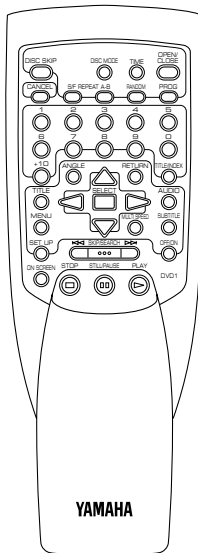
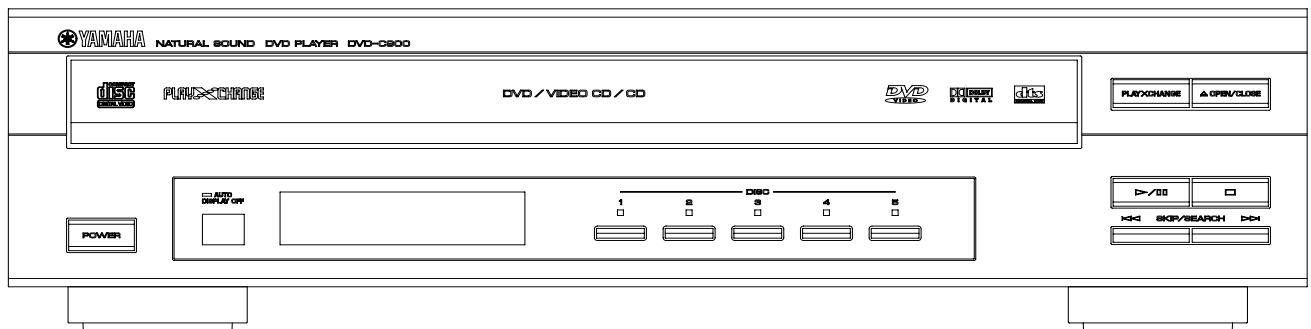


DVD PLAYER

DVD-C900

SERVICE MANUAL

DVD-C900



IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.



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This Service Manual uses recycled paper.

100653



YAMAHA
YAMAHA CORPORATION
P.O.Box 1, Hamamatsu, Japan

■ CONTENTS

TO SERVICE PERSONNEL	1
PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTRO STATICALLY SENSITIVE (ES) DEVICES	2
SPECIFICATIONS	3
REAR PANELS	4
PRECAUTION LASER DIODE	5
HANDLING PRECAUTIONS FOR TRAVERS DECK ..	5
INTERNAL VIEW	6
DISASSEMBLY PROCEDURES	7~8
REPLACING THE MAIN PARTS OF THE TRAVERSE UNIT ..	9~10
GREASE APPLICATION DIAGRAM	10
MAIN P.C.B. OPERATION CHECK	11
ADJUSTMENT	12~13

TEST MODE	15~26
TROUBLESHOOTING	27~30
IC DATA	31~46
IC BLOCKS	47~52
PIN CONNECTION DIAGRAM	52
DISPLAY DATA	53
BLOCK DIAGRAM	54~55
PRINTED CIRCUIT BOARD	56~65
SCHEMATIC DIAGRAM	66~68
PARTS LIST	69~84
SWITCHING POWER SUPPLY	85~87
REMOTE CONTROL TRANSMITTER	88
OPERATING INSTRUCTION	89~96

■ TO SERVICE PERSONNEL

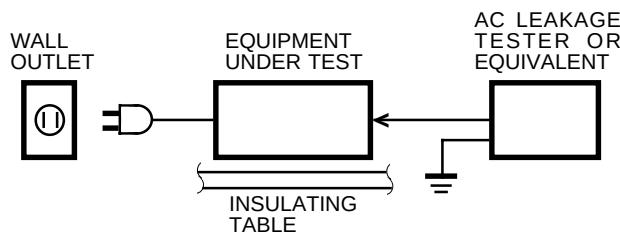
1. Critical Components Information.

Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.

2. Leakage Current Measurement (For 120V Models Only).

When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohm shunted by 0.15 μ F.
- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.



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

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to carefully follow the instructions below when servicing .

1. Pickup

- Wave length : 655 nm
- Laser power : CLASS II

- When checking the laser diode emission, keep your eyes more than 30 cm away from the objective lens.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety.

These parts are marked by Δ in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

SPECIFICATIONS

AUDIO SECTION

Frequency Response		
DVD (48kHz Sampling)	2 Hz to 22 KHz	
DVD (96kHz Sampling)	2 Hz to 44 KHz	
CD, Video CD	2 Hz to 20 KHz	
Harmonic Distortion+Noise (1kHz)	0.002% or less	
S/N Ratio	115 dB or more (Weighted)	
Dynamic Range		
DVD (48kHz, 24 bit)	104 dB or more	
CD, Video CD	100 dB or more	
Output Voltage (1 kHz, 0 dB)	2.0 ± 0.3V	

VIDEO SECTION

VIDEO output	1 Vp-p (75 ohms)
S VIDEO output	
Y output	1 Vp-p (75 ohms)
C output	
U model	0.286 Vp-p (75 ohms)
R, T models	0.3 Vp-p (75 ohms)
COMPONENT VIDEO output	
Y output	1 Vp-p (75 ohms)
Pb output	
U model	0.648 Vp-p (75 ohms)
R, T models	0.7 Vp-p (75 ohms)
Pr output	
U model	0.648 Vp-p (75 ohms)
R, T models	0.7 Vp-p (75 ohms)

GENERAL

Power Requirements	
U model	120V, 60Hz
T model	220V, 50Hz
R model	110 to 240V, 50/60Hz
Power Consumption	30W
Dimensions (W x H x D)	
(Without side panels)	435 x 116 x 404 mm (17-1/8" x 4-9/16" x 15-7/8")
(With side panels)	473 x 116 x 404 mm (18-5/8" x 4-9/16" x 15-7/8")
Weight	
(Without side panels)	6.2 kg (13 lbs 10 oz)
(With side panels)	7.2 kg (15 lbs 13 oz)
Accessories	
	Audio/video connection cord
	Remote control transmitter
	Dry-cell: x2 (Size "AA", R06)

* Specifications subject to change without notice.

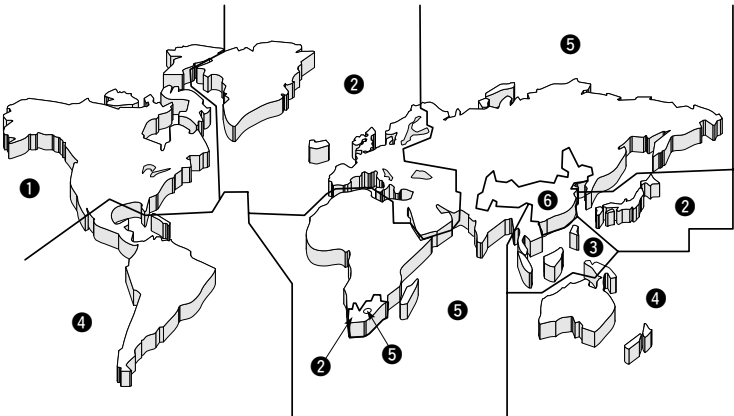
- U U.S.A. model
- R General model
- T China model

Manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

LOCALE MANAGEMENT INFORMATION

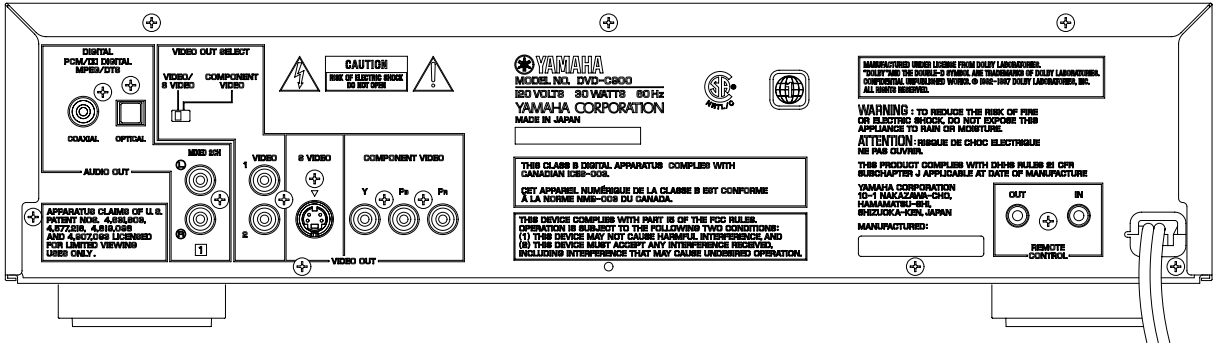
Locale Management Information : This DVD player is designed and manufactured to respond to the Locale Management Information that is recorded on a DVD disc. If the Locale number described on the DVD disc does not correspond to the Locale number of this DVD player, this DVD player cannot play this disc.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

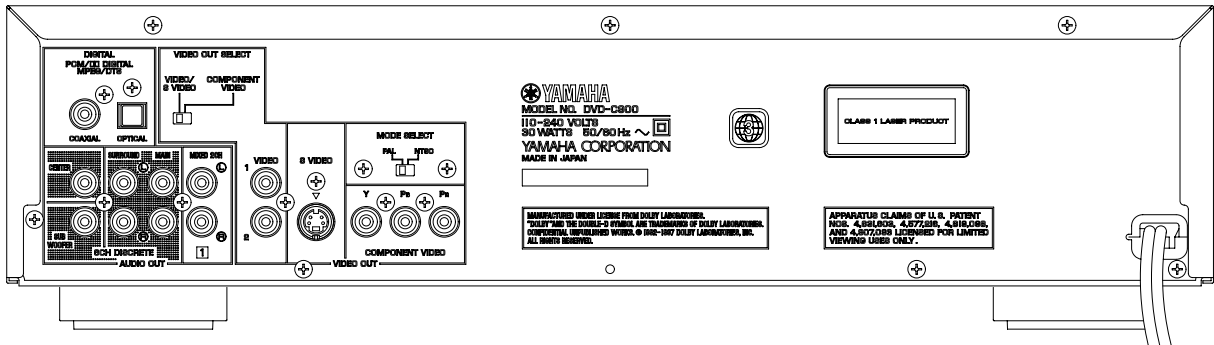


REAR PANELS

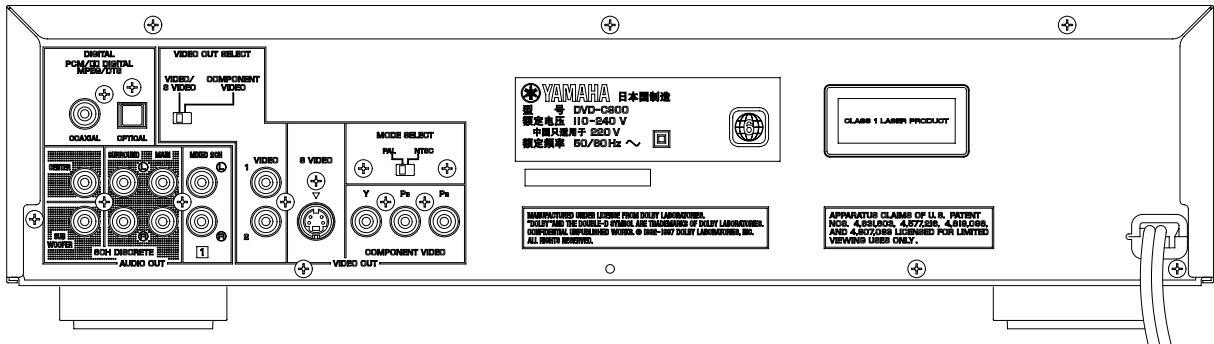
U model



R model



T model



■ PRECAUTION LASER DIODE

CAUTION:

This unit utilizes a class I laser. Invisible laser radiation is emitted from the optical pickup lens when the unit is turned on:

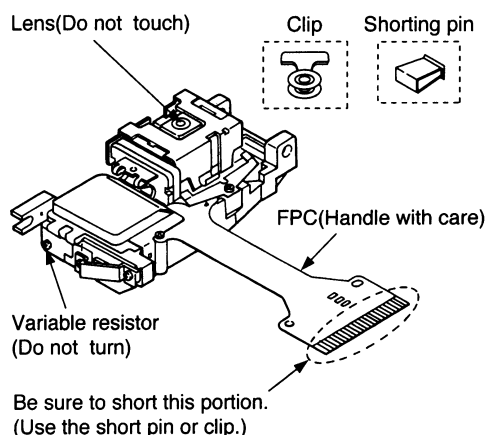
1. Do not look directly into the pickup lens.
2. Do not use optical instruments to look at the pickup lens.
3. Do not adjust the preset variable resistor on the optical pickup.
4. Do not disassemble the optical pickup unit.
5. If the optical pickup is replaced, use the manufactures specified replacement pickup only.
6. Use of control or adjustment or performance of procedures other than those specified herin may result in hazardous radiation exposure.

■ HANDLING PRECAUTIONS FOR TRAVERS DECK

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

Handling of optical pickup

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

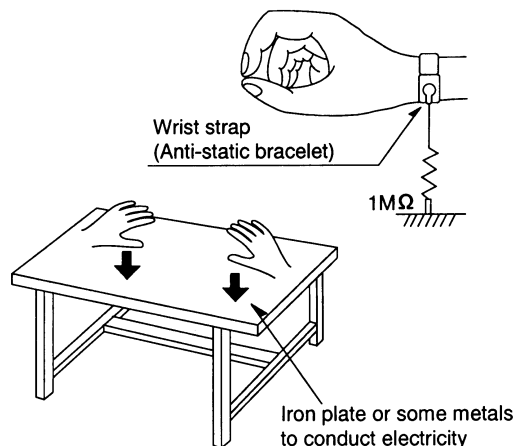


Grounding for electrostatic breakdown prevention

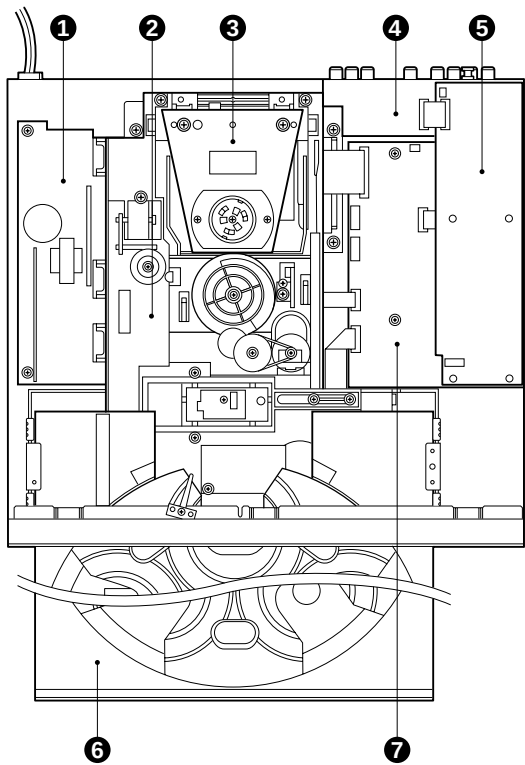
1. Human body grounding
Use the antistatic wrist strap to discharge the static electricity from your body.
2. Work table grounding
Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So take care not to let your clothes touch the optical pickup.

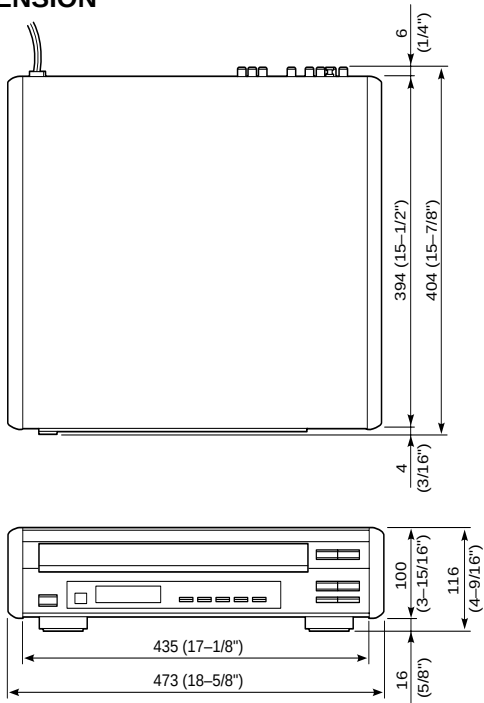


INTERNAL VIEW



- 1 SWITCHING POWER SUPPLY
- 2 CM-200 UNIT
- 3 CLAMPER ASS'Y
- 4 P.C.B. OPERATION (2)
- 5 P.C.B. OPERATION (1)
- 6 TRAY ASS'Y
- 7 P.C.B. MAIN

DIMENSION



Unit : mm (inch)

DISASSEMBLY PROCEDURES (Remove parts in the order as numbered.)

1. Removal of Top Cover & Side Panels

- a. Remove 8 screws (①) and also 3 screws (②) as shown in Fig. 1.

2. Removal of Tray Ass'y

- a. Remove 1 screw (③) as shown in Fig. 1.
b. Turn Gear/L0 as shown in Fig. 2 counter clockwise gradually till immediately before the tray starts to move and stop it there.

CAUTION : Gear/L0, if turned counter clockwise continuously, will mesh with the gear of the tray and the tray will come out. When removing the tray, use care so that Gear/L0 will not mesh with the gear of the tray.

- c. Pull out the Tray Ass'y.

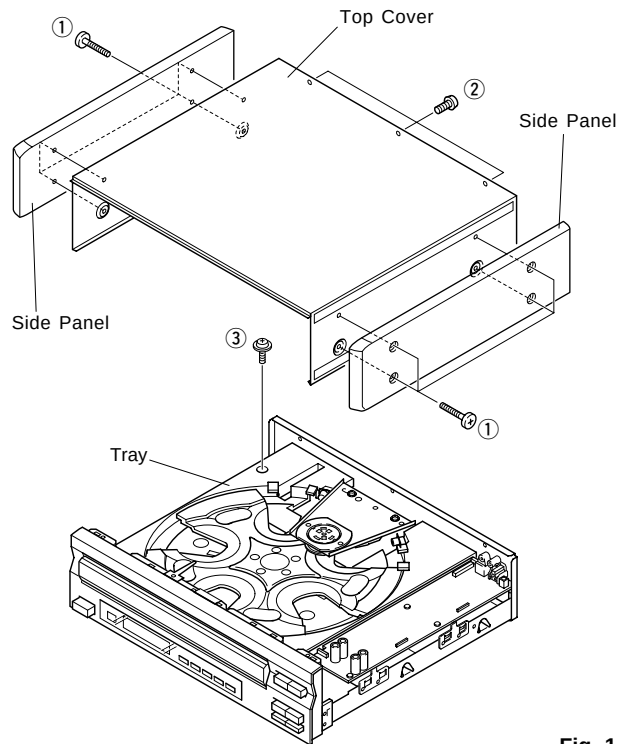


Fig. 1

● Precaution for installation of the Tray Ass'y.

On Tray Ass'y setting.

Check the Direction of marking "▲" on gear according to this drawing.

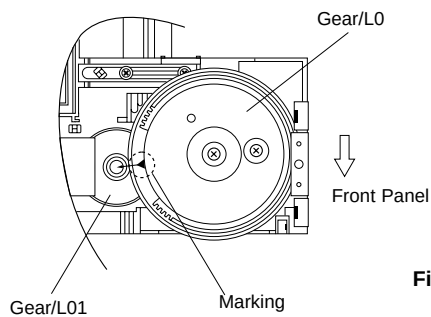


Fig. A

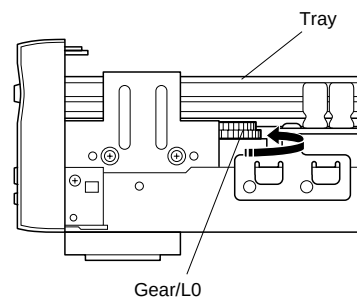


Fig. 2

3. Removal of Table

- a. Remove 2 screw (④) and then remove the Roller Ass'y as shown in Fig. 3.
b. Remove the Plate/Table as shown in Fig. 3.
c. Remove 1 screw (⑤) and then take off the Table as shown in Fig. 3.

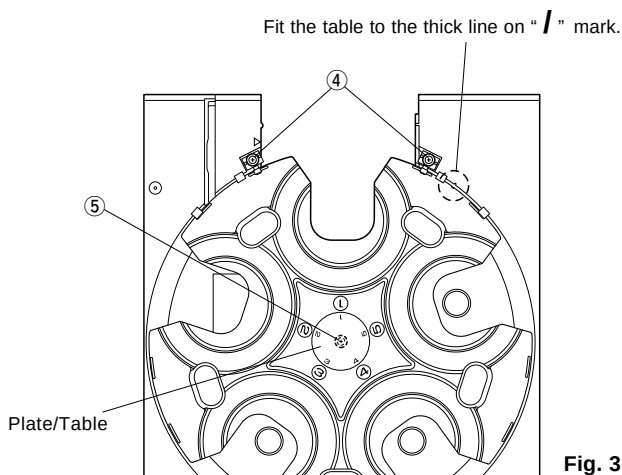


Fig. 3

IMPORTANT : Installation of Table.

Install the table according to the following procedure.

- 1) Slide the Lever so that the Gear/RT becomes free. (Fig.B)
- 2) With the "▲" mark on the Gear/RT aligned with the same mark on the Tray, lock it with the Lever. (Fig.B)
- 3) Install the Table by aligning it to the thick line on "I" mark. (Fig.3)

*Check that the Table is locked after installation.

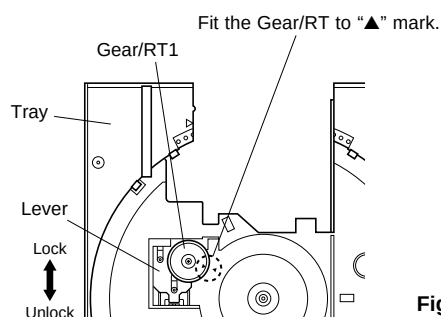


Fig. B

4. Removal of Clamp Ass'y

- a. Remove 2 screws (⑥) as shown in Fig. 4.

5. Removal of CM-200 Unit

Be sure to make both your body and the work table grounded.

- a. Remove 5 screws (⑦) as shown in Fig. 4.
- b. Remove cables (CB1, CB2) from the P.C.B. Main.

CAUTION

The flat cable CB1 is used to connect the traverse unit (laser pickup). Its terminal must not be touched. (The laser pickup is easy to be damaged.)

- c. Take the CM-200 Unit out slowly.

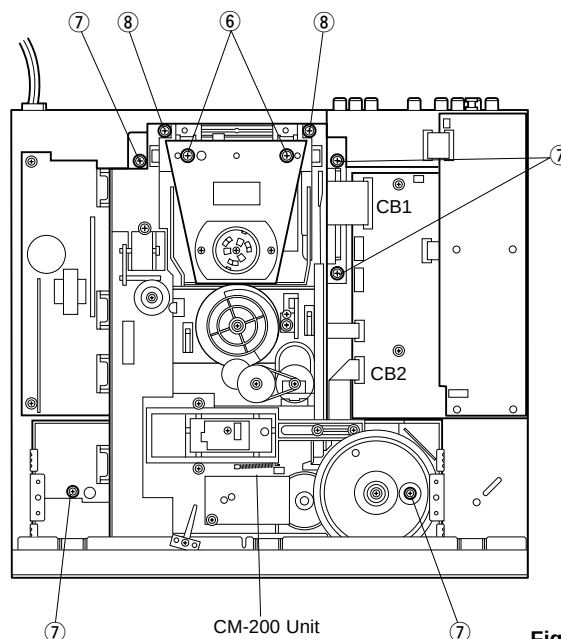


Fig. 4

6. Removal of Traverse Unit

Be sure to make both your body and the work table grounded.

- a. Remove 2 screws (⑧) and then remove the PU Ass'y as shown Fig. 4.
- b. Remove 4 screws (⑨) and then remove the Traverse Unit as shown Fig. 5.

After removing the traverse unit, be sure to take the proper measure to protect the laser diode against an electrostatic breakdown.

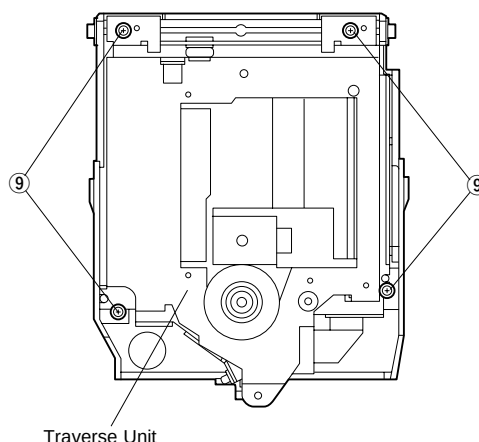


Fig. 5

To Prevent Damage to the Laser Diode

Static electricity destroys the Laser Diode. Always take countermeasures to prevent static electricity damage when performing repairs around the Laser Pick-Up.

1. Do not touch the area around the Laser Pick-Up or the Actuator.
2. Do not check the Laser Diode with a tester or other device (the Laser Diode can be broken quite easily).
3. Short-circuit the Laser Pick-Up

Solder the Land in the center of the flexible cable of the Laser Pick-Up. This will short-circuit the Laser Diode and help prevent damage from static electricity.

If the flexible cable has no Land, short-circuit TP20 and TP21 (See Fig. 6). This will provide the same protection as when the Land is used for shorting the flexible cable.

Caution:

Do not forget to remove the soldered Laser Diode short-circuit after finishing repair, and leave the circuit open.

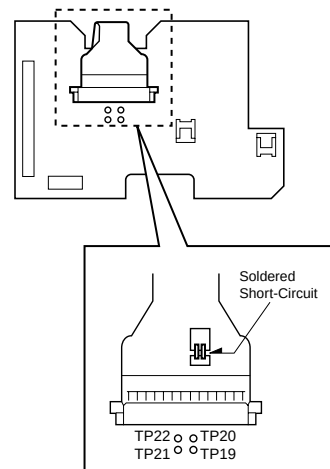


Fig. 6

■ REPLACING THE MAIN PARTS OF THE TRAVERSE UNIT

This section describes the replacement of the main parts in the Traverse Unit, including the Laser Pick-Up, the Disc Motor, the Traverse Motor Unit. Work should be performed after removing the Traverse Unit.

Preparation Prior to Replacing the Parts

Always perform this work after taking action to prevent damage to the Laser Diode, regardless of whether or not the Laser Pick-Up is in working order. When replacing the laser pickup, be sure to write down the serial number of the product and the specific symptom.

1. Remove 2 connectors and 3 flexible cables on the Relay Board. (FP0001-FP0003, P0004 and P0005) Remove 2 screws and then remove the Relay Board.

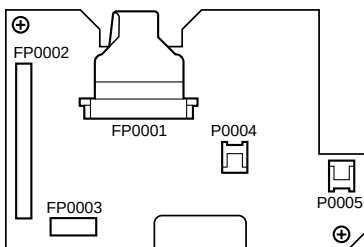


Fig. Relay Board

2. Remove 3 screws, so that, Traverse Unit can be separated into two sections.

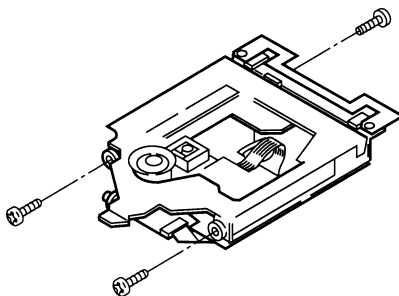


Fig. Disassembly of the Traverse Unit

1. Replacing the Laser Pick-Up

- a. Remove 2 screws and then remove the Laser Pick-Up.

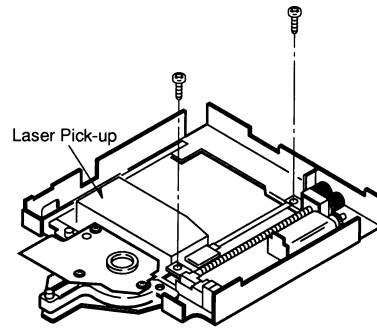


Fig. Replacement of the Laser Pick-up

2. Replacing the Traverse Motor Unit

- a. After the Laser Pick-Up has been removed, remove 2 screws and then remove the Traverse Motor Unit.

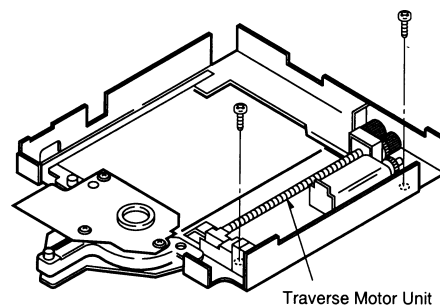


Fig. Replacement of the Traverse Motor Unit

3. Replacing the Disc Motor

- a. This disc motor can be removed after the Traverse Unit has been separated into two sections.
- b. Remove 2 screws A.
- c. Remove 2 screws B using an Hex. wrench. (2.0 mm)

Note: It is not necessary to remove the Laser Pick-Up for replacement of the Disc Motor.

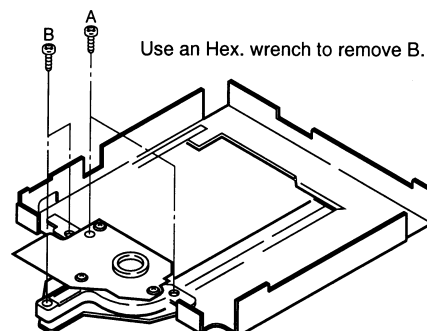


Fig. Replacement of the Disc Motor

4. Disc Motor Assembly/Tentative Tilt Adjustment

- For the Disc Motor assembling, install the 2 screws B (adjustment screw) after firmly tightening 2 screws A. (Refer to the figure Replacement of the Disc Motor.)
- Use 2 screws B to temporarily set the Disc Motor so that it rests parallel to the Base.
- For final adjustment, proceed the Tilt Adjustment of Disc Motor (Page 12).

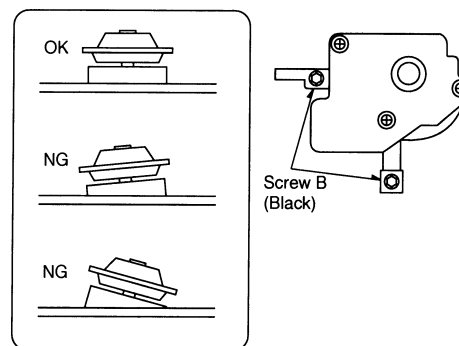


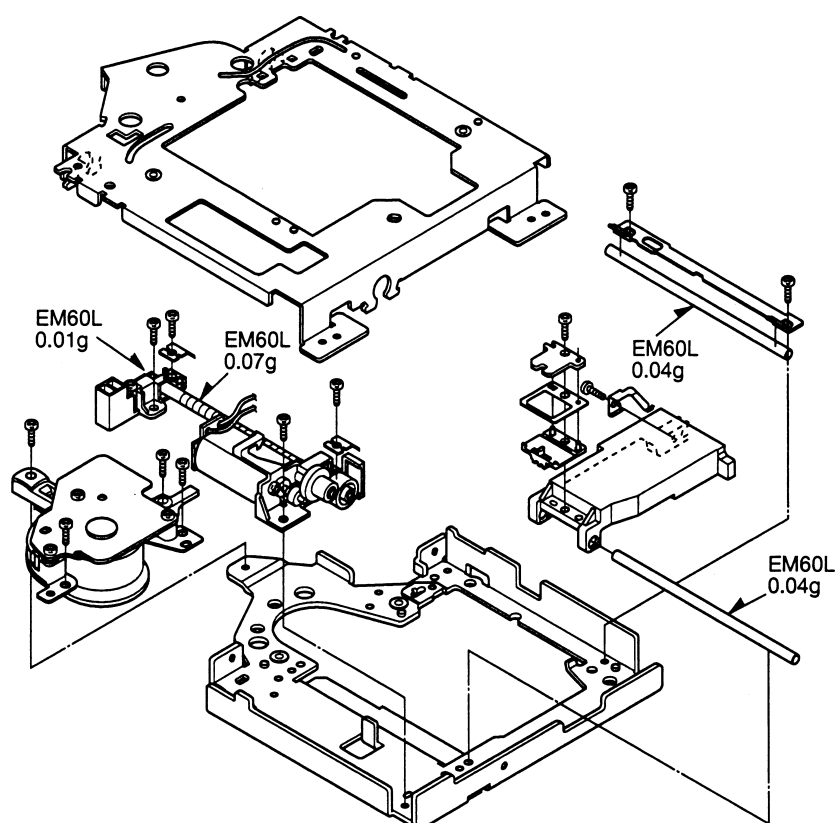
Fig. Disc Motor Assembling

5. Others

- Reassemble the Laser Pick-Up and the Traverse Motor Unit in precisely the reverse order as they were disassembled.
- After reassemble the Laser Pick-Up and the Traverse Motor Unit, perform the Tilt Adjustment of Disc Motor (page 12).

■ GREASE APPLICATION DIAGRAM (Traverse Unit)

Grease: Molycoat EM60L(P/No. TX946270)



■ MAIN P.C.B. OPERATION CHECK

With PLAY operated in the test mode, even when the disc is played, the audio and video signals of the disc are not output from the audio/video output terminal. In order to check the Main P.C.B. while confirming the sound /image of a disc, use the following procedure.

- a. Remove the top cover.
- b. Connect the power plug and then turn on the power switch.
- c. Play a disc.
- d. Press the PLAYXCHANGE button.(This sets the tray ejected without interrupting playing.)

Perform steps e through h below in the **PLAYXCHANGE PLAY** state. Use special care so that shorting will not occur during the removal work.

- e. Remove 8 plastic rivets (⑩) and then remove the Holder/P.C.B. (Fig. 13)
- f. Remove 2 screws (⑪) and then remove the Operation (1) P.C.B. (Fig. 13)
- g. Remove 2 screws (⑫) and 2 screws (⑬) and then remove the Main P.C.B. (Fig. 13)
- h. Set the Main P.C.B. upright as shown in Fig. 14.

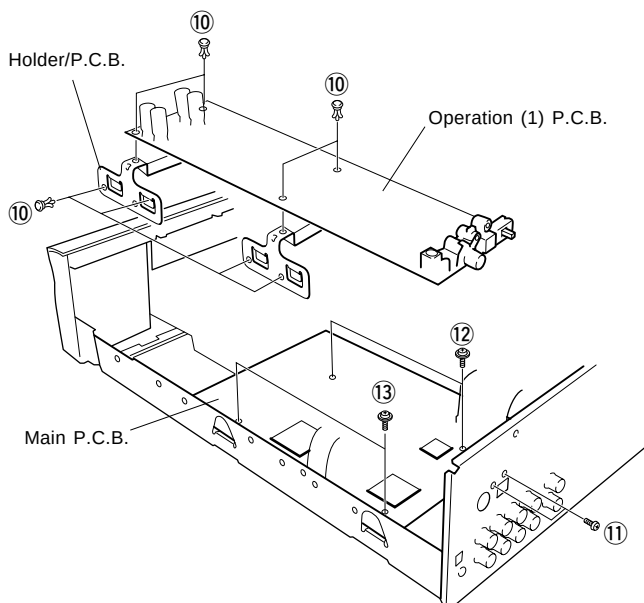


Fig. 13

CAUTION

- As the grounding becomes loose when the Main P.C.B. is removed from the chassis, it to the chassis.
- Do not allow anything like cloth (insulating material) to enter and contact between the Operation (1) P.C.B. and the Main P.C.B.

- i. After confirming the operation, turn off the power switch and proceed to assembly.

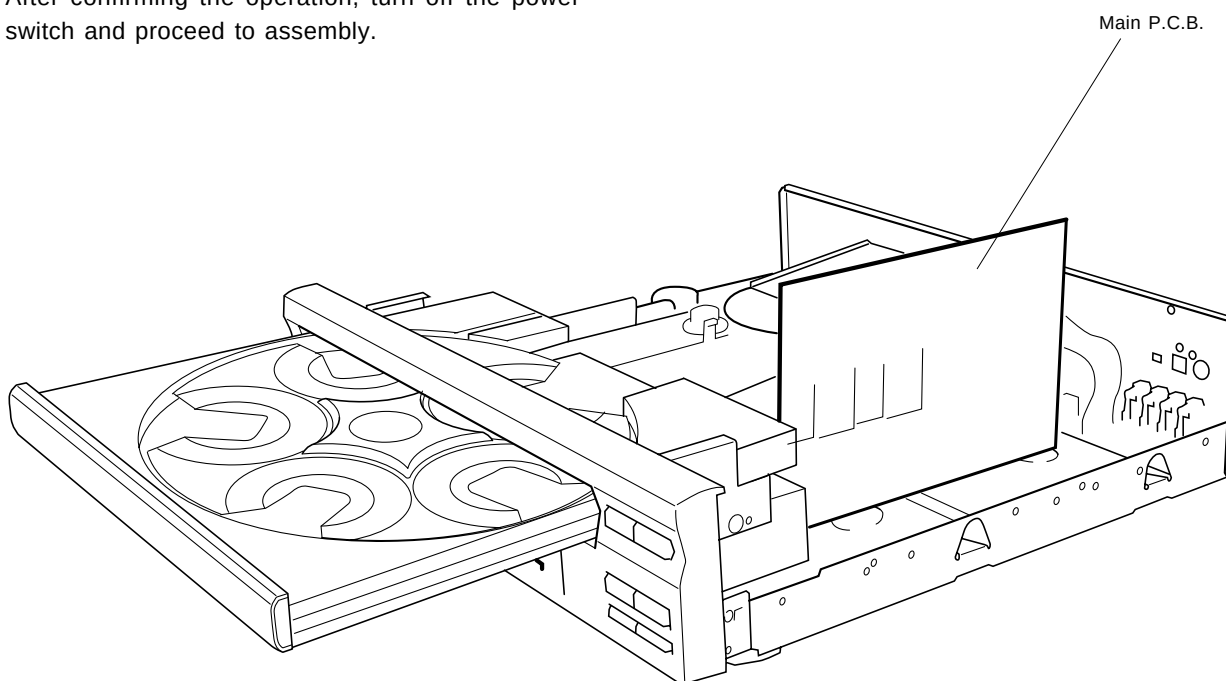


Fig. 14

■ ADJUSTMENT

Tilt Adjustment of Disc Motor

After replacing parts in the Traverse Unit, it is necessary to adjust the Tilt Adjustment of Disc Motor from bottom side.

Please follow the following procedures for adjusting.

When the following parts have been replaced, disc motor adjustment will be required.

1. The disc motor.
2. The laser pick-up.
3. The traverse motor unit.
4. The parts around the laser pick-up (rail, etc.).

Preparation before adjustment (Installation of the traverse unit)

Be sure to make both your body and the work table grounded.

- a. Connect the power plug and then turn on the power switch.
- b. When the clamp has moved up, turn off the power switch and disconnect the power plug.
- c. Remove the Tray referring to "Removal of Tray" on page 7.
- d. Remove the Clamp Assembly.
- e. Remove the Traverse Unit.
(Take the protection measure against static electricity for the Laser Diode except when replacing the Laser Pick-up.)
- f. Place the Adjusting Box on the CM-200 unit (to support the traverse unit). (Fig. 15)
- g. After replacing the parts, place the Traverse Unit on the Adjusting Box. (Fig. 15)

Caution (removal of the measure to protect the laser diode against an electrostatic breakdown)

Unsolder the Land located at the center of the flexible cable of the laser pickup for the open circuit.

- h. Connect the Traverse Unit and the Main P.C.B. with an extension cable. (Fig. 15)

Caution

When connecting the extension cable, be careful not to touch the terminal of the cable. (The laser pickup is easy to be damaged.)

- i. Connect the power plug and turn on the power switch.

Caution:

1. Optical adjustment inside the laser pick-up is not possible.
2. Prior to adjusting, take countermeasures to prevent damage from static electricity.

● Extension cable

	Name	Part No.
1.	35-pin flat cable for servicing	AAX08660
2.	Stabilizer for servicing	AAX07720

● Adjusting Box

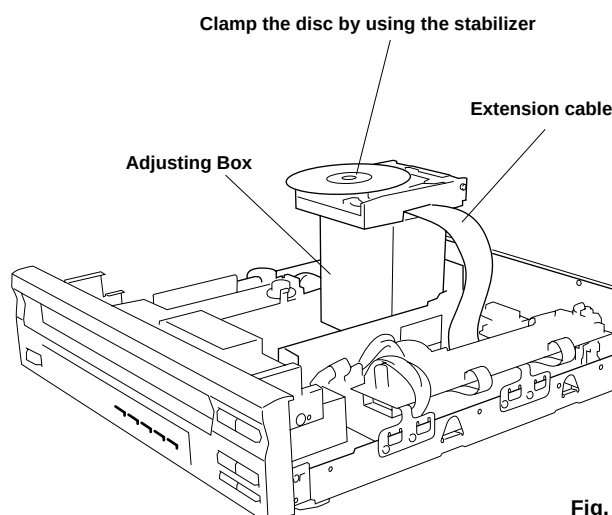
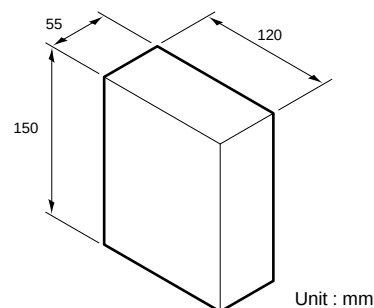
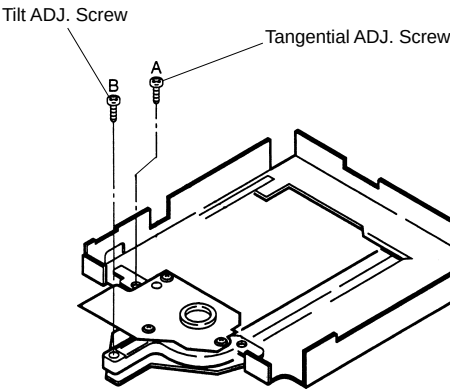


Fig. 15

● Test Disc

Type		Test disc	Part No.
1.	DVD disc	DVDT-S01	TX946080
2.	VIDEO-CD/CD-DA disc	PVCD-K06	TX946090

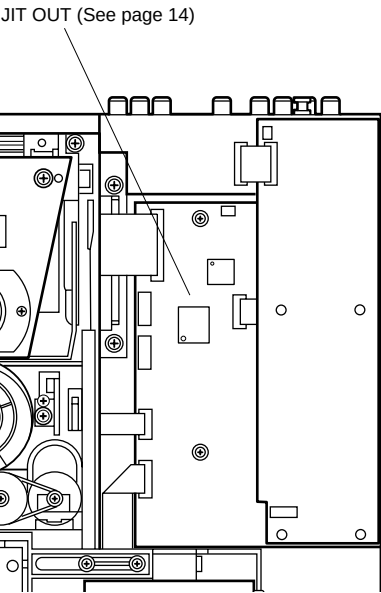
Measurement Point	Adjustment Point	Mode	Test Disc	Measuring Equipment	Adjustment Value
JIT OUT (See page 14)	Tangential ADJ. screw Tilt ADJ. screw	Play (title 8) Pause	DVDT-S01	Oscilloscope DC 500 mV/div 20 msec/div	Adjust untill the bottom section of the waveform becomes flat and the DC components are minimum.



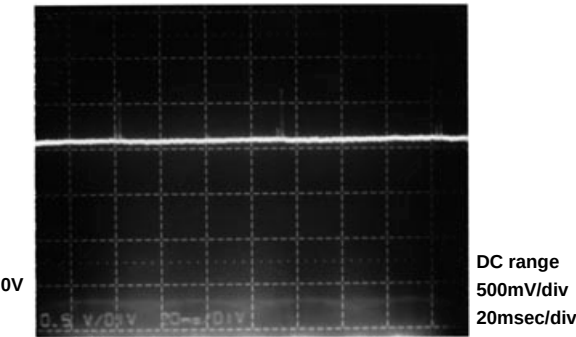
Use a hex. wrench (2.0mm)

Adjustment Procedures

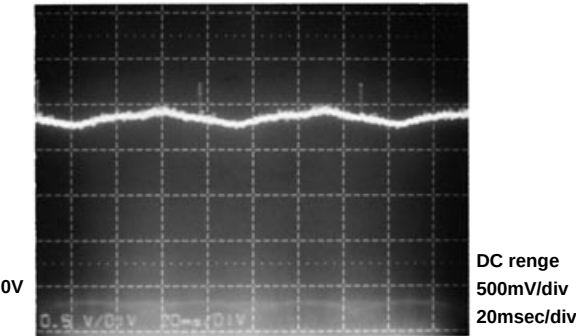
1. Play back the DVD test disc and then place the unit in play mode with title 8, then push the Pause button.
 2. At first, Adjust Tangential Adjustment Screw then adjust Tilt Adjustment Screw with the Hex Wrench (2.0 mm) from bottom side.
Repeat 2 to 3 times alternately until the waveform at JIT OUT indicated below is obtained.
Final adjustment should be Tilt Adjustment.
- The valley sections of the waveform should be as flat as possible.
 - The total DC level should be obtained minimized as much as possible.
 - The waveform whisker sections will not disappear.



