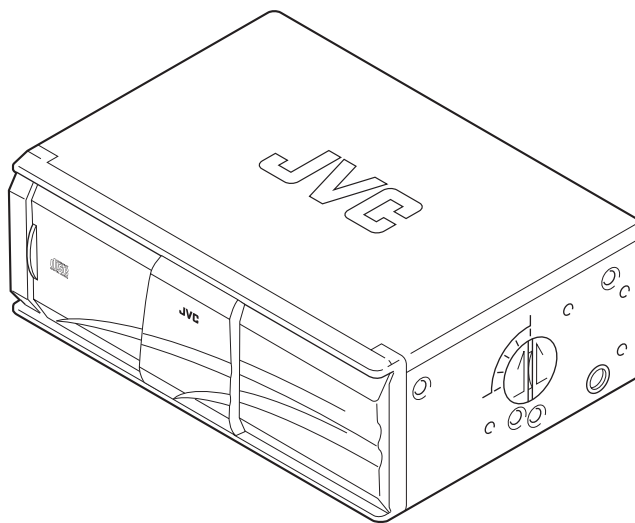


JVC

SERVICE MANUAL

CD CHANGER

CH-X1500



COMPACT
disc
DIGITAL AUDIO
TEXT

MP3

CD-RW
PLAYBACK

Area Suffix

JNorthern America
EContinental Europe
UOther Areas

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SECTION 1

Important Safety Precautions

1.1 Safety Precautions

 **CAUTION** Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of performing repair of this system.

 **CAUTION** Please use enough caution not to see the beam directly or touch it in case of an adjustment or operation check.

 **CAUTION** This unit can only be connected to the JVC car receivers/controllers equipped with MP3-CD changer control functions. If connected to any other receiver/controller, this unit cannot work (even CDs may not play back).

1.2 Preventing static electricity

Electrostatic discharge (ESD), which occurs when static electricity stored in the body, fabric, etc. is discharged, can destroy the laser diode in the traverse unit (optical pickup). Take care to prevent this when performing repairs.

1.2.1 Grounding to prevent damage by static electricity

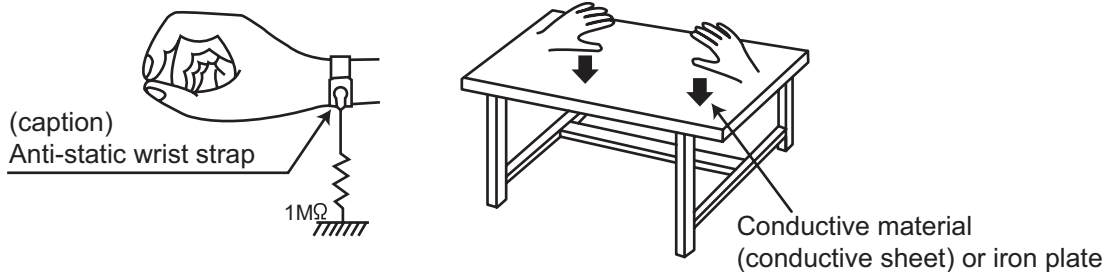
Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as DVD players. Be careful to use proper grounding in the area where repairs are being performed.

(1) Ground the workbench

Ground the workbench by laying conductive material (such as a conductive sheet) or an iron plate over it before placing the traverse unit (optical pickup) on it.

(2) Ground yourself

Use an anti-static wrist strap to release any static electricity built up in your body.



(3) Handling the optical pickup

- In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)
- Do not use a tester to check the condition of the laser diode in the optical pickup. The tester's internal power source can easily destroy the laser diode.

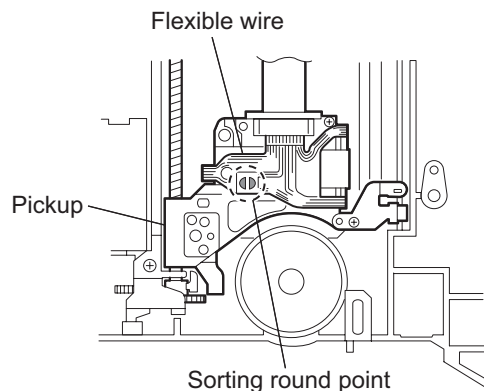
1.3 Handling the traverse unit (optical pickup)

- (1) Do not subject the traverse unit (optical pickup) to strong shocks, as it is a sensitive, complex unit.
- (2) Cut off the shorted part of the flexible cable using nippers, etc. after replacing the optical pickup. For specific details, refer to the replacement procedure in the text. Remove the anti-static pin when replacing the traverse unit. Be careful not to take too long a time when attaching it to the connector.
- (3) Handle the flexible cable carefully as it may break when subjected to strong force.
- (4) It is not possible to adjust the semi-fixed resistor that adjusts the laser power. Do not turn it.

1.4 Attention when traverse unit is decomposed

***Please refer to "Disassembly method" in the text for the CD pickup unit.**

- Apply solder to the short land before the flexible wire is disconnected from the connector on the CD pickup unit. (If the flexible wire is disconnected without applying solder, the CD pickup may be destroyed by static electricity.)
- In the assembly, be sure to remove solder from the short land after connecting the flexible wire.



SECTION 2

Disassembly method

Perform operations according to the items to be disassembled.

2.1 Replacement of the Pickup

- (1) After removing the exterior (top and bottom).
- (2) Proceed to the "2.5.8.Pickup replacement procedure" section.
- (3) When applying grease, refer to the Exploded View. Use new grease.

2.2 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 reassembling, refer to 2-5.Precautions reassembling. (Use new grease when applying grease.)

2.3 Exterior Section

2.3.1 Removing the bottom cover and front panel assembly (See fig.1~4)

- (1) Remove the screw **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 screws **B** attaching the bottom cover on both sides of the main unit.
- (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) Release the four joints on both sides of the front panel, and turn the front panel toward the top cover (lower down) to remove the front panel.

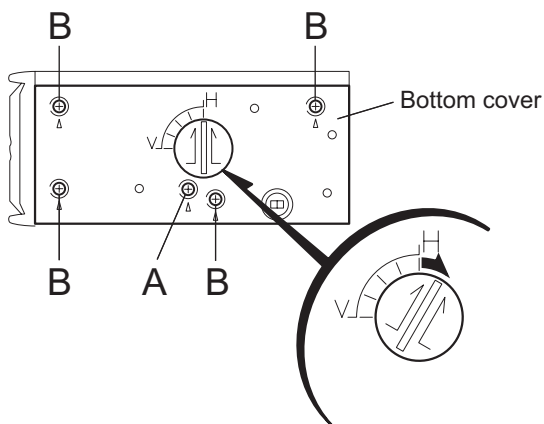


Fig.1

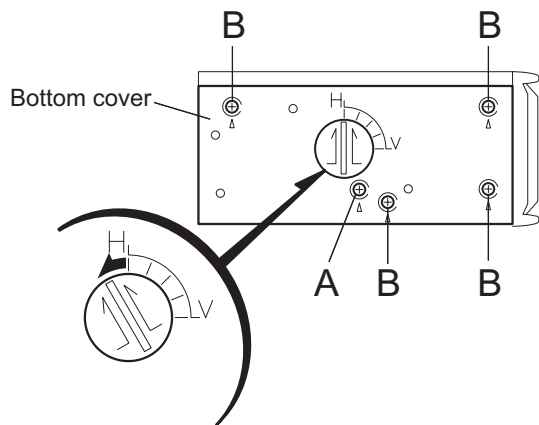


Fig.2

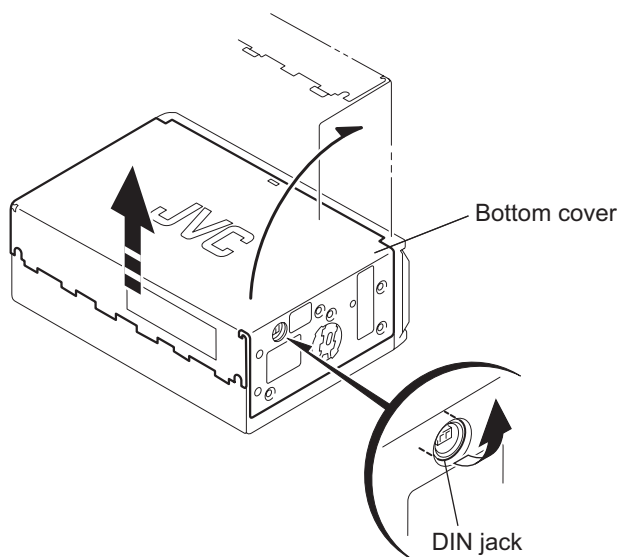


Fig.3

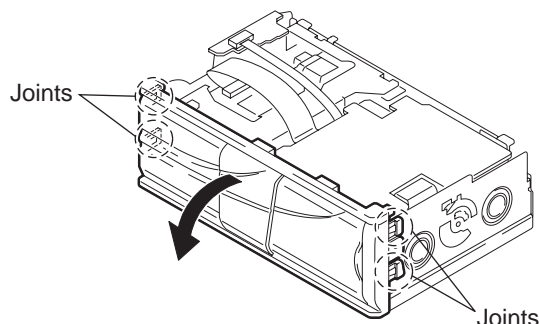


Fig.4

2.3.2 Removing the top cover (See fig.5~9)

(1) Pull out the dampers, being careful not to damage them.

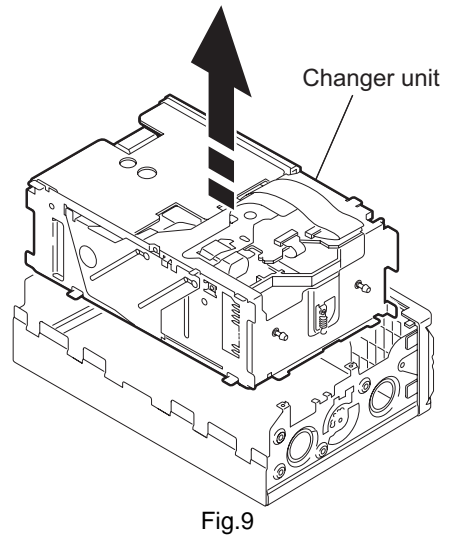
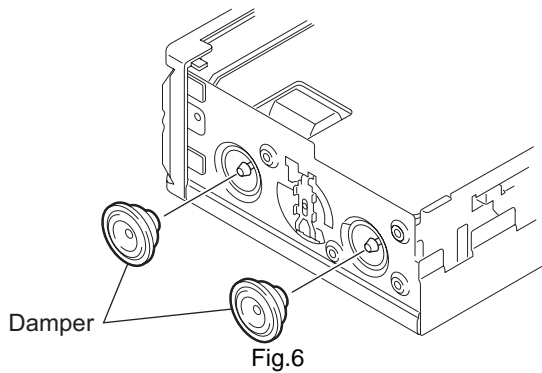
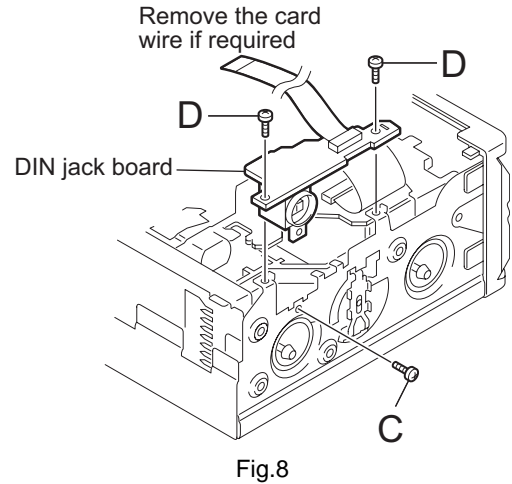
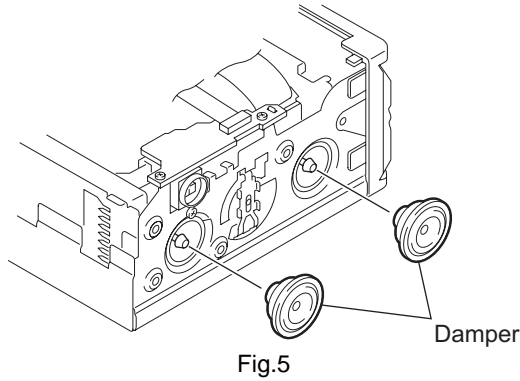
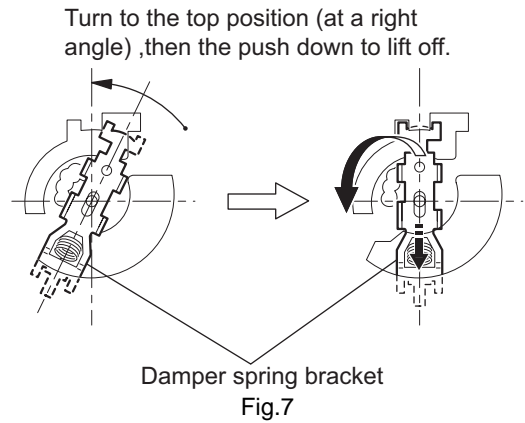
REFERENCE:

When reattaching 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.

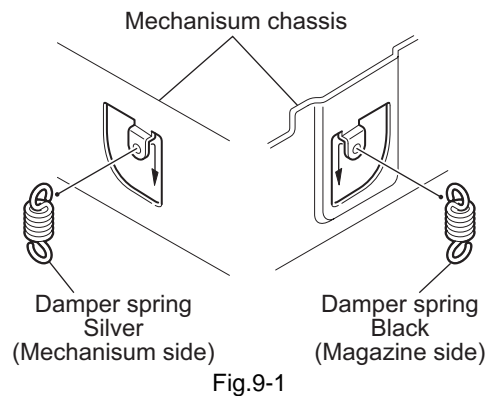
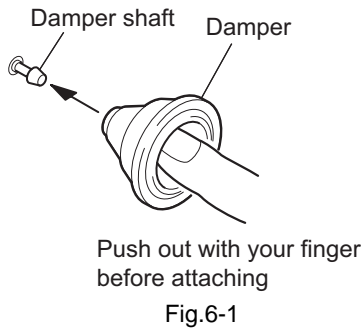
- (2) Turn the damper spring bracket toward the top at a right angle as shown in Fig. 7, then push down the lower side of the damper spring bracket to lift it off.
- (3) Remove the three screws **C** and **D** attaching the DIN jack board assembly, and remove.
- (4) Lift the changer unit upward.
- (5) Remove the damper springs from the mechanism chassis if required.

REFERENCE:

To reassemble, refer to the diagram below.



Apply alcohol to the shaft then immediately attach the damper. (After attaching, check that the shaft is correctly inserted.)



2.3.3 Removing the fitting (See fig.10)

- (1) Remove the screw **E** attaching the fitting.
- (2) Release the two joints **a** on the top edge of the fitting, then release the joints **b** at the left / right bottom edges, and remove.

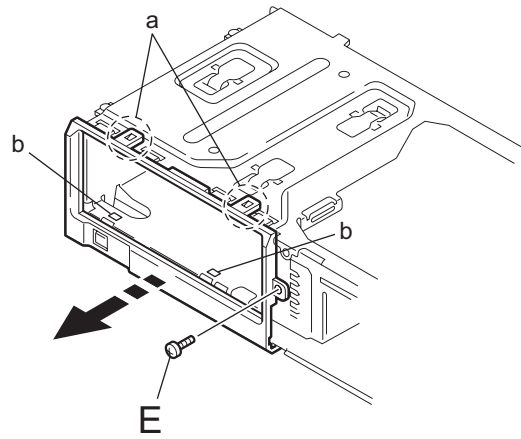


Fig.10

2.3.4 Removing the main board assembly (See fig.11)

- (1) Remove the screw **F** attaching the power IC.
- (2) Remove the four screws **G** attaching the main board assembly, and remove.
- (3) Disconnect the wire from connector CN602 on the main board assembly.
- (4) Disconnect the wire from connector CN501 on the main board assembly.
- (5) Disconnect the card wire from connector CN604 on the traverse mechanism board assembly.

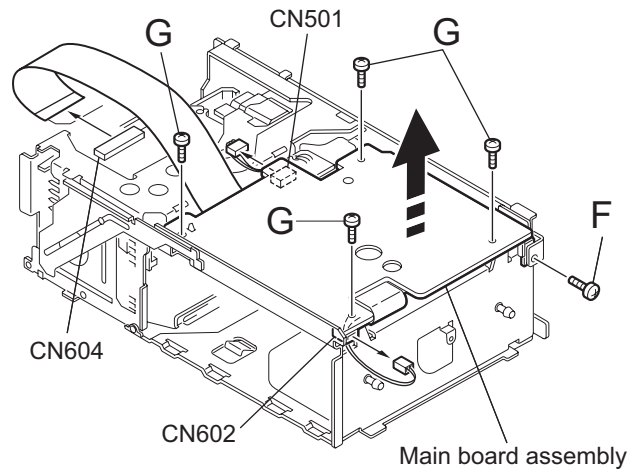


Fig.11

2.4 Changer-mechanism section

2.4.1 Remove the sensor assembly unit (See fig.12)

- (1) Remove the two screws **H** attaching the sensor assembly unit.
- (2) Release the springs on the back of the sensor assembly unit from the holes on the chassis.

2.4.2 Remove the magazine lock arm (See fig.12,13)

- (1) Remove the magazine lock spring from the front side of the chassis.
- (2) Remove the poly-washer attaching 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.

