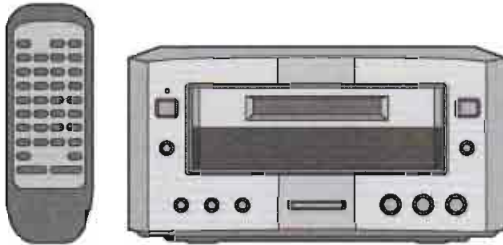


Service Manual

Mini Disc Deck



SJ-HDA710

Mechanism unit: MR3A Mechanism Series

Colour

(N).....Gold Type

Areas

EG.....Europe.

EB.....Great Britain.

This product is option for systems of SC-HDA710.

Specifications

●System	Minidisc digital audio system
Recording	Magnetic field modulation direct overwrite
Reading	Non-contact optical system with Semiconductor laser (=780nm)
Sampling frequency:	44.1 kHz
Cording system:	ATRAC
Channel:	2channel, stereo
Frequency response:	10-20000Hz (±0.3dB)
S/N Ratio (PLAY):	91dB
Dynamic range (PLAY):	90dB
Wow and flutter:	Below measurable limit

●Input	
Analog input (Level/impedance):	500mV/47kΩ
Digital input (Optical in 1, Optical in 2)	
Wavelength:	660nm

●Output

Analog output (Level/impedance):	2.0V/600Ω
-------------------------------------	-----------

●General

Dimensions (WxHxD):	196x105.8x243mm
Weight:	1.8kg
Power supply:	AC230-240V, 50Hz
Power consumption:	12W(at STANDBY condition:2.0W)

Notes:

- 1.Design and specifications are subject to change without notice.
- 2.Dimensions and weight are approximate.
- 3.Total harmonic distortion is measured by the digital spectrum analyzer.

⚠ WARNING

This service information is designed for experienced 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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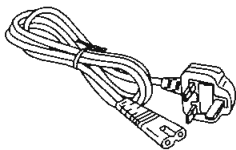
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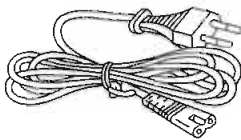
1 Accessories

- AC power supply cord.....1pc.

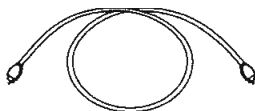
For (EB) area:
(RJA0044-3C)



For (EG) area:
(RJA0043-1C)

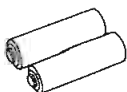


- Optical cable.....1pc.
(RJL1X001B05)



- Remote control batteries.....2pcs.
[R6/LR6 (AA, UM-3)]

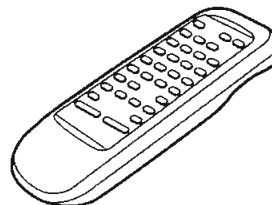
Note:These are available on sales route.



- Stereo phono cables.....2pcs.
(RJL2P004B08A)



- Remote control transmitter.....1pc.
(EUR645274)



2 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: 780 nm

Maximum output radiation power from pickup: 4.9 m

W/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: 4.9 m

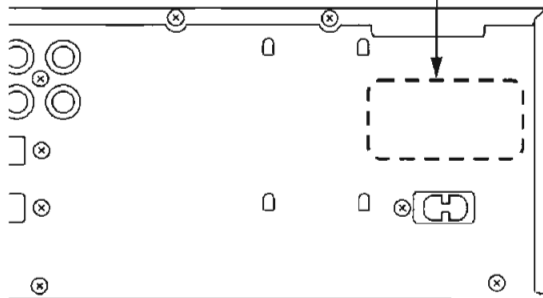
W/VDE

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

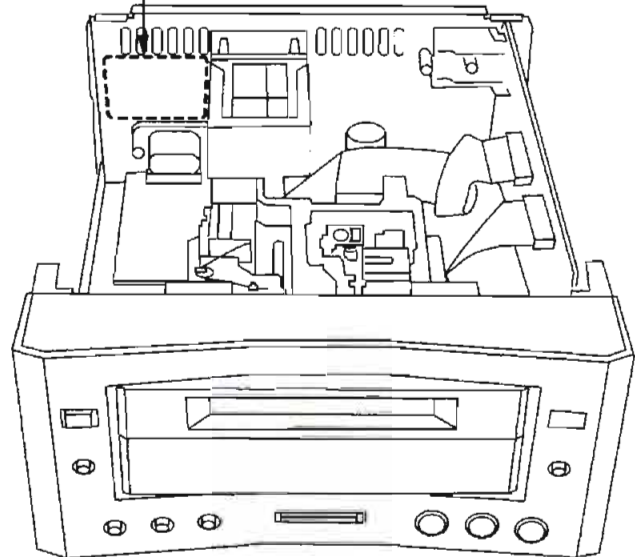
1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.



LUOKAN 1 LASERLAITE
CLASS 1 LASER APPARAT



<p>DANGER</p> <p>INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM</p>
<p>ADVARSEL</p> <p>USYNTLIG LASERSTRÅLING VED ÅBNING. NÅR SIKKERHEDSFAKTORENE ER LØST AF FUNKTION. UNDGÅ UDSETTELSE FOR STRÅLING.</p>
<p>VARO!</p> <p>AVATTARESSA JA SUOJALUKITUS OHTETTUNESSA OLET AILTIINA NÄKYMÄTÖNÄ LASERSTRÄLÄKSI. ÄLÄ KATSI SÄTEEBEEN.</p>
<p>VARNING</p> <p>OSYNTLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÅRREN ÄR UTÖPPNAD. BETRÄKTA EJ STRÅLEN.</p>
<p>ADVARSEL</p> <p>USYNTLIG LASERSTRÅLING NÅR DEKSEL ÅPNEDES OCH SIKKERHEDSÅS BRYTES. UNDGÅ EKSPONERING FOR STRÅLING.</p>
<p>VORSICHT</p> <p>UNSIHTBARE LASERSTRÅHLUNG, WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN.</p>



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.

3 Caution for AC Main Lead (For United Kingdom)

("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 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 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 \perp OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF & KEEP DRY.

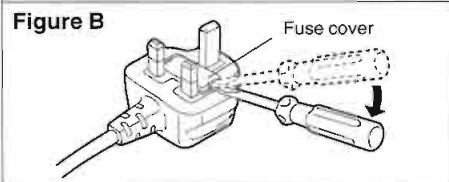
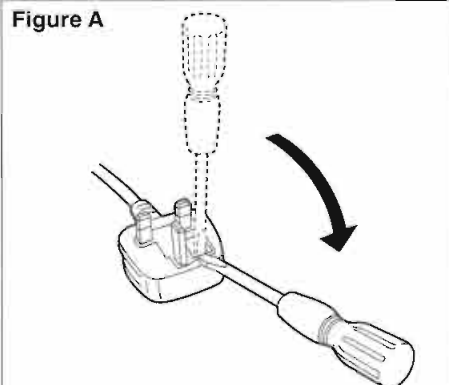
Before use

Remove the connector cover.

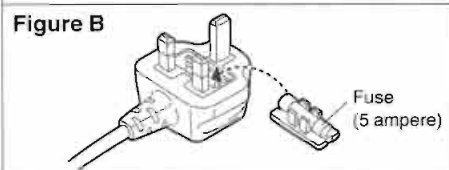
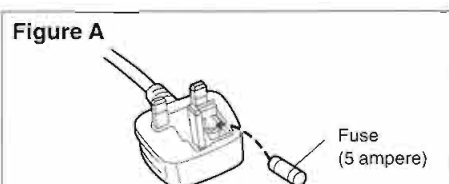
How to replace the fuse

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.

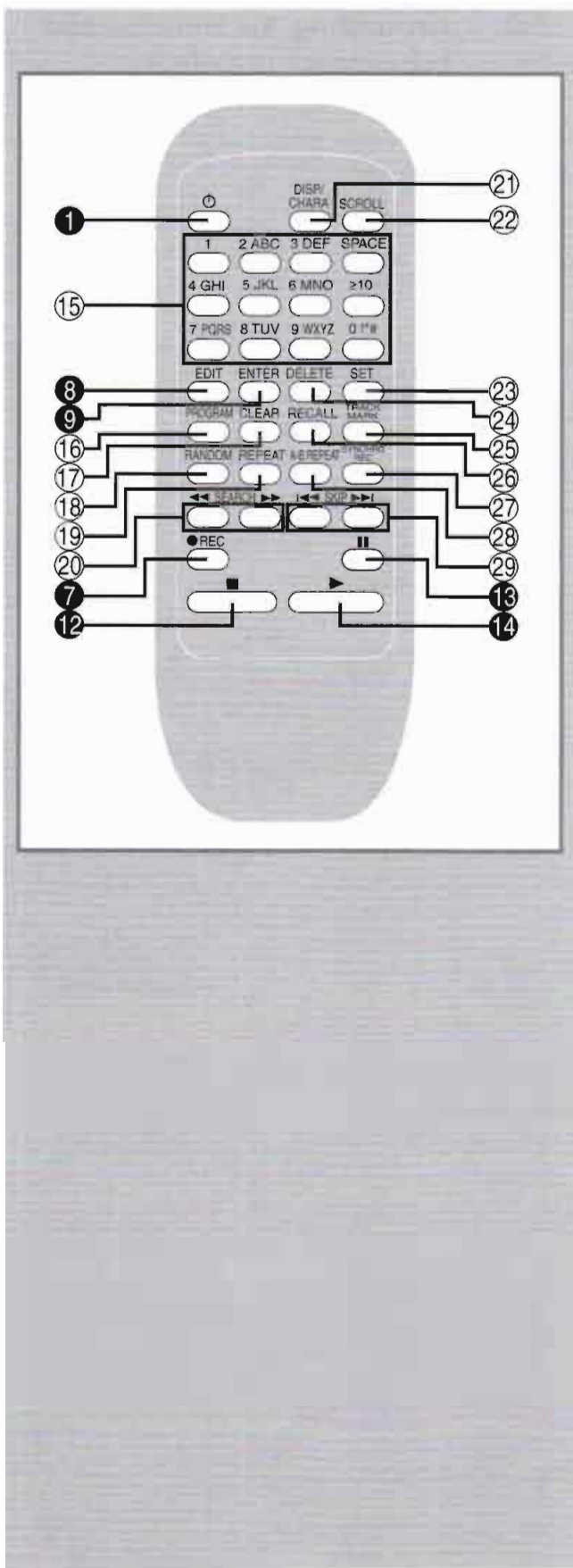
1. Open the fuse cover with a screwdriver.



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



4 Location of Controls



Buttons ①, ⑦ to ⑨, and ⑫ to ⑭ function the same as the controls on the main unit.

No.	Name
⑮	Numeric/Character buttons
⑯	Program button (PROGRAM)
⑰	Program clear button (CLEAR)
⑱	Random play button (RANDOM)
⑲	Repeat button (REPEAT)
⑳	Search buttons (◀◀ SEARCH ▶▶)
㉑	Display/Text mode select button (DISP/CHARA)
㉒	Scroll button (SCROLL)
㉓	Track marking button (SET)
㉔	Delete button (DELETE)
㉕	Auto track-marking button (TRACK MARK)
㉖	Recall button (RECALL)
㉗	Synchro-record button (SYNCHRO REC)
㉘	A-B repeat button (A-B REPEAT)
㉙	Skip buttons (◀◀ SKIP ▶▶)

5 Handling Precautions for Traverse Deck (MD Unit)

The laser diode in the MD unit (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 MD unit (optical pickup).

5.1. Handling of MD Unit (optical pickup)

1. Do not subject the MD unit (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. The short land between the No. 25 (LD-GND) and No. 24 (LD) pins on the flexible board is shorted with a solder build-up to prevent damage to the laser diode. (Refer to Fig. 1.)
To connect to the PC board, be sure to open by removing the solder build-up, and finish the work quickly.
3. Take care not to apply excessive stress to the flexible board (FFC).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

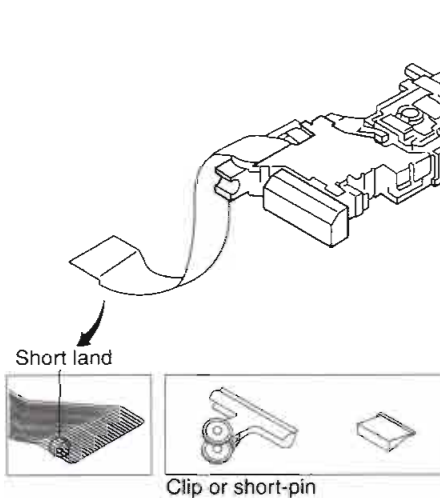


Fig. 1

5.2. Grounding for electrostatic breakdown prevention

1. Human body grounding

Use the anti-static wrist strap to discharge the static electricity from your body. (Refer to Fig. 2.)

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. (Refer to Fig. 3.)

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).

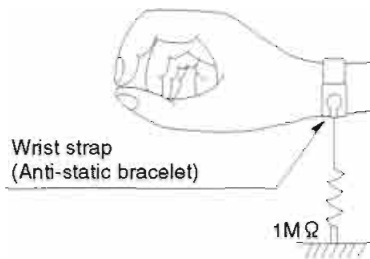


Fig. 2

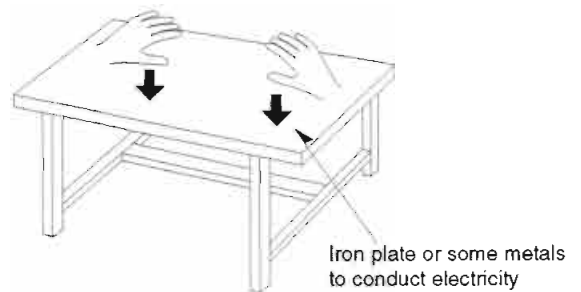
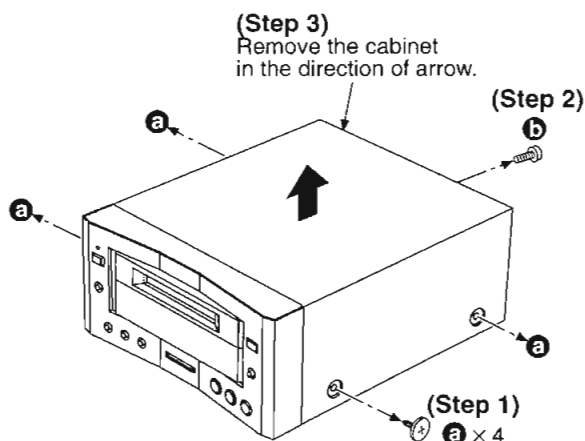


Fig. 3

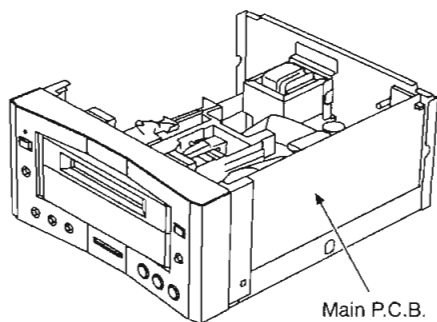
6 Operation Checks and Component Replacement Procedures

- This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
- For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

6.1. Checking for the main P.C.B.



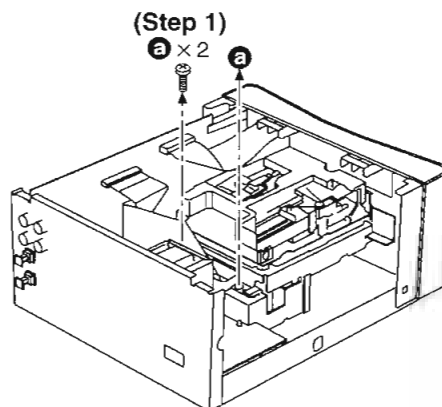
· Check the main P.C.B. as shown below.



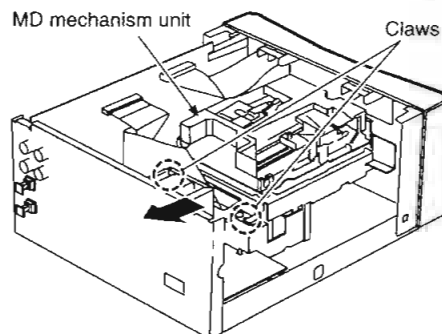
6.2. Checking for the MD servo P.C.B.

6.2.1. Checking for the MD servo P.C.B. (A side)

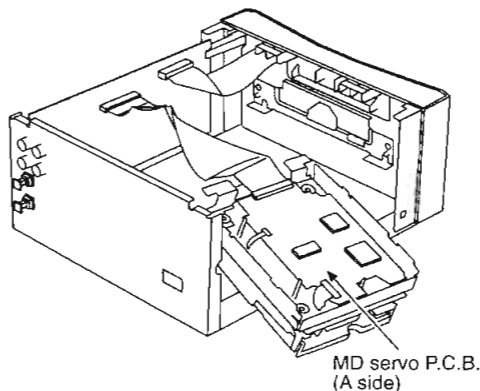
· Follow the (Step 1) - (Step 3) of item 6.1.



(Step 2)
Release the 2 claws, and then remove the MD mechanism unit in the direction of arrow.



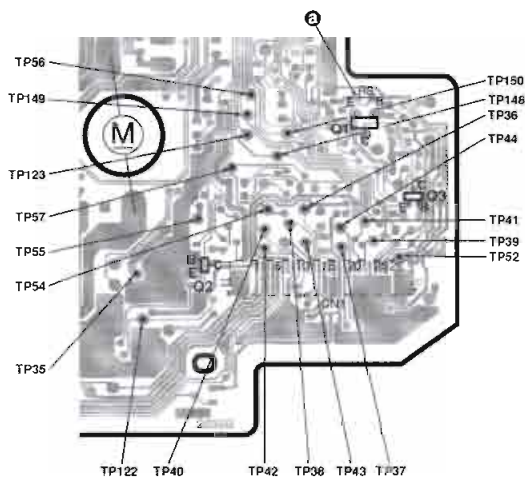
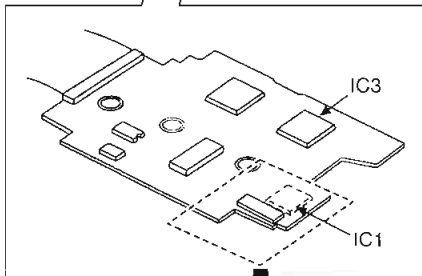
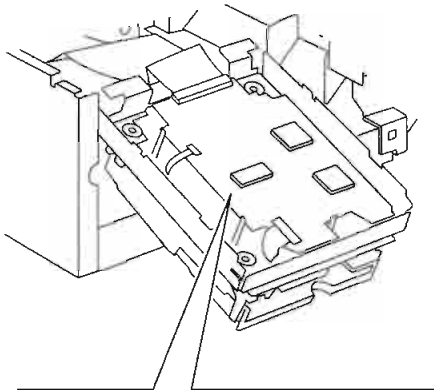
· Check the MD servo P.C.B. (A side) as shown below.



6.2.2. Checking for the MD servo P.C.B. (B side)

〈Checking for the MD servo P.C.B. (B side)〉

- When checking the IC1 on the of MD servo P.C.B. (B side), it can be measured with test point on the MD servo P.C.B. (A side).

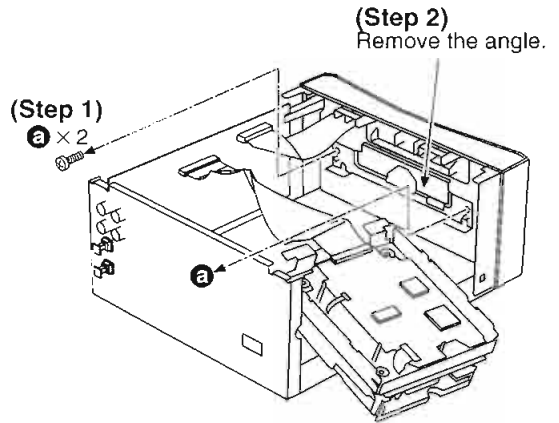


Pin No. of IC1	Test point	Pin No. of IC1	Test point
2PIN	Left side of R8 (M)	32PIN	TP52
5PIN	TP54	36PIN	Equivalent for pin 16 of IC3
11PIN	TP55	37PIN	TP35
16PIN	TP57	38PIN	TP44
21PIN	TP56	39PIN	TP37
26PIN	TP38	40PIN	TP38
27PIN	TP150	41PIN	TP43
28PIN	TP149	44PIN	TP42
29PIN	TP148	45PIN	TP40
30PIN	TP123	46PIN	TP39
31PIN	TP122	47PIN	TP41

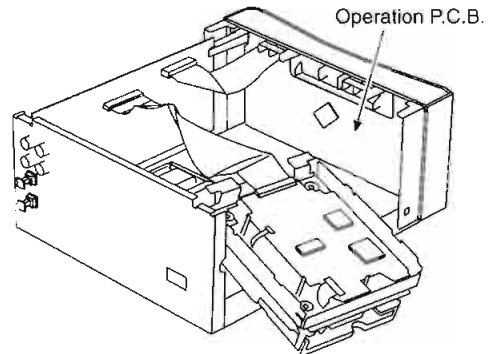
(The waveforms are noted on the schematic diagram.)

6.3. Checking for the operation P.C.B.

- Follow the (Step 1) - (Step 3) of item 6.1.
- Follow the (Step 1) , (Step 2) of item 6.2.1.

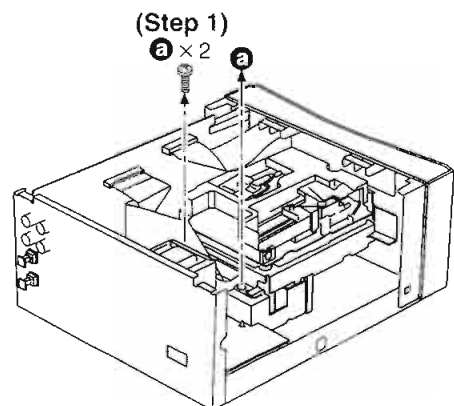


- Check the operation P.C.B. as shown below.



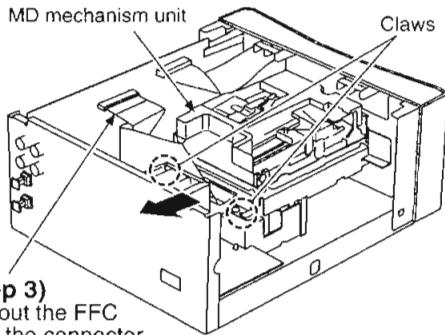
6.4. Replacement for the magnetic head and optical pickup

- Follow the (Step 1) - (Step 3) of item 6.1.



(Step 2)

Release the 2 claws, and then remove the MD mechanism unit in the direction of arrow.

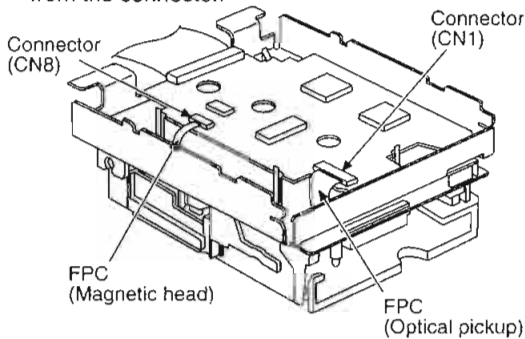


(Step 3)

Pull out the FFC from the connector.

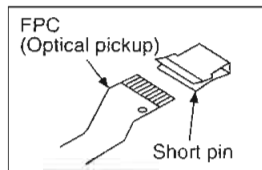
(Step 4)

Remove the 2 FPCs from the connector.



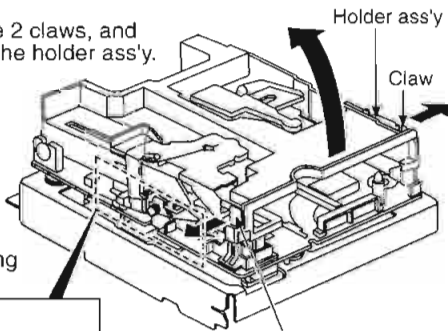
NOTE:

Insert a short pin into the traverse unit FPC board. (Refer to "Handling Precautions for MD unit".)



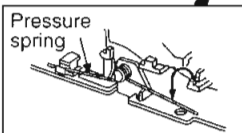
(Step 6)

Release the 2 claws, and then lift up the holder ass'y.



(Step 5)

Remove the pressure spring from latch.

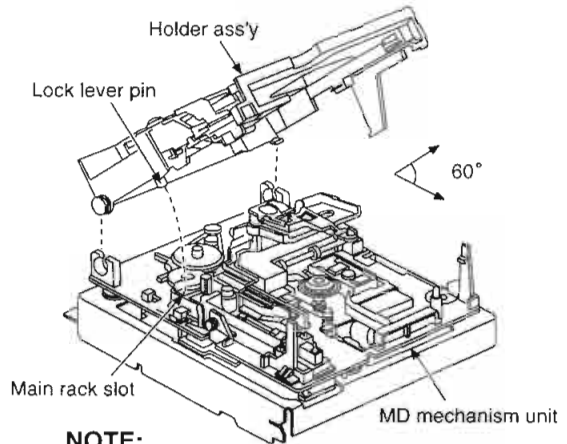


NOTE:

When installing the holder ass'y, the pressure spring should be latched correctly.

(Step 7)

Set the holder ass'y and MD mechanism unit at a 60 degree angle, and then pull out the holder ass'y.



NOTE:

When installing the holder ass'y, align the lock lever pin with the main rack slot.

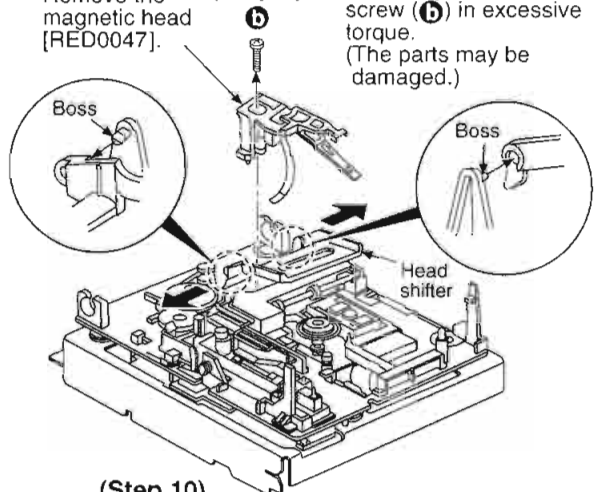
NOTE:

1. Take care not to damage the magnetic head.
2. Do not tighten the set screw (B) in excessive torque. (The parts may be damaged.)

(Step 9)

Remove the magnetic head [RED0047].

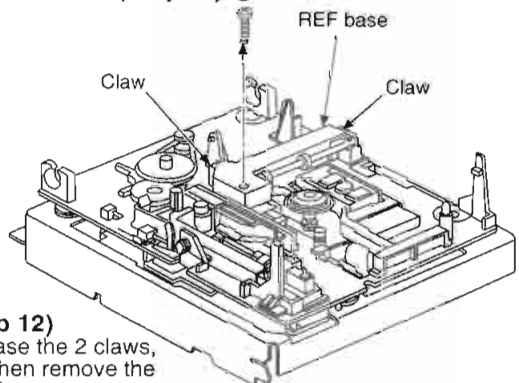
(Step 8)



(Step 10)

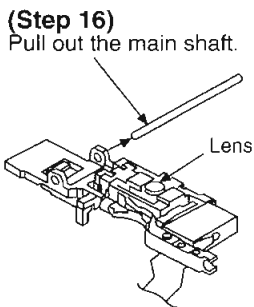
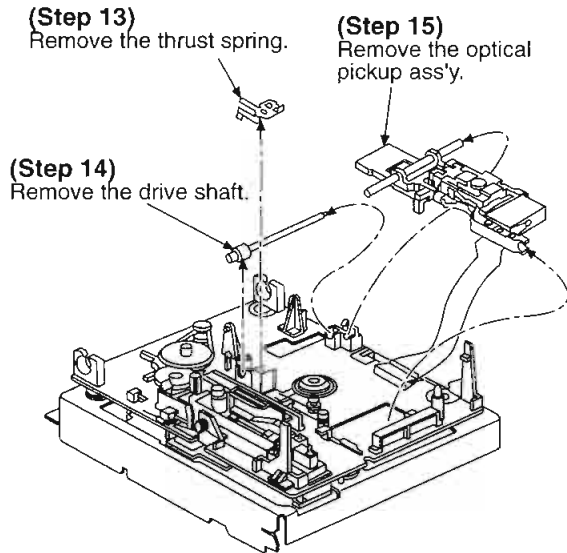
Spread the lugs of head shifter, and then release the lugs from boss.

(Step 11) C



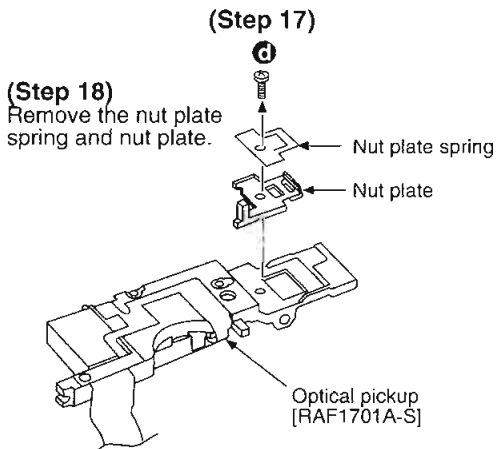
(Step 12)

Release the 2 claws, and then remove the REF base.

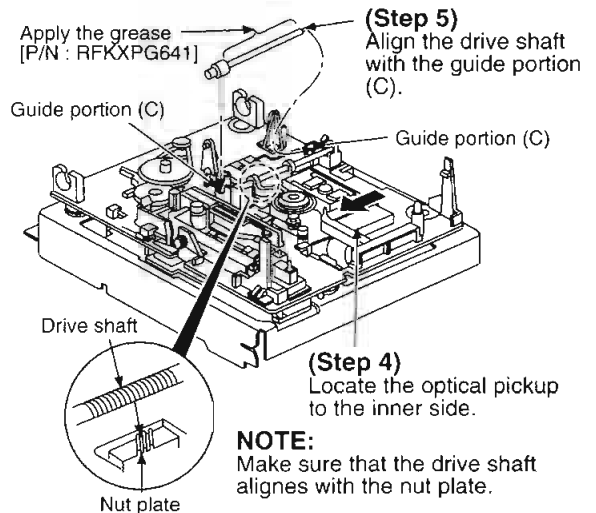
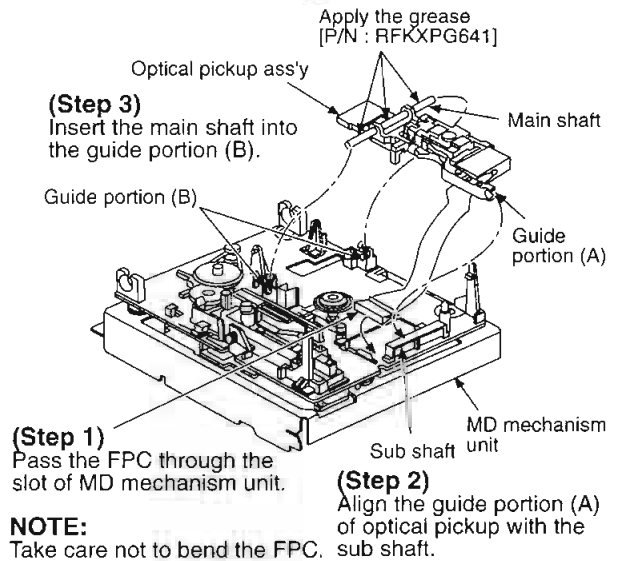


NOTE:

1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not apply the grease on the lens of optical pickup.
3. Do not touch the lens of the optical pickup.

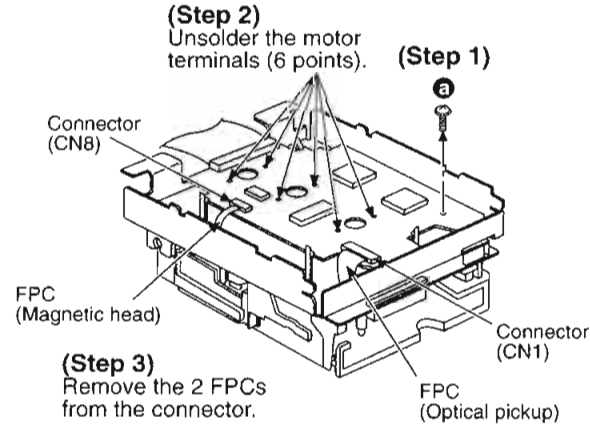


Notice for installing the optical pickup

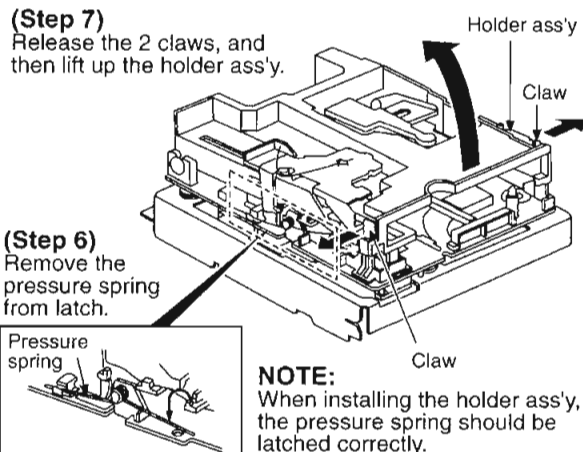
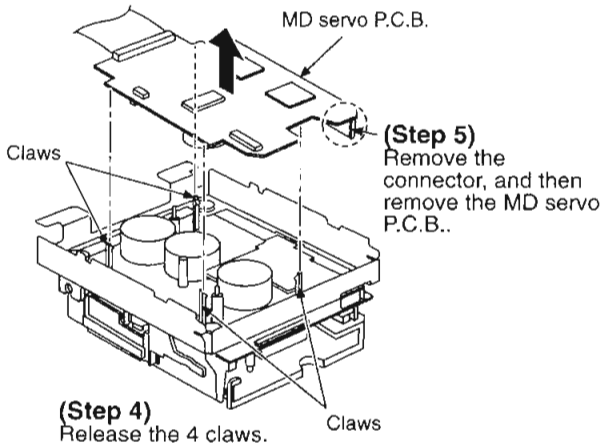
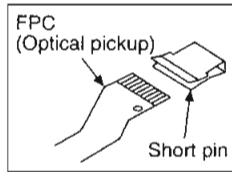


6.5. Replacement for the belt and loading motor ass'y

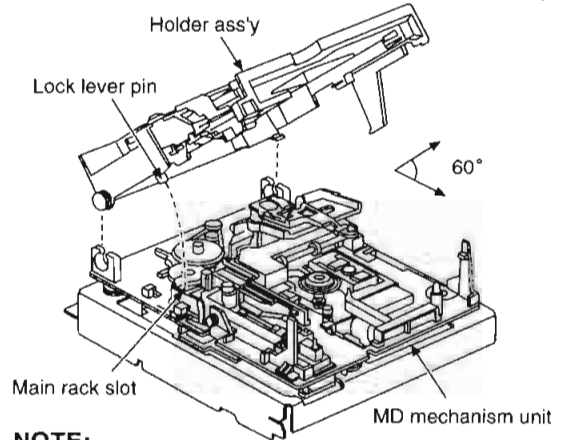
- Follow the (Step 1) - (Step 3) of item 6.1.
- Follow the (Step 1) - (Step 3) of item 6.4.