OK

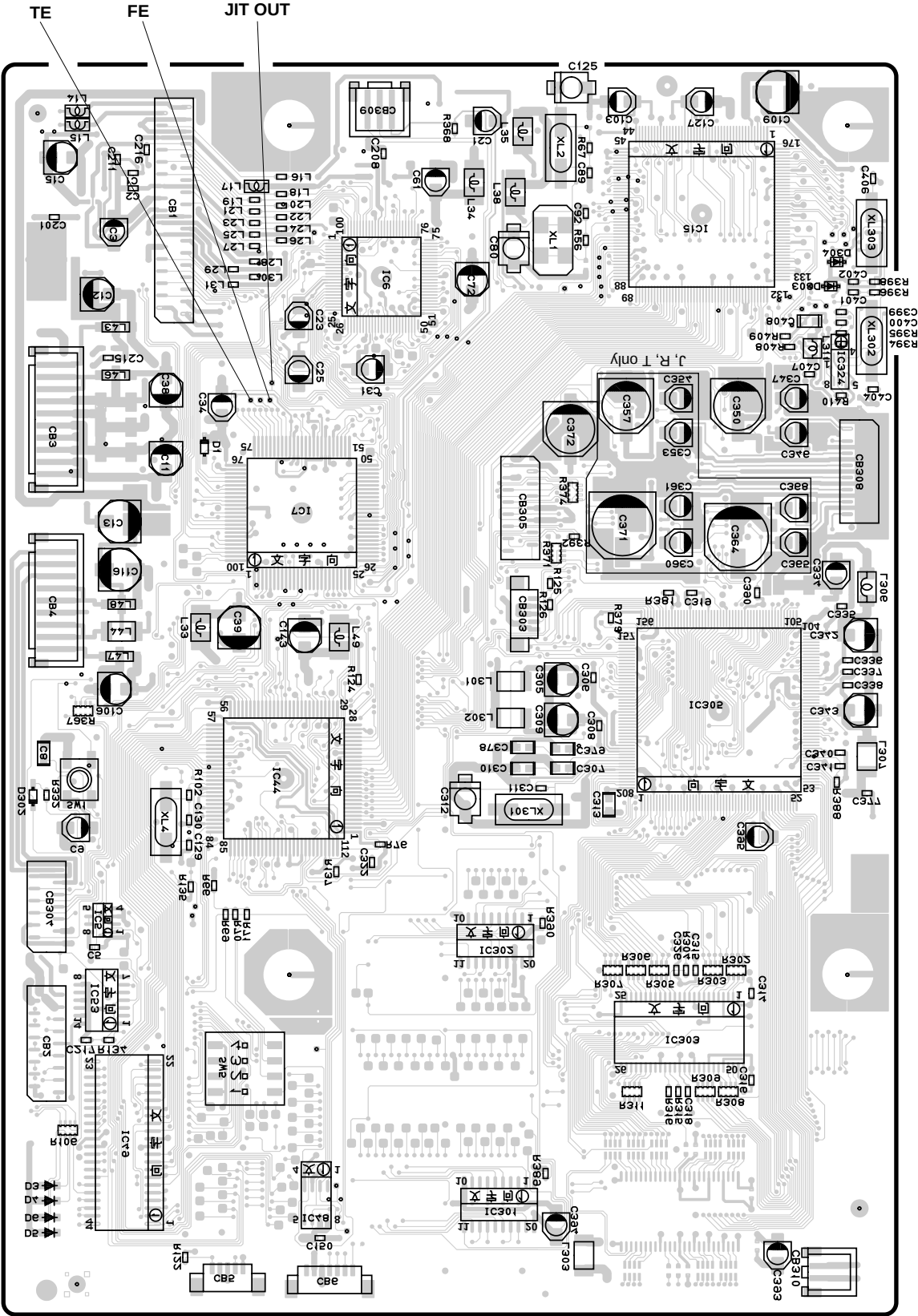


NG



After Adjusting Check the following

1. After adjusting by the DVD test disc, play a video CD or CD-DA and check that there is no abnormal operation.



■ TEST MODE

This built-in test mode is to facilitate inspection, measurement and locating any faulty point.

1. How to start the Test mode

Before operation	Use the key operation
When the product mode at stop	Press the ANGLE key on the remote control unit while pressing the STOP key on the panel.

2. Display at starting of the Test mode

When the Test mode is set, the sub-mode [1] appears as shown below.

Test mode (sub-mode [1])

1 2 3 4 5

1 0 0 0 0 : 0 0 : 0 0

Current sub-mode No. is indicated here.

- Panel LED display
- All LEDs turn off.

Test mode (sub-mode [1])	
Item Test	
Laser Diode ON	RETURN
Focus Servo ON	TITLE/INDEX
Focus Jump 1-2	SUBTITLE
Focus Jump 2-1	OFF/ON
Track. Servo OFF	MULTI SPEED
Spindle Rot +/-	DISC MODE/TIME
Slide In/Out	SKIP/SEARCH +/-
Clamp Up/Down	Up/Down
Tray Open/Close	OPEN/CLOSE
Panel Display	ANGLE
PLAYPlay STOPStop ◀ Prev. Page ▶ Next Page	

3. How to restore the Product mode

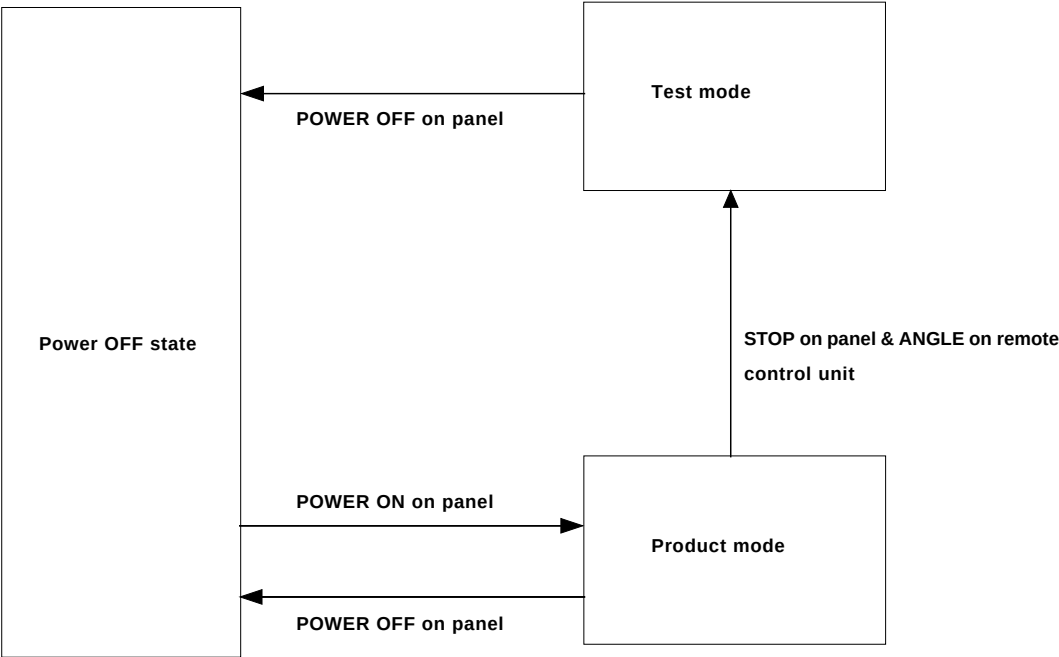
Precaution

- The product mode means the mode in which the normal player operation is available.
- To restore the Product mode from the Test mode, it is necessary to turn off the power once.

Item	Condition before operation	Key operation
To restore the Product mode	Test mode	Panel POWER OFF → Panel POWER ON

Condition immediately after the Product mode is restored

- Immediately after the Product mode is restored, the memory of the table position is initialized.



4. Sub mode

- There are 2 sub modes for the Test mode.
- Immediately after starting the Test mode, the sub mode [1] is set.
- For the details of each sub mode, refer to Ref. page.

Sub mode	Description	Ref. page
1	Individual operation check	17
2	Log display	24

Selection of sub mode

Press the desired sub mode No. on ten keys of the remote control unit while pressing the STOP button on the panel.

Sub mode [1] : Individual operation check



The current sub mode No. is indicated here.

Item Test	
Laser Diode ON	RETURN
Focus Servo ON	TITLE/INDEX
Focus Jump 1-2	SUBTITLE
Focus Jump 2-1	OFF/ON
Track Servo OFF	MULTI SPEED
Spindle Rot +/-	DISC MODE/TIME
Slide In/Out	SKIP/SEARCH +/-
Clamp Up/Down	Up/Down
Tray Open/Close	OPEN/CLOSE
Panel Display	ANGLE
[PLAY] Play [STOP] Stop ◀ Prev. Page ▶ Next Page	

Sub mode [2] : Log display



Log Display	Event Log
00 0163EAE C 13 81AE	
01 0163EAE A 13 80C8	
02 0163EAD 8 13 81AC	
03 0163EAC 4 13 81B8	
04 0163EAB F 13 81B3	
[SKIP/SEARCH] Log Switch ◀ Prev. Page ▶ Next Page	

5 Details of sub mode [1]

Sub mode [1] : Individual operation check

- functions included in the player are checked individually.
- The sub mode [1] is set immediately after starting the Test mode.



The number of the item being executed is displayed here.
Even after completing execution, the display remains until the procedure to execute the next test is taken.

List of sub mode [1]

Function	No.	Item	Key operation
Basic control	000	Stop operation	STOP
	001	Play operation	PLAY/PAUSE or PLAY on remote control unit
Laser diode control	010	Laser diode ON	RETURN on remote control unit
Focus control	020	Focus servo ON	TITLE/INDEX on remote control unit
	021	Focus jump 1 layer → 2 layers	SUBTITLE on remote control unit
	022	Focus jump 2 layers → 1 layer	OFF/ON on remote control unit
Track kick control	030	Tracking servo OFF	MULTI SPEED on remote control unit
Spindle control	040	Spindle rotation in + direction	DISC MODE on remote control unit
	041	Spindle rotation in - direction	TIME on remote control unit
Traverse control	050	Traverse moving to innermost track	SKIP/SEARCH -
	051	Traverse moving to outermost track	SKIP/SEARCH +
Clamp control	060	Clamp down	▲ on remote control unit
	061	Clamp up	▼ on remote control unit
Disc tray control	070	Disc tray open	OPEN/CLOSE
	071	Disc tray close	OPEN./CLOSE
Panel display (FL, LED)	080	Test pattern 1	ANGLE on remote control unit
	081	Test pattern 2	ANGLE on remote control unit
	082	Test pattern 3	ANGLE on remote control unit
	083	Test pattern 4	ANGLE on remote control unit
	084	Normal display of test mode	ANGLE on remote control unit
Tracking control	090	1 track kick continued in - direction	1 on remote control unit
	091	1 track kick continued in + direction	2 on remote control unit
	092	30 track kick continued in - direction	3 on remote control unit
	093	30 track kick continued in + direction	4 on remote control unit
	094	150 track kick continued in - direction	5 on remote control unit
	095	150 track kick continued in + direction	6 on remote control unit
	096	Still kick continued in - direction	7 on remote control unit
	097	Still kick continued in + direction	8 on remote control unit
Turntable control	100	Disc skip in + direction	+10 → 1 on remote control unit
	101	Disc skip in - direction	+10 → 2 on remote control unit
	102	High speed clockwise table rotation continued	+10 → 3 on remote control unit
	103	High speed counterclockwise table rotation continued	+10 → 4 on remote control unit
	104	Low speed clockwise table rotation continued	+10 → 5 on remote control unit
	105	Low speed counterclockwise table rotation continued	+10 → 6 on remote control unit
FE operation mode setting	110	DVD operation mode setting	REPEAT S/F on remote control unit
	111	VCD/CD-DA operation mode setting	A-B on remote control unit
	112	Disc playback setting step 1	Panel DISC 2
	113	Disc playback setting step 2	Panel DISC 3
	114	Disc playback setting step 3	Panel DISC 4
Image output test	120	Color bar image output	ON SCREEN on remote control unit

Caution

With PLAY operated in the test mode, even when the disc is played, the audio and video signals of the disc are not output from the audio/video output terminal.

(The superimposed image of the sub-mode [1] remains as it is.)

OSD (On Screen Display)

- A list of key operations used when checking individual operation appears on the screen.
- Page 1 appears immediately after the mode is shifted to sub mode [1]. There are 5 pages in all.
- The pages on the screen can be changed.

Key operation	Function
▶ on remote control unit	The page on the screen advances to the next page.
◀ on remote control unit	The page on the screen moves back to the previous page.

Page 1

Item Test

Laser Diode ON	RETURN
Focus Servo ON	TITLE/INDEX
Focus Jump 1-2	SUBTITLE
Focus Jump 2-1	OFF/ON
Track. Servo OFF	MULTI SPEED
Spindle Rot +/-	DISC MODE/TIME
Slide In/Out	SKIP/SEARCH -/+
Clamp Up/Down	Up/Down
Tray Open/Close	OPEN/CLOSE
Panel Display	ANGLE

A list of test items and key operations is displayed here.

▶PLAY▶Play

◀STOP◀Stop

◀ Prev. Page

▶ Next Page ▶

The key operation method for basic operation is displayed.

Page changing (to previous/next page) method is displayed.

Page 2

Item Test

Track Kick -1	1
Track Kick +1	2
Track Kick -30	3
Track Kick +30	4
Track Kick -150	5
Track Kick +150	6
Still Kick -	7
Still Kick +	8

▶PLAY▶Play

◀STOP◀Stop

◀ Prev. Page

▶ Next Page ▶

Page 4

Item Test

FE DVD Mode	S/F
FE VCD/CDDA Mode	A-B
Setup Step 1	DISC 2
Setup Step 2	DISC 3
Setup Step 3	DISC 4

▶PLAY▶Play

◀STOP◀Stop

◀ Prev. Page

▶ Next Page ▶

Page 3

Item Test

Disc Skip +	+ 10. 1
Disc Skip -	+ 10. 2
Table Rot. + Fast	+ 10. 3
Table Rot. - Fast	+ 10. 4
Table Rot. + Slow	+ 10. 5
Table Rot. - Slow	+ 10. 6

▶PLAY▶Play

◀STOP◀Stop

◀ Prev. Page

▶ Next Page ▶

Page 5

Item Test

Color Bar Output	ON SCREEN
------------------	-----------

▶PLAY▶Play

◀STOP◀Stop

◀ Prev. Page

▶ Next Page ▶

Note 1 : There is no relation between the screen display and the key operation being accepted. Regardless of the menu currently on screen, all key operations are accepted.

Note 2 : The page can be always changed even when an item is currently executed.

1) Basic control

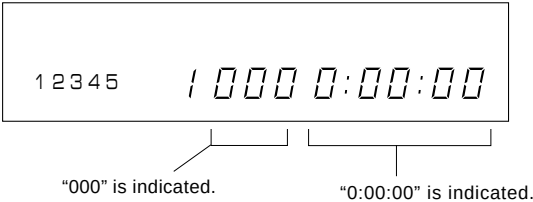
- Basic operation used in the Test mode

Item	Key operation	Description
Stop operation	STOP on panel or STOP on remote control unit	Test operation being executed currently is stopped. (Test mode in the initial state)
Play operation (1)	After setting to DVD operation mode or VCD/CD-DA operation mode in FE operation mode, operate DISC2, DISC3 and DISC4 on the panel in that order. (*1)	The disc is played from the STOP state.
Play operation (2)	PLAY/PAUSE on panel or PLAY on remote control unit	The disc is played from the tracking servo OFF (See 4. Tracking control) or track kick continued (See 10. Track kick control) state while the disc is being played.

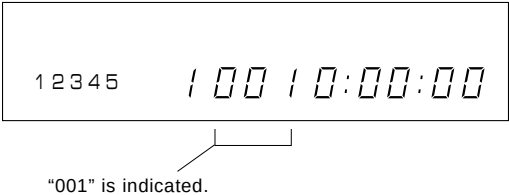
(*1)

- When operating from DISC2 to DISC3 and from DISC3 to DISC4 on the panel, leave about a 5-seconds interval between operations.
- If the focus servo function of the DVD 2-layer disc or the like does not turn on (no sound is heard from the focus actuator) even when DISC3 is operated on the panel, repeat operation of DISC3 on the panel at 5 seconds' interval until the focus servo function turns on.
- With PLAY operated in the test mode, even when the disc is played, the audio and video signals of the disc are not output from the audio/video output terminal.(The image remains superimposed in the sub-mode[1].)

Stop



Play



2) Laser diode control

- Operation used to control the laser diode

Item	Key operation	Description
Laser diode ON	RETURN on remote control unit	The laser diode it turned ON.

Note : To turn OFF the laser diode, press the STOP key on the panel or the remote control unit.

3) Focus control

- Operation to control the focus servo.

Item	Key operation	Description
Focus servo ON	TITLE/INDEX on remote control unit	The focus servo is turned ON and the focus search function is started.
Focus jump 1 layer → 2 layers	SUBTITLE on remote control unit	Focus jump from 1 layer to 2 layers is executed on DVD2-layer disc.
Focus jump 2 layers → 1 layer	OFF/ON on remote control unit	Focus jump from 2 layers to 1 layer is executed on DVD2-layer disc.

Note : To turn OFF the focus servo, press the STOP key on the panel or the remote control unit.

4) Tracking control

- Operation to control the tracking servo

Item	Key operation	Description
Tracking servo OFF	MULTI SPEED on remote control unit	The tracking servo is turned OFF.

Note : In order to turn ON the tracking servo, press the PLAY/PAUSE key on the panel or the PLAY key on the remote control unit.

5) Spindle control

- Operation to control the spindle motor

Item	Key operation	Description
Spindle rotation in + direction	DISC MODE on remote control unit	The spindle motor is run in the + direction continuously.
Spindle rotation in - direction	TIME on remote control unit	The spindle motor is run in the - direction momentarily.

Note 1 : In order to turn ON the spindle servo, press the PLAY/PAUSE key on the panel or the PLAY key on the remote control unit.

Note 2 : In order to turn OFF the spindle servo, press the STOP key on the panel or the remote control unit.

6) Traverse control

- Operation to control the traverse mechanical unit

Item	Key operation	Description
Traverse moving to innermost track	SKIP/SEARCH -	The traverse mechanical unit is moved to the innermost track and stopped when the innermost track limit switch is turned ON.
Traverse moving to outermost track	SKIP/SEARCH +	The traverse mechanical unit is moved to the outermost track. It does not stop automatically even when it has reached the outermost track.

7) Clamp control

- Operation to control the clamp mechanical unit.

Item	Key operation	Description
Clamp up	▲ on remote control unit	The clamp mechanical unit is moved up.
Clamp down	▼ on remote control unit	The clamp mechanical unit is moved down.

8) Disc tray control

- Operation to check the disc tray operation.

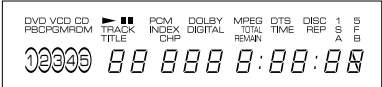
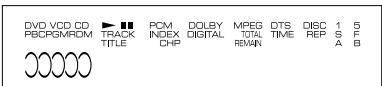
Item	Key operation	Description
Disc tray open	OPEN/CLOSE	The disc tray is opened.
Disc tray close	OPEN/CLOSE	The disc tray is closed. If the disc tray has stopped midway, close operation is used.

9) Panel display

- Operation to check panel display
- Two types of the panel display, FL and LED, are both tested at the same time.

Item	Condition before operation	Key operation	Condition after operation
Test pattern 1	Normal display of test mode	ANGLE on remote control unit	Test pattern 1
Test pattern 2	Test pattern 1	ANGLE on remote control unit	Test pattern 2
Test pattern 3	Test pattern 2	ANGLE on remote control unit	Test pattern 3
Test pattern 4	Test pattern 3	ANGLE on remote control unit	Test pattern 4
Normal display of test mode	Test pattern 4	ANGLE on remote control unit	Normal display of test mode

Panel display test

Item	FL	LED
Test pattern 1	All segments light up. 	ALL LEDs light up.
Test pattern 2	All numeric values and disc No. segments light up. 	LEDs 1, 3 and 5 light up, LEDs 2, 4 and AUTO DISPLAY OFF turn off.
Test pattern 3	All segments other than numeric values and disc No. light up. 	LEDs 2, 4 and AUTO DISPLAY OFF light up and LEDs 1, 3 and 5 turn off.
Test pattern 4	All segments turn OFF. 	All LEDs turn OFF.

10) Track kick control

- This mode is used to check the track kick operation.

Item	Key operation	Description
1 track kick continued in - direction	1 on remote control unit	Kicking is continued for 1 track in the - direction.
1 track kick continued in + direction	2 on remote control unit	Kicking is continued for 1 track in the + direction.
30 track kick continued in - direction	3 on remote control unit	Kicking is continued for 30 tracks in the - direction.
30 track kick continued in + direction	4 on remote control unit	Kicking is continued for 30 tracks in the + direction.
150 track kick continued in - direction	5 on remote control unit	Kicking is continued for 150 tracks in the - direction.
150 track kick continued in + direction	6 on remote control unit	Kicking is continued for 150 tracks in the + direction.
Still kick continued in - direction	7 on remote control unit	Still kicking is continued in the - direction.
Still kick continued in + direction	8 on remote control unit	Still kicking is continued in the + direction.

Note : In order to cancel track kicking, press the STOP key on the panel of remote control unit, PLAY/PAUSE key on the panel, or the PLAY key on the remote control unit.

Track kicking



11) Turntable control

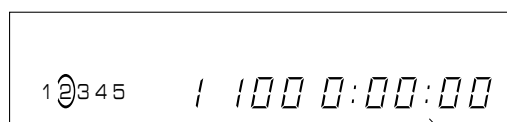
- This mode is used to check the turntable operation.

Item	Key operation	Description
Disk skip in + direction	+10 → 1 on remote control unit	The turntable is rotated clockwise for 1 disc.
Disk skip in - direction	+10 → 2 on remote control unit	The turntable is rotated counterclockwise for 1 disc.
High speed clockwise table rotation continued (*2)	+10 → 3 on remote control unit	Clockwise rotation of the turntable is continued at a high speed.
High speed counterclockwise table rotation continued (*2)	+10 → 4 on remote control unit	Counterclockwise rotation of the turntable is continued at a high speed.
Low speed clockwise table rotation continued (*2)	+10 → 5 on remote control unit	Clockwise rotation of the turntable is continued at a low speed.
Low speed counterclockwise table rotation continued (*2)	+10 → 6 on remote control unit	Counterclockwise rotation of the turntable is continued at a low speed.

(*2)

Precaution : Be sure to perform the clamp-down procedure before running the table.

+/- direction disc skip



"0:00:00" is indicated here.

12) FE operation mode setting

- This mode is used to set the FE operation mode

Item	Key operation	Description
DVD operation mode setting	REPEAT S/F on remote control unit	FE is set for the DVD playback enable mode.
VCD/CD-DA operation mode setting	REPEAT A-B on remote control unit	FE is set for the VCD/CD-DA playback enable mode.
Disc playback setting step 1	Panel DISC 2 (*1)	The setting required for disc playback is executed. (Step 1)
Disc playback setting step 2	Panel DISC 3 (*1)	The setting required for disc playback is executed. (Step 2)
Disc playback setting step 3	Panel DISC 4 (*1)	The setting required for disc playback is executed. (Step 3)

(*1)

- When operating from DISC2 to DISC3 and from DISC3 to DISC4 on the panel, leave about a 5-seconds interval between operations.

13) Image output test

Item	Key operation	Description
Color bar image output	ON SCREEN on remote control unit	The color bar image is output.

6 Details of sub mode [2]

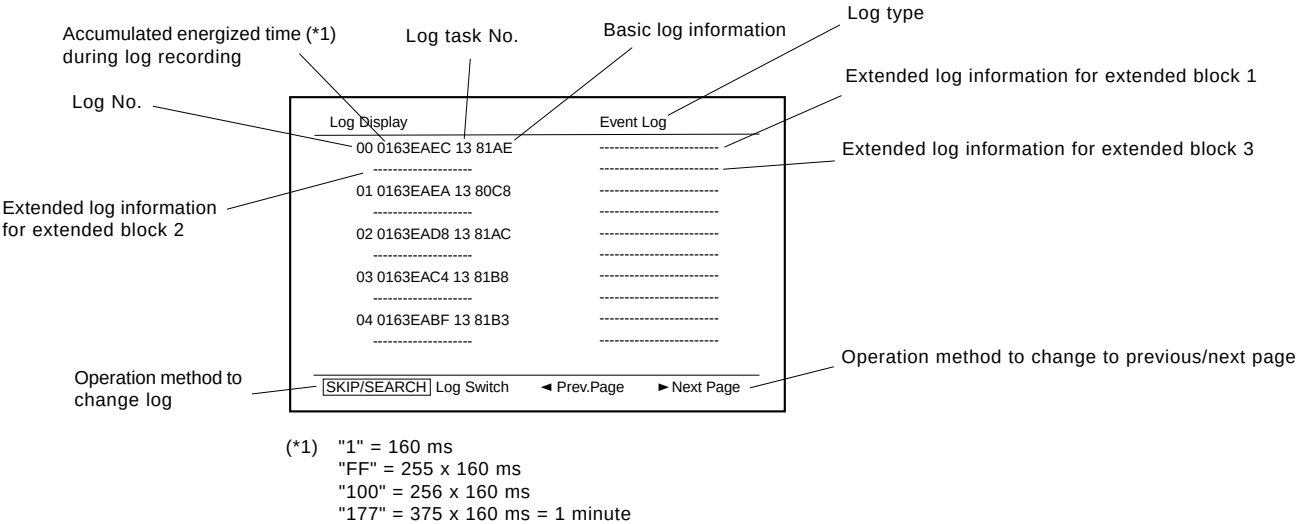
Sub mode [2] : Log display

- Press the 2 key on the remote control unit while pressing the STOP key on the panel.
- Various logs controlled in the player FE appear on the screen.
- Three types of logs are displayed; event log, error log and timer log.
- Immediately after this sub mode has been set, the event log (page 1) is displayed.
- The type of the log on display (event, error or timer) can be changed.
- When the page is changed while the event log or the error log is displayed, all log display becomes available.

Key operation	Description
SKIP/SEARCH + on remote control unit	The display is changed to the next log.
SKIP/SEARCH - on remote control unit	The display is changed to the previous log.
► on remote control unit	The display is changed to the next page.
◄ on remote control unit	The display is changed to the previous page.

Event log display

- The event log screen shows 5 event logs for each page.
There are up to 50 pages.



Error log display

- The error log screen shows 5 error logs for each page.
There are up to 12 pages.

Log Display	Error Log
00 0160FF3F 13 0200	000302B30302
EE0302ED0000	-----
01 0160FF3F 13 8300	800000040000
-----	-----
02 014B8604 17 F601	2210F0220ED2
25346A2210EF	-----
03 014B8601 13 0200	00220ED22534
6A2210EF0000	-----
04 014B8601 13 8200	800000040000
-----	-----
[SKIP/SEARCH] Log Switch ◀ Prev. Page ▶ Next Page	

Timer log display

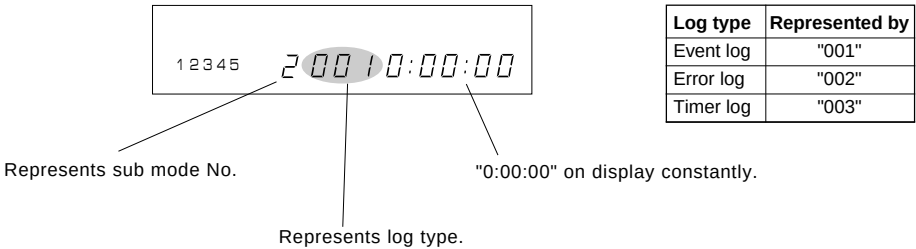
- The timer log screen has 1 page.

Accumulated energized time when obtaining timer log

Log Display	Timer Log
System Timer	0163F0A7
Laser Timer	00B29A98
Clamp Counter	00000ABF
[SKIP/SEARCH] Log Switch ◀ Prev. Page ▶ Next Page	

Counted number of clamp mechanical unit operation
(Clamping and unclamping are counted as 1 time each.)

- Note 1 : All numeric values including the log No. are displayed in hexadecimal.
- Note 2 : When displaying the basic log information, the upper byte is used as the basic log information 1.
- Note 3 : When displaying the extended log information, the uppermost byte is used as the extended log information 1 and the lowermost byte as the extended log information 6.
- Note 4 : If no extended block exists, "-----" should be used to display the extended log information of the applicable extended block.



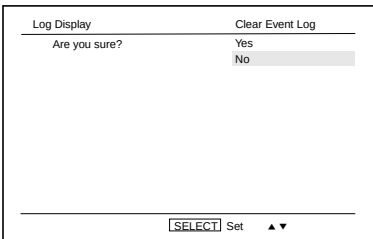
Clearing log

- The data of each log (event, error or timer) can be cleared individually.
- In case of the timer log, the data is cleared by items.
- Before executing the clear command, a message to confirm execution of the clear function appears.
- On the screen after the clear function has been executed, the value which has been cleared appears.

To clear the event log

- Using SKIP/SEARCH +/-, have the event log screen displayed.
- Press the CANCEL key on the remote control unit. Then a message to confirm execution of the clear function appears on the screen.

Event log clear confirmation screen



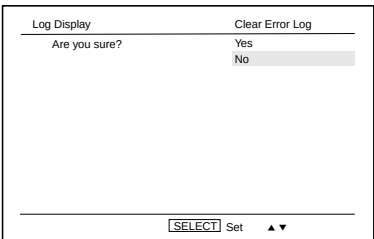
Select "YES" or "NO" by using ▲ and ▼ keys.
The highlight moves as ▲ and ▼ keys are operated.
Pressing the SELECT key will finalize the selection.

Note: When the message appears, "NO" is selected (highlighted).

To clear the error log

- Using SKIP/SEARCH +/-, have the error log screen displayed.
- Press the CANCEL key on the remote control unit. Then a message to confirm execution of the clear function appears on the screen.

Error log clear confirmation screen



Select "YES" or "NO" by using ▲ and ▼ keys.
The highlight moves as ▲ and ▼ keys are operated.
Pressing the SELECT key will finalize the selection.

Note: When the message appears, "NO" is selected (highlighted).

To execute clear function

- Using ▲ and ▼ keys on the remote control unit, select "YES" and then press the SELECT key on the remote control unit.
The entire event log is cleared and the event log screen is restored.

To cancel clear function

- Using ▲ and ▼ keys on the remote control unit, select "NO" and then press the SELECT key on the remote control unit.
The event log is not cleared and the event log screen is restored.

To execute clear function

- Using ▲ and ▼ keys on the remote control unit, select "YES" and then press the SELECT key on the remote control unit.
The entire error log is cleared and the error log screen is restored.

To cancel clear function

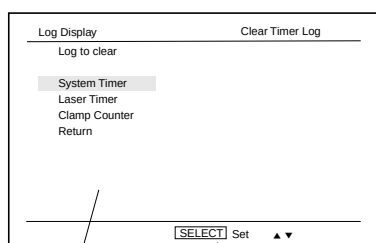
- Using ▲ and ▼ keys on the remote control unit, select "NO" and then press the SELECT key on the remote control unit.
The error log is not cleared and the error log screen is restored.

To clear timer log

- a. Using SKIP/SEARCH +/-, have the timer log screen displayed.
- b. Press the CANCEL key on the remote control unit.
Then timer log items appear on the screen for selection.

Screen for selection of timer log items to be cleared

Using ▲ and ▼ keys, select the item to be cleared.
The highlight moves as ▲ and ▼ keys are operated.

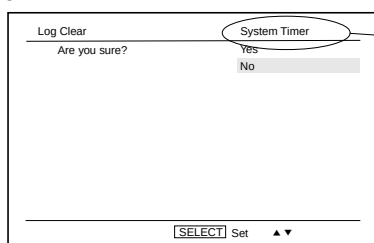


Pressing the SELECT key will finalize the selection.

Select this item to return to the previous screen.

- c. Using ▲ and ▼ keys on the remote control unit, select the item to be cleared and press the SELECT key on the remote control unit.
Then a message to confirm execution of timer log clear function appears.

Timer log clear confirmation screen



Item to be cleared

Note: When the message appears, "NO" is selected (highlighted).

To execute clear function

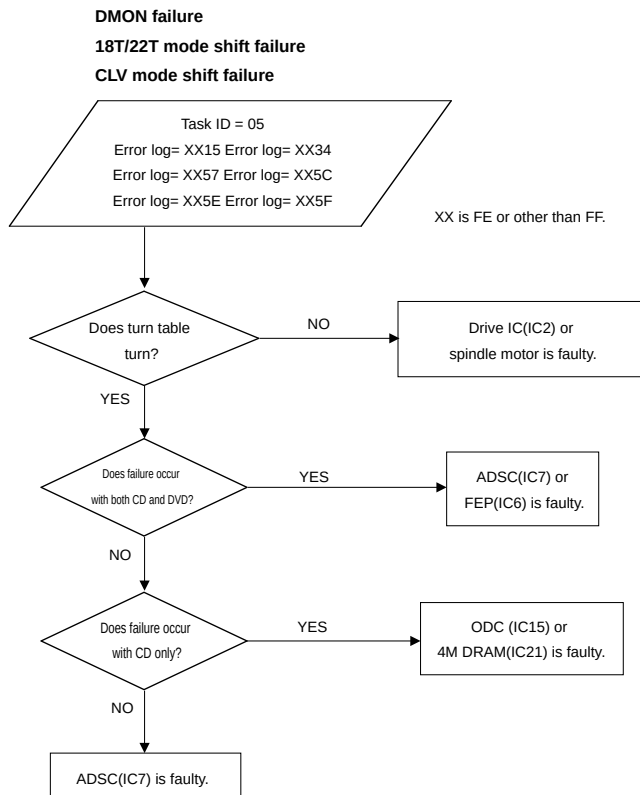
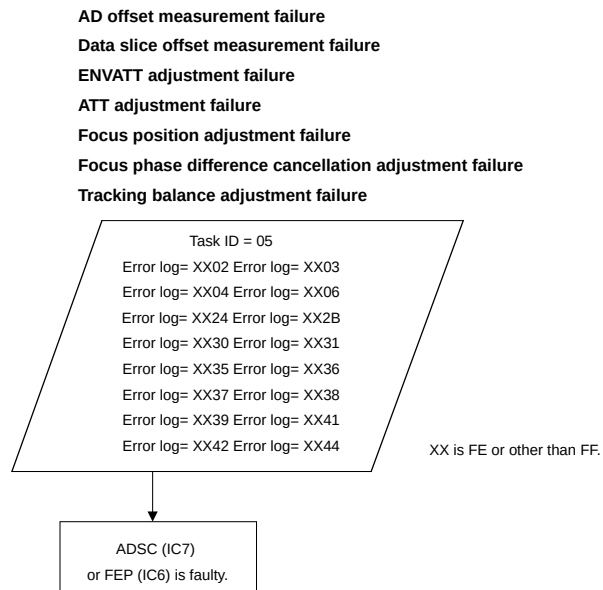
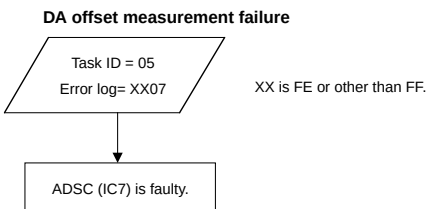
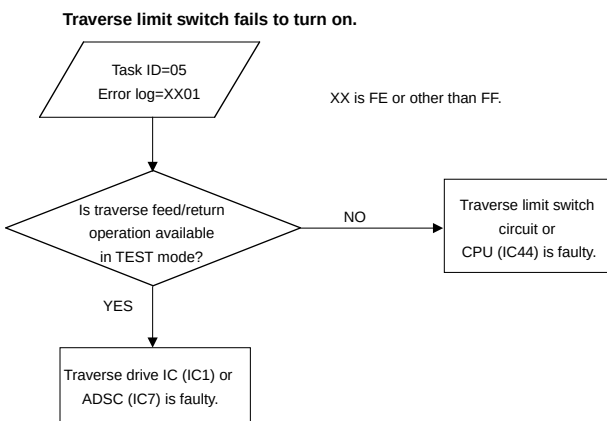
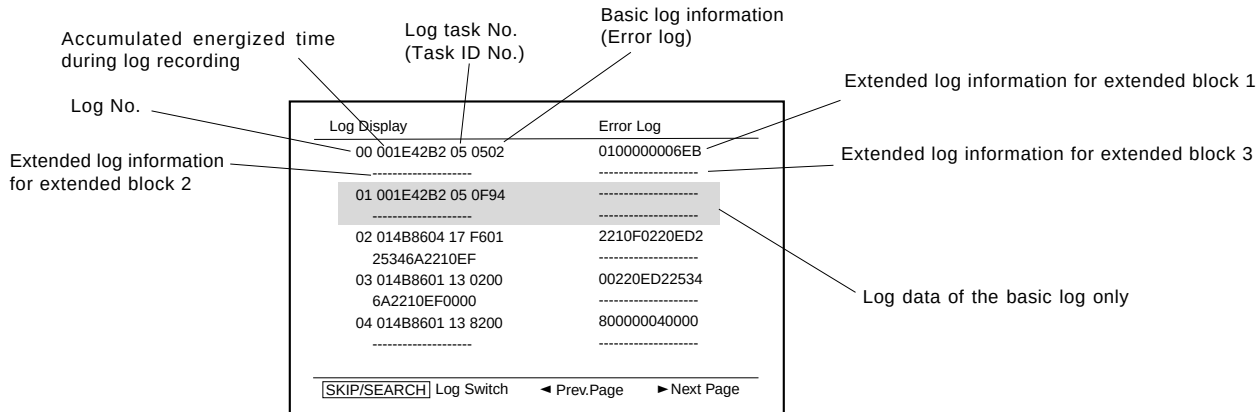
- d. Using ▲ and ▼ keys on the remote control unit, select "YES" and then press the SELECT key on the remote control unit.
The log corresponding to the selected item is cleared and the timer log screen is restored.

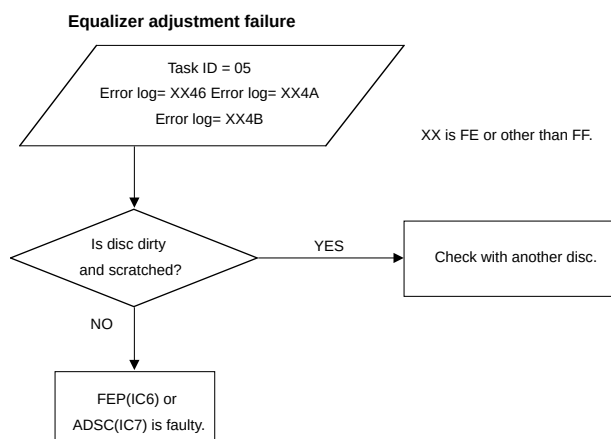
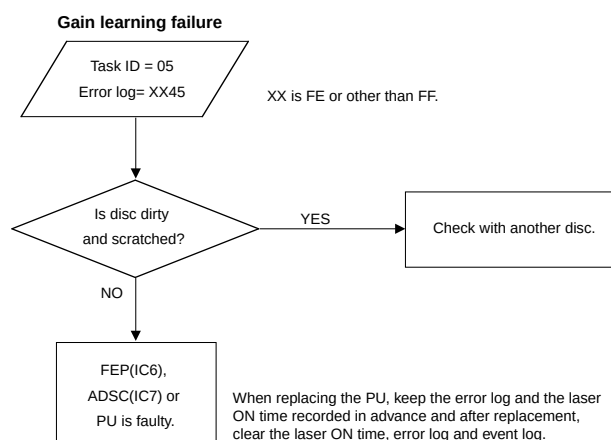
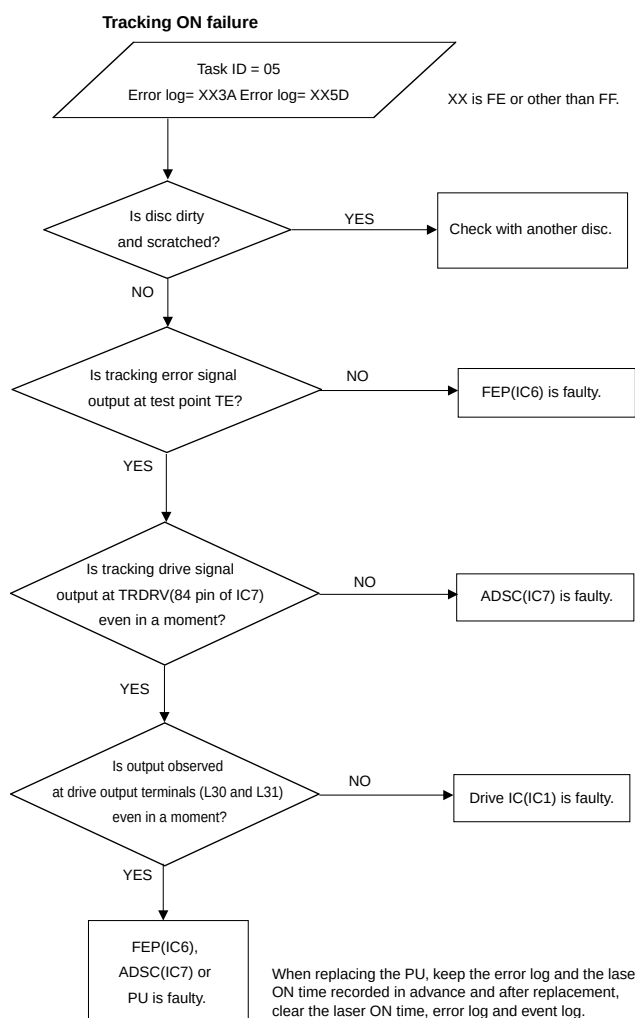
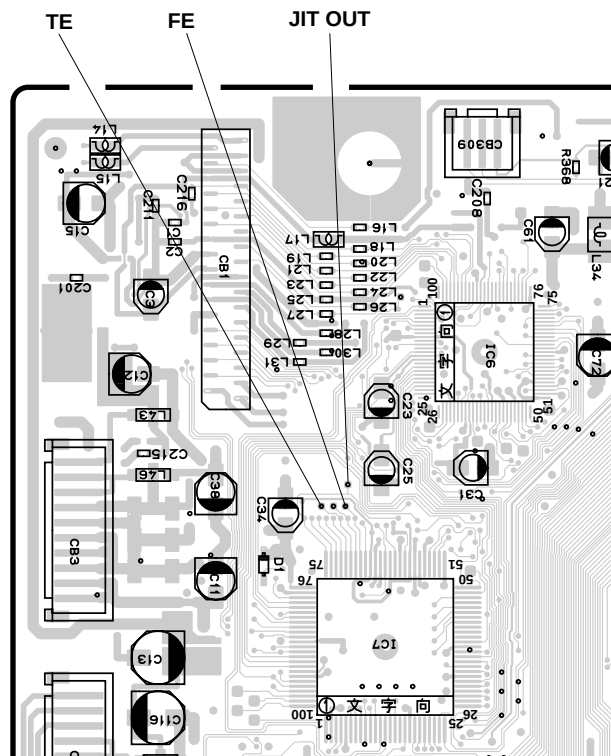
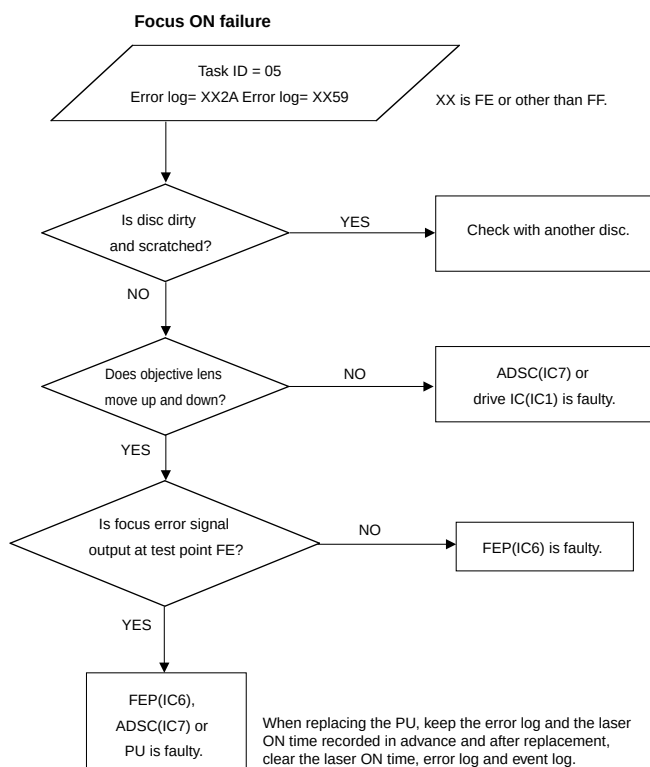
To cancel clear function

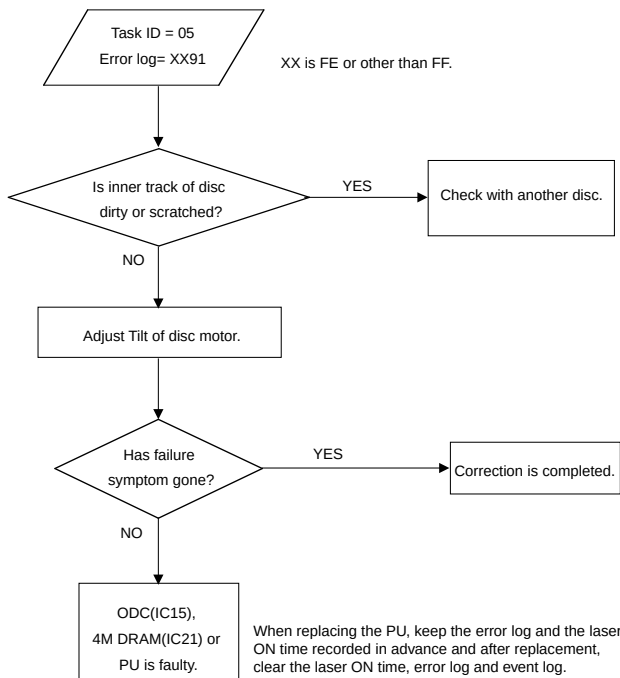
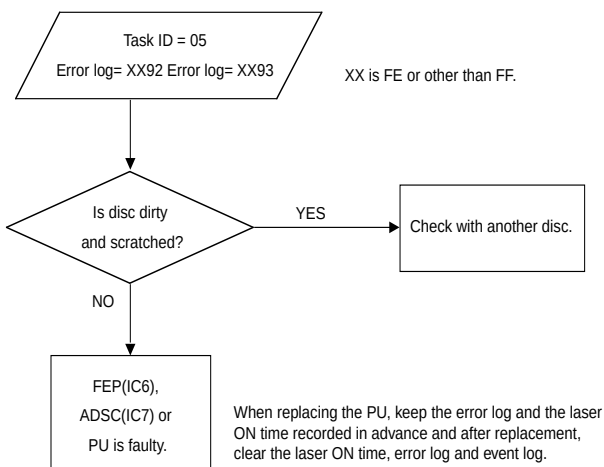
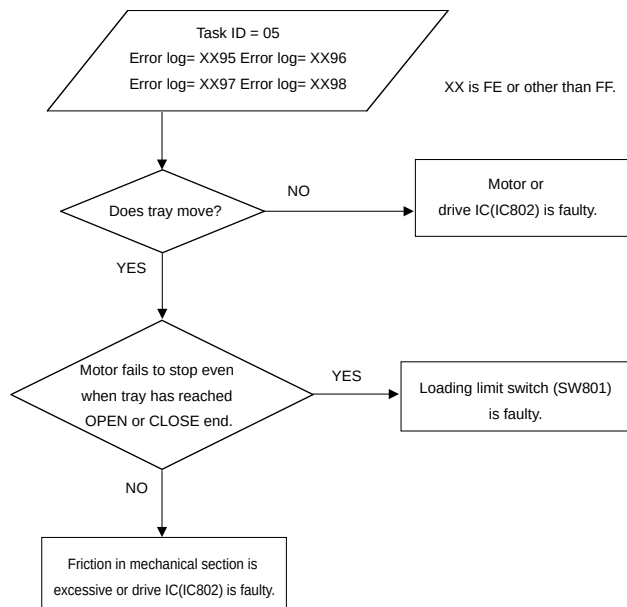
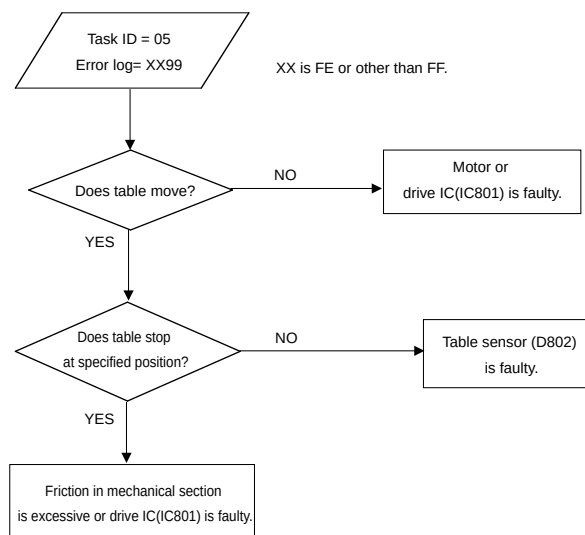
- d. Using ▲ and ▼ keys on the remote control unit, select "NO" and then press the SELECT key on the remote control unit.
The log corresponding to the selected item is not cleared and the timer log screen is restored.

