

Service Manual

CD Stereo System

SA-CH150

COMPACT
disc
 DIGITAL AUDIO

DIGITAL
MASH*
 multi-stage noise shaping


DOLBY SYSTEM*

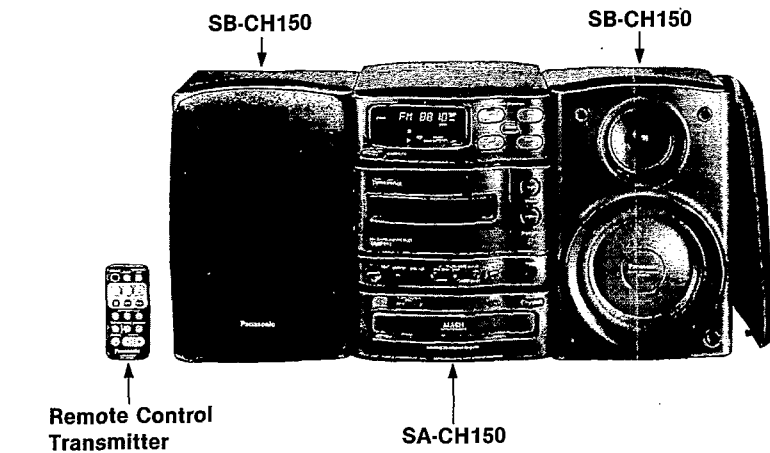
Colour

(K) ... Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(K)
(EB)	Great Britain.	
(EG)	Germany and Italy.	
(GC)	Asia, Latin America, Middle Near East and Africa.	
(GN)	Oceania.	

System: SC-CH150



- ※ • Technics (or Panasonic) developed the world's first MASH type DAC and ADC. MASH technology was invented by NTT (LSI Labs).
 • MASH is a trademark of NTT.

- * Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

TAPE DECK: AR300 MECHANISM SERIES
TRAVERSE DECK: RAE011Z MECHANISM SERIES

SPECIFICATIONS (DIN 45 500)

■ AMPLIFIER SECTION

40 Hz—16 kHz continuous output both channels driven	2 × 15 W (THD 1%, 4Ω)
1 kHz continuous power output both channels driven	2 × 20 W (THD 1%, 4Ω)
Total harmonic distortion	
Half power at 1 kHz	0.09% (4Ω)
Input sensitivity	
AUX	250 mV
Input impedance	
AUX	22 kΩ

■ FM TUNER SECTION

Frequency range	87.50—108.00 MHz
Sensitivity	1.8 μV (IHF '58, usable)
S/N 26 dB	1.5 μV (40 kHz mod., 75Ω)
S/N	
MONO	70 dB (75 dB, IHF)
Image rejection at 98 MHz	40 dB
Alternate channel selectivity	±400 kHz, 50 dB
Stereo separation	
1 kHz	35 dB
Antenna terminals	75Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	
MW	522—1611 kHz (9 kHz steps)
MW	530—1620 kHz (10 kHz steps)
LW	144—288 kHz (9 kHz steps)
Sensitivity (S/N 20 dB)	
MW (at 999 kHz, 1000 kHz)	500 μV/m
LW (at 216 kHz)	50 μV

■ CASSETTE DECK SECTION

Track system	4-track, 2-channel
Heads	
Record/playback	Permalloy head
Erasure	Double gap ferrite head
Motor	DC servo motor
Recording system	AC bias, 100 kHz
Erase system	AC erase
Tape speed	4.8 cm/s (1 7/8 ips)
Frequency response (at PHONES OUT)	
Normal	40 Hz—14 kHz (+3 dB, -6 dB)
CrO ₂	40 Hz—14 kHz (+3 dB, -6 dB)
Metal	40 Hz—15 kHz (+3 dB, -6 dB)

Panasonic

System	Unit	
	Audio center	Speakers
SC-CH150	SA-CH150	SB-CH150

S/N (CrO ₂ type tape)	
Dolby NR off	52 dB (A-WTD)
Dolby NR on	61 dB (CCIR)
Wow and flutter	0.1% (WRMS)
Fast forward and rewind time	
	Approx. 110 seconds with C-60 cassette tape

■ CD SECTION

Sampling frequency	44.1 kHz
Decoding	16-bit linear
	Beam source/wave length
	Semiconductor laser/780 nm
Number of channels	Stereo
Wow and flutter	Below measurable limit
Digital filter	8 fs
D/A converter	MASH (1 BIT DAC)

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■ BEFORE USE

(For (GC) area.)

Be sure to disconnect the mains cord before adjusting the voltage selector.

Use a minus (-) screwdriver to set the voltage selector (on the rear panel) to the voltage setting for the area in which the unit will be used.

■ GENERAL

Power consumption 86 W
9 W (with standby mode)

Power supply
 [For (E, EB, EG, GN) areas.] AC 50/60 Hz, 230 V
 [For (GC) area.] AC 50/60 Hz, 110/127/230/240 V
 Dimensions (W × H × D) 180 × 245 × 272 mm
 Weight 5.2 kg

Notes:

1. Design and specifications are subject to change without notice. Weight and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

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(If the power supply in your area is 117 V or 120 V, set to the "127 V" position.)

Note that this unit will be seriously damaged if this setting is not made correctly. (There is no voltage selector for some countries; the correct voltage is already set.)

■ PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.
Wave length: 780nm
Maximum output radiation power from pickup: 100µW/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG: Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780 nm

Maximale Strahlungsleistung der Lasereinheit: 100µW/VDE

Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

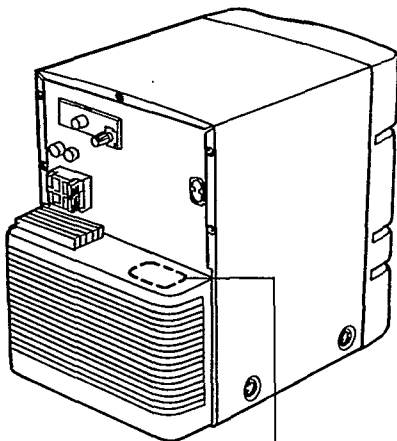
1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.

ADVASEL: I dette a apparat anvendes laser.

• Use of caution labels

Note: ○ Mark is used, × Mark is not used.

Areas	SQWD7	RQLS0021	RQLS0078
(E)	○	○	○
(EG)	○	○	×
(GC)	○	○	×
(GN)	○	○	×
(EB)	○	○	×



SQWD7

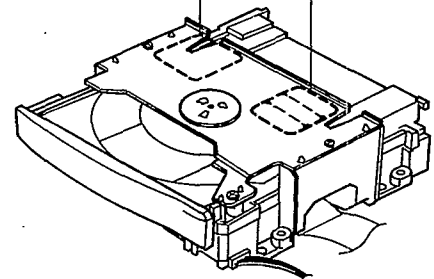
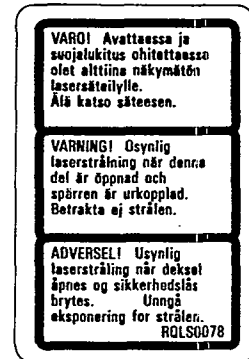


LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

RQLS0021



RQLS0078





■ CAUTION FOR AC MAINS LEAD

[For (EB) area.]

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362. Check for the ASTA mark  or the BSI mark  on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local dealer.

CAUTION!

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:


Blue: Neutral

Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

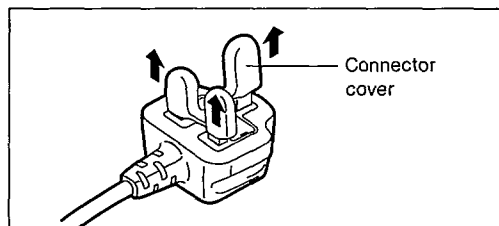
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol .

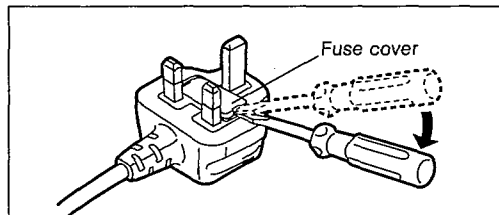
Before use

Remove the connector cover as follows.

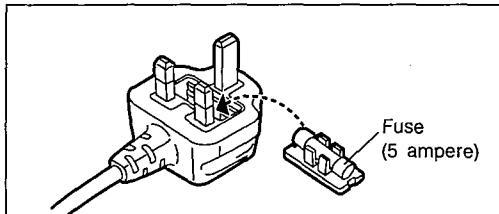


How to replace the fuse

1. Remove the fuse cover with a screwdriver.



2. Replace the fuse and attach the fuse cover



[For (GN) area.]

THIS TUNER/RECEIVER IS CAPABLE OF RECEIVING THE NEW AM STEREO BROADCASTS FROM THE AM BAND RADIO STATIONS. HOWEVER LIKE MANY TUNERS AND RECEIVERS CURRENTLY AVAILABLE ON THE MARKET IT WILL REPRODUCE THIS AM STEREO SIGNAL ONLY IN AM MONO, WHICH, IN EFFECT, IS OF NO LESSER QUALITY THAN YOUR EXISTING AM MONO TUNER/RECEIVER.

PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of the amplifier are used.

If this occurs, follow the procedure outlines below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note:

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

BEFORE REPAIR AND ADJUSTMENT

Disconnect AC power, Discharge both Power Supply Capacitors C701 2200µF, C702/C703 4700µF through a 10Ω, 5W resistor to ground.

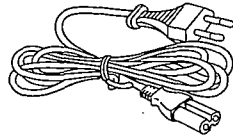
DO NOT SHORT-CIRCUIT DIRECTLY (with a screwdriver blade, for instance), as this may distroy solid state devices. After repairs are completed, restore power gradually using a variac, to avoid overcurrent.

Current consumption at 50Hz/60Hz in NO SIGNAL mode should be shown below with respect to supply voltage AC 230V/240V/110-127V/220-240V.

Power supply voltage	AC 230V		AC 240V		AC 110-127V		AC 220-240V	
	50Hz	90~180mA	50Hz	85~175mA	50Hz	185~365mA	50Hz	85~175mA
Consumed current 50/60Hz	60Hz	72~144mA	60Hz	68~140mA	60Hz	148~292mA	60Hz	68~140mA

ACCESSORIES

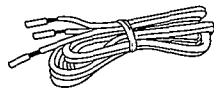
Power cable 1 pc.
 [RJA0019-2K (E, EG, GC)]
 [VJA0733 (EB)]
 [RJA0036-K (GN)]



Remote control transmitter 1 pc.
 (RAK-CH910WK)



Speaker cable 2 pcs.
 (REE0499)

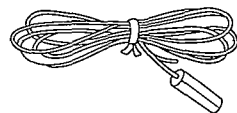


Lithium battery 1 pc.
 (CR2025/1P0D)

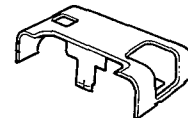


Note:
 This is available on sale route.

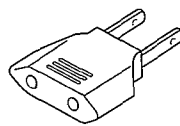
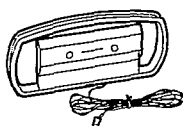
FM indoor antenna 1 pc.
 [RSA0007 (E, EB, EG)]
 [RSA0006 (GC, GN)]



Back cover 1 pc.
 (RKF0328-K)








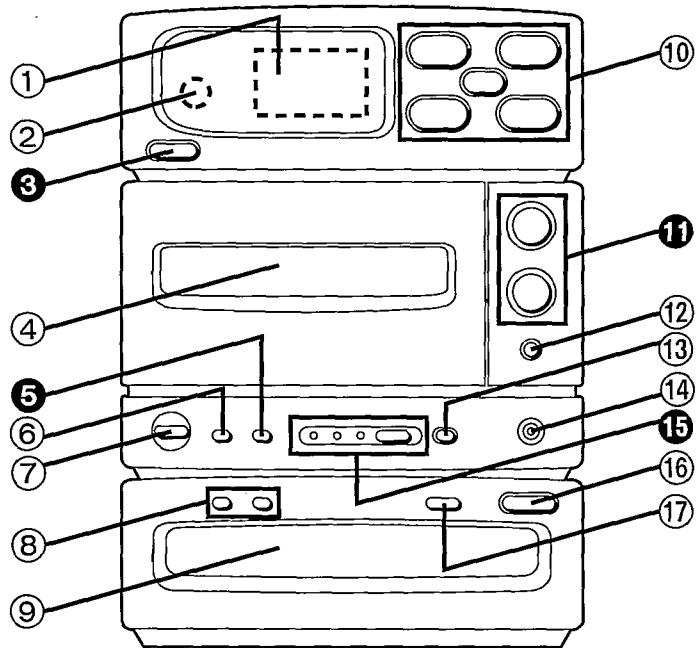
LW/MW loop antenna 1 pc. Power plug adaptor 1 pc. Attachment plug 1 pc.
 (RSA0009) [SJP5213-2 (GC)] [SJP9009 (EB)]



FRONT PANEL CONTROLS

The buttons indicated by the white numbers on the black ground (for example ③) can also be activated from the remote control unit.

- ① Display
- ② Remote control signal sensor (SENSOR)
- ③ Power "STANDBY /ON" switch
(POWER, STANDBY 
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
- ④ Cassette holder
- ⑤ Tape travel button (DIRECTION)
- ⑥ Dolby NR ON/OFF button (DOLBY NR)
- ⑦ Eject button (EJECT)
- ⑧ Tape length input buttons (TAPE LENGTH)
- ⑨ Disc tray
- ⑩ Easy operation buttons (5-KEY OPERATION)
- ⑪ Volume controls (VOLUME)
- ⑫ Timer ON/OFF button ( PLAY/ REC)
- ⑬ Recording start/stop button ( , START/STOP)
- ⑭ Headphones jack (PHONES)
- ⑮ Sound menu button and indicators/Beep on/off button (SOUND MENU, -BEEP OFF/ON)
Beep on/off function is available only on the main unit.
- ⑯ Disc tray open/close button (OPEN/CLOSE)
- ⑰ CD edit button (EDIT)



■ PREPARING FOR REMOTE CONTROL

Installing the lithium battery

A

1. While pressing the cover in the ① direction, pull it out in the ② direction.
2. Install with the "+" side facing up.
3. Push the cover in the direction of the arrow.

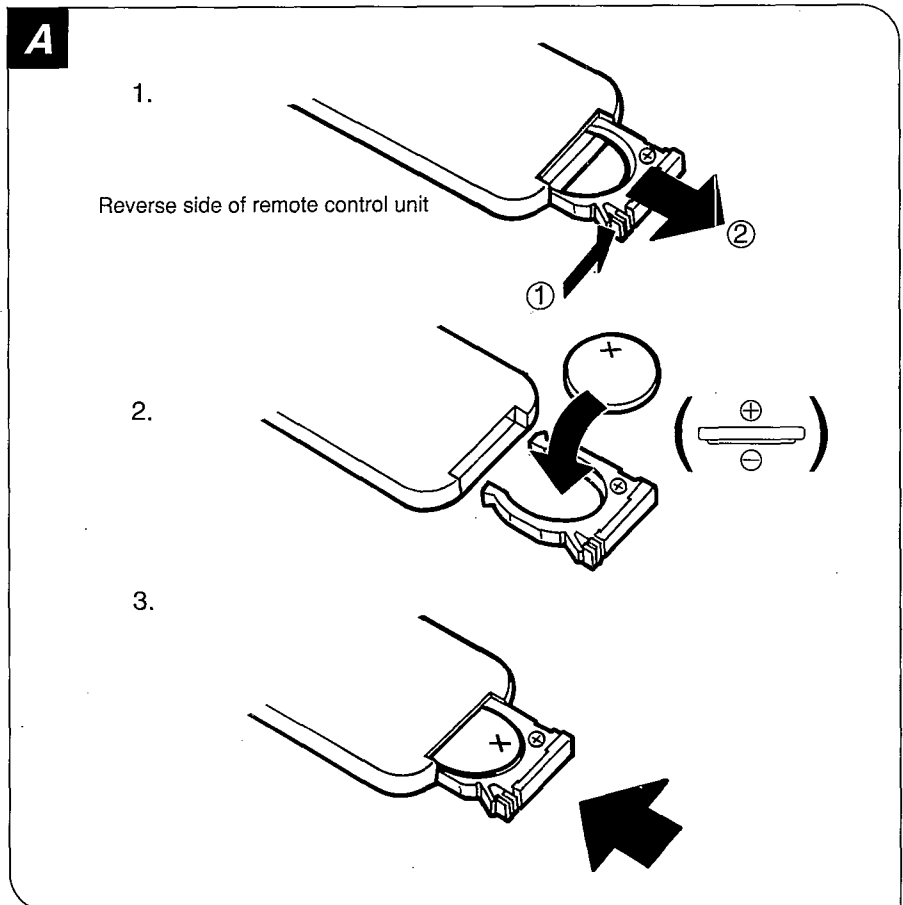
To prevent damage to the lithium battery and electrolyte leakage:

- Install the battery with the "+" and "-" polarities aligned properly.
- Remove the lithium battery if you do not intend to use the remote control unit for a long time.
- Do not throw a lithium battery into a fire, subject it to short-circuiting, disassemble it or apply heat to it.

The average life of a lithium battery is about one year.:

It is time to replace the battery when the remote control unit will not function even when it is operated close to the system.

(To be continued)



Remote control unit's operation range

B

How to use the remote control unit properly:

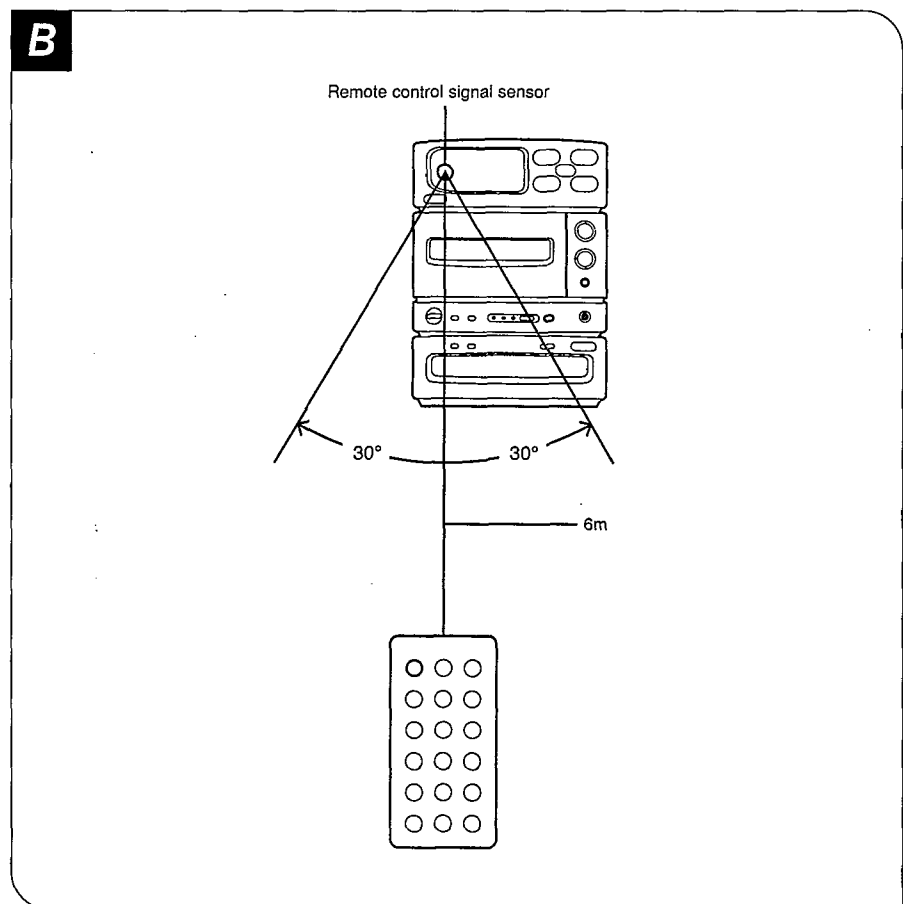
- Do not place obstacles between the remote control signal sensor and remote control unit.
- Do not expose the remote control signal sensor to direct sunlight or to the bright light of an inverter fluorescent light.
- Take care to keep the remote control signal sensor and end of the remote control unit free from dust.

To prevent malfunctioning of the remote control unit:

- Do not disassemble or remodel the unit.
- Do not place heavy objects on top of it.
- Do not leave it where it will be exposed to direct sunlight.
- Do not spill beverages or other liquids over it.

Note

When the system is installed in a rack, the distance over which the remote control unit can be operated may be reduced depending on the thickness and color of the rack's glass doors.



CONNECTIONS

Connecting the accessories

1 Connect the FM indoor antenna.

Find a position on a wall or other surface where there is minimal noise during reception and tape the antenna at that position. If the noise level is high, it is recommended that an outdoor antenna be installed.

(See page 10.)

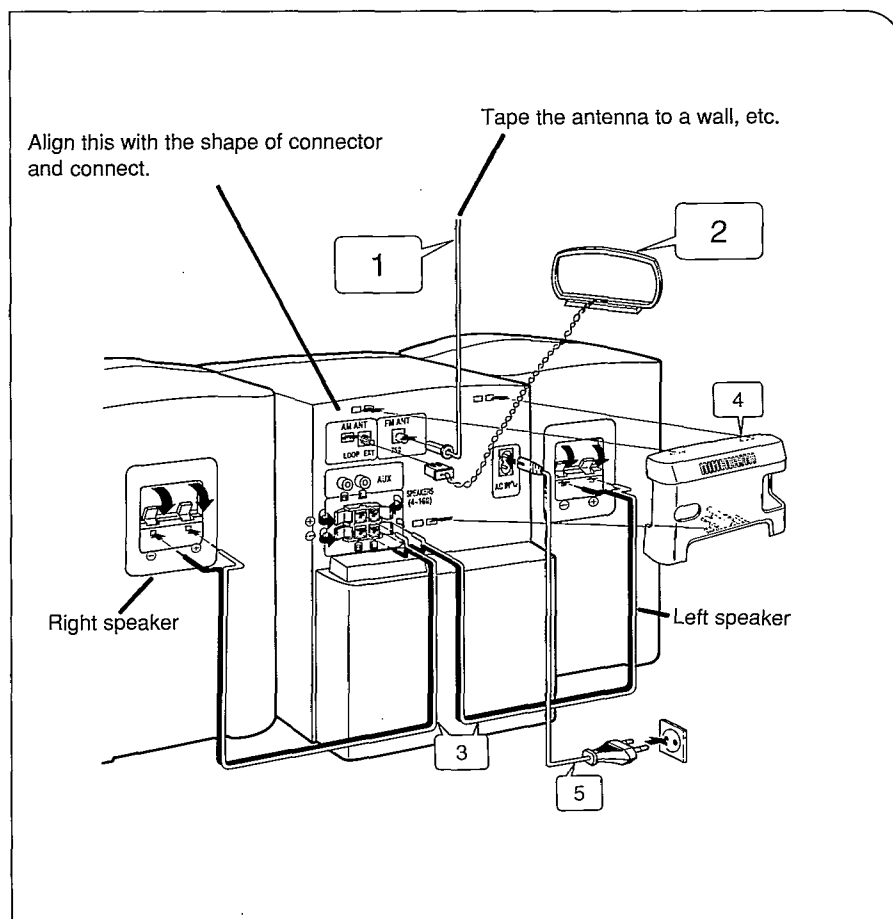
For areas except Europe: **A**

2 Connect the LW/MW loop antenna.

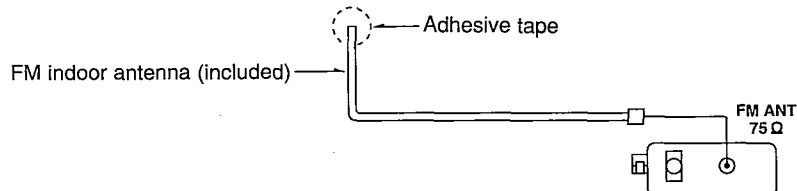
1. Assemble the LW/MW loop antenna.
2. Connect the antenna to the system.
3. Find a position such as the top of the system or the area behind a shelf where there is minimal noise during reception and place the antenna at that position.

Note

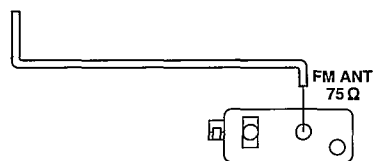
Use wood screws from a hardware store when attaching the antenna to a wall, etc. **B**



1



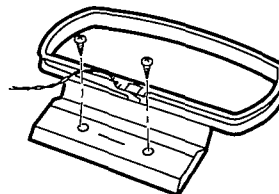
A



2



B



3 Connect the speaker cables.

1. Twist the center conductor. If its strands have become unraveled, twist them tight again.
2. Connect the cables to the speakers. Connect each of the cables to the speaker terminal lever with the same color.
3. Connect the cables to the system.
 - To prevent malfunctioning, do not short-circuit the conductors.

4 Connect the rear cover.

Poke the antenna cables through the hole in the left side of the cover, and speaker cables through the hole in the bottom of the cover.

Do not try connecting or disconnecting the flat cable while the power is switched to ON.

For areas except Europe: C To set the power voltage:

Set the voltage selector to the voltage setting for the area in which the unit will be used.

Note

Note that this unit will be seriously damaged if this setting is not made correctly.

5 Connect the power cable.

Connect this cable last of all through the hole in the right side of the rear cover.

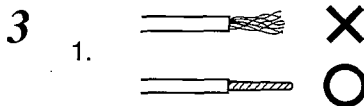
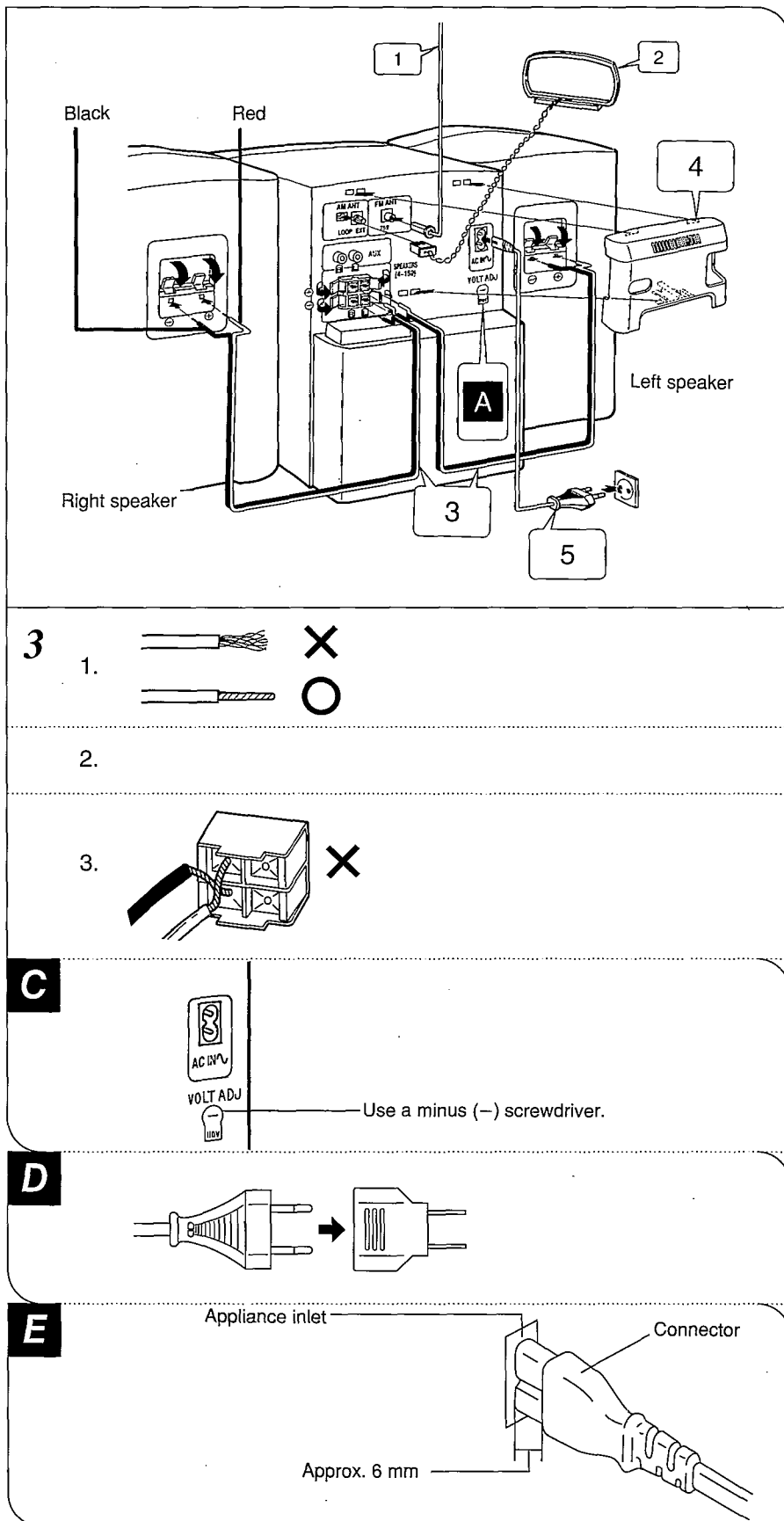
For areas except Europe: D

If the power plug will not fit your socket, use the power plug adaptor (included).

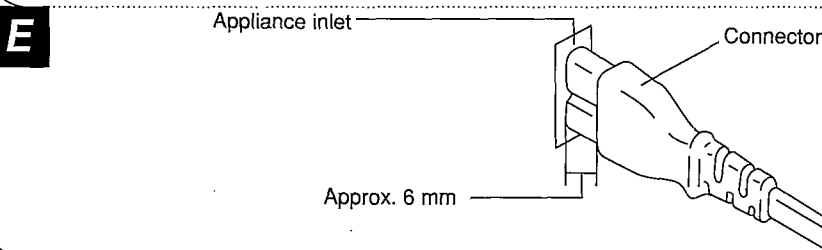
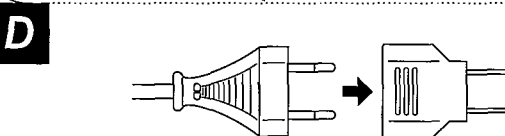
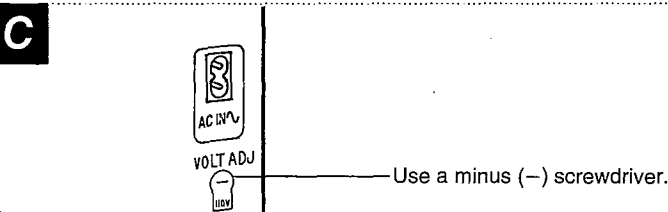
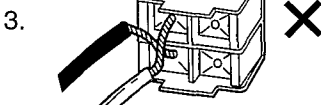
Insertion of Connector: E

Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.

