

Service Manual

COMPACT
disc
DIGITAL AUDIO

MASH*
multi-stage noise shaping

CD Stereo System
SA-AK40

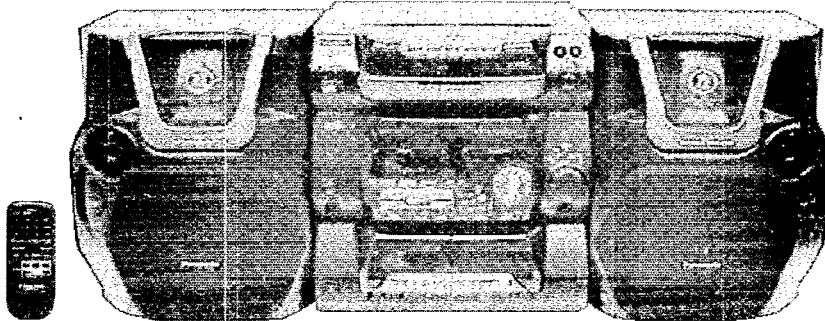
Colour

(K) ... Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe	(K)
(EB)	Great Britain	
(EG)	Germany and Italy	

* MASH is a trademark of NTT.



Remote Control
Transmitter

SB-AK40

SA-AK40

SB-AK40

TAPE SECTION : AR2 MECHANISM SERIES
CD SECTION : RAE0150Z TRAVERSE DECK SERIES

Specifications

Amplifier Section

1kHz continuous power output, both channels driven	2 x 70 W (THD 1%, 6 Ω)
RMS	2 x 100 W (THD 10%, 6 Ω)
Total harmonic distortion	
Half power at 1 kHz	0.1% (6 Ω)
Frequency response	
CD	60 Hz - 20 kHz (-3 dB)
Input sensitivity and impedance	
AUX	250 mV, 57 kΩ
Load impedance	6 Ω

FM Tuner Section

Frequency range	87.5 - 108 MHz
Sensitivity	23.3 dBf (4.0 μV, IHF '58)
Total harmonic distortion	
MONO	0.3 %
STEREO	0.5 %
S/N	
MONO	60 dB
Image rejection at 98 MHz	35 dB
Stereo separation at 1 kHz	35 dB
Antenna terminal(s)	75 Ω (unbalanced)

AM Tuner Section

Frequency range	
MW	522 - 1611 kHz
Sensitivity (For 500 mW)	
MW (at 999 kHz)	250 μV/m

CD Section

Sampling frequency	44.1 kHz
Decoding	16 bit linear
Beam source/wave length	Semiconductor laser / 780 nm
Number of channels	Stereo
Frequency response	20 Hz - 20 kHz (+1 dB, -2 dB)
S/N	
CD UNIT OUT	95 dB (JIS.A)

Wow and flutter

Below measurable limit

Digital filter

8 fs

D/A converter

MASH (1 bit DAC)

Cassette Deck Section

Track system

4 track, 2 channel

Heads

Record/playback

Solid permalloy head

Erase

Double gap ferrite head

Motor

DC servo motor

Recording system

AC bias 100 kHz

Erasing system

AC erase

Tape speed

4.8 cm/s (17 1/2 ips)

Frequency response

NORMAL

35 Hz - 14 kHz (+3 dB, -6 dB)

HIGH POSITION

35 Hz - 14 kHz (+3 dB, -6 dB)

S/N ratio (HIGH type tape)

Dolby NR off

50 dB (A weighted)

Dolby NR on

60 dB (CCIR)

Wow and flutter

0.18 % (WRMS)

Fast forward and rewind times

Approx. 120 seconds
with C-60 cassette tape

General

Power consumption

142W

Power supply

[E, EG]

AC 230 V, 50 Hz

[EB]

AC 230 ~ 240 V, 50 Hz

Dimensions (W x H x D)

270 x 330 x 339 mm

Weight

7.8 kg

Notes :

- Specifications are subject to change without notice.
Weight and dimensions are approximate.
- Total harmonic distortion is measured by the digital spectrum analyzer.

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Panasonic®

⚠ WARNING

This service information is designed for experience repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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■ Before Repair and Adjustment

Disconnect AC power, discharge both Power Supply Capacitors C504, C505, C506 and C507 through a 10 Ω , 5W resistor to ground. **DO NOT SHORT-CIRCUIT DIRECTLY** (with a screwdriver blade, for instance), as this may destroy solid state devices. After repairs are completed, restore power gradually using a variac, to avoid overcurrent.

Current consumption at AC 230V, 50 Hz(E,EG), AC 230v~240V, 50 Hz(EB), in NO SIGNAL mode should be ~300 mA.

■ 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 (FFC 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 (FFC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

• Grounding for electrostatic breakdown prevention

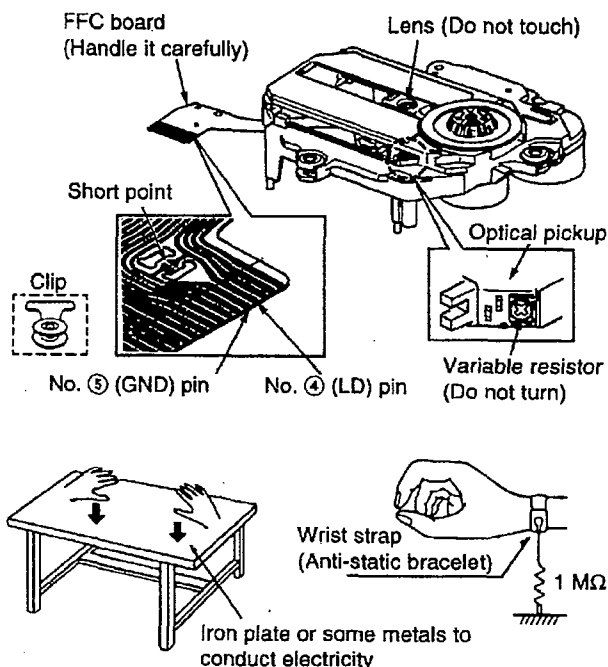
1. Human body grounding
Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

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).

Caution when Replacing the Traverse Deck:

The traverse deck has a short point shorted with solder to protect the laser diode against electrostatics breakdown. Be sure to remove the solder from the short point before making connections.



■ Protection Circuitry

The protection circuitry may have operated if either of the following conditions are 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.

■ Precaution of Laser Diode

CAUTION : This product utilizes a laser diode with the unit turned "ON", invisible laser radiation is emitted from the pick up lens.
Wavelength : 780 nm
Maximum output radiation power from pick up : 100 μ W/VDE

Laser radiation from pick up unit is safety level, but be sure the followings:

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

ACHTUNG: Dieses produkt enthält eine laserdioden. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

Wellenlänge : 780nm
Maximale strahlungsleistung der lasereinheit : 100 μ W/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdioden gefährlich ist.
2. Den werkseitig justierten einstellregler der lasereinheit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

ADVARSEL: I dette a apparat anvendes laser.

CAUTION!

THIS PRODUCT UTILIZES A LASER.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

■ Caution for AC Mains Lead

(For “EB” area code model only.)

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 OFF 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 these colours 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 which is marked with the letter N or coloured Black or Blue.

The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL  OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

Before use

Remove the connector cover.

How to replace the fuse

The location of the fuse differ according to the type of AC mains plug (figures A and B). Confirm the AC mains plug fitted and follow the instructions below.

Illustrations may differ from actual AC mains plug.

1. Open the fuse cover with a screwdriver.

Figure A

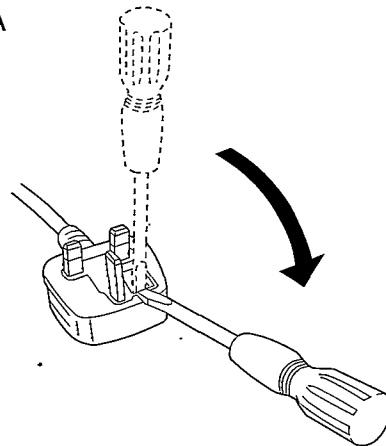
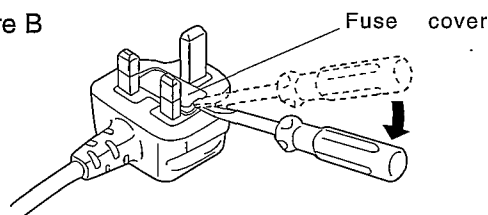


Figure B



2. Replace the fuse and close or attach the fuse cover.

Figure A

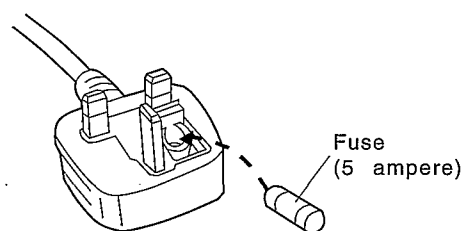
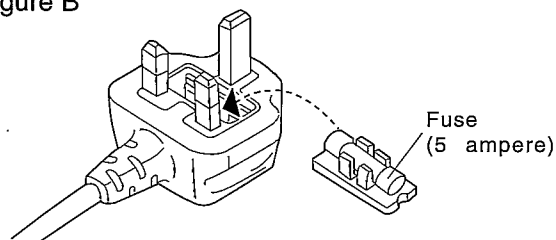


Figure B

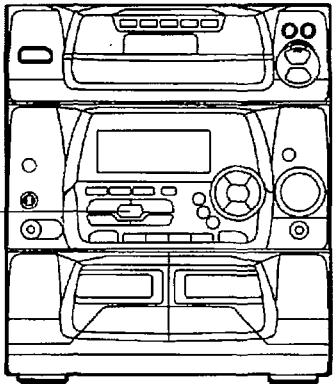


■ Before Moving or Shipping This Unit

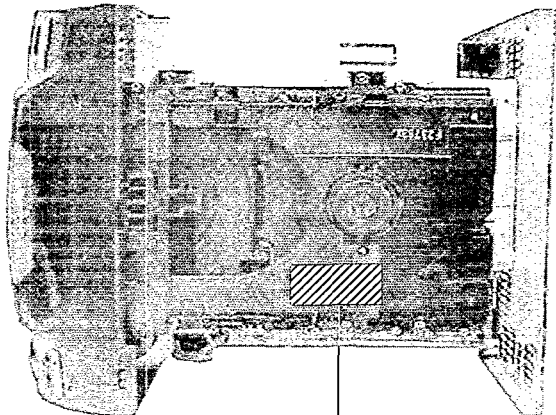
Before moving or shipping this system:
Prepare the system as described below to prevent damage to the mechanism.

- 1. Remove all CDs.
- 2. Press CD.
- 3. Press stop button (■) for 5 seconds. The display will change from "WAIT" to "LOCKED" to "GOOD BYE" and finally "ZZZ". Then the unit will be turned off automatically. (This will set the so-called "shipping mode".)
- 4. Unplug the system. The shipping mode will turn off automatically when you turn the power on the next time.

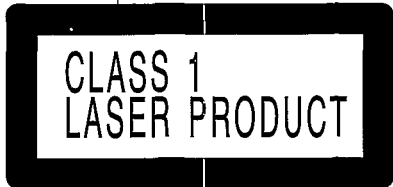
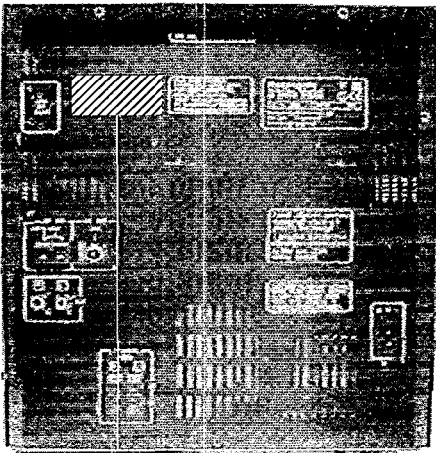
Avoid strong vibrations or impact while moving the equipment.
The shipping mode will turn OFF automatically when you turn the power ON the next time.



■ Use of Caution Labels



DANGER	INSELBESCHÜDIGUNG BEI FALSCHER ANSCHLÜSSUNG KANN ZUR VERLETZUNG FÜHREN
ADVARSEL	USVUR LASERSTRÅLING I ENIG VÅRSKEDSSTRÅL GRUNDFØLJNING OG BRUG AF SIKKERHEDSFORANSTALTNINGER
VARO!	ANTHÄSSA LASERSTRÅLINGEN KAN FÖRSTÄRKA ÖFRÖRNINGEN LASERSTRÅLLEN ÄR VÄRDSKEDSSTRÅL
VARNING	ÖFRÖRNINGEN KAN FÖRSTÄRKA ÖFRÖRNINGEN ÄR VÄRDSKEDSSTRÅL
ADVARSEL	USVUR LASERSTRÅLINGEN KAN FÖRSTÄRKA ÖFRÖRNINGEN KANN ZUR VERLETZUNG FÜHREN
VORSICHT	UNSICHTBARE LASERSTRÄHLUNG, WECHSELN DER ABDECKUNG KANN ZUR VERLETZUNG FÜHREN



LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

■ Operation Checks and Main Component Replacement Procedures

"ATTENTION SERVICER" Some chassis components may have sharp edges. Be careful when disassembling and servicing.

- 1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
- 2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
- 3. Select items from the following index when checks or replacement are required.
- 4. Refer the Parts No. on the page of "Main Component Replacement Procedures", if necessary.

• Contents

	page
• Checking Procedure for each major P.C.B.	
1. Checking of the Main, Panel, Deck, Tuner and Servo P.C.B.	6 & 7
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■ Checking Procedure for each major P.C.B.

1. Checking of the Main, Panel, Deck, Tuner and Servo P.C.B.

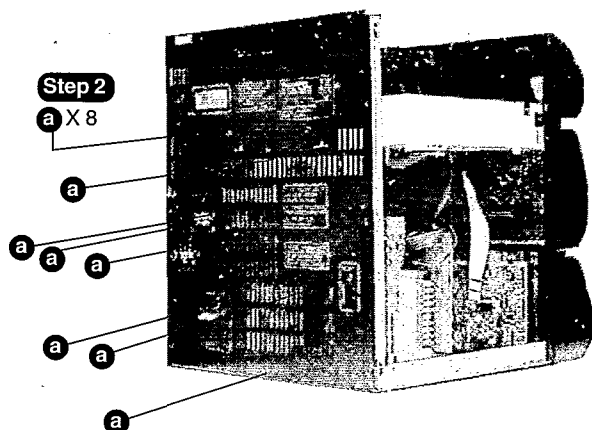
Step 1 Remove the Top Cabinet.



a
[XTBS3+8JFZ1]
(Black)

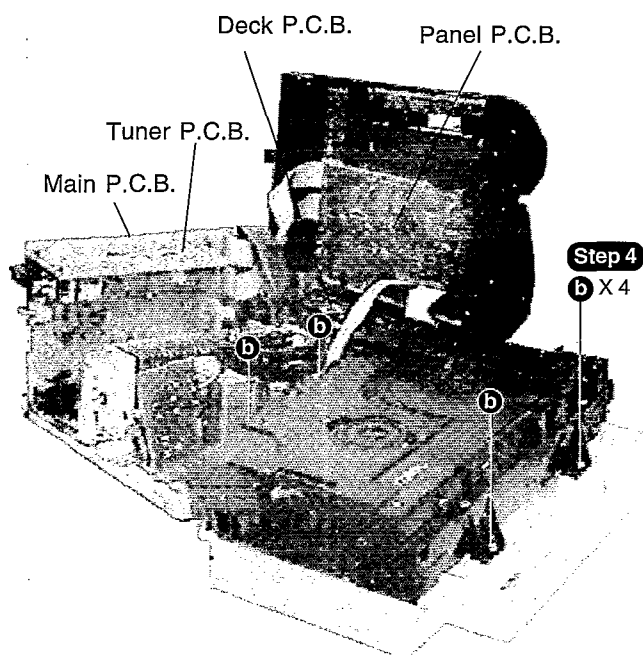


b
[RHD30048]
(Brass)



Step 2

a X 8



Step 4

b X 4

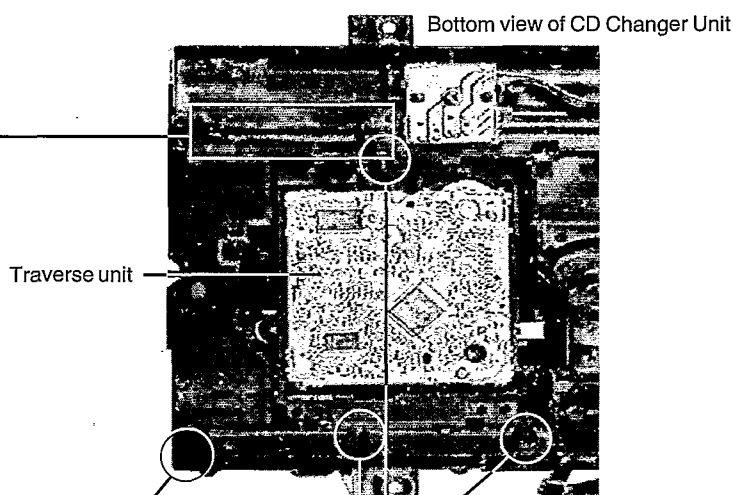
Step 3

Place the CD changer as shown on the right and check the Main P.C.B., Panel P.C.B. Tuner P.C.B. and Deck P.C.B.

• Disassembly of the Traverse Unit



Slide Plate Lever(1)

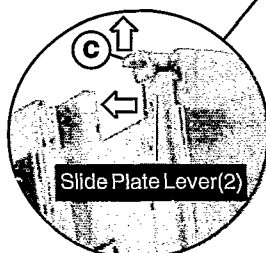


Bottom view of CD Changer Unit

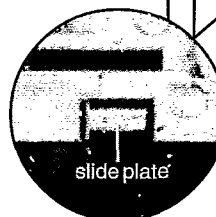
Traverse unit

Step 5

Move the Slide Plate Lever(1) in the direction of arrow ③ to the position ④ and hold it, then lift up the stopper ③ until the Slide Plate Lever(2) eject out. Now the 3 slide plate will be open as shown in the figure 1 on the right and the traverse unit can be removed.



Slide Plate Lever(2)



slide plate

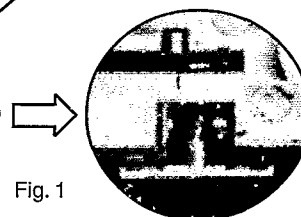
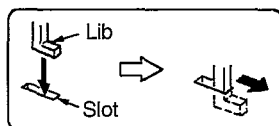


Fig. 1

Step 6

Slide in the Traverse Unit into a slot on the top of the CD Changer Unit and then stand it.



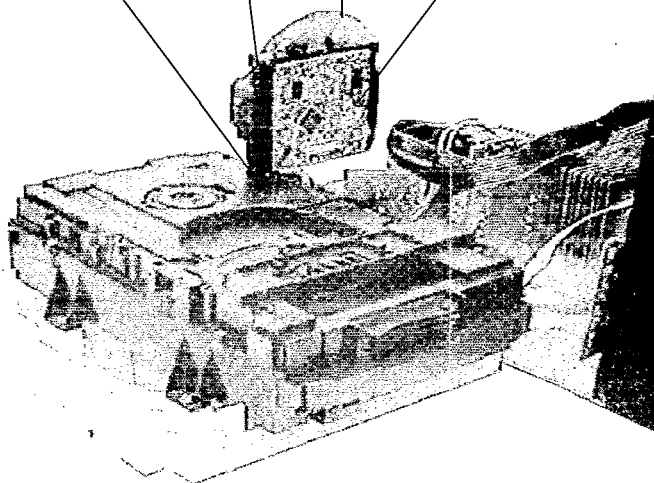
Traverse unit

Disc

Servo P.C.B.

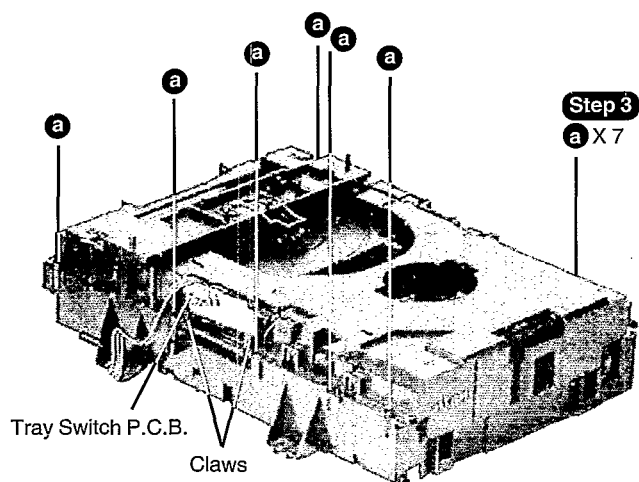
Step 7

Attach the disc and clumper with magnet to the Traverse Unit as shown in the diagram on the left, then check the Servo P.C.B.
(Refer to page 7 of how to check the CD Unit without connecting to the CD Changer Loading Mechanism.)



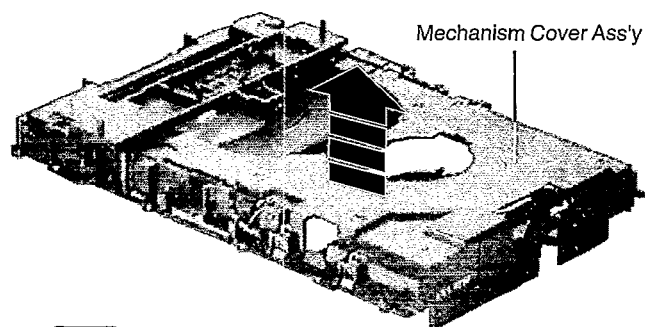
■ Disassembly of the CD Changer Unit

Step 1 Follow the procedures in 'Checking Procedure For Each Major P.C.B.' (**Step 1** ~ **Step 4**).



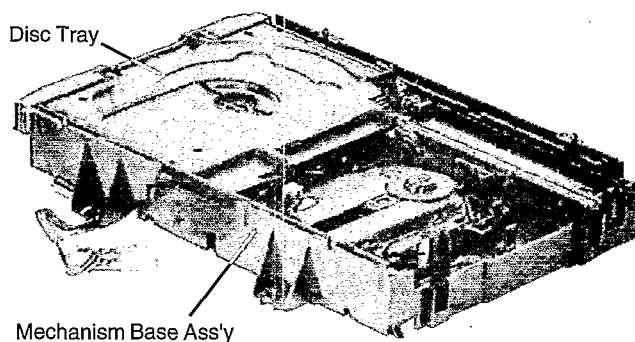
Step 2 Remove the Tray Switch P.C.B.

Step 4 Remove the Mechanism Cover Ass'y.