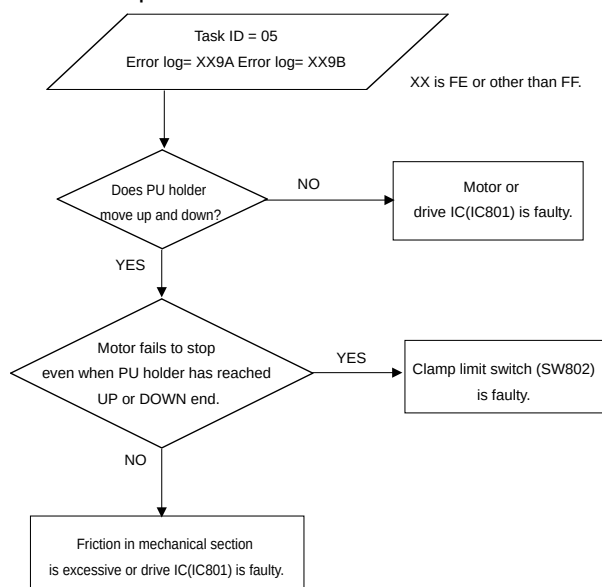
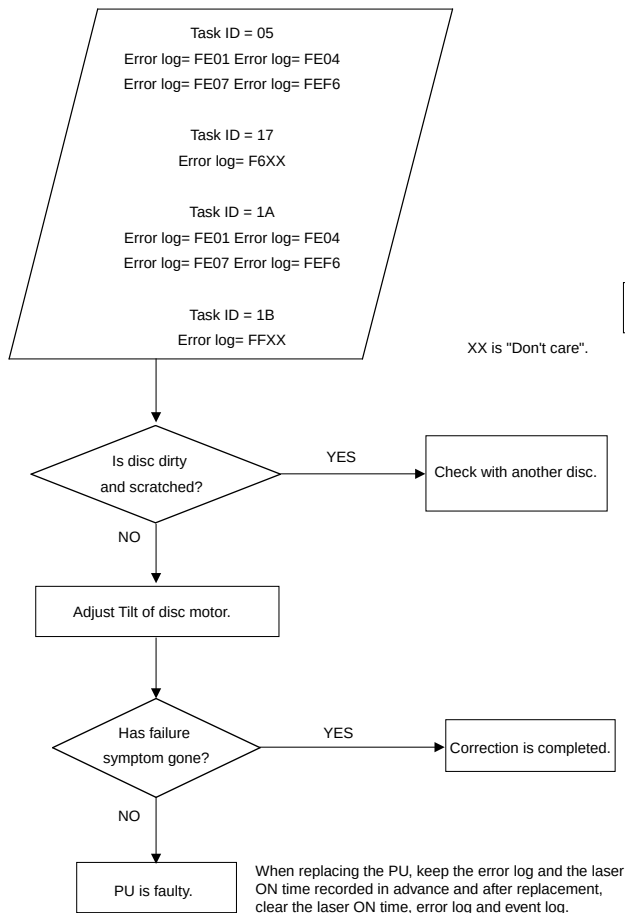
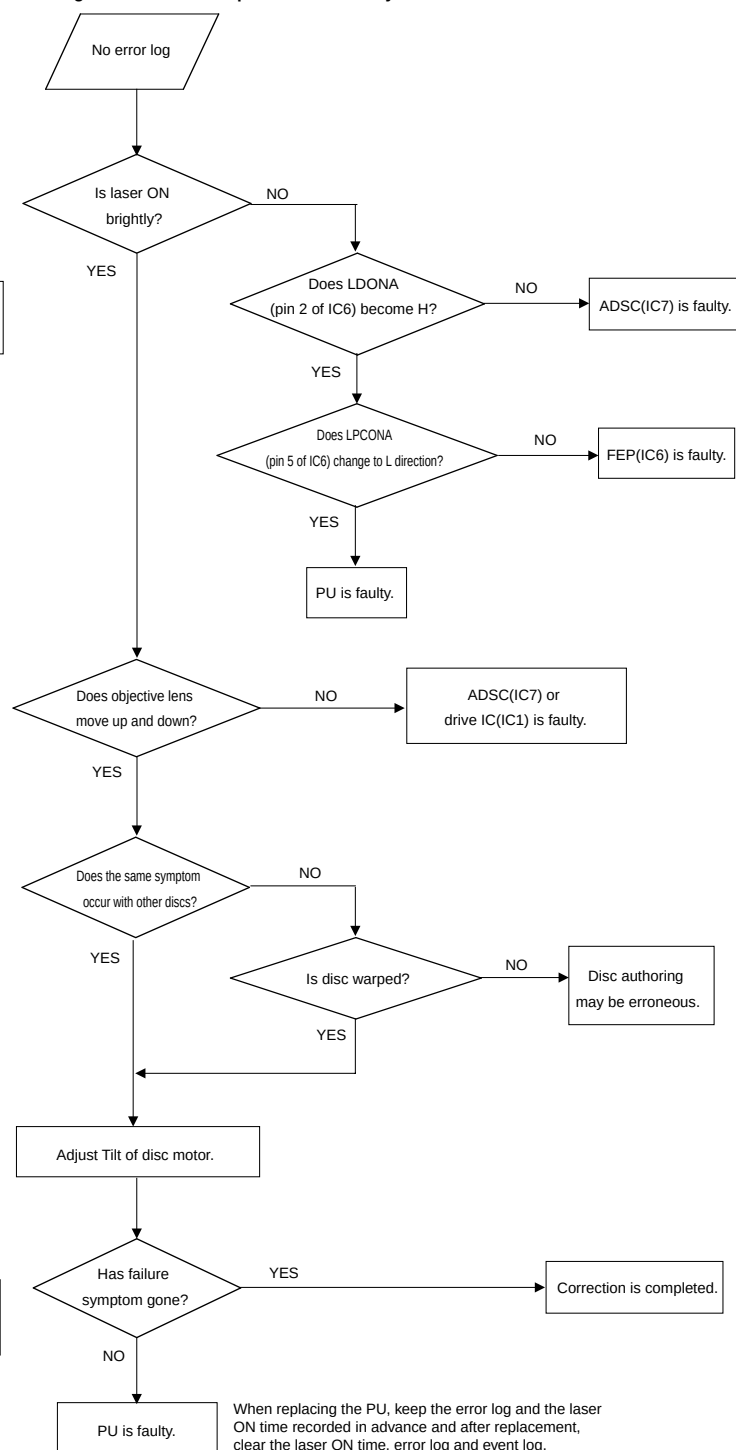
■ TROUBLESHOOTING

When confirming the Task ID=05 log data, use the log data with only the basic log recorded. Do not use the log data with an extended log.





TOC reading time exceeded**Search time exceeded****Tray OPEN/CLOSE malfunction****Table malfunction**

Clamp UP/DOWN malfunction**RD failure****Search time exceeded****Buffer empty****Data skip****Dummy sector read****Disc recognized as unloaded****Image and sound not reproduced smoothly**

■ IC DATA

IC6 : AN8825NFHQ

Front End Processor (FEP)

No.	Port	Name	Function
1	LDONB	LDONB	CD laser "on" control signal input from ADSC(MN67702)
2	LDONA	LDONA	DVD laser "on" control signal input from ADSC(MN67702)
3	LPCOB	LPCOB	NC
4	LPC2	LPC2	GND
5	LPCOA	LPCOA	Laser drive output (DVD HEAD)
6	LPC1	LPC1	Laser PIN input (DVD HEAD)
7	TGBAL	GBAL	Tangential phase balance control input from ADSC(MN67702)
8	POFLT	POFLT	Track detect threshold level
9	PTH	PTH	Track detect threshold level(VREF)
10	TBAL	TBAL	Tracking balance control input from ADSC(MN67702)
11	TG	TG	Tangential phase error output to ADSC(MN67702)
12	FBAL	FBAL	Focus balance control input from ADSC(MN67702)
13	FEOUT	FE	Focus error signal output to ADSC(MN67702)
14	VREFL	VREFL	VREFL voltage output to ADSC(MN67702)
15	VREFH	VREFH	VREFH voltage output to ADSC(MN67702)
16	HDTYP	HDTYP	Selection input of V1.0 or V2.0 head (V1.0 = GND)
17	XTRON	/TRON	Tracking off hold input from ADSC(MN67702)
18	PULIN	PULIN	Selection input of DSL and PLL lock mode from ADSC(MN67702)
19	SEN	/CS FEP	Chip select input from CPU
20	SCK	/SCK	Serial clock input from CPU
21	STDI	SO	Serial data input from CPU
22	STNBY	SLEEP	Stand by mode control input from CPU
23			NC
24	RSCL	RSCL	Reference current source terminal
25			NC
26			NC
27			NC
28	TEOUT	TE	Tracking error signal output to ADSC(MN67702)
29	TKCFLT	TKCFLT	Tracking count detect filter terminal
30	TKCNT	TKC	Tracking count output to ADSC(MN67702)
31	MMPW	MMPW	Mono multi setup input for BDO and OFTR from ADSC(MN67702)
32	DOF	DOFO	Data slice offset adjustment input from ADSC(MN67702)
33	GND1	GND1	GND
34	VREF1	VREF	VREF
35	VREF3	VREF3	VREF3 reference voltage output
36	DFLTON	DFLTON	Invert output of filter amp
37	DFLTOP	DFLTOP	Normal output of filter amp
38	DSLIP	DSLIP	Data slice normal input
39	DSLIN	DSLIN	Data slice invert input
40	GND3	GND3	GND
41	DSLO	DSLO	Data slice output to ADSC(MN67702) and ODC(MN103005)
42	VCK8	VCK8	PLL single CLK output divided by 8 to ADSC(MN67702)
43	VCC3	VCC3	+5V
44	DTMONP	DTMONP	NC
45	DTMONN	DTMONN	NC
46	GND5	GND5	GND
47	RDTN	RDTN	PLL locked differential inverse RF output to ODC(MN103005)
48	RDTP	RDTP	PLL locked differential normal RF output to ODC(MN103005)
49	RDCKN	RDCKN	PLL locked differential inverse clock output to ODC(MN103005)
50	RDCKP	RDCKP	PLL locked differential normal clock output to ODC(MN103005)
51	VCC5	VCC5	+5V
52			GND

IC6 : AN8825NFHQ

Front End Processor (FEP)

No.	Port	Name	Function
53			Pulled up
54			GND
55	VCC4	VCC4	+5V
56	DSLFLT	DSLFLT	Data slice time constant terminal
57	ITDL	ITDL	Current ripple removal filter terminal of PLL jitter free
58	VCOIN	VCOIN	PLL VCO input
59	PLFLT	PLFLT	PLL high frequency filter terminal
60	PLFLT2	PLFLT2	PLL low frequency filter terminal
61	PCPO	PCPO	PLL phase gain setup terminal
62	FCPO	FCPO	PLL frequency gain setup terminal
63	GND4	GND4	GND
64	FUPDN	FUPDN	PLL frequency control input from ADSC(MN67702)
65	VREF5	VREF5	VREF5 reference voltage output
66	JITOUT	JITOUT	Jitter detect signal to ADSC(MN67702)
67	FC	FC	FC control input for filter from ADSC(MN67702)
68	BOOST	BOOST	Boost control input for filter from ADSC(MN67702)
69	OFTR	OFTR	OFTR output to ADSC(MN67702)
70	BDO	BDO	BDO output to ADSC(MN67702) and ODC(MN103005)
71	RFENV	RFENV	RF envelope output to ADSC(MN67702)
72	BOTTOM	BOTTOM	Bottom envelope detect filter terminal
73	PEAK	PEAK	Peak envelope detect filter terminal
74	AGCG	AGCG	AGC amp level control terminal
75	AGCO	AGCO	AGC amp level control terminal
76	VCC2	VCC2	+5V
77	VPWOFT	OFTLVL	Setup input of OFTR detect level from ADSC(MN67702)
78	VPWBDO	BCALVL	Setup input of BDO detect level from ADSC(MN67702)
79	TESTSG	TSTSG	Test signal input from ADSC(MN67702)
80	DCFLT	DCFLT	Capacitor terminal of RF amp filter
81	RFINP	RFINP	RF signal normal input
82	RFINN	RFINN	RF signal inverse input
83	RFON	RFON	Inverse output of total RF signal
84	RFOP	RFOP	Normal output of total RF signal
85	VREF2	VREF2	VREF2 reference voltage output
86	GND2	GND2	GND
87	RFAS2	AS2	Add amp output 2 to ADSC(MN67702)
88	RFAS1	AS1	Add amp output 1 to ADSC(MN67702)
89	VREF4	VREF4	VREF4 reference voltage output
90	VCC1	VCC1	+5V
91	VIN8	VIN8	3 beam sub(CD) input 2
92	VIN7	VIN7	3 beam sub(CD) input 1
93	VIN6	B3 + B4	Outer PD(B3 and B4) input 2
94	VIN5	B1 + B2	Outer PD(B1 and B2) input 1
95	VIN1	A1	Inner PD(A1) input 1
96	VIN2	A2	Inner PD(A2) input 2
97	VIN3	A3	Inner PD(A3) input 3
98	VIN4	A4	Inner PD(A4) input 4
99			NC
100			NC

IC7 : MN67702VRZC

Advanced Digital Servo Controller

No.	Port	Name	Function
1	PWM1B	PWM1B	NC
2	VSS	VSS	Digital GND
3	TEST3		NC
4	GIO12		NC
5	VDD	VDD	Digital +5V
6	TEST4		NC
7	TEST5		NC
8	TEST2		NC
9	MINTEST		NC
10	TEST6		NC
11	GIO13		NC
12	GIO14	LDONA	CD laser on/off control output to FEP(AN8825)
13	GIO15	LDONB	DVD laser on/off control output to FEP(AN8825)
14	TEST7		NC
15	TEST1		NC
16	TEST0		NC
17	XRESETIN	/RES ADSC	Power on reset input
18	VSS	VSS	Digital GND
19	CPUIRQ	/INT ADSC	Interruption output to CPU
20	CPSEN	/CS ADSC	Chip select input from CPU
21	CPSCK	/SCK	Serial clock input from CPU
22	CPSDTIN	SO	Serial data input from CPU
23	CPSDTOT	SI	Serial data output to CPU
24	SPDT	SPDT	CIRC spindle error serial data input from ODC(MN103005)
25	SPCK	SPCK	CIRC spindle error serial clock output to ODC(MN103005)
26	SPEN		NC
27	GIO10		NC
28	GIO11	SPEN	CIRC spindle error serial enable to ODC(MN103005)
29	XINTDSC		NC
30	GIO2		NC
31	GIO3	HAGUP2	Head amp gain change. H : gain up
32	VDD	VDD	Digital +5V
33	TESTA		NC
34	HFCLK	CLKOUT2	Clock input from ODC(MN103005). (13.5MHz)
35	TESTD		NC
36	GIO4	PULIN	DSL and PLL high boost output to FEP(AN8825)
37	GIO5	PLLOK	PLL OK input from ODC(MN103005)
38	VSS	VSS	Digital GND
39	GIO6	/TRON	Tracking on control output to FEP(AN8825) and ODC(MN103005)
40	GIO7		NC
41	GIO8		NC
42	GIO9		NC
43	PWMDA1	MMPW	Monostable multivibrator setup output of BDO and OFTR detect pulse to FEP(AN8825)
44	PWMDA2	GBAL	Tangential phase balance control output to FEP(AN8825)
45	PWMDA3	OFTLVL	OFTR slice level setup output to FEP(AN8825)
46	PWMDA4	TBAL	Tracking balance control output to FEP(AN8825)
47	PWMDA5		NC
48	PWMDA6	BCALVL	BDO slice level setup output to FEP(AN8825)
49	PWMDA7		NC
50	TSTSG	TSTSG	Self calibration output signal to FEP(AN8825)
51	VDD	VDD	Digital +5V
52	DSLO	DSLO	Binary data input from FEP(AN8825)
53	VCK8	VCK8	VCO clock divided by 8 from FEP(AN8825)
54	FUPDNT	FUPDN	Frequency up/down control output to FEP(AN8825)

IC7 : MN67702VRZC

Advanced Digital Servo Controller

No.	Port	Name	Function
55	VSS	VSS	Digital GND
56	AVSS1	AVSS1	Analog GND
57	VREFLA	VREFL	Lower reference voltage input from FEP(AN8825). (1.2V $\pm$ 0.1V)
58	VREFMA	VREF	Middle reference voltage input from FEP(AN8825). (2.2V $\pm$ 0.1V)
59	VREFHA	VREFH	Upper reference voltage input from FEP(AN8825). (3.2V $\pm$ 0.1V)
60	AVDD1	AVDD1	Analog +5V
61	AD10		Connect to capacitor of 10pF
62	AD11	VREF	Reference voltage input from FEP(AN8825)
63	AD12	TKDOF	Tracking drive voltage input from AN8813
64	VREFHD	VREFH	Analog upper voltage input from FEP(AN8825). (3.2V $\pm$ 0.1V)
65	VREFLD	VREFL	Analog lower voltage input from FEP(AN8825). (1.2V $\pm$ 0.1V)
66	VREF	VREF	Analog reference voltage. (2.2V $\pm$ 0.1V)
67	AD1	AS1	AS1 from FEP(AN8825)
68	AD2	FE	Focus error signal from FEP(AN8825)
69	AD3	RFENV	RF envelope signal from FEP(AN8825)
70	AD4	TE	Tracking error signal from FEP(AN8825)
71	AD5	AS2	AS2 from FEP(AN8825)
72	AD6	TG	Tangential phase error signal from FEP(AN8825)
73	AD7		Pulled up
74	AD8		Pulled up
75	AD9	JITOUT	Jitter detect input from FEP(AN8825)
76	AVDD2	AVDD2	Analog +5V
77	AVSS2	AVSS2	Analog GND
78	DA8	FBAL	Focus balance adjustment output to FEP(AN8825)
79	DA7	DOF1	CD data slice offset adjustment output to FEP(AN8825)
80	DA6	BOOST	Equalizer boost control output to FEP(AN8825)
81	DA5	FC	Equalizer cutoff frequency control output to FEP(AN8825)
82	DA4	DOF0	DVD data slice offset adjustment output to FEP(AN8825)
83	DA3	TRSDRV	Traverse drive output to AN8813
84	DA2	TRDRV	Tracking drive output to AN8813
85	DA1	FODRV	Focus drive output to AN8813
86	X4I	X4I	PLL phase error input for 4 times clock generator
87	VSS	VSS	Digital GND
88	X4O	X4O	PLL phase error output for 4 times clock generator
89	FG	FG	FG signal input from BA6849
90	BDO	BDO	BDO signal input from FEP(AN8825)
91	OFTR	OFTR	Off track signal input from FEP(AN8825)
92	TKCRS1	TKC	Track cross signal input from FEP(AN8825)
93	TKCRS2		NC
94	VDD	VDD	Digital +5V
95	PWMDA0	EC	Drive output to BA6849
96	GIO0	TRV-SW+	Switch input for traverse inner position detect
97	GIO1	ST/SP	Start/stop control output to spindle motor driver(BA6849)
98	PWM0A		NC
99	PWM0B		NC
100	PWM1A		NC

IC15 : MN103005AN2G

Optical Disc Controller (ODC)

No.	Port	Name	Function
1	HDD8	STDO	MPEG stream data output to PANTERA-DVD
2	HDD7		Pulled up
3	5VDD	5VDD	+5V
4	/RESET	/RESET	+5V
5	MASTER	STENABLE	Stream data enable input from PANTERA-DVD
6	VSS	VSS	GND
7	DRAMA4	DRAMA4	DRAM address bus
8	DRAMA3	DRAMA3	DRAM address bus
9	DRAMA5	DRAMA5	DRAM address bus
10	DRAMA2	DRAMA2	DRAM address bus
11	DRAMA6	DRAMA6	DRAM address bus
12	DRAMA1	DRAMA1	DRAM address bus
13	VDD	VDD	+3.3V
14	DRAMA7	DRAMA7	DRAM address bus
15	DRAMA0	DRAMA0	DRAM address bus
16	DRAMA8	DRAMA8	DRAM address bus
17	DRAMA10	DRAMA10	NC
18	DRAMA9	DRAMA9	NC
19	DRAMA11	DRAMA11	NC
20	VSS	VSS	GND
21	/DRAMOE	/DRAMOE	DRAM data output enable output
22	/RAS	/RAS	DRAM RAS output
23	/CAS1	/CAS1	DRAM CAS output
24	/DRAMWE	/DRAMWE	DRAM data write enable output
25	/CAS0	/CAS0	DRAM CAS output
26	DRAMD8	DRAMD8	DRAM data bus
27	DRAMD7	DRAMD7	DRAM data bus
28	VDD	VDD	+3.3V
29	DRAMD9	DRAMD9	DRAM data bus
30	DRAMD6	DRAMD6	DRAM data bus
31	DRAMD10	DRAMD10	DRAM data bus
32	DRAMD5	DRAMD5	DRAM data bus
33	DRAMD11	DRAMD11	DRAM data bus
34	DRAMD4	DRAMD4	DRAM data bus
35	DRAMD12	DRAMD12	DRAM data bus
36	VSS	VSS	GND
37	DRAMD3	DRAMD3	DRAM data bus
38	DRAMD13	DRAMD13	DRAM data bus
39	DRAMD2	DRAMD2	DRAM data bus
40	DRAMD14	DRAMD14	DRAM data bus
41	DRAMD1	DRAMD1	DRAM data bus
42	DRAMD15	DRAMD15	DRAM data bus
43	DRAMD0	DRAMD0	DRAM data bus
44	VDD	VDD	+3.3V
45	PVDD	PVDD	+3.3V
46	PVSS	PVSS	GND
47	/RST	/RES ODC	Power on reset input
48	MMOD	MMOD	Mode select (GND)
49	OSCO1	OSCO1	NC
50	OSCI1	OSCI1	27MHz clock input
51	VSS	VSS	GND
52	MONI0	MONI0	NC
53	MONI1	MONI1	NC
54	MONI2	MONI2	NC

IC15 : MN103005AN2G

Optical Disc Controller (ODC)

No.	Port	Name	Function
55	MONI3	MONI3	NC
56	SDATA	SDATA	Pulled up
57	SCLOCK	SCLOCK	Pulled up
58	VDD	VDD	+3.3V
59	TEHLD	TEHLD	NC
60	DTRD	DTRD	NC
61	IDGT	IDGT	NC
62	VSS	VSS	GND
63	RDCKP	RDCKP	PLL locked clock from FEP(AN8825)
64	RDCKN	RDCKN	PLL locked inverse clock from FEP(AN8825)
65	RDTP	RDTP	PLL locked RF signal from FEP(AN8825)
66	RDTN	RDTN	PLL locked inverse RF signal from FEP(AN8825)
67	DSLO	DSLO	Data slice signal data from FEP(AN8825)
68	VDD	VDD	+3.3V
69	PLLOK	PLLOK	Frame mark detect output to ADSC(MN67702)
70	IDHOLD	IDHOLD	NC
71	JMPINH	JMPINH	NC
72	LG	LG	NC
73	/TRON	/TRON	Tracking off hold input from ADSC(MN67702)
74	SPDT	SPDT	CIRC spindle error serial data from ADSC(MN67702)
75	SPCK	SPCK	CIRC spindle error serial clock input from ADSC(MN67702)
76	SPEN	SPEN	CIRC spindle error serial enable to ADSC(MN67702)
77	CPUADR17	AD17	Address bus input from CPU
78	CPUADR16	AD16	Address bus input from CPU
79	CPUADR15	AD15	Address bus input from CPU
80	VSS	VSS	GND
81	AVDD	AVDD	+3.3V
82	OUTLN	OUTLN	NC
83	OUTLP	OUTLP	NC
84	OUTRN	OUTRN	NC
85	OUTRP	OUTRP	NC
86	VCOF	VCOF	VCO control voltage input
87	IREF	IREF	VCO reference current input
88	AVSS	AVSS	GND
89	VDD	VDD	+3.3V
90	OSCI2	OSCI2	33.8688MHz clock input
91	OSCO2	OSCO2	NC
92	CPUADR14	AD14	Address bus input from CPU
93	CPUADR13	AD13	Address bus input from CPU
94	CPUADR12	AD12	Address bus input from CPU
95	VSS	VSS	GND
96	CPUADR11	AD11	Address bus input from CPU
97	CPUADR10	AD10	Address bus input from CPU
98	CPUADR9	AD9	Address bus input from CPU
99	CPUADR8	AD8	Address bus input from CPU
100	CPUADR7	AD7	Address bus input from CPU
101	CPUADR6	AD6	Address bus input from CPU
102	CPUADR5	AD5	Address bus input from CPU
103	CPUADR4	AD4	Address bus input from CPU
104	VDD	VDD	+3.3V
105	CPUADR3	AD3	Address bus input from CPU
106	CPUADR2	AD2	Address bus input from CPU
107	CPUADR1	AD1	Address bus input from CPU
108	CPUADR0	AD0	Address bus input from CPU

IC15 : MN103005AN2G

Optical Disc Controller (ODC)

No.	Port	Name	Function
109	/CS	/CS ODC	Chip select input from CPU
110	/WR	CPUWTL	Write control input from CPU
111	/RD	CPURD	Read control input from CPU
112	CPUDT7	D7	Data bus to CPU
113	CPUDT6	D6	Data bus to CPU
114	VSS	VSS	GND
115	CPUDT5	D5	Data bus to CPU
116	CPUDT4	D4	Data bus to CPU
117	CPUDT3	D3	Data bus to CPU
118	CPUDT2	D2	Data bus to CPU
119	CPUDT1	D1	Data bus to CPU
120	VDD	VDD	+3.3V
121	CPUDT0	D0	Data bus to CPU
122	/INT0	/INT0	NC
123	/INT1	/INT ODC	Interruption output to CPU
124	DASPST	DASPST	NC
125	CPDER2	CPDER2	NC
126	CPDET1	CPDET1	NC
127	BDO	BDO	BDO input from FEP(AN8825)
128	WAITODC	/WAIT ODC	Wait control output to CPU
129	/MRST	/MRST	NC
130	SPARI	FG	FG signal input from BA6849
131	TX	TX	NC
132	CLKOUT2	CLKOUT2	13.5MHz clock output to ADSC(MN67702)
133	VSS	VSS	GND
134	CLKOUT1	CLKOUT1	NC
135	5VDD	5VDD	+5V
136	/EJECT	/EJECT	+5V
137	/TRYCL	/TRYCL	+5V
138	/DASP	/DASP	NC
139	/CS3FX	/CS3FX	+5V
140	/CS1FX	/CS1FX	+5V
141	VDD	VDD	+5V
142	DA2	STCLK	MPEG stream clock output to PANTERA-DVD
143	DA0	DA0	NC
144	/PDIAG	/PDIAG	NC
145	VSS	VSS	GND
146	DA1	DA1	NC
147	/IOCS16	/IOCS16	NC
148	INTRQ	STVALID	MPEG stream valid output to PANTERA-DVD
149	/DMACK	/DMACK	Pulled up
150	5VDD	5VDD	+5V
151	IORDY	IORDY	NC
152	/IORD	DACCLK	NC
153	/IOWR	AVRTM	DVD sector start signal output to PANTERA-DVD
154	VSS	VSS	GND
155	DMARQ	DMARQ	NC
156	HDD15	STD7	MPEG stream data output to PANTERA-DVD
157	HDD0	HDD0	Pulled up
158	VSS	VSS	GND
159	HDD14	STD6	MPEG stream data output to PANTERA-DVD
160	5VDD	5VDD	+5V
161	HDD1	HDD1	Pulled up
162	HDD13	STD5	MPEG stream data output to PANTERA-DVD

IC15 : MN103005AN2G**Optical Disc Controller (ODC)**

No.	Port	Name	Function
163	HDD2	HDD2	Pulled up
164	VSS	VSS	GND
165	HDD12	STD4	MPEG stream data output to PANTERA-DVD
166	VDD	VDD	+5V
167	HDD3	HDD3	Pulled up
168	HDD11	STD3	MPEG stream data output to PANTERA-DVD
169	VSS	VSS	GND
170	HDD4	HDD4	Pulled up
171	HDD10	STD2	MPEG stream data output to PANTERA-DVD
172	HDD5	HDD5	Pulled up
173	5VDD	5VDD	+5V
174	HDD9	STD1	MPEG stream data output to PANTERA-DVD
175	VSS	VSS	GND
176	HDD6	HDD6	Pulled up

IC44 : HD6417014F28**Front End Control CPU**

No.	Port	Name	Function
1	PE14/DACK0//AH	/RESET	Hard reset output for except CPU
2	PE15/DACK1	/SUBCODE-MATCH	Subcode match output
3	VSS	VSS	GND
4	A0	AD0	Address bus
5	A1	AD1	Address bus
6	A2	AD2	Address bus
7	A3	AD3	Address bus
8	A4	AD4	Address bus
9	A5	AD5	Address bus
10	A6	AD6	Address bus
11	A7	AD7	Address bus
12	A8	AD8	Address bus
13	A9	AD9	Address bus
14	A10	AD10	Address bus
15	A11	AD11	Address bus
16	A12	AD12	Address bus
17	A13	AD13	Address bus
18	A14	AD14	Address bus
19	A15	AD15	Address bus
20	A16	AD16	Address bus
21	VCC	VCC	+5V
22	A17	AD17	Address bus
23	VSS	VSS	GND
24	PB2//IRQ0//RAS	/INT ADSC	Interruption input from ADSC(MN67702)
25	PB3//IRQ1//CASL	/INT ODC	Interruption input from ODC(MN103005)
26	PB4//IRQ2//CASH	LED1	Output signal to monitor LED1
27	VSS	VSS	GND
28	PB5//IRQ3/RDWR	/TRANSMIT ENABLE	Data transmit enable input from PANTERA-DVD
29	PB6/A18	AD18	Address bus
30	PB7/A19	LED2	Output signal to monitor LED2
31	PB8//IRQ6/A20//WAIT	/CPUWAIT	Wait signal input from ODC(MN103005)
32	PB9//IRQ7/A21	/CS EEPROM	Chip select output for EEPROM

IC44 : HD6417014F28
Front End Control CPU

No.	Port	Name	Function
33	VSS	VSS	GND
34	/RD	/CPURD	Control signal output for reading
35	/WDTOVF	/WDTOVF	Watched timer overflow output
36	/WRH	/CPUWT	Control signal output for upper byte writing
37	VCC	VCC	+5V
38	/WRL	/CPUWTL	Control signal output for lower byte writing
39	VSS	VSS	GND
40	/CS1	/CS RAM	Chip select output for external RAM
41	/CS0	/CS ROM	Chip select output for external ROM
42	PA9/TCLKD//IRQ3	/CS ADSC	Chip select output for ADSC(MN67702)
43	PA8/TCLKC//IRQ2	/CS FEP	Chip select output for FEP(AN8825)
44	PA7/TCLKB//CS3	/CS ODC	Chip select output for ODC(MN103005)
45	PA6/TCLKA//CS2	LED3	Output signal to monitor LED3
46	PA5/SCK1//DREQ1//IRQ1	/SCK	Serial clock output for serial interface
47	PA4/TXD1	SO	Serial data output for serial interface
48	PA3/RXD1	SI	Serial data input for serial interface
49	PA2/SCK0//DREQ0//IRQ0	SSPCLK0I	Serial clock input from PANTERA-DVD
50	PA1/TXD0	TXD0	Serial data output to PANTERA-DVD
51	PA0/RXD0	RXD0	Serial data input from PANTERA-DVD
52	D15	D15	Data bus
53	D14	D14	Data bus
54	D13	D13	Data bus
55	VSS	VSS	GND
56	D12	D12	Data bus
57	D11	D11	Data bus
58	D10	D10	Data bus
59	D9	D9	Data bus
60	D8	D8	Data bus
61	VSS	VSS	GND
62	D7	D7	Data bus
63	D6	D6	Data bus
64	D5	D5	Data bus
65	VCC	VCC	+5V
66	D4	D4	Data bus
67	D3	D3	Data bus
68	D2	D2	Data bus
69	D1	D1	Data bus
70	D0	D0	Data bus
71	VSS	VSS	GND
72	XTAL	XTAL	Connect to crystal
73	MD3	MD3	Mode setup input (+5V)
74	EXTAL	EXTAL	Connect to crystal
75	MD2	MD2	Mode setup input (GND)
76	NMI	NMI	Pull up
77	VCC	VCC	+5V
78	MD1	MD1	Mode setup input (GND)
79	MD0	MD0	Mode setup input (+5V). When MD3 = H, MD2 = L, MD1 = L, MD0 = H. Internal ROM is invalid. CS0 space is 16bit space. Clock frequency is 4 times of input clock.
80	PLLVC	PLLVC	Power input of internal PLL oscillator (+5V)
81	PLLCAP	PLLCAP	Capacitor terminal of internal PLL oscillator
82	PLLVSS	PLLVSS	GND of internal PLL oscillator (GND)
83	PA15/CK	LED0	Output signal to monitor LED0
84	/RES	/RES	Power on reset input

IC44 : HD6417014F28

Front End Control CPU

No.	Port	Name	Function
85	PE0/TIOC0A//DREQ0	CL UP	Clamp up control output
86	PE1/TIOC0B//DACK0	CL DOWN	Clamp down control output
87	PE2/TIOC0C//DREQ1	CLOSE	Tray close control output
88	PE3/TIOC0D//DACK1	OPEN	Tray open control output
89	PE4/TIOC1A	/CS FLD	Chip select output for FL display driver(CXP2201)
90	VSS	VSS	GND
91	PF0/AN0	DIPSW	DIP SW input
92	PF1/AN1	SUM	A/D input
93	PF2/AN2	CLSW	Tray close switch input
94	PF3/AN3	OPSW	Tray open switch input
95	PF4/AN4	DOWNSW	Clamp down switch input
96	PF5/AN5	UPSW	Clamp up switch input
97	AVSS	AVSS	GND
98	PF6/AN6	TBL POS	Table position input
99	PF7/AN7	NTSC/PAL	NTSC/PAL and CVBS & S-video/YPbPr select switch input
100	AVCC	AVCC	+5V
101	VSS	VSS	GND
102	PE5/TIOC1B	/TRANSMIT REQUEST	Data transmit request output to PANTERA-DVD
103	V CC	VCC	+5V
104	PE6/TIOC2A	TBL R	Control output of table clockwise rotation
105	PE7/TIOC2B	TBL L	Control output of table counterclockwise rotation
106	PE8	SLEEP	Head reset output to FEP
107	PE9	ZERO	Zero detect input from PCM1716E
108	PE10	DIPSW bit1	DIP SW bit1 input
109	VSS	VSS	GND
110	PE11	/CS 9223	Strobe signal output for TC9223
111	PE12	WIDE	Control output for wide screen television
112	PE13	/RES PANTERA	Head reset output to PANTERA-DVD

IC305 : NDV8401

PANTERA-DVD

No.	Port	Name	Function
1	MD5	MD5	SDRAM data bus
2	MD6	MD6	SDRAM data bus
3	MD7	MD7	SDRAM data bus
4	MD8	MD8	SDRAM data bus
5	VSS	VSS	GND
6	MD9	MD9	SDRAM data bus
7	MD10	MD10	SDRAM data bus
8	MD11	MD11	SDRAM data bus
9	MD12	MD12	SDRAM data bus
10	VDD	VDD	+3.3V
11	MD13	MD13	SDRAM data bus
12	MD14	MD14	SDRAM data bus
13	MD15	MD15	SDRAM data bus
14	DQM1	DQM1	SDRAM data byte enable
15	VSS	VSS	GND
16	MA9	MA9	SDRAM address bus
17	MA8	MA8	SDRAM address bus
18	MA7	MA7	SDRAM address bus
19	MA6	MA6	SDRAM address bus
20	VDD	VDD	+3.3V
21	MA5	MA5	SDRAM address bus
22	MA4	MA4	SDRAM address bus
23	MA3	MA3	SDRAM address bus
24	CS1	CS1	SDRAM chip select of bank 2
25	MCLK	MCLK	SDRAM clock
26	VSS	VSS	GND
27	MA2	MA2	SDRAM address bus
28	MA1	MA1	SDRAM address bus
29	MA0	MA0	SDRAM address bus
30	MA10	MA10	SDRAM address bus
31	VDD	VDD	+3.3V
32	MA11	MA11	SDRAM address bus
33	CS0	CS0	SDRAM chip select of bank 1
34	RAS	RAS	SDRAM row address strobe
35	CAS	CAS	SDRAM column address strobe
36	VSS	VSS	GND
37	WE	WE	SDRAM write enable
38	DQM0	DQM0	SDRAM data byte enable
39	DQM2	DQM2	SDRAM data byte enable
40	MD16	MD16	SDRAM data bus
41	VDD	VDD	+3.3V
42	MD17	MD17	SDRAM data bus
43	MD18	MD18	SDRAM data bus
44	MD19	MD19	SDRAM data bus
45	MD20	MD20	SDRAM data bus
46	MD21	MD21	SDRAM data bus
47	VSS	VSS	GND
48	MD22	MD22	SDRAM data bus
49	MD23	MD23	SDRAM data bus
50	MD24	MD24	SDRAM data bus
51	MD25	MD25	SDRAM data bus
52	VDD	VDD	+3.3V
53	MD26	MD26	SDRAM data bus

IC305 : NDV8401

PANTERA-DVD

No.	Port	Name	Function
54	MD27	MD27	SDRAM data bus
55	MD28	MD28	SDRAM data bus
56	VSSDAC	VSSDAC	GND
57	MD29	MD29	SDRAM data bus
58	MD30	MD30	SDRAM data bus
59	MD31	MD31	SDRAM data bus
60	DQM3	DQM3	SDRAM data byte enable
61	CS2	CS2	NC
62	VDD	VDD	+3.3V
63	SCEN	SCEN	NC
64	VSSDAC	VSSDAC	GND
65	SPDIF	SPDIF	S/PDIF digital audio output
66	VDD	VDD	+3.3V
67	PCMCLK	PCMCLK	PCM1716 PCM sampling clock frequency
68	VSSDAC	VSSDAC	GND
69	AIN	AIN	Pulled down
70	AOUT3	AOUT3	Serial audio output data to PCM1716 for Left and Right channel for simultaneous 5.1 and down-mixeds
71	AOUT2	AOUT2	Serial audio output data to PCM1716 for surround Left and Right channel
72	AOUT1	AOUT1	Serial audio output data to PCM1716 for Center and LFE channel
73	AOUT0	AOUT0	Serial audio output data to PCM1716 for Left and Right channel
74	ACLK	ACLK	Audio interface serial data clock
75	LRCK	LRCK	Left/Right channel clock, determine word and channel destination
76	VDD	VDD	+3.3V
77	Reserved	Reserved	
78	VSSDAC	VSSDAC	DAC digital GND
79	C/Cb	C/Cb	Chrominance video output for NTSC/PAL S-video or Cb video output for component
80	Y	Y	Luminance video output for NTSC/PAL S-video and YCbCr
81	IOM	IOM	Cascaded DAC differential output used to dump current into external resistor for power
82	VSSA	VSSA	GND
83	VREF	VREF	Input voltage reference(1.2V typ.) for output DACs
84	VAA	VAA	+3.3V
85	CVBS/Cr	CVBS/Cr	Composite video output for NTSC/PAL or Cr video output for component
86	RSET	RSET	Current setting resistor of output DACs
87	COMP	COMP	Compensation capacitor connection
88	VSSDAC	VSSDAC	GND
89	VDDDAC	VDDDAC	+3.3V
90	VDD	VDD	+3.3V
91	TXD1	TXD1	NC
92	RXD1	IR	Input from optic detector
93	SSPIN1/BAUD1	SSPIN1	Data input from serial communication device
94	SSPOUT1/DTR1	SSPOUT1	Data output to serial communication device
95	SSPCLK1/CTS1	SSPCLK1	Clock output to serial communication device
96	SSPCLK0/RTS1	SSPCLK0	Clock output to HD6417014F28
97	VSS	VSS	GND
98	SSPIN0/BAUD0	SSPIN0	Data input from HD6417014F28
99	SSPOUT0/DTR0	SSPOUT0	Data output to HD6417014F28
100	TXD0	TXD0	UART serial data output to debug port connector
101	RXD0	RXD0	UART serial data input from debug port connector
102	CTS0	CTS0	NC
103	RTS0	RTS0	NC

