SAMSUNG

SERVICE MANUAL

DVD-P355B

SAMSUNG ELECTRONICS

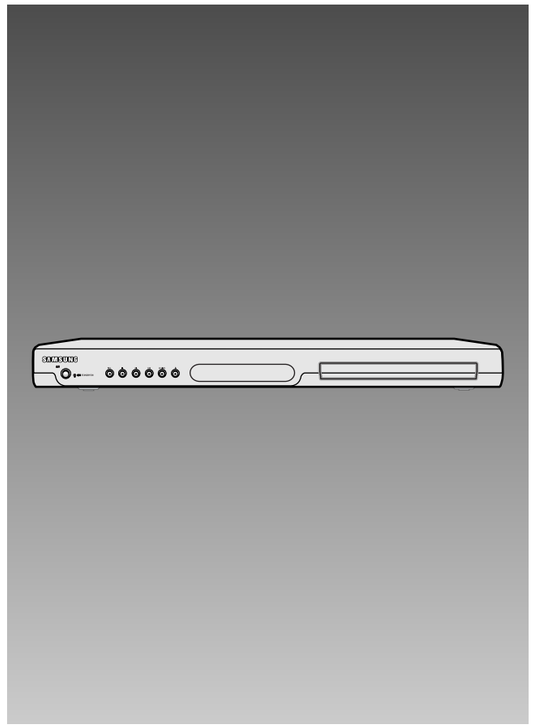
DVD PLAYER

Chassis : Spino

DVD-P355B/XEU, XET, XEE, SED, XEO, XEC, XEL, FOU, XEG, XEH, XEV

SERVICE Manual

DVD PLAYER



Merit & Character regarding Product

1. 41mm With LED Module
2. Playback MPEG4 DVD-Audio
3. ZORAN Vaddis7 1-Chip Solution

Printed in Korea
AK82-0000929A

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1. Precautions

1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1)Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.
(2)When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings through which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.
Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.
Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.

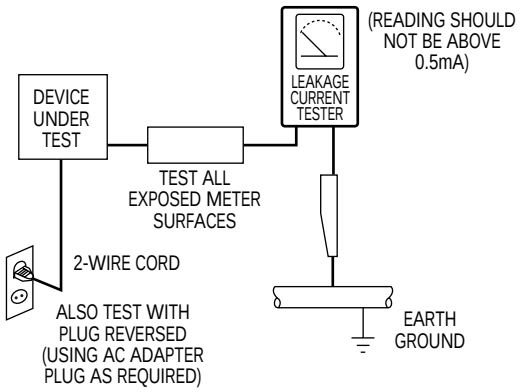


Fig. 1-1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repaired and rechecked before it is returned to the customer. See Fig. 1-2.

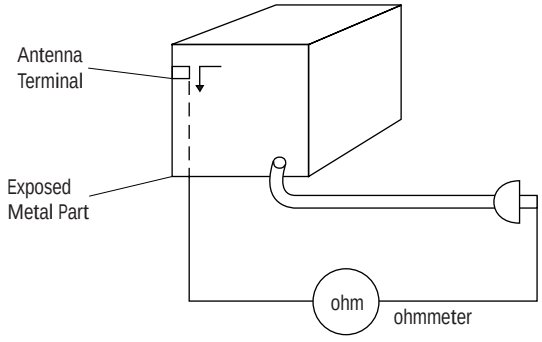


Fig. 1-2 Insulation Resistance Test

2) Read and comply with all caution and safety related notes on or inside the cabinet, or on the chassis.

3) Design Alteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas:
(1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring, Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.

5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/ or wiring that meet original specifications.
Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6) 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 shading, an (⚠)or a (⚠)on schematics and 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. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

CAUTION : Before servicing units covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note : If unforseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) re-moving or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.

c. Do not apply AC power to this instrument and /or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Note : Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength.
When replacing components, use components which have the same ratings. Components identified by shading, by(⚠) or by (⚠) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts(see note) should be more than 1 Megohm.

Note : Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.

1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

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

(1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

(2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

(3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

(4) Use only an anti-static solder removal devices. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESD devices.

(5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

(6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

(7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

(8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

1-4 Handling the optical pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)

(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.

(3) Place your hands on the conductive sheet(This gives them the same ground as the sheet.)

(4) Remove the optical pick up block

(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

- Be sure to put on a wrist strap grounded to the sheet.
- Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

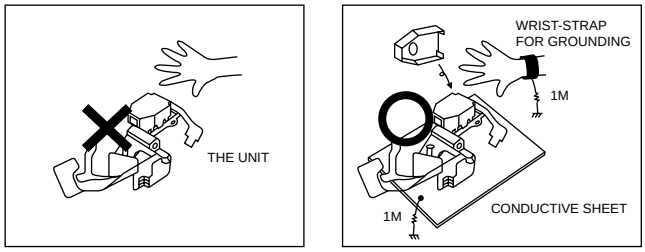


Fig.1-3

(6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)

(7) After replacing the Pick-up, open the short terminal on the PCB.

1-5 Pick-up disassembly and reassembly

1-5-1 Disassembly

1) Remove the power cord.
2) Disassemble the Deck-Assy.
3) Make solder land 2 points short on Pick-up.
   (See Fig. 1-4)
4) Disassemble the Pick-up.

1-5-2 Assembly

1) Replace the Pick-up.
2) Remove the soldering 2 points on Pick-up.
3) Reassemble the Deck-Assy.

Note : If the assembly and disassembly are not done in correct sequence, the Pick-up may be damaged.

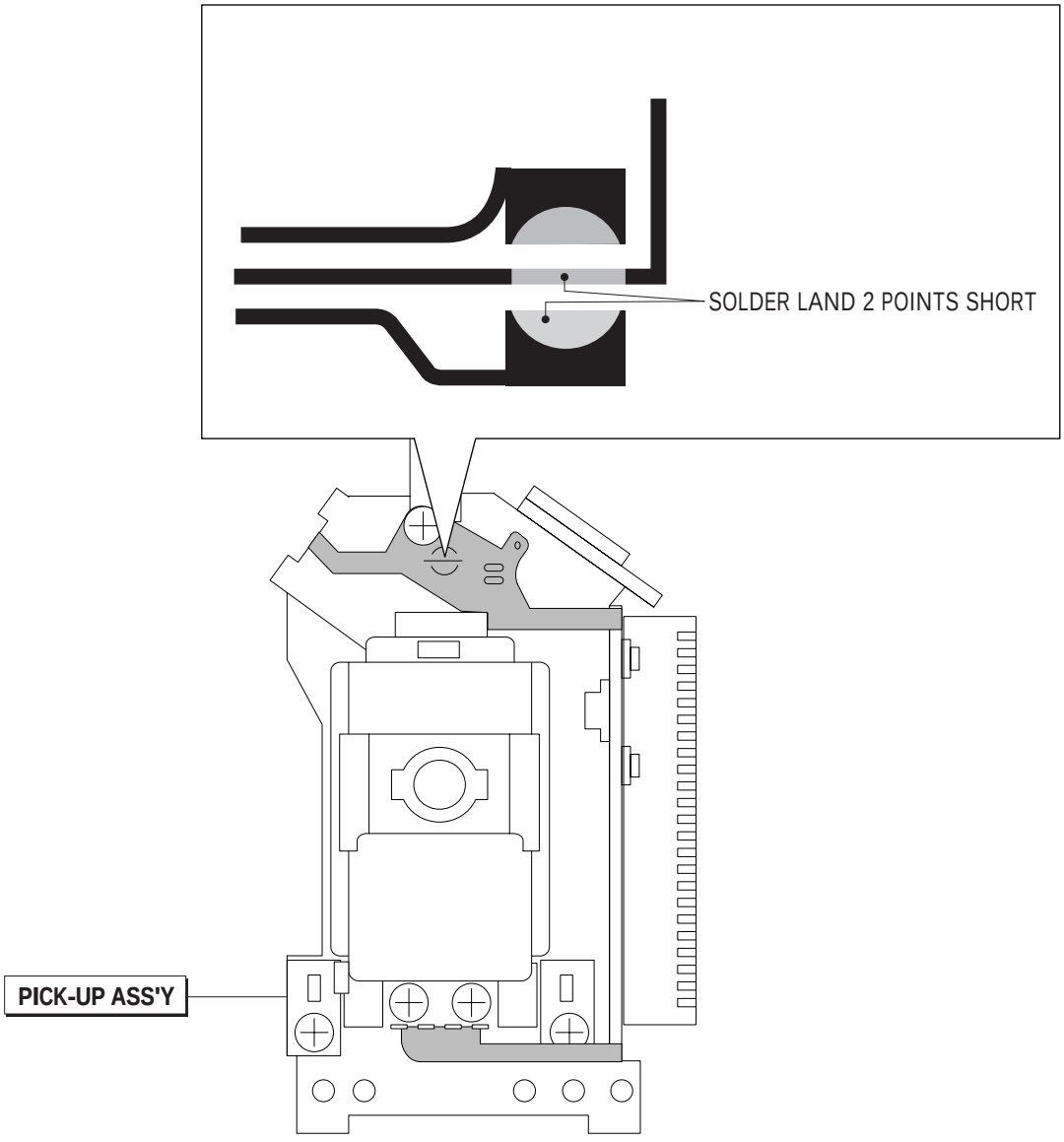


Fig. 1-4

2. Product Specification

2-1 Product Specification

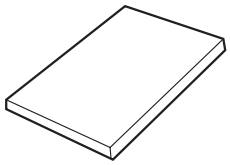
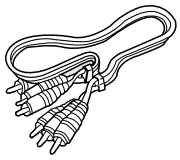
General	Power Requirements	AC230V, 50Hz
	Power Consumption	10W
	Weight	1.7Kg
	Dimensions	430mm (W) x 207mm (D) x 42mm (H)
	Operating Temperature Range	+5°C to 35°C
	Operating Humidity Range	10% to 75%
Disc	DVD (Digital Versatile Disc)	Reading Speed : 3.49 ~ 4.06m/sec. Approx. Play Time (Single Sided, Single Layer Disc) : 135min.
	CD : 12Cm (Compact Disc)	Reading Speed : 4.8 ~ 5.6m/sec. Maximum Play Time : 74min.
	CD : 8cm (Compact Disc)	Reading Speed : 4.8 ~ 5.6m/sec. Maximum Play Time : 20min.
	VCD : 12Cm	Reading Speed : 4.8 ~ 5.6m/sec. Maximum Play Time : 74min. (Video+Audio)
Video Output	Composite Video	1 channel ; 1.0Vp-p (75ohm load)
	SCART Jack	R (Red) : 0.7 Vp-p (75ohm load) G (Green) : 0.7 Vp-p (75ohm load) B (Blue) : 0.7 Vp-p (75ohm load) Composite Video : 1.0 Vp-p (75ohm load) Luminance Signal : 1.0 Vp-p (75ohm load) Color Signal : 0.3 Vp-p (75ohm load)
	Component Video	Y: 1.0 Vp-p (75ohm load) Pr: 0.70 Vp-p (75ohm load) Pb: 0.70 Vp-p (75ohm load)
	S-Video	Luminance Signal : 1.0Vp-p (75ohm load) Chrominance Signal : 0.3Vp-p (75ohm loa)
	HDMI	High Definition Multimedia Interface (576p, 720p, 768p, 1080i)
Audio Output	SCART Jack	2 Channel : L(1/L), R(2/R)
	2 Channel	L(1/L), R(2/R)
	*Ferquency Response	48KHz Sampling : 4Hz to 22KHz 96KHz Sampling : 4Hz to 44KHz
	*S/N Ratio	110dB
	*Dynamic Range	100dB
	*Total Harmonic Distortion	0.004%

* : Nominal specification

2-2 Chassis Product Specification

MODEL	DVD-P250K/XSS	DVD-P255K/XSS	DVD-P350K/XSS	DVD-P355K/XAX
FLASH	2M	2M	2M	2M
RF	X	X	Ti-D	Ti-D
DRIVE	FAN8026	FAN8026	FAN8026	FAN8026
A/V DECODER	ZR36862	ZR36862	ZR36778	ZR36778
6dB_AMP	LA73054	LA73054	LA73054	LA73054
AUDIO DAC	PCM1753	PCM1753	PCM1753	PCM1753
AUDIO ADC	M65855P	M65855P	M65855P	M65855P
FRONTMICOM	eFHP5842	eFHP5842	eFHP5842	eFHP5842
MIC INPUT	1MIC	2MIC	1MIC	2MIC
NTSC	O	O	O	O
Default	PAL	PAL	PAL	NT
SCARTOUT	X	X	X	X
PSO	MULTI	MULTI	MULTI	MULTI
DTS	2CH/DIGI	2CH/DIGI	2CH/DIGI	2CH/DIGI
D-AUDIO	X	X	X	O
MPEG4	X	X	O	O
MP3	O	O	O	O
P-CD	O	O	O	O
WMA	O	O	O	O
VCD	O	O	O	O
SVCD	O	O	O	O
MEMORY CARD	X	X	X	X

2-3 Option Product Specification

Description Fig	Description	Parts No	Remark
	Remote Control	AK59-00011K	Model Stamdard of DVD-P355B/XEL
	Batteries for Remote Control (AAA Size)	AC43-12002H	Model Stamdard of DVD-P355B/XEL S.N.A
	User 's Manual	AK68-00632G	Model Stamdard of DVD-P355B/XEL
	Video/Audio Cable	AC39-42001R	Model Stamdard of DVD-P355B/XEL

3. Alignment and Adjustment

3-1 Location of Test Point

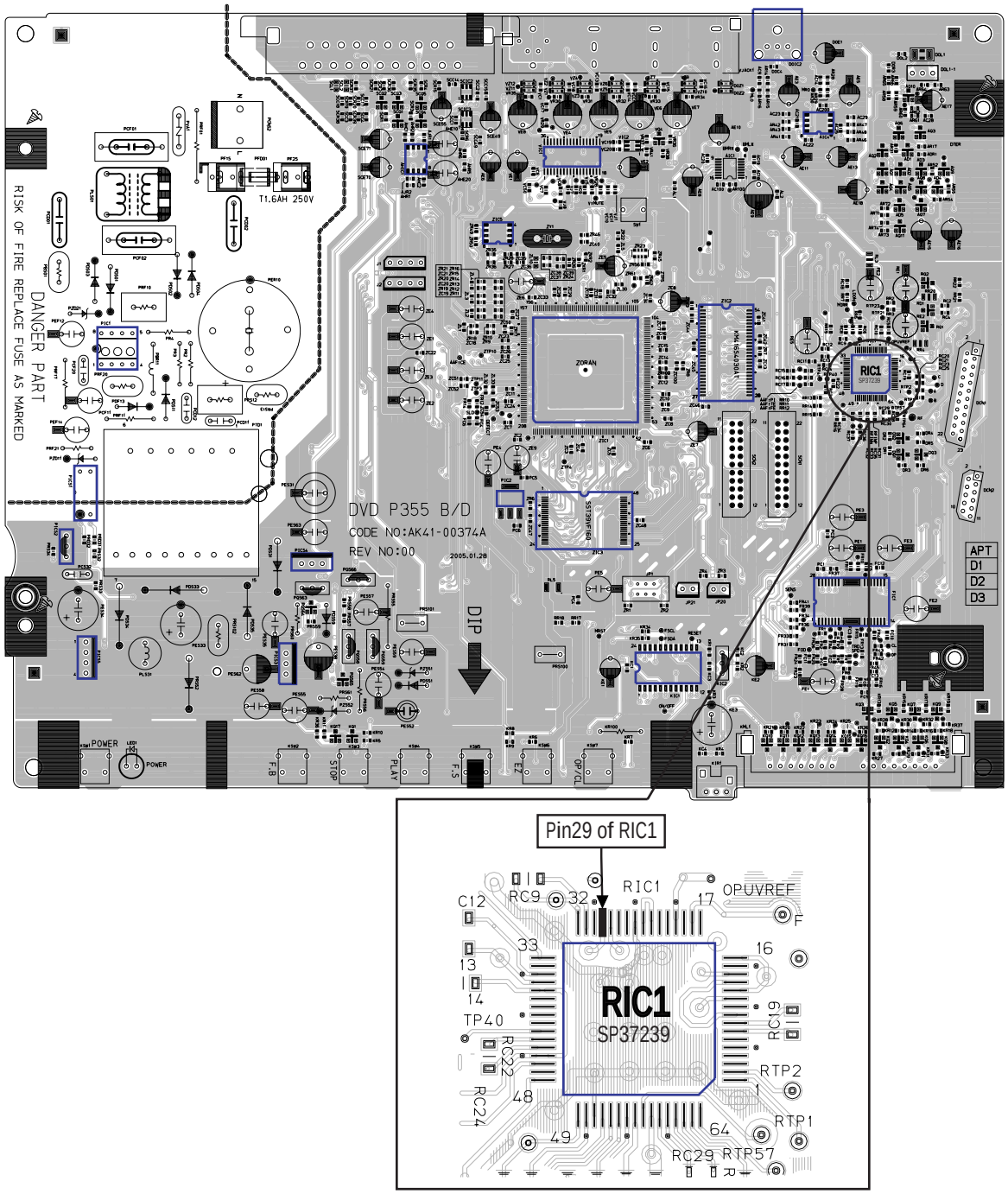


Fig. 3-1 Location of Test Point

3-2 Skew Adjustment

3-2-1 Adjustment Spec. and Test Point

<Table 3-1>

◆ Test Disc ; Service not Available

Test Disc	Adjustment Spec.	Test Point	Adjustment Location
TDV-533 Chapter 14	Flat Waveform	"Pin 29 of RIC1" (Main PCB - Component Side) (See Fig. 3-1)	Screw A / B Ass'y Deck - Top Side (See Fig. 3-2)

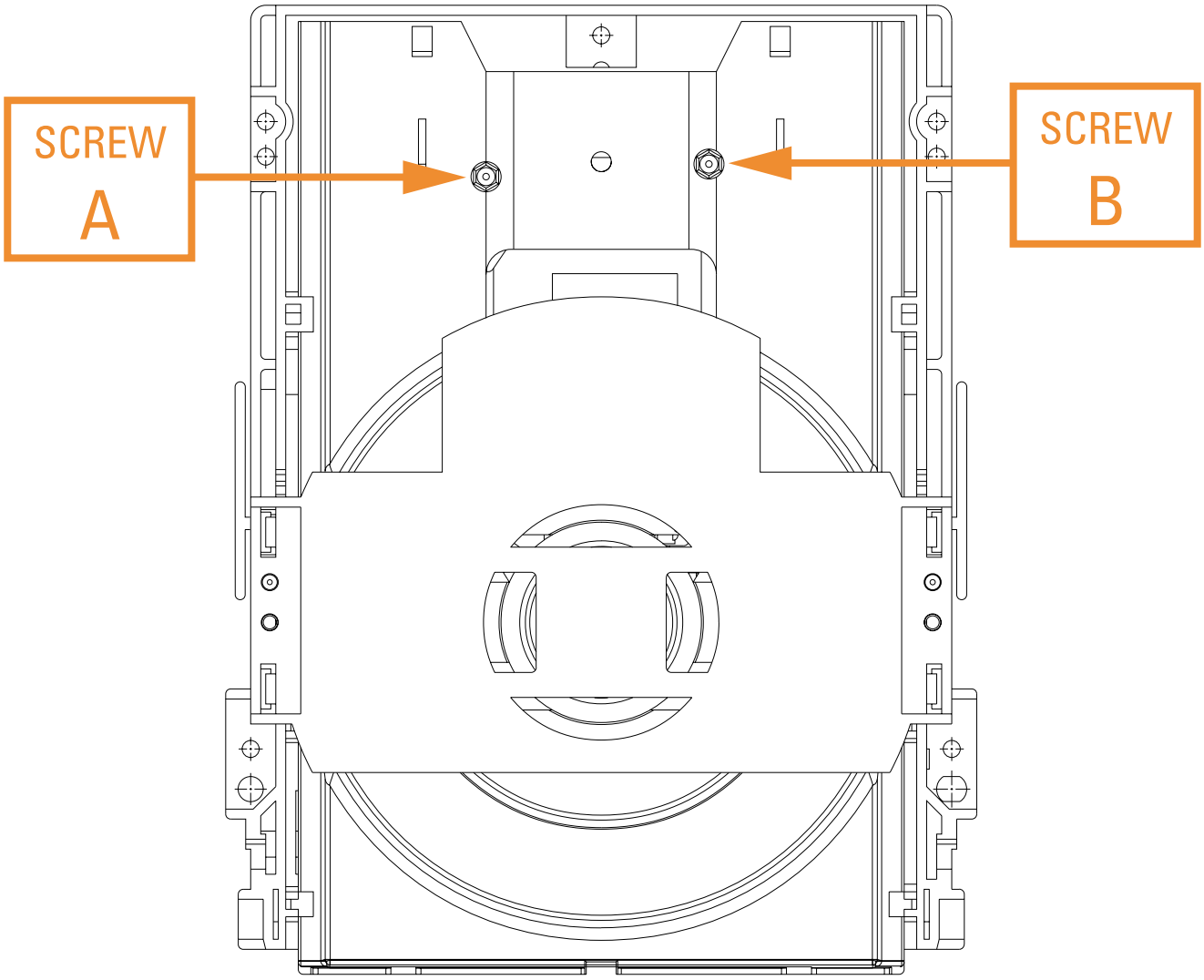


Fig. 3-2 Ass'y Deck (Top Side)

3-2-2 SKEW Adjustment Method

Needed to minimize the variations in Skew of the Pickup unit and to provide optimum match with the recorded signal on the Disc.

1) Connect an Oscilloscope to the “Pin 29 of RIC1” Test Point (See Fig. 3-1)
2) Connect Power, Open the Tray and Play the Ch.14 whish is in the TDV-533 Disc.
   ◆ Set the Oscilloscope Range as follows :
   (Voltage ; 20mV / Div., Frequency ; 10m Sec.)
3) Adjust the Screws “A” and “B” (See Fig. 3-2) using a Hex screwdriver until you obtain a Flat Waveform and the picture is stable.
   Then, go to Chapter 1 and make sure the Waveform is Flat here as well.
   If not, you have to go back to Chapter 14 and adjust again.
   If you cannot obtain a Flat waveform, then the unit is defective.

Note : The Deck must be in a horizontal position. Use both “A” and “B” screws to adjust.

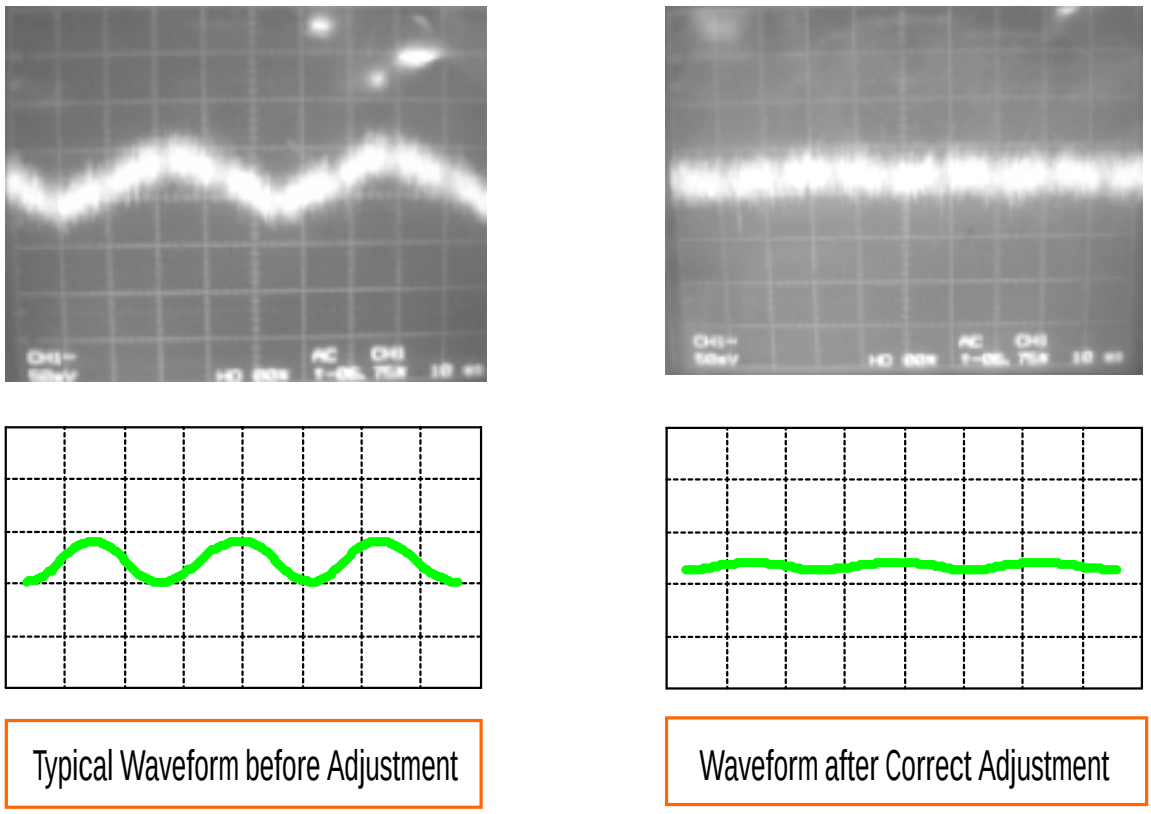


Fig.3-3 Envelope Waveform

4. Disassembly and Reassembly

4-1 Cabinet and PCB

Note : Reassembly in reverse order.

4-1-1 Top Cabinet Removal

1) Remove 3 Screws ❶ the back Top Cabinet.
2) Lift up the Top Cabinet in direction of arrow.

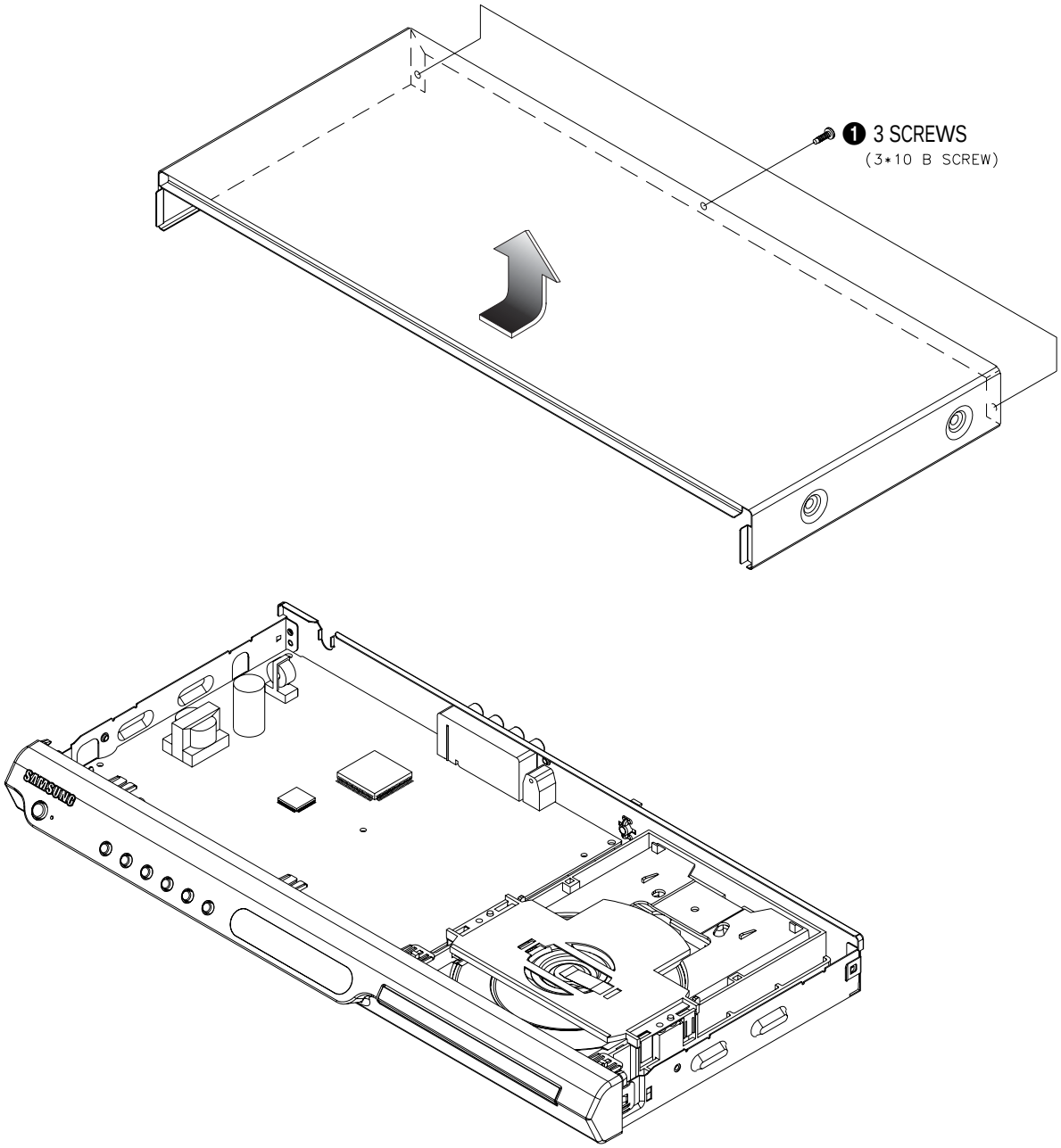


Fig. 4-1 Top Cabinet Removal

4-1-2 Door-Tray Removal

1) Supply power and open Tray ❶.
2) Disassemble the Door-Tray ❷ in direction of arrow “A”.
3) Close Tray ❶ and power off.

Note : If Tray ❶ doesn’t open, insert a Screw driver ❹ into the Emergency hole ❸ (as shown in detailed drawing) and then push it in the direction of arrow “B”. Open Tray manually.

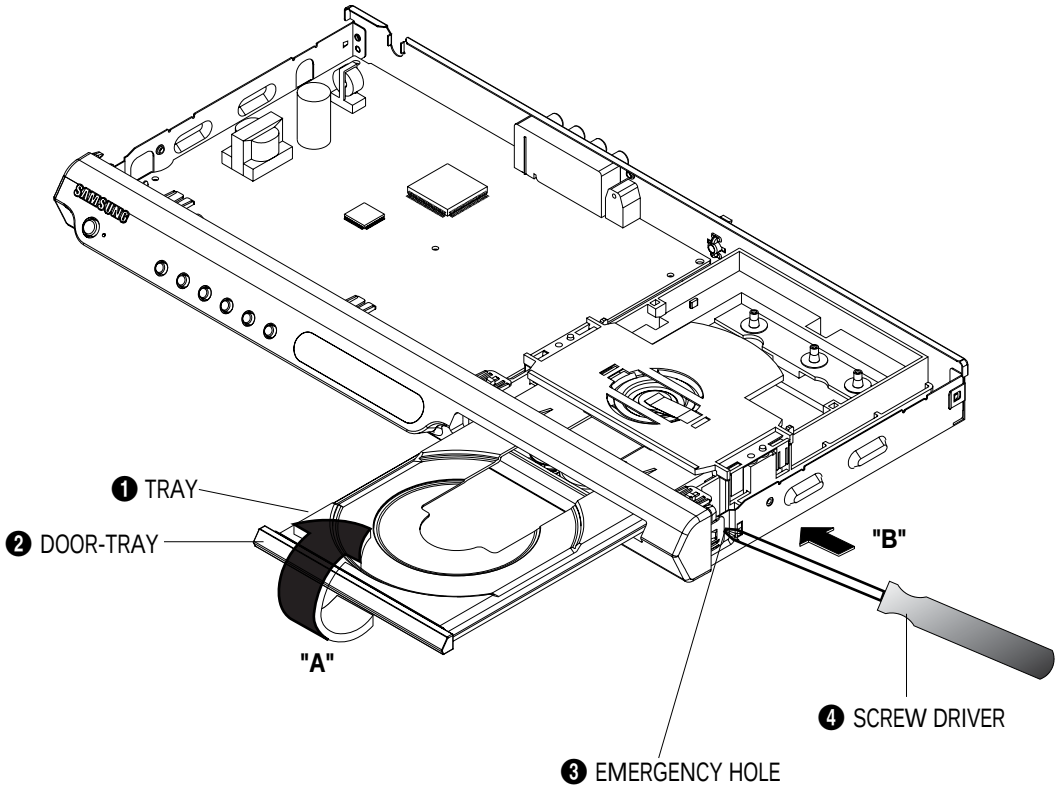


Fig. 4-2 Door-Tray Removal

4-1-3 Ass'y Front-Cabinet Removal

1) Release 6 Hooks ❶, ❷, ❸, ❹ and Remove the Ass'y Front-Cabinet ❺.

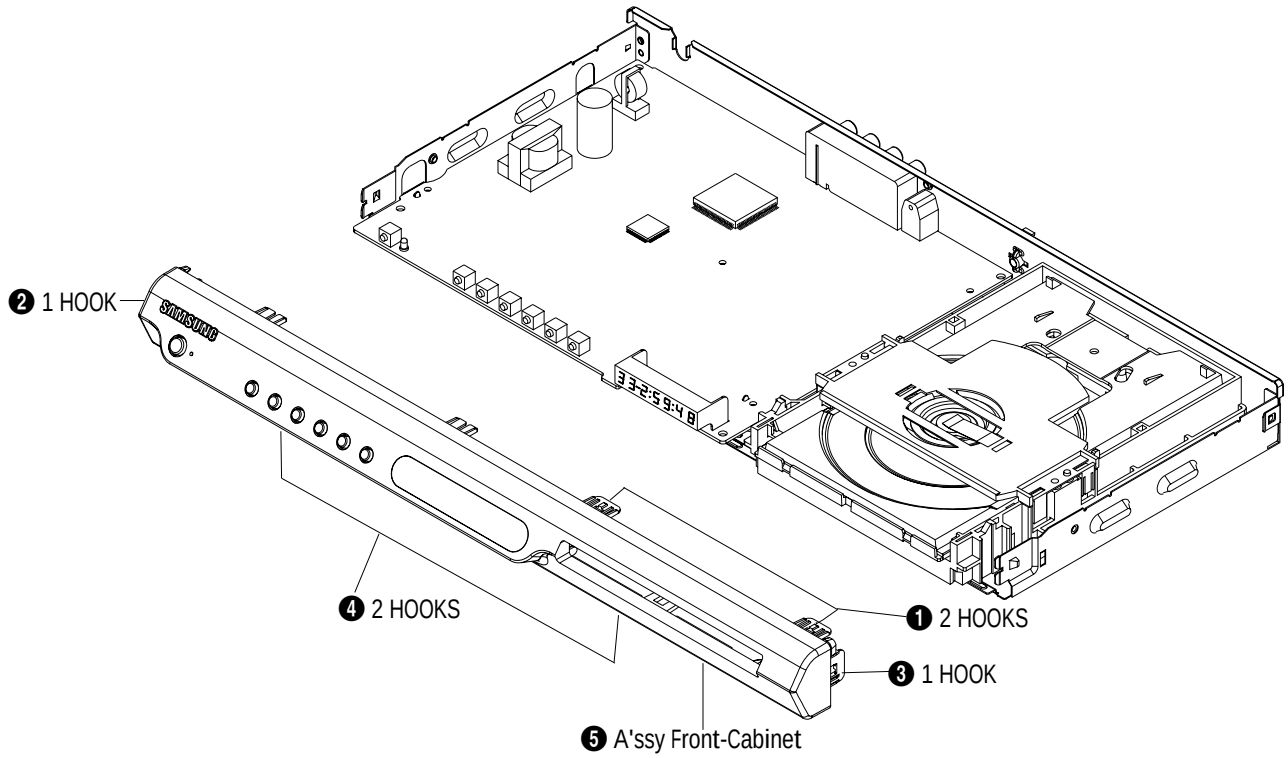


Fig.4-3 Ass'y Front-Cabinet Removal

4-1-4 Ass'y Deck Removal

1) Disconnect Flat-Cable from DCN1, DCN2 on Main PCB.
2) Remove 3 Screws ❶ from the Ass'y Deck and lift it up.

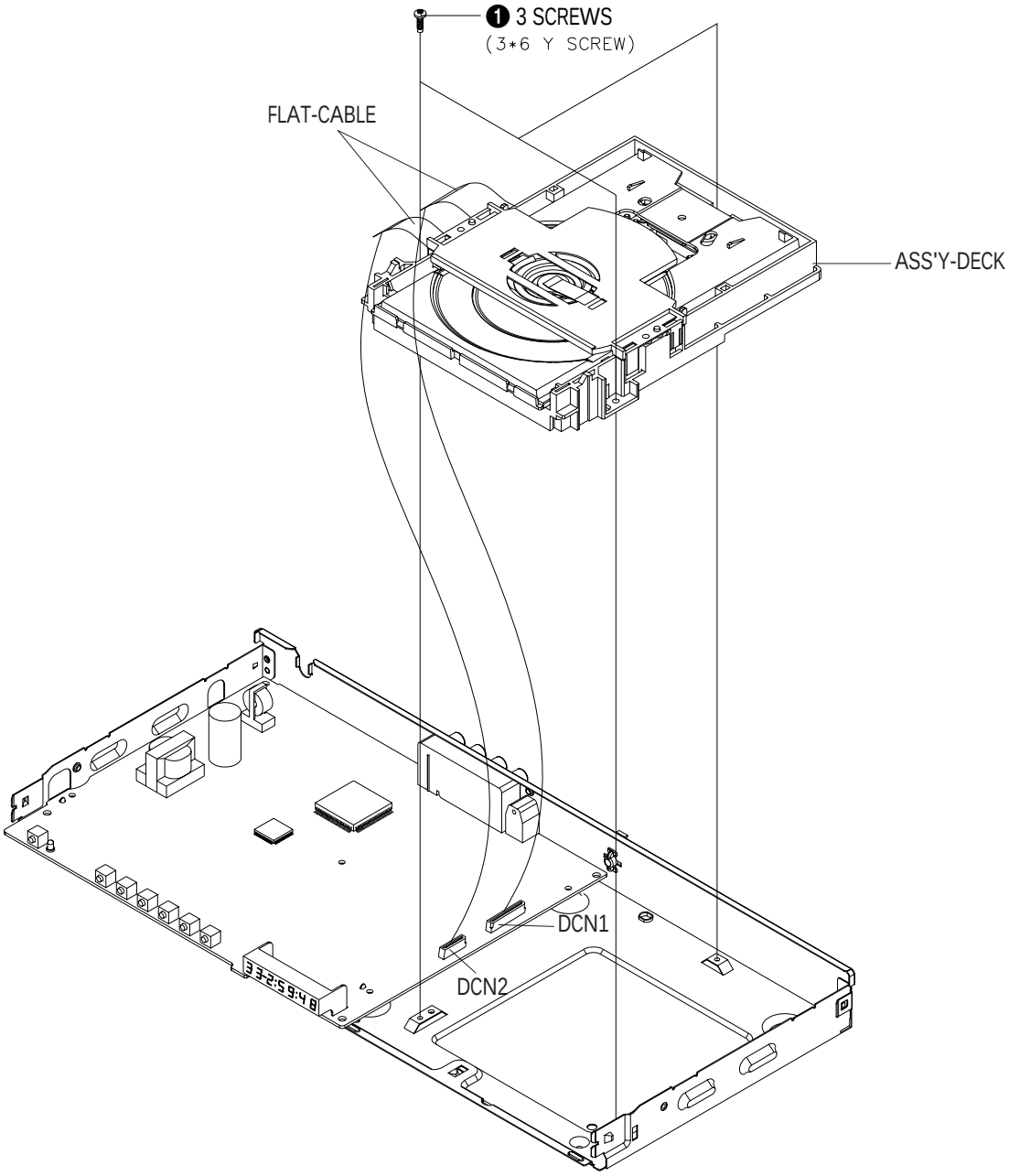


Fig. 4-4 Ass'y Deck Removal

4-1-5 Main PCB Removal

1) Remove 4 Screws ❶.
2) Lift up the Main PCB ❷.

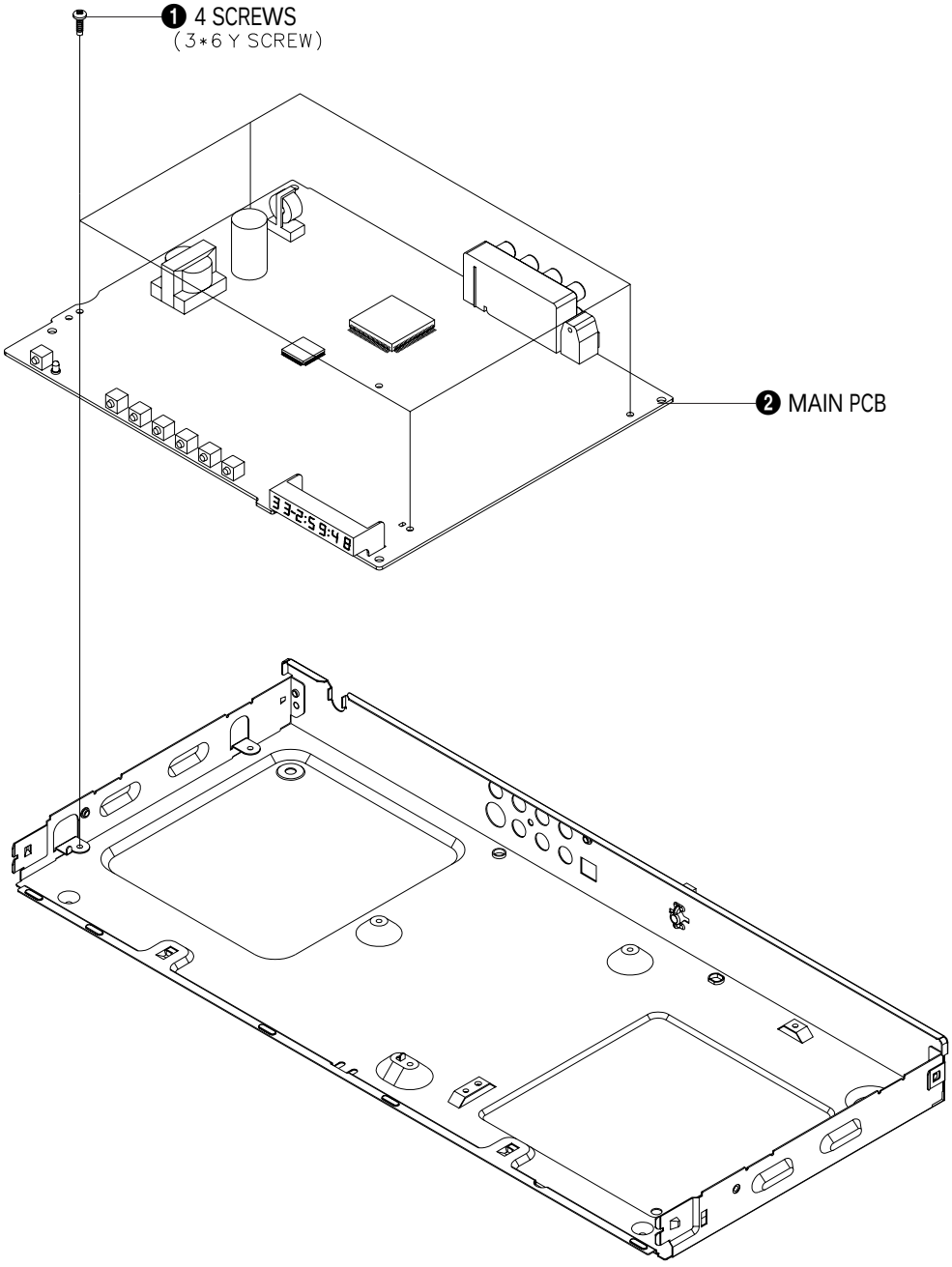


Fig. 4-5 Main PCB Removal

4-2 Deck

4-2-1 Holder Chuck Removal

1) Push 4 Hooks ❶ in the direction of arrow “A” and lift up the Holder Chuck ❷.

