.
 2-digit effective number.

• Units: µF.

2 R 2 ⇒ 2.2µF
 ↑ ↑
 1-digit effective number.
 2-digit effective number, decimal point indicated by R.

• Units: µF.

* **Capacity (except electrolyte)**

2 2 2 ⇒ 2200pF=0.0022µF
 ↑ ↑ (More than 2)
 Indicates number of zeros after effective number.
 2-digit effective number.

• Units: pF.

2 2 1 ⇒ 220pF
 ↑ ↑ (0 or 1)
 Indicates number of zeros after effective number.
 2-digit effective number.

• Units: pF.

• When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value.

PARTS LIST OF P.W.B. UNIT

MAIN P.W.B. UNIT ASS'Y

Note: The symbols in the column "Remarks" indicate the following destinations.
 E3: U.S.A./Canada model
 E2: Europe model

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC101	963 0057 903	IC KIA7815AP	J126781500060
IC102	963 0044 806	IC NJM7915FA	J126791500010
IC104	960 0196 001	IC NJM7805FA	J126780500130
IC105	960 0195 808	IC ICP-N15	J120001500030
IC300	960 0174 308	IC TC9273N-007	J080927300000
IC301	960 0179 701	IC NJM2068DD	J121206800000
Q101,102	960 0196 603	Transistor KTC2874B	J502287400010
Q103-106	960 0196 205	Transistor KSA992Y	J5000992F0050
Q107,108	960 0196 506	Transistor KSC1845F	J5021845F0000
Q115,116	960 0196 506	Transistor KSC1845F	J5021845F0000
Q117-119	963 0022 006	Transistor DTC114YS	J6020114Y0050
Q120	960 0196 302	Transistor KTA1268BL	J5001268B0050
Q121	960 0196 700	Transistor KTC3200BL	J5023200B0050
Q122	960 0189 005	Transistor KSA916Y	J5000916Y0050
Q123	960 0005 105	Transistor KTA1266Y	J5001266Y0050
Q124	960 0005 202	Transistor KTC3198Y	J5023198Y0000
Q125	960 0196 302	Transistor KTA1268BL	J5001268B0050
Q126,127	960 0005 202	Transistor KTC3198Y	J5023198Y0000
Q128	960 0196 302	Transistor KTA1268BL	J5001268B0050
Q129,130	960 0005 202	Transistor KTC3198Y	J5023198Y0000
Q131,132	960 0196 302	Transistor KTA1268BL	J5001268B0050
Q133,134	960 0196 409	Transistor 2SC1740SR	J5021740S0010
Q136	963 0022 006	Transistor DTC114YS	J6020114Y0050
D101-113	963 0020 309	Diode 1SS133	K000013300520
D114-119	963 0058 407	Diode 1N4007	K000400700520
D120,121	963 0020 309	Diode 1SS133	K000013300520
D122-125	963 0058 407	Diode 1N4007	K000400700520
D126-129	963 0020 309	Diode 1SS133	K000013300520
D132-135	963 0020 309	Diode 1SS133	K000013300520
DB101,102	960 0197 107	Diode KBPC604	K047604000020
DZ101,102	963 0046 202	Zener diode MTZJ18B	K06018R044520
DZ103,104	963 0047 405	Zener diode MTZJ7.5B	K06007R544520
DZ105	963 0058 708	Zener diode MTZJ20B	K06020R044520
DZ106	960 0095 500	Zener diode MTZJ5.1B	K06005R144520
DZ107-110	963 0047 502	Zener diode MTZJ3.3B	K06003R344520
RESISTORS GROUP			
R117,118	960 9004 301	Metal film 47ohm 1/4W (NB)	C060047063050
R127-130	244 2052 957	Metal film 5.6kohm 1W (NB)	C060056265070
R135,136	963 9003 068	Metal film 4.7ohm 1/4W (NB)	C0604R7063050
R137-140	244 2043 982	Metal film 0.22ohm 1W (NB)	C060R22065070
R141,142	963 9003 068	Metal film 4.7ohm 1/4W (NB)	C0604R7063050
R143-146	244 2043 982	Metal film 0.22ohm 1W (NB)	C060R22065070
R153-156	244 2043 937	Metal oxide 10ohm 1W (NB)	C041010065060
R162-164	244 2055 996	Metal film 1.2kohm 1W (NB)	C060012265050
R165	244 2043 937	Metal oxide 10ohm 1W (NB)	C041010065060

Ref. No.	Part No.	Part Name	Remarks
R166	244 2043 982	Metal film 0.22ohm 1W (NB)	C060R22065050
R173	963 9003 068	Metal film 4.7ohm 1/4W (NB)	C0604R7063050
R190,191	963 0045 203	Winding 0.1ohm 5W	C144R10069110
R195,196	244 2043 982	Metal film 0.22ohm 1W (NB)	C060R22065050
R208	963 9005 105	Carbon film 68ohm 1/4W	C000068063520
R209	963 0043 108	Metal film 2.2Mohm 1/2W	for E3 C060022574000
R343,344	244 2043 937	Metal oxide 10ohm 1W (NB)	C041010065060
VR101,102	960 0091 601	Semi fixed resistor 1kohm	C544102015130
CAPACITORS GROUP			
C101,102		Electrolytic 22uF/50V	D040220087060
C103,104		Electrolytic 10uF/50V	D040100087070
C105,106	963 9005 118	Ceramic 100pF/50V	D004101067060
C107,108	963 9003 165	Ceramic 220pF/500V	D009092212500
C109,110		Electrolytic 47uF/25V	D040470084070
C111,112	963 9005 121	Ceramic 33pF/500V	D000330067050
C115,116	963 9005 134	Ceramic 1200pF/50V	D004122287050
C117,118		Electrolytic 47uF/50V	D040470087060
C119,120	963 9003 084	Ceramic 100pF/500V	D00410106D050
C121,122		Electrolytic 10uF/50V	D040100087070
C123,124	963 9003 084	Ceramic 100pF/500V	D00410106D050
C125,126	963 9004 517	Ceramic 0.022uF/50V	D004223597050
C127-130	963 9003 097	Mylar film 0.1uF/250V	D02010407H080
C131-134	960 9003 409	Mylar film 0.01uF/50V	for E2 D020103167050
C135	963 9004 504	Ceramic 0.01uF/50V	D004103097060
C136		Electrolytic 2.2uF/50V	D0402R2087100
C137	963 9004 504	Ceramic 0.01uF/50V	D004103097060
C138,139		Electrolytic 1uF/50V	D040010087080
C140	963 9005 147	Ceramic 0.1uF/25V	D004104594050
C141		Electrolytic 220uF/6.3V	D040221081230
C142	963 9005 147	Ceramic 0.1uF/25V	D004104594050
C143		Electrolytic 220uF/6.3V	D040221081230
C144,145	963 9005 150	Electrolytic 680uF/63V	D040681088030
C146-150	963 9003 097	Mylar film 0.1uF/250V	D02010407H080
C151		Electrolytic 1uF/50V	D040010087080
C152	963 9005 163	Electrolytic 1000uF/50V	D040102087230
C153-155	963 0021 900	Mylar film 0.047uF/100V	D02047306C060
C156	960 9007 201	Electrolytic 3300uF/35V	D040332085010
C157	963 9003 123	Electrolytic 1000uF/35V	D040102085040
C158,159		Electrolytic 10uF/50V	D040100087070
C161		Electrolytic 10uF/50V	D040100087070
C162		Electrolytic 4.7uF/50V	D0404R7087100
C164	963 9003 136	Electrolytic 1000uF/25V	D040102084060
C167,168		Electrolytic 1uF/50V	D040010087080
▲ C169	963 9005 176	Ceramic 4700pF/250V (AC)	D008472089010
C170	963 9005 299	Electrolytic 100uF/100V	D04010108C200
C174		Electrolytic 10uF/50V	D040100087070

Ref. No.	Part No.	Part Name	Remarks	
C175	963 9005 189	Mylar film 2200pF/63V	for E2 D020222068050	
C178	963 9005 189	Mylar film 2200pF/63V	for E2 D020222068050	
C300-313	963 9004 520	Ceramic 100pF/50V	for E2 D005101177520	
C314		Electrolytic 10uF/50V	D040100087070	
C315,316	963 9004 504	Ceramic 0.01uF/50V	D004103097060	
C317-321		Electrolytic 10uF/50V	D040100087070	
OTHER PARTS GROUP				Q'ty
CN601	960 0129 706	13P connector base	L101352371310	1
CN908	960 0123 304	2P connector base	for E2 L104353280200	1
CP101	960 0197 505	2P connector base	L108202000220	1
CP102	960 0123 304	2P connector base	L104353280200	1
CP103	963 0081 403	4P connector base	L104353280400	1
CP104	960 0123 207	3P connector base	L102526700300	1
CP105	960 0123 304	2P connector base	for E2 L104353280200	1
CP107	960 0123 207	3P connector base	L102526700300	1
CP608	963 0088 008	10P connector base	L101100041010	1
CP609	963 0087 805	11P connector base	L101100041110	1
CP907	963 0048 909	3P connector base	L101220030000	1
△ F101	960 0188 705	Fuse 8A/125V	for E3 G650802121060	1
△ F101	960 0142 602	Fuse T2.5A/250V	for E2 G650252251160	1
△ F102	963 0089 803	Fuse 6.3A/125V	for E3 G650632121150	1
△ F102	963 0044 709	Fuse T3.15A/250V	for E2 G650312251160	1
F101A,B	960 0005 804	Fuse clip	G645000050010	2
F102A,B	960 0005 804	Fuse clip	G645000050010	2
GND101-103	960 9006 600	GND terminal	3790040876010	3
JACK102	963 0074 009	8P speaker terminal	G61408103610A	1
JACK104	960 0181 508	2P AC outlet	for E3 G435204004010	1
JACK301,302	960 0188 200	4P pin jack	G602040610000	2
JACK303	960 0188 307	6P pin jack	G603060610010	1
L101,102	963 0049 005	Inductor 0.5uH	D330R50000000	2
RLY101	960 0181 702	Relay (G5PA-28)	G680240502020	1
RLY102	963 0071 303	Relay (RSB24S)	G680240202010	1
RLY103	960 0181 702	Relay (G5PA-28)	G680240502020	1
RLY104	960 0181 605	Relay (G5PA-1-8)	G680120502010	1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
△ T101	960 0185 708	Power trans. (Sub)	for E3 8200280960010	1
△ T101	960 0185 711	Power trans. (Sub)	for E2 8201280000010	1
TP101,102	960 0161 405	3P connector base	L101530140310	2
★	—	Heat sink	2120043538050	1
★	963 0018 007	Screw 3×8 (B)-Z	B020030081B10	2
★	963 0068 400	Condenser cover	for E2 4310002640010	1
★	963 0060 000	Fuse label (for T101)	for E2 5527200040020	1

