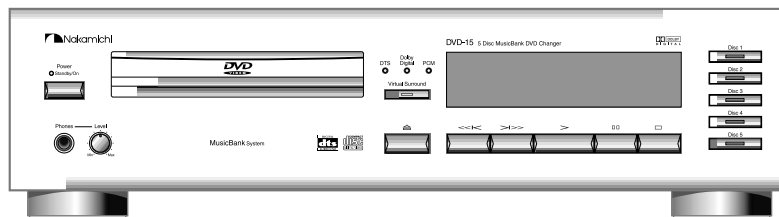


Service Manual

DVD-15

5 Disc MusicBank DVD Changer



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For Schematic Diagrams, and Mounting Diagrams, see the separate volume.

1. GENERAL

1.1 Product Code

V685

1.2 Destinations


BS, CAN, CH, DA, EP, HK, JPN, OTR, TW, USA, KR, AUS

Abbreviations

CAN - Canada	CH - China
DA - South America	EP - Europe
HK - Hong Kong	JPN - Japan
OTR - Other	TW - Taiwan
U.K. - United Kingdom	USA - U.S.A.
KR - Korea	AUS - Australia

1.3 Cautions / Warnings

(1) Product Safety Notice

Parts marked with the symbol  in the schematic diagram have critical characteristics.

Use ONLY replacement parts recommended by the manufacturer. It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

(2) Leakage Current Check / Resistance Check

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.

WARNING—DO NOT return the unit to the customer until the problem is located and corrected.

(3) Protection of Eyes from Laser Beam

To protect eyes from invisible laser beam during servicing, **DO NOT LOOK AT THE LASER BEAM on the Changer.**

(4) Laser Caution

CAUTION

Adjusting the knobs, switches, and controls etc. or taking actions not specified herein may result in a harmful emission of laser beams. This Changer must be adjusted and repaired only by qualified service personnel.

OBSERVERA!

Sådana inställningar av rattarna, omkopplarna eller övriga kontrollknappar som inte är beskrivna i bruksanvisningen kan resultera i farlig laserutstrålning. Justering eller reparation av denna kompaktskivspelare skall endast utföras av kvalificerad servicepersonal.

OBS!

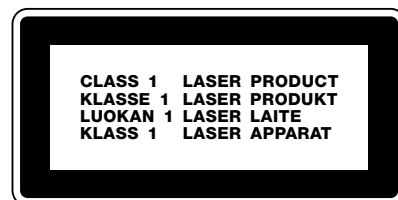
Indstilling af knapper, cmskifttere og øvrige kontrolknapper, som ikke følger den i brugsanvisningen beskrevne måde, kan resultere i farlig laserudstråling. Justering eller reparation af denne CD-afspiller må kun udføres af kvalificeret servicepersonale.

OBS!

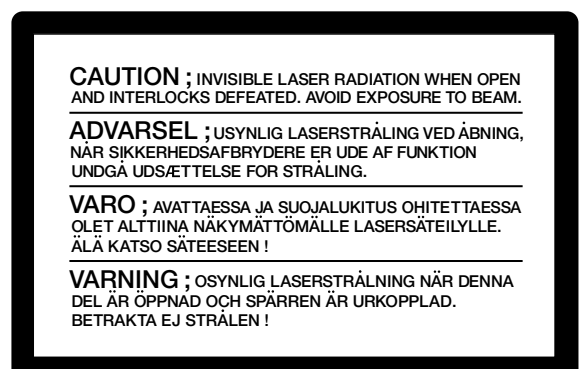
Justering av ratt, brytere og kontroller andre enn de som er beskrevet her, kan resultere i farlig laserbestråling. Justering eller reparasjon av denne kompaktdiskspilleren må bare utføres av kvalifiserte fagfolk.

HUOMAUTUS

Jos nuppeja, kyikimiä ja säätimiä ym, säädetään tai laitetta käytetään toisella tavalla kuin on selostettu, tuloksena saattaa olla vaarallista lasersäteiden vuotoa. CD-soittimen säätö ja korjaus on jätettävä aina asiantuntevan huoltoteknikon tehtäväksi



THIS DVD PLAYER IS CLASSIFIED AS A CLASS 1 LASER PRODUCT. THE CLASS 1 LASER PRODUCT LABEL IS LOCATED ON THE REAR EXTERIOR.



1.4 Caution for handling Laser Pickup of DVD Player

[Electric Influence because of impressed electricity]

Laser pickup of a DVD player is weaker and more sensitive than that of CD player, it is possible to damage the pickup under specific electrical environments, such as impressed or leaked electricity, including static electricity. Electricity that is impressed during modification for zone coding, or through updating the micro processor and so forth, may influence the laser pickup.

Prevention of Impressed Electricity

• In general

It is very difficult to specify why and how static electricity is impressed. It is important to thoroughly ground the working bench and fasten the antistatic electricity wrist band, as well as carry out the daily management of isolating the resistor of the soldering iron and the leaked current in the working room.

Unfortunately, it is impossible for us, even as the supplier, to assure that all these conditions are met at any distributor or subsidiary that does not have an identical situation to that of the manufacturing site. Consequently, we do not recommend any modification for zone coding, that can be a negative factor against quality assurance, and we consider pickup failure of any unit modified for zone coding to be out of warranty.

• How to prevent or discharge the impressed electricity

Please refer to the following items.

1) Grounding

When you repair a laser pickup, first ground the human body, as well as the measuring instruments and other tools (with particular caution to the soldering iron). What's more, your workbench and floor should desirably be grounded using a conductive sheet or copper plate. Be careful so as not to let your clothes touch the laser pickup, as static electricity on the clothes may be released even if your body is grounded.

2) Discharge of electricity

Be sure to discharge electricity from objects brought into contact with the laser pickup (i.e., soldering iron, tweezers, probes, volt-ohm-meter probes, etc.) before starting work by contacting them with the DVD player's chassis. Also, never touch the laser pickup while power is applied.

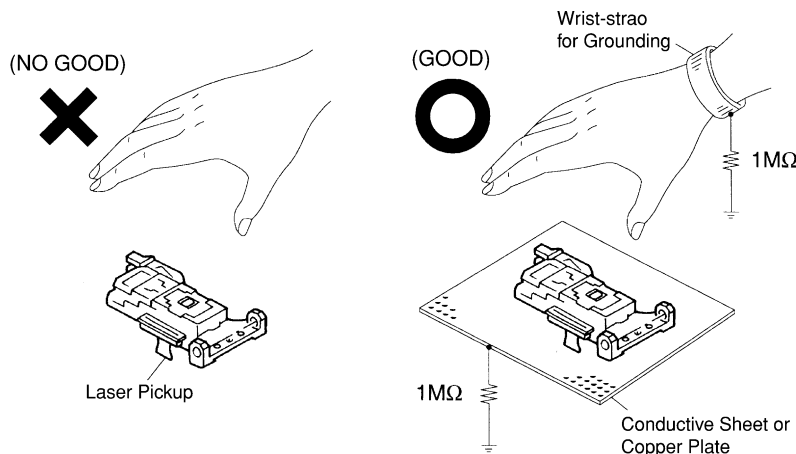
3) Soldering iron

The soldering iron for use in repair work should be: (1) a ceramic soldering iron, (2) a soldering iron with its metal part grounded, or (3) a soldering iron whose insulation resistance after power application is 10 M-ohm or more at 500 VDC. Soldering should be completed promptly, at a soldering iron temperature of 320°C ideally. (39W). A soldering iron heated above this temperature can break down the laser diode.

Condition of Soldering Iron

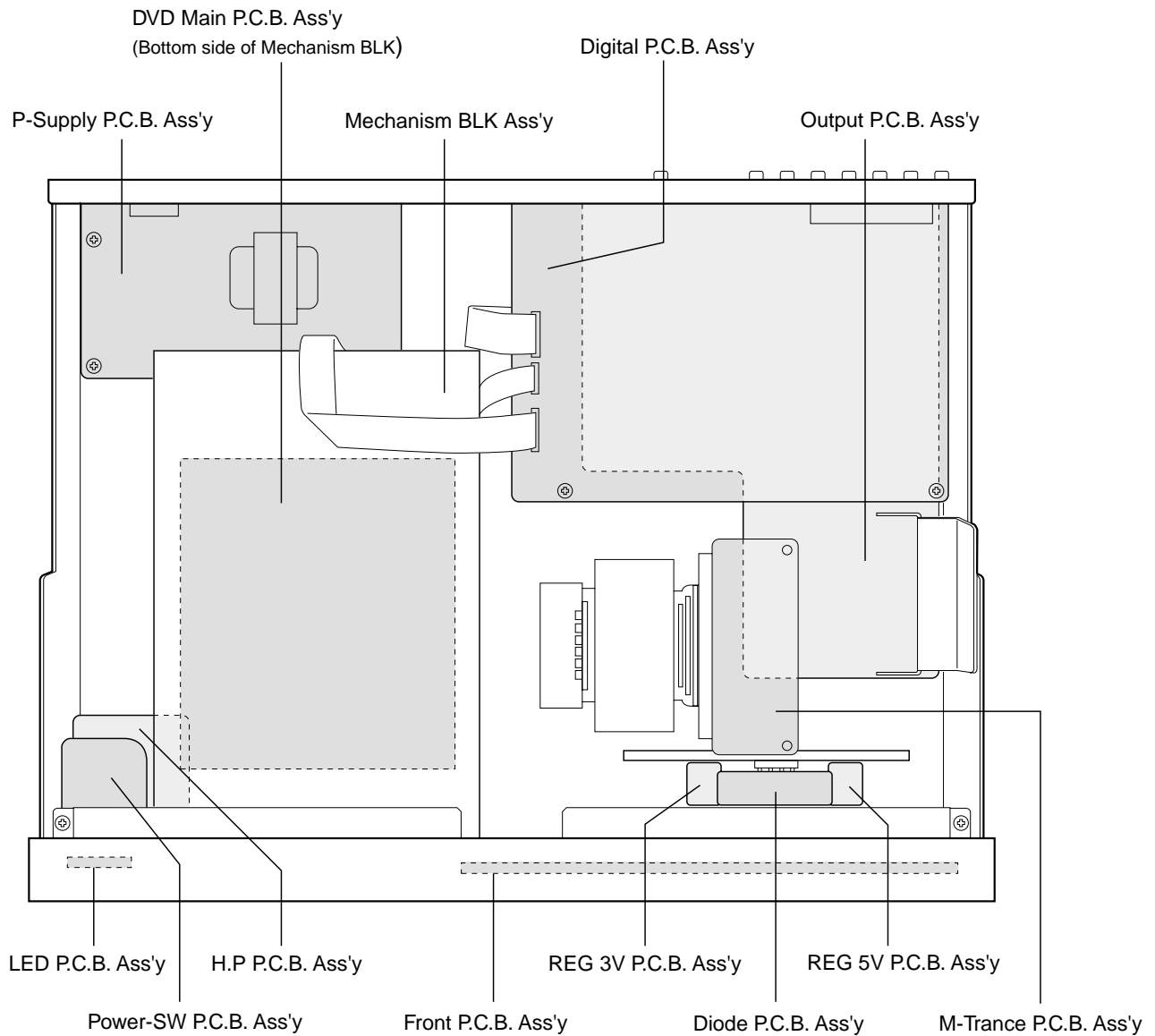
Type	Output Wattage	Tip Temperature	Isolated Resistance	Leaked Current
For IC or LSI	13-18W	300±40°C	≥100MΩ	≤1.0μA
For Elec. Part	23-30W	360±40°C	≥50MΩ	≤2.0μA

Note: A precise digital tester is needed to measure the leaked current.



2. REMOVAL PROCEDURES

• Location of Major Parts



(The Mechanism P.C.B. Ass'y is constructed on the DVD Mechanism Block.)

Fig. 2-1 Top View

2.1 Top Cover (Refer to Fig. 2-2)

- 1) Remove the 8 screws and detach the Top Cover from the main body.

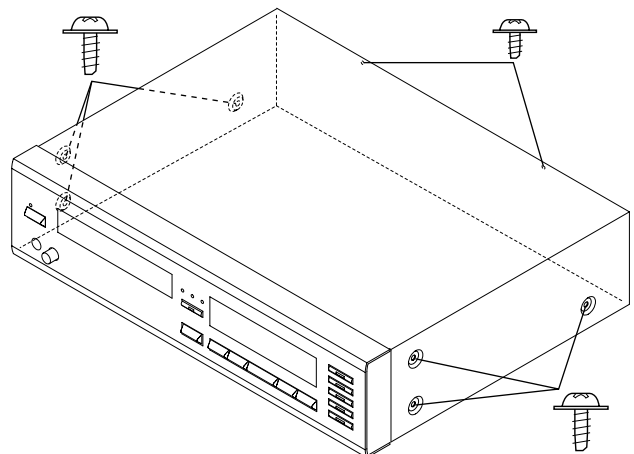


Fig. 2-2

2.2 Front Panel (Refer to Fig. 2-3)

- 1) Remove the 5 screws on the front panel.
- 2) Remove the screws holding the H.P P.C.B. Ass'y. The screws can be reached by going through the hole in the left side Power-SW P.C.B. Ass'y.
- 3) Disconnect the P702 on the P-Supply P.C.B. Ass'y and disconnect the P530 and P200 on the Digital P.C.B. Ass'y.
- 4) Remove the front panel in front of you by pulling it outward, keeping it level as you pull.

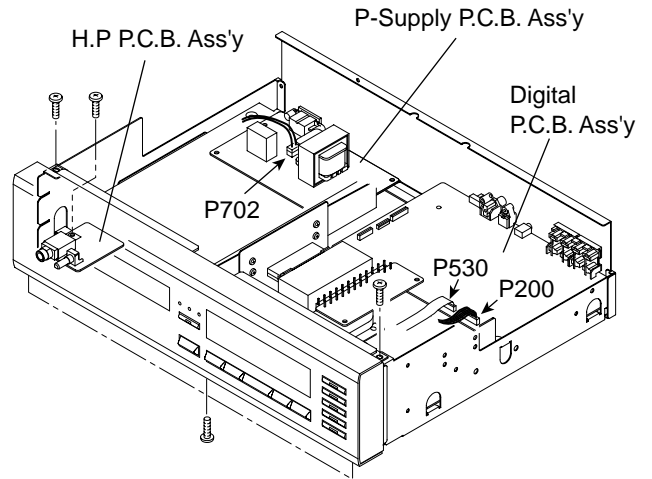


Fig.2-3

2.3 Mechanism Block (Refer to Fig. 2-4)

- 1) Disconnect the flexible cable from the P550 and P570 on the Digital P.C.B. Ass'y.
- 2) Disconnect the P540 on the Output P.C.B. Ass'y.
- 3) Remove the 4 screws and detach the mechanism from the main body.

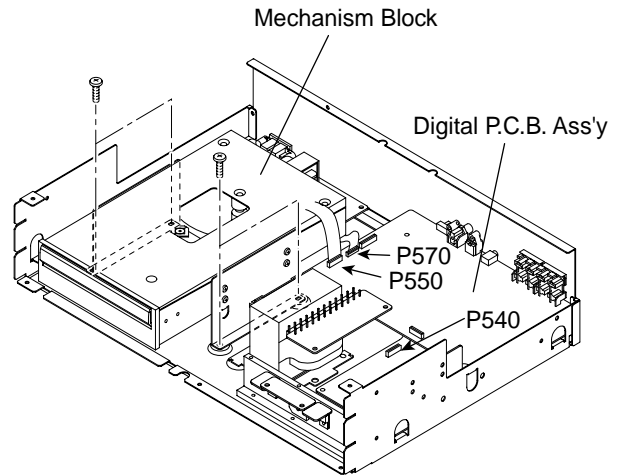


Fig.2-4

2.4 DVD Main P.C.B. Ass'y (Refer to Fig. 2-5)

- 1) Remove the 4 screws "1" on the DVD Main P.C.B. Ass'y.
- 2) Disconnect the three connectors "a", "b" and "c" on the DVD Main P.C.B. Ass'y.

2.5 Mechanism Ass'y (Refer to Fig. 2-5)

- 1) Remove the DVD Main P.C.B. Ass'y.
- 2) Remove the 8 screws "2" in the diagram, and then remove the left and right plates "3".

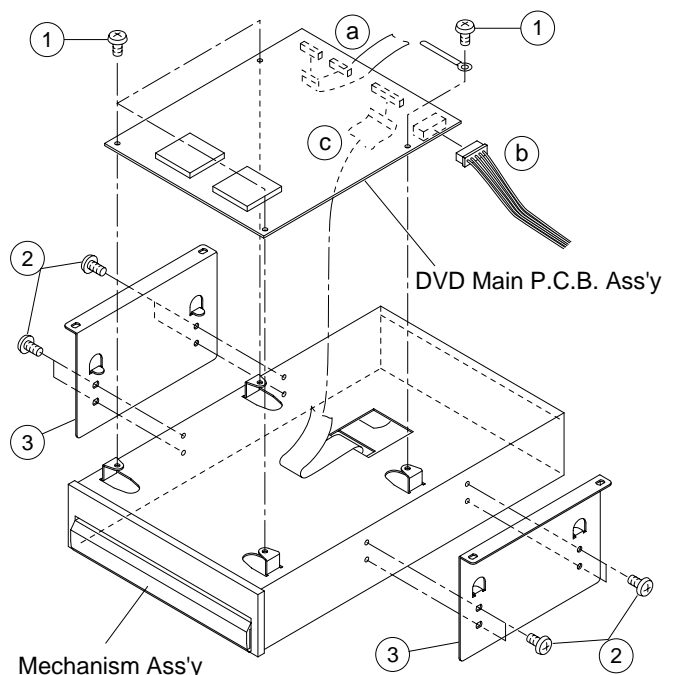


Fig.2-5

2.6. Bottom Cover EX Ass'y, Top Cover EX Ass'y and F Panel EX Ass'y (Refer to Fig. 2-7)

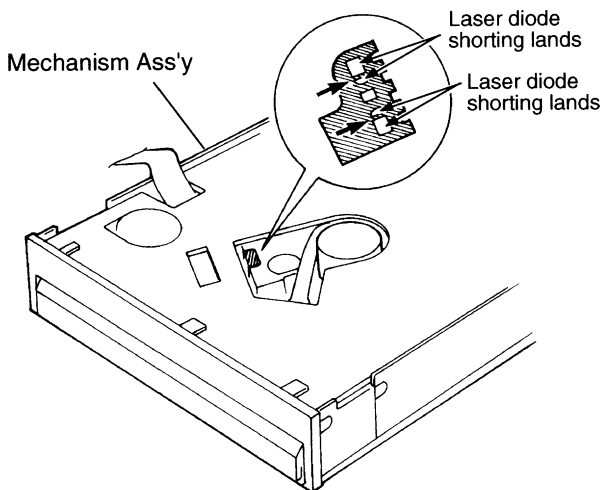
- 1) Remove the 6 screws "1" (M2.6x5 + Pan (#0 Type 3)) and detach the Bottom Cover EX Ass'y.
- 2) Remove the 2 screws "2" (M2.6x3 + Pan), and detach the Top Cover EX Ass'y and F Panel EX Ass'y.

2.7. Mechanism P.C.B. Ass'y (Refer to Fig. 2-7)

- 1) Remove the Bottom Cover EX Ass'y, Top Cover EX Ass'y and F Panel EX Ass'y. See item 2.6.
- 2) Shorting the laser diode shorting land of the DVD Traverse Ass'y:
Short the laser diode shorting lands (2 places shown by the arrows) with a soldering iron before removing the Mechanism P.C.B. Ass'y.

Note: Use a soldering iron whose metal part is grounded or a ceramic soldering iron.

CAUTION: Do not disconnect the Flexible Cable from the connector P200 on the Mechanism P.C.B. Ass'y unless the laser shorting lands (2 places) are shorted.



[Shorting the Laser Diode Shorting Lands of the DVD Traverse Ass'y]

- **Note when reassembling:**
Unsolder the laser diode shorting lands after reassembling the Mechanism P.C.B. Ass'y.

- 3) Remove 1 screw "3" (M2.6x3.5 + Pan (#0 Type 3)) and 1 screw "4" (M2.6x8 + Pan).
- 4) Disconnect the Mecha Flexible P.C.B. Ass'y "5" by pulling the edges of the connector CP103 "6" on the Mechanism P.C.B. Ass'y to unlock the connector edges.
- 5) Pull the edges of the connector CN300 "7" on the Mechanism P.C.B. Ass'y to unlock the connector edges and carefully pull out the Traverse Flexible P.C.B. Ass'y.

- 6) Pull the edges of the connector CN200 "8" on the Mechanism P.C.B. Ass'y to unlock the connector edges and carefully pull out the Pickup Flexible P.C.B. "9".
- 7) Carefully disconnect the 3 connectors CPI04 "10" (EX Motor Ass'y), CN500 "11" (Sled Motor Ass'y), and CN600 "12" (Inner Switch)
- 8) Remove the Mechanism P.C.B. Ass'y from the Mechanism Ass'y.

2.8. Loading EX Ass'y (Refer to Fig. 2-7)

- 1) Remove the Mechanism P.C.B Ass'y. See item 2.7.
- 2) Remove the 6 screws "13" (ST2.6x3 + Pan (#0 Type 3)), 1 screw "14" (M1.7x2.5 + Pan (#0 Type 3) (Black)), and 4 screws "15" (M2x2 + Pan (#0 Type 3) (Black)).

- **Note when reassembling:**
When reassembling the Mecha Flexible P.C.B. Ass'y "5", move it to the front side.

Be sure that the shutter is positioned in the center of the shutter sensor on the Mecha Flexible P.C.B. Ass'y, when the shutter of the Loading EX Ass'y is closed by hand,

- 3) Remove the EX Loading Chassis block "16" backward while lifting its to the right side a little.
- 4) Remove the Loading EX Ass'y while lifting it.

- **Note:** Do not damage the Catch Arm Ass'y and the Loading Link Ass'y of the Loading EX Ass'y.

2.9. DVD Traverse Ass'y (Refer to Fig. 2-7)

- 1) Remove the Loading EX Ass'y. See item 2.8.
- 2) Remove the 3 screws "17" (ST2.6x3 + Pan (#0 Type 3)) and remove the EX Motor Ass'y.
- 3) Remove the 3 screws "18" (ST2.6x3 + Pan (#0 Type 3)) and remove the EX Chassis Ass'y.
- 4) Remove the 4 pcs. of Damper Screw SL"19", 4 pcs of and SUS Collar B "20", and 4 pcs of SUS Collar T "21", and detach the DVD Traverse Ass'y.

Notes:

1. Pay attention so as not to damage the Door Sensor P.C.B. of the Mecha Flexible P.C.B. "5".
2. Assemble the Door Sensor P.C.B. so as not it is inclined.
3. Be sure that the projection of the Front Door Ass'y can be correctly inserted into the Door Sensor.

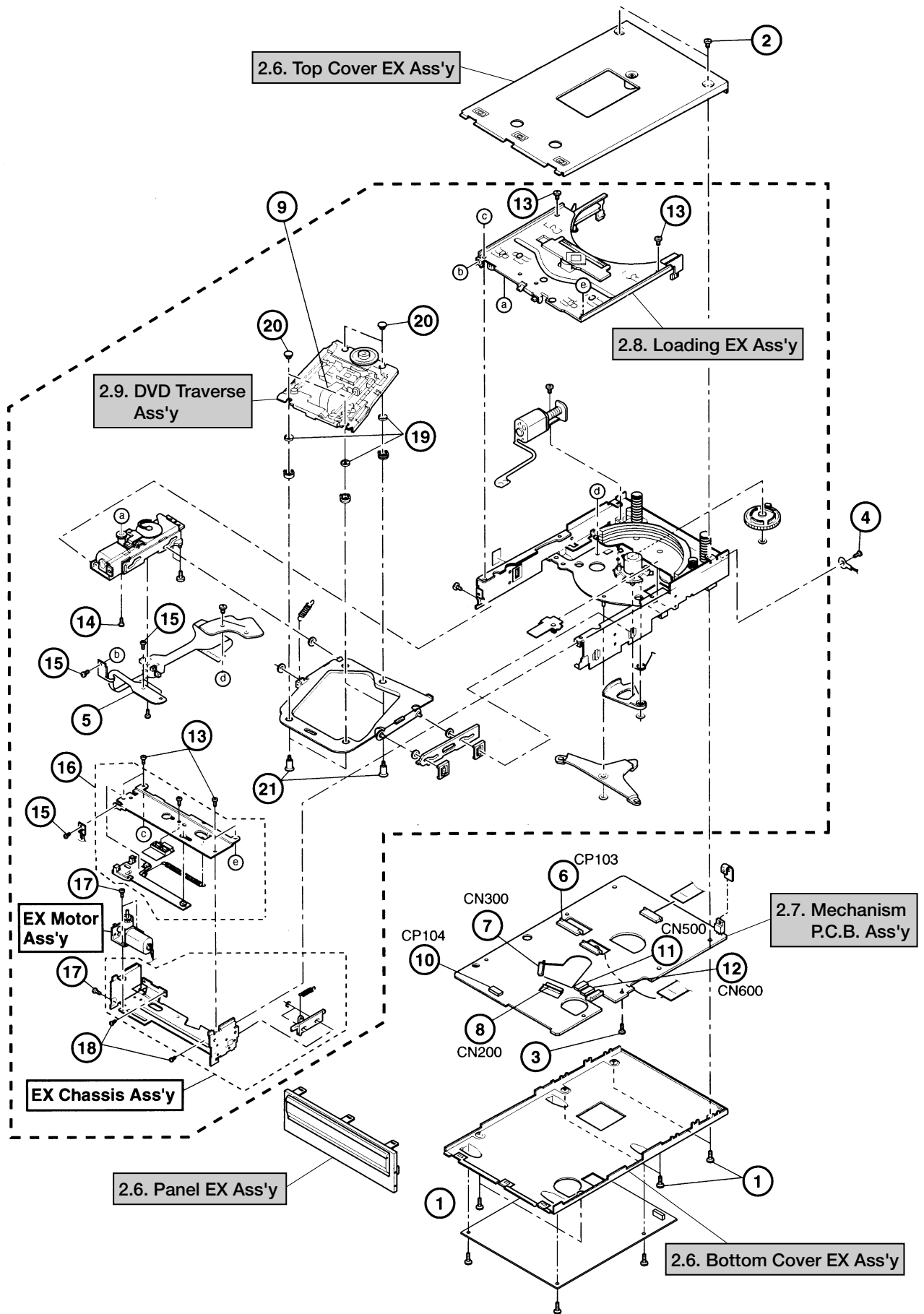


Fig.2-7

REMOVAL PROCEDURES

2.10 Pickup (Refer to Fig.2-8)

Caution: Do not remove or loosen screws that are not included in this procedure.

Note: After reassembling the Pickup, you need to perform "Tilt Adjustment" of the Pickup.

Preparation:

Since you need to reposition the screw F03 to the original position, check the current position before removing the screw F03.

- Give a mark on the head of screw F03 to allow easy repositioning.
- Check the end position of the screw F03. It will be almost the same as the bottom surface of the chassis.

- 1) Remove the DVD Traverse Ass'y. Refer to item 2.9.
- 2) Remove a screw F01 (M1.7x3.5+Pan CMT) and detach F02 (Hook L.S)
- 3) Give a mark to the screw F03 for repositioning.
- 4) Remove a screw F03 (Screw S) and detach F04/F05 (Pickup block).
F06 (SP Push Shaft) can be removed.
- 5) Pull out F04 (Shaft L) from F05 (Pickup).