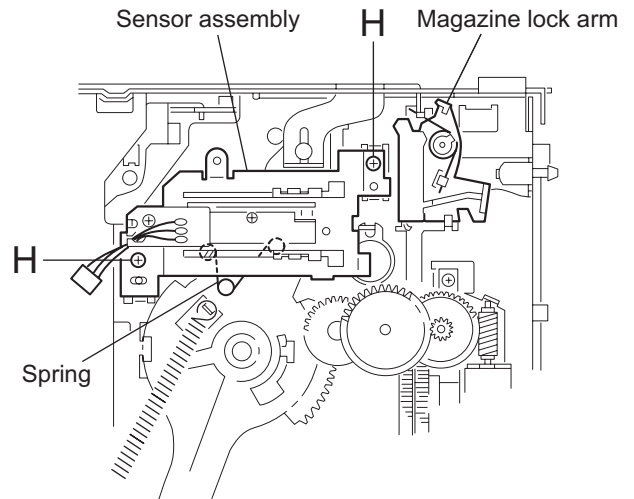


Fig.12

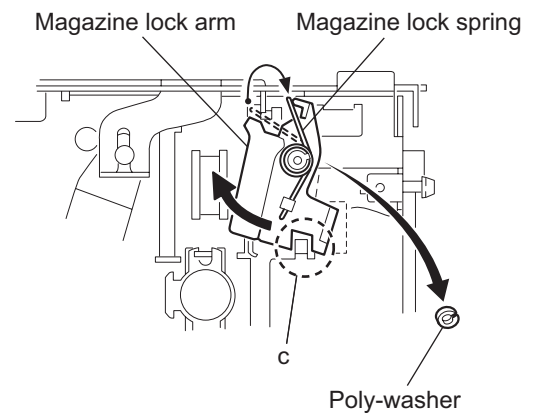


Fig.13

2.4.3 Remove the positioning motor assembly (See fig.14)

- (1) Remove the two screws **I** attaching the positioning motor.

ATTENTION:

When removing the positioning motor assembly from chassis, remove the spacer attaching the wires.

- (2) Slightly lift the positioning motor assembly to remove it from the two burrs on the chassis.

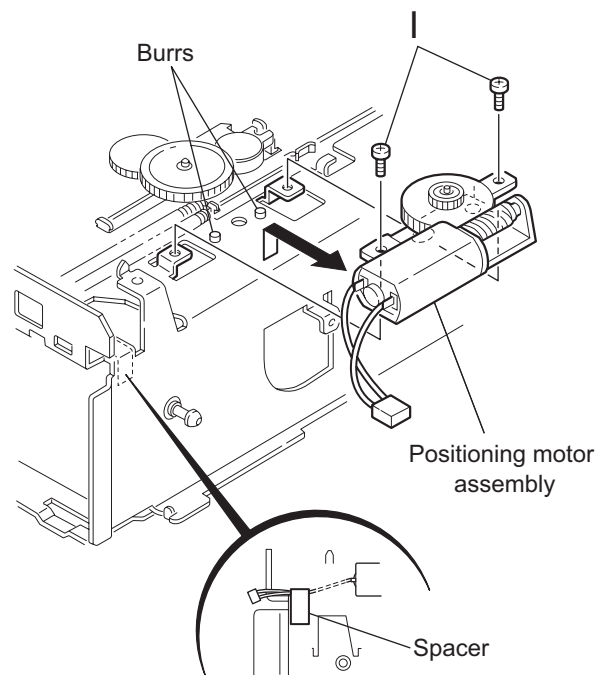


Fig.14

2.4.4 Remove the rear slider (See fig.15)

- (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) Move the rear slider in the direction of the arrow and remove it at the rear slider mounting position (at the widest hole).

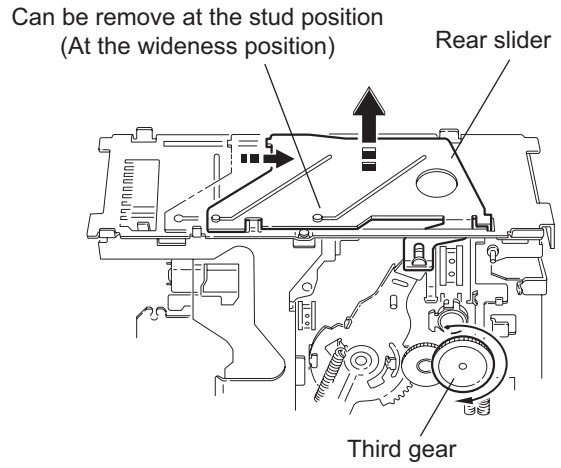


Fig.15

2.4.5 Remove the front slider (See fig.16)

- (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 moved to the outermost position.
- (2) Remove the E-washer attaching the front slider, and remove from the chassis.

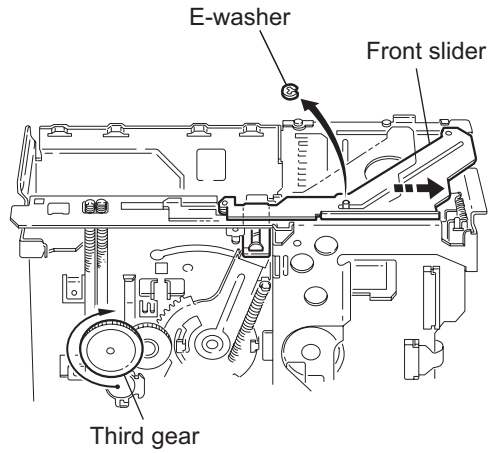


Fig.16

2.4.6 Remove the top plate (See fig.17,18)

- (1) Remove the nine screws **J** attaching the top plate.
- (2) Disconnect the section **d** attached to the rear of the unit, then lift the top plate slightly.
- (3) Move the top plate toward the rear of the unit to remove the upper rod from the top plate.

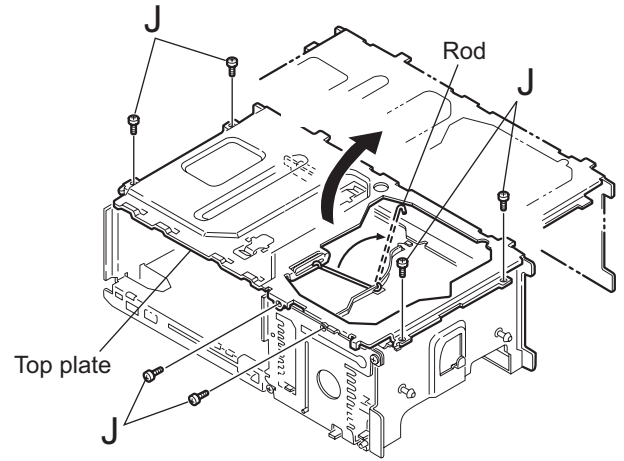


Fig.17

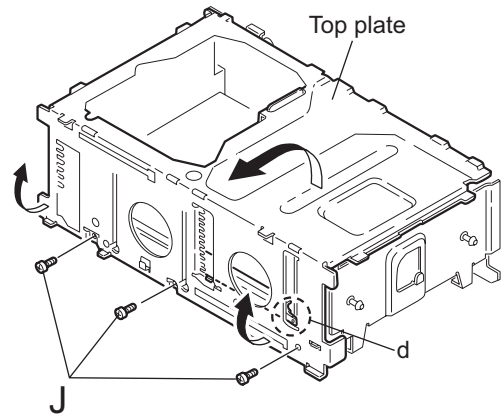


Fig.18

2.4.7 Remove the lifter unit (See fig.19,20)

- (1) Remove the elevator spring located on the front side of the unit. (Be sure to first remove 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.

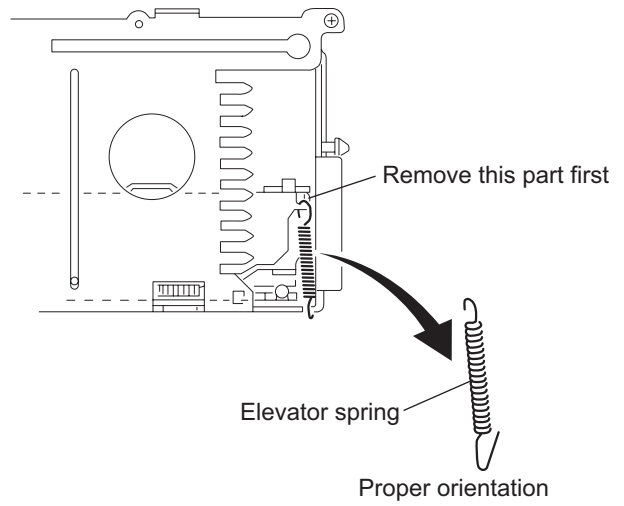


Fig.19

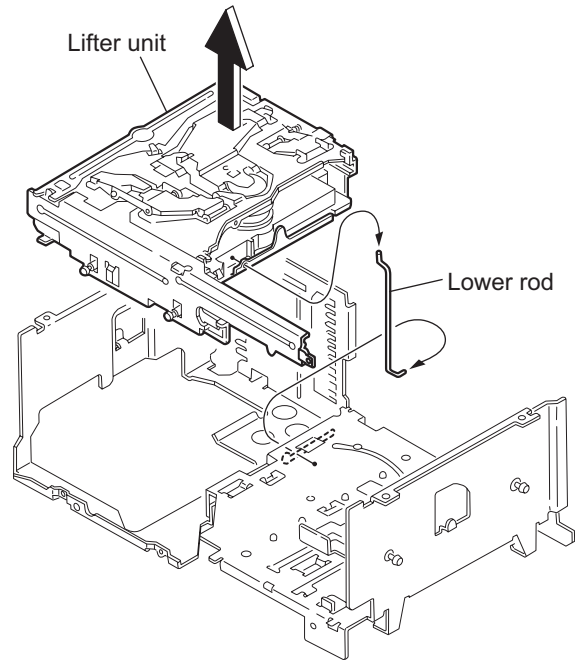


Fig.20

2.4.8 Remove the lifter bracket (See fig.21)

- (1) Remove the two screws **K** attaching the lifter bracket from the back of the lifter unit.
- (2) Remove the lower rod.

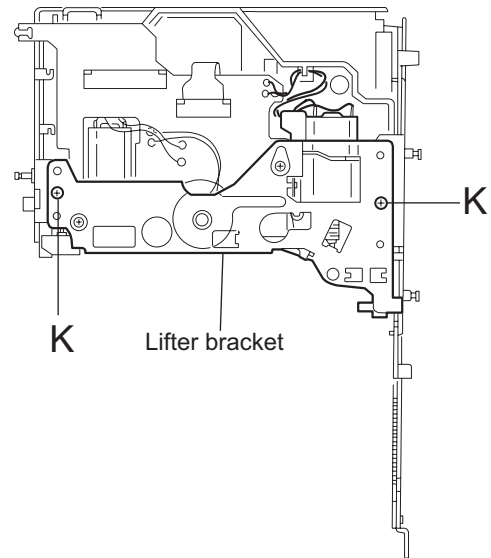


Fig.21

2.4.9 Remove the side bracket and traverse mechanism assembly (See fig.22)

- (1) Remove the two screws **L** attaching the side bracket, and remove the side bracket.
- (2) Remove the three shafts on the traverse mechanism assembly from the lifter unit.

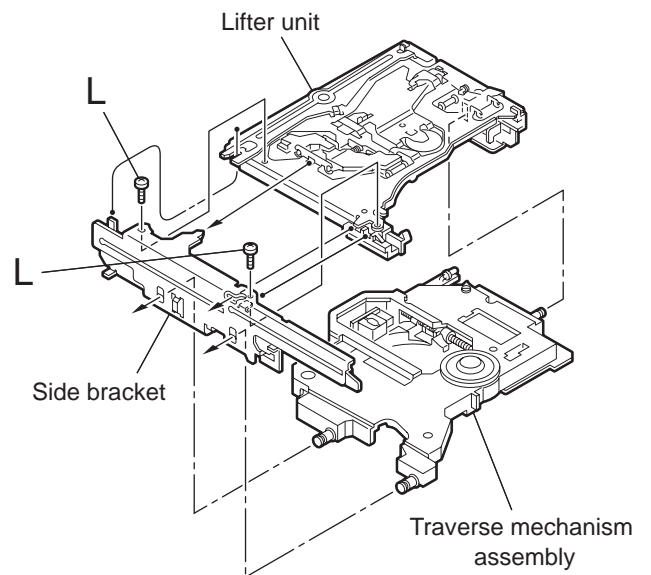


Fig.22

2.4.10 Remove the pickup assembly (See fig.23~26)

CAUTION:

When replacing the flexible wire connected, solder the shorting round point. Otherwise, the pickup may be damaged.

- (1) Remove the three screws **M** attaching the mechanism board on the back of the traverse mechanism assembly.
- (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 board assembly.
- (3) Move and lift mechanism board assembly with the flexible wire attached to connector CN603. Next, solder the shorting round point on the pickup assembly and then disconnect CN603.
- (4) Remove the screw **N** attaching the feed motor assembly, and remove.
- (5) Remove the screw **O** attaching the shaft holder retaining the feed slide shaft assembly and the middle gear, and remove.
- (6) Remove the middle gear.

REFERENCE:

Remove gears and motors only when required.

- (7) Move the pickup assembly upward from the gear section and remove it from the traverse chassis assembly.
- (8) Remove the two screws **P** attaching the rack arm, and remove.
- (9) Pull out the feed slide shaft assembly, and remove.
- (10) Remove the screw **Q** attaching the spring, and remove.

CAUTION:

When reassembling, connect the flexible wire from the pickup to the main board and unsolder the shorting round point.

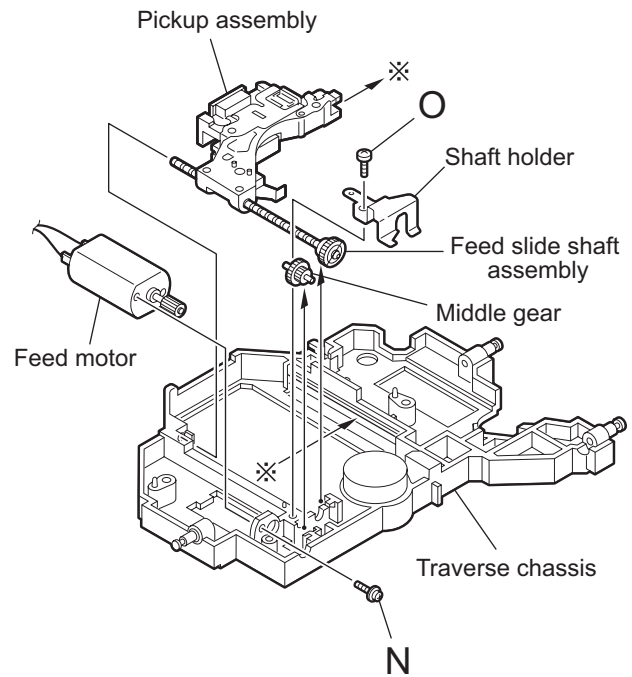
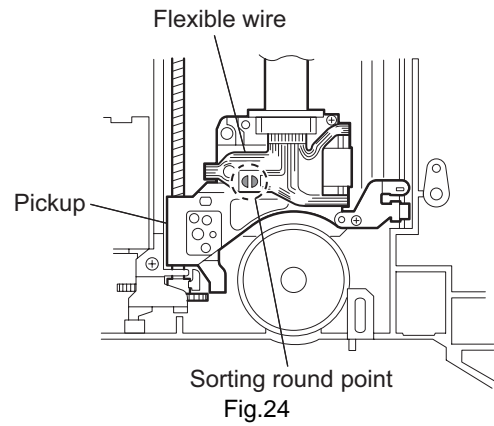
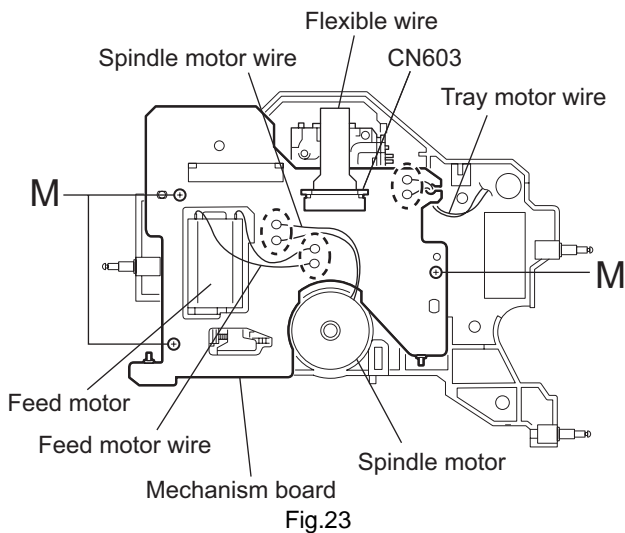


Fig.25

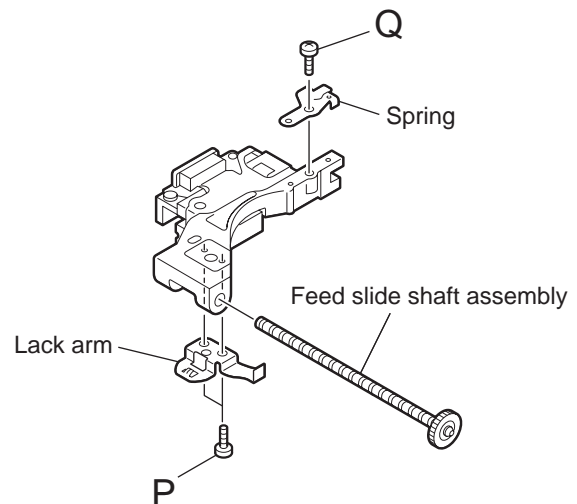
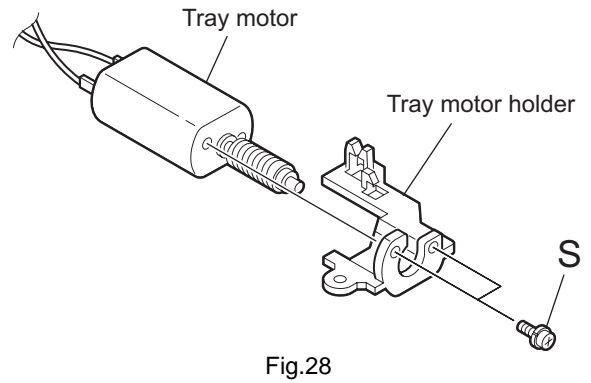
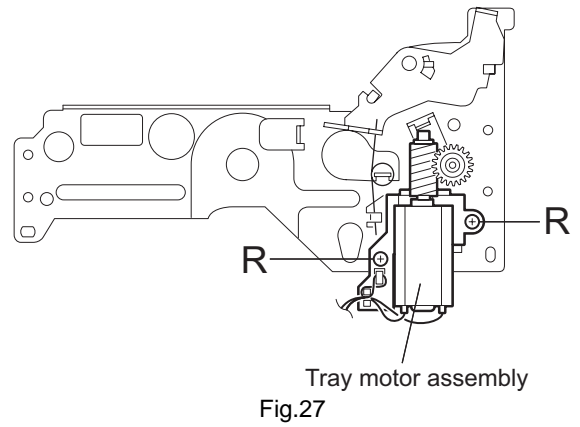