FRONT P.W.B. UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC600	960 0195 400	IC PC74HC4094D	J040744094020
IC601	960 0179 604	IC M62446FP	J084624460010
IC602	960 0179 701	IC NJM2068DD	J121206800000
IC900	963 0089 609	IC CXP82840-321Q	J020828403210
IC901	963 0081 801	IC TDA7330BD	for E2 J020733000010
Q600,601	960 0196 603	Transistor KTC2874B	for E3 J502287400010
Q603,604	960 0196 603	Transistor KTC2874B	for E3 J502287400010
Q900	960 0196 409	Transistor 2SC1740SR	J5021740S0010
Q901	963 0075 503	Transistor DTC144ES	J6020144E0010
Q902-904	963 0081 306	Transistor DTC114ES	J6020114E0010
Q907	963 0081 209	Transistor DTA144ES	J6000144E0010
D600	963 0020 309	Diode 1SS133	K000013300520
D601	963 0058 407	Diode 1N4007	K000400700520
D602	963 0020 309	Diode 1SS133	K000013300520
D900-902	963 0020 309	Diode 1SS133	K000013300520
D903	963 0058 407	Diode 1N4007	K000400700520
D904-908	963 0020 309	Diode 1SS133	K000013300520
DZ600,601	960 0222 603	Zener diode MTZJ7.5A	K06007R544530
DZ900,901	960 0095 607	Zener diode MTZJ5.6B	K06005R644520
DZ902	963 0047 502	Zener diode MTZJ3.3B	K06003R344520
DZ903	960 0095 801	Zener diode MTZJ6.8B	K06006R844520
LED900-902	960 0197 204	LED HL50RDRF4T	K500052015010
FL900	960 0180 509	FLT (16-ST-42GNK)	K530164200010
RESISTORS GROUP			
R615	244 2052 960	Metal film 220ohm 1W (NB)	C060022165050
R623	244 2052 960	Metal film 220ohm 1W (NB)	C060022165050
R912-914	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R926-928	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R930-932	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R936-949	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R951	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R953-955	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R958	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R960	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R962-970	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R977-982	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R985-987	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160

Ref. No.	Part No.	Part Name	Remarks
R990,991	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R993	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R995	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R1008	963 9004 245	Carbon chip 2.2Mohm 1/16W	for E2 C20002256M160
CAPACITORS GROUP			
C600,601	963 9004 520	Ceramic 100pF/50V	D005101177520
C602		Electrolytic 10uF/50V	D040100087070
C603	963 9004 520	Ceramic 100pF/50V	D005101177520
C604	960 9003 108	Ceramic 0.022uF/25V	D005223594520
C605		Electrolytic 47uF/10V	D040470082050
C606		Electrolytic 4.7uF/50V	D0404R7087100
C607	963 9004 520	Ceramic 100pF/50V	D005101177520
C608		Electrolytic 4.7uF/50V	D0404R7087100
C609	963 9004 520	Ceramic 100pF/50V	D005101177520
C610,611		Electrolytic 4.7uF/50V	D0404R7087100
C612-615	963 9004 520	Ceramic 100pF/50V	D005101177520
C616		Electrolytic 0.33uF/50V	D040R33087100
C617	960 9003 603	Mylar film 0.015uF/50V	D020153167050
C618	963 9005 079	Mylar film 8200pF/100V	D02082206C060
C619		Electrolytic 47uF/10V	D040470082050
C620,621	963 9004 520	Ceramic 100pF/50V	D005101177520
C622		Electrolytic 1uF/50V	D040010087080
C623	963 9004 520	Ceramic 100pF/50V	D005101177520
C624		Electrolytic 0.33uF/50V	D040R33087100
C625	960 9003 603	Mylar film 0.015uF/50V	D020153167050
C626,627		Electrolytic 3.3uF/50V	D0403R308705C
C628	963 9005 079	Mylar film 8200pF/100V	D02082206C060
C629		Electrolytic 10uF/50V	for E3 D040100087070
C630		Electrolytic 47uF/10V	D040470082050
C631		Electrolytic 10uF/50V	for E3 D040100087070
C632,633		Electrolytic 10uF/50V	D040100087070
C634,635	963 9005 082	Ceramic 39pF/50V	D001390067520
C636	960 9003 108	Ceramic 0.022uF/25V	for E3 D005223594520
C636	963 9004 520	Ceramic 100pF/50V	for E2 D005101177520
C641-644		Electrolytic 10uF/50V	D040100087070
C645,646		Electrolytic 10uF/50V	for E3 D040100087070
C900	963 0021 900	Mylar film 0.047uF/100V	D02047306C060
C901		Electrolytic 1uF/50V	D040010087080
C902		Electrolytic 47uF/25V	D040470084070
C903	963 0021 900	Mylar film 0.047uF/100V	D02047306C060
C904-909	963 9004 575	Ceramic chip 100pF/50V	D010101167160
C910	963 9004 708	Ceramic chip 0.1uF/50V	D011104577160
C911	963 0061 504	Back up cap. 8200uF/5.5V	D040822080010

TUNER P.W.B. UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks	
C912	963 9004 708	Ceramic chip 0.1uF/50V	D011104577160	
C913		Electrolytic 4.7uF/50V	D0404R7087100	
C914,915	963 9004 698	Ceramic chip 0.01uF/50V	D011103777160	
C916	963 0021 900	Mylar film 0.047uF/100V	D02047306C060	
C918	963 9004 504	Ceramic 0.01uF/50V	D004103097060	
C919		Electrolytic 47uF/50V	D040470087060	
C920	963 0021 900	Mylar film 0.047uF/100V	D02047306C060	
C921,922	963 9004 614	Ceramic chip 27pF/50V	for E2 D01027016716C	
C923	963 9004 504	Ceramic 0.01uF/50V	for E2 D004103097060	
C924		Electrolytic 10uF/50V	for E2 D040100087050	
C925	963 9005 095	Ceramic 270pF/50V	for E2 D000271067050	
C926		Electrolytic 47uF/25V	for E2 D040470084070	
C927	963 9004 698	Ceramic chip 0.01uF/50V	for E2 D011103777160	
C932		Electrolytic 100uF/50V	D040101087060	
C935	960 0186 503	Electric double layer 0.047F/5.5V	for E2 D090473904010	
OTHER PARTS GROUP				Q'ty
CN901	963 0071 206	23P FFC connector base	L131520452345	1
CP401	963 0088 008	10P connector base	L101100041010	1
CP601	960 0128 600	13P connector base	L101353361310	1
CP602	963 0085 807	7P connector base	L101100040710	1
CP605	963 0085 807	7P connector base	L101100040710	1
CP606	963 0088 008	10P connector base	L101100041010	1
CP607	963 0087 805	11P connector base	L101100041110	1
CP900	963 0089 706	3P connector cord (L=100)	L000101030070	1
CP901	963 0071 109	23P FFC connector base (L)	L131520442345	1
CP902	963 0049 102	3P connector base (L)	L102526803010	1
L900	960 0128 008	Inductor 100uH	D330101001020	1
REM900	960 0181 100	Remocon sensor NJL64H380A	E940643800000	1
SW900-923	960 0194 207	Tact switch	G180000270010	24
SW924	960 0181 207	Rotary encoder (EC16B2420431)	G121162420400	1
XTAL900	960 0112 001	Ceramic resonator	CST10.0MGW-TF01 E830100000050	1
XTAL901	960 0091 818	Crystal 4.332MHz	for E2 E8004R3320051	1
★	960 0184 408	FLT holder	4320200026000	1

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC401	963 0043 700	IC LC72131	J120721310030
IC402	963 0043 904	IC LA1266	J124126600010
IC403	963 0044 000	IC LA3401	J124340100010
IC500	960 0181 101	IC LA7952	for E3 J171795200000
IC501	960 0174 104	IC CXA1511M	for E3 J030151100010
IC502	263 0516 001	IC NJM7812FA	for E3 J126781200010
Q401	963 0058 300	Transistor KTC3880S	J5223880O0210
Q402	963 0079 305	Transistor DTA114YK	J5200114Y0210
Q403,404	963 0058 203	Transistor DTA114EK	J5200114E0210
Q405,406	960 0196 603	Transistor KTC2874B	J502287400010
Q407	963 0024 208	Transistor DTC114YK	J5220114Y0210
Q408	963 0058 203	Transistor DTA114EK	J5200114E0210
Q409	963 0058 300	Transistor KTC3880S	for E2 J5223880O0210
Q501	960 0096 813	Transistor KTC3199Y	for E3 J5023199Y0010
Q502	963 0022 006	Transistor DTC114YS	for E3 J6020114Y0050
Q503	960 0096 813	Transistor KTC3199Y	for E3 J5023199Y0010
Q504	963 0022 006	Transistor DTC114YS	for E3 J6020114Y0050
Q512	963 0081 209	Transistor DTA144ES	for E3 J6000144E0010
Q550	963 0075 309	Transistor DTA114ES	J6000114E0010
D403	960 0197 000	Diode KDS160	K005016000010
D404	963 0020 309	Diode 1SS133	K000013300520
D405,406	960 0197 000	Diode KDS160	K005016000010
D500	963 0020 309	Diode 1SS133	for E3 K000013300520
D550	963 0058 407	Diode 1N4007	K000400700520
D551	963 0020 309	Diode 1SS133	K000013300520
D552	963 0058 407	Diode 1N4007	K000400700520
DZ401	960 0095 500	Zener diode MTZJ5.1B	K06005R144520
DZ501	960 0095 704	Zener diode MTZJ6.2B	for E3 K06006R244520
RESISTORS GROUP			
R401	963 9004 821	Carbon chip 10ohm 1/16W	C20001006M160
R403	963 9004 339	Carbon chip 470ohm 1/16W	C20004716M160
R404	963 9004 083	Carbon chip 100kohm 1/16W	C20001046M160

