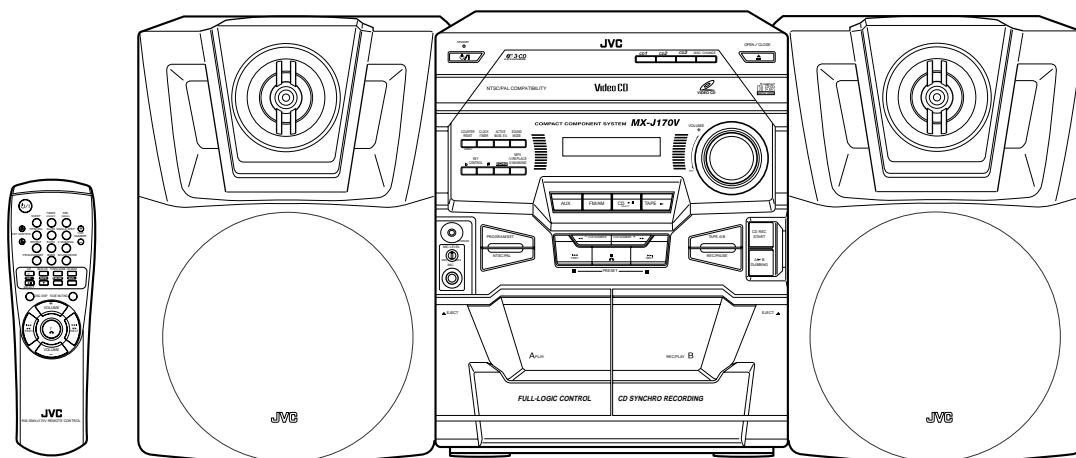# JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

MX-J170V

COMPACT disc DIGITAL VIDEO

COMPACT disc DIGITAL AUDIO

VIDEO CD

Video CD PlayBack Control

Area Suffix
US ············· Singapore
U ············ Other Areas

Contents

Safety Precautions

1. This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer`s warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.

4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

5. Leakage current check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock. Do not use a line isolation transformer during this check.

   ● Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet , particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.)

   ● Alternate check method
   Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground. Measure the AC voltage across the resistor with the AC voltmeter.
   Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Voltage measured any must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).
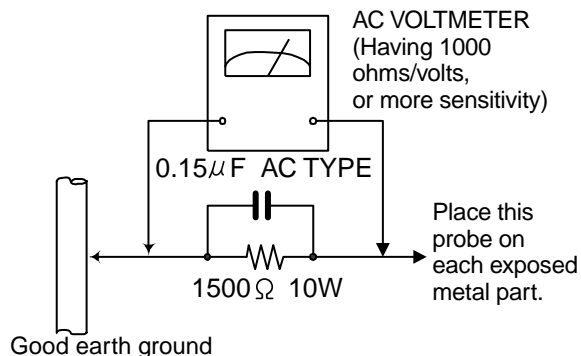
Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

⚠ *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 preforming repair of this system.

Important for laser products

1.CLASS 1 LASER PRODUCT

2.DANGER : Invisible laser radiation when open and inter lock failed or defeated. Avoid direct exposure to beam.

3.CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.

4.CAUTION : The compact disc player uses invisible laserradiation and is equipped with safety switches whichprevent emission of radiation when the drawer is open and the safety interlocks have failed or are de feated. It is dangerous to defeat the safety switches.

5.CAUTION : If safety switches malfunction, the laser is able to function.

6.CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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

VARNING : Osynlig laserstrålning är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen.

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle.Älä katso säteeseen.

ADVARSEL : Usynlig laserstråling ved åbning , når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning,når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL

DANGER : Invisibie laser radiation when open and interlock or defeated.
AVOID DIRECT EXPOSURE TO BEAM (e)

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle.Älä katso säteeseen. (d)

VARNING : Osynlig laserstrålning är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen. (s)

ADVARSEL :Usynlig laserstråling ved åbning , når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling. (f)

CLASS 1 LASER PRODUCT
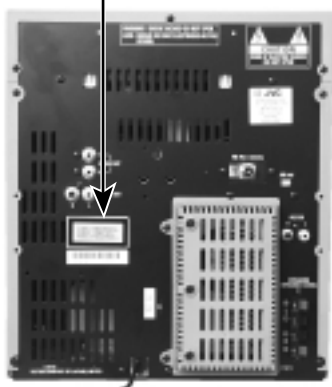
Preventing static electricity

1. Grounding to prevent damage by 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.

2. About the earth processing for the destruction prevention by static electricity
In the equipment which uses optical pick-up (laser diode), optical pick-up is destroyed by the static electricity of the work environment.
Be careful to use proper grounding in the area where repairs are being performed.

2-1 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.

2-2 Ground yourself
Use an anti-static wrist strap to release any static electricity built up in your body.

(caption)
Anti-static wrist strap

1MΩ

Conductive material
(conductive sheet) or iron plate
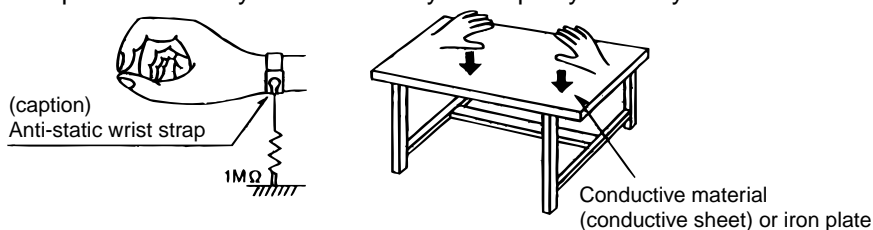
3. Handling the optical pickup
1. In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)

2. 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.

4. 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

Attention when CD mechanism assembly is decomposed

*Please refer to "Disassembly method" in the text for pick-up and how to detach the CD mechanism assembly.

1. Remove the CD changer unit.
2. Remove the CD changer mechanism.
3. Solder is put up before the card wire is removed from the pickup unit connector on the CD mechanism assembly.
   (When the card wire is removed without putting up solder, the CD pick-up assembly might destroy.)
4. Please remove solder after connecting the card wire with the pickup unit connector when you install picking up in the substrate.

CD changer unit

Card wire

Pickup unit connector

CD mechanism

Fig.1

Card wire

Soldering

Pickup unit connector

Fig.2
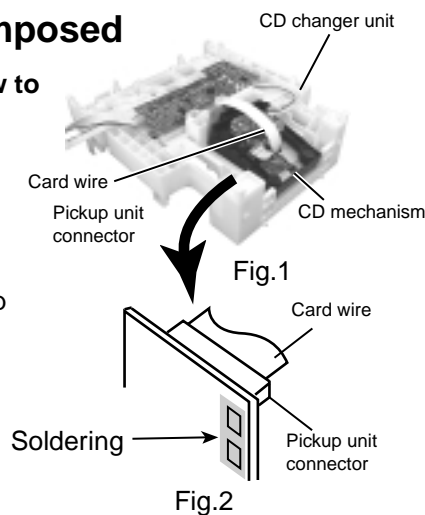
Disassembly method

\<Main body\>

■ Removing the top cover and the side covers (See Fig.1 to 3)

1. Remove the five screws **A** on the back of the body and the both sides of the body.

2. Remove the top cover upward from behind.

3. Remove the eight screws **B** attaching the side covers on the back of the body and the both side of the body.

4. Slide the right and left covers backward and unhook the two hooks **a** in the lower part of the side covers as shown in Fig.2-2.
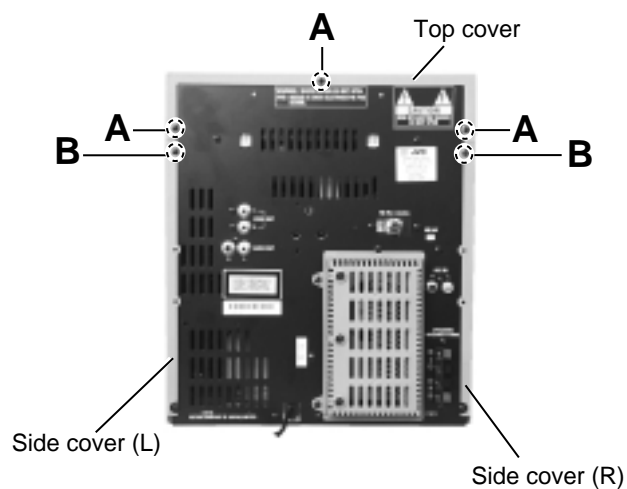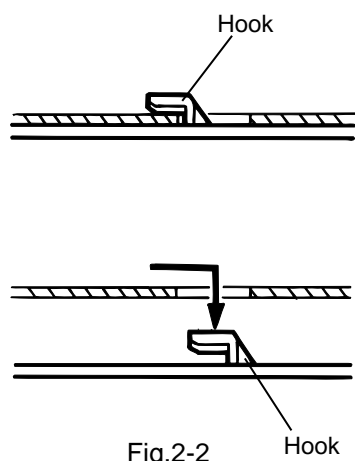

Top cover
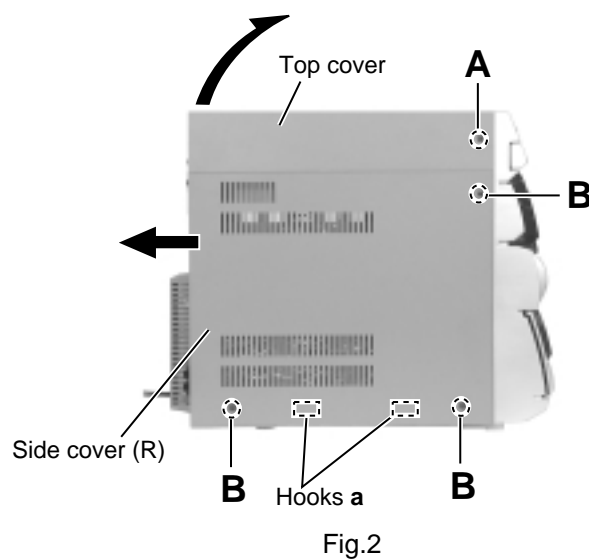
Side cover (L)

Side cover (R)

Fig.1

Hook

Hook

Fig.2-2

Top cover

Side cover (R)

Hooks **a**

Fig.2

Top cover
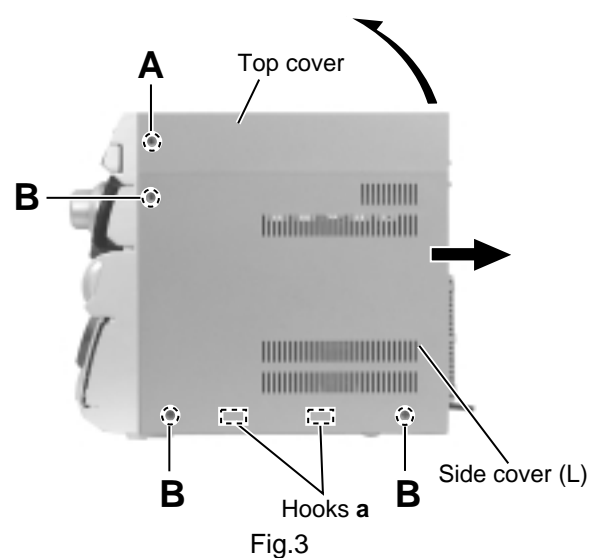
Hooks **a**

Side cover (L)

Fig.3

■Removing the CD Tray fitting
(See Fig. 4 to 6)

· Prior to performing the following procedure, remove the top cover and the side covers.

ATTENTION: Be sure to remove the CD tray fitting before removing the CD changer unit.

1. Press the POWER button. Press the OPEN/CLOSE button to eject the CD tray.

2. Move the CD tray fitting upward and release the joint **b**.

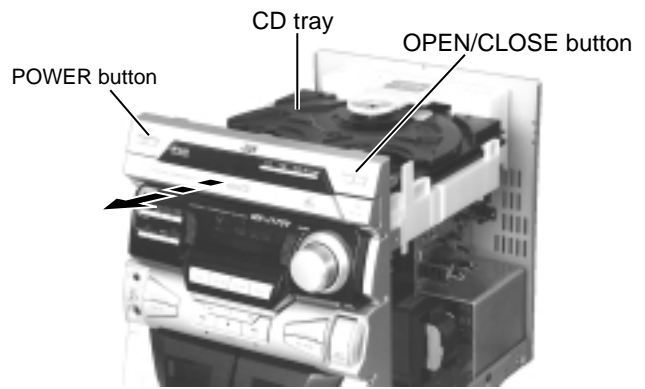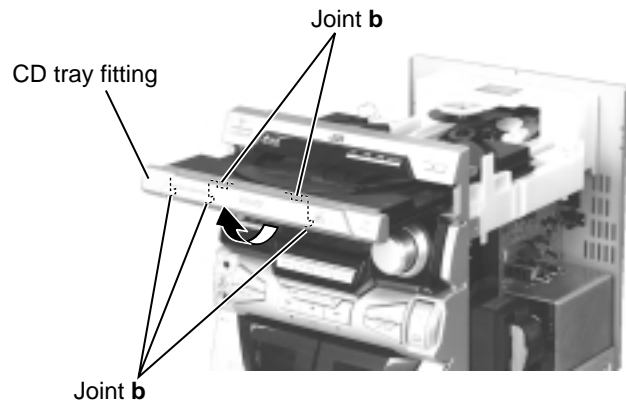3. Press the OPEN/CLOSE button to insert the CD tray.

CD tray

OPEN/CLOSE button

POWER button

Fig.4

Joint **b**

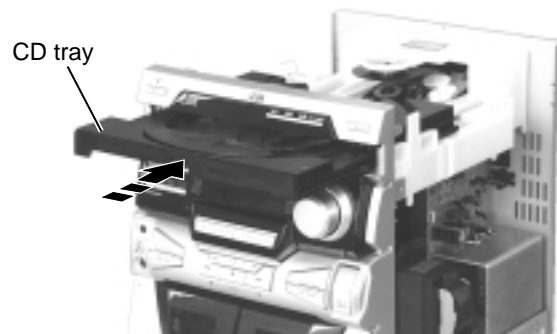CD tray fitting

Joint **b**

Fig.5

CD tray

Fig.6

■Removing the CD Tray fitting & the VCD board   (See Fig.7 to 10)

- How to eject the CD tray without turning on power -

• Prior to performing the following procedure, remove the top cover and the side covers.

    ATTENTION: Be sure to remove the CD tray fitting before removing the CD changer unit.

1. Disconnect the harness from connector PCON1 of the VCD board.

2. Remove the four screws **W** attaching the sealed and VCD board.

3. Turn the black loading pulley gear marked **c** from the back of the CD changer unit as shown in Fig.8 and draw the CD tray toward the front.

4. Move the CD tray fitting upward and release the joint **b**.

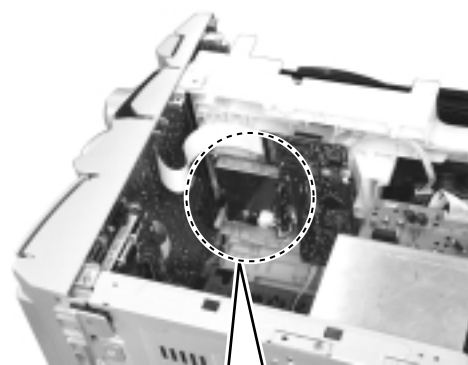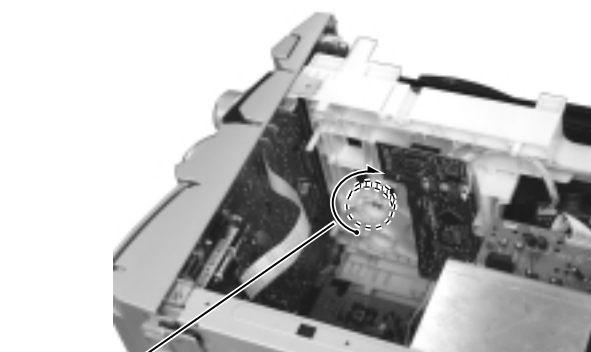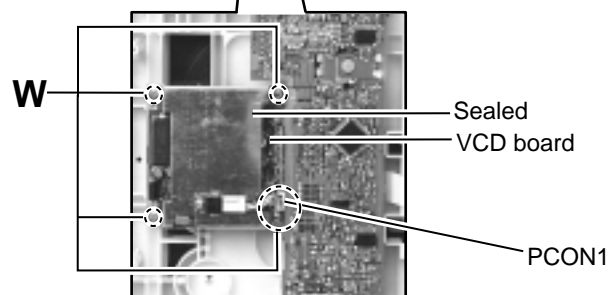5. Push and insert the CD tray manually.

