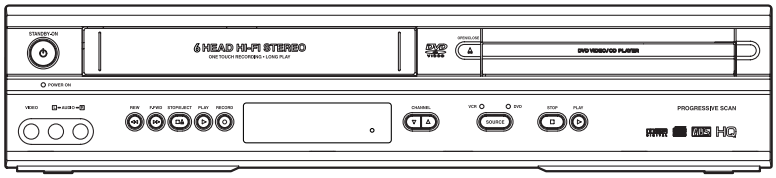
DVD + VCR Combi **DVP620VR/78**

Service
Service
Service



Service Manual

Contents

Survey of versions:

/78 NTSC

CLASS 1 LASER PRODUCT
KLASSE 1 LASER PRODUKT
KLASS 1 LASER APPARAT
CLASSE 1 PRODUIT LASER

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Version 1.0

PHILIPS

MAIN SECTION

DIGITAL VIDEO DISC PLAYER & VIDEO CASSETTE RECORDER

Sec. 1: Main Section

- **Adjustment Procedures**
- **Schematic Diagrams and CBA's**
- **Exploded Views**
- **Mechanical and Electrical Parts List**

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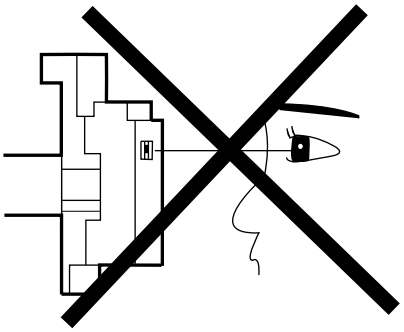
LASER BEAM SAFETY PRECAUTIONS

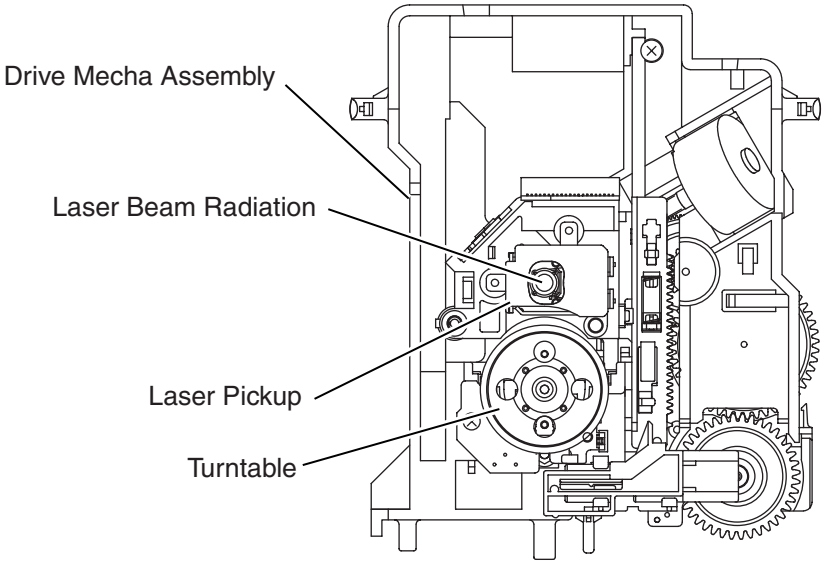
This DVD player uses a pickup that emits a laser beam.



Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 30cm away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.

Caution: Use of controls and adjustments, or doing procedures other than those specified herein, may result in hazardous radiation exposure.



CAUTION
LASER RADIATION
WHEN OPEN. DO NOT
STARE INTO BEAM.

Location: Top of DVD mechanism.

IMPORTANT SAFETY PRECAUTIONS

Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced**.**

Precautions during Servicing

A. Parts identified by the ⚠ symbol are critical for safety. Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

1)Wires covered with PVC tubing

2)Double insulated wires

3)High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

1)Insulation tape

2)PVC tubing

3)Spacers

4)Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector
The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.
Replacement procedure

1)Remove the old connector by cutting the wires at a point close to the connector.

Important: Do not re-use a connector. (Discard it.)

2)Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

3)Align the lengths of the wires to be connected. Insert the wires fully into the connector.

4)Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1: Ratings for selected area

AC Line Voltage	Clearance Distance (d), (d')
120 V	≥ 3.2mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

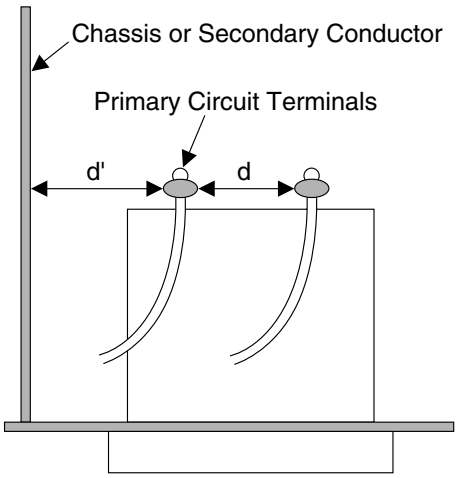


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON) :

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

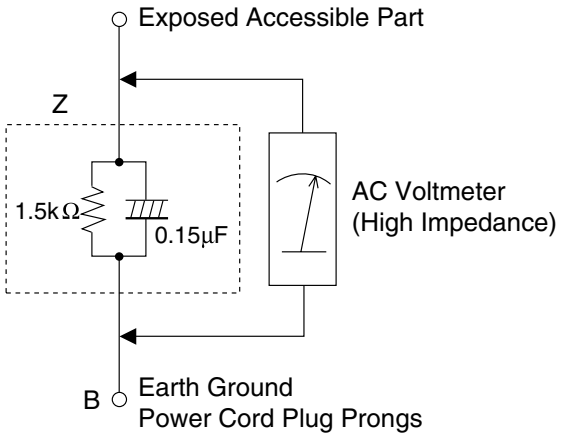


Fig. 2

Table 2: Leakage current ratings for selected areas

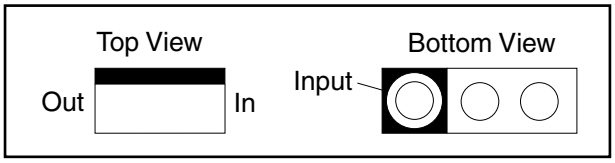
AC Line Voltage	Load Z	Leakage Current (i)	Earth Ground (B) to:
120 V	0.15μF CAP. & 1.5kΩ RES. Connected in parallel	i≤0.5mA Peak	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

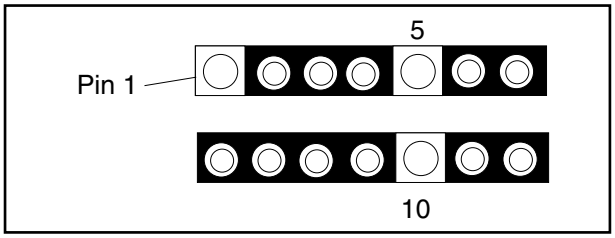
STANDARD NOTES FOR SERVICING

Circuit Board Indications

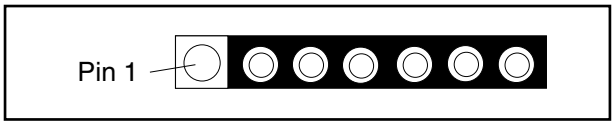
a. The output pin of the 3 pin Regulator ICs is indicated as shown.



b. For other ICs, pin 1 and every fifth pin are indicated as shown.

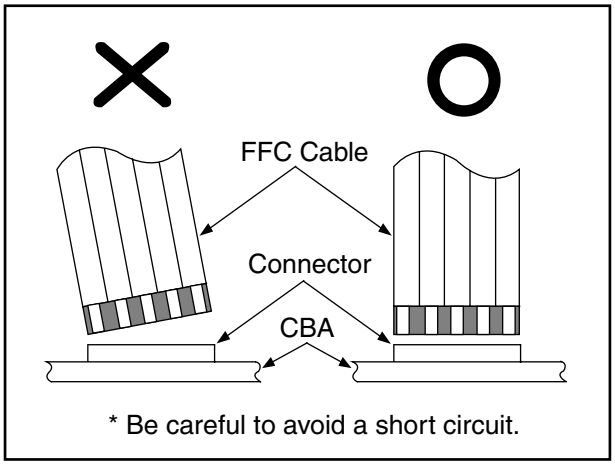


c. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



Pb (Lead) Free Solder

When soldering, be sure to use the Pb free solder.

How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:.

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

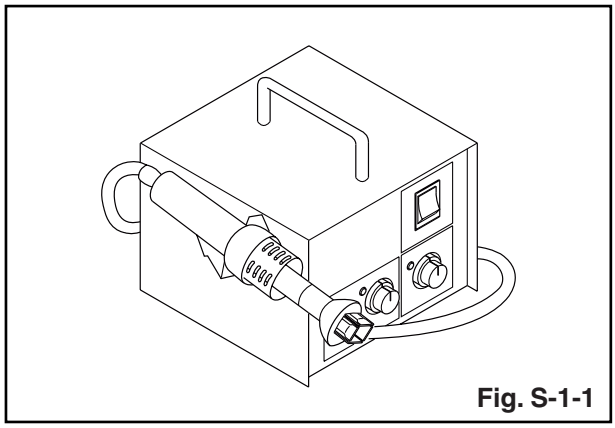


Fig. S-1-1

(2) Remove the flat pack-IC with tweezers while applying the hot air.

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Caution:

1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)

3. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

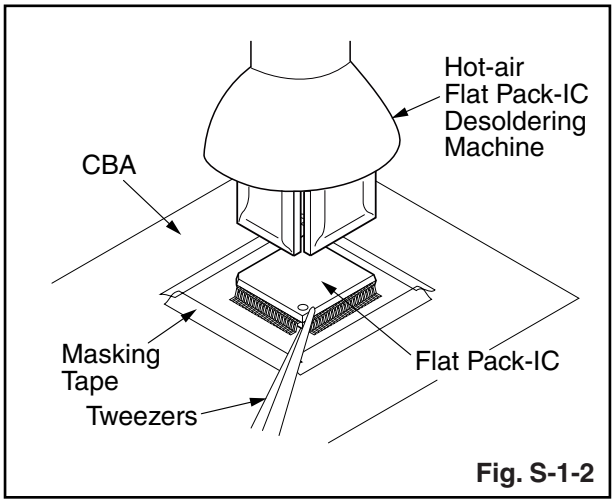


Fig. S-1-2

With Soldering Iron:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

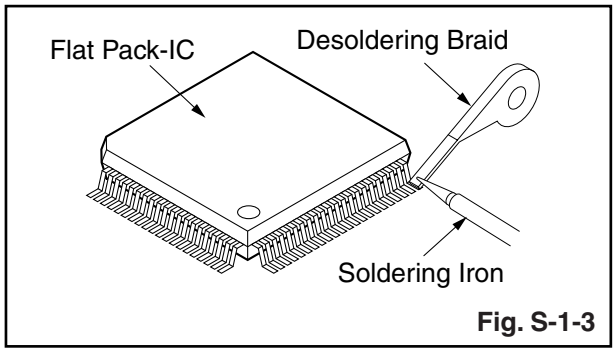


Fig. S-1-3

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

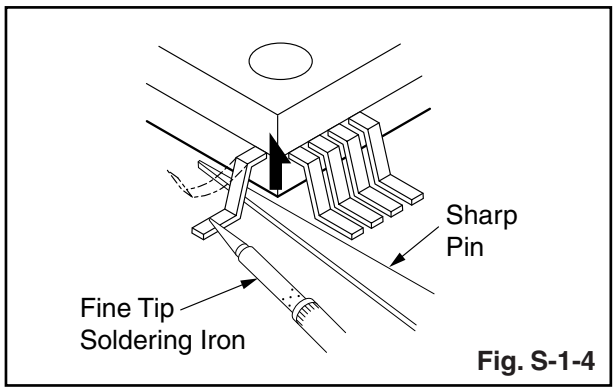


Fig. S-1-4

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5

(4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(5) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

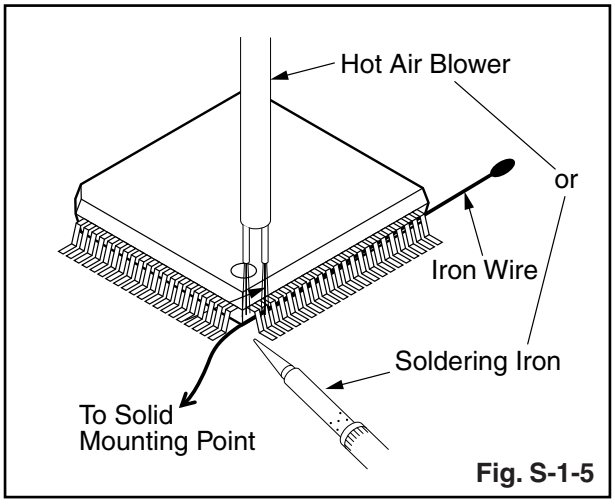


Fig. S-1-5

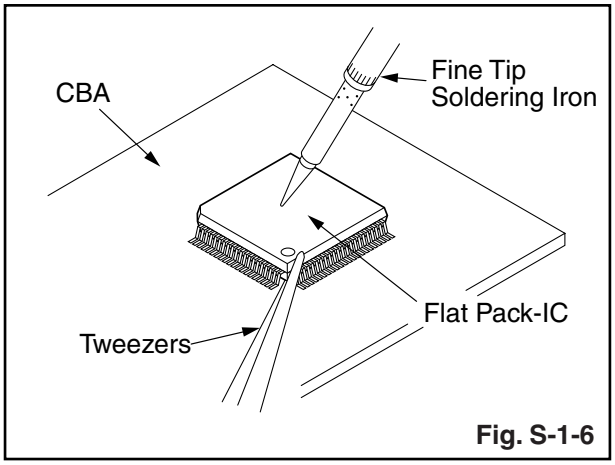


Fig. S-1-6

2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The " ● " mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

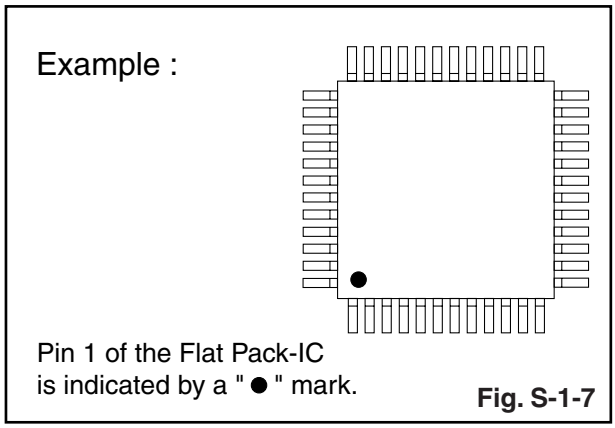


Fig. S-1-7

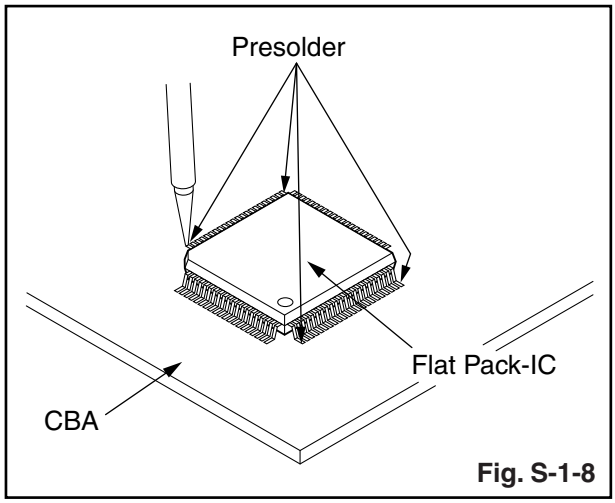


Fig. S-1-8

Instructions for Handling Semi-conductors

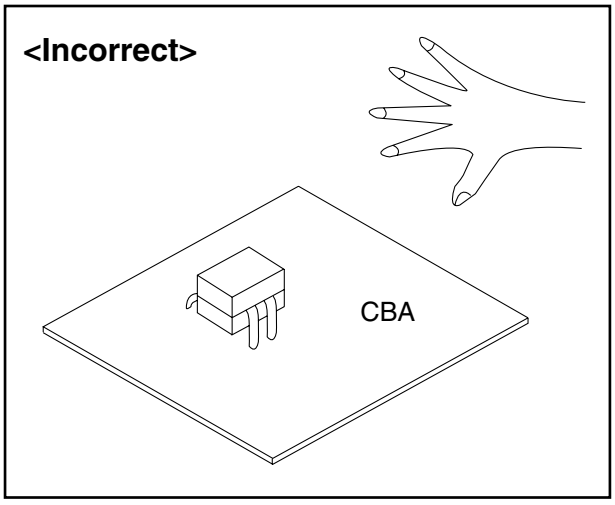
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

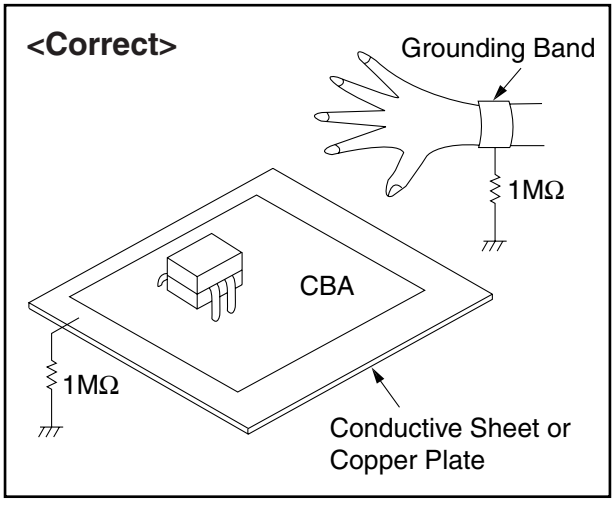
1. Ground for Human Body

Be sure to wear a grounding band (1MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.





FUNCTION INDICATOR SYMBOLS

Note:

If a mechanical malfunction occurs, the power is turned off. When the power comes on again after that by pressing [STANDBY-ON] button, an error message is displayed on the TV screen for 5 seconds.

Led Mode	Indicator Active
When reel and capstan mechanism is not functioning correctly	"EJECT ⏏ R" is displayed on a TV screen. (Refer to Fig. 1.)
When tape loading mechanism is not functioning correctly	"EJECT ⏏ T" is displayed on a TV screen. (Refer to Fig. 2.)
When cassette loading mechanism is not functioning correctly	"EJECT ⏏ C" is displayed on a TV screen. (Refer to Fig. 3.)
When the drum is not working properly	"EJECT ⏏ D" is displayed on a TV screen. (Refer to Fig. 4.)

TV screen

When reel and capstan mechanism is not functioning correctly

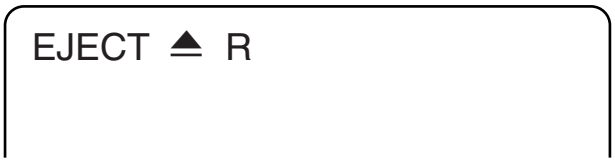


Fig. 1

When tape loading mechanism is not functioning correctly

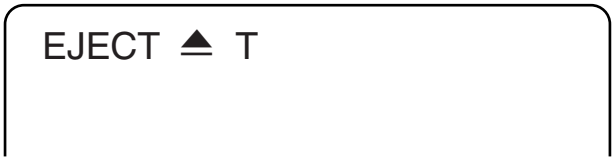


Fig. 2

When cassette loading mechanism is not functioning correctly

Fig. 3

When the drum is not working properly

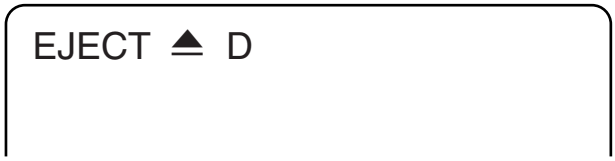


Fig. 4

PREPARATION FOR SERVICING

How to Enter the Service Mode

About Optical Sensors

Caution:

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate erratically.

What to do for preparation

Insert a tape into the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly. Make sure the power is on, connect TP502 (S-INH) to GND. This will stop the function of Tape Start Sensor, Tape End Sensor and Reel Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.) See Fig. 1.

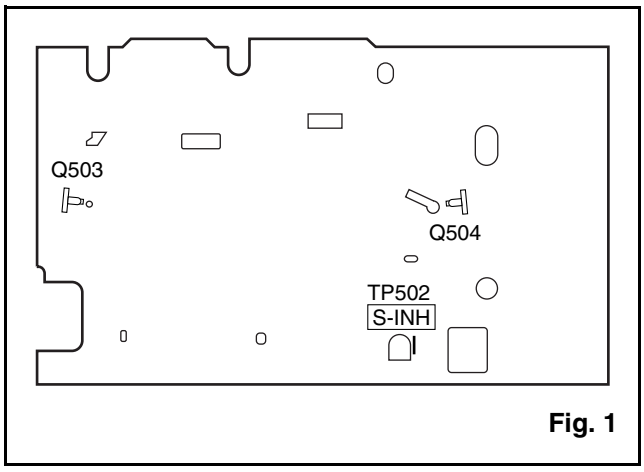
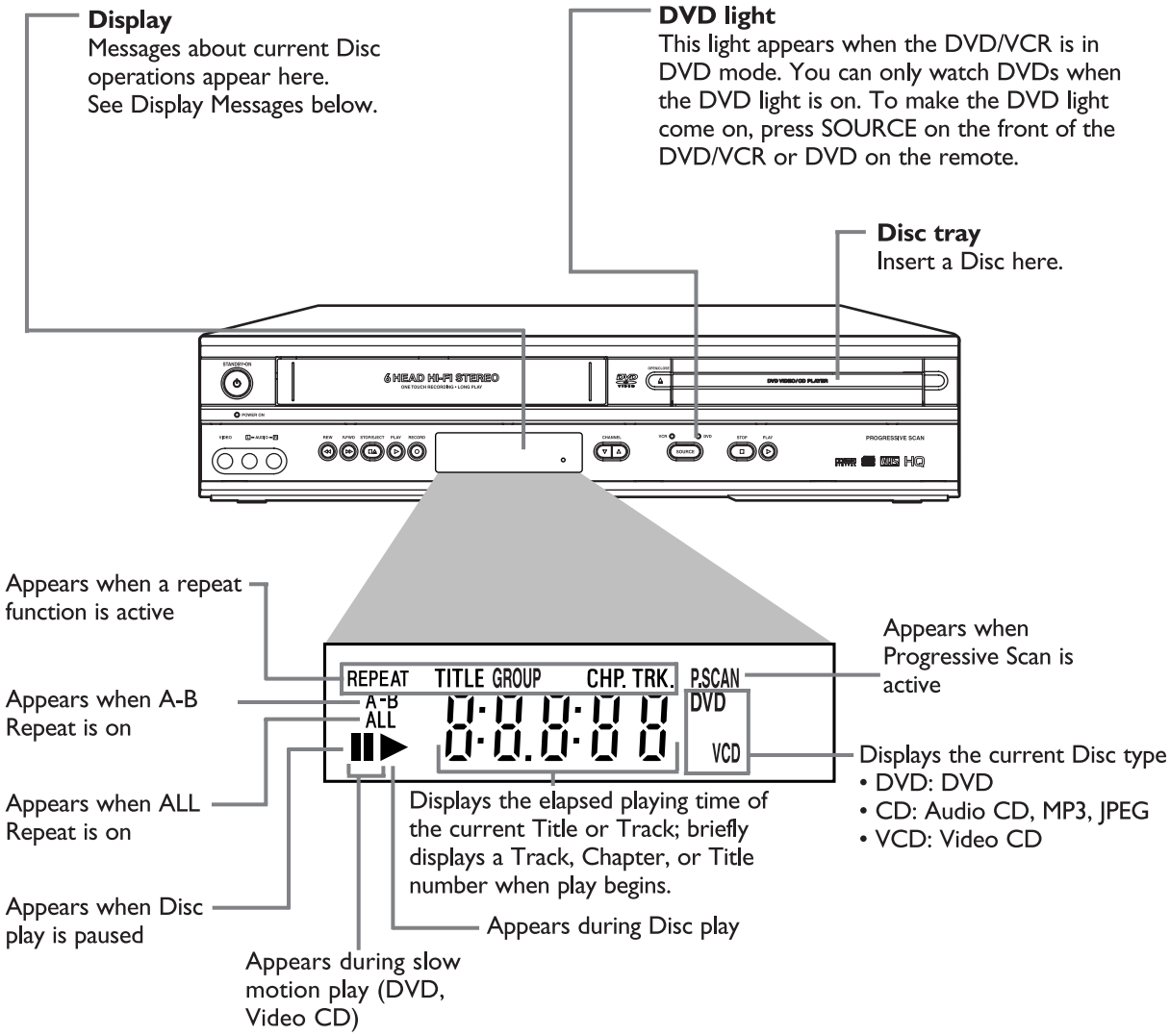


Fig. 1

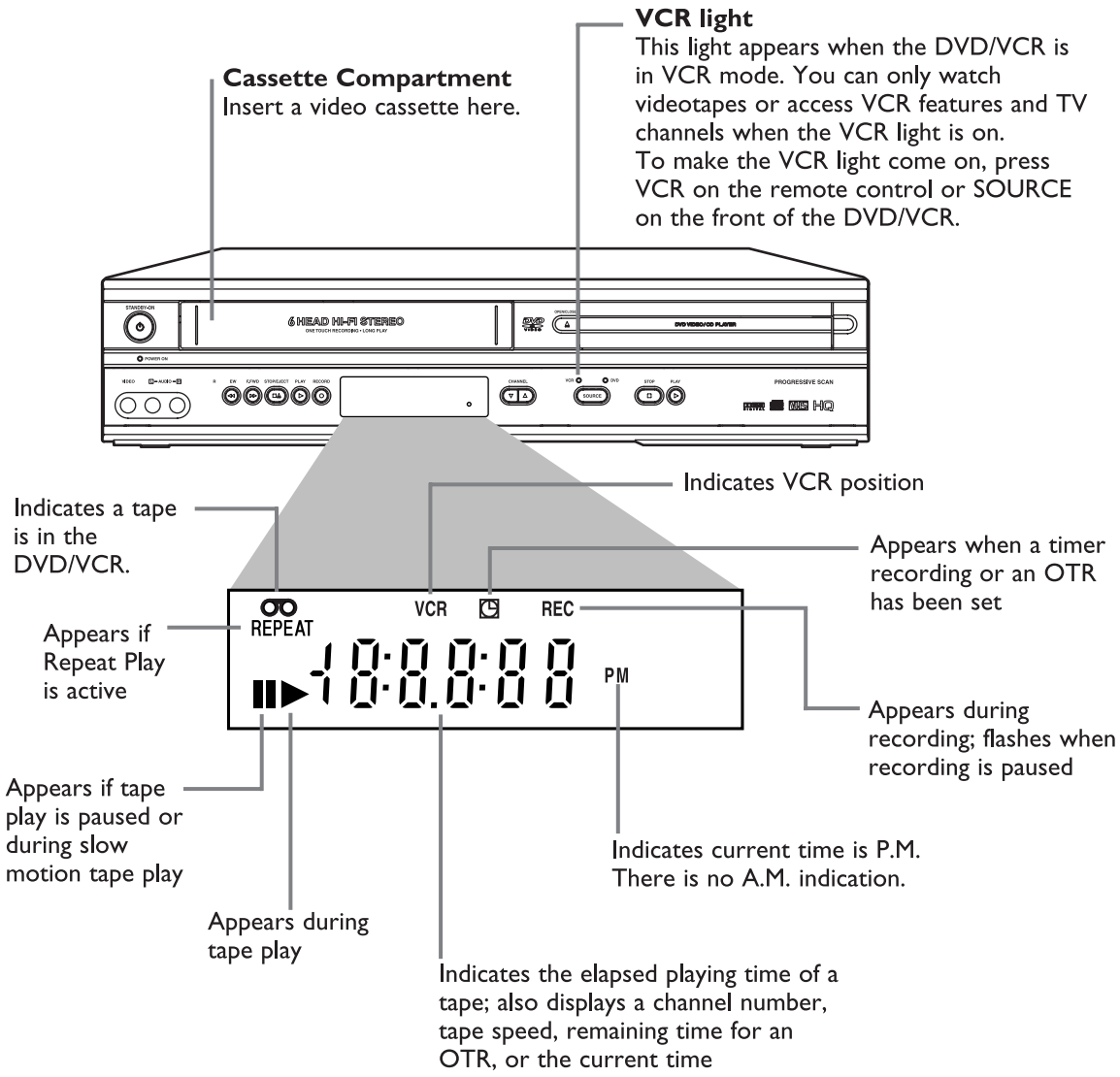
Note: Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.

OPERATING CONTROLS AND FUNCTIONS



Display Messages

- - - - -	Appears after the disc tray closes if the tray is empty, if there is an error reading the disc, or if an unacceptable disc is installed.
OPEN	Tray is opening or is open.
CLOSE	Tray is closing.
Load	Disc is loading.
Pbc	Appears when Playback Control is active (Video CD).


Cassette Compartment
Insert a video cassette here.
VCR light
This light appears when the DVD/VCR is in VCR mode. You can only watch videotapes or access VCR features and TV channels when the VCR light is on.
To make the VCR light come on, press VCR on the remote control or SOURCE on the front of the DVD/VCR.
Indicates VCR position
Indicates a tape is in the DVD/VCR.
Appears when a timer recording or an OTR has been set
REPEAT
VCR
REC
Appears if Repeat Play is active
PM
Appears during recording; flashes when recording is paused
Appears if tape play is paused or during slow motion tape play
Indicates current time is P.M. There is no A.M. indication.
Appears during tape play
Indicates the elapsed playing time of a tape; also displays a channel number, tape speed, remaining time for an OTR, or the current time

AUDIO and VIDEO In Jacks
Connect audio and video cables from a camcorder, VCR, etc. here. This will be useful if you want to copy a videotape or watch material that is playing on other equipment.

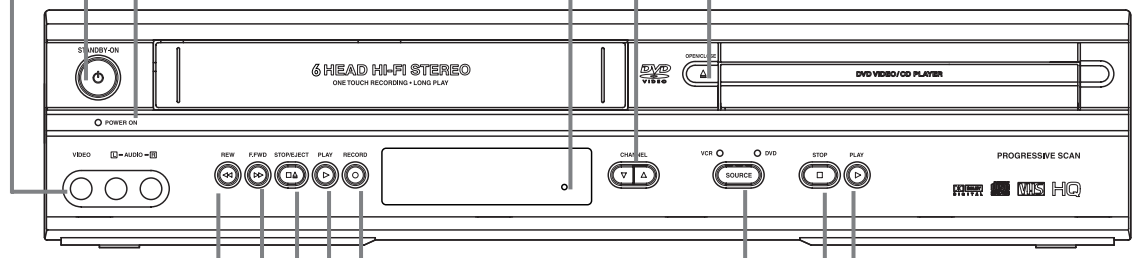
Remote Sensor
Receives a signal from your remote control so you can work your DVD/VCR from a distance. Point the remote here, not at your TV.

CHANNEL ▲▼ Buttons
Press to select TV channels at the VCR.

STANDBY-ON ⏻ Button
Press to turn the power on or off.

OPEN/CLOSE ⏏ Button (DVD)
Press to open or close the Disc tray.

POWER ON Light
Appears when the DVD/VCR power is on



REW ◄◄ Button (VCR)
Press to rewind the tape.

PLAY ► Button (DVD)
Press to start Disc playback. Press and hold for more than five seconds to disable Progressive Scan.

F.FWD ►► Button (VCR)
Press to fast forward the tape.

STOP ■ Button (DVD)
Press to stop Disc playback.

STOP/EJECT ■⏏ Button (VCR)
Press once to stop tape playback. When play is stopped, press to eject the tape.

SOURCE Button
Press to select DVD mode or VCR mode. The DVD light appears in DVD mode. The VCR light appears in VCR mode.

PLAY ► Button (VCR)
Press to play a video cassette. Press to release Slow, Search, or Still mode and return to playback.

RECORD ● button (VCR)
Press once to start a recording. Press repeatedly to start a One-Touch Recording.

DVD/VCR AUDIO OUT Jacks
Left (white) and Right (red)
Connect the supplied audio cables here and to the Audio In jacks of a TV or Stereo. These jacks provide audio for both the DVD Player and the VCR.

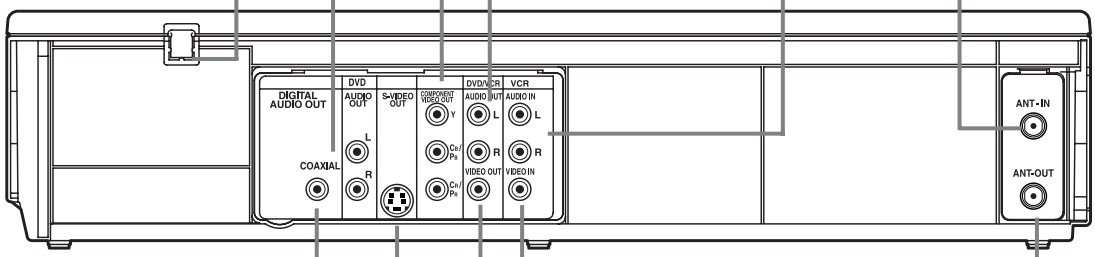
VCR AUDIO IN jacks
Left (white) and Right (red)
Connect audio cables coming from the audio out jacks of a camcorder, another VCR, another DVD Player, or Stereo here. This will be useful if you want to copy a videotape or watch material that is playing on other equipment.

DVD COMPONENT VIDEO OUT
(Y CB/PB CR/PR) Jacks (green, blue, red)
Connect component video cables (not supplied) here and to the Component Video In jacks of a TV. This supplies the picture only for the DVD Player.

DVD AUDIO OUT jacks
Left (white) and Right (red)
Connect the supplied audio cables here and to the Audio In jacks of a TV or Stereo. These jacks only supply audio for the DVD Player. Use these for a second connection to a TV, etc.

AC Power Cord
Connect to a standard AC outlet to supply power to the DVD/VCR.

ANT-IN
(Antenna In) jack
Connect your antenna or Cable TV signal here.



VCR VIDEO IN Jack (yellow)
Connect a video cable from a camcorder, VCR, or DVD Player here.

DVD COAXIAL DIGITAL AUDIO OUT Jack (black)
Connect a coaxial digital audio cable (not supplied) here and to the Coaxial Digital Audio In jack of a Stereo. This supplies audio only for the DVD Player.

ANT-OUT (Antenna Out) Jack
Use the supplied RF coaxial cable to connect this jack to the ANTENNA IN jack on your TV, Cable Box, or Satellite Receiver.

DVD S-VIDEO OUT Jack
Connect an S-Video cable (not supplied) here and to the S-Video In jack of a TV. This supplies the picture only for the DVD Player.

DVD/VCR VIDEO OUT Jack (yellow)
Connect the yellow video cable (supplied) here and to the TV's Video In jack. This supplies the picture for both the VCR and the DVD Player.

Helpful Hint

- *The DVD S-VIDEO OUT, DVD COMPONENT VIDEO OUT, DVD AUDIO OUT and DVD COAXIAL DIGITAL AUDIO OUT jacks are only useful in DVD mode. To have sound and picture in VCR mode, you must connect either the RF coaxial cable or the audio/video cables supplied.*

SEARCH Button
In DVDmode, press to search for a specific Title/Chapter/Track/Time. In VCRmode, press for a Time Search or an Index Search.

REPEAT Button
Press to play a Track, Audio CD, Title, or Chapter repeatedly.

A-B REPEAT Button
Press to set up A-B Repeat.

RETURN Button
Press to return to the previous level of the DVD Player's Setup menu or to remove the Setup menu.

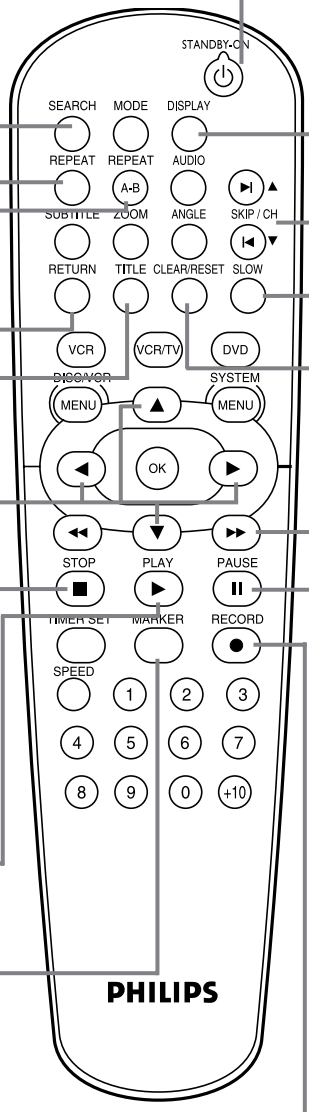
TITLE Button
Press to see a DVD Title menu.

◄ ►▲▼ Buttons
Press to select an item in a menu.

STOP ■ Button
Press to stop Disc playback, tape playback, or recording.

PLAY ► Button
Press to begin Disc or tape playback.

MARKER Button
Press to see the Markers, which give you quick access to points you select on a Disc.



STANDBY-ON ⏻ Button
Press to turn the power on or off.

DISPLAY Button
In VCRmode, press to see status displays. In DVDmode, press to access Disc information.

SKIP ►I/CH ▲ and SKIP I◄/ CH ▼ Buttons
In DVDmode, press to skip Chapters or Tracks. In VCR mode, press to change TV channels at the DVD/VCR. Press to adjust tracking.

SLOW Button
Press to view a videotape in slow motion.

CLEAR/RESET Button
Press to remove VCRmenus. Press to reset the tape counter.
Press to reset a menu item in DVDmode.

►► (Fast Forward) Button
In DVDmode, press to fast forward the Disc. Press when DVD or Video CDplayback is paused to start slow motion playback.
In VCRmode, press to fast forward the tape.

PAUSE ❚❚ Button
Press to pause Disc playback. Press repeatedly to advance the DVDor Video CD picture step by step (or one frame at a time). Press to pause or resume VCR recording. Press to pause a tape.

RECORD ● Button
Press to start a VCR recording. Press repeatedly to start a One-Touch Recording.

Helpful Hints

- *For DVD Player features, press DVD before pressing other buttons. To put the DVD/VCR in DVD mode, press DVD or SOURCE so the DVD light appears on the front of the DVD/VCR.*
- *For VCR features, press VCR before pressing any other buttons. To put the DVD/VCR in VCR mode, press VCR or SOURCE so the VCR light appears on the front of the DVD/VCR.*

MODE Button
Press to set a Program. Press to start Random playback.

ZOOM Button
Press to enlarge the DVD, Video CD, or JPEG image.

SUBTITLE Button
Press to select a language for DVD subtitles.

VCR Button
Press before using the remote control for VCR features. Press to put the DVD/VCR in VCR mode.

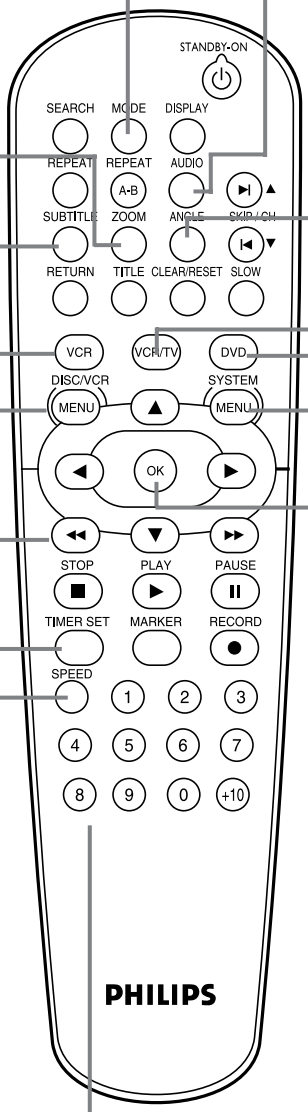
DISC/VCR/MENU Button
Press to access or remove a DVD Disc menu or the VCR menu.

◄◄ (Rewind) Button
Press to fast reverse a Disc. Press when DVD playback is paused to start reverse slow motion playback.
Press to rewind a tape.

TIMER SET Button
Press to set a timer recording that you have programmed.

SPEED Button
Press to select the VCR's recording speed (SP or SLP).

Number Buttons
In DVD mode, press to select a Track or Chapter for playback. Use the +10 button for items 10 and above.
In VCR mode, use to select TV channels. Enter channel numbers as a two-digit number for the quickest results (to select channel 6, press 0,6). For channels 100 and above, enter a three-digit number (for channel 117, press 1, 1, 7). If you have Cable TV, channels 1-125 are available. If you have an antenna, channels 2-69 are available. The +10 button has no effect in VCR mode.



AUDIO Button
Press to choose a DVD audio language or an Audio CD sound mode.

ANGLE Button
Press to see a DVD picture from a different angle.

VCR/TV Button
Press to select VCR or TV position. In VCR position, watch a tape or watch/record TV programs (changing channels at the VCR).
Use TV position to watch TV channels (changing channels at the TV) or watch one program while recording another.

DVD Button
Press before using the remote control for DVD features. Press to put the DVD/VCR in DVD mode.

SYSTEM/MENU Button
Press to access or remove the DVD Player's Setup menu.

OK Button
Press to confirm or select menu items.

