

MB0006002C2

Service Manual

Compact Disc Player

COMPACT
disc
DIGITAL AUDIO

MASH
multi-stage noise shaping

SL-PS7

Traverse Deck: RAE1102Z Mechanism Series

Colour

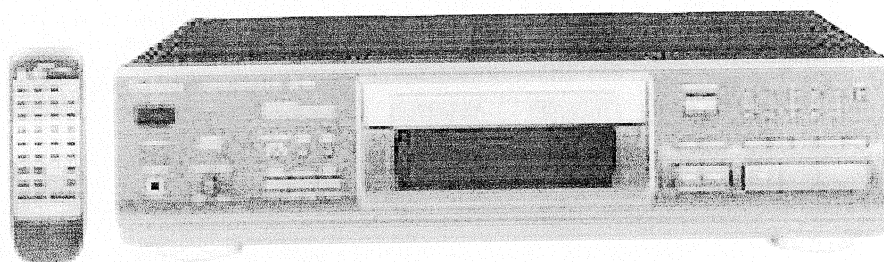
(K).....Black Type

Areas

(E).....Europe.

(EB).....Great Britain.

(EG).....Germany, Italy and France.



SPECIFICATIONS

Specifications

Audio

No. of channels:	2 (left and right, stereo)
Frequency response:	2 – 20,000 Hz, ± 0.3 dB
Output voltage:	2.0 V (at 0 dB)
Dynamic range:	100 dB
S/N:	115 dB
Harmonic distortion:	0.0018% (1 kHz, 0 dB)
Total harmonic distortion:	0.0023% (1 kHz, 0 dB)
Wow and flutter:	Below measurable limit
DA converter:	MASH (1 bit)
Output impedance:	Approximate 600 Ω
Load impedance:	More than 10 k Ω
Headphone output level:	15 mW max. 32 Ω (adjustable)

Pickup

Wavelength:	780 nm
Laser Power:	No hazardous radiation is emitted

General

Power supply:	AC 230 – 240 V, 50 Hz
Power consumption:	15 W
Dimensions (W $\times$ H $\times$ D):	430 $\times$ 114 $\times$ 290 mm
Mass:	4.0 kg

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

1

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.

Technics®

1. Handling Precautions for Traverse Deck

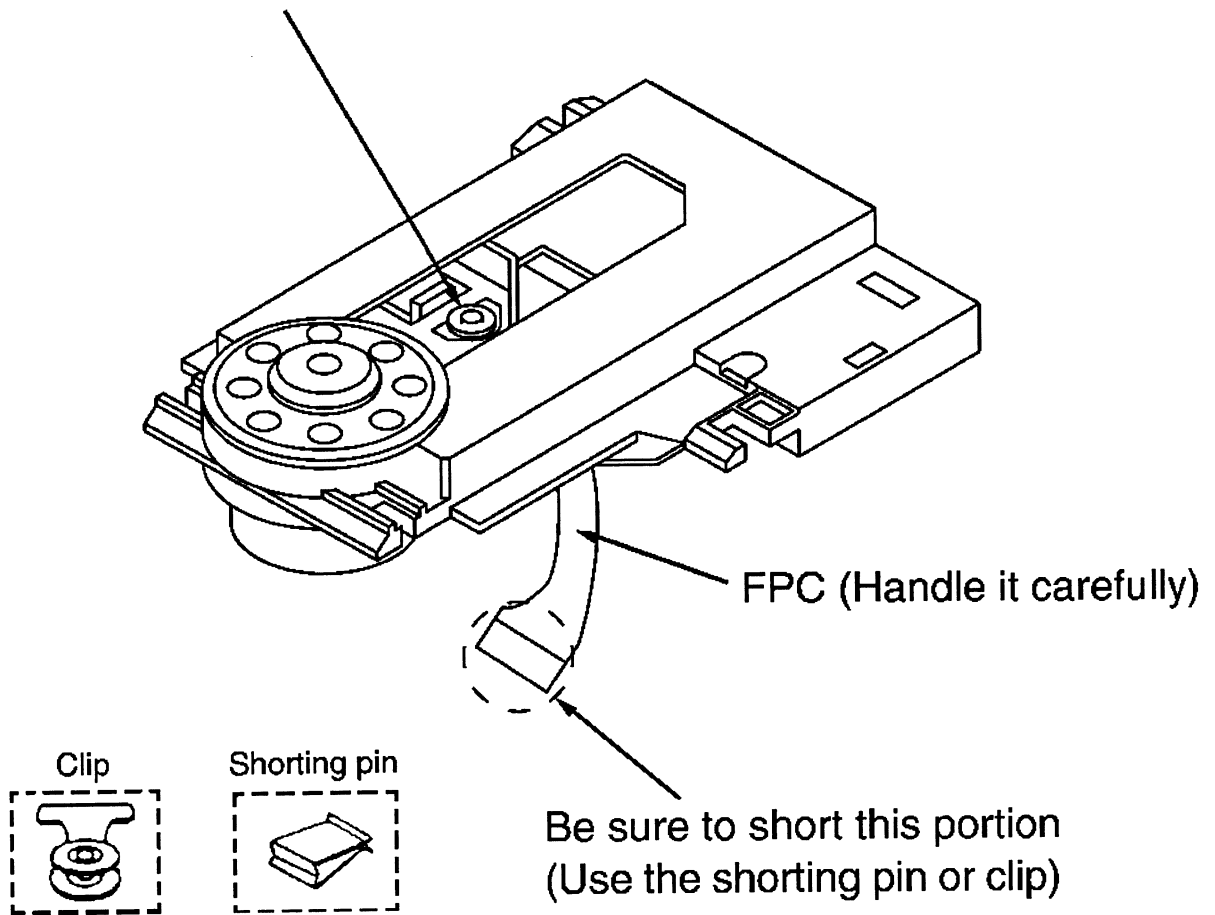
The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body. So be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

1.1. Handling of traverse deck (optical pickup)

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

Fig. 1-1.

Lens (Do not touch)

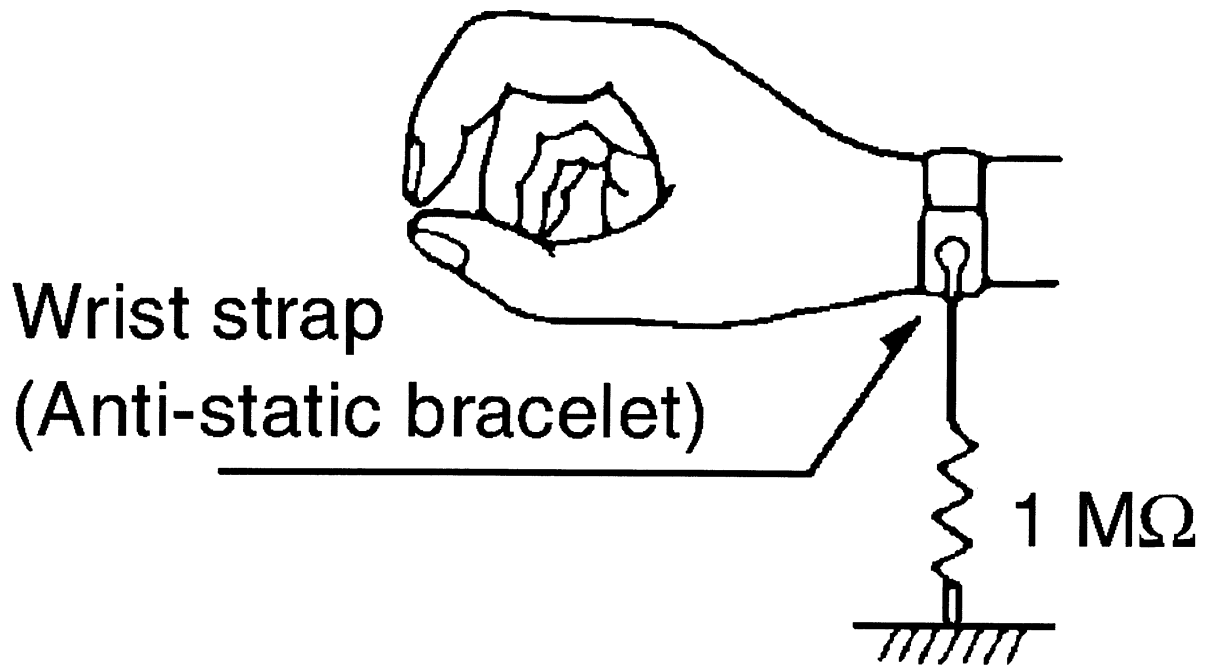


1.2. Grounding for electrostatic breakdown prevention

1.2.1. Human body grounding

Use the anti-static wrist strap to discharge the static electricity from your body.
Refer to Fig. 1-2.

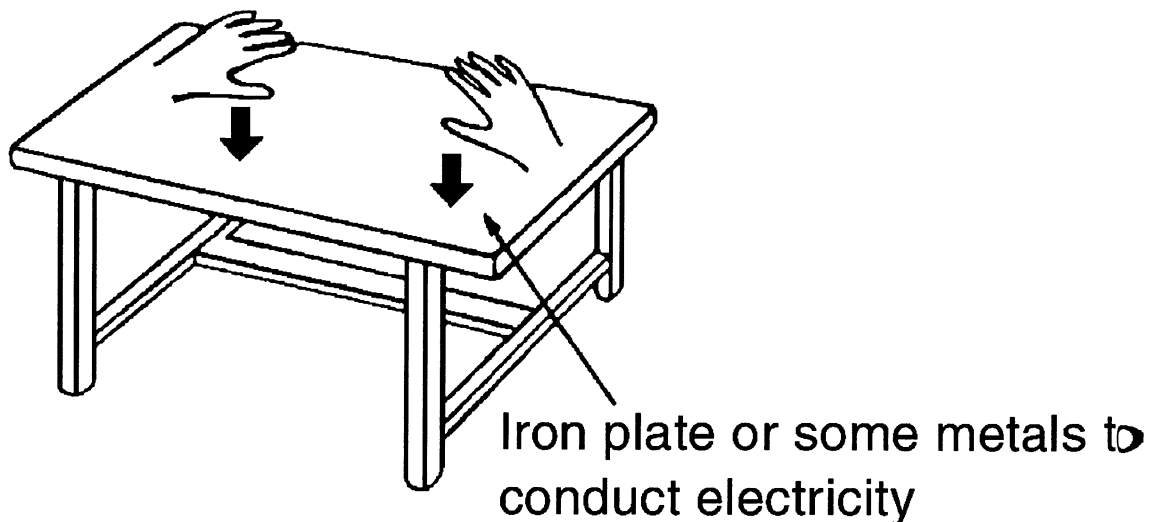
Fig. 1-2.



1.2.2. Work table grounding

Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet. Refer to Fig. 1-3.

Fig. 1-3.



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).

2. Precaution of Laser Diode

CAUTION:

THIS PRODUCT UTILIZES A LASER.

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

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.

Wavelength: 780 nm

Maximum output radiation power from pickup: 100 μ W/VDE

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

1. Do not disassemble the 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.

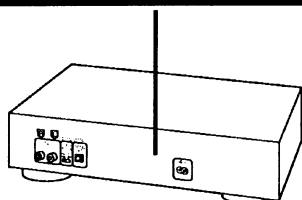
ACHTUNG: Dieses Produkt enthält eine Lasereinheit. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780 nm

Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE

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

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



(Back of product)

DANGER	INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅPNING. NÅR SIKKERHEDSÅFTRYKKET ER UDDE AF FUNKTION. UNDGÅ UDSETTELSE FOR STRÅLING.
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTÄESSÄ OLET ALTILTHIN NÄKYMÄTÖNTÄ LASERISÄTEILYLLÄ. ÄLÄ KATSO SÄTEESEEN.
VARNING	ÖSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRÄKTA EJ STRÅLEN.
ADVARSEL	USYNLIG LASERSTRÅLING NÅR DENSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ UDSÆTNING FOR STRÅLEN.
VORSICHT	UNGSICHTBARE LASERSTRABUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.

(Inside of product)

(Indersiden af apparatet)

(Tuotteen sisällä)

(Apparatens insida)

(Produktets innside)

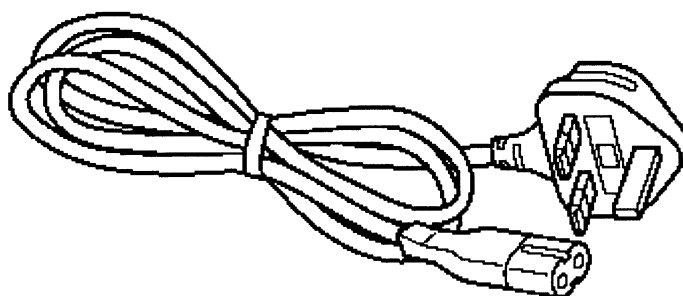
(Im Inneren des Gerätes)

3. Accessories

- AC power supply cord for (EB) area

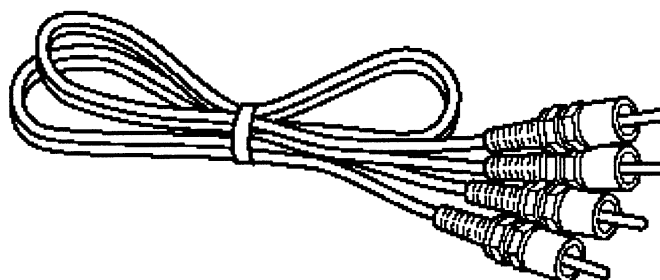
For (EB) area: (RJA0044-3C).....1 pc.

For (E), (EG) area: (RJA0043-1C).....1 pc.

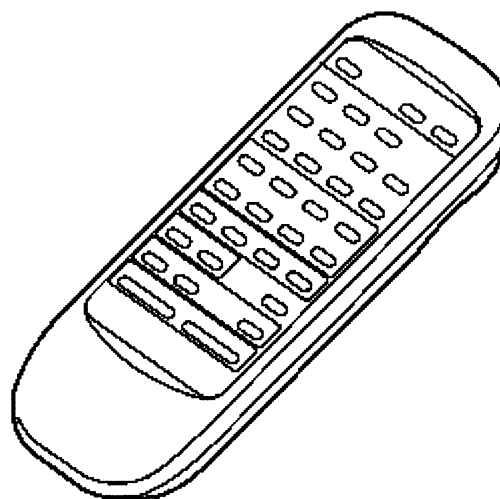


The illustration show the AC power supply cord for (EB) area.

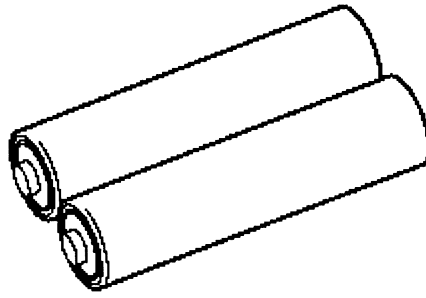
- Stereo connection cable
(RJL2P004B08A).....1 pc.



- Remote control
(EUR645275).....1 pc.



- Batteries for remote control
(R6, AA, UM-3).....2 pc.



4. Caution for AC Mains 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  OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

Before use

Remove the connector cover.

How to replace the fuse

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

Illustrations may differ from actual AC mains plug.

1. Open the fuse cover with a screwdriver.

Figure A

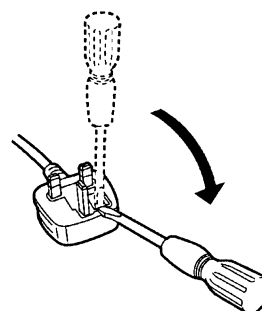
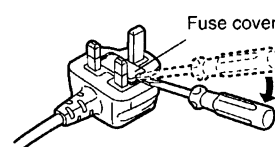


Figure B



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

Figure A

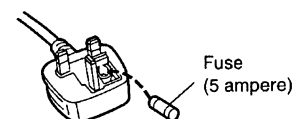
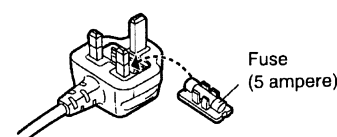


Figure B



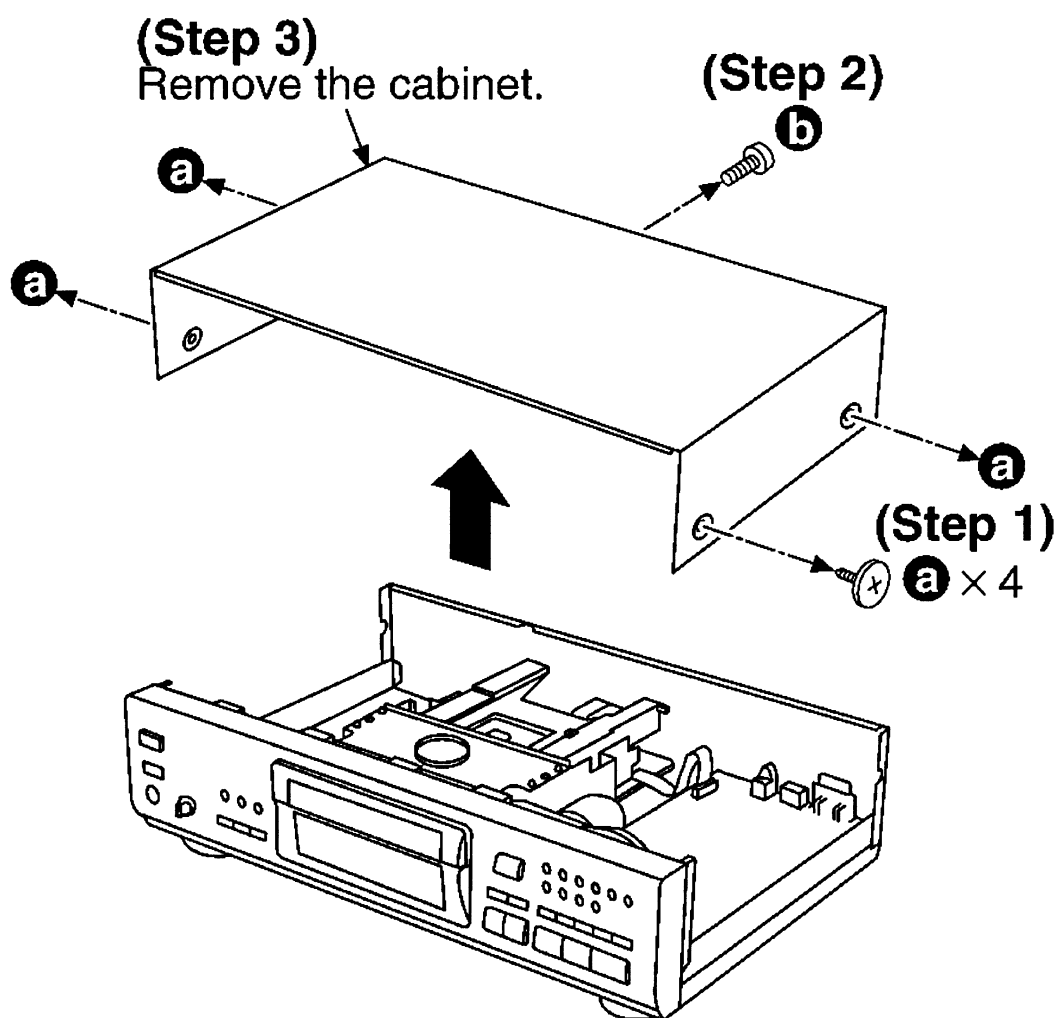
5. Location of Controls

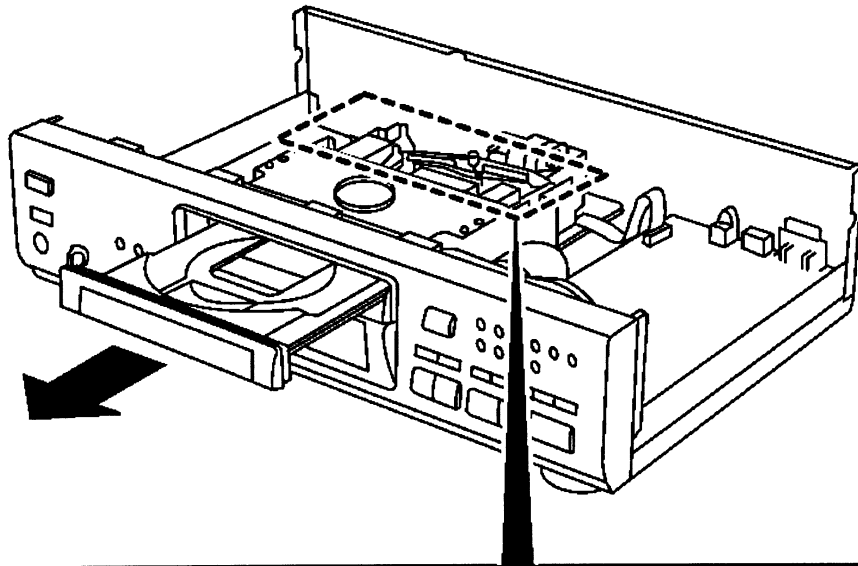


6. Operation Checks and Component Replacement Procedures

- 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.

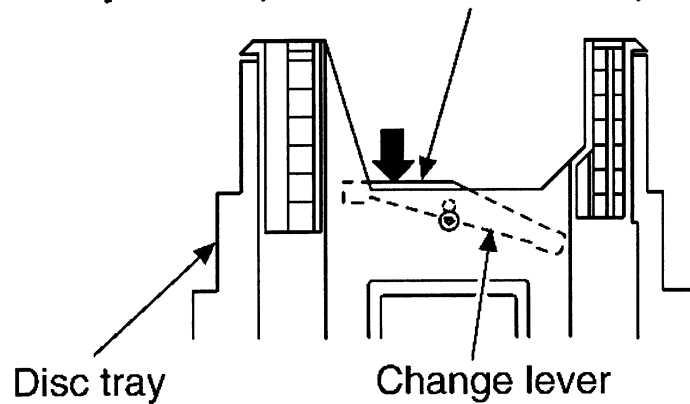
6.1. Checking for the main P.C.B. and headphone jack P.C.B.