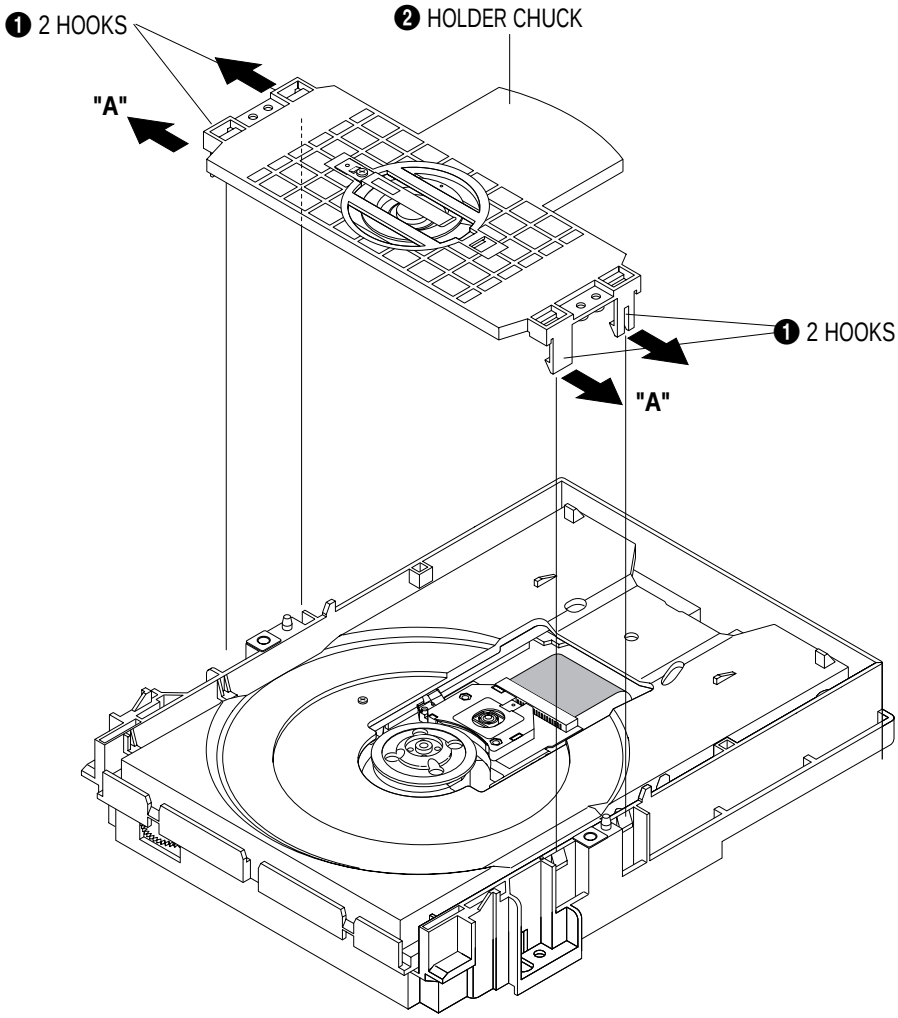


Fig. 4-6 Holder Chuck Removal

4-2-2 Tray Disc Removal

1) Insert a Screw Driver ❶ into Emergency Hole ❷ and push the Slider Housing ❸ in the direction arrow “A”.
2) When the Tray Disc ❹ comes out a little, pull it in the direction arrow “B” by hand.

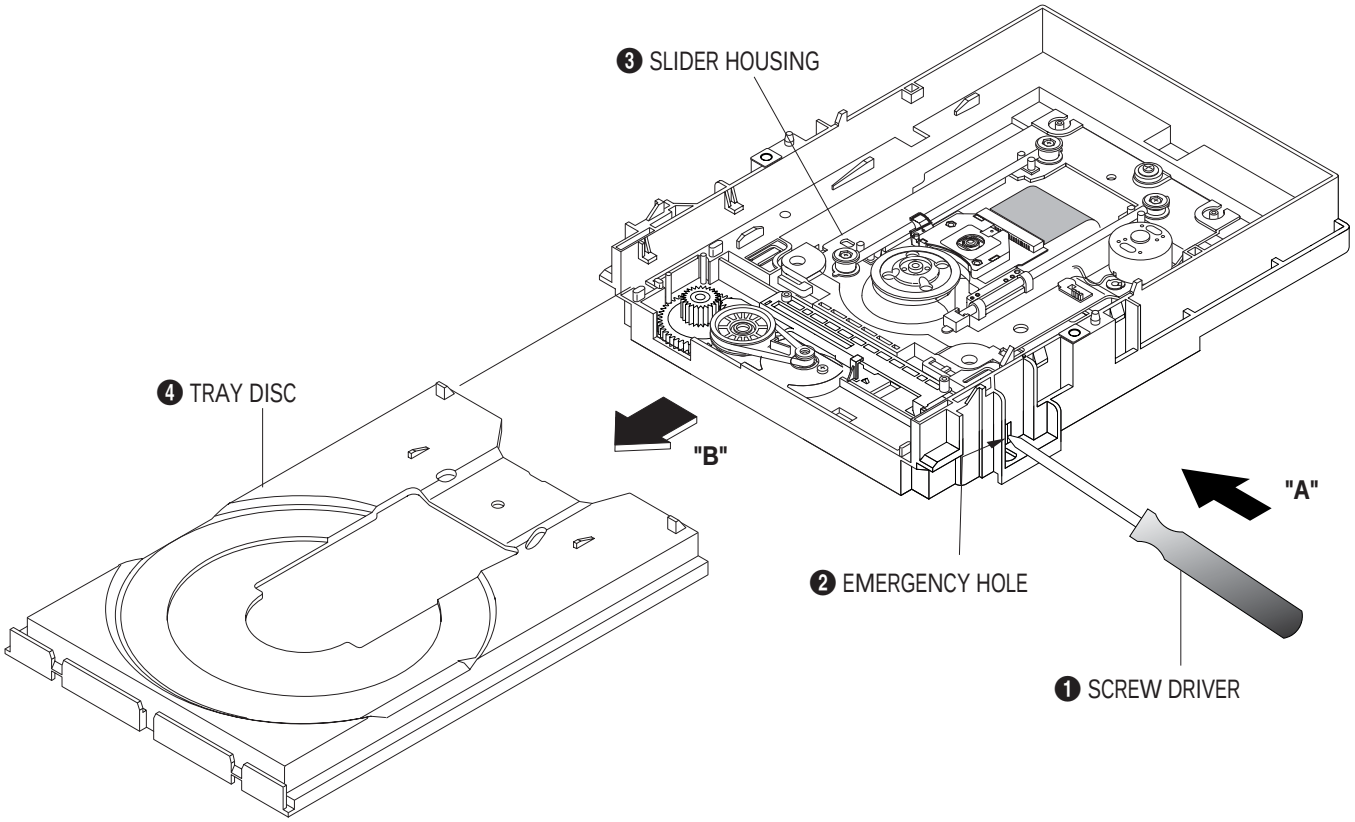


Fig.4-7 Tray Disc Removal

4-2-3 Assy P/U Deck Removal

1) Remove the 4 Soldering ❶ (SL+, SL-, SP+, SP-).
2) Remove the 1 Screw ❷ and lift up the Ass'y P/U Deck ❸

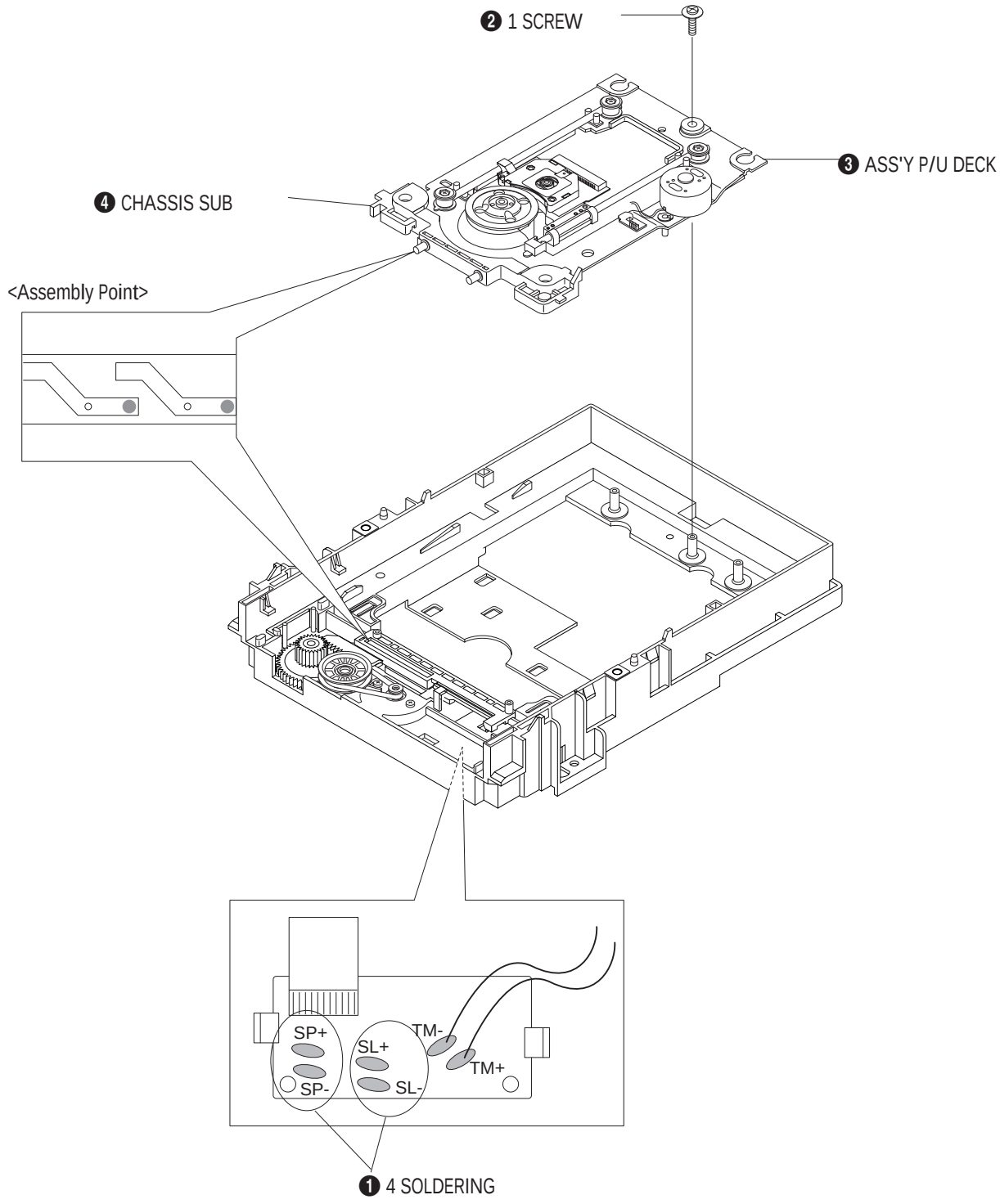


Fig. 4-8 Assy P/U Deck Removal

4-2-4 Ass'y Housing Removal

1) Remove the 2 Soldering ❶. (TM+, TM-)
2) Push the 2 Hooks ❷ in the direction of arrow "A" and remove Ass'y PCB Deck ❸.
3) Push the Slider Housing ❹ in the direction arrow "B".
4) Push the 1 Hook ❺ in the direction of arrow "C" and lift up the Slider Housing ❹.
5) Remove the Belt Pulley ❻ and 2 Screws ❼, Ass'y Motor Load ❽.
6) Push the 1 Hook ❾ in the direction of arrow "D" and lift up the Gear Pulley ❿, Gear Tray ⓫.

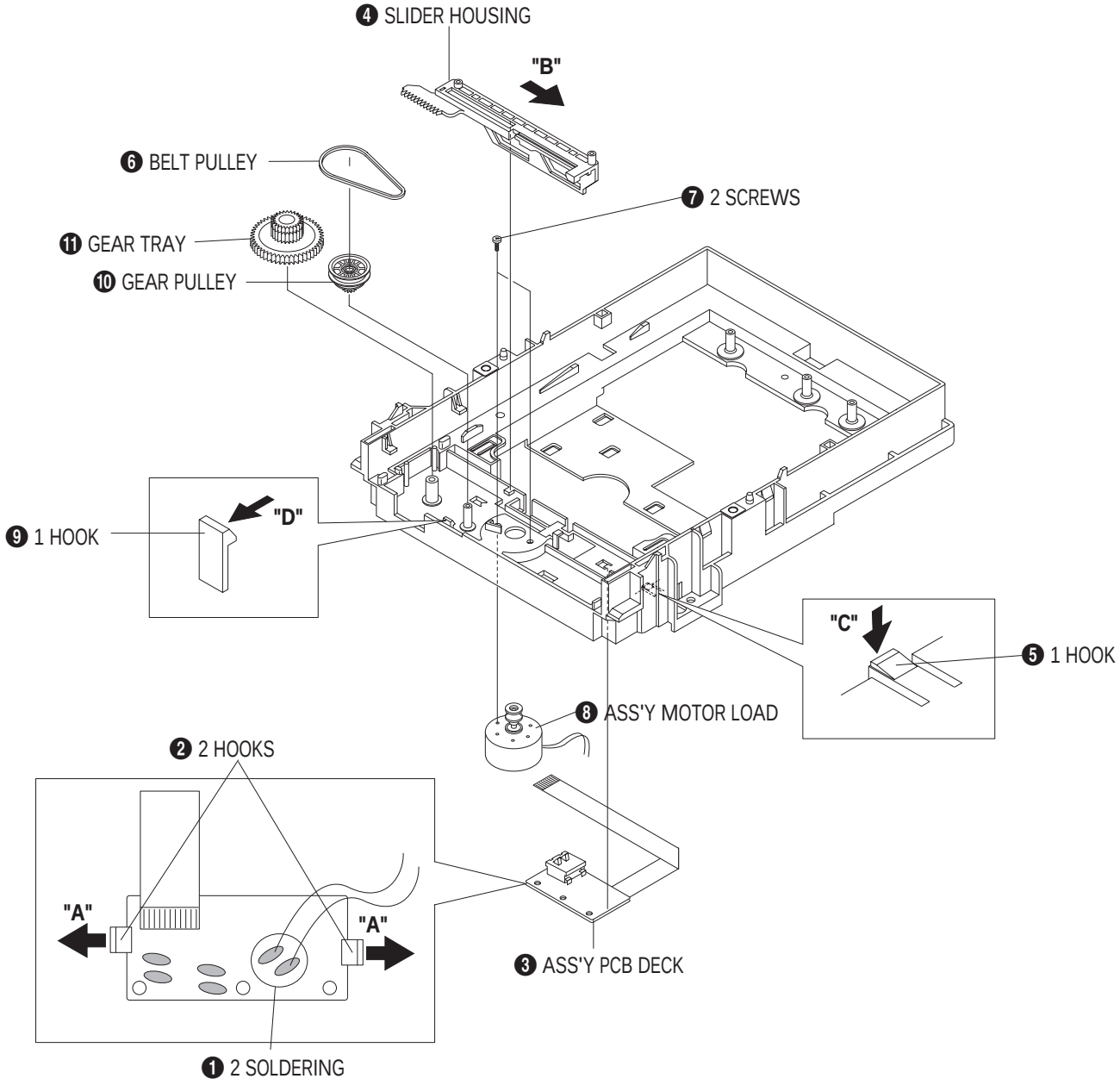


Fig. 4-9 Ass'y Housing Removal

4-2-5 Ass'y Bracket Deck Removal

1) Push the Hook ❶ in the direction of arrow "A" and lift up the Gear Feed B ❷.
2) Push the Hook ❸ in the direction of arrow "B" and lift up the Gear Feed B ❹.
3) Remove the 2 Screws ❺ and lift up Motor Feed Ass'y ❻.
4) Remove the 2 Screws ❼ and lift down Motor Spindl Ass'y ❽.
5) Remove the 3 Screws ❾ and remove 3 Holder Cam Skew ❿, Shaft Pick Up ⓫, Ass'y Pick Up ⓬.
6) Remove the 1 Screws ⓮ and remove Gear Back Lash ⓯.

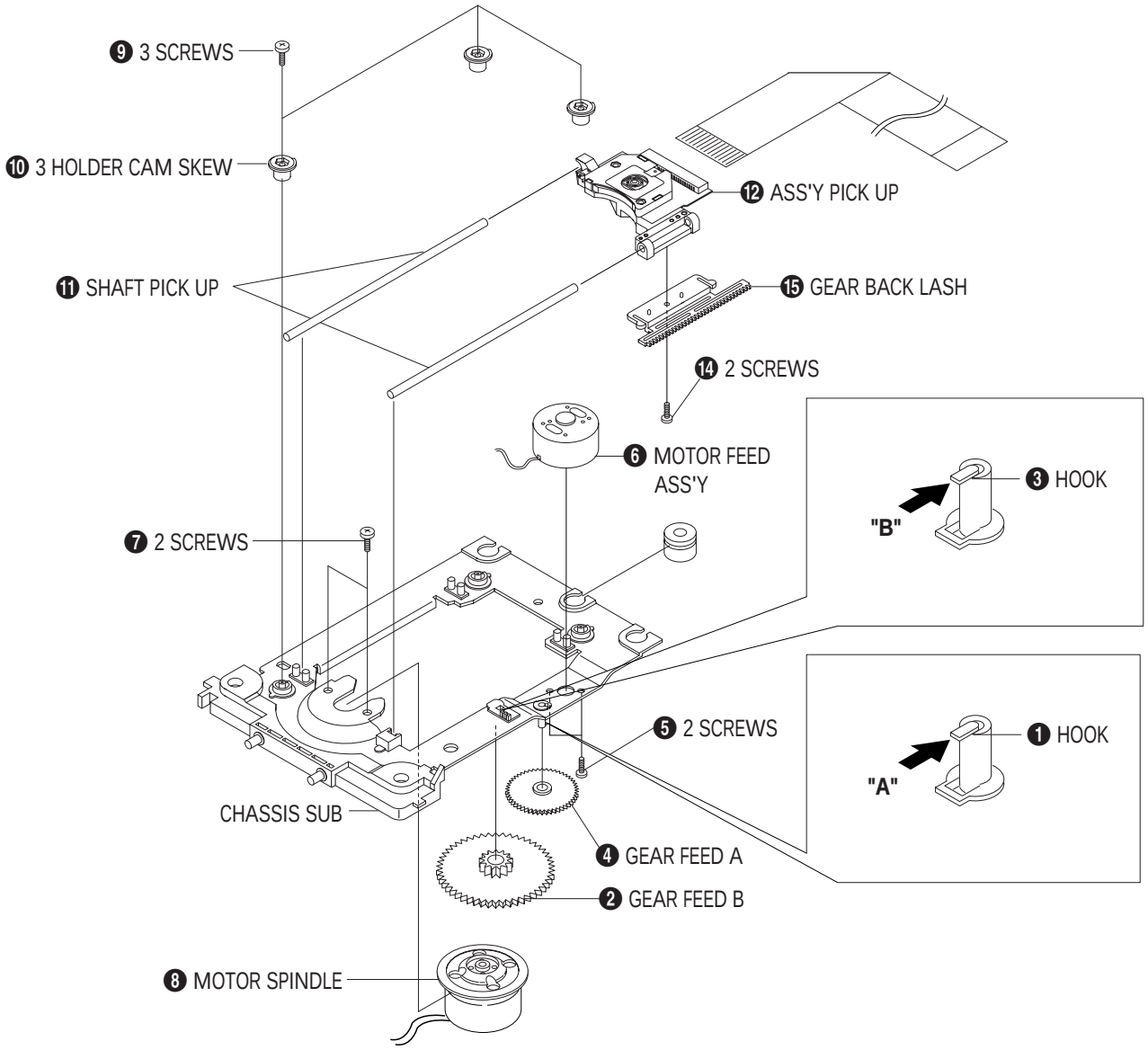
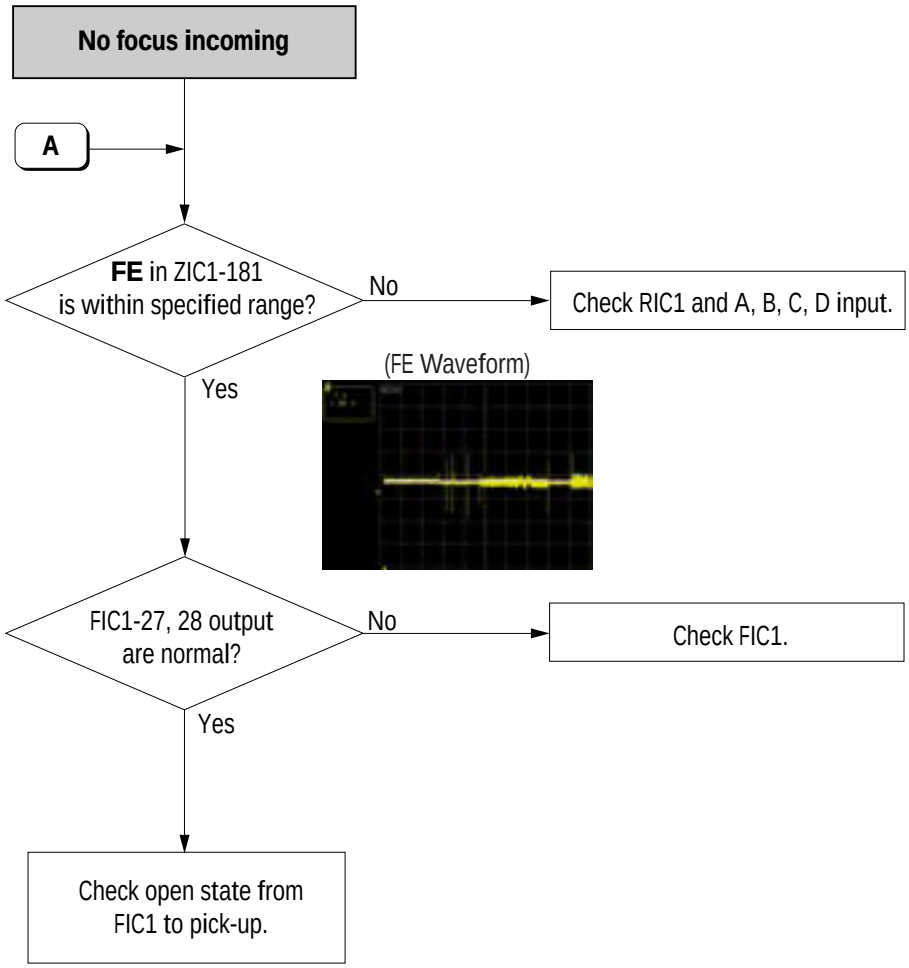
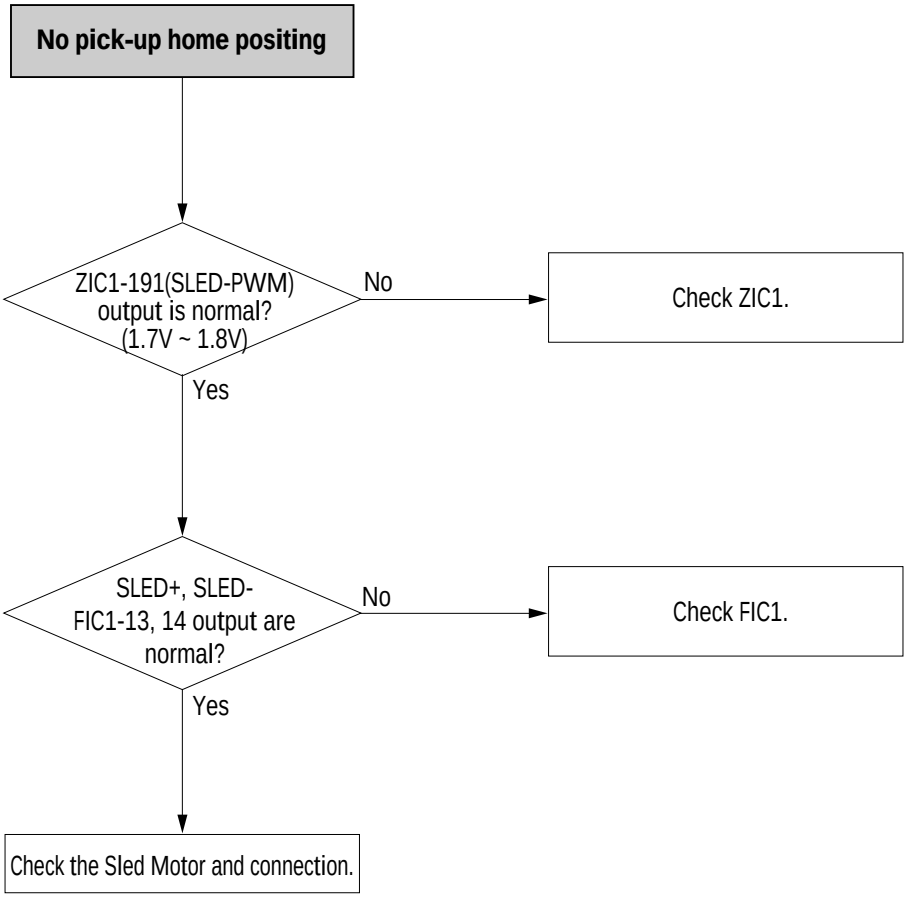
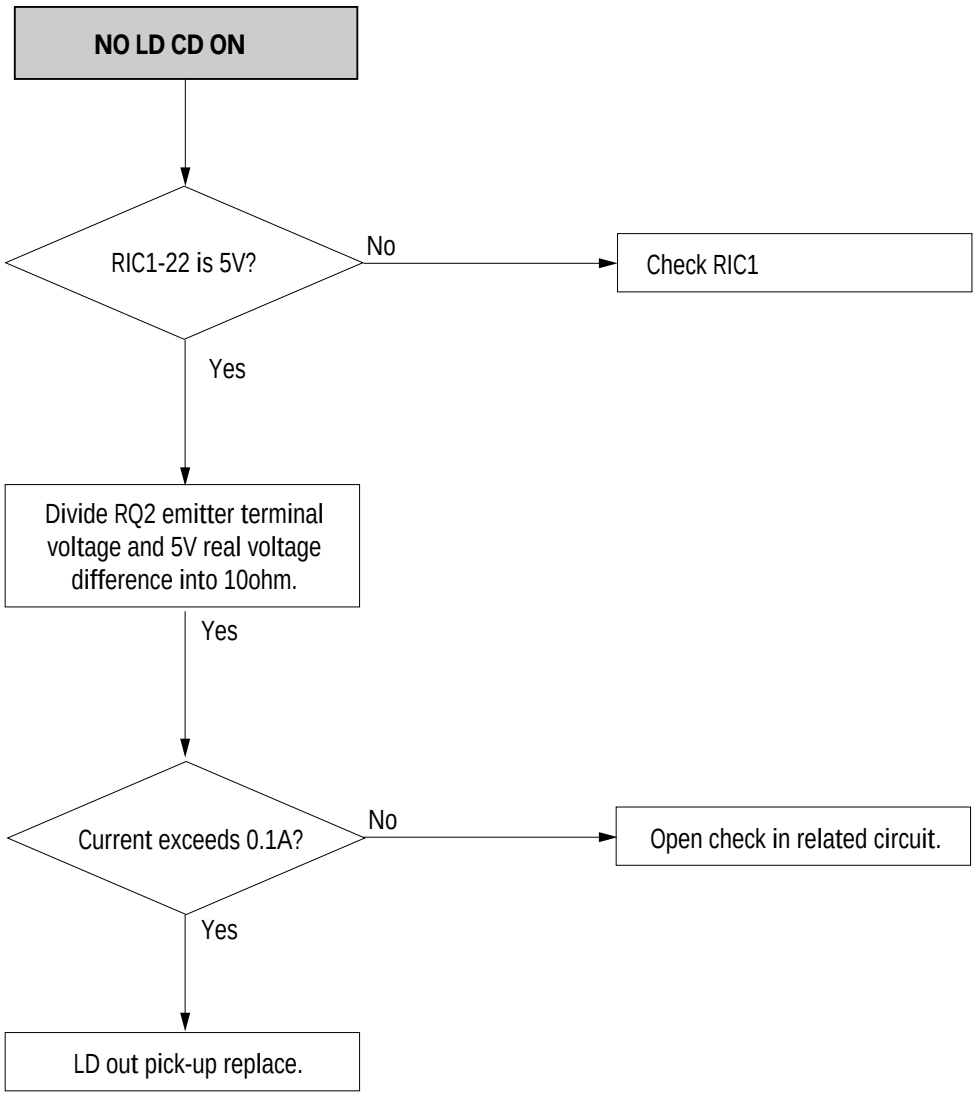


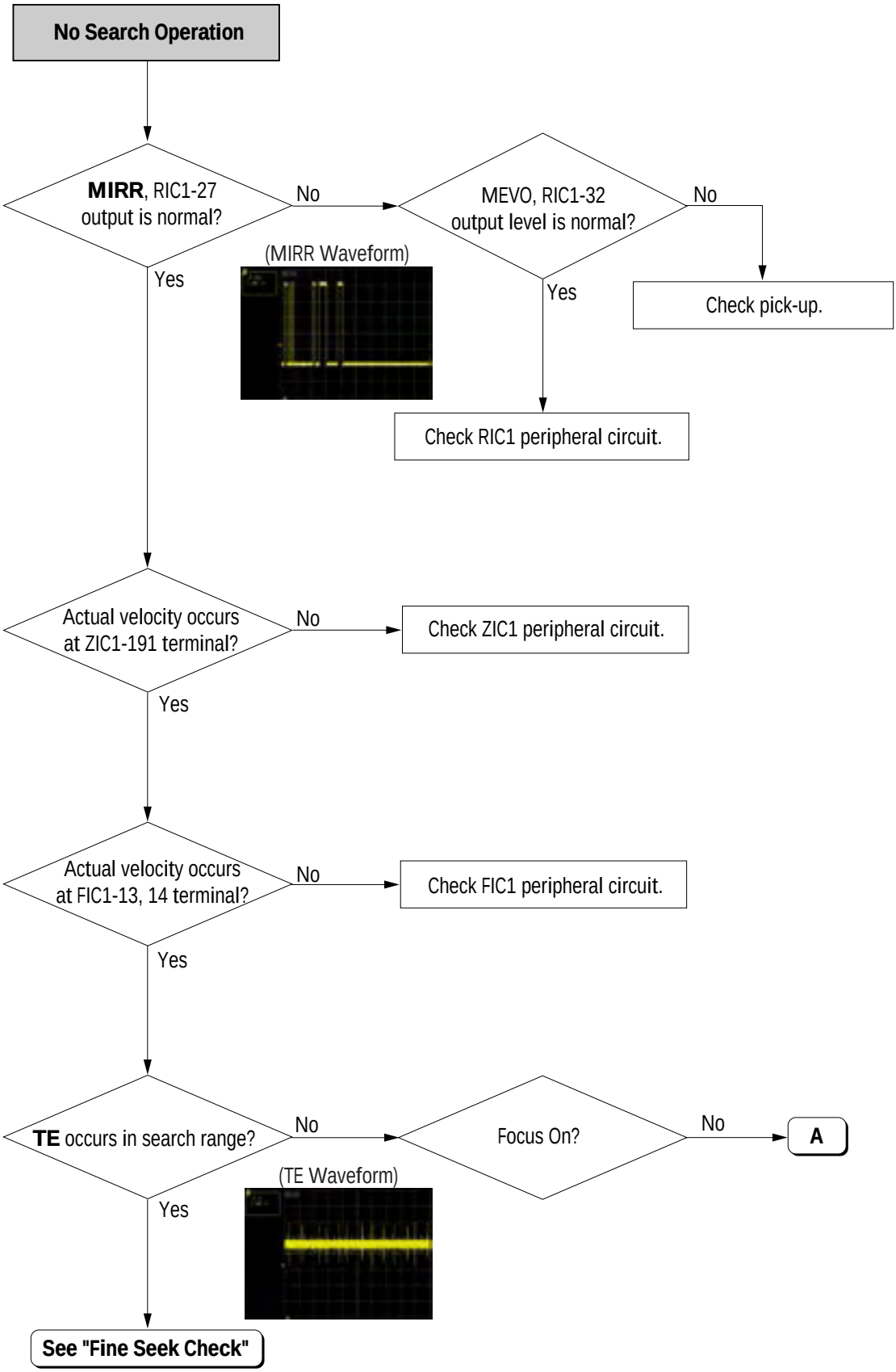
Fig. 4-10 Ass'y Bracket Deck Removal

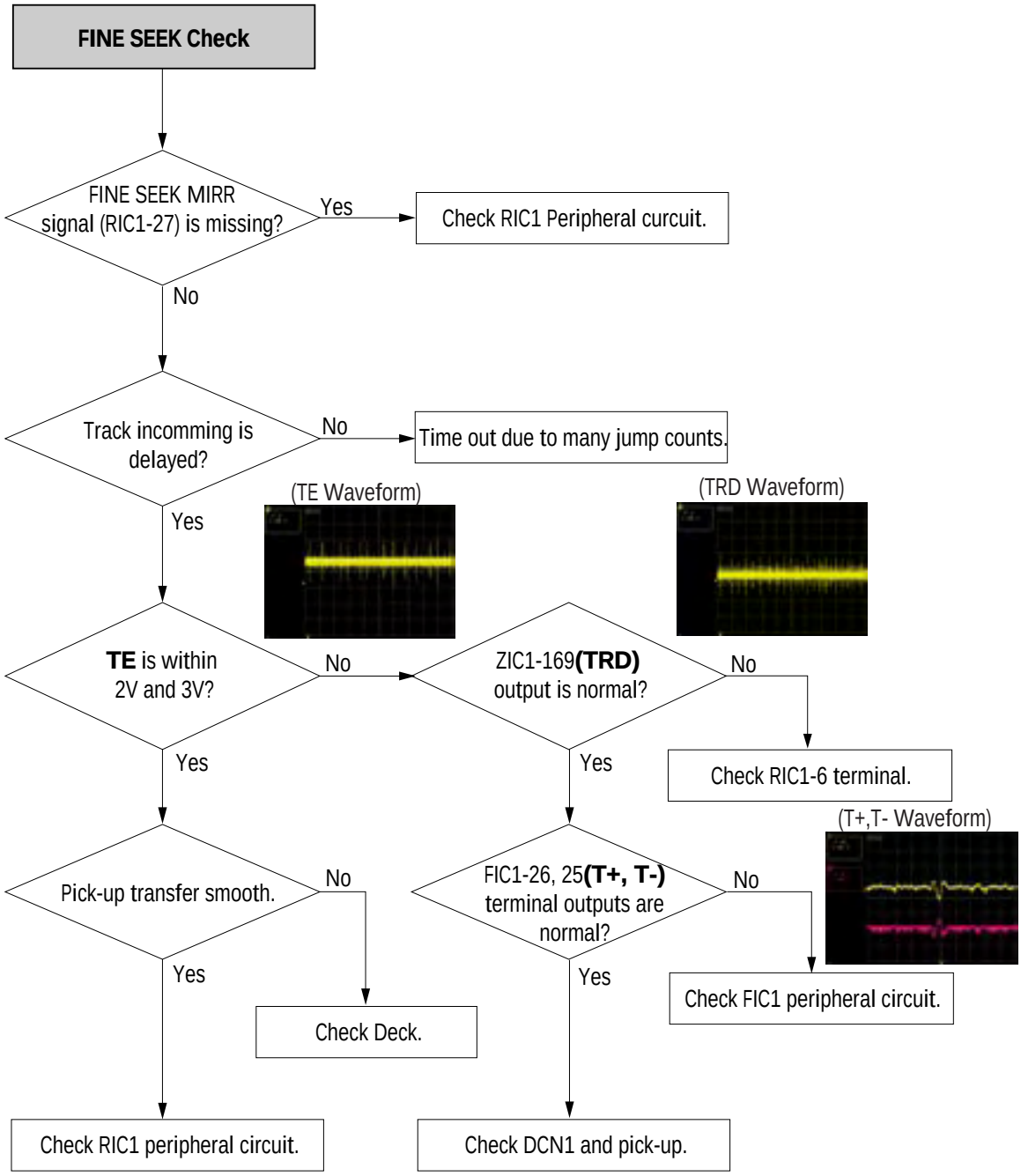
5. Troubleshooting

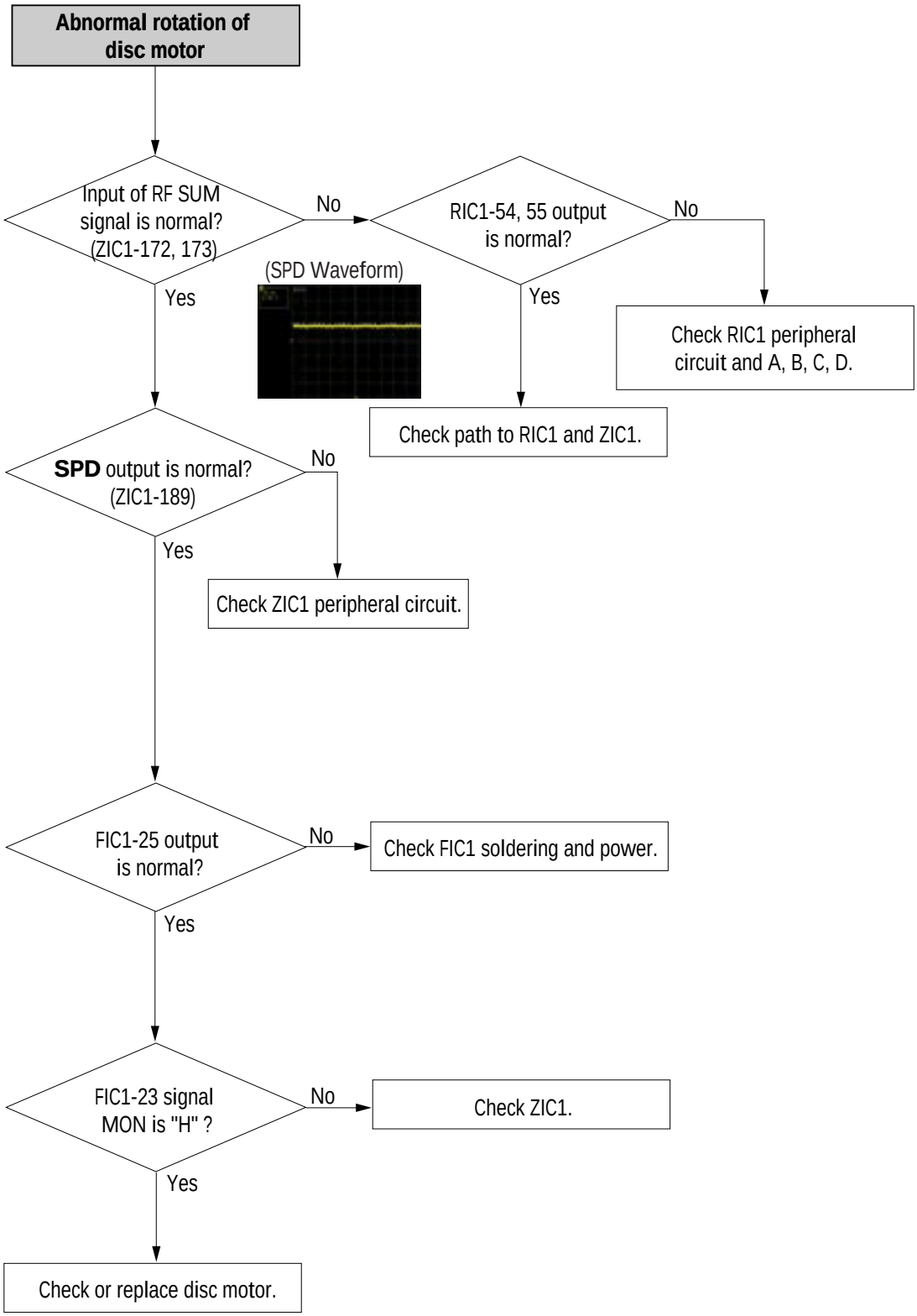


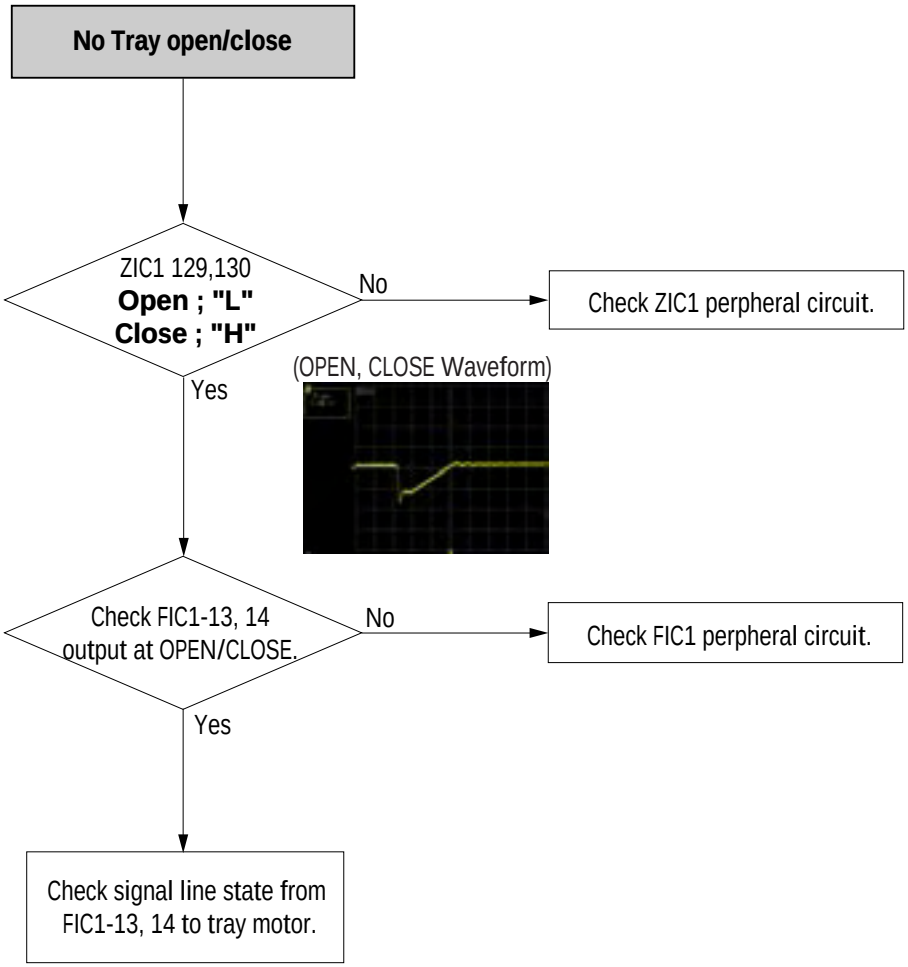

No pick-up home positing
ZIC1-191(SLED-PWM) output is normal? (1.7V ~ 1.8V)
No
Check ZIC1.
Yes
SLED+, SLED- FIC1-13, 14 output are normal?
No
Check FIC1.
Yes
Check the Sled Motor and connection.