SIGNAL NAME ABBREVIATIONS

Signal Name	Function
-FL	FIP Drive Power Supply
3.58MHz	3.58MHz Clock
A-COM	Audio Head Common
A-IN	Audio Signal Input
A-MUTE-H	Audio Mute Control Signal (Mute = “H”)
A-OUT	Audio Signal Output
A-PB/REC	Normal Audio Play Back/Record Signal
AE-H	Audio Erase Head
AFC	Automatic Frequency Control Signal
AFCC	Low Path Filter Input Signal For AFC
AFCLPF	Low Path Filter Output Signal For AFC
AFG	GND
AL+12V	Always +12V with AC Plug Connected
AL+18V	Always +18V with AC Plug Connected
AL+2.8V	Always +2.8V with AC Plug Connected
AL+33V	Always +33V with AC Plug Connected
AL+4.0V	Always +4.0V with AC Plug Connected
AL+44V	Always +44V with AC Plug Connected
AL+5V	Always +5V with AC Plug Connected
AL-30V	Always -30V with AC Plug Connected
AUDIO+5V	+5V at Audio Signal
AVDD	AVDD
AVss	AVSS
C-CONT	Capstan Motor Control Signal
C-F/R	Capstan Motor FWD/REV Control Signal (FWD=”L”/REV=”H”)
C-FG	Capstan Motor Rotation Detection Pulse
C-ROTA	Color Phase Rotary Changeover Signal
C-SYNC	Composite Synchronized Pulse
CONV-SW	RF Conv. Output Channel Switching Signal 3ch=”Hi-z”, 4ch=”L”

Signal Name	Function
CTL	Amp. Output Control Signal for Test Point
CTL (+)	Playback/Record Control Signal (+)
CTL (-)	Playback/Record Control Signal (-)
CTLA	CTL Amp. AC GND
D-CONT	Drum Motor Control Signal
D-PFG	Drum PG/FG Input Signal
D-REC-H	Delayed Record Signal
D-V- SYNC	Dummy V-sync Output
DISPLAY-CLK	VFD Driver IC Control Clock
DISPLAY-DATA	VFD Driver IC Control Data
DISPLAY-ENA	VFD Driver IC Chip Select Signal
DVD A	DVD Audio Signal
DVD-A-MUTE	DVD Audio Mute Control Signal
DVD-H-IND	DVD Mode LED Signal Output
DVD-L-IND	VCR Mode LED Signal Output
DVD-OPEN/ CLOSE	DVD Open/Close at High
DVD-P-ON+12V	+12V at DVD Power-On Signal
DVD-P-ON+3.3V	+3.3V at DVD Power-On Signal
DVD-P-ON+5V	+5V at DVD Power-On Signal
DVD-PLAY	DVD Play at High
DVD-POW-MONITOR	DVD Power Monitor Signal (P-off="L", P-on="H")
DVD-POWER	DVD Power Control Signal
DVD-STOP	DVD Stop at High
DVD-VIDEO	DVD Video Control Signal
END-S	Tape End Position Detect Signal
EV+1.2V	+1.2V Power Supply
EV+11V	+11V Power Supply
EV+3.3V	+3.3V Power Supply
F1	Filament Power Supply 1
F2	Filament Power Supply 2
FE-H	Full Erase Head
FE-H GND	Ground for Full Erase Head
FP-CLK	Clock Input
FP-DIN	Serial Data Input
FP-DOUT	Serial Data Output
FP-STB	Serial Interface Strobe
H-A-COMP	Head Amp Comparator Signal
H-A-SW	Video Head Amp Switching Pulse
Hi-Fi-A	Hi-Fi Audio Head
Hi-Fi-COM	Hi-Fi Audio Head Common

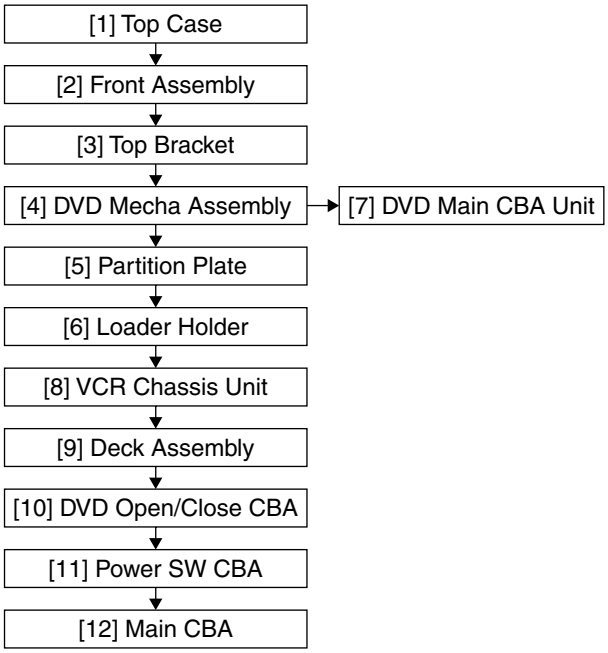
Signal Name	Function
Hi-Fi-H-SW	HiFi Audio Head Switching Pulse
HiFi/NOR-IN	Audio Mode Input HiFi=”L”/ Normal=”H”
I/P-SW	Interlace/Progressive Detector Signal
IIC-BUS- SCL	IIC BUS Control Clock
IIC-BUS- SDA	IIC BUS Control Data
INSEL-2	Input Select “H”=DISC Ch “L”=Ch except DISC
KEY-1	A/D Key Data Signal 1
KEY-2	Key Scan Input Signal 2
LD-SW	Deck Mode Position Detector Signal
LINE- MUTE	Audio Mute Control Signal
LM-FWD/REV	Loading Motor Control Signal
MOD-A	Modulator Audio Output Signal
MOD-V	Modulator Video Output Signal
N-A-IN	Normal Audio Signal Input
N-A-OUT	Normal Audio Signal Output
NORMAL-L	Normal Audio Control Signal (Normal = “L”)
OSCI	Main Clock Input 14.31818MHz
OSCO	Main Clock Output 14.31818MHz
OUTPUT-SELECT	Output Select
P-DOWN-L	Power Voltage Down Detector Signal
P-ON+5V	+5V at Power-On Signal
P-ON+9V	+9V at Power-On Signal
P-ON-L	Power On Signal to Low
PG-DELAY	Video Head Switching Pulse Signal Adjusted Voltage
PWRCON	Power Down
REC-SAF-SW	Recording Safety SW Detect (With Record tab = ”L”/ With out Record tab = ”H”)
REMOTE	Remote Control Signal
REMOTE-VIDEO	Remote Control Sensor
RESET	System Reset Signal (Reset=”L”)
RF-SW	Video Head Switching Pulse
SIF	Source Input Format
SPDIF	Digital Audio Interface Format Signal
ST-S	Tape Start Position Detector Signal
ST/SAP-IN	Tuner Stereo/Sap Detector Signal Input
ST/SAP-MODE	Tuner Stereo/Sap Mode Signal

Signal Name	Function
SXI	Operation Mode Selecting Input Signal
T-REEL	Take Up Reel Rotation Signal
TIMER+5V	+5V at Timer
TU-VIDEO	Tuner Video Input Signal
V(L)	Video L Head
V(R)	Video R Head
V-COM	Video Head Common
V-ENV	Video Envelope Comparator Signal
V-IN	Video Signal Input
V-IN-F	Video Signal Input (Front)
V-OUT	Video Signal Output
VCR/TV	RF Conv. ON/OFF Signal (TV="L"/ VCR="H")
VDD	VDD
VDD2	VDD2
VIDEO	Video Signal
VIDEO-C	Video Component Video Signal (chrominance)
VIDEO-IN	Composite Video Signal Input
VIDEO-OUT	Composite Video Signal Output
VIDEO-Pb/Cb	Video Component Video Signal (Pb/Cb)
VIDEO-Pr/Cr	Video Component Video Signal (Pr/Cr)
VIDEO-Y(I/P)	Video Component Video Signal (Interlace/Progressive)
VRI	Servo Standard Voltage Input
VRO	Servo Standard Voltage Output
VSS	VSS
Vss2	Vss2
XI	Sub Clock Input 32.768 MHz
XO	Sub Clock Output 32.768 MHz
YCA-CS	YCA IC Control Chip Select
YCA-SCL	YCA IC Control Clock
YCA-SDA	YCA IC Control Data

CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note
[1]	Top Case	D1	4(S-1)	-
[2]	Front Assembly	D2	*3(L-1), *3(L-2)	1 1-1 1-2
[3]	Top Bracket	D2	3(S-2)	-
[4]	DVD Mecha Assembly	D3	4(S-3), *CN401, *CN601	-
[5]	Partition Plate	D3	2(S-4)	-
[6]	Loader Holder	D3	2(S-5)	-
[7]	DVD Main CBA Unit	D4	2(S-6), *CN201, *CN301	2 2-1 2-2 3
[8]	VCR Chassis Unit	D5	5(S-7), 2(S-8)	-
[9]	Deck Assembly	D6	Desolder, (S-9), (S-10), (S-11)	4,5
[10]	DVD Open/ Close CBA	D6	Desolder	-
[11]	Power SW CBA	D6	Desolder	-
[12]	Main CBA	D6	----------	-
↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)

Note:

(1): Identification (location) No. of parts in the figures

(2): Name of the part

(3): Figure Number for reference

(4): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw,
CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

(5): Refer to “Reference Notes.”

Reference Notes

CAUTION 1: Locking Tabs (L-1) and (L-2) are fragile. Be careful not to break them.

1-1. Release three Locking Tabs (L-1).

1-2. Release three Locking Tabs (L-2), then remove the Front Assembly.

CAUTION 2: Electrostatic breakdown of the laser diode in the optical system block may occur as a potential difference caused by electrostatic charge accumulated on cloth, human body etc, during unpacking or repair work.

To avoid damage of pickup follow next procedures.

2-1. Disconnect Connector (CN301). Remove a Screw (S-6) and lift the DVD Main CBA Unit. (Fig. D4)

2-2. Short the three short lands of FPC cable with solder before removing the FFC cable (CN201) from it. If you disconnect the FFC cable (CN201), the laser diode of pickup will be destroyed. (Fig. D4)

CAUTION 3: When reassembling, confirm the FFC cable (CN201) is connected completely. Then remove the solder from the three short lands of FPC cable. (Fig. D4)

4. When reassembling, solder wire jumpers as shown in Fig. D6.

5. Before installing the Deck Assembly, be sure to place the pin of LD-SW on Main CBA as shown in Fig. D6. Then, install the Deck Assembly while aligning the hole of Cam Gear with the pin of LD-SW, the shaft of Cam Gear with the hole of LD-SW as shown in Fig. D6.

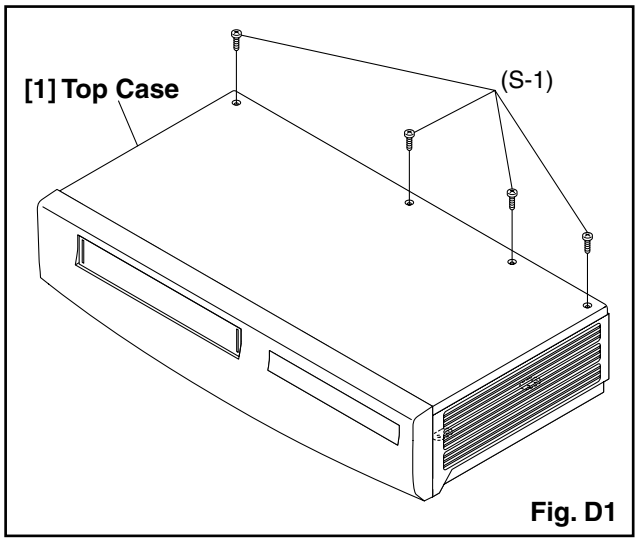


Fig. D1

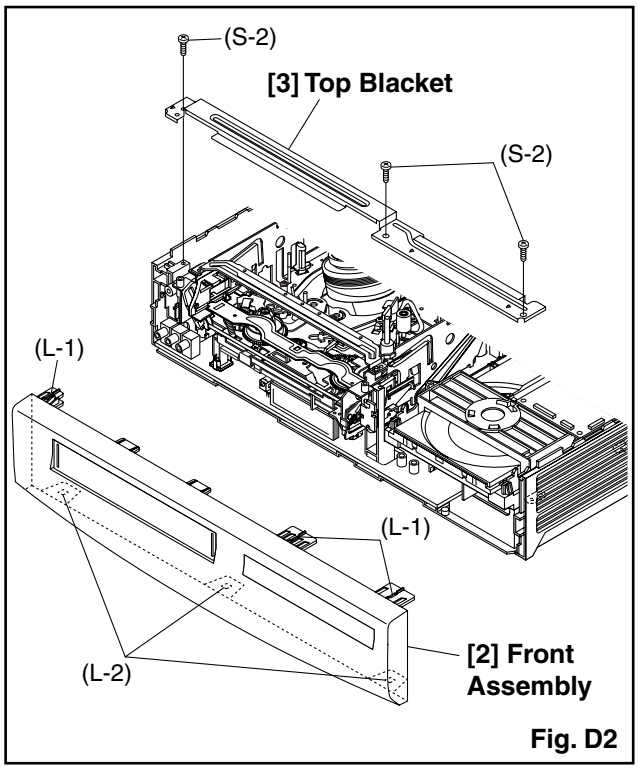


Fig. D2

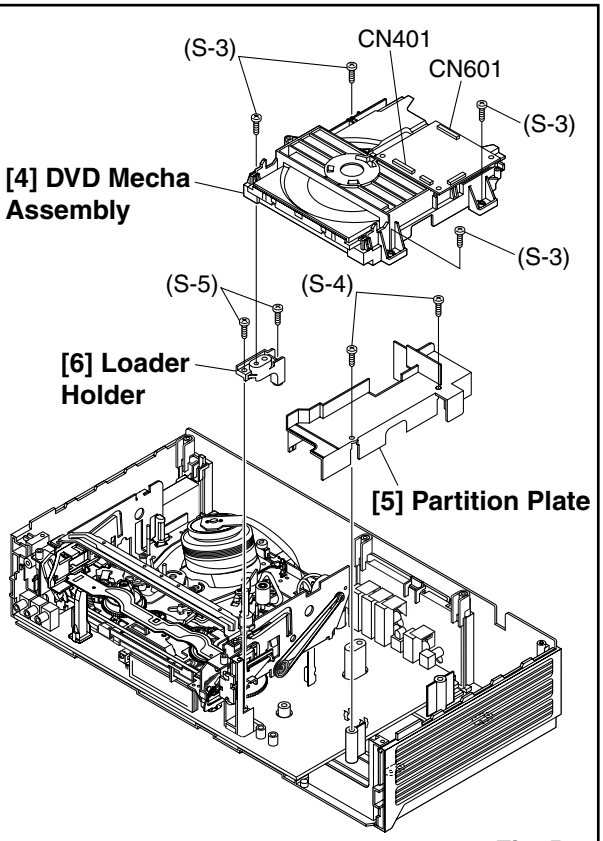


Fig. D3

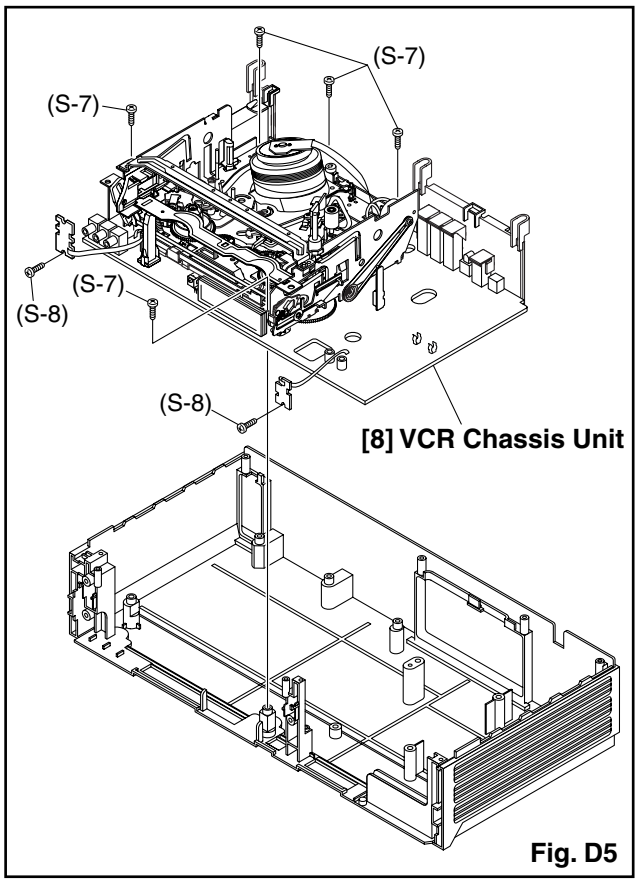
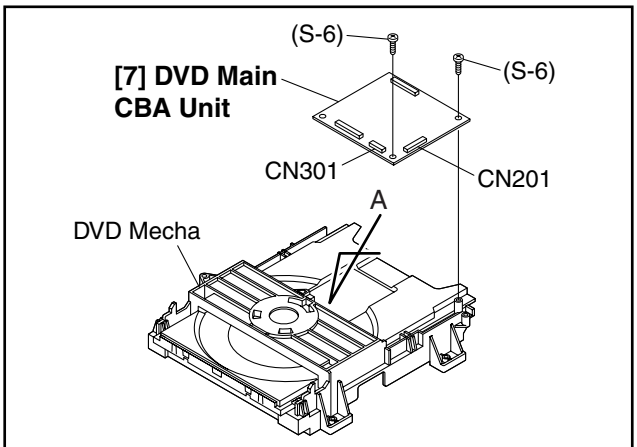


Fig. D5



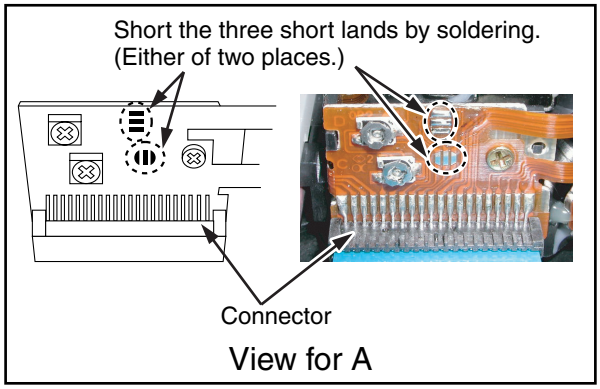
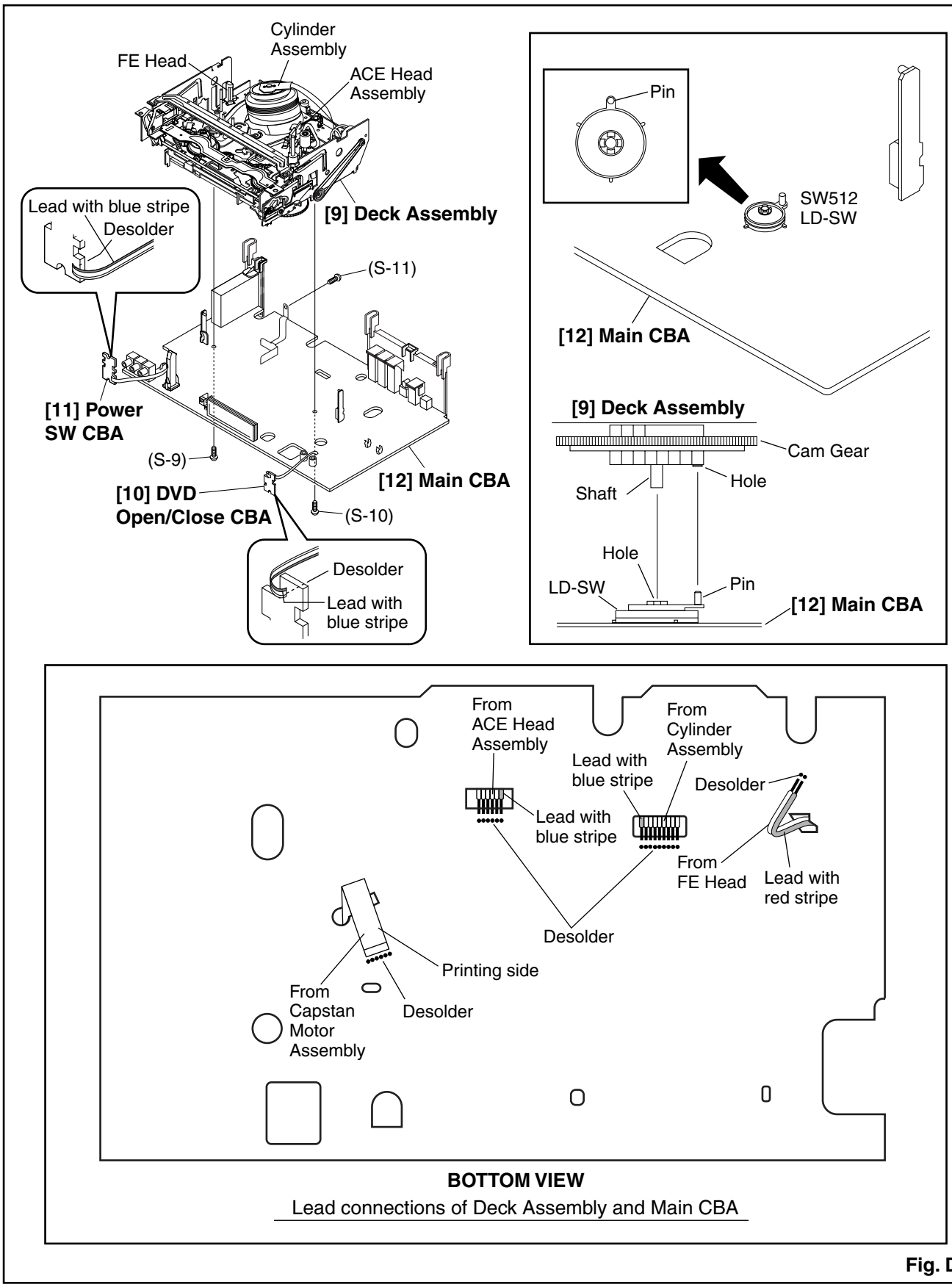


Fig. D4



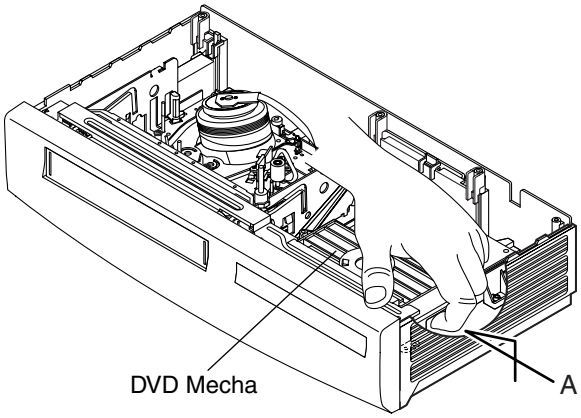
BOTTOM VIEW

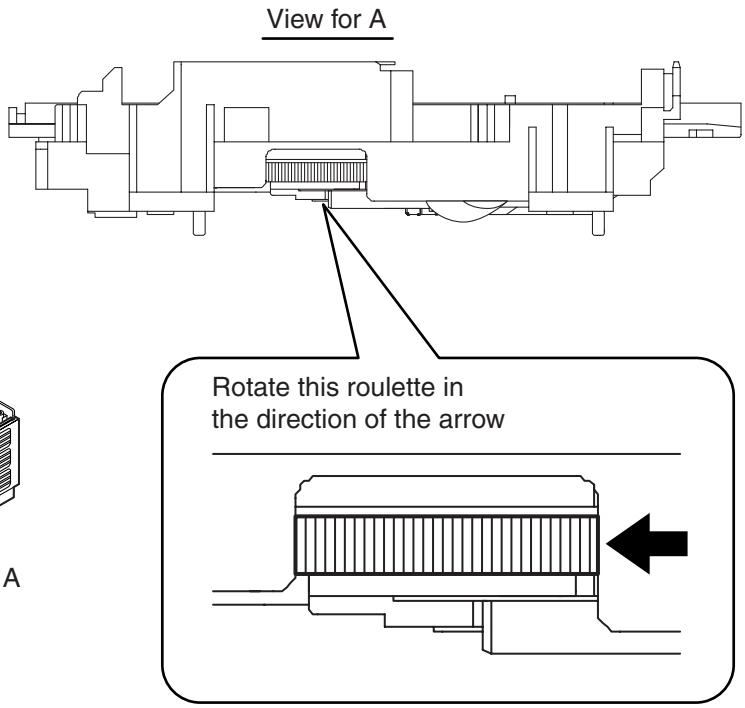
Lead connections of Deck Assembly and Main CBA

Fig. D6

HOW TO EJECT MANUALLY

1. Remove the Top Case.
2. Rotate the roulette in the direction of the arrow as shown below.
3. Pull the tray slowly with a hand.





ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: "CBA" is an abbreviation for "Circuit Board Assembly."

NOTE:

1. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.
2. To perform these alignment / confirmation procedures, make sure that the tracking control is set in the center position: Press either "CHANNEL ▼" or "CHANNEL ▲" button on the front panel first, then the "PLAY" button on the front panel.

Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe,
   V-Range: 0.001~50V/Div.,
   F-Range: DC~AC-20MHz
2. Alignment Tape (VFMS0001H6)

Head Switching Position Adjustment

Purpose:

To determine the Head Switching position during playback.

Symptom of Misadjustment:

May cause Head Switching noise or vertical jitter in the picture.

Test point	Adj.Point	Mode	Input
TP751(V-OUT) TP302(RF-SW) GND	VR501 (Switching Point) (MAIN CBA)	PLAY (SP)	-----
Tape	**Measurement Equipment**	**Spec.**	
VFMS0001H6	Oscilloscope	6.5H±1H (412.7μs±63.5μs)	

Connections of Measurement Equipment

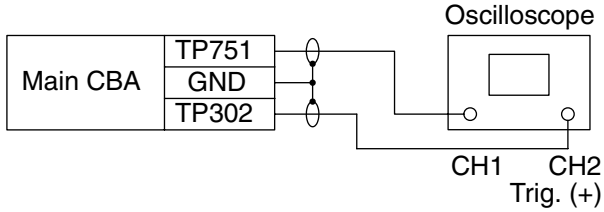
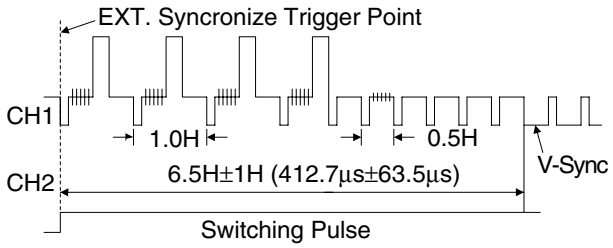


Figure 1



Reference Notes:

Playback the Alignment tape and adjust VR501 so that the V-sync front edge of the CH1 video output waveform is at the 6.5H±1H (412.7μs±63.5μs) delayed position from the rising edge of the CH2 head switching pulse waveform.

FIRMWARE RENEWAL MODE

1. Turn the power on and remove the disc on the tray.
2. To put the DVD player into version up mode, press [9], [8], [7], [6], and [SEARCH MODE] buttons on the remote control unit in that order. The tray will open automatically.
   Fig. a appears on the screen and Fig. b appears on the VFD.

"*******" differ depending on the models.

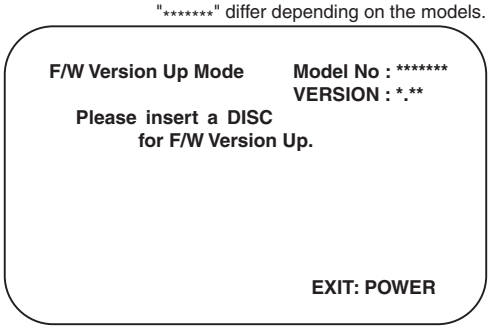


Fig. a Version Up Mode Screen

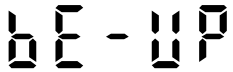


Fig. b VFD in Version Up Mode

The DVD player can also enter the version up mode with the tray open. In this case, Fig. a will be shown on the screen while the tray is open.

3. Load the disc for version up.
4. The DVD player enters the F/W version up mode automatically. Fig. c appears on the screen and Fig. d appears on the VFD. If you enter the F/W for different models, “Disc Error” will appear on the screen, then the tray will open automatically.

"*******" differ depending on the models.

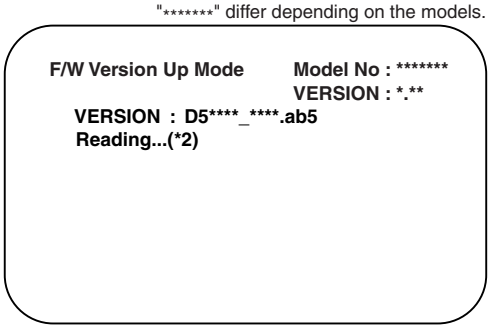


Fig. c Programming Mode Screen

Fig. d VFD in Programming Mode (Example)

The appearance shown in (*2) of Fig. c is described as follows:

No.	Appearance	State
1	Reading...	Sending files into the memory
2	Erasing...	Erasing previous version data
3	Programming...	Writing new version data

5. After programming is finished, the tray opens automatically. Fig. e appears on the screen and the checksum in (*3) of Fig. e appears on the VFD. (Fig. f)

"*******" differ depending on the models.

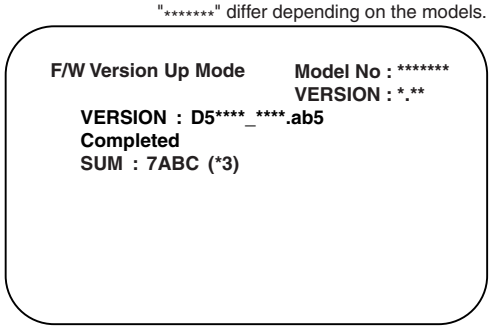


Fig. e Completed Program Mode Screen

Fig. f VFD upon Finishing the Programming Mode (Example)

At this time, no buttons are available.

6. Remove the disc on the tray.
7. Unplug the AC cord from the AC outlet. Then plug it again.
8. Turn the power on by pressing the [STANDBY-ON] button and the tray will close.
9. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order.
   Fig. g appears on the screen.

"*******" differ depending on the models.

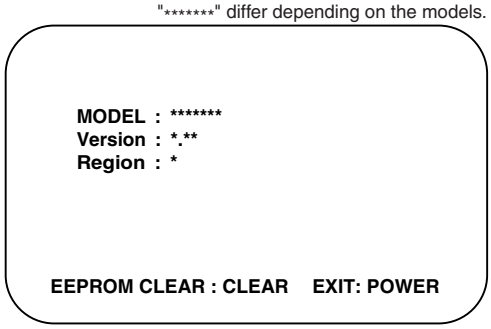


Fig. g

10. Press [CLEAR] button on the remote control unit.
    Fig. h appears on the screen.

"*******" differ depending on the models.

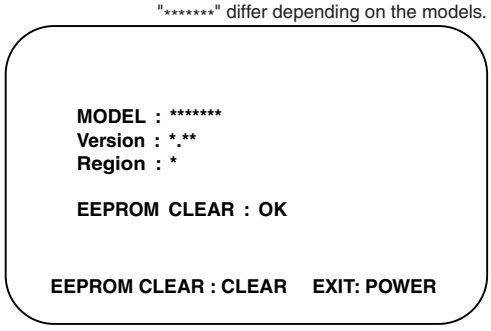


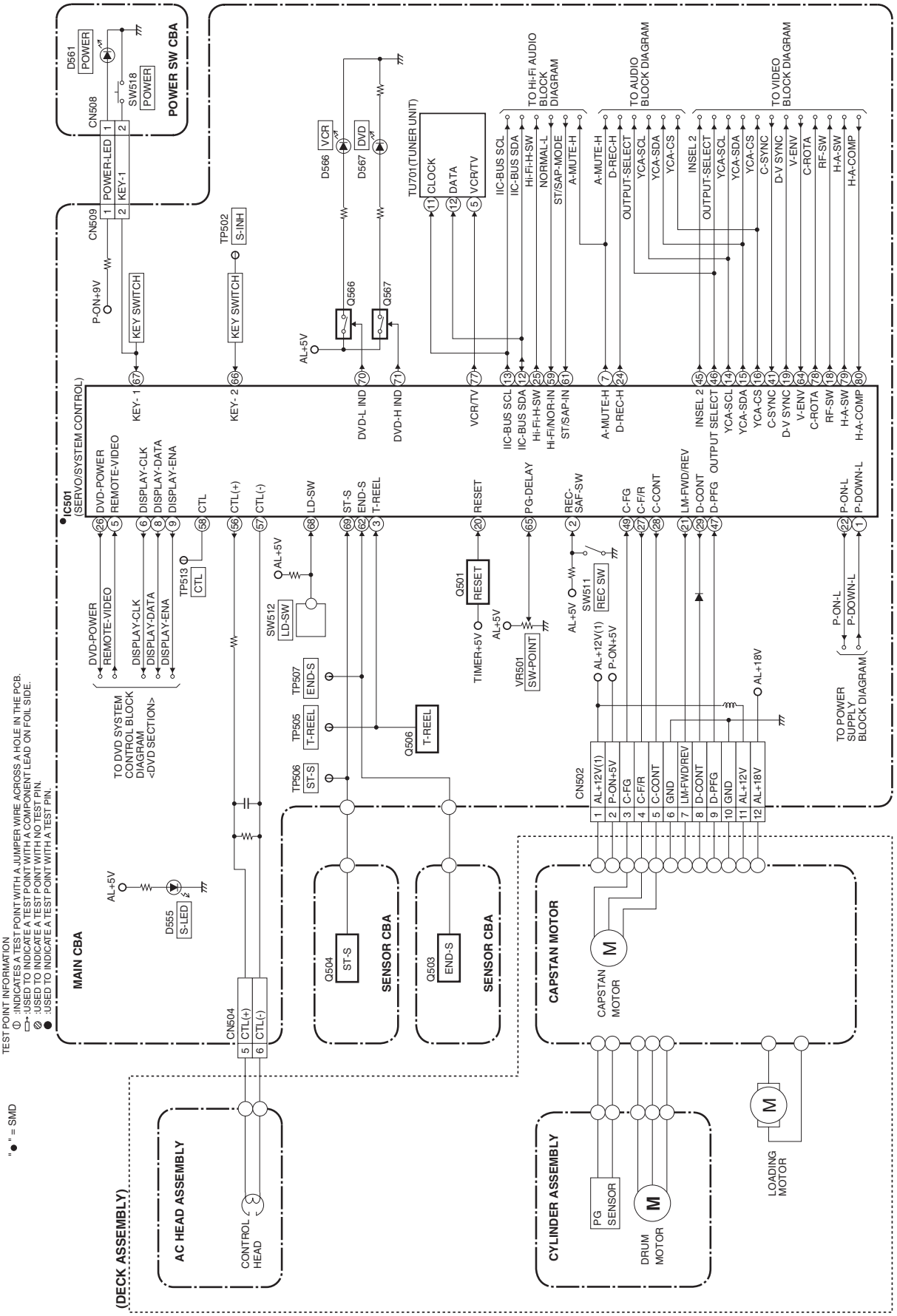
Fig. h

When “OK” appears on the screen, the factory default will be set. Then the firmware renewal mode is complete.

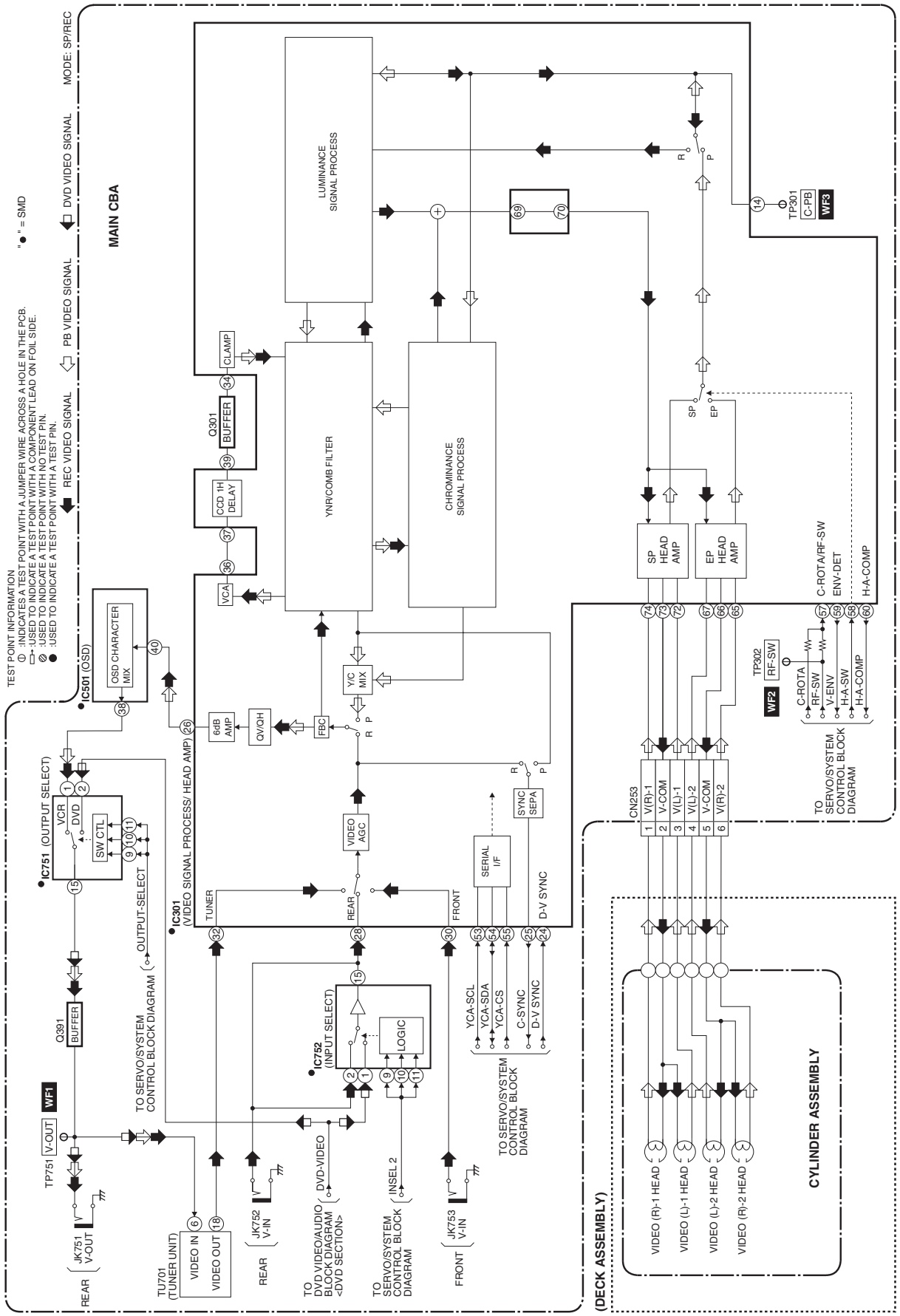
11. To exit this mode, press [STANDBY-ON] button.