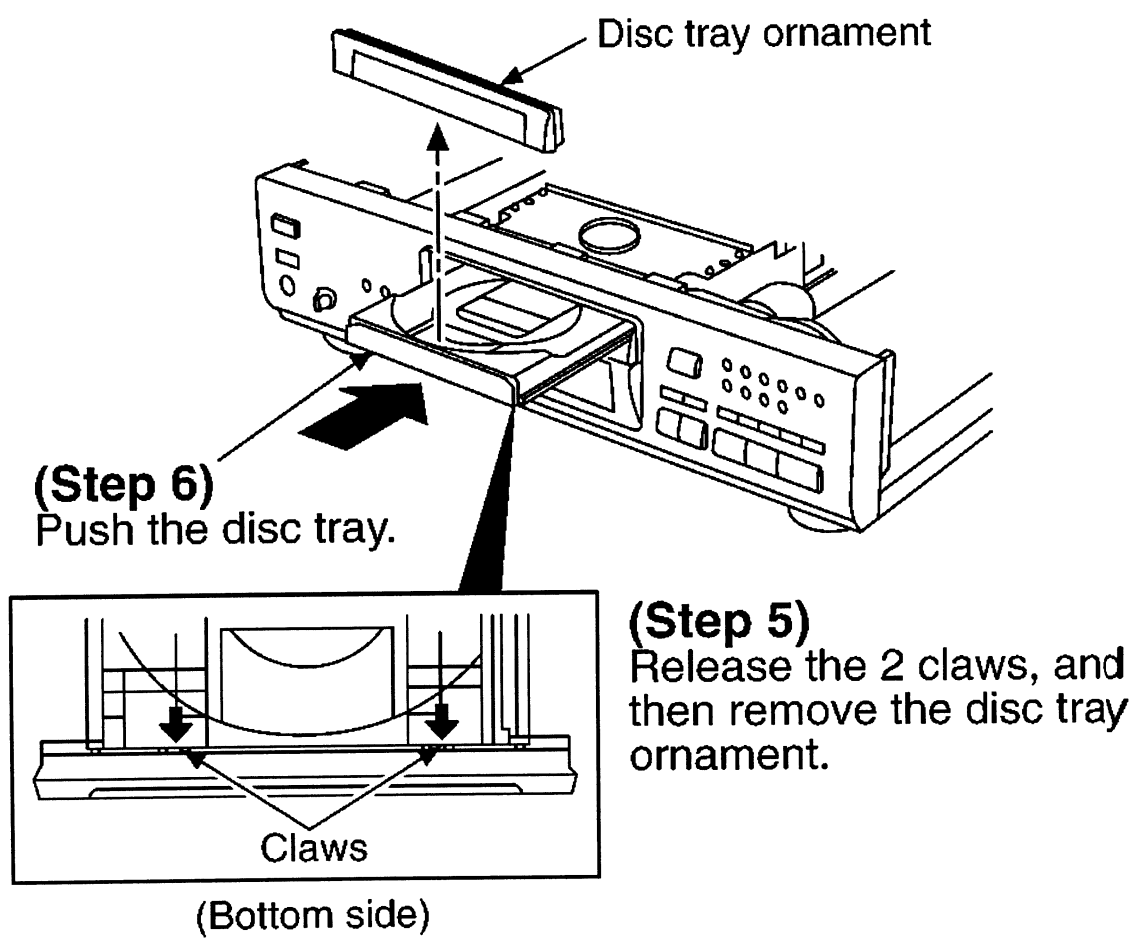




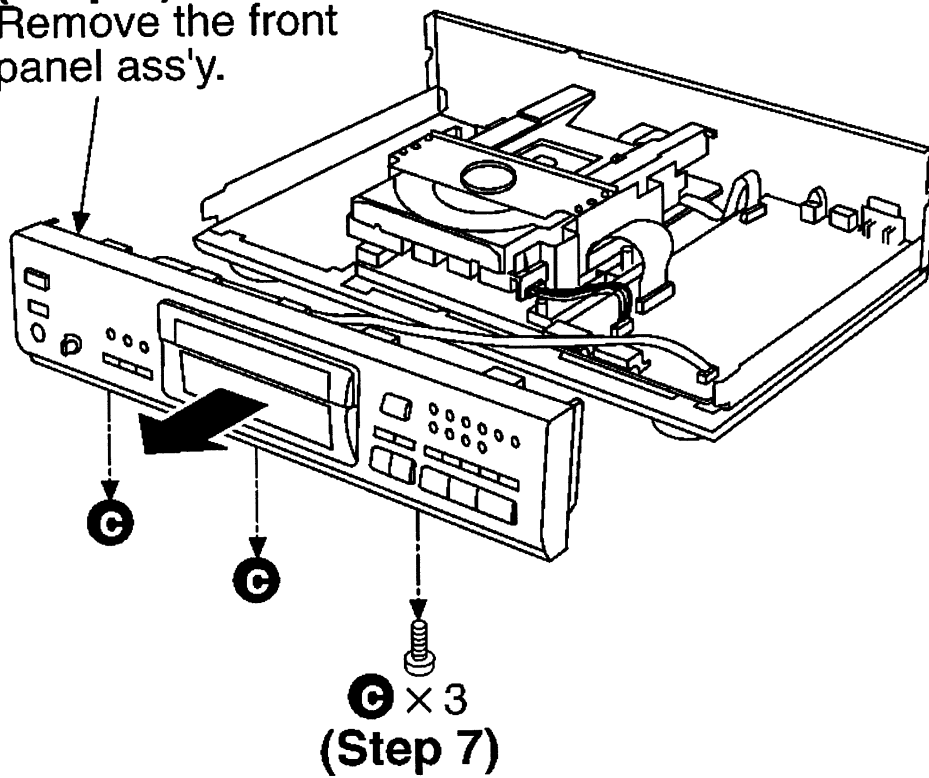
(Step 4)

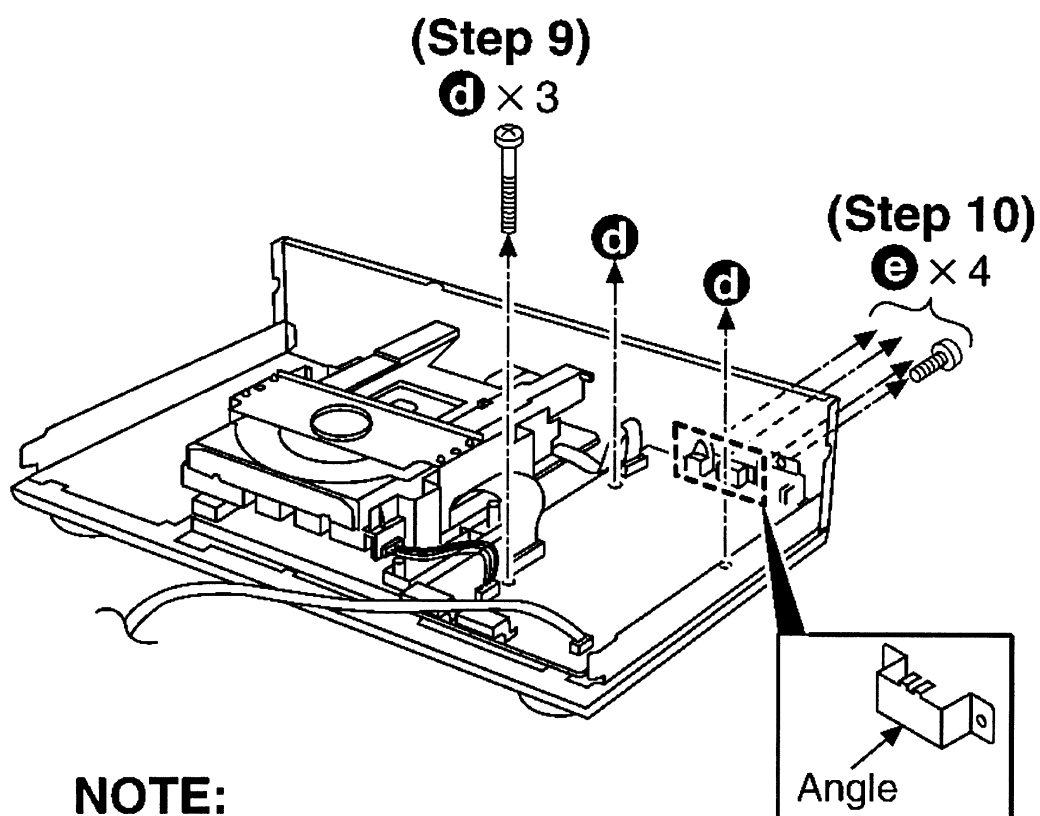
Push the change lever, and then release disc tray. Then pull out the disc tray.



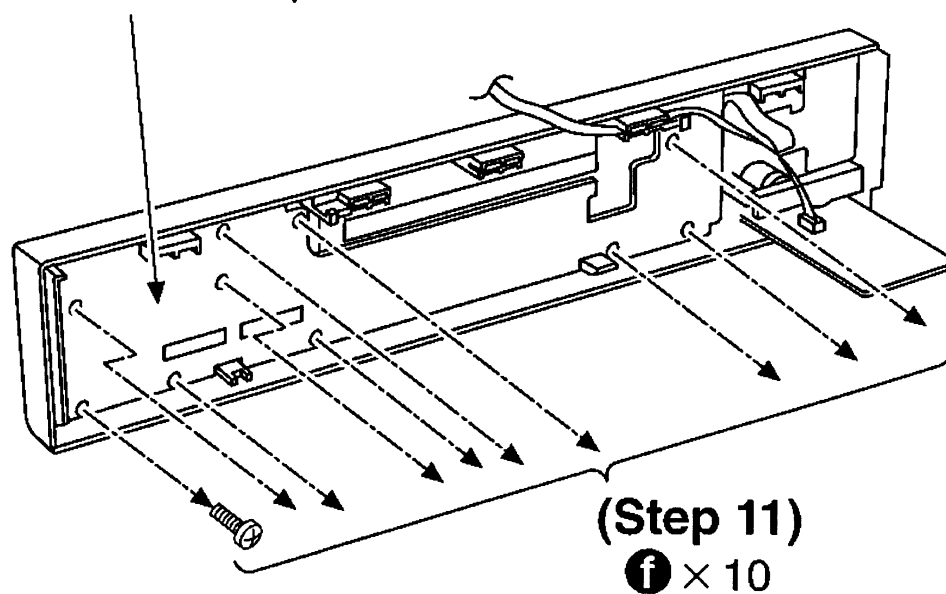


(Step 8)
Remove the front
panel ass'y.





(Step 12)
 Remove the operation P.C.B..



(Step 15)

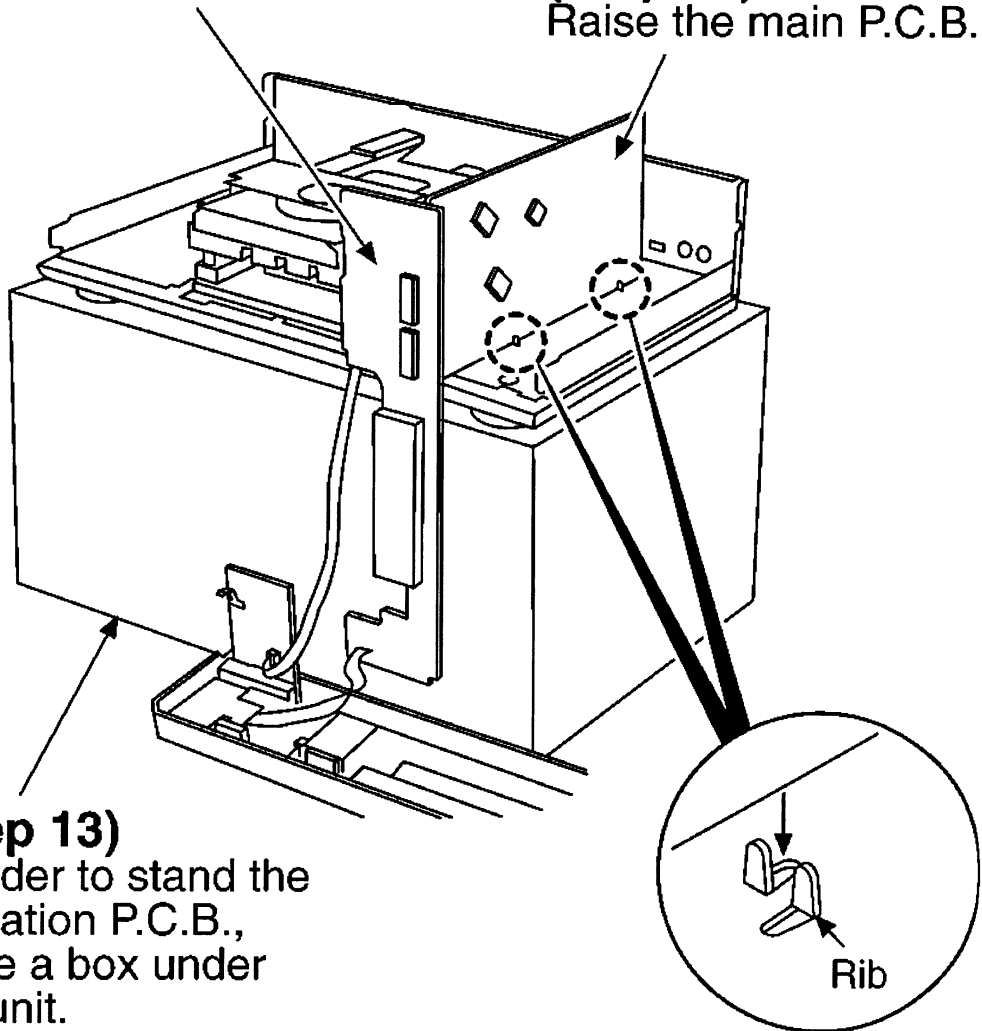
Reinstall the operation P.C.B.
to the main P.C.B..

(Step 14)

Raise the main P.C.B..

(Step 13)

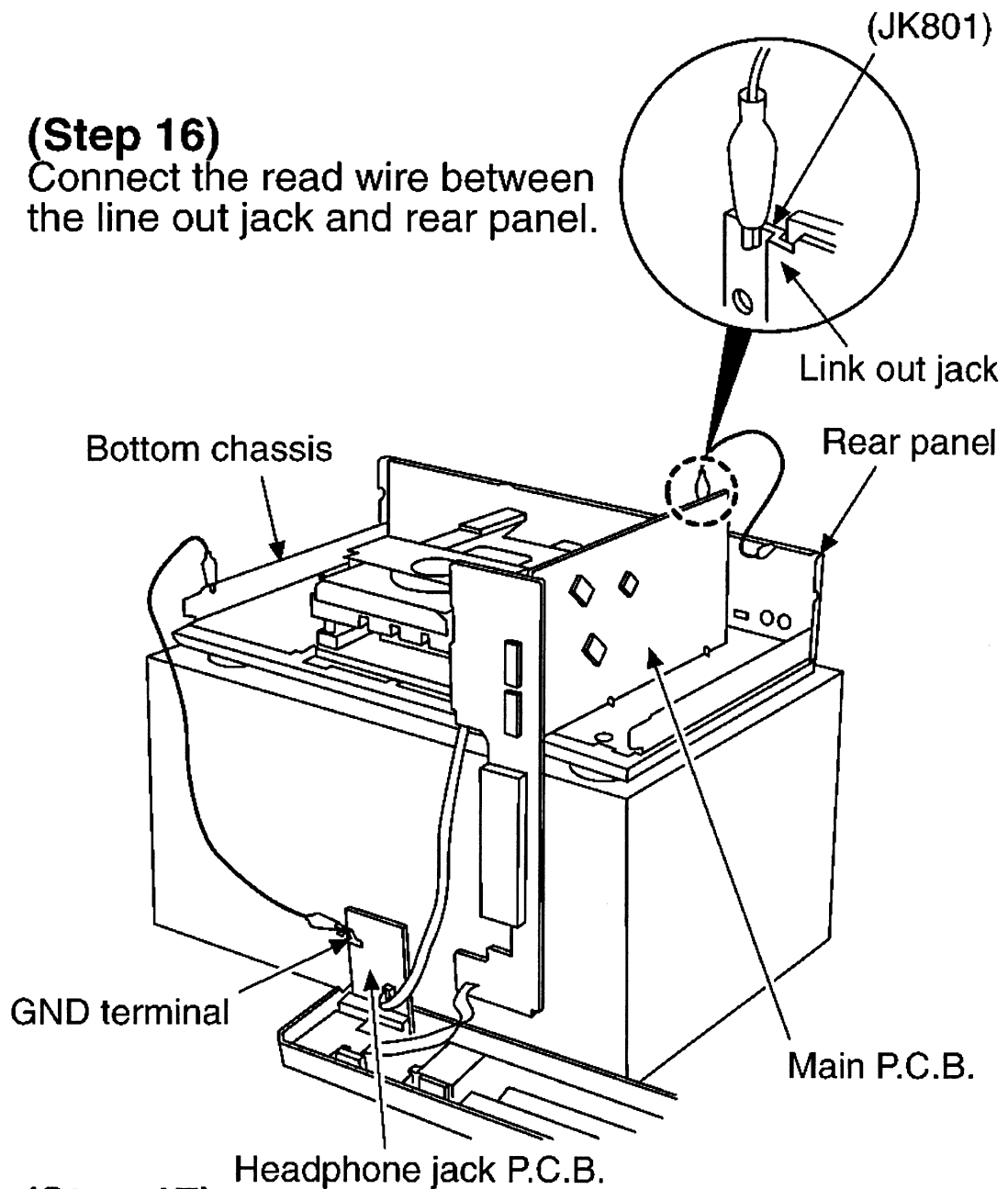
In order to stand the
operation P.C.B.,
place a box under
the unit.



- Check the main P.C.B. and headphone jack P.C.B. as shown below.

(Step 16)

Connect the read wire between the line out jack and rear panel.

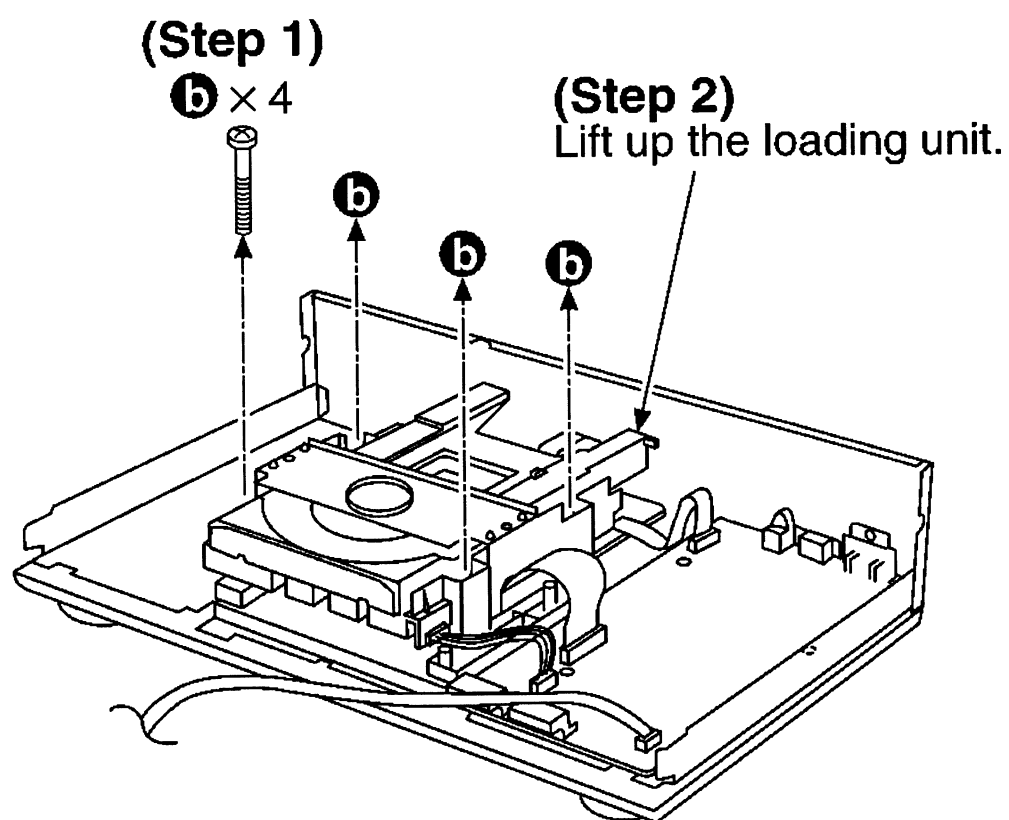


(Step 17)

Connect the read wire between the GND terminal and bottom chassis.

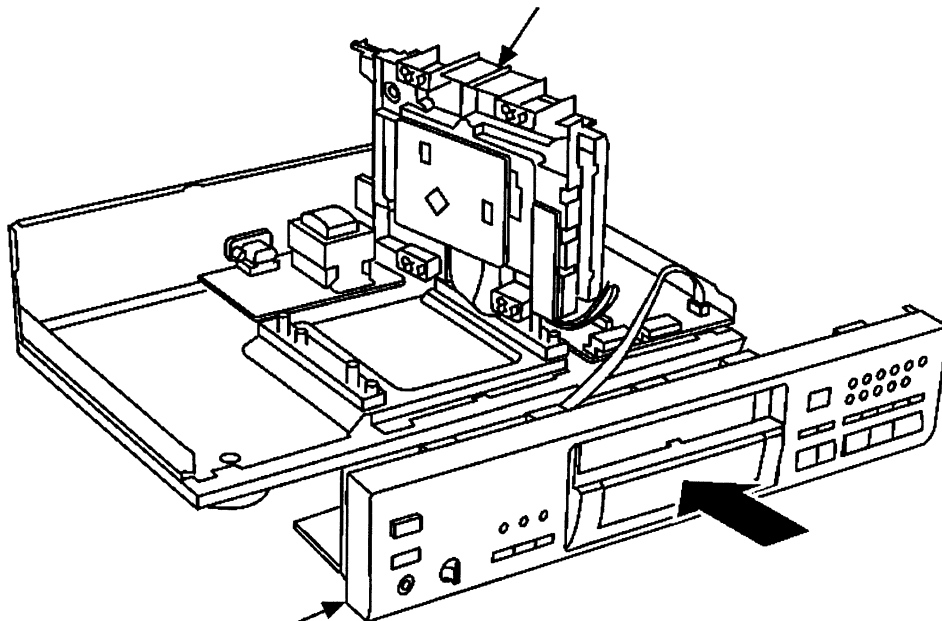
6.2. Checking for the servo P.C.B.

- Follow the (Step 1) - (Step 8) of item 6.1.



(Step 3)

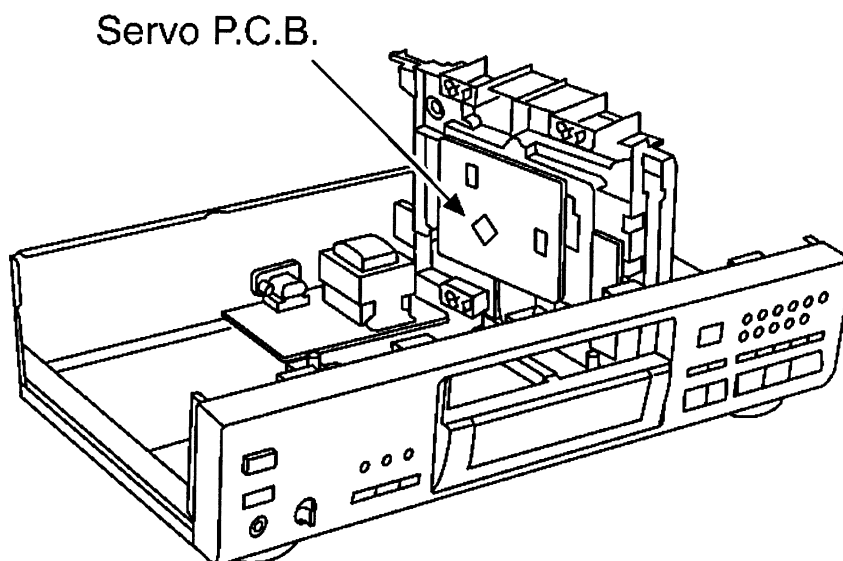
Place the loading unit as shown below.



(Step 4)

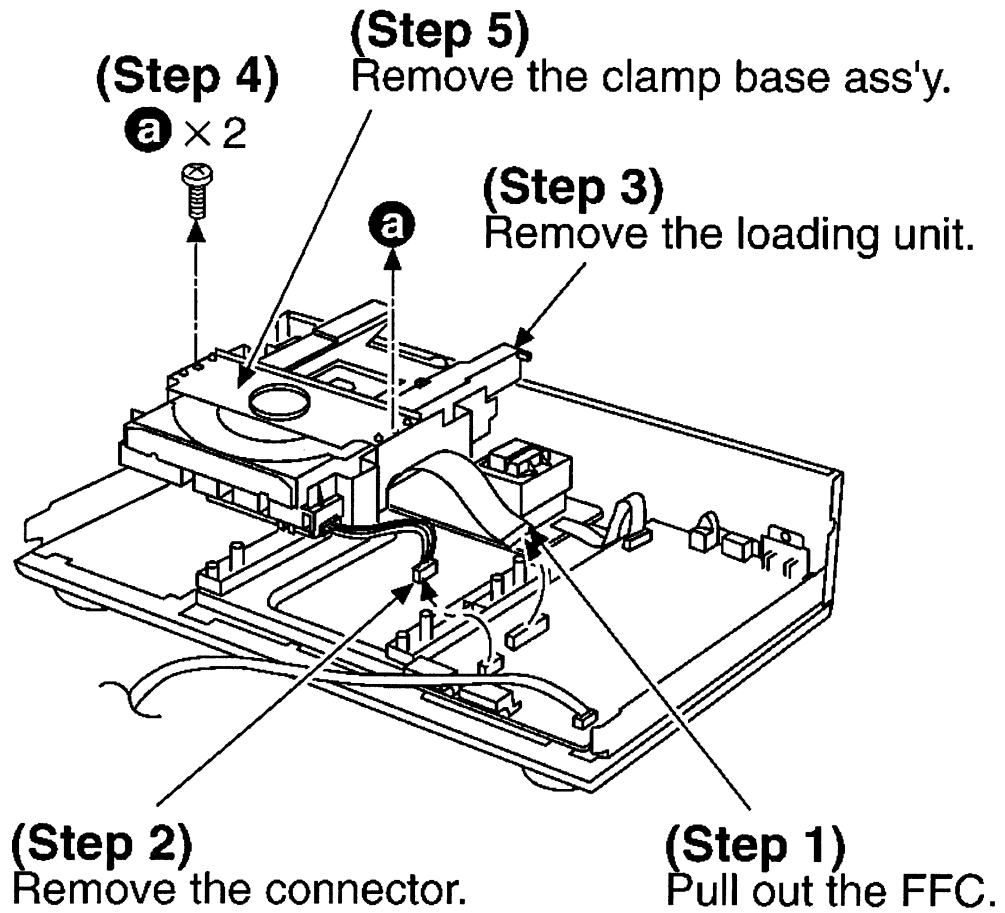
Reinstall the front panel ass'y to set.

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



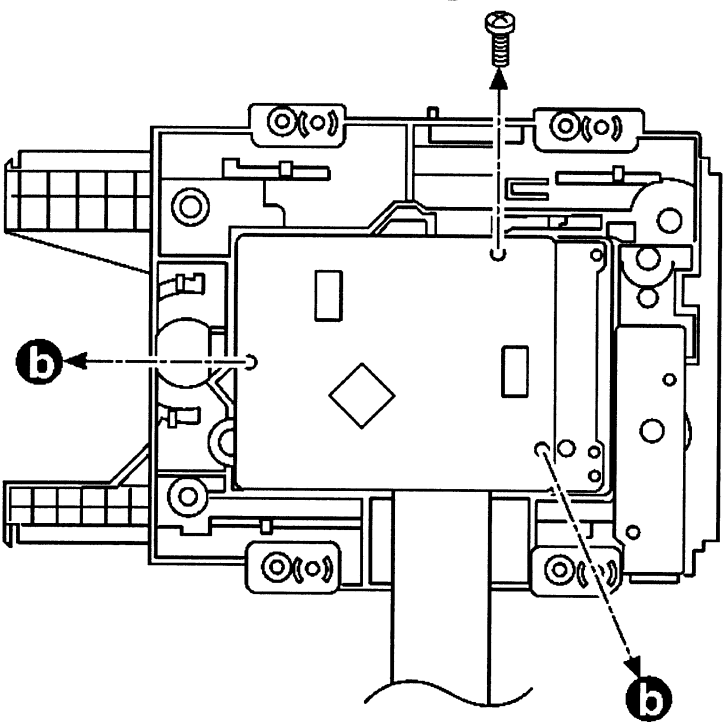
6.3. Replacement for the traverse unit ass'y

- Follow the (Step 1) - (Step 8) of item 6.1.