However there is no problem using the unit.



2.



Connecting an outdoor antenna

FM outdoor antenna (not included)

F

If the FM indoor antenna does not provide satisfactory reception of FM broadcasts, use an outdoor antenna.

You may need an outdoor antenna if you use this system in a mountainous region or inside a reinforced-concrete building, etc. An outdoor antenna should be installed by a competent technician only.

For areas except Europe (FM outdoor antenna): **G**

1. Remove a piece of the outer vinyl sheath from the end of the cable.
2. Bundle the shield braid, and remove a piece of the inner vinyl sheath covering the core wire.
3. Connect the core wire and the shield braid.

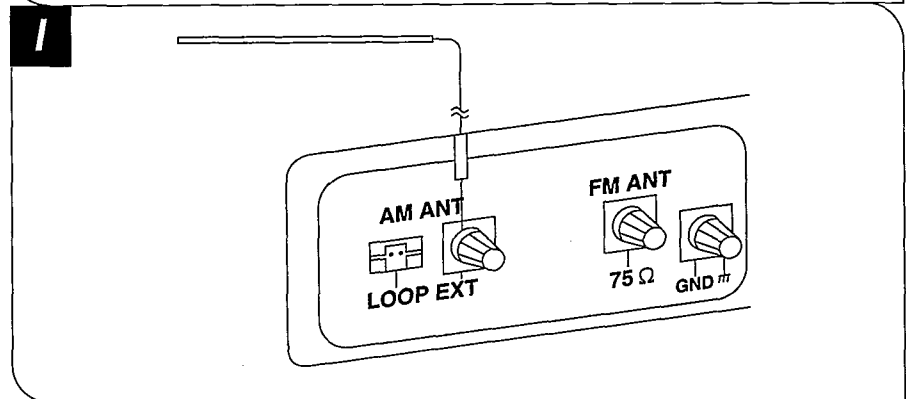
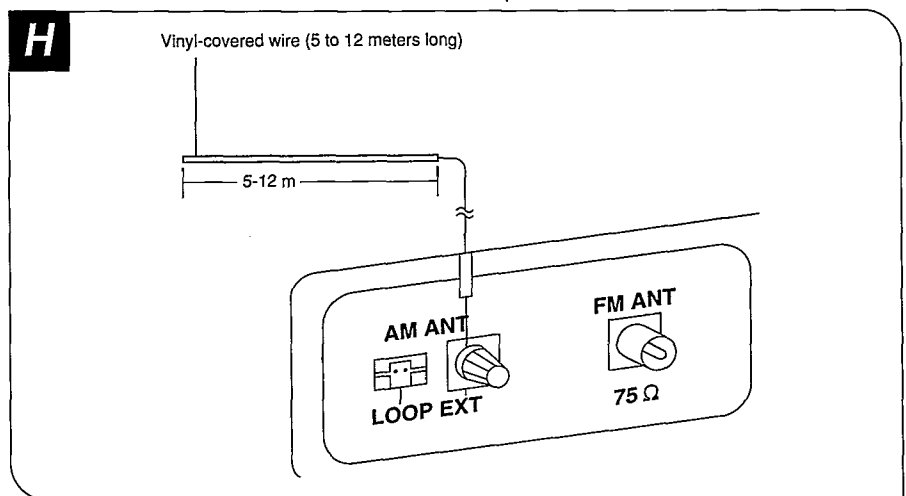
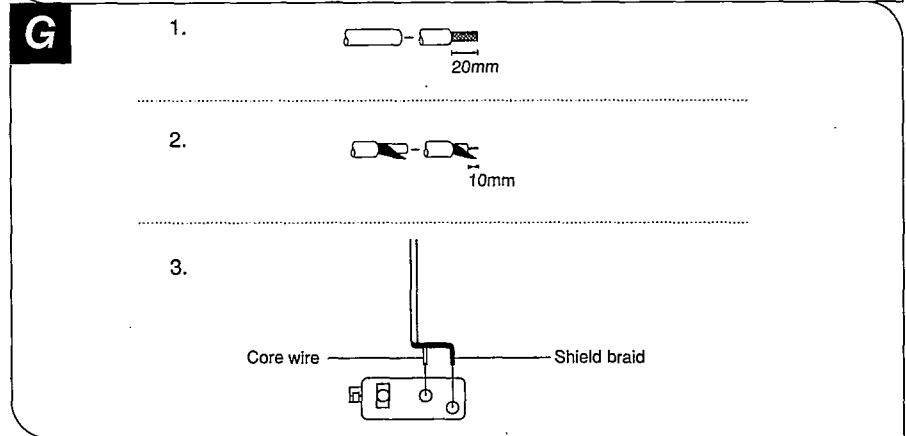
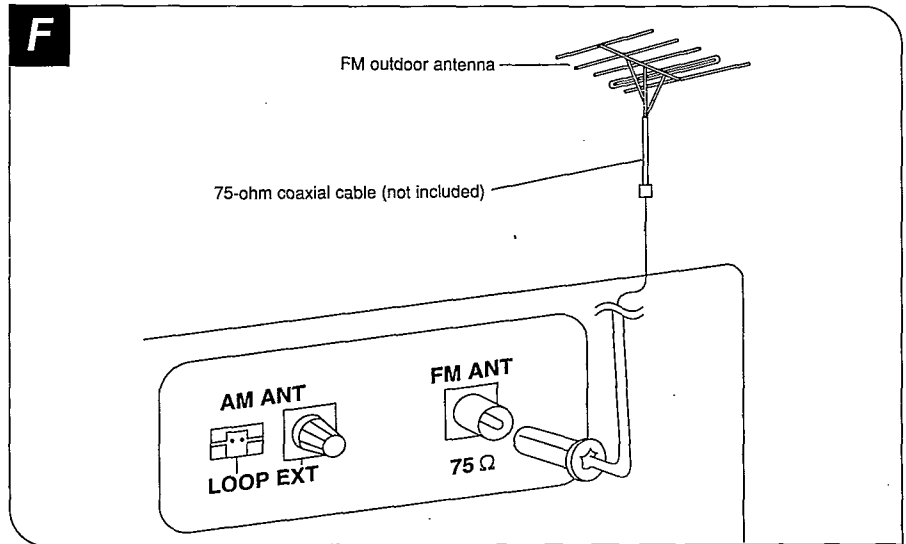
LW/MW outdoor antenna (vinyl-covered wire, not included) **H**

This antenna is required in areas between mountains, inside reinforced concrete buildings or other locations where the broadcast signals are weak. Install the antenna along a window, etc.

Note

Do not disconnect the LW/MW loop antenna.

For areas except Europe: **I**



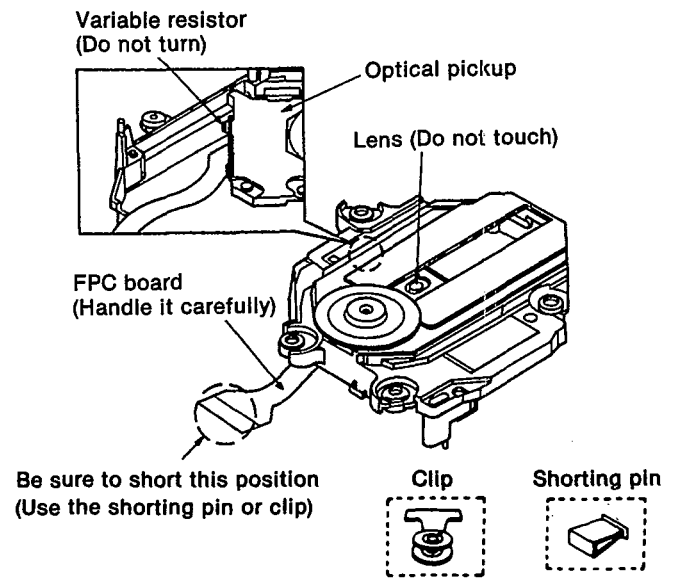
HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.

So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

• Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic shorting pin is inserted into the flexible board (FPC board).
When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FPC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

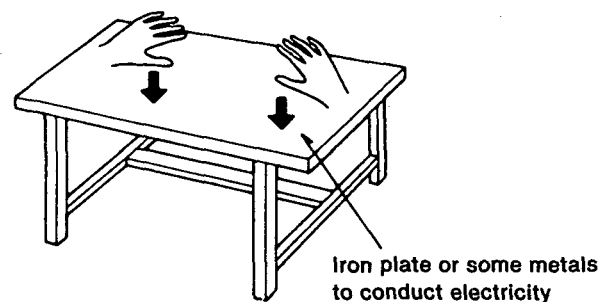
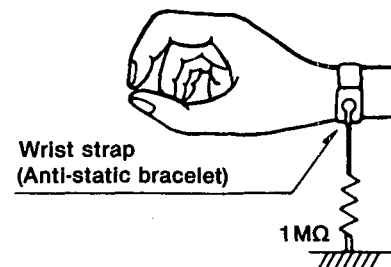


• Grounding for electrostatic breakdown prevention

1. Human body grounding.
Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).

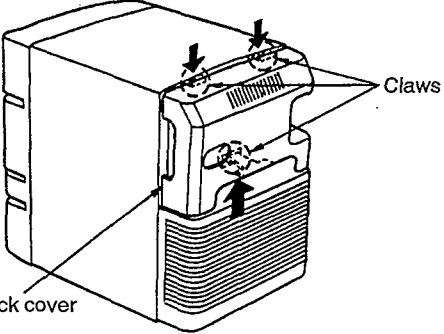
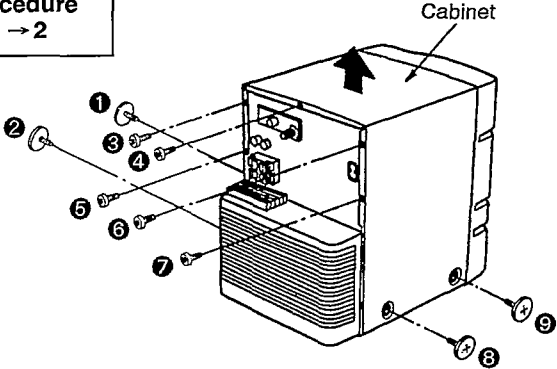
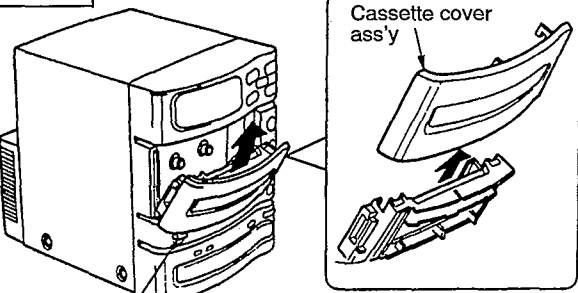
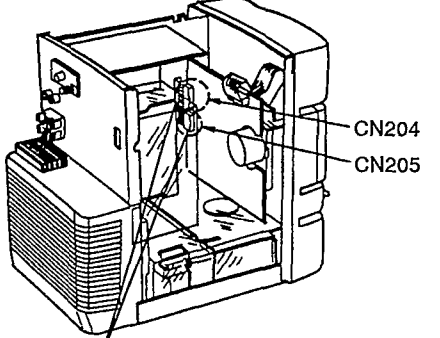
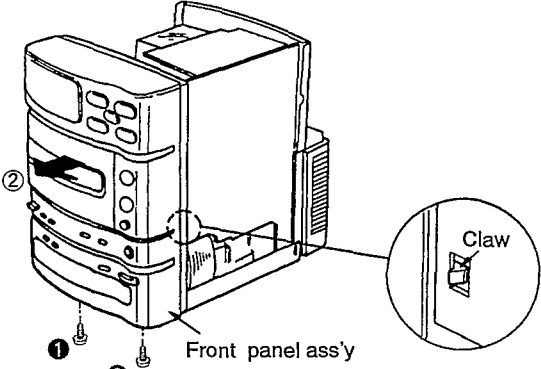
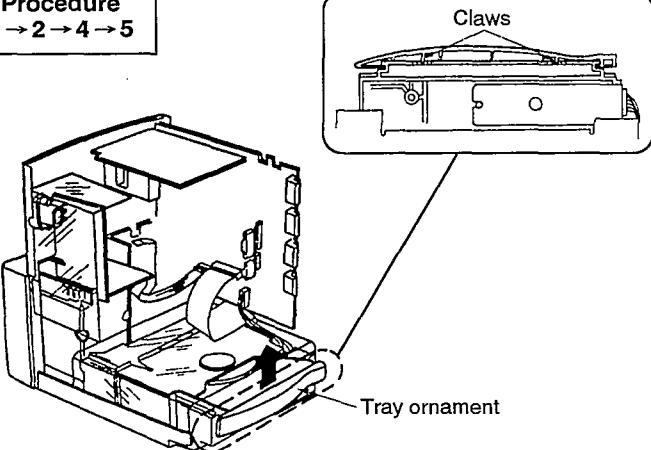


DISASSEMBLY INSTRUCTIONS

Warning: This product uses a laser diode. Refer to caution statements on page 3.

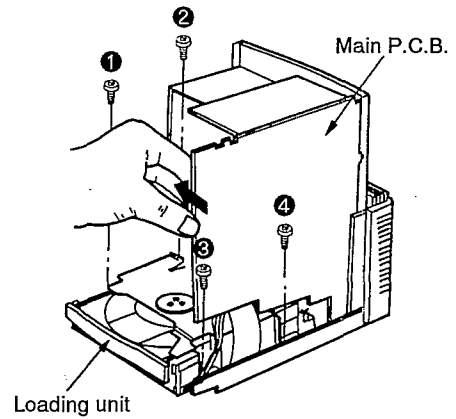
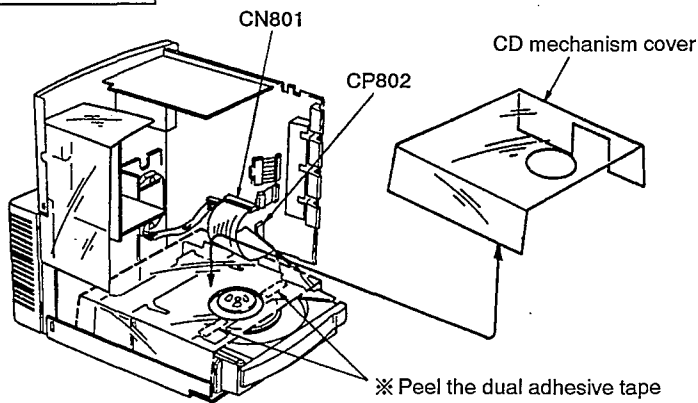
ACHTUNG: • Die lasereinheit nicht zerlegen.
• Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

※ This CD player is equipped with FPC boards, so handle them with care during disassembly and reassembly.

Ref.No. 1	Removal of the back cover	Ref.No. 2	Removal of the cabinet
Procedure 1	 <p>• Release the 3 claws in the direction of arrow, and then remove the back cover.</p>	Procedure 1 → 2	 <ol style="list-style-type: none"> 1. Remove the 9 screws (① ~ ⑨). 2. Remove the cabinet in the direction of arrow.
Ref.No. 3	Removal of the cassette cover ass'y	Ref.No. 4	Removal of the front panel ass'y
Procedure 3	 <ol style="list-style-type: none"> 1. Push the eject button to open the cassette cover ass'y. 2. Remove the cassette cover ass'y in the direction of arrow. 	Procedure 1 → 2 → 4	 <ol style="list-style-type: none"> 1. Remove the 2 connectors (CN204, CN205). <p>※ Pull out the lug of connection in the direction of arrow ①, and then remove the connector.</p>
Ref.No. 5	Removal of the tray ornament	 <ol style="list-style-type: none"> 2. Remove the 2 screws (①, ②). 3. Release the 1 claw. 4. Remove the front panel ass'y in the direction of arrow ②. 	
Procedure 1 → 2 → 4 → 5	 <p>• Release the 2 claws of the tray ornament, and then remove the tray ornament in the direction of arrow.</p>		

Ref.No.
6

Removal of the loading unit

Procedure
1 → 2 → 4 → 6

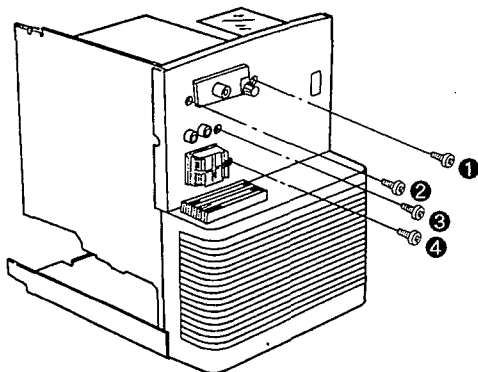
1. Remove the 1 connector (CP802).
2. Remove the flexible P.C.B. (CN801).
3. Remove the CD mechanism cover.

4. Remove the 4 screws (1 ~ 4).

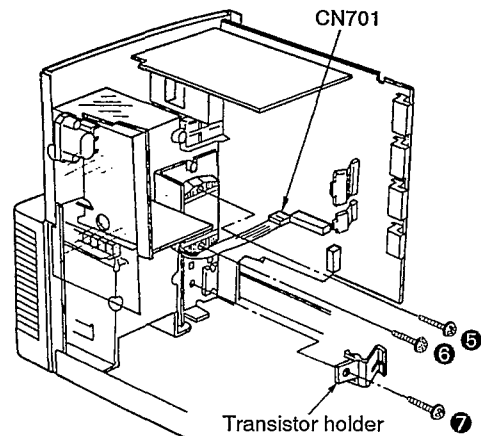
Note: Remove the 2 screw (3) and (4) after pushing the main P.C.B. in the direction of arrow.

Ref.No.
7

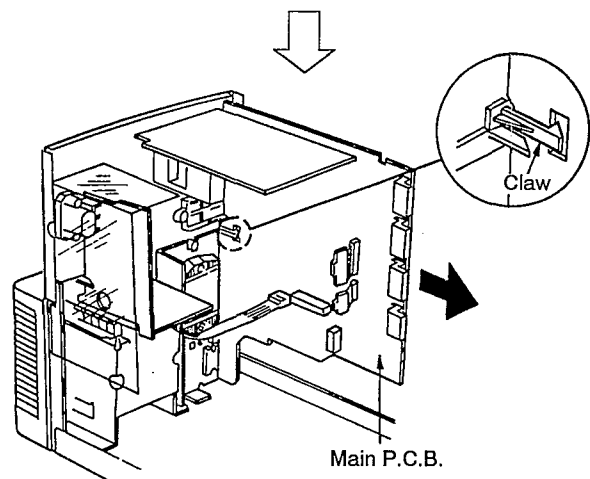
Removal of the main P.C.B. and tuner P.C.B.

Procedure
1 → 2 → 4 → 6
→ 7

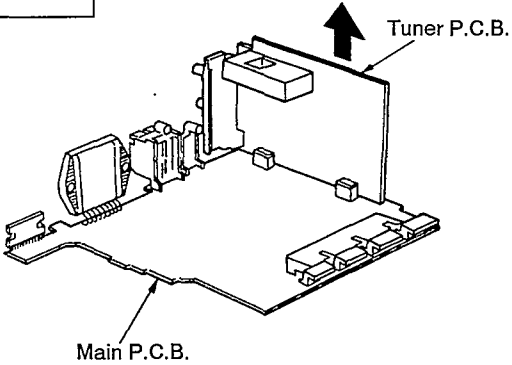
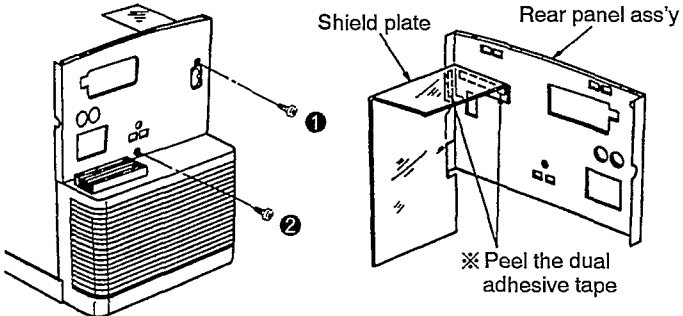
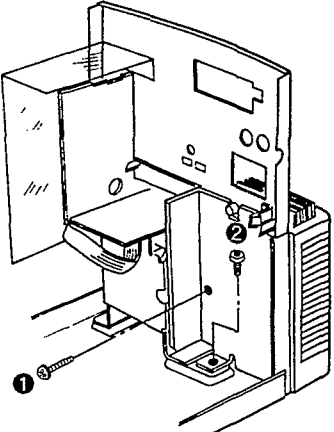
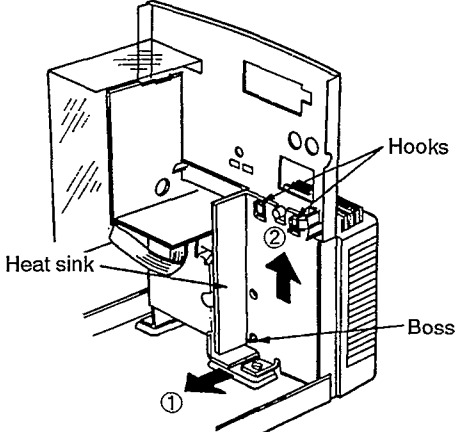
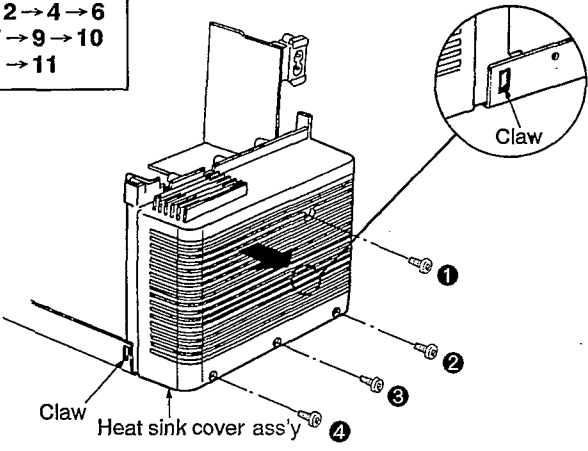
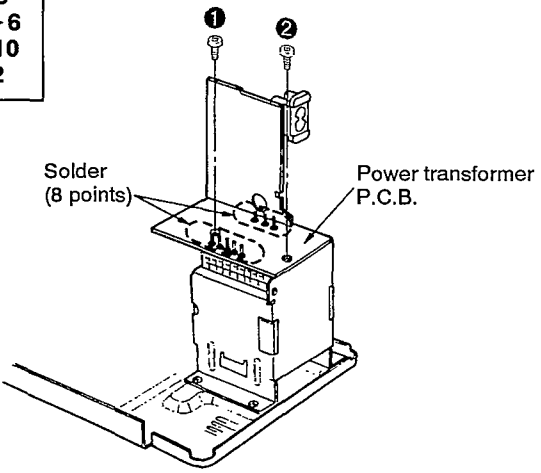
1. Remove the 4 screws (1 ~ 4).

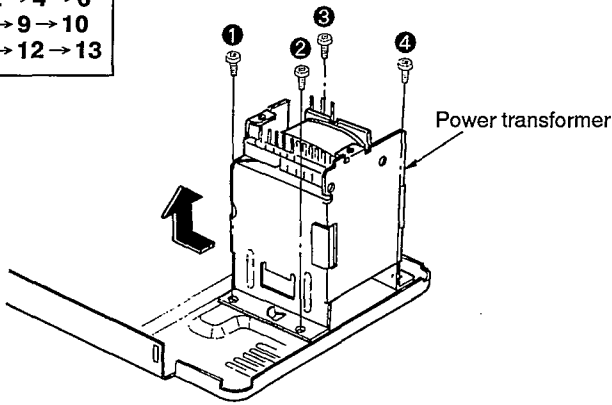
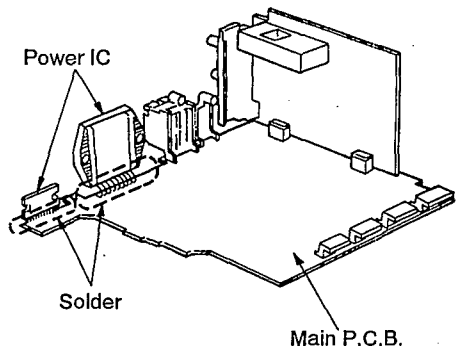
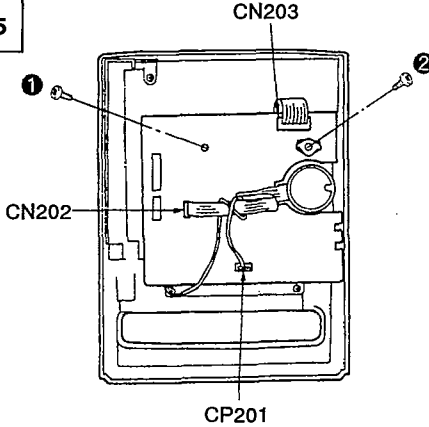
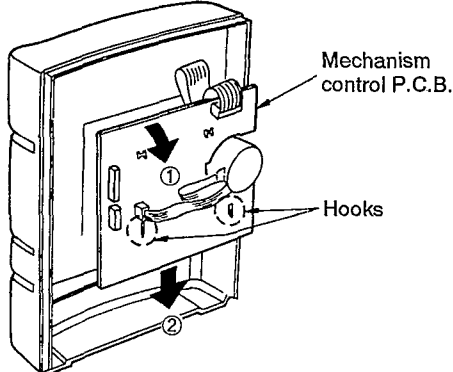
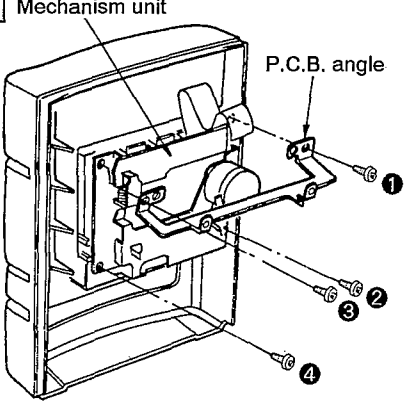
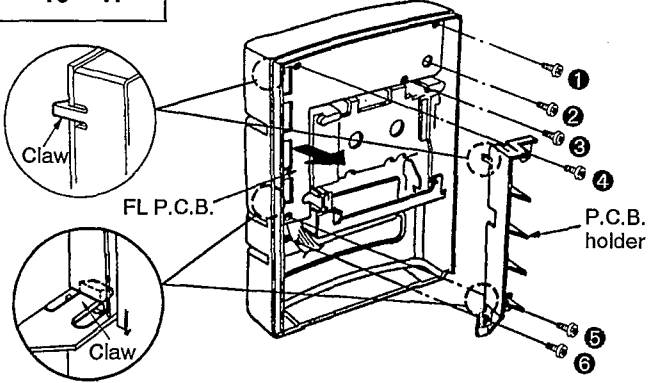


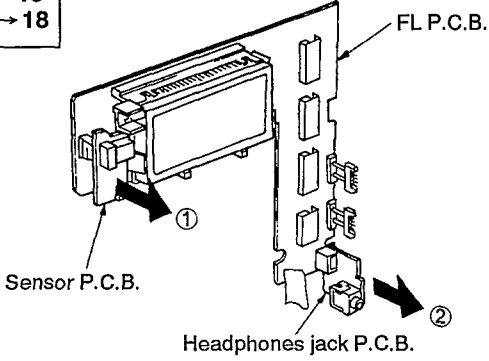
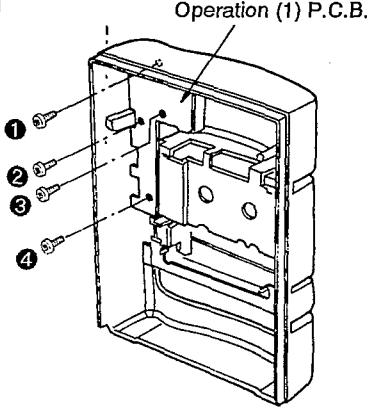
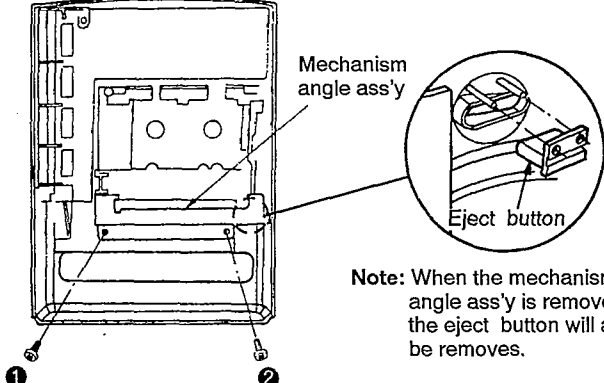
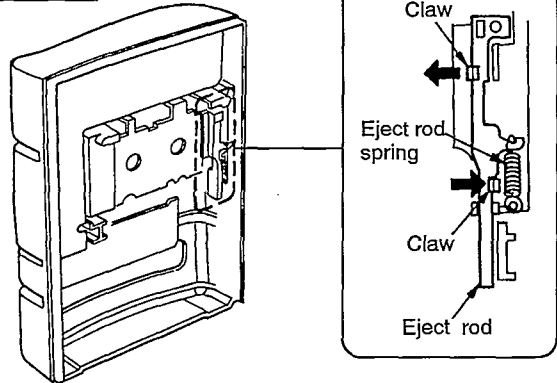
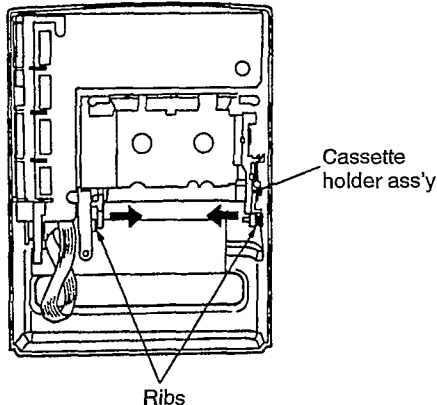
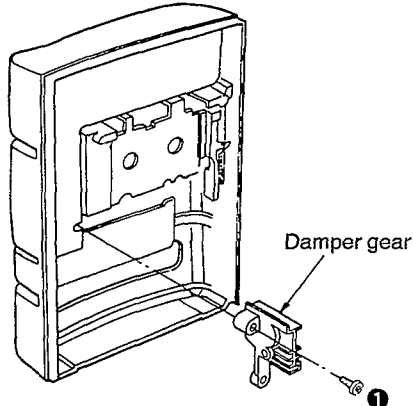
2. Remove the 1 connector (CN701).
3. Remove the 3 screws (5 ~ 7).
4. Remove the transistor holder.