BLOCK DIAGRAMS <VCR SECTION>

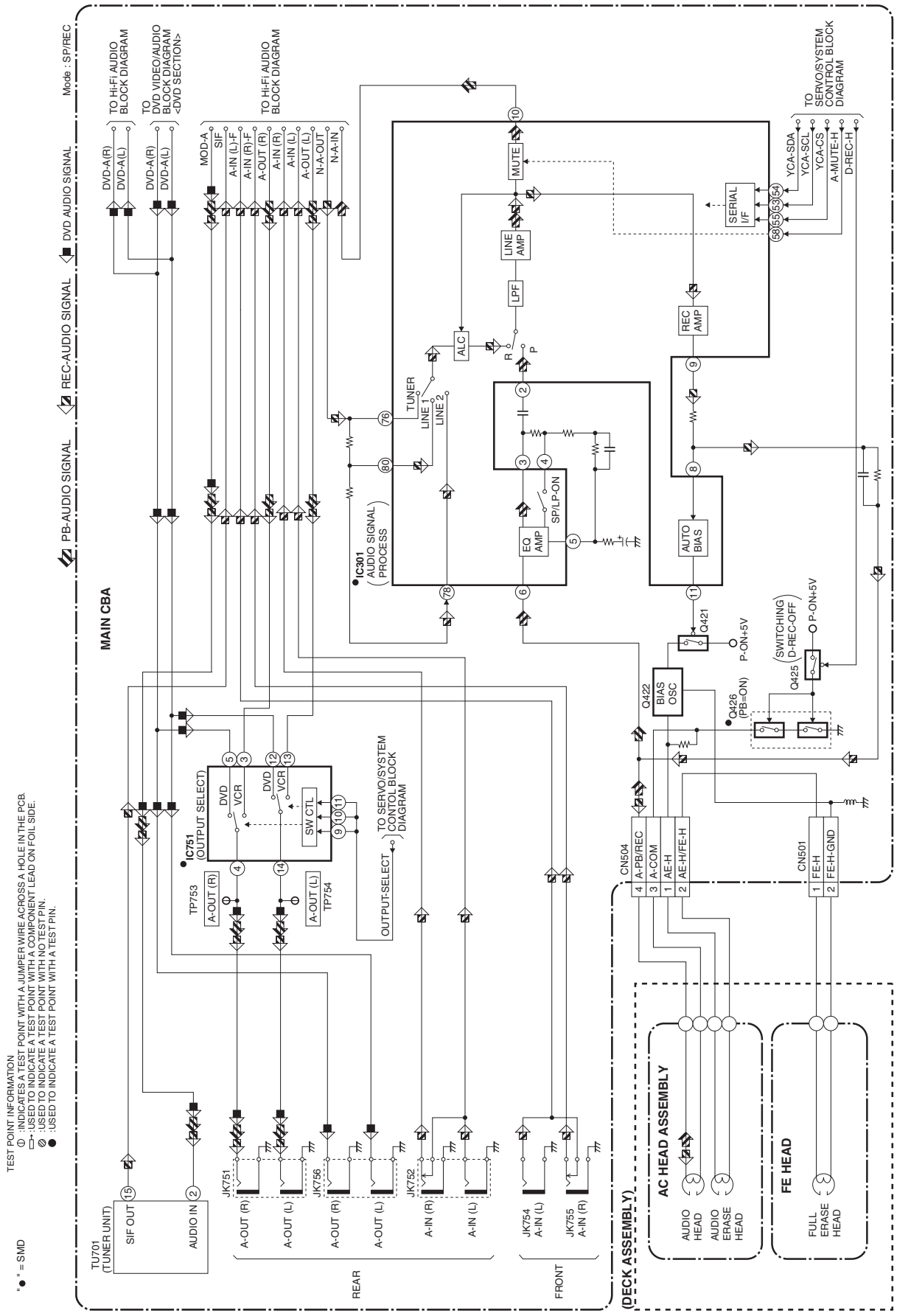
Servo / System Control Block Diagram



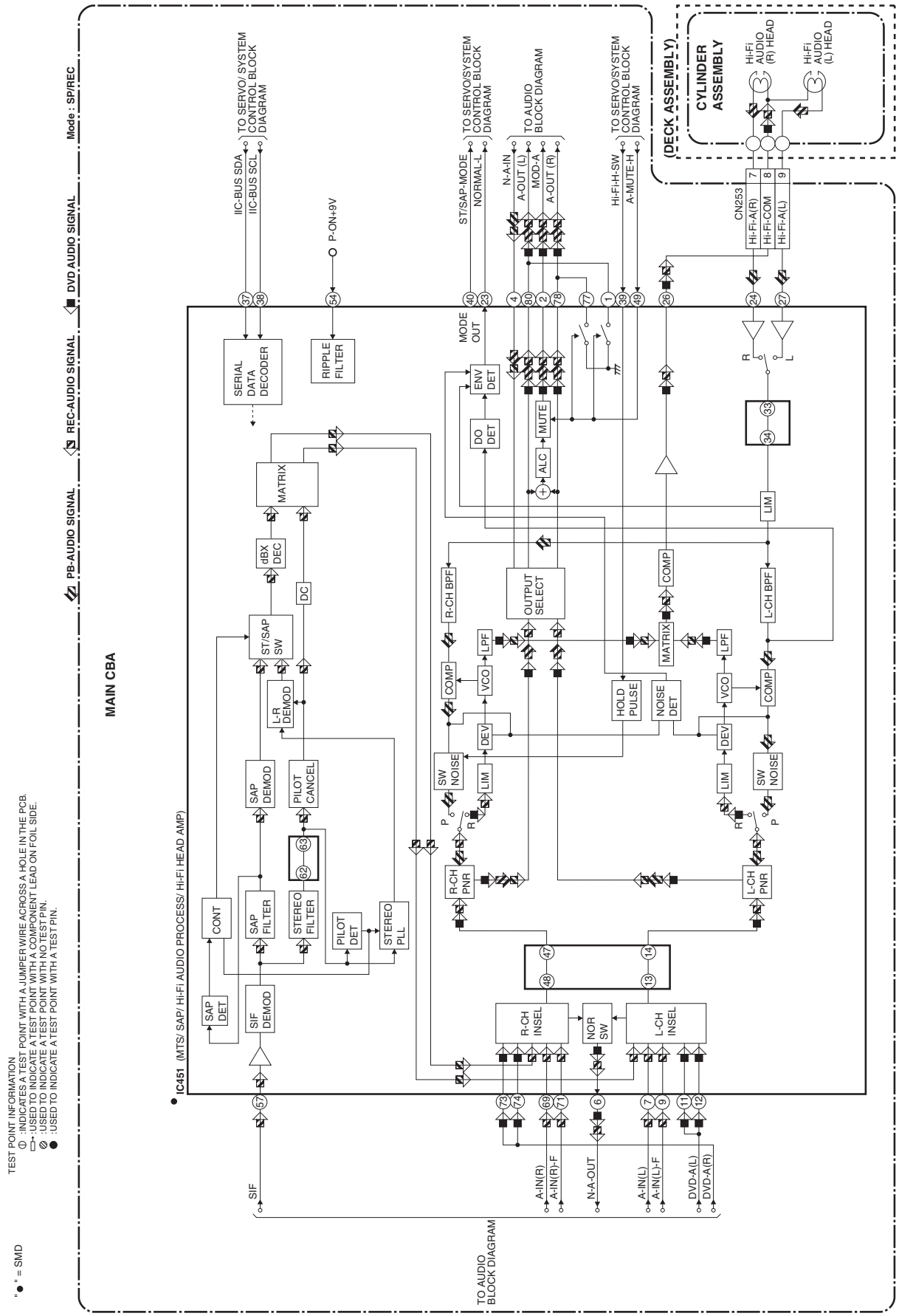
Video Block Diagram



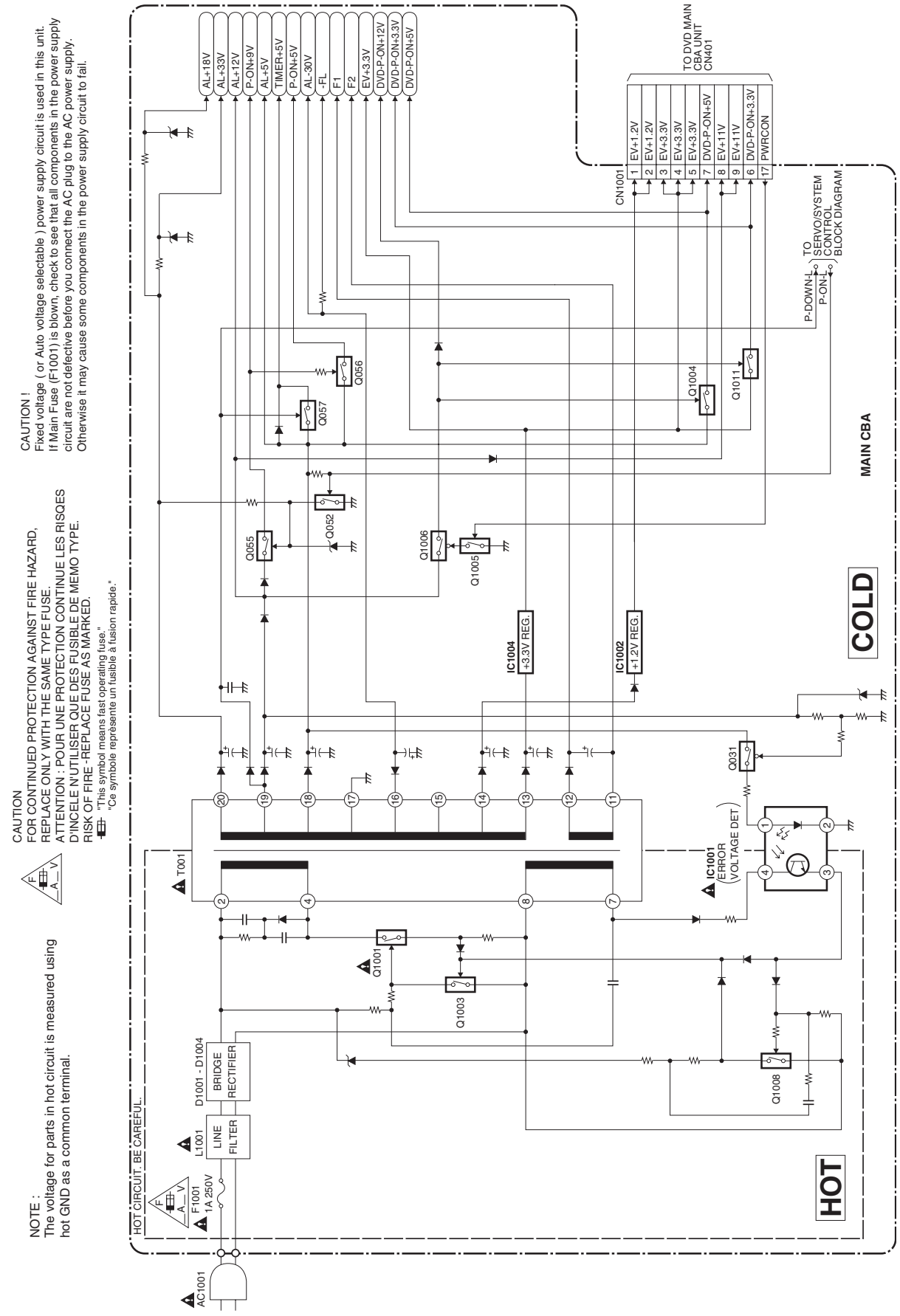
Audio Block Diagram



Hi-Fi Audio Block Diagram

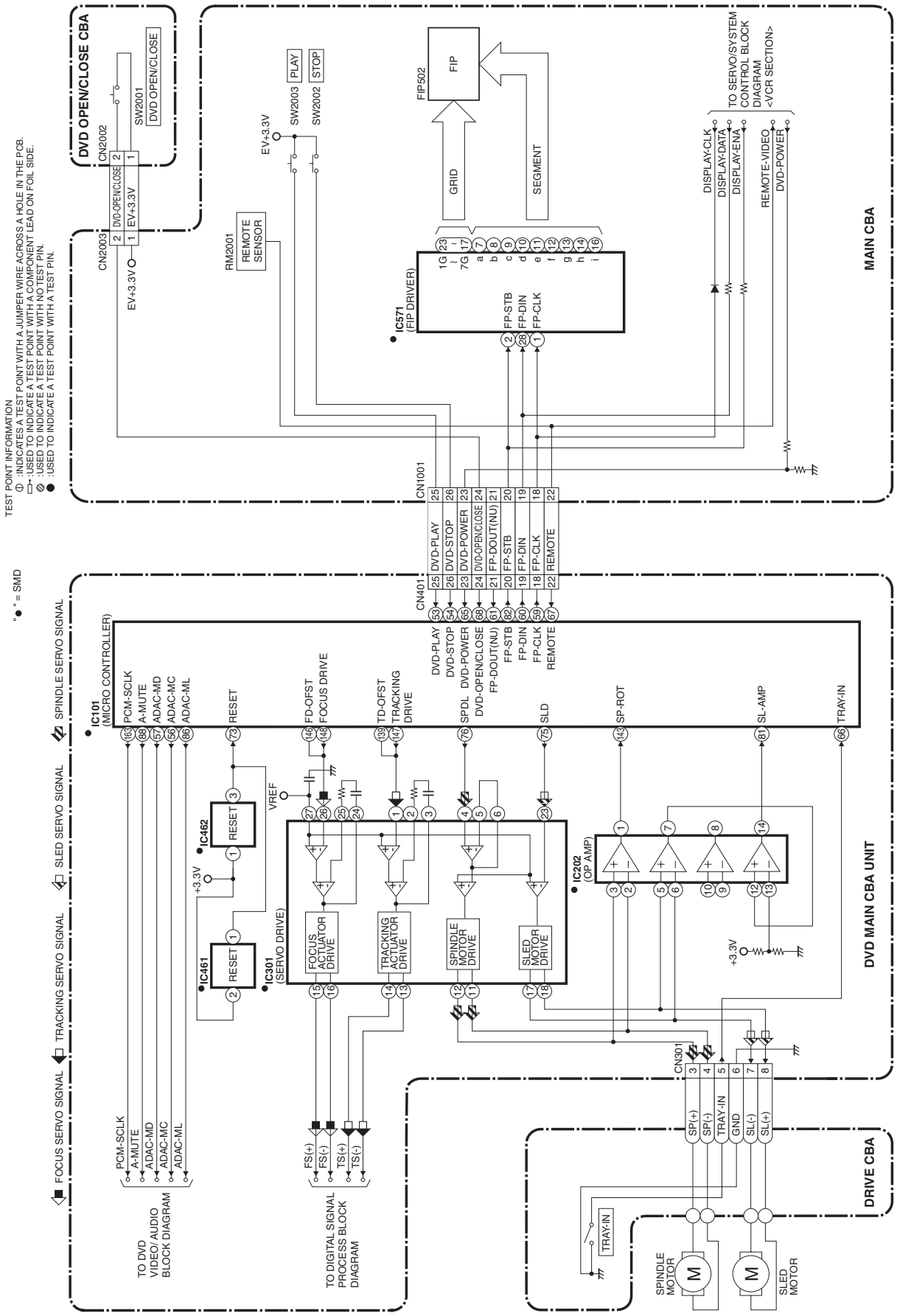


Power Supply Block Diagram

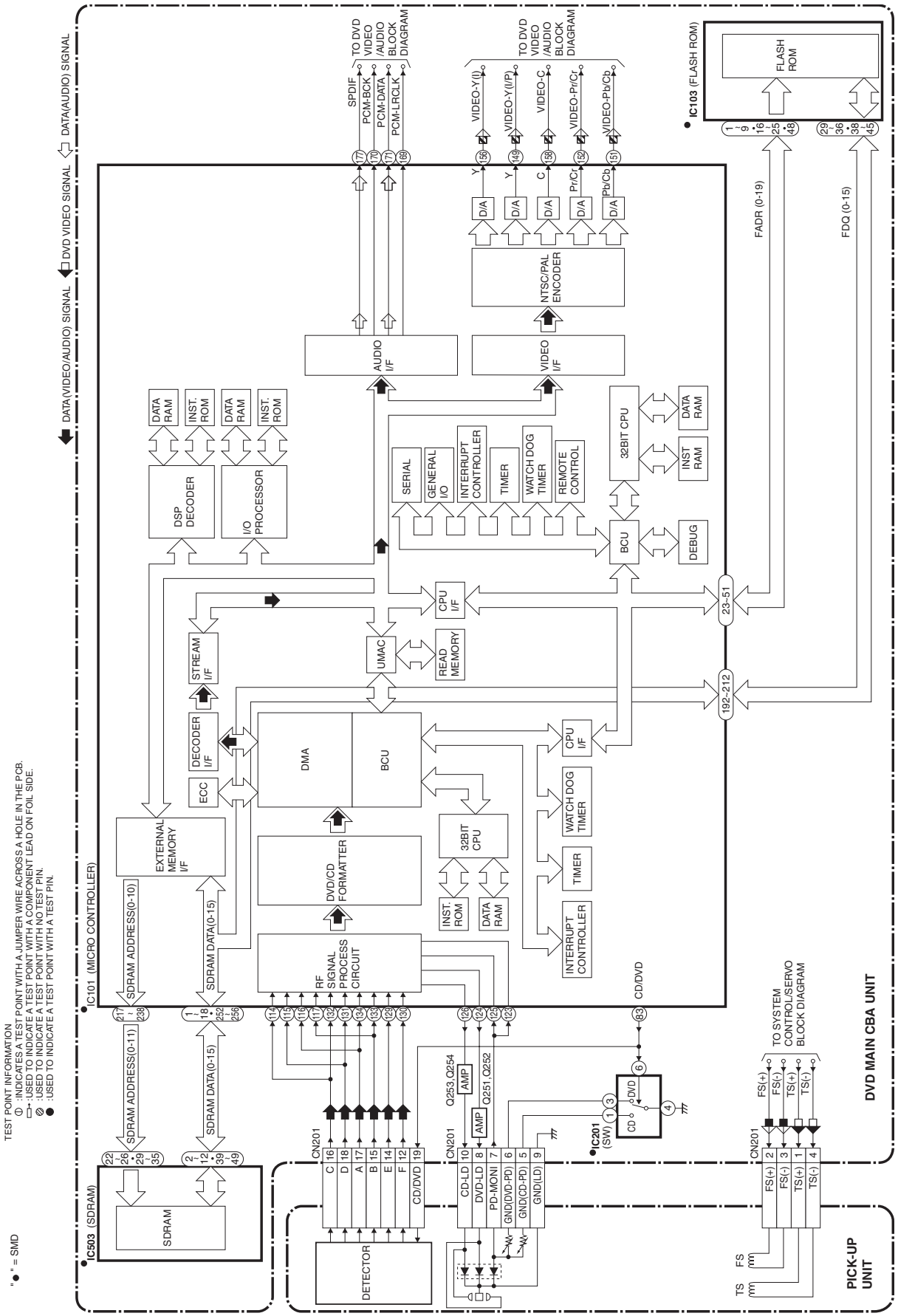


BLOCK DIAGRAMS <DVD SECTION>

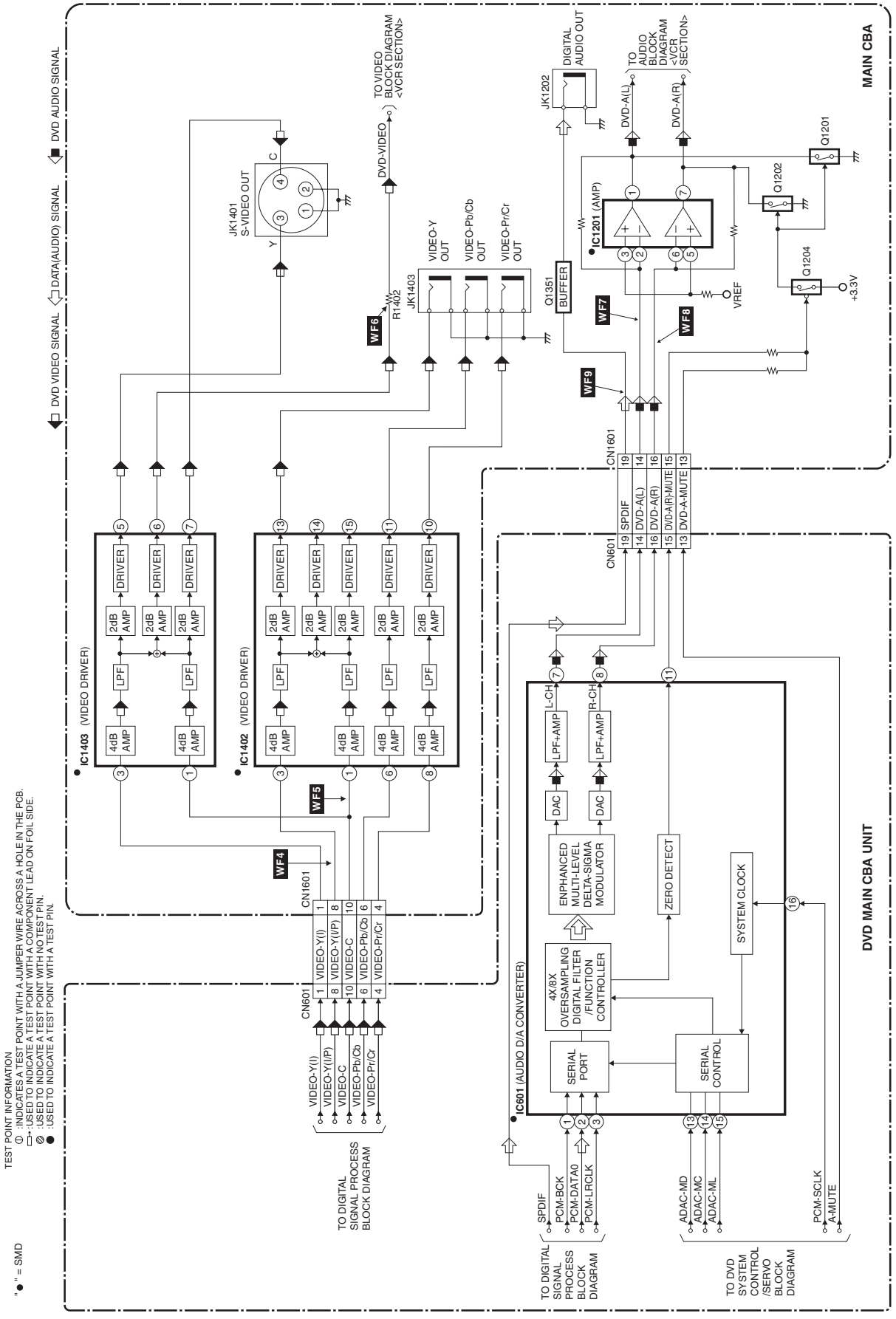
DVD System Control / Servo Block Diagram



Digital Signal Process Block Diagram



DVD Video / Audio Block Diagram



SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

WARNING

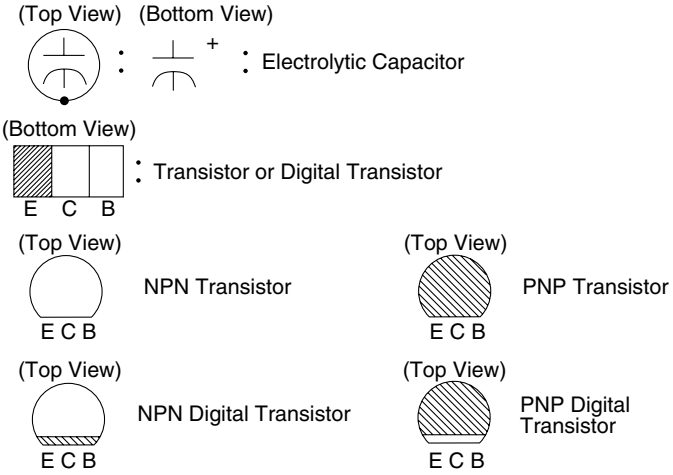
Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.
Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire or other hazards.
Under no circumstances should the original design be modified or altered without written permission from Philips Consumer Electronics Company. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.
* Broken Line : ▬ ▬ ▬ ▬ ▬

Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 - 80%	20°C	–25~+85°C
(SR)	±15%	20°C	–25~+85°C
(Z)	±22.5%	20°C	–25~+85°C

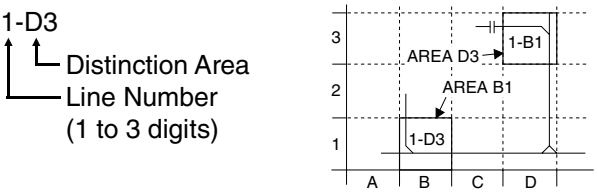
Capacitors and transistors are represented by the following symbols.

< PCB Symbols >



Notes:

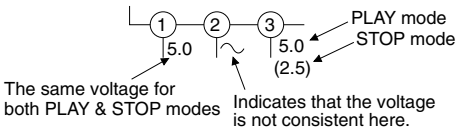
1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.
3. How to read converged lines.



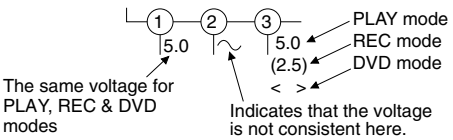
Examples:
(1). "1-D3" means that line number "1" goes to area "D3."
(2). "1-B1" means that line number "1" goes to area "B1."

4. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
5. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
6. All capacitance values are indicated in μF ($P=10^{-6}$ μF).
7. All voltages are DC voltages unless otherwise specified.
8. Voltage indications PLAY and REC modes on the schematics are as shown below.

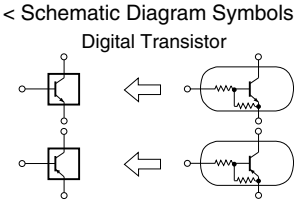
< DVD Section > Unit: Volts



< VCR Section >



< Schematic Diagram Symbols >

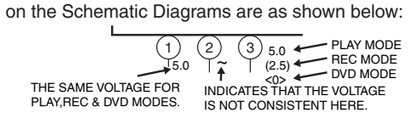


Main 1/8 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position	Ref No.	Position
CAPACITORS		TRANSISTORS	
C023	E-4	Q506	A-2
C502	B-1	RESISTORS	
C505	D-1	R502	D-1
C507	D-1	R503	D-1
C508	D-3	R504	D-1
C509	D-3	R507	D-3
C511	E-3	R508	D-3
C512	E-3	R511	E-4
C514	D-3	R517	E-4
C515	D-3	R518	E-4
C521	E-3	R521	C-4
C522	E-4	R523	D-4
C523	C-4	R524	C-4
C525	F-4	R525	B-3
C527	E-4	R526	B-4
C529	D-4	R527	B-3
C530	D-4	R528	B-3
C531	C-4	R530	B-2
C532	C-4	R537	A-2
C533	C-4	R542	A-1
C534	C-4	R543	B-2
C535	C-4	R544	B-4
C536	C-4	R545	C-1
C537	B-4	R546	C-1
C541	F-3	R550	D-2
C544	E-4	R610	C-1
CONNECTORS		R611	D-2
CN501	A-4	R616	D-4
CN502	F-4	R618	C-1
CN504	A-4	R619	C-2
DIODES		R626	C-1
D501	E-4	R640	F-2
D510	F-3	SWITCH	
D555	A-1	SW511	A-2
IC		VARIABLE RESISTOR	
IC501	C-3	VR501	B-4
COILS		CRYSTAL OSCILLATORS	
L501	A-1	X501	D-3
L502	E-3	X502	D-3
L504	E-3	TEST POINTS	
TRANSISTORS		TP505	B-2
Q501	D-1	TP513	B-4

Main 1/8 Schematic Diagram < VCR Section >

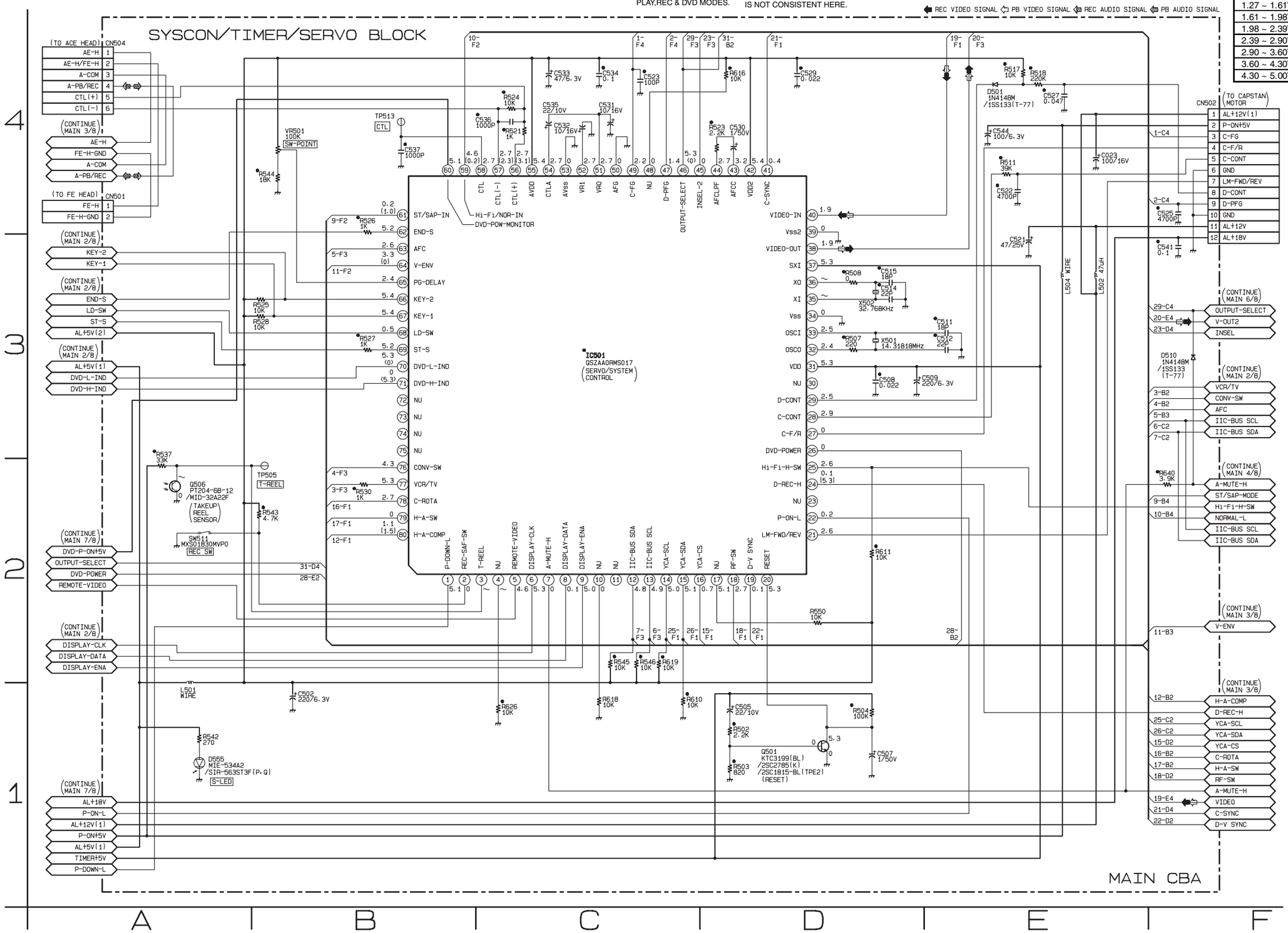
Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



"●" = SMD

IC501 KEY VOLTAGE CHART

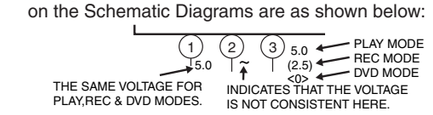
Voltage \ Pin No.	KEY 1 (67 PIN)	KEY 2 (66 PIN)
0.00 ~ 0.51V	POWER	DVD/VCR
0.51 ~ 0.92V	REW	CH UP
0.92 ~ 1.27V	FF	CH DOWN
1.27 ~ 1.61V	STOP/EJECT	SENS-INH
1.61 ~ 1.98V	PLAY	----------
1.98 ~ 2.39V	REC	----------
2.39 ~ 2.90V	----------	----------
2.90 ~ 3.60V	----------	----------
3.60 ~ 4.30V	----------	----------
4.30 ~ 5.00V	KEY OFF	KEY OFF



Main 2/8, Sensor & Power SW Schematic Diagram < VCR Section >

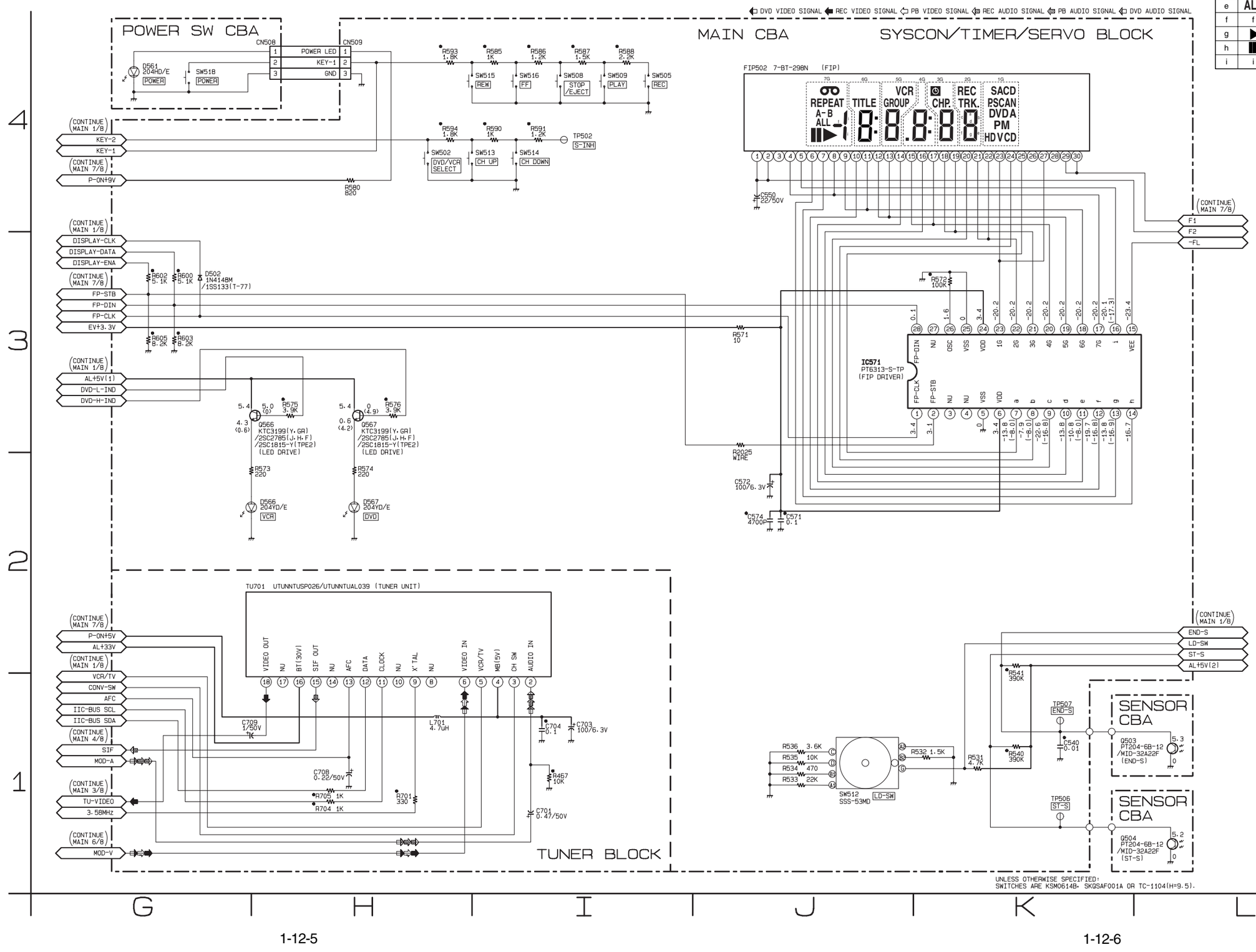
"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



FIP502 MATRIX CHART

	7G	6G	5G	4G	3G	2G	1G
a	∞	a	a	a	a	a	SACD
b	REPEAT	b	b	b	b	b	PSCAN
c	A-	c	c	c	c	c	DVD
d	B	d	d	d	d	d	A
e	ALL	e	e	e	e	e	P
f	f	f	f	f	f	f	M
g	▶	g	g	g	g	g	HD
h	▮▮	:	GROUP	:	CHP	TRK.	V
i	i	TITLE	VCR	.	◷	REC	CD



Main 2/8 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position
CAPACITORS	
C540	K-1
C550	J-4
C571	J-2
C572	J-2
C574	J-2
C701	I-1
C703	I-1
C704	I-1
C708	H-1
C709	H-1
CONNECTOR	
CN509	H-4
DIODES	
D502	G-3
D566	H-2
D567	H-2
IC	
IC571	J-3
COIL	
L701	H-1
TRANSISTORS	
Q566	H-3
Q567	H-3
RESISTORS	
R467	I-1
R531	K-1
R532	K-1
R533	J-1
R534	J-1
R535	J-1
R536	J-1
R540	K-1
R541	K-2
R571	J-3
R572	K-3
R573	H-2
R574	H-2

Ref No.	Position
RESISTORS	
R575	H-3
R576	H-3
R580	H-4
R585	I-4
R586	I-4
R587	I-4
R588	I-4
R590	I-4
R591	I-4
R593	H-4
R594	H-4
R600	G-3
R602	G-3
R603	G-3
R605	G-3
R701	H-1
R704	H-1
R705	H-1
R2025	J-3
SWITCHES	
SW502	H-4
SW505	I-4
SW508	I-4
SW509	I-4
SW512	J-1
SW513	I-4
SW514	I-4
SW515	I-4
SW516	I-4
MISCELLANEOUS	
FIP502	J-4
TU701	H-2
TEST POINTS	
TP502	I-4
TP506	K-1
TP507	K-1

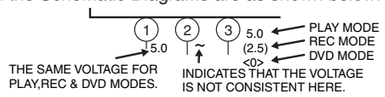
Main 3/8 Schematic Diagram Parts Location Guide < VCR Section >

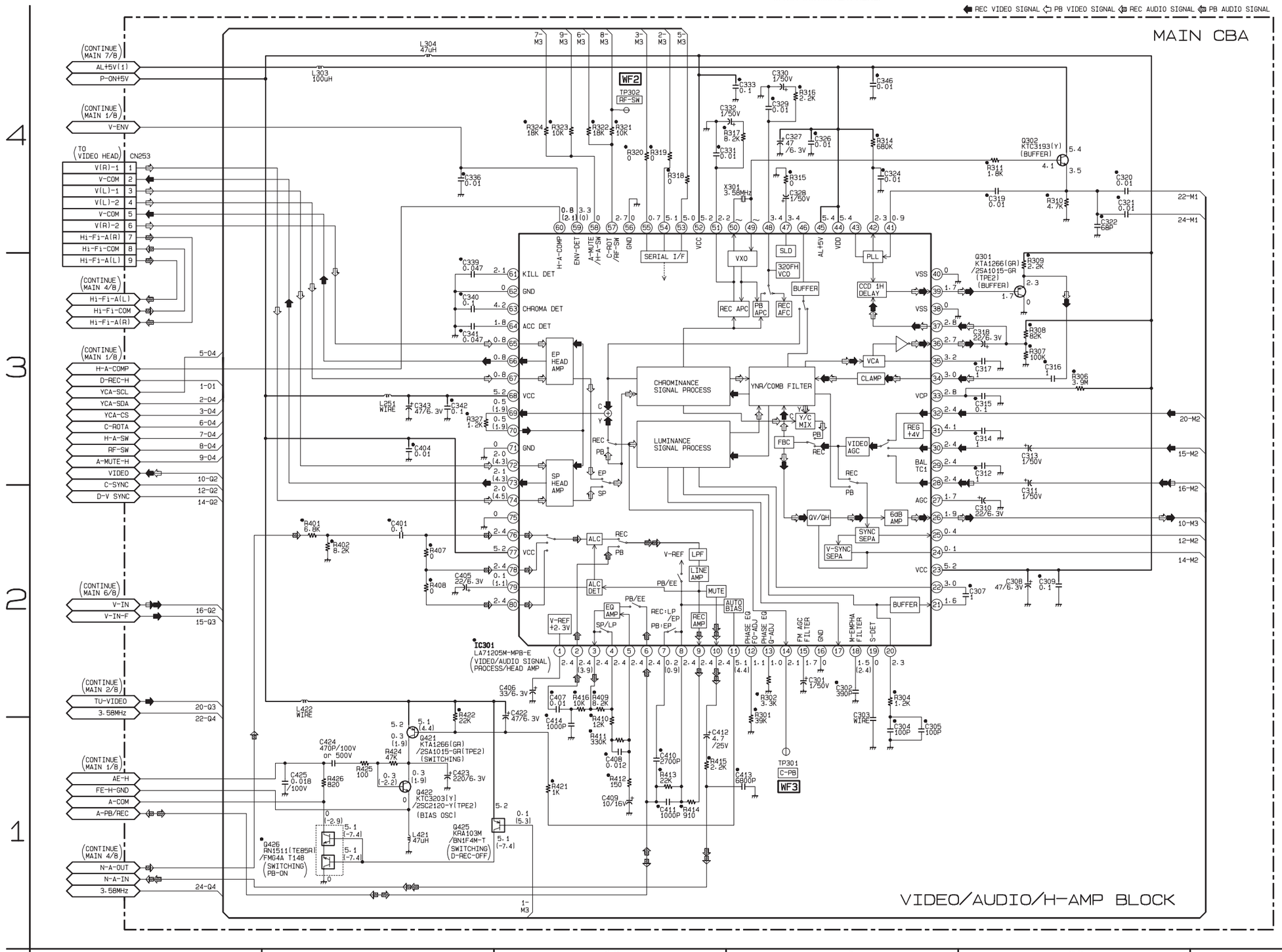
Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		RESISTORS	
C301	P-2	C404	N-3	R308	Q-3
C302	P-2	C405	N-2	R309	Q-3
C303	P-1	C406	O-2	R310	Q-4
C304	P-1	C407	O-2	R311	Q-4
C305	P-1	C408	O-1	R314	P-4
C307	Q-2	C409	O-1	R315	P-4
C308	Q-2	C410	O-1	R316	P-4
C309	Q-2	C411	O-1	R317	P-4
C310	Q-2	C412	O-1	R318	O-4
C311	Q-2	C413	P-1	R319	O-4
C312	Q-3	C414	O-1	R320	O-4
C313	Q-3	C422	O-1	R321	O-4
C314	Q-3	C423	N-1	R322	O-4
C315	Q-3	C424	N-1	R323	O-4
C316	Q-3	C425	N-1	R324	O-4
C317	Q-3	CONNECTOR		R327	N-3
C318	Q-3	CN253	M-4	R401	N-2
C319	Q-4	IC		R402	N-2
C320	Q-4	IC301	N-2	R407	N-2
C321	Q-4	COILS		R408	N-2
C322	Q-4	L251	N-3	R409	O-2
C324	P-4	L303	N-4	R410	O-1
C326	P-4	L304	N-4	R411	O-1
C327	P-4	L421	N-1	R412	O-1
C328	P-4	L422	N-2	R413	O-1
C329	P-4	TRANSISTORS		R414	O-1
C330	P-4	Q301	Q-3	R415	O-1
C331	O-4	Q302	Q-4	R416	O-2
C332	O-4	Q421	N-1	R421	O-1
C333	P-4	Q422	N-1	R422	N-1
C336	N-4	Q425	N-1	R424	N-1
C339	N-3	Q426	N-1	R425	N-1
C340	N-3	RESISTORS		R426	N-1
C341	N-3	R301	P-1	CRYSTAL OSCILLATOR	
C342	N-3	R302	P-2	X301	P-4
C343	N-3	R304	P-2	TEST POINTS	
C346	P-4	R306	Q-3	TP301	P-1
C401	N-2	R307	Q-3	TP302	O-4

Main 3/8 Schematic Diagram < VCR Section >

"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:

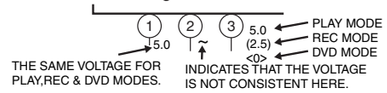


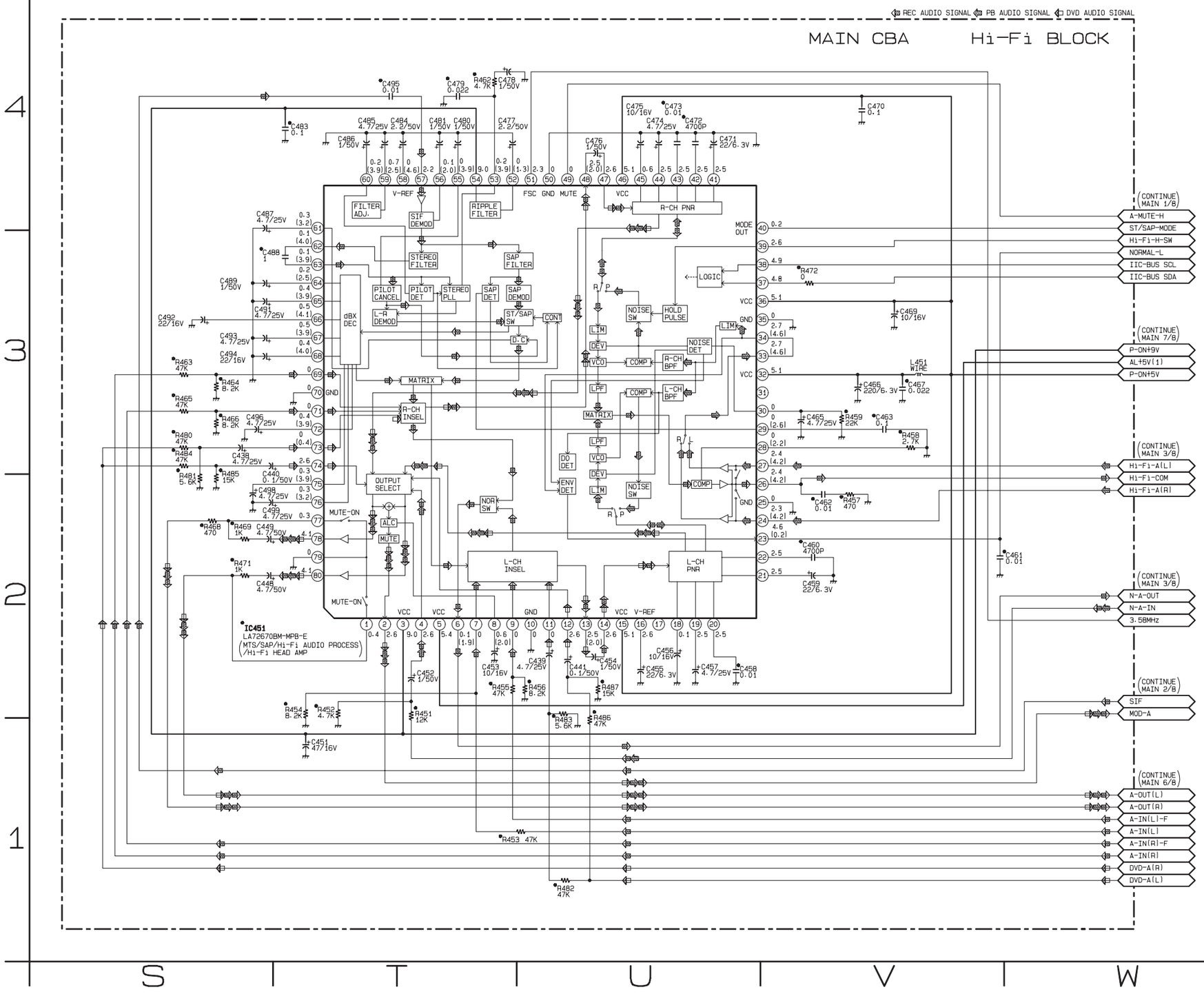


Main 4/8 Schematic Diagram < VCR Section >

"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:





Main 4/8 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS	
C438	S-3	C489	S-3
C439	U-2	C491	S-3
C440	S-3	C492	S-3
C441	U-2	C493	S-3
C448	S-2	C494	S-3
C449	S-2	C495	T-4
C451	T-1	C496	S-3
C452	T-2	C498	S-2
C453	T-2	C499	S-2
C454	U-2	IC	
C455	U-2	IC451	S-2
C456	U-2	COIL	
C457	U-2	L451	V-3
C458	U-2	RESISTORS	
C459	V-2	R451	T-2
C460	V-2	R452	T-2
C461	V-2	R453	U-1
C462	V-2	R454	T-2
C463	V-3	R455	T-2
C465	V-3	R456	U-2
C466	V-3	R457	V-2
C467	V-3	R458	V-3
C469	V-3	R459	V-3
C470	V-4	R462	T-4
C471	U-4	R463	S-3
C472	U-4	R464	S-3
C473	U-4	R465	S-3
C474	U-4	R466	S-3
C475	U-4	R468	S-2
C476	U-4	R469	S-2
C477	T-4	R471	S-2
C478	T-4	R472	V-3
C479	T-4	R480	S-3
C480	T-4	R481	S-2
C481	T-4	R482	U-1
C483	T-4	R483	U-1
C484	T-4	R484	S-3
C485	T-4	R485	S-2
C486	T-4	R486	U-2
C487	S-4	R487	U-2
C488	T-3		

Main 5/8 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position
CAPACITORS	
C1201	X-1
C1202	X-1
C1205	Y-1
C1206	Y-1
C1207	Y-1
C1208	Y-1
C1221	Y-1
C1222	Y-1
C1223	Y-1
C1224	Z-1
C1245	Y-1
C1246	X-1
C1247	X-1
C1249	Y-1
C1351	AA-1
C1352	AA-1
C1354	AA-1
C1355	Z-1
C1394	Y-2
C1395	Y-2
C1403	Y-3
C1422	AA-2
C1423	Y-3
C1441	Y-3
C1442	AA-3
C1443	Z-3
C1461	X-3
C1462	AA-2
C1481	Y-3
C1482	AA-2
C1522	Y-2
C1524	Z-3
C1525	Y-3
C1531	Y-2
C1532	Y-2

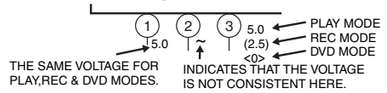
Ref No.	Position
CAPACITORS	
C1535	Y-3
C1536	Y-3
C1537	Z-3
CONNECTOR	
CN1601	X-4
DIODE	
D1301	Y-2
ICS	
IC1201	Y-1
IC1402	Z-3
IC1403	Z-3
COILS	
L1350	Z-2
L1351	AB-1
L1401	AA-2
L1441	AA-2
L1442	AA-2
L1461	AA-2
L1481	AA-3
L1522	Y-2
TRANSISTORS	
Q1201	Z-1
Q1202	Z-1
Q1204	Z-1
Q1351	AA-1
Q1385	Y-2
RESISTORS	
R1205	X-1
R1206	Y-1
R1207	Y-1
R1208	Y-1
R1209	Y-1
R1210	Y-1
R1221	Y-1
R1222	Z-1

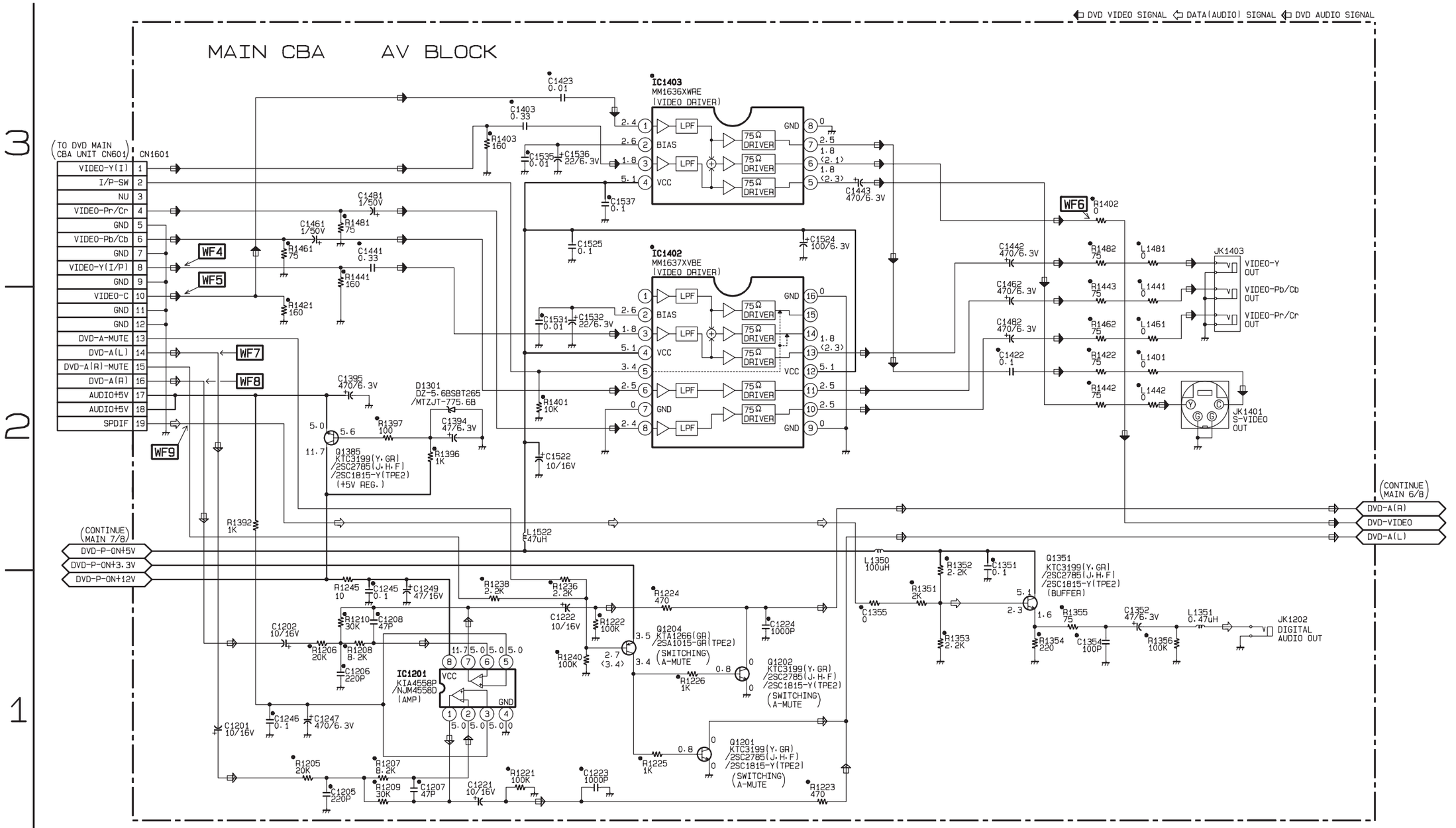
Ref No.	Position
RESISTORS	
R1223	Z-1
R1224	Z-1
R1225	Z-1
R1226	Z-1
R1236	Y-1
R1238	Y-1
R1240	Y-1
R1245	Y-1
R1351	AA-1
R1352	AA-1
R1353	AA-1
R1354	AA-1
R1355	AA-1
R1356	AB-1
R1392	X-2
R1396	Y-2
R1397	Y-2
R1401	Y-2
R1402	AA-3
R1403	Y-3
R1421	X-2
R1422	AA-2
R1441	Y-3
R1442	AA-2
R1443	AA-2
R1461	X-3
R1462	AA-2
R1481	Y-3
R1482	AA-3
MISCELLANEOUS	
JK1202	AB-1
JK1401	AB-2
JK1403	AB-3

Main 5/8 Schematic Diagram < VCR Section >

"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:

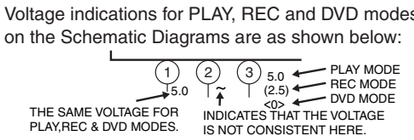


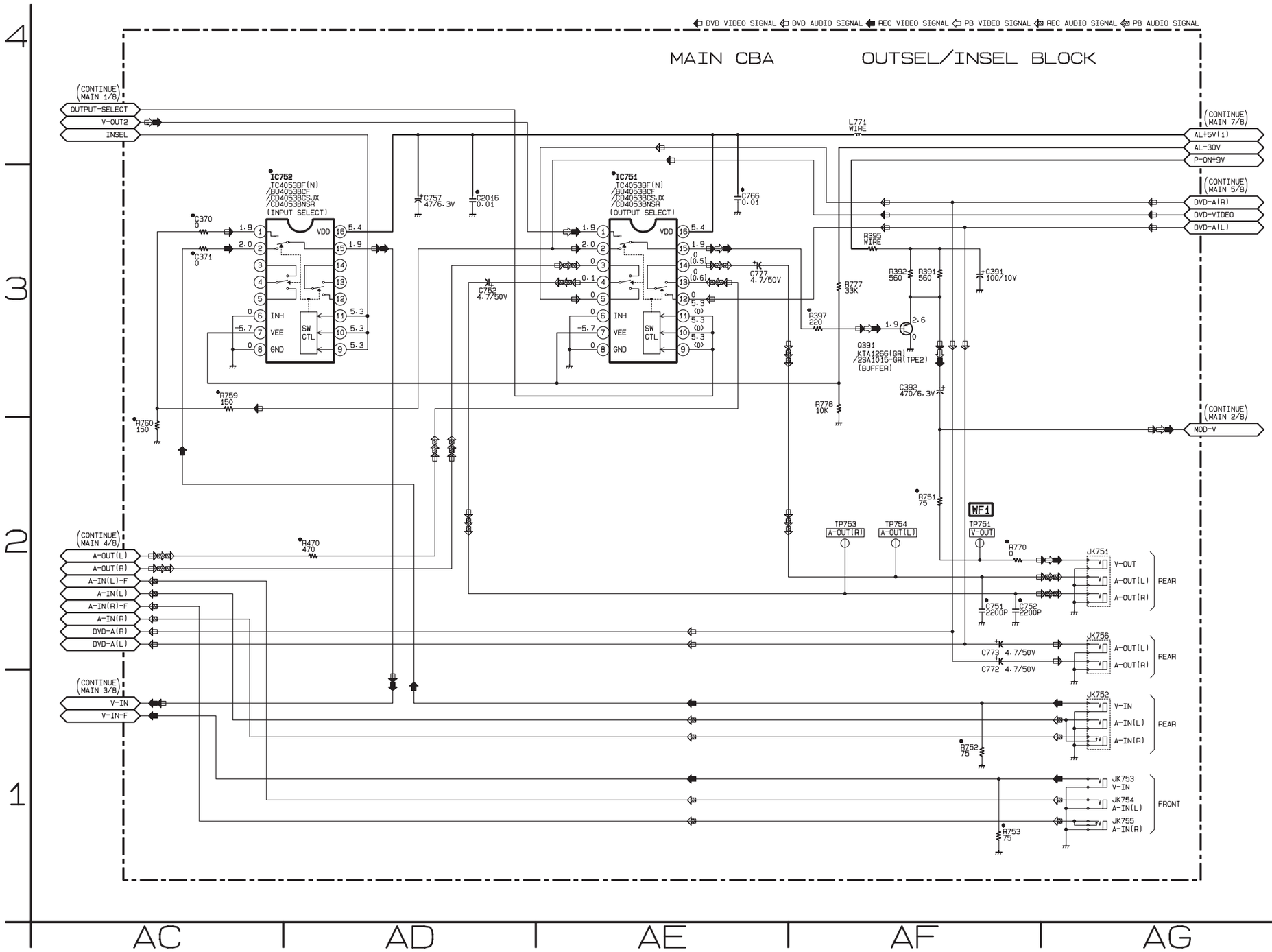


Main 6/8 Schematic Diagram < VCR Section >

"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:





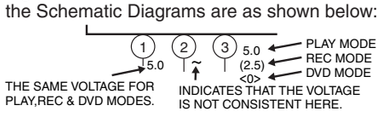
MAIN 6/8 Schematic Diagram
Parts Location Guide

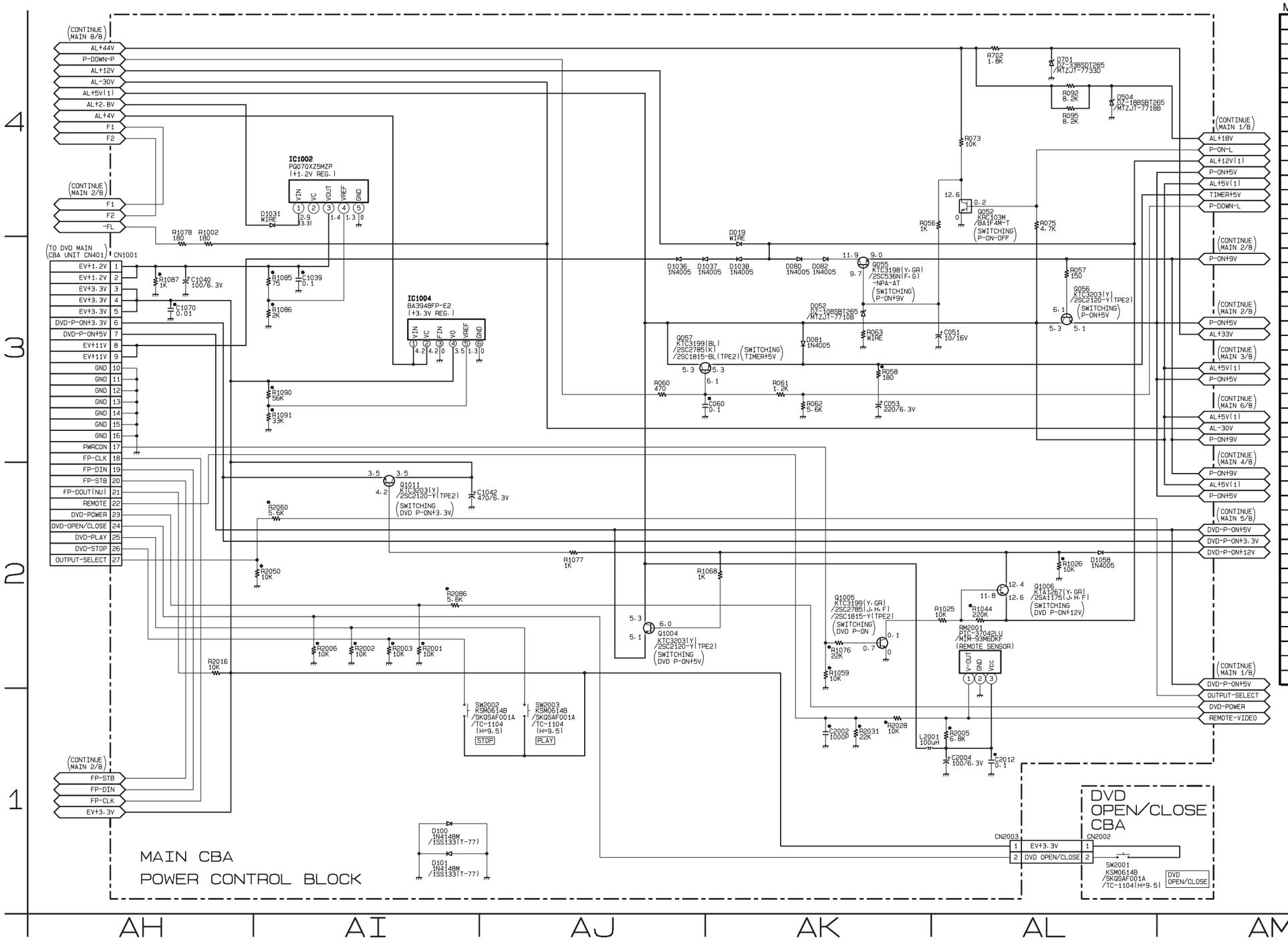
Ref No.	Position
CAPACITORS	
C370	AC-3
C371	AC-3
C391	AF-3
C392	AF-3
C751	AF-2
C752	AF-2
C757	AD-3
C762	AD-3
C766	AE-3
C772	AF-2
C773	AF-2
C777	AE-3
C2016	AD-3
ICS	
IC751	AE-3
IC752	AC-3
COIL	
L771	AF-4
TRANSISTOR	
Q391	AF-3
RESISTORS	
R391	AF-3
R392	AF-3
R395	AF-3
R397	AF-3
R470	AD-2
R751	AF-2
R752	AF-1
R753	AF-1
R759	AC-3
R760	AC-1
R770	AF-2
R777	AF-3
R778	AF-3
MISCELLANEOUS	
JK751	AG-2
JK752	AG-1
JK753	AG-1
JK754	AG-1
JK755	AG-1
JK756	AG-2
TEST POINTS	
TP751	AF-2
TP753	AF-2
TP754	AF-2

Main 7/8 & DVD Open/Close Schematic Diagram < VCR Section >

"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:





MAIN 7/8 Schematic Diagram Parts Location Guide

Ref No.	Position	Ref No.	Position
CAPACITORS		RESISTORS	
C051	AL-3	R057	AL-3
C053	AK-3	R058	AK-3
C060	AK-3	R060	AJ-3
C1039	AI-3	R061	AK-3
C1040	AH-3	R062	AK-3
C1042	AI-2	R063	AK-3
C1070	AH-3	R073	AL-4
C2002	AK-1	R075	AL-4
C2004	AL-1	R092	AL-4
C2012	AL-1	R095	AL-4
CONNECTORS		R702	AL-4
CN1001	AH-3	R1002	AH-3
CN2003	AL-1	R1025	AL-2
DIODES		R1026	AL-2
D019	AK-3	R1044	AL-2
D052	AK-3	R1059	AK-2
D080	AK-3	R1068	AK-2
D081	AK-3	R1076	AK-2
D082	AK-3	R1077	AJ-2
D100	AI-1	R1078	AH-3
D101	AI-1	R1085	AI-3
D504	AL-4	R1086	AI-3
D701	AL-4	R1087	AH-3
D1031	AI-4	R1090	AI-3
D1036	AJ-3	R1091	AI-3
D1037	AK-3	R2001	AI-2
D1038	AK-3	R2002	AI-2
D1058	AL-2	R2003	AI-2
ICS		R2005	AL-1
IC1002	AI-4	R2006	AI-2
IC1004	AI-3	R2016	AI-1
COIL		R2028	AK-1
L2001	AK-1	R2031	AK-1
TRANSISTORS		R2050	AI-2
Q052	AL-4	R2060	AI-2
Q055	AK-3	R2086	AI-2
Q056	AL-3	SWITCHES	
Q057	AK-3	SW2002	AJ-1
Q1004	AJ-2	SW2003	AJ-1
Q1005	AK-2	MISCELLANEOUS	
Q1006	AL-2	RM2001	AL-2
Q1011	AI-2		
RESISTORS			
R056	AK-4		

Main 8/8 Schematic Diagram < VCR Section >

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

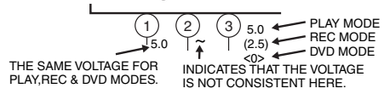
"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."

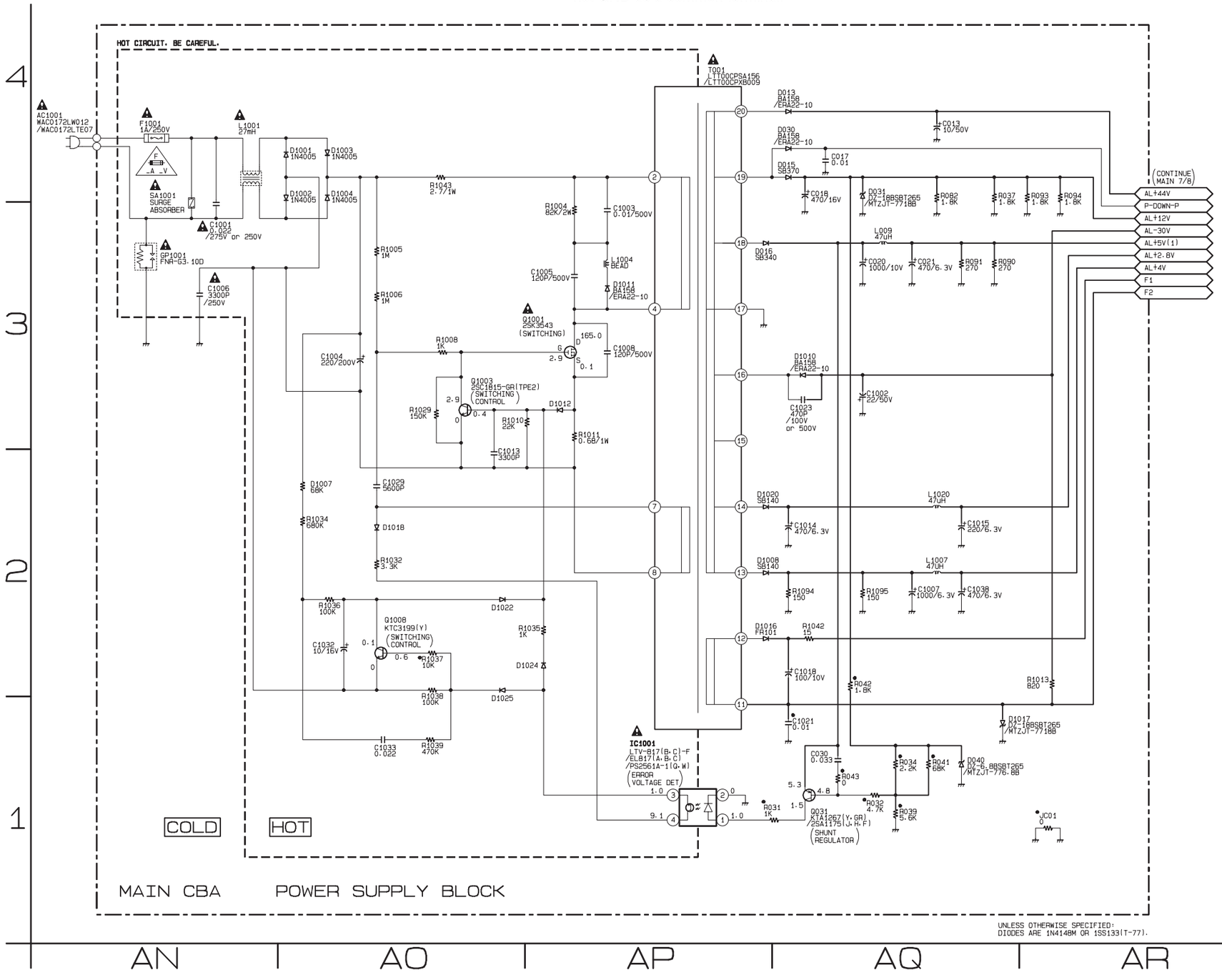
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

"● " = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:





MAIN 8/8 Schematic Diagram Parts Location Guide

Ref No.	Position	Ref No.	Position
CAPACITORS		COILS	
C013	AQ-4	L1001	AN-4
C017	AQ-4	L1004	AP-3
C018	AQ-4	L1007	AQ-2
C020	AQ-3	L1020	AQ-2
C021	AQ-3	TRANSISTORS	
C030	AQ-1	Q031	AQ-1
C1001	AN-3	Q1001	AP-3
C1002	AQ-3	Q1003	AO-3
C1003	AP-3	Q1008	AO-2
C1004	AO-3	RESISTORS	
C1005	AP-3	JC01	AR-1
C1006	AN-3	R031	AP-1
C1007	AQ-2	R032	AQ-1
C1008	AP-3	R034	AQ-1
C1013	AO-2	R037	AQ-4
C1014	AO-2	R039	AQ-1
C1015	AQ-2	R041	AQ-1
C1018	AQ-2	R042	AQ-2
C1021	AQ-1	R043	AQ-1
C1023	AQ-3	R082	AQ-4
C1029	AO-2	R090	AQ-3
C1032	AO-2	R091	AQ-3
C1033	AO-1	R093	AR-4
C1038	AQ-2	R094	AR-4
DIODES		R1004	AP-3
D013	AQ-4	R1005	AO-3
D015	AQ-4	R1006	AO-3
D016	AP-3	R1008	AO-3
D030	AQ-4	R1010	AO-3
D031	AQ-4	R1011	AP-3
D040	AQ-1	R1013	AR-2
D1001	AO-4	R1029	AO-3
D1002	AO-4	R1032	AO-2
D1003	AO-4	R1034	AO-2
D1004	AO-4	R1035	AP-2
D1007	AO-2	R1036	AO-2
D1008	AP-2	R1037	AO-2
D1010	AQ-3	R1038	AO-2
D1011	AP-3	R1039	AO-1
D1012	AP-3	R1042	AQ-2
D1016	AP-2	R1043	AO-4
D1017	AQ-1	R1094	AQ-2
D1018	AO-2	R1095	AQ-2
D1020	AP-2	MISCELLANEOUS	
D1022	AO-2	AC1001	AN-4
D1024	AP-2	F1001	AN-4
D1025	AO-2	GP1001	AN-3
IC		SA1001	AN-3
IC1001	AP-1	T001	AP-4
COILS			
L009	AQ-3		

Main CBA Top View

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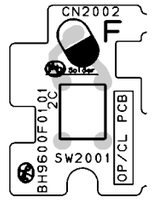
NOTE :
The voltage for parts in hot circuit is measured
using hot GND as a common terminal.

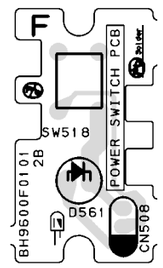
BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

DVD Open/Close CBA Top View



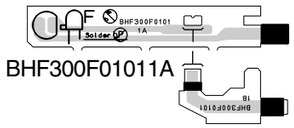
BH9600F01012C

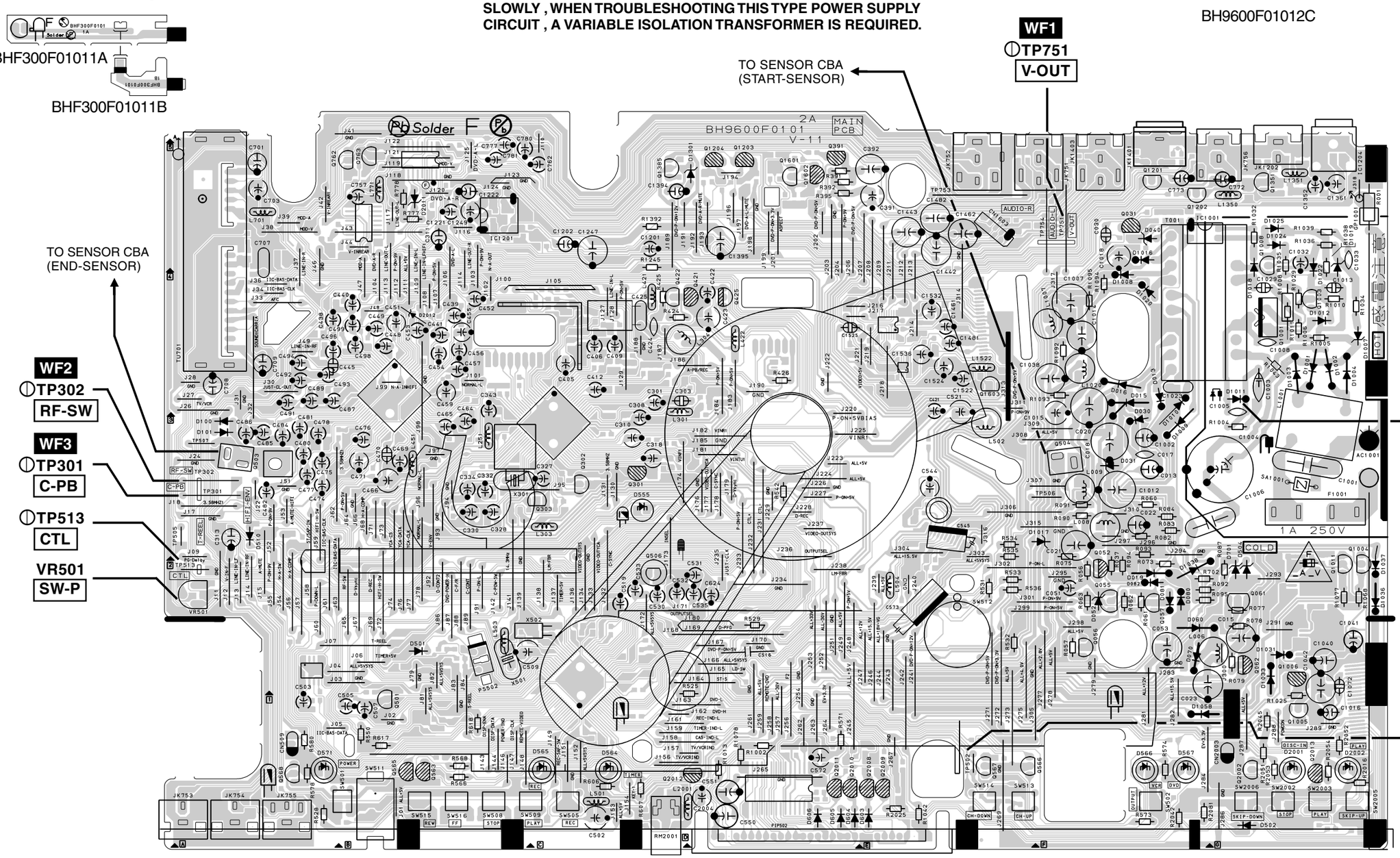
Power SW CBA Top View



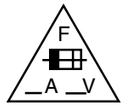
BH9600F01012B

Sensor CBA Top View





Main CBA Bottom View



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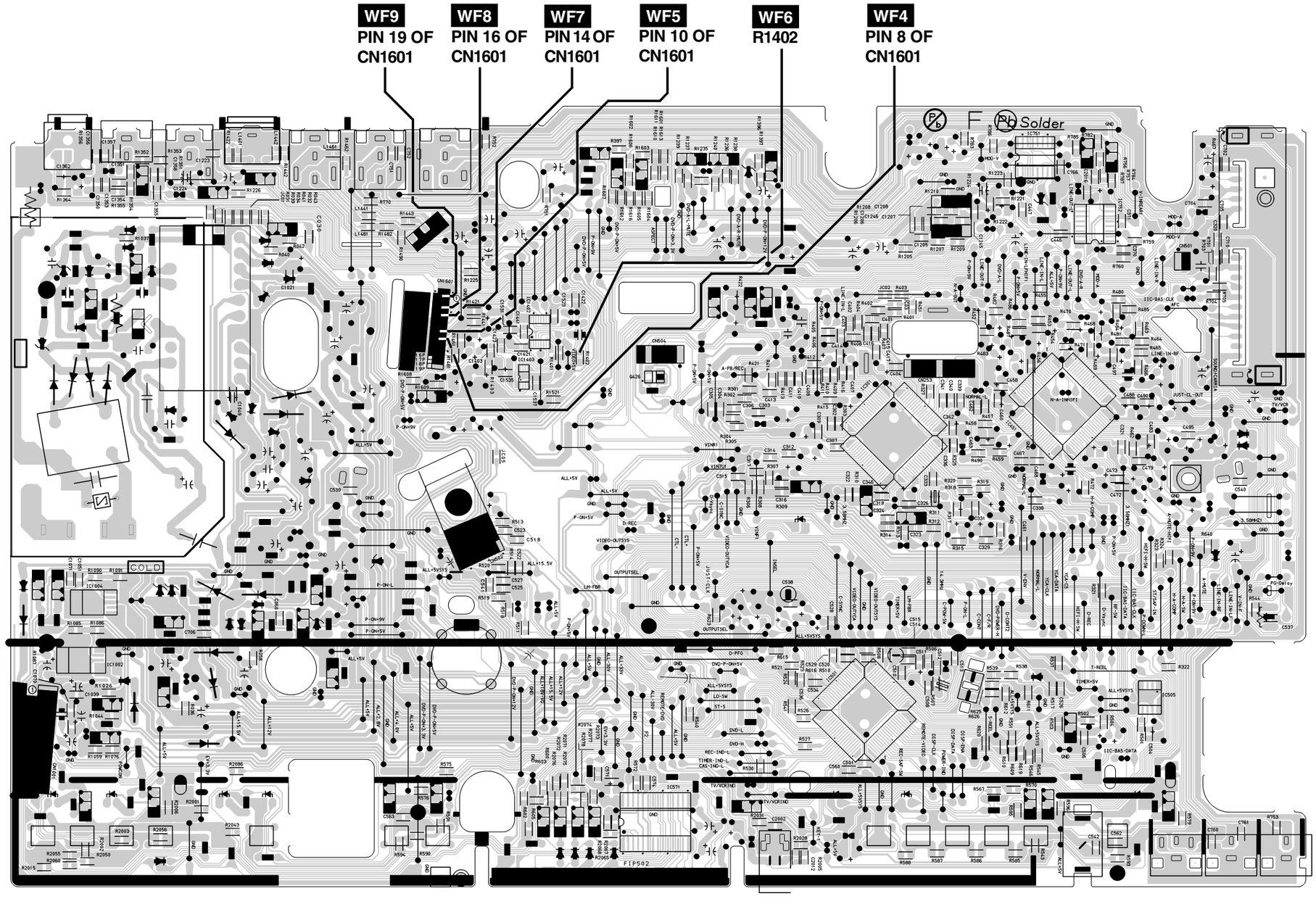


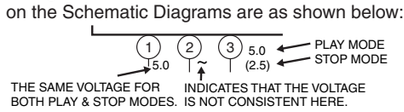
Main CBA Parts Location Guide

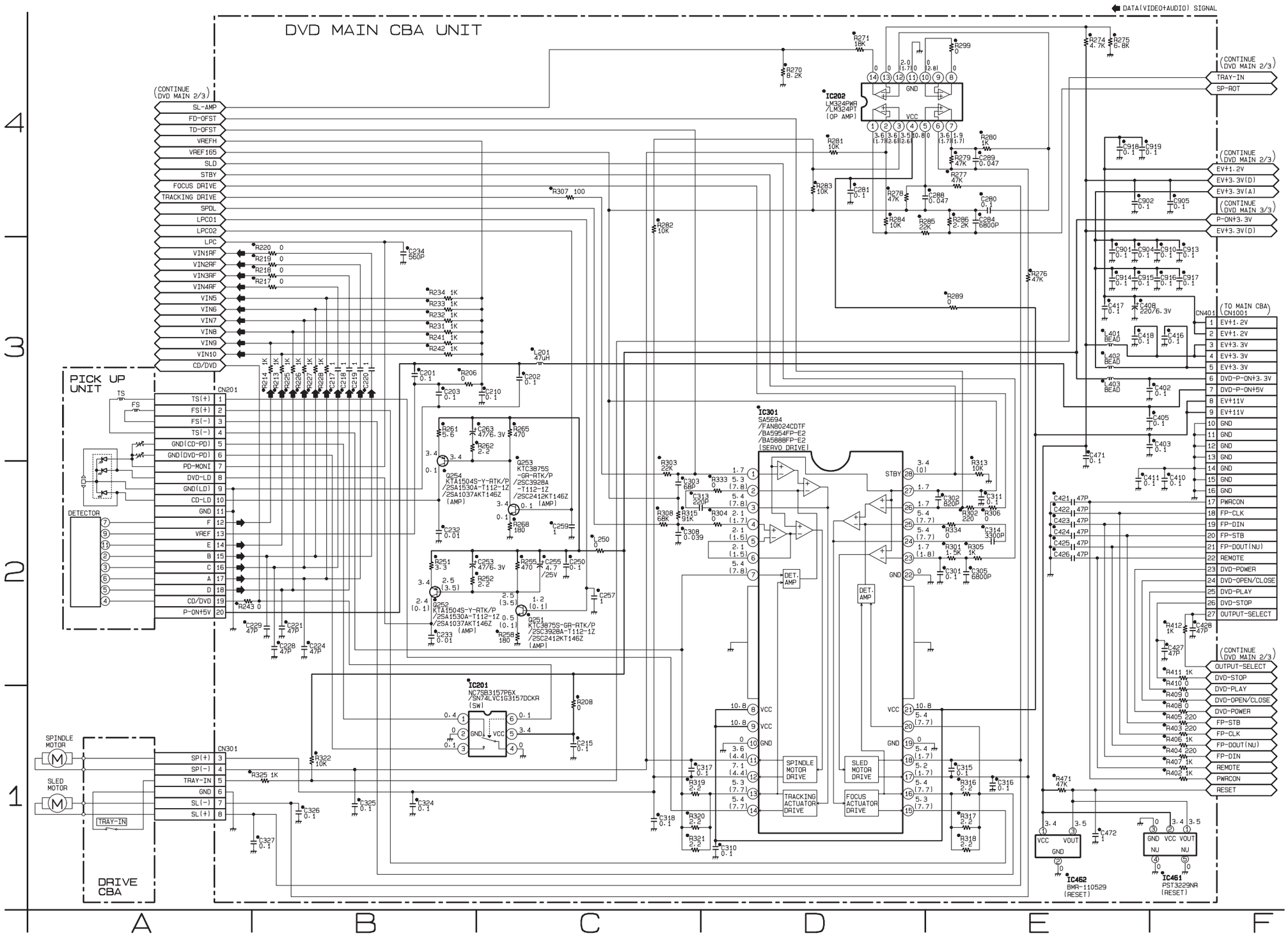
Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		CAPACITORS		CAPACITORS		DIODES		TRANSISTORS		RESISTORS		RESISTORS		RESISTORS		RESISTORS	
C013	F-3	C423	D-4	C523	E-3	C1245	B-5	D1002	G-4	Q056	F-2	R318	B-3	R518	E-2	R1005	G-4	R1461	E-4
C017	F-3	C424	C-4	C525	E-2	C1246	C-5	D1003	G-4	Q057	F-2	R319	B-3	R521	C-2	R1006	G-4	R1462	F-5
C018	F-3	C425	C-4	C527	E-2	C1247	C-5	D1004	G-4	Q301	C-3	R320	B-3	R523	C-2	R1008	G-4	R1481	E-4
C020	F-3	C438	A-4	C529	C-2	C1249	B-5	D1007	G-4	Q302	C-3	R321	B-2	R524	C-2	R1010	G-4	R1482	F-5
C021	F-3	C439	B-4	C530	C-2	C1351	G-5	D1008	F-4	Q391	D-5	R322	A-2	R525	C-2	R1011	G-4	R2001	G-1
C023	F-1	C440	A-4	C531	D-2	C1352	G-5	D1010	F-3	Q421	D-4	R323	A-3	R526	C-2	R1013	D-1	R2002	G-1
C030	F-5	C441	B-4	C532	C-2	C1354	G-5	D1011	G-4	Q422	C-4	R324	A-3	R527	C-1	R1025	G-1	R2003	G-1
C051	F-2	C448	B-4	C533	C-2	C1355	G-5	D1012	G-4	Q425	D-4	R327	B-4	R528	A-1	R1026	G-1	R2005	C-1
C053	F-2	C449	B-4	C534	C-2	C1394	C-5	D1016	F-5	Q426	D-4	R391	D-5	R530	D-1	R1029	G-4	R2006	G-1
C060	F-2	C451	B-4	C535	D-2	C1395	D-5	D1017	D-3	Q501	B-1	R392	D-5	R531	E-2	R1032	G-5	R2016	G-1
C301	C-4	C452	B-4	C536	C-2	C1403	E-4	D1018	G-4	Q506	C-2	R395	D-5	R532	E-2	R1034	G-4	R2025	E-1
C302	C-4	C453	B-4	C537	A-2	C1422	D-4	D1020	F-4	Q566	F-1	R397	D-5	R533	E-2	R1035	G-5	R2028	C-1
C303	C-4	C454	B-4	C540	A-3	C1423	E-4	D1022	G-4	Q567	E-1	R401	C-4	R534	E-3	R1036	G-5	R2031	C-1
C304	D-4	C455	B-4	C541	E-2	C1441	E-4	D1024	G-5	Q1001	G-4	R402	C-4	R535	E-3	R1037	G-5	R2050	G-1
C305	D-4	C456	B-4	C544	E-3	C1442	E-4	D1025	G-5	Q1003	G-4	R407	C-4	R536	E-2	R1038	G-5	R2060	G-1
C307	C-3	C457	B-4	C550	D-1	C1443	E-5	D1031	G-2	Q1004	G-3	R408	C-4	R537	B-2	R1039	G-5	R2086	F-1
C308	C-4	C458	B-4	C571	D-1	C1461	E-4	D1036	G-2	Q1005	G-1	R409	C-4	R540	D-2	R1042	E-1	SWITCHES	
C309	C-4	C459	B-4	C572	D-1	C1462	E-5	D1037	G-2	Q1006	G-2	R410	C-4	R541	C-1	R1043	G-4	SW502	F-1
C310	C-3	C460	B-4	C574	D-1	C1481	E-4	D1038	F-2	Q1008	G-5	R411	C-4	R542	D-3	R1044	G-1	SW505	C-1
C311	B-5	C461	B-3	C701	A-5	C1482	E-5	D1058	F-1	Q1011	G-2	R412	C-4	R543	B-1	R1059	G-1	SW508	B-1
C312	C-3	C462	B-4	C703	A-5	C1522	E-4	D1301	D-5	Q1201	F-5	R413	C-4	R544	A-3	R1068	G-2	SW509	C-1
C313	A-3	C463	B-3	C704	A-5	C1524	E-4	ICS		Q1202	F-5	R414	C-4	R545	B-1	R1076	G-1	SW511	B-1
C314	C-3	C465	B-3	C708	A-4	C1525	D-4	IC301	C-4	Q1204	D-5	R415	C-4	R546	B-1	R1077	G-2	SW512	E-2
C315	D-3	C466	B-3	C709	A-4	C1531	E-4	IC451	B-3	Q1351	G-5	R416	C-4	R550	B-1	R1078	G-1	SW513	E-1
C316	C-3	C467	B-3	C751	E-5	C1532	E-4	IC501	C-2	Q1385	C-5	R421	D-4	R571	D-1	R1085	G-2	SW514	E-1
C317	D-3	C469	B-3	C752	E-5	C1535	E-4	IC571	D-1	RESISTORS		R422	D-4	R572	D-1	R1086	G-2	SW515	B-1
C318	C-3	C470	B-3	C757	B-5	C1536	E-4	IC751	B-5	JC01	F-5	R424	D-4	R573	F-1	R1087	G-2	SW516	B-1
C319	C-3	C471	B-3	C762	C-5	C1537	E-4	IC752	B-5	R031	F-5	R425	C-4	R574	F-1	R1090	G-3	SW2002	G-1
C320	A-5	C472	B-3	C766	B-5	C2002	C-1	IC1001	F-5	R032	F-5	R426	D-4	R575	E-1	R1091	G-3	SW2003	G-1
C321	B-3	C473	B-3	C772	G-5	C2004	D-1	IC1002	G-2	R034	F-5	R451	C-4	R576	E-1	R1094	F-4	VARIABLE RESISTOR	
C322	C-3	C474	A-3	C773	F-5	C2012	C-1	IC1004	G-2	R037	F-2	R452	B-4	R580	A-1	R1095	F-4	VR501	A-2
C324	C-3	C475	A-3	C777	B-5	C2016	B-5	IC1201	B-5	R039	F-5	R453	B-4	R585	B-1	R1205	C-5	CRYSTAL OSCILLATORS	
C326	B-3	C476	B-3	C1001	G-3	CONNECTORS		IC1402	E-4	R041	F-5	R454	B-4	R586	B-1	R1206	C-5	X301	B-3
C327	C-3	C477	A-3	C1002	F-3	CN253	B-4	IC1403	E-4	R042	F-5	R455	B-4	R587	B-1	R1207	B-5	X501	B-2
C328	B-3	C478	A-3	C1003	G-4	CN501	A-5	COILS		R043	F-5	R456	B-4	R588	C-1	R1208	C-5	X502	C-2
C329	B-3	C479	A-3	C1004	G-3	CN502	E-3	L009	F-3	R056	F-2	R457	B-4	R590	E-1	R1209	B-5	MISCELLANEOUS	
C330	B-3	C480	A-3	C1005	G-4	CN504	D-4	L251	B-3	R057	F-2	R458	B-4	R591	E-1	R1210	B-5	AC101	G-3
C331	B-3	C481	A-3	C1006	G-3	CN509	A-1	L303	C-1	R058	F-2	R459	B-3	R593	A-1	R1221	B-5	F1001	G-3
C332	B-3	C483	A-3	C1007	F-4	CN1001	G-1	L304	D-4	R060	F-3	R462	A-3	R594	E-1	R1222	B-5	FIP502	D-1
C333	B-3	C484	A-3	C1008	G-4	CN1601	E-4	L421	C-4	R061	F-2	R463	A-4	R600	E-1	R1223	B-5	JK751	F-5
C336	B-3	C485	A-3	C1013	G-4	CN2003	G-1	L422	D-4	R062	F-2	R464	A-4	R602	E-1	R1224	B-5	JK752	E-5
C339	B-4	C486	A-3	C1014	F-4	DIODES		L451	B-3	R063	F-2	R465	A-4	R603	E-1	R1225	E-4	JK753	A-1
C340	B-4	C487	A-4	C1015	E-3	D013	F-4	L501	C-1	R073	F-2	R466	A-4	R605	E-1	R1226	F-5	JK754	A-1
C341	B-4	C488	A-4	C1018	F-5	D015	F-4	L502	E-3	R075	F-2	R467	A-5	R610	B-1	R1236	D-5	JK755	A-1
C342	B-4	C489	A-4	C1021	F-4	D016	F-4	L504	E-2	R082	F-3	R468	B-4	R611	B-2	R1238	D-5	JK756	G-5
C343	B-4	C491	A-3	C1023	F-4	D019	F-2	L701	A-5	R090	F-3	R469	B-4	R616	C-2	R1240	D-5	JK1202	G-5
C346	C-3	C492	A-4	C1029	G-4	D030	F-4	L771	B-5	R091	F-3	R470	B-4	R618	B-1	R1245	C-5	JK1401	F-5
C370	A-5	C493	A-4	C1032	G-5	D031	F-3	L1001	G-4	R092	G-2	R471	B-4	R619	B-1	R1351	G-5	JK1403	F-5
C371	A-5	C494	A-4	C1033	G-5	D040	F-5	L1004	G-4	R093	F-3	R472	B-3	R626	B-2	R1352	G-5	RM2001	C-1
C391	E-5	C495	A-3	C1038	F-4	D052	F-2	L1007	F-4	R094	F-2	R480	B-4	R640	A-3	R1353	G-5	SA1001	G-3
C392	E-5	C496	A-4	C1039	G-2	D080	F-2	L1020	F-4	R095	G-2	R481	B-4	R701	A-5	R1354	G-5	T001	F-5
C401	C-4	C498	B-4	C1040	G-2	D081	F-2	L1350	G-5	R301	D-4	R482	B-4	R702	F-2	R1355	G-5	TU701	A-4
C404	C-4	C499	A-4	C1042	G-2	D082	F-2	L1351	G-5	R302	D-4	R483	B-4	R704	A-4	R1356	G-5	TEST POINTS	
C405	C-4	C502	C-1	C1070	G-2	D100	A-3	L1401	F-5	R304	D-3	R484	B-4	R705	A-4	R1392	C-5	TP301	A-3
C406	C-4	C505	B-1	C1201	C-5	D101	A-3	L1441	F-5	R306	D-3	R485	B-4	R751	E-5	R1396	C-5	TP302	A-3
C407	C-4	C507	B-1	C1202	C-5	D501	B-2	L1442	F-5	R307	C-3	R486	B-4	R752	E-5	R1397	C-5	TP502	E-1
C408	C-4	C508	B-2	C1205	C-5	D502	G-1	L1461	F-5	R308	C-3	R487	B-4	R753	A-1	R1401	E-4	TP505	A-3
C409	C-4	C509	B-2	C1206	C-5	D504	G-3	L1481	F-5	R309	C-3	R502	B-2	R759	A-5	R1402	D-4	TP506	F-3
C410	C-4	C511	C-2	C1207	C-5	D510	A-3	L1522	E-4	R310	C-3	R503	B-2	R760	B-5	R1403	E-4	TP507	A-3
C411	C-4	C512	B-2	C1208	C-5	D555	C-3	L2001	C-1	R311	B-3	R504	B-2	R770	F-5	R1421	E-4	TP513	A-2
C412	C-4	C514	C-2	C1221	B-5	D566	F-1	TRANSISTORS		R314	C-3	R507	B-2	R777	D-5	R1422	F-5	TP751	F-5
C413	C-4	C515	C-2	C1222	B-5	D567	F-1	Q031	F-5	R315	B-3	R508	C-2	R778	B-5	R1441	E-4	TP753	E-5
C414	C-4	C521	E-4	C1223	F-5	D701	G-3	Q052	F-3	R316	B-3	R511	E-2	R1002	D-1	R1442	F-5	TP754	F-5
C422	D-4	C522	E-3	C1224	G-5	D1001	G-4	Q055	F-2	R317	B-3	R517	B-2	R1004	G-3	R1443	E-5		