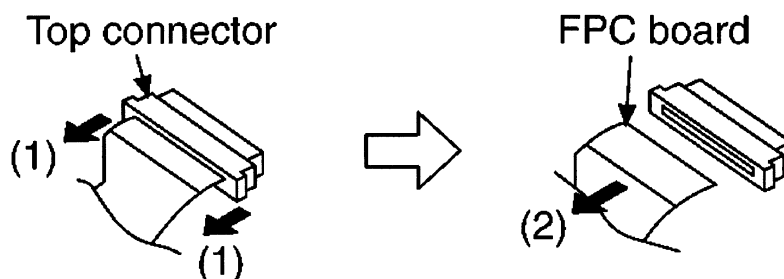


(Step 6)

b × 3

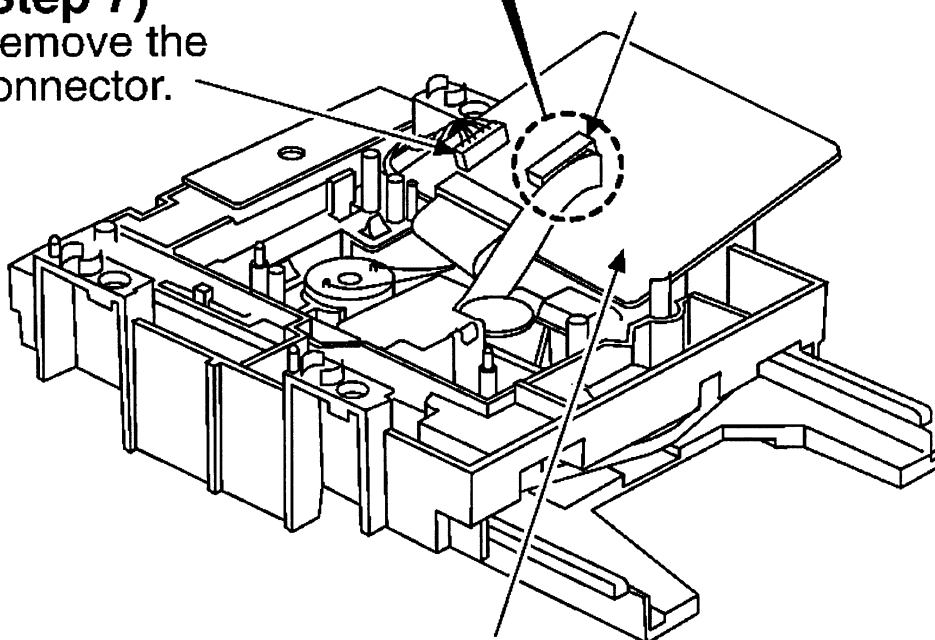


- Push the top of the connector in the direction of arrow (1), and then pull out the FPC board in the direction of arrow (2).

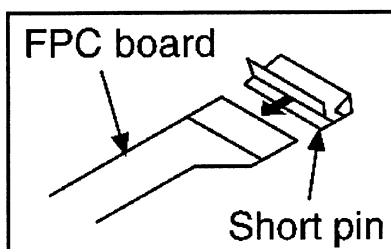


(Step 7)
Remove the
connector.

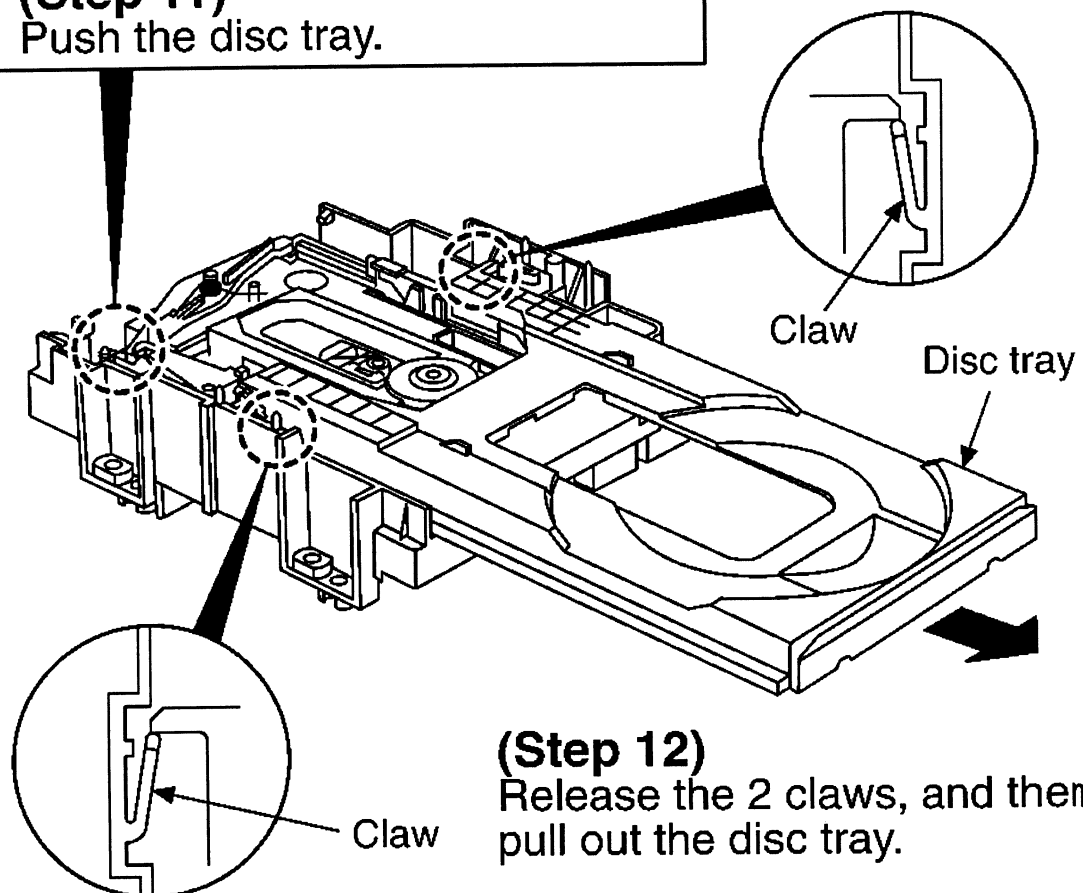
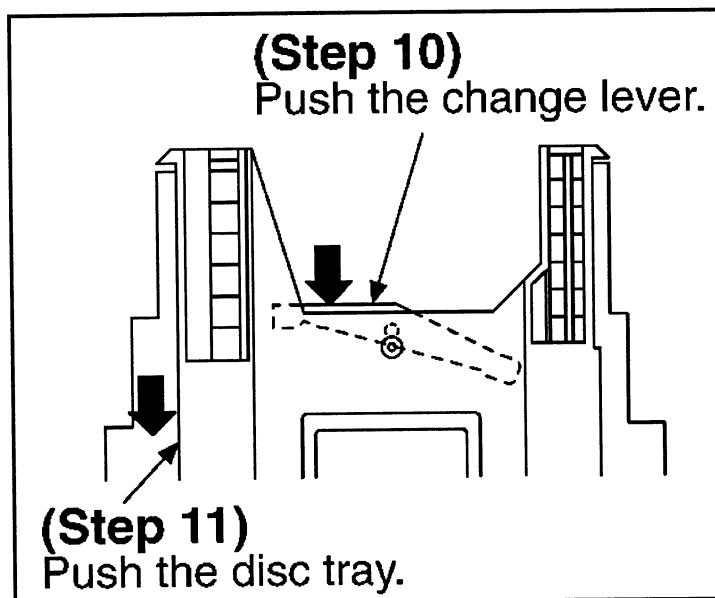
(Step 8)
Remove the FPC board
from connector.



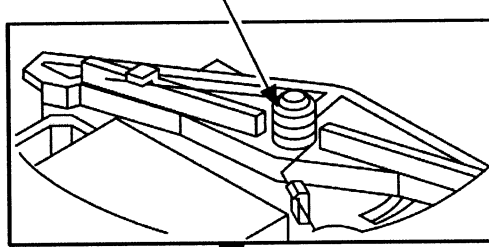
(Step 9)
Remove the servo P.C.B..



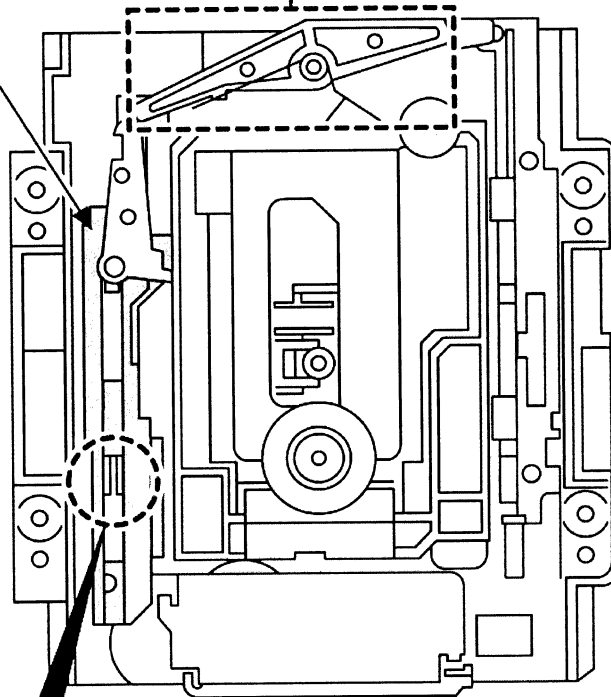
Caution:
Insert a short pin into the traverse
unit FPC board.
(Refer to "**Handling Precautions
for Traverse Deck**".)



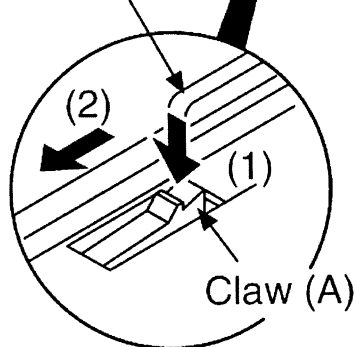
(Step 13)
Remove the spring.



Slide plate (1)



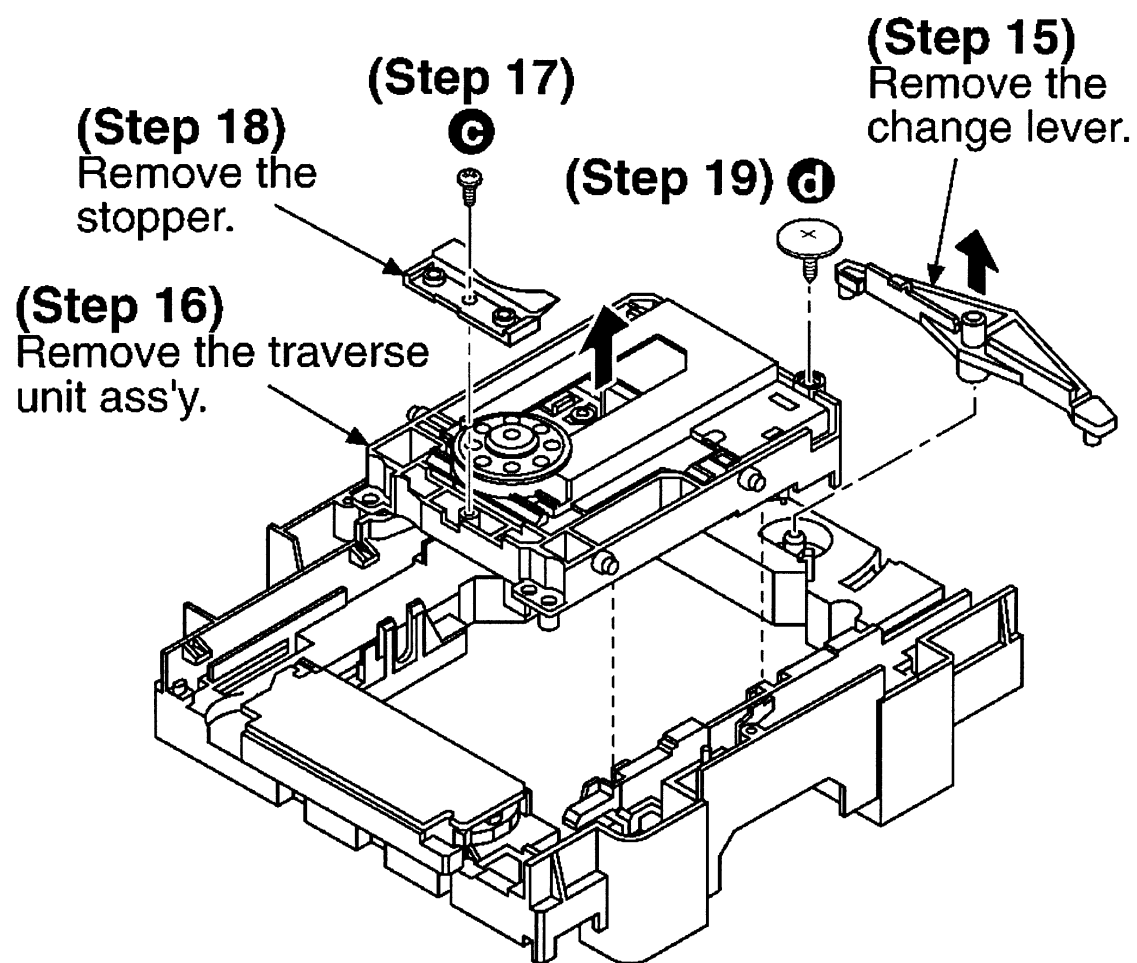
Slide plate (1)



(Step 14)
Push the claw (A) in the direction of arrow (1), and then move the slide plate (1) in the direction of arrow (2).

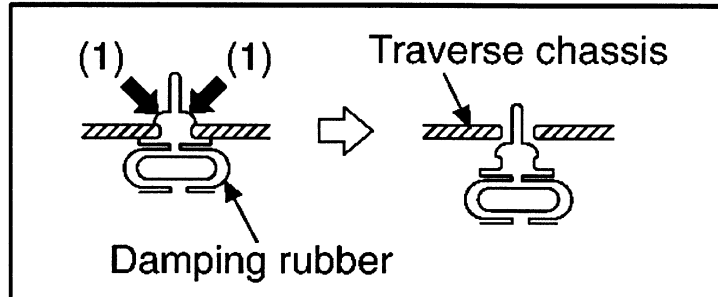
NOTE:

Be careful not to damage the claw (A) because the claw (A) is breakable.



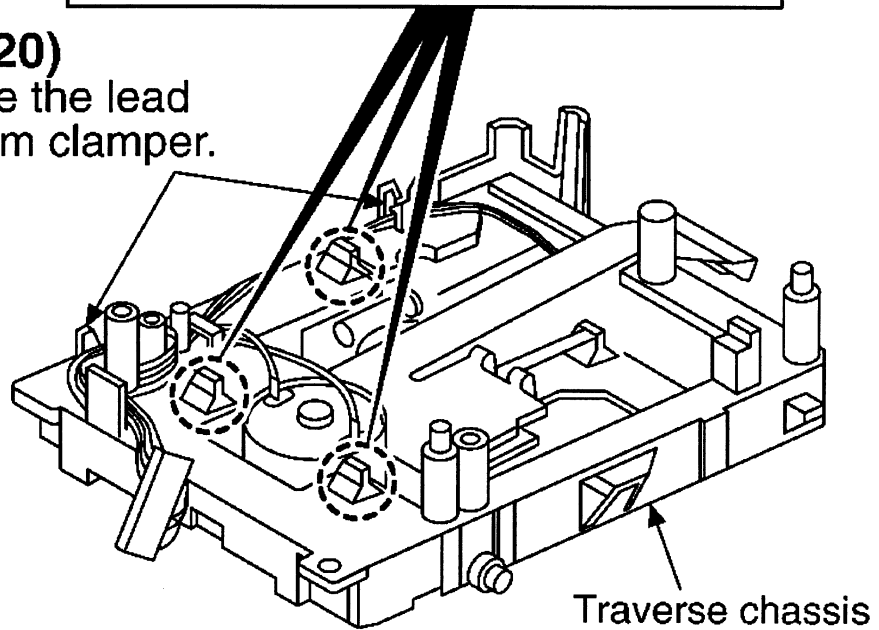
(Step 21)

Remove the damping rubber from traverse chassis.



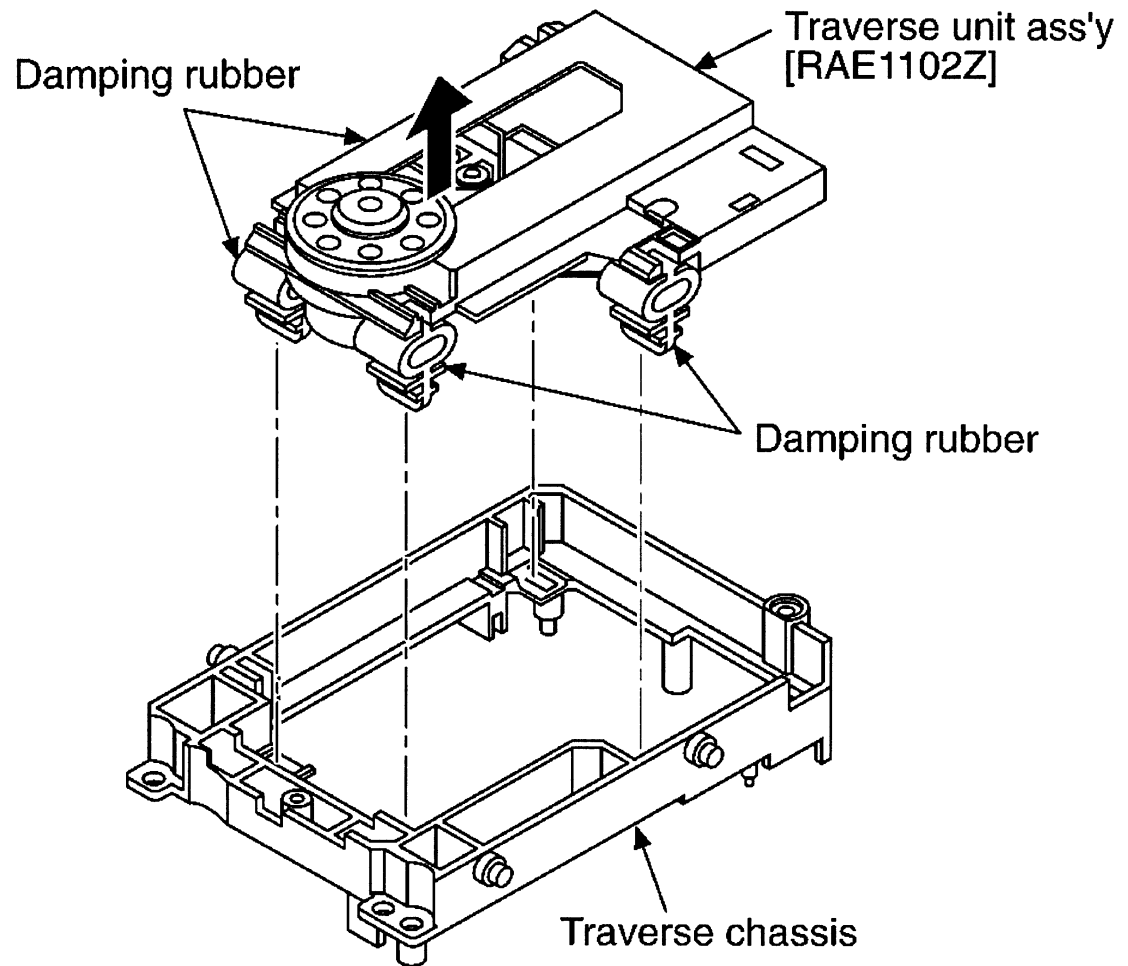
(Step 20)

Remove the lead wire from clamber.



(Step 22)

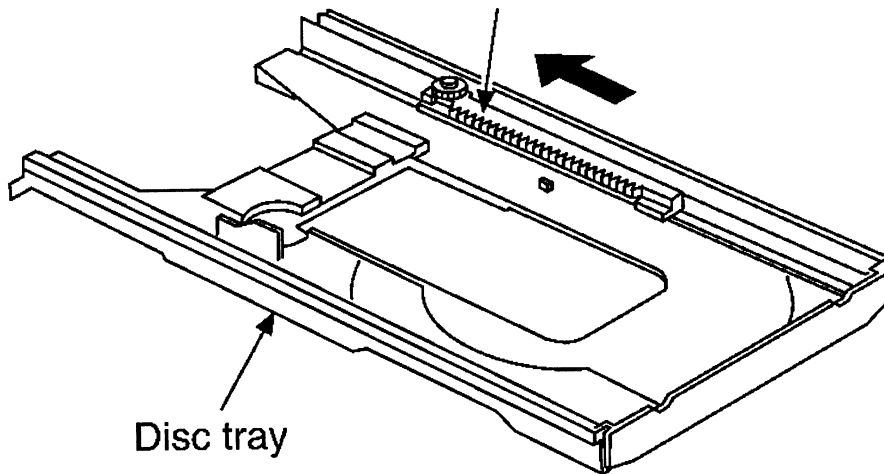
Remove the damping rubber.



Installation of the disc tray after replacement

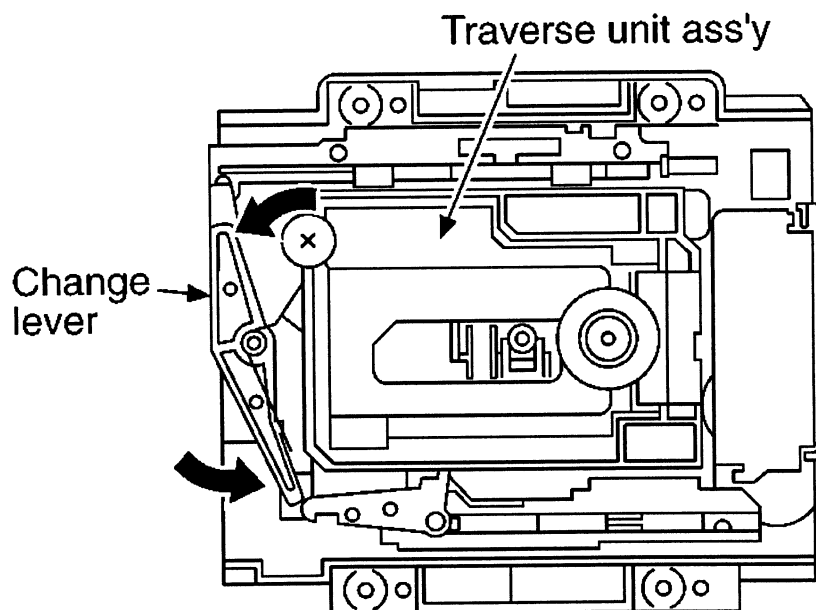
(Step 1)

Slide the drive rack fully in the direction of arrow.



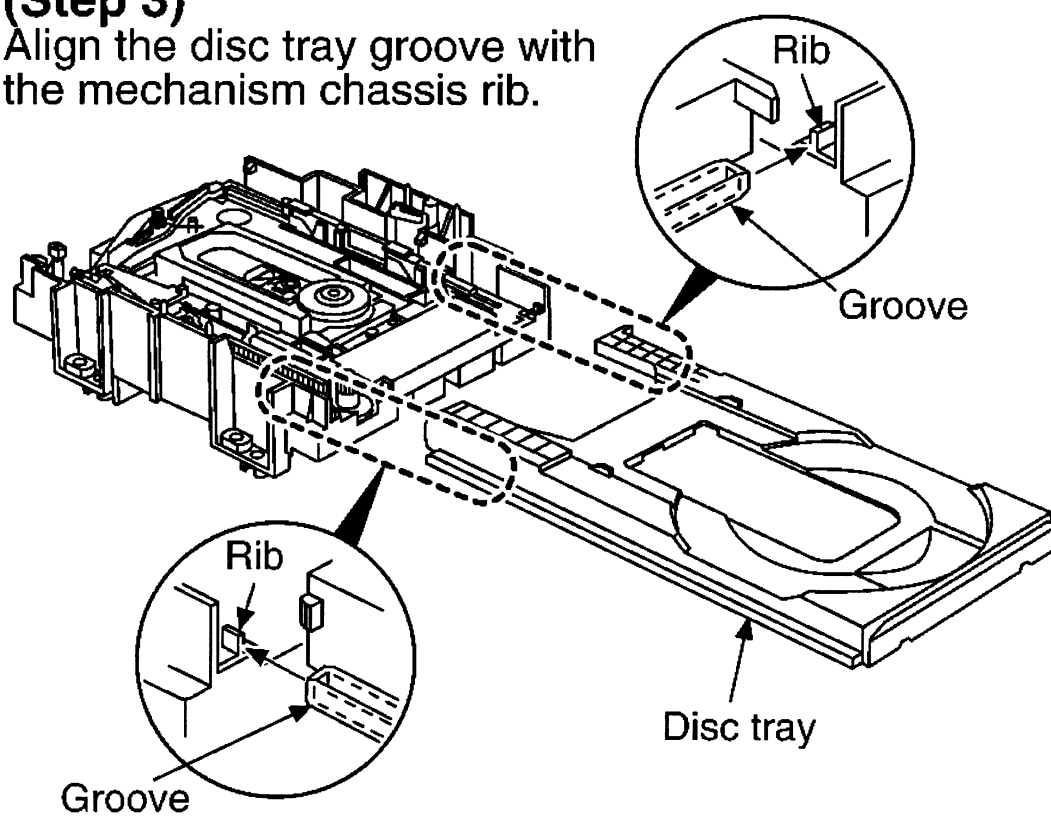
(Step 2)

Slide the change lever, and then leave the traverse unit ass'y falling.