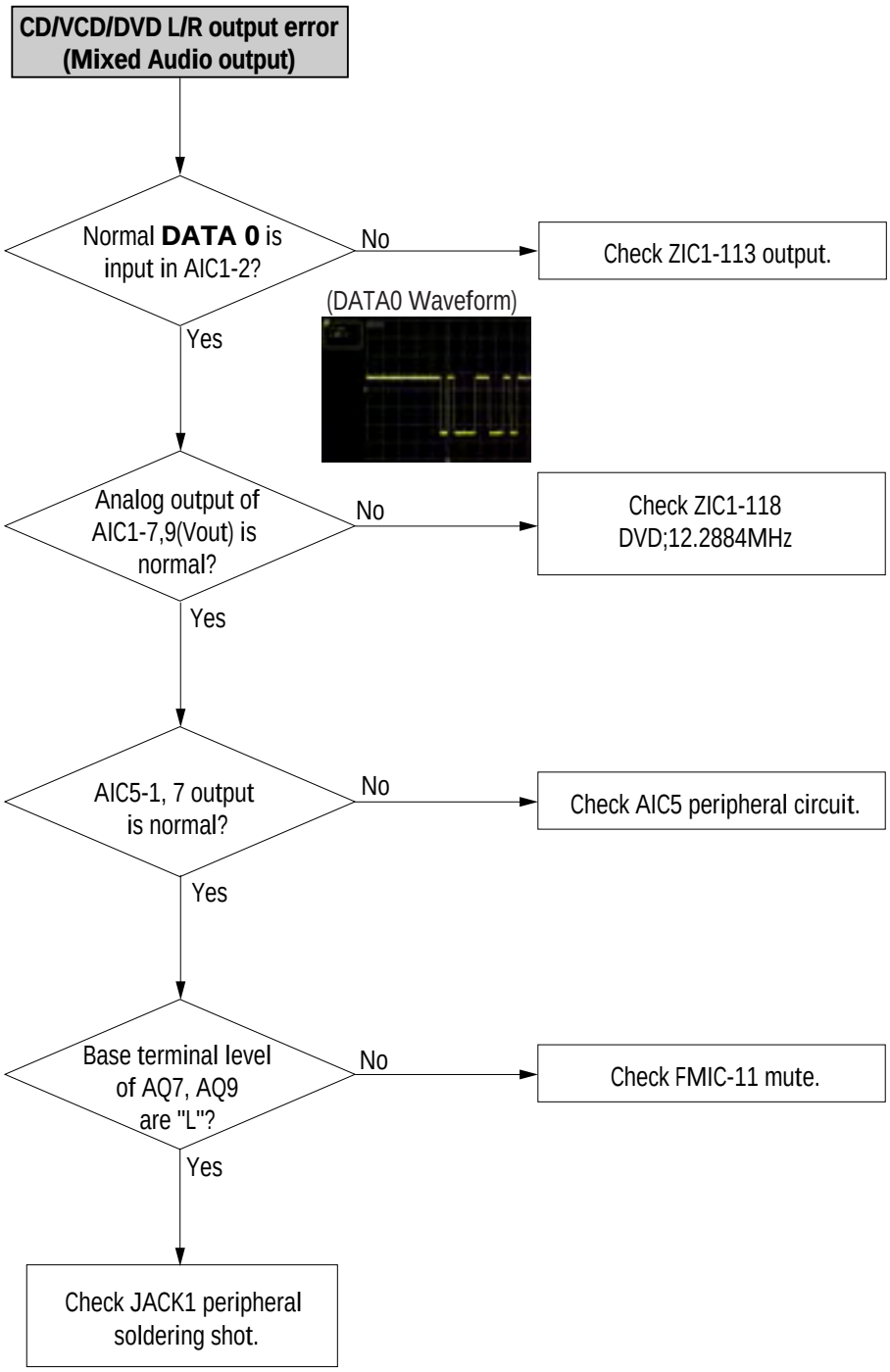

NO LD CD ON
RIC1-22 is 5V?
No
Check RIC1
Yes
Divide RQ2 emitter terminal voltage and 5V real voltage difference into 10ohm.
Yes
Current exceeds 0.1A?
No
Open check in related circuit.
Yes
LD out pick-up replace.

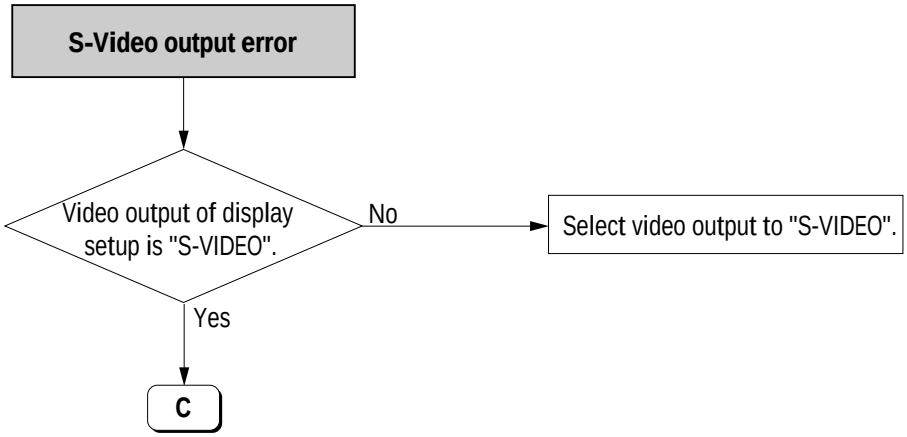

No Search Operation
MIRR, RIC1-27 output is normal?
No
MEVO, RIC1-32 output level is normal?
No
Check pick-up.
Yes
(MIRR Waveform)
Yes
Check RIC1 peripheral circuit.
Actual velocity occurs at ZIC1-191 terminal?
No
Check ZIC1 peripheral circuit.
Yes
Actual velocity occurs at FIC1-13, 14 terminal?
No
Check FIC1 peripheral circuit.
Yes
TE occurs in search range?
No
Focus On?
No
A
(TE Waveform)
Yes
See "Fine Seek Check"

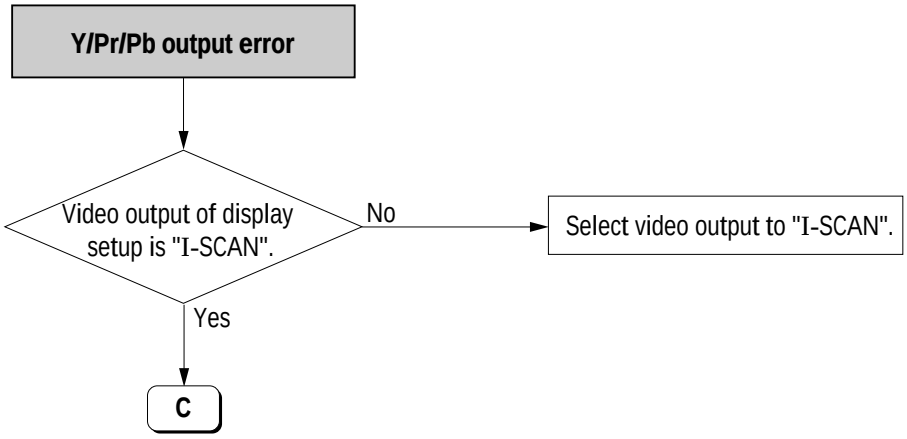

FINE SEEK Check
FINE SEEK MIRR signal (RIC1-27) is missing?
Yes
Check RIC1 Peripheral curcuit.
No
Track incomming is delayed?
No
Time out due to many jump counts.
Yes
(TE Waveform)
(TRD Waveform)
TE is within 2V and 3V?
No
ZIC1-169(TRD) output is normal?
No
Yes
Yes
Check RIC1-6 terminal.
(T+,T- Waveform)
Pick-up transfer smooth.
No
FIC1-26, 25(T+, T-) terminal outputs are normal?
No
Yes
Yes
Check Deck.
Check FIC1 peripheral circuit.
Check RIC1 peripheral circuit.
Check DCN1 and pick-up.

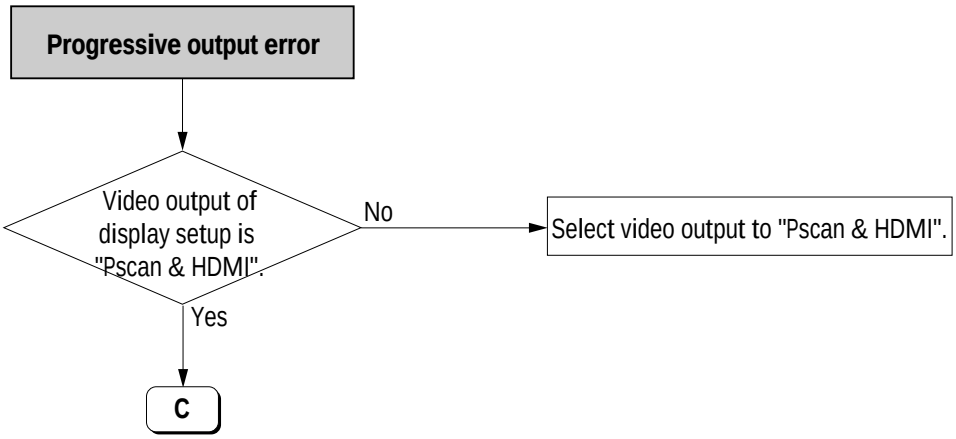

Abnormal rotation of disc motor
Input of RF SUM signal is normal? (ZIC1-172, 173)
No
RIC1-54, 55 output is normal?
No
Yes
(SPD Waveform)
Yes
Check RIC1 peripheral circuit and A, B, C, D.
Check path to RIC1 and ZIC1.
SPD output is normal? (ZIC1-189)
No
Yes
Check ZIC1 peripheral circuit.
FIC1-25 output is normal?
No
Check FIC1 soldering and power.
Yes
FIC1-23 signal MON is "H" ?
No
Check ZIC1.
Yes
Check or replace disc motor.

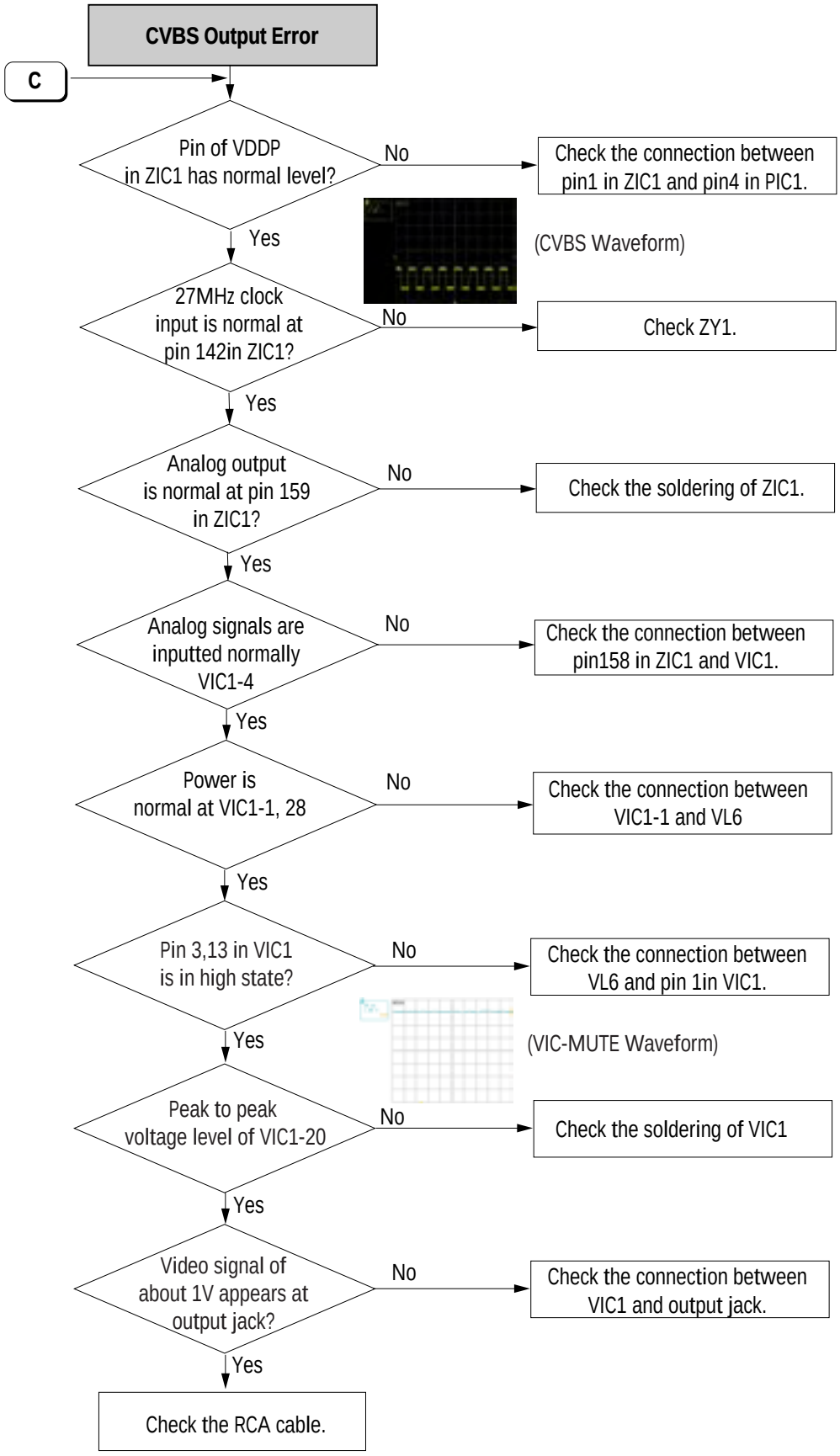

No Tray open/close
ZIC1 129,130
Open ; "L"
Close ; "H"
No
Check ZIC1 perpheral circuit.
Yes
(OPEN, CLOSE Waveform)
Check FIC1-13, 14
output at OPEN/CLOSE.
No
Check FIC1 perpheral circuit.
Yes
Check signal line state from
FIC1-13, 14 to tray motor.

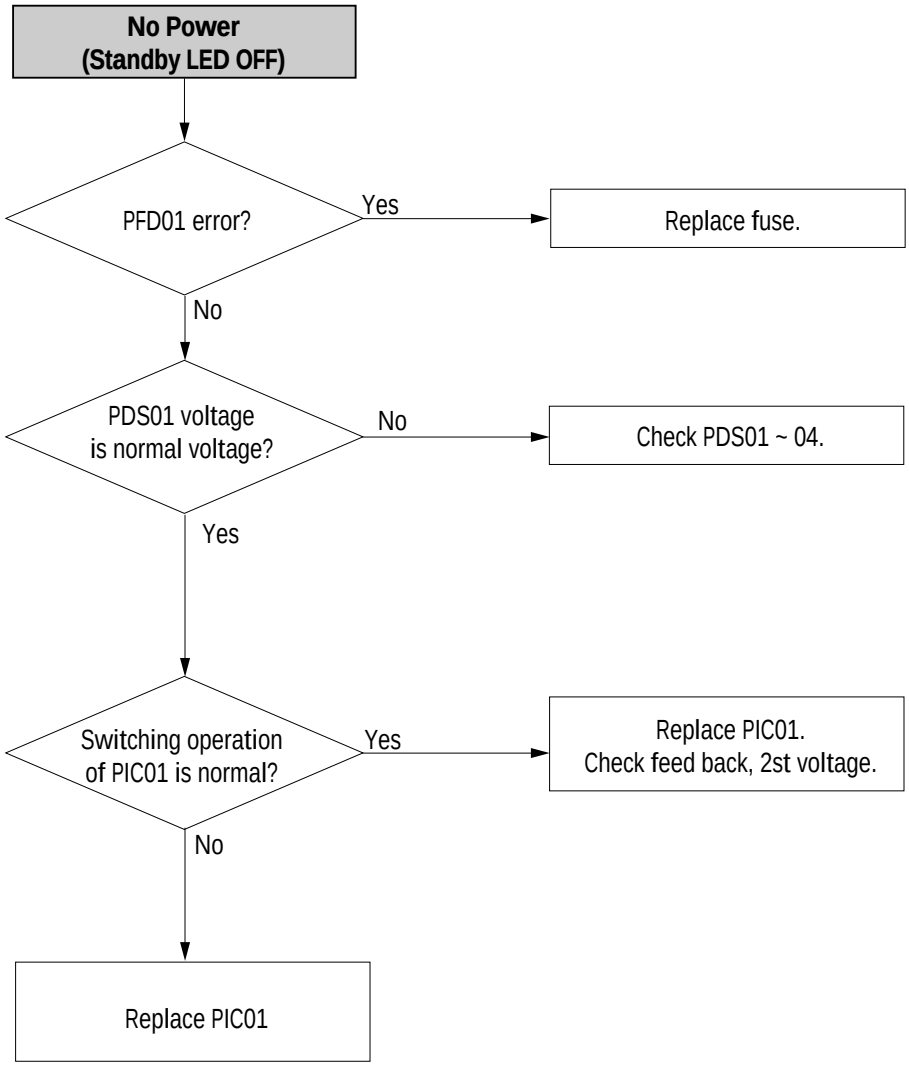

CD/VCD/DVD L/R output error
(Mixed Audio output)
Normal DATA 0 is input in AIC1-2?
No
Check ZIC1-113 output.
(DATA0 Waveform)
Yes
Analog output of AIC1-7,9(Vout) is normal?
No
Check ZIC1-118
DVD;12.2884MHz
Yes
AIC5-1, 7 output is normal?
No
Check AIC5 peripheral circuit.
Yes
Base terminal level of AQ7, AQ9 are "L"?
No
Check FMIC-11 mute.
Yes
Check JACK1 peripheral soldering shot.


S-Video output error
Video output of display setup is "S-VIDEO".
No
Select video output to "S-VIDEO".
Yes
C


Y/Pr/Pb output error
Video output of display setup is "I-SCAN".
No
Select video output to "I-SCAN".
Yes
C

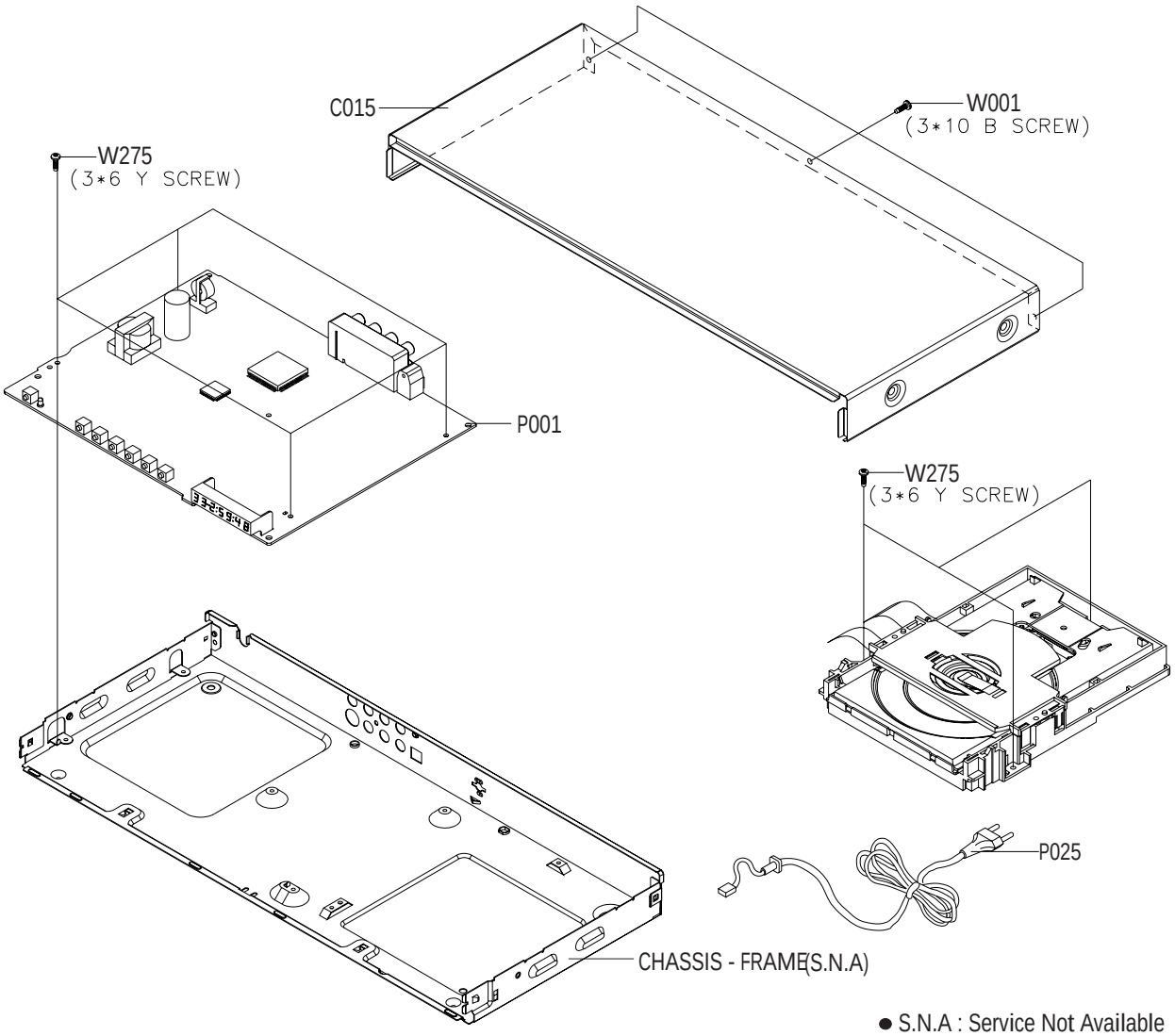

Progressive output error
Video output of display setup is "Pscan & HDMI".
No
Select video output to "Pscan & HDMI".
Yes
C


CVBS Output Error
C
Pin of VDDP in ZIC1 has normal level?
No
Check the connection between pin1 in ZIC1 and pin4 in PIC1.
Yes
(CVBS Waveform)
27MHz clock input is normal at pin 142in ZIC1?
No
Check ZY1.
Yes
Analog output is normal at pin 159 in ZIC1?
No
Check the soldering of ZIC1.
Yes
Analog signals are inputted normally VIC1-4
No
Check the connection between pin158 in ZIC1 and VIC1.
Yes
Power is normal at VIC1-1, 28
No
Check the connection between VIC1-1 and VL6
Yes
Pin 3,13 in VIC1 is in high state?
No
Check the connection between VL6 and pin 1in VIC1.
Yes
(VIC-MUTE Waveform)
Peak to peak voltage level of VIC1-20
No
Check the soldering of VIC1
Yes
Video signal of about 1V appears at output jack?
No
Check the connection between VIC1 and output jack.
Yes
Check the RCA cable.

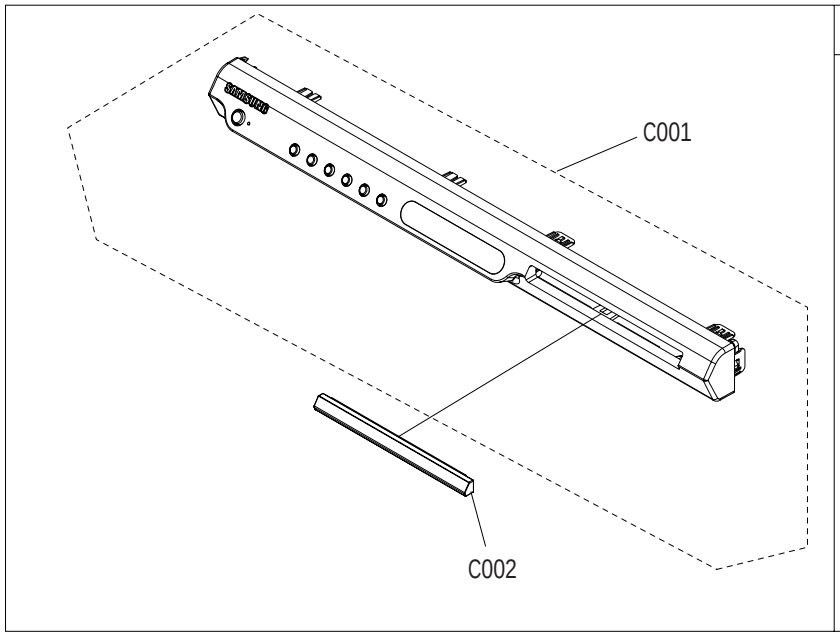

No Power
(Standby LED OFF)
PFD01 error?
Yes
Replace fuse.
No
PDS01 voltage
is normal voltage?
No
Check PDS01 ~ 04.
Yes
Switching operation
of PIC01 is normal?
Yes
Replace PIC01.
Check feed back, 2st voltage.
No
Replace PIC01

6. Exploded View and Parts List

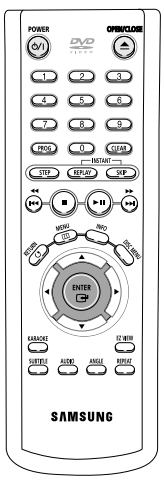
6-1 Cabinet Assembly



● S.N.A : Service Not Available

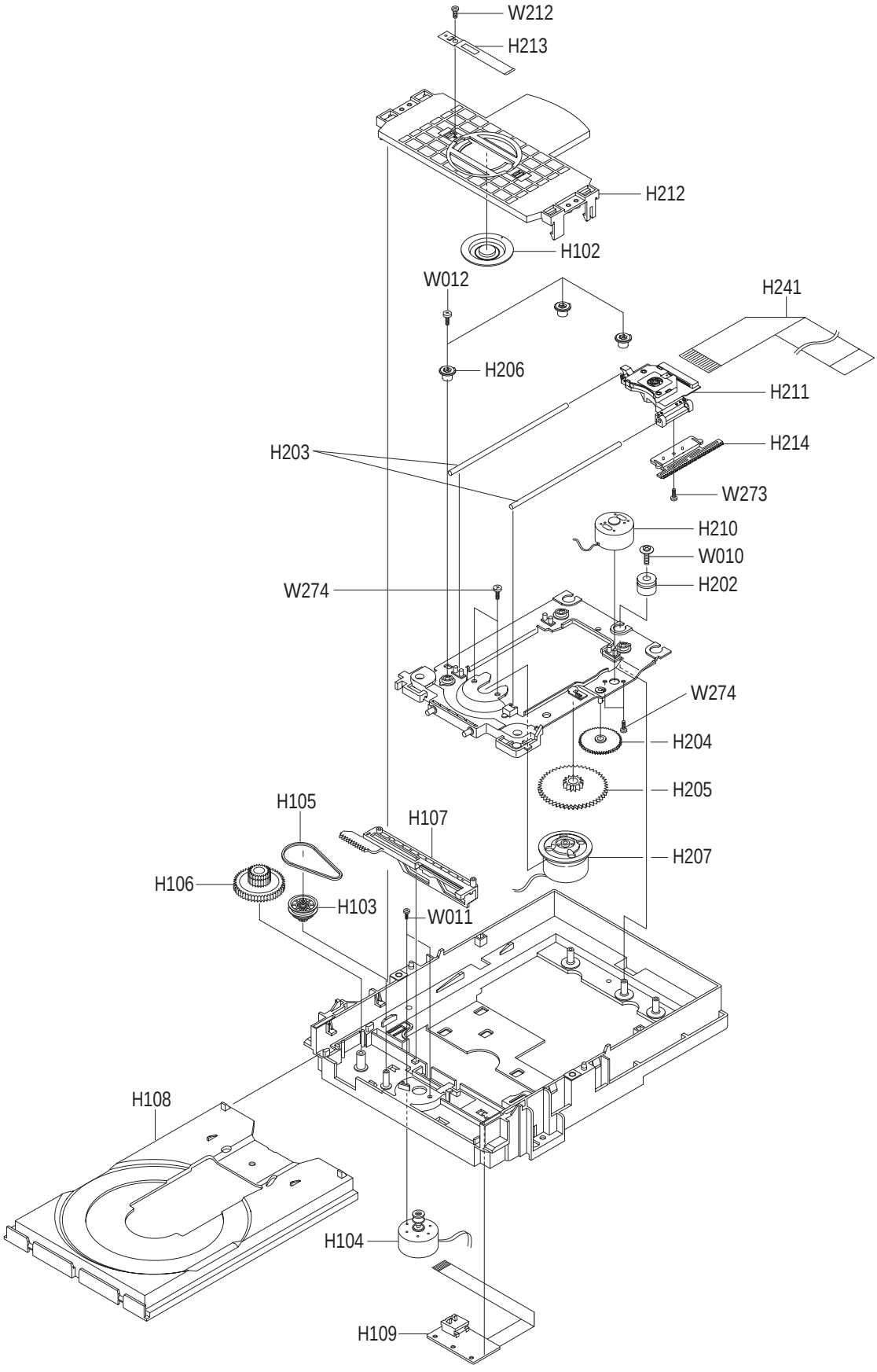


A001



Loc. No	Parts No.	Description ; Specification	Q"ty	S.N.A	Remark
A001	AK59-00011J	REMOCON-ASSY;DVD-P241/XAA,XAA,-,-,36,-,-	1	SA	
C001	AK97-01225E	ASSY CABINET-FRONT;HIPS 94 HB,DVD-P355B/	1	SA	
C002	AK64-01189C	DOOR-TRAY;DVD-P355B/XEL,SEIN,ABS 94 HB,T	1	SA	
C015	AK97-01103D	ASSY CABINET-TOP;PCM T0.55,DVD-P355B/XE	1	SA	
P001	AK92-00680B	ASSY PCB-MAIN;DVD-P355/XEV,MAIN PCB ASSY	1	SA	CIS Only
	AK92-00680A	ASSY PCB-MAIN;DVD-P355/XEO,MAIN PCB ASSY	1	SA	Other Only
P025	AC39-12022K	CBF-POWER CORD;AT,,GP2,HOUING(2P),250V,3	1	SA	U.K Only
	AC39-10019A	CBF-POWER CORD;KKP-419C,H03VVH2-F,VDE/KE	1	SA	Other Only
W001	6003-000275	SCREW-TAPTITE;BH,+,B,M3,L10,BLK ,SWCH101	4	SA	
W275	6003-001561	SCREW-TAPTITE;BH,+,WT,B,M3,L6,ZPC(YEL),S	7	SA	

6-2 DVD Mechanical Parts



Loc. No	Parts No.	Description ; Specification	Q"ty	S.N.A	Remark
H102	AK61-00360A	BODY CLAMPER-DISC;DP-16,POM,T0.7,-,-,-,W	1	SA	
H103	AK66-00042A	GEAR-PULLEY;DP-15,POM,-,-,-,WHT,-,-,-	1	SA	
H104	AK97-00608A	ASSY-MOTOR LOAD;-,DP-15,-	1	SA	
H105	6602-001076	BELT-RECTANGULAR;CR,T1.2,4.3%,1.2X25.1,B	1	SA	
H106	AK66-00041A	GEAR-TRAY;DP-15,POM,-,-,-,WHT,-,-,-	1	SA	
H107	AK66-00045A	SLIDER HOUSING;DP-15,POM,-,W17.8,L90,WHT	1	SA	
H108	AK63-00101C	TRAY-DISC;DP-16,ABS,-,W120,L186.3,-,BLK,	1	SA	
H109	AK92-00328C	ASSY PCB-DECK;DP-15,COMBO-A	1	SA	
H202	AK73-00005B	RUBBER-INSULATOR;DP-15,BUTYL,•'12,HS30,H	1	SA	
H203	AH61-50327A	SHAFT-P/U;DP-3,SUS,L84.7,OD3,-,-,-	2	SA	
H204	AK66-00043A	GEAR-FEED A;DP-15,POM,-,-,-,-,-,-,-	1	SA	
H205	AK66-00044A	GEAR-FEED B;DP-15,POM,-,-,-,-,-,-,-	1	SA	
H206	AK61-00363A	HOLDER-CAM SKEW;DP-16,POM,-,-,-,BLK,-	3	SA	
H207	AK31-00017A	MOTOR DC-SPINDLE;RF300FA-12350,DP-17,-,-	1	SA	
H210	AK31-00005A	MOTOR-FEED ASSY;-,DP-9,-,-,-,-,-,-,-,-	1	SA	
H211	AK97-01009B	ASSY-PICK UP;-,DP-16,MITSUMI VE	1	SA	
H212	AK61-00359A	HOLDER-CHUCK;DP-16,POM,T3,W140,L96,BLK,-	1	SA	
H213	AK61-00357A	SPRING ETC-CLAMPER;-,SUS304CSP,-,-,-,-,-	1	SA	
H214	AK66-00057A	GEAR-BACKLASH;DP-16,POM,0.5,-,-,WHT,-,RA	1	SA	
H241	AK41-00250B	FFC-PU;DP-16,HYPER,PET 0.037mm,23P,0.	1	SA	
W010	6003-001157	SCREW-TAPTITE;PWH,+,B,M2,L6,ZPC(YEL),SWR	1	SA	
W011	6001-001370	SCREW-MACHINE;CH,+,M1.7,L3.0,ZPC(YEL),SW	2	SA	
W012	6002-001086	SCREW-TAPPING;PH,+,B,M1.7,L5.0,ZPC(YEL),	3	SA	
W212	6003-001251	SCREW-TAPTITE;CH,+,B,M1.7,L3,ZPC(YEL),SW	1	SA	
W273	6003-000233	SCREW-TAPTITE;PH,+,B,M2,L6,ZPC(BLK),SWRC	1	SA	
W274	6001-001730	SCREW-MACHINE;BH,+,M1.7,L2.5,ZPC(YEL)	4	SA	

7. Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
P001	**AK92-00680B**	**ASSY PCB-MAIN;DVD-P355/XEV,MAIN PCB ASSY**	**1**	**SA**	**CIS Only**
	AK92-00680A	**ASSY PCB-MAIN;DVD-P355/XEO,MAIN PCB ASSY**	**1**	**SA**	**Other Only**
AC100	2203-000426	C-CER,CHIP;0.018NF,5%,50V,C0G,TP,1608	1	SA	
AC19	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC20	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC200	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC21	2203-000315	C-CER,CHIP;0.12NF,5%,50V,C0G,TP,1608	1	SA	
AC22	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC23	2203-000125	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	1	SA	
AC25	2203-000315	C-CER,CHIP;0.12NF,5%,50V,C0G,TP,1608	1	SA	
AC28	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	1	SA	
AC29	2203-000125	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	1	SA	
AD1	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
AD2	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
AD3	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
AD4	0401-000008	DIODE-SWITCHING;DAN217,80V,100MA,SOT-23,	1	SA	
AD5	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
ADR1	2007-000080	R-CHIP;2Kohm,5%,1/10W,TP,1608	1	SA	
AE10	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
AE11	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11,5	1	SA	
AE13	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11,5	1	SA	
AE15	2401-000438	C-AL;10uF,20%,25V,GP,-,5x11,5	1	SA	
AE16	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	1	SA	
AE17	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	1	SA	
AE3	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11,5	1	SA	
AE5	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11,5	1	SA	
AE6	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11,5	1	SA	
AE9	2401-002594	C-AL;220uF,20%,16V,GP,TP,8x11.5,5	1	SA	
AHC1	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AHC2	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AHE10	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE20	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHIC1	1201-000163	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	1	SA	
AHR1	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
AHR2	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
AHR5	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AHR6	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AIC1	1002-001395	IC-D/A CONVERTER;PCM1753,24Bit,SSOP,16P,	1	SA	
AIC4	1201-000163	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	1	SA	
AL2	3301-001419	BEAD-SMD;-,220,-,500,TP,-,0.3	1	SA	
AQ1	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
AQ10	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
AQ11	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
AQ2	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
AQ3	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
AQ4	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
AQ5	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
AQ6	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
AQ7	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
AQ8	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
AQ9	0501-000002	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
AR100	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
AR14	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
AR15	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR16	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR17	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR28	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
AR29	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR30	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR31	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR41	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
AR42	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR43	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AR46	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
AR47	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR48	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AR52	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR54	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
AR55	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	1	SA	
AR58	2007-000491	R-CHIP;2.2KOHM,1%,1/10W,TP,1608	1	SA	
AR59	2007-000079	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	1	SA	
AR60	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
AR61	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR62	2007-001134	R-CHIP;68ohm,5%,1/10W,TP,1608	1	SA	
AR63	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
AR64	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
AR65	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
AR71	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR72	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR73	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR74	2007-000124	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	1	SA	
DCN1	3708-000491	CONNECTOR-FPC/FFC/PIC,23P,1mm,STRAIGHT,S	1	SA	
DCN2	3708-001266	CONNECTOR-FPC/FFC/PIC,11P,1MM,STRAIGHT,S	1	SA	
DOC4	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
DOE1	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	1	SA	
DOIC2	3707-001065	CONNECTOR-OPTICAL;PLUG,GP1FA550TZ,6dB,2.	1	SA	
DOL1	2901-001273	FILTER-EMI SMD;50V,2A,-,220pF,3.2x1.6x0.	1	SA	
DOL2	3301-001419	BEAD-SMD;-,220,-,500,TP,-,0.3	1	SA	
DOR3	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
DQ1	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
DQ2	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
DQ3	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
DR1	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
DR2	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
DR3	2007-000463	R-CHIP;18ohm,5%,1/10W,TP,1608	1	SA	
DR4	2007-000122	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	1	SA	
DR5	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
DR6	2007-001134	R-CHIP;68ohm,5%,1/10W,TP,1608	1	SA	
FC1	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
FC10	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
FC11	2203-001222	C-CER,CHIP;0.82NF,10%,50V,X7R,TP,1608	1	SA	
FC12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
FC2	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	1	SA	
FC3	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
FC4	2203-000669	C-CER,CHIP;27nF,10%,25V,X7R,TP,1608,-	1	SA	
FC5	2203-000140	C-CER,CHIP;1.5nF,10%,50V,X7R,1608	1	SA	
FC6	2203-000669	C-CER,CHIP;27nF,10%,25V,X7R,TP,1608,-	1	SA	
FC8	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
FC9	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
FE1	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
FE2	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
FE3	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
FIC1	1003-001735	IC-MOTOR DRIVER;FAN8026G3,SSOPH,28P,18.4	1	SA	
FR1	2007-000130	R-CHIP;39Kohm,5%,1/10W,TP,1608	1	SA	
FR10	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
FR11	2007-000129	R-CHIP;27Kohm,5%,1/10W,TP,1608	1	SA	
FR12	2007-000329	R-CHIP;11Kohm,5%,1/10W,TP,1608	1	SA	
FR13	2007-000094	R-CHIP;22Kohm,5%,1/10W,TP,1608	1	SA	
FR14	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
FR15	2007-000129	R-CHIP;27Kohm,5%,1/10W,TP,1608	1	SA	
FR16	2007-007277	R-CHIP;392ohm,1%,1/10W,TP,1608	1	SA	
FR19	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR2	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR23	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	1	SA	
FR24	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	1	SA	
FR25	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	1	SA	
FR26	2007-000094	R-CHIP;22Kohm,5%,1/10W,TP,1608	1	SA	
FR28	2007-007277	R-CHIP;392ohm,1%,1/10W,TP,1608	1	SA	
FR3	2007-000098	R-CHIP;56Kohm,5%,1/10W,TP,1608	1	SA	
FR31	2007-000134	R-CHIP;33Kohm,5%,1/10W,TP,1608	1	SA	
FR33	2007-000091	R-CHIP;12Kohm,5%,1/10W,TP,1608	1	SA	
FR34	2007-000134	R-CHIP;33Kohm,5%,1/10W,TP,1608	1	SA	
FR36	2007-000091	R-CHIP;12Kohm,5%,1/10W,TP,1608	1	SA	
FR37	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
FR39	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
FR4	2007-000129	R-CHIP;27Kohm,5%,1/10W,TP,1608	1	SA	
FR41	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR42	2007-000491	R-CHIP;2.2KOHM,1%,1/10W,TP,1608	1	SA	
FR43	2007-000491	R-CHIP;2.2KOHM,1%,1/10W,TP,1608	1	SA	
FR44	2007-000091	R-CHIP;12Kohm,5%,1/10W,TP,1608	1	SA	
FR5	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	1	SA	
FR7	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	1	SA	
FR8	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	1	SA	
FR9	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
KC1	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
KC2	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA	
KC3	2203-000140	C-CER,CHIP;1.5nF,10%,50V,X7R,1608	1	SA	
KC4	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	1	SA	
KE1	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
KE2	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
KE3	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
KIC1	AK09-00075B	IC MICOM;eFHP5842,SPINO,24PIN,-0.3V ~ 6	1	SA	
KIC2	1203-003526	IC-VOL. DETECTOR;KA75290,TO-92,3P,4.58x4	1	SA	
KIR1	0609-001188	MODULE REMOCON;VERTICAL,9.6MM,TR	1	SA	
KML1	AK07-00030A	LED DISPLAY;BCD-9030B,DVD-P250K,-,7,7,27	1	SA	
KQ1	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KQ10	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
KQ11	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
KQ12	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
KQ13	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
KQ14	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
KQ15	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
KQ16	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
KQ17	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KQ2	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KQ3	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KQ4	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KQ5	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KQ6	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KQ7	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KQ8	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KQ9	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
KR1	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
KR10	2007-000072	R-CHIP;47ohm,5%,1/10W,TP,1608	1	SA	
KR100	2001-000527	R-CARBON;22OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
KR11	2007-000124	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	1	SA	
KR12	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR13	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR14	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR15	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR16	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR17	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR18	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR19	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR2	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
KR20	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR21	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR22	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR23	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR24	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR25	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR26	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
KR27	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
KR28	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
KR29	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
KR3	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
KR30	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
KR31	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
KR32	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
KR33	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
KR34	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
KR35	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
KR36	2007-000124	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	1	SA	
KR37	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
KR4	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
KR5	2007-000083	R-CHIP;3Kohm,5%,1/10W,TP,1608	1	SA	
KR6	2007-000123	R-CHIP;1.5Kohm,5%,1/10W,TP,1608	1	SA	
KR7	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
KR8	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
KR9	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
KSW1	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	
KSW2	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
KSW3	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	
KSW4	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	
KSW5	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	
KSW6	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	
KSW7	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	
LED1	0601-001587	LED;ROUND,RED,3.1mm,635nm,3.8x5.2m	1	SA	
PBR11	3301-000297	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,-,TP,-,-,	1	SA	
PBS01	AC27-92001M	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RADIAL),-	1	SA	
PC1	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
PC3	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
PC4	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
PC5	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
PC6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
PCD01	2201-000963	C-CERAMIC,DISC;1NF,20%,400V,Y5U,TP,9.5X6	1	SA	
PCD02	2201-000963	C-CERAMIC,DISC;1NF,20%,400V,Y5U,TP,9.5X6	1	SA	
PCD11	2305-001029	C-FILM,LEAD-PEF;10nF,10%,630V,TP,12x9x12	1	SA	
PCD12	2201-000129	C-CERAMIC,DISC;0.1NF,10%,1KV,Y5P,TP,7X4M	1	SA	
PCF01	2301-001719	C-FILM,LEAD;100nF,10%,275V,TP,17.5*6*12m	1	SA	
PCF02	2301-001719	C-FILM,LEAD;100nF,10%,275V,TP,17.5*6*12m	1	SA	
PCF11	2401-002608	C-AL;33uF,20%,35V,GP,TP,5x11,5	1	SA	
PCF20	2201-000379	C-CERAMIC,DISC;22NF,+80-20%,50V,Y5V,TP,9	1	SA	
PCNS2	3711-000203	CONNECTOR-HEADER;1WALL,2P,1R,7.92MM,STRA	1	SA	
PCS32	2301-000129	C-FILM,LEAD-PEF;100nF,5%,50V,TP,10X9X4.3	1	SA	
PDF13	0402-001195	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	1	SA	
PDS01	0402-001196	DIODE-RECTIFIER;1T5,600V,1A,TS-1,TP	1	SA	
PDS02	0402-001196	DIODE-RECTIFIER;1T5,600V,1A,TS-1,TP	1	SA	
PDS03	0402-001196	DIODE-RECTIFIER;1T5,600V,1A,TS-1,TP	1	SA	
PDS04	0402-001196	DIODE-RECTIFIER;1T5,600V,1A,TS-1,TP	1	SA	
PDS11	0402-000012	DIODE-RECTIFIER;UF4007,1KV,1A,DO-41,TP	1	SA	
PDS31	0402-001195	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	1	SA	
PDS33	0402-001194	DIODE-RECTIFIER;SHG2D,200V,2A,-,TP	1	SA	
PDS34	0402-001439	DIODE-RECTIFIER;-,100V,3A,SHK75-11,BK	1	SA	
PDS35	0402-001195	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	1	SA	
PDS51	0401-000101	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	1	SA	
PDS59	0401-000101	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	1	SA	
PE1	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
PE2	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
PE3	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
PE4	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
PE5	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
PEF12	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	1	SA	
PEF14	2401-002608	C-AL;33uF,20%,35V,GP,TP,5x11,5	1	SA	
PER10	2401-004086	C-AL;68uF,°æ20%,450V,GP,BK,25.4x20m	1	SA	CIS Only
	2401-004087	C-AL;68uF,°æ20%,400V,GP,BULK,22x20m	1	SA	Other Only
PES31	2401-003477	C-AL;330UF,20%,25V,LZ,TP,10X12.5MM,	1	SA	
PES33	2401-003059	C-AL;1000UF,20%,16V,WT,TP,10X16,5	1	SA	
PES34	2401-003480	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,5	1	SA	
PES35	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	1	SA	
PES38	2401-001358	C-AL;470uF,20%,10V,WT,TP,8x11.5mm,5	1	SA	
PES52	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	1	SA	
PES54	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
PES55	2401-001358	C-AL;470uF,20%,10V,WT,TP,8x11.5mm,5	1	SA	
PES57	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
PES58	2401-002438	C-AL;47uF,20%,50V,WT,TP,6.3x11,5	1	SA	
PES59	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
PES62	2401-001370	C-AL;470uF,20%,16V,GP,TP,8x11.5,5	1	SA	
PES63	2401-002438	C-AL;47uF,20%,50V,WT,TP,6.3x11,5	1	SA	
PFD01	3601-001123	FUSE-CARTRIDGE;250V,1.6A,TIME-LAG,CERAMI	1	SA	
PIC1	1203-002730	IC-PWM CONTROLLER;ICE2B0565,PDIP,8P,9.52	1	SA	
PIC2	1203-002779	IC-POSI.FIXED REG.;G952T63U,SOT-223,3P,6	1	SA	
PICS1	0604-001028	PHOTO-COUPLER;TR,50-600%,250mW,DIP-4,ST	1	SA	
PICS2	AC14-12006D	IC;KA431Z,TO-92,TAPING	1	SA	
PICS3	1203-000122	IC-NEGA.FIXED REG.;7908,TO-220,3P,-,PLAS	1	SA	
PICS4	1203-000293	IC-POSI.FIXED REG.;7808,TO-220,3P,-,PLAS	1	SA	
PICS5	1203-002185	IC-POSI.FIXED REG.;3RD13,TO-220,4P,402MI	1	SA	
PLS01	AC29-00003A	FILTER LINE NOISE;-,20mH MIN,-,-,-	1	SA	
PLS31	AC27-12001N	COIL CHOKE;10UH-15%,RA,K-30,Q80,150KHZ,-	1	SA	
PPS12	2003-000994	R-METAL OXIDE(S);33Kohm,5%,2W,AF,TP,3.9x	1	SA	
PQS58	0501-000362	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	1	SA	
PQS59	0501-000362	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	1	SA	
PQS63	0501-000362	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	1	SA	
PQS64	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
PQS65	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
PQS66	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	1	SA	
PR2	2001-000546	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	1	SA	
PR3	2001-000546	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	1	SA	
PR4	2001-000546	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	1	SA	
PRD31	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
PRD32	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
PRF01	2002-000121	R-COMPOSITION;1Mohm,10%,1/2W,AA,TP,3.5x9	1	SA	
PRF10	2006-000262	R-CEMENT;2.7ohm,10%,2W,CB,TP,7.5x11x20.	1	SA	
PRF11	2001-000527	R-CARBON;22OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PRF17	2001-000527	R-CARBON;22OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PRF20	2003-000119	R-METAL OXIDE;0.68ohm,5%,2W,AE,TP,6x16mm	1	SA	
PRF21	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PRS13	2003-000994	R-METAL OXIDE(S);33Kohm,5%,2W,AF,TP,3.9x	1	SA	
PRS32	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
PRS33	2007-000043	R-CHIP;1Kohm,1%,1/10W,TP,1608	1	SA	
PRS34	2007-000256	R-CHIP;1.6Kohm,1%,1/10W,TP,1608	1	SA	
PRS52	0402-000127	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	1	SA	
PRS55	2001-000062	R-CARBON;470OHM,5%,1/4W,AA,TP,2.4X6.4MM	1	SA	
PRS56	2001-000449	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
PRS57	2007-000491	R-CHIP;2.2KOHM,1%,1/10W,TP,1608	1	SA	
PRS58	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
PRS59	2007-000491	R-CHIP;2.2KOHM,1%,1/10W,TP,1608	1	SA	
PRS60	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PRS61	2001-000449	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
PTD1	AK26-00018B	TRANS SWITCHING;EER2828,DVD-P243K,-,FREE	1	SA	
PZD11	0403-001318	DIODE-ZENER;MTZJ4.3B,4.17-4.43V,500MW,DO	1	SA	
PZD21	0403-000752	DIODE-ZENER;MTZJ22C,21.08-22.17V,500MW,D	1	SA	
PZS51	0403-000717	DIODE-ZENER;MTZJ5.1B,4.94-5.2V,500MW,DO-	1	SA	
RC10	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RC11	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RC12	2203-001126	C-CER,CHIP;0.68nF,10%,50V,X7R,1608	1	SA	
RC13	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RC14	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RC15	2203-001662	C-CER,CHIP;5.6NF,10%,50V,X7R,TP,1608	1	SA	
RC16	2203-001662	C-CER,CHIP;5.6NF,10%,50V,X7R,TP,1608	1	SA	
RC17	2203-001662	C-CER,CHIP;5.6NF,10%,50V,X7R,TP,1608	1	SA	
RC18	2203-001052	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1608	1	SA	

