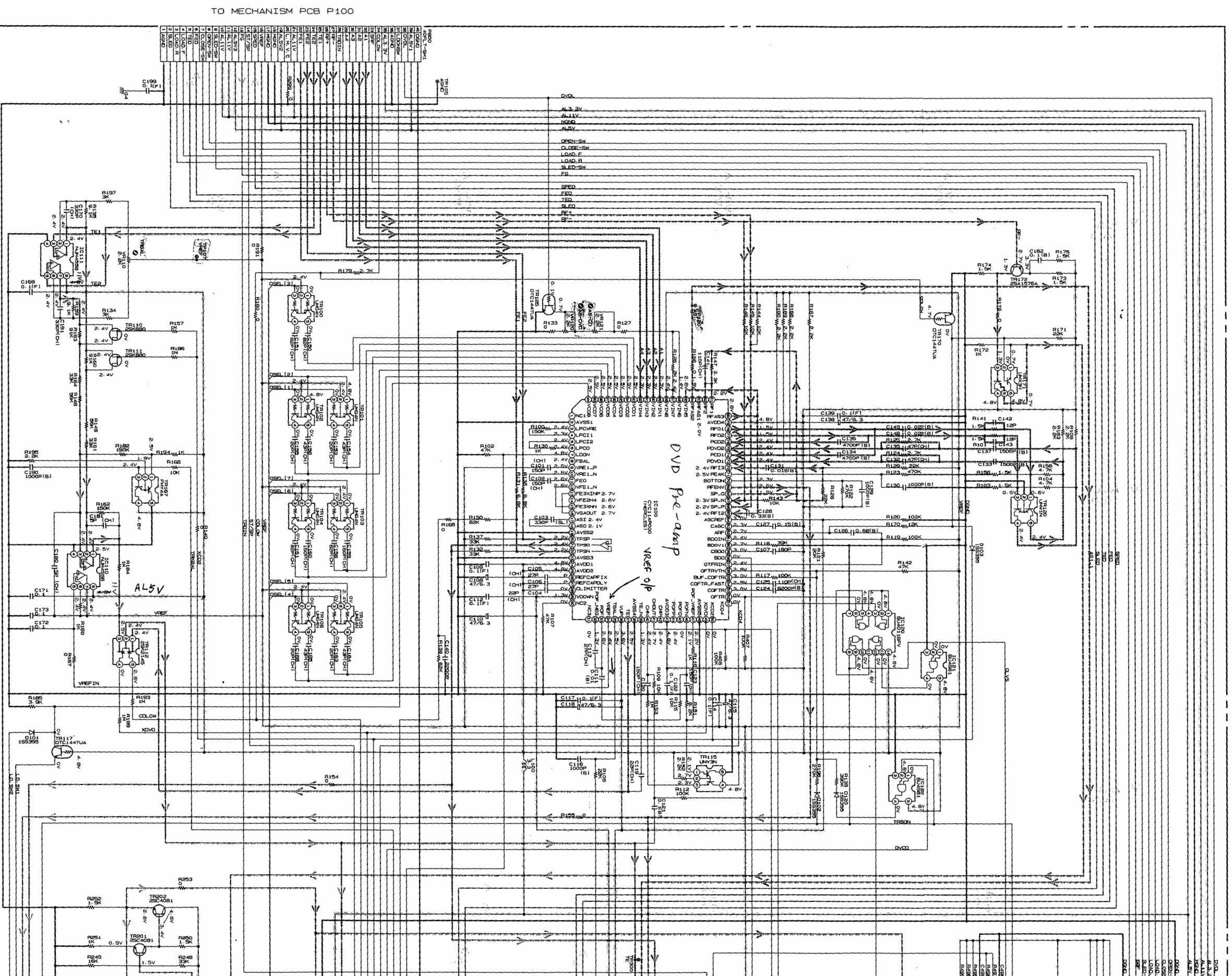




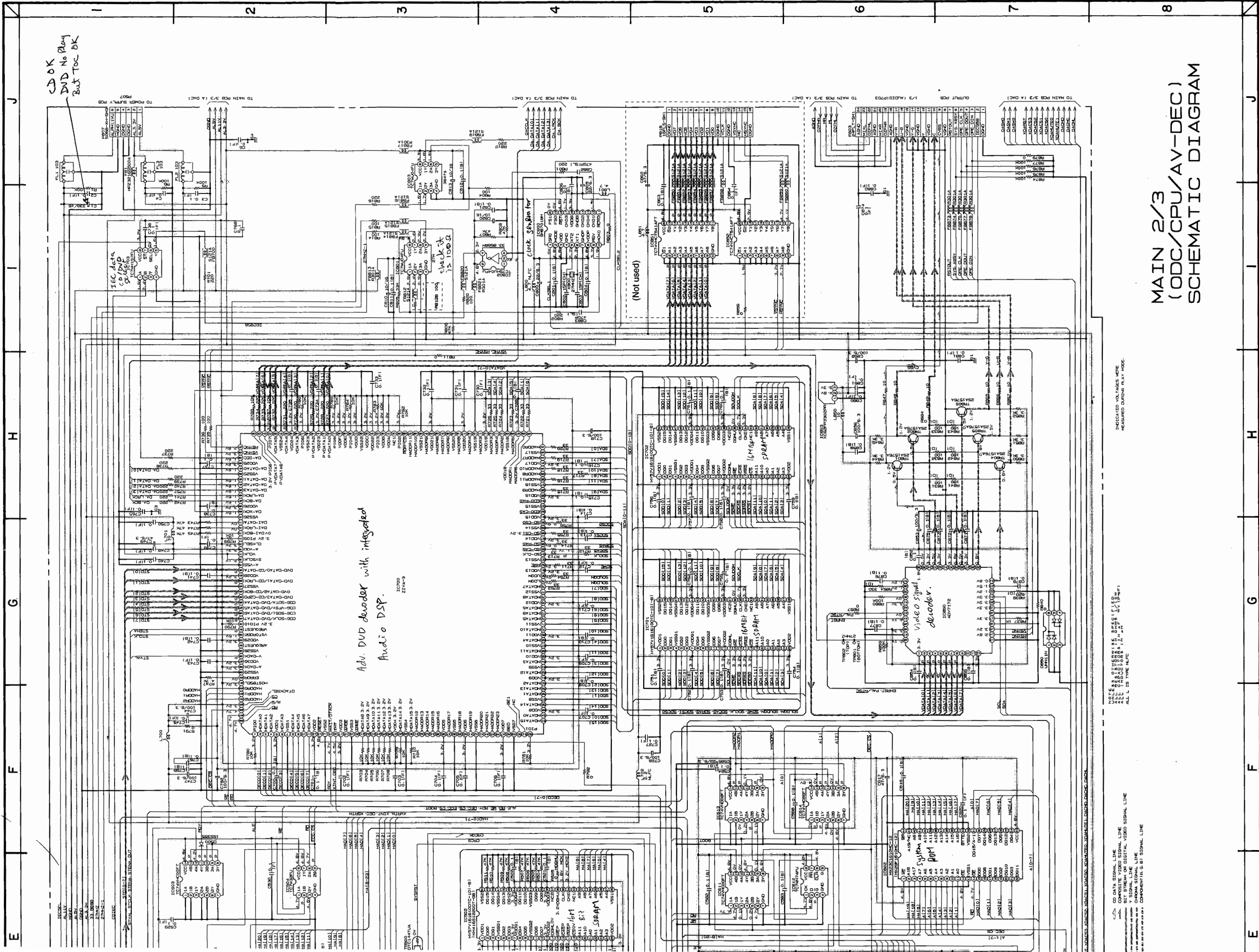
TO MECHANISM PCB P100

MAIN PCB(C3) D6008A5010 (SERVO BLK)

K150K to 270K
S51012/DVD5/K550 only.
to sys II.

NOTE: 1. ALL DIMENSIONS ARE IN INCHES.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL DIMENSIONS ARE IN MILLIMETERS.
4. ALL DIMENSIONS ARE IN MILLIMETERS.

INDICATED VOLTAGE WERE MEASURED
DURING DVD PLAYBACK MODE.

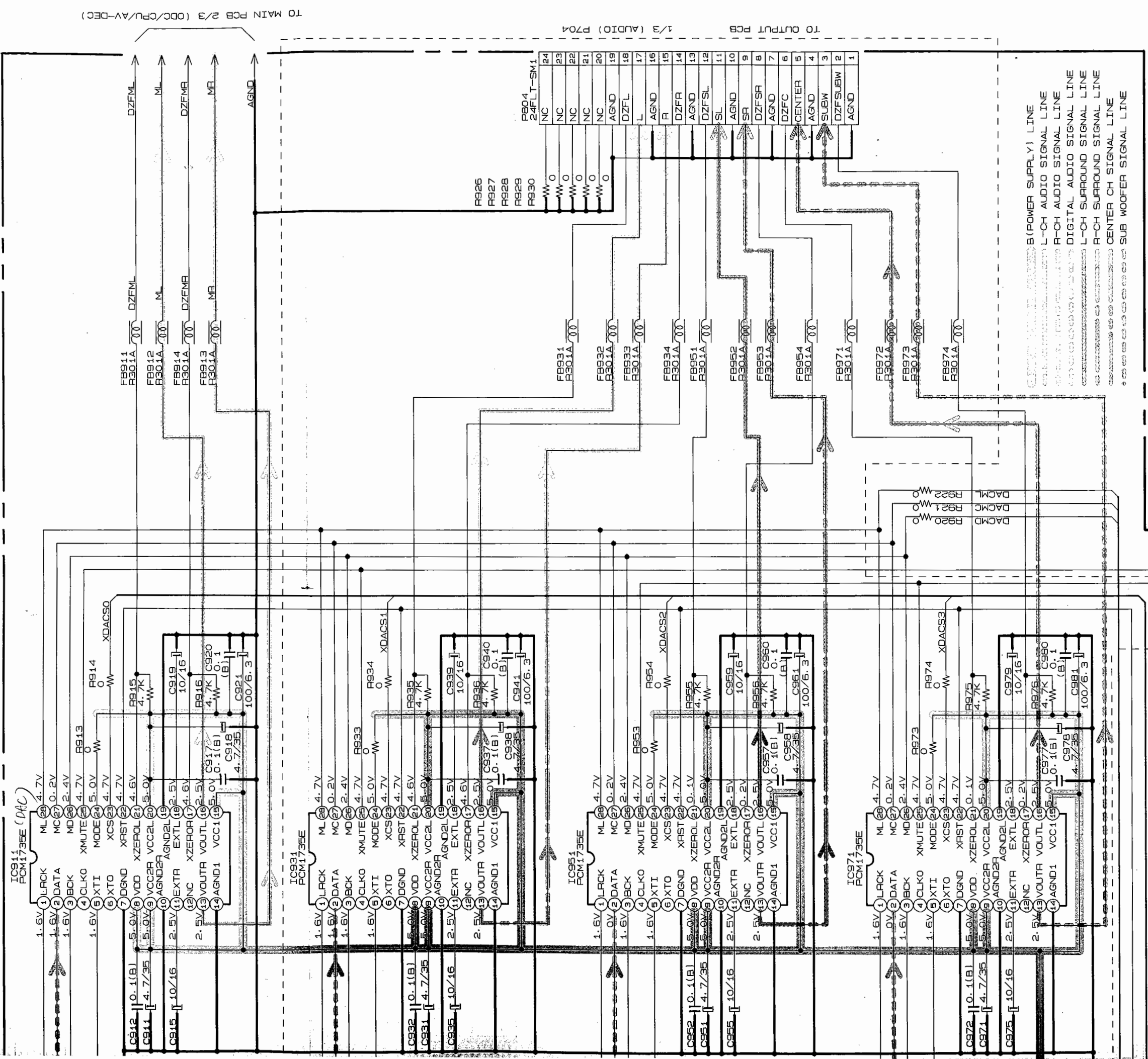


MAIN 2/3
(ODC/CPU/AV-DEC)
SCHEMATIC DIAGRAM

INDICATED VOLTAGES WERE
MEASURED DURING PLAY MODE.

ALL L IS TYPE NTC

DATA SIGNAL LINE
COMPOSITE VIDEO SIGNAL LINE
BIT STREAM OR DIGITAL VIDEO SIGNAL LINE
SIGNAL LINE
COMPONENTS: G B I SIGNAL LINE



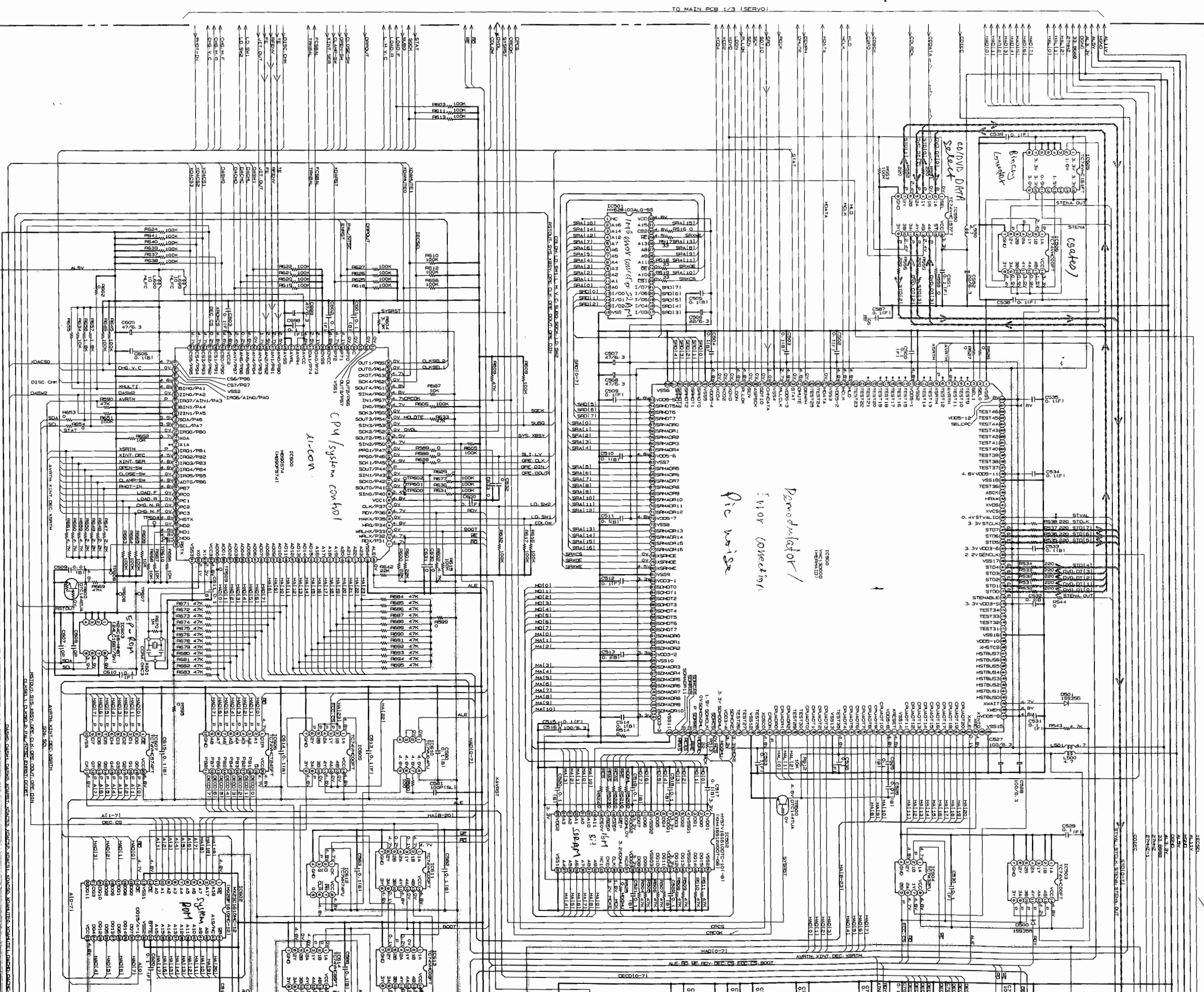
NOTED
S 1/10W
, W (P=PF)
INDICATED VOLTAGES WERE
MEASURED DURING PLAY MODE.