Ref. No.	Part No.	Part Name	Remarks
R405	960 9003 807	Metal film 100ohm 1/4W (NB)	C060010163050
R406	963 9004 342	Carbon chip 4.7kohm 1/16W	C20004726M160
R407	963 9004 339	Carbon chip 470ohm 1/16W	for E3 C20004716M160
R407	963 9005 008	Carbon chip 620ohm 1/16W	for E2 C20006216M160
R408	963 9004 119	Carbon chip 1.2kohm 1/16W	for E3 C20001226M160
R408	963 9004 436	Carbon chip 680ohm 1/16W	for E2 C20006816M160
R409	963 9004 339	Carbon chip 470ohm 1/16W	C20004716M160
R411	963 9005 011	Carbon chip 68kohm 1/16W	C20006836M160
R412	963 9004 834	Carbon chip 5.6kohm 1/16W	C20005626M160
R413	960 9006 503	Metal film 220ohm 1/4W (NB)	C060022163050
R414	963 9004 216	Carbon chip 2.2kohm 1/16W	C20002226M160
R415	963 9003 398	Carbon chip 1kohm 1/16W	C20001026M160
R416	963 9005 024	Metal film 680ohm 1/4W (NB)	C060068163050
R417	963 9003 398	Carbon chip 1kohm 1/16W	C20001026M160
R418	963 9004 274	Carbon chip 33kohm 1/16W	C20003336M160
R420	963 9004 847	Carbon chip 3.3kohm 1/16W	C20003326M160
R426,427	963 9004 070	Carbon chip 10kohm 1/16W	C20001036M160
R428	963 9004 847	Carbon chip 3.3kohm 1/16W	for E3 C20003326M160
R428	963 9004 070	Carbon chip 10kohm 1/16W	for E2 C20001036M160
R429	963 9004 850	Carbon chip 82ohm 1/16W	C20008206M160
R430	963 9003 807	Metal film 100ohm 1/4W (NB)	C060010163050
R431	963 9004 371	Carbon chip 5.1kohm 1/16W	C20005126M160
R432	963 9004 070	Carbon chip 10kohm 1/16W	C20001036M160
R434	963 9003 807	Metal film 100ohm 1/4W (NB)	C060010163050
R435	963 9004 847	Carbon chip 3.3kohm 1/16W	C20003326M160
R437	963 9004 083	Carbon chip 100kohm 1/16W	C20001046M160
R438,439	963 9004 083	Carbon chip 100kohm 1/16W	for E3 C20001046M160
R438,439	963 9004 164	Carbon chip 150kohm 1/16W	for E2 C20001546M160
R440,441	963 9004 863	Carbon chip 120kohm 1/16W	for E3 C20001246M160
R440,441	963 9004 232	Carbon chip 220kohm 1/16W	for E2 C20002246M160
R442,443	963 9004 847	Carbon chip 3.3kohm 1/16W	for E3 C20003326M160
R442,443	963 9004 216	Carbon chip 2.2kohm 1/16W	for E2 C20002226M160
R444,445	963 9004 481	Carbon chip 8.2kohm 1/16W	for E3 C20008226M160
R444,445	963 9004 847	Carbon chip 3.3kohm 1/16W	for E2 C20003326M160
R448	963 9004 216	Carbon chip 2.2kohm 1/16W	C20002226M160
R449	963 9005 037	Carbon chip 3.9kohm 1/16W	for E2 C20003926M160

Ref. No.	Part No.	Part Name	Remarks
R450	963 9003 398	Carbon chip 1kohm 1/16W	for E2 C20001026M160
R455	963 9004 876	Carbon chip 330ohm 1/16W	C20003316M160
R456	963 9003 385	Carbon chip 100ohm 1/16W	C20001016M160
R458,459	963 9004 342	Carbon chip 4.7kohm 1/16W	C20004726M160
R462,463	963 9004 083	Carbon chip 100kohm 1/16W	for E3 C20001046M160
R467,468	963 9004 203	Carbon chip 220ohm 1/16W	for E3 C20002216M160
R470	963 9003 398	Carbon chip 1kohm 1/16W	C20001026M160
R471VT	963 9004 203	Carbon chip 220ohm 1/16W	C20002216M160
R472	963 9003 385	Carbon chip 100ohm 1/16W	for E2 C20001016M160
R473	963 9003 372	Carbon chip 0ohm 1/16W	for E3 C20000006M160
R473	963 9005 040	Carbon chip 2.4kohm 1/16W	for E2 C20002426M160
R474	963 9004 889	Carbon chip 180ohm 1/16W	for E2 C20001816M160
R475	963 9004 122	Carbon chip 12kohm 1/16W	C20001236M160
R476	963 9004 397	Carbon chip 56kohm 1/16W	C20005636M160
R478	963 9004 070	Carbon chip 10kohm 1/16W	C20001036M160
R479	963 9004 083	Carbon chip 100kohm 1/16W	C20001046M160
R491	963 9004 229	Carbon chip 22kohm 1/16W	C20002236M160
R1024,1025	963 0048 006	Metal film 330ohm 2W	C060033166520
VR401	960 0096 606	Semi fixed resistor 20kohm	C541203115000
VR402	963 0056 205	Semi fixed resistor 50kohm	for E3 C541503115000
VR402	960 0096 402	Semi fixed resistor 100kohm	for E2 C541104115000
VR403	963 0052 005	Semi fixed resistor 200kohm	C541204115000

CAPACITORS GROUP


C401,402	963 9004 685	Ceramic chip 1000pF/50V	D011102777160
C403	963 9004 737	Ceramic chip 0.022uF/25V	D011223777160
C404	963 9004 892	Ceramic 2pF/50V	D000020007050
C405	963 9004 737	Ceramic chip 0.022uF/25V	D011223777160
C406	963 9004 902	Ceramic chip 18pF/50V	D010180167160
C408	960 9004 709	Ceramic 6pF/50V	D000060007050
C409	963 9004 520	Ceramic 100pF/50V	D005101177520
C410	963 9004 915	Ceramic 470pF/50V	D005471277520
C411	963 9004 685	Ceramic chip 1000pF/50V	D011102777160
C412	963 9004 737	Ceramic chip 0.022uF/25V	D011223777160
C413	963 9004 575	Ceramic chip 100pF/50V	D010101167160
C414		Electrolytic 2.2uF/50V	D0402R2087100
C415		Electrolytic 47uF/25V	D040470084070
C416		Electrolytic 10uF/50V	D040100087050
C417		Electrolytic 100uF/16V	D040101083100
C418	963 9004 698	Ceramic chip 0.01uF/50V	D011103777160

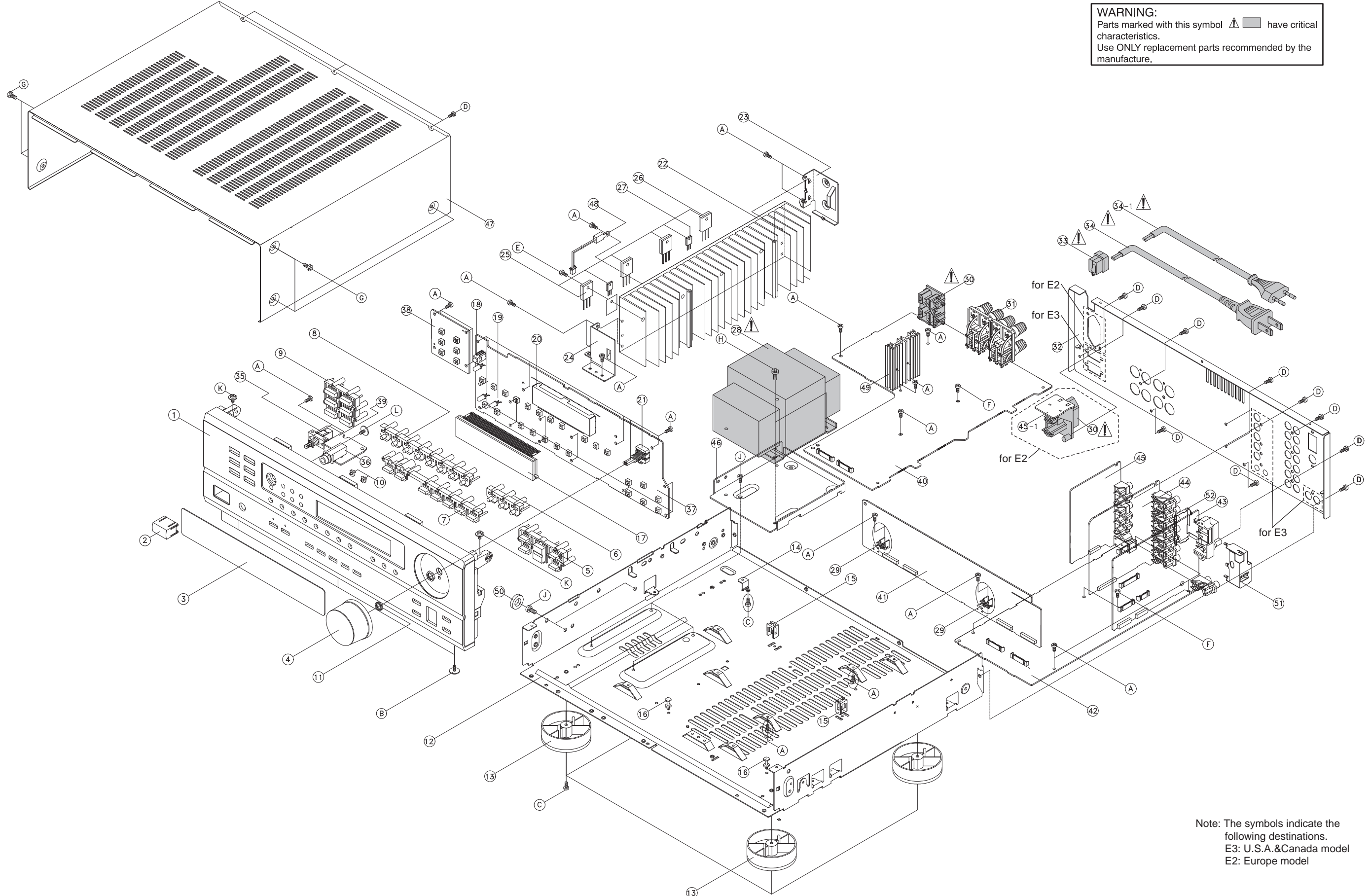
Ref. No.	Part No.	Part Name	Remarks	Ref. No.	Part No.	Part Name	Remarks	
C419		Electrolytic 10uF/50V	D040100087050	C506,507	963 9004 562	Ceramic 0.047uF/50V	for E3 D005473597520	
C420	963 9004 591	Ceramic chip 22pF/50V	D010220167160	C508		Electrolytic 100uF/10V	for E3 D040101083100	
C421	963 9004 928	Ceramic chip 24pF/50V	D010240167200	C509	963 9004 504	Ceramic 0.01uF/50V	for E3 D004103097060	
C422	963 9004 656	Ceramic chip 470pF/50V	D010471167160	C510	963 9004 520	Ceramic 100pF/50V	for E3 D005101177520	
C423,424	963 9004 737	Ceramic chip 0.022uF/25V	D011223777160	C511	960 9008 653	Mylar film 0.012uF/100V	for E3 D02012306C060	
C425		Electrolytic 4.7uF/50V	D0404R7087100	C512		Electrolytic 1uF/50V	for E3 D040010087050	
C426		Electrolytic 3.3uF/50V	D0403R3087100	C513	960 9008 653	Mylar film 0.012uF/100V	for E3 D02012306C060	
C427		Electrolytic 4.7uF/50V	D0404R7087100	C514		Electrolytic 47uF/25V	for E3 D040470084070	
C428	963 9004 737	Ceramic chip 0.022uF/25V	D011223777160	C515		Electrolytic 1uF/50V	for E3 D040010087050	
C430	963 0021 900	Mylar film 0.047uF/100V	D02047306C060	C516		Electrolytic 10uF/50V	for E3 D040100085050	
C431	963 9004 627	Ceramic chip 33pF/50V	D010330167160	C550		Electrolytic 0.1uF/50V	D040R10087070	
C432		Electrolytic 47uF/25V	D040470084070	C551		Electrolytic 100uF/25V	D040101084060	
C433	963 9004 737	Ceramic chip 0.022uF/25V	D011223777160	C928,929	963 9004 533	Ceramic 1000pF/50V	D005102177530	
C434		Electrolytic 1uF/50V	for E3 D040010087080	C930	960 9003 108	Ceramic 0.022uF/25V	D005223594520	
C434		Electrolytic 0.33uF/50V	for E2 D040R33087100	C931		Electrolytic 1uF/50V	D040010087080	
C435,436	963 9004 737	Ceramic chip 0.022uF/25V	D011223777160	OTHER PARTS GROUP				Q'ty
C437		Electrolytic 47uF/25V	D040470084070	CF401,402	960 0187 104	Ceramic filter SFE10.7MA8	for E3 E430107000140	2
C438		Electrolytic 1uF/50V	D040010087080	CF401,402	960 0177 509	Ceramic filter SFE10.7MS3	for E2 E430107000150	2
C439		Electrolytic 0.22uF/50V	D040R22087100	CF403	960 0187 609	Ceramic resonator BFU450C	E830450000070	1
C440,441		Electrolytic 1uF/50V	D040010087080	CN401	963 0085 409	10P connector base	L101100031010	1
C442		Electrolytic 2.2uF/50V	D0402R2087100	CN602	963 0086 505	7P connector base	L101100030710	1
C443		Electrolytic 10uF/50V	D040100087050	CN605	963 0086 505	7P connector base	for E3 L101100030710	1
C444		Electrolytic 4.7uF/50V	D0404R7087100	CN606	963 0085 409	10P connector base	L101100031010	1
C445		Electrolytic 10uF/50V	D040100087050	CN607	963 0086 709	11P connector base	L101100031110	1
C446,447	963 9005 053	Ceramic 270pF/50V	for E3 D004271277050	CN608	963 0085 409	10P connector base	L101100031010	1
C446,447	963 9005 066	Ceramic 330pF/50V	for E2 D004331277050	CN609	963 0086 709	11P connector base	L101100031110	1
C448,449	963 9004 960	Ceramic 470pF/50V	for E3 D004471067060	CN907	963 0089 308	3P connector cord (L=400)	L000401030020	1
C450,451		Electrolytic 10uF/50V	D040100087050	CP900	963 0049 908	3P connector base	L101220030010	1
C453	963 9004 614	Ceramic chip 27pF/50V	D010270167160	CP903	963 0086 000	2P connector cord (L=80)	L000800020060	1
C454,455	963 9004 575	Ceramic chip 100pF/50V	for E3 D010101167160	CP905	963 0089 405	2P connector cord (L=120)	for E2 L000121020050	1
C456	963 9004 672	Ceramic chip 680pF/50V	D010681167160	CP906	963 0048 909	3P connector base	for E3 L101220030000	1
C459		Electrolytic 1uF/50V	for E3 D040010087080	CP906	963 0089 502	2P connector cord (L=350)	for E2 L000351020070	1
C461	963 9004 591	Ceramic chip 22pF/50V	D010220167160					
C462	963 9004 656	Ceramic chip 470pF/50V	for E2 D010471167160					
C463	963 9004 782	Mylar film 0.056uF/100V	D02056306C060					
C464	963 9004 973	Ceramic 3pF/50V	D000030007050					
C471VT		Electrolytic 1uF/50V	D040010087080					
C472VT	963 9004 753	Ceramic chip 0.047uF/50V	D011473597160					
C500-502		Electrolytic 47uF/25V	for E3 D040470084070					
C503,504		Electrolytic 470uF/10V	for E3 D040471081230					