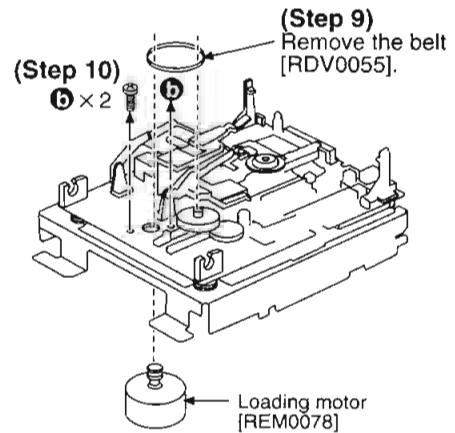
NOTE:
Insert a short pin into the traverse unit FPC board.
(Refer to "Handling Precautions for MD unit".)



(Step 8)
Set the holder ass'y and MD mechanism unit at a 60 degree angle, and then pull out the holder ass'y.

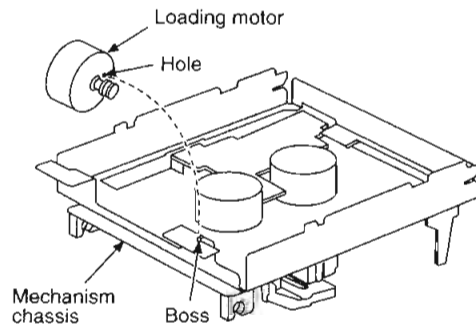


NOTE:
When installing the holder ass'y, align the lock lever pin with the main rack slot.



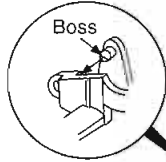
Notice for installing the loading motor

- Align the hole of loading motor with the boss of mechanism chassis, and then install the loading motor.



6.6. Replacement for the traverse motor ass'y

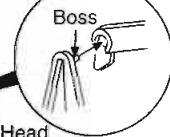
(Step 2)
Remove the magnetic head [RED0047].



(Step 1)

a

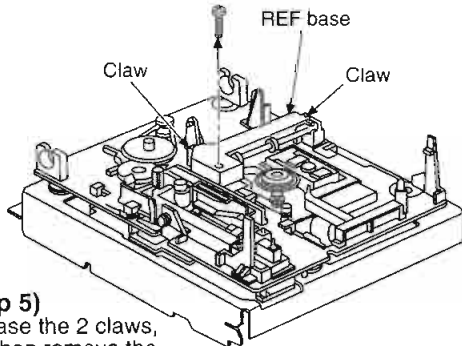
NOTE:
1. Take care not to damage the magnetic head.
2. Do not tighten the set screw **(a)** in excessive torque. (The parts may be damaged.)



(Step 3)
Spread the lugs of head shifter, and then release the lugs from boss.

(Step 4)

b

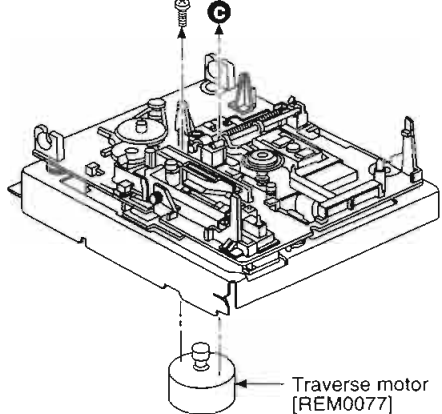


(Step 5)
Release the 2 claws, and then remove the REF base.

(Step 6)

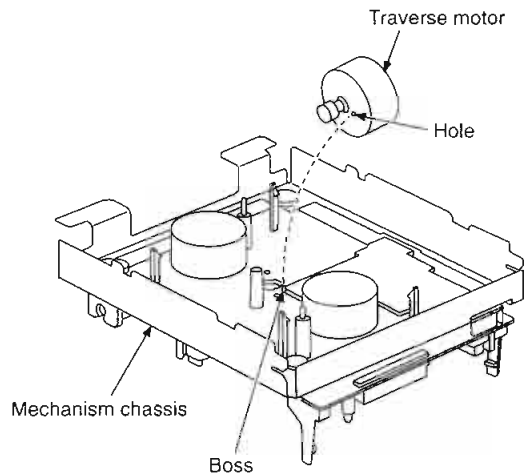
c × 2

c



Notice for installing the traverse motor



- Align the hole of traverse motor with the boss of mechanism chassis, and then install the traverse motor.





7 Self-Diagnostic Function

This unit is equipped with a self-diagnostic function which, in the event of a malfunction, automatically display a code indicating the nature of the malfunction. Use this self-diagnostic function when servicing the unit.


7.1. Switching to the Self-Diagnostic Mode

1. Turn the power on.
2. Press and hold  button for at least 2 seconds, and while still pressing  button, press the REC LEVEL + button for at least 2 seconds. (Refer to Fig. 4.) The unit enters Self-Diagnostic Mode and is displayed "MD TEST". Then an error code is displayed, if any. For details of the error codes, refer to Fig. 5. In the case of no errors, "***** ----" is displayed on FL.
3. If more than one error exists, the display will sequentially show the respective error codes each time the REC LEVEL + button is pressed.

7.2. Canceling the Self-Diagnostic Mode

1. The Self-Diagnostic Mode can be canceled by pressing  button to turn the system off. And then pressing  button again to turn it again.

7.3. Clearing the Self-Diagnostic Mode

1. The contents of abnormality display are stored in memory. In order to clear the memory, continue to press  button for at least 5 seconds while in the Self-Diagnostic Mode. The memory will clear. Always be sure to clear this memory after completing repair.

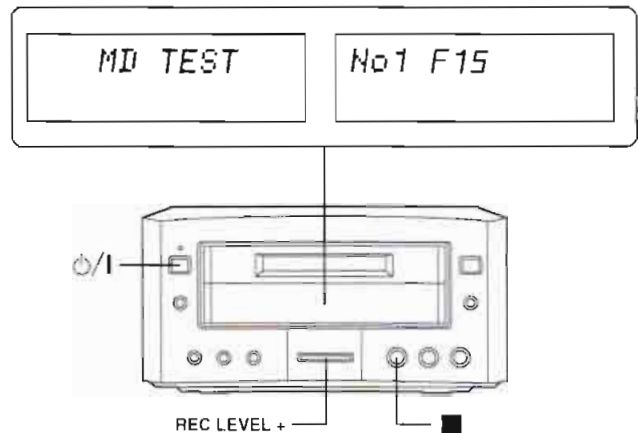


Fig. 4



Error	Symptom	Possible Cause
F15	Interval till MD starts playing is too long.	<ul style="list-style-type: none"> • Pickup home position sense switch (S8) is defective; check and replace if necessary.
F26	MD is loaded but cannot be played.	<ul style="list-style-type: none"> • Communications error between the servoprocessor IC and the micro-processor IC (system control). Check if the flexible circuit board is disconnected. • Displayed when the disc is scratched too.
F28	MD cannot be loaded.	<ul style="list-style-type: none"> • Confirm that the disc is not catching on anything. • The connection (flexible circuit board or connector cable) between the MD unit and the MD servo circuit board is disconnected or damaged; check and replace if necessary. • The MD unit may be malfunctioning; replace it.
F29	MD cannot be ejected.	<ul style="list-style-type: none"> • Confirm that the disc is not catching on anything. • The connection (flexible circuit board or connector cable) between the MD unit and the MD servo circuit board is disconnected or damaged; check and replace if necessary. • The MD unit may be malfunctioning; replace it.

Fig. 5

8 Self Check Function

This unit is equipped with a self check function which can detect a part of malfunction. Use this function before servicing the unit and check the item as shown below.

8.1. Setting to the Self Check Function

1. Turn the power on.
2. Press and hold  button for at least 2 seconds, and while still pressing  button, press the REC LEVEL - button for at least 2 seconds. Then the unit enters Self Check Function. (Refer to Fig. 6.)

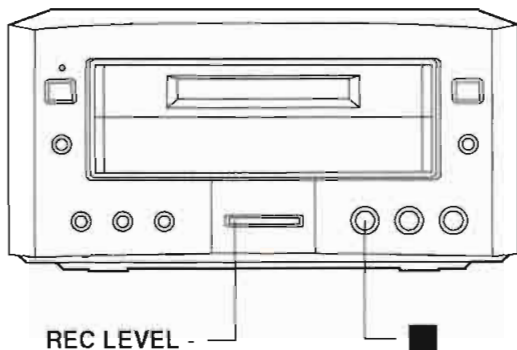



Fig. 6

8.2. Checking the operation switches

1. When the unit enters the Self Check Function, the FL display turn off.
2. Press the buttons on the unit except  button, it displays "-" mark adapted each buttons. (Fig. 7 and Fig. 8 is shown about a allotment.)

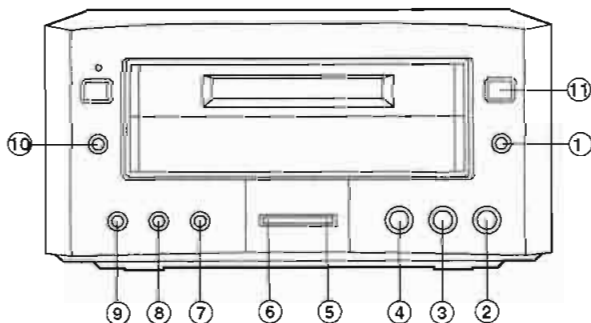


Fig. 7

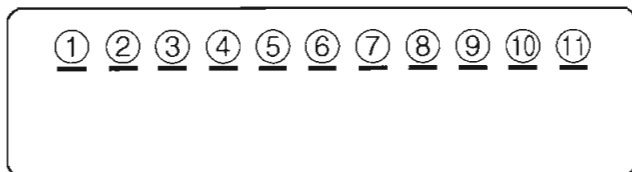


Fig. 8

8.3. Checking the FL display



1. Press  button.
2. All buttons works normally except  button, FL display and LED turns on and off at 0.5 second interval. (Refer to Fig. 9 and Fig. 10.)



Fig. 9

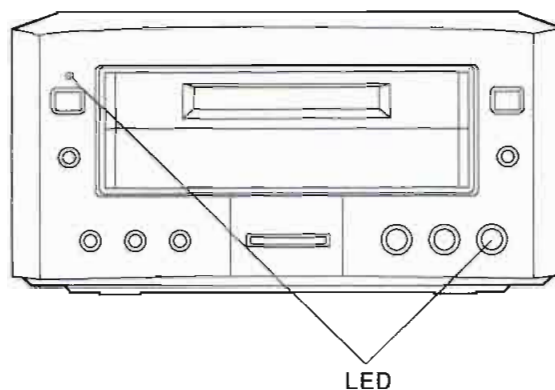



Fig. 10

The Self Check Function can be canceled by pressing and holding  button for at least 2 seconds.

9 Measurements and Adjustments (Laser Power Adjustment)

Note:

- If you exchange parts of MD unit when you repair, you must perform the Laser Power adjustment.
- **Because this unit uses the optical magnetic recording, the unit outputs over 10 times more laser than a CD player does. In the adjustment mode, the laser is always being output. Therefore, be especially careful not to look laser beam directly or to touch the laser beam when adjusting the unit and checking its operation.**

9.1. Necessary Instruments

- Laser power meter (LE8010) or cartridge type laser power meter
- Test disc (Pre-mastered disc RFKV0006 or RFKV0014)
- Recordable disc available on sales route (with music recorded)
- Insulated driver for adjustment such as a ceramic driver
- Remote control transmitter

9.2. Set the Unit to the Adjustmint Mode

1. Supply power to the unit.
2. With no MD loaded in the player, simultaneously press ■ button and the REC LEVEL + button and hold them both pressed for at least 2 seconds until "MD TEST" appears in the display. (Refer to Fig. 11.)
3. At the Self-Diagnostic Mode, press "1" on the player's remote control. "RAM LASER" will be displayed to indicate the read power adjustment mode.

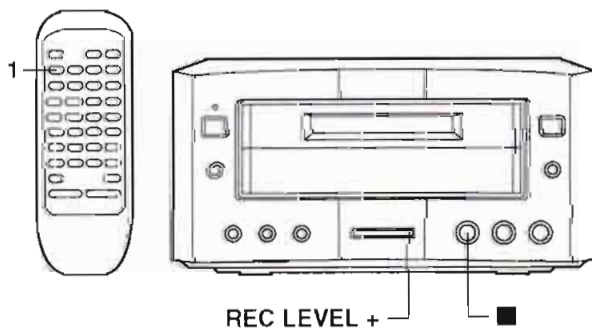


Fig. 11

Cautions

1. About handling the MD unit

- The magnetic head is a precision unit and is very fragile. Do not deform it.
- Laser diode in the optical pickup may be destroyed by the static electricity generated in your clothes or body. Be especially careful with the static electricity.
- The optical pickup is structured extremely precisely. Do not subject to the strong impact or shock. Do not touch the lens.

2. About handling the magnetic head

When replacing the magnetic head, do not tighten the mounting screw (RHD17022) too firmly. If the screw is tightened too much to deform the resin, the position of the head is moved, and this affects its recording operation.

Recommended torque for mounting screw: 700 g cm +/- 100 g cm

Reference: This is the same force as using a screwdriver with a 15-mm diameter grip, you fasten the screw naturally with your thumb and index finger.

3. About the driver for adjusting laser power

Use only insulated driver such as a ceramic driver. With the metal driver, it is not possible to adjust properly because of the induction noise. Also, if it short-circuits with the chassis, it may destroy or damage the laser diode.

Recommended driver: VESSEL 9000 1.8 -30 (Ceramic driver)

Cautions on optical pickup:

- The optical pickup and the magnetic head are structured precisely; therefore, they are very fragile. Be careful not to touch them with the edge of the laser power meter.
- The sensor of the laser power meter is a very fine part. Be careful not to touch it to the optical pickup lens.
- The focus point of the laser reaches to 356°F. Therefore, avoid adjusting using laser power for a long time because the sensor of the laser power meter may be burned.
- Do not allow the write power to even momentarily reach or exceed **5.5 mW**. Doing so will result in damage to the optical pickup.
- Do not set the unit to the laser power adjustment mode with the MD loaded. Doing so may result in damage to the MD.

9.3. Adjustment Procedure

Note:

There are two methods of adjusting the player, either by using a laser power meter or by using a cartridge type laser power meter.

1. Enter the Adjustment Mode.
2. If using a laser power meter, slide open the sensor cover. (Refer to Fig. 12.)

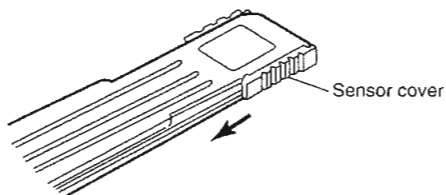


Fig. 12

3. If using a laser power meter, position the sensor directly above the optical pickup. (Refer to Fig. 13.)

If using a cartridge type laser power meter, load the cartridge into the MD mechanism. (Refer to Fig. 14.)

Caution:

Do not allow the laser power meter to come in contact with either the optical pickup or the magnetic head.

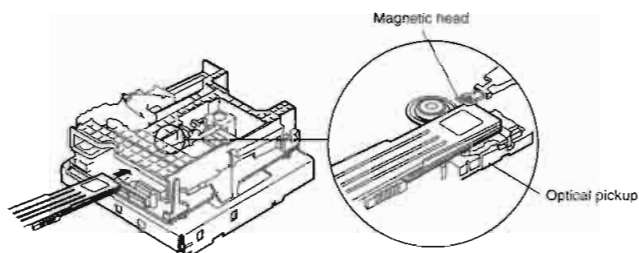


Fig. 13

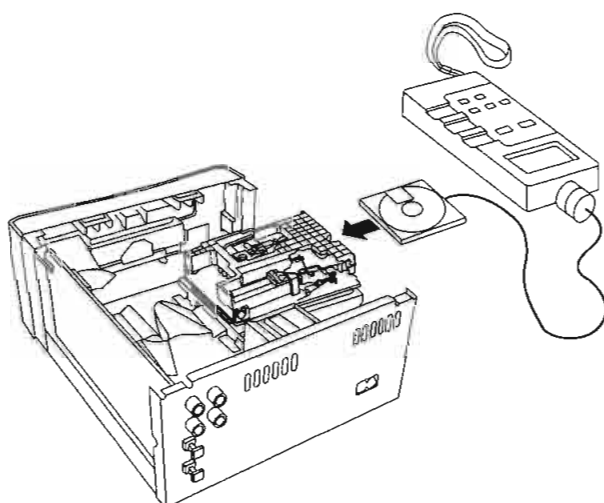


Fig. 14

4. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified. If it is not within the specified range, adjust by turning VR1.

(Refer to Fig. 15.)

Specified range (read power): 600 μ W or lower

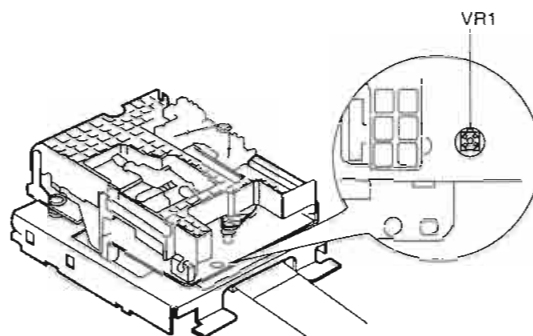


Fig. 15

Caution:

- Proceeding on to the subsequent adjustment procedure with the read power exceeding 680 μ W will result in damage to the optical pickup.

5. Press "2" on the player's remote control.
"WRITE LASER" will be displayed to indicate the write power adjustment mode.
6. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range. If it is not within the specified range, adjust by turning VR1. (Refer to Fig. 15.)

Specified range (write power): 4.8 \pm 0.1mW

Caution:

- Do not allow the write power to even momentarily reach or exceed 5.5mW. Doing so will result in damage to the optical pickup.

7. Press "3" on the player's remote control.
"ROM LASER" will be displayed to indicate the ROM data confirmation mode.
8. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range.

Specified range (ROM data laser power): 540-660 μ W

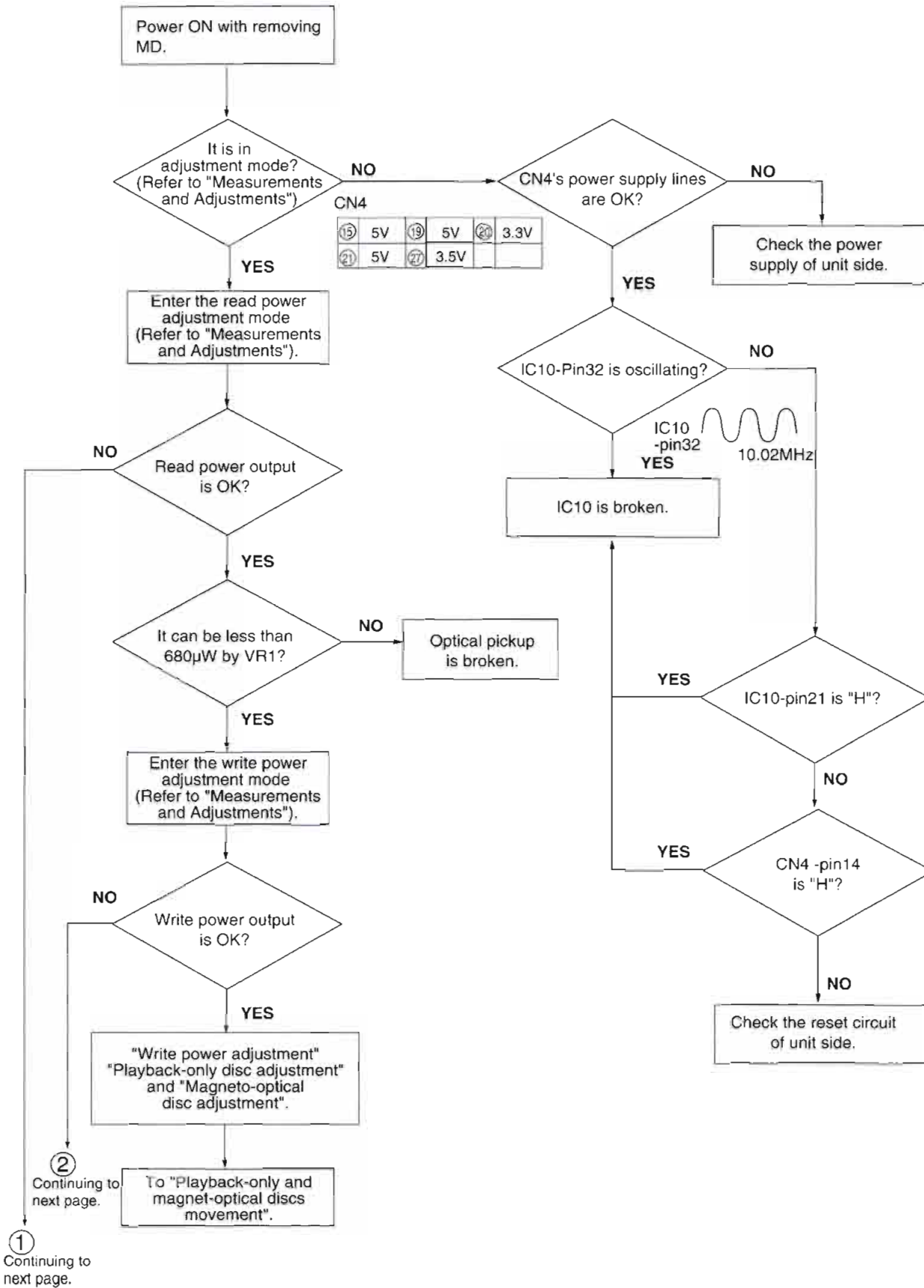
9. Press "1" on the player's remote control.
"RAM LASER" will be displayed to indicate the RAM data confirmation.
10. Confirm that the reading of the laser power meter or cartridge type laser meter is within the specified range.

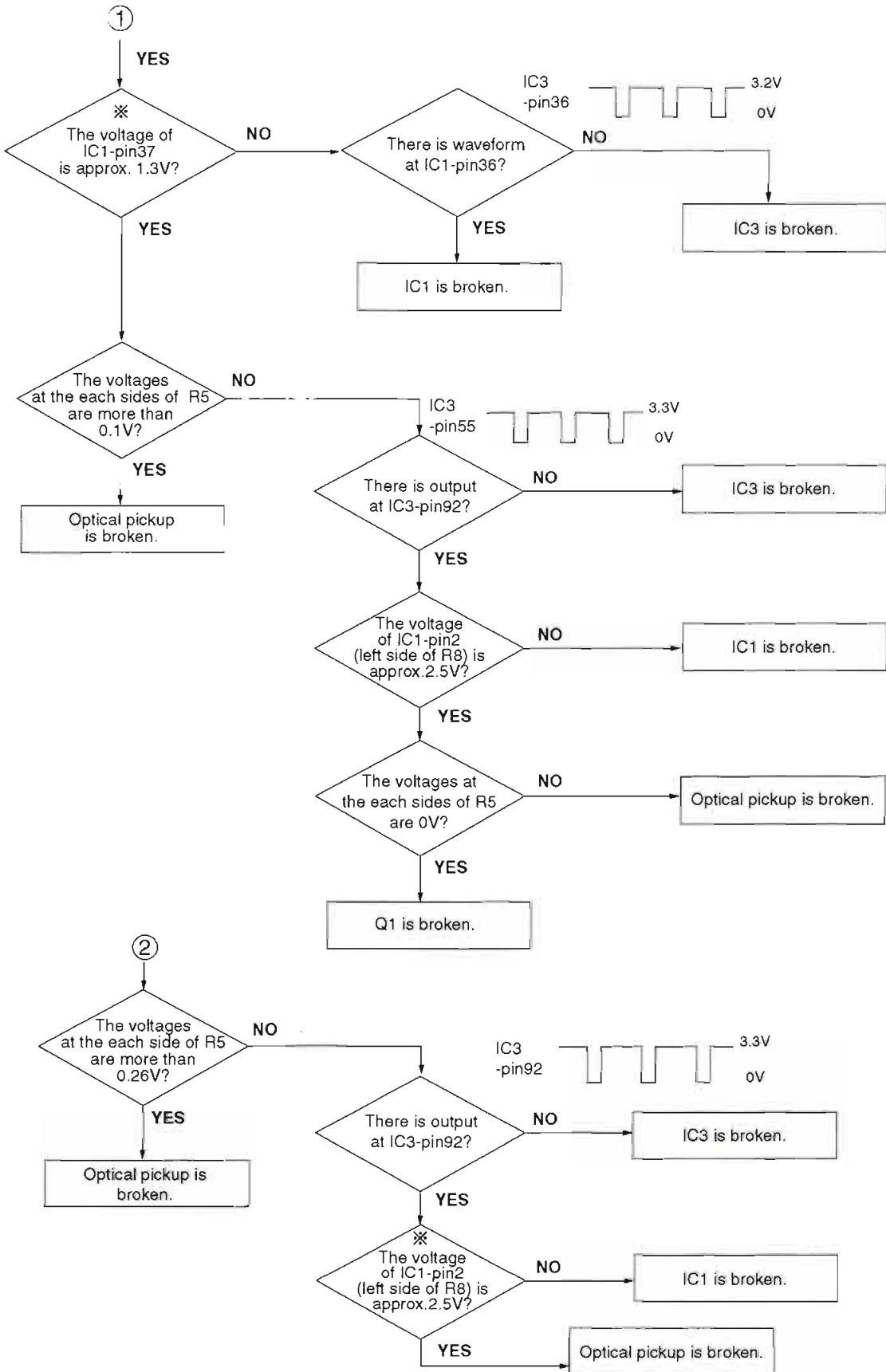
Specified range (RAM data laser power): 540-660 μ W

- If the reading in either step 8 or 10 above is not within the specified range, first switch off the power, and then reset the unit to the adjustment mode and repeat the adjustment procedure.

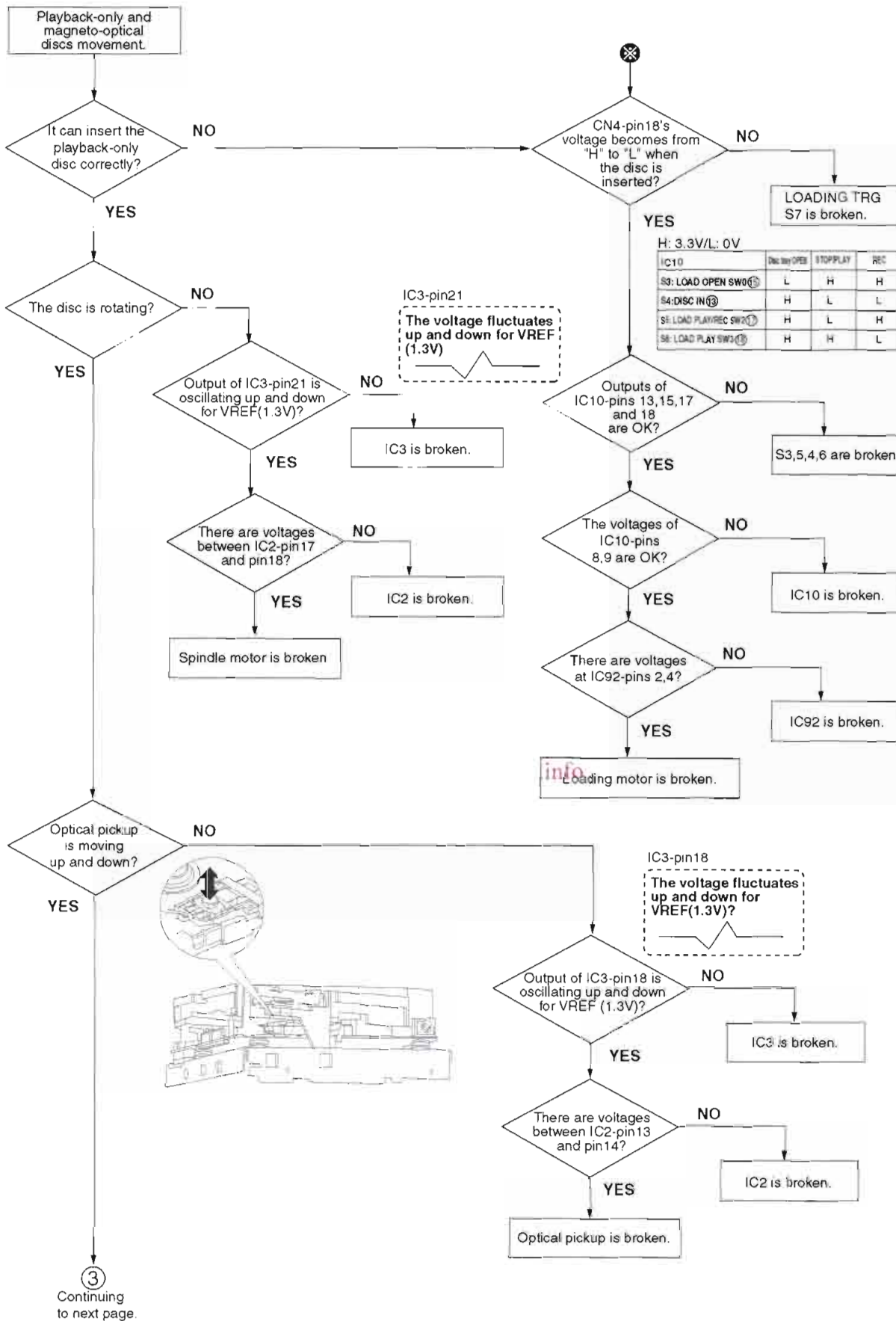
10 Troubleshooting Guide

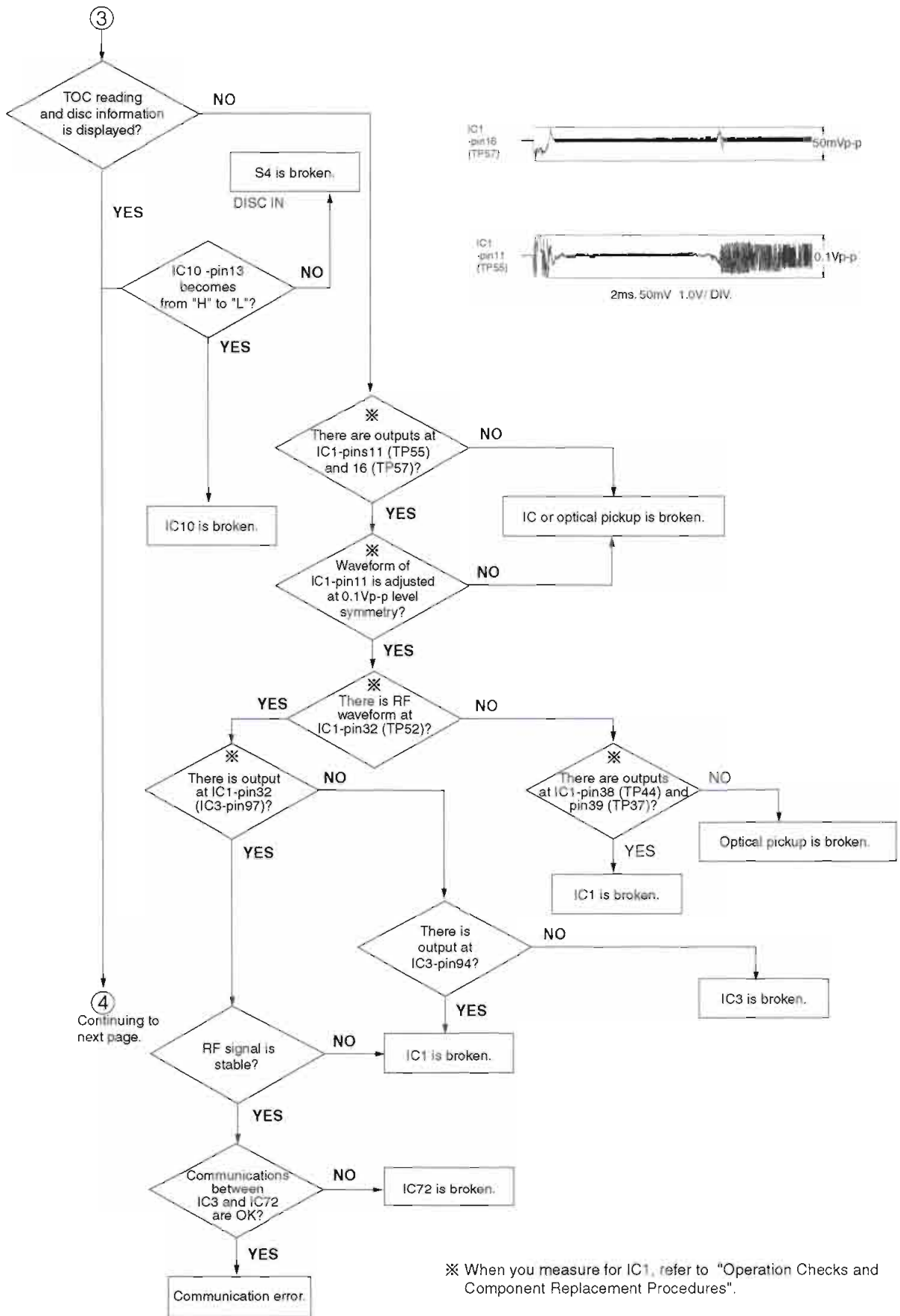
Please refer to this Troubleshooting Guide when you repair for any troubles of this unit.

