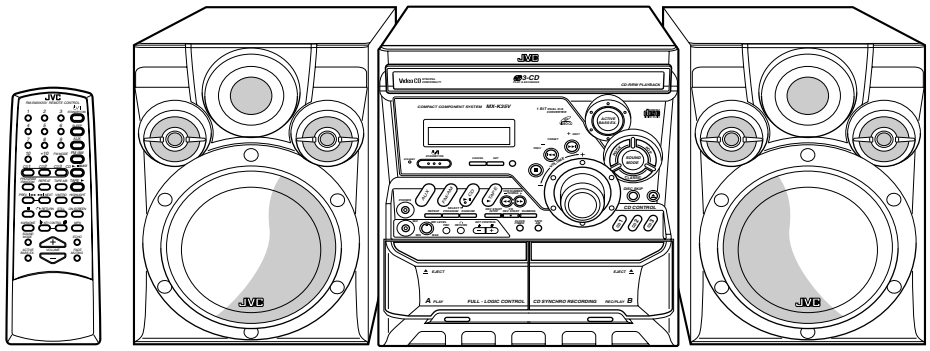
JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

MX-K35V



SP-MXK35V CA-MXK35V SP-MXK35V

VIDEO CD

COMPACT disc DIGITAL VIDEO

COMPACT disc DIGITAL AUDIO

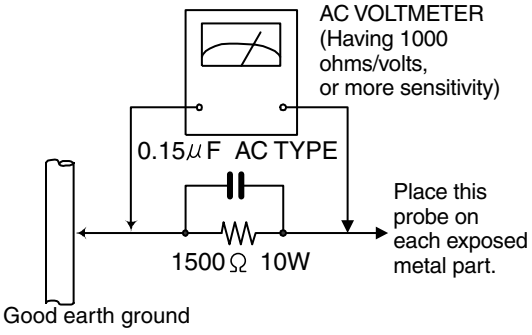
Area suffix	
US	Singapore
UX	Saudi Arabia

Contents

No.21033
Nov. 2001

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 currnet 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 meausre 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.

In regard with component parts appearing on the silk-screen printed side (parts side) of the PWB diagrams, the parts that are printed over with black such as the resistor (▬), diode (▬) and ICP (●) or identified by the "⚠" mark nearby are critical for safety.
(This regulation does not correspond to J and C version.)

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

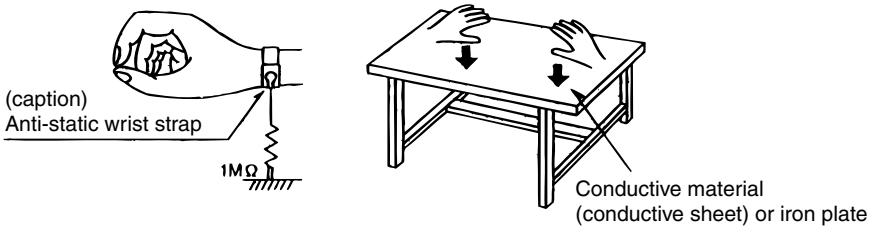
In the equipment which uses optical pick-up (laser diode), optical pick-up is destroyed by the static electricity of the work environment.
Be careful to use proper grounding in the area where repairs are being performed.

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.



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 CD changer unit (optical pickup)

1. Do not subject the CD changer 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 CD changer 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 traverse unit is decomposed

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

1. Remove the CD changer unit.
2. Disconnect the harness from connector on the CD motor board.
3. Solder is put up before the card wire is removed from connector CN601 on the main board as shown in Fig.1 and Fig. 2.
   (When the wire is removed without putting up solder, the CD pick-up assembly might destroy.)
4. Please remove solder after connecting the card wire with CN601 when you install picking up in the substrate.

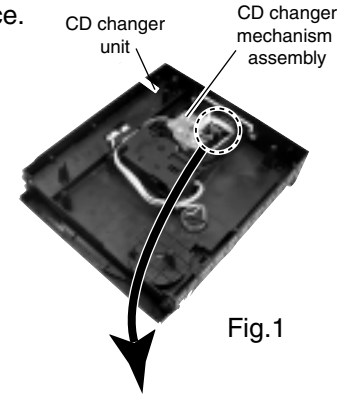


Fig.1

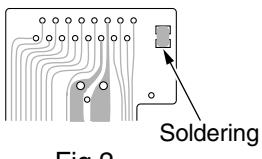


Fig.2

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.

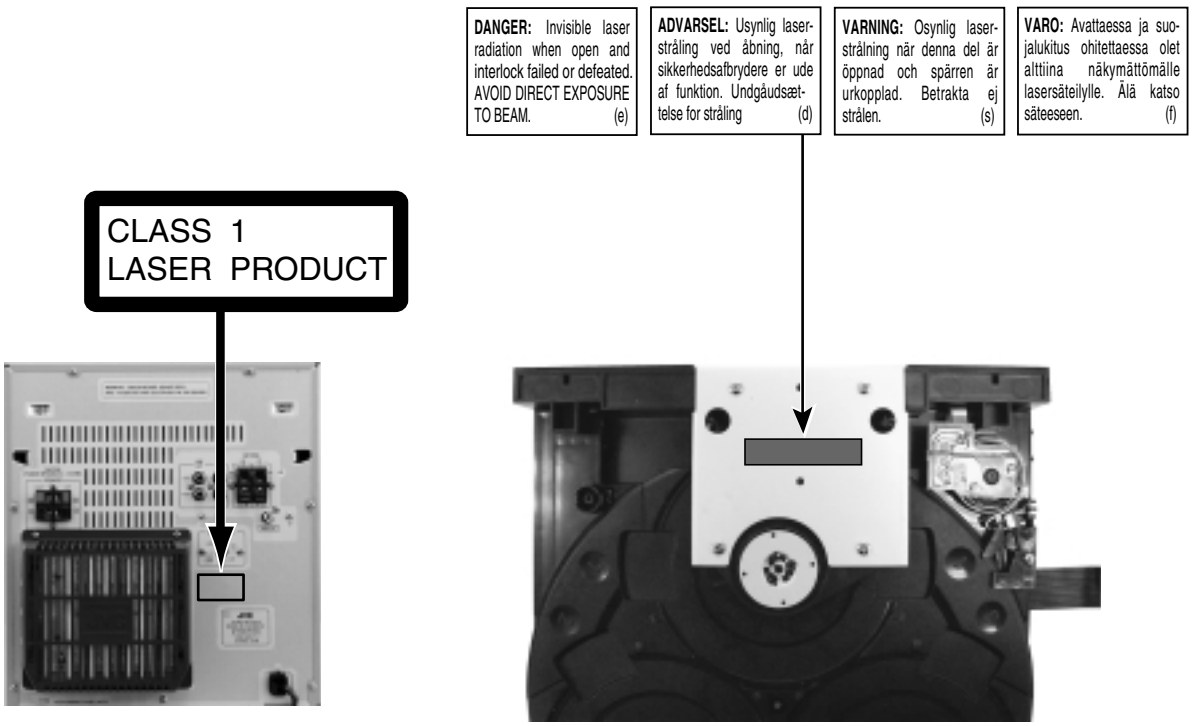
VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle.Älä katso säteeseen.

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



Disassembly method

Commence disassembly of this set by removing the main units and then proceed to the components and assemblies inside the units.

<Disassembly of the main blocks of this set>

Replacement of the fuses and the power IC

■ Replacing the fuses (See Fig.1)

- Prior to performing the following procedure, remove the top cover.

1. Replace the fuses inside.

[Caution] Be sure to use fuses with the specified ratings.

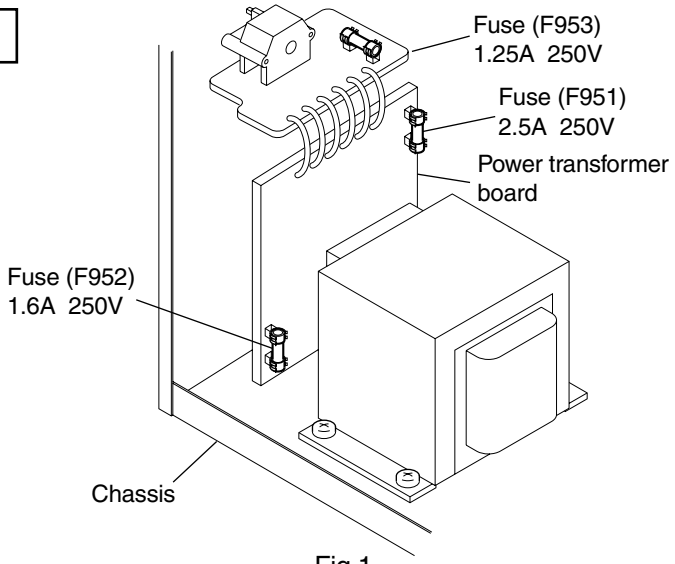


Fig.1

■ Replacing the power IC (See Fig.2 to 4)

- Prior to performing the following procedure, remove the top cover.

1. Remove the two screws **A** that attach the heat sink cover to the rear panel.
2. Pull the heat sink cover outward.
3. Remove the two screws **B** from the bracket that retains the power IC.
4. Remove the solder fixing the power IC.

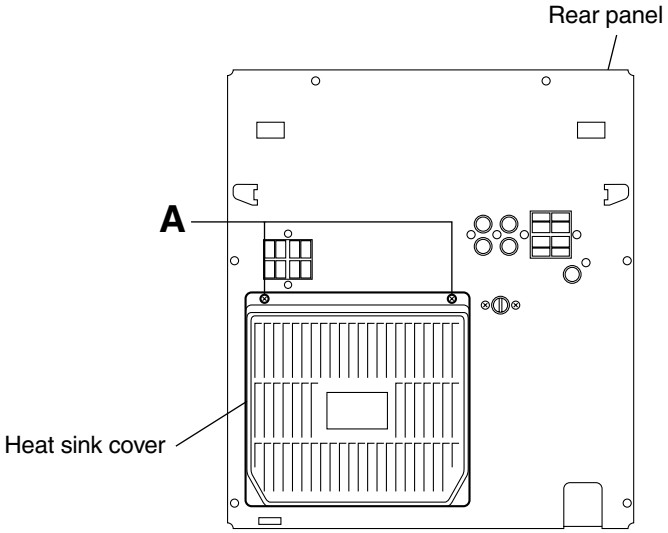


Fig.2

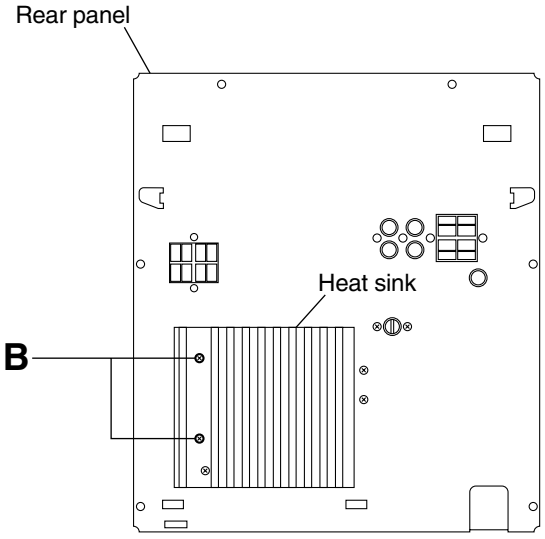


Fig.3

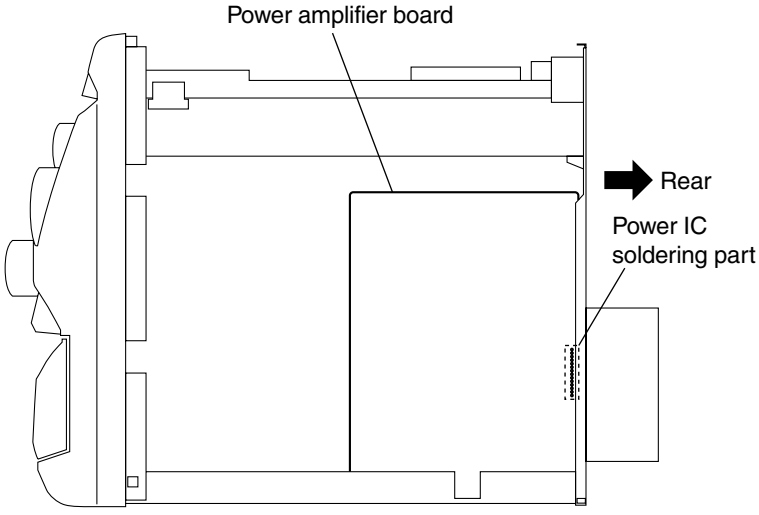


Fig.4

■ Removing the top cover

(See Fig.5 and 6)

1. Remove the two screws **C** and four screws **D** that retain the top cover from the rear of the body.
2. Remove the four screws **E** retain the top cover from the two sides of the body.
3. Remove the top cover from the body by lifting it toward the rear.

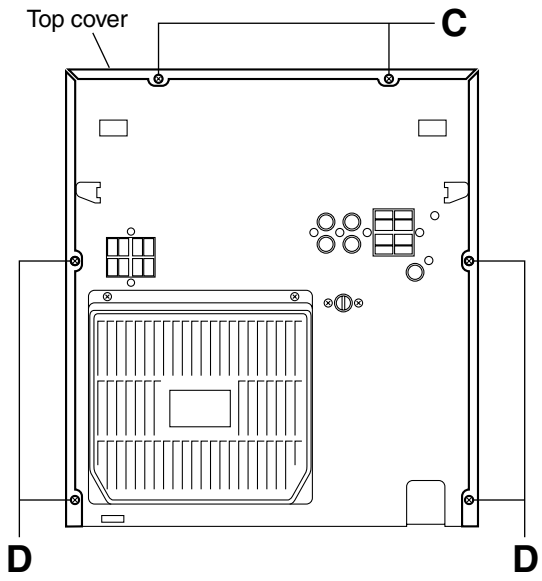


Fig.5

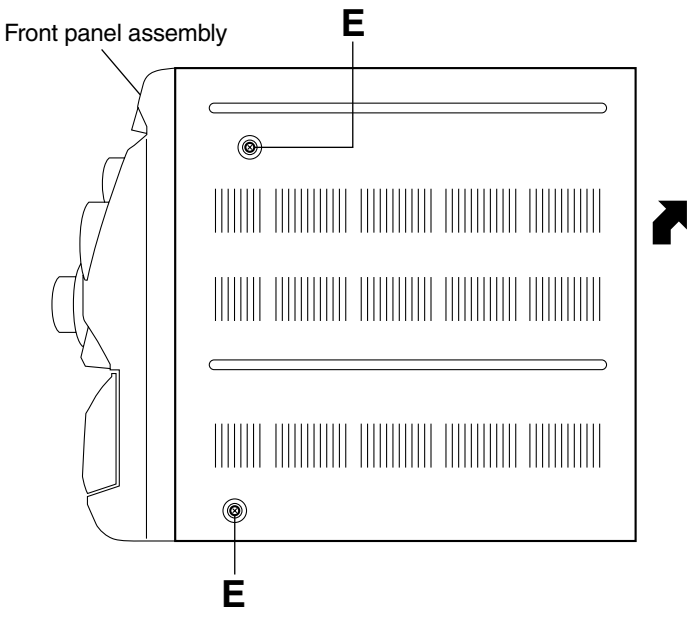


Fig.6

■ Removing the CD changer unit (See Fig.7 to 10)

- Prior to performing the following procedures, remove the top cover.

[Caution] Although the CD mechanism unit can be removed without removing the CD tray panel, it is still recommended to remove it in order to prevent damage.

a. From the front panel side of this set, push in the sections marked with arrows and pull out the CD tray toward the front.
b. Remove the CD tray panel by pushing both of its extremities upward in the direction of the arrows.
c. Push the CD tray deep into the set.