MAIN 3/3 (A DAC)
SCHEMATIC DIAGRAM

MAIN PCB D7001A5010

BIPOAR SUPPLY LINE
L-CH AUDIO SIGNAL LINE
R-CH AUDIO SIGNAL LINE
DIGITAL AUDIO SIGNAL LINE
PE ENV SIGNAL LINE
TPOOR SIGNAL LINE

CD DATA SIGNAL LINE
COMPOSITE VIDEO SIGNAL LINE
V SIGNAL LINE
DIGITAL VIDEO SIGNAL LINE
COMPONENT 0.81 SIGNAL LINE



8

7

6

5

4

3

2

1

A

B

C

D

E

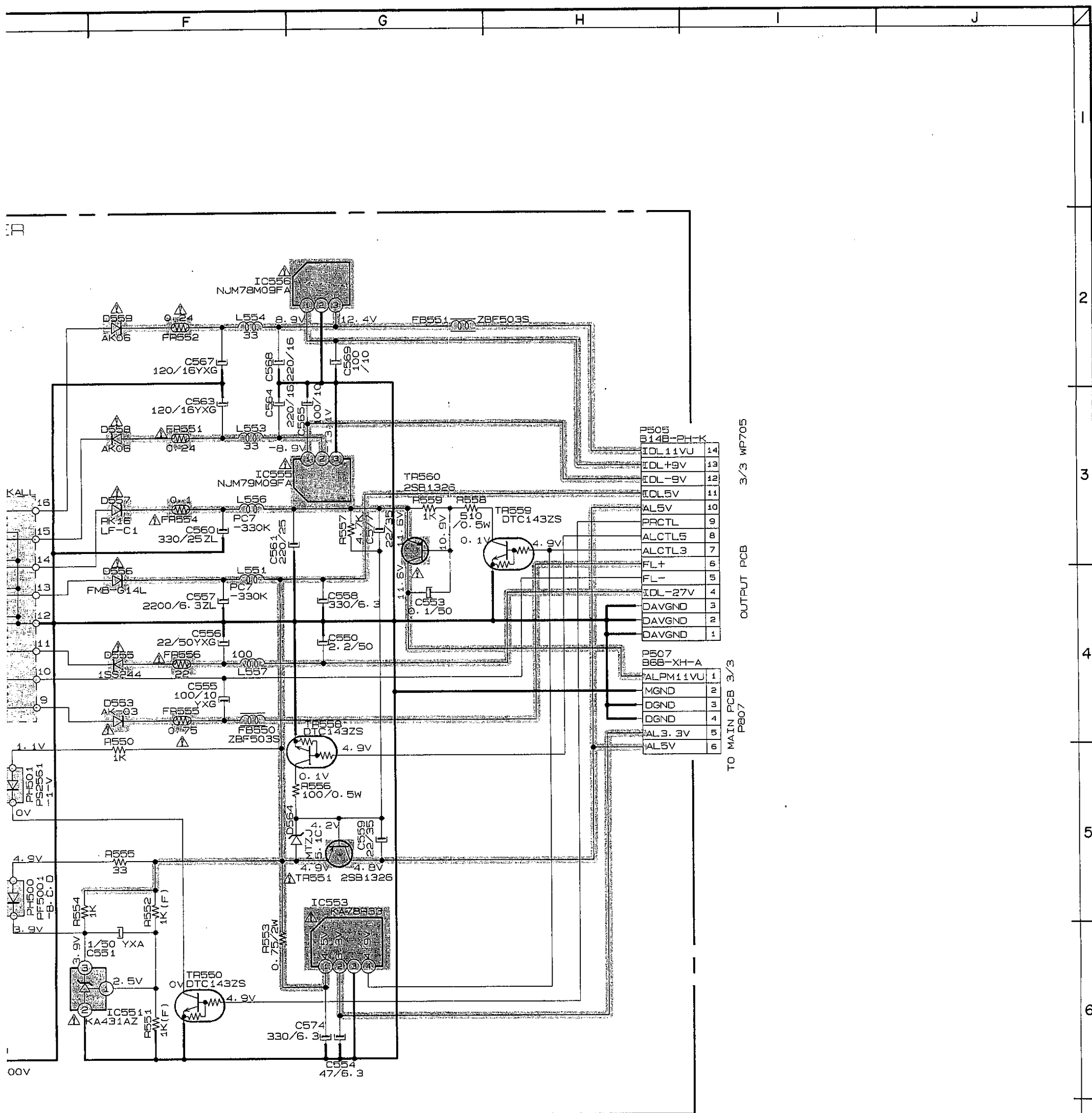
A

B

C

D

E



~~XXXXXXXXXXXXXXXXXXXX~~ B (POWER SUPPLY) LINE

*INDICATED VOLTAGES WERE MEASURED DURING PLAY
MODE

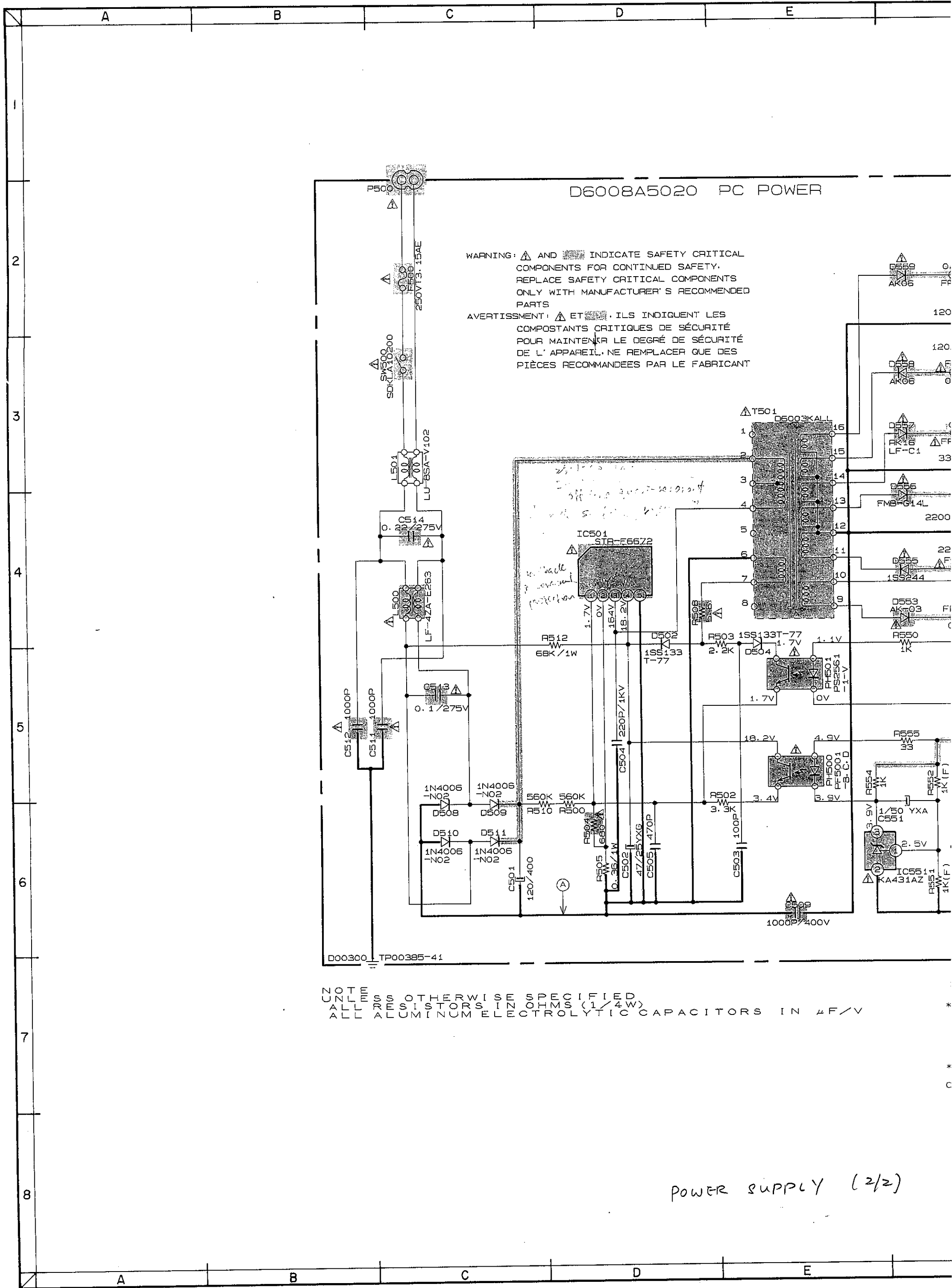
THE DC VOLT METER'S NEGATIVE INPUT WAS CONNECTED TO THE (A) POINT WHEN THE PRIMARY SECTION WAS MEASURED.

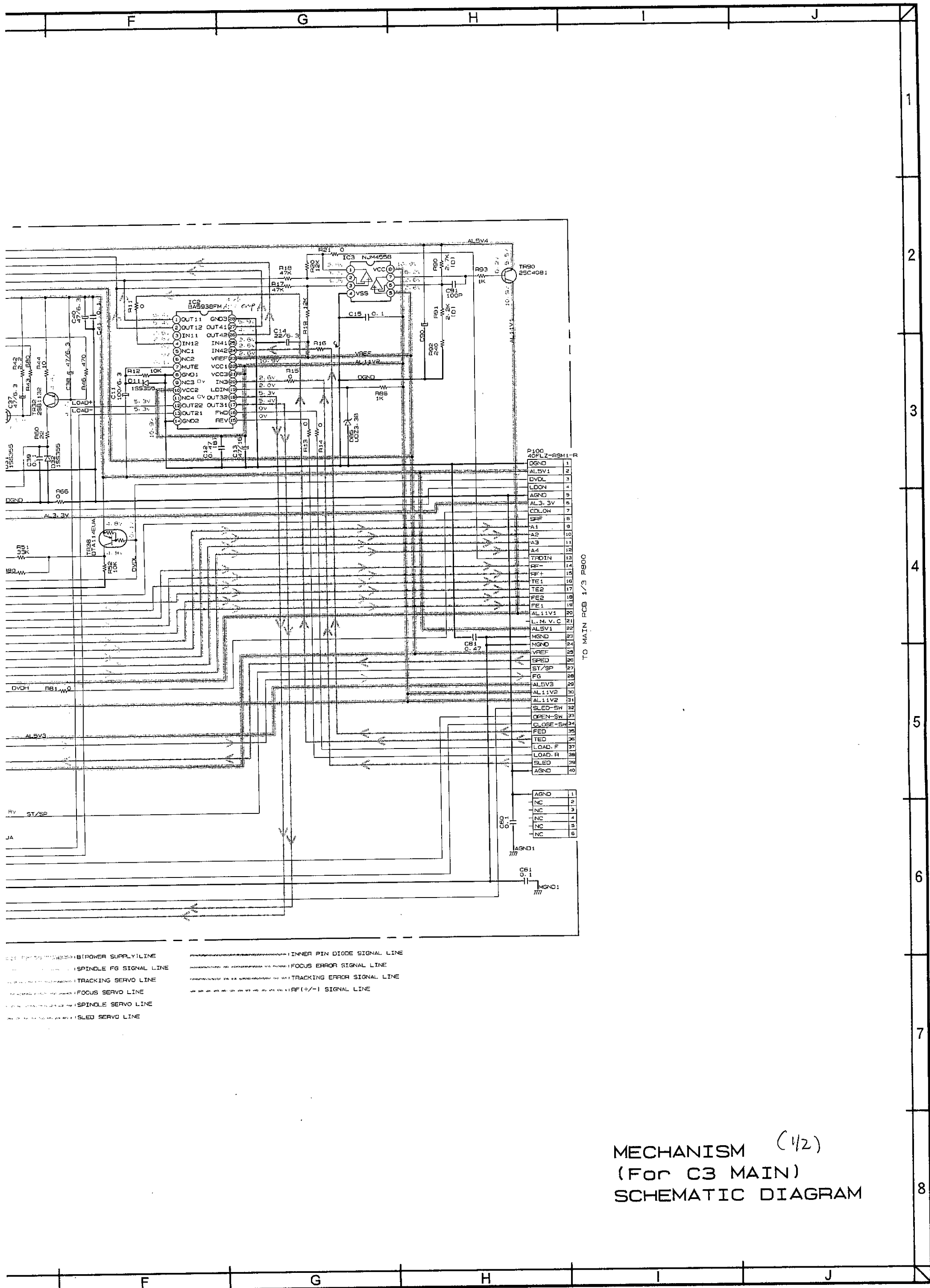
*THE PRIMARY INPUT VOLTAGE WAS AC120V.

CAUTION

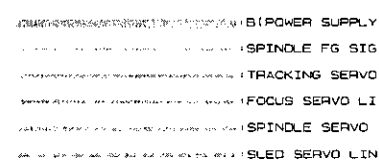
AS THE PRIMARY SIDE OF THE POWER SECTION CONTAINS HIGH VOLTAGE.
THERE IS RISK OF ELECTRIC SHOCK.
BE SURE TO USE EXTREME CAUTION.