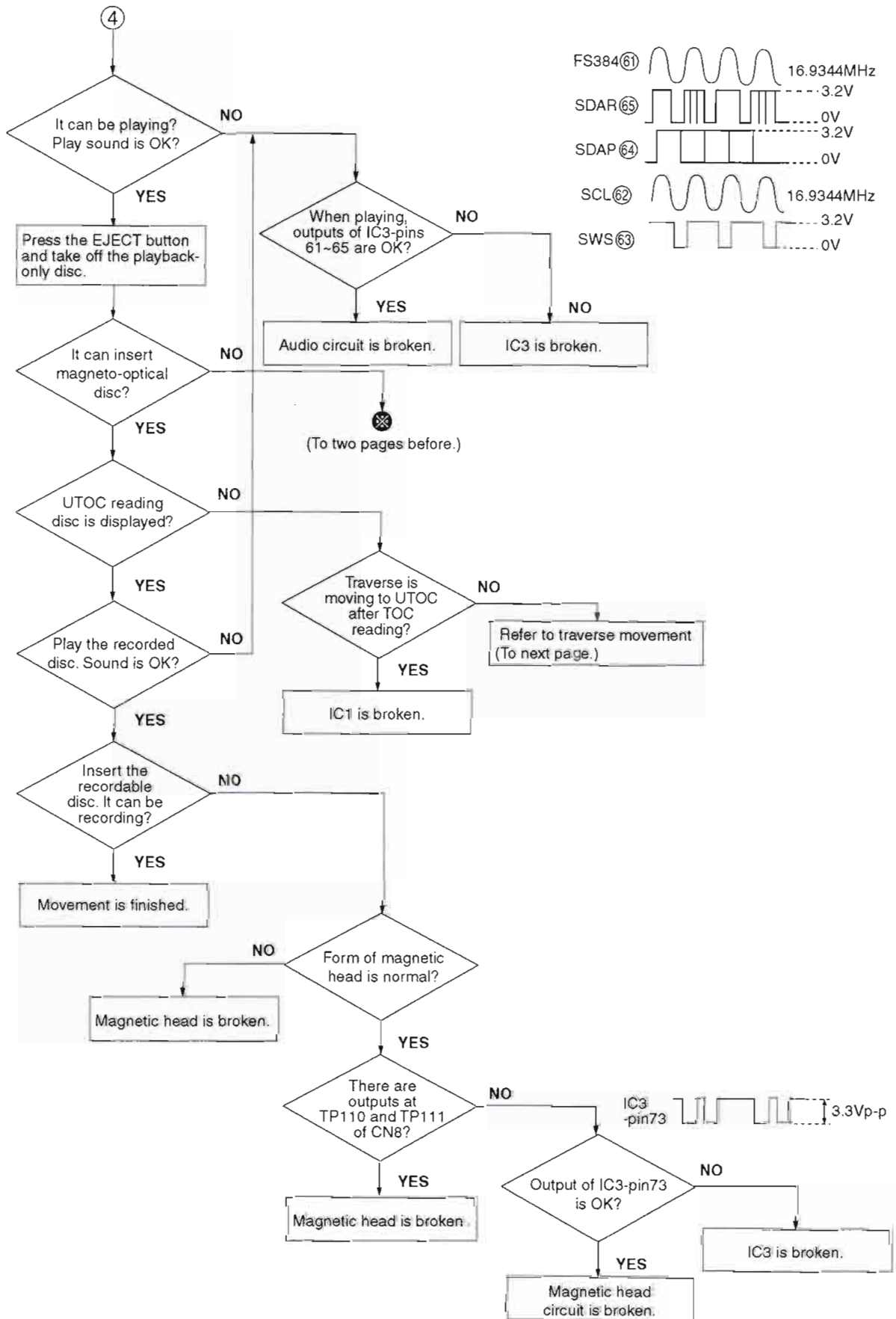


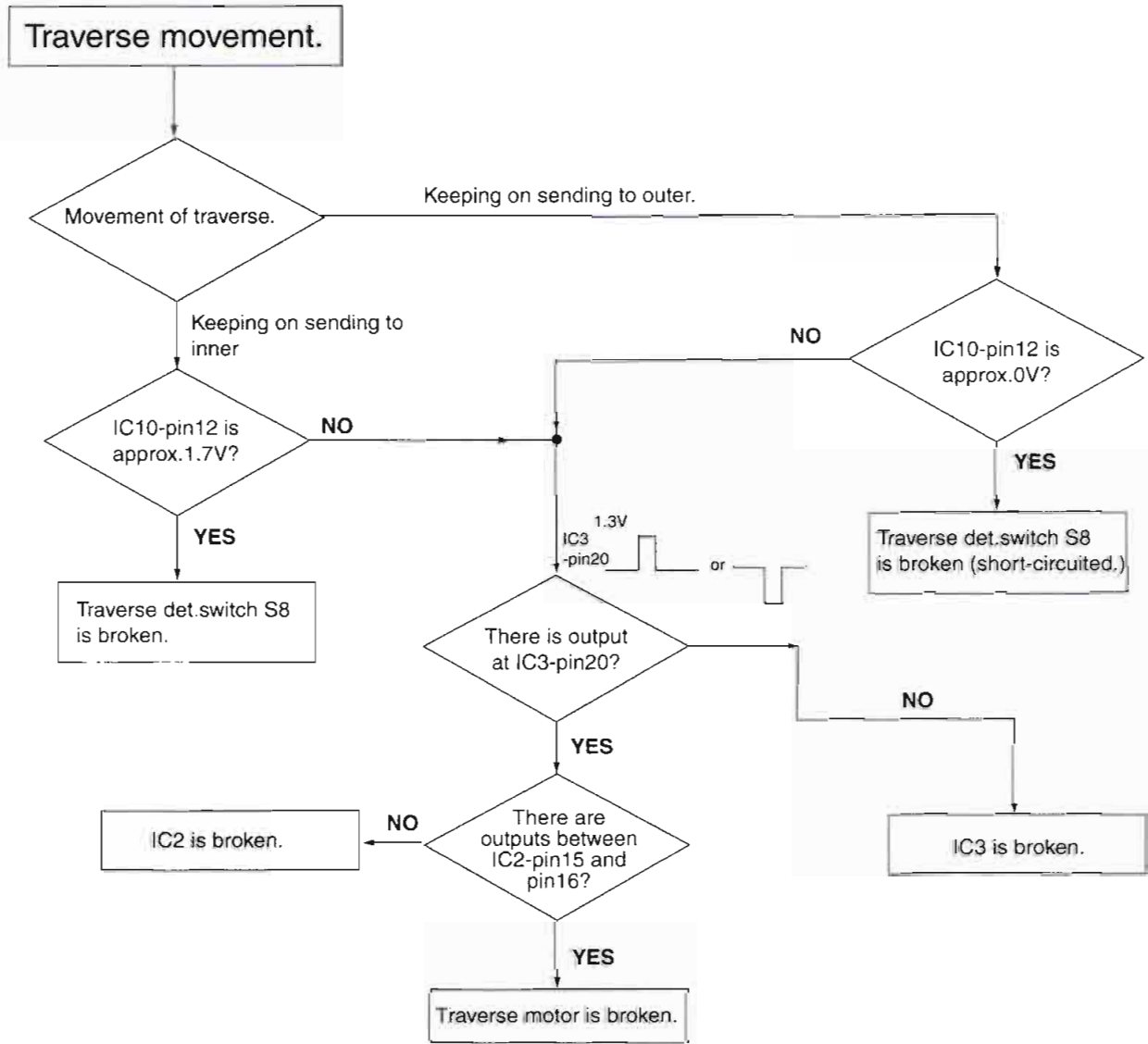


⊛ When you measure for IC1, refer to "Operation Checks and Component Replacement Procedures".



















11 Schematic Diagram Notes

11.1. Schematic Diagram Notes

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

Notes:

- S1 : PROTECT det. switch.
 - S2 : REFLECT det. switch.
 - S3 : LOAD OPEN det. switch.
 - S4 : DISC IN det. switch.
 - S5 : LOAD PLAY/REC det. switch.
 - S6 : LOAD PLAY det. switch.
 - S7 : LOAD TRG det. switch.
 - S8 : Traverse det. switch.
 - S901 : Standby/on (/I) switch.
 - S902 : Input selector (INPUT SELECTOR) switch.
 - S903 : Skip/Search ( /  REC LEVEL -) switch.
 - S904 : Skip/Search ( /  REC LEVEL +) switch.
 - S905 : Edit (EDIT) switch.
 - S906 : Enter (ENTER) switch.
 - S907 : Pause () switch.
 - S908 : (DISPLAY) switch.
 - S909 : Eject ( EJECT) switch.
 - S910 : Stop () switch.
 - S911 : Playback/Recording start () switch.
 - S912 : Record ( REC) switch.
 - VR1: Laser power adj. V.R..
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.


Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark: MD STOP

() : MD play [1kHz, L+R, 0dB]

<> : MD rec. [1kHz, L+R, 0dB]

Important safety notice:

Components identified by  mark have special characteristics important for safety.

Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

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 legs of IC or LSI with the fingers directly.

Voltage and signal lines


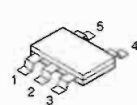


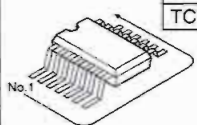
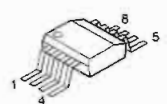




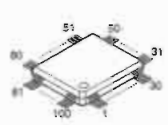
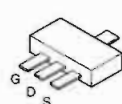
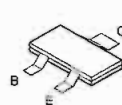
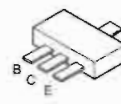
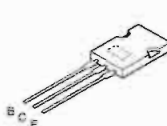

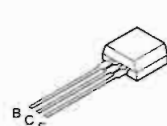
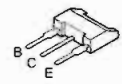
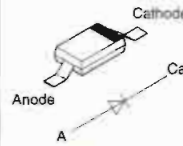
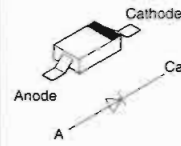
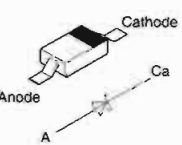
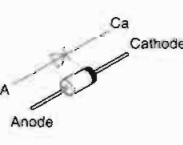
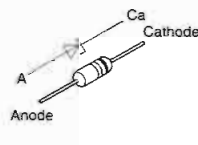
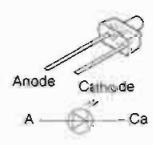
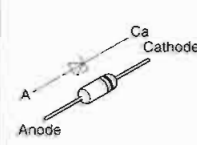
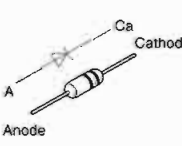
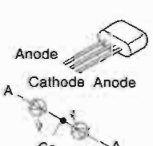
 : Positive voltage line

 : Negative voltage line

 : Playback signal line

 : Recording signal line

11.2. Type Illustration of IC's, Transistors and Diodes

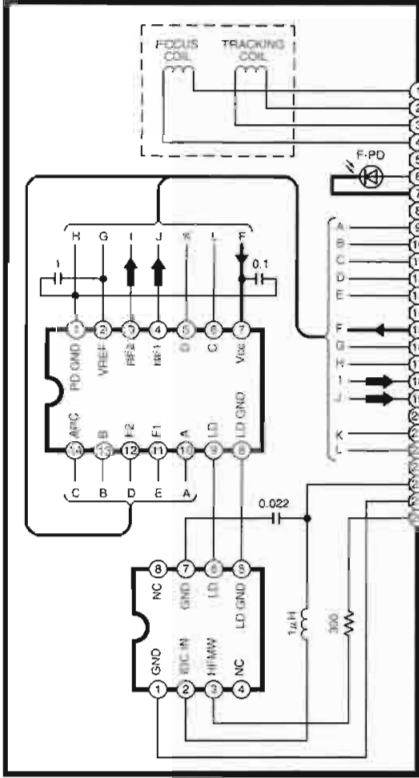
<table border="1"> <tr> <td>AK4518VF-E2</td> <td>24PIN</td> </tr> <tr> <td>BA4560FE2</td> <td>8PIN</td> </tr> <tr> <td>LB1830MS-TLM</td> <td>10PIN</td> </tr> </table> 		AK4518VF-E2	24PIN	BA4560FE2	8PIN	LB1830MS-TLM	10PIN	<p>RN5RG33AA-TL RN5RZ26BA-TR</p> 	<table border="1"> <tr> <td>AN8772FHQ</td> <td>48PIN</td> </tr> <tr> <td>MN101D03DAA1</td> <td>80PIN</td> </tr> <tr> <td>MN66616RA4</td> <td>100PIN</td> </tr> </table> 	AN8772FHQ	48PIN	MN101D03DAA1	80PIN	MN66616RA4	100PIN	<p>M51V4400D7FS</p> 
AK4518VF-E2	24PIN															
BA4560FE2	8PIN															
LB1830MS-TLM	10PIN															
AN8772FHQ	48PIN															
MN101D03DAA1	80PIN															
MN66616RA4	100PIN															
<table border="1"> <tr> <td>TC74HCT7007A</td> <td>14PIN</td> </tr> <tr> <td>TC74HCT00AFL</td> <td>14PIN</td> </tr> <tr> <td>TC74HC4050EL</td> <td>16PIN</td> </tr> </table> 		TC74HCT7007A	14PIN	TC74HCT00AFL	14PIN	TC74HC4050EL	16PIN	<p>TC7W04FTE12L</p> 	<p>AN8814SB-E1</p> 	<p>BA05ST-V5</p> 	<p>S81233SGY-Z</p> 					
TC74HCT7007A	14PIN															
TC74HCT00AFL	14PIN															
TC74HC4050EL	16PIN															
<p>TC9413AP</p> 	<p>M30218MAA204</p> 	<p>2SJ278MYTR 2SK1764KYTR</p> 	<p>2SB1295-6-TB 2SB1462STX 2SD1328-STX DTA114EUT106 DTA143EUT106 DTC114EUT106 DTC114YETL</p> 		<p>2SB1121ST-TD</p> 											
<p>2SD2037EFTA</p> 	<p>2SD1450RSTTA</p> 	<p>2SA933SQRSTA</p> 	<p>2SB1240QRTV6 2SD1862QRTV6</p> 	<p>SC80209TE12R</p> 	<p>MA110TX</p> 											
<p>MA728TX</p> 	<p>1D3-E</p> 		<p>MA4051MTA MA4056MTA MA4062MTA MA4091MTA</p>	<p>LNJ201LPQJA</p> 	<p>MA4270HTA</p> 											
<p>1SS291TA</p> 	<p>SML79420C</p> 															

12 Schematic Diagram

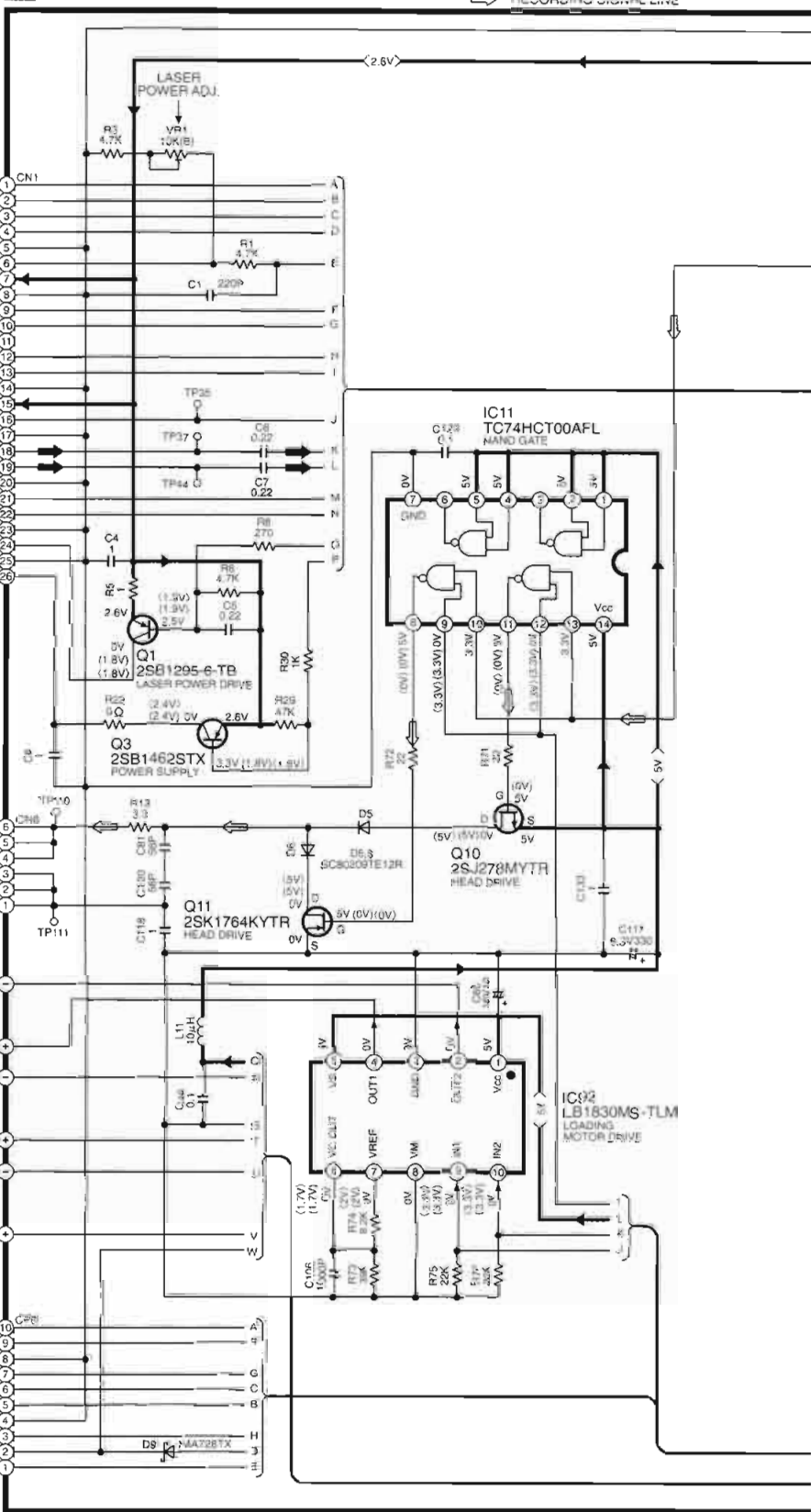
SCHEMATIC DIAGRAM-1

Note:
The number which noted at the connectors on the schematic diagram as "SCHEMATIC DIAGRAM-1" or "SCHEMATIC DIAGRAM-2" indicates the schematic diagram serial number located on the left corner in the schematic diagram.