Fig.26

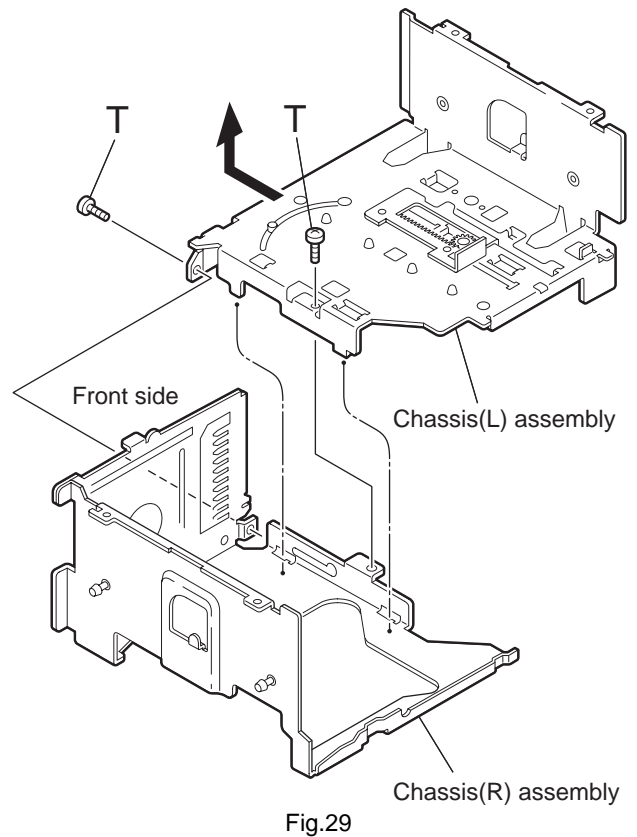
2.4.11 Removing the tray motor assembly (See fig.27, 28)

- (1) Remove the two screws **R** attaching the tray motor assembly, and remove.
- (2) Remove the two screws **S** attaching the tray motor, and remove the tray motor assembly from the tray motor holder.



2.4.12 Separation of the chassis (L) assembly and chassis (R) assembly (See fig.29)

- (1) Remove the two screws **T** 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.



2.5 Precautions reassembling

REFERENCE:

When reassembling, also refer to the disassembling procedures.

2.5.1 Mounting the traverse mechanism assembly (See fig.30-34)

- (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 **O** through the shaft holder.
- (3) Before attaching the mechanism board, move the pickup to the outer edge position, then attach the mechanism board using the screw **M**. 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 fixing it with the screw **P**.

CAUTION:

When reassembling the mechanism board, reattach the flexible wire to connector CN603 on the mechanism board, and then unsolder the sorting round point. Next, reattach the mechanism board with screw **M**.

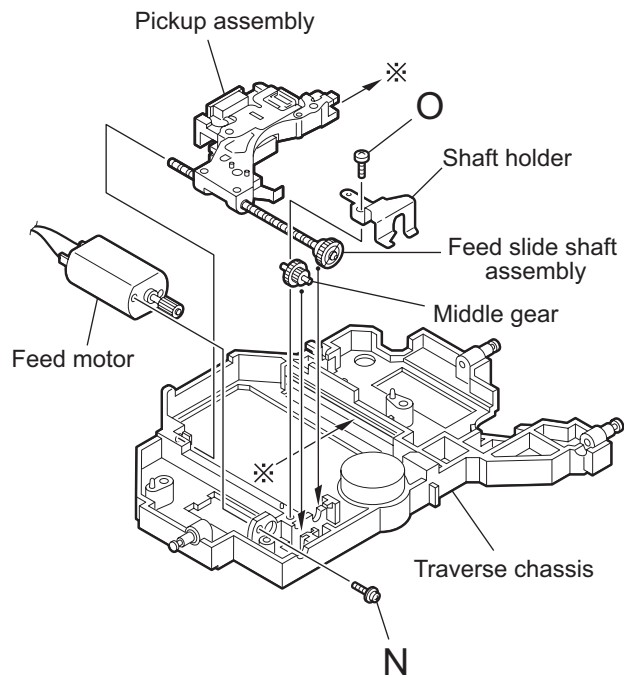


Fig.30

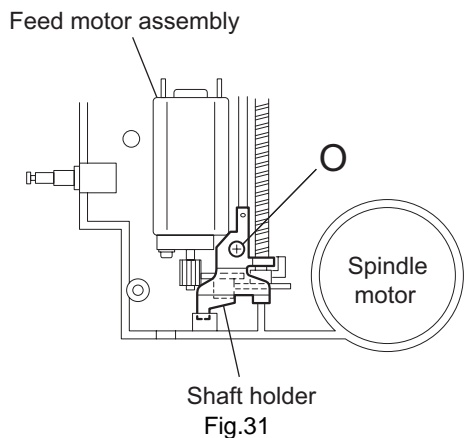


Fig.31

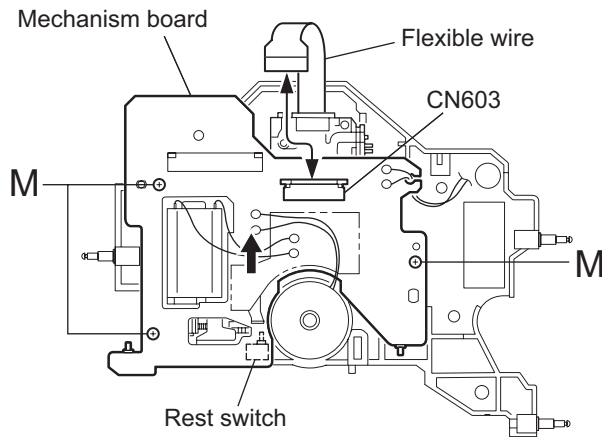


Fig.32

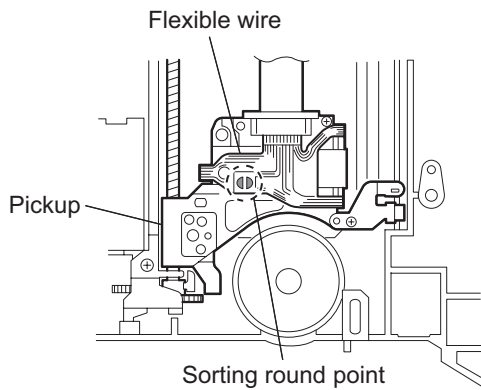


Fig.33

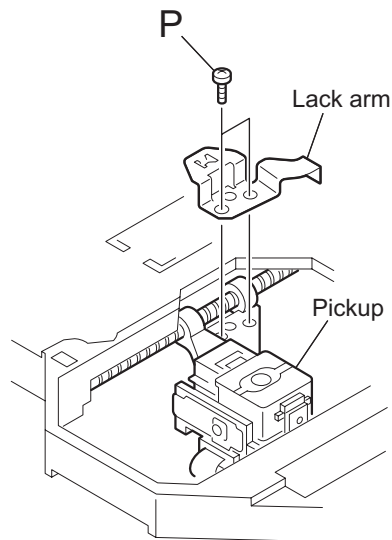


Fig.34

2.5.2 Mounting the lifter unit (See fig.35~37)

- (1) Insert the shafts **e** of the traverse mechanism assembly into the slide grooves **f** on the lifter unit.
- (2) Move the hook of the lifter unit to the edge, and move 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 joint **g** of the lifter unit is correctly inserted into the holes **h** of the side bracket unit. After reassembled, check that levers move together.)
- (4) Turn the lifter unit upside down.

As shown in Fig. 37, slide the lever 30 mm away from the edge, and then mount the lifter bracket (**L**) assembly.

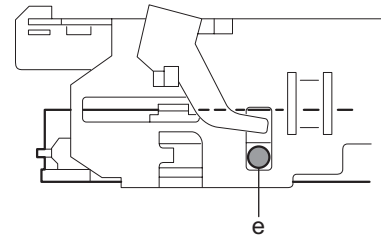


Fig.35

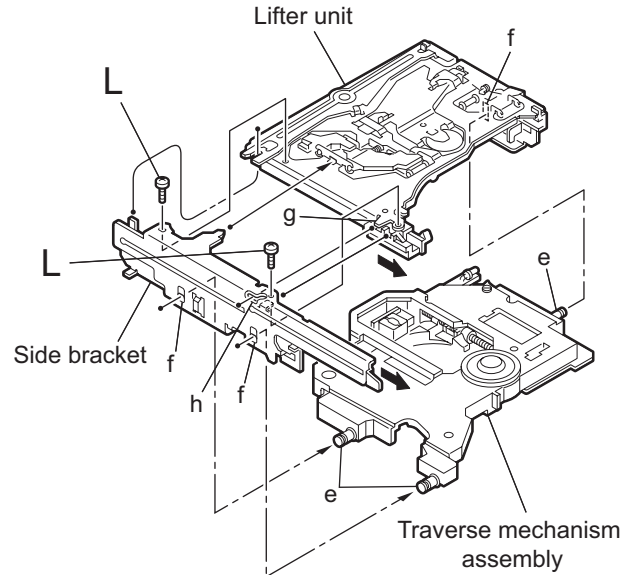


Fig.36

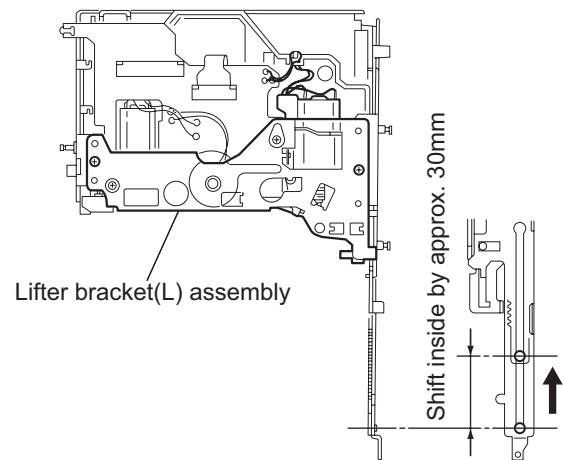
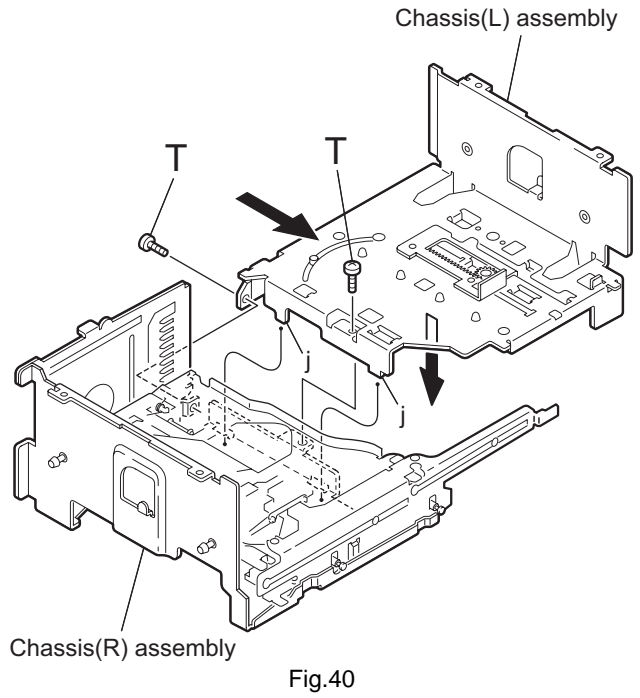
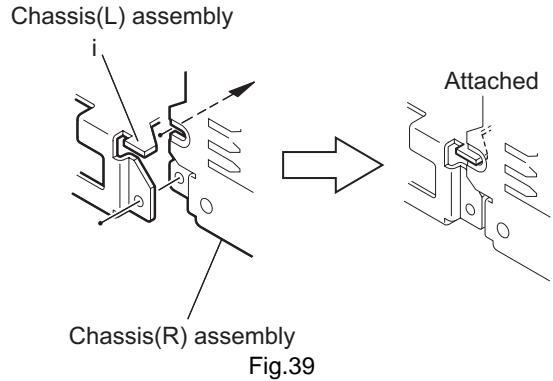
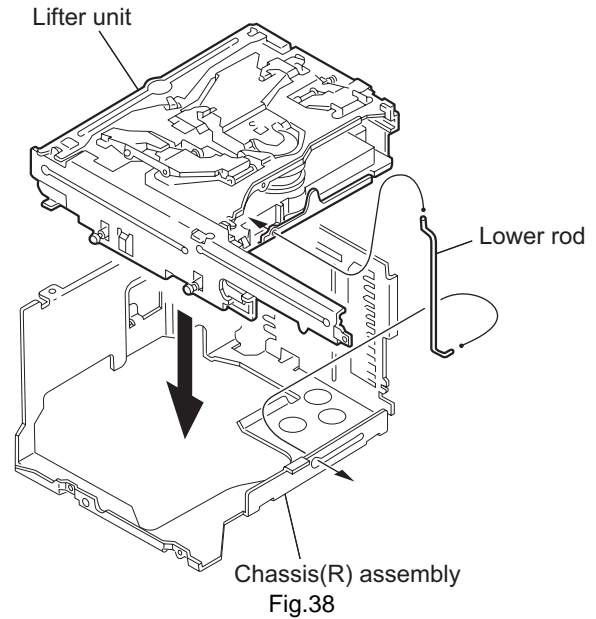


Fig.37

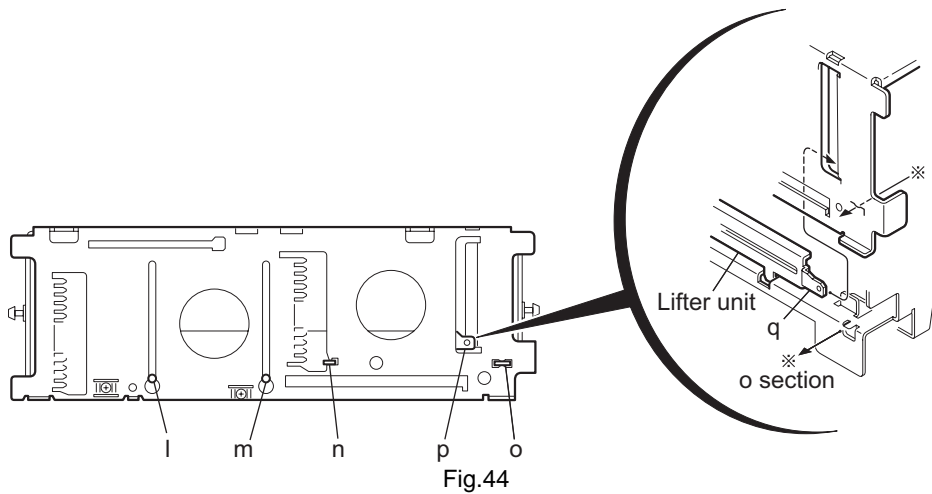
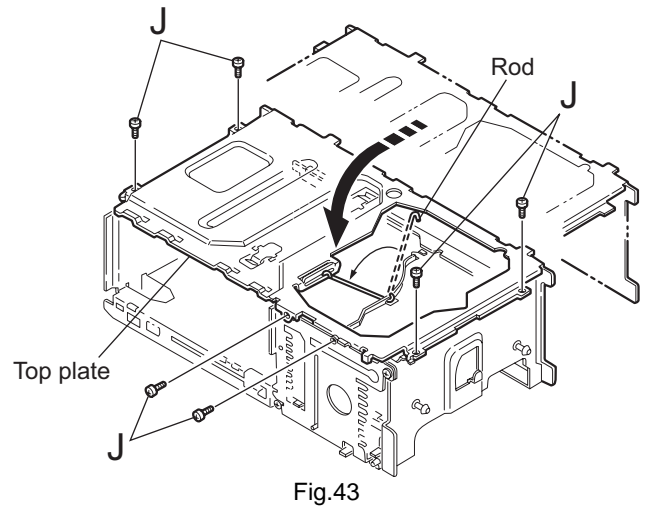
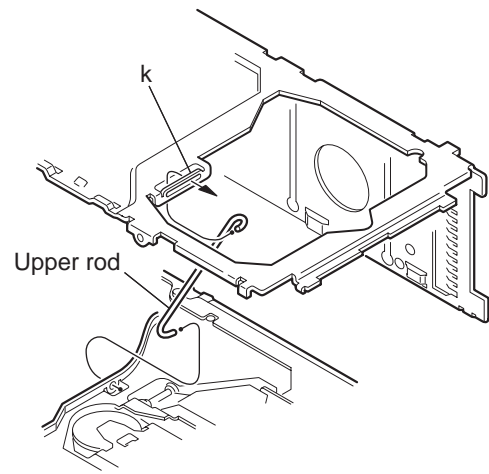
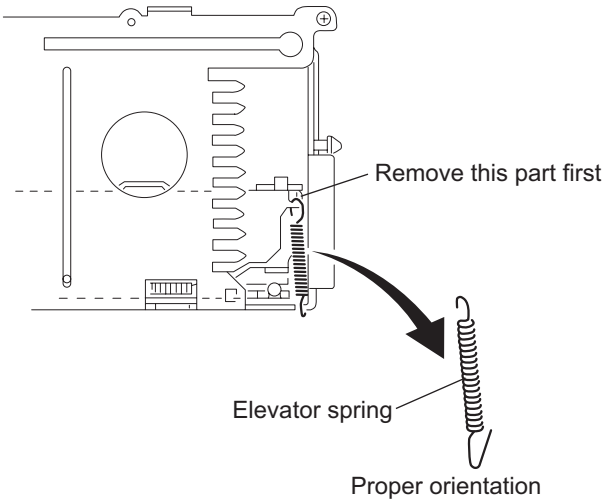
2.5.3 Mounting the chassis (L) assembly and chassis (R) assembly (See fig.38~40)

- (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 **i** of the chassis (L) assembly is inserted into the notch of the chassis (R) assembly by sliding it from the front side, and then the two lib **j** jointed to the chassis (L) assembly.
- (3) After reassembled, fix with the screw **T**.
- (4) Attach the elevator spring between the lifter unit and the chassis.