Ref. No.	Part No.	Part Name	Remarks	Q'ty	Ref. No.	Part No.	Part Name	Remarks	Q'ty
FE401	960 0187 706	Tuner pack	E900401010020	1	X402	963 0043 302	Ceramic resonator	CSB456F11 E830456000050	1
G401	—	1P Wire (L=80)	8410800010010	1					
G900	—	1P Wire (L=80)	8410800010010	1	★	963 0054 003	Shield cover	3070210056000	1
J401,402	963 9003 369	Carbon chip 0ohm 1/8W	C200000061300	2	★	963 0088 406	Earth plate C	4470210206000	1
J403,404	963 9003 369	Carbon chip 0ohm 1/8W	for E3 C200000061300	2	★	960 0184 000	Screw bracket	4010210196000	2
J405,406	963 9003 369	Carbon chip 0ohm 1/8W	for E2 C200000061300	2					
J407	963 9003 369	Carbon chip 0ohm 1/8W	C200000061300	1					
J409	963 9003 369	Carbon chip 0ohm 1/8W	C200000061300	1					
JACK401	960 0188 006	2P pin jack	for E3 G601020170000	1					
JACK402	963 0052 403	3P antenna terminal	G593021068010	1					
JACK501	963 0071 002	Mini jack	for E3 G401065020000	1					
JACK502	960 0188 404	3P pin jack	for E3 G606030164020	1					
JACK503	960 0194 605	2P pin jack	for E3 G601020163010	1					
JACK900	960 0187 502	Headphone jack (D6.5)	G402038400031	1					
L401,402	963 0052 102	Inductor 1uH	D3301R0001020	2					
L403	963 0056 409	MW IFT (RBW07VB-K5025)	D950500500010	1					
△ OUTLE909	960 0143 203	AC outlet	for E2 G435040110000	1					
SW925	963 0045 708	Tact switch	G180000270010	1					
SW927	963 0045 708	Tact switch	G180000270010	1					
SW929	960 0176 209	Push switch	for E3 G000122000010	1					
SW929	963 0056 603	Push switch	for E2 G000040890000	1					
SW930	963 0045 708	Tact switch	G180000270010	1					
SW932	963 0045 708	Tact switch	G180000270010	1					
SW934	963 0045 708	Tact switch	G180000270010	1					
SW936	963 0045 708	Tact switch	G180000270010	1					
T401	960 0186 600	MW IFT (PCFMAF-270)	D950500200000	1					
T402	960 0007 349	FM DET trans.	D951561100000	1					
T403	960 0007 352	FM DET trans.	D951561200000	1					
T404,405	960 0071 207	MPX filter	for E2 E401500100000	2					
T406	960 0037 607	Antibirdie filter	for E2 E403126832410	1					
X401	960 0187 405	Crystal 7.2MHz	E8007R2000071	1					

EXPLODED VIEW

1 2 3 4 5 6 7 8

WARNING:
 Parts marked with this symbol  have critical characteristics.
 Use **ONLY** replacement parts recommended by the manufacture.



A
B
C
D
E

Note: The symbols indicate the following destinations.
 E3: U.S.A. & Canada model
 E2: Europe model

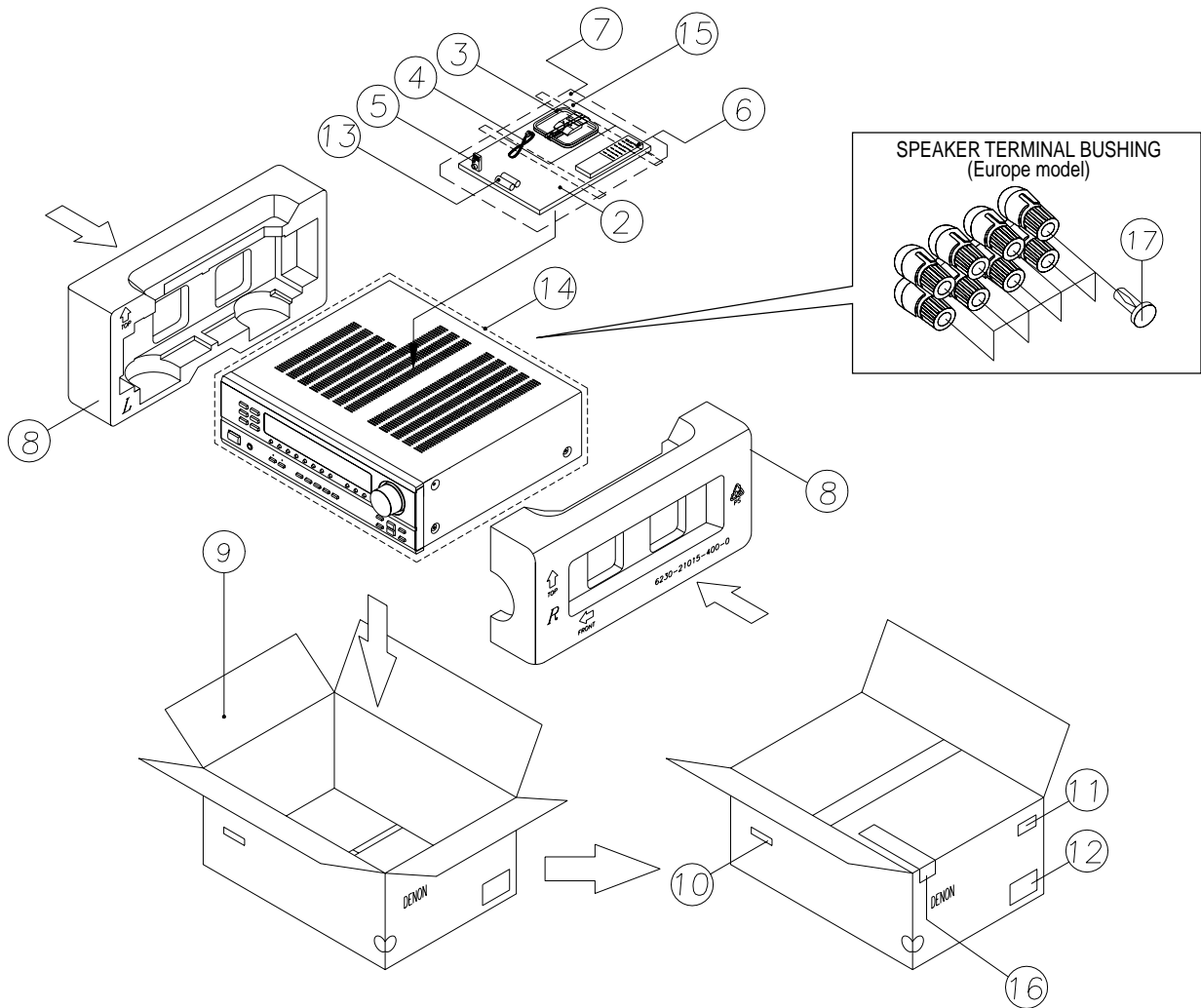
PARTS LIST OF EXPLODED VIEW

Note: The symbols in the column "Remarks" indicate the following destinations.
 E3: U.S.A./Canada model
 E2: Europe model