A MD OPTICAL PICKUP

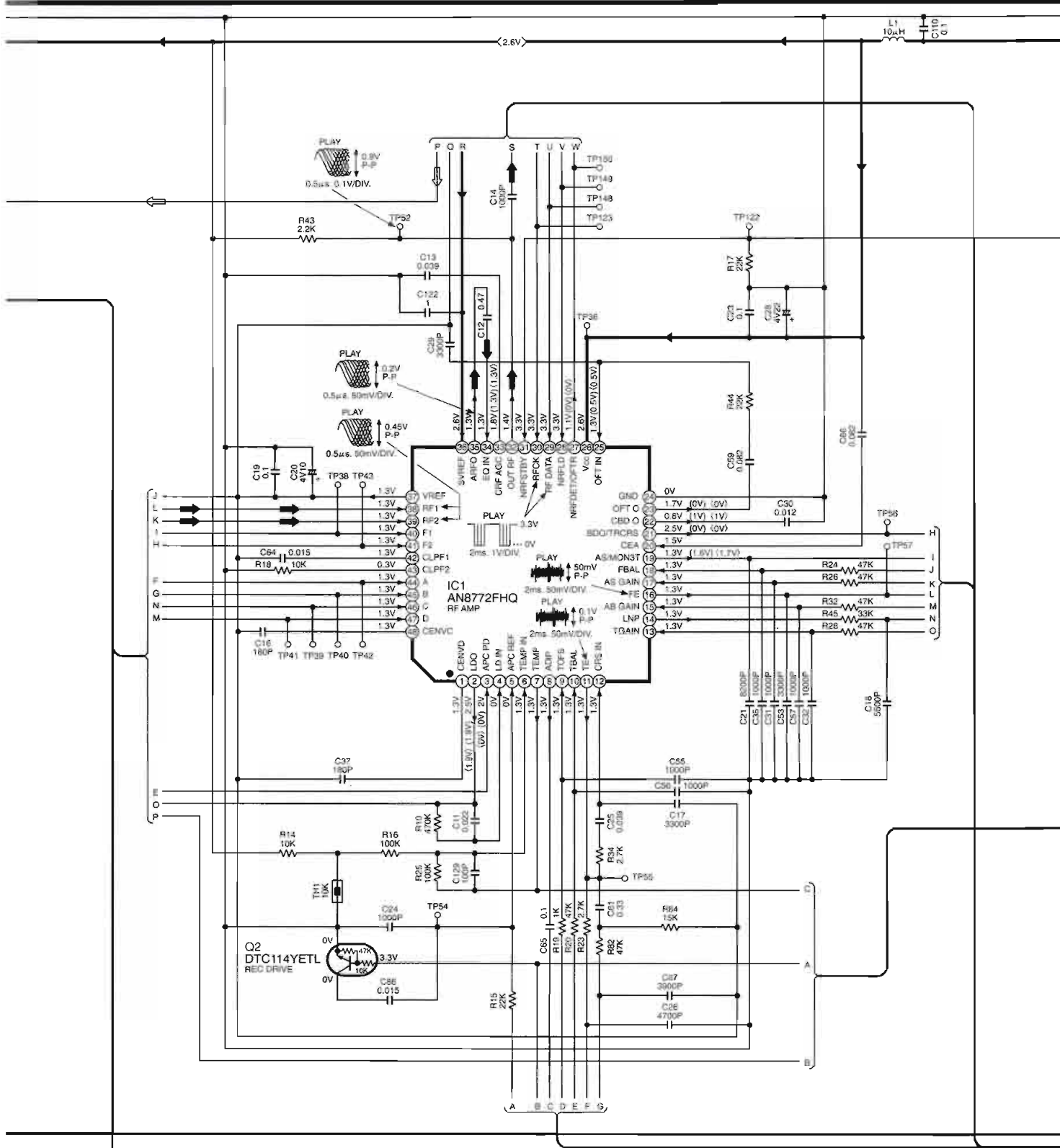


A MD SERVO CIRCUIT



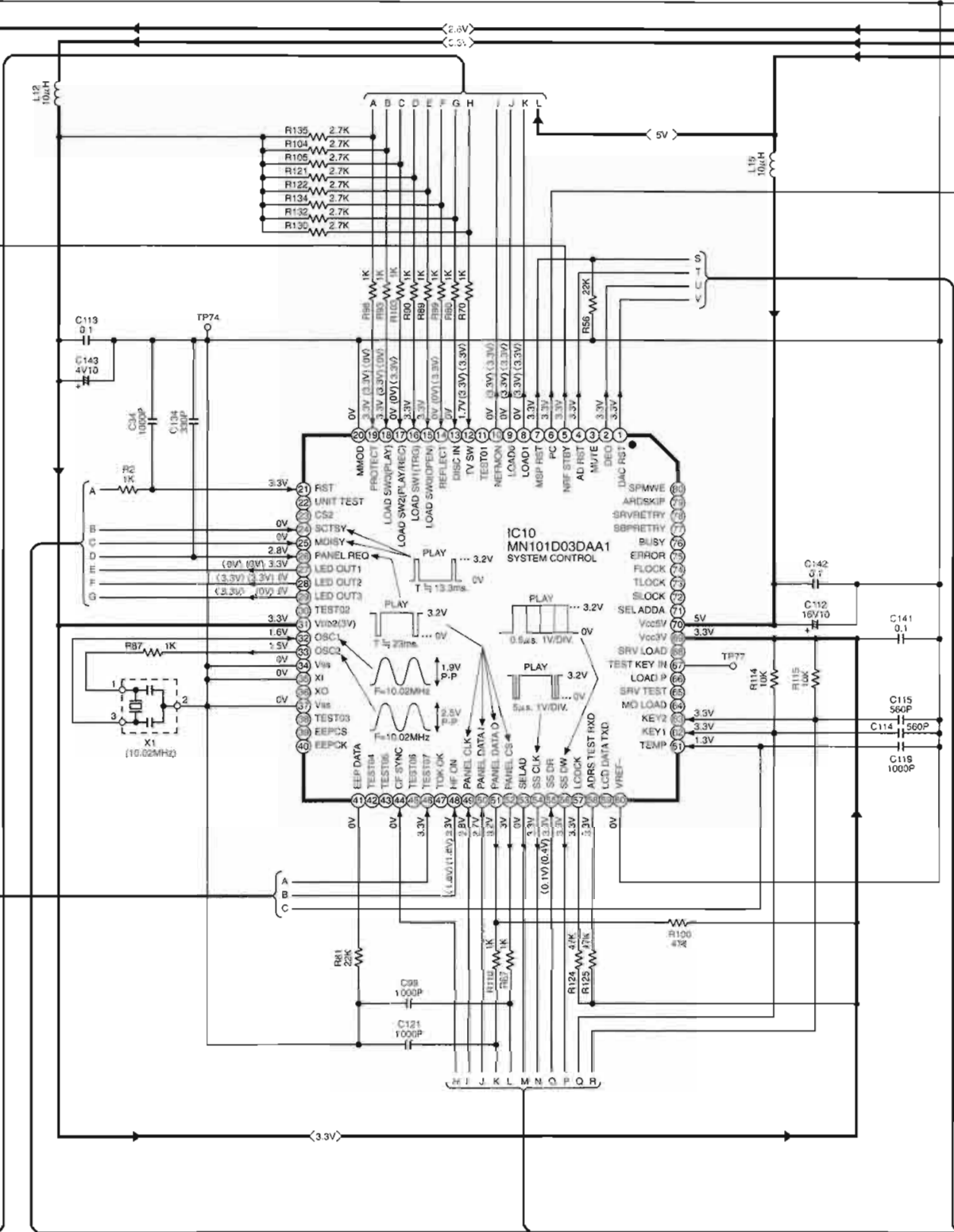
SCHEMATIC DIAGRAM-2

→ : POSITIVE VOLTAGE LINE → : PLAYBACK SIGNAL LINE ⇨ : RECORDING SIGNAL LINE



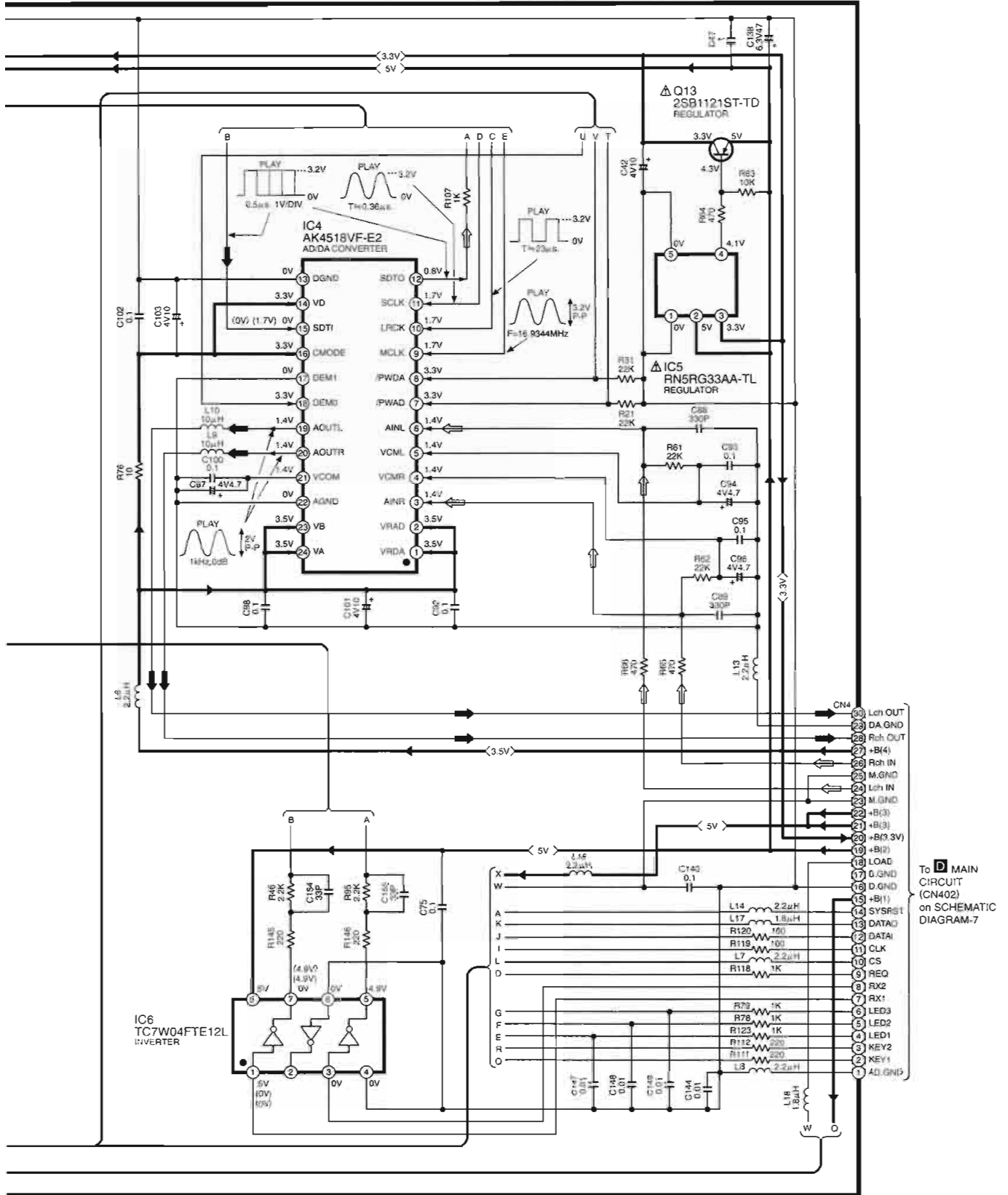
SCHEMATIC DIAGRAM-3 A MD SERVO CIRCUIT

→ POSITIVE VOLTAGE LINE



SCHEMATIC DIAGRAM-6

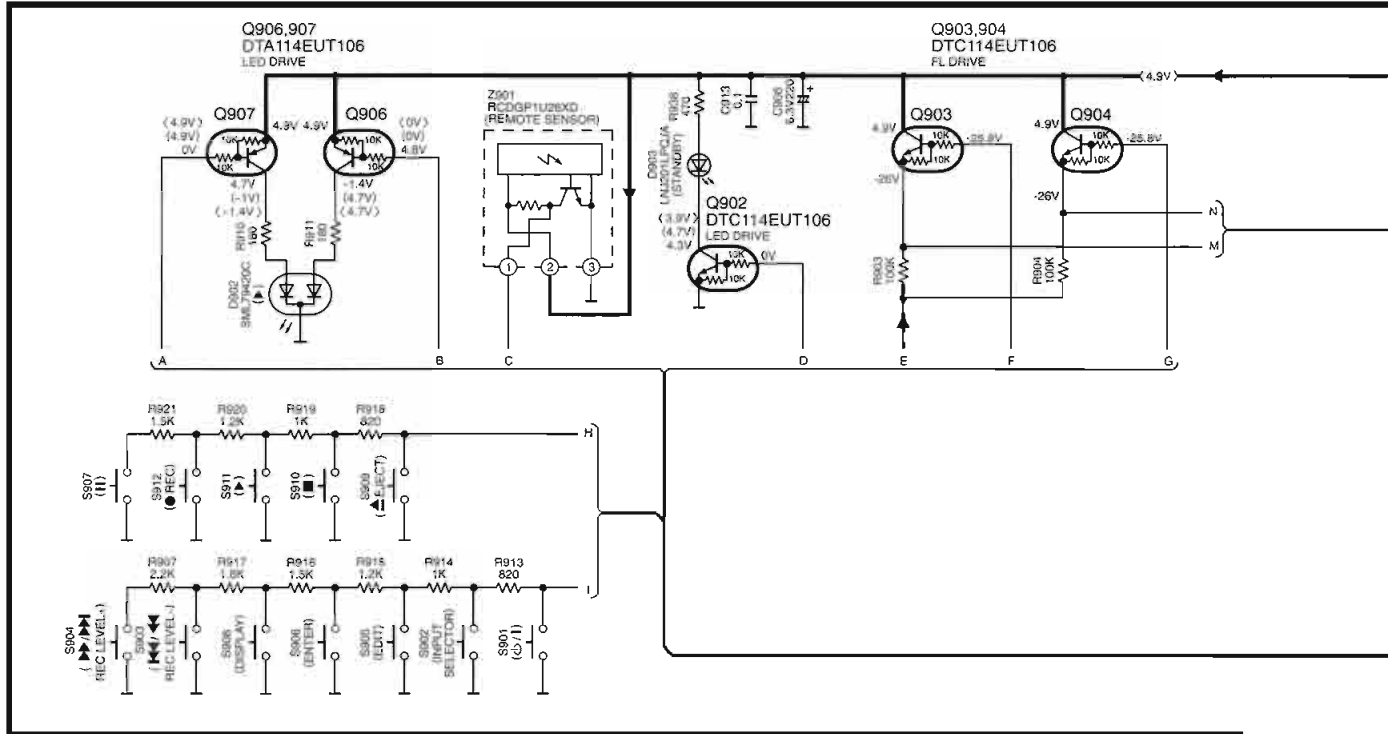
→ : POSITIVE VOLTAGE LINE → : PLAYBACK SIGNAL LINE ⇨ : RECORDING SIGNAL LINE



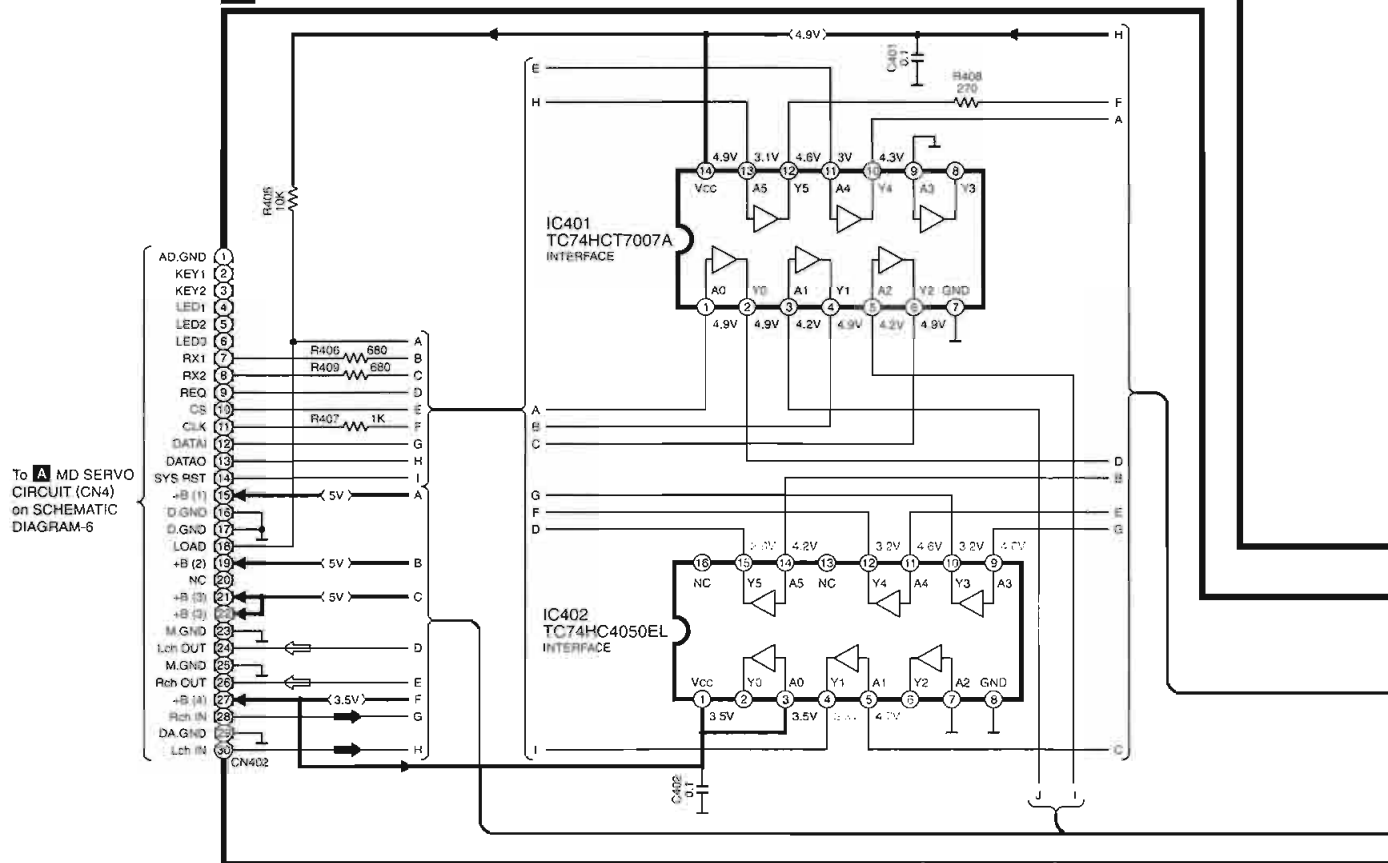
SCHEMATIC DIAGRAM-7

C OPERATION CIRCUIT

: POSITIVE VOLTAGE LINE
 : NEGATIVE VOLTAGE LINE
 : PLAYBACK SIGNAL LINE
 : RECORDING SIGNAL LINE



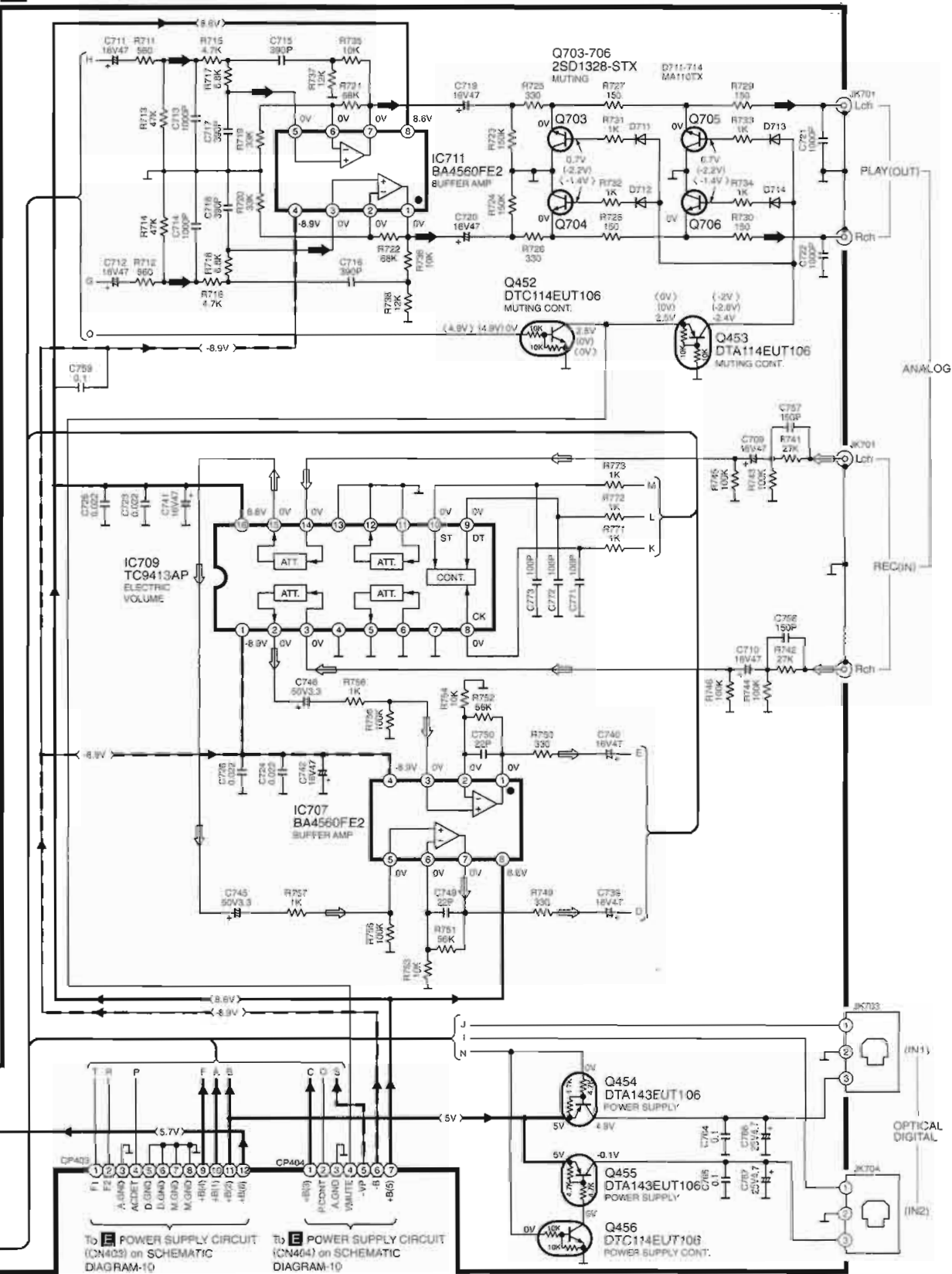
D MAIN CIRCUIT



SCHEMATIC DIAGRAM-9

D MAIN CIRCUIT

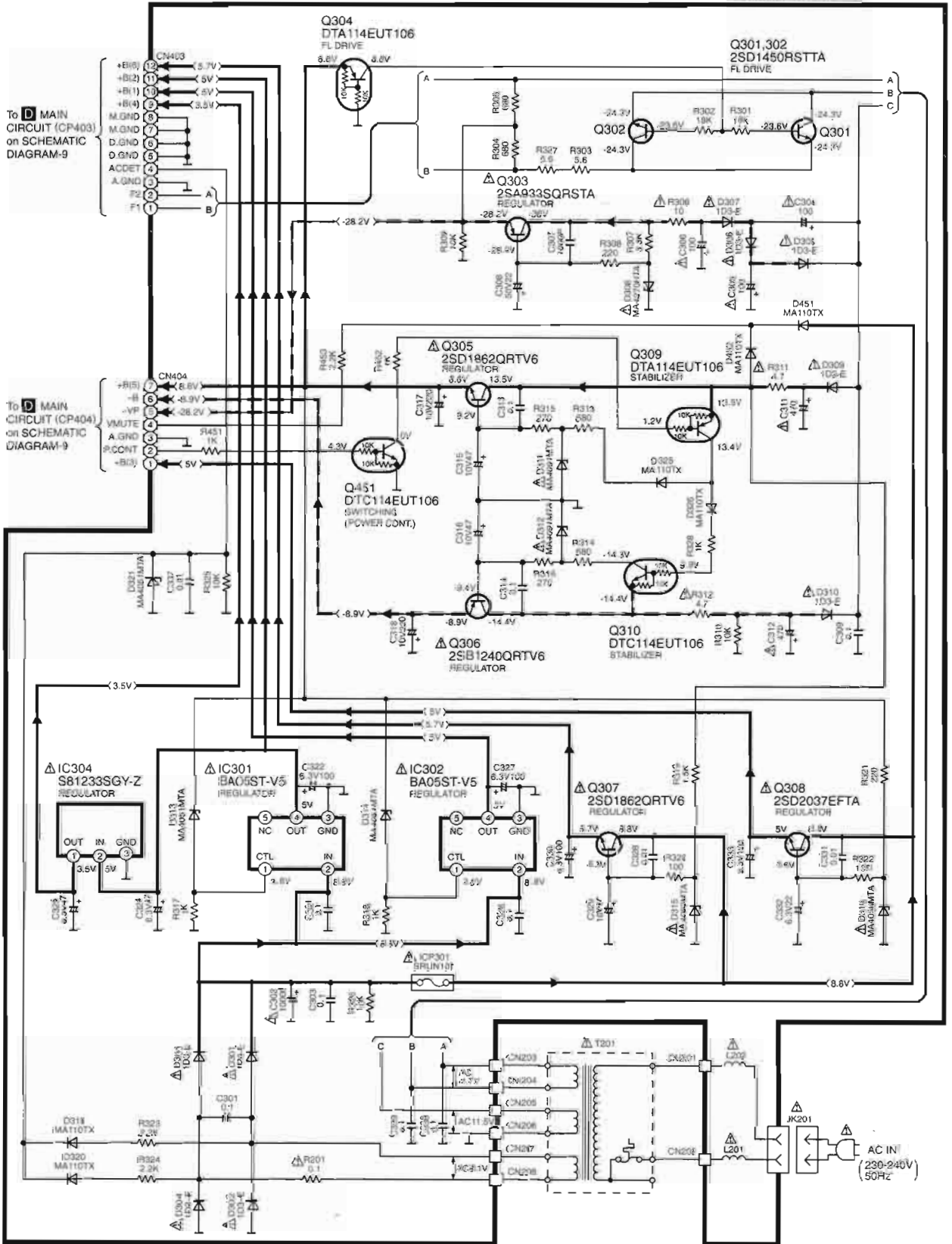
——— : POSITIVE VOLTAGE LINE ———▶ : PLAYBACK SIGNAL LINE
 - - - - : NEGATIVE VOLTAGE LINE ◀——— : RECORDING SIGNAL LINE



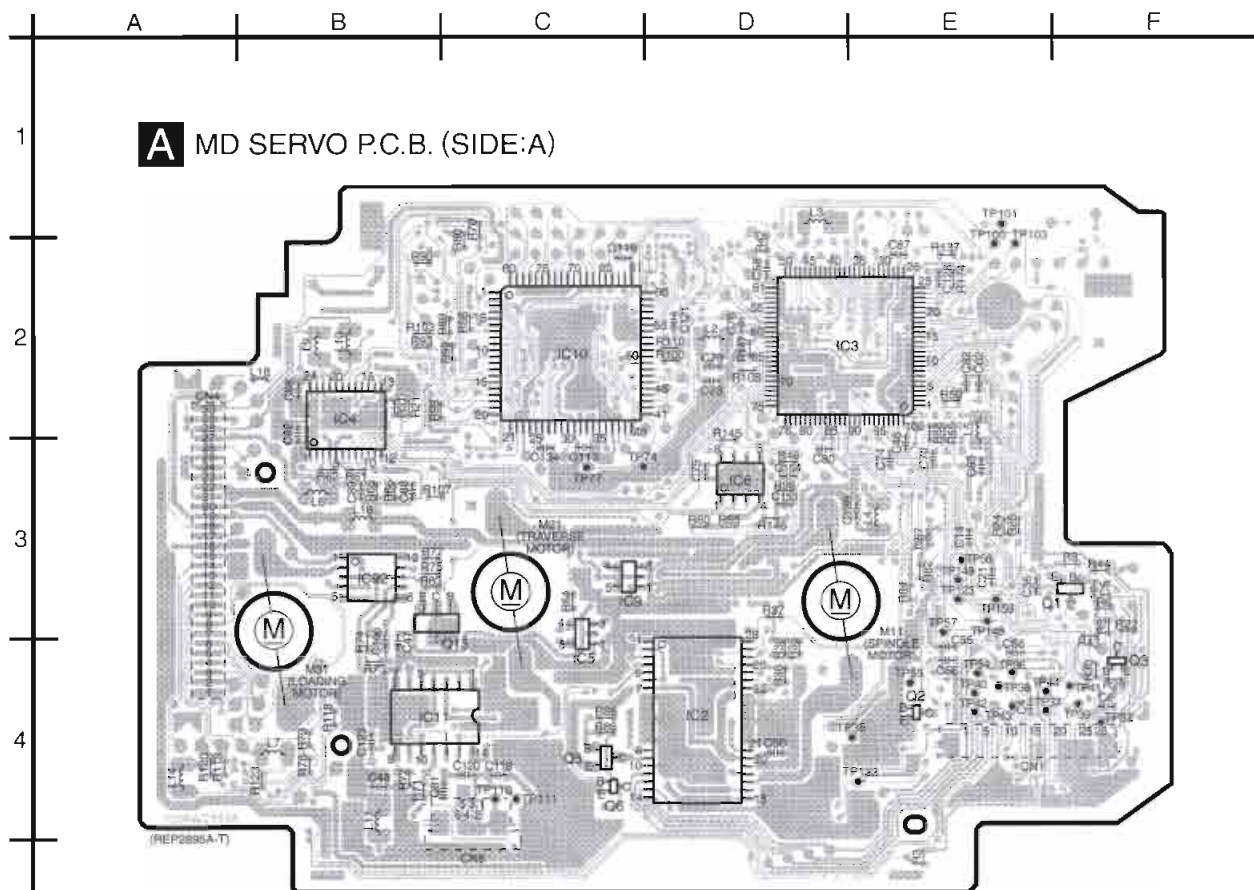
SCHEMATIC DIAGRAM-10

E POWER SUPPLY CIRCUIT

→ : POSITIVE VOLTAGE LINE - - - - - : NEGATIVE VOLTAGE LINE

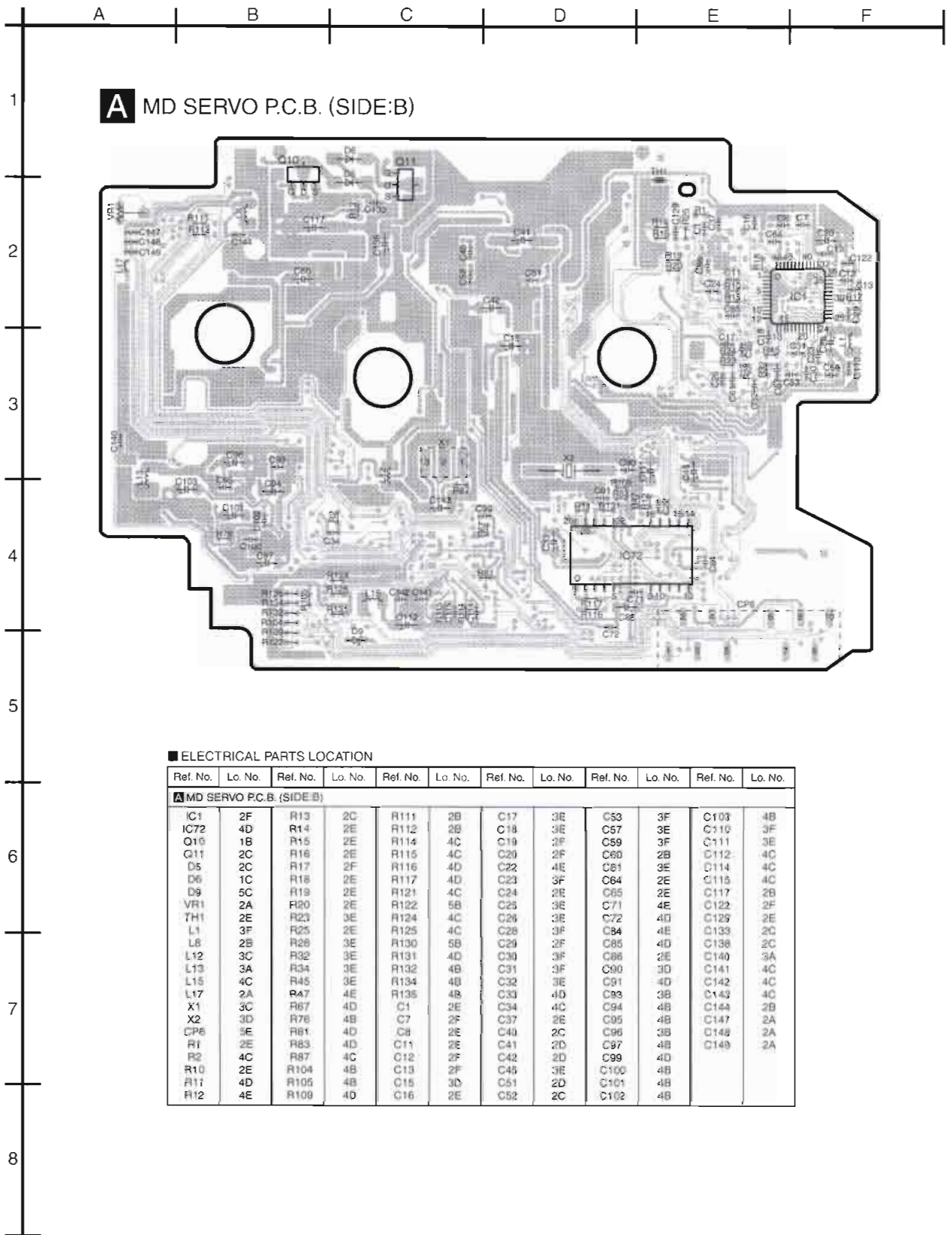


13 Printed Circuit Board



■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
■ MD SERVO P.C.B. (SIDE:A)													
IC2	4D	L14	4A	TP74	3C	R36	4D	R75	3B	R137	2E	C75	3D
IC3	2D	L16	3B	TP77	3C	R37	3D	R77	3B	R145	2D	C76	2D
IC4	2B	L18	2B	TP100	2E	R38	4D	R78	4B	R146	3D	C79	2D
IC5	3C	CN1	4E	TP101	1E	R42	2D	R79	4B	R147	2D	C80	3D
IC6	3D	CN4	3A	TP103	2E	R43	3F	R80	2C	R174	2E	C81	4C
IC9	3C	CN8	4C	TP110	4C	R44	3F	R82	3E	C4	4E	C82	2E
IC10	2C	M11	3D	TP111	4C	R46	3D	R84	3E	C5	3F	C83	3E
IC11	4B	M21	3C	TP122	4E	R50	2E	R85	4C	C6	4F	C87	2E
IC92	3B	M31	3B	TP123	3E	R55	3D	R86	4C	C14	3E	C88	3B
Q1	3F	TP35	4E	TP148	3E	R56	2C	R89	2C	C21	3E	C89	3B
Q2	4E	TP36	4E	TP149	3E	R58	2E	R90	2B	C35	3E	C92	2B
Q3	4F	TP37	4E	TP150	3E	R59	2E	R93	2B	C46	3E	C98	2B
Q5	4C	TP38	4E	R3	5E	R60	3D	R95	3D	C47	4B	C106	4B
Q6	4C	TP39	4F	R5	3F	R61	3B	R98	2B	C48	4B	C113	3C
Q13	3B	TP46	4E	R6	3F	R62	3B	R99	2C	C50	4D	C118	4C
L2	2D	TP41	4F	R8	3F	R63	3B	R100	2D	C55	4E	C119	2C
L3	1D	TP42	4E	R21	2B	R64	3C	R103	2B	C56	4E	C120	4C
L4	3E	TP43	4E	R22	3F	R65	3B	R107	3B	C58	2D	C121	2D
L5	2E	TP44	4E	R24	3E	R66	3B	R108	2D	C62	2E	C123	4B
L6	3B	TP52	4F	R26	3E	R70	1C	R110	2D	C66	4E	C128	2E
L7	4B	TP54	4E	R29	4F	R71	4B	R118	4B	C67	3E	C134	3C
L9	2B	TP55	4E	R30	4F	R72	4B	R119	4A	C70	3E	C139	3E
L10	2B	TP56	3E	R31	2B	R73	4B	R120	4A	C73	2D	C154	3D
L11	4B	TP57	3E	R35	4D	R74	4B	R123	4B	C74	3E	C155	3D



A MD SERVO P.C.B. (SIDE:B)

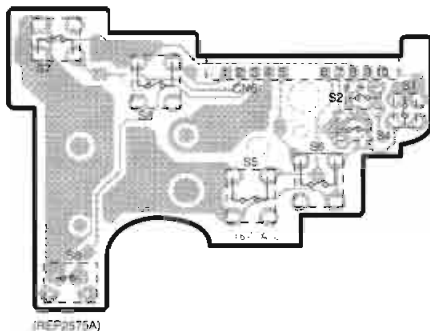
■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
A MD SERVO P.C.B. (SIDE B)											
C1	2F	R13	2C	R111	2B	C17	3E	C53	3F	C103	4B
IC72	4D	R14	2E	R112	2B	C18	3E	C57	3E	C110	3F
Q10	1B	R15	2E	R114	4C	C19	2F	C59	3F	C111	3E
Q11	2C	R16	2E	R115	4C	C20	2F	C60	2B	C112	4C
D5	2C	R17	2F	R116	4D	C22	4E	C61	3E	C114	4C
D6	1C	R18	2E	R117	4D	C23	3F	C64	2E	C115	4C
D9	5C	R19	2E	R121	4C	C24	2E	C65	2E	C117	2B
VR1	2A	R20	2E	R122	5B	C25	3E	C71	4E	C122	2F
TH1	2E	R23	3E	R124	4C	C26	3E	C72	4D	C129	2E
L1	3F	R25	2E	R125	4C	C28	3F	C84	4E	C133	2C
L8	2B	R28	3E	R130	5B	C29	2F	C85	4D	C138	2C
L12	3C	R32	3E	R131	4D	C30	3F	C86	2E	C140	3A
L13	3A	R34	3E	R132	4B	C31	3F	C90	3D	C141	4C
L15	4C	R45	3E	R134	4B	C32	3E	C91	4D	C142	4C
L17	2A	R47	4E	R135	4B	C33	4D	C93	3B	C143	4C
X1	3C	R67	4D	C1	2E	C34	4C	C94	4B	C144	2B
X2	3D	R76	4B	C7	2F	C37	2E	C95	4B	C147	2A
CP6	5E	R81	4D	C8	2E	C40	2C	C96	3B	C148	2A
R1	2E	R83	4D	C11	2E	C41	2D	C97	4B	C149	2A
R2	4C	R87	4C	C12	2F	C42	2D	C99	4D		
R10	2E	R104	4B	C13	2F	C45	3E	C100	4B		
R17	4D	R105	4B	C15	3D	C51	2D	C101	4B		
R12	4E	R109	4D	C16	2E	C52	2C	C102	4B		

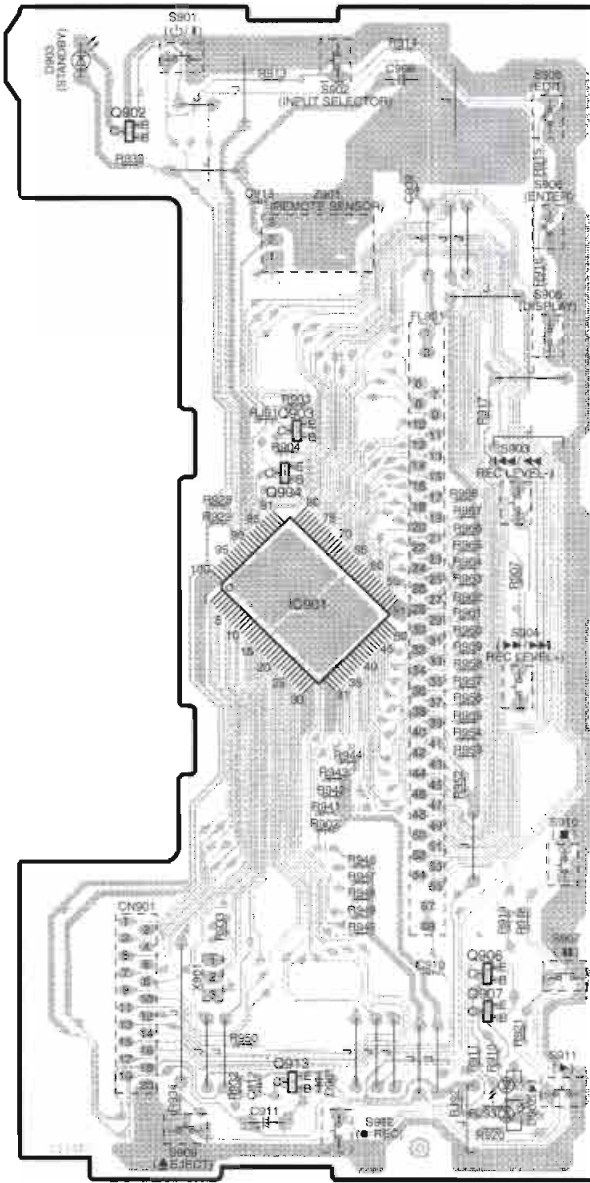
A B C D E F

1
2
3
4
5
6
7
8

B SWITCH P.C.B.

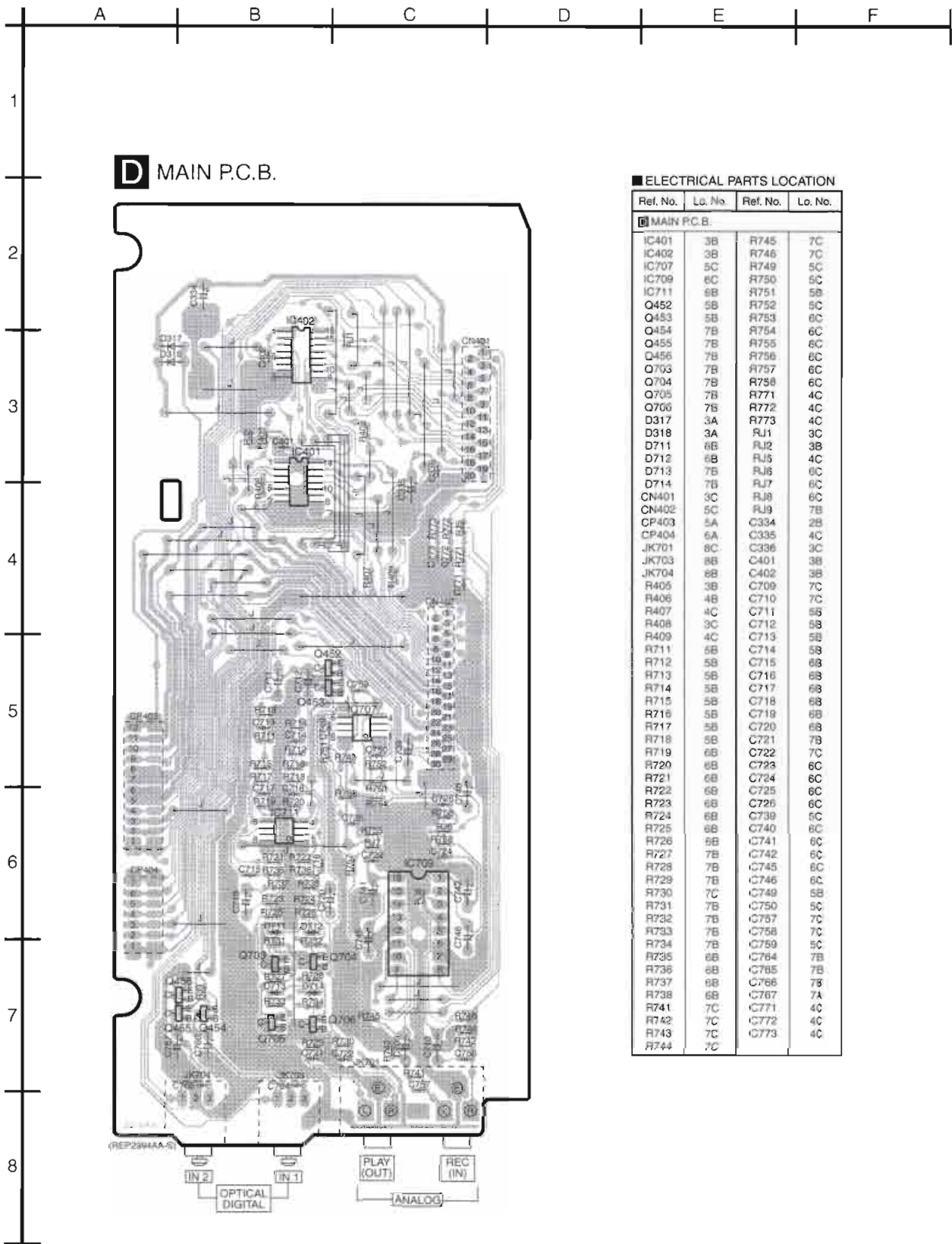


C OPERATION P.C.B.



■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
B SWITCH P.C.B.					
S1	2C	S4	2C	S7	2A
S2	2C	S5	2B	S8	3A
S3	2B	S6	2B	CN6	2B
C OPERATION P.C.B.					
IC901	4E	R904	4E	R950	7E
Q902	2D	R907	4F	R952	5F
Q903	4E	R910	7F	R953	5F
Q904	4E	R911	7F	R954	5F
Q906	6F	R913	2E	R955	5F
Q907	6F	R914	2E	R956	5F
Q913	7E	R915	2F	R957	5F
Q901	7E	R918	3F	R958	5F
D902	7F	R917	4F	R959	5F
D903	2D	R918	6F	R960	5F
Z901	3E	R919	6F	R961	5F
X901	6D	R920	7F	R962	4F
FL901	3F	R921	7F	R963	4F
S901	2D	R926	4E	R964	4F
S902	2E	R929	4E	R965	4F
S903	4F	R932	7E	R966	4F
S904	5F	R933	6E	R967	4F
S905	2F	R934	7D	R968	4F
S906	3F	R938	2D	RJ91	4E
S907	6F	R941	6E	RJ92	7F
S908	3F	R942	5E	RJ93	7F
S909	7D	R943	5E	C908	2E
S910	6F	R944	5E	C909	2E
S911	7F	R945	6E	C910	6F
S912	7E	R946	6E	C911	7E
CN901	6D	R947	6E	C912	7E
R902	6E	R948	6E	C913	2E
R903	3E	R949	6E		



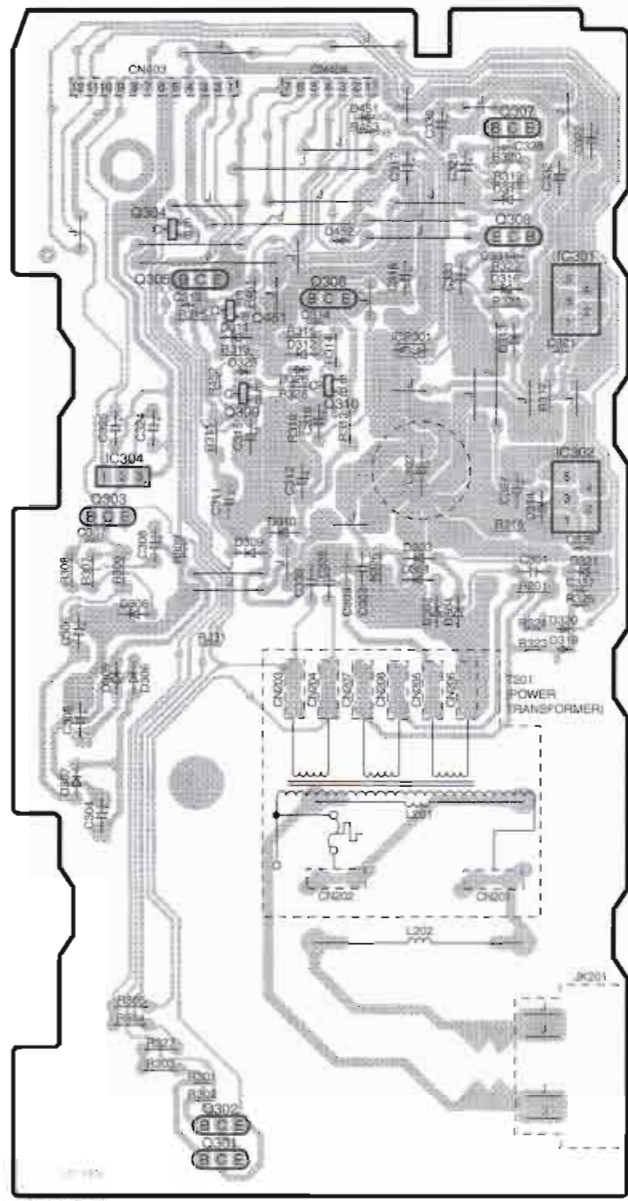
D MAIN P.C.B.

■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.
■ MAIN P.C.B.			
IC401	3B	R745	7C
IC402	3B	R746	7C
IC707	5C	R749	5C
IC709	6C	R750	5C
IC711	6B	R751	5B
Q452	5B	R752	5C
Q453	5B	R753	6C
Q454	7B	R754	6C
Q455	7B	R755	6C
Q456	7B	R756	6C
Q703	7B	R757	6C
Q704	7B	R758	6C
Q705	7B	R771	4C
Q706	7B	R772	4C
D317	3A	R773	4C
D318	3A	RJ1	3C
D711	6B	RJ2	3B
D712	6B	RJ5	4C
D713	7B	RJ6	6C
D714	7B	RJ7	6C
CN401	3C	RJ8	6C
CN402	5C	RJ9	7B
CP403	5A	C334	2B
CP404	6A	C335	4C
JK701	6C	C336	3C
JK703	6B	C401	3B
JK704	6B	C402	3B
R405	3B	C709	7C
R406	4B	C710	7C
R407	4C	C711	5B
R408	3C	C712	5B
R409	4C	C713	5B
R711	6B	C714	5B
R712	5B	C715	6B
R713	5B	C716	6B
R714	5B	C717	6B
R715	5B	C718	6B
R716	5B	C719	6B
R717	5B	C720	6B
R718	5B	C721	7B
R719	6B	C722	7C
R720	6B	C723	6C
R721	6B	C724	6C
R722	6B	C725	6C
R723	6B	C726	6C
R724	6B	C739	5C
R725	6B	C740	6C
R726	6B	C741	6C
R727	7B	C742	6C
R728	7B	C745	6C
R729	7B	C746	6C
R730	7C	C749	5B
R731	7B	C750	5C
R732	7B	C757	7C
R733	7B	C758	7C
R734	7B	C759	5C
R735	6B	C764	7B
R736	6B	C765	7B
R737	6B	C766	7B
R738	6B	C767	7A
R741	7C	C771	4C
R742	7C	C772	4C
R743	7C	C773	4C
R744	7C		



E POWER SUPPLY P.C.B.



