

TA-E90ES

SERVICE MANUAL

US Model
AEP Model

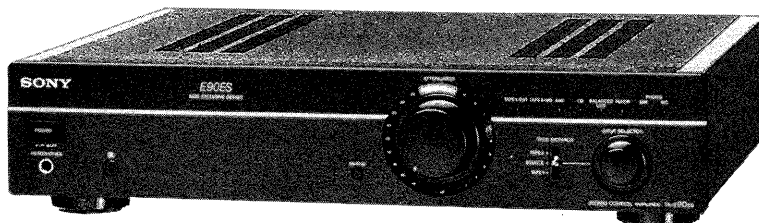


PHOTO : BLACK

SPECIFICATIONS

System

Low-noise FET high gain, NFB type equalizer amplifier
Low noise FET, single stage differential, MOS FET push-pull output, flat amplifier

Total harmonic distortion at rated 20 Hz - 20 kHz
0.003%

Intermodulation (IM) distortion at rated output 60 Hz : 7 kHz = 4 : 1
0.003%

Residual noise at network A
Less than 9 μ V

Frequency response

PHONO MM: RIAA equalization curve ± 0.2 dB
TAPE1/DAT, TAPE2/MD, AUX, CD,
TUNER: 3 Hz - 300 kHz ± 3 dB

S/N (network)

PHONO MC (0.5 mV): 78 dB (A)
MM (5 mV): 95 dB (A)
TAPE1/DAT, TAPE2/MD, AUX, CD,
TUNER: 105 dB (A)

Muting

- ∞ dB

Input

Input sensitivity

PHONO MC: 0.25 mV, 100 ohms
MM: 2.5 mV, 50 kilohms
TAPE1/DAT, TAPE2/MD, AUX, CD
TUNER: 150 mV, 20 kilohms
CD (BALANCED): 150 mV, 20 kilohms

Maximum input capability (1 kHz)

PHONO (1 kHz, THD 0.01%) MC: 10 mV
MM: 200 mV

Output

Output voltage impedance

TAPE1/DAT, TAPE2/MD: 150 mV, 1 kilohms
PRE OUT: 1.5 V, 300 ohms
BALANCED OUTPUT: 3 V, 600 ohms
HEADPHONES: 25 milliwatts (at 8 ohms)

General

Power requirements

U.S.A. model: 120 V AC, 60 Hz
European countries model: 220 - 230 V AC,
50/60 Hz

Power consumption

20 W

Dimensions (approx.) (w/h/d)

430 $\times$ 100 $\times$ 360 mm (17 $\times$ 4 $\times$ 14 1/4 inches)
incl. projecting parts and controls

Mass (approx.)

10.3 kg (22 lb. 11 oz)

Supplied accessories

Remote commander (remote) RM-J90(1)
Sony batteries SUM-3(NS) (2)
Audio connecting cord (1)

Design and specifications are subject to change without notice.



使用時は添付資料も参照のこと
Refer to the additional documents.

STEREO PREAMPLIFIER
SONY®

— **MODEL IDENTIFICATION** —
(Specification Label)

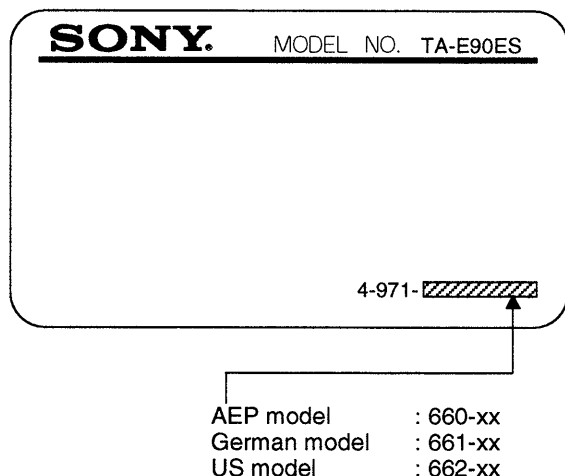


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SAFETY CHECK-OUT

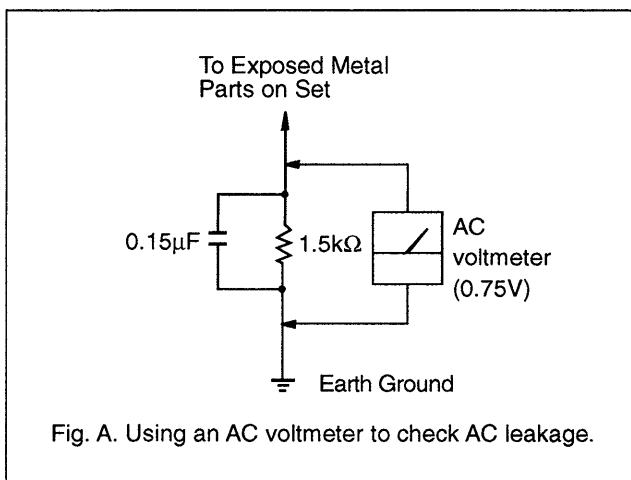
After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

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

LEAKAGE

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 2V AC range are suitable. (See Fig. A)



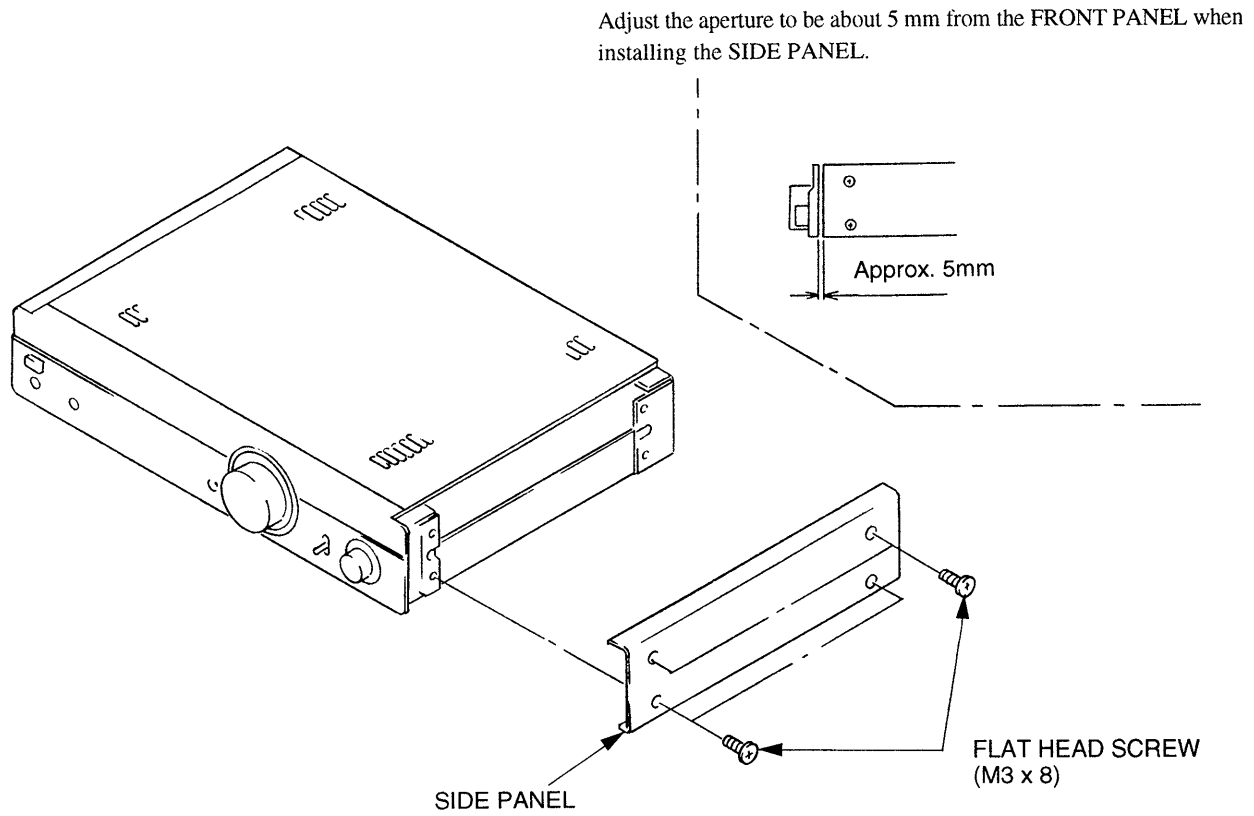
SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ 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.

SECTION 1

SERVICING NOTE

NOTE FOR INSTALLATION OF THE SIDE PANEL



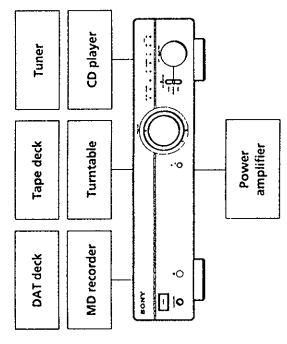
SECTION 2 GENERAL

This section is extracted from instruction manual.

Hooking Up the System

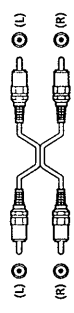
Overview

This section describes how to hook up the preamplifier to a variety of audio components. Hook up your audio components according to the connection diagrams that follow.



What cords will I need?

The following audio connecting cord (one) comes with your preamplifier:

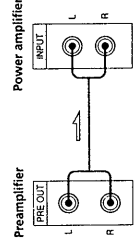


- Use one audio connecting cord to connect the preamplifier to a tuner.
- Use two balanced cables (equivalent to Canon XLR-3; contact your dealer) when connecting a CD player with balanced line output connectors or a power amplifier with balanced input connectors.
- Use two audio connecting cords to connect the preamplifier to a tape deck, a DAT deck or an MD recorder.

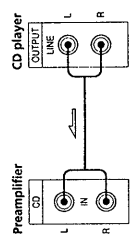
Hookup procedure

- Turn off the power to all components before making any connections.
- Do not connect the AC power cords until all connections are completed.
- Be sure to make connections firmly to prevent hum and noise.
- When connecting an audio cord, be sure to connect the (Right) and (Left) connectors of the preamplifier to the R and L connectors of the other equipment.

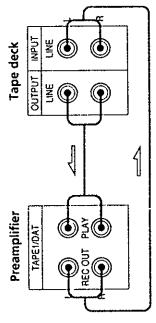
Power amplifier (unbalanced connection)



CD player (unbalanced connection)

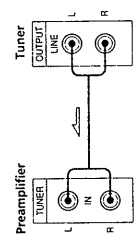


Tape deck (DAT deck or MD recorder)

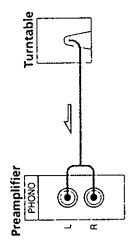


Use the same configurations to connect a tape deck or MD recorder to the TAPEZ/MD connectors.

Tuner



Turntable



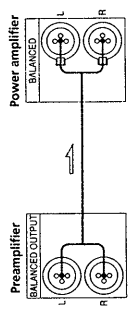
If your turntable has an earth lead

Connect the earth lead to the earth terminal to prevent hum.

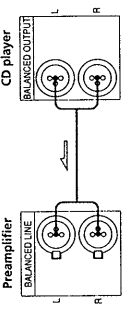
Balanced connection

Do not use balanced and unbalanced connections at the same time. Use of both connections at the same time will result in sound deterioration.

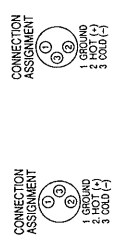
Power amplifier



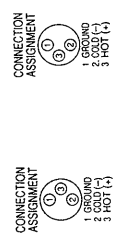
CD player



Connection assignment of balanced cables for European countries model



Connection assignment of balanced cables for U.S.A. model



Connecting the AC power cord

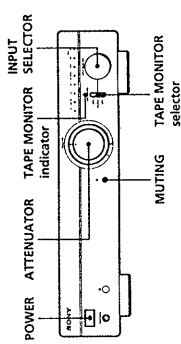
Connect the AC power cords from this preamplifier and the various audio components to a wall outlet.

Where do I go next?

Now you're ready to use your preamplifier. First, turn on the preamplifier and the audio components you're going to use.

Listening to a Program Source

This section describes how to select and listen to a program source. Before you begin, make sure you have connected the preamplifier to audio components correctly and firmly as indicated on page 5.



- Press POWER to turn on the preamplifier. The indicator of the program source last used flashes for about 8 seconds, then lights.
- Turn on the power amplifier.
- Set the TAPE MONITOR selector to SOURCE. The TAPE MONITOR indicator goes off.

- Select the program source by turning the INPUT SELECTOR control. The indicator of the selected program source lights. If the TAPE MONITOR selector is set to either TAPE 1 or TAPE 2, sound from the audio component connected to TAPE 1 or 2 will be output instead of the selected program source.

- Start the program source.

- Adjust the volume by turning the ATTENUATOR control.

When using a turntable

Ascertain the type of cartridge being used, then, depending on the cartridge type, select PHONO MM or MC by turning the INPUT SELECTOR control.