IC305 : NDV8401

PANTERA-DVD

No.	Port	Name	Function
104	VDD	VDD	+3.3V
105	AD31	PAD31	μP multiplexed address/data bus
106	AD30	PAD30	μP multiplexed address/data bus
107	AD29	PAD29	μP multiplexed address/data bus
108	AD28	PAD28	μP multiplexed address/data bus
109	AD27	PAD27	μP multiplexed address/data bus
110	VSS	VSS	GND
111	AD26	PAD26	μP multiplexed address/data bus
112	AD25	PAD25	μP multiplexed address/data bus
113	AD24	PAD24	μP multiplexed address/data bus
114	PWE3	PWE3	Byte write enable for FLASH
115	AD23	PAD23	μP multiplexed address/data bus
116	VDD	VDD	+3.3V
117	AD22	PAD22	μP multiplexed address/data bus
118	AD21	PAD21	μP multiplexed address/data bus
119	AD20	PAD20	μP multiplexed address/data bus
120	AD19	PAD19	μP multiplexed address/data bus
121	AD18	PAD18	μP multiplexed address/data bus
122	VSS	VSS	GND
123	AD17	PAD17	μP multiplexed address/data bus
124	AD16	PAD16	μP multiplexed address/data bus
125	PWE2	PWE2	Byte write enable for FLASH
126	AD15	PAD15	μP multiplexed address/data bus
127	AD14	PAD14	μP multiplexed address/data bus
128	VDD	VDD	+3.3V
129	SCLK	SCLK	NC
130	ACK	ACK	Ready/busy input from FLASH
131	AD13	PAD13	μP multiplexed address/data bus
132	AD12	PAD12	μP multiplexed address/data bus
133	AD11	PAD11	μP multiplexed address/data bus
134	VSS	VSS	GND
135	AD10	PAD10	μP multiplexed address/data bus
136	AD9	PAD9	μP multiplexed address/data bus
137	AD8	PAD8	μP multiplexed address/data bus
138	PWE1	PWE1	Byte write enable for FLASH
139	AD7	PAD7	μP multiplexed address/data bus
140	VDD	VDD	+3.3V
141	AD6	PAD6	μP multiplexed address/data bus
142	AD5	PAD5	μP multiplexed address/data bus
143	AD4	PAD4	μP multiplexed address/data bus
144	AD3	PAD3	μP multiplexed address/data bus
145	AD2	PAD2	μP multiplexed address/data bus
146	VSS	VSS	GND
147	AD1	PAD1	μP multiplexed address/data bus
148	AD0	PAD0	μP multiplexed address/data bus
149	PWE0	PWE0	Byte write enable for FLASH
150	ALE	ALE	Address Latch Enable
151	VDD	VDD	+3.3V
152	LA0	PA0	Latched Address
153	LA1	PA1	Latched Address
154	LA2	PA2	Latched Address
155	LA3	PA3	Latched Address
156	VSS	VSS	GND
157	LAST	LAST	NC

IC305 : NDV8401

PANTERA-DVD

No.	Port	Name	Function
158	WR	WR	NC
159	RD	RD	Read
160	PCS0	PCS0	Chip select output for FLASH
161	PCS1	PCS1	NC
162	VDD	VDD	+3.3V
163	PCS2	/CS-LED	Strobe signal output for NJU3711
164	PCS3	PCS3	NC
165	PCS4	CS-595	Latch signal output to 74HC595
166	SRST	SRST	NC
167	XINT4	XINT4	NC
168	XINT3	XINT3	NC
169	XINT2	XINT2	NC
170	VSS	VSS	GND
171	XINT1	/TRANSMIT-ENABLE	Transmit enable interruption from HD6417014
172	XINT0	/SUBCODE-MATCH	SUBCODE match interruption from HD6417014
173	GPIO0	/TRANSMIT-REQUEST	Transmit request to HD6417014
174	GPIO1	/CS-FLD	Chip select output for FL driver
175	GPIO2	STENABLE	Stream enable output to MN103005
176	GPIO3	AVRTM	DVD sector start
177	GPIO4	/CS-ADAC	Chip select output for PCM1716
178	VDD	VDD	+3.3V
179	DCLK	STCLK	MPEG stream clock input from MN103005
180	GPIO5		NC
181	DSTB	STVALID	MPEG stream valid input from MN103005
182	SD0	SDT0	MPEG stream data input from MN103005
183	VSS	VSS	GND
184	GPIOD1	STD1	MPEG stream data input from MN103005
185	GPIOD2	STD2	MPEG stream data input from MN103005
186	GPIOD3	STD3	MPEG stream data input from MN103005
187	GPID4	STD4	MPEG stream data input from MN103005
188	GPID5	STD5	MPEG stream data input from MN103005
189	GPID6	STD6	MPEG stream data input from MN103005
190	GPID7	STD7	MPEG stream data input from MN103005
191	VDD	VDD	+3.3V
192	RSTP	/RESET-PANTERA	Hard reset input
193	SCMD	SCMD	NC
194	CLKVSS	CLKVSS	GND
195	CLKVDD	CLKVDD	+3.3V
196	ACLKVDD	ACLKVDD	+3.3V
197	CAP1	CAP1	Audio clock PLL capacitor 0 connection
198	CAP0	CAP0	Audio clock PLL capacitor 1 connection
199	ACLKVSS	ACLKVSS	GND
200	CXI	CXI	Crystal input pin
201	CXO	CXO	Crystal output pin
202	ACLKVSS	ACLKVSS	GND
203	MD0	MD0	SDRAM data bus
204	MD1	MD1	SDRAM data bus
205	MD2	MD2	SDRAM data bus
206	MD3	MD3	SDRAM data bus
207	MD4	MD4	SDRAM data bus
208	VDD	VDD	+3.3V

IC320 : TC9223F

Synthesizer PLL for Communication

No.	Port	Name	Function
1	GND	GND	GND
2	XT	XT	512fs clock input from TC7W157FU
3	/XT	/XT	NC
4	PO	PO	Select signal output to TC7W157FU H : 48kHz L : 44.1kHz
5	TEST	TEST	NC
6	PIN	PIN	64fs clock input from PANTERA-DVD
7	PSC	PSC	NC
8	CK	/SCK	Serial clock input from CPU
9	DATA	SO	Serial data input from CPU
10	STB	/CS 9223	Strobe signal input from CPU
11	GND	GND	GND
12	LD	/CS 595	NC
13	L	L	NC
14	H	H	NC
15	DO	DO	Phase error output
16	VDD	VDD	+5V

IC601 : TC74HC595AF

8-Bit Shift Registers with Output Latches

No.	Port	Name	Function
1	QB	MUTE CNT	Mute control output for center channel
2	QC	MUTE SL&SR	Mute control output for surround L and R channel
3	QD		NC
4	QE		NC
5	QF	MUTE L&R	Mute control output for L and R channel
6	QG		NC
7	QH	MUTE DML&DMR	Mute control output for down mixed L and R channel
8	GND	GND	GND
9	QHH	QHH	NC
10	/SCLR	/RESET DAC&FL	Hard reset input
11	SCK	SSPCLK1	Serial clock input from PANTERA-DVD
12	RCK	/CS 595	Latch signal input from CPU
13	/G	/G	GND
14	SI	SSPOUT1	Serial data input from PANTERA-DVD
15	QA	MUTE SW	Mute control output for subwoofer channel
16	VCC	VCC	+5V

IC781 : CXP2201AS
Display Control Driver

Pin No.	Pin Name	I/O	Function
1	EXT	I	Ceramic connecting terminal for system clock oscillation.
2	XT	O	When using an external clock, data is input to EXT and XT is left open.
3	VSS	—	Connect to VSS.
4~7	K0~K3	I	Key input terminal (with built-in pull-down resistor)
8	VDD	—	Connect to VDD.
9~17	S0~S8	O	Output terminal exclusively for segment (with built-in pull-down resistor)
18~24	S9/T14~S15/T8	O	Output terminal for both segment/timing (with built-in pull-down resistor)
25~32	T7~T0	O	Output terminal exclusively for timing (with built-in pull-down resistor)
33	VFDP		Load power supply terminal for FDP
	NC	—	OPEN
34~36	P0~P2	I/O	Port input/output terminal (large current output)
37	KD	O	Key input detect terminal
38	S0	O	Serial data output terminal
39	S1	I	Serial data input terminal
40	CLK	I	Shift clock input terminal
41	CS	I	Chip select input terminal
42	RST	I/O	Reset terminal (with built-in pull-up resistor and power on reset circuit)

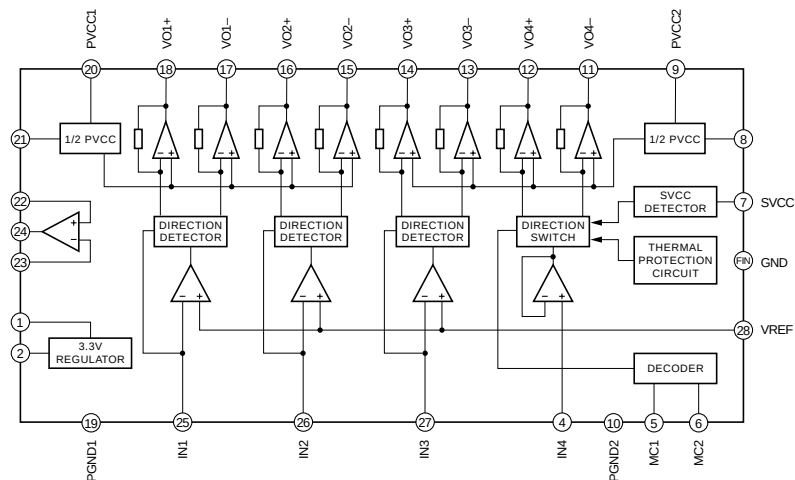
IC782 : NJU3711
8-Bit Serial-Parallel Converter

No.	Port	Name	Function
1	P3	P3	Drive output of DISC 5 LED
2	P4	P4	Drive output of DISC 2 LED
3	P5	P5	Drive output of DISC 4 LED
4	VSS	VSS	GND
5	P6	P6	Drive output of DISC 1 LED
6	P7	P7	Drive output of DISC 3 LED
7	P8	P8	NC
8	DATA	DATA	Serial data input from PANTERA-DVD
9	CLK	CLK	Serial clock input from PANTERA-DVD
10	/STB	/STB	Strobe signal input from PANTERA-DVD
11	/CLK	/CLK	Hard reset input
12	P1	P1	NC
13	P2	P2	NC
14	VDD	VDD	+5V

IC1 : AN8813NSB

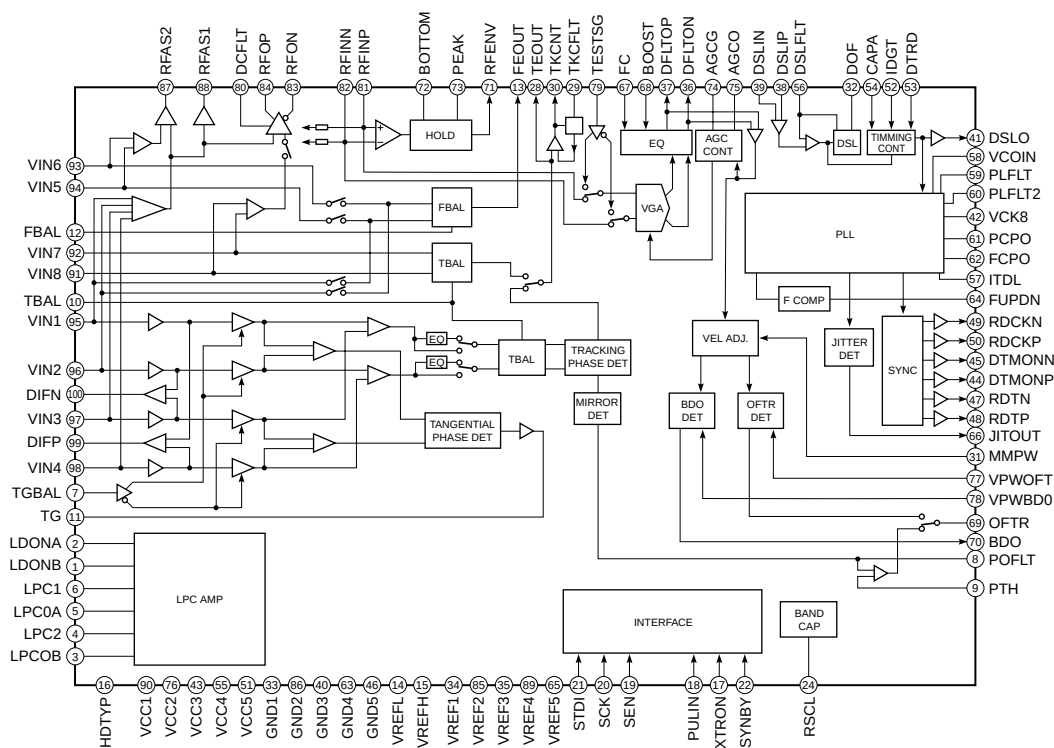
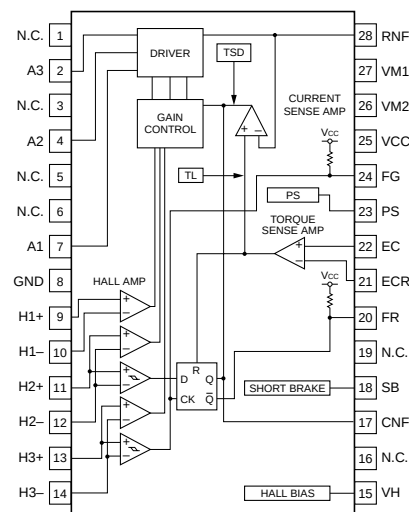
IC6 : AN8825NFHO

Front End Processor (FEP)

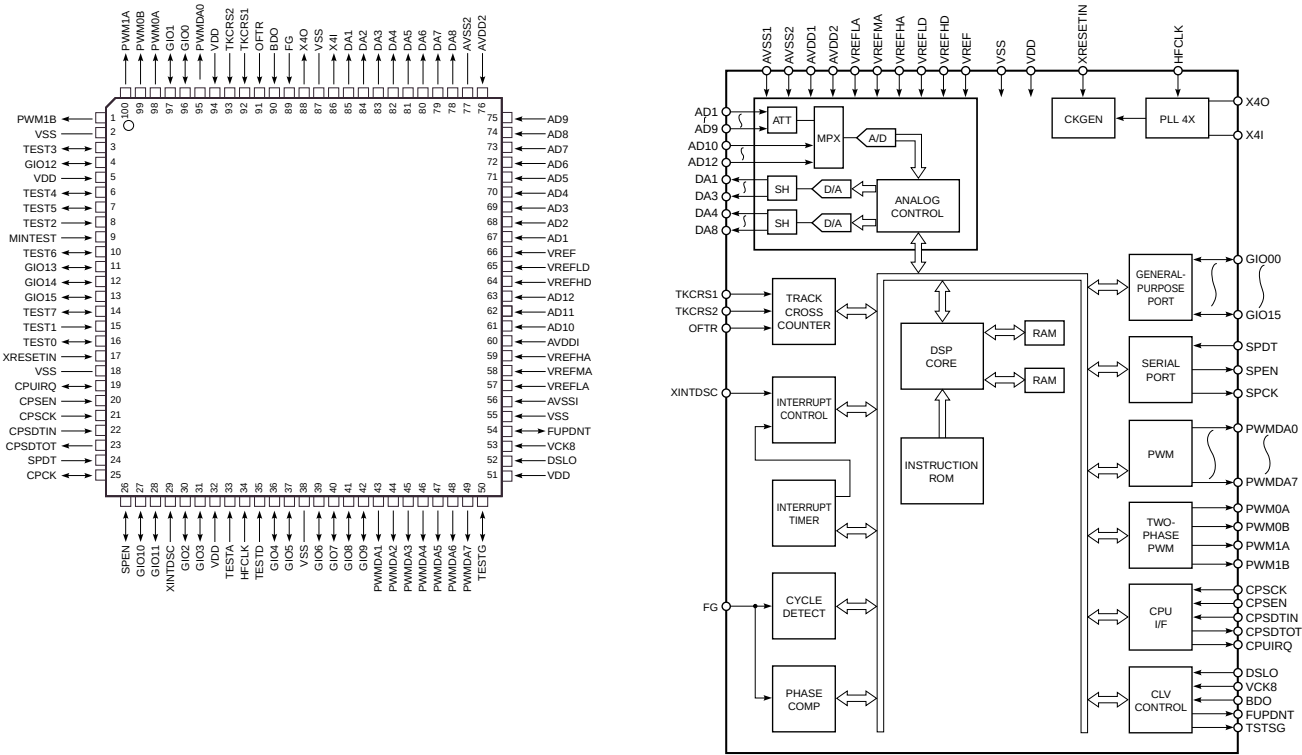


IC2 : BA6849EP-F2

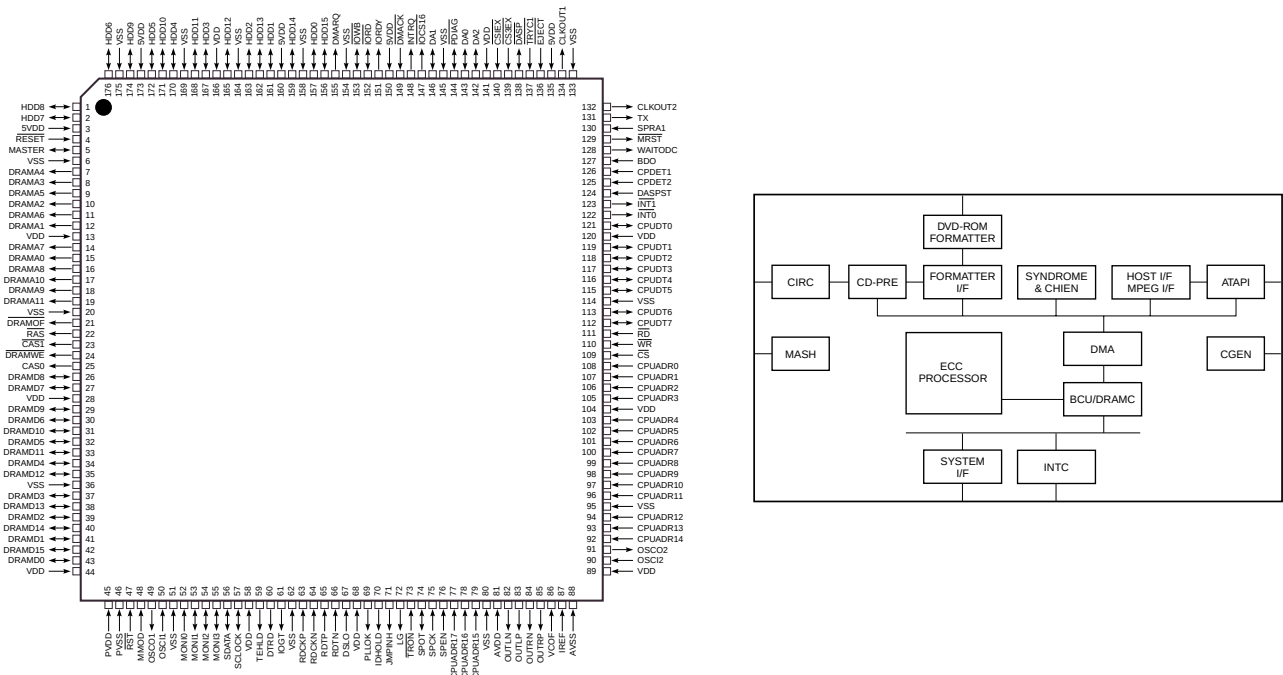
Motor Driver



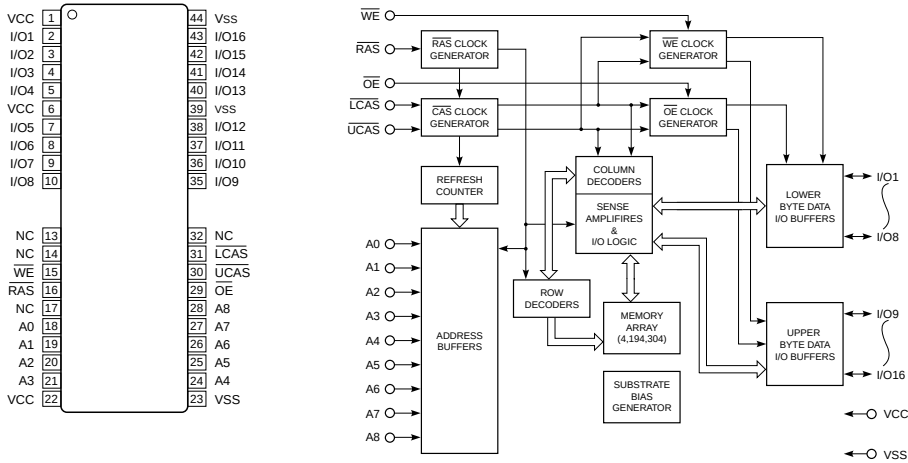
IC7 : MN67702VRZC
Advanced Digital Servo Controller



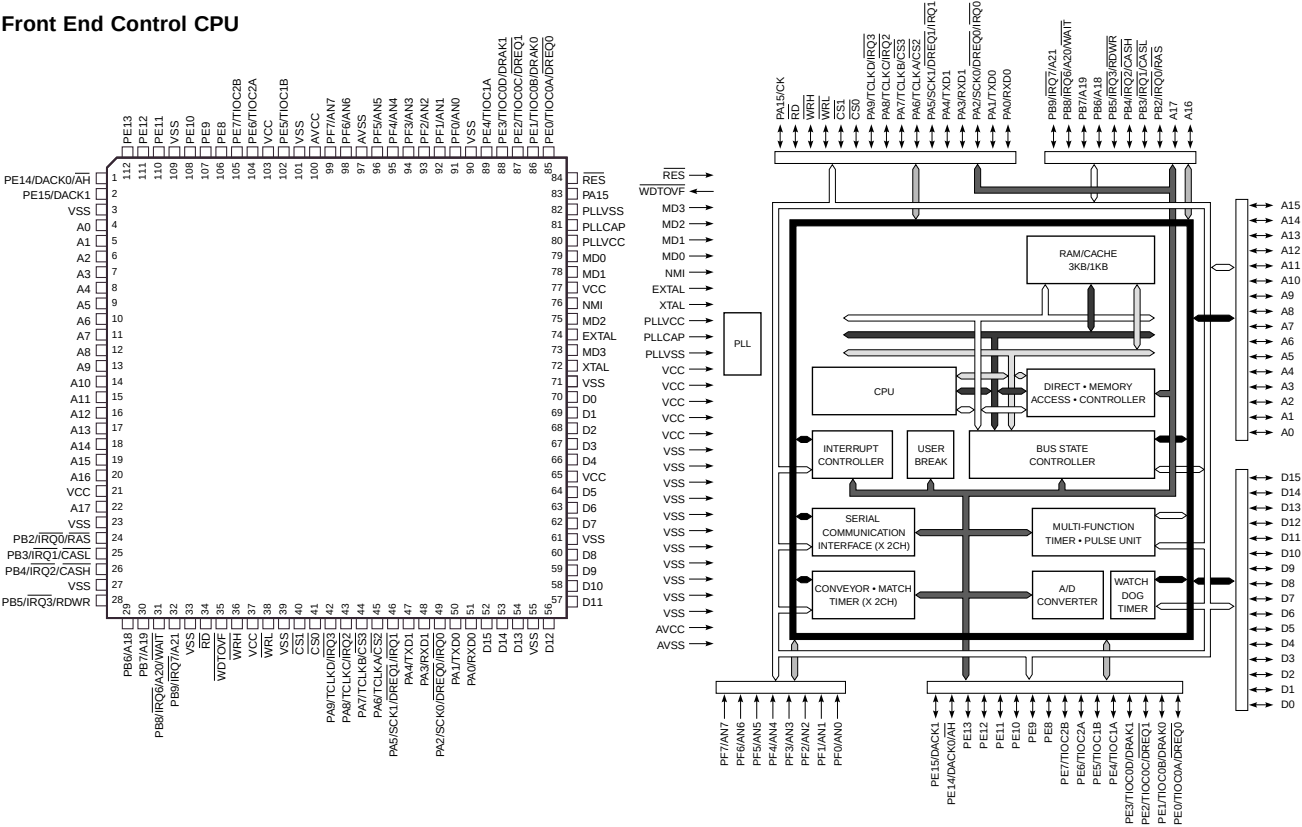
IC15 : MN103005AN2G
Optical Disc Controller (ODC)



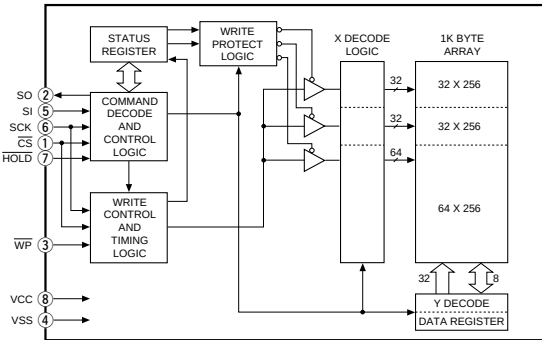
IC21 : GLT440L16-50TC
256K x 16 Bit Dynamic RAM



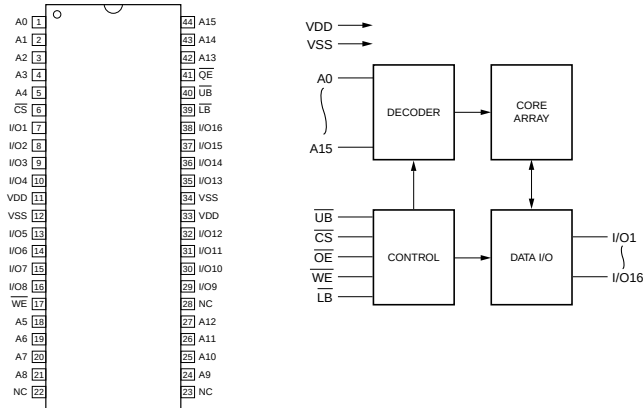
IC44 : HD6417014F28
Front End Control CPU



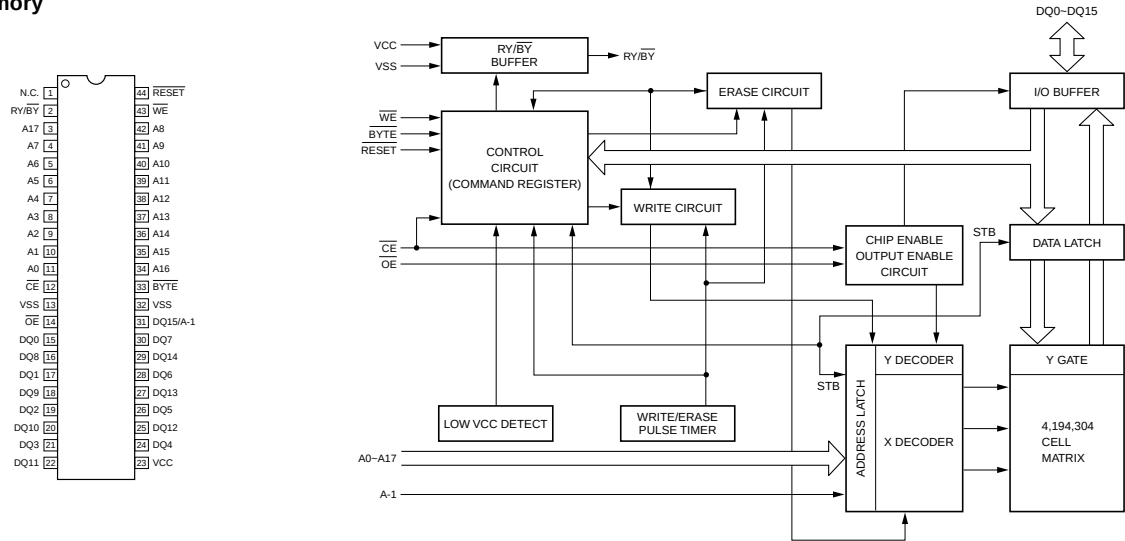
IC48 : X25330S8T2
4K x 8 Bit EEPROM



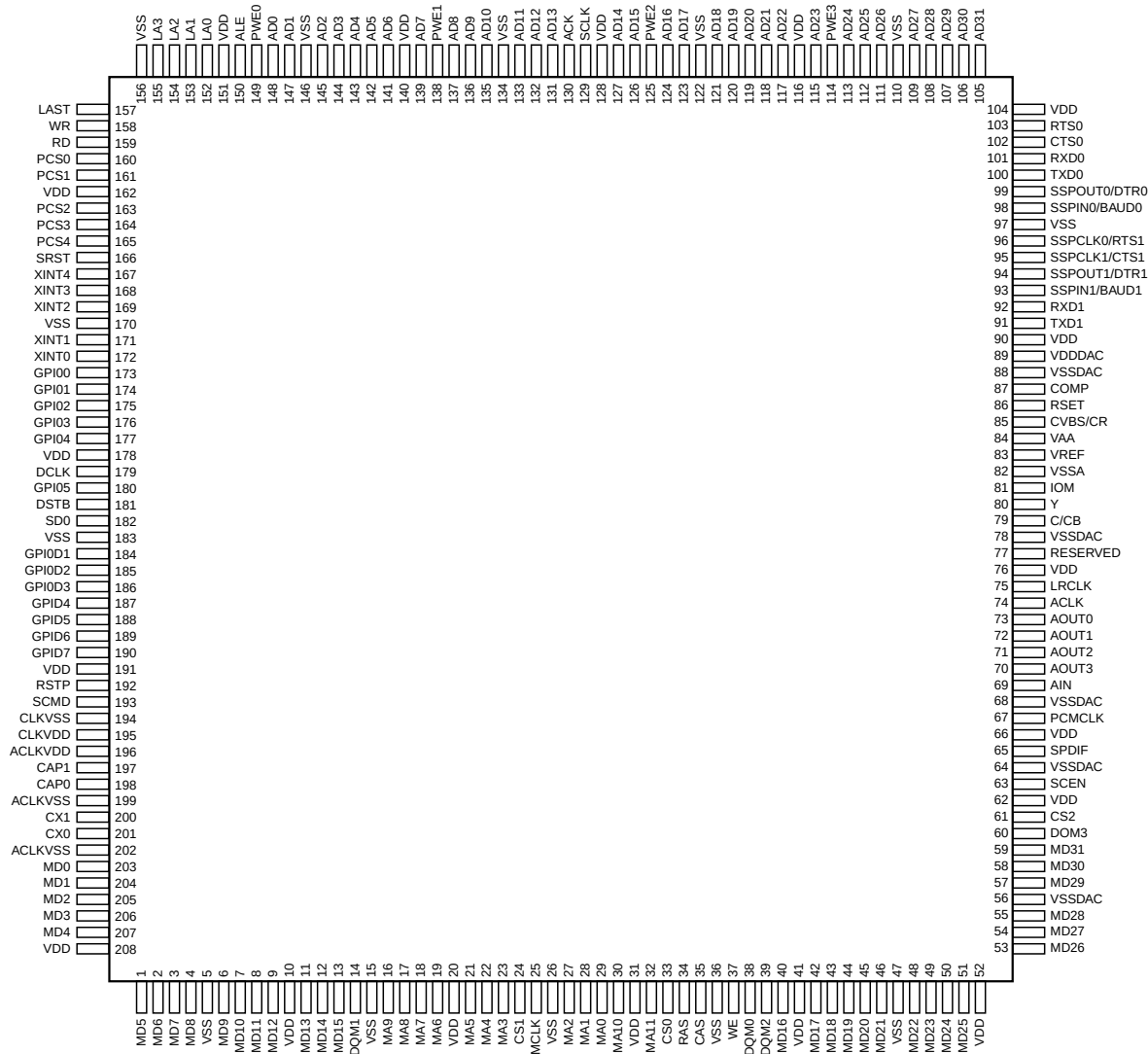
IC49 : W26010AJ-15
64K x 16 Bit Static RAM



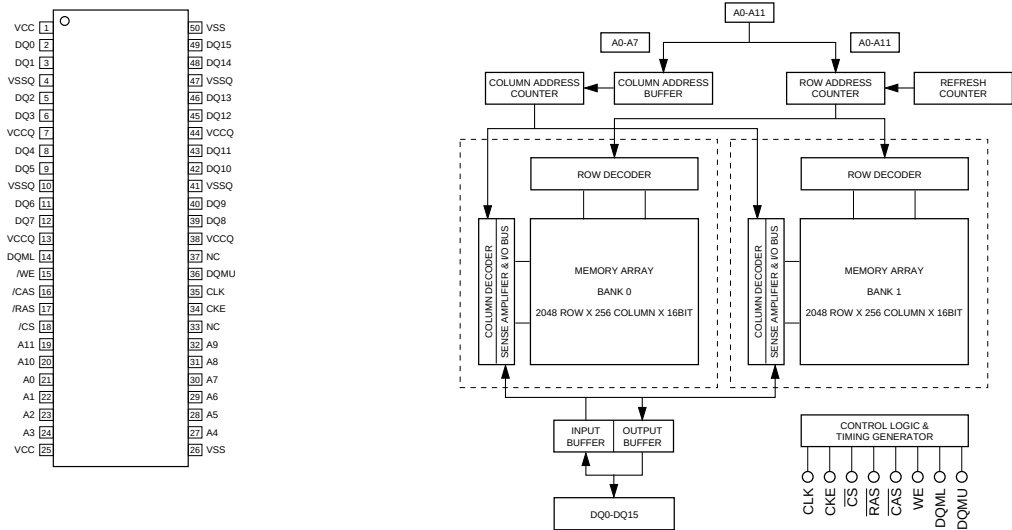
IC51 : MBM29F400BC-70PF
4M Bit Flash Memory



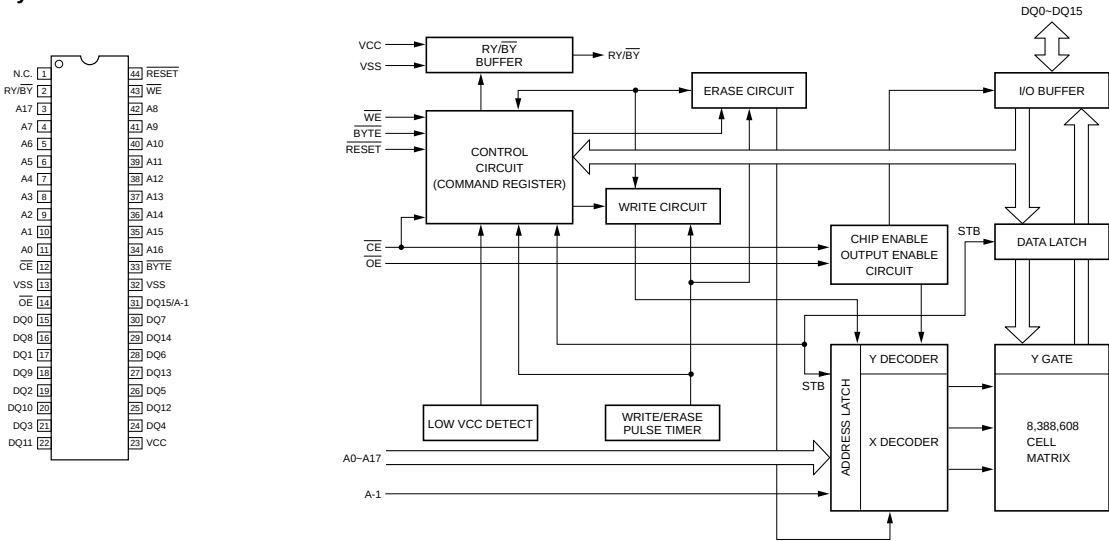
IC305 : NDV8401
PANTERA-DVD



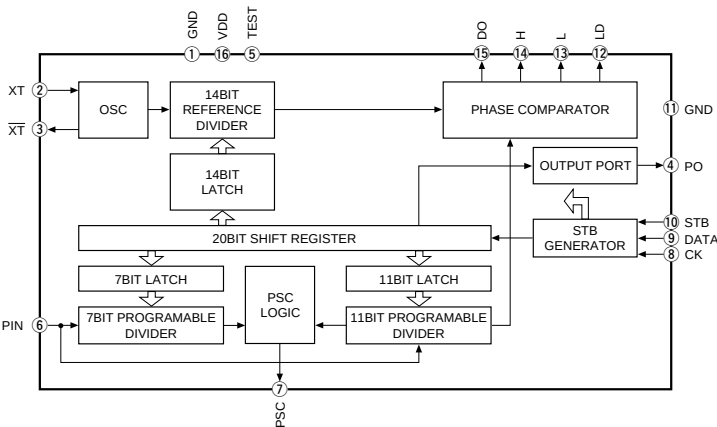
IC303, 306 : GM72V161621CT -10K
524,288 Words x 16 Bit x 2 Bank Dynamic RAM



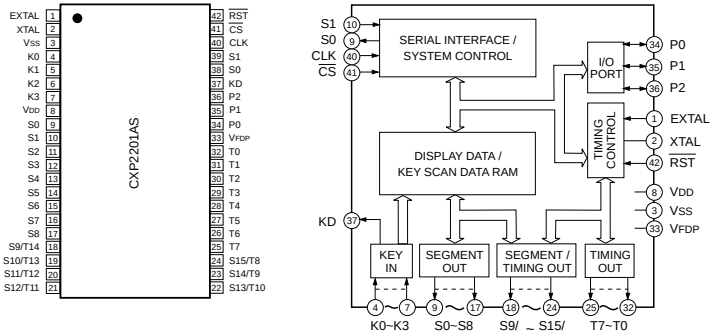
IC304, 307 : MBM29F800BA-90PF
8M Bit Flash Memory



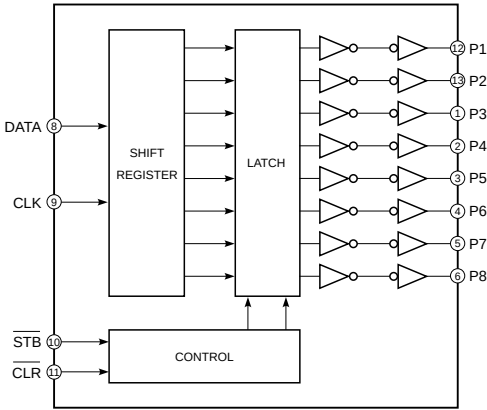
IC320 : TC9223F
Synthesizer PLL for Communication



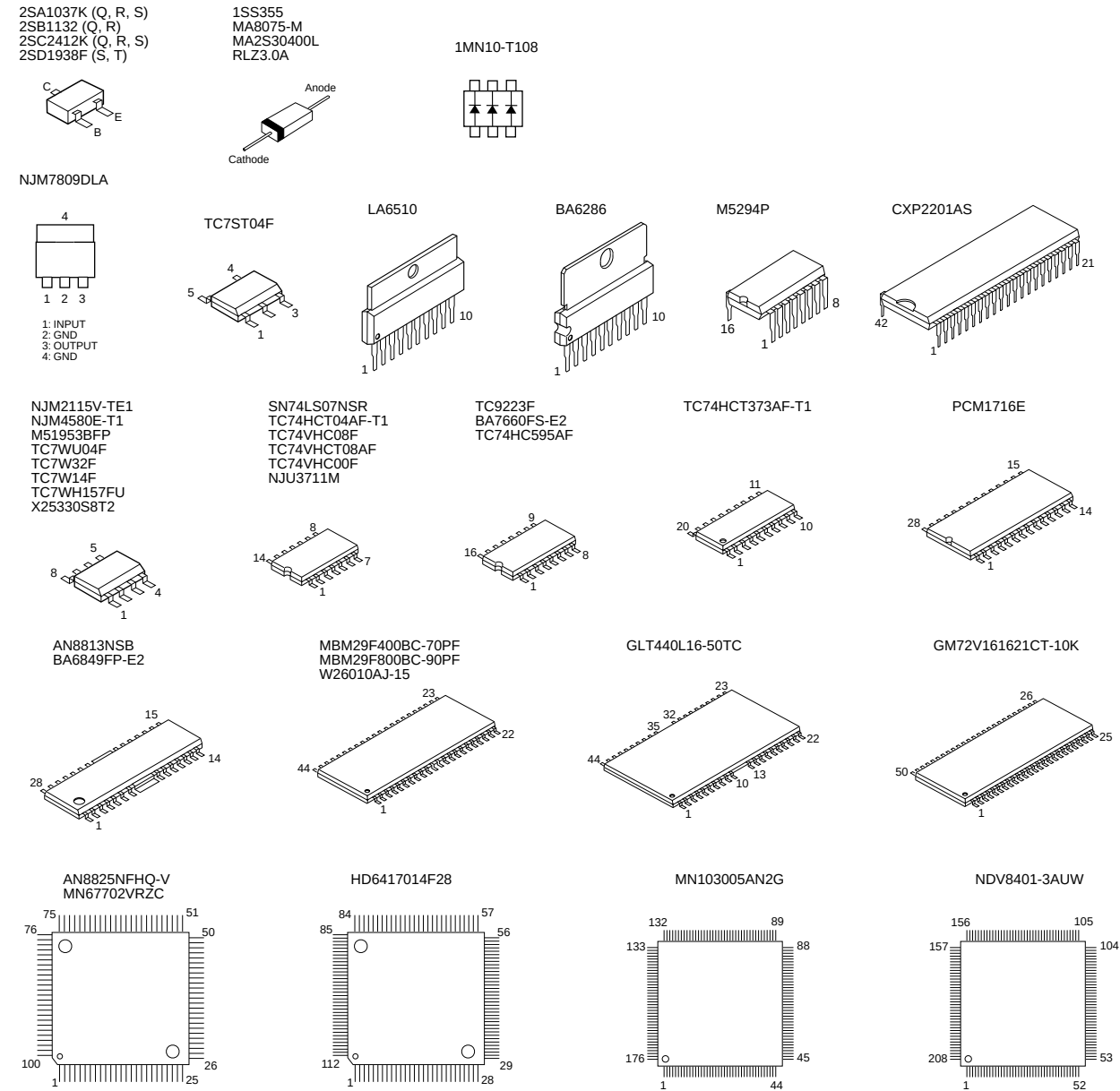
IC781 : CXP2201AS
Display Control Driver



IC782 : NJU3711
8-Bit Serial-Parallel Converter



PIN CONNECTION DIAGRAM



■ DISPLAY DATA

● V781 : 12-ST-14GK (V2215300)



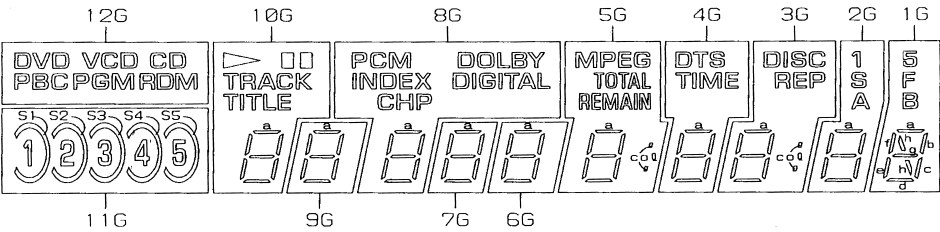
● PIN CONNECTION

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Connection	F1	F1	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	NC	NC	NC	NC	NC	NC	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G

Pin No.	31	32	33	34	35																									
Connection	2G	1G	NP	F2	F2																									

Note 1) F1, F2 Filament 3) NC No Connection 5) 1G-12G Grid
2) NP No Pin 4) P1-P11 Datum Line

● GRID ASSIGNMENT



● ANODE CONNECTION

	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	DVD	1	a	a	a	a	a	a	a	a	a	a
P2	VCD	S1	b	b	b	b	b	b	b	b	b	b
P3	CD	2	c	c	c	c	c	c	c	c	c	c
P4	PBC	S2	d	d	d	d	d	d	d	d	d	d
P5	PGM	3	e	e	e	e	e	e	e	e	e	e
P6	RDM	S3	f	f	f	f	f	f	f	f	f	f
P7	-	4	g	g	g	g	g	g	g	g	g	g
P8	-	S4	▶	-	PCM	-	-	col	-	col	-	h
P9	-	5	TRACK	-	INDEX	-	-	MPEG	DTS	DISC	1	5
P10	-	S5	TITLE	-	CHP	-	-	TOTAL	TIME	REP	S	F
P11	-	-	□□	-	DOLBY DIGITAL	-	-	REMAIN	-	-	A	B