Fig.7

W

Sealed

VCD board

PCON1

Marked **c**
Loading pulley gear   Fig.8

Joint **b**

CD tray fitting
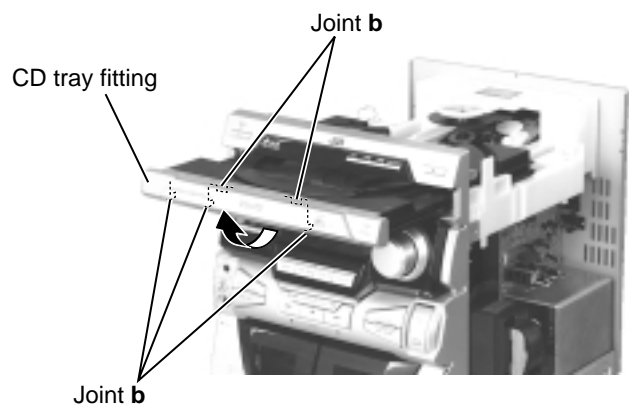
Joint **b**

Fig.9

CD tray

Fig.10

■ Removing the CD changer unit
(See Fig.11 to 13)

・ Prior to performing the following procedure, remove the top cover, the side covers and the CD Tray fitting.

1. Disconnect the card wire from connector SCW1 of the CD servo board on the back of the CD changer unit.

2. Disconnect the harness from connector FW2 on the inner side of the main board in the body.

3. Disconnect the harness from connector VCW2 on the VDC power board .

4. Remove the two screws **C** attaching the CD changer unit on the back of the body.

5. Draw the CD changer unit upward from behind while pulling the rear panel outward.

CD servo board
SCW1
CD changer unit
VCD power board
Main board
FW2   VCW2

Fig.11

C

Rear panel

Fig.12

Front panel assembly
CD changer unit
Rear panel
VCD power board

Fig.13

■ Removing the front panel assembly
(See Fig.14 to 16)

・ Prior to performing the following procedure, remove the top cover, the side covers, the CD Tray fitting and the CD changer unit.

・ There is no need to remove the rear panel.

1. Disconnect the harness from head wire connector ECW1,DW1 and DW2 on the inner side of the main board in the body.

2. Disconnect the harness from connector HCW1 of the headphone board on the right side of the body.

3. Remove the three screws **D** attaching the front panel assembly on both sides of the body.
   Remove the screw **E** attaching the earth terminal extending from the front compartment.

4. Remove the screw **F** attaching the front panel assembly on the bottom of the body.

5. Release the two joints **d** on both sides and two joints **e** on the bottom of the body using a screwdriver. At the same time, disconnect the front compartment from connector CCW1 and CCW2 of the main board.

Front panel assembly
Main board
CCW1
CCW2
DW1
DW2
ECW1
Joint **d**
D
E
earth wire
Fig.14

Front panel assembly
D
MIC /Headphone board HCW1
Joint **d**
D
Main board
Fig.15
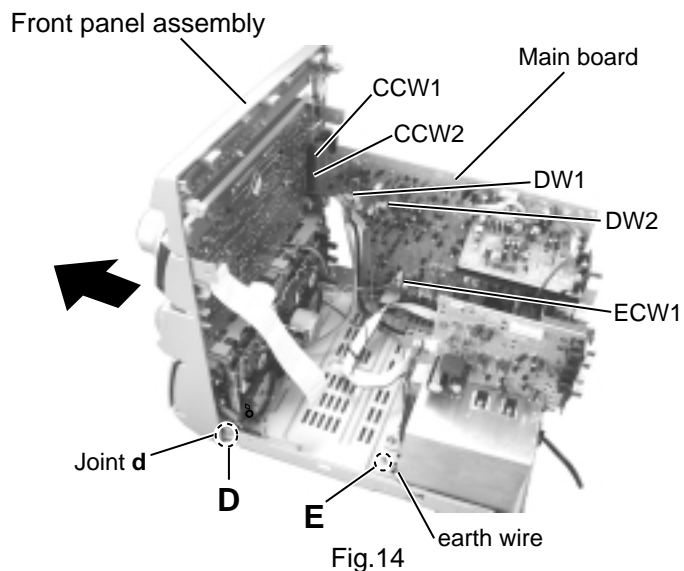
Joint **e**
F
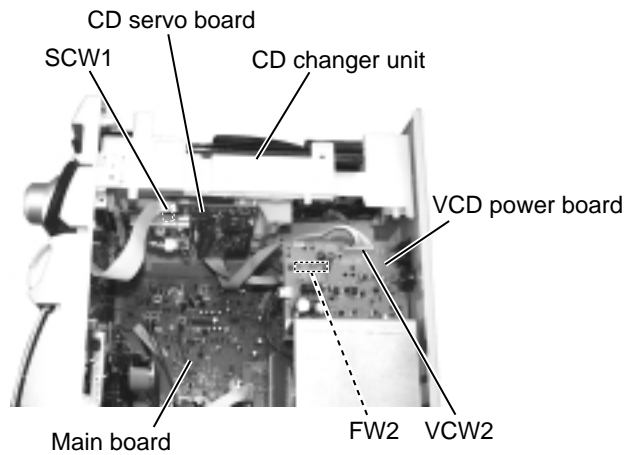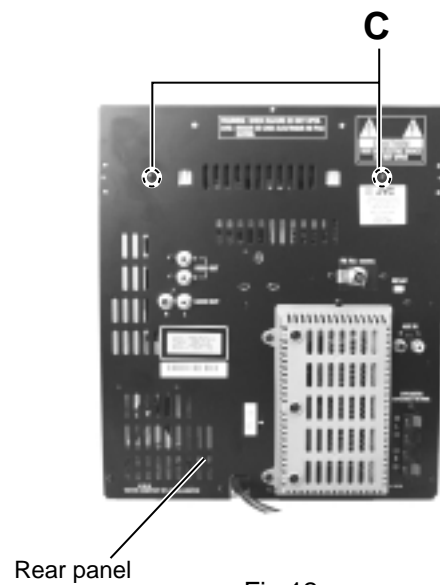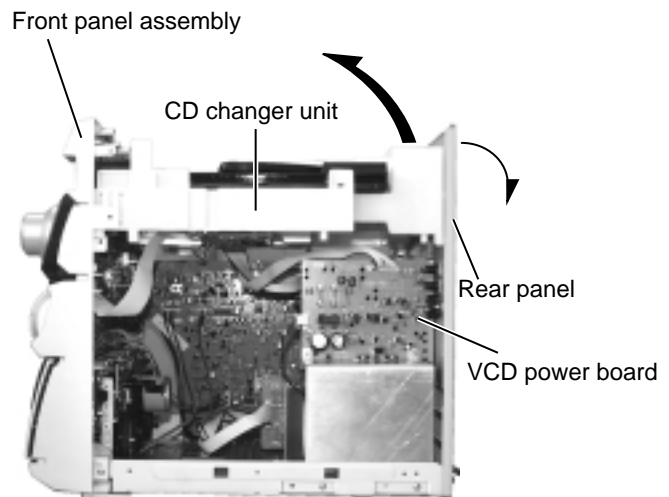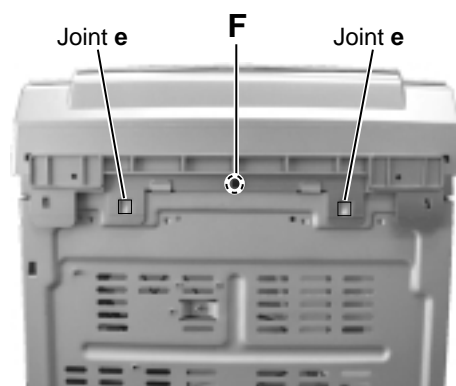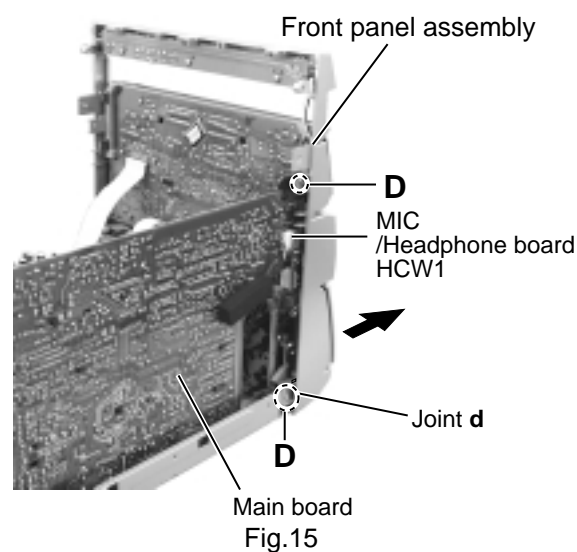Joint **e**
Fig.16

■ Removing the rear panel (See Fig.17)

・Prior to performing the following procedure, remove the top cover, the side covers, the CD Tray fitting and the CD changer unit.

・There is no need to remove the front panel assembly.

1. Remove the ten screws **G** attaching the main board, the tuner board and the heat sink to the rear panel on the back of the body.

2. Remove the three screws **H** attaching the VCD power board to the rear panel on the back of the body.

3. Remove the four screws **I** attaching the rear panel on the back of the body.
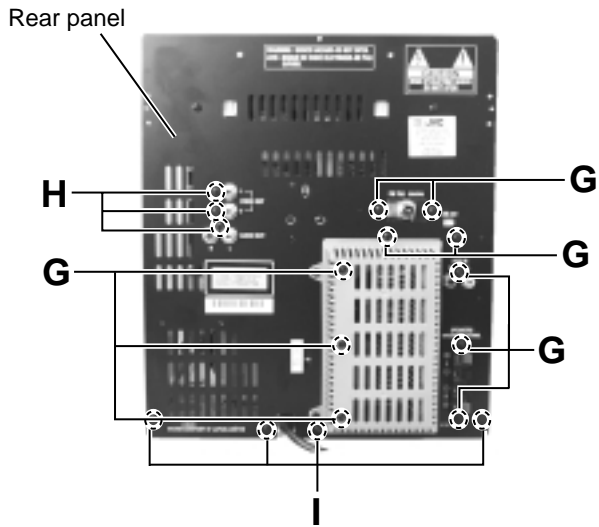
Fig.17

■ Removing the main board
(See Fig.18 and 19)

・Prior to performing the following procedure, remove the rear panel.

1. Disconnect the harness from connector HCW1 of the MIC/headphone board on the right side of the body. Release the harness from the clamp in the body.

2. Disconnect the harness from head wire connector ECW1,DW1 and DW2 extending to the main board in the body.

3. Disconnect the harness from connector RCW1 of the power transformer.

4. Remove the screws **D** attaching the front panel assembly on both sides of the body.

5. Remove the screw **J** attaching the earth terminal to the base chassis.

6. Disconnect connector CCW1 and CCW2 connected to the main board.
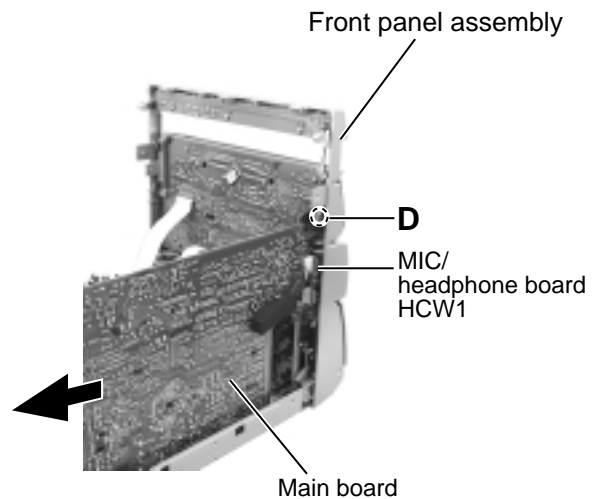
Fig.18
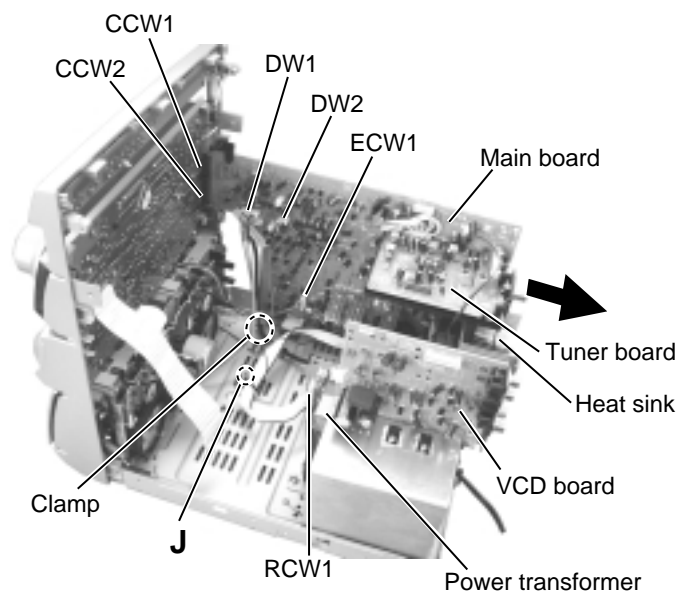
Fig.19

■ Removing the heat sink & cooling fan
(See Fig.20 and 21)

・ Prior to performing the following procedure, remove the main board.

1. Disconnect the harness from connector MJW1 of the main board.

2. Remove the three screws **K** attaching the heat sink cover plate and cooling fan.

3. Remove the two screws **L** attaching the power IC to the heat sink and the three screws **M** attaching the heat sink to the main board.
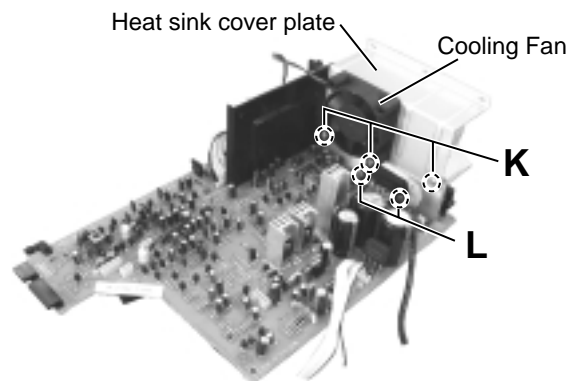
■ Removing the tuner Board
(See Fig.21 to 23)

・ The tuner board can be removed even if the main board is attached.

1. Release the joint tab **f** of the tuner board holder and the main board, and disconnect connector FW1 connected to the main board. Remove the tuner board assembly (Refer to Fig.21).

2. Remove the screw **N** attaching the tuner board holder. Release the two tabs **g** outward and remove the tuner board from the tuner board holder.

Heat sink cover plate
Cooling Fan
K
L

Fig.20

Joint tab **f**
MJW1
Tuner board
Heat sink cover plate
Main board
Heat sink
M

Fig.21

Main board
Tuner board
TWA1

Fig.22

TWA1   Tuner board   Tab **g**
N   Tuner board holder   Tab **g**
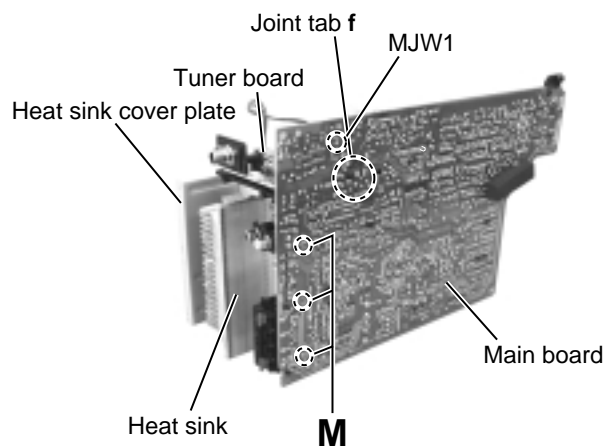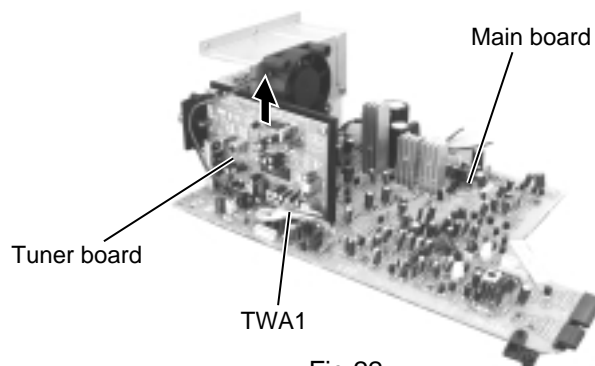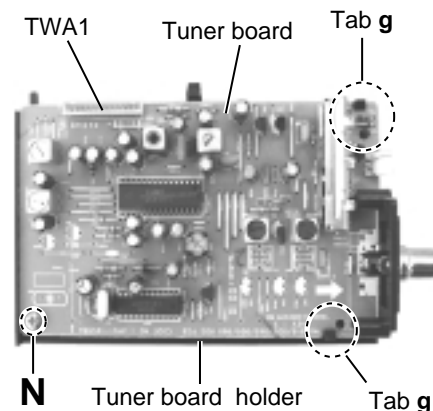
Fig.23

■ Removing the heat sink & VCD Power board   (See Fig.24 and 25)

・ Prior to performing the following procedure, remove the top cover and the side covers.