You can turn the sound off temporarily

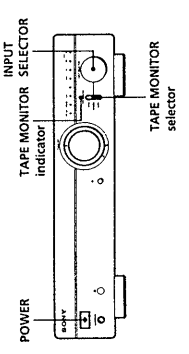
Press the MUTING button. Press again to turn the sound on again. If MUTING is on when you turn off the preamplifier, the sound will still be muted the next time you turn on the preamplifier.

When you use headphones

Connect the headphones to the HEADPHONE jack. Output from the speakers will be cut off.

Recording

This section describes how to record a program source. Before you begin, make sure you have connected the preamplifier to audio components correctly and firmly as indicated on page 5.



- Press POWER to turn on the preamplifier.
- Turn on the power amplifier.
- Select the program source to be recorded by turning the INPUT SELECTOR control. Make sure to set the TAPE MONITOR selector to SOURCE; otherwise you will not be able to hear the selected program source.
- Place the recording unit into recording pause.
- Make the recording level adjustments on the recording unit with the program source playing.
- Restart the program source.
- Start recording on the recording unit.

You can monitor the recorded sound

If your cassette deck has separate recording and playback heads, you can monitor the recorded sound by setting the TAPE MONITOR selector to either TAPE 1 or TAPE 2, whichever one is your recording unit. The TAPE MONITOR indicator will light.

When dubbing a tape

When dubbing from TAPE 1 to TAPE 2, select TAPE 1 in step 3 of the recording procedure. When dubbing from TAPE 2 to TAPE 1, select TAPE 2 in step 3 of the recording procedure.

Note

If you change the program source by turning the INPUT SELECTOR control during recording, the newly selected program source will be recorded.

SECTION 3

ELECTRICAL ADJUSTMENT

DC Bias Adjustment (with no signal input)

Note:

- Before measuring, desolder the two test lands of the MAIN board and EQ board (four test lands altogether) and then return the boards to their original positions.

Set up:

Volume: minimum

Adjusting method:

- Connect a DC volt meter to both edges of the R418 and R468 of the MAIN board and turn on the power supply. Adjust RV401 and RV451 so that the DC volt meter reading satisfies the specified value.
- Adjust the EQ board in the same way.
- After completing all adjustments, solder all parts desoldered again.

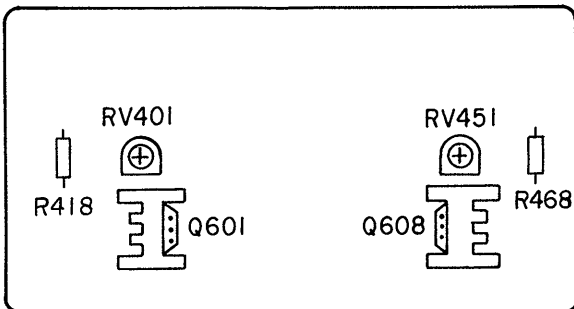
* Specified Value: $200\text{ mV} \pm 20\text{ mV}$

		Measurement Point	Adjustment Point
MAIN BOARD	L-ch	R418	RV401
	R-ch	R468	RV451
EQ BOARD	L-ch	R125	RV101
	R-ch	R175	RV151

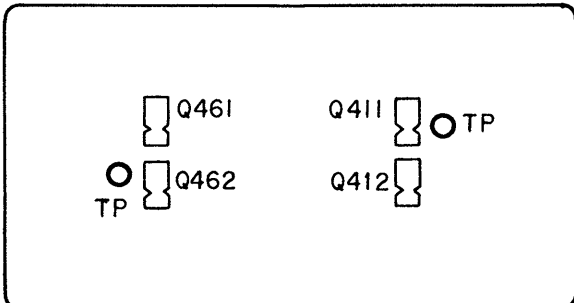
Adjustment Location:

【MAIN BOARD】

Component Side

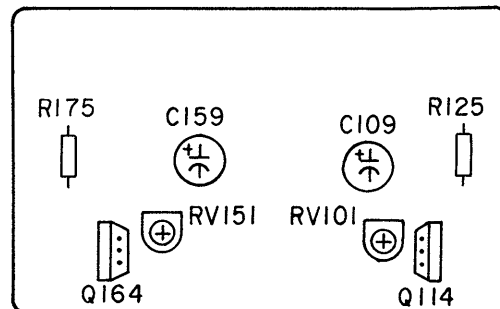


Conductor Side

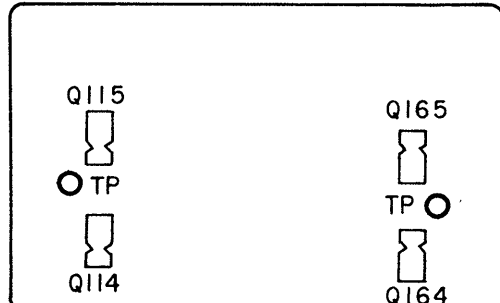


【EQ BOARD】

Component Side

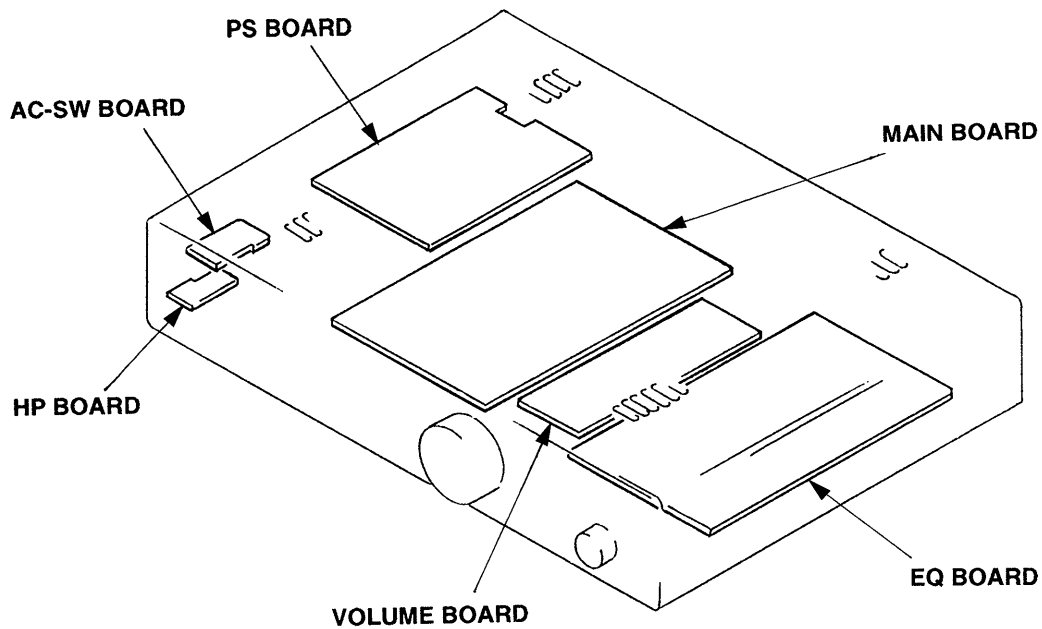
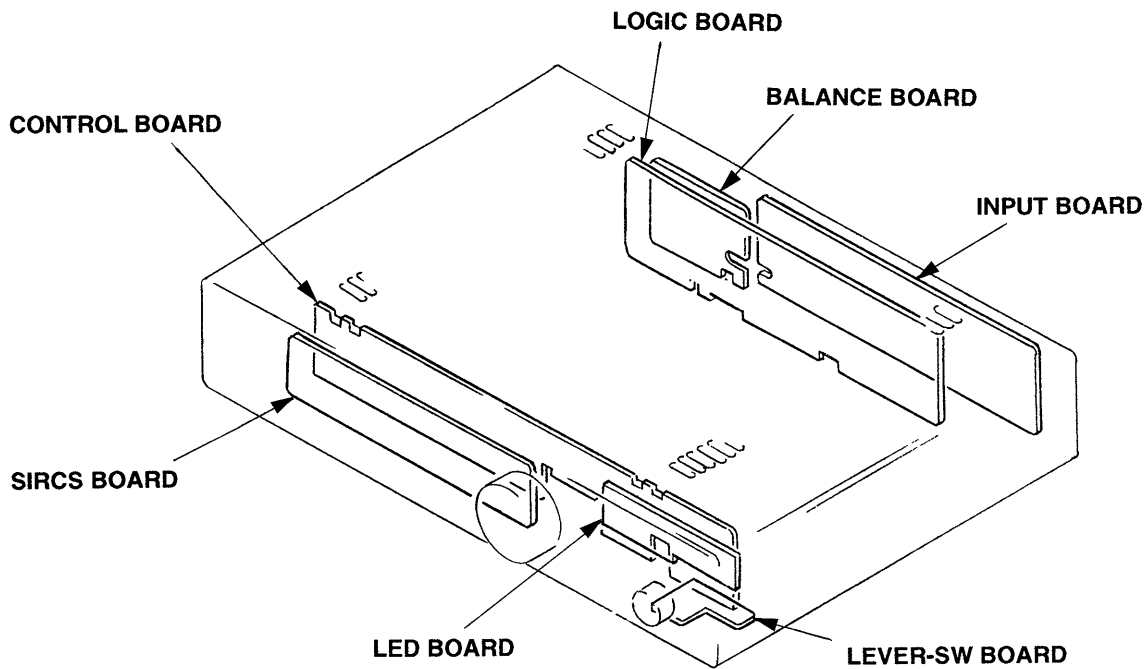