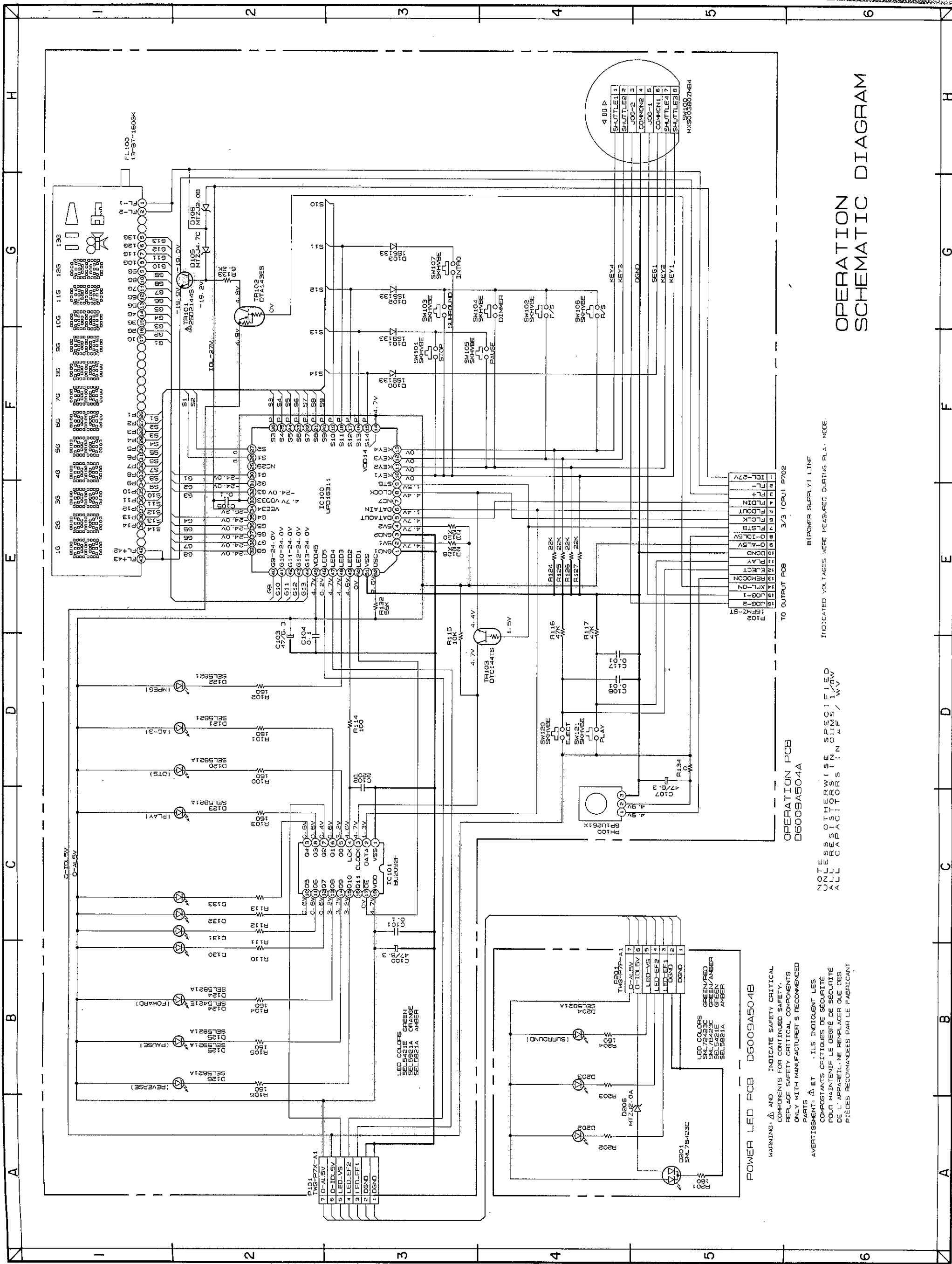
POWER SUPPLY (4/2)
SCHEMATIC DIAGRAM





MECHANISM (1/2)
(For C3 MAIN)
SCHEMATIC DIAGRAM

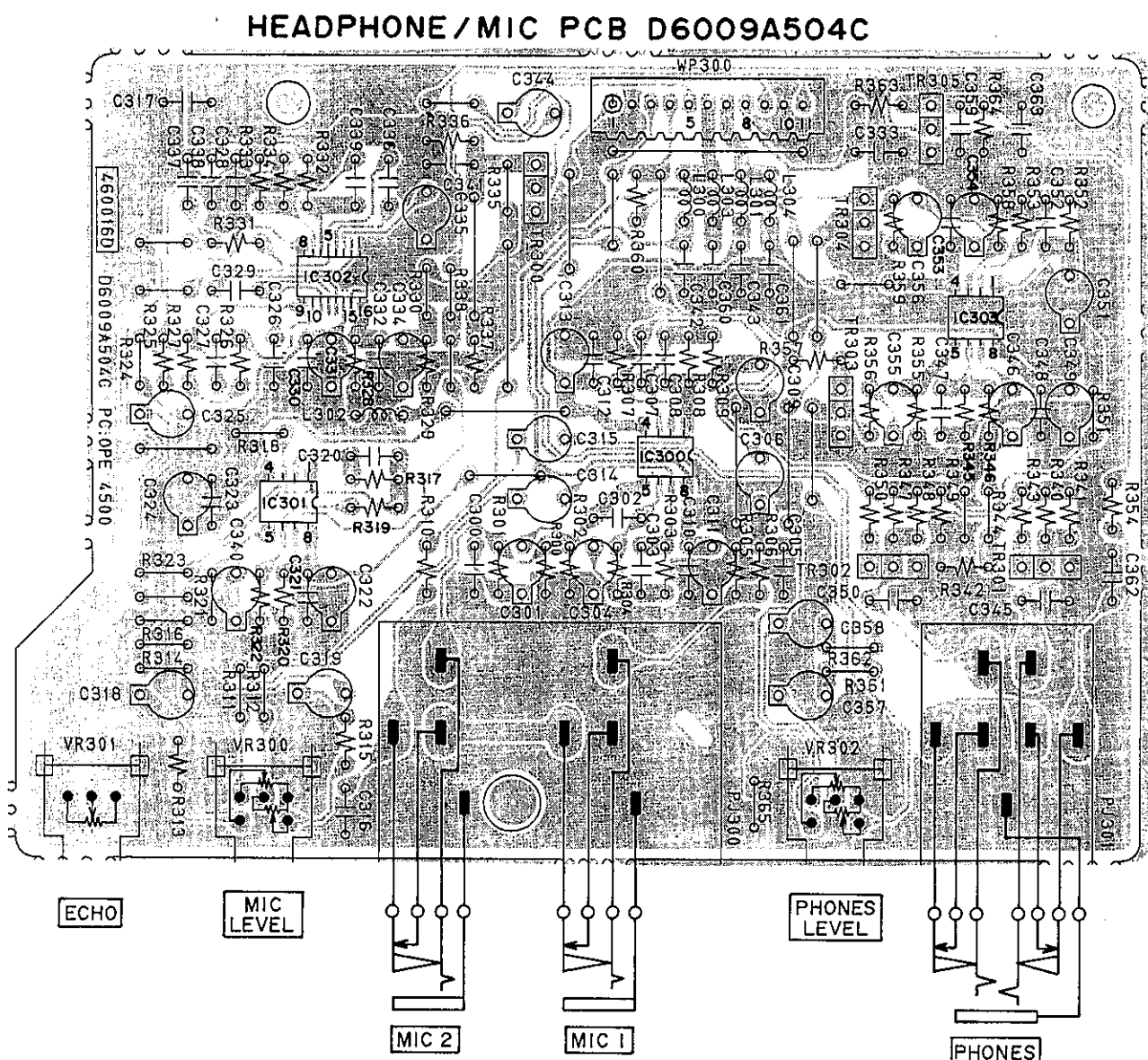


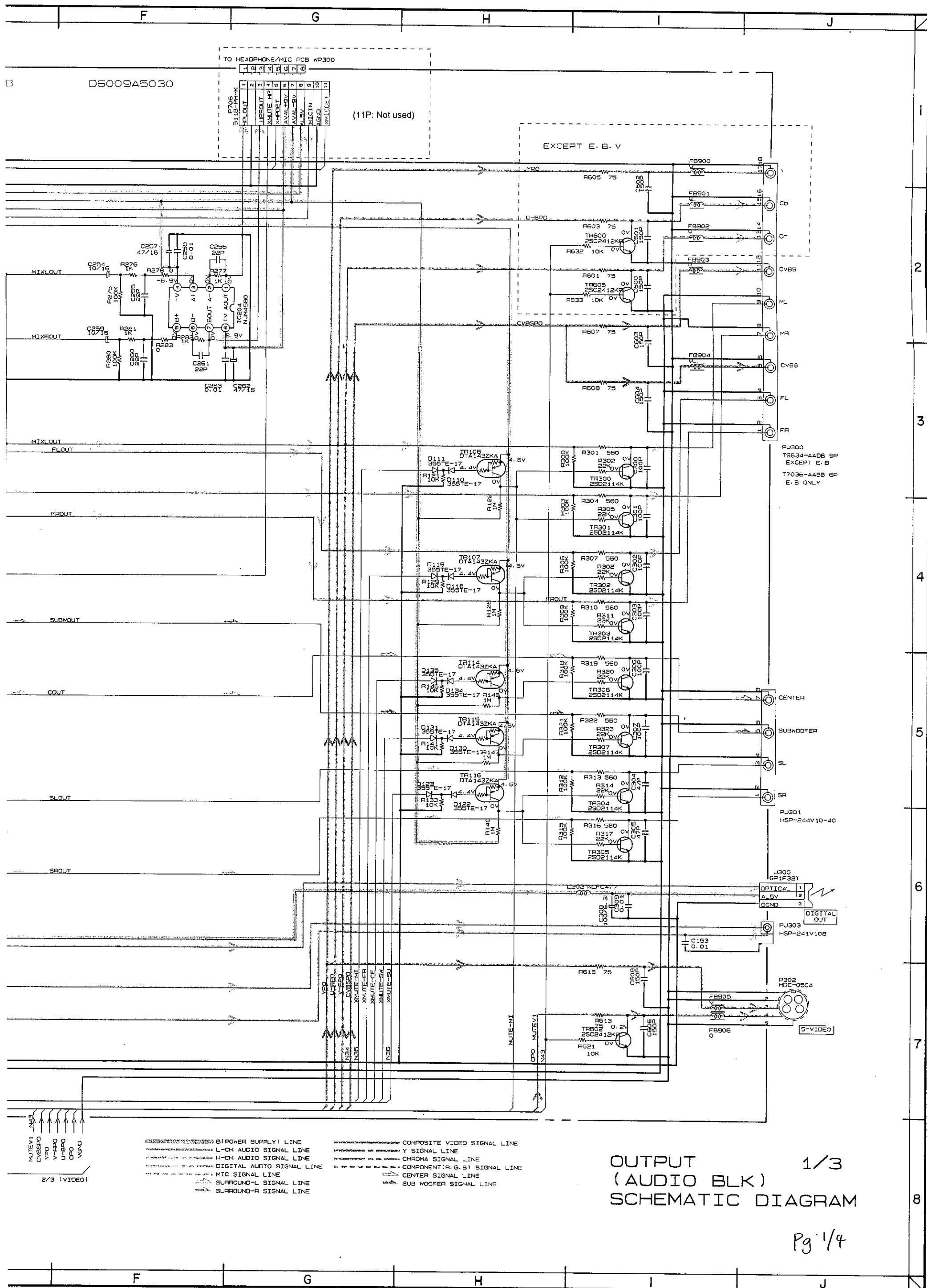




B(Power Supply) LINE
L-CH PHONE SIGNAL LINE
R-CH PHONE SIGNAL LINE

HEADPHONE SCHEMATIC DIAGRAM





Service Manual

DVD-10S

DVD Player



0B90967A laser pickup VED03830K

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SCART OUTPUT MODE - ROCKET

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



1. GENERAL

1.1. Product Code

V676

1.2. Destinations

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

Black version: USA, CAN, JPN, EP, DA, UK, AUS
 Champagne Gold version:
 OTR, HK, CH, TW, KR

Abbreviations

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

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.

1.4. Cautions/Warnings

(1) Protection of Eyes from Laser Beam

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

(2) 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 CD Changer must be adjusted and repaired only by qualified service personnel.

OBSERVERAI

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, omskiftlere og øvrige kontrolknapper, som ikke følger den i brugsanvisningen beskrevne måde, kan resultere i farlig laserudstråling. Justering eller reparation af denne CD-spiller må kun udføres af kvalificeret servicepersonal.

OBS!

Justering av ratt, brytare og kontroller andre enn de som er beskrevet her, kan resultere i farlig laserbestralning. Justering eller reparasjon av denne kompaktdisksplilleren ma bare utføres av kvalifiserte fagfolk.

HUOMAUTUS

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

ADVERSEL: USYNYLIG LASERSTRÅLNING VED ÅBNING.
 UNGÅ UDSÆTTELSE FOR STRÅLING.

VARO! AVATTAESSA OLET ALTIINA
 NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
 ÄLÄ KATSO SÄTEESEEN.

VARNING — OSYNYLIG LASERSTRÅLNING NÄR
 DENNA DEL ÄR ÖPPNAD. BETRÄKTA
 EU STRÅLEN.



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

1.5. Precautions

PRECAUTIONS**Precautions in Repairing:**

1. Do not apply excessive pressure on the mechanical parts (moving parts), including the Pickup Block, as extremely high mechanical precision is required in these parts.
2. When soldering the microprocessor and signal processing ICs, use a ceramic soldering iron or a soldering iron whose metal part is grounded since they are not resistant to static electricity.
3. When removing the solder or soldering the laser shorting lands for the Pickup Block, use a ceramic soldering iron or a soldering iron whose metal part is grounded since the laser diode is not resistant to static electricity.

Precautions when handling the Mechanism Block:

1. Do not loosen any screws in the Pickup Block.
2. Do not adjust any screws in the Mechanism Block except for "Tilt Adjust Screws", as they are adjusted precisely at the factory.
3. Replacement of the Pickup Block is impossible. Always replace the Traverse Assy when the Pickup Block is needed to be replaced.
4. Do not touch the lens or lens holder of the Pickup Block.
5. The Guide Rails of the Pickup Block are greased. Take care when handling.
6. When you try to slide the Pickup Block, do not press or pull it directly. Always turn the drive gears with your fingers.
7. Be sure that the anti-slipping rubber on the turntable is clean. If there is dust or it is greasy, clean the part with the liquid that contains 50% each of alcohol and water.
8. When removing the Mechanism P.C.B. Assy, you need to shortcircuit the laser diode shorting lands beforehand. Follow the instructions shown in "2.6. Mechanism P.C.B. Assy" on page 8.

1.6. New/Former Models

There are two types of Models, new ones and former ones, as shown in the following table.

	New Type	Former Type
Serial Nos.	V676.01501 - 01700 V676.02901 - 03400 V676.04801 - 05300 V676.05301 -	V676.01001 - 01500 V676.01701 - 02900 V676.03401 - 04735
Main P.C.B. Ass'y	Main P.C.B. Ass'y (C3) - CB00667A	Main P.C.B. Ass'y (M3) -- Not supplied
Mechanism P.C.B. Ass'y	Mechanism P.C.B. Ass'y (C3) - CB00667A	Mechanism P.C.B. Ass'y (M3) -- Not supplied

Note that the new Main P.C.B. Ass'y and new Mechanism P.C.B. Ass'y are not compatible with the former ones. Further, the former Main P.C.B. Ass'y and former Mechanism P.C.B. Ass'y are not supplied. Therefore, follow the following instructions when replacing the former Main P.C.B. Ass'y or former Mechanism P.C.B. Ass'y.

● How to replace the former type Main P.C.B. Ass'y/Mechanism P.C.B. Ass'y

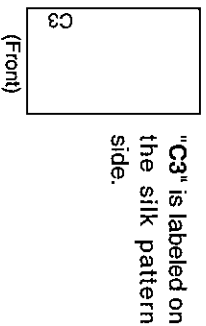
	Main P.C.B. Ass'y	Mechanism P.C.B. Ass'y
When former type Main P.C.B. Ass'y is replaced with new type one.	Replace with the new one (CB00667A), since the former type one is not supplied. (Ref. No. 32 on page 16)	Replace with the new one (CB00667A) at the same time. (Ref. No. 31 on page 16) or Change the location of the chip resistor R80 on the former Mechanism P.C.B. Ass'y (M3) as shown in Fig. 1.1 on the next page.
When former type Mechanism P.C.B. Ass'y is replaced with new type one. Choose (1) or (2).	(1) Replace with the new one (CB00667A) at the same time.	Replace with the new one (CB00667A), since the former type one is not supplied.
	(2) Use the former type one as it is. (However, you need to modify the new Mechanism P.C.B. Ass'y (C3).)	Replace with the new one (CB00667A), since the former type one is not supplied. Further, to use with the former type Main P.C.B. Ass'y (M3), change the location of the chip resistor R81 on the Mechanism P.C.B. Ass'y (C3) as shown in Fig. 1.2 on the next page.