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RC19	2203-000815	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	1	SA	
RC2	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RC20	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
RC21	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
RC22	2203-002041	C-CER,CHIP;0.47nF,10%,50V,X7R,TP,1608	1	SA	
RC23	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
RC24	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RC25	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
RC28	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
RC29	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
RC30	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
RC31	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RC32	2203-001662	C-CER,CHIP;5.6NF,10%,50V,X7R,TP,1608	1	SA	
RC33	2203-001662	C-CER,CHIP;5.6NF,10%,50V,X7R,TP,1608	1	SA	
RC34	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	1	SA	
RC35	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
RC36	2203-001662	C-CER,CHIP;5.6NF,10%,50V,X7R,TP,1608	1	SA	
RC37	2203-001662	C-CER,CHIP;5.6NF,10%,50V,X7R,TP,1608	1	SA	
RC4	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RC5	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RC6	2203-001103	C-CER,CHIP;6.8nF,10%,50V,X7R,TP,1608,-	1	SA	
RC7	2203-001634	C-CER,CHIP;33nF,10%,50V,X7R,TP,1608,1.6m	1	SA	
RC8	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	1	SA	
RC9	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
RD1	0407-000116	DIODE-ARRAY;DAP202K,80V,100mA,CK2-3,SOT-	1	SA	
RE1	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
RE2	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
RE5	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
RIC1	AK13-00005A	IC ASIC;SP3723DE0PM,EXINO2,64,5,+135,Q	1	SA	
RL3	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	SA	
RL5	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	SA	
RQ1	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
RQ2	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
RR10	2007-000234	R-CHIP;1.3Kohm,5%,1/10W,TP,1608	1	SA	
RR11	2007-000234	R-CHIP;1.3Kohm,5%,1/10W,TP,1608	1	SA	
RR12	2007-000234	R-CHIP;1.3Kohm,5%,1/10W,TP,1608	1	SA	
RR13	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
RR14	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
RR15	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
RR16	2007-000091	R-CHIP;12Kohm,5%,1/10W,TP,1608	1	SA	
RR17	2007-007549	R-CHIP;4.99Kohm,1%,1/10W,TP,1608	1	SA	
RR18	2007-000052	R-CHIP;10Kohm,1%,1/10W,TP,1608	1	SA	
RR2	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
RR20	2007-000312	R-CHIP;10ohm,5%,1/4W,TP,3216	1	SA	
RR21	2007-000134	R-CHIP;33Kohm,5%,1/10W,TP,1608	1	SA	
RR22	2007-001010	R-CHIP;51Kohm,5%,1/10W,TP,1608	1	SA	
RR3	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
RR4	2007-000312	R-CHIP;10ohm,5%,1/4W,TP,3216	1	SA	
RR5	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
RR7	2007-000381	R-CHIP;13Kohm,5%,1/10W,TP,1608	1	SA	
SCC1	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
SCC14	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
SCC15	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
SCC17	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	1	SA	
SCC18	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	1	SA	

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SCC2	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
SCC3	2203-000236	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	1	SA	
SCC4	2203-000236	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	1	SA	
SCC49	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
SCE49	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
SCE55	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
SCE70	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
SCE71	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
SCIC2	1204-002139	IC-AUDIO PROCESSOR;MM1508,SOT,6P;-,PLAST	1	SA	
SCIC3	1204-001927	IC-AUDIO PROCESSOR;MM1501,SOT,6P;-,PLAST	1	SA	
SCJ1	3722-001359	JACK-SCART;21P;-,SN,BLK,#20-28	1	SA	
SCL1	2703-000125	INDUCTOR-SMD;10uH,10%,2012	1	SA	
SCL2	2703-000125	INDUCTOR-SMD;10uH,10%,2012	1	SA	
SCQ1	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
SCQ2	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
SCQ3	0501-000002	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	1	SA	
SCQ4	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
SCQ5	0501-000002	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	1	SA	
SCR1	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
SCR15	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
SCR19	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
SCR2	2007-000120	R-CHIP;680ohm,5%,1/10W,TP,1608	1	SA	
SCR20	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
SCR21	2007-000120	R-CHIP;680ohm,5%,1/10W,TP,1608	1	SA	
SCR3	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
SCR35	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
SCR36	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
SCR37	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
SCR38	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
SCR39	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
SCR4	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
SCR6	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
VC10	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC11	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC17	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC20	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC50	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC7	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC8	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC9	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VCC1	2203-000783	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	1	SA	
VE1	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
VE2	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11,5	1	SA	
VE4	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE5	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE6	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
VE7	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
VE8	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VIC1	1204-001978	IC-VIDEO PROCESS;LA73054,-,36P,-,SSOP,7V	1	SA	
VIC2	1204-001748	IC-SELECTOR;MM1503XN,SOP,6P,63MIL,PLASTI	1	SA	
VJ5	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
VJ7	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
VJACK1	3722-002297	JACK-PIN;7P+1P(VHS),SN,BA-RD-BU-GR/RD-W	1	SA	
VQ4	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	

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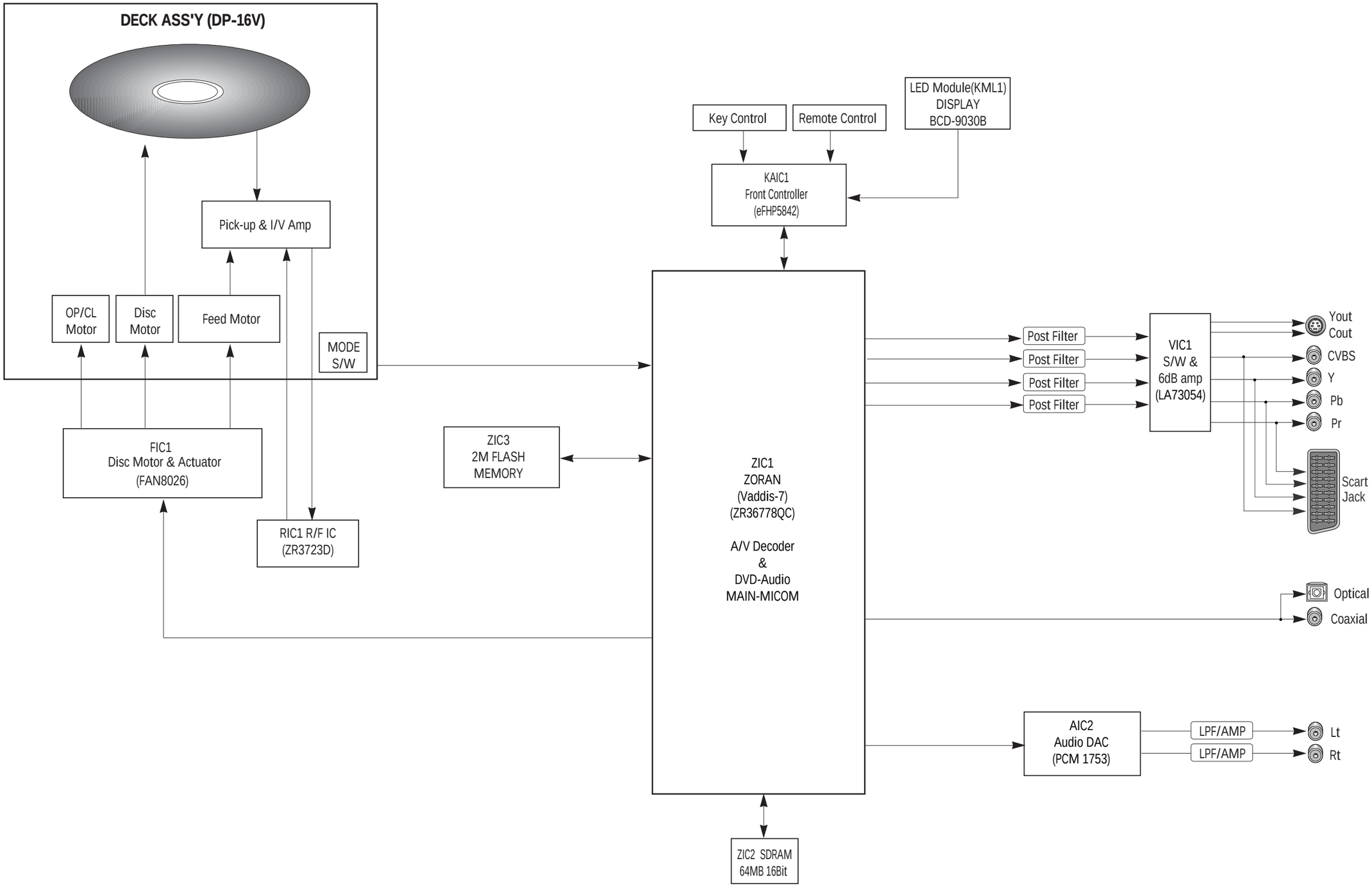
VR28	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
VR29	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
VR30	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VR31	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VR33	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VR34	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VR35	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VR36	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VR37	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
VR38	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
VR41	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
ZC10	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC100	2203-000041	C-CER,CHIP;0.01NF,0.25PF,50V,C0G,TP,1608	1	SA	
ZC11	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC14	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC15	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC16	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC17	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC18	2203-000815	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	1	SA	
ZC19	2203-000815	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	1	SA	
ZC2	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC20	2203-000815	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	1	SA	
ZC21	2203-000815	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	1	SA	
ZC22	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC23	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC24	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC25	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC26	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC27	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC28	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC29	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC3	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC30	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC31	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC32	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA	
ZC33	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC34	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC35	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC36	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC37	2203-000552	C-CER,CHIP;0.02NF,5%,50V,C0G,TP,1608	1	SA	
ZC39	2203-000552	C-CER,CHIP;0.02NF,5%,50V,C0G,TP,1608	1	SA	
ZC4	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC40	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
ZC41	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC42	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC43	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC44	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC45	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC46	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC47	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC48	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC5	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC51	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC52	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
ZC6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC7	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC8	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZC9	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
ZE1	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
ZE2	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
ZE3	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
ZE4	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
ZE5	2401-001507	C-AL;47uF,20%,16V,GP,TP,6.3x5,5	1	SA	
ZE6	2401-001507	C-AL;47uF,20%,16V,GP,TP,6.3x5,5	1	SA	
ZE7	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
ZE8	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
ZE9	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
ZIC1	1204-002307	IC-DECODER;ZR36778,PQFP,208P,28x28mm,PLA	1	SA	
ZIC2	1105-001305	IC-DRAM;4S641632,1MX16X4BIT,TSOP,54P,4	1	SA	
ZIC3	1107-001502	IC-FLASH MEMORY;29LV160M,2Mx8Bit,TSOP,48	1	SA	
ZIC5	1103-001134	IC-EEPROM;24C040,512x8,SOP,8P,5.13x3.95m	1	SA	
ZKR1	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
ZL1	3301-001419	BEAD-SMD;-,220,-,500,TP,-,0.3	1	SA	
ZL2	3301-001419	BEAD-SMD;-,220,-,500,TP,-,0.3	1	SA	
ZL3	3301-001419	BEAD-SMD;-,220,-,500,TP,-,0.3	1	SA	
ZL30	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	1	SA	
ZL32	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	1	SA	
ZL33	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	1	SA	
ZL4	3301-001419	BEAD-SMD;-,220,-,500,TP,-,0.3	1	SA	
ZL5	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	1	SA	
ZR10	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
ZR100	3301-001309	BEAD-SMD;47OHM,1608,500,TP;-,-,0.3	1	SA	
ZR11	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
ZR12	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
ZR13	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
ZR14	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
ZR15	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
ZR16	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
ZR17	2007-007277	R-CHIP;392ohm,1%,1/10W,TP,1608	1	SA	
ZR18	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
ZR19	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
ZR2	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
ZR20	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
ZR21	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
ZR22	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
ZR23	2011-000816	R-NET;100OHM,5%,1/16W,L,CHIP,8P,TP	1	SA	
ZR24	2007-000109	R-CHIP;1Mohm,5%,1/10W,TP,1608	1	SA	
ZR26	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
ZR27	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
ZR28	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
ZR35	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
ZR36	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
ZR45	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
ZR46	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
ZR49	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
ZR50	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
ZR56	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
ZR61	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
ZR62	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	

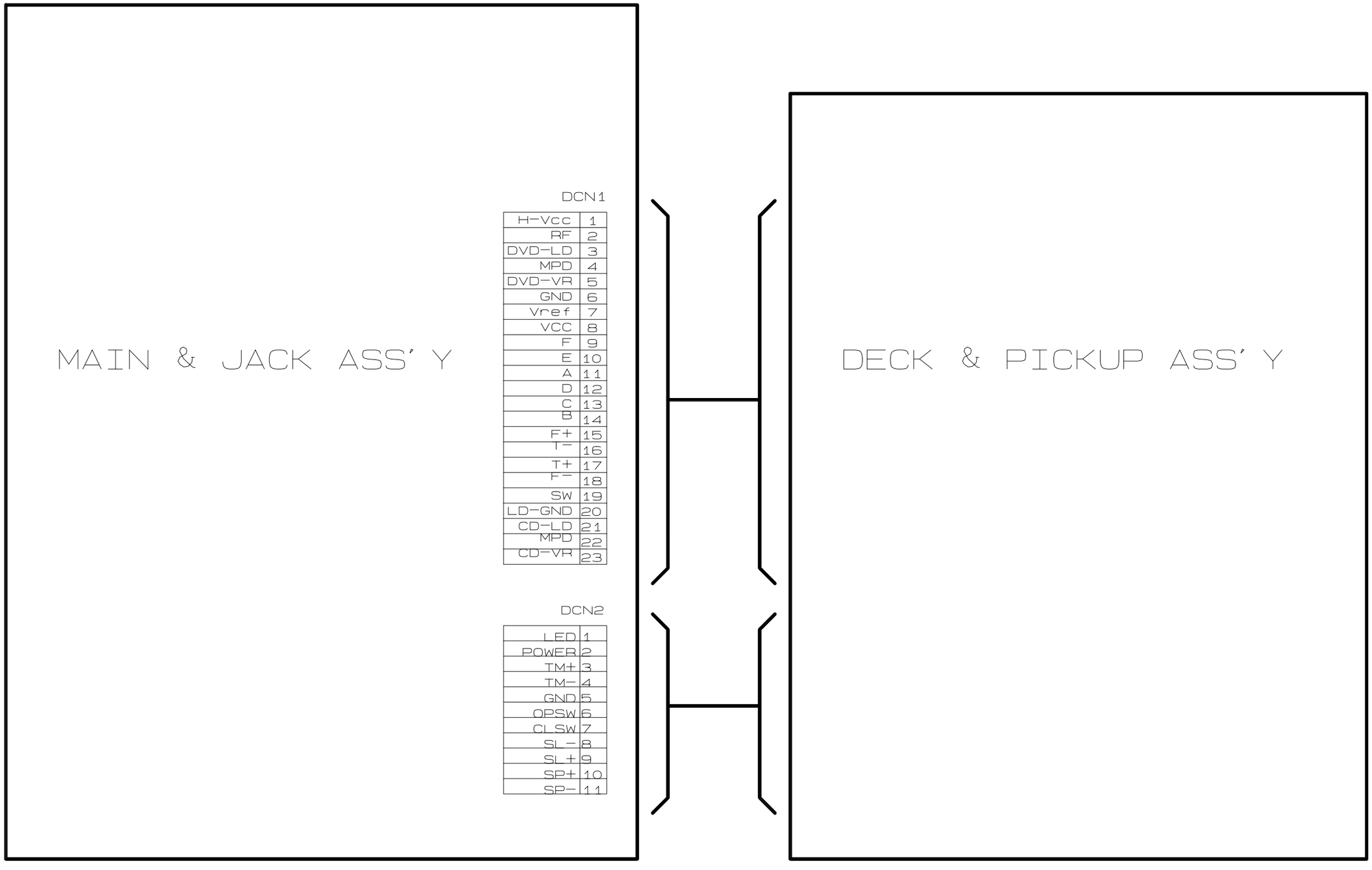
Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
ZR8	3301-001309	BEAD-SMD;47OHM,1608,500,TP,-,-,0.3	1	SA	
ZR9	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
ZY1	2801-003554	CRYSTAL-UNIT;27MHz,10ppm,28-AAM,12pF,40o	1	SA	
H100	**AK97-01011A**	**ASSY-DVD DECK;DP-17V,LEFT,BLACK**	**1**	**SNA**	
H401	AK61-00358A	FRAME-MAIN;DP-17,ABS,SR-0320,94HB,BLK,T3	1	SNA	
DSW1	3403-001026	SWITCH-PUSH;5V,0.7mA,DPST,OFF-ON-OFF,-	1	SA	
S.N.A	AH97-00448B	ASSY-SUB MATERIAL;DP-7S,-,-	1	SNA	
S.N.A	AK97-01005A	ASSY-HOUSING;DP-17,LEFT,BLACK	1	SNA	
S.N.A	AK97-01006A	ASSY-HOLDER CHUCK;-,DP-16,-	1	SNA	
S.N.A	AK97-01105A	ASSY-P U DECK;-,DP-16S,-	1	SNA	
S.N.A	0205-001033	GREASE;PL-30G,W050030019,-	0.5	SNA	
S.N.A	0205-001048	GREASE-BEARING;G-754,BRN,1Kg/6	0.01	SNA	
S.N.A	AK97-01106A	ASSY-SUB DECK;-,DP-16S,SEM	1	SNA	
S.N.A	AK41-00249A	FFC-DECK;DP-17,-,-,11P,-,1mm	1	SNA	
S.N.A	AK41-00251A	PCB-DECK;DP-17,PHENOL,1,-,T1.6,-,-,-,-,	1	SNA	
S.N.A	AH31-00025A	MOTOR-LOADING;RF-300EA-1D390,DP-7,170mA,	1	SNA	
S.N.A	AK66-00058A	PULLEY-MOTOR;DP-17,POM,-,BLK,I3.5,O7.0,H	1	SNA	
S.N.A	AK61-00362A	BRACKET-DECK OUTSERT;DP-16,POM,T1.2,-,-,	1	SNA	
S.N.A	AH66-00077A	GEAR-FEED MOTOR;-,POM M90-44,-,-,-,-,-,-	1	SNA	
S.N.A	AK31-00006A	MOTOR-FEED;RF-300EA-1D390,DP-9,90MA,-,-,	1	SNA	
S.N.A	AK61-00361A	BRACKET-DECK;DP-16,SECC T1.2,T1.2,-,-,GR	1	SNA	
W010	6003-001157	SCREW-TAPTITE;PWH,+,B,M2,L6,ZPC(YEL),SWR	1	SA	
W012	6002-001086	SCREW-TAPPING;PH,+,B,M1.7,L5.0,ZPC(YEL),	2	SA	
A001	**AK59-00011K**	**REMOCON-ASSY;DVD-P240/XAA,XAA,-,-,36,-,-**	**1**	**SA**	
VS001	AK61-00138K	CASE-TOP;DVD-P240/XAA,ABS 94 HB,-,-,-,G	1	SNA	
VS052	AK61-00139A	CASE-BOTTOM;VR-6036,ABS 94 HB,,,,GRY,	1	SNA	
C643	AK64-00330A	DOOR-BATTERY;VR-6036,ABS 94 HB,,,,-,GRY,	1	SNA	
S.N.A	AK64-00332F	BUTTON-RUBBER;DVD-P241/XAA,SILICONE,-,-,	1	SNA	
S.N.A	AK97-00472A	ASSY COMMON-REMOCON;VR-6036,-,-	1	SNA	
	AD99-40085Q	ASSY COMMON-REMOCON,c;VR-6036,-,-	1	SNA	
CT2	2203-000236	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	1	SA	
CT3	2203-000236	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	1	SA	
CT4	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
IC01	AH09-00039C	IC MICOM;S3C1860-XXXX,-,20P,1.8~3.6V,-,	1	SNA	
PCB	AK41-00133A	PCB;P4101-000097A,PHENOL,1,01,1.6,	1	SNA	
RT1	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
	AD99-50056U	ASSY COMMON-REMOCON,t;VR-6036,-,-	1	SNA	
CT1	2401-002206	C-AL;47uF,20%,6.3V,GP,TP,5x7,5mm	1	SA	
	AD99-90091P	ASSY COMMON-REMOCON,m;VR-6036,-,-	1	SNA	
LDT1	0601-000519	LED-IR;ROUND,5mm,170mW,4V,940nm,-	1	SA	
S.N.A	6902-000422	BAG PE;LDPE,T0.08,W80,L300,TRP,-,-PE	1	SNA	
S.N.A	AC68-51211A	LABEL-PASSED;REMOCON,ARP PAPER,-,-,-,-,-	1	SNA	
S.N.A	AK61-00154A	SPRING ETC-REMOCON A(+);VR-6036,CS NI-CO	1	SNA	
S.N.A	AK61-00155A	SPRING ETC-REMOCON B(-);VR-6036,CS NI-CO	1	SNA	
S.N.A	AK61-00156A	SPRING ETC-REMOCON C;VR-6036,CS NI-CO S	1	SNA	
C457	AK64-00331A	WINDOW-REMOCON;VR-6036,PC,-,-,-,-,VIO,-	1	SNA	
XT01	2802-000148	RESONATOR-CERAMIC;455KHz,0.4%,BK,7.0x3.5	1	SNA	
S.N.A	AC39-42001R	CABLE-A/V;PVC,-,-,3P,-,-,-	1	SA	
W001	6003-000275	SCREW-TAPTITE;BH,+,B,M3,L10,BLK ,SWCH101	4	SA	
W275	6003-001561	SCREW-TAPTITE;BH,+,WT,B,M3,L6,ZPC(YEL),S	7	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
I/B	AK68-00632G	MANUAL USERS;DVD-P355,XEL,GER/FRA/NL/ENG	1	SA	
P-CASE	AK69-00355E	PACKING CASE;DVD-P355B/XEL,SW-2,FLEXO,T5	1	SA	

8. Block Diagram



9. Wiring Diagram



11. Schematic Diagrams

Note

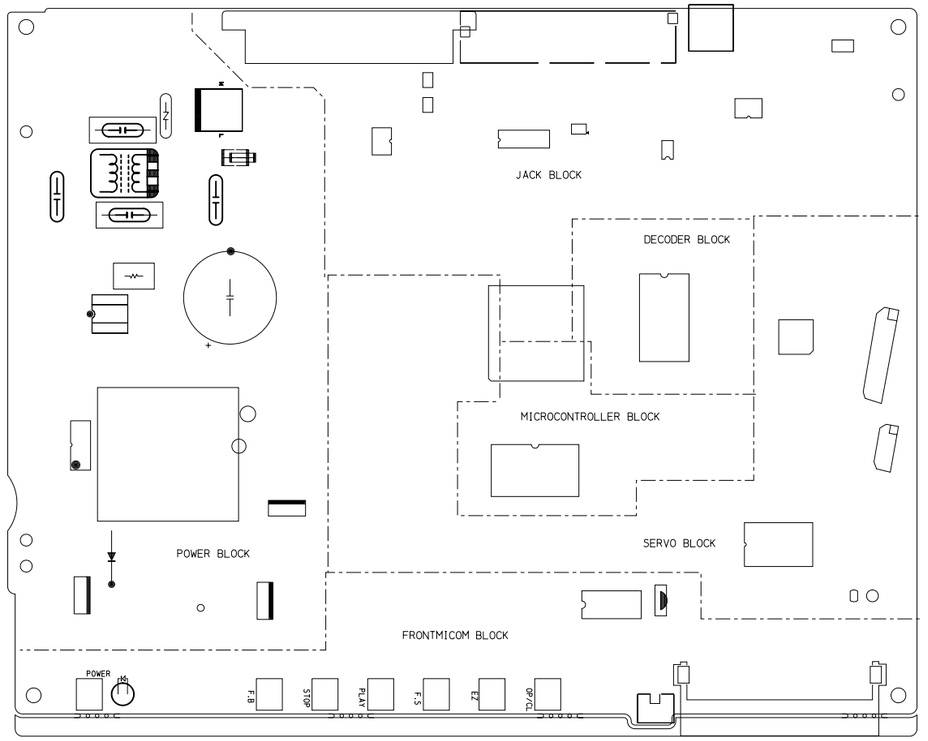
For schematic Diagram
- Resistors are in ohms, 1/8W unless otherwise noted.

Special note :
Most semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "electrostatically sensitive (ES) devices" section of this service manual.

Note :
Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list (may be slightly different or amended since this drawing was prepared).

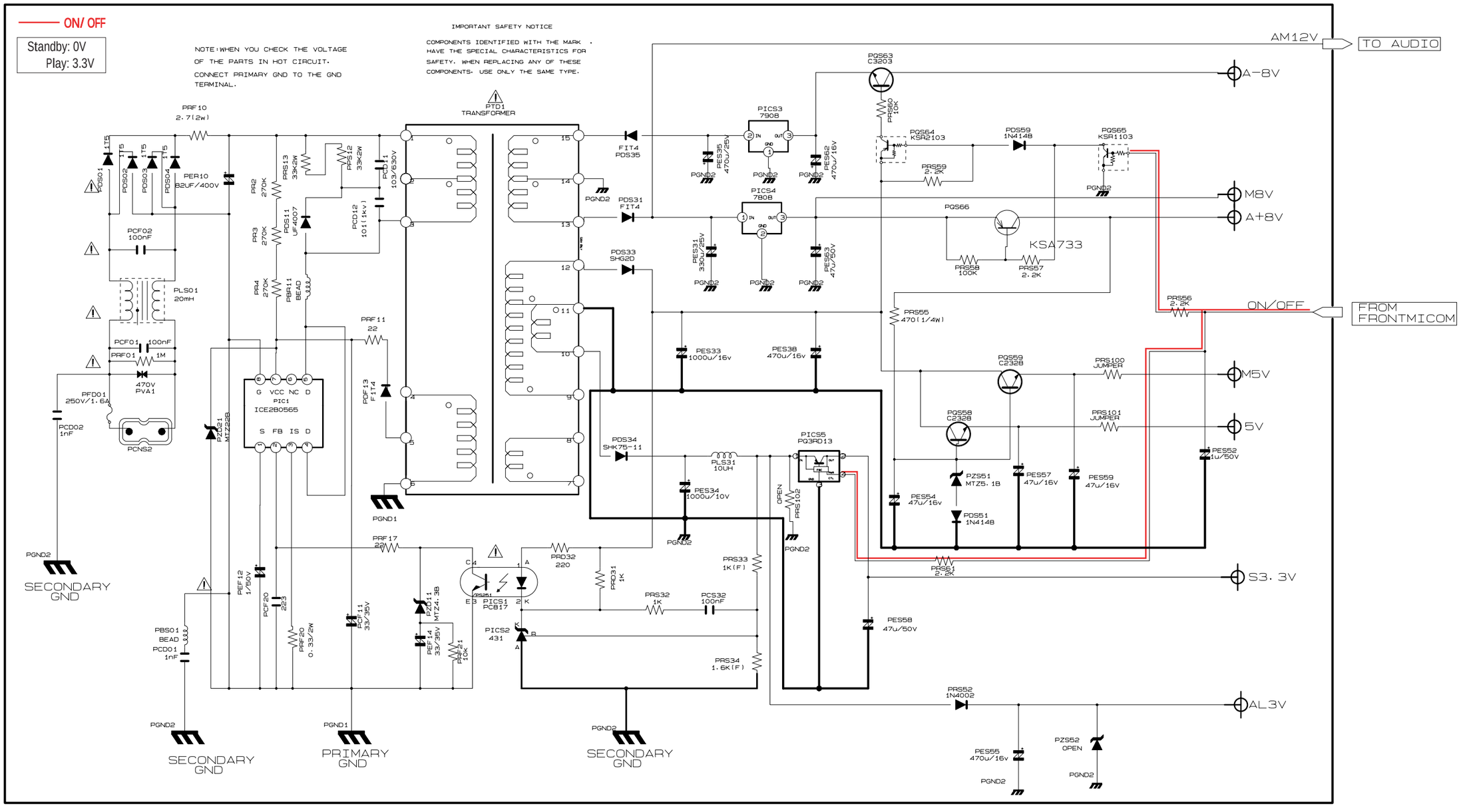
Important safety notices :
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components.
Use only the same type.

Block Identification of PCB



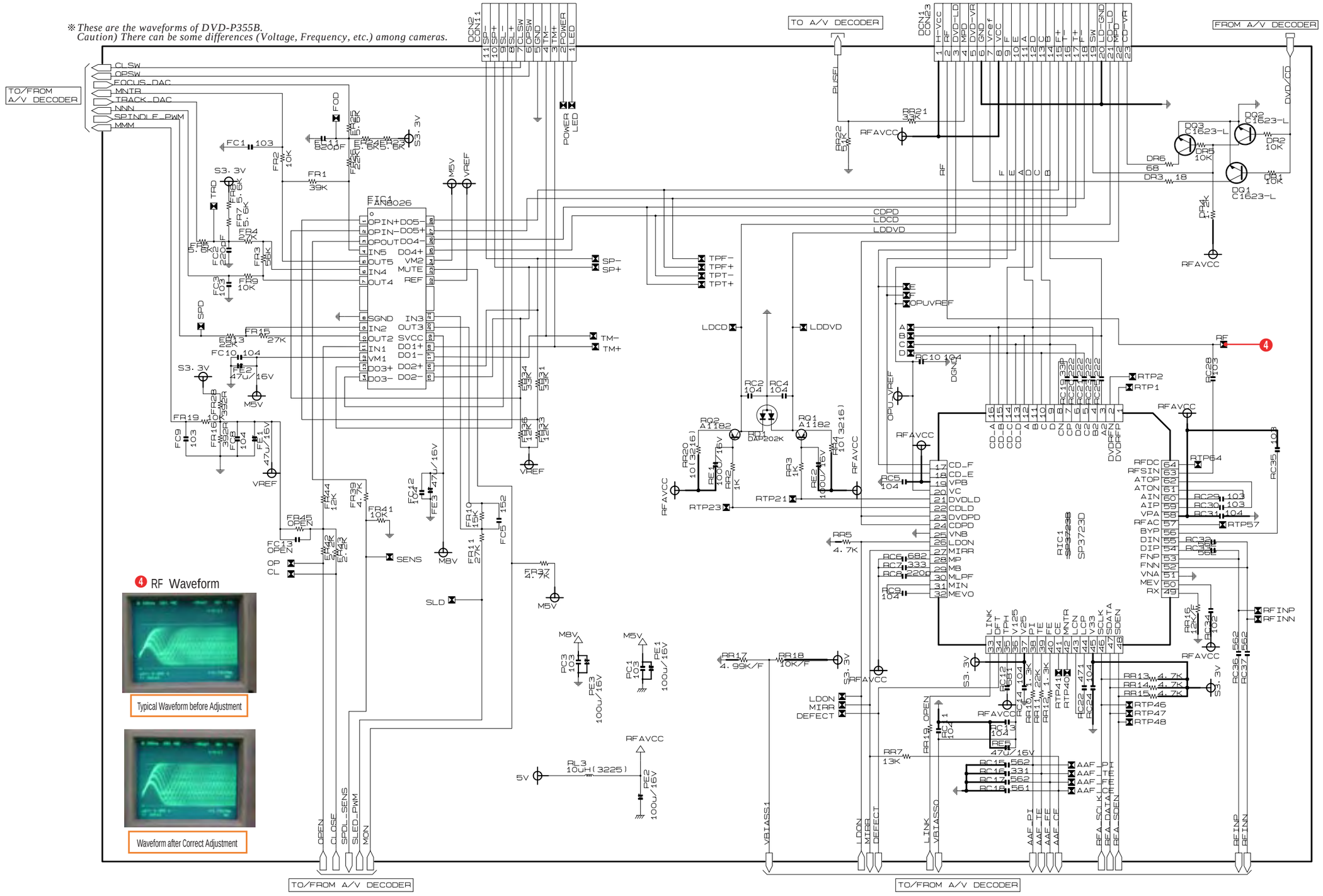
Main PCB (Component Side)

11-1 Power Drive



11-2 Servo

※ *These are the waveforms of DVD-P355B.*
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

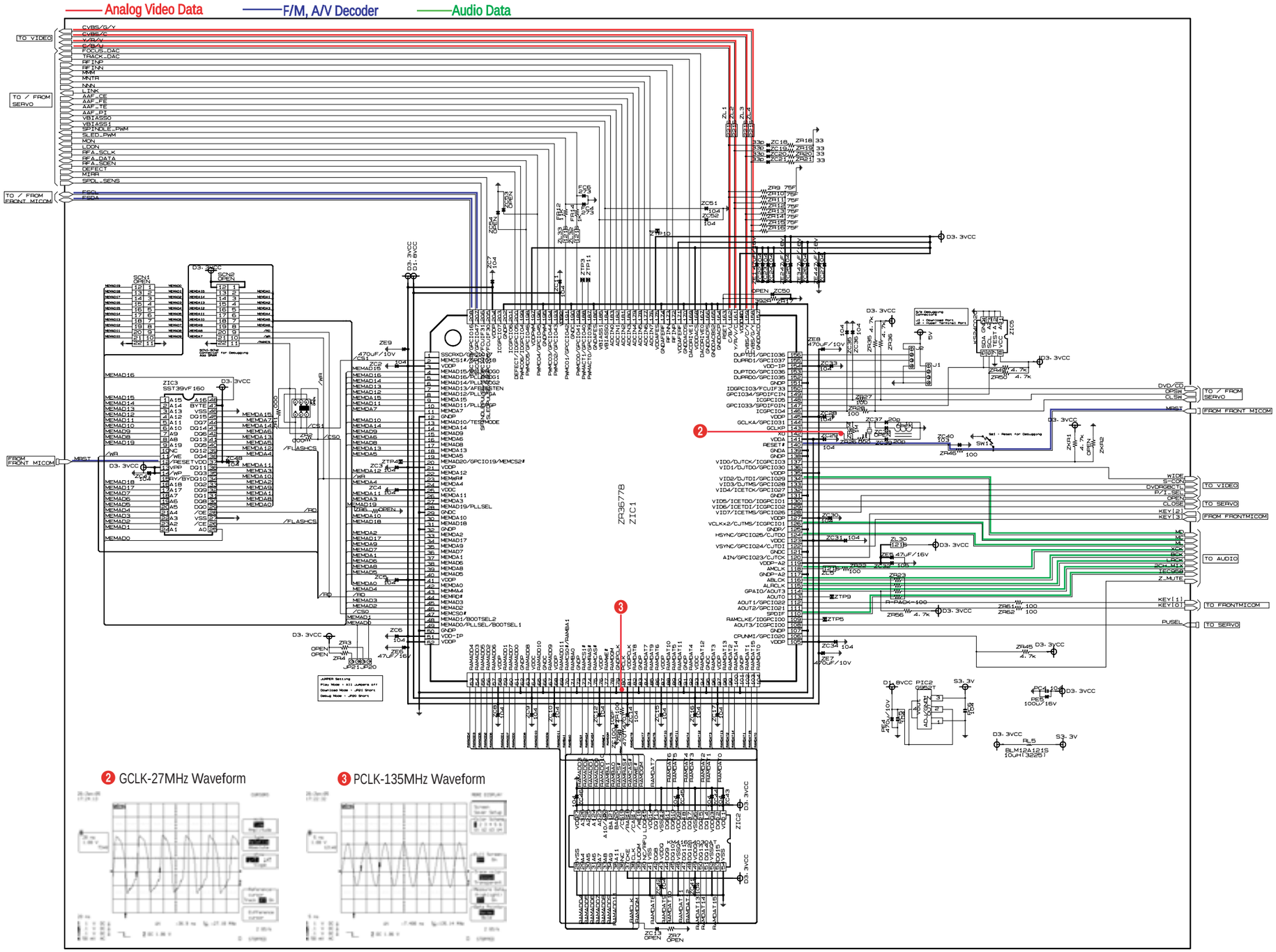


4 RF Waveform

Typical Waveform before Adjustment

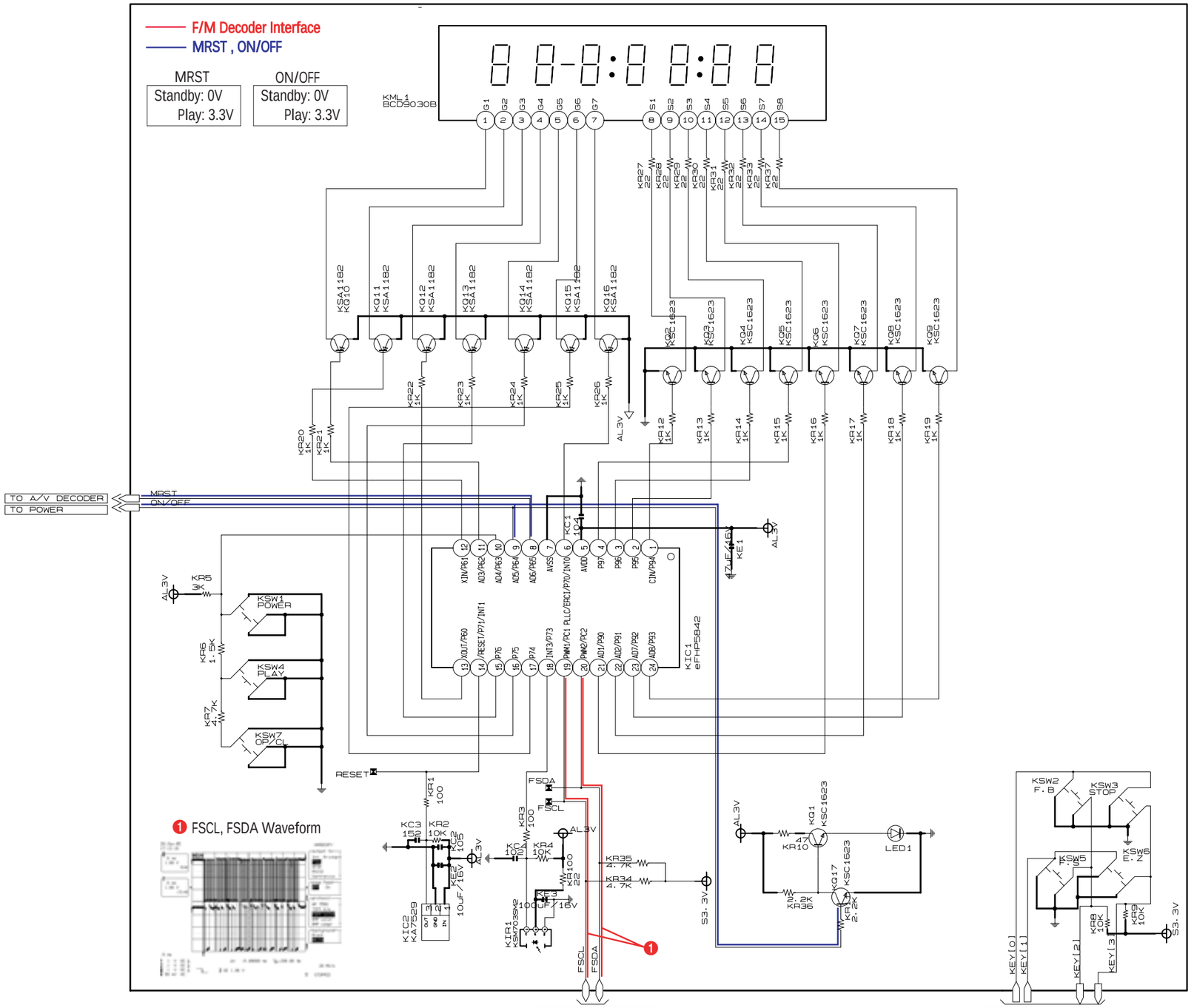
Waveform after Correct Adjustment

11-3 AV-Decoder



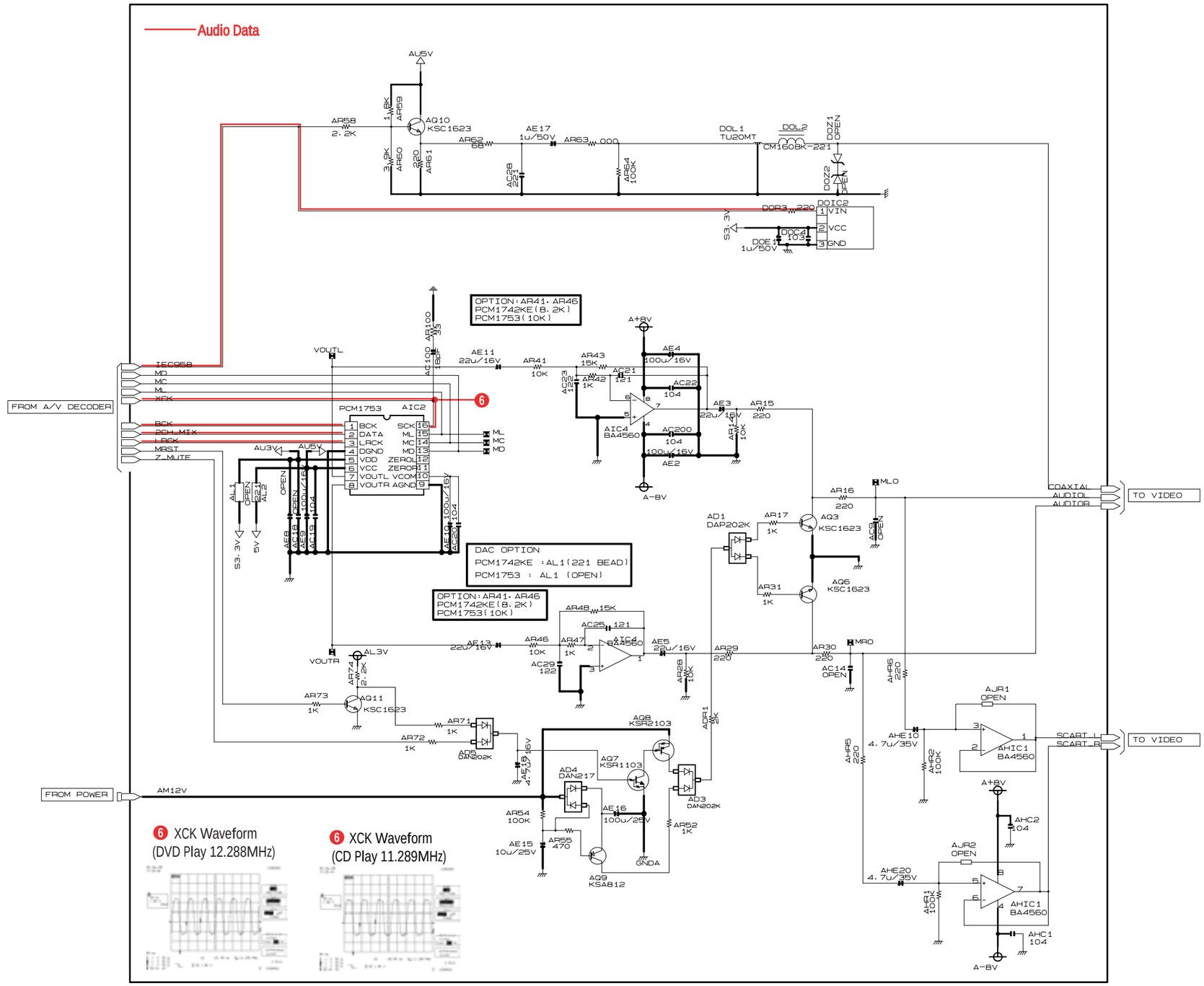
※ *These are the waveforms of DVD-P355B.*
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