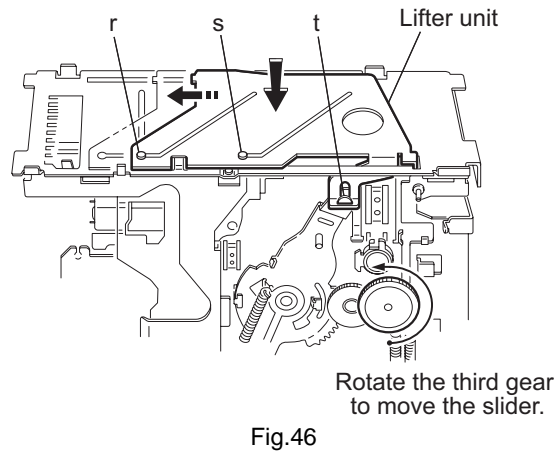
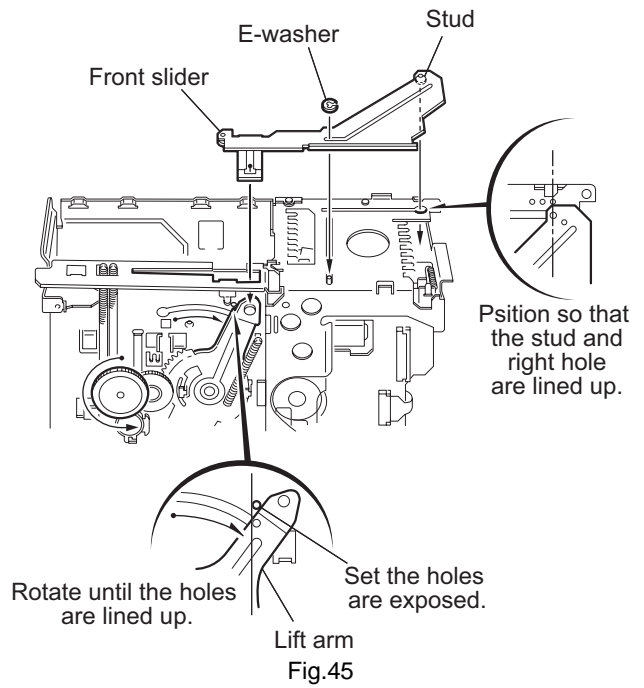
2.5.4 Mounting top plate (See fig.41~44)

- (1) Mount the upper rod on the lifter side 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 **p**, set it so that the bending section of the top plate pinches section **q** of the lifter unit.
- (3) Attach the top plate with six screws **J**.



2.5.5 Mounting the front slider and rear slider (See fig.45, 46)

- (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.
- (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.
- (3) Attach 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.



2.5.6 Mounting the sensor board assembly (See fig.47)

- (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 board assembly.
- (3) Attach the shorter spring to the hook of the lift arm.

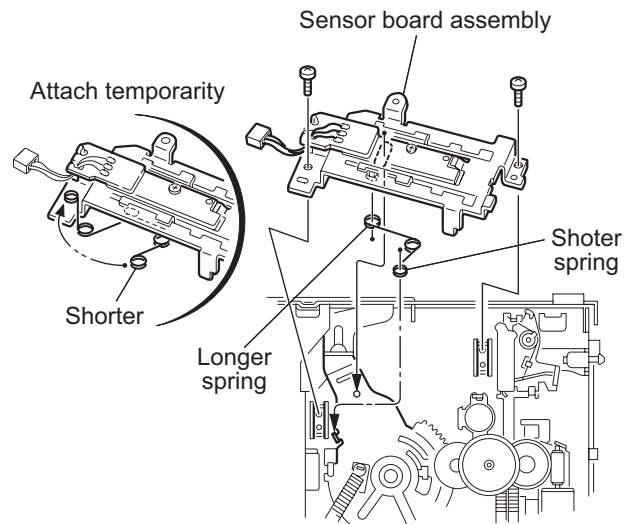


Fig.47

2.5.7 Mounting the main board (See fig.48)

- (1) Rotate the third gear clockwise until section **u** 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 assembly may be damaged.)
- (2) After they are correctly positioned, mount the main board assembly.

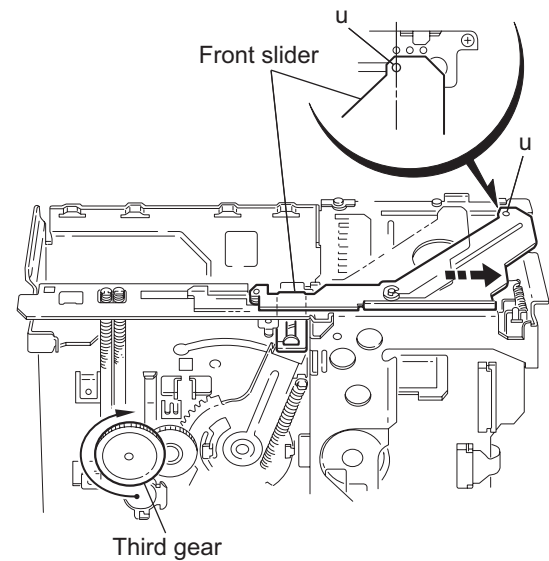


Fig.48

2.5.8 Pickup replacement procedure (See fig.49-55)

- (1) Remove the bottom cover, front panel and top cover of the exterior section.
- (2) Remove the card wire from the connector CN604 on the mechanism board.
- (3) Rotate the rear slider and third gear in the lifter section counterclockwise and then the traverse mechanism assembly is move in the lowermost (bottom) position.
- (4) Unsolder the two wires (black and brown) connected to the tray motor.
- (5) Remove the two screws **K** from the round holes on the chassis (**R**) assembly to remove the lifter bracket (**L**).
- (6) Remove the lower rod.
- (7) Unsolder the two wires (blue and white), two wires of spindle motor (red and black) and wire of tray motor (brown and black) soldered on the mechanism board.
- (8) Solder the sorting round point on the pickup assembly to move the mechanism board and then unplug the flexible wire from CN603 on the mechanism board.
- (9) Remove the flexible wire from the connector CN603 on the mechanism board.
- (10) Remove the three screws **M** from the round hole on the chassis (**R**) assembly, and remove.
- (11) Remove the screw **O** attaching pickup shaft holder, and remove the pickup assembly.

CAUTION:

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 sorting round point on the mechanism board, then lift the mechanism board assembly with CN603 connected. Next, sorting round point on the pickup main unit, then unplug the pickup flexible board from connector CN603.

ATTENTION:

When reassembling, perform in the reverse order.

- (12) Remove the two screws **P** attaching lack arm. Pull out the feed slide shaft assembly. Remove the screw **Q** attaching shaft holder.
- (13) When mounting the lifter bracket after replacing the pickup, move the lifter unit lever approx. 30mm towards the inside and then mount the lifter bracket.

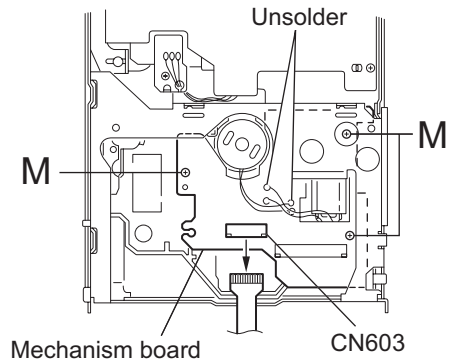


Fig.50

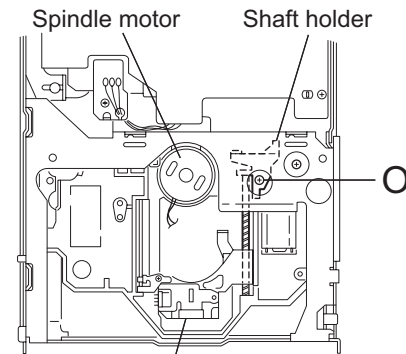


Fig.51

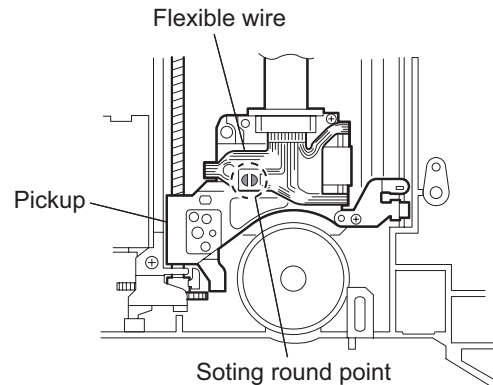


Fig.52

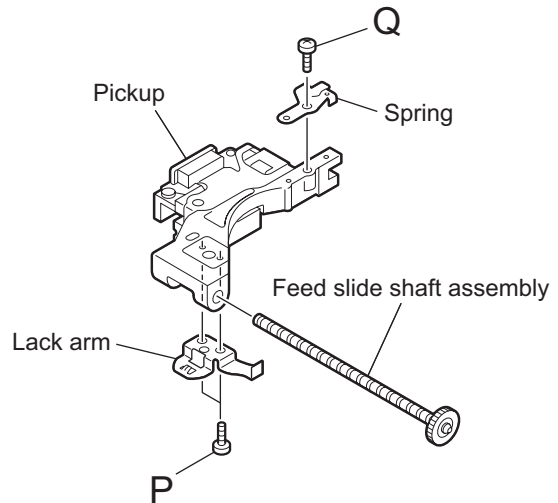


Fig.53

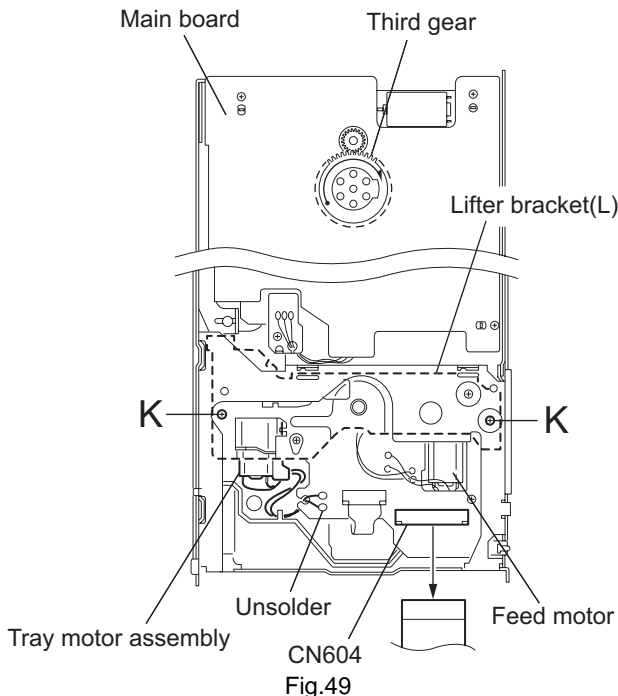
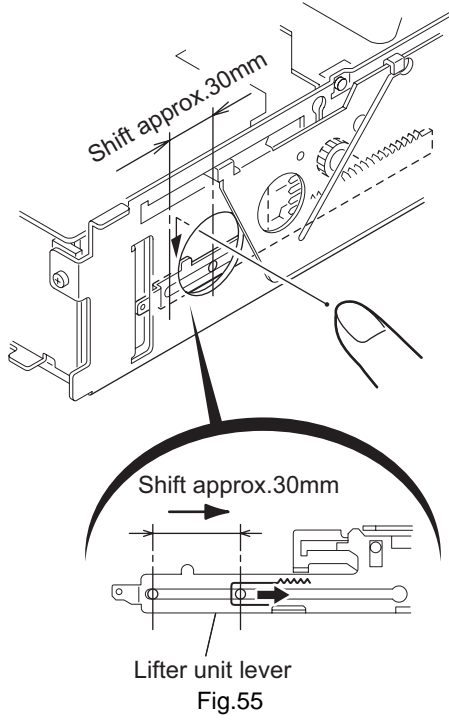
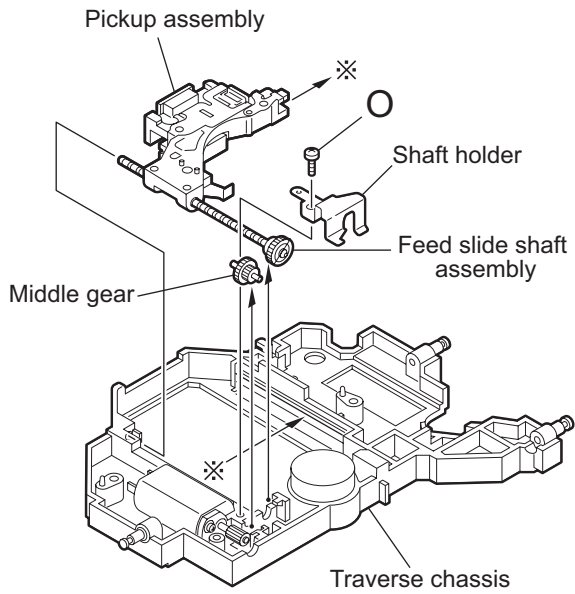
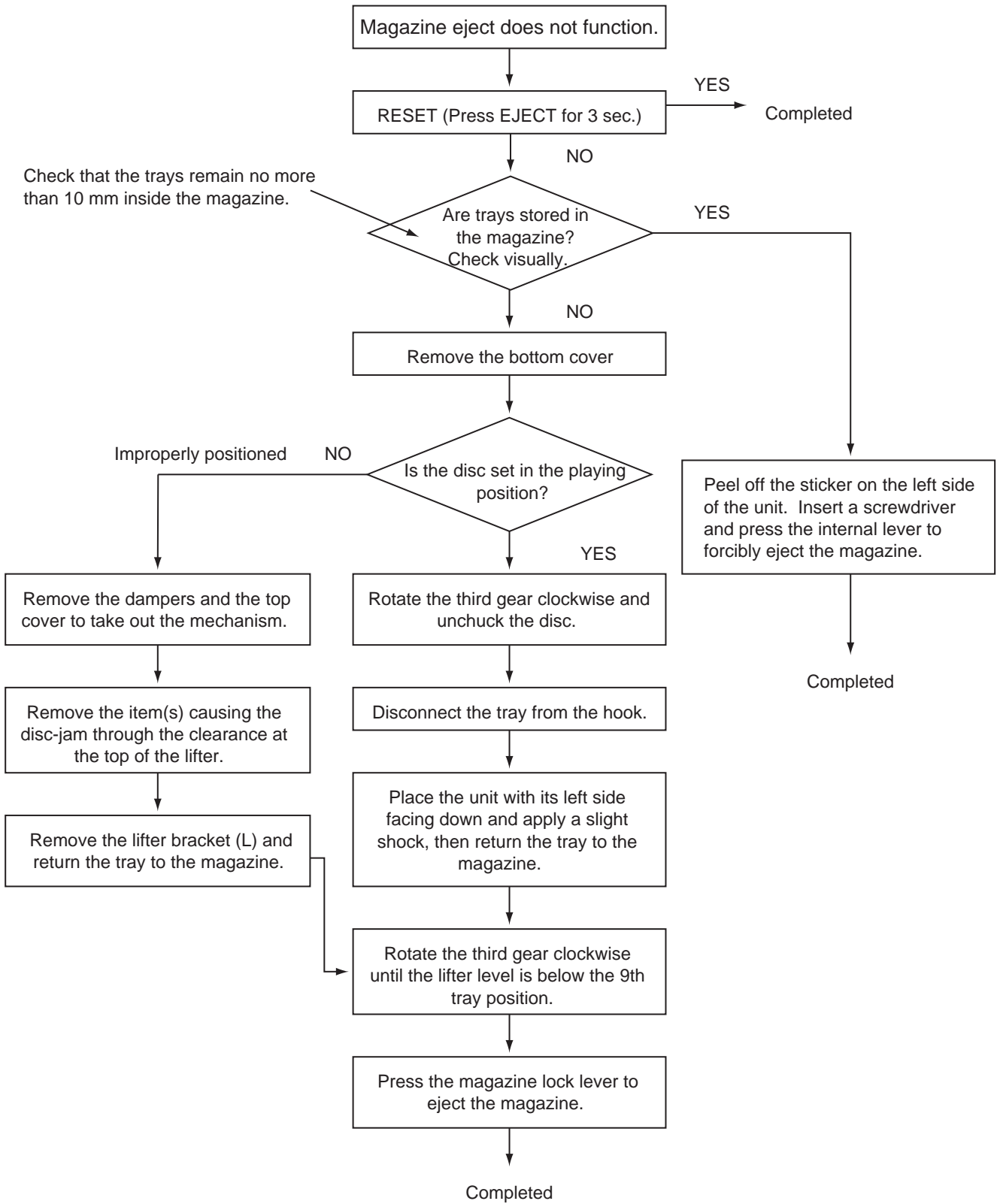