Notes on reassembling:

- Assemble the screw F03 so that it is roughly positioned to the original position.
- Perform "Tilt Adjustment". Refer to Step 3 "Tilt Adjustment" in 3.3 "Adjustment procedure"

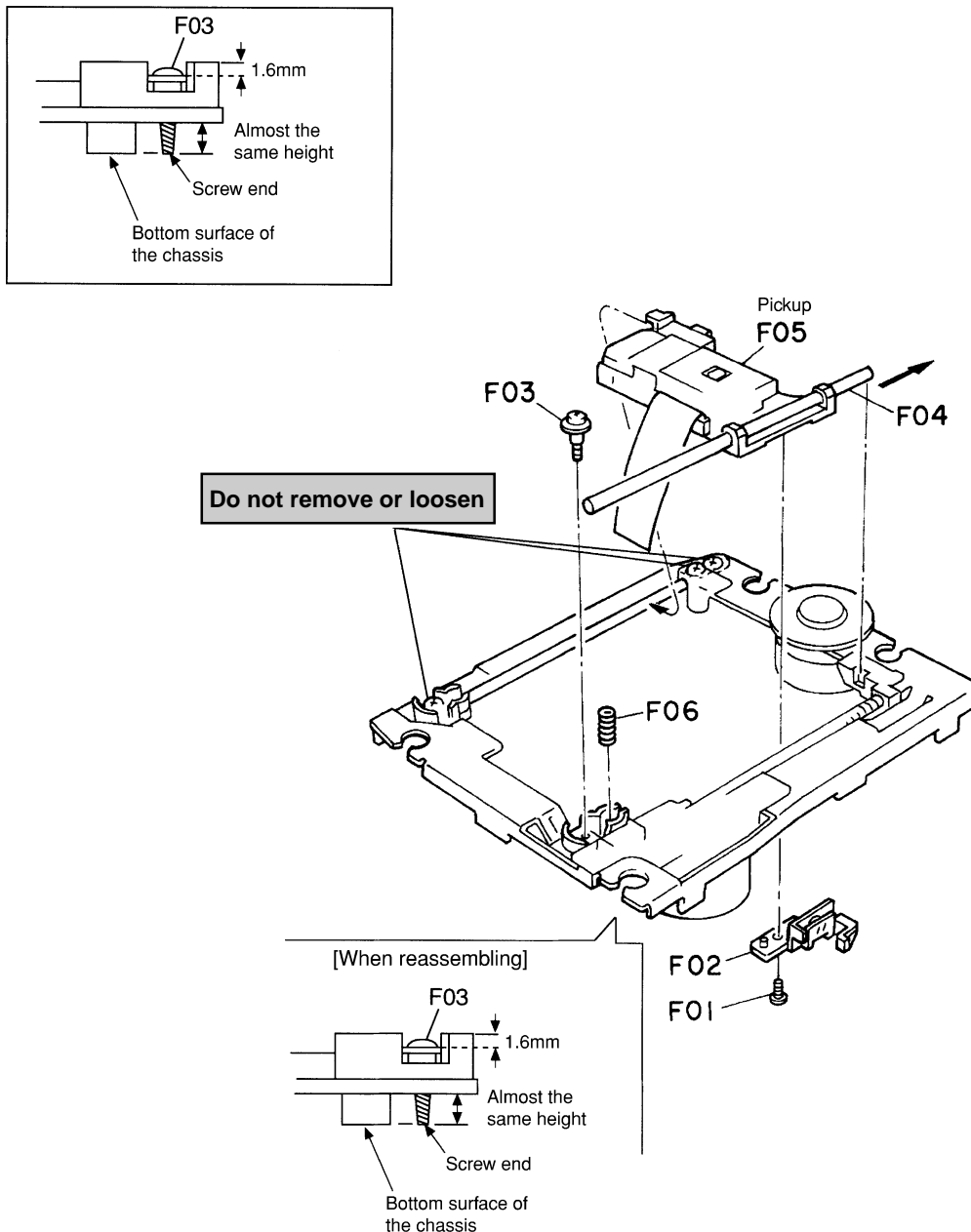


Fig.2-8

3. ELECTRICAL ADJUSTMENT

3.1 Measurement instruments and Jigs

- 1) DC Voltmeter
- 2) AC Voltmeter
- 3) Tracking Offset Meter LE-9055A or LTM-9055 (Leader Electronics Corp.)
- 4) A-BEX Vertical Deviation Test Disc TDV-562 (DA09206A)
- 5) SONY Test Disc Type 3

3.2 Parts Location for Adjustment

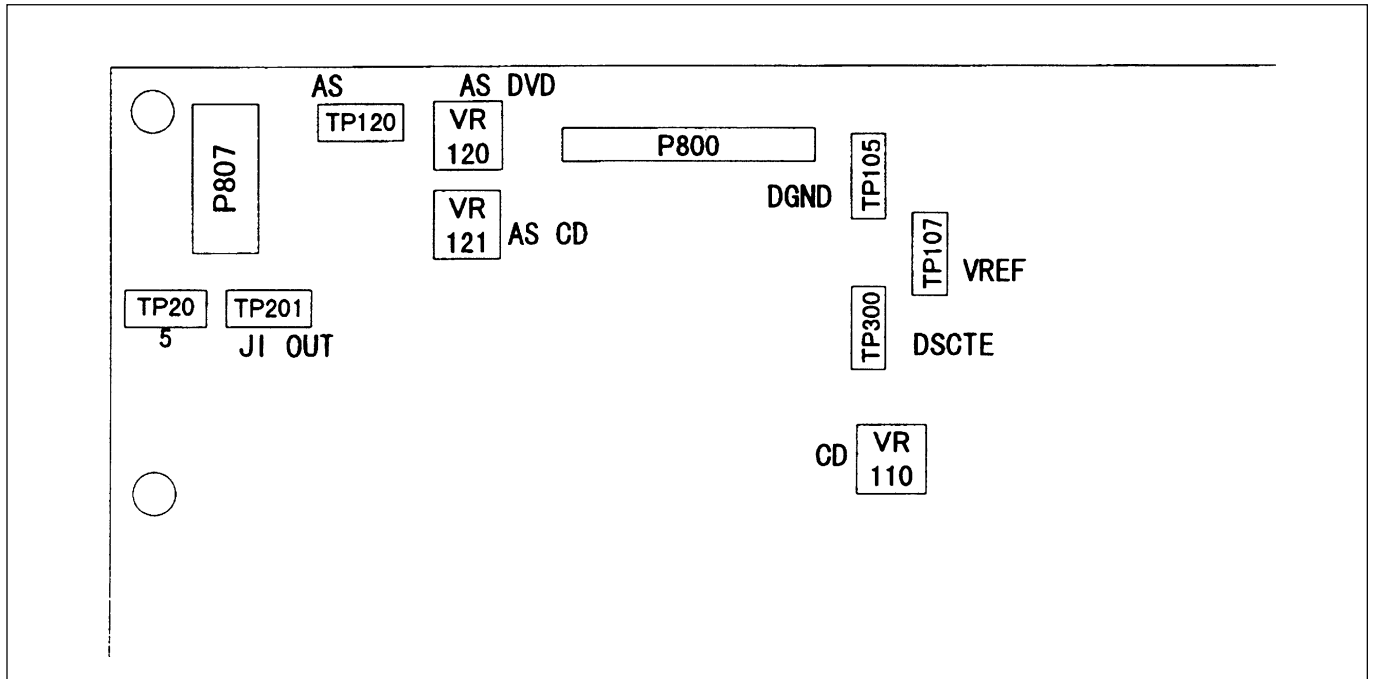


Fig.3-1 Parts Location for Electorical Adjustment (DVD Main P.C.B. Ass'y)

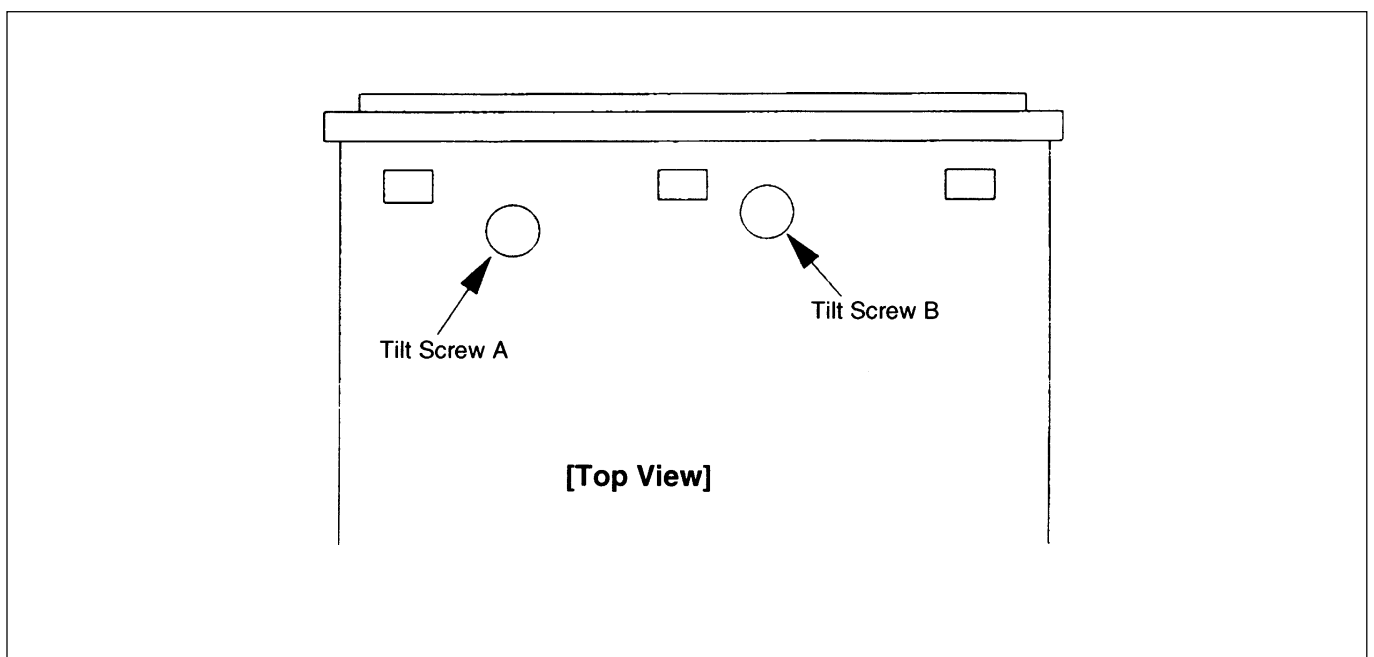


Fig.3-2 Tilt Adjustment Screws (Mechanism Ass'y)

3.3 Adjustment procedure (Follow the next steps in order)

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	REMARKS
1	DVD Adjust Mode				<p>1. Connect each measuring instrument as follows:</p> <ul style="list-style-type: none"> Connect a DC voltmeter between TP120 (AS) (+ terminal) and TP107 (VREF) (- terminal) on the DVD Main P.C.B. Ass'y. Connect an AC voltmeter between TP201 (JI OUT) (+ terminal) and TP105 (DGND) (-terminal) on the DVD Main P.C.B. Ass'y. Connect a tracking offset meter between TP300 (DSCTE) (+ terminal) and TP107 (VREF) (-terminal) on the DVD Main P.C.B. Ass'y. <p>2. While pressing and holding the STOP button, press the POWER button, then enter standby mode. (the indicator will light orange).</p> <p>3. Press the PAUSE (□□) button and DISC 3 button for more than 2 seconds to engage the test mode.</p> <p>Confirm that the following message appears on the display. DVD ADJUST → DISC 1 T - 01</p>
2	AS Adjustment		DC Voltmeter between TP120(AS)(+) and TP107(VREF)(-) on DVD Main P.C.B. Ass'y	VR120 (for DVD,LD) VR121 (for CD,LD)	<p>Note: Perform the adjustment in the order of “CD LD ON” and “DVD LD ON” as mentioned below:</p> <ol style="list-style-type: none"> Press the STOP (□) button once. The message will change as follows: → AS ADJUST → DVD LD ON Adjust VR120 to obtain 0V ±10 mV DC on the DC voltmeter. Press the FORWARD SKIP (> >>) button once. The following message will appear on the display, → CD LD ON Adjust VR121 to obtain 0V ± 10 mV DC on the DC voltmeter. Press the FORWARD SKIP (> >>) button again to select “DVD LD ON”, and confirm that the DC voltage is at the level that it was adjusted to in step 2. If there is any deviance to the DC voltage, re-adjust. Press the FORWARD SKIP (> >>) button twice. The following message will appear on the display. CD LD ON → LD OFF The pickup will then move to the innermost position and stops there. Proceed to the next step.
3	Tilt Adjustment	DVD Vertical Deviation Test Disc TDV-562 (DA09206)	AC Voltmeter between TP201(JI OUT) (+) and TP105(DGND)(-) on DVD Main P.C.B. Ass'y	Tilt Screws A and B	<ol style="list-style-type: none"> Press the STOP (□) button once. Be sure that the following message appears on the display. → MECHA ADJUST Press the EJECT (≡) button and insert the DVD Test Disc. Press the PLAY (>) button to play back the disc. Press the FORWARD SKIP (> >>) button to play back the Chapter 16 (outermost track). Press the PAUSE (□□) button to pause the disc. (The disc will keep turning.) Turn Screw A to obtain the minimum reading on the AC voltmeter. Turn Screw B to obtain the minimum reading on the AC voltmeter. Repeat steps 6 and 7 several times until the minimum readings are obtained. Press the EJECT (≡) button to eject the disc. Proceed to the next step.

ELECTRICAL ADJUSTMENT

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	REMARKS
4	CD Tracking Adjustment	CD Test Disc SONY Type 3	Tracking Offset Meter between TP300(DSCTE) (+) and TP107(VRFE)(-) on Main P.C.B.	VR110	<ol style="list-style-type: none"> Set the tracking offset meter as follows: <ul style="list-style-type: none"> Sensitivity switch: HIGH (right side) Level switch: MEASURE (left side) Center switch: MEASURE (center position) Insert the CD Test Disc. Press the STOP (□) button once. Be sure that the following message appears on the display. → CD ADJUST Adjust VR110 so that the center meter indicates 0 V as shown on the left. Also, be sure that the left side meter indicates around 1 V. Press the EJECT (≡) button to eject the disc. Proceed to the next step to terminate the adjustment.
					<p>When adjustment is finished, detach the voltmeter and press the Power button to turn the power off. The TEST MODE will be released once the power is off.</p> <p>Apply paint lock the Screw A and B.</p>

3.4 RAM Clear (System Controller & Mechanism Controller Clear)

Note: Before shipping perform the RAM Clear to perform the followings:

- To clear the usable setting values to the initial setting values.
- To perform initialization operation of the changer mechanism.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	REMARKS
1	RAM Clear				<ol style="list-style-type: none"> While pressing and holding the STOP button, press the POWER button, then enter standby mode. Remove all discs. Press and hold the PAUSE (□□) and DISC 4 buttons for more than 7 seconds. The following messages will appear on the display. RAM CLEAR 2 ↓ (After 5 seconds) REGION X (X: 0 to 8) Then, the following operation will be done. <ul style="list-style-type: none"> • User setting values are reset to the initial setting values. • Changer mechanism is initialized. "Power OFF" will be displayed and the system is automatically shut off. POWER OFF (Standby mode) If the disc remains in the changer mechanism, power is not shut off and the display returns to the normal one.

4. MECHANICAL ASS'Y AND PARTS LIST

4.1 Synthesis Ass'y

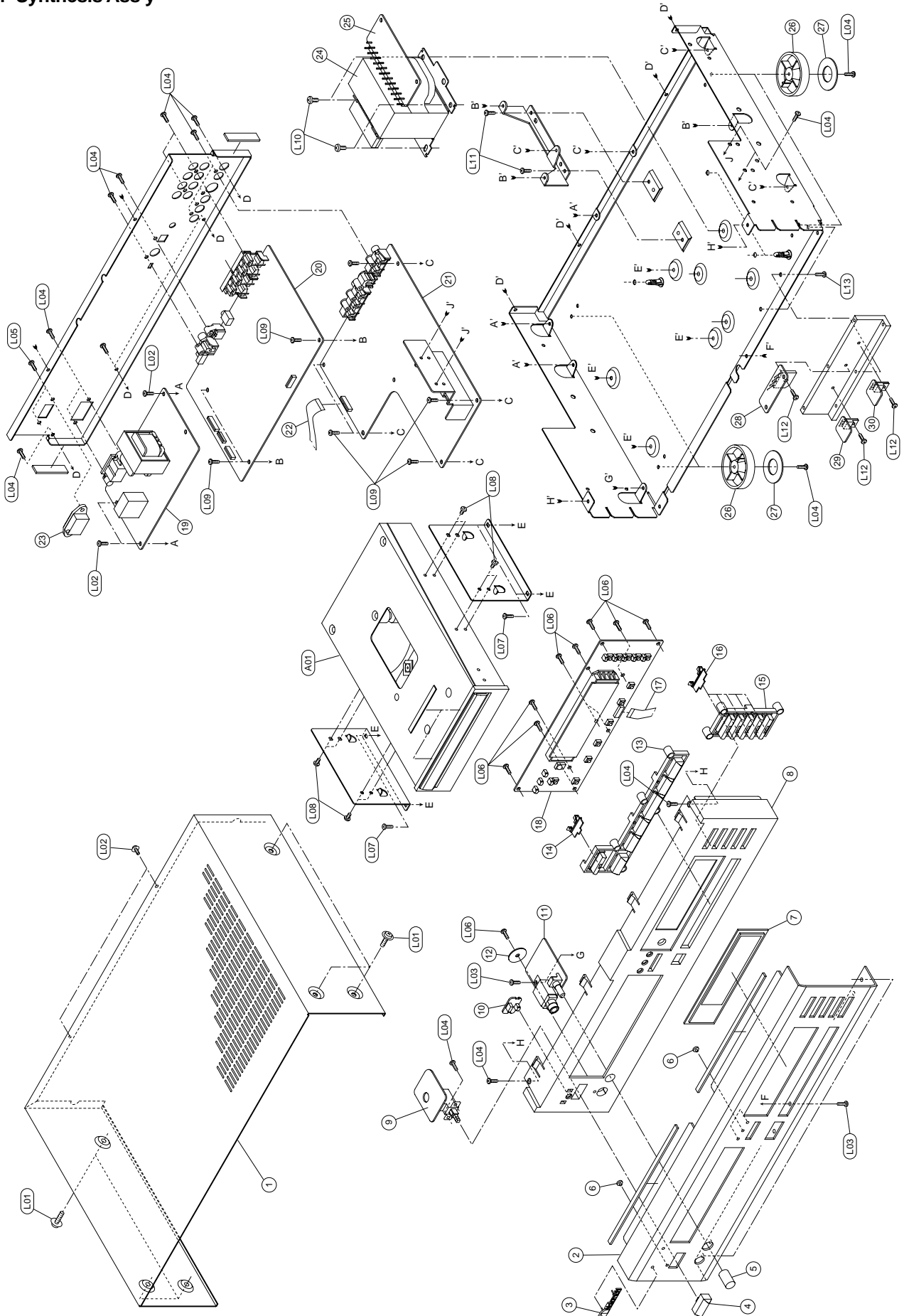


Fig.4-1

MECHANICAL ASS'Y AND PARTS LIST

4.1 Synthesis Ass'y

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
1	0H08831A	Top Cover BK (USA/CAN/UK/EP/AUS/DA)	1		BK10564A	DIGITAL P.C.B. Ass'y Other NTSC (KR/DA/TW)	1
	0H08832A	Top Cover CG (CH/JPN/OTR/HK/KR/TW)	1		BK10566A	DIGITAL P.C.B. Ass'y Other PAL (CH/HK/AUS/OTR)	1
2	0H08583C	Dress Panel BK (USA/CAN/UK/EP/AUS/DA)	1	21	BK10255A	OUTPUT P.C.B. Ass'y (Except JPN/EP/UK)	1
	0H08584C	Dress Panel CG (CH/JPN/OTR/HK/KR/TW)	1		BK10377A	OUTPUT P.C.B. Ass'y (JPN)	1
3	2H00138A	Logo Plate BK (USA/CAN/UK/EP/AUS/DA)	1		BK10378A	OUTPUT P.C.B. Ass'y (EP/UK)	1
	2H00139A	Logo Plate CG (CH/JPN/OTR/HK/KR/TW)	1	22	0B85640A	FFC 17P	1
4	0H08600A	Power Knob BK (USA/CAN/UK/EP/AUS/DA)	1	23	0B70300A	Slide SW L12-22A2 (SW701) (OTR/DA/TW only)	1
	0H09025A	Power Knob CG (CH/JPN/OTR/HK/KR/TW)	1	24	0B50459A	Power Transformer 100-120V (JPN/USA/CAN)	1
5	0H07985A	Headphone Volume knob BK (USA/CAN/UK/EP/AUS/DA)	1		0B50460A	Power Transformer 115-230V (Except JPN/USA/CAN)	1
	0H09026A	Headphone Volume knob CG (CH/JPN/OTR/HK/KR/TW)	1	25	BK10376A	M-Trans P.C.B. Ass'y	1
6	0H08500A	Indicator	4	26	0H08470A	55 Foot A	4
7	0H08596C	Display Lens	1	27	0J08423A	Foot Sheet (20)	4
8	0H08585E	Front Panel BK (USA/CAN/UK/EP/AUS/DA)	1	28	BK10565A	DIODE P.C.B. Ass'y	1
	0H08586D	Dress Panel CG (CH/JPN/OTR/HK/KR/TW)	1	29	BK10557A	REG.3V P.C.B. Ass'y	1
9	BK10268A	POW SW P.C.B. Ass'y	1	30	BK10556A	REG.5V P.C.B. Ass'y	1
10	BK10257A	LED P.C.B. Ass'y	1	A01	-----	MECHANISM Ass'y DVD-15	1
11	BK10254A	HP P.C.B. Ass'y Except EP	1	L01	0E03032A	BT4x8+Washer Faced (Black) (USA/CAN/UK/EP/AUS/DA)	
	BK10574A	HP P.C.B. Ass'y (EP/UK)	1		0E04146A	BT4x8+Pan Flange (CH/JPN/OTR/HK/KR/TW)	
12	0J08637A	Line Cord washer	1	L02	0E03632A	BT3x8+Binding with washer (Black) (USA/CAN/UK/EP/AUS/DA)	
13	0H08592B	Control Button BK (USA/CAN/UK/EP/AUS/DA)	1		0E04147A	BT3x8+Binding with washer (CH/JPN/OTR/HK/KR/TW)	
	0H08593B	Control Button CG (CH/JPN/OTR/HK/KR/TW)	1	L03	0E03897A	BT3x10+Binding Projected (Black) (USA/CAN/UK/EP/AUS/DA)	
14	0H08605B	Control Lens	1		0E04372A	BT3x10+Binding Projected (CH/JPN/OTR/HK/KR/TW)	
15	0H08590B	Disc Select Button BK (USA/CAN/UK/EP/AUS/DA)	1	L04	0E00921A	BT3x8+Binding (Black)	
	0H08591B	Disc Select Button CG (CH/JPN/OTR/HK/KR/TW)	1	L05	0E03137A	M3x10+Binding (OTR/DA/TW)	
16	0H08604B	Disc Select Lens	5	L06	0E00865A	BT3x10+Binding	
17	0B85637A	FFC 13P	1	L07	0E03854A	BT3x6+Binding with washer	
18	BK10253A	FRONT P.C.B. Ass'y	1	L08	0E00992A	M3x4+Binding	
19	BK10269A	P-SUPPLY P.C.B. Ass'y (USA/CAN)	1	L09	0E00877A	ST3x5+Binding	
	BK10379A	P-SUPPLY P.C.B. Ass'y (JPN)	1	L10	0E03438A	ST4x6+Binding	
	BK10380A	P-SUPPLY P.C.B. Ass'y (DA/OTR)	1	L11	0E00857A	BT3x6+Binding	
	BK10381A	P-SUPPLY P.C.B. Ass'y (EP/UK)	1	L12	0E00986A	M3x10+Binding	
	BK10382A	P-SUPPLY P.C.B. Ass'y (CH/HK/KR/SA)	1	L13	0E00896A	M3x6+Binding	
	BK10383A	P-SUPPLY PCB Ass'y (TW)	1	L14	0E00964A	M3x5+Binding	
20	BK10258A	DIGITAL P.C.B. Ass'y (USA/CAN)	1				
	BK10562A	DIGITAL P.C.B. Ass'y (JPN)	1				
	BK10563A	DIGITAL P.C.B. Ass'y (EP/UK)	1				

4.2 Mechanism Ass'y DVD-15 (A01)

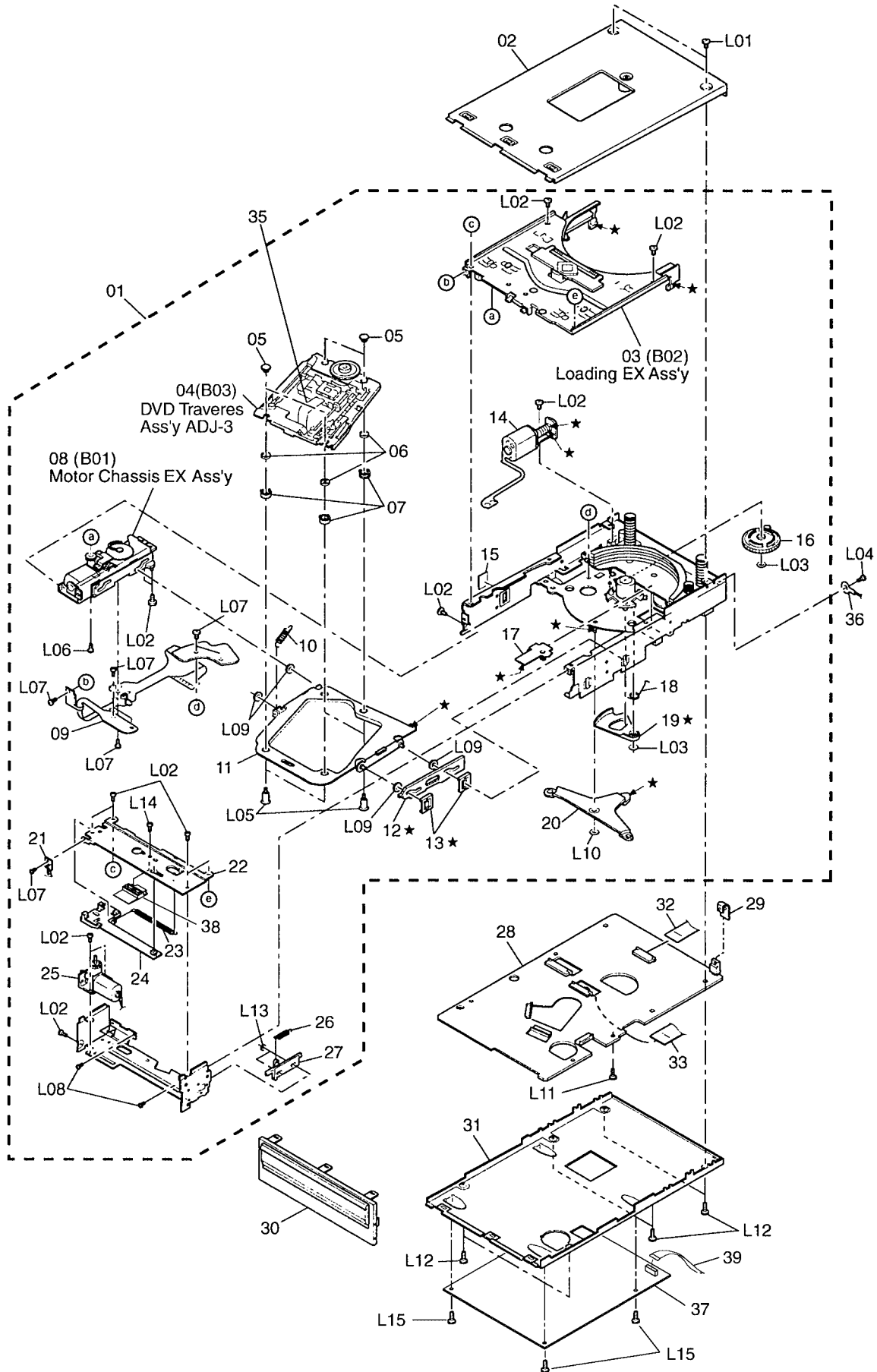


Fig.4-2

MECHANICAL ASS'Y AND PARTS LIST

4.2 Mechanism Ass'y DVD-15 (A01)

Ref. No.	Part No.	Description	Q'ty
A01	-----	Mechanism Ass'y Black	
	-----	Mechanism Ass'y Gold	
01	CG09508A	Machanism Deck Ass'y ADJ-3	1
02	CA09393A	Top Cover EX Ass'y	1
03	CA09505A	Loading EX Ass'y	1
04	CA09479A	DVD Traverse Ass'y ADJ-3	1
05	0C10325B	SUS Collar T	4
06	0C10326A	SUS Collar B	4
07	0C10279A	Damper S SL	4
08	CA09415A	Motor Chassis EX Ass'y	1
09	BA09736A	Mecha Flexible P.C.B. Ass'y	1
10	0C10286A	Anti Rattle Spring SL	1
11	CA09392B	SUS Base ADT S Ass'y	1
12	0C10185B	Mechanism UD Sub Cam SL	1
13	0C10186A	UD S Cam Guide SL	2
14	CA09351A	Stocker Motor SL Ass'y	1
15	0J08004A	Dust Seal Emergency SL	1
16	0C10175A	Stocker Position Gear SL	1
17	0C10211B	Plate Spring SL	1
18	0C10184A	Disc Lock Spring SL	1
19	0C10183A	Disc Lock Arm SL	1
20	0C10187A	UD Link Arm SL	1
22	0C10306C	EX Loading Chassis	1
23	0C10351A	EX Loading Return Spring	1
24	CA09407A	Mov G Plat Ass'y	1
25	CA09408A	EX Motor Ass'y	1
26	0C10250A	Shutter Spring SL	1
27	0C10305B	Sub Cam Extension	1
28	BA10323A	Mechanism P.C.B. Ass'y (C3M1)	1
29	0J08023A	Heat sink Reg	1
30	HA08369C	ME F Panel Ass'y BK (UK/EP/USA/CAN/AUS/DA)	1
	HA08370C	ME F Panel Ass'y CG (JPN/DU/CH/HK/KR/TW)	1
31	CA09394A	Bottom Cover EX Ass'y	1
32	0B85926A	FFC 14P	1
33	0B85438A	40P Flexible Wire	1
35	0B85437A	30P Flexible Wire (Pickup)	1
36	0B85493A	1P Wire GND D202	1
37	BK10567A	DVD Main P.C.B. Ass'y (C3M1)	1
38	0C10350A	D Guide upside Ex	1
39	0B85927A	FFC 24P	1
L01	0E00120A	M2.6x3+Pan	
L02	0E03964A	ST2.6x3+Pan (#0 Type 3)	
L03	0E03955A	Cut Washer 2.2x4.2x0.2	
L04	0E04036A	M2.6x8+Pan	
L05	0C10287A	Damper Screw SL	
L06	0E03845A	M1.7x2.5+Pan (#0 Type 3) (Black)	
L07	0E03945A	M2x2+Pan (#0 Type 3) (Black)	
L08	0E03953A	M2x2+Pan (#0 Type 1)	
L09	0E03971A	Pet Washer	
L10	0E03956A	Cut Washer 3.2x5.2x0.2	
L11	0E03947A	M2.6x3.5+Pan (#0 Type 3)	
L12	0E04032A	M2.6x5+Pan (#0 Type 3)	
L13	0E03954A	Cut Washer 1.6x3.2x0.2	
L14	0E00955A	BT2x4+Binding	
L15	0E00964A	M3x5+Binding	

We suggest that you use grease FL-955/G-4270 or equivalent type.