11-4 Fromt Micom



※ *These are the waveforms of DVD-P355B.*
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

11-5 Audio



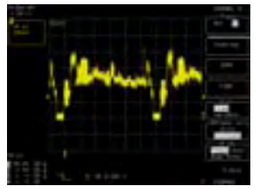
※ *These are the waveforms of DVD-P355B.*
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

11-6 Video

※ *These are the waveforms of DVD-P355B.*
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

Analog Video Data

5 CVBS Waveform



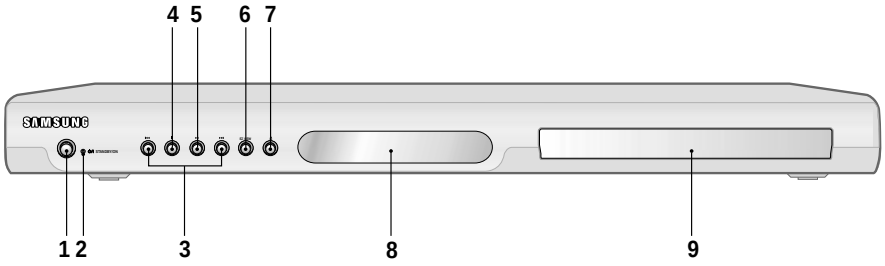
MEMO

12. Operating Instructions

SETUP

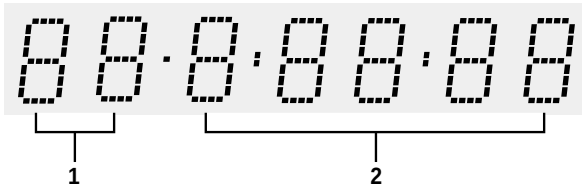
Description

Front Panel Controls



1. **STANDBY/ON (⏻/I)**
   When STANDBY/ON is pressed on, the indicator goes out and the player is turned on.
2. **STANDBY indicator**
   When the unit is first plugged in, this indicator lights.
3. **SKIP (⏮ / ⏭) SEARCH**
   Allow you to search forward/backward through a disc. Use to skip the title, chapter or track.
4. **STOP (■)**
   Stops disc play.
5. **PLAY/PAUSE (▶II)**
   Begin or pause disc play.
6. **EZ VIEW**
   The aspect ratio of a picture can easily be adjusted to your TV's screen size (16:9 or 4:3).
7. **OPEN/CLOSE (▲)**
   Press to open and close the disc tray.
8. **DISPLAY**
   Operation indicators are displayed here.
9. **DISC TRAY**
   Place the disc here.

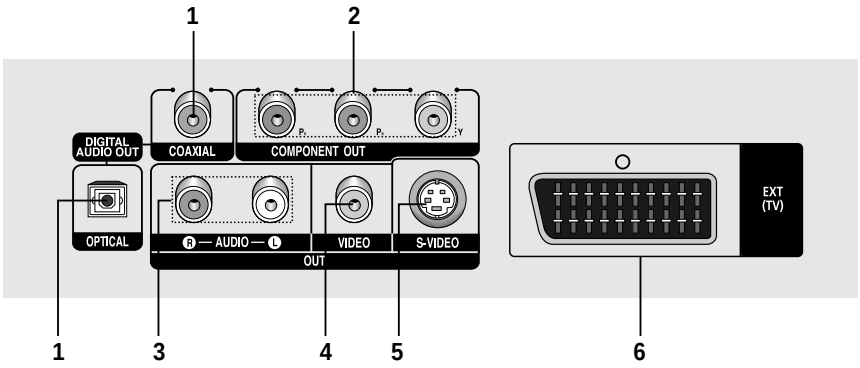
Front Panel Display



1. **Chapter/Track number indicator**
2. **Total playing time/Displays various messages concerning operations such as PLAY, STOP, LOAD ...**
   no DISC: No disc loaded.
   OPEN: The disc tray is open.
   LOAD: Player is loading disc information.

SETUP

Rear Panel



1. DIGITAL AUDIO OUT JACKS
- Use either an optical or coaxial digital cable to connect to a compatible Dolby Digital receiver.
- Use either an optical or coaxial digital cable to connect to an A/V Amplifier that contains a Dolby Digital, MPEG2 or DTS decoder.

2. COMPONENT VIDEO OUT JACKS
- Use these jacks if you have a TV with Component Video in jacks. These jacks provide P_R, P_B and Y video.
- If Component(P-SCAN) Video Output is selected in Setup Menu, progressive scan mode will work.
- If Component(I-SCAN) Video Output is selected in Setup Menu, interlaced scan mode will work.

3. AUDIO OUT JACKS

Connect to the Audio input jacks of your television or audio/video receiver.

4. VIDEO OUT JACK
- Use a video cable to connect to the Video input jack on your television.
- The Video Output in Setup Menu must be set to COMPOSITE/S-VIDEO.

5. S-VIDEO OUT JACK
- Use the S-Video cable to connect this jack to the S-Video jack on your television for higher picture quality.
- The Video Output in Setup Menu must be set to COMPOSITE/S-VIDEO.

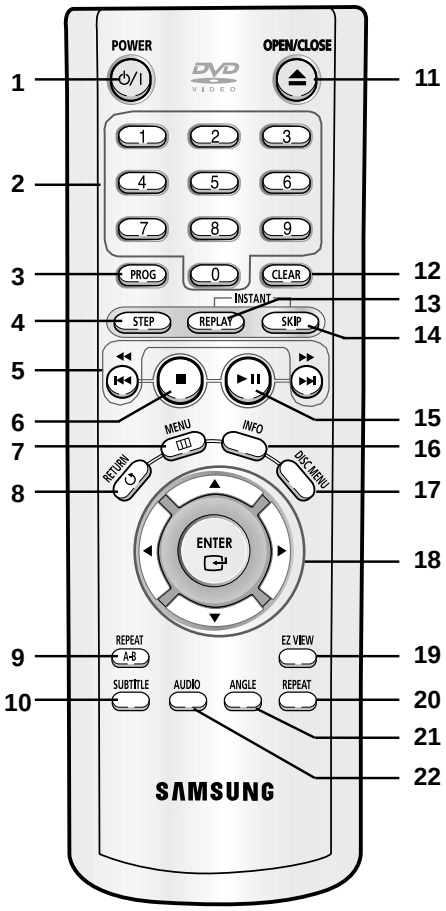
6. SCART JACK
- Connect to a TV scart input jack.

Note

- Consult your TV User's Manual to find out if your TV supports Progressive Scan (P-SCAN). If Progressive Scan is supported, follow the TV User's Manual regarding Progressive Scan settings in the TV's menu system.
- If Component (P-SCAN) Video Output is selected in Setup Menu, Video and S-Video Outputs do not work.
- See pages 53 ~ 54 to get more information on how to use the setup menu.

SETUP

Tour of the Remote Control



1. **DVD POWER Button**
   Turns the power on or off.
2. **NUMBER Buttons**
3. **PROG Button**
   Allows you to program a specific order.
4. **STEP Button**
   Advances play one frame at a time.
5. **SEARCH/SKIP Buttons (◀◀ / ▶▶ , ⏮ / ⏭)**
   Allow you to search forward/backward through a disc.
   Use to skip the title, chapter or track.
6. **STOP Button (■)**
7. **MENU Button**
   Brings up the DVD player's menu.
8. **RETURN Button**
   Returns to a previous menu.
9. **REPEAT A-B Button**
   Allows you to repeat play A-B disc.
10. **SUBTITLE Button**
11. **OPEN/CLOSE (▲) Button**
    To open and close the disc tray.
12. **CLEAR Button**
    Use to remove menus or status displays from the screen.
13. **INSTANT REPLAY Button**
    This function is used to replay the previous 10 seconds of a movie from the current position.
14. **INSTANT SKIP Button**
    This function skips playback ahead 10 seconds.
15. **PLAY/PAUSE Button (▶II)**
    Begin/Pause disc play.
16. **INFO Button**
    Displays the current disc mode.
17. **DISC MENU Button**
    Brings up the Disc menu.
18. **ENTER/▲▼◀ ▶ Buttons**
    This button functions as a toggle switch.
19. **EZ VIEW Button**
    The aspect ratio of a picture can easily be adjusted according to the screen size of your TV (16:9 or 4:3).
20. **REPEAT Button**
    Allows you to repeat play a title, chapter, track, or disc.
21. **ANGLE Button**
    Use to access various camera angles on a DVD.
22. **AUDIO Button**
    Use this button to access various audio functions on a disc.

Chapter 2

CONNECTIONS

Choosing a Connection

The following shows examples of connections commonly used to connect the DVD player with a TV and other components.

Before Connecting the DVD Player

- Always turn off the DVD player, TV, and other components before you connect or disconnect any cables.
- Refer to the user's manual of the additional components (such as a TV) you are connecting for more information on those particular components.

Connecting to a TV (SCART)

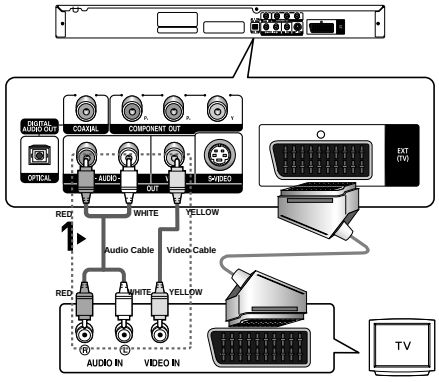
- Using the SCART, connect the SCART (EXT) terminal on the rear of the DVD Player to the SCART(IN) terminal of your TV.
- If your TV is not equipped with a SCART you can select one of the following alterative connections:

Connection to a TV (Video CVBS)

1
Using video/audio cables, connect the **VIDEO (yellow)/AUDIO (red and white) OUT** terminals on the rear of the DVD player to the **VIDEO (yellow)/AUDIO (red and white) IN** terminals of your TV.

2
Turn on the DVD player and TV.

3
Press the input selector on your TV remote control until the Video signal from the DVD player appears on the TV screen.



Note

- **Noise may be generated if the audio cable placed too close to the power cable.**
- If you want to connect to an Amplifier, please refer to the Amplifier connection page. (See pages 15 to 16)
- The number and position of terminals may vary depending on your TV set.
  Please refer to the user's manual of your TV.
- If there is one audio input terminal on the TV, connect it to the [AUDIO OUT][left] (white) terminal of the DVD player.

CONNECTIONS

Connection to a TV (S-Video)

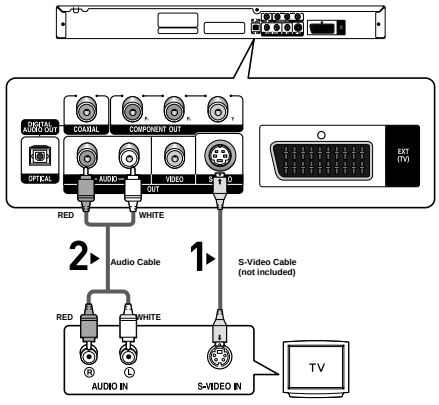
- Connecting to your TV using an S-Video cable.
- You will enjoy high quality images. S-Video separates the picture element into black and white(Y) and color(C) signals to present clearer images than regular video input mode. (Audio signals are delivered through the audio output.)

1
Using an S-Video cable (not included), connect the **S-VIDEO OUT** terminal on the rear of the DVD player to the **S-VIDEO IN** terminal of your TV.

2
Using the audio cables, connect the **AUDIO (red and white) OUT** terminals on the rear of the DVD player to the **AUDIO (red and white) IN** terminals of your TV.
Turn on the DVD player and TV.

3
Press the input selector on your TV remote control until the S-Video signal from the DVD player appears on your TV screen.

4
Set the Video Output to **COMPOSITE/S-VIDEO** in the Display Setup menu. (See pages 53 to 54)



Note

- If you want to connect to an Amplifier, please refer to the Amplifier connection page. (See pages 15 to 16)
- The number and position of terminals may vary depending on the TV set. Please refer to the user's manual of your TV.

CONNECTIONS

Connection to a TV (Interlace)

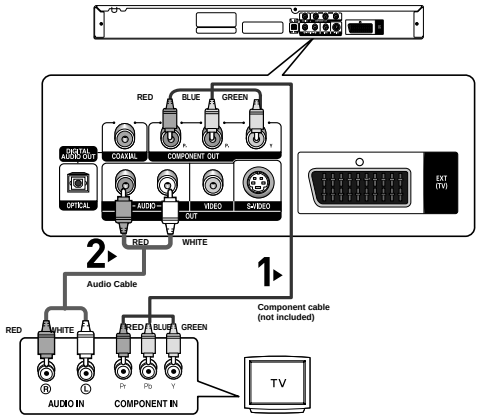
- Connecting to your TV using Component video cables.
- You will enjoy high quality and accurate color reproduction images. Component video separates the picture element into black and white(Y), blue(P_B), red(P_R) signals to present clear and clean images. (Audio signals are delivered through the audio output.)

1
Using component video cables (not included), connect the **COMPONENT VIDEO OUT** terminals on the rear of the DVD player to the **COMPONENT IN** terminals of your TV.

2
Using the audio cables, connect the **AUDIO (red and white) OUT** terminals on the rear of the DVD player to the **AUDIO (red and white) IN** terminals of your TV.
Turn on the DVD player and TV.

3
Press the input selector on your TV remote control until the Component signal from the DVD player appears on the TV screen.

4
Set the Video Output to **Component (I-SCAN)** in the Display Setup menu. (See pages 53 to 54)



Note

- **If Video output is incorrectly set to COMPOSITE/S-VIDEO with the Component cables connected, the screen will turn red.**
- If you want to connect to an Amplifier, please refer to the Amplifier connection page. (See pages 15 to 16)
- The component terminal of your TV may be marked “R-Y, B-Y, Y” or “Cr, Cb, Y” instead of “P_R, P_B, Y” depending on the manufacturer. The number and position of terminals may vary depending on the TV set. Please refer to the user's manual of your TV.

CONNECTIONS

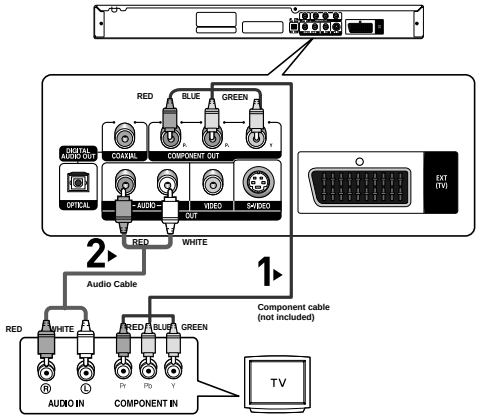
Connection to a TV (Progressive)

1
Using component video cables (not included), connect the **COMPONENT VIDEO OUT** terminals on the rear of the DVD player to the **COMPONENT IN** terminals of your TV.

2
Using the audio cables, connect the **AUDIO (red and white) OUT** terminals on the rear of the DVD player to the **AUDIO (red and white) IN** terminals of your TV.
Turn on the DVD player and TV.

3
Press the input selector on your TV remote control until the Component signal from the DVD player appears on the TV screen.

4
Set the Video Output to **Component (P-SCAN)** in the Display Setup menu. (See pages 53 to 54)



To see the progressive video output,

- Consult your TV User's Manual to find out if your TV supports Progressive Scan.
If Progressive Scan is supported, follow the TV User's Manual regarding Progressive Scan settings in the TV's menu system.
- Depending on your TV, the connection method may differ from the illustration above.

Note

- What is "Progressive Scan"?
  Progressive scan has twice as many scanning lines as the interlace output method.
  Progressive scanning method provides better and clearer picture quality.

CONNECTIONS

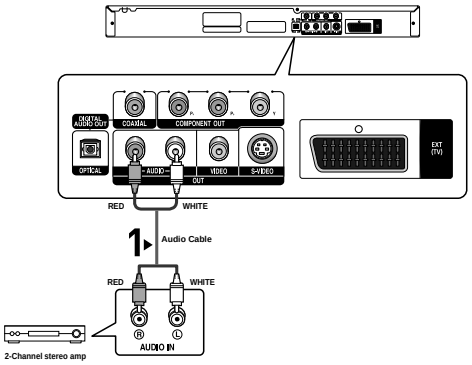
Connection to an Audio System (2 Channel Amplifier)

1
Using the audio cables, connect the **AUDIO (red and white) OUT** terminals on the rear of the DVD player to the **AUDIO (red and white) IN** terminals of the Amplifier.

2
Using the video signal cable(s), connect the **VIDEO, S-VIDEO** or **COMPONENT OUT** terminals on the rear of the DVD player to the **VIDEO, S-VIDEO** or **COMPONENT IN** terminal of your TV as described on pages 11 to 14.

3
Turn on the DVD player, TV, and Amplifier.

4
Press the input select button of the Amplifier to select **external input** in order to hear sound from the DVD player.
Refer to your Amplifier's user manual to set the Amplifier's audio input.



Note

- **Please turn the volume down when you turn on the Amplifier. Sudden loud sound may cause damage to the speakers and your ears.**
- Please set the audio in the menu screen according to the Amplifier. (See pages 51 to 52)
- The position of terminals may vary depending on the Amplifier.
  Please refer to the user's manual of the Amplifier.

CONNECTIONS

Connection to an Audio System (Dolby digital, MPEG2 or DTS Amplifier)

1

If using an optical cable (not included), connect the **DIGITAL AUDIO OUT (OPTICAL)** terminal on the rear of the DVD player to the **DIGITAL AUDIO IN (OPTICAL)** terminal of the Amplifier.
If using a coaxial cable (not included), connect the **DIGITAL AUDIO OUT (COAXIAL)** terminal on the rear of the DVD player to the **DIGITAL AUDIO IN (COAXIAL)** terminal of the Amplifier.

2

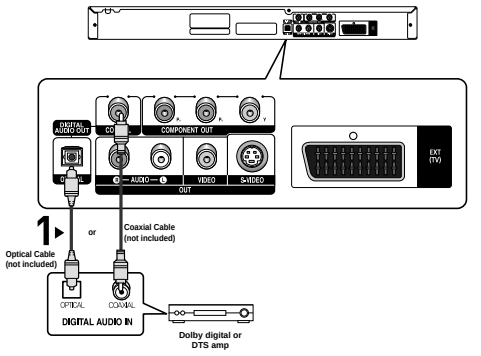
Using the video signal cable(s), connect the **VIDEO**, **S-VIDEO** or **COMPONENT OUT** terminals on the rear of the DVD player to the **VIDEO**, **S-VIDEO** or **COMPONENT IN** terminal of your TV as described on pages 11 to 14.

3

Turn on the DVD player, TV, and Amplifier.

4

Press the input select button of the Amplifier to select **external input** in order to hear sound from the DVD player.
Refer to your Amplifier's user manual to set the Amplifier's audio input.



Note

- **When you connect the DVD player to DTS Amplifier and play a DTS disc, set the DTS to On in Audio Setup menu. If it is set to Off, sound will not be heard, or there will be a loud sound.**
- **Please turn the volume down when you turn on the Amplifier. Sudden loud sound may cause damage to the speakers and your ears.**
- Please set the audio in the menu screen according to the Amplifier. (See pages 51 to 52)
- The position of terminals may vary depending on the Amplifier.
  Please refer to the user's manual of the Amplifier.

Chapter 3

BASIC FUNCTIONS

Playing a Disc

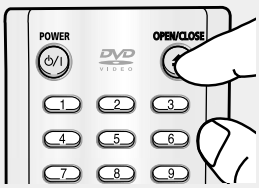
Before Play

- Turn on your TV and set it to the correct Video Input on the TV's remote control.
- If you connected an external Audio System, turn on your Audio System and set it to the correct Audio Input.

After plugging in the player, the first time you press the DVD **POWER** button, this screen comes up: If you want to select a language, press a **NUMBER** button. (This screen will only appear when you plug in the player for the first time.)
If the language for the startup screen is not set, the settings may change whenever you turn the power on or off. Therefore, make sure that you select the language you want to use.
Once you select a menu language, you can change it by pressing the ⏭ button on the front panel of the unit for more than 5 seconds with no disc in the unit. Then the **SELECT MENU LANGUAGE** window appears again where you can reset your preferred language.

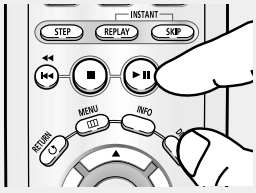
Playback

1
Press the **OPEN/CLOSE (⏏)** button.
The STANDBY indicator light goes out and the tray opens.



2
Place a disc gently into the tray with the disc's label facing up.

3
Press the **PLAY/PAUSE (⏯)** button or **OPEN/CLOSE (⏏)** button to close the disc tray.

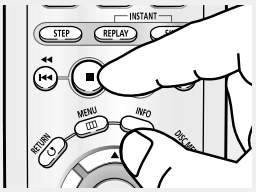


◄ RESUME function

When you stop disc play, the player remembers where you stopped, so when you press PLAY/PAUSE (⏯) button again, it will pick up where you left off. (unless the disc is removed or the player is unplugged, or if you press the STOP (■) button twice.)

BASIC FUNCTIONS

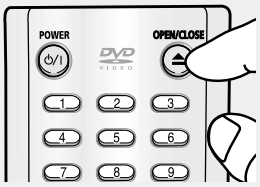
4
Stopping Play
Press the **STOP (■)** button during play.



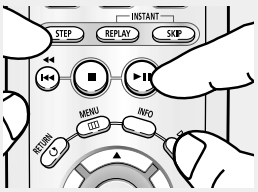
Note

- If the player is left in the stop mode for more than one minute without any user interaction, a screen saver will be activated. Press the PLAY/PAUSE (▶II) button to resume normal play.
- If the player is left in the stop mode for more than 30 minutes, the power will automatically turn off. (Automatic Power-Off Function)

5
Removing Disc
Press the **OPEN/CLOSE (▲)** button.



6
Pausing Play
Press the **PLAY/PAUSE (▶II)** or **STEP** button on the remote control during play.

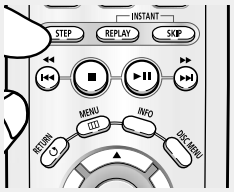


◄ Screen stops, no sound.
To resume, press the PLAY/PAUSE (▶II) button once again.

Note

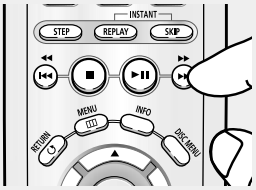
If the player is left for about 5 minutes in pause mode, it will stop.

7
Step Motion Play (Except CD)
Press the **STEP** button on the remote control during play.



◄ Each time the button is pressed, a new frame will appear.
No sound is heard during STEP mode.
Press the PLAY/PAUSE (▶II) button to resume normal play.
You can only perform step motion play in the forward direction.

8
Slow Motion Play (Except CD)
Press and hold the **SEARCH (▶▶)** button to choose the play speed between 1/8, 1/4 and 1/2 of normal during PAUSE or STEP mode.



◄ No sound is heard during slow mode.
Press the PLAY/PAUSE (▶II) button to resume normal play.
Reverse slow motion play will not work.

Note

This (⊘) icon indicates an invalid button press.

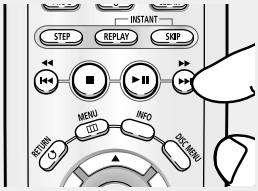
BASIC FUNCTIONS

Using the Search and Skip Functions

During play, you can search quickly through a chapter or track, and use the skip function to jump to the next selection.

Searching through a Chapter or Track

During play, press the **SEARCH** (◀◀ or ▶▶) button on the remote control for more than 1 second.



◄ If you want to search at a faster speed on the DVD, VCD or CD, press and hold the button.

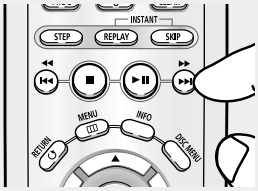
DVD	2X, 8X, 32X, 128X
VCD	4X, 8X
CD	2X, 4X, 8X

Note

- The speed marked in this function may be different from the actual playback speed.
- No sound is hearing during search mode (Except CD).

Skipping Tracks

During play, press the **SKIP** (⏮ or ⏭) button.



- When playing a DVD, if you press the SKIP (⏭) button, it moves to the next chapter. If you press the SKIP (⏮) button, it moves to the beginning of the chapter. One more press makes it move to the beginning of the previous chapter.
- When playing a VCD 2.0 in Menu Off mode, or a VCD 1.1 or a CD, if you press the SKIP (⏭) button, it moves to the next track. If you press the SKIP (⏮) button, it moves to the beginning of the track. One more press makes it move to the beginning of the previous track.
- If a track exceeds 15 minutes when playing a VCD and you press the ⏭ button, it moves forward 5 minutes. If you press the ⏮ button, it moves backward 5 minutes.

Note
When playing VCD 2.0, this function works only when the menu is off.

Basic Functions

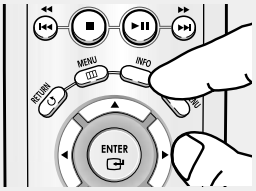
BASIC FUNCTIONS

Using the Display Function

When Playing a DVD/VCD/CD/MPEG4

1

During play, press the **INFO** button on the remote control.

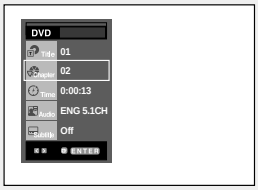


◄ You can select Info in the function menu by pressing the MENU button.

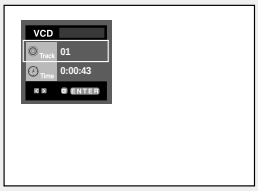
2

Press the ▲/▼ buttons to select the desired item.

DVD

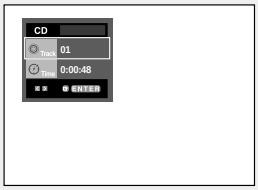


VCD

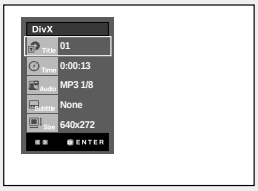


◄ When playing VCD 2.0, this function works only when the menu is off.

CD



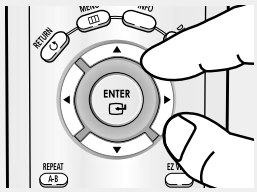
MPEG4



BASIC FUNCTIONS

3

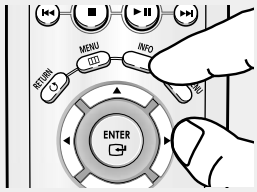
Press the ◀/▶ buttons to make the desired setup and then press the **ENTER** button.



◄ You may use the number buttons of the remote control to directly access a title, chapter or to start the playback from a desired time.

4

To make the screen disappear, press the **INFO** button again.



Note

Title	To access the desired title when there is more than one in the disc. For example, if there is more than one movie on a DVD, each movie will be identified.
Chapter Track	Most DVD discs are recorded in chapters so that you can quickly find a specific passage (similar to tracks on an audio CD).
Time	Allows playback of the film from a desired time. You must enter the starting time as a reference. The time search function does not operate on some discs.
Audio	Refers to the film's soundtrack language. In the example, the soundtrack is played in English 5.1CH. A DVD disc can have up to eight different soundtracks. The MP3, AC3 and WMA are supported.(DivX)
Subtitle	Refers to the subtitle languages available in the disc. You will be able to choose the subtitle languages or, if you prefer, turn them off from the screen. A DVD disc can have up to 32 different subtitles.
Size	(DivX) File Size has a relationship with resolution of a title. The larger file size is, the higher resolution is displayed. If the file resolution is small, it scales up automatically. So you can see the larger screen.

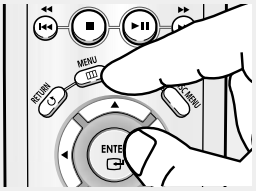
BASIC FUNCTIONS

Using the Disc and Title Menu

Using the Disc Menu (DVD)

1

During the playback of a DVD disc, press the **MENU** button on the remote control.



2

Press the ▲/▼ buttons to select **Disc Menu**, then press the ► or **ENTER** button.

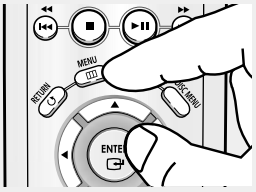
Note

- Depending on a disc, the Disc Menu may not work.
- You can also use the Disc Menu, using the DISC MENU button on the remote control.
- In VCD 2.0 the DISC MENU button is used to select Menu On or Menu Off mode.

Using the Title Menu (DVD)

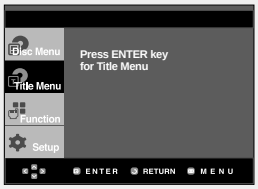
1

During the playback of a DVD disc, press the **MENU** button on the remote control.



2

Press the ▲/▼ buttons to select **Title Menu**, then press the ► or **ENTER** button.



Note

- Depending on a disc, the Title Menu may not work.
- Title Menu will only be displayed if there are at least two titles in the disc.

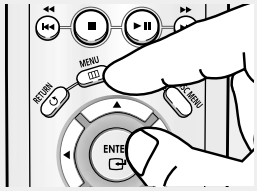
BASIC FUNCTIONS

Using the Function Menu

Using the Function Menu (DVD/VCD)

1

Press the **MENU** button during playback.



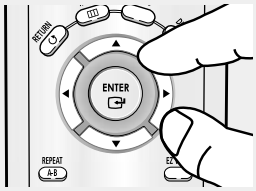
2

Press the ▲/▼ buttons to select **Function**, then press the ► or **ENTER** button.

- Info (See pages 20 to 21)
- Zoom (See page 34)
- Bookmark (See pages 32 to 33)
- Repeat (See pages 24 to 25)
- EZ View (See pages 27 to 28)

3

Press the ▲/▼ buttons to select one of the five functions. Then press the ► or **ENTER** button to access the function.



◄ You can also directly select these functions using their respective buttons on the remote control.
- INFO
- EZ VIEW
- REPEAT

Basic Functions

BASIC FUNCTIONS

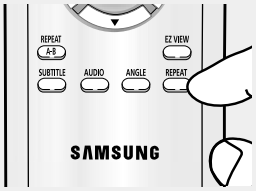
Repeat Play

Repeat the current track, chapter, title, a chosen section (A-B), or all of the disc.

When playing a DVD/VCD/CD

1

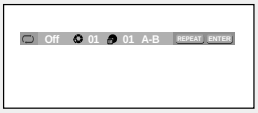
Press the **REPEAT** button on the remote control. Repeat screen appears.



2

Press the ◀/▶ buttons to select **Chapter**, **Title**, or **A-B**, then press the **ENTER** button.

DVD



VCD/CD

◄ DVD repeats play by chapter or title, CD and VCD repeat play by disc or track.

Chapter (): repeats the chapter that is playing.
Title (): repeats the title that is playing.
Disc (): repeats the disc that is playing.
Track (): repeats the track that is playing.
A-B: repeats a segment of the disc that you select.

Using the A-B Repeat function

1. Press the REPEAT A-B button at the point where you want repeat play to start (A). B is automatically highlighted.
2. Press the REPEAT A-B button at the point where you want the repeat play to stop (B).
   - To return to normal play, press the CLEAR button.

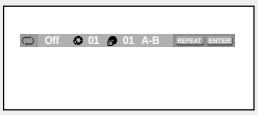
Note

A-B REPEAT does not allow you to set point (B) until at least 5 seconds of playback time has elapsed after point (A) has been set.

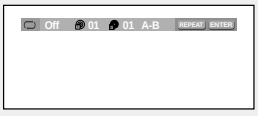
3

To return to normal play, press **REPEAT** button again, then press the ◀/▶ buttons to select **Off** and press **ENTER** button.

DVD



VCD/CD



Note

- Depending on a disc, the Repeat function may not work.
- When playing VCD 2.0, this function works only when the menu is off.

BASIC FUNCTIONS

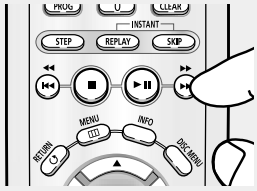
Slow Repeat Play

This feature allows you slowly to repeat scenes containing sports, dancing, musical instruments being played etc., so you can study them more closely.

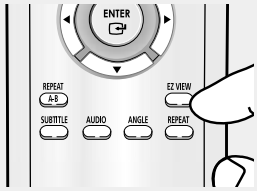
When playing a DVD/VCD

1
During play, press the **PLAY/PAUSE (►II)** button.

2
Press and hold the **SEARCH (▶▶)** button to choose the play speed between 1/8, 1/4 and 1/2 of normal during PAUSE or STEP mode.

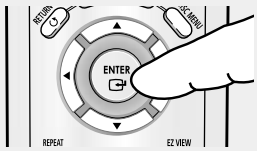


3
Press the **REPEAT** button on the remote control. Press the ◀/▶ buttons to select **A-B**.



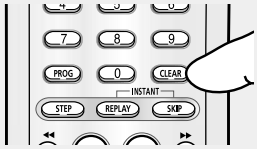
◄ The disc will play from A to B repeatedly at the speed you chose.

4
Press the **ENTER** button at the point where you want repeat play to start (A). **B** is automatically highlighted. Press the **ENTER** button at the point where you want the repeat play to stop (B).



◄ To set A-B REPEAT, set (A) first, then set (B) after the following slow play time has elapsed:
1/8x: wait 40 seconds, then press B
1/4x: wait 20 seconds, then press B
1/2x: wait 10 seconds, then press B

5
To return to normal play, press the **CLEAR** button and then press the **PLAY/PAUSE (►II)** button.



Note
When playing VCD 2.0, this function works only when the menu is off.

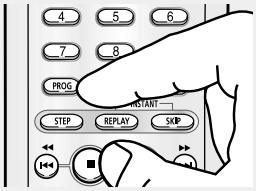
BASIC FUNCTIONS

Program Play & Random Play

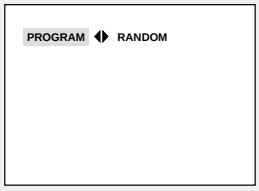
Program Play (CD)

Program Play allows you to select the order in which you want tracks to play.

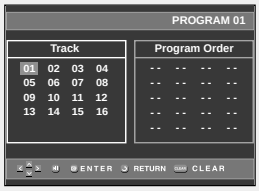
1
During play, press the **PROG** button.



2
Press the ◀/▶ buttons to select **PROGRAM**.
Press the **ENTER** button.

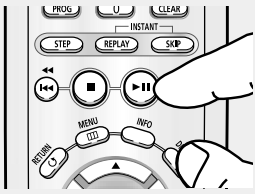


3
Press the ▲/▼/◀/▶ buttons to select the first track to add to the program.
Press the **ENTER** button.
The selection numbers appear in the Program Order box.



◄ - To return to the previous menu screen, press the RETURN button.
- To cancel the selected program order, press the CLEAR button.
- This unit can support a maximum of 20 programmed tracks.

4
Press the **PLAY/PAUSE (▶II)** button.
The disc will be played in programmed order.

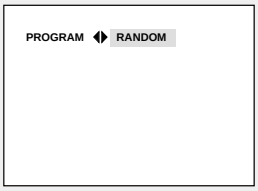


Random Play (CD)

Random Play plays a disc's tracks in random order.

1
Press the **PROG** button.

2
Press the ◀/▶ buttons to select **RANDOM**.
Press the **ENTER** button.



Note
- Depending on a disc, the Program and Random Play functions may not work.
- While in playback mode, press the CLEAR button on the remote control to cancel Program Play or Random Play.

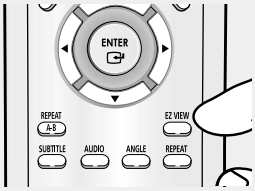
Chapter 4

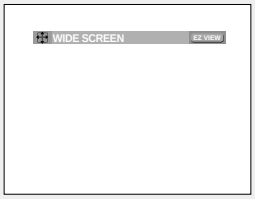
ADVANCED FUNCTIONS

Adjusting the Aspect Ratio (EZ View)

To play back using aspect ratio (DVD)

Press the **EZ VIEW** button.
- The screen size changes when the button is pressed repeatedly.
- The screen zoom mode operates differently depending on the screen setting in the Display Setup menu.
- To ensure correct operation of the **EZ VIEW** button, you should set the correct aspect ratio in the Display Setup menu. (See pages 52 to 53).





◄ To make the aspect ratio bar disappear, press the CLEAR button.

If you are using a 16:9 TV

For 16:9 aspect ratio discs

- **WIDE SCREEN**
  Displays the content of the DVD title in 16:9 aspect ratio.

- **SCREEN FIT**
  The top and bottom portions of the screen are cut off. When playing a 2.35:1 aspect ratio disc, the black bars at the top and bottom of the screen will disappear. The picture will look vertically stretched. (Depending on a type of disc, the black bars may not disappear completely.)

- **ZOOM FIT**
  The top, bottom, left and right of the screen are cut off and the central portion of the screen is enlarged.

For 4:3 aspect ratio discs

- **Normal Wide**
  Displays the content of the DVD title in 16:9 aspect ratio. The picture will look horizontally stretched.

- **SCREEN FIT**
  The top and bottom portions of the screen are cut off and the full screen appears.
  The picture will look vertically stretched.

- **ZOOM FIT**
  The top, bottom, left and right portions of the screen are cut off and the central portion of the screen is enlarged.

- **Vertical Fit**
  When a 4:3 DVD is viewed on a 16:9 TV, black bars will appear at the left and right of the screen in order to prevent the picture from looking horizontally stretched.

ADVANCED FUNCTIONS

If you are using a 4:3 TV

For 16:9 aspect ratio discs

- 4:3 Letter Box
Displays the content of the DVD title in 16:9 aspect ratio. The black bars will appear at the top and bottom of the screen.

- 4:3 Pan Scan
The left and right portions of the screen are cut off and the central portion of the 16:9 screen is displayed.

- SCREEN FIT
The top and bottom portions of the screen are cut off and a full screen appears.
The picture will look vertically stretched.

- ZOOM FIT
The top, bottom, left and right of the screen are cut off and the central portion of the screen is enlarged.

For 4:3 aspect ratio discs

- Normal Screen
Displays the content of the DVD title in 4:3 aspect ratio.

- SCREEN FIT
The top and bottom portions of the screen are cut off and the full screen appears.
The picture will look vertically stretched.

- ZOOM FIT
The top, bottom, left and right portions of the screen are cut off and the central portion of the screen is enlarged.

Note

This function may behave differently depending on the type of disc.

ADVANCED FUNCTIONS

Selecting the Audio Language

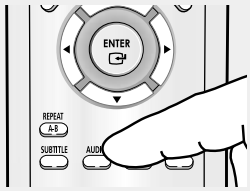
You can select a desired audio language quickly and easily with the AUDIO button.

Using the AUDIO button (DVD/VCD/CD/MPEG4)

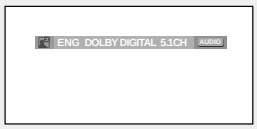
1

Press the **AUDIO** button. The Audio changes when the button is pressed repeatedly.

- The audio languages are represented by abbreviations.



DVD

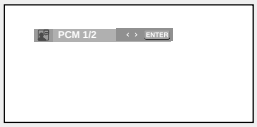


VCD/CD

When playing a VCD or CD, you can select among **Stereo**, **Right** or **Left**.

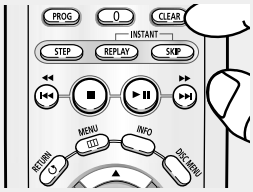
MPEG4

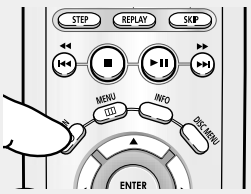
Press the ◀/▶ buttons to select the desired Audio on a MPEG4 then press the **ENTER** .



2

To remove the **AUDIO** icon, press the **CLEAR** or **RETURN** button.





Note

- This function depends on audio languages are encoded on the disc and may not work.
- A DVD disc can contain up to 8 audio languages.
- To have the same audio language come up whenever you play a DVD; Refer to “Using the Audio Language” on page 48.