DVD Main 1/3 Schematic Diagram < DVD Section >

"●" = SMD

Voltage indications for PLAY and STOP modes on the Schematic Diagrams are as shown below:

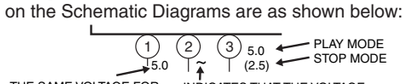




DVD Main 2/3 Schematic Diagram < DVD Section >

"●" = SMD

Voltage indications for PLAY and STOP modes
on the Schematic Diagrams are as shown below:



DVD MAIN CBA UNIT

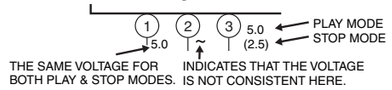
IC101 VOLTAGE CHART

PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP
1	~	~	33	~	~	65	0	0	97	-----	-----	129	2.3	2.3	161	3.4	3.4	193	~	~	225	3.4	3.4
2	~	~	34	3.4	3.4	66	3.4	3.5	98	3.4	3.4	130	2.3	2.3	162	0	0	194	~	~	226	~	~
3	0	0	35	0	0	67	3.2	3.2	99	0.9	0.8	131	2.3	2.3	163	1.8	1.8	195	~	~	227	~	~
4	~	~	36	~	~	68	0	0	100	0	0	132	2.4	2.3	164	0	0	196	3.4	3.4	228	~	~
5	~	~	37	~	~	69	-----	-----	101	2.4	2.4	133	2.4	2.4	165	1.7	1.8	197	~	~	229	0	0
6	3.4	3.4	38	0.4	0.3	70	3.4	3.4	102	2.2	2.2	134	2.4	2.4	166	1.7	1.7	198	~	~	230	~	~
7	~	~	39	~	~	71	-----	-----	103	1.9	1.9	135	2.3	2.3	167	3.4	3.4	199	~	~	231	3.4	3.4
8	~	~	40	~	~	72	-----	-----	104	0.4	0.3	136	2.3	2.3	168	0	0	200	~	~	232	1.3	1.6
9	0	0	41	~	~	73	3.4	3.4	105	0	0	137	2.3	2.3	169	1.8	1.8	201	0	0	233	~	~
10	~	~	42	~	~	74	0	0	106	1.7	1.7	138	2.3	2.3	170	1.7	1.7	202	3.4	3.4	234	1.9	2.3
11	~	~	43	~	~	75	1.7	1.8	107	3.4	3.4	139	1.7	1.7	171	1.3	0.1	203	~	~	235	0	0
12	3.4	3.4	44	1.3	1.3	76	2.3	1.8	108	-----	-----	140	-----	-----	172	1.3	1.3	204	~	~	236	1.3	1.3
13	~	~	45	~	~	77	-----	-----	109	-----	-----	141	3.4	3.4	173	0	0	205	0	0	237	~	~
14	~	~	46	~	~	78	-----	-----	110	1.9	1.9	142	1.3	1.3	174	-----	-----	206	~	~	238	~	~
15	~	~	47	~	~	79	-----	-----	111	1.9	1.9	143	2.1	1.7	175	-----	-----	207	~	~	239	3.4	3.4
16	0	0	48	3.4	3.4	80	3.4	0.1	112	1.7	1.7	144	2.2	2.2	176	-----	-----	208	~	~	240	3.4	3.3
17	~	~	49	0	0	81	0.1	0.1	113	1.7	1.7	145	0	0	177	1.8	1.7	209	3.4	3.4	241	1.9	1.9
18	~	~	50	~	~	82	2.8	2.8	114	1.7	1.7	146	1.7	1.7	178	3.4	3.5	210	~	~	242	0	0
19	3.4	3.4	51	~	~	83	0.1	0.1	115	1.7	1.7	147	1.8	1.7	179	0	0	211	~	~	243	1.9	1.9
20	0	0	52	0.8	0.8	84	3.4	3.4	116	1.7	1.7	148	1.7	1.7	180	-----	-----	212	~	~	244	3.4	3.3
21	-----	-----	53	0	0	85	0.1	0.1	117	1.7	1.7	149	0.6	0.5	181	-----	-----	213	0	0	245	3.4	3.4
22	3.5	3.5	54	0	0	86	3.6	3.4	118	3.4	3.4	150	3.4	3.4	182	-----	-----	214	-----	-----	246	3.4	3.4
23	~	~	55	1.4	1.4	87	0	0	119	2.0	2.0	151	0.5	0.6	183	3.5	3.5	215	-----	-----	247	0	0
24	~	~	56	3.4	3.4	88	3.5	0.1	120	1.7	1.7	152	0.5	0.4	184	-----	-----	216	3.4	3.4	248	3.3	3.4
25	~	~	57	3.5	3.5	89	1.3	1.3	121	1.5	1.5	153	1.4	1.3	185	-----	-----	217	~	~	249	3.2	3
26	1.3	1.3	58	-----	-----	90	-----	-----	122	0	0	154	1.4	1.3	186	-----	-----	218	0	0	250	0	0
27	~	~	59	3.4	3.4	91	-----	-----	123	0.3	0.1	155	2.4	2.4	187	-----	-----	219	1.3	1.3	251	3.2	3.0
28	3.4	3.4	60	3.4	3.4	92	-----	-----	124	1.2	0.1	156	3.4	3.4	188	-----	-----	220	~	~	252	~	~
29	0	0	61	3.5	3.5	93	0	0	125	0.3	0.1	157	0	0	189	-----	-----	221	~	~	253	0	0
30	~	~	62	3.4	3.4	94	-----	-----	126	0.1	0.1	158	0.9	0.9	190	3.4	3.5	222	0	0	254	~	~
31	~	~	63	0	0	95	-----	-----	127	2.3	2.3	159	3.4	3.4	191	0	0	223	~	~	255	3.4	3.4
32	~	~	64	0	0	96	-----	-----	128	1.7	1.7	160	0	0	192	~	~	224	~	~	256	~	~

DVD Main 3/3 Schematic Diagram < DVD Section >

"●" = SMD

Voltage indications for PLAY and STOP modes on the Schematic Diagrams are as shown below:



DVD VIDEO SIGNAL DVD AUDIO SIGNAL DATA(AUDIO) SIGNAL

IC503
K4S641632H-UC75
/VDS6616A4A-7G
(SDRAM)

IC103
M8M29LV160BM90TN
/M29W160EB70N6
/MX29LV160ABTC-90G
/M8M29LV160B90PFTNSFK
/M8M29LV160BE70TN
(FLASH ROM)

IC601
PCM1755DBQR
(AUDIO D/A CONVERTER)

SYSTEM CLOCK
SERIAL CONTROL
ZERO DETECT
4X/8X OVERSAMPLING DIGITAL FILTER /FUNCTION CONTROLLER
ENHANCED MULTI-LEVEL DELTA-SIGMA MODULATOR
DAC
LPF
SERIAL PORT

(CONTINUE DVD MAIN 2/3)
MA(0~11)
MDQ(0~15)
FADR(0~19)
FDQ(0~15)
DQM0
DQM1
NWE
NCAS
NRAS
NCSM
BA0
BA1
MCK
EXT-WE
EXT-CE
EXT-OE

(CONTINUE DVD MAIN 1/3)
P-ON+3.3V
EV+3.3V(D)

(CONTINUE DVD MAIN 2/3)
PCM-SCLK
PCM-LRCLK
PCM-DATA
PCM-BCK
ADAC-ML
ADAC-MC
ADAC-MD
SPDIF
A-MUTE
VIDEO-C
VIDEO-Y(I/P)
VIDEO-Pb/Cb
VIDEO-Pr/Cr
VIDEO-Y(I)
I/P-SW

(TO MAIN CBA) (CN1601)
CN601
1 VIDEO-Y(I)
2 I/P-SW
3 NU
4 VIDEO-Pr/Cr
5 GND
6 VIDEO-Pb/Cb
7 GND
8 VIDEO-Y(I/P)
9 GND
10 VIDEO-C
11 GND
12 GND
13 DVD-A-MUTE
14 DVD-A(L)
15 DVD-A(R)-MUTE
16 DVD-A(R)
17 AUDIO+5V
18 AUDIO+5V
19 SPDIF

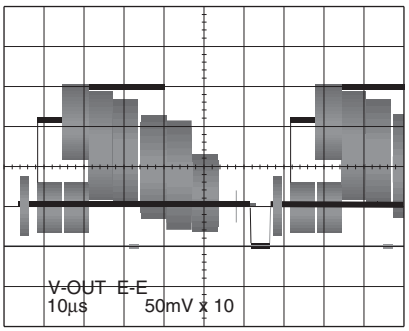
DVD MAIN CBA UNIT

M I N I O P I Q I R

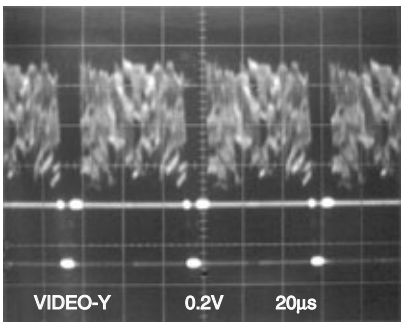
WAVEFORMS

NOTE:
Input
VCR: COLOR BAR SIGNAL
(WF1~WF3)
DVD: POWER ON (STOP) MODE
(WF4~WF6)
CD: 1kHz PLAY
(WF7~WF9)

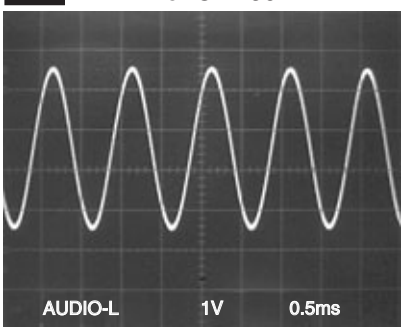
WF 1 TP751



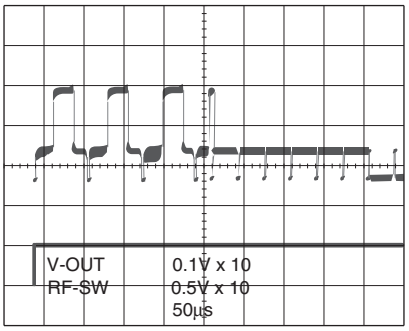
WF4 Pin 8 of CN1601



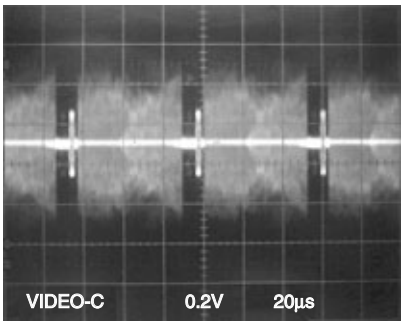
WF7 Pin 14 of CN1601



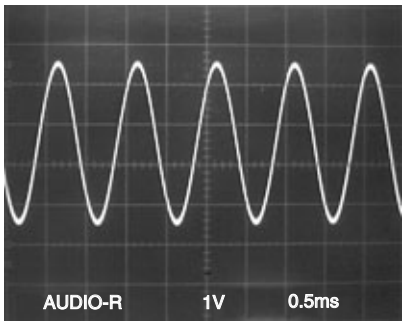
WF1 UPPER TP751
WF2 LOWER TP302



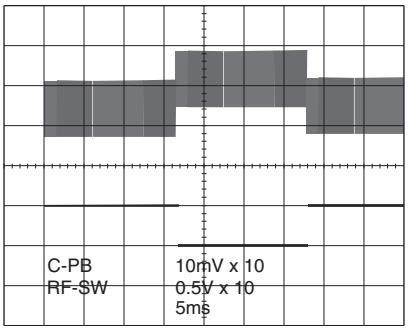
WF5 Pin 10 of CN1601



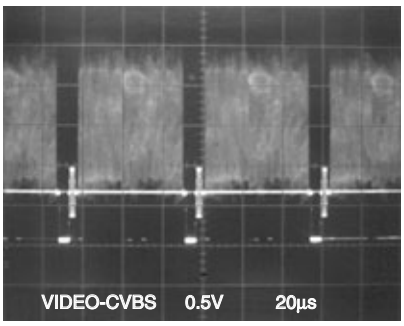
WF8 Pin 16 of CN1601



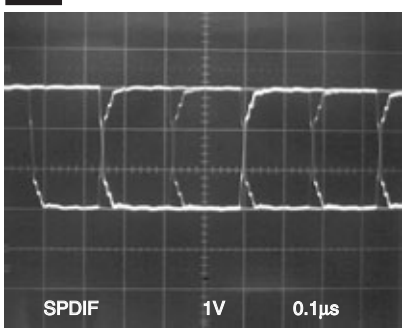
WF3 UPPER TP301
WF2 LOWER TP302



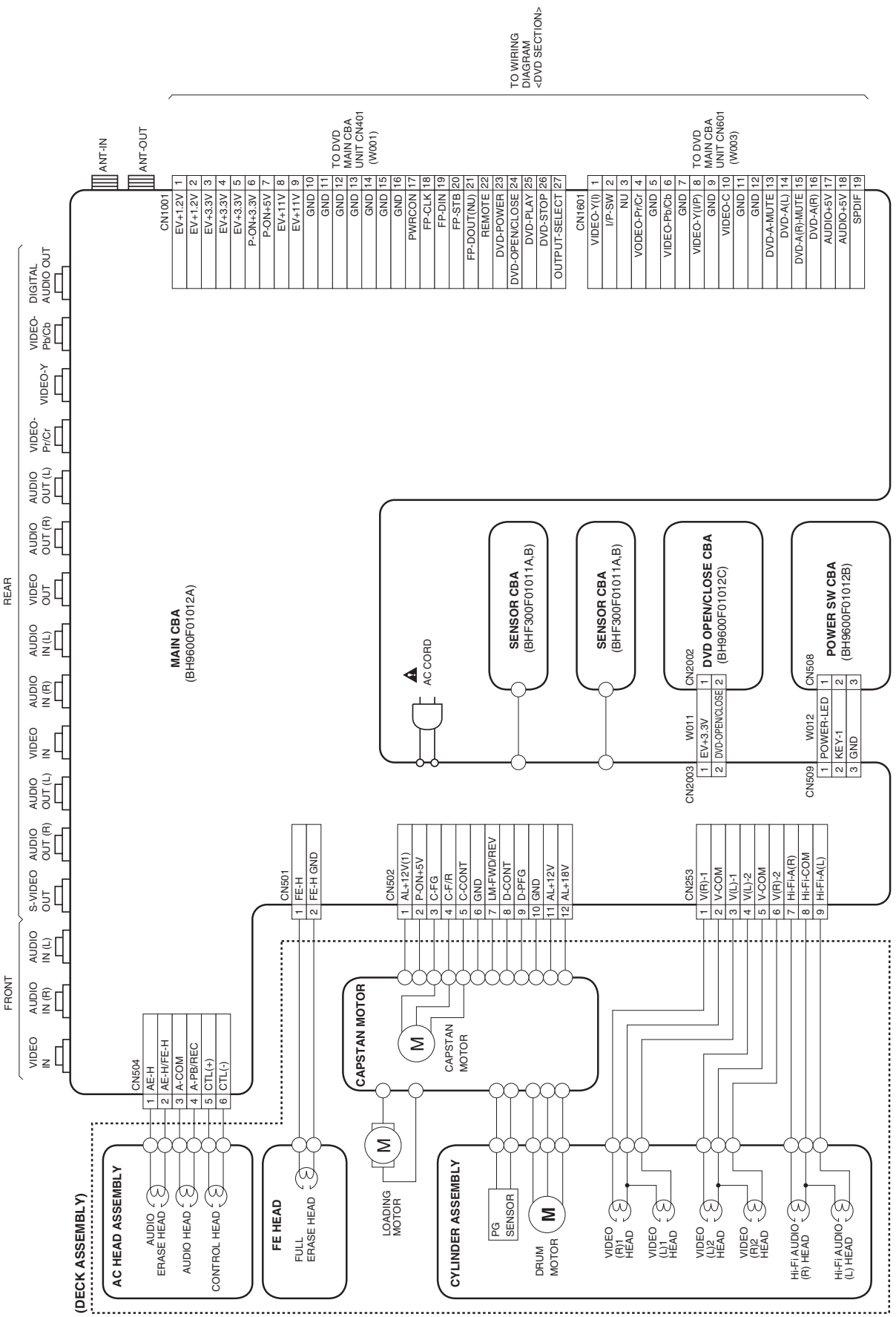
WF6 Pin 6 of IC1402



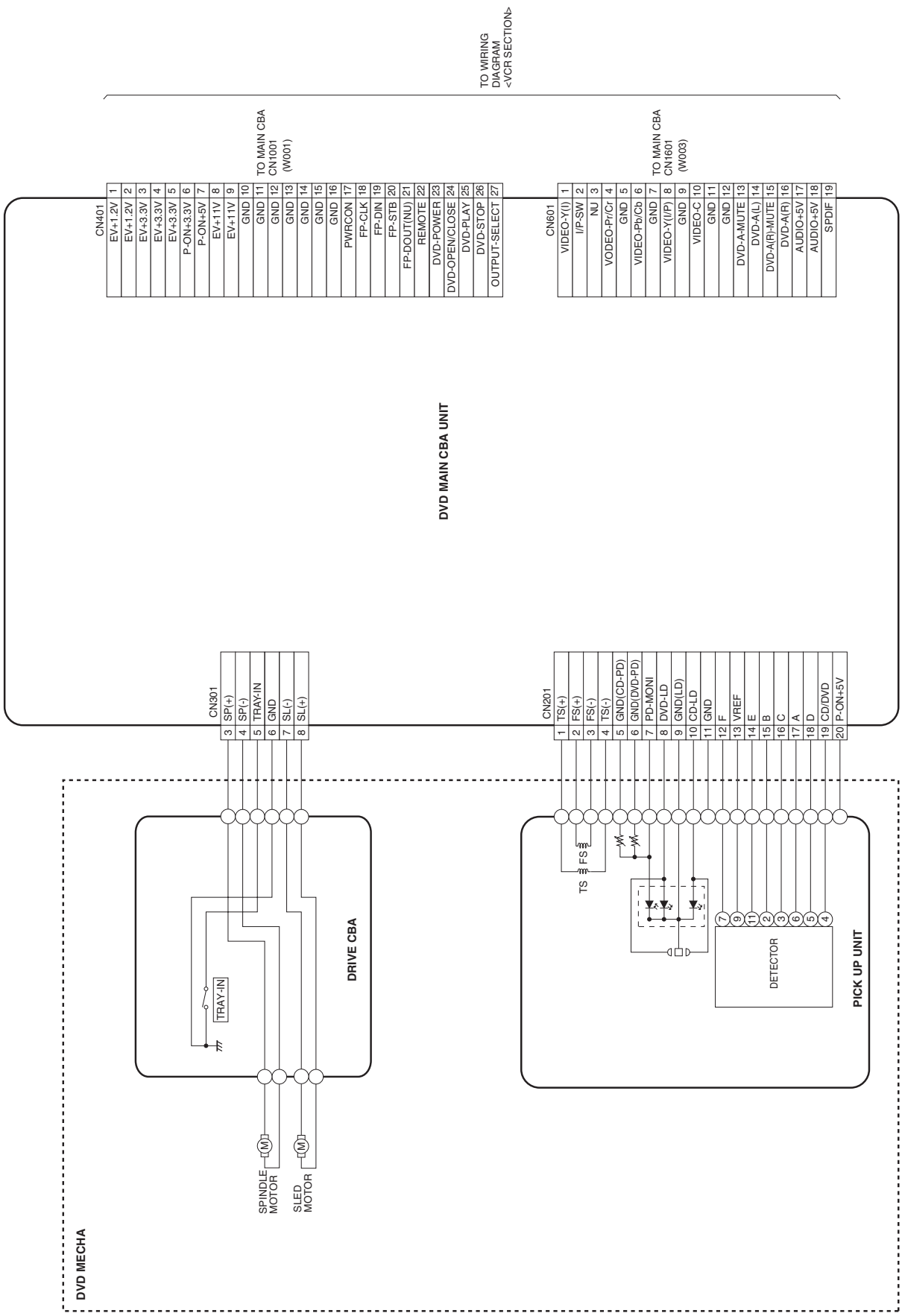
WF9 Pin 19 of CN1601



WIRING DIAGRAM < VCR SECTION >



WIRING DIAGRAM < DVD SECTION >



SYSTEM CONTROL TIMING CHARTS

[VCR Section]

Mode SW : LD-SW

LD-SW Position detection A/D Input voltage Limit (Calculated voltage)	Symbol
3.76V~4.50V (4.12V)	EJ
4.51V~5.00V (5.00V)	CL
0.00V~0.25V (0.00V)	SB
1.06V~1.50V (1.21V)	TL
0.66V~1.05V (0.91V)	FB
1.99V~2.60V (2.17V)	SF
1.51V~1.98V (1.80V)	SM
3.20V~3.75V (3.40V)	AU
0.26V~0.65V (0.44V)	AL
4.51V~5.00V (5.00V)	SS
2.61V~3.19V (2.97V)	RS

Note:

Note:

EJ ⟶ RS: Loading FWD (LM-FWD/REV “H”)
RS ⟶ EJ: Loading REV (LM-FWD/REV “L”)
Stop (A) = Loading
Stop (B) = Unloading

Note:

Symbol	Loading Status
EJ	Eject
CL	Eject ~ REW Reel
SB	REW Reel ~ Stop(B)
TL	Stop(B) ~ Brake Cancel
FB	Brake Cancel ~ FF / REW
SF	FF / REW ~ Stop(M), (FF / REW)
SM	Stop(M), (FF / REW) ~ Stop(A)
AU	Stop(A) ~ Play / REC
AL	Play / REC ~ Still / Slow
SS	Still / Slow ~ RS (REW Search)
RS	RS (REW Search)

Still/Slow Control
Frame Advance Timing Chart

1) SP Mode

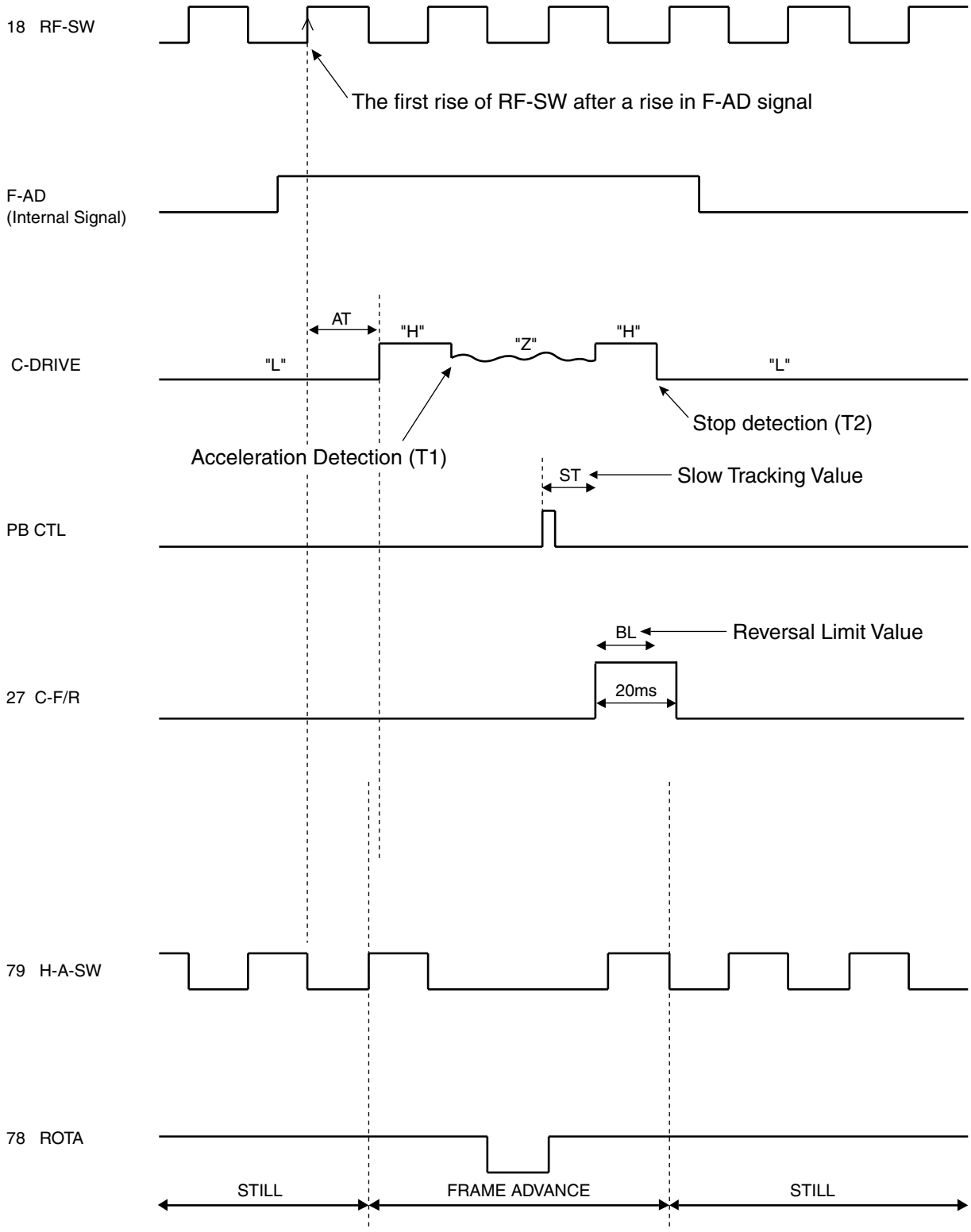


Fig. 1

2) LP/SLP Mode

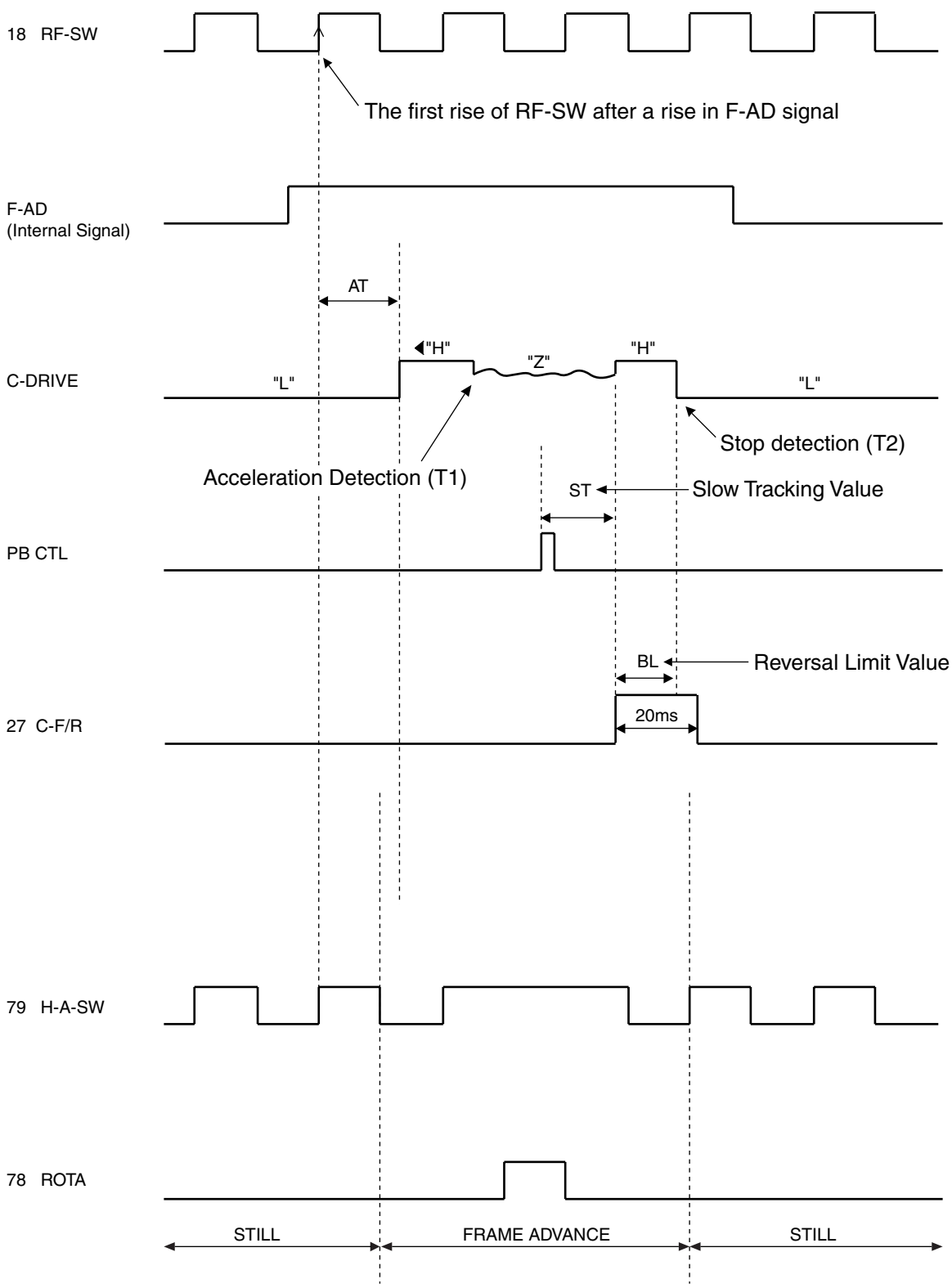


Fig. 2

1. EJECT (POWER OFF) -> CASSETTE IN (POWER ON) -> STOP(B) -> STOP(A) -> PLAY -> RS -> FS -> PLAY -> STILL -> PLAY -> STOP(A)

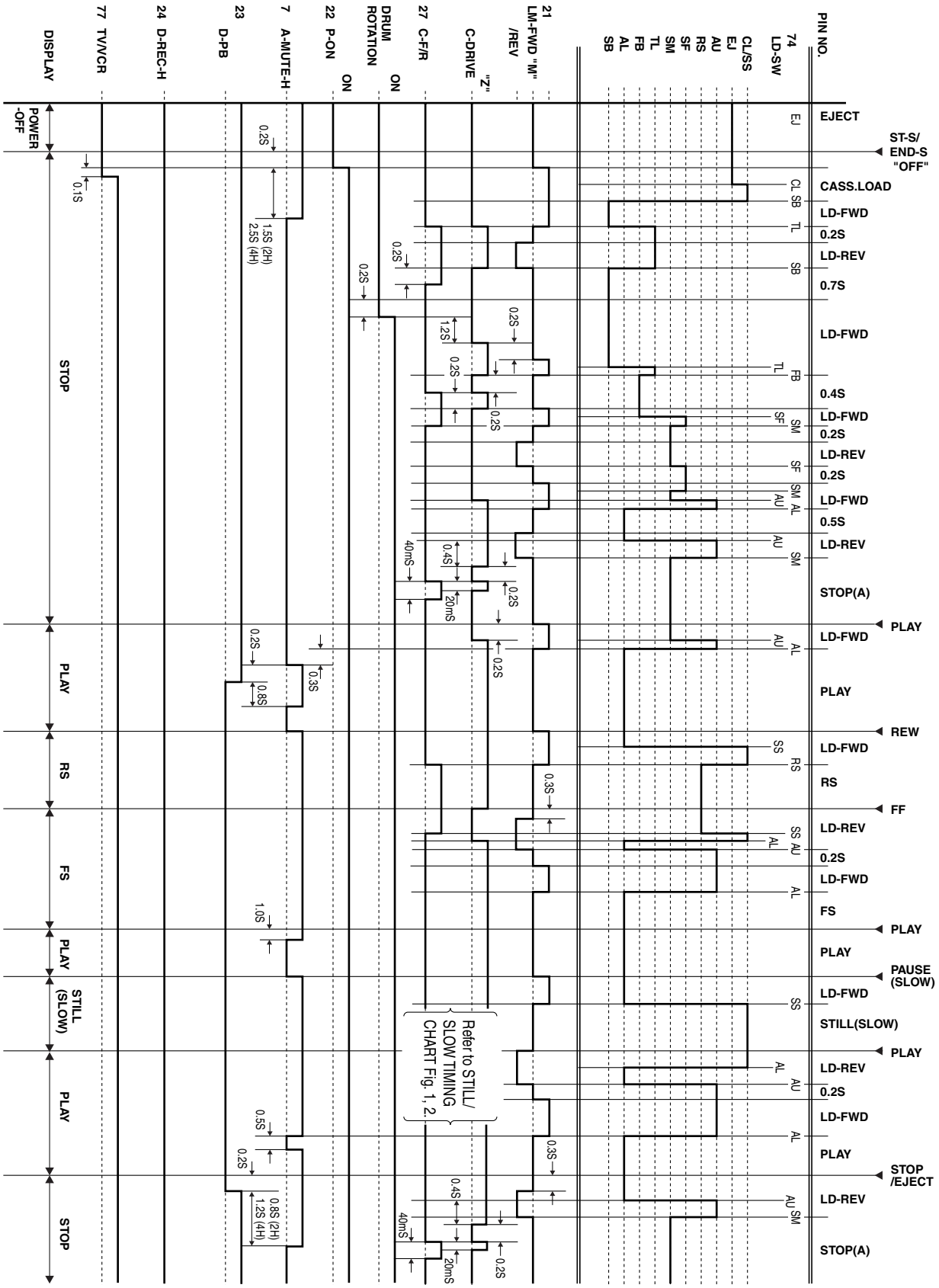


Fig. 3

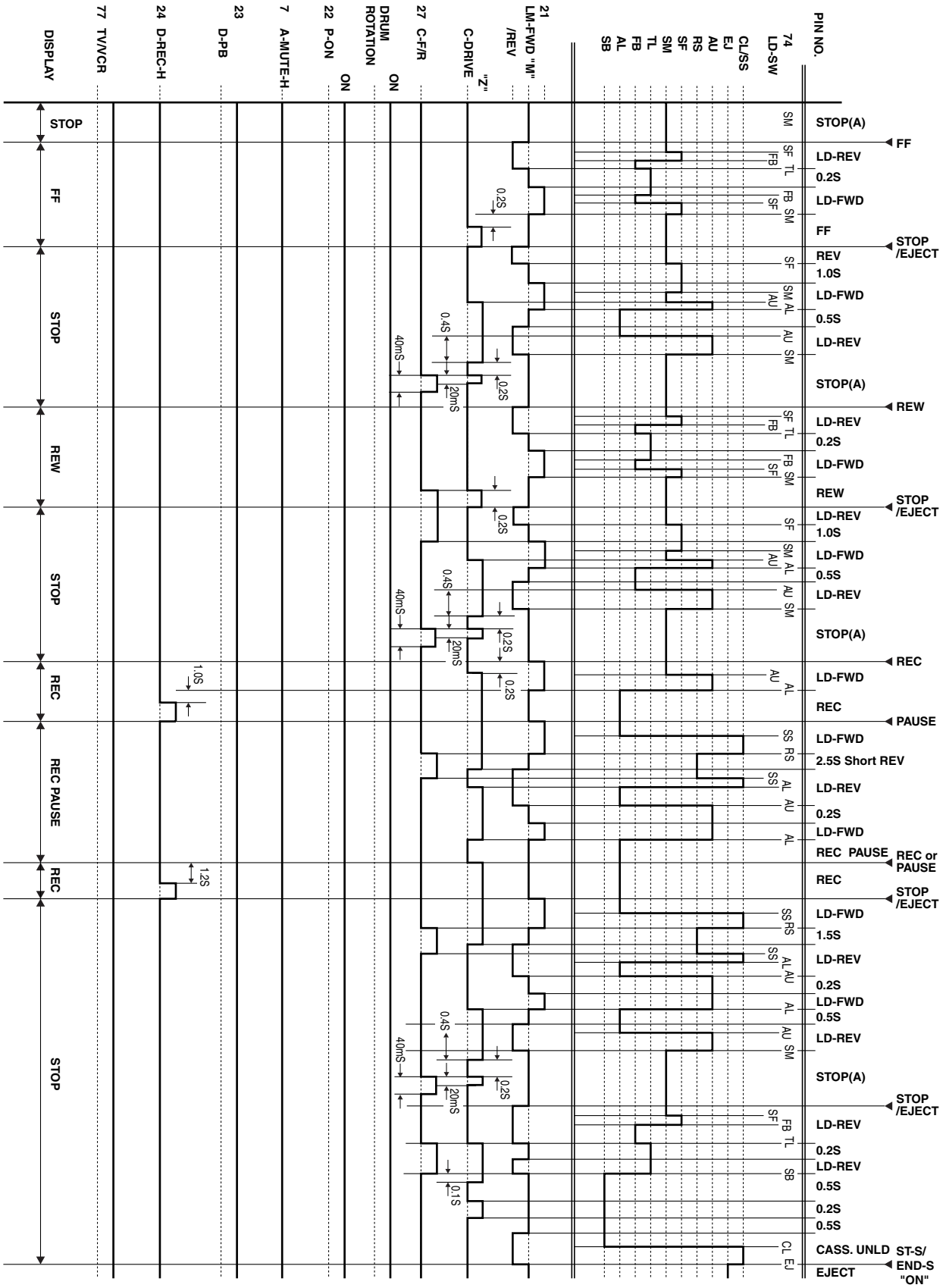
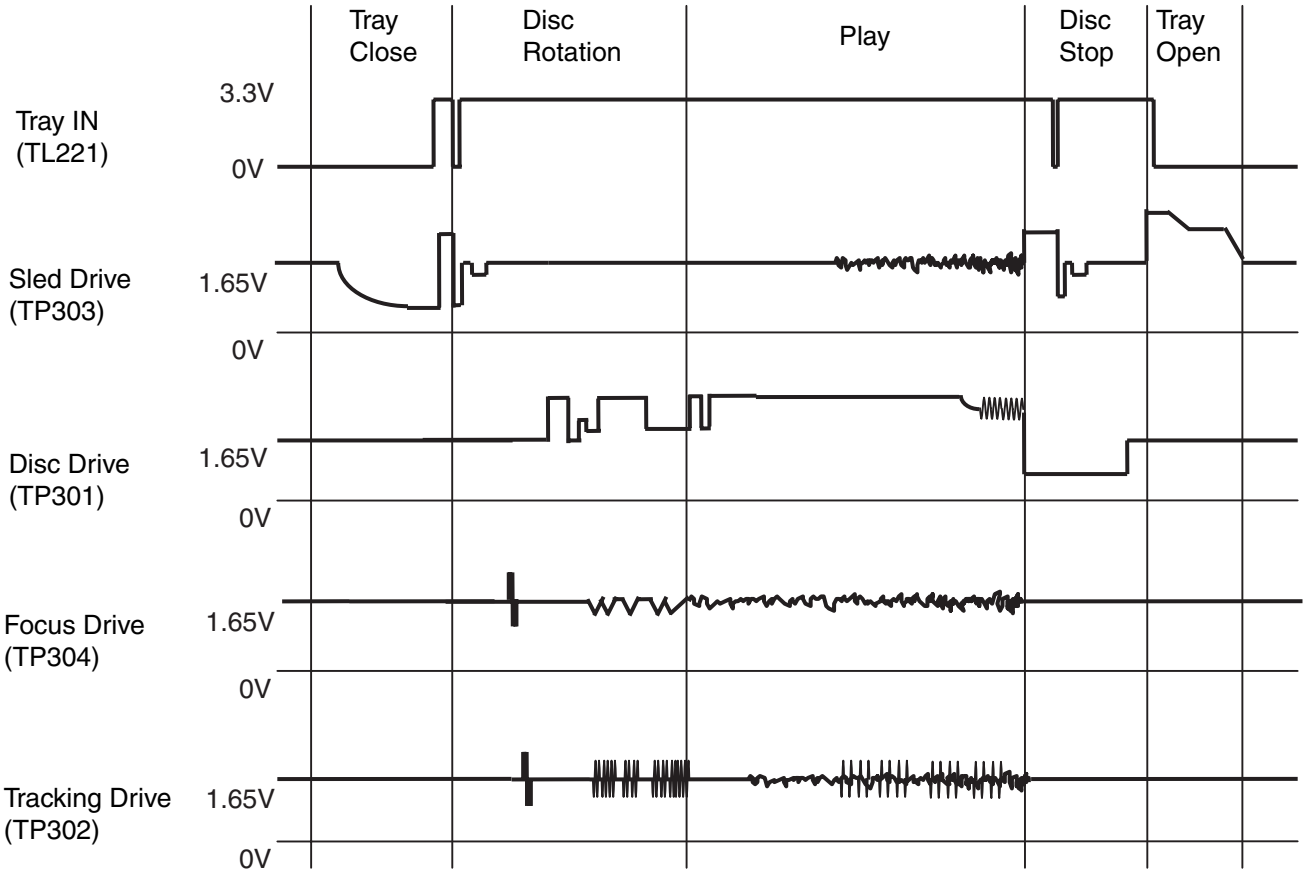