● How to identify the type

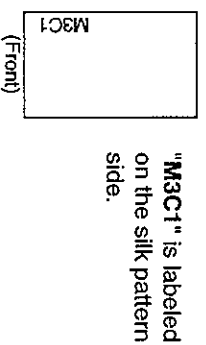
You can see the labeled letters on the P.C.B. by removing the Top Cover.

(1) Main P.C.B. Ass'y

New type one:

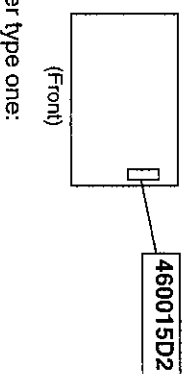


Former type one:

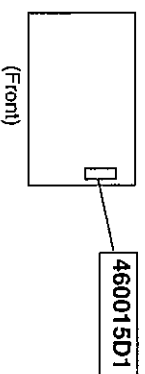


(2) Mechanism P.C.B. Ass'y

New type one:



Former type one:



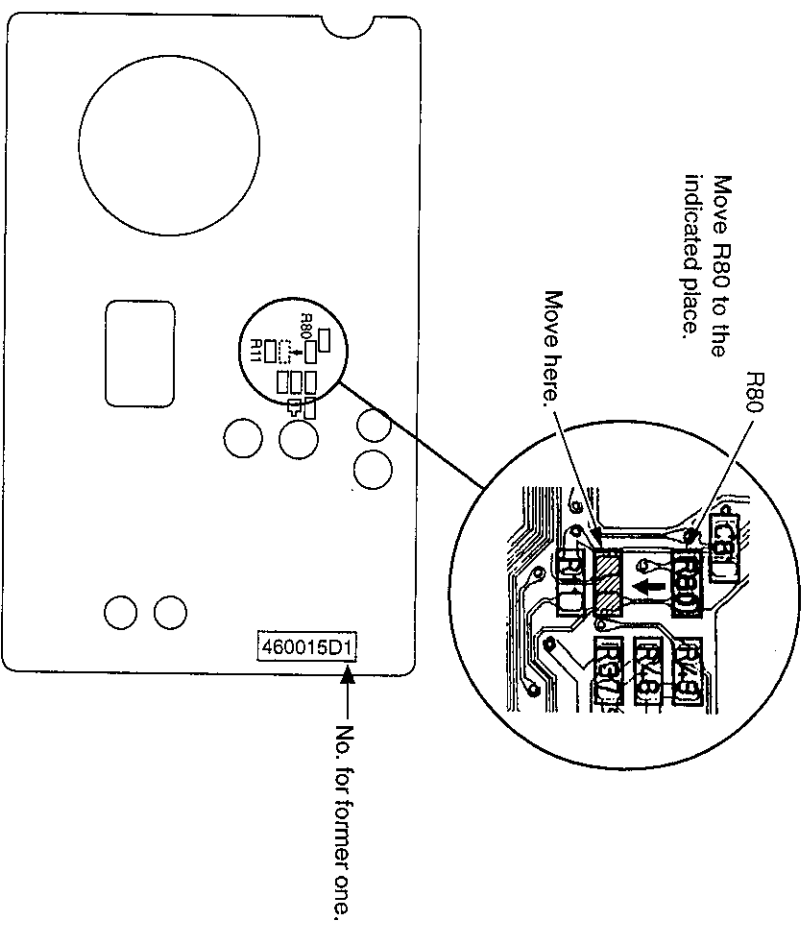


Fig. 1.1 Modification on Former Mechanism P.C.B. Assy (M3)
(When used together with the New Main P.C.B. Assy (C3))

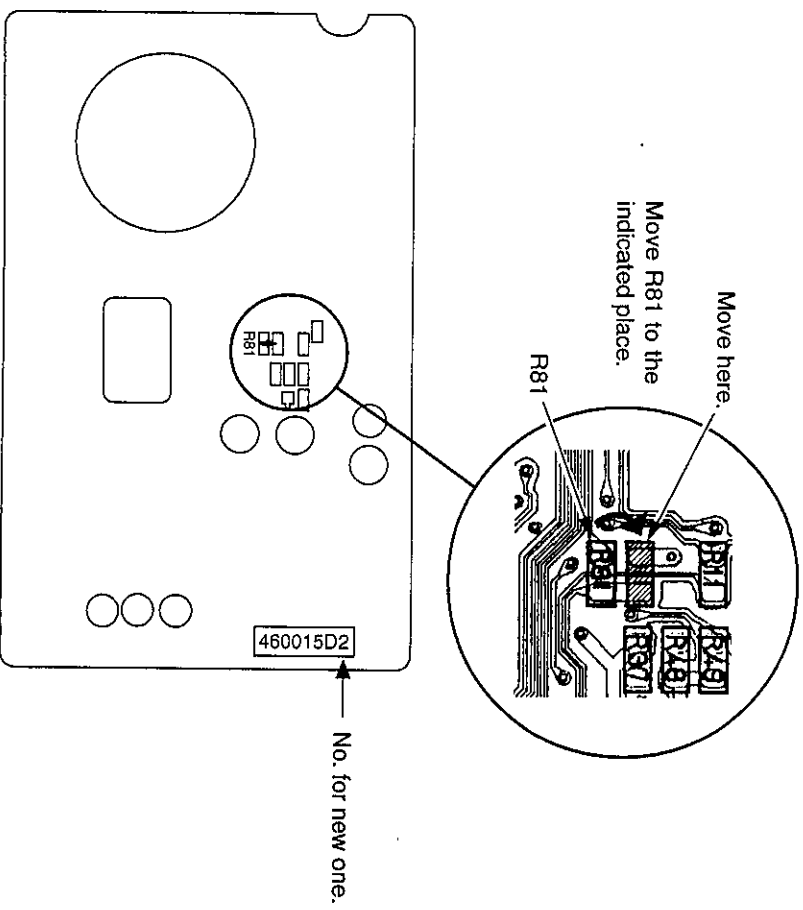


Fig. 1.2 Modification on New Mechanism P.C.B. Assy (C3)
(When used together with the Former Main P.C.B. Assy (M3))

2. REMOVAL PROCEDURES

• Location of Major Parts

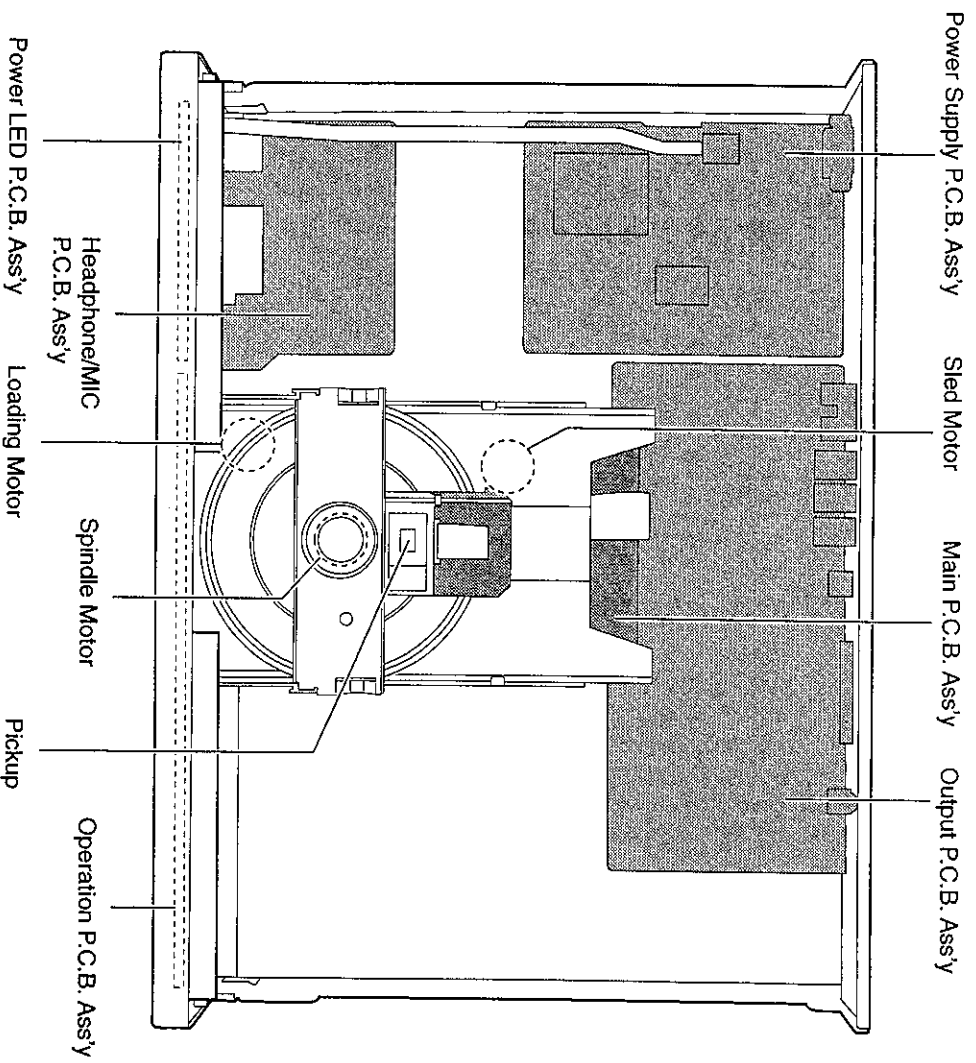


Fig. 2.1 Top View

• Removal Procedures

2.1. Upper Cover

Refer to Fig. 2.2.

- (1) Remove the five screws and detach the Upper Cover from the unit.

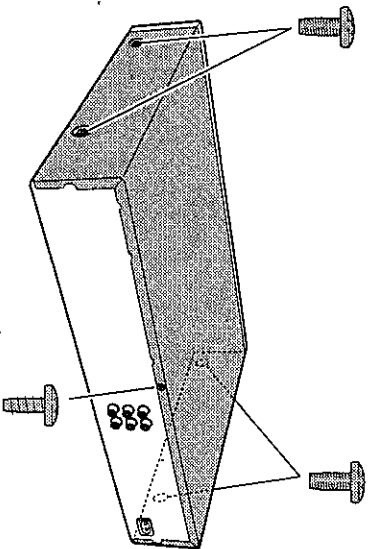


Fig. 2.2

2.2. Front Panel Block

- (1) Press the **EJECT/LOAD** button with the power turned ON. The Disc Tray will be ejected.

Note: After ejecting the Disc Tray, turn OFF the power and disconnect the power cord from the unit.

- (2) Remove the Tray Panel from the Disc Tray by pulling it upward.
- (3) Remove the three screws on the bottom. See Fig. 2.3.1.
- (4) Remove the two screws on both sides of the unit. See Fig. 2.3.1.
- (5) Disconnect the flat cable from the P702 connector on the Output P.C.B. Assy. See Fig. 2.3.2.
- (6) Release the tabs on both sides of the unit and remove the Front Panel Block by gently pulling it forward. The Power Button will be disengaged from the Power Joint.

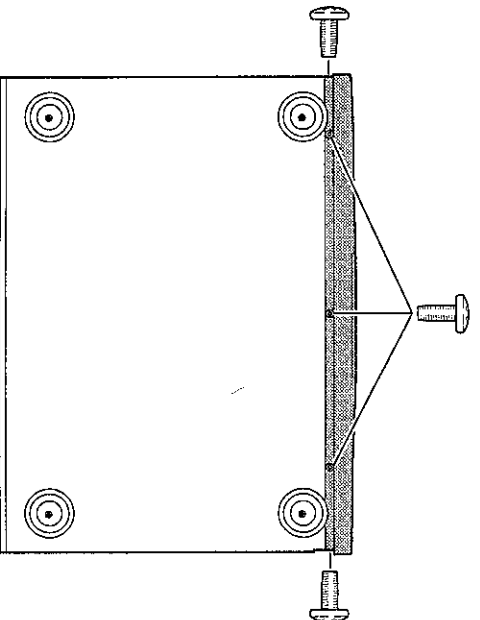


Fig. 2.3.1

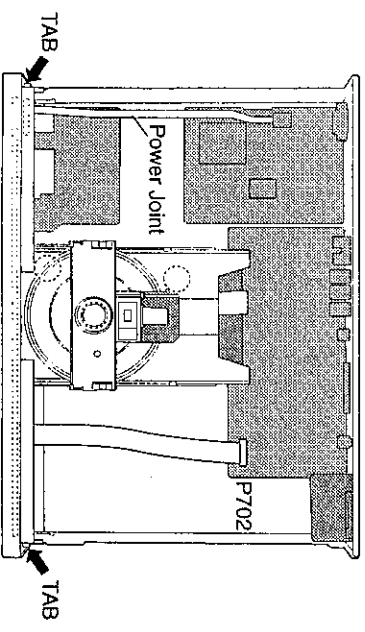


Fig. 2.3.2

2.3. Disc Tray

Refer to Fig. 2.4.

- (1) Remove the Front Panel Block referring to item 2.2.
- (2) Gently pull out the Disc Tray until it stops.
- (3) While pinching both stopper tabs inward with your finger tips, gently pull out the Disc Tray from the unit.

• When Installing the Disc Tray

- (1) Move the Slider UD to the left. (It will automatically return to the right a little.)
- (2) While aligning both side grooves of the Disc Tray with the rails of unit, gently insert the Disc Tray into the unit.

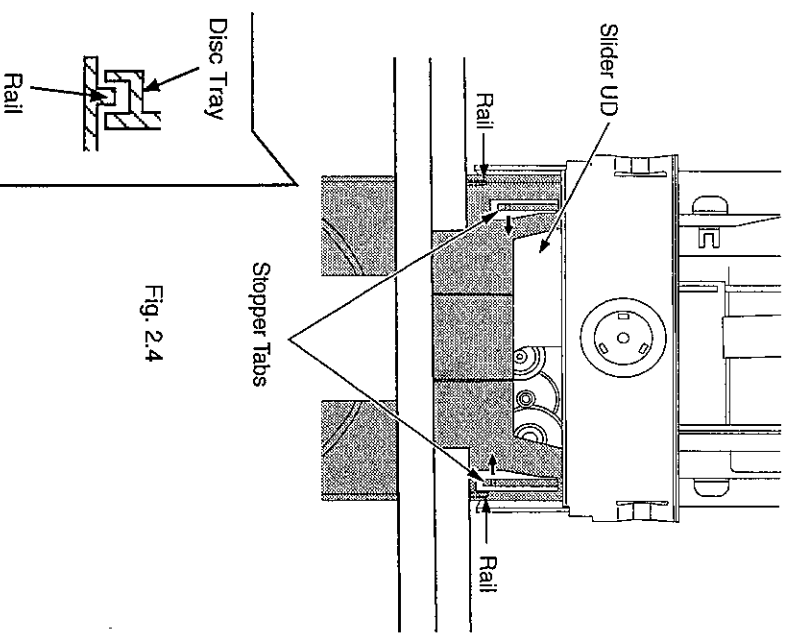


Fig. 2.4

2.4. DVD Mechanism Block

See Fig. 2.5.

- (1) Remove the Disc Tray referring to item 2.3.
- (2) Disconnect the two flat cables from the connectors P803 and P804 on the Main P.C.B. Ass'y.
- (3) Disconnect the cable from the connector P807 on the Main P.C.B. Ass'y.
- (4) Remove the four screws and detach the DVD Mechanism Block.