ADVANCED FUNCTIONS

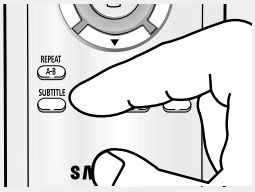
Selecting the Subtitle Language

You can select a desired subtitle quickly and easily with the SUBTITLE button.

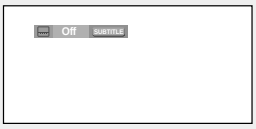
Using the SUBTITLE button (DVD/MPEG4)

1

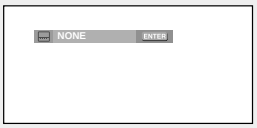
Press the **SUBTITLE** button.
The subtitle changes when the button is pressed repeatedly.
The subtitle languages are represented by abbreviations.



DVD



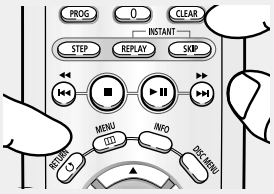
MPEG4



Press the ◀/▶ buttons to select the desired subtitle language on a MPEG4 then press the **ENTER** .

2

To remove the **SUBTITLE** icon, press the **CLEAR** or **RETURN** button.



Note

- Depending on DVDs, you have to change the desired subtitle in the Disc Menu. Press the DISC MENU button.
- This function depends on what subtitles are encoded on the disc and may not work on all DVDs.
- A DVD disc can contain up to 32 subtitle languages.
- To have the same subtitle language come up whenever you play a DVD;
  Refer to “Using the Subtitle Language” on page 49.

ADVANCED FUNCTIONS

Changing the Camera Angle

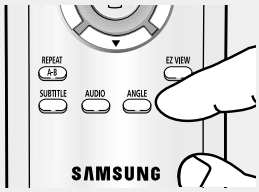
When a DVD contains multiple angles of a particular scene, you can use the ANGLE function.

Using the ANGLE button (DVD)

If the disc contains multiple angles, the ANGLE appears on the screen.

1

Press the **ANGLE** button, then the ANGLE icon will appear with the current angle number and the number of angles available.



2

Press the **ANGLE** button repeatedly to select the desired angle. To remove the ANGLE icon, press the **CLEAR** or **RETURN** button.

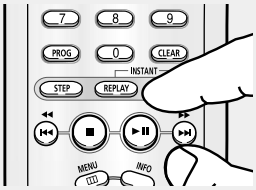
Note
If the disc has only one angle, this feature won't work. Currently, very few discs have this feature.

Using the Instant Replay/Skip Function

Using the Instant Replay function (DVD)

If you miss a scene, you can see it again using this function.

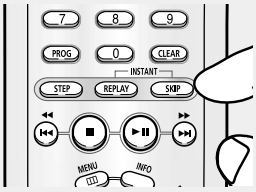
Press the **INSTANT REPLAY** button.
- The current scene moves backward about 10 seconds, and plays back.



Using the Instant Skip function (DVD)

Use this function to skip playback about 10 seconds ahead of the current scene.

Press the **INSTANT SKIP** button.
- Playback will skip ahead 10 seconds.



Note
Depending on the disc, these functions may not work.

Advanced Functions

ADVANCED FUNCTIONS

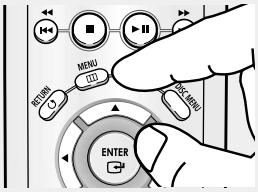
Using the Bookmark Function

This feature lets you bookmark sections of a DVD or VCD (Menu Off mode) so you can quickly find them at a later time.

Using the Bookmark Function (DVD/VCD)

1

During play, press the **MENU** button on the remote control.

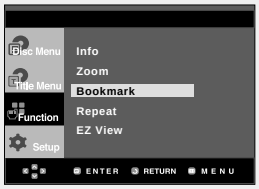


2

Press the ▲/▼ buttons to select **Function**, then press the ► or **ENTER** button.

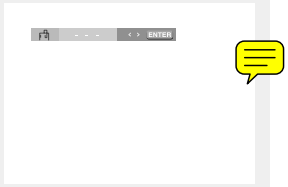
3

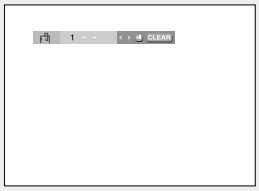
Press the ▲/▼ buttons to select **Bookmark**, then press the ► or **ENTER** button.



4

When you reach the scene you want to mark, press the **ENTER** button. Up to three scenes may be marked at a time.





Note

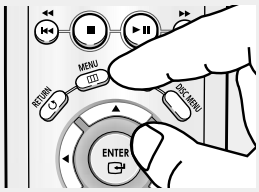
- When playing VCD 2.0, this function works only when the menu is off.
- Depending on a disc, the Bookmark function may not work.

ADVANCED FUNCTIONS

Recalling a Marked Scene

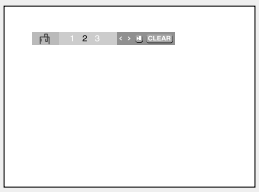
1~3

The first 1~3 steps are the same as those for “Using the Bookmark Function” on page 32.



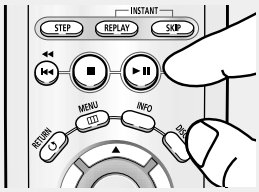
4

Press the ◀/▶ buttons to select a marked scene.



5

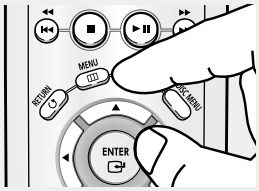
Press the **PLAY/PAUSE** (▶II) button to skip to the marked scene.



Clearing a Bookmark

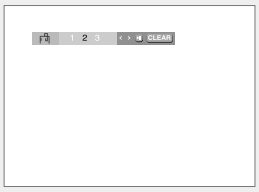
1~3

The first 1~3 steps are the same as those for “Using the Bookmark Function” on page 32.



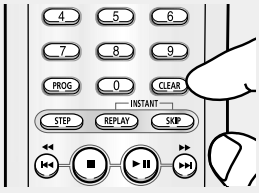
4

Press the ◀/▶ buttons to select the bookmark number you want to delete.



5

Press the **CLEAR** button to delete a bookmark number.



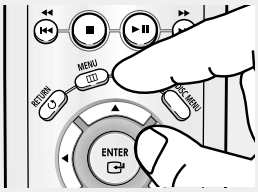
ADVANCED FUNCTIONS

Using the Zoom Function

Using the Zoom Function (DVD/VCD)

1

During play or pause mode, press the **MENU** button on the remote control.

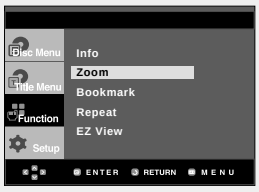


2

Press the ▲/▼ buttons to select **Function**, then press the ► or **ENTER** button.

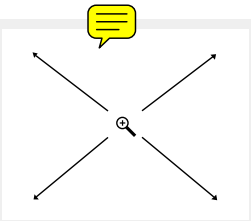
3

Press the ▲/▼ buttons to select **Zoom**, then press the ► or **ENTER** button.



4

Press the ▲/▼ or ◄/► buttons to select the part of the screen you want to zoom in on.
Press the **ENTER** button.



◄ During DVD play, press ENTER to zoom in 2X/4X/2X/Normal in order.

During VCD play, press ENTER to zoom in 2X/Normal in order.

Note
When playing VCD 2.0, this function works only when the menu is off.

ADVANCED FUNCTIONS

DVD AUDIO Playback

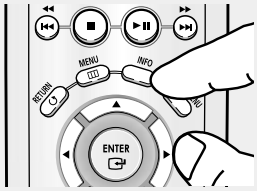
1

Open the disc tray.
Place the DVD AUDIO disc on the tray.
- Place the DVD AUDIO disc with the labeled side up.

Close the tray.
- The tray closes and disc plays.

2

During play, press the **INFO** button on the remote control.



◄ You can select Info in the function menu by pressing the MENU button.

3

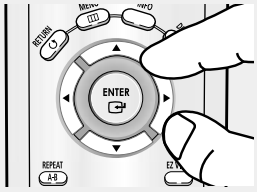
Press the ▲/▼ buttons to select the desired item.

DVD-AUDIO

◄ When playing VCD 2.0, this function works only when the menu is off.

4

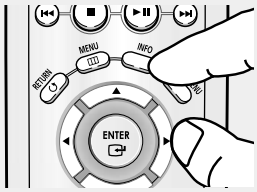
Press the ◄/► buttons to make the desired setup and then press the **ENTER** button.



◄ You may use the number buttons of the remote control to directly access a Group, Track, Page or to start the playback from the desired time.

5

To make the screen disappear, press the **INFO** button again.



ADVANCED FUNCTIONS

Note

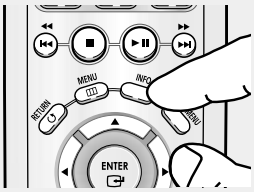
Group	(DVD-AUDIO) Most DVD AUDIO discs are recorded in Groups you can change Groups with this Function. Bonus Group playback. Some DVD AUDIO discs have Bonus groups. If you want to play a Bonus group, you must enter the Bonus Group code. The code is usually on the DVD AUDIO disc case.
Track	(DVD-AUDIO) To access the desired Track when there is more than one on the DVD AUDIO disc.
Page	(DVD-AUDIO) If pages are included with the DVD-AUDIO disc, you can see this icon. To access the desired page, you can use this Function.
Slide	(DVD-AUDIO) If a slide show is included with the DVD-AUDIO disc, you can see this icon.
V-zone	(DVD-AUDIO) If a video zone is included with the DVD-AUDIO disc, you can see this icon.
Time	(DVD-AUDIO) Allows playback of music from a desired time by using the number buttons.

Page, Index Function

1

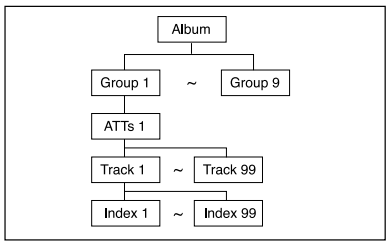
Use Page icon of display function to Skip the Page when there is more than one in a group.

- Some DVD-AUDIO discs include a slide show. In the slide show mode, this function can not be used.
- PAGE is still images. You can see the still images when a DVD-AUDIO disc is played back.



Note

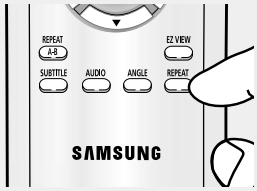
Depending on a disc, this function may not work.



ADVANCED FUNCTIONS

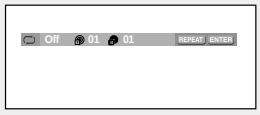
REPEAT Play

1
Press the **REPEAT** button on the remote control. Repeat screen appears.



2
Press the ◀/▶ buttons to select **Title**, **Group**, then press the **ENTER** button.

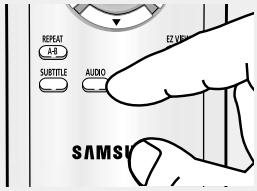
DVD-AUDIO



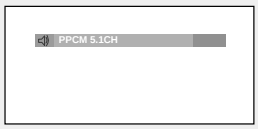
◄ Title ( ): repeats the title that is playing.
Group ( ): repeats the group that is playing.

AUDIO Format Display

1
During DVD AUDIO playback, press the **AUDIO** button to see AUDIO Format information.



DVD-AUDIO



◄ - LPCM : **L**inear **P**ulse **C**ode **M**odulation.
Not compressed Audio data format.
- PPCM : **P**acket **P**ulse **C**ode **M**odulation.
Lossless compressed Audio data format.

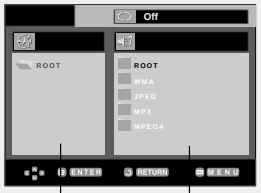
Note
Some DVD-AUDIO discs don't allow audio down-mixing.

ADVANCED FUNCTIONS

Clips Menu for MP3/WMA/JPEG/MPEG4

Discs with MP3/WMA/JPEG/MPEG4 contain individual songs and/or pictures that can be organized into folders as shown below. They are similar to how you use your computer to put files into different folders.

Open the disc tray.
Place the disc on the tray.
Close the tray.
The tray closes and this screen displays.



Parent Folder, Current Folder and Peer Folders

Folders and Files in Current Folder

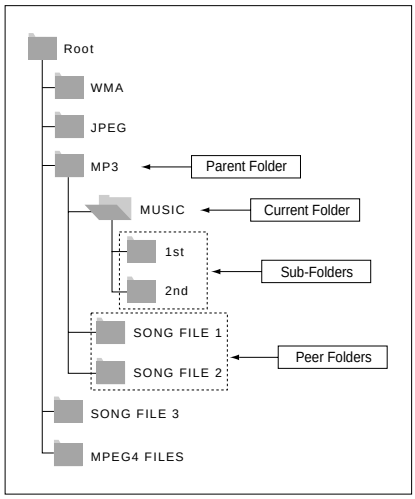
- : Name of currently playing file.
- : Current Playback Time.
- : Current Playback Mode : There are four modes. They can be selected in order by pressing the **REPEAT** button.
  - Off: Normal Playback
  - Track: Repeats the current track.
  - Folder: Repeats the current folder.
  - Random: Files in the disc will be played in random order.

- : MP3 file icon.
- : WMA file icon.
- : JPEG file icon.
- : AVI file icon.
- : Folder icon.
- : Current Folder icon.

Folder Selection

The folder can only be selected in the Stop mode.

- **To select the Parent Folder**
  Press the **RETURN** button to go to the parent folder, or press the ▲/▼ buttons to select ".." and press **ENTER** to go to the parent folder.
- **To select the Peer Folder**
  Press the ◄/► buttons to highlight the left window. Press the ▲/▼ buttons to select the desired folder, then press **ENTER**.
- **To select the Sub-Folder**
  Press the ◄/► buttons to highlight the right window. Press the ▲/▼ buttons to select the desired folder, then press **ENTER**.

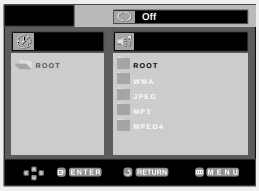


ADVANCED FUNCTIONS

MP3/WMA Playback

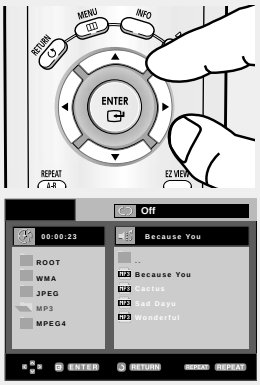
1

Open the disc tray.
Place the disc on the tray.
Close the tray.



2

Press the ▲/▼ or ◄/► buttons to select a song file.
Press **ENTER** to begin playback of the song file.

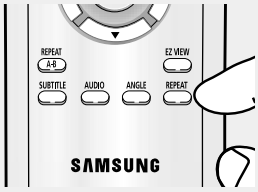


◄ When a disc that contains both MP3 and WMA files, only one type will play, not both.

Repeat/Random playback

1

Press the **REPEAT** button to change the playback mode. There are four modes: **Off**, **Track**, **Folder** and **Random**.



- Off: Normal Playback
- Track: Repeats the current song file.
- Folder: Repeats the song files which have the same extension in the current folder.
- Random: Song files which have the same extension will be played in random order.

To resume normal play, press the **CLEAR** button.

Advanced Functions

ADVANCED FUNCTIONS

CD-R MP3/WMA file

When you record MP3 or WMA files on CD-R, please refer to the following.

- Your MP3 or WMA files should be ISO 9660 or JOLIET format.
ISO 9660 format and Joliet MP3 or WMA files are compatible with Microsoft's DOS and Windows, and with Apple's Mac. This format is the most widely used.

- When naming your MP3 or WMA files, do not exceed 8 characters, and enter ".mp3, .wma" as the file extension.
General name format : Title.mp3. or Title.wma. When composing your title, make sure that you use 8 characters or less, have no spaces in the name, and avoid the use of special characters including: (.,/,\,=,+).

- Use a decompression transfer rate of at least 128 Kbps when recording MP3 files.
Sound quality with MP3 files basically depends on the rate of compression/decompression you choose. Getting CD audio sound requires an analog/digital sampling rate, that is conversion to MP3 format, of at least 128 Kbps and up to 160 Kbps. However, choosing higher rates, like 192 Kbps or more, only rarely give better sound quality.
Conversely, files with decompression rates below 128 Kbps will not be played properly.

- Use a decompression transfer rate of at least 64Kbps when recording WMA files.
Sound quality with WMA files basically depends on the rate of compression/decompression you choose.
Getting CD audio sound requires an analog/digital sampling rate, that is conversion to WMA format, of at least 64Kbps and up to 192Kbps.
Conversely, files with decompression rates below 64Kbps or over 192Kbps will not be played properly.

- Do not try recording copyright protected MP3 files.
Certain "secured" files are encrypted and code protected to prevent illegal copying. These files are of the following types: Windows Media™ (registered trade mark of Microsoft Inc) and SDMI™ (registered trade mark of The SDMI Foundation). You cannot copy such files.

- Important:
The above recommendations cannot be taken as a guarantee that the DVD player will play MP3 recordings, or as an assurance of sound quality. You should note that certain technologies and methods for MP3 file recording on CD-Rs prevent optimal playback of these files on your DVD player (degraded sound quality and in some cases, inability of the player to read the files).
- This unit can play a maximum of 3000 files and 300 folders per disc.

ADVANCED FUNCTIONS

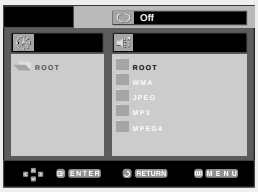
MPEG4 Playback

MPEG4 Play Function

AVI files are used to contain the audio and video data. Only AVI format files with the ".avi" extensions can be played.

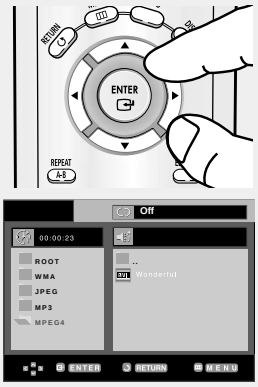
1

Open the disc tray.
Place the disc on the tray.
Close the tray.



2

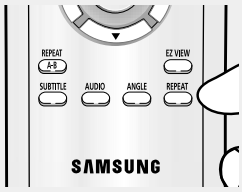
Press the ▲/▼ or ◄/► buttons to select an an avi file (DivX/XviD), then press the **ENTER** button.



Repeat Playback

1

Press the **REPEAT** button to change playback mode. There are 4 modes, such as **Off**, **Folder**, **Title** and **A-B** (a distance between two points appointed by user).



- Folder : Repeats the AVI files which have the same extension in the current folder.
- Title : repeats the title that is playing.
- A-B : repeats a segment of the file that you select.

Advanced Functions

ADVANCED FUNCTIONS

MPEG4 Function Description

Function	Description	Reference page
Skip (⏮ or ⏭)	During play, press the ⏮ or ⏭ button, it moves forward or backward 5 minutes.	-
Search (◀◀ or ▶▶)	During play, press the SERACH (◀◀ or ▶▶) button and press again to search at a faster speed. Allows you to search at a faster speed in an AVI file. (2X, 4X, 8X)	-
Slow Motion Play	Allows you to search at a slower speed in an AVI file. (1/8X, 1/4X, 1/2X)	P 18
Step Motion Play	Each time the STEP button is pressed, a new frame will appear.	P 18
ZOOM	2X/4X/2X/Normal in order	P 34

- These functions may not work depending on MPEG4 file.

CD-R AVI file

This unit can play the following video compression formats within the AVI file format:
- DivX 3.11 contents
- DivX 4 contents (Based on MPEG4 Simple Profile)
- DivX 5 contents (MPEG4 simple profile plus additional features such as bi-directional frames. Qpel and GMC are also supported.)
- XviD MPEG4 compliant Contents.

This unit supports all resolutions up to maximum below.

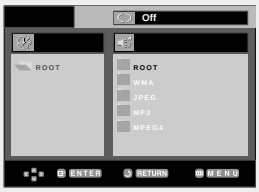
DivX3.11 & DivX4 & XviD	DivX5
Bitrate may fluctuate: Device may skip decoding the high bitrate portions and begin decoding again when Bitrate returns to normal.	720 x 480 @30fps 720 x 576 @25fps : Maximum bitrate : 4Mbps

Note
- Some MPEG4 files created on a personal computer may not be play back.
  That is why Codec Type, Version and Higher resolution over specification is not supported.
- This unit supports CD-R/RW written in MPEG4 in accordance with the “ISO9660 format”.

ADVANCED FUNCTIONS

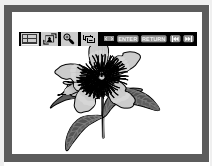
Picture CD Playback

1
Select the desired folder.



2
Press the ▲/▼ buttons to select a Picture file in the clips menu and then press the **ENTER** button.

3
Press the **INFO** button to display the menu.
Press the ◀/▶ buttons to select the menu you want to view, then press the **ENTER** button.



Note
- If no buttons on the remote control are pressed for 10 seconds, the menu will disappear.
- Press the STOP button to return to the clips menu.
- When playing a Kodak Picture CD, the unit displays the Photo directly, not the clips menu.

Album Screen

- : Returns to the Album Screen.
- To see the next six pictures, press the ⏭ button.
- To see the previous six pictures, press the ⏮ button.

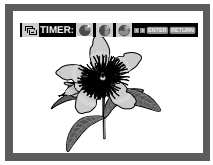
Rotation

: Each time the **ENTER** button is pressed, the picture rotates 90 degrees clockwise.

Zoom

: Press the ▲/▼ or ◀/▶ buttons to select the part of the screen you want to zoom in on.
Press the **ENTER** button. Each time the **ENTER** button is pressed, the picture is enlarged up to 4X.
(2X → 4X → 2X → Normal)

Slide Show



- : The unit enters slide show mode.
- Before beginning the Slide Show, the picture interval must be set. Press the ◀/▶ buttons to select a desired icon, then press the ENTER button.
- : The pictures change automatically with about a 6 second interval.
- : The pictures change automatically with about a 12 second interval.
- : The pictures change automatically with about a 18 second interval.

Note
- Depending on a file size, the amount of time between each picture may be different from the set interval time.
- If you don't press any button, the slide show will start automatically in about 10 seconds by default.

ADVANCED FUNCTIONS

CD-R JPEG Discs

- Only files with the ".jpg" and ".JPG" extensions can be played.
- If the disc is not closed, it will take longer to start playing and not all of the recorded files may be played.
- Only CD-R discs with JPEG files in ISO 9660 or Joliet format can be played.
- The name of the JPEG file may not be longer than 8 characters and should contain no blank spaces or special characters (. / = +).
- Only a consecutively written multi-session disc can be played. If there is a blank segment in the multi-session disc, the disc can be played only up to the blank segment.
- A maximum of 3000 images can be stored on a single CD.
- Kodak Picture CDs are recommended.
- When playing a Kodak Picture CD, only the JPEG files in the pictures folder can be played.
- Kodak Picture CD: The JPEG files in the pictures folder can be played automatically.
- Konica Picture CD: If you want to see the Picture, select the JPEG files in the clips menu.
- Fuji Picture CD: If you want to see the Picture, select the JPEG files in the clips menu.
- QSS Picture CD: The unit may not play QSS Picture CD.
- If the number of files in 1 Disc is over 3000, only 3000 JPEG files can be played.
- If the number of folders in 1 Disc is over 300, only JPEG files in 300 folders can be played

Chapter 5

CHANGING SETUP MENU

Using the Setup Menu

The Setup menu lets you customize your DVD player by allowing you to select various language preferences, set up a parental level, even adjust the player to the type of television screen you have.

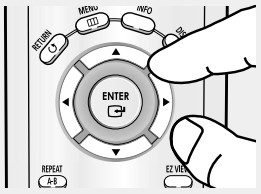
1

With the unit in Stop mode, press the **MENU** button on the remote control.
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

❶ Language Setup : Setup of the Language.
❷ Audio Setup : Setup of the Audio Options.
❸ Display Setup : Setup of the Display Options. Use to select which type of screen you want to watch and several display options.
❹ Parental Setup : Setup of the Parental Level. Allows users to set the level necessary to prevent children from viewing unsuitable movies such as those with violence, adult subject matter, etc.
❺ DivX(R) Registration : Please use the Registration code to register this player with the DivX(R) Video On Demand format. To learn more go to www.divx.com/vod.

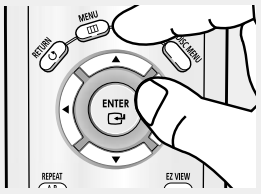
2

Press the ▲/▼ buttons to access the different features. Press the ► or **ENTER** button to access the sub features.



3

To make the setup screen disappear after setting up, press the **MENU** button again.



Note
Depending on the disc, some Setup Menu selections may not work.

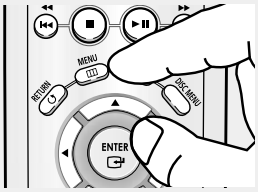
CHANGING SETUP MENU

Setting Up the Language Features

If you set the player menu, disc menu, audio and subtitle language in advance, they will come up automatically every time you watch a movie.

Using the Player Menu Language

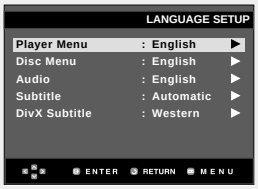
1
With the unit in Stop mode, press the **MENU** button.



2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

3
Press the ▲/▼ buttons to select **Language Setup**, then press the ► or **ENTER** button.

4
Press the ▲/▼ buttons to select **Player Menu**, then press the ► or **ENTER** button.



5
Press the ▲/▼ buttons to select the desired language, then press the ► or **ENTER** button.

◄ - The language is selected and the screen returns to Language Setup menu.

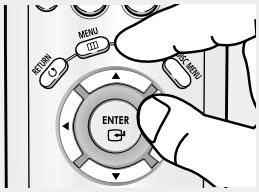
- To make the setup menu disappear, press the MENU button.

CHANGING SETUP MENU

Using the Disc Menu Language

This function changes the text language only on the disc menu screens.

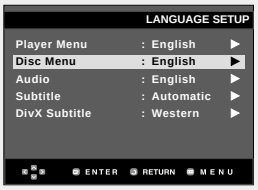
1
With the unit in Stop mode, press the **MENU** button.



2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

3
Press the ▲/▼ buttons to select **Language Setup**, then press the ► or **ENTER** button.

4
Press the ▲/▼ buttons to select **Disc Menu**, then press the ► or **ENTER** button.



5
Press the ▲/▼ buttons to select the desired language, then press the ► or **ENTER** button.

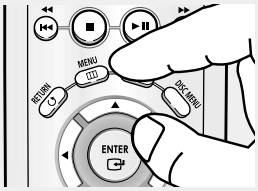
◄ - Select “Others” if the language you want is not listed.

- If the selected language is not recorded on the disc, the original pre-recorded language is selected.
- The language is selected and the screen returns to Language Setup menu.
- To make the setup menu disappear, press the MENU button.

CHANGING SETUP MENU

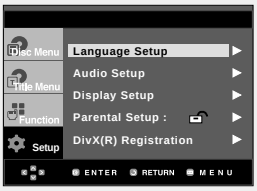
Using the Audio Language

1
With the unit in Stop mode, press the **MENU** button.

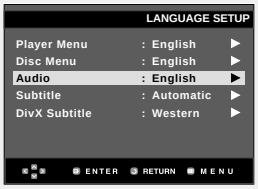


2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

3
Press the ▲/▼ buttons to select **Language Setup**, then press the ► or **ENTER** button.



4
Press the ▲/▼ buttons to select **Audio**, then press the ► or **ENTER** button.



5
Press the ▲/▼ buttons to select the desired language, then press the ► or **ENTER** button.

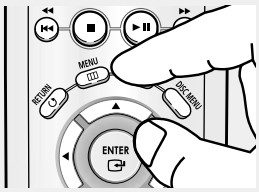
◄ - Select “Original” if you want the default soundtrack language to be the original language the disc is recorded in.

- Select “Others” if the language you want is not listed.
- If the selected language is not recorded on the disc, the original pre-recorded language is selected.
- The language is selected and the screen returns to Language Setup menu.
- To make the setup menu disappear, press the MENU button.

CHANGING SETUP MENU

Using the Subtitle Language

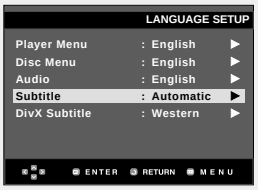
1
With the unit in Stop mode, press the **MENU** button.



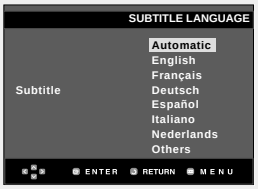
2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

3
Press the ▲/▼ buttons to select **Language Setup**, then press the ► or **ENTER** button.

4
Press the ▲/▼ buttons to select **Subtitle**, then press the ► or **ENTER** button.



5
Press the ▲/▼ buttons to select the desired language, then press the ► or **ENTER** button.



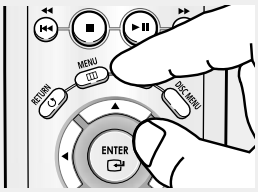
◄ - Select “Automatic” if you want the subtitle language to be the same as the language selected as the audio language.

- Select “Others” if the language you want is not listed. Some discs may not contain the language you select as your initial language; in that case the disc will use its original language setting.
- The language is selected and the screen returns to setup menu.
- To make the setup menu disappear, press the MENU button.

CHANGING SETUP MENU

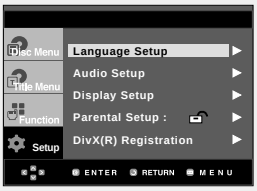
Using the DviX Subtitle Language

1
With the unit in Stop mode, press the **MENU** button.

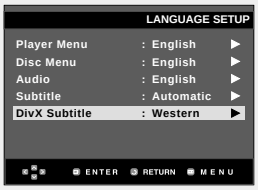


2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

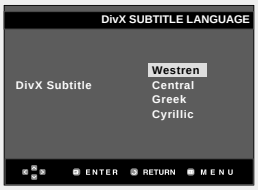
3
Press the ▲/▼ buttons to select **Language Setup**, then press the ► or **ENTER** button.



4
Press the ▲/▼ buttons to select **DivX Subtitle**, then press the ► or **ENTER** button.



5
Press the ▲/▼ buttons to select the desired language, then press the ► or **ENTER** button.



◄ - The language is selected and the screen returns to setup menu.

- To make the setup menu disappear, press the MENU button.

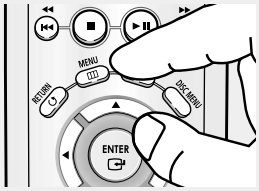
Western	English, Breton, Catalan, Danish, Dutch, Faroese, Finnish, French, Gaelic, German, Icelandic, Irish, Italian, Norwegian, Portuguese, Spanish and Swedish
Central	English, Albanian, Croatian, Czech, Hungarian, Polish, Romanian, Slovak, Slovene and Serbian(Latin)
Greek	English and modern Greek
Cyrillic	English, Russian, Bulgarian, Belorussian, Macedonian, Moldavian, Serbian(Cyrillic), Ukrainian

CHANGING SETUP MENU

Setting Up the Audio Options

Audio Options allows you to setup the audio device and sound status settings depending on the audio system in use.

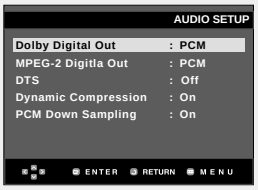
1
With the unit in Stop mode, press the **MENU** button.



2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

3
Press the ▲/▼ buttons to select **Audio Setup**, then press the ► or **ENTER** button.

4
Press the ▲/▼ buttons to select the desired item, then press the ► or **ENTER** button.



◄ To make the setup menu disappear, press the MENU button.

CHANGING SETUP MENU

❶ Dolby Digital Out
- PCM : Converts to PCM(2CH) audio.
- Bitstream : Outputs Dolby Digital Bitstream via digital output.
  Select Bitstream when connecting to a Dolby Digital Decoder.

Note

- There is no analog audio output when you play a DTS disc.

❷ MPEG-2 Digital Out
- PCM : Converts to PCM(2CH) audio.
- Bitstream : Converts to MPEG-2 Digital Bitstream (5.1CH or 8CH).
  Select Bitstream when using the Digital Audio Output.

❸ DTS
- Off : Doesn't output digital signal.
- On : Outputs DTS Bitstream via digital output only.
  Select DTS when connecting to a DTS Decoder.

❹ Dynamic Compression
- On : To select dynamic compression.
- Off : To select the standard range.

❺ PCM Down Sampling
- On : Select this when the Amplifier connected to the player is not 96KHz compatible.
  In this case, the 96KHz signals will be down converted to 48KHZ.
- Off : Select this when the Amplifier connected to the player is 96KHz compatible.
  In this case, all signals will be output without any changes.

Note

Even when PCM Down sampling is Off

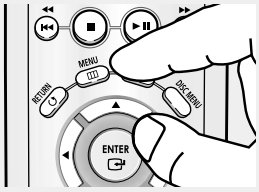
• Some discs will only output down sampled audio through the digital outputs.

CHANGING SETUP MENU

Setting Up the Display Options

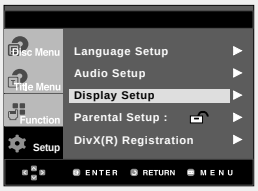
Display options enable you to set various video functions of the player.

1
With the unit in Stop mode, press the **MENU** button.

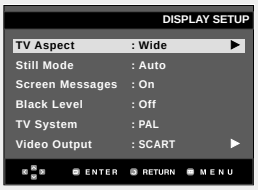


2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

3
Press the ▲/▼ buttons to select **Display Setup**, then press the ► or **ENTER** button.



4
Press the ▲/▼ buttons to select the desired item, then press the ► or **ENTER** button.



◄ To make the setup menu disappear, press the MENU button.

CHANGING SETUP MENU

❶ TV Aspect

Depending on a type of television you have, you may want to adjust the screen setting (aspect ratio).

- 4:3 Letter Box : Select when you want to see the total 16:9 ratio screen DVD supplies, even though you have a TV with a 4:3 ratio screen. Black bars will appear at the top and bottom of the screen.
- 4:3 Pan Scan : Select this for conventional size TVs when you want to see the central portion of the 16:9 screen. (Extreme left and right side of movie picture will be cut off.)
- 16:9 Wide : You can view the full 16:9 picture on your wide screen TV.

❷ Still Mode

These options will help prevent picture shake in still mode and display small text clearer.

- Auto : When selecting Auto, Field/Frame mode will be automatically converted.
- Field : Select this feature when the screen shakes in the Auto mode.
- Frame : Select this feature when you want to see small letters more clearly in the Auto mode.

❸ Screen Messages

Use to turn on-screen messages On or Off.

❹ Black Level

Adjusts the brightness of the screen. (On or Off) It does not function in Progressive mode.

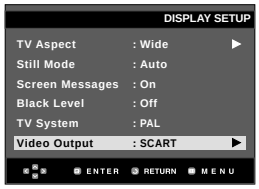
❺ TV System

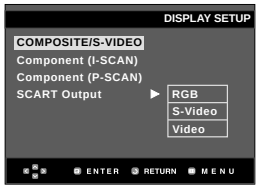
- NTSC : In case of using NTSC disc
  - If your TV system only has PAL-Video input, you must choose “PAL”. When you choose “PAL”, Interlace output format is PAL 60 Hz output.
  - If your TV system only has NTSC, input you must choose “NTSC ”.
- PAL : In case of using PAL disc
  - If your TV system only has NTSC-Video input, you must choose “NTSC”.
  - If your TV system only has PAL input, you must choose “PAL ”.

❻ Video Output

Select Video Output.

- COMPOSITE/S-VIDEO : Select when you want to use Video and S-Video Out.
- Component (I-SCAN) : Select when you want to use Component Interlace (525i) Out.
- Component (P-SCAN) : Select when you want to use Component Progressive (525p) Out.
- SCART Output : Select when you want to use Scart Out.
  - RGB : Select when you want to use SCART RGB Out.
  - Video : Select when you want to use SCART Video Out.
- If the Yes/No selection in the Display Setup sub Menu is not made within 10 seconds, the screen returns to the previous menu.





• Consult your TV User’s Manual to find out if your TV supports Progressive Scan. If Progressive Scan is supported, follow the TV User’s Manual regarding Progressive Scan settings in the TV’s menu system.

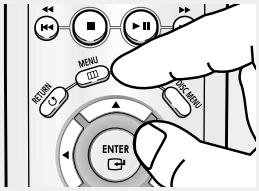
• If Video Output is set incorrectly, the screen may be blocked.

CHANGING SETUP MENU

Setting Up the Parental Control

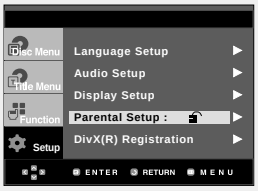
The Parental Control function works in conjunction with DVDs that have been assigned a rating, which helps you control the types of DVDs that your family watches. There are up to 8 rating levels on a disc.

1
With the unit in Stop mode, press the **MENU** button.

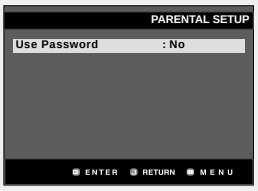


2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

3
Press the ▲/▼ buttons to select **Parental Setup**, then press the ► or **ENTER** button.



4
Press the ► or **ENTER** button to select **Yes** if you want to use a password. The Enter Password screen appears.



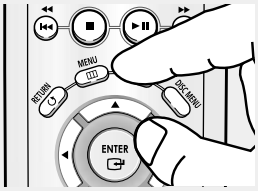
5
Enter your password.
The Re-enter Password screen appears to confirm the password. Enter your password again.
The player is locked (🔒).

◄ To make the setup menu disappear, press the MENU button.

CHANGING SETUP MENU

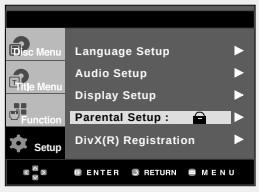
Setting Up the Rating Level

1
With the unit in Stop mode, press the **MENU** button.



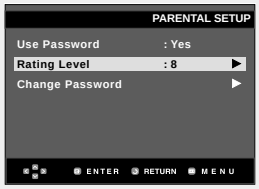
2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

3
Press the ▲/▼ buttons to select **Parental Setup**, then press the ► or **ENTER** button.

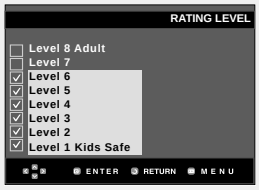


4
Enter your password.

5
Press the ▲/▼ buttons to select **Rating Level**, then press the ► or **ENTER** button.



6
Press the ▲/▼ buttons to select the Rating Level you want, then press the ► or **ENTER** button.
e.g) Setting up in **Level 6**.



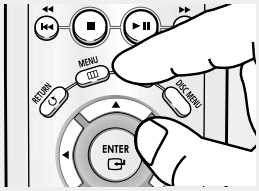
◄ To make the setup menu disappear, press the MENU button.

For example, if you select up to Level 6, discs that contain Level 7,8 will not play.

CHANGING SETUP MENU

Changing the Password

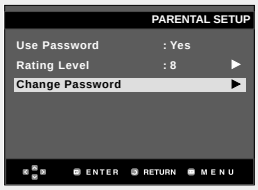
1
With the unit in Stop mode, press the **MENU** button.



2
Press the ▲/▼ buttons to select **Setup**, then press the ► or **ENTER** button.

3
Press the ▲/▼ buttons to select **Parental Setup**, then press the ► or **ENTER** button.
The Enter Password screen appears.
Enter your password.

4
Press the ▲/▼ button to select **Change Password**, then press the ► or **ENTER** button.
Enter your new password.
Re-enter the new password again.



◄ To make the setup menu disappear, press the MENU button.

Note
If you have forgotten your password, see "Forgot Password" in the Troubleshooting Guide.

13. Circuit Operating Descriptions

13-1 Power

13-1-1 Comparsion between Linear Power Supply and S.M.P.S.

13-1-1 (a) Linear

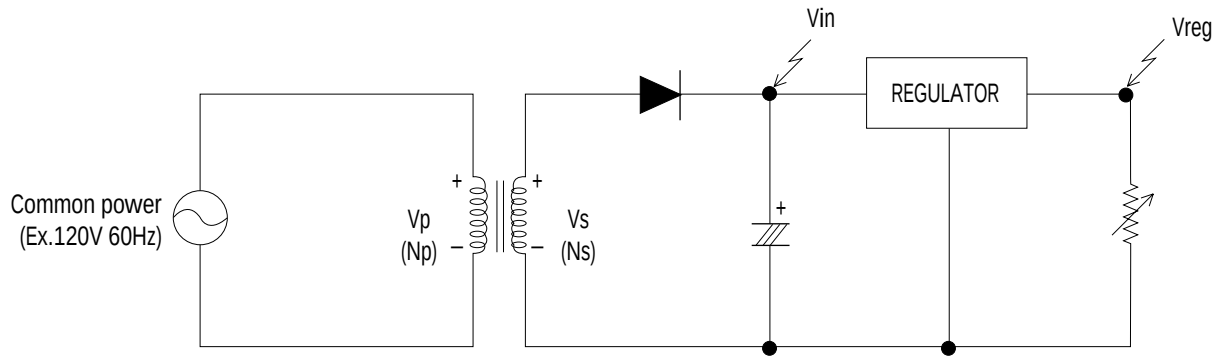


Fig.13-1 Linear Power Supply

◆ Waveform/Description

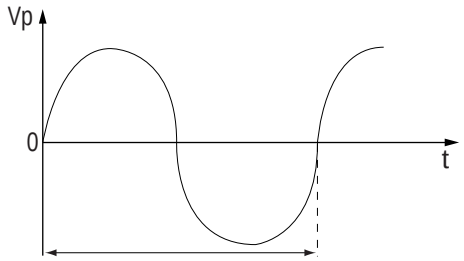


Fig. 13-2

Input : Common power to transformer (Vp).

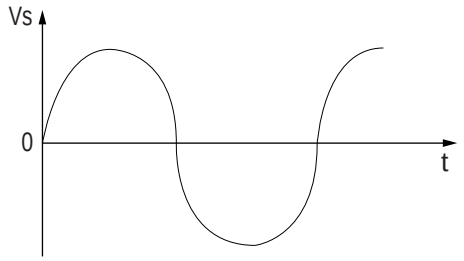


Fig. 13-3

The output Vs of transformer is determined by the ratio of 1st Np and 2nd Ns.
Vs = (Ns / Np) x Vp

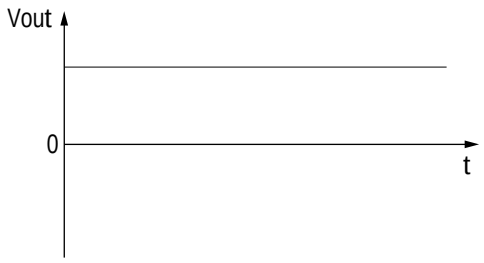


Fig. 13-4

Vout is output (DC) by diode and condensor.

◆ Advantages and disadvantages of linear power supply

1) Advantages : Little noise because the output waveform of transformer is sine wave.

2) Disadvantages :

❶ Additional margin is required because Vs is changed (depending on power source). (The regulator loss is caused by margin design).

❷ Greater core size and condensor capacity are needed, because the transformer works on a single power frequency.