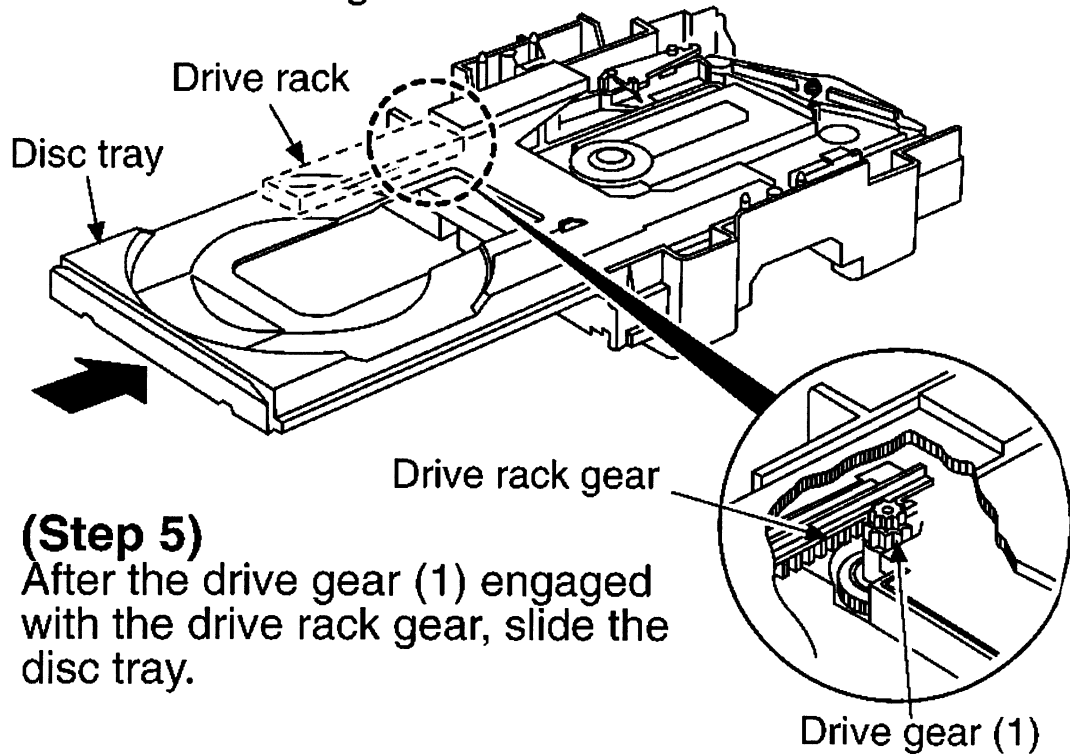
(Step 3)

Align the disc tray groove with the mechanism chassis rib.



(Step 4)

Slide the disc tray in the direction of arrow. Then, put the drive rack manually so that the drive gear (1) engages with the drive rack gear.



(Step 5)

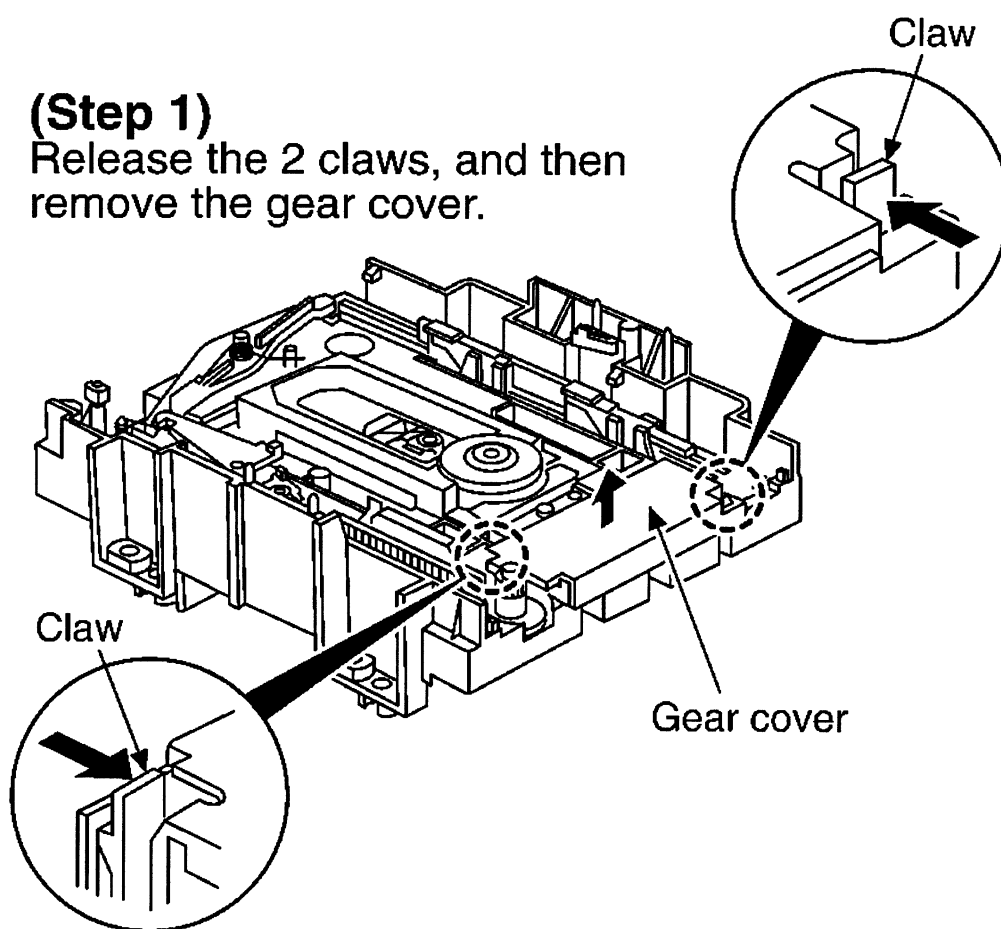
After the drive gear (1) engaged with the drive rack gear, slide the disc tray.

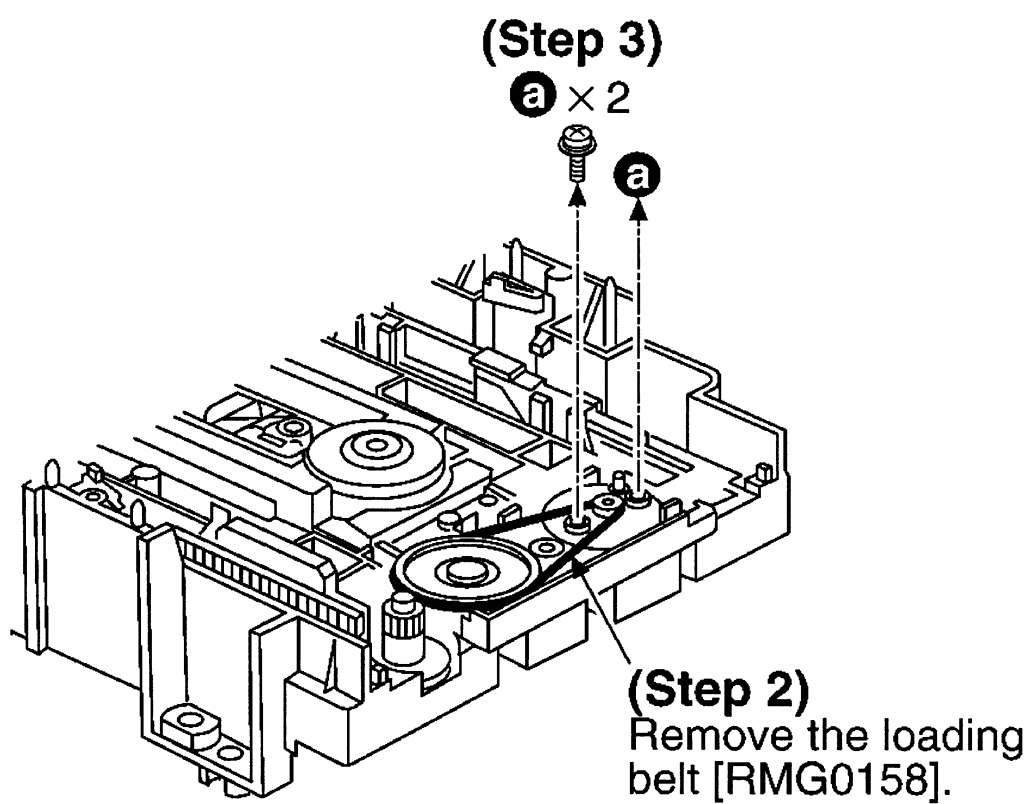
6.4. Replcement for the loading belt and loading motor

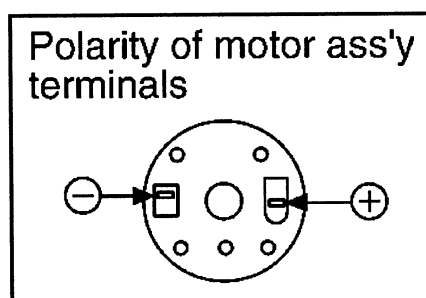
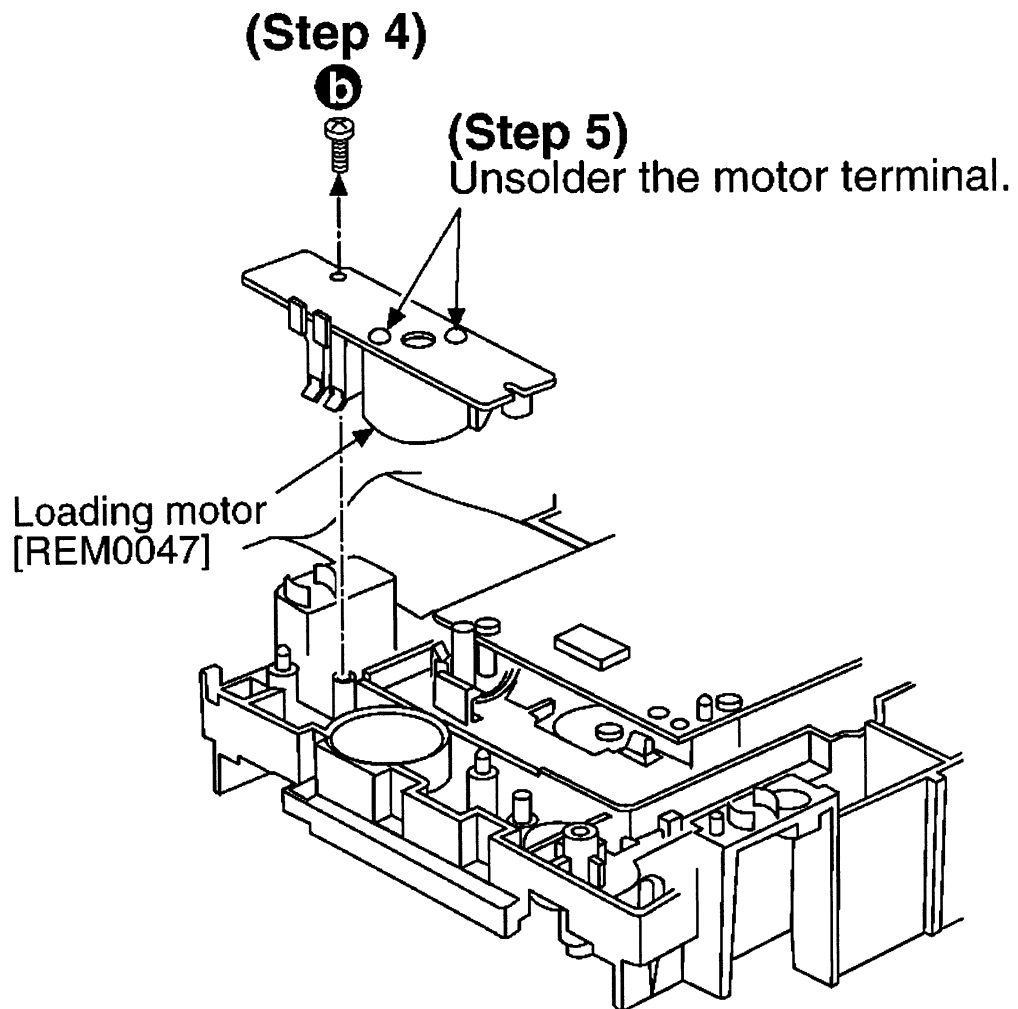
- Follow the (Step 1) - (Step 8) of item 6.1.
- Follow the (Step 1) - (Step 5) , (Step 10) - (Step 12) of item 6.3.

(Step 1)

Release the 2 claws, and then remove the gear cover.







7. Self-Diagnostic Function

The self-diagnostic feature automatically diagnoses the unit's mechanism and provides error information display. It includes self-diagnostic functions for the servo system and mechanism control switches.

7.1. Servo system self-diagnosis

1. With the test disc (SZZP1054C) loaded, turn the unit off.
2. While pressing and holding the Stop, Pause and Play button, turn the unit on again. Refer to Fig. 7-1. (The self-diagnostic function is activated.)
3. The display will show an error code, if any. Refer to Table 7-1.
4. Press the Play button to play the test disc. Refer to Fig. 7-1.
5. The display shows servo system status. Refer to Fig. 7-2. and Table 7-2.
6. Turn off the unit to exit the self-diagnostic function.

Fig. 7-1.

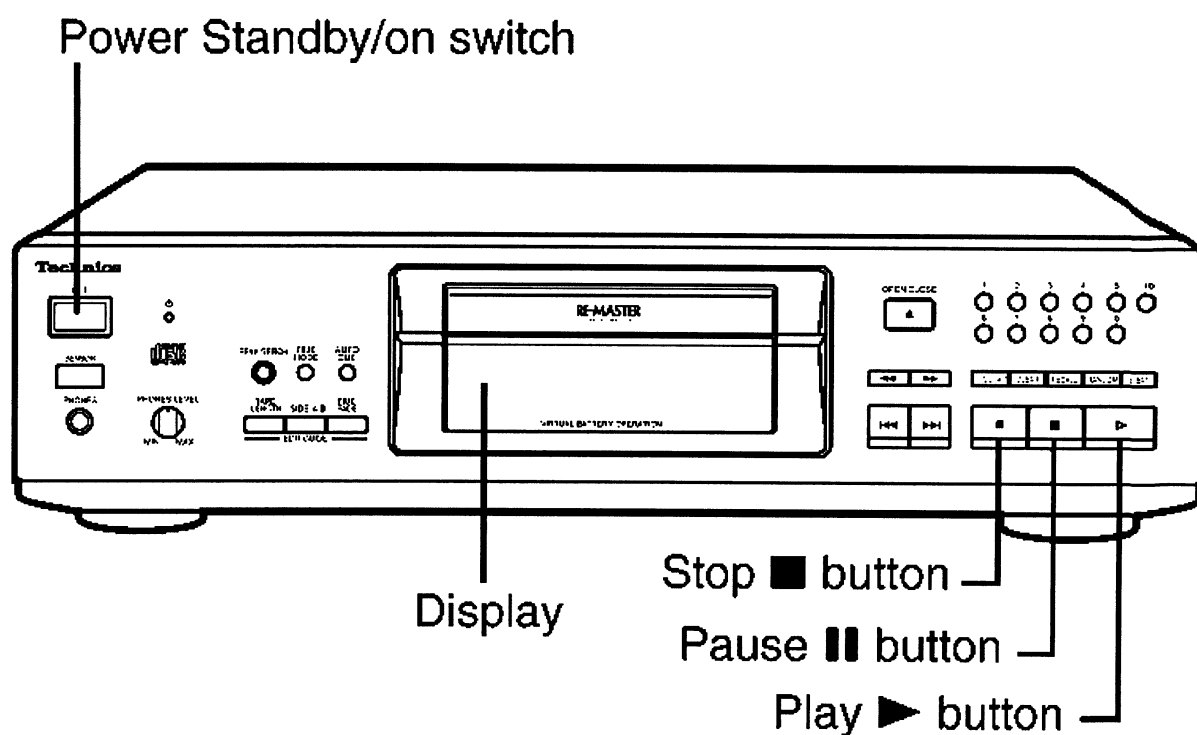
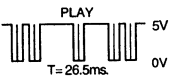
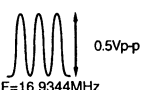
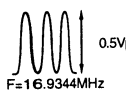
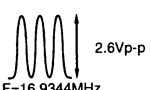
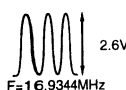
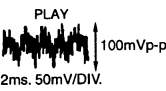
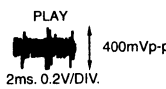


Table 7-1.

FL error code display	Symptom	Probable cause	Signal to check		Normal voltage and waveform values	
			Signal name	Location	PLAY	STOP
00	Normal	-----	-----	-----	-----	-----
01	Focus and tracking offset adjustments has not been completed in the specified time period.	1. IC702's clock input X1, IC702's power supply (V DD) or its reset (/RST) is invalid. 2. Any signal MDATA, MCLK, MLD or SENSE to/from IC401 are invalid.	MDATA	IC702-pin 8		5 V
			MCLK	IC702-pin 7		5 V
			MLD	IC702-pin 9		5 V
			SENSE	IC702-pin 10	0 V	5 V
			/RST	IC702-pin 18	5 V	5 V
			X1	IC702-pin 58		
			X2	IC702-pin 59		
02, 03, 05, 06, 07, 09, 0A, 0B, 0D, 0E, 0F	The test disc does not play consistently.	1. The disc is scratched or dirty. 2. Focus or tracking servo is malfunctioning (Check waveforms voltages and circuit constants). 3. Spindle driver is malfunctioning. 4. Optical pickup is malfunctioning.	FE	IC702-pin 32		2.5 V
			TE	IC702-pin 33		2.5 V
			FOD	IC702-pin 28	2.5 V	2.5 V
			TRD	IC702-pin 27	2.5 V	2.5 V
			KICK	IC702-pin 26	2.5 V	2.5 V
			/FLOCK	IC702-pin 11	0 V	5 V
			/RFDET	IC702-pin 38	0 V	5 V
			RF	TJ701		2.5 V
			STAT	IC702-pin 17	3.3 V	0 V

04, 08, 0C	Focus and tracking gain adjustment has not been completed in specified time period.	1. The disc is scratched or dirty. 2. Focus or tracking servo is malfunctioning (Check waveforms voltages and circuit constants). 3. Optical pickup is malfunctioning.	17			
			FE	IC702-pin 32	PLAY 100mVp-p 2ms, 50mV/DIV.	2.5 V
			TE	IC702-pin 33	PLAY 400mVp-p 2ms, 0.2V/DIV.	2.5 V
			/TLOCK	IC702-pin 12	0 V	5 V
			OFT	IC702-pin 36	0 V	5 V

Fig. 7-2.

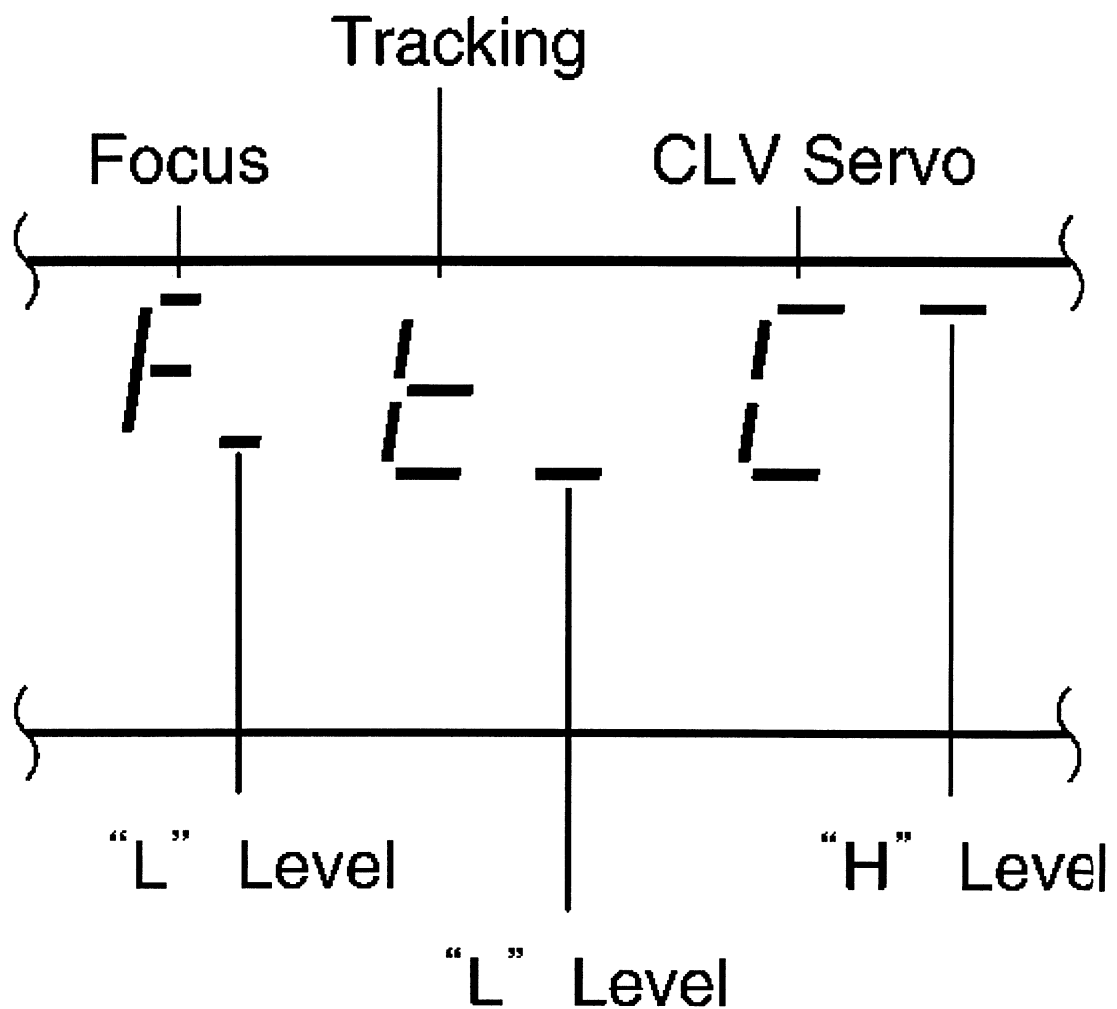


Table 7-2.

	L level	H level
Focus	Focus system normal	Focus system error
Tracking	Tracking system normal	Tracking system error
CLV servo	CLV servo system normal	CLV servo system error

7.2. Mechanism control switches self-diagnosis

1. Turn the unit on.
2. Press the Disc tray open/close button to open the disc tray, and load the test disc (SZZP1054C). Refer to Fig. 7-3.
3. Hold down the Stop button for more than 2 seconds, and then press the F.skip button for more than 2 seconds while continuing to hold down the Stop button. Refer to Fig. 7-3. (The symbol “C” is displayed on the display. It indicates the self-diagnostic function is activated.)
4. Press the Stop button. Refer to Fig. 7-3. The display will show an error code, if any. Refer to Table 7-3.
5. If more than one error exists, the display will sequentially show the respective error codes each time the Stop button is pressed.
6. Turn off the unit to exit the self-diagnostic function.

Fig. 7-3.

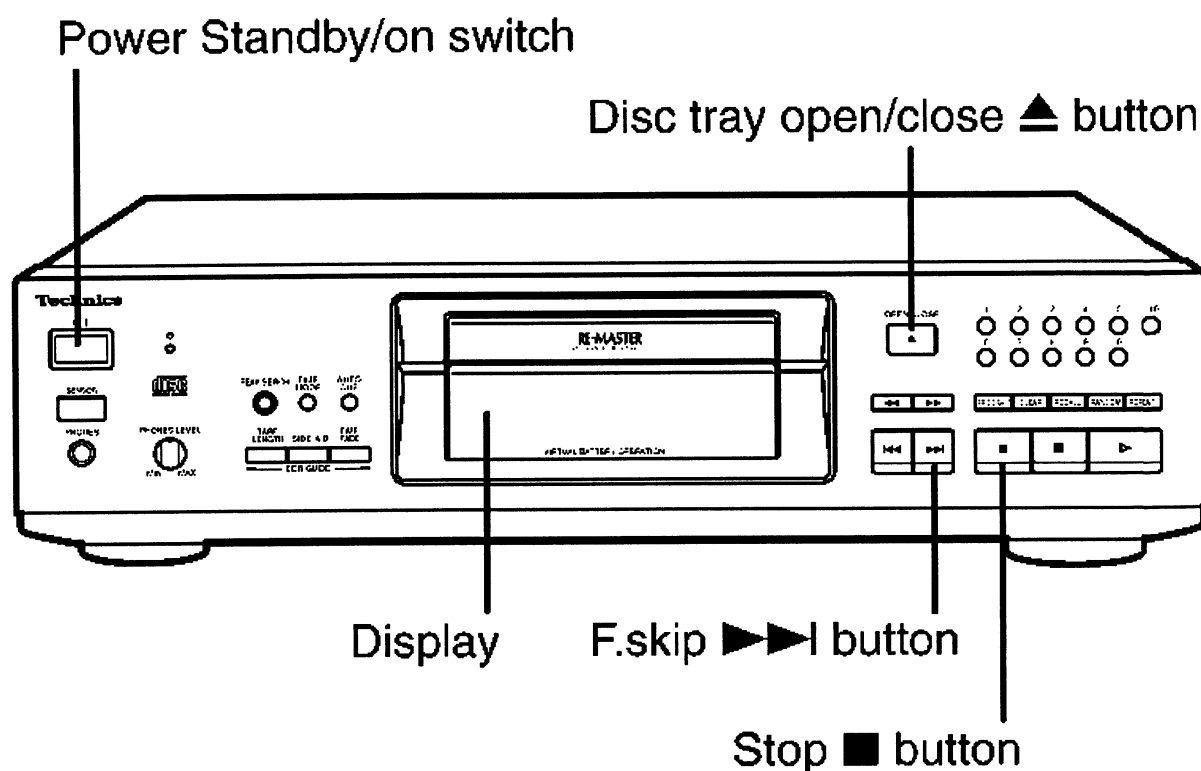


Table 7-3.

error code	Symptom	Possible cause
F15	Interval before CD starts playing is too long.	Rest detect switch (S701) is defective.
H15	Disc tray closes immediately after it is opened.	Disc tray open detect switch (S781) is defective.
H16	Disc tray opens immediately after it is closed.	Disc tray close detect switch (S782) is defective.
F26	The display shows error code F26 after the unit is turned on. The CD does not play.	Communication error between CD servo and CPU.