2. STOP(A) -> FF -> STOP(A) -> REW -> STOP(A) -> REC -> PAUSE -> PAUSE or REC -> STOP(A) -> EJECT
PIN NO.
74 LD-SW
CL/SS
EJ
AU
RS
SF
SM
TL
FB
AL
SB
21 LM-FWD "M" /REV
C-DRIVE "Z"
27 C-F/R
DRUM ROTATION
22 P-ON
7 A-MUTE-H
23 D-PB
24 D-REC-H
77 TV/VCR
DISPLAY
STOP(A)
FF
LD-REV
0.2S
LD-FWD
FF
STOP /EJECT
REV
1.0S
LD-FWD
0.5S
LD-REV
STOP(A)
REW
LD-REV
0.2S
LD-FWD
REW
STOP /EJECT
LD-REV
1.0S
LD-FWD
0.5S
LD-REV
STOP(A)
REC
LD-FWD
REC
PAUSE
LD-FWD
2.5S Short REV
LD-REV
0.2S
LD-FWD
REC PAUSE
REC or PAUSE
REC
STOP /EJECT
LD-FWD
1.5S
LD-REV
0.2S
LD-FWD
0.5S
LD-REV
STOP(A)
STOP /EJECT
LD-REV
0.2S
LD-REV
0.5S
0.2S
0.5S
CASS. UNLD
EJECT
ST-S/ END-S "ON"
STOP
FF
STOP
REW
STOP
REC
REC PAUSE
REC
STOP
0.2S
0.4S
20mS
40mS
1.0S
1.2S
0.1S

Fig. 4

[DVD Section]

Tray Close ~ Play / Play ~ Tray Open



IC PIN FUNCTION DESCRIPTIONS

[VCR Section]

IC501(SERVO / SYSTEM CONTROL IC)

"H" ≥ 4.5V, "L" ≤ 1.0V

Pin No.	IN/ OUT	Signal Name	Function	Active Level
1	IN	P-DOWN -L	Power Voltage Down Detector Signal	L
2	IN	REC-SAF-SW	Recording Safety SW Detect (With Record tab = "L"/ With out Record tab = "H")	H/L
3	IN	T-REEL	Take Up Reel Rotation Signal	PULSE
4	-	N.U.	Not Used	-
5	IN	REMOTE-VIDEO	Remote Control Sensor	L
6	OUT	DISPLAY-CLK	7seg. Driver IC Clock Control Output Signal	H/L
7	OUT	A-MUTE-H	Audio Mute Control Signal (Mute = "H")	H
8	OUT	DISPLAY-DATA	7seg. Driver IC Data Control Output Signal	H/L
9	OUT	DISPLAY-ENA	7seg. Driver IC Enable Control Output Signal	L
10	-	N.U.	Not Used	-
11	-	N.U.	Not Used	-
12	IN/ OUT	IIC-BUS-SDA	IIC BUS Control Data	H/L
13	OUT	IIC-BUS-SCL	IIC BUS Control Clock	H/L
14	OUT	YCA-SCL	YCA IC Control Clock	H/L
15	OUT	YCA-SDA	YCA IC Control Data	H/L
16	OUT	YCA-CS	YCA IC Control Chip Select	H/L
17	-	N.U.	Not Used	-
18	OUT	RF-SW	Video Head Switching Pulse	H/L
19	OUT	D-V SYNC	Dummy V-sync Output	H/Hi-z
20	IN	RESET	System Reset Signal (Reset="L")	L
21	OUT	LM-FWD/ REV	Loading Motor FWD/ REV Output	H/Z/L
22	OUT	P-ON-L	Power On Signal to Low	L
23	-	N.U.	Not Used	-
24	OUT	D-REC-H	Delayed Record Signal	H
25	OUT	HiFi-H-SW	HiFi Audio Head Switching Pulse	H/L
26	OUT	DVD-POWER	DVD Power Control Signal	H
27	OUT	C-F/R	Capstan Motor FWD/REV Control Signal (FWD="L"/ REV="H")	H/L
28	OUT	C-CONT	Capstan Motor Control Signal	PWM
29	OUT	D-CONT	Drum Motor Control Signal	PWM
30	-	N.U.	Not Used	-
31	-	VDD	VDD	-
32	OUT	OSCO	Main Clock Output 14.31818MHz	-
33	IN	OSCI	Main Clock Input 14.31818MHz	-
34	-	VSS	VSS	
35	IN	XI	Sub Clock Input 32.768 MHz	-
36	OUT	XO	Sub Clock Output 32.768 MHz	-
37	IN	SXI	Operation Mode Selecting Input Signal	-
38	OUT	VIDEO-OUT	Composite Video Signal Output	-
39	-	Vss2	Vss2	-
40	IN	VIDEO-IN	Composite Video Signal Input	-
41	IN	C-SYNC	Composite Synchronized Pulse	PULSE
42	-	VDD2	VDD2	-
43	IN	AFCC	Low Path Filter Input Signal For AFC	-
44	OUT	AFCLPF	Low Path Filter Output Signal For AFC	-
45	OUT	INSEL-2	Input Select "H"=DISC Ch "L"=Ch except DISC	H/L
46	OUT	OUTPUT-SELECT	Output Select	H/L

Pin No.	IN/ OUT	Signal Name	Function	Active Level
47	IN	D-PFG	Drum PG/FG Input Signal	PULSE
48	-	N.U.	Not Used	-
49	IN	C-FG	Capstan Motor Rotation Detection Pulse	PULSE
50	-	AFG	GND	-
51	OUT	VRO	Servo Standard Voltage Output	-
52	IN	VRI	Servo Standard Voltage Input	-
53	-	AVss	AVSS	-
54	IN	CTLA	CTL Amp. AC GND	-
55	-	AVDD	AVDD	-
56	IN/ OUT	CTL (+)	Playback/Record Control Signal (+)	-
57	IN/ OUT	CTL (-)	Playback/Record Control Signal (-)	-
58	OUT	CTL	Amp. Output Control Signal for Test Point	-
59	IN	HiFi/NOR-IN	Audio Mode Input HiFi=”L”/ Normal=”H”	A/D
60	IN	DVD-POW-MONITOR	DVD Power Monitor Signal (P-off="L", P-on="H")	H/L
61	IN	ST/SAP-IN	Tuner Stereo/Sap Detector Signal Input	A/D
62	IN	END-S	Tape End Position Detect Signal	A/D
63	IN	AFC	Automatic Frequency Control Signal	A/D
64	IN	V-ENV	Video Envelope Comparator Signal	A/D
65	IN	PG-DELAY	Video Head Switching Pulse Signal Adjusted Voltage	A/D
66	IN	KEY-2	A/D Key Data Signal 2	A/D
67	IN	KEY-1	A/D Key Data Signal 1	A/D
68	IN	LD-SW	Deck Mode Position Detector Signal	A/D
69	IN	ST-S	Tape Start Position Detector Signal	A/D
70	OUT	DVD-L-IND	VCR Mode LED Signal Output	H/L
71	OUT	DVD-H-IND	DVD Mode LED Signal Output	H/L
72	-	N.U.	Not Used	-
73	-	N.U.	Not Used	-
74	-	N.U.	Not Used	-
75	-	N.U.	Not Used	-
76	OUT	CONV-SW	RF Conv. Output Channel Switching Signal 3ch=”Hi-z”, 4ch=”L”	Hi-z/L
77	OUT	VCR/TV	RF Conv. ON/OFF Signal (TV="L"/ VCR="H")	H/L
78	OUT	C-ROTA	Color Phase Rotary Changeover Signal	H/L
79	OUT	H-A-SW	Video Head Amp Switching Pulse	H/L
80	IN	H-A-COMP	Head Amp Comparator Signal	H/L

Notes:

Abbreviation for Active Level:

PWM -----Pulse Wide Modulation

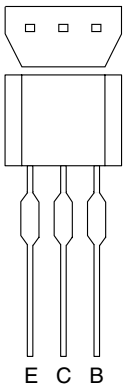
A/D--------Analog - Digital Converter

[DVD Section]

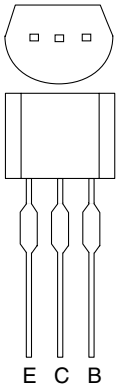
IC571 [PT6313-S-TP]

Pin No.	IN/ OUT	Signal Name	Name Function
1	IN	FP-CLK	Clock Input
2	IN	FP-STB	Serial Interface Strobe
3	-	N.U.	Not Used
4	-	N.U.	Not Used
5	-	VSS	GND
6	-	VDD	Power Supply
7	OUT	a	Segment Output
8	OUT	b	
9	OUT	c	
10	OUT	d	
11	OUT	e	
12	IN	f	
13	IN	g	
14	OUT	h	
15	-	VEE	Pull Down Level
16	OUT	i	Segment Output
17	OUT	7G	Grid Output
18		6G	
19		5G	
20		4G	
21		3G	
22		2G	
23		1G	
24	-	VDD	Power Supply
25	-	VSS	GND
26	IN	OSC	Oscillator Input
27	-	N.U.	Not Used
28	IN	FP-DIN	Serial Data Input

LEAD IDENTIFICATIONS

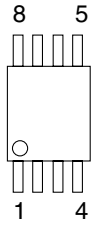


2SA1175(J,H,F)
2SC2785(J,H,F,K)
BA1F4M-T
BN1F4M-T
KRA103M
KRC103M
KTA1266(GR)
KTA1267(GR,Y)
KTC3193(Y)
KTC3199(Y,GR,BL)

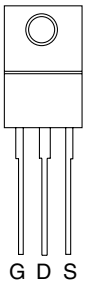


2SA1015-GR(TPE2)
2SC1815-BL(TPE2)
2SC1815-GR(TPE2)
2SC1815-Y(TPE2)
2SC2120-Y(TPE2)
KTC3198(Y,GR)
KTC3203(Y)

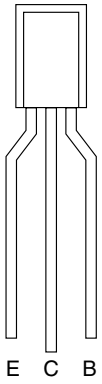
KIA4558P
NJM4558D



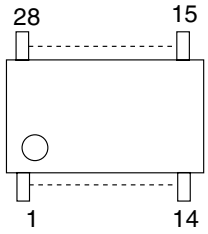
2SK3543



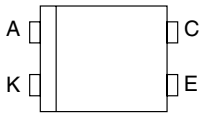
2SC536NF-NPA-AT
2SC536NG-NPA-AT



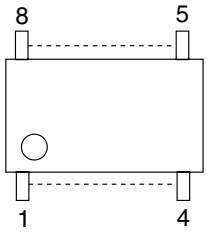
PT6313-S-TP



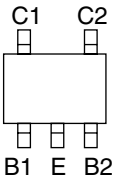
EL817A
EL817B
EL817C
LTV-817B-F
LTV-817C-F
PS2561A-1(Q,W)



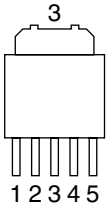
MM1636XWRE



FMG4A T148
RN1511(TE85R)

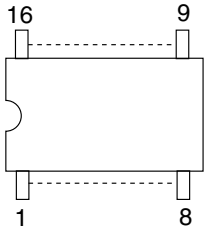


PQ070XZ5MZP

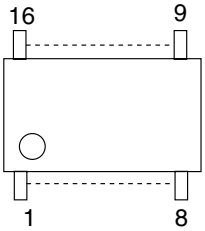


1: Vin
2: Vc
3: Vo
4: Vadj
5: GND

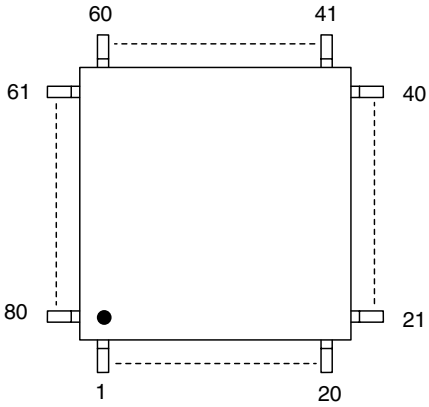
BU4053BCF
CD4053BCSJX
TC4053BF(N)



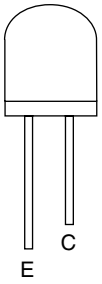
MM1637XVBE



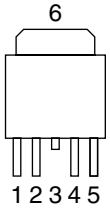
LA71205M-MPB-E
LA72670BM-MPB-E
QSZAA0RMS017



MID-32A22F
PT204-6B-12



BA3948FP-E2



1: CTL
2: Vcc
3: N.C.
4: OUT
5: C
6: GND

Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference
S: Source
G: Gate
D: Drain

ELECTRICAL PARTS LIST

MISCELLANEOUS

	9965 000 24113	DVD MAIN CBA UNIT
	9965 000 24114	MCV CBA
	9965 000 24118	SENSOR CBA

MCV CBA UNIT

MCV CBA UNIT consists of MAIN CBA, POWER SWITCH CBA, DVD OPEN/CLOSE CBA and SENSOR CBA.

MAIN CBA

MISCELLANEOUS

F1001!	9965 000 24157		FUSE SIC 1A 250V U/C T
FIP502	9965 000 23984		V.F.D. 7-BT-298N
GP1001!	9965 000 08671	⚠	GAP. FNR-G3.10D
JK751	4822 265 11657		MSP-283V-B-324
JK752	4822 265 11656		MSP-293V3-324
JK753	4822 265 11659		RCA JACK(YELLOW) MSP-281V4-B
JK754	4822 265 11661		RCA JACK(WHITE) MSP-281V1-B
JK755	9965 000 00423		MSP-281V3-A RCA JACK(RED)
JK756	9965 000 13039		RCA JACK 0.01282V-12 PBSN
JK1202	9965 000 15322		RCA JACK(BLACK) MSP-281V2-B
JK1401	9965 000 15323		S TYPE JACK MDC-050V-2.4
JK1403	9965 000 24161		RCA JACK MSP-283V-B-752 NI LF
RM2001	9965 000 10857		REMOTE RECEIVER
SA1001!	9965 000 20946	⚠	SURGE ABSORBER PVR-10D471KB
SW502	4822 276 13954		KSM0614B
SW502	9965 000 19590		TC-1104 (ALTERNATIVE)
SW505	4822 276 13954		KSM0614B
SW505	9965 000 19590		TC-1104 (ALTERNATIVE)
SW508	4822 276 13954		KSM0614B
SW508	9965 000 19590		TC-1104 (ALTERNATIVE)
SW509	4822 276 13954		KSM0614B
SW509	9965 000 19590		TC-1104 (ALTERNATIVE)
SW511	9965 000 16625		LEAF SWITCH MXS01830MVP0
SW512	9965 000 23359		ROTARY MODE SWITCH SSS-53MD
SW513	4822 276 13954		KSM0614B
SW513	9965 000 19590		TC-1104 (ALTERNATIVE)
SW514	4822 276 13954		KSM0614B
SW514	9965 000 19590		TC-1104 (ALTERNATIVE)
SW515	4822 276 13954		KSM0614B
SW515	9965 000 19590		TC-1104 (ALTERNATIVE)
SW516	4822 276 13954		KSM0614B
SW516	9965 000 19590		TC-1104 (ALTERNATIVE)
SW2002	4822 276 13954		KSM0614B
SW2002	9965 000 19590		TC-1104 (ALTERNATIVE)
SW2003	4822 276 13954		KSM0614B
SW2003	9965 000 19590		TC-1104 (ALTERNATIVE)
T001!	9965 000 24166		SWITCHING TRANSFO CSA-SW0412A
TU701	9965 000 24167		TUNER UNIT VH025AFE
W001	9965 000 24168		FFC CABLE, 27P FFC/P1.00/230
W003	9965 000 24169		FFC CABLE, 19P FFC/P1.00/195
X301	9965 000 12363		X'TAL 3.579545MHZ(20PPM)
X301	9965 000 24170		X'TAL 3.579545MHZ (ALTERNATIVE)
X501	9965 000 09220		X'TAL 14.31818MHZ
X502	9965 000 12288		X'TAL 32.768KHZ(20PPM)
X502	9965 000 19592		X'TAL32.768KHZ(20PPM) (ALTERNATIVE)

CAPACITORS

C020	4822 124 12427		1000UF 20% 10V
C424	9965 000 15255		CERAMIC CAP. B K 470PF/100V
C425	9965 000 24150		FILM CAP.(P) 0.018UF/100V J
C1001!	9965 000 24151	⚠	MET. FILM 0.022UF/275
C1001!	9965 000 24152	⚠	MET. FILM 0.022UF/250 (ALTERNATIVE)
C1003	4822 126 14142		0.01UF 500V
C1004	9965 000 24153		ELCAP 220UF/200V M
C1005	9965 000 08657		CAP B K 120PF/500V
C1006!	9965 000 05384	⚠	SAFETY CAP. 3300PF/250V
C1007	9965 000 24154		ELCAP 1000UF/6.3V M
C1008	9965 000 08657		CAP B K 120PF/500V
C1023	9965 000 15255		CERAMIC CAP. B K 470PF/100V

RESISTORS

R1004	4822 053 11823	82K 5% 2W
R1011	9965 000 24164	METAL OXIDE 0.68R 1W
R1011	9965 000 24165	METAL OXIDE 0.68R 1W
R1043	9965 000 19665	METAL OXIDE 2.7R 1W
VR501	9965 000 05260	CARBON P.O.T. 100K OHM B

DIODES

D013	4822 130 11654	BA158
D015	9965 000 24155	SCHOTTKY BARRIER DIODE SB370
D016	4822 130 32715	SB340
D030	4822 130 11654	BA158
D031	9965 000 23356	DZ-18BSBT265
D040	9965 000 14881	DZ-6.8BSBT265
D052	9965 000 09283	DZ-10BSBT265
D080	4822 130 31933	1N5061
D081	4822 130 31933	1N5061
D082	4822 130 31933	1N5061
D100	4822 130 30621	1N4148
D101	4822 130 30621	1N4148
D501	4822 130 30621	1N4148
D502	4822 130 30621	1N4148
D504	9965 000 23356	DZ-18BSBT265
D510	4822 130 30621	1N4148
D555	9965 000 19572	LED MIE-534A2
D566	9965 000 24156	LED(YELLOW) 204YD/E
D567	9965 000 24156	LED(YELLOW) 204YD/E
D701	9965 000 09183	DZ-33BSDT265
D1001	4822 130 31933	1N5061
D1002	4822 130 31933	1N5061
D1003	4822 130 31933	1N5061
D1004	4822 130 31933	1N5061
D1008	5322 130 81917	SB140
D1010	4822 130 11654	BA158

ELECTRICAL PARTS LIST

DIODES

D1011	4822 130 11654		BA158
D1012	4822 130 30621		1N4148
D1016	9965 000 14882		RECTIFIER DIODE FR101
D1017	9965 000 23356		DZ-18BSBT265
D1018	4822 130 30621		1N4148
D1020	5322 130 81917		SB140
D1022	4822 130 30621		1N4148
D1024	4822 130 30621		1N4148
D1025	4822 130 30621		1N4148
D1036	4822 130 31933		1N5061
D1037	4822 130 31933		1N5061
D1038	4822 130 31933		1N5061
D1058	4822 130 31933		1N5061
D1301	9965 000 08622		DZ-5.6BSBT265

INTEGRATED CIRCUITS

IC301	9965 000 24158		IC:Y/C/A LA71205M-MPB-E
IC451	9965 000 24159		IC:HIFI LA72670BM-MPB-E
IC501	9965 000 24160		MICROCONT. 8BIT MN101D08DFT
IC571	9965 000 19575		FL DRIVER IC PT6313-S-TP
IC751	9965 000 13852		IC:SWITCH TC4053BF(N) OR
IC751	9965 000 23979		MUX CD4053BCSJX (ALTERNATIVE)
IC752	9965 000 13852		IC:SWITCH TC4053BF(N) OR
IC752	9965 000 23979		MUX CD4053BCSJX (ALTERNATIVE)
IC1001!	4822 130 11655	⚠	PHOTOCOUPLER LTV817B-F
IC1001!	9965 000 19657	⚠	EL817B (ALTERNATIVE)
IC1001!	9965 000 24000	⚠	PS2561A-1(Q) (ALTERNATIVE)
IC1001!	9965 000 09187	⚠	LTV-817C-F (ALTERNATIVE)
IC1002	9965 000 23986		VOLTAGE REG PQ070XZ5MZP
IC1004	9965 000 23987		VOLTAGE REG BA3948FP-E2
IC1201	9965 000 15314		IC:OP AMP KIA4558P
IC1402	9965 000 23981		DRIVER FOR DVD MM1637XVBE
IC1403	9965 000 23989		DRIVER FOR DVD MM1636XWRE

COILS & FILTERS

L009	9965 000 05627	CHOKE COIL 47UH-K
L009	9965 000 23990	CHOKE COIL 47UH-K (ALTERNATIVE)
L303	4822 157 10649	100UH
L304	9965 000 05627	CHOKE COIL 47UH-K
L304	9965 000 23990	CHOKE COIL 47UH-K (ALTERNATIVE)
L421	9965 000 05705	INDUCTOR 47UH-K-5FT
L502	9965 000 05627	CHOKE COIL 47UH-K
L502	9965 000 23990	CHOKE COIL 47UH-K (ALTERNATIVE)
L701	4822 157 11312	4.7UH 10%
L1001!	9965 000 24162	LINE FILTER 27MH TLF14CB2730R4
L1004	4822 526 10685	BEAD CORE B16 RH 3.5X10X1.3
L1007	9965 000 05627	CHOKE COIL 47UH-K
L1007	9965 000 23990	CHOKE COIL 47UH-K (ALTERNATIVE)
L1020	9965 000 05627	CHOKE COIL 47UH-K
L1020	9965 000 23990	CHOKE COIL 47UH-K (ALTERNATIVE)
L1350	4822 157 10649	100UH
L1351	9965 000 15331	INDUCTOR 0.47UH-K-26T
L1522	9965 000 05705	INDUCTOR 47UH-K-5FT
L2001	4822 157 10649	100UH

TRANSISTORS

Q031	4822 130 63144		2SA1267(YG)
Q031	4822 130 11646		2SA1175J (ALTERNATIVE)
Q031	9965 000 05644		2SA1175(F) (ALTERNATIVE)
Q052	9965 000 23377		RES. BUILT-IN KRC103M
Q055	4822 130 63485		KTC3198-Y
Q055	9965 000 05370		2SC536NF-NPA-AT (ALTERNATIVE)
Q056	4822 130 42292		2SC2120Y
Q057	4822 130 10923		KTC3199(BL)
Q057	4822 130 41319		2SC1815BL (ALTERNATIVE)
Q301	4822 130 42959		2SA1015Y
Q302	4822 130 10102		KTC3193Y
Q391	4822 130 42959		2SA1015Y
Q421	4822 130 42959		2SA1015Y
Q422	4822 130 42292		2SC2120Y
Q425	4822 130 10145		KRA103M
Q426	9965 000 12361		CHIP RN1511(TE85R)
Q501	4822 130 10923		KTC3199(BL)
Q501	4822 130 41319		2SC1815BL (ALTERNATIVE)
Q506	9965 000 08630		PHOTO PT204-6B-12
Q566	4822 130 10103		KTC3199Y
Q566	4822 130 11647		2SC2785J (ALTERNATIVE)
Q566	9965 000 05643		2SC2785(F) (ALTERNATIVE)
Q567	4822 130 10103		KTC3199Y
Q567	4822 130 11647		2SC2785J (ALTERNATIVE)
Q567	9965 000 05643		2SC2785(F) (ALTERNATIVE)
Q1001!	9965 000 24163	⚠	FET 2SK3543
Q1003	4822 130 41306		2SC1815GR
Q1004	4822 130 42292		2SC2120Y
Q1005	4822 130 10103		KTC3199Y
Q1005	4822 130 11647		2SC2785J (ALTERNATIVE)
Q1005	9965 000 05643		2SC2785(F) (ALTERNATIVE)
Q1006	4822 130 63144		2SA1267(YG)
Q1006	4822 130 11646		2SA1175J (ALTERNATIVE)
Q1006	9965 000 05644		2SA1175(F) (ALTERNATIVE)
Q1008	4822 130 10103		KTC3199Y
Q1011	4822 130 42292		2SC2120Y
Q1201	4822 130 10103		KTC3199Y
Q1201	4822 130 11647		2SC2785J (ALTERNATIVE)
Q1201	9965 000 05643		2SC2785(F) (ALTERNATIVE)
Q1202	4822 130 10103		KTC3199Y
Q1202	4822 130 11647		2SC2785J (ALTERNATIVE)
Q1202	9965 000 05643		2SC2785(F) (ALTERNATIVE)
Q1204	4822 130 42959		2SA1015Y
Q1351	4822 130 10103		KTC3199Y
Q1351	4822 130 11647		2SC2785J (ALTERNATIVE)
Q1351	9965 000 05643		2SC2785(F) (ALTERNATIVE)
Q1385	4822 130 10103		KTC3199Y
Q1385	4822 130 11647		2SC2785J (ALTERNATIVE)

ELECTRICAL PARTS LIST

TRANSISTORS		
Q1385	9965 000 05643	2SC2785(F) (ALTERNATIVE)

Power Switch CBA

MISCELLANEOUS		
D561	9965 000 08621	LED(RED) 204HD/E
SW518	4822 276 13954	KSM0614B
SW518	9965 000 19590	TC-1104 (ALTERNATIVE)

DVD Open/Close CBA

MISCELLANEOUS		
SW2001	4822 276 13954	KSM0614B
SW2001	9965 000 19590	TC-1104 (ALTERNATIVE)

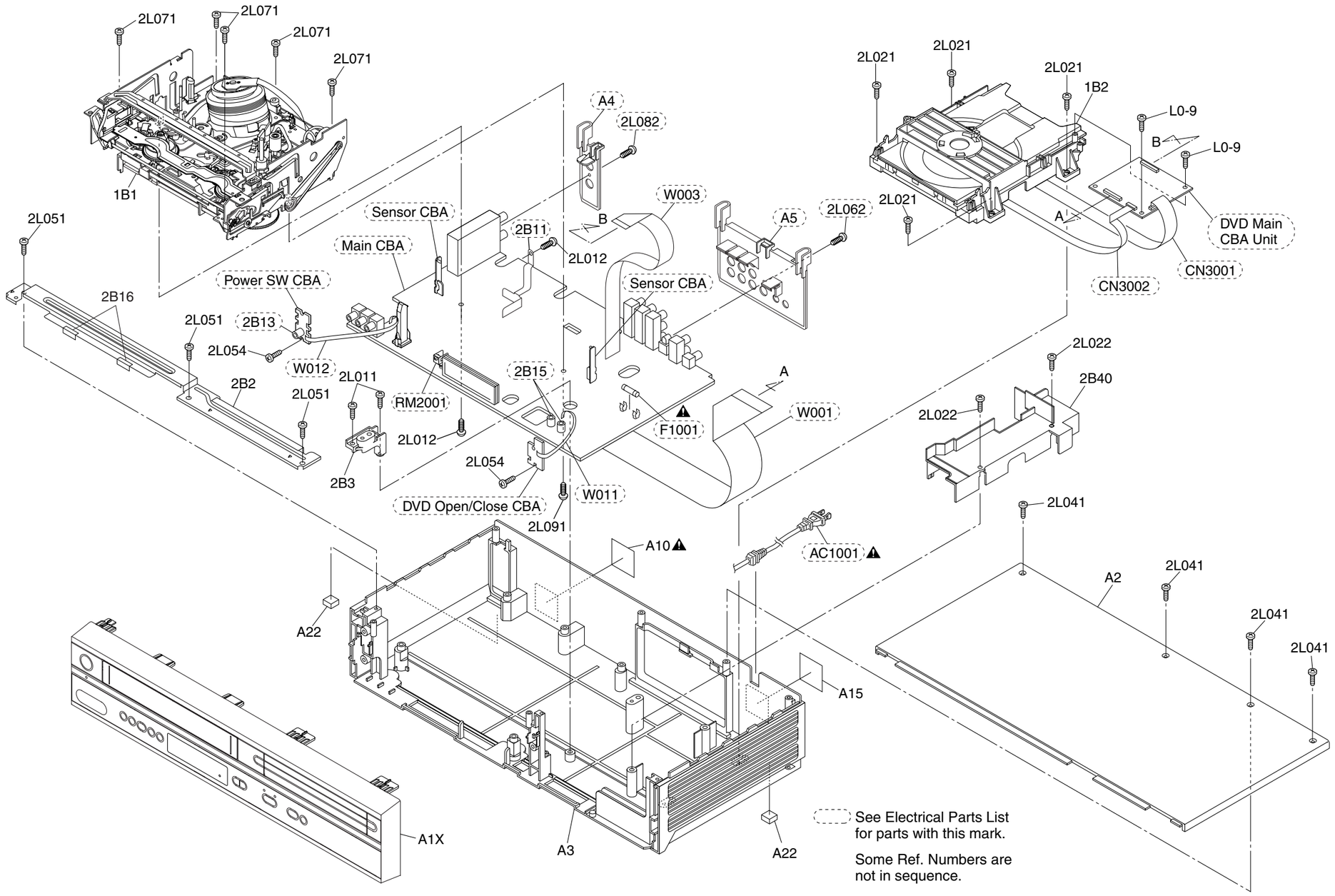
Sensor CBA

TRANSISTORS		
Q503	9965 000 08630	PHOTO PT204-6B-12
Q504	9965 000 08630	PHOTO PT204-6B-12

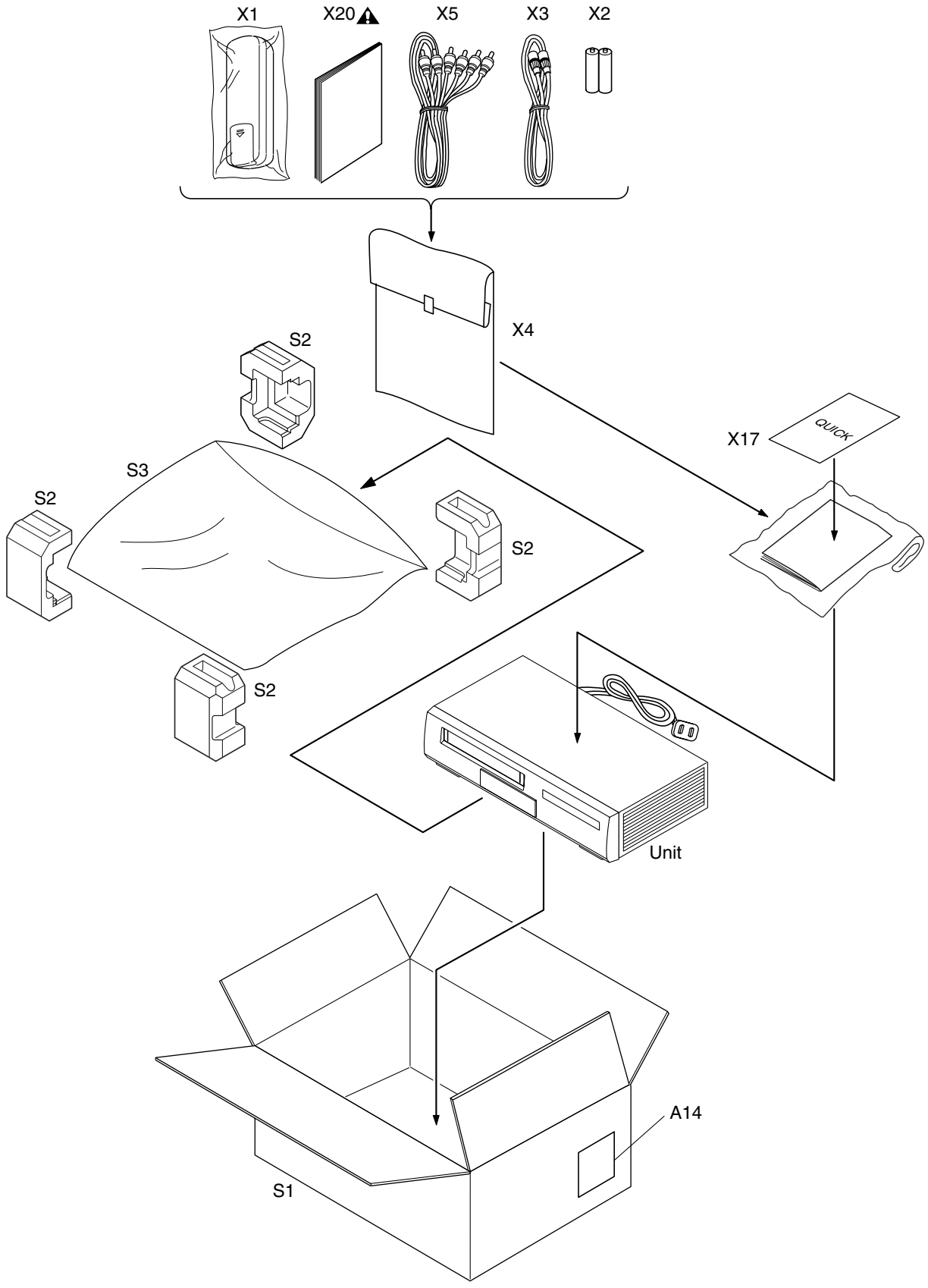
Note: Only the parts mentioned in this list are normal service spare parts.

EXPLODED VIEWS

Cabinet



Packing



MECHANICAL & ACCESSORY PARTS LIST

ELECTRICAL PCBAS

	9965 000 24113		DVD MAIN CBA UNIT
	9965 000 24114		MCV CBA
	9965 000 24118		SENSOR CBA

MECHANICAL PARTS

1B1	9965 000 24110		DECK ASSEMBLY CZD013/VM2260
1B2	9965 000 23962		DVDMECH(FG LESS) 0838 VCZL0500
A1X	9965 000 24108		FRONT ASSEMBLY H9622MD
A22	9965 000 17140		CHASSIS FOOT H79P9JD
A3	9965 000 24109		CHASSIS(MEXICO) H9622MD
AC1001!	9965 000 24119	⚠	AC CORD PB8K9F9110A-05A
X1	9965 000 24111		REMOTE CONTROL UNIT 364/CZF05DD
X3	9965 000 09209		RF CABLE WPZ0901TM001
X5	9965 000 24112		AV CORD TSCKA-Y/RW100

Note: Only the parts mentioned in this list are normal service spare parts.

DECK MECHANISM SECTION

DIGITAL VIDEO DISC PLAYER & VIDEO CASSETTE RECORDER

Sec. 2: Deck Mechanism Section

- **Standard Maintenance**
- **Mechanism Alignment Procedures**
- **Disassembly / Assembly of Mechanism**
- **Deck Exploded Views**
- **Deck Parts List**

TABLE OF CONTENTS

STANDARD MAINTENANCE

Service Schedule of Components

This maintenance chart shows you the standard of replacement and cleaning time for each part.
Because those may replace depending on environment and purpose for use, use the chart for reference.

h: Hours ○: Cleaning ●: Replace

Deck		Periodic Service Schedule			
Ref.No.	**Part Name**	**1,000 h**	**2,000 h**	**3,000 h**	**4,000 h**
B2	Cylinder Assembly	○	●	○	●
B3	Loading Motor Assembly			●	
B8	Pulley Assembly		●		●
B587	Tension Lever Assembly		●		●
B31	ACE Head Assembly			●	
B573, B574	Reel (SP)(D2), Reel (TU)(D2)			●	
B37	Capstan Motor		●		●
B52	Cap Belt		●		●
B73	FE Head			●	
B133, B134	Idler Gear, Idler Arm		●		●
B410	Pinch Arm(A) Assembly		●		●
B414	M Brake (SP) Assembly		●		●
B416	M Brake (TU) Assembly		●		●
B525	LDG Belt		●		●
B569 (2 head only)	Cam Holder		●		●
B593 (4 head, 4 head HiFi only)	Cam Holder Assembly		●		●

Notes:

1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / ACE Head / FE Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.
3. For the reference numbers listed above, refer to Deck Exploded Views.

Cleaning

Cleaning of Video Head

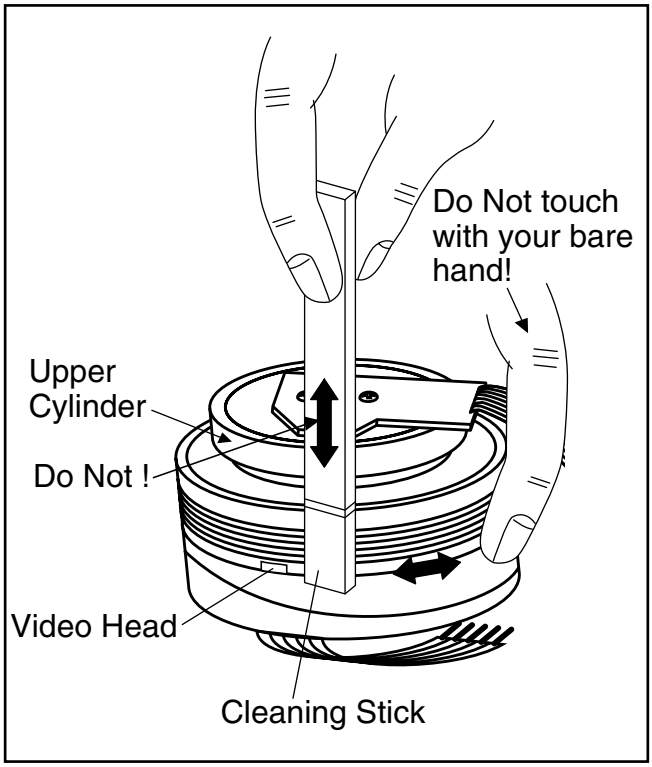
Clean the head with a head cleaning stick or chamois cloth.

Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois cloth and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois cloth.



Cleaning of ACE Head

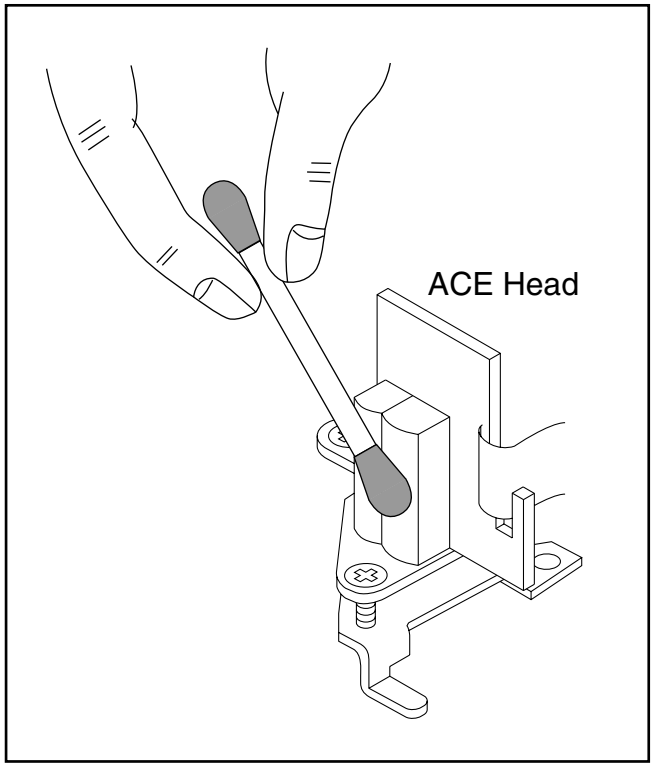
Clean the head with a cotton swab.

Procedure

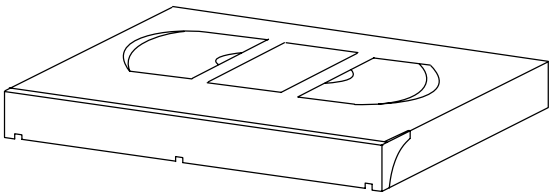
1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the ACE Head. Be careful not to damage the upper drum and other tape running parts.

