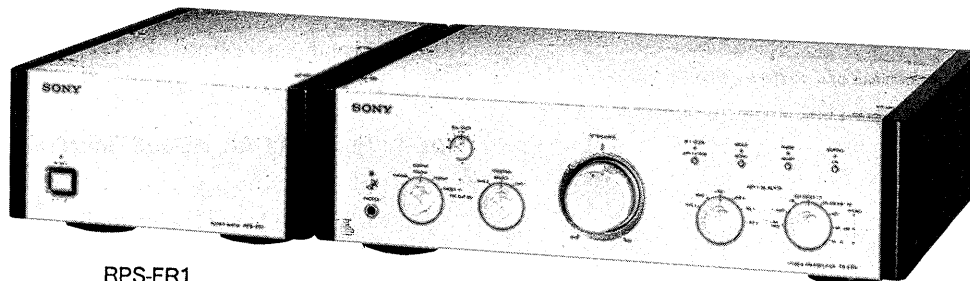


TA-ER1

RPS-ER1

SERVICE MANUAL

Germany Model



RPS-ER1

TA-ER1

SPECIFICATIONS

Amplifier (TA-ER1)

Inputs

	Input sensitivity	Input impedance	S/N
BALANCED CD BALANCED LINE	250 mV	4 MΩ ^{*1} (2 MΩ/2 MΩ)	More than 110 dB
CD TUNER LINE 1 } LINE 4	250 mV	2 MΩ ^{*2}	More than 110 dB
TAPE 1 TAPE 2	250 mV	2 MΩ ^{*3}	More than 110 dB
PHONO MM	4 mV	100 kΩ/ 100 pF	More than 90 dB ^{*4}
PHONO MC 3 Ω	0.2 mV	125 Ω	More than 92 dB ^{*5}
MC 30 Ω	0.4 mV	500 Ω	More than 87 dB ^{*5}

*1 100 kΩ at REC OUT ON

*2 50 kΩ at REC OUT ON

*3 20 kΩ when using tape monitor

*4 Measurement input signal level = 5 mV

*5 Measurement input signal level = 0.5 mV

Outputs

	Output	Maximum output	Output impedance
PREOUT			
BALANCED NORM	2.5 V	20 V	4 Ω (2 Ω/2 Ω)
BALANCED INVT	2.5 V	20 V	4 Ω (2 Ω/2 Ω)
UNBALANCED NORM	1.25 V	10 V	2 Ω
UNBALANCED INVT	1.25 V	10 V	2 Ω
PHONES (front)	39 mW	1,000 mW	2 Ω
(rear)	39 mW	1,000 mW	2 Ω
REC OUT (TAPE 1)	375 mV	10 V	1 kΩ
(TAPE 2)	375 mV	10 V	1 kΩ

Frequency response

CD input : 20 Hz – 20 kHz +0, –0.1 dB

MM input : RIAA ±1 dB

MC transformer : 20 Hz – 20 kHz +0, –1.0 dB

MC (both 3 Ω and 30 Ω) : Less than 0.005%

MM : Less than 0.003%

Others : Less than 0.003%

Total harmonic distortion
(THD + N) (With
ATTENUATOR at 0 dB,
output level 5 V)

Channel separation
(all inputs)

More than 110 dB

Dimensions

470 x 135 x 420 mm (W x H x D) (incl.
projecting parts and controls)

Weight

Approx. 20 kg

Power Supply Unit (RPS-ER1)

Power requirements

220V – 230V AC, 50/60 Hz

Power consumption

45 W

Dimensions

260 x 135 x 395 mm (W x H x D)

Weight

Approx. 13 kg

Remote Commander (RM-ER1, supplied)

Power requirements

3 V DC

Dimensions

38 x 23 x 160 mm (W x H x D)

Weight

(including batteries)

Approx. 0.2 kg

— Continued on next page —

STEREO PREAMPLIFIER

SONY®



Accessories supplied

Remote Commander (1)
Sony alkaline batteries LR6/AM3 (N) (2)
Power supply connection cable (1)
Load pins (2)
Shorting plugs (4)*
Balanced input caps (4)*
Jack caps (26)*
Headphone cap (1)*

* Attached to the appropriate terminals prior to shipment from the factory.

Design and specifications are subject to change without notice.

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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.

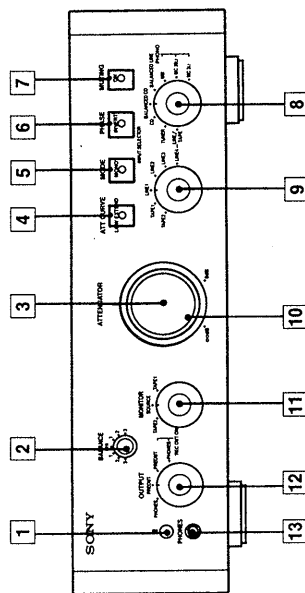
This section is extracted from
instruction manual.

SECTION 1 GENERAL

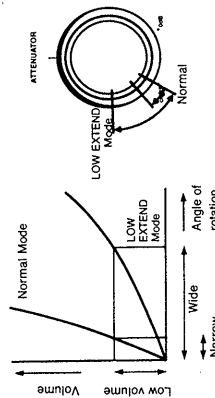
Identifying the Parts

The TA-ER1 Stereo Preamplifier consists of an amplifier and a power supply unit. You can also use the supplied Remote Commander to operate some of the controls on the unit. This section explains the location and the function of the controls on the amplifier, the power supply unit, and the Remote Commander.

Amplifier — Front Panel



The graph and the table below shows the difference in the
attenuation curve for Normal Mode and for LOW EXTEND Mode.



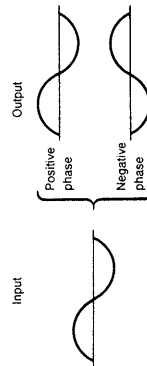
		low ← attenuation → high												(dB)	
Normal Mode	20	22	24	28	32	36	40	45	51	58	68	104	∞		
		46	48	50	54	58	62	66	71	77	84	94	130		∞
		LOW EXTEND Mode													

5 MODE button and indicator

Selects stereo or monaural sound.
When you press this button, monaural sound (MONO) is selected and the indicator lights.
MONO : The sound on the left channel and the sound on the right channel are mixed, and the same sound come out from both speakers.

6 PHASE button and indicator

Switches the phase.
When you press this button, Invert Mode is selected and the indicator lights.
INVERT : The phase is inverted. The NORM output becomes negative phase, and the INVT output becomes positive phase. (Refer to the diagram below.)



7 MUTING button and indicator

Turns the muting function on and off.
When you press this button, the muting function is turned on and the indicator lights.
ON: The sound is turned off.

8 INPUT SELECTOR switch ①

Selects the program source.
PHONO-MC 3 Ω : Turntable with an MC (moving-coil) type cartridge that has low output power and low impedance
-MC 30 Ω : Turntable with common MC-type cartridge
-MM : Turntable with MM (moving-magnet) type cartridge
BALANCED CD : CD player with balanced connection terminals
BALANCED LINE : Audio component with balanced connection terminals
CD : CD player (with unbalanced terminals)
TUNER : Tuner (with unbalanced terminals)
LINE/TAPE : Components connected to LINE 1 through LINE 4 or tape decks connected to TAPE 1 or 2 (with unbalanced terminals)

Note:

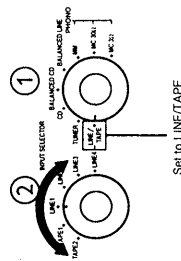
The position of INPUT SELECTOR ② does not affect the use of INPUT SELECTOR ①.

9 INPUT SELECTOR switch ②

Selects the program source when LINE/TAPE is selected with INPUT SELECTOR ①.

LINE 1 - 4 : Component connected to LINE 1 through LINE 4
TAPE 1, TAPE 2 : Tape deck connected to TAPE 1 or TAPE 2

Select a program source from LINE 1 through TAPE 2 only after selecting LINE/TAPE with INPUT SELECTOR ①.



10 Standby indicator

Starts flashing immediately after the power switch on the power supply unit is turned on. Once this unit is ready, this indicator stops flashing and stays lit.

11 MONITOR switch

Changes the source of the sound that you listen to while recording.
Normally (including those times when you are not recording), set this switch to SOURCE.
TAPE 1 : Used to listen to the sound from the tape deck when recording on TAPE 1
TAPE 2 : Used to listen to the sound from the tape deck when recording on TAPE 2
SOURCE : Used to listen to the program source selected with the INPUT SELECTOR

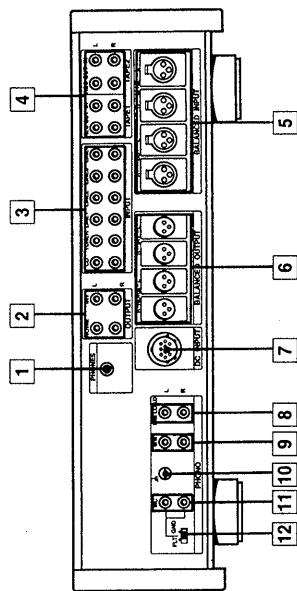
12 OUTPUT switch

Switches the output.
When you select the REC OUT ON position, sound is also output to the REC OUT terminals.
PHONES : Output sound to headphones (used when listening through headphones)
PREOUT : Output sound to power amplifier (used when listening through the speakers)
REC OUT ON : Output sound to power amplifier (used when listening through the speakers while recording)
-PHONES : Output sound to headphones (used when listening through headphones while recording)

13 PHONES (headphones) jack (stereo phone jack)

Identifying the Parts

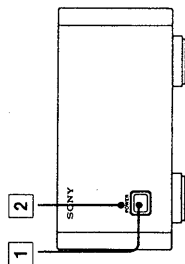
Amplifier — Rear Panel



- 1 PHONES (headphone) jack** (stereo phone jack)
To plug in stereo headphones.
The phase is normal.
- 2 OUTPUT (unbalanced output) terminals**
To connect a power amplifier with unbalanced input terminals.
NORM : Normal phase output (used for normal connection)
INVT : Inverted phase output (used for BTL connection, etc.)
- 3 INPUT (unbalanced input) terminals**
To connect stereo components with unbalanced output terminals.
CD : CD player
TUNER : Tuner
LINE 1 — LINE 4 : Any component with line output terminals
- 4 TAPE 1/TAPE 2 terminals**
To connect tape deck(s).
REC OUT (recording output) : Connect to the input terminals on the tape deck.
IN (input) : Connect to the output terminals on the tape deck.
- 5 BALANCED INPUT terminals**
To connect stereo components with balanced output terminals.
CD : CD player
LINE : Any component with line output terminals
- 6 BALANCED OUTPUT terminals**
To connect a power amplifier with balanced input terminals.
NORM : Normal phase output (i.e., the number 2 pin is hot); used for normal connection
INVT : Inverted phase (i.e., the number 3 pin is hot); used for BTL connection, connection with a power amplifier where the number 3 pin is hot, etc.
- 7 DC INPUT (power input) terminal**
To connect the power supply unit with the amplifier.
- 8 MM LOAD terminals**
To connect either the supplied load pins (or any other loads that meet your needs here) if you want to change the load resistance of the MM input terminal
- 9 PHONO MM input terminals**
To connect a turntable that has an MM-type cartridge.
- 10 Ground terminal**
To connect a ground wire of the turntable.
- 11 PHONO MC input terminals**
To connect a turntable that has an MC-type cartridge.
- 12 FLT/GND (floating/ground) switch**
To change the method of grounding for the cold (shielded) pin when a turntable equipped with an MC-type cartridge is connected.
See page 14 for details.

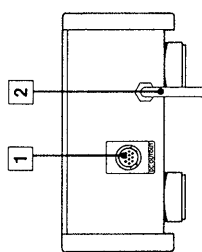
Power Supply Unit — Front Panel

- 1 Power switch**
Turns the power on and off.
- 2 Power indicator**
Lights when the power is turned on.



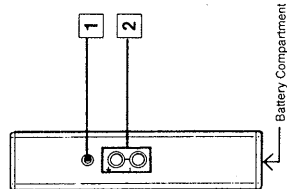
Power Supply Unit — Rear Panel

- 1 DC OUTPUT terminal**
To connect with the Preamplifier TA-ER1.
- 2 Power cord**
Plug this cord into a wall outlet.



Remote Commander

- 1 MUTING button**
Switches the volume off. This button operates in the same way as the MUTING button on the main unit.
- 2 ATTENUATOR +/- buttons**
Adjusts the volume. When you press these buttons, the ATTENUATOR knob on the unit moves simultaneously in the corresponding direction. Each time you press them, the ATTENUATOR knob rotates about 2.5°. When these buttons are held down, the ATTENUATOR knob continues to rotate until the button is released.
The Remote Commander can adjust the volume just one or two settings short of the minimum and maximum volumes. To turn the volume off completely, use the muting button.



Note on remote control operation

Make sure that the remote control signal sensor (see page 6) is not subject to direct sunlight or to lighting of high intensity, as this may cause malfunctioning or make remote control operation impossible.

To avoid damage caused by battery leakage or corrosion

When the commander will not be used for a long time, remove the batteries.

Battery replacement

When the distance from which remote control operation is possible becomes shorter, replace both batteries with new ones.

Inserting batteries

- 1** Open the battery cover.
- 2** Insert two R6 (size AA) batteries. Close the cover by turning the lid in the direction for CLOSE while pressing the batteries down with the lid.

Hooking up the System

This section explains how to install this unit and how to connect other components to it.

Before Connection and Installation

Notes on connection

- On connections**
- Be sure to turn the power switch off before making any connections.
 - Use the red plug on the connecting cables for the right channel (R) and use the white plug for the left channel (L).
 - Connect plugs firmly. Loose connections may generate hum and noise.
 - Either use the cables supplied with each of the components, or purchase audio signal cables separately.
 - For balanced connections, use cables with Canon XLR-3 connectors or their equivalent.

On shorting plugs and caps

- Shorting plugs and caps have been inserted in each of the phono terminals and balanced input terminals on this amplifier. Before connecting another component to that terminal, remove the shorting plug or cap. Do not insert the removed shorting plug into an output terminal (PREOUT or REC OUT) or the MM LOAD terminal.
- When no component is connected to that terminal, insert a shorting plug or a cap into that terminal. Unwanted noise may be generated if any of the terminals are open.

Keep your cables organized!

- Noise that adversely affects sound quality can be generated if a connecting cable between your amplifier and another audio component comes into contact with a power cord, or if a power cord comes into contact with a speaker wire or a tuner antenna (whether a bar antenna or an antenna lead wire). Organize your cords, cables and antennas behind your stereo equipment.

Side panels

- The amplifier and the power supply unit are equipped with left and right decorative side panels. Because the audio characteristics of this unit were tuned with these side panels in place, it is recommended that they not be removed.

To derive an optimum performance from the unit

Power supply

- Use power from a wall outlet if at all possible. If a portable generator or similar power supply must be used, be sure to use one that has sufficient capacity and for which the wiring is of good quality.

- Do not connect this unit to a wall outlet which is shared by equipment that generates electronic noise, such as personal computers, electric carpets, refrigerators or coffee makers.

Installation

- While this unit is protected against vibration, it is recommended that it be located on a sturdy stereo rack or shelf so that it will not be affected by vibrations from the speakers.
- When using a turntable, it is recommended that the power supply unit be located to the left of this unit (facing the unit) or on a different shelf.

Signal connections

- Since the materials used in cables and their construction can have a major effect on sound quality, we recommend that you test several different types of cables and determine which kind you like best.

Aging

- Although this unit was operated for the minimum required aging period during the manufacturing process, you may find that as you use this unit over a period of time the sound quality increases until it reaches its optimum level. The period before this optimum level is reached is called the "aging period." If this unit is left unused for an extended period of time, another aging period may be required. The change in sound quality will be greatest over the first ten hours of operation, and should then taper off at about one hundred hours.

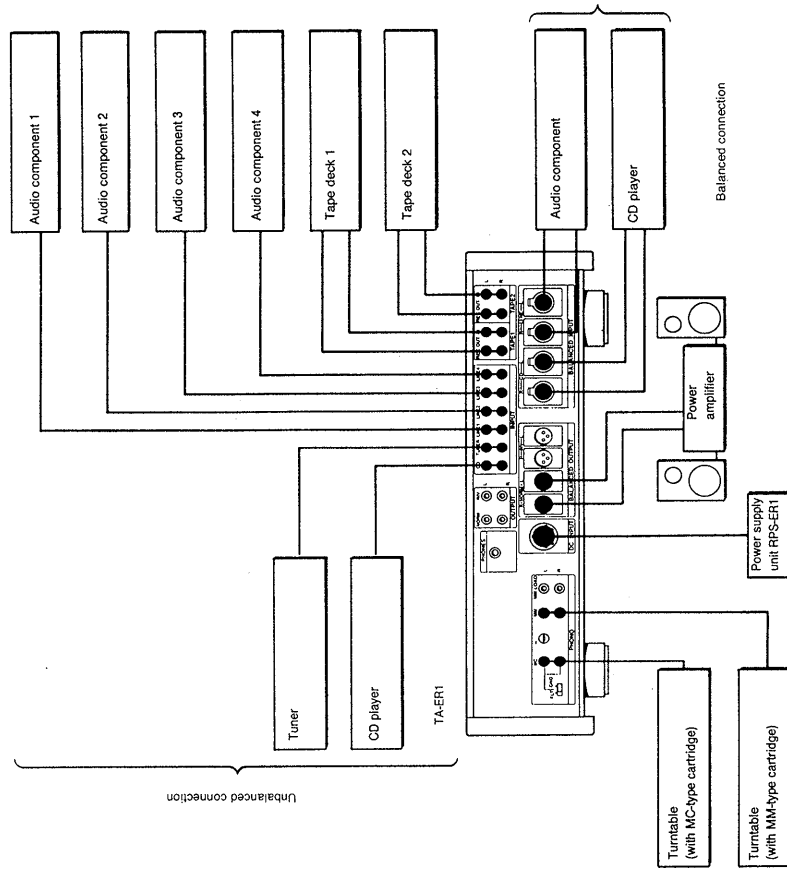
System Configuration

In order to use this unit, you need to connect a power amplifier or headphones.

You can connect other components such as those listed below:

- Turntable
- CD player or other equipment with balanced output terminals (XLR terminals)
- CD player, tuner, or other equipment with unbalanced output terminals (phono jack terminals)
- Tape deck (for playback and recording)

The diagram below shows the largest configuration of components that can be connected to this unit.



Hooking up the System

Connection with the Power Amplifier

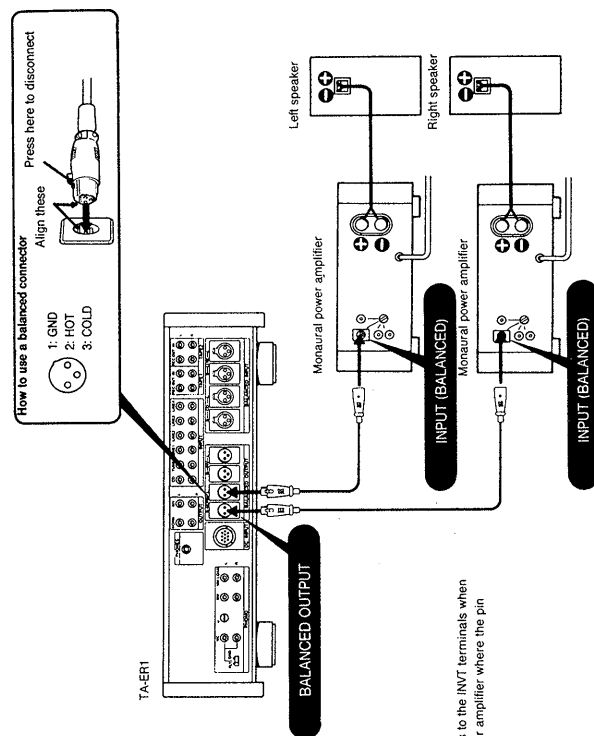
Normally, either one stereo power amplifier or two monaural power amplifiers are connected to this unit.
In cases where there is insufficient power (when listening at high volume, for example), the available power can be increased by using BTL connections.

When using BTL connections, either four monaural power amplifiers or two stereo power amplifiers are used; the power amplifiers are connected to both the NORM and the INVT terminals.

Connection Using Balanced Cables

Using balanced cables (equivalent to Canon XLR-3; contact your dealer), make the connections as illustrated below.

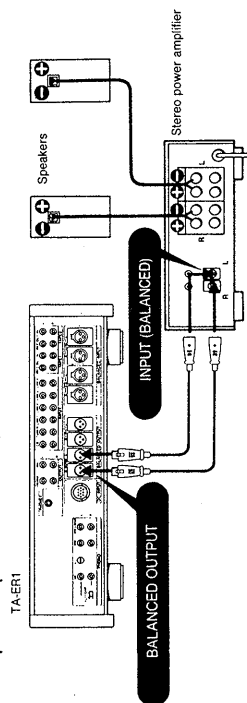
■ Connecting monaural power amplifiers



Note:
Connect the cables to the INVT terminals when connecting a power amplifier where the pin assignments are:

- 1: GND
- 2: COLD
- 3: HOT

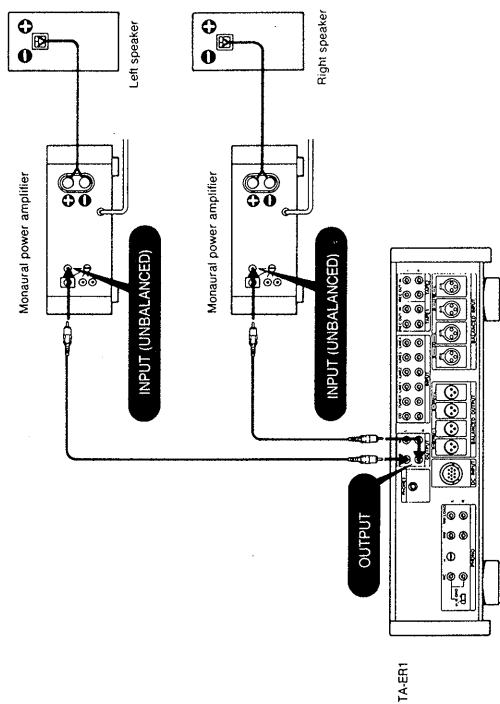
■ Connecting a stereo power amplifier



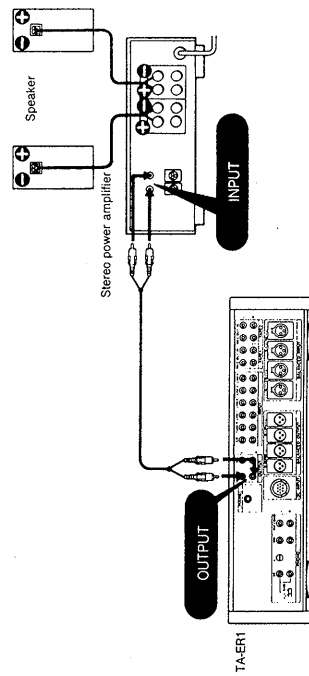
Connection Using Phono Cords

Using phono cords (commercially available), make the connections as illustrated below.

■ Connecting monaural power amplifiers



■ Connecting a stereo power amplifier



Hooking up the System

Connection with the Power Amplifier

Using BTL Connection

Connect four monaural power amplifiers or two stereo power amplifiers. Make sure that you connect the positive (+) and negative (–) terminals of the speakers correctly.

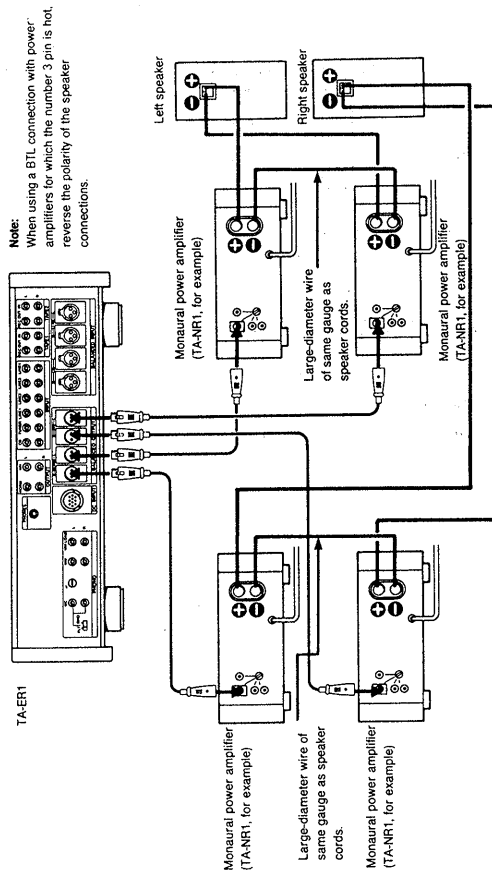
Note:

You cannot use BTL connection with a power amplifier which has BTL circuit system in itself.

Connect one channel first by following the procedure below, and then connect the other channel in the same way.

- 1 Connect the two – output terminals of the power amplifiers with each other.
- 2 Connect the + output terminal of the normal phase (i.e., the power amplifier connected to NORM) with the + terminal of the speaker.
- 3 Connect the + output terminal of the inverted phase (i.e., the power amplifier connected to INVT) with the – terminal of the speaker.