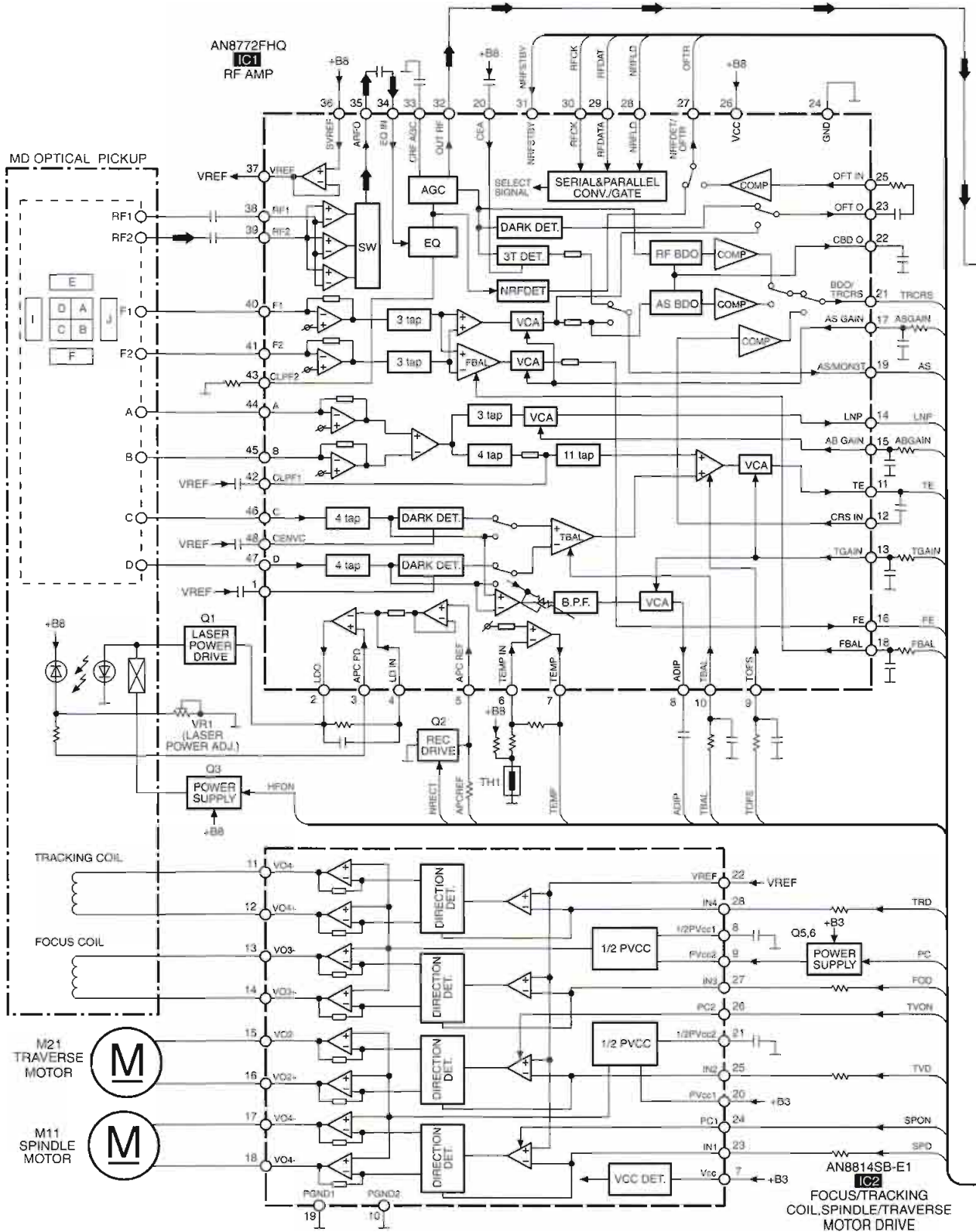
■ ELECTRICAL PARTS LOCATION

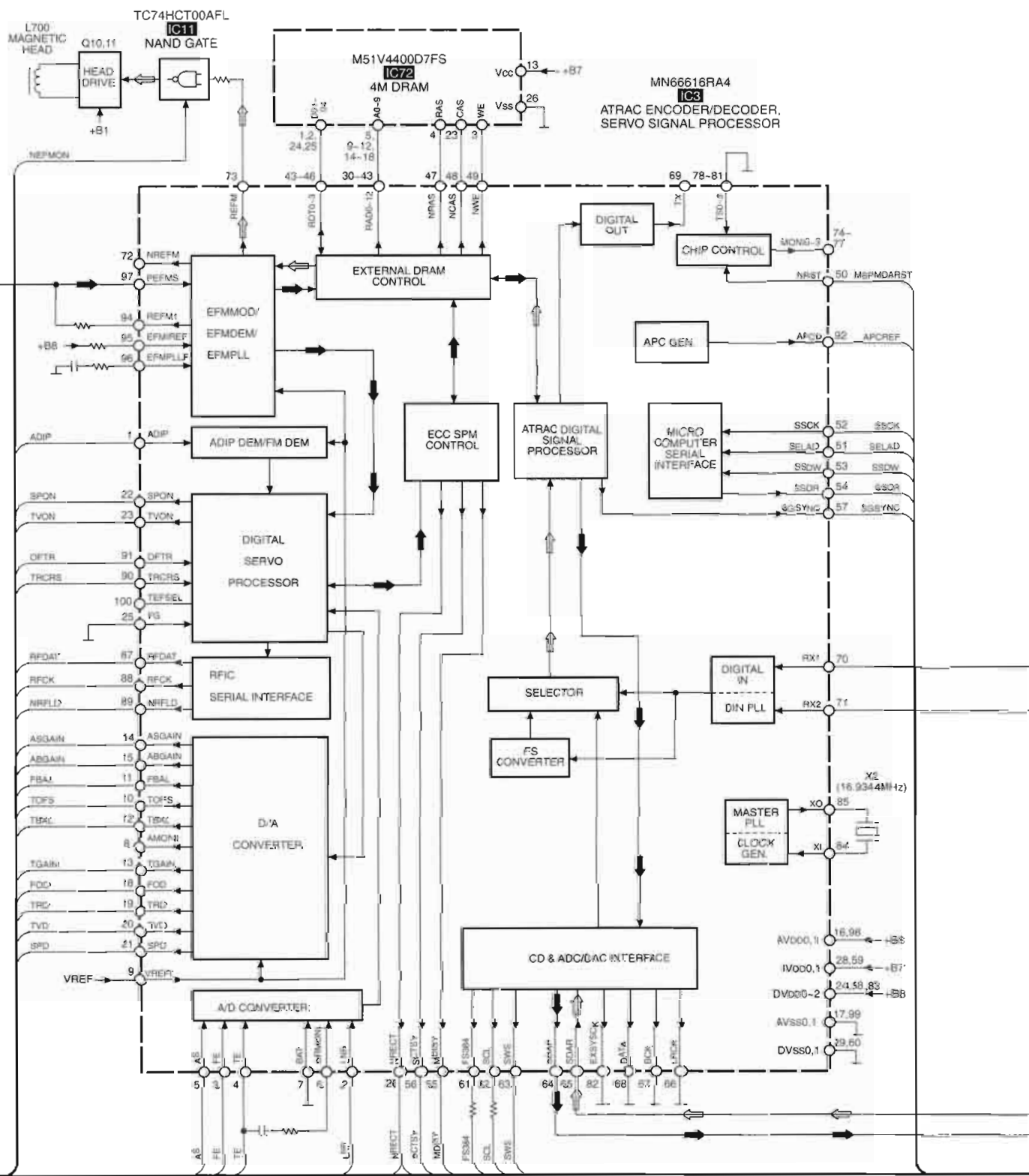
Ref. No.	Lo. No.	Ref. No.	Lo. No.
■ POWER SUPPLY P.C.B.			
IC301	3D	R307	4A
IC302	4D	R308	4A
IC304	4B	R309	4B
Q301	7B	R310	4C
Q302	7B	R311	4B
Q303	4B	R312	4C
Q304	3B	R313	3B
Q305	3B	R314	3C
Q306	3C	R315	3B
Q307	2D	R316	3C
Q308	3D	R317	3D
Q309	3B	R318	4D
Q310	3C	R319	2D
D451	3B	R320	2D
D301	4C	R321	3D
D302	4C	R322	3D
D303	4C	R323	5D
D304	4C	R324	5D
D305	6B	R325	4D
D306	5B	R326	4C
D307	5A	R327	7B
D308	5B	R328	3C
D309	4B	R451	3B
D310	4B	R452	3B
D311	3B	R453	2C
D312	5C	RL31	5B
D313	3D	C301	4D
D314	4D	C302	4C
D315	2D	C303	4C
D316	3D	C304	6B
D319	5D	C305	5A
D320	5D	C306	5A
D321	4D	C307	4A
D325	3B	C308	4B
D326	3C	C309	4C
D451	2C	C911	4B
D452	3C	C312	4C
ICP301	3C	C313	3B
L201	5C	C314	3C
L202	6C	C315	4B
T201	5C	C316	4C
CN201	6C	C317	2C
CN202	6C	C318	3C
CN203	5B	C321	3D
CN204	5C	C322	2D
CN205	5C	C324	4B
CN206	5C	C325	4B
CN207	5C	C326	4D
CN208	5C	C327	4D
CN403	2B	C328	2D
CN404	2C	C329	2C
JK201	7D	C330	2C
R201	4D	C331	3D
R301	7B	C332	2D
R302	7B	C333	3C
R303	7B	C337	4D
R304	7B	C338	4C
R305	6B	C339	4C
R306	4B		

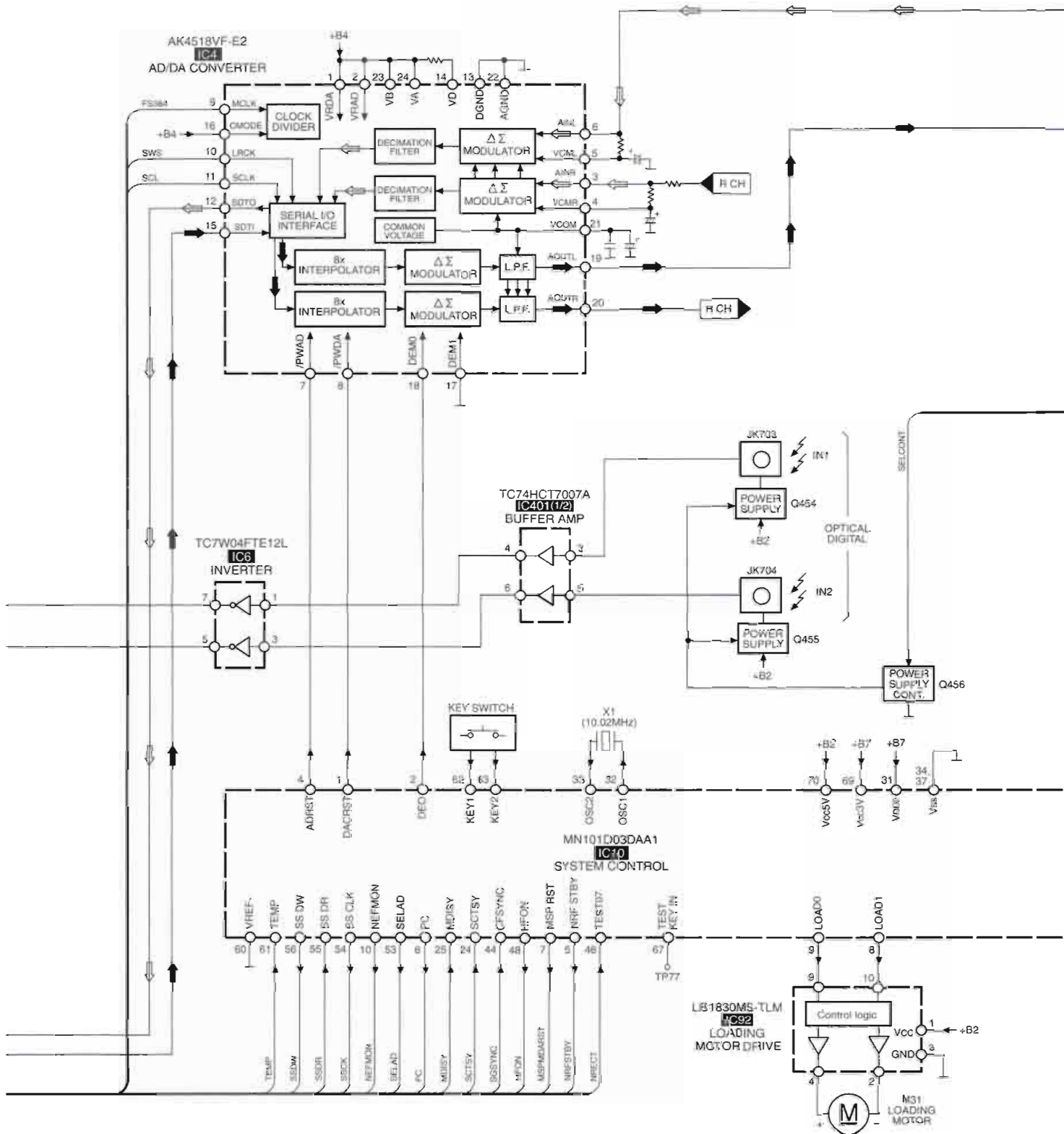
AC IN
(230-240V 50Hz)

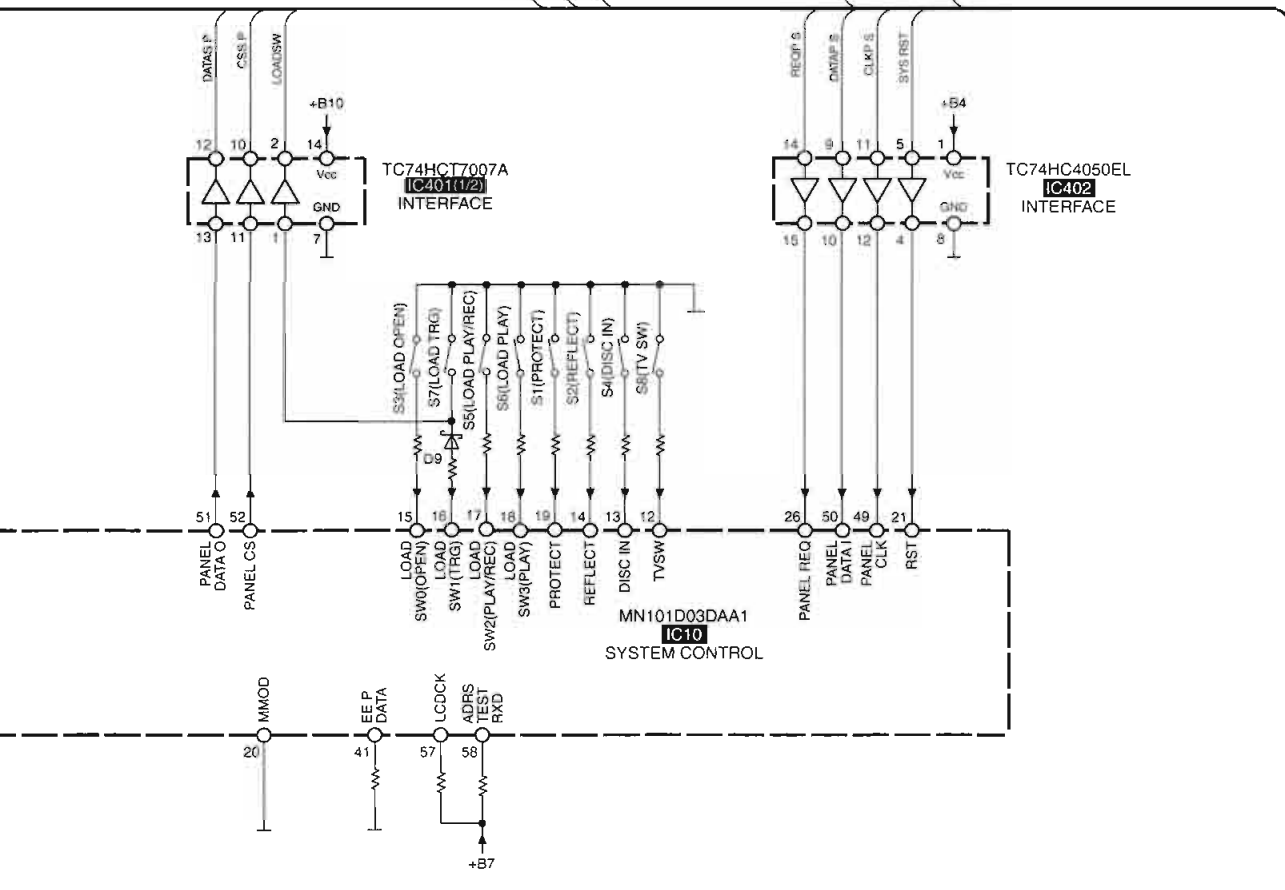
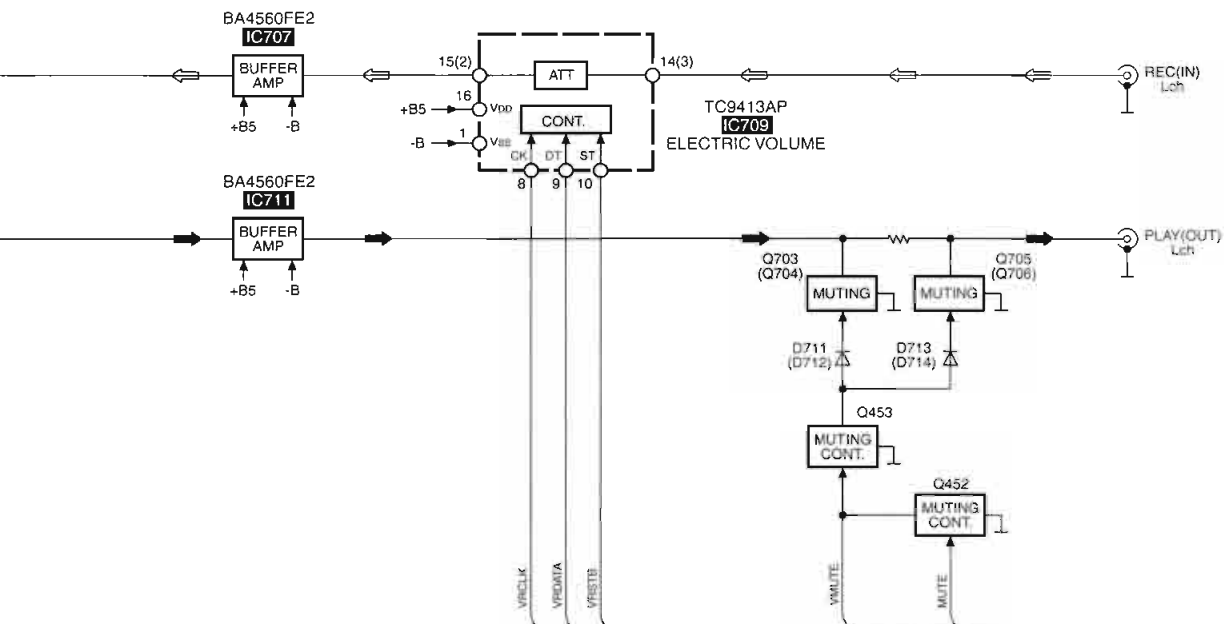
(REP2204AB-5)

14 Block Diagram



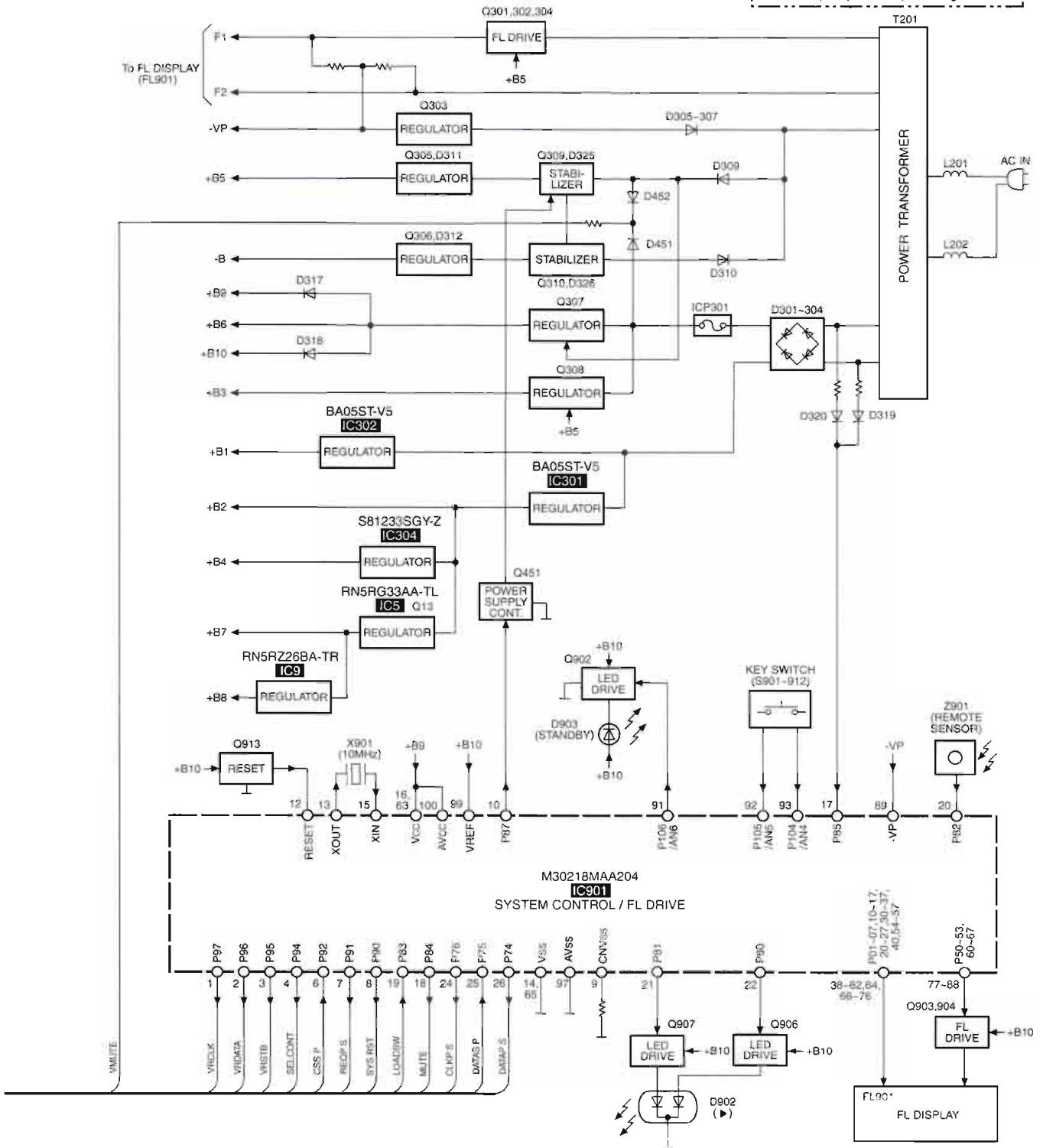




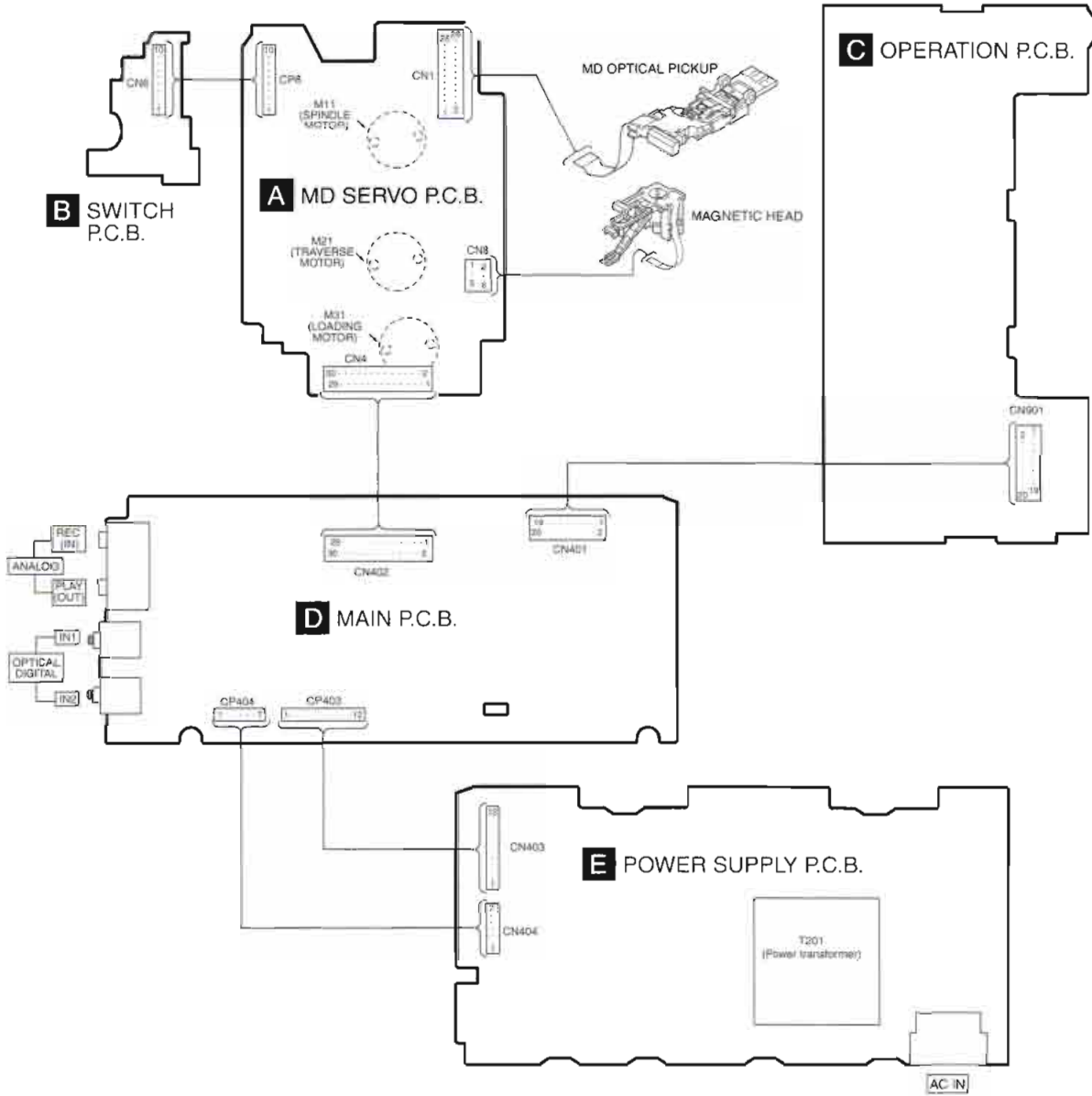


NOTE

- → PLAYBACK SIGNAL LINE
- → RECORDING SIGNAL LINE
- () indicates pin No. Right channel.



15 Wiring Connection Diagram



16 Terminal Function of IC's

16.1. IC1 (AN8772FHQ) : RF AMP

Pin No.	Mark	I/O Division	Function
1	CENVD	—	D signal det. capacitor connection terminal
2	LDO	O	Laser amp output terminal
3	APCPD	I	Photo diode light quantity det. input terminal
4	LD IN	I	Laser amp reverse input terminal
5	APC REF	I	APC amp criterion voltage input terminal
6	TEMP IN	I	Temperature sensor amp input terminal
7	TEMP	O	Temperature sensor amp output terminal
8	ADIP	O	ADIP signal output terminal
9	TOFS	I	Tracking error offset adjustment terminal
10	TBAL	I	Tracking ballance adjustment terminal
11	TE	O	Tracking error signal output terminal
12	CRS IN	I	Track cross input terminal
13	TGAIN	I	Tracking gain adjustment input terminal
14	LNP	O	Lens position signal output terminal
15	AB GAIN	I	APP compensation signal gain adjustment terminal
16	FE	O	Focus error signal output terminal
17	AS GAIN	I	AS gain adjustment terminal
18	FBAL	I	Focus ballance adjustment terminal
19	AS/MON3T	O	AS/3TMON signal output terminal
20	CEA	I	3T envelope det. capacitor connection terminal
21	BDO/ TRCRS	O	BDO/Track cross signal output terminal
22	CBD O	O	BDO detection capacitor connection terminal
23	OFT O	O	Off track detection signal output terminal
24	GND	—	GND terminal
25	OFT IN	I	Off track detection signal input terminal
26	VCC	I	Power supply terminal (+3V)
27	NRFDET /OFTR	O	NRFDET/off track signal output terminal
28	NRFLD	I	Serial command latch signal input terminal
29	RF DATA	I	Serial command data signal input terminal
30	RFCK	I	Serial command clock input terminal
31	NRFSTBY	I	Standby control signal input terminal
32	OUT RF	O	EFM signal output terminal
33	CRF AGC	—	RFAGC capacitor connection terminal
34	EQ IN	I	EQ input terminal
35	ARFO	O	RF amp. output terminal
36	SVREF	I	Reference voltage input terminal
37	VREF	O	Reference voltage output terminal
38	RF1	I	RF1 signal input terminal
39	RF2	I	RF2 signal input terminal
40	F1	I	F1 signal input terminal
41	F2	I	F2 signal input terminal
42	CLPF1	—	APP compensation LPF capacitor connection terminal
43	CLPF2	—	RF equalizer adjustment resistor connection terminal
44~47	A~D	I	Beam A~D signal input terminal

Pin No.	Mark	I/O Division	Function
48	CENVC	—	Beam E signal detection capacitor connection terminal

16.2. IC2 (AN8814SB-E1) : FOCUS/TRACKING COIL, SPINDLE/TRAVERSE MOTOR DRIVE

Pin No.	Mark	I/O Division	Function
1	REG B	—	3.3V external transistor control terminal (Not used, open)
2	REG M	—	3.3V regular output monitor terminal (Not used, connected to GND)
3	NC	—	Not used, open
4	OPO	O	Op-amp output terminal
5	OP-	I	Op-amp invert input terminal
6	OP+	O	Op-amp non-invert output terminal (Not used, connected to GND)
7	Vcc	I	Power supply terminal
8	1/2 PVcc2	O	1/2 PVcc output terminal 1 (Connected to GND through capacitor)
9	PVcc2	I	Power supply terminal for driver
10	PGND2	—	GND terminal
11	VO4-	O	Tracking coil driver output terminal
12	VO4+	O	Tracking coil driver output terminal
13	VO3-	O	Focus coil driver output terminal
14	VO3+	O	Focus coil driver output terminal
15	VO2-	O	Traverse motor drive output terminal
16	VO2+	O	Traverse motor drive output terminal
17	VO1-	O	Spindle motor drive output terminal
18	VO1+	O	Spindle motor drive output terminal
19	PGND1	—	GND terminal
20	PVcc1	I	Power supply terminal
21	1/2 PVcc1	O	1/2 PVcc output terminal 1 (Connected to GND through capacitor)
22	VREF	I	Reference voltage input
23	IN1	I	Spindle motor drive input terminal
24	PC1	I	Power cut 1 input terminal
25	IN2	I	Traverse motor drive input terminal
26	PC2	I	Power cut 2 input terminal
27	IN3	I	Focus drive input terminal
28	IN4	I	Tracking drive input terminal

16.3. IC3 (M6616RA1) : ATRAC ENCODER/DECORDER, SERVO SIGNAL PROCESSOR

Pin No.	Mark	I/O Division	Function
1	ADIP	I	ADIP FM signal input terminal
2	LNP	I	Lens position signal input terminal
3	FE	I	Focus error signal input terminal
4	TE	I	Tracking error signal input terminal
5	AS	I	AS signal input terminal
6	DRMONi	I	Drive voltage monitor input terminal
7	BAT	I	Battery power supply terminal (Not used, connected to GND)
8	AMONi	—	Servo analog monitor signal output (Not used, open)
9	VREFi	I	Reference voltage input terminal

Pin No.	Mark	I/O Division	Function
10	TOFS	O	Tracking off-set adjustment output terminal
11	FBAL	O	Focus balance adjustment output terminal
12	TBAL	O	Tracking balance adjustment output terminal
13	TGAIN	O	TE error gain adjustment output terminal
14	ASGAIN	O	Main beam amp gain adjustment output terminal
15	ABGAIN	O	APP adjustment output terminal
16	AV _{pp} 1	I	Power supply terminal
17	AV _{ss} 1	—	GND terminal
18	FOD	O	Focus drive signal output terminal
19	TRD	O	Tracking drive signal output terminal
20	TVD	O	Traverse motor drive signal output terminal
21	SPD	O	Spindle motor drive signal output terminal
22	SPON	O	Drive IC spindle ON signal output terminal
23	TVON	O	Drive IC traverse ON signal output terminal
24	DV _{pp} 0	I	Power supply terminal
25	FG	I	Connected to GND
26	NRECT	O	Rec/Play switching signal output terminal
27	IV _{pp} 2	—	Power supply terminal for I/O pad
28	IV _{pp} 0	—	Power supply terminal for I/O pad
29	DV _{ss} 0	—	GND terminal
30~32	RAD12 ~RAD10	—	DRAM address output terminal (Not used, open)
33~42	RAD9 ~RAD0	O	DRAM address output terminal
43~46	RDT3 ~RDT0	I/O	DRAM data input/output terminal
47	NRAS	O	DRAM row address strobe output terminal
48	NCAS	O	DRAM column address strobe output terminal
49	NWE	O	DRAM write enable output terminal
50	NRST	I	Reset signal input terminal
51	SELAD	I	MSP/MDA,I/F address select input terminal ("H" Address)
52	SSCK	I	MSP/MDA,I/F clock input terminal
53	SSDW	I	MSP/MDA,I/F write data input terminal
54	SSDR	O	MSP/MDA,I/F read data output terminal
55	MDISY	O	Leader synchronous signal output
56	SCTSY	O	ADIP synchronous noise output terminal
57	SGSYNC	O	Frame synchronous signal output terminal
58	DV _{pp} 1	I	Power supply terminal
59	IV _{pp} 1	—	Power supply terminal for I/O pad
60	DV _{ss} 1	—	GND terminal
61	FS384	O	384 Fs output terminal
62	SCL	O	Bit clock output terminal
63	SWS	O	Word clock output terminal
64	SDAP	O	Audio data output terminal
65	SDAR	I	Audio data input terminal
66	LRCK	I	CD word clock input terminal (Connected to GND)
67	BCK	I	CD bit clock input terminal (Connected to GND)
68	DATA	I	CD data input terminal (Connected to GND)
69	TX	O	Digital audio interface signal output terminal (Not used, open)