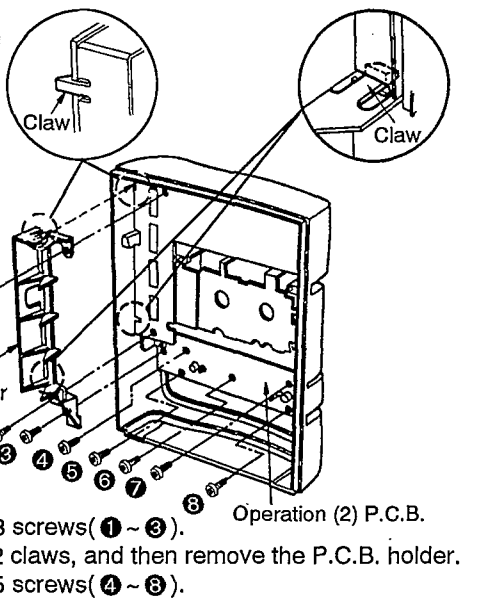
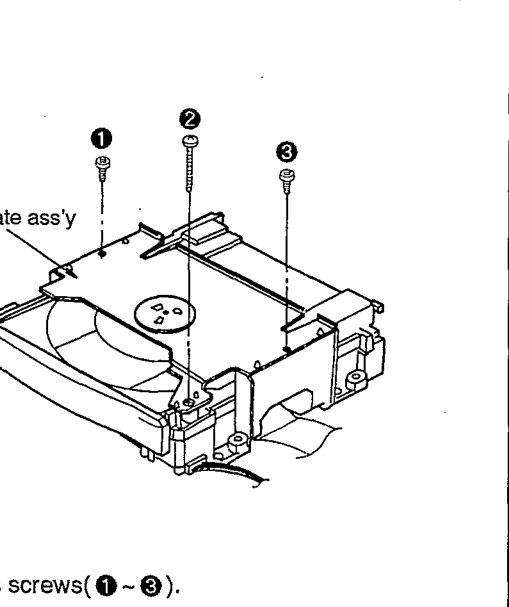
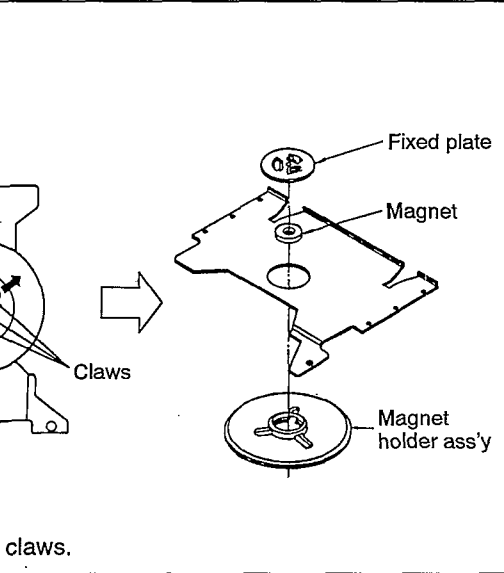
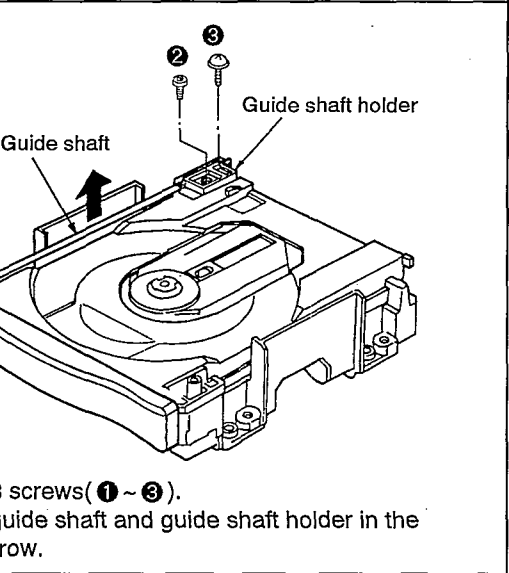
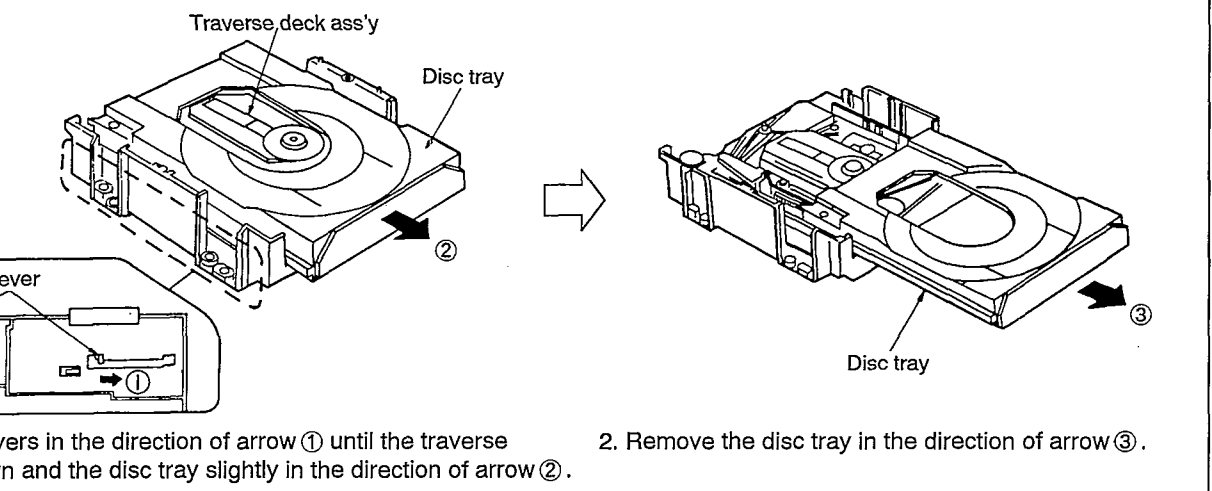


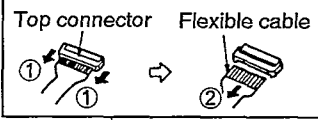
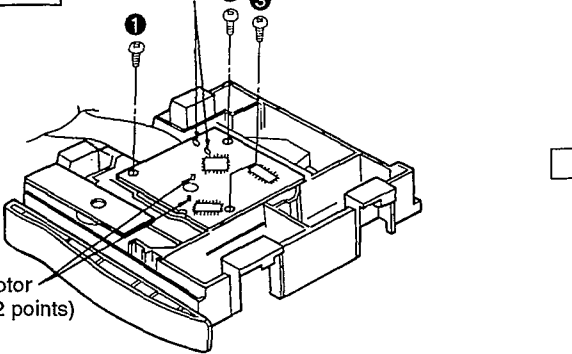
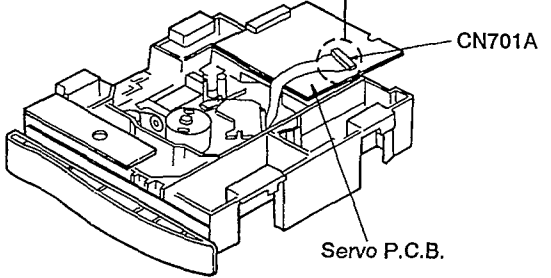
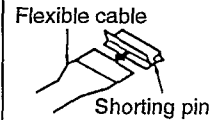
5. Remove the 1 claw.
6. Remove the main P.C.B. in the direction of arrow.

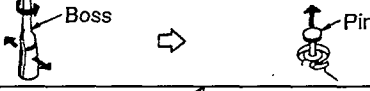
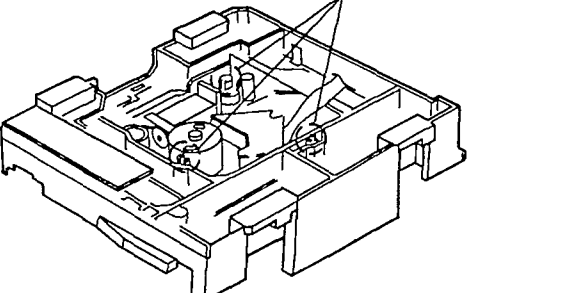
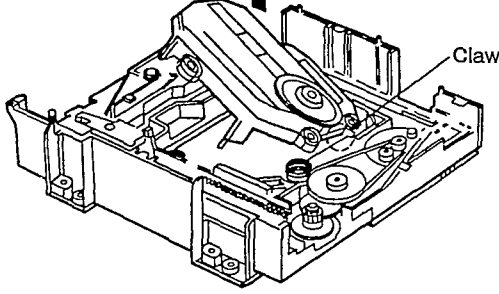
Ref.No. 8	Removal of the tuner P.C.B.	Ref.No. 9	Removal of the rear panel ass'y
Procedure 1 → 2 → 4 → 6 → 7 → 8		Procedure 1 → 2 → 4 → 6 → 7 → 9	
	 <p>• Remove the tuner P.C.B. in the direction of arrow.</p>		 <ol style="list-style-type: none"> 1. Remove the 2 screws (①, ②). 2. Remove the shield plate.
Ref.No. 10	Removal of the heat sink		
Procedure 1 → 2 → 4 → 6 → 7 → 10			
	 <ol style="list-style-type: none"> 1. Remove the 2 screws (①, ②). 		 <ol style="list-style-type: none"> 2. Release the 1 boss by moving the heat sink in the direction of arrow ①, and then remove the heat sink from the hooks with pushing it in the direction of arrow ②.
Ref.No. 11	Removal of the heat sink cover ass'y	Ref.No. 12	Removal of the power transformer P.C.B.
Procedure 1 → 2 → 4 → 6 → 7 → 9 → 10 → 11		Procedure 1 → 2 → 4 → 6 → 7 → 9 → 10 → 11 → 12	
	 <ol style="list-style-type: none"> 1. Remove the 4 screws (① ~ ④). 2. Release the 2 claws. 3. Remove the heat sink cover ass'y in the direction of arrow. 		 <ol style="list-style-type: none"> 1. Remove the 2 screws (①, ②). 2. Unsolder the 8 points.


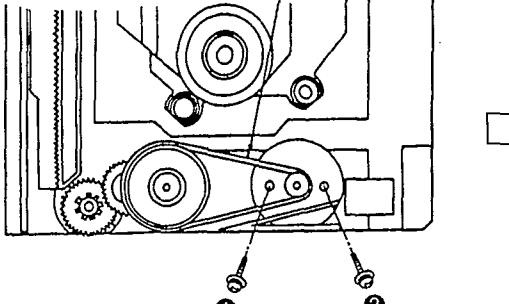
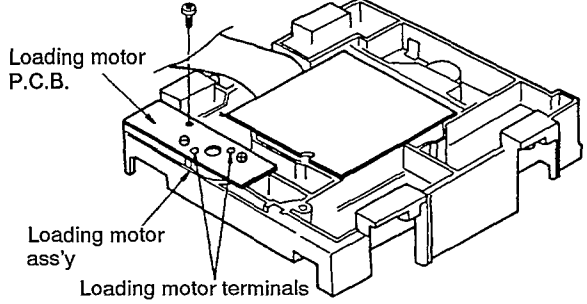
<p>Ref.No. 13</p>	<p>Removal of the power transformer</p>	<p>Ref.No. 14</p>	<p>Removal of the power IC</p>
<p>Procedure 1 → 2 → 4 → 6 → 7 → 9 → 10 → 11 → 12 → 13</p>	 <p>1. Remove the 4 screws(① ~ ④). 2. Remove the power transformer in the direction of arrow.</p>	<p>Procedure 1 → 2 → 4 → 6 → 7 → 14</p>	 <p>• Unsolder the pins of power IC.</p>
<p>Ref.No. 15</p>	<p>Removal of the mechanism control P.C.B.</p>		
<p>Procedure 1 → 2 → 4 → 15</p>	 <p>1. Remove the 3 connectors(CP201, CN202, CN203). 2. Remove the 2 screws(①, ②).</p>		 <p>3. Tilt the mechanism control P.C.B. in the direction of arrow ①, and then lower the mechanism control P.C.B. in the direction of arrow ② to release the hooks.</p>
<p>Ref.No. 16</p>	<p>Removal of the mechanism unit</p>	<p>Ref.No. 17</p>	<p>Removal of the FL P.C.B.</p>
<p>Procedure 1 → 2 → 4 → 15 → 16</p>	 <p>1. Remove the 4 screws(① ~ ④). 2. Remove the P.C.B. angle.</p>	<p>Procedure 1 → 2 → 4 → 15 → 16 → 17</p>	 <p>1. Remove the 6 screws(① ~ ⑥). 2. Release the 2 claws, and then remove the P.C.B. holder. 3. Remove the FL P.C.B. in the direction of arrow.</p>

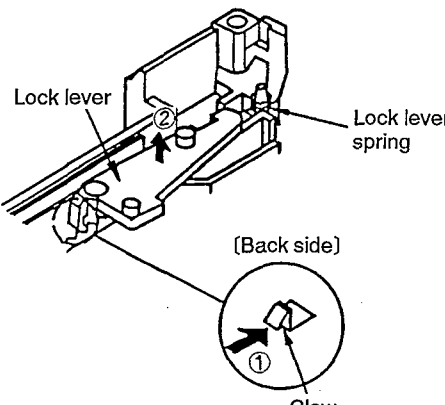
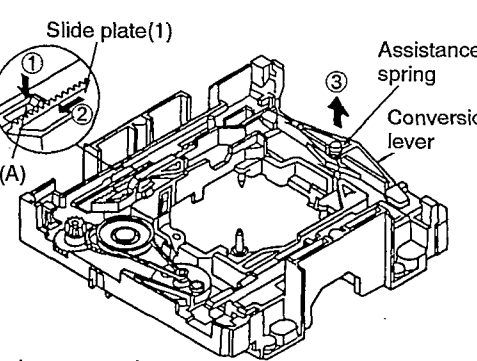
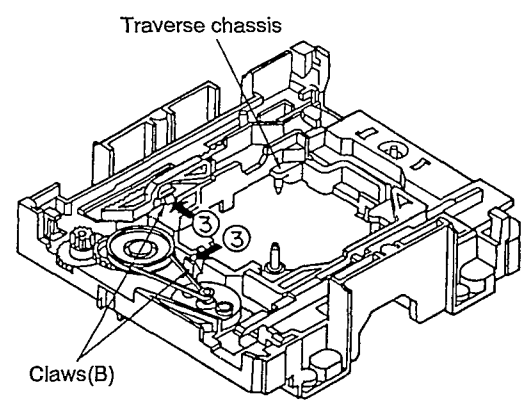
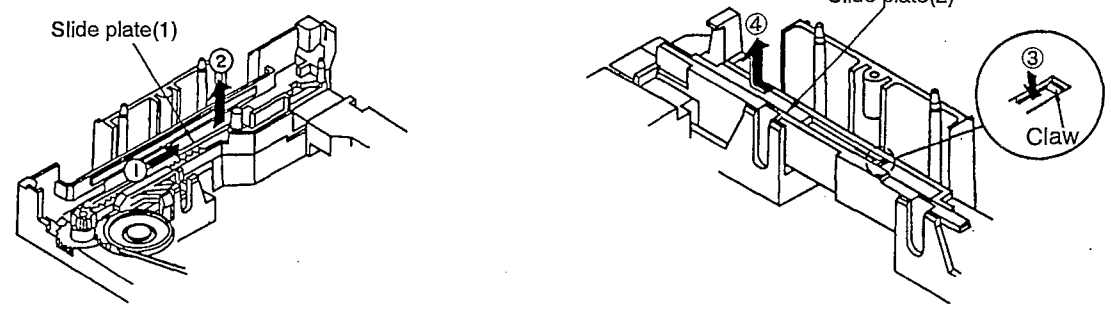
<p>Ref.No. 18</p>	<p>Removal of the sensor P.C.B. and headphones jack P.C.B.</p>	<p>Ref.No. 19</p>	<p>Removal of the operation (1) P.C.B.</p>
<p>Procedure 1 → 2 → 4 → 15 → 16 → 17 → 18</p>	 <p>FL P.C.B.</p> <p>Sensor P.C.B.</p> <p>Headphones jack P.C.B.</p> <p>➤ Removal of the sensor P.C.B. • Remove the sensor P.C.B. in the direction of arrow ①.</p> <p>➤ Removal of the headphones jack P.C.B. • Remove the headphones jack P.C.B. in the direction of arrow ②.</p>	<p>Procedure 1 → 2 → 4 → 15 → 16 → 17 → 19</p>	 <p>Operation (1) P.C.B.</p> <p>➤ Remove the 4 screws (① ~ ④).</p>
<p>Ref.No. 20</p>	<p>Removal of the mechanism angle ass'y</p>	<p>Ref.No. 21</p>	<p>Removal of the eject rod</p>
<p>Procedure 1 → 2 → 4 → 15 → 16 → 20</p>	 <p>Mechanism angle ass'y</p> <p>Eject button</p> <p>Note: When the mechanism angle ass'y is removed, the eject button will also be removed.</p> <p>➤ Remove the 2 screws (①, ②).</p>	<p>Procedure 1 → 2 → 4 → 15 → 16 → 20 → 21</p>	 <p>Claw</p> <p>Eject rod spring</p> <p>Claw</p> <p>Eject rod</p> <p>1. Remove the eject rod spring. 2. Release the 2 claws.</p>
<p>Ref.No. 22</p>	<p>Removal of the cassette holder ass'y</p>	<p>Ref.No. 23</p>	<p>Removal of the damper gear</p>
<p>Procedure 1 → 2 → 3 → 4 → 15 → 16 → 20 → 21 → 22</p>	 <p>Cassette holder ass'y</p> <p>Ribs</p> <p>➤ Pull the 2 ribs of the cassette holder ass'y in the direction of arrow, and then remove the cassette holder ass'y.</p>	<p>Procedure 1 → 2 → 3 → 4 → 15 → 16 → 20 → 21 → 22 → 23</p>	 <p>Damper gear</p> <p>➤ Remove the 1 screw (①).</p>

<p>Ref.No. 24</p>	<p>Removal of the operation (2) P.C.B.</p>	<p>Ref.No. 25</p>	<p>Removal of the clamp plate ass'y</p>
<p>Procedure 1 → 2 → 3 → 4 → 15 → 16 → 20 → 21 → 22 → 23 → 24</p>	 <p>Claw</p> <p>Claw</p> <p>P.C.B. holder</p> <p>Operation (2) P.C.B.</p> <ol style="list-style-type: none"> 1. Remove the 3 screws (① ~ ③). 2. Release the 2 claws, and then remove the P.C.B. holder. 3. Remove the 5 screws (④ ~ ⑧). 	<p>Procedure 1 → 2 → 4 → 6 → 25</p>	 <p>Clamp plate ass'y</p> <p>• Remove the 3 screws (① ~ ③).</p>
<p>Ref.No. 26</p>	<p>Removal of the fixed plate, magnet and magnet holder ass'y</p>	<p>Ref.No. 27</p>	<p>Removal of the guide shaft and guide shaft holder</p>
<p>Procedure 1 → 2 → 4 → 6 → 25 → 26</p>	 <p>Fixed plate</p> <p>Magnet</p> <p>Magnet holder ass'y</p> <p>Claws</p> <p>• Release the 3 claws.</p>	<p>Procedure 1 → 2 → 4 → 6 → 25 → 27</p>	 <p>Guide shaft</p> <p>Guide shaft holder</p> <ol style="list-style-type: none"> 1. Remove the 3 screws (① ~ ③). 2. Remove the guide shaft and guide shaft holder in the direction of arrow.
<p>Ref.No. 28</p>	<p>Removal of the disc tray</p>		
<p>Procedure 1 → 2 → 4 → 5 → 6 → 25 → 27 → 28</p>	 <p>Traverse deck ass'y</p> <p>Disc tray</p> <p>(Back side)</p> <p>Lever</p> <ol style="list-style-type: none"> 1. Push the 2 levers in the direction of arrow ① until the traverse unit goes down and the disc tray slightly in the direction of arrow ②. 2. Remove the disc tray in the direction of arrow ③. 		

<p>Ref.No. 29</p>	<p>Removal of the servo P.C.B.</p>	<p>※ Push the top of the connector in the direction of arrow ①, and then pull out the flexible cable in the direction of arrow ②.</p> 
<p>Procedure 1 → 2 → 4 → 6 → 29</p>	<p>Traverse motor terminals (2 points)</p>  <p>Spindle motor terminals(2 points)</p> <p>1. Remove the 3 screws (① ~ ③).</p> <p>2. Unsolder the spindle motor terminals(2 points).</p> <p>3. Unsolder the traverse motor terminals(2 points).</p>	<p>Top connector Flexible cable</p>  <p>CN701A</p> <p>Servo P.C.B.</p> <p>4. Remove the FPC board(CN701A).</p> <p>Note: Insert a shorting pin into the traverse unit flexible cable. (Refer to "handling precautions for traverse deck" on page 11.)</p> 

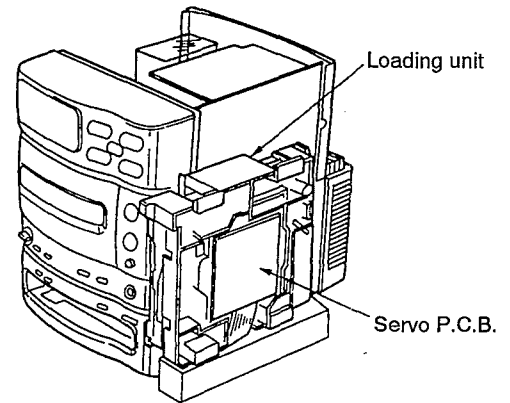
<p>Ref.No. 30</p>	<p>Removal of the traverse deck ass'y</p>	
<p>Procedure 1 → 2 → 4 → 5 → 6 → 25 → 27 → 28 → 29 → 30</p>	<p>1. Widen the boss by using a regular screwdriver or similar object.</p> <p>2. Pull out the pin in the direction of arrow.</p>  <p>Boss</p> <p>Pin</p>  <p>1. Remove the 3 pins.</p> <p>2. Release the claw and then remove the traverse deck ass'y in the direction of arrow.</p>	<p>Traverse deck ass'y</p>  <p>Claw</p>

<p>Ref.No. 31</p>	<p>Removal of the loading motor P.C.B. and loading motor</p>	<p>Polarity of loading motor ass'y terminals</p> 
<p>Procedure 1 → 2 → 4 → 5 → 6 → 25 → 27 → 28 → 31</p>	<p>Belt</p>  <p>1. Remove the belt.</p> <p>2. Remove the 2 screws (①, ②).</p>	<p>3. Remove the 1 screw (③).</p> <p>4. Unsolder the loading motor ass'y terminals(2 points).</p>  <p>Loading motor P.C.B.</p> <p>Loading motor ass'y</p> <p>Loading motor terminals</p>

Ref.No. 32	Removal of the lock lever	Ref.No. 33	Removal of the conversion lever
Procedure 1 → 2 → 4 → 5 → 6 → 25 → 27 → 28 → 32	 <ol style="list-style-type: none"> 1. Remove the lock lever spring. 2. Release the claw in the direction of arrow ①, and then remove the lock lever in the direction of arrow ②. 	Procedure 1 → 2 → 4 → 5 → 6 → 25 → 27 → 28 → 29 → 30 → 32 → 33	 <ol style="list-style-type: none"> 1. Remove the assistance spring. 2. Push the claw(A) in the direction of arrow ①, and then move the slide plate(1) in the direction of arrow ②. 3. Remove the conversion lever in the direction of arrow ③
Ref.No. 34	Removal of the traverse chassis		 <ol style="list-style-type: none"> 1. Push the claw(A) in the direction of arrow ①, and then move the slide plate(1) in the direction of arrow ②. 2. Push 2 claws(B) in the direction of arrow ③, and then remove the traverse chassis.
Ref.No. 35	Removal of the slide plate(1) and slide plate(2)		 <ol style="list-style-type: none"> Removal of the slide plate (1) <ul style="list-style-type: none"> • Move the slide plate(1) in the direction of arrow ①, and lift up the slide plate(1) in the direction of arrow ②. Removal of the slide plate (2) <ul style="list-style-type: none"> • Push the claw in the direction of arrow ③, and remove the slide plate(2) in the direction of arrow ④.

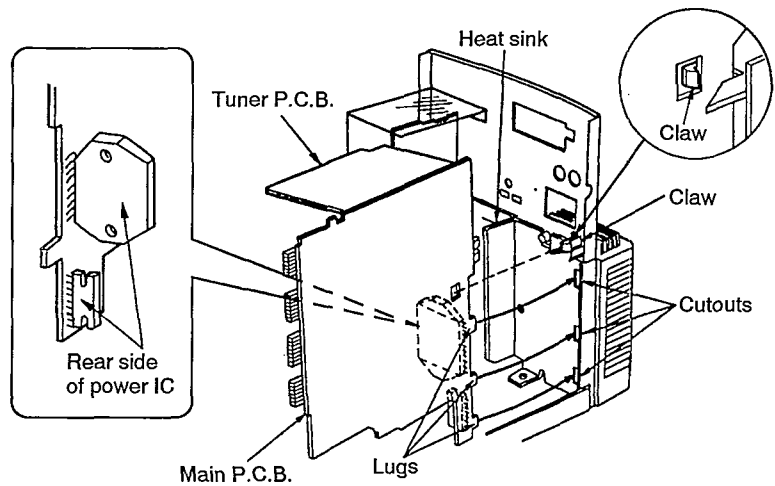
Ref.No. 36	Check of the mechanism control P.C.B., operation(1) P.C.B. and FL P.C.B.
Procedure 1 → 2 → 4 → 15 → 16 → 17 → 19 → 36	<div data-bbox="209 315 836 748" data-label="Image"> </div> <ol style="list-style-type: none"> 1. Connect the lead wire(CP201) and flat cable(CN202, CN203) of mechanism unit to the connector of mechanism control P.C.B. 2. Connect the flat cable(CN204, CN205) of main P.C.B. to the connector of mechanism control P.C.B. <div data-bbox="858 237 1382 636" data-label="Image"> </div> <ol style="list-style-type: none"> 3. Reinstall the operation(1) P.C.B. to the FL P.C.B. 4. Reinstall the operation(1) P.C.B. and FL P.C.B. to the main P.C.B. <div data-bbox="868 792 1442 1182" data-label="Image"> </div> <ol style="list-style-type: none"> 5. When checking the mechanism control P.C.B., operation(1) P.C.B. and FL P.C.B., do as shown right.
Ref.No. 37	Check of the servo P.C.B.
Procedure 1 → 2 → 4 → 6 → 37	<div data-bbox="177 1420 628 1839" data-label="Image"> </div> <ol style="list-style-type: none"> 1. Place the loading unit sideways as shown above, and then connect the flexible cable and lead wire to the connector (CN801, CP802) of main P.C.B. <div data-bbox="740 1245 1406 1688" data-label="Image"> </div> <ol style="list-style-type: none"> 2. Reinstall the front panel ass'y to the unit and connect the flat cable of main P.C.B. to the connectors(CN204, CN205) of mechanism control P.C.B. (For wiring connection, refer to Procedure 4 "Removal of the front panel ass'y".) 3. Turn on the power switch and push the OPEN/CLOSE button to open the disc tray. 4. Set the test disc on the disc tray and then push the OPEN/CLOSE button to close the disc tray. <p style="text-align: right;">(To be continued on next page)</p>

5. Place the loading unit vertically.
6. When checking the soldered surface of the servo P.C.B., do as shown right.

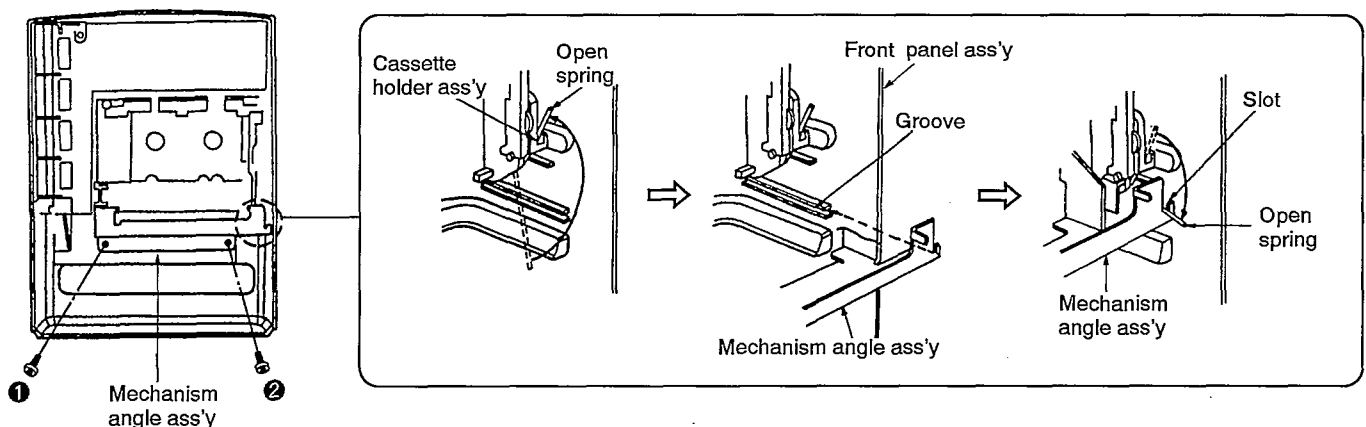


NOTE ON INSTALLING THE MAIN P.C.B. AND TUNER P.C.B.

1. When installing the main P.C.B. and tuner P.C.B. apply silicone compound (RFKX0002 or equivalent agent) on the rear side power IC.
2. Align the 3 lugs of main P.C.B. with the 3 cutouts of heat sink, and then secure the main P.C.B. with claw.