1. Remove the two screws **O** attaching the heat sink plate.

2. Remove the two screws **P** attaching the power IC to the heat sink and the two screws **Q** attaching the heat sink to the VCD Power board.

VCD Power board

P

P

Heat sink

O

O

Fig.24

VCD Power board

Q

Q

Heat sink
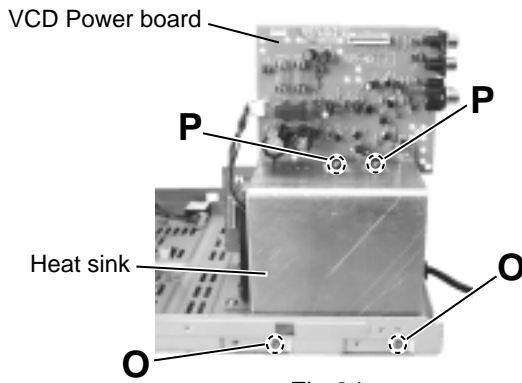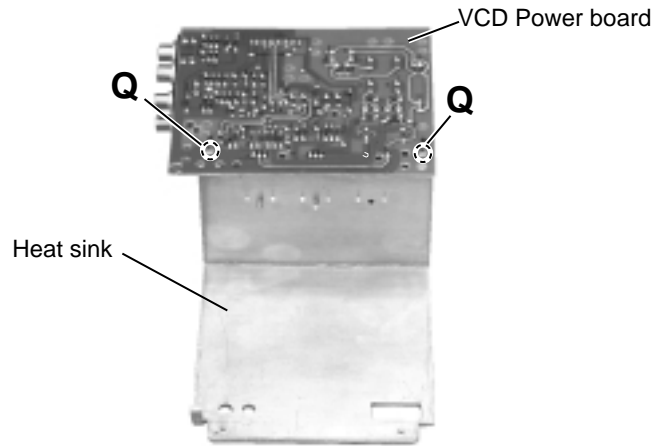
Fig.25

■ Removing the power transformer   (See Fig.26)

・ Prior to performing the following procedure, remove the VCD Power board.

1. Disconnect the power cord from connector RCW2 of the power transformer.

2. Disconnect the harness from connector RCW1 of the power transformer.

3. Remove the four screws **R** attaching the power transformer.

    ATTENTION: Prior to disconnecting the power cord from the body, remove the rear panel.
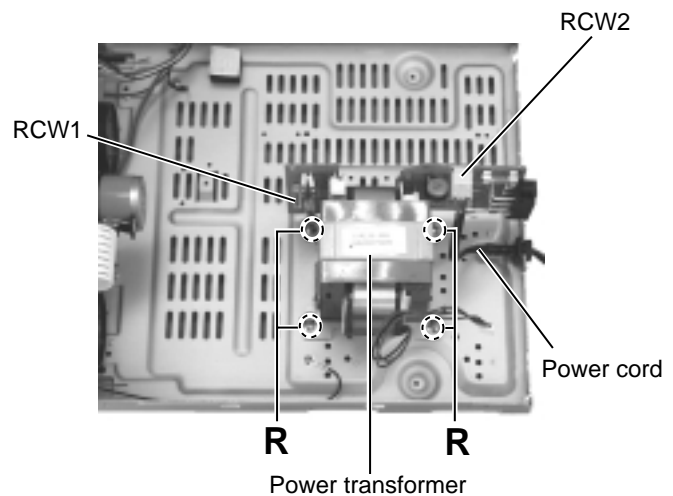
RCW2

RCW1

Power cord

R   **R**

Power transformer

Fig.26

<Front panel assembly>

・ Prior to performing the following procedure, remove the top cover, the side covers, the CD tray fitting and the front panel assembly.

■ Removing the power / CD switch board (See Fig.27)

1. Remove the three screws **S** attaching the power/CD switch board and release the three tabs **h** outward.

2. Disconnect the harness from connector UCW9 of the power / CD switch board.
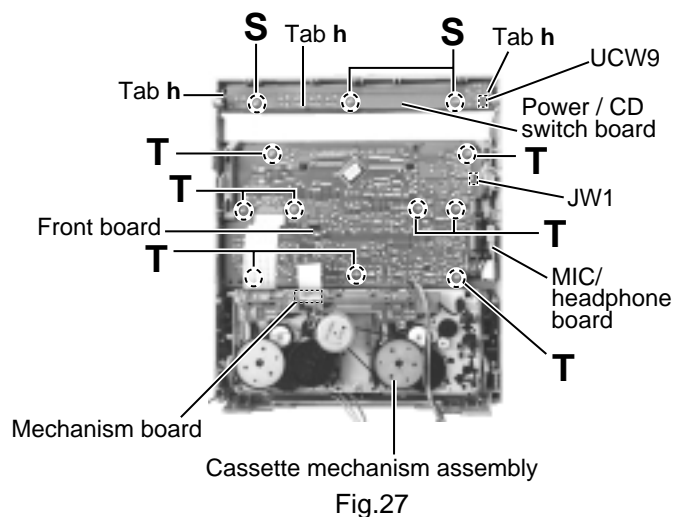
Fig.27

■ Removing the front board (See Fig.27 and 28)

・ Prior to performing the following procedure, remove the power / CD switch board.

1. Pull out the volume knob toward the front.

2. Disconnect the card wire from the mechanism board of the cassette mechanism assembly.

3. Remove the nine screws **T** attaching the front board.
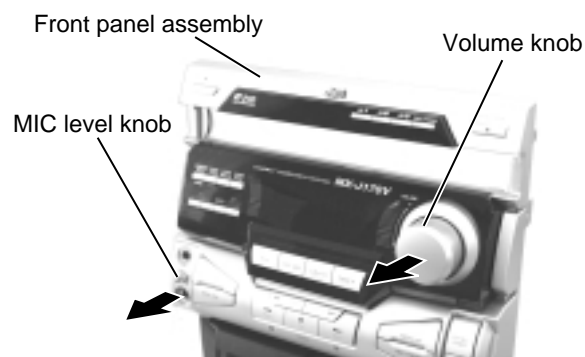
Fig.28

■ Removing the MIC/headphone board (See Fig.28 and 29)

・ Prior to performing the following procedure, remove the front board.

1. Pull out the MIC level knob toward you.

2. Remove the two screws **U** attaching the MIC/headphone board.
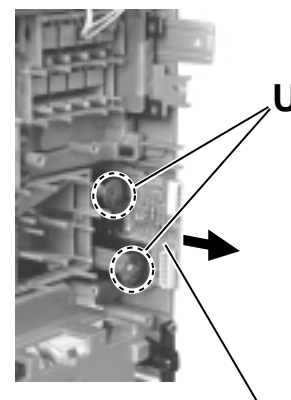
Fig.29

■ Removing the cassette mechanism assembly (See Fig.30)

1. Disconnect the card wire from the mechanism board of the cassette mechanism assembly.

2. Remove the seven screws **V** attaching the cassette mechanism assembly.
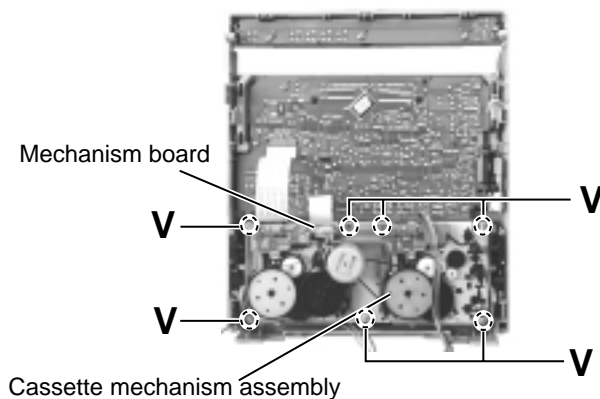
Fig.30

<CD changer unit>

・ Prior to performing the following procedure, remove the CD changer unit.

■ Removing the VCD board

(See Fig.31)

1. Disconnect the harness from connector PCON1 of the VCD board .

2. Remove the four screws **W** attaching the Sealed and VCD board.

Shield   **W**   VCD board

W

PCON1
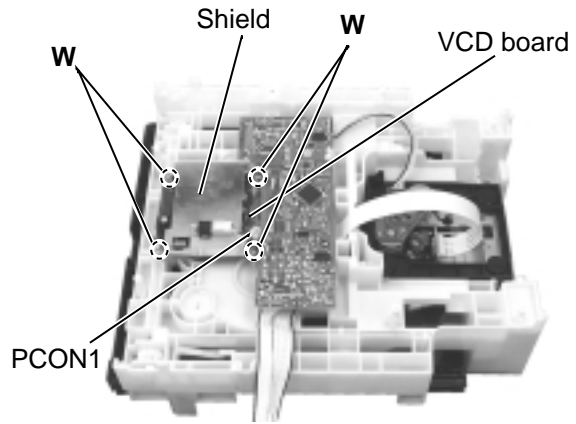
Fig.31

■ Removing the CD tray   (See Fig.32 to 34)

1. Turn the black loading pulley gear marked **c** on the under side of the CD changer unit in the direction of the arrow and draw the CD tray toward the front until it stops.

2. Disconnect the card wire from connector SCW5 of the CD servo board on the upper side of the CD changer unit.

3. Push down the two tray stoppers marked **i** and pull out the CD tray.

Loading pulley gear marked **c**

CD tray

Fig.32

Tray stopper marked **i**

CD tray

Tray stopper marked **i**

CD servo board
SCW5
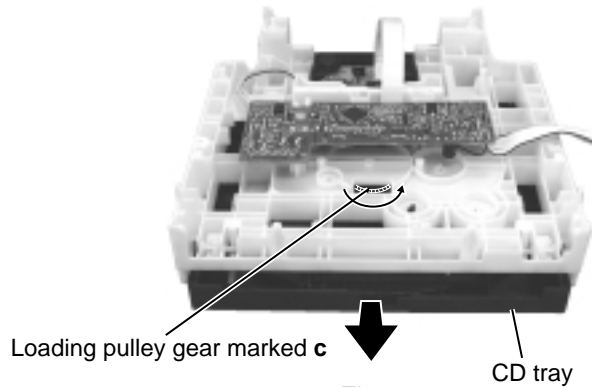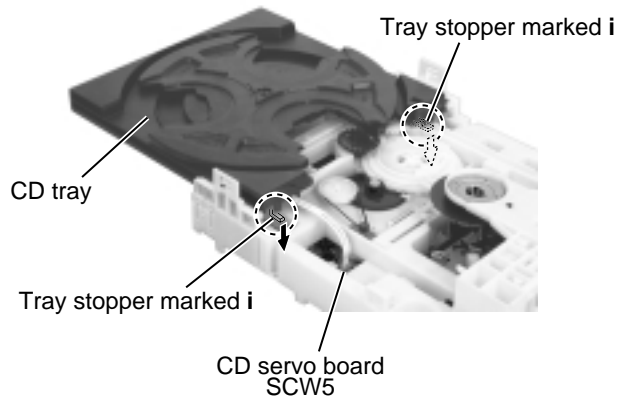
Fig.33
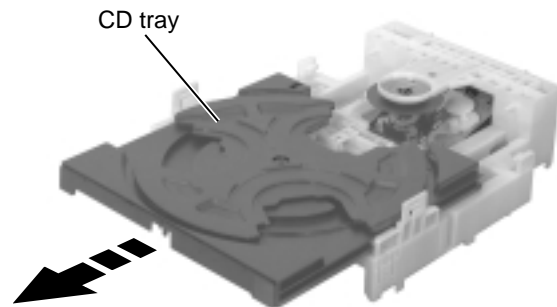
CD tray

Fig.34

■ Reinstall the CD tray (See Fig.35 and 36)

1. Align the gear-cam with the gear-tray as shown fig.28, then mount the CD tray.

2. When assembling the CD tray, take extreme care not engage with gear - synchro.

Gear-cam

Gear-tray

Gear-convert

Gear-cam timing point

Gear-tray

Gear-convert   Gear-tray

Fig.35

Gear-synchro

CD tray

Fig.36
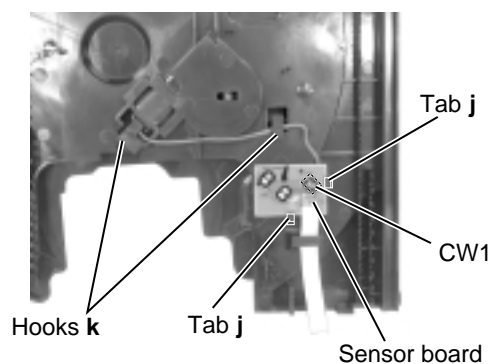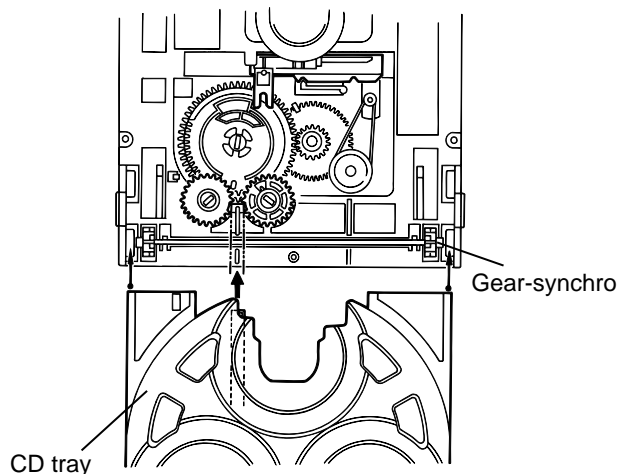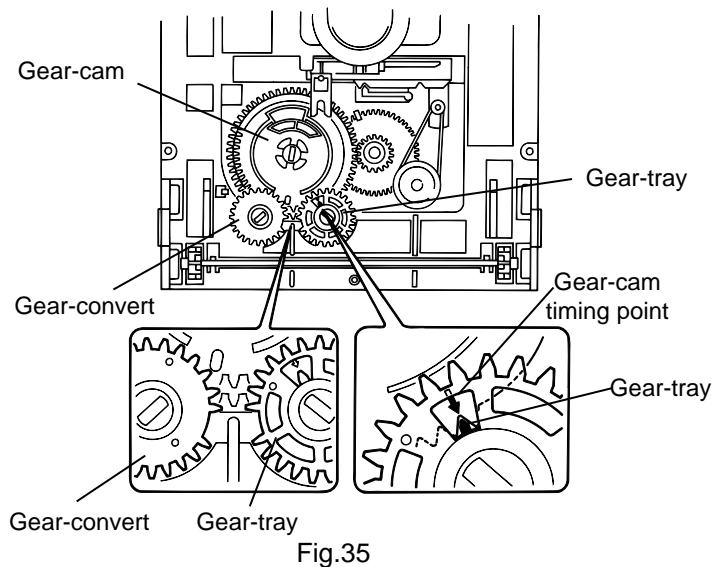
■ Removing the sensor board / the tray motor   (See Fig.37 to 39)

· Prior to performing the following procedure, remove the CD tray.

1. Release the two tabs **j** attaching the sensor board on the under side of the CD tray.

2. Disconnect the harness from connector CW1 on the sensor board and release the harness from the two hooks **k**. Remove the sensor board.

3. Remove the screw **X** attaching the tray turn table. Detach the tray turn table from the tray.

4. Pull outward the tab **m** attaching the tray turn table motor assembly on the upper side of the tray and detach the tray turn table motor assembly from the tray.

Tab **j**

CW1

Hooks **k**   Tab **j**

Sensor board

Fig.37

Tray turn table

Tray

X

Fig.38

Tab **m**

Tray turn table motor assembly

Fig.39
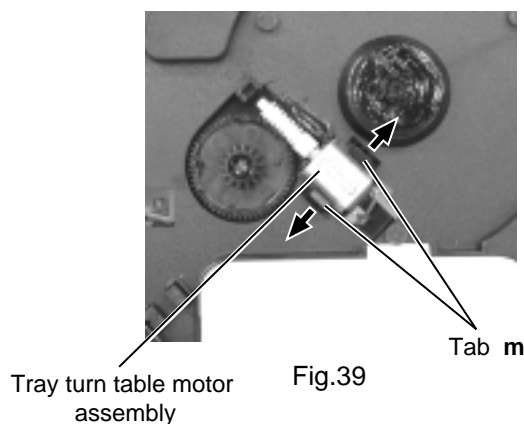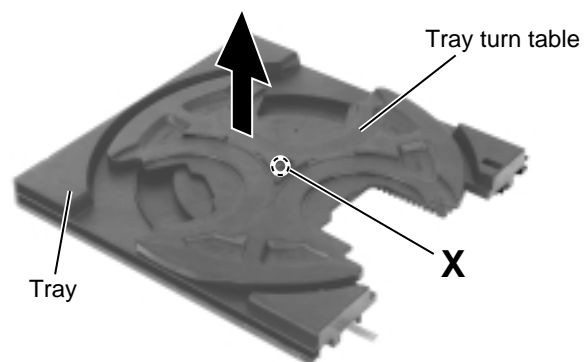
■ Removing the belt, the CD servo board and the switch board (See Fig.40 and 41)

・Prior to performing the following procedure, remove the CD tray.