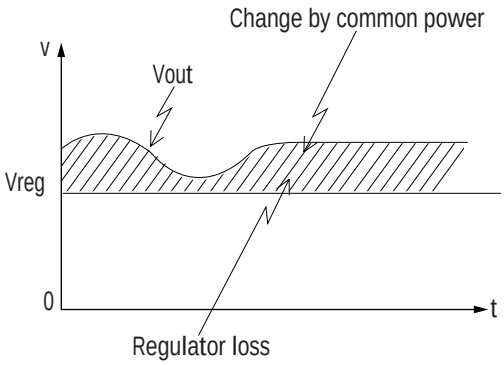


Fig. 13-5

13-1-1 (b) S.M.P.S. (Pulse Width Modulation)

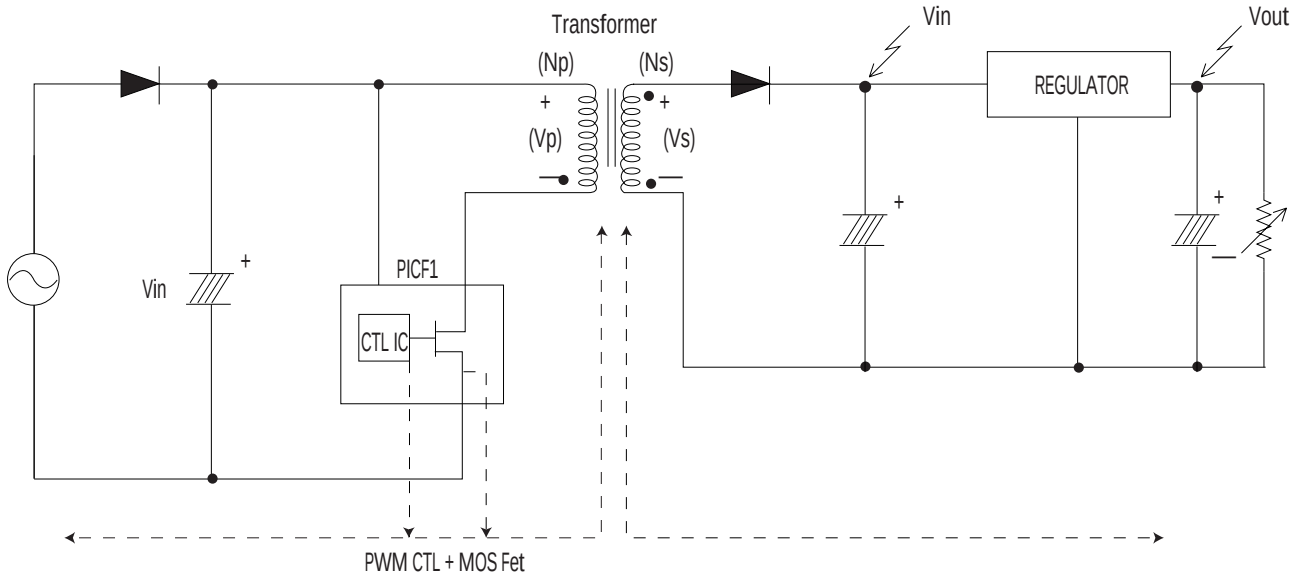


Fig. 13-6

◆ Terms

1) 1st : Common power input to 1st winding.
2) 2nd : Circuit followings output winding of transformer.
3) f (Frequency) : Switching frequency (T : Switching cycle)
4) Duty : (Ton / T) x 100

13-1-2 Circuit description [FLY-Back PWM(Pulse Width Modulation)] Control

13-1-2 (a) AC Power Rectification/Smoothing Terminal

1) PDS01, PDS02, PDS03, PDS04 : Convert AC power to DC(Full wave rectification).
2) PER10 : Smooth the voltage converted to DC.
3) PCD01, PCD02, PBS01 : Noise removal at power input/output.
4) PVA1 : SMPS protection at power surge input.

13-1-2 (b) SNUBBER Circuit : PDS11, PCD12, PRS13, PCD11, PPS12

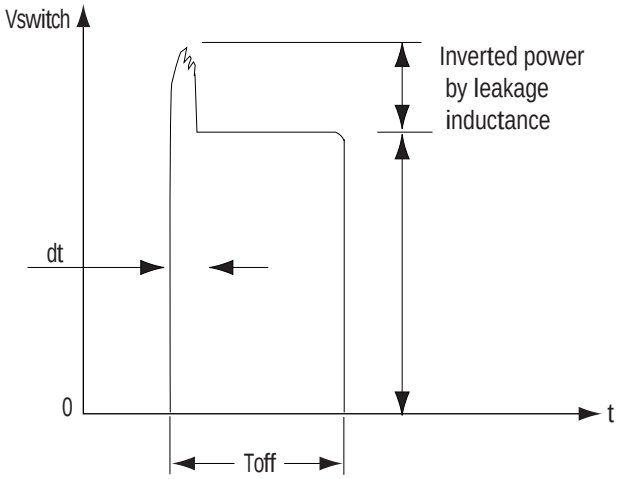


Fig. 13-7

1) Prevent residual high voltage at the terminals of switch during switch off/Suppress noise.
   High inverted power occurs at switch (PQR11) off, because of the 1st winding of transformer :
   (V=-L1 xdi/dt. L1 : Leakage Induction)
   A very high residual voltage exist on both terminals of PIC1 4, 5~8pin because dt is a very short.

2) SNUBBER circuit protects PQR11 from damage through leakage voltage suppression by RC, (Charges the leakage voltage to PDS11, PER13, PCD12 and discharges to PRS11, PRS12).

13-1-2 (c) Driving circuit

When Vin supplied, driving current Ig occurs throuhg the PICF1. By this I_1 (=Hfe x Ig) occurs throug the PIC1 and the Vb is inducted to base winding coil NB. By inducted Vb, Ib start flow and the V_{CC} voltage of PQR11 is sustained stable. Ib is constant and I_1 increases in Proportion to time. After constant time passed Ib become to shortage and PIC1 is cut OFF (S/W OFF).

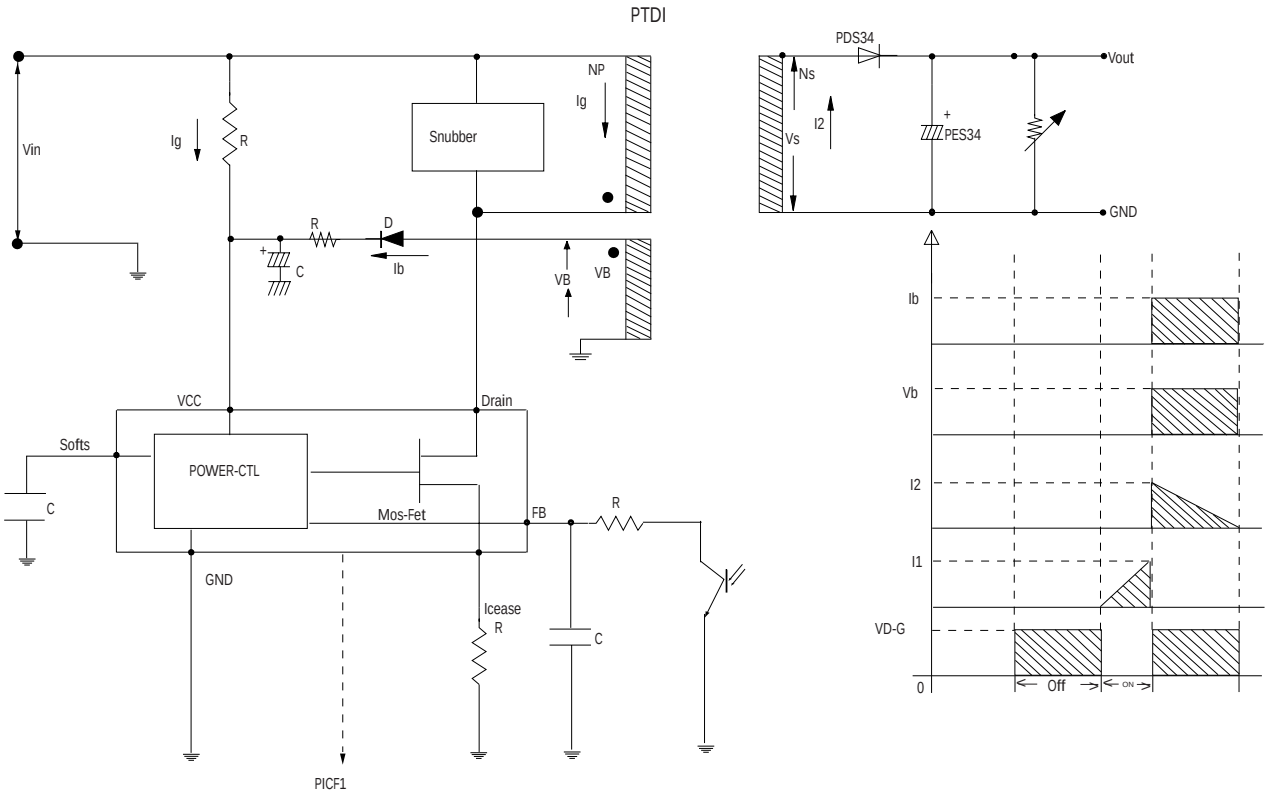


Fig. 13-8 Driving Circuit

13-1-2 (d) Feedback Control Circuit

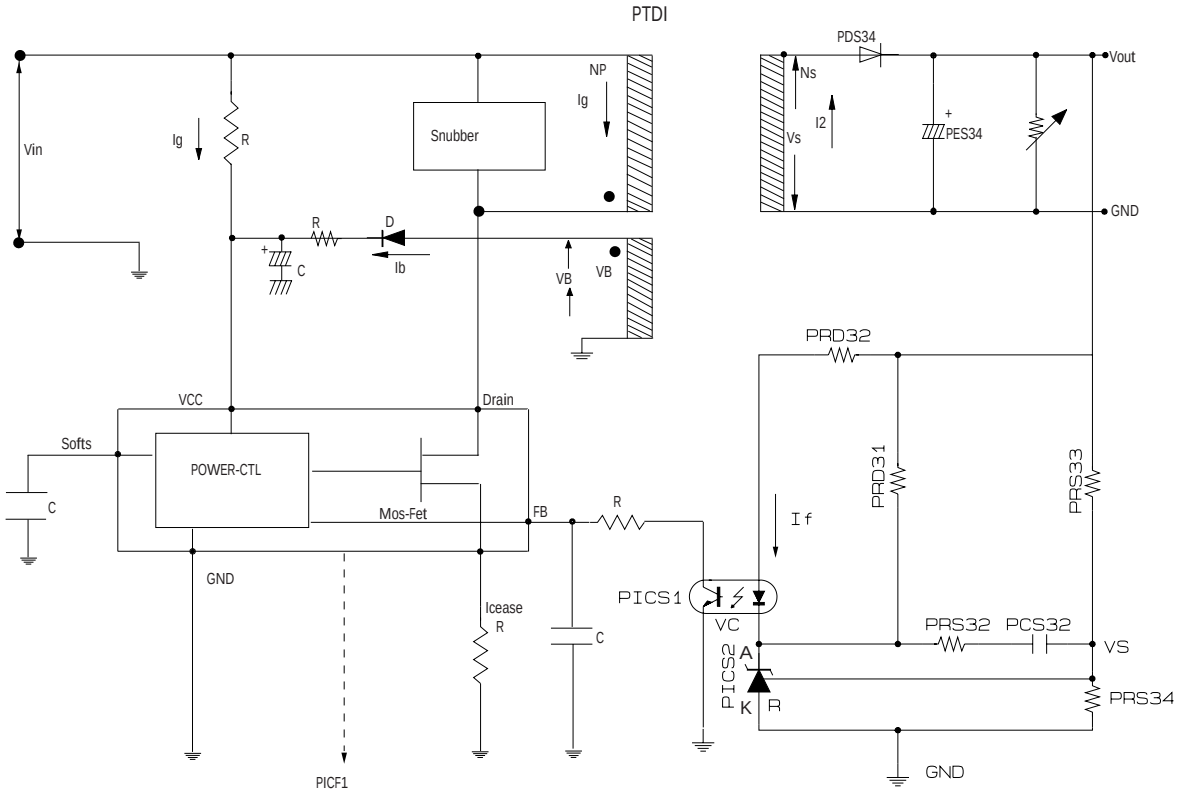


Fig.13-9

◆ Operation descriptions

1) Internal OP-Amp '+' base potential of PICS2 is 2.5V and external "-" input potential is connected with PRS33 and PRS34 to maintain Vout of 4.4V.
2) If load of 4.4V terminal increase (or AC inout voltage decrease) and Vout decrease over 4.4V,
   Then : PICS2 "R" potential decrease over 2.5V --> PICS2 A-K BASE Current decrease --> PICS2 A-K Current decrease --> PICS1 DIODE Current decrease --> PICS1 C-E Current decrease --> PICS1 C-E Voltage increase --> PICS1 F-B Voltage increase --> OUT DUTY increase TRANS Primary Cuttent Increase --> TRANS Primary Power increase --> Vout increase --> Vout maintain 4.4V

   - PRD31, PRD32 : Reduce 4.4V overshoot.
   - PRS32, PCS32 : Prevent PICS2 oscillation (for phase correction).

13-1-3 Internal Block Diagram

◆ Internal Block Diagram

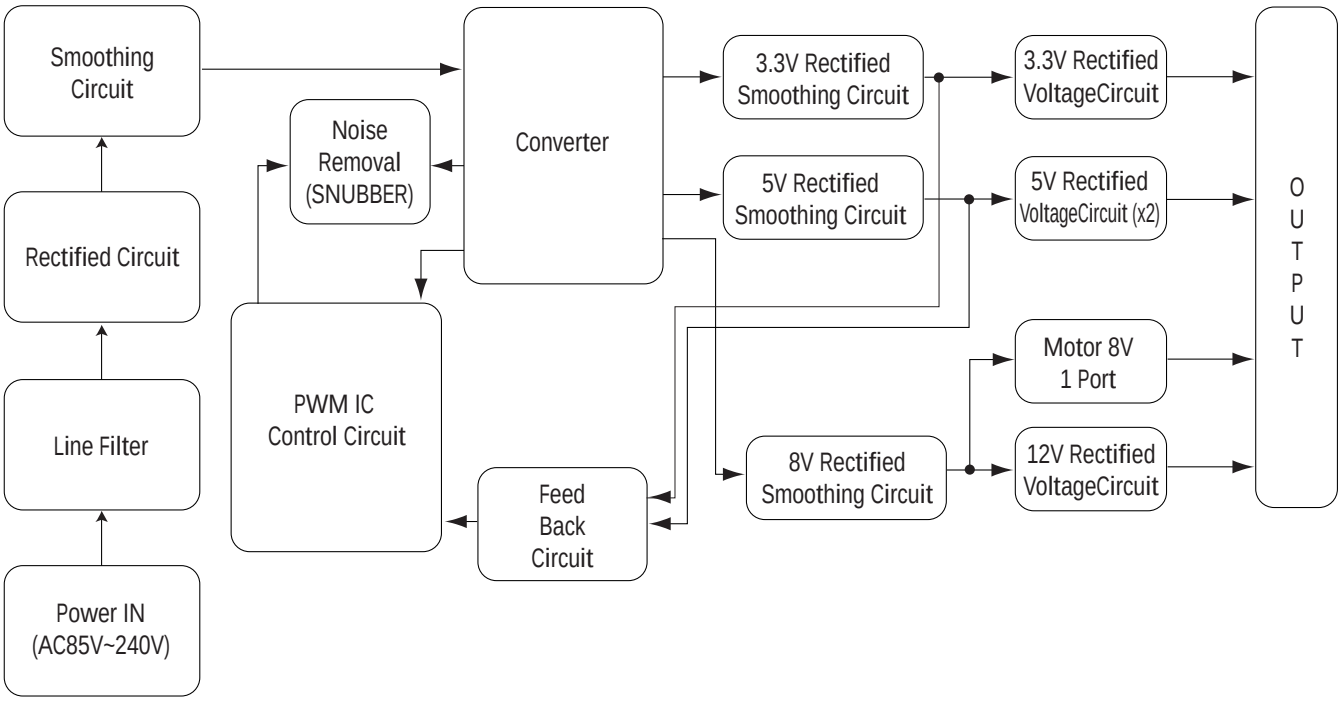


Fig.13-10

13-2 RF

13-2-1 RIC1 (SP3723)

SP3723 is combined with Zoran Vaddis 6 as bipolar IC developed for DVD SERVO system.
Main features include DVD waveform equalizing, CD waveform equalizing, focus error signal generation, 3-beam tracking error signal generation, DPD 1-beam tracking error, defect, MIRR output, Laser Power Control, etc.

13-2-1 (a) Basic Potentiometer

SP3723 Uses 3.5V to 5.5V and reference voltage is 1.65V.

13-2-1(b) RF signal

Fig. 13-11 shows the flow of signal generated by the pick-up.
RF signal detected from pick-up is converted in to RF signal via RF interface and attennuators.
A, B, C, D signals detected from pick-up are converted in to FE, TE, PI, CE, DEFECT signals.

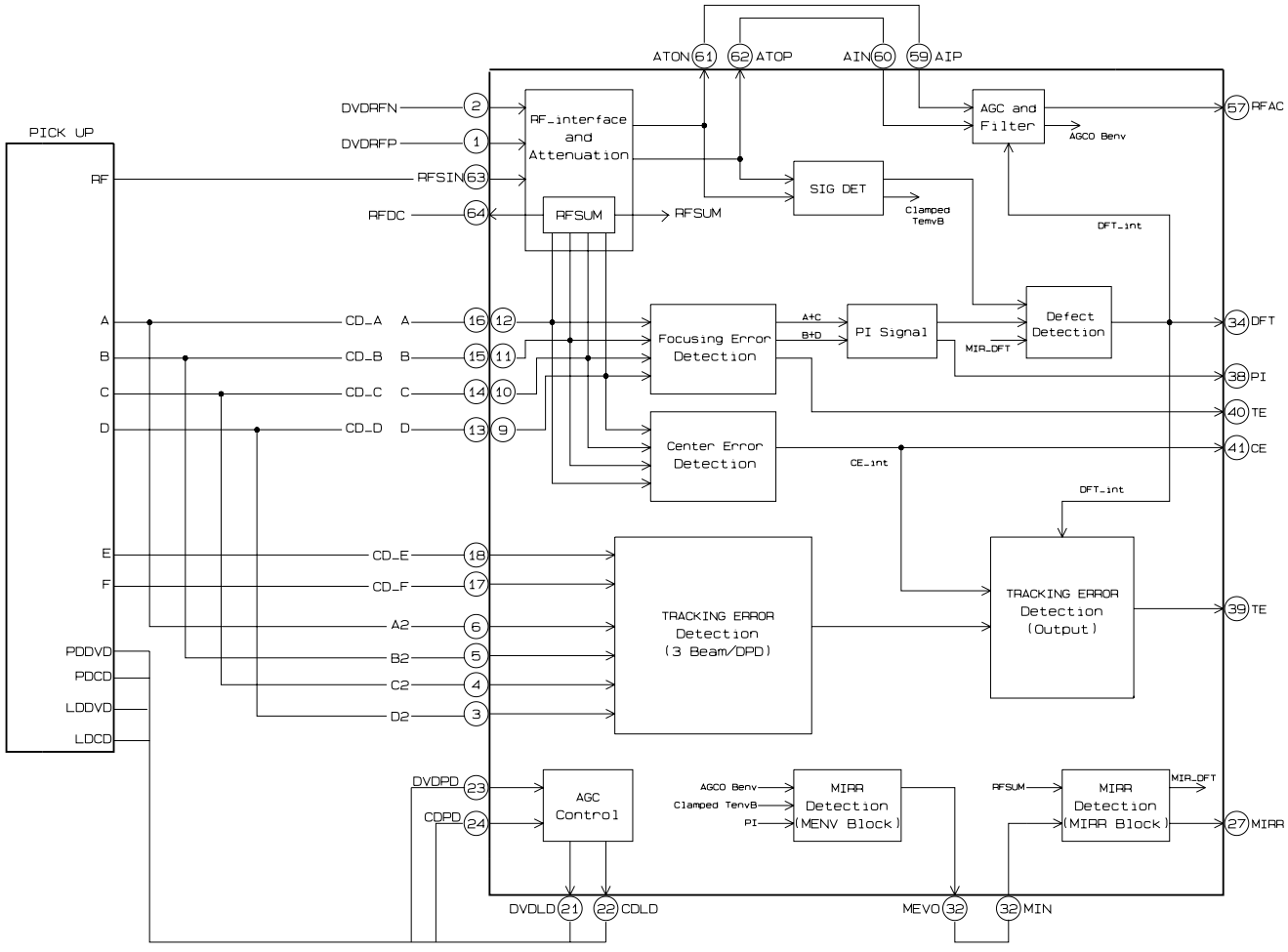


Fig. 13-11

Fig.13-12 shows the waveform-equalizing block diagram for the RF signal.
RF signal from the pick-up is the input of RF equalizer module of RIC1 (SP3723).

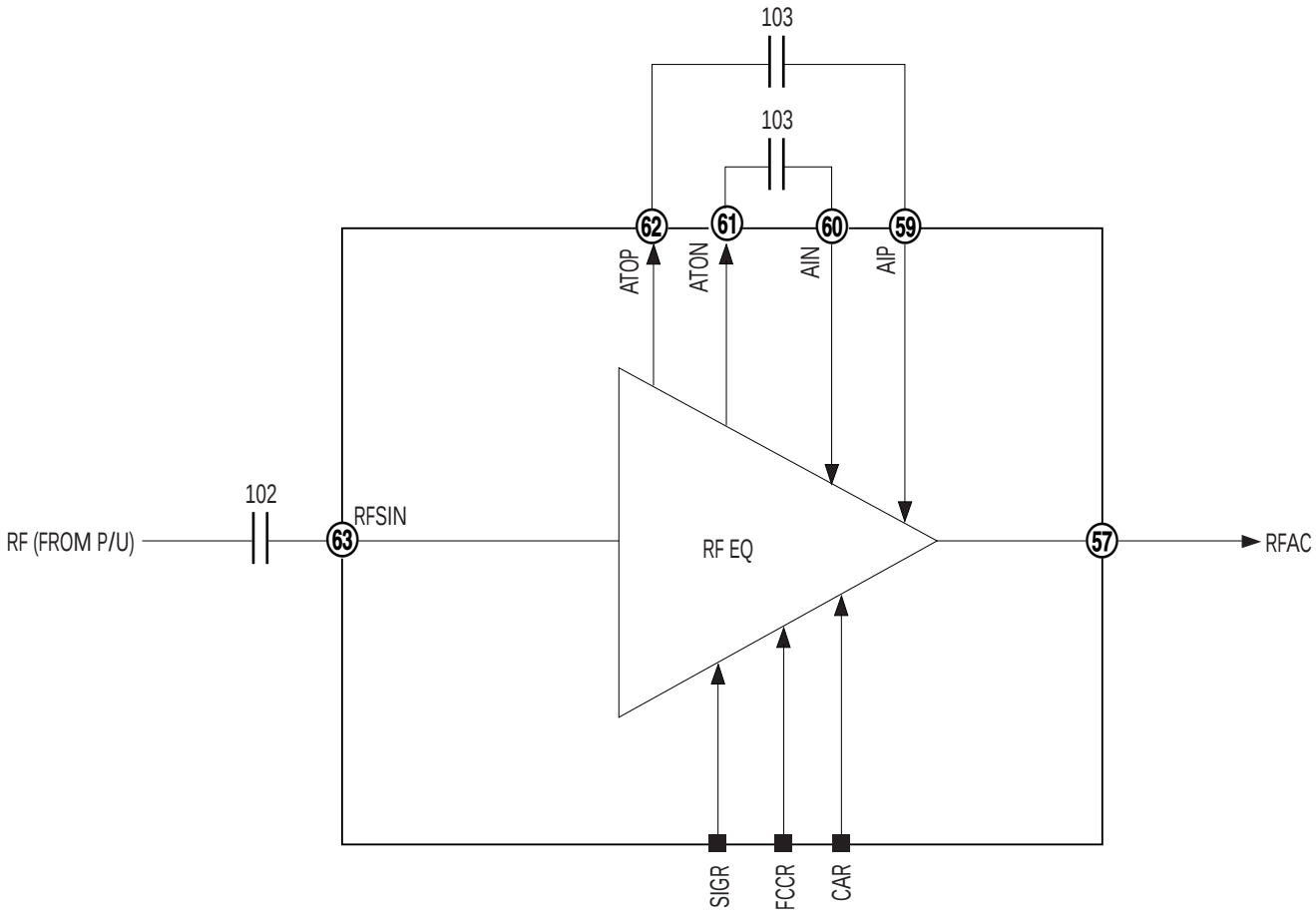


Fig.13-12

13-3 System Control

13-3-1 Outline

The main micom peripheral circuit is composed of 1Mbyte Flash Memory (ZIC3) for Microcode and data save, 2Kbit EE-PROM (ZIC5) for permanent storage of data needed at power off, 64Mbit SDRAM (ZIC2) for temporary data read and write.
The Micom (ZIC1 ; Vaddis 7) mounted in main board analizes the key commands of front panel or instructions of remote control and controls the devices on board to execute the corresponding commands after initializing the devices connected with micom on board at power on.

13-3-2 Block Diagram

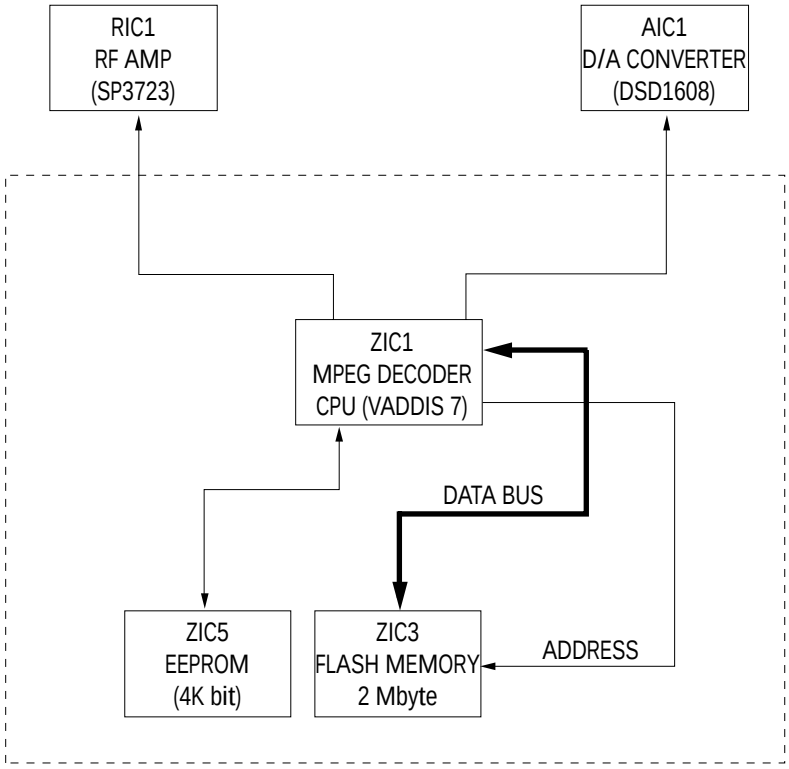


Fig. 13-13

13-4 Servo

13-4-1 Outline

SERVO system of DVD is Compoced of Focusing SERVO, Tracking SERVO, SLED Linked SERVO and CLV SERVO (DISC Motor Control SERVO).

1) Focusing SERVO : Focuses the optical spot output from object lens onto the disc surface. Maintains a uniform distance between object lens of Pick-up and disc (for surface vibration of disc).
2) Tracking SERVO : Make the object lens follow the disc track in use of tracking error signal (created from Pick-up).
3) SLED Linked SERVO : When the tracking actuator inclines outwardly as the object lens follows the track during play, the SLED motor moves slightly (and counteracts the incline).
4) CLV SERVO (DISC Motor Control SERVO) : Controls the disc motor to maintain a constant linear velocity (necessary for RF signal).

13-4-2 Block Diagram

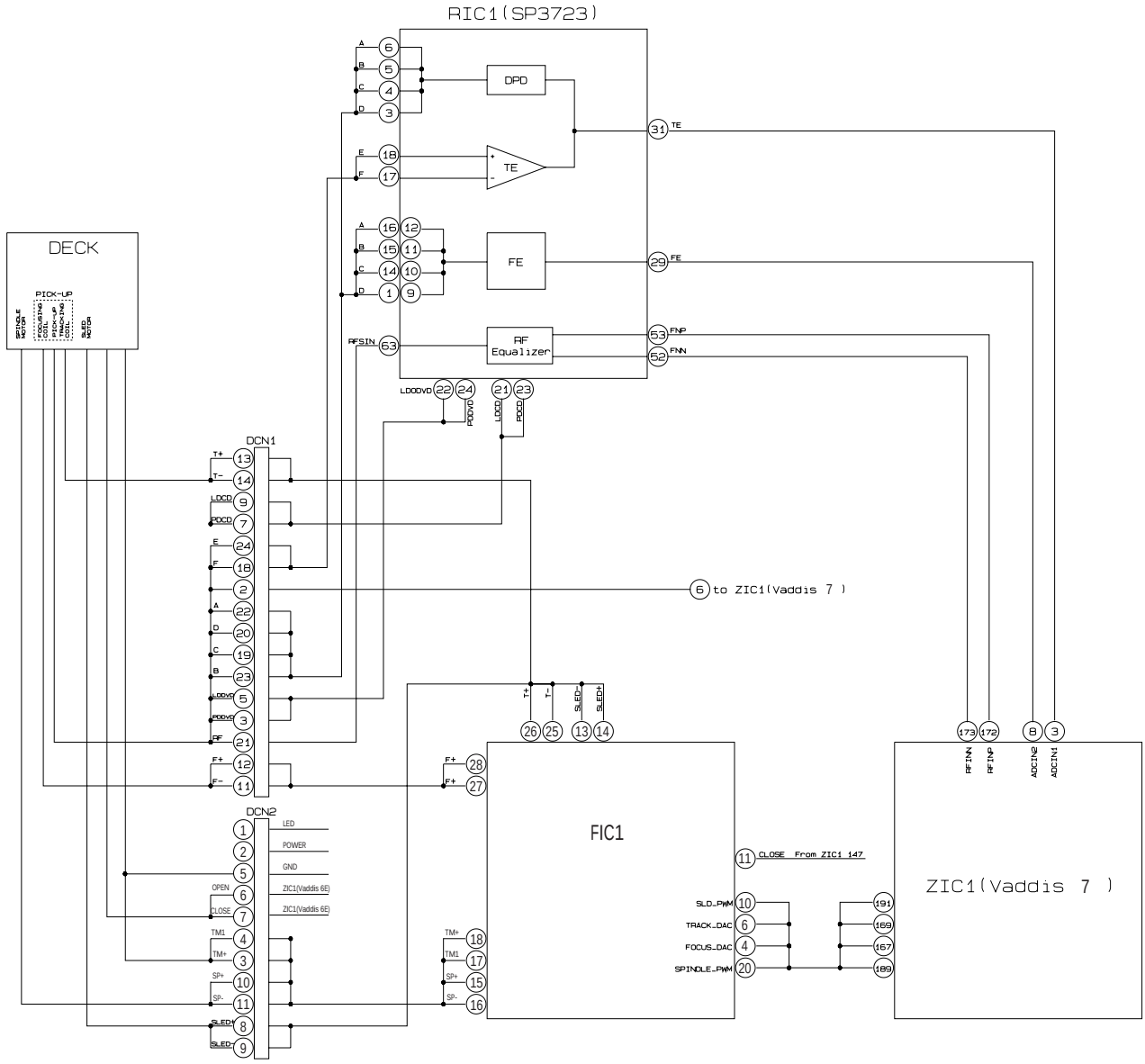


Fig.13-14

13-4-3 Operation

1) FOCUSING SERVO

(1) FOCUS INPUT

The focus loop is changed from open loop to closed loop, and the triangular waveform moves the object lens up and down (at pin 167 of ZIC1 during Focus SERVO ON.) At that time, S curve is input to pin 181 of ZIC1.

PZ (pin 183 of ZIC1) signal, summing signal of PD A, B, C, D, is generated, and zero cross(1.65V) point occurs when S curve is focused and ABCD signal exceeds a preset,constant value. The focus loop is changed to closed loop, and the object lens follows the disc movement, maintaining a constant distance from the disc. (these operations are same in CD and DVD).

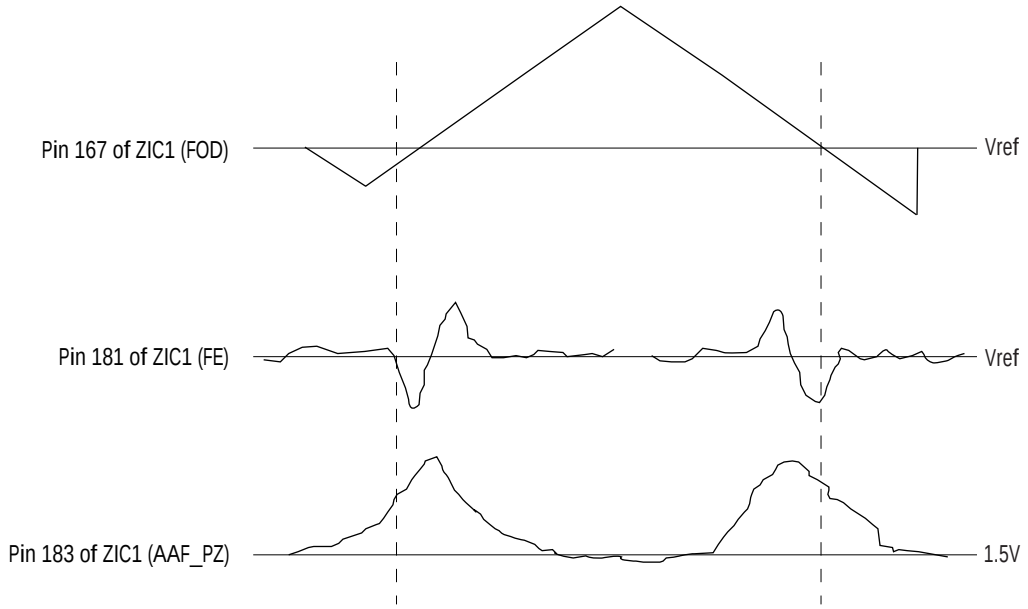


Fig. 13-15

(2) PLAY

When focus loop closes the loop during focus servo on, both are controlled by VREF voltage (approx. 1.65V).

2) TRACKING SERVO

(1) NORMAL PLAY MODE

❶ For DVD

Composite : The signal output from PD A, B, C, D of Pick-up, the tracking error signal (pin39 of RIC1) uses the phase difference of A+C and B+D in RIC1, and inputs to ZIC1. Then, it is output to ZIC1 pin 169 via digital equalizer, and applied to the tracking actuator through FIC3.
Pin 69 of ZIC1 is controlled by VREF(approx. 1.65V) during normal play.
Meanwhile, DVD repeats the track jump from 1 to 4 in inner direction at normal play (because data- read speed from disc is faster than data output speed on screen).

❷ For CD, VCD

Receive the signal output through E, F of Pick-up, from ZIC1. The tracking error signal is similar to DVD.

(2) SEARCH Mode :

Search mode : Fine seek,(Moving the tracking actuator slightly little below 255 track) and coarse search, moving much in use of sled motor. The coarse search will be described in sled linked servo and now, the fine seek is explained shortly.
If the object lens is located near target, cut off the tracking loop and give the control signal as many as desired count to move the tracking actuator via ZIC1 pin 169 terminal(TRD).

3) SLED LINKED SERVO

- Normal play mode
  Move SLED motor slightly by means of PWM signal in ZIC1 pin 191, as the tracking actuator moves along with track during play. Control to move the entire Pick-up as the tracking actuator moves.

- Coarse serach mode
  In case of long-distance search (such as chapter serach), ZIC1 uses MIRR and Global sense signal.
  Then, read ID and compute the existing track count after input of next track.
  If the existing track count is within fine seek range, tracking begins using fine seek.

4) CLV SERVO(DISC MOTOR CONTROL SERVO)

Input RF signal (from Pick-up) to ZIC1 pin 172, 173.
Detect SYNC signal from RF in ZIC1, and output PWM signal to ZIC1 pin 189 for constant linear velocity.

13-5 DVD Data Processor

13-5-1 Outline

The Vaddis 7(highly-integrated device) includes the full front-end disc controller, back-end decoder functions as well as the host control CPU.
The principal off-chip components include the disc drive with its optical pickup, tray, sled and spindle drivers and motors, 16Mbits of flash MEMORY, 128Mbits of SDRAM, and the audio Digital-to-Analog converters some applications.

In case of general disc refresh, the memory is almost filled up periodically. It is because Write rate to memory after disc playback and signal process is faster than Read of A / V decoder. When the memory is filled, this status is reported by interrupt to main micom, which controls the servo to kick back the pick-up to the previous track after memorizing the last data read from disc until now. It takes some times to jump to the previous track and return to the original(jump location) again. The memory will have an empty space because A / V decoder reads out data of memory.
When the memory has an empty space, where data can be processed and written and the pick-up correctly gets to the original location(before kick back location) again, it reads data again avoids the interrupt of data read previously. The basic operation repeats to perform as described above.

13-5-2 Block Diagram

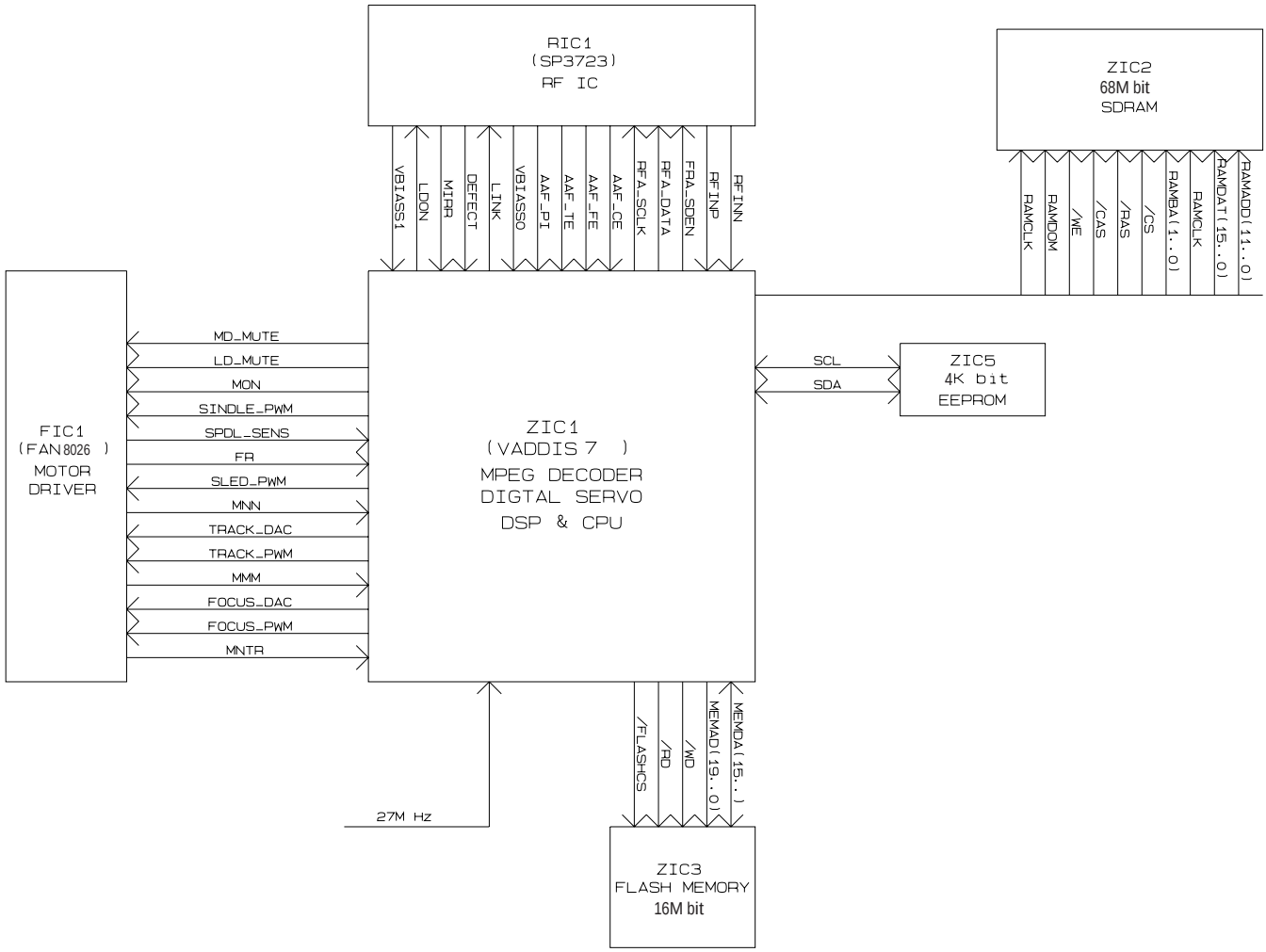


Fig.13-16

13-6 Video

13-6-1 Outline

ZIC1(A/V decoder with video encoder) diverges from the 27MHz crystal, then generates VSYNC and HSYNC.
ZIC1(A/V decoder with video encoder) does RGB encoding, copy guard processing and D/A conversion of 8bit video data internally inputted from video decoder block by ZIC1.
Video signal converted into analog signal is outputted via amplifier of analog part.

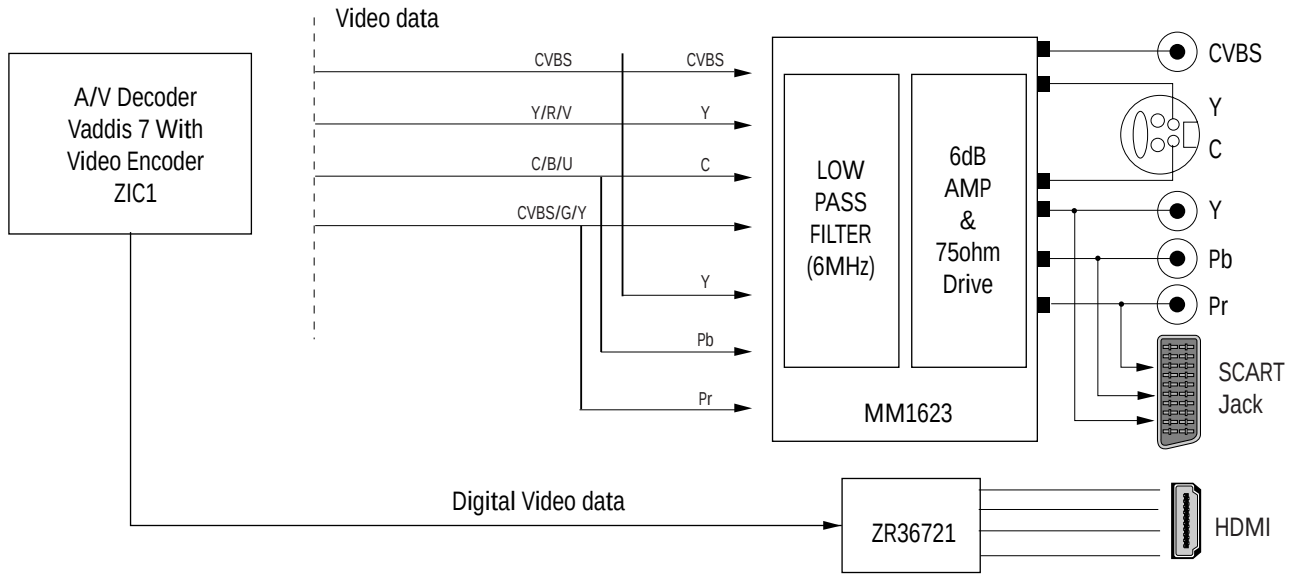


Fig. 13-17 Video Output Block Diagram

13-6-2 NTSC/PAL Digital Encoder (VADDIS 7 ; Built in video encode)

ZIC1 inputted from pin 161 with 27MHz generates HSYNC and VSYNC which are based on video signal.
ZIC1 is synchronous signals with decoded video signal and control the output timing of 8bit video signal.
The separate signal is encoded to NTSC by control of ZIC1.
The above signals, which are CVBS (Composite Video Burst Synchronized)/G (GREEN)/Y,
Y (S_VIDEO)/R (RED)/Pr and C (S_VIDEO)/B (BLUE)/Pb [PIN162], are selectively outputted CVBS +S_VIDEO, RGB/Component by the rear switch. In Course of encoding, 8bit data can extend to 10bit or more.
To convert the extended data to quantization noise as possible, ZIC1 adopts 10bit D/A converter.
ZIC1 perform video en-coding as well as copy protection.