■ Example: BTL connection using balanced cables — with monaural power amplifiers

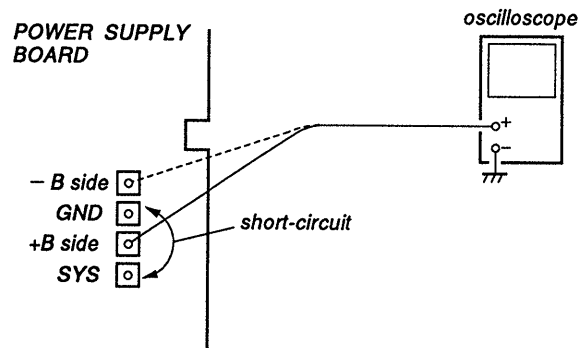


SECTION 2

ELECTRICAL ADJUSTMENTS

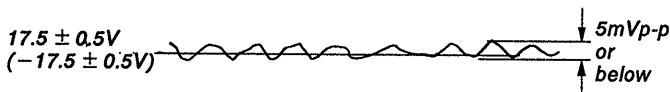
DC VOLTAGE CHECK

Connection:



Procedure:

- 1) Turn power on.
- 2) Connect an oscilloscope to +B side or - B side of DC OUT terminals and check the voltage value and the waveform.
 + B side : 17.5 ± 0.5 V
 - B side : -17.5 ± 0.5 V

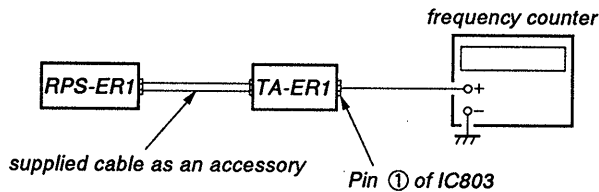


- 3) Turn power off.

ULTRASONIC MOTOR OSCILLATING FREQUENCY ADJUSTMENT

(Adjust on the malfunction of the motor or on replacement of the motor.)

Connection :



Procedure :

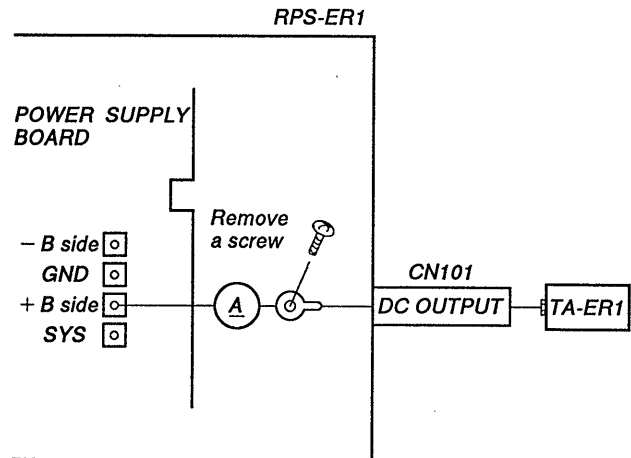
- 1) Short-circuit between Pin ① and Pin ② of CN805 on Motor Drive Board.
- 2) Turn power on.
- 3) Wait until the stand-by indicator lights up.
- 4) Adjust with RV801 so that the reading on the frequency counter becomes 164.0 ± 0.5 kHz.
- 5) Turn power off.
- 6) Release the short-circuit position.

UNIT BOARDS BIAS ADJUSTMENT

Switch position :

OUTPUT	REC OUT ON - PHONES
TAPE MONITOR	TAPE 1
ATTENUATOR	∞ dB (Minimum)
INPUT SELECTOR 1	LINE/TAPE
INPUT SELECTOR 2	TAPE 2

Connection :



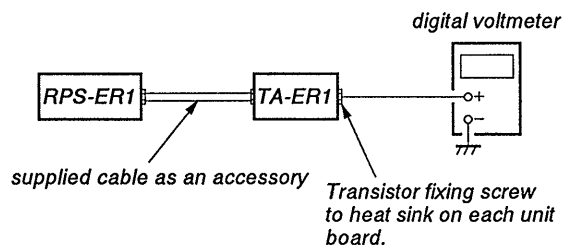
Procedure :

- 1) Turn power switch on.
- 2) Minimize the volume control on each board by turning it counterclockwise ; RV501 (EQ) , RV3101 (PI), RV3201 (MI), RV4101 (PO), or RV4201 (MO).
- 3) Check the electric current value is 300 ± 50 mA.
- 4) Adjust the volume control so that the electric current value increases 50 ± 1 mA on each board.
- 5) Check the total electric current is 800 ± 50 mA.
- 6) Turn power off.

OFFSET VOLTAGE ADJUSTMENT AND CHECK

Switch position : The same as Unit Boards Bias Adjustment.

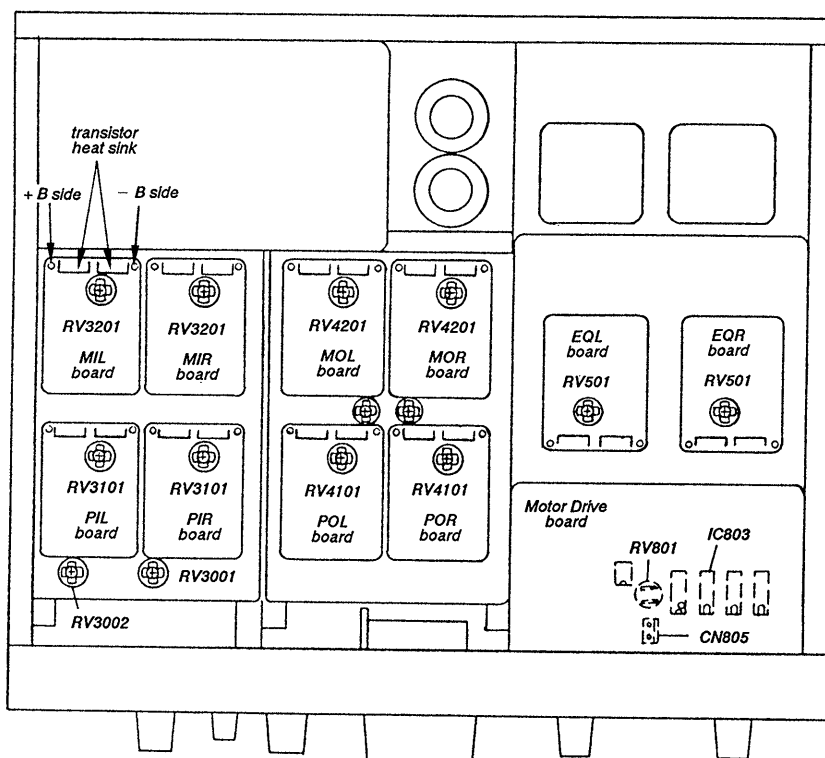
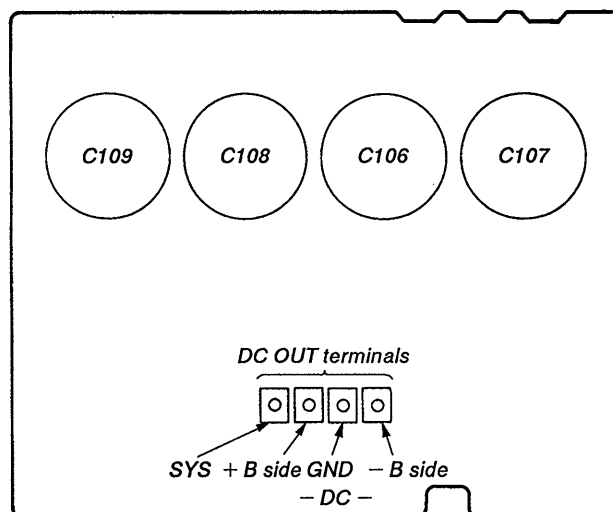
Connection :



Procedure :

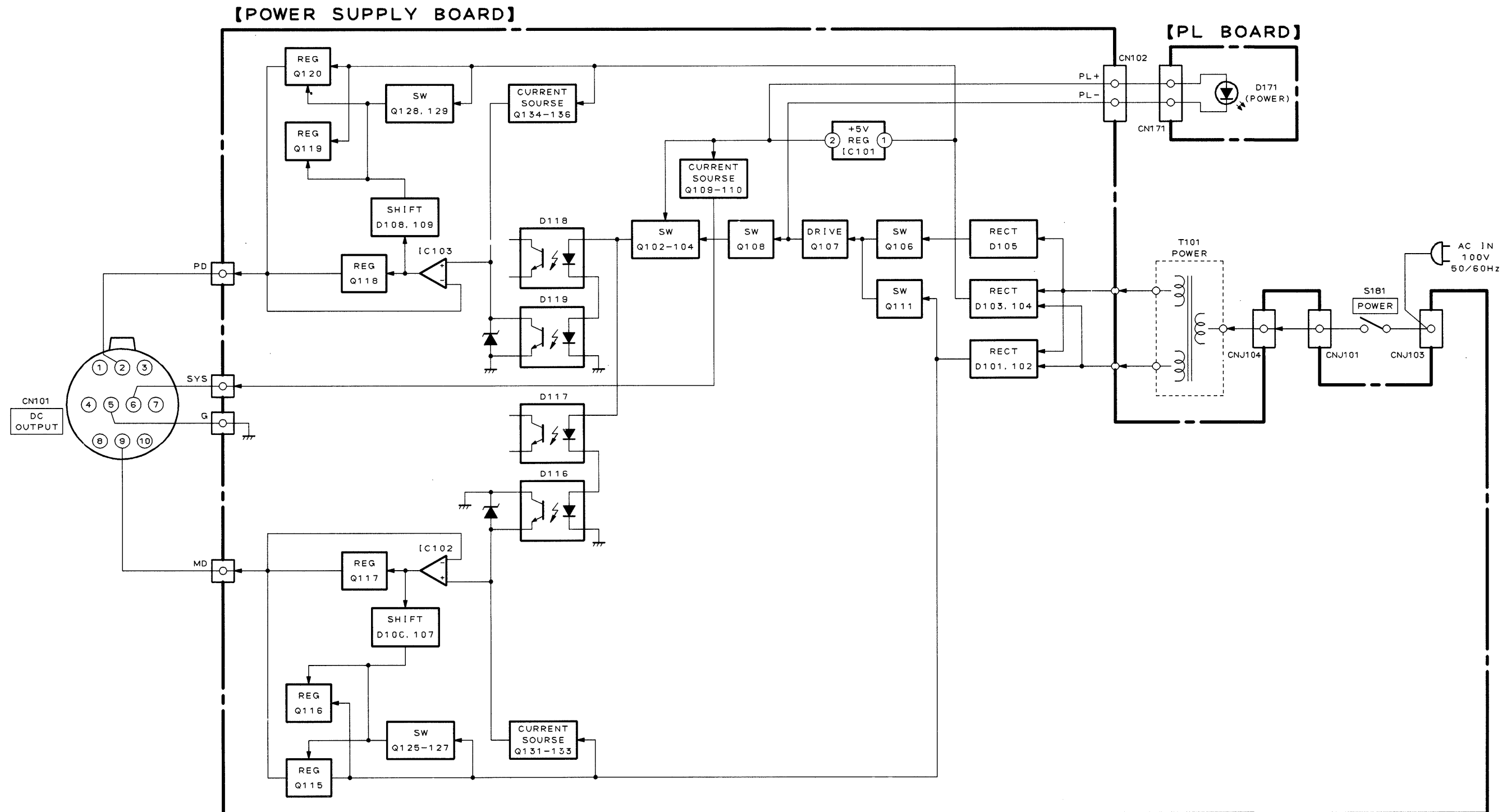
- 1) Turn power on.
- 2) Check the offset voltages of MIL and MIR unit boards outputs (on the transistor fixing screw to heat sink) are within ± 40 mV.
- 3) Adjust with RV3002 so that the offset voltage of PIL unit board output is within ± 1 mV.
- 4) Adjust with RV3001 so that the offset voltage of PIR unit board output is within ± 1 mV.
- 5) Check the offset voltages of POL and POR unit boards outputs are within ± 2 mV.
- 6) Adjust with RV4002 so that the offset voltage of MOL unit board output is within ± 1 mV.
- 7) Adjust with RV4001 so that the offset voltage of MOR unit board output is within ± 1 mV.
- 8) Check the offset voltages of EQL and EQR unit boards outputs are within ± 2 mV.
- 9) Turn power off.

[POWER SUPPLY BOARD] — Component Side —

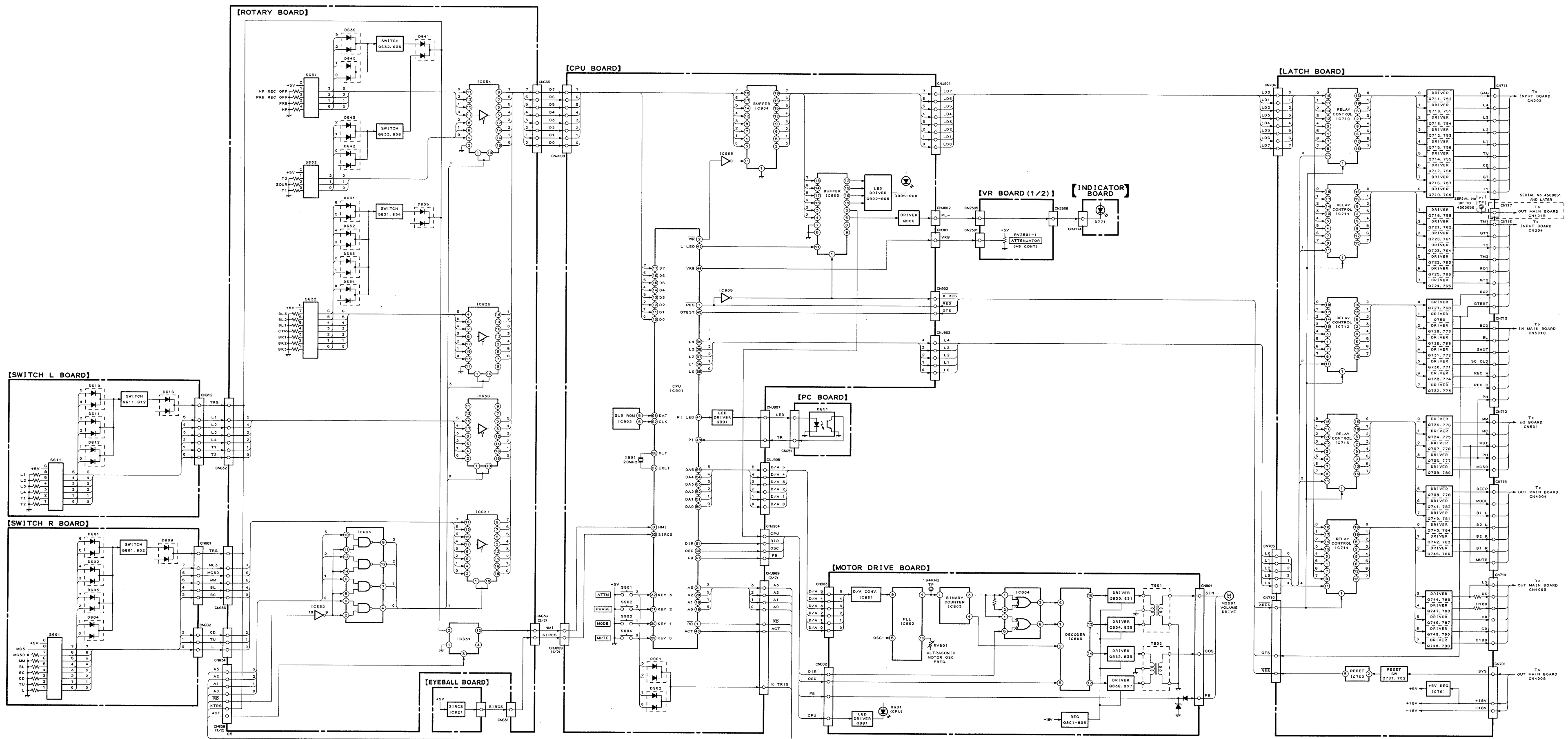


SECTION 3 DIAGRAMS

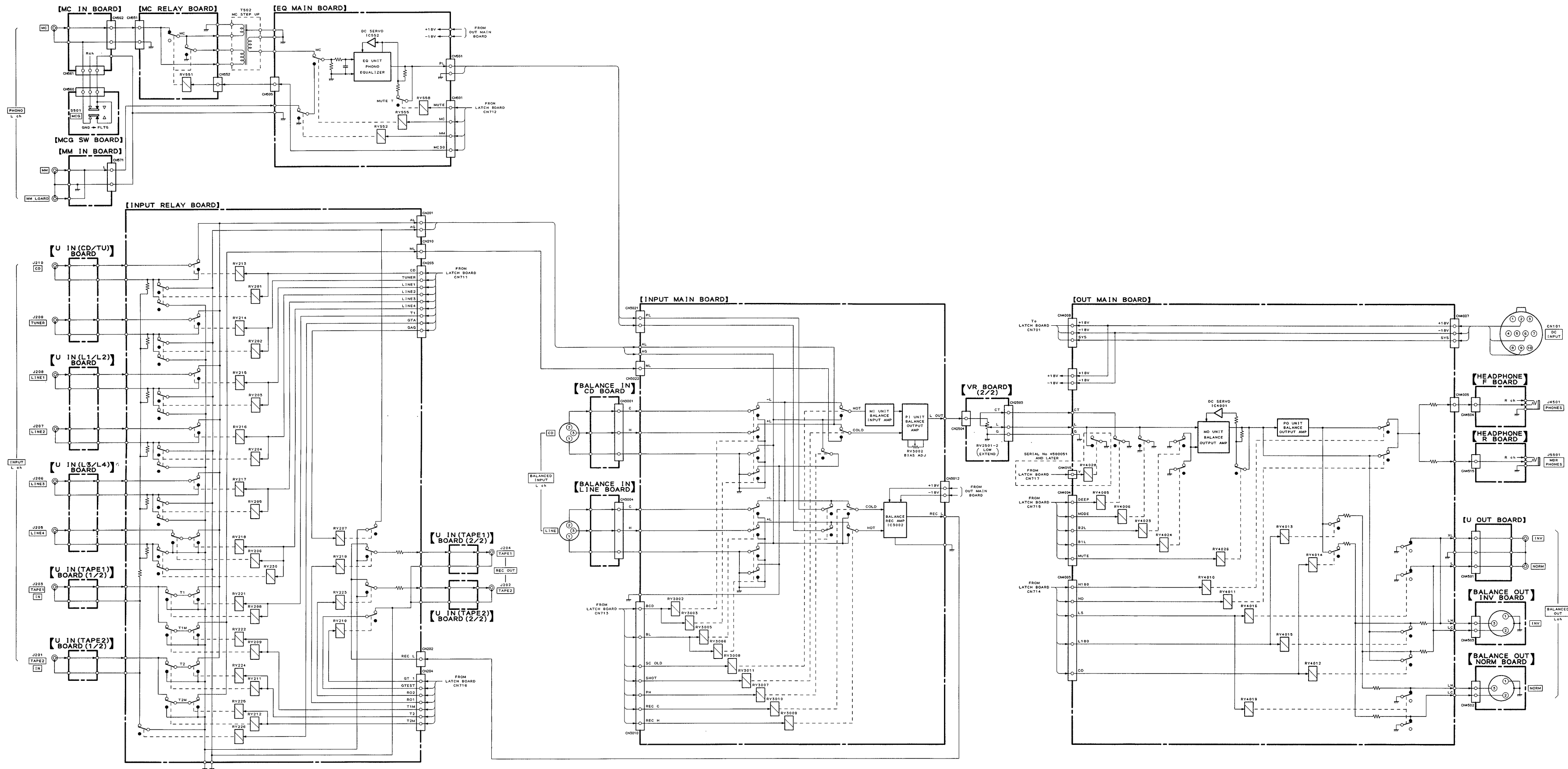
3-1. POWER SUPPLY SECTION BLOCK DIAGRAM



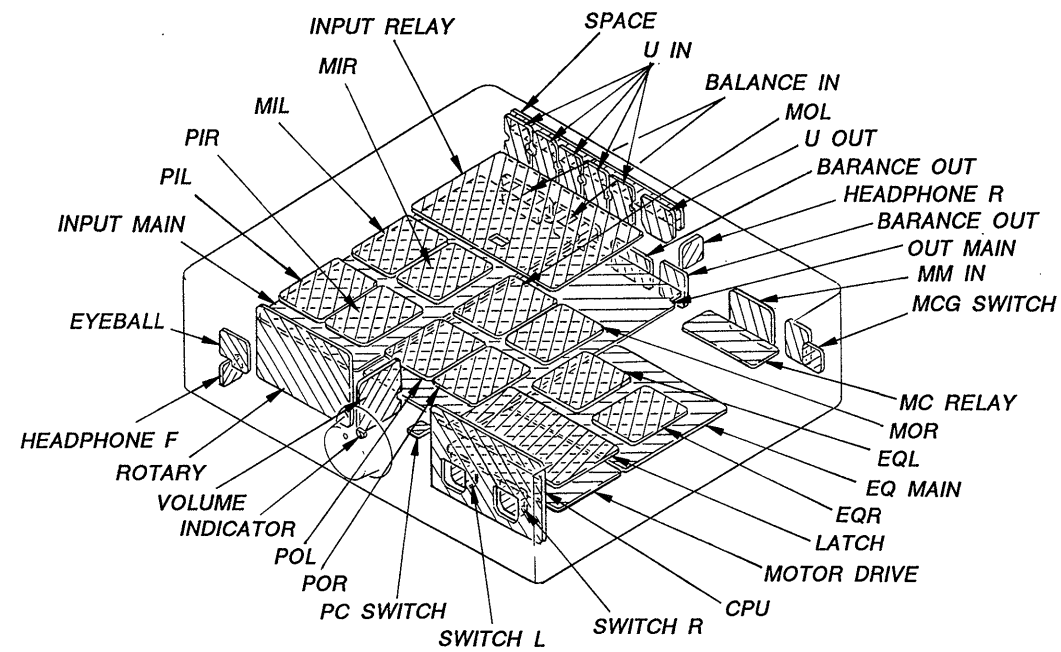
3-2. CONTROL SECTION BLOCK DIAGRAM



3-3. SIGNAL SECTION BLOCK DIAGRAM

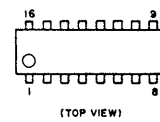


• Circuit Boards Location

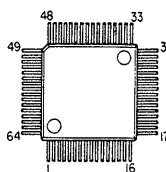


• Semiconductor Lead Layouts

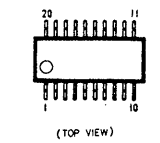
HD14046BP



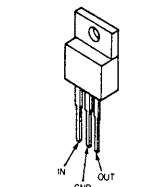
HD6475208F-001



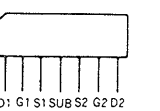
SN74HC373ANS



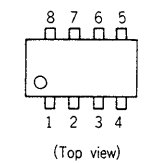
TA7805S



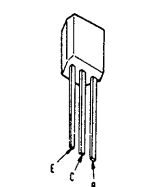
μ PA68HA-M



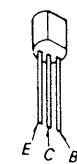
X24C01P



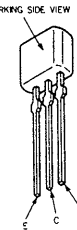
DTA114ES
DTC114ES
2SA1344



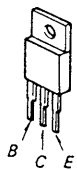
2SA1015-GR
2SA1815-GR



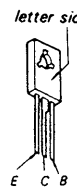
2SA1175-FEK
2SC2785-FEK



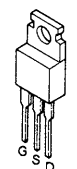
2SA1606-E
2SA985A-QP
2SC2275A-P
2SC4159-E