1. Detach the belt from the pulley on the upper side of the CD changer unit (Do not stain the belt with grease).

2. Disconnect the card wire from the pickup unit connector on the under side of the CD changer unit.

3. Disconnect the motor wire harness from connector on the CD mechanism board.

4. Remove the two screws **Y** attaching the CD servo board. First release the **n** side of the two tabs **n** and two tabs **o** attaching the CD servo board motor to raise the CD servo board slightly, then release the **o** side.

※ If the tabs **n** and **o** are hard to release, it is recommendable to unsolder the two soldered parts on the motor terminal of the CD servo board.
Disconnect the terminal CW3 connected to the switch board and remove the CD servo board.

5. Remove the screw **Z** attaching the CD Changer unit and release the three tabs **p** attaching the switch board outward and detach the switch board.

Belt

CD changer unit

Fig.40

Y   CD servo board
Tabs **o**
Soldered parts
Tabs **p**
Motor
Tabs **n**
Z
Switch board   CW3
CD mechanism board motor connecter
Pickup unit connector
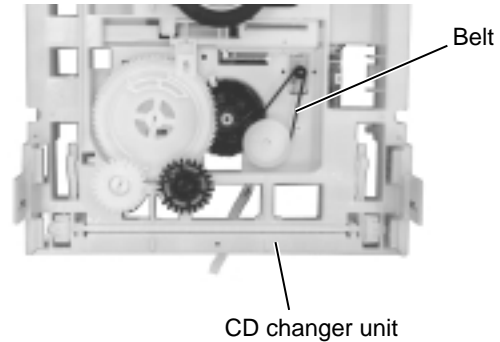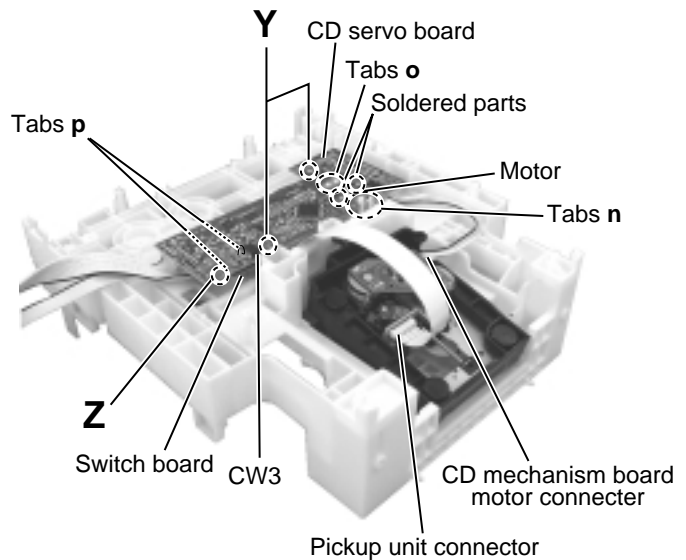
Fig.41

■ Removing the CD mechanism holder assembly (mechanism included) (See Fig.42 to 45)

1. Disconnect the harness from connector on the CD mechanism board in the CD mechanism assembly on the under side of the CD changer unit. Disconnect the card wire from the pickup unit connector.

2. Remove the screw **A** attaching the shaft on the right side of the CD mechanism holder assembly. Pull outward the stopper fixing the shaft on the left side and remove the CD mechanism holder assembly from behind in the direction of the arrow.

3. Turn the CD mechanism holder assembly half around the lift up slide shaft **r** of the CD mechanism holder assembly until the turn table is reversed, and pull out the CD mechanism holder assembly.

Motor connecter

CD changer unit

CD mechanism assembly

Pickup unit connector

Fig.42

A

Stopper

CD mechanism holder assembly

Fig.43

Lift up slide shaft

CD mechanism holder assembly

Fig.44

Lift up slide shaft **r**

CD mechanism holder assembly

Fig.45

MX-J170V

<CD mechanism section>
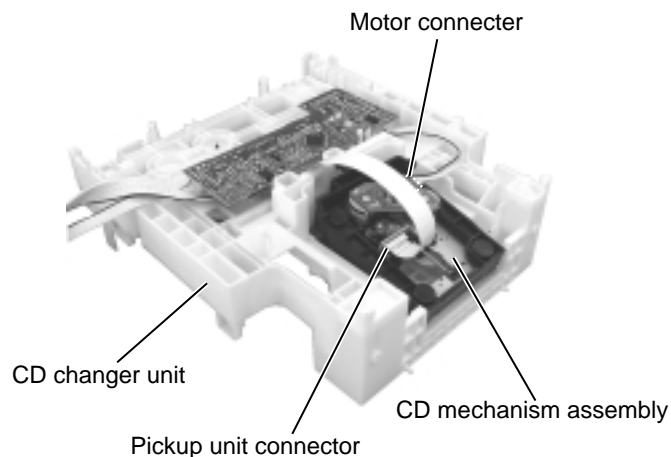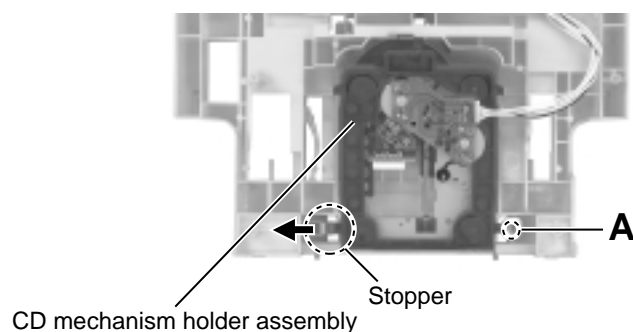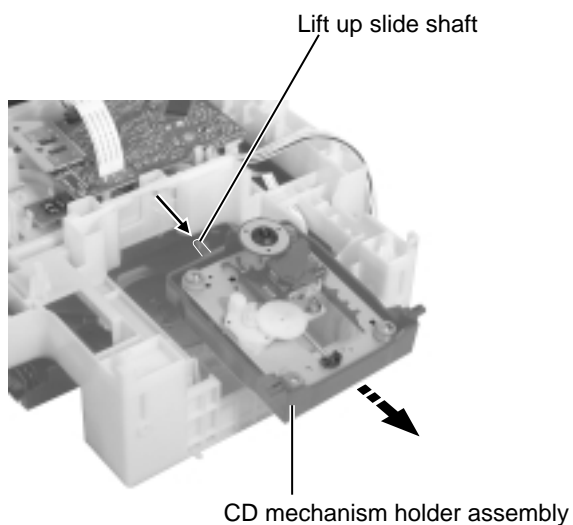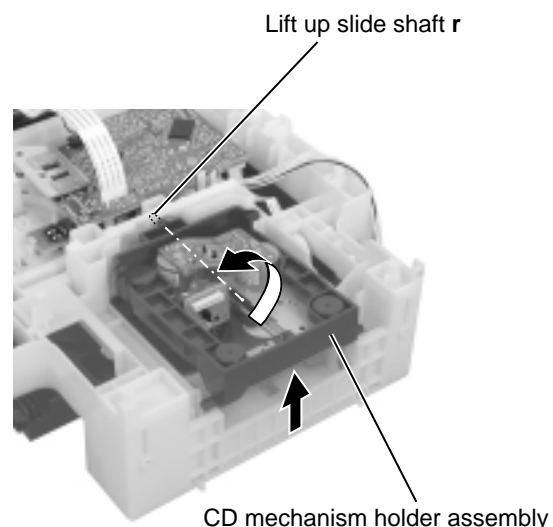
- Removing the CD mechanism holder from the CD chassis to remove the CD mechanism.
(Refer to "Removing the CD mechanism holder assembly" (Pag.2-11))

■ Removing the pickup unit.
1. Loosen the two screws **A** fixing the chassis.(Fig.1)
2. Removing the feed gear stopper c on the bottom of the mechanism and pull out the gear. (Fig.1, Fig.3, Fig.4)
3. Pull out the shaft by opening the pickup shaft stopper outward to unlock.(Fig.1, Fig.2)
4. Removing the pickup unit.(Fig.1)
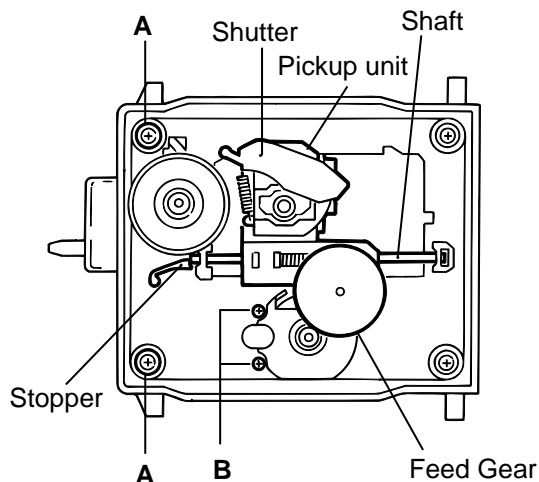
■ Removing the motor board.
1. Unsolder the motor terminal on the motor board.(Fig.3)
2. Remove the motor board.(Fig.3)

■ Removing the feed motor.
Remove the two motor fixing screws at **B** and removing the feed motor.(Fig.1, Fig.3)

■ Removing the spindle motor.
The spindle motor cannot be removed as a single unit. When removing the spindle motor, change the chassis and turntable together as aunit.(Fig.5)

Fig.1
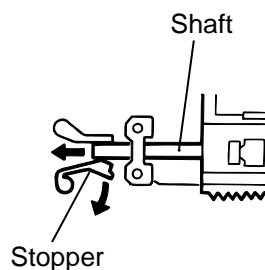
Fig.2
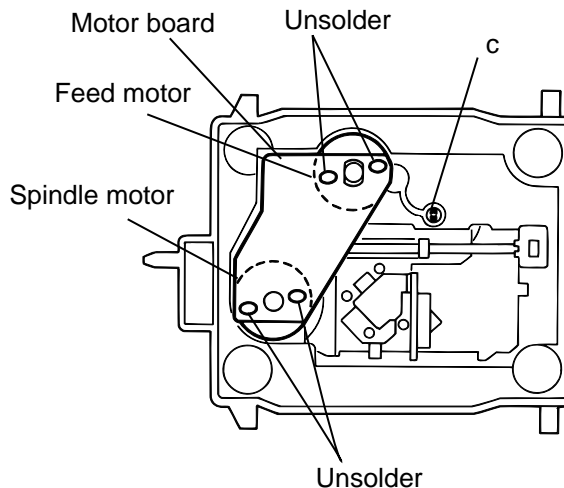
Fig.3
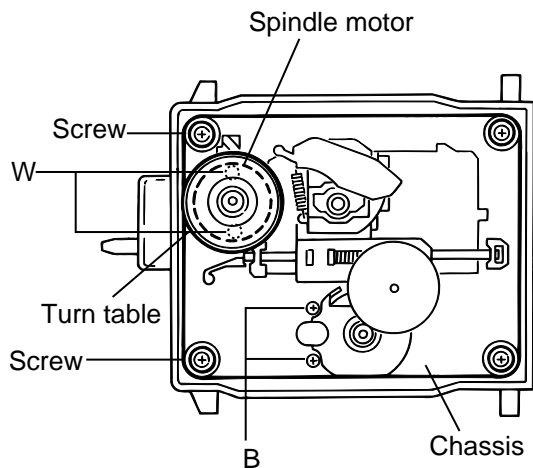
Fig.5
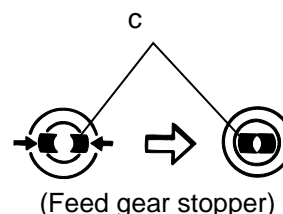
(Feed gear stopper)
Fig.4

<Cassette mechanism section>

• Removing the record/playback mechanism.

■ **Removing the R/P head.**

1. Remove the screw **A** on the right side of the R/P head.(Fig.1, Fig.2)
2. Remove the screw **B** on the left side of the R/P head.(Fig.1, Fig.2)

■ **Remove the erase head.**

Remove the screw **C** fixing the erase head.(Fig.1)

■ **Removing the pinch roller.**

1. Pull out the pinch roller by opening the pinch roller stopper outward to unlock .(Fig.3)
2. When reassembling the pinch roller, refer to fig. 4 to hook up the spring.

R/P Head

E. Head   **C B A**   Pinch roller assembly   Stopper

Fig.1

B   **A**

Spring   R/P Head

Fig.2

Pinch roller   Pinch roller stopper

Fig.3

Return spring   Pinch roller   Pinch roller spring

Return spring   Return spring
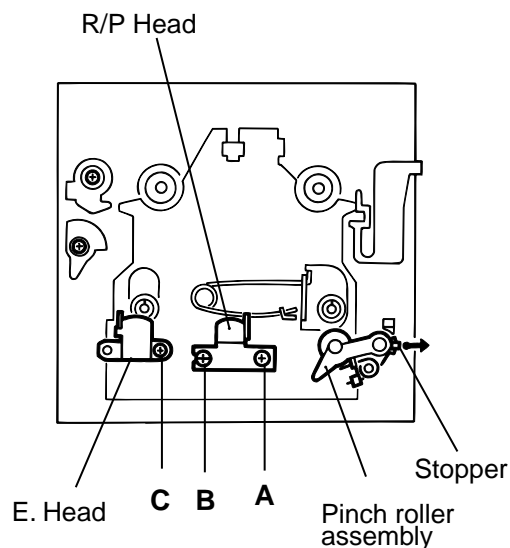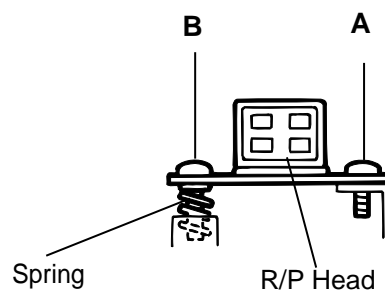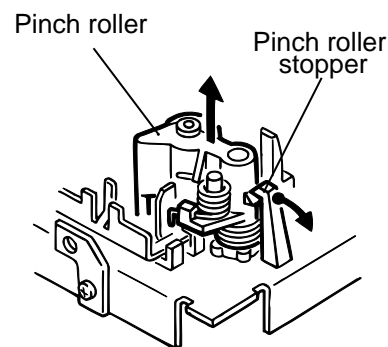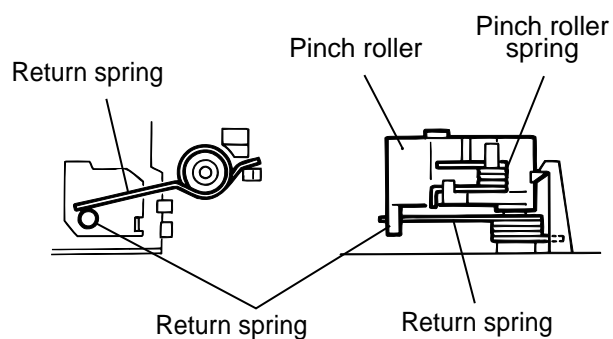
Fig.4

■ Removing the motor.

1. Remove the two screws **D** fixing the motor.
   Be careful to grease's splash when the
   drive belt comes off.(Fig.5, Fig.6)
2. Unsolder the motor terminal.(Fig.5)

■ Removing the mechanism board.

1. Unsolder the four parts **a** on the solenoid
   coil terminal.(Fig.5)
2. Remove the two screws **E** fixing the board.(Fig.5)
3. Unhook the three parts **b** from the board.(Fig.5)
4. Remove the mechanism board.(Fig.5)

■ Removing the flywheel.