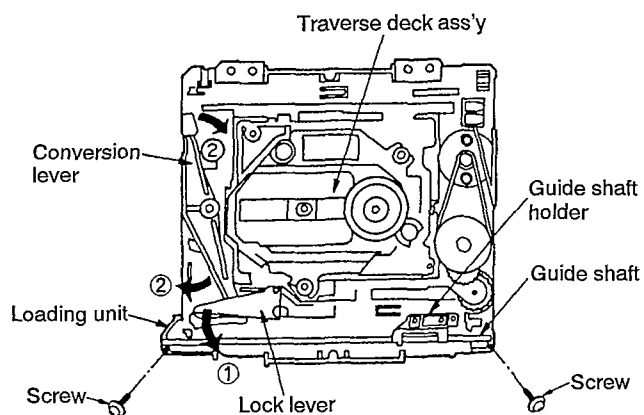


NOTE ON INSTALLING THE MECHANISM ANGLE ASS'Y

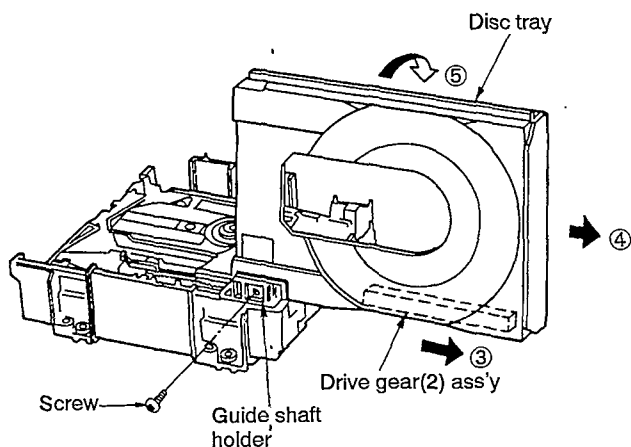


1. Temporarily install the open spring on cassette holder ass'y.
2. Set the mechanism angle ass'y to the groove of front panel ass'y, and then install the front panel ass'y.
3. Tighten the mechanism angle ass'y with 2 screws (1, 2).
4. Align the open spring with the slot of mechanism angle ass'y.

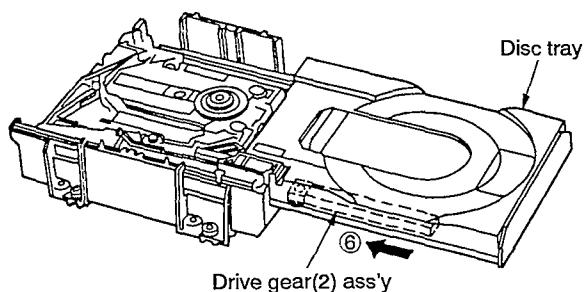
■ INSTALLING DISC TRAY



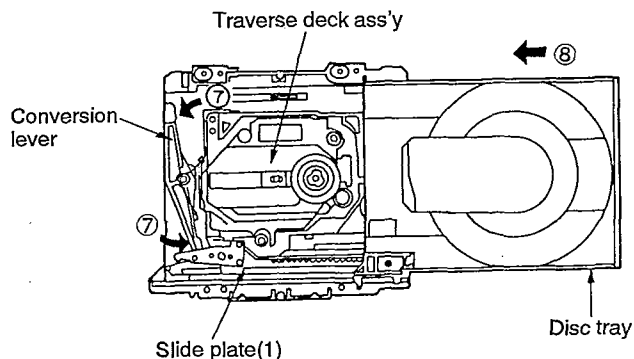
1. Move lock lever in the direction of arrow ① and conversion lever in the direction of arrow ②.
(Traverse deck ass'y rises.)
2. Install the guide shaft and guide shaft holder on the loading unit.



3. Install the disc tray on the guide shaft holder with the screw as shown above.
4. Slide the drive gear(2) ass'y fully in the direction of arrow ③.
5. Slide the disc tray fully in the direction of arrow ④.
6. Lay the disc tray down in the direction of arrow ⑤.



7. Slide the drive gear(2) ass'y in the direction of arrow ⑥.
8. Hold the disc tray and slide the under tray fully the direction of arrow ⑥.
(Slide but very little and the loading gear is engaged with drive gear(2) ass'y.)



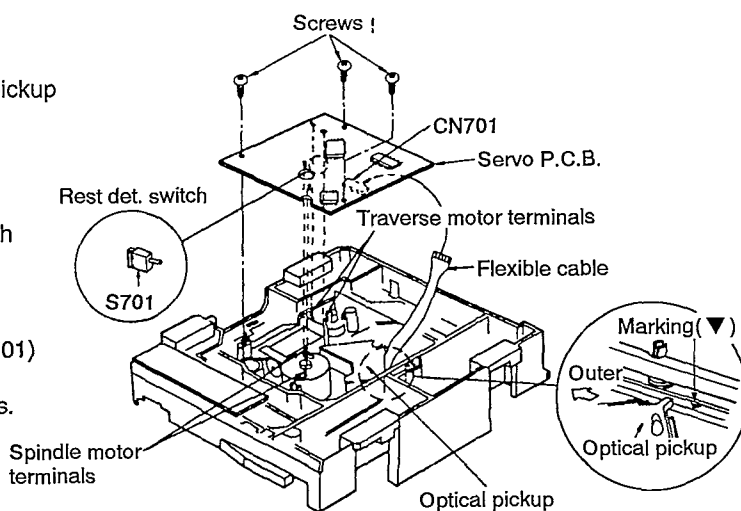
9. Slide the conversion lever fully in the direction of arrow ⑦, and the drive gear(2) ass'y engages with the slide plate(1).
(The traverse deck ass'y is lowered.)
10. Slide the disc tray in the direction of arrow ⑧.

■ INSTALLING SERVO P.C.B.

1. Before installing the servo P.C.B., move the optical pickup toward the outer edge from the mark "▲".
(Otherwise, the rest switch(S701) mounted on the servo P.C.B. may be damaged.)
2. Connect the flexible cable to the connector(CN701).
3. Install the servo P.C.B. in the traverse deck ass'y with the 3 screws.
4. Solder the 2 terminals of the traverse motor and the 2 terminals of the spindle motor.

Note: Connect the flexible cable to the connector(CN701) firmly.

Tighten the screws before soldering the terminals.



MEASUREMENTS AND ADJUSTMENTS

Cassette deck section

Measurement Condition

- Rec. level control; Maximum
- Reverse-mode selector switch; \rightleftharpoons
- Edit-recording tape-speed selector; NORMAL
- Timer-recording switch; Off

Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator

Test tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM

- Dolby NR switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)

- ATT (Attenuator)
- DC voltmeter
- Resistor (600 Ω)

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment Normal reference blank tape; QZZCRA
CrO₂ reference blank tape; QZZCRX
Metal reference blank tape; QZZCRZ

HEAD AZIMUTH ADJUSTMENT

Caution:

- Please replace both azimuth adjustment screws (QH1361A) and springs (QBC1278A) used for to new ones simultaneously when readjusting the head azimuth. (Shown in Fig. 2.) Even if you wish to readjust the head azimuth without replacing the screws and springs, a fine adjustment can not be done because of the screw-locking bond adhered to the azimuth screw and spring.
- Please remove the screw-locking bond left on the head base when replacing the azimuth screw.
- If you wish to readjust the head azimuth, be sure to adjust with adhering the cassette tape closely to the mechanism by pushing the center of cassette tape with your finger. (Shown in Fig. 3.)

1. Playback the azimuth adjustment portion (8kHz, -20dB) of the test tape (QZZCFM) in the forward play mode. Vary the azimuth adjusting screw until the output of the R-CH are maximized.
2. Perform the same adjustment in the reverse play mode.
3. After the adjustment, apply screwlock to the azimuth adjusting screw.

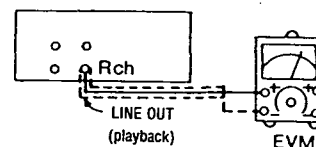


Fig. 1

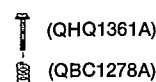


Fig. 2

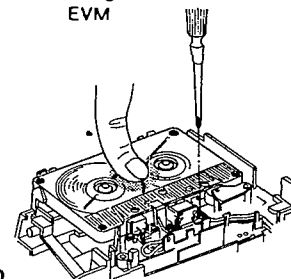


Fig. 3

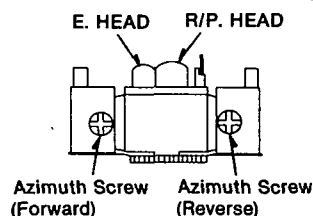


Fig. 4i

TAPE SPEED ADJUSTMENT

(Standard Value: $\pm 45\text{Hz}$)

1. Playback the middle portion of the test tape (QZZCWAT).
2. Adjust VR203 so that the output is within the adjustment target.

Adjustment target: $\pm 15\text{Hz}$

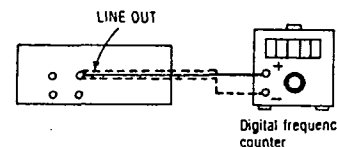


Fig. 5

PLAYBACK GAIN ADJUSTMENT

1. Playback the gain adjusted portion (315Hz, 0dB) of the test tape (QZZCFM).
2. Adjust VR201 (L-CH) [[VR202 (R-CH)]] so that the output is within the adjustment target.

Adjustment target: $385\text{mV} \pm 0.5\text{dB}$

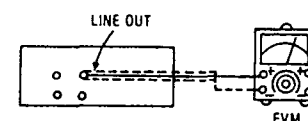


Fig. 6

PLAYBACK FREQUENCY RESPONSE

1. Playback the frequency response portion (315Hz, 12.5kHz~63Hz, -20dB) of the test tape (QZZCFM).
2. Assure that the frequency response is within the range shown in Fig. 6 for both L-CH and R-CH.

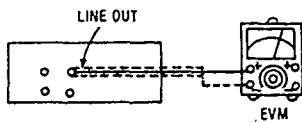


Fig. 7

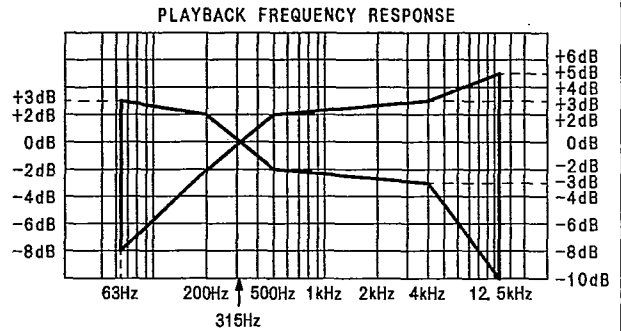


Fig. 8

ERASE CURRENT CONFIRMATION

1. Insert the Metal blank test tape (QZZCRZ) and set the unit to the Record Pause mode.
2. Assure so that the output between TP12 and TP11 is within the adjustment target.

Adjustment target: 160mA ± 15mV

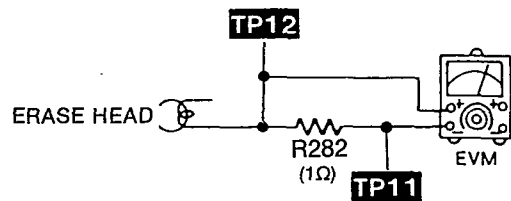


Fig. 9

OVERALL FREQUENCY RESPONSE

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.
2. Apply a reference input signal (1kHz, -24dB) through an attenuator.
3. Attenuate the signal by 20dB and adjust the frequency from 50Hz~10kHz.
4. Record the frequency sweep.
5. Playback the recorded signal and assure that it is within the range shown in Fig. 8 in comparison to the reference frequency (1kHz).
6. Repeat steps 2~5 above using the CrO₂ tape (QZZCRX) and the Metal tape (QZZCRZ) increasing the frequency range to 12.5kHz (50Hz~12.5kHz).
7. Assure that the level is within the range shown in Fig. 9.

Normal Overall frequency response chart (NR OUT)

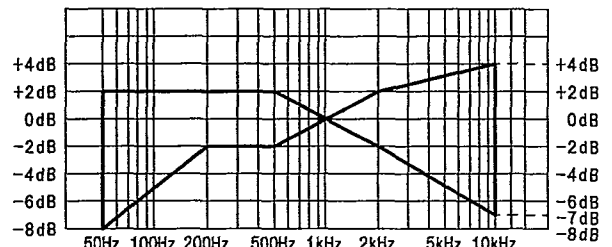


Fig. 10

CrO₂, Metal Overall frequency response chart (NR OUT)

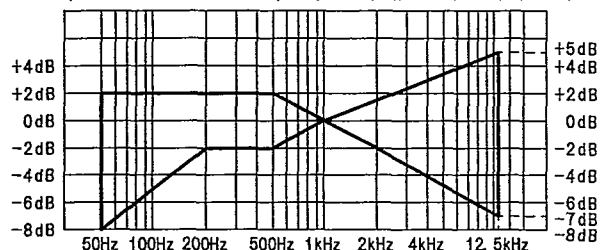


Fig. 11

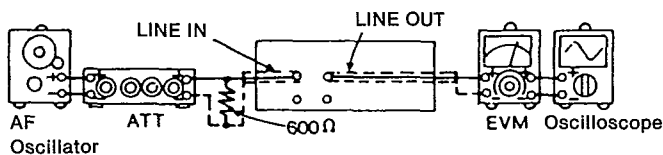


Fig. 12

• Compact disc player section

Warning: This product uses a laser diode. Refer to caution statements on page 3.

ACHTUNG: • Die lasereinheit nicht zerlegen.
• Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Measuring Instruments and Special Tools

- | | |
|--------------------------------------|---|
| * Test discs | * Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT. trigger and 1:1 probe). |
| 1. Playability test disc (SZZP1054C) | * Allen wrench (M2.0) (SZZP1101C) |
| 2. Uneven test disc (SZZP1056C) | * Lock paint (RZZ0L01) |
| * Musical program disc (ordinary) | |

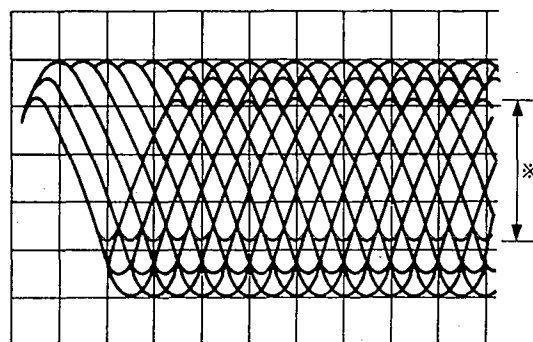
(1) MECHANICAL ADJUSTMENT

- When the traverse deck is replaced, making adjustments is not necessary. (The traverse deck ass'y is already adjusted.)
- Make adjustments to improve playability if the traverse deck has not been replaced.

1. Connect the oscilloscope's CH. 1 probe across **TJ701** (RF) (+) and **TJ702** (VREF) (-) on the servo P.C.B.

Oscilloscope setting: VOLT 200mV
SWEEP..... 0.5 μ s.
Input coupling AC

2. Switch the player power ON, and play track 19 on the test disc (SZZP1056C). (Playing any other track will prevent, the HEX screws from being accessed.)
3. Leave the player in play mode and place the traverse deck as shown under Ref. No. 37 on pages 20, 21.
4. Alternately adjust the HEX screws with the 2.0mm allen wrench (SZZP1101C) until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.
(Refer to Fig. 15 on page 26)
5. After completing the adjustment, lock the HEX screws with lock paint (RZZ0L01).



* Most stretched eye pattern.

(2) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* Checking Skip Search

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

* Checking Manual Search

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

* Checking Playability

1. Play the 0.7mm black dot and the 0.7mm wedge on the test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc (SZZP1056C) and verify that no sound skip or noise occurs.

• Adjustment points

<Cassette deck section>

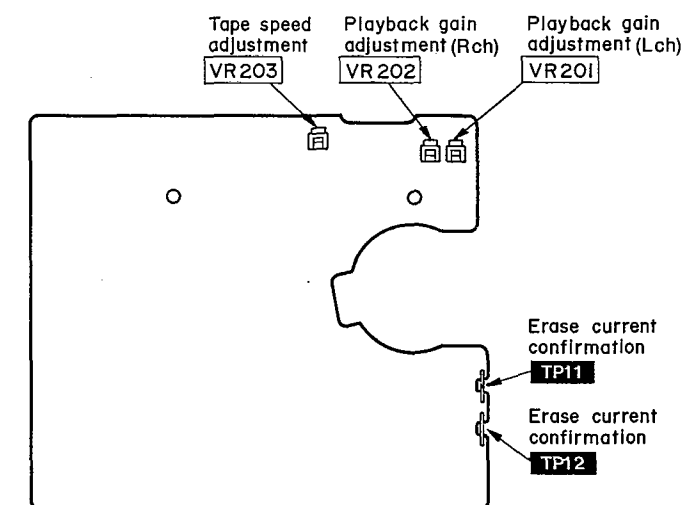


Fig. 13

<Compact disc player section>

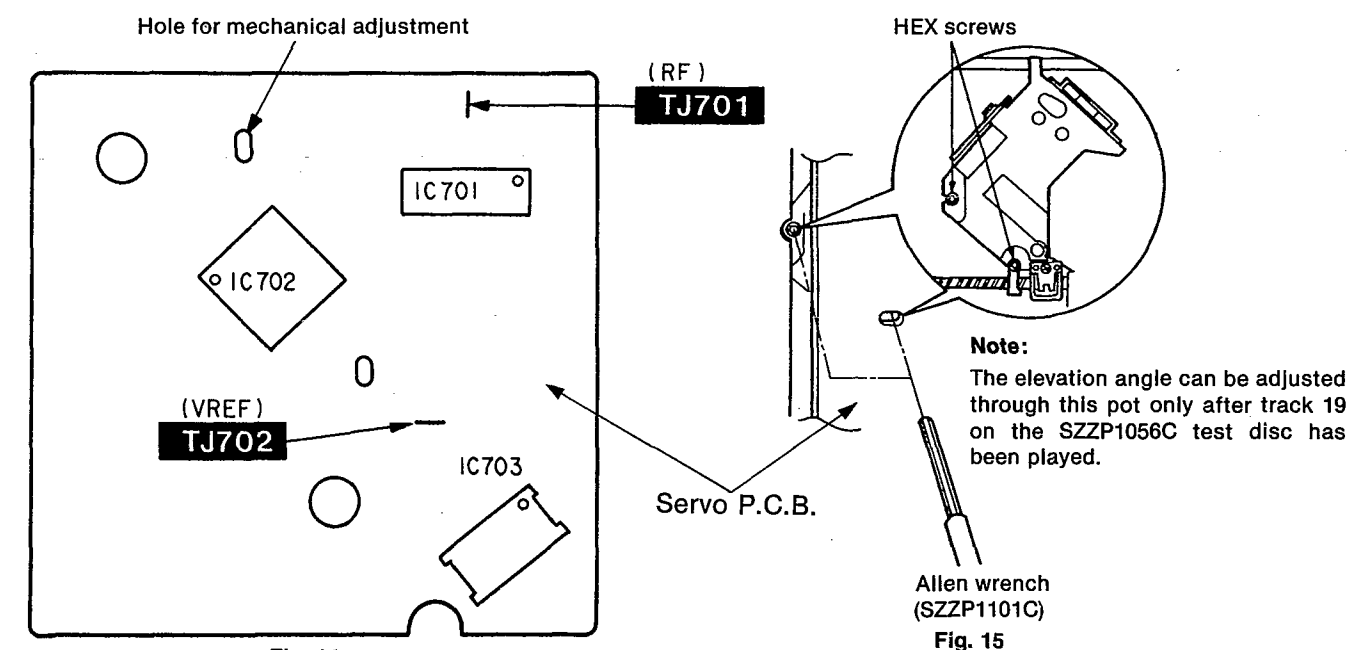


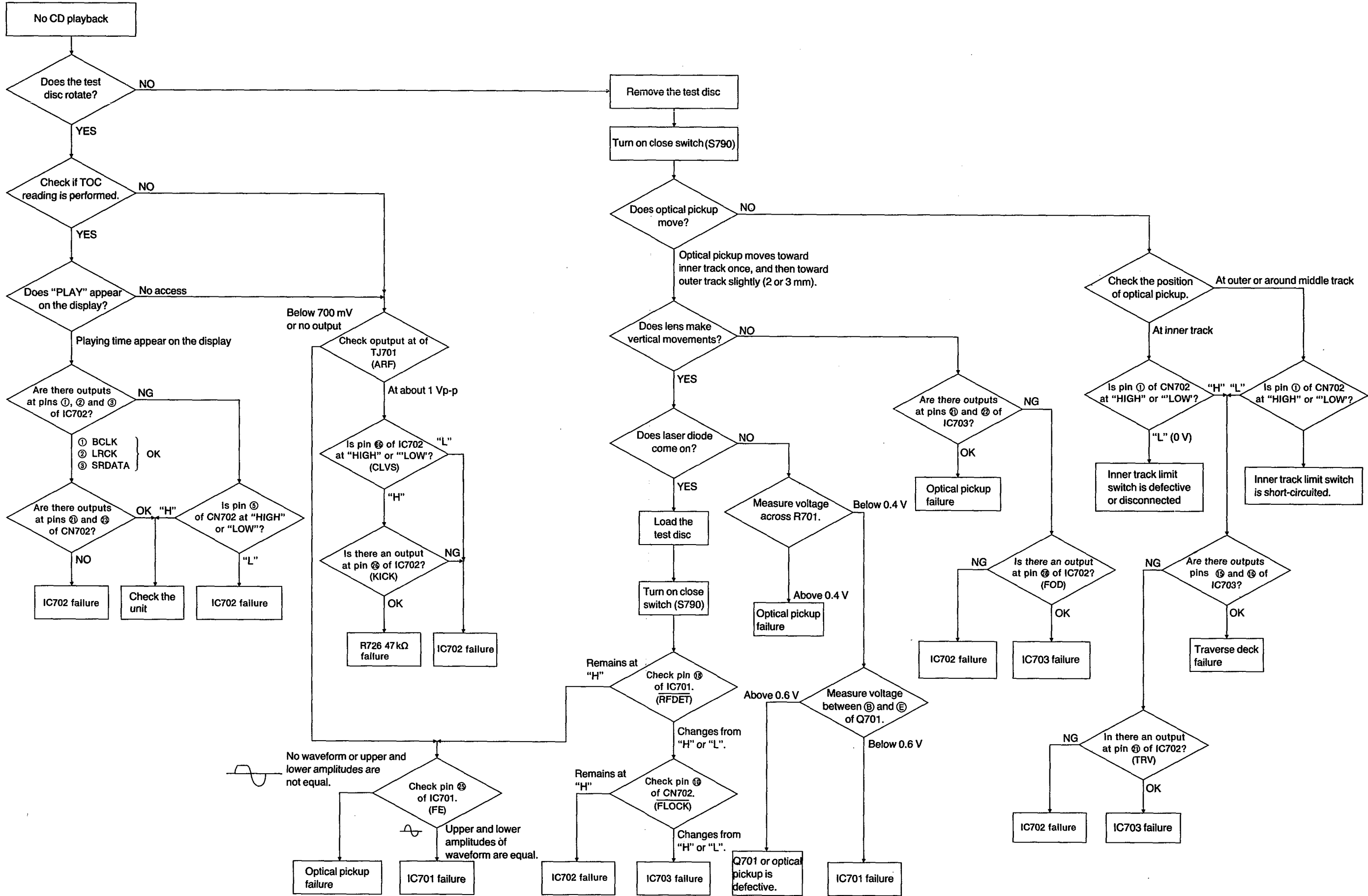
Fig. 14

Fig. 15

■ NEW DIGITAL SERVO CIRCUIT

For this model we have adopted new IC to substantialize "no adjustment required for electric section". (As for conventional models, the "Best Eye Adjustment" has been required.)

■ TROUBLESHOOTING GUIDE



■ TERMINAL FUNCTION OF IC'S

• IC702 (MN66271RA): Digital servo processor/digital signal processor/digital filter/D/A converter

Pin No.	Mark	I/O Division	Function
1	BCLK	O	Serial bit clock terminal
2	LRCK	O	L/R discriminating signal
3	SRDATA	O	Serial data (Not used, open)
4	DV _{DD1}	I	Power supply (digital circuit) terminal
5	DV _{SS1}	—	GND (digital circuit) terminal
6	TX	O	Digital audio interface signal
7	MCLK	I	Command clock signal
8	MDATA	I	Command data signal
9	MLD	I	Command load signal ("L": LOAD)
10	SENSE	O	Sense signal (OFT, FESL, NACEND, NAJEND, POSAD, SFG)
11	/FLOCK	O	Optical servo condition (focus) ("L": lead-in)
12	/TLOCK	O	Optical servo condition (tracking) ("L": lead-in)
13	BLKCK	O	Sub-code block clock (f=75Hz)
14	SQCK	I	Sub-code Q register clock
15	SUBQ	O	Sub-code Q data
16	DMUTE	I	Muting input ("H": MUTE)
17	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
18	/RST	I	Reset signal ("L": reset)
19	SMCK	O	System clock (f=4.2336MHz)
20	PMCK	O	Frequency division clock signal (Not used, open) ($f = \frac{1}{1.92} \times ck = 88.2 \text{ kHz}$)
21	TRV	O	Traverse servo control

Pin No.	Mark	I/O Division	Function
22	TVD	O	Traverse drive signal
23	PC	O	Turntable motor drive signal ("L": ON)
24	ECM	O	Turntable motor drive signal (Forced mode)
25	ECS	O	Turntable motor drive signal (Servo error signal)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	I	D/A drive output (TVD, ECS, TRD, FOD, FBAL, TBAL) normal voltage input terminal
30	FBAL	O	Focus balance adj. output
31	TBAL	O	Tracking balance adj. output
32	FE	I	Focus error signal (analog input)
33	TE	I	Tracking error signal (analog input)
34	RFENV	I	RF envelope signal
35	VDET	I	Oscillation det. signal ("H": det.)
36	OFT	I	Off track signal ("H": Off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal ("L": detection)
39	BDO	I	Dropout detection signal ("H": dropout)
40	LDON	O	Laser power control ("H": ON)
41	TES	O	Tracking error shunt output ("H": dropout)
42	PLAY	O	Play signal ("H": play)

Pin No.	Mark	I/O Division	Function
43	WVEL	O	Double velocity status signal ("H": double)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias terminal (Not used, open)
47	DSL F	I/O	DSL loop filter terminal
48	PLL F	I/O	PLL loop filter terminal
49	VCO F	I/O	VCO loop filter terminal (Not used, open)
50	AV _{DD2}	I	Power supply (analog circuit) terminal (2)
51	AV _{SS2}	—	GND (analog circuit) terminal
52	EFM	O	EFM signal (Not used, open)
53	PCK	O	PLL extract clock (f=4.3218 MHz)
54	PDO	O	Phase compared signal of EFM and PCK (Not used, open)
55	SUBC	O	Sub-code serial output data (Not used, open)
56	SBCK	I	Sub-code serial output clock (Not used, open)
57	V _{SS}	—	GND terminal
58	X1	I	Crystal oscillator terminal (f=16.9344 MHz)
59	X2	O	
60	V _{DD}	I	Power supply terminal
61	BYTCK	O	Byte clock signal
62	/CLDCK	O	Sub-code frame clock signal (f CLDCK=7.35 kHz: Normal) (Not used, open)

Pin No.	Mark	I/O Division	Function
63	FCLK	O	Crystal frame clock (Not used, open)
64	IPFLAG	O	Interpolation flag terminal
65	FLAG	O	Flag terminal
66	CLVS	O	Turntable servo phase synchro signal ("H": CLV, "L": Rough servo)
67	CRC	O	Sub-code CRC check terminal ("H": OK, "L": NG)
68	DEMPH	O	De-emphasis ON signal ("H": ON)
69	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
70	/RST2	I	Reset terminal after "MASH" circuit
71	/TEST	I	Test terminal (Normal: "H")
72	AV _{DD1}	I	Power supply (analog circuit) terminal (1)
73	OUTL	O	
74	AV _{SS1}	—	GND (analog circuit) terminal (1)
75	OUTR	O	Rch audio signal
76	RSEL	I	Polarity direction control terminal of RF signal
77	CSEL	I	Frequency control terminal of crystal oscillator
78	PSEL	I	Test terminal (Normal: "L")
79	MSEL	I	"SMCK" terminal frequency select ("L": SMCK=4.2336 MHz)
80	SSEL	I	"SUBQ" terminal mode select ("H": Q code buffer)

• IC601 (MND2416RLAH3): System control/FL drive

Pin No.	Mark	I/O Division	Function
1 } 5	DGT4 } DGT0	O	FL digit signal output terminal
6 } 21	SEG0 } SEG15	O	FL segment signal output terminal
22 } 27	LED1 } LED6	O	LED drive signal output terminal
28	MUTE	O	Muting control signal output terminal
29	VR STB	O	ASP control signal output terminal
30	CSI	—	External resistance connection terminal
31	CSO	—	External resistance connection terminal
32	HP SW	I	Headphones detect terminal
33	HALT	I	Power down detect terminal
34	DO	I	PLL frequency synceizer control signal input terminal
35	DC PROTECT	I	Holding circuit actuate detect terminal
36	TLOCK	I	Tracking signal input and tuner received monitor signal input
37	FLOCK	I	Focus servo clock signal and FM stereo received signal input
38	MKCLK	O	Serial clock signal output terminal
39	ACLK	O	Serial clock signal output terminal
40	VRCLK	O	ASP control clock signal output terminal
41	DATA	O	Serial data signal output terminal
42	VREF—	—	GND terminal
43	CD CLOSE SW	I	Disk close detect terminal
44	CD OPEN SW	I	Disk open detect terminal
45	AD IN5	I	Deck 1 cassette half detection signal input "HIGH" level in half detection switch in ON mode. "LOW" level in half detection switch in OFF mode
46	AD IN4	I	Cassette hole detect terminal
47	AD IN3	I	TPS detect terminal
48	CR TIMER	—	CR timer detect terminal
49	KEY INI	I	Key switch detect terminal
50	KEY INO	I	Key switch detect terminal