Fig.49



SECTION 3 Adjustment method

3.1 Forced eject procedures



3.2 Troubleshooting

3.2.1 Servicing procedures for CH-X1500 error displays

| Error display | Servicing procedure |
|--------------------------|---|
| E1: Eject error | <p>The magazine cannot be ejected until S601 (magazine switch) turns off. Can the magazine be ejected? YES→1, NO→ 2</p> <p>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.</p> |
| E2: Position motor error | <p>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</p> <p>3 If the lifter exceeds the required disc position, check the lift position input. (IC601 pin 76) If the lifter does not reach the required disc position, check the mechanism (mainly the lifter elevation mechanism)</p> <p>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 Ω . If the resistance is excessively low (1 - 2 Ω), the motor is defective.</p> |
| E3: Tray motor error | <p>Trays cannot be opened or closed when exchanging or ejecting discs. Does the tray move when changing or ejecting discs? YES→5, NO→ 6</p> <p>5 Check that TRAY OUT SW (S602) and TRAY IN SW (S603) function correctly.</p> |

| | S602 & IC601 pin (46) | S603 & IC601 pin (45) |
|--------------|-----------------------|-----------------------|
| 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 | <p>Does the feed (pickup unit) return to the inner area of the disc when ejecting? YES→7, NO→8, 9</p> <p>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.</p> |
|--------------------------|---|

Other errors occurring in the receiver or controller.

| | |
|----------------------|---|
| E8: Connection error | <p>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.</p> <p>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.</p> |
|----------------------|---|

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

3.2.2 CH-X1500 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.

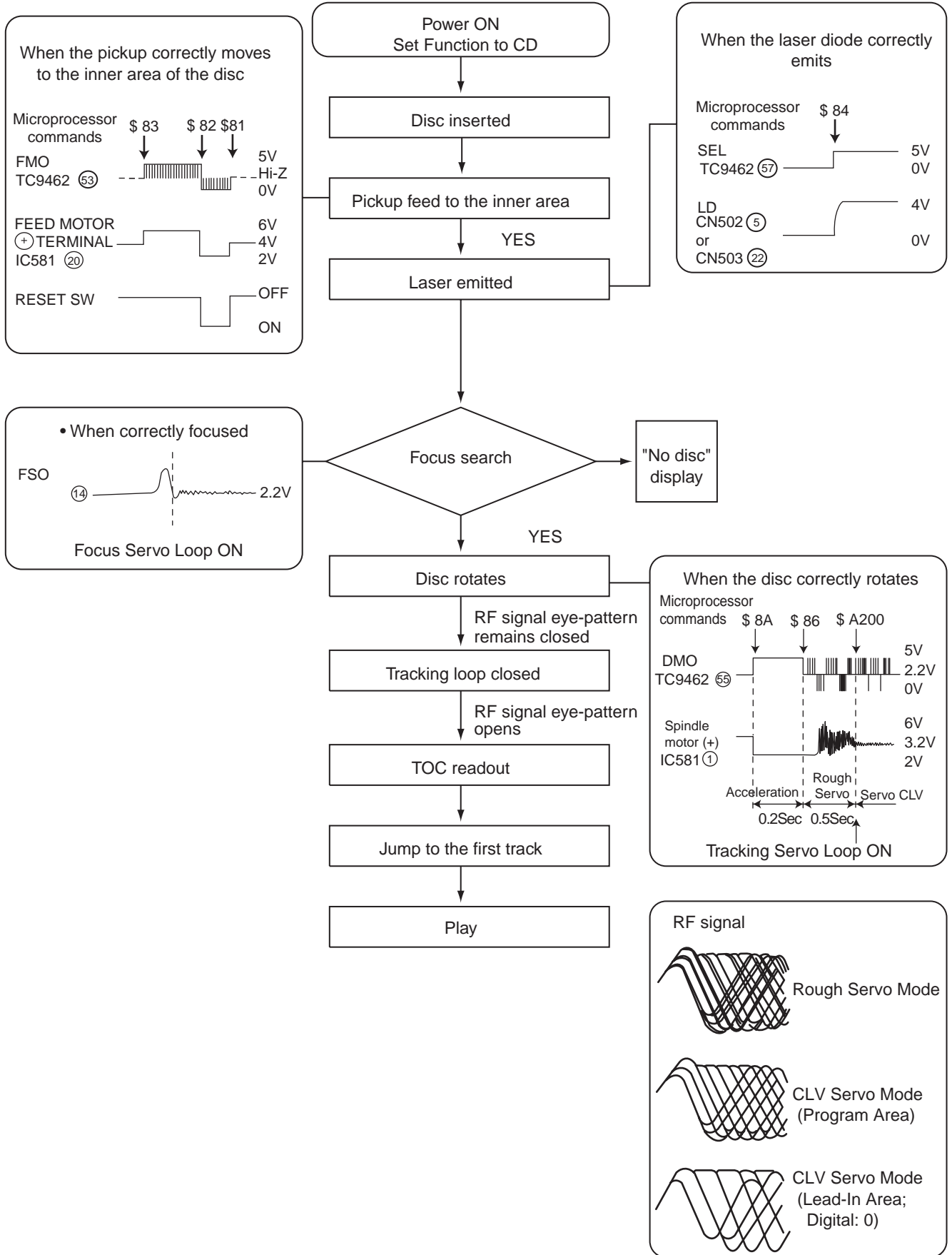
CH-1 error code table

| Generating condition | | Description | Error code |
|-----------------------|--|---|-------------|
| Tray extension error | 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 |
| Tray retraction error | 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 |
| Lifter raise error | 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 |
| Lifter lower error | 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 |
| Chuck error | 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 |
| Unchuck error | 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 |
| Eject error | 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 |
| Initialize error | 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 |

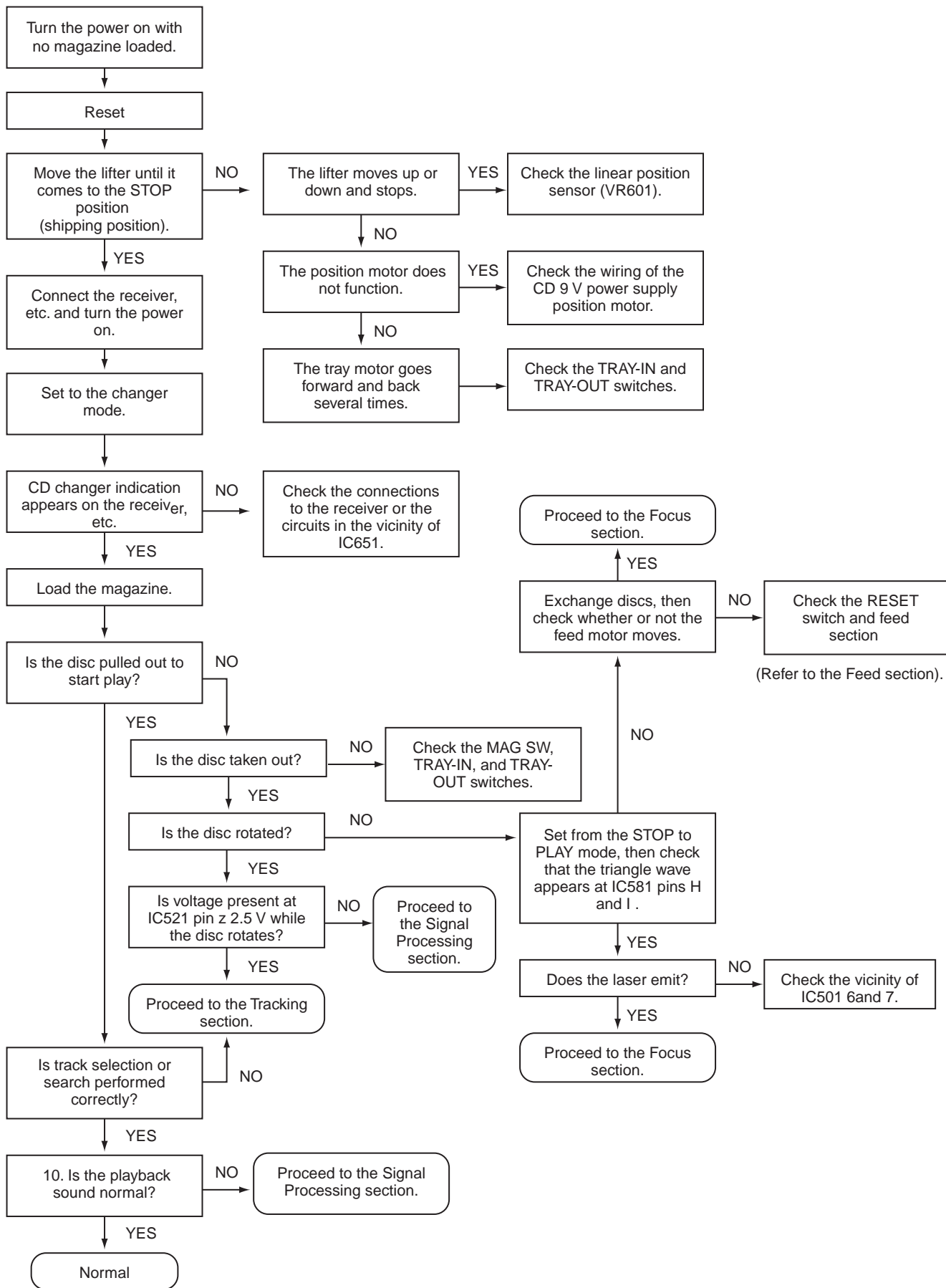
Note:

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

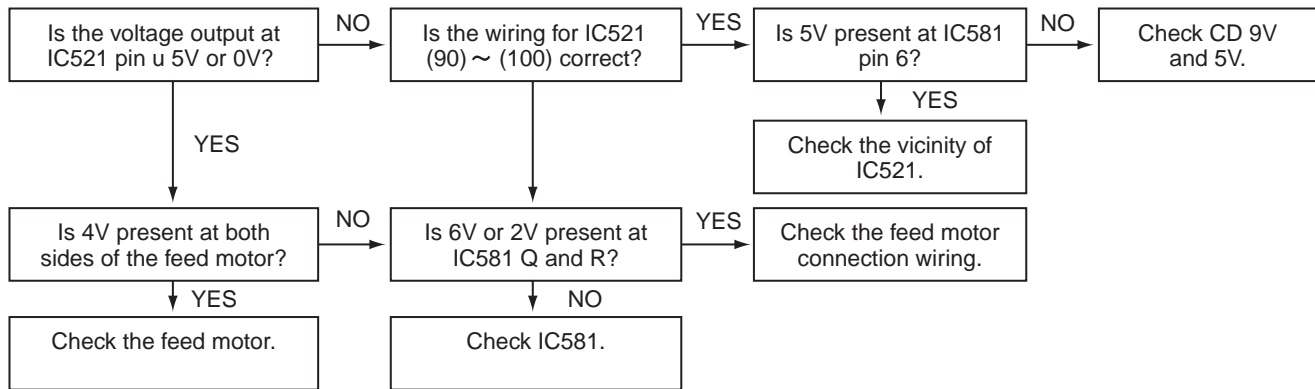
3.3 Flow of functional operation until TOC read



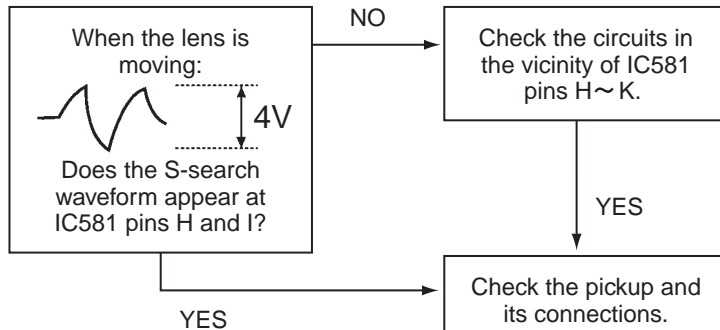
3.3.1 General section



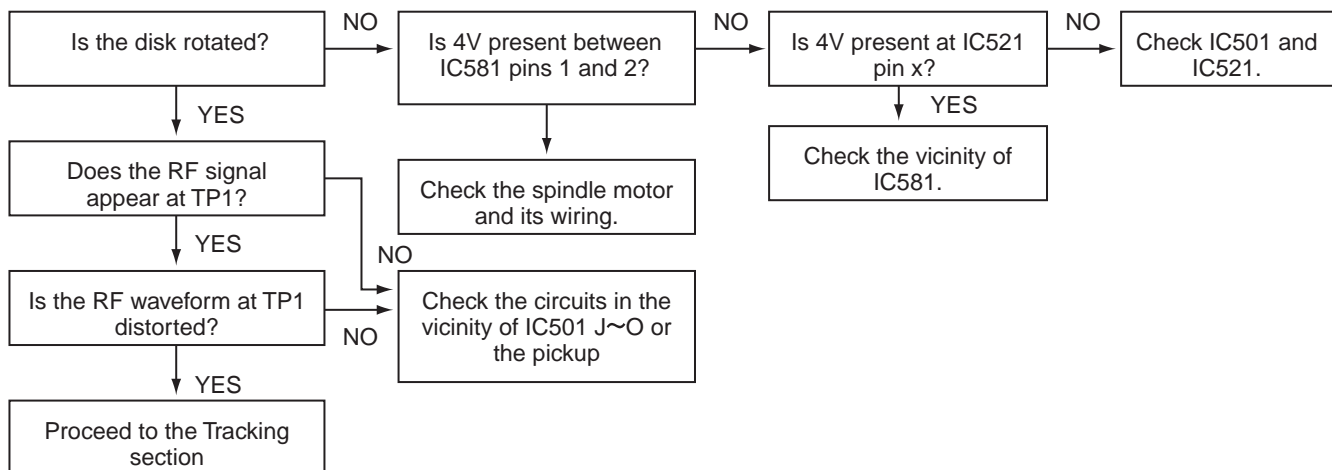
3.3.2 Feed section



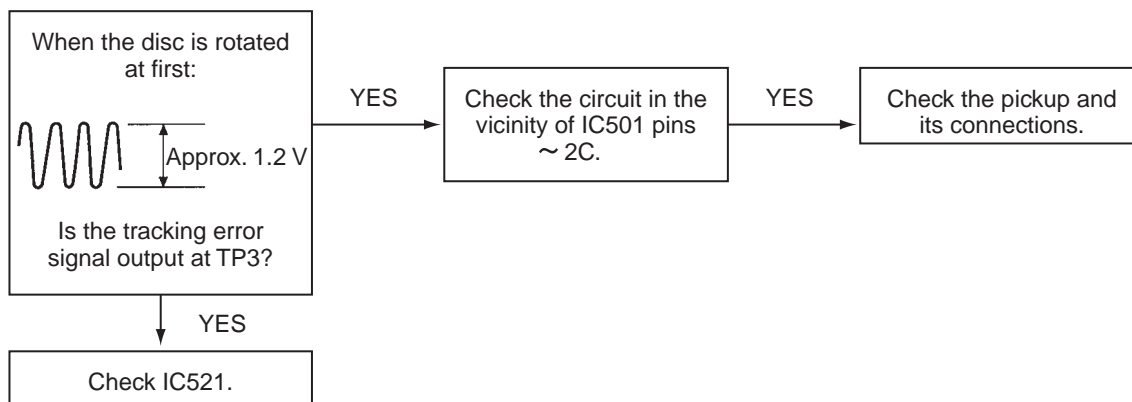
3.3.3 Focus section



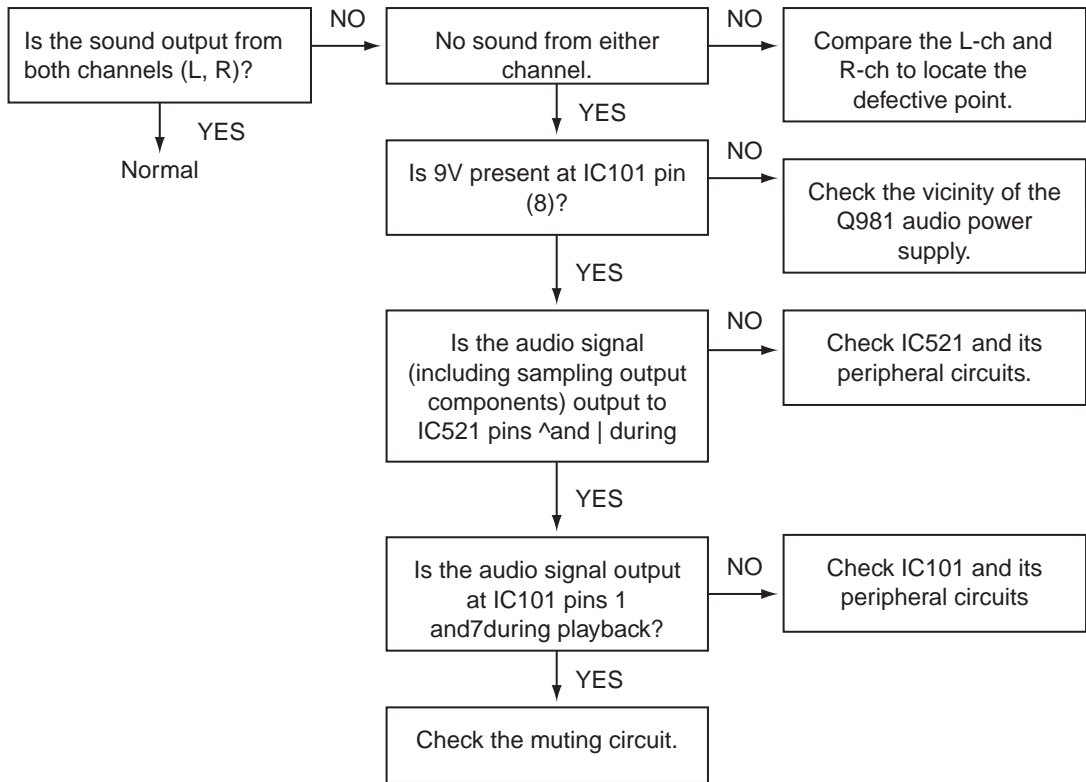
3.3.4 Spindle section



3.3.5 Tracking section

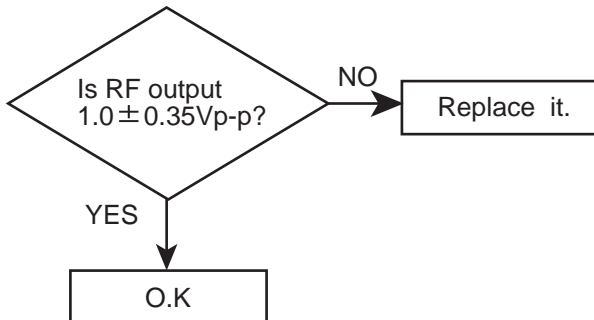


3.3.6 Signal processing section



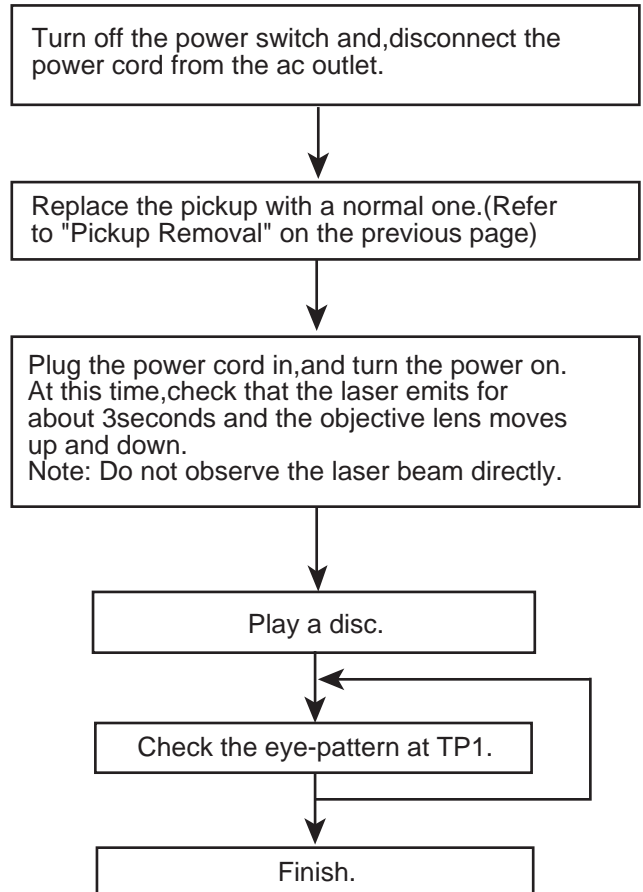
3.4 Maintenance of laser pickup

- (1) Cleaning the pick up lens
Before you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.
- (2) Life of the laser diode
When the life of the laser diode has expired,the following symptoms will appear.
- The level of RF output (EFM output:ampli tude of eye pattern) will be low.