Remove the cut-washers at **c** and **d** from the
capstan shaft, then remove the flywheel.
When reassembling the flywheel,
be sure to use new washers as they
cannot be reused.(Fig.8, Fig.9)
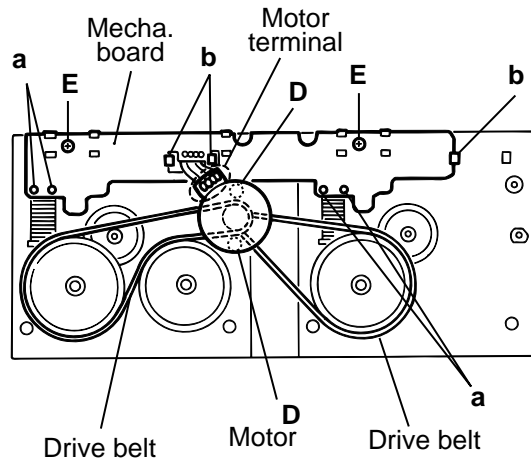
Fig.5
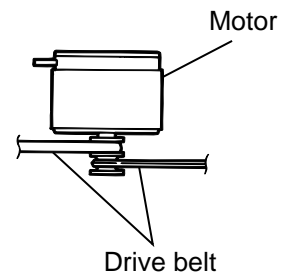
Fig.6
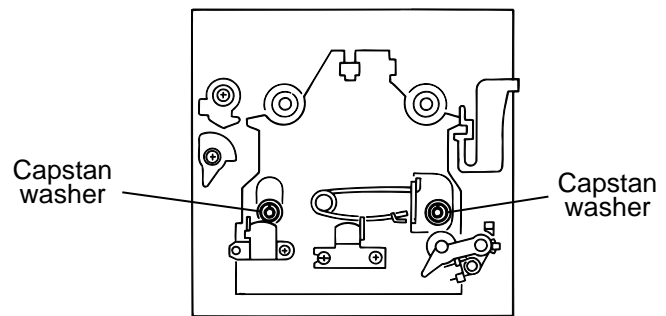
Fig.7
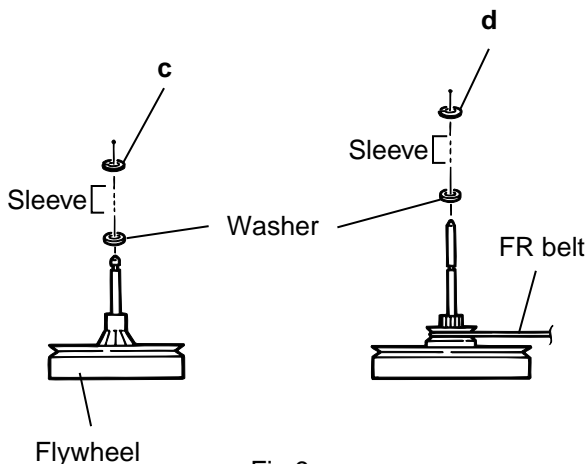
Fig.9
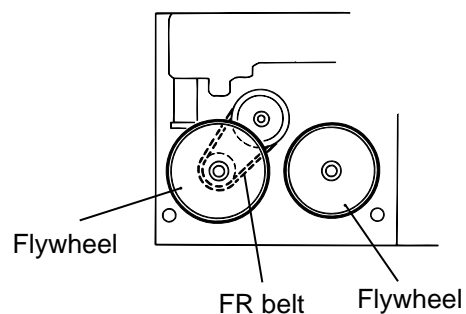
Fig.8

Adjustment method

■ Tuner
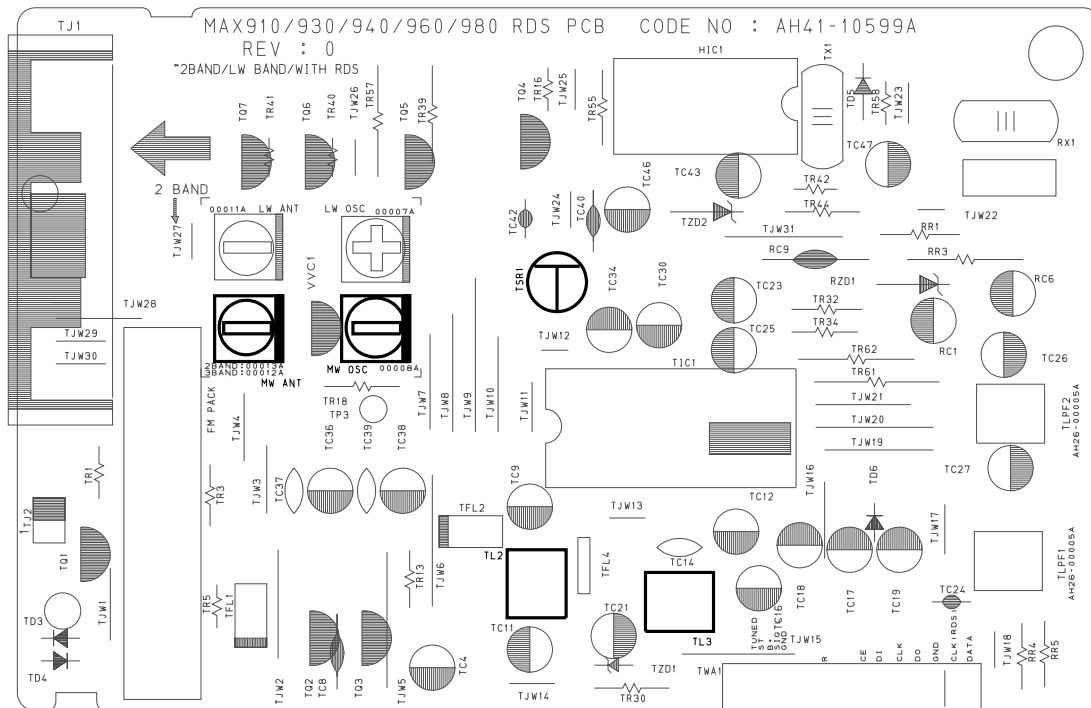
* Adjustment Location of Tuner PCB

ITEAM	AM(MW) OSC Adjustment	AM(MW) RF Adjustment
Received FREQ.	520~1720 KHz	590 KHz
Adjustment point	Non-Adjustment	MW-ANT
Output	1~7.0±0.5V	Maximum Output(Fig1-4)
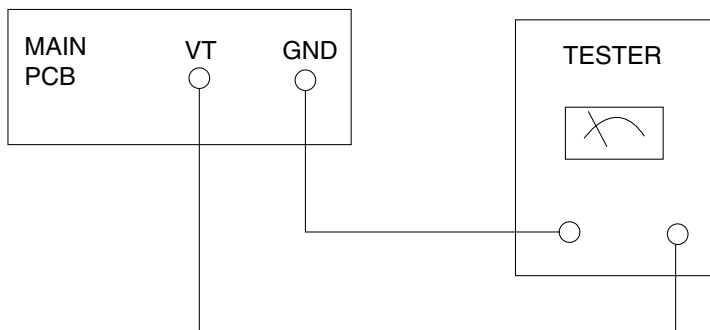
Fig 1-4 OSC Voltage

FM THD Adjustment	
SSG FREQ.	98 MHz
Adjustment point (TL3)	FM DETECTOR COIL
Output	60 dB
Minumum Distortion (0.3% below) (Figure 1-1)	
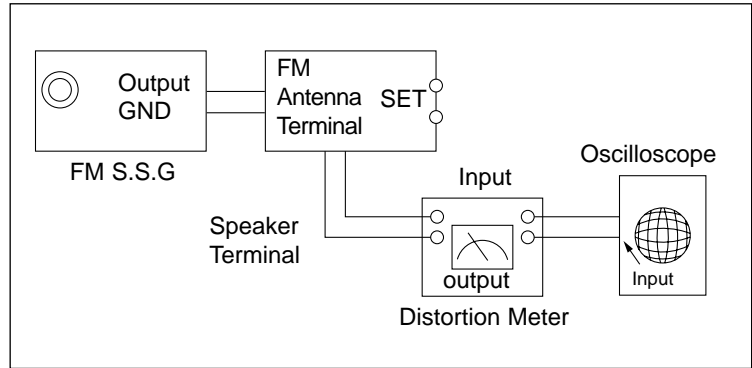
Figure1-1 IF CENTER and THD Adjustment

FM Search Level Adjustment	
SSG FREQ.	98 MHz
Adjustment point (TSR1)	BEACON SENSITIVITY SEMI-VR(20K½)
Output	28 dB(±2dB)
Adjust TSR1 so that "TUNED" of FL T is lighted (Figure 1-2)	

*Adjust FM S.S.G level to 28dB
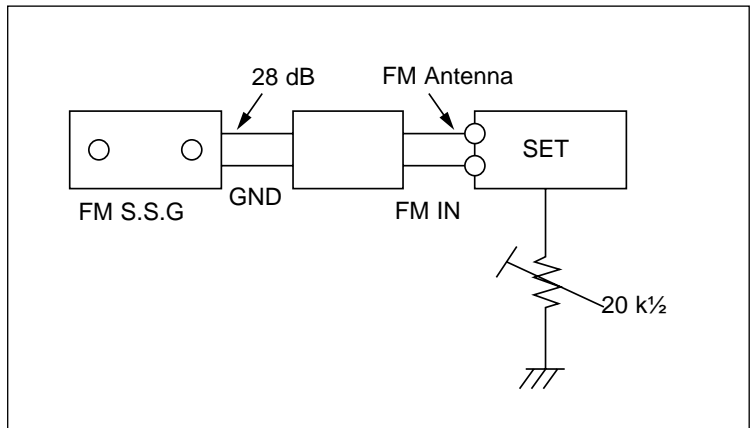
Figure1-2 FM Auto Search Level Adjustment

AM(MW) I.F Adjustment	
SSG FREQ.	450 kHz
Frequency	520 kHz
Adjustment point (TL2)	AM I.F COIL
Maximum output (Figure 1-3)	
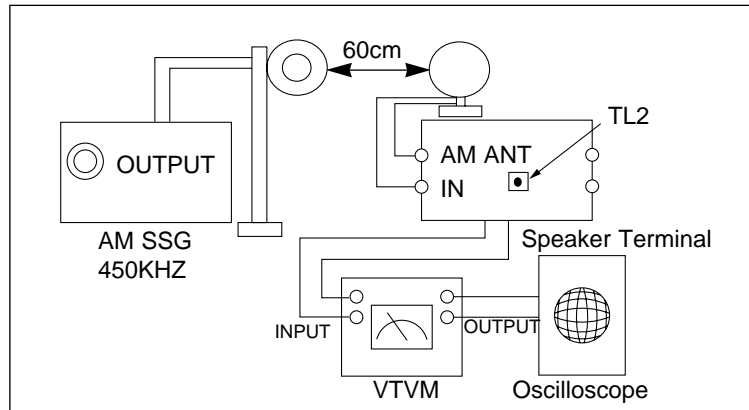
Figure1-3 AM I.F Adjustment

■ Cassette deck

1. To adjust tape speed

```
Notes

1) Measuring tape: i) MTT -111 (or equivalent)
                       (Tapes recorded with 3kHz)
                   ii) MTT -5512 (or equivalent)
2) Connect the cassette deck to the frequency counter
   as in figure 1-5.
```
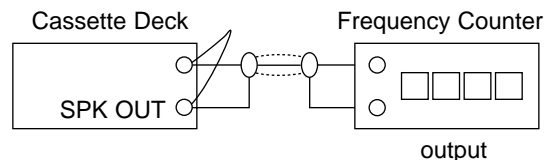
Figure 1-5

Step	Item	Pre-Setup Condition	Pre-Setup	To Adjust	Standard	Remark
1	NOR SPEED Control	OUT (connected to the frequency counter)	1) Deck 1:MTT-111 2) Press PLAY SW button 3) Deck 2:Same as above	Turn UVR2 to left and right (FRONT PCB)	3KHz	±1% range
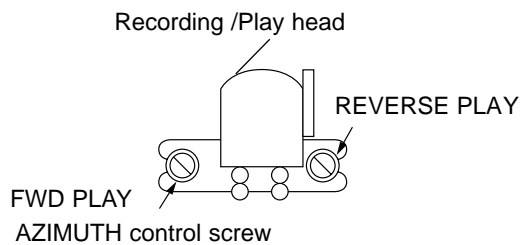
Figure 1-6
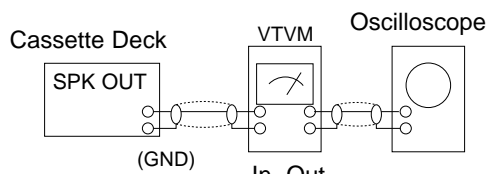
Figure 1-7
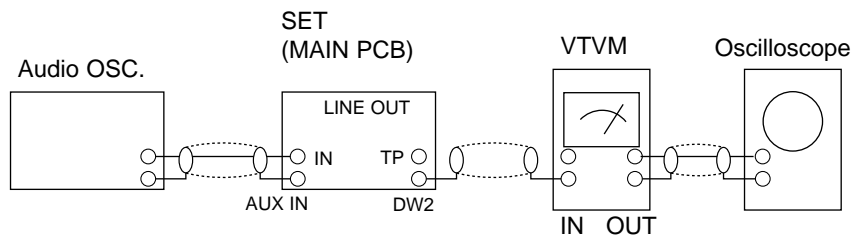
Figure 1-8

2. To adjust playback lebel/REC

```
┌─ Notes ─────────────────────────────────────────────┐
│                                                       │
│ 1) Before the actual adjustment, clean the play/recording │
│    head.                                              │
│ 2) Measuring tape :                                   │
│    i) MTT-114NA(or equivalent 12.5kHz AZIMUTH control) │
│    ii) MTT-5512                                       │
│ 3) The cassette deck is connections as shown in figure 1-7. │
│                                                       │
└───────────────────────────────────────────────────────┘
```

1 Adjust Deck 1 Play Level

Step	Item	Pre-Setup Condition	Pre-Setup	To Adjust	Standard	Remark
1	AZIMUTH	TP1 OUT (VTVM is connected to the scope)	After putting MTT-114NA into Deck 1 - Press FWD PLAY button.	- Turn the control screw to as shown in Figure 1-6.	Max output and same phase (both channels)	After adjustment secure it with REGION LOCK.

2 Adjust Deck 2 Play Level/REC BIAS

Step	Item	Pre-Setup Condition	Pre-Setup	To Adjust	Standard	Remark
1	AZIMUTH	TP1 OUT (VTVM is connected to the scope)	After putting MTT-114NA into Deck 2 1)Press FWD PLAY button. 2)Press REV PLAY button.	- Turn the control screw to as shown in Figure 1-6.	Max output and same phase (both channels)	After adjustment secure it with REGION LOCK.
2	Recording Bias Voltage	Fig 1-8	After putting MT-T 5512 into Deck 2 1)Press REC PLAY button. 2)MAIN PCB DCW2, connectted to VTVM	Turn DVR1,DVR2 to the right and left	7V(±0.5V)	

Flow of functional operation until TOC read

Check Point

| Power ON | → | Play Key | → | RESET a CD LSI | → | Confirm that the voltage at the pin38 of IC327 is "L" → "H". |

Confirm that the voltage at the pin63 of IC327 is "H" → "L" → "H".

| Set A decoder register 0 ~ F | → | Confirm that the signal at the pin39 (SDA), 40(SCLK), 41(RAB) is output. |

| Set A servo coefficient | → | Confirm that the signal at the pin39 (SDA), 40(SCLK), 42(SILD) is output. |

| Does SLED move to INNER | → | Check IC327 #16resonator signal (16.93MHz) |
→ Check IC327 #56(SL)
→ Check IC073-2 #9
  #12

| Limit SWITCH on | → | Confirm that the voltage at the pin63 of IC327 is "H" → "L" → "H". |

| Is focus search done properly ? | → | Confirm that the voltage swing at the pin #55 of IC327 and the pin 13, pin16. |

| Disc is Rotated | → | Confirm that the signal from pin59, 60 of IC327 is as a accelerated pulse during approximations. |

| Automatic adjusting of focus, tracking servo | → | With servo coefficient. |

| Detection of disk | ← | CD-DA, VCD, Detection. |
| | ← | Communication with VCD micom MI1. |

| TOC reading |

| Play a disc | CD-DA

Maintenance of laser pickup   Replacement 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.

  1. The level of RF output (EFM output:ampli
    tude of eye pattern) will below.

```
        ┌──────────────┐
        │ Is the level of │   NO   ┌──────────────┐
        │ RFOUT under    │ ─────▶ │ Replace it.  │
        │ 1.8V±0.2Vp-p?  │        └──────────────┘
        └──────────────┘
            │ YES
            ▼
        ┌──────────┐
        │   O.K    │
        └──────────┘
```

```
┌─────────────────────────────────────────────┐
│ Turn off the power switch and,disconnect the  │
│ power cord from the ac outlet.                 │
└─────────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────────┐
│ Replace the pickup with a normal one.(Refer   │
│ to "Pickup Removal" on the previous page)      │
└─────────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────────┐
│ Plug the power cord in,and turn the power on.  │
│ At this time,check that the laser emits for    │
│ about 3seconds and the objective lens moves    │
│ up and down.                                   │
│ Note: Do not observe the laser beam directly.  │
└─────────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────────┐
│ Play a disc.                                   │
└─────────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────────┐
│ Check the eye-pattern at TP1.                  │
└─────────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────────┐
│ Finish.                                        │
└─────────────────────────────────────────────┘
```

(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.

