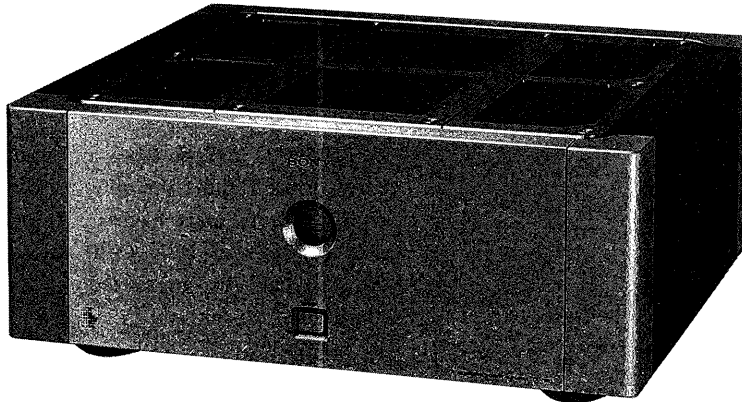


TA-NR1

SERVICE MANUAL

US Model
Germany Model



SPECIFICATIONS

Amplifier section

Type	Pure A-class monaural power amplifier
Circuitry	Complementary Darlington SEPP with all stages directly coupled
Power bandwidth (IHF)	5 Hz – 50 kHz (50 W output, 8 ohms, 0.1% THD)
Overall output (20 Hz – 20 kHz)	200 W (4-ohm load, 0.08% THD) 100 W (8-ohm load, 0.05% THD)
Frequency response	5 Hz – 100 kHz ± 3 dB
Input sensitivity	UNBALANCED: 1.1 V (47 kohms) BALANCED: 1.1 V (600 ohms)
Damping factor	50 (8 ohms, 1 kHz)
Residual noise	Less than 30 μ V
Signal-to-noise ratio	120 dB
Outputs	SPEAKER terminals Accepts speakers of 4 – 16 ohms.

General

Power requirements	1 20 V AC, 60 Hz (US model) 220 – 230 V AC, 50/60 Hz (Germany model)
Power consumption	300 W
Dimensions	Approx. 466 x 188 x 462 mm (w/h/d) (18 ³ / ₈ x 7 ¹ / ₂ x 18 ¹ / ₄ inches)
Weight	Approx. 47.5 kg (104 lb 12 oz.)

Design and specifications subject to change without notice.

MONAURAL POWER AMPLIFIER
SONY[®]



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SERVICING NOTE

1. For protection against scratching in the time of repair and maintenance inspection be sure to lay protective materials, such as a protection sheet, under the set.
2. Do not check the input transformer T1 for continuity. (If checked, the core will magnetized, deteriorating the sound quality.)
3. This set uses select component parts. For replacement of any part, a new genuine part must be used.
4. To prevent a secondary failure, the check of the drive stage, etc. should be made after the final stage has been removed.
5. When a stranded signal-core wire was removed for repair, it must be again wired as before the repair.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

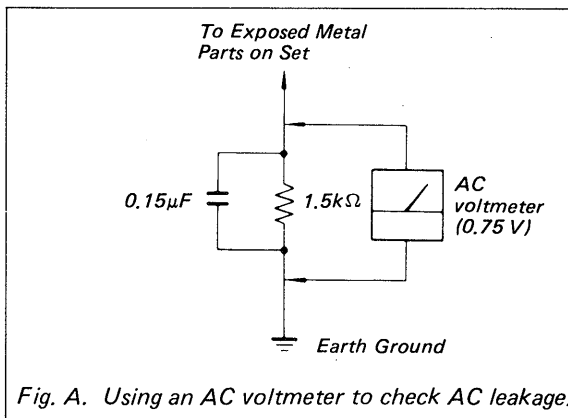


Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1 GENERAL

This section is extracted from instruction manual.

1-1. LOCATION OF CONTROLS

Front Panel

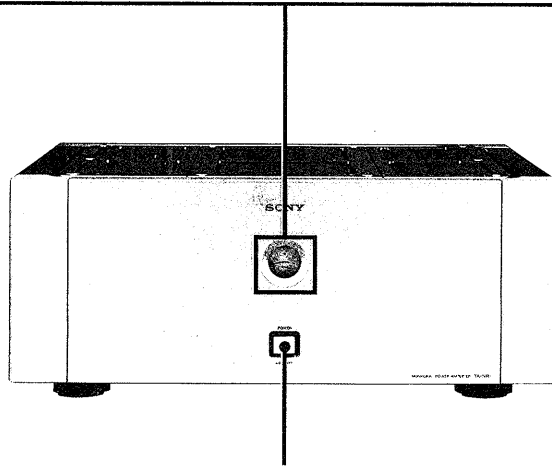
Display window

Protection indicator: Lights red when the POWER switch is turned ON and stays red for approximately 15 seconds. The red light indicates that the protection circuit is activated. The indicator lights green when the protection circuit is canceled and the amplifier is ready to operate. If the indicator changes from green to red while the unit is operating, the unit has encountered an abnormality and has activated the protection circuit. (When the protection circuit is activated, no sound is output to the speaker.) If this occurs, check to see if the SPEAKER terminals are short-circuited or if a DC voltage is being applied to the INPUT terminal.

Temperature indicator: Indicates the internal temperature of the amplifier. Check the internal temperature to drive the amplifier in a good condition.

When the needle is in the C range: The amplifier's internal temperature is within the proper range.

When the needle is in the H range: The amplifier's internal temperature has exceeded the proper range. This occurs when the amplifier is used for a long period of time under severe operating conditions. If this happens, you should let the amplifier cool down by turning the power off for a while or moving it to a location which is better ventilated.



POWER switch


Rear Panel

UNBALANCED INPUT terminal

When making a monaural connection, connect this input terminal to your preamplifier's output terminal.

BALANCED Cannon XLR connector input terminal

When making a balanced connection using Cannon XLR connectors, connect this input terminal to your preamplifier's output terminal.

- 1 GROUND
 - 2 HOT (+)
 - 3 COLD (-)
- 

HOT (+) INPUT terminal

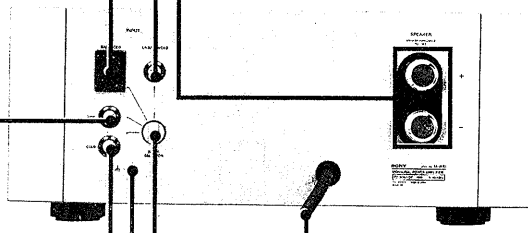
Use this terminal when making a bridge connection where two amplifiers are used for each channel. Set the INPUT SELECTOR switch to HOT. (See page 7.)

COLD (-) INPUT terminal

Use this terminal when making a bridge connection where two amplifiers are used for each channel. Set the INPUT SELECTOR switch to COLD. (See page 7.)

SPEAKER terminals

These are screw-type terminals for ensuring positive speaker cord connections. Speaker cords with core wire diameters of up to 12 mm can be used. It is recommended to select a speaker with an allowable input rating large enough to handle the effective output power of the amplifier. Use a speaker with an impedance of 4 – 16 ohms when the amplifier is used as a normal monaural amplifier, and use a speaker with an impedance of 8 – 16 ohms when the amplifier is used in a bridge connection.



Power cord

INPUT SELECTOR switch

Set to the position corresponding to the input terminal connection.

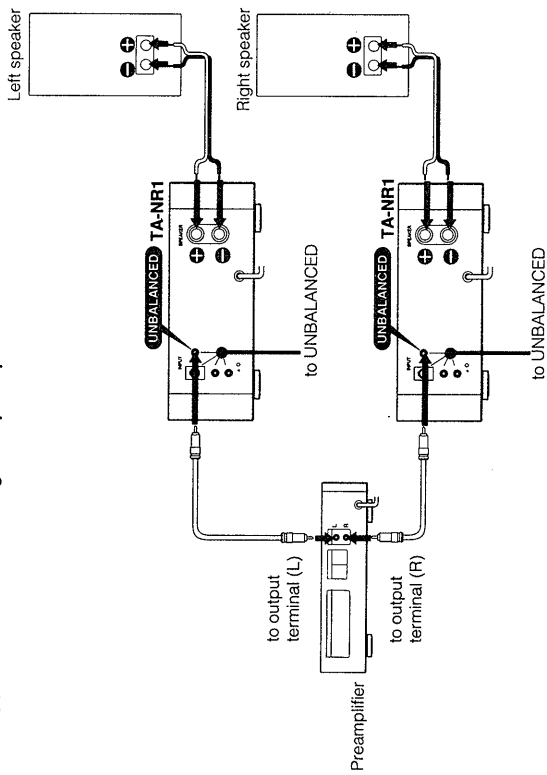
Ground terminal (⌚)

Connect a ground wire to this terminal.