Step 5

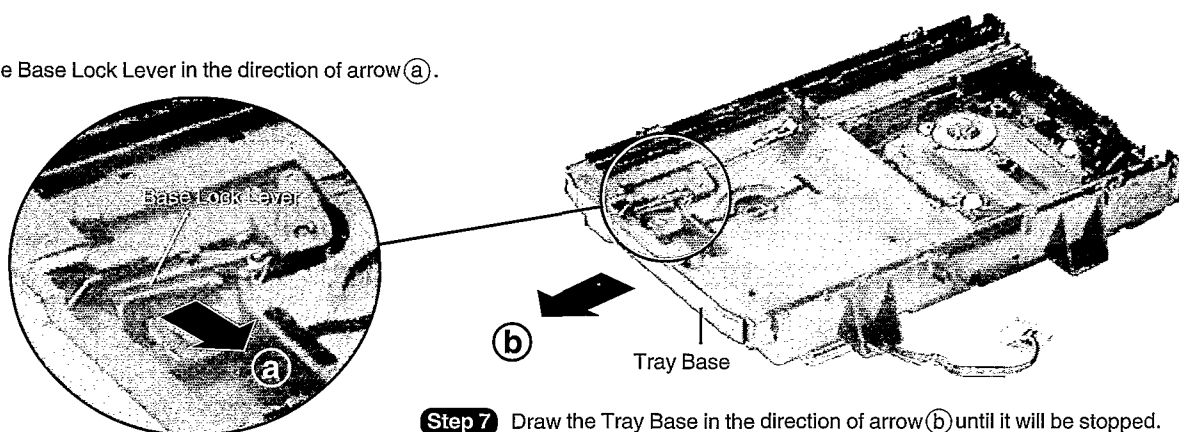
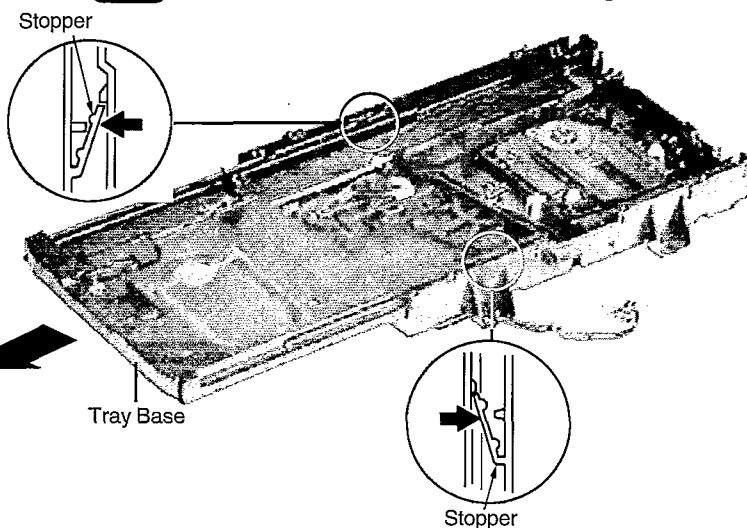
Remove the Disc Tray sided on the Mechanism Base Ass'y.



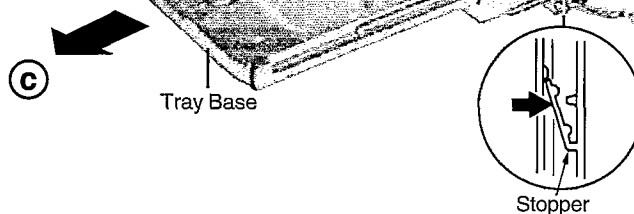
a
[XTB3+10JFZ]
(Black)

Step 6

Unlock the Base Lock Lever in the direction of arrow (a).

**Step 7** Draw the Tray Base in the direction of arrow (b) until it will be stopped.**Step 8**

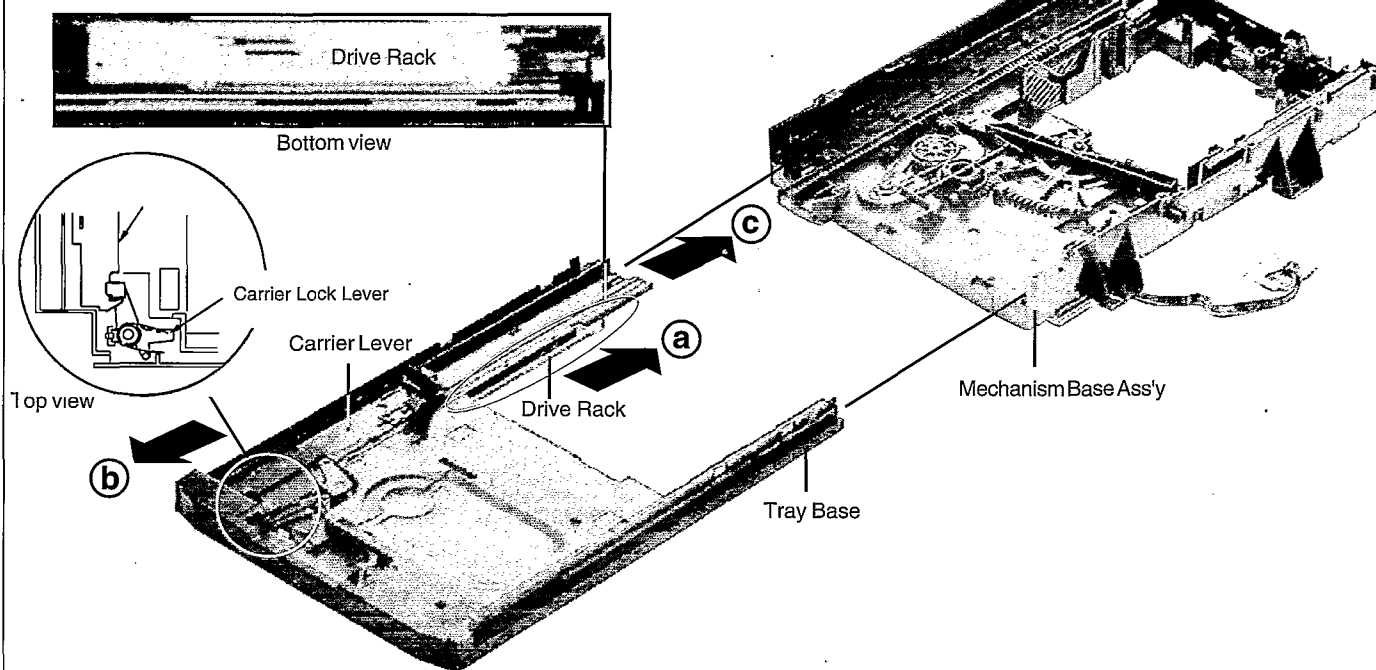
Release 2 stoppers manually and pull out the Tray Base in the direction of arrow (c).

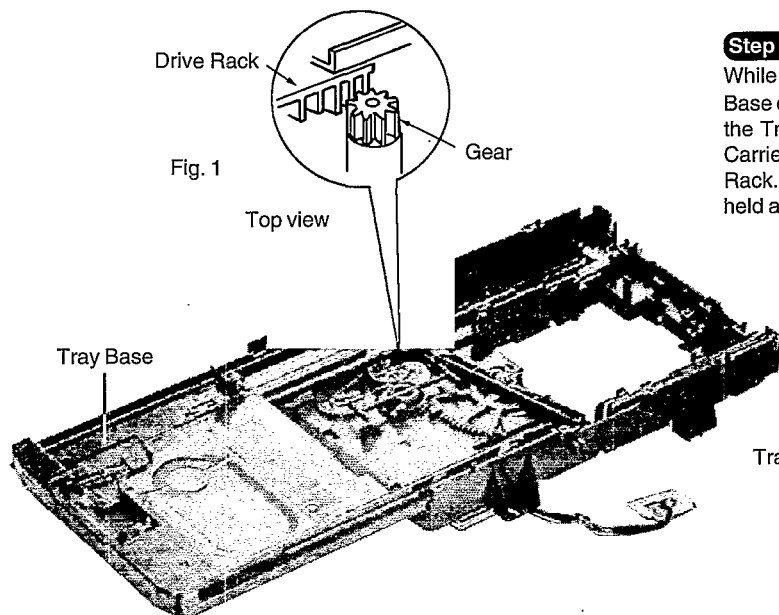


■ Assembly of the CD Changer Unit

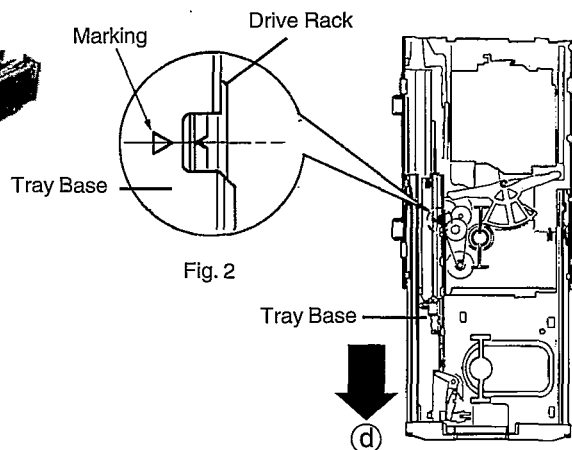
Step 1

Move the Drive Rack in the direction of arrow (a) to the position as shown in the diagram below and the Carrier Lever in the direction of arrow (b) fully until the Carrier Lever is locked.



**Step 2**

While holding the Drive Rack and Carrier Lever, insert the Tray Base on the Mechanism Base in the direction of arrow ③ until the Tray Base stops as shown in figure 1. Release only the Carrier Lever and push the Tray Base together with the Drive Rack. After engaging the gear, release the Drive Rack which held and feed the Tray Base slowly.

**Step 3**

Draw the Tray Base in the direction of arrow ④ to the end until it stops. Make sure the mark '▽' on the Tray Base is aligned with the mark '△' on the Drive Rack as shown in figure 2 before closing the Tray Base. (In case that the statement above is not operated, draw the Tray Base again from step 2)

■ Main Component Replacement Procedures

1. Replacement of the Traverse Deck

Step 1 Follow the procedures in 'Disassembly of the Traverse Unit' (**Step 1** ~ **Step 2**).

Step 2

a X 2

Step 4

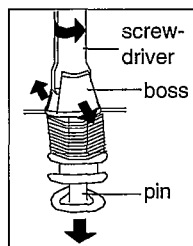
Desolder the 4 legs of the 2 motors and pull out the Servo P.C.B.

Servo P.C.B.

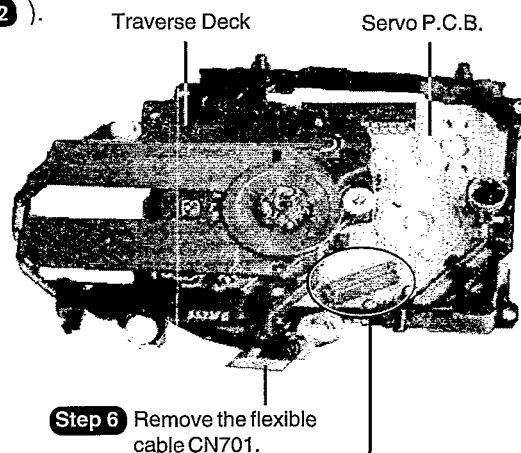
Step 3

b X 1

Step 5 Widen the 2 bosses with a flat screwdriver and pull out the 2 pins. Then remove the Traverse Deck.

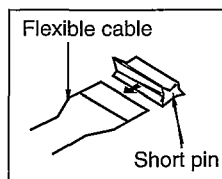
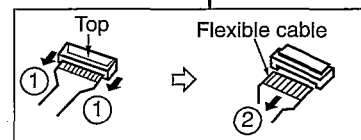


Note:
Insert a short pin into the flexible cable for traverse unit.



Step 6 Remove the flexible cable CN701.

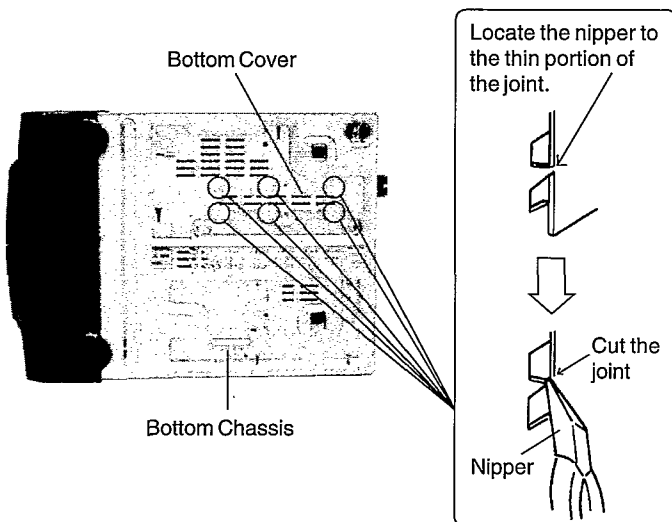
• Removal of the flexible cable
Push the top of the connector in the direction of the arrow ①, and then pull out the flexible cable in the direction of the arrow ②.



- | | | |
|----------|--|-------------------|
| a | | [XTV2+6G] (Brass) |
| b | | [XTN2+6G] (Brass) |

2. Replacement of the Power Amplifier IC and Regulator Transistor.

Step 1 Follow the procedures in 'Checking of the Main, Panel, Deck Tuner and Servo P.C.B.' (Step 1 ~ Step 4) and remove the CD changer unit.



Step 2

Cut the joints (6 portions) between bottom cover and the bottom chassis ass'y with a nipper.

Step 3

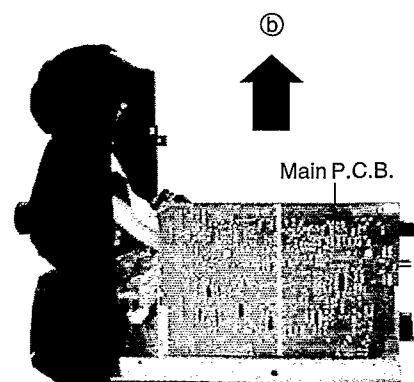
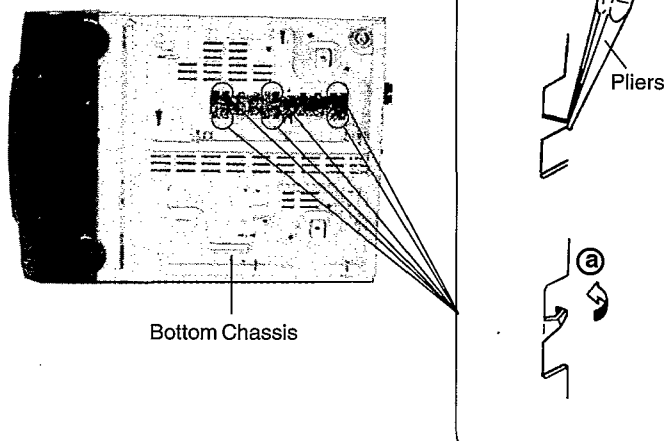
After cutting the joints (6 portions), bend the portions of the bottom chassis ass'y in the direction of arrow (a) with pliers. (Step 2 must be performed to avoid injury by sharp edge.)

Step 4

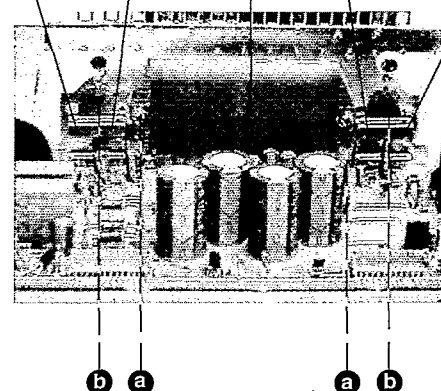
Unsolder the terminals of Power IC or Regulator Transistors on the solder surface.

Step 5

Pull out the Main P.C.B. in the direction of arrow (b). Remove 4 screws fixed to the Power IC and Transistor Holders, then remove Power IC, Transistor Holder and Regulator Transistor.

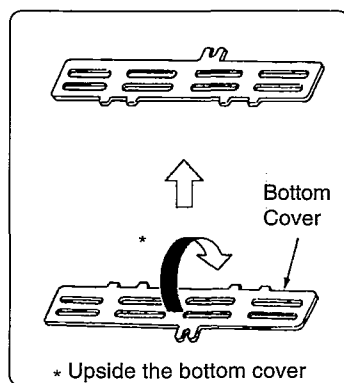
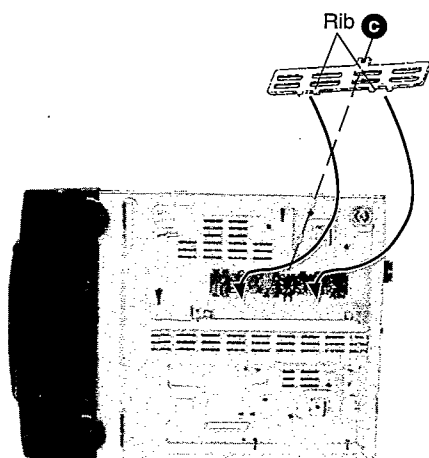


Regulator Transistor Q501 (2SD2395E) Q504 (2SB1566E) Power IC IC601 (RSN308M24-P) Regulator Transistor Q507, Q508 (2SD2395E)



Assembly of Bottom Cover

After replacing the Power IC or Regulator Transistor, upset the bottom cover and align the ribs of bottom cover to the lugs on the bottom chassis ass'y. After mounting the bottom cover on the bottom chassis ass'y, fix it with a screw.



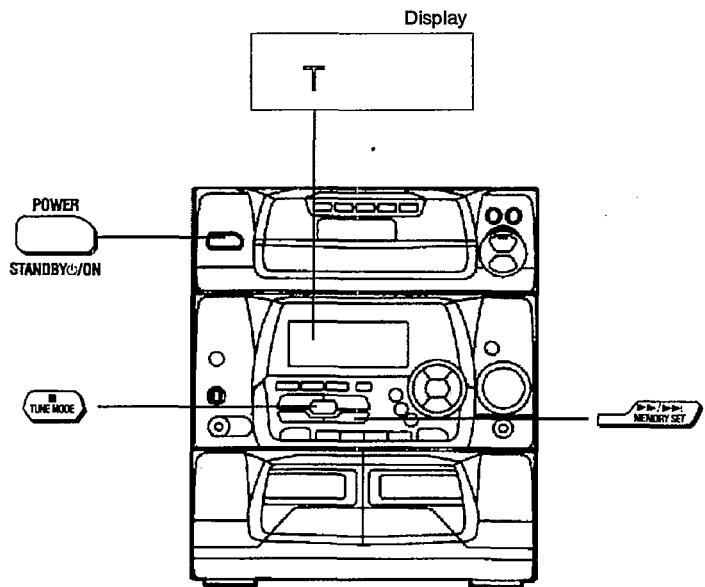
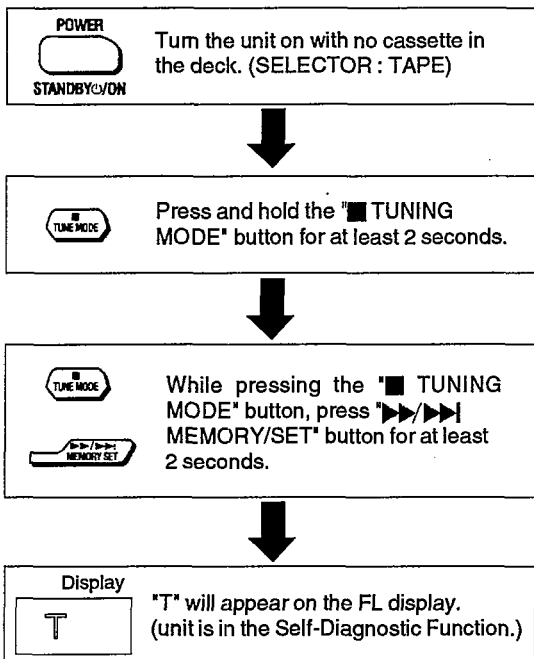
a	
b	
c	

■ Self-Diagnostic Display Function

■ Self-diagnostic display

This unit is equipped with a self-diagnostic display function which, if a problem occurs, will display an error code corresponding to the problem. Use this function when performing maintenance on the unit.

■ How to enter the Self-Diagnostic Function



■ Cassette Mechanism Test (For error code H01, H02, H03, F01, F02)

1. Press "TAPE, DECK 1/2" to select Deck 2.
2. Load a cassette tape with the erasure prevention tab, remove from left side only and close the cassette holder.
3. Press "▶▶▶▶ MEMORY/SET" (Tape will be stop after 2 seconds).
4. Load a cassette tape with the erasure prevention tab, remove from right side only and close the cassette holder.
5. Press "◀◀◀ FM MODE/BP" (Tape will be stop after 2 seconds).
6. Load a pre-recorded tape with both side record tabs intact and close the cassette holder.
7. Press "▶ TUNE/TIME ADJ" (After TPS function, tape will stop automatically).
8. Press "•REC/STOP" (Tape will not move).
9. Press "■ TUNING MODE" to indicate Error code.
 - If several problem exist, error code will change each time when "■ TUNING MODE" is pressed. (e.g. H01 = H03 = F01 etc.)
10. Press "TAPE, DECK 1/2" to select Deck 1.
11. Repeat step 2 to 9 to test Deck 1. (Tape Deck 1 will not check H02 because of no recording function)

■ CD Mechanism Test (F15, F16, F25 ~ F28, F75)

1. Press "CD".
2. Press "OPEN-NEXT-AUTO".
3. Press "■ TUNING MODE" to indicate Error Code.
 - If several problem exist, error code will change each time when "■ TUNING MODE" is pressed. (e.g. F15 = F16 = F25 etc.)

■ To clear all Error code

1. Press "■ TUNING MODE" button for 5 seconds.
2. FL indicator shows "CLEAR" for 1 second and change to "T".

■ How to get out from Self-Diagnostic function

1. Press "POWER" button OFF.

■ Power Amplifier Failure (F61)

1. When power amplifier fail, F61 will indicate automatically.

■ Description of Error Code

(1) Error detection for Cassette Mechanism block

No.	Error	Error Display	Problem condition
1	MODE SW detection error	H01	Faulty operation of cassette mechanism. Faulty contact or short-circuit of mechanism mode switch (S951, S971).
2	REC INH SW detection error	H02	Recording not possible. Faulty contact or short-circuit of REC INH switch (S974, S975).
3	HALF SW detection error	H03	Playback can not perform. Faulty contact or short-circuit of HALF switch (S952, S972).
4	Reel Pulse detection error	F01	The tape advances slightly and then stops. Faulty reel pulse, faulty hole detect IC (IC951, IC971).
5	TPS abnormal	F02	Cassette deck will not perform TPS function. Faulty playback EQ/recording amplifier IC (IC101).