Trouble shooting guide

```
┌─────────────────────────┐
│  Tray does not close/open │
└─────────────────────────┘
           │ No
           ▼
      ◇ Check the pin 20,10
        of IC082 when          ── No ──→  ┌──────────────────┐
        open button is                    │ Check the UIC1   │
        pressed ◇                         └──────────────────┘
           │ Yes
           ▼
      ◇ Check the pulse pin
        RL+, RL- of SCW1       ── No ──→  ┌──────────────────┐
        connector ◇                       │ Check for IC082  │
           │ No                           └──────────────────┘
           ▼
┌─────────────────────────┐
│ Check the SW, SW2 of      │
│ mecha                     │
│ mecha initial position    │
└─────────────────────────┘
```

```
┌─────────────────────────┐
│   No logo display        │
└─────────────────────────┘
           │ No
           ▼
      ◇ Check for VIDEO
        signal at pin V.OUT   ── Yes ──→ ┌──────────────────────┐
        of CT1 ◇                         │ Check VIDEO pattern  │
           │ No                          │ line(OQ2, OQ3)       │
           ▼                             └──────────────────────┘
      ◇ Check for 27MHz
        signal at CI1 of VCD  ── No ──→  ┌──────────────────────┐
        board pin No. 106 ◇              │ Check the X-TAL      │
           │ Yes                         │ VX101(27MHz)         │
           ▼                             └──────────────────────┘
      ◇ Check pin RST of
        CT1:low               ── Yes ──→ ┌──────────────────────┐
        pin No. 60 ◇                     │ Check VCD board,     │
           │ No                          │ resoldering or       │
           ▼                             │ replase vcd board    │
┌─────────────────────────┐             └──────────────────────┘
│ Check the communication  │
│ line of MI1 with UIC1    │
└─────────────────────────┘
```

```
┌─────────────────────┐
│    Check pick-up     │
└─────────────────────┘
           │
          Yes
           ▼

    Check for resistance
    at pin T+,T- of NCW8:        No ──────┐
    about 10ohm                          │
           │                             ▼
          Yes                    ┌─────────────────┐
           ▼                     │   Pickup  OK    │
                                 └─────────────────┘
    Check for resistance
    at pin F+,F- of NCW8:        No ──────┐
    about 5ohm                           │
           │                             ▼
          Yes                    ┌─────────────────┐
           ▼                     │   Pickup  OK    │
                                 └─────────────────┘
    (When CD lead in)
    Check for voltage            No ──────┐
    at pin1 of SIC2                       │
    1.7Vp-p                               ▼
           │                     ┌─────────────────┐
          Yes                    │   Pickup  OK    │
           ▼                     └─────────────────┘

    (When CD lead in)
    Check for voltage at PD of SW4    No ──────┐
    connector.                               │
    about : 0.15V                            ▼
           │                        ┌─────────────────┐
          Yes                       │   Pickup  OK    │
           ▼                        └─────────────────┘
┌─────────────────────┐
│    Pickup  OK        │
└─────────────────────┘
```

Description of major ICs

■ BA4560 (UIC1) / KA4558 (DIC2) : Dual OP AMP

1.Pin layout

```
OUT1  1                    8  Vcc
-IN1  2     1ch            7  OUT2
              -   +
+IN1  3        2ch         6  -IN2
               +   -
VEE   4                    5  +IN2
```

■ TC7SU04F (C12) : Inverter

```
NC   1              4  Vcc
IN A 2              5  OUT Y
GND  3
```

■ NJU3711M (UIC2) : 8-BIT Serial to parallel conveter

1. Pin layout

```
P3   1          14  VDD
P4   2          13  P2
P5   3          12  P1
VSS  4          11  CLR
P6   5          10  STB
P7   6           9  CLK
P8   7           8  DATA
```

2. Pin function

| Pin.No	Symbol	Function
1	P3	
2	P4	Parallel converts darta output terminals
3	P5	
4	V_{SS}	Ground
5	P6	
6	P7	Parallel converts darta output terminals
7	P8	
8	DATA	Serial data input termnal
9	CLK	Clock signal input termnal
10	STB	Strove signal input termnal
11	CLR	Clear signal input termnal
12	P1	
13	P2	Parallel converts darta output terminals
14	V_{DD}	Power supply terminal

■ KA22291 (DIC1) : Cassette amp.

■ LC72131D (HIC1) : PLL
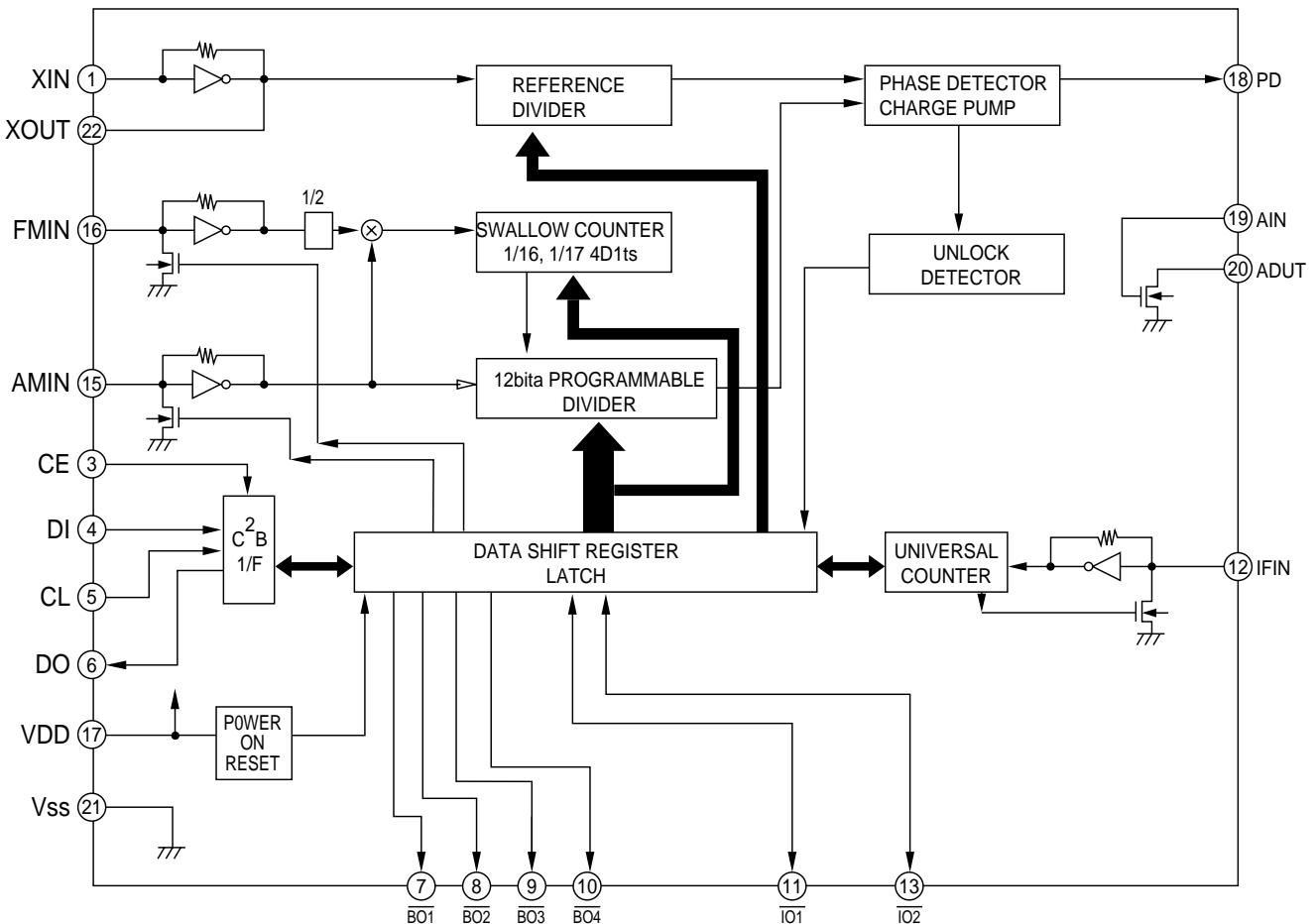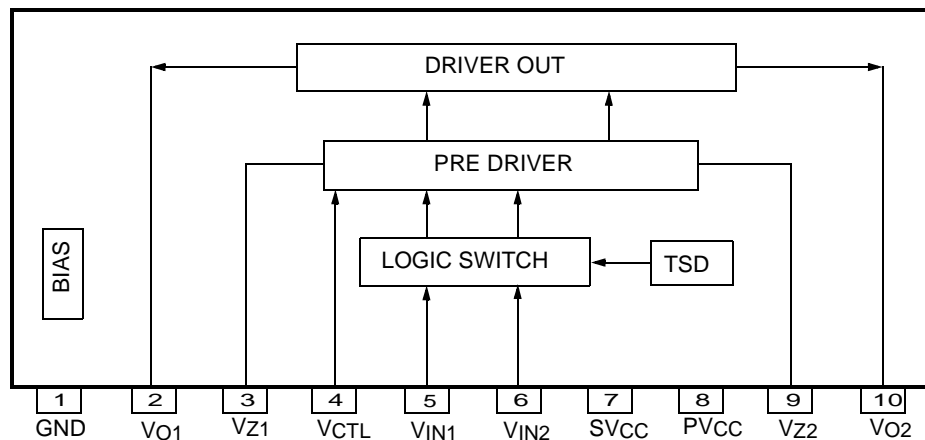
■ KA3082 (IC3082) : Bi-directional DC motor driver

1.Pin layout
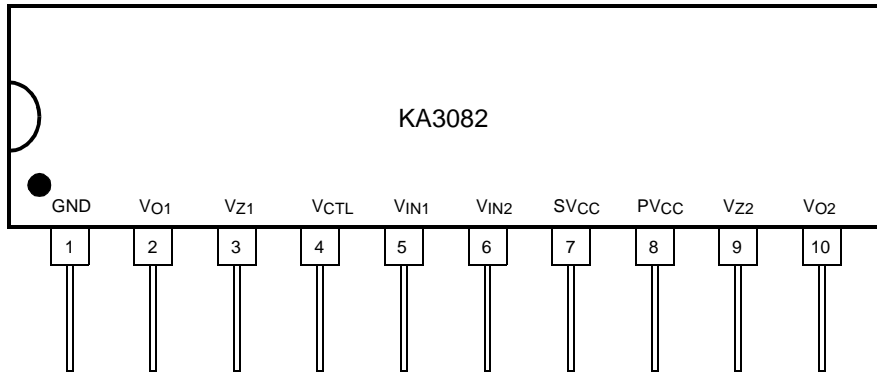
2.Pin function

Pin Number	Pin Name	I/O	Pin Function Description
1	GND	-	Ground
2	V_{O1}	O	Output 1
3	V_{Z1}	-	Phase compensation
4	V_{CTL}	I	Motor speed control
5	V_{IN1}	I	Input 1
6	V_{IN2}	I	Input 2
7	SV_{CC}	-	Supply voltage (Signal)
8	PV_{CC}	-	Supply voltage (Power)
9	V_{Z2}	-	Phase compensation
10	V_{O2}	O	Output 2

3.Block Diagram

■ LA1837 (TIC1) : FM IF/DET　AM RF/IF/DET
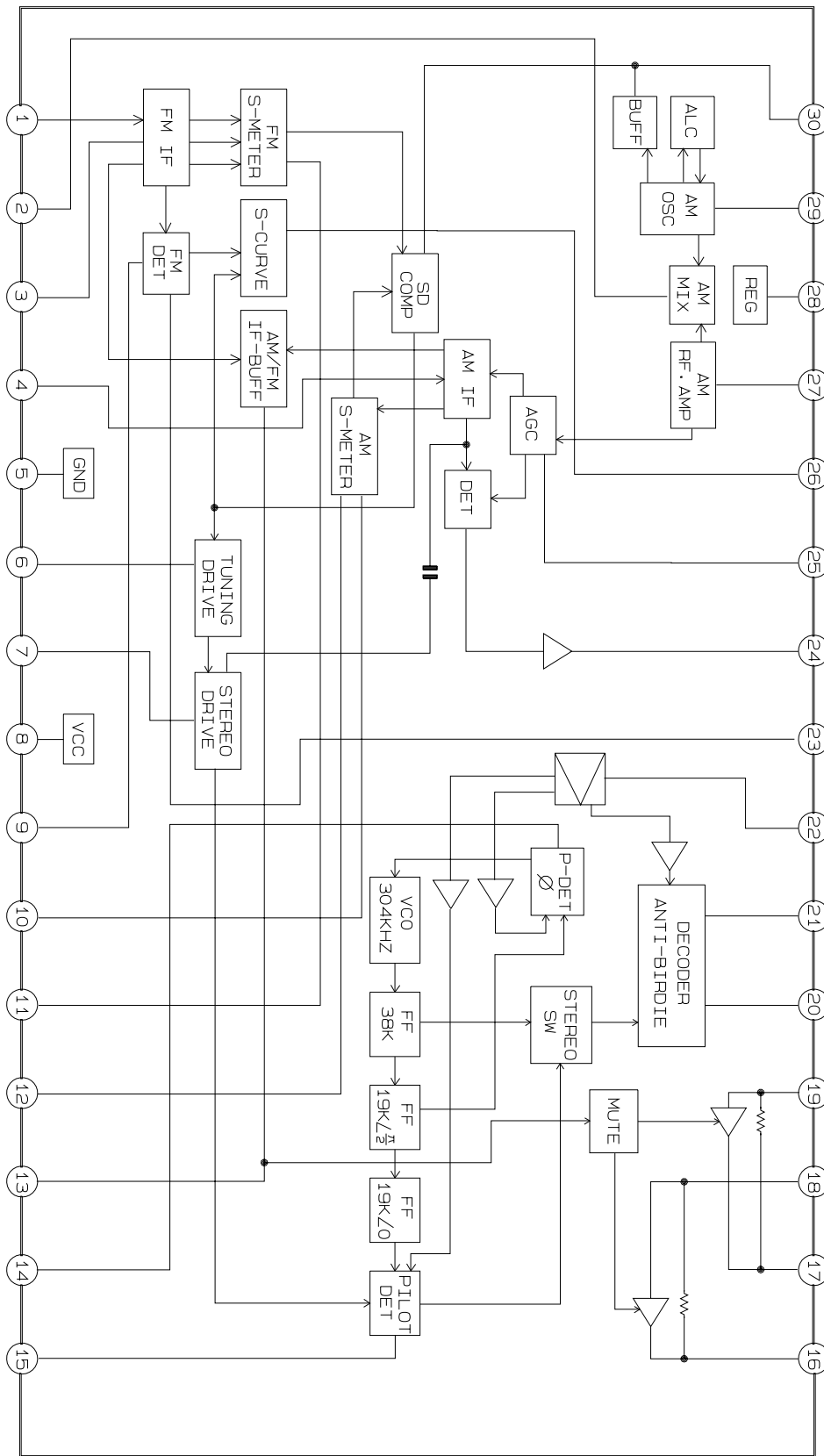
■ LC75341 (FIC1) : Function