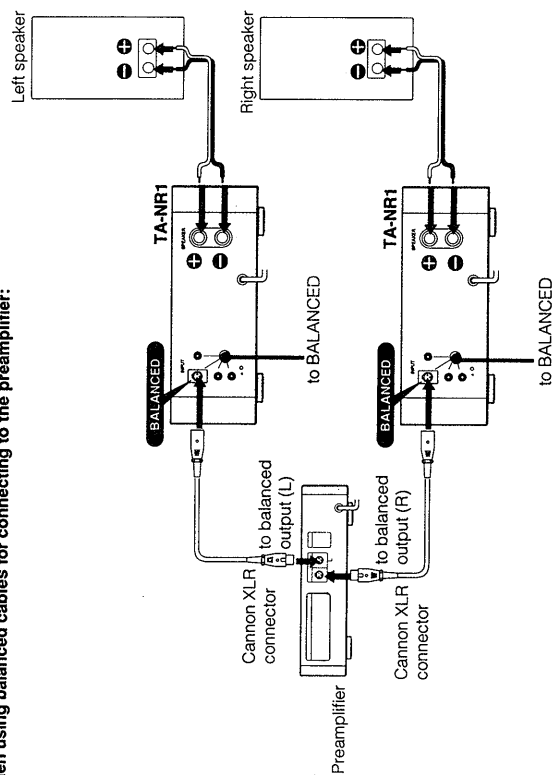
1-2. CONNECTIONS

Monaural amplifier connection

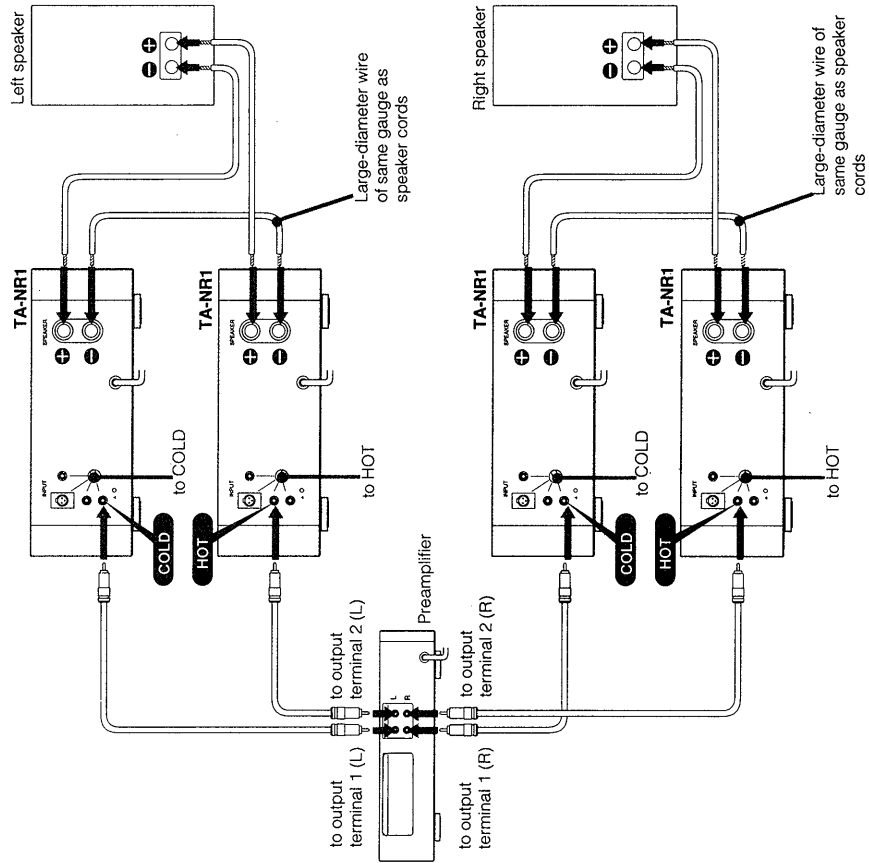
When using phono cords for connecting to the preamplifier:



When using balanced cables for connecting to the preamplifier:



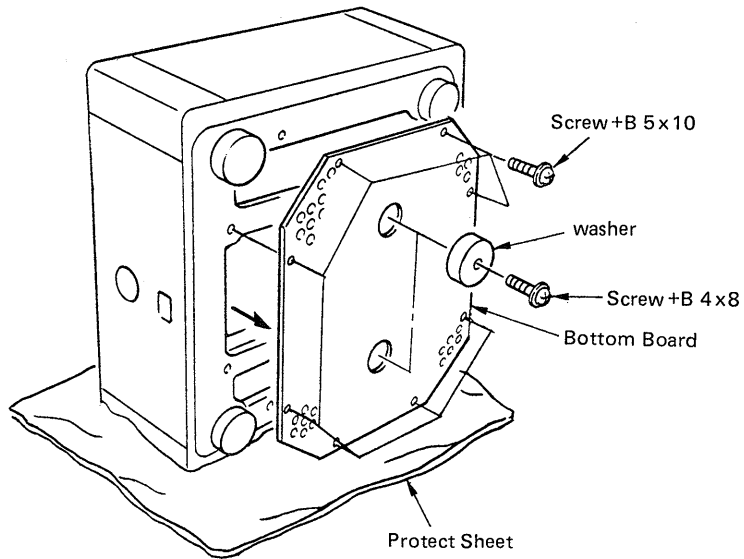
Bridge connection using two amplifiers for each channel



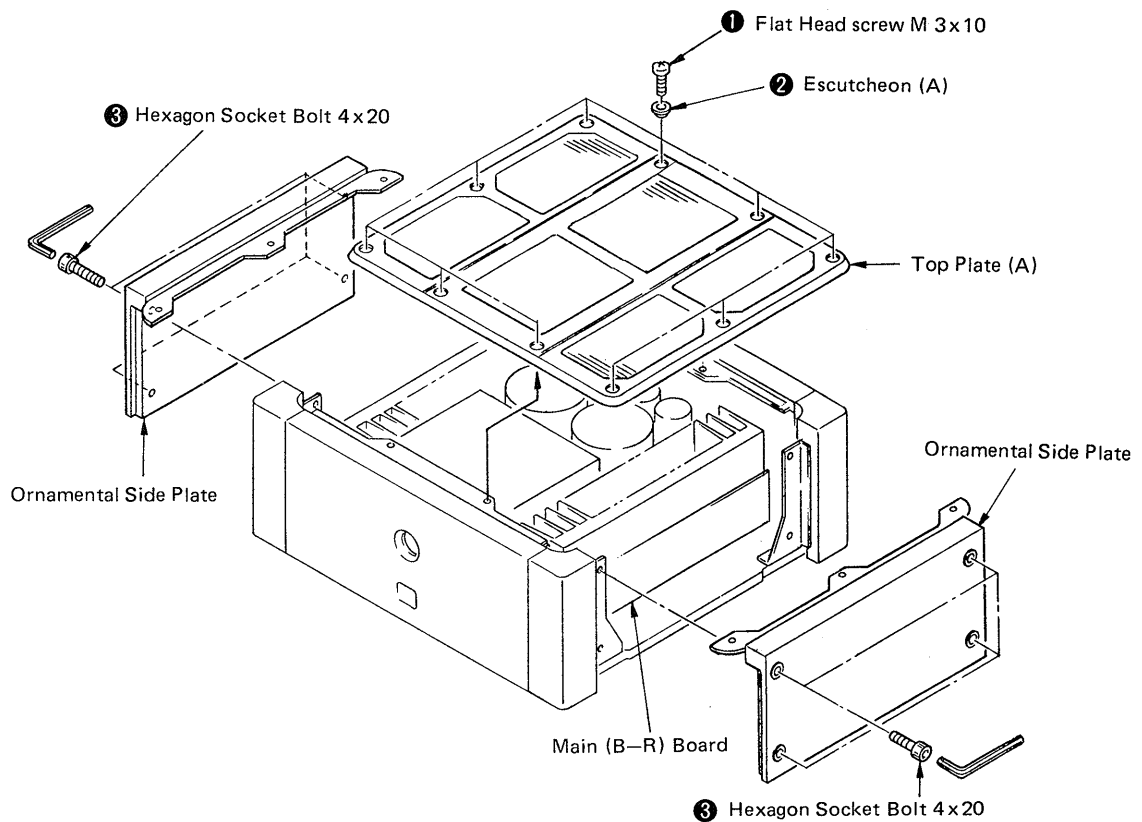
SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