Conductor Side

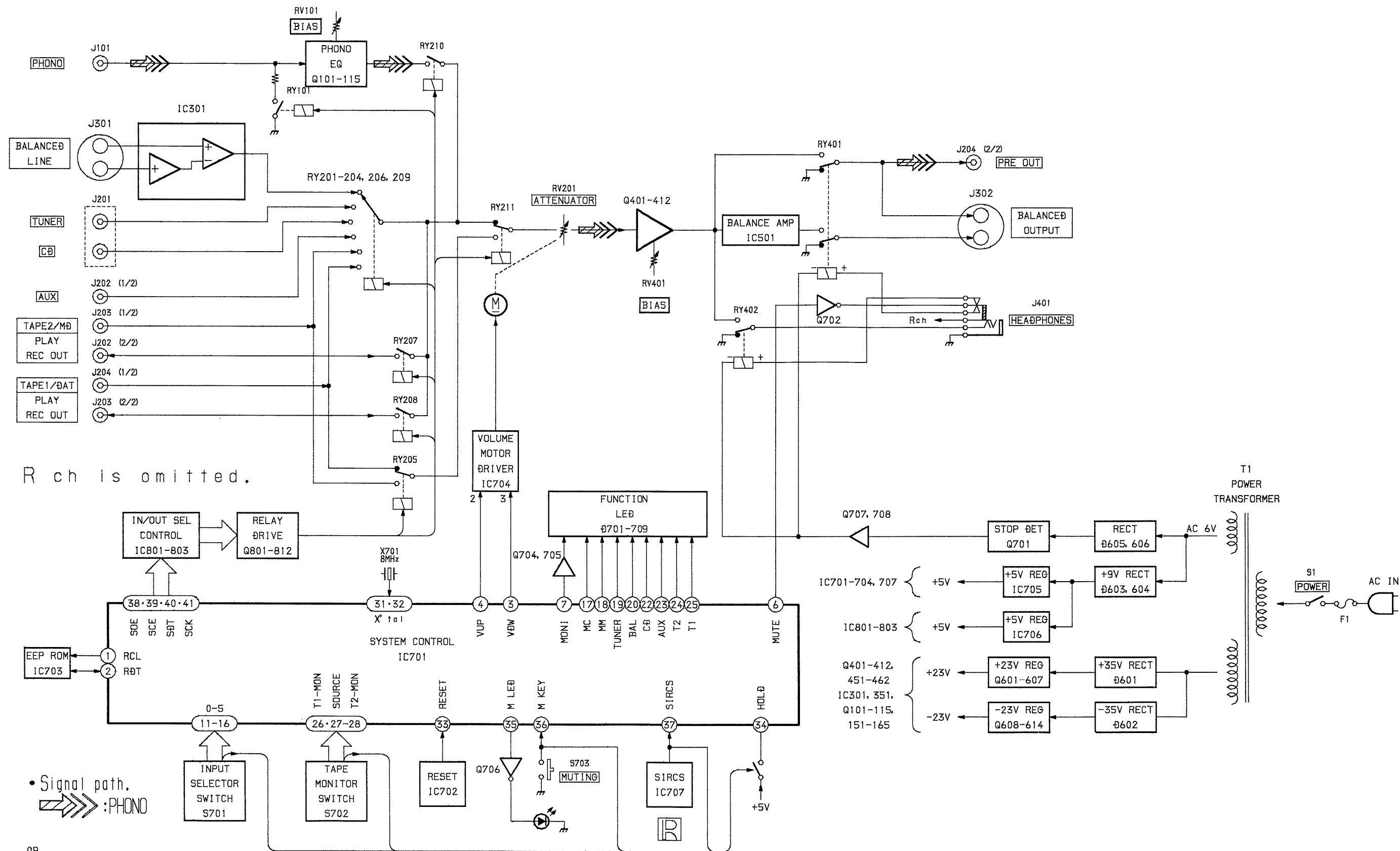


SECTION 4 DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION

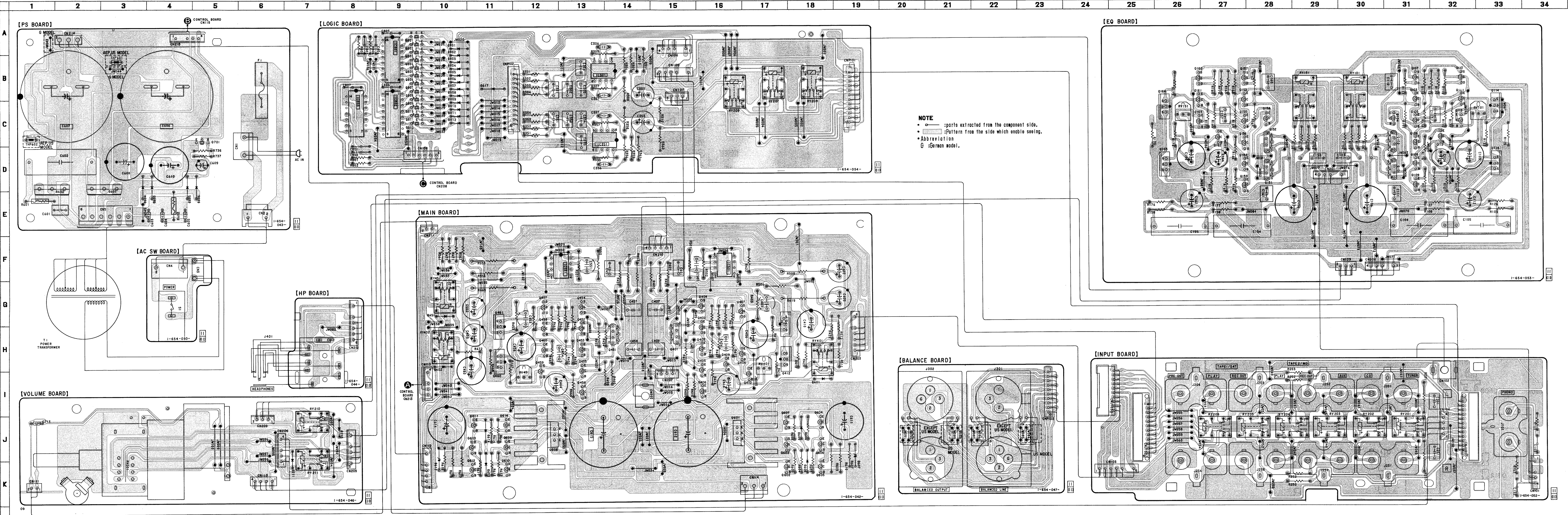


4-2. BLOCK DIAGRAM



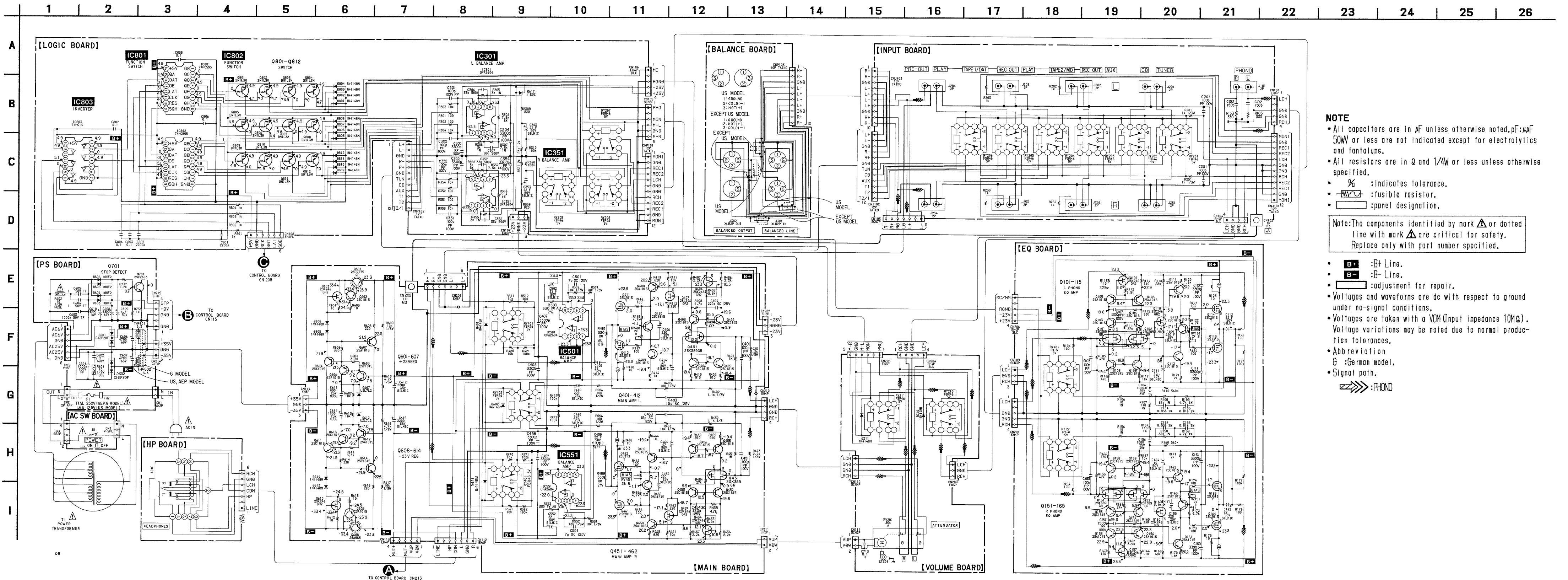
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D210	J-8	Q157	B-28
D211	K-7	Q158	D-28
D401	I-18	Q159	D-28
D402	H-10	Q160	B-27
D451	G-10	Q161	B-27
D601	E-3	Q162	D-27
D602	E-2	Q163	C-27
D603	E-4	Q164	B-26
D604	E-3	Q165	D-26
D605	E-4	Q401	H-15
D606	E-5	Q402	G-16
D607	J-19	Q403	H-16
D608	K-18	Q404	G-16
D609	J-18	Q405	H-16
D612	K-10	Q406	I-16
D613	K-11	Q407	G-17
D614	J-11	Q408	H-17
D617	B-11	Q409	H-16
D801	A-10	Q410	I-17
D802	A-10	Q411	H-18
D803	B-10	Q412	I-18
D804	B-10	Q451	H-14
D805	B-10	Q452	G-13
D806	B-10	Q453	H-13
D807	B-10	Q454	G-13
D808	B-10	Q455	H-13
D809	B-10	Q456	I-13
D810	C-10	Q457	G-12
D811	C-10	Q458	G-12
D812	C-10	Q459	H-12
		Q460	H-12
IC301	B-14	Q461	G-11
IC351	C-14	Q462	I-11
IC501	F-16	Q601	J-16
IC551	F-13	Q602	K-18
IC801	A-9	Q603	J-18
IC802	C-9	Q604	I-18
IC803	C-8	Q605	K-18
		Q606	J-18
		Q607	I-18
Q101	D-31	Q608	J-12
Q102	C-31	Q609	J-11
Q103	B-31	Q610	K-11
Q104	C-31	Q611	J-11
Q105	C-31	Q612	K-11
Q106	C-31	Q613	J-11
Q107	B-31	Q614	J-11
Q108	D-31	Q701	C-5
Q109	D-31	Q801	A-9
Q110	B-32	Q802	A-9
Q111	B-32	Q803	B-9
Q112	C-32	Q804	B-9
Q113	C-32	Q805	B-9
Q114	B-33	Q806	B-9
Q115	D-33	Q807	B-9
Q151	D-28	Q808	B-9
Q152	C-28	Q809	C-9
Q153	C-28	Q810	C-9
Q154	C-28	Q811	C-9
Q155	C-28	Q812	C-9
Q156	C-28		



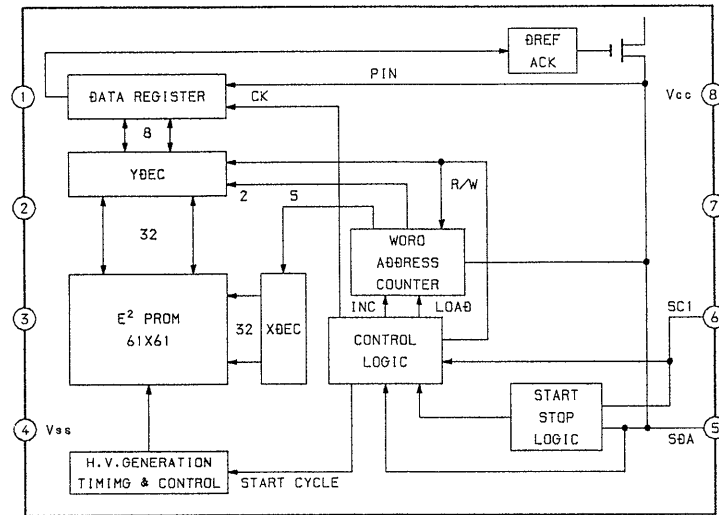
NOTE
• :parts extracted from the component side.
• :Pattern from the side which enable seeing.
• Abbreviation
G :German model.

4-4. SCHEMATIC DIAGRAM — MAIN SECTION —

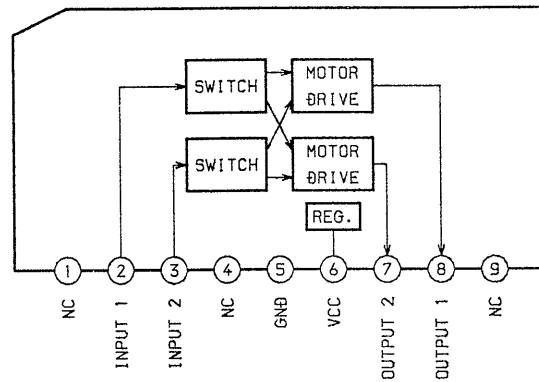


IC BLOCK DIAGRAMS

IC703 X24C01P

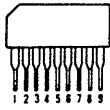


IC704 BA6208

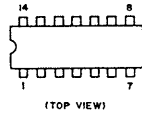


4-5. SEMICONDUCTOR LEAD LAYOUTS

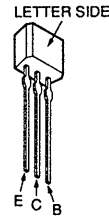
BA6208



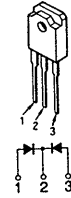
TC74HC14AP



2SA1175-HFE
2SC2785-HFE



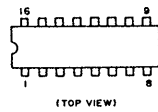
C16P20F
C16P20FR



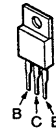
GP1U57XB



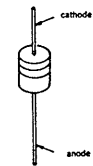
TC74HC595AP



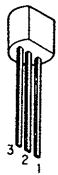
2SA985A-QP
2SC2275A-P
2SK2013-Y
2SJ313-Y