Pin No.	Mark	I/O Division	Function
51	VREFH	I	Reference voltage input terminal
52	VDD	I	Power supply input terminal
53	OSC2	O	Quartz oscillation terminal (f=4 MHz)
54	OSC1	I	
55	VSS	—	GND terminal
56	X1	I	Quartz oscillation terminal (f=32.7 MHz)
57	X2	O	
58	RESET	I	Reset signal input terminal
59	REMOCON	I	Remote control data signal input terminal
60	BLKCK	I	Sub code block clock signal input terminal
61	CD SENSE	I	Sense signal input terminal
62	BUZZER	O	Buzzer control output terminal
63	CD STATUS	I	Status signal input terminal
64	RESET SW	I	Rest (inside) detect input terminal
65	MLD/ PLL CE	O	Microcomputer command roard signal output terminal
66	MDAT/ PLL CL	O	Microcomputer command data signal output terminal
67	MCLK/ PLL D1	O	Microcomputer command clock signal output terminal
68	SQCK	O	Sub-code Q resister clock signal output terminal
69	SUBQ	I	Sub-code Q code input terminal
70	NC	—	No connection
71	CM	—	Not used, connected to GND
72	SYNC	—	Not used open
73	—VP	I	Pull down voltage input
74	P. CONT	O	Power supply control signal output terminal
75	RST	I	Reset signal input terminal
76 } 78	LED9 } LED7	O	LED drive signal output terminal
79 } 84	DGT10 } DGT5	O	FL digit signal output terminal

• IC701 (AN8802SCE1V): Servo amp

Pin No.	Mark	I/O Division	Function
1	PDAD	I	Photo detector Bch input without delay
2	PDA	I	Photo detector Ach input without delay
3	LPD	I	Laser PD signal
4	LD	O	Laser power auto control output
5	AMPI	I	RF amp terminal
6	V _{CC}	I	Power supply terminal
7	AMPO	O	RF amp signal
8	CAGC	I	AGC detection capacitor input
9	ARF	O	RF signal
10	CENV	I	RF detect capacitor connection terminal
11	CEA	I	HPF-AMP capacitor connection terminal
12	GND	—	GND terminal
13	LDON	I	LD APC ON/OFF ("H": ON, "L": OFF)
14	TES	I	Tracking error shunt input ("H": shunt)
15	PLAY	I	Play signal ("H": ON, "L": OFF)
16	WVEL	I	Double velocity ("H": double, "L": single)

Pin No.	Mark	I/O Division	Function
17	BDO	O	Dropout detection control
18	/RFDET	O	RF det. signal ("L": det.)
19	CROSS	O	Tracking error zero cross output
20	OFTR	O	Off track detection ("H": det.)
21	VDET	O	Oscillation det. signal ("H": det.)
22	ENV	O	Envelope output terminal
23	TEBPF	I	Oscillation detect input terminal
24	TE	O	Tracking error signal
25	FE	O	Focusing error signal
26	PTO	O	Potention amp output
27	PTI	I	Potention amp input
28	TBAL	I	Tracking balance adj. input
29	FBAL	I	Focus balance adj. input
30	VREF	O	Reference voltage output
31	PDB	I	Photo detector Ach input with delay
32	PDBD	I	Photo detector Bch input with delay

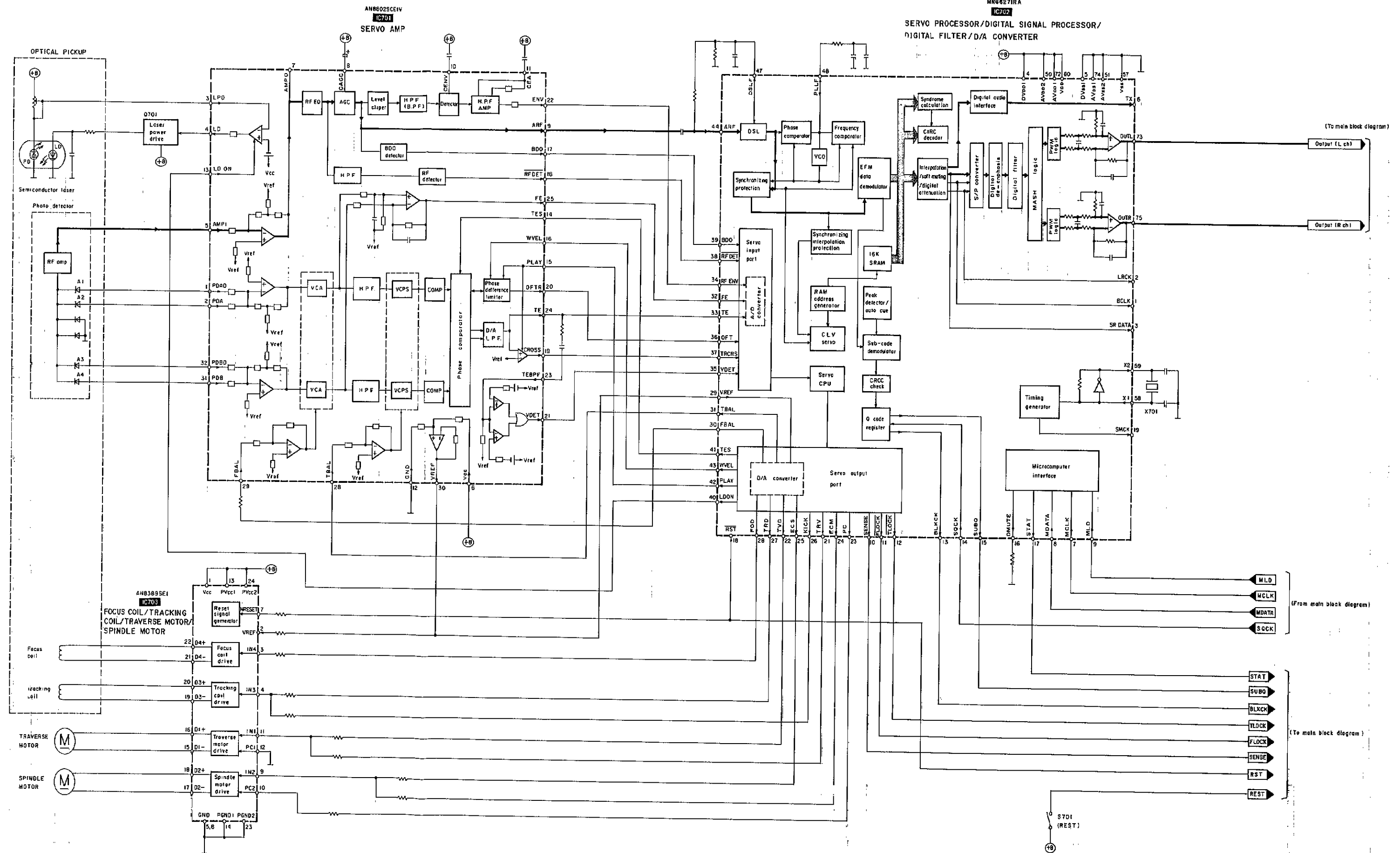
• IC703 (AN8389SE1): Focus coil/tracking coil/traverse motor/spindle motor drive

Pin No.	Mark	I/O Division	Function
1	V _{cc}	I	Power supply terminal
2	VREF	I	Reference voltage input
3	IN4	I	Motor driver (4) input
4	IN3	I	Motor driver (3) input
5	GND	—	GND terminal
6	NC	—	No connection
7	NRESET	I	Reset terminal
8	GND	—	GND terminal
9	IN2	I	Motor driver (2) input
10	PC2	I	PC2 (power cut) input
11	IN1	I	Motor driver (1) input
12	PC1	I	PC1 (power cut) input (Not used, open)

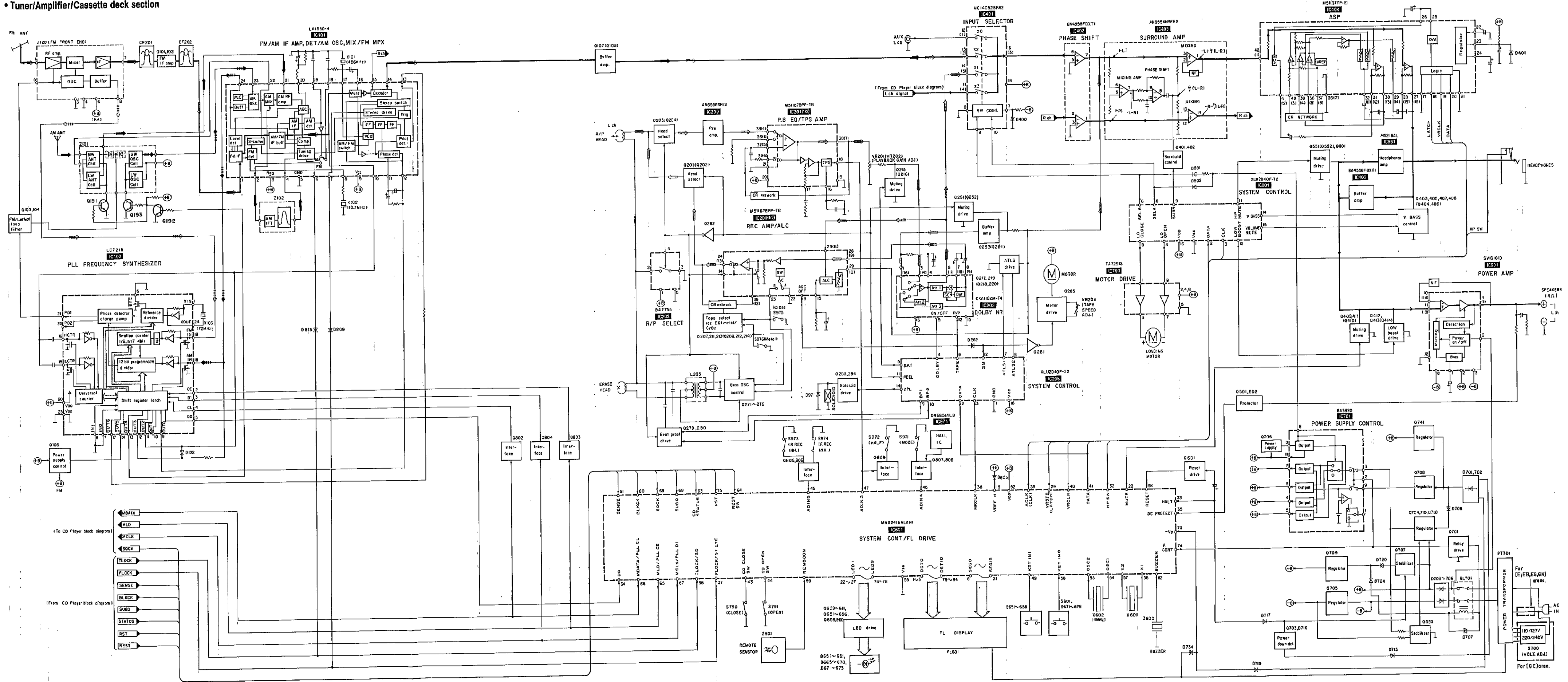
Pin No.	Mark	I/O Division	Function
13	PV _{cc1}	I	Driver power supply (1)
14	PGND1	—	Driver GND terminal (1)
15	D1-	O	Motor driver (1) output terminal (-)
16	D1+	O	Motor driver (1) output terminal (+)
17	D2-	O	Motor driver (2) output terminal (-)
18	D2+	O	Motor driver (2) output terminal (+)
19	D3-	O	Motor driver (3) output terminal (-)
20	D3+	O	Motor driver (3) output terminal (+)
21	D4-	O	Motor driver (4) output terminal (-)
22	D4+	O	Motor driver (4) output terminal (+)
23	PGND2	—	Driver GND terminal (2)
24	PV _{cc2}	I	Driver power supply (2)

■ BLOCK DIAGRAM

• CD player section



Tuner/Amplifier/Cassette deck section



Notes:

- : CD signal
- ⇨ : FM signal
- ⇩ : AM (MW/LW) signal
- ⊞ : FM OSC signal
- ⊞ : AM (MW/LW) OSC signal
- ⊞ : Playback signal
- ⊞ : Recording signal
- () indicates pin No. of right channel.

SCHEMATIC DIAGRAM (Parts list on pages 73~80.)

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

Notes:

- S601 : Power "STANDBY ϕ /ON" (POWER, STANDBY ϕ /ON) switch.
- S651~S655 : Easy operation (5-KEY OPERATION) switches. (S651: TIMER, S652: TUNER, S653: CD, S654: AUX, S655: TAPE)
- S656, S657 : Volume controls (VOLUME) switches. (S656: DOWN (-), S657: UP (+))
- S658 : Timer ON/OFF (PLAY/REC) switch.
- S671 : Disc tray open/close (OPEN/CLOSE) switch.
- S672 : Recording start/stop (REC, START/STOP) switch.
- S673 : Dolby NR ON/OFF (DOLBY NR) switch.
- S674 : Tape travel (DIRECTION) switch.
- S675 : Sound menu/Beep on/off/switch. (SOUND MENU, -BEEP OFF/ON)
- S677 : CD edit (EDIT) switch.
- S678, S679 :

Tape length input (TAPE LENGTH) switches. (S678: TAPE LENGTH (-), S679: TAPE LENGTH (+))

- S700 : Voltage adj. switch.
- S701 : Rest det. switch.
- S790 : Close detector switch.
- S791 : Open detector switch.
- S971 : Mode switch.
- S972 : Half switch.
- S973 : CrO₂ (metal) tape switch.
- S974 : Forward record inhibit switch.
- S975 : CrO₂ tape switch.
- S976 : Metal tape switch.
- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.

Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

- <Tuner/Amplifier/Cassette deck section>
- < > : FM, \uparrow : MW, \uparrow : TUNER mode,
 - [] : TAPE mode, () : Playback,
 - < > : Record, [] : LW, [] : AUX mode
- <Compact disc player section>
- No mark : STOP
 - () : Playback (Test disc 1kHz, L+R 0dB)

- Signal line
- : Positive voltage lines
 - : FM signal
 - : FM OSC
 - : Recording signal
 - : Negative voltage lines
 - : AM (MW/LW) signal
 - : AM (MW/LW) OSC
 - : Playback signal
 - : CD signal

- Important safety notice:
- Components identified by Δ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

- The supply parts number is described alone in the replacement parts.

Part No.	Original Part No.	Supply Part No.
IC205, 801	XLU2040F-T2	XLU2040F-T1
IC551	M5218AL	M5218L

- Caution!**
- IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
 - Ground the soldering iron.
 - Put a conductive mat on the work table.
 - Do not touch the pins of IC or LSI with fingers directly.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

ADVARSEL!

Lithiumbatteri — Eksplosionsfare ved fejlagtig handling. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandør.

ADVARSEL

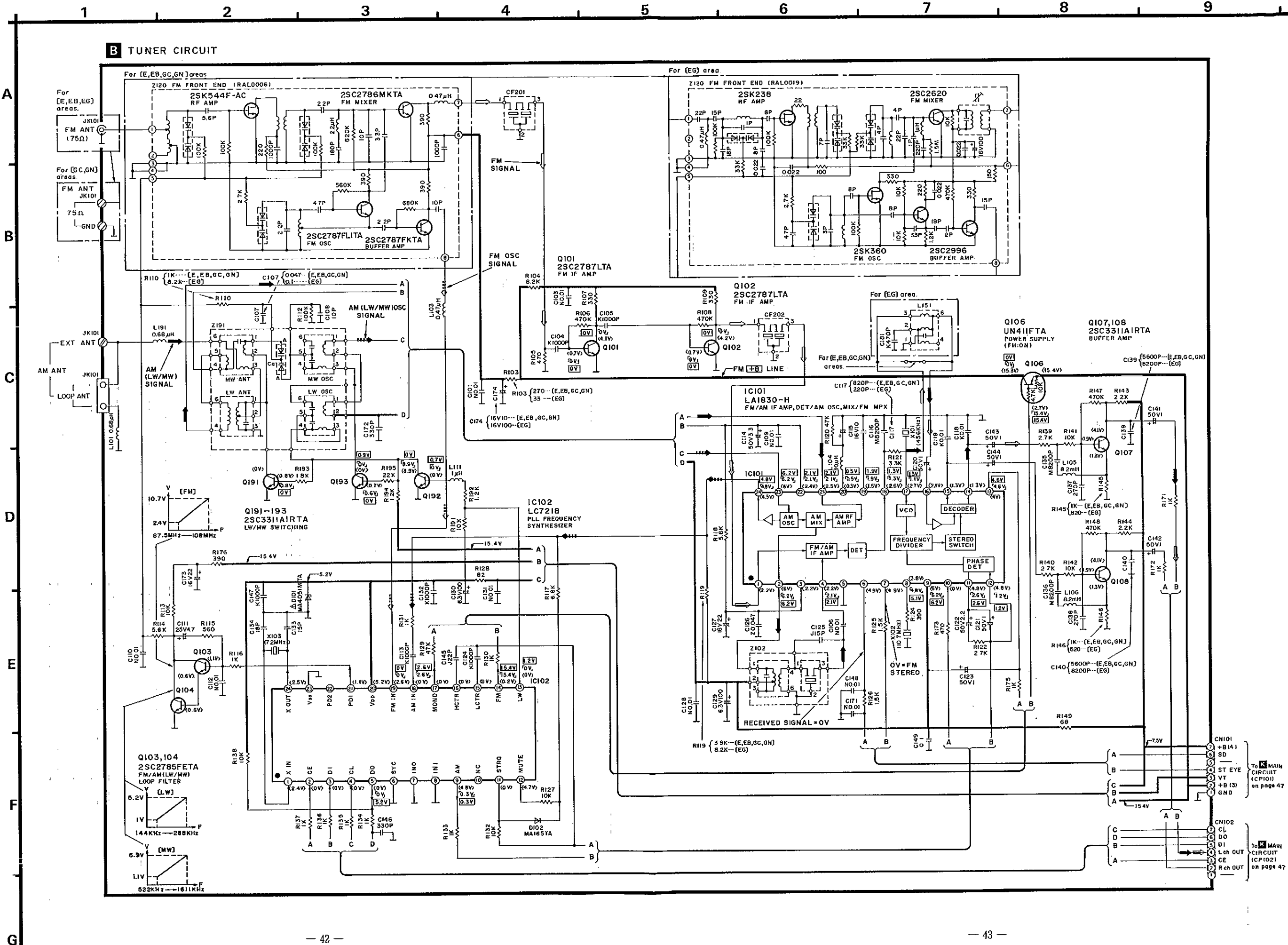
Lithiumbatteri — Eksplosionsfare. Ved utskiftning benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandør.

VARNING

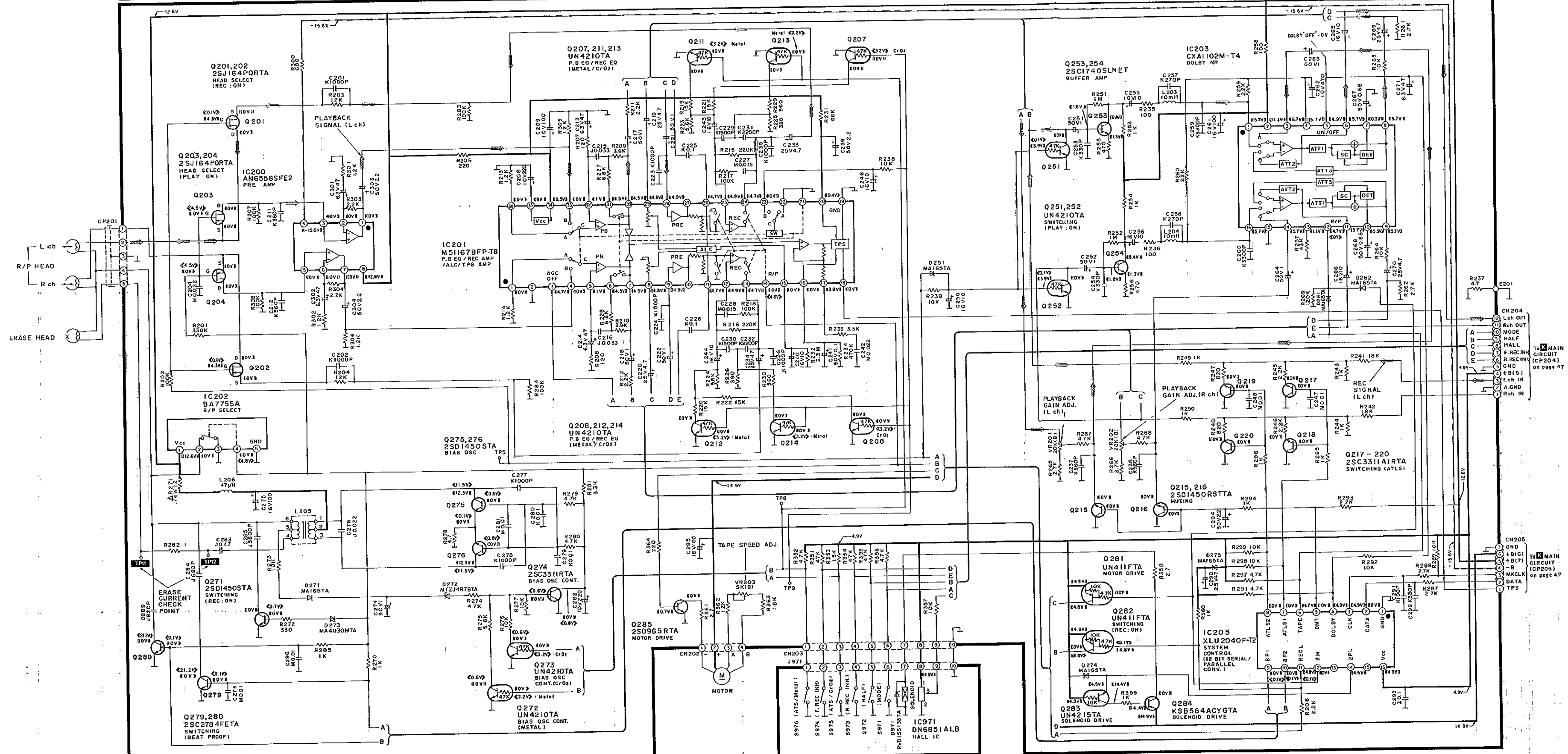
Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparatillverkaren. Kassera anvant batteri enligt fabrikantens instruktion.

VAROITUS

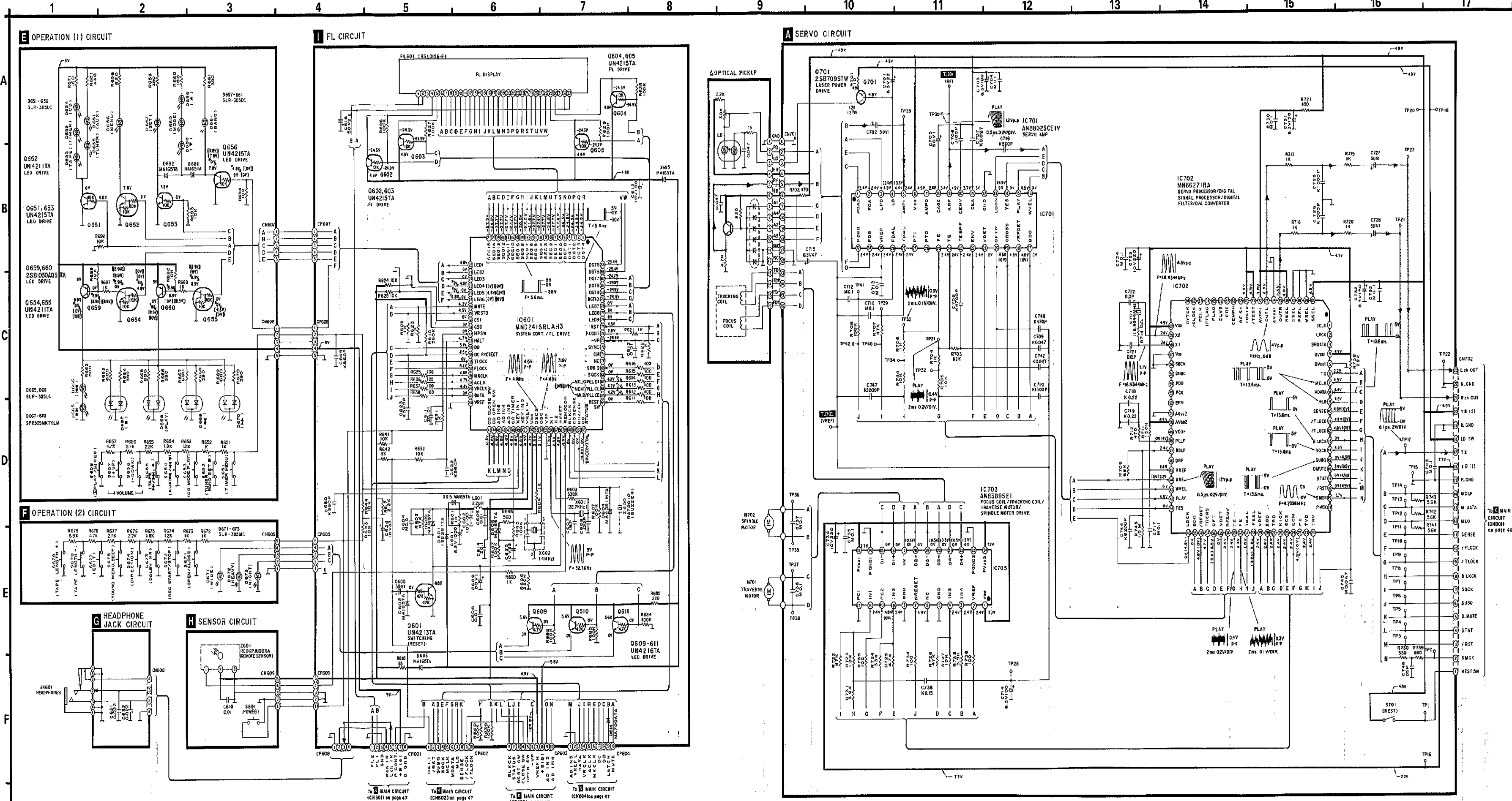
Paristo voi räjähtää, jos se on virheellisesti asennettu. Valhda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Havita käytetty paristo valmistajan ohjeiden mukaisesti.



C MECHANISM CONTROL CIRCUIT



D MECHANISM CIRCUIT



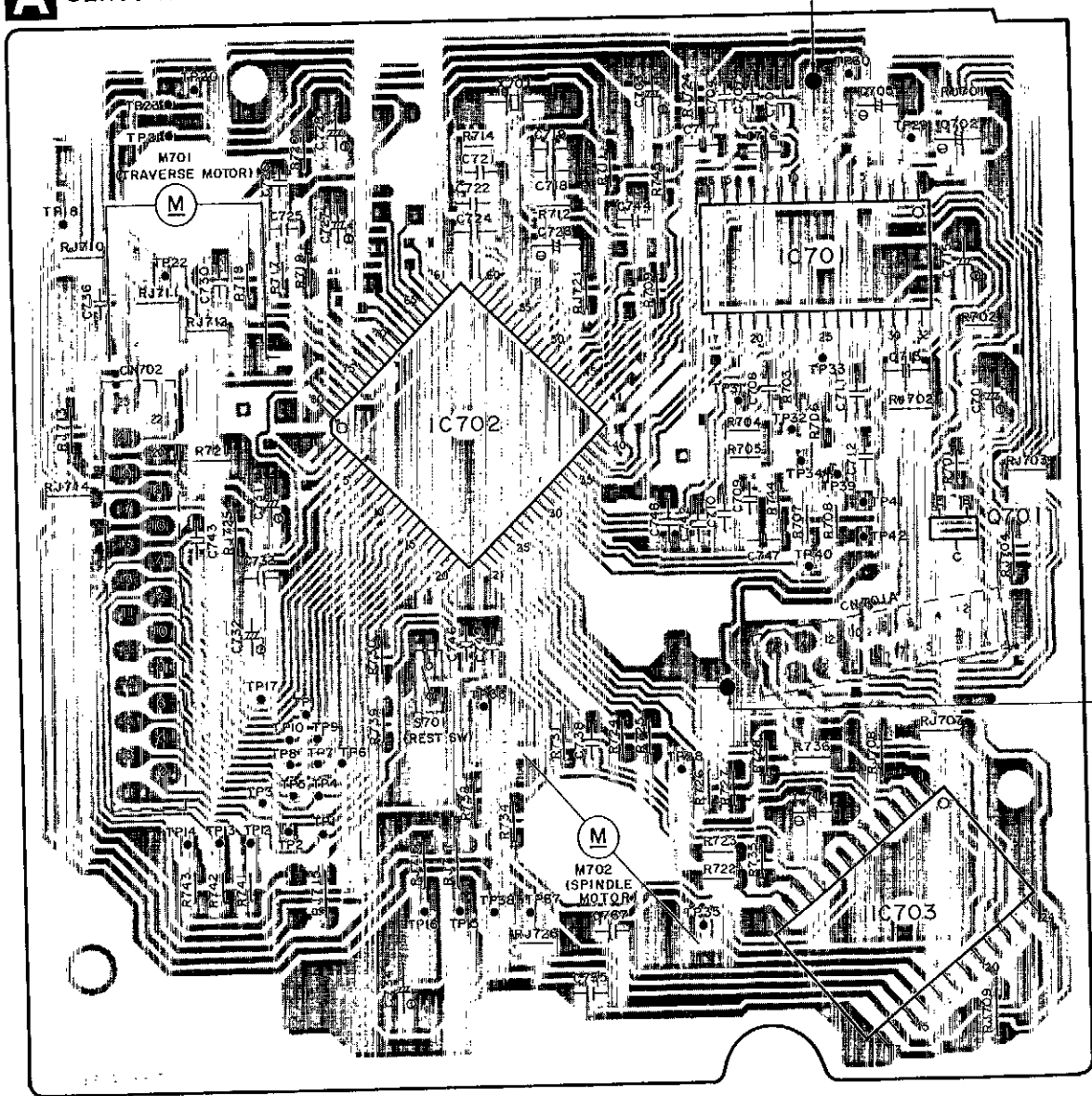
TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

BA4588FDXT1	AN6588FE2 8Pin MC14052BFR2 14Pin AN634NSFE2 14Pin XLU2040F-T2 16Pin	CXA1102M-T4 16Pin AN862SCE1V 32Pin M51167BFP-TB 39Pin M51137FP-E1 42Pin	MN66271RA 80Pin MN2046RLAH3 100Pin
AN8385E1	M5216AL 8Pin LA1630-H 24Pin LC7216 24Pin	TA7291S	BA3920
BA7755A	SV13101D	DN6851ALB	2SC3327ABTP K5B664CYGTA KSD471ACYGTA 2SB103AQSTA
2SK381BCTA	2SJ164PQRTA	2SC2784FETA 2SC2786FETA 2SC2787LTA 2SC3311AIRTA 2SC3311IRTA 2SD1450STA 2SD1450RSTTA	UN411FTA UN411TA UN4115TA UN4210TA UN4211TA UN4212TA UN4213TA
2SC1740SLNET DTB123YSTP	2SB1357EFTA 2SD2037EFTA 2SD1782EF	2SB709STW	1SS291TA RVD16S133TA MA165TA MA167TA MA700ATA
MA430MTA MA4051LTA MA4051MTA MA4062HTA MA4075MTA MA4082MTA MA4091HTA	MA4130MTA MA4220MTA MA4240MTA MA4150MTA	RL154M11 RL1N4003N02	SFR35MKTCLM
SLR-306DC SLR-305LC SLR-306MC			