- (3) Semi-fixed resistor on the APC PC board
The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power.Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor. If the laser power is lower than the specified value,the laser diode is almost worn out, and the laser pickup should be replaced. If the semi-fixed resistor is adjusted while the pickup is functioning normally,the laser pickup may be damaged due to excessive current.

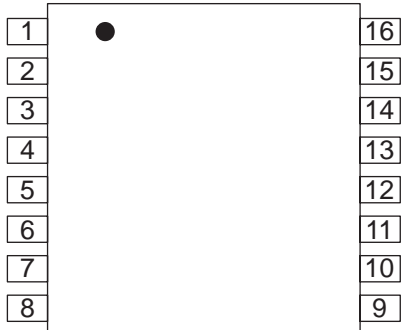
3.5 Replacement of laser pickup



SECTION 4 Description of major ICs

4.1 AK4381VT-X (IC121) : 2ch DAC

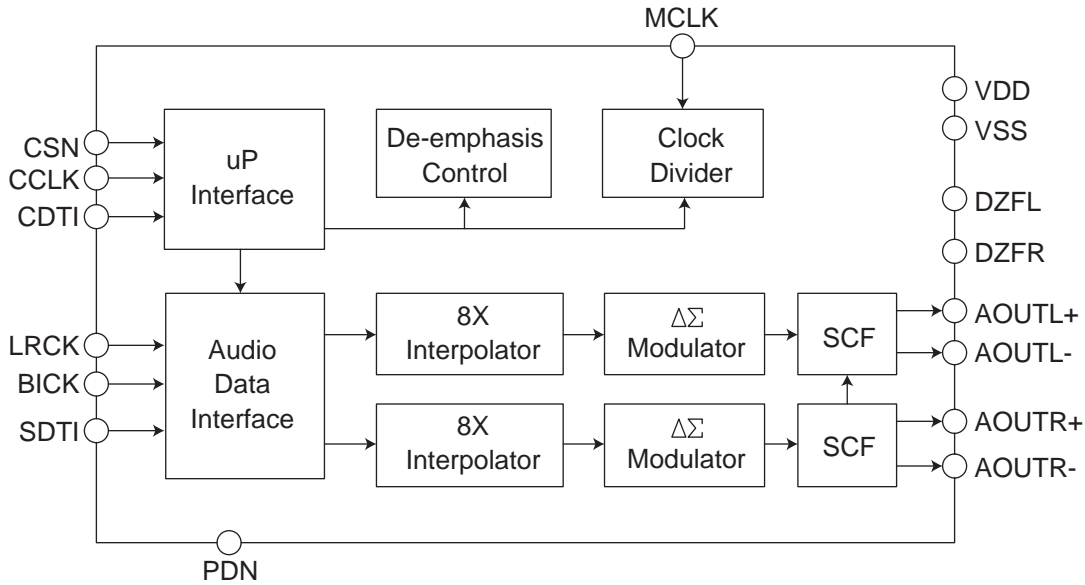
• Pin layout



• Pin functions

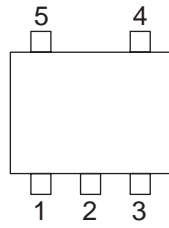
| Pin No | Symbol | Function |
|--------|--------|--------------------------------|
| 1 | MCLK | Master clock input pin |
| 2 | BICK | Audio serial data clock pin |
| 3 | SDTI | Audio serial data input pin |
| 4 | LRCK | L/R clock pin |
| 5 | PDN | Power-Down mode pin |
| 6 | CSN | Chip select pin |
| 7 | CCLK | Control data input pin |
| 8 | CDTI | Control data input pin |
| 9 | AOUTR- | Rch negative analog output pin |
| 10 | AOUTR+ | Rch positive analog output pin |
| 11 | AOUTL- | Lch negative analog output pin |
| 12 | AOUTL+ | Lch positive analog output pin |
| 13 | VSS | Ground pin |
| 14 | VDD | Power supply pin |
| 15 | DZFR | Rch data zero input detect pin |
| 16 | DZFL | Lch data zero input detect pin |

• Block diagram

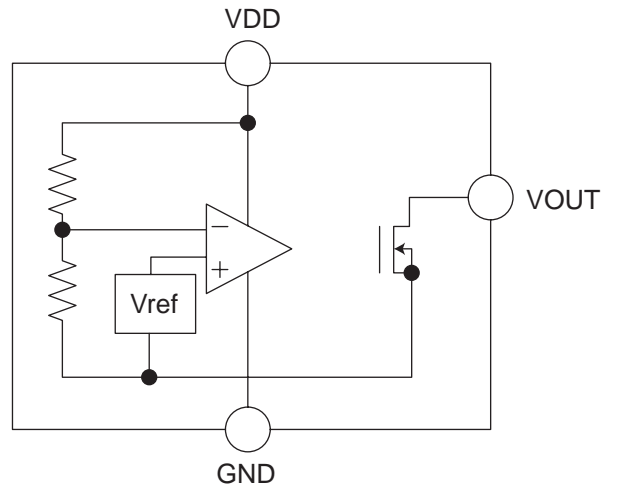


4.2 DB4833FVE-W (IC502) : Voltage detector

- Pin layout



- Block diagram

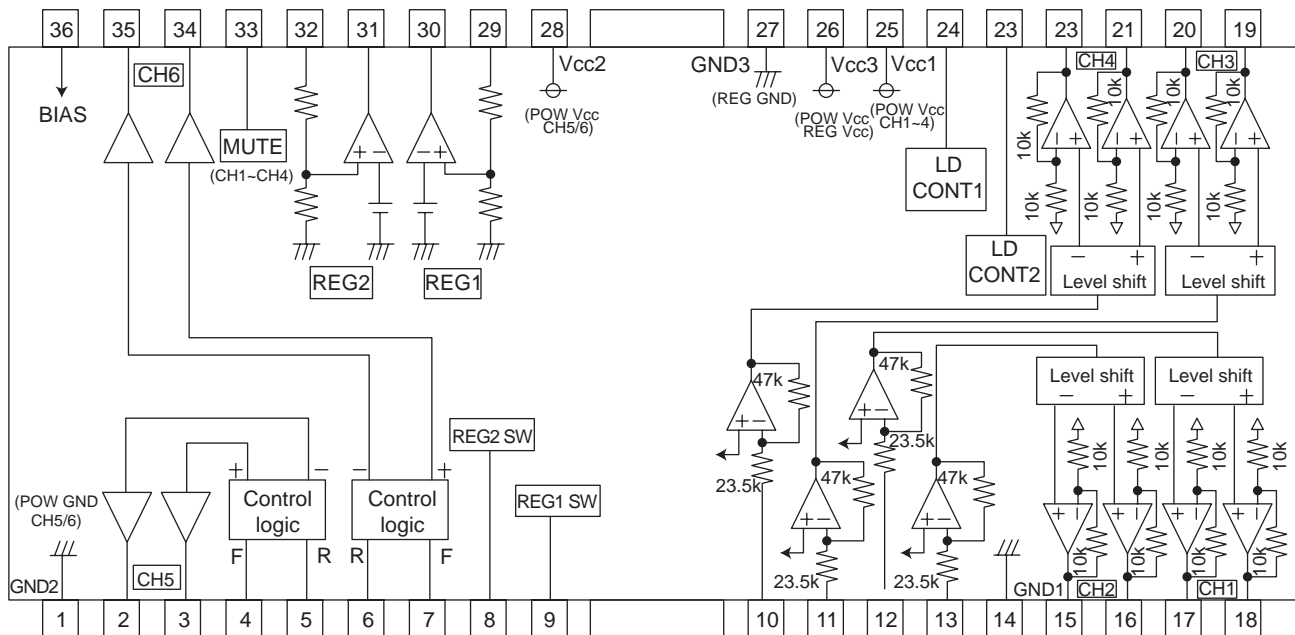


- Pin functions

| Pin No | Symbol | Function |
|--------|--------|----------------------------|
| 1 | VOUT | Reset output |
| 2 | SUB | Sub slate (connect to GND) |
| 3 | N.C. | Non connect |
| 4 | GND | GND |
| 5 | VDD | Power supply voltage |

4.3 BD7961FM-X (IC681) : Power driver

• Pin layout & Block diagram



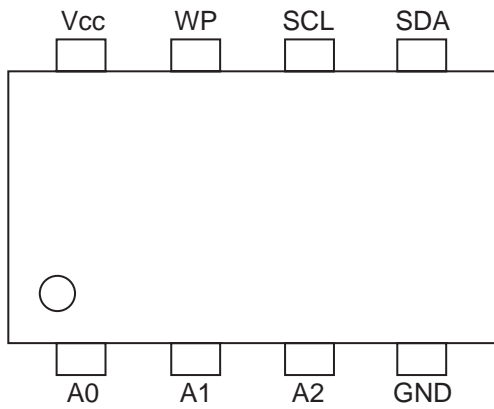
• Pin functions

| Pin No | Symbol | Function |
|--------|--------|---------------------------------|
| 1 | GND2 | Power GND (loading driver unit) |
| 2 | OUT5- | Loading driver (CH5) output - |
| 3 | OUT5+ | Loading driver (CH5) output + |
| 4 | IN5FWD | Loading driver (CH5) FWD input |
| 5 | IN5REV | Loading driver (CH5) REV input |
| 6 | IN6REV | Loading driver (CH6) REV input |
| 7 | IN6FWD | Loading driver (CH6) FWD input |
| 8 | REG2SW | Regulator 2 switch terminal |
| 9 | REG1SW | Regulator 1 switch terminal |
| 10 | IN4 | CH4 input |
| 11 | IN3 | CH3 input |
| 12 | IN1 | CH1 input |
| 13 | IN2 | CH2 input |
| 14 | GND1 | Power GND (BTL driver unit) |
| 15 | OUT2- | BTL driver (CH2) output - |
| 16 | OUT2+ | BTL driver (CH2) output + |
| 17 | OUT1- | BTL driver (CH1) output - |
| 18 | OUT1+ | BTL driver (CH1) output + |

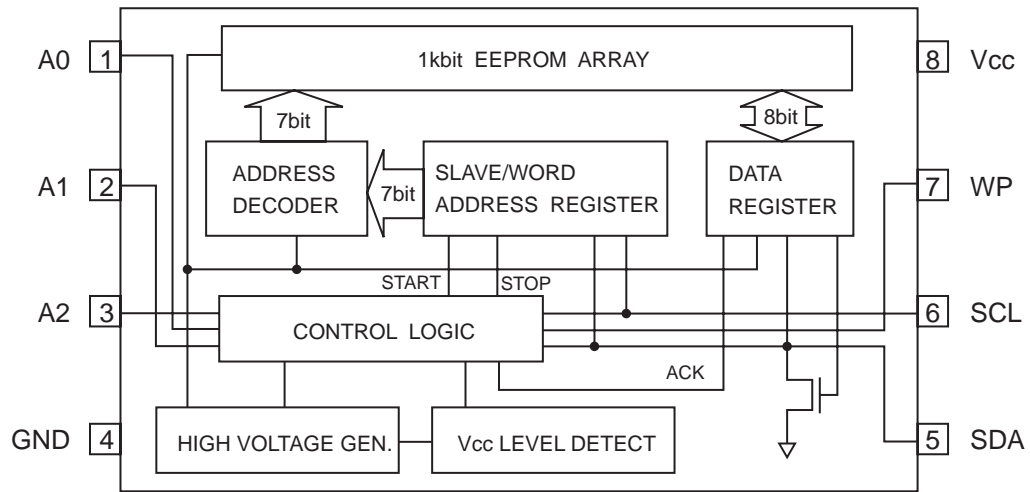
| Pin No | Symbol | Function |
|--------|---------|--------------------------------------|
| 19 | OUT3+ | BTL driver (CH3) output + |
| 20 | OUT3- | BTL driver (CH3) output - |
| 21 | OUT4+ | BTL driver (CH4) output + |
| 22 | OUT4- | BTL driver (CH4) output - |
| 23 | LDCONT2 | Loading driver (CH6) voltage setting |
| 24 | LDCONT1 | Loading driver (CH5) voltage setting |
| 25 | Vcc1 | Supply voltage (BTL driver unit) |
| 26 | Vcc3 | Supply voltage (regulator unit) |
| 27 | GND3 | REG GND (regulator unit) |
| 28 | Vcc2 | Supply voltage (loading driver unit) |
| 29 | REG1OUT | Regulator output 1 |
| 30 | REG1 B | Regulator 1 Tr base |
| 31 | REG2 B | Regulator 2 Tr base |
| 32 | REG2OUT | Regulator output 2 |
| 33 | MUTE | BTL drivermute terminal |
| 34 | OUT6+ | Loading driver (CH6) output + |
| 35 | OUT6- | Loading driver (CH6) output - |
| 36 | BIAS | BIAS terminal |

4.4 BR24C01AFV-W-X (IC503) : EEPROM

- Pin layout



- Block diagram



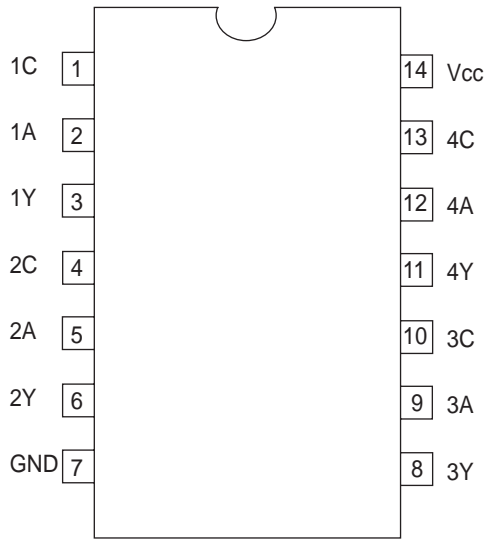
- Pin function

| Pin name | I/O | Description |
|----------|----------|---|
| Vcc | - | Power supply |
| GND | - | Ground (0v) |
| A0A1A2 | IN | Slave address set |
| SCL | IN | Serial clock input |
| SDA | IN / OUT | Slave and word addressserial data input serial data output *1 |
| WP | IN | Write protect input |

*1 An open drain output requires a pull-up resistor.