[PS BOARD, FUSE BOARD]

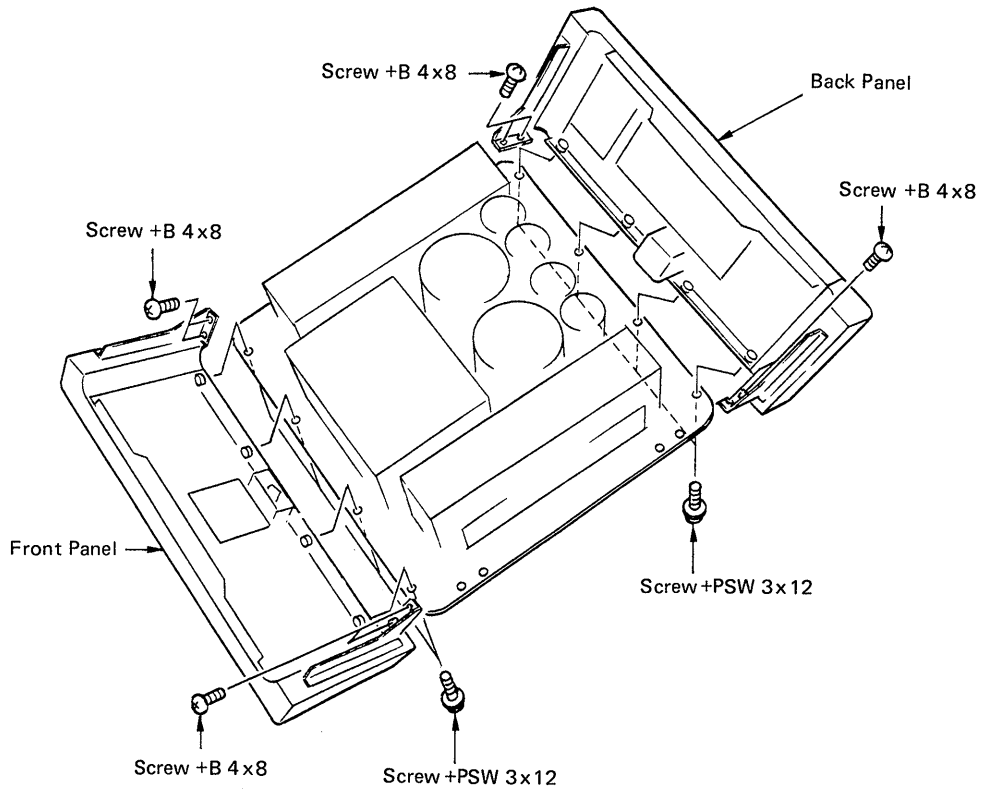


[MAIN (B-L)/(B-R) BOARD, IC BOARD]



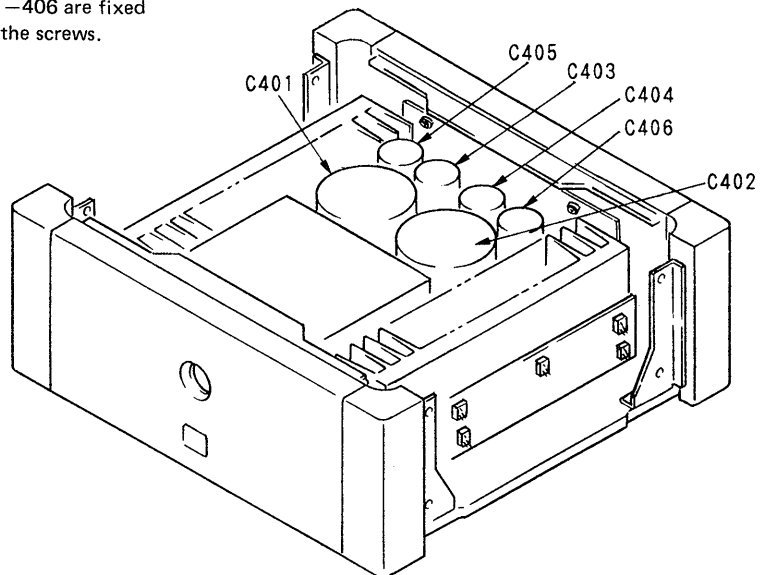
[FRONT PANEL SIDE: DRIVE BOARD, LED (L)/(R) BOARD, METER]

[BACK PANEL SIDE: MAIN (A) BOARD, SP.TM BOARD]



[LOCATION OF ELECTRICAL CAPACITOR (PS BOARD)]

C401—406 are fixed with the screws.



SECTION 3 ELECTRICAL ADJUSTMENTS

- Precautions for adjustment.
 - Before starting the adjustment, keep the unit powered for about 10 minutes under the conditions of no load and no signal.
 - In the process of adjustment, heat dissipation should be taken into account with caution to protect the unit from direct wind blows. If not, the measurements may fluctuate.
 - This adjustment must be made after such a major component as the final-stage transistor is replaced.

[IDLING CURRENT ADJUSTMENT]

Procedure:

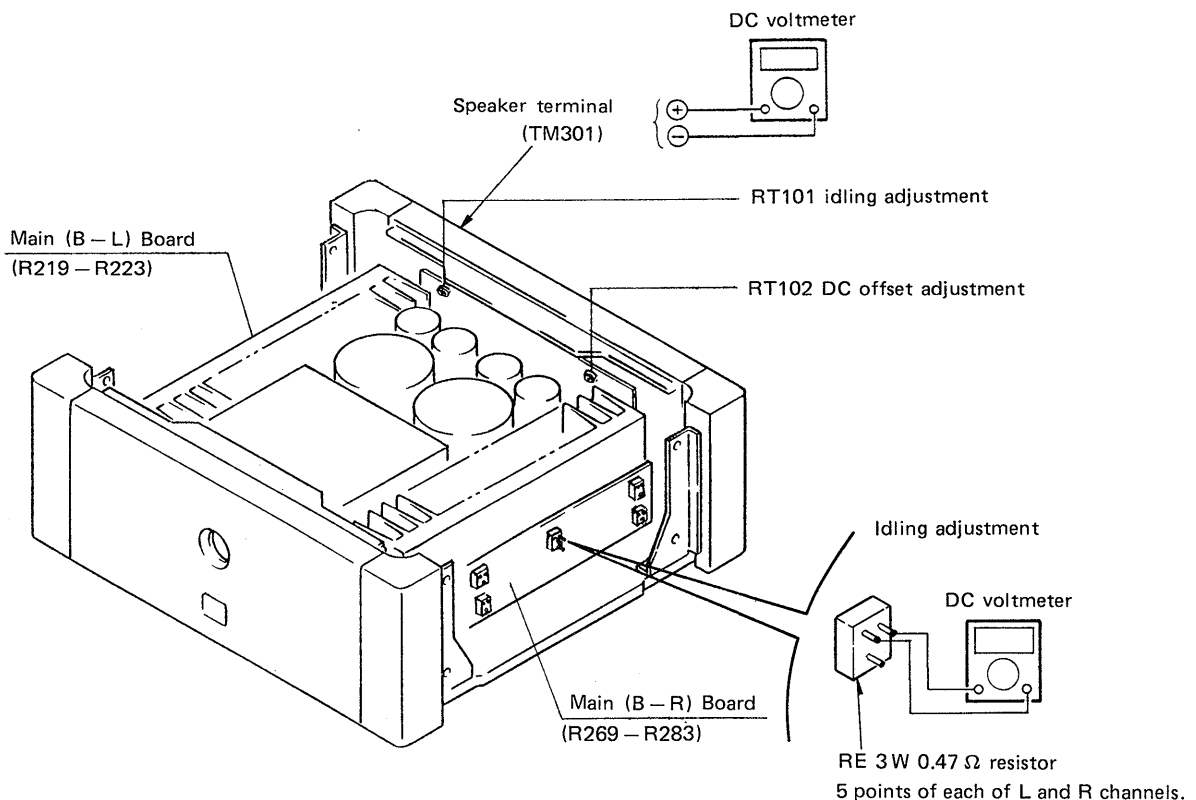
1. Connect a DC voltmeter (digital voltmeter) to respective leads of R219 to R223 and R269 to R273, and measure the voltage across each resistor.
2. Adjust RT101 so that the average of voltages at the above 10 places will be 0.15 V (± 0.02 V).