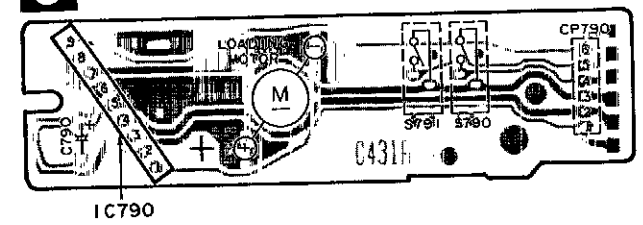
1 2 3 4 5 6 7 8 9 10 11 12 13 14

PRINTED CIRCUIT BOARDS

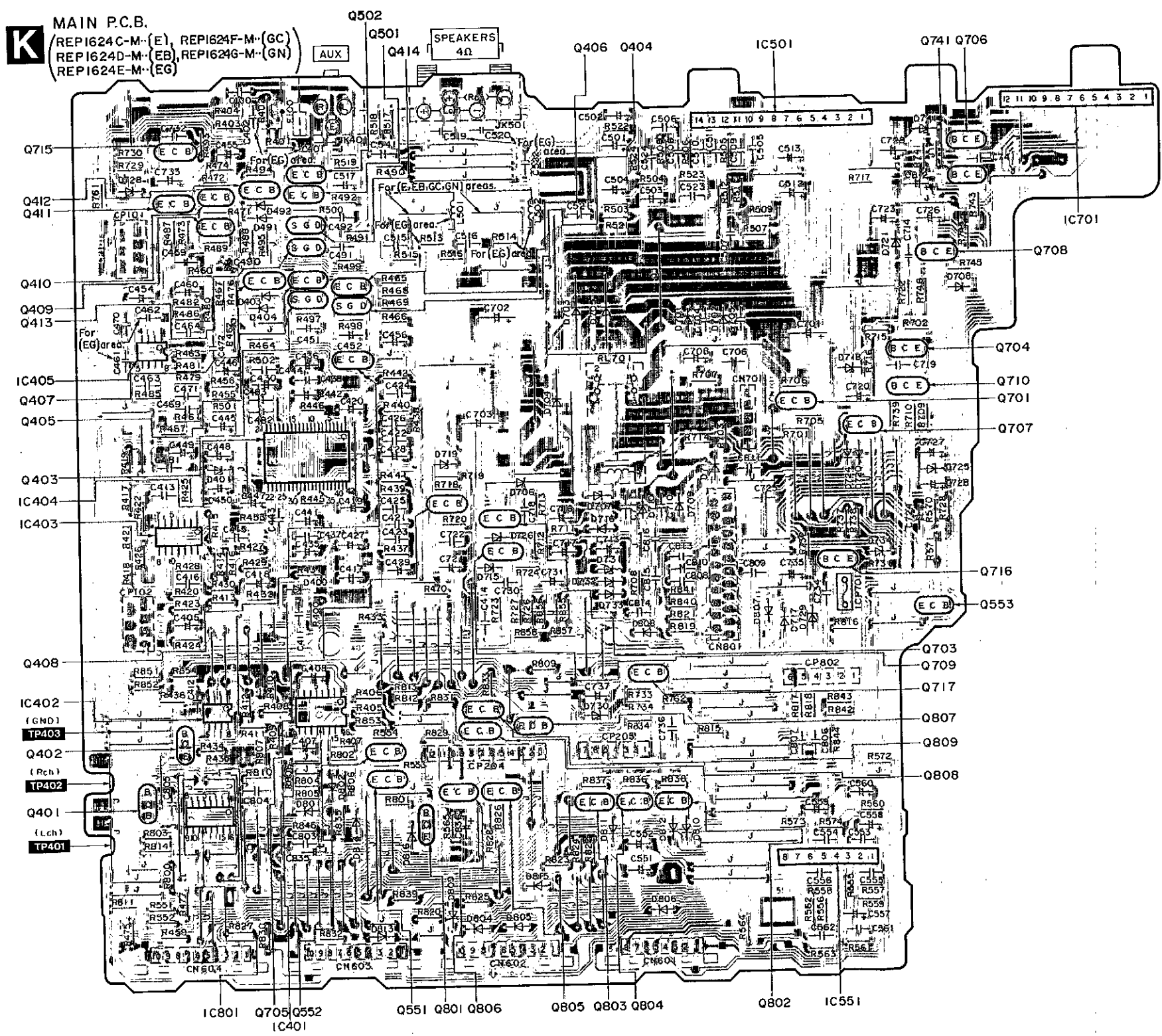
A SERVO P.C.B. (REP1391A-IN)



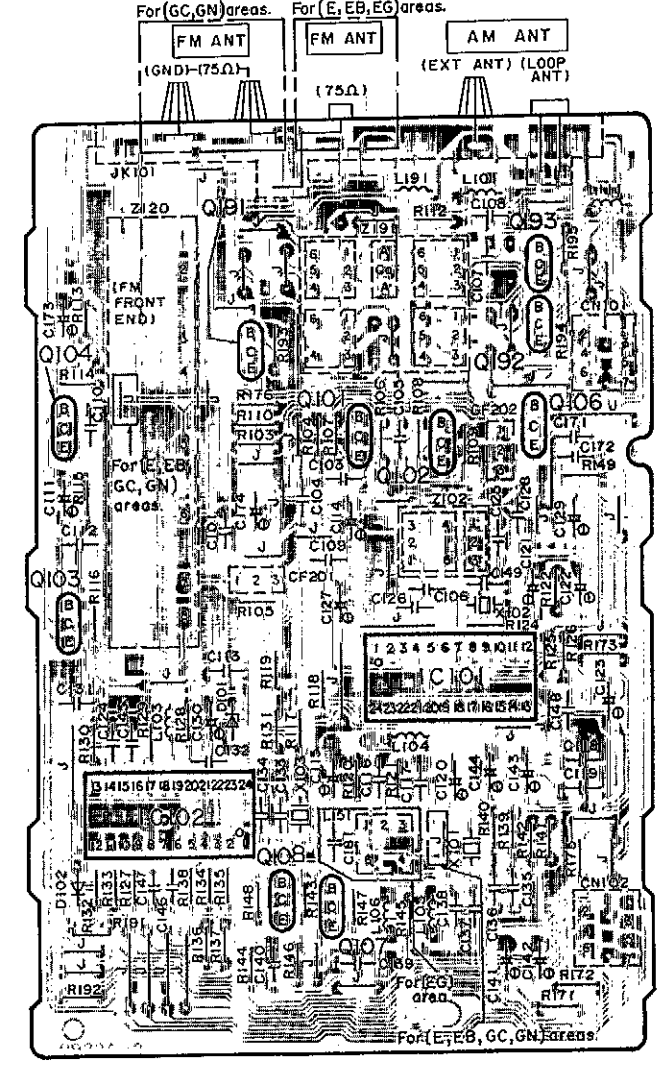
J LOADING MOTOR P.C.B. (REP0767)



K MAIN P.C.B.
(REP1624C-M-(E), REP1624F-M-(GC)
REP1624D-M-(EB), REP1624G-M-(GN)
REP1624E-M-(EG))

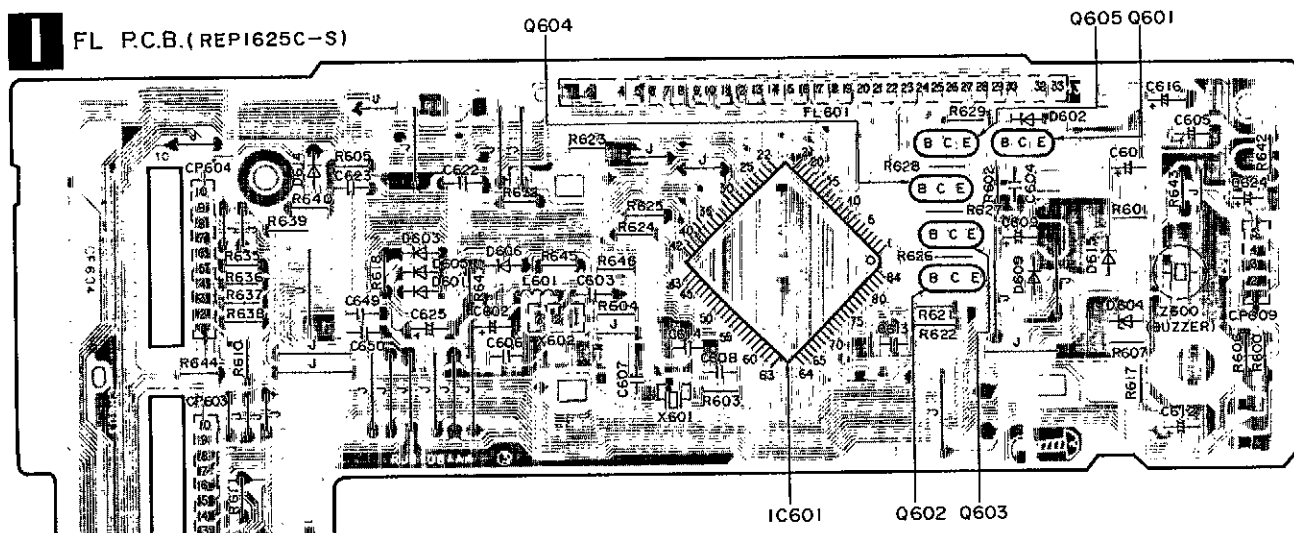


B TUNER P.C.B. (REP1452J-T-(E,EB)
REP1452K-T-(EG)
REP1452L-T-(GC,GN))

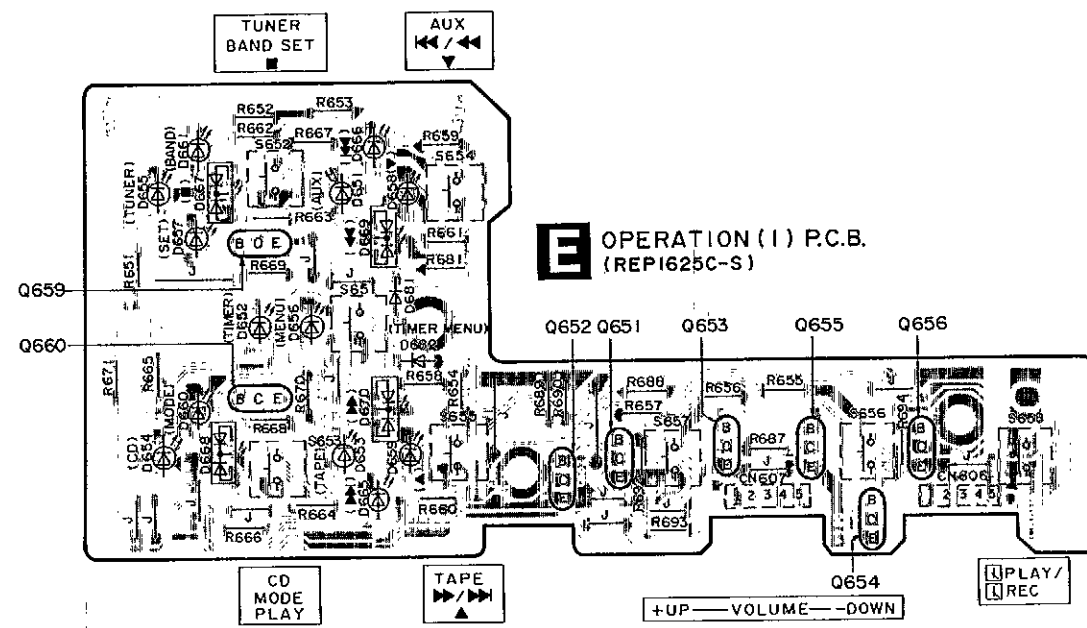


1 2 3 4 5 6 7 8 9 10 11 12 13 14

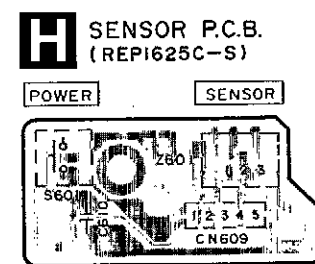
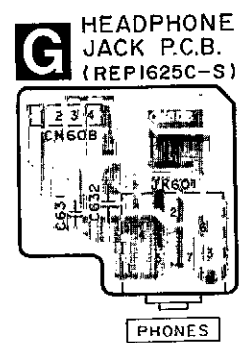
A



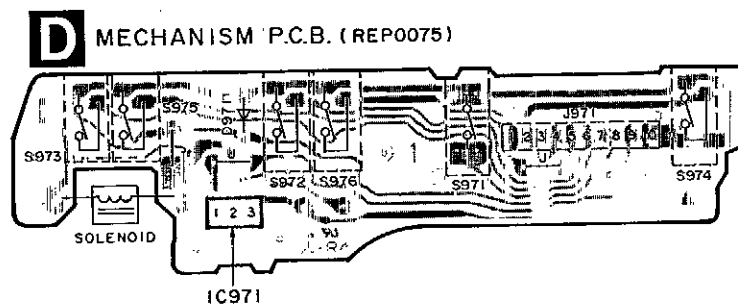
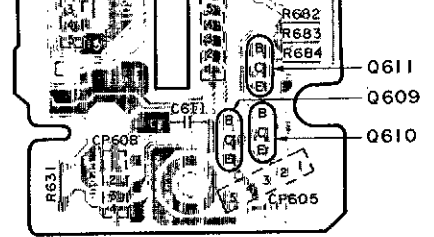
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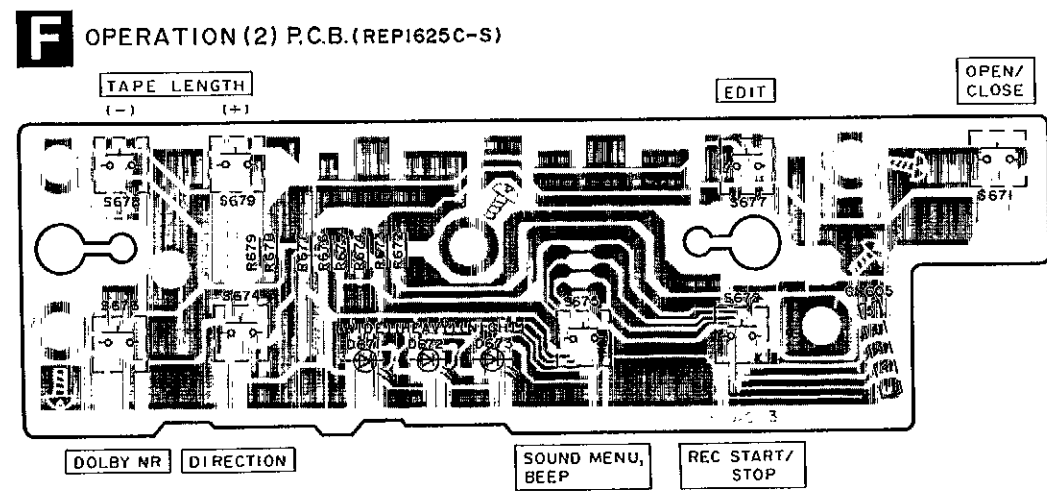
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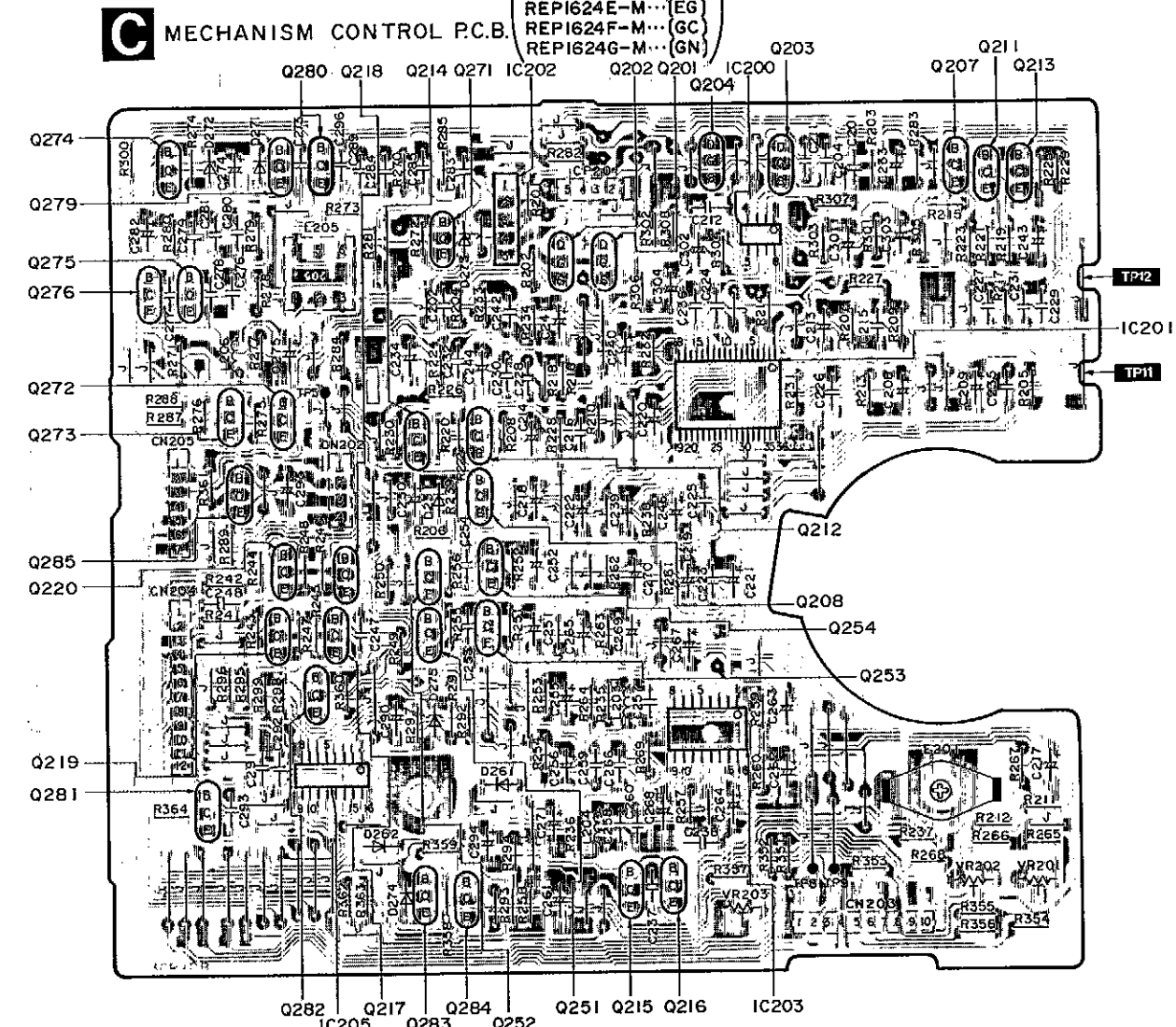
D



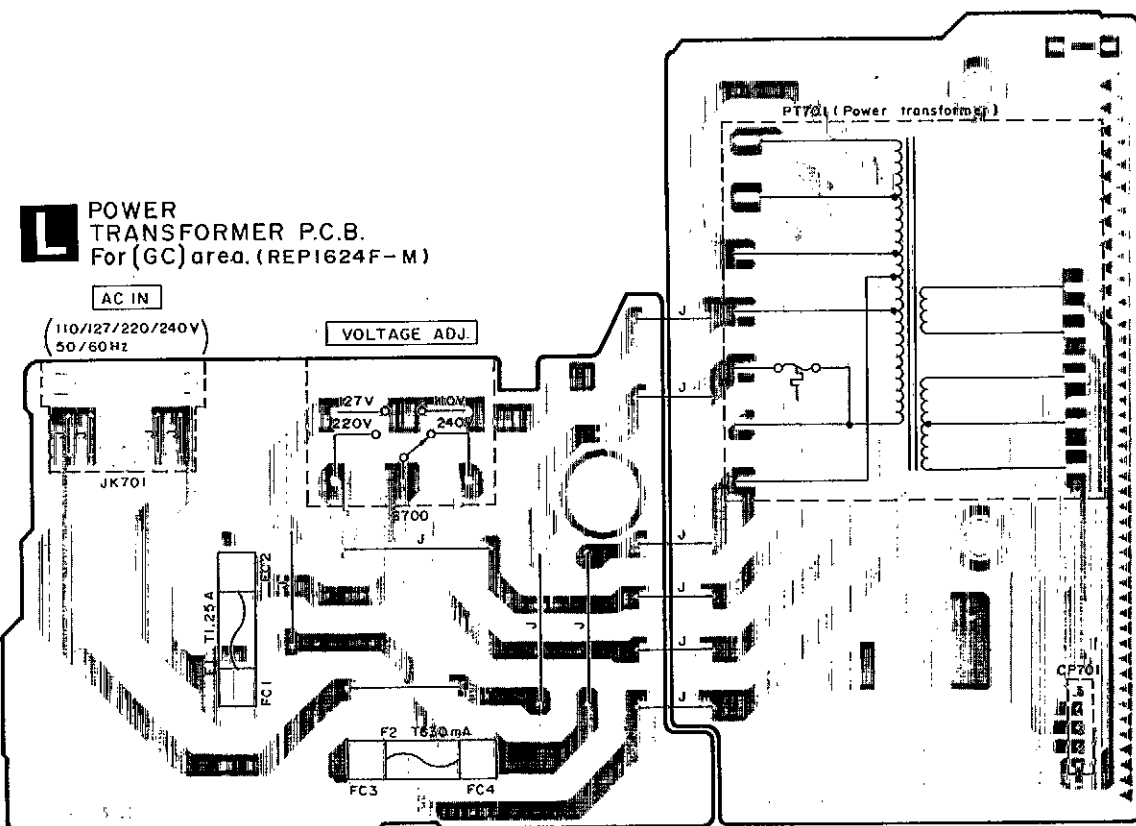
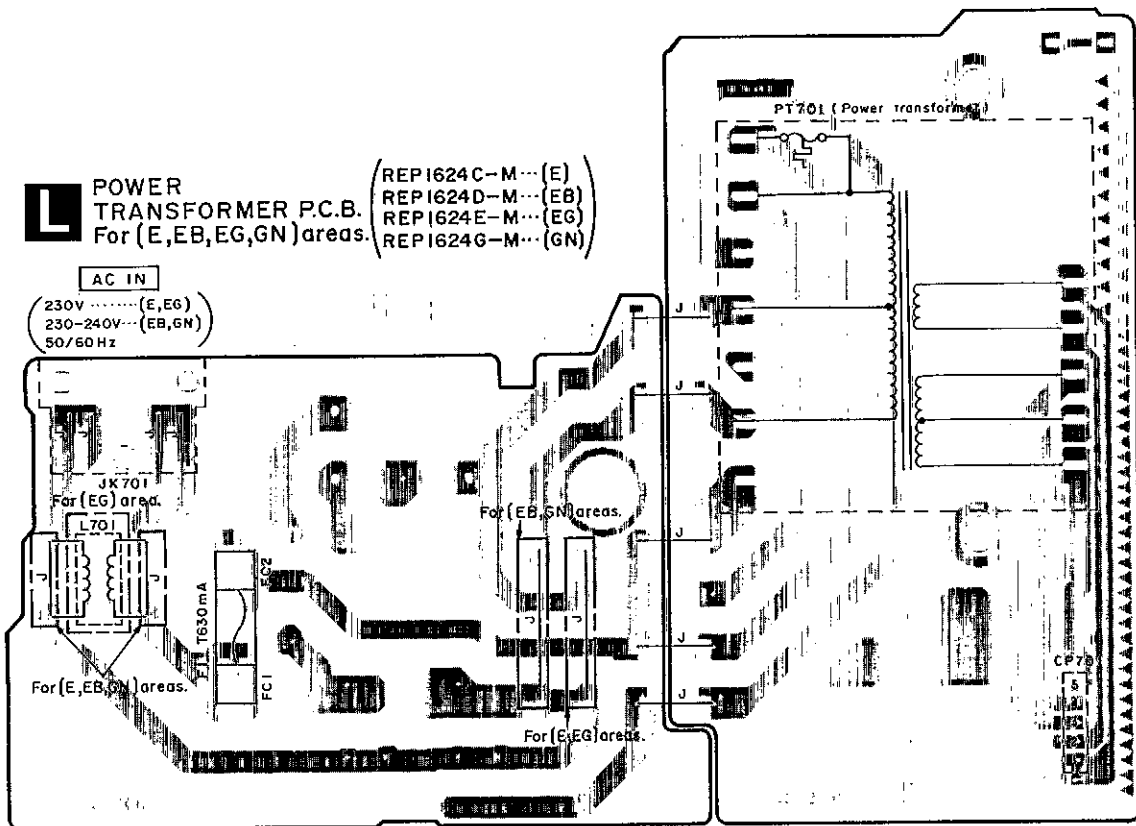
E



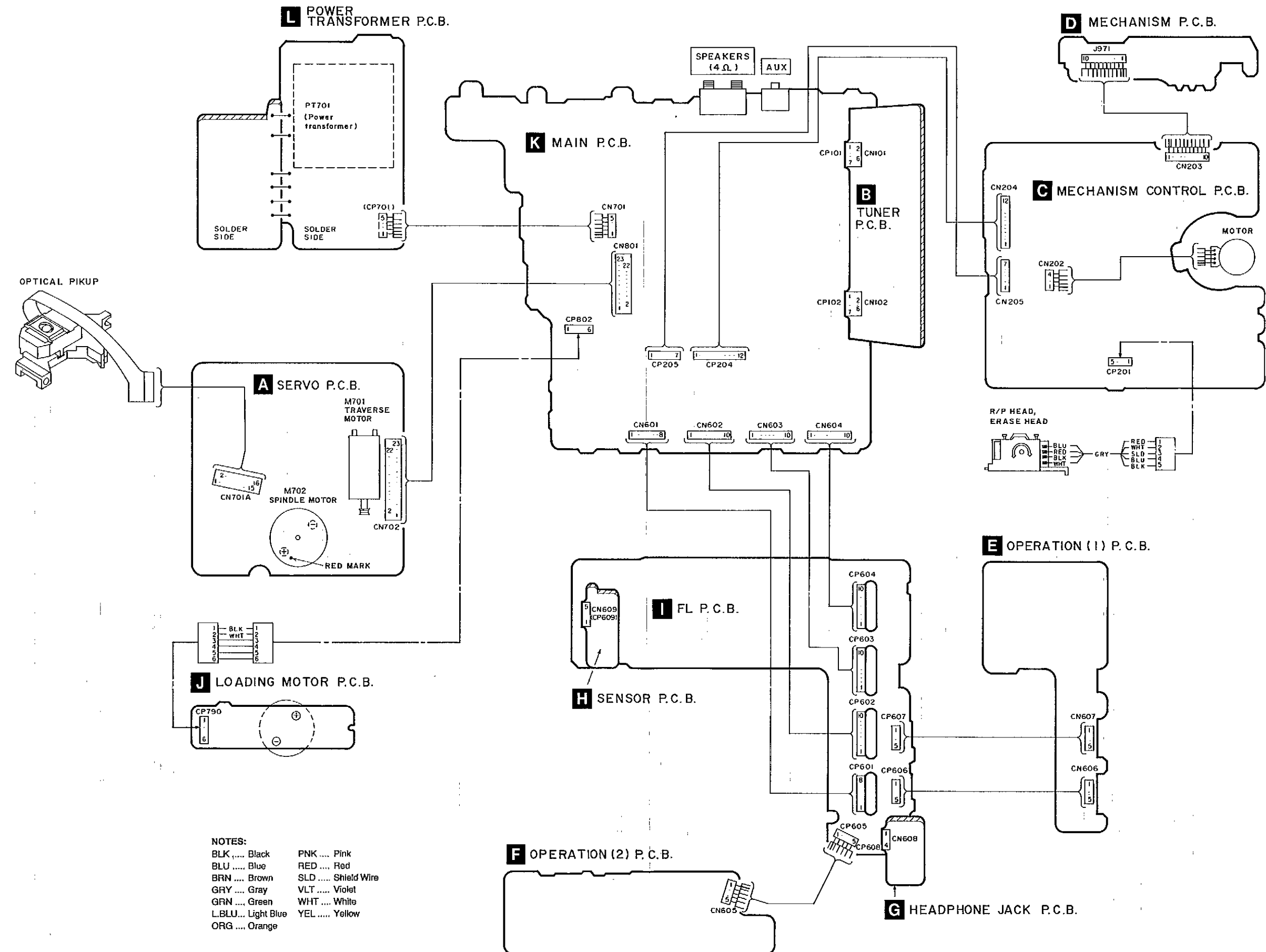
F



G



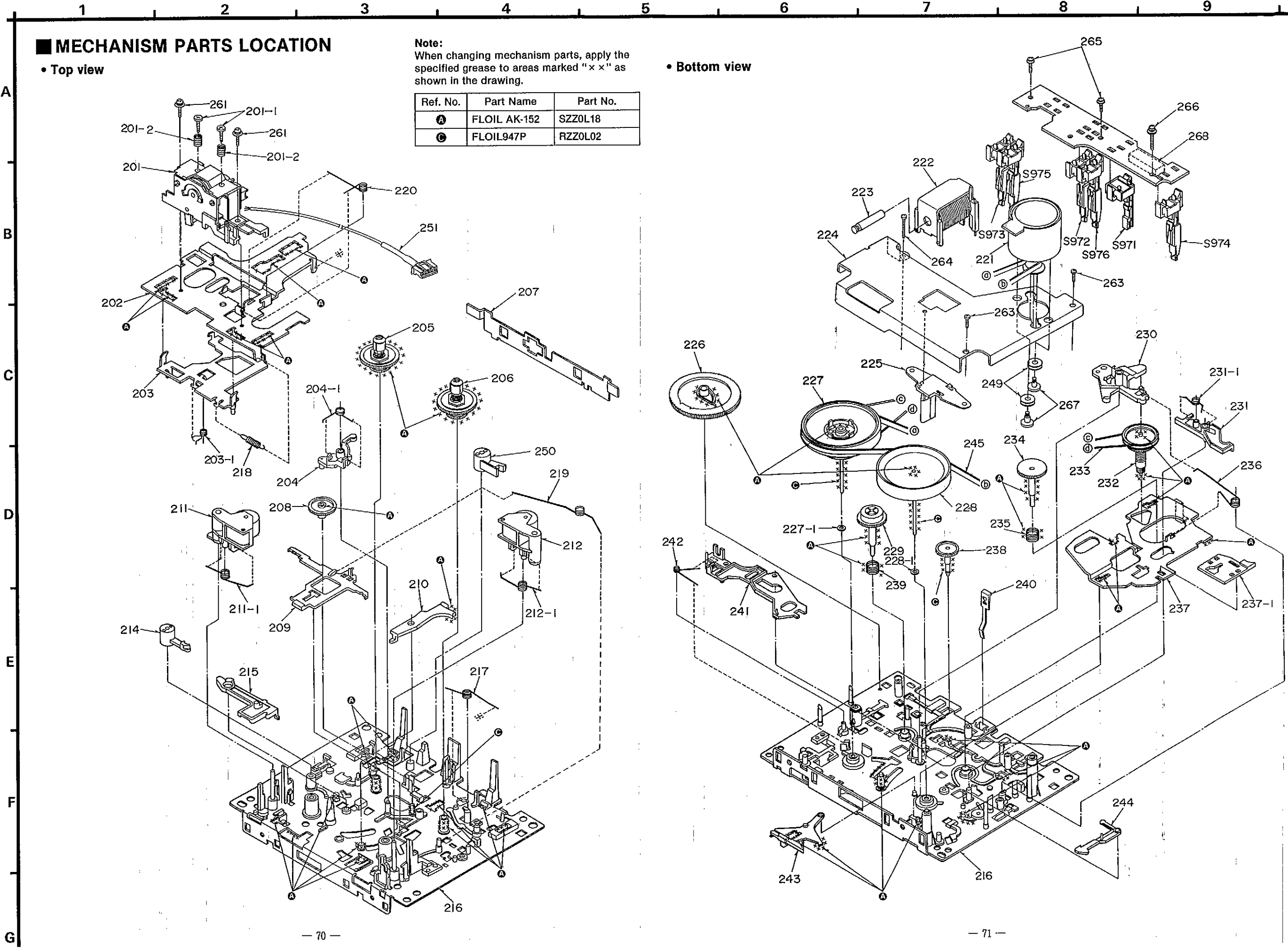
WIRING CONNECTION DIAGRAM



- NOTES:
- BLK Black
 - BLU Blue
 - BRN Brown
 - GRY Gray
 - GRN Green
 - L.BLU... Light Blue
 - ORG Orange
 - PNK Pink
 - RED Red
 - SLD Shield Wire
 - VLT Violet
 - WHT White
 - YEL Yellow