1. Disconnect the cassette head wires from the connectors CN307 and CN308 on the main board, which is located below the CD changer unit.
2. Disconnect the microphone amplifier wire from the connector CN306 on the main board.
3. Disconnect the card wires from the connectors CN301, CN302, CN305 and CN606 on the main board.
4. Disconnect the parallel wires from the connectors CN902A, CN902B and CN902C on the power amplifier board.
5. From the rear of the set, remove the two screws **F** retaining the CD changer unit, then remove the four screws **G** retaining the ANTENNA terminal the AUX IN terminal and LINE OUT terminal.
6. Push down and disengage the two claws **a** holding the CD changer unit at the bottom of its front panel and then remove the CD changer unit.(See **Fig. 10**)

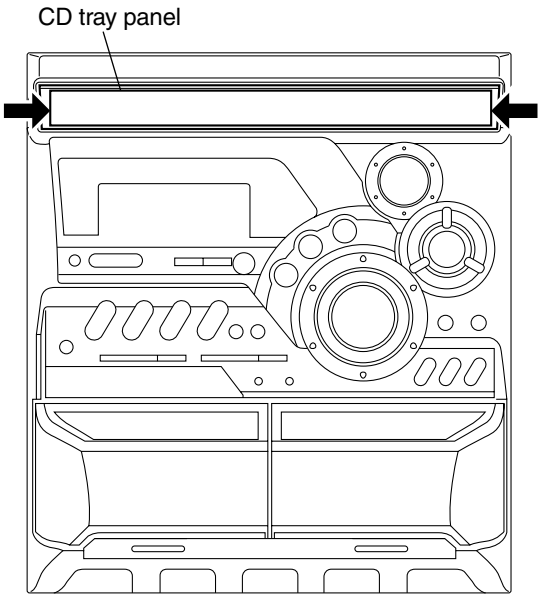


Fig.7

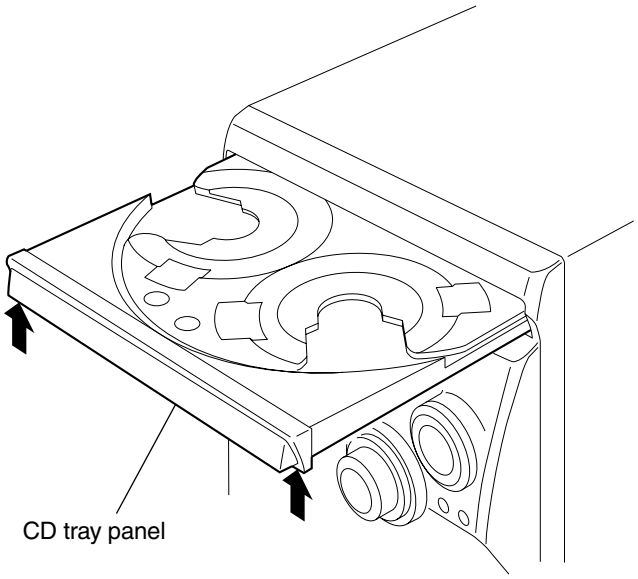


Fig.8

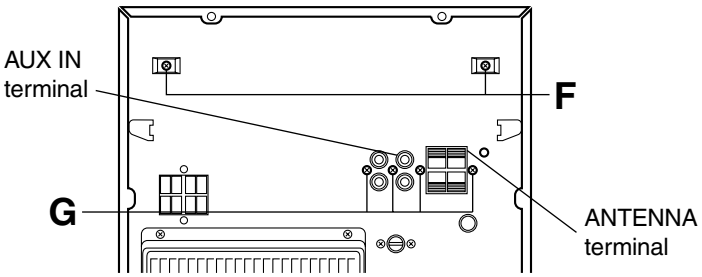


Fig.9

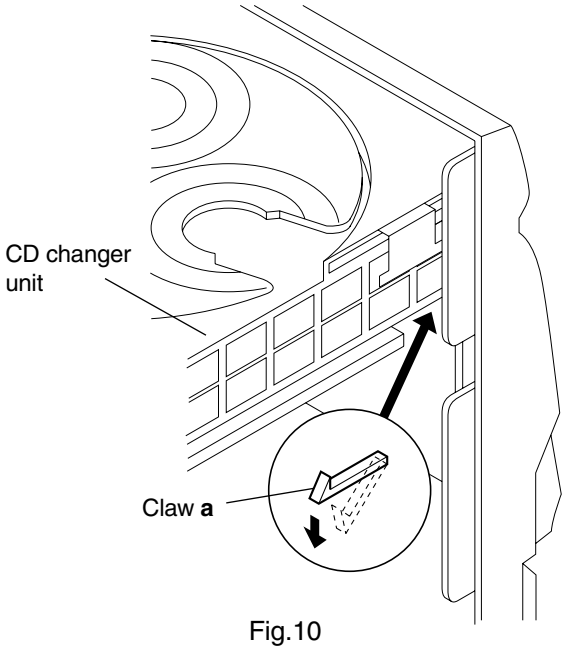


Fig.10

■ Removing the front panel assembly (See Fig.11 and 12)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.

1. Disconnect the parallel wire and card wire from the connectors CN901 and CN903 on the power amplifier board.
2. Remove the two screws **H** retaining the front panel assembly onto the bottom of the body.
3. Remove the screw **J** retaining the cassette deck mechanism and then remove the GND lug **b** that comes from the power amplifier board.
4. Disengage the claws **c** on both sides at the bottom of the front panel assembly and then remove the assembly.

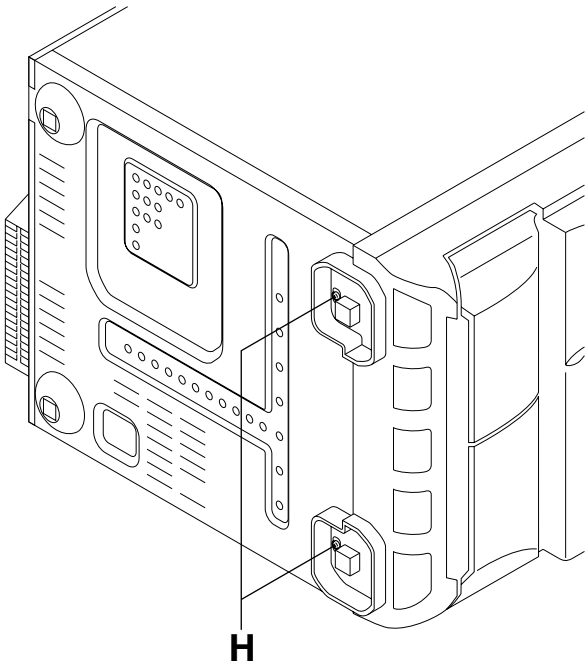


Fig.11

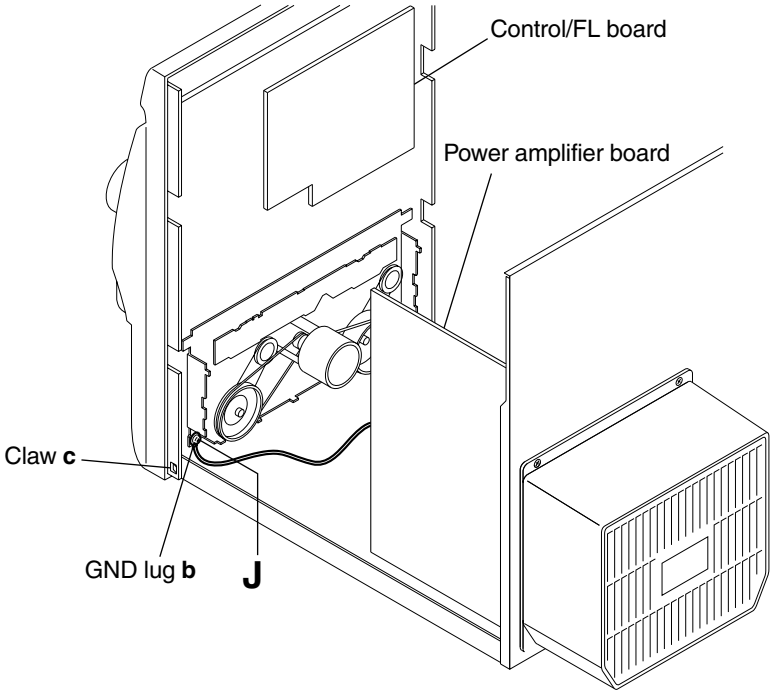


Fig.12

<Disassembly of units and assembly inside this set>

■ Removing the main board (See Fig.13 and 14)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.

1. Disconnect the wires from CN602 and CN603 on the main board, which is located on the backside of the CD changer unit.
2. Disconnect the card wire from connector CN604 of the main board at the back of the CD changer unit.
3. The three screws **K** and screw with washer **L** retain the main board should be removed.
4. Remove the main board by pulling it toward the side where the CN601 is located.
5. Using solder, short the CD pickup to connect to short round.

[Caution] (See Fig.14)

After re-connecting the wires, be sure to remove the shorting solder from the GND connection.

6. Disconnect the card wire from the connector CN601 on the main board and then remove the main board.

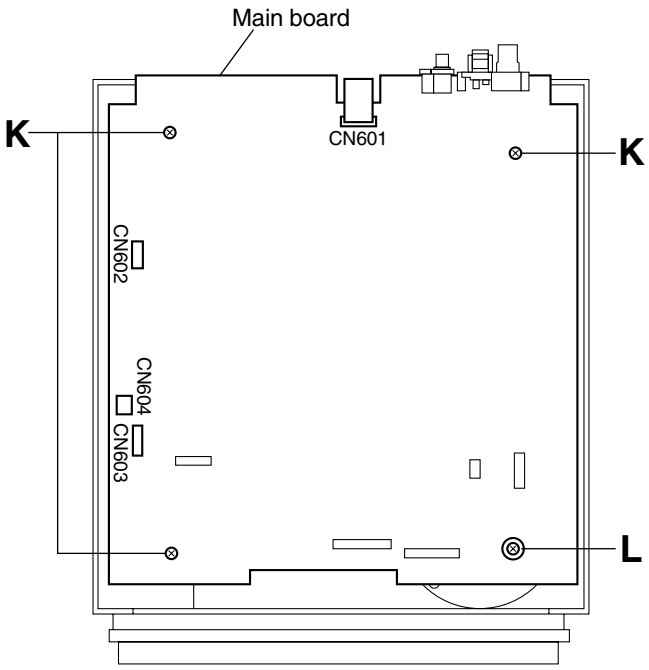


Fig.13

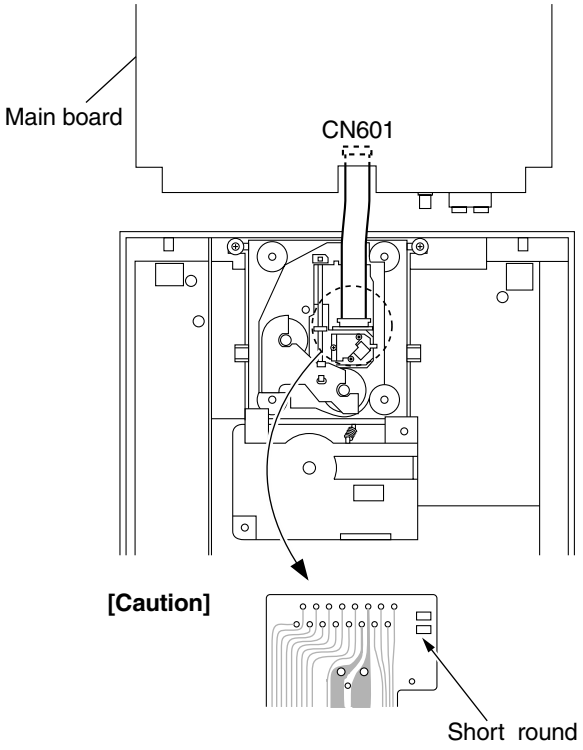


Fig.14

■ Removing the CD changer mechanism assembly (See Fig.15 to 17)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.

1. Remove the spring **d** from the front surface of the CD changer mechanism unit.
2. Turn the CD changer mechanism unit upside down, and remove the spring **e** connecting the unit to the CD changer mechanism assembly.

[Note] When re-assembling after the disassembly work, apply bonding agent on the spring to prevent it from slipping off.

3. Remove the two screws with the washer **M** retaining the CD changer mechanism assembly.

[Caution] When replacing the CD changer mechanism assembly, be sure not to mistake the positions of the red and blue dampers.

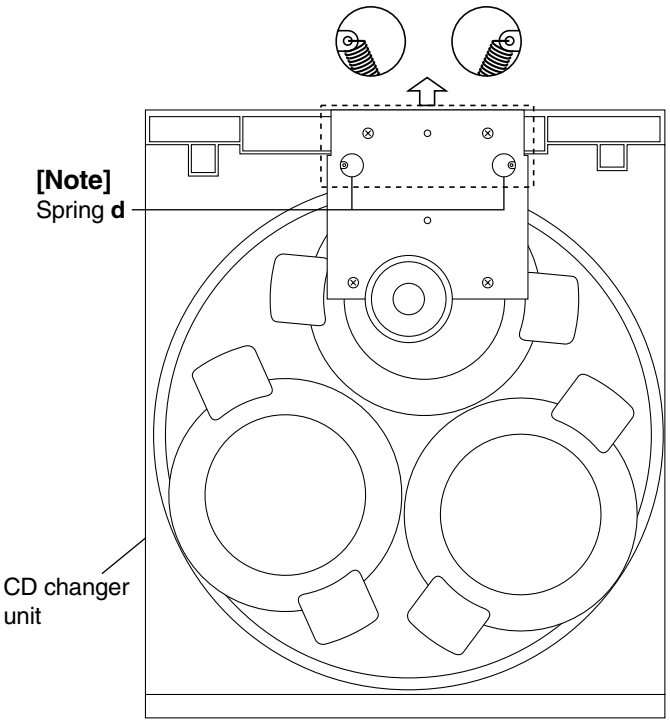


Fig.15

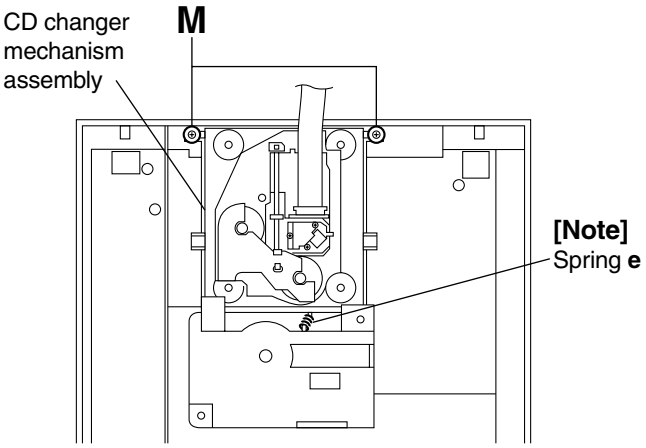


Fig.16

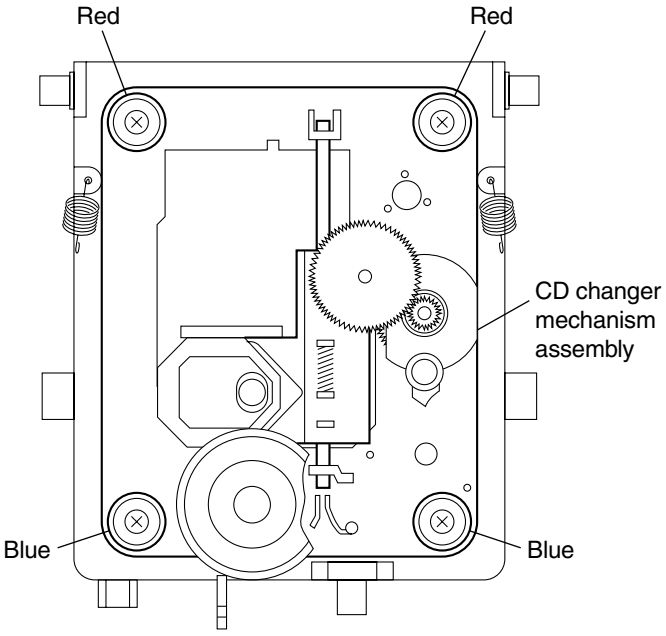


Fig.17

■ Removing the CD pickup (See Fig.18)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.
- Also remove the CD changer mechanism assembly.

1. Widen the section **f**.
2. While keeping the section **f** wide open, push the section **g** in the direction of the arrow to remove the shaft, and then remove the CD pickup.

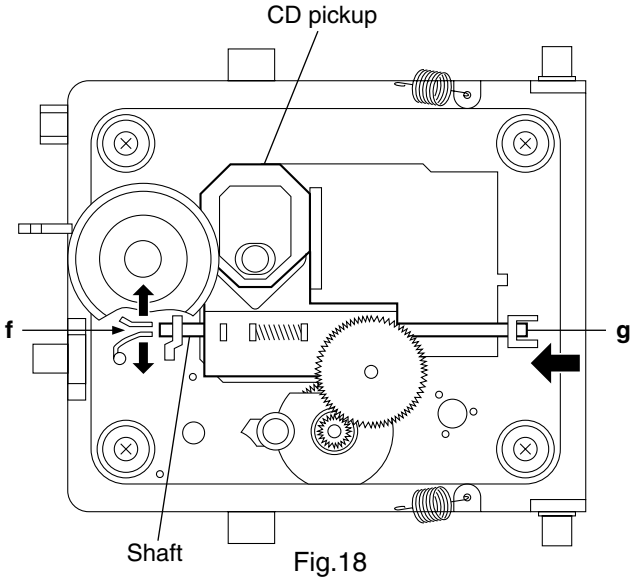


Fig.18

■ Replacing the loading motor and belt of the CD changer tray (See Fig.19)

- Prior to performing the following procedure, remove the top cover.