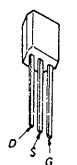
2SB731-KFE
2SD809-KFE



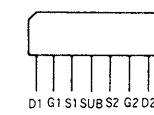
2SJ76
2SK213
2SK208GR3



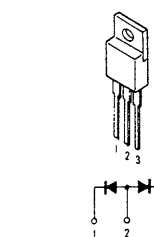
2SK241-GR



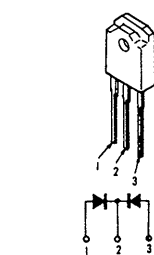
2SK389-GR



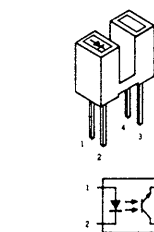
C10P20FUR



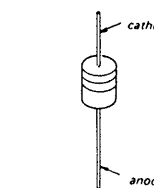
C16P20F
C16P20FR



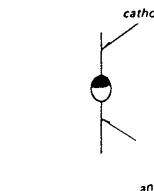
GP1S51



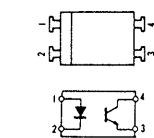
HZS18-1L
HZS6A1L
UZL-12M3



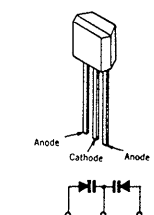
MV104V



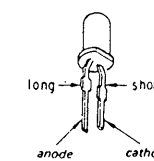
PC817



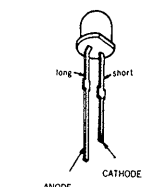
1N4148M

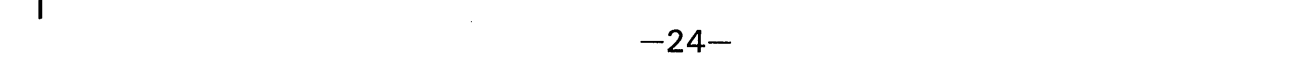


SEL2210S-C
SEL2910D-D



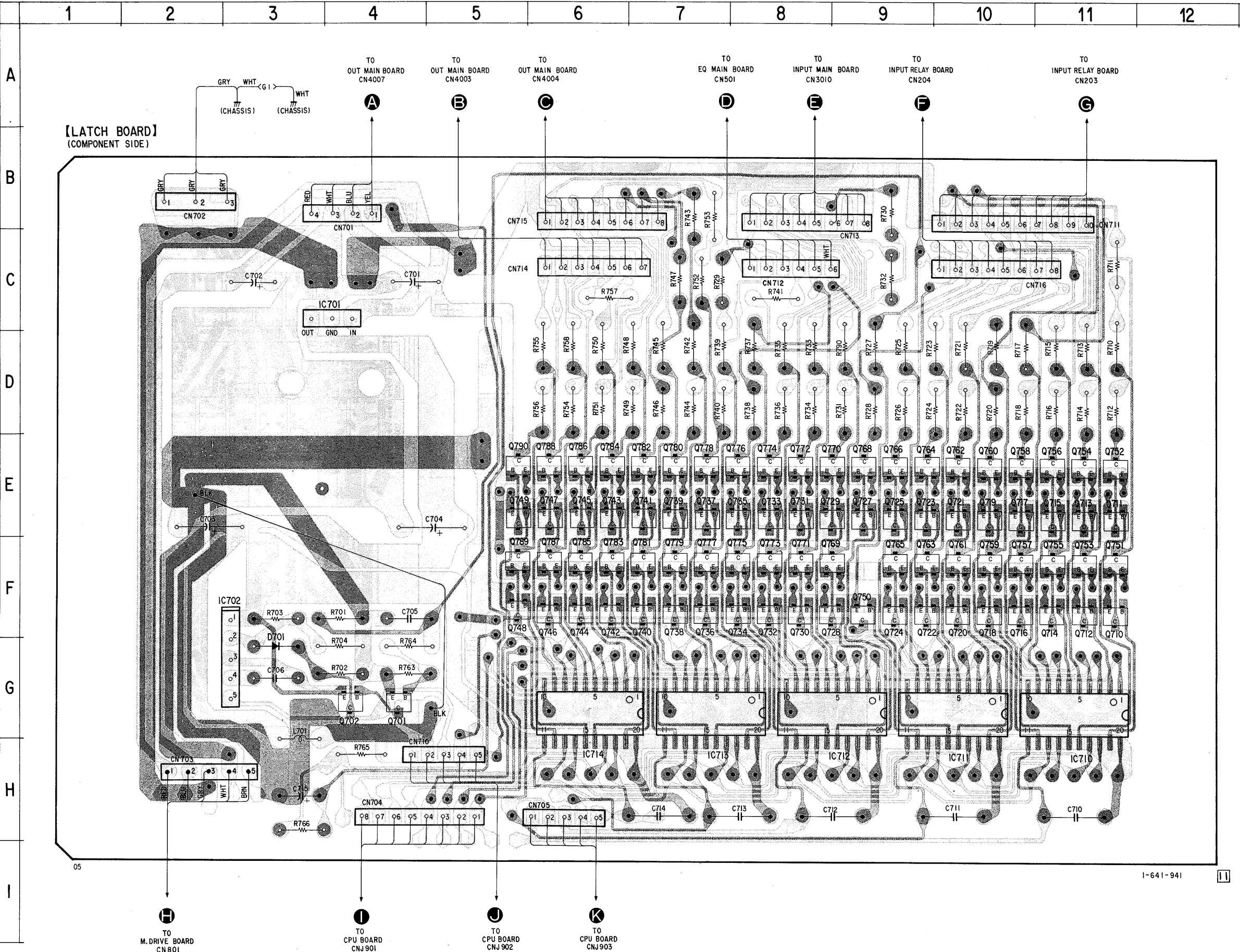
SEL2210S-D
SEL2510C-D





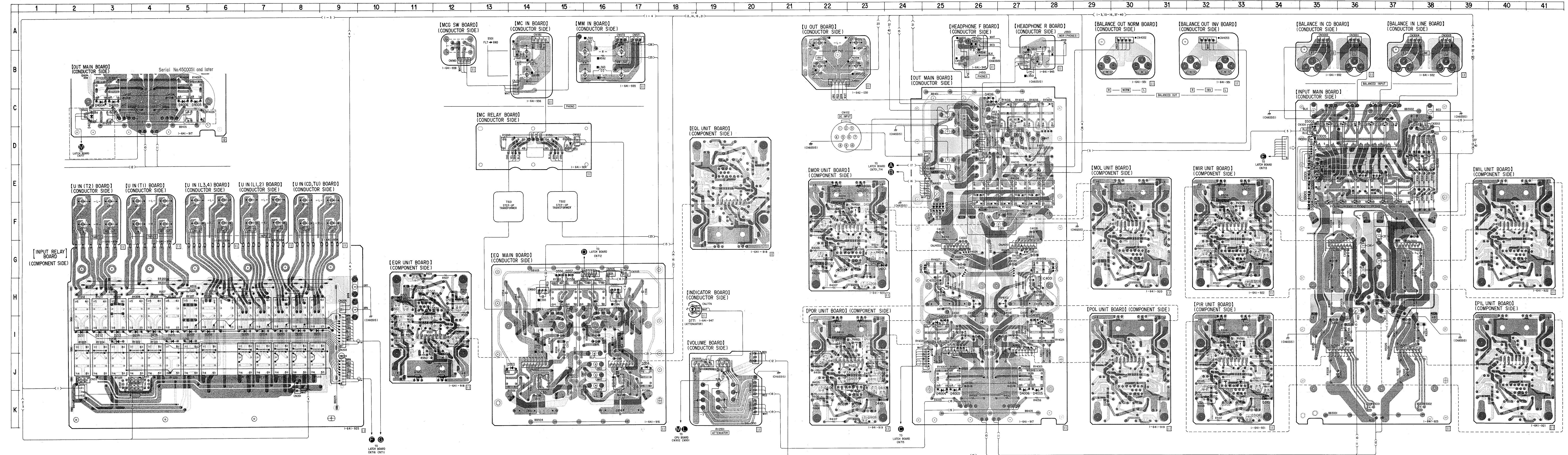
● Semiconductor Location

Ref. No.	Location
D701	G-3
IC701	C-4
IC702	F-3
IC710	G-11
IC711	G-10
IC712	G-9
IC713	G-7
IC714	G-6
Q128	D-5
Q701	G-4
Q702	G-4
Q710	F-11
Q711	E-11
Q712	F-11
Q713	E-11
Q714	F-11
Q715	E-11
Q716	F-10
Q717	E-10
Q718	F-10
Q719	E-10
Q720	F-10
Q721	E-10
Q722	F-9
Q723	E-9
Q724	F-9
Q725	E-9
Q727	E-9
Q728	F-9
Q729	E-9
Q730	F-8
Q731	E-8
Q732	F-8
Q733	E-8
Q734	F-8
Q735	E-8
Q736	F-7
Q737	E-7
Q738	F-7
Q739	E-7
Q740	F-7
Q741	E-7
Q742	F-6
Q743	E-6
Q744	F-6
Q745	E-6
Q746	F-6
Q747	E-6
Q748	F-5
Q749	E-5
Q750	F-9
Q751	F-11
Q752	E-11
Q753	F-11
Q754	E-11
Q755	F-11
Q756	E-11
Q757	F-10
Q758	E-10
Q759	F-10
Q760	E-10
Q761	F-10
Q762	E-10
Q763	F-9
Q764	E-9
Q765	F-9
Q766	E-9
Q768	E-9
Q769	F-9
Q770	E-9
Q771	F-8
Q772	E-8
Q773	E-8
Q774	E-8
Q775	F-8
Q776	E-8
Q777	F-7
Q778	E-7
Q779	F-7
Q780	E-7
Q781	F-7
Q782	E-7
Q783	F-6
Q784	E-6
Q785	F-6
Q786	E-6
Q787	F-6
Q788	E-6
Q789	F-5
Q790	E-5



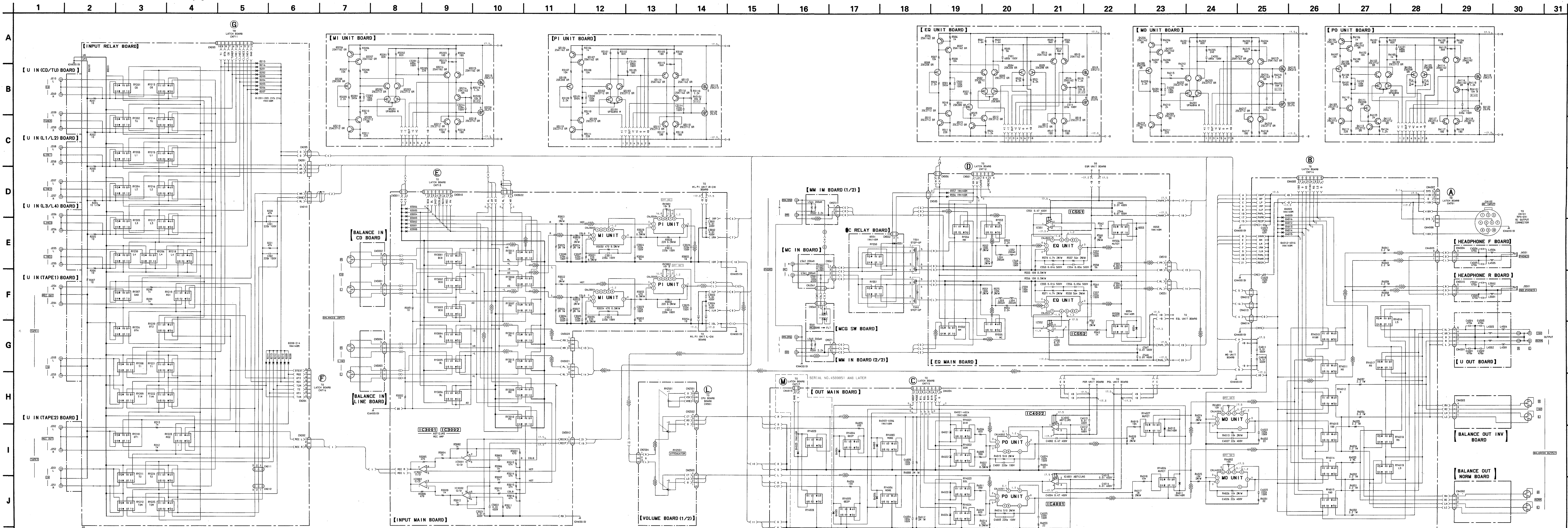
3-6. SIGNAL SECTION PRINTED WIRING BOARDS

• See page 24 for Notes, page 19 for Semiconductor Lead Layouts.



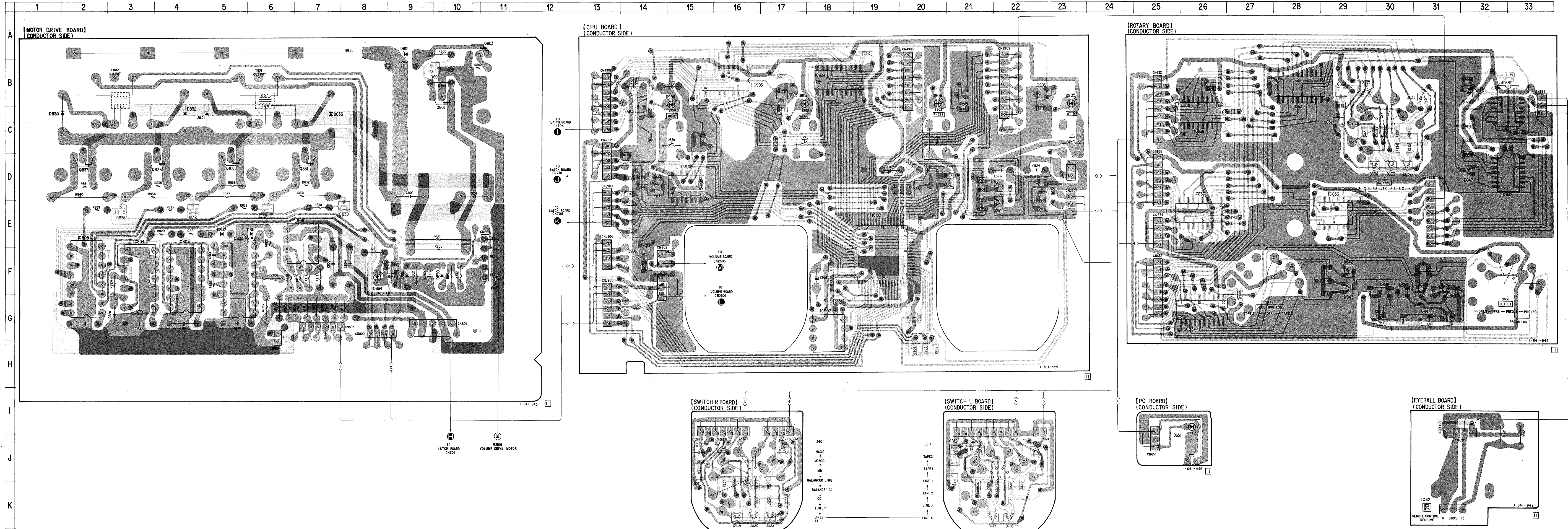
• Semiconductor Location

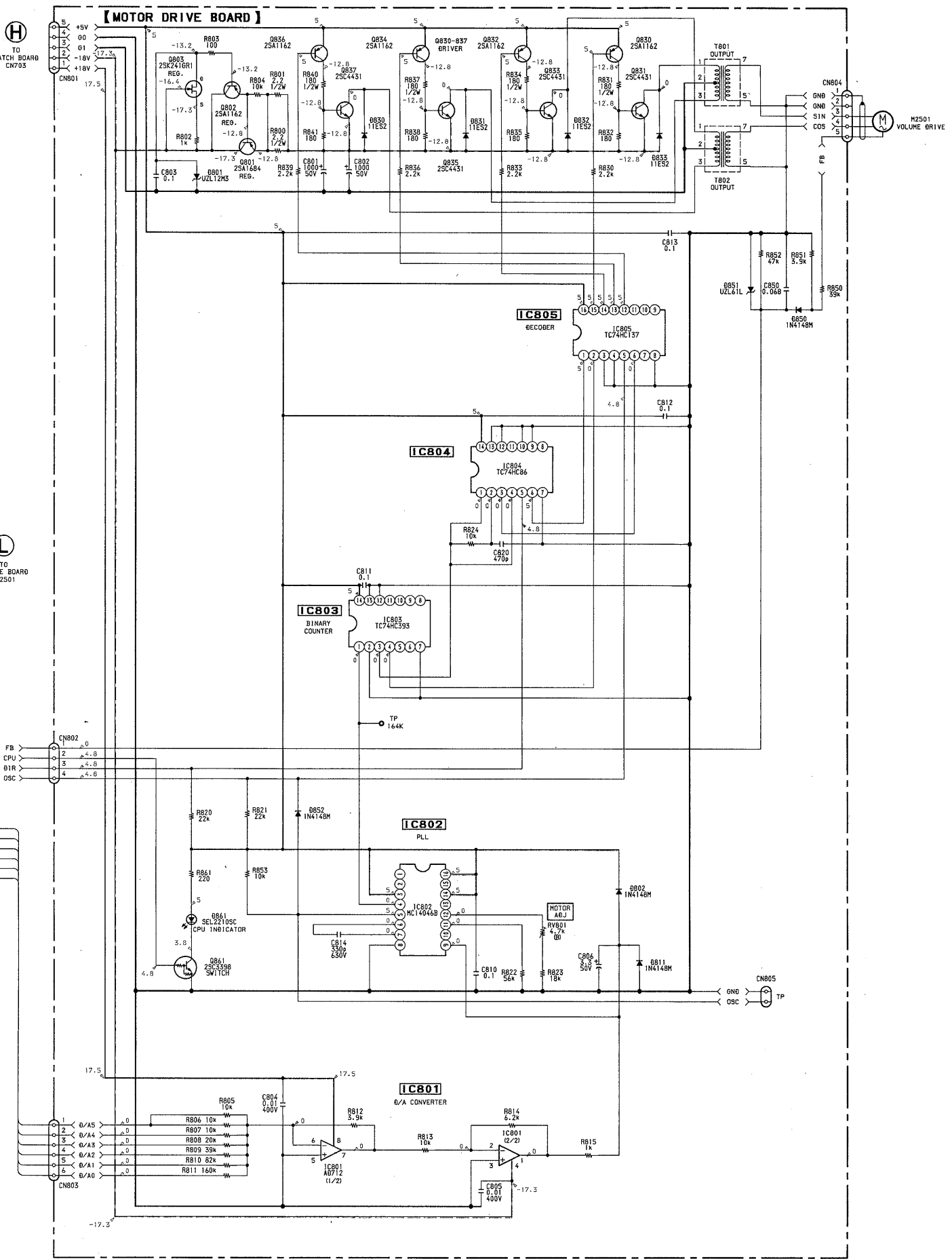
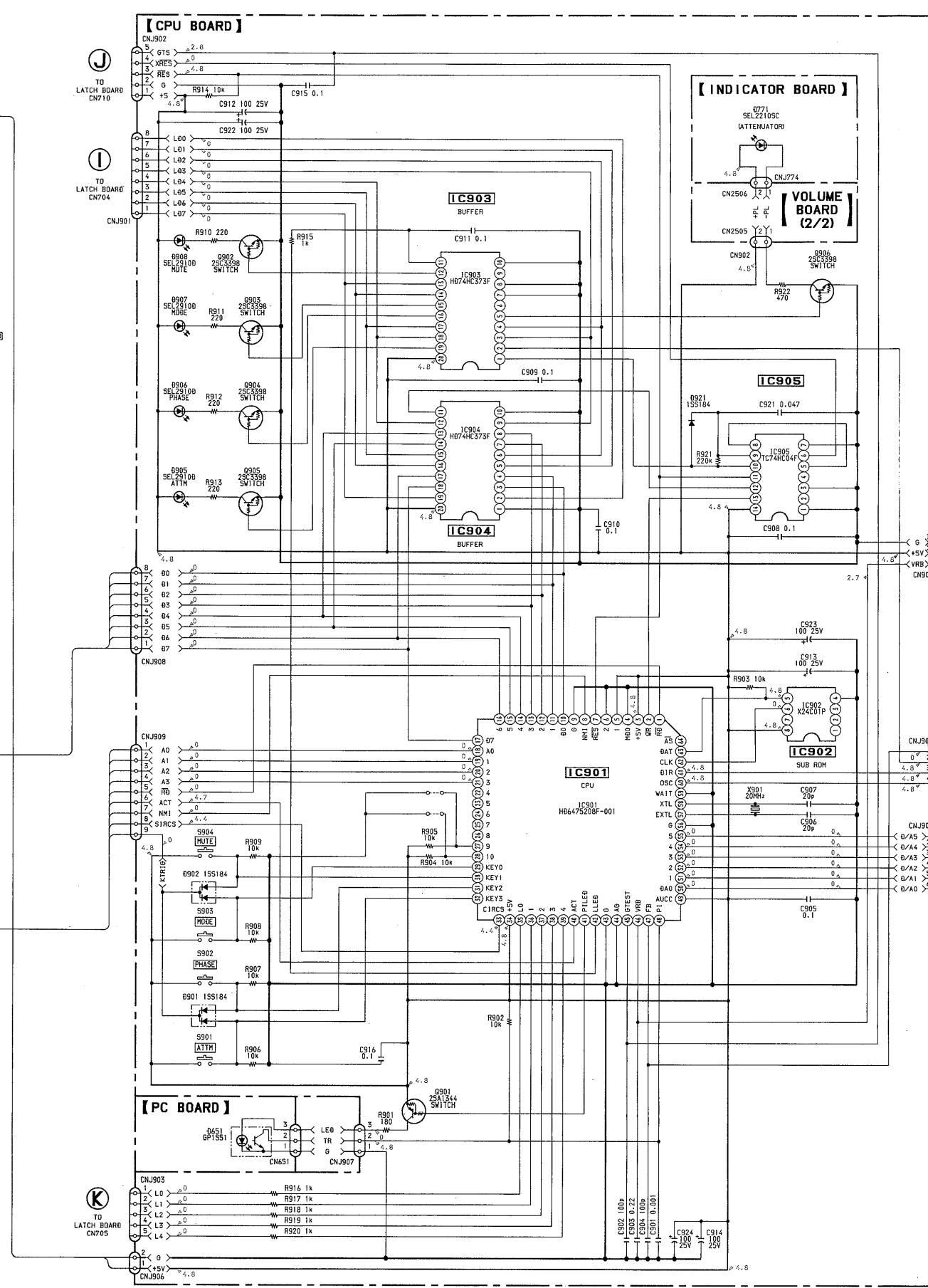
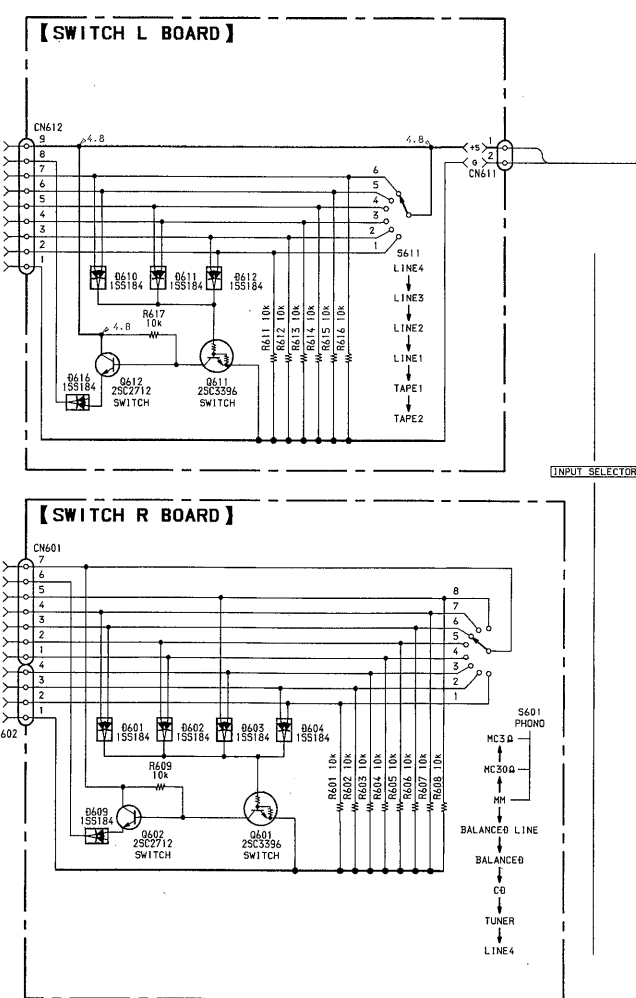
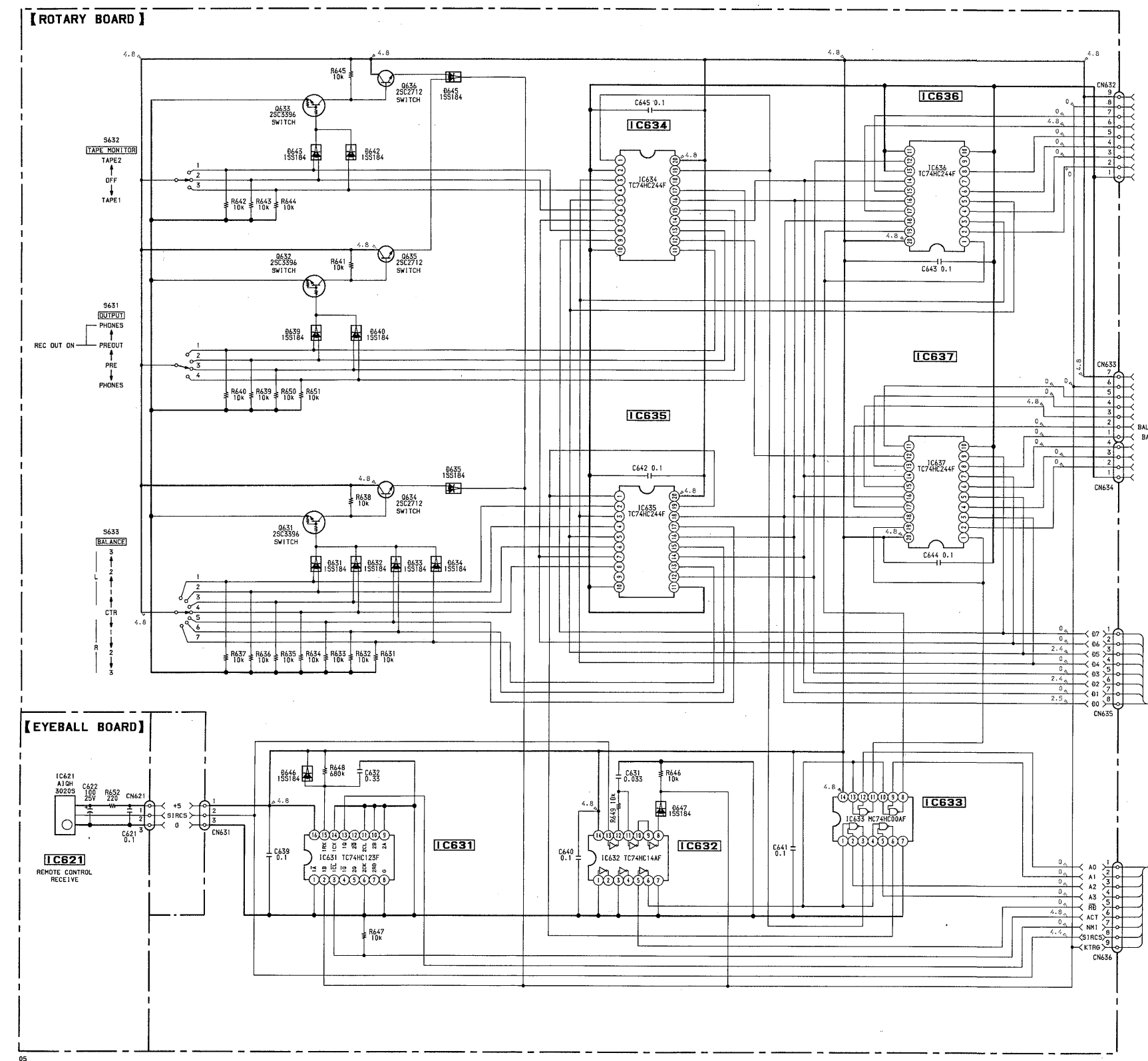
Ref. No.	Location	Ref. No.	Location
D201	I-8	Q514	I-11
D202	I-8	Q515	I-12
D203	I-7	Q516	J-12
D204	I-7	Q517	I-11
D205	I-6	Q518	J-12
D206	I-6	Q519	J-11
D207	I-6	Q520	J-11
D208	I-3	Q3101	J-33
D209	I-5	Q3102	K-33
D210	I-5	Q3103	K-33
D211	D-2	Q3106	J-32
D212	I-3	Q3107	K-32
D213	I-3	Q3108	K-33
D214	I-4	Q3109	K-33
D215	I-5	Q3110	K-33
D216	I-4	Q3114	J-33
D501	H-11	Q3115	J-32
D551	D-15	Q3116	I-32
D553	J-14	Q3117	J-33
D554	J-17	Q3118	I-33
D556	G-15	Q3119	I-32
D557	G-15	Q3120	I-33
D771	H-18	Q3201	G-33
D3001	E-35	Q3202	G-33
D3002	E-35	Q3203	G-33
D3003	E-35	Q3206	G-32
D3004	E-35	Q3207	G-32
D3005	D-35	Q3208	H-33
D3006	D-35	Q3209	G-33
D3008	E-35	Q3210	F-33
D3101	K-34	Q3214	F-33
D3201	G-33	Q3215	F-32
D4003	K-25	Q3216	F-32
D4004	K-25	Q3217	F-33
D4005	K-28	Q3218	F-33
D4006	K-27	Q3219	E-32
D4009	C-26	Q3220	E-33
D4010	G-25	Q4101	K-22
D4011	G-28	Q4102	K-23
D4012	F-25	Q4103	K-22
D4013	F-25	Q4104	J-22
D4014	F-25	Q4105	J-22
D4015	F-25	Q4106	J-22
D4016	C-26	Q4107	K-22
D4021	I-25	Q4108	K-23
D4022	I-25	Q4109	K-23
D4023	I-27	Q4110	K-23
D4024	I-28	Q4111	J-23
D4025	C-2	Q4112	J-23
D4101	K-23	Q4113	J-23
D4201	G-23	Q4114	J-23
		Q4115	J-22
IC551	J-14	Q4116	I-22
IC552	J-16	Q4117	J-23
IC3001	E-38	Q4118	I-23
IC3002	E-38	Q4119	I-22
IC4001	H-28	Q4120	I-23
IC4002	H-25	Q4201	G-22
		Q4202	G-23
Q501	H-11	Q4203	G-22
Q502	H-11	Q4206	G-22
Q503	H-11	Q4207	G-22
Q504	I-11	Q4208	H-23
Q505	I-11	Q4209	G-23
Q506	H-12	Q4210	G-23
Q507	H-12	Q4214	F-22
Q508	G-11	Q4215	F-22
Q509	H-11	Q4216	F-22
Q510	H-11	Q4217	F-23
Q511	I-11	Q4218	F-23
Q512	I-11	Q4219	E-22
Q513	I-11	Q4220	E-23



• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D601	K-16	IC633	E-29
D602	K-16	IC634	G-26
D603	K-16	IC635	B-28
D604	J-17	IC636	C-26
D609	J-16	IC637	E-26
D610	K-22	IC801	E-7
D611	K-21	IC802	E-5
D612	J-21	IC803	E-4
D616	J-21	IC804	E-3
D631	B-31	IC805	E-2
D632	D-30	IC901	E-19
D633	D-30	IC902	G-18
D634	D-30	IC903	B-16
D635	B-30	IC904	B-18
D639	G-31	IC905	D-15
D640	G-31		
D642	F-29	Q601	J-15
D643	F-29	Q602	J-15
D645	G-30	Q611	J-21
D646	B-32	Q612	J-21
D647	D-32	Q631	C-29
D651	I-26	Q632	G-31
D801	A-9	Q633	F-30
D802	G-6	Q634	B-29
D811	E-6	Q635	G-31
D830	C-2	Q636	F-30
D831	C-5	Q801	B-10
D832	C-4	Q802	A-10
D833	C-7	Q803	A-11
D850	F-10	Q830	E-8
D851	F-9	Q831	D-7
D852	E-5	Q832	E-4
D861	F-9	Q833	D-4
D864	F-8	Q834	E-6
D901	E-22	Q835	D-5
D902	D-22	Q836	E-3
D905	B-23	Q837	D-2
D906	B-20	Q861	F-9
D907	B-17	Q901	D-23
D908	B-15	Q902	C-14
D921	D-14	Q903	B-17
		Q904	B-21
		Q905	B-23
		Q906	F-14
IC621	K-31		
IC631	B-32		
IC632	D-32		



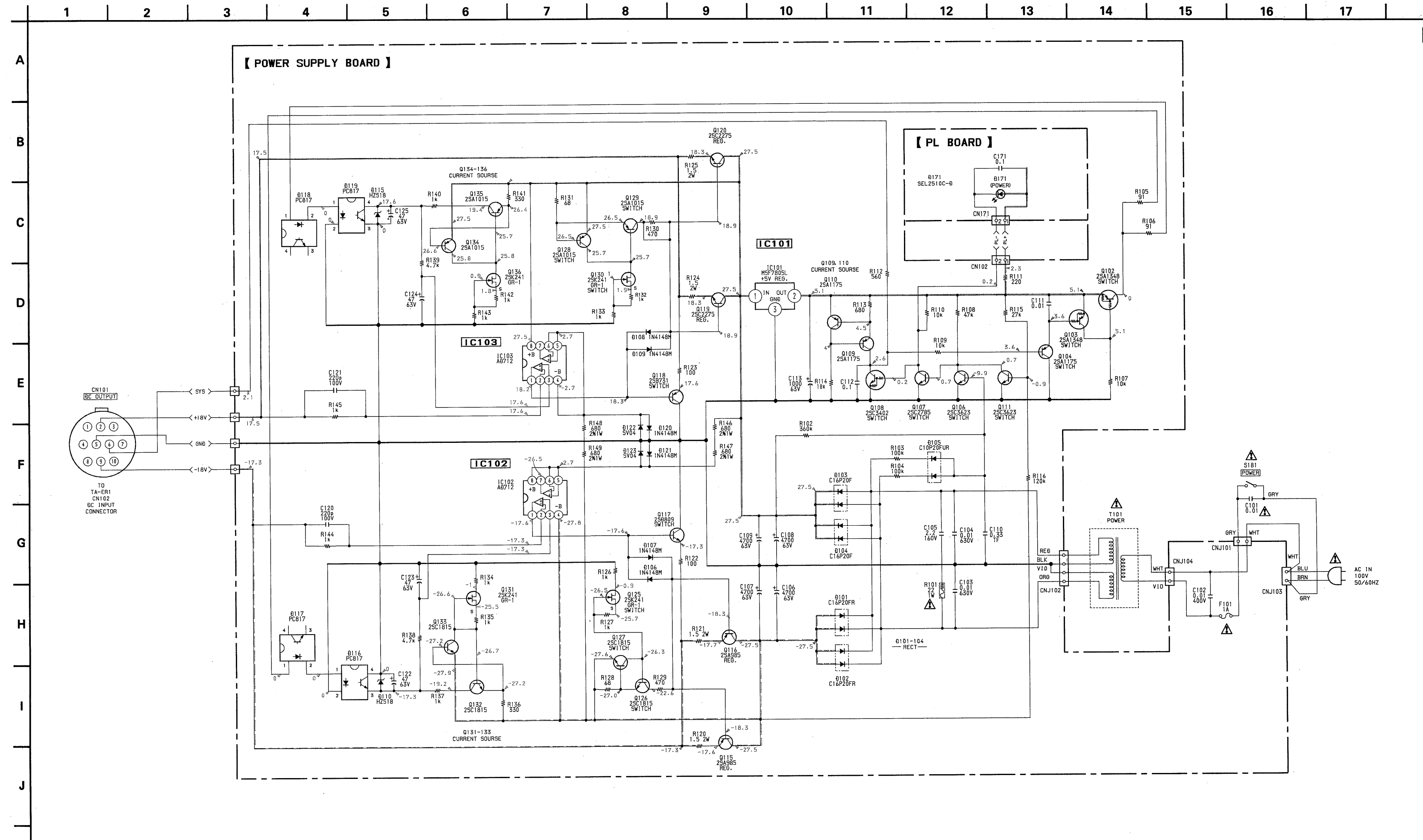
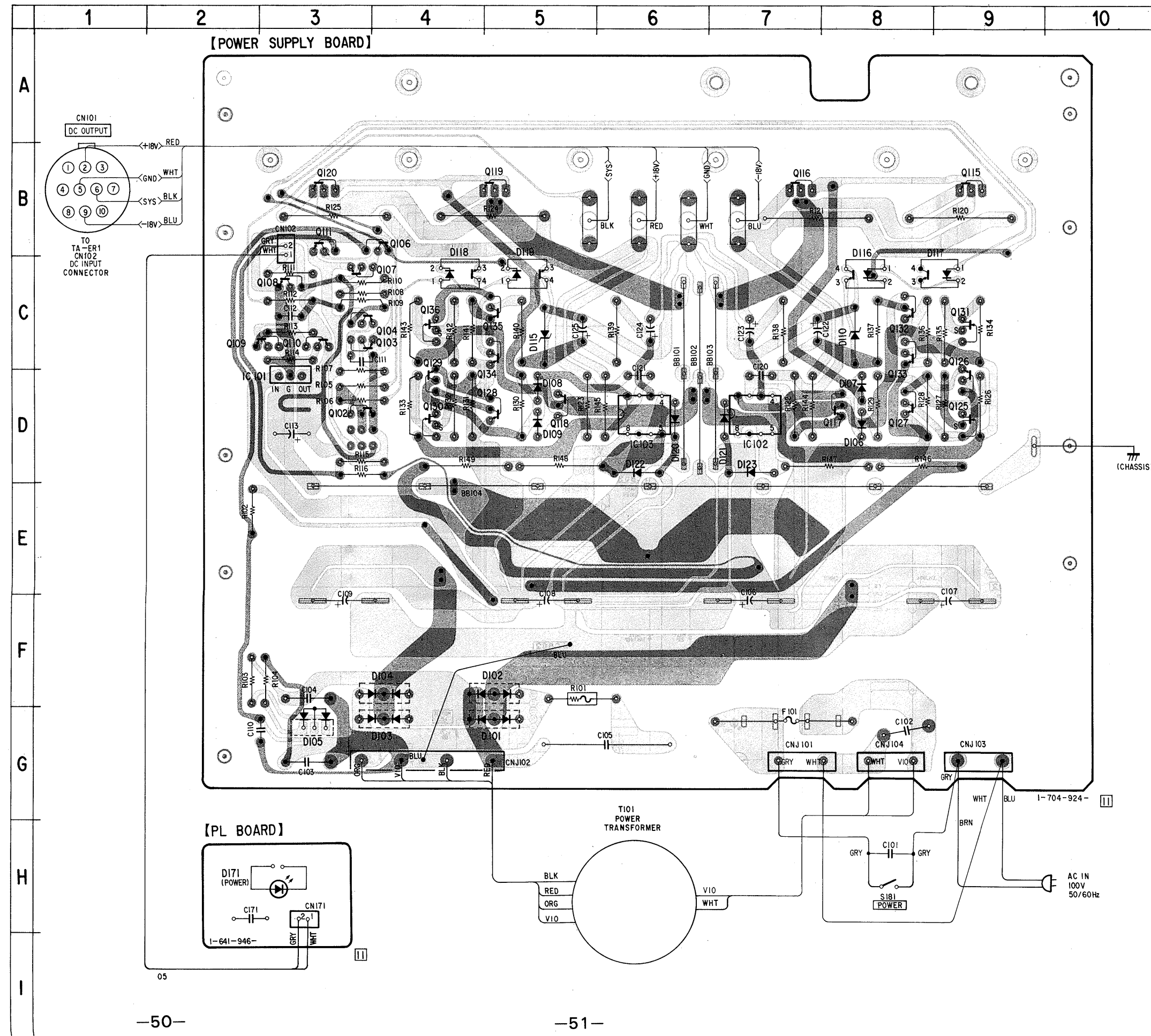


3-10. POWER SUPPLY SECTION PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

• See page 24 for Notes, page 19 for Semiconductor Lead Layouts.

• Semiconductor Location

Ref. No.	Location
D101	G-5
D102	F-5
D103	G-4
D104	F-4
D105	G-3
D106	D-8
D107	D-5
D108	D-5
D109	C-8
D110	C-5
D111	C-8
D112	C-8
D113	C-4
D114	C-5
D115	D-6
D116	D-7
D117	D-3
D118	D-3
D119	D-3
D120	D-3
D121	D-3
D122	D-3
D123	D-3
D124	D-3
D125	D-3
D126	D-3
D127	D-3
D128	D-3
D129	D-3
D130	D-3
D131	D-3
D132	D-3
D133	D-3
D134	D-3
D135	D-3
D136	D-3



SECTION 4

EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.

- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) ... (RED)

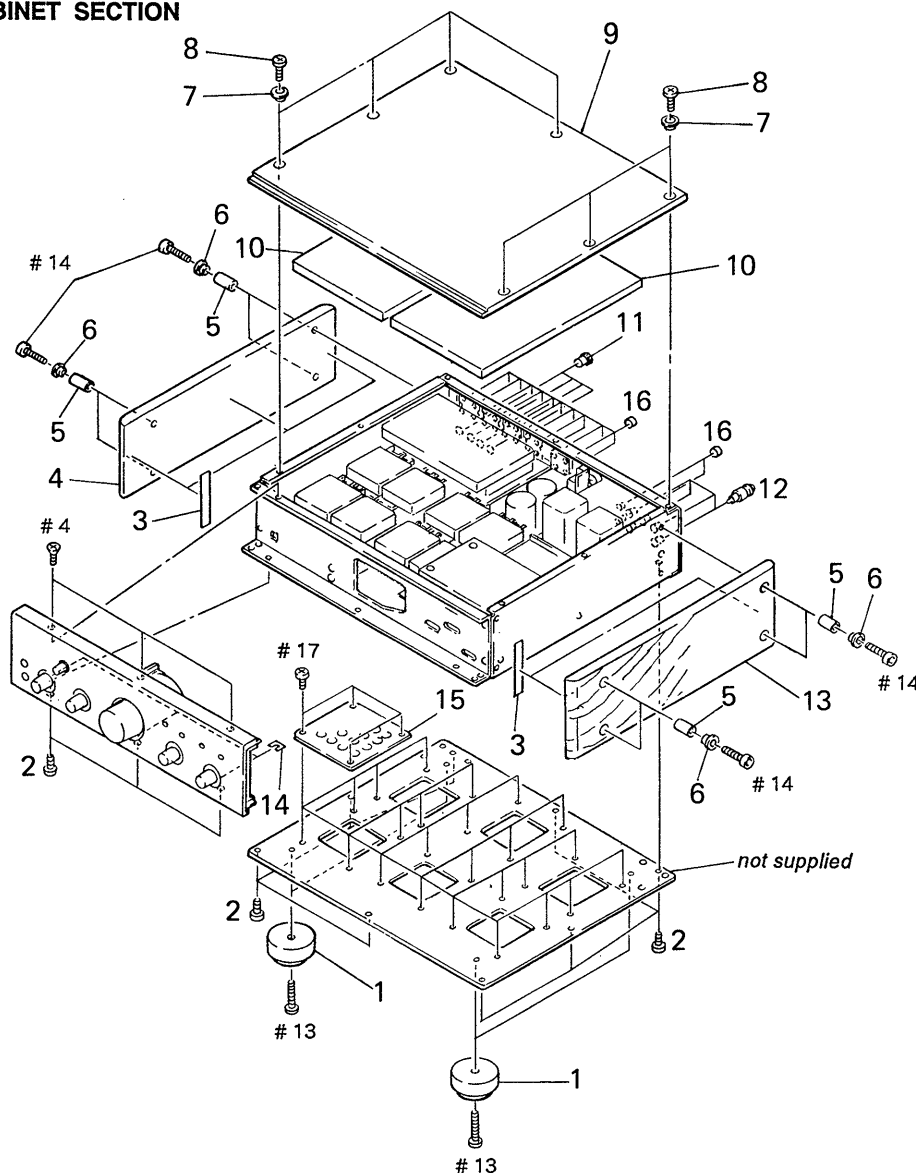
↑ ↑
 Parts Color Cabinet's Color

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.

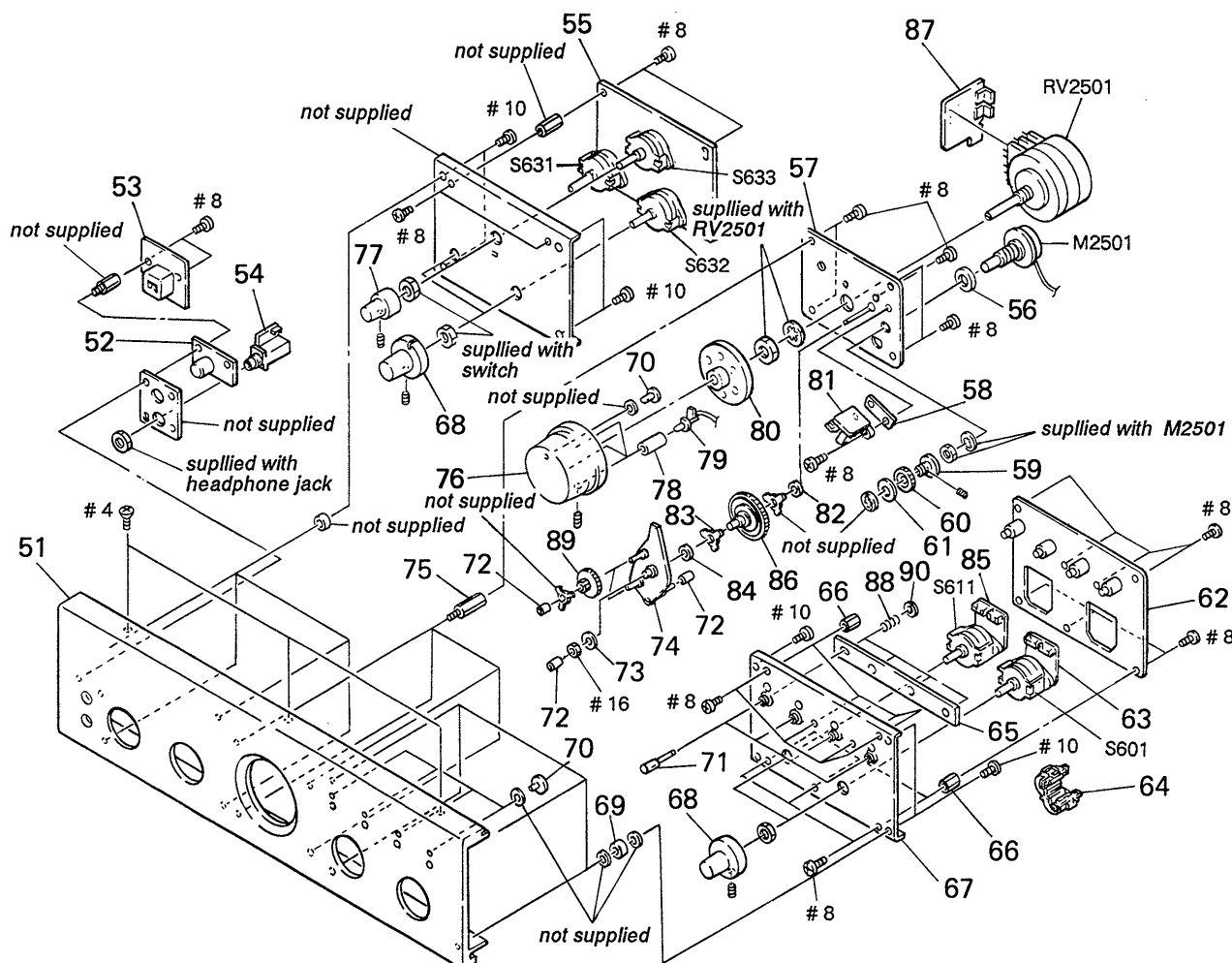
- Hardware (# mark) list is given in the last of this parts list.

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

(1) TA-ER1 CABINET SECTION

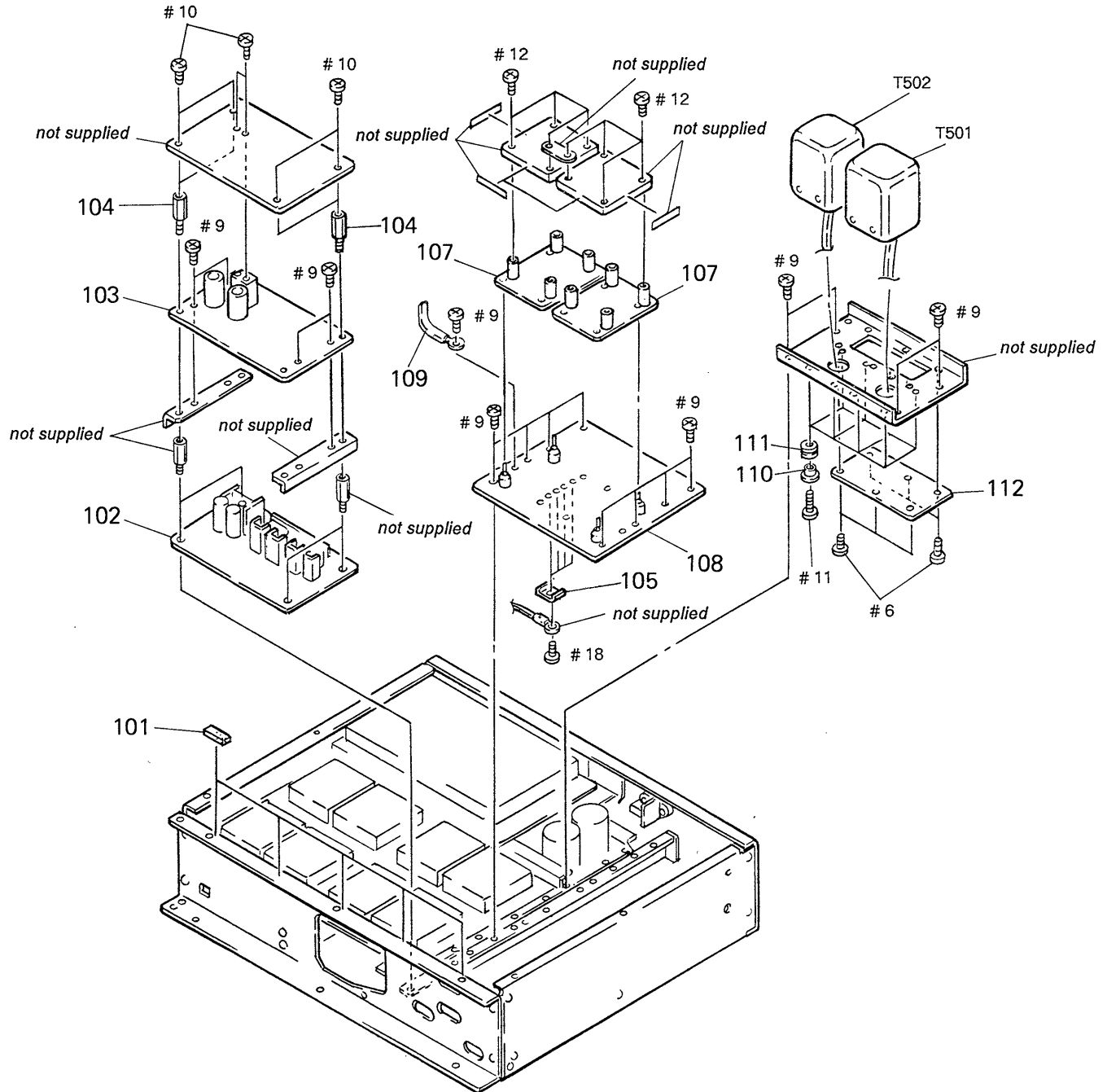
Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
1	X-4942-178-1	FOOT ASSY		* 10	4-924-265-01	ABSORBENT (A), ACOUSTIC	
2	3-703-685-21	SCREW (+BV 3X8)		11	1-691-682-11	CAP, CONNECTOR	
3	9-911-835-XX	CUSHION, F		12	1-691-676-11	PLUG, SHORT	
4	4-949-043-01	PLATE (L), ORNAMENTAL SIDE		13	4-949-042-01	PLATE (R), ORNAMENTAL SIDE	
5	4-949-006-01	SPACER (E)		14	3-544-028-01	SPACER (t=0.3)	
6	4-924-241-01	ESCUTCHEON (B)		14	3-544-028-11	SPACER (t=0.5)	
7	4-949-003-01	ESCUTCHEON		14	3-544-028-21	SPACER	
8	4-924-242-21	SCREW (M3X10), FLAT HEAD		* 15	1-641-950-11	PC BOARD, BOTTOM LID	
* 9	4-949-050-01	PANEL		* 16	1-691-807-11	CAP, PIN JACK	