(2) Error detection for CD/Changer block

No.	Error	Error Display	Problem condition
1	REST SW detection error	F15	CD does not function. This error occurs when the Optical Pick Up REST SW (S701) is not detected within the specified time (about 8 seconds)
2	S3 (TUP) detection error	F16	CD does not function. This error occurs when S3 (Traverse up detection) is not ON or OFF within the specified time.
3	S4 (DRO) detection error	F25	Tray does not stay open. This error occurs when S4 (Tray open detection) is not ON or OFF during OPEN/CLOSE operation within the specified time.
4	Transmission error between CD servo LSI and micon	F26	CD does not function. This error occurs when the POWER is ON for the CD block and an error is detected after the transmission has started.
5	S5 (TNO) detection error	F27	Tray number does not detect correctly. This error occurs when S5 (Tray number detection) can not be detected normally or when the TRAY No. is uncertain.
6	S1 (STK), S2 (PLY) detection error	F28	CD loading mechanism does not move correctly. This error occurs when S1 (stocker position detection) is not ON or OFF, or S2 (play position detection) is not ON or OFF within the specified time.
7	CD power error	F75	CD does not function. Check if CDRST is H for SELECTOR at CD. If it is not H after 1 second, it shall be memorised as an error. (IC702)

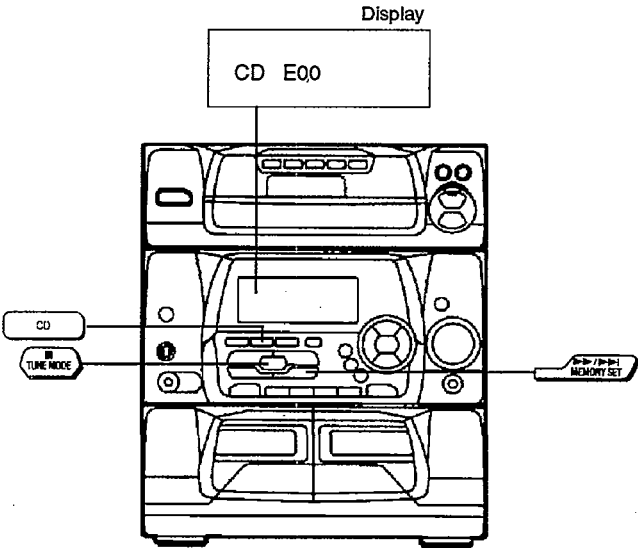
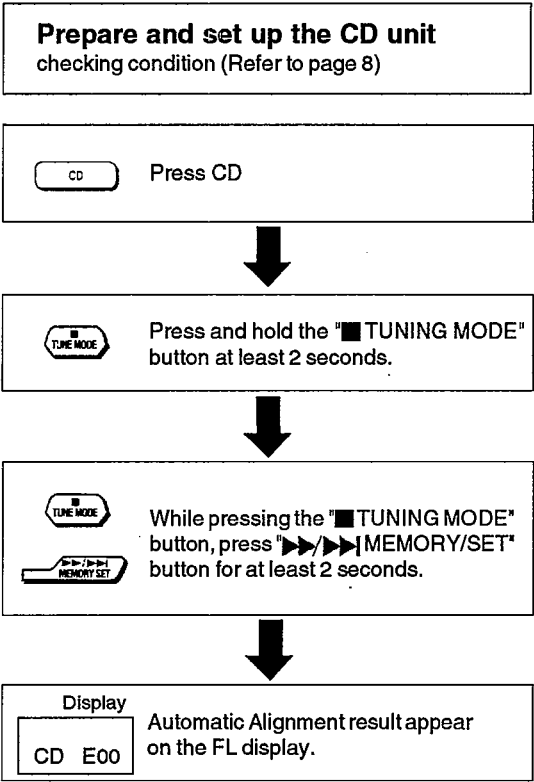
(3) Power Supply related error detection

No.	Error	Error Display	Problem condition
1	POWER AMP output abnormal	F61	When POWER is switched on, power become off automatically. During normal operation, if DC DET become L, PCNT shall become L and the error display on the left shall be displayed. (IC501)

■ CD Test Mode Function

This CD test mode is provided to check CD unit without connecting to changer loading mechanism. This mode shall operate CD PLAY with CD unit being connected only and CD Automatic Alignment result is shown on FL display.

■ How to set CD test mode



■ CD Automatic Alignment result indication

This function provided indication of error code as the result of Automatic Alignment of CD (Tracking, Focus, Offset, etc.). Based on these error codes, the faulty area can be located .

■ Error code Explanation

- The unit is satisfactory if the error code is E00
- Before testing, make sure that the test disc is free of scratches, dirt and that the optical pick up lens is clean.

Error code	E00	E01	E02	E03	E04	E05	E06	E07	E08	E09	E0A	E0B	E0C	E0D	E0E	E0F
Focus offset	○	※	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Tracking offset	○	※	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Focus Gain (Rough)	○	※	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Tracking Gain(Rough)	○	-	○	×	○	×	○	×	○	×	○	×	○	×	○	×
Tracking balance	○	-	×	×	○	○	×	×	○	○	×	×	○	○	×	×
Focus balance	○	-	○	○	×	×	×	×	○	○	○	○	×	×	×	×
Tracking or Focus Gain (Fine)	○	-	○	○	○	○	○	○	×	×	×	×	×	×	×	×

○ Satisfy × Fault (※ Fault either items)

Measurements and Adjustments

< CASSETTE DECK SECTION >

- Measurement Condition
 - Reverse-mode selector switch : 
 - Tape edit : NORMAL
 - Record timer : OFF
 - Dolby NR : OFF
 - Make sure head, capstan and pressure roller are clean.
 - Judgeable room temperature $20 \pm 5^{\circ}\text{C}$ ($68 \pm 9^{\circ}\text{F}$)
- Test tape
 - Head azimuth adjustment (8 kHz, -20 dB); QZZCFM
 - Tape speed adjustment (3 kHz, -10 dB); QZZCWAT
 - Playback gain adjustment (315 Hz, 0 dB); QZZCFM
 - Normal reference blank tape; QZZCRA
 - CrO₂ tape; QZZCRX
- Measuring instrument
 - EVM (Electronic Voltmeter)
 - Digital frequency counter

• Head Azimuth Adjustment (Deck 1/2)

Caution :

- Please replace both azimuth adjustment screws (RHE5152ZB) and springs (RMB0331) 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 cannot 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 (8 kHz, -20 dB) of the test tape (QZZCFM) in the forward play mode. Vary the azimuth adjusting screw until the output of the R-CH (PB OUT-R) are maximized.
2. Perform the same adjustment in the reverse play mode.
3. After the adjustment, apply screwlock to the azimuth adjusting screw.

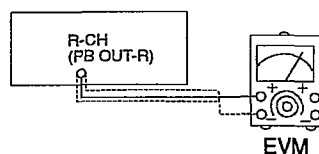


Fig. 1

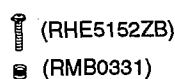


Fig. 2

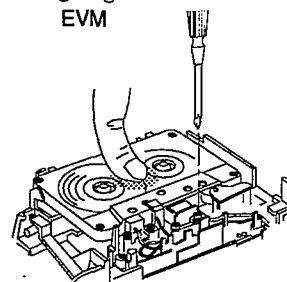


Fig. 3

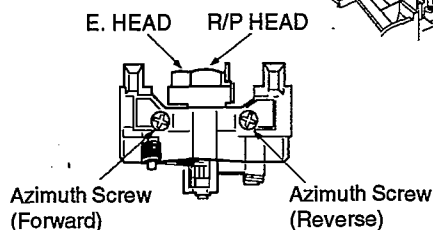


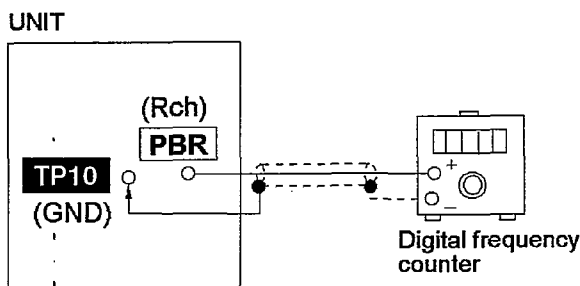
Fig. 4

• Tape Speed Adjustment (Deck 1/2)

1. Set the tape edit button to "NORMAL" position.
2. Insert the test tape (QZZCWAT) to DECK 2 and playback (FWD side) the middle portion of it.
3. Adjust VR201 (DECK 2) for the output value shown below.

Adjustment target : 2940 ~ 3060 Hz (NORMAL speed)

4. After alignment, assure that the output frequency of the DECK 2 REV and DECK 1 FWD/REV are within ± 60 Hz of the value of the output frequency of DECK 2 FWD.

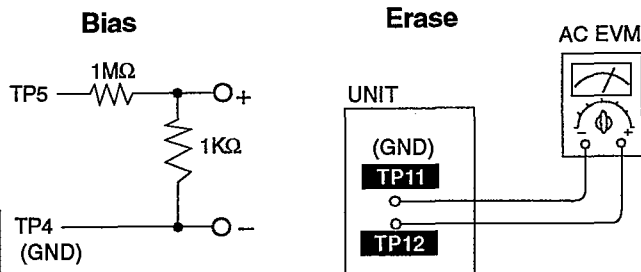


• Bias and Erase Voltage Check

1. Set the unit to "AUX" position.
2. Insert the Normal blank tape (QZZCRA) into DECK 2 and set the unit to "REC" mode (use "•REC / STOP" key).
3. Measure and make sure that the output is within the standard value.
4. Insert the CrO₂ tape (QZZCRX).
5. Repeat steps 2 and 3.

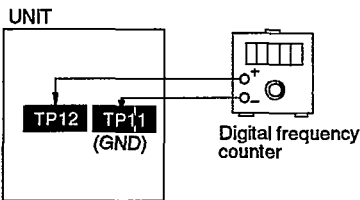
Bias voltage for Deck 2 (Standard value) : $19 \pm 4\text{mV}$ (Normal)
 $27 \pm 5\text{mV}$ (CrO₂)

Erase voltage for Deck 2 (Standard value) : more than 100mV (Normal)
 more than 150mV (CrO₂)



• Bias Frequency Adjustment (Deck 2)

- 1. Set the unit to "AUX" position.
- 2. Insert the Normal blank tape (QZZCRA) into DECK2 and set the unit to "REC" mode (use *REC / STOP" key).
- 3. Adjust L201 so that the output frequency is within the standard value.



Standard Value : 98 ± 8 kHz

< TUNER SECTION >

■ AM-IF ALIGNMENT

SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Shown in Fig. 3)	REMARKS
CONNECTIONS	FREQUENCY				
Fashion a loop of several turns of wire and radiate a signal into the loop ant. of receiver.	450kHz 30 % Mod. at 400Hz	Point of non-interference.(or/ about 600kHz	Headphones Jack (32Ω) Fabricate the plug as shown in Fig. 2 and then connect the lead wires of the plug to the measuring instrument.	Z102 (AM IFT)	Adjust for maximum output.

■ AM-RF ALIGNMENT

*	522 kHz	Tuning capacitor fully closed	*	Z101 (AM OSC Coil)	Adjust for maximum output.
*	603 kHz	Tuning to signal	*	Z101 (AM ANT Coil)	Adjust for maximum output.

• Alignment Points

<Cassette Deck Section>

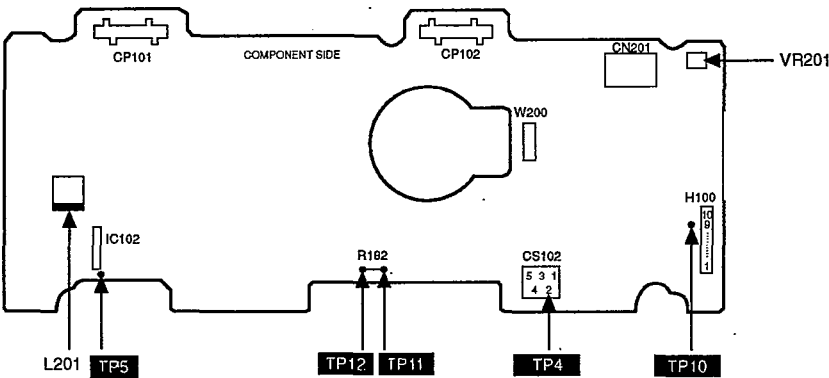


Fig. 1

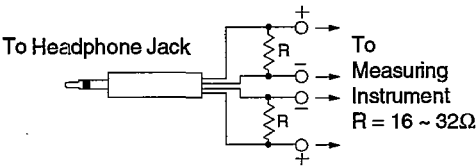


Fig. 2

<Tuner Section>

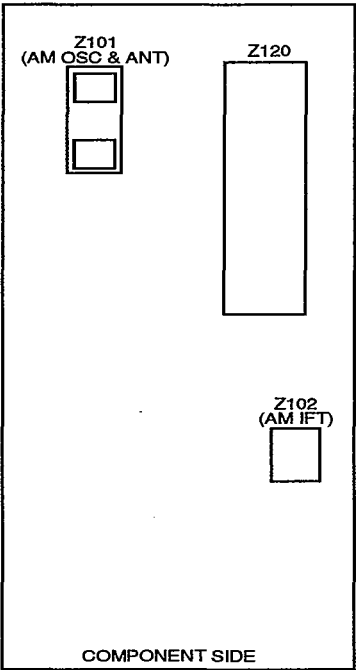


Fig. 3

■ Terminal Function of IC's

• IC701 (AN8835SBE1) Servo Amplifier

Pin No.	Mark	I/O	Function
1	PDA	I	PD signal input
2	PDB	I	PD signal input
3	VCC	I	Power supply connection
4	LPD	I	Laser PD connection
5	LD	O	Power out for LD driving
6	RF	O	RF signal output
7	RFIN	I	RF signal input
8	CAGC	I	AGC loop filter connection
9	ARF	O	RF-AGC output
10	CSBRT	I	Capacitor for detection connection
11	CEA	I	Capacitor connection for HPF amplifier
12	BDO	O	BDO output ("H" : drop out)
13	LDON	I	LD APC input ("H" : ON, "L" : OFF)
14	GND	—	Ground connection

Pin No.	Mark	I/O	Function
15	/RFDET	O	NRFDET output ("L" : detection)
16	CROSS	O	CROSS output (Track cross signal output)
17	OFTR	O	Off-track output("L" : ON track, "H" : OFF track)
18	VDET	O	VDET output("H" : Vibration detected)
19	ENV	O	RF envelope detection
20	TEBPF	I	Vibration detection signal input
21	CCRS	I	Capacitor for LPF connection
22	TE	O	Tracking error signal output
23	FE	O	Focus error signal output
24	TBAL	I	Tracking balance signal input
25	FBAL	I	Focus balance signal input
26	VREF	O	Reference voltage output
27	PDE	I	PD signal input
28	PDF	I	PD signal input

• IC703 (AN8389SE1) Focus coil / Tracking coil / Traverse motor / Spindle motor driver

Pin No.	Mark	I/O	Function
1	VCC	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	—	Ground connection
6	NC	—	Ground connection
7	NRESET	I	Reset input
8	GND	—	Ground connection
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	Function
13	PVCC1	I	Power supply (1) for driver
14	PGND1	—	Ground connection (1) for driver
15	D1—	O	Motor driver (1) reverse-action output
16	D1+	O	Motor driver (1) forward-action output
17	D2—	O	Motor driver (2) reverse-action output
18	D2+	O	Motor driver (2) forward-action output
19	D3—	O	Motor driver (3) reverse-action output
20	D3+	O	Motor driver (3) forward-action output
21	D4—	O	Motor driver (4) reverse-action output
22	D4+	O	Motor driver (4) forward-action output
23	PGND2	—	Ground connection (2) for driver
24	PVCC2	I	Power supply (2) for driver

• IC702 (MN662741RPA) Servo processor / Digital signal processor / Digital filter / D/A converter

Pin No.	Mark	I/O	Function
1	BCLK	O	Serial bit clock terminal (Not used, open)
2	LRCK	O	L/R discriminating signal (Not used, open)
3	SRDATA	O	Serial data (Not used, open)
4	DVDD1	I	Power supply (digital circuit) terminal
5	DVSS1	—	GND (digital circuit) terminal
6	TX	O	Digital audio interface signal
7	MCLK	I	Microprocessor command clock signal
8	MDATA	I	Microprocessor command data signal
9	MLD	I	Microprocessor command load signal
10	SENSE	O	Sense signal output (OFT, FESL, MAGEND, 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	External clock signal input for sub-code Q register.
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting input ("H" : mute)
17	STAT	O	Status signal output (CRC, CUE, CLVS, TTSTVP, FCLV, SQCK)
18	/RST	I	Reset input
19	SMCK	O	1/2-divided clock signal of crystal oscillating at MSEL = "H" (fSMCK=8.4672MHz) 1/4-divided clock signal of crystal oscillating at MSEL="L" (fSMCK=4.2336MHz)
20	PMCK	O	1/192-divided clock signal of crystal oscillating (fPMCK=88.2kHz) (Not used, open)
21	TRV	O	Traverse servo control output
22	TVD	O	Traverse drive signal output
23	PC	O	Spindle motor ON signal output ("L" : ON)
24	ECM	O	Spindle motor drive signal output (forced mode output)
25	ECS	O	Spindle motor drive signal output (servo error signal output)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	D/A (drive) output (TVD, ECS, TRD, FOD, FBAL, TBAL) Reference voltage input.
30	FBAL	O	Focus balance adjustment output (Not used, open)
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input
35	VDET	I	Vibration detection signal input ("H" : detection)

Pin No.	Mark	I/O	Function
36	OFT	I	Off-track signal input ("H" : off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal input ("L" : detection)
39	BDO	I	Dropout signal input ("H" : Dropout)
40	LDON	O	Laser on signal output ("H" : ON)
41	TES	O	Tracking error shunt signal output ("H" : shunt)
42	PLAY	O	Play signal out ("H" : PLAY)
43	WVEL	O	Double speed status signal output ("H" : DS)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias (Not used, open)
47	DSLIF	I/O	DSL loop filter
48	PLLIF	I/O	PLL loop filter
49	VCOF	I/O	VCO loop filter (Not used, open)
50	AVDD2	I	Power supply input (for analog circuit)
51	AVSS2	—	GND (for analog circuit)
52	EFM	O	EFM signal output (Not used, open)
53	PCK	O	PLL extraction clock output (Not used, open) (fPCK=4.321 MHz during normal playback)
54	PDO	O	Phase comparison signal of EFM and PCK signals (Not used, open)
55	SUBC	O	Sub-code serial data output (Not used, open)
56	SBCK	I	Sub-code frame clock signal output (fCLDCK=7.35kHz during normal playback)
57	VSS	—	GND
58	X1	I	Crystal oscillating circuit input (f=16.9344MHz)
59	X2	O	Crystal oscillating circuit output (f=16.9344MHz)
60	VDD	I	Power supply input (for oscillating circuit)
61	BYTCK	O	Byte clock output (Not used, open)
62	/CLDCK	O	Clock input for sub-code serial data (Not used, open)
63	FCLK	O	Crystal frame clock signal output (fCLK=7.35kHz, double=14.7kHz)
64	PFLAG	O	Interpolation flag output ("H" : interpolation) (Not used, open)
65	FLAG	O	Flag output (Not used, open)
66	CLVS	O	Spindle servo phase synchronizing signal output ("H" : CLV, "L" : rough servo) (Not used, open)
67	CRC	O	Sub-code CRC checked output ("H" : OK, "L" : NG) (Not used, open)
68	DEMPH	O	De-emphasis ON signal output ("H" : ON) (Not used, open)
69	RESY	O	Frame resynchronizing signal output (Not used, open)
70	/RST2	I	Reset input through MASH circuit ("L" : Reset)
71	/TEST	I	Test input

Pin No.	Mark	I/O	Function
72	AVDD1	I	Power supply input (for analog circuit)
73	OUTL	O	Left channel audio signal output
74	AVSS1	—	GND
75	OUTR	O	Right channel audio signal output
76	RSEL	I	RF signal polarity assignment input (at "H" level, RSEL="H", at "L" level, RSEL="L")
77	CSEL	I	Crystal oscillating frequency designation input

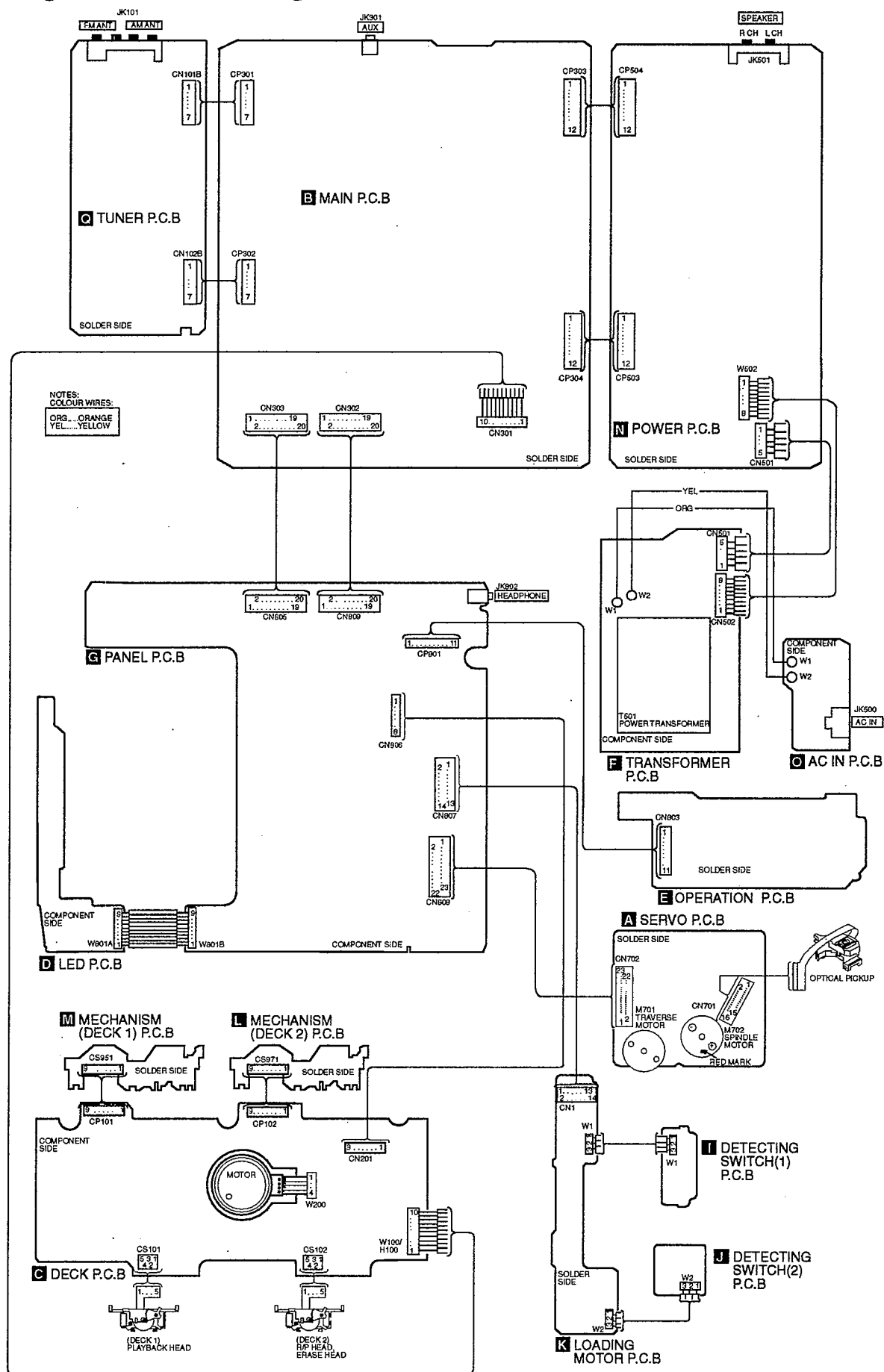
Pin No.	Mark	I/O	Function
			"L" : 16.9344MHz "H" : 33.8688MHz
78	PSEL	I	Test input (normally "L") (Not used, open)
79	MSEL	I	Output mode switching of SUBQ terminal ("H" : Q code buffer mode)
80	SSEL	I	Output frequency switching for SMCK terminal "H" : SMCK=8.4672MHz "L" : MCK=4.2336MHz (Not used, open)