4.5 HD74HCT126T-X : (IC541,IC691) Buffer

• Pin arrangement

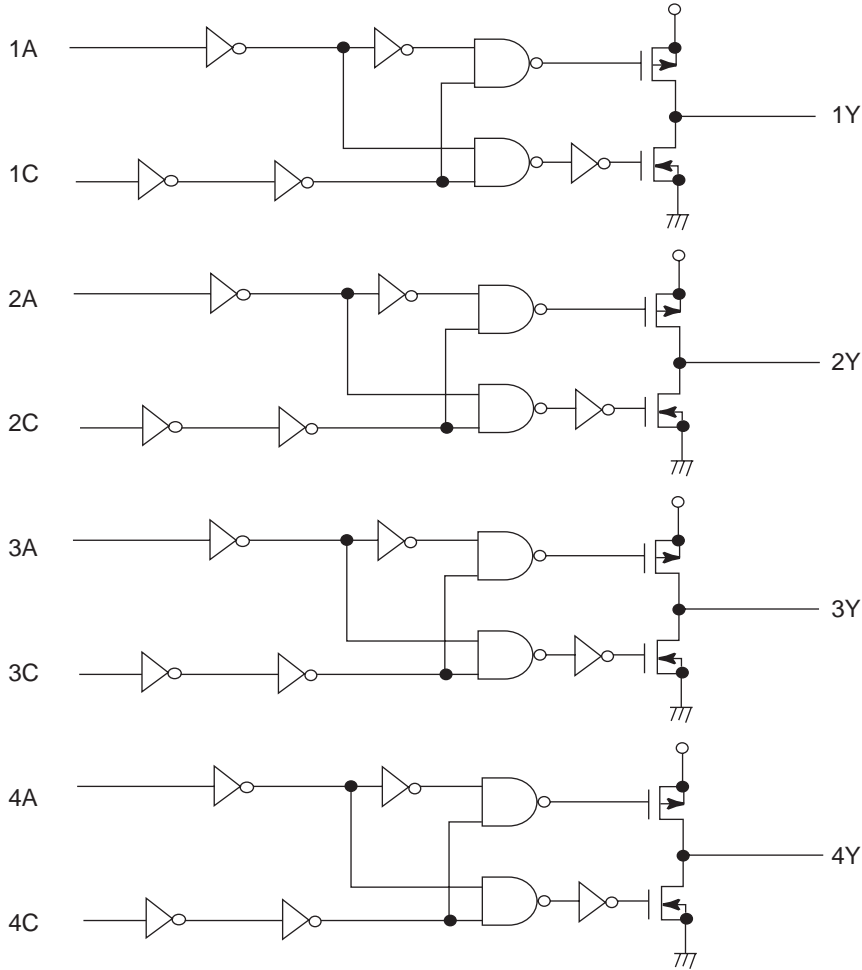


• Pin function

| Input | | Output |
|-------|---|--------|
| C | A | Y |
| L | X | Z |
| H | L | L |
| H | H | H |

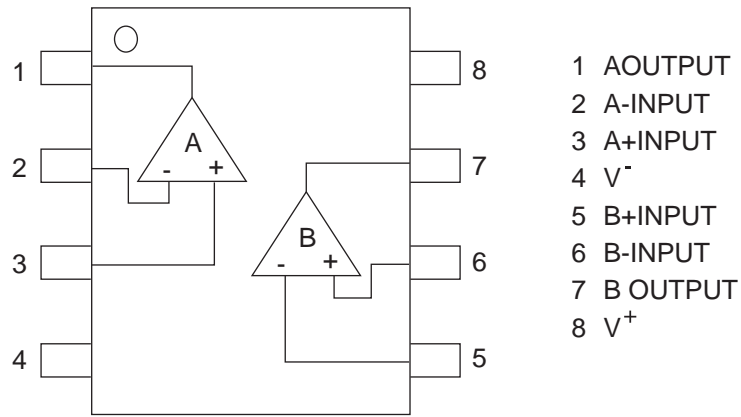
H : High level
 L : Low level
 X : Irrelevant
 Z : Off (Hhigh-impedance)state of a 3-stage output

• Block diagram



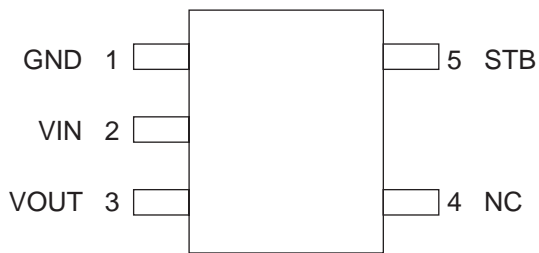
4.6 NJM4565V-X (IC151) : Dual ope amp

- Terminal layout & Pin function

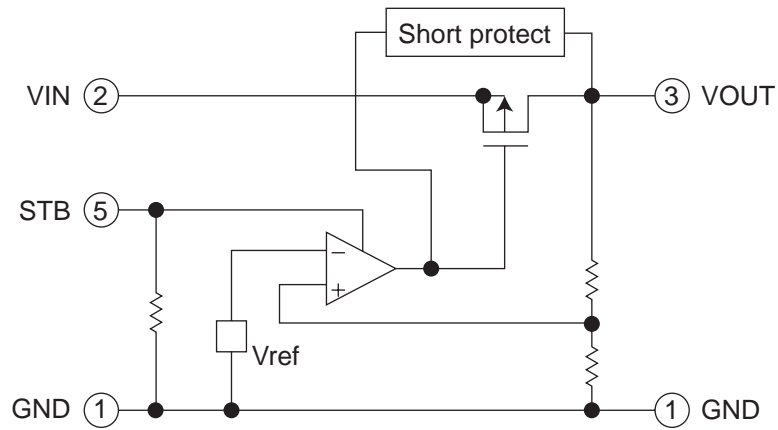


4.7 NJU7241F25-X (IC653) : Regulator

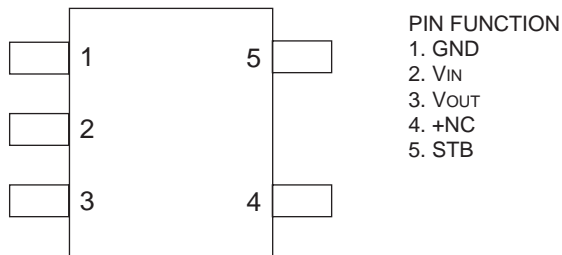
- Pin layout



- Block diagram

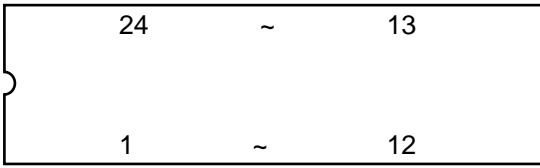


4.8 NJU7241F33-X (IC652) : Voltage regulator

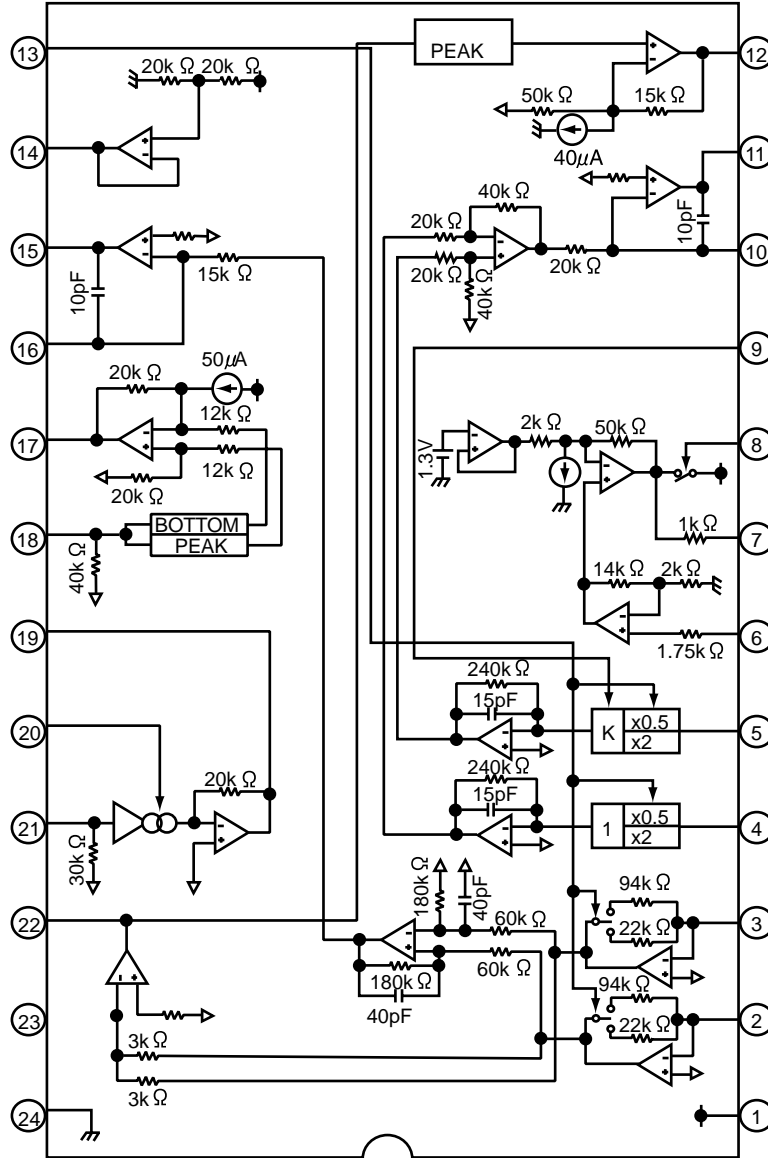


4.9 TA2157FN-X (IC601) : RF amp

- Terminal layout



- Block diagram



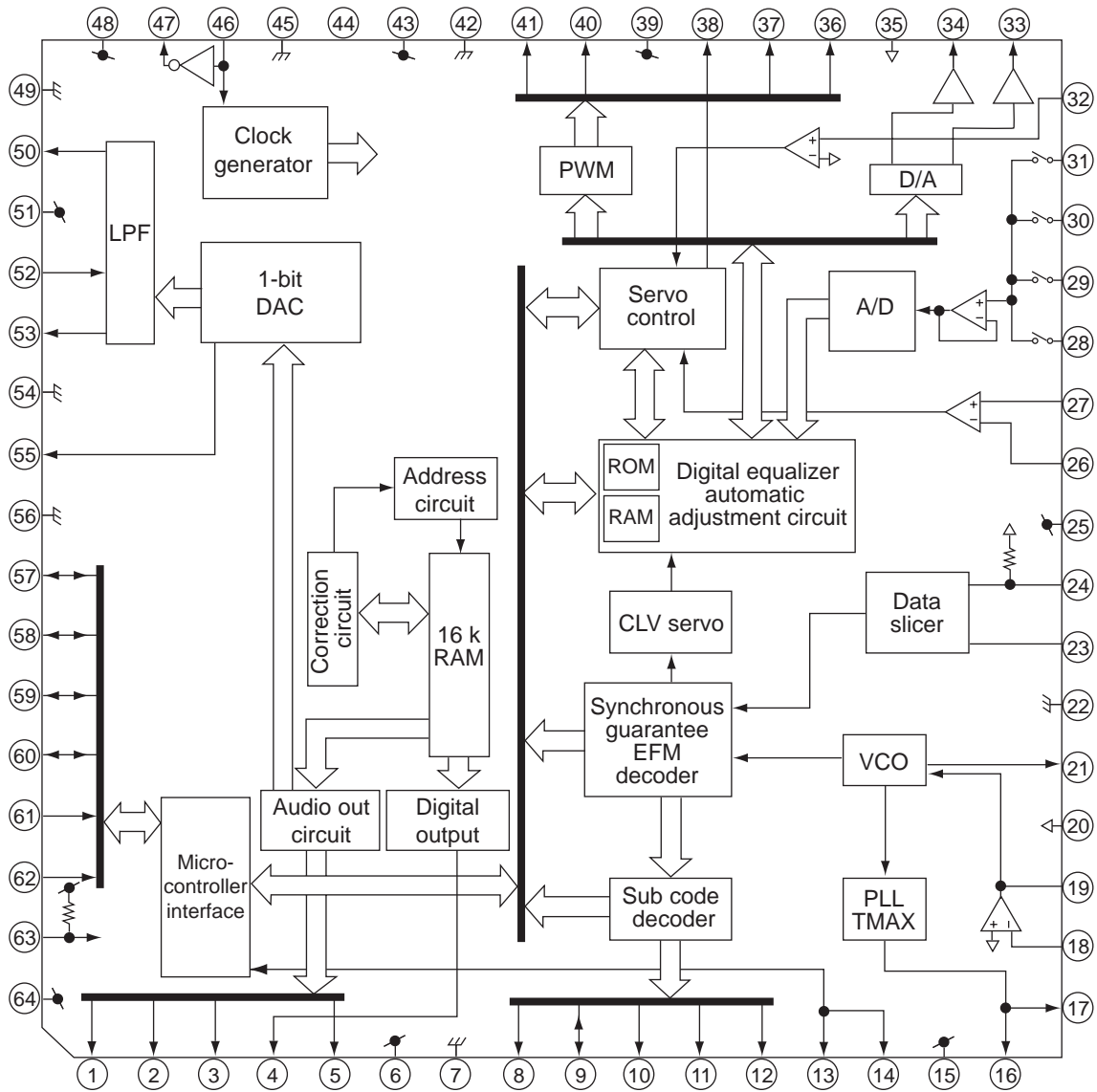
| PIN | SEL (APC SW) | TEB (TE BAL) | RFGC (AGC Gian) | TEB (TE BAL) |
|----------|--------------------|-----------------|--------------------|-----------------------|
| VCTRLPIN | | | | |
| VCC | APC ON | -50% | +12dB | Normal mode (0dB) |
| HiZ | APC ON | 0% | +6dB | Normal mode (0dB) |
| GND | APC OFF (LDO=H) | 50% | 0dB | CD-RW mode (+12dB) |

• Pin function

| Pin No. | Symbol | I/O | Function | | | | | | | | | | | | |
|---------|-------------|------------------------------------|--|------|-------------|-----|-------|-----|------------------------------------|-----|----|-----------------------|-----|----|-----------------------|
| 1 | VCC | - | 3.3V power supply pin | | | | | | | | | | | | |
| 2 | FNI | I | Main-beam amp input pin | | | | | | | | | | | | |
| 3 | FPI | I | Main-beam amp input pin | | | | | | | | | | | | |
| 4 | TPI | I | Sub-beam amp input pin | | | | | | | | | | | | |
| 5 | TNI | I | Sub-beam amp input pin | | | | | | | | | | | | |
| 6 | MDI | I | Monitor photo diode amp input pin | | | | | | | | | | | | |
| 7 | LDO | O | Laser diode amp output pin | | | | | | | | | | | | |
| 8 | SEL | I | APC circuit ON/OFF control signal, laser diode (LDO) control signal input or bottom/peak detection frequency change pin. <table border="1" data-bbox="646 489 1311 684"> <thead> <tr> <th>SEL</th> <th>APC circuit</th> <th>LDO</th> </tr> </thead> <tbody> <tr> <td>GND</td> <td>OFF</td> <td>Connected VCC through 1kΩ resistor</td> </tr> <tr> <td>Hiz</td> <td>ON</td> <td>Control signal output</td> </tr> <tr> <td>VCC</td> <td>ON</td> <td>Control signal output</td> </tr> </tbody> </table> | SEL | APC circuit | LDO | GND | OFF | Connected VCC through 1kΩ resistor | Hiz | ON | Control signal output | VCC | ON | Control signal output |
| SEL | APC circuit | LDO | | | | | | | | | | | | | |
| GND | OFF | Connected VCC through 1kΩ resistor | | | | | | | | | | | | | |
| Hiz | ON | Control signal output | | | | | | | | | | | | | |
| VCC | ON | Control signal output | | | | | | | | | | | | | |
| 9 | TEB | I | Tracking error balance adjustment signal input pin Adjusts TE signal balance by eliminating carrier component from PWM signal (3-state output, PWM carrier = 88.2kHz) output from TC94A14F/FA TEBC pin using RC-LPF and inputting DC. TEBC input voltage:GND~VCC | | | | | | | | | | | | |
| 10 | TEN | I | Tracking error signal generation amp negative-phase input pin | | | | | | | | | | | | |
| 11 | TEO | O | Tracking error signal generation amp output pin. Combining TEO signal RFRP signal with TC94A14F/FA configures tracking search system. | | | | | | | | | | | | |
| 12 | RFDC | O | RF signal peak detection output pin | | | | | | | | | | | | |
| 13 | GVSW | I | AGC/FE/TE amp gain change pin <table border="1" data-bbox="852 1041 1104 1236"> <thead> <tr> <th>GVSW</th> <th>Mode</th> </tr> </thead> <tbody> <tr> <td>GND</td> <td>CD-RW</td> </tr> <tr> <td>Hiz</td> <td rowspan="2">Normal</td> </tr> <tr> <td>VCC</td> </tr> </tbody> </table> | GVSW | Mode | GND | CD-RW | Hiz | Normal | VCC | | | | | |
| GVSW | Mode | | | | | | | | | | | | | | |
| GND | CD-RW | | | | | | | | | | | | | | |
| Hiz | Normal | | | | | | | | | | | | | | |
| VCC | | | | | | | | | | | | | | | |
| 14 | VRO | O | Reference voltage (VRO) output pin *VRO=1/2VCC When VCC=3.3V | | | | | | | | | | | | |
| 15 | FEO | O | Focus error signal generation amp output pin | | | | | | | | | | | | |
| 16 | FEN | I | Focus error signal generation amp negative-phase input pin | | | | | | | | | | | | |
| 17 | RFRP | O | Signal amp output pin for track count Combining RFRP signal and TEO signal with TC94A14F/FA configures tracking search system. | | | | | | | | | | | | |
| 18 | REIS | I | RF signal amplitude adjustment amp output pin Adjusts RF signal amplitude by eliminating carrier component from PWM signal (3-state output, PWM carrier=88.2kHz)output fromTC94A14F/14FA *RFGC pin using RC-LPF and inputting DC. *RFGC input voltage:GND~VCC | | | | | | | | | | | | |
| 19 | RFGO | O | | | | | | | | | | | | | |
| 20 | RFGC | I | | | | | | | | | | | | | |
| 21 | AGCIN | I | RF signal amplitude adjustment amp input pin | | | | | | | | | | | | |
| 22 | RFO | O | RF signal generation amp output pin | | | | | | | | | | | | |
| 23 | RFI | I | RF signal generation amp input pin | | | | | | | | | | | | |
| 24 | GND | - | GND pin | | | | | | | | | | | | |