[DC OFFSET ADJUSTMENT]

Procedure:

1. Connect the DC voltmeter to both terminals of the SP terminal (TM301), and adjust RT102 so that the indication of the DC voltmeter will become 0 V.

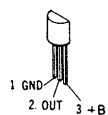
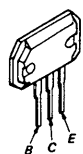
Adjustment positions:



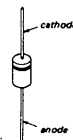
SECTION 4 DIAGRAMS

4-1. SEMICONDUCTOR LEAD LAYOUTS

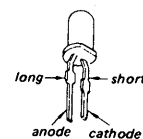
LM35DZ

2SA1216
2SC29222SA733-QP
2SC1815BL
2SC1845EA

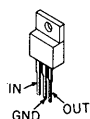
2SJ74

10E2
HZ6C2L

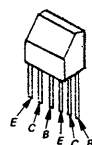
SEL2210S-C



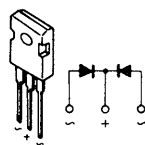
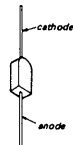
M5F78M12



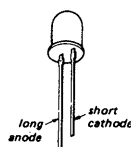
2SA1349-GR-BL



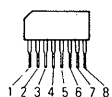
2SK246-GR3

C16P20F
C25P20FSV-02
SV-04

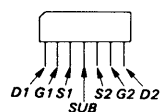
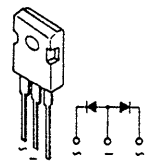
SEL2510C



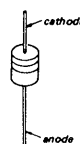
μPC1237HA

2SA1360
2SC3423

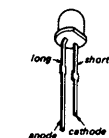
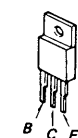
2SK389-GR