1. Pull out the CD changer tray.
2. Remove the belt from the pulley.
3. Remove the two screws **N** retaining the CD changer tray loading motor.

[Caution] When pushing in the CD changer tray, be sure to lower the CD changer mechanism assembly by manually turning the UD cam gear in the direction of the arrow.

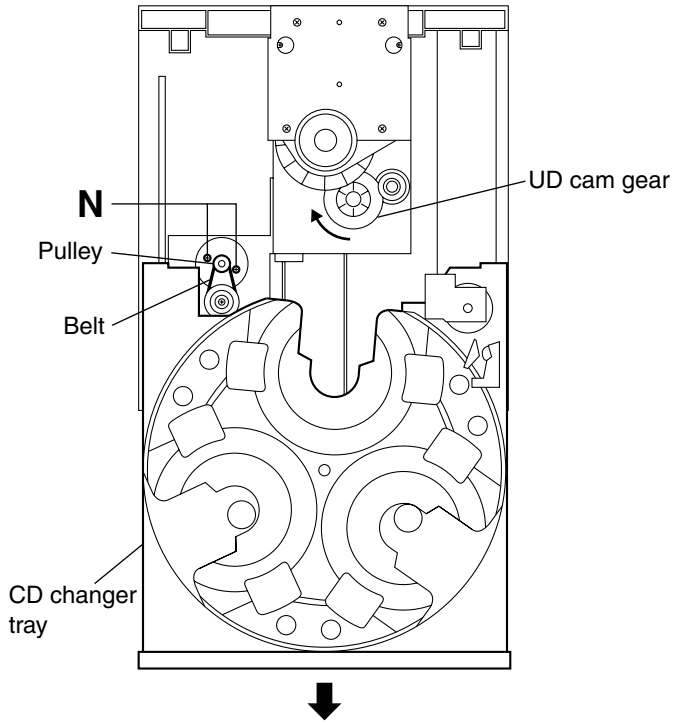


Fig.19

■ Replacing the CD tray rotor belt of the CD changer, and removing the motor (See Fig.20 and 21)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.

1. Remove the two screws **P** retaining the stopper brackets on both sides of the CD changer unit.
2. Remove the stopper brackets from both sides of the CD changer unit.
3. Pull out the CD tray from the CD changer unit, all the way and then lift the tray upward to remove.
4. Turn the CD tray upside down and remove the tray rotor belt from the pulley.
5. Turn the CD tray upside down and disconnect the card wire from the connector CN605 on the CD tray rotor motor assembly.
6. Remove the two screws **Q** retaining the CD tray rotor motor, and then remove the CD tray rotor motor.

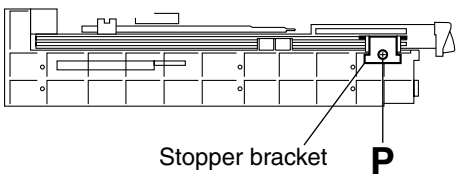


Fig.20

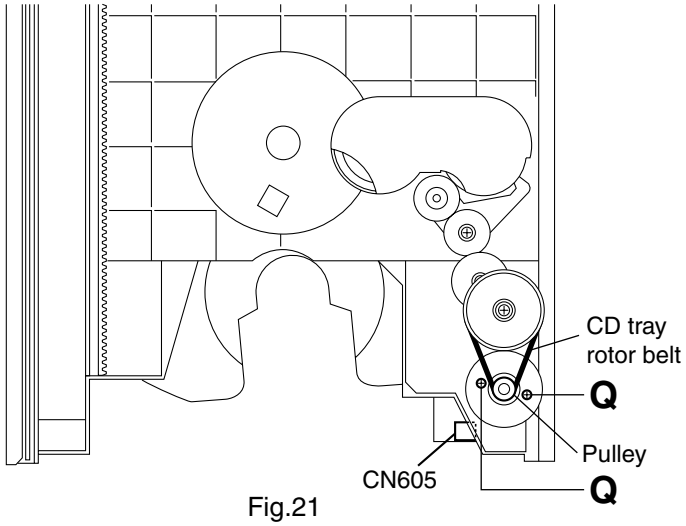


Fig.21

■ Removing the cassette deck mechanism (See Fig.22)

- Prior to performing the following procedure, remove the top cover.
- Also remove the CD changer unit.
- Also remove the front panel assembly.

1. Remove the five screws **R** retaining the cassette deck mechanism and then remove the wire clamp lug **h** that comes from the back of the front panel assembly.

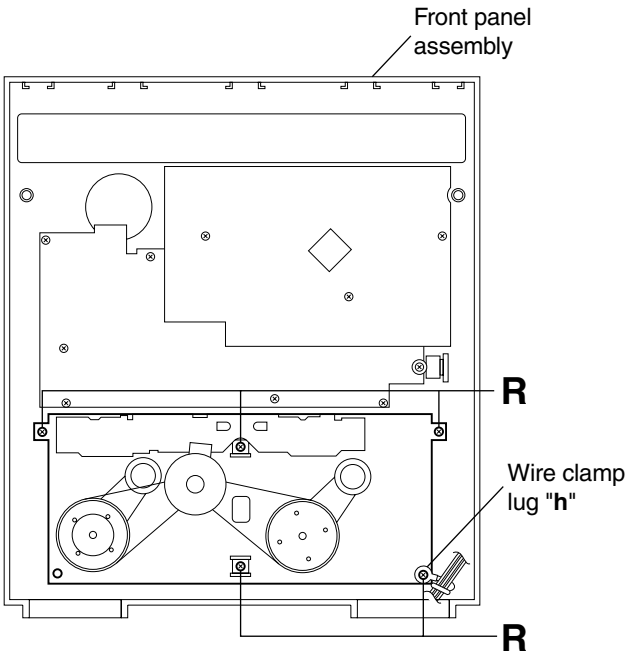


Fig.22

■ Removing the head phone board (See Fig.23)

- Prior to performing the following procedure, remove the top cover
- Also remove the CD changer unit.
- Also remove the front panel assembly.

1. Remove the screw with the washer, **S** that retains the head phone board from the back of the front panel assembly.

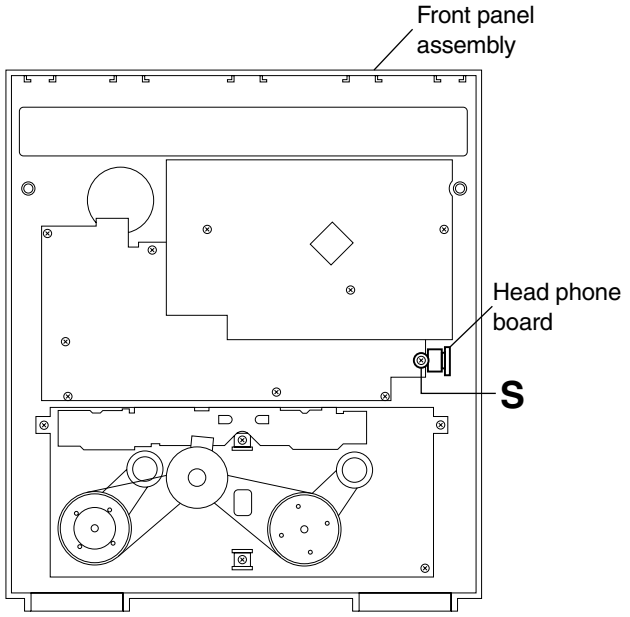


Fig.23

■ Removing the microphone amplifier board (See Fig.24 and 25)

- Prior to performing the following procedure, remove the top cover
- Also remove the CD changer unit.
- Also remove the front panel assembly.

1. Pull out the mic volume knob from the front of the front panel assembly.
2. Remove the screw with the washer, **T** that retains the microphone amplifier board.

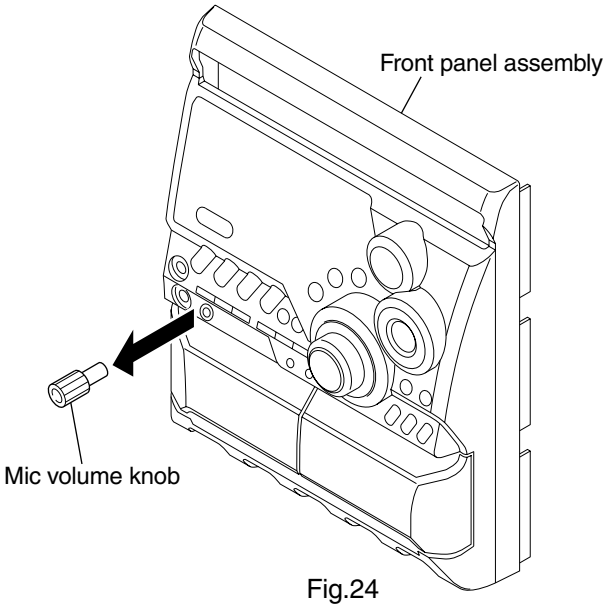


Fig.24

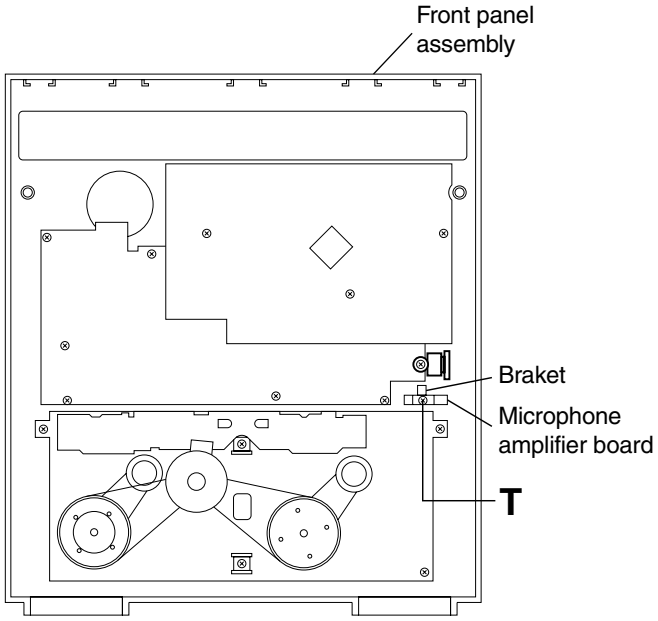


Fig.25

■ Removing the control/FL board (See Fig.26)

- Prior to performing the following procedure, remove the top cover.
- Also remove the CD changer unit.

1. Remove the three screws **U** that retain the control/FL board from the back of the front panel assembly.

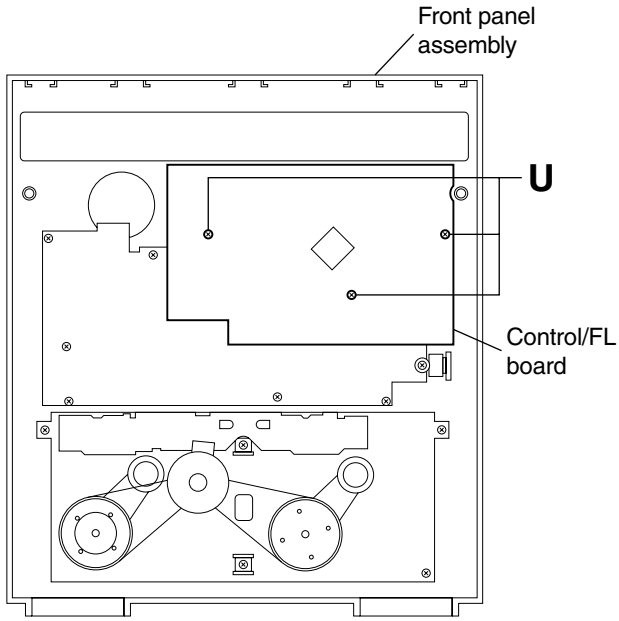


Fig.26

■ Removing the switch board and active bass ex. switch board

(See Fig.26 to 29)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.
- Also remove the front panel assembly.

1. Pull out the volume control knob from the front of the front panel assembly.
2. Remove the nut and washer retaining the volume knob shaft.
3. Remove the three screws **U** retaining the control/FL board from the back of the front panel assembly.
4. Remove the control/FL board.
5. Remove the eleven screws **V** retaining the switch board.
6. Remove the two screws **W** retaining the active bass ex. switch board.

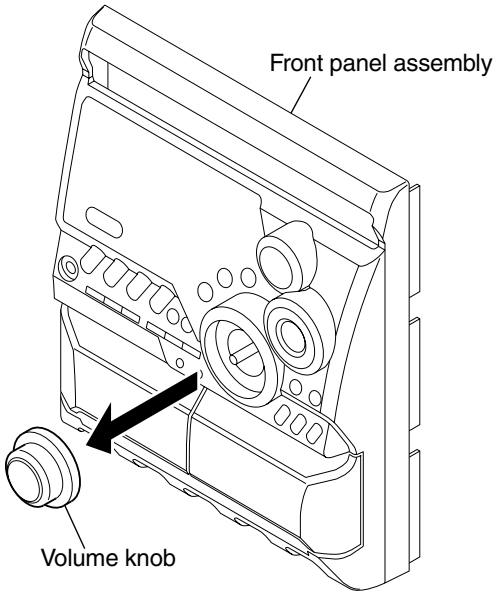


Fig.27

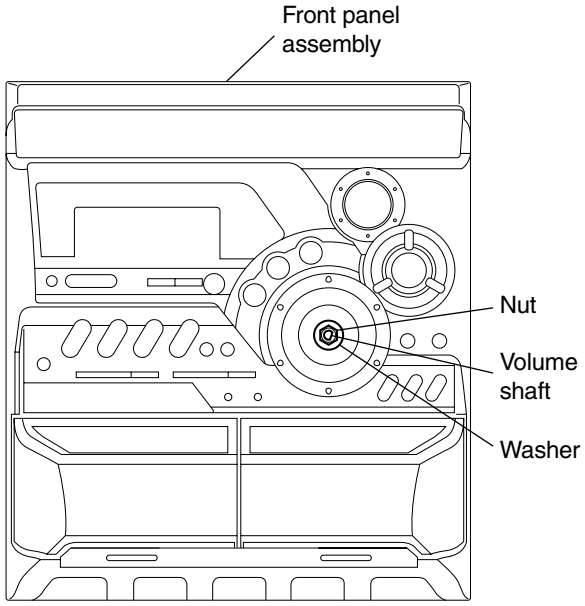


Fig.28

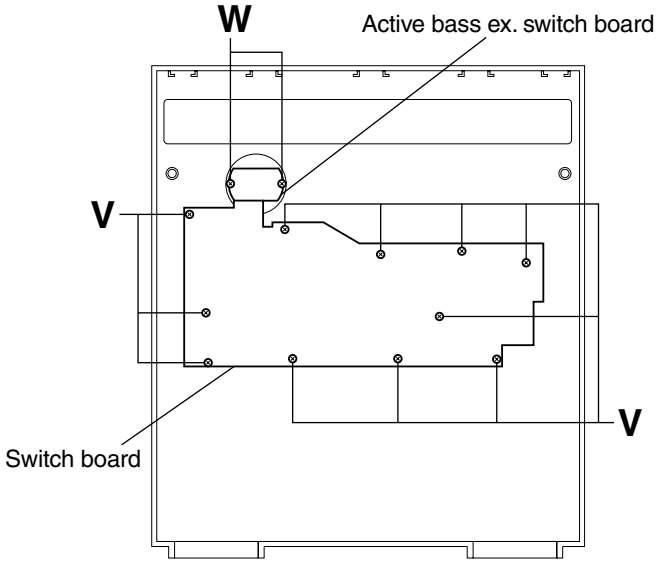


Fig.29

■ Removing the cassette deck main motor, and replacing the main belts (See Fig.22, 30 and 31)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.
- Also remove the front panel assembly.

1. Remove the five screws **R** retaining the cassette deck mechanism.
2. Remove the cassette deck mechanism.
3. Remove the two screws **X** retaining the main motor from the front side of the cassette deck.