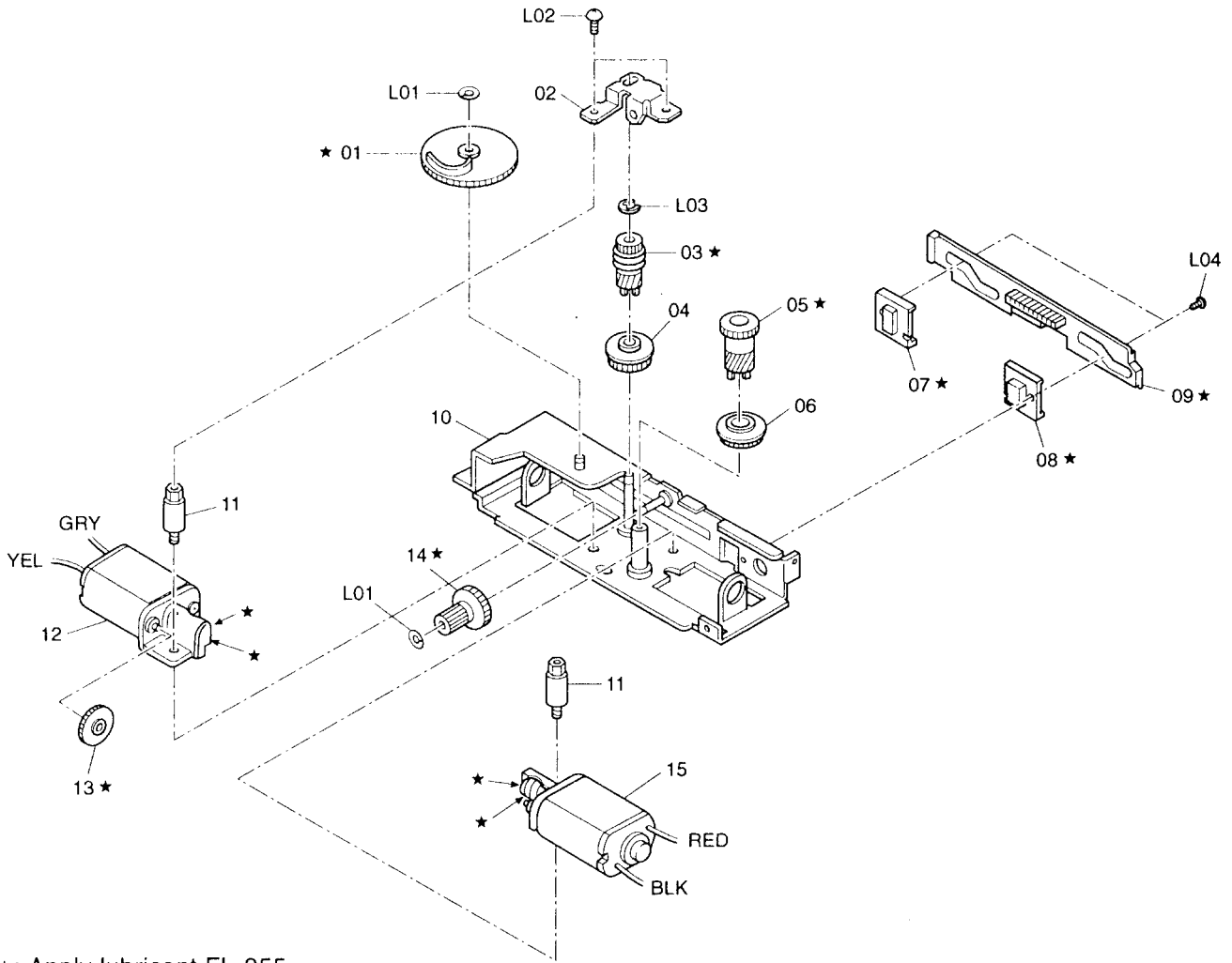
The company dealing FL-955/G-4270 is as follows:

- FL-955 : Kanto Chemicals Co., Ltd.
2-7 Kanda Sakuma-cho, Chiyoda-ku, Tokyo, Japan

Apply FL-955 (grease) to the following places (marked with) when parts are replaced.

Ref. No.	Location	Remarks
03	Loading EX Ass'y	
	Edges which are inserted into the chassis plate	
11	SUS Bass ADT S Ass'y	
	• Contact part with the Plate Spring SL (Ref. No. 17)	
12	Mecha UD Sub Cam SL	Whole surface
13	UD S Cam Guide SL (2 pcs.)	Whole surface
14	Stocker Motor SL Ass'y	
	• Motor Shaft Worm Gear	
	• Motor Shaft End	
17	Plate Spring SL	
	Contact part (bottom end) with the SUS Base X Sub Ass'y (Ref. No. 11)	
19	Disc Lock Arm SL	Whole surface
20	UD Link Arm SL	
	• Around the Top End	
---	Shaft for UD Link Arm SL (Ref. No. 20)	

4.3 Motor Chassis EX Ass'y (B01)



★: Apply lubricant FL-955.

Fig.4-3

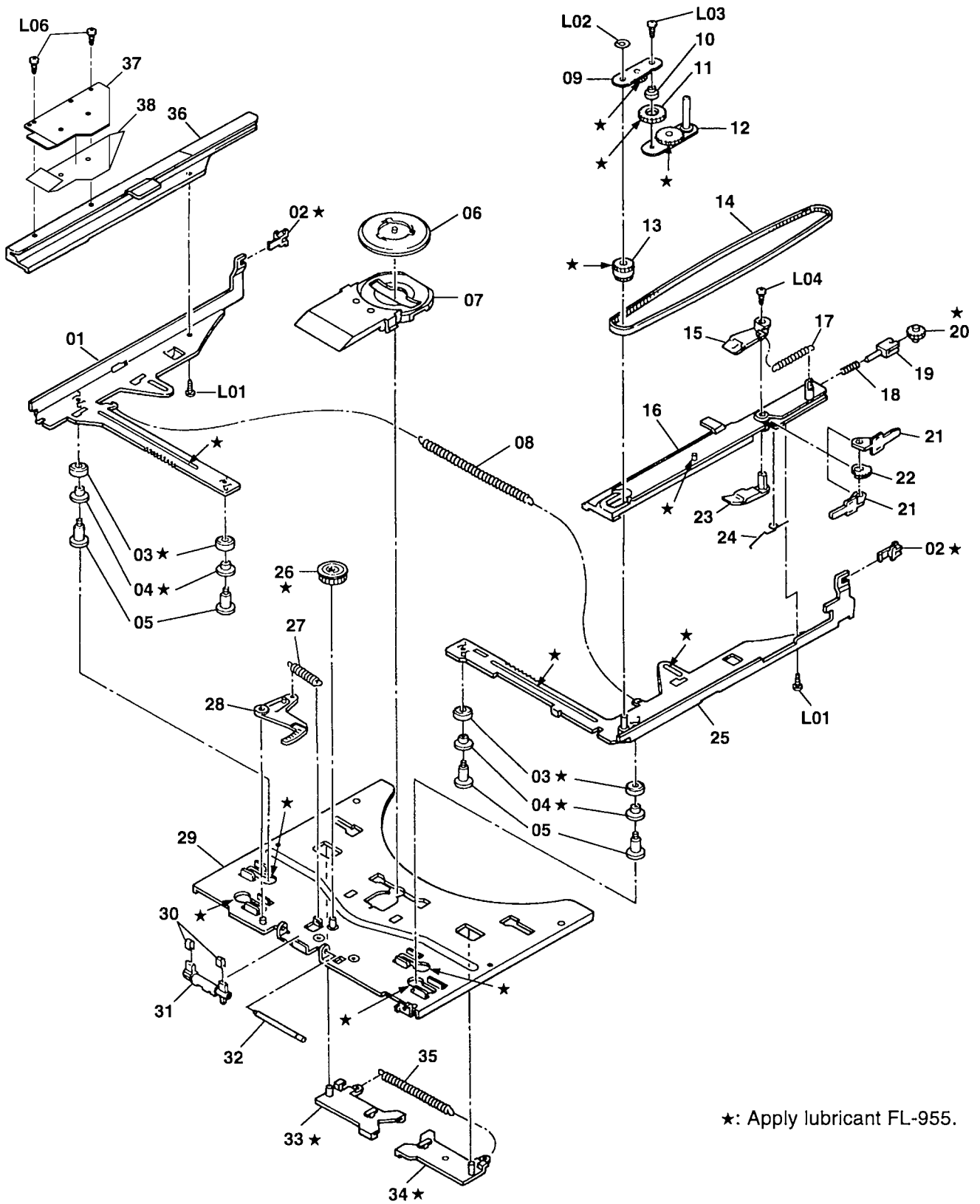
4.3 Motor Chassis EX Ass'y (B01)

Ref. No.	Part No.	Description	Q'ty
B01	CA09415A	Motor Chassis EX Ass'y	
01	0C10238A	Loading Plate Cam SL	1
02	0C10240A	UD Worm Plate SL	1
03	0C10233A	UD Worm Gear SL	1
04	0C10235A	Mecha Sensor Ring SL	1
05	0C10236A	Loading Worm Gear SL	1
06	0C10237A	Loading Sensor Ring SL	1
07	0C10208A	UD Cam Guide SL	1
08	0C10242A	UD Cam Guide W SL	1
09	0C10232A	UD Cam SL	1
10	CA09338A	Motor Chassis SA S Ass'y	1
11	0C10241A	Bracket Screw SL	2
12	CA09417A	UD Motor EX Ass'y	1
13	0C10239A	Emergency Gear SL	1
14	0C10234A	Mecha UD Gear SL	1
15	CA09416A	Loading Motor EX Ass'y	1
L01	0E03955A	Cut Washer 2.2x4.2x0.2	
L02	0E03947A	M2.6x3.5+Pan (#0 Type 3)	
L03	0E00222A	E-Ring 2.0 mm	
L04	0E03967A	M1.4x2+Pan (#0 Type 1) (Black)	

Apply FL-955 (grease) to the following places (marked with ★) when parts are replaced.

Ref. No.	Location	Remarks
01	Loading Plate Cam SL	Whole surface
03	UD Worm Gear SL	Whole surface
05	Loading Worm Gear SL	Whole surface
07	UD Cam Guide SL	Whole surface
08	UD Cam Guide W SL	Whole surface
09	UD Cam SL	Whole surface
12	UD Motor EX Ass'y	<ul style="list-style-type: none"> • Motor Shaft Worm Gear • Motor Shaft End
13	Emergency Gear SL	Whole surface
14	Mecha UD Gear SL	Whole surface
15	Loading Motor EX Ass'y	<ul style="list-style-type: none"> • Motor Shaft Worm Gear • Motor Shaft End

4.4 Loading EX Ass'y ADJ-3 (B02)



★: Apply lubricant FL-955.

Fig.4-4

MECHANICAL ASS'Y AND PARTS LIST

4.4 Loading EX Ass'y ADJ-3 (B02)

Ref. No.	Part No.	Description	Q'ty
B02	CA09505A	Loadig EX Ass'y ADJ-3	1
01	0C10201A	Loading Plate R SL	1
02	0C10215A	LP Slider SL	2
03	0C10295A	Loading Roller	4
04	0C10296A	Screw Collar	4
05	0C10294A	Loading Screw	4
06	CA09403A	Clamper ADT Ass'y	1
07	0C10203A	Disc Guide Upper SL	1
08	0C10252A	Loading Return Spring SL	1
09	CA09356A	Loading Link B SL S Ass'y	1
10	0C10248A	Loading Idler Gear L SL	1
11	0C10247A	Loading Gear Collar SL	1
12	CA09355A	Loading Link A SL S Ass'y	1
13	0C10213A	Timing Gear SL	1
14	0C10190A	Timing Belt SL	1
15	CA09335A	Disc Fin Arm LO SL S Ass'y	1
16	0C10199A	Disc Guide L SL	1
17	0C10214A	Catch Arm Spring SL	1
18	0C10193A	Pulley Spring SL	1
19	0C10192A	Pulley Fork SL	1
20	0C10191A	Idler Pulley SL	1
21	0C10195B	Lapping Arm SL	2
22	0C10194A	Disc Catch Gear SL	1
23	CA09336A	Disc Fin Arm SL S Ass'y	1
24	0C10196C	Lapping Arm Spring	1
25	CA09337A	Loading Plate L SL A Ass'y	1
26	0C10251A	Loading Center Gear SL	1
27	0C10250A	Shutter Spring SL	1
28	0C10204A	Shutter Lever SL	1
29	CA09361A	Loading Chassis SL S Ass'y	1
30	0C10255A	Shutter Arm Cushion SL	2
31	0C10249A	Shutter Arm SL	1
32	0C10254A	Shutter Arm Shaft SL	1
33	0C10206A	Clamp Holder R SL	1
34	0C10205A	Clamp Holder L SL	1
35	0C10253A	Clamper Return Spring SL	1
36	CA09395B	Disc Guide R EX S Ass'y	1
37	0C10581A	D Guide R side EX	1
38	0C10582A	D Guide Sheet EX	1
L01	0E03961A	BT2x4+Pan (#0 Type 1) (Black)	
L02	0E03955A	Cut Washer 2.2x4.2x0.2	
L03	0E03969A	M1.4x3+Pan (#0 Type 3)	
L04	0E03963A	BT1.7x3+Pan (#0 Type 1) (Black)	
L05	0E00793A	BT2x6+Pan	

Apply FL-955 (grease) to the following places (marked with) when parts are replaced.

Ref. No.	Location	Remarks
01	Loading Plate R SL	Groove
02	LP Slider SL	Whole surface (2 places)
03	Loading Roller	Whole surface (4 places)
04	Screw Collar	Whole surface (4 places)
09	Loading Link B SL S Ass'y	Gear surface
10	Loading Idler Gear L SL	Gear surface
12	Loading Link A SL S Ass'y	Gear surface
13	Timing Gear SL	Gear surface
16	Disc Guide L SL	Stud
20	Idler Pulley SL	Whole surface
25	Loading Plate L SL A Ass'y	Grooves (2 places)
26	Loading Center Gear SL	Whole surface
29	Loading Chassis SL S Ass'y	Holes (4 places)
33	Clamp Holder R SL	Whole surface
34	Clamp Holder L SL	Whole surface

4.5 DVD Traverse Ass'y ADJ-3 (B03)

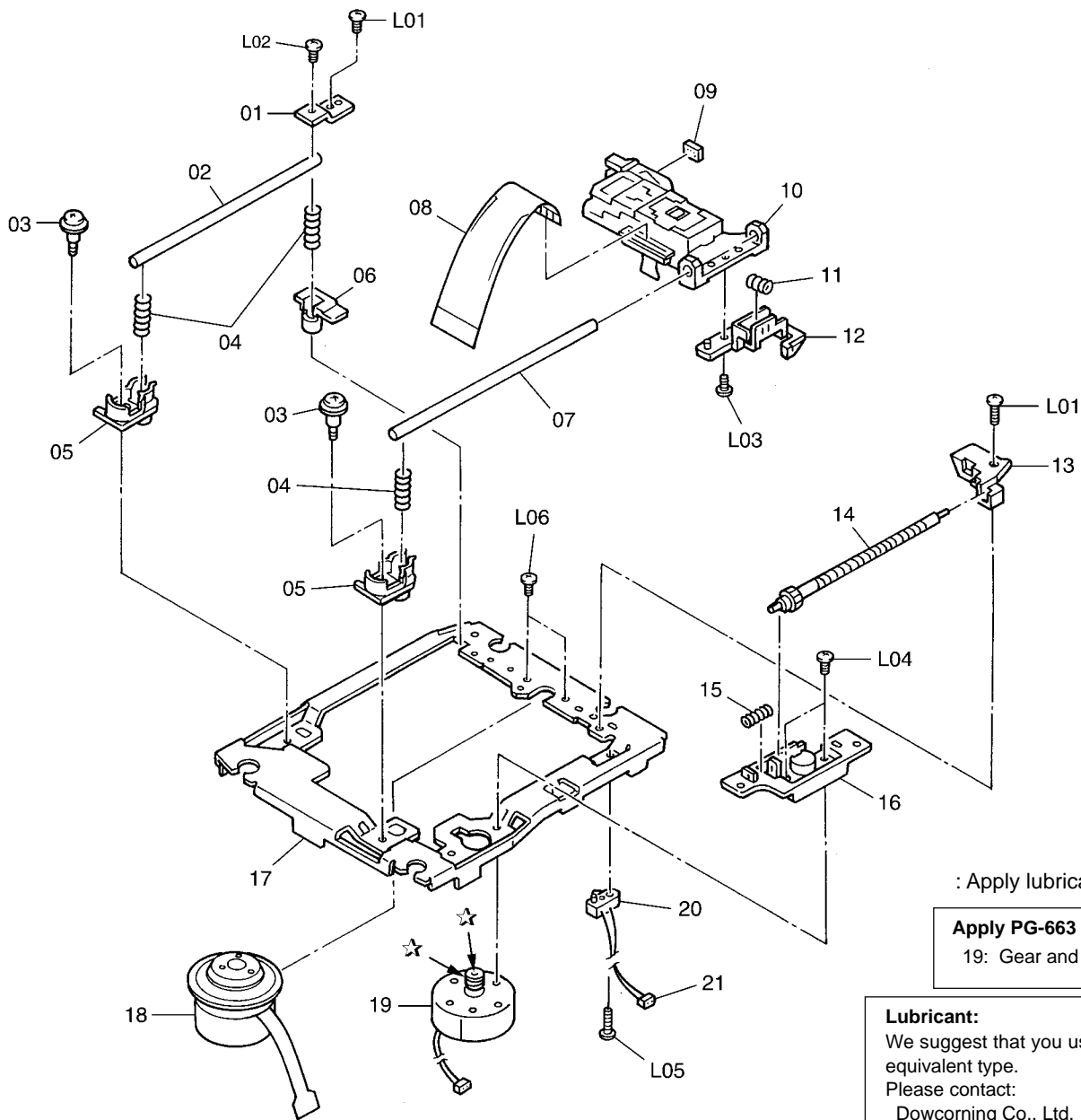


Fig.4-5

: Apply lubricant PG-663

Apply PG-663
19: Gear and Gear Top

Lubricant:
We suggest that you use PG-663 or equivalent type.
Please contact:
Dowcorning Co., Ltd.
1-1-3 Marunouchi, Chiyoda-ku,
Tokyo, Japan

4.5 DVD Traverse Ass'y ADJ-3 (B03)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
B03	CA09479A	DVD Traverse Ass'y ADJ-3		13	0C10537A	Holder Shaft 1	1
01	0C10559A	Holder Shaft 3	1	14	CA09487A	Shaft Screw Ass'y	1
02	0C10532A	Shaft R	1	15	0C10524A	SP Push L.S	1
03	0C10534A	Screw S	2	16	0C10539A	Holder Motor	1
04	0C10525A	SP Push Shaft	3	17	0C10530A	Traverse-P Chassis	1
05	0C10536A	Holder SP	2	18	0B90969A	M. CDS8A50T30-A/TT	1
06	0C10558A	Holder SP 2	1	19	CA09488A	Sled Motor Ass'y	1
07	0C10531A	Shaft L	1	20	0B70304A	Switch MPU10420MLB0	1
08	0B85437A	30P Flexible wire (Pickup)	1	21	0B85699A	2P Wire Ass'y L100	1
(Note: Do not included in the DVD Traverse Ass'y (CA09479A).				L01	0E04250A	ST2x5+Pan CMT	
09	0C10583A	Cushion PU 7x4x2.5	1	L02	0E04256A	M2x4+Pan BNI	
10	0B90967A	Pick-up VED0383-AK	1	L03	0E04248A	M1.7x3.5+Pan CMT	
11	0C10526A	SP Push Hook	1	L04	0E04248A	M1.7x3.5+Pan CMT	
12	0C10535A	Hook L.S	1	L05	0E04249A	ST2x8+Binding CMT	
				L06	0E04247A	M1.7x2.5+Pan BZN	

4.6 Package Ass'y and Accessory Ass'y

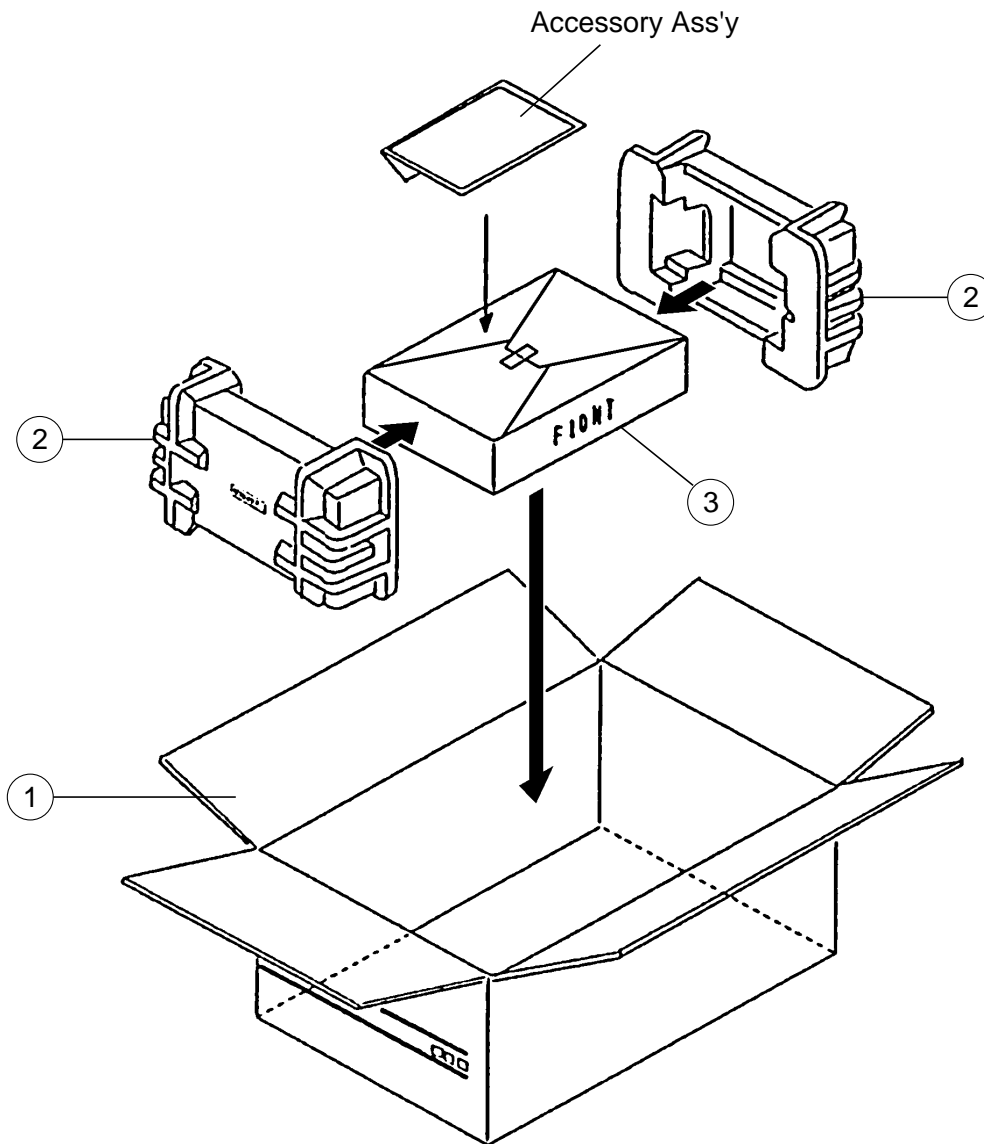


Fig.4-6

4.6 Package Ass'y and Accessory Ass'y

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
1	0F05622B	Carton Box	1	---	0D07243A	AC Cord CH (CH)	1
2	0F05623B	Packing	2	---	0D07244A	AC Cord KR (KR)	1
3	0F04458A	Sheet	1	---	0D07245A	AC Cord SA (AUS)	1
---	0B85744A	Code YAF11-0642 (UK/EP)	1	---	0D07355A	Owner's Manual Japanese (JPN)	1
---	0B85745A	Code R-C275VP (JPN/OTR/AUS /USA/CAN/CH/DA/HK/KR/TW)	1	---	0D07356A	Owner's Manual English (Except JPN)	1
---	0B90451A	Batery UM3X1	2	---	0D07357A	Owner's Manual Franch (USA/CAN/EP)	1
---	0D03092B	Poly Bag	1	---	0D07358A	Owner's Manual German (EP)	1
---	0F04860A	Poly Bag (UK/HK only)	1	---	0D07359A	Owner's Manual Spanish (USA/CAN/EP/DA)	1
---	0D07238A	AC Cord UL (USA/CAN)	1	---	0D07360A	Owner's Manual Italian (EP)	1
---	0D07239A	AC Cord EP (EP)	1	---	0H08216A	CD Single Adaptor (JPN)	1
---	0D07240A	AC Cord DA/DU (DA/OTR/TW)	1	---	HG08343A	Remote Control Unit	1
---	0D07241A	AC Cord DM (JPN)	1				
---	0D07242A	AC Cord BS/HK (UK/HK)	1				

5. ELECTRICAL PARTS LIST

Notes:

- Abbreviations
TR-Transistor, SID-Silicon Diode, ZD-Zener Diode,
RC-Cement Resistor, RF-Fail Safe Type Resistor,
RK-Carbon Resistor.
IC-Integrated Circuit, CML-Mylar Capacitor,
CC-Ceramic Capacitor, CE-Electrolytic Capacitor.
- Parts marked with * show chip parts.