Note:

Error code F26 will be displayed before the self-diagnostic function is activated if an error exists.

8. Schematic Diagram Notes

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

Notes:

S601:

Numeric switch (8)

S602:

Numeric switch (3)

S603:

Recall switch (RECALL)

S604:

F.Skip switch ( **)**

S605:

Stop switch ( **)**

S606:

Numeric switch (9)

S607:

Numeric switch (4)

S608:

Random play switch (RANDOM)

S609:

R.Skip switch ( **)**

S610:

Pause switch ( **)**

S611:

Numeric switch (0)

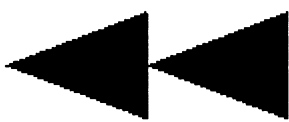
S612:

Numeric switch (5)

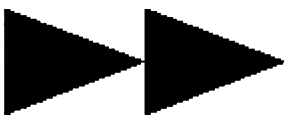
S613:

Repeat switch (REPEAT)

S614:


R.Search switch ()

S615:


F.Search switch ()

S616:

Numeric switch (6)

S617:

Numeric switch (1)

S618:

Program switch (PROGRAM)

S619:

Time fade switch (TIME FADE)

S620:

Auto cue switch (AUTO CUE)

S621:

Numeric switch (7)

S622:

Numeric switch (2)

S623:

Clear switch (CLEAR)

S624:

Tape side select switch (SIDE A/B)

S625:

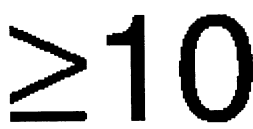
Time mode select switch (TIME MODE)

S626:

Disc tray open/close switch


(OPEN/CLOSE)

S627:

Numeric switch ( 10)

S628:

Play switch ()

S629:

Tape length switch (TAPE LENGTH)

S630:

Peak search switch (PEAK SEARCH)

S651:

Power Standby/on switch ( /I)

S701:

Rest detect switch in OFF position

S781:

Disc tray open detect switch in OFF position

S782:

Disc tray close detect switch in OFF position

S901:

Re-master processing switch in ON position (RE-MASTER PROCESSING)

VR871:

Headphones volume control VR
(PHONES LEVEL)

- 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

: CD stop

()

: CD play [1 kHz, L+R, 0 dB]

- Important safety notice:

Components identified by  mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

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

- 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.

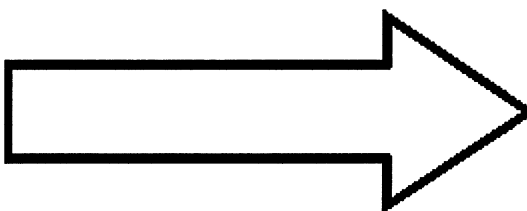
- Voltage and signal line



: Positive voltage line



: Negative voltage line



: CD signal line

9. Schematic Diagram



10. Printed Circuit Board Diagram



11. Type Illustration of ICs, Transistors and Diodes



12. Wiring Connection Diagram



13. Block Diagram



14. Troubleshooting Guide



15. Terminal Function of ICs

15.1. IC401 (UPD78042F116): System Control/FL Drive

Pin No.	Terminal Name	I/O	Function
1	7G	O	FL grid drive signal output
7	1G		
8	V DD	I	Power supply terminal
9	MCLK	O	Microprocessor command clock
10	MDATA	O	Microprocessor command data
11	STAT	I	Status signal input
12	MLD	O	Microprocessor command load signal
13	DMUTE2	-	Not used, open
14	SQCK	O	External clock for sub-code Q resister
15	NC	-	Not used, open
16	SUBQ	I	Sub-code Q data input
17	RST	I	Reset signal input
18	OPEN SW	I	Disc tray open detect switch input
19	CLOSE SW	I	Disc tray close detect switch input
20	GND	-	GND terminal
21	OPEN	O	Disc tray open command signal output
22	CLOSE	O	Disc tray close command signal output
23	SENSE	I	Sense signal input
24	FLOCK	I	Focus servo pull in signal input
25	TLOCK	I	Tracking servo pull in signal input
26	S RST	O	Reset signal output
27	REST SW	I	Rest detect switch signal input
28	POWER OFF	O	Power off command output
29	V DD	I	Power supply terminal
30	GND	-	GND terminal
31			
32	NC	-	Not used, open
33	GND	-	GND terminal
34	X1	I	Oscillator connected terminal (4.23 MHz)
35	X2	O	
36	P37	-	Not used, open
37	P36		
38	D RST	O	Reset signal output

38	D RST	O	Reset signal output
39	ACK	I	Acknowledge signal input
Pin No.	Terminal Name	I/O	Function
40	LP	O	Latch pulse signal output
41	CS2	O	Chip select signal output
42	MLD	O	Microprocessor command load signal
43	CS1	O	Chip select signal output
44	M RST	O	Reset signal output
45	EMPH	O	Emphasis signal output
46	DMUTE	O	Muting signal output
47	REMOCON	I	Remote control signal input
48	GND	-	GND terminal
49	STANBY LED	O	STANDBY LED control signal output
50	PAUSE LED	O	PAUSE LED control signal output
51	PLAY LED	O	PLAY LED control signal output
52	V DD	I	Power supply terminal
53	POWER SW	I	Power key switch signal input
54 58	P126 P122	I	Key return signal input
59 60	P121 P120	I	Connected to power supply
61 66	P16 P11	O	FL anode drive signal and key scan signal
67 70	P10 P7	O	FL anode drive signal output
71	V PP	I	Power supply terminal for FL drive (-33.3 V)
72 77	P6 P1	O	FL anode drive signal output
78 80	10G 8G	O	FL grid drive signal output

15.2. IC701 (AN8805SB-E1): Servo Amp

Pin No.	Terminal Name	I/O	Function
1	PD	I	APC amplifier input
2	LD	-	APC amplifier output (Not used, open)
3	LD ON/OFF	-	APC ON/OFF control signal (Not used, connected to GND)
4	REF SW	I	Capacitor connection for CROSS
5	V CC	I	Power supply terminal
6	RF-	I	RF amplifier inversion signal input
7	RF	O	RF amplifier signal output
8	RF IN	I	AGC signal input
9	CAGC	I	AGC loop filter connection
10	ARF	O	AGC signal output
11	CENV	I	Capacitor connection for RF detection
12	CEA	I	Capacitor connection for HPF amplifier
13	CSBDO	I	Capacitor connection for -RF envelope detection
14	EDO	O	BDO signal output
15	CSBRT	I	Capacitor connection for RF envelope detection
16	OFTR	O	OFTR signal output
17	/RFDET	O	RFDET signal output
18	V SS	-	GND terminal
19	ENV	O	Envelope signal output
20	VREF	O	VREF signal output
21	LDOFF	-	APC OFF signal control (Connected to GND)
22	VDET	O	VDET signal output
23	TEBPF	I	VDET signal input
24	CROSS	O	Cross signal output
25	TEOUT	O	TE amplifier signal output
26	TE-	I	TE amplifier inversion signal input
27	FEOUT	O	FE amplifier signal output

Pin No.	Terminal Name	I/O	Function
28	FE-	I	FE amplifier inversion signal input
29	FBAL	I	F BAL control signal
30	TBAL	I	T BAL control signal
31	PDFR	I	Adjustment for I-V amplifier conversion resistor
32	PDER	I	Adjustment for I-V amplifier conversion resistor
33	E	I	I-V amplifier signal input
34	F	I	I-V amplifier signal input
35	B+D	I	I-V amplifier signal input
36	A+C	I	I-V amplifier signal input

15.3. IC702 (MNG713RG1AL): Servo Processor/Digital Signal Processor/Digital Filter & D/A converter

Pin No.	Terminal Name	I/O	Function
1	BCLK	O	Bit clock output for serial data
2	LRCK	O	L/R discriminating signal output
3	SRDATA	O	Serial data signal output
4	DV DD 1	I	Power supply terminal (for digital circuit)
5	DV SS 1	-	GND terminal (for digital circuit)
6	TX	O	Digital audio interface signal output
7	MCLK	I	Microprocessor command clock signal input
8	MDATA	I	Microprocessor command data signal input
9	MLD	I	Microprocessor command load signal input
10	SENSE	O	Sense signal output
11	/FLOCK	O	Focus servo feeding signal output
12	/TLOCK	O	Tracking servo feeding signal output
13	BLKCK	-	Sub-code block clock signal output (Not used, open)

Pin No.	Terminal Name	I/O	Function
14	SQCK	I	External clock signal input for sub-code Q resistor
15	SUBQ	O	Sub-code Q data signal output
16	DMUTE	I	Muting input (H: Mute)
17	STAT	O	Status signal output
18	/RST	I	Reset signal input (L: Reset)
19	SMCK	-	Not used, open
20	PMCK	-	Not used, open
21	TRV	O	Traverse forced feed output
22	TVD	O	Traverse drive signal output
23	PC	O	Spindle motor ON signal output (L: ON)
24	ECM	O	Spindle motor drive signal output
25	ECS	O	Spindle motor drive signal output
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	I	D/A drive output reference voltage input
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input
35	VDET	I	Vibration detect signal input (H: Detect)
36	OFT	I	Off track signal input (H: Off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detect signal input (L: Detect)
39	BDO	I	Dropout detection signal input (H: Dropout)
40	LDON	O	Laser on signal output (H: ON)
41	TES	-	Not used, open
42	PLAY	-	Not used, open
43	WVEL	-	Not used, open
44	ARF	I	RF signal input

Pin No.	Terminal Name	I/O	Function
45	IREF	I	Reference current input
46	DRF	-	DSL bias terminal (Not used, open)
47	DSLIF	I/O	DSL loop filter terminal
48	PLLIF	I/O	PLL loop filter terminal
49	VCOF	I/O	VCO loop filter terminal
50	AV DD 2	I	Power supply terminal (for analog circuit)
51	AV SS 2	-	GND terminal (for analog circuit)
52	EFM	-	EFM signal (Not used, connected to GND)
53	PCK	-	PLL extract clock (Not used, connected to GND)
54	PDO	-	Phase comparison signal of EFM and PCK signals (Not used, connected to GND)
55	SUBC	-	Sub-code serial data output (Not used, open)
56	SBCK	-	Sub-code serial input data (Not used, connected to GND)
57	V SS	-	GND terminal
58	X1	I	Crystal oscillator terminal (f=16.9344 MHz)
59	X2	O	
60	V DD	I	Power supply terminal
61	BYTCK	-	Byte clock signal (Not used, open)
62	/CLDCK	-	Sub-code frame clock signal output (Not used, open)
63	FCLK	-	Crystal frame clock (Not used, open)
64	PFLAG	-	Interpolation flag terminal (Not used, open)
65	FLAG	-	Flag terminal (Not used, open)
66	CLVS	-	Spindle servo phase synchronizing signal (Not used, open)
67	CRC	-	Sub-code CRC check terminal (Not used, open)
68	DEMPH	-	De-emphasis ON signal (Not used, open)
69	RESY	-	Re-synchronizing signal of frame sync. (Not used, open)

(Not used, open)			
Pin No.	Terminal Name	I/O	Function
70	/RST2	I	Reset input through MASH circuit
71	/TEST	I	Test terminal
72	AV DD 1	I	Power supply terminal (for analog circuit)
73	OUTL	O	L ch audio signal output
74	AV SS 1	-	GND terminal
75	OUTR	O	R ch audio signal output
76	RSEL	I	RF signal polarity assignment input
77	CSEL	I	Crystal oscillating frequency designation input
78	PSEL	I	Test terminal
79	MSEL	I	Output frequency switching for SMCK terminal
80	SSEL	I	Output mode switching of SUBQ terminal

15.4. IC703 (AN8389S-E1): Focus Coil/Radial Coil/ Sledge Motor/Spindle Motor Drive

Pin No.	Terminal Name	I/O	Function
1	V CC	I	Power supply terminal
2	VREF	I	Reference voltage input
3	IN4	I	Motor driver 4 input
4	IN3	I	Motor driver 3 input
5	GND	-	GND terminal
6	NC	-	Not used, connected to GND
7	/RST	-	Reset input (Not used, open)
8	GND	-	GND terminal
9	IN2	I	Motor driver 2 input
10	PC2	-	Not used, connected to GND
11	IN1	I	Motor driver 1 input
12	PC1	I	PC1 (power cut) input
13	PV CC 1	I	Power supply terminal 1
14	PGND1	-	GND terminal 1 for driver
15	D1-	O	Spindle motor drive 1 output terminal (-)
16	D1+	O	Spindle motor drive 1 output terminal (+)
17	D2-	O	Sledge motor drive 2 output terminal (-)
18	D2+	O	Sledge motor drive 2 output terminal (+)
19	D3-	O	Radial actuator 3 output terminal (-)
20	D3+	O	Radial actuator 3 output terminal (+)
21	D4-	O	Focus actuator 4 output terminal (-)
22	D4+	O	Focus actuator 4 output terminal (+)
23	PGND2	-	GND terminal 2 for driver
24	PV CC 2	I	Power supply terminal 2 for driver

16. Replacement Parts List

Notes:

- Important safety notice:

