

# JVC

# SERVICE MANUAL

## COMPACT DISC AUTOMATIC CHANGER

### CH-X200

COMPACT  
disc  
DIGITAL AUDIO



#### Area suffix

E..... Continental Europe  
J..... Northern America  
U..... Other areas

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# Removal of Main Parts

## Disassembling Procedures

Perform operations according to the items to be disassembled.

## Replacement of the Pickup

1. After removing the exterior (top and bottom)...
2. Proceed to the "Pickup Replacement" section.
3. When applying grease, refer to the Exploded View.  
Use new grease.

## Mechanism Section

1. Remove the exterior (required section only).
2. The mechanism section is designed so that each unit can be removed separately.
3. When re-assembling, refer to the assembling precautions.  
(Use new grease when applying grease.)

## \*Exterior Section

### Removing the Bottom Cover and Front Panel Assembly

1. Remove the screw (1-a) to unlock the mounting direction knob located on the side of the main unit.
2. Turn the mounting direction knob in the direction of the arrow using a coin, etc. to remove it. (The knob can be removed only when it is set to this position.)
3. Remove the four top cover fixing screws (1) at the triangle (A) marks on the side of the main unit. (Perform the same operation on both sides.)
4. Turn the unit upside down so the bottom surface is facing upward.
5. Lift the rear edge of the bottom cover slightly and lift the side by grasping the DIN jack section on the side panel, then turn it toward the front (raise upward) to remove the bottom cover.
6. Unhook the four catches located on both sides of the front panel, and turn the front panel toward the top cover (lower down) to remove the front panel.

The front panel can be separated by raising the cover.

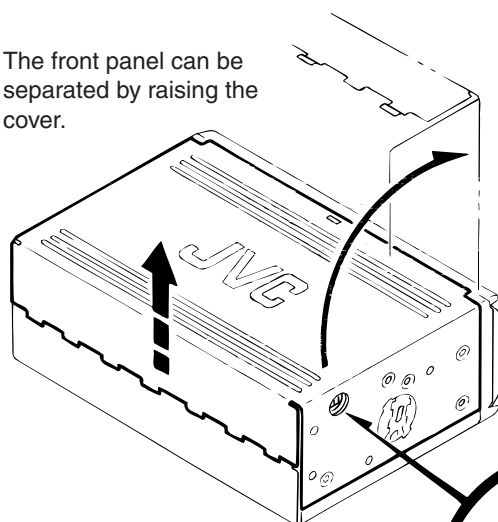
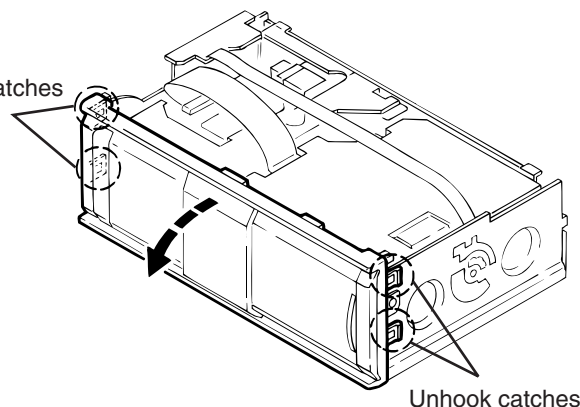


Fig. 3

Unhook catches



Unhook catches

Fig. 4

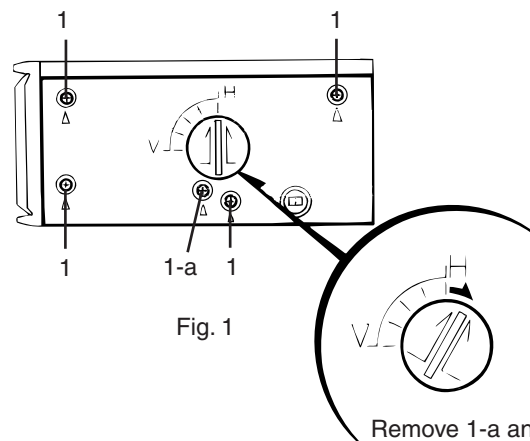


Fig. 1

Remove 1-a and turn in the direction of the arrow.

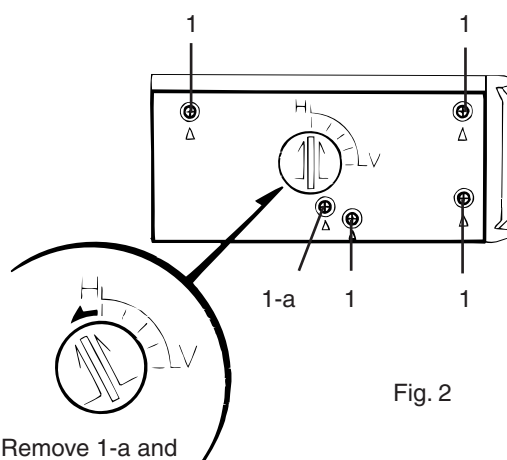


Fig. 2

Remove 1-a and turn in the direction of the arrow

Slightly lift the jack section to remove.



## Removing the Top Cover

1. Remove the four damper bracket fixing screws (2) to remove the damper brackets.
2. Pull out the dampers, being careful not to damage them.  
When re-attaching a damper, insert your finger to push out the center of the damper to mount it on the damper shaft, as shown in Fig. 6-1.
3. Turn the damper spring bracket toward the top at a right angle as shown in Fig. 7, then push down the lower side of the damper spring bracket to lift it off.
4. Remove the three fixing screws (3) and (4) on the DIN jack PCB assembly.
5. Lift the changer unit upward.
6. Remove the damper springs from the mechanism chassis if required. To reassemble, refer to the diagram below.

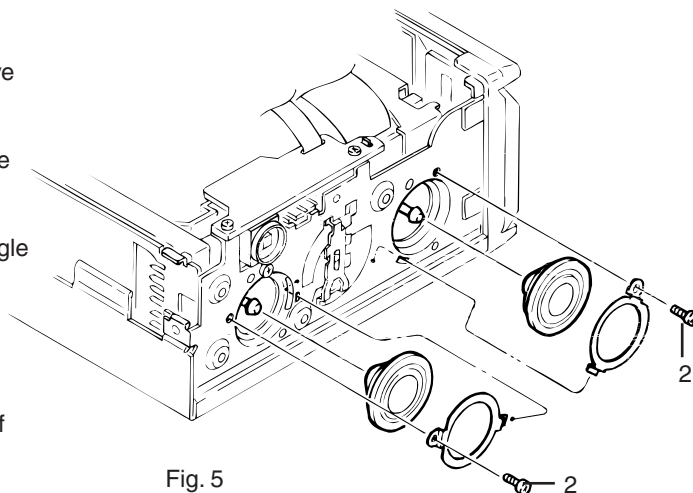


Fig. 5

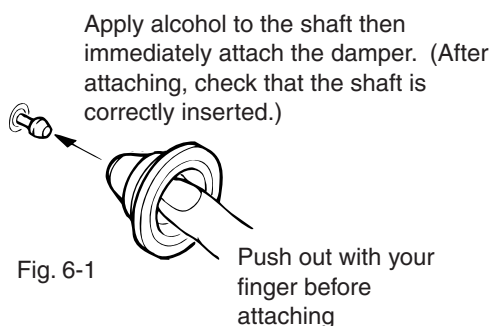


Fig. 6-1

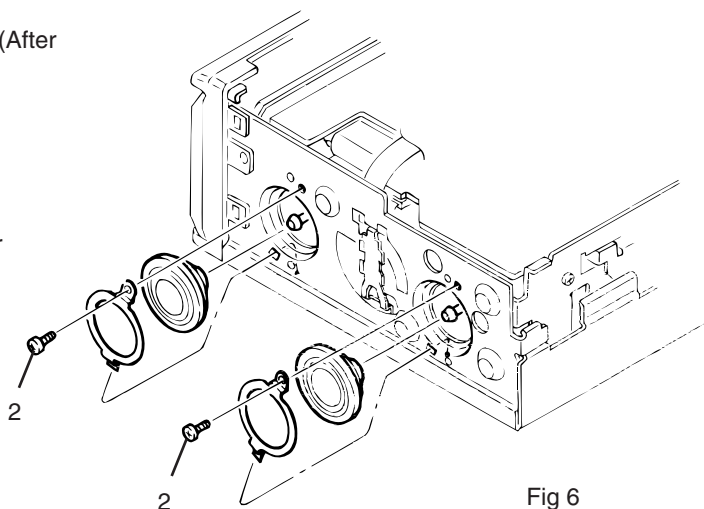


Fig 6

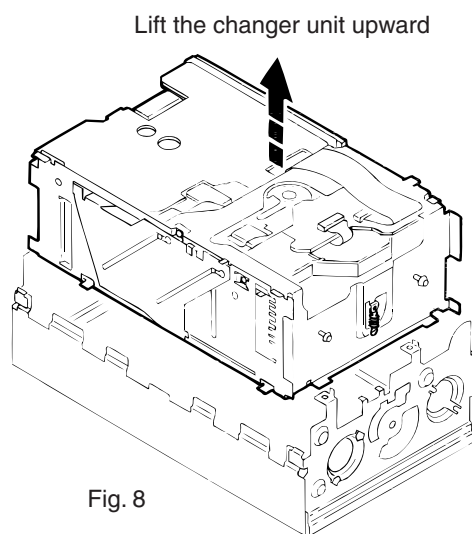


Fig. 8

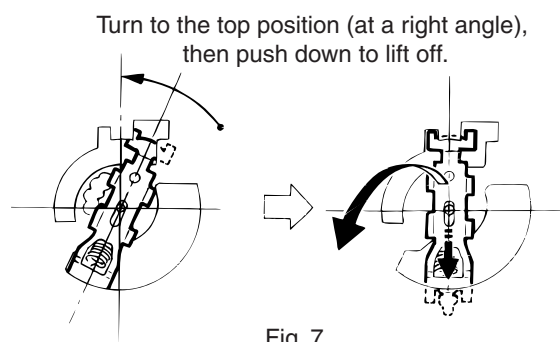
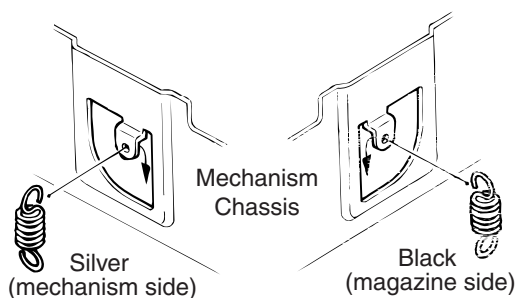


Fig. 7



### How to Attach the Damper Springs

Fig. 8-1

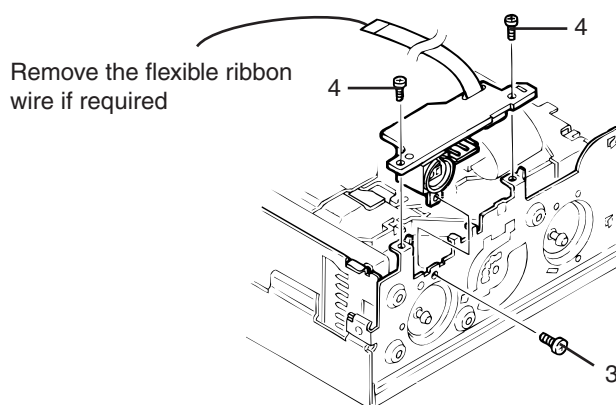


Fig. 9



## Removing the Fittings

1. Remove the fixing screw (5).
2. Unhook the two catches (a) on the top edge of the fitting, then unhook the catches (b) at the left/right bottom edges.

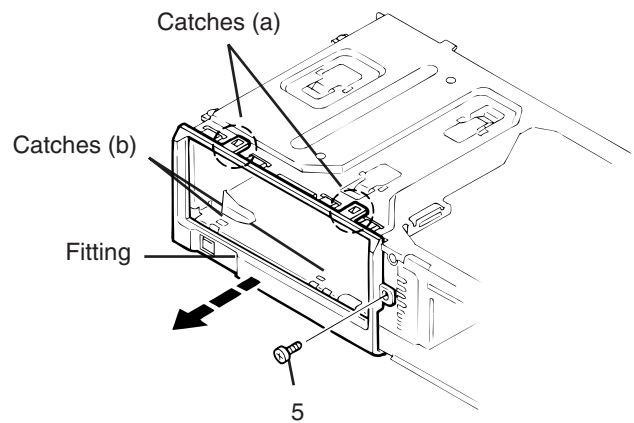


Fig. 10

## Removing the Main PCB Assembly

1. Remove the power IC fixing screw (6).
  2. Remove the four screws (7) securing the main PCB assembly.
  3. Disconnect position motor wire connector CN504 from the main PCB assembly.
  4. Disconnect sensor PCB assembly wire connector CN601 from the main PCB assembly.
  5. Remove the flexible ribbon wire from CN502 on the traverse mechanism PCB assembly.
- When re-installing the PC boards, refer to the reassembling procedures for protecting switches, etc.

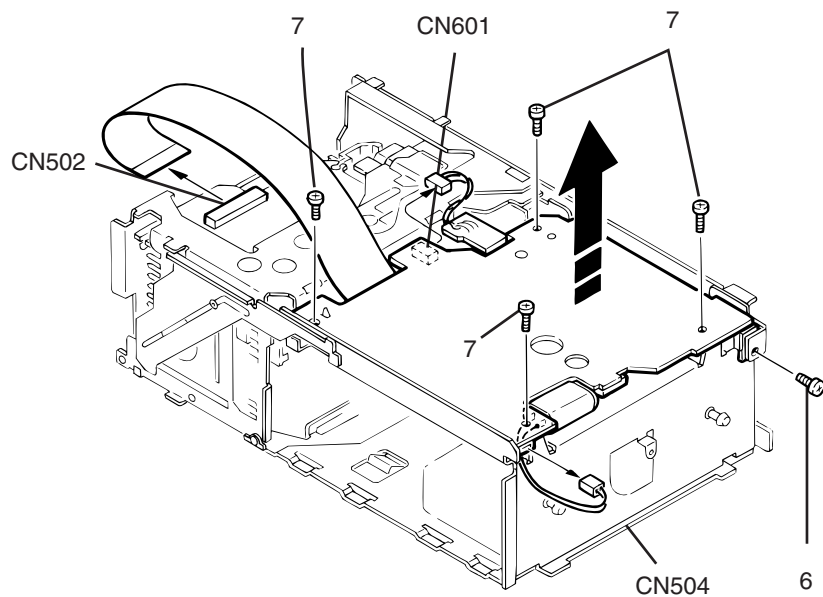


Fig. 11



## \* Changer Mechanism Section

### Sensor Assembly Unit

1. Remove the two screws (1) securing the sensor assembly unit.
2. Unhook the springs on the back of the sensor assembly unit from the holes on the chassis.

### Magazine Lock Arm

1. Remove the magazine lock spring from the front side of the chassis.
2. Remove the poly-washer (b) securing the magazine lock arm.
3. Turn the magazine lock arm in the direction of the arrow until the notch is at the "C" position to remove it from the chassis.

### Positioning Motor Assembly

1. Remove the two screws (2) securing the positioning motor.
2. Slightly lift the positioning motor assembly to remove it from the two burrs on the chassis.

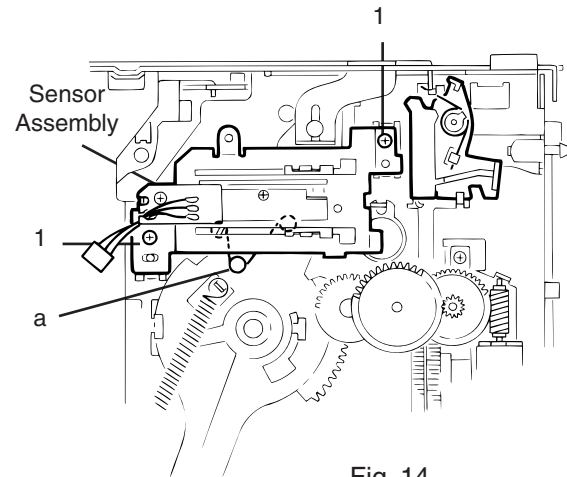


Fig. 14

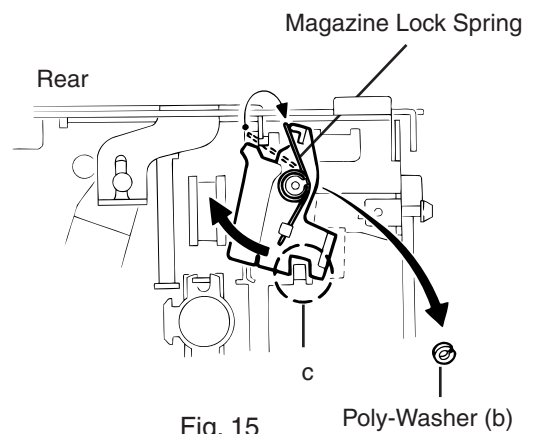


Fig. 15

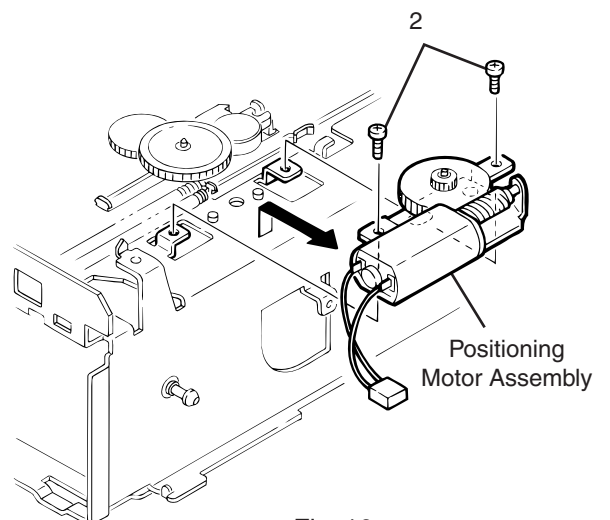


Fig. 16



## Rear Slider

1. Position the unit with the front section facing down. Rotate the third gear located on the back of the main unit in the direction of the arrow (clockwise).
2. Shift the rear slider in the direction of the arrow and remove it at the rear slider mounting position (at the widest hole).

Can be removed at the stud position  
(at the widest hole)

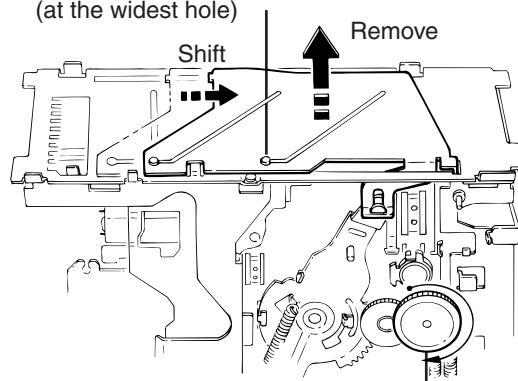


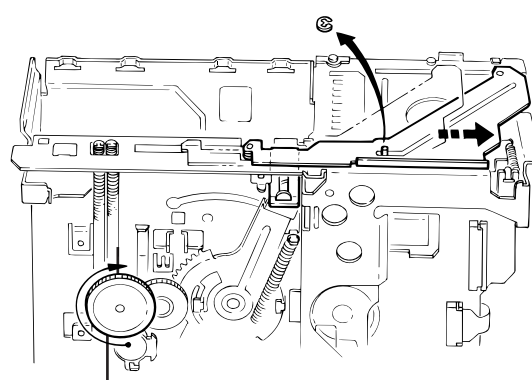
Fig. 17

Third Gear

## Front Slider

1. Position the unit with the rear section facing down. Rotate the third gear located on the bottom of the unit in the direction of the arrow (clockwise) until the front slider is shifted to the outermost position.
2. Remove the E-washer securing the front slider to remove the front slider from the chassis.

Remove the E-washer



Third gear

Fig. 18

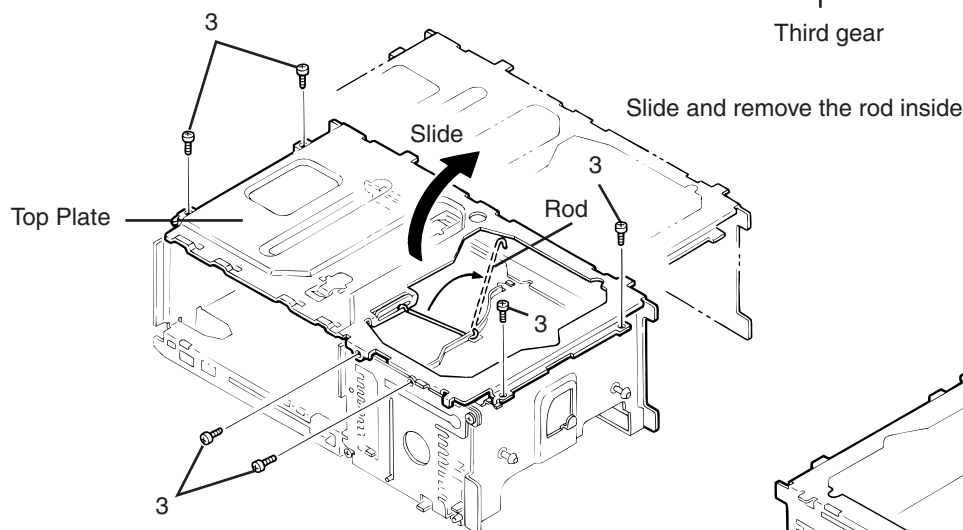


Fig. 19

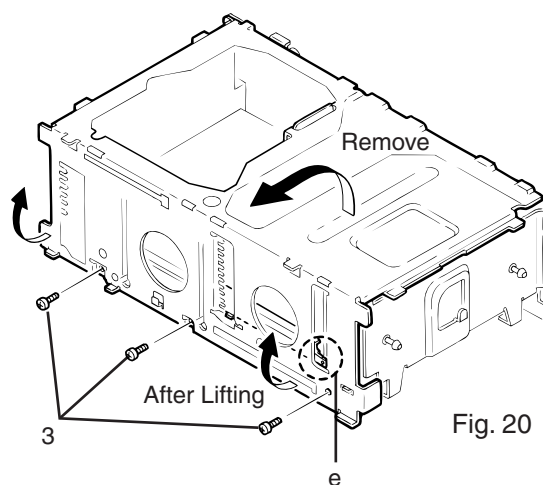


Fig. 20



## Lifter Unit

1. Unhook the elevator spring located on the front side of the unit.  
(Be sure to first unhook the spring from the lifter side as shown in the upper part of the diagram.)
2. Lift the lifter unit upward, then remove the lower rod to remove the lifter unit from the chassis.