[Caution] After attaching the main motor, check the orientation of the motor and the polarity of the wires.

4. From the backside of the cassette deck, remove the main motor and two main belts.

[Caution] The lengths of the cassette A (playback only) and cassette B (record/play) main belts are different. When attaching the main belts, use the longer belt for cassette A.

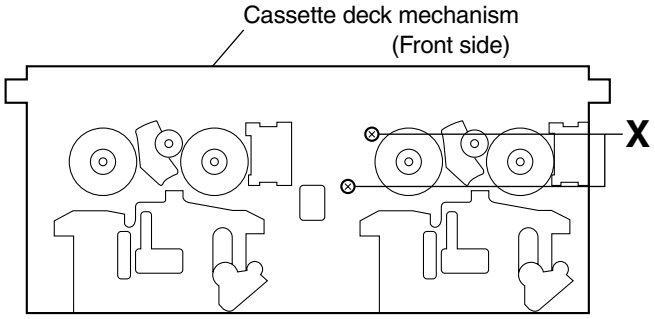


Fig.30

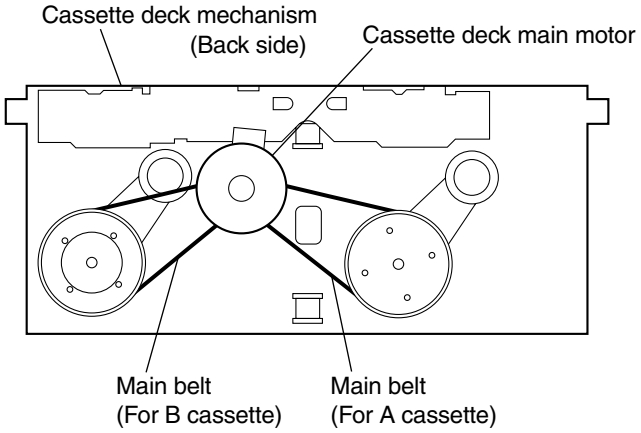


Fig.31

■ Removing the leaf switches of the cassette deck mechanism (See Fig.22 and 32)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.
- Also remove the front panel assembly.

1. Remove the five screws **R** that retain the cassette deck mechanism.
2. Remove the cassette deck mechanism.
3. Turn the cassette deck mechanism upside down.
4. Remove the solder from around the leaf switches.
5. Pull out the leaf switches from the front side of the cassette deck mechanism.

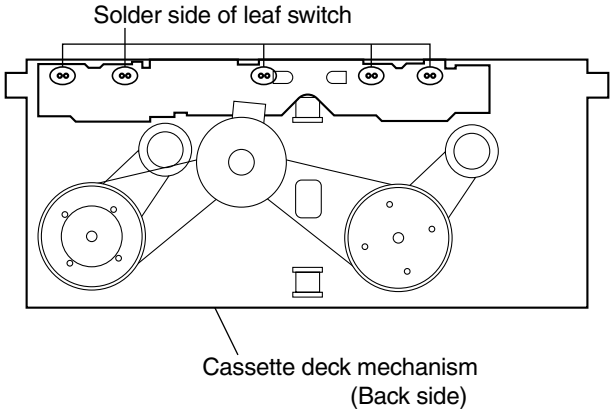


Fig.32

■ Removing the cassette deck heads (See Fig.22 and 33)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.
- Also remove the front panel assembly.

1. Remove the five screws **R** that retain the cassette deck mechanism.
2. Remove the cassette deck mechanism and place it so that the front side faces up.
3. Remove the solder from the bottom side of the head terminal and disconnect the wire.
4. Remove the screw **Y** that retains the head.
5. Loosen the screw **Z** that retains the head.
6. Hold the head and slide it in the direction of the arrow to remove it.

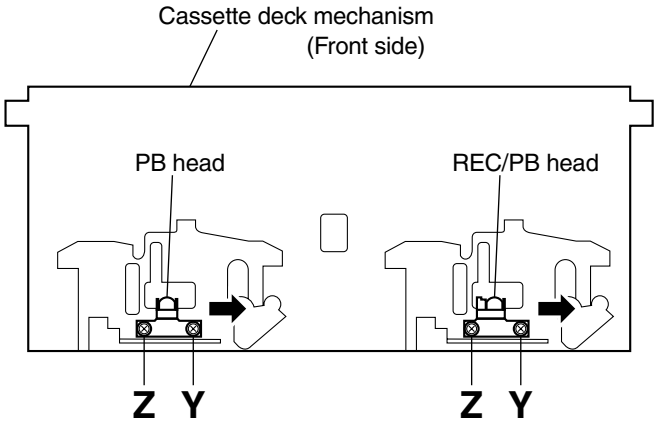


Fig.33

■ Removing the Video & CD board (See Fig.2, 34 to 36)

- Prior to performing the following procedures, remove the top cover.

1. Disconnect the card wire from connector CN606 on the main board.
2. Remove the three screws **AA** and screw **AB** retains the Video & CD board cover.
3. In order to remove the wire from the Video & CD board, remove the solder on the power amplifier board.
4. Remove the Video & CD board cover.
5. Remove the two screws **AC** retains the Video & CD board.

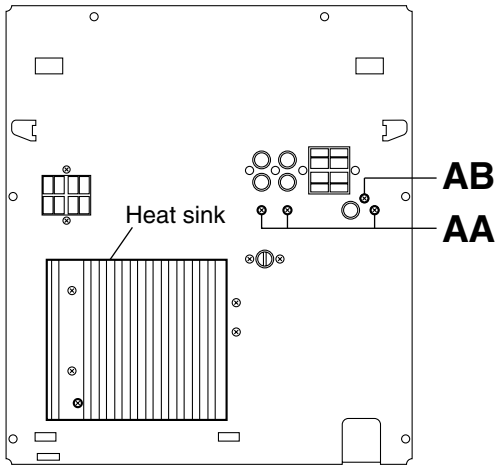


Fig.34

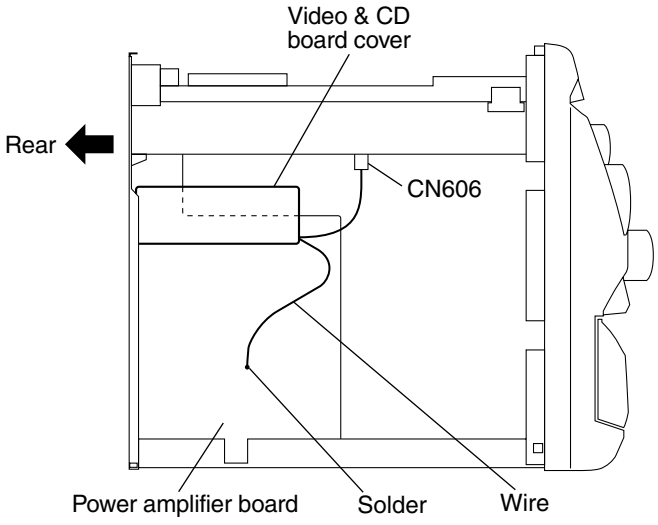


Fig.35

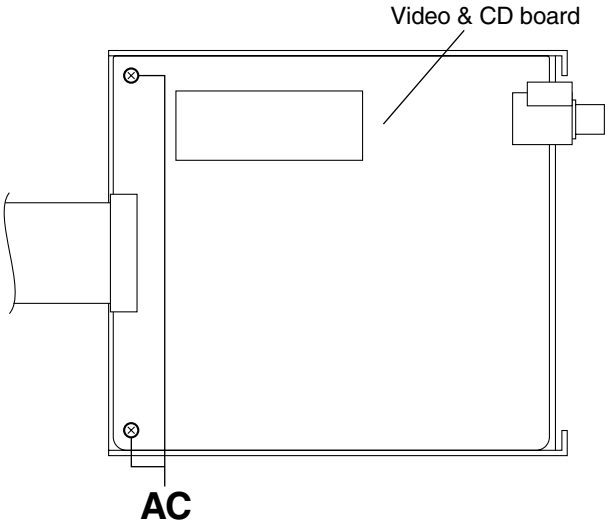


Fig.36

■ Removing the 3-pin regulator (See Fig.2, 37 and 38)

- Prior to performing the following procedures, remove the top cover.

1. Remove the two screws **A** connecting the heat sink cover to the rear panel.
2. Pull the heat sink cover foward you.
3. Remove the screw **AD** that retains the bracket holding the 3-pin terminal regulator.
4. Remove the solder fixing the 3-pin regulator.

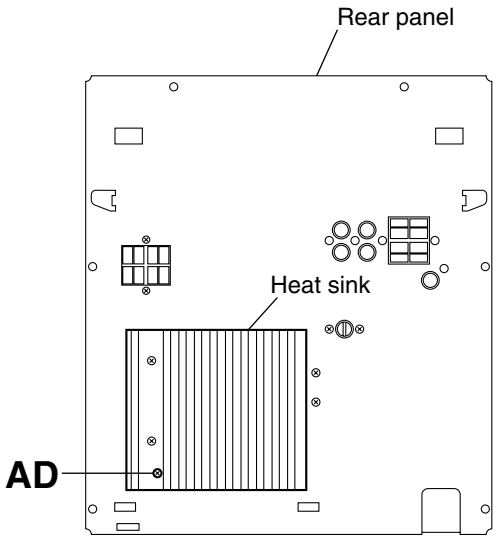


Fig.37

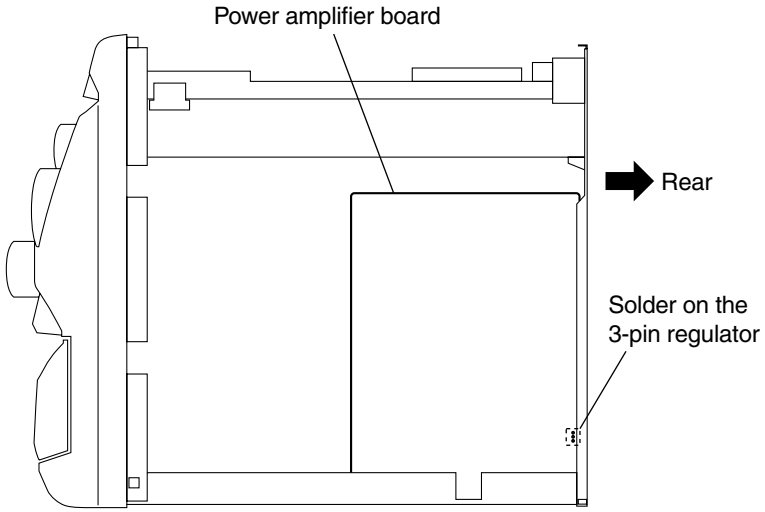


Fig.38

■ Removing the power amplifier board, voltage selector board and power transformer board

(See Fig.2, 3, 37, 39 to 42)

- Prior to performing the following procedures, remove the top cover.
- Also remove the CD changer unit.

1. Remove the two screws **A** connecting the heat sink cover to the rear panel.
2. Pull out the heat sink cover toward you.
3. Remove the two screws **B** that retain the bracket supporting the power IC.
4. Remove the screw **AC** that retain the bracket holding the 3-pin terminal regulator.
5. Remove the two screws **AE** that retain the SPEAKERS terminals.
6. Remove the screw **AF** that retains the rear panel, and then remove the rear panel.
7. Remove the two screws **AG** that retain the voltage selector board.
8. Disconnect the parallel wires from the connectors CN951A and CN951B on the power amplifier board.
9. Remove the screw **AH** that retain the power amplifier board and then remove the assembly.
10. Remove the solders **j** connecting the six wires.
11. Remove the four screws **AJ** that retain the power transformer board and then remove the assembly.

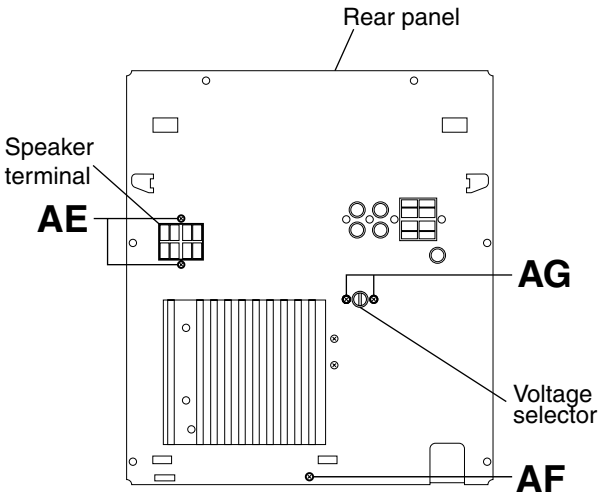


Fig.39

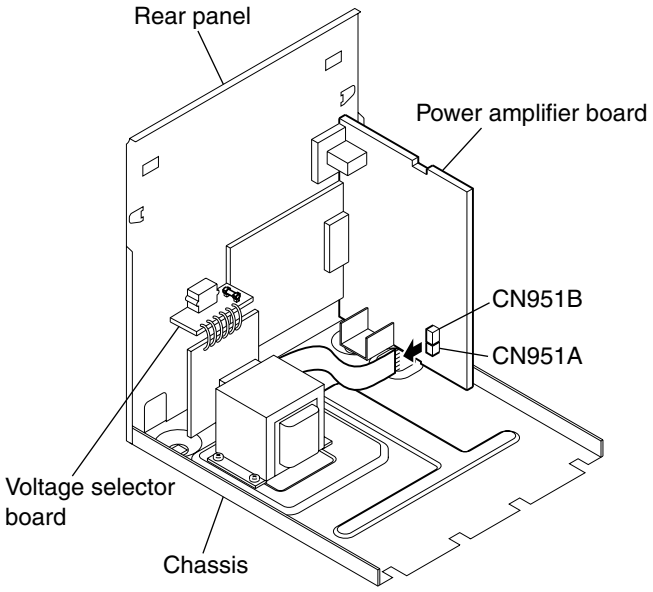


Fig.40

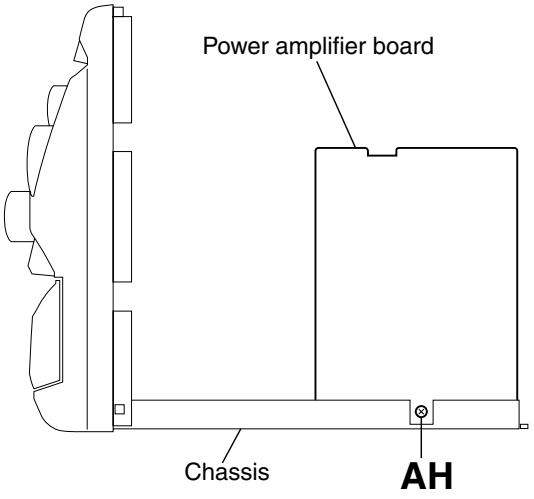


Fig.41

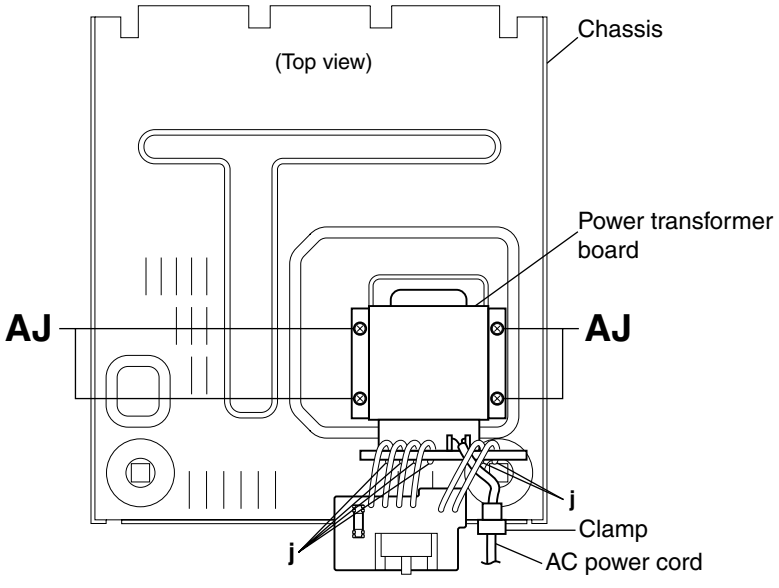


Fig.42

Adjustment method

Measurement instruments required for adjustment

1. Low frequency oscillator,
   This oscillator should have a capacity to output 0dB to 600ohm at an oscillation frequency of 50Hz-20kHz.
2. Attenuator impedance : 600ohm
3. Electronic voltmeter
4. Frequency counter
5. Wow flutter meter
6. Test tape
   VT712 : For Tape speed and wow flutter (3kHz)
   VT703 : For Head angle(10kHz),Play back frequency
   VT724 : For reference signal test(1kHz)
   VT739 : For frequency response test(63Hz,1kHz,10kHz)
7. Blank tape
   TAPE Ⅰ : AC-225, TAPE Ⅱ : AC-514
8. Torque gauge : For play and back tension
   Forward ; TW2111A, Reverse ; TW2121A
   Fast Forward and Rewind ; TW2231A
9. Test disc
   : CTS-1000(12cm),GRG-1211(8cm)
10. Jitter meter