6



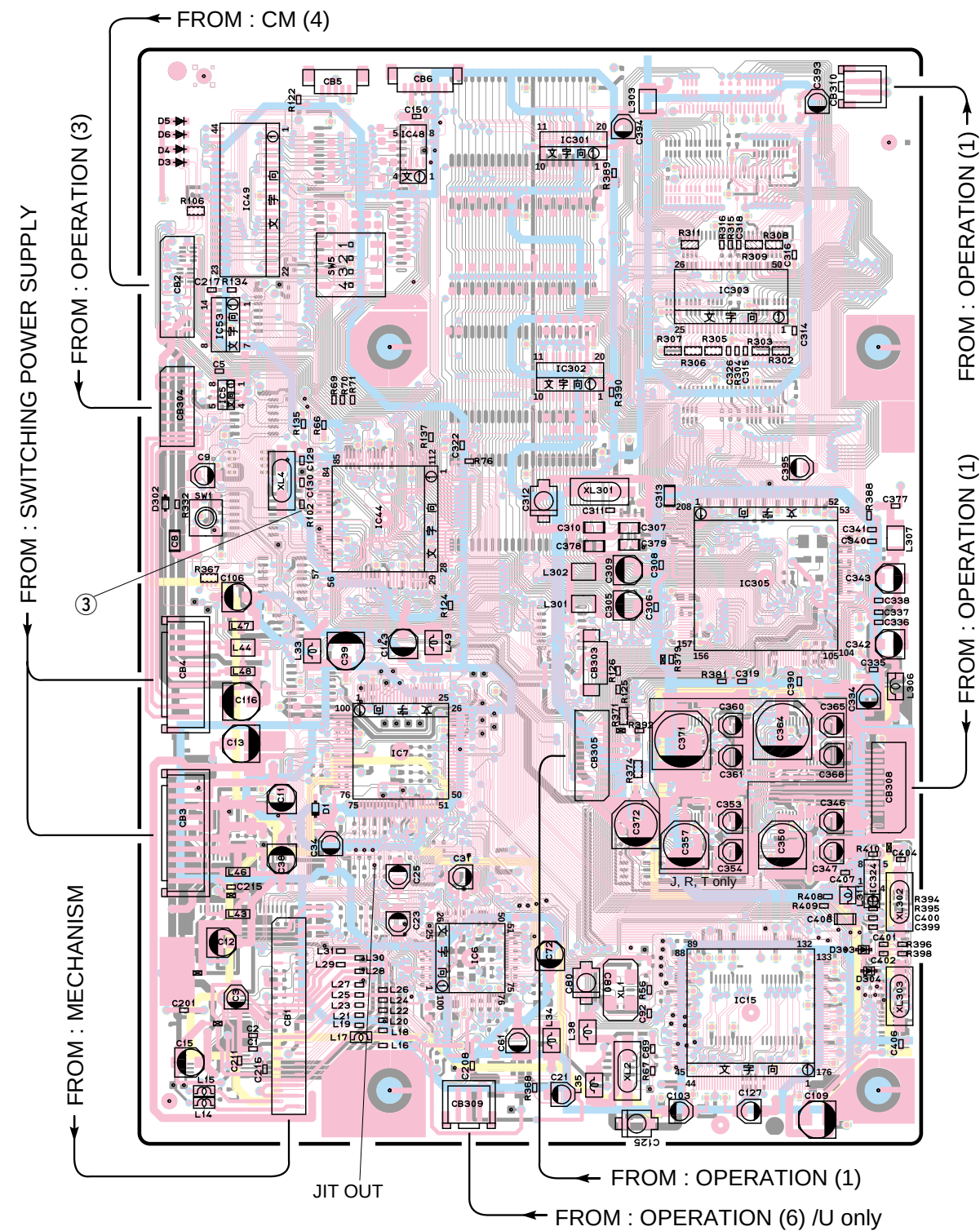
PRINTED CIRCUIT BOARD (Foil side)

P.C.B. MAIN

(Lead Type Device)

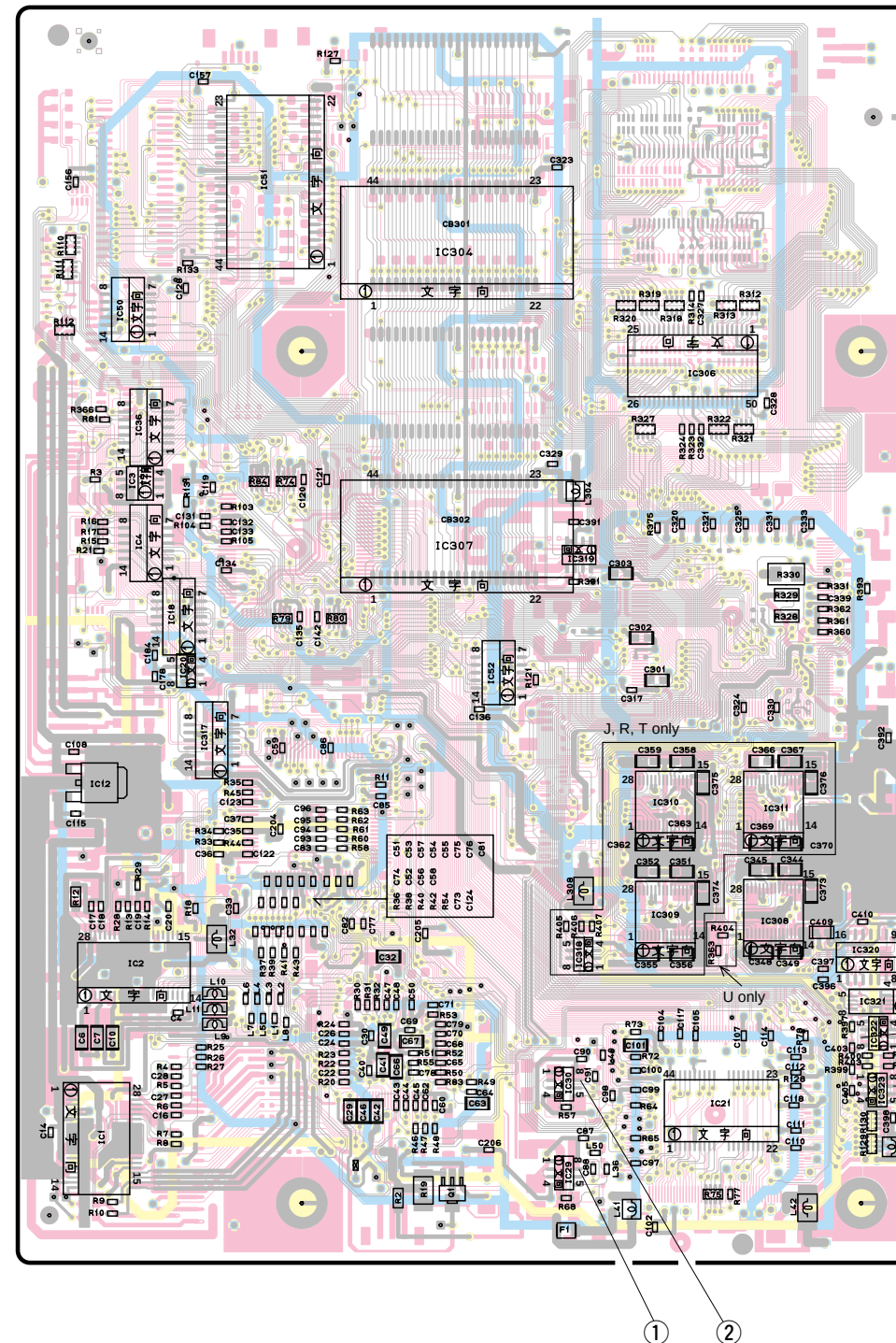
P.C.B. MAIN

(Surface Mount Device)



- Red shade : Component side pattern (Table)
- Blue shade : 2-layer pattern (For ground)
- Green shade : 3-layer pattern (For power supply)
- Black shade : Solder side pattern (Backside)

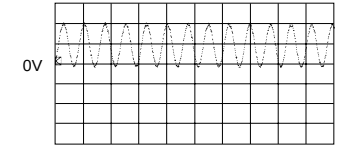
Note) The 2-layer and the 3-layer pattern are displayed in reverse. The colored part represents the free section and the uncolored part represents the section with the normal pattern.



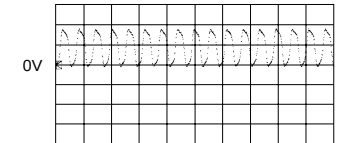
- 赤アミ : 部品側パターン (表)
- 青アミ : 2層パターン (アース用)
- 緑アミ : 3層パターン (電源用)
- 黒アミ : チップ側パターン (裏)

注意) 2層と3層のパターンは、反転して表示されています。
色が付いている所はスキの部分となり、色が付いていない所は正常のパターン部分です。

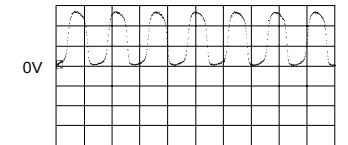
Point ① (Pin7 of IC29)
V : 2V/div H : 50 nsec/div
DC range 1 : 1 probe



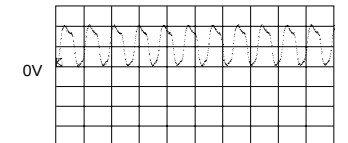
Point ② (Pin7 of IC30)
V : 2V/div H : 50 nsec/div
DC range 1 : 1 probe



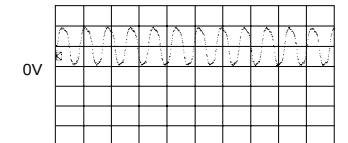
Point ③ (Pin72 of IC44)
V : 2V/div H : 0.1 μsec/div
DC range 1 : 1 probe



Point ④ (Pin7 of IC322)
V : 2V/div H : 50 nsec/div
DC range 1 : 1 probe

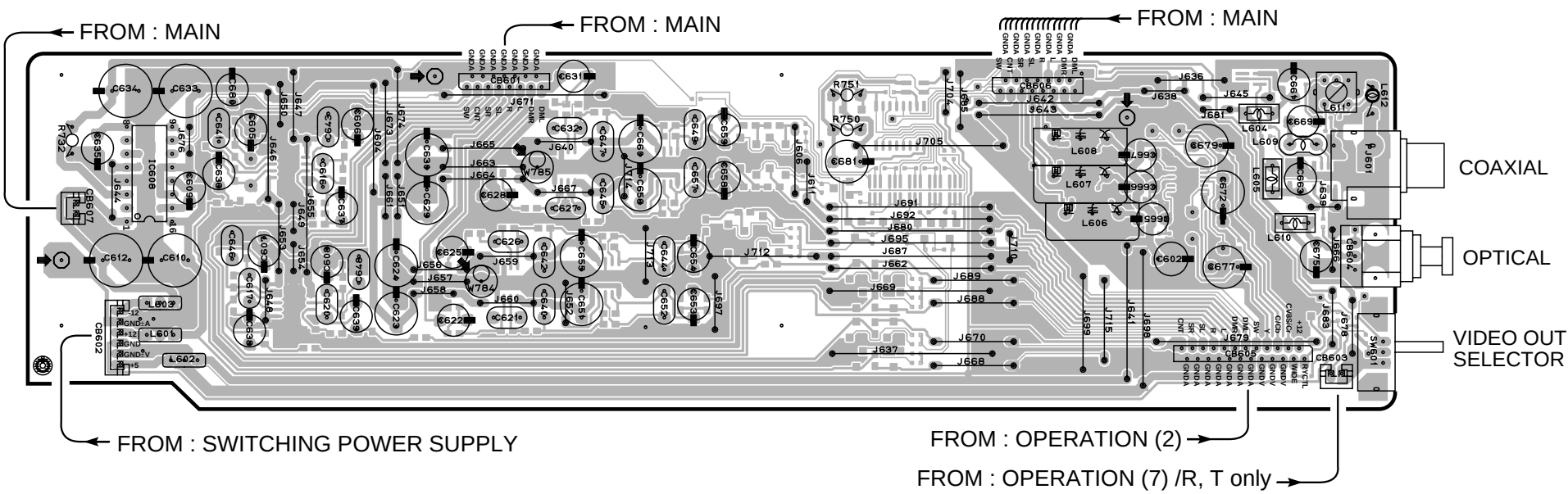


Point ⑤ (Pin7 of IC323)
V : 2V/div H : 50 nsec/div
DC range 1 : 1 probe



PRINTED CIRCUIT BOARD (Foil side)

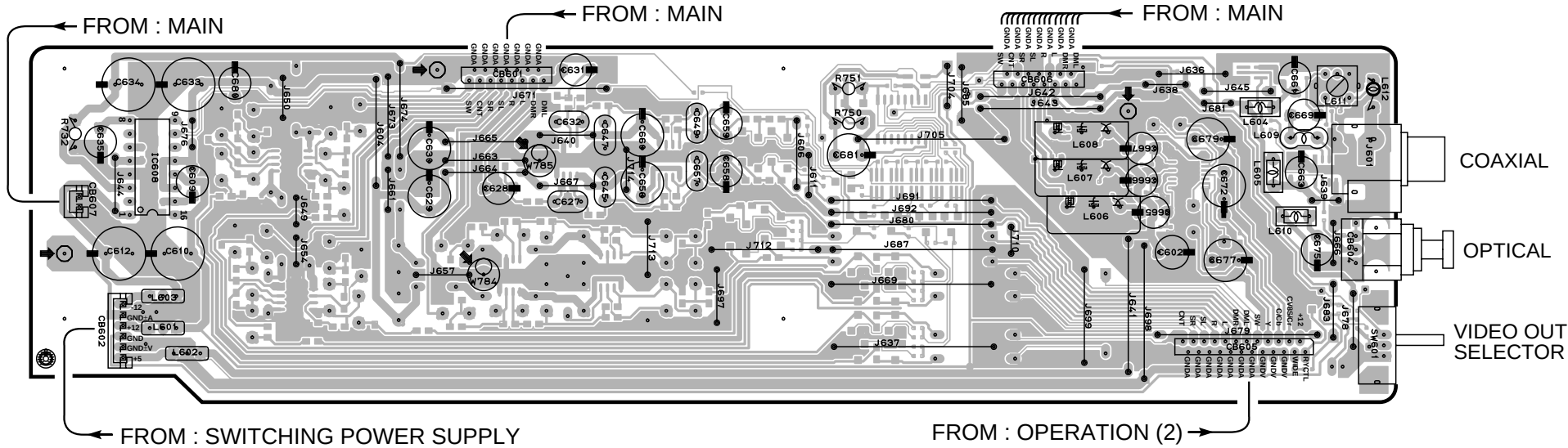
J, R, T only
P. C. B. OPERATION (1) (Lead Type Device)



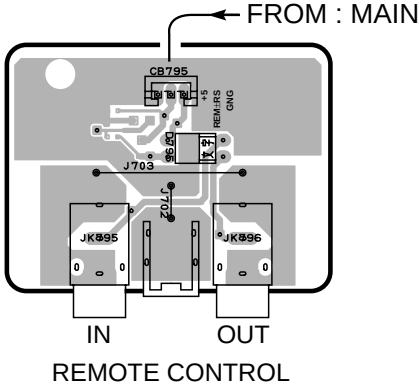
DVD-C900

PRINTED CIRCUIT BOARD (Foil side)

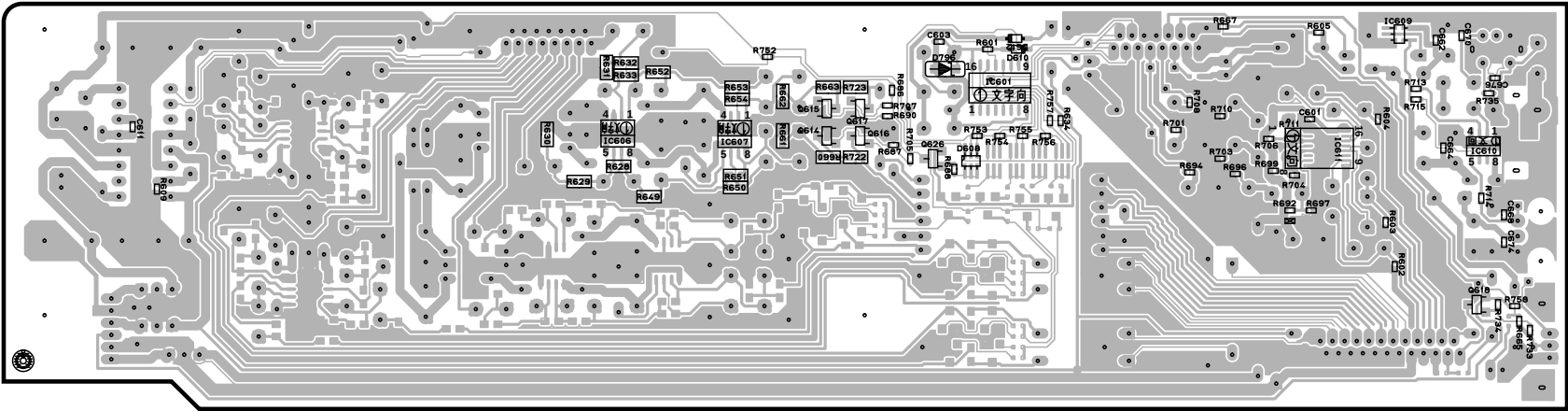
U only
P. C. B. OPERATION (1) (Lead Type Device)



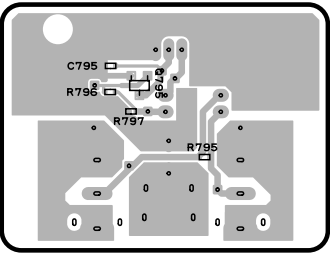
U only
P. C. B. OPERATION (6)
(Lead Type Device)



U only
P. C. B. OPERATION (1) (Surface Mount Device)

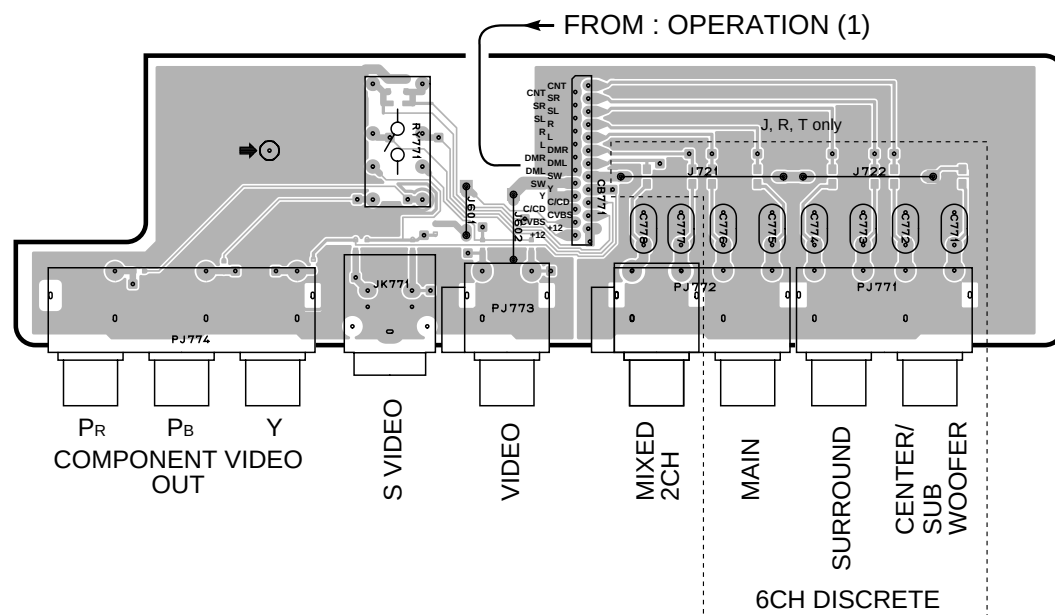


U only
P. C. B. OPERATION (6)
(Surface Mount Device)

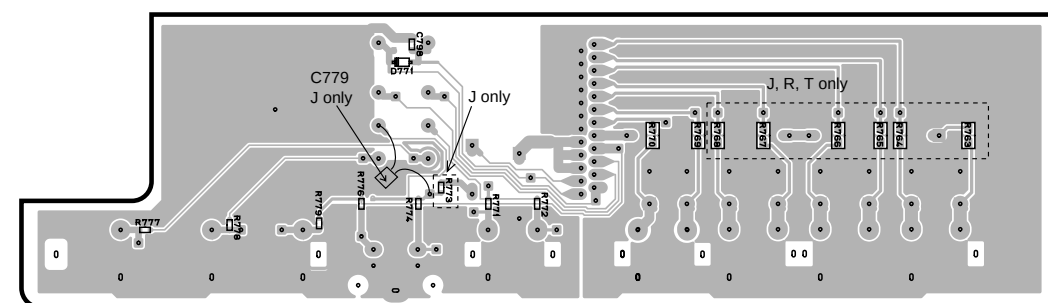


■ PRINTED CIRCUIT BOARD (Foil side)

P. C. B. OPERATION (2) (Lead Type Device)

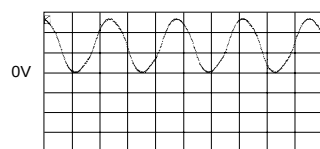


P. C. B. OPERATION (2) (Surface Mount Device)

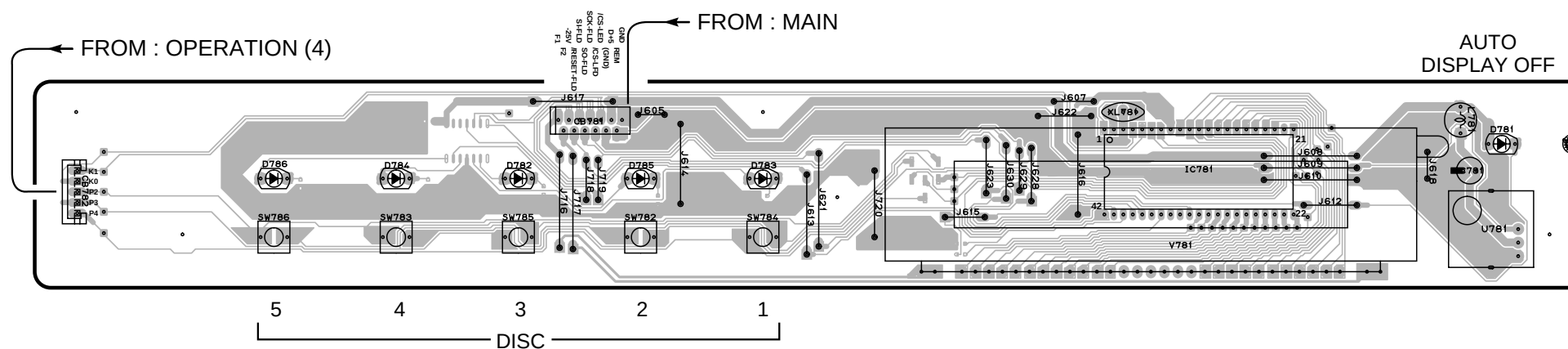


Point ⑥ (Pin1 of IC781)

V : 2V/div H : 0.1 μ sec/div
DC range 1 : 1 probe



P. C. B. OPERATION (3) (Lead Type Device)

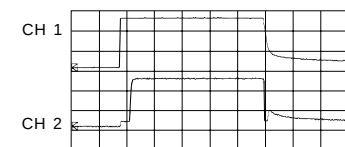


Point ⑦

CH1 : Pin8 of IC781 V : 2V/div (CH1)
CH2 : Pin42 of IC781 V : 2V/div (CH2)

H : 0.5 sec/div DC range 1 : 1 probe

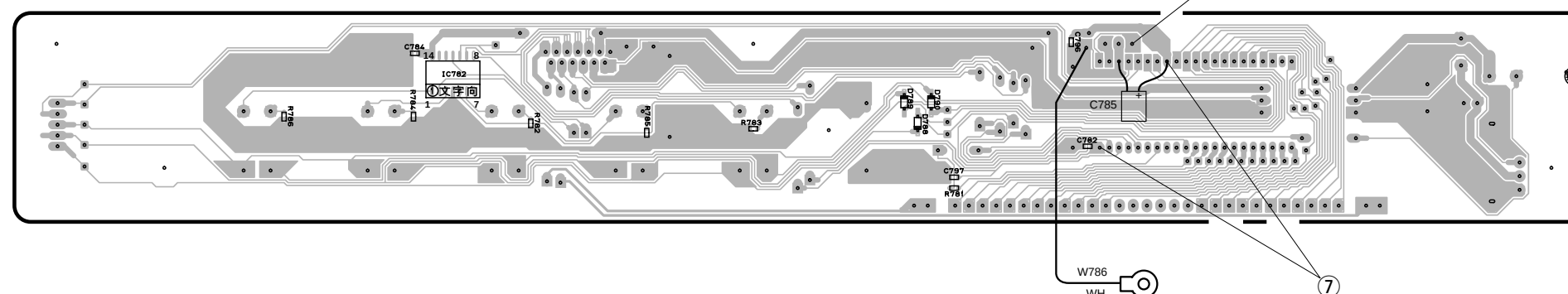
(This waveform is not available by pushing the power switch ON and OFF.)



With the POWER ON, disconnect the A/C power cord. Reconnect the A/C power cord and the above waveforms will start.

Disconnect the power cord from the AC outlet.

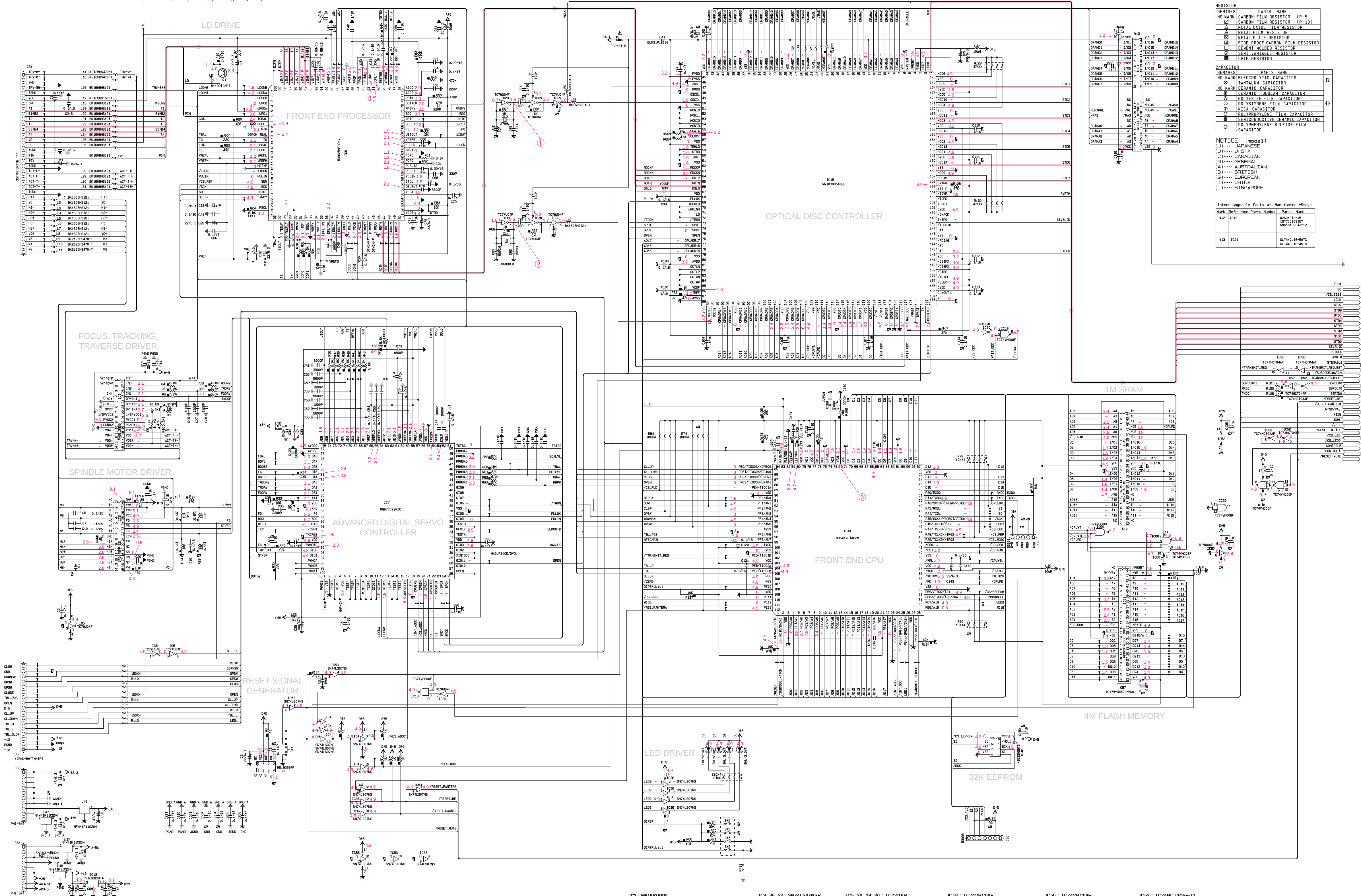
P. C. B. OPERATION (3) (Surface Mount Device)



■ SCHEMATIC DIAGRAM

注意：Q1およびIC6の5、6、91～98ピンの電圧は、必ずオシロスコープにて測定すること。
テスター等を使用して測定すると、テスター内部電源によりLASER PICK-UPが簡単に破壊されます。

Caution:
Be sure to use an oscilloscope when measuring the voltage at Q1 and pins 5, 6, 91 through 98 of IC6.
If a tester or the like is used for measurement, the laser pick-up is easily damaged by the power source within the tester.



* All voltages are measured with a 10MΩ/V DC electric volt meter.
* Components having special characteristics are marked △ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

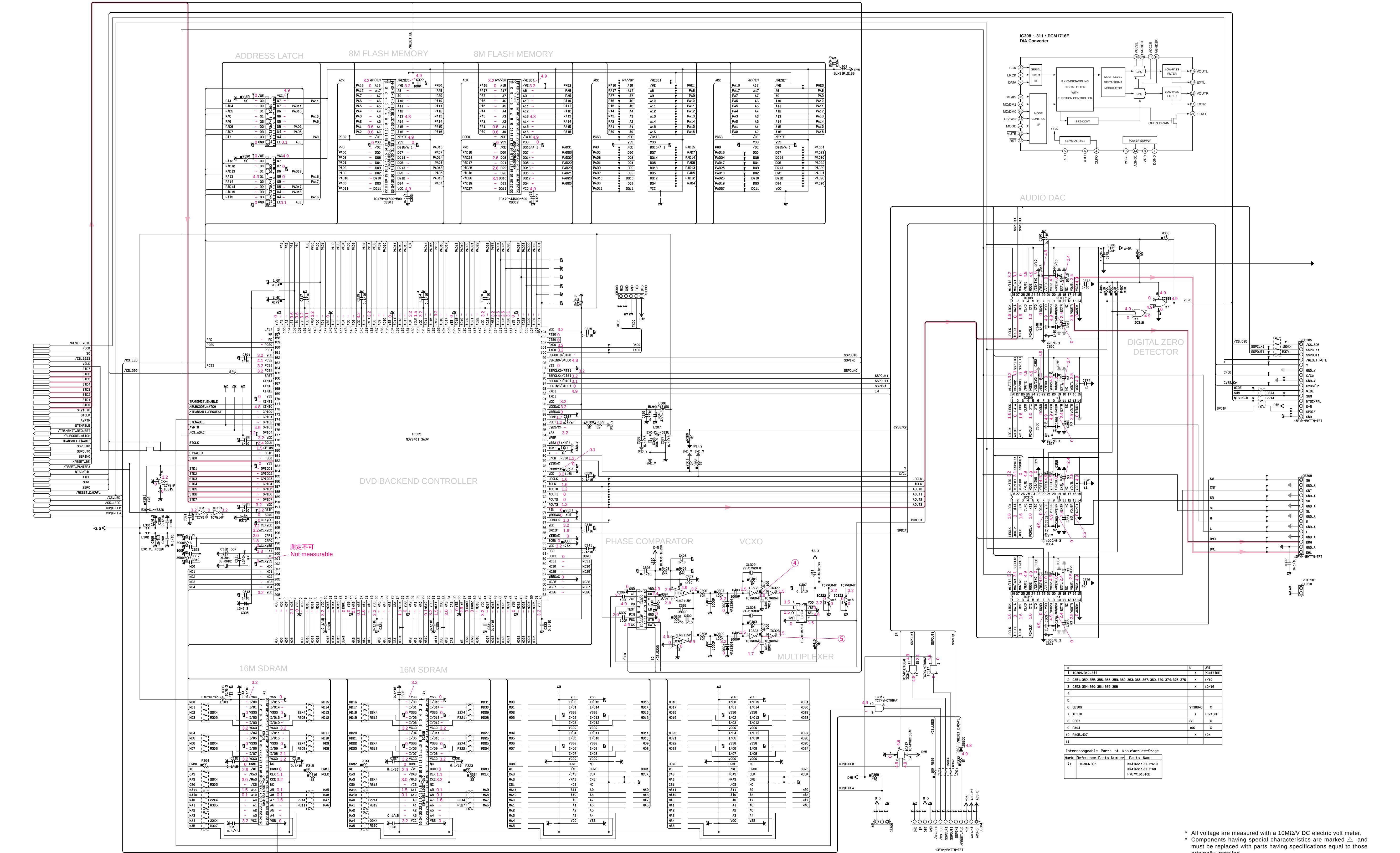
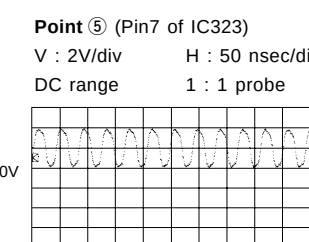
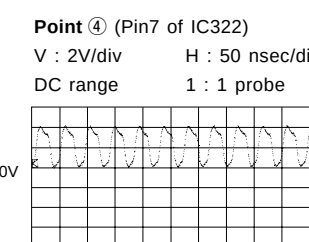
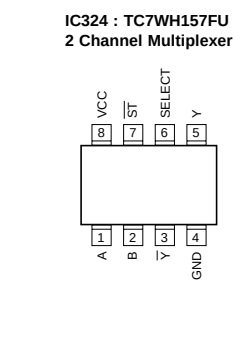
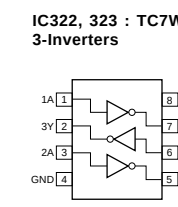
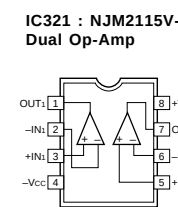
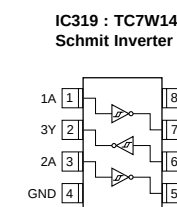
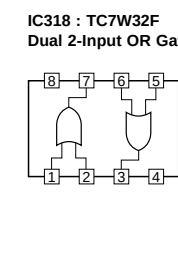
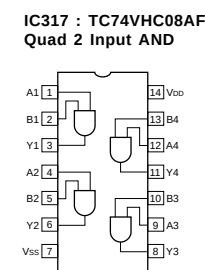
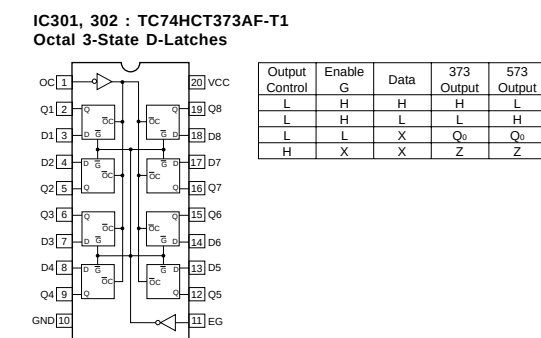
SCHEMATIC DIAGRAM

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P-5)
△	CARBON FILM RESISTOR (P-10)
△	METAL OXIDE FILM RESISTOR
△	METAL FILM RESISTOR
△	METAL PLATE RESISTOR
△	FIRE PROOF CARBON FILM RESISTOR
△	CEMENT MOLDED RESISTOR
△	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
○	TANTALUM CAPACITOR
○	CERAMIC CAPACITOR
○	CERAMIC TUBULAR CAPACITOR
○	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
○	MICA CAPACITOR
○	POLYPROPYLENE FILM CAPACITOR
○	SEMICONDUCTIVE CERAMIC CAPACITOR
○	POLYPHENYLENE SULFIDE FILM CAPACITOR

NOTICE (mode1)

(J)..... JAPANESE
(U)..... U.S.A.
(C)..... CANADIAN
(R)..... GENERAL
(A)..... AUSTRALIAN
(B)..... BRITISH
(G)..... EUROPEAN
(Y)..... CHINA
(L)..... SINGAPORE

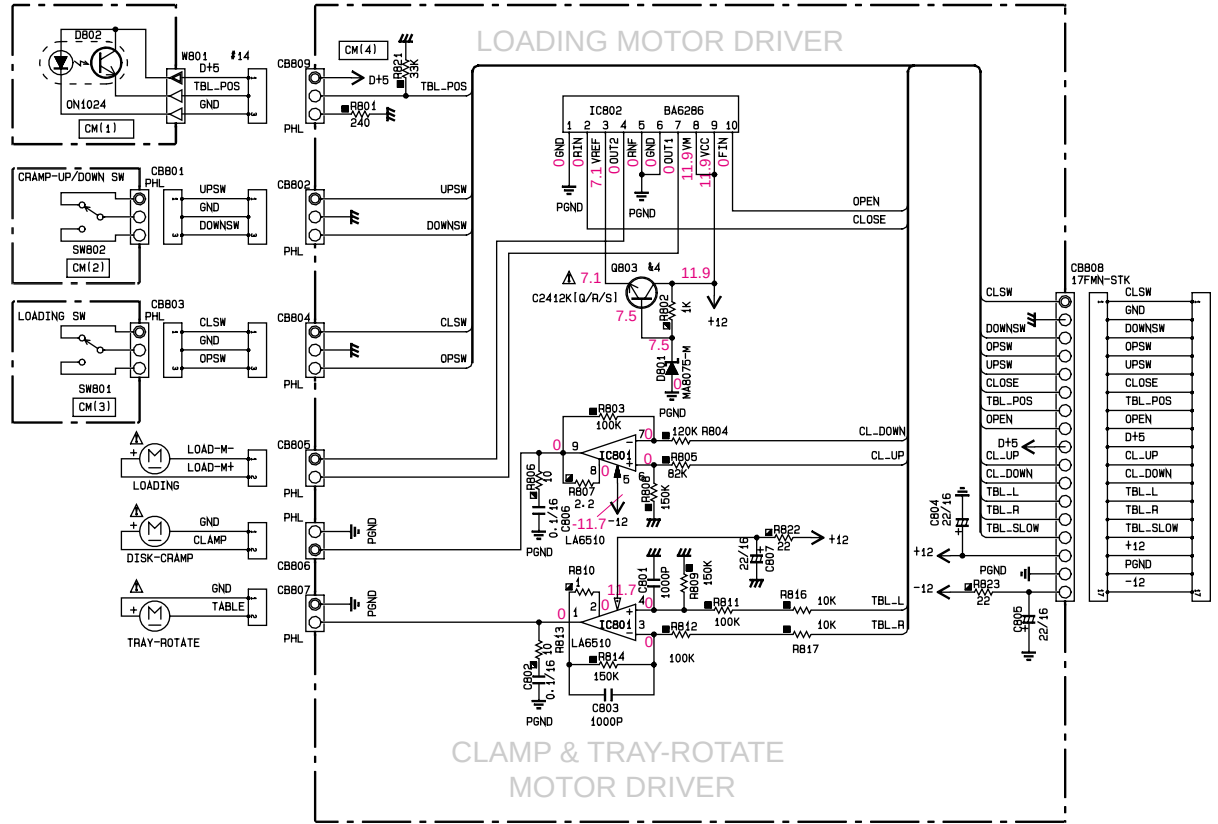
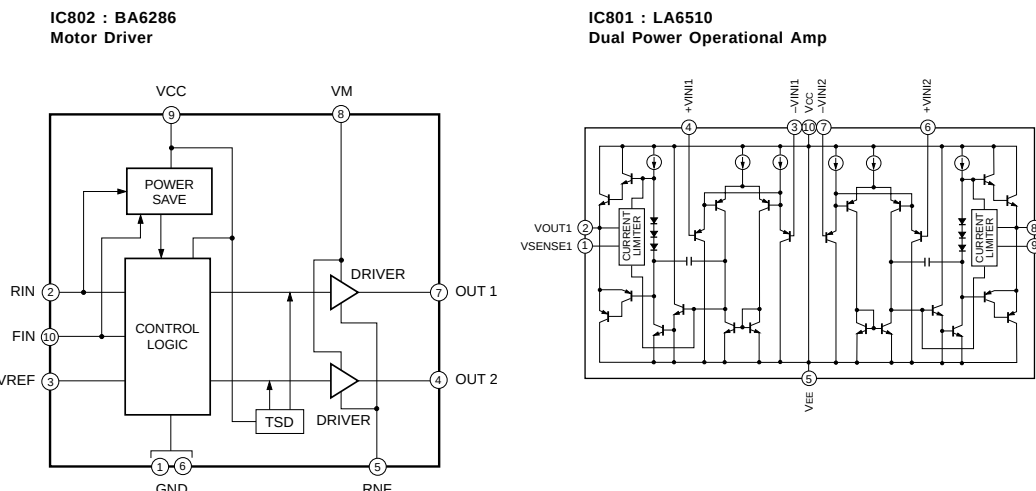


Mark	Reference Parts Number	Parts Name
1	IC300-310-311	IC300-310-311
2	CM51-302-305-306-308-309-360-363-366-367-369-370-374-375-376	CM51-302-305-306-308-309-360-363-366-367-369-370-374-375-376
3	CM53-354-360-361-365-368	CM53-354-360-361-365-368
4		
5	IC309	IC309
6	IC318	IC318
7	IC319	IC319
8	IC321	IC321
9	IC322	IC322
10	IC323	IC323
11	IC324	IC324

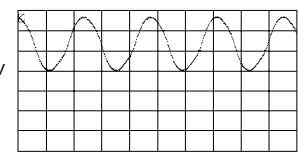
Mark	Reference Parts Number	Parts Name
1	IC300-306	IC300-306
2	IC307	IC307
3	IC308	IC308
4	IC309	IC309
5	IC310	IC310
6	IC311	IC311
7	IC312	IC312
8	IC313	IC313
9	IC314	IC314
10	IC315	IC315
11	IC316	IC316

* All voltage are measured with a 10MΩ/V DC electric volt meter.
* Components having special characteristics are marked △ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

SCHEMATIC DIAGRAM

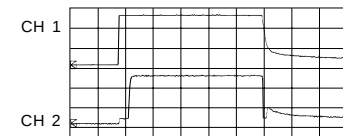


Point ⑥ (Pin1 of IC781)
V : 2V/div H : 0.1 usec/div
DC range 1 : 1 probe



Point ⑦
CH1 : Pin8 of IC781 V : 2V/div (CH1)
CH2 : Pin42 of IC781 V : 2V/div (CH2)
H : 0.5 sec/div DC range 1 : 1 probe

(This waveform is not available by pushing the power switch ON and OFF.)



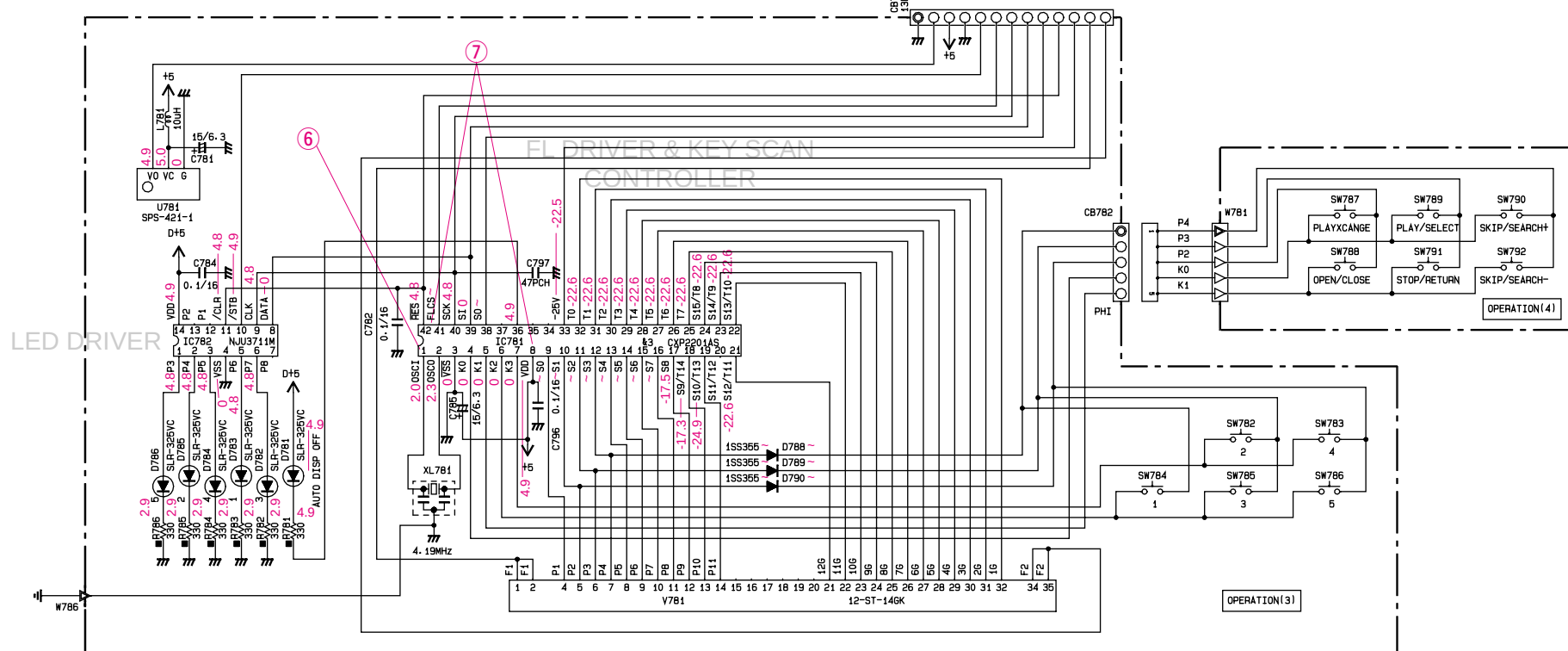
With the POWER ON, disconnect the power cord from the AC power outlet. Reconnect the A/C power cord and the above waveforms will start.