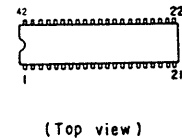
UZL-7L2
11ES2-NTA2B



M51943BSL



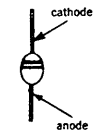
TMP47C200BN-H327



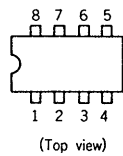
2SK246-GR2



U05G



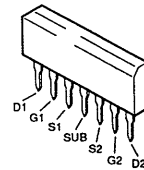
OPA2604AP
X24C01P-S



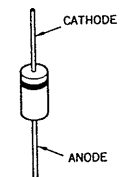
DTA124ES
DTA144ES
2SC2603-EF



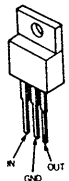
2SK389-GR



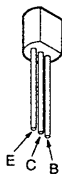
1N4148M



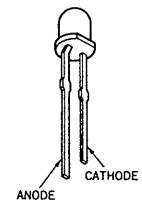
TA7805S



2SA1015-GR

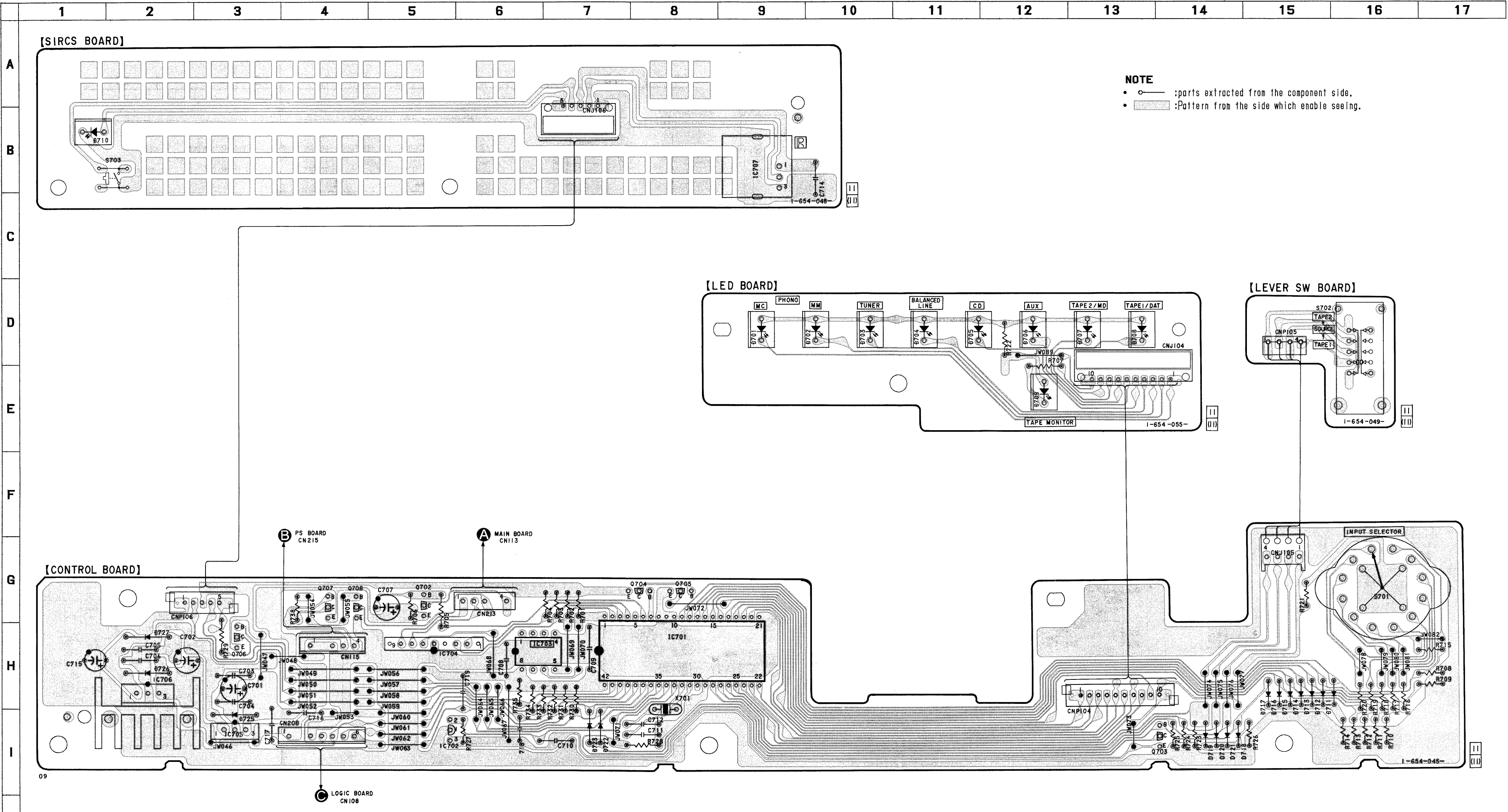


SEL2810A

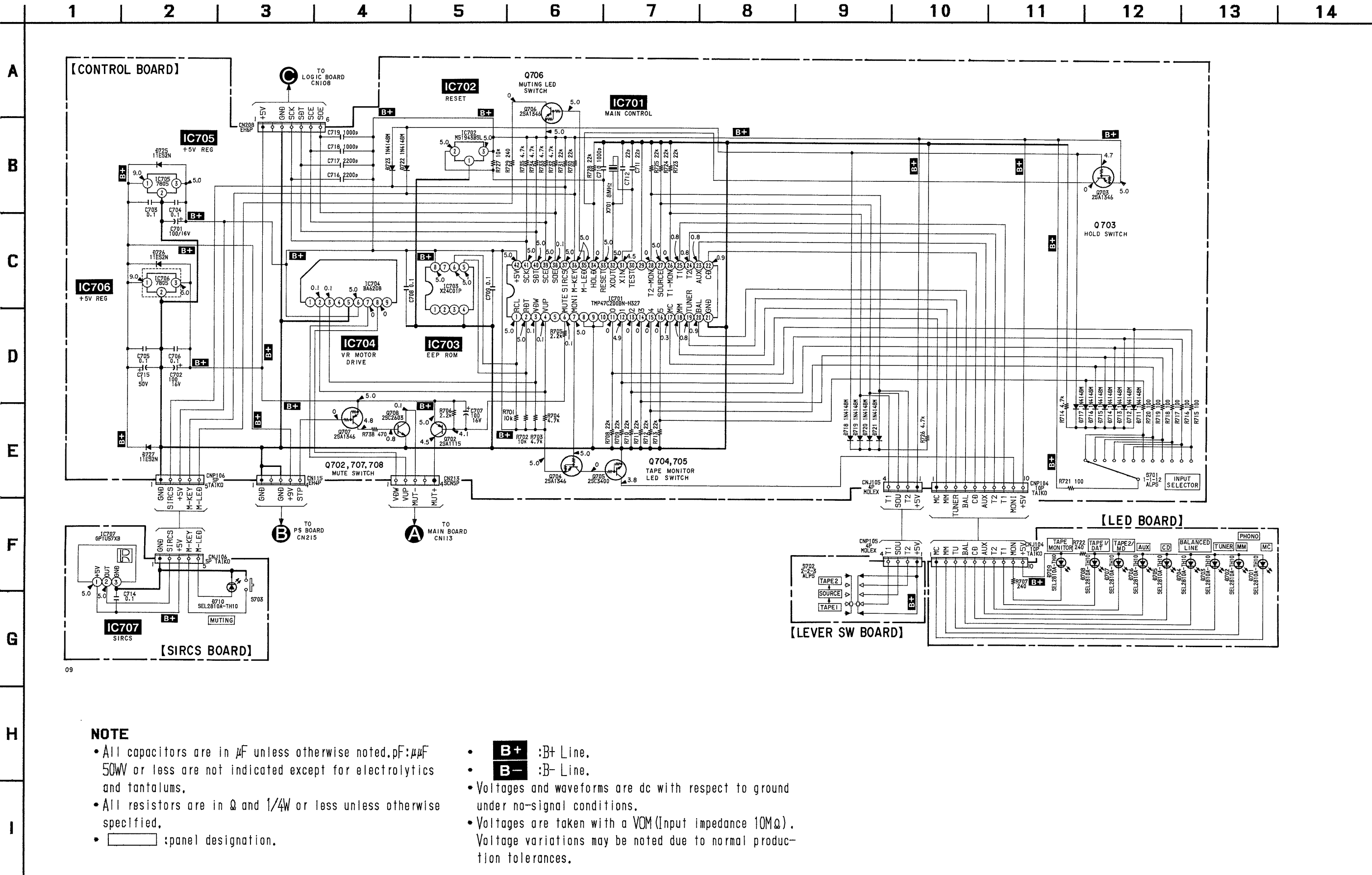


4-6. PRINTED WIRING BOARD — CONTROL SECTION —
•See page 6 for Circuit Boards Location.

• Semiconductor Location	
Ref. No.	Location
D701	D-9
D702	D-10
D703	D-10
D704	D-11
D705	D-11
D706	D-12
D707	D-13
D708	D-13
D709	E-12
D710	B-1
D711	H-16
D712	H-15
D713	H-15
D714	H-15
D715	H-15
D716	H-15
D717	H-15
D718	I-15
D719	I-14
D720	I-14
D721	I-14
D722	D-7
D723	D-7
D725	I-3
D726	H-2
D727	H-2
IC701	H-8
IC702	I-5
IC703	H-7
IC704	H-5
IC705	I-3
IC706	H-2
IC707	B-9
Q702	G-5
Q703	I-14
Q704	G-8
Q705	G-8
Q706	H-3
Q707	G-4
Q708	G-4



4-7. SCHEMATIC DIAGRAM — CONTROL SECTION —



4-8. IC PIN FUNTION

· IC701 TMP47C200BN-H327

Pin No.	Pin Name	I/O	Function
1	RCL	O	Clock Data } Serial data of EEPROM. (X24C01)
2	RDT	I/O	
3	VUP	O	Up Down } VR motor control signal. (Active : H, Stop : L-L, Brake : H-H)
4	VDW	O	
5	—	—	Not Used. (Open)
6	MUT	O	Mute control signal output when switching. (Mute : H)
7	MONI	O	TAPE MONITOR LED display signal. (L : Function LED is turned on.)
8	—	I	Not Used. (Pull down to GND.)
9	—	I	Not Used. (Pull down to GND.)
10	—	I	Not Used. (Pull down to GND.)
11	SW0	I	Relativity position detection signal of rotary switch. (one of them terminal : H, the other terminal : L) Direction from SW5 to SW0, CD → AUX → TAPE2 → TAPE1 → MC → MM → TUNER → BALANCE → CD ...
12	SW1	I	
13	SW2	I	
14	SW3	I	
15	SW4	I	
16	SW5	I	
17	MC	O	Function LED drive signal. (ON : L)
18	MM	O	
19	TUNER	O	
20	BAL	O	
21	GND	—	GND terminal.
22	CD	O	Function LED drive signal. (ON : L)
23	AUX	O	
24	TAPE 2	O	
25	TAPE 1	O	
26	TAPE 1M	I	Signal of TAPE MONITOR SWITCH (one of them : H, the other : L)
27	SOURCE	I	
28	TAPE 2M	I	
29	—	I	Not Used. (Pull down to GND.)
30	TEST	—	Test terminal. (Open)
31	XIN	—	Oscillation signal. 8.19MHz
32	XOUT	—	
33	RESET	I	Reset signal. (Reset : L)
34	HOLD	I	Cancellation of hold mode signal. (Start : H)
35	M-LED	O	MUTING LED drive signal. (ON : L)
36	M-KEY	I	MUTING Switch signal. (Active : L)
37	SIRCS	I	SIRCS signal (Active : L)
38	SOE	O	Serial control signal to function IC. (IC801, 802)
39	SCE	O	
40	SDT	O	
41	SCK	O	
42	VDD	—	Power supply (+5V) terminal.

SECTION 5 EXPLODED VIEWS

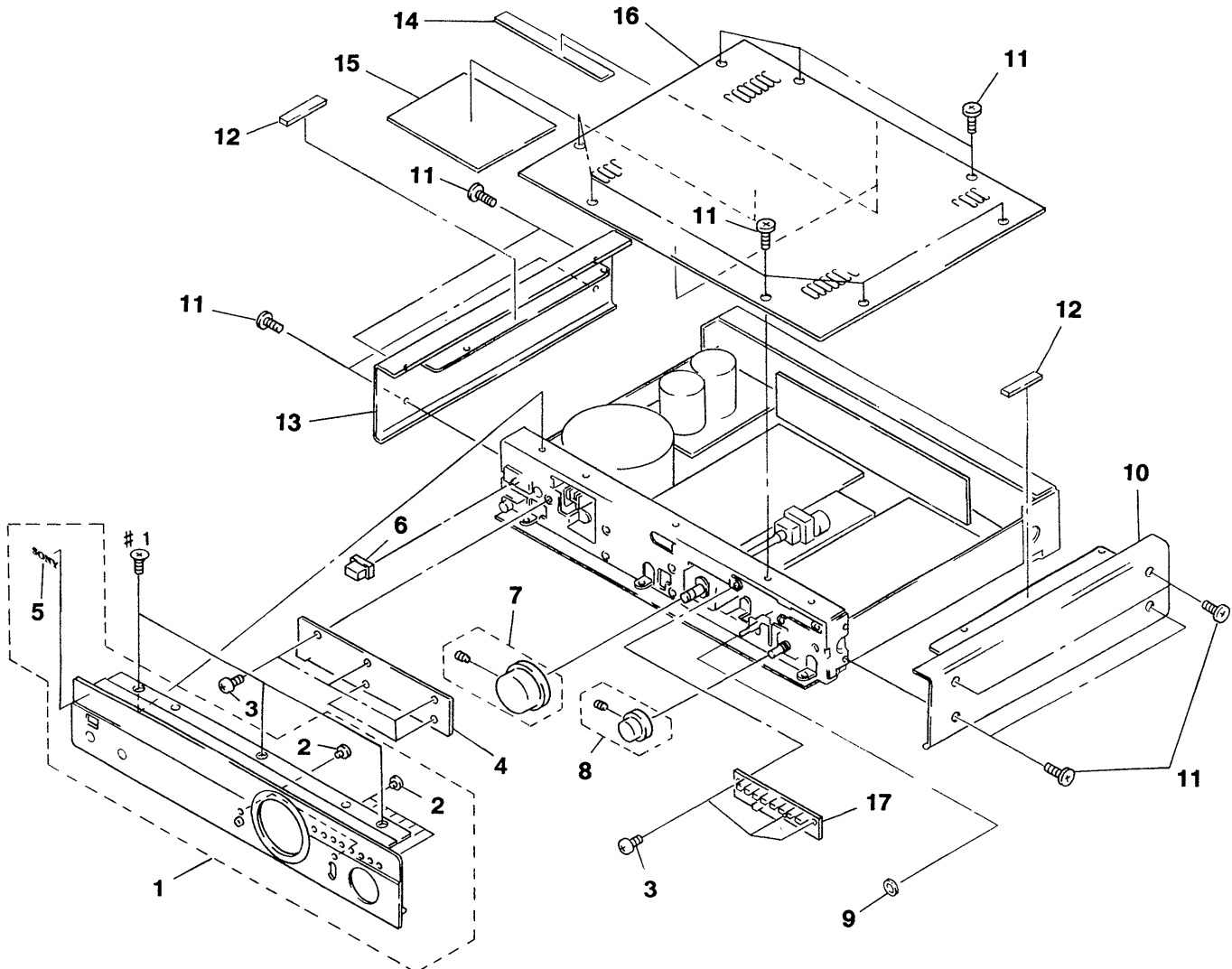
NOTE:

- Items marked “ * ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.

- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
G : German model

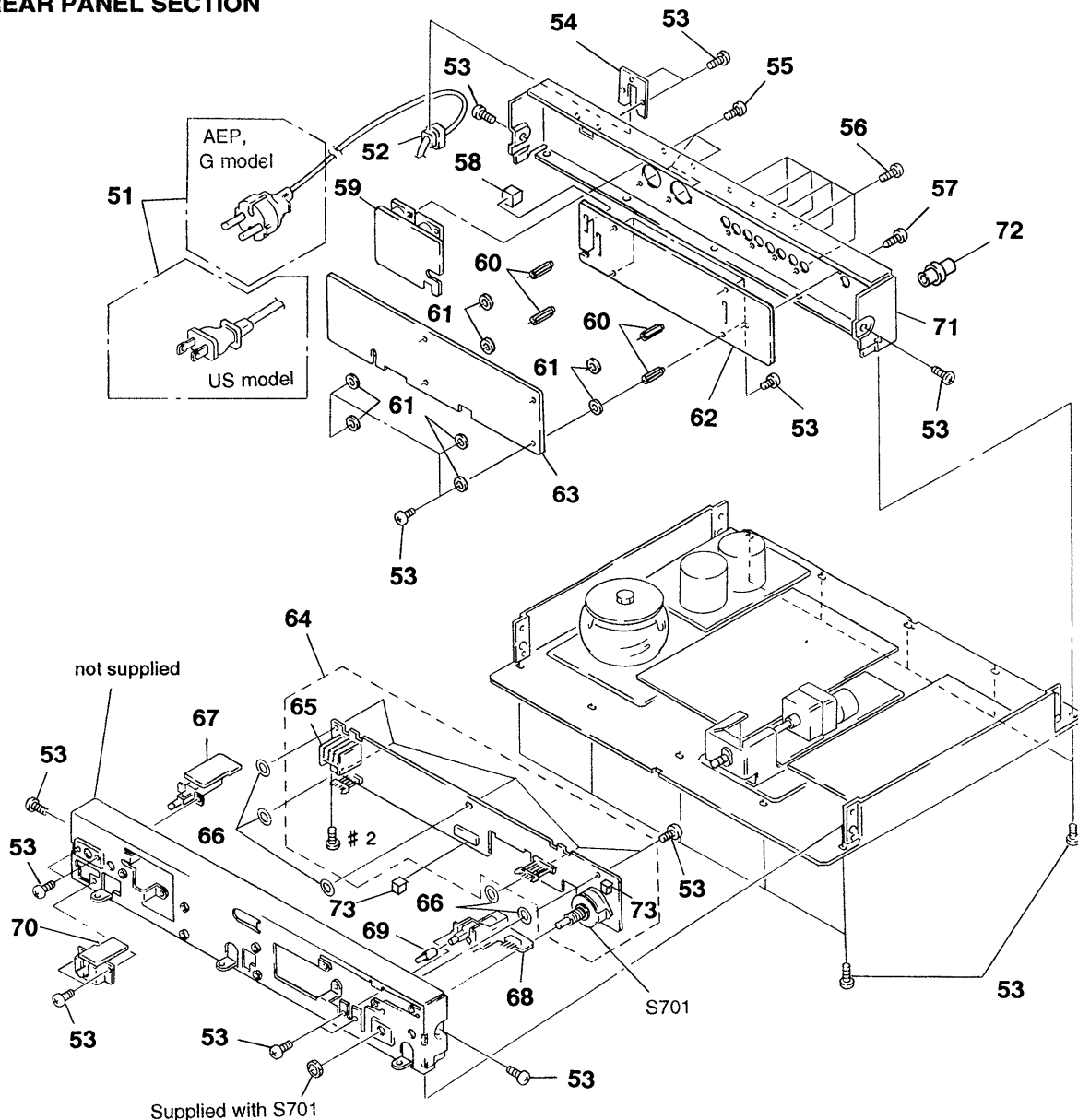
The components identified by mark or dotted line with mark are critical for safety.
Replace only with part number specified.

5-1. FRONT AND SIDE PANEL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	A-4361-172-A	PANEL ASSY, FRONT (US, AEP, G(BLACK))		9	4-971-312-01	SHEET (DIA. 8), BLIND	
1	A-4361-174-A	PANEL ASSY, FRONT (G(GOLD))		* 10	4-969-320-01	PANEL (R), SIDE (US, AEP, G(BLACK))	
2	4-969-325-01	LENS, LED		* 10	4-969-320-11	PANEL (R), SIDE (G(GOLD))	
3	4-967-961-01	SCREW (3X8) (SPECIAL)		11	4-924-242-11	SCREW (M3X6), FLAT HEAD (US, AEP, G(BLACK))	
* 4	1-654-048-11	SIRCS BOARD		11	4-924-242-61	SCREW (M3X6), FLAT HEAD (G(GOLD))	
5	4-942-568-01	EMBLEM (NO. 5), SONY (US, AEP, G(BLACK))		* 12	4-971-317-01	CUSHION (C)	
5	4-942-568-21	EMBLEM (NO. 5), SONY (G(GOLD))		* 13	4-969-319-01	PANEL (L), SIDE (US, AEP, G(BLACK))	
6	4-969-330-01	KNOB (POWER) (US, AEP, G(BLACK))		* 13	4-969-319-11	PANEL (L), SIDE (G(GOLD))	
6	4-969-330-11	KNOB (POWER) (G(GOLD))		14	4-969-347-01	CUSHION	
7	4-969-322-01	KNOB (DIA. 55) (US, AEP, G(BLACK))		15	4-971-316-21	DAMPER	
		(ATTENUATOR)		16	4-969-318-01	PLATE, TOP (US, AEP, G(BLACK))	
7	4-969-322-11	KNOB (DIA. 55) (G(GOLD)) (ATTENUATOR)		16	4-969-318-11	PLATE, TOP (G(GOLD))	
8	4-969-323-01	KNOB (DIA. 34) (US, AEP, G(BLACK))		* 17	1-654-055-11	LED BOARD	
		(INPUT SELECT)					
8	4-969-323-11	KNOB (DIA. 34) (G(GOLD)) (INPUT SELECT)					

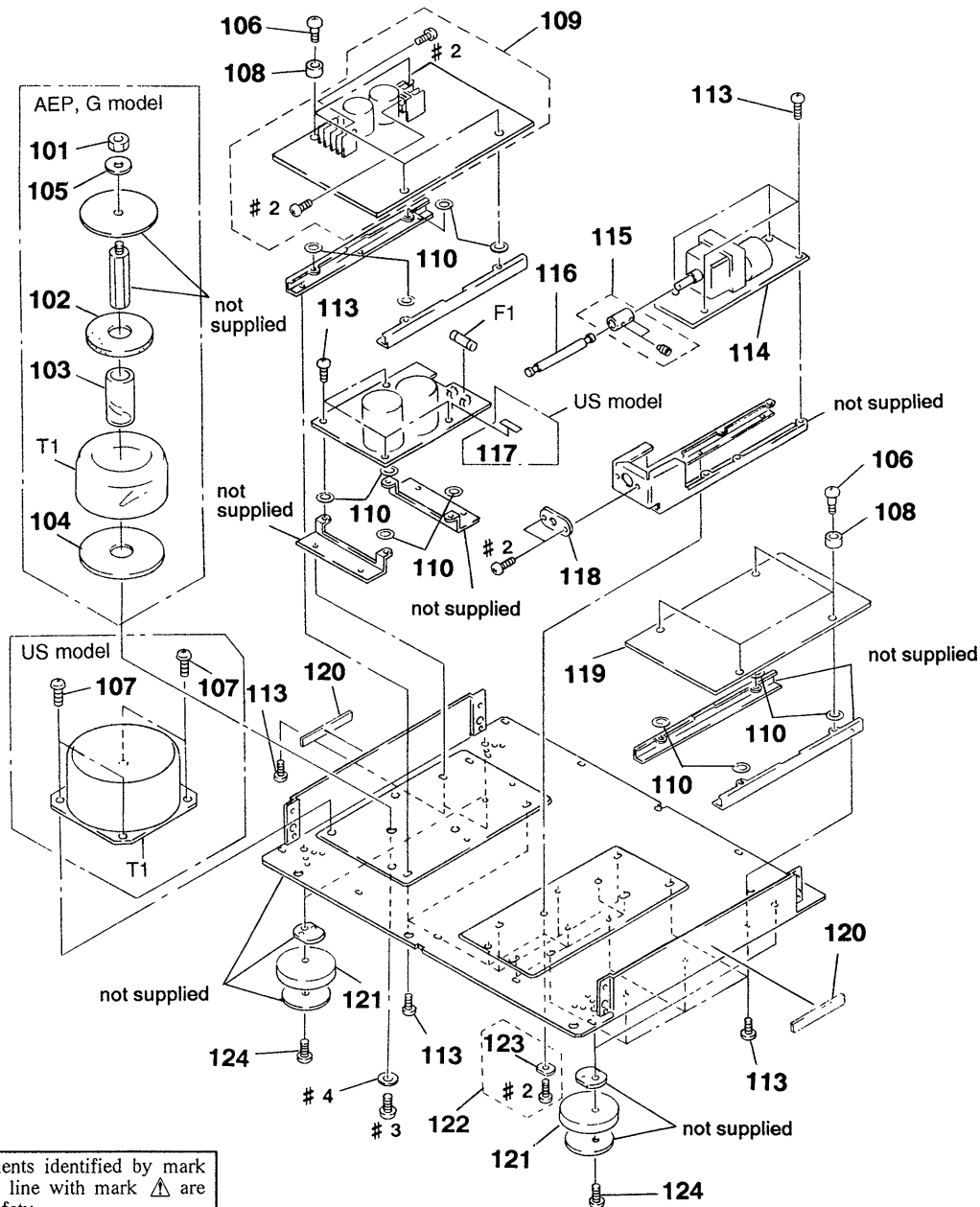
5-2. REAR PANEL SECTION



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	Ref. No.	Part No.	Description	Remark
 51	1-559-479-11	CORD, POWER (US)		* 64	A-4371-725-A	CONTROL BOARD, COMPLETE	
 51	1-575-953-11	CORD, POWER (AEP, G)		* 65	4-363-146-00	HEAT SINK, V. OUT	
* 52	3-703-244-00	BUSHING (2104), CORD		66	4-971-099-01	WASHER (P)	
* 53	4-967-961-01	SCREW (3X8) (SPECIAL)		* 67	1-654-050-11	AC-SW BOARD	
* 54	4-923-873-01	BRACKET, CORD STOPPER		* 68	1-654-049-11	LEVER-SW BOARD	
55	4-967-959-01	SCREW (3X6)		69	4-969-328-01	KNOB, LEVER	
56	4-968-977-11	SCREW (3X10), +BVTP		* 70	1-654-044-11	HP BOARD	
57	3-704-515-41	SCREW (BV/RING)		* 71	4-969-315-01	PANEL, BACK (AEP, G)	
58	4-971-108-01	CUSHION (H)		* 71	4-969-315-11	PANEL, BACK (US)	
* 59	1-654-047-11	BALANCE BOARD		72	1-506-113-00	SHORT PLUG	
60	4-969-324-01	BOSS		73	4-971-313-11	CUSHION (A)	
61	4-971-658-01	CUSHION (DIA. 10)		S701	1-572-095-21	SWITCH, ROTARY	
* 62	A-4371-732-A	INPUT BOARD, COMPLETE					
* 63	A-4371-734-A	LOGIC BOARD, COMPLETE					

5-3. BOARDS SECTION



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	Ref.No.	Part No.	Description	Remark
101	4-960-914-01	NUT (M10) (AEP, G)		* 116	4-969-326-01	SHAFT (VOL)	
102	4-971-092-01	CUSHION (T1) (AEP, G)		* 117	3-701-946-22	LABEL, FUSE RATING (US)	
* 103	4-971-105-01	CUSHION (DIA. 22)		118	4-970-441-01	BRACKET (VOL)	
104	4-971-093-01	CUSHION (T2) (AEP, G)		* 119	A-4371-733-A	EQ BOARD, COMPLETE	
105	3-376-862-01	WASHER (AEP, G)		* 120	4-971-317-11	CUSHION (C)	
106	4-971-720-01	SCREW, (+) STEP		121	4-970-487-01	FOOT (F50180S)	
107	4-967-960-01	SCREW (4X8) (US)		122	X-4944-262-1	SCREW(3X8) ASSY, BARREL W +BVT	
108	4-969-896-01	SPACER		123	4-908-961-01	WASHER	
* 109	A-4371-722-A	MAIN BOARD, COMPLETE		124	4-968-979-01	SCREW (4X20), +B	
110	4-971-099-01	WASHER (P)		▲F1	1-532-078-00	FUSE, TIME LAG (T1AL 250V) (AEP, G)	
* 112	1-654-043-11	PS BOARD		▲F1	1-532-742-11	FUSE, GLASS TUBE (1.6A 125V) (US)	
113	4-967-961-01	SCREW (3X8) (SPECIAL)		▲T901	1-427-641-11	TRANSFORMER, POWER (AEP, G)	
* 114	1-654-046-11	VOLUME BOARD		▲T901	1-427-642-11	TRANSFORMER, POWER (US)	
* 115	4-969-329-01	SHAFT, RELAY					

SECTION 6

ELECTRICAL PARTS LIST

AC-SW

BALANCE

CONTROL

NOTE:

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.