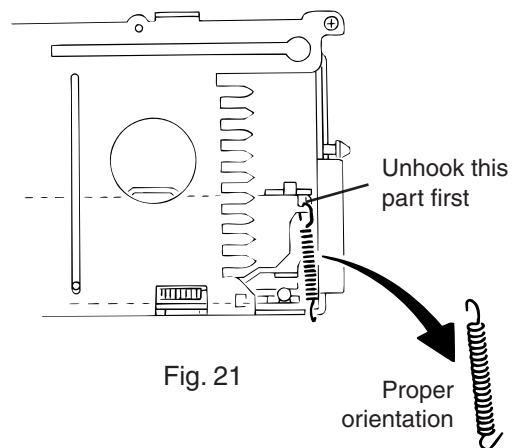


Fig. 21

## Lifter Bracket

1. Remove the two lifter bracket fixing screws (4) located on the back of the lifter unit.
2. Remove the lower rod.

## Side Bracket and Traverse Mechanism

1. Remove the two side bracket unit fixing screws (5) to disconnect the side bracket unit from the lifter unit.
2. Remove the three shafts on the traverse mechanism assembly from the lifter unit.

For reassembling, refer to the reassembling procedures.

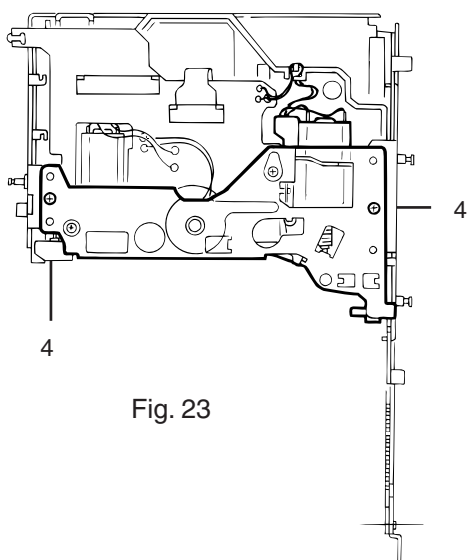


Fig. 23

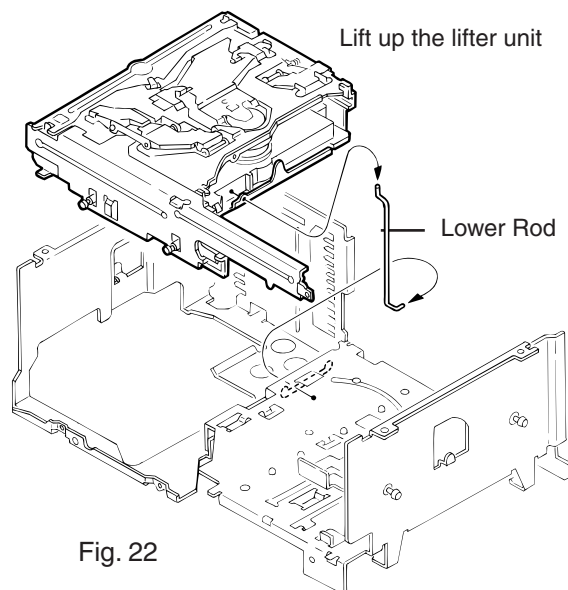


Fig. 22

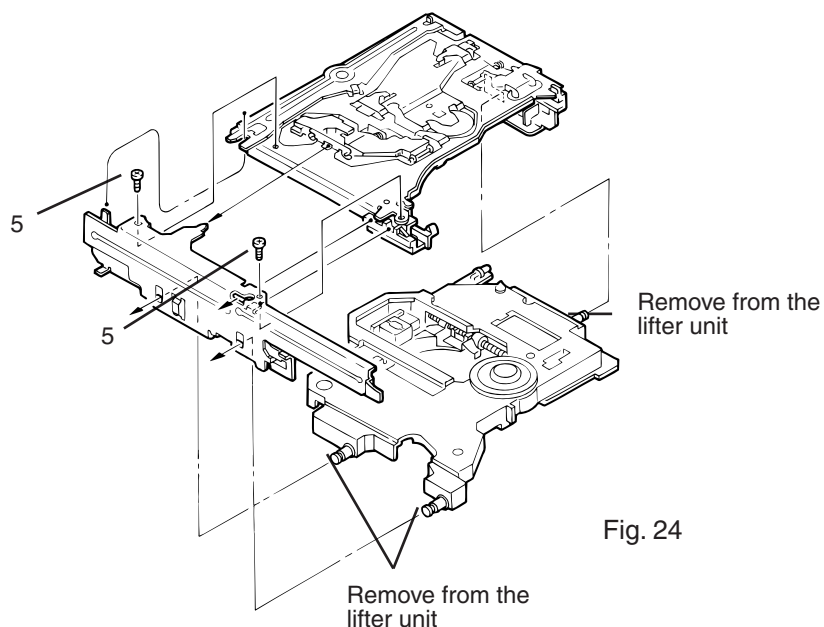


Fig. 24



## Pickup Assembly

1. Remove the three mechanism PCB fixing screws (6) located on the back of the traverse mechanism.
2. Disconnect the two feed motor wires (blue and white), two spindle motor wires (red and black) and two tray motor wires (brown and black) that are soldered to the mechanism PCB assembly.
3. Short-circuit the grounding point on the mechanism PCB assembly, and lift it with the flexible PCB attached to connector CN501.  
Next, short-circuit the grounding point on the pickup unit and disconnect CN501.
4. Remove the screw (7) to remove the feed motor assembly.
5. Remove the screw (8) to remove the shaft holder retaining the feed slide shaft assembly and the middle gear.
6. Remove the middle gear.
7. Move the pickup assembly upward from the gear section and remove it from the traverse chassis assembly.
8. Remove the two screws (9) to remove the rack arm.
9. Pull out the feed slide shaft assembly.
10. Remove the screw (10) to remove the spring.

Note: Before replacing the pickup, be sure to short-circuit the grounding points. First short-circuit the PCB section and then immediately short-circuit the pickup section.

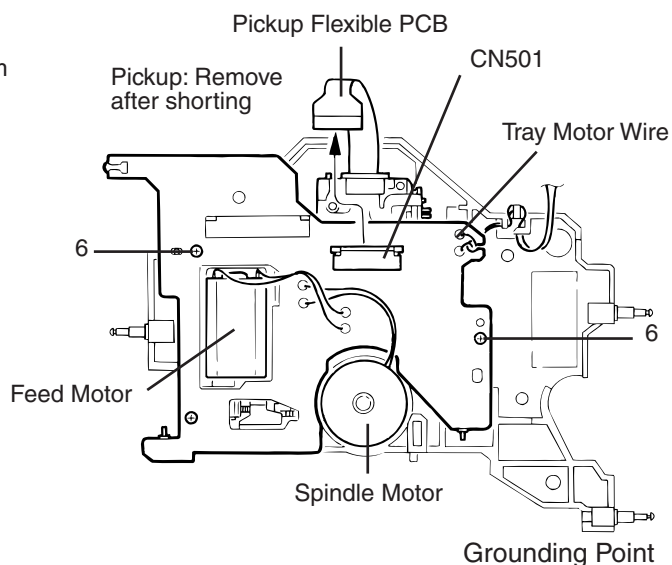


Fig. 25

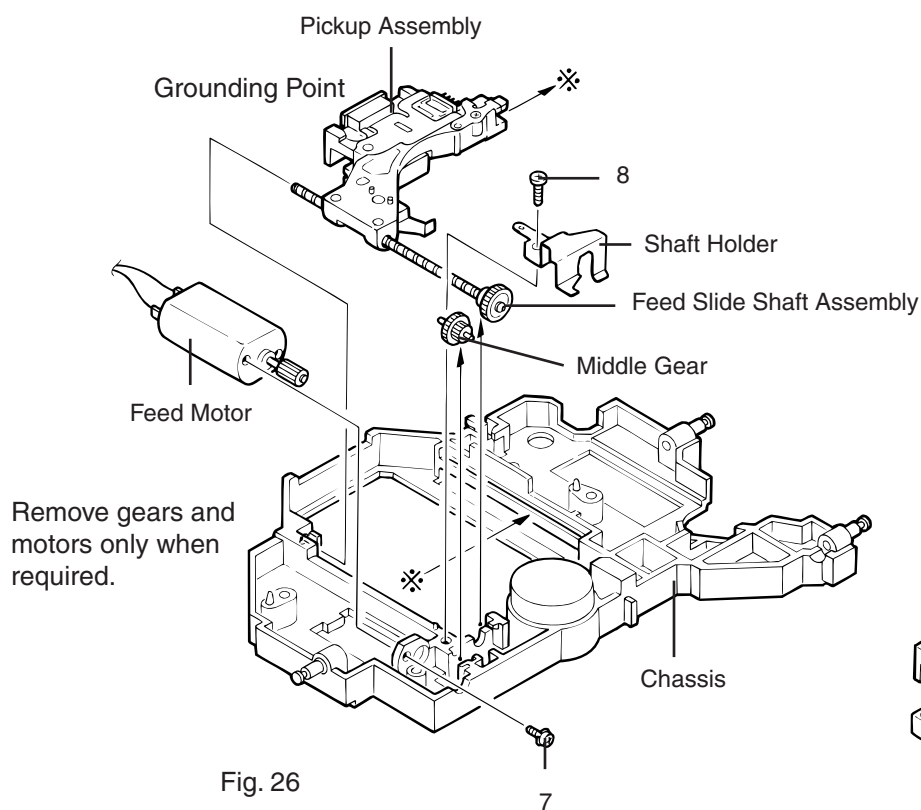


Fig. 26

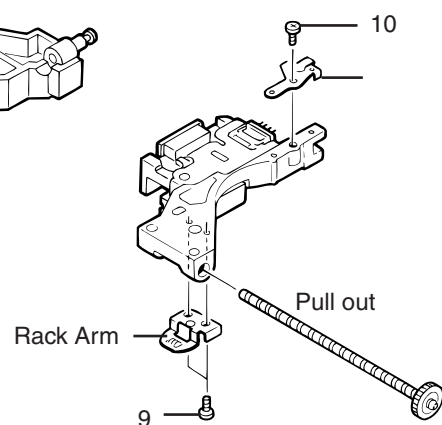


Fig. 27



## Tray Motor

1. Remove the two screws (11) securing the tray motor.
2. Remove the two screws (12) to remove the tray motor assembly from the tray motor holder.

## Separation of the Chassis L Assembly and Chassis R Assembly

1. Remove the two screws (13) retaining the chassis "L" and "R" assemblies.
2. Slide the chassis L assembly toward the front and detach it, then remove the chassis "L" upward.

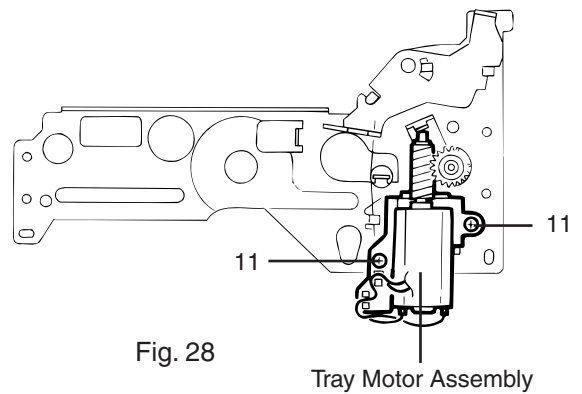


Fig. 28

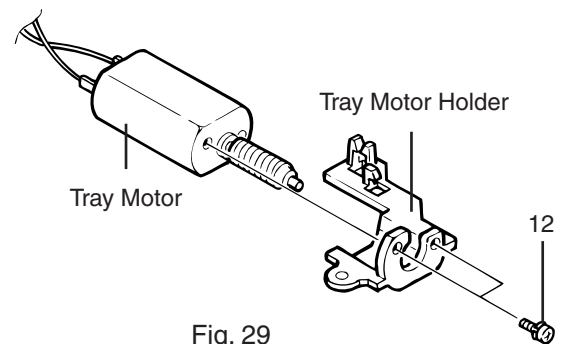


Fig. 29

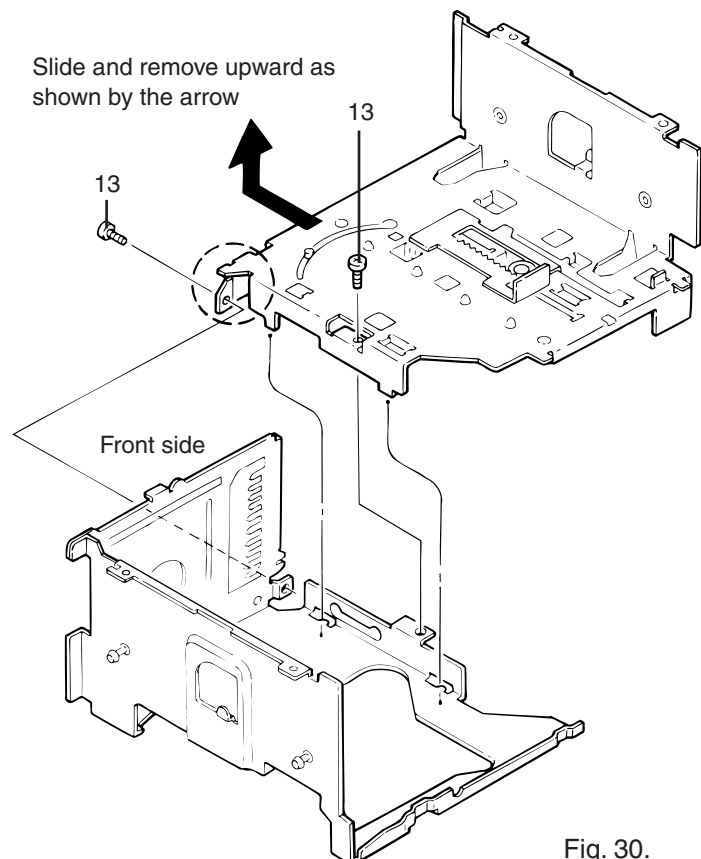


Fig. 30.



## Precautions On Reassembling

**When reassembling, also refer to the disassembling procedures.**

### Mounting the Traverse Mechanism

1. When mounting the pickup assembly, attach the feed slide shaft assembly to the traverse chassis.  
Apply E-JC-525 grease to the shaft.
2. Mount the middle gear and the feed slide shaft to the traverse chassis and secure them with the screw (14) through the shaft holder.
3. Before mounting the mechanism PCB assembly, move the pickup to the outer edge position, then secure the PCB assembly using the screw (15).  
At this time, check that the rest switch is correctly placed.
4. To mount the rack arm, first move the pickup to the middle position and secure it with the screws (16).

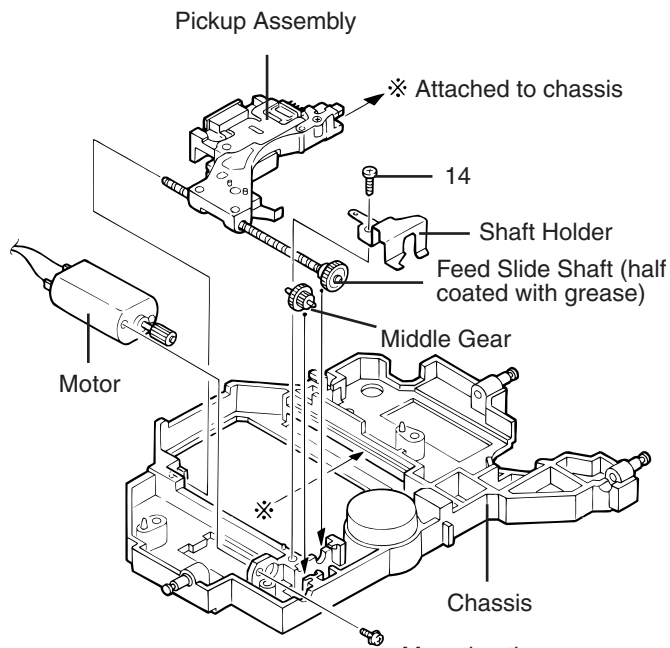


Fig. 31

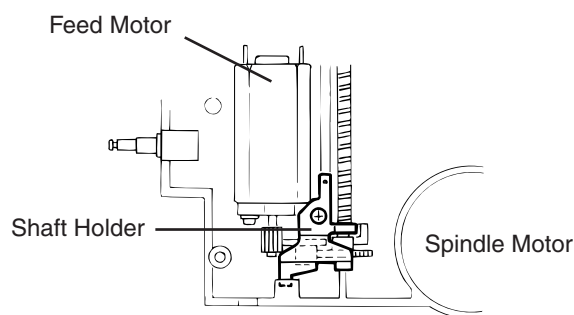


Fig. 32

### Mechanism PCB Assembly

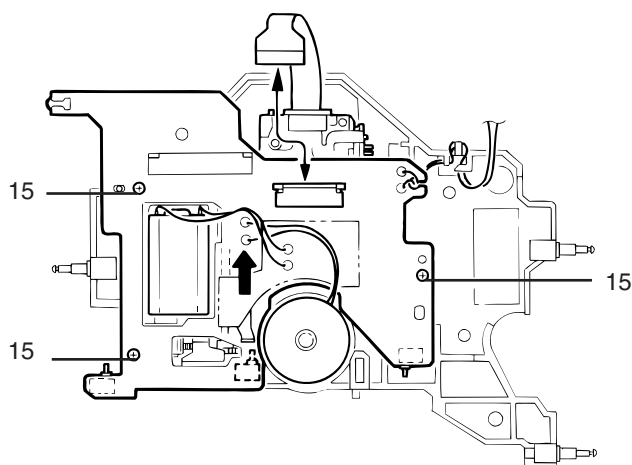


Fig. 33

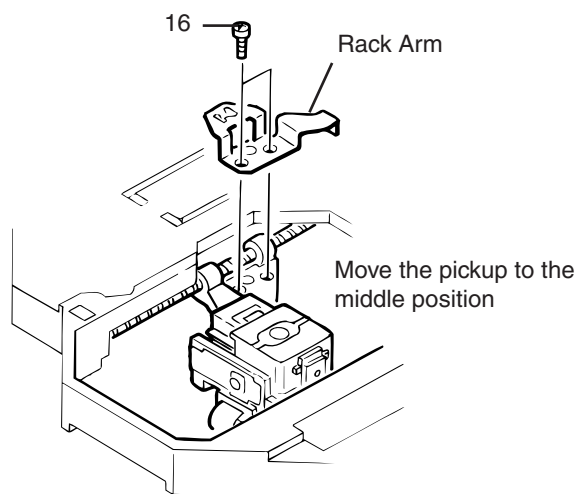


Fig. 34



## Mounting the Lifter unit

1. Insert the shafts (B) of the traverse mechanism assembly into the slide grooves (F) on the lifter unit.
2. Shift the hook of the lifter unit to the edge, and shift the sliding lever inside the side bracket unit to the edge as well.
3. With each hole and lever shifted to the edge, mount the lifter unit and side bracket unit from the side.  
(Check each attached section, and check that the two shafts (C) of the lifter unit are correctly inserted into the holes (g) of the side bracket unit. After mounting, check that the levers move together.)
4. Turn the lifter unit upside down.  
As shown in Fig. 37, slide the lever 30 mm away from the edge, then mount the lifter bracket L assembly.

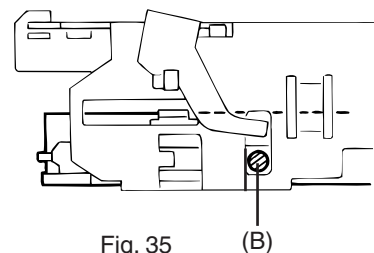


Fig. 35

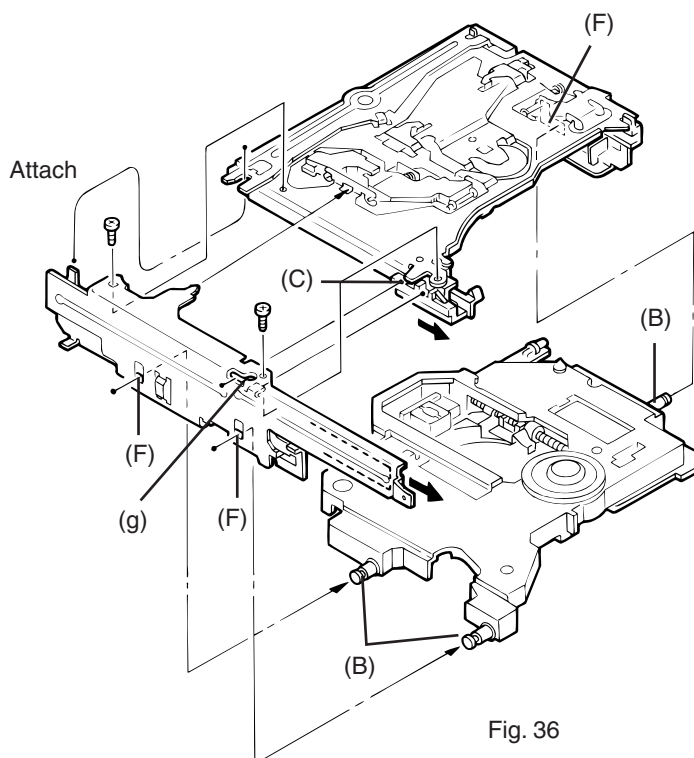


Fig. 36

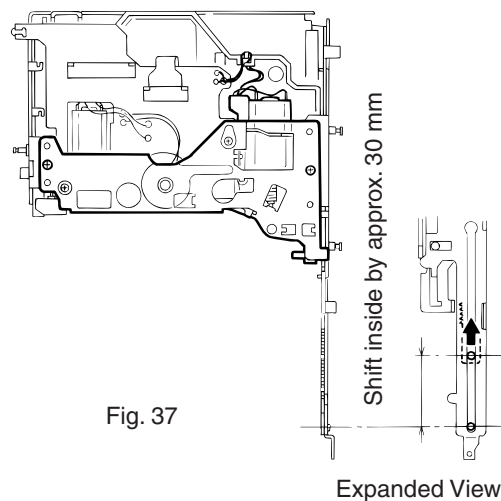


Fig. 37

Expanded View



## Connection of the Chassis "L" Assembly and Chassis "R" Assembly

1. Attach the lower rod to the chassis "R" assembly. While shifting the rod toward the front side, mount the rod on the lifter unit.

With the rod mounted, place the lifter unit on the chassis "R" assembly.

2. Combine the chassis "L" and "R" assemblies so that the hook section (h) of the chassis "L" assembly is inserted into the notch of the chassis "R" assembly by sliding it from the front side.
3. After engaging, secure with the two screws (18).
4. Attach the tension spring between the lifter unit and the chassis.