Ref. No.	Part No.	Part Name	Remarks	Q'ty	Ref. No.	Part No.	Part Name	Remarks	Q'ty	
40 44	963 0080 802	Main P.W.B. unit Ass'y	for E3 7025HK0011010	1	22	—	Heat sink (main)	2120210298100Z	1	
	963 0080 815	Main P.W.B. unit Ass'y	for E2 7025HK0011020	1	23	960 0184 204	Heat sink bracket B	4010210386000	1	
		Main P.W.B. unit			24	960 0184 301	Heat sink bracket F	4010210396000	1	
		Input P.W.B. unit			25	960 0090 107	Transistor 2SB1559Y	Q113,114 J5011559Y1170	2	
					26	960 0090 000	Transistor 2SD2389Y	Q111,112 J5032389Y1170	2	
		963 0080 909	Front P.W.B. unit Ass'y	for E3 7025HK0011011	1	27	963 0058 106	Transistor 2SD947F	Q109,110 J503947F00000	2
		963 0080 912	Front P.W.B. unit Ass'y	for E2 7025HK0011021	1	△ 28	963 0088 901	Power trans.	for E3 8200858630100	1
			Front P.W.B. unit			△ 28	963 0088 914	Power trans.	for E2 8200858630110	1
			Volume P.W.B. unit			29	960 0184 000	Screw bracket	4010210196000	2
						△ 30	960 0181 508	2P AC outlet	JACK104, for E3 G435204004010	1
37 42	963 0081 005	Tuner P.W.B. unit Ass'y	for E3 7025HK0011012	1	△ 30	960 0143 203	AC outlet	OUTLE909, for E2 G435040110000	1	
	963 0081 018	Tuner P.W.B. unit Ass'y	for E2 7025HK0011022	1	31	963 0089 201	8P speaker terminal	JACK102 G61408103610A	1	
		Switch P.W.B. unit			32	963 0076 502	Back panel	for E3 3207210766600	1	
		Power SW/HP P.W.B. unit			32	963 0076 515	Back panel	for E2 3207210766700	1	
		Connector P.W.B. unit			△ 33	960 0192 403	Cord bush	4380210002000	1	
		Tuner P.W.B. unit			△ 34	960 0166 400	AC cord	for E3 L068020030010	1	
		Video P.W.B. unit	for E3		△ 34-1	960 0202 500	AC cord	for E2 L068040011010	1	
		Outlet P.W.B. unit	for E2		35	960 0176 209	Push switch	SW929, for E3 G000122000010	1	
					35	963 0056 603	Push switch	SW929, for E2 G0000408900000	1	
					36	960 0187 502	Headphone jack (D6.5)	JACK900 G402038400031	1	
38 39 41 43 45 45-1	1 963 0076 308	Front panel	for E3 3067210261040Z	1	46	963 0072 205	Trans bracket	4010210466001	1	
	1 963 0076 311	Front panel	for E2 3067210261050Z	1	47	963 0053 017	Top cover	3000210096001	1	
	2 960 0185 009	Power button	5090210201000Z	1	48	960 0187 900	Posistor P43T7D330BW16	F320161001020	1	
	3 963 0076 612	Display window	5077210262040	1	49	—	Heat sink	2120043538050	1	
	4 963 0054 906	Volume knob	5087210191010Z	1	50	963 0072 302	Rubber cushion	4050210165000	2	
	5 963 0053 703	5key button	5097210471000Z	1	51	963 0054 003	Shield cover	3070210056000	1	
	6 963 0053 606	3key button	5090210511000Z	1	52	963 0088 406	Earth plate C	4470210206000	1	
	7 963 0053 415	7(A)key button	5090210491001Z	1	53	963 0081 607	Side bracket	for E2 4010210686000	1	
	8 963 0053 509	8key button	5090210501000Z	1	54	963 0044 602	P.W.B. support	for E2 4070210192000	1	
	9 963 0053 305	6key button	5090210481000Z	1	★ 55	963 0089 104	Rubber sheet	1210210235000	3	
10 960 0191 417	LED lens	3710210043001	2	★ 56	960 0155 301	Wire clamper	for E3 4330040343010	4		
11 963 0051 006	Knob spring	3720210116000	1	★ 56	960 0155 301	Wire clamper	for E2 4330040343010	5		
12 960 0198 229	Main chassis	3200210146301	1	★ 57	963 0054 207	Fuse caution label	for E3 5527042410020	1		
13 960 0183 904	Foot Ass'y	400802006101C	4							
14 960 0184 107	Support bracket	4010210206000	1							
15 960 0003 301	P.W.B. support	4070001601010	2							
16 963 0051 103	Card spacer	4300210062000	2							
17 960 0180 509	FLT (16-ST-42GNK)	FL900	1							
18 960 0181 100	Remocon sensor NJL64H380A	REM900 E940643800000	1							
19 960 0197 204	LED HL50RDRF4T	LED900-902 K500052015010	3							
20 960 0184 408	FLT holder	4320200026000	1							
21 960 0181 207	Rotary encoder (EC16B2420431)	SW924 G121162420400	1							

Ref. No.	Part No.	Part Name	Remarks	Q'ty
★ 58	963 0089 007	FFC cable	CP901 L301171230010	1
SCREWS				
A	963 0018 007	Screw 3×8 (B)-Z	B020030081B10	44
B	960 9008 527	Screw 3×8 (B) W-B	1500001456020	4
C	963 0048 200	Screw 3×10 (B)-Z	B020030101B10	5
D	960 0108 714	Screw 3×10 (B)-B	for E3 B020030103B11	24
D	960 0108 714	Screw 3×10 (B)-B	for E2 B020030103B11	19
E	963 9004 009	Screw 3×14 (P) SW W-Z	B018230141H10	6
F	963 0018 104	Screw 3×17 (B)-Z	B020030171B10	2
G	963 0048 307	Screw 4×8 (B)-B	1500040083B10	6
H	963 9008 417	Screw 4×8 (P) SW W-Z	B028940081B10	4
J	963 9004 025	Screw 4×6 (S)-Z	B020740061B10	6
K	963 9004 038	Screw 3×8 (B) W-Z	1500001206010	2
L	960 9008 420	Screw 3×8 (B) W-Z	1500001456010	1

PACKING VIEW



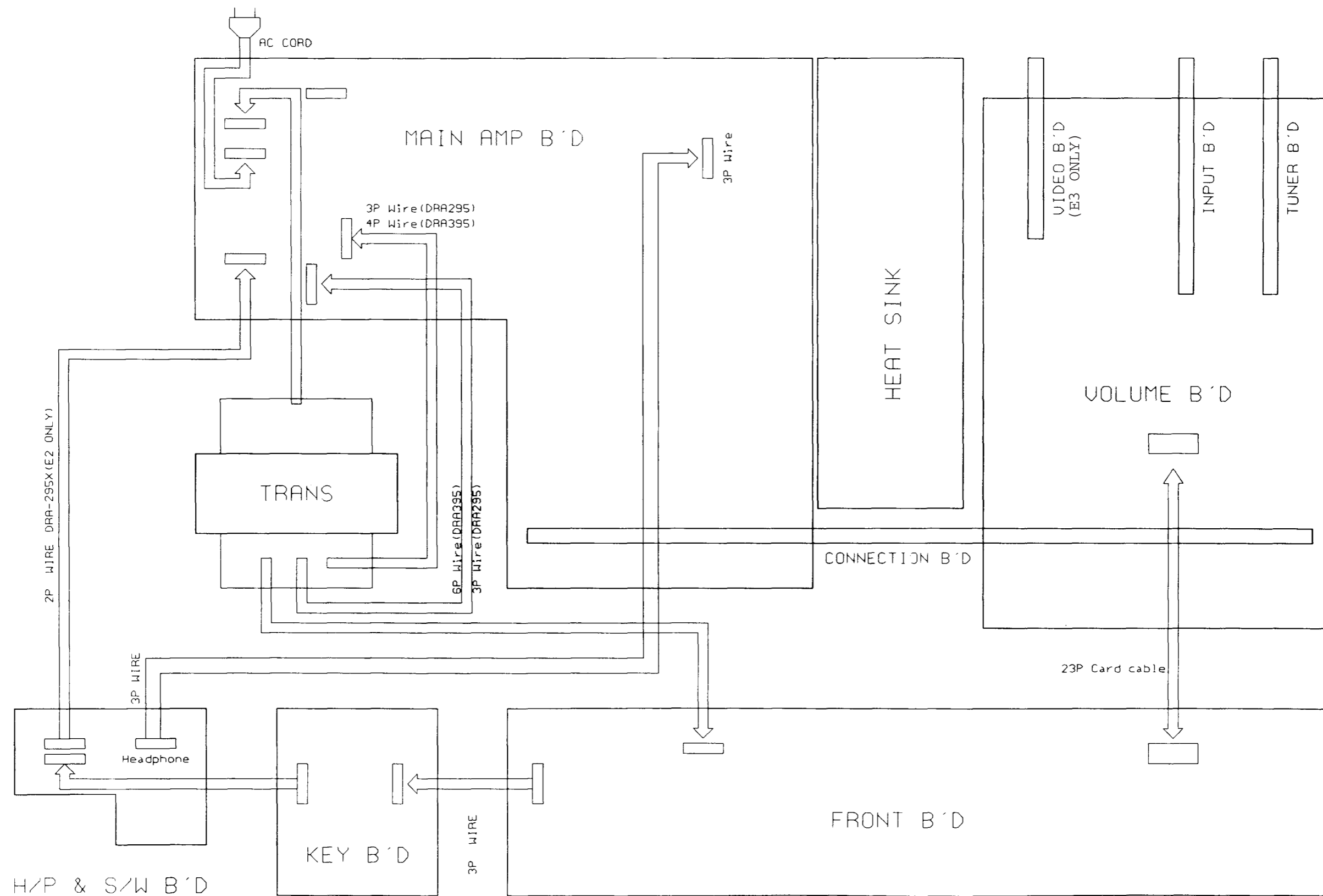
PARTS LIST OF PACKING & ACCESSORIES

Note: The symbols in the column "Remarks" indicate the following destinations.
 E3: U.S.A./Canada model E2: Europe model

Ref. No.	Part No.	Part Name	Remarks	Q'ty	Ref. No.	Part No.	Part Name	Remarks	Q'ty
2	963 0080 608	Instruction manual	for E3 5707210170250	1	10	—	RDS label	for E2 5507051670010	2
2	963 0080 611	Instruction manual	for E2 5707210170260	1	11	—	UPC label	for E3 5507002330100	1
3	963 0052 306	AM loop antenna	E605010090000	1	11	—	POS label	for E2 5507002340090	1
4	963 0081 102	FM antenna wire	E605010010000	1	12	—	Control label	5500014920010	2
5	963 0052 704	FM antenna adapter	L109000180010	1	13	—	Battery (R6P/AA)	G670001R50010	2
6	963 0088 707	Remote control unit RC-895	for E3 8300895000010	1	14	960 0185 601	Set poly bag	6330210019000	1
6	963 0088 804	Remote control unit RC-907	for E2 8300907000010	1	15	—	S.S. list (EX)	5777001620012	1
7	963 0045 106	Poly bag	6330000240000	1	16	—	DEL warranty home	for E3 5777001610020	1
8	963 0193 101	Cushion (L/R)	6230210154001	1	17	960 0093 104	Speaker terminal bushing	for E2 2410040353010	8
9	963 0080 705	Carton case	for E3 6007210310040	1					
9	963 0080 718	Carton case	for E2 6007210310070	1					