- 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.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
G : German model
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F : nonflammable
- 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

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
*	1-654-050-11	AC-SW BOARD ***** < CONNECTOR >		C717	1-162-302-11	CERAMIC 0.0022uF 30% 16V	
* CN3	1-568-226-11	PIN, CONNECTOR 2P		C718	1-162-294-31	CERAMIC 0.001uF 10% 50V	
CN4	1-580-629-11	PIN, CONNECTOR 2P		C719	1-162-294-31	CERAMIC 0.001uF 10% 50V	
		< SWITCH >				< CONNECTOR >	
Δ S1	1-554-920-11	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)		CN115	1-691-766-11	PLUG (MICRO CONNECTOR) 4P	
		*****		CN208	1-691-768-11	PLUG (MICRO CONNECTOR) 6P	
				CNJ105	1-562-087-00	SOCKET, CONNECTOR 4P	
				CNP104	1-766-800-11	CONNECTOR, BOARD TO BOARD 10P	
				CNP106	1-766-801-11	CONNECTOR, BOARD TO BOARD 5P	
						< DIODE >	
*	1-654-047-11	BALANCE BOARD ***** < CONNECTOR >		D711	8-719-987-63	DIODE 1N4148M	
				D712	8-719-987-63	DIODE 1N4148M	
CNP103	1-766-802-11	PIN, CONNECTOR 10P		D713	8-719-987-63	DIODE 1N4148M	
		< JACK >		D714	8-719-987-63	DIODE 1N4148M	
J301	1-750-786-11	CONNECTOR (XLR TYPE) 3P(BALANCED LINE)		D715	8-719-987-63	DIODE 1N4148M	
J302	1-750-785-11	CONNECTOR (XLR TYPE) 3P(BALANCED OUTPUT)		D716	8-719-987-63	DIODE 1N4148M	
		*****		D717	8-719-987-63	DIODE 1N4148M	
*	A-4371-725-A	CONTROL BOARD, COMPLETE *****		D718	8-719-987-63	DIODE 1N4148M	
				D719	8-719-987-63	DIODE 1N4148M	
*	4-363-146-00	HEAT SINK, V. OUT < CAPACITOR >		D720	8-719-987-63	DIODE 1N4148M	
				D721	8-719-987-63	DIODE 1N4148M	
C701	1-126-101-11	ELECT 100uF 20% 16V		D722	8-719-987-63	DIODE 1N4148M	
C702	1-126-101-11	ELECT 100uF 20% 16V		D723	8-719-987-63	DIODE 1N4148M	
C703	1-164-159-11	CERAMIC 0.1uF 50V		D725	8-719-024-99	DIODE 11ES2-NTA2B	
C704	1-164-159-11	CERAMIC 0.1uF 50V		D726	8-719-024-99	DIODE 11ES2-NTA2B	
C705	1-164-159-11	CERAMIC 0.1uF 50V		D727	8-719-024-99	DIODE 11ES2-NTA2B	
C706	1-164-159-11	CERAMIC 0.1uF 50V				< IC >	
C707	1-126-101-11	ELECT 100uF 20% 16V		IC701	8-759-325-18	IC TMP47C200BN-H327	
C708	1-164-159-11	CERAMIC 0.1uF 50V		IC702	8-759-635-63	IC M51943BSL	
C709	1-164-159-11	CERAMIC 0.1uF 50V		IC703	8-759-188-67	IC X24C01P-S	
C710	1-162-294-31	CERAMIC 0.001uF 10% 50V		IC704	8-759-962-08	IC BA6208	
				IC705	8-759-231-53	IC TA7805S	
C711	1-162-207-31	CERAMIC 22PF 5% 50V		IC706	8-759-231-53	IC TA7805S	
C712	1-162-207-31	CERAMIC 22PF 5% 50V				< TRANSISTOR >	
C715	1-124-903-11	ELECT 1uF 20% 50V		Q702	8-729-119-76	TRANSISTOR 2SA1175-HFE	
C716	1-162-302-11	CERAMIC 0.0022uF 30% 16V		Q703	8-729-900-63	TRANSISTOR DTA124ES	
				Q704	8-729-900-63	TRANSISTOR DTA124ES	
				Q705	8-729-900-36	TRANSISTOR DTC124ES	

Ref. No.	Part No.	Description	Remark
Q706	8-729-900-63	TRANSISTOR DTA124ES	
Q707	8-729-900-63	TRANSISTOR DTA124ES	
Q708	8-729-620-05	TRANSISTOR 2SC2603-EF	
< RESISTOR >			
R701	1-249-429-11	CARBON 10K 5% 1/4W	
R702	1-249-429-11	CARBON 10K 5% 1/4W	
R703	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R704	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R705	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R706	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R708	1-249-433-11	CARBON 22K 5% 1/4W	
R709	1-249-433-11	CARBON 22K 5% 1/4W	
R710	1-249-433-11	CARBON 22K 5% 1/4W	
R711	1-249-433-11	CARBON 22K 5% 1/4W	
R712	1-249-433-11	CARBON 22K 5% 1/4W	
R713	1-249-433-11	CARBON 22K 5% 1/4W	
R714	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R715	1-247-807-31	CARBON 100 5% 1/4W	
R716	1-247-807-31	CARBON 100 5% 1/4W	
R717	1-247-807-31	CARBON 100 5% 1/4W	
R718	1-247-807-31	CARBON 100 5% 1/4W	
R719	1-247-807-31	CARBON 100 5% 1/4W	
R720	1-247-807-31	CARBON 100 5% 1/4W	
R721	1-247-807-31	CARBON 100 5% 1/4W	
R723	1-249-433-11	CARBON 22K 5% 1/4W	
R724	1-249-433-11	CARBON 22K 5% 1/4W	
R725	1-249-433-11	CARBON 22K 5% 1/4W	
R726	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R727	1-249-429-11	CARBON 10K 5% 1/4W	
R728	1-249-433-11	CARBON 22K 5% 1/4W	
R729	1-247-816-11	CARBON 240 5% 1/4W	
R730	1-249-433-11	CARBON 22K 5% 1/4W	
R731	1-249-433-11	CARBON 22K 5% 1/4W	
R732	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R733	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R734	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R735	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R738	1-249-413-11	CARBON 470 5% 1/4W	F
< SWITCH >			
S701	1-572-095-21	SWITCH, ROTARY (INPUT SELECTOR)	
< OSCILLATOR >			
X701	1-579-223-11	OSCILLATOR, CERAMIC (8MHz)	

Ref. No.	Part No.	Description	Remark
*	A-4371-733-A	EQ BOARD, COMPLETE *****	
< CAPACITOR >			
C103	1-136-808-11	FILM 100PF 5% 100V	
C104	1-136-305-11	FILM 0.056uF 2% 0	
C105	1-136-304-11	FILM 0.016uF 2% 0	
C106	1-124-557-11	ELECT 1000uF 20% 25V	
C107	1-136-252-00	FILM 0.0015uF 5% 100V	
C109	1-110-495-51	ELECT 220uF 20% 25V	
C110	1-136-817-91	FILM 0.0033uF 5% 100V	
C111	1-136-817-91	FILM 0.0033uF 5% 100V	
C112	1-124-916-11	ELECT 22uF 20% 63V	
C114	1-124-915-11	ELECT 10uF 20% 63V	
C153	1-136-808-11	FILM 100PF 5% 100V	
C154	1-136-305-11	FILM 0.056uF 2% 0	
C155	1-136-304-11	FILM 0.016uF 2% 0	
C156	1-124-557-11	ELECT 1000uF 20% 25V	
C157	1-136-252-00	FILM 0.0015uF 5% 100V	
C159	1-110-495-51	ELECT 220uF 20% 25V	
C160	1-136-817-91	FILM 0.0033uF 5% 100V	
C161	1-136-817-91	FILM 0.0033uF 5% 100V	
C162	1-124-916-11	ELECT 22uF 20% 63V	
C164	1-124-915-11	ELECT 10uF 20% 63V	
< CONNECTOR >			
CN201	1-691-766-21	PLUG (MICRO CONNECTOR) 4P	
CN206	1-691-766-21	PLUG (MICRO CONNECTOR) 4P	
< TRANSISTOR >			
Q101	8-729-203-21	TRANSISTOR 2SK389-GR	
Q102	8-729-203-21	TRANSISTOR 2SK389-GR	
Q103	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q104	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q105	8-729-201-53	TRANSISTOR 2SA1015-GR	
Q106	8-729-201-53	TRANSISTOR 2SA1015-GR	
Q107	8-729-201-56	TRANSISTOR 2SK246-GR2	
Q108	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q109	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q110	8-729-201-56	TRANSISTOR 2SK246-GR2	
Q111	8-729-201-53	TRANSISTOR 2SA1015-GR	
Q112	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q113	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q114	8-729-018-19	TRANSISTOR 2SK2013-Y	
Q115	8-729-018-21	TRANSISTOR 2SJ313-Y	
Q151	8-729-203-21	TRANSISTOR 2SK389-GR	
Q152	8-729-203-21	TRANSISTOR 2SK389-GR	
Q153	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q154	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q155	8-729-201-53	TRANSISTOR 2SA1015-GR	

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q156	8-729-201-53	TRANSISTOR	2SA1015-GR	R169	1-247-720-11	CARBON	3.9K 5% 1/4W F
Q157	8-729-201-56	TRANSISTOR	2SK246-GR2	R170	1-249-928-11	CARBON	1.6K 5% 1/4W
Q158	8-729-119-78	TRANSISTOR	2SC2785-HFE	R171	1-247-138-00	CARBON	2K 5% 1/4W
Q159	8-729-119-78	TRANSISTOR	2SC2785-HFE	R172	1-247-721-11	CARBON	4.7K 5% 1/4W F
Q160	8-729-201-56	TRANSISTOR	2SK246-GR2	R173	1-247-700-11	CARBON	100 5% 1/4W F
Q161	8-729-201-53	TRANSISTOR	2SA1015-GR	R174	1-247-700-11	CARBON	100 5% 1/4W F
Q162	8-729-119-78	TRANSISTOR	2SC2785-HFE	R175	1-249-504-11	CARBON	10 5% 1/4W
Q163	8-729-119-78	TRANSISTOR	2SC2785-HFE	R176	1-247-700-11	CARBON	100 5% 1/4W F
Q164	8-729-018-19	TRANSISTOR	2SK2013-Y	R177	1-249-469-11	CARBON	100K 5% 1/4W
Q165	8-729-018-21	TRANSISTOR	2SJ313-Y				
< RESISTOR >				< VARIABLE RESISTOR >			
R104	1-247-700-11	CARBON	100 5% 1/4W F	RV101	1-237-457-21	RES, ADJ, CARBON 2K	
R105	1-249-465-11	CARBON	47K 5% 1/4W	RV151	1-237-457-21	RES, ADJ, CARBON 2K	
R106	1-249-875-91	CARBON	10 1% 1/4W				
R107	1-249-900-91	CARBON	110 1% 1/4W	< RELAY >			
R108	1-249-966-91	CARBON	62K 1% 1/4W	RY101	1-515-725-11	RELAY	
R109	1-249-939-11	CARBON	4.7K 1% 1/4W	RY151	1-515-725-11	RELAY	
R110	1-214-958-00	METAL	560K 1% 1/4W	*****			
R111	1-249-586-11	CARBON	27K 5% 1/4W	*	1-654-044-11	HP BOARD	
R112	1-247-720-11	CARBON	3.9K 5% 1/4W F			*****	
R113	1-249-529-11	CARBON	110 5% 1/4W				
R114	1-249-529-11	CARBON	110 5% 1/4W	< CONNECTOR >			
R115	1-247-706-11	CARBON	330 5% 1/4W F	CN212	1-691-768-11	PLUG (MICRO CONNECTOR) 6P	
R116	1-247-708-11	CARBON	470 5% 1/4W F				
R117	1-247-725-11	CARBON	10K 5% 1/4W F	< JACK >			
R118	1-249-596-11	CARBON	68K 5% 1/4W	J401	1-580-439-11	JACK, LARGE TYPE (HEADPHONES)	
R119	1-247-720-11	CARBON	3.9K 5% 1/4W F	*****			
R120	1-249-928-11	CARBON	1.6K 5% 1/4W	*	A-4371-732-A	INPUT BOARD, COMPLETE	
R121	1-247-138-00	CARBON	2K 5% 1/4W			*****	
R122	1-247-721-11	CARBON	4.7K 5% 1/4W F				
R123	1-247-700-11	CARBON	100 5% 1/4W F	< CAPACITOR >			
R124	1-247-700-11	CARBON	100 5% 1/4W F	C102	1-162-284-31	CERAMIC	150PF 10% 50V
R125	1-249-504-11	CARBON	10 5% 1/4W	C152	1-162-284-31	CERAMIC	150PF 10% 50V
R126	1-247-700-11	CARBON	100 5% 1/4W F	C201	1-136-808-11	FILM	100PF 5% 100V
R127	1-249-469-11	CARBON	100K 5% 1/4W	C251	1-136-808-11	FILM	100PF 5% 100V
R154	1-247-700-11	CARBON	100 5% 1/4W F				
R155	1-249-465-11	CARBON	47K 5% 1/4W	< CONNECTOR >			
R156	1-249-875-91	CARBON	10 1% 1/4W	CN101	1-691-766-21	PLUG (MICRO CONNECTOR) 4P	
R157	1-249-900-91	CARBON	110 1% 1/4W	* CN102	4-924-264-21	TERMINAL, MOUNT	
R158	1-249-966-91	CARBON	62K 1% 1/4W	* CN104	1-564-507-11	PLUG, CONNECTOR 4P	
R159	1-249-939-11	CARBON	4.7K 1% 1/4W	CNJ101	1-766-796-11	CONNECTOR, BOARD TO BOARD 12P	
R160	1-214-958-00	METAL	560K 1% 1/4W	CNJ102	1-766-796-11	CONNECTOR, BOARD TO BOARD 12P	
R161	1-249-586-11	CARBON	27K 5% 1/4W	* CNJ103	1-691-244-11	SOCKET, CONNECTOR 10P	
R162	1-247-720-11	CARBON	3.9K 5% 1/4W F				
R163	1-249-529-11	CARBON	110 5% 1/4W	< JACK >			
R164	1-249-529-11	CARBON	110 5% 1/4W	J101	1-766-795-11	JACK (PHONO)	
R165	1-247-706-11	CARBON	330 5% 1/4W F				
R166	1-247-708-11	CARBON	470 5% 1/4W F				
R167	1-247-725-11	CARBON	10K 5% 1/4W F				
R168	1-249-596-11	CARBON	68K 5% 1/4W				