Ref. No.	Part No.	Part Name & Description	Remarks
225	RMD5014ZC	ANGLE	
226	RDG5927ZG	MAIN GEAR	
227	1DW00372B	FLYWHEEL (F)	
227-1	RNW139ZA	WASHER	
228	1DW00382B	FLYWHEEL (R)	
228-1	RNW138ZA	WASHER	
229	1DG0006ZB	REEL TABLE GEAR	
230	RUB513ZD	ARM	
231	1UB0091ZA	LEVER	
231-1	RUW146ZA	SPRING	
232	1DR0011ZB	MAIN PULLEY	
233	RDV90ZB	BELT	
234	RDG5769ZA	REEL TABLE GEAR	
235	RUQ111ZB	SPRING	
236	RUW145ZA	SPRING	
237	1UB0090ZA	ROD	
237-1	RUB512ZB	ROD	
238	RDG5773ZB	GEAR	
239	RUQ112ZA	SPRING	
240	RUS609ZC	TAPE PRESSURE SPRING	
241	RUB514ZC	LEVER	
242	RUW147ZA	SPRING	
243	RUB515ZA	LEVER	
244	RUB509ZA	LEVER	
245	RDV108ZA	CAPSTAN BELT	
249	RHG3032ZA	RUBBER CUSHION	
250	RNL180ZB	DAMPER ARM	
251	REX0059	LEAD WIRE (GP)	
261	XTW2+6L	SCREW	
263	XTN26+7J	SCREW	
264	RHE5203ZA	SCREW	
265	XTW2+8S	SCREW	
266	XYC2+JF16	SCREW	
267	RHD26002	SCREW	
268 (J971)	RJS10T7ZA	SOCKET (10P)	
		PACKING MATERIAL	
P1	RPG1749	PACKING CASE (SA-CH150)	(E, EG)
P1	RPG1750	PACKING CASE (SA-CH150)	(EB)
P1	RPG1751	PACKING CASE	(GC, GN)
P1	RPG1867	PACKING CASE (SB-CH150)	(E)
P2	RPN0713	CUSHION	(GC, GN)
P2	RPN0748	CUSHION (SA-CH150)	(E, EB, EG)
P3	RPQF0098	ACCESSORIES BOX	
P4	RPQ0366	PAD	(GC, GN)
P5	RPN0749	CUSHION (SB-CH150)	(E)
P6	RPH0136	MIRROR SHEET (SB-CH150)	
		ACCESSORIES	
A1	RFKSACH150E	INSTRUCTION MANUAL ASS'Y	(E)

Ref. No.	Part No.	Part Name & Description	Remarks
A1	RQT2133-B	INSTRUCTION MANUAL	(EB, GN)
A1	RQT2132-E	INSTRUCTION MANUAL	(EG)
A1	RQT2131-G	INSTRUCTION MANUAL	(GC)
A2	RQA0013	WARRANTY CARD	(E, EB, EG)
A2	RQX7433ZA	WARRANTY CARD	(GN)
A3	RQCB0189	SERVICENTER LIST	
A4	RJAD019-2K	AC POWER SUPPLY CORD	(E, EG, GC) Δ (SF)
A4	RJA0733	AC POWER SUPPLY CORD	(EB) Δ (SF)
A4	RJA0036-K	AC POWER SUPPLY CORD	(GN) Δ (SF)
A5	RSAD007	FM INDOOR ANTENNA	(E, EB, EG)
A5	RSAD006	FM INDOOR ANTENNA	(GC, GN)
A6	RSAD009	LW/MW LOOP ANTENNA	
A7	RKFO328-K	BACK COVER	
A8	RAK-CH910WK	REMOTE CONTROL TRANSMITTER	
A9	SJP9009	ATTACHMENT PLUG	(EB) Δ
A10	REED499	SPEAKER CORD	
A11	SJP5213-2	POWER PLUG ADAPTOR	(GC) Δ
A12	RQLAD134	VOLTAGE CAUTION LABEL	(GC)

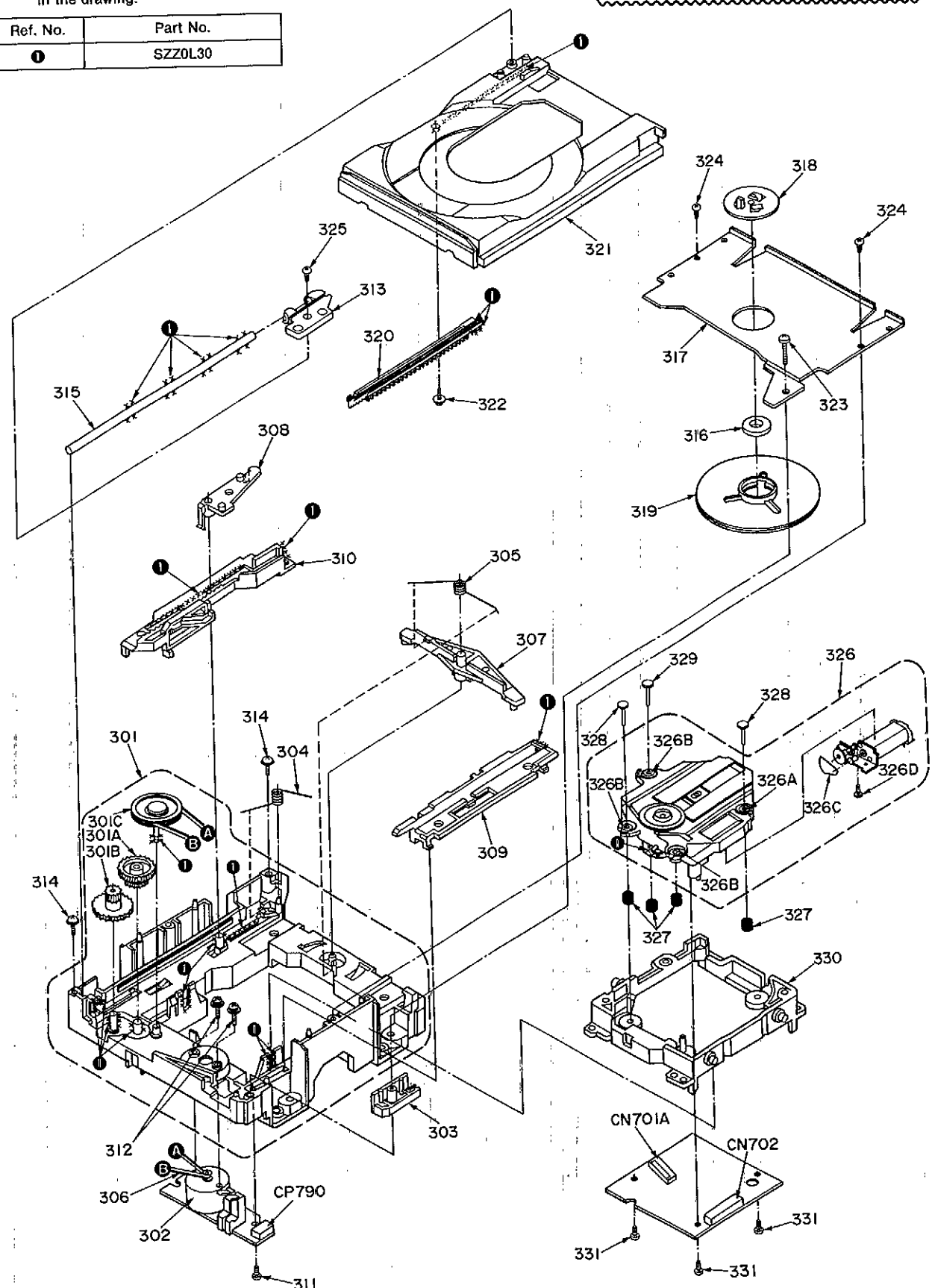


LOADING PARTS LOCATION

Note: When changing loading mechanism parts, apply the specified grease to the areas marked "x" as shown in the drawing.

The parts enclosed in the dotted boxes are supplied as a block assembly. Therefore, they are not supplied separately except parts indicated with Ref. No.

Ref. No.	Part No.
1	SZZ0L30



REPLACEMENT PARTS LIST

Notes: *Important safety notice: Components identified by Δ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list. *The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas. *Warning: This product uses a laser diode. Refer to caution statements on page 3. *ACHTUNG: Die Lasereinheit nicht zerlegen. Die Lasereinheit darf nur gegen eine vom Hersteller spezifizierete Einheit ausgetauscht werden.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
LOADING UNIT				INTEGRATED CIRCUIT(S)			
301	RFKJLPG440BK	TRAVERSE CHASSIS ASS'Y		IC101	LA1830-H	FM/AM IF AMP./AM OSC	
301A	RDC0142	INTERMEDIATE GEAR		IC102	LC7218	PLL FREQ. SYNTHESIZER	
301B	RDC0193	DRIVE GEAR(1)		IC200	AN6558SFE2	PRE AMP	
301C	RDP0065	INTERMEDIATE PULLEY		IC201	M51167BFP-TB	P. B EQ/REC AMP	
302	REMO019	LOADING MOTOR ASS'Y		IC202	BA7755A	R/P SELECT	
303	RMAD339	TRAY HOLDER		IC203	CXA1102M-T4	DOLBY NR	
304	RME0063	LOCK LEVER SPRING		IC205	XLU2040F-T1	SYSTEM CONTROL	
305	RME0087	ASSISTANCE SPRING		IC401	MC14052BF2	INPUT SELECTOR	
306	RMGD158	BELT		IC402	BA4558FDK1	BUFFER AMP	
307	RML0177	CONVERSION LEVER		IC403	AN6554NSFE2	SUBR/KARAOKE	
308	RML0178-1	LOCK LEVER		IC404	M51137FP-E1	ASP	
309	RMD059-1	SLIDE PLATE (2)		IC405	BA4558FDK1	BUFFER AMP	
310	RMD079	SLIDE PLATE (1)		IC501	SV13101D	POWER AMP	Δ
311	XTN26+6G	SCREW		IC551	MS218L	HEADPHONES AMP	
312	XYN2+6GF2	SCREW		IC601	MND2416RLA43	SYSTEM CONTROL/FL DRIVE	
313	RDB0036	GUIDE SHAFT HOLDER		IC701	BA392Q	POWER SUPPLY CONTROL	Δ
314	RHD20010	SCREW		IC790	TA7291S	MOTOR DRIVE	
315	RMJ0046	GUIDE SHAFT		IC801	XLU2040F-T1	SYSTEM CONTROL	
316	RHM2452A	MAGNET		IC971	DN6851ALB	HALL	
317	RFKNACH350EK	CLAMP PLATE ASS'Y	(E)				
317	RFKNLPG440GC	CLAMP PLATE ASS'Y	(EB, EG, GC, GN)			TRANSISTOR(S)	
318	RMRO334	FIXED PLATE		Q101, 102	2SC2787L	TRANSISTOR	
319	RKQ0123	MAGNET HOLDER ASS'Y		Q103, 104	2SC2785FE	TRANSISTOR	
320	RFKNLPG440-K	DRIVE GEAR(2) ASS'Y		Q106	UN411FTA	TRANSISTOR	
321	RGQ0088-K	DISC TRAY		Q107, 108	2SC3311A1RTA	TRANSISTOR	
322	RHD20009-1	SCREW		Q191-193	2SC3311A1RTA	TRANSISTOR	
323	XTB3+25GFZ	SCREW		Q201-204	2SJ164PQRTA	TRANSISTOR	
324	XTN26+6G	SCREW		Q207, 208	UN4210-S	TRANSISTOR	
325	XTN3+8JFZ	SCREW		Q211-214	UN4210-S	TRANSISTOR	
326	RAE0111Z	TRAVERSE DECK ASS'Y		Q215, 216	2SD1450RTA	TRANSISTOR	
326A	SHGD112	FLOATING RUBBER(A)		Q217-220	2SC3311A1RTA	TRANSISTOR	
326B	SHGD113-1	FLOATING RUBBER(B)		Q251, 252	UN4210-S	TRANSISTOR	
326C	RVD0023	BELT		Q253, 254	2SC1740SLNET	TRANSISTOR	
326D	SNSD38	SCREW		Q271	2SD1450RTA	TRANSISTOR	
327	RME0109	FLOATING SPRING		Q272, 273	UN4210-S	TRANSISTOR	
328	RMS0123-1	FIXED PIN (A)		Q274	2SC3311R	TRANSISTOR	
329	RMS0350	FIXED PIN (B)		Q275, 276	2SD1450RTA	TRANSISTOR	
330	RMRO533-K	TRAVERSE CHASSIS		Q279, 280	2SC2784FETA	TRANSISTOR	
331	XTV2+6G	SCREW		Q281, 282	UN411FTA	TRANSISTOR	
				Q283	UN4215	TRANSISTOR	
				Q284	KSB564ACYGTA	TRANSISTOR	
				Q285	2SD965Q	TRANSISTOR	
				Q401	UN4115	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
Q402	2SD1450RTA	TRANSISTOR		D602, 603	MA165	DIODE	
Q403, 404	2SK381BCDTA	TRANSISTOR		D604	MA4051MTA	DIODE	
Q405, 406	2SC3311A1RTA	TRANSISTOR		D605, 606	MA165	DIODE	
Q407	UN4212TA	TRANSISTOR		D609	MA165	DIODE	
Q408	UN4111	TRANSISTOR		D614	MA700	DIODE	
Q409, 410	2SD1450RTA	TRANSISTOR		D615	MA165	DIODE	
Q411	UN4115	TRANSISTOR		D651-656	SLR-305LC	L. E. D.	
Q412	UN4212TA	TRANSISTOR		D657-661	SLR-305DC	L. E. D.	
Q413, 414	2SK381BCDTA	TRANSISTOR		D665, 666	SLR-305LC	L. E. D.	
Q501, 502	2SC3311A1RTA	TRANSISTOR		D667-670	SPR305MKTJM	L. E. D.	
Q551, 552	2SD1450RTA	TRANSISTOR		D671-673	SLR-305MC	L. E. D.	
Q553	2SC3327-A	TRANSISTOR		D681, 682	MA165	DIODE	
Q601	UN4213	TRANSISTOR		D701, 702	RL1M4003N02	DIODE	Δ
Q602-605	UN4215	TRANSISTOR		D703-706	RL154M11	DIODE	Δ
Q609-611	UN4216-S	TRANSISTOR		D707	MA4240H	DIODE	
Q651	UN4215	TRANSISTOR		D708	RL1M4003N02	DIODE	
Q652	UN4211	TRANSISTOR		D709, 710	RL1M4003N02	DIODE	Δ
Q653	UN4215	TRANSISTOR		D713	MA167	DIODE	Δ
Q654, 655	UN4211	TRANSISTOR		D715-717	MA165	DIODE	
Q656	UN4215	TRANSISTOR		D718, 719	MA4150M	DIODE	Δ
Q659, 660	2SB1030AQSTA	TRANSISTOR		D720	MA165	DIODE	
Q701	2SC3311A1RTA	TRANSISTOR		D721	MA4220MTA	DIODE	Δ
Q703	2SC3311A1RTA	TRANSISTOR		D724	MA165	DIODE	
Q704	2SD2037EFTA	TRANSISTOR	Δ	D725	MA4051-L	DIODE	Δ
Q705	KSB564ACYGTA	TRANSISTOR	Δ	D726	MA4062-H	DIODE	Δ
Q706	2SB1357EFTA	TRANSISTOR		D728	MA4082HTA	DIODE	Δ
Q707	DTB123YSTP	TRANSISTOR		D729	MA4075MTA	DIODE	Δ
Q708	2SD1762EF	TRANSISTOR	Δ	D730	MA4130M	DIODE	Δ
Q709	2SC3940AQSTA	TRANSISTOR	Δ	D731-733	MA4091HTA	DIODE	Δ
Q710	2SD2037EFTA	TRANSISTOR	Δ	D734	MTZJ4R7BTA	DIODE	Δ
Q715	2SC3940AQSTA	TRANSISTOR	Δ	D741	MA4091HTA	DIODE	Δ
Q716	2SD2037EFTA	TRANSISTOR	Δ	D801, 802	MA165	DIODE	
Q717	KSD471ACYGTA	TRANSISTOR	Δ	D804-814	MA165	DIODE	
Q741	2SD2037EFTA	TRANSISTOR	Δ	D815	MA700	DIODE	
Q801-804	UN4111	TRANSISTOR		D816	MA165	DIODE	
Q805-809	2SC3311A1RTA	TRANSISTOR		D971	RVDISS133TA	DIODE	
						DIODE(S)	
						IC PROTECTOR(S)	
D101	MA4051MTA	DIODE	Δ	ICP701	SRUN10	IC PROTECTOR	Δ
D102	MA165	DIODE					
D251	MA165	DIODE				VARIABLE RESISTOR(S)	
D261, 262	MA165	DIODE		VR201, 202	EVNDCAA03B24	PLAYBACK GAIN ADJ.	
D271	MA165	DIODE		VR203	EVNDCAA03B53	TAPE SPEED ADJ.	
D272	MTZJ4R7BTA	DIODE					
D273	MA4030MTA	DIODE				COIL(S)	
D274, 275	MA165	DIODE					
D400	MA4051-L	DIODE	Δ	L101	ELESNR68MA	COIL	
D401	MA4091HTA	DIODE	Δ	L103	ELEKTR47MA9	COIL	
D403, 404	MA165	DIODE		L104	ELEXT100KA9	COIL	
D491, 492	MA165	DIODE		L105, 106	RLQZB822KT-D	COIL	
D601	1SS291TA	DIODE					

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
L111	ELEXT1R0KA9	COIL		S652	EVQ21405R	TUNER, BAND, SET	
L151	SLM1B10M-1M	COIL	(EG)	S653	EVQ21405R	CD, MODE, PLAY	
L191	ELESNR68MA	COIL		S654	EVQ21405R	AUX, B. SKIP, DOWN	
L203, 204	RLQB103JT-Y	COIL		S655	EVQ21405R	TAPE, F. SKIP, UP	
L205	RL08C002M-T	COIL		S656	EVQ21405R	VOLUME DOWN(-)	
L206	RLQZB470KT-D	COIL		S657	EVQ21405R	VOLUME UP(+)	
L501, 502	SLQY07G-40	COIL	(EG)	S658	EVQ21405R	TIMER (PLAY/REC)	
L601	ELEXT2R2KA9	COIL		S671	EVQ21405R	OPEN/CLOSE	
L701	RLQZ271M	COIL	(EG)	S672	EVQ21405R	REC. START/STOP	
		TRANSFORMER(S)		S673	EVQ21405R	DOLBY NR	
PT701	RTP2M5B001	POWER TRANSFORMER	(E, EB, EG, GN) △	S674	EVQ21405R	DIRECTION	
PT701	RTP2M5G001	POWER TRANSFORMER	(GC) △	S675	EVQ21405R	SOUND MENU, BEEP	
		COMPONENT COMBINATION(S)		S677	EVQ21405R	EDIT	
Z102	RLI2Z006M-T	COMPONENT COMBINATION		S678	EVQ21405R	TAPE LENGTH(-)	
Z120	RAL0006	FM FRONT END	(E, EB, GC, GN)	S679	EVQ21405R	TAPE LENGTH(+)	
Z120	RAL0019	FM FRONT END	(EG)	S700	SSR187-1	VOLTAGE ADJ.	(GC) △
Z191	RLA6Z005M-T	COMPONENT COMBINATION		S790	RSH1A005	CLOSE DETECTOR	
Z600	RAT0010	BUZZER		S791	RSH1A005	OPEN DETECTOR	
Z601	RCDGP1U90XA	REMOTE SENSOR		S971	RSH1A89ZD-U	MODE	
		FILTER(S)		S972	RSH1A90YD-U	HALF	
CF201, 202	RLFFETWND01M	FILTER	(E, EB, GC, GN)	S973	RSH1A90YD-U	R. REC INH	
CF201	RLFFETNGD01L	FILTER	(EG)	S974	RSH1A90YD-U	F. REC INH	
CF202	RLFFETMGD01L	FILTER	(EG)	S975	RSH1A90YD-U	ATS/Cr02	
		OSCILLATOR(S)		S976	RSH1A90YD-U	ATS/METAL	
X101	RSXZ456KM07M	CERAMIC OSCILLATOR (456KHz)				RELAY(S)	
X102	RLFDFTD03M1	OSCILLATOR (10. 7MHz)		RL701	RSY0013M-0	RELAY	△
X103	SVQ49U722-S	OSCILLATOR (7. 2MHz)				CONNECTOR(S) AND SOCKET(S)	
X601	RSXD32K7F02	CERAMIC OSCILLATOR (32KHz)		CN101, 102	RJU063W07T	SOCKET (7P)	
X602	EF0EC4004T4	CERAMIC OSCILLATOR (4MHz)		CN202	RJS1A6604	SOCKET (4P)	
		DISPLAY TUBE(S)		CN203	SJSD1005	CONNECTOR (10P)	
FL601	RSLO156-F	DISPLAY TUBE		CN204	RJU005A012	SOCKET (12P)	
		FUSE(S)		CN205	RJU005W007	SOCKET (7P)	
F1	XBA2C06TBO	FUSE, 250V, T630mA	(E, EB, EG, GN) △	CN601	RJU003K008M1	SOCKET (8P)	
F1	XBA2C12TBOS	FUSE, 250V, T1. 25A	(GC) △	CN602-604	RJU003K010M1	SOCKET (10P)	
F2	XBA2C06TBO	FUSE, 250V, T630mA	(GC) △	CN606, 607	RJU066H05	SOCKET (5P)	
		SWITCH(ES)		CN608	RJU057W004	SOCKET (4P)	
S601	EVQ21405R	POWER		CN609	SJS0581BB	SOCKET (5P)	
S651	EVQ21405R	TIMER, MENU		CN701	RJS1A6605	SOCKET (5P)	
				CN801	RJS1A6823	SOCKET (23P)	
				CP101, 102	RJT063W07T	CONNECTOR (7P)	
				CP201	RJP5G18ZA	CONNECTOR (5P)	
				CP204	RJT005W012	CONNECTOR (12P)	
				CP205	RJT005W007	CONNECTOR (7P)	
				CP601	RJT003K008-1	CONNECTOR (8P)	
				CP602-604	RJT003K010-1	CONNECTOR (10P)	
				CP605	REZ0601	CONNECTOR UNIT (5P)	
				CP606, 607	RJT066H05A	CONNECTOR (5P)	
				CP608	RJT057W004-1	CONNECTOR (4P)	

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
CP609	SJT30549BB1	CONNECTOR (5P)				<SERVO P. C. B. >	
CP790	RJP6617ZA	CONNECTOR (6P)				INTEGRATED CIRCUIT(S)	
CP802	RJT029W06VT	CONNECTOR (6P)					
		GND PLATE (S)		IC701	AN8802SCE1V	SERVO AMP	
E100	RSC0081	GND PLATE		IC702	MN66271RA	SERVO PROCESSOR	
E201	SNE1004-1	GND PLATE		IC703	AN8389SE1	MOTOR DRIVE	
		FUSE HOLDER (S)				TRANSISTOR (S)	
FC1, 2	EYF52BC	FUSE HOLDER		Q701	2SB709S	TRANSISTOR	
FC3, 4	EYF52BC	FUSE HOLDER	(GC)			OSCILLATOR (S)	
		JACK (S) AND TERMINAL (S)		X701	RSXZ16M9M02T	OSCILLATOR (16. 9344MHZ)	
JK101	RJH4202M	ANT TERMINAL	(E, EB, EG)			SWITCH(ES)	
JK101	RJH4405-1M	ANT TERMINAL	(GC, GN)	S701	RSM0006-P	REST DETECTOR	
JK401	SJF3068N	AUX				CONNECTOR(S) AND SOCKET(S)	
JK501	RJR0054EM	SPEAKERS TERMINAL		CN701A	RJU035T016-1	CONNECTOR (16P)	
JK601	RJJD7S2YA-C	HEADPHONES JACK		CN702	RJS1A6723-1Q	SOCKET (23P)	
JK701	SJS9236	AC INLET	(E, EB, EG, GC) Δ				
JK701	SJSD16	AC INLET	(GN) Δ				

RESISTORS AND CAPACITORS

Notes : *Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
 *Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
		RESISTORS	R128	ERDS2TJ820	1/4W 82	R209, 210	ERDS2TJ392T	1/4W 3.9K
			R129	ERDS2TJ473	1/4W 47K	R211, 212	ERDS2TJ222	1/4W 2.2K
			R130, 131	ERDS2TJ102	1/4W 1K	R213, 214	ERDS2TJ122	1/4W 1.2K
R103	ERDS2TJ271	1/4W 270 E, EB, GC, GN	R132	ERDS2TJ103	1/4W 10K	R215, 216	ERDS2TJ224T	1/4W 220K
R103	ERDS2TJ330	1/4W 330 EG	R133-137	ERDS2TJ102	1/4W 1K	R217, 218	ERDS2TJ104	1/4W 100K
R104	ERDS2TJ822	1/4W 8.2K	R138	ERDS2TJ103	1/4W 10K	R219-222	ERDS2TJ153	1/4W 15K
R105	ERDS2TJ471	1/4W 470	R139, 140	ERDS2TJ272T	1/4W 2.7K	R223, 224	ERDS2TJ562	1/4W 5.6K
R106	ERDS2TJ474	1/4W 470K	R141, 142	ERDS2TJ103	1/4W 10K	R225, 226	ERDS2TJ391	1/4W 390
R107	ERDS2TJ331	1/4W 330	R143, 144	ERDS2TJ222	1/4W 2.2K	R227, 228	ERDS2TJ682T	1/4W 6.8K
R108	ERDS2TJ474	1/4W 470K	R145, 146	ERDS2TJ102	1/4W 1K E, EB, GC, GN	R229, 230	ERDS2TJ561	1/4W 560
R109	ERDS2TJ331	1/4W 330	R145, 146	ERDS2TJ821	1/4W 820 EG	R231	ERDS2TJ683	1/4W 68K
R110	ERDS2TJ102	1/4W 1K E, EB, GC, GN	R147, 148	ERDS2TJ474	1/4W 470K	R232	ERDS2TJ335T	1/4W 3.3M
R110	ERDS2TJ822	1/4W 8.2K EG	R149	ERDS2TJ680T	1/4W 68	R233	ERDS2TJ332	1/4W 3.3K
R112	ERDS2TJ104	1/4W 100K	R171, 172	ERDS2TJ102	1/4W 1K	R234	ERDS2TJ474	1/4W 470K
R113	ERDS2TJ103	1/4W 10K	R173	ERDS2TJ471	1/4W 470	R235, 236	ERDS2TJ101	1/4W 100
R114	ERDS2TJ562	1/4W 5.6K	R175	ERDS2TJ102	1/4W 1K	R237	ERDS2TJ4R7T	1/4W 4.7
R115	ERDS2TJ561	1/4W 560	R176	ERDS2TJ391	1/4W 390	R238, 239	ERDS2TJ103	1/4W 10K
R116	ERDS2TJ102	1/4W 1K	R191	ERDS2TJ103	1/4W 10K	R241, 242	ERDS2TJ183T	1/4W 18K
R117	ERDS2TJ682T	1/4W 6.8K	R192	ERDS2TJ122	1/4W 1.2K	R243, 244	ERDS2TJ102	1/4W 1K
R118	ERDS2TJ562	1/4W 5.6K	R193	ERDS2TJ182	1/4W 1.8K	R245, 246	ERDS2TJ222	1/4W 2.2K
R119	ERDS2TJ392T	1/4W 3.9K E, EB, GC, GN	R194	ERDS2TJ122	1/4W 1.2K	R247, 248	ERDS2TJ821	1/4W 820
R119	ERDS2TJ822	1/4W 8.2K EG	R195	ERDS2TJ223	1/4W 22K	R249, 250	ERDS2TJ102	1/4W 1K
R120	ERDS2TJ473	1/4W 47K	R201	ERDS2TJ334	1/4W 330K	R251, 252	ERDS2TJ105T	1/4W 1M
R121	ERDS2TJ332	1/4W 3.3K	R202	ERDS2TJ104	1/4W 100K	R253, 254	ERDS2TJ102	1/4W 1K
R122	ERDS2TJ272T	1/4W 2.7K	R203, 204	ERDS2TJ123	1/4W 12K	R255, 256	ERDS2TJ471	1/4W 470
R124	ERDS2TJ391	1/4W 390	R205	ERDS2TJ221	1/4W 220	R257	ERDS2TJ433	1/4W 43K
R125, 126	ERDS2TJ152	1/4W 1.5K	R206	ERDS2TJ222	1/4W 2.2K	R258	ERDS2TJ101	1/4W 100
R127	ERDS2TJ103	1/4W 10K	R207, 208	ERDS2EJ121	1/4W 120	R259, 260	ERDS2TJ222	1/4W 2.2K