(2) TA-ER1 FRONT PANEL ASSY SECTION



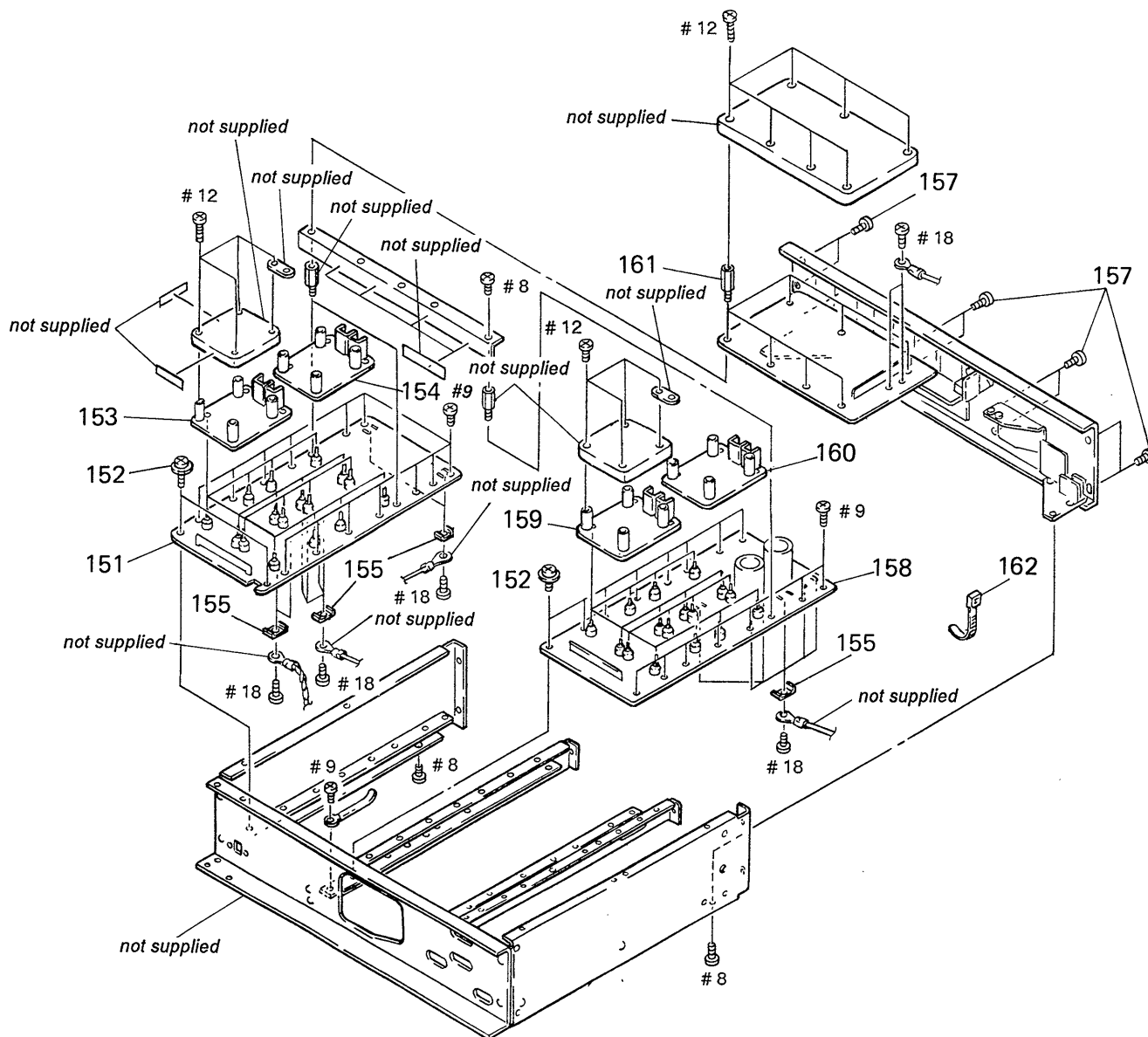
Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
51	4-949-259-01	PANEL, FRONT		74	X-4942-180-1	LEVER ASSY	
52	4-949-256-01	INDICATOR (RC)		* 75	4-949-250-01	BOSS (V)	
* 53	1-641-942-11	EYEBALL BOARD		76	4-949-261-01	KNOB (V)	
* 54	1-641-945-11	HEADPHONE (F) BAORD		77	4-949-029-01	KNOB (SB)	
* 55	A-4345-758-A	ROTARY BOARD, COMPLETE		* 78	4-901-919-00	HOUSE, LED LAMP	
* 56	4-949-276-01	SPACER (M)		* 79	1-641-947-11	INDICATOR BOARD	
* 57	X-4942-182-1	BRACKET (V) ASSY		80	X-4942-179-1	GEAR (V) ASSY	
* 58	4-949-251-01	SPACER (PS)		* 81	1-641-946-11	PC BOARD	
59	4-949-262-01	PULLEY		82	3-701-436-21	WASHER, POLYETHYLENE	
60	4-949-253-01	GEAR (M)		* 83	4-949-275-01	SPRING (B), LEAF	
61	4-949-265-01	SPRING, LEAF		84	3-701-444-01	WASHER, 6	
* 62	A-4345-757-A	CPU BOARD, COMPLETE		* 85	1-641-943-11	SWITCH (L) BOARD	
* 63	1-641-944-11	SWITCH (R) BOARD		86	X-4942-181-1	GEAR (MC) ASSY	
64	1-543-619-41	CORE, RING		* 87	1-641-930-11	VOLUM BOARD	
* 65	4-949-366-01	DAMPER (C)		88	4-915-427-01	SPRING, COMPRESSION	
* 66	4-924-280-01	BOSS (E)		89	4-949-270-01	GEAR (MA)	
67	X-4942-143-1	CHASSIS (TS) ASSY, SUB		M2501	1-541-941-11	MOTOR	
68	4-949-005-01	KNOB (SA)		* RV2501	1-241-752-11	RES. VAR, CARBON 20KX3	
* 69	4-949-027-01	SPACER (SC)		S601	1-692-008-11	SWITCH, ROTARY (INPUT SELECTOR) 8P	
70	4-924-233-01	INDICATOR		S611	1-692-006-11	SWITCH, ROTARY (INPUT SELECTOR) 6P	
71	4-924-295-01	BUTTON (F)		S631	1-692-004-11	SWITCH, ROTARY	
72	4-949-266-01	BUSHING		S632	1-692-005-11	SWITCH, ROTARY	
73	4-949-271-01	GEAR (MB)		S633	1-692-007-11	SWITCH, ROTARY	

(3) TA-ER1 CHASSIS SECTION 1



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
101	9-911-840-XX	CUSHION, RUBBER		* 109	3-701-822-00	HOLDER, WIRE	
* 102	A-4345-591-A	MOTOR DRIVE BOARD, COMPLETE		110	4-949-015-01	COLLAR (ST)	
* 103	A-4345-590-A	LATCH BOARD, COMPLETE		111	4-936-305-01	BUSHING	
* 104	4-949-002-01	BOSS (C)		* 112	1-641-924-11	MC RELAY BOARD	
* 105	4-924-264-21	TERMINAL, MOUNT		T501	1-423-271-11	TRANSFORMER, INPUT	
				T502	1-423-271-11	TRANSFORMER, INPUT	
* 107	A-4345-589-A	EQ UNIT BOARD, COMPLETE					
108	A-4347-964-A	EQ MAIN BOARD, COMPLETE					

(4) TA-ER1 CHASSIS SECTION 2

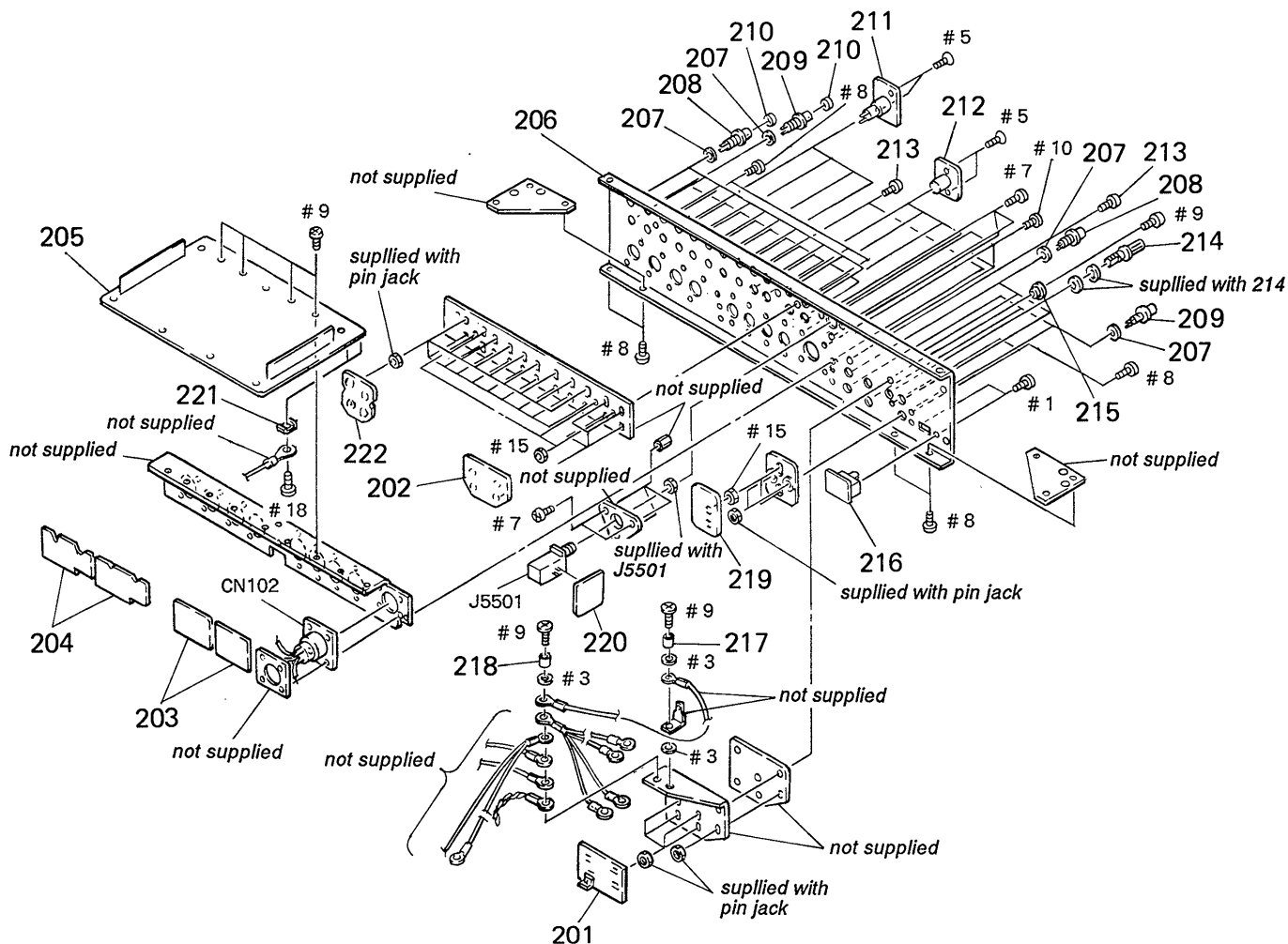


Ref. No.	Part No.	Description
151	A-4347-963-A	INPUT MAIN BOARD, COMPLETE
152	X-4908-910-1	SCREW ASSY (+ BVTT)
* 153	A-4345-584-A	PI UNIT BOARD, COMPLETE
* 154	A-4345-583-A	MI UNIT BOARD, COMPLETE
* 155	4-924-264-21	TERMINAL, MOUNT
157	3-703-685-21	SCREW (+BV 3X8)

Ref. No.	Part No.	Description
* 158	A-4345-585-A	OUT MAIN BOARD, COMPLETE
* 159	A-4345-586-A	PO UNIT BOARD, COMPLETE
* 160	A-4345-587-A	MO UNIT BOARD, COMPLETE
* 161	4-949-000-01	BOSS (B)
162	3-655-653-21	BAND (TAITON), BINDING

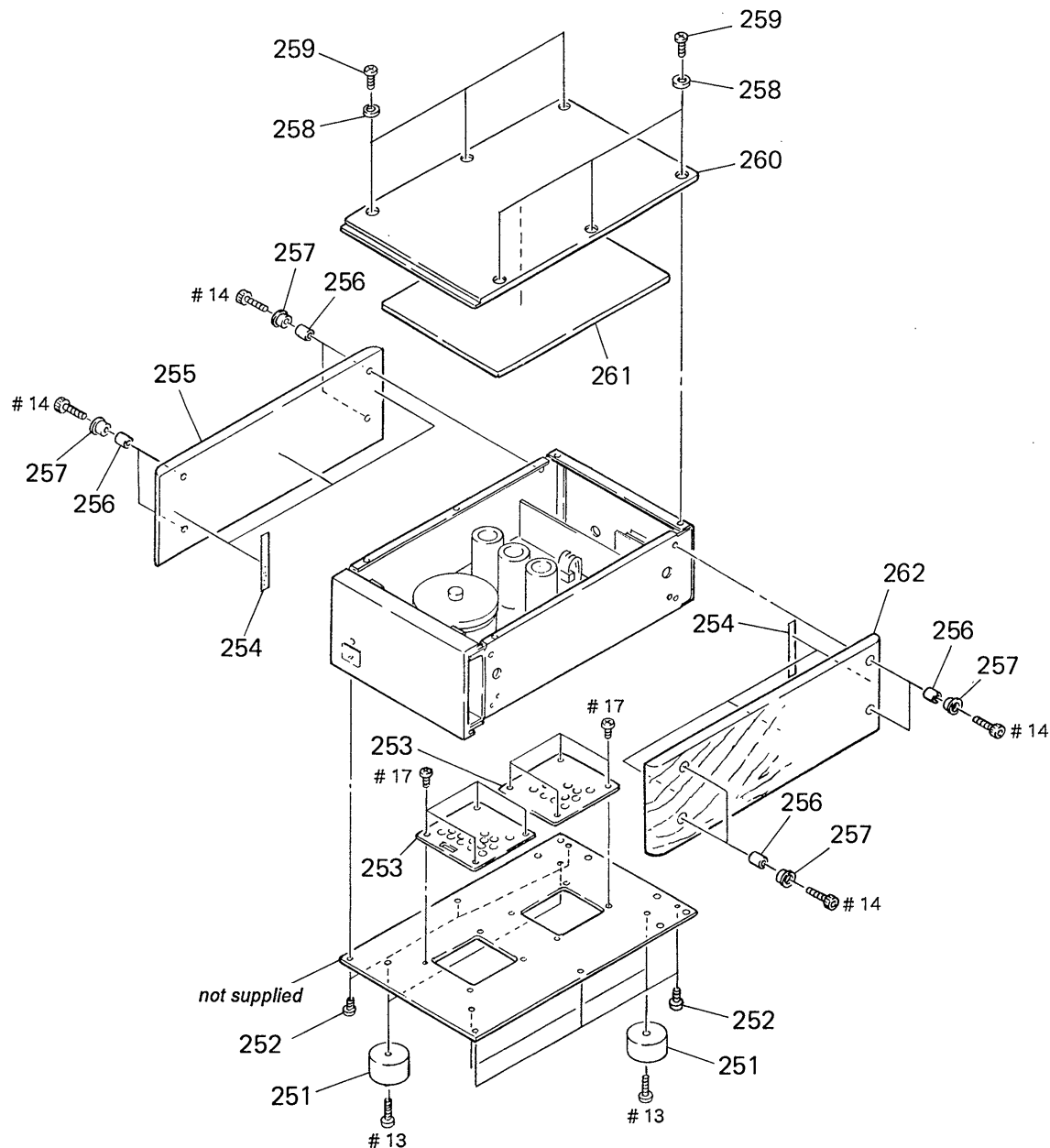
Remark

(5) TA-ER1 REAR PANEL ASSY SECTION



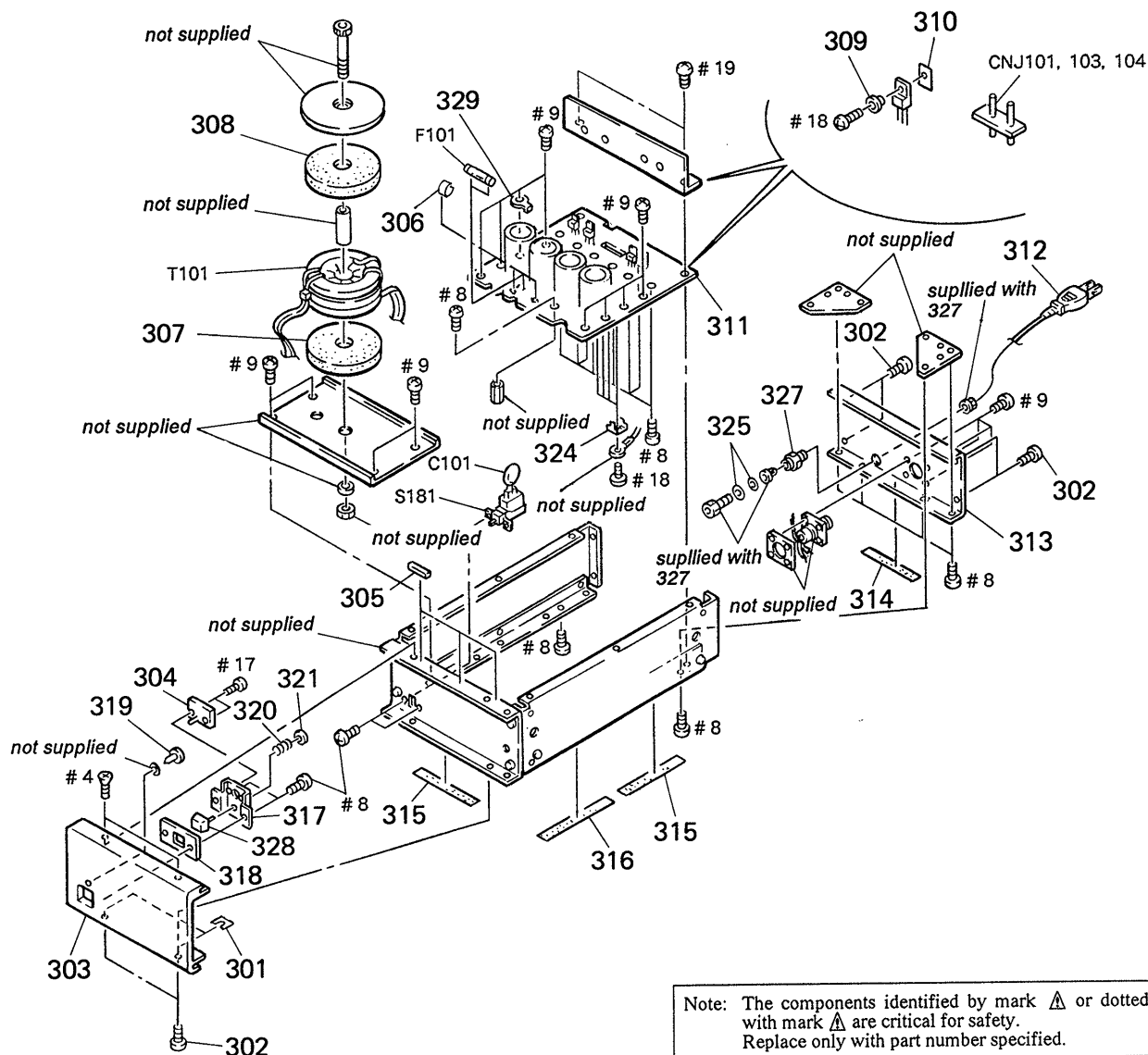
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 201	1-641-935-11	MM IN BOARD		213	3-703-685-21	SCREW (+BV 3X8)	
* 202	1-642-030-11	U OUT BOARD		* 214	4-935-253-01	TERMINAL, SP	
* 203	1-641-931-11	BALANCE OUT NORM BOARD		215	2-371-561-00	BUSHING (P), INSULATING	
* 204	1-641-932-11	BALANCE IN CD BOARD		* 216	1-641-938-11	MCG SWITCH BOARD	
* 205	A-4345-581-A	INPUT RELAY BOARD, COMPLETE		* 217	4-949-021-01	SPACER (D)	
* 206	4-949-044-11	PANEL, BACK		* 218	4-949-022-01	SPACER (C)	
* 207	4-949-030-01	SPACER (B)		* 219	1-641-936-11	MC IN BOARD	
208	1-573-057-21	JACK, PIN 1P		* 220	1-641-937-11	HEADPHONE (R) BOARD	
209	1-573-057-31	JACK, PIN 1P		* 221	4-924-264-21	TERMINAL, MOUNT	
* 210	1-691-807-11	CAP, PIN JACK		* 222	1-641-934-11	U IN BOARD	
211	1-568-917-11	CONNECTOR, CANON (SOCKET) 3P		CN102	1-690-736-11	LEAD (WITH CONNECTOR)	
212	1-569-226-11	CONNECTOR (RECEPTACLE)		J5501	1-507-796-61	JACK (PHONES)	

(6) RPS-ER1 CABINET SECTION



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
251	X-4942-178-1	FOOT ASSY		257	4-924-241-01	ESCUTCHEON (B)	
252	3-703-685-21	SCREW (+BV 3X8)		258	4-949-003-01	ESCUTCHEON	
* 253	1-641-950-11	PC BOARD, BOTTOM LID		259	4-924-242-21	SCREW (M3X10), FLAT HEAD	
254	9-911-835-XX	CUSHION, F		* 260	4-949-041-01	PANEL (D)	
255	4-949-043-01	PLATE (L), ORNAMENTAL SIDE		* 261	4-924-265-01	ABSORBENT (A), ACOUSTIC	
256	4-949-006-01	SPACER (E)		262	4-949-042-01	PLATE (R), ORNAMENTAL SIDE	

(7) RPS-ER1 CHASSIS SECTION



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	Ref.No.	Part No.	Description	Remark
301	3-544-028-01	SPACER (t=0.3)		315	3-645-258-00	CLOTH, GUIDE, C	
301	3-544-028-11	SPACER (t=0.5)		316	3-831-441-11	SPACER (10X160X0.5)	
301	3-544-028-21	SPACER		* 317	X-4924-202-1	BRACKET (E) ASSY	
302	3-703-685-21	SCREW (+BV 3X8)		318	4-924-245-01	PLATE (E), ORNAMENTAL	
303	4-949-047-01	PANEL (D), FRONT		319	4-924-233-01	INDICATOR	
* 304	1-641-939-11	PL BOARD		* 320	4-880-426-00	SPRING, COMPRESSION	
305	9-911-840-XX	CUSHION, RUBBER		321	4-862-338-00	RING, STOPPER	
306	1-533-183-11	HOLDER, FUSE		* 324	4-924-264-21	TERMINAL, MOUNT	
* 307	4-949-026-01	CUSHION (DA)		325	4-916-726-01	WASHER	
* 308	4-949-025-01	CUSHION (DB)		* 327	X-4885-924-1	BUSHING ASSY, CORD	
309	2-371-561-00	BUSHING (P), INSULATING		328	X-4924-201-1	KNOB (A) ASSY	
* 310	4-916-721-01	SHEET, INSULATING		* 329	4-870-539-00	PLATE, GROUND	
* 311	A-4345-963-A	POWER BOARD, COMPLETE		▲C101	1-161-744-00	CAP, CERAMIC 1000PF V	
▲312	1-559-271-11	CORD, POWER		▲F101	1-532-078-00	FUSE, TIME-LAG 1A	
* 313	4-949-046-01	PANEL (D), BACK		▲S181	1-554-538-00	SWITCH, PUSH (AC POWER) (1 KEY)	
314	9-911-835-XX	CUSHION, F		▲T101	1-450-754-11	TRANSFORMER, POWER	

SECTION 5
ELECTRICAL PARTS LIST

BALANCE IN CD

BALANCE IN LINE

BALANCE OUT INV

BALANCE OUT NORM

CPU

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 and -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 including parts by reference number, please include the board name.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	1-641-932-11	BALANCE IN CD BOARD *****		C903	1-164-489-11	CERAMIC CHIP 0.22uF	10% 16V
		< CONNECTOR >		C904	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
* CN3001	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P		C905	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
* CN3002	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P		C906	1-163-234-11	CERAMIC CHIP 20PF	5% 50V
*****				C907	1-163-234-11	CERAMIC CHIP 20PF	5% 50V
	1-641-932-11	BALANCE IN LINE BOARD *****		C908	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
		< CONNECTOR >		C909	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
* CN3003	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P		C910	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
* CN3004	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P		C911	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
*****				C912	1-124-122-11	ELECT 100uF	20% 50V
	1-641-931-11	BALANCE OUT INV BOARD *****		C913	1-124-122-11	ELECT 100uF	20% 50V
		< CONNECTOR >		C914	1-124-122-11	ELECT 100uF	20% 50V
* CN4503	1-573-863-11	PIN, CONNECTOR (PC BOARD) 4P		C915	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
*****				C916	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
	1-641-931-11	BALANCE OUT NORM BOARD *****		C921	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
		< CONNECTOR >		C922	1-124-122-11	ELECT 100uF	20% 50V
* CN4502	1-573-863-11	PIN, CONNECTOR (PC BOARD) 4P		C923	1-124-122-11	ELECT 100uF	20% 50V
*****				C924	1-124-122-11	ELECT 100uF	20% 50V
	A-4345-757-A	CPU BOARD, COMPLETE *****				< CONNECTOR >	
		< CAPACITOR >		* CN901	1-564-506-11	PLUG, CONNECTOR 3P	
C901	1-163-275-11	CERAMIC CHIP 0.001uF	5% 50V	* CN902	1-564-505-11	PLUG, CONNECTOR 2P	
C902	1-163-251-11	CERAMIC CHIP 100PF	5% 50V			< DIODE >	
				D901	8-719-801-78	DIODE 1SS184	
				D902	8-719-801-78	DIODE 1SS184	
				D905	8-719-301-58	DIODE SEL2910D-D	
				D906	8-719-301-58	DIODE SEL2910D-D	
				D907	8-719-301-58	DIODE SEL2910D-D	
				D908	8-719-301-58	DIODE SEL2910D-D	
				D921	8-719-801-78	DIODE 1SS184	
						< IC >	
				IC901	8-759-047-59	IC HD6475208F-001	
				IC902	8-759-500-31	IC X24C01P	
				IC903	8-759-233-16	IC TC74HC373AF	
				IC904	8-759-233-16	IC TC74HC373AF	
				IC905	8-759-925-74	IC SN74HC04ANS	