• IC803 (M38197MA194F) System Microprocessor

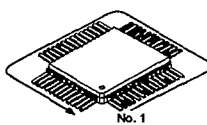
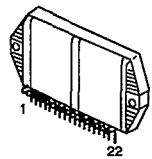
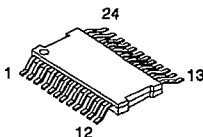
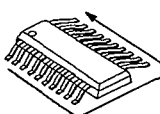
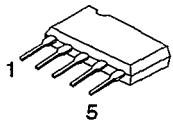
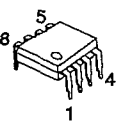
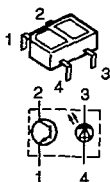
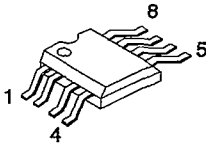
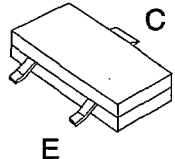
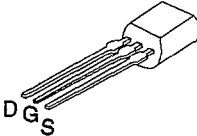
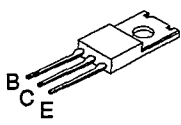
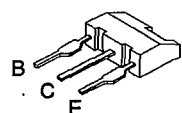
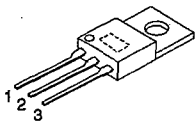
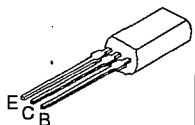
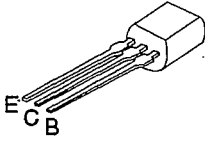
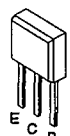
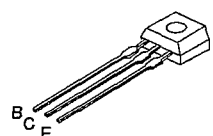
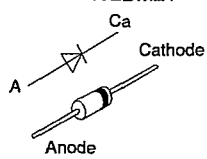
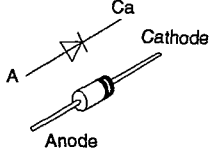
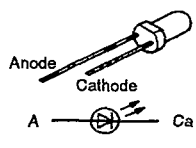
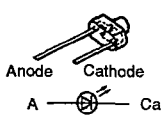
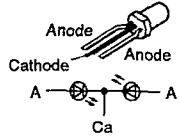
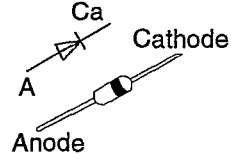
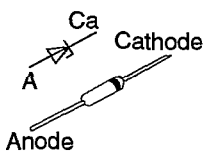
Pin No.	Mark	I/O	Function
1	DECK 2	I	Mecha condition input(PLAY, FF/RW, MOTOR)
2	DECK 1	I	Mecha condition input(PLAY, FF/RW, MOTOR)
3	TPS_IN	I	TPS input
4	CRT	—	CR timer
5	KEY 4	I	Key 4 input
6	KEY 3	I	Key 3 input
7	KEY 2	I	Key 2 input
8	KEY 1	I	Key 1 input
9	SER 1	O	LED drive clock output
10	MDATA/ PLLDATA	O	CD command data output
11	SER 2	O	LED drive data output
12	SER 3	O	LED drive data output
13	SER 4	O	Key control clock output
14	SER 5	O	Key control strobe output
15	SPEANA INPUT	I	Spectrum analyser input
16	CHG SW1	I	CD changer SW input (STK_SW, TUP_SW)
17	CHG SW2	I	CD changer SW input (DR0_SW, PLY_SW, TNO_SW)
18	CDRST	I	CD reset input
19	STATUS	I	CD signal processor status input
20	SQCK	O	CD subcode clock output
21	NC	—	No connection
22	SUBQ	I	CD subcode data input
23	TLOCK	I	CD tracking lock input
24	FLOCK	I	CD focus lock input
25	SENSE	I	CD servo processor sense input
26	MLD/ PLLCE	O	CD command load output
27	BEEP	—	No connection
28	MCLK/ PLLCLK	O	CD command clock output
29	RESTSW	I	CD REST detect SW input

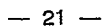
Pin No.	Mark	I/O	Function
30	BLKCK	I	CD block clock input
31	RMT	I	Remote control signal input
32	DCDET	I	DC detect input
33	P.CONT	O	Power control output
34	/HALT	I	AC failure detect input
35	/RESET	I	RESET input
36	XCIN	I	X'tal oscillator (f = 32.768 kHz sub clock)
37	XCOUT	O	X'tal oscillator (f = 32.768 kHz sub clock)
38	XIN	I	X'tal oscillator (f = 6.0 MHz Main clock)
39	XOUT	O	X'tal oscillator (f = 6.0 MHz Main clock)
40	VSS	—	Ground (0V)
41	MBP1	O	MPU beat proof output 1
42	MBP2	O	MPU beat proof output 2
43	NC	—	No connection
44	NC	—	No connection
45	CD DMUTE	O	CD digital mute output
46	SPE CONT A	O	Space control A
47	SPE CONT B	O	Space control B
48	SPE CONT C	O	Space control C
49-64	GRD16-GRD1	O	FL digit (grid) drive signal output
65-88	AND1-AND24	O	FL segment (anode) drive output
89	JOG A	I	Jog dial signal input A
90	JOG B	I	Jog dial signal input B
91	VCC	I	Power supply (+5V)
92	REGION IN	I	Area setting terminal
93	MKCLK	O	Cassette deck control clock signal output
94	MKDATA	O	Cassette deck control data output
95	SD IN	I	Tuner signal DET input
96	STEREO IN	I	Tuner stereo DET input
97	DO IN	I	Tuner PLL if data input
98	VP	I	Power input (-30V)
99	VSS	—	Ground (0V)
100	VREF	I	Reference for A-D

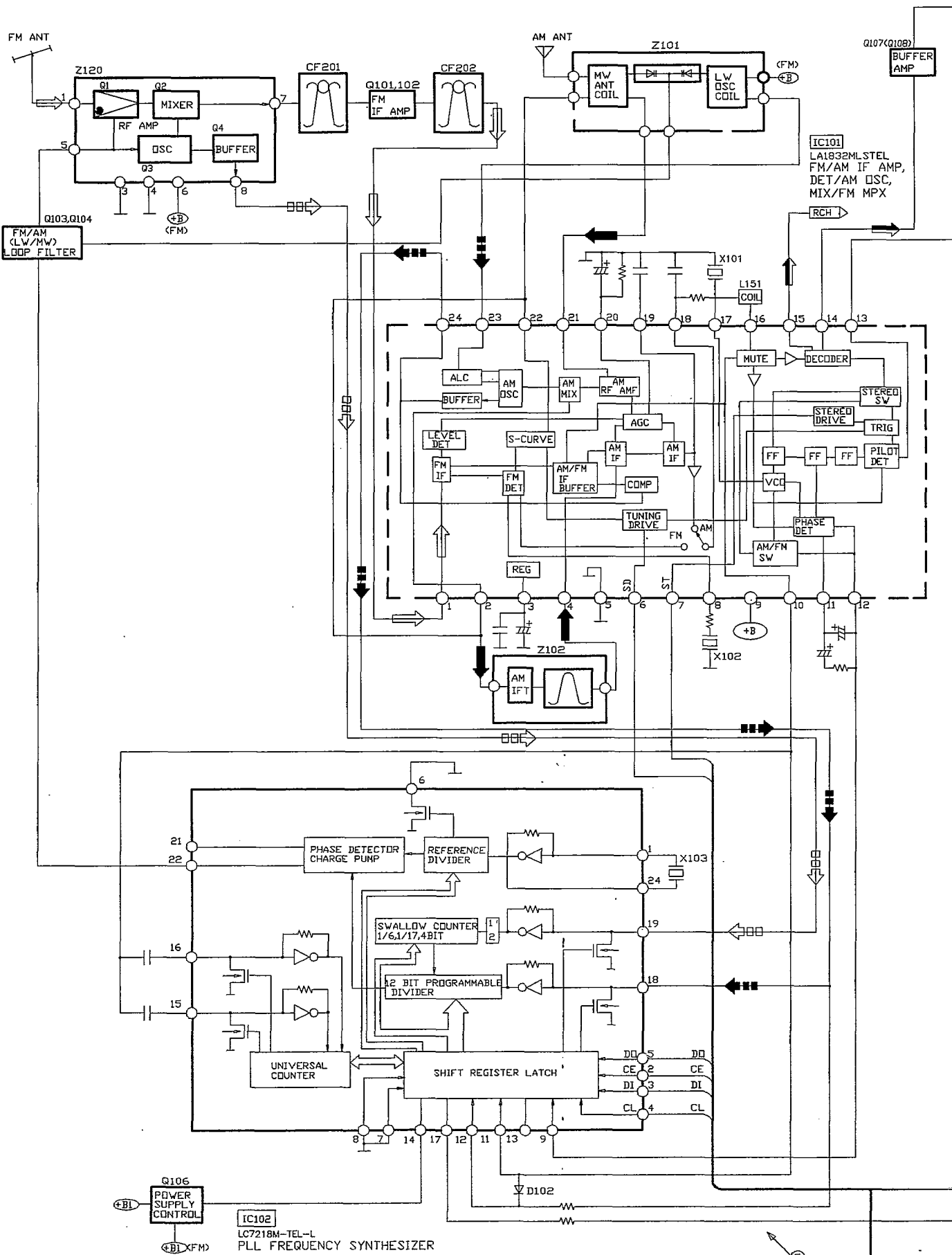
Wiring Connection Diagram

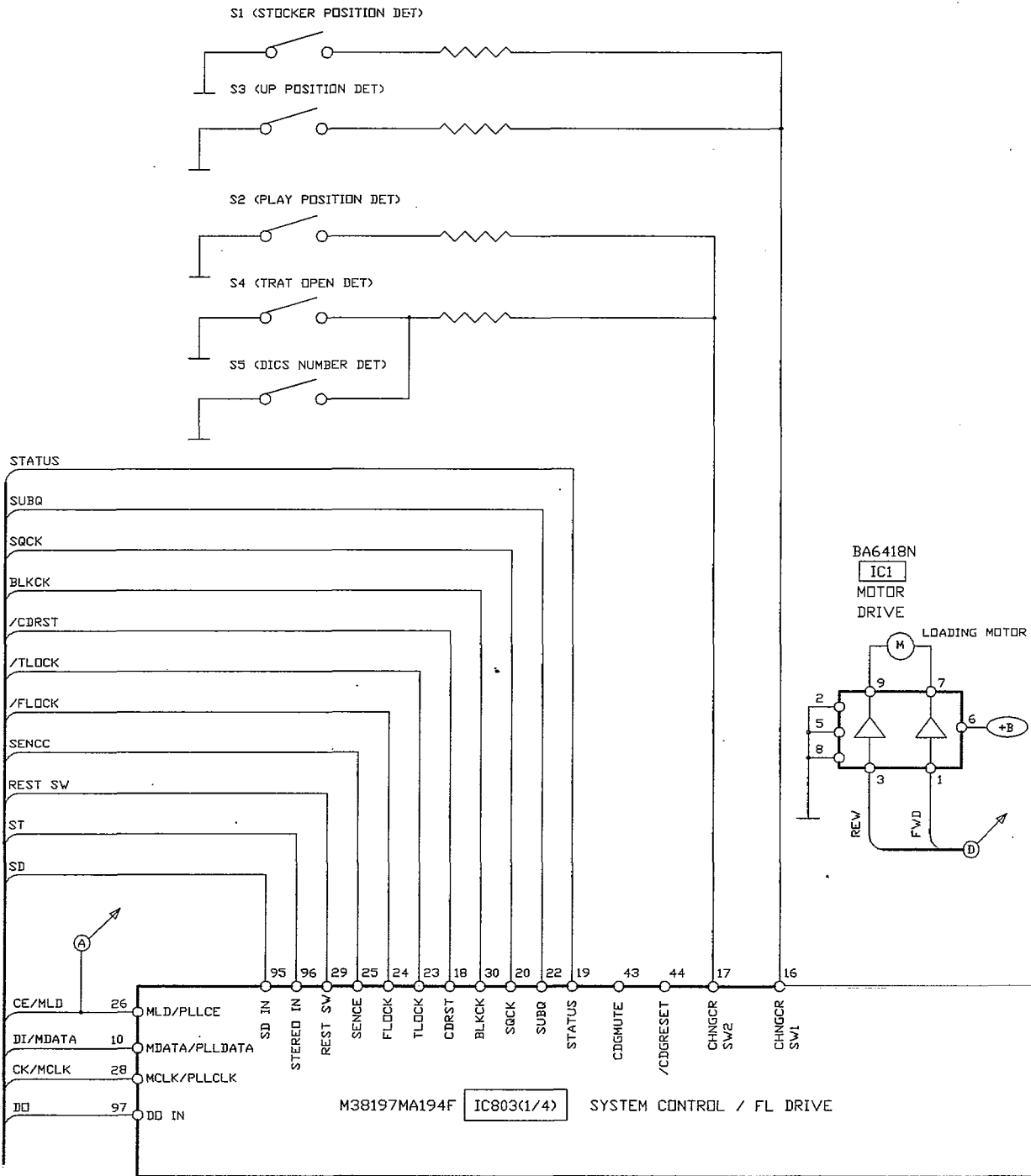


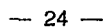
Terminal Guide of IC's, Transistors and Diodes

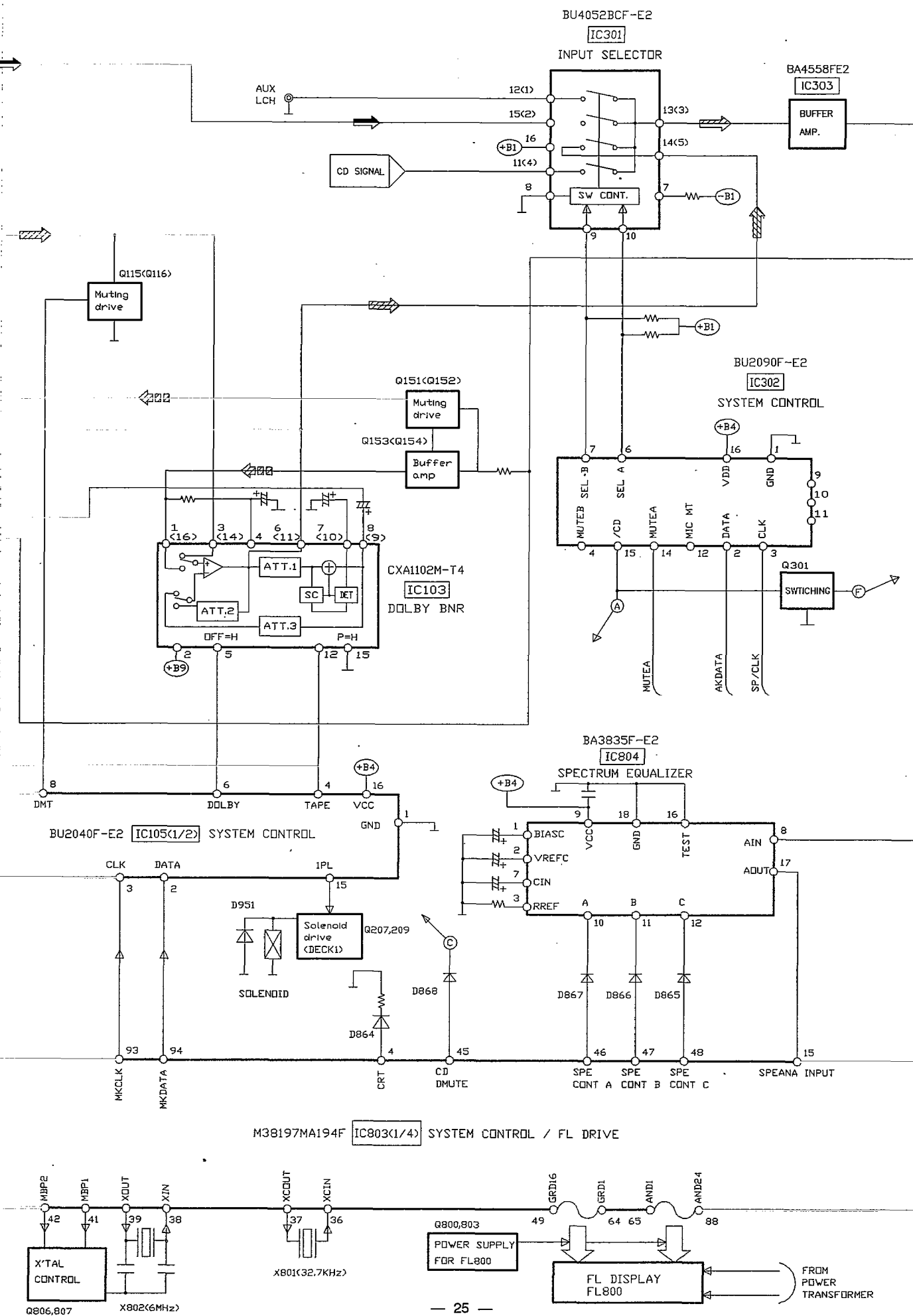
M38197MA194F(100P) MN662741RPA(80P) 	RSN308M24-P 	AN8389SE1 	BA3835F-E2(18P) AN8835SBE1(28P) BU2040F-E2(16P) BU2090F-E2(16P) BU4052BCF-E2(16P) M51167BFP-TB(36P)	BH3854AFS-E2(32P) BU4066BCF-E2(14P) CXA1102M-T4(16P) LA1832MLSTEL(24P) LC7218M-TE-L(24P) No. 1 	
BA7755A 	M5218AP 	ON2180RLC 	BA4558FE2 	2SB709S 	2SK301QTA 
2SD2395E 2SB1566E 	2SB1238Q 2SD1859QRTV2 	AN78M05 	2SC3940AQSTA 	2SC1684RTA 2SC2001KTA 2SB621RTA 2SD1302STA 2SD965RTA KSD471ACYGTA 	
2SC2784FTA BN1A4MTA 	RVTDTA114EST RVTDTA143XST RVTDTA114TST RVTDTA144EST 2SA933SSTA 2SC1740SLNET	2SC1740SSTA 2SC2785FTA 2SJ1640QRTA 2SC2787LTA 2SD1020HTA 2SD1450STA	BA1A4ZTA BA1L4ZTA BA1L4MTA 	1D3E 1N5402BM21 	
RK306LFU1 	SLR325DCT31 	SLR-325MC 	SPR505MDTT 	1SS254TA 1SS291TA MA165TA 	
MTZJ11CTA MTZJ24DTA MTZJ3R6BTA MTZJ4R7BTA MTZJ5R1BTA MTZJ36ATA	MTZJ16ATA MTZJ5R1CTA MTZJ5R6BTA MTZJ6R8BTA MTZJ8R2BTA MTZJ9R1CTA 				

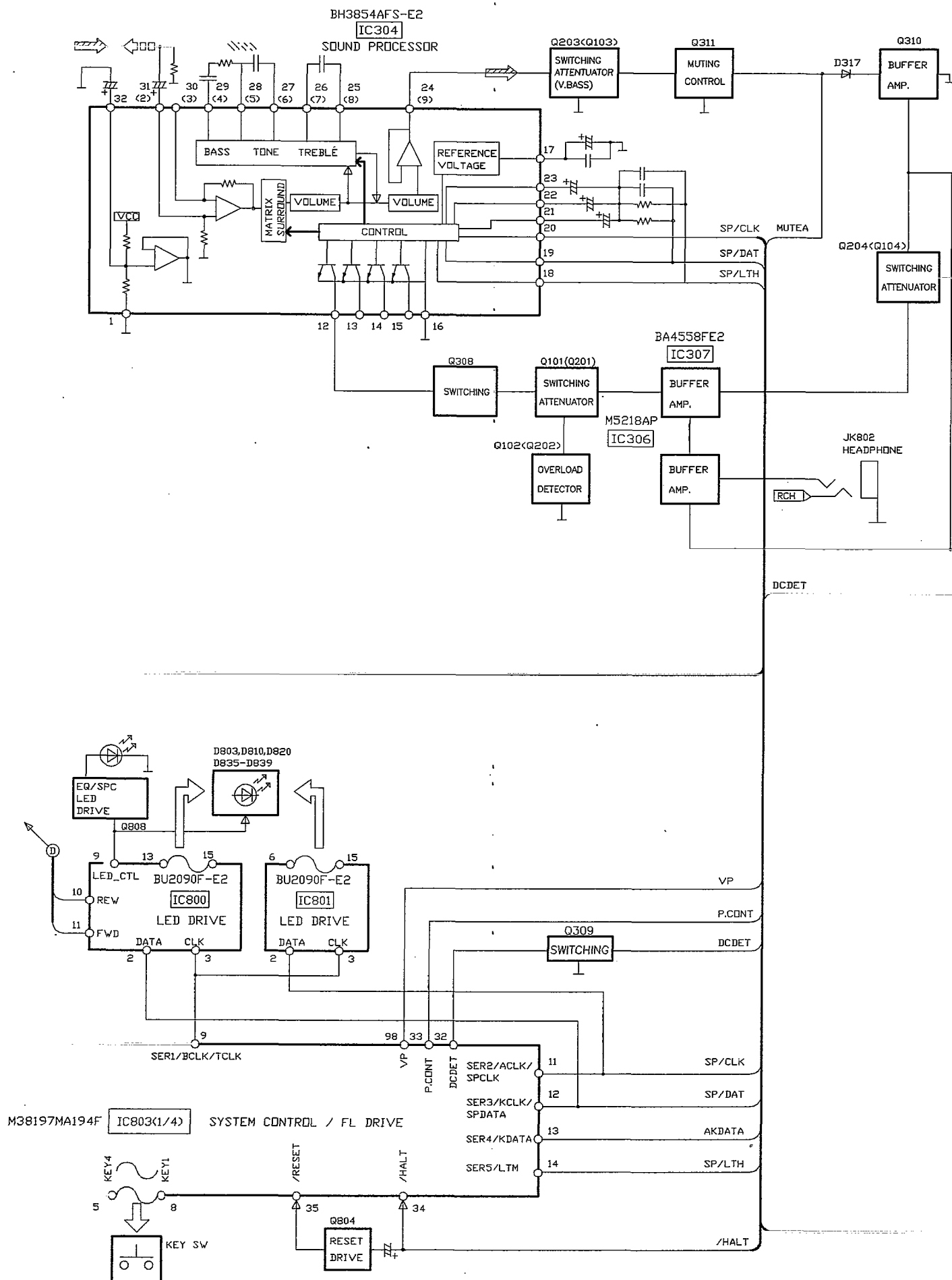


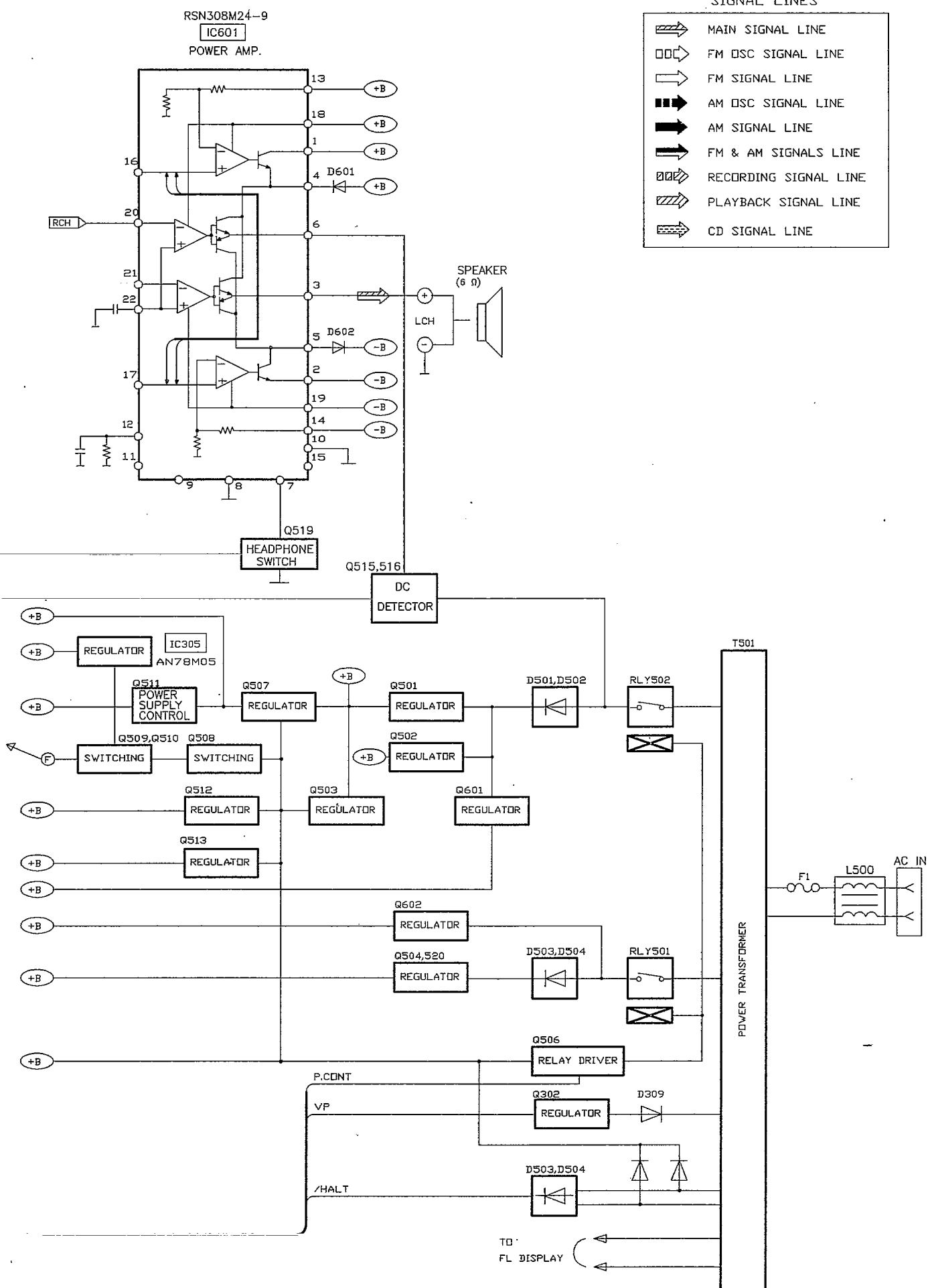












■ Schematic Diagram

(All schematic diagrams may be modified at any time with the development of new technology)