Ref. No.	Part No.	Description	Q'ty
ZD033	0B12168A	ZD RD10V JS B2	1
ZD401	0B12150A	ZD RD5.6V JS B2	1
ZD402	0B12160A	ZD RD7.5V JS B3	1
ZD403	0B12153A	ZD RD6.2V JS B2	1
ZD404	0B12150A	ZD RD5.6V JS B2	1
ZD502,503	0B12154A	ZD RD6.2V JS B3	2

5.1 Mechanism P.C.B. Ass'y (C3M1)

Ref. No.	Part No.	Description	Q'ty
	BA10323A	Mech P.C.B. Ass'y C3M1	
CN100	0B85425A	40P F Connector*	1
CN200	0B85424A	30P F Connector*	1
CN300	0B85420A	11P F Connector*	1
CN501	0B80941A	14P F Connector *	1
CP103	0B84785A	22P F Connector*	1
CP502	0B85421A	13P F Connector*	1
D011	0B12249A	SID 1SS133	1
D031,032	0B12249A	SID 1SS133	2
D404	0B10540A	SID MA152WA*	1
D406	0B10540A	SID MA152WA*	1
D516	0B10539A	SID MA152WK*	1
D518	0B12249A	SID 1SS133	1
ICP01	0B12918A	IC ICP 0.5A*	1
Q001	0B14013A	TR DTC144EK*	1
Q031,032	0B12901A	TR 2SB1132R *	2
Q033,034	0B14227A	TR 2SA1576 S *	2
Q035	0B14188A	TR 2SC4081 R *	1
Q036	0B10882A	TR DTC114TKA*	1
Q037	0B14188A	TR 2SC4081 R *	1
Q038	0B14002A	TR DTA114EK*	1
Q090	0B14167A	TR 2SC2412K *	1
Q401	0B10792A	TR 2SB1182QR*	1
Q402	0B14167A	TR 2SC2412K *	1
Q403	0B10901A	TR 2SD2153TL*	1
Q404	0B10930A	TR 2SD1758F *	1
Q411,412	0B14167A	TR 2SC2412K *	2
Q501	0B14167A	TR 2SC2412K *	1
Q502	0B14013A	TR DTC144EK*	1
Q511,512	0B14018A	TR DTC143TK*	2
Q513,514	0B14018A	TR DTC143TK*	2
Q515	0B14018A	TR DTC143TK*	1
U001	0B12868A	IC BA6859AFP*	1
U002	0B12867A	IC BA5938FM*	1
U003	0B11001A	IC NJM4558M	1
U004	0B06404A	IC NJM2904M	1
U105,106	0B10719A	IC TA8409F *	2
U107,108	0B10719A	IC TA8409F *	2
U401	0B10566A	IC PQ09RF1	1
U501	0B13256A	IC HD6433396F*	1
U502	0B11928A	IC TC4049BF	1
X501	0B90740A	Resonator 6.00MHz	1

ELECTRICAL PARTS LIST

5.2 DVD Main P.C.B. Ass'y (C3M1)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
				P800	0B85696A	SO 40FLT-SM1-TB*	1
				P803	0B85694A	FFC 24FLT-SM1-TB*	1
	BK10567A	DVD Main P.C.B. Ass'y C3M1		P807	0B85697A	SO S06B-XH-SM3-TB*	1
D101,102	0B13151A	SID 1SS355TE-17*	2	P999	0B85695A	SO 10FM-1.0-SP1.9*	1
D103	0B13151A	SID 1SS355TE-17*	1	TR100,101	0B13161A	TR UMG4N-TR*	2
D120	0B13151A	SID 1SS355TE-17*	1	TR102,103	0B13161A	TR UMG4N-TR*	2
D190	0B13151A	SID 1SS355TE-17*	1	TR104,105	0B13161A	TR UMG4N-TR*	2
D191	0B13152A	SID DA204U-T106*	1	TR106	0B13161A	TR UMG4N-TR*	1
D193	0B13151A	SID 1SS355TE-17*	1	TR110,111	0B13163A	TR 2SK880-TE85L*	2
D209	0B13151A	SID 1SS355TE-17*	1	TR112	0B13162A	TR 2SK2145-TE85L*	1
D300,301	0B13151A	SID 1SS355TE-17*	2	TR115	0B13157A	TR UMY3N-TR*	1
D500,501	0B13151A	SID 1SS355TE-17*	2	TR117	0B13160A	TR DTC144TUA*	1
D850	0B13153A	SID UMN11N-TN*	1	TR120	0B13155A	TR UMW1N-TR*	1
D901	0B13153A	SID UMN11N-TN*	1	TR125	0B13160A	TR DTC144TUA*	1
D902,903	0B13151A	SID 1SS355TE-17*	2	TR167	0B13154A	TR FMY4A-T148*	1
IC100	0B13171A	IC CYC11AP000*	1	TR170	0B13160A	TR DTC144TUA*	1
IC110,111	0B13179A	IC NJM4558M*	2	TR171	0B13156A	TR UMX3N-TR*	1
IC120	0B13169A	IC BU4011BFV-E2*	1	TR172	0B13196A	TR 2SA1576A-Q/R/S*	1
IC121,122	0B13170A	IC BU4S81-TR*	2	TR190	0B13159A	TR DTC144EUA*	1
IC201	0B13172A	IC CYC12MP000*	1	TR200,201	0B13197A	TR 2SC4081-R/S*	2
IC202	0B13190A	IC TC7SHU04FU*	1	TR202	0B13197A	TR 2SC4081-R/S*	1
IC203	0B13179A	IC NJM4558M*	1	TR300	0B13158A	TR DTA144EUA*	1
IC300	0B13177A	IC MN67700VRZB*	1	TR490	0B13159A	TR DTC144EUA*	1
IC311	0B13190A	IC TC7SHU04FU*	1	TR491	0B13160A	TR DTC144TUA*	1
IC410,411	0B13178A	IC NJM2903V*	2	TR500	0B13160A	TR DTC144TUA*	1
IC412	0B13169A	IC BU4011BFV-E2*	1	TR600	0B13159A	TR DTC144EUA*	1
IC490	0B13165A	IC MN66261	1	TR801,802	0B13196A	TR 2SA1576A-Q/R/S*	2
IC500	0B13173A	IC CYC13DD000*	1	TR804,805	0B13196A	TR 2SA1576A-Q/R/S*	2
IC501	0B13175A	IC HY628100ALG-55*	1	TR806	0B13196A	TR 2SA1576A-Q/R/S*	1
IC502	0B13174A	IC HY57V161610DTC*	1	VR110	0B30229A	Semi VR 22K*	1
IC503	0B13183A	IC TC74VHC00FT*	1	VR120,121	0B30229A	Semi VR 22K*	2
IC507	0B13186A	IC TC74VHC32FTEL*	1	X301	0B90966A	X'tal CX-16F 40MHz*	1
IC550	0B13185A	IC TC74VHC157FTEL*	1	X601	0B90964A	X'tal CCR4.0MC3T*	1
IC600	BA10572A	DVD AK-SYS6 KIT	1	X800	0B90965A	X'tal CX-11F 27MH*	1
IC602	BA10573A	OPT ROM NC100503 KIT	1				
IC603	0B13176A	IC M24C16-MN6T*	1				
IC605	0B13183A	IC TC74VHC00FT*	1				
IC606	0B13189A	IC TC74VHCT245AFT*	1				
IC607	0B13187A	IC TC74VHC574FTEL*	1				
IC610	0B13191A	IC TC7W04FUTE12L*	1				
IC611	0B13183A	IC TC74VHC00FT*	1				
IC612	0B13193A	IC TC7WH74FUTE12L*	1				
IC613	0B13184A	IC TC74VHC08FTEL*	1				
IC614	0B13188A	IC TC74VHC86FT*	1				
IC700	0B13195A	IC ZIVA-3-PEO*	1				
IC701,702	0B13174A	IC HY57V161610DTC*	2				
IC703	0B13192A	IC TC7WH157FU*	1				
IC704	0B13181A	IC SI-3025ALS-TL*	1				
IC800	0B13182A	IC SM8701BM-ET*	1				
IC801	0B13194A	IC TC7WU04FUTE12L*	1				
IC802	0B13190A	IC TC7SHU04FU*	1				
IC803	0B13194A	IC TC7WU04FUTE12L*	1				
IC850	0B13167A	IC ADV7172 KST*	1				
IC901	0B13168A	IC BA05FP-E2*	1				
IC911	0B13180A	IC PCM1735E/2K*	1				
IC991	0B13231A	IC TC74HC4053AFT*	1				

ELECTRICAL PARTS LIST

5.3 Digital P.C.B. Ass'y

5.3 Digital P.C.B. Ass'y				Ref. No.	Part No.	Description	Q'ty
Ref. No.	Part No.	Description	Q'ty				
				P550	0B85930A	14P F Connector*	1
				P570	0B85829A	24P F Connector*	1
	BK10258A	Digital P.C.B. Ass'y (USA/CAN)		P600	0B85931A	17P F Connector*	1
	BK10562A	Digital P.C.B. Ass'y (JPN)		R578	0B25579A RK	47K 1/10W J* (UK/EP/DA/KR/TW)	1
	BK10563A	Digital P.C.B. Ass'y (EP/UK)		R579	0B25579A RK	47K 1/10W J* (UK/USA/CAN/EP)	1
	BK10564A	Digital P.C.B. Ass'y Other NTSC		R580	0B25579A RK	47K 1/10W J* (JPN)	1
	BK10566A	Digital P.C.B. Ass'y Other PAL		R678	0B25579A RK	47K 1/10W J* (JPN/OTR/AUS/USA/CAN/CH/HK)	1
C226	0B41298A	CML 0.1 50V J (EP/UK only)	1				
C227	0B41298A	CML 0.1 50V J (EP/UK only)	1	R679	0B25579A RK	47K 1/10W J* (Except USA/CAN)	1
C397	0B43203A	CC 330P 50V J* (EP/UK only)	1	R680	0B25579A RK	47K 1/10W J* (Except JPN)	1
C701	0B42342A	CE 0.1F 5.5V	1	TR200,201	0B06299A TR	2SC2878	2
J300	0B12811A	Toslink TOTX178A	1	TR202,203	0B06299A TR	2SC2878	2
L300	0B51351A	Pulse Transformer (TC-1027-04)	1	TR204,205	0B06299A TR	2SC2878	2
PJ200	0B85644A	8P Pin Jack R/W	1	TR206,207	0B06299A TR	2SC2878	2
PJ300	0B85645A	1P Pin Jack ORG	1	TR208	0B06299A TR	2SC2878	1
PJ400	0B85576A	ST Mini Jack	1	TR209	0B14002A TR	DTA114EK*	1
SW300	0B70296A	Slide SW	1	TR211	0B14002A TR	DTA114EK*	1
X101	0B90902A	X'tel 12.288MHz	1	TR213	0B14002A TR	DTA114EK*	1
X500	0B91047A	X'tal 8.38MHz	1	TR215	0B14002A TR	DTA114EK*	1
D200,201	0B12835A	SID 1SS355*	2	TR217	0B14002A TR	DTA114EK*	1
D202,203	0B12835A	SID 1SS355*	2	TR218,219	0B14167A TR	2SC2412K *	2
D204,205	0B12835A	SID 1SS355*	2	TR220,221	0B14167A TR	2SC2412K *	2
D206,207	0B12835A	SID 1SS355*	2	TR222	0B14167A TR	2SC2412K *	1
D208,209	0B12835A	SID 1SS355*	2	TR301,302	0B14011A TR	DTC114EK*	2
D210,211	0B12835A	SID 1SS355*	2	TR690	0B14167A TR	2SC2412K *	1
D212	0B12835A	SID 1SS355*	1	TR691	0B14002A TR	DTA114EK*	1
D690,691	0B12586A	SID 1N4002	2	L472	0B25612A	RK 0 1/10W J* (UK/EP)	1
D692,693	0B12835A	SID 1SS355*	2		0B50467A	Coil 100uH* (Except UK/EP)	1
D694,695	0B12835A	SID 1SS355*	2				
D696,697	0B12835A	SID 1SS355*	2				
D698	0B12586A	SID 1N4002	1				
IC101	0B12885A	IC YSS912*	1				
IC103	0B12883A	IC LC89055W*	1				
IC104	0B11603A	IC TC74HCU04AF	1				
IC105	0B11613A	IC TC74HC00AF	1				
IC200,201	0B14189A	IC UPC4570G2*	2				
IC202,203	0B14189A	IC UPC4570G2*	2				
IC204,205	0B14189A	IC UPC4570G2*	2				
IC206,207	0B14189A	IC UPC4570G2*	2				
IC208,209	0B14189A	IC UPC4570G2*	2				
IC210,211	0B14189A	IC UPC4570G2*	2				
IC212,213	0B14189A	IC UPC4570G2*	2				
IC214	0B14189A	IC UPC4570G2*	1				
IC215	0B10812A	IC LC78211	1				
IC216	0B10814A	IC LC78213	1				
IC217	0B10813A	IC LC78212	1				
IC218,219	0B14189A	IC UPC4570G2*	2				
IC220,221	0B14189A	IC UPC4570G2*	2				
IC222,223	0B14189A	IC UPC4570G2*	2				
IC224,225	0B14189A	IC UPC4570G2*	2				
IC390	0B11613A	IC TC74HC00AF	1				
IC401,402	0B12783A	IC AD1855*	2				
IC403	0B12783A	IC AD1855*	1				
IC404,405	0B14189A	IC UPC4570G2*	2				
IC406	0B14189A	IC UPC4570G2*	1				
IC500	0B12863A	IC UPD78F4225GC-8*	1				
P530	0B85929A	13P F Connector*	1				

ELECTRICAL PARTS LIST

5.4 Output P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10255A	Output P.C.B. Ass'y (Except UK/EP/JPN)	
	BK10377A	Output P.C.B. Ass'y (JPN)	
	BK10378A	Output P.C.B. Ass'y (EP/UK)	
IC100	0B11146A	IC TC4053BP (UK/EP)	1
IC101	0B12995A	IC BA7666FS*	1
IC102	0B12862A	IC BA7660FS*	1
IC500	0B12864A	IC PQ30RV2	1
IC510	0B10554A	IC PQ05RF1	1
IC530	0B10554A	IC PQ05RF1	1
IC540	0B12791A	IC PQ20VZ1U*	1
IC570	0B11751A	IC NJM7815FA	1
IC580	0B11752A	IC NJM7915FA	1
PJ100	0B85646A	2P Pin Jack YEL	1
PJ101	0B85647A	3P Pin Jack G/B/R (Except EP/UK)	1
PJ102	0B90953A	S-Video Jack	1
PJ103	0B85631A	21P Connector (EP/UK only)	1
D100	0B12154A	ZD RD6.2V JS B3 (EP/UK only)	1
D101	0B12175A	ZD RD12JSB3 (EP/UK only)	1
D502	0B12249A	SID 1SS133	1
D521	0B10520A	SID GBU6D	1
TR100,101	0B10026A	TR 2SA933S	2
TR102	0B10026A	TR 2SA933S	1
TR103,104	0B10039A	TR 2SC1740S(SE)	2
TR105	0B10039A	TR 2SC1740S(SE)	1
TR106	0B10026A	TR 2SA933S (EP/UK only)	1
TR107,108	0B10026A	TR 2SA933S	2
TR109	0B10039A	TR 2SC1740S(SE) (EP/UK only)	1
TR110,111	0B10039A	TR 2SC1740S(SE)	2
TR112,113	0B10039A	TR 2SC1740S(SE)	2
TR114	0B12991A	TR DTC143ZS (JPN only)	1
TR115	0B12991A	TR DTC143ZS (EP/UK only)	1
TR116	0B12991A	TR DTC143ZS (EP/UK only)	1
TR117	0B10026A	TR 2SA933S (EP/UK only)	1
TR118	0B12991A	TR DTC143ZS (EP/UK only)	1
TR119	0B10039A	TR 2SC1740S(SE) (EP/UK only)	1
TR490	0B06299A	TR 2SC2878 (EP/UK only)	1
TR491	0B06299A	TR 2SC2878 (EP/UK only)	1

5.5 Front P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10253A	Front P.C.B. Ass'y	
IC601	0B12866A	IC LC75874E *	1
IC602	0B12993A	IC NJU3716L	1
IN601	0B90957A	LCD	1
PH601	0B12999A	Photo Sensor	1
D601,602	0B12998A	LED Amber/Green	2
D603,604	0B12998A	LED Amber/Green	2
D605	0B12998A	LED Amber/Green	1
D607,608	0B12996A	LED Amber	2
D609,610	0B12996A	LED Amber	2
D611,612	0B13385A	LED Amber (605NM)	2

Ref. No.	Part No.	Description	Q'ty
D613,614	0B13385A	LED Amber (605NM)	2
SW601,602	0B70298A	Tact SW	2
SW603,604	0B70298A	Tact SW	2
SW605,606	0B70298A	Tact SW	2
SW607,608	0B70298A	Tact SW	2
SW609,610	0B70298A	Tact SW	2
SW611,612	0B70298A	Tact SW	2
TR601	0B10969A	TR DTD113ZK*	1

5.6 Head phone P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10254A	HP P.C.B. Ass'y (Except EP/UK)	
	BK10574A	HP P.C.B. Ass'y (EP/UK)	
C811	0B41298A	CML 0.1 50V J (EP/UK)	1
C812	0B41298A	CML 0.1 50V J (EP/UK)	1
IC801	0B10743A	IC NJM4556D	1
PJ801	0B85642A	3P Mini Jack 6.3	1
VR801	0B30228A	VR 50K(A)x2 L25	1
TR801,802	0B06299A	TR 2SC2878	2

5.7 P-Supply P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10269A	P Supply P.C.B. Ass'y (USA/CAN)	
	BK10379A	P Supply P.C.B. Ass'y (JPN)	
	BK10380A	P Supply P.C.B. Ass'y (OTR/DA)	
	BK10381A	P Supply P.C.B. Ass'y (EP/UK)	
	BK10382A	P Supply P.C.B. Ass'y (AUS/CH/HK/KR)	
	BK10383A	P Supply P.C.B. Ass'y (TW)	
F701	0B91083A	Fuse 3.15A-250V	1
IC701	0B17033A	IC NJM78M12FA	1
IC702	0B12994A	IC PQ30RV1	1
P701	0B85361A	AC Inlet (USA/CAN)	1
	0B85362A	AC Inlet (Except USA/CAN)	1
RL701	0B90907A	Relay OSZ-SH-112DM	1
T701	0B50342A	Sub Transformer (USA/CAN/JPN)	1
	0B50343A	Sub Transformer (Except USA/CAN/JPN)	1
C715	0B41298A	CML 0.1 50V J (EP/UK)	1
D701,702	0B12586A	SID 1N4002	2
D703,704	0B12249A	SID 1SS133	2
D705	0B12249A	SID 1SS133	1
TR701	0B12992A	TR DTC113ZKA*	1
TR702,703	0B14167A	TR 2SC2412K *	2

ELECTRICAL PARTS LIST

5.8 M-Trans P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10376A	M Trans P.C.B. Ass'y	
D500,501	0B12586A SID	1N4002	2
D510,511	0B12586A SID	1N4002	2
F201,202	0B91091A	Fuse 4A-125V	2
F203,204	0B91088A	Fuse 7A-125V	2
F205,206	0B91089A	Fuse 3A-125V	2
F207,208	0B91084A	Fuse 1A-125V	2

5.9 Power SW P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10268A	Power SW P.C.B. Ass'y	
SW301	0B70292A	Power SW	1

5.10 LED P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10257A	LED P.C.B. Ass'y	
D401	0B12998A	LED Amber/Green	1

5.11 Diode P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10565A	DIODE P.C.B. Ass'y	
D520	0B10543A SID	GBU8D	1

5.12 REG. 3V P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10557A	REG3V P.C.B. Ass'y	
IC560	0B12994A IC	PQ30RV1	1

5.13 REG. 5V P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BK10556A	REG5V P.C.B. Ass'y	
IC550	0B10554A IC	PQ05RF1	1

5.14 Mecha Flexible P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BA09736A	Mecha Flexible P.C.B. ASS'y	
PC701,702	0B10737A IC	PhotoInterrupter	2
PC703,704	0B10737A IC	PhotoInterrupter	2
PC705,706	0B10737A IC	PhotoInterrupter	2
PC707,708	0B10737A IC	PhotoInterrupter	2
PC709	0B10737A IC	PhotoInterrupter	1

5.15 Photo P.C.B. Ass'y

Ref. No.	Part No.	Description	Q'ty
	BA10175A	Photo P.C.B. Ass'y	
	0B10737A IC	PhotoInterrupter	1

6. RECOMMENDED SPARE PARTS LIST

Notes:

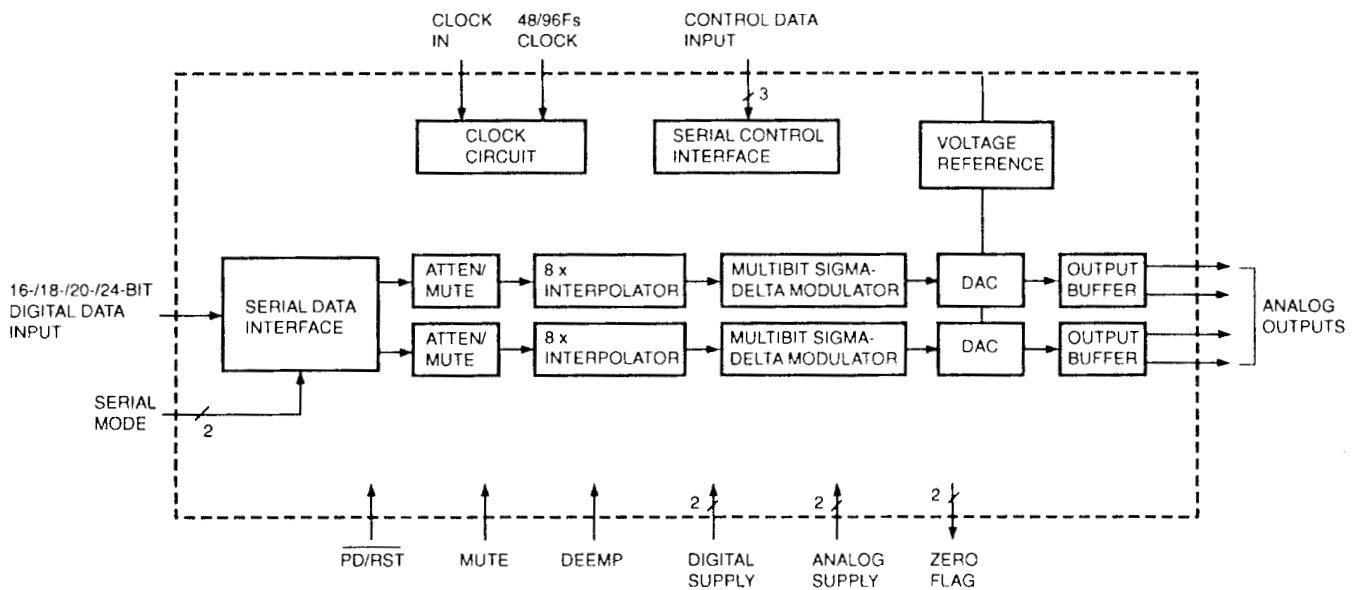
- Abbreviations
TR-Transistor, SID-Silicon Diode, ZD-Zener Diode,
RC-Cement Resistor, RF-Fail Safe Type Resistor,
RK-Carbon Resistor.
IC-Integrated Circuit, CML-Mylar Capacitor,
CC-Ceramic Capacitor, CE-Electrolytic Capacitor.
- Parts marked with * show chip parts.

Ref. No.	Part No.	Description
1	0B06404A	IC NJM2904M
2	0B10554A	IC PQ05RF1
3	0B10566A	IC PQ09RF1
4	0B10719A	IC TA8409F *
5	0B10737A	IC PhotoInterrupter
6	0B10743A	IC NJM4556D
7	0B10812A	IC LC78211
8	0B10813A	IC LC78212
9	0B10814A	IC LC78213
10	0B11001A	IC NJM4558M
11	0B11146A	IC TC4053BP
12	0B11603A	IC TC74HCU04AF
13	0B11613A	IC TC74HC00AF
14	0B11751A	IC NJM7815FA
15	0B11752A	IC NJM7915FA
16	0B11928A	IC TC4049BF
17	0B12783A	IC AD1855*
18	0B12791A	IC PQ20VZ1U*
19	0B12862A	IC BA7660FS*
20	0B12863A	IC UPD78F4225GC-8*
21	0B12864A	IC PQ30RV2
22	0B12866A	IC LC75874E *
23	0B12867A	IC BA5938FM*
24	0B12868A	IC BA6859AFP*
25	0B12883A	IC LC89055W*
26	0B12885A	IC YSS912*
27	0B12918A	IC ICP 0.5A*
28	0B12993A	IC NJU3716L
29	0B12994A	IC PQ30RV1
30	0B12995A	IC BA7666FS*
31	0B13165A	IC MN66261
32	0B13167A	IC ADV7172 KST*
33	0B13168A	IC BA05FP-E2*
34	0B13169A	IC BU4011BFV-E2*
35	0B13170A	IC BU4S81-TR*
36	0B13171A	IC CYC11AP000*
37	0B13172A	IC CYC12MP000*
38	0B13173A	IC CYC13DD000*
39	0B13174A	IC HY57V161610DTC*
40	0B13175A	IC HY628100ALG-55*
41	0B13176A	IC M24C16-MN6T*
42	0B13177A	IC MN67700VRZB*
43	0B13178A	IC NJM2903V*
44	0B13179A	IC NJM4558M*
45	0B13180A	IC PCM1735E/2K*
46	0B13181A	IC SI-3025ALS-TL*
47	0B13182A	IC SM8701BM-ET*
48	0B13183A	IC TC74VHC00FT*
49	0B13184A	IC TC74VHC08FTEL*
50	0B13185A	IC TC74VHC157FTEL*
51	0B13186A	IC TC74VHC32FTEL*
52	0B13187A	IC TC74VHC574FTEL*
53	0B13188A	IC TC74VHC86FT*
54	0B13189A	IC TC74VHCT245AFT*
55	0B13190A	IC TC7SHU04FU*
56	0B13191A	IC TC7W04FUTE12L*
57	0B13192A	IC TC7WH157FU*
58	0B13193A	IC TC7WH74FUTE12L*
59	0B13194A	IC TC7WU04FUTE12L*
60	0B13195A	IC ZIVA-3-PEO*
61	0B13231A	IC TC74HC4053AFT*

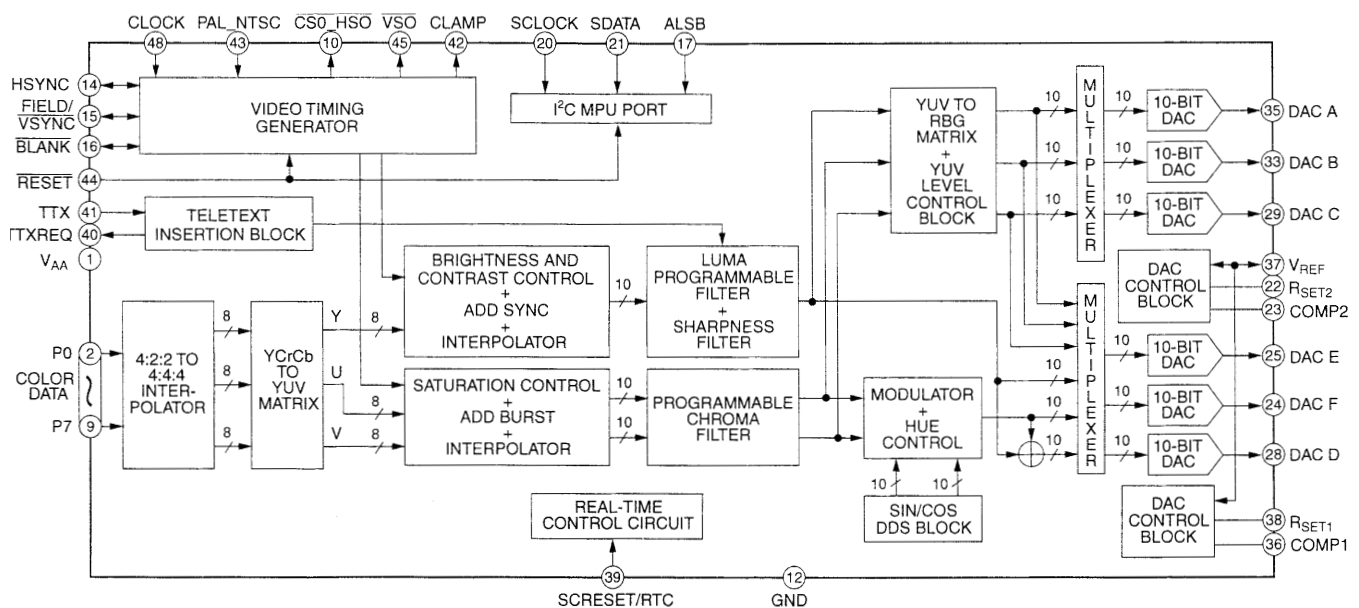
Ref. No.	Part No.	Description
62	0B13256A	IC HD6433396F*
63	0B17033A	IC NJM78M12FA
64	0B10520A	SID GBU6D
65	0B10539A	SID MA152WK*
66	0B10543A	SID GBU8D
67	0B12249A	SID 1SS133
68	0B12586A	SiD 1N4002
66	0B12835A	SID 1SS355*
70	0B13151A	SID 1SS355TE-17*
71	0B13152A	SID DA204U-T106*
72	0B13153A	SID UMN11N-TN*
73	0B06299A	TR 2SC2878
74	0B10026A	TR 2SA933S
75	0B10039A	TR 2SC1740S(SE)
76	0B10792A	TR 2SB1182QR*
77	0B10882A	TR DTC114TKA*
78	0B10901A	TR 2SD2153TL*
79	0B10930A	TR 2SD1758F *
80	0B10969A	TR DTD113ZK*
81	0B12901A	TR 2SB1132R *
82	0B12991A	TR DTC143ZS
83	0B12992A	TR DTC113ZKA*
84	0B13154A	TR FMY4A-T148*
85	0B13155A	TR UMW1N-TR*
86	0B13156A	TR UMX3N-TR*
87	0B13157A	TR UMY3N-TR*
88	0B13158A	TR DTA144EUA*
89	0B13159A	TR DTC144EUA*
90	0B13160A	TR DTC144TUA*
91	0B13161A	TR UMG4N-TR*
92	0B13162A	TR 2SK2145-TE85L*
93	0B13163A	TR 2SK880-TE85L*
94	0B13196A	TR 2SA1576A-Q/R/S*
95	0B13197A	TR 2SC4081-R/S*
96	0B14002A	TR DTA114EK*
97	0B14011A	TR DTC114EK*
98	0B14013A	TR DTC144EK*
99	0B14018A	TR DTC143TK*
100	0B14167A	TR 2SC2412K *
101	0B14188A	TR 2SC4081 R *
102	0B14227A	TR 2SA1576 S *
103	0B12150A	ZD RD5.6V JS B2
104	0B12153A	ZD RD6.2V JS B2
105	0B12154A	ZD RD6.2V JS B3
106	0B12160A	ZD RD7.5V JS B3
107	0B12168A	ZD RD10V JS B2
108	0B12175A	ZD RD12JSB3
109	0B12811A	Toslink TOTX178A
110	0B12999A	Photo Sensor
111	0B50342A	Sub Transformer DM/UL
112	0B50343A	Sub Transformer EP/OTR
113	0B50459A	Power Transformer 100-120V
114	0B50460A	Power Transformer 115-230V
115	0B51351A	Pulse Transformer (TC-1027-04)
116	0B70296A	Slide SW
117	0B70298A	Tact SW
118	0B70300A	Slide SW L21-22A2
119	0B70304A	Switch MPU10420MLB0
120	0B90907A	Relay OSZ-SH-112DM
121	0B90967A	Pick-up VED0383-AK
122	0B91083A	Fuse 3.15A-250V
123	0B91084A	Fuse 1A-125V
124	0B91088A	Fuse 7A-125V
125	0B91089A	Fuse 3A-125V
126	0B91091A	Fuse 4A-125V
127	0C10190A	Timing Belt SL
128	CA09479A	DVD Traverse Ass'y ADJ-3

7. IC BLOCK DIAGRAMS

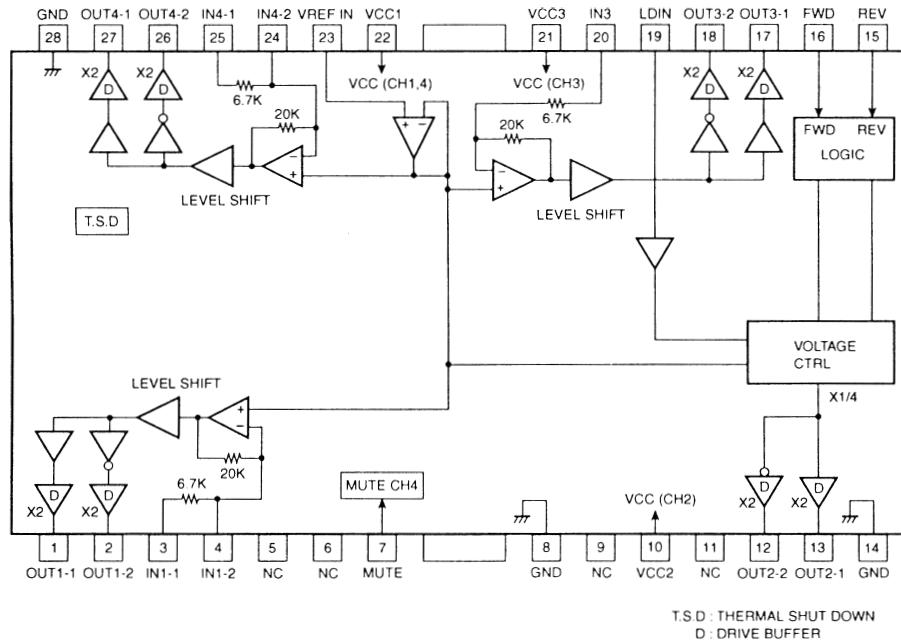
7.1 AD1855 (A/D Converter) - IC401,402,403 on Digital P.C.B. Ass'y