WIRING DIAGRAM

1 2 3 4 5 6 7 8



A
B
C
D
E

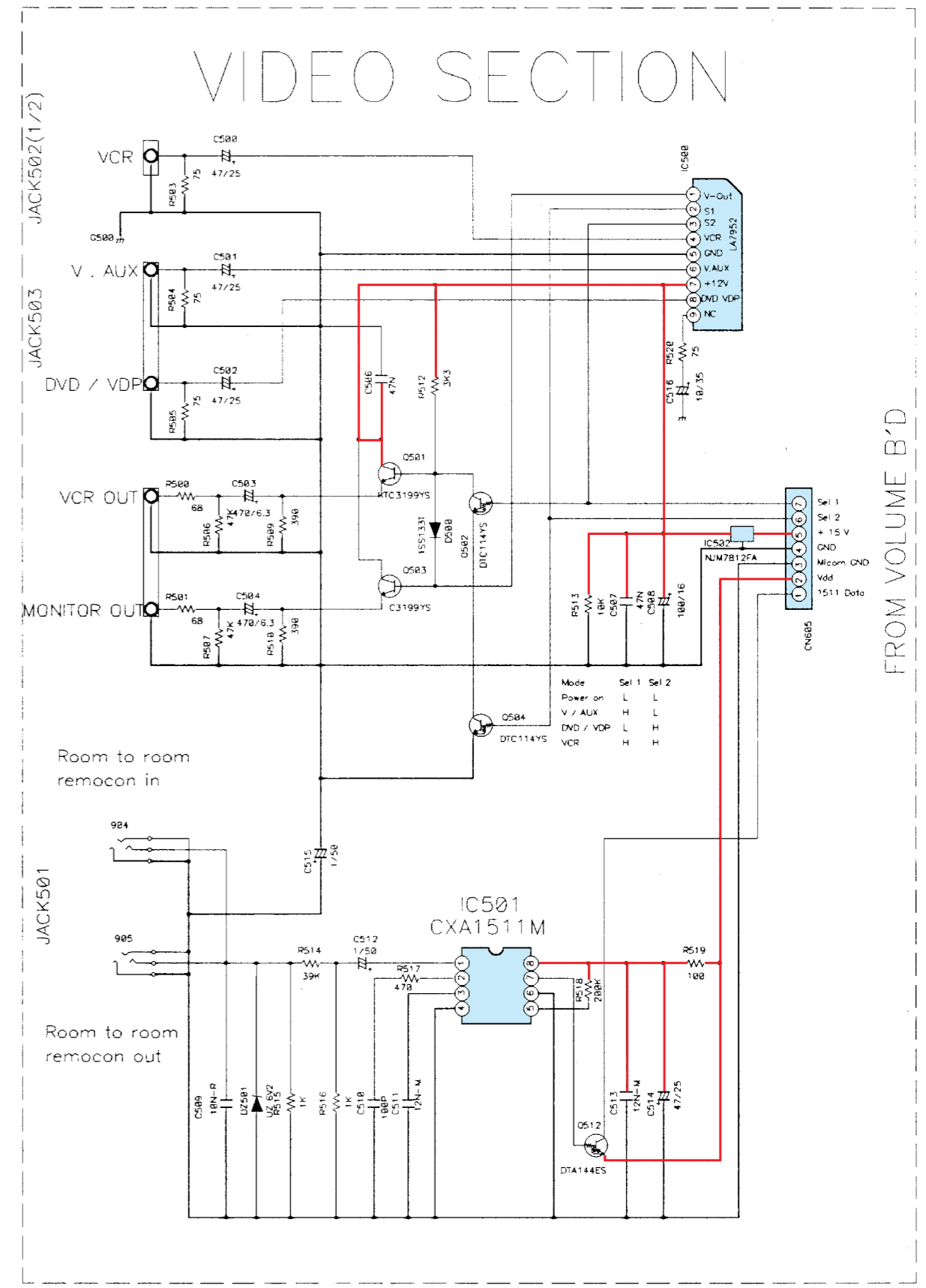
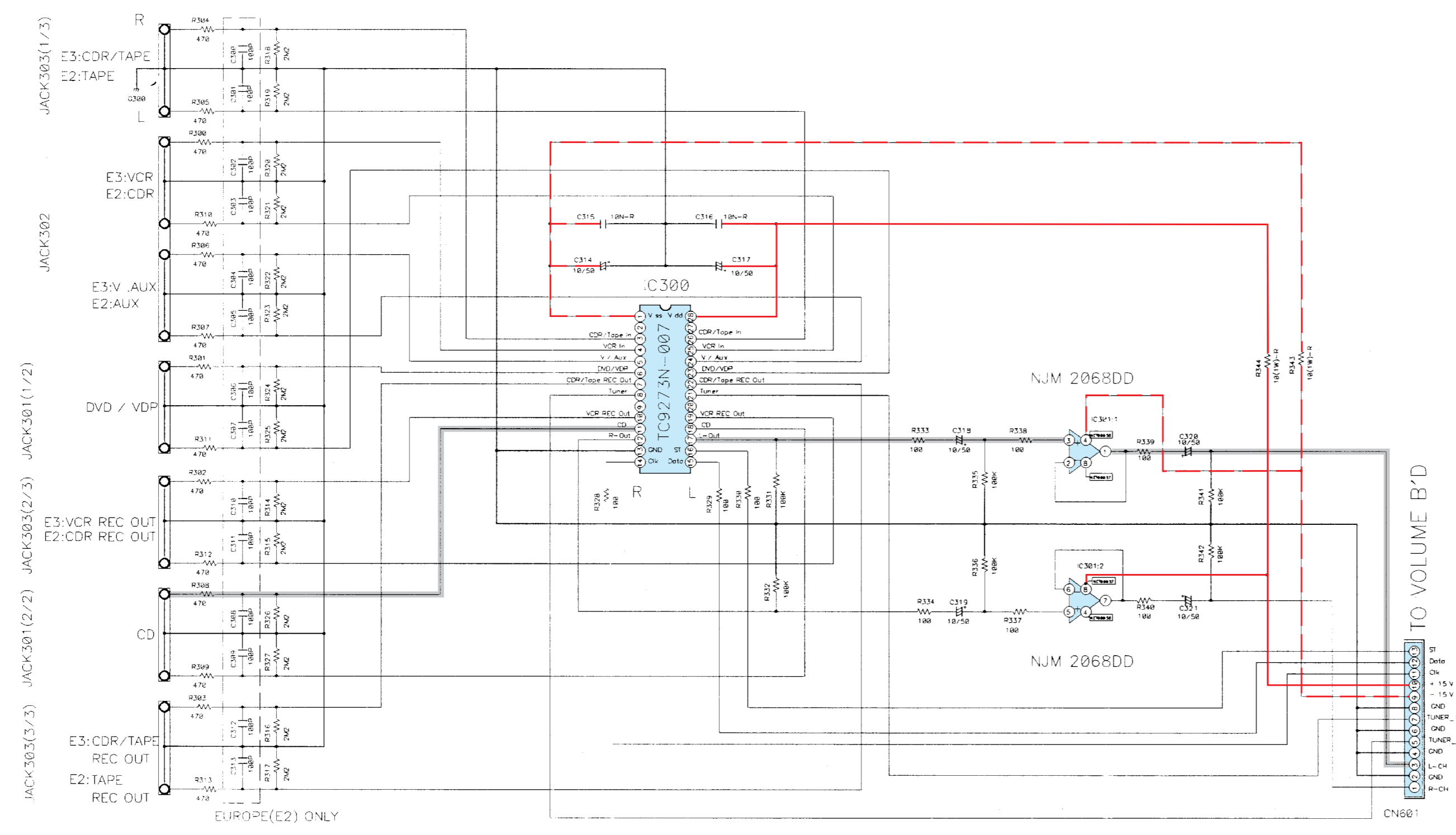
DRA-295 WIRING DIAGRAM

SCHEMATIC DIAGRAMS(1/5)

1 2 3 4 5 6 7 8 9 10 11

INPUT SECTION

VIDEO SECTION



A
B
C
D
E
F
G
H

NOTICE
 ALL RESISTANCE VALUES IN OHM. k=1,000 OHM M=1,000,000 OHM
 ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
 EACH VOLTAGE AND CURRENT ARE MEASURED AT MO SIGNAL INPUT
 CONDITION.
 CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR
 NOTICE.