CPU

EQ MAIN

Ref. No.	Part No.	Description	Remark
< TRANSISTOR >			
Q901	8-729-805-65	TRANSISTOR 2SA1344	
Q902	8-729-805-41	TRANSISTOR 2SC3398	
Q903	8-729-805-41	TRANSISTOR 2SC3398	
Q904	8-729-805-41	TRANSISTOR 2SC3398	
Q905	8-729-805-41	TRANSISTOR 2SC3398	
Q906	8-729-805-41	TRANSISTOR 2SC3398	
< RESISTOR >			
R901	1-216-031-00	METAL CHIP 180 5% 1/10W	
R902	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R903	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R904	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R905	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R906	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R907	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R908	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R909	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R910	1-216-033-00	METAL CHIP 220 5% 1/10W	
R911	1-216-033-00	METAL CHIP 220 5% 1/10W	
R912	1-216-033-00	METAL CHIP 220 5% 1/10W	
R913	1-216-033-00	METAL CHIP 220 5% 1/10W	
R914	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R915	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R916	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R917	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R918	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R919	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R920	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R921	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R922	1-216-041-00	METAL CHIP 470 5% 1/10W	
< SWITCH >			
S901	1-570-472-11	SWITCH, KEY BOARD (ATTM)	
S902	1-570-472-11	SWITCH, KEY BOARD (PHASE)	
S903	1-570-472-11	SWITCH, KEY BOARD (MODE)	
S904	1-570-472-11	SWITCH, KEY BOARD (MUTE)	
< OSCILLATOR >			
X901	1-577-121-11	VIBRATOR, CRYSTAL 20MHz	

A-4347-964-A EQ MAIN BOARD, COMPLETE

3-831-441-XX CUSHION

* 4-924-264-21 TERMINAL, MOUNT

* 4-949-007-01 DAMPER (B)

Ref. No.	Part No.	Description	Remark
< BUSBAR >			
* BB501	1-560-242-21	BUS BAR 4P	
* BB502	1-560-242-21	BUS BAR 4P	
* BB503	4-908-951-01	REINFORCEMENT (B), PWB	
* BB504	4-908-951-01	REINFORCEMENT (B), PWB	
< CAPACITOR >			
C551	1-137-349-11	FILM 0.47uF 5% 400V	
C552	1-136-810-11	FILM 220PF 5% 100V	
C553	1-107-352-11	MICA 0.016uF 2% 500V	
C554	1-107-353-11	MICA 0.056uF 2% 500V	
C555	1-107-352-11	MICA 0.016uF 2% 500V	
C556	1-107-353-11	MICA 0.056uF 2% 500V	
C557	1-136-810-11	FILM 220PF 5% 100V	
C558	1-137-349-11	FILM 0.47uF 5% 400V	
C559	1-136-808-11	FILM 100PF 5% 100V	
C560	1-136-808-11	FILM 100PF 5% 100V	
C565	1-137-348-11	FILM 0.01uF 10% 400V	
C566	1-137-348-11	FILM 0.01uF 10% 400V	
C567	1-137-348-11	FILM 0.01uF 10% 400V	
C568	1-137-348-11	FILM 0.01uF 10% 400V	
C593	1-129-702-00	FILM 0.001uF 5% 630V	
C594	1-129-702-00	FILM 0.001uF 5% 630V	
< CONNECTOR >			
* CN501	1-564-340-00	PIN, CONNECTOR 6P	
* CN505	1-564-336-00	PIN, CONNECTOR 2P	
* CN506	1-564-505-11	PLUG, CONNECTOR 2P	
* CN510	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P	
* CN551	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P	
< JACK >			
* CNJ501	1-573-899-11	PIN, CONNECTOR (PC BOARD) 8P	
* CNJ502	1-573-899-11	PIN, CONNECTOR (PC BOARD) 8P	
< DIODE >			
D553	8-719-987-63	DIODE 1N4148M	
D554	8-719-987-63	DIODE 1N4148M	
D556	8-719-987-63	DIODE 1N4148M	
D557	8-719-987-63	DIODE 1N4148M	
< IC >			
IC551	8-759-067-05	IC AD712JNS	
IC552	8-759-067-05	IC AD712JNS	
< COIL >			
L551	1-424-397-11	COIL, CHOKE 200uH	
L552	1-424-397-11	COIL, CHOKE 200uH	
L553	1-424-397-11	COIL, CHOKE 200uH	
L554	1-424-397-11	COIL, CHOKE 200uH	

EQ MAIN

EQ UNIT

EYEBALL

Ref. No.	Part No.	Description	Remark		
< RESISTOR >					
R551	1-259-724-11	CARBON	100K	2%	1W
R552	1-259-724-11	CARBON	100K	2%	1W
R553	1-247-717-11	CARBON	2.2K	5%	1/4W
R554	1-247-717-11	CARBON	2.2K	5%	1/4W
R555	1-260-221-61	CARBON	100	0.50%	1W
R556	1-260-221-61	CARBON	100	0.50%	1W
R557	1-259-718-11	CARBON	56K	2%	1W
R558	1-249-180-11	CARBON	56	5%	1/3W
R559	1-259-718-11	CARBON	56K	2%	1W
R560	1-259-748-11	CARBON	1M	2%	1W
R561	1-259-748-11	CARBON	1M	2%	1W
R562	1-249-210-11	CARBON	1K	5%	1/3W
R563	1-249-210-11	CARBON	1K	5%	1/3W
R564	1-249-180-11	CARBON	56	5%	1/3W
R570	1-259-692-11	CARBON	4.7K	2%	1W
R571	1-259-692-11	CARBON	4.7K	2%	1W
R574	1-259-724-11	CARBON	100K	2%	1W
R575	1-259-724-11	CARBON	100K	2%	1W
< RELAY >					
RY552	1-515-887-11	RELAY			
RY553	1-515-887-11	RELAY			
RY554	1-515-887-11	RELAY			
RY555	1-515-887-11	RELAY			
RY556	1-515-614-11	RELAY			
RY558	1-515-614-11	RELAY			

*	A-4345-589-A	EQ UNIT BOARD, COMPLETE	*****		
< CAPACITOR >					
C501	1-136-813-11	FILM	680PF	5%	100V
C502	1-136-808-11	FILM	100PF	5%	100V
C514	1-136-810-11	FILM	220PF	5%	100V
< DIODE >					
D501	8-719-300-04	DIODE MV-104V			
< TRANSISTOR >					
Q501	8-729-203-21	TRANSISTOR 2SK389-GR			
Q502	8-729-230-49	TRANSISTOR 2SC2712-G			
Q503	8-729-230-49	TRANSISTOR 2SC2712-G			
Q504	8-729-232-69	TRANSISTOR 2SK208GR3			
Q505	8-729-232-69	TRANSISTOR 2SK208GR3			
Q506	8-729-216-22	TRANSISTOR 2SA1162			
Q507	8-729-216-22	TRANSISTOR 2SA1162			
Q508	8-729-232-69	TRANSISTOR 2SK208GR3			
Q509	8-729-230-49	TRANSISTOR 2SC2712-G			

Ref. No.	Part No.	Description	Remark		
Q510	8-729-230-49	TRANSISTOR 2SC2712-G			
Q511	8-729-232-69	TRANSISTOR 2SK208GR3			
Q512	8-729-230-49	TRANSISTOR 2SC2712-G			
Q513	8-729-230-49	TRANSISTOR 2SC2712-G			
Q514	8-729-216-22	TRANSISTOR 2SA1162			
Q515	8-729-216-22	TRANSISTOR 2SA1162			
Q516	8-729-216-22	TRANSISTOR 2SA1162			
Q517	8-729-230-49	TRANSISTOR 2SC2712-G			
Q518	8-729-230-49	TRANSISTOR 2SC2712-G			
Q519	8-729-321-35	TRANSISTOR 2SK213			
Q520	8-729-307-65	TRANSISTOR 2SJ76			
< RESISTOR >					
R501	1-249-215-11	CARBON	1.6K	5%	1/3W
R502	1-249-215-11	CARBON	1.6K	5%	1/3W
R503	1-249-199-11	CARBON	360	5%	1/3W
R504	1-249-192-11	CARBON	180	5%	1/3W
R505	1-249-180-11	CARBON	56	5%	1/3W
R506	1-249-210-11	CARBON	1K	5%	1/3W
R507	1-249-234-11	CARBON	10K	5%	1/3W
R508	1-249-234-11	CARBON	10K	5%	1/3W
R509	1-249-218-11	CARBON	2.2K	5%	1/3W
R510	1-249-217-11	CARBON	2K	5%	1/3W
R511	1-249-194-11	CARBON	220	5%	1/3W
R515	1-249-199-11	CARBON	360	5%	1/3W
R517	1-249-192-11	CARBON	180	5%	1/3W
R518	1-249-192-11	CARBON	180	5%	1/3W
R519	1-249-212-11	CARBON	1.2K	5%	1/3W
R520	1-249-232-11	CARBON	8.2K	5%	1/3W
R521	1-249-232-11	CARBON	8.2K	5%	1/3W
R522	1-249-234-11	CARBON	10K	5%	1/3W
R523	1-249-217-11	CARBON	2K	5%	1/3W
R524	1-249-212-11	CARBON	1.2K	5%	1/3W
< VARIABLE RESISTOR >					
RV501	1-224-252-XX	RES, ADJ, METAL GLAZE 10K			

*	1-641-942-11	EYEBALL BOARD			

< CAPACITOR >					
C621	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C622	1-124-122-11	ELECT	100uF	20%	50V
< CONNECTOR >					
* CN621	1-564-337-00	PIN, CONNECTOR 3P			
< IC >					
IC621	8-749-920-59	IC A1QH3020S			

EYEBALL

HEADPHONE (F)

HEADPHONE (R)

INDICATOR

LATCH

Ref.No.	Part No.	Description	Remark
< RESISTOR >			
R652	1-259-412-11	CARBON 220 5% 1/6W	

*	1-641-945-11	HEADPHONE (F) BOARD	

< CAPACITOR >			
C4505	1-136-478-11	FILM 470PF 5% 630V	
C4506	1-136-478-11	FILM 470PF 5% 630V	
< CONNECTOR >			
* CN4504	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P	
< JACK >			
J4501	1-568-498-71	JACK, LARGE TYPE (PHONES)	
< COIL >			
L4505	1-424-397-11	COIL, CHOKE 200uH	
L4506	1-424-397-11	COIL, CHOKE 200uH	

*	1-641-937-11	HEADPHONE (R) BOARD	

< CAPACITOR >			
C5501	1-136-478-11	FILM 470PF 5% 630V	
C5502	1-136-478-11	FILM 470PF 5% 630V	
< CONNECTOR >			
* CN5515	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P	
< JACK >			
J5501	1-507-796-61	JACK (PHONES)	
< COIL >			
L5501	1-424-397-11	COIL, CHOKE 200uH	
L5502	1-424-397-11	COIL, CHOKE 200uH	

*	1-641-947-11	INDICATOR BOARD	

< DIODE >			
D771	8-719-301-39	LED SEL2210S	

Ref.No.	Part No.	Description	Remark
*	A-4345-590-A	LATCH BOARD, COMPLETE	

< CAPACITOR >			
C701	1-124-748-11	ELECT 22uF 20% 100V	
C702	1-124-748-11	ELECT 22uF 20% 100V	
C703	1-126-066-11	ELECT 470uF 20% 63V	
C704	1-126-066-11	ELECT 470uF 20% 63V	
C705	1-164-159-11	CERAMIC 0.1uF 50V	
C706	1-164-159-11	CERAMIC 0.1uF 50V	
C710	1-164-159-11	CERAMIC 0.1uF 50V	
C711	1-164-159-11	CERAMIC 0.1uF 50V	
C712	1-164-159-11	CERAMIC 0.1uF 50V	
C713	1-164-159-11	CERAMIC 0.1uF 50V	
C714	1-164-159-11	CERAMIC 0.1uF 50V	
C715	1-123-381-00	ELECT 2.2uF 20% 100V	
< CONNECTOR >			
CN701	1-564-507-11	PLUG, CONNECTOR 4P	
CN702	1-564-104-00	PIN, CONNECTOR 3P	
* CN703	1-564-508-11	PLUG, CONNECTOR 5P	
* CN704	1-564-342-61	PIN, CONNECTOR 8P	
* CN705	1-564-339-00	PIN, CONNECTOR 5P	
* CN710	1-564-339-61	PIN, CONNECTOR 5P	
* CN711	1-569-997-11	PIN, CONNECTOR (PC BOARD) 10P	
* CN712	1-564-340-00	PIN, CONNECTOR 6P	
* CN713	1-564-342-11	PIN, CONNECTOR 8P	
* CN714	1-564-341-21	PIN, CONNECTOR 7P	
* CN715	1-564-342-61	PIN, CONNECTOR 8P	
* CN716	1-569-995-11	PIN, CONNECTOR (PC BOARD) 8P	
* CN717	1-564-336-00	PIN, CONNECTOR 2P	
(Serial No. 4500051 and later)			
< DIODE >			
D701	8-719-987-63	DIODE 1N4148M	
< IC >			
IC701	8-759-231-53	IC M5F7805	
IC702	8-759-603-69	IC M51957BL	
IC710	8-759-926-66	IC SN74HC373ANS	
IC711	8-759-926-66	IC SN74HC373ANS	
IC712	8-759-926-66	IC SN74HC373ANS	
IC713	8-759-926-66	IC SN74HC373ANS	
IC714	8-759-926-66	IC SN74HC373ANS	
< COIL >			
L701	1-408-916-11	INDUCTOR 2.2mH	

LATCH

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< TRANSISTOR >							
Q701	8-729-230-49	TRANSISTOR 2SC2712-G		Q758	8-729-805-65	TRANSISTOR 2SA1344	
Q702	8-729-805-65	TRANSISTOR 2SA1344		Q759	8-729-805-65	TRANSISTOR 2SA1344	
Q710	8-729-805-41	TRANSISTOR 2SC3398		Q760	8-729-805-65	TRANSISTOR 2SA1344	
Q711	8-729-805-41	TRANSISTOR 2SC3398		Q761	8-729-805-65	TRANSISTOR 2SA1344	
Q712	8-729-805-41	TRANSISTOR 2SC3398		Q762	8-729-805-65	TRANSISTOR 2SA1344	
Q713	8-729-805-41	TRANSISTOR 2SC3398		Q763	8-729-805-65	TRANSISTOR 2SA1344	
Q714	8-729-805-41	TRANSISTOR 2SC3398		Q764	8-729-805-65	TRANSISTOR 2SA1344	
Q715	8-729-805-41	TRANSISTOR 2SC3398		Q765	8-729-805-65	TRANSISTOR 2SA1344	
Q716	8-729-805-41	TRANSISTOR 2SC3398		Q766	8-729-805-65	TRANSISTOR 2SA1344	
Q717	8-729-805-41	TRANSISTOR 2SC3398		Q768	8-729-805-65	TRANSISTOR 2SA1344	
Q718	8-729-805-41	TRANSISTOR 2SC3398		Q769	8-729-805-65	TRANSISTOR 2SA1344	
Q719	8-729-805-41	TRANSISTOR 2SC3398		Q770	8-729-805-65	TRANSISTOR 2SA1344	
Q720	8-729-805-41	TRANSISTOR 2SC3398		Q771	8-729-805-65	TRANSISTOR 2SA1344	
Q721	8-729-805-41	TRANSISTOR 2SC3398		Q772	8-729-805-65	TRANSISTOR 2SA1344	
Q722	8-729-805-41	TRANSISTOR 2SC3398		Q773	8-729-805-65	TRANSISTOR 2SA1344	
Q723	8-729-805-41	TRANSISTOR 2SC3398		Q774	8-729-805-65	TRANSISTOR 2SA1344	
Q724	8-729-805-41	TRANSISTOR 2SC3398		Q775	8-729-805-65	TRANSISTOR 2SA1344	
Q725	8-729-805-41	TRANSISTOR 2SC3398		Q776	8-729-805-65	TRANSISTOR 2SA1344	
Q727	8-729-805-41	TRANSISTOR 2SC3398		Q777	8-729-805-65	TRANSISTOR 2SA1344	
Q728	8-729-805-41	TRANSISTOR 2SC3398		Q778	8-729-805-65	TRANSISTOR 2SA1344	
Q729	8-729-805-41	TRANSISTOR 2SC3398		Q779	8-729-805-65	TRANSISTOR 2SA1344	
Q730	8-729-805-41	TRANSISTOR 2SC3398		Q780	8-729-805-65	TRANSISTOR 2SA1344	
Q731	8-729-805-41	TRANSISTOR 2SC3398		Q781	8-729-805-65	TRANSISTOR 2SA1344	
Q732	8-729-805-41	TRANSISTOR 2SC3398		Q782	8-729-805-65	TRANSISTOR 2SA1344	
Q733	8-729-805-41	TRANSISTOR 2SC3398		Q783	8-729-805-65	TRANSISTOR 2SA1344	
Q734	8-729-805-41	TRANSISTOR 2SC3398		Q784	8-729-805-65	TRANSISTOR 2SA1344	
Q735	8-729-805-41	TRANSISTOR 2SC3398		Q785	8-729-805-65	TRANSISTOR 2SA1344	
Q736	8-729-805-41	TRANSISTOR 2SC3398		Q786	8-729-805-65	TRANSISTOR 2SA1344	
Q737	8-729-805-41	TRANSISTOR 2SC3398		Q787	8-729-805-65	TRANSISTOR 2SA1344	
Q738	8-729-805-41	TRANSISTOR 2SC3398		Q788	8-729-805-65	TRANSISTOR 2SA1344	
Q739	8-729-805-41	TRANSISTOR 2SC3398		Q789	8-729-805-65	TRANSISTOR 2SA1344	
Q740	8-729-805-41	TRANSISTOR 2SC3398		Q790	8-729-805-65	TRANSISTOR 2SA1344	
Q741	8-729-805-41	TRANSISTOR 2SC3398		< RESISTOR >			
Q742	8-729-805-41	TRANSISTOR 2SC3398		R701	1-259-438-11	CARBON 2.7K 5%	1/6W
Q743	8-729-805-41	TRANSISTOR 2SC3398		R702	1-259-428-11	CARBON 1K 5%	1/6W
Q744	8-729-805-41	TRANSISTOR 2SC3398		R703	1-259-476-11	CARBON 100K 5%	1/6W
Q745	8-729-805-41	TRANSISTOR 2SC3398		R704	1-259-466-11	CARBON 39K 5%	1/6W
Q746	8-729-805-41	TRANSISTOR 2SC3398		R710	1-259-402-11	CARBON 82 5%	1/6W
Q747	8-729-805-41	TRANSISTOR 2SC3398		R711	1-259-402-11	CARBON 82 5%	1/6W
Q748	8-729-805-41	TRANSISTOR 2SC3398		R712	1-259-420-11	CARBON 470 5%	1/6W
Q749	8-729-805-41	TRANSISTOR 2SC3398		R713	1-259-413-11	CARBON 240 5%	1/6W
Q750	8-729-230-49	TRANSISTOR 2SC2712-G		R714	1-259-413-11	CARBON 240 5%	1/6W
Q751	8-729-805-65	TRANSISTOR 2SA1344		R715	1-259-413-11	CARBON 240 5%	1/6W
Q752	8-729-805-65	TRANSISTOR 2SA1344		R716	1-259-413-11	CARBON 240 5%	1/6W
Q753	8-729-805-65	TRANSISTOR 2SA1344		R717	1-259-420-11	CARBON 470 5%	1/6W
Q754	8-729-805-65	TRANSISTOR 2SA1344		R718	1-259-413-11	CARBON 240 5%	1/6W
Q755	8-729-805-65	TRANSISTOR 2SA1344		R719	1-246-455-11	CARBON 180 5%	1/4W
Q756	8-729-805-65	TRANSISTOR 2SA1344		R720	1-259-413-11	CARBON 240 5%	1/6W
Q757	8-729-805-65	TRANSISTOR 2SA1344		R721	1-259-420-11	CARBON 470 5%	1/6W

LATCH

MC IN

MC RELAY

MCG SWITCH

MI UNIT

Ref.No.	Part No.	Description	Remark		
R722	1-259-413-11	CARBON	240	5%	1/6W
R723	1-259-413-11	CARBON	240	5%	1/6W
R724	1-259-413-11	CARBON	240	5%	1/6W
R725	1-259-420-11	CARBON	470	5%	1/6W
R726	1-259-413-11	CARBON	240	5%	1/6W
R727	1-259-396-11	CARBON	47	5%	1/6W
R728	1-259-420-11	CARBON	470	5%	1/6W
R729	1-259-402-11	CARBON	82	5%	1/6W
R730	1-259-402-11	CARBON	82	5%	1/6W
R731	1-259-402-11	CARBON	82	5%	1/6W
R732	1-259-402-11	CARBON	82	5%	1/6W
R733	1-259-420-11	CARBON	470	5%	1/6W
R734	1-259-420-11	CARBON	470	5%	1/6W
R735	1-259-420-11	CARBON	470	5%	1/6W
R736	1-259-420-11	CARBON	470	5%	1/6W
R737	1-259-413-11	CARBON	240	5%	1/6W
R738	1-259-413-11	CARBON	240	5%	1/6W
R739	1-259-402-11	CARBON	82	5%	1/6W
R740	1-259-403-11	CARBON	91	5%	1/6W
R741	1-259-403-11	CARBON	91	5%	1/6W
R742	1-259-403-11	CARBON	91	5%	1/6W
R743	1-259-403-11	CARBON	91	5%	1/6W
R744	1-259-413-11	CARBON	240	5%	1/6W
R745	1-259-417-11	CARBON	360	5%	1/6W
R746	1-259-403-11	CARBON	91	5%	1/6W
R747	1-259-403-11	CARBON	91	5%	1/6W
R748	1-259-417-11	CARBON	360	5%	1/6W
R749	1-259-417-11	CARBON	360	5%	1/6W
R750	1-259-413-11	CARBON	240	5%	1/6W
R751	1-259-417-11	CARBON	360	5%	1/6W
R752	1-259-403-11	CARBON	91	5%	1/6W
R753	1-259-403-11	CARBON	91	5%	1/6W
R754	1-259-420-11	CARBON	470	5%	1/6W
R755	1-259-413-11	CARBON	240	5%	1/6W
R756	1-259-413-11	CARBON	240	5%	1/6W
R757	1-259-413-11	CARBON	240	5%	1/6W
R758	1-259-420-11	CARBON	470	5%	1/6W
R763	1-259-452-11	CARBON	10K	5%	1/6W
R764	1-259-452-11	CARBON	10K	5%	1/6W
R765	1-259-452-11	CARBON	10K	5%	1/6W
R766	1-259-452-11	CARBON	10K	5%	1/6W
R790	1-259-402-11	CARBON	82	5%	1/6W

*	1-641-936-11	MC IN BOARD	*****		
		< CAPACITOR >			
C591	1-136-433-11	FILM	100PF	5%	630V
C592	1-136-433-11	FILM	100PF	5%	630V

Ref.No.	Part No.	Description	Remark		
< CONNECTOR >					
* CN561	1-573-863-11	PIN, CONNECTOR (PC BOARD) 4P			
< COIL >					
L561	1-424-397-11	COIL, CHOKE	200uH		
L562	1-424-397-11	COIL, CHOKE	200uH		

*	1-641-924-11	MC RELAY BOARD			

< CONNECTOR >					
* CN552	1-564-336-00	PIN, CONNECTOR 2P			
< DIODE >					
D551	8-719-987-63	DIODE 1N4148M			
< RELAY >					
RY550	1-515-887-11	RELAY			
RY551	1-515-887-11	RELAY			

*	1-641-938-11	MCG SWITCH BOARD			

< CONNECTOR >					
* CN560	1-564-496-11	PIN, CONNECTOR 3P			
< SWITCH >					
S501	1-571-083-31	SWITCH, SLIDE			

*	A-4345-583-A	MI UNIT BOARD, COMPLETE			

	7-682-147-15	SCREW, TR			
	7-682-547-09	SCREW +B 3X6			
< CAPACITOR >					
C3201	1-136-813-11	FILM	680PF	5% 100V	
C3202	1-136-808-11	FILM	100PF	5% 100V	
C3214	1-136-810-11	FILM	220PF	5% 100V	
< DIODE >					
D3201	8-719-300-04	DIODE MV-104V			

MI UNIT

MM IN

MO UNIT

Ref. No.	Part No.	Description	Remark
< TRANSISTOR >			
Q3201	8-759-108-01	IC uPA68HA-M	
Q3202	8-729-230-49	TRANSISTOR 2SC2712-G	
Q3203	8-729-230-49	TRANSISTOR 2SC2712-G	
Q3206	8-729-216-22	TRANSISTOR 2SA1162	
Q3207	8-729-216-22	TRANSISTOR 2SA1162	
Q3208	8-729-232-69	TRANSISTOR 2SK208GR3	
Q3209	8-729-230-49	TRANSISTOR 2SC2712-G	
Q3210	8-729-230-49	TRANSISTOR 2SC2712-G	
Q3214	8-729-216-22	TRANSISTOR 2SA1162	
Q3215	8-729-216-22	TRANSISTOR 2SA1162	
Q3216	8-729-216-22	TRANSISTOR 2SA1162	
Q3217	8-729-230-49	TRANSISTOR 2SC2712-G	
Q3218	8-729-230-49	TRANSISTOR 2SC2712-G	
Q3219	8-729-321-35	TRANSISTOR 2SK213	
Q3220	8-729-307-65	TRANSISTOR 2SJ76	

< RESISTOR >

R3201	1-249-208-11	CARBON	820	5%	1/3W
R3202	1-249-208-11	CARBON	820	5%	1/3W
R3203	1-249-192-11	CARBON	180	5%	1/3W
R3204	1-249-192-11	CARBON	180	5%	1/3W
R3205	1-249-194-11	CARBON	220	5%	1/3W
R3206	1-249-210-11	CARBON	1K	5%	1/3W
R3207	1-249-234-11	CARBON	10K	5%	1/3W
R3208	1-249-234-11	CARBON	10K	5%	1/3W
R3209	1-249-218-11	CARBON	2.2K	5%	1/3W
R3210	1-249-217-11	CARBON	2K	5%	1/3W
R3211	1-249-194-11	CARBON	220	5%	1/3W
R3215	1-249-199-11	CARBON	360	5%	1/3W
R3217	1-249-192-11	CARBON	180	5%	1/3W
R3218	1-249-192-11	CARBON	180	5%	1/3W
R3219	1-249-212-11	CARBON	1.2K	5%	1/3W