INPUT LED LEVER-SW LOGIC

Ref.No.	Part No.	Description	Remark
J201	1-766-795-21	JACK (CD, TUNER)	
J202	1-766-795-21	JACK (TAPE2/MD REC OUT, AUX)	
J203	1-766-795-21	JACK (TAPE1/DAT REC OUT, TAPE2/MD PLAY)	
J204	1-766-795-21	JACK (PRE-OUT, TAPE1/DAT PLAY)	
J251	1-766-795-31	JACK (CD, TUNER)	
J252	1-766-795-31	JACK (TAPE2/MD REC OUT, AUX)	
J253	1-766-795-31	JACK (TAPE1/DAT REC OUT, TAPE2/MD PLAY)	
J254	1-766-795-31	JACK (PRE-OUT, TAPE1/DAT PLAY)	
< RESISTOR >			
R103	1-259-416-11	CARBON 330 5% 1/6W	
R153	1-259-416-11	CARBON 330 5% 1/6W	
R201	1-249-210-11	CARBON 1K 5% 1/3W	
R202	1-247-713-11	CARBON 1K 5% 1/4W F	
R203	1-247-713-11	CARBON 1K 5% 1/4W F	
R251	1-249-210-11	CARBON 1K 5% 1/3W	
R252	1-247-713-11	CARBON 1K 5% 1/4W F	
R253	1-247-713-11	CARBON 1K 5% 1/4W F	
< RELAY >			
RY201	1-515-622-11	RELAY	
RY202	1-515-622-11	RELAY	
RY203	1-515-622-11	RELAY	
RY204	1-515-622-11	RELAY	
RY205	1-515-622-11	RELAY	
RY206	1-515-622-11	RELAY	

*	1-654-055-11	LED BOARD	

< CONNECTOR >			
CNJ104	1-766-797-11	CONNECTOR, BOARD TO BOARD 10P	
< DIODE >			
D701	8-719-301-49	DIODE SEL2810A (PHONO/MC)	
D702	8-719-301-49	DIODE SEL2810A (PHONO/MM)	
D703	8-719-301-49	DIODE SEL2810A (TUNER)	
D704	8-719-301-49	DIODE SEL2810A (BALANCED LINE)	
D705	8-719-301-49	DIODE SEL2810A (CD)	
D706	8-719-301-49	DIODE SEL2810A (AUX)	
D707	8-719-301-49	DIODE SEL2810A (TAPE2/MD)	
D708	8-719-301-49	DIODE SEL2810A (TAPE1/DAT)	
D709	8-719-301-49	DIODE SEL2810A (TAPE MONITOR)	
< RESISTOR >			
R707	1-247-816-11	CARBON 240 5% 1/4W	
R722	1-247-816-11	CARBON 240 5% 1/4W	

Ref.No.	Part No.	Description	Remark
*	1-654-049-11	LEVER-SW BOARD	

< CONNECTOR >			
CNP105	1-560-941-00	PIN, CONNECTOR 4P	
< SWITCH >			
S702	1-762-165-11	SWITCH, LEVER SLIDE (TAPE1/TAPE2/SOURCE)	

*	A-4371-734-A	LOGIC BOARD, COMPLETE	

< CAPACITOR >			
C301	1-136-808-11	FILM 100PF 5% 100V	
C302	1-136-808-11	FILM 100PF 5% 100V	
C303	1-124-916-11	ELECT 22uF 20% 63V	
C304	1-136-817-91	FILM 0.0033uF 5% 100V	
C305	1-136-817-91	FILM 0.0033uF 5% 100V	
C306	1-102-233-00	CERAMIC 33PF 10% 500V	
C307	1-102-233-00	CERAMIC 33PF 10% 500V	
C351	1-136-808-11	FILM 100PF 5% 100V	
C352	1-136-808-11	FILM 100PF 5% 100V	
C353	1-124-916-11	ELECT 22uF 20% 63V	
C354	1-136-817-91	FILM 0.0033uF 5% 100V	
C355	1-136-817-91	FILM 0.0033uF 5% 100V	
C356	1-102-233-00	CERAMIC 33PF 10% 500V	
C357	1-102-233-00	CERAMIC 33PF 10% 500V	
C801	1-162-302-11	CERAMIC 0.0022uF 30% 16V	
C802	1-162-302-11	CERAMIC 0.0022uF 30% 16V	
C803	1-164-159-11	CERAMIC 0.1uF 50V	
C804	1-164-159-11	CERAMIC 0.1uF 50V	
C805	1-164-159-11	CERAMIC 0.1uF 50V	
C806	1-164-159-11	CERAMIC 0.1uF 50V	
C807	1-164-159-11	CERAMIC 0.1uF 50V	
< CONNECTOR >			
CN106	1-691-766-21	PLUG (MICRO CONNECTOR) 4P	
* CN107	1-564-506-11	PLUG, CONNECTOR 3P	
* CN108	1-564-521-11	PLUG, CONNECTOR 6P	
CNP101	1-766-799-11	CONNECTOR, BOARD TO BOARD 12P	
CNP102	1-766-799-11	CONNECTOR, BOARD TO BOARD 12P	
< DIODE >			
D617	8-719-024-99	DIODE 11ES2-NTA2B	
D801	8-719-987-63	DIODE 1N4148M	
D802	8-719-987-63	DIODE 1N4148M	
D803	8-719-987-63	DIODE 1N4148M	
D804	8-719-987-63	DIODE 1N4148M	

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
D805	8-719-987-63	DIODE 1N4148M		R360	1-249-469-11	CARBON 100K 5% 1/4W	
D806	8-719-987-63	DIODE 1N4148M		R361	1-247-138-00	CARBON 2K 5% 1/4W	
D807	8-719-987-63	DIODE 1N4148M		R801	1-249-417-11	CARBON 1K 5% 1/4W F	
D808	8-719-987-63	DIODE 1N4148M		R802	1-249-417-11	CARBON 1K 5% 1/4W F	
D809	8-719-987-63	DIODE 1N4148M		R803	1-249-417-11	CARBON 1K 5% 1/4W F	
D810	8-719-987-63	DIODE 1N4148M		R804	1-249-417-11	CARBON 1K 5% 1/4W F	
D811	8-719-987-63	DIODE 1N4148M					
D812	8-719-987-63	DIODE 1N4148M				< RELAY >	
		< IC >		RY207	1-515-622-11	RELAY	
IC301	8-759-259-12	IC OPA2604AP		RY208	1-515-622-11	RELAY	
IC351	8-759-259-12	IC OPA2604AP		RY209	1-515-622-11	RELAY	
IC801	8-759-233-43	IC TC74HC595AP					
IC802	8-759-233-43	IC TC74HC595AP					
IC803	8-759-232-15	IC TC74HC14AP					
		< TRANSISTOR >					
Q801	8-729-900-65	TRANSISTOR DTA144ES					
Q802	8-729-900-65	TRANSISTOR DTA144ES					
Q803	8-729-900-65	TRANSISTOR DTA144ES					
Q804	8-729-900-65	TRANSISTOR DTA144ES					
Q805	8-729-900-65	TRANSISTOR DTA144ES					
Q806	8-729-900-65	TRANSISTOR DTA144ES					
Q807	8-729-900-65	TRANSISTOR DTA144ES					
Q808	8-729-900-65	TRANSISTOR DTA144ES					
Q809	8-729-900-65	TRANSISTOR DTA144ES					
Q810	8-729-900-65	TRANSISTOR DTA144ES					
Q811	8-729-900-65	TRANSISTOR DTA144ES					
Q812	8-729-900-65	TRANSISTOR DTA144ES					
		< RESISTOR >					
R301	1-247-700-11	CARBON 100 5% 1/4W F					
R302	1-247-700-11	CARBON 100 5% 1/4W F					
R303	1-247-725-11	CARBON 10K 5% 1/4W F					
R304	1-247-725-11	CARBON 10K 5% 1/4W F					
R305	1-249-934-11	CARBON 3K 1% 1/4W					
R306	1-249-944-11	CARBON 7.5K 1% 1/4W					
R307	1-249-944-11	CARBON 7.5K 1% 1/4W					
R308	1-249-934-11	CARBON 3K 1% 1/4W					
R309	1-247-712-11	CARBON 820 5% 1/4W F					
R310	1-249-469-11	CARBON 100K 5% 1/4W					
R311	1-247-138-00	CARBON 2K 5% 1/4W					
R351	1-247-700-11	CARBON 100 5% 1/4W F					
R352	1-247-700-11	CARBON 100 5% 1/4W F					
R353	1-247-725-11	CARBON 10K 5% 1/4W F					
R354	1-247-725-11	CARBON 10K 5% 1/4W F					
R355	1-249-934-11	CARBON 3K 1% 1/4W					
R356	1-249-944-11	CARBON 7.5K 1% 1/4W					
R357	1-249-944-11	CARBON 7.5K 1% 1/4W					
R358	1-249-934-11	CARBON 3K 1% 1/4W					
R359	1-247-712-11	CARBON 820 5% 1/4W F					

Ref.No.	Part No.	Description	Remark

Ref. No.	Part No.	Description
* CN207	1-564-506-11	PLUG, CONNECTOR 3P
* CN210	1-564-507-11	PLUG, CONNECTOR 4P
CN211	1-564-505-11	PLUG, CONNECTOR 2P
< DIODE >		
D401	8-719-987-63	DIODE 1N4148M
D402	8-719-987-63	DIODE 1N4148M
D451	8-719-987-63	DIODE 1N4148M
D607	8-719-000-78	DIODE UZL-7L2
D608	8-719-987-63	DIODE 1N4148M
D609	8-719-987-63	DIODE 1N4148M
D612	8-719-000-78	DIODE UZL-7L2
D613	8-719-987-63	DIODE 1N4148M
D614	8-719-987-63	DIODE 1N4148M
< IC >		
IC501	8-759-259-12	IC OPA2604AP
IC551	8-759-259-12	IC OPA2604AP
< TRANSISTOR >		
Q401	8-729-203-21	TRANSISTOR 2SK389-GR
Q402	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q403	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q404	8-729-201-56	TRANSISTOR 2SK246-GR2
Q405	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q406	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q407	8-729-201-56	TRANSISTOR 2SK246-GR2
Q408	8-729-201-53	TRANSISTOR 2SA1015-GR
Q409	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q410	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q411	8-729-018-19	TRANSISTOR 2SK2013-Y
Q412	8-729-018-21	TRANSISTOR 2SJ313-Y
Q451	8-729-203-21	TRANSISTOR 2SK389-GR
Q452	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q453	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q454	8-729-201-56	TRANSISTOR 2SK246-GR2
Q455	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q456	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q457	8-729-201-56	TRANSISTOR 2SK246-GR2
Q458	8-729-201-53	TRANSISTOR 2SA1015-GR
Q459	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q460	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q461	8-729-018-19	TRANSISTOR 2SK2013-Y
Q462	8-729-018-21	TRANSISTOR 2SJ313-Y
Q601	8-729-107-53	TRANSISTOR 2SC2275A-P
Q602	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q603	8-729-201-56	TRANSISTOR 2SK246-GR2
Q604	8-729-201-53	TRANSISTOR 2SA1015-GR
Q605	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q606	8-729-201-53	TRANSISTOR 2SA1015-GR