C16P20FR
C25P20FR

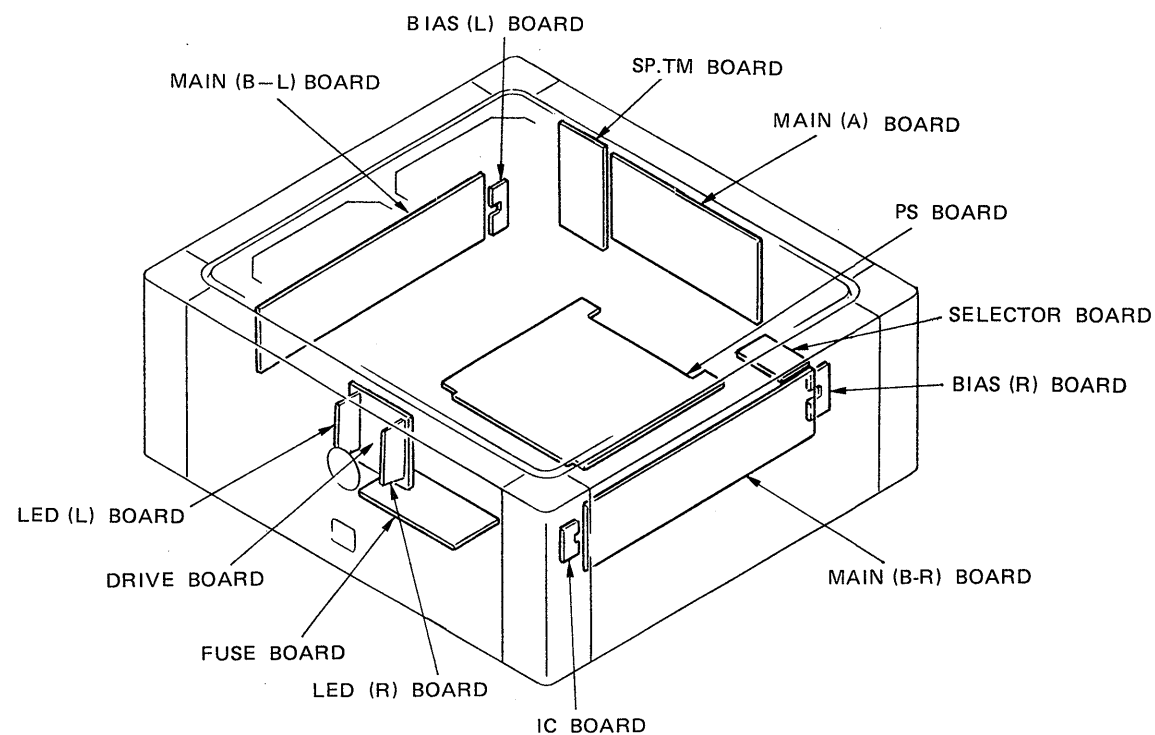
1SS120



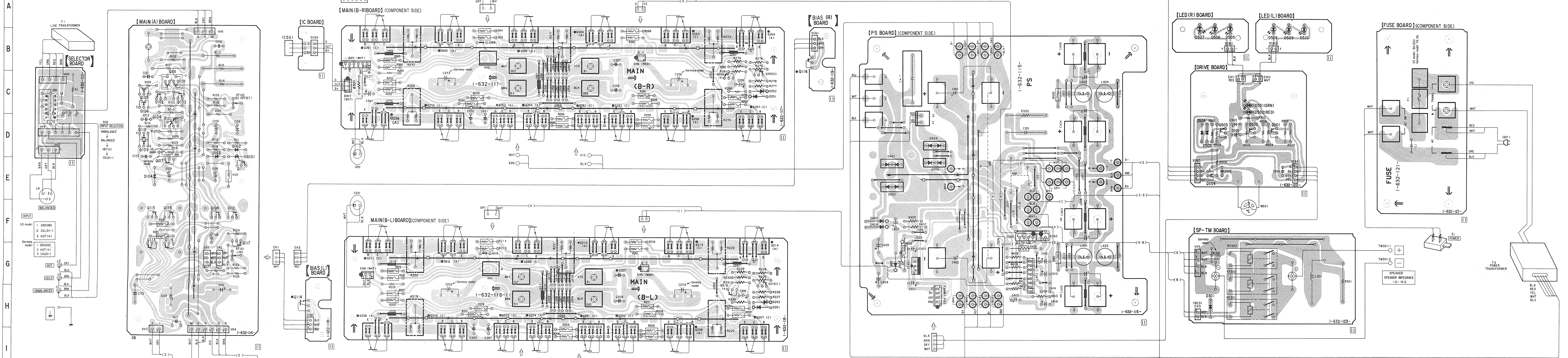
SEL2910A-D

2SA985A-QP
2SC2275-P

4-2. CIRCUIT BOARDS LOCATION



4-3. PRINTED WIRING BOARDS

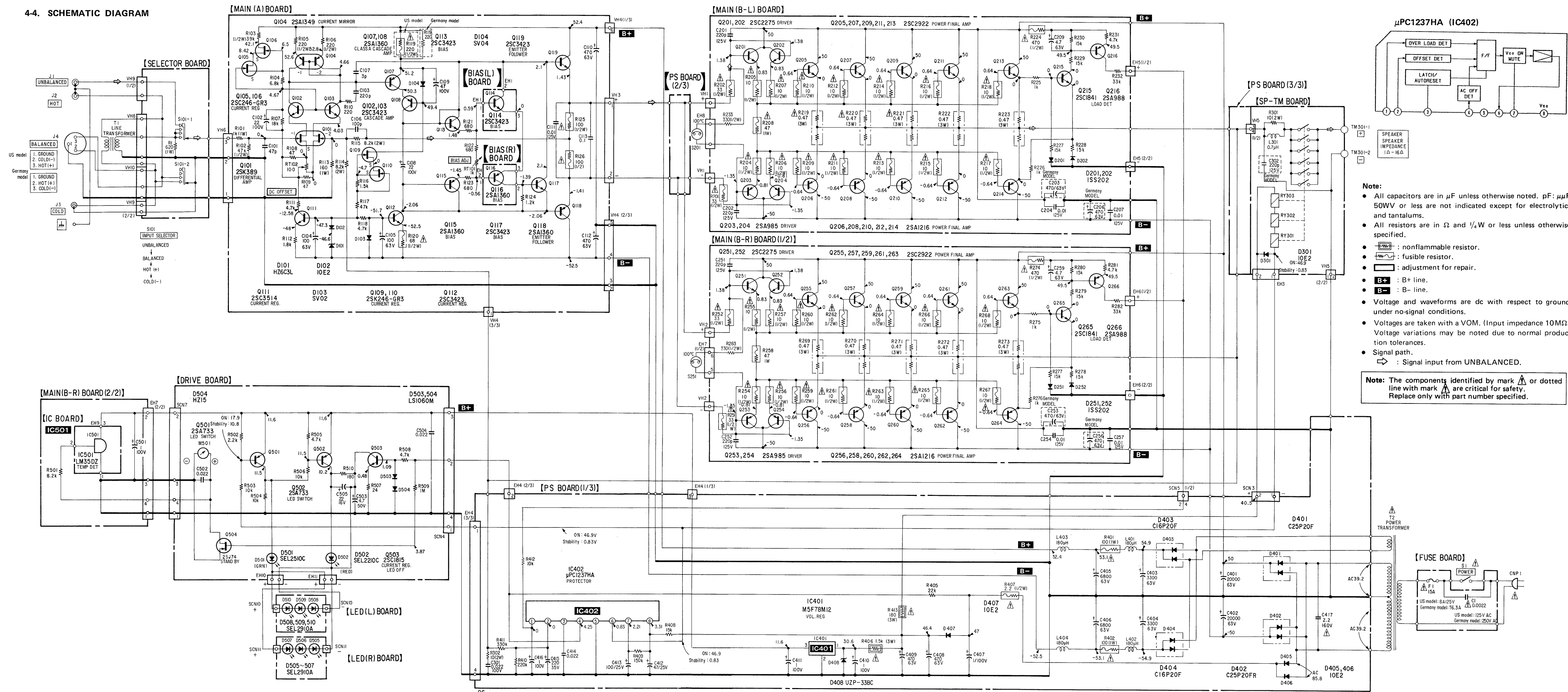


Note:
 ● : parts extracted from the component side.
 ● Bus bar in use with the mark.
 ▲ : B +
 ○ : B -
 □ : CENTER VOLTAGE (OUTPUT)

● Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D101	D-6	D502	C-30	Q105	C-4	Q204	H-13	Q256	D-9
D102	D-6	D503	D-29	Q106	C-4	Q205	H-10	Q257	C-18
D103	D-5	D504	D-28	Q107	E-4	Q206	H-9	Q258	D-17
D104	E-4	D505	B-29	Q108	F-5	Q207	H-18	Q259	B-13
D201	H-18	D506	B-29	Q109	D-4	Q208	H-18	Q260	B-14
D202	H-18	D507	B-28	Q110	D-4	Q209	G-13	Q261	B-9
D251	C-18	D508	B-30	Q111	E-6	Q210	F-14	Q262	B-11
D252	C-18	D509	B-30	Q112	F-6	Q211	G-9	Q263	B-17
D301	H-29	D510	B-31	Q113	F-4	Q212	G-11	Q264	B-18
D401	D-21			Q114	H-7	Q213	G-17	Q265	C-18
D402	E-21	IC401	G-22	Q115	F-4	Q214	G-18	Q266	C-17
D403	F-22	IC402	G-25	Q116	B-19	Q215	G-18	Q501	D-30
D404	D-22	IC501	B-7	Q117	G-6	Q216	G-17	Q502	D-30
D405	F-21			Q118	F-4	Q217	C-14	Q503	D-29
D406	F-21	Q101	C-4	Q119	F-4	Q252	C-15	Q504	E-29
D407	G-21	Q102	C-4	Q201	H-14	Q253	C-12		
D408	G-21	Q103	C-4	Q202	H-15	Q254	C-13		
D501	C-30	Q104	D-4	Q203	H-12	Q255	C-10		

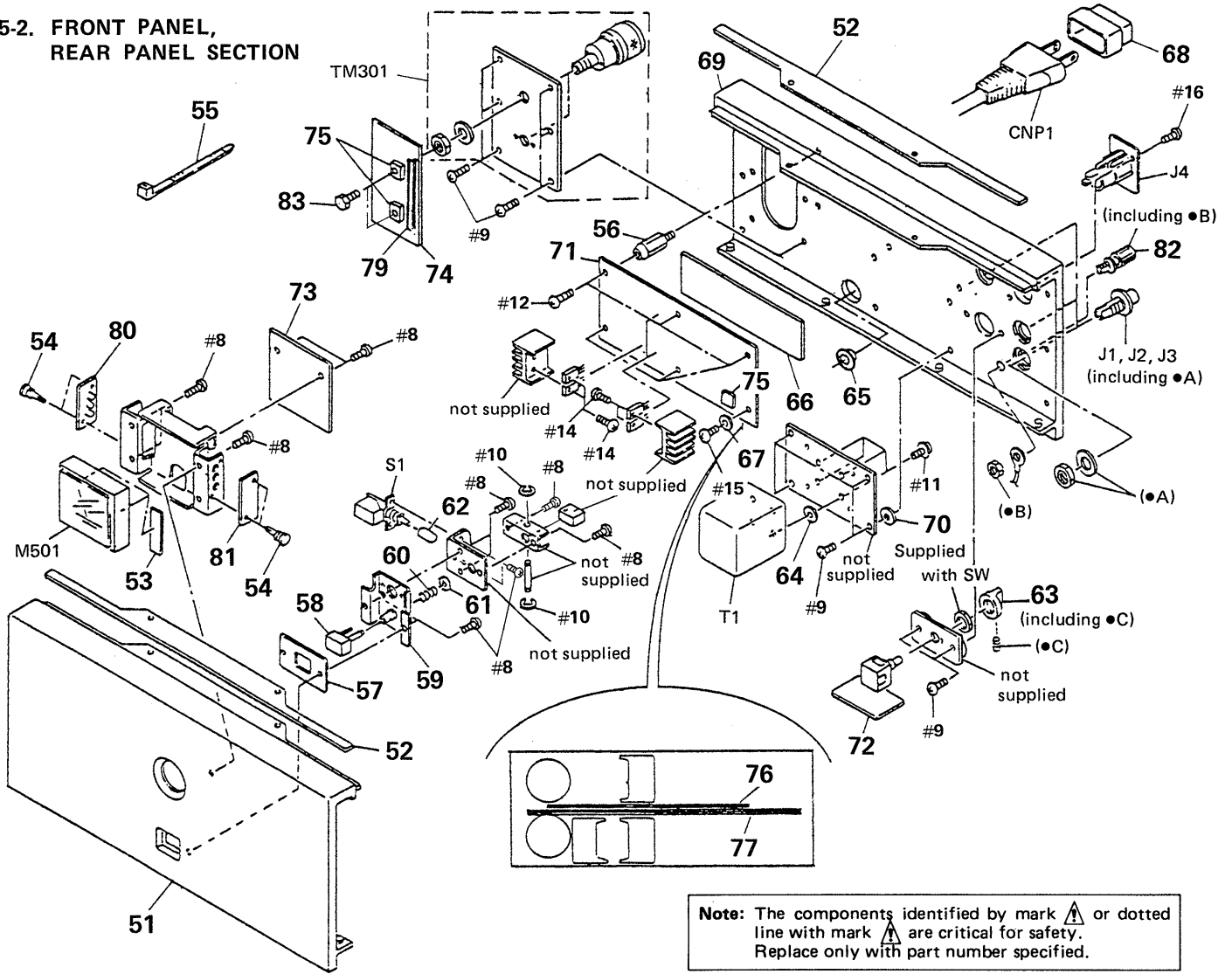
4-4. SCHEMATIC DIAGRAM



- Note:**
- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
 - \square : nonflammable resistor.
 - \square : fusible resistor.
 - \square : adjustment for repair.
 - **B+**: B+ line.
 - **B-**: B- line.
 - Voltage and waveforms are dc with respect to ground under no-signal conditions.
 - Voltages are taken with a VOM. (Input impedance 10M Ω) Voltage variations may be noted due to normal production tolerances.
 - Signal path.
 - \rightarrow : Signal input from UNBALANCED.