Measurement conditions

Power supply voltage
AC110/127/220/230-240V (50Hz/60Hz) : US/UX

Measurement
output terminal : Speaker out
: TP101(Measuring for TUNER/DECK/CD)
: Dummy load 6ohm

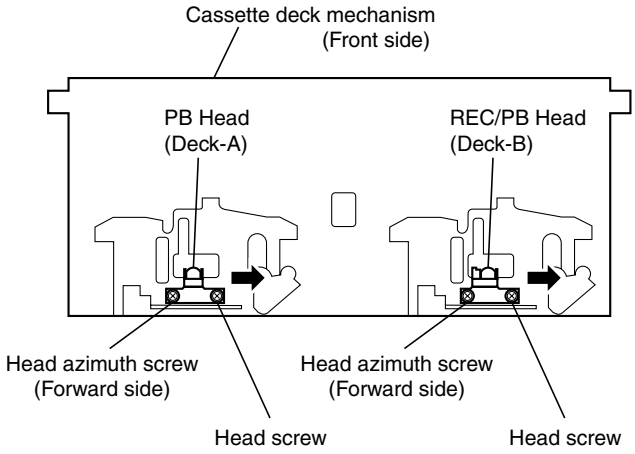
Radio input signal
AM modulation frequency : 400Hz
Modulation factor : 30%
FM modulation frequency : 400Hz
Frequency displacement : 22.5kHz

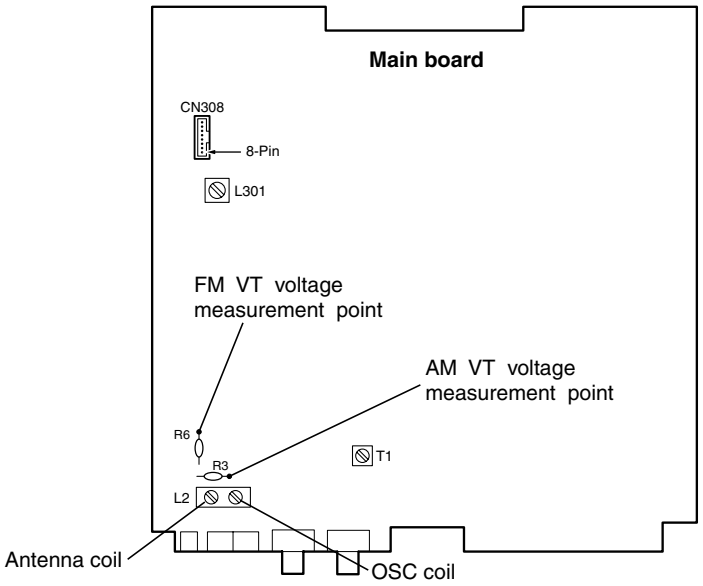
Frequency Range
AM 522kHz~1629kHz (at 9kHz channel space)
FM 87.5MHz~108MHz

Standard measurement positions of volume and switch
Power : Standby (Light STANDBY Indicator)
A.BUSS switch: OFF
Sound mode : OFF
Main VOL. maximum
Travers mecha set position : Disc 1
Mic MIX VOL : MAX
ECHO : OFF

Precautions for measurement
1. Apply 30pF and 33kohm to the IF sweeper output side and 0.082μF and 100kohm in series to the sweeper input side.
2. The IF sweeper output level should be made as low as possible within the adjustable range.
3. Since the IF sweeper is a fixed device, there is no need to adjust this sweeper.
4. Since a ceramic oscillator is used, there is no need to perform any MPX adjustment.
5. Since a fixed coil is used, there is no need to adjust the FM tracking.
6. The input and output earth systems are separated. In case of simultaneously measuring the voltage in both of the input and output systems with an electronic voltmeter for two channels, therefore, the earth should be connected particularly.
7. In the case of BTL connection amplifier, the minus terminal of speaker is not for earthing. Therefore, be sure not to connect any other earth terminal to this terminal. This system is of an OTL system.

■ Arrangement of adjusting positions





■ Tape recorder section

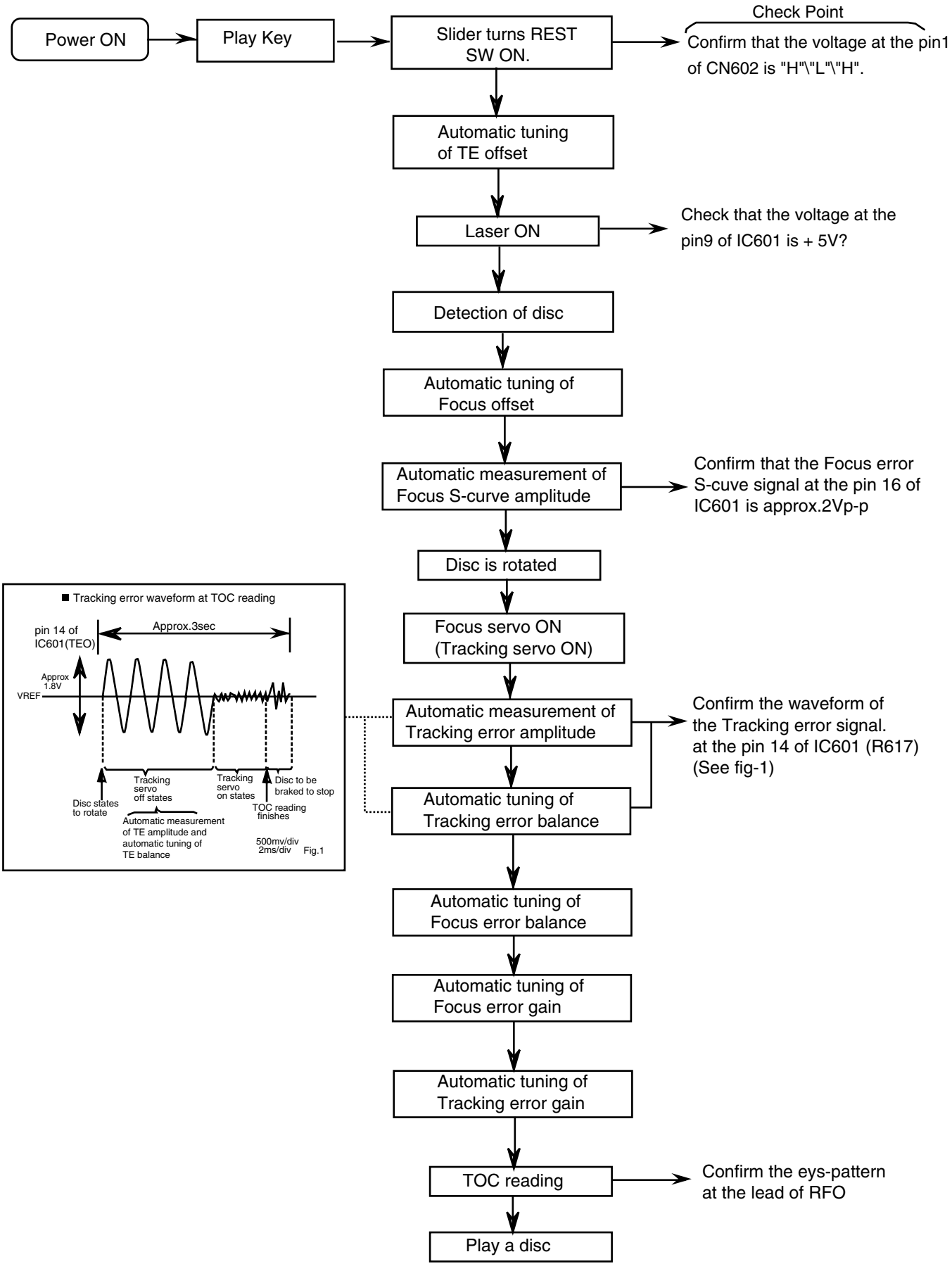
Items	Measurement conditions	Measurement method	Standard values	Adjusting positions
Cassette Head Azimuth Alignments	Test tape : VT703 (10kHz) Measurement output terminal : Headphone Output (32-ohm loaded) or Left and Right speaker output (6-ohm loaded)	1. Playback the test tape VT703 (10KHz) or equivalent. 2. Adjust the head azimuth screw to obtain maximum output and both output of L / R is in 3dB. 3. Put on the screw lock paint after alignments.	Maximum output	Head azimuth screw Adjust the head azimuth screw only when the head has been changed.
Recording Bias Frequency Alignment	Recording tape : TYPE Ⅱ AC-514 Measurement output terminal : Erase head terminal (CN308 8-Pin)	1. Insert the recording tape in deck-B. 2. Starting the recording. 3. Adjust the oscillation frequency to 80KHz+/-3KHz by core of Oscillation coil of L301.	80kHz+/-3kHz	Bias coil: L301 Use the High-Impedance Probe for Frequency counter input.

■ Tuner section

Items	Measurement conditions	Measurement method	Standard values	Adjusting positions
AM Tracking Alignments	Input signal : 530kHz Measurement point : Resistor R3 (AM) Resistor R6 (FM)	OSC coil adjustment 1.Set the Signal Generator signal to 530KHz the feed to Loop Antenna. 2.Receiving the signal and the adjust the OSC coil (L2) obtain the V.T is 1.40V +/-0.05V.	V.T : 1.40V+/-0.05V	OSC/Antenna coil : L2 Adjust the OSC coil only when the AM coil block has been changed.
	Input signal : 603kHz	Antenna coil check or adjustment 1.Change the receiving frequency to 603KHz. 2.Adjust the Antenna coil (L2) obtain maximum sensitivity. (Adjust the SSG output to out of AGC range.)	Maximum sensitivity	
AM IFT Alignments	Input signal : 531kHz	1. Set the receiving frequency to 531KHz. 2. Feed the 450KHz signal to AM IF input. 3.Adjust the IFT Block T1 obtain to maximum output. (Adjust the SSG output to out of AGC range.)	Maximum output	IFT (T1) Adjust the IFT only when the IFT block has been changed.

Note: The adjustment of CD section is not required.

Flow of functional operation until TOC read

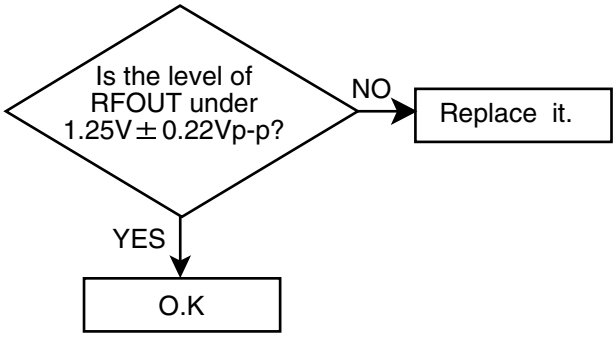


Maintenance of laser pickup

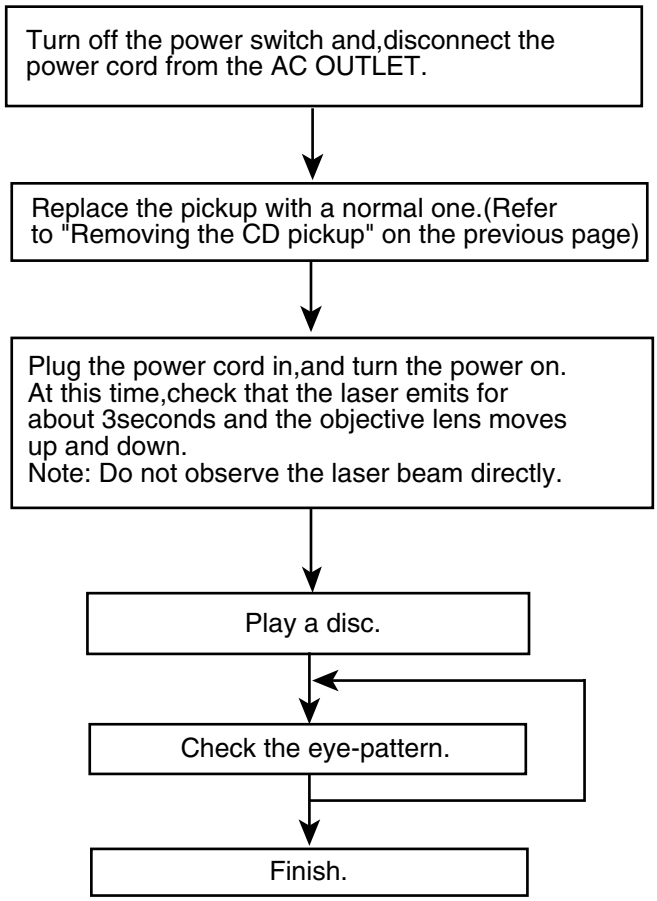
(1) Cleaning the pick up lens
Before you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.

(2) Life of the laser diode
When the life of the laser diode has expired, the following symptoms will appear.

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



Replacement of laser pickup

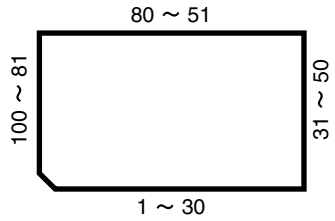


(3) Semi-fixed resistor on the APC PC board
The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power.Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor.
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 would be adjusted when the pickup operates normally,the laser pickup may be damaged due to excessive current.

Description of major ICs

■ TMP87CM78 (IC701) : System control microprocessor

1. Terminal layout



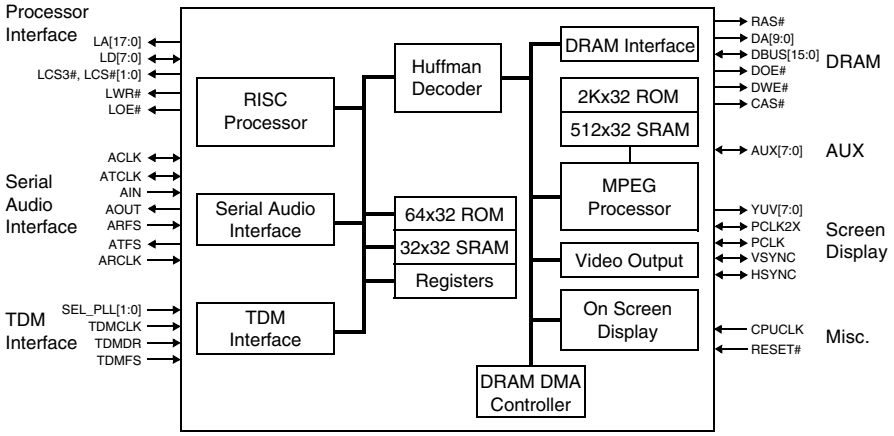
2. Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	VDD	-	+5V back up supply	38	PCNT	O	System power on/off control
2	AB	O	Deck A/B select control	39	SHFT	O	Clock shift output
3	BIAS	O	Recording bias on/off control	40	SMUT	O	System mute cotrol output
4	RPHD	O	Deck-B head switch control	41	SPK	O	Speaker mute control output
5	BC1	O	Bias frequency control	42	LMUT	O	Line output mute control
6	uRTS	I	MPEG RTS input	43	ECHO	O	Echo on/off control output
7	uDA	I/O	MPEG serial data I/O	44	AHB	O	Active bass boost control output
8	uCLK	I	MPEG serial clock input	45	KARA	O	Karaoke mode on/off control
9	MPX	I	FM stereo indicator input	46	VCK	O	Sound processor serial clock out
10	PER	O	PLL periode output	47	VDAT	O	Sound processor serial data out
11	SD	I/O	PLL serial data I/O	48	VOL+	I	Volume up jog signal input
12	SCK	O	PLL serial clock output	49	VOL-	I	Volume down jog signal input
13	REM	I	IR remote signal input	50	VKK	-	-35V supply
14	KEY0	I	Key-0 ADC input	51~63	G13~G1	O	VFD grid output
15	KEY1	I	Key-1 ADC input	64~79	P16~P1	O	VFD plate output
16	KEY2	I	Key-2 ADC input	80	DOP	O	MPEG door open
17	VER	I	Version set	81	DCL	O	MPEG door close
18	LVL	I	Level meter input	82	Reservd	-	Reserved
19	SFTY	I	Safety input	83	CLS	O	Tray close control output
20	TPA	I	Deck-A switch matrix input	84	CW	O	Turn table CW output
21	TPB	I	Deck-B switch matrix input	85	CCW	O	Turn table CCW output
22	VSS	I	Digita ground	86	CNTT	O	Turn table speed control
23	VASS	-	ADC reference ground	87	OPSW	I	Tray open detect switch input
24	VAREF	-	ADC reference +5V supply	88	CLSW	I	Tray close detect switch input
25	VDD	-	+5V back up supply	89	UPSW	I	Pickup up detect switch input
26	INH	I	INH bit input	90	DWSW	I	Pickup down detect switch input
27	TEST	I	Test mode / ground	91	DCNT	I	Disc count switch input
28	XTI	I	32.768kHz X'Tal iput	92	TPSW	I	Turn table position SW input
29	XTO	O	32.768kHz X'Tal output	93	OPN	O	Tray open control output
30	VSS	-	Digita ground	94	DETA	I	Tape-A real rotation detector
31	XIN	I	8.0MHz X'Tal	95	DETB	I	Tape-B real rotation detector
32	XOUT	O	8.0MHz X'Tal	96	MOT	O	Motor on/off control
33	RST	I	Reset circuit	97	SOLB	O	Deck-B solenoide control
34	uSTB	I	MPEG strobe input	98	SOLA	O	Deck-A solenoide control
35	PRT	I	Protector input	99	PBM	O	Tape playback muting control
36	FCD	O	CD power supply control	100	RECM	O	Recording mute control
37	FTU	O	Tuner power supply control				