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
R261, 262	ERDS2TJ272T	1/4W 2.7K	R420	ERDS2TJ472	1/4W 4.7K	R518	ERDS2TJ124T	1/4W 120K
R263, 264	ERDS2TJ103	1/4W 10K	R421, 422	ERDS2TJ223	1/4W 22K	R519	ERDS2TJ563	1/4W 56K
R265, 266	ERDS2TJ272T	1/4W 2.7K	R423-426	ERDS2TJ103	1/4W 10K	R521, 522	ERDS2TJ104	1/4W 100K
R267, 268	ERDS2TJ472	1/4W 4.7K	R427, 428	ERDS2TJ153	1/4W 15K	R523, 524	ERDS2TJ272T	1/4W 2.7K
R269	ERDS2TJ124T	1/4W 120K	R429, 430	ERDS2TJ102	1/4W 1K	R551, 552	ERDS2TJ102	1/4W 1K
R270	ERDS2TJ102	1/4W 1K	R431, 432	ERDS2TJ103	1/4W 10K	R553, 554	ERDS2EJ121	1/4W 120
R271	ERD2FCVG120T	1/4W 12 Δ	R433	ERDS2TJ561	1/4W 560	R555-558	ERDS2TJ563	1/4W 56K
R272	ERDS2TJ331	1/4W 330	R434	ERDS2EJ121	1/4W 120	R559, 560	ERDS2TJ103	1/4W 10K
R273	ERDS2TJ103	1/4W 10K	R435	ERDS2TJ334	1/4W 330K	R561-564	ERDS2EJ121	1/4W 120
R274	ERDS2TJ472	1/4W 4.7K	R436	ERDS2TJ105T	1/4W 1M	R565	ERDS2TJ105T	1/4W 1M
R275	ERDS2TJ562	1/4W 5.6K	R437-440	ERDS2TJ472	1/4W 4.7K	R570	ERDS2TJ560T	1/4W 56
R276, 277	ERDS2TJ103	1/4W 10K	R441, 442	ERDS2TJ103	1/4W 10K	R571	ERDS2TJ223	1/4W 22K
R278	ERDS2TJ4R7T	1/4W 4.7	R445, 446	ERDS2TJ472	1/4W 4.7K	R572	ERDS2TJ153	1/4W 15K
R279, 280	ERDS2TJ472	1/4W 4.7K	R453	ERDS1FVJ151T	1/2W 150 Δ	R573, 574	ERDS2TJ122	1/4W 1.2K
R281	ERDS2TJ332	1/4W 3.3K	R455, 456	ERDS2TJ104	1/4W 100K	R600, 601	ERDS2TJ102	1/4W 1K
R282	ERDS2TJ1R0	1/4W 1.0	R457	ERDS2TJ272T	1/4W 2.7K	R602	ERDS2TJ473	1/4W 47K
R283, 284	ERDS2TJ104	1/4W 100K	R459	ERDS2TJ101	1/4W 100	R603	ERDS2TJ334	1/4W 330K
R285	ERDS2TJ102	1/4W 1K	R460	ERDS2TJ105T	1/4W 1M	R604, 605	ERDS2TJ102	1/4W 1K
R287, 288	ERDS2TJ272T	1/4W 2.7K	R461, 462	ERDS2TJ472	1/4W 4.7K	R606	ERDS2TJ224T	1/4W 220K
R289	ERDS2TJ103	1/4W 10K	R463, 464	ERDS2TJ152	1/4W 1.5K	R607	ERDS2TJ104	1/4W 100K
R291	ERDS2TJ472	1/4W 4.7K	R465	ERDS2TJ102	1/4W 1K	R610	ERDS2TJ564	1/4W 560K
R292	ERDS2TJ103	1/4W 10K	R466	ERDS2TJ105T	1/4W 1M	R611-616	ERDS2TJ101	1/4W 100
R293	ERDS2TJ222	1/4W 2.2K	R467	ERDS2TJ474	1/4W 470K	R617	ERDS2TJ222	1/4W 2.2K
R294-296	ERDS2TJ102	1/4W 1K	R468	ERDS2TJ102	1/4W 1K	R618	ERDS2TJ150T	1/4W 15
R297	ERDS2TJ472	1/4W 4.7K	R469	ERDS2TJ334	1/4W 330K	R621-623	ERDS2TJ102	1/4W 1K
R298, 299	ERDS2TJ103	1/4W 10K	R470	ERDS2TJ392T	1/4W 3.9K	R624, 625	ERDS2TJ103	1/4W 10K
R300	ERDS2TJ681	1/4W 680	R471, 472	ERDS2EJ121	1/4W 120	R626-629	ERDS2TJ104	1/4W 100K
R301, 302	ERDS2TJ122	1/4W 1.2K	R473	ERDS2TJ105T	1/4W 1M	R631	ERDS2TJ102	1/4W 1K
R303, 304	ERDS2TJ222	1/4W 2.2K	R474	ERDS2TJ104	1/4W 100K	R632	ERDS2TJ103	1/4W 10K
R305, 306	ERDS2TJ122	1/4W 1.2K	R475	ERDS2TJ102	1/4W 1K	R635-638	ERDS2TJ101	1/4W 100
R307, 308	ERDS2TJ104	1/4W 100K	R476	ERDS2TJ473	1/4W 47K	R639, 640	ERDS2TJ104	1/4W 100K
R351	ERDS2TJ473	1/4W 47K	R477	ERDS2TJ104	1/4W 100K	R641	ERDS2TJ103	1/4W 10K
R352	ERDS2TJ472	1/4W 4.7K	R479, 480	ERDS2TJ104	1/4W 100K	R642	ERDS2TJ102	1/4W 1K
R353	ERDS2TJ152	1/4W 1.5K	R481, 482	ERDS2TJ822	1/4W 8.2K	R643, 644	ERDS2TJ103	1/4W 10K
R354, 355	ERDS2TJ473	1/4W 47K	R485, 486	ERDS2TJ104	1/4W 100K	R645	ERDS2TJ104	1/4W 100K
R356	ERDS2TJ472	1/4W 4.7K	R487, 488	ERDS2TJ472	1/4W 4.7K	R646	ERDS2TJ561	1/4W 560
R357	ERDS2TJ103	1/4W 10K	R489, 490	ERDS2TJ104	1/4W 100K	R647	ERDS2TJ104	1/4W 100K
R358	ERDS2TJ2R7T	1/4W 2.7	R491, 492	ERDS2TJ102	1/4W 1K	R651, 652	ERDS2TJ102	1/4W 1K
R359, 360	ERDS2TJ102	1/4W 1K	R493	ERDS2TJ473	1/4W 47K	R653	ERDS2TJ122	1/4W 1.2K
R361	ERDS2TJ2R7T	1/4W 2.7	R494	ERDS2TJ474	1/4W 470K	R654	ERDS2TJ182	1/4W 1.8K
R362	ERDS2TJ123	1/4W 12K	R495	ERDS2TJ105T	1/4W 1M	R655	ERDS2TJ222	1/4W 2.2K
R363	ERDS2TJ182	1/4W 1.8K	R497, 498	ERDS2TJ333	1/4W 33K	R656	ERDS2TJ272T	1/4W 2.7K
R364	ERDS2TJ221	1/4W 220	R499, 500	ERDS2TJ123	1/4W 12K	R657	ERDS2TJ472	1/4W 4.7K
R400	ERDS2TJ122	1/4W 1.2K	R501, 502	ERDS2TJ104	1/4W 100K	R658	ERDS2TJ821	1/4W 820
R401, 402	ERDS2TJ153	1/4W 15K	R503, 504	ERDS2TJ681	1/4W 680	R659	ERDS2TJ391	1/4W 390
R403, 404	ERDS2TJ682T	1/4W 6.8K	R505-508	ERDS2TJ104	1/4W 100K	R660	ERDS2TJ101	1/4W 100
R405, 406	ERDS2TJ153	1/4W 15K	R509	ERD25FJ470	1/4W 47 Δ	R661	ERDS2TJ391	1/4W 390
R407-410	ERDS2TJ223	1/4W 22K	R511	ERDS2TJ563	1/4W 56K	R662	ERDS2TJ561	1/4W 560
R411, 412	ERDS2TJ683	1/4W 68K	R512	ERDS2TJ103	1/4W 10K	R663	ERDS2TJ681	1/4W 680
R413, 414	ERDS2TJ273	1/4W 27K	R513, 514	ERDS2TJ100	1/4W 10 EG	R664	ERDS2TJ391	1/4W 390
R415, 416	ERDS2TJ223	1/4W 22K	R515, 516	ERDS1FVJ100T	1/2W 10 Δ	R665	ERDS2TJ681	1/4W 680
R417-419	ERDS2TJ393	1/4W 39K	R517	ERDS2TJ823T	1/4W 82K	R666	ERDS2TJ391	1/4W 390

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
R667	ERDS2TJ681	1/4W 680	R801	ERDS2TJ102	1/4W 1K	C122	ECEA1HKA2R2B	50V 2.2U
R668	ERDS2TJ391	1/4W 390	R802	ERDS2TJ104	1/4W 100K	C123	ECEA1HKA010B	50V 1U
R669	ERDS2TJ681	1/4W 680	R803	ERDS2TJ102	1/4W 1K	C124	ECBT1H102KB5	50V 1000P
R670	ERDS2TJ391	1/4W 390	R804, 805	ERDS2TJ103	1/4W 10K	C125	ECBT1H150JC5	50V 15P
R671	ERDS2TJ181T	1/4W 180	R806, 807	ERDS2TJ473	1/4W 47K	C126	ECBT1H473ZF5	50V 0.047U
R672, 673	ERDS2TJ102	1/4W 1K	R808	ERDS2TJ822	1/4W 8.2K	C127	ECEA1CKA220B	16V 22U
R674	ERDS2TJ122	1/4W 1.2K	R809	ERDS2TJ103	1/4W 10K	C128	ECBT1C103NS5	16V 0.01U
R675	ERDS2TJ182	1/4W 1.8K	R810, 811	ERDS2TJ272T	1/4W 2.7K	C129, 130	ECEA0JKA101B	6.3V 100U
R676	ERDS2TJ222	1/4W 2.2K	R812	ERDS2TJ102	1/4W 1K	C131	ECBT1C103NS5	16V 0.01U
R677	ERDS2TJ272T	1/4W 2.7K	R813, 814	ERDS2TJ272T	1/4W 2.7K	C132	ECBT1H102KB5	50V 1000P
R678	ERDS2TJ472	1/4W 4.7K	R815, 816	ERDS2TJ103	1/4W 10K	C133	ECBT1H150JC5	50V 15P
R679	ERDS2TJ682T	1/4W 6.8K	R817, 818	ERDS2TJ102	1/4W 1K	C134	ECBT1H180JC5	50V 18P
R681	ERDS2TJ331	1/4W 330	R819	ERDS2TJ103	1/4W 10K	C135, 136	ECBT1C822MS5	16V 8200P
R682-684	ERDS2TJ104	1/4W 100K	R820	ERDS2TJ472	1/4W 4.7K	C137, 138	ECBT1H271KB5	50V 270P
R685	ERDS2TJ221	1/4W 220	R821	ERDS2TJ102	1/4W 1K	C139, 140	ECFR1E562KR	25V 5600P E, EB, GC, GN
R687, 688	ERDS2TJ102	1/4W 1K	R822-824	ERDS2TJ104	1/4W 100K	C139, 140	ECFR1E822KR	25V 8200P EG
R689, 690	ERDS2TJ103	1/4W 10K	R825	ERDS2TJ103	1/4W 10K	C141-144	ECEA1HKA010B	50V 1U
R692-694	ERDS2TJ103	1/4W 10K	R826	ERDS2TJ182	1/4W 1.8K	C145	ECBT1H220JC5	50V 22P
R701, 702	ERDS2TJ1R0	1/4W 1.0	R827, 828	ERDS2TJ122	1/4W 1.2K	C146	ECBT1H331KB5	50V 330P
R703	ERDS2TJ222	1/4W 2.2K	R829	ERDS2TJ182	1/4W 1.8K	C147	ECBT1H102KB5	50V 1000P
R705, 706	ERDS2TJ472	1/4W 4.7K	R830-832	ERDS2TJ122	1/4W 1.2K	C148	ECBT1C103NS5	16V 0.01U
R707	ERDS1FVJ2R2T	1/2W 2.2 Δ	R833	ERDS2TJ182	1/4W 1.8K	C149	ECBT1H104ZF5	50V 0.1U
R708	ERDS1FVJ101T	1/2W 100 Δ	R834	ERDS2TJ122	1/4W 1.2K	C171	ECBT1C103NS5	16V 0.01U
R709, 710	ERDS2TJR47T	1/4W 0.47	R835	ERDS2TJ472	1/4W 4.7K	C172	ECBT1H331KB5	50V 330P
R711	ERDS2TJ563	1/4W 56K	R836-838	ERDS2TJ222	1/4W 2.2K	C173	ECEA1CKA220B	16V 22U
R712	ERDS2TJ333	1/4W 33K	R839-845	ERDS2TJ103	1/4W 10K	C174	ECEA1CKA100B	16V 10U E, EB, GC, GN
R713	ERDS2TJ102	1/4W 1K	R851, 852	ERDS2TJ822	1/4W 8.2K	C174	ECEA1CKA101B	16V 100U EG
R714	ERD2FCVJ4R7T	1/4W 4.7 Δ	R853, 854	ERDS2TJ472	1/4W 4.7K	C181	ECBT1H471KB5	50V 470P EG
R715	ERDS2TJ681	1/4W 680	R855, 856	ERDS2TJ153	1/4W 15K	C201, 202	ECBT1H102KB5	50V 1000P
R716	ERDS2TJ560T	1/4W 56	R857, 858	ERDS2TJ223	1/4W 22K	C204	ECFR1C223MR	16V 0.022U
R717	ERDS2TJ332	1/4W 3.3K				C208	ECEA1AKA221Q	10V 220U
R718	ERDS2TJ152	1/4W 1.5K			CAPACITORS	C209	ECEA1AKA101B	10V 100U
R719	ERDS2EJ121	1/4W 120				C211, 212	ECBT1H561KB5	50V 560P
R720	ERD2FCVJ4R7T	1/4W 4.7 Δ	C100	ECBT1E103ZF	25V 0.01U	C213, 214	ECEA0JKA470B	6.3V 47U
R722	ERDS1FVJ331T	1/2W 330 Δ	C101	ECBT1C103NS5	16V 0.01U	C215, 216	ECFR1C333JR	16V 0.033U
R723	ERDS1FVJ680T	1/2W 68 Δ	C103	ECBT1C103NS5	16V 0.01U	C217, 218	ECEA1HKA010B	50V 1U
R724	ERDS2TJ221	1/4W 220	C104, 105	ECBT1H102KB5	50V 1000P	C219, 220	ECEA1EKA4R7B	25V 4.7U
R726	ERDS2TJ332	1/4W 3.3K	C106	ECBT1C103NS5	16V 0.01U	C221, 222	ECEA1HKA010B	50V 1U
R727	ERDS1FVJ680T	1/2W 68 Δ	C107	ECBT1H473ZF5	50V 0.047U E, EB, GC, GN	C223, 224	ECBT1H102KB5	50V 1000P
R728	ERDS2TJ152	1/4W 1.5K	C107	ECBT1H104ZF5	50V 0.1U EG	C225, 226	ECFR1E104KR	25V 0.1U
R729	ERDS2TJ471	1/4W 470	C108	ECBT1H100JC5	50V 10P	C227, 228	ECBT0J153MS5	6.3V 0.015U
R730	ERDS2TJ101	1/4W 100	C109, 110	ECBT1C103NS5	16V 0.01U	C229, 230	ECBT1C152KR5	16V 1500P
R731	ERDS1FVJ100T	1/2W 10 Δ	C111	ECEA1EKA4R7B	25V 4.7U	C231, 232	ECBT1C222KR5	16V 2200P
R732	ERDS2TJ152	1/4W 1.5K	C112	ECBT1C103NS5	16V 0.01U	C233, 234	ECEA1EKA4R7B	25V 4.7U
R733	ERDS2TJ561	1/4W 560	C113	ECBT1H102KB5	50V 1000P	C235, 236	ECBT1H102KB5	50V 1000P
R734	ERDS2EJ121	1/4W 120	C114	ECEA1HKA3R3B	50V 3.3U	C237, 238	ECBT1H561KB5	50V 560P
R737, 738	ERDS2TJ101	1/4W 100	C115	ECEA1CKA100B	16V 10U	C239	ECEA1HKA2R2B	50V 2.2U
R739	ERDS2TJ103	1/4W 10K	C116	ECBT1C822MS5	16V 8200P	C240	ECEA1CKA100B	16V 10U
R741	ERDS2TJ152	1/4W 1.5K	C117	ECQB1H821JF3	50V 820P E, EB, GC, GN	C241	ECEA1HKA0R1B	50V 0.1U
R743-746	ERDS1FVJ220T	1/2W 22 Δ	C117	ECQP2A221JZT	100V 220P EG	C242	ECFR1C223MR	16V 0.022U
R761, 762	ERD2FCVJ4R7T	1/4W 4.7 Δ	C118, 119	ECFR1E103KR	25V 0.01U	C243, 244	ECEA1CKA100B	16V 10U
R800	ERDS2TJ471	1/4W 470	C120, 121	ECEA1HKA010B	50V 1U	C246	ECEA1CKA100B	16V 10U

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
C247, 248	ECBT1C103MS5	16V 0.01U	C445, 446	ECEA1HKA2R2B	50V 2.2U	C622, 623	ECBT1H561KB5	50V 560P
C250	ECEA1CKA100B	16V 10U	C447	ECEA1EKA4R7B	25V 4.7U	C624, 625	ECEA1AKA330B	10V 33U
C251, 252	ECEA1HKA010B	50V 1U	C448, 449	ECEA1CKA100B	16V 10U	C631, 632	ECBT1E223ZF	25V 0.022U
C253, 254	ECBT1H331KB5	50V 330P	C450	ECEA1AKA101B	10V 100U	C649, 650	ECBT1H561KB5	50V 560P
C255, 256	ECEA1CKA100B	16V 10U	C451, 452	ECEA1HKA68B	50V 0.68U	C701	ECEA1EU222B	25V 2200U Δ
C257, 258	ECBT1H271KB5	50V 270P	C454	ECEA1EKA100B	25V 10U	C702, 703	ECEA1EU472YB	25V 4700U Δ
C259, 260	ECBT1C332KR5	16V 3300P	C455	ECEA1HKA010B	50V 1U	C704, 705	ECKR1H103ZF5	50V 0.01U
C261	ECEA1CKA101B	16V 100U	C456	ECEA1EKA100B	25V 10U	C706	ECQV1H104JM3	50V 0.1U
C262	ECA1AM471B	10V 470U	C459, 460	ECEA1CKA100B	16V 10U	C708	ECEA1VU220	35V 22U
C263, 264	ECEA50M1RB	50V 1U	C461, 462	ECBT1H101KB5	50V 100P EG	C710, 711	ECKR1H103ZF5	50V 0.01U
C265, 266	ECEA1CKA100B	16V 10U	C463, 464	ECBT1H270J5	50V 27P	C713	ECA1HM470B	50V 47U Δ
C267, 268	ECEA1HKA68B	50V 0.68U	C469, 470	ECBT1E103ZF	25V 0.01U	C714	ECBT1E103ZF	25V 0.01U
C269, 270	ECEA1EKA4R7B	25V 4.7U	C471, 472	ECBT1H104ZF5	50V 0.1U	C716	ECEA1HKA010B	50V 1U Δ
C271	ECEA0JKA470B	6.3V 47U	C481	ECBT1H101KB5	50V 100P	C717	ECEA0JKA101B	6.3V 100U
C273	ECBT1C103MS5	16V 0.01U	C482	ECBT1H561KB5	50V 560P	C718, 719	ECBT1E103ZF	25V 0.01U
C274	ECEA1HKA010B	50V 1U	C483	ECBT1H101KB5	50V 100P	C720, 721	ECA1EM101B	25V 100U
C275	ECEA1CKA101B	16V 100U	C490	ECEA1HKA010E	50V 1U	C722	ECKR1H103ZF5	50V 0.01U
C276	ECQB1H223JF3	50V 0.022U	C491, 492	ECFR1C333JR	16V 0.033U	C723	ECEA1VU220	35V 22U
C277, 278	ECBT1H102KB5	50V 1000P	C501, 502	ECEA1HKA2R2B	50V 2.2U	C724	ECEA1HKA010B	50V 1U
C279, 280	ECFR1C103KR	16V 0.01U	C503, 504	ECEA1CKA100B	16V 10U	C725	ECKR1H103ZF5	50V 0.01U
C281	ECBT1C103MS5	16V 0.01U	C505, 506	ECBT1H102KB5	50V 1000P	C726	ECEA1EKA4R7B	25V 4.7U
C282	ECEA1AKA221Q	10V 220U	C507, 508	ECBT1H8R2KC5	50V 8.2P	C727	ECEA1EU101	25V 100U
C283	ECQV1H474JM3	50V 0.47U	C509, 510	ECBT1H331KB5	50V 330P	C728	ECEA1EKA4R7B	25V 4.7U
C284	ECQP2E681JZT	250V 680P	C511	ECBT1E223ZF	25V 0.022U	C729	ECEA1CKA101B	16V 100U
C285	ECQP2E562JZT	250V 5600P	C512	ECEA0JKA470B	6.3V 47U	C730	ECQB1H223JF3	50V 0.022U
C289	ECQP2E821JZT	250V 820P	C513	ECEA1CKA100B	16V 10U	C731	ECEA1AKA101B	10V 100U
C290	ECEA1EU470	25V 47U	C515, 516	ECBT1H104ZF5	50V 0.1U	C732	ECBT1E223ZF	25V 0.022U
C291	ECBT1H101KB5	50V 100P	C517	ECEA0JKA101B	6.3V 100U	C733	ECEA1AKA101B	10V 100U
C292	ECBT1H331KB5	50V 330P	C519, 520	ECBT1E223ZF	25V 0.022U EG	C734	ECKR1H103ZF5	50V 0.01U
C293	ECBT1H104ZF5	50V 0.1U	C521, 522	ECBT1H102KB5	50V 1000P	C735	ECEA1AKA101B	10V 100U
C294	ECEA1HKA2R2B	50V 2.2U	C523, 524	ECFR1C333JR	16V 0.033U	C736	ECQB1H223JF3	50V 0.022U
C295	ECEA1CKA101B	16V 100U	C541	ECBT1E223ZF	25V 0.022U	C737	ECEA1CKA101B	16V 100U
C296	ECBT1C103MS5	16V 0.01U	C551, 552	ECEA1HKA2R2B	50V 2.2U	C741	ECBT1E103ZF	25V 0.01U
C301, 302	ECEA0JKA470B	6.3V 47U	C553, 554	ECBT1H101KB5	50V 100P	C790	ECA1AKF820E	10V 82U
C303, 304	ECEA1HKA2R2B	50V 2.2U	C555, 556	ECBT1H330J5	50V 33P	C803	ECBT1H104ZF5	50V 0.1U
C401, 402	ECBT1H101KB5	50V 100P EG	C557, 558	ECEA1HKA2R2B	50V 2.2U	C804	ECBT1H101KB5	50V 100P
C405	ECEA1CKA100B	16V 10U	C559, 560	ECEA1CKA100B	16V 10U	C805	ECBT1H102KB5	50V 1000P
C407, 408	ECEA1HKA2R2B	50V 2.2U	C561, 562	ECBT1E103ZF	25V 0.01U	C806, 807	ECBT1C472KR5	16V 4700P
C411, 412	ECBT1E103ZF	25V 0.01U	C601	ECEA0JU102	6.3V 1000U	C808, 809	ECBT1H102KB5	50V 1000P
C413	ECFR1C823MR	16V 0.082U	C602	ECEA1AKA101B	10V 100U	C810	ECBT1H330J5	50V 33P
C414	ECFR1C223MR	16V 0.022U	C603	ECBT1E103ZF	25V 0.01U	C811	ECBT1H102KB5	50V 1000P
C415, 416	ECBT1H270J5	50V 27P	C604	ECBT1C103MS5	16V 0.01U	C812	ECEA1AGE471B	10V 470U
C417, 418	ECEA1HKA2R2B	50V 2.2U	C605	ECEA1HKA010B	50V 1U	C813	ECBT1E103ZF	25V 0.01U
C419, 420	ECEA1CKA100B	16V 10U	C606	ECBT1E103ZF	25V 0.01U	C814-816	ECBT1H102KB5	50V 1000P
C421, 422	ECBT1C332KR5	16V 3300P	C607	ECBT1H150JC5	50V 15P	C835	ECEA0JKA470B	6.3V 47U
C423, 424	ECFR1C823MR	16V 0.082U	C608	ECBT1H220JC5	50V 22P	C836	ECEA1EKA4R7B	25V 4.7U
C425, 426	ECFR1C473JR	16V 0.047U	C609	ECEA1HKA010B	50V 1U			
C427-430	ECEA1CKA100B	16V 10U	C610, 611	ECBT1E103ZF	25V 0.01U			<SERVO P. C. B. >
C435, 436	ECEA1HKA010B	50V 1U	C612	ECEA1AKA101B	10V 100U			RESISTORS
C437, 438	ECBT1H101KB5	50V 100P	C613	ECBT1E103ZF	25V 0.01U			
C441, 442	ECEA1HKA2R2B	50V 0.22U	C614	ECBT1H104ZF5	50V 0.1U	R701	ERJ6GEYJ100	1/10W 10
C443, 444	ECBT1H101KB5	50V 100P	C616	ECEA1HKA2R2B	50V 2.2U	R702	ERJ6GEYJ471V	1/10W 470

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Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
R703	ERJ6GEYJ823	1/10W 82K	R741-743	ERJ6GEYJ562V	1/10W 5.6K	C713	ECUV1C104MBM	16V 0.1U
R704	ERJ6GEYJ102A	1/10W 1K	R744	ERJ6GEYJ103V	1/10W 10K	C714	ECEAJKA1011	6.3V 100U
R705	ERJ6GEYJ103V	1/10W 10K	R745	ERJ6GEYJ155V	1/10W 1.5M	C715	ECEAJKA4701	6.3V 47U
R706	ERJ6GEYJ102A	1/10W 1K				C716	ECUE1H561KBN	50V 560P
R707	ERJ6GEYJ473V	1/10W 47K			CHIP JUMPERS	C717	ECUZ1E104MBN	25V 0.1U
R708	ERJ6GEYJ104V	1/10W 100K				C718, 719	ECUV1C224KBM	16V 0.22U
R709	ERJ6GEYJ683V	1/10W 68K	RJ701-704	ERJ8GEYR00A	CHIP JUMPER	C721, 722	ECUE1H100DCN	50V 10P
R711	ERJ6GEYJ154V	1/10W 150K	RJ707-717	ERJ8GEYR00A	CHIP JUMPER	C723	ECEAJKA221I	10V 220U
R712	ERJ6GEYJ471V	1/10W 470	RJ721	ERJ6GEYR00A	CHIP JUMPER	C724	ECUV1C104MBM	16V 0.1U
R714	ERJ6GEYR00A	1/10W 0.00	RJ724-726	ERJ6GEYR00A	CHIP JUMPER	C725, 726	ECUE1H102KBN	50V 1000P
R717-720	ERJ6GEYJ102A	1/10W 1K				C727, 728	ECEAJHPK010I	50V 1U
R721	ERJ8GEYJ101V	1/8W 100			CAPACITORS	C730	ECUZ1E104MBN	25V 0.1U
R722	ERJ6GEYJ473V	1/10W 47K				C731, 732	ECA05SD151I	6.3V 150U
R723	ERJ6GEYJ182V	1/10W 1.8K	C701	ECEAJKA220	6.3V 22U	C733	ECUZ1E104MBN	25V 0.1U
R724	ERJ6GEYJ333V	1/10W 33K	C702	ECEAJHKA010I	50V 1U	C734	ECEAJKA221I	10V 220U
R725	ERJ6GEYJ472V	1/10W 4.7K	C703	ECEAJKA1011	6.3V 100U	C735-737	ECUZNE104MBN	25V 0.1U
R726	ERJ6GEYJ473V	1/10W 47K	C704	ECUZ1E104MBN	25V 0.1U	C738	ECUV1C154KBN	16V 0.15U
R727	ERJ6GEYJ103V	1/10W 10K	C705	ECEAJHKA010I	50V 1U	C742	ECUV1E273KBN	25V 0.027U
R728	ERJ6GEYJ392V	1/10W 3.9K	C706	ECUE1H101JCN	50V 100P	C743	ECUZNE104MBN	25V 0.1U
R730	ERJ6GEYJ331V	1/10W 330	C707	ECUV1E273KBN	25V 0.027U	C744	ECUE1E822KBN	25V 8200P
R731	ERJ6GEYJ392V	1/10W 3.9K	C708	ECUE1H472KBN	50V 4700P	C745	ECUE1C473MBN	16V 0.047U
R734-736	ERJ6GEYJ101V	1/10W 100	C709	ECUE1C473KBN	16V 0.047U	C746	ECUE1H050DCN	50V 5P
R738	ERJ6GEYJ223V	1/10W 22K	C710	ECUE1H152KBN	50V 1500P	C747	ECUE1H222KBN	50V 2200P
R739	ERJ6GEYJ681V	1/10W 680	C711, 712	ECUZ1E104MBN	25V 0.1U	C748	ECUV1H471KBM	50V 470P

PACKAGING

• For (E, EB, EG) areas.

• For (GC, GN) areas.

• For (E) area only.