Note: The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

5-2. FRONT PANEL,
REAR PANEL SECTION



Ref. No. Part No. Description

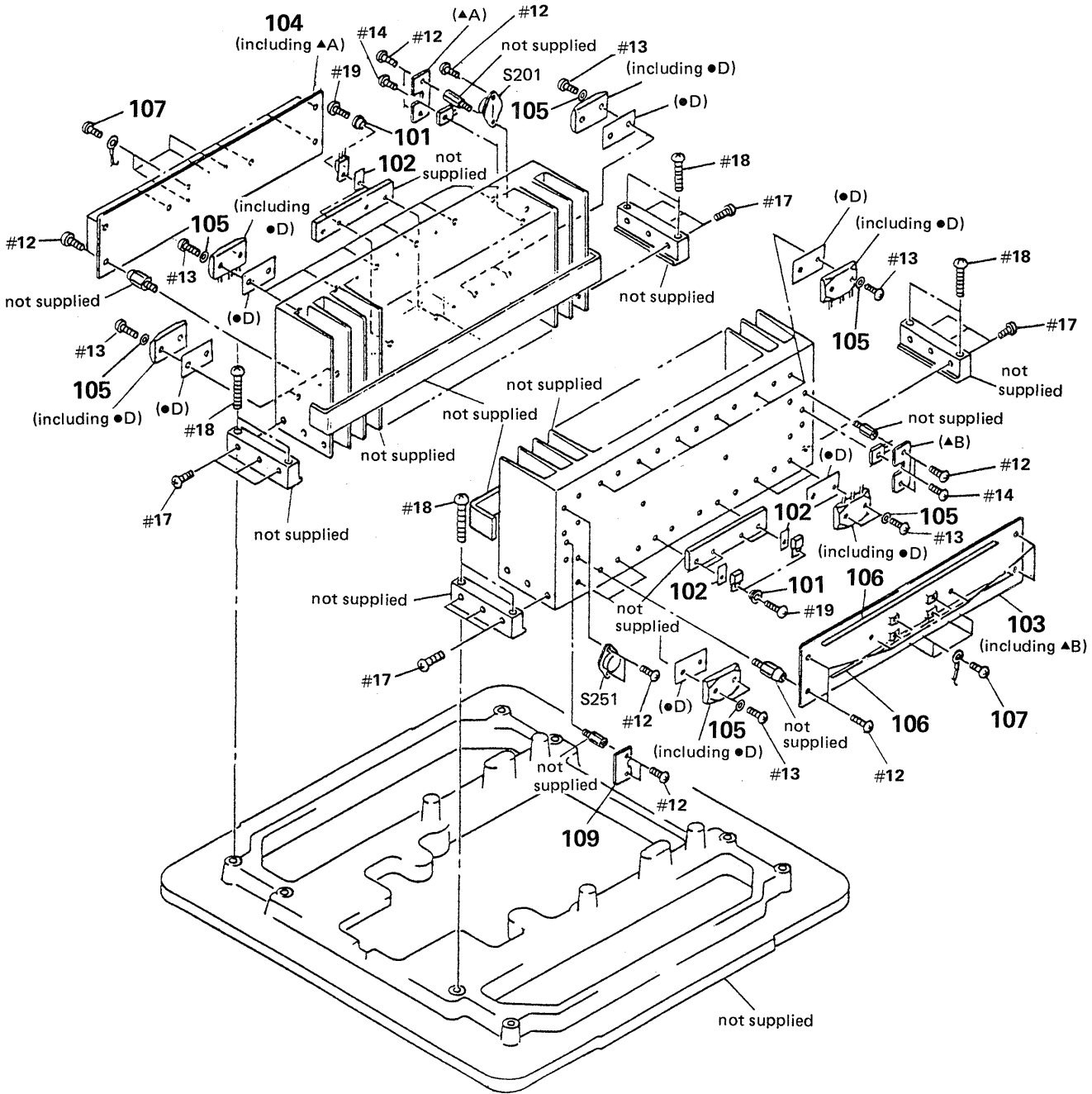
51	4-935-234-01	PANEL, FRONT
52	4-935-233-01	PACKING (B), TOP PLATE (Germany)
52	4-935-233-11	PACKING (B), TOP PLATE (US)
53	9-911-844-XX	CUSHION, GRILLE
54	4-812-134-00	RIVET NYLON, 3.5
55	3-655-653-21	BAND (TAITON), BINDING
56	* 4-935-216-01	BOSS
57	4-924-245-01	PLATE (E), ORNAMENTAL
58	X-4935-201-1	BUTTON ASSY
59	* X-4924-202-1	BRACKET (E) ASSY
60	* 4-880-426-00	SPRING, COMPRESSION
61	4-862-338-00	RING, STOPPER
62	4-935-221-01	CAP
63	4-924-256-01	KNOB (B)
64	4-885-984-21	WASHER
65	* 4-946-389-01	ESCUTCHEON, CORD
66	9-911-851-XX	ABSORBENT, ACOUSTIC
67	4-908-961-11	WASHER
68	4-362-304-00	GUARD, PLUG (US)
69	* 4-935-235-21	PANEL, BACK (Germany)
69	* 4-935-235-11	PANEL, BACK (US)
70	4-916-751-01	WASHER

Remark

Ref. No. Part No. Description

71	* A-4345-337-A	MAIN (A) BOARD, COMPLETE (US)
71	* A-4345-353-A	MAIN (A) BOARD, COMPLETE (Germany)
72	* 1-632-122-11	SELECTOR BOARD
73	* 1-632-120-11	DRIVE BOARD
74	* 1-632-123-11	SP. TM BOARD
75	* 4-835-639-00	PLATE, GROUND
76	1-564-295-00	BAR, BUS
77	* 1-564-393-00	BUS BAR 9P
78	* 1-560-242-21	BUS BAR 4P
79	* 1-560-242-11	BUS BAR 3P
80	* 1-633-166-11	LED (L) BOARD
81	* 1-633-167-11	LED (R) BOARD
82	* 4-935-253-01	TERMINAL, SP
83	* 4-931-964-01	SCREW (M4X6)
CNP1	⚠ 1-559-479-11	CORD, POWER (US)
CNP1	⚠ 1-559-271-11	CORD, POWER (Germany)
J1	1-568-918-11	JACK, PIN 1P (UNBALANCED)
J2	1-568-918-11	JACK, PIN 1P (HOT)
J3	1-568-918-11	JACK, PIN 1P (COLD)
J4	1-568-917-11	CONNECTOR, CANON (SOCKET) 3P (BALANCED)
M501	1-520-507-11	METER
S1	1-554-538-00	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)
T1	1-424-299-11	TRANSFORMER, LINE
TM301	1-537-248-11	TERMINAL BOARD (SPEAKER 2P)

5-3. HEAT SINK SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	2-371-561-00	BUSHING (P), INSULATING		105	4-908-961-01	WASHER	
102	4-916-721-01	SHEET, INSULATING		106	1-565-063-11	BAR, BUS	
103	* A-4345-340-A	MAIN (B-R) BOARD, COMPLETE (US)		107	* 4-931-964-01	SCREW (M4X6)	
103	* A-4345-355-A	MAIN (B-R) BOARD, COMPLETE (Germany)		109	* 1-633-170-11	IC BOARD	
104	* A-4345-339-A	MAIN (B-L) BOARD, COMPLETE (US)		S201	1-576-080-11	THERMOSTAT	
104	* A-4345-354-A	MAIN (B-L) BOARD, COMPLETE (Germany)		S251	1-576-080-11	THERMOSTAT	

MAIN(A)

PS

BIAS (L)

BIAS (R)