■ ES3880FL (IC101) : MPEG decoder

1. Terminal layout

2. Block diagram



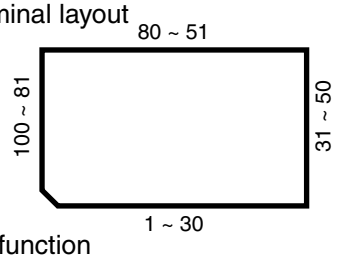
3. Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	VDD	-	3.3V power supply	82~87	LA12~17	O	RISC interface address bus
2	RAS#	O	Row address strobe	88	ACLK	I/O	Master clock for external audio DAC
3	DWE#	O	DRAM write enable	89	AOUT	O	Audio interface serial data output when selected.
4~12	DA0~8	O	DRAM multiplexed row and column address bus		SEL_PLL0	I	System and DSCK output clock frequency selection at reset time. The matrix below lists the available clock frequencies and their respective PLL bit settings.
13~28	DBUS0~15	I/O	DRAM data bus				
29	RESET#	I	System reset				
30	VSS	-	Ground				
31	VDD	-	3.3V power supply				
32~39	YUV0~7	O	YUV[7:0] 8-bit video data bus				
40	VSYNC	I/O	Vertical sync				
41	HSYNC	I/O	Horizontal sync				
42	CPUCLK	I	RISC and system clock input. CPUCLK is used only if SEL_PLL[1:0] = 00 to bypass PLL.				
43	PCLK2X	I/O	Doubled 54MHz pixel clock				
44	PCLK	I/O	27MHz pixel clock				
45~49	AUX0~4	I/O	Auxiliary control pins 4:0 AUX0 and AUX1 are open collectors.	90	ATCLK	I/O	Audio transmit bit clock
				91	ATFS	O	Audio transmit frame sync
50	VSS	-	Ground		SEL_PLL1	I	Refer to the description and matrix for SEL_PLL0 pin 89.
51	VDD	-	3.3V power supply				
52	AUX6	I/O	Auxiliary control pins 6	92	DA9	O	DRAM multiplexed row and column address line 9
53	AUX5	I/O	Auxiliary control pins 5				
54	AUX7	I/O	Auxiliary control pins 7		DOE#	O	DRAM output enable
55~62	LD0~7	I/O	RISC interface data bus	93	AIN	I	Audio serial data input
63	LWR#	O	RISC interface write enable	94	ARCLK	I	Audio receive bit clock
64	LOE#	O	RISC interface output enable	95	ARFS	I	Audio receive frame sync
65	LCS3#	O	RISC interface chip select	96	TDMCLK	I	TDM serial clock
66	LCS1#	O	RISC interface chip select	97	TDMDR	I	TDM serial data receive
67	LCS0#	O	RISC interface chip select	98	TDMFS	I	TDM frame sync
68~79	LA0~11	O	RISC interface address bus	99	CAS#	O	DRAM column address strobe
80	VSS	-	Ground	100	VSS	-	Ground
81	VPP	-	5.0V power supply				

SEL_PLL1	SEL_PLL0	DCLK
0	0	Bypass PLL (input mode)
0	1	54MHz (output mode)Default
1	0	67.5MHz (output mode)
1	1	81.0MHz (output mode)

■ ES3883F (IC102) : Companion chip

1. Terminal layout



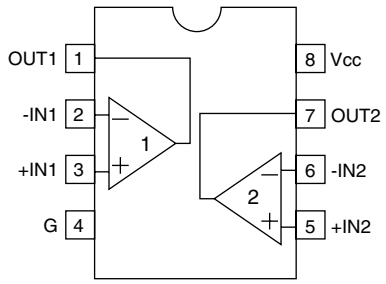
2. Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	VSS	-	Ground	44	VCCAA	I	Analog VCC, 5V
2~4	NC	-	No connect	45,46	AOR+,AOR-	O	Right channel output
5	VCC	-	Voltage supply, 5V	47,48	AOL-,AOL+	O	Left channel output
6	DSC_C	I	Clock for programming to access internal registers	49	MIC1	I	Microphone input 1
				50	MIC2	I	Microphone input 2
7	AUX0	I/O	Servo forward or general-purpose I/O	51	VSSAA	-	Audio analog ground
8	DSC_D0	I/O	Data for programming to access internal registers	52	VREF	I	Internal resister divider generates CMR voltage. Bypass to analog ground with 0.1uF.
9	AUX1	I/O	Servo reverse or general-purpose I/O				
10	DSC_S	I	Strobe for programming to access internal registers	53	VREFM	I	DAC and ADC minimum reference. Bypass to VCMR with 10uF in parallel with 0.1uF.
11	AUX2	I/O	Servo LDON or general-purpose I/O				
12	DCLK	O	DCLK is the MPEG decoder clock.	54	RSET	I	Full-scale DAC current adjustment
	EXT_CLK	I	EXT_CLK is the external clock. EXT_CLK is an input during bypass PLL mode.	55	COMP	I	Compensation pin
				56,57	VSSAV	-	Video analog ground
13	RESET_B	I	Video reset (active-low)	58	CDAC	O	Modulated chrominance output
14	AUX7/NFD_DI	I/O	Servo BRKM/sense or general-purpose I/O / VFD_DI	59,60	VCCAV	-	Video VCC, 5V
15	MUTE	O	Audio mute	61	YDAC	O	Y luminance data bus for screen video port
16	VCC	-	Voltage supply, 5V				
17	MCLK	I	Audio master clock	62,63	VSSAV	-	Video analog ground
18	AUX8/NFD_CLK	I/O	Servo mute/open or general-purpose I/O / VFD_CLK	64	VDAC	O	Composite video output
19	TWS	I	TWS is the transmit audio frame sync.	65	ACAP	I	Audio CAP
	SPLL_OUT	O	SPLL_OUT is the select PLL output.	66	VCC	-	Voltage supply, 5V
20	AUX9/SQSO	I/O	Servo SQSO or general-purpose I/O	67	AUX6/VFD_DO	I/O	Servo XLAT or general-purpose I/O / VFD_DO
21	TSD	I	Transmit audio data input	68	AUX5	I/O	Servo data or general-purpose I/O
22	TBCK	I	Transmit audio bit clock	69	AUX4	I/O	Servo CCW/close or general-purpose I/O
23	RWS	O	RWS is the receive audio frame sync.	70	AUX3	I/O	Servo CW/limit or general-purpose I/O
	SEL_PLL1	I	SEL_PLL[1:0] select the PLL clock frequency for the DCLK output.	71	XOUT	O	Crystal output
				72	VSS	-	Ground
				73	VCC	-	Voltage supply, 5V
				74	XIN	I	27MHz crystal input
				75	VSS	-	Ground
				76	NC	-	No connect
				77	VSS	-	Ground
				78	VCC	-	Voltage supply, 5V
24	RSTOUT_B	O	Reset output (active-low)	79	PCLK	I/O	13.5MHz pixel clock
25,26	VSS	-	Ground	80	2XPCLK	I/O	27MHz(2 times pixel clock)
27~30	NC	-	No connect	81	DSC_D7	I/O	Data for programming to access internal registers
31	VSS	-	Ground				
32	VCC	-	Voltage supply, 5V	82	HSYNC_B	O	Horizontal sync (active-low)
33	RSD	O	RSD is the receive audio data input.	83	DSC_D6	I/O	Data for programming to access internal registers
	SEL_PLL0	I	SEL_PLL0 and SEL_PLL1 select the PLL clock frequency for the DCLK output. Refer to the table in the definition for pin 23.	84	VSYNC_B	O	Vertical sync (active-low)
				85	DSC_D5	I/O	Data for programming to access internal registers
34	AUX10/SQCK	I/O	Servo SQCK or general-purpose I/O				
35	AUX11/IRQ	I/O	ES3880 IRQ or interrupt output or general-purpose I/O	86~89	YUV7~4	I	YUV data bus for screen video port
36	AUX12/C2PO	I/O	CD C2PO or interrupt input or general-purpose I/O	90	VCC	-	Voltage supply, 5V
37	RBCK	O	RBCK is the receive audio bit clock.	91	VSS	-	Ground
	SER_IN	I	SER_IN is the serial input DSC mode: 0 = Parallel DSC mode 1 = Serial DSC mode	92	YUV3	I	YUV data bus for screen video port
				93	DSC_D4	I/O	Data for programming to access internal registers
38	AUX13/SP	I/O	Serial interrupt/CD-mute or general-purpose I/O	94	YUV2	I	YUV data bus for screen video port
39	AUX14/SOSI	I/O	Servo SCOR (SOSI), interrupt input, or general-purpose I/O	95	DSC_D3	I/O	Data for programming to access internal registers
40	AUX15/IR	I/O	Interrupt input or general-purpose I/O	96	YUV1	I	YUV data bus for screen video port
41	VSSAA	-	Audio analog ground	97	DSC_D2	I/O	Data for programming to access internal registers
42	VCM	I	ADC common mode reference (CMR) buffer output. CMR is approximately 2.25V. Bypass to analog ground with 47uF electrolytic in paralell with 0.1uF.	98	YUV0	I	YUV data bus for screen video port
				99	DSC_D1	I/O	Data for programming to access internal registers
43	VREFP	I	DAC and ADC maximum reference. Bypass to video CMR (VCMR) with 10uF in parallel with 0.1uF.	100	VSS	-	Ground

SEL_PLL1	SEL_PLL0	DCLK
0	0	Bypass PLL (input mode)
0	1	27MHz (output mode)
1	0	32.4MHz (output mode)
1	1	40.5MHz (output mode)

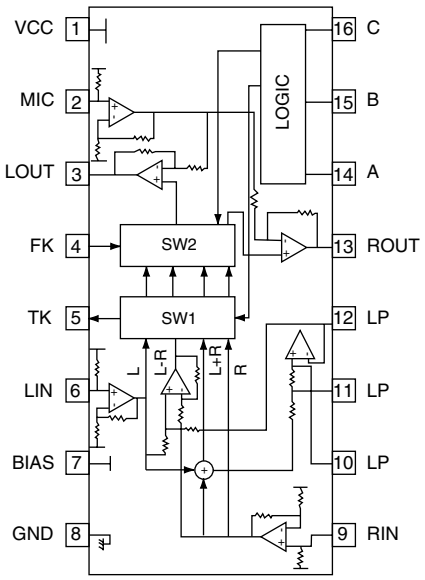
■ BA15218 / BA15218F (IC102 / IC852) : Dual operational amplifier

1. Terminal layout & block diagram



■ BA3837 (IC103) : MIC Mixer

1. Terminal layout & block diagram

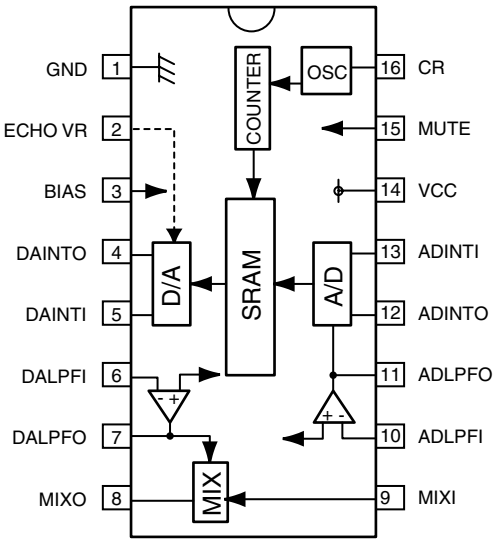


2. Pin function

Pin No.	Symbol	I/O	Function
1	VCC	-	Power supply
2	MIC	I	Microphone mixing input
3	LOUT	O	Channel L output
4	FK	-	Non connect
5	TK	-	Non connect
6	LIN	I	Channel L input
7	BIAS	I	Signal bias
8	GND	-	Connect to GND
9	RIN	I	Channel R input
10	LP	O	Connects to LPF time constant element
11	LP	O	Connects to LPF time constant element
12	LP	O	LPF outpout
13	ROUT	O	Channel R output
14	A	I	Mode select input A
15	B	I	Mode select input B
16	C	I	Mode select input C

■ BU9253FS (IC851) : Low pass filter & echo mixer

1. Terminal layout & block diagram

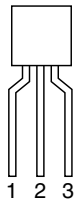


2. Pin function

Pin No.	Symbol	I/O	Function
1	GND	-	Connect GND
2	ECHO VR	I	Echo level control
3	BIAS	-	Analog part DC bias
4	DAINTO	O	DA side integrator output
5	DAINTI	I	DA side integrator intput
6	DALPFI	I	DA side LPF input
7	DALPFO	O	DA side LPF output
8	MIXO	O	Mix AMP output for original tone& echo tone
9	MIXI	I	Mix AMP input pin for original tone
10	ADLPFI	I	AD side LPF input
11	ADLPFO	O	AD side LPF output
12	ADINTO	O	AD side integrator output
13	ADINTI	I	AD side integrator input
14	VCC	-	Power supply
15	MUTE	I	Mute control signal input
16	CR	-	CR pin for oscillator