< VARIABLE RESISTOR >

RV3201 1-224-252-XX RES, ADJ, METAL GLAZE 10K

* 1-641-935-11 MM IN BOARD

< CONNECTOR >

* CN571 1-573-862-11 PIN, CONNECTOR (PC BOARD) 3P
* CN572 1-573-862-11 PIN, CONNECTOR (PC BOARD) 3P

< COIL >

L563	1-424-397-11	COIL, CHOKE	200uH
L564	1-424-397-11	COIL, CHOKE	200uH

Ref. No.	Part No.	Description	Remark
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< RESISTOR >

R591	1-247-717-11	CARBON	2.2K	5%	1/4W
R592	1-247-717-11	CARBON	2.2K	5%	1/4W

* A-4345-587-A MO UNIT BOARD, COMPLETE

< CAPACITOR >

C4201	1-136-813-11	FILM	680PF	5%	100V
C4202	1-136-808-11	FILM	100PF	5%	100V
C4214	1-136-810-11	FILM	220PF	5%	100V

< DIODE >

D4201 8-719-300-04 DIODE MV-104V

< TRANSISTOR >

Q4201	8-759-108-01	IC uPA68HA-M	
Q4202	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4203	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4206	8-729-216-22	TRANSISTOR 2SA1162	
Q4207	8-729-216-22	TRANSISTOR 2SA1162	
Q4208	8-729-232-69	TRANSISTOR 2SK208GR3	
Q4209	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4210	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4214	8-729-216-22	TRANSISTOR 2SA1162	
Q4215	8-729-216-22	TRANSISTOR 2SA1162	
Q4216	8-729-216-22	TRANSISTOR 2SA1162	
Q4217	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4218	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4219	8-729-321-35	TRANSISTOR 2SK213	
Q4220	8-729-307-65	TRANSISTOR 2SJ76	

< RESISTOR >

R4201	1-249-208-11	CARBON	820	5%	1/3W
R4202	1-249-208-11	CARBON	820	5%	1/3W
R4203	1-249-192-11	CARBON	180	5%	1/3W
R4204	1-249-192-11	CARBON	180	5%	1/3W
R4205	1-249-195-11	CARBON	240	5%	1/3W
R4206	1-249-210-11	CARBON	1K	5%	1/3W
R4207	1-249-234-11	CARBON	10K	5%	1/3W
R4208	1-249-234-11	CARBON	10K	5%	1/3W
R4209	1-249-218-11	CARBON	2.2K	5%	1/3W
R4210	1-249-217-11	CARBON	2K	5%	1/3W
R4211	1-249-194-11	CARBON	220	5%	1/3W
R4215	1-249-199-11	CARBON	360	5%	1/3W
R4217	1-249-192-11	CARBON	180	5%	1/3W
R4218	1-249-192-11	CARBON	180	5%	1/3W
R4219	1-249-212-11	CARBON	1.2K	5%	1/3W

MO UNIT

MOTOR DRIVE

Ref.No.	Part No.	Description	Remark
< VARIABLE RESISTOR >			
	RV4201	1-224-252-XX RES, ADJ, METAL GLAZE 10K	

*	A-4345-591-A	MOTOR DRIVE BOARD, COMPLETE	

*	4-921-402-21	HEAT SINK	
	4-949-004-01	HOLDER, LED	
	7-682-547-09	SCREW +B 3X6	
< BUSBAR >			
* BB801	4-908-951-01	REINFORCEMENT (B), PWB	
< CAPACITOR >			
C801	1-126-056-11	ELECT 1000uF 20% 50V	
C802	1-126-056-11	ELECT 1000uF 20% 50V	
C803	1-164-159-11	CERAMIC 0.1uF 50V	
C804	1-137-348-11	FILM 0.01uF 10% 400V	
C805	1-137-348-11	FILM 0.01uF 10% 400V	
C806	1-123-382-00	ELECT 3.3uF 20% 100V	
C810	1-164-159-11	CERAMIC 0.1uF 50V	
C811	1-164-159-11	CERAMIC 0.1uF 50V	
C812	1-164-159-11	CERAMIC 0.1uF 50V	
C813	1-164-159-11	CERAMIC 0.1uF 50V	
C814	1-136-439-11	FILM 330PF 5% 630V	
C820	1-162-290-31	CERAMIC 470PF 10% 50V	
C850	1-136-163-00	FILM 0.068uF 5% 50V	
< CONNECTOR >			
* CN801	1-564-508-11	PLUG, CONNECTOR 5P	
* CN802	1-564-338-61	PIN, CONNECTOR 4P	
* CN803	1-564-340-00	PIN, CONNECTOR 6P	
* CN804	1-573-264-11	PIN, CONNECTOR 5P	
* CN805	1-564-505-11	PLUG, CONNECTOR 2P	
< DIODE >			
D801	8-719-001-76	DIODE UZL-12M3	
D802	8-719-987-63	DIODE 1N4148M	
D811	8-719-987-63	DIODE 1N4148M	
D830	8-719-200-82	DIODE 11ES2	
D831	8-719-200-82	DIODE 11ES2	
D832	8-719-200-82	DIODE 11ES2	
D833	8-719-200-82	DIODE 11ES2	
D850	8-719-987-63	DIODE 1N4148M	
D851	8-719-933-33	DIODE HZS6A1L	
D852	8-719-987-63	DIODE 1N4148M	
D861	8-719-301-38	LED SEL2210S-C	

Ref.No.	Part No.	Description	Remark
< IC >			
IC801	8-759-971-80	IC AD712JN	
IC802	8-759-340-46	IC CD4046BE	
IC803	8-759-917-11	IC SN74HC393N	
IC804	8-759-921-10	IC SN74HC86AN	
IC805	8-759-001-28	IC MC74HC137N	
< TRANSISTOR >			
Q801	8-729-809-26	TRANSISTOR 2SA1606-E	
Q802	8-729-216-22	TRANSISTOR 2SA1162	
Q803	8-729-200-56	TRANSISTOR 2SK241-GR	
Q830	8-729-216-22	TRANSISTOR 2SA1162	
Q831	8-729-809-29	TRANSISTOR 2SC4159-E	
Q832	8-729-216-22	TRANSISTOR 2SA1162	
Q833	8-729-809-29	TRANSISTOR 2SC4159-E	
Q834	8-729-216-22	TRANSISTOR 2SA1162	
Q835	8-729-809-29	TRANSISTOR 2SC4159-E	
Q836	8-729-216-22	TRANSISTOR 2SA1162	
Q837	8-729-809-29	TRANSISTOR 2SC4159-E	
Q861	8-729-805-41	TRANSISTOR 2SC3398	
< RESISTOR >			
R800	1-249-478-11	CARBON 2.2 5% 1/2W	
R801	1-249-478-11	CARBON 2.2 5% 1/2W	
R802	1-259-428-11	CARBON 1K 5% 1/6W	
R803	1-259-404-11	CARBON 100 5% 1/6W	
R804	1-259-452-11	CARBON 10K 5% 1/6W	
R805	1-259-452-11	CARBON 10K 5% 1/6W	
R806	1-259-452-11	CARBON 10K 5% 1/6W	
R807	1-259-452-11	CARBON 10K 5% 1/6W	
R808	1-259-459-11	CARBON 20K 5% 1/6W	
R809	1-259-466-11	CARBON 39K 5% 1/6W	
R810	1-259-474-11	CARBON 82K 5% 1/6W	
R811	1-259-481-11	CARBON 160K 5% 1/6W	
R812	1-259-442-11	CARBON 3.9K 5% 1/6W	
R813	1-259-452-11	CARBON 10K 5% 1/6W	
R814	1-259-447-11	CARBON 6.2K 5% 1/6W	
R815	1-259-428-11	CARBON 1K 5% 1/6W	
R820	1-259-460-11	CARBON 22K 5% 1/6W	
R821	1-259-460-11	CARBON 22K 5% 1/6W	
R822	1-259-470-11	CARBON 56K 5% 1/6W	
R823	1-259-458-11	CARBON 18K 5% 1/6W	
R824	1-259-452-11	CARBON 10K 5% 1/6W	
R830	1-259-436-11	CARBON 2.2K 5% 1/6W	
R831	1-247-742-11	CARBON 180 5% 1/2W	
R832	1-259-410-11	CARBON 180 5% 1/6W	
R833	1-259-436-11	CARBON 2.2K 5% 1/6W	
R834	1-247-742-11	CARBON 180 5% 1/2W	
R835	1-259-410-11	CARBON 180 5% 1/6W	
R836	1-259-436-11	CARBON 2.2K 5% 1/6W	

MOTOR DRIVE

INPUT MAIN

Ref.No.	Part No.	Description	Remark
R837	1-247-742-11	CARBON 180 5% 1/2W	
R838	1-259-410-11	CARBON 180 5% 1/6W	
R839	1-259-436-11	CARBON 2.2K 5% 1/6W	
R840	1-247-742-11	CARBON 180 5% 1/2W	
R841	1-259-410-11	CARBON 180 5% 1/6W	
R850	1-259-466-11	CARBON 39K 5% 1/6W	
R851	1-259-442-11	CARBON 3.9K 5% 1/6W	
R852	1-259-468-11	CARBON 47K 5% 1/6W	
R853	1-259-452-11	CARBON 10K 5% 1/6W	
R861	1-259-412-11	CARBON 220 5% 1/6W	
< VARIABLE RESISTOR >			
RV801	1-228-993-00	RES, ADJ, METAL 4.7K	
< TRANSFORMER >			
T801	1-427-622-11	TRANSFORMER, OUTPUT	
T802	1-427-622-11	TRANSFORMER, OUTPUT	

*	A-4347-963-A	MOUNTED PCB, INPUT MAIN	

	3-831-441-XX	CUSHION	
*	4-924-264-21	TERMINAL, MOUNT	
	7-682-547-09	SCREW +B 3X6	
< BUSBAR >			
* BB3001	4-908-951-01	REINFORCEMENT (B), PWB	
* BB3002	4-908-951-01	REINFORCEMENT (B), PWB	
< CAPACITOR >			
C3001	1-137-348-11	FILM 0.01uF 10% 400V	
C3002	1-137-348-11	FILM 0.01uF 10% 400V	
C3003	1-137-348-11	FILM 0.01uF 10% 400V	
C3004	1-137-348-11	FILM 0.01uF 10% 400V	
C3005	1-136-810-11	FILM 220PF 5% 100V	
C3006	1-136-810-11	FILM 220PF 5% 100V	
C3007	1-136-810-11	FILM 220PF 5% 100V	
C3008	1-136-810-11	FILM 220PF 5% 100V	
C3010	1-136-810-11	FILM 220PF 5% 100V	
C3011	1-136-810-11	FILM 220PF 5% 100V	
C3012	1-136-810-11	FILM 220PF 5% 100V	
C3013	1-136-810-11	FILM 220PF 5% 100V	
C3020	1-136-810-11	FILM 220PF 5% 100V	
C3021	1-137-348-11	FILM 0.01uF 10% 400V	
C3022	1-137-348-11	FILM 0.01uF 10% 400V	
C3023	1-136-810-11	FILM 220PF 5% 100V	
C3024	1-136-810-11	FILM 220PF 5% 100V	
C3025	1-136-810-11	FILM 220PF 5% 100V	

Ref.No.	Part No.	Description	Remark
< CONNECTOR >			
* CN3010	1-564-342-11	PIN, CONNECTOR 8P	
* CN3011	1-564-505-11	PLUG, CONNECTOR 2P	
CN3012	1-564-320-00	PIN, CONNECTOR 2P	
* CN3020	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P	
* CN3021	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P	
* CN3022	1-564-506-11	PLUG, CONNECTOR 3P	
< JACK >			
* CNJ30011	573-899-11	PIN, CONNECTOR (PC BOARD) 8P	
* CNJ30021	573-899-11	PIN, CONNECTOR (PC BOARD) 8P	
* CNJ30031	573-899-11	PIN, CONNECTOR (PC BOARD) 8P	
* CNJ30041	573-899-11	PIN, CONNECTOR (PC BOARD) 8P	
< DIODE >			
D3001	8-719-987-63	DIODE 1N4148M	
D3002	8-719-987-63	DIODE 1N4148M	
D3003	8-719-987-63	DIODE 1N4148M	
D3004	8-719-987-63	DIODE 1N4148M	
D3005	8-719-987-63	DIODE 1N4148M	
D3006	8-719-987-63	DIODE 1N4148M	
D3008	8-719-987-63	DIODE 1N4148M	
< IC >			
IC3001	8-759-067-05	IC AD712JNS	
IC3002	8-759-067-05	IC AD712JNS	
< RESISTOR >			
R3001	1-249-202-11	CARBON 470 5% 1/3W	
R3002	1-249-210-11	CARBON 1K 5% 1/3W	
R3003	1-249-210-11	CARBON 1K 5% 1/3W	
R3004	1-249-210-11	CARBON 1K 5% 1/3W	
R3005	1-249-202-11	CARBON 470 5% 1/3W	
R3006	1-249-210-11	CARBON 1K 5% 1/3W	
R3007	1-249-210-11	CARBON 1K 5% 1/3W	
R3008	1-249-202-11	CARBON 470 5% 1/3W	
R3009	1-249-210-11	CARBON 1K 5% 1/3W	
R3010	1-249-210-11	CARBON 1K 5% 1/3W	
R3011	1-249-202-11	CARBON 470 5% 1/3W	
R3012	1-249-210-11	CARBON 1K 5% 1/3W	
R3013	1-249-492-11	CARBON 47K 5% 1/3W	
R3014	1-249-492-11	CARBON 47K 5% 1/3W	
R3015	1-249-492-11	CARBON 47K 5% 1/3W	
R3016	1-249-492-11	CARBON 47K 5% 1/3W	
R3020	1-259-676-11	CARBON 1K 2% 1W	
R3021	1-259-676-11	CARBON 1K 2% 1W	
R3022	1-259-676-11	CARBON 1K 2% 1W	
R3023	1-259-676-11	CARBON 1K 2% 1W	
R3024	1-260-225-61	CARBON 2M 5% 1W	
R3025	1-260-225-61	CARBON 2M 5% 1W	

INPUT MAIN

INPUT RELAY

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R3026	1-260-225-61	CARBON	2M 5% 1W	< CAPACITOR >			
R3027	1-260-225-61	CARBON	2M 5% 1W	C201	1-136-810-11	FILM 220PF 5% 100V	
R3028	1-260-222-61	CARBON	220 0.50% 1W	C202	1-136-810-11	FILM 220PF 5% 100V	
R3029	1-260-223-61	CARBON	470 0.50% 1W	< CONNECTOR >			
R3030	1-260-223-61	CARBON	470 0.50% 1W	* CN201	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P	
R3031	1-260-222-61	CARBON	220 0.50% 1W	* CN202	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P	
R3032	1-260-222-61	CARBON	220 0.50% 1W	* CN203	1-569-997-11	PIN, CONNECTOR (PC BOARD) 10P	
R3033	1-260-223-61	CARBON	470 0.50% 1W	* CN204	1-569-995-11	PIN, CONNECTOR (PC BOARD) 8P	
R3034	1-260-223-61	CARBON	470 0.50% 1W	* CN205	1-564-505-11	PLUG, CONNECTOR 2P	
R3035	1-260-222-61	CARBON	220 0.50% 1W	* CN210	1-564-506-11	PLUG, CONNECTOR 3P	
R3051	1-249-162-11	CARBON	10 5% 1/3W	* CN211	1-564-506-11	PLUG, CONNECTOR 3P	
R3052	1-249-162-11	CARBON	10 5% 1/3W	* CN212	1-564-506-11	PLUG, CONNECTOR 3P	
R3053	1-249-180-11	CARBON	56 5% 1/3W	< DIODE >			
R3054	1-249-168-11	CARBON	18 5% 1/3W	D201	8-719-987-63	DIODE 1N4148M	
R3055	1-249-168-11	CARBON	18 5% 1/3W	D202	8-719-987-63	DIODE 1N4148M	
R3056	1-249-180-11	CARBON	56 5% 1/3W	D203	8-719-987-63	DIODE 1N4148M	
< VARIABLE RESISTOR >				D204	8-719-987-63	DIODE 1N4148M	
RV3001	1-224-252-XX	RES, ADJ, METAL GLAZE 10K		D205	8-719-987-63	DIODE 1N4148M	
RV3002	1-224-252-XX	RES, ADJ, METAL GLAZE 10K		D206	8-719-987-63	DIODE 1N4148M	
< RELAY >				D207	8-719-987-63	DIODE 1N4148M	
RY3001	1-515-887-11	RELAY		D208	8-719-987-63	DIODE 1N4148M	
RY3002	1-515-887-11	RELAY		D209	8-719-987-63	DIODE 1N4148M	
RY3003	1-515-887-11	RELAY		D210	8-719-987-63	DIODE 1N4148M	
RY3004	1-515-887-11	RELAY		D211	8-719-987-63	DIODE 1N4148M	
RY3005	1-515-887-11	RELAY		D212	8-719-987-63	DIODE 1N4148M	
RY3006	1-515-887-11	RELAY		D213	8-719-987-63	DIODE 1N4148M	
RY3007	1-515-887-11	RELAY		D214	8-719-987-63	DIODE 1N4148M	
RY3008	1-515-887-11	RELAY		D215	8-719-987-63	DIODE 1N4148M	
RY3009	1-515-887-11	RELAY		D216	8-719-987-63	DIODE 1N4148M	
RY3010	1-515-887-11	RELAY		< RESISTOR >			
RY3011	1-515-887-11	RELAY		R201	1-249-162-11	CARBON 10 5% 1/3W	
RY3012	1-515-887-11	RELAY		R202	1-249-162-11	CARBON 10 5% 1/3W	
RY3013	1-515-887-11	RELAY		R203	1-249-162-11	CARBON 10 5% 1/3W	
*****				R204	1-249-162-11	CARBON 10 5% 1/3W	
*	A-4345-581-A	MOUNTED PCB, INPUT RELAY		R205	1-249-162-11	CARBON 10 5% 1/3W	
*****				R206	1-249-162-11	CARBON 10 5% 1/3W	
	3-831-441-XX	CUSHION		R207	1-249-162-11	CARBON 10 5% 1/3W	
*	4-924-264-21	TERMINAL, MOUNT		R208	1-249-210-11	CARBON 1K 5% 1/3W	
< BUSBAR >				R209	1-249-210-11	CARBON 1K 5% 1/3W	
* BB201	1-564-393-00	BUS BAR 9P		R212	1-249-210-11	CARBON 1K 5% 1/3W	
* BB202	1-560-242-21	BUS BAR 4P		R213	1-249-210-11	CARBON 1K 5% 1/3W	
* BB203	1-560-242-31	BUS BAR 5P		R220	1-259-468-11	CARBON 47K 5% 1/6W	
* BB204	1-560-242-31	BUS BAR 5P		R221	1-259-468-11	CARBON 47K 5% 1/6W	
* BB205	1-560-242-31	BUS BAR 5P		< RELAY >			
				RY201	1-515-887-11	RELAY	
				RY202	1-515-887-11	RELAY	

POWER

OUT MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< TRANSISTOR >				R124	1-260-226-11	CARBON 1.5 5% 2W	
Q102	8-729-900-61	TRANSISTOR DTA114ES		R125	1-260-226-11	CARBON 1.5 5% 2W	
Q103	8-729-900-61	TRANSISTOR DTA114ES		R126	1-249-210-11	CARBON 1K 5% 1/3W	
Q104	8-729-119-77	TRANSISTOR 2SA1175-FEK		R127	1-249-210-11	CARBON 1K 5% 1/3W	
Q106	8-729-141-30	TRANSISTOR 2SC3623A-LK		R128	1-249-182-11	CARBON 68 5% 1/3W	
Q107	8-729-119-79	TRANSISTOR 2SC2785-FEK		R129	1-249-202-11	CARBON 470 5% 1/3W	
Q108	8-729-900-80	TRANSISTOR DTC114ES		R130	1-249-202-11	CARBON 470 5% 1/3W	
Q109	8-729-119-77	TRANSISTOR 2SA1175-FEK		R131	1-249-182-11	CARBON 68 5% 1/3W	
Q110	8-729-119-77	TRANSISTOR 2SA1175-FEK		R132	1-249-210-11	CARBON 1K 5% 1/3W	
Q111	8-729-141-30	TRANSISTOR 2SC3623A-LK		R133	1-249-210-11	CARBON 1K 5% 1/3W	
Q115	8-729-141-10	TRANSISTOR 2SA985A		R134	1-249-210-11	CARBON 1K 5% 1/3W	
Q116	8-729-141-10	TRANSISTOR 2SA985A		R135	1-249-210-11	CARBON 1K 5% 1/3W	
Q117	8-729-141-60	TRANSISTOR 2SD809-KFE		R136	1-249-198-11	CARBON 330 5% 1/3W	
Q118	8-729-141-59	TRANSISTOR 2SB731-KFE		R137	1-249-210-11	CARBON 1K 5% 1/3W	
Q119	8-729-107-53	TRANSISTOR 2SC2275A		R138	1-249-226-11	CARBON 4.7K 5% 1/3W	
Q120	8-729-107-53	TRANSISTOR 2SC2275A		R139	1-249-226-11	CARBON 4.7K 5% 1/3W	
Q125	8-729-200-56	TRANSISTOR 2SK241-GR		R140	1-249-210-11	CARBON 1K 5% 1/3W	
Q126	8-729-281-53	TRANSISTOR 2SC1815-GR		R141	1-249-198-11	CARBON 330 5% 1/3W	
Q127	8-729-281-53	TRANSISTOR 2SC1815-GR		R142	1-249-210-11	CARBON 1K 5% 1/3W	
Q128	8-729-201-53	TRANSISTOR 2SA1015-GR		R143	1-249-210-11	CARBON 1K 5% 1/3W	
Q129	8-729-201-53	TRANSISTOR 2SA1015-GR		R144	1-249-210-11	CARBON 1K 5% 1/3W	
Q130	8-729-200-56	TRANSISTOR 2SK241-GR		R145	1-249-210-11	CARBON 1K 5% 1/3W	
Q131	8-729-200-56	TRANSISTOR 2SK241-GR		R146	1-259-672-11	CARBON 680 2% 1W	
Q132	8-729-281-53	TRANSISTOR 2SC1815-GR		R147	1-259-672-11	CARBON 680 2% 1W	
Q133	8-729-281-53	TRANSISTOR 2SC1815-GR		R148	1-259-672-11	CARBON 680 2% 1W	
Q134	8-729-201-53	TRANSISTOR 2SA1015-GR		R149	1-259-672-11	CARBON 680 2% 1W	
Q135	8-729-201-53	TRANSISTOR 2SA1015-GR		*****			
Q136	8-729-200-56	TRANSISTOR 2SK241-GR		*	A-4345-585-A OUT MAIN BOARD, COMPLETE		
< RESISTOR >					*****		
△R101	1-217-485-00	FUSIBLE 22 5% 1W	F		3-831-441-XX CUSHION		
R102	1-249-613-11	CARBON 360K 5% 1/4W		*	4-924-264-21 TERMINAL, MOUNT		
R103	1-249-469-11	CARBON 100K 5% 1/4W		*	4-949-007-01 DAMPER (B)		
R104	1-249-469-11	CARBON 100K 5% 1/4W			< BUSBAR >		
R105	1-249-527-11	CARBON 91 5% 1/4W		*	BB4001 1-560-242-31 BUS BAR 5P		
R106	1-249-527-11	CARBON 91 5% 1/4W		*	BB4002 1-560-242-11 BUS BAR 3P		
R107	1-247-725-11	CARBON 10K 5% 1/4W		*	BB4003 1-560-242-11 BUS BAR 3P		
R108	1-249-465-11	CARBON 47K 5% 1/4W		*	BB4004 1-560-242-11 BUS BAR 3P		
R109	1-247-725-11	CARBON 10K 5% 1/4W		*	BB4005 4-908-951-01 REINFORCEMENT (B), PWB		
R110	1-247-725-11	CARBON 10K 5% 1/4W			< CAPACITOR >		
R111	1-247-704-11	CARBON 220 5% 1/4W		C4001	1-136-810-11	FILM 220PF 5% 100V	
R112	1-247-710-11	CARBON 560 5% 1/4W		C4002	1-137-349-11	FILM 0.47uF 5% 400V	
R113	1-247-711-11	CARBON 680 5% 1/4W		C4003	1-136-810-11	FILM 220PF 5% 100V	
R114	1-247-725-11	CARBON 10K 5% 1/4W		C4004	1-137-349-11	FILM 0.47uF 5% 400V	
R115	1-249-586-11	CARBON 27K 5% 1/4W		C4010	1-137-348-11	FILM 0.01uF 10% 400V	
R116	1-249-602-11	CARBON 120K 5% 1/4W		C4011	1-137-348-11	FILM 0.01uF 10% 400V	
R120	1-260-226-11	CARBON 1.5 5% 2W		C4012	1-137-348-11	FILM 0.01uF 10% 400V	
R121	1-260-226-11	CARBON 1.5 5% 2W		C4013	1-137-348-11	FILM 0.01uF 10% 400V	
R122	1-249-186-11	CARBON 100 5% 1/3W		C4014	1-137-348-11	FILM 0.01uF 10% 400V	
R123	1-249-186-11	CARBON 100 5% 1/3W					