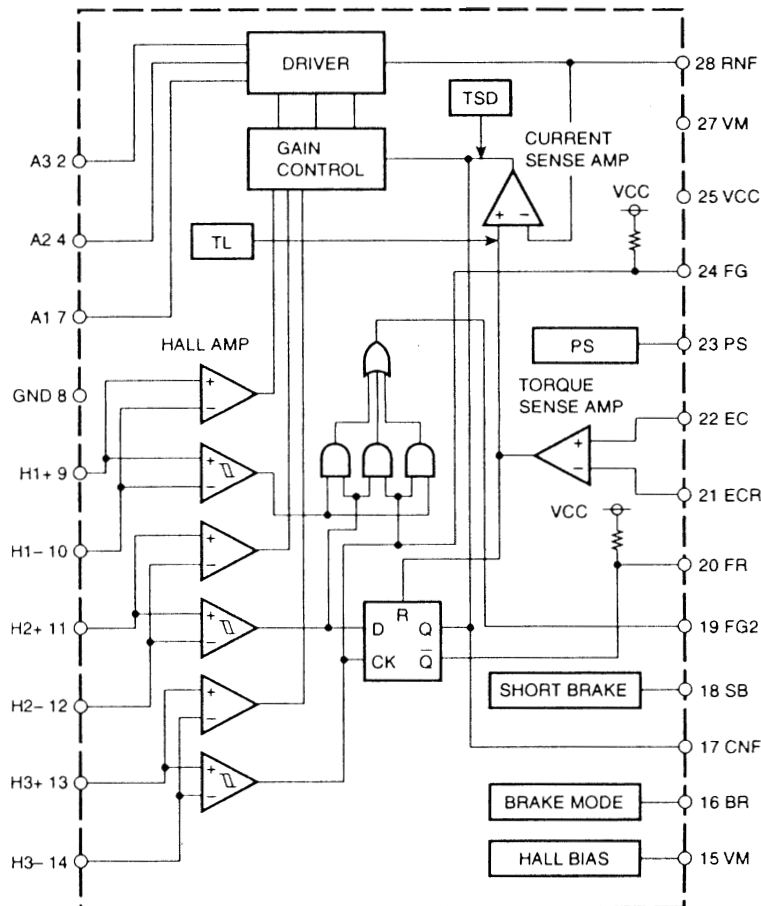
7.2 ADV7172 (Video signal decoder) - IC850 on DVD Main P.C.B. Ass'y



7.3 BA5938FM (Power driver) - U002 on Mechanism P.C.B. Ass'y



7.4 BA6859AFP (3-Phase motor driver) - U001 on Mchanism P.C.B. Ass'y



7.5 CYC11AP000 (DVD Pre-AMP) - IC100 on DVD Main P.C.B. Ass'y

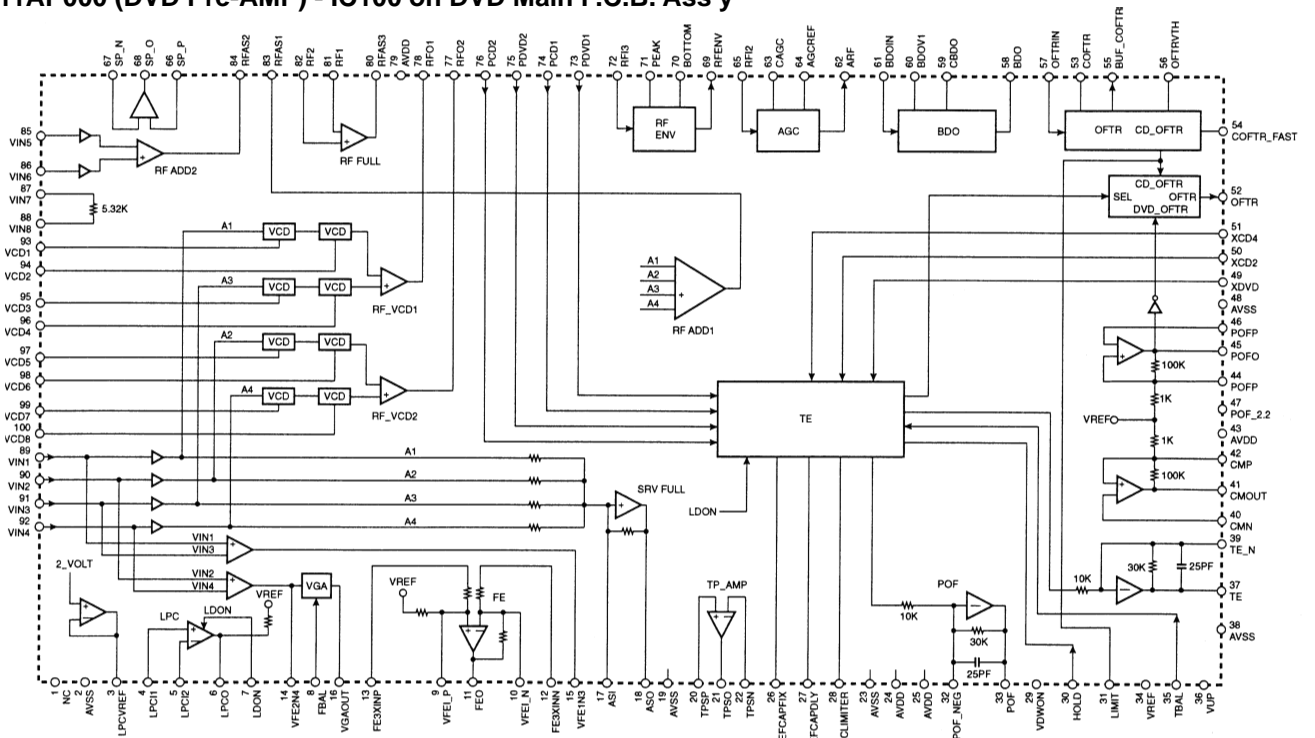
Pin No.	Port Name	I/O	FUNCTION
1	NC	---	No connection.
2,19,23,38,48	AVSS	---	Ground pin.
3	LPCVREF	O	LPC (laser power control) reference voltage output.
4	LPCI1	I	LPC (laser power control) non-inverting input pin.
5	LPCI2	I	LPC (laser power control) inverting input pin.
6	LPCO	O	LPC (laser power control) output..
7	LDON	I	LPC (laser power control) on/off control (H;LD on, L: LD off).
8	FBAL	I	Focus balance control input.
9	VFEI_P	I	Focus AMP positive input pin.
10	VFEI_N	I	Focus AMP negative input pin.
11	FEO	O	Focus error output pin.
12	FE3XINN	I	Focus AMP negative input pin.
13	FE3XINP	I	Focus AMP positive input pin.
14	VFE2N4	O	Vin2, Vin4 summing output.
15	VFE1N3	O	Vin1, Vin3 summing output.
16	VGAOUT	O	Focus balance AMP output.
17	ASI	I	Servo full addition AMP inverting input.
18	ASO	O	Servo full addition AMP output.
20	TPSP	I	OP-AMP non-inverting input.
21	TPSO	O	OP-AMP output.
22	TPSN	I	OP-AMP inverting input.
24,25,43,79	AVDD	---	+5V power supply pin.
26	REFCAPFIX	---	Fixed delay capacitor connecting pin.
27	REFCAPDLY	---	Variable delay capacitor connecting pin.
28	CLIMITER	---	Phase error limit capacitor connecting pin.
29	VDOWN	O	Low reference voltage output (nominal: 1.25V)
30	HOLD	I	Select TE detection method. (L: TE detection method, H: improved method)
31	LIMIT	---	Phase error limit capacitor connecting terminal.
32	POF NEG	I	POF AMP negative input pin.
33	POF	O	TE (tracking error) phase off-track voltage output.
34	VREF	O	Reference voltage output (nominal: 2.5V).
35	TBAL	I	Tracking balance control pin (nominal input range: 2.5V±1.25V).
36	VUP	O	High reference voltage output (nominal: 3.75V)
37	TE	O	TE (tracking error) AMP output.
39	TE_N	I	TE (tracking error) AMP inverting input.
40	CMN	I	Comparator inverting input.
41	CMOUT	O	Comparator output.
42	CMP	I	Comparator non inverting input.
44	POFP	I	POF non inverting input.
45	OFTR_2	O	CD off-track analog output.
46	POFN	I	POF inverting input.
47	POF_2.2	O	2.2V reference voltage output.
49	XDVD	I	DVD control pin.
50	XCD2	I	CD 2X control pin.
51	XCD4	I	CD 4X control pin.
52	OFTR	O	Off track detect output pin.
53	COFTR	---	OFTR AMP filtering capacitor connecting pin.
54	COFTR_FAST	O	OFTR AMP timing capacitor connecting pin.
55	BUF_COFTR	O	Buffered output of OFTR AMP.
56	OFTRVTH	---	OFTR AMP threshold voltage setting pin.

(to be continued)

IC BLOCK DIAGRAMS

Pin No.	Port Name	I/O	FUNCTION
57	OFTRIN	I	OFTR AMP input pin.
58	BDO	O	BDO (black drop out) AMP output pin.
59	CBDO	---	BDO (black drop out) AMP filtering capacitor connecting pin.
60	BDOV1	---	BDO (black drop out) AMP connecting pin.
61	BDOIN	I	BDO (black drop out) AMP input pin.
62	ARF	O	AGC (automatic gain control) AMP output pin.
63	CAGC	---	AGC (automatic gain control) loop setting capacitor connecting pin.
64	AGCREF	---	Reference current setting resistor connecting pin.
65	RFI2	I	AGC (automatic gain control) AMP input pin.
66	SP_P	I	Spare amplifier positive input pin.
67	SP_N	I	Spare amplifier negative input pin.
68	SP_O	O	Spare amplifier output pin.
69	RFENV	O	RF envelope output pin.
70	BOTTOM	---	Bottom hold capacitor connecting pin.
71	PEAK	---	Peak hold capacitor connecting pin.
72	RFI3	I	RF envelope input pin.
73	PDVD1	I	DVD tracking phase difference input pin 1.
74	PCD1	I	CD tracking phase difference input pin 1.
75	PDVD2	I	DVD tracking phase difference input pin 2.
76	PCD2	I	CD tracking phase difference input pin 2.
77	RFO2	O	RF phase difference output pin 2.
78	RFO1	O	RF phase difference output pin 1.
80	RFAS3	O	RF full addition AMP output pin.
81	RE1	I	RF full addition AMP input pin 1.
82	RF2	I	RF full addition AMP input pin 2.
83	RFAS1	O	RF full addition AMP output pin 1.
84	RFAS2	O	RF full addition AMP output pin 2.
85-88	VIN5-VIN8	I	External PD input pins.
89-92	VIN1-VIN4	I	Internal PD input pins.
93-100	VCD1-VCD8	---	Phase delay capacitor connecting pins.

CYC11AP000 (DVD Pre-AMP) - IC100 on DVD Main P.C.B. Ass'y



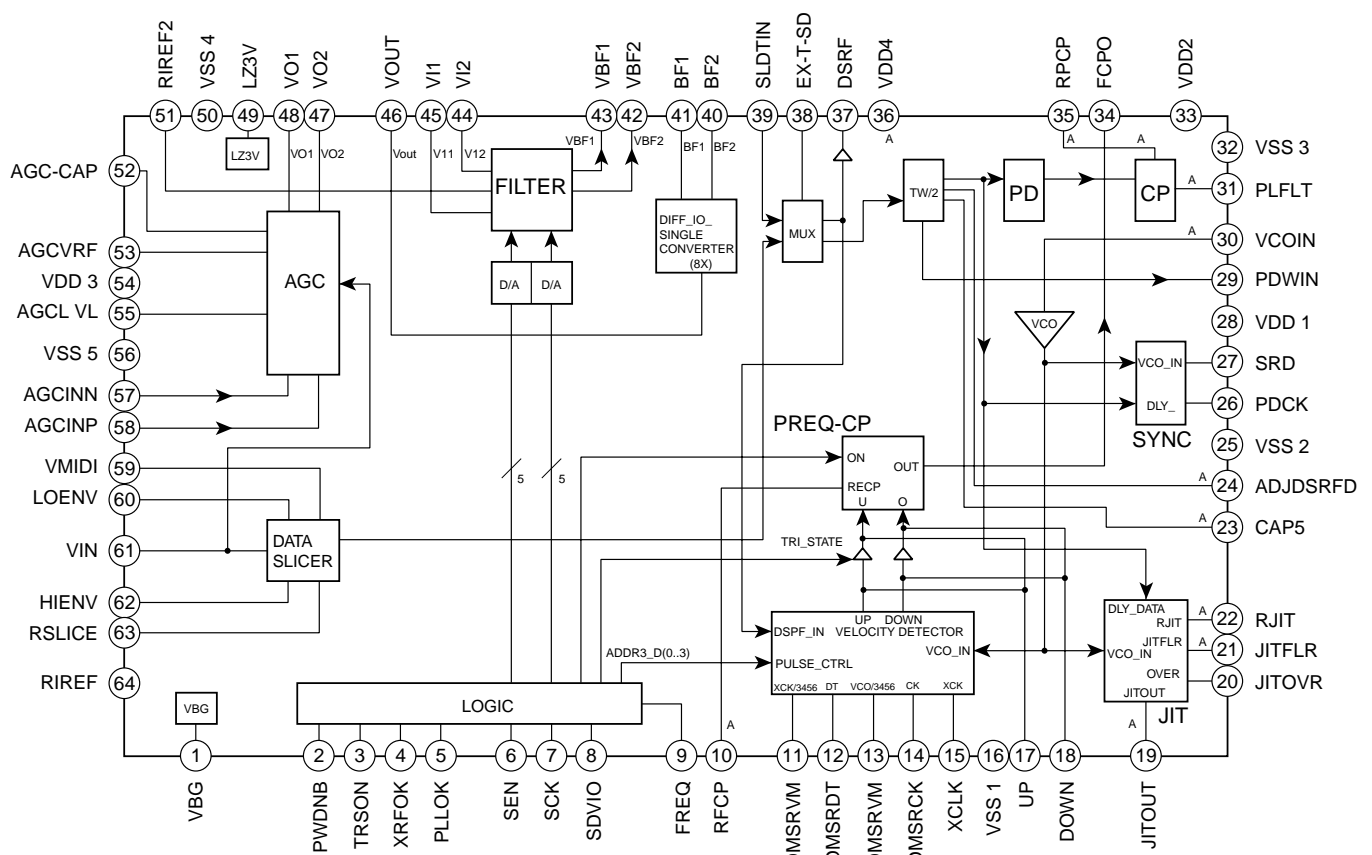
7.6 CYC12AP000 (LION) (Read Channel) - IC201 on DVD Main P.C.B. Ass'y

Pin No.	Port Name	I/O	FUNCTION
1	VBG	O	Band gap reference volyage output.
2	PWDNB	I	Power on mode control input. (normal: H)
3	TRSON	I	Traverse servo on. (H: tracking servo on, L: off)
4	XRFOK	I	Drop out input. (H: drop out, L: normal)
5	PLLOK	I	PLL mode selection. (H: phase pull in, L: frequency pull in)
6	SEN	I	Serial port enable input.
7	SCK	I	Serial port clock input.
8	SDTIO	I/O	Serial port data input/output.
9	FREQ	O	Frequency mode test pin.
10	RFCP	---	Frequency mode current setting pin.
11	DMSRVR	O	Reference clock / 3456 output.
12	DMSRDT	O	Serial data output for speed control.
13	DMSRVP	O	VCO / 3456 output.
14	DMSRCK	I	Serial clock input for speed control.
15	XCLK	I	Reference clock input for velocity detection (27 MHz).
16,25,32,50,56	VSS	---	Ground pin.
17	UP	I/O	Tri-state I/O pin (not used).
18	DOWN	I/O	Tri-state I/O pin (not used).
19	JITOUT	O	PLL jitter output. Jitter is converted to voltage and send to output.
20	JITOVR	O	Jitter over output. (L: normal, H: jitter over)
21	JITFLR	---	Filter terminal for PLL jitter detection.
22	RJIT	---	Resister terminal for jitter detection.
23	CAP5	---	TW/2 test pin.
24	ADJDSRFD	---	TW/2 half window adjust pin.
26	RDCK	O	Synchronized clock output.
27	SRD	O	Synchronized data output.
28,33,36,54	VDD	---	LVD & digital section power supply.
29	PDWIN	O	TW/2 half window test pin.
30	VCOIN	I	VCO input pin. The voltage level of this pin controls the frequency of VCO.
31	PLFLT	---	Phase control charge pump output / VCO input.
34	FCPO	---	Capacitor connecting pin for frequency control loop.
35	RPCP	---	Phase mode current setting terminal.
37	DSRF	O	Sliced data test pin.
38	EXT_SD	I	MUX selection control pin. (L: normal mode, H: select SLDTIN as PLL input for testing).
39	SLDTIN	I	PLL test dat input.
40	BF2	I	Differential to single converter input 2.
41	BF1	I	Differential to single converter input 1.
42	VBF2	O	Buffered filter output 2 (normal output : 50 mVp-p).
43	VBF1	O	Buffered filter output 1 (normal output : 50 mVp-p).
44	VL2	I	Filter input 2.
45	VL1	I	Filter input 1.
46	VOUT	O	D/S converter output (VOUT=Vbf2_Vbf1) x 10+LZ3V.
47	VO2	O	Differential AGC output 2.
48	VO1	O	Differential AGC output 1.
49	LZ3V	O	Reference voltage output (3V).
51	RIREF2	---	Filter & equalizer reference current setting resistor pin.
52	AGC_CAP	---	AGC loop setting terminal.
53	AGCVRF	---	AGC output reference voltage pin.
55	AGCLVL	---	AGC output level reference voltage pin.
57	AGCINN	I	AGC negative signal input.

(to be continued)

Pin No.	Port Name	I/O	FUNCTION
58	AGCINP	I	AGC positive signal input.
59	VMIDI	I	Data slicer comparator positive input test pin.
60	LOENV	O	Data slicer negative envelope output pin.
61	VIN	I	Data slicer input.
62	HIENV	O	Data slicer positive envelope output pin.
63	RSLICE	---	Data slicer internal bias current setting resistor pin.
64	RIREF	---	Reference current setting resistor pin.

CYC12MP000 (Read Channel) - IC201 on DVD Main P.C.B. Ass'y



7.7 HD6433396A32F (Mechanism Controller) - U501 on Mechanism P.C.B. Ass'y

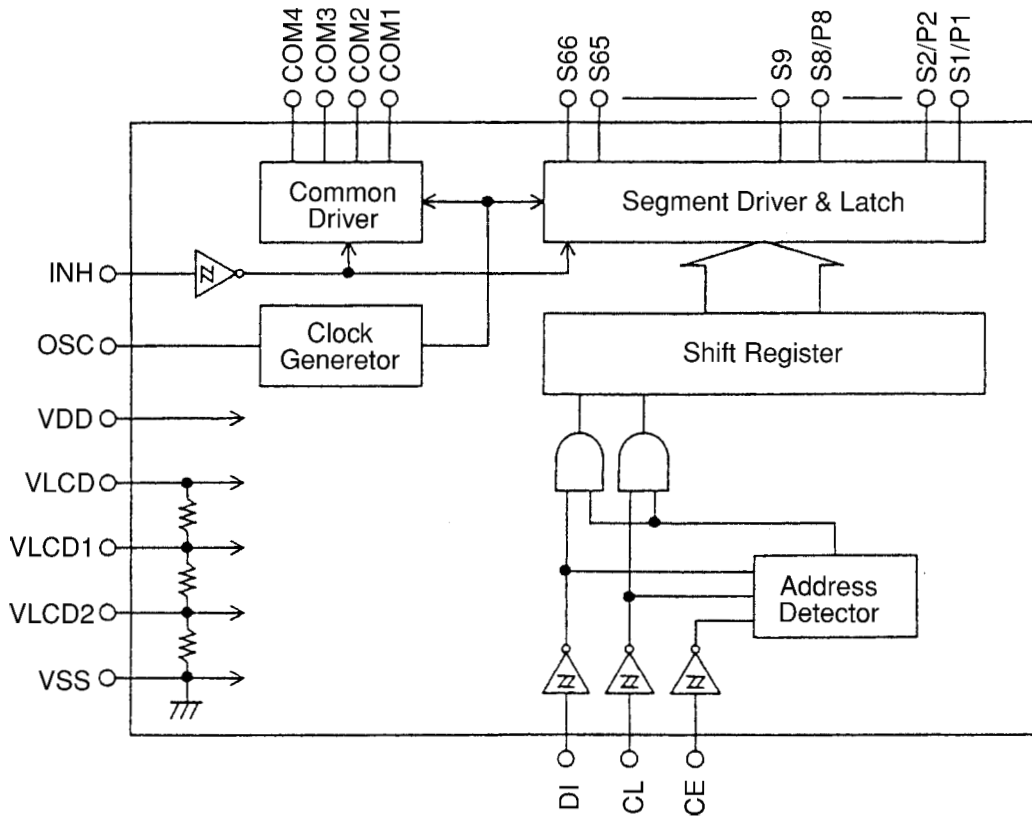
Pin No.	Signal Name	I/O	Function	Active
1	RES	I	Reset signal.	
2	XTAL	---	CPU clock (6MHz).	
3	EXTAL	---	CPU clock (6MHz).	
4	MD1	I	CPU mode select input.	
5	MDO	I	CPU mode select input.	
6	NMI	I	Grounded.	
7	STBY	I	Grounded.	
8	VCC	---	+5V	
9	CLK-IN	I	S-BUS clock input (SCI).	
10	DAT-IN	I	S-BUS data input (SCI).	
11	SYS-ON	O	System on signal.	H
12	Vss	---	GND	
13	NC	---	Not used.	
14	NC	---	Not used.	
15	NC	---	Not used.	
16	NC	---	Not used.	
17	NC	---	Not used.	
18	BSENS	I	Battery voltage sensing input.	
19	ACC-CNT	I	ACC control signal.	
20	SQCK	O	Not used.	
21	KEY1	I	key 1 input signal.	
22	KEY2	I	key 2 input signal.	
23	SCOR	I	Grounded.	
24	LD-PLS	I	Loading pulse.	
25	UD-PLS	I	Up/Down pulse.	
26	KEY3	I	key 3 input signal.	
27	KEY4	I	key 4 input signal.	
28	KEY5	I	key 5 input signal.	
29	AVCC	---	+5V	
30	SENSE	I	Grounded.	
31	SQSO	I	Grounded.	
32	FOK	I	Grounded.	
33	GFS	I	Grounded.	
34	UD-HOME	I	Up/down reference position signal.	
35	DOOR	I	Door open signal.	
36	SHUTTER	I	Shutter signal	
37	LD-INOUT	I	Loading in signal.	
38	AVSS	---	GND	
39	DLOCK	I	Disc lock signal.	
40	DCNT	I	Disc count signal.	
41	DCNT-HOME	I	Disc count home position	
42	UD-UP	O	Up/down-motor down drive output.	H
43	UD-DOWN	O	Up/down-motor up drive output.	H
44	DSPSEL	I	DSP select signal.	
45	FRONT	O	Loading-motor rear drive output.	H
46	REAR	O	Loading-motor front drive output.	
47	VCC	---	+5V	
48	NC	---	Not used.	
49	NC	---	Not used.	
50	NC	---	Not used.	

(to be continued)

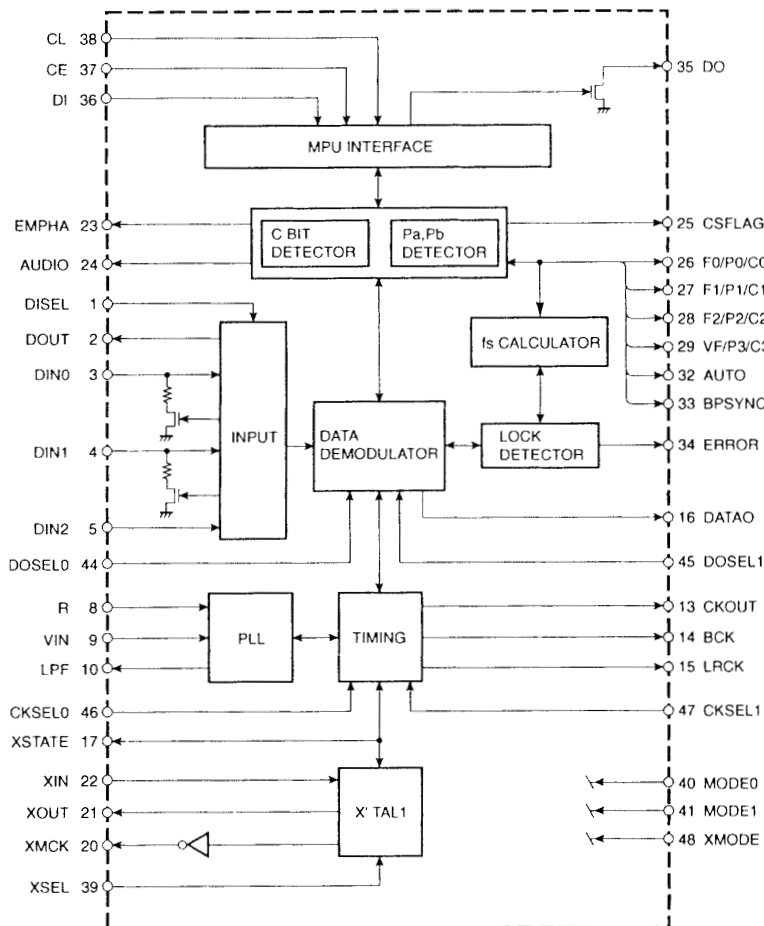
IC BLOCK DIAGRAMS

Pin No.	Signal Name	I/O	Function	Active
51	NC	---	Not used.	
52	NC	---	Not used.	
53	NC	---	Not used.	
54	NC	---	Not used.	
55	NC	---	Not used.	
56	VSS	---	GND	
57	NC	---	Not used.	
58	NC	---	Not used.	
59	NC	---	Not used.	
60	DATA	O	Not used.	
61	TR-ON	O	Not used.	
62	LDON	O	Not used.	
63	CDRST	O	Not used.	
64	ENCLK	O	Not used.	H
65	LED1	O	Disc 1 LED drive output.	H
66	LED2	O	Disc 2 LED drive output.	H
67	LED3	O	Disc 3 LED drive output.	H
68	LED4	O	Disc 4 LED drive output.	H
69	LED5	O	Disc 5 LED drive output.	H
70	NC	---	Not used.	
71	NC	---	Not used.	
72	NC	---	Not used.	
73	VSS	---	GND	
74	ST-DOWN	O	Stocker-motor down drive output.	H
75	ST-UP	O	Stocker-motor up drive output.	H
76	CLK	O	Not used.	
77	MUTE	O	Not used.	
78	DAT-OUT	O	S-BUS data out signal.	
79	XLAT	O	Not used.	
80	CLK-OUT	O	S-BUS clock out signal.	