RESISTOR	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
○	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
□	METAL FILM RESISTOR
◇	METAL PLATE RESISTOR
◇	FILM PROOF CARBON FILM RESISTOR
◇	CEMENT MOLDED RESISTOR
◇	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

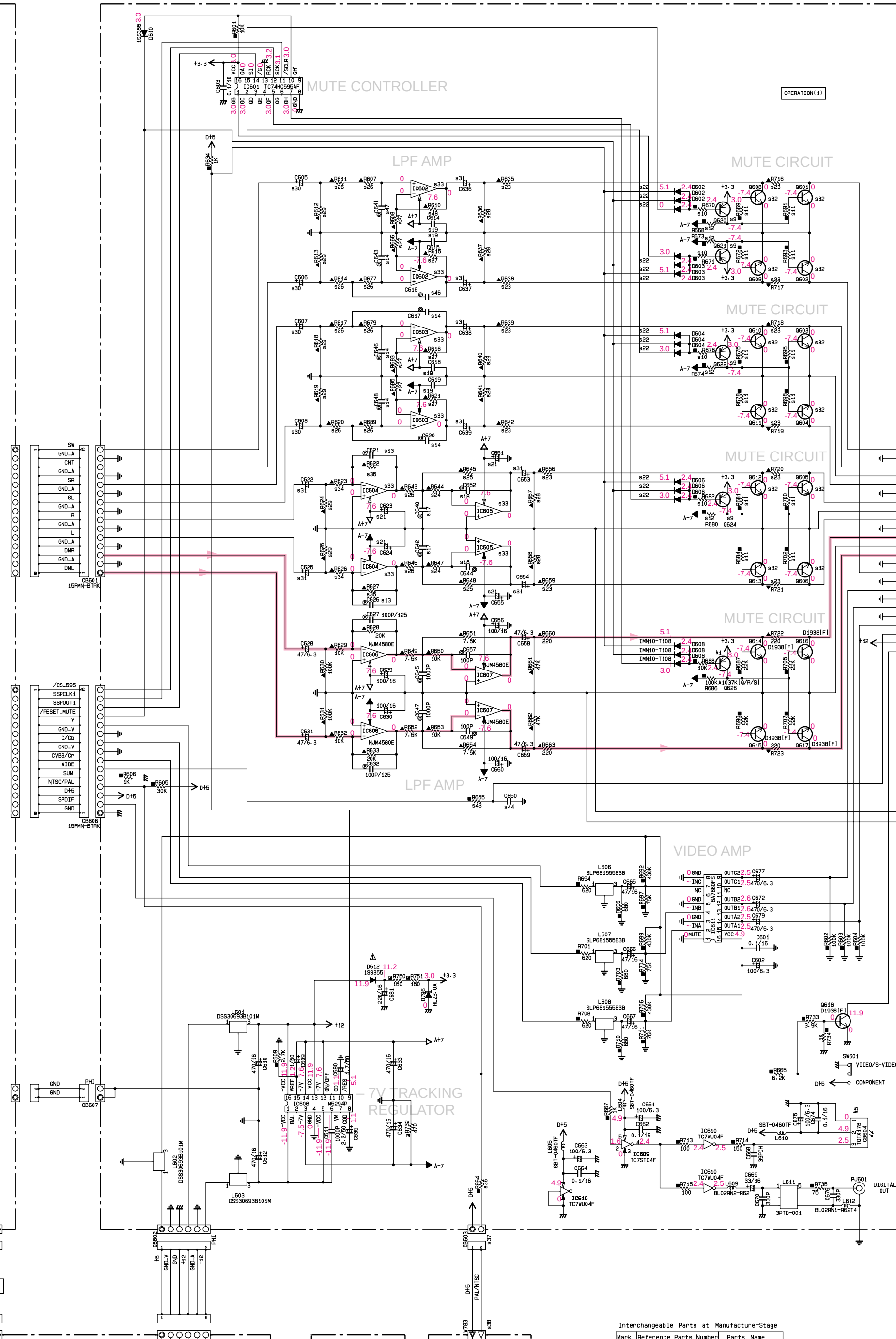
CAPACITOR	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
○	FANALUM CAPACITOR
●	CERAMIC TUBULAR CAPACITOR
○	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
○	MICA CAPACITOR
○	POLYPROPYLENE FILM CAPACITOR
○	SEMICONDUCTIVE CERAMIC CAPACITOR
○	POLYPROPYLENE SULFIDE FILM CAPACITOR

NOTICE (mode1)
(U)..... U.S.A
(C)..... CANADIAN
(S)..... GENERAL
(A)..... AUSTRALIAN
(B)..... BRITISH
(G)..... EUROPEAN
(T)..... CHINA
(L)..... SINGAPORE

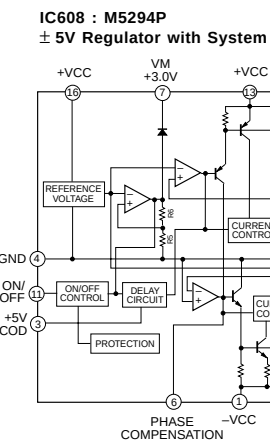
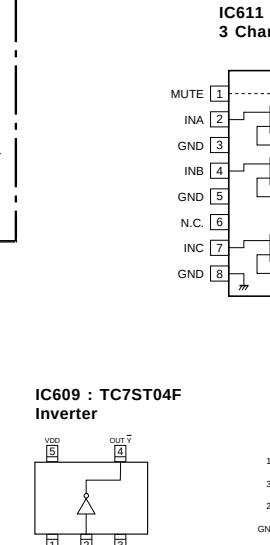
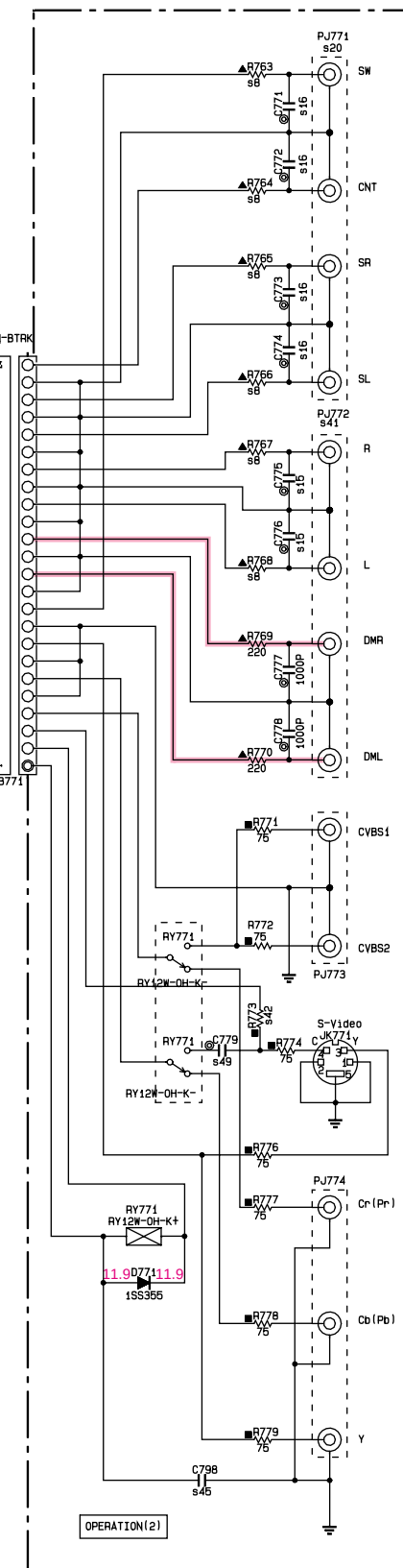
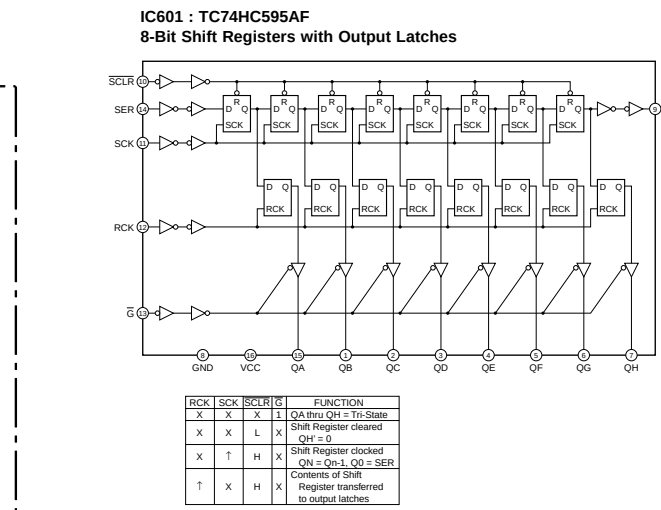
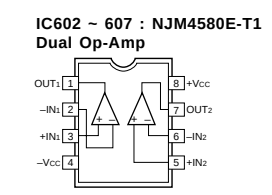
		U	J	R	T
51	0795	C2412(15/P/S) 0601A(15/P/S)	————	————	————
52	8797	470 RD39547	————	————	————
53	0795	0N131 VT0280	————	————	————
54	R195-798	10K RD39710	————	————	————
55	C795	0.1/16 US139510	————	————	————
56	C8795	PNC V020460	————	————	————
57	JK795-798	LV19501-0600 VJ72680	————	————	————
58	R763-768	————	220 VI19330	————	————
59	9520-620-624	————	A103X(L/P/S) B708A(P/P/S)	————	————
510	R670-671-676-682	————	10K RD39710	————	————
511	R691-693-695-696-700-703- R669-672-675-678-681-684	————	20K RD39722	————	————
512	R686-673-674-680	————	100K RD39810	————	————
513	C621-626	————	100P UT05210	————	————
514	C517-620 643-646-648	————	470P VI17910	————	————
515	C775-776	————	1000P UA95310	————	————
516	C771-774	————	3300P UA63333	————	————
517	C640-642	————	1000P VI17950	————	————
518	C644-652	————	100P YG4500	————	————
519	C614-615-618-619	————	0.1/16 US139510	————	————
520	PJ771	————	YG51230	————	————
521	C623-624-651-655	————	100/16 VE11790	————	————
522	C602-604-606	————	DM10-1108 VE2750	————	————
523	R636-638-639-642-656-659 R716-721	————	220 VI19330	————	————
524	R644-647	————	10K VI19740	————	————
525	R643-645-646-648	————	7.5K VI19710	————	————
526	R607-611-614-617-620-677 R679-680	————	5.9K VI19980	————	————
527	R608-615-616-621-656 R683-685	————	1K VI19490	————	————
528	R636-637-640-641-657-658	————	47K VI19990	————	————
529	R612-613-618-619-624-625	————	100K VI20000	————	————
530	C605-608	————	10/16 YG68270	————	————
531	C620-625-630-639-653-654	————	47/6.3 YG66600	————	————
532	9501-606-608-613	————	C193T(F) VZ72950	————	————
533	15052-605	————	NM4580E X917840	————	————
534	R623-626	————	10K VI19470	————	————
535	R620-627	————	20K VI19810	————	————
536	R664	————	————	15K RD39715	————
537	C8603	————	————	PNC V020460	————
538	R763	————	————	————	V060870
539	SK754	————	————	————	V060870
541	PJ772	YG51230	YG51240	————	————
542	R773	————	————	10K RD39710	————
543	R655	————	————	1K RD39510	————
544	C650	————	————	0.1/16 US139510	————
545	C798	0.1/16 US139510	————	————	————
546	C615	————	————	470/3.3 UT05047	————
547	C641	————	————	0.01 VZ1670	————
548	R610	————	————	2.7K VI19950	————
549	C779	SHORT	0.01 UM46410	SHORT	SHORT



D782~D786の電圧値は点灯状態のときです。
The voltage value for each terminal of D782 and D786 is measured in the light ON state.



Mark	Reference Parts Number	Parts Name
81	9526	PSA131X(15/P/S) PSB709A(P/P/S)
82		
83	10781	CP020145 N/A02421
84	9803	PSC412X(15/P/S) PSB614(P/P/S)
85	2864	TOT176 TOT178A



* All voltage are measured with a 10MΩ/V DC electric volt meter.
* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

PARTS LIST

■ ELECTRICAL PARTS

■ WARNING

Components having special characteristics are marked $\triangle$ and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.
- Chip resistors are listed on page 77.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED, INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR, RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN, TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.FLM	: METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL	: TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.WW	: WIRE WOUND RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TITE SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR, BASE PIN	SCR.CUP	: CUP TITE SCREW
CN.CANNON	: CONNECTOR, CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR, DIN	SCR.TR	: SCREW, TRANSISTOR
CN.FLAT	: CONNECTOR, FLAT CABLE	SUPRT.PCB	: SUPPORT, P.C.B.
CN.POST	: CONNECTOR, BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL, AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL, FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL, FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL, FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.VAR	: VARACTOR DIODE	SW.SLIDE	: SLIDE SWITCH
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.SP	: SPEAKER TERMINAL
DIODE.ZENR	: ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DSCR.CE	: CERAMIC DISCRIMINATOR	THRMST.CHP	: CHIP THERMISTOR
FER.BEAD	: FERRITE BEADS	TR.CHP	: CHIP TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT	: DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS	: TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PULS	: PULSE TRANSFORMER
FLTR.COMB	: COMB FILTER MODULE	TRANS.PWR	: POWER TRANSFORMER ASS'y
FLTR.LC.RF	: LC FILTER, EMI	TUNER.AM	: TUNER PACK, AM
GND.MTL	: GROUND PLATE	TUNER.FM	: TUNER PACK, FM
GND.TERM	: GROUND TERMINAL	TUNER.PK	: FRONT-END TUNER PACK
HOLDER.FUS	: FUSE HOLDER	VR	: ROTARY POTENTIOMETER
IC.PRTCT	: IC PROTECTOR	VR.MTR	: POTENTIOMETER WITH MOTOR
JUMPER.CN	: JUMPER CONNECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.TST	: JUMPER, TEST POINT	VR.SLIDE	: SLIDE POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE	VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with “#” are not included in the P.C.B. ass'y.

P.C.B. MAIN

Schm Ref.	PART NO.	Description
*	V247870R	P.C.B.
*	V247870T	P.C.B.
*	V2478800	P.C.B.
		MAIN(R)
		MAIN(T)
		MAIN(U)
CB1	V3691800	CN.BS.PIN 35P
CB2	V2773700	CN.BS.PIN 17P
CB3	VT389100	CN.BS.PIN 10P
CB4	VT389000	CN.BS.PIN 9P
CB5	VT466600	CN.BS.PIN 5P
CB6	VT333200	CN.BS.PIN 7P
CB7	VZ462900	SOCKET.IC 44P IC179-44600
CB301	VZ462900	SOCKET.IC 44P IC179-44600
CB302	VZ462900	SOCKET.IC 44P IC179-44600
CB303	VT466600	CN.BS.PIN 5P
CB304	V2773500	CN.BS.PIN 13P
CB305	V2773600	CN.BS.PIN 15P
CB308	V2773600	CN.BS.PIN 15P
CB309	VT388400	CN.BS.PIN 3P(U)
CB310	VT388300	CN.BS.PIN 2P
C1	US135100	C.CE.CHP 0.1uF 16V
C2	US135100	C.CE.CHP 0.1uF 16V
C3	V3318900	C.EL.CHP 15uF 6.3V
C4	US064100	C.CE.M.CHP 0.01uF 50V
C5	US135100	C.CE.CHP 0.1uF 16V
C6	UB245100	C.CE.M.CHP 0.1uF 25V
C7	UB245100	C.CE.M.CHP 0.1uF 25V
C8	VZ243400	C.CE.CHP 0.33uF 16V
C9	UF017220	C.EL.CHP 22uF 6.3V
C10	UB245100	C.CE.M.CHP 0.1uF 25V
C11	UF017470	C.EL.CHP 47uF 6.3V
C12	UF017470	C.EL.CHP 47uF 6.3V
C13	UF037470	C.EL.CHP 47uF 16V
C14	US135100	C.CE.CHP 0.1uF 16V
C15	UF037220	C.EL.CHP 22uF 16V
C16	US163120	C.CE.CHP 1200pF 50V
C17	US135100	C.CE.CHP 0.1uF 16V
C18	US135100	C.CE.CHP 0.1uF 16V
C19	US035100	C.CE.M.CHP 0.1uF 16V
C20	US035100	C.CE.M.CHP 0.1uF 16V
C21	UF017220	C.EL.CHP 22uF 6.3V
C22	US061560	C.CE.CHP 56pF 50V
C23	UF017220	C.EL.CHP 22uF 6.3V
C24	US135100	C.CE.CHP 0.1uF 16V
C25	UF017220	C.EL.CHP 22uF 6.3V
C26	US135100	C.CE.CHP 0.1uF 16V
C27	US163120	C.CE.CHP 1200pF 50V
C28	US163120	C.CE.CHP 1200pF 50V
C29	UB445680	C.CE.M.CHP 0.68uF 16V
C30	US035100	C.CE.M.CHP 0.1uF 16V
C31	UF017220	C.EL.CHP 22uF 6.3V
C32	VZ243200	C.CE.CHP 1uF 10V
C33	US135100	C.CE.CHP 0.1uF 16V
C34	V3318900	C.EL.CHP 15uF 6.3V
C35	US064100	C.CE.M.CHP 0.01uF 50V

* New Parts

Schm Ref.	PART NO.	Description
C36	US063220	C.CE.M.CHP 2200pF 50V
C37	US135100	C.CE.CHP 0.1uF 16V
C38	UF017470	C.EL.CHP 47uF 6.3V
C39	UF018100	C.EL.CHP 100uF 6.3V
C40	US135100	C.CE.CHP 0.1uF 16V
C41	VZ243200	C.CE.CHP 1uF 10V
C42	VZ243200	C.CE.CHP 1uF 10V
C43	US035100	C.CE.M.CHP 0.1uF 16V
C44	US035100	C.CE.M.CHP 0.1uF 16V
C45	US035100	C.CE.M.CHP 0.1uF 16V
C46	UB445680	C.CE.M.CHP 0.68uF 16V
C47	US163100	C.CE.CHP 1000pF 50V
C48	US163100	C.CE.CHP 1000pF 50V
C49	VZ243200	C.CE.CHP 1uF 10V
C50	US135100	C.CE.CHP 0.1uF 16V
C51	US063390	C.CE.CHP 3900pF 50V
C52	US063560	C.CE.CHP 5600pF 50V
C53	US163120	C.CE.CHP 1200pF 50V
C54	US135100	C.CE.CHP 0.1uF 16V
C55	US135100	C.CE.CHP 0.1uF 16V
C56	US063560	C.CE.CHP 5600pF 50V
C57	US163120	C.CE.CHP 1200pF 50V
C58	US063560	C.CE.CHP 5600pF 50V
C59	US135100	C.CE.CHP 0.1uF 16V
C60	US135100	C.CE.CHP 0.1uF 16V
C61	V3318900	C.EL.CHP 15uF 6.3V
C62	US035100	C.CE.M.CHP 0.1uF 16V
C63	VZ243300	C.CE.CHP 0.22uF 16V
C64	US035100	C.CE.M.CHP 0.1uF 16V
C65	US062220	C.CE.CHP 220pF 50V
C66	VZ243200	C.CE.CHP 1uF 10V
C67	VZ243300	C.CE.CHP 0.22uF 16V
C68	US062330	C.CE.M.CHP 330pF 50V
C69	US035100	C.CE.M.CHP 0.1uF 16V
C70	US063680	C.CE.CHP 6800pF 50V
C71	US135100	C.CE.CHP 0.1uF 16V
C72	UF017330	C.EL.CHP 33uF 6.3V
C73	US063180	C.CE.CHP 1800pF 50V
C74	US063390	C.CE.CHP 3900pF 50V
C75	US135100	C.CE.CHP 0.1uF 16V
C76	US135100	C.CE.CHP 0.1uF 16V
C77	US163100	C.CE.CHP 1000pF 50V
C78	US062220	C.CE.CHP 220pF 50V
C79	US135100	C.CE.CHP 0.1uF 16V
C80	VZ202500	C.TRIM 50pF
C81	US135100	C.CE.CHP 0.1uF 16V
C82	US163100	C.CE.CHP 1000pF 50V
C83	US035100	C.CE.M.CHP 0.1uF 16V
C85	US135100	C.CE.CHP 0.1uF 16V
C86	US035100	C.CE.M.CHP 0.1uF 16V
C87	US135100	C.CE.CHP 0.1uF 16V
C88	US062100	C.CE.M.CHP 100pF 50V
C89	US061180	C.CE.CHP 18pF 50V

* New Parts

P.C.B. MAIN

Schm Ref.	PART NO.	Description
C90	US135100	C.CE.CHP 0.1uF 16V
C91	US062100	C.CE.M.CHP 100pF 50V
C92	US061150	C.CE.CHP 15pF 50V
C93	US035100	C.CE.M.CHP 0.1uF 16V
C94	US035100	C.CE.M.CHP 0.1uF 16V
C95	US035100	C.CE.M.CHP 0.1uF 16V
C96	US035100	C.CE.M.CHP 0.1uF 16V
C97	US035100	C.CE.M.CHP 0.1uF 16V
* C98	US163100	C.CE.CHP 1000pF 50V
C99	US135100	C.CE.CHP 0.1uF 16V
C100	US135100	C.CE.CHP 0.1uF 16V
* C101	VZ243200	C.CE.CHP 1uF 10V
C102	US135100	C.CE.CHP 0.1uF 16V
C103	V3318900	C.EL.CHP 15uF 6.3V
C104	US135100	C.CE.CHP 0.1uF 16V
C105	US135100	C.CE.CHP 0.1uF 16V
C106	UF017470	C.EL.CHP 47uF 6.3V
C107	US135100	C.CE.CHP 0.1uF 16V
C108	US135100	C.CE.CHP 0.1uF 16V
C109	UF018100	C.EL.CHP 100uF 6.3V
C110	US135100	C.CE.CHP 0.1uF 16V
C111	US135100	C.CE.CHP 0.1uF 16V
C112	US135100	C.CE.CHP 0.1uF 16V
C113	US135100	C.CE.CHP 0.1uF 16V
C114	US135100	C.CE.CHP 0.1uF 16V
C115	US135100	C.CE.CHP 0.1uF 16V
C116	UF037470	C.EL.CHP 47uF 16V
C117	US135100	C.CE.CHP 0.1uF 16V
C118	US135100	C.CE.CHP 0.1uF 16V
C119	US062100	C.CE.M.CHP 100pF 50V
C120	US135100	C.CE.CHP 0.1uF 16V
C121	US135100	C.CE.CHP 0.1uF 16V
C122	US063560	C.CE.CHP 5600pF 50V
C123	US035100	C.CE.M.CHP 0.1uF 16V
C124	US061100	C.CE.M.CHP 10pF 50V
C125	VZ202500	C.TRIM 50pF
C127	UF017220	C.EL.CHP 22uF 6.3V
C128	US062100	C.CE.M.CHP 100pF 50V
C129	US061220	C.CE.M.CHP 22pF 50V
C130	US061220	C.CE.M.CHP 22pF 50V
C131	US062470	C.CE.M.CHP 470pF 50V
C132	US135100	C.CE.CHP 0.1uF 16V
C133	US135100	C.CE.CHP 0.1uF 16V
C134	US135100	C.CE.CHP 0.1uF 16V
C135	US135100	C.CE.CHP 0.1uF 16V
C136	US135100	C.CE.CHP 0.1uF 16V
* C142	US135100	C.CE.CHP 0.1uF 16V
* C143	UF017330	C.EL.CHP 33uF 6.3V
C150	US135100	C.CE.CHP 0.1uF 16V
C156	US135100	C.CE.CHP 0.1uF 16V
C157	US135100	C.CE.CHP 0.1uF 16V
C178	US135100	C.CE.CHP 0.1uF 16V
C184	US135100	C.CE.CHP 0.1uF 16V

* New Parts

Schm Ref.	PART NO.	Description
C201	US135100	C.CE.CHP 0.1uF 16V
C204	US135100	C.CE.CHP 0.1uF 16V
C205	US135100	C.CE.CHP 0.1uF 16V
C206	US135100	C.CE.CHP 0.1uF 16V
C208	US135100	C.CE.CHP 0.1uF 16V
C211	US135100	C.CE.CHP 0.1uF 16V
C215	US135100	C.CE.CHP 0.1uF 16V
C216	US135100	C.CE.CHP 0.1uF 16V
C217	US062150	C.CE.CHP 150pF 50V
* C301	VZ243200	C.CE.CHP 1uF 10V
* C302	VZ243200	C.CE.CHP 1uF 10V
* C303	VZ243200	C.CE.CHP 1uF 10V
C305	V3318900	C.EL.CHP 15uF 6.3V
C306	US135100	C.CE.CHP 0.1uF 16V
* C307	VR327500	C.MYLA.CHP 0.0001uF 50V
C308	US135100	C.CE.CHP 0.1uF 16V
C309	V3318900	C.EL.CHP 15uF 6.3V
* C310	VR325800	C.MYLA.CHP 0.0039uF 16V
C311	US061120	C.CE.CHP 12pF 50V
C312	VZ202500	C.TRIM 50pF
* C313	VZ243200	C.CE.CHP 1uF 10V
C314	US135100	C.CE.CHP 0.1uF 16V
C315	US135100	C.CE.CHP 0.1uF 16V
C316	US135100	C.CE.CHP 0.1uF 16V
C317	US135100	C.CE.CHP 0.1uF 16V
C318	US135100	C.CE.CHP 0.1uF 16V
C319	US135100	C.CE.CHP 0.1uF 16V
C320	US135100	C.CE.CHP 0.1uF 16V
C321	US135100	C.CE.CHP 0.1uF 16V
C322	US062100	C.CE.M.CHP 100pF 50V
C323	US135100	C.CE.CHP 0.1uF 16V
C324	US135100	C.CE.CHP 0.1uF 16V
C325	US135100	C.CE.CHP 0.1uF 16V
C326	US135100	C.CE.CHP 0.1uF 16V
C327	US135100	C.CE.CHP 0.1uF 16V
C328	US135100	C.CE.CHP 0.1uF 16V
C329	US135100	C.CE.CHP 0.1uF 16V
C330	US135100	C.CE.CHP 0.1uF 16V
C331	US135100	C.CE.CHP 0.1uF 16V
C332	US135100	C.CE.CHP 0.1uF 16V
C333	US135100	C.CE.CHP 0.1uF 16V
C334	V3318900	C.EL.CHP 15uF 6.3V
C335	US135100	C.CE.CHP 0.1uF 16V
C336	US135100	C.CE.CHP 0.1uF 16V
C337	US035100	C.CE.M.CHP 0.1uF 16V
C338	US135100	C.CE.CHP 0.1uF 16V
C339	US135100	C.CE.CHP 0.1uF 16V
C340	US135100	C.CE.CHP 0.1uF 16V
C341	US135100	C.CE.CHP 0.1uF 16V
C342	UF017470	C.EL.CHP 47uF 6.3V
C343	UF008100	C.EL.CHP 100uF 4V
* C344	VZ243200	C.CE.CHP 1uF 10V
* C345	VZ243200	C.CE.CHP 1uF 10V

* New Parts

P.C.B. MAIN

Schm Ref.	PART NO.	Description
C346	UF037100	C.EL.CHP 10uF 16V
C347	UF037100	C.EL.CHP 10uF 16V
* C348	VZ243200	C.CE.CHP 1uF 10V
* C349	VZ243200	C.CE.CHP 1uF 10V
C350	UF118470	C.EL.CHP 470uF 6.3V
* C351	VZ243200	C.CE.CHP 1uF 10V(RT)
* C352	VZ243200	C.CE.CHP 1uF 10V(RT)
C353	UF037100	C.EL.CHP 10uF 16V(RT)
C354	UF037100	C.EL.CHP 10uF 16V(RT)
* C355	VZ243200	C.CE.CHP 1uF 10V(RT)
* C356	VZ243200	C.CE.CHP 1uF 10V(RT)
C357	UF118470	C.EL.CHP 470uF 6.3V
* C358	VZ243200	C.CE.CHP 1uF 10V(RT)
* C359	VZ243200	C.CE.CHP 1uF 10V(RT)
C360	UF037100	C.EL.CHP 10uF 16V(RT)
C361	UF037100	C.EL.CHP 10uF 16V(RT)
* C362	VZ243200	C.CE.CHP 1uF 10V(RT)
* C363	VZ243200	C.CE.CHP 1uF 10V(RT)
C364	UF119100	C.EL.CHP 1000uF 6.3V
C365	UF037100	C.EL.CHP 10uF 16V(RT)
* C366	VZ243200	C.CE.CHP 1uF 10V(RT)
* C367	VZ243200	C.CE.CHP 1uF 10V(RT)
C368	UF037100	C.EL.CHP 10uF 16V(RT)
* C369	VZ243200	C.CE.CHP 1uF 10V(RT)
* C370	VZ243200	C.CE.CHP 1uF 10V(RT)
C371	UF119100	C.EL.CHP 1000uF 6.3V
C372	V3320500	C.EL.CHP 120uF 6.3V
* C373	VZ243200	C.CE.CHP 1uF 10V
* C374	VZ243200	C.CE.CHP 1uF 10V(RT)
* C375	VZ243200	C.CE.CHP 1uF 10V(RT)
* C376	VZ243200	C.CE.CHP 1uF 10V(RT)
C377	US135100	C.CE.CHP 0.1uF 16V
* C378	VR325800	C.MYLA.CHP 0.0039uF 16V
* C379	VR327500	C.MYLA.CHP 0.0001uF 50V
C390	US135100	C.CE.CHP 0.1uF 16V
C391	US062100	C.CE.M.CHP 100pF 50V
C392	US135100	C.CE.CHP 0.1uF 16V
C393	V3318900	C.EL.CHP 15uF 6.3V
C394	V3318900	C.EL.CHP 15uF 6.3V
C395	V3318900	C.EL.CHP 15uF 6.3V
C396	US062100	C.CE.M.CHP 100pF 50V
C397	US062100	C.CE.M.CHP 100pF 50V
C398	US135100	C.CE.CHP 0.1uF 16V
* C399	US063390	C.CE.CHP 3900pF 50V
C400	US035100	C.CE.M.CHP 0.1uF 16V
* C401	US163100	C.CE.CHP 1000pF 50V
* C402	US163100	C.CE.CHP 1000pF 50V
* C403	US163100	C.CE.CHP 1000pF 50V
C404	US060700	C.CE.CHP 7pF 50V
* C405	US163100	C.CE.CHP 1000pF 50V
C406	US061120	C.CE.CHP 12pF 50V
C407	US135100	C.CE.CHP 0.1uF 16V
* C408	VZ243200	C.CE.CHP 1uF 10V

* New Parts

Schm Ref.	PART NO.	Description
* C409	VZ243200	C.CE.CHP 1uF 10V
C410	US061220	C.CE.M.CHP 22pF 50V
D1	VT332900	DIODE 1SS355
D3	VV524100	LED.CHP(r) SML-210VT
D4	VV524100	LED.CHP(r) SML-210VT
D5	VV524100	LED.CHP(r) SML-210VT
D6	VV524100	LED.CHP(r) SML-210VT
D302	VT332900	DIODE 1SS355
D303	V3616900	DIODE.VAR MA2S30400L
D304	V3616900	DIODE.VAR MA2S30400L
* F1	V2693700	IC.PRCTCT ICP-S1.8
* IC1	XU139A00	IC AN8813NSB
* IC2	XU150A00	IC BA6849FP-E2
IC3	XP157A00	IC M51953BFP
IC4	XH226A00	IC SN74LS07NSR
IC5	XN567A00	IC TC7WU04F INV
* IC6	XU140A00	IC AN8825NFHQ-V
* IC7	XU142A00	IC MN67702VRZC
* IC12	XU827A00	IC NJM7809DLA 9V
* IC15	XU141A00	IC MN103005AN2G
IC18	XT229A00	IC TC74VHC00F NAND
IC20	XN567A00	IC TC7WU04F INV
IC21	XV886A00	IC GLT440L16-50TC
IC29	XN567A00	IC TC7WU04F INV
IC30	XN567A00	IC TC7WU04F INV
IC36	XH226A00	IC SN74LS07NSR
IC44	XU147A00	IC HD6417014F28 CPU
* IC48	XU830AR0	IC X25330S8T2 EEP(R)
* IC48	XU830AT0	IC X25330S8T2 EEP(T)
* IC48	XU830AU0	IC X25330S8T2 EEP(U)
* IC49	XV438A00	IC W26010AJ-15 SRAM
IC50	XT014A00	IC TC74VHC08F
* IC51	XV218A00	IC FLASH FE
IC52	Xi297A00	IC TC74HCT04AF-T1
IC53	XH226A00	IC SN74LS07NSR
IC301	Xi296A00	IC TC74HCT373AF-T1 LA
IC302	Xi296A00	IC TC74HCT373AF-T1 LA
* IC303	XW599A00	IC KM416S1120DT-G8
! IC304	AAX07820	IC.PAIR FLASH BE1
IC305	XU796B00	IC NDV8401-3AUW DVD
* IC306	XW599A00	IC KM416S1120DT-G8
! IC307	AAX07820	IC.PAIR FLASH BE1
* IC308	XU829A00	IC PCM1716E
* IC309	XU829A00	IC PCM1716E(RT)
* IC310	XU829A00	IC PCM1716E(RT)
* IC311	XU829A00	IC PCM1716E(RT)
* IC317	XV495A00	IC TC74VHCT08AF AND
* IC318	XQ324A00	IC TC7W32F OR(RT)
IC319	XR336A00	IC TC7W14F TE12L
IC320	XQ484A00	IC TC9223F
IC321	XU949A00	IC NJM2115V-TE1 OP AM
IC322	XN567A00	IC TC7WU04F INV
IC323	XN567A00	IC TC7WU04F INV

* New Parts

! : IC304 and IC307 must be replaced at the same time.

P.C.B. MAIN

Schm Ref.	PART NO.	Description
IC324	XV865A00	IC TC7WH157FU
* L1	VY656400	COIL.CHP 120uH
* L2	VY656400	COIL.CHP 120uH
* L3	VY656400	COIL.CHP 120uH
* L4	VY656400	COIL.CHP 120uH
* L5	VY656400	COIL.CHP 120uH
* L6	VY656400	COIL.CHP 120uH
* L7	VY656400	COIL.CHP 120uH
* L8	VY656400	COIL.CHP 120uH
* L9	VZ250100	COIL.CHP BK2125HS470-T
* L10	VZ250100	COIL.CHP BK2125HS470-T
* L11	VZ250100	COIL.CHP BK2125HS470-T
* L14	VZ250100	COIL.CHP BK2125HS470-T
* L15	VZ250100	COIL.CHP BK2125HS470-T
* L16	VY656400	COIL.CHP 120uH
* L17	VZ269900	COIL.CHP BK2125HS150-T
* L18	VY656400	COIL.CHP 120uH
* L19	VY656400	COIL.CHP 120uH
* L20	VY656400	COIL.CHP 120uH
* L21	VY656400	COIL.CHP 120uH
* L22	VY656400	COIL.CHP 120uH
* L23	VY656400	COIL.CHP 120uH
* L24	VY656400	COIL.CHP 120uH
* L25	VY656400	COIL.CHP 120uH
* L26	VY656400	COIL.CHP 120uH
* L27	VY656400	COIL.CHP 120uH
* L28	VY656400	COIL.CHP 120uH
* L29	VY656400	COIL.CHP 120uH
* L30	VY656400	COIL.CHP 120uH
* L31	VY656400	COIL.CHP 120uH
* L32	VZ683400	COIL.CHP 10uH LQH4N100J04
* L33	VZ683400	COIL.CHP 10uH LQH4N100J04
* L34	VZ683400	COIL.CHP 10uH LQH4N100J04
* L35	VZ683400	COIL.CHP 10uH LQH4N100J04
* L36	VY656400	COIL.CHP 120uH
* L38	VZ683400	COIL.CHP 10uH LQH4N100J04
* L40	VY656400	COIL.CHP 120uH
L41	V3232700	COIL.CHP BLM31P121SGPT
* L42	VZ683400	COIL.CHP 10uH LQH4N100J04
L43	VT332800	COIL.CHP NFM41P11C204
L44	VQ734800	BEAD.CHP EXC CL4532U 4
L46	VT332800	COIL.CHP NFM41P11C204
L47	VT332800	COIL.CHP NFM41P11C204
L48	VT332800	COIL.CHP NFM41P11C204
* L49	VZ683400	COIL.CHP 10uH LQH4N100J04
* L50	VY656400	COIL.CHP 120uH
L301	VQ734800	BEAD.CHP EXC CL4532U 4
L302	VQ734800	BEAD.CHP EXC CL4532U 4
L303	VQ734800	BEAD.CHP EXC CL4532U 4
L304	V3232700	COIL.CHP BLM31P121SGPT
L306	V3224300	COIL.CHP BLM41P181SG
L307	VQ734800	BEAD.CHP EXC CL4532U 4
* L308	VZ683400	COIL.CHP 10uH LQH4N100J04

* New Parts

Schm Ref.	PART NO.	Description
L310	V3232700	COIL.CHP BLM31P121SGPT
L311	V3232700	COIL.CHP BLM31P121SGPT
Q1	VR810000	TR 2SB1132 Q,R
* R7	V2293500	R.MTL.CHP 12KΩ 1/10W
* R8	V2293500	R.MTL.CHP 12KΩ 1/10W
* R9	V2293700	R.MTL.CHP 47KΩ 1/10W
* R10	V2293700	R.MTL.CHP 47KΩ 1/10W
* R13	V2293400	R.MTL.CHP 10KΩ 1/10W
* R14	V2293400	R.MTL.CHP 10KΩ 1/10W
* R28	V2293600	R.MTL.CHP 22KΩ 1/10W
* R29	V2293600	R.MTL.CHP 22KΩ 1/10W
R74	RE047100	R.ARRAY 10KΩ
R75	RE044330	R.ARRAY 33Ω
R79	RE047100	R.ARRAY 10KΩ
R80	RE047100	R.ARRAY 10KΩ
R84	RE047100	R.ARRAY 10KΩ
* R106	RE045330	R.ARRAY 330Ω
* R110	RE045150	R.ARRAY 150Ω
* R111	RE045150	R.ARRAY 150Ω
* R112	RE045150	R.ARRAY 150Ω
R129	RE047470	R.ARRAY 47KΩ
R130	RE047470	R.ARRAY 47KΩ
R302	RE044220	R.ARRY.CHP 22Ω
R303	RE044220	R.ARRY.CHP 22Ω
R305	RE044220	R.ARRY.CHP 22Ω
R306	RE044220	R.ARRY.CHP 22Ω
R307	RE044220	R.ARRY.CHP 22Ω
R308	RE044220	R.ARRY.CHP 22Ω
R309	RE044220	R.ARRY.CHP 22Ω
R311	RE044220	R.ARRY.CHP 22Ω
R312	RE044220	R.ARRY.CHP 22Ω
R313	RE044220	R.ARRY.CHP 22Ω
R318	RE044220	R.ARRY.CHP 22Ω
R319	RE044220	R.ARRY.CHP 22Ω
R320	RE044220	R.ARRY.CHP 22Ω
R321	RE044220	R.ARRY.CHP 22Ω
R322	RE044220	R.ARRY.CHP 22Ω
R327	RE044220	R.ARRY.CHP 22Ω
R328	Vi194900	R.MTL.CHP 1KΩ 1/10W
R329	Vi192000	R.MTL.CHP 62Ω 1/10W
* R367	RE045150	R.ARRAY 150Ω
* R371	RE045150	R.ARRAY 150Ω
R374	RE044220	R.ARRY.CHP 22Ω
* SW1	VR198000	SW.PUSH EVQ QHP 03W
* SW5	V2215500	SW.SLIDE SSGM740101
XL1	VV023800	RSNR.CRYS 33.8688MHz
* XL2	VZ268400	RSNR.CRYS 27MHz SMD-49
XL4	VV762900	RSNR.CRYS 7MHz SMD-49
* XL301	V2914600	RSNR.CRYS 33MHz SMD-49
XL302	V3625600	RSNR.CRYS 22.5792MHz
XL303	V3625700	RSNR.CRYS 24.576MHz

* New Parts

P.C.B. OPERATION

Schm Ref.	PART NO.	Description
*	V2479000	P.C.B.
*	V2479100	P.C.B.
*	V2479200	P.C.B.
*	CB601	V2438900 CN.BS.PIN 15P
	CB602	VD004900 CN.BS.PIN 6P
	CB603	VD004500 CN.BS.PIN 2P(RT)
	CB604	VT707200 L.EMIT TOTX178
*	CB605	V2330000 CN.BS.PIN 24P
*	CB606	V2438900 CN.BS.PIN 15P
	CB607	VD004500 CN.BS.PIN 2P
*	CB771	V2330000 CN.BS.PIN 24P
*	CB781	V2283700 CN.BS.PIN 13P
	CB782	VD004800 CN.BS.PIN 5P
	CB795	VD004600 CN.BS.PIN 3P(U)
	C601	US135100 C.CE.CHP 0.1uF 16V
	C602	VK679700 C.EL 100uF 6.3V
	C603	US135100 C.CE.CHP 0.1uF 16V
	C605	VQ082700 C.EL 10uF 16V(RT)
	C606	VQ082700 C.EL 10uF 16V(RT)
	C607	VQ082700 C.EL 10uF 16V(RT)
	C608	VQ082700 C.EL 10uF 16V(RT)
	C609	VJ839100 C.EL 1uF 50V
	C610	UJ638470 C.EL 470uF 16V
*	C611	US163100 C.CE.CHP 1000pF 50V
	C612	UJ638470 C.EL 470uF 16V
	C614	US135100 C.CE.CHP 0.1uF 16V(RT)
	C615	US135100 C.CE.CHP 0.1uF 16V(RT)
	C616	UT552470 C.PP 470pF 125V(RT)
	C617	Vi715100 C.MYLAR 470pF 50V(RT)
	C618	US135100 C.CE.CHP 0.1uF 16V(RT)
	C619	US135100 C.CE.CHP 0.1uF 16V(RT)
	C620	Vi715100 C.MYLAR 470pF 50V(RT)
	C621	UT552100 C.PP 100pF 125V(RT)
*	C622	VQ568800 C.EL 47uF 6.3V(RT)
	C623	VE018700 C.EL 100uF 25V(RT)
	C624	VE018700 C.EL 100uF 25V(RT)
*	C625	VQ568800 C.EL 47uF 6.3V(RT)
	C626	UT552100 C.PP 100pF 125V(RT)
	C627	UT552100 C.PP 100pF 125V
*	C628	VQ568800 C.EL 47uF 6.3V
	C629	VE018700 C.EL 100uF 25V
	C630	VE018700 C.EL 100uF 25V
*	C631	VQ568800 C.EL 47uF 6.3V
	C632	UT552100 C.PP 100pF 125V
	C633	UJ638470 C.EL 470uF 16V
	C634	UJ638470 C.EL 470uF 16V
	C635	UR866220 C.EL 2.2uF 50V
*	C636	VQ568800 C.EL 47uF 6.3V(RT)
*	C637	VQ568800 C.EL 47uF 6.3V(RT)
*	C638	VQ568800 C.EL 47uF 6.3V(RT)
*	C639	VQ568800 C.EL 47uF 6.3V(RT)
	C640	Vi715500 C.MYLAR 1000pF 50V(RT)
	C641	Vi716700 C.MYLAR 0.01uF 50V(RT)