13-6-3 Amplifier (VIC1: LA73054)

VIC1 is 6dB amplifier.
Based on CVBS signal, the final output level must be 2Vpp without 75ohm terminal resitance.
Because the level of video encoder output is only 1.1Vpp, the level is adjusted with the special amplifier.
When mute of pin 5 is high active, if the pin is floating and connecte to power, the output signal is never ouputted.
CVBS, Y, C, R, Pb(B), Pr(R) outputted from video encoder are inputted to VIC1 (Pin 2, 8, 6, 16, 14).
The signal to which gain is adjusted by amplifier is outputted from jack via 75ohm Resistance (VR11~VR16).

13-7 Audio

13-7-1 Outline

A / V decoder (ZIC1 ; Vaddis 7) is supply to DATA 0 for 2-channel mixed audio output.
The audio data transmitted from A / V decoder (ZIC1 ; Vaddis 7) are converted into analog signal via audio D / A converter and outputted via post filter and amplifier.
CD and VCD are outputted with only 2 channels audio data and transmit them to Data 0.
If DVD of multichannel Source disc, if is downmixed and transmit them to Data0.
If you want to listen to the multichannel output, you have to connect digital output with AC-3 amp or MPEG / DTS amp.

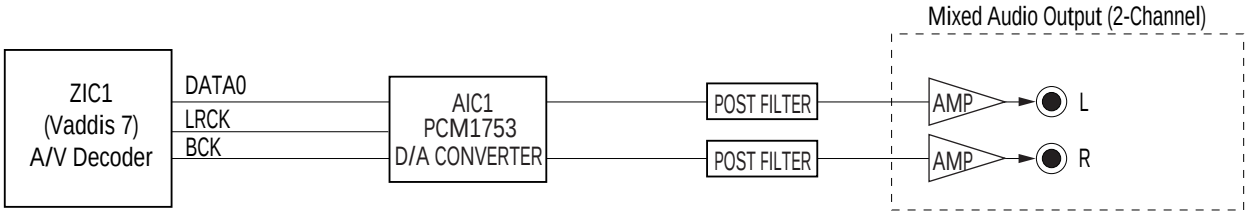


Fig. 13-18 Audio Output Block Diagram

MEMO

14. Reference Information

14-1 Introduction to DVD

14-1-1 The Definition of DVD

DVD is the next generation medium and is the acronym of the Digital Versatile Disc or thr Digital Video Disc, which maximizes the saving density of the disk surface using the MPEG-2 compression technology to enable the storage of 17G bytes of data on the same size CD.

1) 7 times the storage capacity of the conventional CD

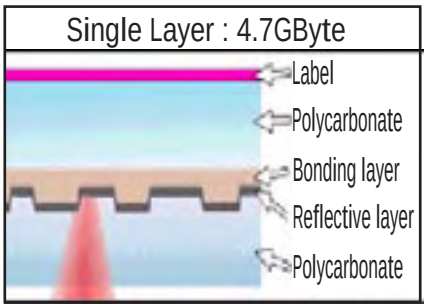
- Minimized the track pitch and pit size to 1/2 of conventional CD.
- Uses red laser with short-wavelenght of 650nm (635nm).

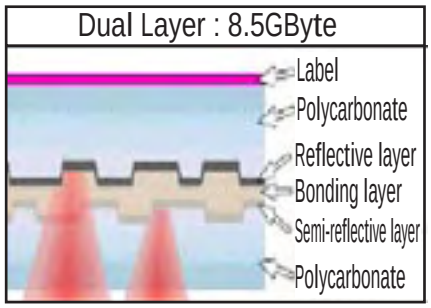
- **DVD Vs. CD-ROM**

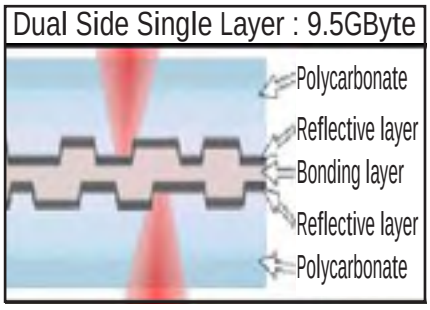
	CD-ROM	CD-R/RW	DVD-ROM	DVD-R/RW	DVD-RAM
Disc Thickness	1.2mm	1.2mm	0.6*2mm	0.6*2mm	0.6*2mm
Lens NA	0.45	0.45(0.5)	0.6	0.6	0.6
Laser wavelenght	780um	780um	650um	650um	650um
Track pitch	1.6pm	1.6pm	0.74pm	0.74pm	0.615pm
Capacity	0.65GB	0.65GB	4.7GB	4.7GB	4.7GB
Track structure	Pit train	Groove	Pit train	Groove	Land/Groove

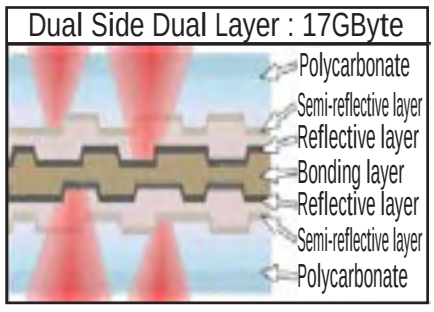
2) Disc Formats

DVD consists of two 0.6mm discs attached together, enabling access to the upper and lower side of the disk, and 4 sides could be used at maximum.









14-1-2 DVD Types

FORMAT	TYPE	APPLICATIONS
DVD-Video	Playback Only	High quality image and sound for movies and other video media.
DVD-ROM	Read Only	Multi-functional, multi-media software that requires large storage capacity.
DVD-Audio	Playback Only	High quality sound that exceeds the CD, multi-channel Audio.
DVD-R	1 Time Recording	As with CD-R, write only once
DVD-RAM	Rewritable (more than 100,000times)	This can be virtually used as hard-disk, with a random read-write access
DVD-RW	Rewritable (About 1000times)	Similar to DVD-RAM except than its technology features a separated read-write access more like phonograph than a hard disk.

14-2 DVD-Video Fromat

14-2-1 Main Features

1) Able to store up to 160 minutes of Movie by utilizing the MPEG-2 compression technology. (Aver. 133min.)

2) Enables more than 500 lines of horizontal resolution. (Class corresponding to the Master Tapes used in broadcasting stations)

3) Provides Dolby Digital 5.1ch Surround 3D sound, which enables theater quality sound (NTSC area).
- For PAL areas, 1 of either MPEG-2 Audio or Dolby Digital must be selected.

4) Multi-Language
- Able to store up to 8 languages of dubbing.
- Able to store up to 32 subtitle languages.

5) Multi-Aspect Ratio
3TV Mode alternatives ; 16:9 Wide Screen (DVD Basic) / 4:3 Pan & Scan / Letter Box.

6) Multi-Story
Possible to implement Interactive Viewing which enables the user to select the scenario.

7) Multi-Angle
Able to view the camera angle you selected among the scenes recorded with multiple camera angles.

Note ; The above media features must have the DVD Title that contains the appropriate contents to function properly.

14-2-2 Audio & Video Specifications

<table>
<tr><th colspan="2">Classification</th><th colspan="2">DVD-Video</th><th>Video-CD</th><th>LD</th></tr>
<tr><td rowspan="6">VIDEO</td><td>Compression</td><td colspan="2">MPEG-2</td><td>MPEG-1</td><td rowspan="2">Analog</td></tr>
<tr><td>Pixel</td><td colspan="2">720 x 480</td><td>352 x 240</td></tr>
<tr><td>Horizontal resolution</td><td colspan="2">Max. 500 Lines</td><td>Max. 250 Lines</td><td>Max.420 Lines</td></tr>
<tr><td>Compression rate</td><td colspan="2">1/40</td><td>1/140</td><td rowspan="2">Analog</td></tr>
<tr><td>Transmission speed</td><td colspan="2">Max. 9.8Mbps (variable)</td><td>1.15Mbps (fixed)</td></tr>
<tr><td>TV aspect</td><td colspan="2">16:9 / 4:3</td><td>4:3</td><td>4:3</td></tr>
<tr><td rowspan="5">AUDIO</td><td>Audio</td><td colspan="2">Max. 8 streams</td><td>2CH stereo</td><td rowspan="5">2 Analog CH.
2 Digital CH.
(16Bit/44.1KHz)
or
1 Analog CH.
1 Stream of Dolby Digital
2 Digital CH.
(16Bit/44.1KHz)</td></tr>
<tr><td>Recording type</td><td>Dolby Digital</td><td>Linear PCM</td><td>MPEG-1 Layer 2</td></tr>
<tr><td>Transmission rate</td><td>448Kbps/stream</td><td>6.144Mbps/stream</td><td>224Kbps</td></tr>
<tr><td>Channel</td><td>5.1CH/stream</td><td>8CH/stream</td><td>2CH</td></tr>
<tr><td>Sampling frequency</td><td>48KHz</td><td>16, 20, 24Bit/48, 96KHz</td><td>16Bit/44.1KHz</td></tr>
</table>

14-2-3 Detailed Feature

DVD-Video Feature 1 — **When Developing the DVD Software, various addition and modification is possible.**

As the storage capacity increases, the DVD-Video separates the main data and the additional data such as the Multi-Function into different data areas, enabling the control of time-data ratio to provide the format that enables the flexible Software development

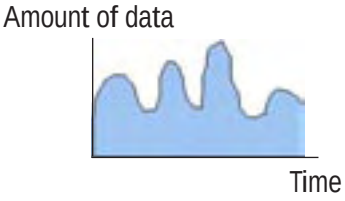
- 1 Movie (3.5Mbps)
  + Subtitle (1 Language)
  + Surround Audio (1 Language)
  = 160min storage (4.673Gbytes)

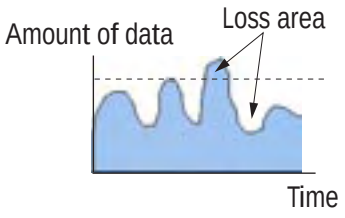
- 1 Movie (3.5Mbps)
  + Subtitle (4 Language)
  + Surround Audio (4 Language)
  = 160min storage (4.680Gbytes)

- 1 Music Video (4Mbps)
  + 2ch High quality Audio (96kHz/24bit)
  = 72min storage (4.648Gbytes)

DVD-Video Feature 2 — **Application of the MPEG-2 compression technology.**

DVD-Video uses the variable compresion technology, the MPEG-2 to compress the moving image optimally, minimizing the Data loss to Provide a clear, natural screen while increasing the storage time.

DVD-Video	• MPEG-2 (Variable compression : Max. 1/40)
	  • Field unit compression.
	  • Compression rate change according to the amount of Data.
	  • Differentiates the still image and the moving image compression rate, reducing Data loss and enables efficient compression.
		

Video-CD	• MPEG-1 (Fixed compression : Max. 1/140)
	  • Frame unit compression.
	  • Compresses all data using the same ratio.
	- Fast movements are jagged, and unnatural
		

DVD-Video Feature 3 | **High quality surround audio.**

DVD-Video can store the audio using the 5.1ch Dolby Digital compression or the advanced Liner PCM method, providing the better-than-CD quality and theater like audio quality.

- DTS (Digital Theater System)
  Home theatre and music playback in the home, DTS provides high quality 5.1-channel surround sound with many extras not offered by other consumer formats. As well as handling DTS-branded releases from a growing number of music labels and consumer software producers, DTS provides enhanced 6.1 matrix and DTS 6.1 discrete decoding that envelopes the listener in sound. DTS technology is featured in a wide cross section of receiver / pre-amplifiers, DVD players and and add-on components from leading consumer audio vendors

- Dolby Digital (AC-3)
  - Unlike the traditional Dolby pro-Logic method, the Dolby Digital method separates all 5 main channels (Front L / R, Center, Surround (Rear) L / R)and the Sub woofer to provide live surround audio.
  - Using the Down Mix method, the conventional Dolby Pro-Logic and Stereo are all compatible.
  - Each separated channels are played back at CD quality sound. (Frequency band: 20Hz ~ 20KHz)

- Linear PCM (Pulse Code Modulation)
  - Provides the high quality Digital sound without the audio data compression.
  - Various Digital Recordings are possible as shown in the table to the right.

Sampling Frequency	Bit Rate
48KHz	16bit
	20bit
	24bit
96KHz	16bit
	20bit
	24bit

- Dolby Digital compatible Audio Mode

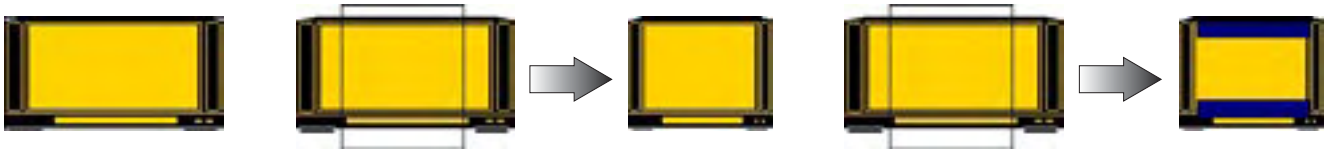
Audio Coding Mode	Channel Format					Remark
		Front		Surround (Rear)		
	L	C	R	L	R	
1/0		O				Mono
2/0	O		O			Stereo
3/0	O	O	O			Surround
2/1	O		O	Mono		
3/1	O	O	O	Mono		
2/2	O		O	O	O	
3/2	O	O	O	O	O	

DVD-Video Feature 4 — Multi-Language

- Audio Dubbing - Max. 8 Languages
- Subtitle - Max. 32 Languages. Capable of storing, and selectiong.
- Linear PCM (Pulse Code Modulation)

DVD-Video Feature 5 — Multi-Aspect

- Unlike the conventional VCD or LD, DVD-Video has the default of 16:9 Wide, and can be viewed using the conventional 4:3 TV, enabling the expansion of viewer selection capabilities.
  - 16 : 9 TV : Wide Mode (16:9 Wide Full Screen)
  - 4 : 3 TV : Letter Box Mode, Pan & Scan Mode

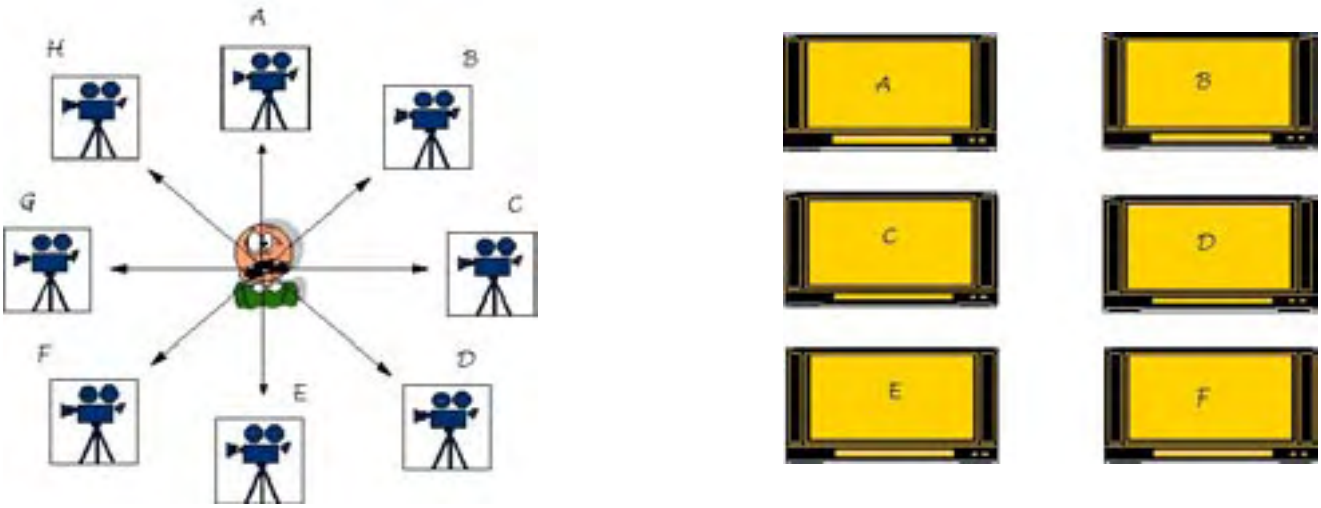


16:9 Wide | 4:3 Pan & Scan | 4:3 Letter Box

Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 6 — Multi-Angle

- Up to 9 angles of view may be stored, enabling the viewer to select a specific viewpoint at a given time.
  --> Especially, for the Music Video and Sports Title, this provides a more lively image of the scene.



Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 7 | **Multi-Story**

- DVD-Video provides the enviroment suitable for the bi-directional Software develoment, providing multiple scenarios. This feature enables the Multi-Story function.

OPTION | **Parental Lock**

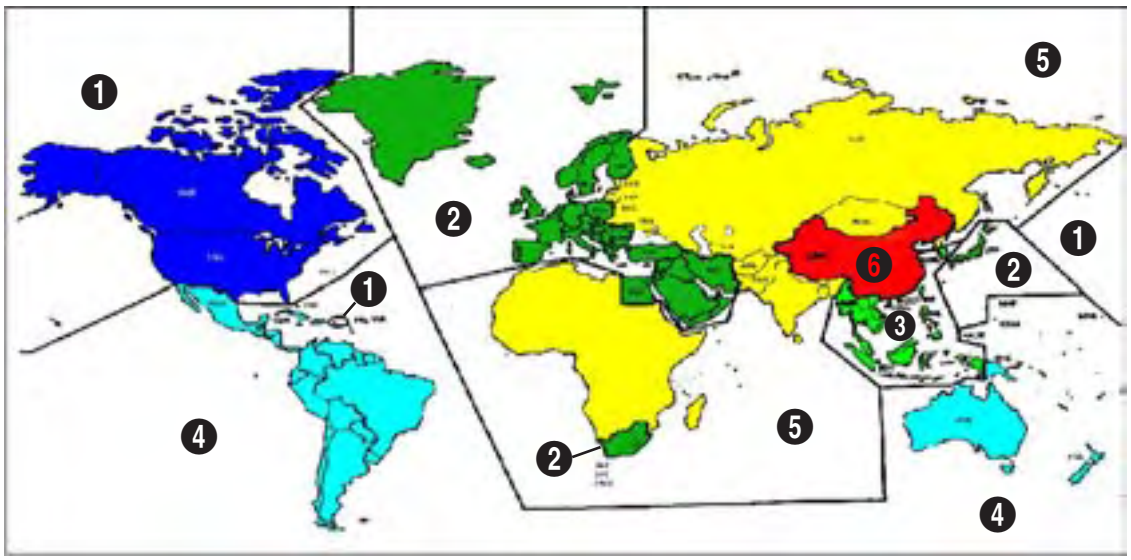
- For the titles that are not suitable for children viewing, Parental Locks are set, requesting user defined passwords for viewing
- Parential Locks may be set on specific frames of the Title, enabling the player to skip those frames during playback.

COPYRIGHT | **Regional Code & Macrovision**

- Classify the world into 6 regions, and if the DVD Title and the Player's "Reginal Code" do not agree, playback is prohibited.

- **Regionnal Coding is optional for the Soft developers (Region 0 All Code), but the Hardware developers must adopt the appropriate regionnal code for sale.**

  - Region 1 : The United States and its territories, Canada.
  - Region 2 : Europe, Japan, Greenland, Egypt, South Africa, the Middle East.
  - Region 3 : Taiwan, Hongkong, Korea, South East Asia.
  - Region 4 : Mexico, South America, Australia, New Zealand.
  - Region 5 : Russia, Eastern Europe, India, Africa.
  - Region 6 : China. • Region 0 : Worldwide (All Code)



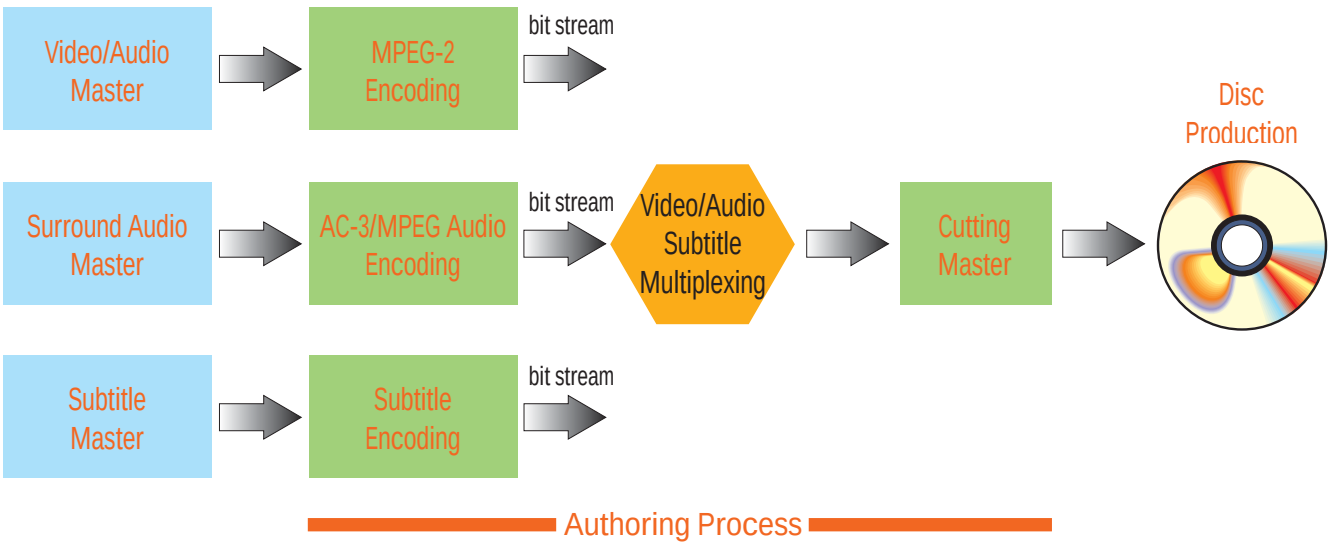
- Adoptation of the Macrovision System disables the copying on to other media.

Remark

DVD-Video Authoring Process

- The image quality of the DVD-Video may vary accoring to the quality of the Master and the Authoring Process
  - The image quality of the DVD-Video varies according to the Digital Mastering Source such as the conventional LD, VCD, or Original Film.
  - Different Authoring Process are used accoring to the Software developers, and this may affect the DVD image quality.

- **Authoring Process**

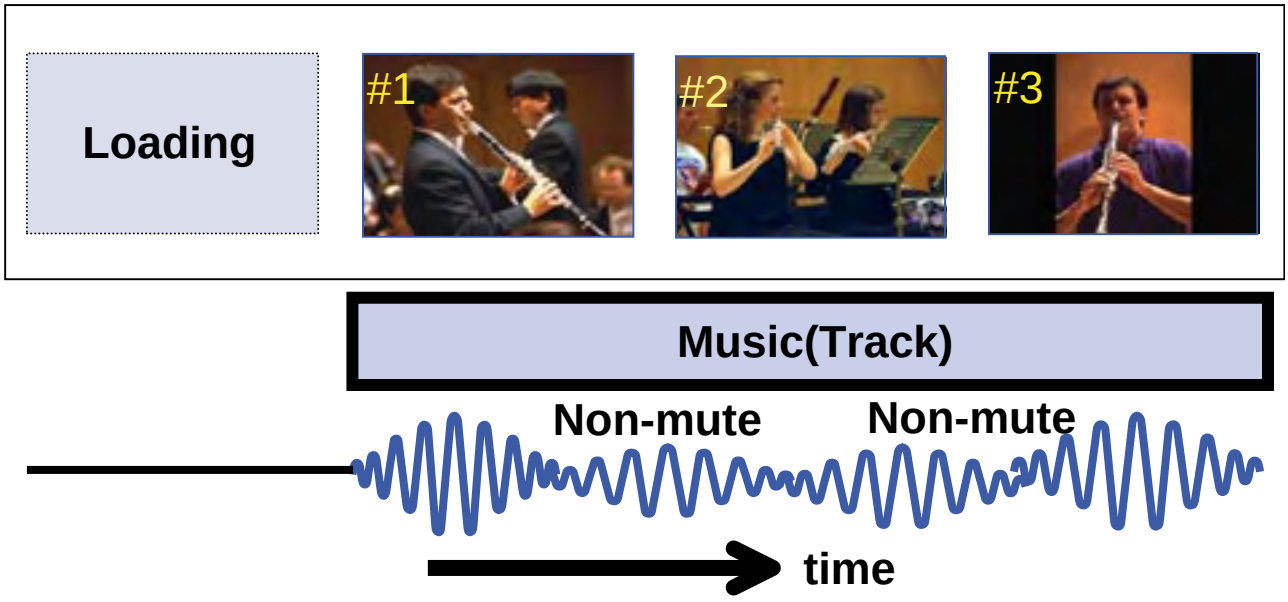


The Logical Structure of DVD-AUDIO

- Album
  - Each side of a DVD-Audio disc contains one
- Group
  - Essentially a playlist specifying the playback order of a number of Tracks
  - 9 per Album
- Track
  - As on a CD, a Track may be thought of as a single audio program (I.e. a song)
  - Audio attributes such as channel assignment, sample rate, and word-length may be changed on Track boundaries
  - There may be no more than 99 tracks total within a single Group
- Index
  - A reference point to a portion of an audio Track (Cell)
  - There may be up to 99 indices within a single Track

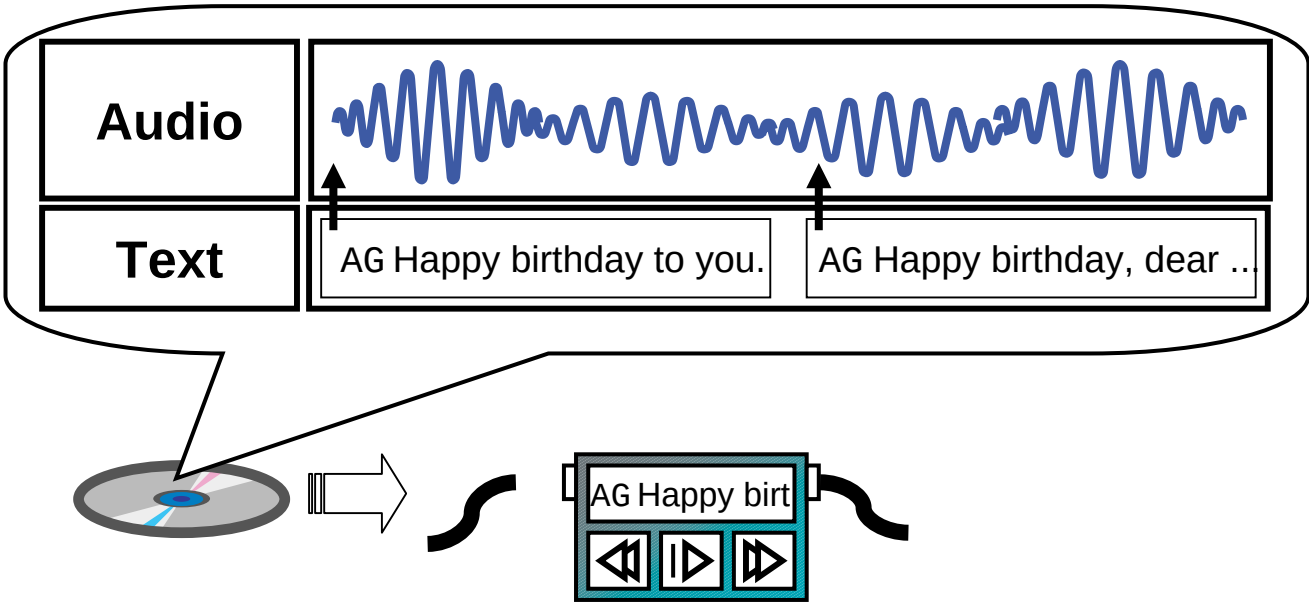
Audio Still Video

- Still pictures playback with audio.

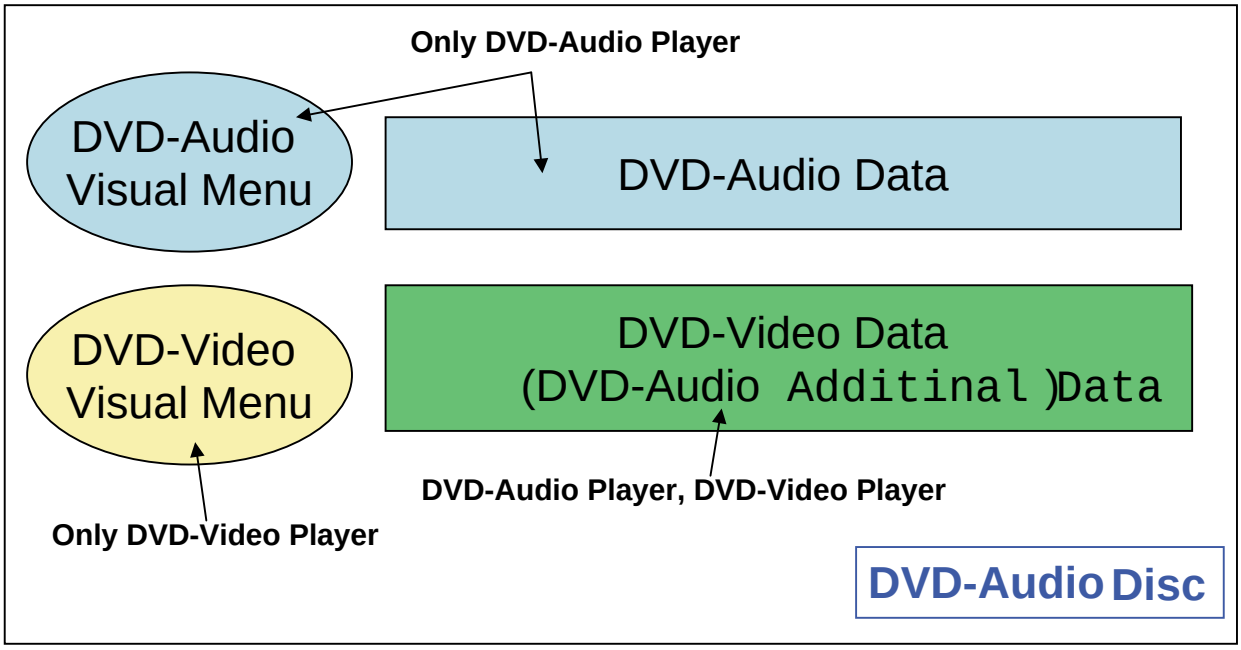


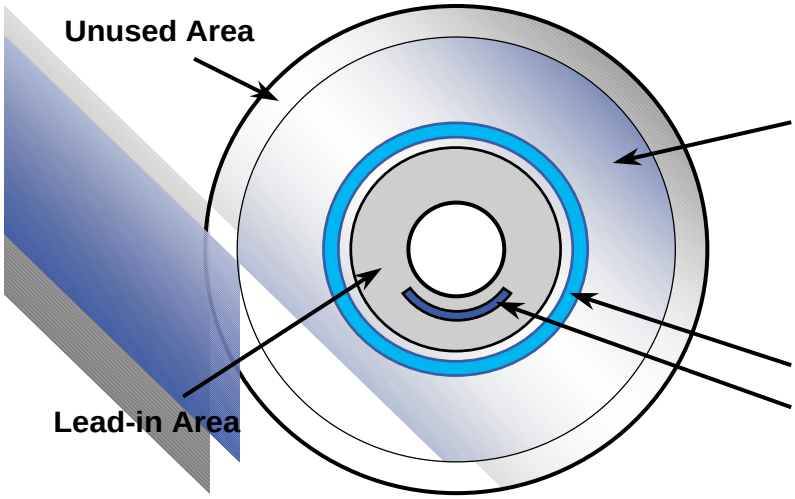
Real Time Text

-Supports Text data with audio



DVD-VIDEO Data in DVD-AUDIO Disc.





Protected content prerecorded by media manufacturer

Encrypted using key:

Hash[Media Key, Album ID, CCI]

Other data prerecorded by media manufacturer

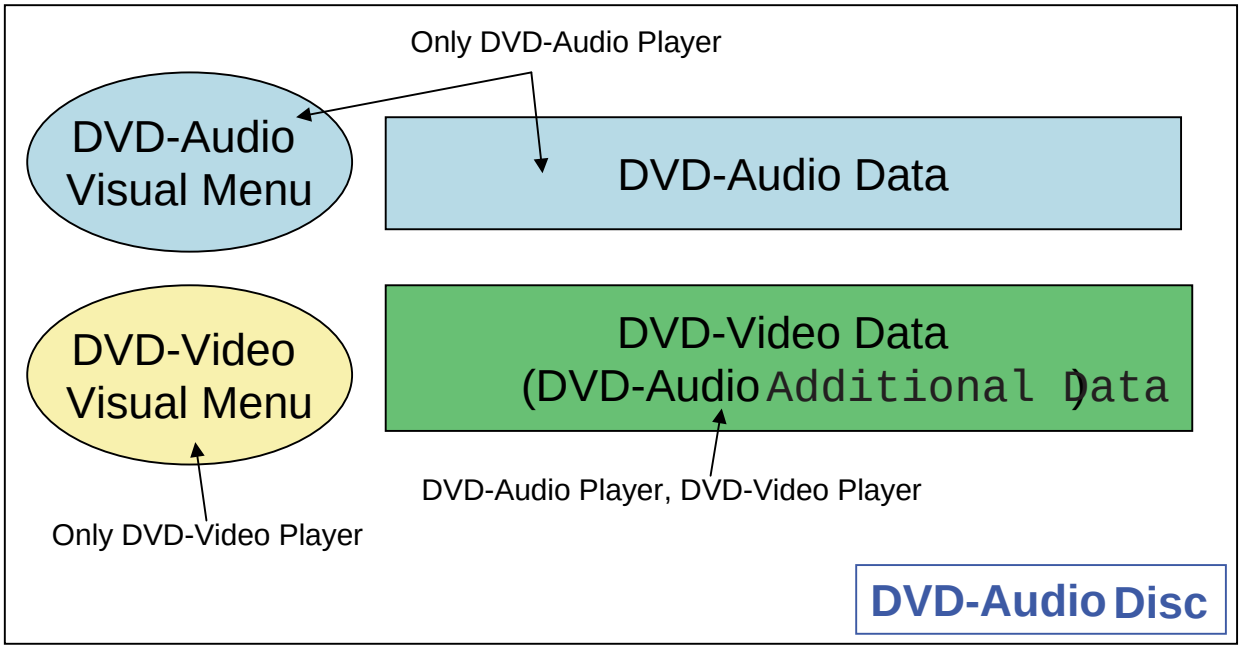
Media Key Block Media Key

Album ID (album-unique, not copyable)

Individual keys for each device supplied to manufacturer by licensing entity

Device calculates Media Key from Media Key Block and device keys, and uses in forming content decryption key

DVD-VIDEO Data in DVD-AUDIO Disc.

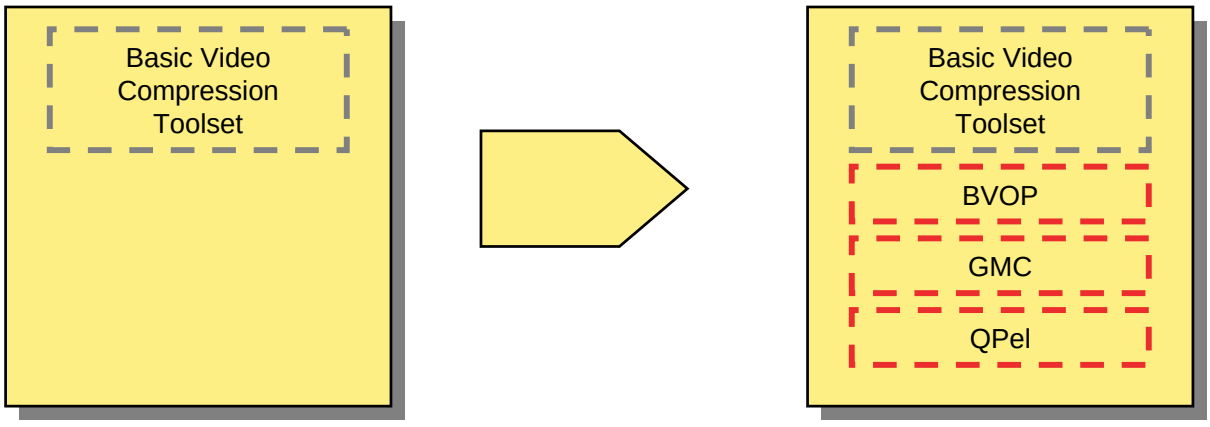


14-4 DivX

- ***DivX:*** **Most successful MPEG-4 video compression technology in history.**
  - standard for digital video ('MP3 of Video').
  - Internet's 3rd most downloaded application,
  - MPEG-4 video codec.
  - Secure, MPEG-4, DVD-quality VOD products.

- **Powerful technology…**
  - DVD quality: ~784Kbps.
  - NTSC/PAL: <500Kbps.
  - 720P HD: <4Mbps.
  - 1080p HD: <7Mbps.
  - 32Kbps to Digital Cinema.
  - 80+ hours of portable video.

- **There are many different MPEG-4 profiles.**
  - 'Simple Profile' (SP) is the most basic; other profiles are SP pl us other tools.
- **Advanced Simple Profile (ASP) is emerging as the standard for consumer and CE applications.**



Simple Profile MPEG-4 Advanced Simple Profile MPEG-4

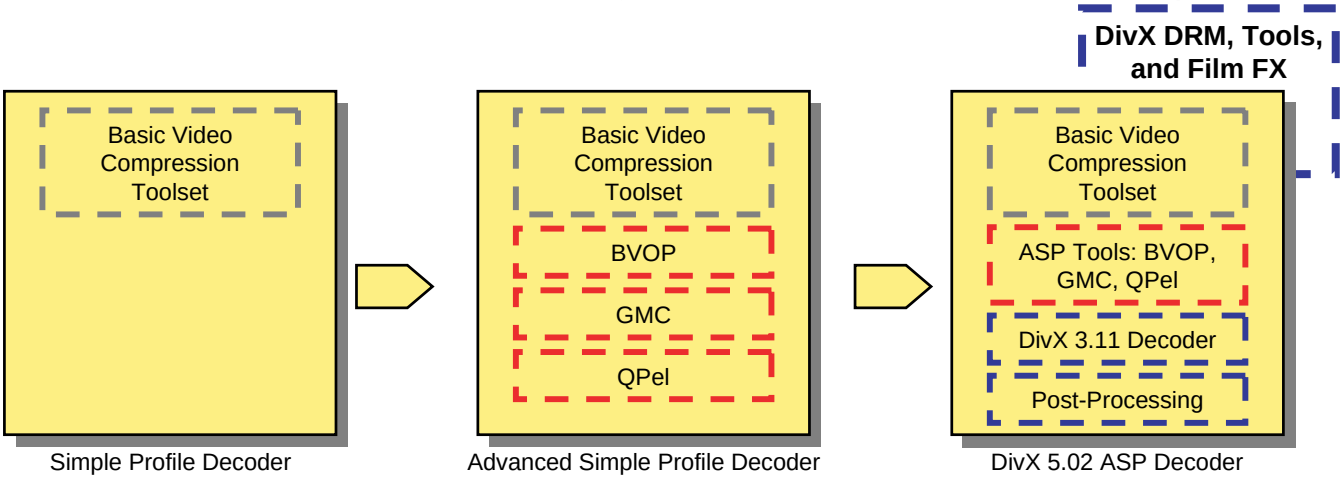
- **DivX 3.11 is a legacy technology that is not MPEG-4 compatible**
  - –Requires different decoding algorithms – cannot be decoded by a generic MP 4 decoder.
  - –Constitutes about 45% of the DivX content on the Internet today.
- **Open DivX is a MPEG-4 Simple Profile Implementation.**
  - –Released to the Internet community in Jan/2001
- **DivX 4.x is a highly optimized MPEG-4 Simple Profile Implementation.**
  - –Released Aug/2001.
- **DivX 5.0 – 5.02 is a MPEG-4 Advanced Simple Profile Implementation.**
  - –Released Mar/2002.
- **DivX 5.1 is a MPEG-4 Advanced Simple Profile Implementation stabilized an d optimized for CE devices.**
  - –Released Nov/2002; GMC and QPel support are not required for certification.
- **DivX 5.2.1 is the latest version until now**

• DivX remains MPEG-4 compatible:

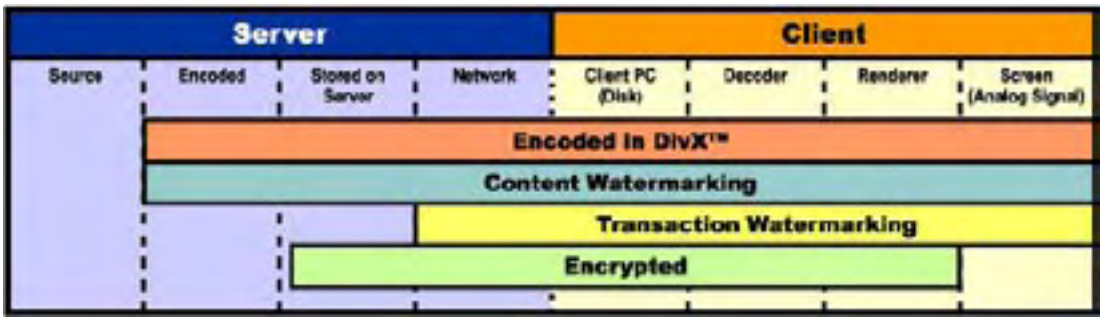
–A generic MPEG-4 Simple Profile decoder can decode Open DivX and DivX 4.x content

–A generic MPEG-4 Advanced Simple profile decoder can decode content encoded with Open DivX, DivX 4.x and DivX 5.x.

- DivX 5.X decoder advantages:
  - Fully MPEG-4 ASP compliant (superior to all Simple Profile decoders).
  - DivX 3.11 decoder (critical for existing DivX content on the Internet).
  - DivX proprietary post-processing (improves all files).
  - DivX advanced tools (interlace, PVM, telecine, etc).
  - DivX DRM
  - And the standard DivX advantages of users, content, and brand).



- **All Versions of DivX require DivX DRM to be implemented in IC.**
- DivX content is protected in numerous ways to ensure security.
  - Content never exists in an unencrypted form.
- The DivX DRM system quickly identifies and responds to security attacks.
- Content owners have maximum flexibility to set usage rules and to enforce Digit al Millennium Copyright Act (DMCA) rights.
- **All DivX Certified CE devices require DivX DRM.**



- **Pre-Encryption**
- **Key Rotation**
- **Encryption Rotation**
- **Static Watermarking**
- **Dynamic Watermarking**
- **Central Business Rule(s)**
- **Server Key Management**
- **Secure Channels**
- **Tamper Resistance**

DivX Certification helps CE makers get high-quality devices to market.

PLATFORM	CERTIFIED DivX HANDHELD VIDEO	CERTIFIED DivX PORTABLE VIDEO	CERTIFIED DivX HOME THEATER VIDEO	CERTIFIED DivX HIGH DEF VIDEO
Screen Size Requirements	3" X 3" Max (76.2 x 76.2 mm)	3" X 3" - 12" X 9" (76.2 x 76.2 - 304.8 x 228.6 mm)	12" X 9" or larger (304.8 x 228.6 mm)	Any HD Screen Size
Resolution and Frame Rate	176 X 144 @ 15 fps	352 X 240 @ 30 fps 352 X 288 @ 25 fps	720 X 480 @ 30 fps 720 X 576 @ 25 fps	1280 X 720 @ 30 fps
Video Type	Progressive	Progressive	Progressive and Interlaced	Progressive and Interlaced
DivX Versions	DivX 3.11, 4.x, 5.x	DivX 3.11, 4.x, 5.x	DivX 3.11, 4.x, 5.x	DivX 3.11, 4.x, 5.x
DivX DRM	Yes	Yes	Yes	Yes
Post-Processing	None	Deblocking on Luma	Deblocking, Deringing, Film FX	Deblocking, Deringing, Film FX