7.8 LC75874E (LCD driver) - IC601 on Front P.C.B. Ass'y



7.9 LC89055W (Digital audio interface receiver) - IC103 on Digital P.C.B. Ass'y



7.10 MN66261 (CD signal processor) - IC490 on DVD Main P.C.B. Ass'y

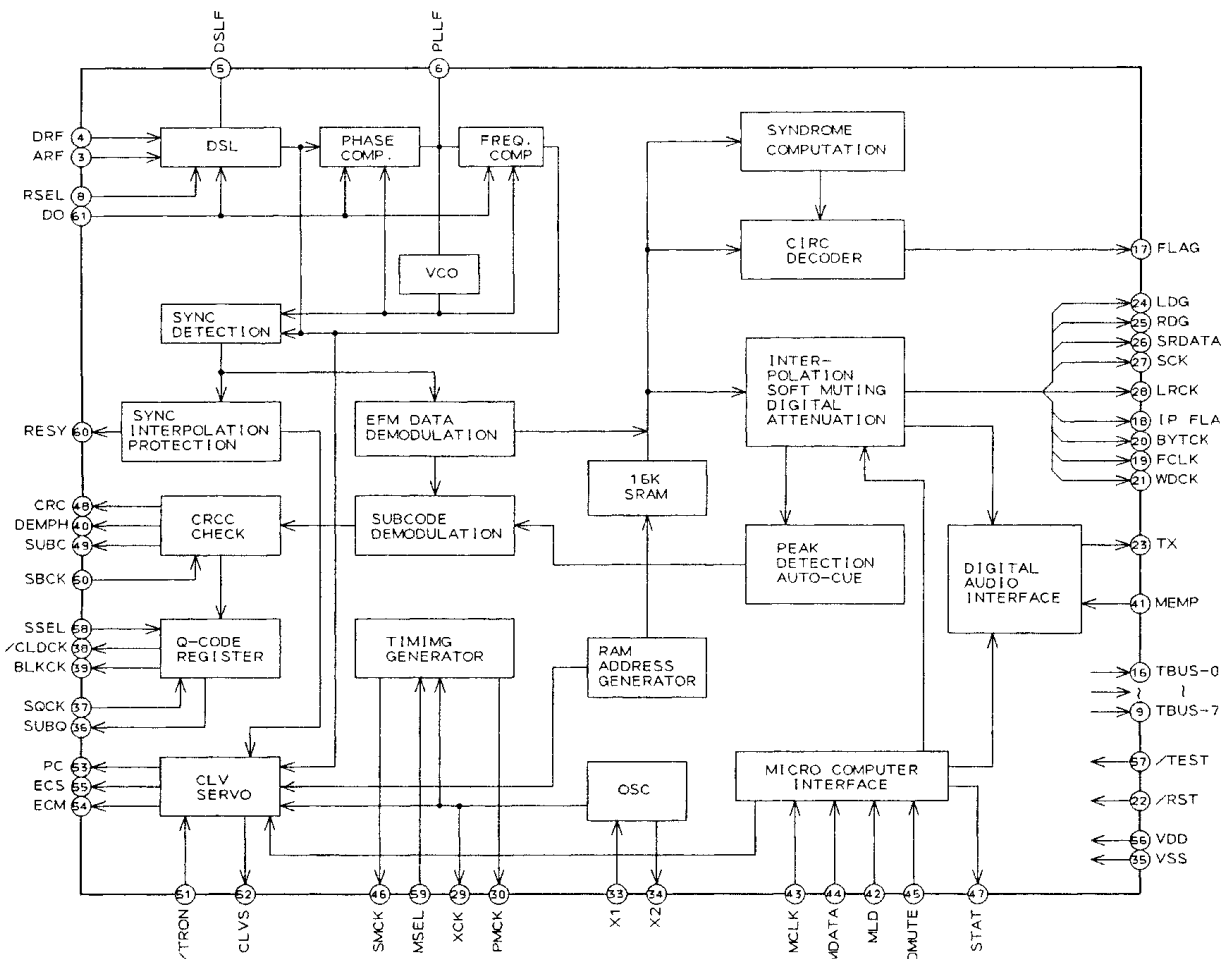
Pin No.	Port Name	I/O	FUNCTION
1	AVSS	---	Ground pin for DSL, PLL circuit.
2	IREF	I	Reference current input pin.
3	ARF	I	RF signal input pin.
4	DRF	---	Bias pin for DSL.
5	DSLIF	O	Loop filter pin for DSL.
6	PLLIF	I/O	Loop filter pin for PLL.
7	AVDD	---	+5 V power supply pin for DSL, PLL.
8	RSEL	---	RF signal polarity setting pin. (Brightness level : H-> RSEL: H)
9-16	TBUS0-7	O	Test pins. Normally, these pins are open circuit.
17	FLAG	O	Flag output pin.
18	IPFLAG	O	Interpolation flag pin. (H: interpolate)
19	FCLK	O	Frame clock output (from crystal OSC). (fCLK=7.35 kHz, 14.7 kHz when dubble speed)
20	BYTCK	O	Byte clock out.
21	WDCK	O	Word clock out.
22	/RST	I	Reset input pin (L: reset).
23	TX	O	Digital audio interface output.
24	LDG	O	L-CH deglitch signal output.
25	RDG	O	R-CH deglitch signal output.
26	SRDATA	O	Serial data output.
27	SCK	O	Bit clock output for SRDATA.
28	LRCK	O	Left-right discrimination clock output.
29	XCK	O	Crystal OSC clock output (fXCK=16.9344 MHz).
30	PMCK	O	1/192 counted down clock signal from the crystal OSC. (fPMCK=88.2 kHz)
31	CSEL	I	Crystal OSC frequency select pin. (L: 16.9344 MHz, H: 33.8688 MHz)
32	PSEL	---	Test pin (normally, open circuit).
33	X1	I	Crystal connecting pin. (f=16.9344 MHz or 33.8688 MHz)
34	X2	O	Crystal connecting pin. (f=16.9344 MHz or 33.8688 MHz)
35	VSS	---	Ground pin.
36	SUBQ	O	Subcode Q output.
37	SQCK	I	External clock input for Subcode Q register.
38	/CLDCK	O	Subcode frame clock signal output. (fCLDCK=7.35 kHz in normal palyback)
39	BLKCK	O	Subcord block clock signal. (fBLOCK= 75 Hz in normal playback)
40	DEMPH	O	De-emphasis control output. (H: de-emphasis on)
41	MEMP	I	Emphasis signal input for digital audio interface.
42	MLD	I	MI-COM command LOAD signal input. (L: LOAD)
43	MCLK	I	MI-COM command CLOCK signal input. (Data will be latched with rising edge of the pulse)
44	MDATA	I	MI-COM command DATA input.
45	DMUTE	I	Muting input.
46	SMCK	O	1/2 counted down crystal OSC signal output when MSEL=H. 1/4 counted down crystal OSC signal output when MSEL=L.
47	STAT	O	Status signal output (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK).
48	CRC	O	Subcode CRC check output. (H: OK, L: no good)
49	SUBC	O	Subcode serial output data.
50	SBCK	I	Clock input for subcode serial output.
51	/TRON	I	Tracking servo on signal. (L: tracking on)
52	CLVS	O	Spindle servo phase synchronization judge output. (H: CLV, L: rough cervo)
53	PC	O	Spindle motor on signal (L= on).
54	ECM	O	Spindle motor drive signal output (forced mode, 3-state).
55	ECS	O	Spindle motor drive signal output (servo error signal, 3-state).
56	VDD	---	+5V power supply.

(to be continued)

IC BLOCK DIAGRAMS

Pin No.	Port Name	I/O	FUNCTION
57	/TEST	I	Test pin (normally, H)
58	SSEL	I	Output mode select pin for SUBQ pin. (H: Q-code buffer is used)
59	MSEL	I	Output frequency select pin for SMCK pin. (H: SMCK=8.4672 MHz, L: 4.2336 MHz)
60	RESY	O	Re-synchronization signal of the frame synchronization signal. (H: synchronized, L: not synchronized)
61	DO	I	Drop out signal (H: drop out)
62	EFM	O	EFM signal output.
63	PCK	O	PLL extraction clock output. (fPCK=4.3218 MHz in normal playback)
64	PDO	O	Phase comparison signal between EFM and PCK signal.

MN66261 (CD signal processor) - IC490 on DVD Main P.C.B. Ass'y



7.11 MB90574 (CPU/System control MI-COM) - IC600 on DVD Main P.C.B. Ass'y

Pin No.	Port Name	I/O	FUNCTION
1	RDX	O	System bus read strobe signal output.
2	WEX	O	System bus lower 8 bit write strobe signal output.
3	BOOT	O	Ziva MI-COM transmission control output.
4	CDLOW	O	Disc judge output.
5	LD.SW1	O	Laser control output 1.
6	N.C	---	Not used.
7	LD.SW2	O	Laser control output 2.
8,54,94	Vcc	---	+5 V power supply pin.
9	DACML.C3	O	Audio DAC serial latch output.
10	DACMC.C3	O	Audio DAC serial clock output.
11	DACMD.C3	O	Audio DAC serial data output.
12	OPE.DOUT	I	Serial data input from the output control MI-COM.
13	OPE.DIN	O	Serial data output to the output control MI-COM.
14	OPE.CLK	I	Serial clock input from the output control MI-COM.
15	CHG.V.C2	O	PWM out ut for data slice level control of the read channel MI-COM.
16	LMVC	O	PWM output for disc changer tray rotation control.
17	XAVRST	O	Reset control output for the Ziva-3 MI-COM.
18	SYS.XBSY	O	Serial data ready/busy output to the output control MI-COM.
19	DVD.L	O	DVD/CD laser select control output.
20	SUBQ	I	CD-DSP Q data input.
21	OLD.M3	I	New M3 / Old M3
22	SQCK	O	Clock output for CD-DSP Q data.
23	REG 95	O	Register 0x95 write input. (Low)
24	CRCOK	I	Sector ID error O.K. input.
25	XAVLP	I	Ziva LP operation setting pin.
26	XDAMUTEO	O	Audio section mute control output. (L: mute on)
27	IECSEL	O	IEC958 digital out select output. (L: Ziva, H: CD)
28	XDAMUTE1	O	Audio section mute control output. (L: mute on)
29	CLKSEL1	O	Clock generator SRO control output. (L: normal, H: double)
30	CLKSEL2	O	Clock generator FSO control output. (L: 48 kHz, H: 44.1 kHz)
31	SYSRST	O	System reset output.
32	DRPOUT	I	Drop out input.
33,63,91,119	Vss	---	Ground pin.
34	C	---	Capacitor connecting pin.
35	PAL/NTSC	O	Video decoder PAL/NTSC select output.
36	ENRST	O	Video encoder IC reset output.
37	XDARST	O	DAC reset output.
38	DVcc	---	+5 V power supply pin for digital circuit.
39	DVss	---	Ground pin for digital circuit.
40	FCSBAL	I	Focus balance adjustment input.
41	TRKBAL	I	Tracking balance adjustment input.
42	Avcc	---	+5 V power supply pin for analog circuit.
43	AVRH	I	Connect to +5 V.
44	AVRL	I	Connect to ground.
45	Avcc	---	Ground pin for analog circuit.
46	TE	I	A/D input for disc judge signal 1 (Tracking error).
47	RFENV	I	A/D input for disc judge signal 2 (RF envelope).
48	FE	I	A/D input for disc judge signal 3 (FOCUS error).
49	JIT.OUT	I	A/D input for jitter out.
50	DASW1	O	Audio DAC L/R channel input data select control output.

(to be continued)

IC BLOCK DIAGRAMS

Pin No.	Port Name	I/O	FUNCTION
51	SL.KICK	O	SLED. KICK
52	VREFM	O	TRD offset adjust input.
53	N.C	---	Not used.
55	DASW0	O	Audio DAC mix channel input data select control output.
56	N.C	---	Not used.
57	DEC.CS	O	Ziva MI-COM chip select output.
58	XDACS1	O	Audio DAC (L/R) chip select output.
59	XDACS2	O	Audio DAC (SL/SR) chip select output.
60	XDACS3	O	Audio DAC (C/SUBW) chip select output.
61	XDACS0	O	Audio DAC (MIXL/MIXR) chip select output.
62	CHG.V.C	O	Disc changer motor control output.
64	DISC.CHK	I	Disc judge assist.
65	M3C1	I	M3C1/C3M1 setting control input.
66	DVCD	O	OFTR threshold level / TE Gain select output.
67	AVRTM	I	ECC interruption request input (end of output stream of 2060 bytes data) .
68,69	DGND	---	Ground for digital section.
70	SDA	I/O	Serial data in/out from/to EEP-ROM & video encoder.
71	SCL	O	Serial clock output to the EEP-ROM & video encoder.
72	STAT	I	CD-DSP status input.
73	X0A	---	Not used.
74	X1A	---	Not used.
75	XSRTM	I	ECC interruption request input (end of block signal).
76	XINT.DEC	I	Interruption request from the Ziva MI-COM.
77	XINT.SER	I	Interruption request from the servo MI-COM.
78	OPEN-SW	I	Disc tray open detect input pin.
79	CLOSE-SW	I	Disc tray close detect input pin.
80	CLAMP-SW	I	Disc changer tray position detect input pin.
81	PHOT-IN	I	Disc changer tray position detect photo sensor input pin.
82	LOAD.F	O	Loading motor direction control output.
83	LOAD.R	O	
84	CHG.M.R	O	Disc changer motor control output.
85	CHG.M.F	O	
86	HSTX	I	hardware standby pin. (Pulled up)
87-89	MD0-MD2	I	Bus mode setting pins.
90	RSTOUT	I	Reset signal input from the output control MI-COM.
92	X0	I	4 MHz crystal connecting pin.
93	X1	O	
95-102	HAD00-HAD07	I/O	S stem bus serial data/address I/O pins.
103-116	HA08-HA21	O	System bus address output pins.
117,118	HA22,HA23	O	System bus address output pins for chip select circuit.
120	ALE	O	System bus address latch enable output.

7.12 MN67700 (Servo Processing IC) - IC300 on DVD Main P.C.B. Ass'y

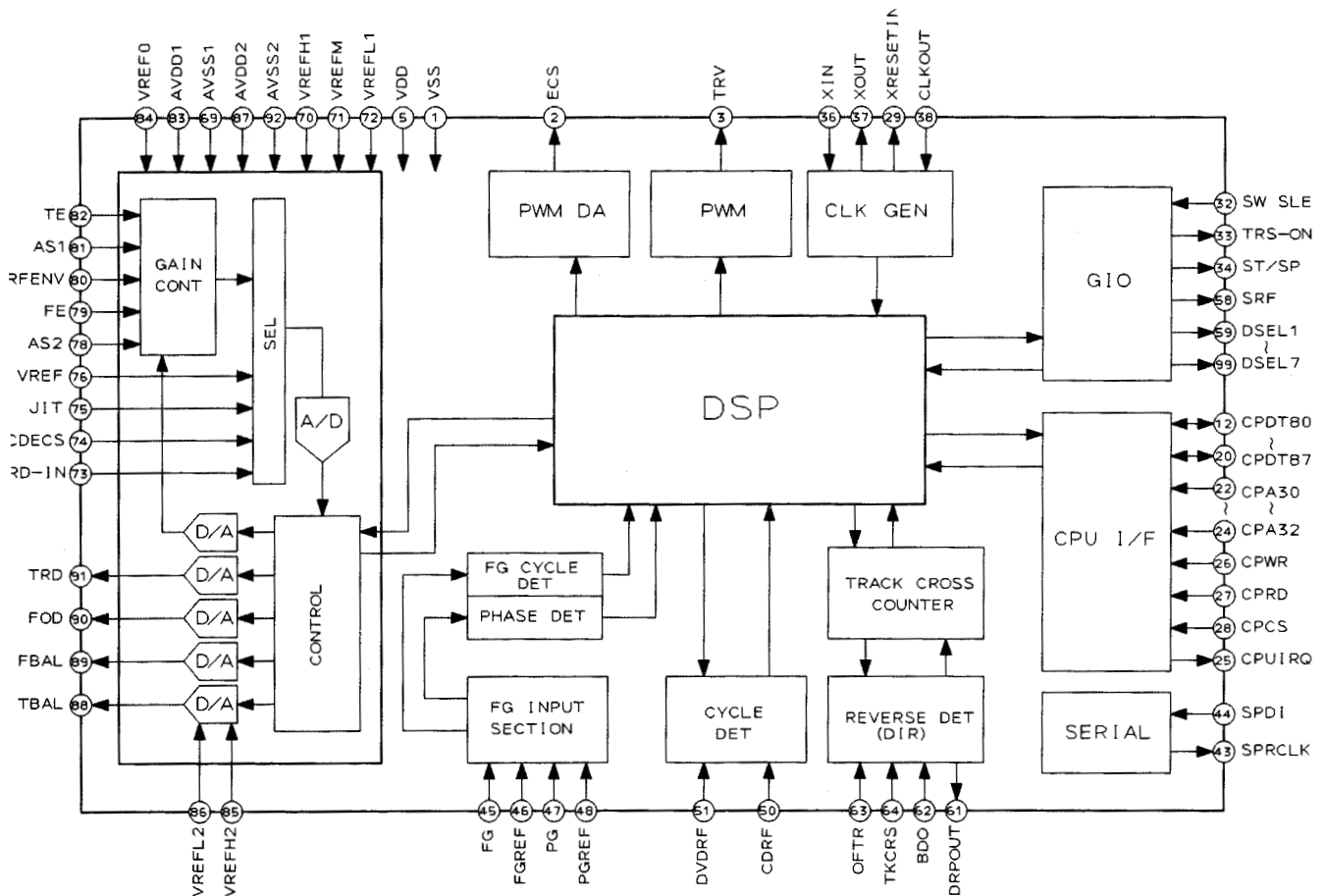
Pin No.	Port Name	I/O	FUNCTION
1	VSS	---	Ground pin for digital circuit.
2	ECS	O	Spindle motor drive signal output.
3	TRV	O	Traverse (sled motor) drive signal output.
4,6-11	N.C	---	No connection.
5,21,39,55	VDD	---	Power supply for digital circuit.
12-15,17-20	CPDT80-87	I/O	CPU I/F data I/O pins.
16,35,60	VSS	---	Ground for digital circuit.
22-24	CPA30-32	I	CPU I/F address input pins.
25	CPUIRQ	O	CPU interruption signal output.
26	CPWR	I	CPU I/F write strobe input pin.
27	CPRD	I	CPU I/F read strobe input pin.
28	CPCS	I	CPU I/F chip select input pin.
29	XRESETIN	I	Reset signal input. (L: reset)
30	CRCOK	I	ID check signal input pin from the DEM/ECC MI-COM.
31	GIO01	---	No connection.
32	SW SLE	I	Traverse innermost position detect signal input.
33	TRS-ON	O	Tracking servo on signal. (H: tracking servo on)
34	ST/SR	O	Spindle motor drive (start / stop) control output (H: start).
35	VSS	---	Ground for digital circuit.
36	XIN	I	Crystal connecting pin (40 MHz).
37	XOUT	O	Crystal connecting pin (40 MHz).
38	CLKOUT	O	Clock output (1/2 counted down of the crystal OSC).
40	SPEN	O	Serial enable output pin.
41	SPWCLK	O	Serial write signal synchronization clock.
42	SPDO	O	Serial data output pin.
43	SPRCLK	O	Serial clock output pin.
44	SPDI	I	Serial data input pin.
45	FG	I	FG (frequency generator) signal input pin.
46	FGREF	I	FG (frequency generator) reference signal input pin.
47	PG	I	PG (pulse generator) signal input pin. (VCO/3456 XCK=27 MHz)
48	PGREF	I	PG (pulse generator) reference signal input pin. (XCK/3456 XCK=27 MHz)
49,56,57,77	N.C	---	No connection.
50	CDRF	I	CD-RF signal input.
51	DVDRF	I	DVD-RF signal input.
52-54	MON0-2	O	Internal monitoring signal.
58	SRF	O	Head AMP gain select control.
59,66,95-99	DSEL1-7	O	VCD setting pins.
61	DRPOUT	O	Drop out signal output. (H: drop out)
62	BDO	I	Black drop out signal input. (H: black drop out)
63	OFTR	I	Off track signal input. (H: off track)
64	TKCRS	I	Track cross signal input pin.
65	RSV1	I	Test pin (normally open).
67	RSVO	I	Test pin (normally open).
68	TESTA	I	Test mode setting pin (normally open).
69	AVSS1	I	Ground for analog circuit.
70	VREFH1	I	AD high level reference voltage input pin (3.75V).
71	VREFM	I	AD middle reference voltage input pin (2.5V).
72	VREFL1	I	AD low level reference voltage input pin (1.25V).
73	TRD-IN	I	Tracking drive voltage input pin. (This pin is connected to 91 pin)
74	CDECS	I	CD spindle motor drive signal input.

(to be continued)

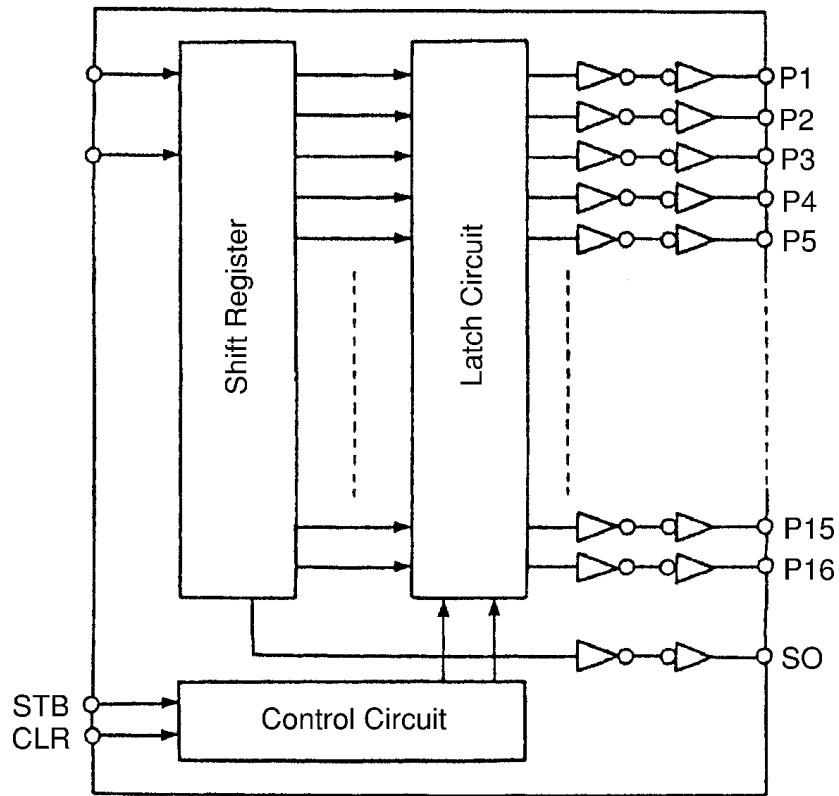
IC BLOCK DIAGRAMS

Pin No.	Port Name	I/O	FUNCTION
75	JIT	I	Jitter level signal input.
76	VREF	I	Reference voltage input.
78	AS2	I	PD all addition signal input.
79	FE	I	Focus error signal input.
80	RFENV	I	RF envelope signal input.
81	AS1	I	Addition signal of inner 4 divided PD.
82	TE	I	Tracking error signal input.
83	AVDD1	I	Power supply for analog circuit.
84	VREF0	I	Analog reference voltage input (2.5V).
85	VREFH2	I	Analog high level reference voltage input (3.75V).
86	VREFL2	I	Analog low level reference voltage input (1.25V).
87	AVDD2	I	Power supply for analog circuit.
88	TBAL	O	Tracking balance adjust output.
89	FBAL	O	Focus balance adjust output.
90	FOD	O	Focus drive signal output.
91	TRD	O	Tracking drive signal output.
92	AVSS2	I	Ground pin for analog circuit.
93	TESTD	I	Test mode setting pin (normally open).
94	MINTST	I	Test mode setting pin (normally open).
100	PWMCTL	I	PWM output control signal input (normal: L).

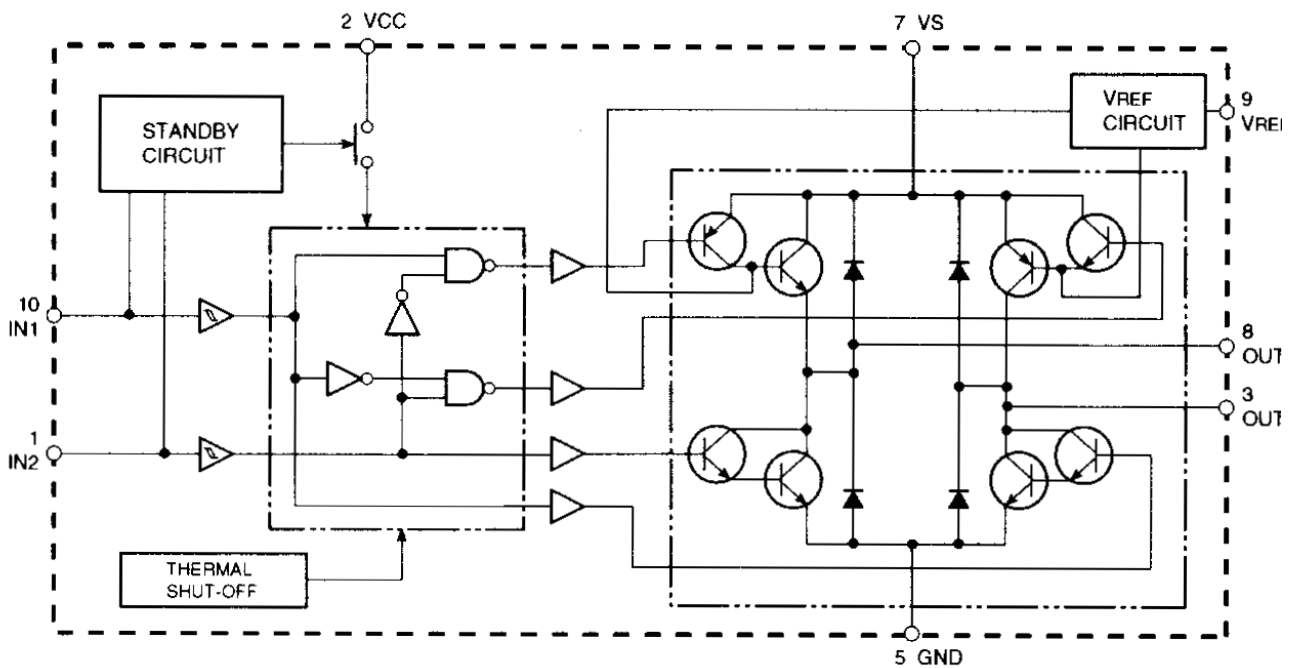
MN67700 (Servo processing) - IC300 on DVD Main P.C.B. Ass'y



7.13 NJU3716 (16-bit Serial-to-parallel converter) - IC602 on Front P.C.B. Ass'y



7.14 TA8409F (Motor driver) - U105, 106, 107, 108 on Mechanism P.C.B. Ass'y



7.15 μ PD78F4225YGC (System Controller) - IC500 on Digital P.C.B. Ass'y

Pin No.	Signal Name	I/O	Function
1	NC	---	Grounded.
2	NC	---	Grounded.
3	NC	---	Grounded.
4	AVSS	---	GND
5	XINH	O	LCD display OFF signal.
6	CE	O	LCD driver IC enable signal.
7	AVREF1	---	+5V
8	COM-SI	I	Serial data input.
9	COM-SO	O	Serial data output.
10	COM-CLK	O	Serial clock output.
11	DVD-SI	I	Serial data input for DVD.
12	DVD-SO	O	Serial data output for DVD.
13	DVD-CLK	O	Serial clock output for DVD.
14	READY/BSY	I	READY/BUSY input for DVD.
15	ACCCONT	O	MB mechanism operation/standby control output.
16	MB-SI	I	Serial data input for MB mechanism. (Serial data input for flash ROM writing.)
17	FROM-SO	O	Serial data output for CD mechanism. (Serial data output for flash ROM writing.)
18	MB-CLK	I	Serial clock input for MB mechanism. (Serial clock input for flash ROM writing.)
19	CLKOUT	O	Serial clock output for MB mechanism.
20	DATOUT	O	Serial data output for MB mechanism.
21	DSPSEL	O	Motor quasi control output for DVD MPU.
22	DW-AMUTE	O	Down mix audio mute signal.
23	F-AMUTE	O	Front (L/R) audio mute signal.
24	R-AMUTE	O	Rear (L/R) audio mute signal.
25	C-AMUTE	O	Center audio mute signal.
26	S-AMUTE	O	Sub-woofer audio mute signal.
27	ST-DSP1	O	DSP1 strob signal.
28	ST-DSP2	O	DSP2 strob signal.
29	ST-DIR	O	DIR strob signal.
30	DI-SEL	O	Serial data input select signal from DSP and DIR.
31	XDIR-RST	O	DIR reset signal.
32	XDSP-RET	O	DSP reset signal.
33	VSS1	---	GND
34	XDAC-RST	O	D/A converter reset signal.
35	ST-CONF	O	SP CONF strob signal.
36	DIR-ERR	I	DIR error input signal.
37	DOFF	O	Digital audio output OFF signal.
38	XCLR	O	LCD drive IC clear signal.
39	XSTB	O	LCD drive IC chip enable signal.
40	NC	---	Not used.
41	DVD/XTV	O	DVD/TV change control signal of 21 pin SCART output. (EP,BS model only)
42	21SQ	O	16:9 squeeze pictures control signal of 21 pin SCART output. (EP,BS model only)
43	RGB	O	21 pin SCART connector setting signal (EP,BS model only).
44	XS	O	21 pin SCART connector setting signal (EP,BS model only).
45	S1	O	16:9 squeeze pictures control signal of S-Video terminal. (DM model only)
46	DVDVMUTE	O	DVD video mute signal.
47	NC	---	Not used.
48	NC	---	Not used
49	REM	I	Remote sensor input signal.
50	DZFR	I	DVD audio zero signal.

(to be continued)

IC BLOCK DIAGRAMS

Pin No.	Signal Name	I/O	Function
51	DZFL	O	DVD audio zero signal.
52	OPEN	O	Open SW output to DVD.
53	CLOSE	O	Close SW output to DVD.
54	DVRST	O	DVD reset signal.
55	LM1	I	DVD tray motor control terminal signal.
56	LM2	I	DVD tray motor control terminal signal.
57	CTL5V	O	5V control output for DVD.
58	CTL11V	O	11V control output for DVD.
59	P.ON	O	Power ON signal
60	RESET	I	Reset signal.
61	NC	---	Not used.
62	P-OFF	I	Power OFF detect signal.
63	NC	---	Not used.
64	NC	---	Not used.
65	NC	---	Not used.
66	NC	---	Not used.
67	VSS0	---	GND
68	VDD1	---	+5V
69	X2	O	Crystal connecting terminal.
70	X1	I	Crystal connecting terminal.
71	TEST/VPP	I	IC test pin.
72	NC	---	Not used.
73	NC	---	Not used.
74	VDD0	---	+5V
75	AVDD	---	+5V
76	KIN1	I	Key input 1 signal.
77	KIN2	I	Key input 2 signal.
78	NT/PAL	I	NTSC/PAL detect signal.
79	AREA	I	Destination setting signal.
80	MODEL	I	Model setting signal.