Note :

< for Servo Circuit > (Page 39)

- S701 : Reset switch

< for Panel circuit, Led Circuit and Operation Circuit > (Page 48 & 49)

- | | |
|---|--------------------------------------|
| • S800 : Tape/deck select switch | • S819 : Karaoke select switch |
| • S801 : Reverse play/pause, Tune/time adjust down switch | • S822 : Disc check open switch |
| • S802 : CD select switch | • S823 : Disc tray open/close switch |
| • S803 : DISC 5 select switch | • S824 : CD manager switch |
| • S804 : DISC 4 select switch | • S825 : Random play switch |
| • S805 : DISC 3 select switch | • S826 : V. Bass switch |
| • S806 : DISC 2 select switch | • S827 : Down select switch |
| • S807 : DISC 1 select switch | • S828 : Tape Edit switch |
| • S808 : Power switch | • S829 : Left select switch |
| • S809 : Tuner select switch | • S830 : Record select switch |
| • S810 : FWD play, tune/time adjust up switch | • S835 : Up select switch |
| • S811 : AUX select switch | • S836 : Dolby NR select switch |
| • S812 : Stop, tune mode select switch | • S837 : Right select switch |
| • S813 : Display, demonstration select switch | • S838 : Reverse mode select switch |
| • S814 : FWD, memory/set switch | • S839 : EQ/SPACE select switch |
| • S815 : Clock, timer select switch | • S840 : Deck 2 open switch |
| • S816 : REW, FM mode/BP select switch | • VR802 : Volume control |
| • S817 : Play timer/REC timer select switch | |
| • S818 : Deck 1 open switch | |

< for Deck circuit, Mechanism (Deck 1) circuit and Mechanism (Deck 2) circuit > (Page 45 - 47)

- | | |
|---|---|
| • S951 : Deck 1 Mode detect switch. | • VR101 : Deck 1 Lch playback gain adjustment VR(DOLBY) |
| • S952 : Deck 1 Tape detect switch. | • VR102 : Deck 1 Rch playback gain adjustment VR(DOLBY) |
| • S953 : Deck 1 CrO ₂ detect switch. | • VR103 : Deck 2 Lch playback gain adjustment VR(DOLBY) |
| • S971 : Deck 2 Mode detect switch. | • VR104 : Deck 2 Rch playback gain adjustment VR(DOLBY) |
| • S972 : Deck 2 Tape detect switch. | • VR201 : Deck 2 Normal speed adjustment. |
| • S973 : Deck 2 CrO ₂ detect switch. | |
| • S974 : Deck 2 Record detect switch. | |
| • S975 : Deck 2 Record detect switch. | |

< for Loading Motor circuit, Detecting Switch (1) Circuit and Detecting Switch (2) Circuit > (Page 54)

- S1, S4 : Leaf switch.
- S2, S3, S5 : Mecha switch.

•Signal line

- | | | |
|--|--|--|
|  : +B line |  : Playback signal line |  : AM signal line |
|  : -B line |  : Record signal line |  : AM OSC signal line |
|  : FM/AM signal line |  : CD signal line |  : FM OSC signal line |
|  : Main signal line |  : FM signal line | |

•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.

No mark : Playback << >>.....Rec { } : Tuner (()) : CD < > FM

•Importance safety notice:

Components identified by  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.

Caution !

IC, LSI and VLSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

•Cover the parts boxes made of plastics with aluminium foil.

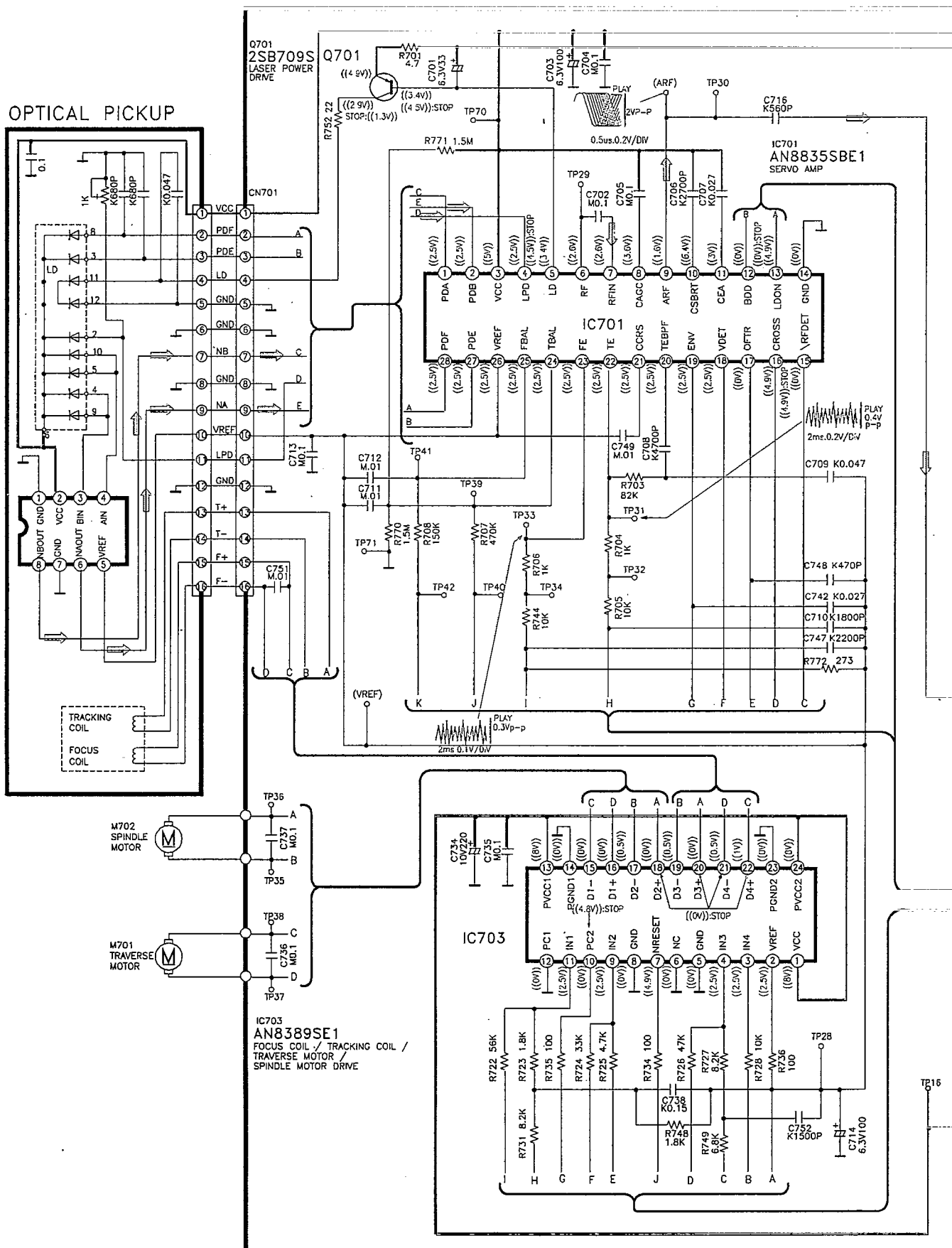
•Put a conductive mat on the work table.

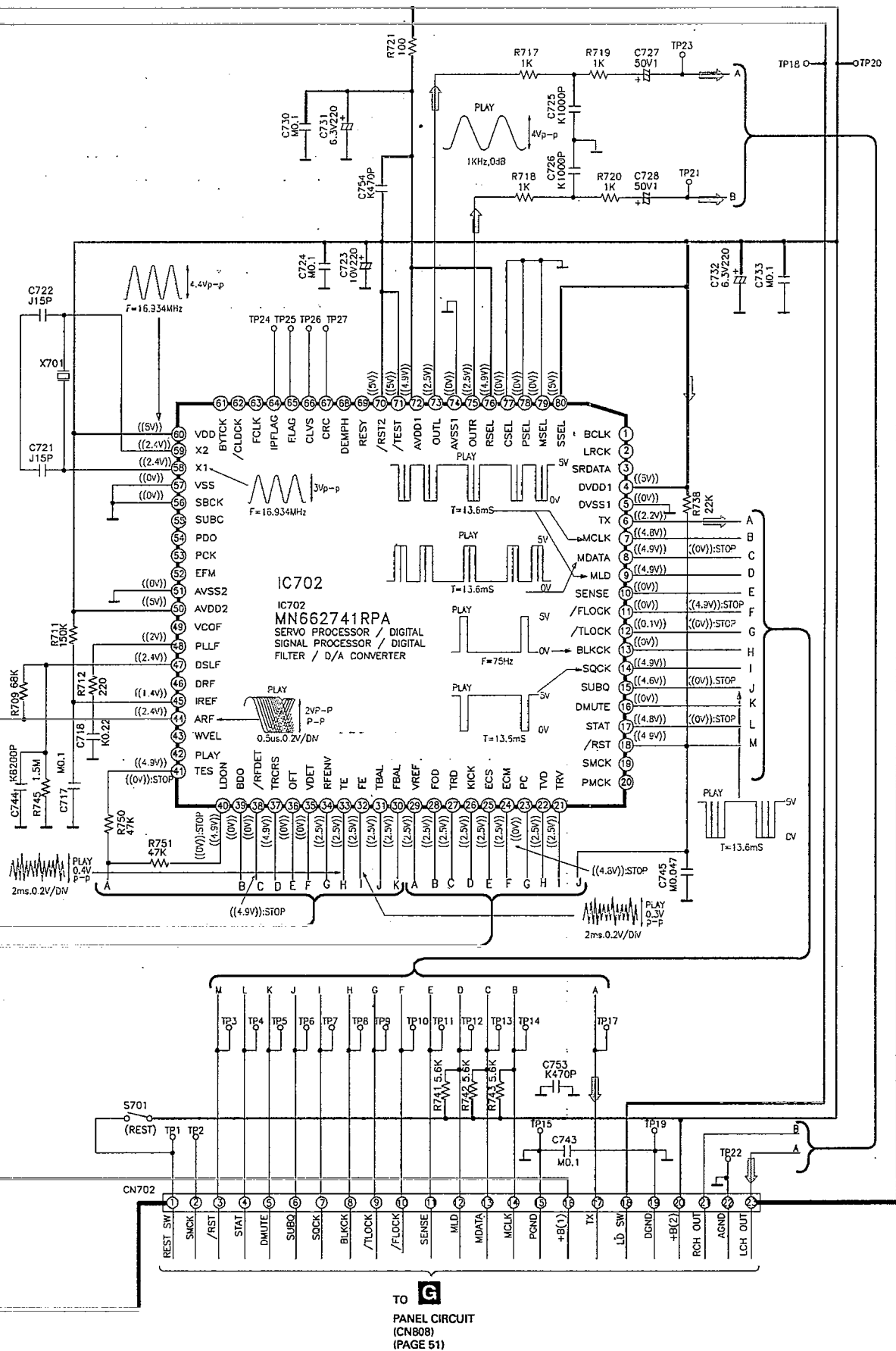
•Ground the soldering iron.

•Do not touch the pins of IC, LSI or VLSI with fingers directly.