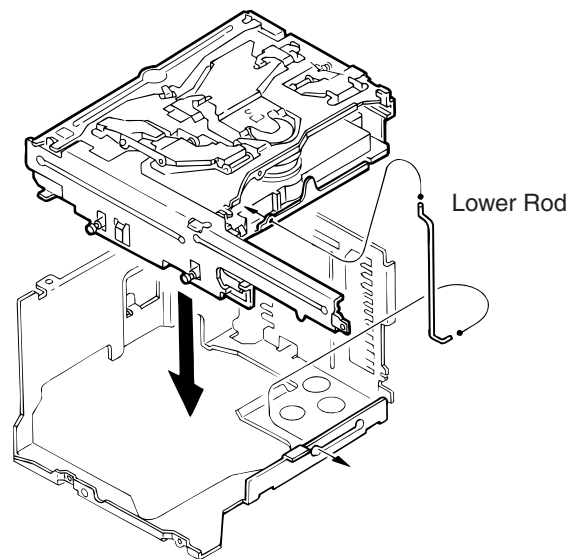


Fig. 38

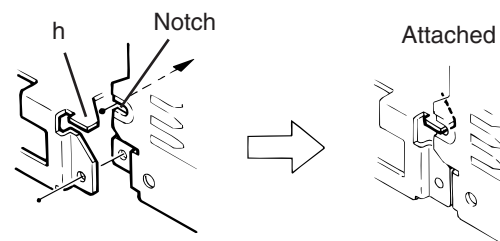


Fig. 39

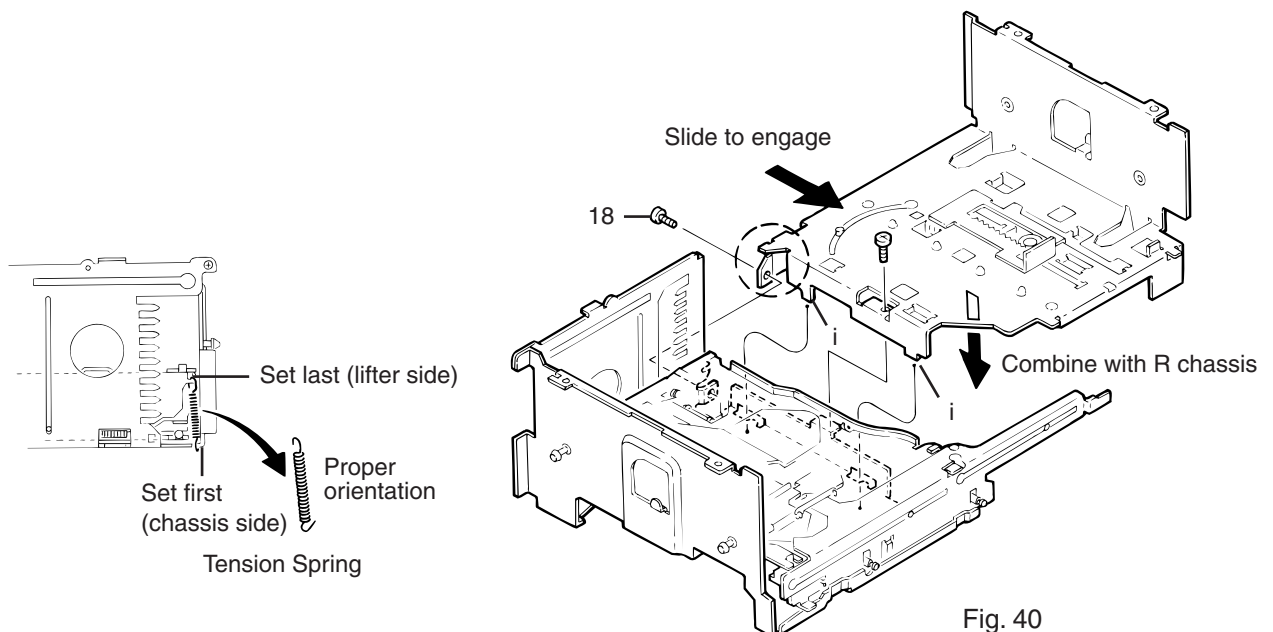


Fig. 40



## Mounting the Top Plate

1. Mount the upper rod on the lifter side (j) and set it on the rear of the top plate, then mount the other end of the upper rod to (k).
2. Check that the five points (l, m, n, o and p) are correctly positioned.  
When mounting section (q), set it so that section (D) of the lifter unit is pinched by the bending section of the top plate.
3. Secure the top plate with six fixing screws (19).

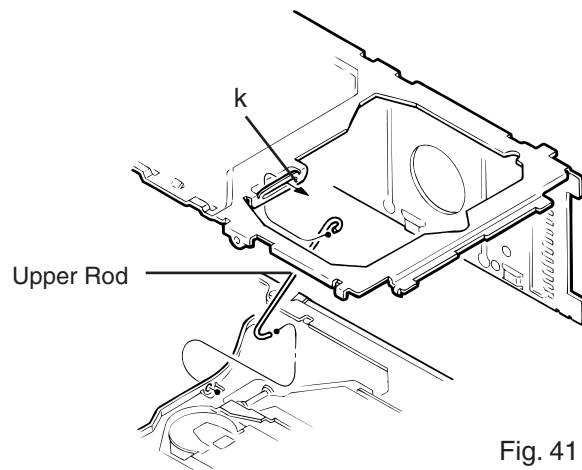


Fig. 41

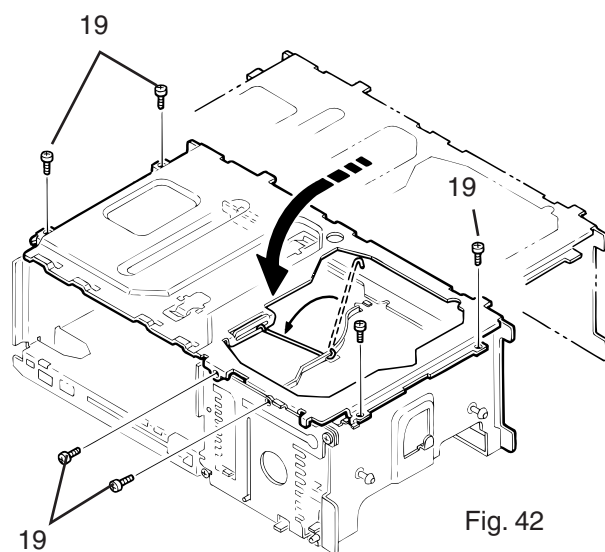


Fig. 42

### Expanded view of mounting "q"

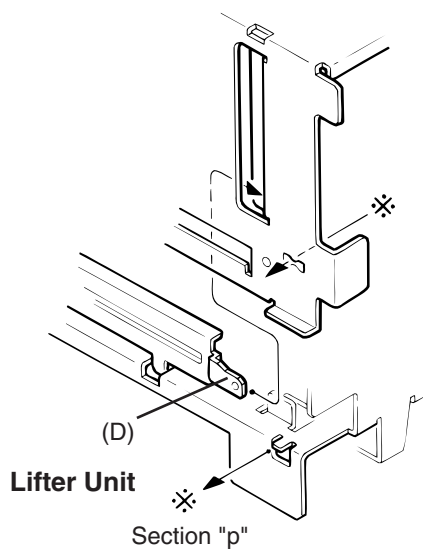


Fig. 43

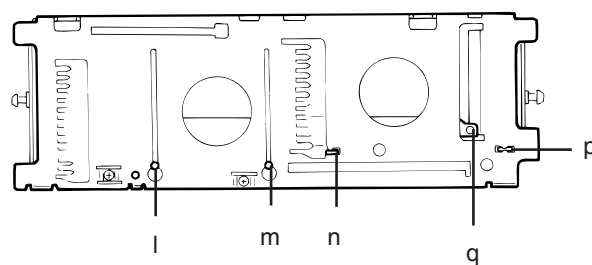


Fig. 44



## Mounting the Front Slider and Rear Slider

1. Position the unit with the rear side facing down, then rotate the third gear in the direction of the arrow (clockwise) until the lift arm comes to the position at which the holes are exposed, as shown in Fig. 45-1.
2. Mount the front slider from the top.  
Rotate the third gear counterclockwise until the hole of the slider is lined up with the right hole of the stud, as shown in Fig. 45-2.
3. Mount the E-washer on the shaft.
4. Position the unit with the front side facing down, then mount the rear slider. Check that the (r), (s) and (t) positions are correctly mounted as shown in Fig. 46.
5. Rotate the third gear in the direction of the arrow (counterclockwise) until the lifter unit is at the top position.

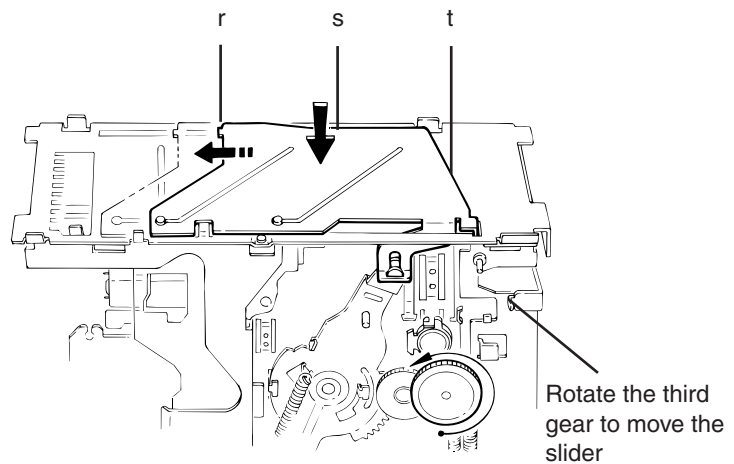
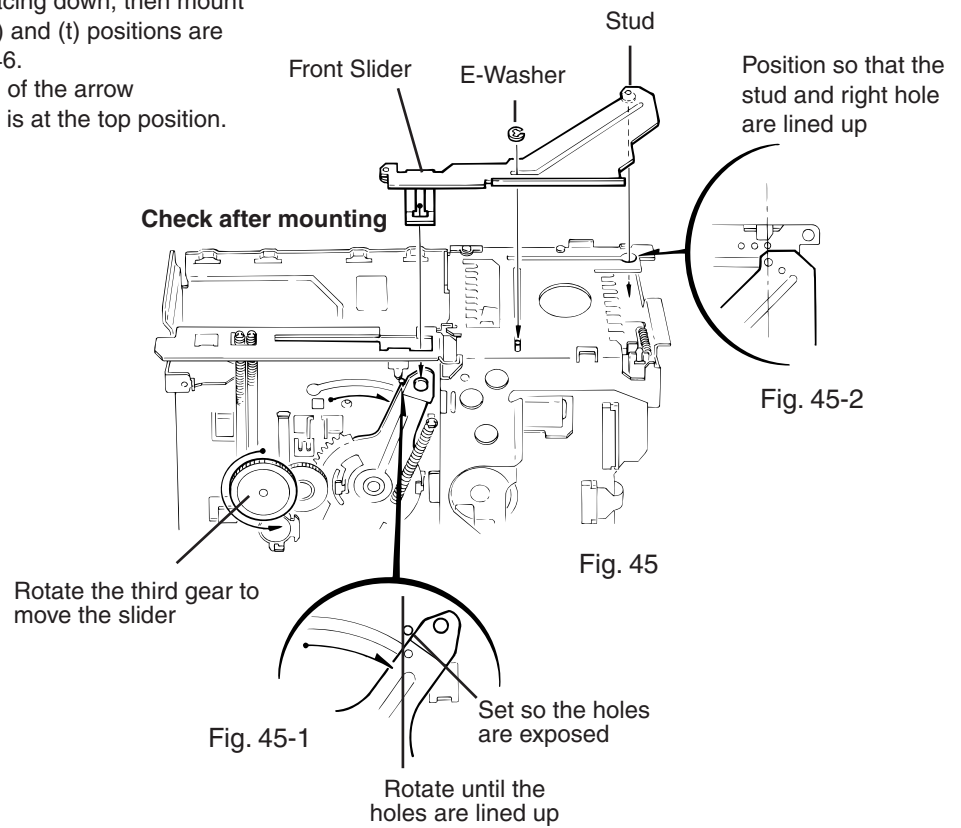


Fig. 46



### Mounting the Sensor PCB Assembly

1. Attach the longer spring to the white resin, and attach the shorter spring temporarily to the sensor assembly bracket.
2. Mount the sensor assembly so that the shaft of the lift arm is inserted into the longer hole on the white resin located on the back of the sensor PCB assembly.
3. Attach the shorter spring to the hook of the lift arm.

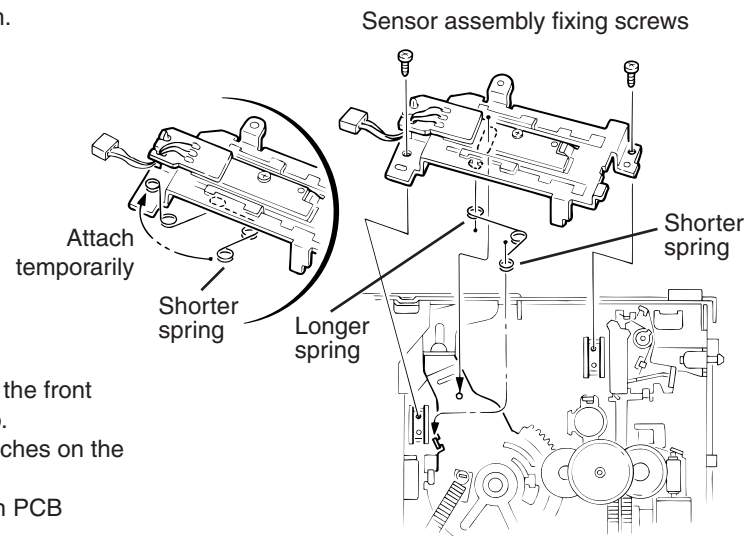


Fig. 47

### Mounting the Main PC Board Assembly

1. Rotate the third gear clockwise until section (E) of the front slider and the third hole from the right are lined up.  
(Be sure to set properly. If incorrectly set, the switches on the PCB assembly may be damaged.)
2. After they are correctly positioned, mount the main PCB assembly.

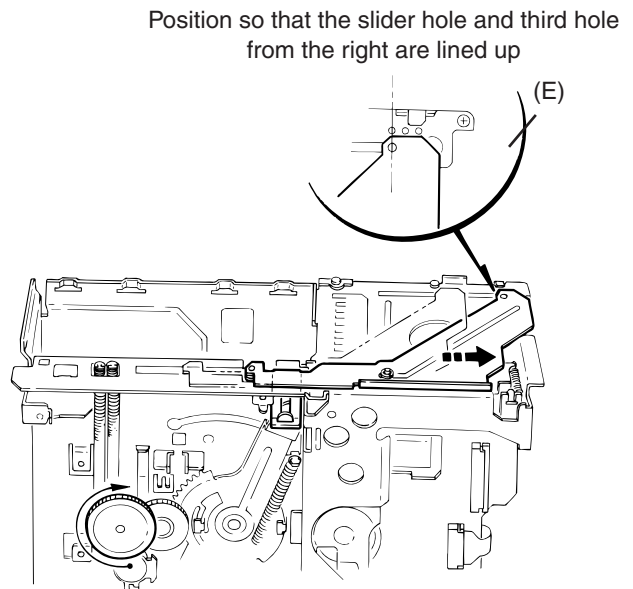


Fig. 48



# Pickup Replacement Procedure

1. Remove the bottom cover, front panel and top cover from the exterior section.
2. Unplug the flexible ribbon wire from connector CN502 on the traverse mechanism PC board assembly.
3. Turn the rear slider and third gear in the lifter section counterclockwise until the traverse mechanism assembly is in the lowermost (bottom) position.
4. Unsolder the two wires (black and brown) connected to the tray motor.
5. Remove the two screws (1) from the round holes on the chassis R assembly to remove the lifter bracket (L).
6. Remove the lower rod.
7. Short-circuit the grounding point on the traverse mechanism PCB assembly of the lifter unit. Unsolder the wires connected to the spindle motor (red, black) and to the feed motor (blue, white) to lift the PCB assembly.  
Next, short-circuit the grounding point on the pickup main unit and unplug the pickup flexible PCB from CN501.
8. Remove the three fixing screws (2) from the round holes on the chassis R assembly to remove the traverse mechanism PCB assembly.
9. Remove the pickup shaft holder fixing screw (3) to remove the pickup assembly.

**Note:** When replacing the pickup, be sure to apply countermeasures against static electricity (grounding the operation table, wrist band and soldering iron). To remove it, first short-circuit the grounding point on the mechanism PCB, then lift the mechanism PCB assembly with CN501 connected. Next, short-circuit the grounding point on the pickup main unit, then unplug the pickup flexible PCB from connector CN501.

When reassembling, perform in the reverse order.

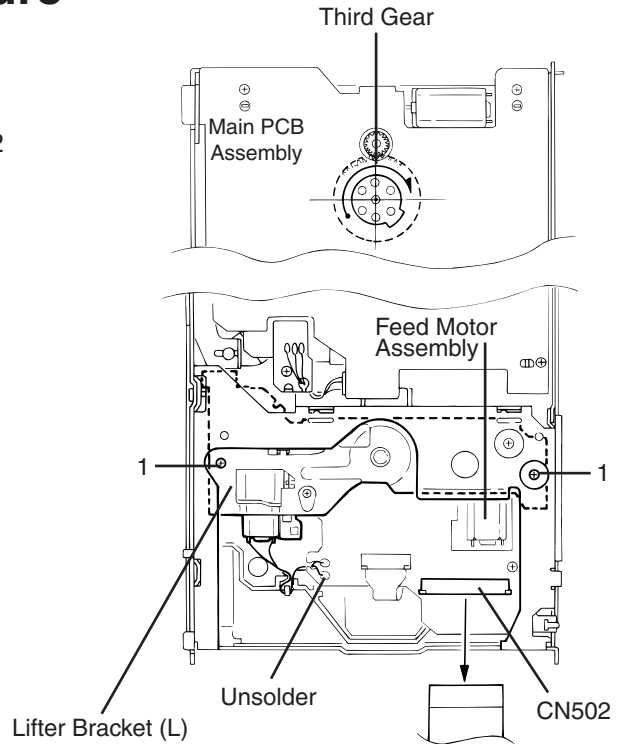


Fig. 49

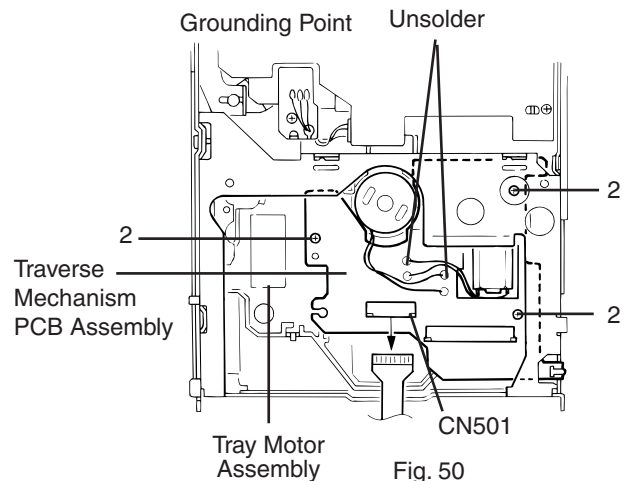


Fig. 50

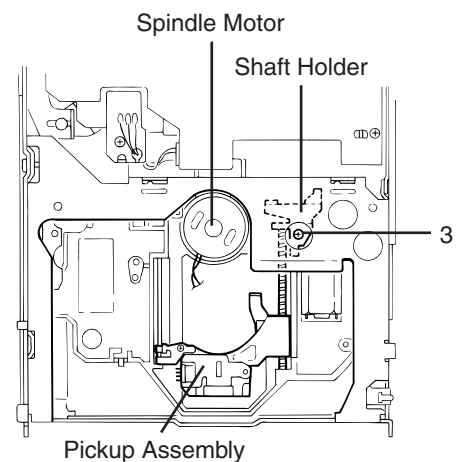


Fig. 51



10. Remove the two rack arm fixing screws (4).  
Pull out the feed slide shaft.
- Remove the shaft holder fixing screw (5).
11. When mounting the lifter bracket after replacing the pickup, shift the lifter unit lever approx. 30 mm towards the inside, then mount the lifter bracket.