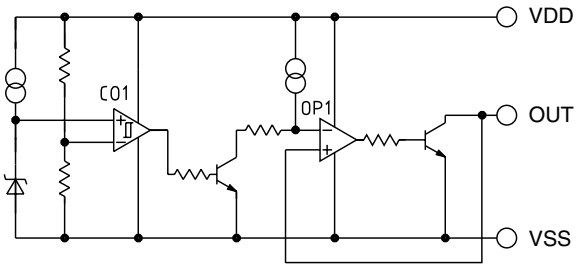
■ PST9119 (IC703) : Reset IC

1. Terminal layout



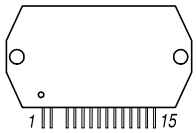
1	OUT
2	VDD
3	VSS

2. Block diagram

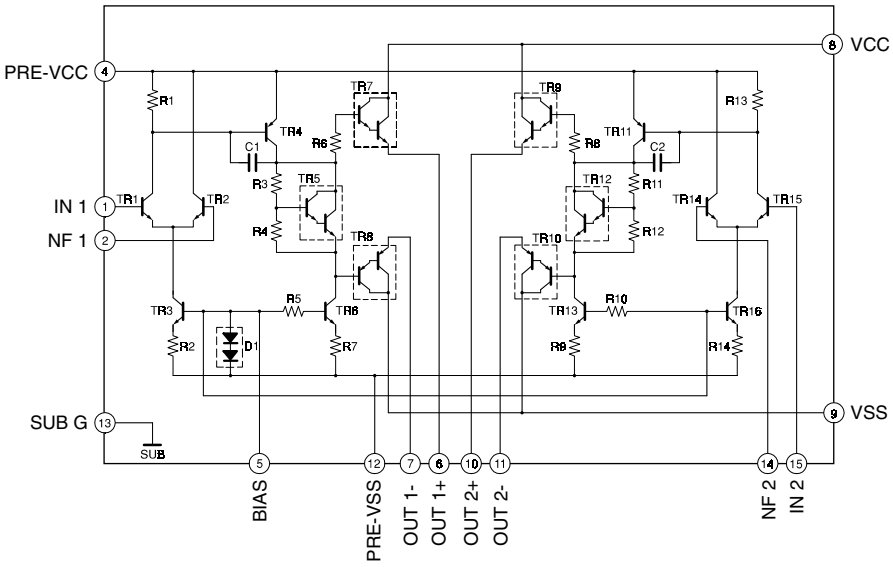


■ STK402-070 (IC151) : 2-ch audio power amplifier

1. Terminal layout

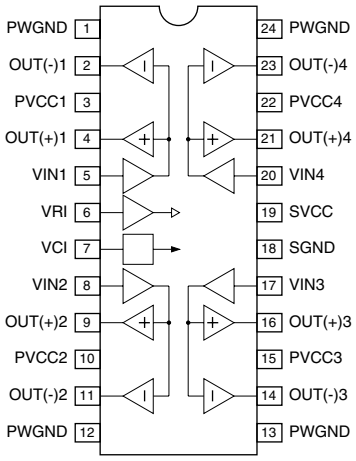


2. Block diagram



■ TA2092N (IC603) : Power driver IC for CD

1. Terminal layout &Block diagram

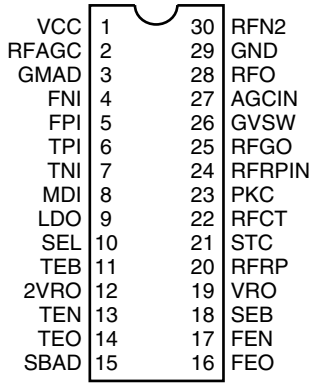


2. Pin function

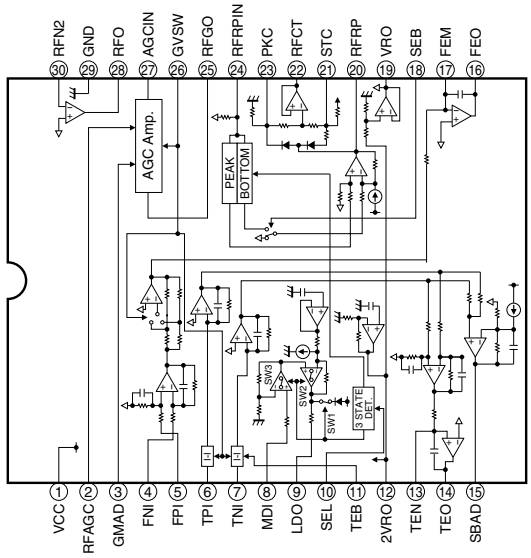
PIN No.	Symbol	I/O	Function	PIN No.	Symbol	I/O	Function
1	PWGND	-	Power ground	13	PWGND	-	Power ground
2	OUT(-)1	O	Inverted output for CH1	14	OUT(-)3	O	Inverted output for CH3
3	PVCC1	-	Supply terminal of output stage for CH1	15	PVCC3	-	Supply terminal of output stage for CH3
4	OUT(+)1	O	Non-inverted output for CH1	16	OUT(+)3	O	Non-inverted output for CH3
5	VIN1	I	Input for CH1	17	VIN3	I	Input for CH3
6	VRI	I	Input reference voltage	18	SGND	-	Supply terminal of small signal ground
7	VCI	O	Output reference voltage	19	SVCC	-	Small signal ground
8	VIN2	I	Input for CH2	20	VIN4	I	Input for CH4
9	OUT(+)2	O	Non-inverted output for CH2	21	OUT(+)4	O	Non-inverted output for CH4
10	PVCC2	-	Supply terminal of output stage for CH2	22	PVCC4	-	Supply terminal of output stage for CH4
11	OUT(-)2	O	Inverted output for CH2	23	OUT(-)4	O	Inverted output for CH4
12	PWGND	-	Power ground	24	PWGND	-	Power ground

■ TA2153FN (IC601) : RF amplifier for digital servo

1. Terminal layout



2. Block diagram

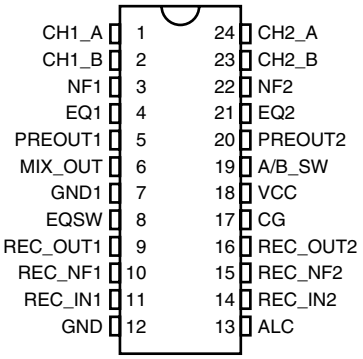


3. Pin function

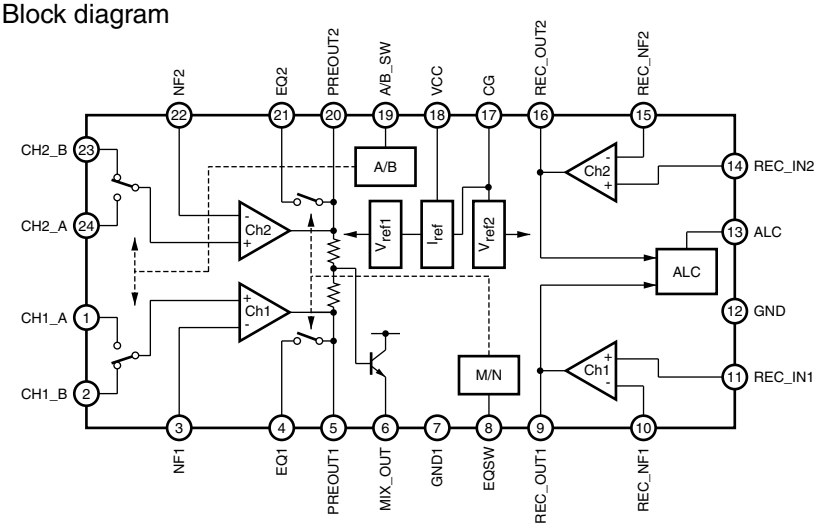
PIN No.	Symbol	I/O	Function
1	VCC	-	Power supply input terminal
2	RFAGC	I	RF amplitude adjustment control signal input terminal. Controlled by 3-PWM signals. (PWM carrier = 88.2kHz)
3	GMAD	I	Open loop gain adjustment terminal for AGC amplifier
4	FNI	I	Main beam I-V amplifier input terminal
5	FPI	I	Main beam I-V amplifier input terminal
6	TPI	I	Sub beam I-V amplifier input terminal
7	TNI	I	Sub beam I-V amplifier input terminal
8	MDI	I	Monitor photo diode amplifier input terminal
9	LDO	O	Laser diode amplifier input terminal
10	SEL	I	Laser diode control signal input terminal and APC circuit ON/OFF control sugnal terminal SEL level / APC circuit / LDO / Detect frequency GND / OFF / Connected to Vcc through resistor (1kohm) / Low Hiz / ON / Control signal output / Low Vcc / ON / Control signal output / High
11	TEB	I	Tracking error balance adjustment signal input terminal. Controlled by 3-PWM signals. (PWM carrier = 88.2kHz)
12	2VRO	O	Reference voltage (2VRO) output terminal 2RVO = 4.2V when Vcc = 5V
13	TEN	I	TE amplifier negative input terminal
14	TEO	O	TE error signal output terminal
15	SBAD	O	Sub beam adder signal output terminal
16	FEO	O	Focus error signal output terminal
17	FEN	I	FE amplifier negative input terminal
18	SEB	I	RFRP output circuit switching terminal SEL level / Bottom detection / Peak detection GND / ON / ON Vcc / OFF / ON
19	VRO	O	Reference signal (VRO) output terminal
20	RFRP	O	Track count signal output terminal
21	STC	I	Time constant adjustment terminal for bottom detection
22	RFCT	O	RFRP signal center level output terminal
23	PKC	I	Time constant adjustment terminal for peak detection
24	RFRPIN	I	Input terminal for track count signal output amplifier
25	RFGO	O	Output terminal for RF signal amplitude adjustment amplifier
26	GVSW	I	Amplifier (AGC, FE, TE) gain switching terminal GVSW / Mode GND / CD-RW Hiz / Normal Vcc / Normal
27	AGCIN	I	Input terminal for RF signal amplitude adjustment amplifier
28	RFO	O	Output terminal RF signal amplifier
29	GND	-	Ground terminal
30	RFN2	I	Input terminal for RF signal amplifier

■ TA8189 (IC401) : REC/PB amplifier

1. Terminal layout



2. Block diagram

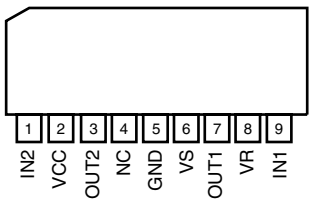


3. Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	CH1_A	I	Input for playback amp. (Ch1): A cassette (PB)	13	ALC	I	ALC filter terminal
2	CH1_B	I	Input for playback amp. (Ch1): B cassette (REC/PB)	14	REC_IN2	I	Input for recording amp.
3	NF1	I	NF terminal for playback amp.	15	REC_NF2	I	NF terminal for recording amp.
4	EQ1	O	Metal output for playback amp.	16	REC_OUT2	O	Output for recording amp.
5	PREOUT1	O	Output terminal for playback amp.	17	CG	O	Charge detection terminal
6	MIX_OUT	O	Mixing output	18	VCC	-	Power supply terminal
7	GND1	-	Ground	19	A/B_SW	I	REC amp. Select switch (A cassette/B cassette)
8	EQSW	I	Metal/Normal mode select switch	20	PREOUT2	O	Output terminal for playback amp.
9	REC_OUT1	O	Output for recording amp.	21	EQ2	O	Metal output for playback amp.
10	REC_NF1	I	NF terminal for recording amp.	22	NF2	I	NF terminal for playback amp.
11	REC_IN1	I	Input for recording amp.	23	CH2_B	I	Input for playback amp. (Ch2): B cassette (REC/PB)
12	GND1	-	Ground terminal	24	CH2_A	I	Input for playback amp. (Ch2): A cassette (PB)

■ TA8409S (IC604, IC605) : Motor driver

1. Terminal layout

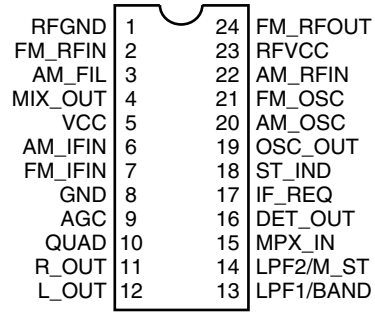


2. Truth table

INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	MOTOR
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

■ TA2104N (IC1) : 1chip AM/FM, MPX tuner system

1. Terminal layout

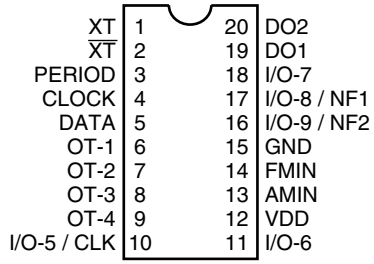


2. Pin function

PIN No.	Symbol	I/O	Function	PIN No.	Symbol	I/O	Function
1	RFGND	-	Ground terminal for RF	13	LPF1/BAND	I	FM/AM switch
2	FM_RFIN	I	Input of FMRF signal	14	LPF2/M_ST	I	Stereo/monoral switch
3	AM_FIL	I	AM low frequency cut	15	MPX_IN	I	Multiplex signal input
4	MIX_OUT	O	Output of FM/AM RF mix	16	DET_OUT	O	AM/FM detection output
5	VCC	-	Power supply terminal	17	IF_REQ	O	IF out/REQ out
6	AM_IFIN	I	Input of AMIF signal	18	ST_IND	O	Stereo indicator output
7	FM_IFIN	I	Input of FMIF signal	19	OSC_OUT	O	PLL data bus for FM or AM
8	GND	-	Ground terminal	20	AM_OSC	-	AM local oscillation circuit
9	AGC	I	AGC voltage input terminal	21	FM_OSC	-	FM local oscillation circuit
10	QUAD	I	OSC terminal for FM DET.	22	AM_RFIN	I	Input of AMRF signal
11	R_OUT	O	Output R-channel	23	RFVCC	-	Power supply teminal for RF
12	L_OUT	O	Output L-channel	24	FM_RFOUT	O	Output of FMRF signal

■ TC9257P (IC2) : PLL frequency synthesizer

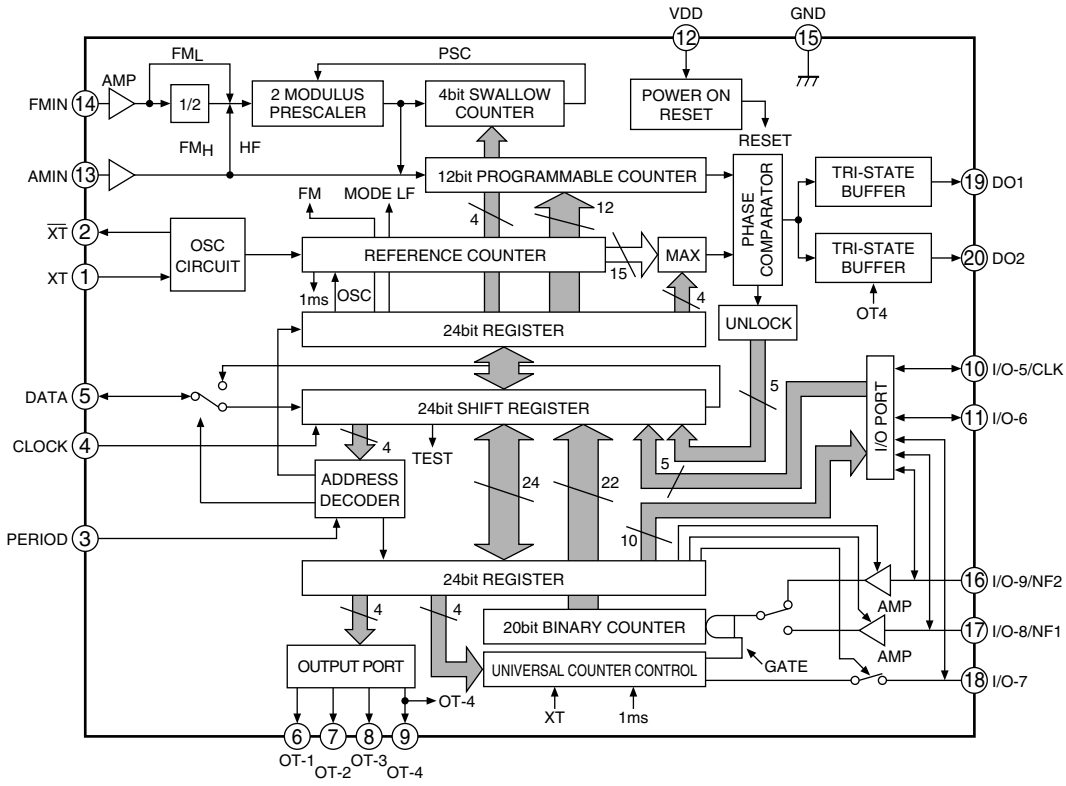
1. Terminal layout



2. Pin function

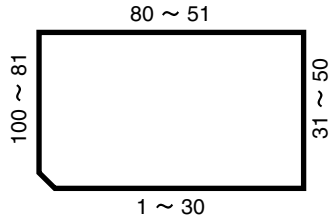
PIN No.	Symbol	I/O	Function	PIN No.	Symbol	I/O	Function
1	XT	I	Crystal oscillator pins	13	AMIN	I	Programmable counter input
2	$\overline{XT}$	O	Crystal oscillator pins	14	FMIN	I	Programmable counter input
3	PERIOD	I	Period signal input	15	GND	-	Ground pin
4	CLOCK	I	Clock signal input	16	I/O-9	I/O	General-purpose I/O port
5	DATA	I/O	Serial data input/output		NF2	I	General-purpose counter frequency measurement input
6	OT-1	O	General-purpose output port				
7	OT-2	O	General-purpose output port	17	I/O-8	I/O	General-purpose I/O port
8	OT-3	O	General-purpose output port		NF1	I	General-purpose counter frequency measurement input
9	OT-4	O	General-purpose output port				
10	I/O-5/CLK	I/O	General-purpose I/O port	18	I/O-7	I/O	General-purpose I/O port
11	I/O-6	I/O	General-purpose I/O port	19	DO1	O	Phase comparator output
12	VDD	-	Power supply pin	20	DO2	O	Phase comparator output