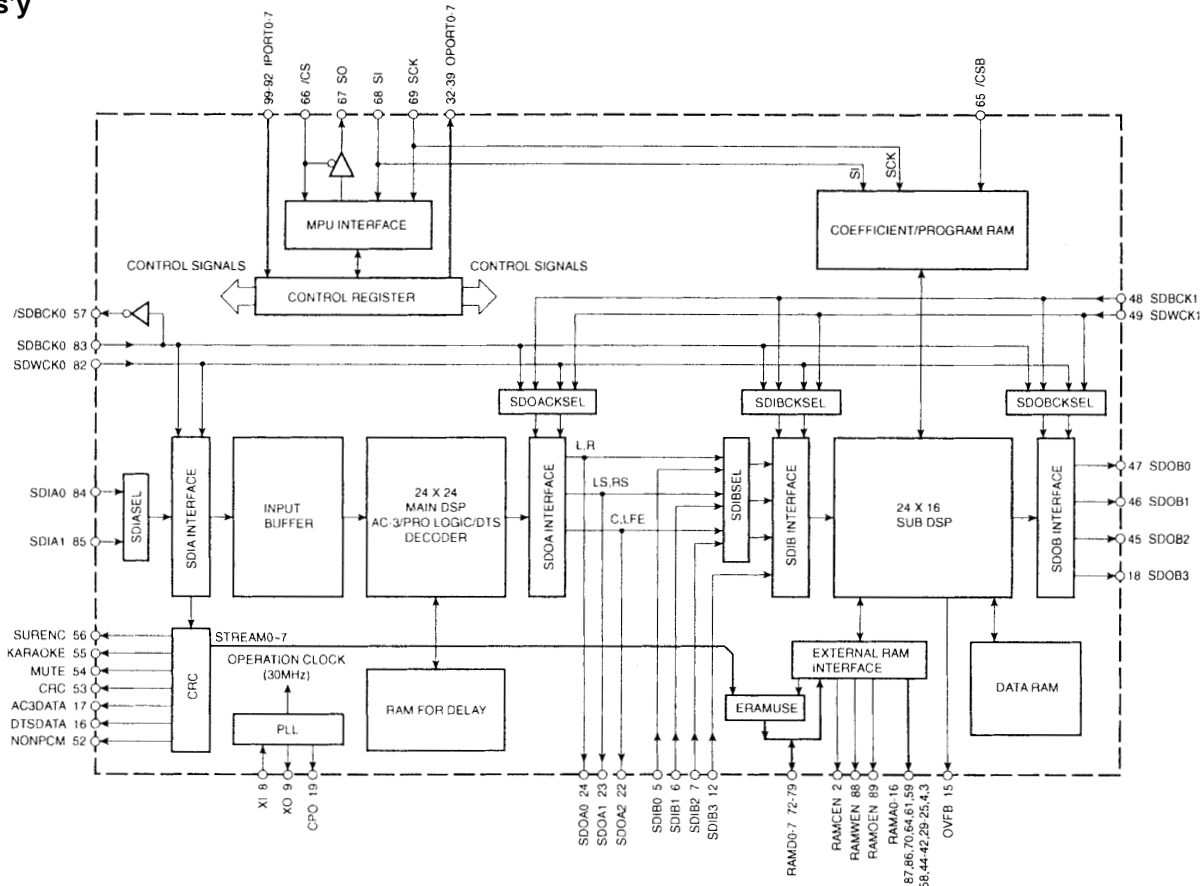
7.16 CYC13D000 (DVD Sync /ECC / Formatter) - IC500 on DVD Main P.C.B. Ass'y

Pin No.	Port Name	I/ O	FUNCTION
1,12,26,35,46 52,63,73,81 95,105,118 131,142,156 170,182,195	VSS1-18	---	Grounded.
2	SEL0	---	Grounded.
3	SEL1	---	Test mode select pins.
4-6,8,10,11 14-22,28,29 116,117,119 125,126,132 171-174,194 197-206	TEST 9-46	---	Test mode output pins. (Leave them open)
7	AVRTM	O	End of output stream of 2060 bytes data to CSS.
9	XSRTM	O	End of block signal.
13,25,33,45, 53, 62,72,140, 157,169,196,208	VDD-5 1-12	---	+5 V power supply.
23	MLD	O	Microprocessor command load signal for CD-DA section. (L: load).
24	MCLK	O	Microprocessor command clock signal for CD-DA section. (data is attached on rising edge)
27	MDATA	O	Microprocessor command data for CD-DA section.
30	DEMPH	I	De-emphasis control input (H: on).
31	DMUTE	O	Muting output for CD-DA section.
32	STAT	I	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK) from CD-DA, STAT also goes to CPU.
34	PLLCLK	I	27 MHz clock input pin.
36	CHNDATA	I	Inverted bit data, which is changed on the falling edge of PLLCLK.
37	SDTIO	I/O	Serial bit data I/O.
38	ASPSCK	O	296ns clock (27 MHz/8) output.
39	SEN	O	High enable CPU to write data to 8 read-channel registers.
40	PLLOK	O	DVD frame sync (H: O.K)
41	LDON	O	Turn on the Laser diode.
42	XDVD	O	DVD mode control output.
43	XCD2	O	2X CD mode control output.
44	XCD4	O	4X CD mode control output.
47-51,54-56	SRMDT0-7	I/O	SRAM data bus.
57-61 ,64-71 74-77	SRMADR0-16	O	SRAM address bus.
78	XSRMCE	O	Chip enable signal to SRAM.
79	XSRMOE	O	Output enable signal to SRAM.
80	XSRMWE	O	Write enable signal to SRAM.
82,84,104 114,175,184	VDD-3 1-6	---	+3.3 V power supply.
83-90	SDMDT0-7	I/O	SDRAM data bus.
91-93 96-103,106	SDMADR0-11	O	SDRAM address bus.
107	SDMRAS	O	SDRAM row address strobe output.
108	SDMCAS	O	SDRAM column address strobe output.
109	SDMWE	O	SDRAM write enable output.
110	SDMDQML	O	SDRAM lower byte input/output mask.
111	SDMCLK	O	Clock signal output to SDRAM.
112	SDMCS	O	SDRAM chip select control.
113	SDMDQMU	O	SDRAM upper byte input/output mask.
115	SDMCKE	O	SDRAM clock enable.
120	XDSCO	O	Chip select signal to the SERVO MI-COM.
121	CRCOK	O	Sector IDs are O.K.

(to be continued)

Pin No.	Port Name	I/O	FUNCTION
122-124	CPUADR0-2	O	(Video/Audio) HAL [2:0], V/A decoder, CPU address bus.
127-130 133-139 143-152	CPUADT0-20	I/O	CPU address / data bus.
141	XRESET	I	Global reset input.
153	XALE	I	Address latch enable input.
154	XRE	I	Read strobe.
155	XINTO	O	ECC interrupt request.
158	XW E H	I	Write strobe signal.
159	XWA IT	O	CPU wait state control.
160-167	HSTBUS0-7	---	Not used.
168	XHSTCS	---	Not used.
176	STENABLE	I	Stream data request.
177-184 185-187	STD0-7	O	Output stream data bus.
183	GENCLK	I	27 MHz clock input.
188	STCLK	O	Output stream data transfer clock, falling edge active, 6.75 MHz.
189	STVALID	O	Output stream data valid.
190	XVCS	O	Latched video decoder chip select.
191	XVDS	O	CPU read/write strobe.
192	HRXW	O	CPU write strobe, XWEH
193	ASCK	O	Latched audio decoder chip select.
207	SELCPU	I	1 : data corresponds to CPUADT15-8. 0: data corresponds to CPUADT7-0.

7.17 YSS912 (Dolby digital(AC3) / prologic / DTS decoder & programmable DSP) - IC101 on Digital P.C.B.
Ass'y



7.18 Advanced DVD decoder with integrated Audio DSP

ZIVA-3 (MPEG AV decoder) - IC700 on DVD Main P.C.B. Ass'y

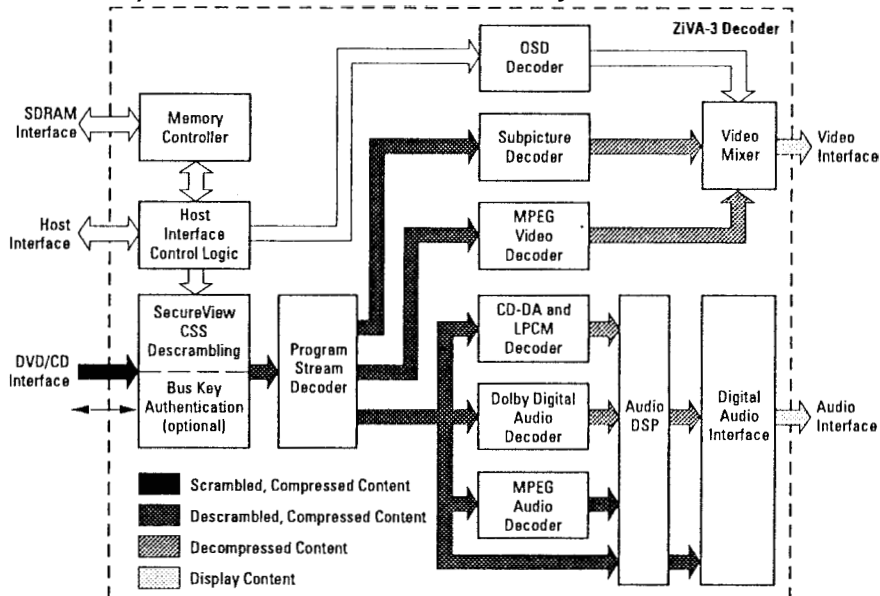
Pin No.	Port Name	I/O	FUNCTION
122-124 133,138,141 147,153,156 174,190	PIO0-10	I/O	Programmable I/O pins.
2-4,6,8-11	HDATA0-7	I/O	8 bit bi-directional host data bus.
5,12,17,27 36,40,47,55 66,65,69,75 81,87,91,95 101,107,113 117,123,134 149,160,181 193	VDD1-29	---	+3.3 V power supply pins.
7,14,19,29 38,42,49,57 66,67,71,77 83,89,93,97 119,125,136 146,151,162 170,183,195 199	VSS1-29	---	Ground pins.
13	RESET	I	Hardware reset pin.
15	WAIT/DTACK	O	Transfer not complete / data acknowledge.
16	INT	O	Host interrupt.
21-26,28,30	HDATA8-15	I/O	Programmable I/O pins. Input mode after reset.
31-35,37,39 41,43-46	HADDR12-23	I/O	Programmable I/O pins. Output mode after reset.
51,130	NC	---	Not used.
53,54,56,58 59,60,62,64 66,68,70,72 73,74,76,78	MDATA0-15	I/O	Memory data.
79	LDQM	O	SDRAM LDQM.
80	UDQM	O	SDRAM UDQM.
82	MWE	O	SDRAM write enable.
84	SD-CLK	O	SDRAM system clock.
85	SD-CAS	O	Active low SDRAM column address.
86	SD-RAS	O	Active low SDRAM row address.
88,90	SDCS0,1	O	Active low SDRAM back select.
92	EDO-CAS	O	EDO column address (Not used).
94	EDO-RAS	O	EDO row address (Not used).
96,98-100 102,104-106 108,110-112	MADDR0-11	O	Memory address output.
114,115,116 120-122,124 126,127	HADDR3-11	O	Memory address output (Not used).
128	ROM-CS	O	Not used.
131,132,135 137,139,140	VDDA-F	---	Connect to +3.3 V power supply line.
142,143,145 148,150,152 154,155	VDATA0-7	O	Video data bus.
157	HSYNC	I/O	Horizontal sync.
158	VSYSN	I/O	Vertical sync.
159	DA-IEC	O	Bit stream data in IEC-1937 or PCM data out in IEC-958 format.

(to be continued)

Pin No.	Port Name	I/O	FUNCTION
161,163-165	DA-DATA0-3	O	PCM data out, eight channels. Serial audio samples relative to DA-BCK clock.
166	DA-LRCK	O	PCM left/right clock. Identifies the channel for each audio sample.
167	DA-BCK	O	PCM bit clock output.
169	DA-XCK	O	Audio master frequency clock.
171	DAI-DATA	I	PCM input DATA (Not used).
172	DAI-LRCK	I	PCM input LRCK (Not used).
173	DAI-BCK	I	PCM input BCK (Not used).
175	CLKSEL	I	Clock select pin. (H: Internal, L: External)
176	A-VDD	---	+3.3 V power supply for analog section.
177	VCLK	O	Video clock. (27 MHz)
178	SYSCLK	I	System clock input. Decoder requires an external 27 MHz TTL oscillator.
179	A-VSS	---	Analog ground for PLL.
180	DVD-DATA0 /CD-DATA	I	Serial CD data.
182	DVD-DATA1 /CD-LRCK	I	DVD DATA1 input or CD-LRCK input.
184	DVD-DATA2 /CD-BCK	I	DVD DATA2 input or CD bit clock input.
185	DVD-DATA3 /CD-C2PO	I	DVD DATA3 input. Asserted HIGH indicates a corrupted byte.
186-189	DVD-DATA4-7 CDG-4-7	I	DVD parallel compressed data from DVD DSP or CDG-SDATA/VSFY/S0S1/SCLK signal input.
191	VREQUEST	O	Video request. Decoder asserts VREQUEST to indicate that the video input buffer has available space.
192	VSTROBE	I	Video strobe signal input.
194	AREQUEST	O	Audio request. Decoder asserts AREQUEST to indicate that the audio input buffer has available space.
196	V-DACK	I	Video data acknowlegd (in synchronous mode). Asserted when DVD is valid.
198	A-DACK	I	Audio data acknowlegd
200	ERROR	I	Error input data. If error signal is not available from the DSP, it must be grounded.
202-204	HADDR0-2	I	Host address bus. 3-bit address bus selects one of eight host interface registers.
205	DTACKSEL	I	Tie HIGH to select WAIT signal, LIW to select DTACK signal. (Motorola 68K mode)
206	CS	I	Host chip select. Host asserts CS to select the decoder for a read or write operation.
207	R/W	I	Read/write strobe in M mode. Write strobe in I mode. Host asserts R/W LOW to select write and LOW to select read.
208	RD	I	Read strobe in I mode. Must be held HIGH in I mode.

Advanced DVD decoder with integrated Audio DSP

ZIVA-3 (MPEG AV decoder) - IC700 on DVD Main P.C.B. Ass'y



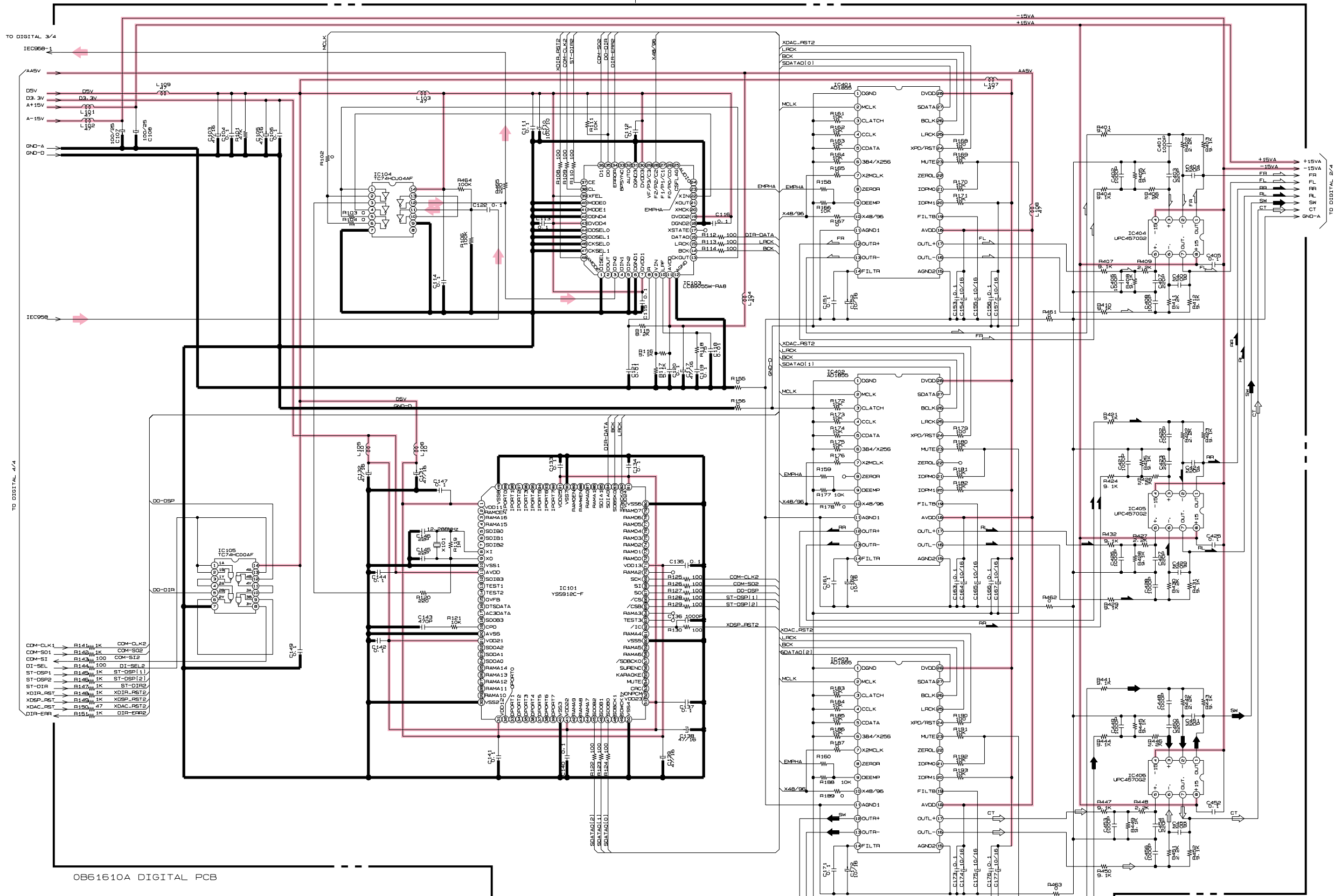
8. SPECIFICATIONS

Discs played	
DVD video disc	12 cm single-sided, single layer 12 cm single-sided, double layer 12 cm double-sided, single layer 12 cm double-sided, double layer (one layer per side) 8 cm single-sided, single layer 8 cm single-sided, double layer 8 cm double-sided, single layer 8 cm double-sided, double layer (one layer per side)
Compact disc (CD-DA, Video DC)	12 cm, 8 cm
Video system	NTSC (525/60)/PAL (625/50)
Audio system	Linear PCM audio Dolby Digital DTS audio
Video output	
Line output level	1.0 Vp-p/75 ohms, unbalanced Pin Jack x 2
S output level	Y output: 1.0 Vp-p/75 ohms, unbalanced C output: 0.286 Vp-p/75 ohms (NTSC) 0.3 Vp-p: 75 ohms (PAL)
R/G/B output level	4 pin mini DIN x 1 R/G/B output 0.7 Vp-p 21 Pin SCART connector x 1 (*5)
Component output level	Y output: 1.0 Vp-p/75 ohms, unbalanced CR output: 0.7 Vp-p/75 ohms, unbalanced CB output: 0.7 Vp-p/75 ohms, unbalanced Pin Jack x 1 system (*1,2,3,4,6)
Audio output	
Audio output	2.0 Vrms/10 kohms Pin jack x 1 system 21 Pin SCART connector x 1 (*5)
Dolby Digital 5.1ch output	Pin Jack x 1 system
Digital audio output	
Optical Digital Output	Optical connector x 1
Coaxial Output	RCA Pin x 1
DVD linear audio characteristics	
Frequency response	4 Hz-22 kHz (Fs = 48 kHz) 4 Hz-44 kHz (Fs = 96 kHz)
S/N ratio	100 dB (Fs = 48 kHz, 24 bit, PCM)
Dynamic range	100 dB (Fs = 48 kHz, 24 bit, PCM)
Total harmonic distortion	0.0025 % (Fs = 48 kHz, 24 bit, PCM)
CD audio characteristics	
Frequency response	4 Hz-20 kHz (EIAJ)
S/N ratio	100 dB (EIAJ)
Dynamic range	100 dB (EIAJ)
Total harmonic distortion	0.003 % (EIAJ)
Pickup	Wave length 655 nm (DVD) Wave length 790 nm (CD)
Headphone output	ø6.3 headphone jack
Power requirements	100 V AC, 50/60 Hz(*6) 120 V AC, 60 Hz(*1) 100-240 V AC, 50/60 Hz(*2,3,5) 220 V AC, 60 Hz(*4)
Power consumption	Approx. 45 W max.
Operation temperature	5° C-35° C
Operation humidity range	5 %-90 % (no condensation)
Dimensions	430 (W) x 100 (H) x 320 (D) mm (excluding protrusions)
Weight	Approx. 8 kg

(*1) : For U.S.A. and Canada
(*2) : For Australia
(*3) : For Southeast Asia and Hong Kong
(*4) : For Korea
(*5) : For U.K. and C.Europe
(*6) : For Japan

- For improvement purposes, specifications and design are subject to change without notice.

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Nakamichi America	18375 S. Broadwick St., Rancho Dominguez, CA 90220 Phone: 1(310)631-2122 Fax: 1(310)631-2760
Nakamichi Asia	8/F The Grande Bldg., 398 Kwun Tong Rd., Kowloon, Hong Kong Phone: 852-2357-6690 Fax: 852-2357-6697
Nakamichi Europe	8F Hayes Gate House, 27 Uxbridge Road, Hayes, Middlesex UB4 0JN, England Phone: 44-181-581-9191 Fax: 44-181-581-9153



TO DIGITAL 3/4

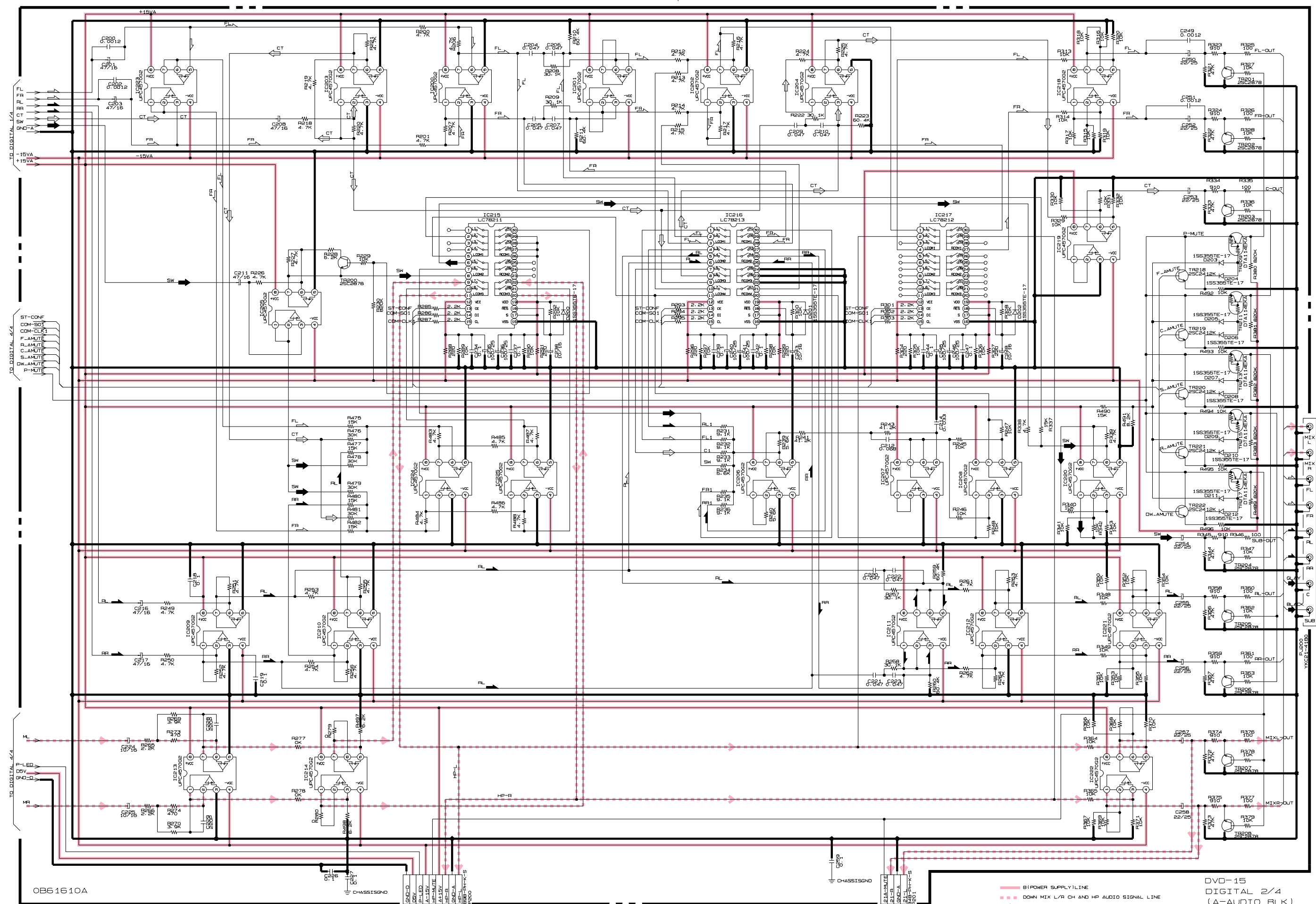
TO DIGITAL 4/4

TO DIGITAL 2/4

OB561610A DIGITAL PCB

- BIPOLAR SUPPLY LINE
- ⇌ FRONT L/R CH AUDIO SIGNAL LINE
- ⇌ REAR L/R CH AUDIO SIGNAL LINE
- ⇌ CENTER CH AUDIO SIGNAL LINE
- ⇌ SUBWOOFER CH AUDIO SIGNAL LINE
- ⇌ DIGITAL AUDIO SIGNAL LINE

DVD-15
DIGITAL 1/4
(D-AUDIO BLK)
SCHEMATIC DIAGRAM



OB61610A

TO HP PCB WPB01

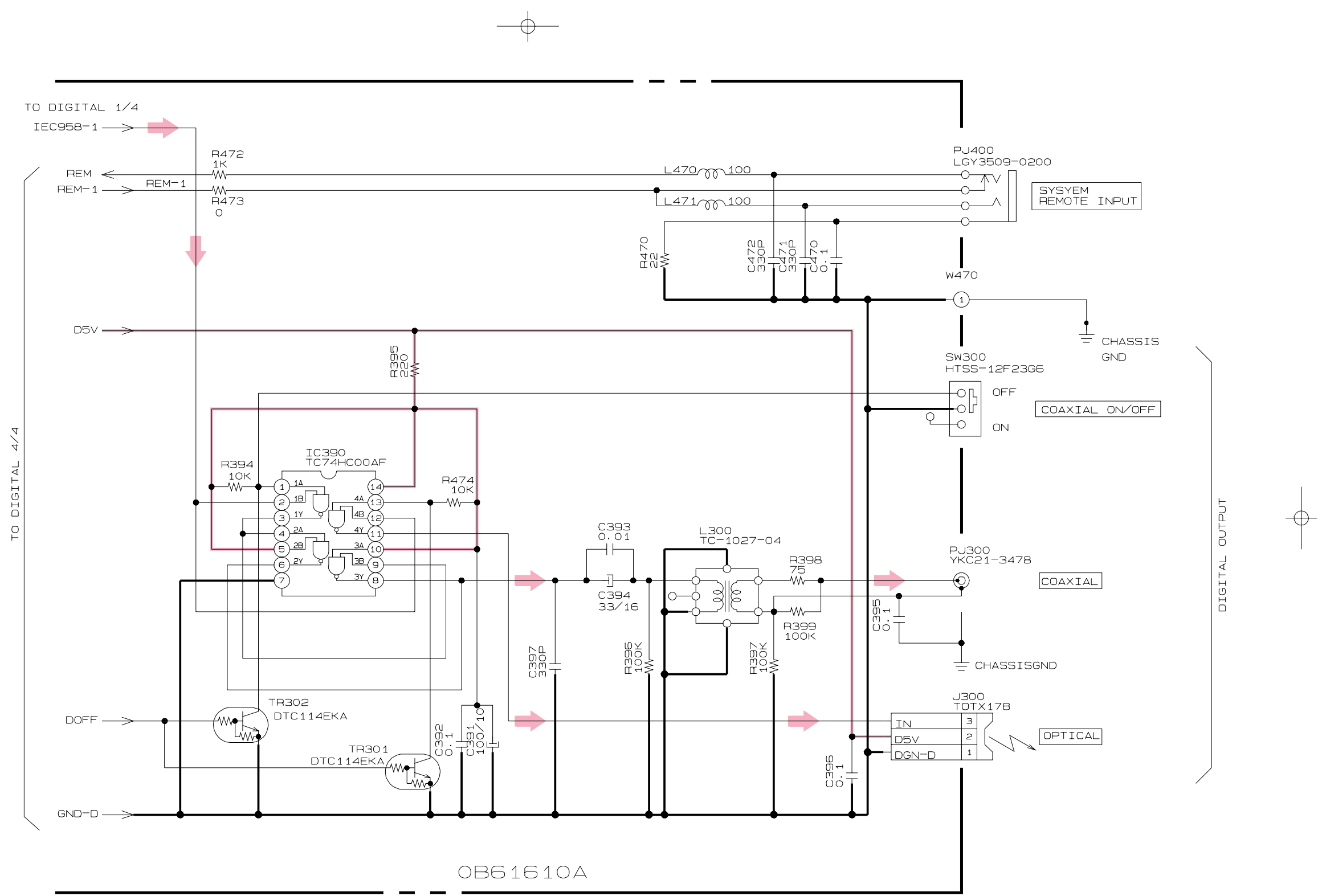
INDICATED VOLTAGE MEASURED DURING STOP MODE.