Pin No.	Mark	I/O Division	Function
70	RX1	I	Digital audio interface signal 1 input terminal
71	RX2	I	Digital audio interface signal 2 input terminal
72	NREFM	—	EFM modulation inverted output (Not used, open)
73	REFM	O	EFM modulation output terminal
74	MONI3	—	Monitor signal output (Not used, open)
75	MONI2	—	Monitor signal output (Not used, open)
76	MONI1	—	Monitor signal output (Not used, open)
77	MONI0	—	Monitor signal output (Not used, open)
78	TS3	I	Connected to GND
79	TS2	I	Connected to GND
80	TS1	I	Connected to GND
81	TS0	I	Connected to GND
82	EXSYSCK	—	External system clock input terminal (Not used, connected to GND)
83	DV _{pp} 2	I	Power supply terminal
84	XI	I	Crystal oscillator input terminal (F=16.9344MHz)
85	XO	O	Crystal oscillator output terminal (F=16.9344MHz)
86	VD _{ss} 2	—	GND terminal
87	RFDAT	O	RF serial data output terminal
88	RFCK	O	RF serial clock output terminal
89	NRFLD	O	RF serial load output terminal
90	TRCRS	I	Track cross input terminal
91	OFTR	I	Off-track signal input terminal
92	APCD	O	Laser power PWM output terminal
93	EXEFMCK	I	External FM clock input terminal (Not used, connected to GND through resistor)
94	PEFM1	O	EFM loop filter output terminal
95	EFMIREF	I	EFM PLL reference current input terminal
96	EFMPLLF	O	EFM PLL filter output terminal
97	PEFMS	I	EFM signal input terminal
98	AV _{pp} 0	I	Power supply terminal
99	AV _{ss} 0	—	GND terminal
100	TEFSEL	—	Not used, open

16.4. IC10 (MN101D03DAA) : SYSTEM CONTROL

Pin No.	Mark	I/O Division	Function
1	DACRST	O	DAC reset signal output terminal to IC4 ("L":Reset)
2	DEO	O	DE emphasis signal output terminal to IC4 ("L":DE emphases)
3	MUTE	—	AD-DA mute output terminal (Not used, open)
4	AD RST	O	Reset signal output terminal
5	NRFSTBY	O	Standby control signal output terminal ("L":Standby)
6	PC	O	Transistor drive signal output terminal ("H":Power ON)
7	MSP RST	O	MSP reset signal output terminal ("L":Reset)
8	LOAD1	O	Loading motor drive 1 output terminal
9	LOAD0	O	Loading motor drive 0 output terminal
10	NEFMON	O	Magnetic head current output terminal

Pin No.	Mark	I/O Division	Function
11	TEST01	O	Test signal output terminal (Not used, open)
12	TVSW	I	Traverse innermost detection switch signal input terminal
13	DISC IN	I	Disc detection switch signal input terminal
14	REFLECT	I	Reflection rate switch signal input terminal
15	LOAD SW0 (OPEN)	I	Loading mechanism position det. Switch 0 signal input terminal
16	LOAD SW1 (TRG)	I	Loading mechanism position det. Switch 1 signal input terminal
17	LOAD SW2 (PLAY/REC)	I	Loading mechanism position det. Switch 2 signal input terminal.
18	LOAD SW3 (PLAY)	I	Loading mechanism position det. Switch 3 signal input terminal
19	PROTECT	I	Erase prevention switch signal input terminal
20	MMOD	—	Connected to GND
21	RST	I	Reset signal input terminal ("L":Reset)
22	UNIT TEST	I	Test signal input terminal (Open)
23	CS2	I	Test signal input terminal (Open)
24	SCTSY	I	Micro computer interrupt signal input terminal (SUBQ/ADIP simultaneous signal)
25	MDISY	I	Micro computer interrupt signal input terminal (MD simultaneous signal)
26	PANEL REQ	I	Panel I/F request signal input terminal
27-29	LED OUT1 ~LED OUT3	O	Drive signal output terminal to LED DRIVE ("H":LED ON)
30	TEST02	O	Test signal output terminal (Not used, open)
31	V _{cc} 2(3V)	I	Power supply terminal (+3V)
32	OSC1	I	Crystal oscillator input terminal (f=10MHz)
33	OSC2	O	Crystal oscillator output terminal (f=10MHz)
34	V _{SS}	—	GND terminal
35	XI	I	Not used, connected to GND
36	XO	O	Not used, open
37	V _{SS}	—	GND terminal
38	TEST03	O	Test signal output terminal (Not used, open)
39	EEPCS	O	EEPROM chip select signal output terminal (Not used, open)
40	EEPCK	O	EEPROM clock signal output terminal (Not used, open)
41	EEPDATA	I/O	EEPROM data in/output terminal (Connected to GND through resistor)
42	TEST04	O	Test signal output terminal (Not used, open)
43	TEST05	O	Test signal output terminal (Not used, open)
44	CFSYNC	I	ATRACK management frame simultaneous signal input terminal
45	TEST06	O	Test signal output terminal (Not used, open)
46	TEST07	I	Connected to rec/play switch signal
47	TOK OK	O	Not used, open
48	HF ON	I	Drive signal input terminal to Q3 (POWER SUPPLY CONTROL)
49	PANEL CLK	I	Panel I/F clock input terminal
50	PANEL DATA I	I	Panel I/F data input terminal
51	PANEL DATA O	O	Panel I/F data output terminal
52	PANEL CS	O	Panel I/F chip select output terminal
53	SELAD	O	Micro computer I/F address select output terminal
54	SSCLK	O	Micro computer I/F clock output terminal

Pin No.	Mark	I/O Division	Function
55	SSDR	I	Micro computer I/F reading data input terminal
56	SSDW	O	Micro computer I/F writing data output terminal
57	LCDCCK	O	LCD clock test signal output terminal (Connected to power supply through resistor)
58	ADRS TEST RXD	O	Test signal output terminal (Connected to power supply through resistor)
59	LCD DATA TXD	O	Test signal output terminal (Not used, open)
60	VREF-	—	Connected to GND
61	TEMP	I	Temperature sensor amp input terminal
62	KEY1	I	Key input 1 terminal
63	KEY2	I	Key input 2 terminal
64	MO LOAD	I	Test signal input terminal ("L":Without loading mechanism) (Open)
65	SRVTEST	I	Test signal input terminal ("L":Servo test mode) (Open)
66	LOAD P	I	Test signal input terminal (Open)
67	TEST KEY IN	I	Test signal input terminal ("L":Unit key mode) (Open)
68	SRV LOAD	I	Test signal input terminal ("L":Using for servo primary values EEPROM)
69	V _{CC} 3V	I	Power supply terminal (+3V)
70	V _{CC} 5V	I	Power supply terminal (+5V)
71	SELADDA	I	AD/DA converter select signal input terminal (Open)
72	SLOCK	O	Spindle lock test signal output terminal (Not used, open)
73	TLOCK	O	Tracking lock signal output terminal ("H":lock) (Not used, open)
74	FLOCK	O	Focus lock test signal output terminal ("H":lock) (Not used, open)
75	ERROR	O	Servo error test signal output terminal (Not used, open)
76	BUSY	O	Servo busy test signal output terminal (Not used, open)
77	SBPRETRY	O	Signal management retry test signal output terminal (Not used, open)
78	SRVRETRY	O	Servo retry test signal output terminal (Not used, open)
79	ARDSKIP	O	Address skip test signal output terminal (Not used, open)
80	SPMWE	O	SPM take in test signal output terminal (Not used, open)

16.5. IC72 (MNV4400-T8T) : 4M DRAM

Pin No.	Mark	I/O Division	Function
1	DO1	I/O	DRAM data 1 in/output terminal
2	DO2	I/O	DRAM data 2 in/output terminal
3	WE	I	DRAM light enable input terminal
4	RAS	I	DRAM low address strobe input terminal
5	A9	I	DRAM address 9 input terminal
9	A0	I	DRAM address 0 input terminal
10-12	A1-A3	I	DRAM address 1-3 input terminal
13	V _{CC}	I	Power supply terminal
14-18	A4-A8	I	DRAM address 4-8 input terminal
22	OE	I	DRAM output enable input terminal (Not used, connected to GND)
23	CAS	I	DRAM calam address strobe input terminal
24	DO3	I/O	DRAM data 3 in/output terminal

Pin No.	Mark	I/O Division	Function
25	DO4	I/O	DRAM data 4 in/output terminal
26	V _{SS}	—	GND terminal

Pin No.	Mark	I/O Division	Function
98	P100/AN0	—	Not used, connected to GND
99	VREF	I	Reference voltage input terminal
100	AV _{CC}	I	Power supply input terminal

16.6. IC901 (M30218MAA204): FL DRIVE/SYSTEM CONTROL

Pin No.	Mark	I/O Division	Function
1	P97	O	VR control clock output terminal
2	P96	O	VR control data output terminal
3	P95	O	VR control STB output terminal
4	P94	O	Digital in 1/2 select signal output terminal ("H": in 1)
5	P93	—	Not used, connected to GND
6	P92	I	Chip select input terminal
7	P91	O	Request signal output terminal
8	P90	O	Reset signal output terminal
9	CNV _{SS}	—	Flash write signal voltage (Connected to GND through resistor)
10	P87	O	Power on/off control signal output terminal
11	P86	—	Not used, connected to GND
12	RESET	I	Reset signal input terminal
13	XOUT	O	Clock ceramic oscillator output terminal (f=10MHz)
14	V _{SS}	—	GND terminal
15	XIN	I	Clock ceramic oscillator output terminal (f=10MHz)
16	V _{CC}	I	Power supply terminal
17	P85	I	AC detect terminal
18	P84	O	Audio mute signal output terminal
19	P83	I	Unit load switch signal input terminal
20	P82	I	Remote control data input terminal
21	P81	O	Play LED drive signal output terminal ("L": LED on)
22	P80		
23	P77	I	Not used, connected to power supply through resistor
24	P76	O	Communication clock output terminal
25	P75	I	Data input terminal
26	P74	O	Data output terminal
27~30	P73~P70	I	Not used, connected to power supply through resistor
31~34	P47~P44	—	Not used, connected to power supply through resistor
35	P43	—	Not used, connected to GND
36	P42	I	Model select terminal
37	P41	—	Not used
38	P40	O	FL segment control signal output terminal
39~46	P37~P30		
47~62	P27~P10		
63	V _{CC}	I	Power supply input terminal
64	P07	O	FL segment control signal output terminal
65	V _{SS}	—	GND terminal
66~72	P06~P00	O	FL segment control signal output terminal
73~80	P57~P80		
81~86	P67~62	O	FL grid control signal output terminal
87	P61	O	Q904 drive signal output terminal
88	P60	O	Q903 drive signal output terminal
89	-VP	I	Power supply input terminal
90	P107/AN7	—	Not used, connected to GND
91	P106/AN6	O	Q902 drive signal output terminal
92	P105/AN5	I	Key switch input terminal
93	P104/AN4		
94~96	P103/AN3~P101/AN1	—	Not used, connected to GND
97	AV _{SS}	—	GND terminal

17 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.

*Warning: This product uses a laser diode. Refer to caution statements. eit

***ACHTUNG:** Die Lasereinheit nicht zerlegen. Die Lasereinheit darf nur gegen eine vom Hersteller spezifizierte Einheit ausgetauscht werden.

*Capacity values are in microfarads (μ F) 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)

*[MAVD] indicates in Remarks column parts that are supplied by MAVD.

*The marking <RTL> indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

**<A>”, ”, <C>”, marks in Remarks indicate languages of instruction manuals. [<A> : German / Italian / French, : Netherlands / Danish / Spanish / Swedish / Polish, <C> : English]

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RHD30007-S	SCREW	4	
2	RKM0412A-N	CABINET	1	
3	XTBS3+8JFZ1	SCREW	12	
4	REZ1250	FFC (30P)	1	[MAVD]
5	REZ1316	FFC (20P)	1	[MAVD]
6	RKA0114-K	FOOT	4	
6-1	RKA0083-K	CUSHION	4	
7	XTB3+5JFZ	SCREW	4	
9	XTBR3+20JFZ	SCREW	2	
11	XTB3+10JFZ	SCREW	2	
12	RMG0387A-K	RUBBER	1	
13	RMN0195	FL HOLD PIECE	2	
14	RGG0183-N2	AL PANEL	1	[MAVD]
15	RGK0977-N	MD LID	1	[MAVD]
16	RGL0499-Q	INDICATOR	1	[MAVD]
17	RGPO792-N1	SUB PANEL	1	[MAVD]
18	RGU1843-N	BUTTON	1	
19	RGU1859-N	BUTTON	1	
20	RHD20010	SCREW	1	
21	RHD26021	SCREW	10	
22	RKW0607-K	FL WINDOW	1	[MAVD]
23	RMB0645	SPRING	1	[MAVD]
100	RED0047-1	MAGNETIC HEAD	1	[MAVD]
101	RHD17021	SCREW	1	
102	RHD17022	SCREW	1	
103	RMC0348	THRUST SPRING	1	
104	RMC0349	NUT PLATE SPRING	1	
105	RML0515	HEAD SIFTER	1	
106	RMQ0750	REF BASE	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
107	RMQ0751	NUT PLATE	1	
108	RMS0611	MAIN SHAFT	1	
109	RXJ0021	DRIVE SHAFT	1	
110	RXK0249	MECHANISM CHASSIS	1	
110-1	RDV0055	BELT	1	
110-2	REM0077	TRAVERSE MOTOR	1	
110-3	REM0078	LOADING MOTOR	1	
110-4	RMB0548	PRESSURE SPRING	1	
110-5	RMQ0752	DETECTOR PIN (1)	1	
110-6	RMQ0753	DETECTOR PIN (2)	2	
110-7	XQN17+C25FZ	SCREW	4	
110-8	XYC2+FF105	SCREW	1	
111	RAF1701A-S	OPTICAL PICKUP	1	[MAVD] Δ
112	XTW2+6S	SCREW	1	
113	RHD20053	SCREW	4	
114	RMB0504	SPRING	4	
115	RMG0447-K	DAMPER	4	
116	XTM17+6GFZ	SCREW	1	
117	RXQ0558	HOLDER	1	
A1	EUR645274	REMOTE CONTROLLER	1	[MAVD]
A1-1	UR64EC1987B	BATT COVER (REMOTE CONT.)	1	
A2	RJA0044-3C	AC POWER SUPPLY CORD	1	[MAVD] (EB) Δ
A2	RJA0043-1C	AC POWER SUPPLY CORD	1	[MAVD] (EB) Δ
A3	RJL1X008B05	OPTICAL CABLE	1	
A4	RJL2P004B08A	RCA PIN CORD	2	
A5	RQA0117	WARRANTY CARD	1	
A6	RQCB0169	SERVICENTER LIST	1	
A7	RQT5452-D	INSTRUCTION MANUAL	1	[MAVD] (EG) <IA>
A7	RQT5453-E	INSTRUCTION MANUAL	1	[MAVD] (EG) <IB>
A7	RQT5454-B	INSTRUCTION MANUAL	1	[MAVD] <IC>
C1	ECUV1H221KBV	50V 220P	1	
C4	ECUVNJ105ZFY	63V 1U	1	(EB)
C5	ECUVNA224KBV	10V 0.22U	1	
C6	ECUVNJ105ZFY	63V 1U	1	(EB)
C7,C8	ECUVNA224KBV	10V 0.22U	2	
C11	ECUV1C223KBV	16V 0.022U	1	
C12	ECUV0J474KBV	6.3V 0.47U	1	
C13	ECUVNC393KBV	16V 0.039U	1	[MAVD] (EB)
C14	ECUV1H102KBV	50V 1000P	1	
C15	ECST0GY106RR	4V 10U	1	
C16	ECUV1H181KV	50V 180P	1	
C17	ECUV1H332KBV	50V 3300P	1	
C18	ECUV1H562KBV	50V 5600P	1	
C19	ECUVNC104ZFY	16V 0.1U	1	
C20	ECST0GY106RR	4V 10U	1	
C21	ECUV1H822KBV	50V 8200P	1	
C22	ECUV1H102KBV	50V 1000P	1	
C23	ECUVNC104ZFY	16V 0.1U	1	
C24	ECUV1H102KBV	50V 1000P	1	
C25	ECUVNC393KBV	16V 0.039U	1	[MAVD]
C26	ECUV1H472KBV	16V 4700P	1	
C28	ECST0GY226RR	4V 22U	1	
C29	ECUV1H332KBV	50V 3300P	1	
C30	ECUV1E123KBV	25V 0.012U	1	
C31,32	ECUV1H102KBV	50V 1000P	2	
C33	ECST0GY106RR	4V 10U	1	
C34,35	ECUV1H102KBV	50V 1000P	2	
C37	ECUV1H181KV	50V 180P	1	
C40	ECUVNC104ZFY	16V 0.1U	1	
C41	ECEV0JA331P	6.3V 330U	1	
C42	ECST0GY106RR	4V 10U	1	
C45	ECST0GY106RR	4V 10U	1	
C46	ECUVNC104ZFY	16V 0.1U	1	
C47	ECUVNJ105ZFY	63V 1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C48	ECUVNC104ZV	16V 0.1U	1	
C50	ECUVNC104ZV	16V 0.1U	1	
C51,52	ECUVNJ105ZV	63V 1U	2	
C53	ECUV1H332KBV	50V 3300P	1	
C55-58	ECUV1H102KBV	50V 1000P	4	
C59	ECUVNC823KBV	16V 0.082U	1	
C60	ECEV1CA100NR	16V 10U	1	
C61	ECUV0J334KBV	16V 0.33U	1	
C62	ECUV1H221KBV	50V 220P	1	
C64	ECUV1E153KBV	25V 0.015U	1	
C65	ECUVNC104KBV	16V 0.1U	1	
C66	ECUVNC823KBV	16V 0.082U	1	
C67	ECUV1H392KBV	50V 3900P	1	
C70	ECUV1E123KBV	25V 0.012U	1	
C71-76	ECUVNC104ZV	16V 0.1U	6	
C79,80	ECUVNC104ZV	16V 0.1U	2	
C81	ECUV1H560JCV	50V 56P	1	
C82	ECUV1C473KBV	16V 0.047U	1	
C83,84	ECUVNC104ZV	16V 0.1U	2	
C85	ECST0GY106RR	4V 10U	1	
C86	ECUV1E153KBV	25V 0.015U	1	
C87	ECUVNC104ZV	16V 0.1U	1	
C88,89	ECUV1H331KBV	50V 330P	2	
C90,91	ECUV1H080DCV	50V 8P	2	
C92,93	ECUVNC104ZV	16V 0.1U	2	
C94	ECST0GY475RR	4V 4.7U	1	
C95	ECUVNC104ZV	16V 0.1U	1	
C96,97	ECST0GY475RR	4V 4.7U	2	
C98	ECUVNC104ZV	16V 0.1U	1	
C99	ECUV1H102KBV	50V 1000P	1	
C100	ECUVNC104ZV	16V 0.1U	1	
C101	ECST0GY106RR	4V 10U	1	
C102	ECUVNC104ZV	16V 0.1U	1	
C103	ECST0GY106RR	4V 10U	1	
C106	ECUV1H102KBV	50V 1000P	1	
C110	ECUVNC104ZV	16V 0.1U	1	
C111	ECST0GY106RR	4V 10U	1	
C112	ECEV1CA100NR	16V 10U	1	
C113	ECUVNC104ZV	16V 0.1U	1	
C114,15	ECUV1H561KBV	50V 560P	2	
C117	ECEV0JA331P	6.3V 330U	1	
C118	ECUVNA105KBN	10V 1U	1	
C119	ECUV1H102KBV	50V 1000P	1	
C120	ECUV1H560JCV	50V 56P	1	
C121	ECUV1H102KBV	50V 1000P	1	
C122	ECUVNJ105ZV	63V 1U	1	
C123	ECUVNC104ZV	16V 0.1U	1	
C128	ECUVNC104ZV	16V 0.1U	1	
C129	ECUV1H101JCV	50V 100P	1	
C133	ECUVNJ105ZV	63V 1U	1	
C134	ECUV1H331KBV	50V 330P	1	
C138	ECEV0JA470SR	6.3V 47U	1	
C139-42	ECUVNC104ZV	16V 0.1U	4	
C143	ECST0GY106RR	4V 10U	1	
C144	ECUV1E103KBV	25V 0.01U	1	
C147-49	ECUV1E103KBV	25V 0.01U	3	
C154,55	ECUV1H330GCV	50V 33P	2	
C301	ECBT1H104ZF5	50V 0.1U	1	
C302	ECA1CM103E	10000U	1	▲
C303	ECBT1H104ZF5	50V 0.1U	1	
C304-06	ECA1HM101	100U	3	▲
C307	ECUV1H102RCN	50V 1000P	1	
C308	ECEA1HKA220B	50V 22U	1	
C309	ECBT1H104ZF5	50V 0.1U	1	
C311,12	ECA1EM471	470U	2	▲
C313,14	ECUV1E104ZFN	25V 0.1U	2	
C315,16	ECEA1AKS470	10V 47U	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C317,18	ECA1AM221B	10V 220U	2	
C321	ECUVNE104KBN	25V 0.1U	1	
C322	ECEA0JKS101	6.3V 100U	1	
C324,25	ECEA0JKS470	6.3V 47U	2	
C326	ECUVNE104KBN	25V 0.1U	1	
C327	ECEA0JKS101	6.3V 100U	1	
C328	ECUV1H103KBN	50V 0.01U	1	
C329	ECEA1CKA470	16V 47U	1	
C330	ECEA0JKS101	6.3V 100U	1	
C331	ECUV1H103KBN	50V 0.01U	1	
C332	ECEA0JKS220	6.3V 22U	1	
C333	ECEA0JKS101	6.3V 100U	1	
C334	ECA0JM102	6.3V 1000U	1	
C335	ECEA0JKS470	6.3V 47U	1	
C336	ECUV1E104ZFN	25V 0.1U	1	
C337	ECUV1H103KBN	50V 0.01U	1	
C338,39	ECBT1H104ZF5	50V 0.1U	2	
C401,02	ECUV1E104ZFN	25V 0.1U	2	
C709-12	ECEA1CKA470	16V 47U	4	
C713,14	ECUV1H102KCN	50V 1000P	2	
C715-18	ECUV1H391KCN	50V 390P	4	
C719,20	ECEA1CKA470	16V 47U	2	
C721,22	ECUV1H102KCN	50V 1000P	2	
C723-26	ECUV1E223ZFN	25V 0.022U	4	
C739-42	ECEA1CKA470	16V 47U	4	
C745,46	ECEA1HKS3R3	50V 3.3U	2	
C749,50	ECUV1H220JCN	50V 22P	2	
C757,58	ECUV1H151JCN	50V 150P	2	
C759	ECUV1E104ZFN	25V 0.1U	1	
C764,65	ECUV1E104ZFN	25V 0.1U	2	
C766,67	ECEA1EKS4R7	25V 4.7U	2	
C771-73	ECUV1H101JCN	50V 100P	3	
C908	ECEA1AKS221B	6.3V 220U	1	
C909,10	ECUV1E104ZFN	25V 0.1U	2	
C911	ECEA1HKS2R2	50V 2.2U	1	
C912,13	ECUV1E104ZFN	25V 0.1U	2	
CN1	RJS2A4526T	CONNECTOR (26P)	1	
CN4	RJS2A4830T	CONNECTOR (30P)	1	
CN6	RJU113W10M	SOCKET (10P)	1	
CN8	RJS2A4506T	CONNECTOR (6P)	1	
CN201-08	RJS1A1101T1	CONNECTOR (1P)	8	
CN401	RJS1A6820	CONNECTOR (20P)	1	
CN402	RJS2A3330M	CONNECTOR (30P)	1	
CN403	RJT057W012-1	CONNECTOR (12P)	1	
CN404	RJT057W007-1	CONNECTOR (7P)	1	
CN901	RJS1A6220-1	CONNECTOR (20P)	1	
CP6	RJT113W10M	CONNECTOR (10P)	1	
CP403	RJU057W012	CONNECTOR (12P)	1	
CP404	RJU057W007-1	CONNECTOR (7P)	1	[MAVD]
D5, D6	SC80209TE12R	DIODE	2	
D9	MA728TX	DIODE	1	
D301-07	1D3-E	DIODE	7	▲
D308	MA4270H	DIODE	1	▲

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D309,10	1D3-E	DIODE	2	△
D311,12	MA4091M	DIODE	2	△
D313,14	MA4051M	DIODE	2	
D315	MA4062M	DIODE	1	△
D316	MA4056M	DIODE	1	△
D317,18	1SS291TA	DIODE	2	
D319,20	MA110TX	DIODE	2	
D321	MA4051M	DIODE	1	
D325,26	MA110TX	DIODE	2	
D451,52	MA110TX	DIODE	2	
D711-14	MA110TX	DIODE	4	
D901	MA110TX	DIODE	1	
D902	SML79420C	L. E. D.	1	
D903	LNJ201LPQJA	L. E. D.	1	
FL901	RSL0226-1F	FL DISPLAY	1	[MAVD]
IC1	AN8772FHQ	IC	1	
IC2	AN8814SB-E1	IC	1	
IC3	MN66616RA4	IC	1	
IC4	AK4518VF-E2	IC	1	
IC5	RN5RG33AA-TL	IC	1	△
IC6	TC7W04FTE12L	IC	1	
IC9	RN5RZ26BA-TR	IC	1	△
IC10	MN101D03DAA1	IC	1	
IC11	TC74HCT00AFL	IC	1	
IC72	M51V4400D7FS	IC	1	
IC92	LB1830MS-TLM	IC	1	
IC301,02	BA05ST-V5	IC	2	△
IC304	S81233SGY-Z	IC	1	△
IC401	TC74HCT7007A	IC	1	
IC402	TC74HC4050EL	IC	1	
IC707	BA4560FE2	IC	1	[MAVD]
IC709	TC9413AP	IC	1	[MAVD]
IC711	BA4560FE2	IC	1	[MAVD]
IC901	M30218MAA204	IC	1	[MAVD]
ICP301	SRUN10	IC PROTECTOR	1	△
JK201	SJS9236-1	JACK, AC IN	1	△
JK701	SJF3069-4N	JACK, ANALOG IN/OUT	1	
JK703,04	GPIF32R	JACK, OPTICAL IN	2	
L1	RLQU100KT-W	COIL	1	
L2, L3	RLQU101KT-W	COIL	2	
L4-L8	RLQU2R2MT-W	COIL	5	
L9-12	RLQU100KT-W	COIL	4	
L13, 14	RLQU2R2MT-W	COIL	2	
L15	RLQU100KT-W	COIL	1	
L16	RLQU2R2MT-W	COIL	1	
L17, 18	RLQP1R8KT2-Y	COIL	2	
L201,02	SLQX400-D	COIL	2	△
P1	RPF0139	PROTECTION BAG (F. B.)	1	
P2	RPG4938	PACKING CASE	1	[MAVD]
P3	RPNI310	CUSHION	1	[MAVD]
PCB1	REP2895A-T	MD SERVO P. C. B.	1	(RTL)
PCB2	REP2575A	SWITCH P. C. B.	1	(RTL)
PCB3	REP2994AB-S	POWER P. C. B.	1	[MAVD] (RTL)
PCB4	REP2994AC-5	PANEL P. C. B.	1	[MAVD] (RTL)
PCB5	REP2994AA-S	MAIN P. C. B.	1	[MAVD] (RTL)
Q1	2SB1295-6-TB	TRANSISTOR	1	