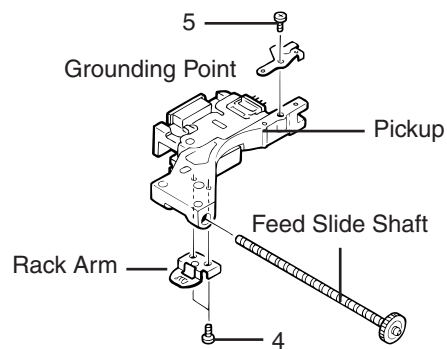


Fig. 52

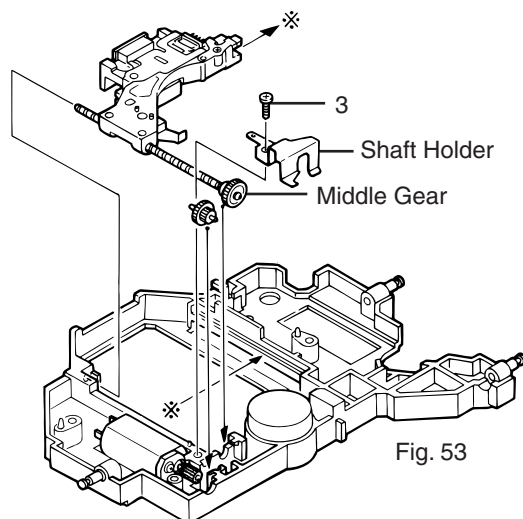


Fig. 53

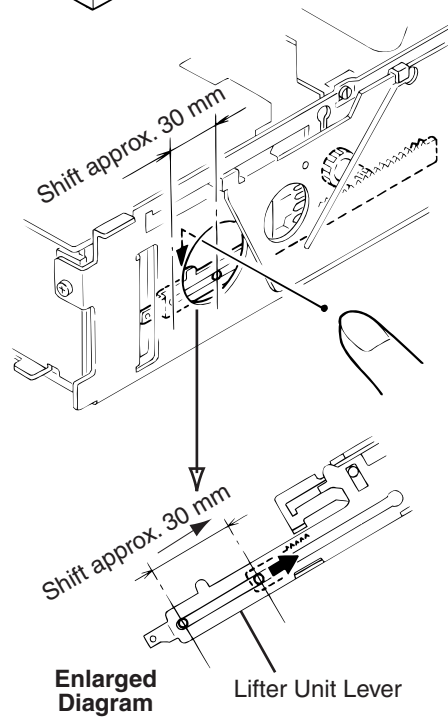
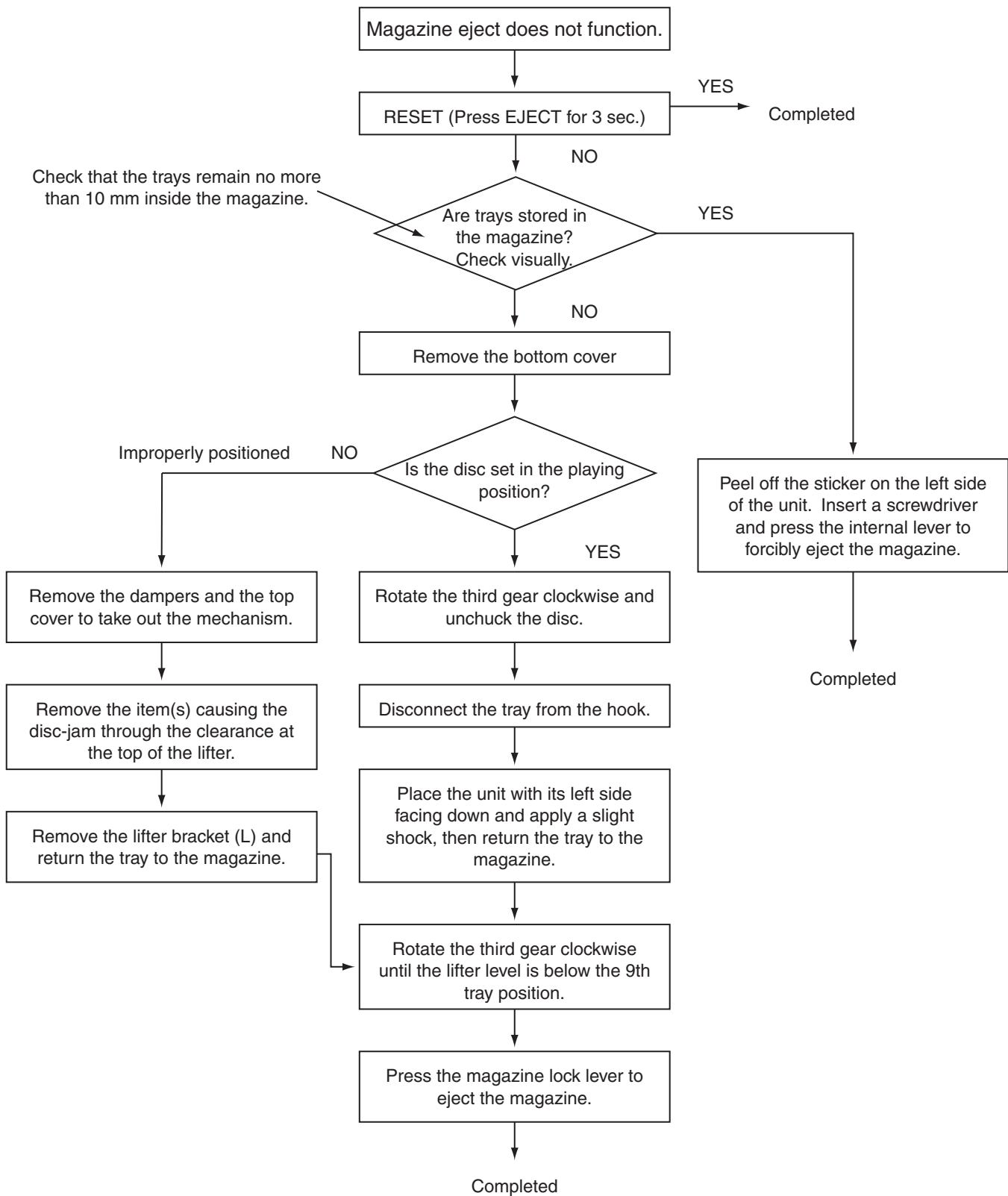


Fig. 54



# JC12 Forced Eject Procedures





# Troubleshooting

## ■ Servicing Procedures for CH-X1200 Error Displays

### Error display

### Servicing Procedure

- E1: Eject error      The magazine cannot be ejected until S601 (magazine switch) turns off.  
Can the magazine be ejected? YES→1, NO→2  
1. The magazine switch (S601) does not turn off even though the magazine is completely ejected.  
2. Check that the magazine is not engaged with the mechanism assembly.

- E2: Position motor error      The lifter does not move up and down when exchanging or ejecting discs.  
After resetting, check whether or not the lifter moves. YES→3, NO→4  
3. If the lifter exceeds the required disc position, check the lift position input. (IC601 pin 25)  
If the lifter does not reach the required disc position, check the mechanism (mainly the lifter elevation mechanism)  
4. Check that voltage is present at the motor terminal.  
If voltage is present, check the lifter elevation mechanism. If voltage is not present, separate the motor from the circuit and check again whether or not voltage is present.  
If voltage is present, next check that the armature resistance of the position motor (resistance between motor terminals) is approx.  $12\Omega$ .  
If the resistance is excessively low ( $1 - 2\Omega$ ), the motor is defective.

- E3: Tray motor error      Trays cannot be opened or closed when exchanging or ejecting discs.  
Does the tray move when changing or ejecting discs? YES→5, NO→6  
5. Check that TRAY OUT SW (S602) and TRAY IN SW (S603) function correctly.

	S602 & IC601 pin (95)	S603 & IC601 pin (94)
When opening	H	L
When closing	L	H

6. Check that the drive voltage is applied to the motor terminal.  
If the voltage is present, check the tray mechanism.  
If the voltage is not present, separate the motor from the circuit and check again whether or not the voltage is present.

- E4: Pick returning error      Does the feed (pickup unit) return to the inner area of the disc when ejecting?  
YES→7, NO→8, 9  
7. Check the rest switch.  
8. If the feed gear is rotated, check the feed transfer mechanism  
9. If the feed gear is not rotated, check the motor driver and the pattern.

### Other errors occurring in the receiver or controller.

- E8: Connection error      When selecting the CD Changer mode using function keys, etc., the unit does not enter the CD changer mode, or the E8 error display appears. This signifies trouble relating to communications.  
a. Check the connection cables between the CD changer and the receiver (CD changer controller).  
b. Check the CD changer power cord and the fuse (including F901 on the PC board).  
c. Check IC651 and its peripheral circuits.

\*The E1 to E8 error displays described above may appear as E-1 to E-8, 1E1 to 1E8, R-1 to R-8, or RST1 to RST8, depending on the product.



## CH-X1200 Error Code

The following error codes can be displayed and stored in up to 3 memories when the KD-MX3000 is used with the controller. Refer to the KD-MX3000 service manual regarding error code indication.  
The error code indication when using the earlier controller is the same as the CH-X99, KD-MK88 and other 12CD changer models.

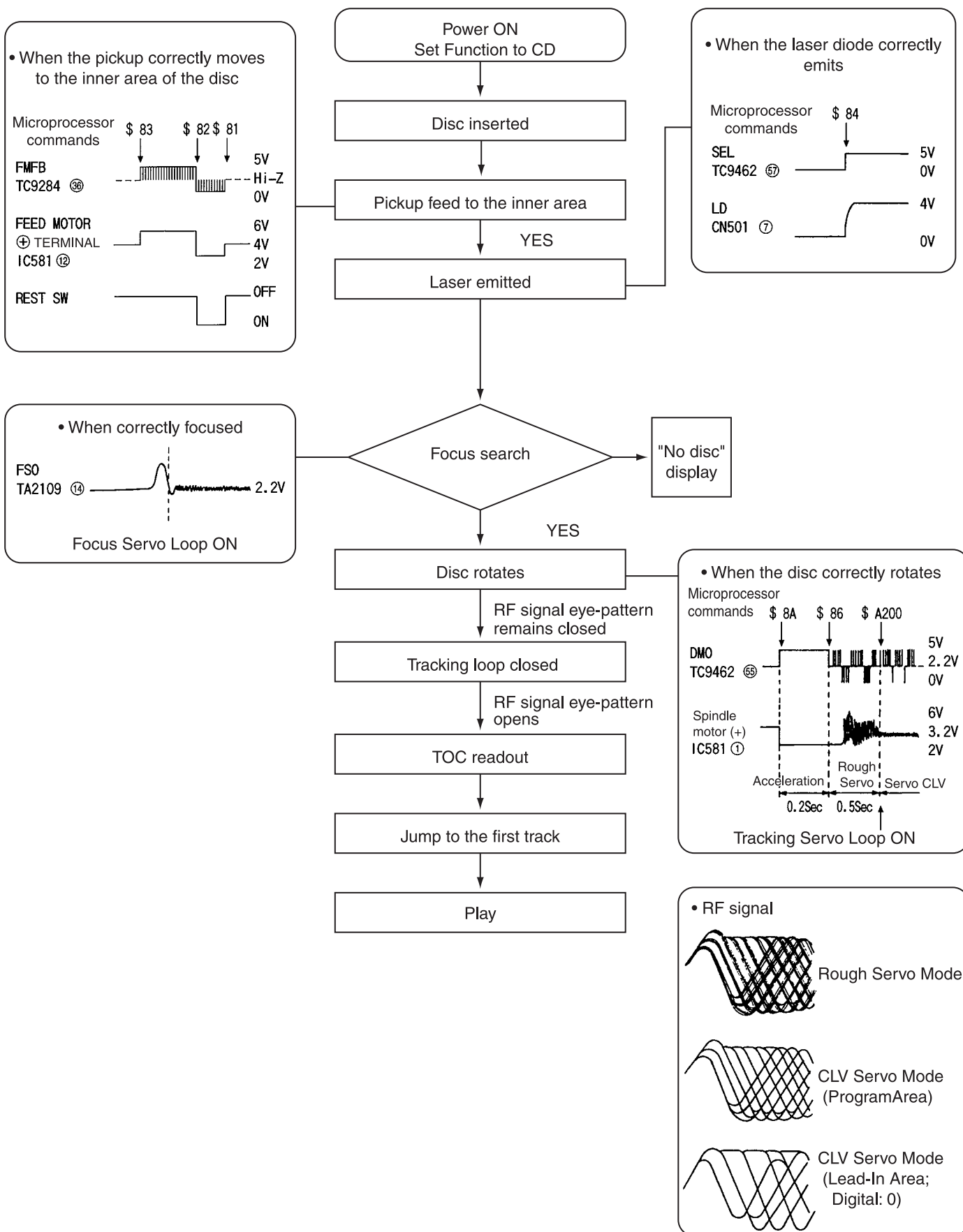
**CH-1 error code table**

Generating condition		Description	Error code
<b>Tray extension error</b>	Tray-in switch time out (Tray-in switch Low, Tray-out switch High)	Tray stops part way	E1 03 00 11
	Tray-out switch time out (Tray-in switch High, Tray-out switch High)	Tray stops part way	E1 03 00 12
	Tray-in switch time out (Tray-in switch Low, Tray-out switch Low)	Tray-in switch faulty or other defect	E1 03 00 13
	MAG-in switch Low to High	Magazine removed when tray partly extended	E1 03 00 14
<b>Tray retraction error</b>	Tray-in switch time out (Tray-in switch Low, Tray-out switch Low)	Tray motor inoperative	E1 03 00 16
	Tray-out switch time out (Tray-in switch High, Tray-out switch High)	Tray retraction stops part way	E1 03 00 17
	Tray-in switch time out (Tray-in switch Low, Tray-out switch Low)	Tray-in switch faulty or other defect	E1 03 00 18
	MAG-in switch Low to High	Magazine removed when tray partly retracted	E1 03 00 19
<b>Lifter raise error</b>	Wait position time out	Position motor inoperative	E1 02 00 21
	Wait position time out	Position not stable in fine adjust mode	E1 02 00 22
	Wait position time out	Other fault	E1 02 00 23
<b>Lifter lower error</b>	Wait position time out	Position motor inoperative	E1 02 00 26
	Wait position time out	Position not stable in fine adjust mode	E1 02 00 27
	Wait position time out	Other fault	E1 02 00 28
<b>Chuck error</b>	Play position time out	Position motor inoperative	E1 02 00 31
	Play position time out	Position not stable in fine adjust mode	E1 02 00 32
	Play position time out	Other fault	E1 02 00 33
<b>Unchuck error</b>	Wait position time out	Position motor inoperative	E1 02 00 36
	Wait position time out	Position not stable in fine adjust mode	E1 02 00 37
	Wait position time out	Other fault	E1 02 00 38
<b>Eject error</b>	Eject position time out	Position motor inoperative	E1 02 00 41
	Eject position time out	Eject position not attained	E1 02 00 42
	MAG in switch time out	Magazine not ejected	E1 02 00 43
<b>Initialize error</b>	Mechanism switch time out	Both Tray-in and Tray-out Low	E1 03 00 46
	Absolute position time out	Not stable at absolute position	E1 03 00 47

Note: The 1st error code is indicated by E1, while the 2nd and 3rd error codes are respectively indicated by E2 and E3.