* New Parts

Schm Ref.	PART NO.	Description
C642	Vi715500	C.MYLAR 1000pF 50V(RT)
C643	Vi715100	C.MYLAR 470pF 50V(RT)
C644	VQ645600	C.MYLAR 100pF 50V(RT)
C645	Vi715500	C.MYLAR 1000pF 50V
C646	Vi715100	C.MYLAR 470pF 50V(RT)
C647	Vi715500	C.MYLAR 1000pF 50V
C648	Vi715100	C.MYLAR 470pF 50V(RT)
C649	VQ645600	C.MYLAR 100pF 50V
C651	VE018700	C.EL 100uF 25V(RT)
C652	VQ645600	C.MYLAR 100pF 50V(RT)
* C653	VQ568800	C.EL 47uF 6.3V(RT)
* C654	VQ568800	C.EL 47uF 6.3V(RT)
	C655	VE018700 C.EL 100uF 25V(RT)
	C656	VE018700 C.EL 100uF 25V
	C657	VQ645600 C.MYLAR 100pF 50V
* C658	VQ568800	C.EL 47uF 6.3V
* C659	VQ568800	C.EL 47uF 6.3V
	C660	VE018700 C.EL 100uF 25V
	C661	VK679700 C.EL 100uF 6.3V
	C662	US135100 C.CE.CHP 0.1uF 16V
	C663	VK679700 C.EL 100uF 6.3V
	C664	US135100 C.CE.CHP 0.1uF 16V
	C665	VJ837200 C.EL 47uF 16V
	C666	VJ837200 C.EL 47uF 16V
	C667	VJ837200 C.EL 47uF 16V
	C668	US061390 C.CE.M.CHP 39pF 50V
	C669	UM397330 C.EL 33uF 16V
	C670	US062330 C.CE.M.CHP 330pF 50V
	C672	UR818470 C.EL 470uF 6.3V
	C674	US135100 C.CE.CHP 0.1uF 16V
	C675	VK679700 C.EL 100uF 6.3V
	C676	US062330 C.CE.M.CHP 330pF 50V
	C677	UR818470 C.EL 470uF 6.3V
	C679	UR818470 C.EL 470uF 6.3V
	C680	UM416470 C.EL 4.7uF 50V
	C681	VH620400 C.EL 220uF 16V
	C771	UA653330 C.MYLAR 3300pF 50V(RT)
	C772	UA653330 C.MYLAR 3300pF 50V(RT)
	C773	UA653330 C.MYLAR 3300pF 50V(RT)
	C774	UA653330 C.MYLAR 3300pF 50V(RT)
	C775	UA653100 C.MYLAR 1000pF 50V(RT)
	C776	UA653100 C.MYLAR 1000pF 50V(RT)
	C777	UA653100 C.MYLAR 1000pF 50V
	C778	UA653100 C.MYLAR 1000pF 50V
	C781	VN407200 C.EL 15uF 6.3V
	C782	US135100 C.CE.CHP 0.1uF 16V
	C783	VU466300 C.CE.SAFTY 0.01uF 400V
	C784	US135100 C.CE.CHP 0.1uF 16V
	C785	VN407200 C.EL 15uF 6.3V
	C795	US135100 C.CE.CHP 0.1uF 16V(U)
	C796	US135100 C.CE.CHP 0.1uF 16V
	C797	US061470 C.CE.M.CHP 47pF 50V
	C798	US135100 C.CE.CHP 0.1uF 16V(U)



* New Parts

P.C.B. OPERATION

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Schm Ref.	PART NO.	Description
D602	VE277600	DI0D.ARRAY IMN10-T108(RT)
D603	VE277600	DI0D.ARRAY IMN10-T108(RT)
D604	VE277600	DI0D.ARRAY IMN10-T108(RT)
D606	VE277600	DI0D.ARRAY IMN10-T108(RT)
D608	VE277600	DI0D.ARRAY IMN10-T108
D610	VT332900	DIODE 1SS355
D612	VT332900	DIODE 1SS355
D771	VT332900	DIODE 1SS355
D781	VS132300	LED(re) SLR-325VCT31
D782	VS132300	LED(re) SLR-325VCT31
D783	VS132300	LED(re) SLR-325VCT31
D784	VS132300	LED(re) SLR-325VCT31
D785	VS132300	LED(re) SLR-325VCT31
D786	VS132300	LED(re) SLR-325VCT31
D788	VT332900	DIODE 1SS355
D789	VT332900	DIODE 1SS355
D790	VT332900	DIODE 1SS355
* D795	VT522800	PHOT.CPL ON3131(U)
D796	VV656600	DIODE.ZENR RLZ3.0A 3.0V
IC601	XJ016A00	IC TC74HC595AF
* IC602	XQ178A00	IC NJM4580E-T1(RT)
* IC603	XQ178A00	IC NJM4580E-T1(RT)
* IC604	XQ178A00	IC NJM4580E-T1(RT)
* IC605	XQ178A00	IC NJM4580E-T1(RT)
* IC606	XQ178A00	IC NJM4580E-T1 OP AMP
* IC607	XQ178A00	IC NJM4580E-T1 OP AMP
IC608	XP362A00	IC M5294P
* IC609	XT785A00	IC TC7ST04F NAND
IC610	XN567A00	IC TC7WU04F INV
* IC611	XV169A00	IC BA7660FS-E2 3CH
IC781	XM832A00	IC CXP2201AS
IC782	XV129A00	IC NJU3711M SERI-PARA
JK771	VT034300	CN.DIN 1P
JK795	VJ726800	JACK.MNI (U)
JK796	VJ726800	JACK.MNI (U)
L601	VG594300	FLTR.LC.RF DSS30693B101M
L602	VG594300	FLTR.LC.RF DSS30693B101M
L603	VG594300	FLTR.LC.RF DSS30693B101M
L604	VD473700	COIL 60uH
L605	VD473700	COIL 60uH
* L606	V2589600	COIL.LP SLP681555B3B-0420
* L607	V2589600	COIL.LP SLP681555B3B-0420
* L608	V2589600	COIL.LP SLP681555B3B-0420
L609	VB871100	FER.BEAD BL02RN2-R62
L610	VD473700	COIL 60uH
L611	Vi530800	TRANS.PULS 3PTD-001
L612	GE300610	FER.BEAD BL02RN1-R62T4
L781	VG668100	COIL 10uH
PJ601	VY667800	JACK.PIN 1P
* PJ771	V2612300	JACK.PIN 4P(RT)
* PJ772	V2612400	JACK.PIN 4P(RT)
* PJ772	V2612500	JACK.PIN 2P(U)
* PJ773	V2612600	JACK.PIN 2P

* New Parts

Schm Ref.	PART NO.	Description
* PJ774	V2612700	JACK.PIN 3P
Q601	VZ725900	TR 2SD1938F S,T(RT)
Q602	VZ725900	TR 2SD1938F S,T(RT)
Q603	VZ725900	TR 2SD1938F S,T(RT)
Q604	VZ725900	TR 2SD1938F S,T(RT)
Q605	VZ725900	TR 2SD1938F S,T(RT)
Q606	VZ725900	TR 2SD1938F S,T(RT)
Q608	VZ725900	TR 2SD1938F S,T(RT)
Q609	VZ725900	TR 2SD1938F S,T(RT)
Q610	VZ725900	TR 2SD1938F S,T(RT)
Q611	VZ725900	TR 2SD1938F S,T(RT)
Q612	VZ725900	TR 2SD1938F S,T(RT)
Q613	VZ725900	TR 2SD1938F S,T(RT)
Q614	VZ725900	TR 2SD1938F S,T
Q615	VZ725900	TR 2SD1938F S,T
Q616	VZ725900	TR 2SD1938F S,T
Q617	VZ725900	TR 2SD1938F S,T
Q618	VZ725900	TR 2SD1938F S,T
Q620	iA103700	TR.CHP 2SA1037 Q,R,S(RT)
Q621	iA103700	TR.CHP 2SA1037 Q,R,S(RT)
Q622	iA103700	TR.CHP 2SA1037 Q,R,S(RT)
Q624	iA103700	TR.CHP 2SA1037 Q,R,S(RT)
Q626	iA103700	TR.CHP 2SA1037 Q,R,S
Q795	iC241200	TR.CHP 2SC2412K Q,R,S(U)
R607	Vi196800	R.MTL.CHP 5.6KΩ 1/10W(RT)
R608	Vi194900	R.MTL.CHP 1KΩ 1/10W(RT)
R610	Vi195900	R.MTL.CHP 2.7KΩ 1/10W(RT)
R611	Vi196800	R.MTL.CHP 5.6KΩ 1/10W(RT)
R612	Vi200000	R.MTL.CHP 100KΩ 1/10W(RT)
R613	Vi200000	R.MTL.CHP 100KΩ 1/10W(RT)
R614	Vi196800	R.MTL.CHP 5.6KΩ 1/10W(RT)
R615	Vi194900	R.MTL.CHP 1KΩ 1/10W(RT)
R616	Vi194900	R.MTL.CHP 1KΩ 1/10W(RT)
R617	Vi196800	R.MTL.CHP 5.6KΩ 1/10W(RT)
R618	Vi200000	R.MTL.CHP 100KΩ 1/10W(RT)
R619	Vi200000	R.MTL.CHP 100KΩ 1/10W(RT)
R620	Vi196800	R.MTL.CHP 5.6KΩ 1/10W(RT)
R621	Vi194900	R.MTL.CHP 1KΩ 1/10W(RT)
R622	Vi198100	R.MTL.CHP 20KΩ 1/10W(RT)
R623	Vi197400	R.MTL.CHP 10KΩ 1/10W(RT)
R624	Vi200000	R.MTL.CHP 100KΩ 1/10W(RT)
R625	Vi200000	R.MTL.CHP 100KΩ 1/10W(RT)
R626	Vi197400	R.MTL.CHP 10KΩ 1/10W(RT)
R627	Vi198100	R.MTL.CHP 20KΩ 1/10W(RT)
R628	Vi198100	R.MTL.CHP 20KΩ 1/10W
R629	Vi197400	R.MTL.CHP 10KΩ 1/10W
R630	Vi200000	R.MTL.CHP 100KΩ 1/10W
R631	Vi200000	R.MTL.CHP 100KΩ 1/10W
R632	Vi197400	R.MTL.CHP 10KΩ 1/10W
R633	Vi198100	R.MTL.CHP 20KΩ 1/10W
R635	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R636	Vi199000	R.MTL.CHP 47KΩ 1/10W(RT)
R637	Vi199000	R.MTL.CHP 47KΩ 1/10W(RT)

* New Parts

P.C.B. OPERATION & CM

Schm Ref.	PART NO.	Description
R638	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R639	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R640	Vi199000	R.MTL.CHP 47KΩ 1/10W(RT)
R641	Vi199000	R.MTL.CHP 47KΩ 1/10W(RT)
R642	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R643	Vi197100	R.MTL.CHP 7.5KΩ 1/10W(RT)
R644	Vi197400	R.MTL.CHP 10KΩ 1/10W(RT)
R645	Vi197100	R.MTL.CHP 7.5KΩ 1/10W(RT)
R646	Vi197100	R.MTL.CHP 7.5KΩ 1/10W(RT)
R647	Vi197400	R.MTL.CHP 10KΩ 1/10W(RT)
R648	Vi197100	R.MTL.CHP 7.5KΩ 1/10W(RT)
R649	Vi197100	R.MTL.CHP 7.5KΩ 1/10W
R650	Vi197400	R.MTL.CHP 10KΩ 1/10W
R651	Vi197100	R.MTL.CHP 7.5KΩ 1/10W
R652	Vi197100	R.MTL.CHP 7.5KΩ 1/10W
R653	Vi197400	R.MTL.CHP 10KΩ 1/10W
R654	Vi197100	R.MTL.CHP 7.5KΩ 1/10W
R656	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R657	Vi199000	R.MTL.CHP 47KΩ 1/10W(RT)
R658	Vi199000	R.MTL.CHP 47KΩ 1/10W(RT)
R659	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R660	Vi193300	R.MTL.CHP 220Ω 1/10W
R661	Vi199000	R.MTL.CHP 47KΩ 1/10W
R662	Vi199000	R.MTL.CHP 47KΩ 1/10W
R663	Vi193300	R.MTL.CHP 220Ω 1/10W
R666	Vi194900	R.MTL.CHP 1KΩ 1/10W(RT)
R677	Vi196800	R.MTL.CHP 5.6KΩ 1/10W(RT)
R679	Vi196800	R.MTL.CHP 5.6KΩ 1/10W(RT)
R683	Vi194900	R.MTL.CHP 1KΩ 1/10W(RT)
R685	Vi194900	R.MTL.CHP 1KΩ 1/10W(RT)
R689	Vi196800	R.MTL.CHP 5.6KΩ 1/10W(RT)
R716	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R717	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R718	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R719	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R720	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R721	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R722	Vi193300	R.MTL.CHP 220Ω 1/10W
R723	Vi193300	R.MTL.CHP 220Ω 1/10W
R732	HV455470	R.CAR.FP 470Ω 1/4W
R750	HV455150	R.CAR.FP 150Ω 1/4W
R751	HV455150	R.CAR.FP 150Ω 1/4W
R763	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R764	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R765	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R766	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R767	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R768	Vi193300	R.MTL.CHP 220Ω 1/10W(RT)
R769	Vi193300	R.MTL.CHP 220Ω 1/10W
R770	Vi193300	R.MTL.CHP 220Ω 1/10W
RY771	VM640200	RELAY RY12W-OH-K-DC12V
SW601	VR365100	SW.SLIDE SSSF112-S06N1
SW782	VG392900	SW.TACT SKHVAA

* New Parts

Schm Ref.	PART NO.	Description
SW783	VG392900	SW.TACT SKHVAA
SW784	VG392900	SW.TACT SKHVAA
SW785	VG392900	SW.TACT SKHVAA
SW786	VG392900	SW.TACT SKHVAA
SW787	VG392900	SW.TACT SKHVAA
SW788	VG392900	SW.TACT SKHVAA
SW789	VG392900	SW.TACT SKHVAA
SW790	VG392900	SW.TACT SKHVAA
SW791	VG392900	SW.TACT SKHVAA
SW792	VG392900	SW.TACT SKHVAA
△ SW793	Vi319200	SW.PUSH SDDL1
SW794	VR365100	SW.SLIDE SSSF112-S06N1(RT)
U781	VK498900	L.DTCT S-100
* V781	V2215300	FL.DSPLY 12-ST-14GK
XL781	V3175000	RSNR.CE 4.19MHz CST0419MG
	CB644670	COVER.CAP (RT)
	VB966900	CN IMSA-6024
	VP931600	SHEET FL25x98
* V2642200		SPACER.FL H5
BB071360		SCR.TERM 8.3x13
* V2479300	P.C.B.	CM
CB801	VB858200	CN.BS.PIN 3P
CB802	VB858200	CN.BS.PIN 3P
CB803	VB858200	CN.BS.PIN 3P
CB804	VB858200	CN.BS.PIN 3P
CB805	VB858100	CN.BS.PIN 2P
CB806	VB858100	CN.BS.PIN 2P
CB807	VB858100	CN.BS.PIN 2P
* CB808	V2215900	CN.BS.PIN 17P
CB809	VB858200	CN.BS.PIN 3P
* C801	US163100	C.CE.CHP 1000pF 50V
C802	US135100	C.CE.CHP 0.1uF 16V
* C803	US163100	C.CE.CHP 1000pF 50V
C804	UM407220	C.EL 22uF 25V
C805	UM407220	C.EL 22uF 25V
C806	US135100	C.CE.CHP 0.1uF 16V
C807	UM407220	C.EL 22uF 25V
D801	VU994200	DIODE.ZENR MA8075-M 7.5V
* D802	V2363400	PHOT.INTR ON1024
IC801	XF947A00	IC LA6510
IC802	XQ135A00	IC BA6286
△ Q803	iC241200	TR.CHP 2SC2412K Q,R,S
R802	HV456100	R.CAR.FP 1KΩ 1/4W
R806	HV454100	R.CAR.FP 10Ω 1/4W
R807	HV453220	R.CAR.FP 2.2Ω 1/4W
R810	HV453100	R.CAR.FP 1Ω 1/4W
R813	HV454100	R.CAR.FP 10Ω 1/4W
R822	HV454220	R.CAR.FP 22Ω 1/4W
R823	HV454220	R.CAR.FP 22Ω 1/4W
SW801	Vi294000	SW.LEVER SSCF21
SW802	Vi294000	SW.LEVER SSCF21

* New Parts

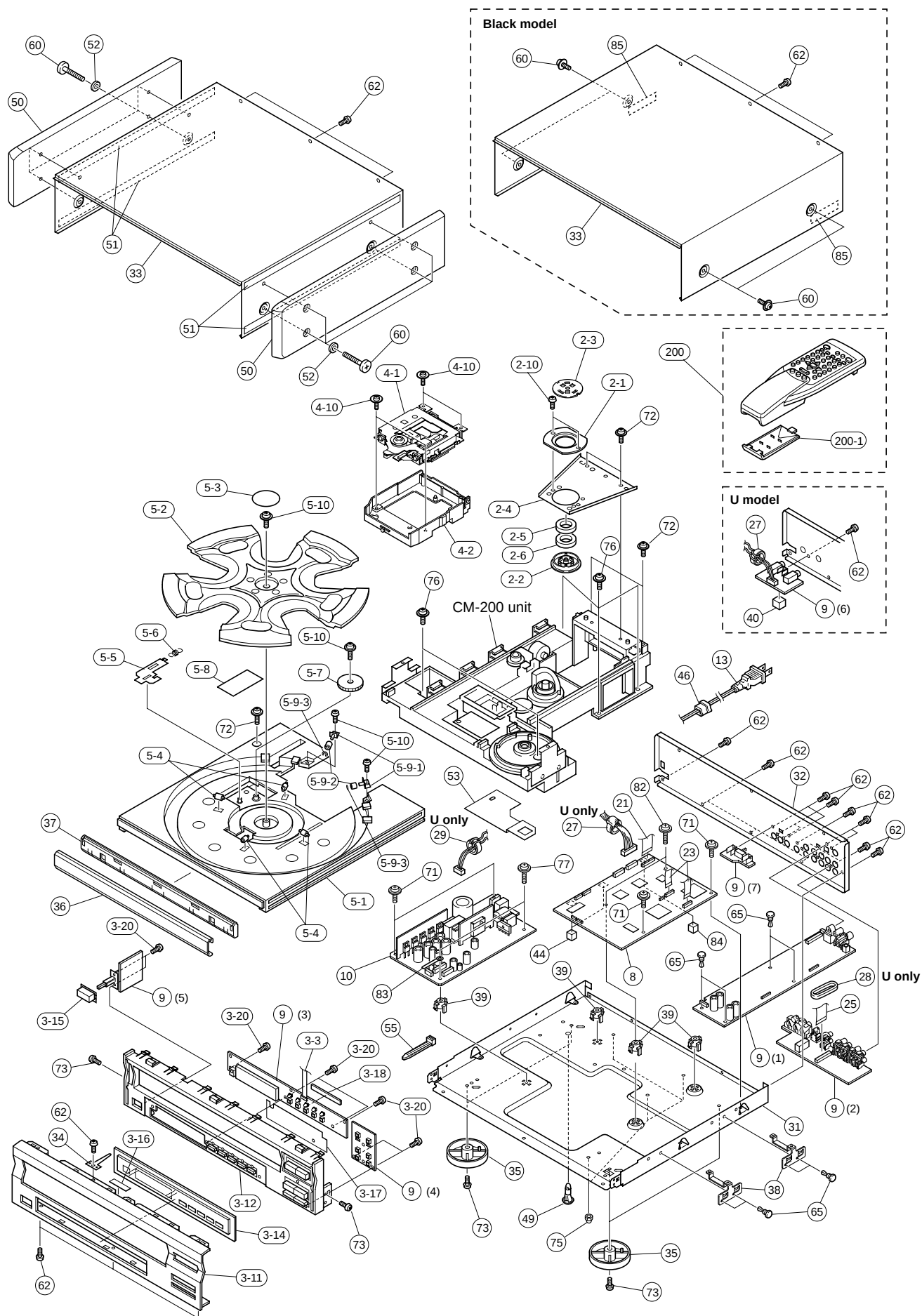
CHIP RESISTOR

*
*

Schm Ref.	PART NO.	Description

* New Parts

■ EXPLODED VIEW



MECHANICAL PARTS

	Ref. No.	PART NO.	Description	Remarks	Markets
*	2-1	VZ762300	HOLDER, CLAMPER/D		
*	2-2	VZ762400	CLAMPER	D	
*	2-3	VZ762500	PLATE, CLAMPER	D	
*	2-4	VZ762600	FRAME, CLAMPER		
*	2-5	VZ762700	PLATE, BACK D		
*	2-6	V2014800	MAGNET, D	NEOREC37H	
	2-10	EP600230	BIND HEAD B-TITE SCREW	3x6 ZMC2-BL	
*	3-3	V2688500	CONNECTOR, FLAT CABLE	13P 320mm	
*	3-11	V0067800	FRONT PANEL	GD	
*	3-11	VZ877400	FRONT PANEL	BL	
*	3-12	V0068000	SUB PANEL	GD	
*	3-12	VZ877700	SUB PANEL	BL	
*	3-14	VZ877900	WINDOW PANEL, LID		
	3-15	V0068200	BUTTON	11/22	GD
	3-15	VZ494400	BUTTON	11x22	BL
	3-16	V3984600	SPACER	T1x13x40	
	3-17	V4108200	SHEET, GND		
	3-18	V4421600	CUSHION	H5x8x80	
	3-20	EP630220	BIND HEAD P-TITE SCREW	3x8 ZMC2-BL	
*	4-1	V2205700	TRAVERSE UNIT	VXK1363	
*	4-2	VZ762200	HOLDER, PU/D		
*	4-10	V2296900	PW HEAD P-TITE SCREW	2x10-5 MFZN2-Y	
*	5-1	VZ761500	TRAY	B	
*	5-2	VZ761600	TABLE, D	B	
*	5-3	V2133100	PLATE, TABLE		
	5-4	VS037300	ROLLER		
	5-5	VV014400	LEVER	PO	
	5-6	VS036900	SPRING, RT		
*	5-7	VZ761800	GEAR, RT1		
	5-8	VS037900	SHEET, TRAY	B	
*	5-9-1	VZ762100	PLATE, ROLLER		
*	5-9-2	VZ762000	ROLLER		
	5-9-3	VM672200	CUT WASHER	1.5x4x0.25	
*	5-10	V2296600	PW HEAD P-TITE SCREW	3x8-10 MFZN2-BL	
*	8	V247870R	P.C.B. ASS'Y	MAIN	(R)
*	8	V247870T	P.C.B. ASS'Y	MAIN	(T)
*	8	V2478800	P.C.B. ASS'Y	MAIN	(U)
*	9	V2479000	P.C.B. ASS'Y	OPERATION	(U)
*	9	V2479100	P.C.B. ASS'Y	OPERATION	(R)
*	9	V2479200	P.C.B. ASS'Y	OPERATION	(T)
⚠ *	10	V2687300	SWITCHING POWER SUPPLY	DL893W	
⚠	13	V2643800	POWER CORD ASS'Y		(U)
⚠	13	VZ542500	POWER CORD ASS'Y		(RT)
*	21	V2688600	CONNECTOR, FLAT CABLE	35P 90mm	
*	23	V2688800	CONNECTOR, FLAT CABLE	15P 140mm	
*	25	V2688700	CONNECTOR, FLAT CABLE	24P 100mm	
	27	VP128600	FERRITE CORE	FSOB160PB	(U)
	28	V3479200	FERRITE CORE	FSOC320RT01	(U)
	29	V3479100	FERRITE CORE	FSOB300RT03	(U)
*	31	VZ876600	CHASSIS, MAIN		
*	32	VZ876800	REAR PANEL		(U)
*	32	VZ876900	REAR PANEL		(RT)
*	33	V2488700	TOP COVER	BL	

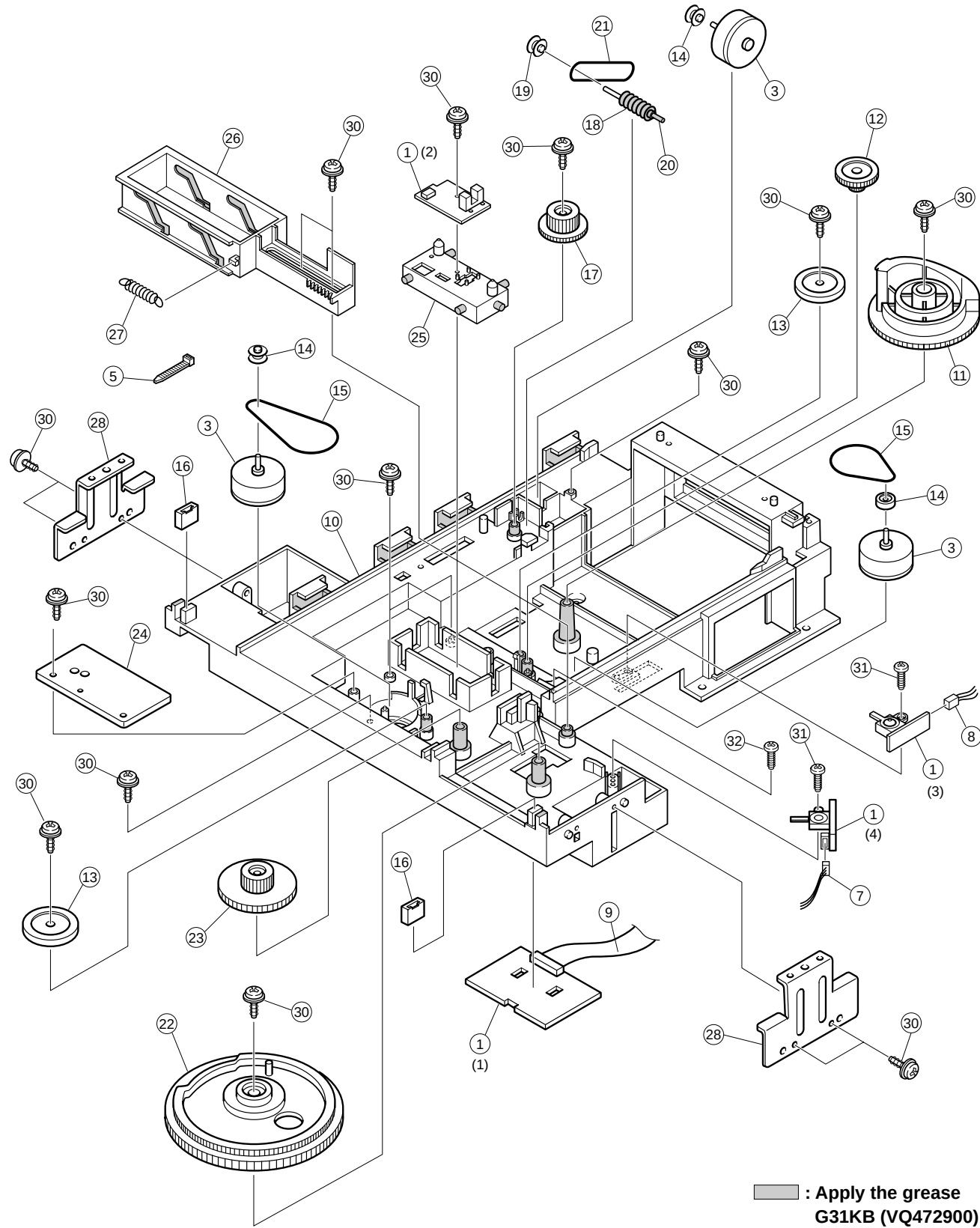
* New Parts

	Ref. No.	PART NO.	Description	Remarks	Markets
*	33	V2488800	TOP COVER	GD	
	34	VN806000	GROUND PLATE		
	35	V0049900	LEG	D60xH16	GD
	35	VQ780300	LEG	D60xH16	BL
*	36	V2684800	LID		BL
*	36	V2684900	LID		GD
*	37	V0068100	HOLDER, LID		GD
*	37	VZ877800	HOLDER, LID		BL
*	38	V2671800	HOLDER, PCB		
	39	VR264400	SPACER	H8	
*	40	V2642000	CUSHION	H15	(U)
*	44	V2641900	CUSHION, P.C.B.	H13	
	46	V2438700	CORD STOPPER	10P1	
	49	V2319600	DAMPER	T2	
*	50	V2153500	SIDE PANEL		
*	51	V2642100	SAPCER, SIDE		
	52	V2961800	RING	/WOOD	
	53	V3436700	SHHET, BARRIER		
	55	CB069250	BINDING TIE	BK-1	
	60	EK365090	PW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	BL
	60	VC077200	FLAT FILLISTER HEAD SCREW	4x27 FCRM3-BR	GD
	62	VN413300	BIND HEAD BONDING B-T. SCREW	3x8 MFZN2-BL	
	65	CB099600	PLASTIC RIVET	No.920	
	66	CB605620	PLASTIC RIVET	No.1781	
	71	VT669300	PW HEAD B-TITE SCREW	3x8-8 MFC2	
	72	EX602620	PW HEAD P-TITE SCREW	3x12-10 ZMC2-Y	
	73	EP600190	BIND HEAD B-TITE SCREW	3x8 ZMC2-BL	
	74	VQ057700	HEXAGONAL CAP NUT	3mm FNM3-3G	
	75	VK002600	HEXAGONAL CAP NUT	4mm PLASTIC	
	76	EX602630	BW HEAD S-TITE SCREW	4x10 FCRM3-BL	
*	77	V2690700	PW HEAD S-TITE SCREW	3x15-8 MFZN2-BL	
	82	VT669400	PW HEAD B-TITE SCREW	3x15-8 MFC2	
	83	CB836200	BINDING TIE	S-70B	
	84	V3862900	CUSHION	H7	
	85	V3871800	CUSHION	H3x10x40	
			ACCESSORIES		
*	200	V2096000	REMOTE CONTROL TRANSMITTER	SBGH60039A	
	200-1	CX679050	LID	74x34BLALPS	
*		V3008100	PIN-PLUG CORD	3P 1.5m	
			BATTERY, MANGANESE	SUM-3,AA,R06	

* New Parts

DVD-C900

EXPLODED VIEW (CM-200 UNIT)

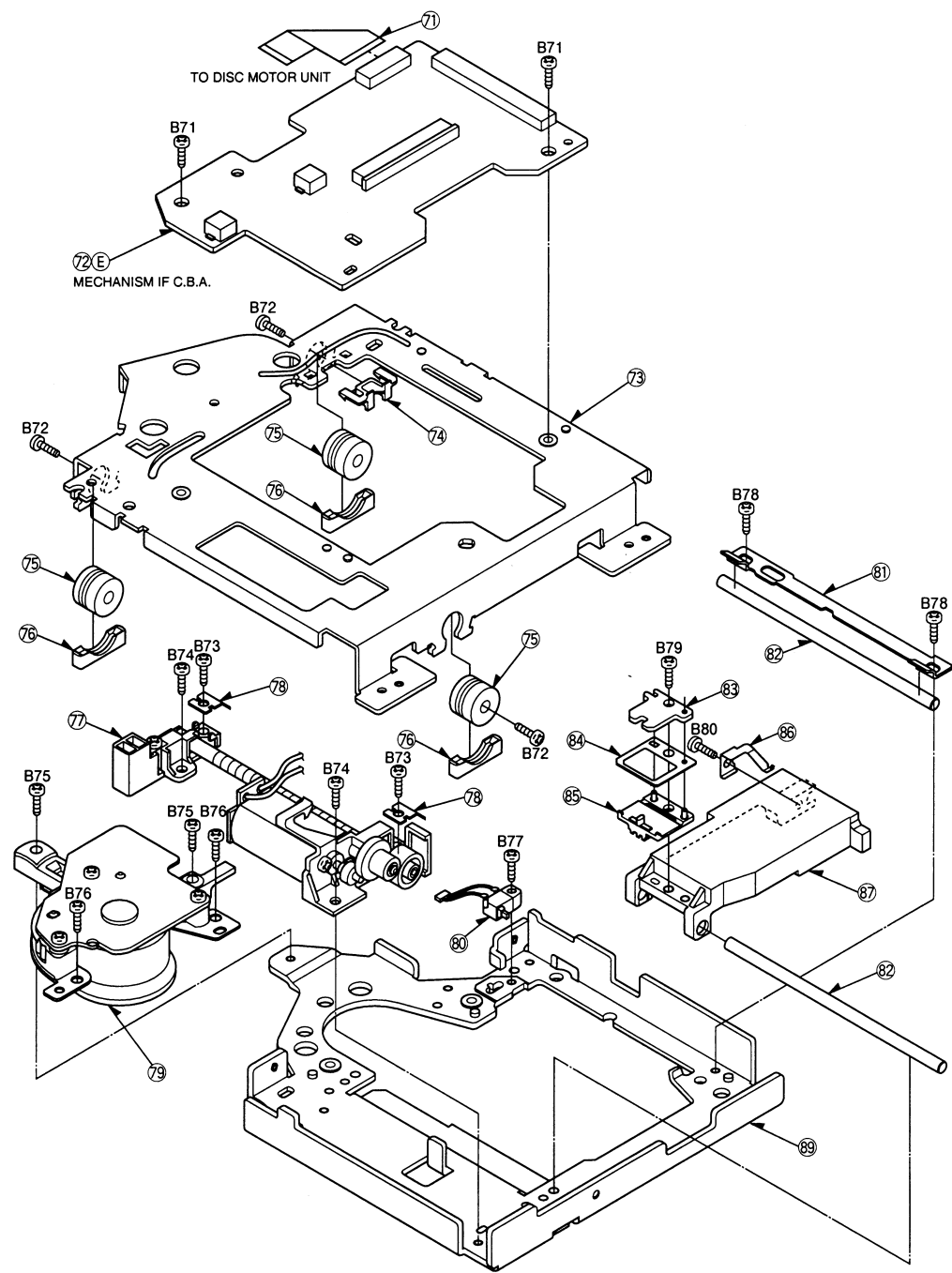


MECHANICAL PARTS (CM-200 UNIT)

Ref. No.	PART NO.	Description	Remarks	Markets
* 1	V2479300	P.C.B. ASS'Y	CM	
▲ 3	VM444200	MOTOR	RF-500TB-14415	
5	CB069250	BINDING TIE	BK-1	
* 7	V2688400	CONNECTOR ASS'Y	3P 160mm	
* 8	V2688300	CONNECTOR ASS'Y	3P 200mm	
9	V3888100	CONNECTOR, FLAT CABLE	17P 100mm	
* 10	VZ760500	CHASSIS	B	
* 11	VZ760600	CAM, CL		
12	VS035400	GEAR, CL2		
13	VS036100	GEAR PULLEY		
14	VS036200	PULLEY		
15	VQ776900	BELT	V	
16	VQ775500	DAMPER, TRAY		
17	VS035800	GEAR, WW		
18	VS035700	GEAR		
* 19	V2009500	PULLEY, RT		
20	VS036600	SHAFT, 2		
21	VS036500	BELT, RT		
* 22	VZ760700	GEAR, LO1		
23	VS035300	GEAR, LO1		
* 24	VZ760800	SHEET, BELT		
* 25	VZ761000	HOLDER, SENSOR		
* 26	VZ761200	CAM, SLIDE		
27	VS036800	SPRING, CAM		
28	VS037400	SUPPORT, TRAY		
* 30	V2296600	PW HEAD P-TITE SCREW	3x8-10 MFZN2-BL	
31	VF617600	PAN HEAD P-TITE SCREW	2.6x8 FCRM3-BL	
* 32	V2297000	BIND HEAD SCREW	2.6x5 MFZN2-BL	

* New Parts

1 ■ EXPLODED VIEW (TRAVERSE UNIT)



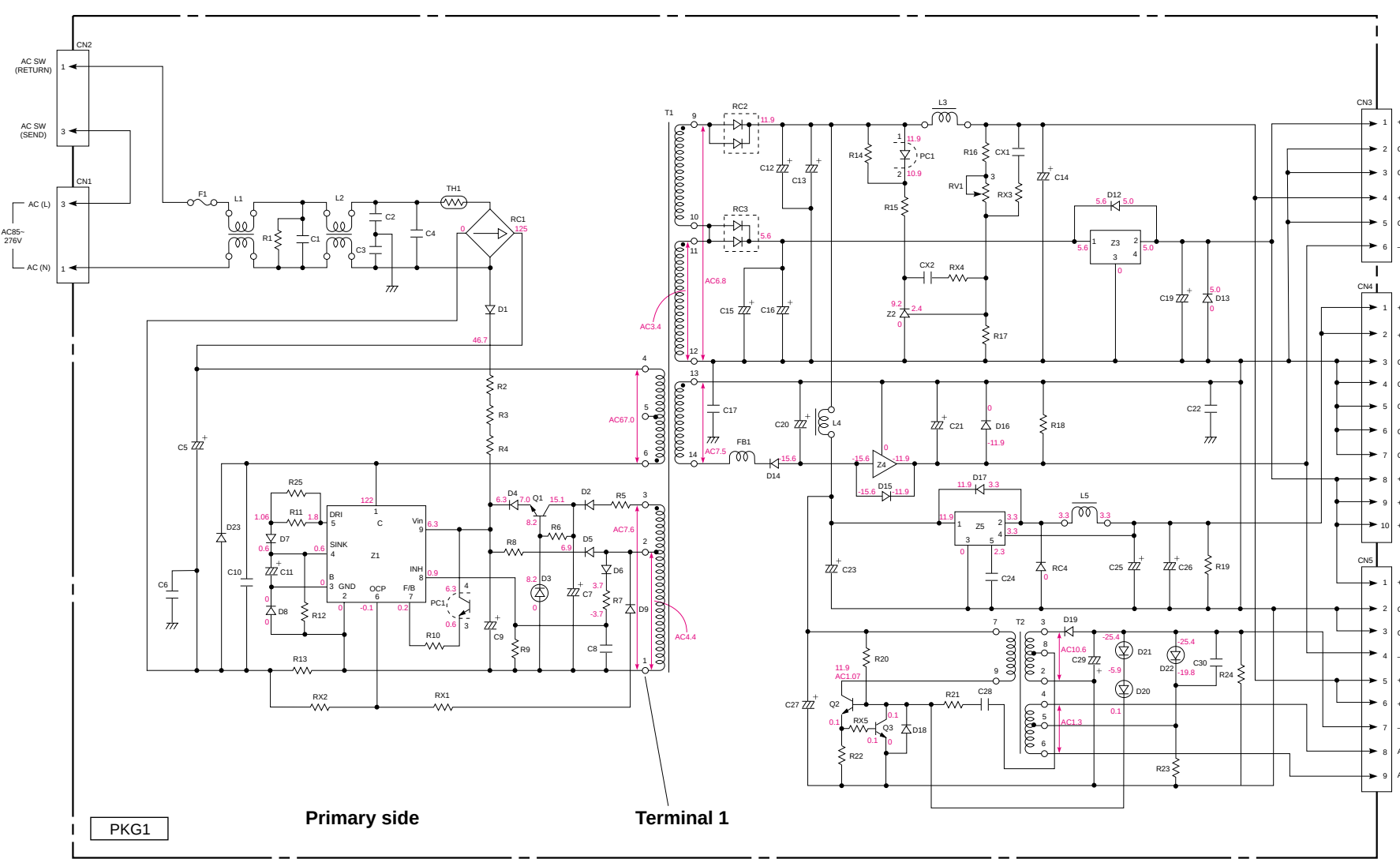
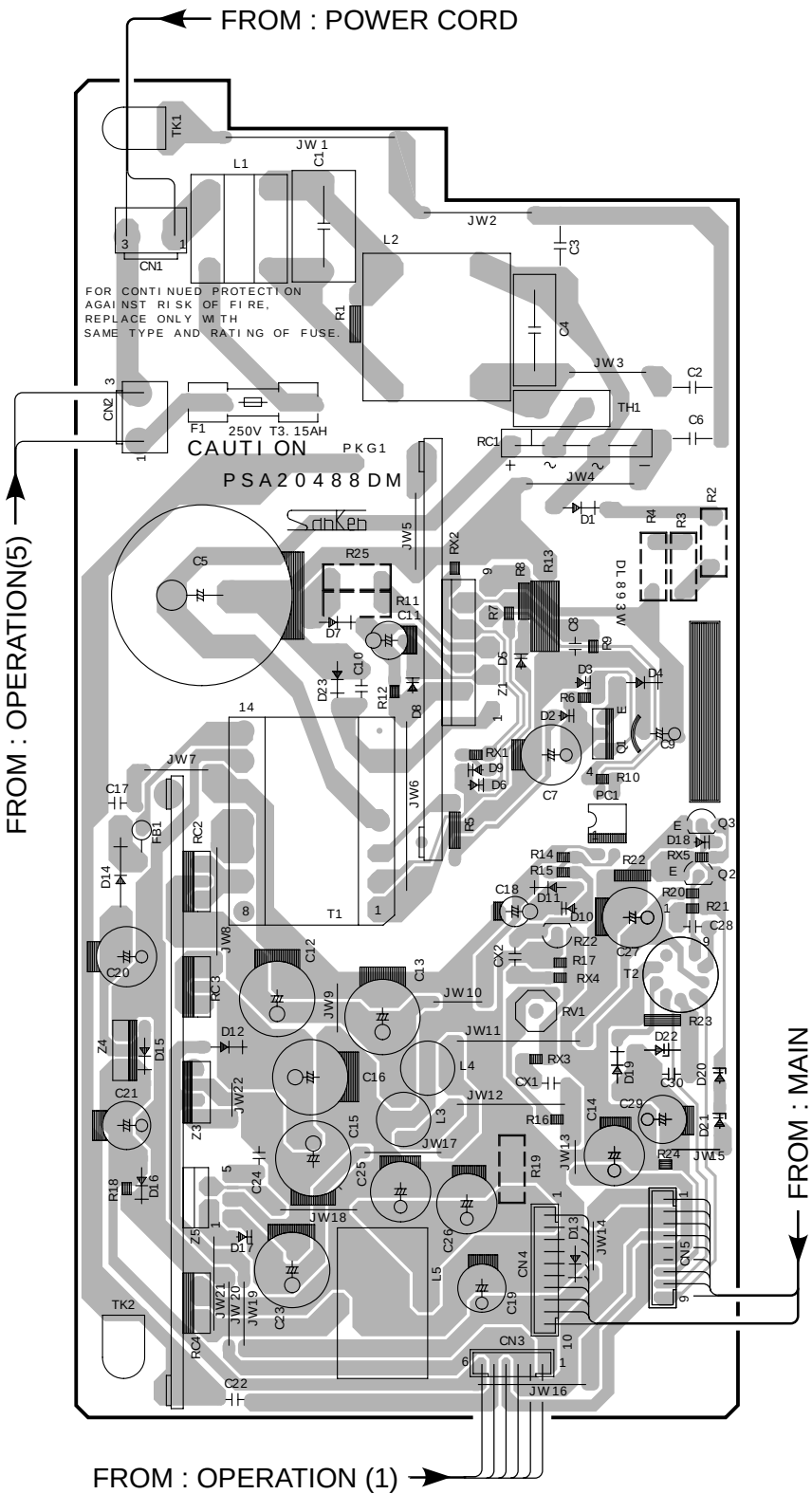
■ MECHANICAL PARTS (TRAVERSE UNIT)

Ref. No.	PART NO.	Description	Remarks	Markets
* 71	MX605090	FLEXIBLE CABLE	11P	VWJ1116
* 72	NX701940	P.C.B. ASS'Y	MECHANISM IF	VEP90367A
* 73	NX635670	D CHASSIS UNIT		VXA5786
* 74	CX680120	SWITCH CLAMPER		VMD2682
* 75	CX680210	DAMPER		VMG1001
* 76	CX680220	DAMPER HOLDER		VMD2675
* 77	NX635720	TRAVERSE MOTOR UNIT		VXQ0588
* 78	CX680250	MAIN SHAFT HOLDER		VMC1262
* 79	NX702760	DISC MOTOR UNIT	VXA6065	VXA6065
* 80	NX635700	CHIP SWITCH UNIT		VEK8061
* 81	CX680180	SUB SHAFT HOLDER		VMC1260
* 82	AX624050	GUIDE SHAFT		VMS6098
* 83	AX624160	NUT STOPPER		VMA9532
* 84	AX624170	NUT HOLD SPRING		VMC1263
* 85	AX624070	SCREW NUT		VMD2637
* 86	AX624020	PU OVER PRESSURE SPRING		VMC1265
* 87	PX601990	OPTICAL PICK-UP UNIT		VED0378
* 89	AX624010	H CHASSIS		VMK0433
* B71	EX604000	SCREW		XTB26+5F
* B72	EX603930	SCREW		VHD1032
* B73	EX604080	SCREW		XYC2+JF10
* B74	EX604120	SCREW		XYN2+J4
* B75	EX604070	SCREW		XVE26B10FP
* B76	EX604090	SCREW		XYC2+JF5
* B77	EX604130	SCREW		XYN2+J8
* B78	EX603990	SCREW		XSN2+3
* B79	EX603970	SCREW		XQN17+C5
* B80	EX603950	SCREW		VHD1057