TO OUTPUT PCB P-90

- BIPOWER SUPPLY LINE
- DOWN MIX L/R CH AND HP AUDIO SIGNAL LINE
- FRONT L/R CH AUDIO SIGNAL LINE
- REAR L/R CH AUDIO SIGNAL LINE
- CENTER CH AUDIO SIGNAL LINE
- SUBWOOFER CH AUDIO SIGNAL LINE

DVD-15
DIGITAL 2/4
(A-AUDIO BLK)
SCHEMATIC DIAGRAM

5.1 Channel
OUTPUT



— B (POWER SUPPLY) LINE
➔ DIGITAL AUDIO SIGNAL LINE

DVD-15
 DIGITAL 3/4
 (DIGITAL-OUT BLK)
 SCHEMATIC DIAGRAM

R580 : EXEPT JP
 R680 : ONLY JP
 R579 : ONLY US
 R679 : EXEPT US
 R578 : ONLY PAL
 R678 : ONLY NTSC

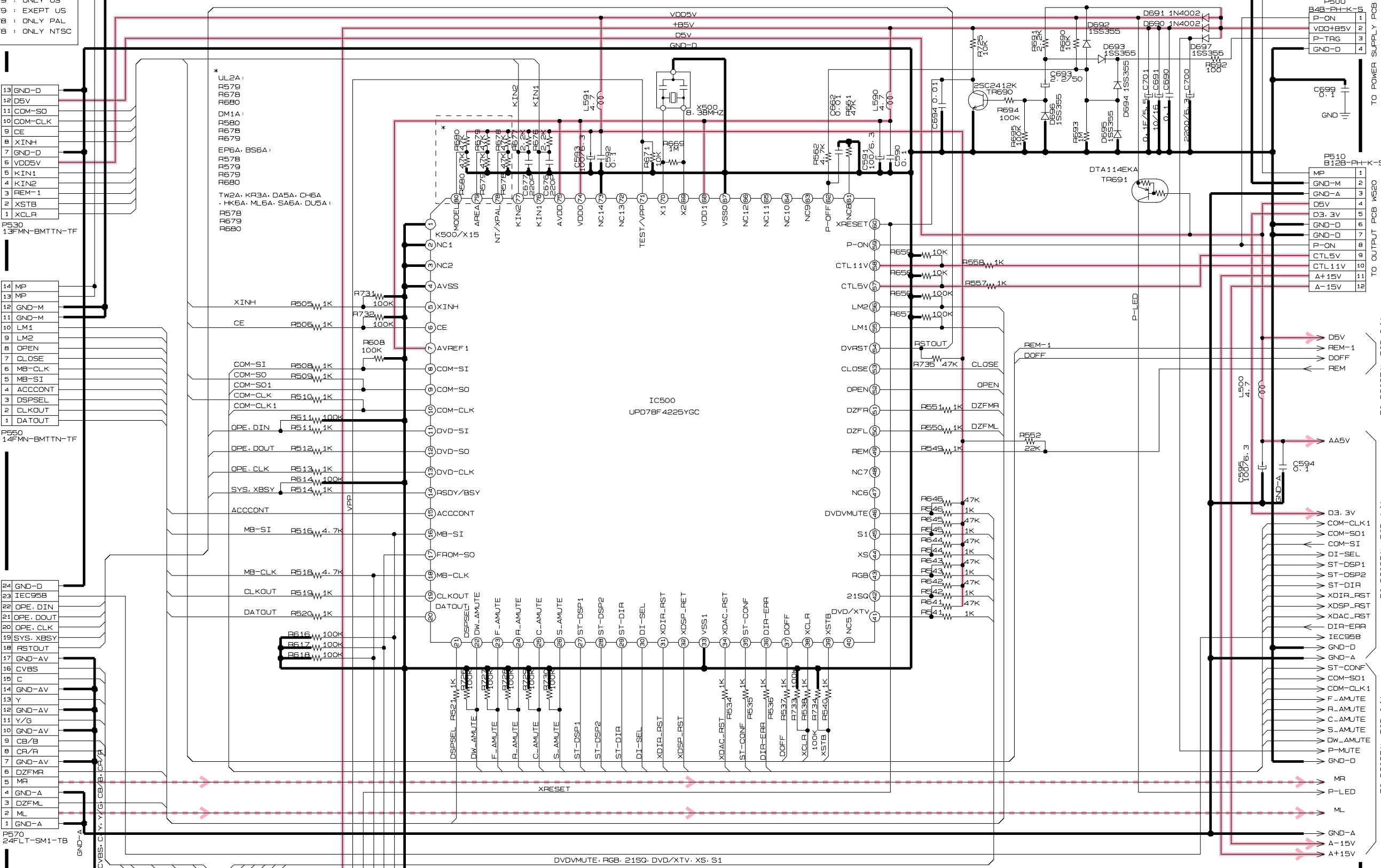
TO FRONT PCB P601

TO MECH PCB CN501

P550
 14FMN-BMTTN-TF

TO MAIN PCB P603

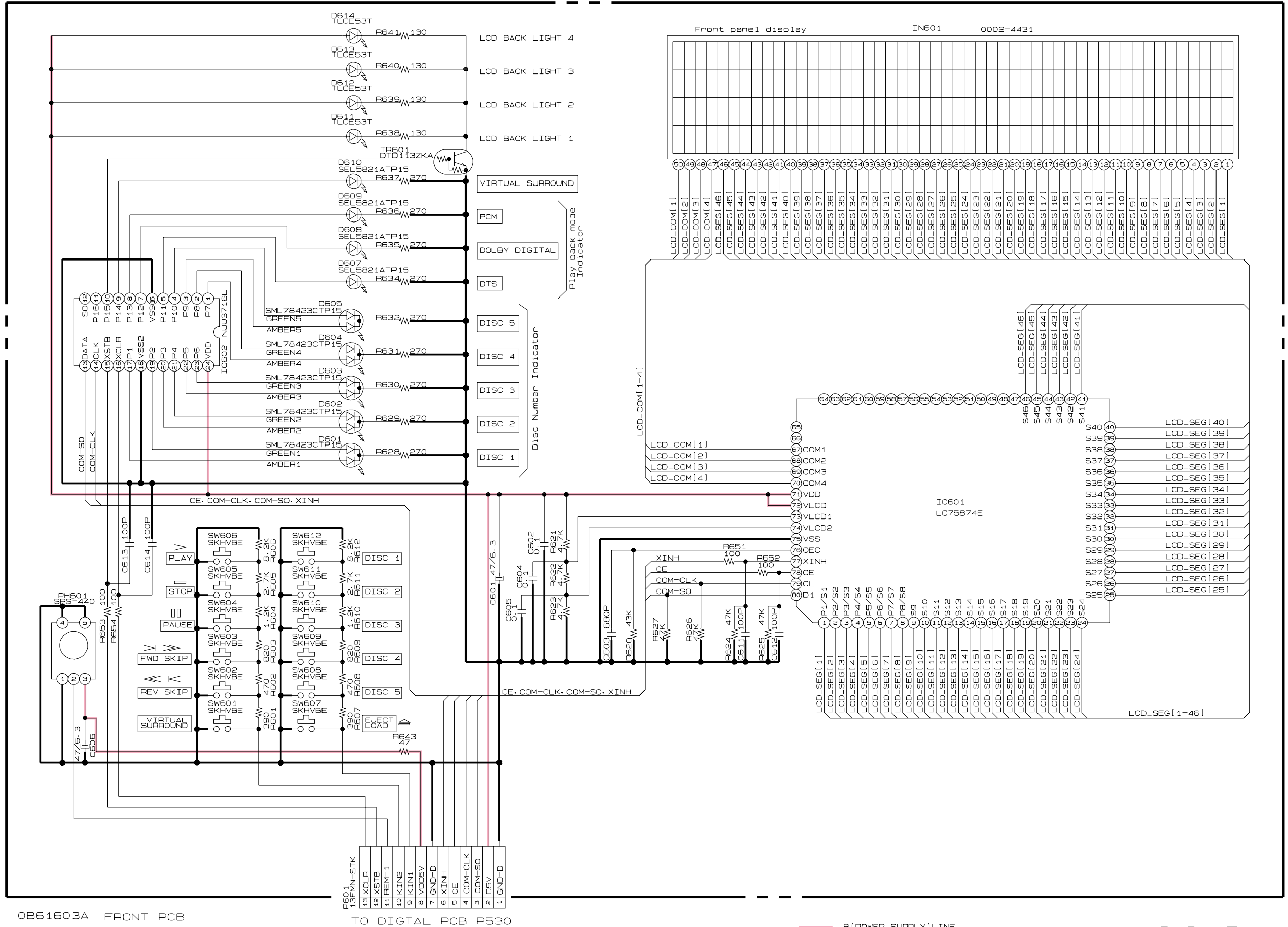
TO OUTPUT PCB P100
 TO OUTPUT PCB P520
 TO DIGITAL PCB 3/4
 TO DIGITAL PCB 1/4
 TO DIGITAL PCB 2/4



OB61610A DIGITAL PCB

DVD-15
 DIGITAL 4/4
 (CPU BLK)
 SCHEMATIC DIAGRAM

- B (POWER SUPPLY) LINE
- VIDEO COMPOSITE SIGNAL LINE (CVBS)
- Y SIGNAL LINE
- CHROMA SIGNAL LINE
- COMPONENT (R, G, B) SIGNAL LINE
- - - DOWN MIX L/R CH AUDIO SIGNAL LINE

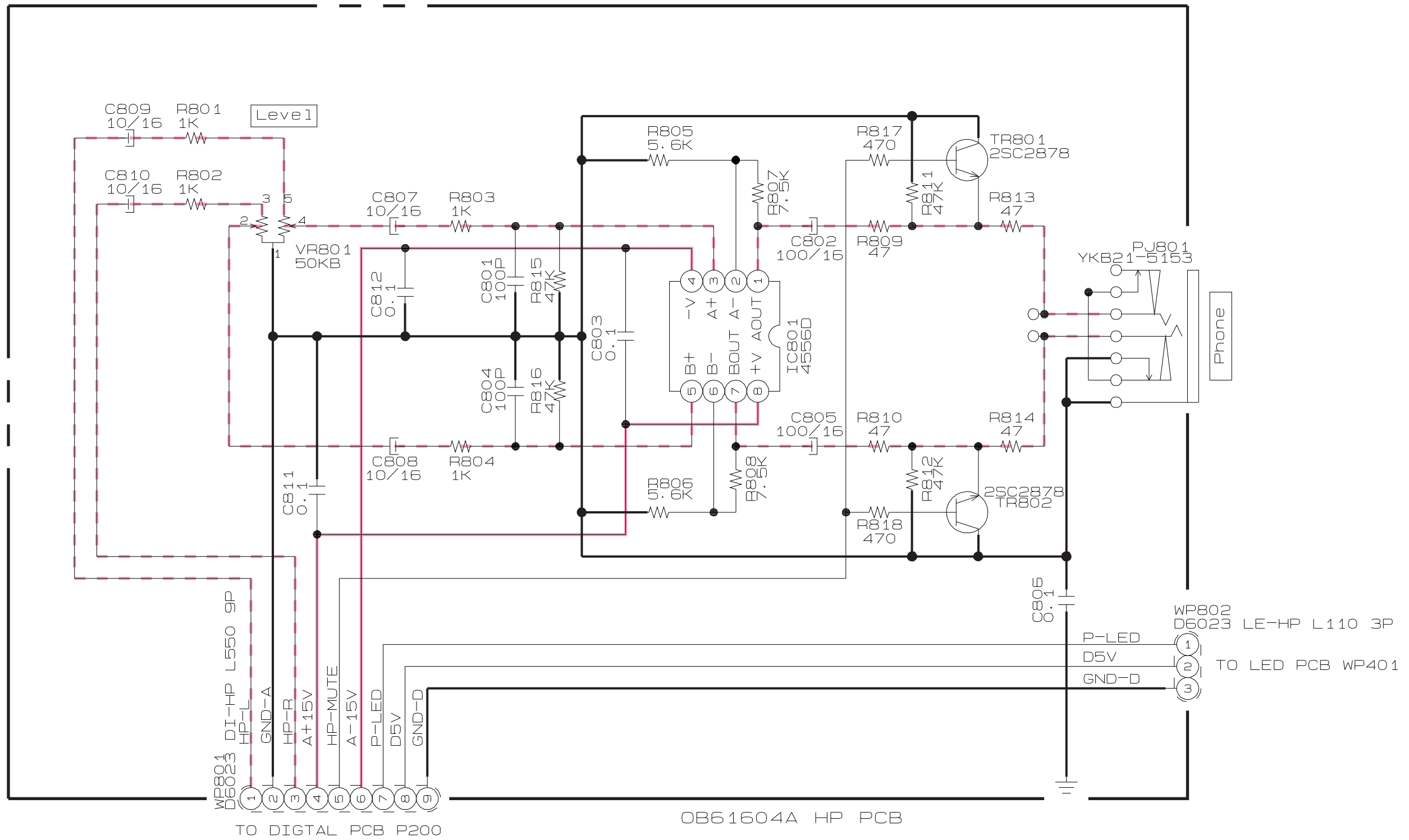


OB61603A FRONT PCB

TO DIGITAL PCB P530

— B (POWER SUPPLY) LINE

DVD-15
FRONT
SCHEMATIC DIAGRAM



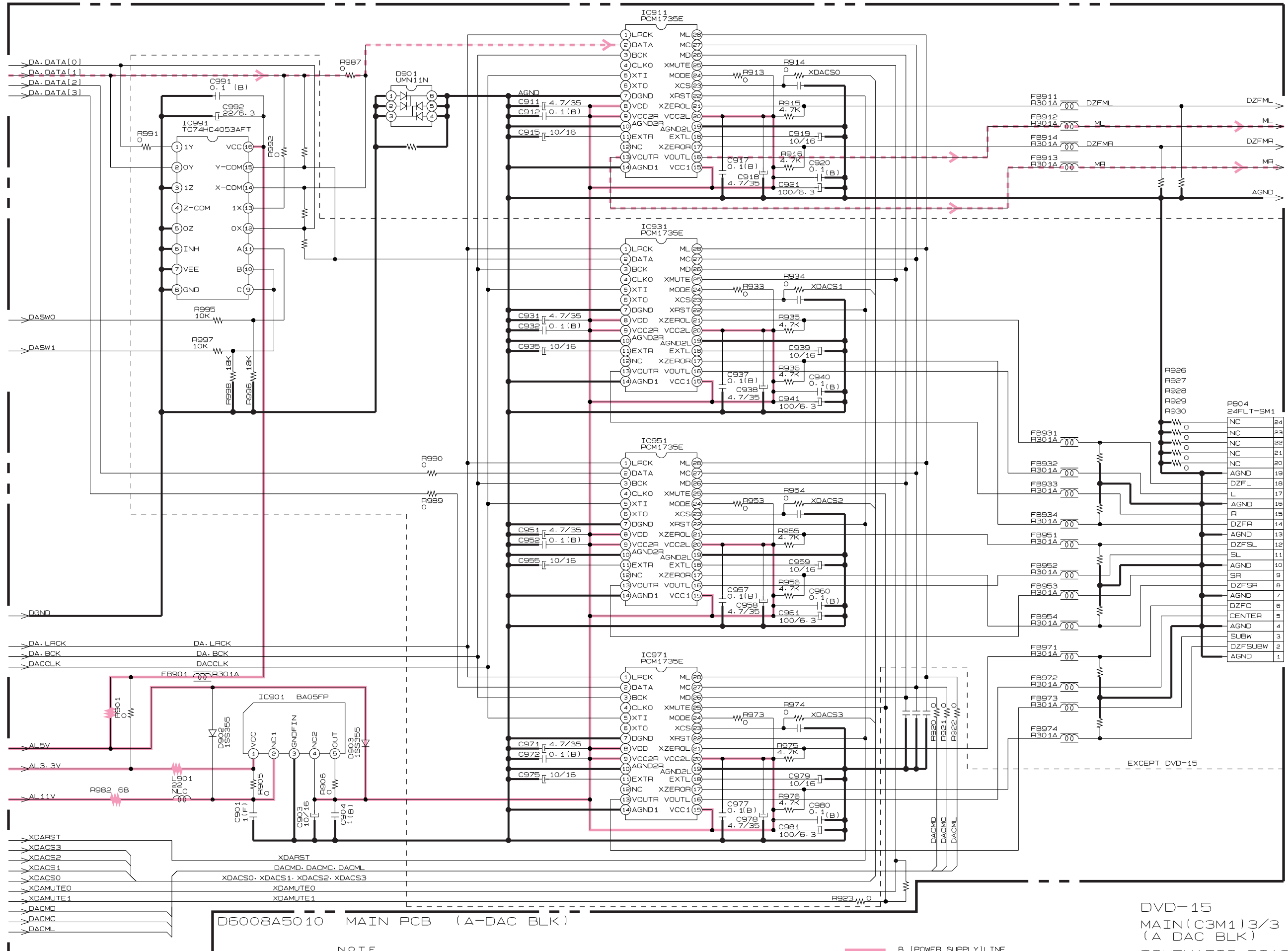
— B(POWER SUPPLY)LINE
- - - HEAD PHONE AUDIO SIGNAL LINE

INDICATED VOLTAGE WERE
 MESURED DURING STOP MODE. (NO DISK)

DVD-15
 HEAD PHONS
 SCHEMTIC DIAGRAM

TO MAIN 2/3 (ODC/CPU/AV-DEC)

TO MAIN 2/3
(ODC/CPU/AV-DEC)

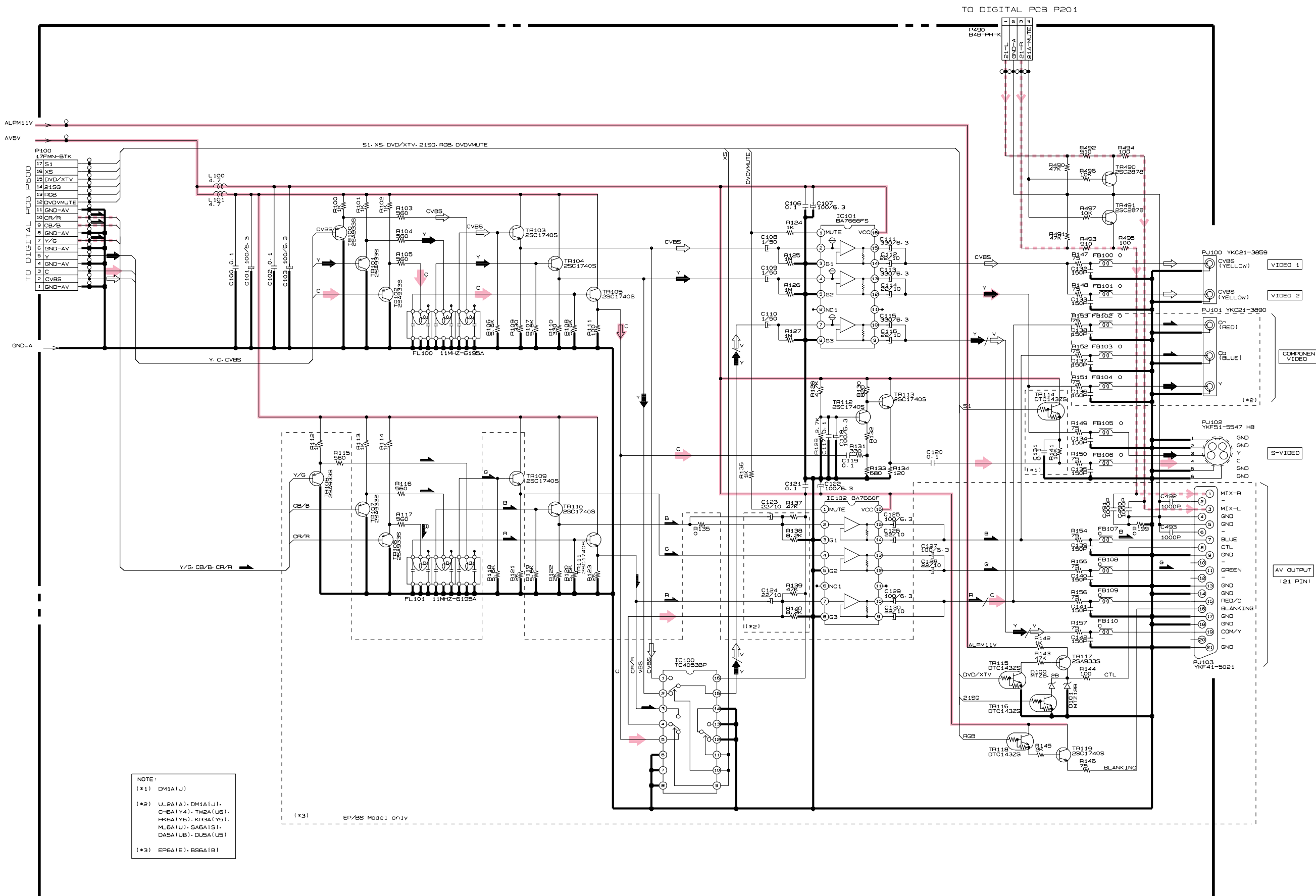


D6008A50 10 MAIN PCB (A-DAC BLK)

DVD-15
MAIN(C3M1)3/3
(A DAC BLK)
SCHEMATIC DIAGRAM

NOTE
ALL CAPS
ALL INDUCTION
RESISTORS IN
OTHERWISE SPECIFIED
RESISTORS IN OHMS
RESISTORS IN KΩ
RESISTORS IN MΩ
RESISTORS IN PPF

— B (POWER SUPPLY) LINE
- - - MIX L/R AUDIO LINE



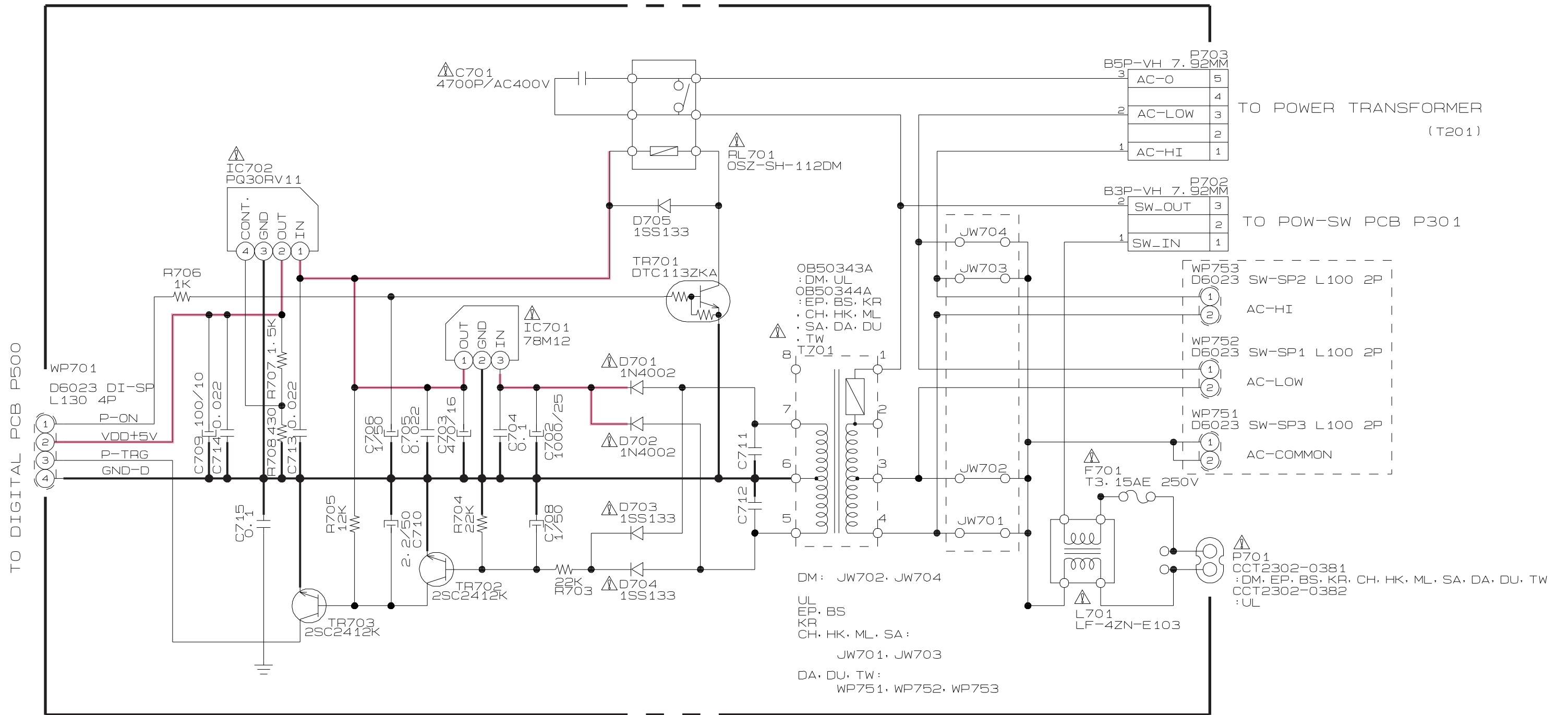
NOTE:
 (*1) DM1A(J)
 (*2) UL2A(A), DM1A(J),
 CH5A(Y4), TW2A(UE),
 HK5A(Y5), KR3A(Y5),
 ML6A(U), SABA1(S),
 DASA(U8), OUSA(U5)
 (*3) EP6A(E), B96A(B)

(*3) EP/BS Model only

OB61605A OUTPUT PCB

- B(POWER SUPPLY)LINE
- - - L/R CH AUDIO SIGNAL LINE
- ⇨ VIDEO COMPOSITE(CVBS)SIGNAL LINE
- ⇨ Y SIGNAL LINE
- ⇨ C-roma SIGNAL LINE
- ⇨ COMPONENT OR R-G-B SIGNAL LINE

DVD-15
 OUTPUT 2/2
 (VIDEO BLK)
 SCHEMATIC DIAGRAM

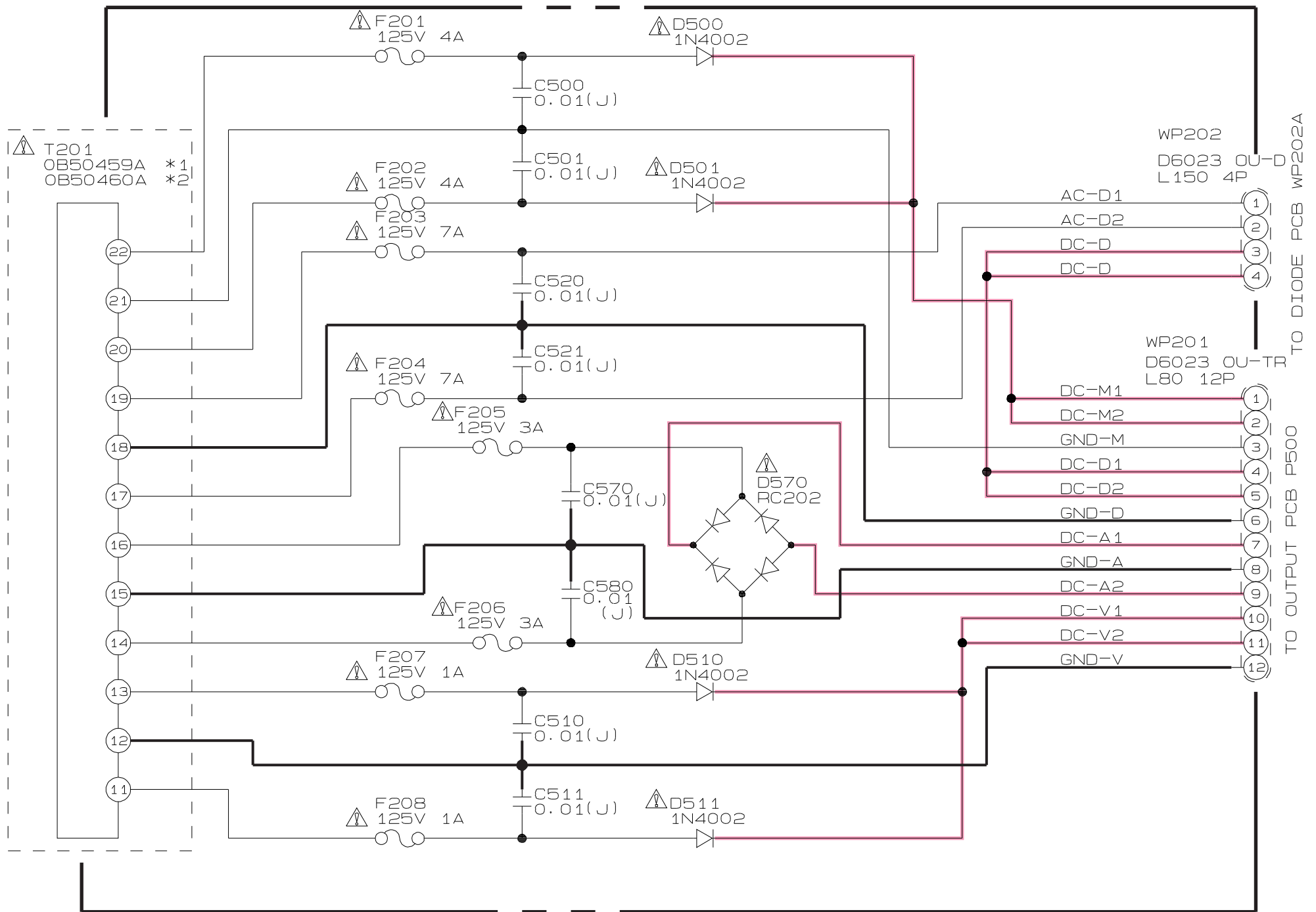


WARNING: INDICATE SAFETY CRITICAL COMPONENTS. DO NOT REPLACE SAFETY CRITICAL COMPONENTS WITH MANUFACTURER'S RECOMMENDED PARTS.

NOTE: UNLESS OTHERWISE SPECIFIED, ALL RESISTORS IN OHMS (1/4W), ALL ALUMINUM ELECTROLYTIC CAPACITORS IN $\mu F/V$

DVD-15
POWER SUPPLY
SCHEMATIC DIAGRAM

NOTE :
 *1 DM
 UL
 *2 EP, BS
 KP
 CH, HK, ML, SA
 DA, DU, TW



OB61609A M-TRANS PCB

— B (POWER SUPPLY)LINE

WARNING : INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

NOTE
 UNLESS OTHERWISE SPECIFIED
 ALL RESISTORS IN OHMS (1/4W)
 ALL ALUMINUM ELECTROLYTIC CAPACITORS IN $\mu F/V$

DVD-15
 M-TRANS
 SCHEMATIC DIAGRAM