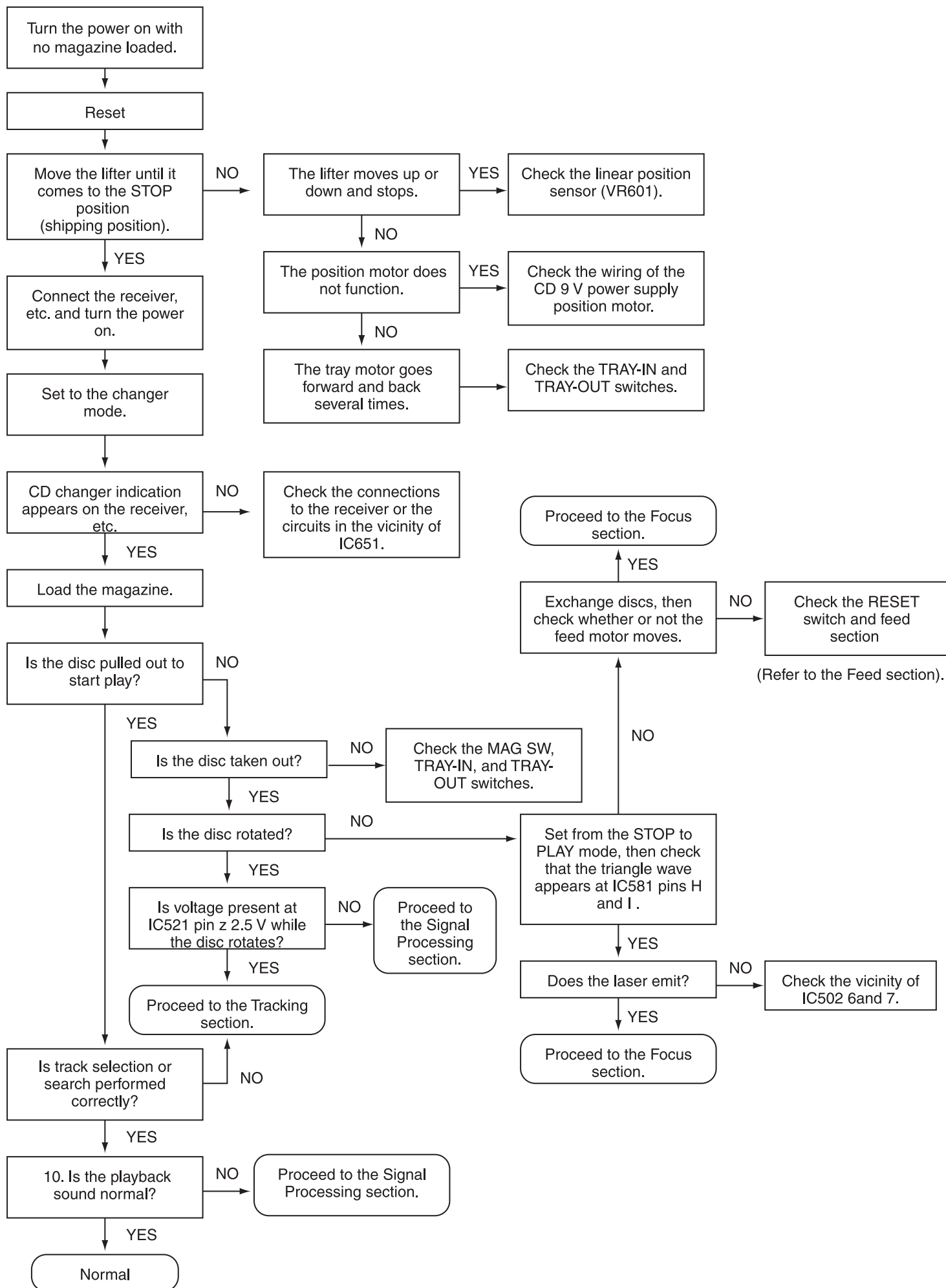


## ■ Flow Chart for Reading TOC (Table of Contents)



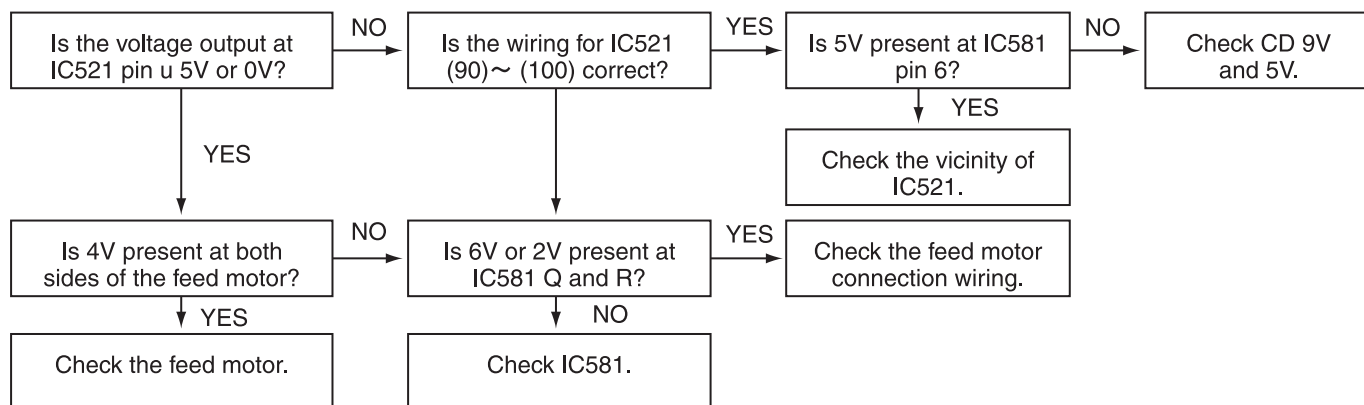


## ■ General Section

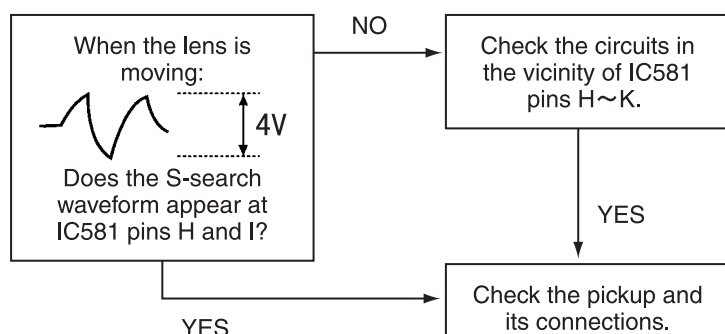




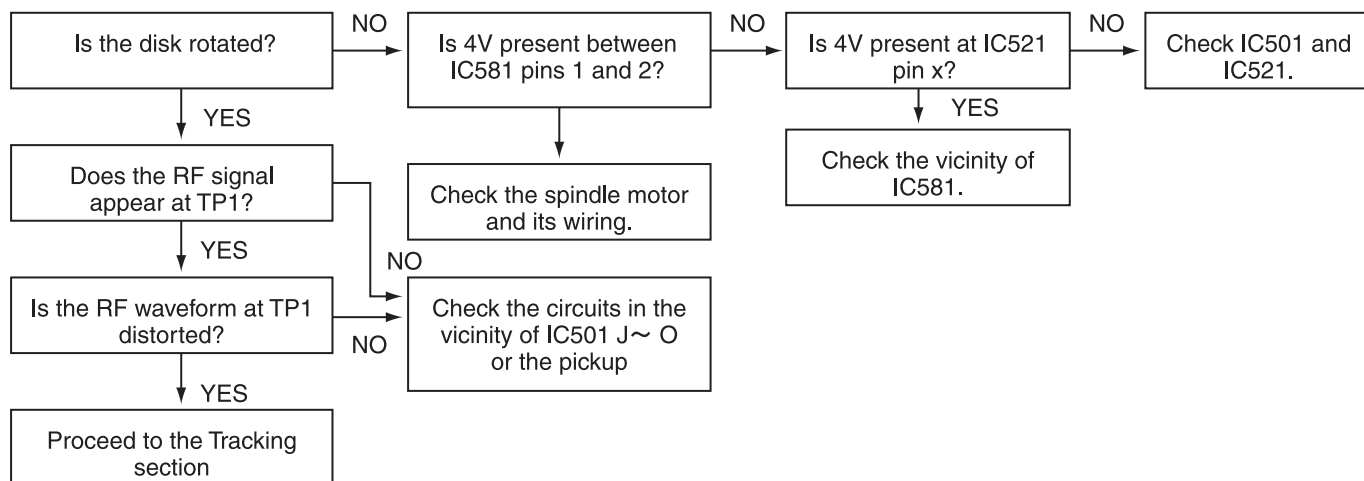
## ■ Feed Section



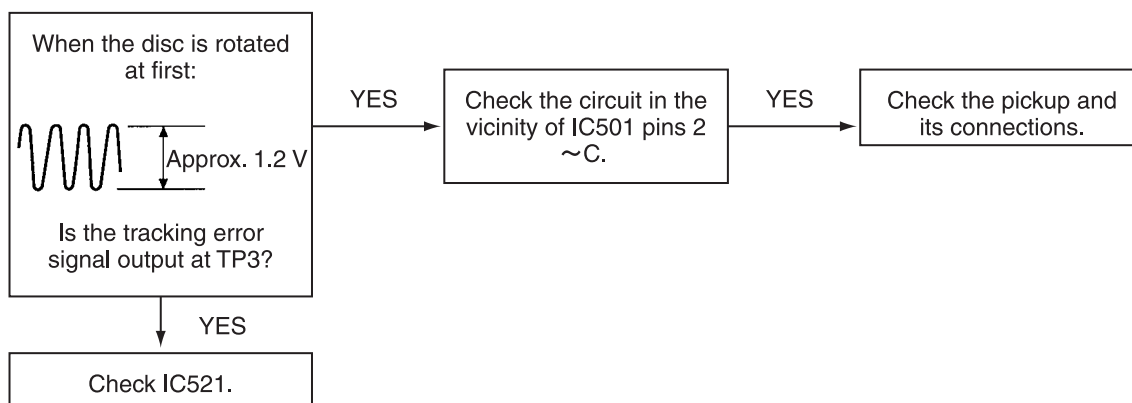
## ■ Focus Section



## ■ Spindle Section

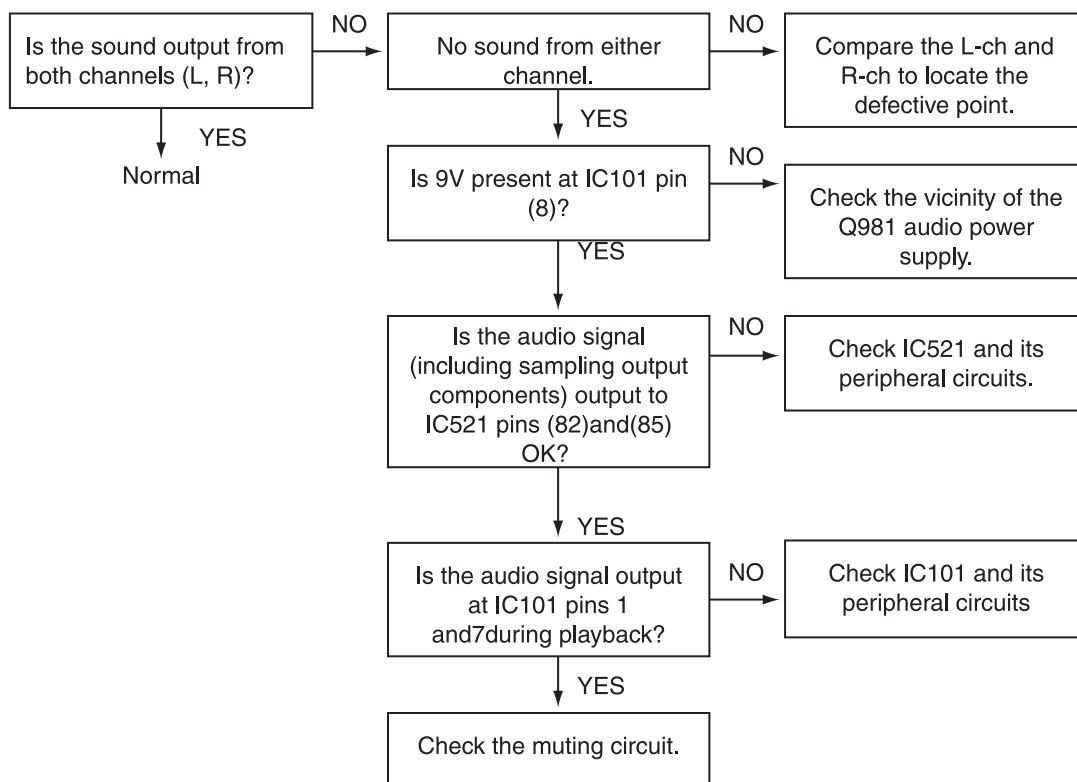


## ■ Tracking Section





## ■ Signal Processing Section





# Wiring Connections

5

4

3

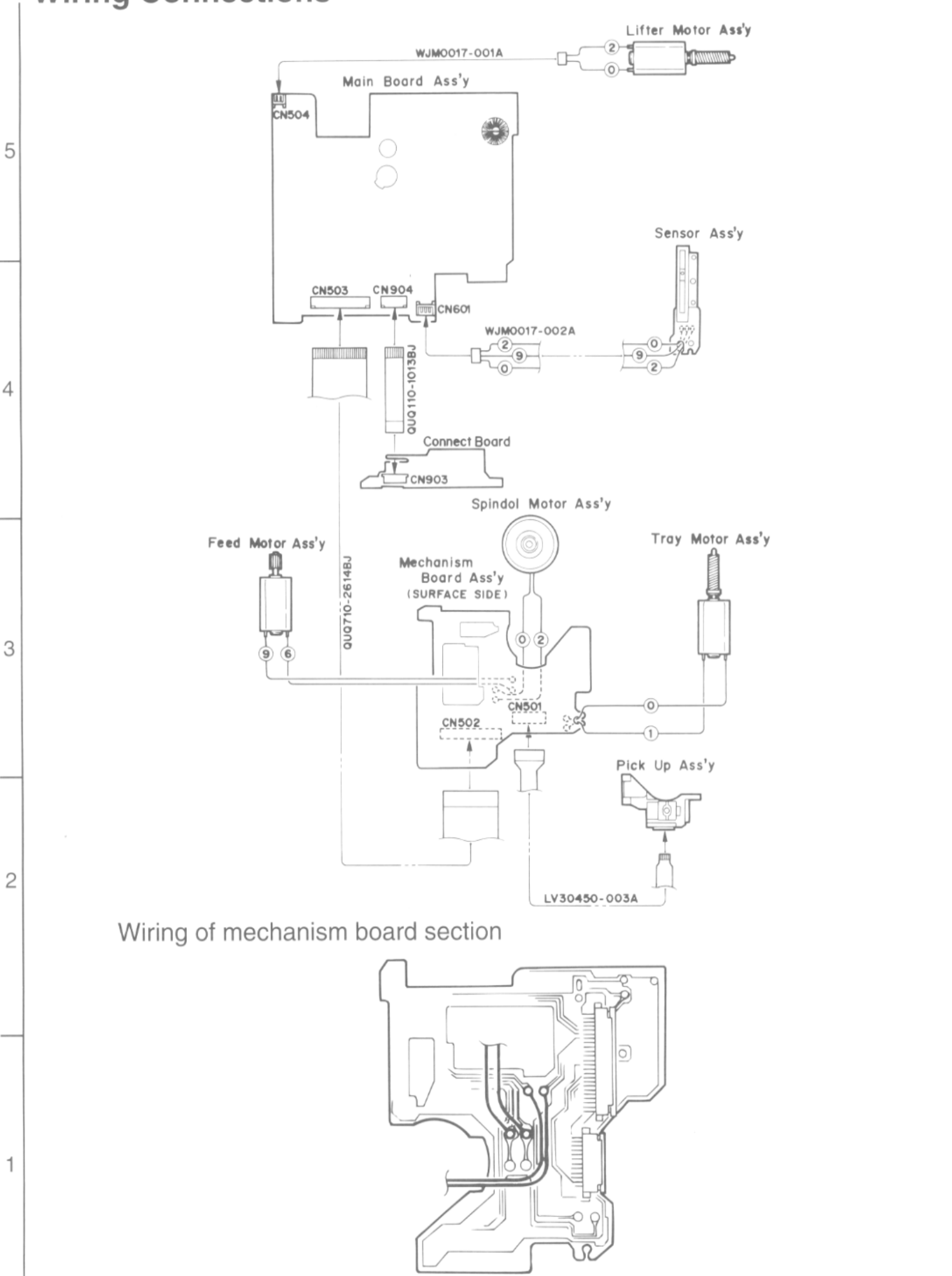
2

1

A

B

C



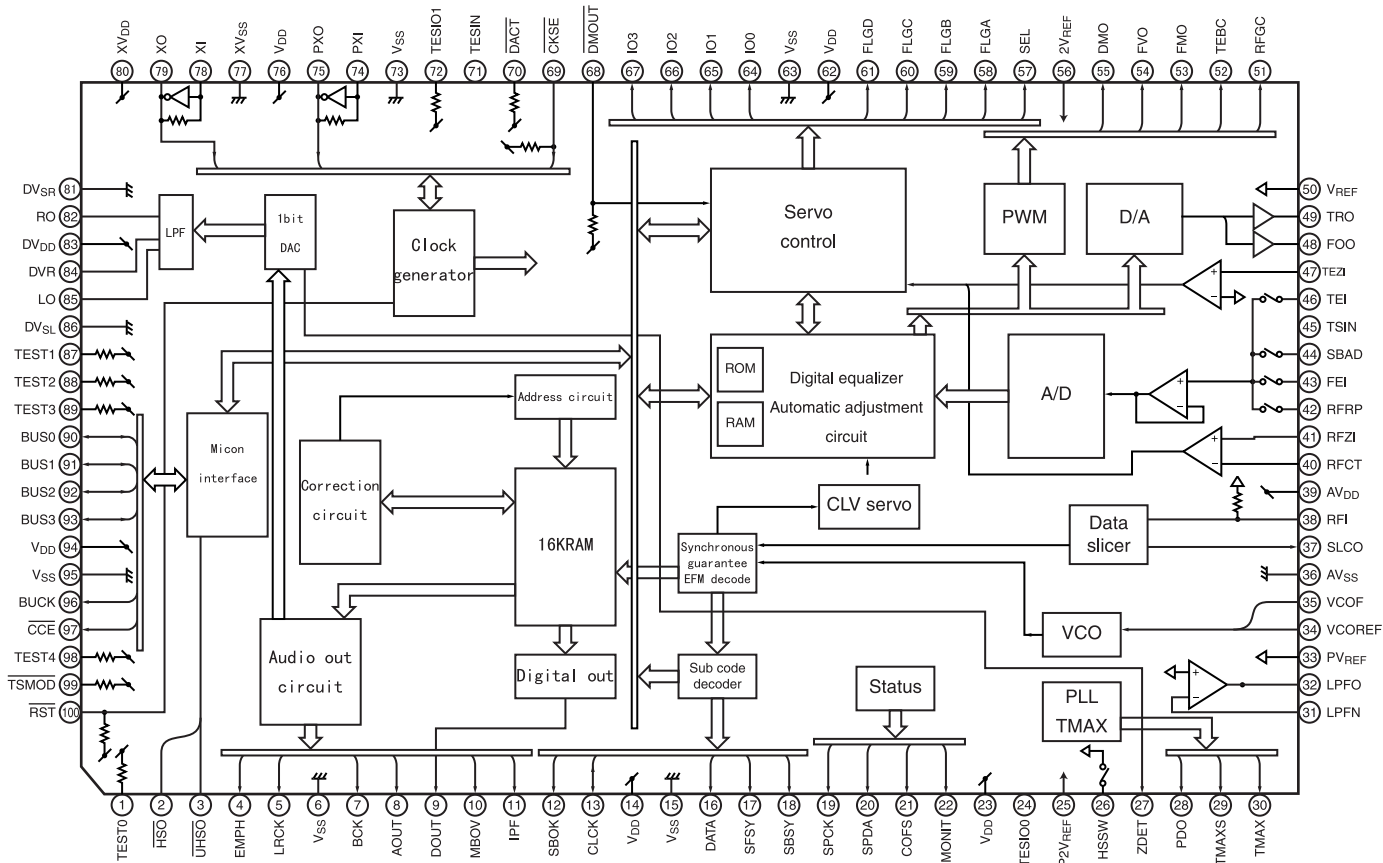
Wiring of mechanism board section



Description of Main ICs

IC521 TC9462F

1.Block Diagram (TOP VIEW)



2.Pin function

PIN No.	SYMBOL	I/O	FUNCTIONAL DESCRIPTION	REMARKS															
1	TEST0	I	Test mode terminal.Normally, Keep at open.	With pull-up resistor.															
2	$\overline{\text{HSO}}$	0	Playback speed mode fflag output terminal. <table><tr><th>UHSO</th><th><math>\overline{\text{HSO}}</math></th><th>PLAYBACK SPEED</th></tr><tr><td>H</td><td>H</td><td>Normal</td></tr><tr><td>H</td><td>L</td><td>2 times</td></tr><tr><td>L</td><td>H</td><td>4 times</td></tr><tr><td>L</td><td>L</td><td>—</td></tr></table>	UHSO	$\overline{\text{HSO}}$	PLAYBACK SPEED	H	H	Normal	H	L	2 times	L	H	4 times	L	L	—	—
UHSO	$\overline{\text{HSO}}$	PLAYBACK SPEED																	
H	H	Normal																	
H	L	2 times																	
L	H	4 times																	
L	L	—																	
3	$\overline{\text{UHSO}}$	0																	
4	EMPH	0	Subcode Q data emphasis flag output terminal.Emphasis ON at "H" level and OFF at "L" level.The output polarity can invert by command.	—															
5	LRCK	0	Channel clock output terminal.(44.1khz)L-ch at "L" level and R-ch at "H" level. the output polarity can invert by command.	—															
6	Vss	—	Digital GND terminal.	—															
7	BCK	0	Bit clock output terminal.(1.4122MHz)	—															
8	AOUT	0	Audio data output terminal.	—															
9	DOUT	0	Digital data output terminal.	—															
10	MBOV	0	Buffer memory over signal output terminal. Over at "H" level.	—															
11	IPF	0	Correction flag output terminal. At "H" level,AOUT output is made to correction impossibility by C2 correction processing.	—															
12	SBOK	0	Subcode Q data CRCC check adjusting result output terminal. The adjusting result is OK at "H" level.	—															
13	CLKK	I/O	Subcode P~W data reabout clock input/output terminal. This terminal can select by command bit.	—															
14	VDD	—	Digital power supply voltage terminal.	—															
15	Vss	—	Digital GND terminal.	—															
16	DATA	0	Subcode P~W data output terminal.	—															
17	SFSY	0	Play-back frame sync signal output terminal.	—															
18	SBSY	0	Subcode block sync signal output terminal.	—															
19	SPCK	0	Processor status signal reabout clock output terminal.	—															
20	SADA	0	Processor status signal output terminal.	—															
21	COFS	0	Correction frame clock output terminal. (7.35kHz)	—															
22	MONIT	0	Internal signal (DSP internal flag and PLL clock) output terminal.Selected by command. This terminal output the text data with serial by command.	—															
23	VDD	—	Digital power supply voltage terminal.	—															
24	TES100	I	Test input/output terminal.Normally,keep at "L" level. The terminal that inputted the clock for read of text data by command.	—															
25	P2VREF	—	PLL double reference voltage supply terminal.	—															

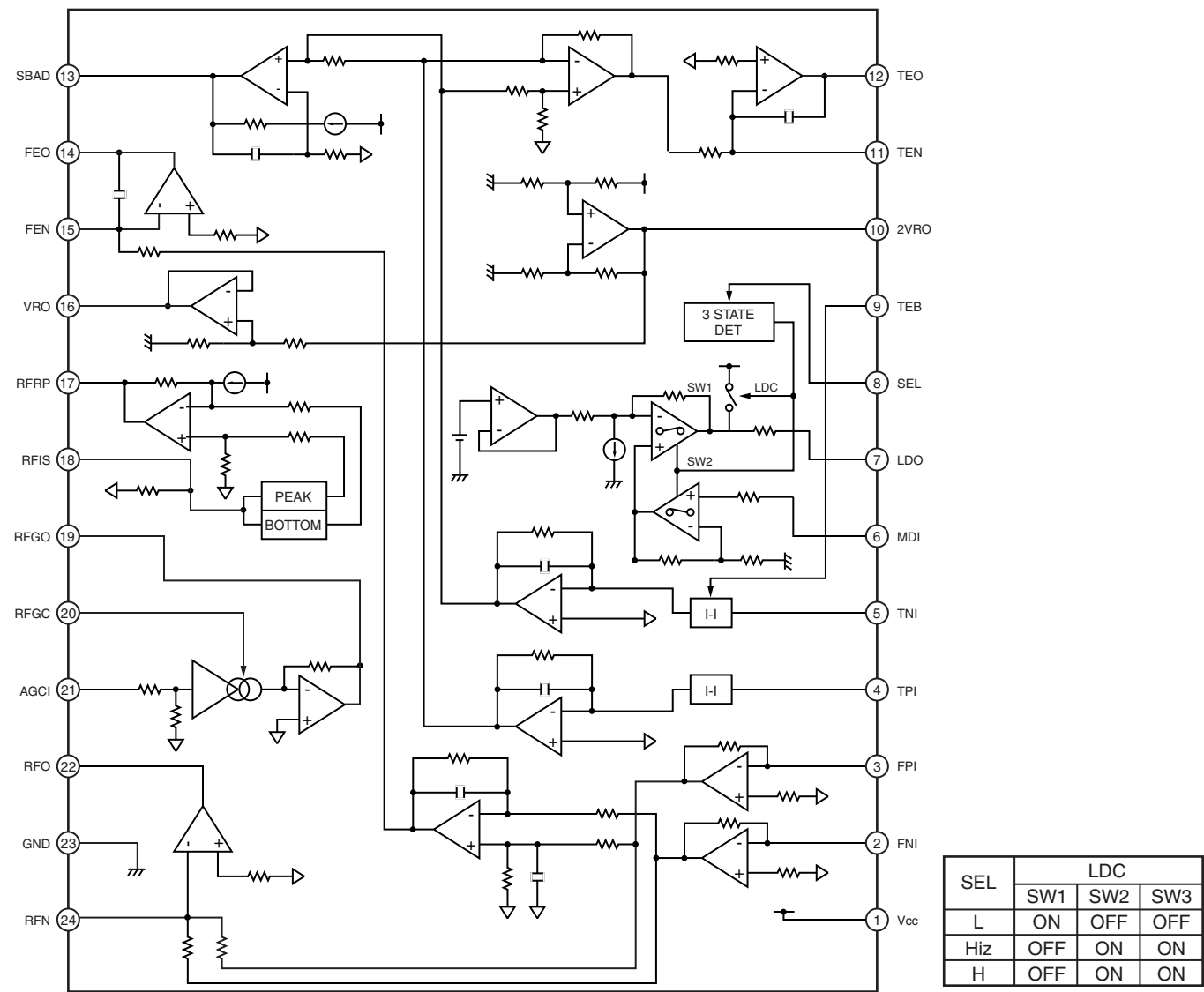


PIN No.	SYMBOL	I/O	Function	Remarks
26	HSSW	0	2/4 times speed at "VREF" voltage.	2-state output.(PVREF,HiZ)
27	ZDET	0	1bit DA converter zero detect flag output terminal.	
28	PDO	0	Phase difference signal output terminal of EFM signal and PLCK signal.	3-state output.(P2VREF,PVREF,Vss)
29	TMAXS	0	TMAX detection result output terminal. Selected by command bit (TMPS).	3-state output.(P2VREF,PVREF,Vss)
30	TMAX	0	DIFFERENCE RESULT	TMAX OUTPUT
			Longer than fixed freq.	"P2VREF"
			Shorter than fixed freq.	"VSS"
			Within than fixed freq.	"HiZ"
31	LPFN	I	LPF amplifier inverting input terminal for PLL.	Analog input.
32	LPFO	0	LPF amplifier output terminal for PLL.	Analog output.
33	PVREF	—	PLL reference voltage supply terminal.	
34	VCOREF	I	VCO center frequency reference level terminal. Normally, keep at "PVREF" level	
35	VCOF	0	VCO filter terminal.	Analog output.
36	AVSS	—	Analog GND terminal.	
37	SLCO	0	Data slice level output terminal.	Analog output.
38	RF I	I	RF signal input terminal.	Analog input.(Zin : selected by command)
39	AVDD	—	Analog power supply voltage terminal.	
40	RFCT	I	RFRP signal center level input terminal.	Analog input.(Zin : 50kΩ )
41	RFZI	I	RFRP zero cross input terminal.	Analog input.
42	RFRP	I	RF ripple signal input terminal.	Analog input.
43	FE I	I	Focus error signal input terminal.	Analog input.
44	SBAD	I	Sub-beam adder signal input terminal.	Analog input.
45	TSIN	I	Test input terminal.Normally, keep at "VREF" level.	Analog input.
46	TE I	I	Tracking error signal input terminal.Take in at tracking servo on.	Analog input.
47	TEZI	I	Tracking error zero cross input terminal.	Analog input.(Zin : 10kΩ )
48	FOO	0	Focus servo equalizer output terminal.	Analog output.(2VREF~AVss)
49	TRO	0	Tracking servo equalizer output terminal.	
50	VREF	—	Analog reference voltage supply terminal.	
51	RFGC	0	RF amplitude adjustment control signal output terminal.	3-state output. (2VREF,VREF,Vss) (PWM carrier=88.2kHz)
52	TEBC	0	Tracking balance control signal output terminal.	
53	FMO	0	Feed equalizer output terminal.	
54	FVO	0	Speed error signal or feed search equalizer output terminal.	
55	DMO	0	Disk equalizer output terminal. (PWM carrier=88.2kHz for DSP,Synchronize to PXO)	3-state output. (2VREF,VREF,Vss)
56	2VREF	—	Analog double reference voltage supply terminal.	
57	SEL	0	APC circuit ON/OFF indication signal output terminal. At the laser on time, UHF=L at "Hi-Z" level and UHF=H at "H" level.	
58	FLGA	0	External flag output terminal for internal signal. Can select signal from TEZC,FOON,FOK and RFZC by command.	
59	FLGB	0	External flag output terminal for internal signal. Can select signal from DECT,FOON,FMON and RFZC by command.	
60	FLGC	0	External flag output terminal for internal signal. Can select signal from TRON,TRSR,FOK and SRCH by command.	
61	FLGD	0	External flag output terminal for internal signal. Can select signal from TRON,DMON,HYS and SHC by command.	
62	VDD	—	Digital power supply voltage terminal.	
63	VSS	—	Digital GND terminal.	
64	IO0	I/O	General I/O terminal. Can change over input port or output port by command.	
65	IO1		At the input mode time can reabout a state of terminal (H/L) by read command.	
66	IO2		At the output mode time can control a state of terminal (H/L/HiZ) by command.	
67	IO3			
68	DMOUT	I	This terminal controls IO0~IO3 terminal. At "L" level time, IO0,1 out feed equalizer signal of 2-state PWM, IO2, 3 out disk equalizer signal of 2-state PWM.	With pull-up resistor.
69	CKSE	I	Normally, keep at open.	With pull-up resistor.
70	DACI	I	DAC test mode terminal. Normally, keep at open.	With pull-up resistor.
71	TESIN	I	Test input terminal. Normally, keep at "L" level.	Analog input.
72	TESIO1	I	Test input/output terminal. Normally, keep at "L" level.	Analog input.
73	VSS	—	Digital GND terminal.	
74	PXI	I	Crystal oscillator connecting input terminal for DSP. Normally, keep at "L" level.	
75	PXO	0	Crystal oscillator connecting output terminal for DSP.	
76	VDD	—	Digital power supply voltage terminal.	
77	XVSS	—	Oscillator GND terminal for system clock.	
78	XI	I	Crystal oscillator connecting input terminal for system clock.	
79	XO	0	Crystal oscillator connecting output terminal for system clock.	
80	XVDD	—	Oscillator power supply voltage terminal for system clock.	
81	DVSR	—	Analog GND terminal for DA converter. (R-ch)	
82	RO	0	R channel data forward output terminal.	
83	DVDD	—	Analog supply voltage terminal for DA converter.	
84	DVR	—	Reference terminal for DA converter.	
85	LO	0	L channel data forward output terminal.	
86	DVSL	—	Analog GND terminal for DA converter. (L-ch)	
87	TEST1	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
88	TEST2	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
89	TEST3	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
90	BUS0	I/O	Micon interface data input / output terminal.	Schmit input. With pull-up resistor.
91	BUS1	I/O		
92	BUS2	I/O		
93	BUS3	I/O		
94	VDD	—	Digital power supply voltage terminal.	
95	VSS	—	Digital GND terminal.	
96	BUCK	I	Micon interface clock input terminal.	Schmit input.
97	CCE	I	Command and data sending / receiving chip enable signal input terminal. The bus line becomes active at "L" level.	Schmit input.
98	TEST4	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
99	TSMOD	I	Local test mode selection terminal.	With pull-up resistor.
100	RST	I	Reset signal input terminal. Reset at "L" level.	With pull-up resistor.