Notes:

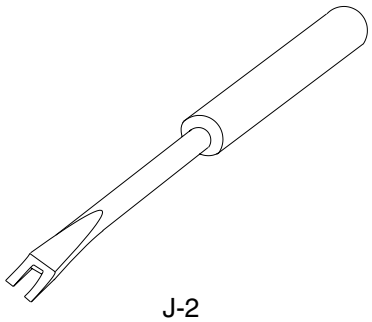
1. Avoid cleaning the ACE Head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.



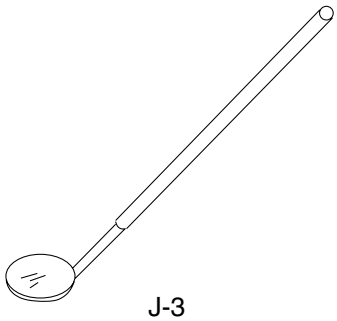
SERVICE FIXTURE AND TOOLS



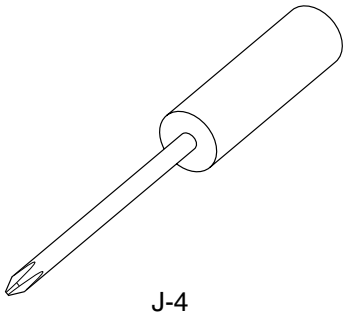
J-1-1, J-1-2



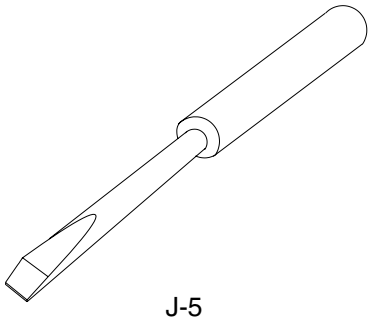
J-2



J-3



J-4



J-5

Ref. No.	Name	Part No.	Adjustment
J-1-1	Alignment Tape	VFMS0001H6	Head Adjustment of ACE Head
J-1-2	Alignment Tape	VFMS0001H6	Azimuth and X Value Adjustment of ACE Head / Adjustment of Envelope Waveform
J-2	Guide Roller Adj. Screwdriver	Available Locally	Guide Roller
J-3	Mirror	Available Locally	Tape Transportation Check
J-4	Azimuth Adj. Screwdriver +	Available Locally	ACE Head Height
J-5	Flat Screwdriver -	Available Locally	X Value

MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

Service Information

A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 for a minute or two to complete this task.

To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Make sure that the Moving guide preparations are in the Eject Position.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 until the Moving guide preparations come to the Eject Position. Stop turning when the preparations begin clicking or can not be moved further. However, the tape will be left wound around the cylinder.
5. Turn the LDG Belt in the appropriate direction continuously, and the cassette tape will be ejected. Allow a minute or two to complete this task.

B. Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.
2. Remove the Top Case and Front Assembly.
3. Turn the LDG Belt in the appropriate direction shown in Fig. M1. Release the locking tabs shown in Fig. M1 and continue turning the LDG Belt until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.

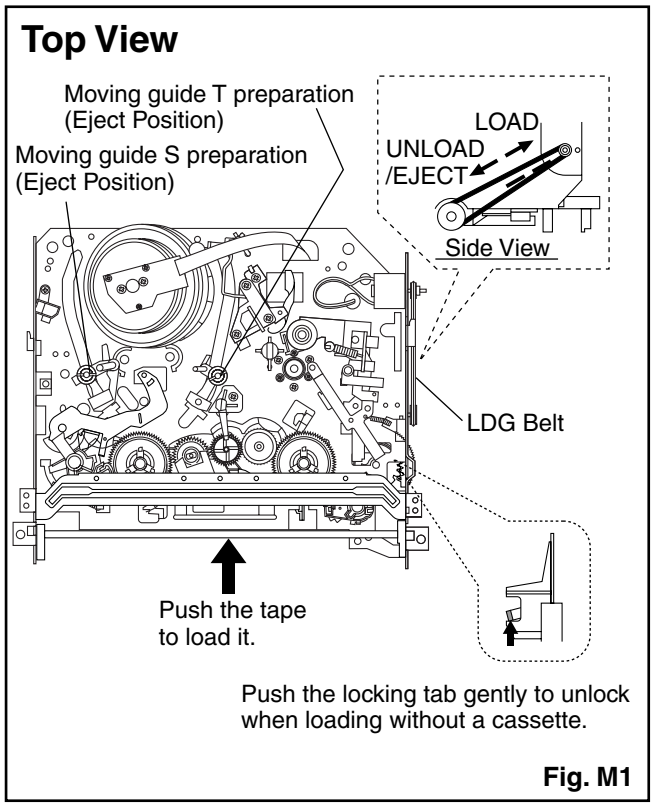


Fig. M1

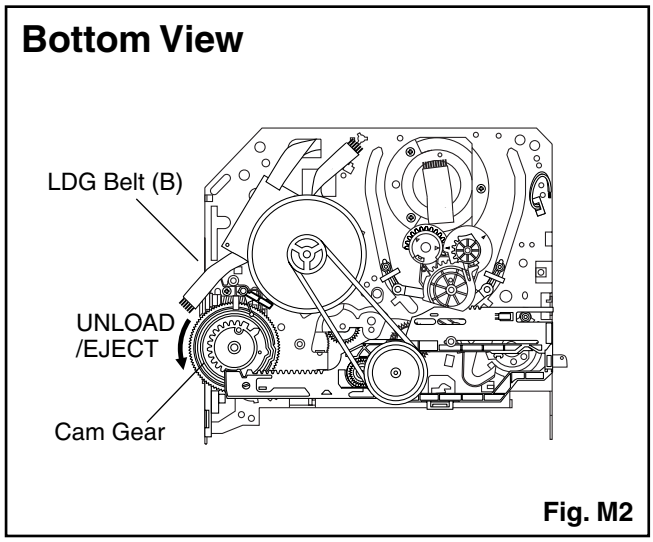


Fig. M2

1. Tape Interchangeability Alignment

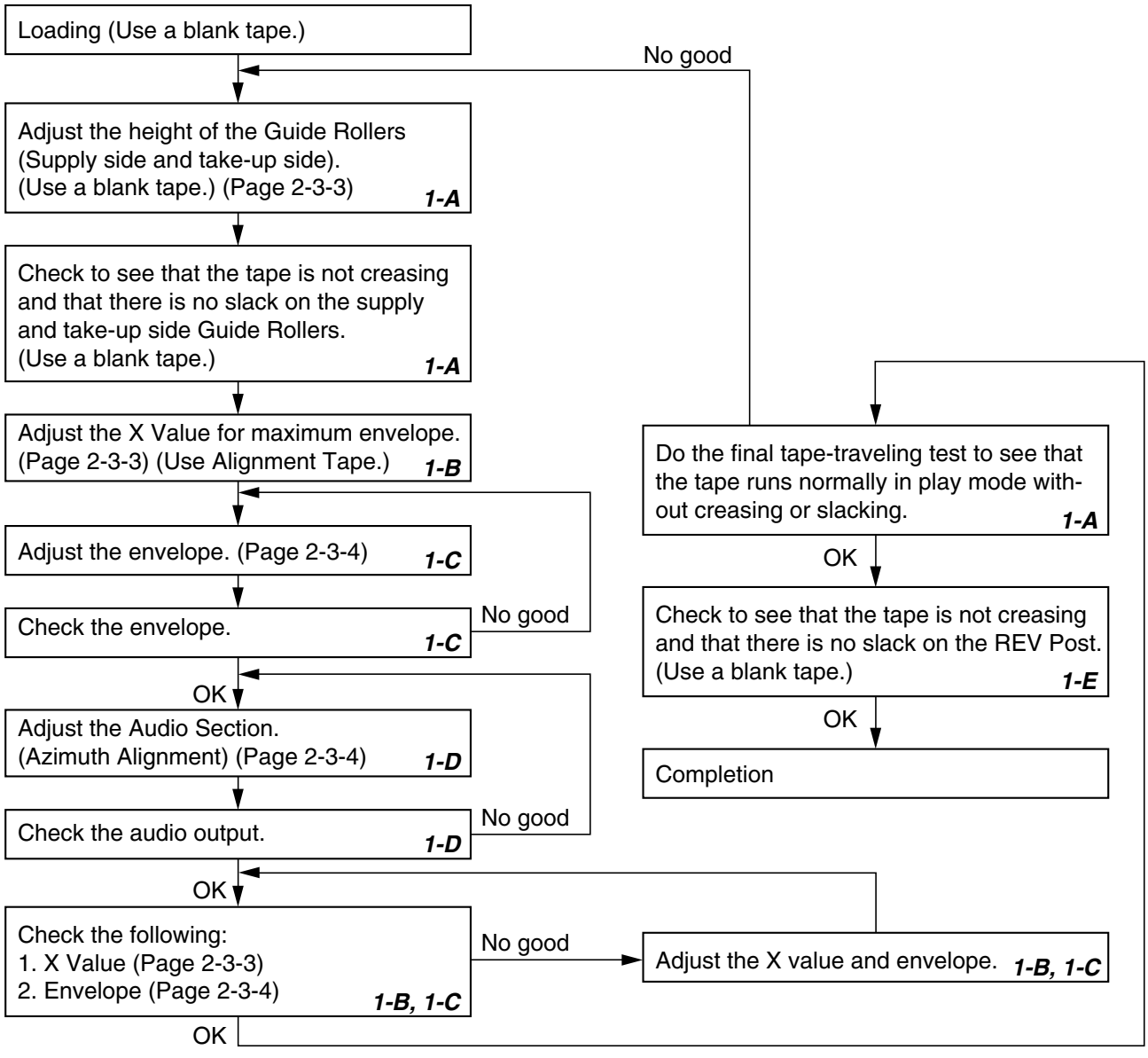
Note:
To do these alignment procedures, make sure that the Tracking Control Circuit is set to the preset position every time a tape is loaded or unloaded. (Refer to page 2-3-4, procedure 1-C, step 2.)

Equipment required:

Dual Trace Oscilloscope
VHS Alignment Tape (VFMS0001H6)
Guide Roller Adj. Screwdriver
Flat Screwdriver (Purchase Locally)

Note: Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

Flowchart of Alignment for tape traveling



1-A. Preliminary/Final Checking and Alignment of Tape Path

Purpose:

To make sure that the tape path is well stabilized.

Symptom of Misalignment:

If the tape path is unstable, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Playback a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig. M3 and M4.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. M3 and M5.)

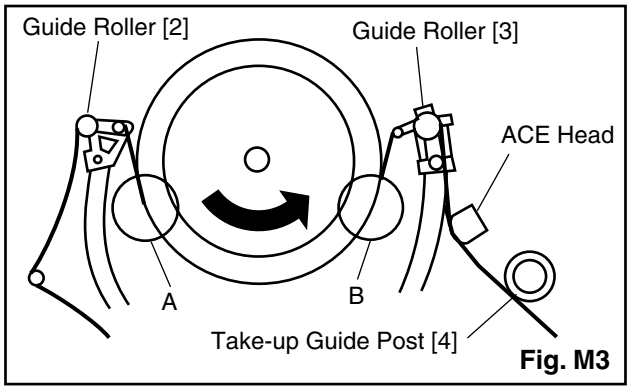


Fig. M3

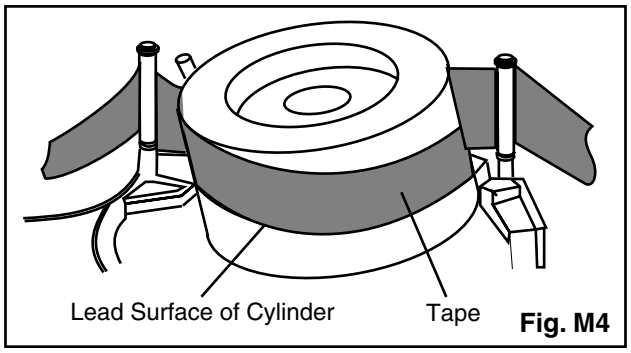


Fig. M4

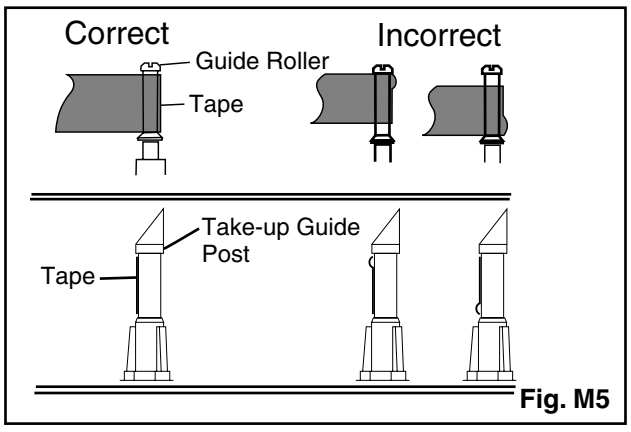


Fig. M5

3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and ACE Head. (Fig. M3 and M5)
4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the ACE Head. (Fig. M6)

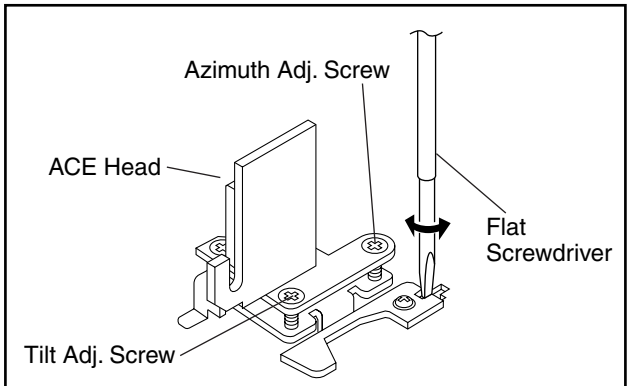


Fig. M6

1-B. X Value Alignment

Purpose:

To obtain maximum PB FM envelope signal at the preset position of the Tracking Control Circuit, align the Horizontal Position of the ACE Head.

Symptom of Misalignment:

If the Horizontal Position of the ACE Head is not properly aligned, maximum PB FM envelope cannot be obtained at the preset position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP301 (C-PB) and TP513 (CTL) on the Main CBA. Use TP302 (RF-SW) as a trigger.
2. Playback the Gray Scale of the Alignment Tape (VFMS0001H6) and confirm that the PB FM signal is present.
3. Set the Tracking Control Circuit to the preset position by pressing CH UP button on the remote control unit then “PLAY” button on the unit. (Refer to note on bottom of page 2-3-4.)
4. Use the Flat Screwdriver so that the PB FM signal at TP301 (C-PB) is maximum. (Fig. M6)

5. To shift the CTL waveform, press CH UP or CH DOWN button on the remote control unit. Then make sure that the maximum output position of PB FM envelope signal become within ±2ms from preset position.

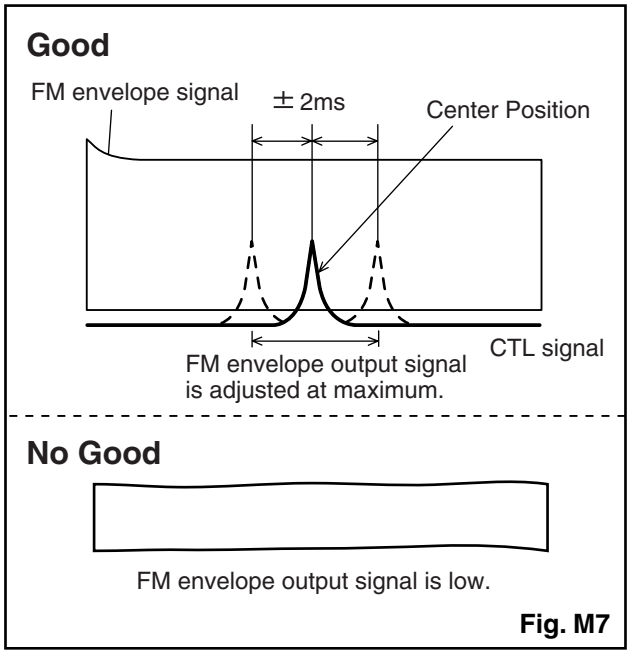


Fig. M7

6. Set the Tracking Control Circuit to the preset position by pressing CH UP button on the remote control unit. and then “PLAY” button.

1-C. Checking/Adjustment of Envelope Waveform

Purpose:

To achieve a satisfactory picture, adjust the PB FM envelope becomes as flat as possible.

Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

1. Connect the oscilloscope to TP301 (C-PB) on the Main CBA. Use TP302 (RF-SW) as a trigger.
2. Playback the Gray Scale on the Alignment Tape (VFMS0001H6). Set the Tracking Control Circuit to the preset position by pressing CH UP button and then “PLAY” button on the unit. Adjust the height of Guide Rollers [2] and [3] (Fig. M3, Page 2-3-3) watching the oscilloscope display so that the envelope becomes as flat as possible. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
3. If the envelope is as shown in Fig. M7, adjust the height of Guide Roller [2] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
4. If the envelope is as shown in Fig. M8, adjust the height of Guide Roller [3] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
5. When Guide Rollers [2] and [3] (Refer to Fig. M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M9.

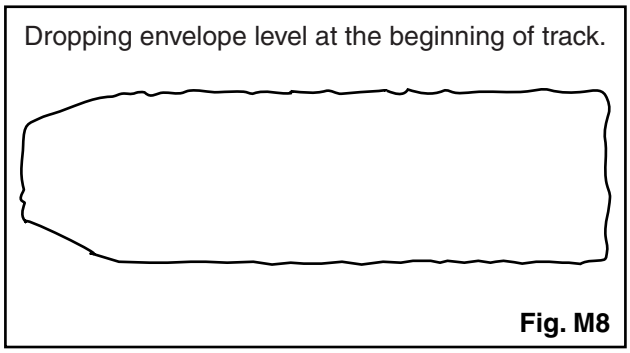


Fig. M8

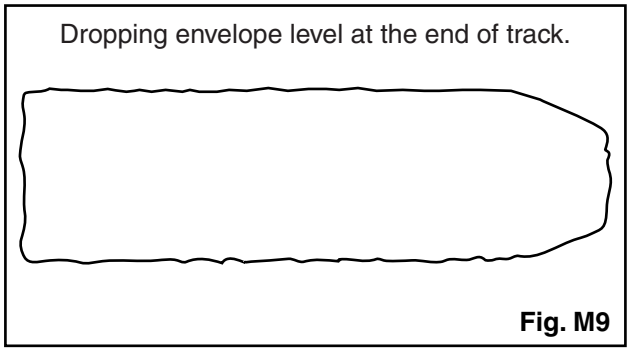


Fig. M9

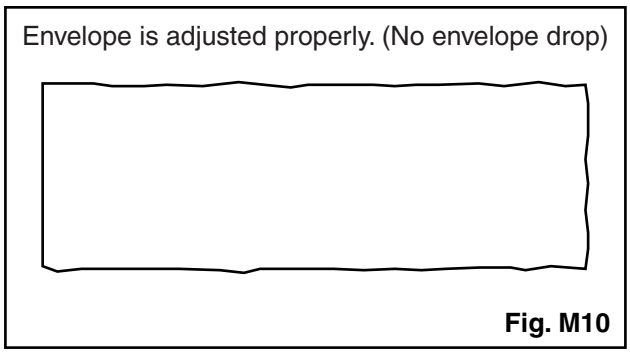


Fig. M10

Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. M3), check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure preset position. The number of pushes CH UP button to achieve 1/2 level of envelope should match the number of pushes CH DOWN button from center. If required, redo the “X Value Alignment.”

1-D. Azimuth Alignment of Audio/Control/ Erase Head

Purpose:

To correct the Azimuth alignment so that the Audio/ Control/Erase Head meets tape tracks properly.

Symptom of Misalignment:

If the position of the Audio/Control/Erase Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Playback the alignment tape (VFMS0001H6) and confirm that the audio signal output level is 6kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform on the oscilloscope is at maximum. (Fig. M6)

Note: Upon completion of the adjustment of Azimuth Adj. Screw, check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure preset position. The number of pushes CH UP button to achieve 1/2 level of envelope should match the number of pushes CH DOWN button from center. If required, redo the “X Value Alignment.”

1-E. Checking and Alignment of Tape Path during reversing

Purpose:

To make sure that the tape path is well stabilized during reversing.

Symptom of Misalignment:

If the tape path is unstable during reversing, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Insert a black cassette tape into the tray and set the unit to REV. Then confirm if the tape has been curled up or bent at the Take-up Guide Post[4] or REV Post[5]. (Refer to Fig. M11 and M12.)
2. When the tape has been curled up or bent, turn the alignment screw to adjust the height of REV Post. (Refer to Fig. M11 and M13.)

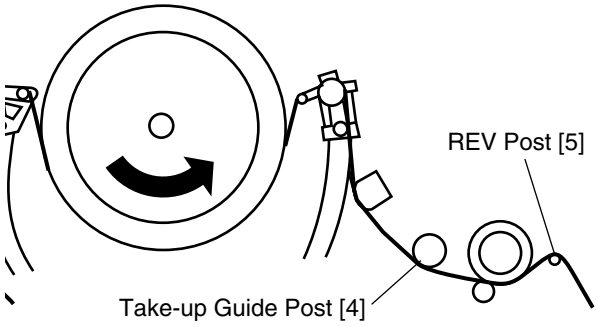


Fig. M11

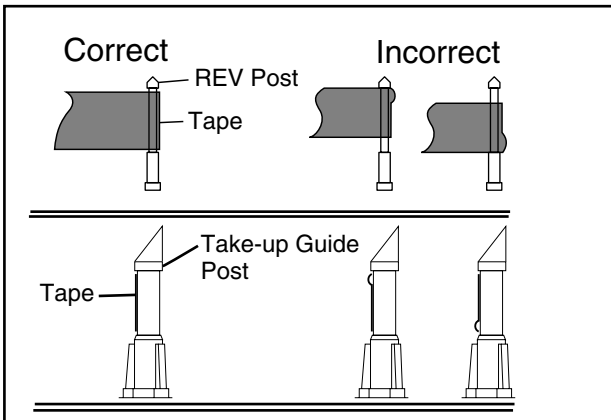


Fig. M12

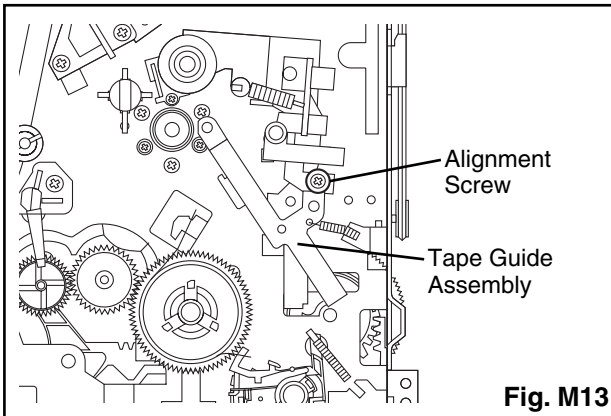


Fig. M13

DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

Before following the procedures described below, be sure to remove the deck assembly from the cabinet. (Refer to CABINET DISASSEMBLY INSTRUCTIONS of Main Section.)
All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [41] and [42] in Fig. DM1 on page 2-4-3. When reassembling, follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Guide Holder A	T	DM3	2(S-1)	
[2]	[1]	Cassette Holder Assembly	T	DM4		
[3]	[2]	Slider (SP)	T	DM5	(S-1A), *(L-1)	
[4]	[2]	Slider (TU)	T	DM5	*(L-2)	
[5]	[4]	Lock Lever	T	DM5	*(L-3), *(P-1)	
[6]	[2]	Cassette Plate	T	DM5		
[7]	[7]	Cylinder Assembly	T	DM1, DM6	Desolder, 3(S-2)	
[8]	[8]	Loading Motor Assembly	T	DM1, DM7	Desolder, LDG Belt, 2(S-3)	
[9]	[9]	ACE Head Assembly	T	DM1, DM7	(S-4)	
[10]	[2]	Tape Guide Arm Assembly	T	DM1, DM8-1	*(P-2)	
[11]	[10]	C Door Opener	T	DM1, DM8-1	(S-4A), *(L-4)	
[12]	[11]	Pinch Arm (B)	T	DM1, DM8-1, DM8-2	*(P-3)	
[13]	[12]	Pinch Arm (A) Assembly	T	DM1, DM8-1, DM8-2		
[14]	[14]	FE Head	T	DM1, DM9	(S-5)	
[15]	[15]	Prism	T	DM1, DM9	(S-6)	
[16]	[2],[15]	Sensor Gear	T	DM1, DM9		
[17]	[2]	Slider Shaft	T	DM10	*(L-5)	
[18]	[17]	C Drive Lever (SP)	T	DM10		
[19]	[17]	C Drive Lever (TU)	T	DM10	(S-7), *(P-4)	
[20]	[7],[8], [10]	Capstan Motor	B	DM2, DM11	3(S-8), Cap Belt	
[21]	[21]	Clutch Assembly	B	DM2, DM12	(C-1)	
[22]	[22]	Cam Holder Assembly	B	DM2, DM12	*(L-6)	
[23]	[23]	Cam Gear (B)	B	DM2, DM12	(C-2), *(P-5)	
[24]	[24]	Mode Gear	B	DM2, DM13-1	(C-3)	
[25]	[21],[23], [24]	Mode Lever	B	DM2, DM13-1, DM13-2	(C-4), *(L-8)	
[26]	[22]	Worm Holder	B	DM2, DM13-1	(S-9), *(L-9), *(L-10)	
[27]	[26]	Pulley Assembly	B	DM2, DM13-1		
[28]	[25],[26]	Cam Gear (A)	B	DM2, DM13-1, DM13-2		
[29]	[25]	Idler Gear	B	DM1, DM14		
[30]	[29]	Idler Arm	B	DM1, DM14	*(L-11)	
[31]	[25]	BT Arm	B	DM2, DM14	*(P-6)	

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[32]	[25]	Loading Arm (SP) Assembly	B	DM2, DM14		(+)Refer to Alignment Sec.Page 2-5-1
[33]	[32]	Loading Arm (TU) Assembly	B	DM2, DM14		(+)Refer to Alignment Sec.Page 2-5-1
[34]	[2],[25]	M Brake (TU) Assembly	T	DM1, DM15	*(P-7), Brake Belt	
[35]	[2],[25]	M Brake (SP) Assembly	T	DM1, DM15	*(P-8)	
[36]	[35]	Tension Lever Assembly	T	DM1, DM15		
[37]	[36]	T Lever Holder	T	DM15	*(L-12)	
[38]	[34]	Reel (TU)(D2)	T	DM1, DM15		
[39]	[38]	M Gear	T	DM1, DM15		
[40]	[36]	Reel (SP)(D2)	T	DM1, DM15		
[41]	[32],[36]	Moving Guide S Preparation	T	DM1, DM16	(S-11), Slide Plate	
[42]	[33]	Moving Guide T Preparation	T	DM1, DM16		
[43]	[19]	TG Post Assembly	T	DM1, DM16	*(L-13)	
[44]	[28]	Rack Assembly	R	DM17		(+)Refer to Alignment Sec.Page 2-5-1
[45]	[44]	F Door Opener	R	DM17		
[46]	[46]	Cleaner Assembly	T	DM1, DM6		
[47]	[46]	CL Post	T	DM6	*(L-14)	
↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)	↓ (6)	↓ (7)

(1): Follow steps in sequence. When reassembling, follow the steps in reverse order.
These numbers are also used as identification (location) No. of parts in the figures.

(2): Indicates the part to start disassembling with in order to disassemble the part in column (1).

(3): Name of the part

(4): Location of the part: T=Top B=Bottom R=Right L=Left

(5): Figure Number

(6): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder
e.g., 2(L-2) = two Locking Tabs (L-2).

(7): Adjustment Information for Installation
(+):Refer to Deck Exploded Views for lubrication.

Top View

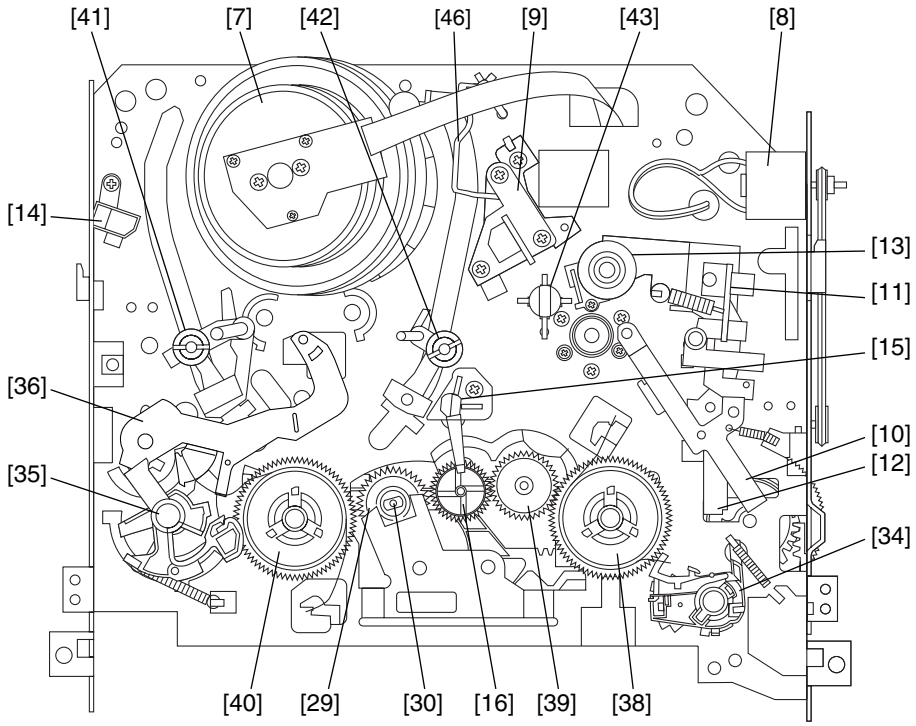


Fig. DM1

Bottom View

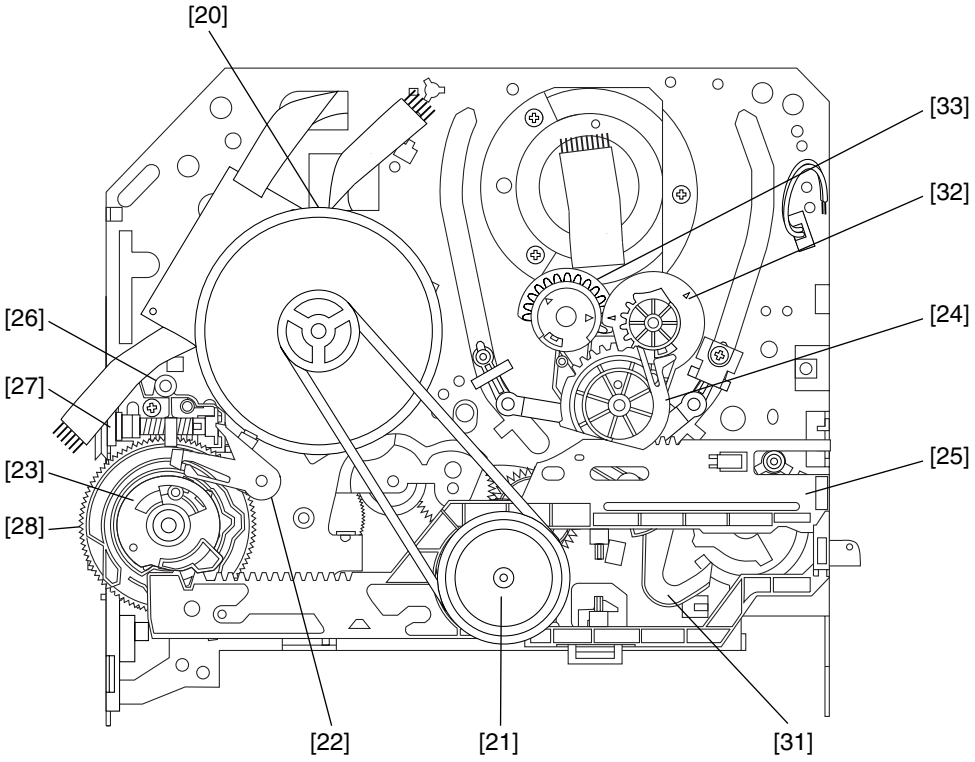


Fig. DM2

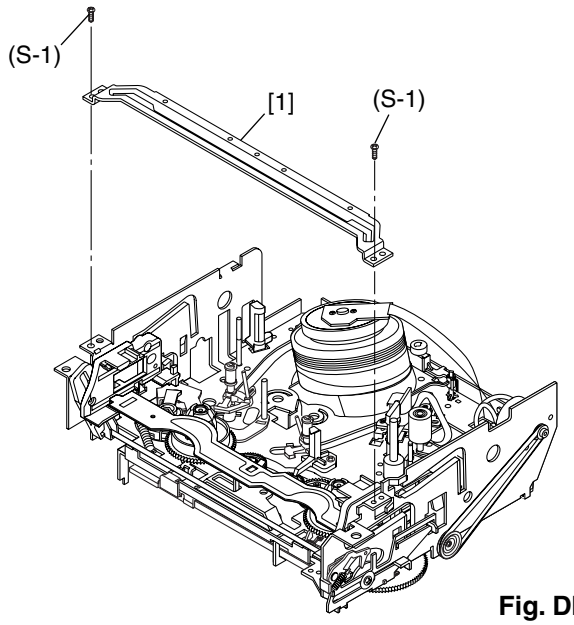
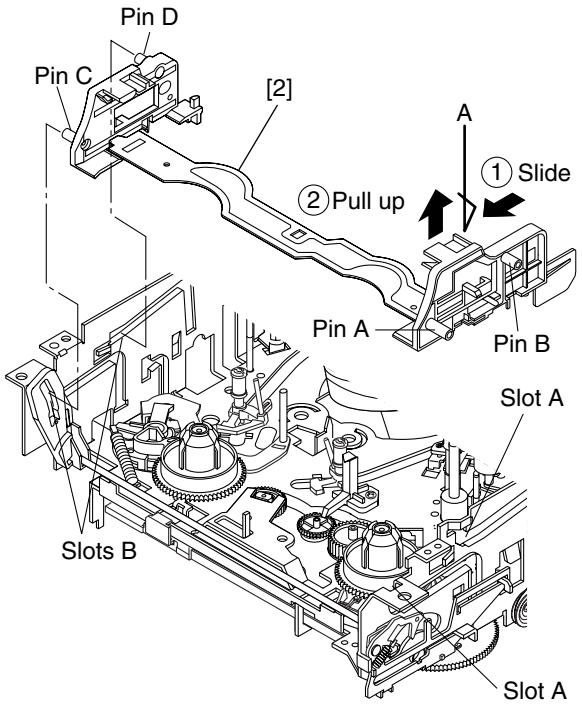


Fig. DM3



First, while pushing the locking tab as shown at right, slide and pull up the right side on [2] to release Pin A and Pin B from the slots A.
Then, remove Pin C and Pin D on [2] from the slots B as shown.

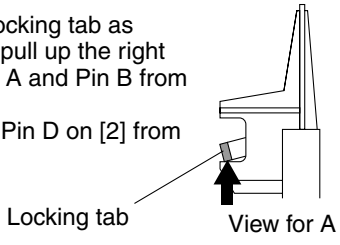
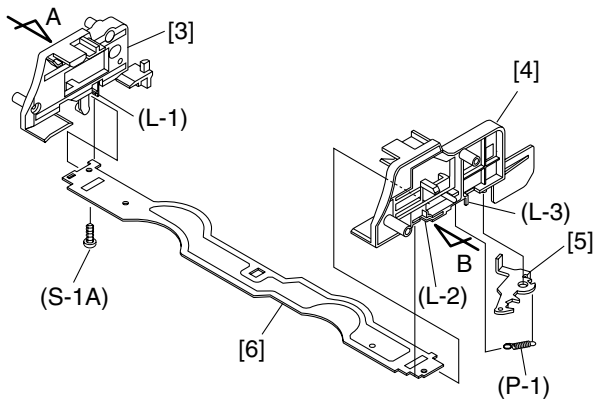
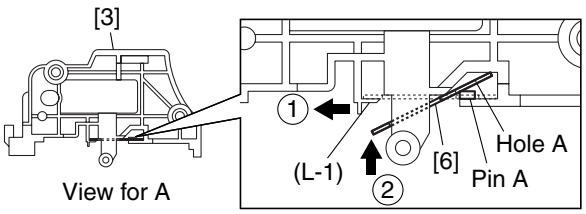


Fig. DM4



Installation of [3] and [6]

First, insert [6] diagonally in [3] as shown below. Then, install [6] in [3] while pushing (L-1) in a direction of arrow. After installing [6] in [3], confirm that pin A of [3] enters hole A of [6] properly.



Installation of [4] and [6]

Install [6] in [4] while pulling (L-2) in a direction of arrow. After installing [6] in [4], confirm that pin B of [4] enters hole B of [6] properly.

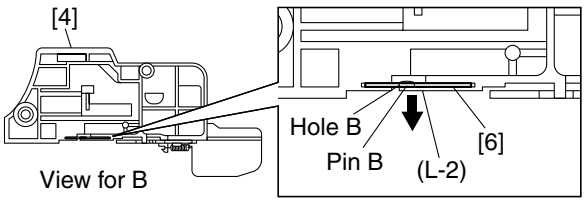


Fig. DM5

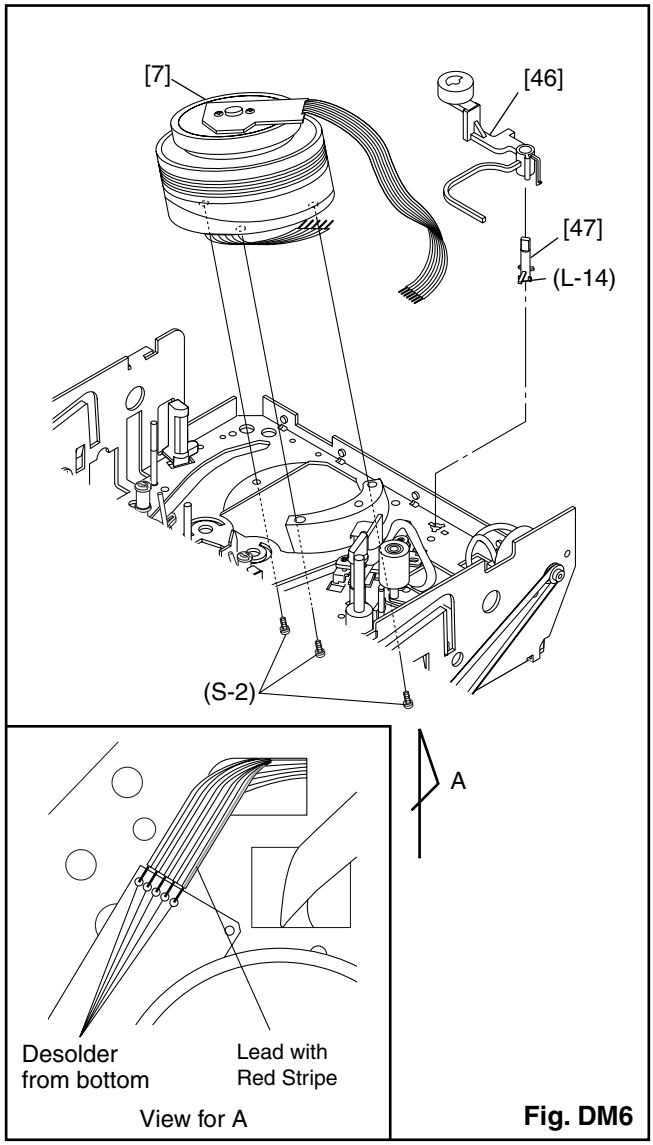


Fig. DM6

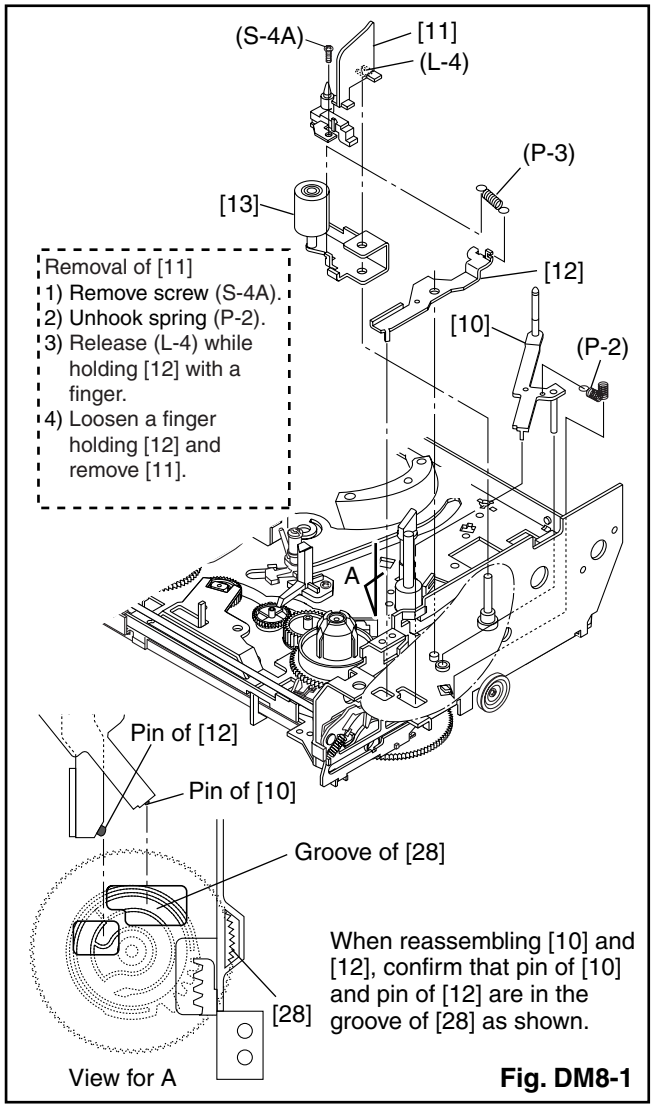


Fig. DM8-1

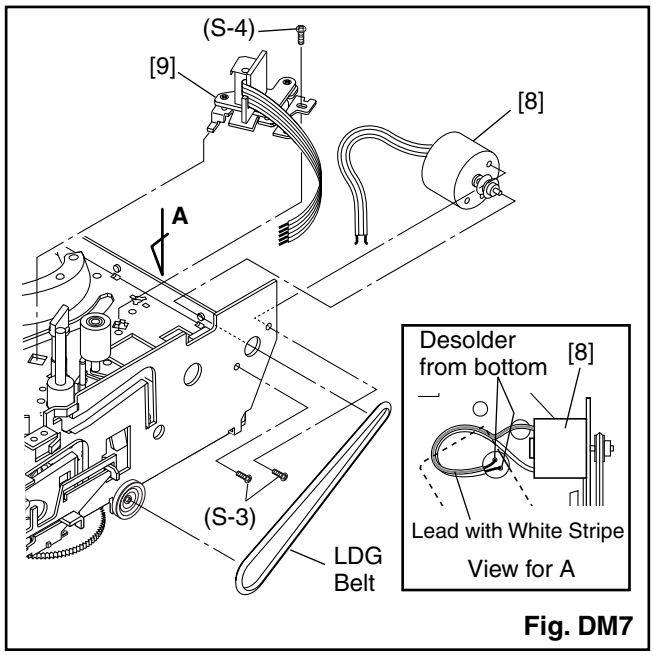


Fig. DM7

Installation of [13] and [12]

Hook spring (P-3) up to [12] and [13], then install then to the specified position so that [12] will be floated slightly while holding [12] and [13]. (Refer to Fig. A.)