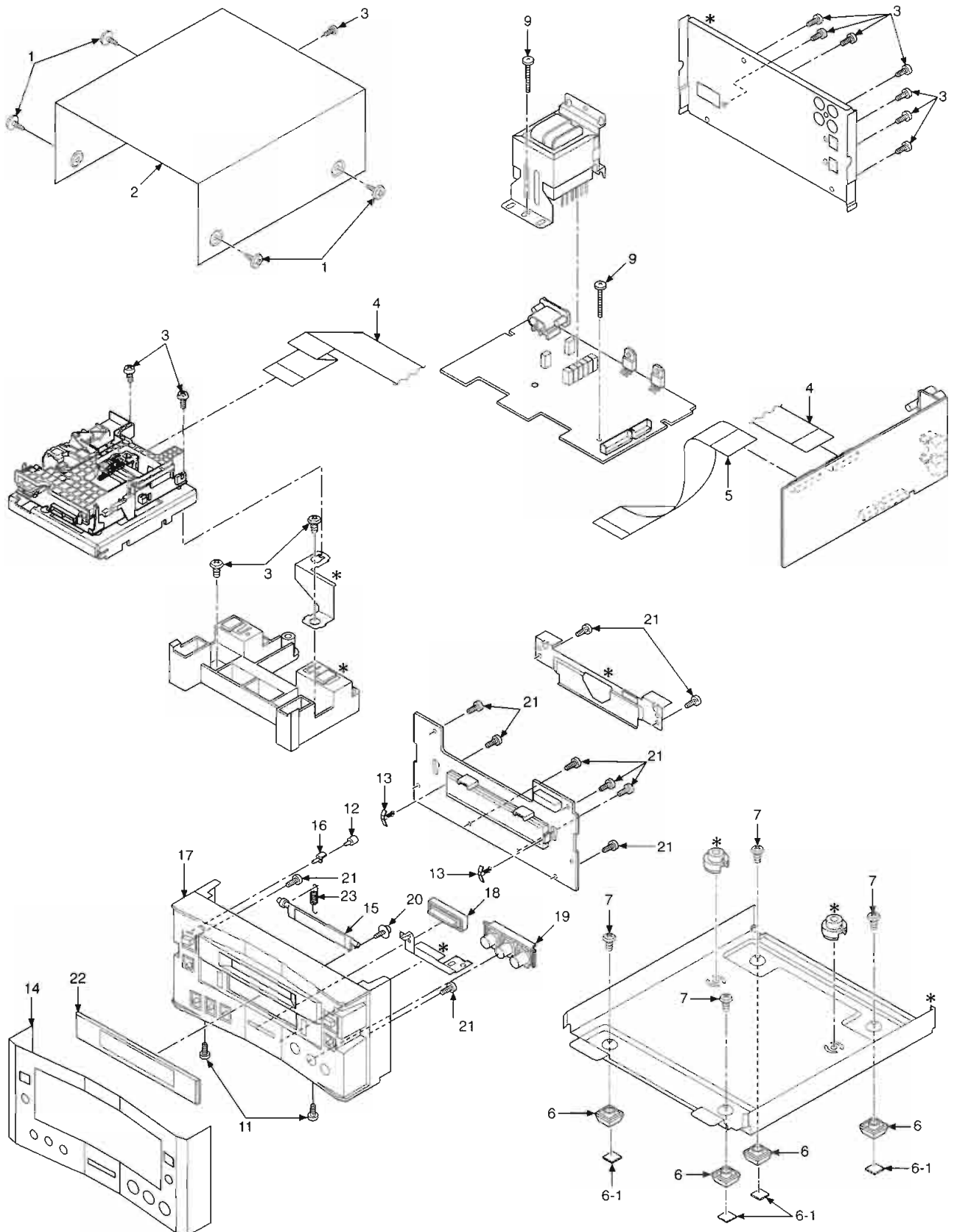
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q2	DTC114YETL	TRANSISTOR	1	
Q3	2SB1462STX	TRANSISTOR	1	
Q5	2SB1295-6-TB	TRANSISTOR	1	
Q6	DTC114YETL	TRANSISTOR	1	
Q10	2SJ278MYTR	TRANSISTOR	1	
Q11	2SK1764KYTR	TRANSISTOR	1	
Q13	2SB1121ST-TD	TRANSISTOR	1	△
Q301,02	2SD1450S	TRANSISTOR	2	
Q303	2SA1048GR	TRANSISTOR	1	△
Q304	DTA114EUT106	TRANSISTOR	1	
Q305	2SD1862QRTV6	TRANSISTOR	1	△
Q306	2SB1240-P	TRANSISTOR	1	△
Q307	2SD1862QRTV6	TRANSISTOR	1	△
Q308	2SD2037EFTA	TRANSISTOR	1	△
Q309	DTA114EUT106	TRANSISTOR	1	
Q310	DTC114EUT106	TRANSISTOR	1	
Q451,52	DTC114EUT106	TRANSISTOR	2	
Q453	DTA114EUT106	TRANSISTOR	1	
Q454,55	DTA143EUT106	TRANSISTOR	2	
Q456	DTC114EUT106	TRANSISTOR	1	
Q703-06	2SD1328-S	TRANSISTOR	4	
Q902-04	DTC114EUT106	TRANSISTOR	3	
Q906,07	DTA114EUT106	TRANSISTOR	2	
Q913	DTC114EUT106	TRANSISTOR	1	
R1	ERJ3GEYJ472V	1/16W 4.7K	1	
R2	ERJ3GEYJ102V	1/16W 1K	1	
R3	ERJ3GEYJ472V	1/16W 4.7K	1	
R5	ERJ3GEYJ1R0V	1/16W 1	1	
R6	ERJ3GEYJ472V	1/16W 4.7K	1	
R8	ERJ3GEYJ271V	1/16W 270	1	
R10	ERJ3GEYJ474V	1/16W 470K	1	
R11	ERJ3GEYJ101V	1/16W 100	1	
R12	ERJ3GEYJ223V	1/16W 22K	1	
R13	ERJ6GEYJ3R3V	1/8W 3.3	1	
R14	ERJ3GEYD103V	1/16W 10K	1	
R15	ERJ3GEYJ223V	1/16W 22K	1	
R16	ERJ3GEYJ104V	1/16W 100K	1	
R17	ERJ3GEYJ223V	1/16W 22K	1	
R18	ERJ3GEYJ103V	1/16W 10K	1	
R19	ERJ3GEYJ102V	1/16W 1K	1	
R20	ERJ3GEYJ473V	1/16W 47K	1	
R21	ERJ3GEYJ223V	1/16W 22K	1	
R22	ERJ3GEYOR00V	1/16W 0	1	
R23	ERJ3GEYJ272V	1/16W 2.7K	1	
R24	ERJ3GEYJ473V	1/16W 47K	1	
R25	ERJ3GEYJ104V	1/16W 100K	1	
R26	ERJ3GEYJ473V	1/16W 47K	1	
R28, 29	ERJ3GEYJ473V	1/16W 47K	2	
R30	ERJ3GEYJ102V	1/16W 1K	1	
R31	ERJ3GEYJ223V	1/16W 22K	1	
R32	ERJ3GEYJ473V	1/16W 47K	1	
R34	ERJ3GEYJ272V	1/16W 2.7K	1	
R35	ERJ3GEYJ183V	1/16W 18K	1	
R36	ERJ3GEYJ273V	1/16W 27K	1	
R37	ERJ3GEYJ333V	1/16W 33K	1	
R38	ERJ3GEYJ223V	1/16W 22K	1	
R42	ERJ3GEYJ102V	1/16W 1K	1	
R43	ERJ3GEYJ222V	1/16W 2.2K	1	
R44	ERJ3GEYJ223V	1/16W 22K	1	
R45	ERJ3GEYJ333V	1/16W 33K	1	
R46	ERJ3GEYJ222V	1/16W 2.2K	1	
R47	ERJ3GEYJ473V	1/16W 47K	1	
R50	ERJ3GEYJ102V	1/16W 1K	1	
R55	ERJ3GEYJ332V	1/16W 3.3K	1	
R56	ERJ3GEYJ223V	1/16W 22K	1	
R58	ERJ3GEYJ682V	1/16W 6.8K	1	
R59	ERJ3GEYJ683V	1/16W 68K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R60	ERJ3GEYJ332V	1/16W 3.3K	1	
R61,62	ERJ3GEYJ223V	1/16W 22K	2	
R63	ERJ3GEYJ103V	1/16W 10K	1	
R64-66	ERJ3GEYJ471V	1/16W 470	3	
R67	ERJ3GEYJ102V	1/16W 1K	1	
R70	ERJ3GEYJ102V	1/16W 1K	1	
R71,72	ERJ3GEYJ220V	1/16W 22	2	
R73	ERJ3GEYJ393V	1/16W 39K	1	
R74	ERJ3GEYJ822V	1/16W 8.2K	1	
R75	ERJ3GEYJ223V	1/16W 22K	1	
R76	ERJ3GEYJ100V	1/16W 10	1	
R77	ERJ3GEYJ223V	1/16W 22K	1	
R78-80	ERJ3GEYJ102V	1/16W 1K	3	
R81	ERJ3GEYJ223V	1/16W 22K	1	
R82	ERJ3GEYJ473V	1/16W 47K	1	
R83	ERJ3GEYJ105V	1/16W 1M	1	
R84	ERJ3GEYJ153V	1/16W 15K	1	
R85	ERJ3GEYJ223V	1/16W 22K	1	
R86,87	ERJ3GEYJ102V	1/16W 1K	2	
R89,90	ERJ3GEYJ102V	1/16W 1K	2	
R93	ERJ3GEYJ102V	1/16W 1K	1	
R95	ERJ3GEYJ222V	1/16W 2.2K	1	
R98,99	ERJ3GEYJ102V	1/16W 1K	2	
R100	ERJ3GEYJ473V	1/16W 47K	1	
R103	ERJ3GEYJ102V	1/16W 1K	1	
R104,05	ERJ3GEYJ272V	1/16W 2.7K	2	
R107-10	ERJ3GEYJ102V	1/16W 1K	4	
R111,12	ERJ3GEYJ221V	1/16W 220	2	
R114,15	ERJ3GEYJ103V	1/16W 10K	2	
R116,17	ERJ3GEYJ101V	1/16W 100	2	
R118	ERJ3GEYJ102V	1/16W 1K	1	
R119,20	ERJ3GEYJ101V	1/16W 100	2	
R121,22	ERJ3GEYJ272V	1/16W 2.7K	2	
R123	ERJ3GEYJ102V	1/16W 1K	1	
R124,25	ERJ3GEYJ473V	1/16W 47K	2	
R130	ERJ3GEYJ272V	1/16W 2.7K	1	
R131	ERJ3GEYJ101V	1/16W 100	1	
R132	ERJ3GEYJ272V	1/16W 2.7K	1	
R134,35	ERJ3GEYJ272V	1/16W 2.7K	2	
R137	ERJ3GEYJ103V	1/16W 10K	1	
R145,46	ERJ3GEYJ221V	1/16W 220	2	
R147	ERJ3GEYJ102V	1/16W 1K	1	
R174	ERJ3GEYJ103V	1/16W 10K	1	
R201	EQ16NKWR10E	0.1	1	△
R301,02	ERJ6GEYJ183V	1/10W 18K	2	
R303	ERDS2FJ5R6	1/4W 5.6	1	
R304,05	ERDS2FJ681	1/4W 680	2	
R306	ERD2FCG100	10	1	△
R307	ERDS2FJ332	1/4W 3.3K	1	
R308	ERDS2FJ221	1/4W 220	1	
R309,10	ERJ6GEYJ103V	1/10W 10K	2	
R311,12	ERD2FCJ4R7	4.7	2	△
R313,14	ERDS2FJ681	1/4W 680	2	
R315,16	ERDS2FJ271	1/4W 270	2	
R317,18	ERDS2FJ102	1/4W 1K	2	
R319	ERDS2FJ152	1/4W 1.5K	1	
R320	ERDS2FJ101	1/4W 100	1	
R321	ERDS2FJ221	1/4W 220	1	
R322	ERDS2FJ101	1/4W 100	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R323,24	ERJ6GEYJ222V	1/10W 2.2K	2	
R325	ERJ6GEYJ103V	1/10W 10K	1	
R326	ERDS2FJ103	1/4W 10K	1	
R327	ERDS2FJ5R6	1/4W 5.6	1	
R328	ERJ6GEYJ102V	1/10W 1K	1	
R405	ERJ6GEYJ103V	1/10W 10K	1	
R406	ERJ6GEYJ681V	1/10W 680	1	
R407	ERJ6GEYJ102V	1/10W 1K	1	
R408	ERJ6GEYJ271V	1/10W 270	1	
R409	ERJ6GEYJ681V	1/10W 680	1	
R451	ERDS2FJ102	1/4W 1K	1	
R452	ERJ6GEYJ102V	1/10W 1K	1	
R453	ERJ6GEYJ222V	1/10W 2.2K	1	
R711,12	ERJ6GEYJ561V	1/10W 560	2	
R713,14	ERJ6GEYJ473V	1/10W 47K	2	
R715,16	ERJ6GEYJ472V	1/10W 4.7K	2	
R717,18	ERJ6GEYJ682V	1/10W 6.8K	2	
R719,20	ERJ6GEYJ333V	1/10W 33K	2	
R721,22	ERJ6GEYJ683V	1/10W 68K	2	
R723,24	ERJ6GEYJ154V	1/10W 150K	2	
R725,26	ERJ6GEYJ331V	1/10W 330	2	
R727-30	ERJ6GEYJ151V	1/10W 150	4	
R731-34	ERJ6GEYJ102V	1/10W 1K	4	
R735,36	ERJ6GEYJ103V	1/10W 10K	2	
R737,38	ERJ6GEYJ123V	1/10W 12K	2	
R741,42	ERJ6GEYJ273V	1/10W 27K	2	
R743-46	ERJ6GEYJ104V	1/10W 100K	4	
R749,50	ERJ6GEYJ331V	1/10W 330	2	
R751,52	ERJ6GEYJ563V	1/10W 56K	2	
R753,54	ERJ6GEYJ103V	1/10W 10K	2	
R755,56	ERJ6GEYJ104V	1/10W 100K	2	
R757,58	ERJ6GEYJ102V	1/10W 1K	2	
R771-73	ERJ6GEYJ102V	1/10W 1K	3	
R902	ERJ6GEYJ103V	1/10W 10K	1	
R903,04	ERJ6GEYJ104V	1/10W 100K	2	
R907	ERJ6GEYJ222V	1/10W 2.2K	1	
R910,11	ERJ6GEYJ181V	1/19W 180	2	
R913	ERJ6GEYJ821V	1/10W 820	1	
R914	ERJ6GEYJ102V	1/10W 1K	1	
R915	ERJ6GEYJ122V	1/10W 1.2K	1	
R916	ERJ6GEYJ152V	1/10W 1.5K	1	
R917	ERJ6GEYJ182V	1/10W 1.8K	1	
R918	ERJ6GEYJ821V	1/10W 820	1	
R919	ERJ6GEYJ102V	1/10W 1K	1	
R920	ERJ6GEYJ122V	1/10W 1.2K	1	
R921	ERJ6GEYJ152V	1/10W 1.5K	1	
R928,29	ERJ6GEYJ103V	1/10W 10K	2	
R932	ERJ6GEYJ104V	1/10W 100K	1	
R933	ERJ6GEYJ101V	1/10W 100	1	
R934	ERJ6GEYJ562V	1/10W 5.6K	1	
R938	ERJ6GEYJ471V	1/10W 470	1	
R941-49	ERJ6GEYJ103V	1/10W 10K	9	
R950	ERJ6GEYJ271V	1/10W 270	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R952-68	ERJ6GEYJ104V	1/10W 100K	17	
RJ1, J2	ERJ6GEY0R00V	CHIP JUMPER	2	
RJ5-J9	ERJ6GEY0R00V	CHIP JUMPER	5	
RJ31	ERJ6GEY0R00V	CHIP JUMPER	1	
RJ91-93	ERJ6GEY0R00V	CHIP JUMPER	3	
S1, S2	RSH1A91ZA-A	SW, PROTECT/REFLECT	2	
S3	RSH1A044-1A	SW, LOAD OPEN	1	
S4	RSH1A91ZA-A	SW, DISC IN	1	
S5, S6	RSH1A044-1A	SW, LOAD DET.	2	
S7	RSH1A045-1A	SW, LOAD TRG	1	
S8	RSP1A023-A	SW, TV	1	
S901-12	EVQ21405R	SW, PUSH	12	
T201	RTFK4B034	POWER TRANSFORMER	1	[MAVD] △
TH1	RRSP33J103CW	THERMISTOR	1	
VR1	EVM3YSX50B14	VR, LASER POWER ADJ.	1	
X1	RSXY10M0M02T	OSCILLATOR	1	
X2	RSXC16M9S03T	OSCILLATOR	1	
X901	RSXY10M0M01T	OSCILLATOR	1	
Z901	RCDGP1U26XD	REMOTE SENSOR	1	

18 Cabinet Parts Location

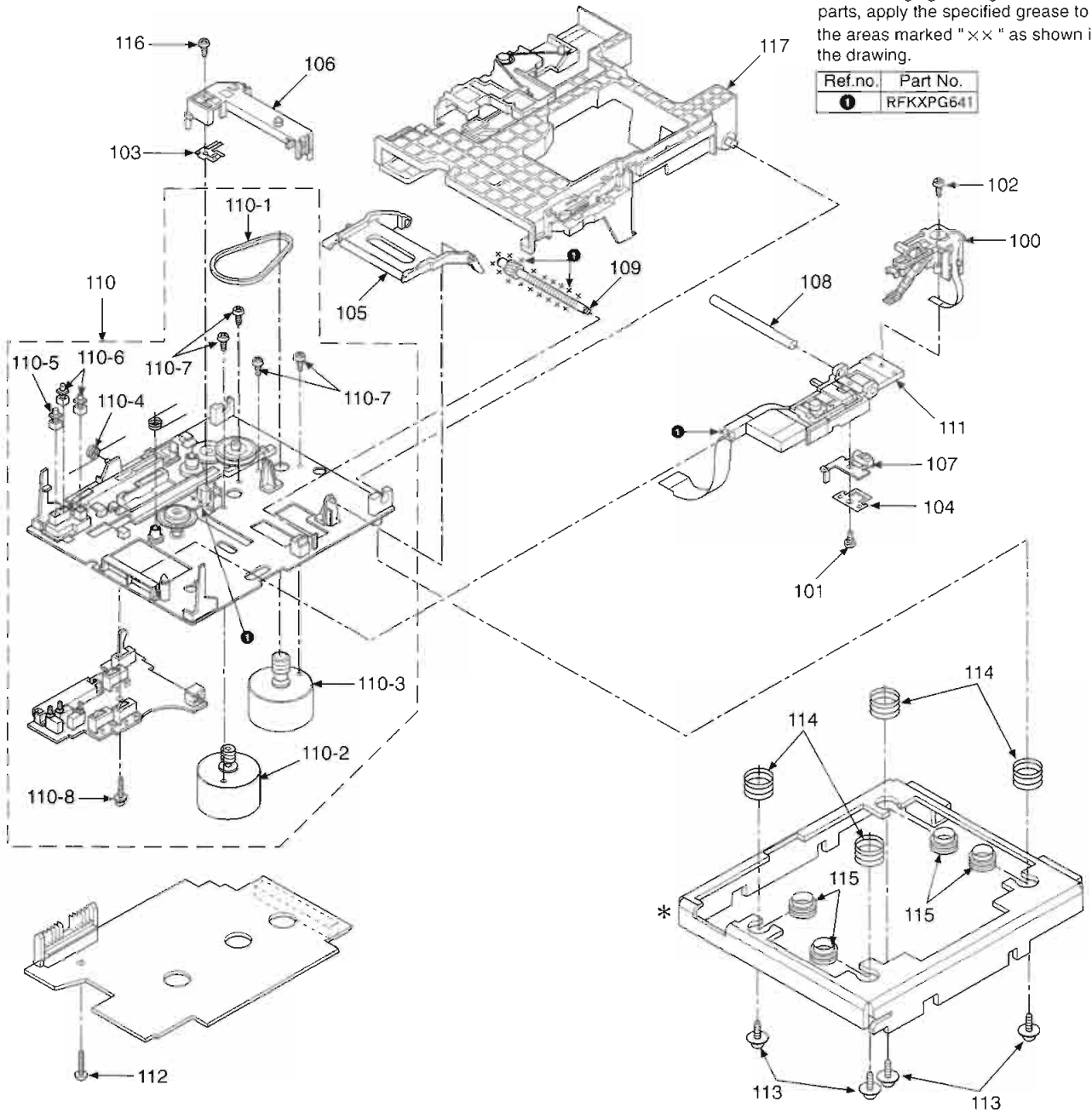


Note : We do not supply those items of parts marked *.

19 MD Mechanism Parts Location

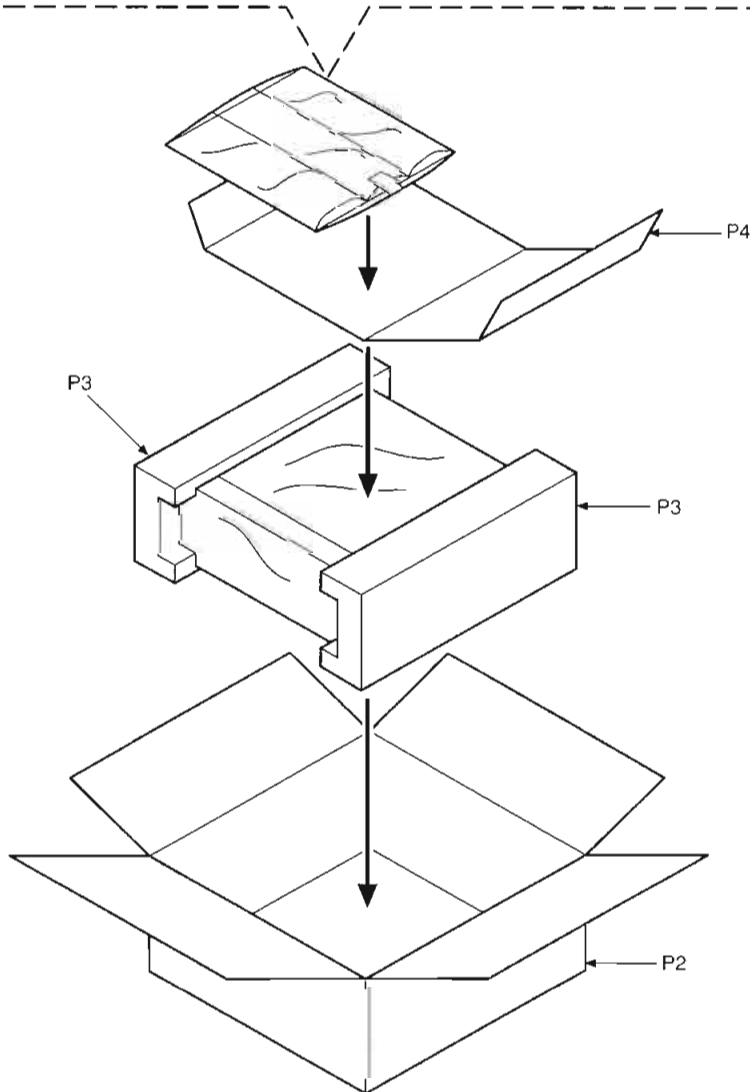
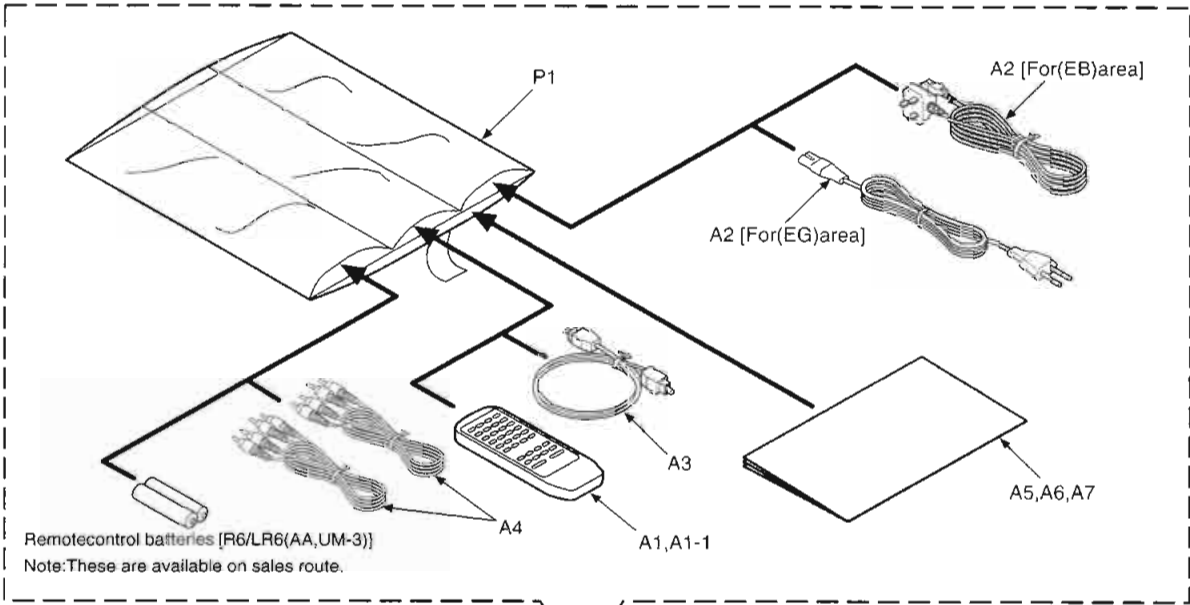
Note: When changing loading mechanism parts, apply the specified grease to the areas marked "××" as shown in the drawing.

Ref.no.	Part No.
①	RFKXPG641



Note: We do not supply those items of parts marked *.

20 Packaging



Service Manual

Mini Disc Deck

Service Schematics

This publication consists of schematics for product identified in the schematics. It is not intended as a substitute for a service manual, which is available from MATSUSHITA in CD or print format. For proper repair instructions it is necessary to consult the CD or print version of the full service manual.

SJ-HDA710

Mechanism unit: MR3A Mechanism Series

Colour

(N).....Gold Type

Areas

EG.....Europe.

EB.....Great Britain.

This product is option for systems of SC-HDA710.

Specifications

●System	Minidisc digital audio system
Recording	Magnetic field modulation direct overwrite
Reading	Non-contact optical system with Semiconductor laser (=780nm)
Sampling frequency:	44.1 kHz
Cording system:	ATRAC
Channel:	2channel, stereo
Frequency response:	10-20000Hz (±0.3dB)
S/N Ratio (PLAY):	91dB
Dynamic range (PLAY):	90dB
Wow and flutter:	Below measurable limit

●Input	
Analog input (Level/impedance):	500mV/47kΩ
Digital input (Optical in 1, Optical in 2)	
Wavelength:	660nm

●Output

Analog output
(Level/impedance): 2.0V/600Ω

●General

Dimensions (WxHxD): 196x105.8x243mm
 Weight: 1.8kg
 Power supply: AC230-240V, 50Hz
 Power consumption: 12W(at STANDBY condition:2.0W)

Notes:

- 1.Design and specifications are subject to change without notice.
- 2.Dimensions and weight are approximate.
- 3.Total harmonic distortion is measured by the digital spectrum analyzer.

⚠ WARNING

This service information is designed for experienced 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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


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1 Schematic Diagram Notes

1.1. Schematic Diagram Notes

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

Notes:

- S1 : PROTECT det. switch.
- S2 : REFLECT det. switch.
- S3 : LOAD OPEN det. switch.
- S4 : DISC IN det. switch.
- S5 : LOAD PLAY/REC det. switch.
- S6 : LOAD PLAY det. switch.
- S7 : LOAD TRG det. switch.
- S8 : Traverse det. switch.
- S901 : Standby/on ( / I) switch.
- S902 : Input selector (INPUT SELECTOR) switch.
- S903 : Skip/Search ( /  REC LEVEL -) switch.
- S904 : Skip/Search ( /  REC LEVEL +) switch.
- S905 : Edit (EDIT) switch.
- S906 : Enter (ENTER) switch.
- S907 : Pause () switch.
- S908 : (DISPLAY) switch.
- S909 : Eject ( EJECT) switch.
- S910 : Stop () switch.
- S911 : Playback/Recording start () switch.
- S912 : Record ( REC) switch.
- VR1: Laser power adj. V.R..
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.

Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark: MD STOP

(): MD play [1kHz, L+R, 0dB]

<>: MD rec. [1kHz, L+R, 0dB]

Important safety notice:

Components identified by Δ mark have special characteristics important for safety.

Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

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 legs of IC or LSI with the fingers directly.

Voltage and signal lines


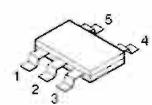

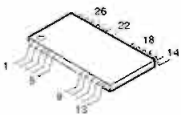
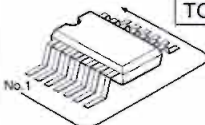
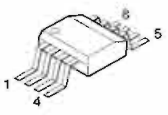
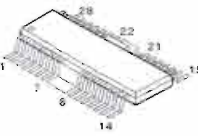


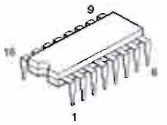

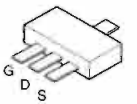
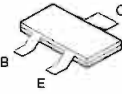
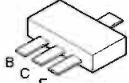
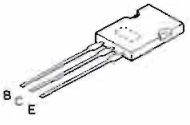

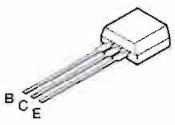
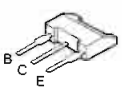
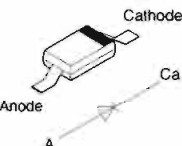
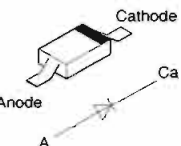
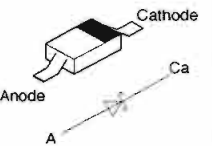
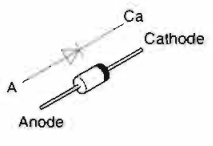
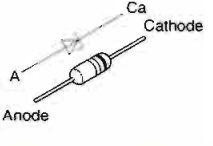
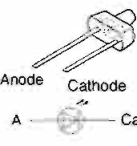
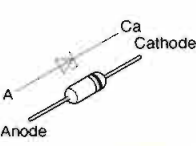
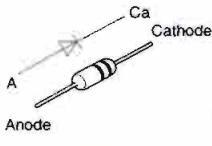
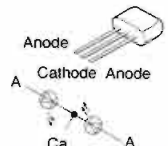
 : Positive voltage line

 : Negative voltage line

 : Playback signal line

 : Recording signal line

1.2. Type Illustration of IC's, Transistors and Diodes

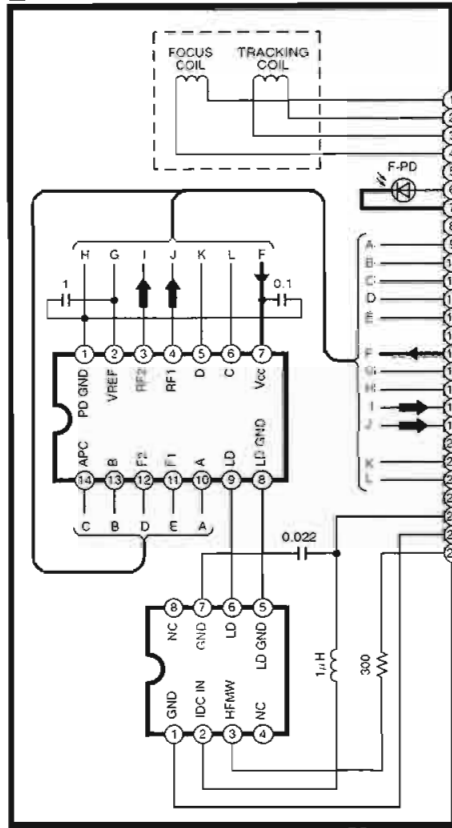
<table border="1"> <tr> <td>AK4518VF-E2</td> <td>24PIN</td> </tr> <tr> <td>BA4560FE2</td> <td>8PIN</td> </tr> <tr> <td>LB1830MS-TLM</td> <td>10PIN</td> </tr> </table> 	AK4518VF-E2	24PIN	BA4560FE2	8PIN	LB1830MS-TLM	10PIN	<p>RN5RG33AA-TL RN5RZ26BA-TR</p> 	<table border="1"> <tr> <td>AN8772FHQ</td> <td>48PIN</td> </tr> <tr> <td>MN101D03DAA1</td> <td>80PIN</td> </tr> <tr> <td>MN66616RA4</td> <td>100PIN</td> </tr> </table> 	AN8772FHQ	48PIN	MN101D03DAA1	80PIN	MN66616RA4	100PIN	<p>M51V4400D7FS</p> 
AK4518VF-E2	24PIN														
BA4560FE2	8PIN														
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AN8772FHQ	48PIN														
MN101D03DAA1	80PIN														
MN66616RA4	100PIN														
<table border="1"> <tr> <td>TC74HCT7007A</td> <td>14PIN</td> </tr> <tr> <td>TC74HCT00AFL</td> <td>14PIN</td> </tr> <tr> <td>TC74HC4050EL</td> <td>16PIN</td> </tr> </table> 	TC74HCT7007A	14PIN	TC74HCT00AFL	14PIN	TC74HC4050EL	16PIN	<p>TC7W04FTE12L</p> 	<p>AN8814SB-E1</p> 	<p>BA05ST-V5</p> 	<p>S81233SGY-Z</p> 					
TC74HCT7007A	14PIN														
TC74HCT00AFL	14PIN														
TC74HC4050EL	16PIN														
<p>TC9413AP</p> 	<p>M30218MAA204</p> 	<p>2SJ278MYTR 2SK1764KYTR</p> 	<p>2SB1295-6-TB 2SB1462STX 2SD1328-STX DTA114EUT106 DTA143EUT106 DTC114EUT106 DTC114YETL</p> 	<p>2SB1121ST-TD</p> 											
<p>2SD2037EFTA</p> 	<p>2SD1450RSTTA</p> 	<p>2SA933SQRSTA</p> 	<p>2SB1240QRTV6 2SD1862QRTV6</p> 	<p>SC80209TE12R</p> 	<p>MA110TX</p> 										
<p>MA728TX</p> 	<p>1D3-E</p> 	<p>MA4051MTA MA4056MTA MA4062MTA MA4091MTA</p> 	<p>LNJ201LPQJA</p> 	<p>MA4270HTA</p> 											
<p>1SS291TA</p> 	<p>SML79420C</p> 														

2 Schematic Diagram

SCHEMATIC DIAGRAM-1

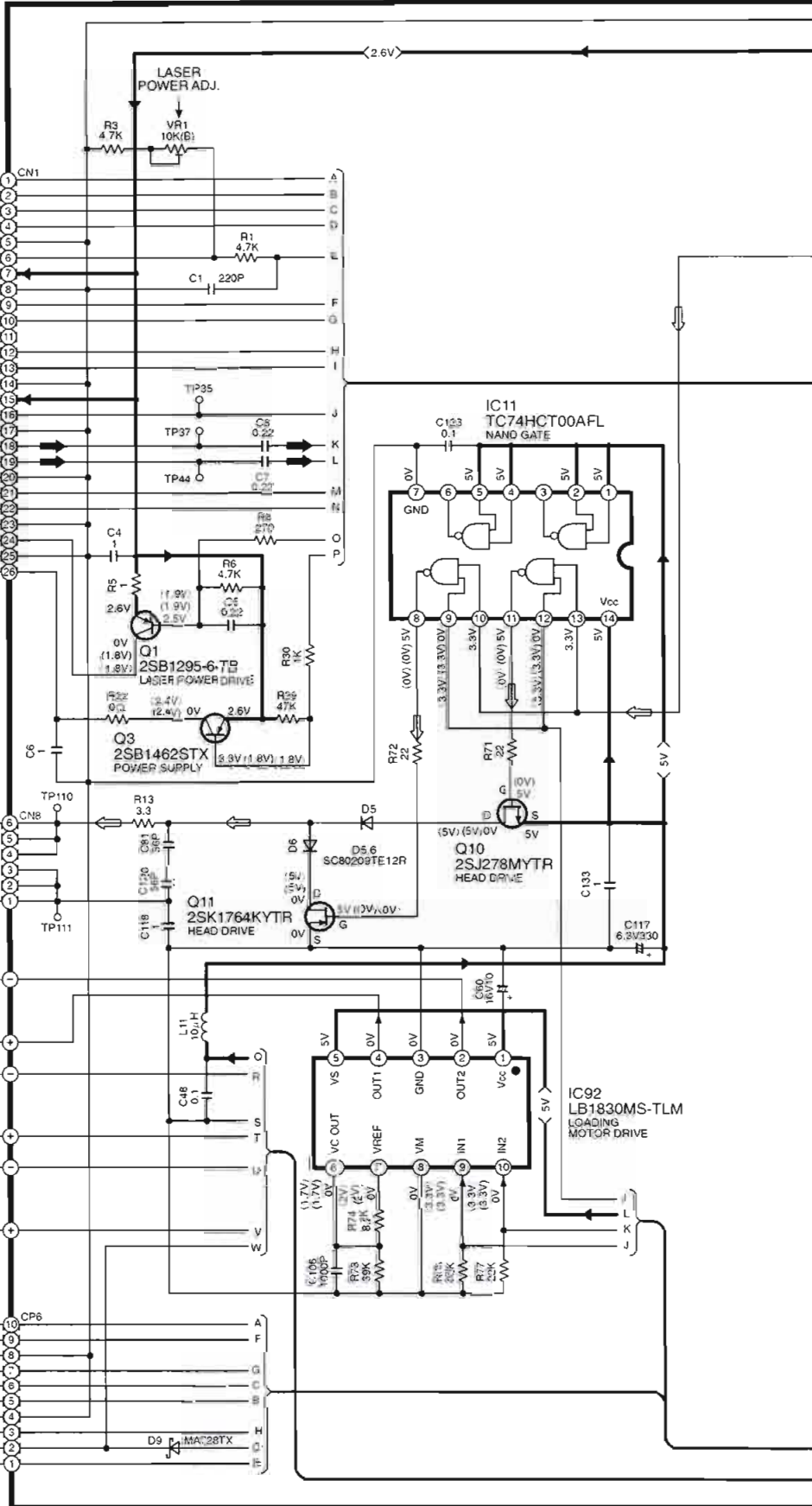
Note:
The number which noted at the connectors on the schematic diagram as "SCHEMATIC DIAGRAM-1" or "SCHEMATIC DIAGRAM-2" indicates the schematic diagram serial number located on the left corner in the schematic diagram.