IC501 TA2109F

1.Block Diagram



2.Function

PIN No.	SYMBOL	I/O	Function
1	Vcc	—	Power supply input terminal
2	FNI	I	Main beam I-V amp. input terminal
3	FPI	I	Main beam I-V amp. input terminal
4	TPI	I	Sub beam I-V amp. input terminal
5	TNI	I	Sub beam I-V amp. input terminal
6	MDI	I	Monitor photo diode amp. input terminal
7	LDO	O	Laser diode amp. output terminal
8	SEL	I	Laser diode control signal input terminal and APC circuit ON/OFF control signal input terminal
9	TEB	I	Tracking error balance adjustment signal input terminal Controlled by 3PWM signal (PWM carrier=88.2khz)
10	2VRO	O	Reference voltage (2VREF) output terminal 2VREF=4.2V when Vcc=5V
11	TEN	I	TE amp. negative input terminal
12	TEO	O	TE error signal output terminal
13	SBAD	O	Sub beam adder signal output terminal
14	FEO	O	Focus error signal output terminal
15	FEN	I	FE amp. negative input terminal
16	VRO	O	Reference voltage (VREF) output terminal VREF=2.1V when Vcc=5V
17	RFRP	O	Track count signal output terminal
18	RFIS	I	RFRP detect circuit input terminal
19	RFGO	O	RF gain signal output terminal
20	RFGC	I	RF amplitude adjustment control signal input terminal controlled by 3PWM signal
21	AGCI	I	RF signal amplitude adjustment amp. input terminal
22	RFO	O	RF signal output terminal
23	GND	—	Ground terminal
24	RFN	I	RF amp. negative input terminal



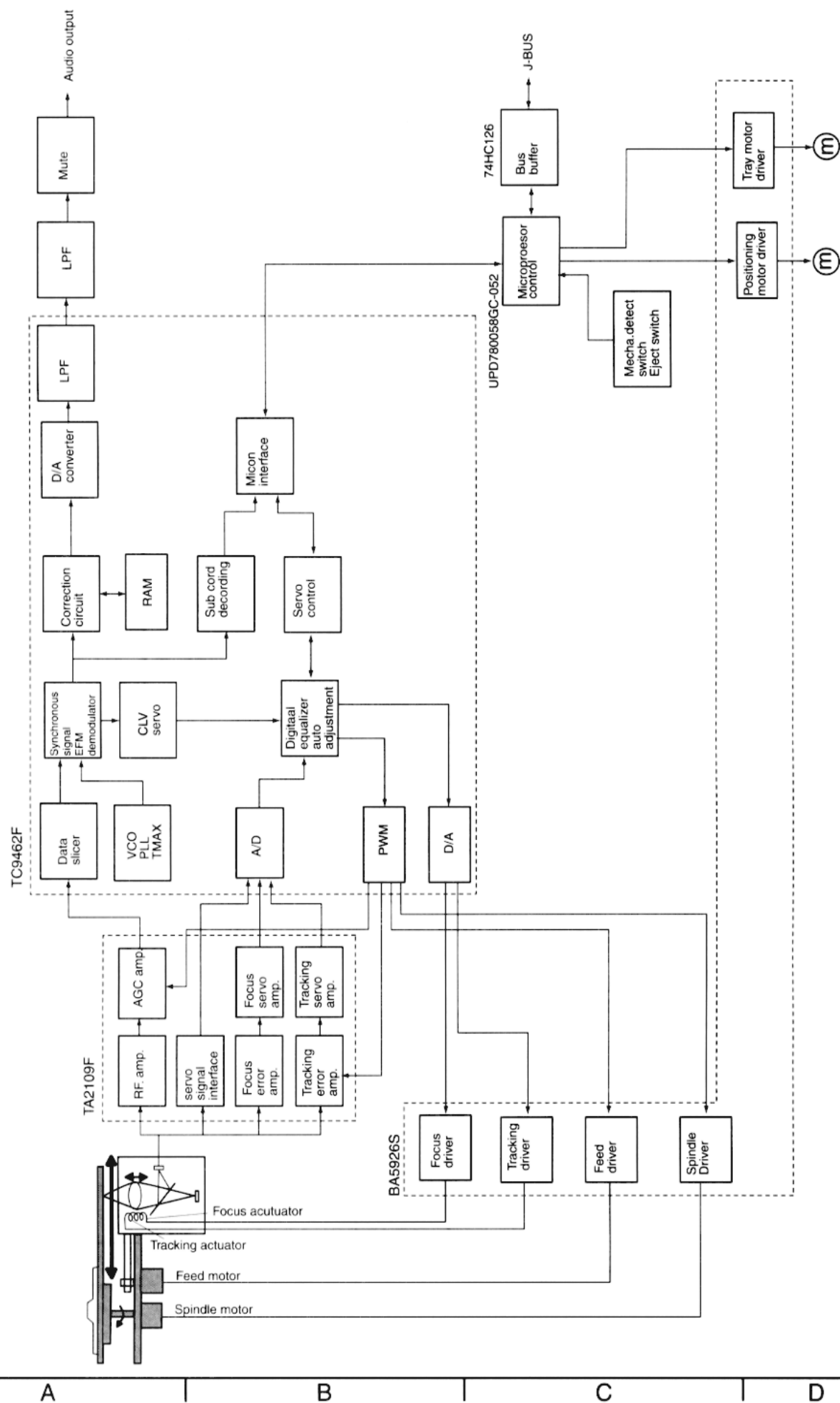
## ■ IC601 (UPD780058GC-052) CPU

PIN No.	PORT Name	I/O	Function	Active
1	LCDDA	O	LCD driver data output	
2	LCDSCK	O	LCD driver clock output	
3	LCDCE	O	LCD driver chip enable output	
4	AVSS	-	Connect to ground	
5	ADCOU	O	Power on Hi output. Low in stop mode.	H
6	NC	O	Unused output port	
7	AVREF1	-	Connect to 5V	
8	NC	O	Unused output port	
9	NC	O	Unused output port	
10	CDCHECK	I	CD check mode input. Reset only.	
11	EPROMDI	I/O	EEPROM data input	
12	EOROMDO	O	EEPROM data output. Hi during input.	
13	EPROMCK	I/O	EEPROM clock input/output	
14	LED	O	Lifter LED output	H
15	BUS I/O	O	JVC bus input/output control (Lo: input)	
16	BUS SI	I	JVC bus data input	
17	BUS SO	O	JVC bus data output	
18	BUS SCK	I/O	JVC bus clock input/output	
19	NC	O	Unused output port	
20	NC	O	Unused output port	
21	NC	O	Unused output port	
22	NC	O	Unused output port	
23	NC	O	Unused output port	
24	NC	O	Unused output port	
25	BUSOUT	O	JVC bus output	H
26	CD ON	O	CD power control Hi: on	H
27	PWR CONT	O	Power supply control output Hi: on	H
28	POS MO+	O	Position motor control output	
29	POS MO-	O	Position motor control output	
30	TRAY MO+	O	Tray motor control output	
31	TRAY MO-	O	Tray motor control output	
32	BUCK	O	CD LSI data clock	
33	VSS1	-	Connect to ground	
34	LSI RESET	O	CD LSI reset	L
35	CCE	O	CD LSI chip enable	
36	BUS0	I/O	CD LSI data 0 (open drain)	
37	BUS1	I/O	CD LSI data 1 (open drain)	
38	BUS2	I/O	CD LSI data 2 (open drain)	
39	BUS3	I/O	CD LSI data 3 (open drain)	
40	NC	O	Unused output port	

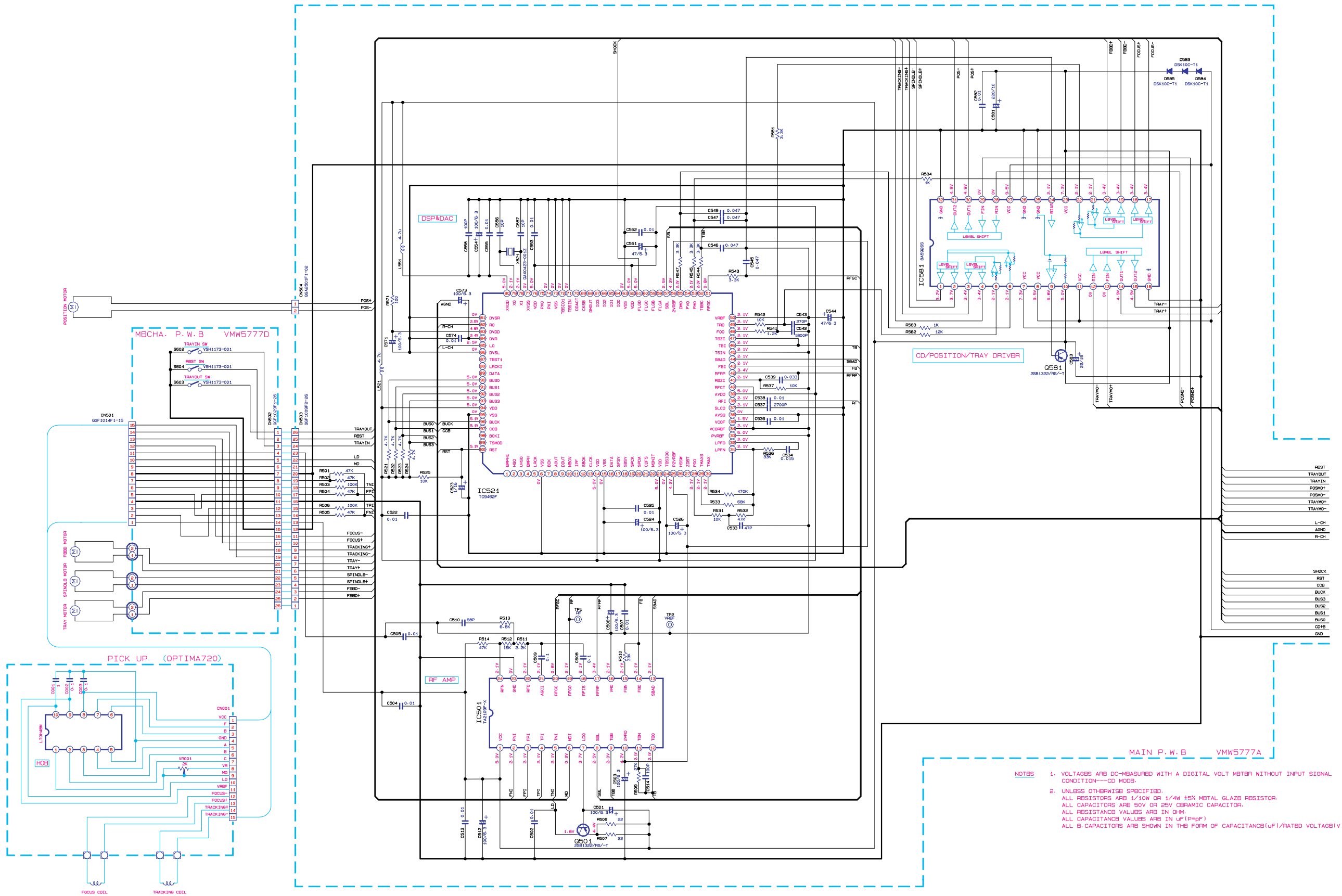
PIN No.	PORT Name	I/O	Function	Active
41	NC	O	Unused output port	
42	NC	O	Unused output port	
43	NC	O	Unused output port	
44	MAG IN	I	Magazine switch Lo: magazine inserted	L
45	TRAY IN	I	Tray retract switch Lo: retraction complete	L
46	TRAY OUT	I	Tray extend switch Lo: extension complete	L
47	REST	I	Rest switch	L
48	NC	O	Unused output port	
49	EMPH	O	Emphasis select output Hi: on	H
50	NC	O	Unused output port	
51	BUFF CONT	O	Buffer control output	L
52	TEST RUN	I	Test running input	L
53	NC	O	Unused output port	
54	NC	O	Unused output port	
55	NC	O	Unused output port	
56	MUTE	O	Mute output. When reverse of earlier audio mute. Mute power OR output	H
57	STAGE	I	LCD, AD key, remote inhibit selector Low: inhibit	L
58	NC	O	Unused output port	
59	EPROM CLF	I	EEPROM clear input Functional only during reset	L
60	RESET	I	Reset input (includes flash write in function)	L
61	REMOCON	I	Remote controller signal input	
62	PWR DET	I	Memory power detect input	
63	PWR SW	I	CRTL+B detect input	
64	BUS INT	I	JVC bus com start interrupt input	
65	EJECT	I	Eject key input	
66	NC	I	Unused output port	L
67	VSS0	-	Connect to ground	
68	VDD1	-	Connect to 5V	
69	X2	O	Oscillator (4.19430 MHz)	
70	X1	I	Oscillator (4.19430 MHz)	
71	IC	-	Connect to ground	
72	XT2	O	Open	
73	XT1	I	Connect to VDD	
74	VDD	-	Connect to 5V	
75	AVREF0	-	Connect to ADCONT	
76	L SENSOR	I	Linear sensor input (8 bit A/D input)	
77	KEY1	I	Key input 1 (8 bit A/D input)	
78	KEY2	I	Key input 2 (8 bit A/D input)	
79	KEY3	I	Key input 3 (8 bit A/D input)	
80	KEY0	I	Key input 0 (8 bit A/D input)	



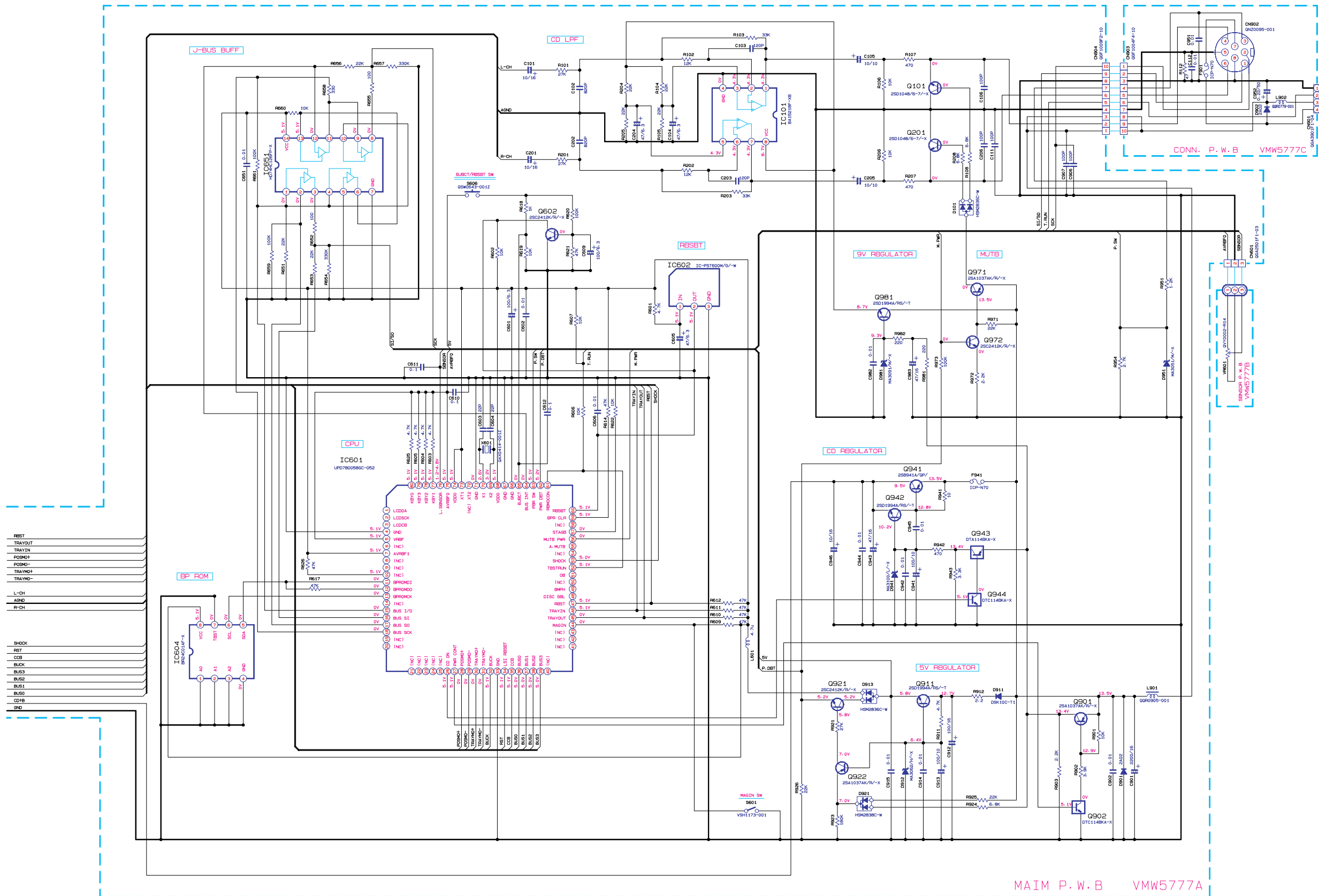
# Brock Diagram









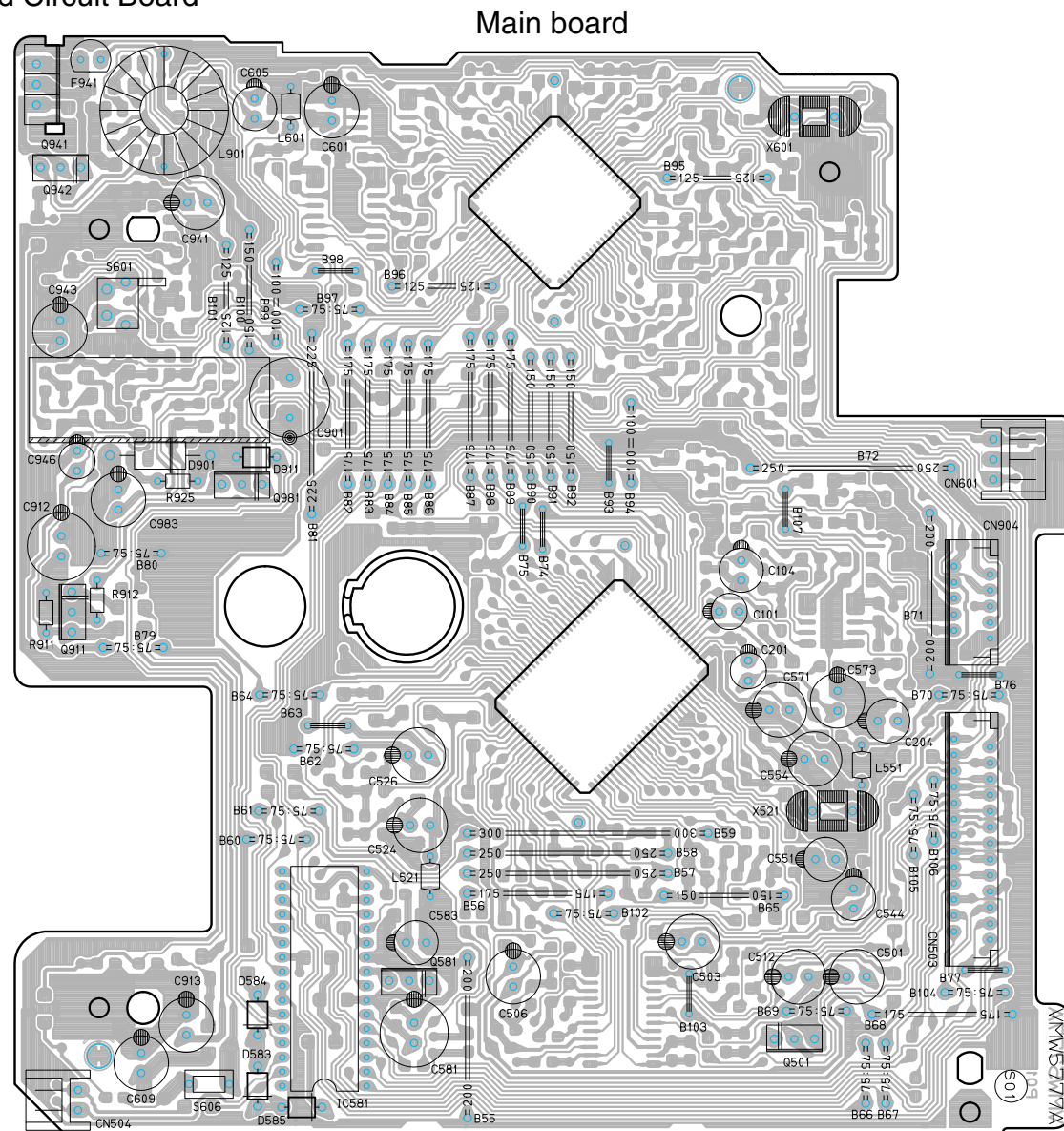


DTA1148KA		
DTA1148KA		

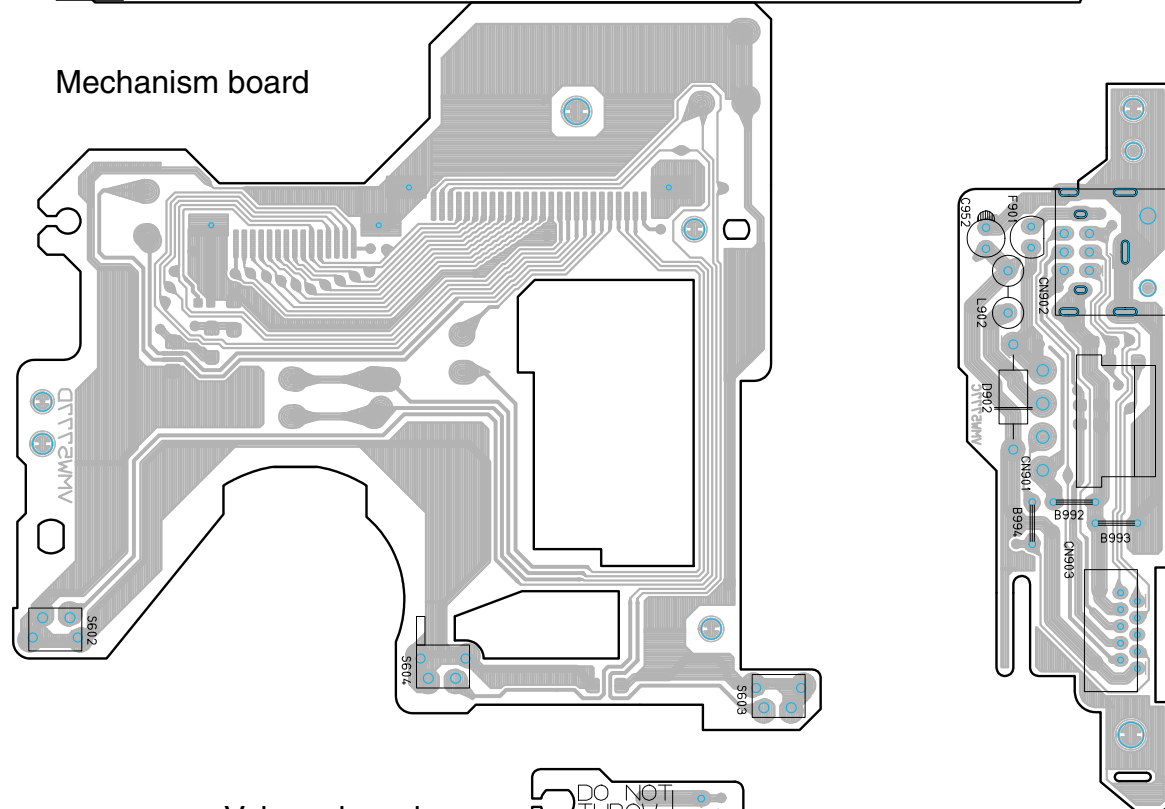
- NOTES**
- VOLTAGES ARE DC-MEASURED WITH A DIGITAL VOLT METER WITHOUT INPUT SIGNAL CONDITION—CD MODE.
  - UNLESS OTHERWISE SPECIFIED.  
ALL RESISTORS ARE 1/10W OR 1/4W 1% METAL GLAZE RESISTOR.  
ALL CAPACITORS ARE 50V OR 25V CERAMIC CAPACITOR.  
ALL RESISTANCE VALUES ARE IN OHM.  
ALL CAPACITANCE VALUES ARE IN pF (pFpF).  
ALL CAPACITORS ARE SHOWN IN THE FORM OF CAPACITANCE (pF)/RATED VOLTAGE (V).