SECTION 6 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PD...
- CAPACITORS
uF: μ F
- COILS
uH: μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	* A-4345-337-A	MAIN (A) BOARD, COMPLETE (US)		C402	1-125-583-11	CAP, ELECT 20000MF	63V
	* A-4345-353-A	MAIN (A) BOARD, COMPLETE (Germany)		C403	1-125-597-11	CAP, ELECT 3300MF	63V
	*****			C404	1-125-597-11	CAP, ELECT 3300MF	63V
	* A-4345-075-A	PS BOARD, COMPLETE (Germany)		C405	1-125-581-11	CAP, ELECT 6800MF	63V
	* A-4345-338-A	PS BOARD, COMPLETE (US)		C406	1-125-581-11	CAP, ELECT 6800MF	63V
	*****			C407	1-123-380-00	ELECT 1uF	20% 100V
	1-535-730-21	LEAD, JUMPER (OFC)		C408	1-126-066-11	ELECT 470uF	20% 63V
	1-535-731-21	LEAD, JUMPER (OFC)		C409	1-126-066-11	ELECT 470uF	20% 63V
	* 1-560-242-21	BUS BAR 4P		C410	1-123-380-00	ELECT 1uF	20% 100V
	* 1-560-242-31	BUS BAR 5P		C411	1-123-380-00	ELECT 1uF	20% 100V
	1-564-295-00	BAR, BUS		C412	1-124-910-11	ELECT 47uF	20% 50V
	* 1-564-393-00	BUS BAR 9P		C413	1-124-122-11	ELECT 100uF	20% 50V
	* 3-555-872-21	SPACER		C414	1-136-157-00	FILM 0.022uF	5% 50V
	* 4-835-639-00	PLATE, GROUND		C415	1-124-484-11	ELECT 220uF	20% 35V
	* 4-916-791-01	PLATE, GROUND, 5P		C416	1-123-380-00	ELECT 1uF	20% 100V
	* 4-921-402-01	HEAT SINK		C417 Δ	1-136-880-11	FILM 2.2uF	10% 160V
	7-682-148-15	SCREW, TR		< DIODE >			
< CAPACITOR >				D101	8-719-910-68	DIODE HZ6C2L	
C101	1-104-322-11	POLYSTYRENE 47PF	10% 400V	D102	8-719-200-02	DIODE 10E2	
C102	1-124-748-11	ELECT 22uF	20% 100V	D103	8-719-300-02	DIODE SV-02	
C103	1-104-233-00	POLYSTYRENE 220PF	10% 125V	D104	8-719-300-04	DIODE SV-04	
C104	1-124-130-00	ELECT 100uF	20% 63V	D401	8-719-210-25	DIODE C25P20F	
C105	1-124-130-00	ELECT 100uF	20% 63V	D402	8-719-210-26	DIODE C25P20FR	
C106	1-104-269-11	POLYSTYRENE 100PF	10% 125V	D403	8-719-200-39	DIODE C16P20F	
C107	1-104-320-11	POLYSTYRENE 3PF	10% 400V	D404	8-719-200-40	DIODE C16P20FR	
C108	1-124-748-11	ELECT 22uF	20% 100V	D405	8-719-200-02	DIODE 10E2	
C109	1-126-988-11	ELECT 47uF	20% 100V	D406	8-719-200-02	DIODE 10E2	
C110	1-125-580-11	ELECT 470uF	20% 63V	D407	8-719-200-02	DIODE 10E2	
C111	1-104-319-11	POLYSTYRENE 10000PF	10% 125V	D408	8-719-016-18	DIODE UZP-33BC	
C112	1-125-580-11	ELECT 470uF	20% 63V	< CONNECTOR >			
C113	1-130-321-00	FILM 0.1uF	5% 100V	EH1	* 1-564-506-11	PLUG, CONNECTOR 3P	
C301	1-136-944-11	FILM 0.022uF	5% 0	EH2	* 1-564-506-11	PLUG, CONNECTOR 3P	
C401	1-125-583-11	CAP, ELECT 20000MF	63V	EH4	* 1-564-507-11	PLUG, CONNECTOR 4P	

MAIN(A)

PS

BIAS (L)

BIAS (R)

MAIN(B-R)

MAIN(B-L)

DRIVE

FUSE

SELECTOR

SP.TM

LED(L)

LED(R)

Ref. No.	Part No.	Description	Remark			
R410	1-247-887-00	CARBON	220K	5%	1/4W	
R411	1-247-891-00	CARBON	330K	5%	1/4W	
R412	1-247-725-11	CARBON	10K	5%	1/4W	
R413	Δ 1-216-476-11	METAL OXIDE	180	5%	3W	F

< VARIABLE RESISTOR >

RT101	1-224-249-XX	RES. ADJ. METAL GLAZE 1K
RT102	1-224-247-XX	RES. ADJ. METAL GLAZE 100

< CONNECTOR >

VH3	1-564-320-00	PIN. CONNECTOR 2P
VH4	* 1-564-243-00	PIN. CONNECTOR 6P
VH6	* 1-564-104-00	PIN. CONNECTOR 3P

- * A-4345-340-A MAIN (B-R) BOARD, COMPLETE (US)
- * A-4345-355-A MAIN (B-R) BOARD, COMPLETE (Germany)
- * A-4345-339-A MAIN (B-L) BOARD, COMPLETE (US)
- * A-4345-354-A MAIN (B-L) BOARD, COMPLETE (Germany)

- * 1-632-120-11 DRIVE BOARD

- * 1-632-121-11 FUSE BOARD

- * 1-632-122-11 SELECTOR BOARD

- * 1-632-123-11 SP. TM BOARD

- * 1-633-166-11 LED (L) BOARD

- * 1-633-167-11 LED (R) BOARD

1-533-183-11 HOLDER, FUSE

1-535-476-11 TERMINAL

- * 1-535-730-21 LEAD, JUMPER (OFC)

- * 1-560-242-11 BUS BAR 3P

- * 1-560-242-21 BUS BAR 4P

1-565-063-11 BAR, BUS

- * 4-835-639-00 PLATE, GROUND

< CAPACITOR >

C1	1-161-742-00	CERAMIC	0.0022uF	20%	400V
C201	1-104-233-00	POLYSTYRENE	220PF	10%	125V
C202	1-104-233-00	POLYSTYRENE	220PF	10%	125V
C203	1-125-582-11	ELECT	470uF	20%	63V (Germany)
C204	1-104-319-11	POLYSTYRENE	10000PF	10%	125V
C206	1-125-582-11	ELECT	470uF	20%	63V (Germany)
C207	1-104-319-11	POLYSTYRENE	10000PF	10%	125V
C209	1-123-369-00	ELECT	4.7uF	20%	63V
C251	1-104-233-00	POLYSTYRENE	220PF	10%	125V
C252	1-104-233-00	POLYSTYRENE	220PF	10%	125V

Ref. No.	Part No.	Description	Remark		
C253	1-125-582-11	ELECT	470uF	20%	63V (Germany)
C254	1-104-319-11	POLYSTYRENE	10000PF	10%	125V
C256	1-125-582-11	ELECT	470uF	20%	63V (Germany)
C257	1-104-319-11	POLYSTYRENE	10000PF	10%	125V
C259	1-123-369-00	ELECT	4.7uF	20%	63V

C302	1-104-233-00	POLYSTYRENE	220PF	10%	125V (Germany)
C501	1-123-380-00	ELECT	1uF	20%	100V
C502	1-136-157-00	FILM	0.022uF	5%	50V
C503	1-126-163-11	ELECT	4.7uF	20%	50V
C504	1-136-157-00	FILM	0.022uF	5%	50V
C505	1-124-234-00	ELECT	22uF	20%	16V

< DIODE >

D201	8-719-912-20	DIODE	1SS120
D202	8-719-912-20	DIODE	1SS120
D251	8-719-912-20	DIODE	1SS120
D252	8-719-912-20	DIODE	1SS120
D301	8-719-200-02	DIODE	10E-2
D501	8-719-303-00	DIODE	SEL2510C
D502	8-719-301-38	DIODE	SEL2210S-C
D503	8-719-912-20	DIODE	1SS120
D504	8-719-912-20	DIODE	1SS120
D505	8-719-301-61	DIODE	SEL2910A-D
D506	8-719-301-61	DIODE	SEL2910A-D
D507	8-719-301-61	DIODE	SEL2910A-D
D508	8-719-301-61	DIODE	SEL2910A-D
D509	8-719-301-61	DIODE	SEL2910A-D
D510	8-719-301-61	DIODE	SEL2910A-D

< CONNECTOR >

EH3	* 1-564-505-11	PLUG, CONNECTOR 2P
EH5	* 1-564-505-11	PLUG, CONNECTOR 2P
EH6	* 1-564-505-11	PLUG, CONNECTOR 2P
EH7	* 1-564-509-11	PLUG, CONNECTOR 6P
EH8	* 1-564-505-11	PLUG, CONNECTOR 2P
EH9	* 1-564-506-11	PLUG, CONNECTOR 3P
EH11	* 1-564-505-11	PLUG, CONNECTOR 2P

< COIL >

L301	* 1-428-071-11	COIL, AIR-CORE 0.7uH
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< TRANSISTOR >