▲ MD OPTICAL PICKUP

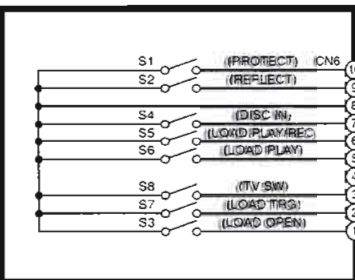


A MD SERVO CIRCUIT

→ : POSITIVE VOLTAGE LINE
 → : PLAYBACK SIGNAL LINE
 ⇨ : RECORDING SIGNAL LINE

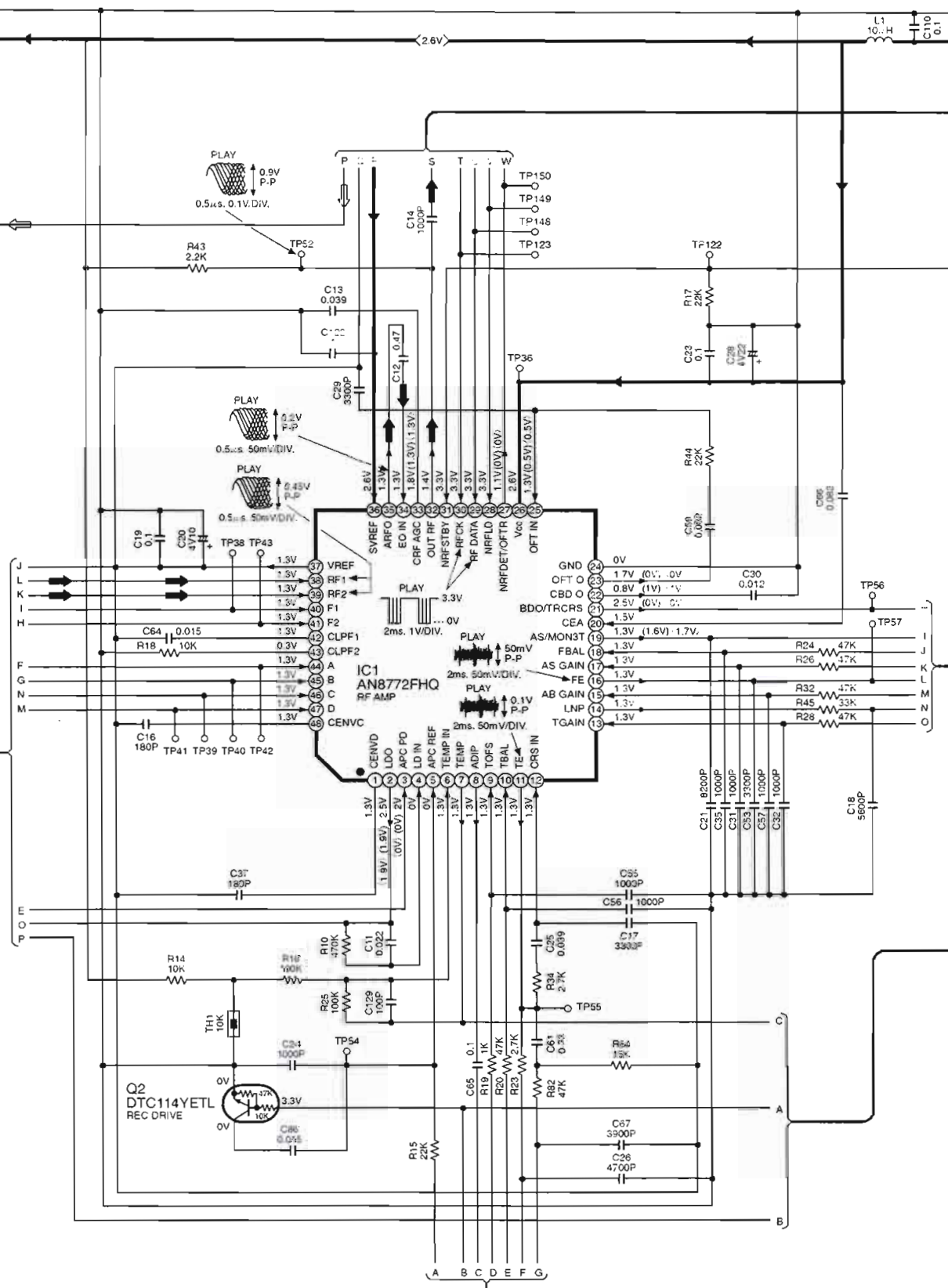


B SWITCH CIRCUIT



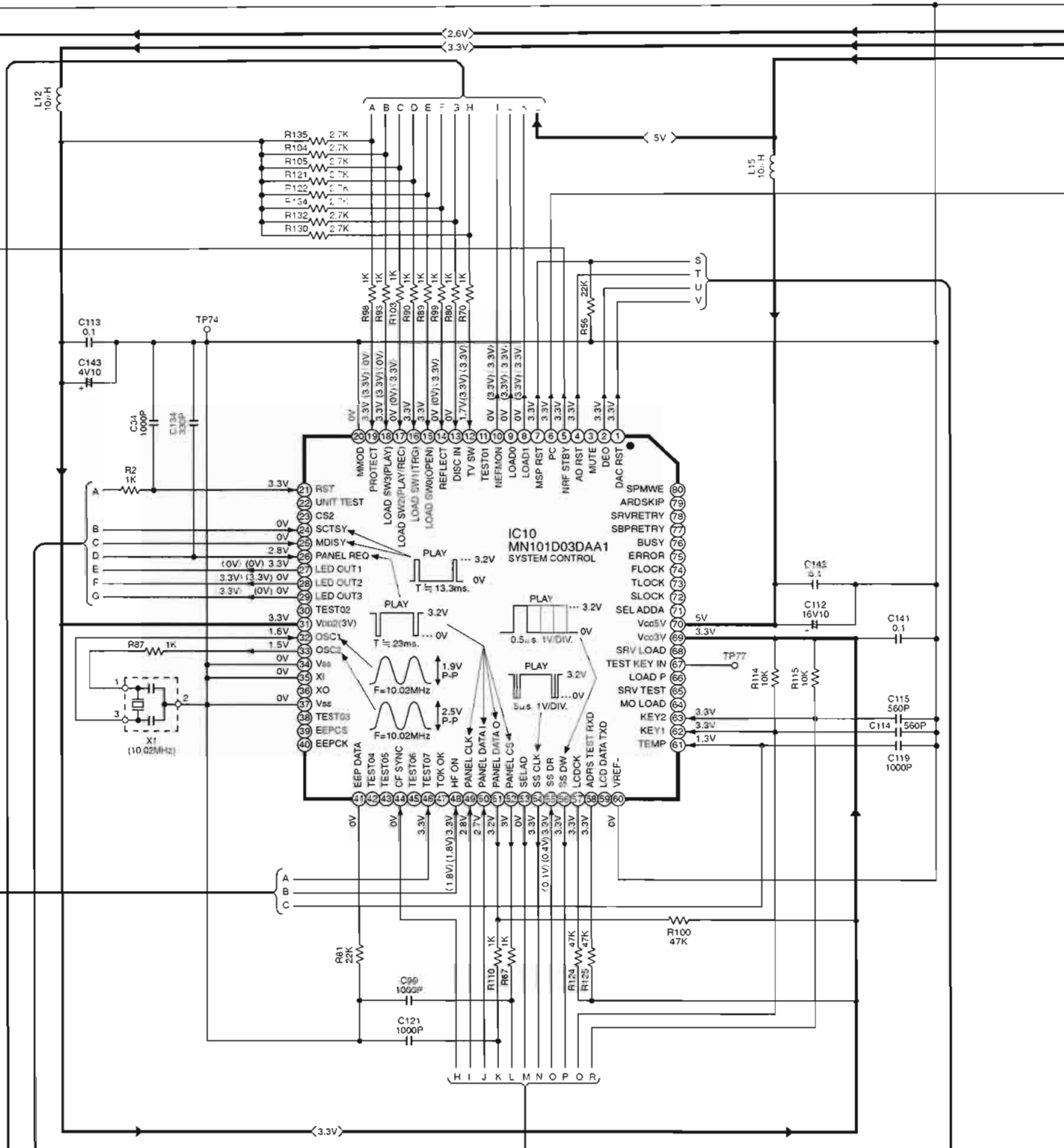
SCHEMATIC DIAGRAM-2

→ : POSITIVE VOLTAGE LINE → : PLAYBACK SIGNAL LINE ⇨ : RECORDING SIGNAL LINE



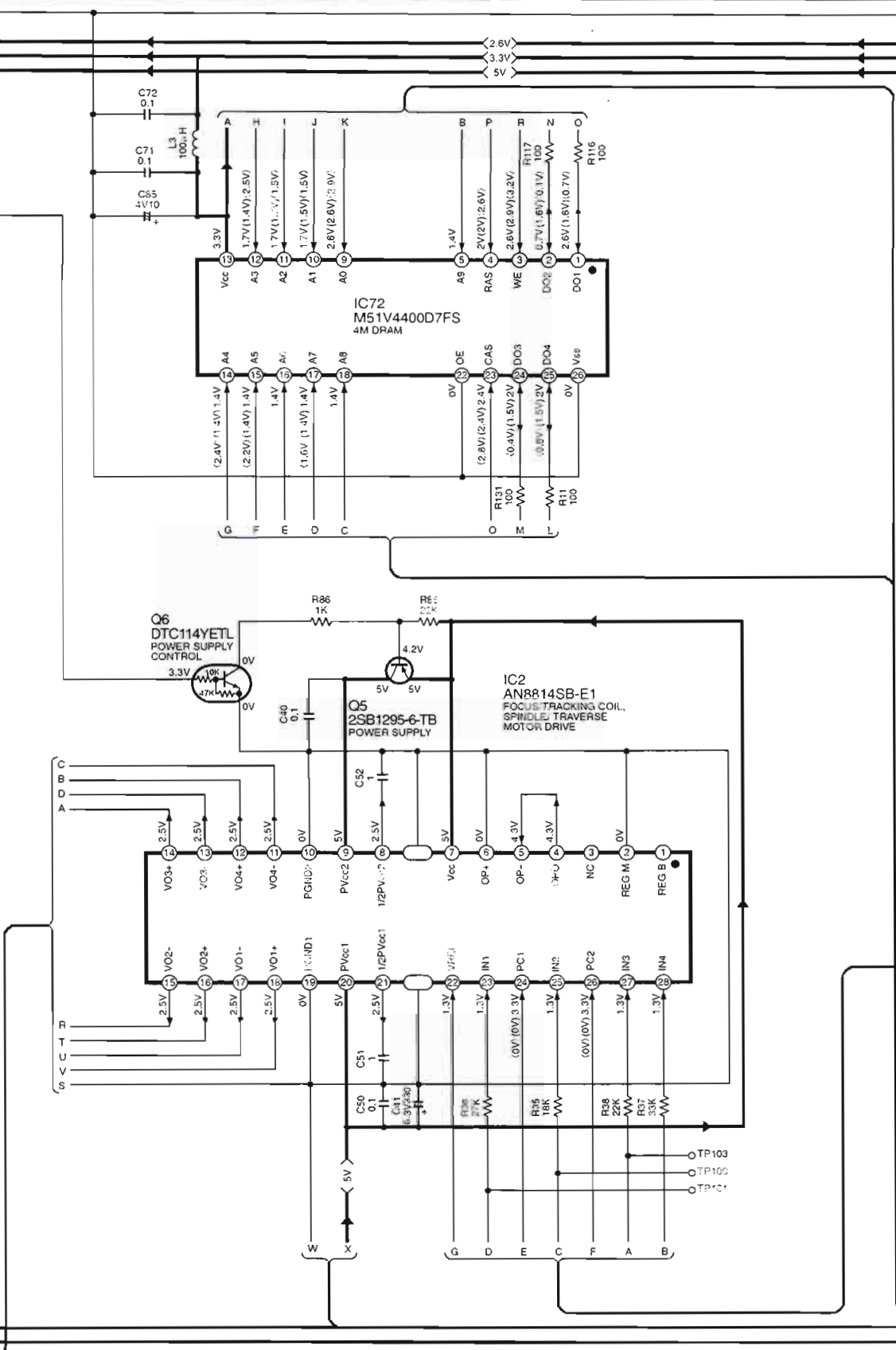
SCHEMATIC DIAGRAM-3 A MD SERVO CIRCUIT

→ POSITIVE VOLTAGE LINE



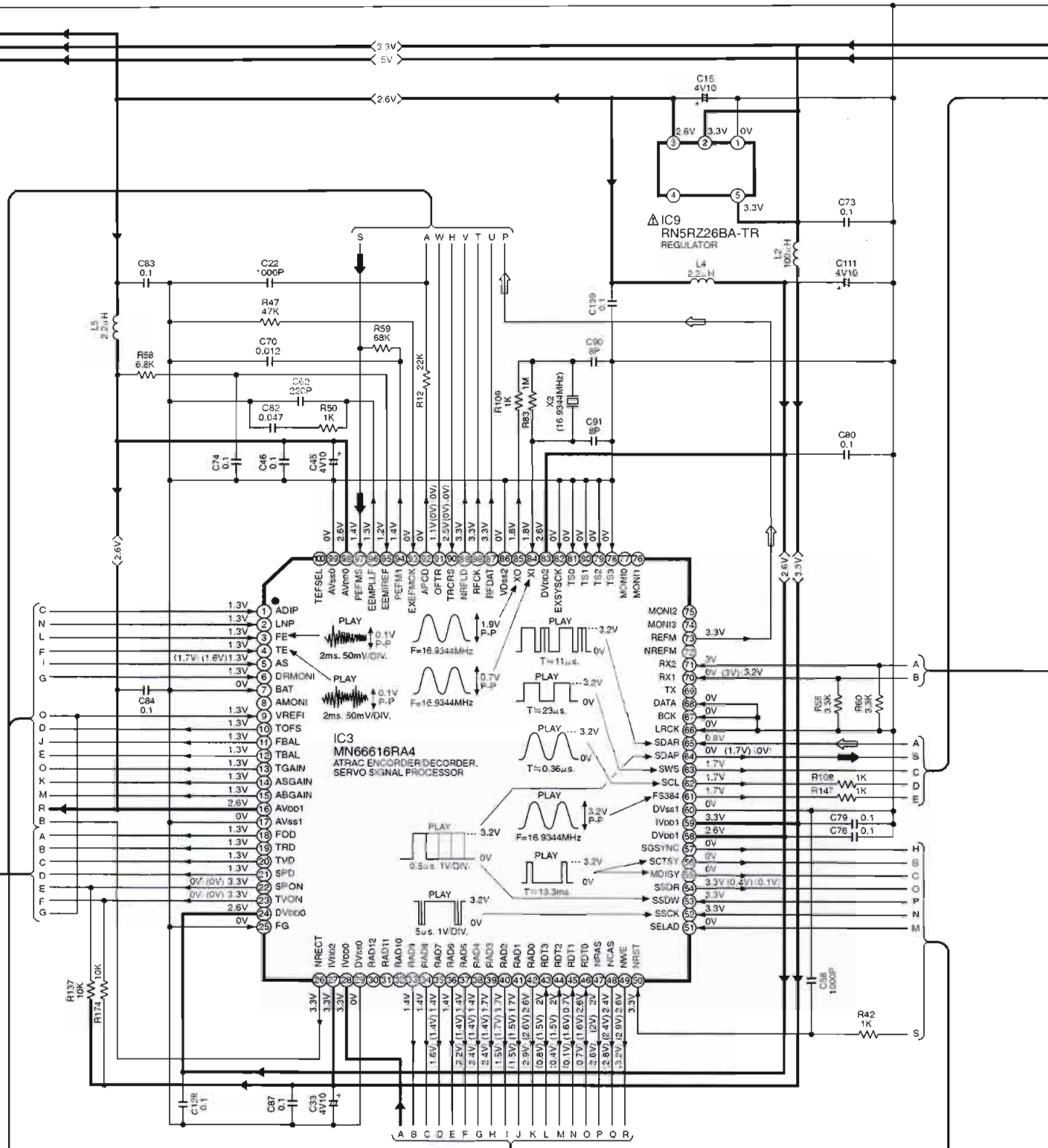
SCHEMATIC DIAGRAM-4

→ POSITIVE VOLTAGE LINE



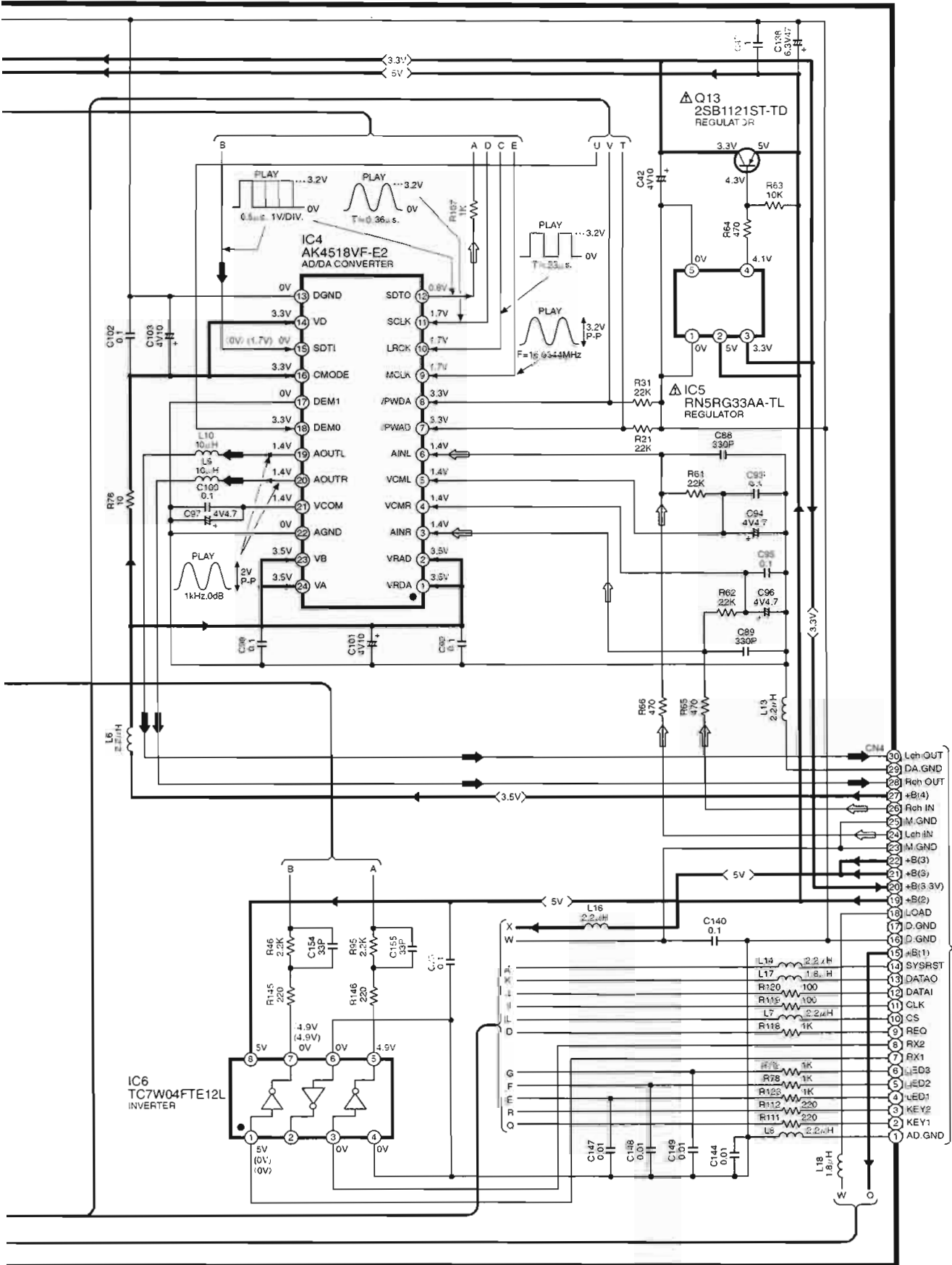
SCHEMATIC DIAGRAM-5 A MD SERVO CIRCUIT

→ : POSITIVE VOLTAGE LINE ↗ : PLAYBACK SIGNAL LINE ⇨ : RECORDING SIGNAL LINE



SCHEMATIC DIAGRAM-6

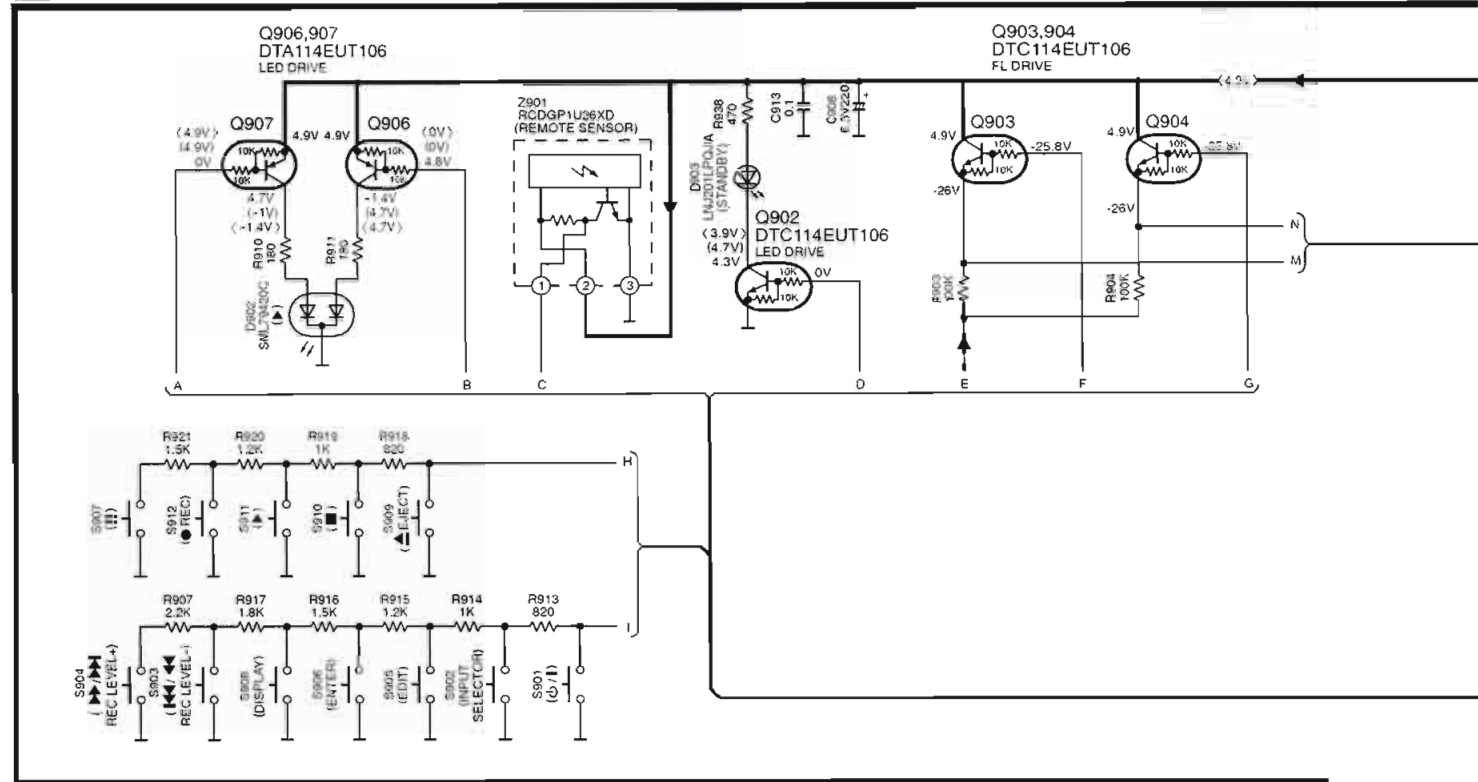
→ : POSITIVE VOLTAGE LINE ➡ : PLAYBACK SIGNAL LINE ⇨ : RECORDING SIGNAL LINE



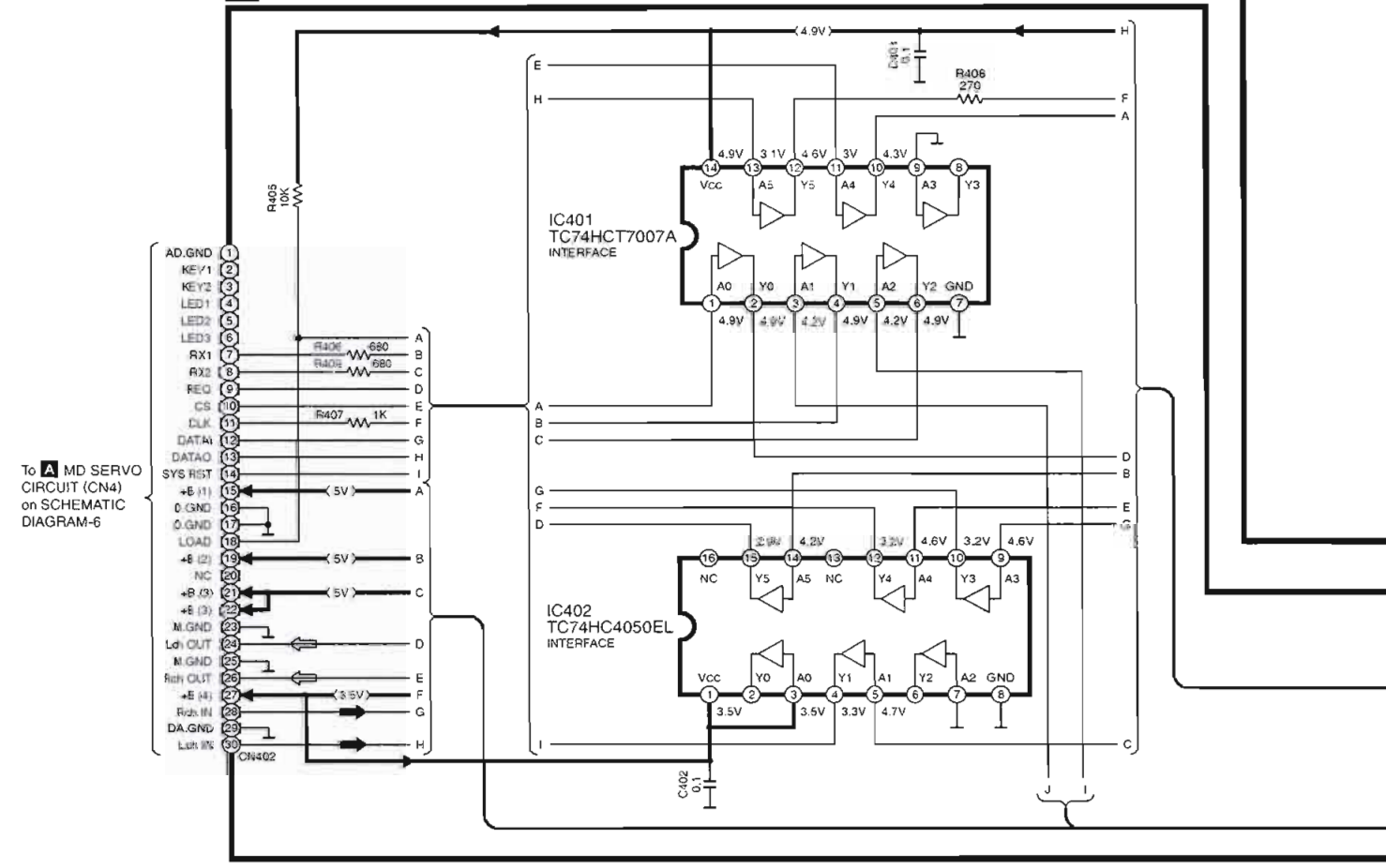
To **D** MAIN CIRCUIT (CN402) on SCHEMATIC DIAGRAM-7

C OPERATION CIRCUIT

—▶— : POSITIVE VOLTAGE LINE ▶ : PLAYBACK SIGNAL LINE
 - -▶ - - : NEGATIVE VOLTAGE LINE ◀ : RECORDING SIGNAL LINE



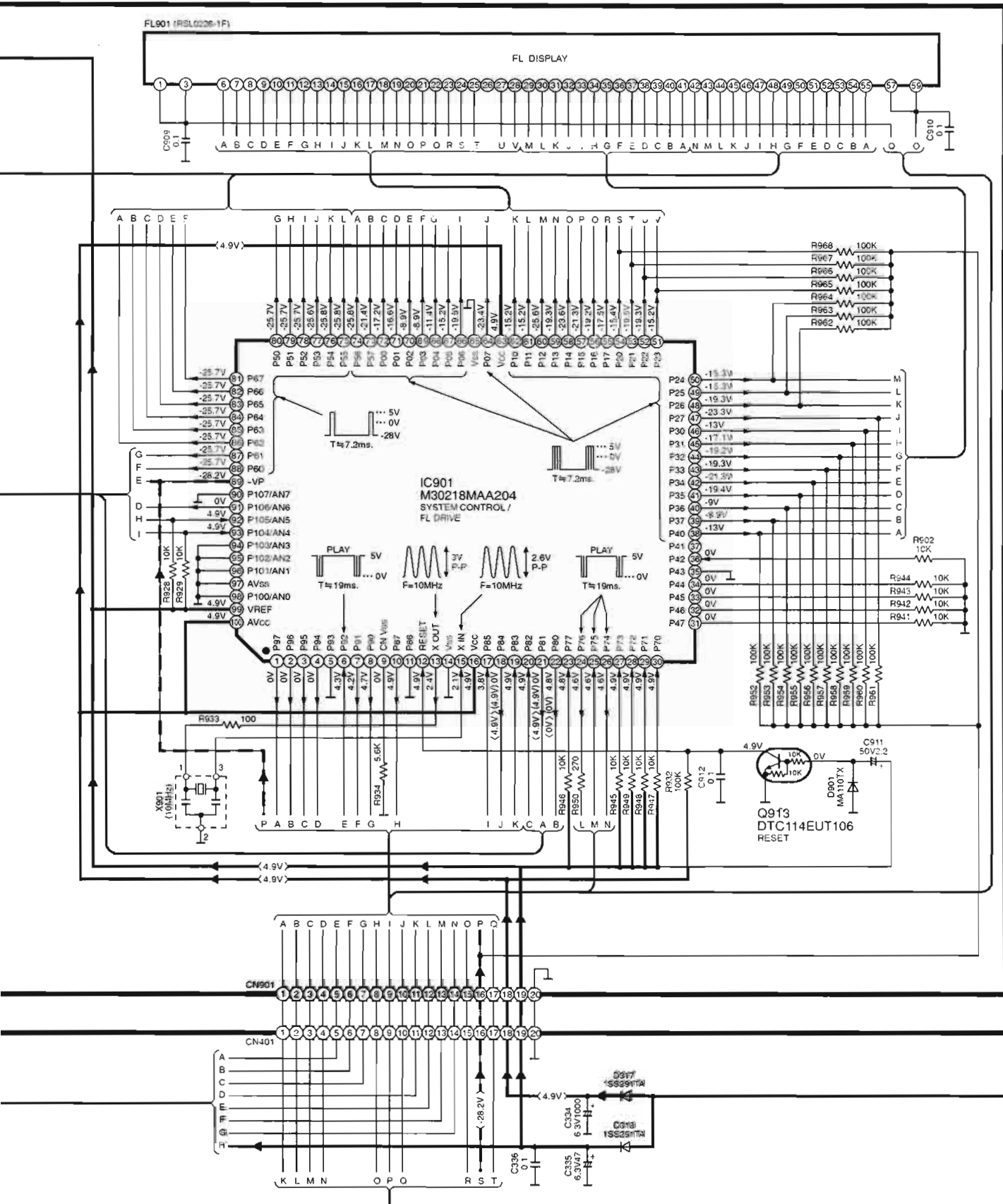
D MAIN CIRCUIT



To **A** MD SERVO CIRCUIT (CN4) on SCHEMATIC DIAGRAM-6

SCHEMATIC DIAGRAM-8

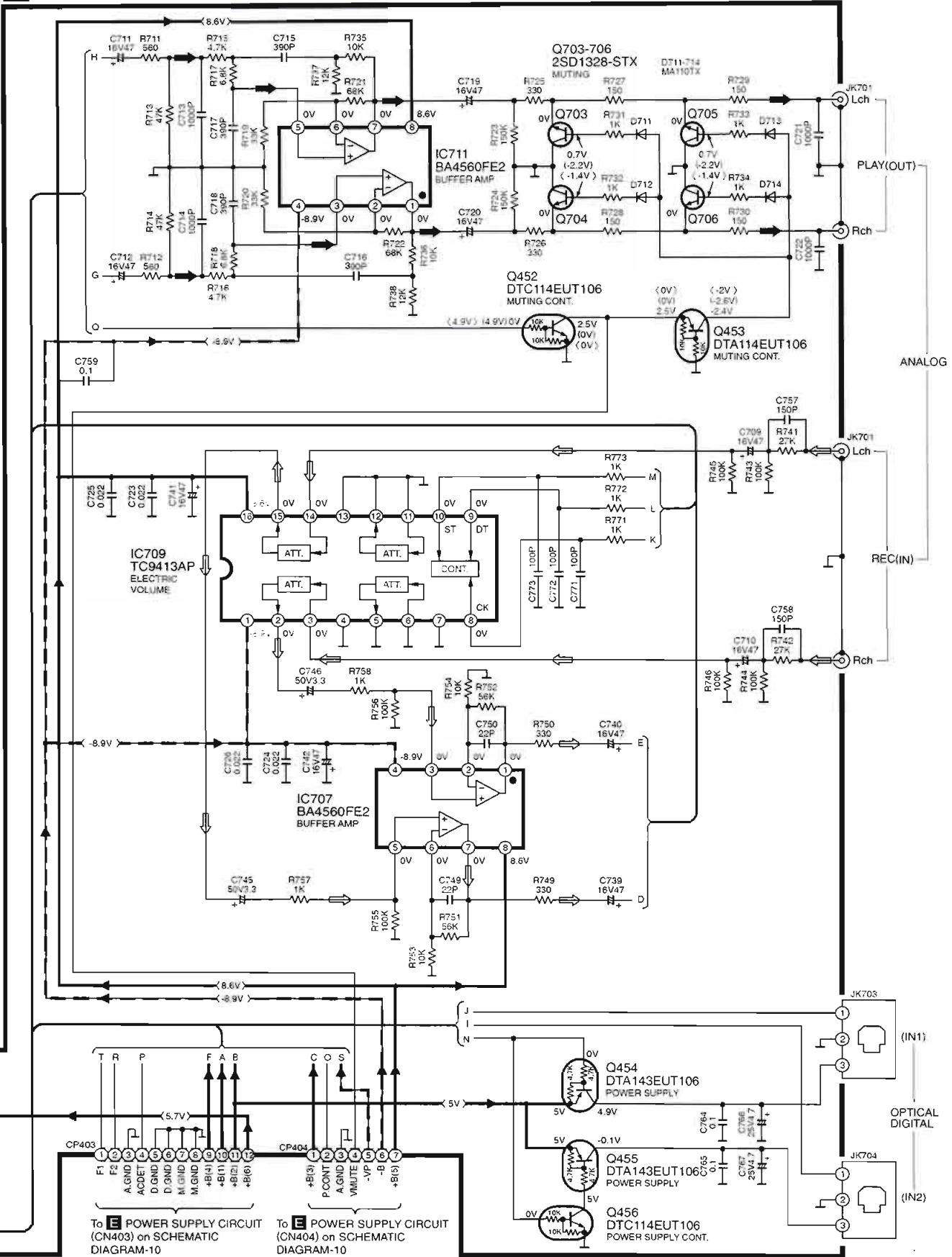
→ : POSITIVE VOLTAGE LINE → - : NEGATIVE VOLTAGE LINE



SCHEMATIC DIAGRAM-9

D MAIN CIRCUIT

- : POSITIVE VOLTAGE LINE
- : NEGATIVE VOLTAGE LINE
- : PLAYBACK SIGNAL LINE
- : RECORDING SIGNAL LINE



SCHEMATIC DIAGRAM-10

E POWER SUPPLY CIRCUIT

→ : POSITIVE VOLTAGE LINE -→ : NEGATIVE VOLTAGE LINE