Components identified by  mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

- The parenthesized indications in Remarks columns specify the area. (Refer to the cover page for the area.)
- The <IA> <IB> <IC> <ID> and <IE> marks in Remarks indicate language of instruction manual.
 - <IA>: English, Spanish, Swedish
 - <IB>: English
 - <IC>: German, Italian, French
 - <ID>: Russian, Czech, Polish
 - <IE>: Netherlands, Danish
- The marking [RTL] indicates that 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 dependent 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.
- The marking <MAVD> indicates in Remarks columns parts that are supplied by MAVD.
- All parts are supplied by MESA.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RKM0152-K	TOP CABINET	1	
2	RYP0951-K	FRONT PANEL ASS'Y	1	<MAVD>
2-1	RGU1580A-K	BUTTON,MAIN	1	<MAVD>
2-2	RGU1146A-K	BUTTON,SUB	1	
2-3	RGU1579A-K	BUTTON,PROGRAM	1	<MAVD>
2-4	RKW0359B-R	FL PANEL	1	<MAVD>
2-5	RKW0273A-K	FILTER	1	
3	RGU1029-KA	BUTTON,POWER	1	<MAVD>
4	RGL0267-Q	LED INDICATOR	1	
5	RMV0079	SHEET 1	1	
6	RMV0080	SHEET 2	1	
7	RMR0818-K	LED COVER	1	
8	RHD26021	SCREW	13	
9	RMN0298	HOLDER	1	
10	RGW0048-1K	KNOB,VOLUME	1	
11	XTB3+10GFZ	SCREW	13	
12	RKA0040B-K1	FOOT	4	
12-1	RMG0384-T	RUBBER	4	
13	XTBS3+8JFZ1	SCREW	7	
14	XTBR3+20JFZ	SCREW	3	
15	RHD30053	SCREW	3	
16	RMR0810-W	SPACER	2	
17	RWJ5223130EE	FFC(23P)	1	
18	REX0577-1	CABLE ASS'Y	1	<MAVD>
19	RHD30052	SCREW	4	
20	XTB3+10JFZ	SCREW	3	
21	RHD30035-K1	SCREW	4	
22	RMR0811-K	HOLDER	1	
23	RGK1257-S	TRAY LID	1	<MAVD>
24	RGK1258-S	TRAY ORNAMENT	1	<MAVD>
101	RGQ0130-K	TRAY	1	
102	RFKJLPG460AE	MECHANISM CHASSIS ASS'Y	1	
103	RMR0719-W	MID CHASSIS	1	
104	RAE1102Z	TRAVERSE UNIT	1	<MAVD> 
105	REX0576	CABLE ASS'Y	1	
106	RHD30047	SCREW	1	
107	RMG0507-A	DAMPING RUBBER	4	<MAVD>
108	RMR0750-W	TRAVERSE STOPPER	1	
109	XTBS26+8J	SCREW	5	
110	RFKNLPG460AC	CLAMPER ASS'Y	1	
111	RDG0142	RELAY GEAR	1	
112	RDG0259	DRIVE GEAR	1	
113	RDP0065	RELAY PULLEY	1	
114	REM0047	MOTOR ASS'Y	1	
115	RME0063	LOCK LEVER SPRING	1	
116	RME0087	ASSIST SPRING	1	
117	RMG0158	BELT	1	
118	RMG0338-Q	STOPPER RUBBER	1	
119	RML0177	CHANGE LEVER	1	
120	RML0352	LOCK LEVER	1	
121	RMM0112	SLIDER 1	1	
122	RMM0113	SLIDER 2	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
123	RMR0721-K	GEAR COVER	1	
124	RHD20009-1	SCREW	1	
125	RFKNLPG460AA	DRIVE RACK ASS'Y	1	
126	XTB3+8JFZ	SCREW	2	
127	XYN2+F6FZ	SCREW	2	
128	RFKNLPG460AB	CLAMPER BASE ASS'Y	1	
A1	EUR645275	REMOTE CONTROL	1	<MAVD>
A1-1	UR64EC1987	BATT.COVER(REMOTE COT.)	1	
A2	RJA0043-1C	POWER SUPPLY CORD	1	(E)(EG) <MAVD>
A2	RJA0044-3C	POWER SUPPLY CORD	1	(EB) <MAVD> 
A3	RJL2P004B08A	PIN CORD	1	
A4	RQT5415-E	INSTRUCTION MANUAL	1	(E) <MAVD> <IA>
A4	RQT5414-B	INSTRUCTION MANUAL	1	(EB) <MAVD> <IB>
A4	RQT5412-D	INSTRUCTION MANUAL	1	(EG) <MAVD> <IC>
A5	RQT5416-R	INSTRUCTION MANUAL	1	(E) <MAVD> <ID>
A5	RQT5413-H	INSTRUCTION MANUAL	1	(EG) <MAVD> <IE>
A6	RQA0117	WARRANTY CARD	1	
A7	RQCB0169	SERVICE CENTER LIST	1	
C1	ECUV1H103KBN	50V 0.01U	1	
C11	ECA1CM222	2200U	1	
C12	ECUV1H103KBN	50V 0.01U	1	
C13	ECEA1AKS330	10V 33U	1	
C14	ECA1APXS470B	10V 47U	1	
C15,16	EEUPL1E471ZE	470U	2	<MAVD> 
C17,18	ECA1HM101	100U	2	
C20,21	ECA1EPXS101B	100U	2	
C22	ECA1AM331	10V 330U	1	
C25	ECUV1H103KBN	50V 0.01U	1	
C26,27	ECEA0JKS470	6.3V 47U	2	
C31,32	ECUV1H102KBN	50V 1000P	2	
C33,34	ECA1APXS101B	10V 100U	2	
C35	ECUV1E104ZFN	25V 0.1U	1	
C36-39	ECUV1H103KBN	50V 0.01U	4	
C40,41	ECUV1E104ZFN	25V 0.1U	2	
C42-44	ECUV1H103KBN	50V 0.01U	3	
C45	ECUZ1H104ZFN	50V 0.1U	1	<MAVD>
C51	ECEA1AKS220	10V 22U	1	
C201	ECEA0JKS470	6.3V 47U	1	
C202-08	ECUV1E104ZFN	25V 0.1U	7	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C209	ECEA0JKS470	6.3V 47U	1	
C210,11	ECUV1E104ZFN	25V 0.1U	2	
C212	ECUV1H102KBN	50V 1000P	1	
C301,02	ECUV1E104ZFN	25V 0.1U	2	
C303	ECUV1H101JCN	50V 100P	1	
C304	ECEA0JKS101	6.3V 100U	1	
C305	ECUV1E104ZFN	25V 0.1U	1	
C401	ECUV1E104ZFN	25V 0.1U	1	
C402	ECA0JM102	6.3V 1000U	1	
C403	ECUV1H103KBN	50V 0.01U	1	
C404	ECUV1E104ZFN	25V 0.1U	1	
C405	ECEA0JKS101	6.3V 100U	1	
C501-04	ECUV1E104ZFN	25V 0.1U	4	
C703	ECEA0JKS101	6.3V 100U	1	
C704	ECFR1E104ZF5	25V 0.1U	1	
C705	ECEA1HKS010	50V 1U	1	
C706	ECBT1H101KB5	50V 100P	1	
C707	ECFR1C273KR	16V 0.027U	1	
C708	ECBT1C472MR	16V 4700P	1	
C709	ECFR1C473KR	16V 0.047U	1	
C714	ECEA0JKS101	6.3V 100U	1	
C716	ECBT1H561KB5	50V 560P	1	
C717	ECFR1E104ZF5	25V 0.1U	1	
C718	RCQ52C0224J9	50V 0.22U	1	
C721,22	ECBT1H270J5	50V 27P	2	
C723	ECEA1AKS221	6.3V 220U	1	
C724	ECFR1E104ZF5	25V 0.1U	1	
C725,26	ECBT1H102KB5	50V 1000P	2	
C727,28	ECEA1HKS010	50V 1U	2	
C730	ECFR1E104ZF5	25V 0.1U	1	
C731,32	ECEA1AKS221	6.3V 220U	2	
C733	ECFR1E104ZF5	25V 0.1U	1	
C734	ECEA1AKS221	10V 220U	1	
C735-37	ECBT1E223ZF	25V 0.022U	3	
C738	ECFR1C183KR	16V 0.018U	1	
C739	ECBT1C152MR5	16V 1500P	1	
C740	ECBT1C272MR5	16V 2700P	1	
C742	ECFR1C273KR	16V 0.027U	1	
C743	ECBT1E223ZF	25V 0.022U	1	
C744	ECBT1C822MS5	16V 8200P	1	
C747,48	ECBT1C103NS5	16V 0.01U	2	
C751	ECEA1CKS100	16V 10U	1	
C752	ECFR1E104ZF5	25V 0.1U	1	
C765	ECBT1H331KB5	50V 330P	1	
C766	ECBT1H391KB5	50V 390P	1	
C767	ECEA1HSN010	50V 1U	1	
C768	ECFR1E682KR	25V 6800P	1	
C769	ECBT1C222MR5	16V 2200P	1	
C772-75	ECFR1E104ZF5	25V 0.1U	4	
C776	ECBT1H180J5	50V 18P	1	
C777	ECBT1H680J5	50V 68P	1	
C781	ECEA1AKS101	10V 100U	1	
C801	ECA1APXS470B	10V 47U	1	
C802	ECUV1E104ZFN	25V 0.1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C803	ECA1APXS470B	10V 47U	1	
C804	ECUV1E104ZFN	25V 0.1U	1	
C805	ECA1APXS470B	10V 47U	1	
C806	ECUV1E104ZFN	25V 0.1U	1	
C807	ECA1APXS221	10V 220U	1	
C808-10	ECUV1E104ZFN	25V 0.1U	3	
C811	ECA1APXS221	10V 220U	1	
C812-14	ECUV1E104ZFN	25V 0.1U	3	
C816	ECUVNA105KBN	10V 1U	1	
C818	ECUVNA105KBN	10V 1U	1	
C819	ECUV1E104ZFN	25V 0.1U	1	
C821,22	ECA1APXS101B	10V 100U	2	
C823-26	ECUV1E104ZFN	25V 0.1U	4	
C827	ECA0JPXS101	6.3V 100U	1	
C828	ECHR1H223JZ3	50V 0.022U	1	<MAVD>
C831,32	ECHR1H223JZ3	50V 0.022U	2	<MAVD>
C833-36	ECHR1H103JZ3	50V 0.01U	4	
C837-44	ECHR1H391JZ3	50V 390P	8	
C845,46	ECHR1H122JZ3	50V 1200P	2	
C847,48	ECHR1H271JZ3	50V 270P	2	
C849,50	ECA1CPXS470B	16V 47U	2	
C851,52	ECHR1H102JZ3	50V 1000P	2	
C861	ECA1CM102	16V 1000U	1	
C863,64	ECUV1H103KBN	50V 0.01U	2	
C865	ECUZ1H104ZFN	50V 0.1U	1	<MAVD>
C871,72	ECEA1EKN3R3B	25V 3.3U	2	
C873,74	ECQB1H103JZ	50V 0.01U	2	
C875-79	ECBT1C103NS5	16V 0.01U	5	
C881,82	ECEA1AN101XB	10V 100U	2	
C892	ECBT1C103NS5	16V 0.01U	1	
C895	ECBT1C103NS5	16V 0.01U	1	
C901	ECEA0JKS470	6.3V 47U	1	
C902	ECUV1E104ZFN	25V 0.1U	1	
C903,04	ECUV1H080DCN	50V 8P	2	
C905-07	ECUV1E104ZFN	25V 0.1U	3	
C908,09	ECUVNE104KBN	25V 0.1U	2	
CN11	RJS1A6606T1	CONNECTOR(6P)	1	
CN401	RJS1A6823	CONNECTOR(23P)	1	
CN402	RJT029W06VT	CONNECTOR(6P)	1	
C411,12	RJU076W20M	CONNECTOR(20P)	2	
C611,12	RJT076W20M	CONNECTOR(20P)	2	
CN701	RJS12Q9ZA	CONNECTOR(12P)	1	
CN702	RJS1A6723-Q	CONNECTOR(23P)	1	
CN703	RJT029W06VT	CONNECTOR(6P)	1	
CN781	RJP6G17ZA	CONNECTOR(6P)	1	
CN871	RJS2A2107T	CONNECTOR(7P)	1	
CN891	RJS2A2107T	CONNECTOR(7P)	1	
D11-18	1D3-E	DIODE	8	
D19	MA4330M	DIODE	1	
D21,22	MA4082M	DIODE	2	
D25,26	MA165	DIODE	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D31,32	MA165	DIODE	2	
D33,34	MA4091M	DIODE	2	⚠
D41,42	MA165	DIODE	2	
D51	MA4039M	DIODE	1	
D301-05	MA165	DIODE	5	
D401	MA4056M	DIODE	1	⚠
D601-06	MA165	DIODE	6	
D651	SLR325LCT31	LED	1	<MAVD>
D652	SLR325DCT31	LED	1	<MAVD>
D653	SLR325MCT31	LED	1	<MAVD>
D701	MA165	DIODE	1	
D861	1D3-E	DIODE	1	
D862	MA152WATX	DIODE	1	
D863	1SS291TA	DIODE	1	
FL601	RSL0188-F	FL-DISPLAY	1	
IC11	LM2940T5	IC	1	⚠
IC12	BA033T	IC	1	⚠
IC201	RS10004	IC	1	<MAVD>
IC301	TC74HCT74AFL	IC	1	<MAVD>
IC302	TC7S86FTE85L	IC	1	
IC401	UPD78042F116	IC	1	<MAVD>
IC501	TC74HC4050EL	IC	1	
IC502	TC7W74FTE12L	IC	1	
IC503	TC7SHU04F85L	IC	1	
IC651	RCDHC-278N	IC	1	
IC701	AN8805SB-E1	IC	1	<MAVD>
IC702	MNG713RG1AL	IC	1	<MAVD>
IC703	AN8389S-E1	IC	1	<MAVD>
IC781	TA7291S	IC	1	
IC801	MN64735	IC	1	<MAVD>
IC803,04	TC74AC574FTL	IC	2	<MAVD>
IC805,06	SVIM5238FP	IC	2	
IC807,08	OP-271GP	IC	2	<MAVD>
IC871	BA4560N	IC	1	
IC901-04	TC7SHU04F85L	IC	4	
JK1	SJS9236-1	AC INLET	1	⚠
JK301	T0TX178A	JACK,OPTICAL OUT	1	<MAVD>
JK801	RJH3201A	JACK,LINEOUT	1	
JK871	QJA0455ZC-A	JACK,HEADPHONES	1	
L1,L2	SLQX400-D	COIL	2	⚠
L871-73	RLL500050T-Y	COIL	3	
L874	RLQZN4R7KL-D	COIL	1	
P1	RPG4857	PACKING CASE	1	<MAVD>
P2	RPN0842	CUSHION	1	
P3	XZB23X35C03	POLYETHYLENE BAG	1	
P4	SPP730	PROTECTION SHEET	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
PCB1	REP2012A-S	OPERATION PCB ASS'Y	1	[RTL]
PCB2	REP2035D-S	HEADPHONES PCB ASS'Y	1	[RTL] <MAVD>
PCB3	REP2975A-M	MAIN PCB ASS'Y	1	[RTL] <MAVD>
PCB4	REP2976A-P	POWER PCB ASS'Y	1	[RTL] <MAVD> 
PCB5	REP2853A-N	SERVO PCB ASS'Y	1	[RTL] <MAVD>
PCB6	REP1940A-N	LOADING PCB ASS'Y	1	[RTL]
Q11	2SD2037EFTA	TRANSISTOR	1	
Q12	2SB1240-P	TRANSISTOR	1	
Q13	2SD1862QRTV6	TRANSISTOR	1	
Q15	2SB709A-R	TRANSISTOR	1	
Q16	2SB1238QSTV6	TRANSISTOR	1	
Q19,20	2SD1328-TX	TRANSISTOR	2	
Q21	DTA124EUT106	TRANSISTOR	1	<MAVD>
Q22	2SD601A	TRANSISTOR	1	
Q23	2SD2037EFTA	TRANSISTOR	1	
Q31	2SD1862QRTV6	TRANSISTOR	1	
Q32	2SB1240-P	TRANSISTOR	1	
Q33	2SK982TPE2	TRANSISTOR	1	
Q34	2SJ148TPE2	TRANSISTOR	1	
Q41	DTA124EUT106	TRANSISTOR	1	<MAVD>
Q51,52	2SD601A	TRANSISTOR	2	
Q201	DTA124EUT106	TRANSISTOR	1	<MAVD>
Q202	DTC124EUT106	TRANSISTOR	1	<MAVD>
Q401,02	2SD1862QRTV6	TRANSISTOR	2	
Q403	DTC124EUT106	TRANSISTOR	1	<MAVD>
Q751	2SA1048GR	TRANSISTOR	1	
Q752	2SC2458GR	TRANSISTOR	1	
Q801,02	DTA124EUT106	TRANSISTOR	2	<MAVD>
Q803,04	2SD601A	TRANSISTOR	2	
Q861	DTC124EUT106	TRANSISTOR	1	<MAVD>
Q862	DTA114EUT106	TRANSISTOR	1	<MAVD>
Q863,64	2SD1328-TX	TRANSISTOR	2	
Q871,72	2SD1450S	TRANSISTOR	2	
Q891	2SC2458GR	TRANSISTOR	1	
Q892	2SA1048GR	TRANSISTOR	1	
R1	ERQ16NKWR10E	1/6W 0.1	1	
R12,13	ERJ6GEYJ222V	1/10W 2.2K	2	
R16	ERJ6GEYJ680V	1/10W 68	1	
R17	ERJ6GEYJ471V	1/10W 470	1	
R18	ERJ6GEYJ473V	1/10W 47K	1	
R19	ERJ6GEYJ472V	1/10W 4.7K	1	
R23	ERJ6GEYJ103V	1/10W 10K	1	
R24-27	ERJ6GEYJ1R0V	1/10W 1	4	
R28,29	ERJ6GEYJ103V	1/10W 10K	2	
R31,32	ERJ6GEYJ471V	1/10W 470	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R33,34	ERJ6GEYJ105	1/10W 1M	2	
R41	ERJ6GEYJ222V	1/10W 2.2K	1	
R51	ERJ6GEYJ331V	1/10W 330	1	
R52	ERJ6GEYJ272V	1/10W 2.7K	1	
R53,54	ERJ6GEYJ472V	1/10W 4.7K	2	
R301	ERJ6GEYJ101V	1/10W 100	1	
R302	ERJ6GEYJ102V	1/10W 1K	1	
R303	ERJ6GEYJ470V	1/10W 47	1	
R304	ERJ6GEYJ331V	1/10W 330	1	
R401	ERJ6GEYJ102V	1/10W 1K	1	
R403,04	ERJ6GEYJ103V	1/10W 10K	2	
R405,06	ERJ6GEYJ471V	1/10W 470	2	
R407	ERJ6GEYJ101V	1/10W 100	1	
R408-15	ERJ6GEYJ103V	1/10W 10K	8	
R451	ERJ6GEYJ471V	1/10W 470	1	
R501,02	ERJ6GEYJ331V	1/10W 330	2	
R601,02	ERDS2FJ100	1/4W 10	2	
R651	ERDS2FJ221	1/4W 220	1	
R652	ERDS2FJ331	1/4W 330	1	
R653	ERDS2FJ151	1/4W 150	1	
R701	ERDS2FJ561	1/4W 560	1	
R703	ERDS2FJ823	1/4W 82K	1	
R707,08	ERDS2FJ334	1/4W 330K	2	
R709	ERDS2FJ683	1/4W 68K	1	
R711	ERDS2FJ154	1/4W 150K	1	
R712	ERDS2FJ221	1/4W 220	1	
R717,18	ERDS2FJ102	1/4W 1K	2	
R721	ERDS2FJ101	1/4W 100	1	
R722	ERDS2FJ823	1/4W 82K	1	
R723	ERDS2FJ183	1/4W 18K	1	
R724	ERDS2FJ333	1/4W 33K	1	
R725	ERDS2FJ472	1/4W 4.7K	1	
R726	ERDS2FJ474	1/4W 470K	1	
R727	ERDS2FJ153	1/4W 15K	1	
R728	ERDS2FJ822	1/4W 8.2K	1	
R731	ERDS2FJ223	1/4W 22K	1	
R732	ERDS2FJ183	1/4W 18K	1	
R733	ERDS2FJ822	1/4W 8.2K	1	
R735,36	ERDS2FJ101	1/4W 100	2	
R745	ERDS2TJ155	1/4W 1.5M	1	
R751	ERDS2FJ102	1/4W 1K	1	
R752,53	ERDS2FJ392	1/4W 3.9K	2	
R754	ERDS2FJ103	1/4W 10K	1	
R761,62	ERDS2FJ103	1/4W 10K	2	
R763	ERDS2FJ823	1/4W 82K	1	
R764	ERDS2FJ393	1/4W 39K	1	
R765	ERDS2FJ224	1/4W 220K	1	
R772,73	ERDS2FJ220	1/4W 22	2	
R775,76	ERDS2FJ392	1/4W 3.9K	2	
R777	ERDS2FJ102	1/4W 1K	1	
R821	ERDS2FJ472	1/4W 4.7K	1	
R822	ERDS2FJ272	1/4W 2.7K	1	
R825-32	ERDAS3G202	1/4W 2K	8	
R833-36	ERDS2FJ272	1/4W 2.7K	4	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R837-40	ERDS2FJ472	1/4W 4.7K	4	
R841-44	ERDS2FJ222	1/4W 2.2K	4	
R845-50	ERDS2FJ472	1/4W 4.7K	6	
R851,52	ERDS2FJ471	1/4W 470	2	
R853,54	ERDS2FJ331	1/4W 330	2	
R855,56	ERDS2FJ473	1/4W 47K	2	
R861	ERJ6GEYJ222V	1/10W 2.2K	1	
R863,64	ERJ6GEYJ102V	1/10W 1K	2	
R865,66	ERJ6GEYJ563V	1/10W 56K	2	
R867,68	ERDS2FJ330	1/4W 33	2	
R871,72	ERDS2FJ473	1/4W 47K	2	
R873-76	ERDS2FJ104	1/4W 100K	4	
R885,86	ERDS2FJ222	1/4W 2.2K	2	
R887,88	ERDS2FJ101	1/4W 100	2	
R889,90	ERDS2FJ473	1/4W 47K	2	
R891,92	ERDS2FJ102	1/4W 1K	2	
R901	ERJ6GEYJ105	1/10W 1M	1	
R902	ERJ6GEYJ221V	1/10W 220	1	
R903	ERJ6GEYJ151V	1/10W 150	1	
R904,05	ERJ6GEYJ473V	1/10W 47K	2	
R906	VLP0150	COIL	1	
R907,08	ERJ6GEYJ223V	1/10W 22K	2	
R909	ERJ6GEYJ101V	1/10W 100	1	
RJ201,02	ERJ6GEY0R00V	CHIP JUMPER	2	
RJ401	ERJ6GEY0R00V	CHIP JUMPER	1	
RJ803,03	ERJ6GEY0R00V	CHIP JUMPER	2	
RJ901	ERJ6GEY0R00V	CHIP JUMPER	1	
S601-30	EVQ21405R	SW,PUSH	30	
S651	EVQ21405R	SW,POWER	1	
S781,82	RSH1A005-1U	SW,OPEN/CLOSE DET.	2	
S901	SSS153	SW,REMSTER PROCSSING	1	
T1	RTP2K4B001	POWER TRANSFORMER	1	<MAVD> 
VR871	EWCU1A016A15	VR,HEADPHONES LEVEL	1	
X401	RSXY4M23M01	OSZILLATOR	1	
X701	RSXZ16M9M01	OSZILLATOR	1	
X901	RSXC33M8R02	OSZILLATOR	1	<MAVD>
Z301,02	VLP0321A601	COMPONENT COMBINATION	2	<MAVD>
Z303	VLP0150	COMPONENT COMBINATION	1	<MAVD>
Z501,02	VLP0321A601	COMPONENT COMBINATION	2	<MAVD>
Z503,04	VLP0150	COMPONENT COMBINATION	2	<MAVD>
Z505	VLP0321A601	COMPONENT COMBINATION	1	<MAVD>
Z801	VLP0321A601	COMPONENT COMBINATION	1	<MAVD>
Z861-67	VLP0321A601	COMPONENT COMBINATION	7	<MAVD>
Z901-03	VLP0321A601	COMPONENT COMBINATION	3	<MAVD>
Z904	VLP0321A601	COMPONENT COMBINATION	1	<MAVD>

17. Cabinet Parts Location



18. Loading Unit Parts Location



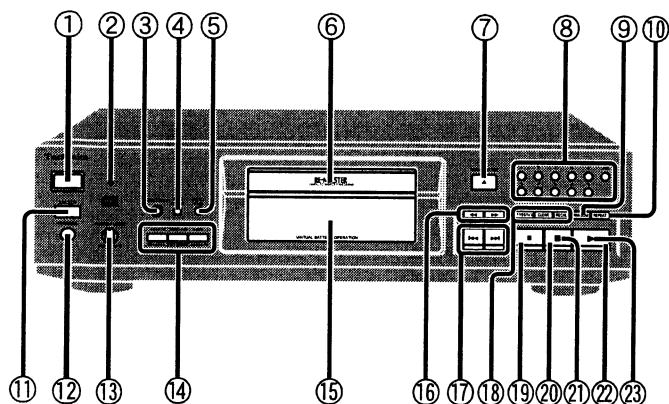
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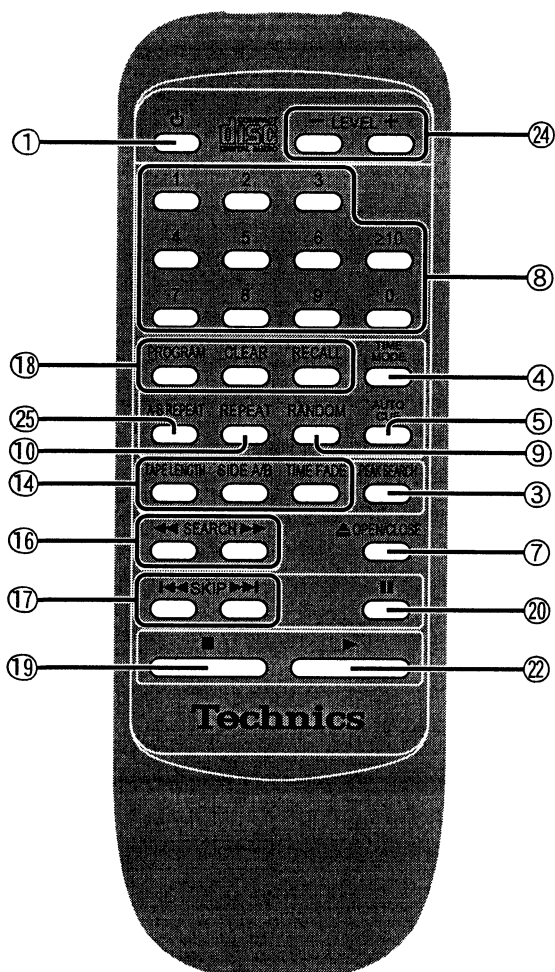
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A



B



A

Main unit

- ① **Standby/on switch ($\odot/\text{I}$)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
- ② **Standby indicator ($\odot$)**
When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.
- ③ **Peak search button (PEAK SEARCH)**
- ④ **Time mode select button (TIME MODE)**
- ⑤ **Auto cue button (AUTO CUE)**
- ⑥ **Disc tray**
- ⑦ **Disc tray open/close button ($\blacktriangle$ OPEN/CLOSE)**
- ⑧ **Numeric buttons (1–9, 0, ≥ 10)**
- ⑨ **Random play button (RANDOM)**
- ⑩ **Repeat button (REPEAT)**
- ⑪ **Remote control signal sensor (SENSOR)**
- ⑫ **Headphones jack (PHONES)**
- ⑬ **Headphones volume control (PHONES LEVEL)**
- ⑭ **CD edit record buttons (EDIT GUIDE)**
 - Tape length button (TAPE LENGTH)
 - Tape side select button (SIDE A/B)
 - Time fade button (TIME FADE)
- ⑮ **Display panel**
- ⑯ **Search buttons ($\blacktriangleleft, \blacktriangleright$)**
- ⑰ **Skip buttons ($\blacktriangleleft, \blacktriangleright$)**
- ⑱ **Program play buttons**
 - Program button (PROGRAM)
 - Clear button (CLEAR)
 - Recall button (RECALL)
- ⑲ **Stop button ($\blacksquare$)**
- ⑳ **Pause button (II)**
- ㉑ **Pause indicator (II)**
- ㉒ **Play button ($\blacktriangleright$)**
- ㉓ **Play indicator ($\blacktriangleright$)**

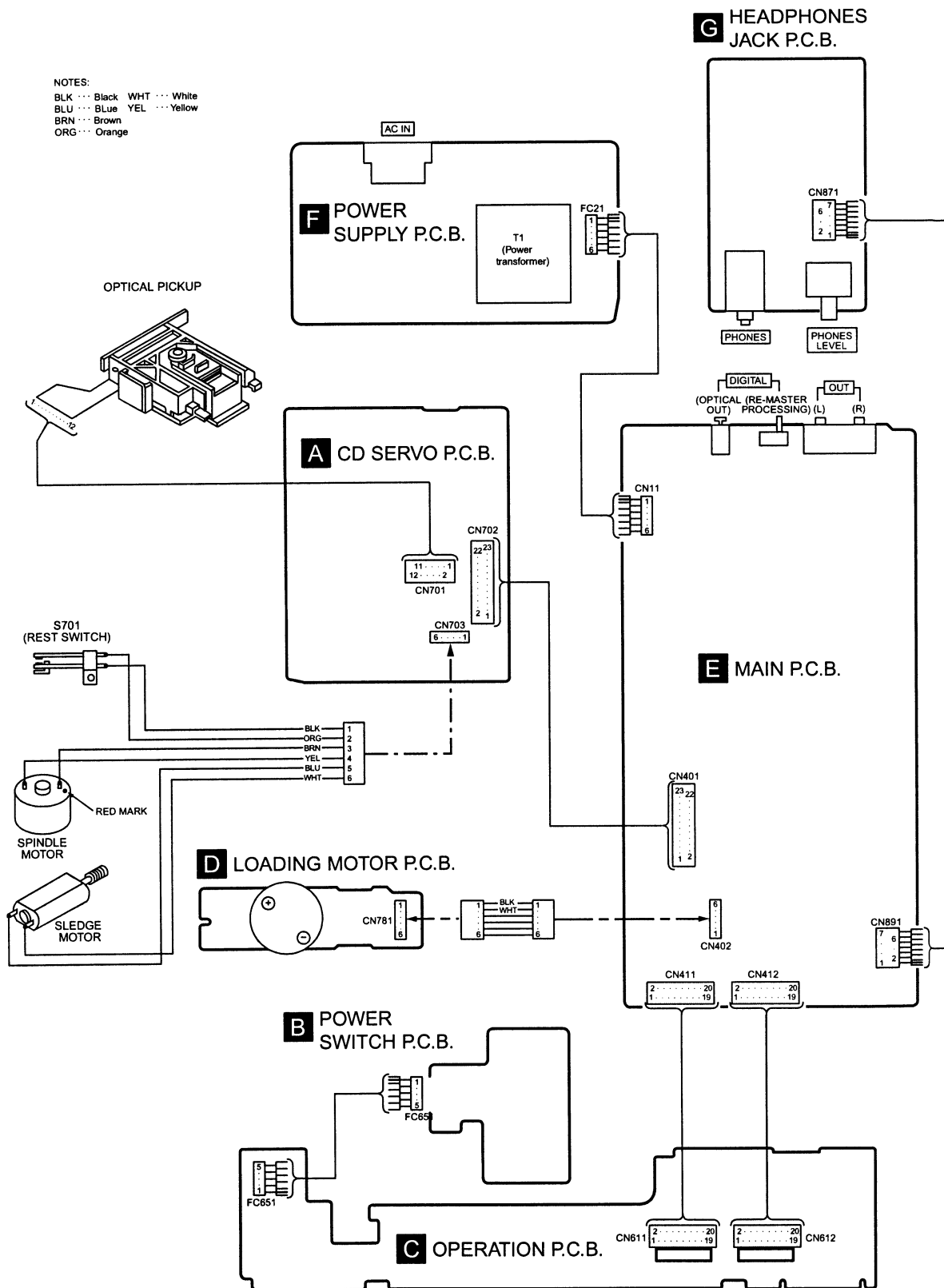
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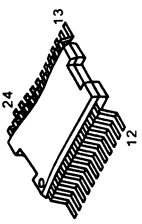
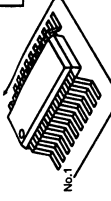
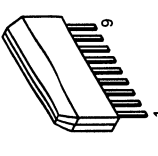
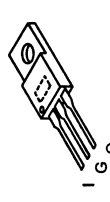
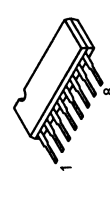
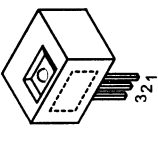
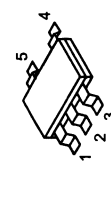
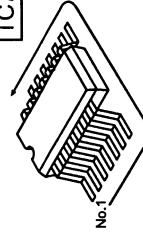
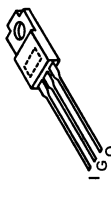
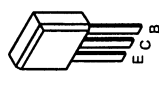
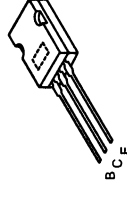
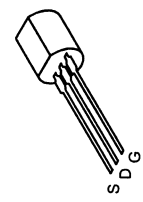
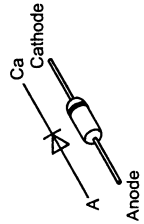
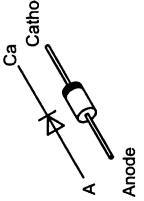
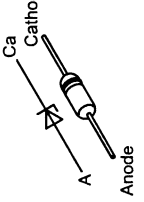
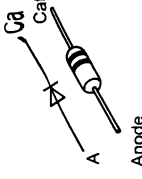
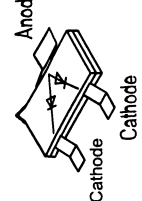
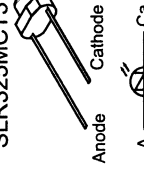
Remote control

With the exception of ㉔ and ㉕, the buttons on the remote control function the same as the buttons on the main unit.