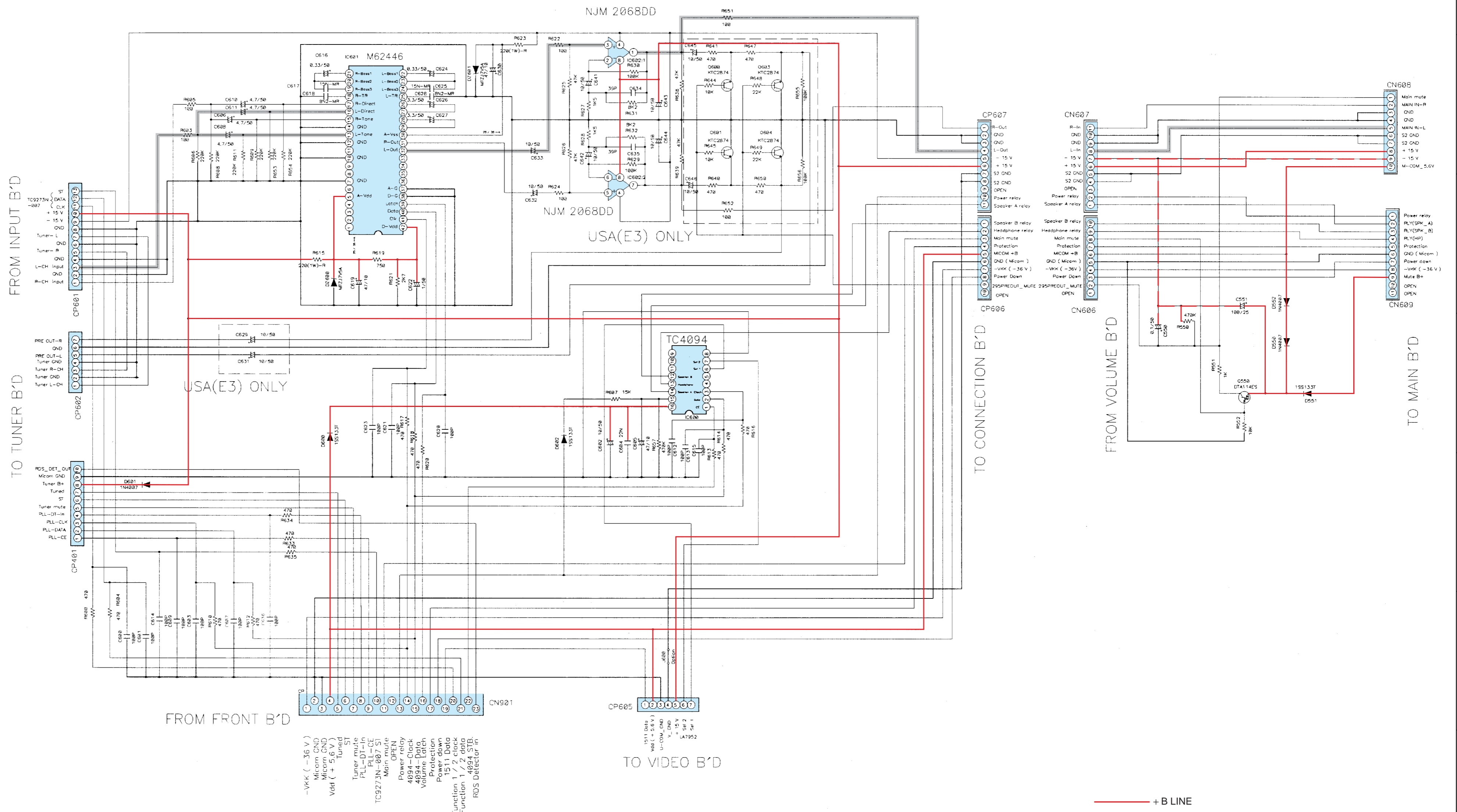
WARNING:
 Parts marked with this symbol Δ have critical characteristics.
 Use ONLY replacement parts recommended by the manufacture.
CAUTION:
 Before returning the unit to the customer, make sure you make either (1) a
 leakage current check or (2) a line to chassis resistance check. If the leakage
 current exceeds 0.5 milliamps, or if the resistance from chassis to either side
 of the power card is less than 460kohms, the unit is defective.
WARNING:
 DO NOT return the unit to the customer until the problem is located and
 corrected.

— + B LINE
 - - - - B LINE
 — SIGNAL LINE

SCHEMATIC DIAGRAMS(2/5)

VOLUME SECTION

CONNECTION SECTION



FROM INPUT B'D

TO TUNER B'D

FROM FRONT B'D

TO VIDEO B'D

TO CONNECTION B'D

FROM VOLUME B'D

TO MAIN B'D

NOTICE
 ALL RESISTANCE VALUES IN OHM. k=1,000 OHM M=1,000,000 OHM
 ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
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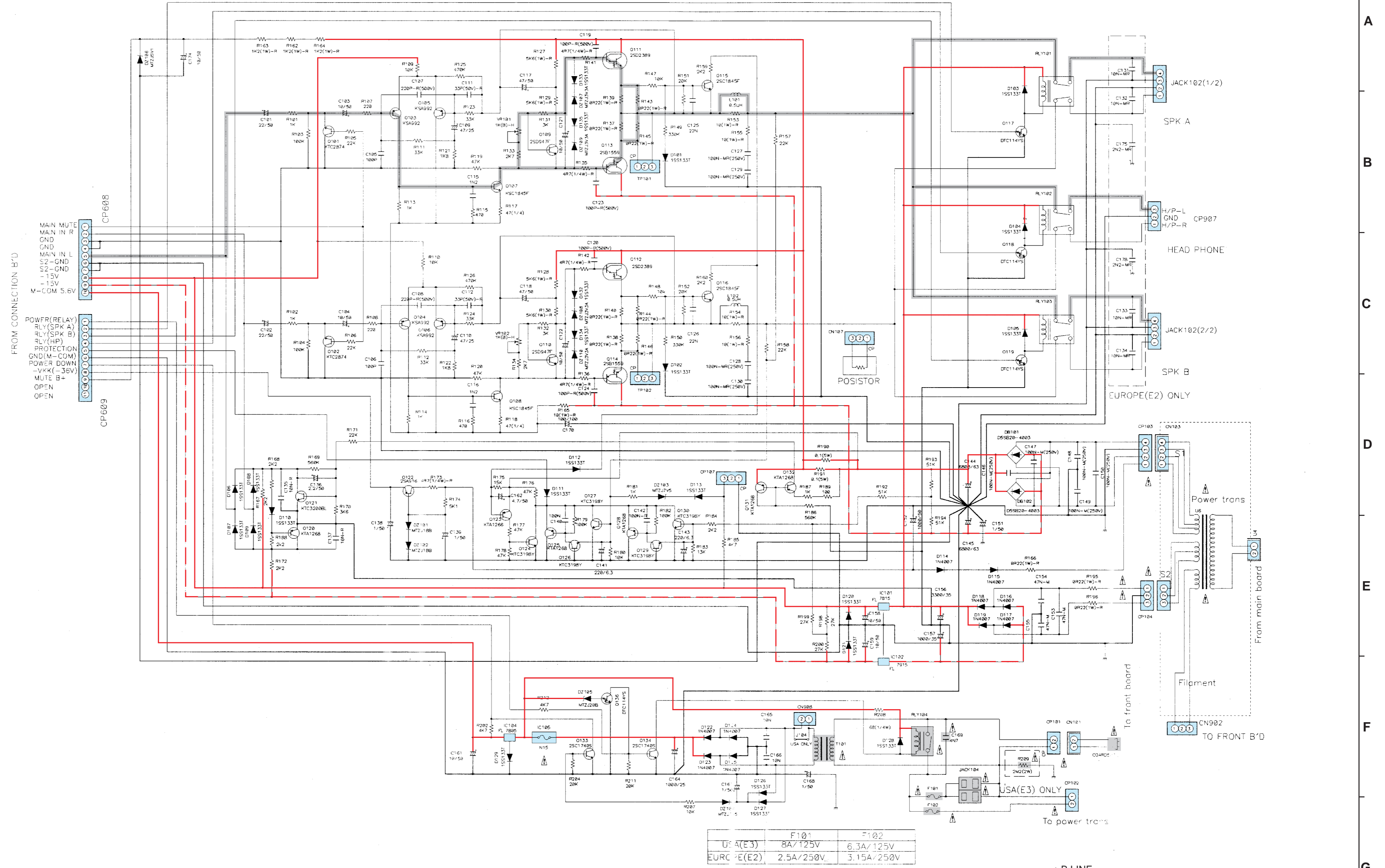
— + B LINE
 - - - - B LINE
 — SIGNAL LINE

SCHEMATIC DIAGRAMS(2/5)
 VOLUME UNIT
 CONNECTOR UNIT

SCHEMATIC DIAGRAMS(3/5)

1 2 3 4 5 6 7 8 9 10 11

MAIN SECTION



	F101	F102
U: A(E3)	8A/125V	6.3A/125V
EURC :E(E2)	2.5A/250V	3.15A/250V

— + B LINE
- - - - B LINE
— SIGNAL LINE

NOTICE
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 ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
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 CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR
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 leakage current check or (2) a line to chassis resistance check. If the leakage
 current exceeds 0.5 milliamperes, or if the resistance from chassis to either side
 of the power card is less than 460kohms, the unit is defective.

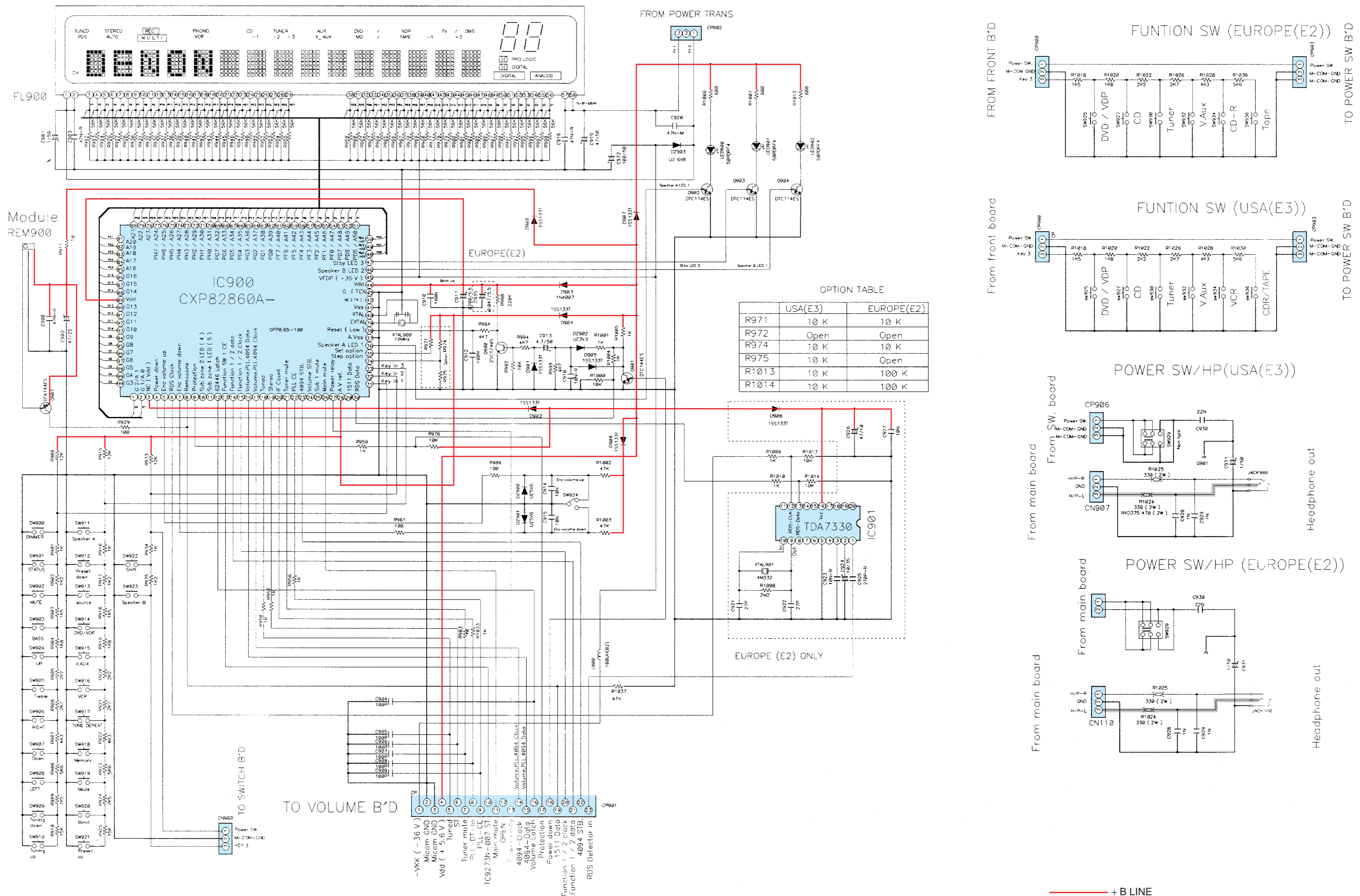
WARNING:
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 corrected.