Ref. No.	Part No.	Description	Remark
Q607	8-729-201-53	TRANSISTOR 2SA1015-GR	
Q608	8-729-141-10	TRANSISTOR 2SA985A-QP	
Q609	8-729-201-53	TRANSISTOR 2SA1015-GR	
Q610	8-729-201-56	TRANSISTOR 2SK246-GR2	
Q611	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q612	8-729-201-53	TRANSISTOR 2SA1015-GR	
Q613	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q614	8-729-119-78	TRANSISTOR 2SC2785-HFE	
< RESISTOR >			
R401	1-249-995-11	CARBON 1M 5%	1/4W
R402	1-247-241-00	CARBON 1.1K 5%	1/3W
R403	1-249-234-11	CARBON 10K 5%	1/3W
R404	1-249-586-11	CARBON 27K 5%	1/4W
R405	1-247-720-11	CARBON 3.9K 5%	1/4W F
R406	1-247-717-11	CARBON 2.2K 5%	1/4W F
R407	1-247-717-11	CARBON 2.2K 5%	1/4W F
R408	1-247-721-11	CARBON 4.7K 5%	1/4W F
R409	1-249-551-11	CARBON 910 5%	1/4W
R410	1-249-551-11	CARBON 910 5%	1/4W
R411	1-247-725-11	CARBON 10K 5%	1/4W F
R412	1-247-704-11	CARBON 220 5%	1/4W F
R413	1-247-712-11	CARBON 820 5%	1/4W F
R414	1-247-713-11	CARBON 1K 5%	1/4W F
R415	1-247-721-11	CARBON 4.7K 5%	1/4W F
R416	1-247-700-11	CARBON 100 5%	1/4W F
R417	1-247-700-11	CARBON 100 5%	1/4W F
R418	1-249-504-11	CARBON 10 5%	1/4W
R419	1-259-664-51	CARBON 330 2%	1W
R420	1-247-725-11	CARBON 10K 5%	1/4W F
R421	1-249-469-11	CARBON 100K 5%	1/4W
R422	1-249-469-11	CARBON 100K 5%	1/4W
R423	1-249-218-11	CARBON 2.2K 5%	1/3W
R451	1-249-995-11	CARBON 1M 5%	1/4W
R452	1-247-241-00	CARBON 1.1K 5%	1/3W
R453	1-249-234-11	CARBON 10K 5%	1/3W
R454	1-249-586-11	CARBON 27K 5%	1/4W
R455	1-247-720-11	CARBON 3.9K 5%	1/4W F
R456	1-247-717-11	CARBON 2.2K 5%	1/4W F
R457	1-247-717-11	CARBON 2.2K 5%	1/4W F
R458	1-247-721-11	CARBON 4.7K 5%	1/4W F
R459	1-249-551-11	CARBON 910 5%	1/4W
R460	1-249-551-11	CARBON 910 5%	1/4W
R461	1-247-725-11	CARBON 10K 5%	1/4W F
R462	1-247-704-11	CARBON 220 5%	1/4W F
R463	1-247-712-11	CARBON 820 5%	1/4W F
R464	1-247-713-11	CARBON 1K 5%	1/4W F
R465	1-247-721-11	CARBON 4.7K 5%	1/4W F
R466	1-247-700-11	CARBON 100 5%	1/4W F
R467	1-247-700-11	CARBON 100 5%	1/4W F

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R468	1-249-504-11	CARBON	10 5% 1/4W	*	1-654-043-11	PS BOARD	
R469	1-259-664-51	CARBON	330 2% 1W		*****		
R470	1-247-725-11	CARBON	10K 5% 1/4W F		1-533-183-11	HOLDER, FUSE	
R471	1-249-469-11	CARBON	100K 5% 1/4W		1-533-183-11	HOLDER, FUSE	
R472	1-249-469-11	CARBON	100K 5% 1/4W		< CAPACITOR >		
R473	1-249-218-11	CARBON	2. 2K 5% 1/3W	C601	1-136-814-11	FILM	0. 001uF 5% 100V
R501	1-249-234-11	CARBON	10K 5% 1/3W	C602	1-136-880-11	FILM	2. 2uF 10% 160V
R502	1-249-234-11	CARBON	10K 5% 1/3W	C603	1-130-471-00	MYLAR	0. 001uF 5% 50V
R503	1-259-664-51	CARBON	330 2% 1W	C604	1-136-177-00	FILM	1uF 5% 50V
R506	1-247-739-11	CARBON	100 5% 1/2W F	C605	1-136-177-00	FILM	1uF 5% 50V
R511	1-247-725-11	CARBON	10K 5% 1/4W F	C606	1-110-493-11	CAP, ELECT	4700uF
R512	1-249-469-11	CARBON	100K 5% 1/4W	C607	1-110-493-11	CAP, ELECT	4700uF
R551	1-249-234-11	CARBON	10K 5% 1/3W	C608	1-128-489-11	ELECT	3300uF 20% 16V
R552	1-249-234-11	CARBON	10K 5% 1/3W	C609	1-124-927-11	ELECT	4. 7uF 20% 100V
R553	1-259-664-51	CARBON	330 2% 1W	C610	1-128-489-11	ELECT	3300uF 20% 16V
R556	1-247-739-11	CARBON	100 5% 1/2W F	< CONNECTOR >			
R561	1-247-725-11	CARBON	10K 5% 1/4W F	CN1	1-564-321-00	PIN, CONNECTOR 2P	
R562	1-249-469-11	CARBON	100K 5% 1/4W	CN2	1-580-230-11	PIN, CONNECTOR (PC BOARD) 3P	
R603	1-247-719-11	CARBON	3. 3K 5% 1/4W F	* CN5	1-564-243-11	PIN, CONNECTOR 6P	
R604	1-249-504-11	CARBON	10 5% 1/4W	CN215	1-691-766-11	PLUG (MICRO CONNECTOR) 4P	
R605	1-249-504-11	CARBON	10 5% 1/4W	< DIODE >			
R606	1-247-706-11	CARBON	330 5% 1/4W F	D601	8-719-200-39	DIODE C16P20F	
R607	1-247-725-11	CARBON	10K 5% 1/4W F	D602	8-719-200-40	DIODE C16P20FR	
R608	1-247-704-11	CARBON	220 5% 1/4W F	D603	8-719-911-55	DIODE U05G	
R609	1-249-234-11	CARBON	10K 5% 1/3W	D604	8-719-911-55	DIODE U05G	
R610	1-249-226-11	CARBON	4. 7K 5% 1/3W	D605	8-719-911-55	DIODE U05G	
R611	1-247-719-11	CARBON	3. 3K 5% 1/4W F	D606	8-719-911-55	DIODE U05G	
R612	1-249-504-11	CARBON	10 5% 1/4W	< FUSE >			
R613	1-249-504-11	CARBON	10 5% 1/4W	△F1	1-532-078-00	FUSE, TIME LAG (T1AL 250V) (AEP, G)	
R614	1-247-706-11	CARBON	330 5% 1/4W F	△F1	1-532-742-11	FUSE, GLASS TUBE (1. 6A 125V) (US)	
R615	1-247-725-11	CARBON	10K 5% 1/4W F	< TRANSISTOR >			
R616	1-247-704-11	CARBON	220 5% 1/4W F	Q701	8-729-620-05	TRANSISTOR 2SC2603-EF	
R617	1-249-234-11	CARBON	10K 5% 1/3W	< RESISTOR >			
R618	1-249-226-11	CARBON	4. 7K 5% 1/3W	△R601	1-212-958-00	FUSIBLE	10 5% 1/2W F
< VARIABLE RESISTOR >				△R602	1-212-958-00	FUSIBLE	10 5% 1/2W F
RV401	1-237-457-21	RES, ADJ, CARBON 2K		R736	1-249-417-11	CARBON	1K 5% 1/4W F
RV451	1-237-457-21	RES, ADJ, CARBON 2K		R737	1-249-422-11	CARBON	2. 7K 5% 1/4W F
< RELAY >				< THERMISTOR (POSITIVE) >			
RY401	1-515-622-11	RELAY		THP601	1-810-782-11	THERMISTOR, POSITIVE 3. 3 (US, AEP)	
RY402	1-515-622-11	RELAY		THP602	1-810-782-11	THERMISTOR, POSITIVE 3. 3 (US, AEP)	
RY451	1-515-622-11	RELAY		*****			

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

SIRCS**VOLUME**

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
*	1-654-048-11	SIRCS BOARD *****				MISCELLANEOUS *****	
		< CAPACITOR >		△51	1-559-479-11	CORD, POWER (US)	
C714	1-164-159-11	CERAMIC 0.1uF	50V	△51	1-575-953-11	CORD, POWER (AEP, G)	
		< CONNECTOR >		△F1	1-532-078-00	FUSE, TIME LAG (T1AL 250V) (AEP, G)	
CNJ106	1-766-798-11	CONNECTOR, BOARD TO BOARD 5P		△F1	1-532-742-11	FUSE, GLASS TUBE (1. 6A 125V) (US)	
		< DIODE >		S701	1-572-095-21	SWITCH, ROTARY	
D710	8-719-301-49	DIODE SEL2810A (MUTING)		△T901	1-427-641-11	TRANSFORMER, POWER (AEP, G)	
		< IC >		△T901	1-427-642-11	TRANSFORMER, POWER (US)	
IC707	8-749-923-43	IC GP1U57XB		*****			
		< SWITCH >		ACCESSORIES & PACKING MATERIALS *****			
S703	1-554-303-21	SWITCH, TACTILE (MUTING)			1-467-890-11	COMMANDER, STANDARD (RM-J90) (US, AEP, G(BLACK))	
*****					1-467-890-21	COMMANDER, STANDARD (RM-J90) (G(GOLD))	
*	1-654-046-11	VOLUME BOARD *****			1-558-271-11	CORD, CONNECTION (AUDIO 108cm)	
*	4-942-204-01	PLATE, GROUND (ET201)			3-759-991-11	MANUAL, INSTRUCTION (US, AEP) (ENGLISH, FRENCH, SPANISH, PORTUGUESE)	
		< CAPACITOR >			3-759-991-41	MANUAL, INSTRUCTION (AEP, G) (GERMAN, DUTCH, SWEDISH, ITALIAN)	
C713	1-136-165-00	FILM 0.1uF 5% 50V			4-962-615-01	COVER, BATTERY (for RM-J90)	
		< CONNECTOR >				(US, AEP, G(BLACK))	
CN204	1-691-766-11	PLUG (MICRO CONNECTOR) 4P			4-962-615-11	COVER, BATTERY (for RM-J90) (G(GOLD))	
CN205	1-691-767-11	PLUG (MICRO CONNECTOR) 5P		*	4-970-081-01	INDIVIDUAL CARTON	
* CN209	1-564-506-11	PLUG, CONNECTOR 3P		*	4-970-082-01	CUSHION	
		< DIODE >		*****			
D210	8-719-987-63	DIODE 1N4148M		***** HARDWARE LIST *****			
D211	8-719-987-63	DIODE 1N4148M		#1	7-682-247-09	SCREW +K 3X6	
		< VARIABLE RESISTOR >		#2	7-682-548-09	SCREW (3X8)	
RV201	1-223-758-11	RES, VAR, CARBON 20K/20K (ATTENUATOR)		#3	7-682-575-09	SCREW +B 5X10 (AEP, G)	
		< RELAY >		#4	7-688-005-01	WASHER (5. SMALL)	
RY210	1-515-622-11	RELAY					
RY211	1-515-622-11	RELAY					

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TA-E90ES

SONY SERVICE MANUAL

US Model
AEP Model

CORRECTION-1

Correct your service manual as shown below.

_____ : indicates corrected portion.

Page	INCORRECT				CORRECT			
	No.	Part No.	Description	Remark	Part No.	Description	Remark	
33	***** LOGIC BOARD *****				***** LOGIC BOARD *****			
	Q801	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q802	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q803	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q804	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q805	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q806	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q807	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q808	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q809	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q810	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q811	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		
	Q812	8-729-900-65	TRANSISTOR DTA144ES		8-729- <u>029-46</u>	TRANSISTOR <u>DTA143ESA</u>		

(SPM-96032)