■ LC86P5032 (MI1) : 8-Bit single-chip microcontroller
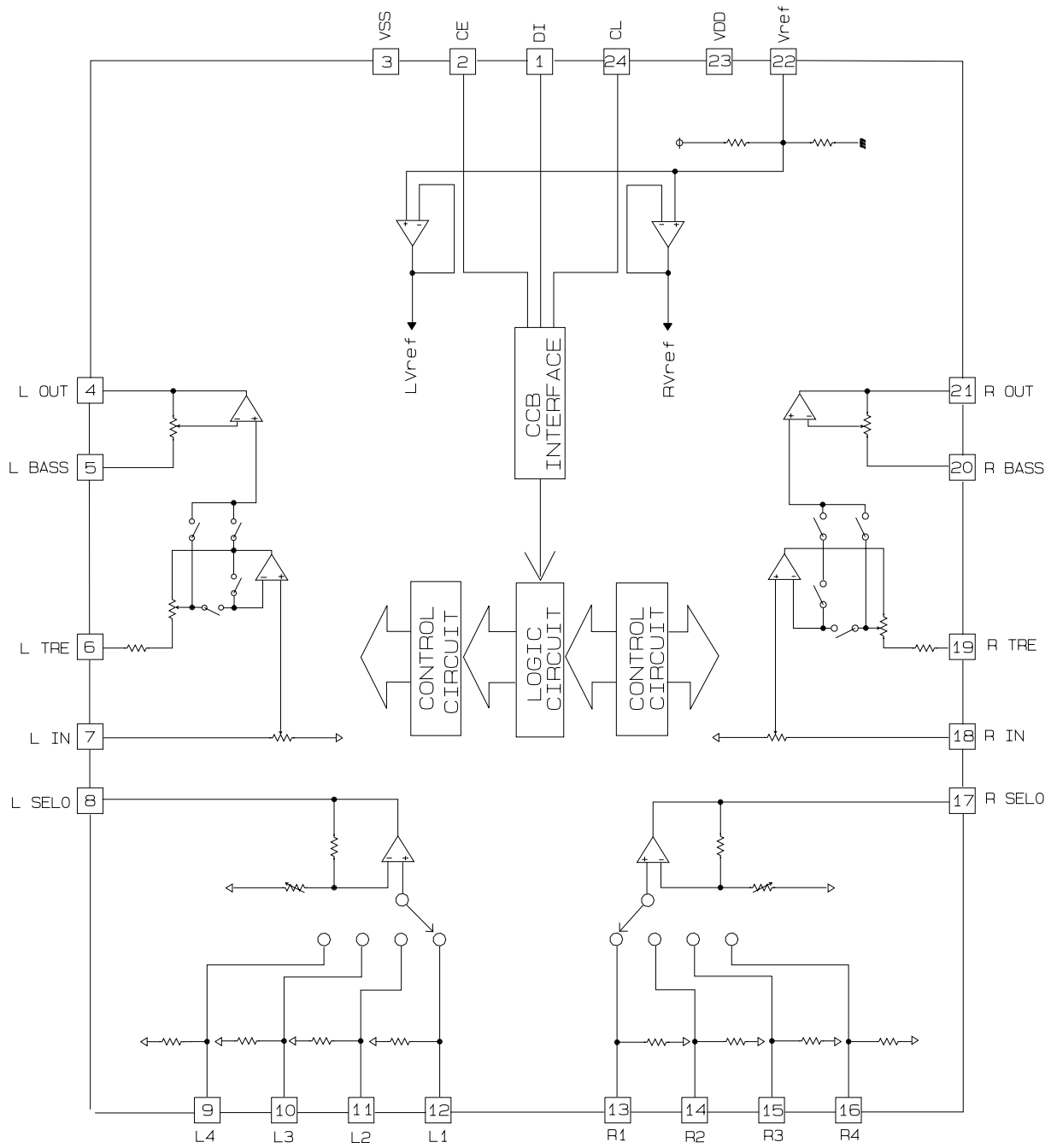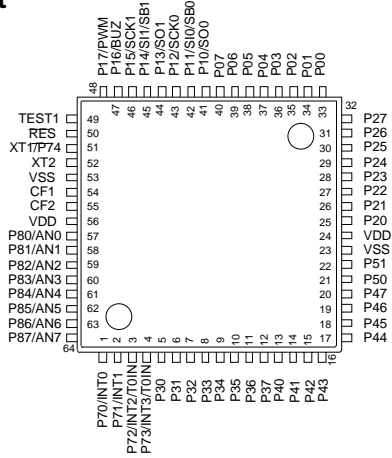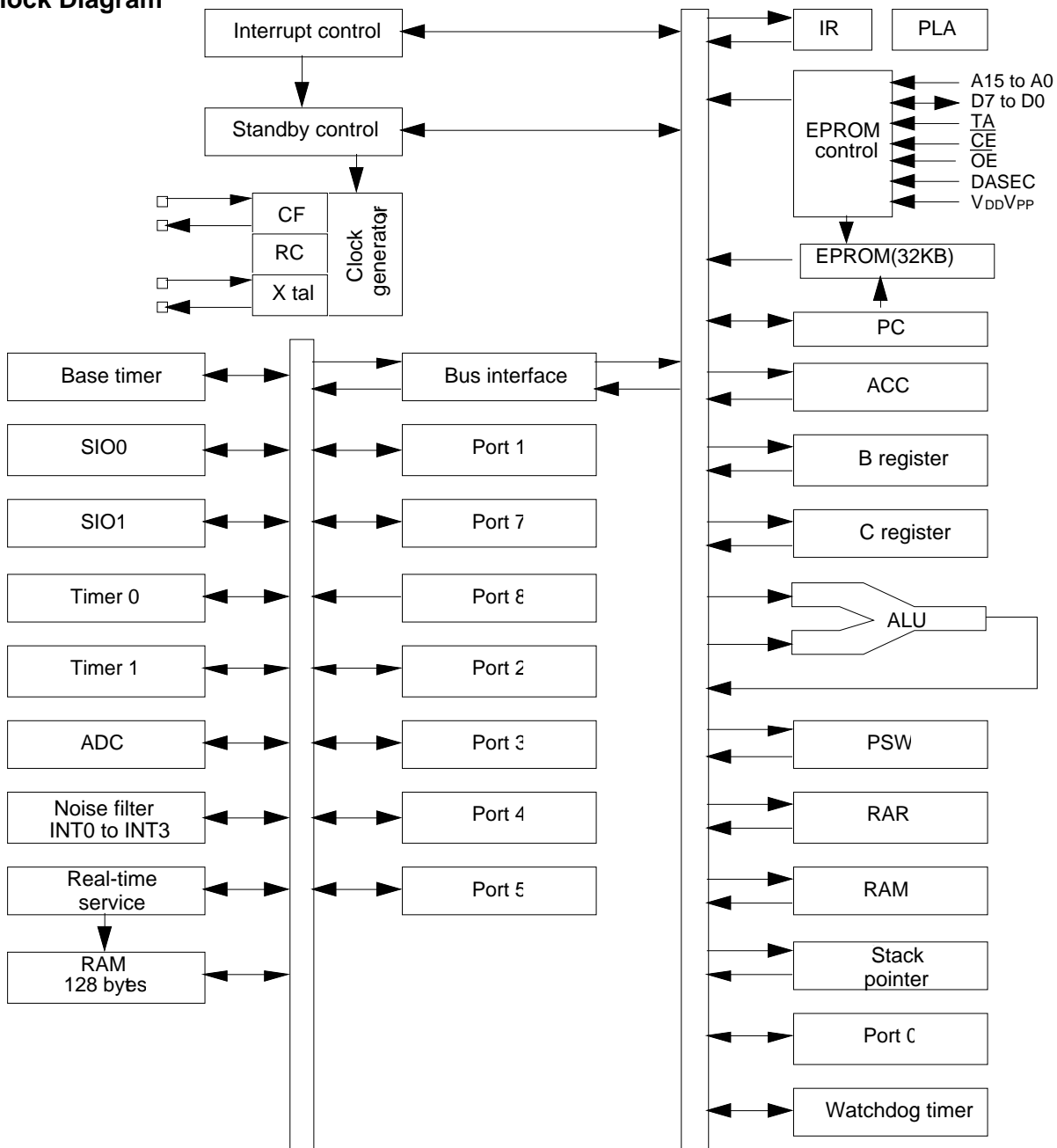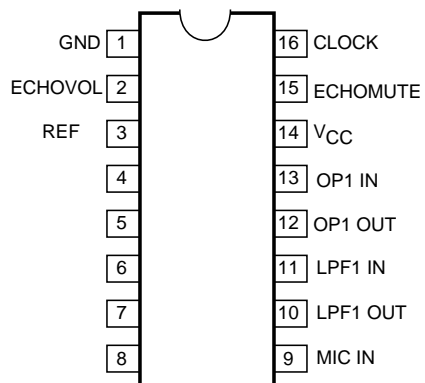
1.Pin layout

2.Block Diagram

■ M65855FP(EIC1) : Sound processor

1. Pin layout

2. Pin function

GND 1
ECHOVOL 2
REF 3
4
5
6
7
8

16 CLOCK
15 ECHOMUTE
14 V_{CC}
13 OP1 IN
12 OP1 OUT
11 LPF1 IN
10 LPF1 OUT
9 MIC IN

Pin No.	Symbol	DESCRIPTION
1	GND	
2	ECHOVOL	Echo level control with external DC voltage
3	REF	To connect 1/2 Vcc output and filter capacitor
4	OP2 IN	Uses external C to from an D/A conversion integrator
5	OP2 OUT	
6	LPF2 IN	Uses external CR to from a low pass filter at the input side
7	LPF2 OUT	
8	MIC OUT	Mixing output echo output and microphone
9	MIC IN	Microphone input
10	LPF1 OUT	Uses external CR to from a low pass filter at the input side
11	LPF1 IN	
12	OP1 OUT	Uses external C to from an D/A conversion integrator
13	OP1 IN	
14	V_{CC}	Applies a voltage of 3.5V to 5.5V(Rated5V)
15	ECHOMUTE	Echo mute control and clock stop control with external DC voltage
16	CLOCK	Controls a built -in clock generation circuit with external R

3. Block diagram.
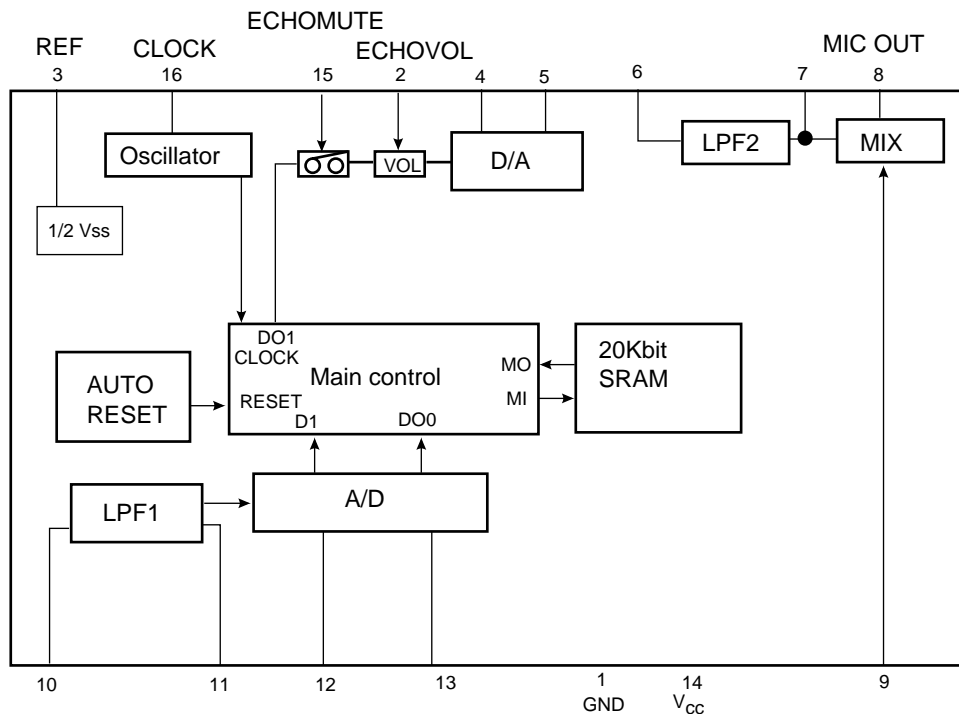
■ NJU3711M (UIC2) : 8-BIT Serial to parallel converter

1. Pin layout

2. Pin function

```
P3   1        14  VDD
P4   2        13  P2
P5   3        12  P1
VSS  4        11  CLR
P6   5        10  STB
P7   6         9  CLK
P8   7         8  DATA
```
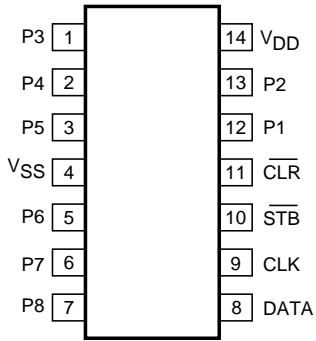
Pin.No	Symbol	Function
1	P3	Parallel converts data output terminals
2	P4	
3	P5	
4	V_{SS}	Ground
5	P6	Parallel converts data output terminals
6	P7	
7	P8	
8	DATA	Serial data input termnal
9	CLK	Clock signal input termnal
10	STB	Strove signal input termnal
11	CLR	Clear signal input termnal
12	P1	Parallel converts data output terminals
13	P2	
14	V_{DD}	Power supply terminal

■ SAA7327 (IC327) :Digital servo processor

1. Block diagram

MGS234
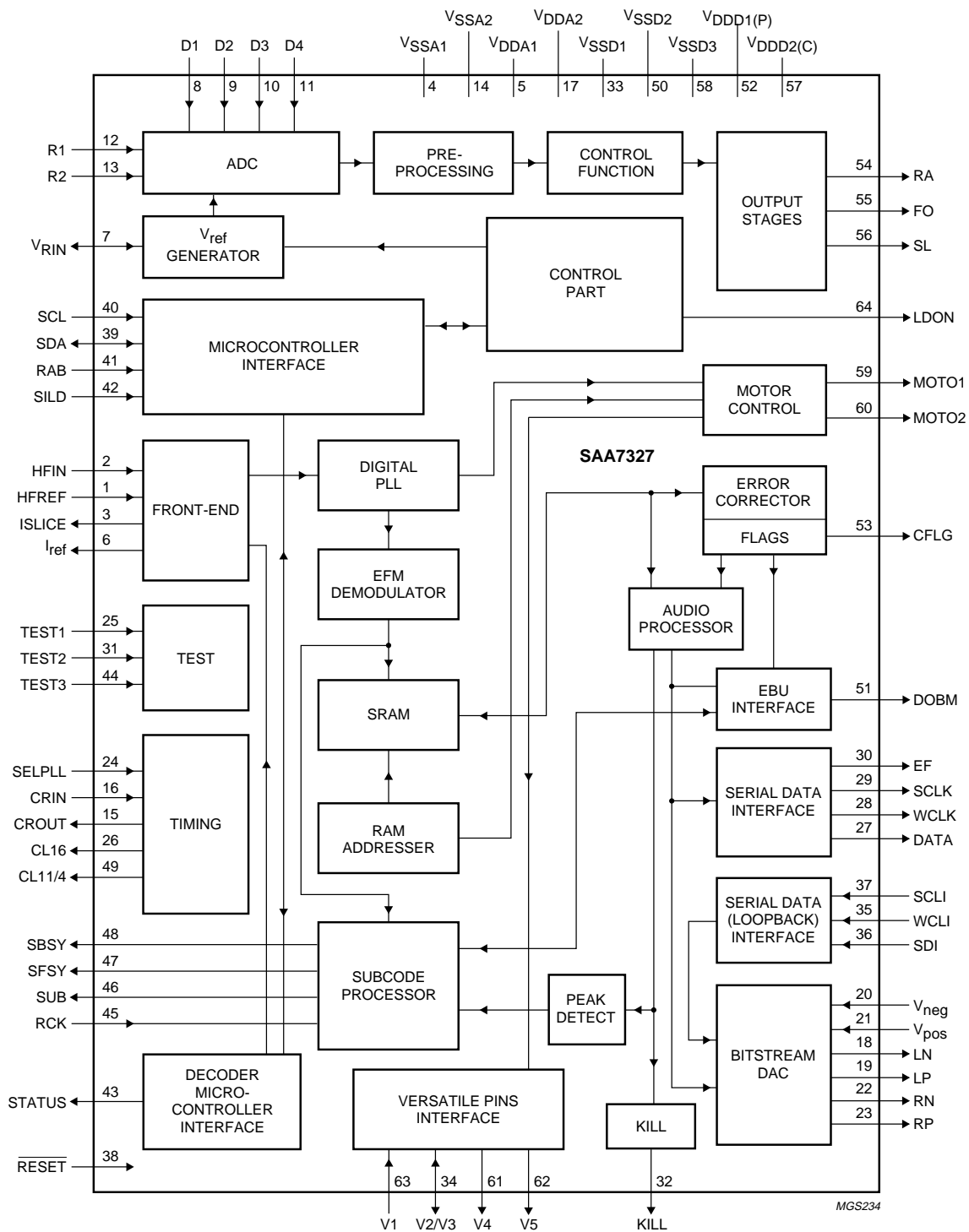
2. Pin function

Pin No.	Symbol	Function
1	HFREF	comparator common mode input
2	HFIN	comparator signal input
3	ISLICE	current feedback output from data slicer
4[1]	V_{SSA1}	analog ground 1
5[1]	V_{DDA1}	analog supply voltage 1
6	I_{ref}	reference current output
7	V_{RIN}	reference voltage for servo ADCs
8	D1	unipolar current input 1 (central diode signal input)
9	D2	unipolar current input 2 (central diode signal input)
10	D3	unipolar current input 3 (central diode signal input)
11	D4	unipolar current input 4 (central diode signal input)
12	R1	unipolar current input 1 (satellite diode signal input)
13	R2	unipolar current input 2 (satellite diode signal input)
14[1]	V_{SSA2}	analog ground 2
15	CROUT	crystal/resonator output
16	CRIN	crystal/resonator input
17[1]	V_{DDA2}	analog supply voltage 2
18	LN	DAC left channel differential negative output
19	LP	DAC left channel differential positive output
20	V_{neg}	DAC negative reference input
21	V_{pos}	DAC positive reference input
22	RN	DAC right channel differential negative output
23	RP	DAC right channel differential positive output
24	SELPLL	selects whether internal clock multiplier PLL is used
25	TEST1	test control input 1 (this pin should be tied LOW)
26	CL16	16.9344 MHz system clock output
27	DATA	serial d4(1) data output (3-state)
28	WCLK	word clock output (3-state)
29	SCLK	serial bit clock output (3-state)
30	EF	C2 error ßag output (3-state)
31	TEST2	test control input 2 (this pin should be tied LOW)
32	KILL	kill output (programmable; open-drain)
33[1]	V_{SSD1}	digital ground 1
34	V2/V3	versatile I/O: versatile input 2 or versatile output 3 (open-drain)
35	WCLI	word clock input (for data loopback to DAC)
36	SDI	serial data input (for data loopback to DAC)
37	SCLI	serial bit clock input (for data loopback to DAC)
38	$\overline{RESET}$	power-on reset input (active LOW)
39	SDA	microcontroller interface data I/O line (I2C-bus; open-drain output)
40	SCL	microcontroller interface clock line input (I2C-bus)