* New Parts

SWITCHING POWER SUPPLY (DL893W : V2687300)

P. C. B. SWITCHING POWER SUPPLY



■ ELECTRICAL PARTS (DL893W : V2687300)

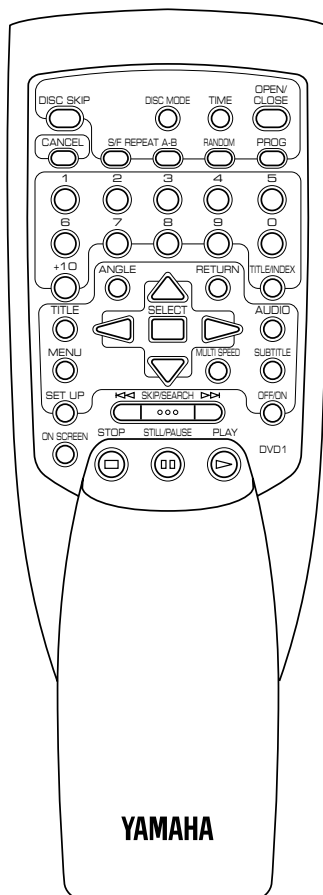
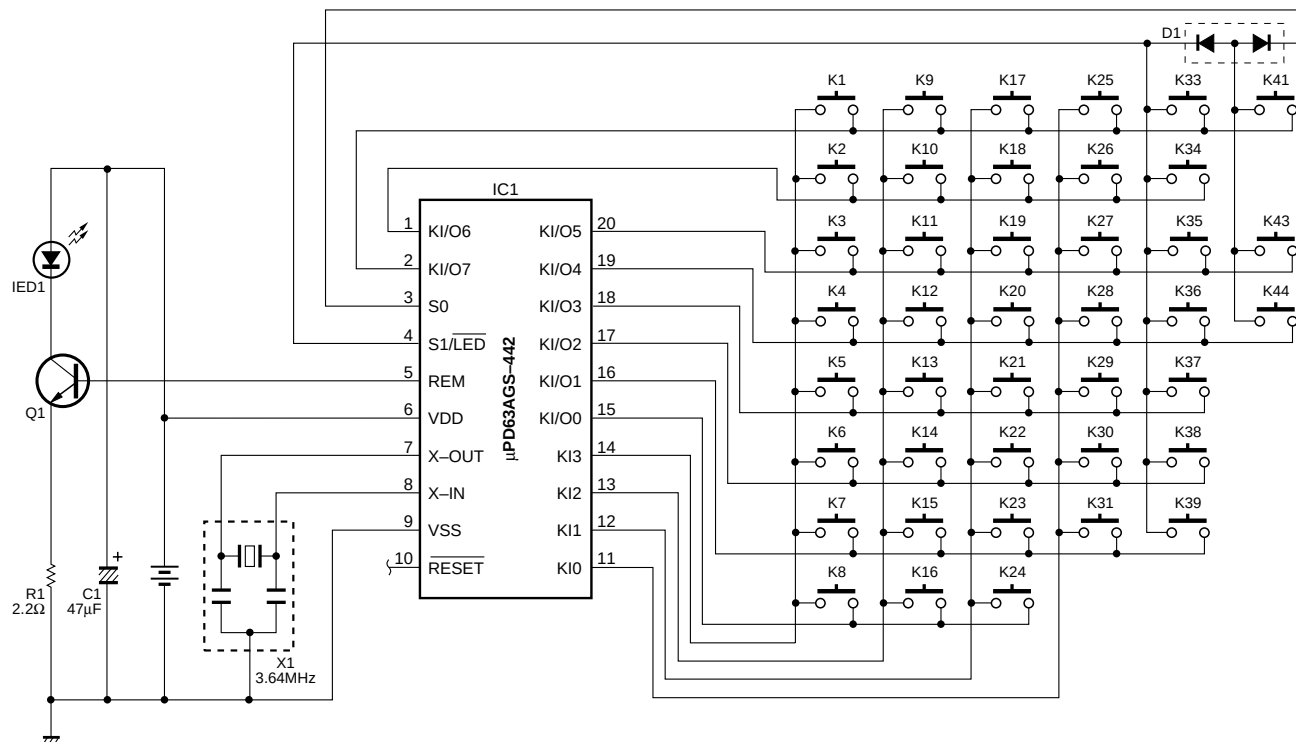
Schm				
Ref.	PART NO.	Description	Remarks	
△ *	V2687300	PWR.SUPPLY	DL893W	
F1	AAX08230	FUSE	3.15A 250V	23642453
* FH1	AAX08240	HOLDER.FUS	EYF-52BCZ	23643614
T1	AAX08440	TRNS.PWR	EXT41540-736	31566908
T2	AAX08450	TRNS.PWR	98006414	33388578
L1	VR816100	COIL	TLF12UA502W1R0	23079302
L2	AAX08310	COIL	SS24H-10082	23487369
L3	AAX08320	COIL	CX40357-006	23642925
L4	AAX08320	COIL	CX40357-006	23642925
L5	AAX08150	DIODE	RK19	33300263
D 1	AAX08120	DIODE	S5688J	23586928
D 2	AAX08130	DIODE	1GU42	23601552
D 4	AAX08140	DIODE	S5688G	23606732
D 5	AAX08130	DIODE	1GU42	23601552
D 6	AAX08130	DIODE	1GU42	23601552
D 7	AAX08130	DIODE	1GU42	23601552
D 8	AAX08130	DIODE	1GU42	23601552
D 9	AAX08130	DIODE	1GU42	23601552
D12	AAX08140	DIODE	S5688G	23606732
D13	AAX08140	DIODE	S5688G	23606732
D14	AAX08150	DIODE	RK19	33300263
D15	AAX08140	DIODE	S5688G	23606732
D16	AAX08140	DIODE	S5688G	23606732
D17	AAX08130	DIODE	1GU42	23601552
D18	AAX08090	DIODE	1SS119	23195236
D19	AAX08110	DIODE	AL01Z	23553566
D23	AAX08100	DIODE	EG01C	23402142
D 3	AAX08170	DIODE.ZENR	RD8.2ES	23246183
D20	AAX08190	DIODE.ZENR	RD6.8ES	23355705
D21	AAX08180	DIODE.ZENR	RD20ES	23310639
D22	AAX08160	DIODE.ZENR	RD5.6E	23166546
RC1	VP598900	DIODE.BRG	D3SBA60	23376125
RC2	AAX08420	DIODE.BDG	SF10SC6	33090374
RC3	AAX08410	DIODE.BDG	SF5SC4	23740137
RC4	AAX08400	DIODE.BDG	SF5S4	23739589
Q1	AAX08220	TR	2SD1509	33030797
Q2	AAX08200	TR	2SC3328	13535290
Q3	AAX08210	TR	2SC1815	23080986
PC1	VQ250500	PHOT.CPL	TLP621	23732290
Z1	AAX07890	IC	STR-S6709A	33231946
Z2	XL967A00	IC	HA17431P	23364755
Z3	AAX07880	IC	PQ05RF2X	33021259
Z4	AAX07870	IC	uPC79M12HF	23308723
* Z5	XW241A00	IC	SI-8033S	33283644
C 5	AAX07980	C.EL	220uF 400V	33380976
C 7	AAX07990	C.EL	220uF 35V	33386605
C 9	AAX07950	C.EL	220uF 25V	33347790
C11	AAX07910	C.EL	47uF 35V	33061617
C12	AAX07960	C.EL	1000uF 25V	33364385
C13	AAX07960	C.EL	1000uF 25V	33364385
C14	AAX07940	C.EL	470uF 25V	33237650
C15	AAX07970	C.EL	2200uF 10V	33364393
C16	AAX07970	C.EL	2200uF 10V	33364393

* New Parts

Schm				
Ref.	PART NO.	Description	Remarks	
C19	AAX07920	C.EL	220uF 10V	33062672
C20	AAX08000	C.EL	220uF 35V	33437218
C21	AAX07950	C.EL	220uF 25V	33347790
C23	AAX07960	C.EL	1000uF 25V	33364385
C25	AAX07900	C.EL	1000uF 16V	14337700
C26	AAX07900	C.EL	1000uF 16V	14337700
C27	AAX07940	C.EL	470uF 25V	33237650
C29	AAX07930	C.EL	100uF 50V	33237588
CX1	AAX08270	C.FILM	1uF 50V	23090531
CX2	AAX08270	C.FILM	1uF 50V	23090531
C 1	AAX08300	C.FILM	0.22uF 250V	23485838
C 4	AAX08290	C.FILM	0.1uF 250V	23485811
C 8	AAX08280	C.FILM	0.001uF 50V	23095525
C24	AAX08260	C.FILM	0.01uF 50V	23090280
C28	AAX08250	C.FILM	0.0047uF 50V	23087743
C30	AAX08270	C.FILM	1uF 50V	23090531
C 2	AAX08070	C.CE	1000pF 250V	33269773
C 3	AAX08070	C.CE	1000pF 250V	33269773
C 6	AAX08080	C.CE	2200pF 250V	33319800
C10	AAX08060	C.CE	470pF 2KV	23515168
RV1	AAX08330	VR	1KΩ	23644634
R 2	AAX08370	R.MTL	15KΩ	2W23769879
R 3	AAX08370	R.MTL	15KΩ	2W23769879
R 4	AAX08370	R.MTL	15KΩ	2W23769879
R 5	AAX08360	R.MTL	6.8Ω 1/2W	23537110
R 8	AAX08360	R.MTL	6.8Ω 1/2W	23537110
R11	AAX08390	R.MTL	33Ω 2W	33024282
R13	AAX08380	R.MTL	0.47Ω 2W	23769976
R19	AAX08340	R.MTL	33Ω 2W	23516407
R22	AAX08350	R.MTL	1.5Ω 1/2W	23537072
R25	AAX08390	R.MTL	33Ω	2W33024282
TH1	AAX08050	POSISTOR	NTH18D100LA	23485137
FB1	GE300600	FER.BEAD	BL02RN1	23607259
CN1	AAX08010	CN	B2P3-VH	23397858
CN2	AAX08010	CN	B2P3-VH	23397858
CN3	AAX08030	CN	B6B-PH-K-S	23479358
CN4	AAX08020	CN	B10B-PH-K-S	23416941
CN5	AAX08040	CN	B9B-PH-K-S	23626369
TK1	AAX08430	TERM		33055250
TK2	AAX08430	TERM		33055250

* New Parts

■ SCHEMATIC DIAGRAM

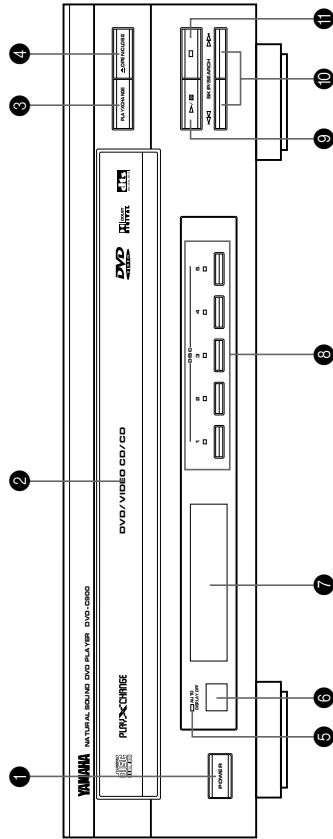


Key No.	FUNCTION	CUSTOM (HEX)	DATA (HEX)
1	OPEN/CLOSE	7C	81
2	CANCEL	7C	9F
3	S/F REPEAT	7C	A3
4	A-B REPEAT	7C	A4
5	RANDOM	7C	A1
6	PROG	7C	A0
7	1	7C	94
8	2	7C	95
9	3	7C	96
10	4	7C	97
11	5	7C	98
12	6	7C	99
13	7	7C	9A
14	8	7C	9B
15	9	7C	9C
16	0	7C	93
17	+10	7C	9D
18	ANGLE	7C	AE
19	△	7C	BA
20	RETURN	7C	B7
21	TITLE/INDEX	7C	9E
22	SET UP	7C	AC
23	SKIP/SEARCH ◀◀◀	7C	B9
24	SKIP/SEARCH ▶▶▶	7C	BA
25	OFF/ON	7C	AA
26	TITLE	7C	B1
27	◀	7C	B5
28	SELECT	7C	B8
29	▷	7C	B6
30	AUDIO	7C	AD
31	MENU	7C	B2
33	▽	7C	B3
34	MULTI SPEED	7C	BB
35	SUBTITLE	7C	AB
36	ON SCREEN	7C	A6
37	STOP □	7C	85
38	STILL/PAUSE ◻◻	7C	83
39	PLAY ▷	7C	82
41	DISC SKIP	7C	8B
43	DISC MODE	7C	BC
44	TIME	7C	AB

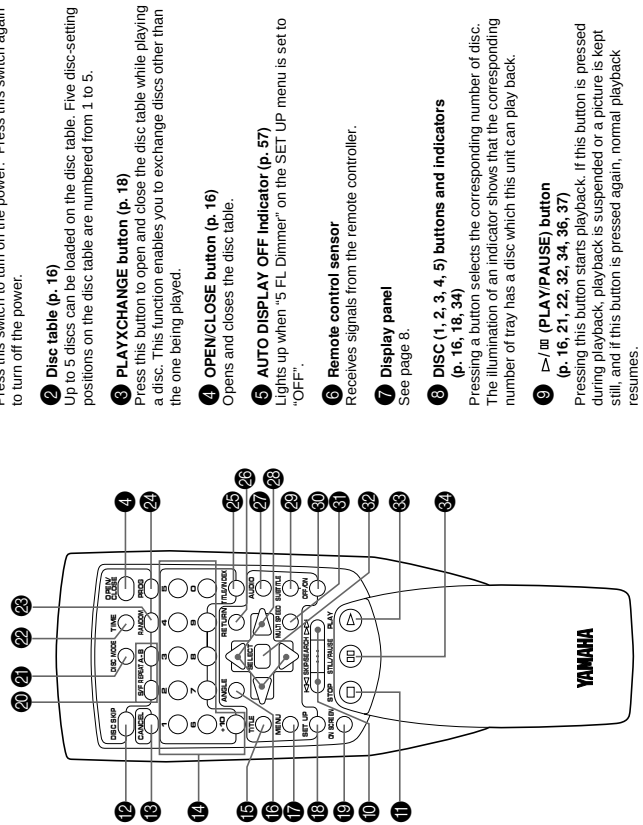
Names of parts and their functions

See the pages in parenthesis for details regarding operation.

Front panel



Remote controller



OPERATING INSTRUCTIONS

English

Names of parts and their functions

10 SKIP/SEARCH buttons (p. 19, 22, 24, 25)

SKIP $\triangleright/\triangleleft$: Press this button to locate the beginning of the next chapter or next track.

SKIP $\triangleleft/\triangleright$: Press this button to locate the beginning of the currently playing chapter or track, or the previous chapter or track.

SEARCH $\triangleright/\triangleleft$: Press and hold this button to advance the playback rapidly.

SEARCH $\triangleleft/\triangleright$: Press and hold this button to reverse the playback rapidly.

11 STOP (■) button (p. 17, 36, 37)

Stops playback.

12 DISC SKIP button (p. 16, 34, 37)

Whenever this button is pressed, the selected disc changes.

CANCEL button (p. 36)
Used to cancel some specific mode or setting of this unit. See the pages for operating methods for details.

Numeric buttons
(p. 17-21, 24, 34, 36, 40, 41, 44, 47, 50)
Used to select a title number, chapter number, track number, etc.

TITLE button (p. 40)
Press this button to display the title menu of a DVD disc on the monitor screen. For a disc which has no title menu, pressing this button is ineffective. For Video CDs and CDs, pressing this button is ineffective.

ANGLE button (p. 42)
Whenever pressed, the viewing angle of the picture changes. This button is effective only for scenes (on a DVD) which have some angles of view.

MENU button (p. 41)
Press this button to display the DVD menu of a DVD disc on the monitor screen. For a disc which has no DVD menu, pressing this button is ineffective.

SET UP button (p. 44)
Press this button to display the SET UP menu on the monitor screen.

ON SCREEN button (p. 29)
Press this button to turn on and off the OSD (On Screen Display) screen on the TV monitor. It gives you information about the current status of this unit and the selected disc.

SF REPEAT button (p. 32)
Whenever you press this button, repeat play mode changes. The selected mode is shown on the front panel display for single or full repeat. This button also allows you to turn off the mode.

A/B REPEAT button (p. 33)
Makes this unit repeatedly play a section between 2 points (A and B) you designate on the disc.

21 DISC MODE button (p. 16, 37)

Changes the disc play mode between the single-disc play mode and the all-disc play mode. In the single-disc play mode, only a selected disc is played back. In the all-disc play mode, all discs on the disc table are played back sequentially.

22 TIME button (p. 27, 28, 34, 35)

Switches the time display mode.

23 RANDOM button (p. 37)

Press this button to play back titles or tracks on a designated disc or all discs on the disc table in a random order.

24 PROG button (p. 34)

Used for programming titles, tracks or a mixture of them in your desired order.

25 TITLE/INDEX button (p. 20, 21)

Whenever you press this button, search mode changes. The selected mode is shown on the monitor screen for title (or index) search or time search. This button also allows you to turn off the mode.

26 RETURN button (p. 17, 25, 44, 62)

Press this button to show the previous menu on the monitor screen.

27 AUDIO button

Changes the audio sound track language if the selected DVD has two or more audio sound track languages.

For Video CDs and CDs (p. 26)

Changes the output mode of the audio signal output terminals. Every time this button is pressed, the output mode changes to "left channel only", "right channel only", "left and right channels", and repeated.

28 $\triangleleft/\triangleright/\triangleleft/\triangleright$ (p. 17, 23, 40, 41, 44-62)

Move cursors or change selections on the monitor screen.

29 SUBTITLE button (p. 38)

Changes the subtitle language if the selected DVD has two or more subtitle languages.

30 (SUBTITLE) OFF/ON button (p. 38)

Turns on and off the showing of subtitles on the monitor screen.

31 MULTI SPEED button (p. 23)

Makes this unit enter into the multi-speed mode during playback. When this unit is stopped, pressing this button is ineffective.

32 SELECT button (p. 17, 40, 41, 44-62)

Activates the selected menu item or input value.

33 PLAY button (p. 16, 21, 22, 32, 34, 36, 37)

Starts playback.

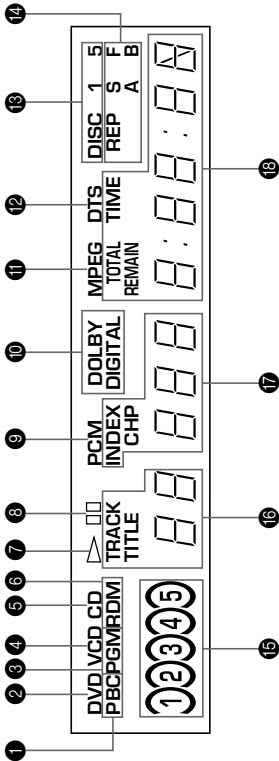
34 STILL/PAUSE button (p. 21, 22)

Suspends playback temporarily or keep a picture still. Press the **PLAY** or $\triangleright/\square$ button to return to the standard speed playback.

OPERATING INSTRUCTIONS

Names of parts and their functions

Front panel display



- 1 PBC**
Lights up when this unit is in the Playback Control mode for playing a Video CD, version 2.0.
- 2 DVD**
Lights up when the selected disc is a DVD.
- 3 PGM**
Lights up when this unit is in the program play mode.
- 4 VCD**
Lights up when the selected disc is a Video CD.
- 5 CD**
Lights up when the selected disc is a compact disc.
- 6 RDM**
Lights up when this unit is in the random play mode.
- 7 ▷**
Lights up during playback.
- 8 ■**
Lights up while playback is paused.
- 9 PCM**
Lights up when a source recorded in Linear PCM is played back.
- 10 DOLBY DIGITAL**
Lights up when a source encoded with Dolby Digital is played back.
- 11 MPEG**
Lights up when a source encoded with MPEG 1 or MPEG 2 is played back.
- 12 DTS**
Lights up when a source encoded with DTS is played back.
- 13 DISC 1**
Lights up when this unit is in the single-disc play mode.
- DISC 5**
Lights up when this unit is in the all-disc play mode.
- 14 REP S**
Lights up when this unit is in the single-repeat play mode.
- REP F**
Lights up when this unit is in the full-repeat play mode.
- REP A B**
Lights up or flashes when this unit is in the A-B repeat play mode.
- 15**
Tray numbers with discs only light up.
The circle enclosing the currently selected tray number lights up.
- 16 TITLE**
Lights up with the selected title number.
- TRACK**
Lights up with the selected track number.
- 17 CHP**
Lights up with the selected chapter number.
- INDEX**
Lights up with the selected index number.
- 18**
Shows a playing time, for example the elapsed time of a playing chapter and the remaining time (REMAIN) of a playing chapter.

The On-Screen Display/ language of your model has been factory preset as follows:
U.S.A. and General models: English
China model: Chinese
If you would like to change the On-Screen Display language to another language, please refer to "OSD Language" on the SET UP menu on page 54.

Preparations

- If you play back a DVD or a Video CD, turn the TV on and make some setting changes on the TV if necessary.
- Turn on the power of your stereo system if this unit is connected to the stereo system.

Basic playback

- 1 Press **POWER** to turn on the power.
- 2 Press **OPEN/CLOSE** to open the disc table.
- 3 Place discs on the trays, label side upward.
* Up to five discs can be loaded on the trays.
The trays are numbered 1 to 5.
* 8 cm (3") discs can be played back without an adaptor.
- 4 Press **OPEN/CLOSE** to close the disc table.
* The disc on the tray 1 is ready to be played back.
Playback may begin automatically depending on some DVDs.
* If no disc is loaded on the disc tray 1, select another disc by following step 6.
- 5 If necessary, change the disc play mode (to "DISC 1" or "DISC 5") by pressing **DISC MODE** on the remote controller confirming it on the front panel display.

When DISC 1 is illuminated: Only a designated disc is played back.

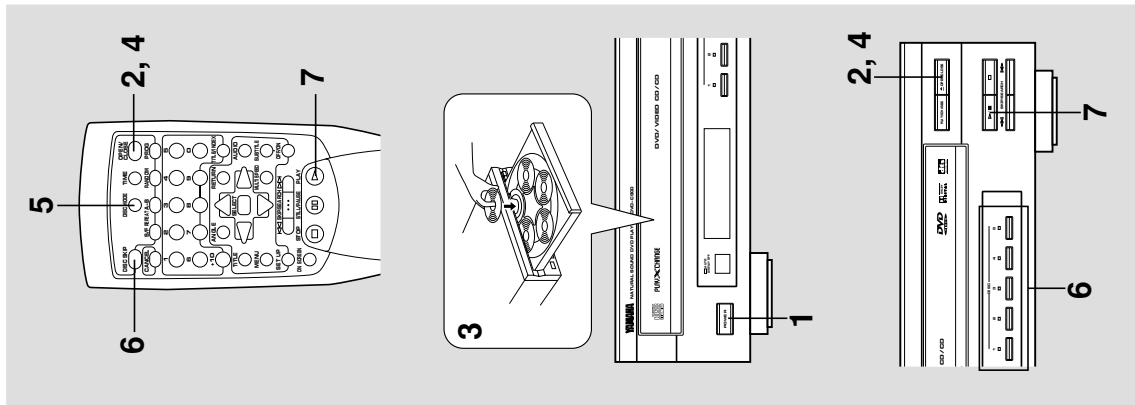
When DISC 5 is illuminated: All discs on the disc table are played back sequentially.

- 6 If you want to select another disc, press **DISC SKIP** on the remote controller once or more, or press **DISC (1, 2, 3, 4 or 5)** on the front panel.
- 7 Press **PLAY** on the remote controller or **▶/PAUSE** on the front panel to begin playback.
* Playback begins.
* You can skip this step if the disc is already played back automatically.

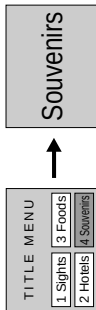
When a screen menu appears on the monitor screen, go on to step 8.
In case of DVDs with menu or Video CDs with Playback Control, a screen menu appears on the monitor screen.

Example)

TITLE MENU			
1 Sights	3 Foods		
2 Hotels	4 Souvenirs		



- 8 Select the preferred item by using **Δ/▽/◀/▶** and then press **SELECT**, or select the item simply by pressing the corresponding numeric button(s).
* Refer to page 18 for how to use the numeric buttons.



Playback of the selected item begins.

Note

For Video CDs, only the numeric buttons can be used to select the preferred item.

To stop playback and return to the screen menu

- For DVDs
Press **TITLE, MENU** or **RETURN**.
(The button to be used differs depending on the disc used.)
- For Video CDs
Press **RETURN**.

To stop playback

Press **STOP (□)**.

- * When playback is stopped, the unit memorizes the point where **STOP (□)** was pressed (**Playback Resumption**). Press **PLAY** again, and playback will resume from this point. When the table is opened or **STOP (□)** is pressed again, the memory will be cleared.
- The **Playback Resumption** works only with discs for which playing time appears on the front panel display during playback.
- This feature will not be cleared when the power is turned off.

Note

There may be a case that the **Playback Resumption** does not work depending on a part of the disc played back.

OPERATING INSTRUCTIONS

Direct playback

- Pressing **DISC** (1, 2, 3, 4 or 5) on the front panel will select the disc directly (even if the disc table is open), and playback will begin automatically.
- Even if the disc table is open, pressing **PLAY** will close the disc table and begin playback of the disc 1.

PLAYXCHANGE

During playback, you can open the disc table by pressing **PLAYXCHANGE** without interrupting playback. While **PLAYXCHANGE** is working, pressing **DISC SKIP** has no effect.

Note

You can load or replace discs on the trays when the disc table is opening, however, **never load a disc on the tray hidden inside the unit. In doing so, the disc and the unit may be damaged, because the tray already has a disc which is being played back.**

Automatic playback-starting function (for DVDs only)

If you load a disc which includes the information for automatic playback-starting, playback starts automatically without an operation of starting playback.

How to use the numeric buttons to select a number

- (Example)
- To select number 8.
Press "8".
 - To select number 10.
Press "+10" and "0" in succession.
 - To select number 15.
Press "+10" and "5" in succession.
 - To select number 26.
Press "+10" twice, then press "6".

Notes

- There may be a case that  appears on the monitor screen when a button is pressed. It means that the corresponding operation is prohibited by this unit or the disc currently played back.

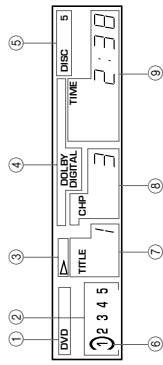
For DVDs and Video CDs:

The disc continues to rotate while the menu is displayed on the monitor screen even after the playback of an item is finished. If no further selection is to be played back, be sure to press **STOP** () to clear the menu.

Precautions

- Subjecting the unit to shock or vibration can cause mistracking.
- Do not pull open the disc table forcibly with your hands.
- Do not push the disc table while it is moving.
- The temperature range for playing back discs is recommended to be 5°C (41°F) – 35°C (95°F).

Front panel display information at basic playback



- Type of the selected disc
- Lights up the tray numbers with discs only.
- "E" lights up during playback and "a" lights up when the playback is paused.
- Audio format of the played disc
- Disc play mode
- Encloses the tray number of the selected disc.
- Shows the selected title (or track) number.
- Shows the selected chapter (or index) number.
- Shows the time displays. (Refer to "Switching the time display" on pages 27 to 28.)

Playing back a preferred scene or track

Beginning playback from a preferred chapter (or track)

You can select and play back a preferred chapter (for a DVD) or track (for a Video CD or CD) simply by entering its number with the numeric buttons.

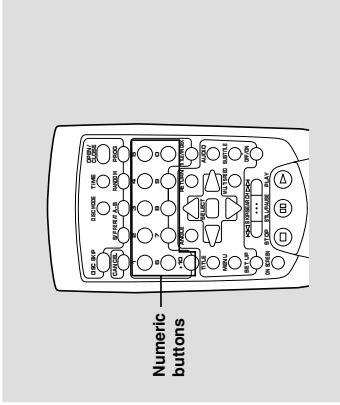
- Refer to page 18 for how to use the numeric buttons.

Note

For Video CDs only:
This operation is ineffective when this unit is in the Playback Control mode.

For DVDs only:

Pressing "+10" may be ineffective when a title is changing. In this case, press **CANCEL** and try again.



Skipping to a preferred chapter (or track) on the disc (Skip search)

The beginning of any chapter (for DVDs) or track (for Video CDs or CDs) can be found easily.

1 Select a disc and begin playback.

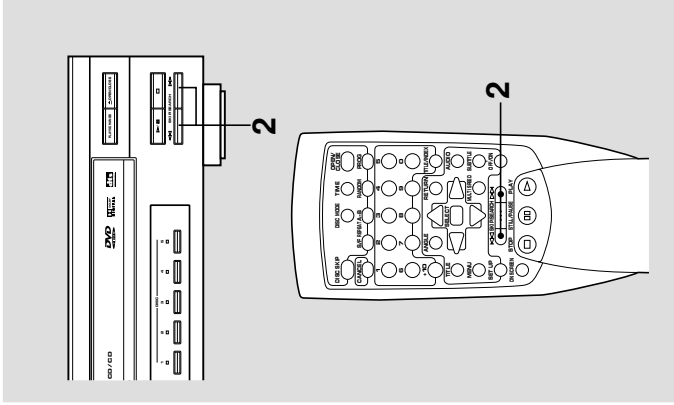
2 Press >>> to advance or <<< to reverse through the title (or disc).

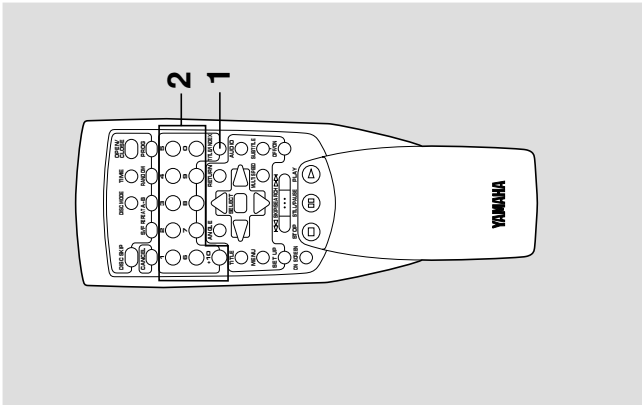
Press once for each chapter (or track) to be advanced or reversed.

- Press >>> once to advance to the next chapter (or track).
- Press <<< once to return to the start of the current chapter (or track).
- Press <<< once at the beginning of the current chapter (or track) to return to the chapter (or track) before the current chapter (or track).

Notes

- This function can also be performed while this unit is stopped. Press **PLAY** when your desired chapter (or track) number appears on the front panel display. Playback will begin from the beginning of the chapter (or track).
- This function will be performed forward or backward from any point on the title (or disc). However, it will not move forward during playback of the final chapter (or track).
- For Video CDs only:**
 - This operation is ineffective when this unit is in the Playback Control mode.
 - <<< and >>> are used in the Playback Control mode as the functions of "PREV" and "NEXT" respectively.



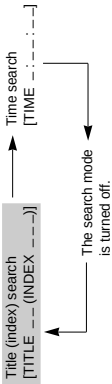


■ Beginning playback from a preferred title (for DVDs) or index number (for Video CDs/CDS)

For DVDs:
You can select any preferred title on the disc.

For Video CDs/CDS:
You can select any index number if the disc has index numbers.

- 1 Press **TITLE/INDEX** to select the title (index) search mode.
* "TITLE --" (or "INDEX --") appears on the monitor screen.
* Every time **TITLE/INDEX** is pressed, the search mode changes as follows.



- 2 Enter the preferred title (or index) number with the numeric button(s).
* Playback begins from the selected number.

Note

For DVDs only:
Depending on the disc used, it may not be possible to perform this search operation.

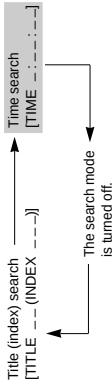
How to use the numeric buttons to select a number

- (Example)
- To select number 8.
Press "8".
 - To select number 10.
Press "+10" and "0" in succession.
 - To select number 15.
Press "+10" and "5" in succession.
 - To select number 26.
Press "+10" twice, then press "6".

■ Beginning playback from a preferred time point on the title (or disc)

You can locate a preferred time point on the title (or disc) by designating the time, and begin playback from the point or suspend playback at the point.

- 1 Press **TITLE/INDEX** once or more to select the time search mode.
* "TIME -- : -- : --" appears on the monitor screen.
* Every time **TITLE/INDEX** is pressed, the search mode changes as follows.



- 2 Enter the preferred time with the numeric button(s).
- 3 Press **PLAY** to begin playback from the time point.
Press **STILL/PAUSE** to suspend playback at the time point.

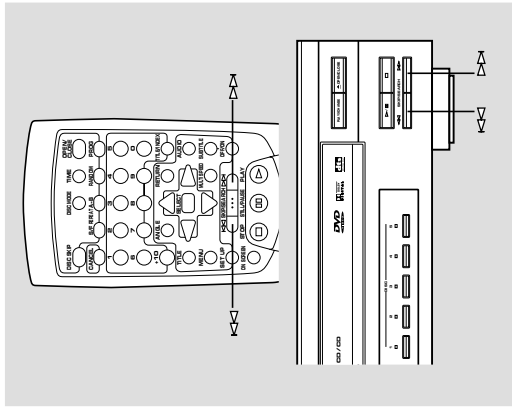
Notes

- If the time longer than the total play time of the title (or disc) is entered, the operation will be canceled.
- **For DVDs only:**
 - * Depending on the disc used, it may not be possible to perform this search operation.
 - * Depending on the disc used, playback may not begin from the specified time point even when the operation have been performed correctly.
 - * This search operation may be ineffective when a title is changing. In this case, press **CANCEL** and try again.
- **For Video CDs only:**
This search operation cannot be made when this unit is in the Playback Control mode.

How to use the numeric buttons to enter the time

- (Example)
- To enter 45 minutes and 23 seconds
Press "4", "5", "2" and "3" sequentially.
 - To enter 2 hours, 15 minutes and 10 seconds
Press "2", "1", "5", "1" and "0" sequentially.

Other ways of playback



To advance or reverse playback rapidly (Rapid search)

During playback, press and hold **REVERSE** to advance playback rapidly, and **PLAY** to reverse playback rapidly.

Notes

- The rapid search can also be performed while playback is paused.
- When using **REVERSE** or **PLAY**: Be careful not to release the button just after it is pressed, otherwise the play is skipped to the beginning of the next chapter (or track) or returned to the beginning of the current chapter (or track).
- **For Video CDs and CDs only:** The sound can be heard (although slightly garbled) during the rapid search in either direction. This is convenient for locating a precise position within the disc, or for reviewing the contents quickly. However, no sound will be heard if the rapid search is performed while playback is paused.

To still picture (or suspend playback)

Press **STILL/PAUSE** (or **REVERSE/PLAY**) during playback.

For DVDs/Video CDs:

- This unit turns into the still picture mode.
- * This operation is ineffective when playing back a still picture which is originally contained in the disc.

For CDs:

- This unit turns into the pause mode.

To restore normal playback

Press **PLAY** (or **REVERSE/PLAY**).

Frame advance [DVD and VCD only]

Press **STILL/PAUSE** repeatedly in the still picture mode.

Picture is advanced by one frame every time the button is pressed.

To restore normal playback

Press **PLAY** (or **REVERSE/PLAY**).

To advance or reverse playback in a preferred speed (Multi-speed playback) [DVD and VCD only]

You can change the playback speed in 6 steps (slowly or rapidly).

- 1 Press **MULTI SPEED** during playback.
* This unit turns into the still picture mode.
- 2 If you want to reverse playback, press **REVERSE**.
- 3 Press **FAST** or **SLOW** once or more to select the desired speed.
* Every time a button is pressed, the speed changes as follows:

For DVDs

- When playback is advanced
FAST 2 (The fastest advance)
FAST 1 (Fast advance)
(Standard speed)
SLOW 2 (Slow advance)
SLOW 1 (The slowest advance)
(Still)

When playback is reversed

- FAST 2 (The fastest reverse)
FAST 1 (Fast reverse)
SLOW 1 (Slow reverse)
(Still)

For Video CDs

When playback is advanced

- FAST 2 (The fastest advance)
FAST 1 (Fast advance)
(Standard speed)
SLOW 2 (Slow advance)
SLOW 1 (The slowest advance)
(Still)

When playback is reversed

- FAST 2 (The fastest reverse)
FAST 1 (Fast reverse)
(Still)

Note

In the still mode, pressing **FAST** advances and **REVERSE** reverses playback by one frame.

If you want to change the playback direction during playback in a slow or rapid speed

1. Press $\blacktriangle$ to advance playback, or $\blacktriangledown$ to reverse playback.
2. Press $\triangle$ or $\triangledown$ to select the desired speed.

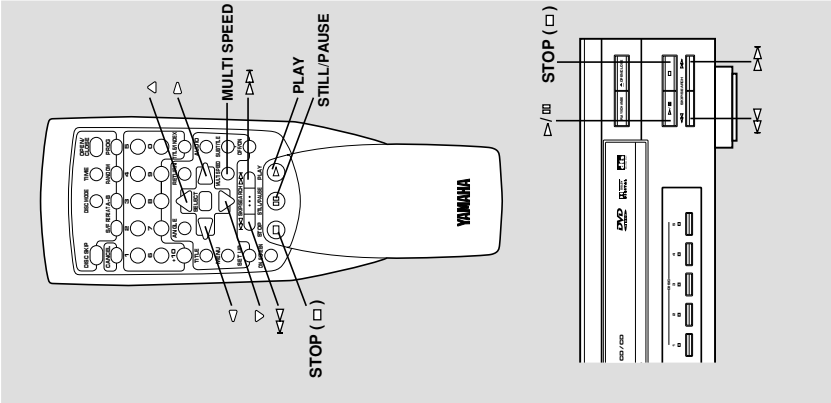
To cancel the multi-speed playback mode.

Press one of the following buttons:

- On the remote controller:
PLAY, MULTI SPEED, STILL/PAUSE, $\blacktriangleright\blacktriangleleft$, $\blacktriangleleft\blacktriangleright$, $\blacktriangleleft\blacktriangleleft$
- On the front panel:
 $\blacktriangleleft\blacktriangleright$, $\blacktriangleright\blacktriangleleft$, $\blacktriangleleft\blacktriangleright$, $\blacktriangleleft\blacktriangleleft$
- Press **STOP (□)**.

Notes

- No sound will be heard during this operation.
- For Video CDs, reverse playback cannot be made in slow speed and also by one frame.



Operations unique for a Video CD in the Playback Control mode
[only]

If "PBC" is illuminated on the front panel display when a Video CD is played back, this unit is in the Playback Control mode. In this mode, a screen menu appears on the monitor screen after the playback begins.

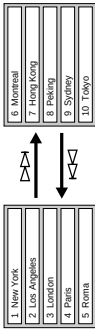
To select the preferred item on a screen menu

Press the corresponding numeric button(s). The Playback of the item begins.

- Refer to page 18 for how to use the numeric buttons.

If the disc has two or more menus;

Press $\blacktriangleright\blacktriangleleft$ to go on to the next menu.
(Press $\blacktriangleleft\blacktriangleright$ to return to the previous menu.)



- For some discs, the next screen menu may appear before beginning playback. In that case, select the preferred item again.

To skip to the preferred item (or screen menu) during playback (or being paused)

- Pressing $\blacktriangleright\blacktriangleleft$ locates the beginning of the next item or the next screen menu.
- Pressing $\blacktriangleleft\blacktriangleright$ locates the beginning of the previous item or the previous screen menu.

To return to the previous screen menu

Press **RETURN**.
• To return to the first screen menu, press **RETURN** repeatedly until the first menu appears.

Note

Disc play in the Playback Control mode depends on the data of the disc used. So, depending on the contents of disc, the above operating method may not be applied to the disc. Be sure to refer to the instruction manual for the disc.

To enjoy Video CDs with the Playback Control turned off

- Change the setting of "1 Playback Control" on the SET UP menu to "OFF". Refer to page 52 for details.
- Video CDs can be played back in normal playback mode.
- When playback is stopped in the Playback Control mode, making a track search operation cancels the Playback Control mode.

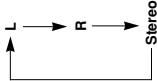
■ Changing the audio output mode
(to enjoy using a multichannel disc
etc.) [VCD and DVD only]

You can change the output mode of the MIXED 2CH left and right audio output terminals of this unit. This operation is useful when playing back a multichannel karaoke disc etc.

* <For China and General models only>
This setting also applies to the 6CH DISCRETE MAIN left and right audio output terminals.

Press **AUDIO** once or more.

* Every time **AUDIO** is pressed, the output mode changes. The current output mode is displayed on the monitor screen and the mode changes among "L", "R" and "Stereo".



Outputs sound signals of the left channel only from both left and right terminals.

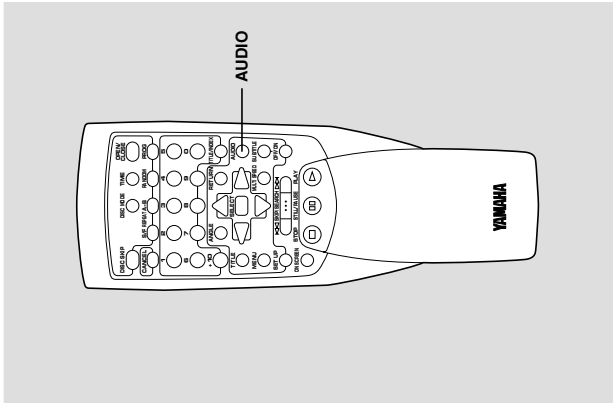
Outputs sound signals of the right channel only from both left and right terminals.

Outputs sound signals of the left channel from the left terminal, and outputs sound signals of the right channel from the right terminal.

Factory default setting: Stereo

Notes

- This operation also applies to the output mode of the OPTICAL and COAXIAL DIGITAL output terminals of this unit.
- This operation is only effective when playing back a Video CD or CD.
- The output mode is always returned to "Stereo" when you turn on this unit.



Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 k Ω	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	*	11 k Ω	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 k Ω	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 k Ω	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 k Ω	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 k Ω	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 k Ω	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 k Ω	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 k Ω	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 k Ω	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 k Ω	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 k Ω	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 k Ω	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 k Ω	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 k Ω	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 k Ω	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 k Ω	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 k Ω	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 k Ω	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 k Ω	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 k Ω	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 k Ω	HF45 8110	HF45 8110
160 Ω	HJ35 5160	*	120 k Ω	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 k Ω	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 k Ω	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 k Ω	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 k Ω	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 k Ω	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 k Ω	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 k Ω	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 k Ω	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 k Ω	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 k Ω	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 k Ω	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 M Ω	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 M Ω	HJ35 9120	*
1.0 k Ω	HF45 6100	HF45 6100	1.5 M Ω	HJ35 9150	HF85 9150
1.2 k Ω	HF45 6120	HF45 6120	1.8 M Ω	HJ35 9180	HF85 9180
1.5 k Ω	HF45 6150	HF45 6150	2.2 M Ω	HJ35 9220	HF85 9220
1.8 k Ω	HF45 6180	HF45 6180	3.3 M Ω	HJ35 9330	HF85 9330
2.0 k Ω	HJ35 6200	HF85 6200	3.9 M Ω	HJ35 9390	*
2.2 k Ω	HF45 6220	HF45 6220	4.7 M Ω	HJ35 9470	HF85 9470
2.4 k Ω	HJ35 6240	HF85 6240			
2.7 k Ω	HF45 6270	HF45 6270			
3.0 k Ω	HF45 6300	HF45 6300			
3.3 k Ω	HF45 6330	HF45 6330			
3.6 k Ω	HJ35 6360	HF85 6360			
3.9 k Ω	HF45 6390	HF45 6390			
4.7 k Ω	HF45 6470	HF45 6470			
5.1 k Ω	HF45 6510	HF45 6510			
5.6 k Ω	HF45 6560	HF45 6560			
6.8 k Ω	HF45 6680	HF45 6680			
8.2 k Ω	HF45 6820	HF45 6820			
9.1 k Ω	HF45 6910	HF45 6910			

1/4W Type

HJ35 10mm

1/4W Type

HF45

1/6W Type

HF85

5mm

DVD-C900

YAMAHA