SCHEMATIC DIAGRAMS(3/5)
MAIN UNIT

SCHEMATIC DIAGRAMS(4/5)

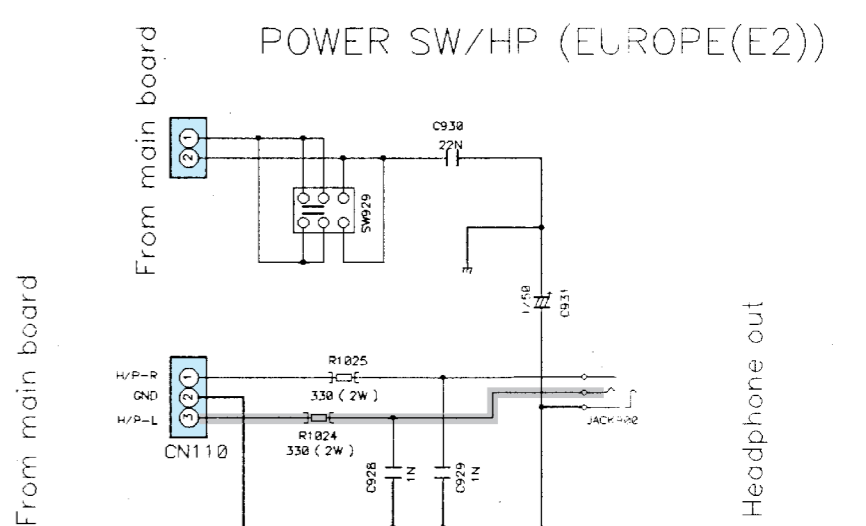
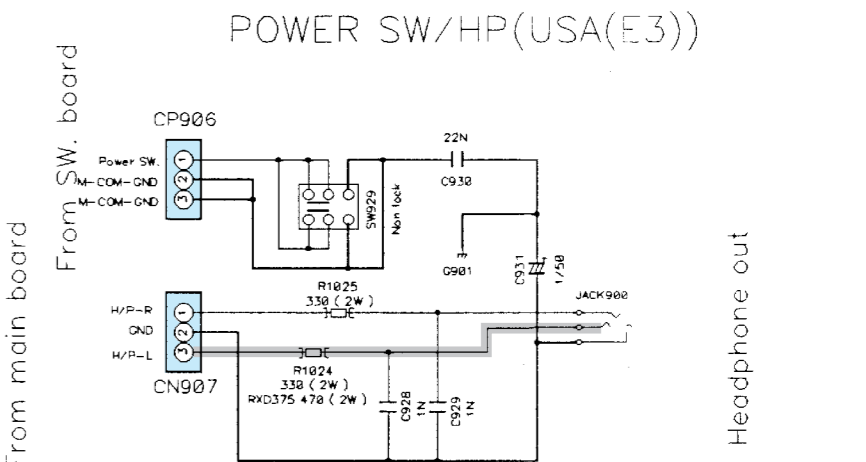
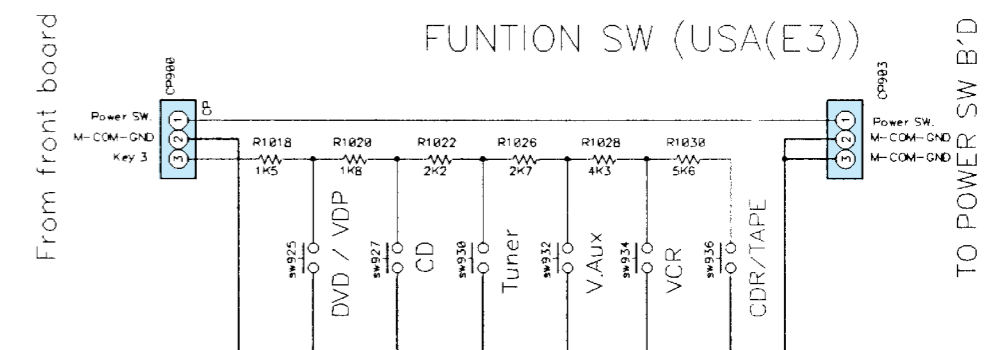
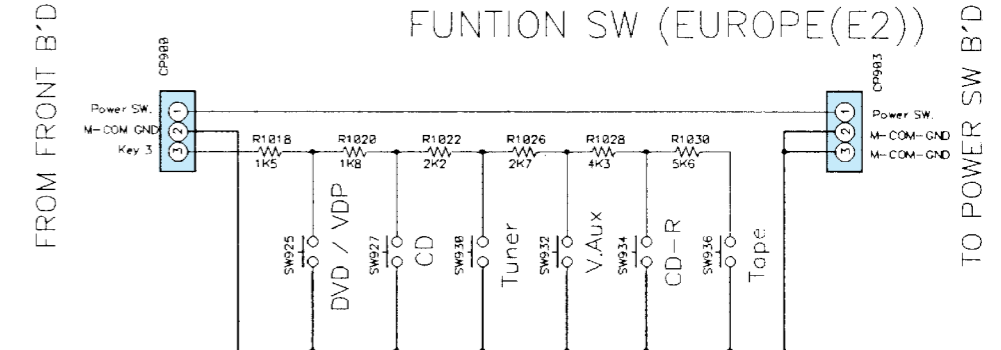
1 2 3 4 5 6 7 8 9 10 11

FRONT SECTION



OPTION TABLE

	USA(E3)	EUROPE(E2)
R971	10 K	10 K
R972	Open	Open
R974	10 K	10 K
R975	10 K	Open
R1013	100 K	100 K
R1014	10 K	100 K



NOTICE
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 ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
 EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT
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 CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR
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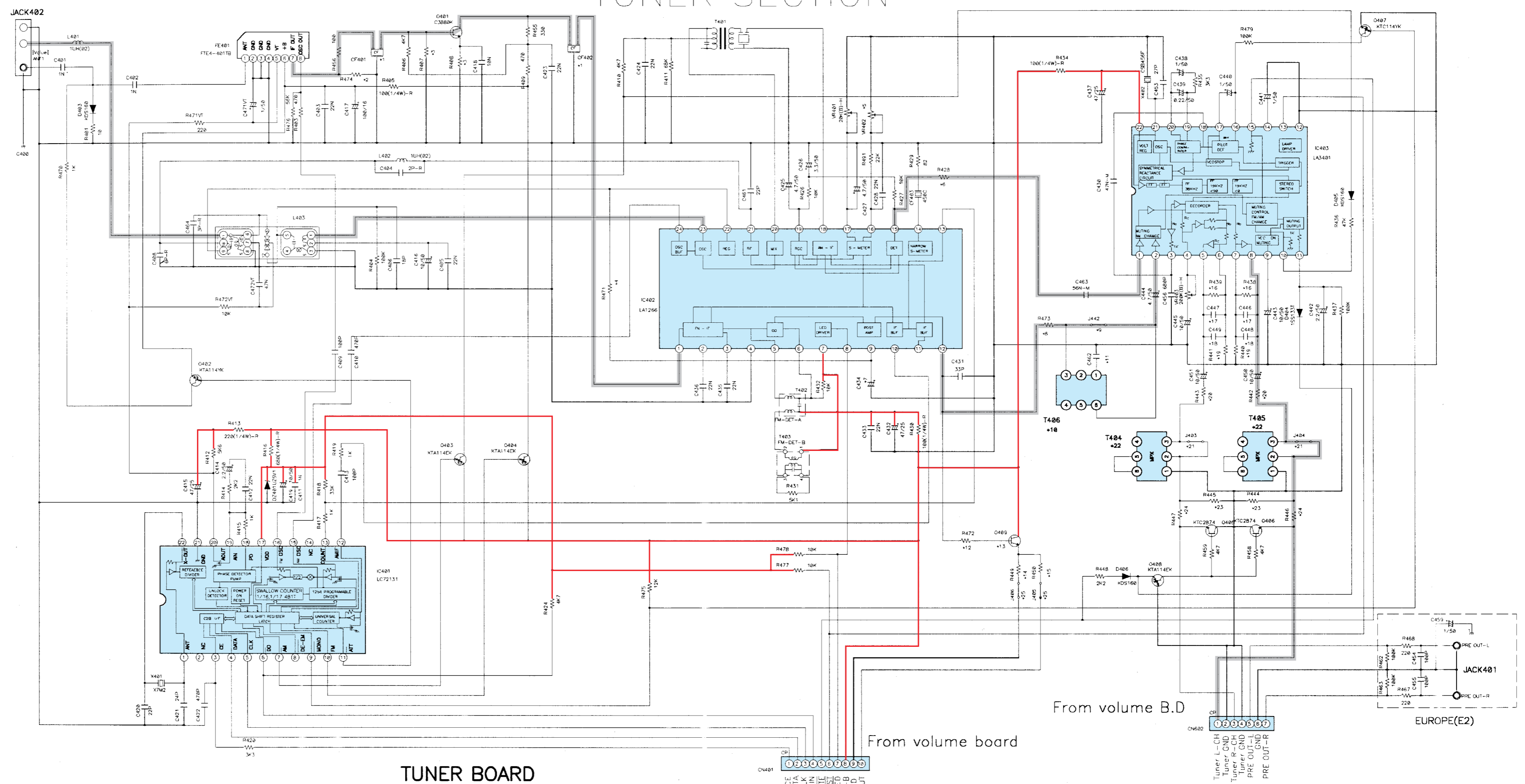
WARNING:
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SCHEMATIC DIAGRAMS(4/5)
 FRONT UNIT
 SWITCH UNIT
 POWER SW/HP UNIT

SCHEMATIC DIAGRAMS(5/5)

1 2 3 4 5 6 7 8 9 10 11

TUNER SECTION



TUNER BOARD

R-NO.	USA(E3)	EUROPE(E2)
*1	CF401/CF402	SFE10.7MA8
*2	R474	-
*3	R407/R408	470/1.2K
*4	R471	18K
*5	VR402	50K(B)-H
*6	R42B	3.3K
*7	C434	1/50
*8	R473	0

R-NO.	USA(E3)	EUROPE(E2)
*9	J442	JUMPER
*10	T406	-
*11	C452	-
*12	R472	-
*13	Q409	-
*14	R449	-
*15	R450	-
*16	R43B,R439	100K

R-NO.	USA(E3)	EUROPE(E2)
*17	C446,C447	270P
*18	C448,C449	470P
*19	R440,R441	120K
*20	R442,R443	3.3K
*21	J403,J404	JUMPER
*22	T404,T405	-
*23	R444,R445	8.2K
*24	R446,R447	JUMPER
*25	J405,406	-

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— + B LINE
 — SIGNAL LINE

SCHEMATIC DIAGRAMS(5/5)
 TUNER UNIT