2. Pin function(2/2)

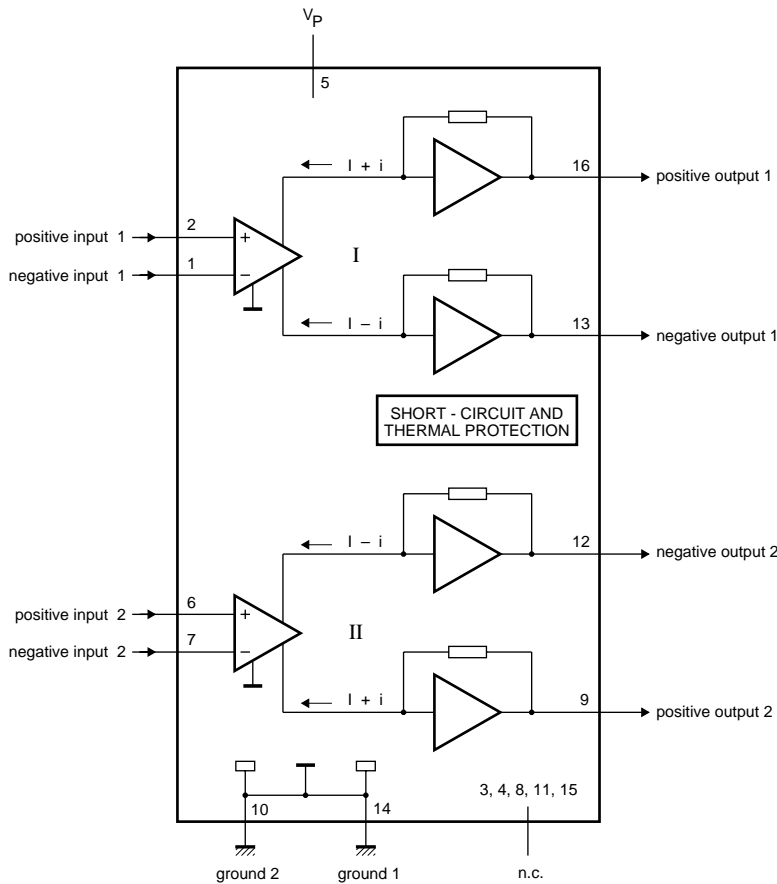| Pin No.	Symbol	Function
41	RAB	microcontroller interface R/$\overline{\text{W}}$ and load control line input (4-wire bus mode)
42	SILD	microcontroller interface $\overline{\text{R}}$/W and load control line input (4-wire bus mode)
43	STATUS	servo interrupt request line/decoder status register output (open-drain)
44	TEST3	test control input 3 (this pin should be tied LOW)
45	RCK	subcode clock input
46	SUB	P-to-W subcode bits output (3-state)
47	SFSY	subcode frame sync output (3-state)
48	SBSY	subcode block sync output (3-state)
49	CL11/4	11.2896 or 4.2336 MHz (for microcontroller) clock output
50[1]	V_{SSD2}	digital ground 2
51	DOBM	bi-phase mark output (externally buffered; 3-state)
52[1]	$V_{DDD1(P)}$	digital supply voltage 1 for periphery
53	CFLG	correction ßag output (open-drain)
54	RA	radial actuator output
55	FO	focus actuator output
56	SL	sledge control output
57[1]	$V_{DDD2(C)}$	digital supply voltage 2 for core
58[1]	V_{SSD3}	digital ground 3
59	MOTO1	motor output 1; versatile (3-state)
60	MOTO2	motor output 2; versatile (3-state)
61	V4	versatile output 4
62	V5	versatile output 5
63	V1	versatile input 1
64	LDON	laser drive on output (open-drain)

■ TDA7073A(IC805) : Dual BTL power driver

1. Pin layout

```
IN1−   1          16  OUT1+
IN1+   2          15  n.c.
n.c.   3          14  GND1
n.c.   4  TDA7073A  13  OUT1 −
VP     5  TDA7073AT 12  OUT2 −
IN2 +  6          11  n.c.
IN2 −  7          10  GND2
n.c.   8           9  OUT2 +
```
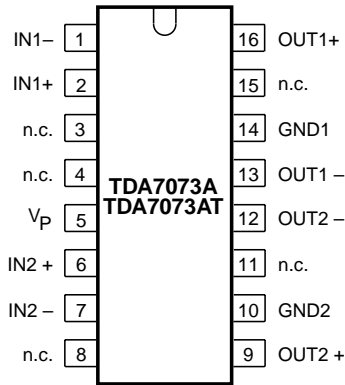
2. Pin function

Pin No.	Symbol	Function
1	IN1-	negative input 1
2	IN1+	positive input 1
3	n.c.	not connected
4	n.c.	not connected
5	VP	positive supply voltage
6	IN2+	positive input 2
7	IN2-	negative input 2
8	n.c.	not connected
9	OUT2+	positive output 2
10	GND2	ground 2
11	n.c.	not connected
12	OUT2+	negative output 2
13	OUT1-	negative output 1
14	GND1	ground 1
15	n.c.	not connected
16	OUT1+	positive output 1

3. Block diagram

■ TDA7295 (AIC1, 2) : Audio amp.

1.Pin layout

KA3082

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

- 1 STAND-BY GND
- 2 INVERTING INPUT
- 3 NON INVERTING INPUT
- 4 SUR
- 5 N.C.
- 6 BOOT STARD
- 7 +US(SIGNAL)
- 8 -US(SIGNAL)
- 9 STAND-BY
- 10 MUTE
- 11 N.C.
- 12 N.C.
- 13 +US(POWER)
- 14 OUT
- 15 -US(POWER)

2.Block Diagram

BOOTSTRAP

IN+

IN-

+US

BOOTSTRAP

OUTPUT

-US

BIPOLAR TRANSCONDUCTANCE INPUT STAGE

MOS GAIN & LEVEL SHIFTING STAGE

MOS OUTPUT STAGE

SHORT CIRCUIT PROTECTION
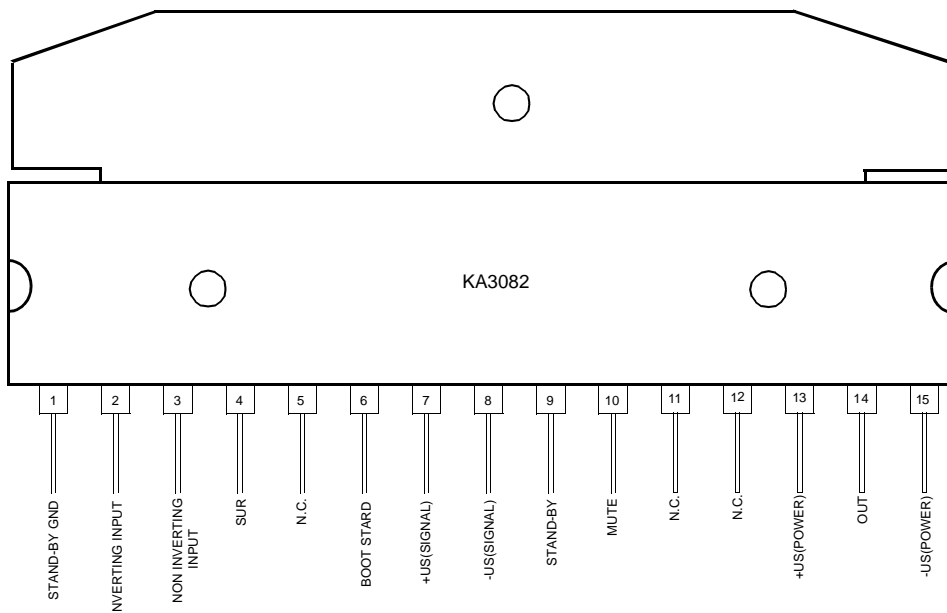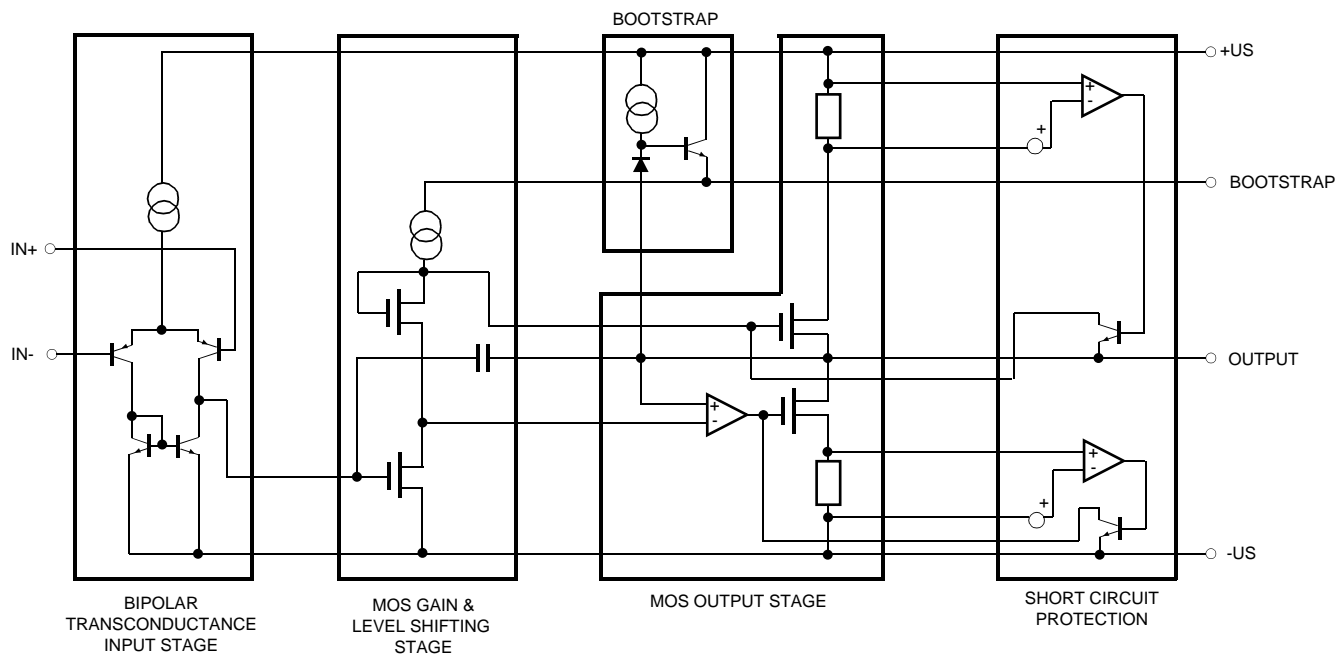
■ TZA1024 (IC024) : Data ampliÞer and laser supply

1. Pin Layout   2. Pin function

```
        LD  1 |          | 14  RGADJ
   V_DD(L)  2 |          | 13  V_DD
      CFIL  3 |          | 12  EQSEL
       MON  4 | TZA1024  | 11  CDRW
       DIN  5 |          | 10  RFEQO
       GND  6 |          |  9  RFFB
     PWRON  7 |          |  8  CMFB
```
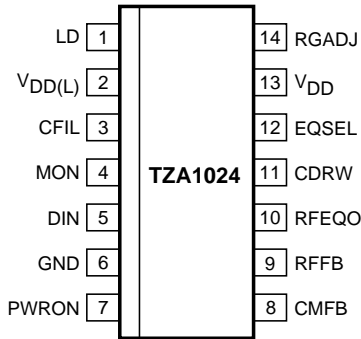
PIN.No	SYMBOL	Function
1	LD	current output to laser diode
2	$V_{DD(L)}$	laser supply voltage
3	CFIL	external Þlter capacitor
4	MON	laser monitor diode input
5	DIN	central diode input
6	GND	ground
7	PWRON	power-on select input
8	CMFB	common mode feedback voltage input
9	RFFB	external RF feedback resistor
10	RFEQO	RF ampliÞer output
1	CDRW	gain select input for CD-A/V , CD-R/W
12	EQSEL	equalizer/speed select input (n = 1, 2 or 4)
13	V_{DD}	supply voltage
14	RGADJ	external laser supply gain adjust resistor

3. Block diagram
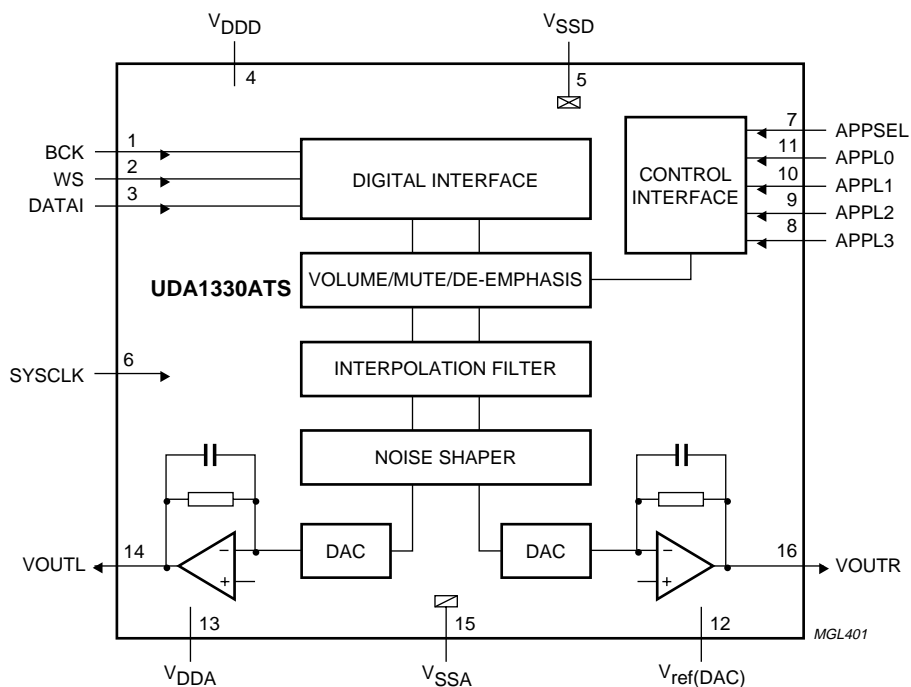

MGR517
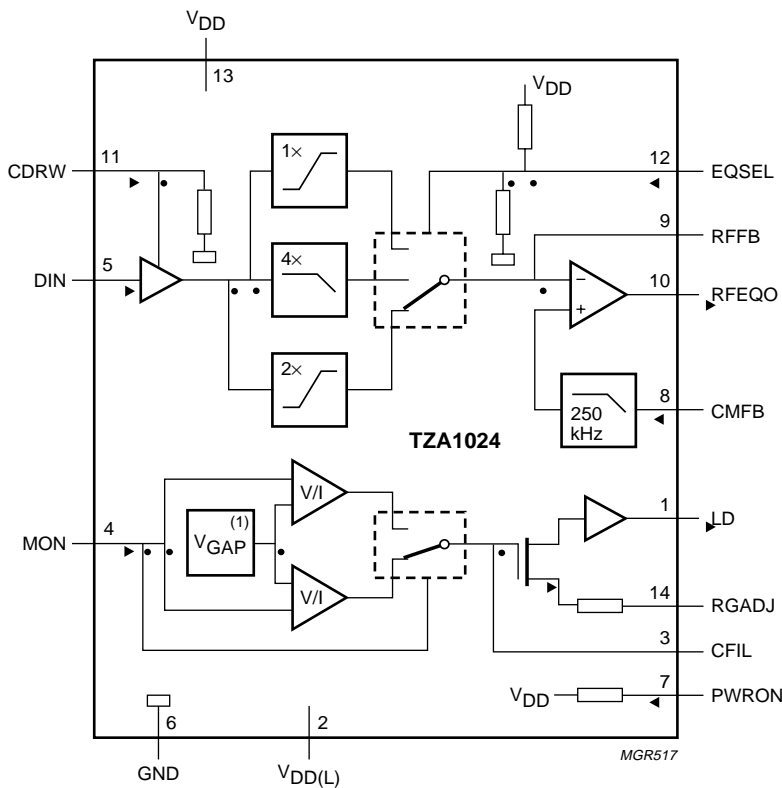
■ UDA1330AT (AI1) : Stereo filter DAC

1. Pin layout

MGL402
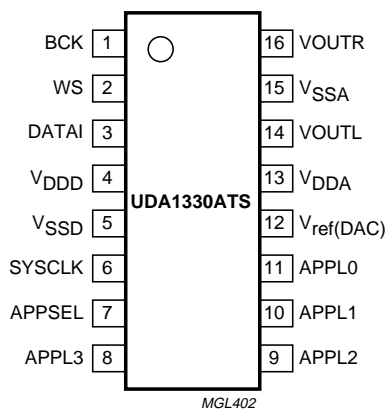
2. Pin function

SYMBOL	PIN	DESCRIPTION
BCK	1	bit clock input
WS	2	word select input
DATAI	3	data input
V_{DDD}	4	digital supply voltage
V_{SSD}	5	digital ground
SYSCLK	6	system clock input: $256f_s$, $384f_s$ and $512f_s$
APPSEL	7	application mode select input
APPL3	8	application input 3
APPL2	9	application input 2
APPL1	10	application input 1
APPL0	11	application input 0
$V_{ref(DAC)}$	12	DAC reference voltage
V_{DDA}	13	analog supply voltage for DAC
VOUTL	14	left channel output
V_{SSA}	15	analog ground
VOUTR	16	right channel output

3. Block diagram.

MGL401

MX-J170V