4.10 TC94A14FA (IC621) : DSP & DAC

• Terminal layout & block diagram



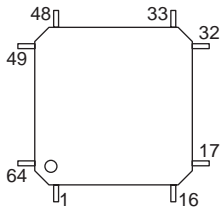
• Pin function

| Pin No | Symbol | I/O | Description |
|--------|-------------------|-----|--|
| 1 | BCK | O | Bit clock output pin. 32fs or 64fs selectable by command. |
| 2 | LRCK | O | L/R channel clock output pin. "L" for L channel and "H" for R channel. Output polarity can be inverted by command. |
| 3 | AOUT | O | Audio data output pin. MSB-first or LSB-first selectable by command. |
| 4 | DOUT | O | Digital data output pin. Outputs up to double-speed playback. |
| 5 | IPF | O | Correction flag output pin. When set to "H" AOUT output cannot be corrected by C2 correction processing. |
| 6 | V _{DD3} | - | Digital 3.3V power supply voltage pin. |
| 7 | V _{SS3} | - | Digital GND pin. |
| 8 | SBOK | O | Subcode Q data CRCC result output pin. "H" level when result is OK. |
| 9 | CLCK | O | Subcode P-W data read I/O pin. I/O polarity selectable by command. |
| 10 | DATA | O | Subcode P-W data output pin. |
| 11 | SFSY | O | Playback frame sync signal output pin. |
| 12 | SBSY | O | Subcode block sync signal output pin. "H" level at S1 when subcode sync is detected. |
| 13 | HSO | I/O | General-purpose input / output pins. Input port at reset. |
| 14 | UHSO | | |
| 15 | PV _{DD3} | - | PLL-only 3.3V power supply voltage pin. |
| 16 | PDO | O | EFM and PLCK phase difference signal output pin. |

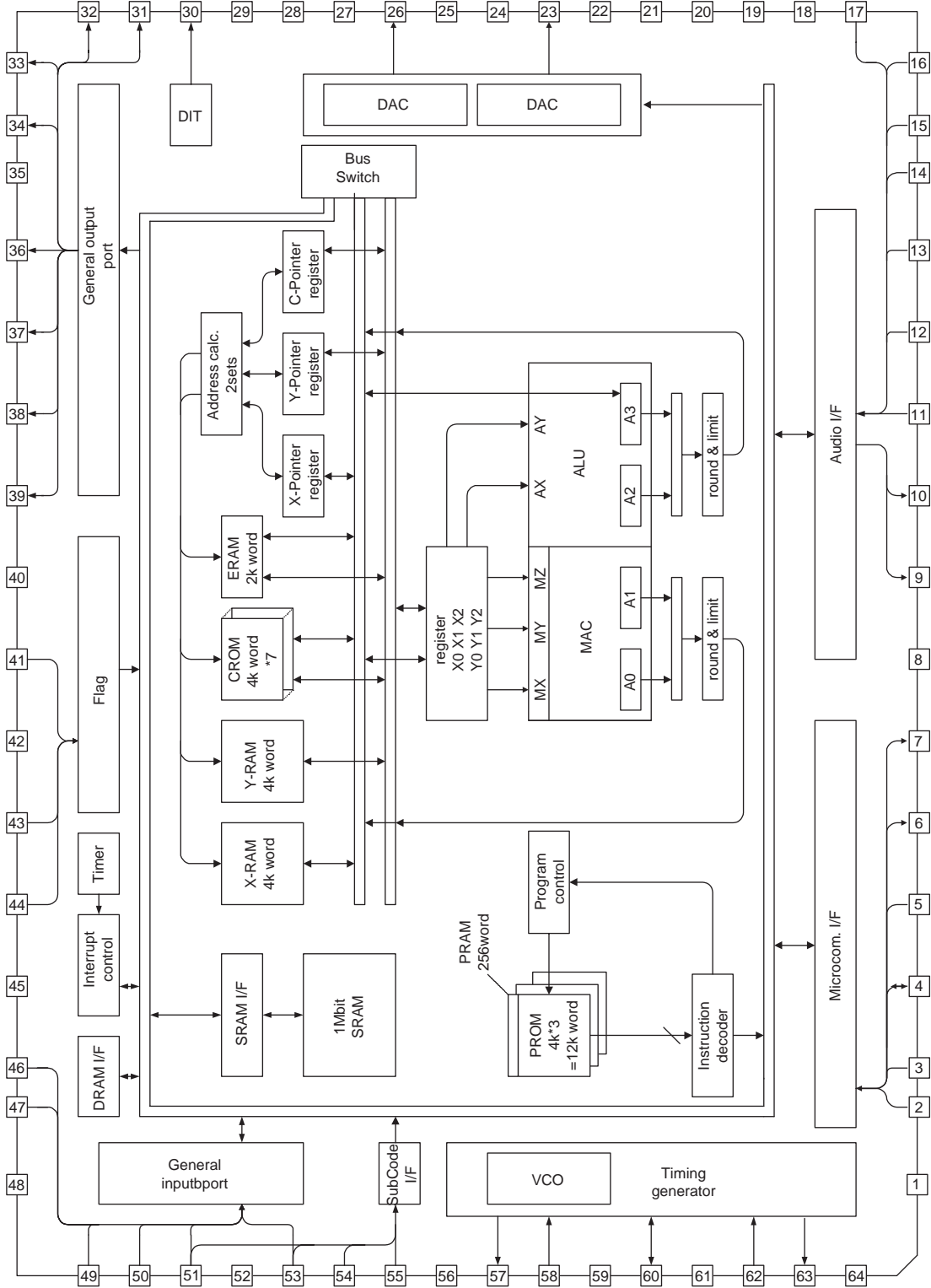
| Pin No | Symbol | I/O | Description | |
|--------|--------------------|-----|--|-----------------------|
| 17 | TMAX | O | TMAX detection result output pin. | |
| | | | TMAX Detection Result | TMAX Output |
| | | | Longer than fixed period | "PVD _{DD3} " |
| | | | Within fixed period | "HiZ" |
| | | | Shorter than fixed period | "AV _{SS3} " |
| 18 | LPFN | I | Inverted input pin for PLL LPF amp. | |
| 19 | LPFO | O | Output pin for PLL LPF amp. | |
| 20 | PVREF | - | PLL-only VREF pin. | |
| 21 | VCOF | O | VCO filter pin. | |
| 22 | AV _{SS3} | - | Analog GND pin. | |
| 23 | SLCO | O | DAC output pin for data slice level generation. | |
| 24 | RFI | I | RF signal input pin. Zin selectable by command. | |
| 25 | AV _{DD3} | - | Analog 3.3V power supply voltage pin. | |
| 26 | RFCT | I | RFRP signal center level input pin. | |
| 27 | RFZI | I | RFRP signal zero-cross input pin. | |
| 28 | RFRP | I | RF ripple signal input pin. | |
| 29 | FEI | I | Focus error signal input pin. | |
| 30 | SBAD | I | Sub-beam adder signal input pin. | |
| 31 | TEI | I | Tracking error input pin. Inputs when tracking servo is on. | |
| 32 | TEZI | I | Tracking error signal zero-cross input pin. | |
| 33 | FOO | O | Focus equalizer output pin. | |
| 34 | TRO | O | Tracking equalizer output pin. | |
| 35 | VREF | - | Analog reference power supply voltage pin. | |
| 36 | RFGC | O | RF amplitude adjustment control signal output pin. | |
| 37 | TEBC | O | Tracking balance control signal output pin. | |
| 38 | SEL | O | APC circuit ON/OFF signal output pin. At laser on, high impedance with UHS="L", H output with UHS="H". | |
| 39 | AV _{DD3} | - | Analog 3.3V power supply voltage pin. | |
| 40 | FMO | O | Feed equalizer output pin. | |
| 41 | DMO | O | Disc equalizer output pin. | |
| 42 | V _{SS3} | - | Digital GND pin. | |
| 43 | V _{DD3} | - | Digital 3.3V power supply voltage pin. | |
| 44 | TESIN | I | Test input pin. Normally, fixed to "L". | |
| 45 | XV _{SS3} | - | System clock oscillator GND pin. | |
| 46 | XI | I | System clock oscillator input pin. | |
| 47 | XO | O | System clock oscillator output pin. | |
| 48 | XV _{DD3} | - | System clock oscillator 3.3V power supply voltage pin. | |
| 49 | DV _{SS3R} | - | DA converter GND pin. | |
| 50 | RO | O | R-channel data forward output pin. | |
| 51 | DV _{DD3} | - | DA converter 3.3V power supply pin. | |
| 52 | DVR | - | Reference voltage pin. | |
| 53 | LO | O | L-channel data forward output pin. | |
| 54 | DV _{SS3L} | - | DA converter GND pin. | |
| 55 | ZDET | O | 1 bit DA converter zero detection flag output pin. | |
| 56 | V _{SS5} | - | Microcontroller interface GND pin. | |
| 57 | BUS0 | | | |
| 58 | BUS1 | | | |
| 59 | BUS2 | I/O | Microcontroller interface data I/O pins. | |
| 60 | BUS3 | | | |
| 61 | BUCK | I | Microcontroller interface clock input pin. | |
| 62 | /CCE | I | Microcontroller interface chip enable signal input pin. At "L", BUS0 to BUS3 are active. | |
| 63 | /RST | I | Reset signal input pin. At reset, "L". | |
| 64 | V _{DD5} | - | Microcontroller interface 5V power supply pin. | |

4.11 TC94A20F-011 (IC651) : DAC/SRAM built in type D-ROM decoder+ MP3 decoder

- Pin layout



- Block diagram

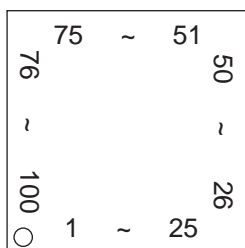


• Pin functions

| Pin No | Symbol | I/O | Functions |
|--------|------------|-----|--|
| 1 | /RESET | I | Hard reset input H:normal L:reset |
| 2 | MiMD | I | Micon I/F mode select input |
| 3 | /MiCS | I | Micon I/F chip select input |
| 4 | /MiLP | I | Micon I/F latch palus input |
| 5 | MiDio | I/O | Micon I/F data input/output |
| 6 | /MiCK | I | Micon I/F clock input |
| 7 | MiACK | O | Micon I/F acknowledge output |
| 8 | VDDT | - | Power supply for digital (3.3V) |
| 9 | SDo | O | Data output |
| 10 | BCKo | O | Bit output |
| 11 | LRCKo | O | LR clock output |
| 12 | SDiO | I | Data input 0 |
| 13 | BCKiA | I | Bit clock input A |
| 14 | LRCKiA | I | LR clock input A |
| 15 | SDiL | I | Data input terminal 1 |
| 16 | BCKiB | I | Bit clock input terminal B |
| 17 | LRCKiB | I | LR clock input terminal B |
| 18 | VDD | - | Power supply for digital (2.5V) |
| 19 | STANBY | I | Standby mode control input H:STBY L:normal |
| 20 | VSS | - | GND for digital |
| 21 | VSSL | - | GND for DAC Lch |
| 22 | VRAL | - | Reference voltage for DAC Lch |
| 23 | LO | O | DAC Lch output |
| 24,25 | VDAL,VDAR | - | Power supply for DAC Lch/Power supply for DAC Rch (2.5V) |
| 26 | RO | O | DAC Rch output |
| 27 | VRAR | - | Reference voltage for DAC Rch |
| 28 | VSSR | - | GND for DAC R ch |
| 29 | TESTP | I | Test terminal H:test mode L:normal |
| 30 | TXO | O | SPDIF output |
| 31~34 | Po0~Po3 | O | General purpose output 0 ~ 3 |
| 35 | VDDT | - | Power supply for digital (3.3V) |
| 36~38 | Po4~Po6 | O | General purpose output 4 ~ 6 |
| 39 | REQ | O | REC terminal |
| 40 | VSS | - | GND for digital |
| 41 | IRO | I/O | External interrupt input |
| 42 | VDDM | - | Internal 1Mbit SRAM power supply (2.5V) |
| 43,44 | Fi0,Fi1 | I | Flug input 0,1 |
| 45 | VSSM | - | GND for internal 1Mbit SRAM |
| 46,47 | Pi0,Pi1 | I | General ourpose input 01 |
| 48 | VSS | - | GND for digital |
| 49,50 | Pi2,Pi3 | I | General purpose input 23 |
| 51 | Pi4/CLCL | I | General purpose input 4/SUBQ I/F clock input/output |
| 52 | VDD | - | Power supply for digital (2.5V) |
| 53 | Pi5/DATA | I | General purpose input 5/SUBQ I/F data input |
| 54 | TSTiN/SFSY | I | Test terminal/SUBQ I/F flame sync input |
| 55 | Fi2/SBSY | I | Flug input 2/SUBQ I/F block sync input |
| 56 | VSSP | - | GND for VCO |
| 57 | Pdo | O | PLL phase error detection signal output |
| 58 | Vcoi | I | VCO control voltage input |
| 59 | VDDP | - | Power supply for VCO (2.5V) |
| 60 | CKo/CKi | I/O | External clock input/Clock output terminal |
| 61 | VDDX | - | Power supply for X'tal oscillator (2.5V) |
| 62,63 | Xi,Xo | I,O | Oscillator connection terminal for input/output |
| 64 | VSSX | - | GND for oscillator |

4.12 UPD784217AGC209 (IC501) : System micon

- Pin layout



- Pin functions

| Pin No | Symbol | I/O | Function |
|--------|-----------|-----|--|
| 1 | NC | O | Non connect |
| 2 | DAC SEL | I | DAC presence mode |
| 3,4 | NC | - | Non connect |
| 5 | MP3 SEL | I | MP3 presence mode |
| 6 | SHOCK SEL | I | H:shock detection 1 L:shock detection 2 |
| 7 | STAGE1 | I | LCD/AD key/Rimocon invalid select L:invalid |
| 8 | STAGE2 | I | Initial setting port |
| 9 | VDD1 | - | Connect to 5V |
| 10 | X2 | O | Oscillator output(12.5MHz) |
| 11 | X1 | I | Oscillator input(12.5MHz) |
| 12 | GND | - | GND |
| 13 | XT2 | O | Open |
| 14 | XT1 | I | Connect to GND |
| 15 | RESET | I | Reset input |
| 16 | REMOCON | I | Remocon signal input |
| 17 | B.DET | I | Buck up power supply detection |
| 18 | P.DET | I | Main power off detection |
| 19 | BUS INT | I | JVC BUS communication start interrupu input |
| 20 | MP3 REQ | I | CD MP3 request input |
| 21 | NC | - | Non connect |
| 22 | EJECT | I | Eject key input |
| 23 | VDD0 | - | Connect to 5V |
| 24 | AVDD | - | Connect to AD CONT(power supply for A/D converter) |
| 25 | IOP | I | Pickup IOP measurement input |
| 26~29 | KEY0~3 | I | Key input 0 ~ 3 (8bit A/D input) |
| 30 | TEMP IN | I | Temp. detection input |
| 31 | L SENSOR | I | Linear senser input (8bit A/D input) |
| 32 | NC | I | Non connect (connect to GND) |
| 33 | GND | - | GND for A/D converter |
| 34 | ADCONT | O | Out put H at power ON stop mode:L |
| 35 | V CONT | O | Position motor voltage control analog output |
| 36 | VREF | - | Reference voltage for A/D converter |
| 37 | EPROMDI | I | EEPROM data input |
| 38 | EPROMDO | O | EEPROM data output |
| 39 | EPROMCK | I/O | EEPROM clock inpt/output |
| 40 | LCD CE | O | CE output for LCD driver |
| 41 | LCD DA | O | Data output for LCD driver |
| 42 | LCD CK | O | Clock output for LCD driver |
| 43 | NC | O | Non connect |
| 44 | BUS I/O | O | JVC BUS input/output control |
| 45 | BUS SI | I | JVC BUS data input |
| 46 | BUS SO | O | JVC BUS data output |

| Pin No | Symbol | I/O | Function |
|--------|-----------|-----|--|
| 47 | BUS SCK | I/O | JVC BUS colck input/ooutput |
| 48 | POSMO+ | O | Position motor control output |
| 49 | POSMO- | O | Position motor control output |
| 50 | TRAYMO+ | O | Tray motor control output |
| 51 | TRAYMO- | O | Tray motor control output |
| 52,53 | NC | - | Non connect |
| 54 | EMPH | O | Emphasis select output H:ON |
| 55 | PWR CONT | O | Output for power control H:ON |
| 56 | BUSOUT | O | JVC BUS output |
| 57 | CD ON | O | CD power supply control (5V) H:ON |
| 58 | NC | - | Non connect |
| 59 | CD MUTE | O | CD mute output H:mute ON |
| 60 | SHOCK | I | Shock detection input Shock:L |
| 61 | NC | - | Non connect |
| 68 | 2X PLAY | O | 2x speed playback corespond RF frequency response select output (2x:L) |
| 69 | RW SEL | O | CD-RW select output (RW:L) |
| 70,71 | NC | - | Non connect |
| 72 | GND | - | GND |
| 73 | MP3 DI | I | CD MP3 data input |
| 74 | MP3 DO | O | CD MP3 data output |
| 75 | MP3 CK | O | Clock for CD MP3 data |
| 76 | MP3 RESET | O | CD MP3 reset |
| 77 | MP3 STB | O | CD MP3 standby output (H:standby) |
| 78 | CD CHECK | I | CD CHECK mode input (only reset mode) |
| 79 | LED | O | Lifter LED output |
| 80 | EPROM CLR | I | EPROM clear input |
| 81 | VDD | - | Connect to 5V |
| 82 | MAG IN | I | Magazin switch L:magazin in |
| 83 | TRAY IN | I | Tray return switch L: complete return |
| 84 | TRAY OUT | I | Tray loading switch L:complete loading |
| 85 | REST | I | Rest switch |
| 86 | DAC PDN | O | DAC power down mode |
| 87 | DAC CSN | O | DAC chip select output |
| 88 | DAC CCLK | O | DAC clock data output |
| 89 | DAC CDTI | O | DAC data output |
| 90 | NC | O | Non connect |
| 91 | DSP RESET | O | CD DSP reset |
| 92 | CCE | O | CD DSP chip enable |
| 93 | BUCK | O | Clock for CD DSP data |
| 94 | VPP | - | Connect to GND |
| 95~98 | BUS0~3 | I/O | CD DSP data 0 ~ 3 |
| 99100 | NC | I | Non connect |

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