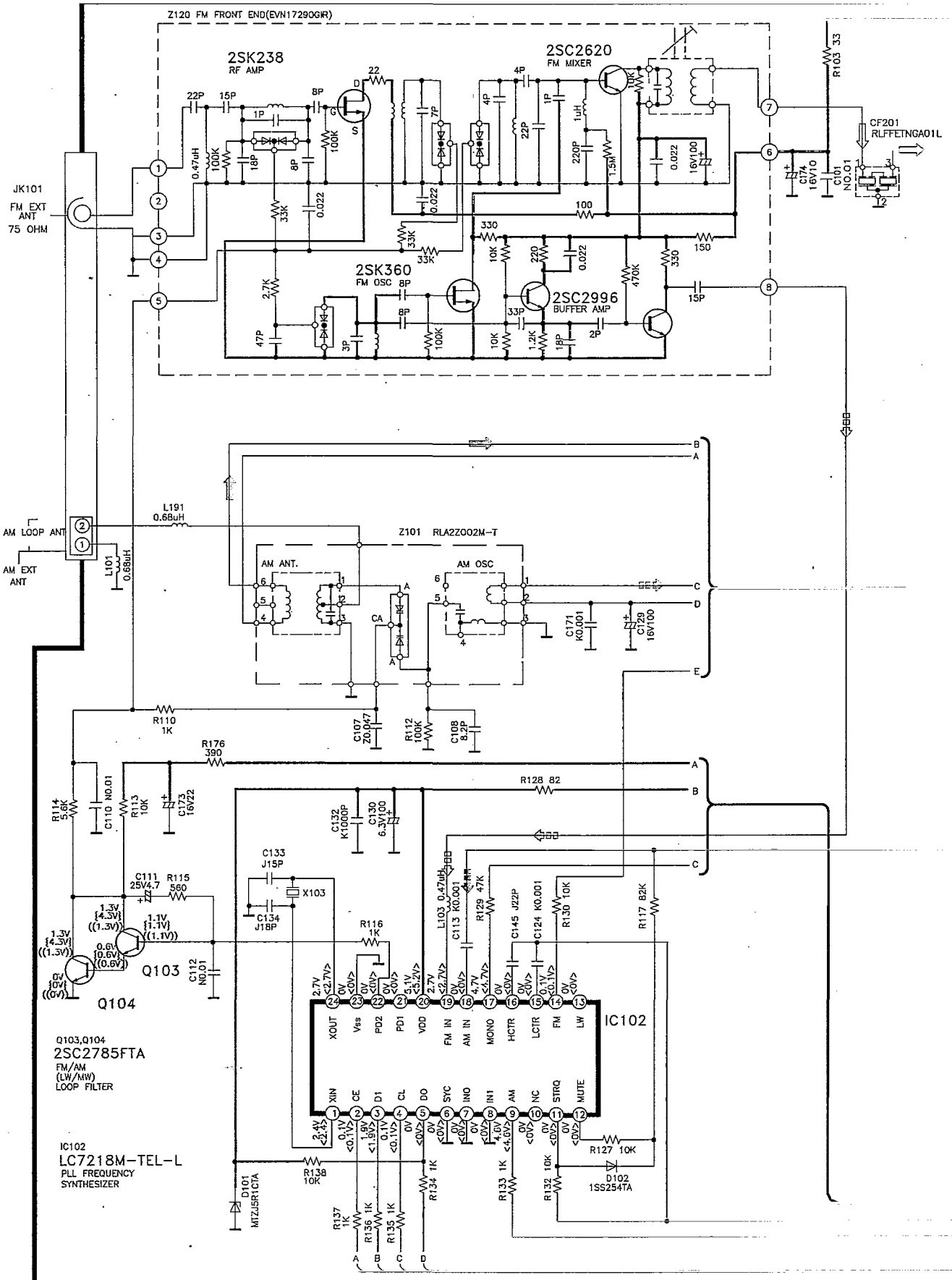
■ Schematic Diagram

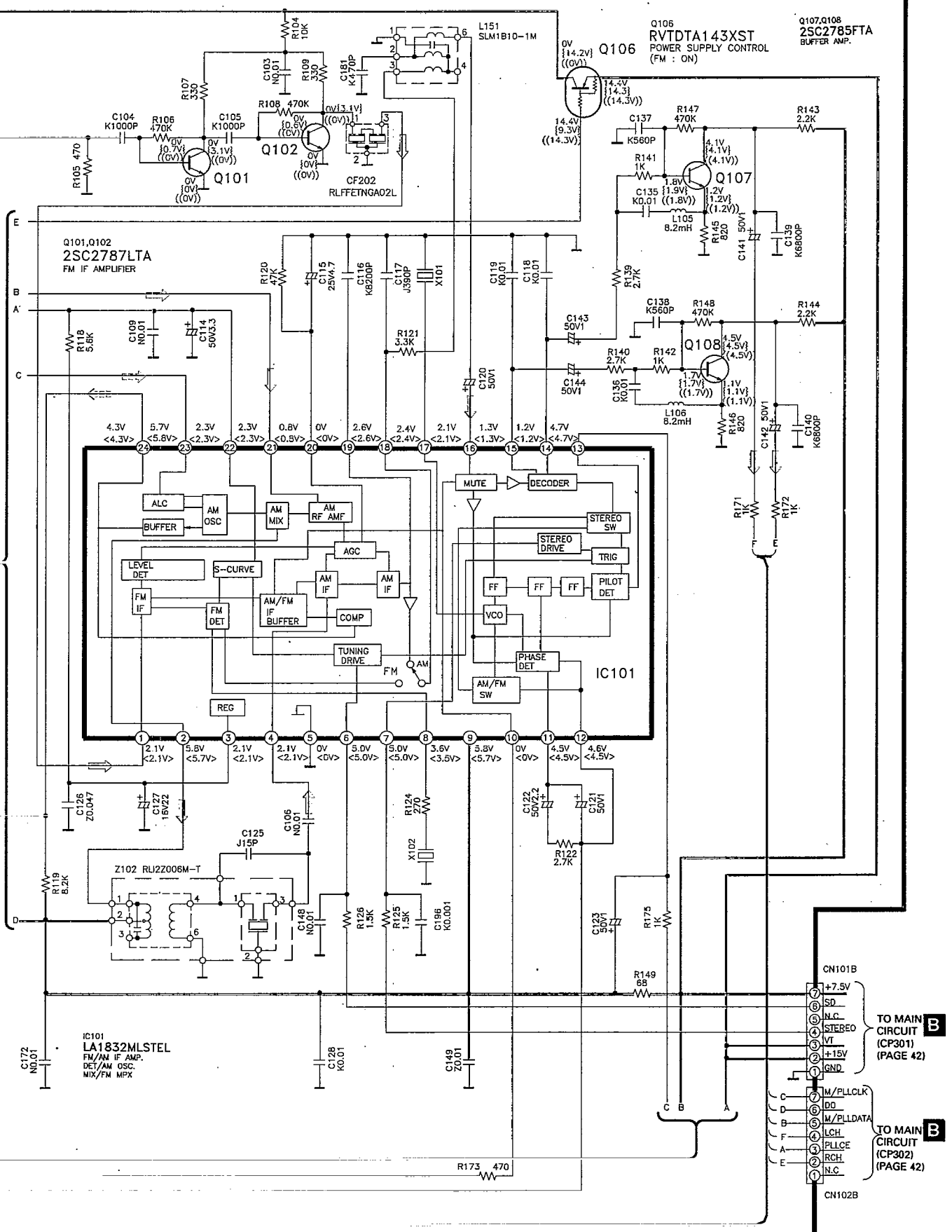
A SERVO CIRCUIT





TUNER CIRCUIT

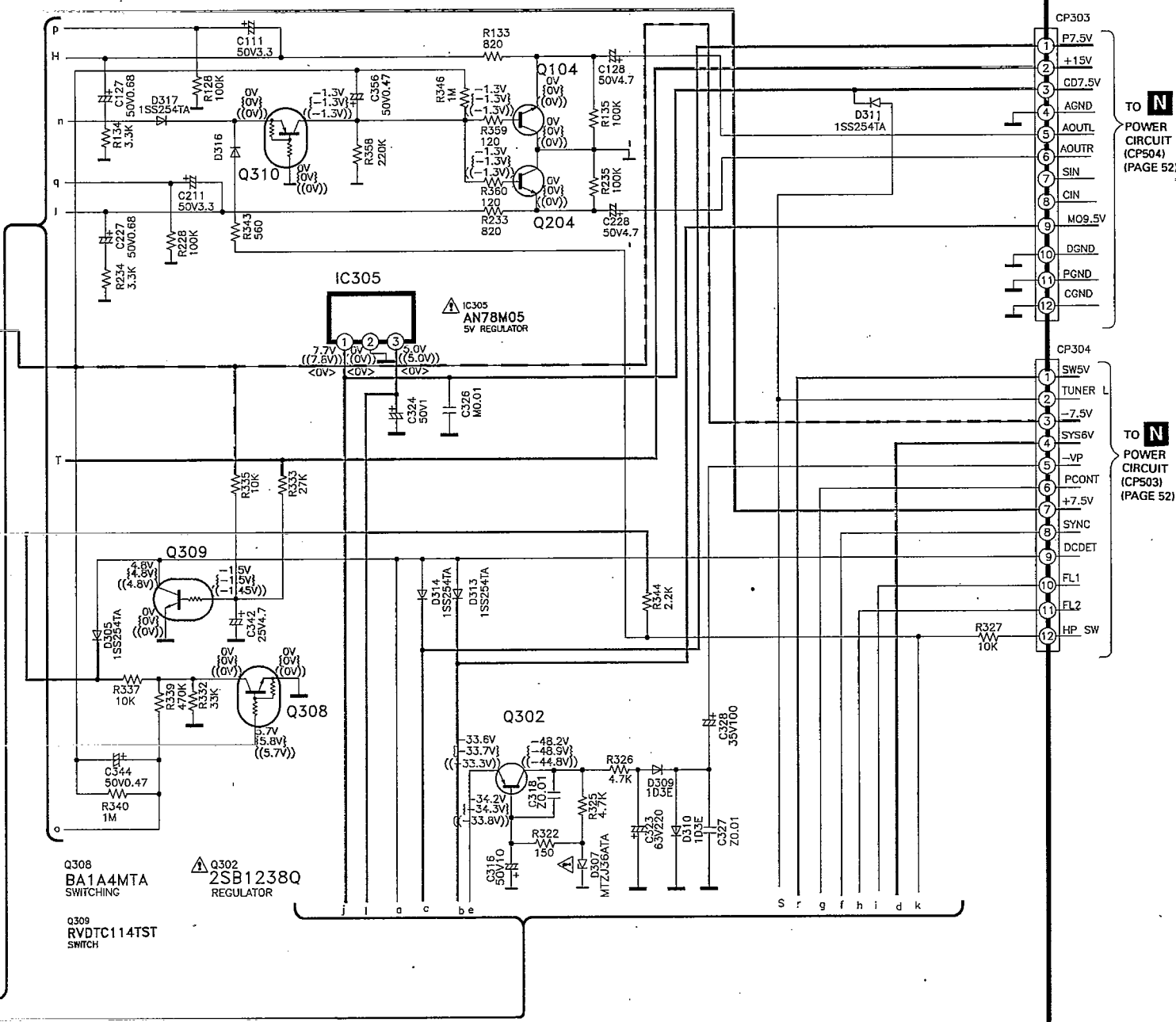




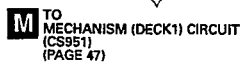


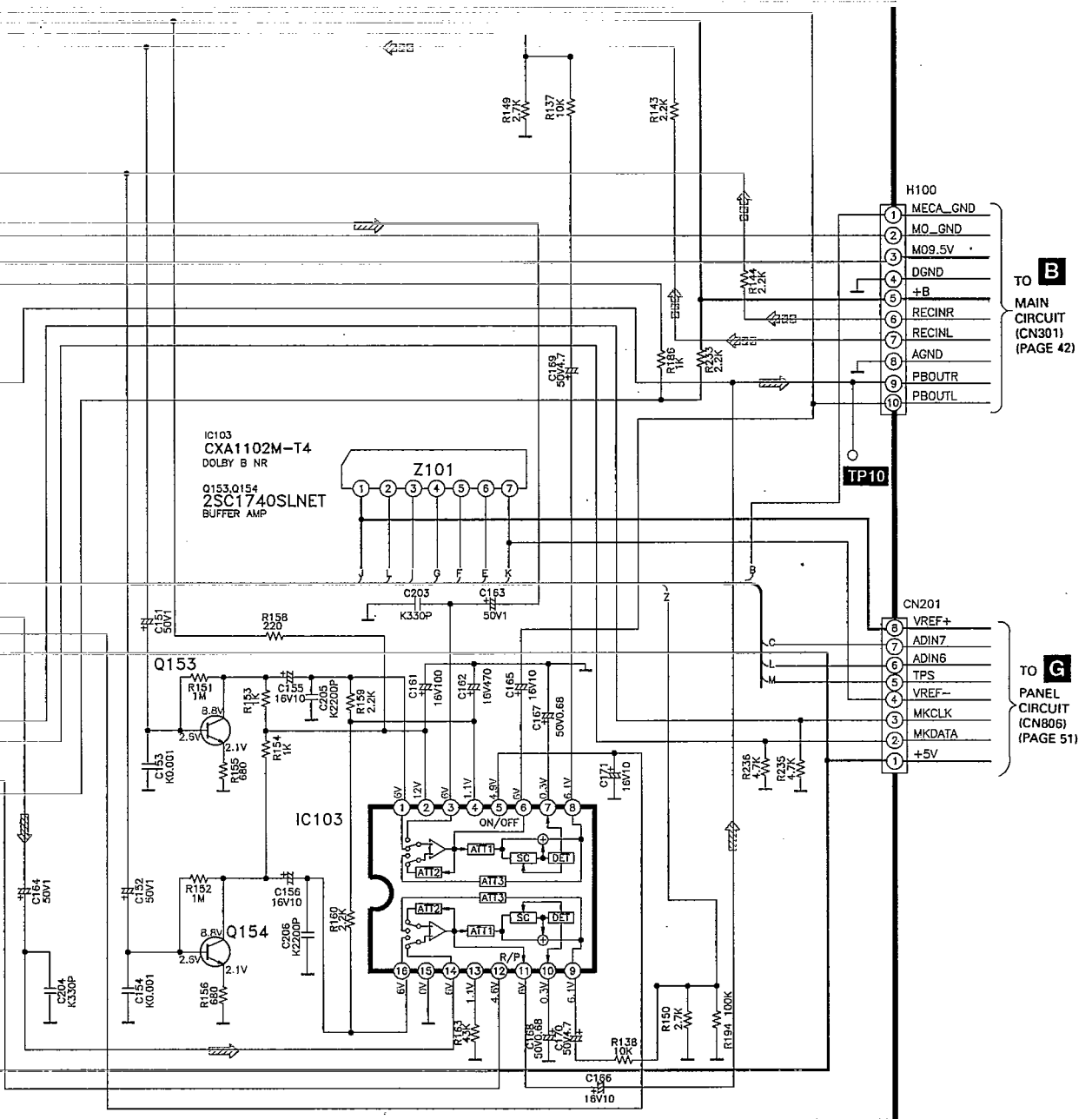
Q310
RVDTA114EST
BUFFER AMP.