- ㉔ **Level control (– LEVEL +)**
- ㉕ **A-B repeat button (A-B REPEAT)**

NOTES:
 BLK ... Black WHT ... White
 BLU ... Blue YEL ... Yellow
 BRN ... Brown
 ORG ... Orange



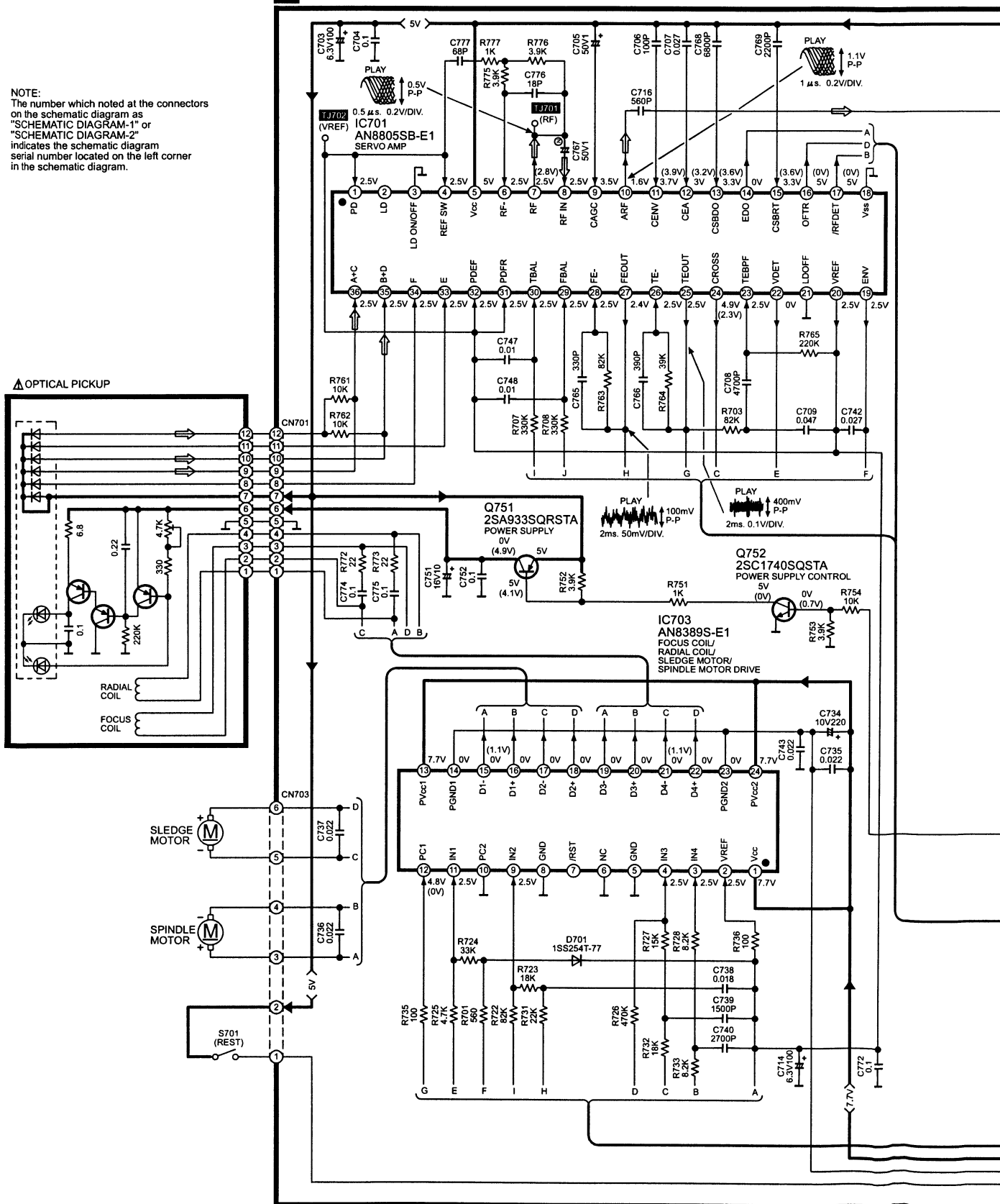
AN8389S-E1		AN8805SB-E1 36PIN M5238FPTA 8PIN TC74AC574FTL 20PIN	 No.1	MN64735 64PIN MNG713RG1AL 80PIN		TA7291SA
LM2940T5M	 I G O	BA4560N	 1 8	RCDHC-278N	 3 2 1	TC7W74FTE12L
TC7SHU04F85L TC7S86FTE85L	 1 2 3 4 5	TC74HCT74AFL 14PIN TC74HC4050EL 16PIN	 No.1	BA033T	 I G O	2SA933SQRSTA 2SC1740SQSTA
2SD1450RSTTA	 E C B	2SD2037EFTA	 B C E	2SK982TPE2 2SJ148TPE2	 S D G	2SB709A-RTX 2SD1328-TX 2SD601A-TX DTA114EUT106 DTA124EUT106 DTC124EUT106
1SS254T-77	 Ca Cathode A Anode	1D3-E	 Ca Cathode A Anode	MA4330MTA	 Ca Cathode A Anode	SLR325DCT31 SLR325LCT31 SLR325MCT31
1SS291TA	 Ca Cathode A Anode	MA152WATX	 Anode Cathode	MA4039MTA MA4056MTA MA4082MTA MA4091MTA	 Ca Cathode A Anode	

SCHEMATIC DIAGRAM-1

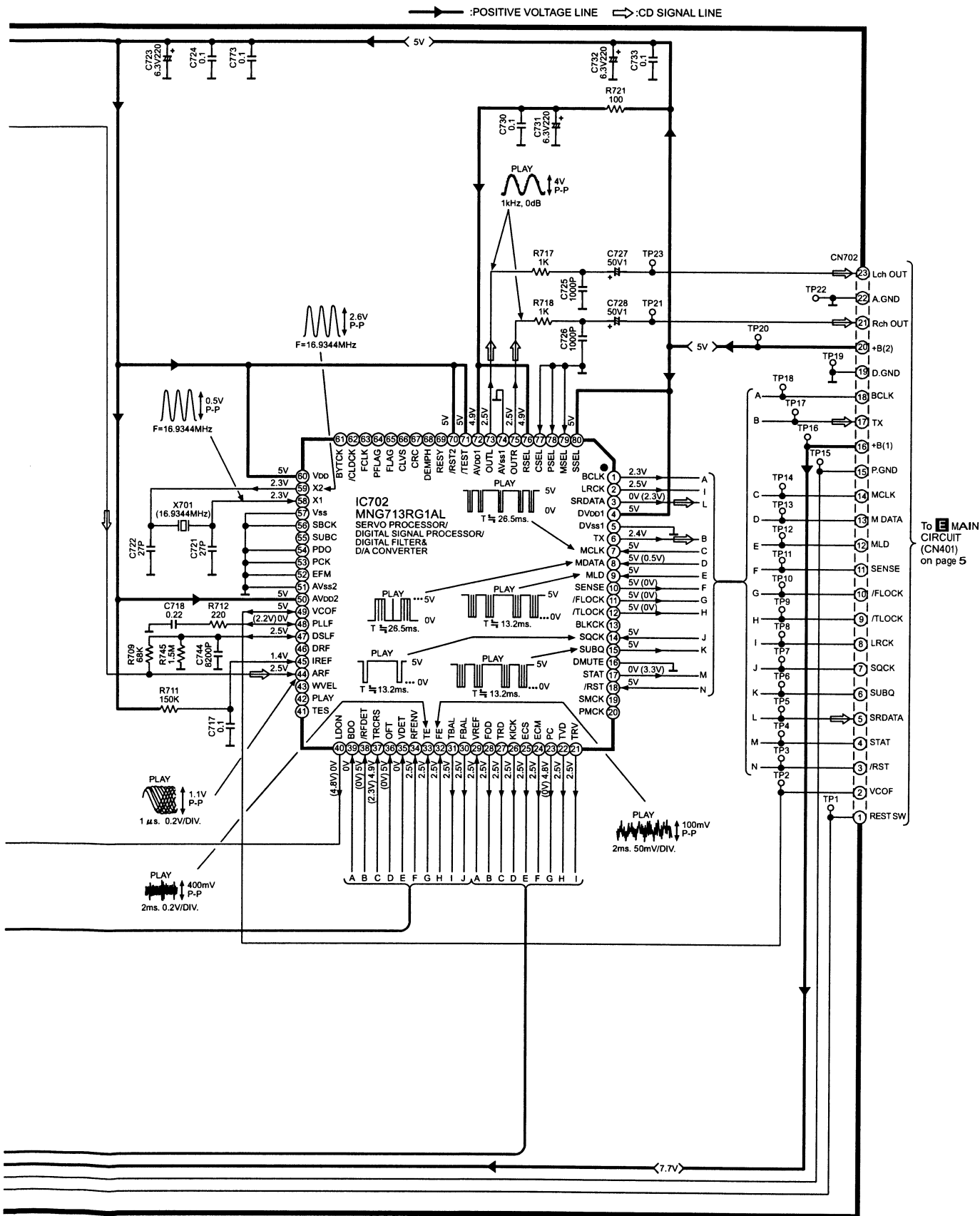
NOTE:
The number which noted at the connectors on the schematic diagram as "SCHEMATIC DIAGRAM-1" or "SCHEMATIC DIAGRAM-2" indicates the schematic diagram serial number located on the left corner in the schematic diagram.

A CD SERVO CIRCUIT

→ : POSITIVE VOLTAGE LINE ⇨ : CD SIGNAL LINE

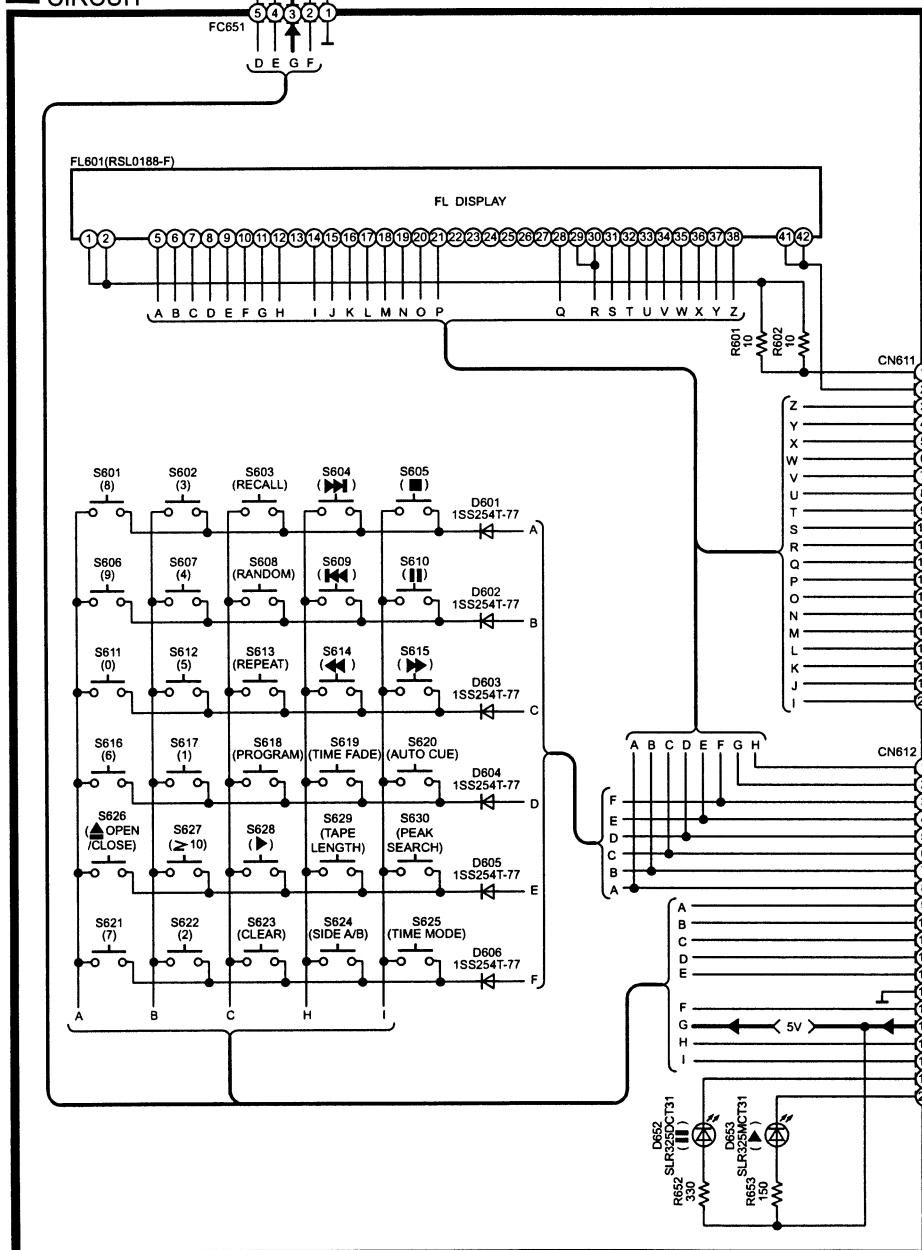
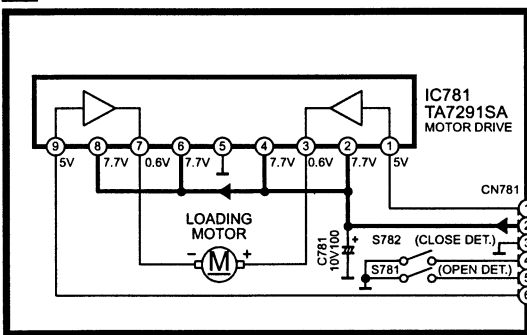