Printed Circuit Board



Mechanism board

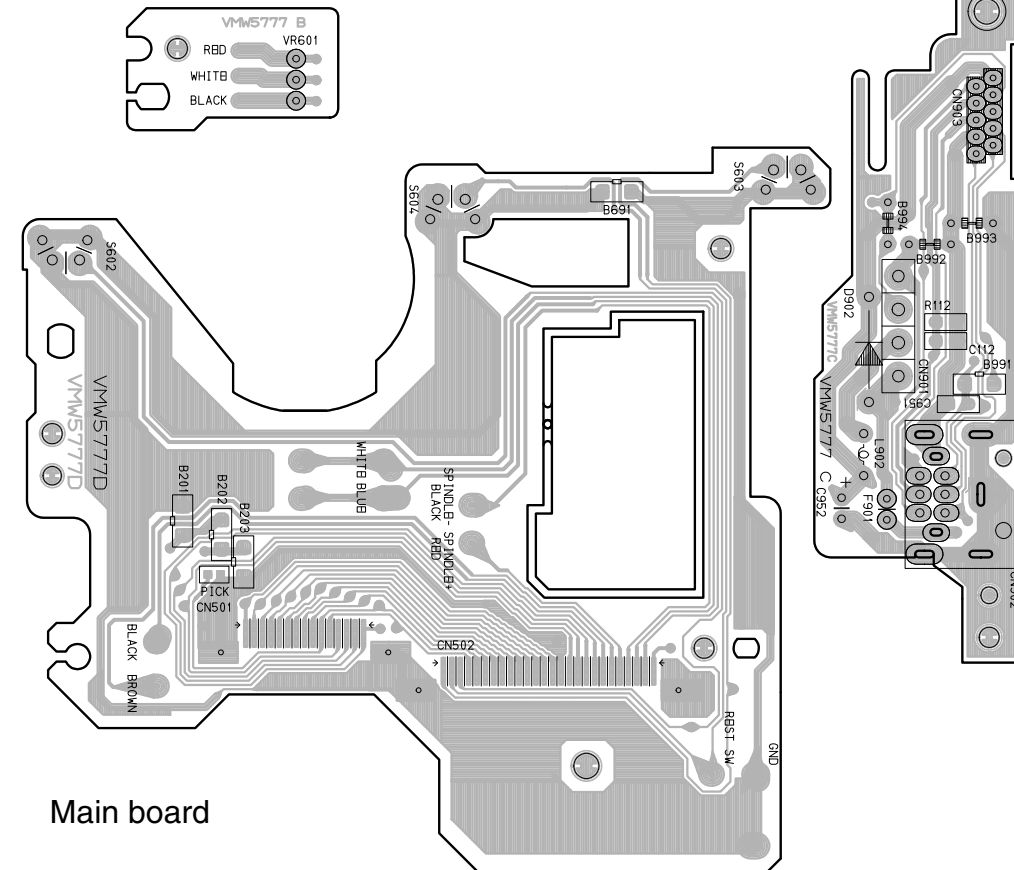


## Volume board



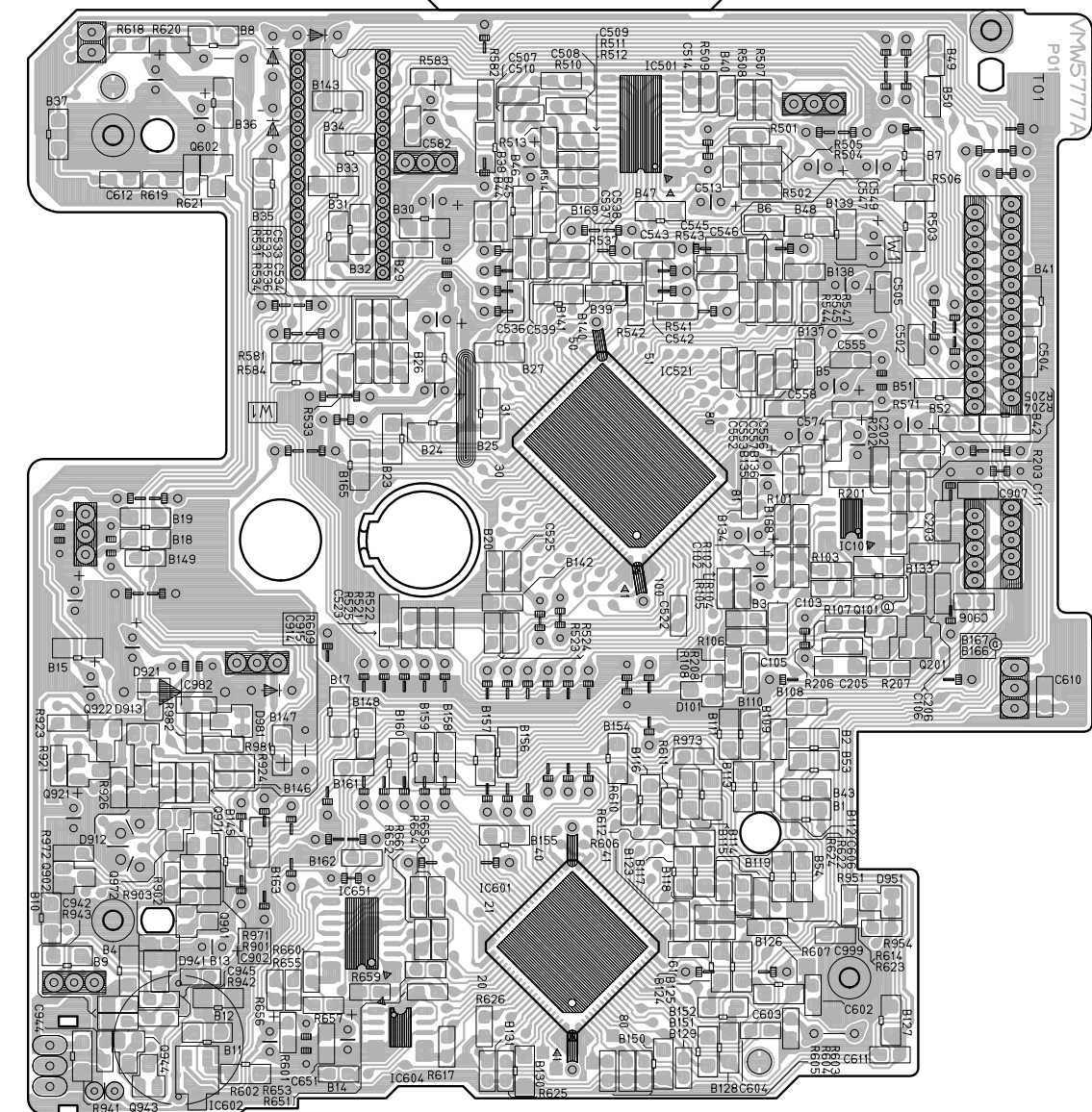
8Pin connector board

Volume board



8Pin connector board

Main board





# PARTS LIST

[ CH-X200 ]

\* All printed circuit boards and its assemblies are not available as service parts.

## Areas Suffix

E ----- Continental Europe  
J ----- Northern America  
U ----- Other Areas  
No marks indicates all areas.

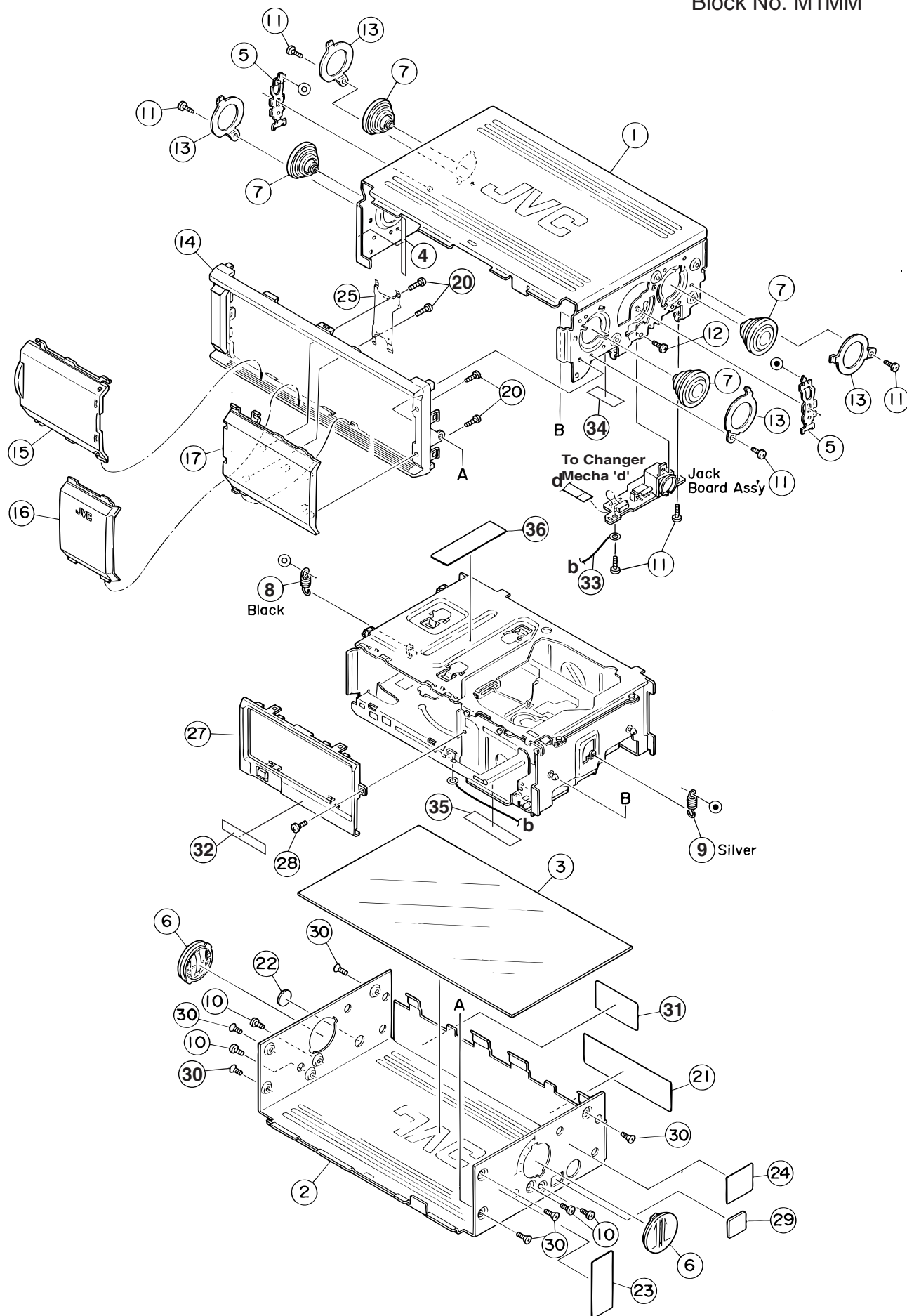
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# Exploded View of General Assembly and Parts List

Block No. M1MM





## ■ Parts List (General Assembly)

BLOCK NO. M1MM

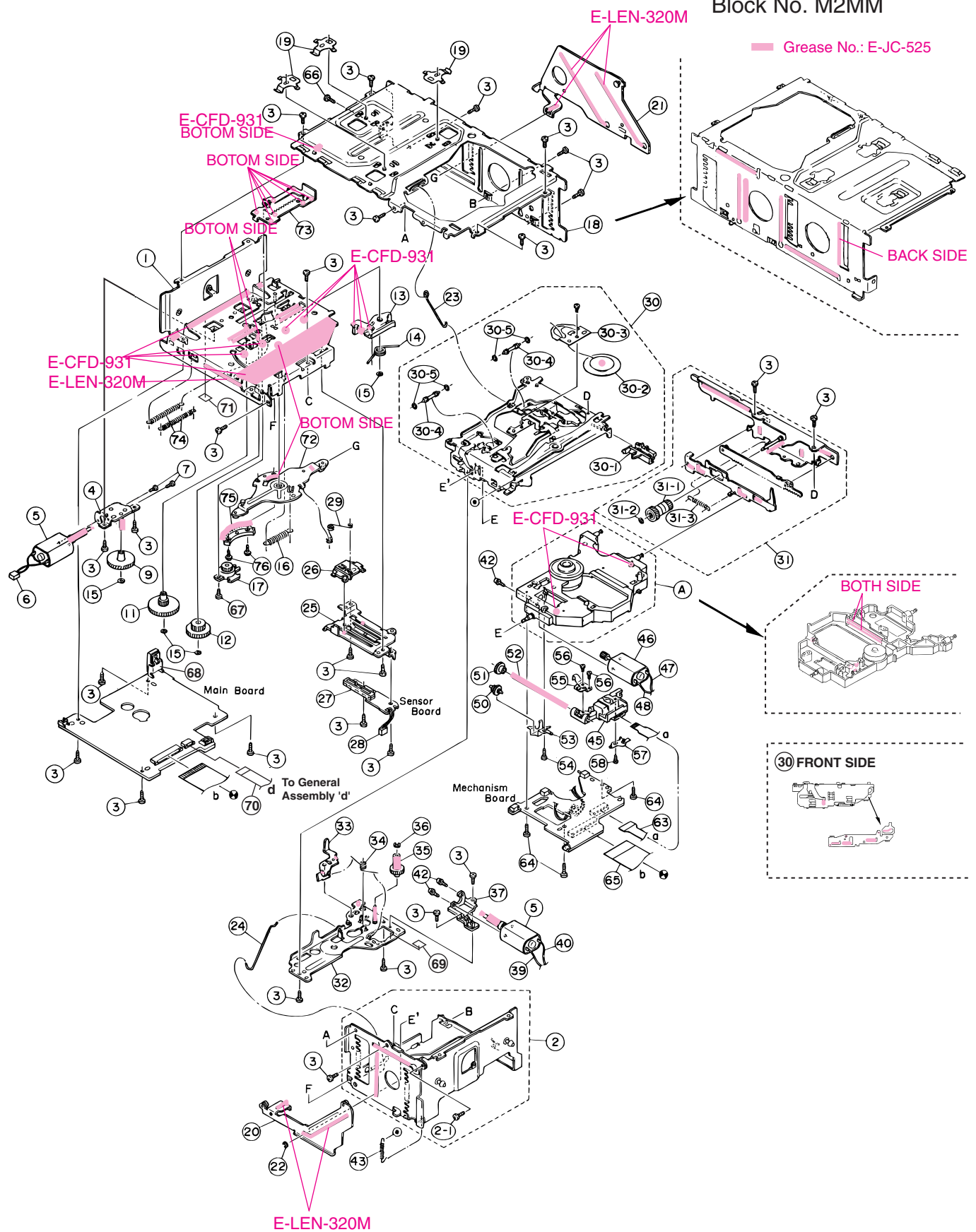
△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY	SUFFIX	CLR
	1	LV10040-003A	TOP COVER		1		
	2	LV10041-003A	BOTTOM COVER		1		
	3	LV30632-001A	INSULATOR		1		
	4	VYSH101-031	SPACER		1		
	5	LV40530-001A	BRACKET		2		
	6	LV30360-003A	DIRECTION KNOB	BOTTOM REAR SID	2		
	7	LV30451-001A	DAMPER		4		
	8	LV40346-002A	DAMPER SP(L)		1		
	9	LV40345-002A	DAMPER SP(R)		1		
	10	QYSDST2604M	SCREW		4		
	11	QYSDSR2006Z	SCREW	8P+TOP	6		
	12	QYSDST2606Z	SCREW		1		
	13	LV40529-001A	DAMPER BRACKET		4		
	14	LV10149-001A	FRONT PANEL		1		
	15	LV20282-001A	DOOR-1		1		
	16	LV20283-001A	DOOR-2		1		
	17	LV20284-001A	DOOR-3		1		
	20	QYSDSF2006Z	SCREW		4		
	21	LV30795-001A	NAME PLATE		1	U	
		LV30796-001A	NAME PLATE		1	J	
		LV31041-001A	NAME PLATE		1	E	
	22	VYSS2R2-028	SPACER		1		
	23	LV40762-001A	CAUTION LABEL		1		
	24	LV40487-003A	CAUTION LABEL		1		
	25	LV30786-001A	HOLD BRACKET		1		
	27	LV20065-002A	FITTING		1		
	28	QYSDSR2004Z	SCREW		1		
	29	LV40528-001A	LABEL		1		
	30	QYSSST2605M	SCREW		6		
	31	E70891-001	CLASS 1 LABEL		1	E	
		VND4922-003	CAUTION LABEL	J	1	J	
	32	LV40706-003A	CAUTION LABEL		1		
	33	QUB220-16RLRL	WIRE		1		
	34	VYSA1R4-056	SPACER		1		
	35	LV40847-001A	SPACER(H)		1		
	36	E406709-001	LASER CAUTION		1	E	



# CD Changer Mechanism Ass'y and Parts List

Block No. M2MM

Grease No.: E-JC-525





## ■ Parts List (CD Changer Mechaism)

BLOCK NO. M2MM

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY	SUFFIX	CLR
	A	LV30928-001A	TRA MECHA UNIT		1		
	1	LV30096-002A	CHASSIS(L) ASSY		1		
	2	LV30097-001A	CHASSIS(R) ASSY		1		
	2-1	QYSDST2004Z	SCREW		1		
	3	QYSDST2004Z	SCREW		27		
	4	LV40129-003A	MOTOR BKT ASS'Y		1		
	5	PPN13KA10C-SA5	MOTOR ASS'Y		2		
	6	WJM0017-001A	E-SI C WIRE C-F		1		
	7	QYSPSPT2025M	MINI SCREW		2		
	9	LV40131-001A	WORM WHEEL(P)		1		
	11	LV40132-003A	THIRD GEAR		1		
	12	LV40133-005A	LIFTER GEAR		1		
	13	LV30100-002A	APLOCK ARM		1		
	14	LV40134-003A	M.LOCK SPRING		1		
	15	QYWDL163525-6	SLIT WASHER		4		
	16	LV40142-003A	LIFTER SPRING		1		
	17	LV40478-002A	EJECT DAMPER		1		
	18	LV10027-002A	TOP COVER		1		
	19	LV30101-002A	MAGAZINE SPRING		3		
	20	LV30448-001A	FRONT SLIDER AS		1		
	21	LV30449-001A	REAR SLIDER ASS		1		
	22	REE1500X	E.RING		1		
	23	LV40135-002A	ROD(U)		1		
	24	LV40136-002A	ROD(L)		1		
	25	LV30104-001A	SENSOR BRACKET		1		
	26	LV30105-001A	SENSOR HOLDER		1		
	27	QVY0002-B14	S V RESISTOR		1		
	28	WJM0017-002A	E-SI C WIRE C-F		1		
	29	LV40137-001A	SENSOR SPRING		1		
	30	LV20067-001A	*LIFTER UNIT		1		
	30-1	LV30110-001A	HOOK		1		
	30-2	VKR3203-001	CLAMPER		1		
	30-3	VKL7938-001	CLAMPER GUIDE		1		
	30-4	VKS5587-002	DETECT ROLLER		2		
	30-5	VKZ4563-005	O RING		4		
	31	LV30148-004A	SIDE BKT UNIT		1		
	31-1	LV40148-003A	TRAY GEAR		1		
	31-2	QYWDL163525-6	SLIT WASHER		1		
	31-3	LV40190-002A	RETURN SP.(R)		1		
	32	LV40149-002A	L.BKT(L) ASSY		1		
	33	LV30119-001A	SWITCH LEVER		1		
	34	LV40151-002A	SWITCH SPRING		1		
	35	LV40152-001A	WORM WHEEL(T)		1		
	36	REE1500X	E.RING		1		
	37	LV30120-001A	T.MOTOR HOLDER		1		
	39	QUB540-10A2A2	WIRE(T.MOTOR)		1		
	40	QUB541-11A2A2	WIRE(T.MOTOR)		1		
	42	QYSPSPL2004Z	SCREW		3		
	43	LV40474-001A	ELEVATOR SPRING		1		
	45	OPTIMA-720A1	CD PICK UNIT		1		
	46	FF050SK11170SA2	DC MOTOR ASS'Y		1		
	47	QUB456-04A2A2	WIRE(F.MOTOR)		1		
	48	QUB459-05A2A2	WIRE(F.MOTOR)		1		
	50	LV40155-001A	MIDDLE GEAR		1		
	51	LV40156-001A	S.S. GEAR		1		