3. Block diagram



■ TC9462F (IC602) : Digital servo single chip processor

1. Terminal layout



2. Pin function

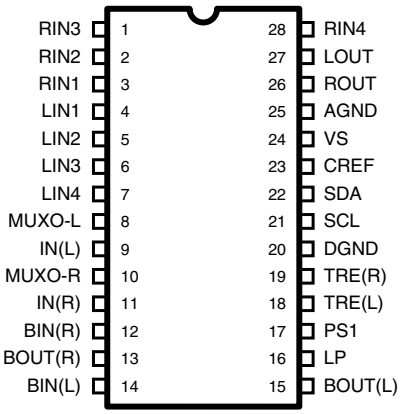
Pin No.	Symbol	I/O	Function
1	TEST0	I	Test mode terminal. Normally, keep at open
2	$\overline{HSO}$	O	Playback speed mode flag output terminal.
3	$\overline{UHSO}$	O	$\overline{UHSO}$ / $\overline{HSO}$ / PLAYBACK SPEED: H / H / Normal; H / L / 2 times; L / H / 4 times; L / L / -
4	EMPH	O	Subcode Q data emphasis flag output terminal. Emphasis ON at "H" level and OFF at "L" level. The output polarity can invert by command.
5	LRCK	O	Channel clock output terminal. (44.1kHz) L-ch at "L" level and R-ch at "H" level. The output polarity can invert by command.
6	VSS	-	Digital ground terminal.
7	BCK	O	Bit clock output terminal. (1.4112MHz)
8	AOUT	O	Audio data output terminal.
9	DOUT	O	Digital data output terminal.
10	MBOV	O	Buffer memory over signal output terminal. Over at "H" level.
11	IPF	O	Correction flag output terminal. At "H" level, AOUT output is made to correction impossibility by C_2 correction processing.
12	SBOK	O	Subcode Q data CRCC check adjusting result output terminal. The adjusting result is OK at "H" level.
13	CLCK	I/O	Subcode P~W data readout clock input/output terminal. This terminal can select by command bit.
14	VDD	-	Digital power supply voltage terminal.
15	VSS	-	Digital ground terminal.
16	DATA	O	Subcode P~W data output terminal.
17	SFSY	O	Playback frame sync signal output terminal.
18	SBSY	O	Subcode block sync signal output terminal.
19	SPCK	O	Processor status signal readout clock output terminal.
20	SPDA	O	Processor status signal output terminal.
21	COFS	O	Correction frame clock output terminal. (7.35kHz)
22	MONIT	O	Internal signal (DSP internal flag and PLL clock) output terminal. Selected by command. This terminal output the text data with serial by command.

Pin No.	Symbol	I/O	Function
23	VDD	-	Digital power supply voltage terminal.
24	TESIO0	I	Test input/output terminal. Normally, keep at "L" level. The terminal that inputted the clock for read of text data by command.
25	P2VREF	-	PLL double reference voltage supply terminal.
26	HSSW	O	2/4 times speed at "V_{REF}" voltage.
27	ZDET	O	1 bit DA converter zero detect flag output terminal.
28	PDO	O	Phase difference signal output terminal of EFM signal and PLCK signal.
29	TMAXS	O	TMAX detection result output terminal. Selected by command bit (TMPS).
30	TMAX	O	TMAX detection result output terminal. Selected by command bit (TMPS). DIFFERENCE RESULT / TMAX OUTPUT: Longer than fixed freq. / "P2V_{REF}"; Shorter than fixed freq. / "Vss"; Within the fixed freq. / "HiZ"
31	LPFN	I	LPF amplifier inverting input terminal for PLL.
32	LPFO	O	LPF amplifier output terminal for PLL.
33	PVREF	-	PLL reference voltage supply terminal.
34	VCOREF	I	VCO center frequency reference level terminal. Normally, keep at "PV_{REF}" level.
35	VCOF	O	VCO filter terminal.
36	AVSS	-	Analog ground terminal.
37	SLCO	O	Data slice level output terminal.
38	RFI	I	RF signal input terminal.
39	AVDD	-	Analog power supply voltage terminal.
40	REFCT	I	RFRP signal center level input terminal.
41	RFZI	I	RFRP zero cross input terminal.
42	RFRP	I	RF ripple signal input terminal.
43	FEI	I	Focus error signal input terminal.
44	SBAD	I	Sub-beam adder signal input terminal.
45	TSIN	I	Test input terminal. Normally, keep at "V_{REF}" level.
46	TEI	I	Tracking error signal input terminal. Take in at tracking servo on.
47	TEZI	I	Tracking error zero cross input terminal.
48	FDO	O	Focus servo equalizer output terminal.
49	TRO	O	Tracking servo equalizer output terminal.
50	VREF	-	Analog reference voltage supply terminal.

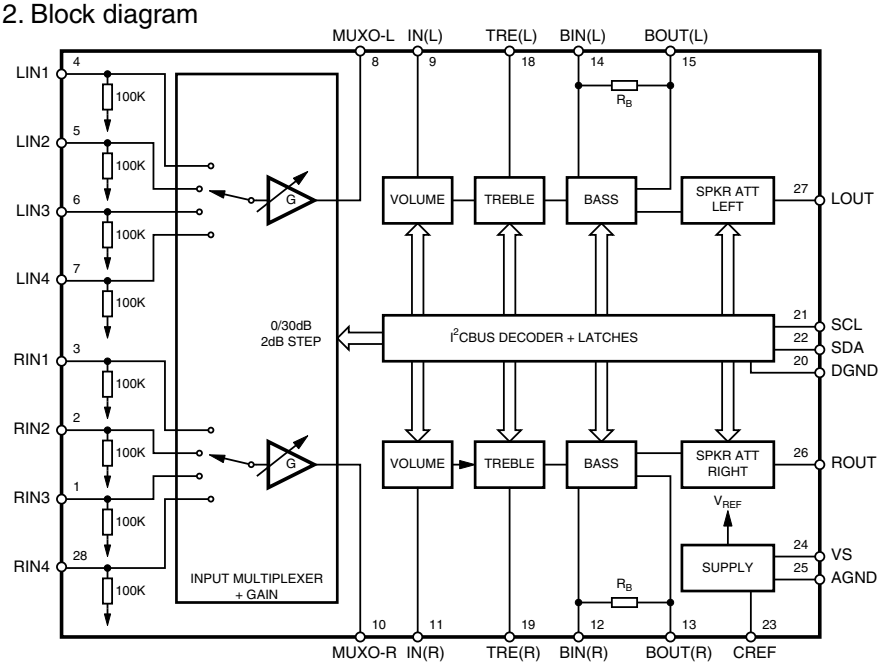
Pin No.	Symbol	I/O	Function
51	RFGC	O	RF amplitude adjustment control signal output terminal.
52	TEBC	O	Tracking balance control signal output terminal.
53	FMO	O	Feed equalizer output terminal.
54	FVO	O	Speed error signal or feed search equlizer output terminal.
55	DMO	O	Disk equalizer output terminal. (PWM carrier= 88.2kHz for DSP, Synchronize to PXO)
56	2VREF	-	Analog double reference voltage supply terminal.
57	SEL	O	APC circuit ON/OFF indication signal output terminal. At the laser on time, UHF = L at "HiZ" level and UHF = H at "H" level.
58	FLGA	O	Extermal flag output terminal for internal signal. Can select signal from TEZC, $\overline{\text{FOON}}$, $\overline{\text{FOK}}$ and RFZC by command.
59	FLGB	O	Extermal flag output terminal for internal signal. Can select signal from $\overline{\text{DFCT}}$, $\overline{\text{FOON}}$, $\overline{\text{FMON}}$ and RFZC by command.
60	FLGC	O	Extermal flag output terminal for internal signal. Can select signal from $\overline{\text{TRON}}$, $\overline{\text{TRSR}}$, $\overline{\text{FOK}}$ and $\overline{\text{SRCH}}$ by command.
61	FLGD	O	Extermal flag output terminal for internal signal. Can select signal from $\overline{\text{TRON}}$, $\overline{\text{DMON}}$, $\overline{\text{HYS}}$ and $\overline{\text{SHC}}$ by command.
62	VDD	-	Digital power supply voltage terminal.
63	VSS	-	Digital ground terminal.
64	IO0	I/O	General I/O terminal. Can change over input port or output port by command. At the input mode time can readout a state of terminal (H/L) by read command. At the output mode time can control a state of terminal (H/L/HiZ) by command.
65	IO1	I/O	
66	IO2	I/O	
67	IO3	I/O	
68	$\overline{\text{DMOUT}}$	I	This terminal controls IO0~IO3 terminal. At "L" level time, IO0, 1 out feed equalizer signal of 2-state PWM, IO2,3 out disk equalizer signal of 2-state PWM.
69	$\overline{\text{CKSE}}$	I	Normally, keep at open.
70	$\overline{\text{DACT}}$	I	DAC test mode terminal. Normally, keep at open.
71	TESIN	I	Test input terminal. Normally, keep at "L" level.
72	TESIO1	I	Test input/output terminal. Normally, keep at "L" level.
73	VSS	-	Digital ground terminal.
74	PXI	I	Crystal oscillator connecting input terminal for DSP. Normally, keep at "L" level.
75	PXO	O	Crystal oscillator connecting output terminal for DSP.
76	VDD	-	Digital power supply voltage terminal.
77	XVSS	-	Oscillator ground terminal for system clock.
78	XI	I	Crystal oscillator connecting input terminal for system clock.
79	XO	O	Crystal oscillator connecting output terminal for system clock.
80	XVDD	-	Oscillator power supply voltage terminal for system clock.
81	DVSR	-	Analog ground terminal for DA converter.(R-ch)
82	RO	O	R channel data forward output terminal.
83	DVDD	-	Analog supply voltage terminal for DA converter.
84	DVR	-	Reference voltage terminal for DA converter.
85	LO	O	L channel data forward output terminal.
86	DVSL	-	Analog ground terminal for DA converter.(L-ch)
87	TEST1	I	Test mode terminal. Normal, keep at open.
88	TEST2	I	Test mode terminal. Normal, keep at open.
89	TEST3	I	Test mode terminal. Normal, keep at open.
90	BUS0	I/O	Micon interface data input/output terminal.
91	BUS1	I/O	
92	BUS2	I/O	
93	BUS3	I/O	
94	VDD	-	Digital power supply voltage terminal.
95	VSS	-	Digital ground terminal.
96	BUCK	I	Micon interface clock input terminal.
97	CCE	I	Command and data sending/receiving chip enable signal input terminal. The bus line becomes active at "L" level.
98	TEST4	I	Test mode terminal. Normal, keep at open.
99	TSMOD	I	Local test mode selection terminal.
100	RST	I	Reset signal input terminal. Reset at "L" level.

■ TDA7440D (IC101) : Audio processor

1. Terminal layout

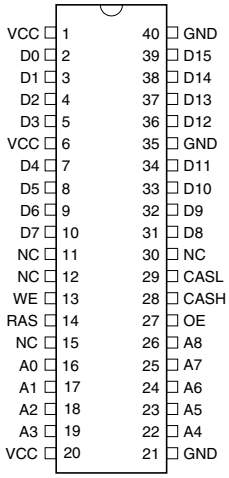


2. Block diagram



■ 4C16256 (IC103) : 4MB EDO-RAM

1. Terminal layout

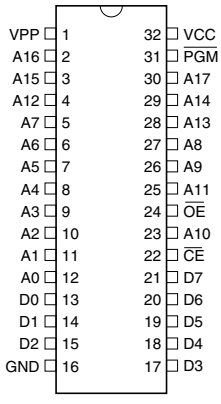


2. Pin function

PIN No.	Symbol	I/O	Function
1,6,20	VCC	-	Power supply terminal
2~5,7~10, 31~34,36~39	D0~D15	I/O	Data input/output
11,12,15,30	NC	-	Not used
13	WE	I	Write enable terminal
14	RAS	I	Row address strobe terminal
16~19,22~26	A0~A8	I	Address input
21,35,40	GND	-	Ground teminal
27	OE	I	Output enable terminal
28	CASH	I	Upper column address strobe terminal
29	CASL	I	Lower column address strobe terminal

■ 27C020 (IC104) : 2MB PROM

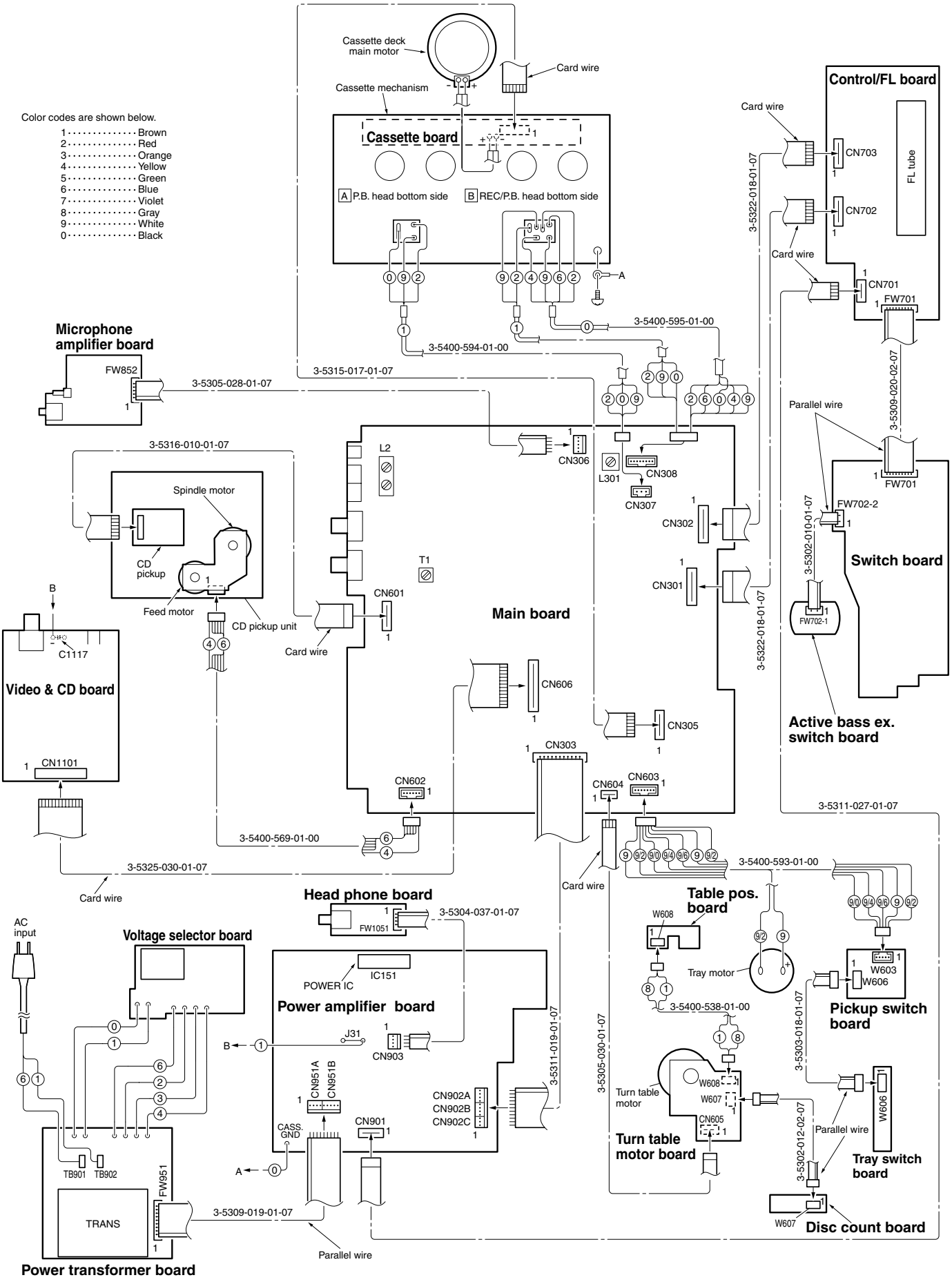
1. Terminal layout



2. Pin function

PIN No.	Symbol	I/O	Function
1	VPP	-	Power supply terminal
2~12	A16,A15,A12,A7~A0	I	Address input
13~15	D0~D2	I/O	Data input/output
16	GND	-	Ground terminal
17~21	D3~D7	I/O	Data input/output
22	$\overline{CE}$	I	Chip enable terminal
23	A10	I	Address input
24	$\overline{OE}$	I	Output enable teminal
25~30	A11,A9,A8,A13,A14,A17	I	Address input
31	$\overline{PGM}$	I	Program strobe
32	VCC	-	Power supply terminal

Wiring connections



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