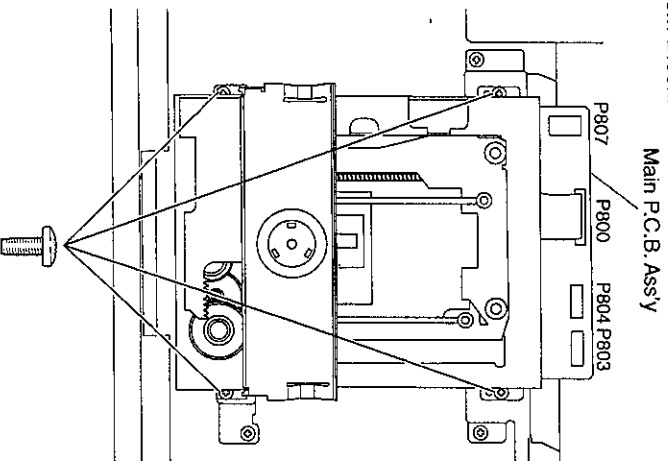


Fig. 2.5

2.5. Main P.C.B. Ass'y

- (1) Remove the DVD Mechanism Block referring to item 2.4.
- (2) Disconnect the flat cable from the connector P800 on the Main P.C.B. Ass'y. See Fig. 2.5.
- (3) Remove the four screws and detach the Main P.C.B. Ass'y from the DVD Mechanism Block. See Fig. 2.6.

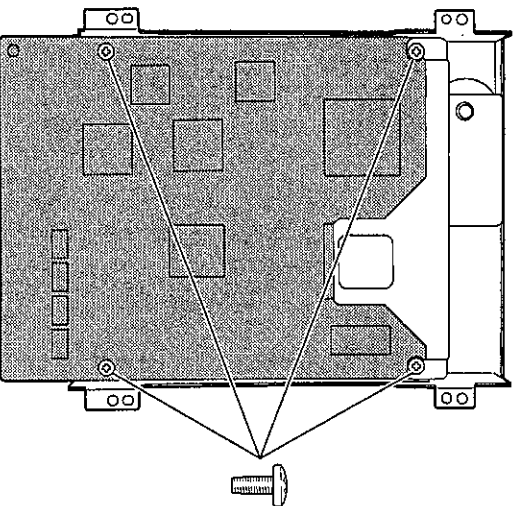


Fig. 2.6 Bottom View

2.6. Mechanism P.C.B. Ass'y

- (1) Remove the Main P.C.B. Ass'y referring to item 2.5.
- (2) Short the laser diode shorting lands (2 places) on the flexible cable of the Pickup Block. See Fig. 2.7.1.

NOTE: Use the ceramic soldering iron or the soldering iron whose metal part is grounded.

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

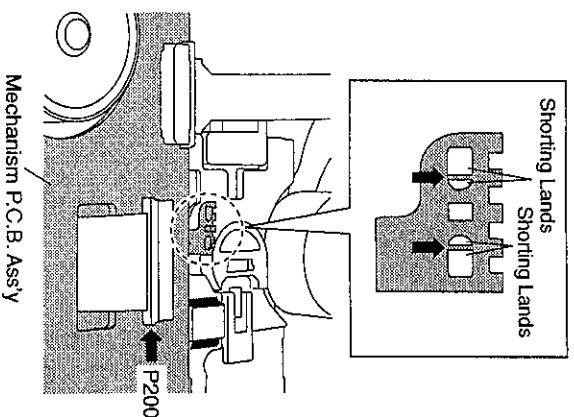


Fig. 2.7.1 Bottom View

- (3) Carefully disconnect the two cables from the connectors P400, P500 and P600, and the two flat cables from the connectors P100, P200 and P300 on the Mechanism P.C.B. Ass'y. See Fig. 2.7.2.
- (4) Remove the two screws and detach the Mechanism P.C.B. Ass'y from the Traverse Mechanism.

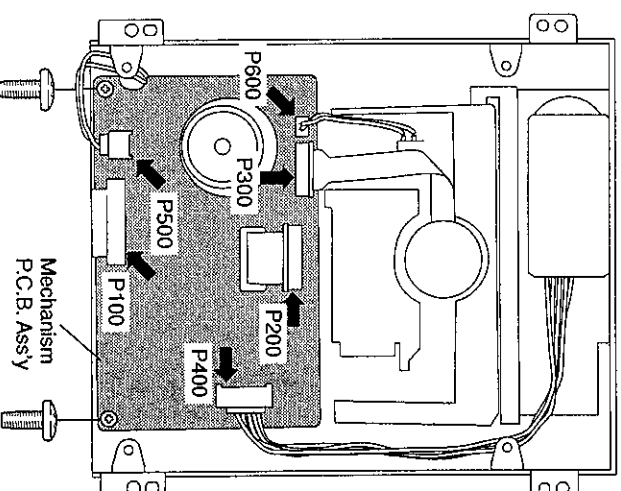


Fig. 2.7.2 Bottom View

● Note on Installing the Mechanism P.C.B. Assy

Remove the solder on the laser diode shorting lands (2 places) with the soldering iron after connecting all connectors to the Mechanism P.C.B. Assy.

Use the ceramic soldering iron or the soldering iron whose metal part is grounded.

2.7. Traverse Assy

See Fig. 2.8.

- (1) Remove the Main P.C.B. Assy referring to item 2.6.
- (2) Remove the two screws and detach the Clamper Block by turning it toward the front.
- (3) Using tweezers, release the four retaining hooks of the Traverse Assy from the rubber Insulators and remove the Traverse Assy.

NOTE: Pay special attention so as not to damage the rubber insulators.

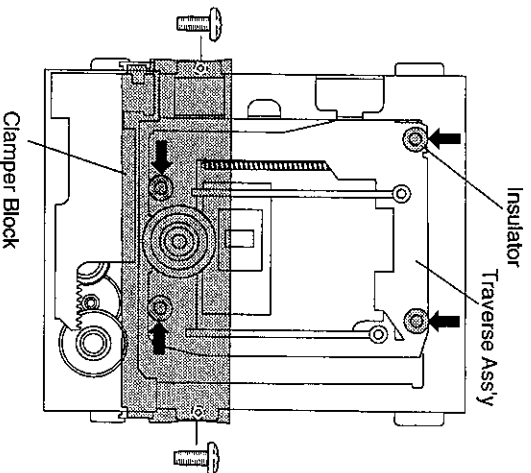


Fig. 2.8

2.8. Spindle Motor

- (1) Remove the Main P.C.B. Assy referring to item 2.5.
- (2) Disconnect the connector P300 on the Mechanism P.C.B. Assy. See Fig. 2.7.2.
- (3) Insert a Philips screwdriver into the turntable hole and remove the two screws that retain the Spindle Motor (Motor CDS8A50T30-A/TT). Refer to Fig. 2.9.

● Note on Installing the Spindle Motor

Perform the Tilt Adjustment.

- For new Models:
See item 3.2.3, "DVD Tilt Adjustment" on page 11.
- For former Models:
See item 3.3.1, "DVD Tilt Adjustment" on page 12.

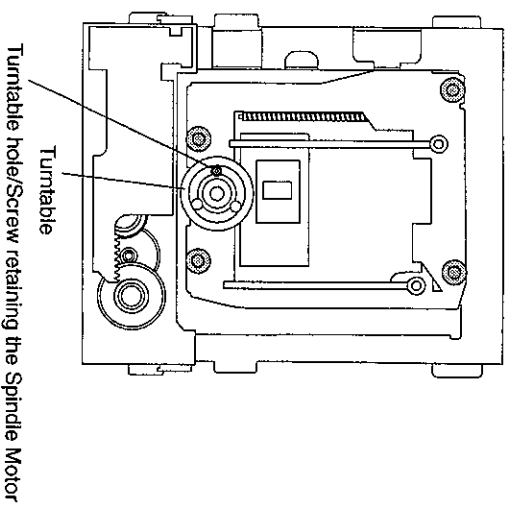


Fig. 2.9

2.9. Pickup Block

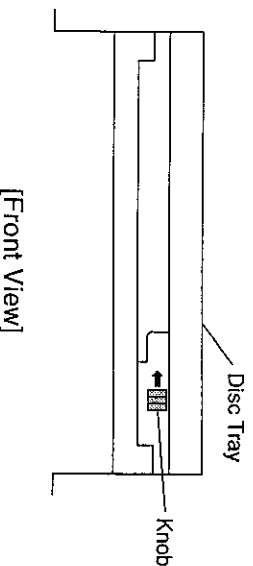
Replacement of the Pickup Block is not recommended because its azimuth adjustment is very critical and requires a special jig.

In case if the Pickup Block replacement is necessary, always replace the entire Traverse Assy.

How to Manually Open the Disc Tray of the Mechanism Block Assy

(The Front Panel Block has to be removed.)

Push the knob on the front right of the Mechanism Block Assy to the left. Then, the Disc Tray is unlocked and comes out a little. Draw the Disc Tray to open it.



[Front View]

3. ADJUSTMENTS

● Measuring Instruments and Jigs

- (1) DC Voltmeter
- (2) Oscilloscope (40 MHz or more)
- (3) A-BEX DVD Vertical Deviation Test Disc TDV-532 (DA09205A)
- (4) Laser Power Meter

3.1. Parts Location for Adjustments

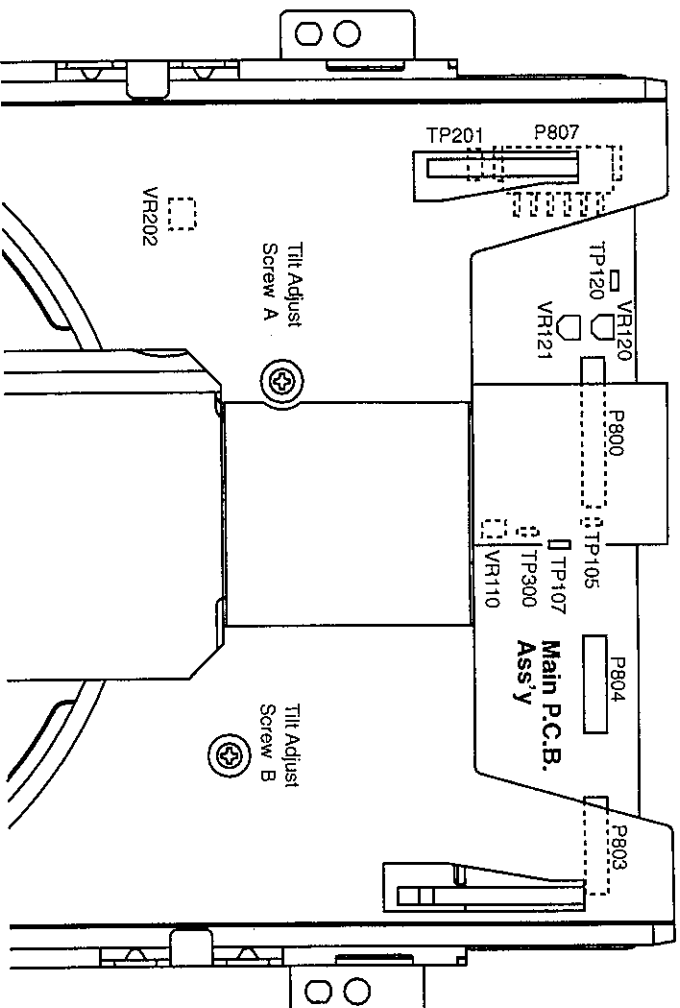


Fig. 3.1.1 Parts Location for New Model

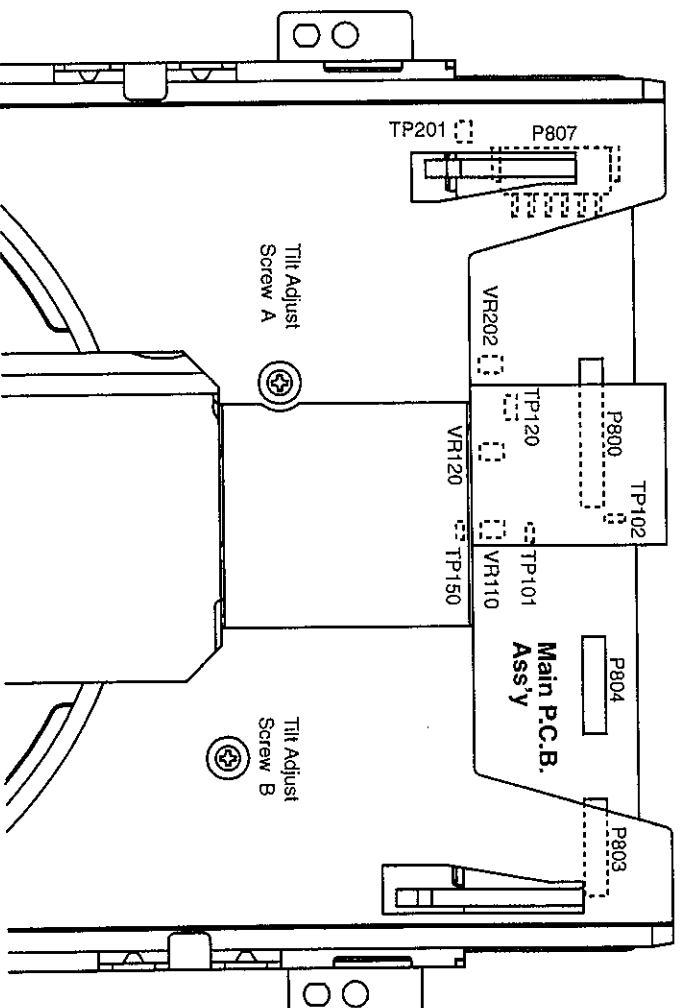


Fig. 3.1.2 Parts Location for Former Model

For New Models (For serial Nos., see "1.6. New/Former Models" on page 4.)

3.2. Adjustment Procedures (For New Models)

All VRs and test points are located on the Main P.C.B. Assy. See Fig. 3.1.1 for parts location.

WARNING

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

3.2.1. DSRF Adjustment

NOTE: Adjust only if the unit does work properly after IC201 on the Main P.C.B. Assy has been replaced with new one. Otherwise, this adjustment is not necessary since it is precisely adjusted at the factory.

- (1) Roughly adjust VR202 so that the unit can normally play back an ordinary DVD disc.
- (2) Slowly turn VR202 **clockwise** until the position were an error occurs. Memorize this position.
- (3) Next, turn VR202 **counterclockwise** until the position were an error occurs. Again, memorize this position.
- (4) Set VR202 to the center position of the points memorized in (2) and (3).

3.2.2. AS Adjustment

NOTE: No disc is required for this adjustment.

- (1) Connect a DC voltmeter between TP120 (AS) (+ terminal) and TP107 (VREF) (– terminal).
 - (2) While pressing and holding both **STOP** and **PAUSE** buttons on the unit, turn on the power.
- The unit will enter the test mode and the following message will appear on the display.

TEST MODE

- (3) Press the **STOP** button three times to light the following message on the display.

LD TEST CD

- (4) Adjust VR121 to obtain 0 ± 10 mV DC on the DC voltmeter.
- (5) Press the **STOP** button three time to light the following message on the display.

LD TEST DVD

- (6) Adjust VR120 to obtain 0 ± 10 mV DC on the DC voltmeter.
- (7) Turn off the power.

3.2.3. Tilt Adjustment

- (1) Connect an oscilloscope between TP201 (+ terminal) and TP105 (A.GND) (– terminal).
- Set it to "DC input" mode.
- (2) Play back the DVD Vertical Deviation Test Disc TDV-532 (DA09205A) and press the F.F. (>) button repeatedly until the pickup block reaches the outermost position (Chapter 16) of its movable range.
- (3) Press the **PAUSE** button to pause the test disc.
- (The disc keeps turning.)
- (4) Adjust the **Screw A** and **Screw B** alternately so that both AC and DC levels of the waveform are minimum. (The DC level should be less than 1.8 V and the AC component should be minimum.)