## ■ Parts List

BLOCK NO. M2MM

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY	SUFFIX	CLR
	52	LV40157-001A	SCREW SHAFT		1		
	53	LV30122-001A	SHAFT HOLDER		1		
	54	VKZ4248-204	MINI TAP SCREW		1		
	55	LV30123-001A	RACK ARM		1		
	56	QYSPSPT1722M	SCREW		2		
	57	LV30124-001A	P.S. SPRING		1		
	58	QYSPSPU1414M	MINI SCREW		1		
	63	LV30450-003A	PICK FPC		1		
	64	QYSDST2006Z	SCREW		3		
	65	QUQ710-2614BJ	FFC		1		
	66	QYSDSP2606Z	SCREW		1		
	67	QYSDSR2006Z	SCREW		1		
	68	VKL7059-002	P.W.B.BRACKET		1		
	69	VYSA1R4-088	SPACER		1		
	70	QUQ110-1013BJ	FFC		1		
	71	VYSH102-102	SPACER		1		
	72	LV40123-003A	LIFTER ARM ASSY		1		
	73	LV30098-003A	EJECT SLIDER		1		
	74	LV40126-003A	EJECT SPRING		2		
	75	LV30822-001A	L.A.GEAR		1		
	76	LV40938-001A	SPECIAL SCREW		2		



## Electrical Parts List

BLOCK NO. 01						BLOCK NO. 01					
A	REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX	A	REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
	C 101	QER41CM-106	E CAPACITOR	10MF 20% 16V			C 574	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 102	NCS21HJ-821X	C CAPACITOR	820PF 5% 50V			C 581	QER41AM-227	E CAPACITOR	220MF 20% 10V	
	C 103	NCS21HJ-121X	C CAPACITOR	120PF 5% 50V			C 582	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 104	QERF0JM-476Z	E CAPACITOR	47MF 20% 6.3V			C 583	QER41CM-226	E CAPACITOR	22MF 20% 16V	
	C 105	NBE21AM-106X	E CAPACITOR				C 601	QER40JM-107	E CAPACITOR	100MF 20% 6.3V	
	C 106	NCS21HJ-101X	C CAPACITOR	100PF 5% 50V			C 602	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 111	NCS21HJ-101X	C CAPACITOR	100PF 5% 50V			C 603	NCS21HJ-220X	C CAPACITOR	22PF 5% 50V	
	C 112	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			C 604	NCS21HJ-220X	C CAPACITOR	22PF 5% 50V	
	C 201	QER41CM-106	E CAPACITOR	10MF 20% 16V			C 605	QERF0JM-476Z	E CAPACITOR	47MF 20% 6.3V	
	C 202	NCS21HJ-821X	C CAPACITOR	820PF 5% 50V			C 606	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 203	NCS21HJ-121X	C CAPACITOR	120PF 5% 50V			C 609	QER40JM-107	E CAPACITOR	100MF 20% 6.3V	
	C 204	QERF0JM-476Z	E CAPACITOR	47MF 20% 6.3V			C 610	NCB21HK-104X	C CAPACITOR	.10MF 10% 50V	
	C 205	NBE21AM-106X	E CAPACITOR				C 611	NCB21HK-104X	C CAPACITOR	.10MF 10% 50V	
	C 206	NCS21HJ-101X	C CAPACITOR	100PF 5% 50V			C 612	NCB21HK-104X	C CAPACITOR	.10MF 10% 50V	
	C 501	QER40JM-107	E CAPACITOR	100MF 20% 6.3V			C 651	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 502	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			C 901	QEZ0338-228	E CAPACITOR	2200MF	
	C 503	QER40JM-107	E CAPACITOR	100MF 20% 6.3V			C 902	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 504	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			C 906	NCS21HJ-101X	C CAPACITOR	100PF 5% 50V	
	C 505	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			C 907	NCS21HJ-101X	C CAPACITOR	100PF 5% 50V	
	C 506	QER40JM-107	E CAPACITOR	100MF 20% 6.3V			C 912	QERF1CM-107Z	E CAPACITOR	100MF 20% 16V	
	C 507	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			C 913	QER41AM-107	E CAPACITOR	100MF 20% 10V	
	C 508	NCB21EK-104X	C CAPACITOR	.10MF 10% 25V			C 914	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 509	NCB21EK-104X	C CAPACITOR	.10MF 10% 25V			C 915	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 510	NDC21HJ-680X	C CAPACITOR				C 941	QER41AM-107	E CAPACITOR	100MF 20% 10V	
	C 512	QER40JM-107	E CAPACITOR	100MF 20% 6.3V			C 942	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 513	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			C 943	QER41CM-476	E CAPACITOR	47MF 20% 16V	
	C 514	NCS21HJ-101X	C CAPACITOR	100PF 5% 50V			C 944	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 522	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			C 945	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 523	NBE21CM-105X	C.CAPA. C.M				C 946	QER41CM-106	E CAPACITOR	10MF 20% 16V	
	C 524	QER40JM-107	E CAPACITOR	100MF 20% 6.3V			C 951	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 525	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			C 952	QERF1HM-224Z	E CAPACITOR	.22MF 20% 50V	
	C 526	QER40JM-107	E CAPACITOR	100MF 20% 6.3V			C 982	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V	
	C 533	NCS21HJ-470X	C CAPACITOR	47PF 5% 50V			C 983	QER41CM-476	E CAPACITOR	47MF 20% 16V	
	C 534	NCB21HK-153X	C CAPACITOR	.015MF 10% 50V			CN501	GGF1014F1-15	FPC CONNE		
	C 536	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			CN502	GGF1029F1-26	FPC CONNE		
	C 537	NCB21HK-272X	C CAPACITOR	2700PF 10% 50V			CN503	GGF1009F2-26	FPC/FPC CONECTO		
	C 538	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			CN504	QGA2501F1-02	CONNECTOR		
	C 539	NCB21HK-333X	C CAPACITOR	.033MF 10% 50V			CN601	QGA2501F1-03	CONNECTOR		
	C 542	NCB21HK-182X	C CAPACITOR	1800PF 10% 50V			CN901	QGA3901F1-04	CONNECTOR		
	C 543	NCS21HJ-271X	C CAPACITOR	270PF 5% 50V			CN902	QNZ009S-001	CONNECTOR		
	C 544	QERF0JM-476Z	E CAPACITOR	47MF 20% 6.3V			CN903	GGF1004F4-10	CONNECTOR		
	C 545	NCB21EK-473X	C CAPACITOR	.047MF 10% 25V			CN904	GGF1009F2-10	CONNECTOR		
	C 546	NCB21EK-473X	C CAPACITOR	.047MF 10% 25V			D 101	HSM2836C-W	DIODE		
	C 547	NCB21EK-473X	C CAPACITOR	.047MF 10% 25V			D 583	DSK10C-T1	DIODE		
	C 549	NCB21EK-473X	C CAPACITOR	.047MF 10% 25V			D 584	DSK10C-T1	DIODE		
	C 551	QERF0JM-476Z	E CAPACITOR	47MF 20% 6.3V			D 585	DSK10C-T1	DIODE		
	C 552	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			D 901	2A02	DIODE		
	C 553	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			D 902	2A02	DIODE		
	C 554	QER40JM-107	E CAPACITOR	100MF 20% 6.3V			D 911	DSK10C-T1	DIODE		
	C 555	NCB21HK-103X	C CAPACITOR	.010MF 10% 50V			D 912	MA3062/H/-X	ZENER DIODE		
	C 556	NDC21HJ-100X	C.CAPA. C.M				D 913	HSM2836C-W	DIODE		
	C 557	NDC21HJ-100X	C.CAPA. C.M				D 921	HSM2838C-W	DIODE		
	C 558	NCS21HJ-101X	C CAPACITOR	100PF 5% 50V			D 941	MA3100/L/-X	ZENER DIODE		
	C 571	QER40JM-107	E CAPACITOR	100MF 20% 6.3V			D 951	MA3051/M/-X	ZENER DIODE		
	C 573	QER40JM-107	E CAPACITOR	100MF 20% 6.3V			D 981	MA3091/M/-X	ZENER DIODE		



BLOCK NO. 01

REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
F 901	ICP-N70	IC PROTECTOR		
F 941	ICP-N70	IC PROTECTOR		
IC101	BA15218F-XE	IC		
IC501	TA2109F-X	IC		
IC521	TC9462F	IC		
IC581	BA5926S	IC		
IC601	UPD780058GC-052	IC		
IC602	IC-PST600M/G/-W	IC		
IC604	BR24C01AF-X	IC		
IC651	HD74HC126FP-X	IC		
L 521	QGL121K-4R7Y	INDUCTOR		
L 551	QGL121K-4R7Y	INDUCTOR		
L 601	QGL121K-4R7Y	INDUCTOR		
L 901	QGR0905-001	CHOKO COIL		
L 902	QGR0779-001Z	INDUCTOR		
Q 101	2SD1048/6-7/-X	TRANSISTOR		
Q 201	2SD1048/6-7/-X	TRANSISTOR		
Q 501	2SB1322/RS/-T	TRANSISTOR		
Q 581	2SB1322/RS/-T	TRANSISTOR		
Q 602	2SC2412K/R/-X	TRANSISTOR		
Q 901	2SA1037AK/R/-X	CHIP TR.C.M		
Q 902	DT114EKA-X	TRANSISTOR		
Q 911	2SD1994A/RS/-T	TRANSISTOR		
Q 921	2SC2412K/R/-X	TRANSISTOR		
Q 922	2SA1037AK/R/-X	CHIP TR.C.M		
Q 941	2SB941A/QP/	TRANSISTOR		
Q 942	2SD1994A/RS/-T	TRANSISTOR		
Q 943	DTA114EKA-X	DIGITAL TR		
Q 944	DT114EKA-X	TRANSISTOR		
Q 971	2SA1037AK/R/-X	CHIP TR.C.M		
Q 972	2SC2412K/R/-X	TRANSISTOR		
Q 981	2SD1994A/RS/-T	TRANSISTOR		
R 101	NRSA02J-273X	MG RESISTOR	27K 5% 1/10W	
R 102	NRSA02J-123X	MG RESISTOR	12K 5% 1/10W	
R 103	NRSA02J-333X	MG RESISTOR	33K 5% 1/10W	
R 104	NRSA02J-223X	MG RESISTOR	22K 5% 1/10W	
R 105	NRSA02J-223X	MG RESISTOR	22K 5% 1/10W	
R 106	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 107	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 108	NRSA02J-682X	MG RESISTOR	6.8K 5% 1/10W	
R 112	NRSA02J-470X	MG RESISTOR	47 5% 1/10W	
R 201	NRSA02J-273X	MG RESISTOR	27K 5% 1/10W	
R 202	NRSA02J-123X	MG RESISTOR	12K 5% 1/10W	
R 203	NRSA02J-333X	MG RESISTOR	33K 5% 1/10W	
R 204	NRSA02J-223X	MG RESISTOR	22K 5% 1/10W	
R 205	NRSA02J-223X	MG RESISTOR	22K 5% 1/10W	
R 206	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 207	NRSA02J-471X	MG RESISTOR	470 5% 1/10W	
R 208	NRSA02J-682X	MG RESISTOR	6.8K 5% 1/10W	
R 501	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 502	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 503	NRS181J-104X	MG RESISTOR	100K 5% 1/8W	
R 504	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 505	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 506	NRSA02J-104X	MG RESISTOR	100K 5% 1/10W	

BLOCK NO. 02

REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
R 507	NRSA02J-220X	MG RESISTOR	22 5% 1/10W	
R 508	NRSA02J-220X	MG RESISTOR	22 5% 1/10W	
R 509	NRSA02J-273X	MG RESISTOR	27K 5% 1/10W	
R 510	NRSA02J-333X	MG RESISTOR	33K 5% 1/10W	
R 511	NRSA02J-222X	MG RESISTOR	2.2K 5% 1/10W	
R 512	NRSA02J-153X	MG RESISTOR	15K 5% 1/10W	
R 513	NRSA02J-682X	MG RESISTOR	6.8K 5% 1/10W	
R 514	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 521	NRSA02J-472X	MG RESISTOR	4.7K 5% 1/10W	
R 522	NRSA02J-472X	MG RESISTOR	4.7K 5% 1/10W	
R 523	NRSA02J-472X	MG RESISTOR	4.7K 5% 1/10W	
R 524	NRSA02J-472X	MG RESISTOR	4.7K 5% 1/10W	
R 525	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 531	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 532	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 533	NRSA02J-683X	MG RESISTOR	68K 5% 1/10W	
R 534	NRSA02J-474X	MG RESISTOR	470K 5% 1/10W	
R 536	NRSA02J-333X	MG RESISTOR	33K 5% 1/10W	
R 537	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 541	NRSA02J-122X	MG RESISTOR	1.2K 5% 1/10W	
R 542	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 543	NRSA02J-332X	MG RESISTOR	3.3K 5% 1/10W	
R 544	NRSA02J-332X	MG RESISTOR	3.3K 5% 1/10W	
R 545	NRSA02J-332X	MG RESISTOR	3.3K 5% 1/10W	
R 547	NRSA02J-332X	MG RESISTOR	3.3K 5% 1/10W	
R 571	NRSA02J-101X	MG RESISTOR	100 5% 1/10W	
R 581	NRS181J-332X	MG RESISTOR	3.3K 5% 1/8W	
R 582	NRSA02J-123X	MG RESISTOR	12K 5% 1/10W	
R 583	NRSA02J-102X	MG RESISTOR	1.0K 5% 1/10W	
R 584	NRS181J-102X	MG RESISTOR	1.0K 5% 1/8W	
R 601	NRSA02J-472X	MG RESISTOR	4.7K 5% 1/10W	
R 602	NRS181J-103X	MG RESISTOR	10K 5% 1/8W	
R 603	NRSA02J-472X	MG RESISTOR	4.7K 5% 1/10W	
R 604	NRSA02J-472X	MG RESISTOR	4.7K 5% 1/10W	
R 605	NRSA02J-472X	MG RESISTOR	4.7K 5% 1/10W	
R 606	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 607	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 609	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 610	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 611	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 612	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 614	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 617	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 618	NRSA02J-102X	MG RESISTOR	1.0K 5% 1/10W	
R 619	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 620	NRSA02J-104X	MG RESISTOR	100K 5% 1/10W	
R 621	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 622	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 625	NRSA02J-472X	MG RESISTOR	4.7K 5% 1/10W	
R 626	NRSA02J-473X	MG RESISTOR	47K 5% 1/10W	
R 651	NRSA02J-223X	MG RESISTOR	22K 5% 1/10W	
R 652	NRSA02J-101X	MG RESISTOR	100 5% 1/10W	
R 653	NRSA02J-223X	MG RESISTOR	22K 5% 1/10W	
R 654	NRSA02J-334X	MG RESISTOR	330K 5% 1/10W	
R 655	NRSA02J-101X	MG RESISTOR	100 5% 1/10W	



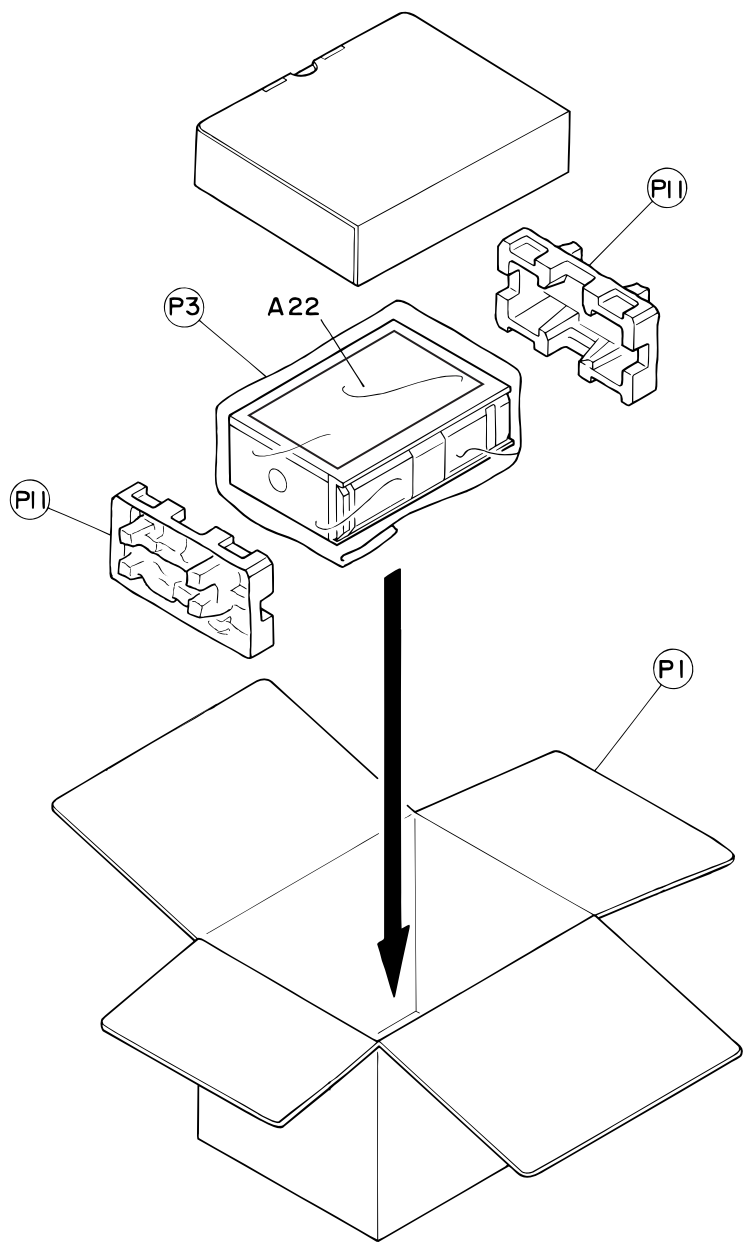
BLOCK NO. 01

REF.	PARTS NO.	PARTS NAME	REMARKS	SUFFIX
R 656	NRSA02J-223X	MG RESISTOR	22K 5% 1/10W	
R 657	NRSA02J-334X	MG RESISTOR	330K 5% 1/10W	
R 658	NRSA02J-331X	MG RESISTOR	330 5% 1/10W	
R 659	NRSA02J-104X	MG RESISTOR	100K 5% 1/10W	
R 660	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 661	NRSA02J-104X	MG RESISTOR	100K 5% 1/10W	
R 901	NRSA02J-103X	MG RESISTOR	10K 5% 1/10W	
R 902	NRSA02J-392X	MG RESISTOR	3.9K 5% 1/10W	
R 903	NRSA02J-222X	MG RESISTOR	2.2K 5% 1/10W	
R 911	QRE141J-472Y	C RESISTOR	4.7K 5% 1/4W	
R 912	QRE141J-2R2Y	C RESISTOR	2.2 5% 1/4W	
R 921	NRSA02J-273X	MG RESISTOR	27K 5% 1/10W	
R 923	NRSA02J-184X	MG RESISTOR	180K 5% 1/10W	
R 924	NRSA02J-682X	MG RESISTOR	6.8K 5% 1/10W	
R 925	QRE141J-223Y	C RESISTOR	22K 5% 1/4W	
R 926	NRSA02J-223X	MG RESISTOR	22K 5% 1/10W	
R 941	NRS181J-100X	MG RESISTOR	10 5% 1/8W	
R 942	NRSA02J-471X	MG RESISTOR	470 5% 1/10W	
R 943	NRSA02J-332X	MG RESISTOR	3.3K 5% 1/10W	
R 951	NRSA02J-122X	MG RESISTOR	1.2K 5% 1/10W	
R 954	NRSA02J-272X	MG RESISTOR	2.7K 5% 1/10W	
R 971	NRSA02J-223X	MG RESISTOR	22K 5% 1/10W	
R 972	NRSA02J-222X	MG RESISTOR	2.2K 5% 1/10W	
R 973	NRSA02J-104X	MG RESISTOR	100K 5% 1/10W	
R 981	NRSA02J-221X	MG RESISTOR	220 5% 1/10W	
R 982	NRSA02J-221X	MG RESISTOR	220 5% 1/10W	
S 601	VSH1173-001	SWITCH		
S 602	VSH1173-001	SWITCH		
S 603	VSH1173-001	SWITCH		
S 604	VSH1173-001	SWITCH		
S 606	GSW0643-001Z	TACT SWITCH		
SPACE	PU59915-105	SPACER		
SPACE	PU59915-105	SPACER		
SPACE	PU59915-105	SPACER		
X 521	QAX0423-001Z	CRYSTAL		
X 601	QAX0414-001Z	CRYSTAL		



Packing Materials and Accessories Parts List

Block No. M3MM  
Block No. M4MM



■ Packing Parts List

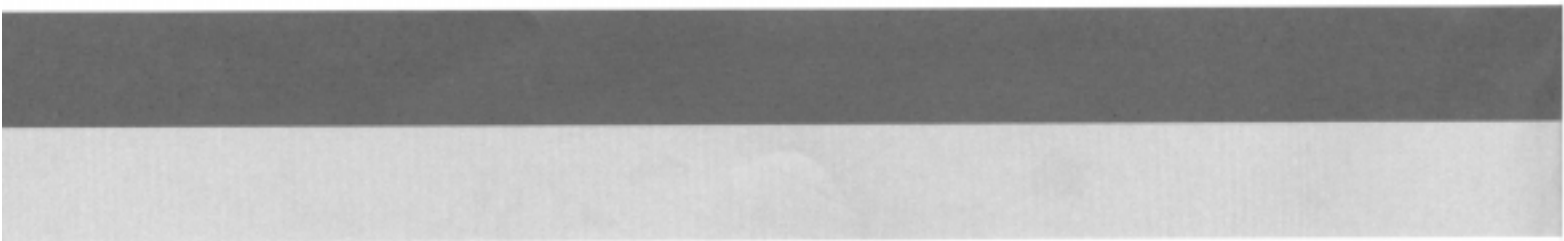
BLOCK NO. M3MM      

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY	SUFFIX	CLR
P	1	LV30797-001A	CARTON		1		
P	2	LV30453-002A	ACCESSARY BOX		1		
P	3	VPE3005-065	POLY BAG	FOR UNIT	1		
P	4	QPA01703505P	POLY BAG		1		
P	6	QPA00801205	POLY BAG	SCREW SA	1		
P	9	LV30575-002A	SEPALATOR		1		
P	10	LV30576-002A	SPACER		1		
P	11	LV10057-201A	PAPER CUSHION		2		









**JVC**

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