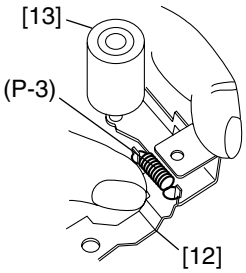


Fig. A

Install pin of [12] in groove of [28]. (Refer to Fig. B.)

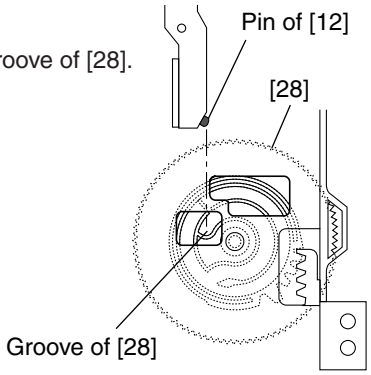


Fig. B (Top view)

Hold [12] and [13] till groove of pin of chassis looks and fit [13] in notch of chassis. Then, turn a few [13] while holding [12]. (Refer to Fig. C.)

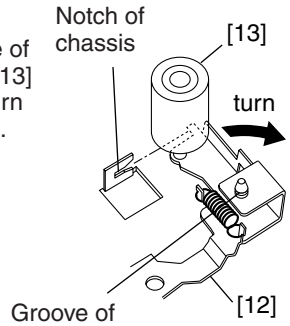


Fig. C

Install [11] and [10] while holding [12]. (Refer to Fig. DM8-1.)

Fig. DM8-2

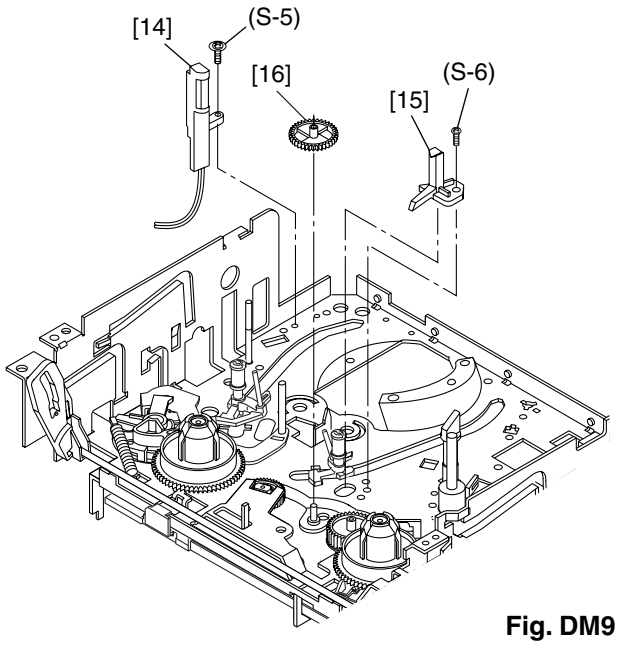


Fig. DM9

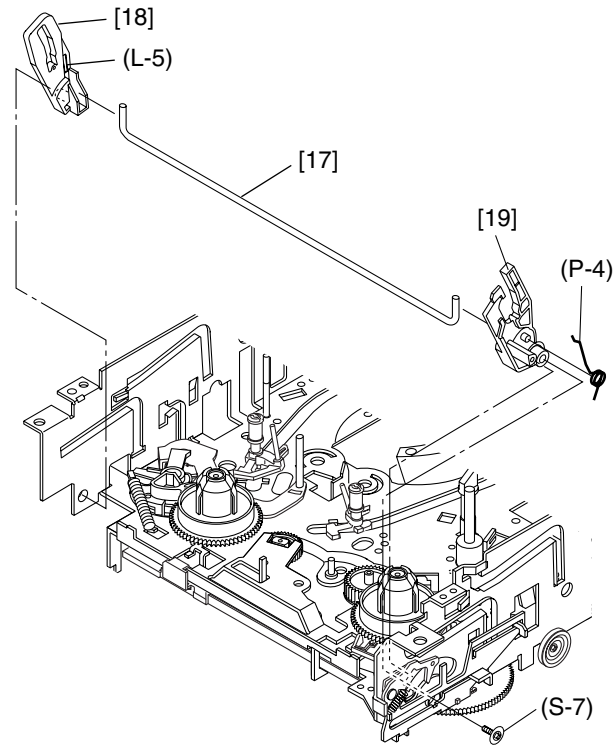
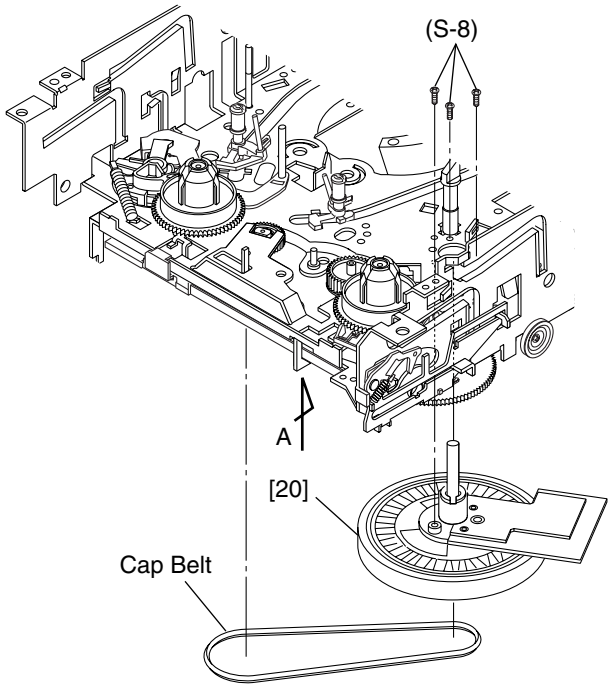
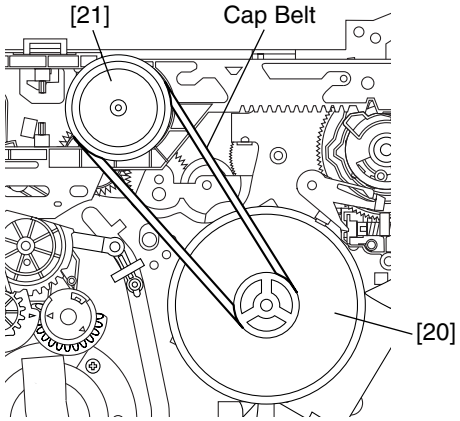


Fig. DM10

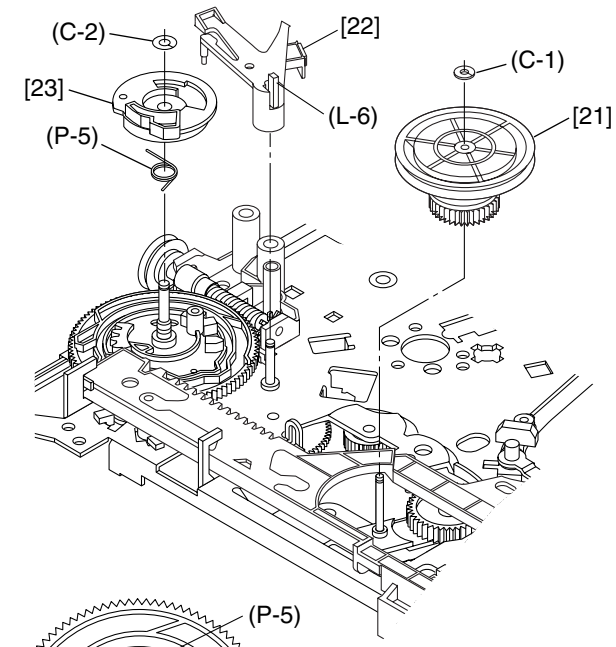


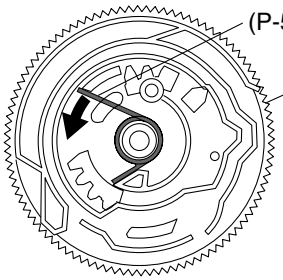
Installation position of Cap Belt



View for A

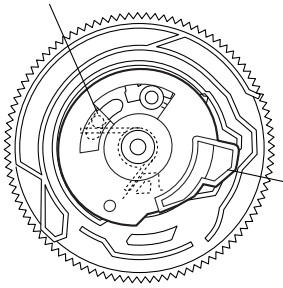
Fig. DM11



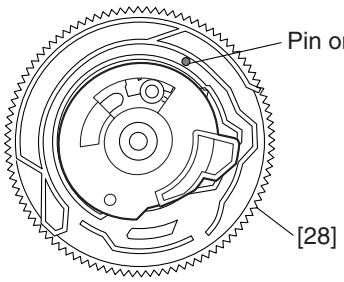


When installing [23], install the spring (P-5) to [28] as shown in the left figure, and then install [23] while pressing the spring (P-5) to the direction of the arrow in the left figure and confirming that the position of the spring (P-5) is placed as shown in the left figure.

Pin on bottom of [23]



Top View



Position of pin on [22]

Fig. DM12

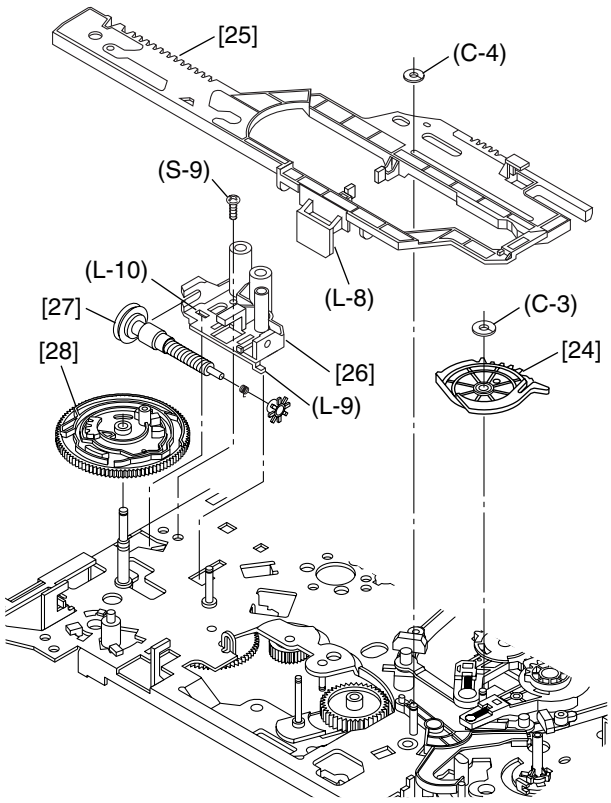


Fig. DM13-1

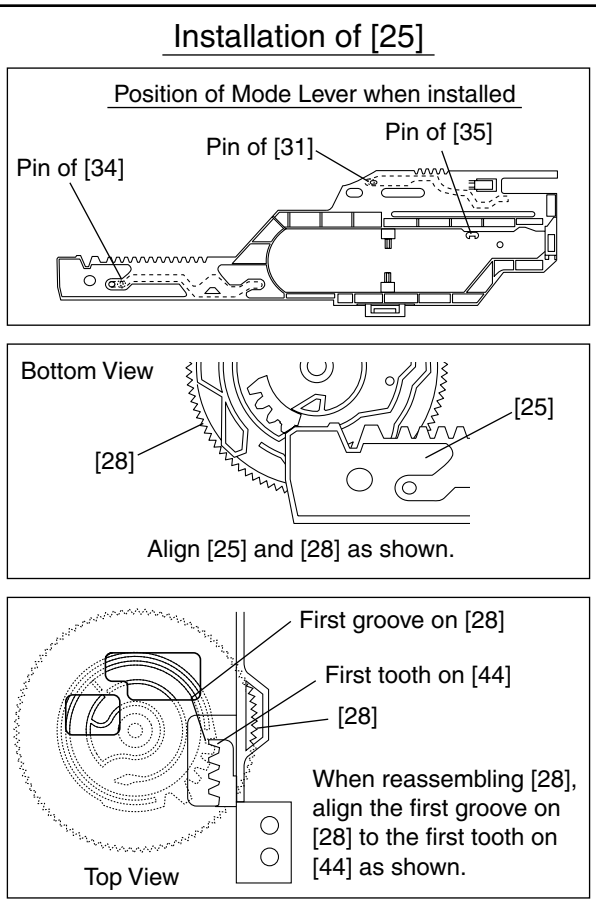


Fig. DM13-2

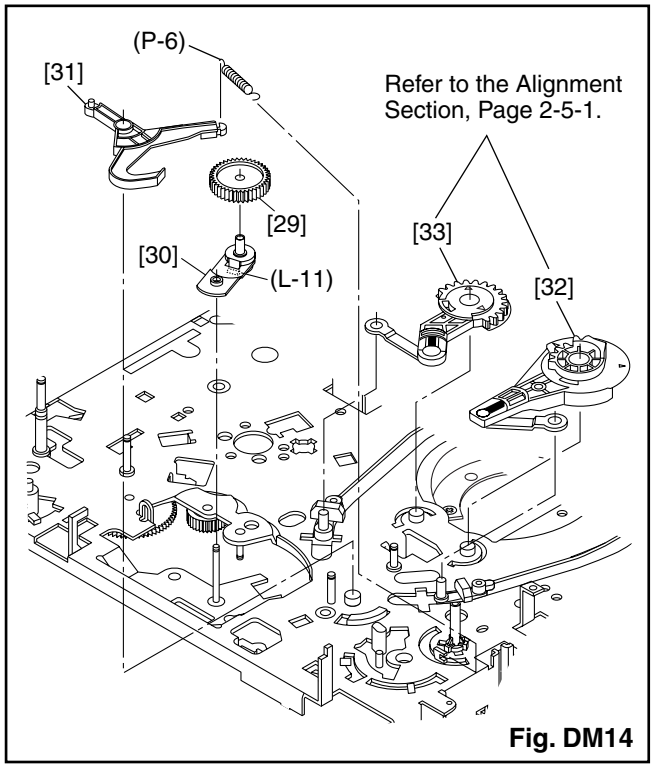


Fig. DM14

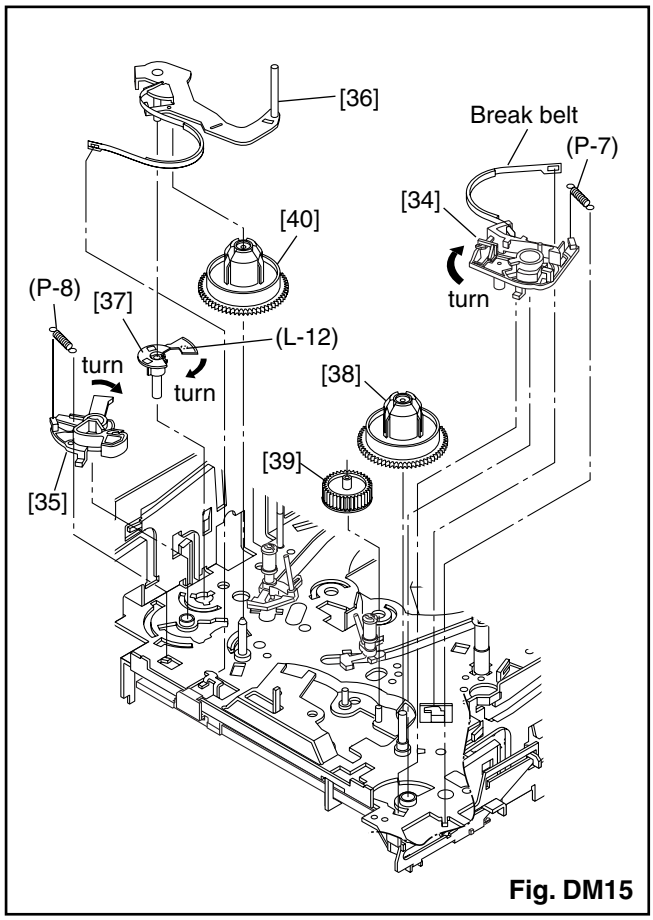


Fig. DM15

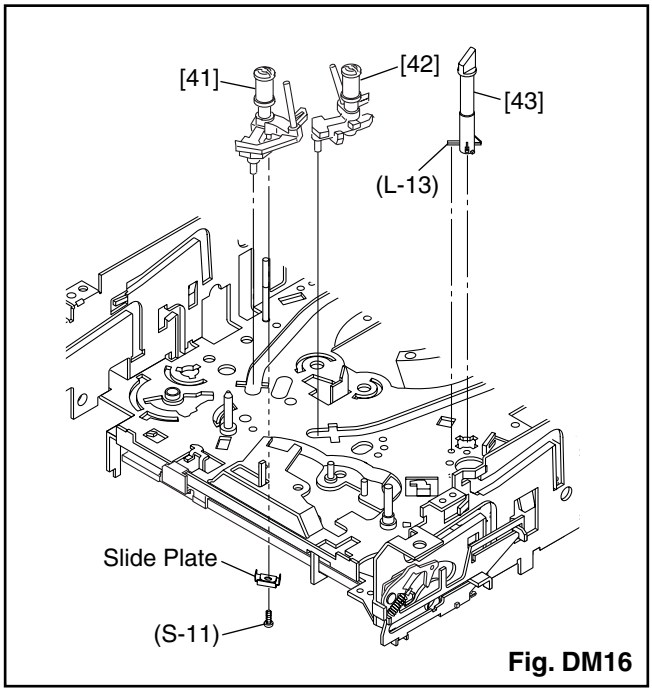


Fig. DM16

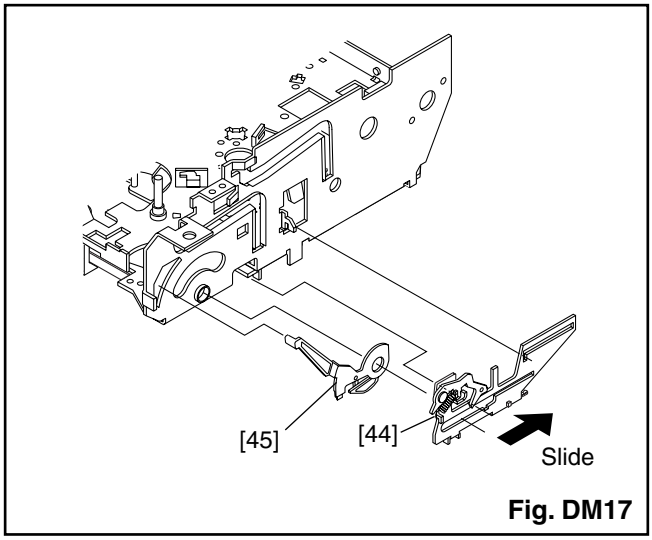


Fig. DM17

ALIGNMENT PROCEDURES OF MECHANISM

The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.

All alignments are to be performed with the mechanism in Eject mode, in the sequence given. Each procedure assumes that all previous procedures have been completed.

IMPORTANT:

If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

Alignment points in Eject Position

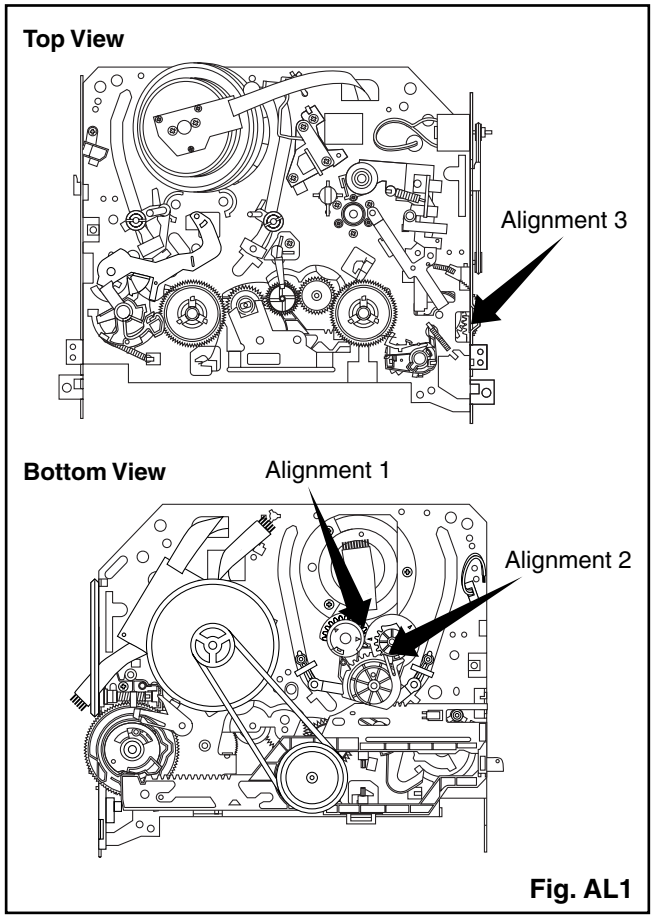


Fig. AL1

Alignment 1

Loading Arm (SP) and (TU) Assembly

Install Loading Arm (SP) and (TU) Assembly so that their triangle marks point to each other as shown in Fig. AL2.

Alignment 2

Mode Gear

Keeping the two triangles pointing at each other, install the Loading Arm (SP) Assembly so that the last tooth of the gear meets the most inside teeth of the Mode Gear. See Fig. AL2.

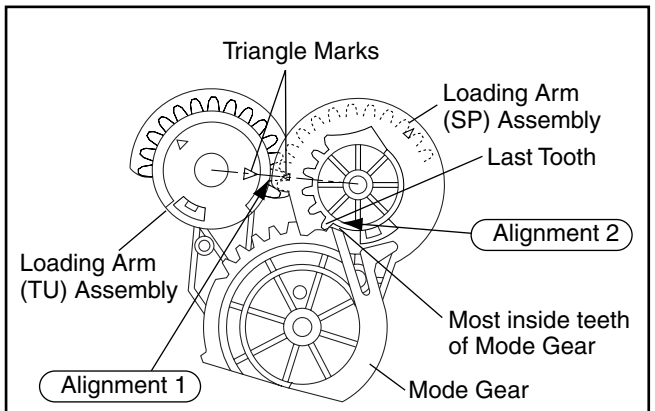


Fig. AL2

Alignment 3

Cam Gear (A), Rack Assembly

Install the Rack Assembly so that the first tooth on the gear of the Rack Assembly meets the first groove on the Cam Gear (A) as shown in Fig. AL3.

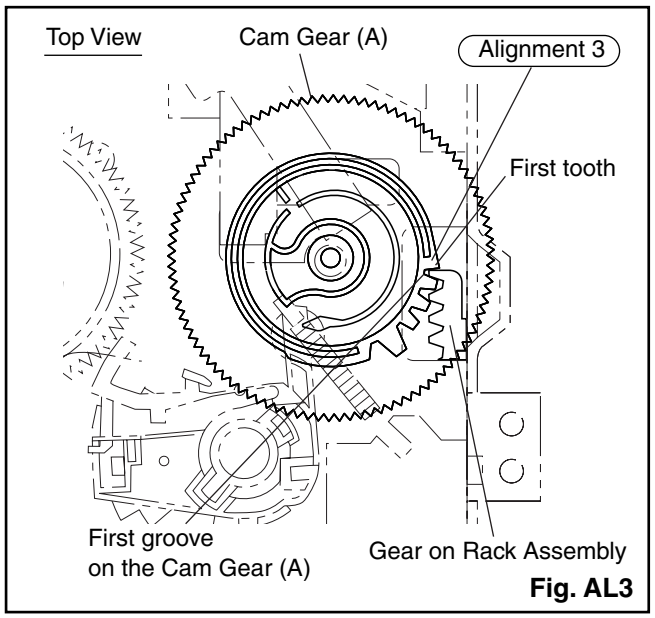
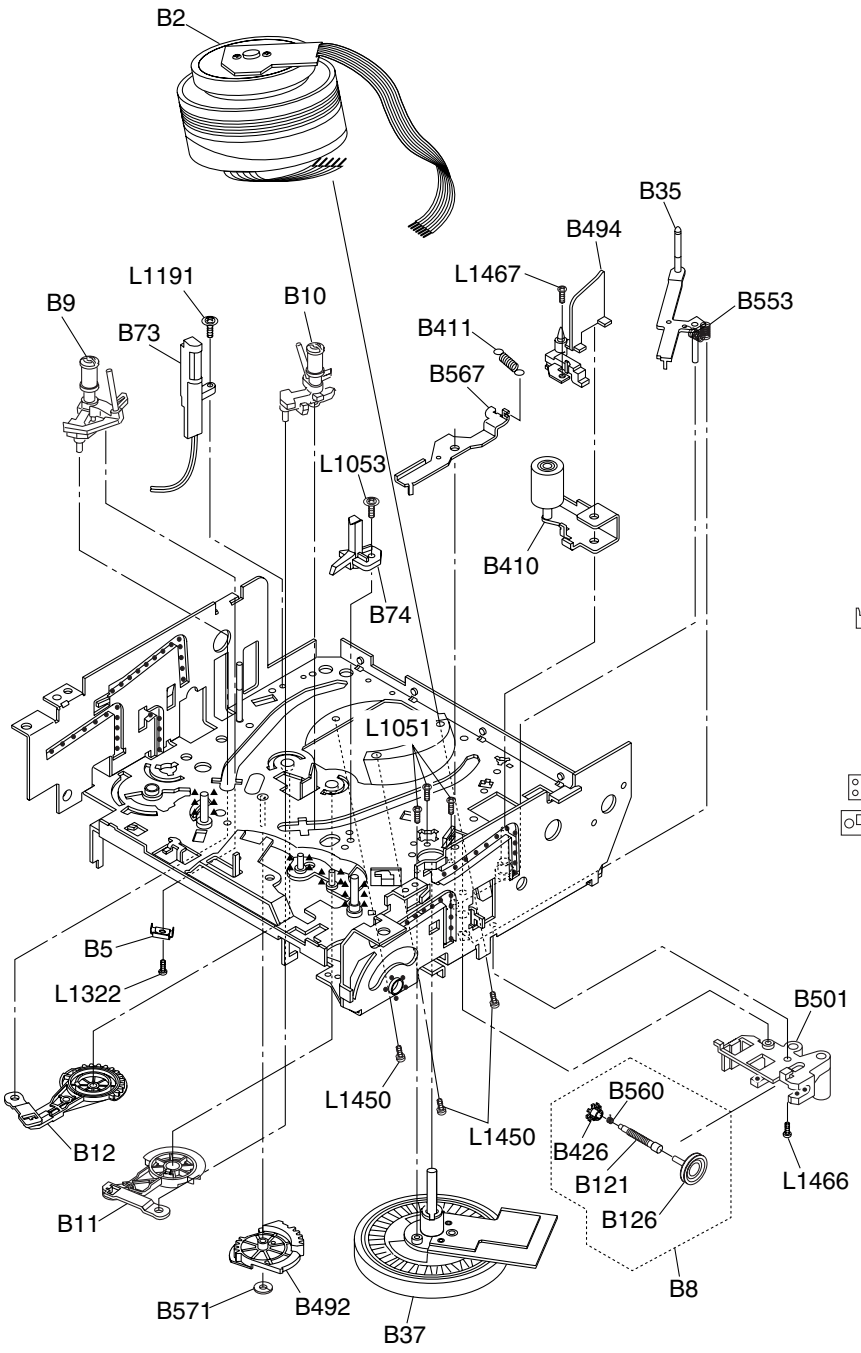


Fig. AL3

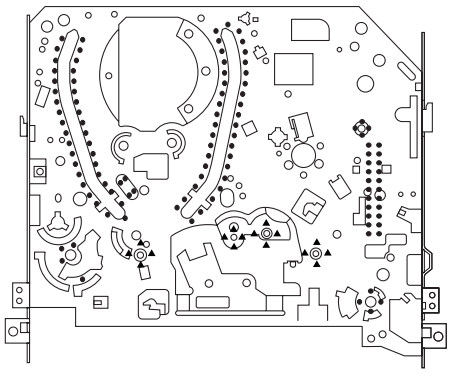
DECK EXPLODED VIEWS

Deck Mechanism View 1

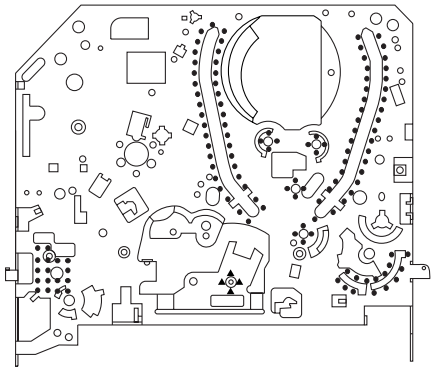
Mark	Description
●●●●●	Floil G-684G or Multemp MH-D (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150



Some Ref. Numbers are not in sequence.

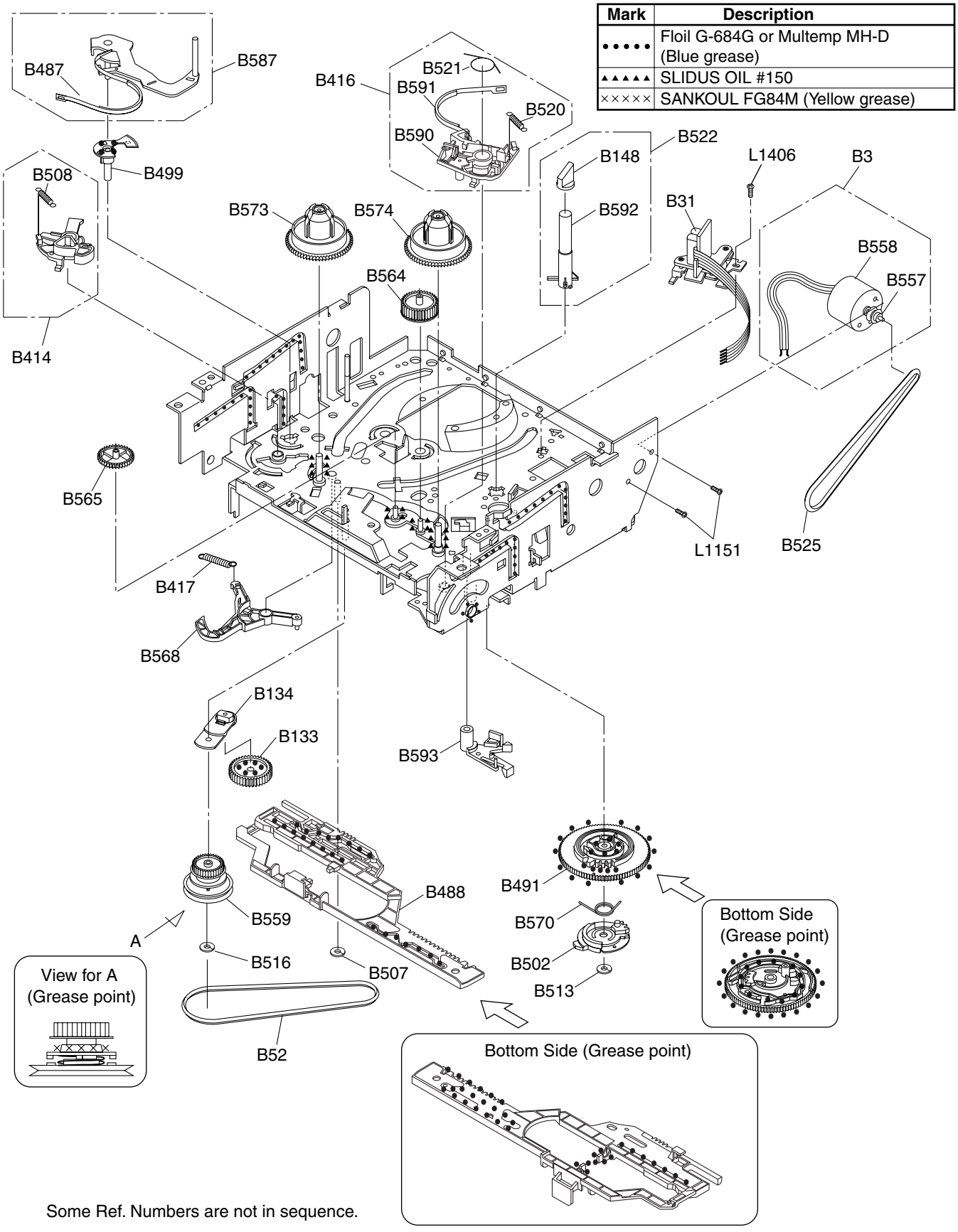


Chassis Assembly
Top View (Lubricating Point)



Chassis Assembly
Bottom View (Lubricating Point)

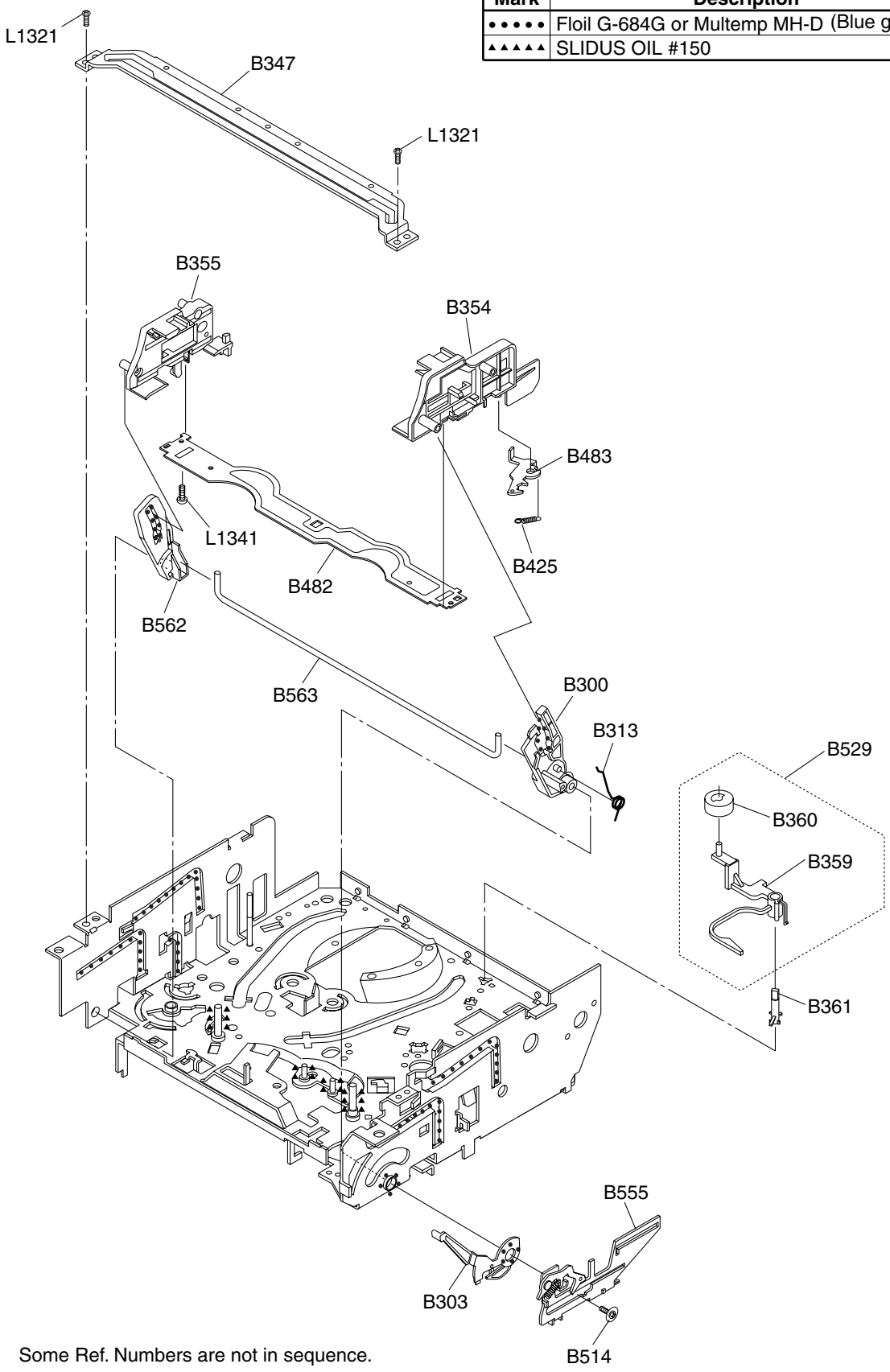
Deck Mechanism View 2



Some Ref. Numbers are not in sequence.

Deck Mechanism View 3

Mark	Description
●●●●●	Floil G-684G or Multemp MH-D (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150



Some Ref. Numbers are not in sequence.

MECHANICAL PARTS LIST - VCR MECHANISM

B2	9965 000 24171	CYLINDER ASSEMBLY MK12.5 NTSC 6H
B3	9965 000 23363	LOADING MOTOR ASSEMBLY MK12.5
B5	9965 000 24007	SLIDE PLATE MK12.5
B8	9965 000 17191	PULLEY ASSEMBLY MK12
B9	9965 000 23364	MOVING GUIDE S P.P MK12.5
B10	9965 000 23365	MOVING GUIDE T P.P MK12.5
B11	9965 000 16634	LOADING ARM(TU) ASSEMBLY MK12
B12	9965 000 16635	LOADING ARM(SP) ASSEMBLY MK12
B31	9965 000 23366	AC HEAD ASSEMBLY MK12.5
B35	9965 000 23382	TAPE GUIDE ARM ASSEMBLY MK12.5
B37	9965 000 23418	CAPSTAN MOTOR 288/VCZC1300
B52	9965 000 08593	CAP BELT MK10
B73	9965 000 12210	FE HEAD ASSEMBLY MK11
B73	9965 000 19628	FE HEAD MK12 (ALTERNATIVE)
B74	9965 000 08555	PRISM MK10
B121	9965 000 16640	WORM MK12
B126	9965 000 18128	PULLEY MK12
B133	9965 000 17193	IDLER GEAR MK12
B134	9965 000 17194	IDLER ARM MK12
B148	9965 000 12368	TG CAP MK11
B300	9965 000 16643	C DRIVE LEVER(TU) MK12
B303	9965 000 18129	F DOOR OPENER MK12
B313	9965 000 16645	C DRIVE SPRING MK12
B347	9965 000 08445	GUIDE HOLDER MK10
B354	9965 000 18130	SLIDER(TU) MK12
B355	9965 000 19630	SLIDER(SP) MK12
B359	9965 000 08449	CLEANER LEVER MK10
B360	9965 000 06561	CLEANER ROLLER MK9
B361	9965 000 08450	CL POST MK10
B410	9965 000 23370	PINCH ARM(A) ASSEMBLY(6) MK12.5
B411	9965 000 16649	PINCH SPRING MK12
B414	9965 000 23419	M BRAKE(SP) ASSEMBLY MK12.5
B416	9965 000 17196	M BRAKE(TU) ASSEMBLY MK12
B417	9965 000 23371	TENSION SPG(3002645) MK12
B425	9965 000 08457	LOCK LEVER SPRING MK10
B426	9965 000 08458	KICK PULLEY MK10
B482	9965 000 16653	CASSETTE PLATE MK12
B483	9965 000 16654	LOCK LEVER MK12
B487	9965 000 16655	BAND BRAKE(SP) MK12
B488	9965 000 23420	MODE LEVER MK12.5
B491	9965 000 17199	CAM GEAR(A) MK12
B492	9965 000 16658	MODE GEAR MK12
B494	9965 000 16659	C DOOR OPENER MK12
B499	9965 000 16660	T LEVER HOLDER MK12
B501	9965 000 16661	WORM HOLDER MK12
B502	9965 000 17200	CAM GEAR(B) MK12
B507	9965 000 05342	REEL WASHER MK9 5*2.1*0.5
B508	9965 000 08470	S BRAKE SPRING MK10
B513	9965 000 17201	CAM WASHER MK12
B514	9965 000 08641	SCREW RACK MK10
B516	9965 000 05342	REEL WASHER MK9 5*2.1*0.5
B520	9965 000 17202	TU BRAKE SPRING MK12
B521	9965 000 16662	REV BRAKE SPRING MK12
B522	9965 000 12373	TG POST ASSEMBLY MK11
B525	9965 000 12230	LDG BELT MK11
B529	9965 000 08504	CLEANER ASSEMBLY MK10
B553	9965 000 12233	REV SPRING MK11
B555	9965 000 16663	RACK ASSEMBLY MK12
B557	9965 000 08519	MOTOR PULLEY U5
B558	9965 000 23373	LOADING MOTOR M31E-1 R-14 7401
B559	9965 000 17204	CLUTCH ASSEMBLY MK12
B560	9965 000 08522	KICK SPRING MK10
B562	9965 000 16665	C DRIVE LEVER(SP) MK12
B563	9965 000 16666	SLIDER SHAFT MK12
B564	9965 000 17205	M GEAR MK12
B565	9965 000 17206	SENSOR GEAR MK12
B567	9965 000 16669	PINCH ARM(B) MK12
B568	9965 000 16670	BT ARM MK12
B570	9965 000 12240	CAM RACK SPRING(HI) MK11
B571	4822 532 13159	P.S.W. 1.6X4.0X0.5T
B573	9965 000 17208	REEL(SP)(D2) MK12
B574	9965 000 17209	REEL(TU)(D2) MK12
B587	9965 000 16674	TENSION LEVER ASSEMBLY MK12
B590	9965 000 18132	BRAKE ARM(TU) MK12
B591	9965 000 17210	BAND BRAKE(TU) MK12
B592	9965 000 17211	TG POST MK11
B593	9965 000 24172	CAM HOLDER ASSEMBLY MK12.5
L1051	9965 000 05359	SCREW, M2.6X6 PAN HEAD+
L1053	9965 000 05375	SCREW, M2.6X8 WASHER HEAD+
L1151	9965 000 08642	SCREW, SEMS M2.6X4 PAN +
L1191	9965 000 05375	SCREW, M2.6X8 WASHER HEAD+
L1321	4822 502 14009	M 3 X 6
L1322	9965 000 08645	SCREW, B-TIGHT M2.3X4 BIND HEAD+
L1341	9965 000 23375	SCREW, P-TIGHT M2X6 PAN HEAD+
L1406	9965 000 08643	AC HEAD SCREW MK9
L1450	4822 502 14671	SCREW M2.6X5
L1466	9965 000 05364	SCREW, M2.6X6 BIND HEAD+
L1467	9965 000 23376	SCREW M2.6X5 WASHER HEAD+

Note: Only the parts mentioned in this list are normal service spare parts.