NOTE: When the Spindle Motor is replaced, the tilt adjustment should be performed for proper performance.

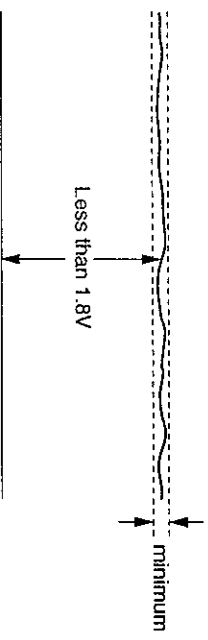


Fig. 3.2

3.2.4. Tracking Error Adjustment

- (1) Connect an oscilloscope between TP300 (TE) (+ terminal) and TP105 (A.GND) (– terminal).
 - Set it to "DC input" mode.
 - (2) While pressing and holding both F.F. (>) and **DIMMER** button on the unit, turn on the power.
- The unit will enter the test mode and the following message will appear on the display.

TEST MODE

- (3) Without loading a CD, read the DC level on the oscilloscope.
- (4) Load a 12-cm CD and press the **ZOOM** button on the remote control unit.
- (5) Adjust VR110 so that the center level of the AC component of the waveform is the same level as read in (3).

3.3. Adjustment Procedures (For Former Models)

All VRs and test points are located on the Main P.C.B. Assy. See Fig. 3.1.2 for parts location.

WARNING

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

3.3.1. Tilt Adjustment

- (1) Connect an oscilloscope between TP201 (+ terminal) and TP102 (D.GND) (– terminal). Set it to "DC input" mode.
- (2) Play back the DVD Vertical Deviation Test Disc TDV-532 (DA09205A) and press the F.F. (>) button repeatedly until the pickup block reaches the outermost position (Chapter 16) of its movable range.
- (3) Press the **PAUSE** button to pause the test disc. (The disc keeps turning.)
- (4) Adjust the **Screw A** and **Screw B** alternately so that both AC and DC levels of the waveform are minimum. (The DC level should be less than 1.8 V and the AC component should be minimum.)

NOTE: When the Spindle Motor is replaced, the tilt adjustment should be performed for proper performance.

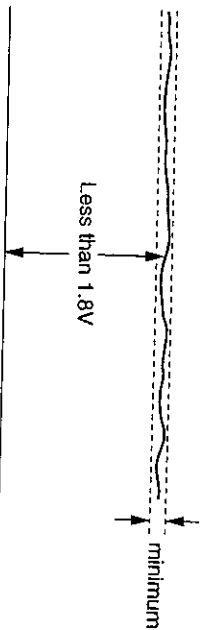


Fig. 3.3

3.3.2. Slice Level Adjustment

- (1) Connect an oscilloscope between TP201 (+ terminal) and TP102 (D.GND) (– terminal). Set it to "DC input" mode.
- (2) Play back an ordinary DVD (Single sided, one layer) and press the F.F. (>) button repeatedly until the pickup block reaches almost the center position of its movable range.
- (3) Adjust VR202 to obtain minimum DC level on the oscilloscope. (The DC level should be less than 1.8 V.)

3.3.3. CD Tracking Balance Adjustment

- (1) Connect an oscilloscope between TP150 (TE) (+ terminal) and TP102 (D.GND) (– terminal). Set it to "DC input" mode.
- (2) Set VR110 approximately at its mechanical center position.
- (3) Play back an ordinary CD, and then pause it. **NOTE:** If the CD does not start playing, turn the VR110 within ± 15 degrees and try to play back the CD. If the CD does not still start playing, turn VR110 within ± 30 degrees and play the CD.
- (4) Adjust VR110 so that the level A and level B of the waveform are equal.

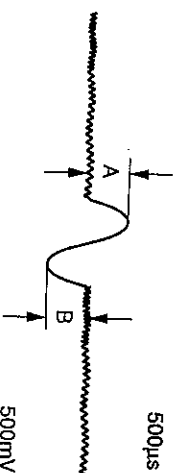


Fig. 3.4

3.3.4. AS Adjustment

NOTE: No disc is required for this adjustment.

- (1) Connect a DC voltmeter between TP120 (+ terminal) and TP102 (D.GND) (– terminal).
- (2) While pressing and holding both **STOP** and **PAUSE** buttons on the unit, turn on the power. The unit will enter the test mode and the following message will appear on the display.

TEST MODE

- (3) Press the **STOP** button twice to light the following message on the display.
LD TEST DVD
- (4) Adjust VR120 to obtain 3.65 V to 3.85 V DC on the DC voltmeter.
- (5) Press the **STOP** button once to light the following message on the display.
LD TEST CD
- (6) Check that the reading on the DC voltmeter is in the following range:
"Value in (4)" ± 50 –0 mV
- (7) If satisfactory result is not obtained, repeat (3) to (6).
Turn off the power.

Common to New and Former Models

3.4. Laser Power Check

WARNING

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

NOTES:

1. The pickup incorporates two laser diodes (one for DVD and the other for CD). So, you need to check for both laser diodes.
2. Two check methods are introduced; using a laser power meter and using a DC voltmeter to measure the laser current.

The former method is easier to check the laser power. On the other hand, when you measure the voltages across the chip resistors with a DC voltmeter, you need to solder lead wires to the chip resistors on the Mechanism P.C.B. Assy beforehand.

3.4.1. Laser Power Check Using a Laser Power Meter

- (1) While pressing and holding both **STOP** and **PAUSE** buttons on the unit, turn on the power.

The unit will enter the test mode and the following message will appear on the display.

TEST MODE

- (2) Put a laser power meter on the pickup lens.
- (3) Press the **STOP** button twice to light the following message on the display.

LD TEST DVD

- (4) Read the power meter. (LPdvd)
- (5) Press the **STOP** button once to light the following message on the display.

LD TEST CD

- (6) Read the power meter. (LPcd)
- (7) Be sure that the laser diodes are normal from the following table.
- (8) Turn off the power

[Laser Power Reference]

	DVD (LPdvd)	CD (LPcd)
Typical value	0.5 - 1.1 mW	0.07 to 0.3 mW

Laser Power Meter Settings:

- For DVD -- WAVE: HeNe, RANGE: 1 mW
- For CD -- WAVE: Diode, RANGE: 0.3 mW

NOTE: If the reading is widely out of the above range, the pickup will be defective and the Traverse Assy must be replaced with new one.

3.4.2. Laser Power Check Using a DC Voltmeter

Preparation to check:

Solder the lead wires to the following resistors on the Mechanism P.C.B. Assy. You will need to remove the Mechanism P.C.B. Assy to solder the lead wires. (Refer to "2.6. Mechanism P.C.B. Assy" on page 8.)

- R40 (For DVD laser diode)
- R44 (For CD laser diode)

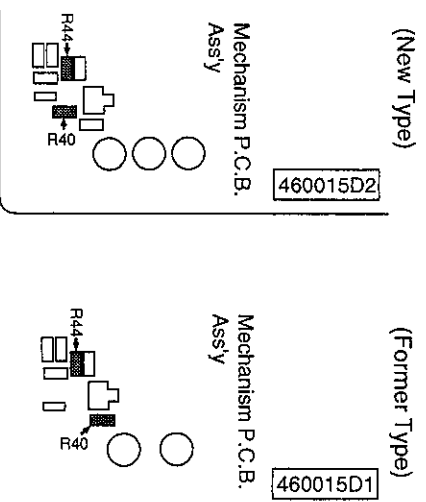


Fig. 3.5 Location of R40 and R44

Check Procedure:

- (1) While pressing and holding both **STOP** and **PAUSE** buttons on the unit, turn on the power. The unit will enter the test mode and the following message will appear on the display.

TEST MODE

- (2) Press the **STOP** button twice to light the following message on the display.

LD TEST DVD

- (3) Connect a DC voltmeter across R40 and read the voltage. Vdvd (mV)
Calculate the laser current (Idvd) from the following:
 $I_{dvd} (mA) = V_{dvd} (mV) / 27 (\text{ohm})$
- (4) Press the **STOP** button once to light the following message on the display.

LD TEST CD

- (5) Connect a DC voltmeter across R44 and read the voltage. Vcd (mV)
Calculate the laser current (Icd) from the following:
 $I_{cd} (mA) = V_{cd} (mV) / 4.7 (\text{ohm})$
- (6) Be sure that the laser diodes are normal from the following table. Then, turn off the power.

[Laser Current Reference]

	DVD (Idvd)	CD (Icd)
Typical value	40 mA	35 mA
Maximum value	60 mA	55 mA

NOTE: If the reading exceeds the maximum value, the pickup will be defective and the Traverse Assy must be replaced with new one.

4. MECHANISM ASS'Y AND PARTS LIST

4.1. Synthesis

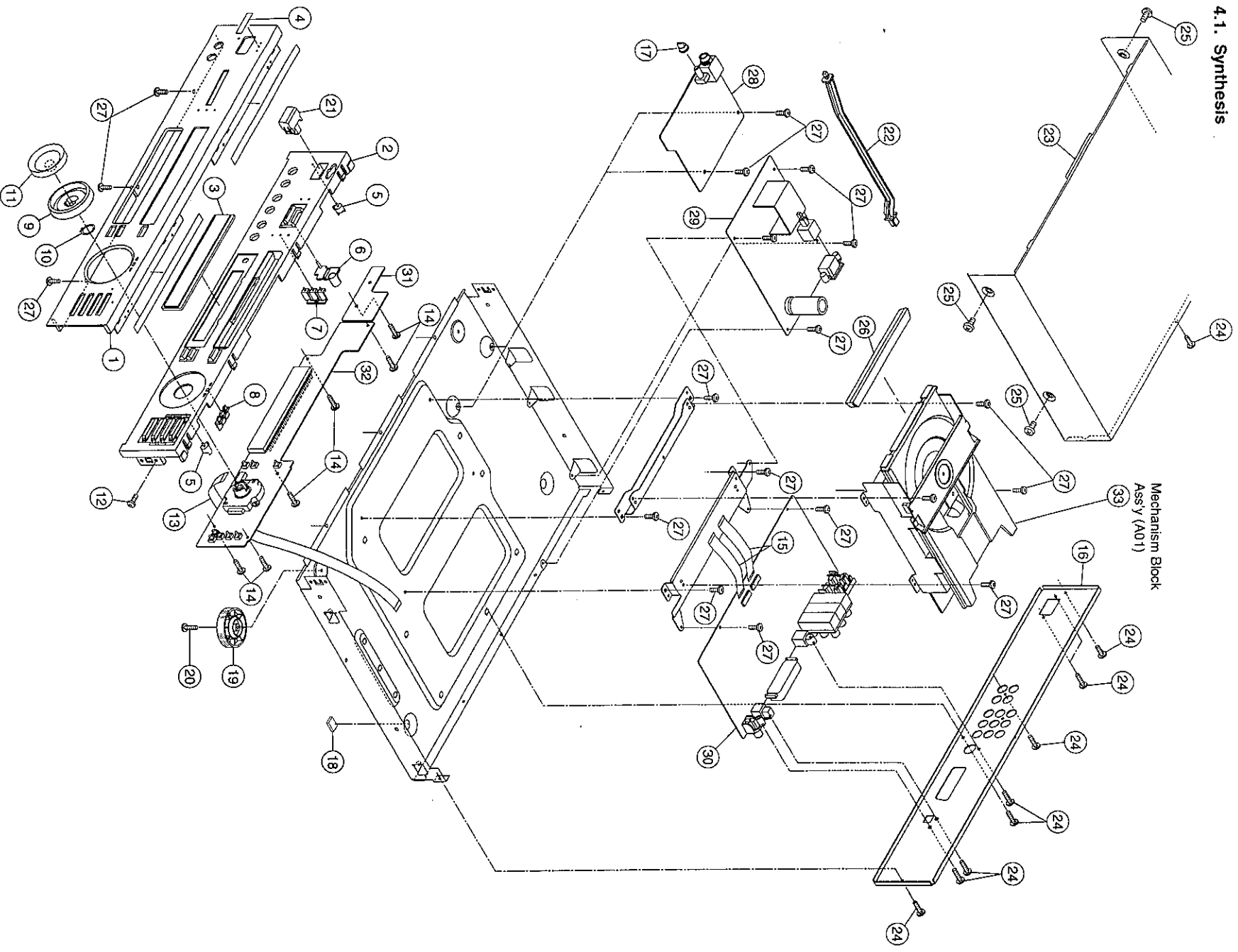


Fig. 4.1

Accessories

Schematic Ref. No.	Part No.	Description
—	0F05640A	Carton Box
—	0F05641A	Packing
—	0F05639A	Poly Cover
—	0D07259A	Owner's Manual (Japanese)
—	0D07260A	Owner's Manual (English)
—	0D07261A	Owner's Manual (French)
—	0D07262A	Owner's Manual (German)
—	0D07263A	Owner's Manual (Spanish)
—	0D07264A	Owner's Manual (China)
—	DG05609A	Remote Unit RC-105v
—	0B85744A	Cord 21P YAF11-0642 1.5M (EP, UK Only)
—	0B85745A	Cord R-C275VP (Except EP, UK)
—	0D07241A	AC Cord 200S Kp-211Ks15C B J (JPN, DA, OTR)
—	0D07238A	AC Cord 200SKP10WKS15WNISPT2 BA (USA, CAN, TW)
—	0D07245A	AC Cord 200SKP561KS15F A S (AUS)
—	0D07239A	AC Cord 200SKP419CKS15F A V (EP)
—	0D07242A	AC Cord MP5004A (HK, UK)
—	0D07243A	AC Cord 200SKP10M KS15F B GB (CH)
—	0D07244A	AC Cord MP2217 (KR)

For recommended spare parts list, see 6 "RECOMMENDED SPARE PARTS LIST".