Q104, Q204
2SD1450STA
SWITCHING (V.BASS)
ATTENUATOR

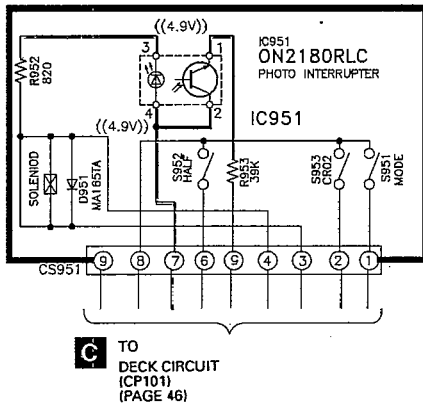




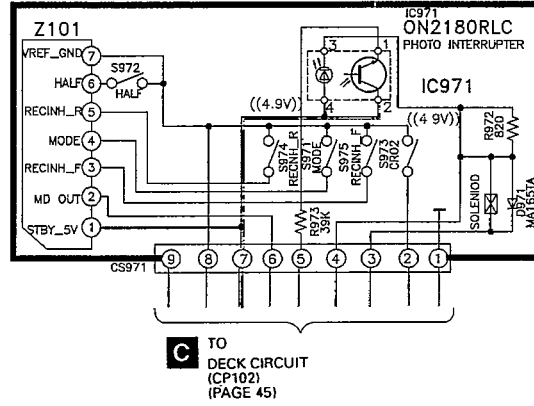




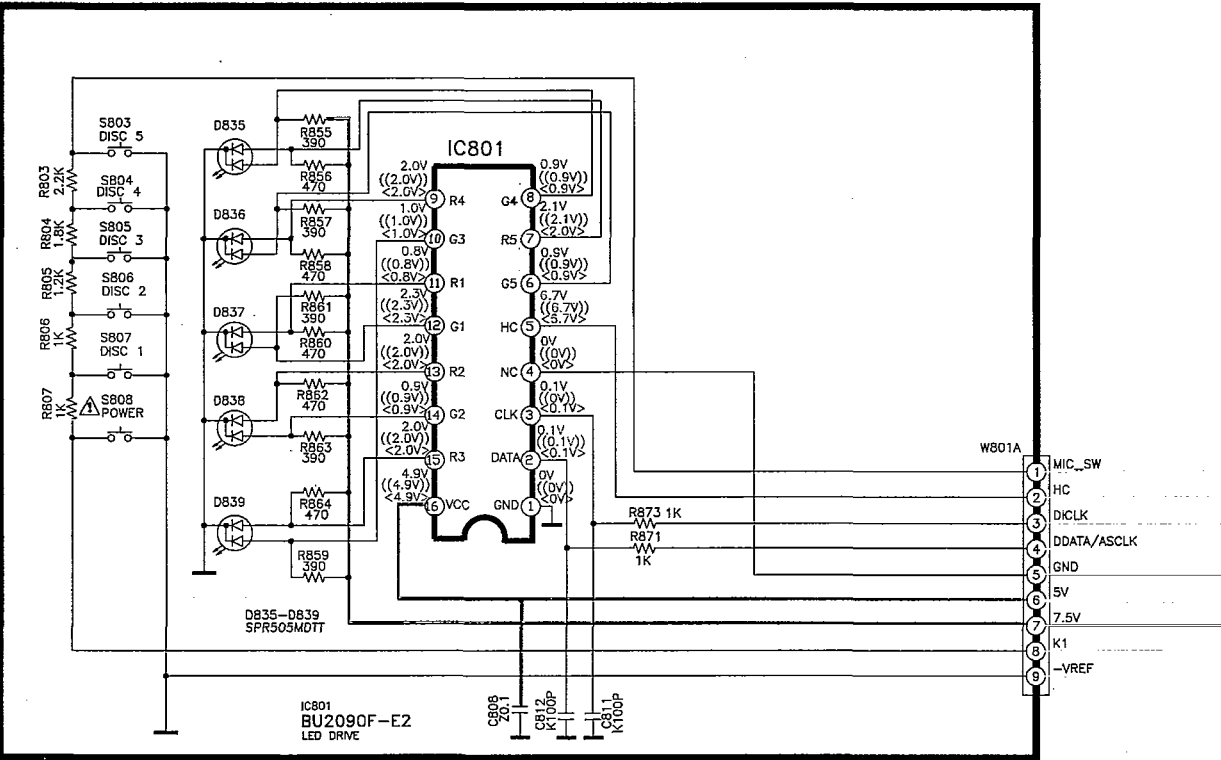
M MECHANISM (DECK 1)
CIRCUIT



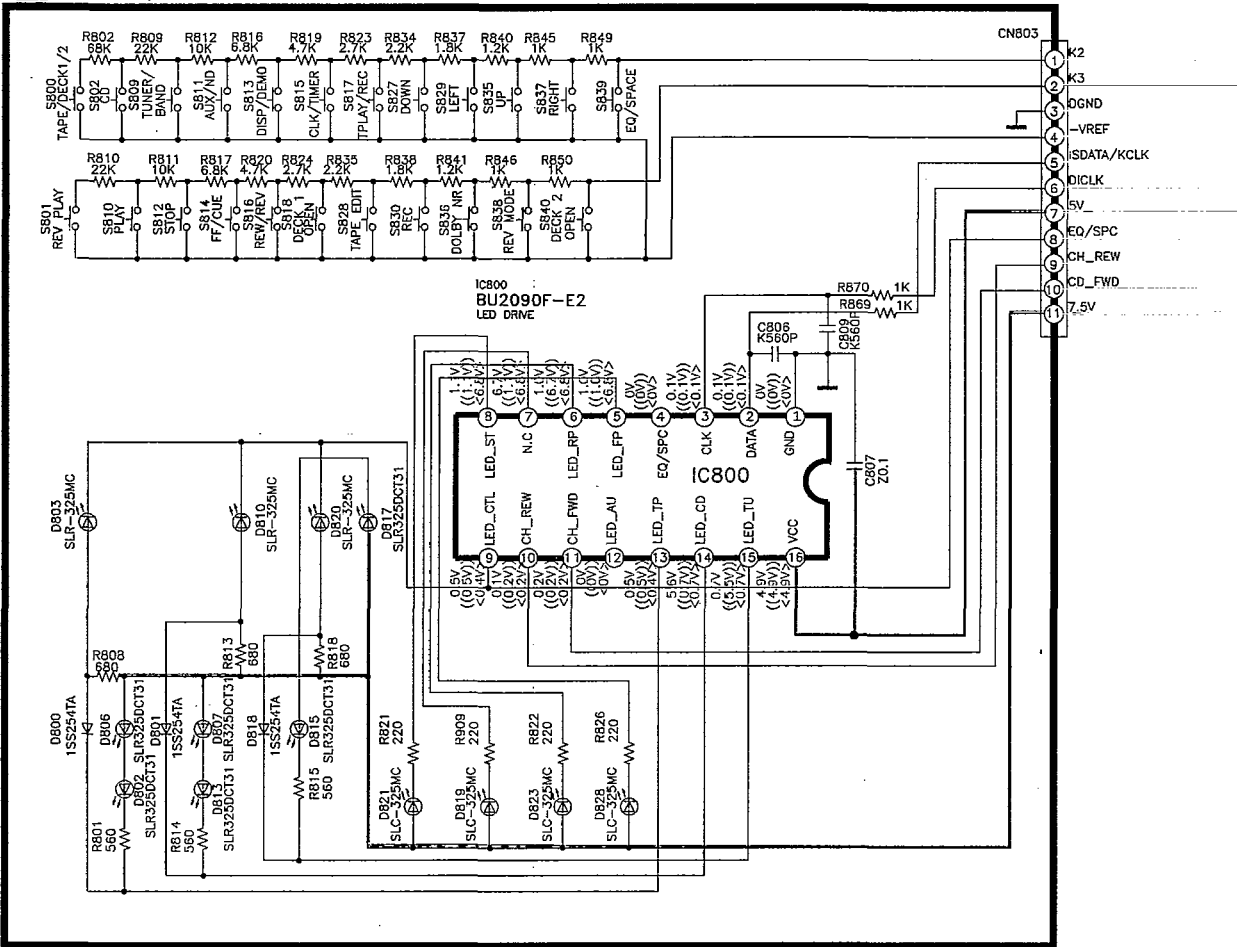
L MECHANISM (DECK 2)
CIRCUIT

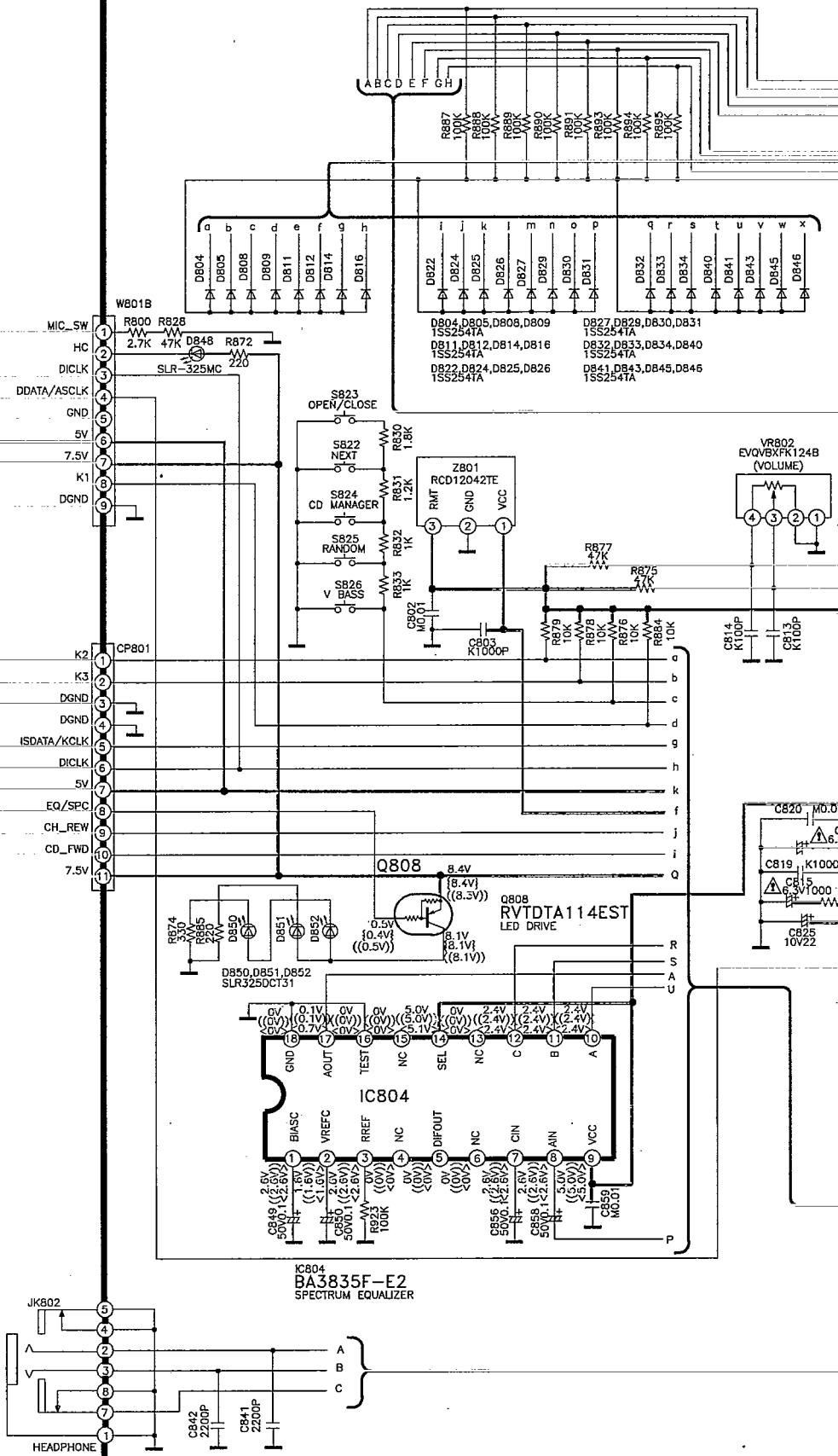


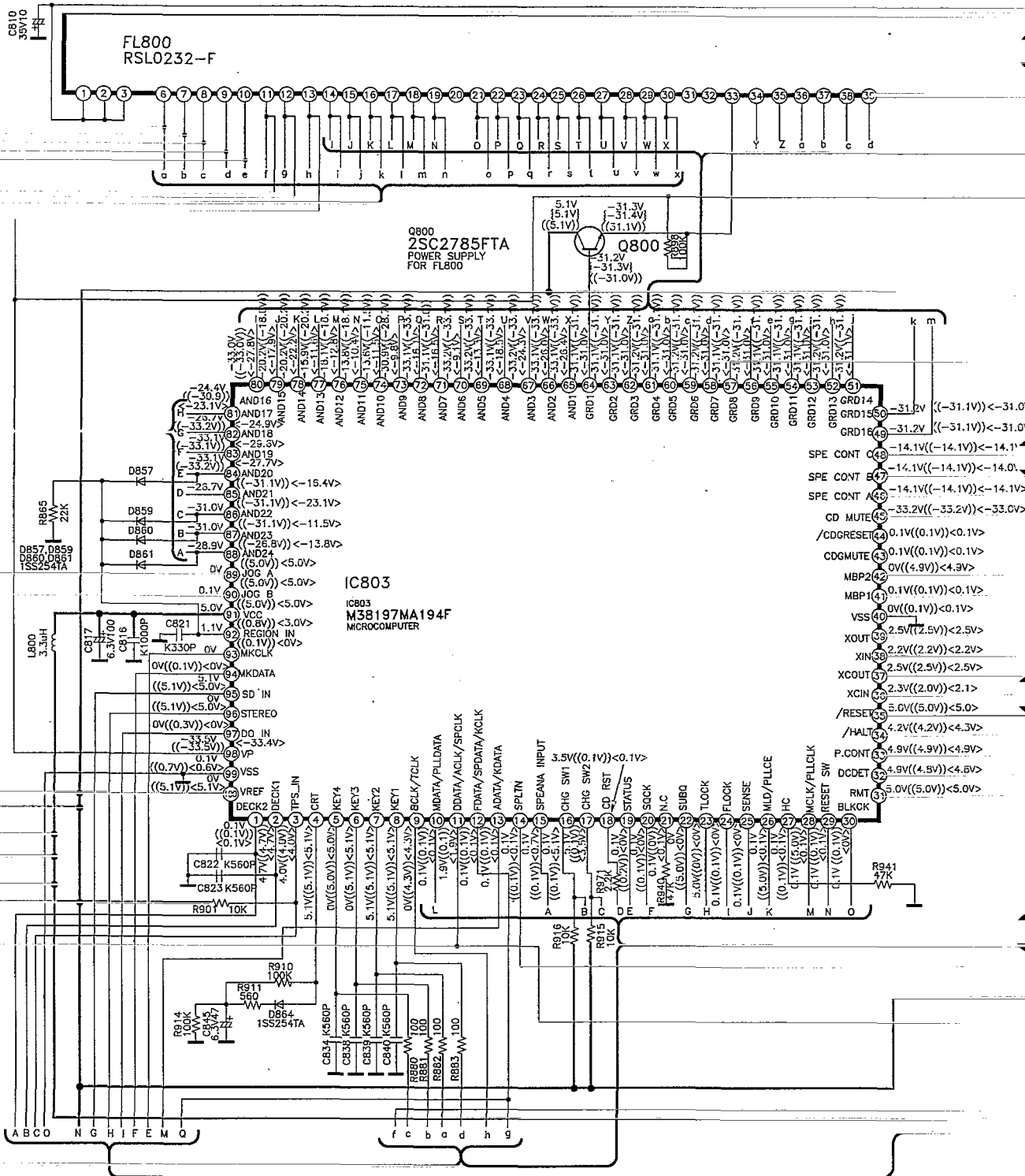
D LED CIRCUIT

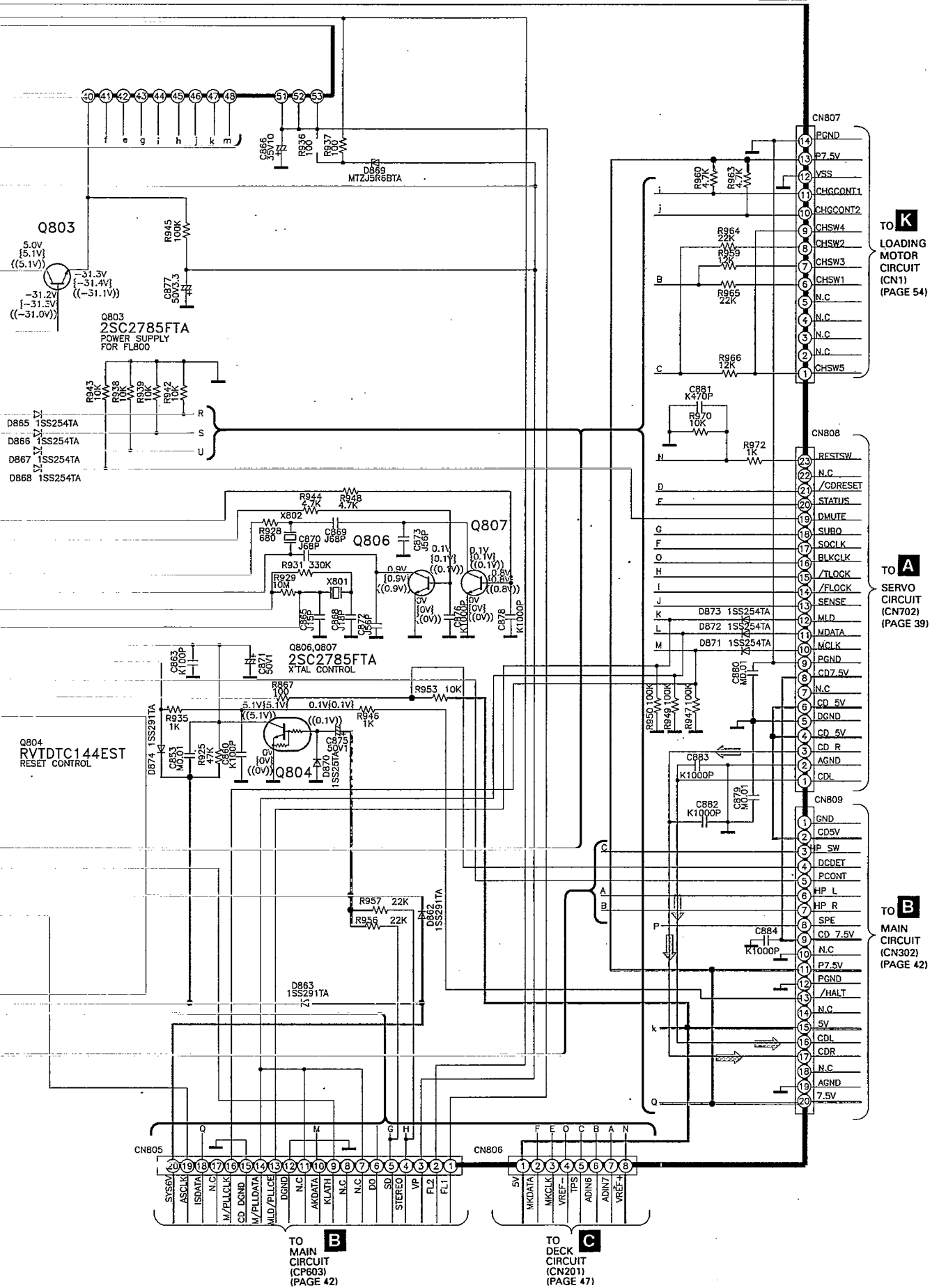


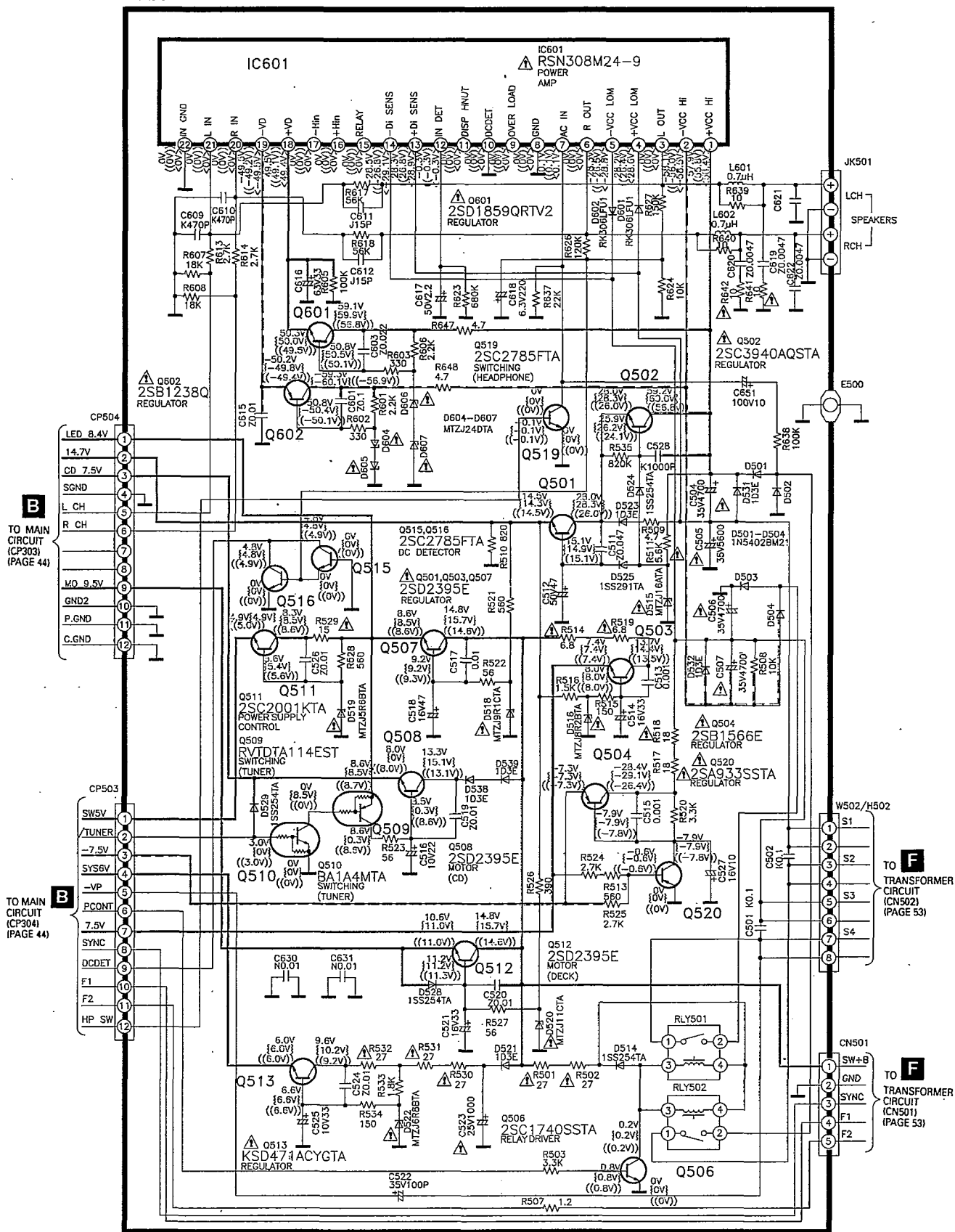
E OPERATION CIRCUIT

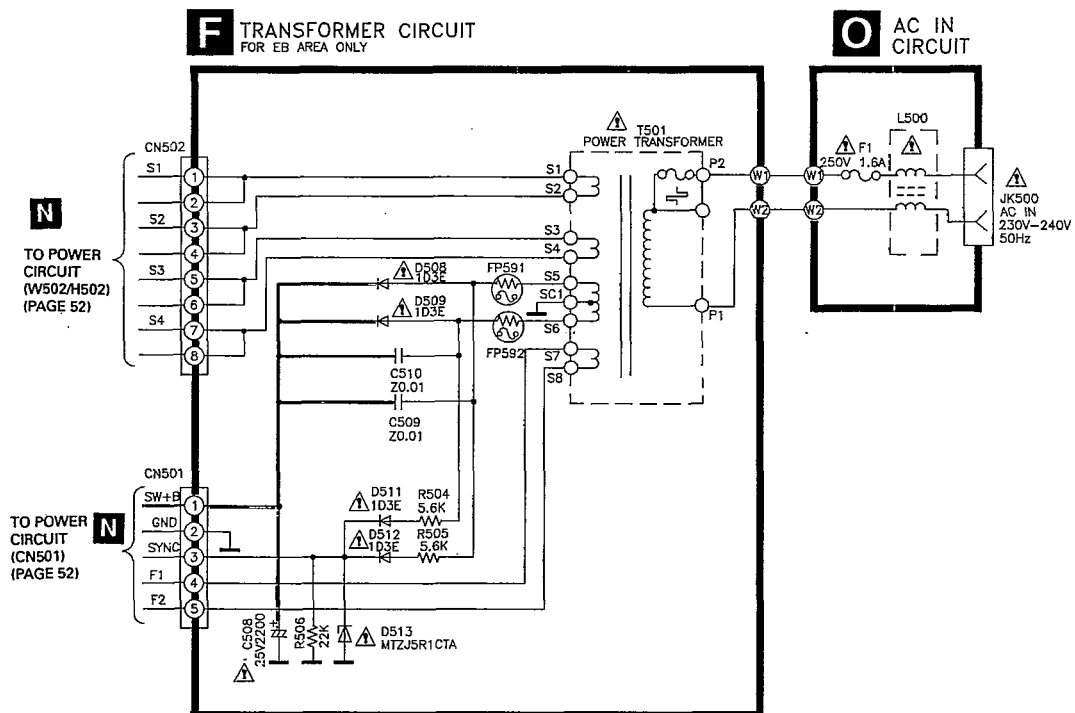
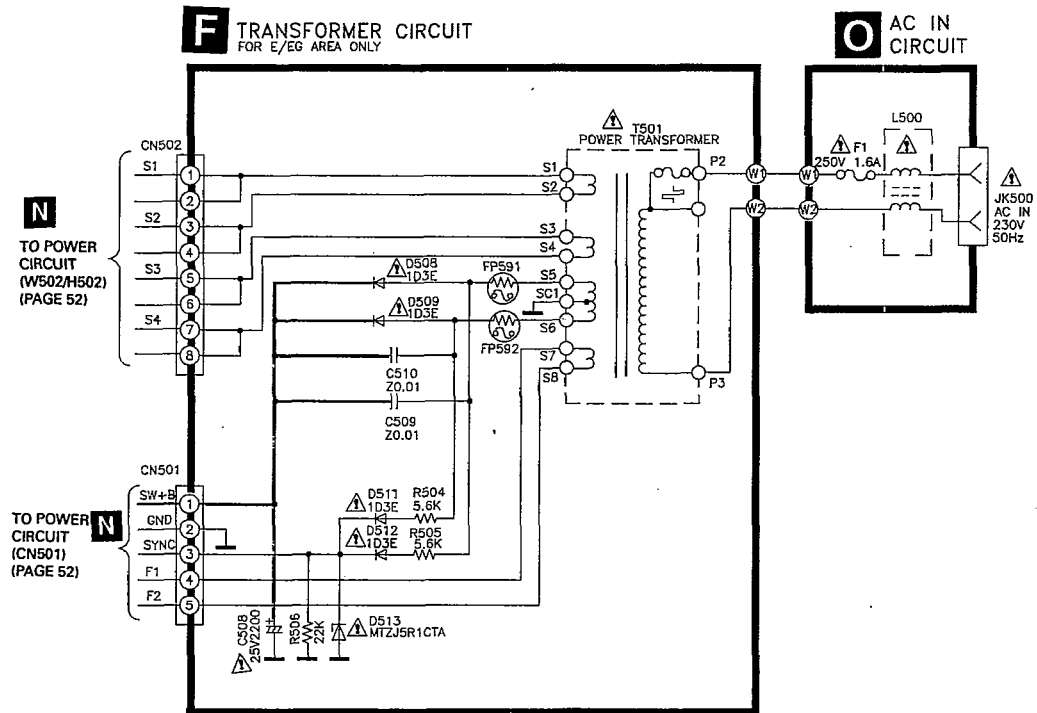


G PANEL CIRCUIT




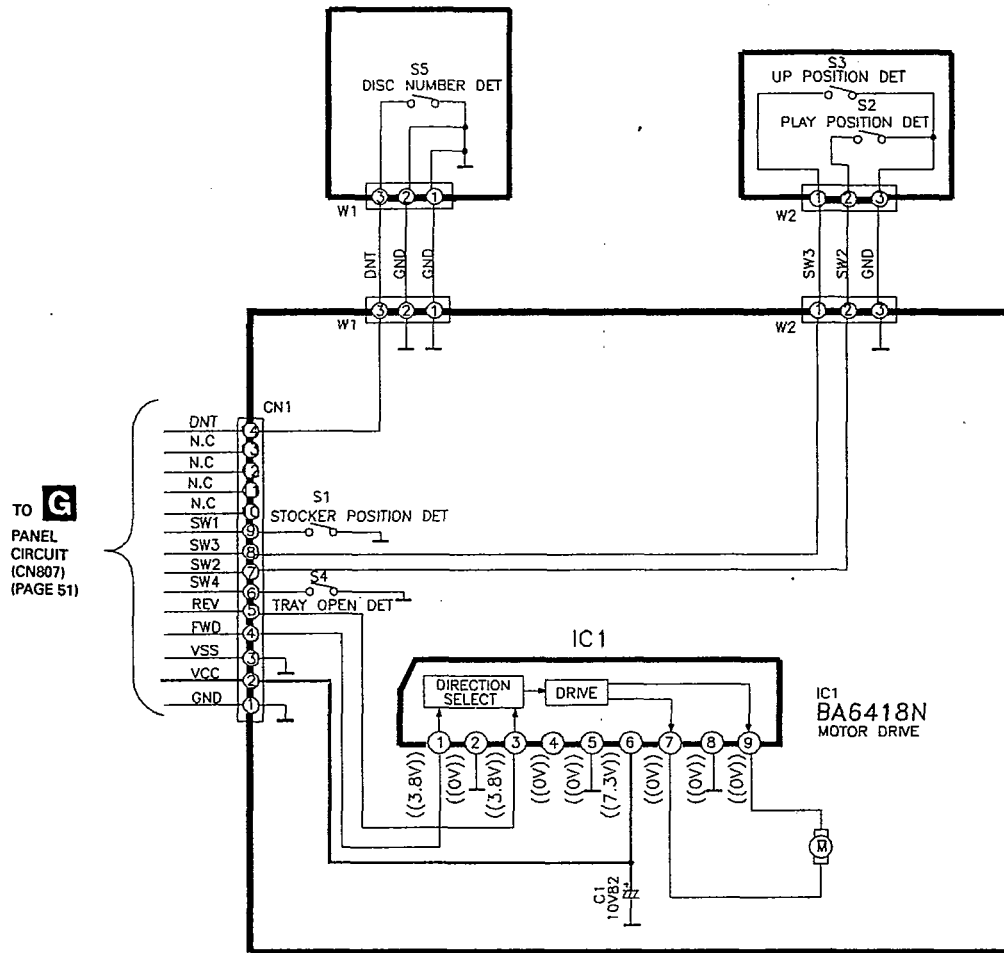


N POWER CIRCUIT




I DETECTING SWITCH (1) CIRCUIT

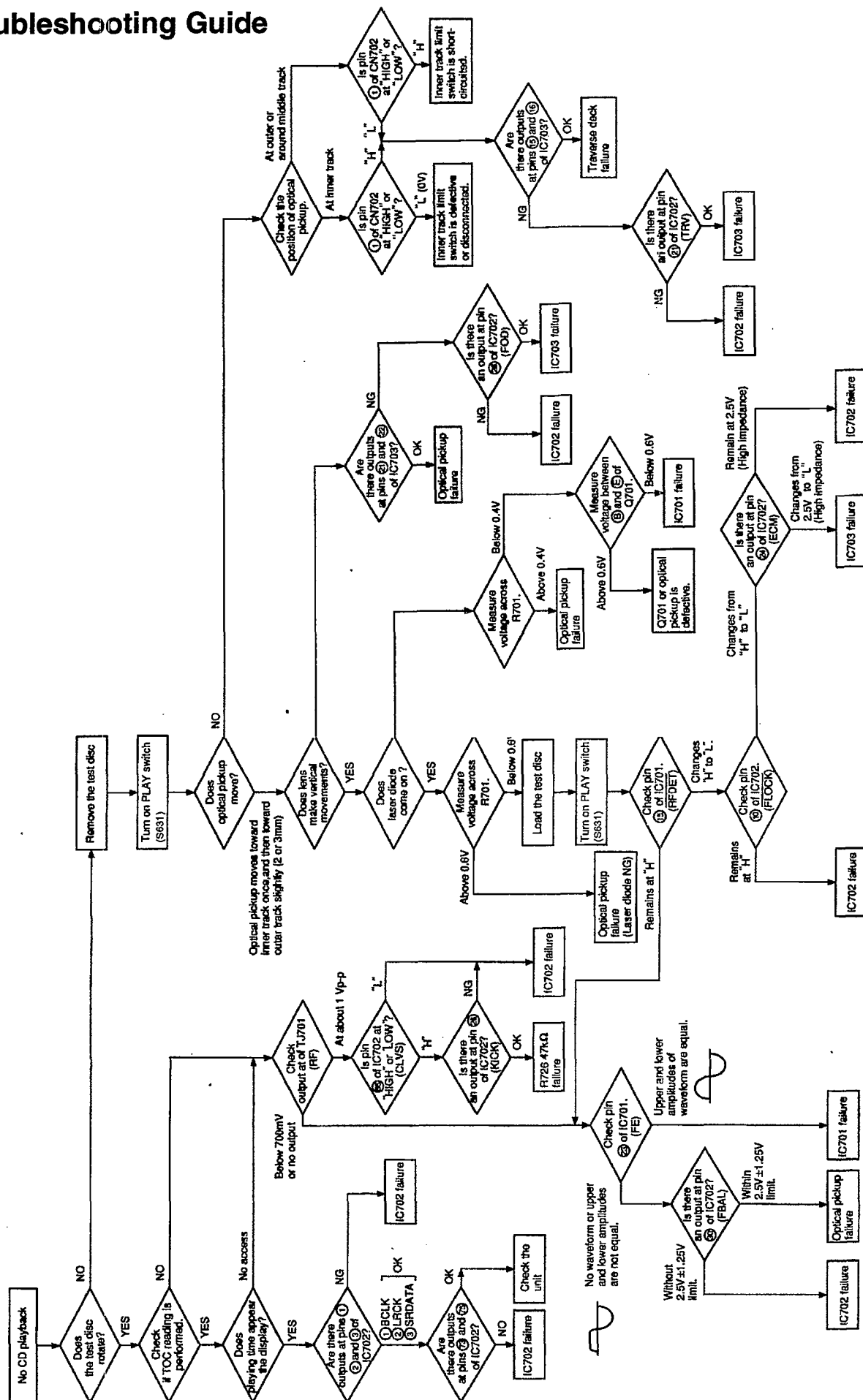
J DETECTING SWITCH (2) CIRCUIT



K LOADING MOTOR CIRCUIT

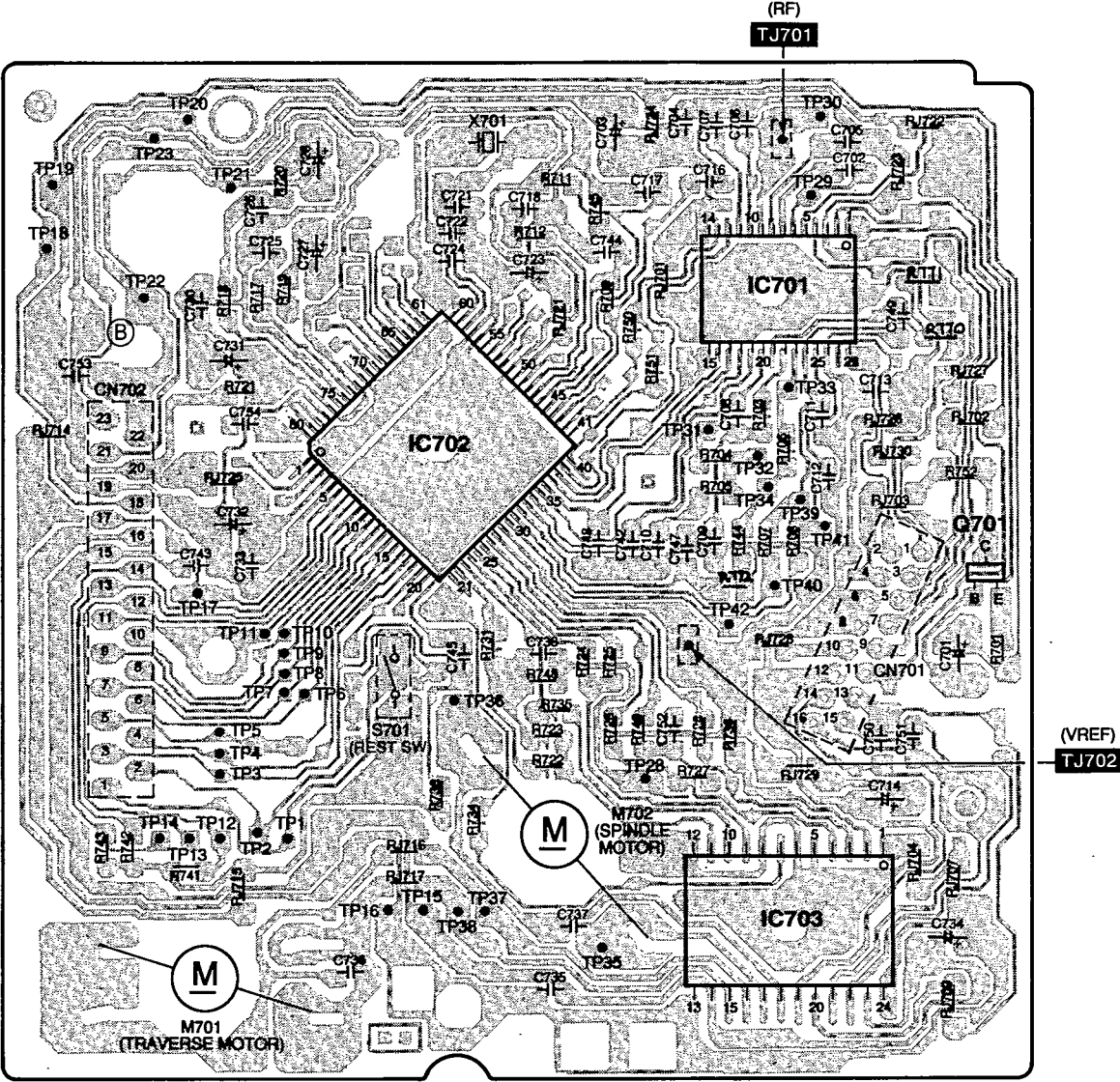
TO **G**
PANEL
CIRCUIT
(CN607)
(PAGE 51)

Troubleshooting Guide

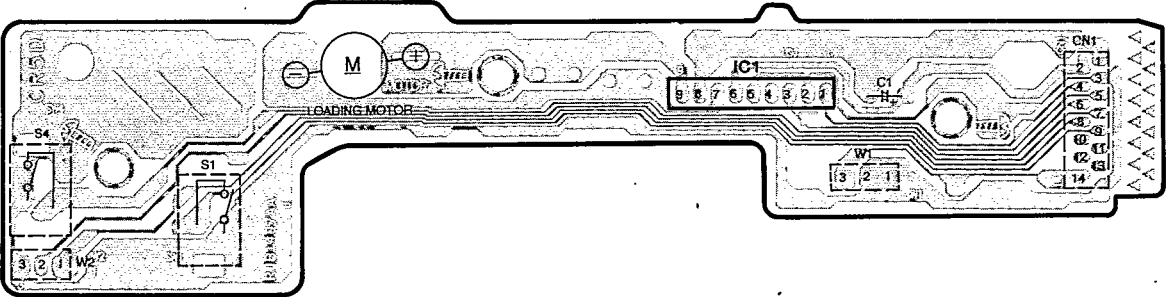


Printed Circuit Board

A SERVO P.C.B. (REPX0109)

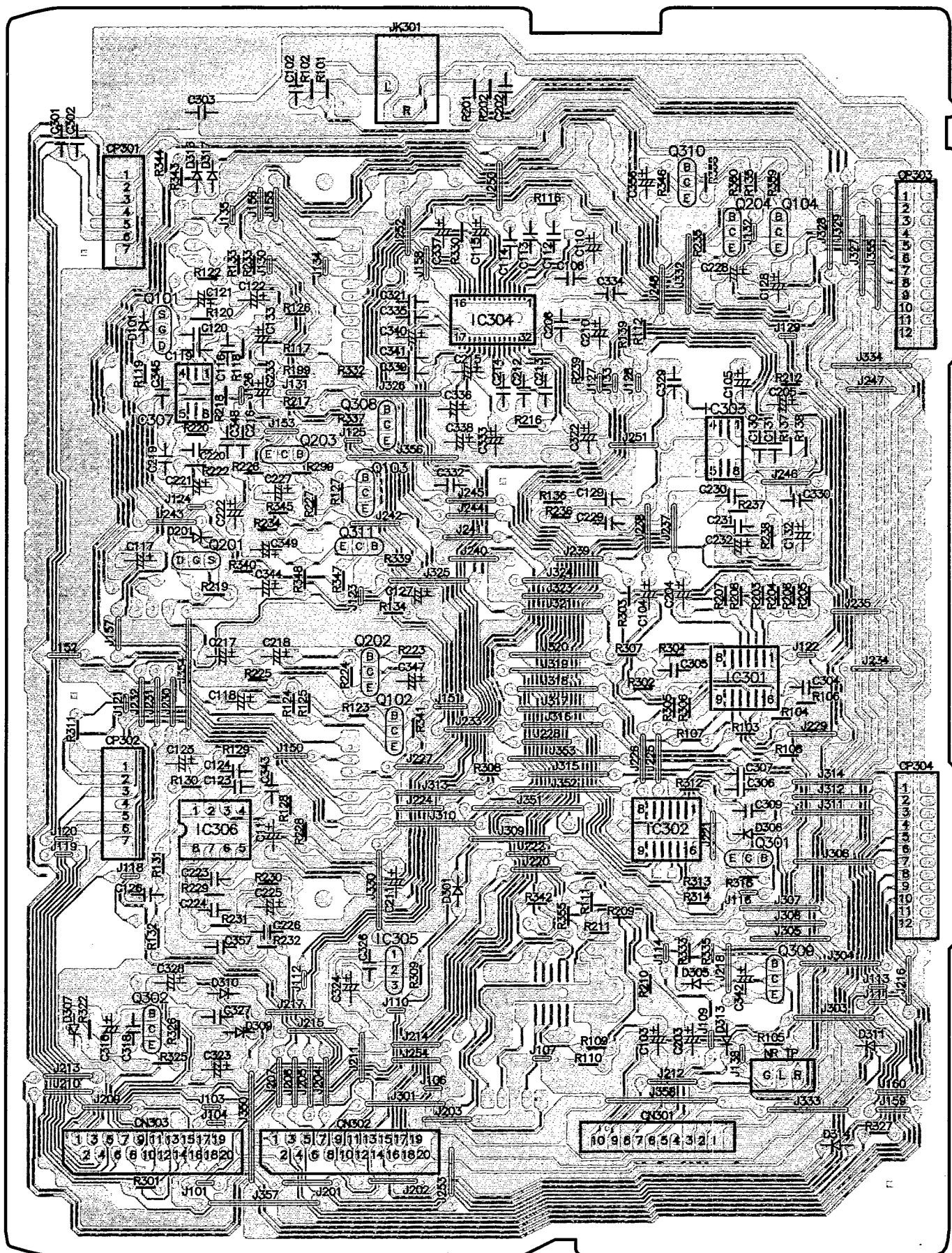


K LOADING MOTOR P.C.B. (REP2182A-N)