OUT MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C4015	1-137-348-11	FILM	0.01uF 10% 400V	< RESISTOR >			
C4020	1-128-470-11	ELECT	1500uF 20% 63V	R4005	1-249-200-11	CARBON	390 5% 1/3W
C4021	1-128-470-11	ELECT	1500uF 20% 63V	R4006	1-249-208-11	CARBON	820 5% 1/3W
C4022	1-136-810-11	FILM	220PF 5% 100V	R4008	1-260-225-61	CARBON	2M 5% 1W
C4023	1-136-810-11	FILM	220PF 5% 100V	R4010	1-249-208-11	CARBON	820 5% 1/3W
C4024	1-136-810-11	FILM	220PF 5% 100V	R4011	1-249-200-11	CARBON	390 5% 1/3W
C4025	1-136-810-11	FILM	220PF 5% 100V	R4012	1-260-225-61	CARBON	2M 5% 1W
C4026	1-104-321-11	POLYSTYRENE	22PF 10% 400V	R4013	1-259-700-11	CARBON	10K 2% 1W
C4027	1-104-321-11	POLYSTYRENE	22PF 10% 400V	R4014	1-260-222-61	CARBON	220 0.50% 1W
C4034	1-136-808-11	FILM	100PF 5% 100V	R4015	1-259-669-11	CARBON	510 2% 1W
C4035	1-136-808-11	FILM	100PF 5% 100V	R4016	1-259-669-11	CARBON	510 2% 1W
< CONNECTOR >				R4017	1-259-748-11	CARBON	1M 2% 1W
* CN4003	1-564-341-11	PIN, CONNECTOR 7P		R4018	1-249-234-11	CARBON	10K 5% 1/3W
* CN4004	1-564-342-11	PIN, CONNECTOR 8P		R4019	1-249-234-11	CARBON	10K 5% 1/3W
* CN4005	1-573-862-11	PIN, CONNECTOR (PC BOARD) 3P		R4020	1-259-748-11	CARBON	1M 2% 1W
	CN4007	1-564-507-11	PLUG, CONNECTOR 4P	R4021	1-260-222-61	CARBON	220 0.50% 1W
* CN4008	1-564-505-11	PLUG, CONNECTOR 2P		R4024	1-259-700-11	CARBON	10K 2% 1W
* CN4012	1-564-505-11	PLUG, CONNECTOR 2P		R4025	1-259-700-11	CARBON	10K 2% 1W
* CN4013	1-564-505-11	PLUG, CONNECTOR 2P		R4026	1-259-700-11	CARBON	10K 2% 1W
* CN4014	1-564-505-11	PLUG, CONNECTOR 2P		R4030	1-260-218-61	CARBON	2.2 10% 1W
* CN4015	1-564-336-00	PIN, CONNECTOR 2P		R4031	1-260-218-61	CARBON	2.2 10% 1W
(Serial No. 45000051 and later)				R4032	1-260-218-61	CARBON	2.2 10% 1W
< JACK >				R4033	1-260-218-61	CARBON	2.2 10% 1W
* CNJ400	1-573-899-11	PIN, CONNECTOR (PC BOARD) 8P		R4034	1-260-218-61	CARBON	2.2 10% 1W
< DIODE >				R4035	1-260-218-61	CARBON	2.2 10% 1W
D4003	8-719-987-63	DIODE 1N4148M		R4036	1-260-218-61	CARBON	2.2 10% 1W
D4004	8-719-987-63	DIODE 1N4148M		R4037	1-260-218-61	CARBON	2.2 10% 1W
D4005	8-719-987-63	DIODE 1N4148M		R4038	1-260-218-61	CARBON	2.2 10% 1W
D4006	8-719-987-63	DIODE 1N4148M		R4039	1-260-218-61	CARBON	2.2 10% 1W
D4009	8-719-987-63	DIODE 1N4148M		R4040	1-260-218-61	CARBON	2.2 10% 1W
D4010	8-719-987-63	DIODE 1N4148M		R4041	1-260-218-61	CARBON	2.2 10% 1W
D4011	8-719-987-63	DIODE 1N4148M		R4051	1-249-170-11	CARBON	22 5% 1/3W
D4012	8-719-987-63	DIODE 1N4148M		R4052	1-249-170-11	CARBON	22 5% 1/3W
D4013	8-719-987-63	DIODE 1N4148M		R4053	1-249-170-11	CARBON	22 5% 1/3W
D4014	8-719-987-63	DIODE 1N4148M		R4054	1-249-170-11	CARBON	22 5% 1/3W
D4015	8-719-987-63	DIODE 1N4148M		R4055	1-249-186-11	CARBON	100 5% 1/3W
D4016	8-719-987-63	DIODE 1N4148M		R4056	1-249-186-11	CARBON	100 5% 1/3W
D4021	8-719-987-63	DIODE 1N4148M		< VARIABLE RESISTOR >			
D4022	8-719-987-63	DIODE 1N4148M		RV4001	1-224-252-XX	RES, ADJ, METAL GLAZE 10K	
D4023	8-719-987-63	DIODE 1N4148M		RV4002	1-224-252-XX	RES, ADJ, METAL GLAZE 10K	
D4024	8-719-987-63	DIODE 1N4148M		< RELAY >			
D4025	8-719-987-63	DIODE 1N4148M		RY4003	1-515-614-11	RELAY	
(Serial No. 45000051 and later)				RY4004	1-515-614-11	RELAY	
< IC >				RY4005	1-515-614-11	RELAY	
IC4001	8-759-067-05	IC AD712JNS		RY4006	1-515-614-11	RELAY	
IC4002	8-759-067-05	IC AD712JNS		RY4010	1-515-887-11	RELAY	
				RY4011	1-515-887-11	RELAY	
				RY4012	1-515-887-11	RELAY	

OUT MAIN

PC

PI UNIT

PL

PO UNIT

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
RY4013	1-515-887-11	RELAY		Q3116	8-729-216-22	TRANSISTOR 2SA1162	
RY4014	1-515-887-11	RELAY		Q3117	8-729-230-49	TRANSISTOR 2SC2712-G	
RY4015	1-515-887-11	RELAY		Q3118	8-729-230-49	TRANSISTOR 2SC2712-G	
RY4016	1-515-887-11	RELAY		Q3119	8-729-321-35	TRANSISTOR 2SK213	
RY4017	1-515-887-11	RELAY		Q3120	8-729-307-65	TRANSISTOR 2SJ76	
						< RESISTOR >	
RY4018	1-515-887-11	RELAY		R3101	1-249-208-11	CARBON 820 5% 1/3W	
RY4019	1-515-887-11	RELAY		R3102	1-249-208-11	CARBON 820 5% 1/3W	
RY4021	1-515-614-11	RELAY		R3103	1-249-192-11	CARBON 180 5% 1/3W	
RY4022	1-515-614-11	RELAY		R3104	1-249-192-11	CARBON 180 5% 1/3W	
RY4023	1-515-614-11	RELAY		R3105	1-249-192-11	CARBON 180 5% 1/3W	
RY4024	1-515-614-11	RELAY		R3106	1-249-210-11	CARBON 1K 5% 1/3W	
RY4026	1-515-614-11	RELAY		R3107	1-249-234-11	CARBON 10K 5% 1/3W	
RY4027	1-515-614-11	RELAY		R3108	1-249-234-11	CARBON 10K 5% 1/3W	
RY4028	1-515-614-11	RELAY (Serial No. 45000051 and later)		R3109	1-249-218-11	CARBON 2.2K 5% 1/3W	
RY4029	1-515-614-11	RELAY (Serial No. 45000051 and later)		R3110	1-249-217-11	CARBON 2K 5% 1/3W	

*	1-641-946-11	PC BOARD		R3111	1-249-194-11	CARBON 220 5% 1/3W	
		*****		R3115	1-249-199-11	CARBON 360 5% 1/3W	
		< CONNECTOR >		R3117	1-249-192-11	CARBON 180 5% 1/3W	
* CN651	1-564-496-11	PIN, CONNECTOR 3P		R3118	1-249-192-11	CARBON 180 5% 1/3W	
		< DIODE >		R3119	1-249-212-11	CARBON 1.2K 5% 1/3W	
D651	8-719-975-18	DIODE	GP1S51			< VARIABLE RESISTOR >	
*****				RV3101	1-224-252-XX	RES, ADJ, METAL GLAZE 10K	
*	A-4345-584-A	PI UNIT BOARD, COMPLETE		*****			
		*****		*	1-641-939-11	PL BOARD	
		< CAPACITOR >				*****	
C3101	1-136-813-11	FILM 680PF	5% 100V			< CAPACITOR >	
C3102	1-136-808-11	FILM 100PF	5% 100V	C171	1-164-159-11	CERAMIC 0.1uF	50V
C3114	1-136-810-11	FILM 220PF	5% 100V			< CONNECTOR >	
		< DIODE >		* CN171	1-564-336-00	PIN, CONNECTOR 2P	
D3101	8-719-300-04	DIODE MV-104V				< DIODE >	
		< TRANSISTOR >		D171	8-719-303-02	DIODE SEL2510C-D	
Q3101	8-759-108-01	IC uPA68HA-M		*****			
Q3102	8-729-230-49	TRANSISTOR 2SC2712-G		*	A-4345-586-A	PO UNIT BOARD, COMPLETE	
Q3103	8-729-230-49	TRANSISTOR 2SC2712-G				*****	
Q3106	8-729-216-22	TRANSISTOR 2SA1162				< CAPACITOR >	
Q3107	8-729-216-22	TRANSISTOR 2SA1162		C4101	1-136-813-11	FILM 680PF	5% 100V
Q3108	8-729-232-69	TRANSISTOR 2SK208GR3		C4102	1-136-808-11	FILM 100PF	5% 100V
Q3109	8-729-230-49	TRANSISTOR 2SC2712-G		C4114	1-136-810-11	FILM 220PF	5% 100V
Q3110	8-729-230-49	TRANSISTOR 2SC2712-G					
Q3114	8-729-216-22	TRANSISTOR 2SA1162					
Q3115	8-729-216-22	TRANSISTOR 2SA1162					

PO UNIT

ROTARY

Ref. No.	Part No.	Description	Remark
< DIODE >			
D4101	8-719-300-04	DIODE MV-104V	
< TRANSISTOR >			
Q4101	8-759-108-01	IC uPA68HA-M	
Q4102	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4103	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4104	8-729-232-69	TRANSISTOR 2SK208GR3	
Q4105	8-729-232-69	TRANSISTOR 2SK208GR3	
Q4106	8-729-216-22	TRANSISTOR 2SA1162	
Q4107	8-729-216-22	TRANSISTOR 2SA1162	
Q4108	8-729-232-69	TRANSISTOR 2SK208GR3	
Q4109	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4110	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4111	8-729-232-69	TRANSISTOR 2SK208GR3	
Q4112	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4113	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4114	8-729-216-22	TRANSISTOR 2SA1162	
Q4115	8-729-216-22	TRANSISTOR 2SA1162	
Q4116	8-729-216-22	TRANSISTOR 2SA1162	
Q4117	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4118	8-729-230-49	TRANSISTOR 2SC2712-G	
Q4119	8-729-321-35	TRANSISTOR 2SK213	
Q4120	8-729-307-65	TRANSISTOR 2SJ76	
< RESISTOR >			
R4101	1-249-208-11	CARBON 820 5% 1/3W	
R4102	1-249-208-11	CARBON 820 5% 1/3W	
R4103	1-249-192-11	CARBON 180 5% 1/3W	
R4104	1-249-192-11	CARBON 180 5% 1/3W	
R4105	1-249-210-11	CARBON 1K 5% 1/3W	
R4106	1-249-210-11	CARBON 1K 5% 1/3W	
R4107	1-249-234-11	CARBON 10K 5% 1/3W	
R4108	1-249-234-11	CARBON 10K 5% 1/3W	
R4109	1-249-218-11	CARBON 2.2K 5% 1/3W	
R4110	1-249-217-11	CARBON 2K 5% 1/3W	
R4111	1-249-194-11	CARBON 220 5% 1/3W	
R4115	1-249-199-11	CARBON 360 5% 1/3W	
R4117	1-249-192-11	CARBON 180 5% 1/3W	
R4118	1-249-192-11	CARBON 180 5% 1/3W	
R4119	1-249-212-11	CARBON 1.2K 5% 1/3W	
R4120	1-249-232-11	CARBON 8.2K 5% 1/3W	
R4121	1-249-232-11	CARBON 8.2K 5% 1/3W	
R4122	1-249-234-11	CARBON 10K 5% 1/3W	
R4123	1-249-217-11	CARBON 2K 5% 1/3W	
R4124	1-249-212-11	CARBON 1.2K 5% 1/3W	
< VARIABLE RESISTOR >			
RV4101	1-224-252-XX	RES, ADJ, METAL GLAZE 10K	

Ref. No.	Part No.	Description	Remark

*	A-4345-758-A	ROTARY BOARD, COMPLETE	

< CAPACITOR >			
C631	1-163-034-00	CERAMIC CHIP 0.033uF	50V
C632	1-164-336-11	CERAMIC CHIP 0.33uF	25V
C639	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C640	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C641	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C642	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C643	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C644	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C645	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
< CONNECTOR >			
* CN631	1-564-337-00	PIN, CONNECTOR 3P	
* CN632	1-506-503-11	PIN, CONNECTOR 9P	
* CN633	1-564-341-11	PIN, CONNECTOR 7P	
* CN634	1-564-338-00	PIN, CONNECTOR 4P	
* CN635	1-564-342-11	PIN, CONNECTOR 8P	
* CN636	1-506-503-11	PIN, CONNECTOR 9P	
< DIODE >			
D631	8-719-801-78	DIODE 1SS184	
D632	8-719-801-78	DIODE 1SS184	
D633	8-719-801-78	DIODE 1SS184	
D634	8-719-801-78	DIODE 1SS184	
D635	8-719-801-78	DIODE 1SS184	
D639	8-719-801-78	DIODE 1SS184	
D640	8-719-801-78	DIODE 1SS184	
D642	8-719-801-78	DIODE 1SS184	
D643	8-719-801-78	DIODE 1SS184	
D645	8-719-801-78	DIODE 1SS184	
D646	8-719-801-78	DIODE 1SS184	
D647	8-719-801-78	DIODE 1SS184	
< IC >			
IC631	8-759-206-28	IC MC74HC123AF	
IC632	8-759-232-16	IC TC74HC14AF-TP1	
IC633	8-759-032-01	IC MC74HC00AF	
IC634	8-759-232-92	IC TC74HC244AF-TP1	
IC635	8-759-232-92	IC TC74HC244AF-TP1	
IC636	8-759-232-92	IC TC74HC244AF-TP1	
IC637	8-759-232-92	IC TC74HC244AF-TP1	
< TRANSISTOR >			
Q631	8-729-805-43	TRANSISTOR 2SC3396	
Q632	8-729-805-43	TRANSISTOR 2SC3396	
Q633	8-729-805-43	TRANSISTOR 2SC3396	

ROTARY

SWITCH (L)

SWITCH (R)

TAPE

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q634	8-729-230-49	TRANSISTOR 2SC2712-G				< RESISTOR >	
Q635	8-729-230-49	TRANSISTOR 2SC2712-G					
Q636	8-729-230-49	TRANSISTOR 2SC2712-G					
		< RESISTOR >					
R631	1-216-073-00	METAL CHIP 10K 5% 1/10W		R611	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R632	1-216-073-00	METAL CHIP 10K 5% 1/10W		R612	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R633	1-216-073-00	METAL CHIP 10K 5% 1/10W		R613	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R634	1-216-073-00	METAL CHIP 10K 5% 1/10W		R614	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R635	1-216-073-00	METAL CHIP 10K 5% 1/10W		R615	1-216-073-00	METAL CHIP 10K 5% 1/10W	
		< RESISTOR >					
R636	1-216-073-00	METAL CHIP 10K 5% 1/10W		R616	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R637	1-216-073-00	METAL CHIP 10K 5% 1/10W		R617	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R638	1-216-073-00	METAL CHIP 10K 5% 1/10W				< SWITCH >	
R639	1-216-073-00	METAL CHIP 10K 5% 1/10W		S611	1-692-006-11	SWITCH, ROTARY (INPUT SELECTOR) 6P	
R640	1-216-073-00	METAL CHIP 10K 5% 1/10W				*****	
		< RESISTOR >					
R641	1-216-073-00	METAL CHIP 10K 5% 1/10W		* 1-641-944-11	SWITCH (R) BOARD	*****	
R642	1-216-073-00	METAL CHIP 10K 5% 1/10W				< CONNECTOR >	
R643	1-216-073-00	METAL CHIP 10K 5% 1/10W					
R644	1-216-073-00	METAL CHIP 10K 5% 1/10W		* CN601	1-564-500-11	PIN, CONNECTOR 7P	
R645	1-216-073-00	METAL CHIP 10K 5% 1/10W		* CN602	1-564-497-11	PIN, CONNECTOR 4P	
		< RESISTOR >				< DIODE >	
R646	1-216-073-00	METAL CHIP 10K 5% 1/10W					
R647	1-216-073-00	METAL CHIP 10K 5% 1/10W		D601	8-719-801-78	DIODE 1SS184	
R648	1-216-117-00	METAL CHIP 680K 5% 1/10W		D602	8-719-801-78	DIODE 1SS184	
R649	1-216-073-00	METAL CHIP 10K 5% 1/10W		D603	8-719-801-78	DIODE 1SS184	
R650	1-216-073-00	METAL CHIP 10K 5% 1/10W		D604	8-719-801-78	DIODE 1SS184	
R651	1-216-073-00	METAL CHIP 10K 5% 1/10W		D609	8-719-801-78	DIODE 1SS184	
		< SWITCH >				< TRANSISTOR >	
S631	1-692-004-11	SEITCH, ROTARY					
S632	1-692-005-11	SWITCH, ROTARY		Q601	8-729-805-43	TRANSISTOR 2SC3396	
S633	1-692-007-11	SWITCH, ROTARY		Q602	8-729-230-49	TRANSISTOR 2SC2712-G	
		*****				< RESISTOR >	
* 1-641-943-11	SWITCH (L) BOARD	*****					
		< CONNECTOR >					
* CN611	1-564-495-11	PIN, CONNECTOR 2P		R601	1-216-073-00	METAL CHIP 10K 5% 1/10W	
CN612	1-506-615-11	PIN, CONNECTOR 9P		R602	1-216-073-00	METAL CHIP 10K 5% 1/10W	
		< DIODE >		R603	1-216-073-00	METAL CHIP 10K 5% 1/10W	
D610	8-719-801-78	DIODE 1SS184		R604	1-216-073-00	METAL CHIP 10K 5% 1/10W	
D611	8-719-801-78	DIODE 1SS184		R605	1-216-073-00	METAL CHIP 10K 5% 1/10W	
D612	8-719-801-78	DIODE 1SS184					
D616	8-719-801-78	DIODE 1SS184		R606	1-216-073-00	METAL CHIP 10K 5% 1/10W	
		< TRANSISTOR >		R607	1-216-073-00	METAL CHIP 10K 5% 1/10W	
Q611	8-729-805-43	TRANSISTOR 2SC3396		R608	1-216-073-00	METAL CHIP 10K 5% 1/10W	
Q612	8-729-230-49	TRANSISTOR 2SC2712-G		R609	1-216-073-00	METAL CHIP 10K 5% 1/10W	
						< SWITCH >	
				S601	1-692-008-11	SWITCH, ROTARY (INPUT SELECTOR) 8P	

				* 1-643-077-11	TAPE BOARD	*****	

U IN

U OUT

VOLUME

Ref.No. Part No. Description Remark

* 1-641-934-11 U IN BOARD

* 1-642-030-11 U OUT BOARD

< CAPACITOR >

C4501	1-136-478-11	FILM	470PF	5%	630V
C4502	1-136-478-11	FILM	470PF	5%	630V
C4503	1-136-478-11	FILM	470PF	5%	630V
C4504	1-136-478-11	FILM	470PF	5%	630V

< CONNECTOR >

* CN4501 1-573-864-11 PIN, CONNECTOR (PC BOARD) 5P

< COIL >

L4501	1-424-397-11	COIL, CHOKE	200uH
L4502	1-424-397-11	COIL, CHOKE	200uH
L4503	1-424-397-11	COIL, CHOKE	200uH
L4504	1-424-397-11	COIL, CHOKE	200uH

* 1-641-930-11 VOLUME BOARD

< CONNECTOR >

* CN2501 1-564-518-11 PLUG, CONNECTOR 3P
 * CN2502 1-573-863-11 PIN, CONNECTOR (PC BOARD) 4P
 * CN2503 1-573-863-11 PIN, CONNECTOR (PC BOARD) 4P
 * CN2504 1-573-862-11 PIN, CONNECTOR (PC BOARD) 3P
 * CN2505 1-564-517-11 PLUG, CONNECTOR 2P
 * CN2506 1-564-517-11 PLUG, CONNECTOR 2P

< VARIABLE RESISTOR >

* RV2501 1-241-752-11 RES, VAR, CARBON 20KX3 (ATTENUATOR)

ACCESSORIES & PACKING MATERIALS

1-465-979-11 REMOTE COMMANDER (RM-ER1)
 1-690-294-11 CORD, CONNECTION
 1-691-675-11 PLUG, LOAD
 * 4-947-753-01 CUSHION (A)
 * 4-947-754-01 CUSHION (B)
 * 4-947-755-01 INDIVIDUAL CARTON

Ref.No. Part No. Description Remark

HARDWARE LIST

#1	7-621-775-20	SCREW +B 2.6X5
#2	7-623-954-01	WASHER 3.0, FIBER
#3	7-623-955-01	WASHER 4.0, FIBER
#4	7-682-246-04	SCREW +K 3X5
#5	7-682-247-09	SCREW +K 3X6
#6	7-682-545-09	SCREW +B 3X4
#7	7-682-546-09	SCREW +B 3X5
#8	7-682-547-09	SCREW +B 3X6
#9	7-682-548-09	SCREW (3X8)
#10	7-682-549-09	SCREW +B 3X10
#11	7-682-550-09	SCREW +B 3X12
#12	7-682-552-09	SCREW +B 3X16
#13	7-682-567-09	SCREW +B 4X25
#14	7-683-425-04	BOLT, HEXAGON SOCKET 4X20
#15	7-684-023-04	N 3, TYPE 2
#16	7-684-024-04	N 4, TYPE 2
#17	7-685-870-09	SCREW +BVTT 3X5 (S)
#18	7-682-147-15	SCREW, TR
#18	7-682-147-15	SCREW, TR
#19	7-685-874-09	+BVTT 3X12

SONY

SERVICE MANUAL

Germany model

SUPPLEMENT-1

Remote Commander RM-ER1 Addition

File this supplement with the service manual.

SECTION 4 EXPLODED VIEWS

NOTE:

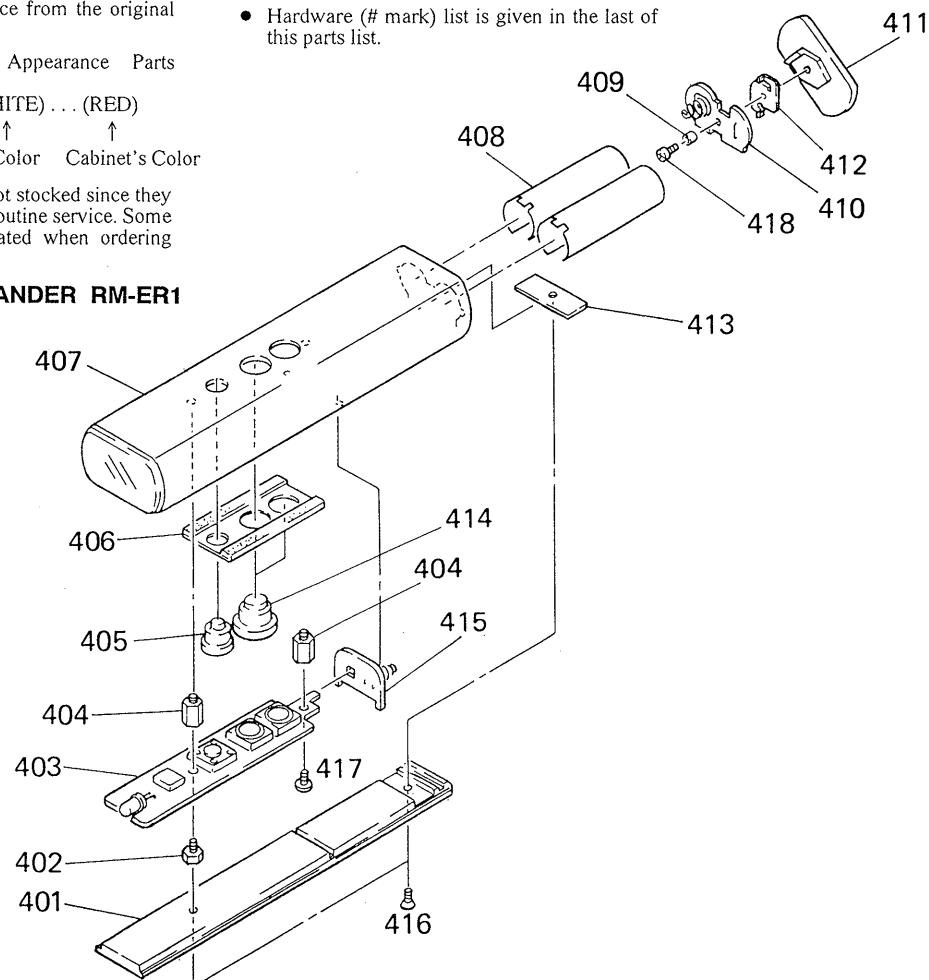
- -XX and -X mean standardized parts, so they may have some difference from the original one.

- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) ... (RED)

Parts Color Cabinet's Color

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

(8) REMOTE COMMANDER RM-ER1



Ref.No.	Part No.	Description
	401	9-902-160-01 COVER PLATE
*	402	9-902-169-01 SPACER BOLT (B)
*	403	9-902-171-01 A BOARD, COMPLETE
*	404	9-902-168-01 SPACER BOLT (A)
	405	9-902-163-01 PUSH-KEY (SMALL)
	406	9-902-164-01 CUSHION
	407	9-902-159-01 BODY
	408	9-902-170-01 PROTECTOR
	409	9-902-167-01 SPACER

Ref.No.	Part No.	Description
*	410	9-902-172-01 B BOARD, COMPLETE
	411	9-902-165-01 BATTERY CASE LID
	412	9-902-166-01 SPRING
	413	9-902-161-01 RETAINER
	414	9-902-162-01 PUSH-KEY (LARGE)
*	415	9-902-173-01 C BOARD, COMPLETE
	416	7-627-454-28 SCREW +K 2×4.5
	417	7-621-284-10 SCREW +P 2.6×5
	418	7-621-284-10 SCREW +P 2.6×5