4.1. Synthesis

Schematic Ref. No.	Part No.	Description
01	0H08858A	Panel Front-10S (BK) (USA, CAN, JPN, EP, DA, UK, AUS)
02	0H08859A	Panel Front-10S (CG) (OTR, HK, CH, TW, KR)
02	0H08861A	Panel Inner (BK) (USA, CAN, JPN, EP, DA, UK, AUS)
03	0H08862A	Panel Inner (CG) (OTR, HK, CH, TW, KR)
04	0H08860A	Window FLD
04	0H08848A	Name Plate -Black (USA, CAN, JPN, EP, DA, UK, AUS)
05	0H08849A	Name Plate -Gray (OTR, HK, CH, TW, KR)
06	0H08850A	Lens Power
07	0H08851A	Lens VS
08	0H08852A	Lens (B)
09	0H08853A	Shuttle Jog/Shuttle
09	0H08854A	Shuttle Ring(N)-BK (USA, CAN, JPN, EP, DA, UK, AUS)
10	0H08855A	Shuttle Ring(N)-CG (OTR, HK, CH, TW, KR)
11	0E04266A	Ring C STW-19
11	0H08856A	Knob Jog (N)-BK (USA, CAN, JPN, EP, DA, UK, AUS)
12	0H08857A	Knob Jog (N)-CG (OTR, HK, CH, TW, KR)
12	0E04259A	ST 3x6 +BID BNI (USA, CAN, JPN, EP, DA, UK, AUS)
13	0E04260A	ST3X6 +BID N13 (OTR, HK, CH, TW, KR)
14	0B85743A	Cord FFC BD P1.0 L230 16P
14	0E04262A	BT3X8 +BID BZN
15	0B85741A	Cord FFC BD P0.5 L70 24P
16	0H08834A	Panel Rear DVD-10S (JPN)
16	0H08835A	Panel Rear DVD-10S (EP, UK)
17	0H08836A	Panel Rear DVD-10S (DA, OTR, HK, CH, TW, KR, AUS)
17	0H08833A	Panel Rear DVD-10S (USA, CAN)
18	0H08837A	Knob Level (BK)
18	0H08838A	Knob Level (BK) (USA, CAN, JPN, EP, DA, UK, AUS)
19	0J08650A	Knob Level (CG) (OTR, HK, CH, TW, KR)
20	0H08839A	Cushion Foot 12x12x2
21	0E04261A	Foot(B)
21	0H08840A	ST3x10 +BID CMT
22	0H08841A	Button Power (BK) (USA, CAN, JPN, EP, DA, UK, AUS)
22	0J08651A	Button Power (CG) (OTR, HK, CH, TW, KR)
23	0H08842A	Cover Upper (BK) (USA, CAN, JPN, EP, DA, UK, AUS)
24	0H08843A	Cover Upper (CG) (OTR, HK, CH, TW, KR)
24	0E04262A	BT3x8 +BID BZN
25	0E04263A	(USA, CAN, JPN, EP, DA, UK, AUS)
25	0E04264A	BT3x8 +BID N13 (OTR, HK, CH, TW, KR)
26	0E04265A	ST4x6 +BID BZN
27	0E04266A	(USA, CAN, JPN, EP, DA, UK, AUS)
28	0E04267A	ST4x6 +BID N13 (OTR, HK, CH, TW, KR)
29	0E04268A	Panel Tray (BK) Part (USA, CAN, JPN, EP, DA, UK, AUS)
29	0E04269A	Panel Tray (CG) Part (OTR, HK, CH, TW, KR)
30	0E04270A	ST3x6 +BID CMT
31	0E04271A	Headphone/MIC P.C.B. Assy (USA, CAN, TW)
32	0E04272A	Power Supply P.C.B. Assy (Except USA, CAN, TW)
33	0E04273A	Power Supply P.C.B. Assy (USA, CAN, TW)
34	0E04274A	Power Supply P.C.B. Assy (KR)
35	0E04275A	Output P.C.B. Assy (JPN)
36	0E04276A	Output P.C.B. Assy UL (Except JPN, EP, UK)
37	0E04277A	Output P.C.B. Assy (EP, UK)
38	0E04278A	Power LED P.C.B. Assy
39	0E04279A	Operation P.C.B. Assy
40	0E04280A	Mechanism Block Assy (Except USA, CAN)
41	0E04281A	Mechanism Block Assy (USA, CAN)

4.2. Mechanism Block Ass'y (A01)

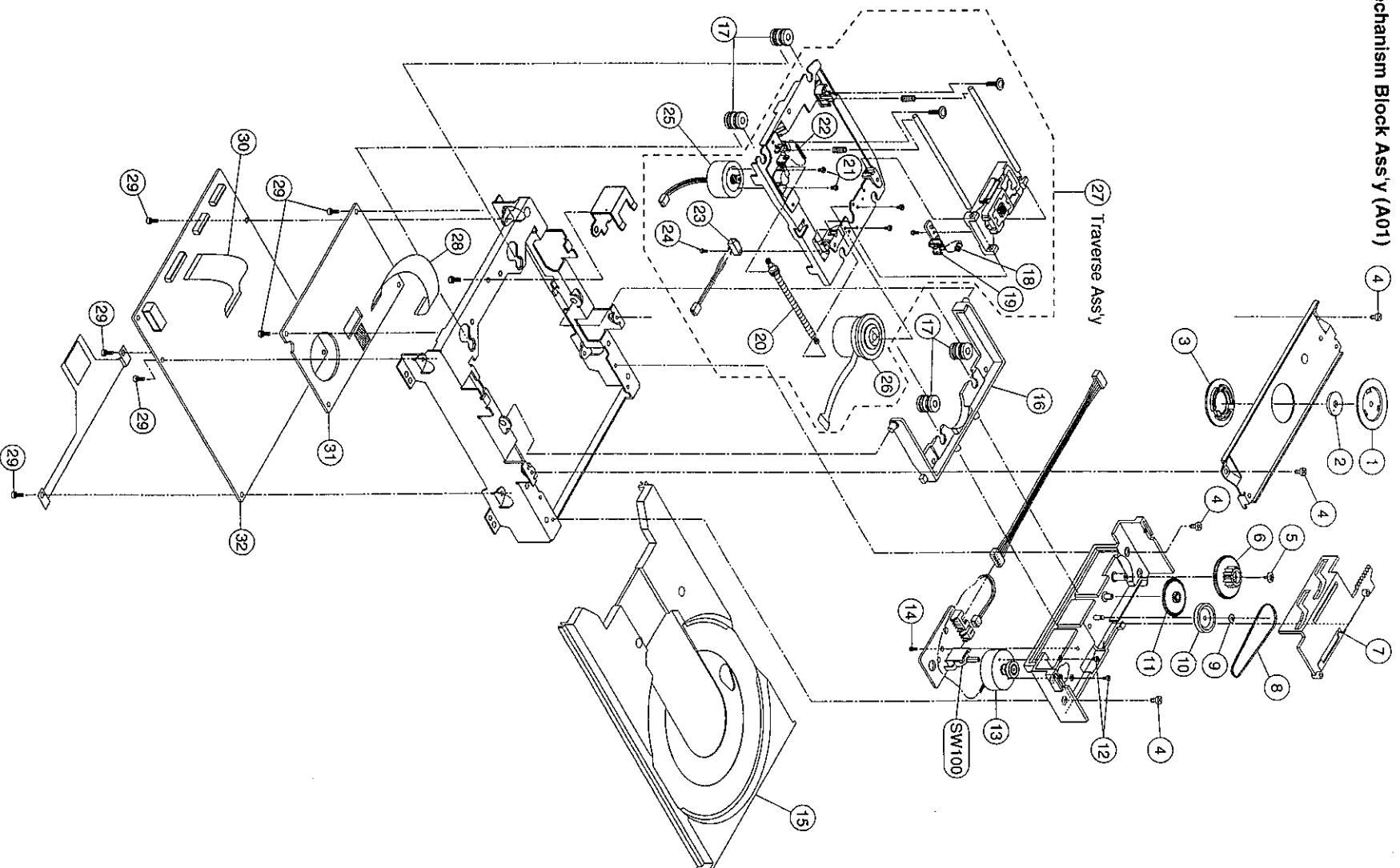


Fig. 4.2

4.2. Mechanism Block Ass'y (A01)

Schematic Ref. No.	Part No.	Description
A01	CA09490A	Mechanism Block Ass'y (Except USA, CAN)
	CA09489A	Mechanism Block Ass'y (USA, CAN)
	01	OC10554A Plate Clamp
	02	OC10555A Magnet
	03	OC10553A Disc Clamp
	04	OE04255A ST2.6x6 + Pan CMT
	05	OE04253A PT2x5 + Pan CMT
	06	OC10545A Gear Load 2
	07	OC10548A Slider UD
	08	OC10547A Belt Loading
	09	OE04252A C Washer 2.1x5x5
	10	OC10544A Pulley Gear
	11	OC10543A Gear Load 1
	12	OE04247A M1.7x2.5 +Pan BZN
	13	CA09493A Loading Motor Ass'y
	14	OE04254A BT3x8 +BID CMT
	15	OC10557A Disc Tray
	16	OC10551A Holder Traverse
	17	OC10552A Insulator
	18	OC10526A Sp Push Hook
	19	OC10535A Hook L.S
	20	CA09487A Shaft Screw Ass'y
	21	OE04248A M1.7x3.5 +Pan CMT
	22	OC10524A SP Push L.S
	23	OB70304A SW Micro MPU10420MLB0
	24	OE04249A ST2x8 +BID CMT
	25	CA09488A Sled Motor Ass'y
	26	OB90969A Motor CDS8A50T30-A/TT
	27	CA09494A Traverse Ass'y TKM-002 ✓
	28	OB85702A FFC 30P L50S3 P0.5
	29	OE04251A ST3x6 +BID CMT
	30	OB85703A FFC 40P L70 P0.5
	31	BK10454A Mechanism P.C.B. Ass'y (C3)
	32	BK10455A Main P.C.B. Ass'y (C3) ✓
	SW100	OB70306A SW Lever MXS01070MLB0

5. ELECTRICAL PARTS LIST

NOTE: May/or electrical parts are shown in the parts list.

5.1. Main P.C.B. Ass'y 5.1.1. New Main P.C.B. Ass'y

Schematic Ref. No.	Part No.	Description
	BK10455A	Main P.C.B. Ass'y (C3) (For New Models)
IC100	OB13177A	IC CYC11AP000* (Hercules)
IC110	OB13179A	IC NJM4558M
IC111	OB13179A	IC NJM4558M*
IC120	OB13169A	IC BU4011BFV-E2*
IC121	OB13170A	IC BU4S81-TR*
IC201	OB13172A	IC CYC12MP000* (Lion)
IC202	OB13190A	IC TC7SHU04FU*
IC203	OB13179A	IC NJM4558M*
IC300	OB13177A	IC MN67700VRZB*
IC311	OB13190A	IC TC7SHU04FU*
IC311	OB13165A	IC MN66261
IC490	OB13173A	IC CYC13DD000* (Mermaid)
IC500	OB13175A	IC HY628100ALG-55*
IC501	OB13174A	IC HY57V161610DTC*
IC502	OB13174A	IC HY57V161610DTC*
IC503	OB13183A	IC TC74VHC00FT*
IC550	OB13185A	IC TC74VHC157FTEL*
IC600	BA10459A	IC MB90F574APFV-G AK-SYS4 → 2
IC602	BA10460A	IC MX29F1610MC-12-NC090303
IC603	OB13176A	IC M24C16-MN6T*
IC605	OB13183A	IC TC74VHC00FT*
IC606	OB13189A	IC TC74VHC1245AFT*
IC607	OB13187A	IC TC74VHC574FTEL*
IC610	OB13191A	IC TC7W04FUTE12L*
IC611	OB13183A	IC TC74VHC00FT*
IC612	OB13193A	IC TC74VHC00FT*
IC613	OB13184A	IC TC74VHC08FTEL*
IC614	OB13188A	IC TC74VHC086FT*
IC700	OB13195A	IC ZVNA-3-PEO*
IC701	OB13174A	IC HY57V161610DTC*
IC702	OB13174A	IC HY57V161610DTC*
IC703	OB13192A	IC TC7WH157FU*
IC800	OB13182A	IC SM8701BM-ET*
IC801	OB13194A	IC TC7WU04FUTE12L*
IC802	OB13190A	IC TC7SHU04FU*
IC803	OB13194A	IC TC7WU04FUTE12L*
IC850	OB13167A	IC ADV7172 KST*
IC901	OB13168A	IC BA05FP-E2*
IC911	OB13180A	IC PCM1735E2K*
IC931	OB13180A	IC PCM1735E2K*
IC951	OB13180A	IC PCM1735E2K*
IC971	OB13180A	IC PCM1735E2K*
IC991	OB13231A	IC TC74HC4053AFT*
TR100	OB13161A	DTR UMG4N-TR*
TR101	OB13161A	DTR UMG4N-TR*
TR102	OB13161A	DTR UMG4N-TR*
TR103	OB13161A	DTR UMG4N-TR*
TR104	OB13161A	DTR UMG4N-TR*
TR105	OB13161A	DTR UMG4N-TR*
TR106	OB13161A	DTR UMG4N-TR*
TR110	OB13163A	FET 2SK880*-TE85L
TR111	OB13163A	FET 2SK880*-TE85L
TR112	OB13162A	FET 2SK2145*-TE85L
TR117	OB13160A	DTR DTC144TUA*
TR167	OB13154A	DTC FMV4A-1148*
TR170	OB13160A	DTR DTC144TUA*
TR171	OB13156A	DTR UMX3N-TR*
TR172	OB13196A	TR 2SA1576A*-Q,R,S
TR190	OB13159A	DTR DTC144EUA*
TR200	OB13197A	TR 2SC4081*-R,S

For recommended spare parts list, see 6 "RECOMMENDED SPARE PARTS LIST".

Schematic Ref. No.	Part No.	Description
TR201	OB13197A	TR 2SC4081*-R,S
TR202	OB13197A	TR 2SC4081*-R,S
TR300	OB13158A	DTR DT144EUA*
TR490	OB13159A	DTR DTC144EUA*
TR491	OB13160A	DTR DTC144TUA*
TR500	OB13160A	DTR DTC144TUA*
TR600	OB13159A	DTR DTC144EUA*
TR800	OB13196A	TR 2SA1576A*-Q,R,S
TR802	OB13196A	TR 2SA1576A*-Q,R,S
TR804	OB13196A	TR 2SA1576A*-Q,R,S
TR805	OB13196A	TR 2SA1576A*-Q,R,S
TR806	OB13196A	TR 2SA1576A*-Q,R,S
D101	OB13151A	DI 1SS355TE-17*
D103	OB13151A	DI 1SS355TE-17*
D190	OB13151A	DI 1SS355TE-17*
D191	OB13152A	DI DA204U-1T06*
D193	OB13151A	DI 1SS355TE-17*
D300	OB13151A	DI 1SS355TE-17*
D301	OB13151A	DI 1SS355TE-17*
D500	OB13151A	DI 1SS355TE-17*
D501	OB13151A	DI 1SS355TE-17*
D850	OB13153A	DI UMN11N-TN*
D901	OB13153A	DI UMN11N-TN*
D902	OB13151A	DI 1SS355TE-17*
D903	OB13151A	DI 1SS355TE-17*
X301	OB90966A	XTAL CX-16F 40MHZ*
X601	OB90966A	XTAL CCR4.0MC3T*
X800	OB90965A	XTAL CX-11F 27MH*
VR110	OB30229A	SVR MVR32 222*
VR120	OB30229A	SVR MVR32 222*
VR121	OB30229A	SVR MVR32 222*
VR202	OB30230A	SVR MVR32 223*

5.1.2. Former Main P.C.B. Ass'y (M3C1)

Schematic Ref. No.	Part No.	Description
	—	Main P.C.B. Ass'y (M3C1) (For Former Models)
IC100	—	IC AN8824FBP
IC101	OB13179A	IC NJM4558M*
IC110	OB10811A	IC NJM4560M
IC111	OB13179A	IC NJM4558M*
IC112	OB13170A	IC BU4S81*-TR
IC120	OB13169A	IC BU4011BFV-E2
IC121	OB13170A	IC BU4S81*-TR
IC200	—	IC AN8623FBO
IC250	2B10237A	IC EL524C
IC300	OB13177A	IC MN67700VRZB*
IC311	OB13190A	IC TC7SHU04FU*
IC490	OB13165A	IC MN66261
IC500	OB13173A	IC CYC13DD000* (Mermaid)
IC501	OB13175A	IC HY628100ALG-55*
IC502	OB13174A	IC HY57V161610DTC*
IC503	OB13183A	IC TC74VHC00FT*
IC504	2B10219A	IC TC7W32FUTE12L
IC505	2B10233A	IC TC74VHC161FTEL
IC506	OB13183A	IC TC74VHC00FT*
IC550	OB13185A	IC TC74VHC157FTEL*
IC600	BA10459A	IC MB90F574APFV-G AK-SYS4
IC602	BA10460A	IC MX29F1610MC-12-NC090303
IC603	OB13176A	IC M24C16-MN6T*
IC605	OB13183A	IC TC74VHC00FT*
IC606	OB13189A	IC TC74VHC1245AFT*
IC607	OB13187A	IC TC74VHC574FTEL*
IC610	OB13191A	IC TC7W04FUTE12L*
IC611	OB13183A	IC TC74VHC00FT*
IC612	OB13193A	IC TC74VHC00FT*
IC613	OB13184A	IC TC74VHC08FTEL*