SCHEMATIC DIAGRAM-2



→ : POSITIVE VOLTAGE LINE

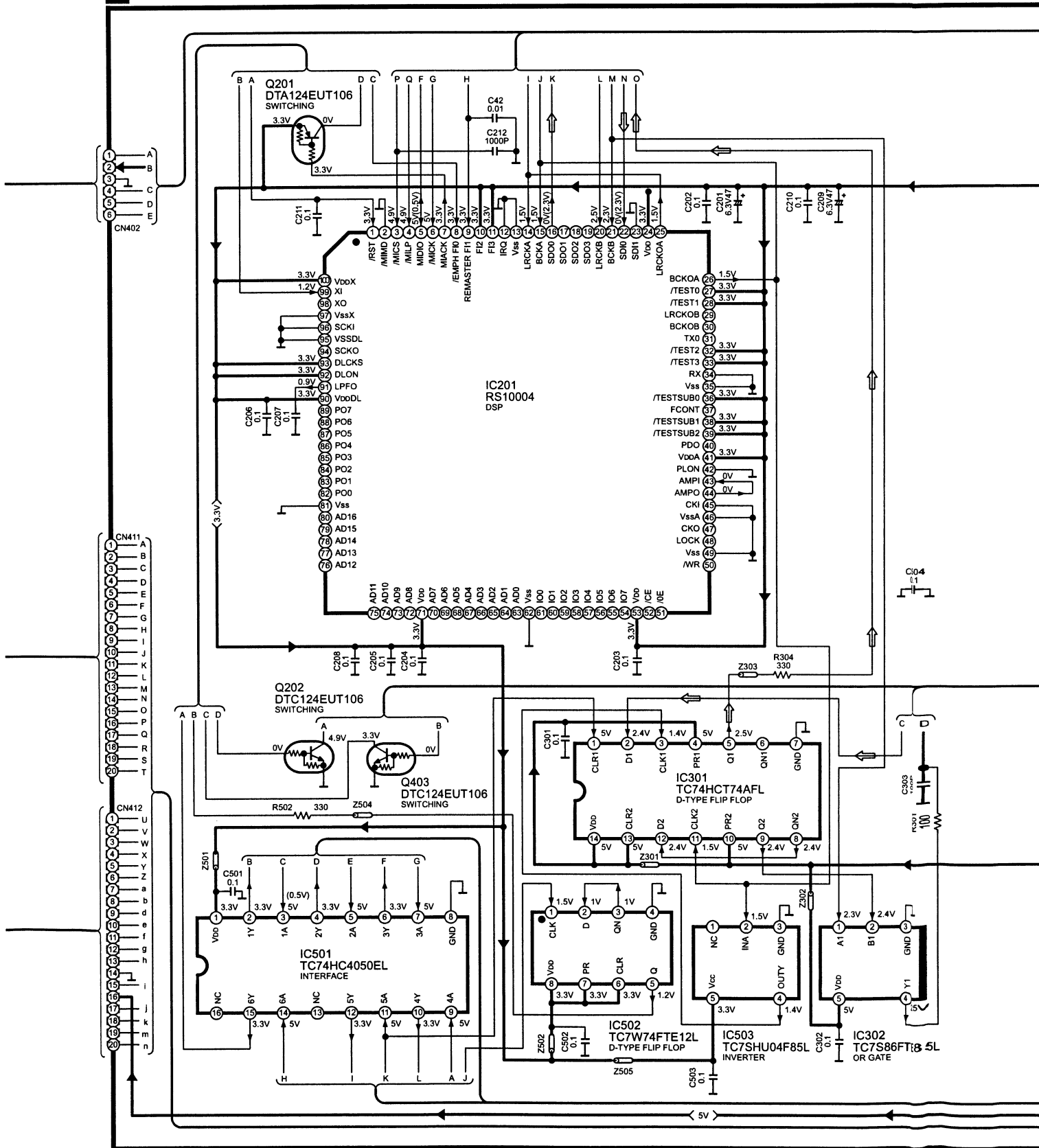
D LOADING MOTOR CIRCUIT



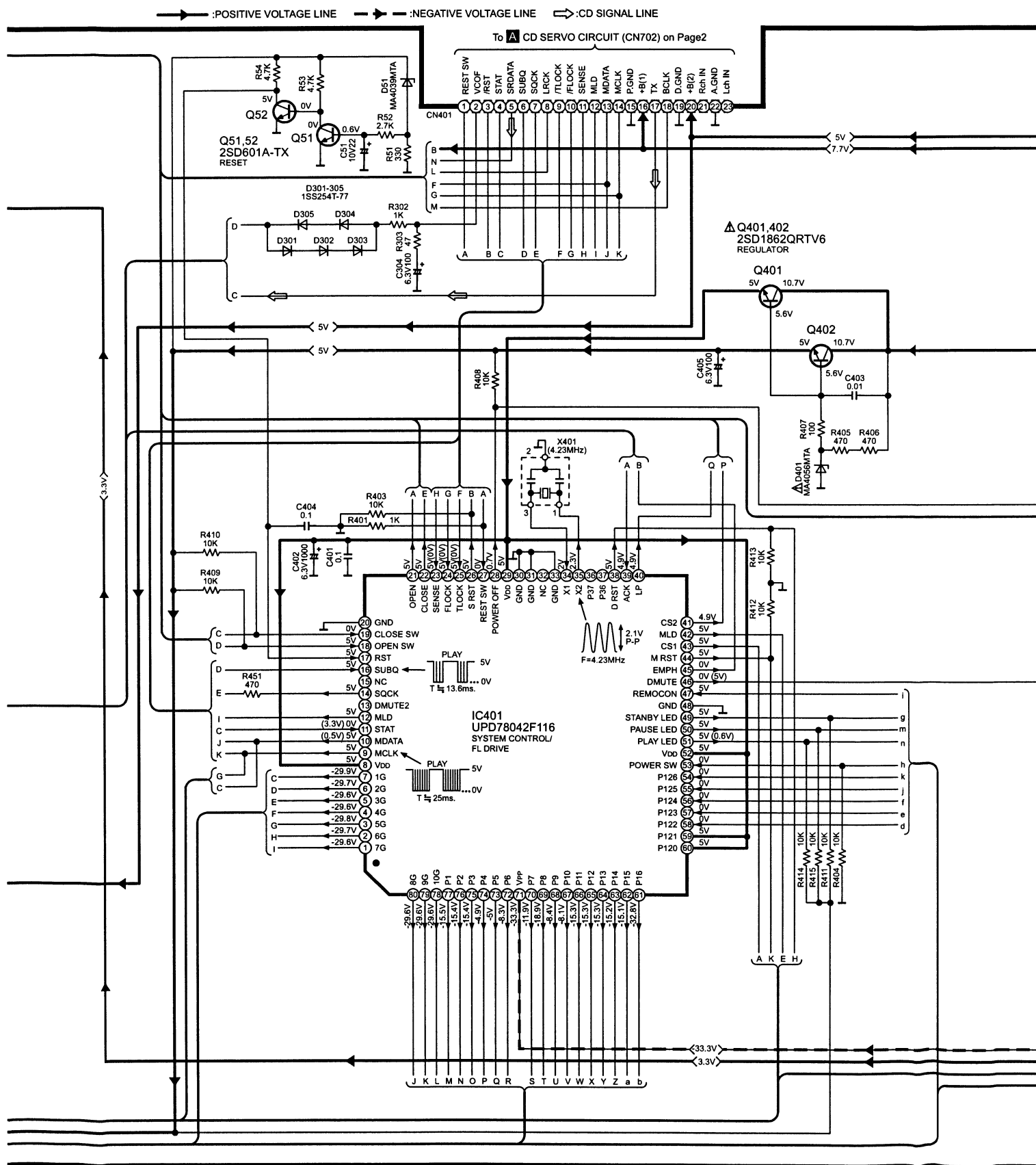
SCHEMATIC DIAGRAM-4

E MAIN CIRCUIT

→ : POSITIVE VOLTAGE LINE ⇨ : CD SIGNAL LINE



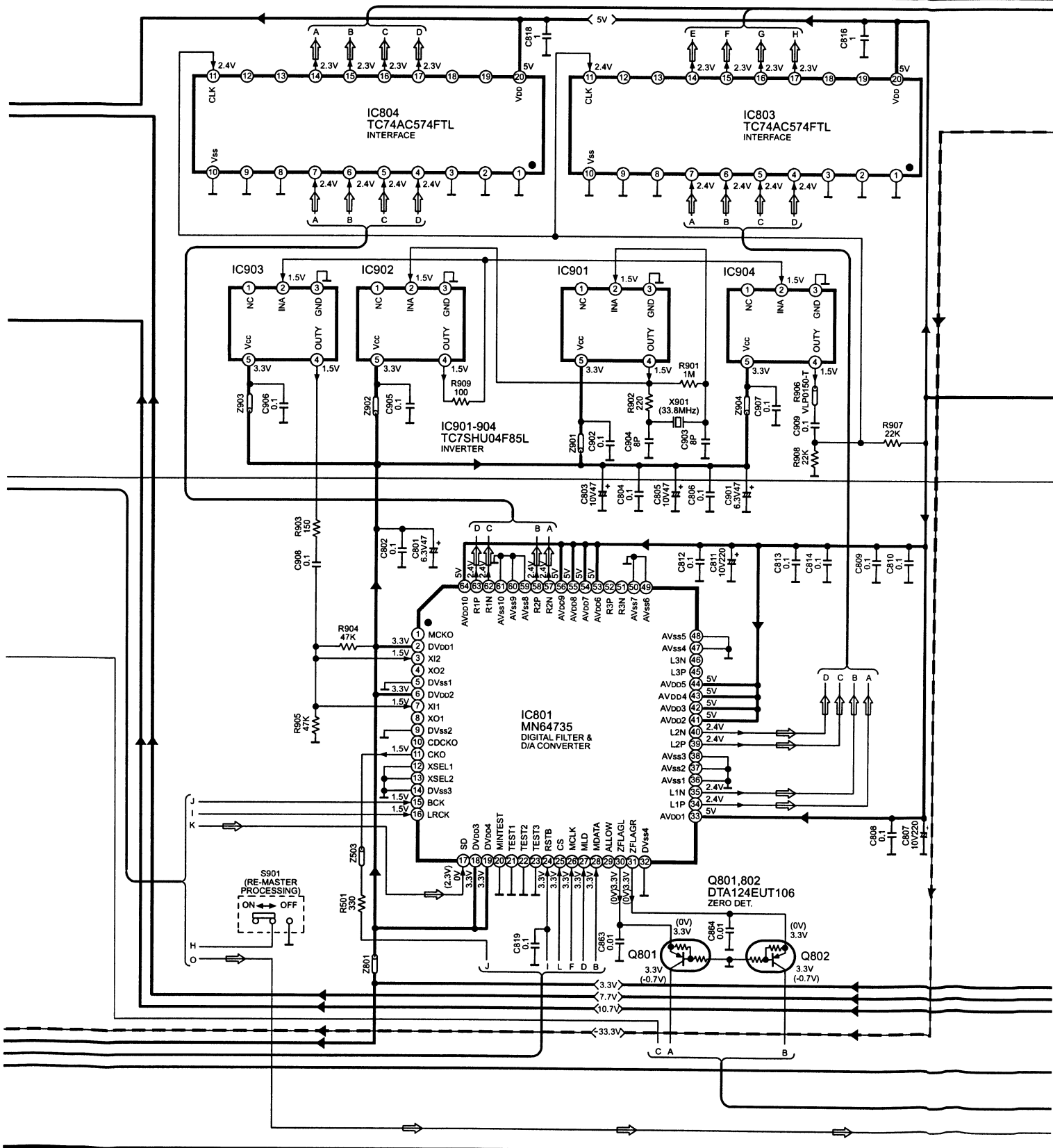
SCHEMATIC DIAGRAM-5



SCHEMATIC DIAGRAM-6

E MAIN CIRCUIT

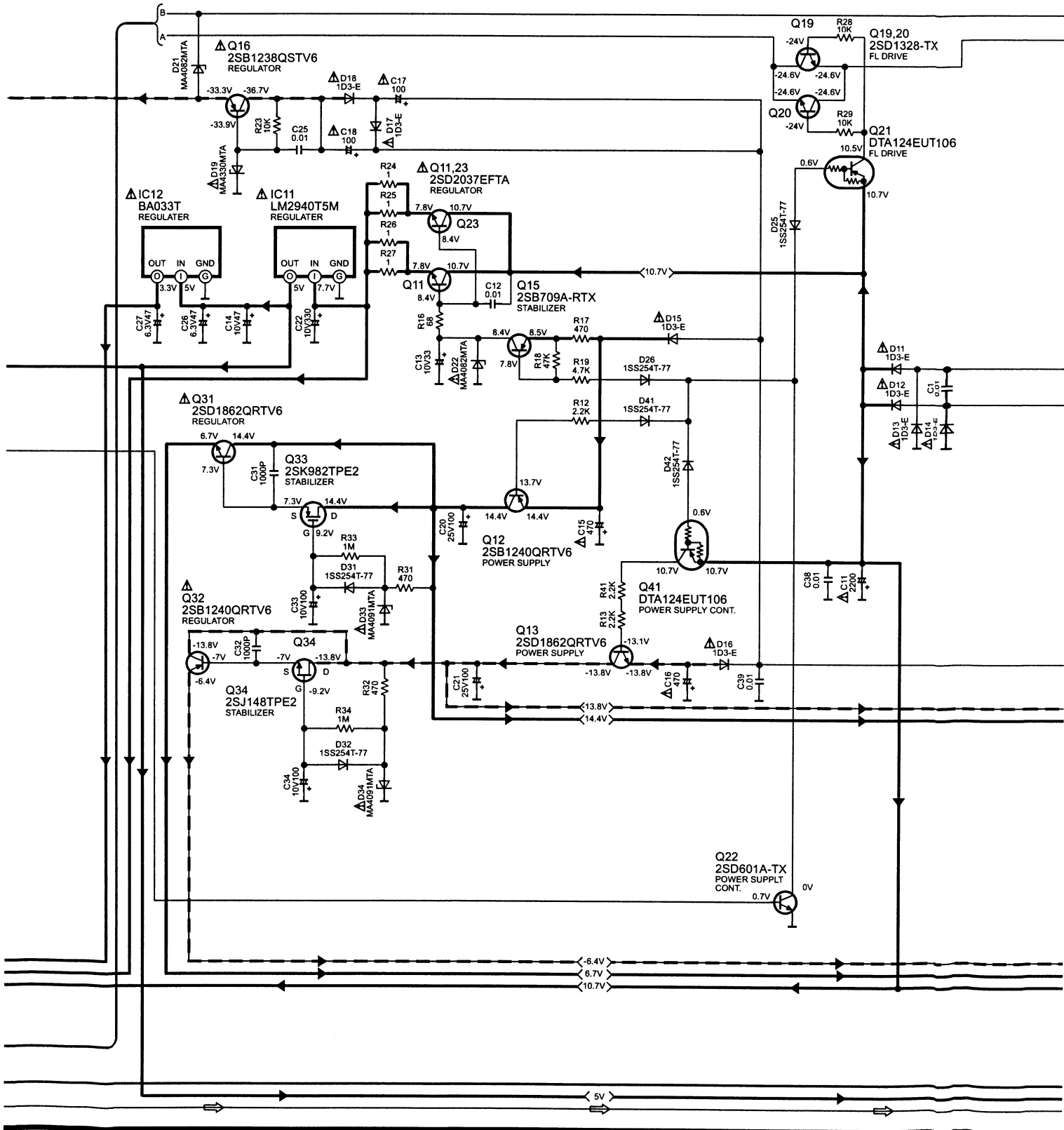
→ : POSITIVE VOLTAGE LINE - - - - - : NEGATIVE VOLTAGE LINE ⇨ : CD SIGNAL LINE



SCHEMATIC DIAGRAM-7

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

⇨ : CD SIGNAL LINE



SCHEMATIC DIAGRAM-8

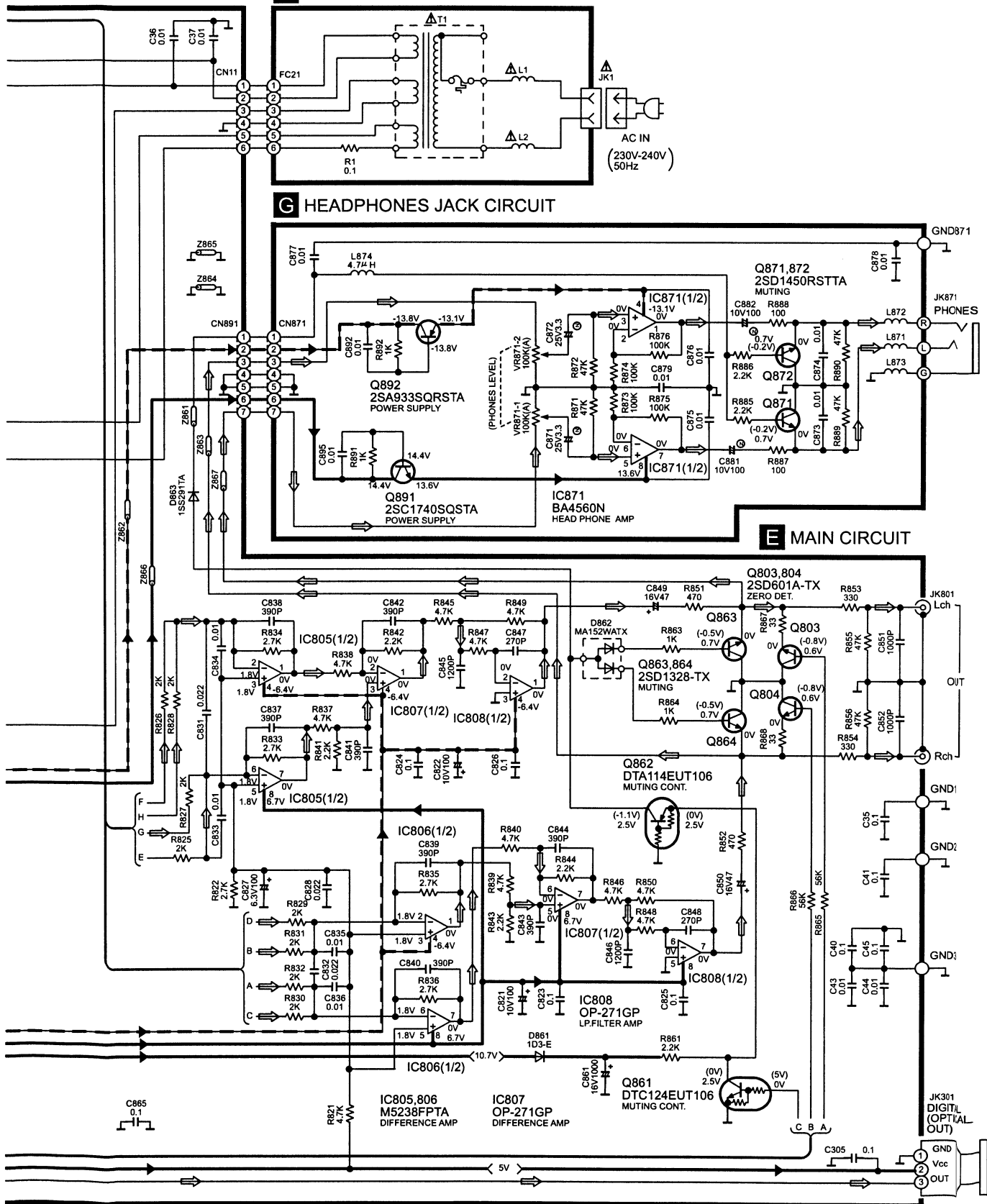
F POWER SUPPLY CIRCUIT

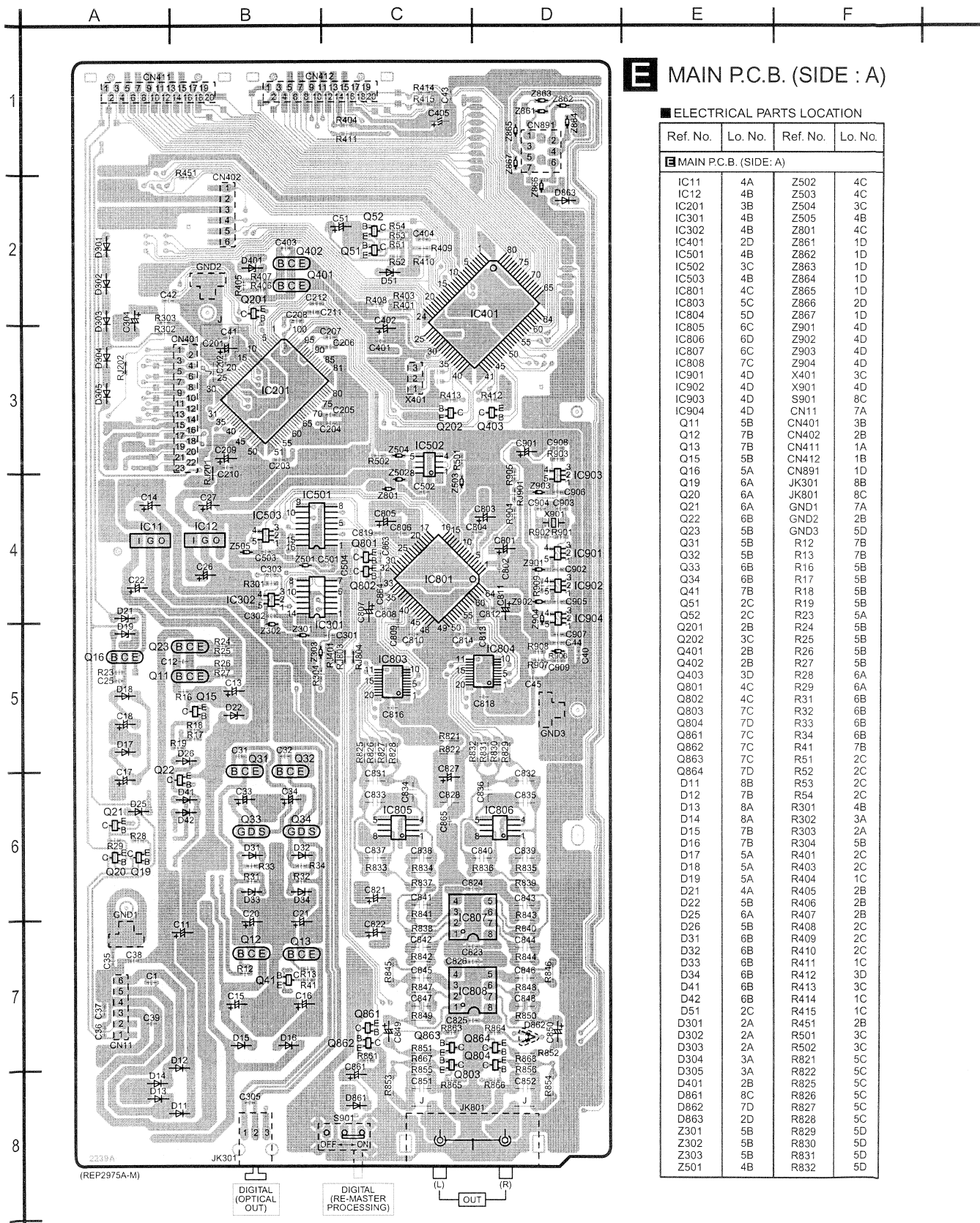
→ : POSITIVE VOLTAGE LINE
 - - - : NEGATIVE VOLTAGE LINE

⇨ : CD SIGNAL LINE

G HEADPHONES JACK CIRCUIT

E MAIN CIRCUIT



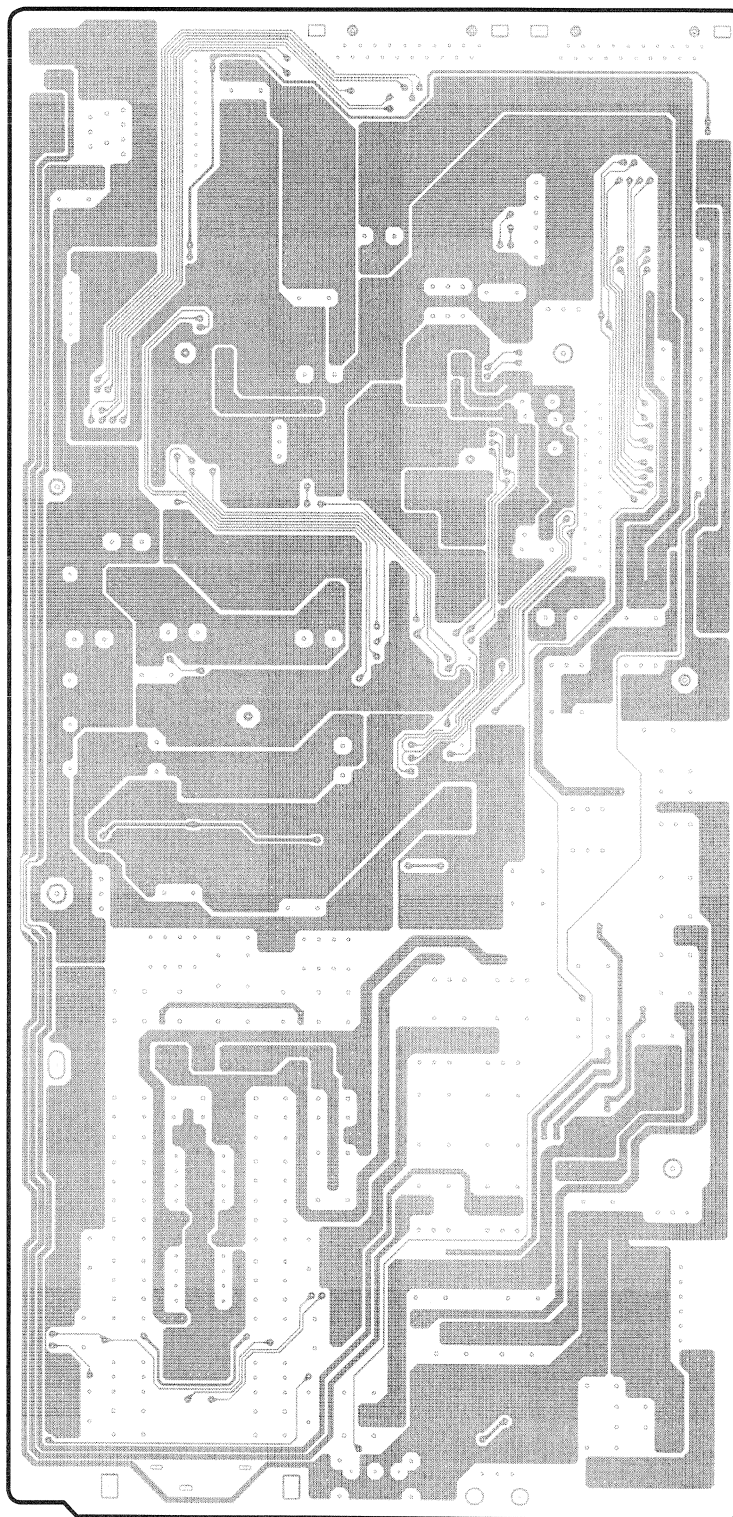


G H I J K L

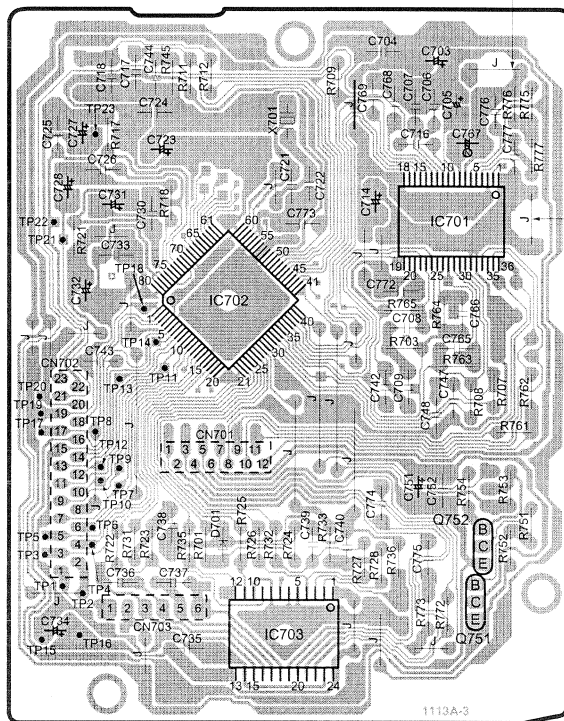
E MAIN P.C.B. (SIDE : B)

ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.
MAIN P.C.B. (SIDE: A)			
R833	6C	C207	3C
R834	6C	C208	2B
R835	6D	C209	3B
R836	6D	C210	3B
R837	6C	C211	2B
R838	7C	C212	2B
R839	6D	C301	5C
R840	7D	C302	4B
R841	6C	C303	4B
R842	7C	C304	2A
R843	6D	C305	8B
R844	7D	C401	3C
R845	7C	C402	3C
R846	7D	C403	2B
R847	7C	C404	2C
R848	7D	C405	1C
R849	7C	C501	4C
R850	7D	C502	4C
R851	7C	C503	4B
R852	7D	C504	4C
R853	8C	C801	4D
R854	8D	C802	4D
R855	8C	C803	4D
R856	8D	C804	4D
R861	7C	C805	4C
R863	7C	C806	4C
R864	7D	C807	4C
R865	8C	C808	4C
R866	8D	C809	4C
R867	7C	C810	5C
R868	7D	C811	4D
R901	4D	C812	4D
R902	4D	C813	4D
R903	3D	C814	5C
R904	4D	C816	5C
R905	4D	C818	5D
R906	5D	C819	4C
R907	5D	C821	6C
R908	5D	C822	7C
R909	4D	C823	7C
RJ201	4B	C824	6D
RJ202	3A	C825	7C
RJ401	5C	C826	7C
RJ803	5C	C827	6C
RJ804	5C	C828	6C
RJ901	4D	C831	6C
C1	7A	C832	6D
C11	7B	C833	6C
C12	5B	C834	6C
C13	5B	C835	6D
C14	4A	C836	6D
C15	7B	C837	6C
C16	7B	C838	6C
C17	6A	C839	6D
C18	5A	C840	6D
C20	7B	C841	6C
C21	7B	C842	7C
C22	4A	C843	6D
C25	5A	C844	7D
C26	4B	C845	7C
C27	4B	C846	7D
C31	5B	C847	7C
C32	5B	C848	7D
C33	6B	C849	7C
C34	6B	C850	7D
C35	7A	C851	8C
C36	7A	C852	8D
C37	7A	C861	8C
C38	7A	C863	4C
C39	7A	C864	4C
C40	5D	C865	6C
C41	3B	C901	3D
C42	2A	C902	4D
C43	1C	C903	4D
C44	5D	C904	4D
C45	5D	C905	4D
C51	2C	C906	4D
C201	3B	C907	5D
C202	3B	C908	3D
C203	3B	C909	5D
C204	3C		
C205	3C		
C206	3C		



A CD SERVO P.C.B.

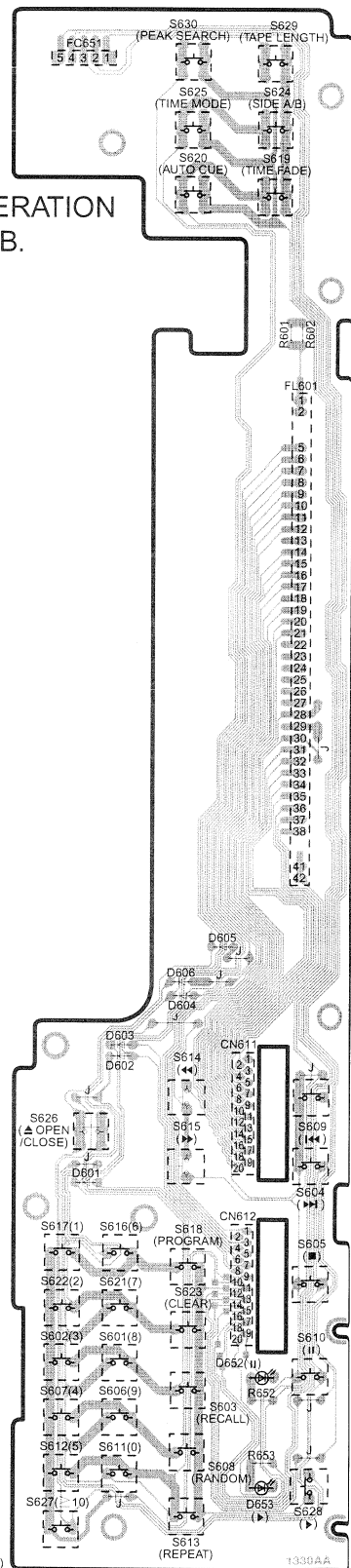


(REP2853A-N)

TJ701
(RF)

C OPERATION P.C.B.

TJ702
(VREF)

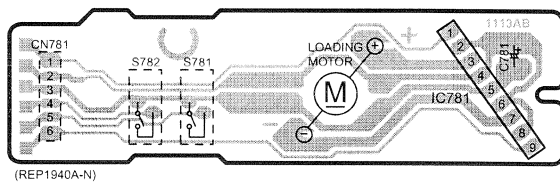


(REP2012A-S)

ELECTRICAL PARTS LOCATION

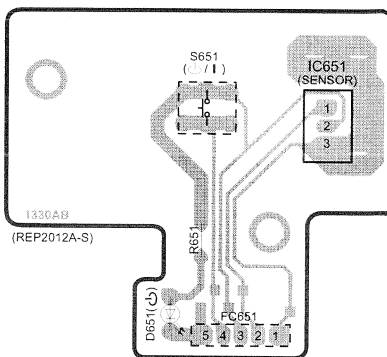
Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
A CD SERVO P.C.B.							
IC701	2C	R726	4B	C704	1C	C736	4A
IC702	3B	R727	4C	C705	2C	C737	4B
IC703	4B	R728	4C	C706	2C	C738	4B
Q751	4C	R731	4A	C707	2C	C739	4B
Q752	4C	R732	4B	C708	3C	C740	4B
D701	4B	R733	4B	C709	3C	C742	3C
X701	2B	R735	4B	C714	2C	C743	3A
CN701	3B	R736	4C	C716	2C	C744	1B
CN702	3A	R745	1B	C717	1A	C747	3C
CN703	4B	R751	4C	C718	1A	C748	3C
R701	4B	R752	4C	C721	2B	C751	3C
R703	3C	R753	3C	C722	2B	C752	3C
R707	3C	R754	3C	C723	2B	C765	3C
R708	3C	R761	3C	C724	2B	C766	3C
R709	1B	R762	3C	C725	2A	C767	2C
R711	1B	R763	3C	C726	2A	C768	2C
R712	1B	R764	3C	C727	2A	C769	2C
R717	2A	R765	3C	C728	2A	C772	2C
R718	2B	R772	4C	C730	2B	C773	2B
R721	2A	R773	4C	C731	2A	C774	4C
R722	4A	R775	2C	C732	2A	C775	4C
R723	4B	R776	2C	C733	2A	C776	2C
R724	4B	R777	2C	C734	4A	C777	2C
R725	4B	C703	1C	C735	4B		
C OPERATION P.C.B.							
D601	7E	S604	6F	S616	7E	S628	8F
D602	6E	S605	7F	S617	7E	S629	1F
D603	6E	S606	8E	S618	7E	S630	1E
D604	6E	S607	8E	S619	2F	CN611	6F
D605	5F	S608	8E	S620	2E	CN612	7F
D606	6E	S609	6F	S621	7E	FC651	1E
D652	8F	S610	8F	S622	7E	R601	2F
D653	8F	S611	8E	S623	7E	R602	2F
FL601	4F	S612	8E	S624	1F	R652	8F
S601	7E	S613	8E	S625	1E	R653	8F
S602	7E	S614	6E	S626	6E		
S603	8E	S615	6E	S627	8E		

D LOADING MOTOR P.C.B.

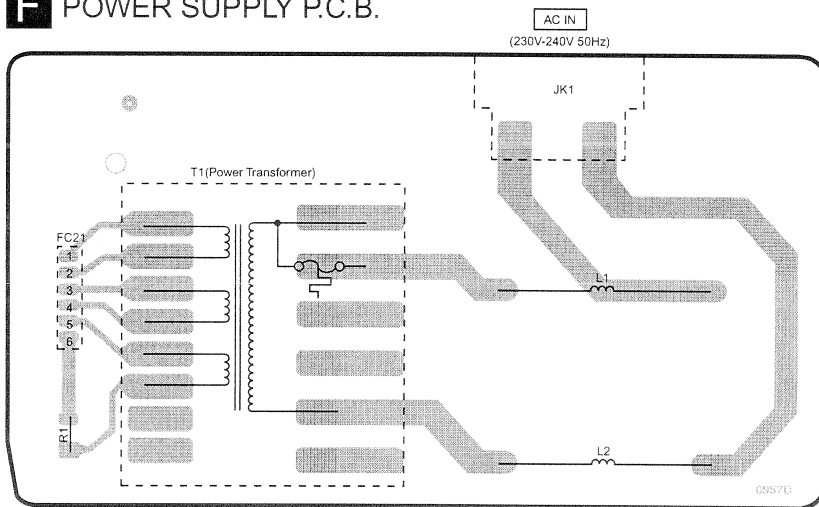


(REP1940A-N)

B POWER SWITCH P.C.B.

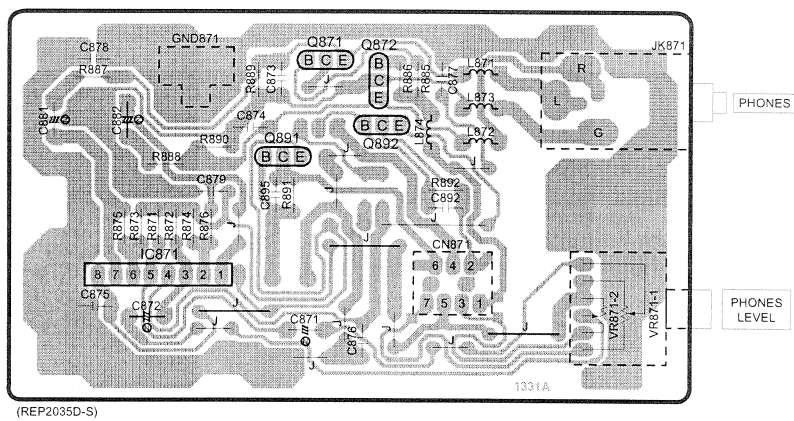


F POWER SUPPLY P.C.B.



(REP2976A-P)

G HEADPHONES JACK P.C.B.



(REP2035D-S)

■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.
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D LOADING MOTOR P.C.B.

IC781	1A	CN781	1C
S781	2B	C781	1C
S782	2A		

B POWER SWITCH P.C.B.

IC651	2F	FC651	3F
D651	3E	R651	2E
S651	2E		

F POWER SUPPLY P.C.B.

L1	4D	FC21	4A
L2	5D	JK1	3C
T1	4B	R1	5A

G HEADPHONES JACK P.C.B.

IC871	7B	R886	7C
Q871	6B	R887	7A
Q872	7C	R888	7B
Q891	7B	R889	7B
Q892	7C	R890	7B
VR871-1	8D	R891	7B
VR871-2	8D	R892	7C
L871	6C	C871	8B
L872	7C	C872	8A
L873	7C	C873	7B
L874	7C	C874	7B
CN871	7C	C875	8A
JK871	7D	C876	8C
GND871	6B	C877	7C
R871	7B	C878	6A
R872	7B	C879	7B
R873	7A	C881	7A
R874	7B	C882	7A
R875	7A	C892	7C
R876	7B	C895	7B
R885	7C		

Note: $\Rightarrow$ AUDIO SIGNAL