B MAIN P.C.B. (REPX0123B)

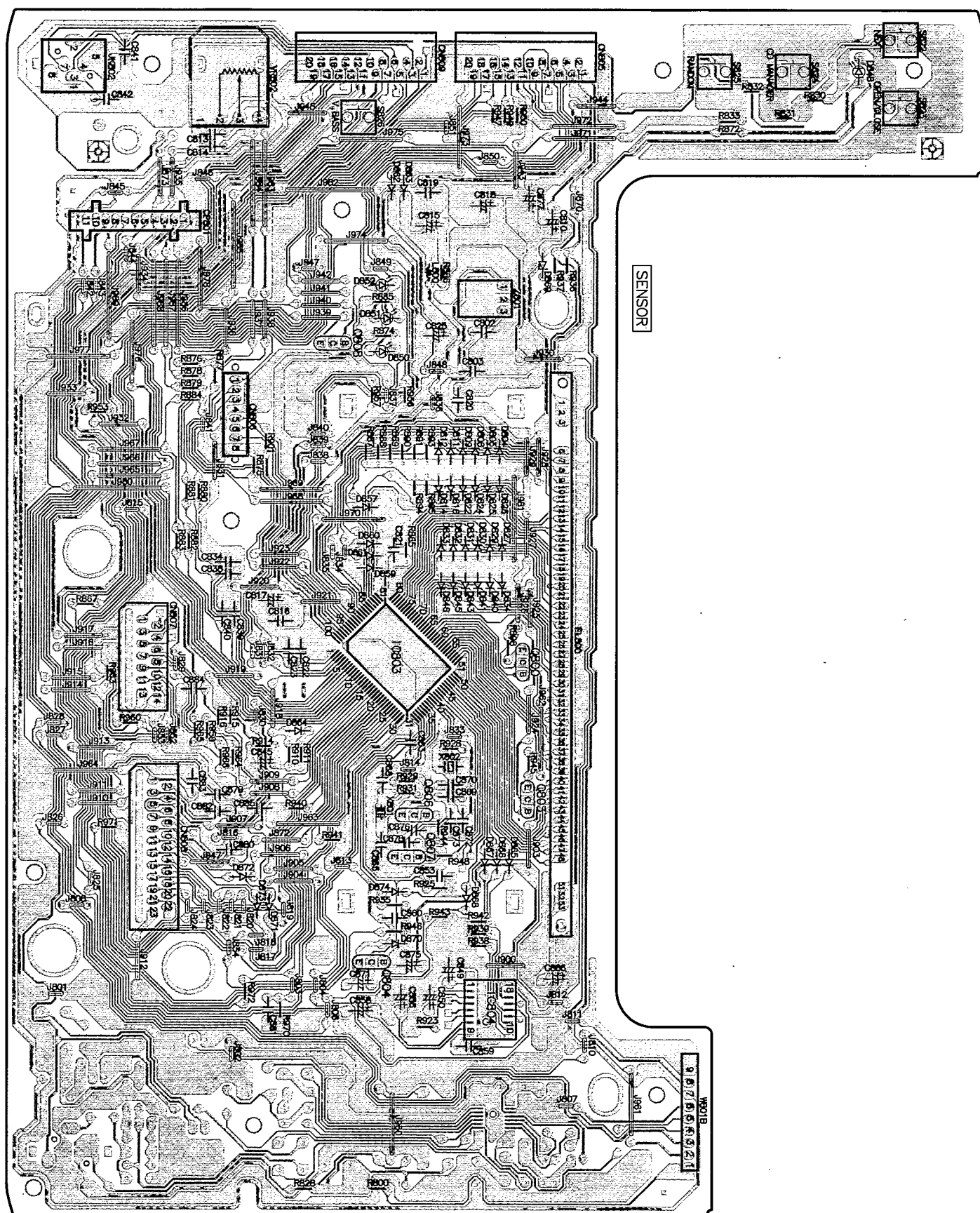
AUX



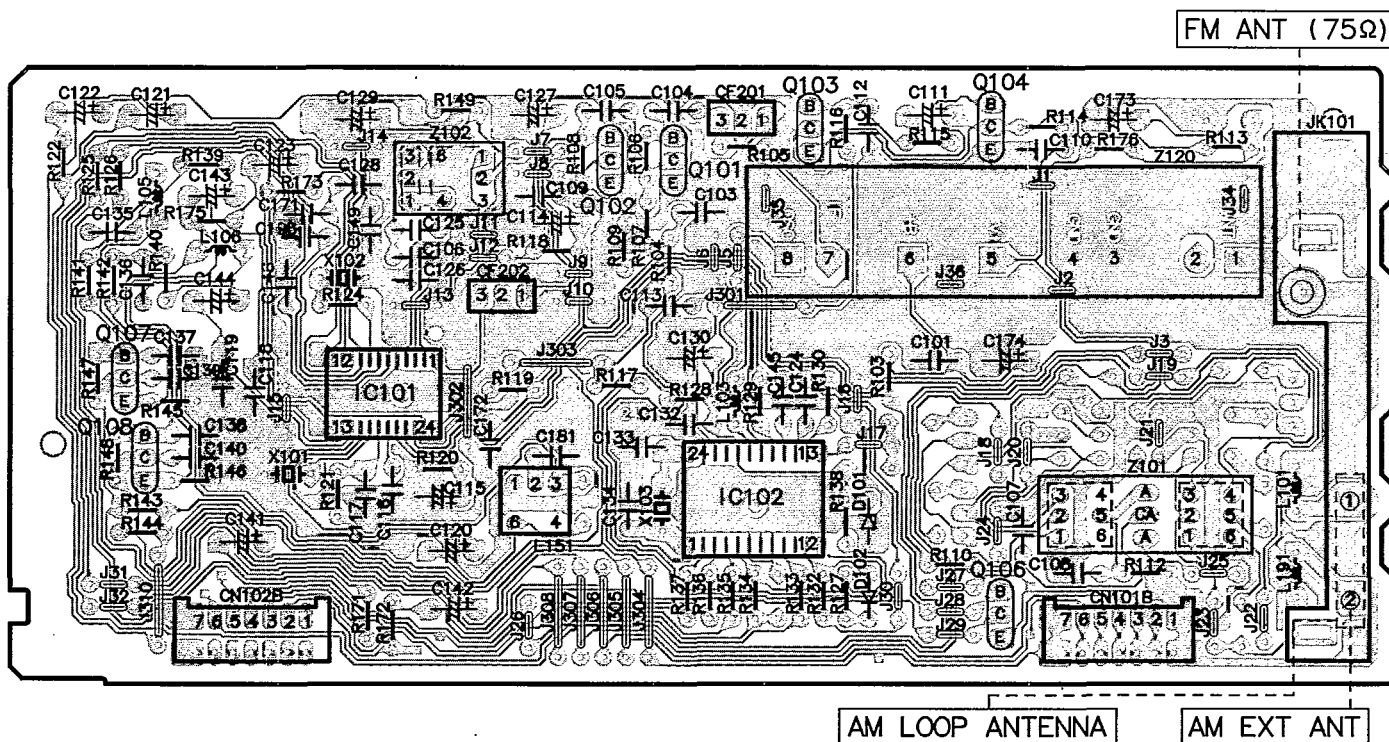
G PANEL P.C.B. (REPX0124B)

PHONES

VOLUME



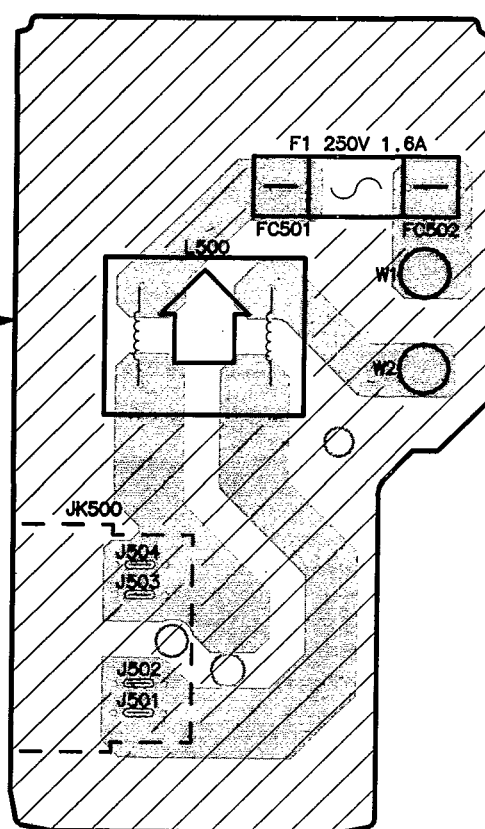
Q TUNER P.C.B. (REP2456C)

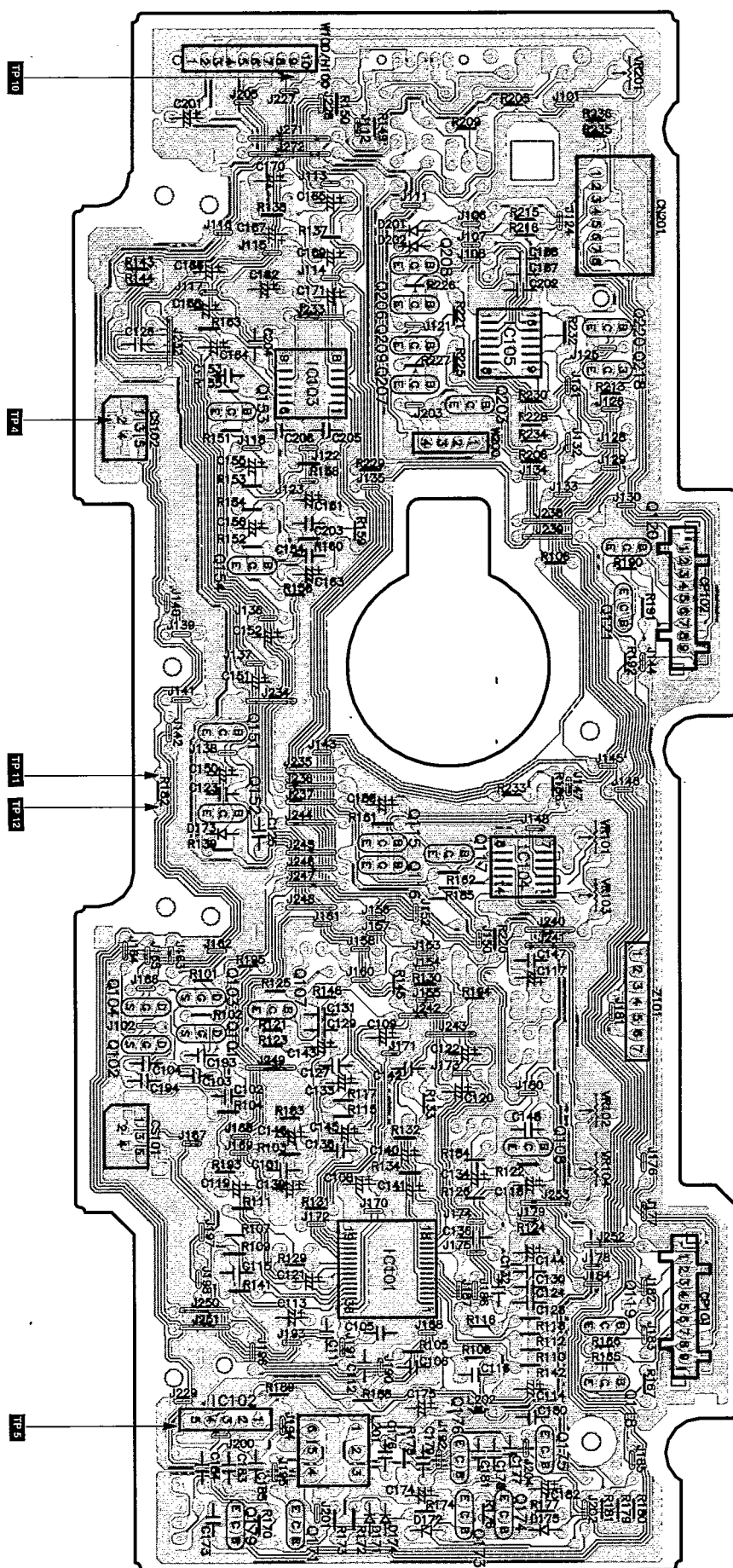


O AC IN P.C.B.(REP2458E ... E,EG)
(REP2458F ... EB)

CAUTION
RISK OF ELECTRIC SHOCK
AC voltage line. Please do not
touch this portion.

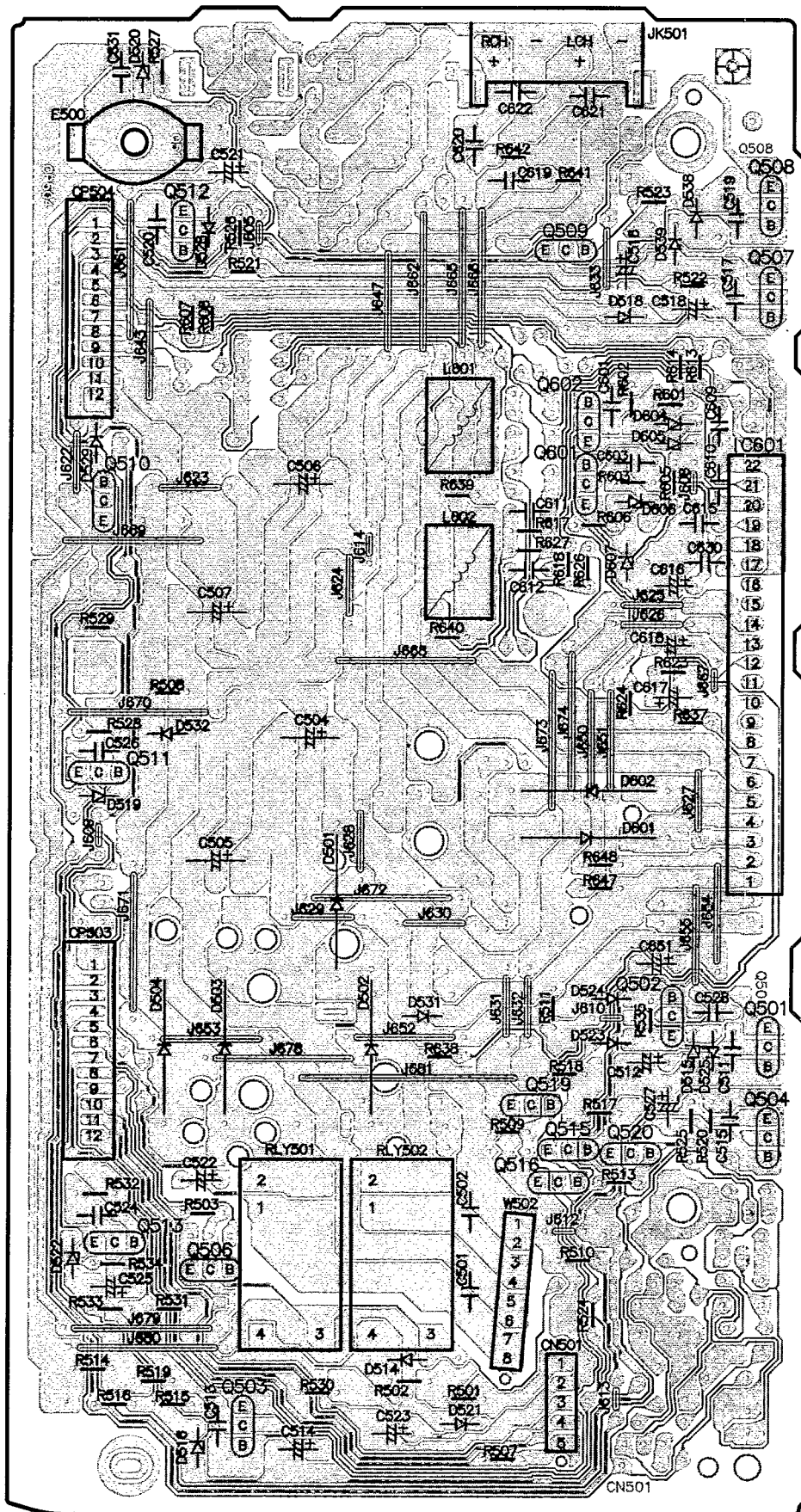
AC IN ~
230V
... E/EG
230V-240V
... EB
50Hz

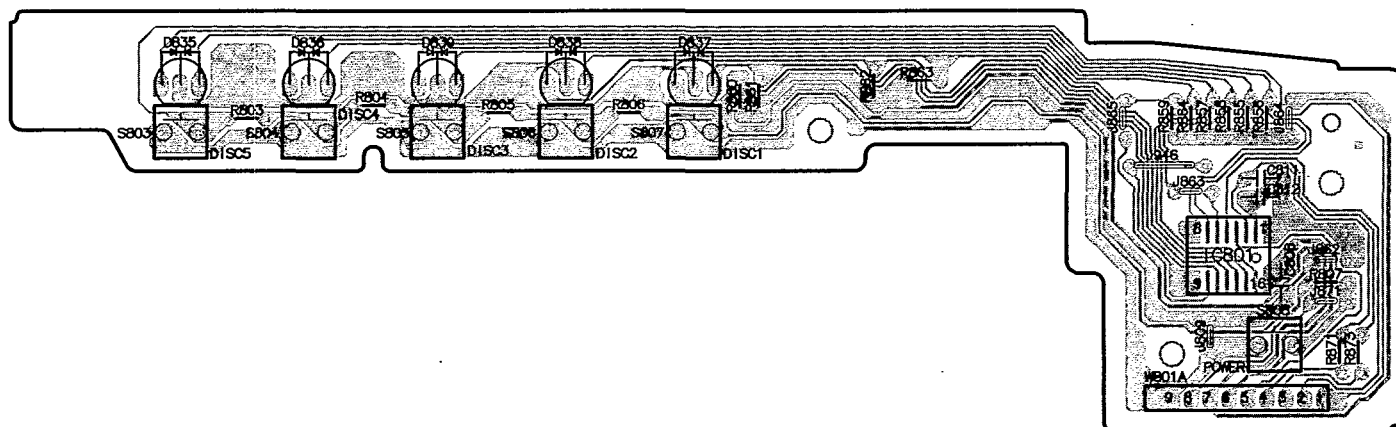
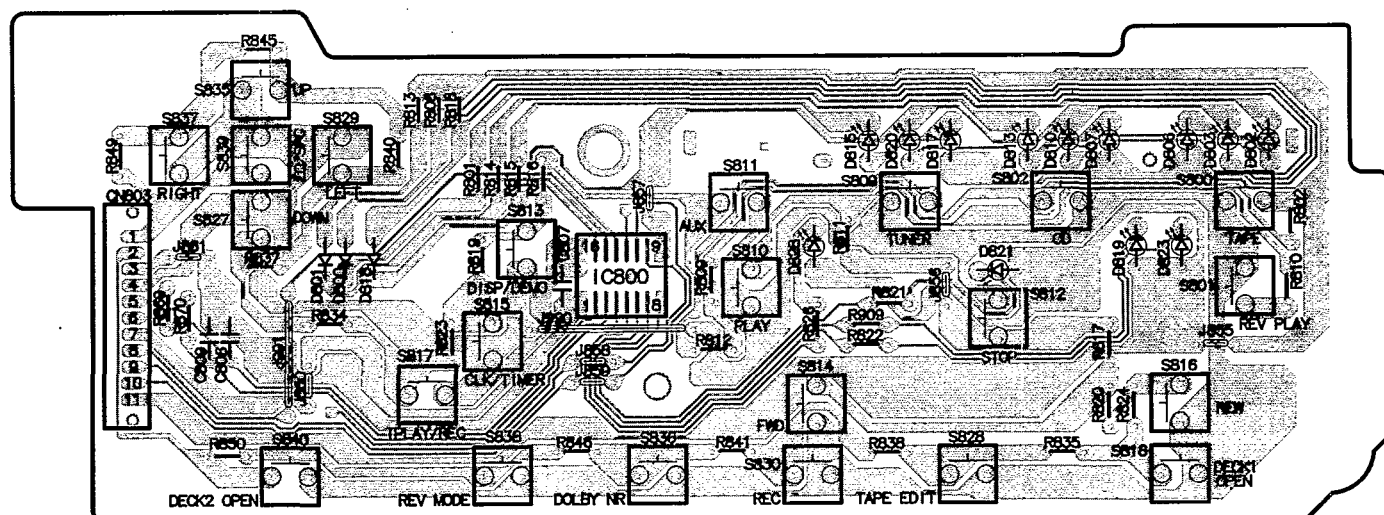




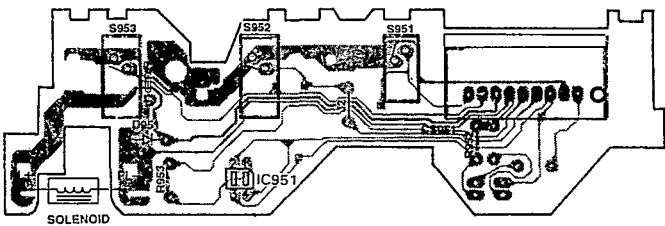
N POWER P.C.B. (REP2457E)

SPEAKER

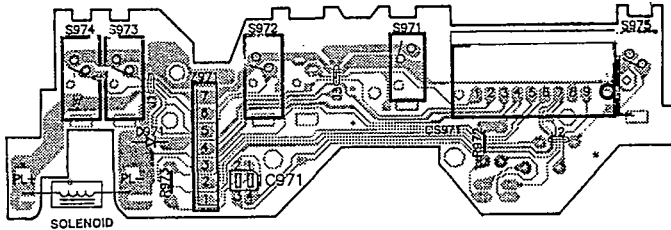


D LED P.C.B. (REPX0124B)**E** OPERATION P.C.B. (REPX0124B)

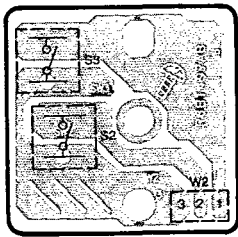
M MECHANISM (DECK 1) P.C.B. (REPX0108A)



L MECHANISM (DECK 2) P.C.B. (REPX0108)



J DETECTING SWITCH (2) P.C.B. (REP2182A-N)



I DETECTING SWITCH (1) P.C.B. (REP2182A-N)