Q215	8-729-184-53	TRANSISTOR	2SC1845-EA
Q216	8-729-140-82	TRANSISTOR	2SA988-PAFAEA
Q265	8-729-184-53	TRANSISTOR	2SC1845-EA
Q266	8-729-140-82	TRANSISTOR	2SA988-PAFAEA
Q501	8-729-141-03	TRANSISTOR	2SA733-QP
Q502	8-729-141-03	TRANSISTOR	2SA733-QP
Q503	8-729-281-54	TRANSISTOR	2SC1815BL
Q504	8-729-200-95	TRANSISTOR	2SJ74

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

MAIN(B-R)

MAIN(B-L)

DRIVE

FUSE

SELECTOR

SP.TM

LED(L)

LED(R)

Ref. No.	Part No.	Description	Remark
< RESISTOR >			
R1	△ 1-259-671-11	CARBON 620 2% 1W	
R201	△ 1-219-010-11	FUSIBLE 33 5% 1/2W	
R202	△ 1-219-010-11	FUSIBLE 33 5% 1/2W	
R204	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R205	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R206	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R207	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R208	△ 1-219-079-11	FUSIBLE 47 5% 1W	
R209	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R210	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R211	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R212	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R213	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R214	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R215	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R216	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R217	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R218	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R219	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R220	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R221	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R222	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R223	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R224	1-219-038-11	FUSIBLE 470 5% 1/2W	
R225	1-247-713-11	CARBON 1K 5% 1/4W	
R226	1-247-713-11	CARBON 1K 5% 1/4W	
R227	1-249-460-11	CARBON 15K 5% 1/4W	
R228	1-249-460-11	CARBON 15K 5% 1/4W	
R229	1-249-460-11	CARBON 15K 5% 1/4W	
R230	1-249-460-11	CARBON 15K 5% 1/4W	
R231	1-247-721-11	CARBON 4.7K 5% 1/4W	
R232	1-249-497-11	CARBON 33K 5% 1/4W	
R233	1-249-661-11	CARBON 330 5% 1/2W	
R251	△ 1-219-010-11	FUSIBLE 33 5% 1/2W	
R252	△ 1-219-010-11	FUSIBLE 33 5% 1/2W	
R254	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R255	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R256	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R257	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R258	△ 1-219-079-11	FUSIBLE 47 5% 1W	
R259	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R260	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R261	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R262	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R263	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R264	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	

Ref. No.	Part No.	Description	Remark
R265	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R266	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R267	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R268	△ 1-217-997-11	FUSIBLE 10 5% 1/2W	
R269	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R270	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R271	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R272	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R273	1-219-117-11	RES. WIREWOUND (0.47+0.47 3W)	
R274	△ 1-219-038-11	FUSIBLE 470 5% 1/2W	
R275	1-247-713-11	CARBON 1K 5% 1/4W	
R276	1-247-713-11	CARBON 1K 5% 1/4W	
R277	1-249-460-11	CARBON 15K 5% 1/4W	
R278	1-249-460-11	CARBON 15K 5% 1/4W	
R279	1-249-460-11	CARBON 15K 5% 1/4W	
R280	1-249-460-11	CARBON 15K 5% 1/4W	
R281	1-247-721-11	CARBON 4.7K 5% 1/4W	
R282	1-249-497-11	CARBON 33K 5% 1/4W	
R283	1-249-661-11	CARBON 330 5% 1/2W	
R301	△ 1-259-749-11	CARBON 10 2% 2W	
R501	1-249-945-11	CARBON 8.2K 1% 1/4W	
R502	1-247-717-11	CARBON 2.2K 5% 1/4W	
R503	1-247-725-11	CARBON 10K 5% 1/4W	
R504	1-247-725-11	CARBON 10K 5% 1/4W	
R505	1-247-721-11	CARBON 4.7K 5% 1/4W	
R506	1-247-725-11	CARBON 10K 5% 1/4W	
R507	1-249-513-11	CARBON 24 5% 1/4W	
R508	1-247-721-11	CARBON 4.7K 5% 1/4W	
R509	1-246-545-00	CARBON 1.0M 5% 1/4W	
R510	1-247-703-11	CARBON 180 5% 1/4W	

< RELAY >

RY301	1-515-703-11	RELAY	
RY302	1-515-703-11	RELAY	
RY303	1-515-703-11	RELAY	

< SWITCH >

S101	1-572-074-11	SWITCH, ROTARY (INPUT SELECTOR)	
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< CONNECTOR >

VH1	1-564-320-00	PIN, CONNECTOR 2P	
VH2	1-564-320-00	PIN, CONNECTOR 2P	
VH8	* 1-564-241-00	PIN, CONNECTOR 4P	
VH9	* 1-564-243-00	PIN, CONNECTOR 6P	
VH10	* 1-564-104-00	PIN, CONNECTOR 3P	

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

IC

Ref.No.	Part No.	Description	Remark
	* 1-633-170-11	IC BOARD *****	
		< IC >	
IC501	8-759-947-34	IC LM35DZ	

		MISCELLANEOUS *****	
174	1-533-185-11	HOLDER, FUSE (US)	
CNP1	△ 1-559-271-11	CORD, POWER (Germany)	
CNP1	△ 1-559-479-11	CORD, POWER (US)	
F1	△ 1-532-325-00	FUSE, TIME-LAG (6.3A) (Germany)	
F1	△ 1-532-510-00	FUSE, GLASS TUBE (8.0A) (US)	
J1	1-568-918-11	JACK, PIN 1P (UNBALANCED)	
J2	1-568-918-11	JACK, PIN 1P (HOT)	
J3	1-568-918-11	JACK, PIN 1P (COLD)	
J4	1-568-917-11	CONNECTOR, CANON (SOCKET) 3P (BALANCED)	
M501	1-520-507-11	METER	
S1	1-554-538-00	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)	
S201	1-576-080-11	THERMOSTAT	
S251	1-576-080-11	THERMOSTAT	
T1	1-424-299-11	TRANSFORMER, LINE	
T2	△ 1-450-490-11	TRANSFORMER, POWER (US)	
T2	△ 1-450-491-11	TRANSFORMER, POWER (Germany)	
TM301	1-537-248-11	TERMINAL BORAD (SPEAKER 2P)	

		ACCESSORIES & PACKING MATERIALS *****	
	3-703-450-01	INSTRUCTION (US)	
	3-751-053-11	MANUAL, INSTRUCTION (English, French, Spanish, Portuguese) (Germany)	
	3-751-053-21	MANUAL, INSTRUCTION (English) (US)	
	3-751-053-41	MANUAL, INSTRUCTION (German, Dutch, Swedish, Italian) (Germany)	
	4-362-304-00	GUARD, PLUG	
	* 4-935-245-01	CUSHION	
	* 4-945-283-01	INDIVIDUAL CARTON	

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
HARDWARE LIST *****			
# 1	7-682-560-09	SCREW +B 4X6	
# 2	7-682-650-09	SCREW +PSW 3X12	
# 3	7-682-561-09	SCREW +B 4X8	
# 4	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
# 5	7-685-144-19	SCREW +P 3X5 TYPE2 NON-SLIT	
# 6	7-683-425-04	BOLT, HEXAGON SOCKET 4X20	
# 7	7-685-645-79	SCREW +BVTP 3X6 TYPE2 N-S	
# 8	7-682-547-09	SCREW +B 3X6	
# 9	7-682-562-04	SCREW +B 4X10	
#10	7-624-105-04	STOP RING 2.3, TYPE -E	
#11	7-682-548-09	SCREW +B 3X8	
#12	7-682-147-15	SCREW, TR	
#13	7-682-552-04	SCREW +BVTT 3X16 (S)	
#14	7-682-148-15	SCREW, TR	
#15	7-682-149-15	SCREW, TR	
#16	7-682-248-09	SCREW +RK 3X8	
#17	7-682-566-09	SCREW +B 4X20	
#18	7-682-580-09	SCREW +B 5X25	
#19	7-682-551-09	SCREW +B 3X14	
#20	7-682-575-09	SCREW +B 5X10	
#21	7-682-569-09	SCREW +B 4X35	
#22	7-682-666-09	SCREW +PSW 4X20	
#23	7-682-581-09	SCREW +B 5X30	
#24	7-688-005-01	WASHER, PICTURE TUBE	
#25	7-688-004-02	W 4, SMALL	
#26	7-682-577-09	SCREW +B 5X14	
#27	7-684-024-04	N 4, TYPE 2	
#28	7-623-210-22	SW 4, TYPE 2	