5.2. Output P.C.B. Assy

Schematic Ref. No.	Part No.	Description
IC614	OB13188A	IC TC74VHC96FT*
IC700	OB13195A	IC ZVNA-3-PEO*
IC701	OB13174A	IC HY57V161610DTC*
IC702	OB13174A	IC HY57V161610DTC*
IC703	OB13192A	IC TC7WH157FU*
IC800	OB13182A	IC SM8701BM-ET*
IC801	OB13194A	IC TC7WU04FUTE12L*
IC802	OB13190A	IC TC7SHU04FU*
IC803	OB13194A	IC TC7WU04FUTE12L*
IC850	OB13167A	IC ADV7172* KST
IC853	2B10145A	IC XC62FP3302PR
IC901	OB13168A	IC BA05FP*-E2
IC911	OB13180A	IC PCMI735E/2K*
IC931	OB13180A	IC PCMI735E/2K*
IC951	OB13180A	IC PCMI735E/2K*
IC971	OB13180A	IC PCMI735E/2K*
IC991	OB13231A	IC TC74HC4053AFJ*
TR100	OB13161A	DTR UMG4N-TR*
TR101	OB13161A	DTR UMG4N-TR*
TR102	OB13161A	DTR UMG4N-TR*
TR103	OB13161A	DTR UMG4N-TR*
TR104	OB13161A	DTR UMG4N-TR*
TR105	OB13161A	DTR UMG4N-TR*
TR106	OB13161A	DTR UMG4N-TR*
TR107	OB13197A	TR 2SC4081*-R,S
TR108	OB13197A	TR 2SC4081*-R,S
TR110	OB13163A	FET 2SK880-TE85L*
TR111	OB13163A	FET 2SK880-TE85L*
TR112	OB13162A	FET 2SK2145-TE85L*
TR117	OB13160A	DTR DTC144TUA*
TR140	2B10171A	TR C.DTA144TUA
TR167	OB13154A	DTC FMV4A-T148*
TR190	OB13159A	DTR DTC144EUA*
TR200	OB13197A	TR 2SC4081*-R,S
TR300	OB13158A	DTR DTA144EUA*
TR490	OB13159A	DTR DTC144EUA*
TR491	OB13160A	DTR DTC144TUA*
TR500	OB13160A	DTR DTC144TUA*
TR600	OB13159A	DTR DTC144EUA*
TR801	OB13196A	TR 2SA1576A*-Q,R,S
TR802	OB13196A	TR 2SA1576A*-Q,R,S
TR804	OB13196A	TR 2SA1576A*-Q,R,S
TR805	OB13196A	TR 2SA1576A*-Q,R,S
TR806	OB13196A	TR 2SA1576A*-Q,R,S
D101	OB13151A	DI ISS355TE-17
D103	OB13151A	DI ISS355TE-17
D190	OB13151A	DI ISS355TE-17
D191	OB13152A	DI DA204U*-T106
D193	OB13151A	DI ISS355TE-17
D300	OB13151A	DI ISS355TE-17
D301	OB13151A	DI ISS355TE-17
D500	OB13151A	DI ISS355TE-17
D501	OB13151A	DI ISS355TE-17
D850	OB13153A	DI UMN11N*-TN
D901	OB13153A	DI UMN11N*-TN
D902	OB13151A	DI ISS355TE-17
D903	OB13151A	DI ISS355TE-17
X301	OB90966A	XTAL CX-16F 40MHZ*
X601	OB90964A	XTAL CCRA.0MC3T*
VR110	OB90965A	XTAL CX-11F 27MH*
VR120	OB30229A	SVR MVR32 222*
VR202	2B20044A	SVR MVR32 471*

Schematic Ref. No.	Part No.	Description
	BK10451A	Output P.C.B. Assy (JPN)
	BK10452A	Output P.C.B. Assy UL
	(Except JPN, EP, UK)	
	BK10450A	Output P.C.B. Assy (EP, UK)
IC200	OB13229A	IC NJM4580M*
IC201	OB13229A	IC NJM4580M*
IC202	OB13229A	IC NJM4580M*
IC203	OB13229A	IC NJM4580M*
IC204	OB13229A	IC NJM4580M*
IC205	OB13226A	IC M5218AFP*-73A (EP, UK Only)
IC206	OB13233A	IC TC7SET08FT*
IC207	OB13232A	IC TC74HCU04AF*
IC461	OB13223A	IC BA7660FS-E2*
IC700	OB13225A	IC M38022* M4-467
IC719	OB13235A	IC XC61AN14002MR*
IC901	OB13230A	IC TC4053BF* (EP, UK Only)
IC903	OB13222A	IC BA7660FS-E2*
TR100	OB13245A	TR 2SA1037AK*-R,S
TR102	OB13212A	DTR DTA143ZKA*
TR103	OB13214A	DTR DTC143ZKA*
TR105	OB13245A	TR 2SA1037AK*-R,S
TR106	OB13212A	DTR DTA143ZKA*
TR107	OB13212A	DTR DTA143ZKA*
TR114	OB13212A	DTR DTA143ZKA*
TR115	OB13212A	DTR DTA143ZKA*
TR116	OB13212A	DTR DTA143ZKA*
TR178	OB13245A	TR 2SA1037AK*-R,S
TR179	OB13248A	TR 2SD2114K*
TR208	OB13212A	DTR DTA143ZKA*
TR209	OB13248A	TR 2SD2114K*
TR210	OB13248A	TR 2SD2114K*
TR300	OB13248A	TR 2SD2114K*
TR301	OB13248A	TR 2SD2114K*
TR302	OB13248A	TR 2SD2114K*
TR303	OB13248A	TR 2SD2114K*
TR304	OB13248A	TR 2SD2114K*
TR305	OB13248A	TR 2SD2114K*
TR306	OB13248A	TR 2SD2114K*
TR307	OB13248A	TR 2SD2114K*
TR401	OB13245A	TR 2SA1037AK*-R,S
TR402	OB13245A	TR 2SA1037AK*-R,S
TR403	OB13245A	TR 2SA1037AK*-R,S
TR404	OB13247A	TR 2SC2412K*-R,S
TR405	OB13247A	TR 2SC2412K*-R,S
TR406	OB13247A	TR 2SC2412K*-R,S
TR441	OB13247A	TR 2SC2412K*-R,S
TR442	OB13247A	TR 2SC2412K*-R,S
TR443	OB13214A	DTR DTC143ZKA* (JPN Only)
TR501	OB13245A	TR 2SA1037AK*-R,S (EP, UK Only)
TR502	OB13245A	TR 2SA1037AK*-R,S
TR503	OB13245A	TR 2SA1037AK*-R,S
TR507	OB13247A	TR 2SC2412K*-R,S
TR508	OB13247A	TR 2SC2412K*-R,S
TR509	OB13247A	TR 2SC2412K*-R,S
TR602	OB13247A	TR 2SC2412K*-R,S
TR801	OB13243A	TR 2SD2097-Q,R,S
TR802	OB13241A	TR 2SB1326-Q,R
TR803	OB13214A	DTR DTC143ZKA*
TR806	OB13212A	DTR DTA143ZKA*
TR902	OB13214A	DTR DTC143ZKA* (EP, UK Only)
TR904	OB13247A	TR 2SC2412K*-R,S (EP, UK Only)
TR921	OB13214A	DTR DTC143ZKA* (EP, UK Only)
TR922	OB13214A	DTR DTC143ZKA* (EP, UK Only)
TR923	OB13245A	TR 2SA1037AK*-R,S (EP, UK Only)
TR937	OB13248A	TR 2SD2114K* (EP, UK Only)
TR938	OB13248A	TR 2SD2114K* (EP, UK Only)
D100	OB13151A	DI ISS355TE-17*
D101	OB13151A	DI ISS355TE-17*
D105	OB13151A	DI ISS355TE-17*
D106	OB13151A	DI ISS355TE-17*
D107	OB13151A	DI ISS355TE-17*

Schematic Ref. No.	Part No.	Description
D110	0B13151A	DI 1SS355TE-17*
D111	0B13151A	DI 1SS355TE-17*
D118	0B13151A	DI 1SS355TE-17*
D119	0B13151A	DI 1SS355TE-17*
D122	0B13151A	DI 1SS355TE-17*
D123	0B13151A	DI 1SS355TE-17*
D130	0B13151A	DI 1SS355TE-17*
D131	0B13151A	DI 1SS355TE-17*
D134	0B13151A	DI 1SS355TE-17*
D135	0B13151A	DI 1SS355TE-17*
D138	0B13151A	DI 1SS355TE-17*
D150	0B13151A	DI 1SS355TE-17*
D151	0B13151A	DI 1SS355TE-17*
D179	0B13151A	DI 1SS355TE-17*
D908	0B13255A	ZD UDZS6.2BTE-17* (EP, UK Only)
D909	0B13254A	ZD UDZ12BTE-17* (EP, UK Only)
J300	0B85710A	OPT S. GP1-F32T
J901	0B85725A	Socket YK641-5021 (EP, UK Only)
L200	0B50402A	Trans Pulse TC-1027-04
PJ300	0B85709A	J.Pin T7036-AABB (EP, UK Only)
PJ300A	0B85740A	J.Pin T6634-AADB (Except EP, UK)
PJ301	0B85708A	J.Pin HSP-244V10
PJ303	0B85707A	J.Pin HSP-241V10G
P302	0B85705A	DIN.J HDC-050A 4P
X722	0B90978A	XTAL CCR8.0MC5T*

5.3. Power Supply P.C.B. Assy

Schematic Ref. No.	Part No.	Description
	BK10447A	Power Supply P.C.B. Assy (Except USA, CAN, TW)
	BK10449A	Power Supply P.C.B. Assy (USA, CAN, TW)
	BK10448A	Power Supply P.C.B. Assy (KR)
IC501	0B13219A	IC STR-F6672
IC551	0B13215A	IC KA431A27A
IC553	0B13216A	IC KAT9R33
IC555	0B13218A	IC NJM79M09FA
IC556	0B13217A	IC NJM79M09FA
TS01	0B50401A	Trans D6003KALL
TR550	0B13208A	DTR DTC149ZS
TR551	0B13241A	TR 2SB1326-Q,R
TR558	0B13208A	DTR DTC149ZS
TR559	0B13208A	DTR DTC149ZS
TR560	0B13241A	TR 2SB1326-Q,R
D502	0B13201A	DI 1SS1331-77
D504	0B13201A	DI 1SS1331-77
D508	0B13200A	DI 1N4006-N02
D509	0B13200A	DI 1N4006-N02
D510	0B13200A	DI 1N4006-N02
D511	0B13200A	DI 1N4006-N02
D553	0B13203A	DI AK03V0
D555	0B13202A	DI 1SS244T-77
D556	0B13205A	D Schot.FMB-G14L 40/5.0A
D557	0B13206A	DI FK16LF-C1
D558	0B13204A	DI AK06V0 60/0.7A
D559	0B13204A	DI AK06V0 60/0.7A
D564	0B13252A	ZD MTZJ5-1C
L500	0B50399A	Coil LF L-F-4ZA-E263 26.0MH
L501	0B50400A	Coil LF LU-8SA-V102 1.0MH
L551	0B50394A	Coil PC7 330K
L553	0B50392A	Coil ELO606RA 330K
L554	0B50392A	Coil ELO606RA 330K
L556	0B50394A	Coil PC7 330K
L557	0B50391A	Coil ELO606RA 101K
R504	0B21718A	RF RDT16S1 681J
R505	0B21721A	RF RSSX1VTPA R36J
R508	0B21717A	RF RDT16S1 5R6J
R512	0B21719A	RF RSS1VTPA 683J
R553	0B21720A	RF RSSX R75J(2W)
C509	0B42937R	CC CD85 E102M400V
C511	0B42937R	CC CD85 E102M400V

Schematic Ref. No.	Part No.	Description
C512	0B42937R	CC CD85 E102M400V
C513	0B42990A	CM MKPR46K104M
C514	0B42991A	CM MKPR46K1224M
F500	0B90972A	FU T3.15A/250V(219
FR551	0B21723A	RFU RF25SCVTP R24K
FR552	0B21723A	RFU RF25SCVTP R24K
FR554	0B21722A	RFU RF25SCVTP R10K
FR555	0B21724A	RFU RF25SCVTP R75K
FR556	0B21725A	RFU RF25SVTP 220J
P500A	0B90970A	AC Inlet M1932 (Except USA, CAN, TW)
P500B	0B90979A	AC Inlet M1934 (USA, CAN, TW)
PH500	0B13238A	PHT C. PF5001-BCD
PH501	0B13239A	PHT C. PS2561-1-V
SW500	0B70307A	SW SDKLA10200

5.4. Mechanism P.C.B. Assy

5.4.1. New Mechanism P.C.B. Assy (C3)

Schematic Ref. No.	Part No.	Description
	BK10454A	Mechanism P.C.B. Assy (For C3MT Main) (For New Models)

IC1	0B13221A	IC BA6859AFP*-E2
IC2	0B13220A	IC BA5938FM*-E2
IC3	0B13179A	IC NJM4558M*
IC4	0B13228A	IC NJM2904M*
TR1	0B13159A	DTR DTC144EUA*
TR31	0B13246A	TR 2SB1132*-P,Q,R
TR32	0B13246A	TR 2SB1132*-P,Q,R
TR33	0B13196A	TR 2SA1576A*-Q,R,S
TR34	0B13196A	TR 2SA1576A*-Q,R,S
TR35	0B13197A	TR 2SC4081*-R,S
TR36	0B13213A	DTR DTC114TUA*
TR37	0B13197A	TR 2SC4081*-R,S
TR38	0B13211A	DTR DTA114EUA*
D11	0B13151A	DI 1SS355TE-17
D31	0B13151A	DI 1SS355TE-17
D32	0B13151A	DI 1SS355TE-17
D33	0B13253A	ZD UDZ10BTE*-17
P100	0B85720A	Socket 40FLZ-RSM1*-RTB
P200	0B85719A	Socket 30FLS-RSM1*-TB
P300	0B85722A	Socket SFW11R*-1STE1

5.4.2. Former Mechanism P.C.B. Assy (M3)

Schematic Ref. No.	Part No.	Description
	—	Mechanism P.C.B. Assy (For M3C1 Main) (For Former Models)
IC1	0B13221A	IC BA6859AFP*-E2
IC2	0B13220A	IC BA5938FM*-E2
IC3	0B13179A	IC NJM4558M*
IC4	0B13228A	IC NJM2904M*
TR1	0B13159A	DTR DTC144EUA*
TR31	0B13246A	TR 2SB1132*-P,Q,R
TR32	0B13246A	TR 2SB1132*-P,Q,R
TR33	0B13196A	TR 2SA1576A*-Q,R,S
TR34	0B13196A	TR 2SA1576A*-Q,R,S
TR35	0B13159A	DTR DTC144EUA*
TR36	0B13213A	DTR DTC114TUA*
TR37	0B13197A	TR 2SC4081*-R,S
TR38	0B13211A	DTR DTA114EUA*
TR39	0B13211A	DTR DTA114EUA*
TR40	0B13197A	TR 2SC4081*-R,S
TR41	0B13197A	TR 2SC4081*-R,S
D11	0B13151A	DI 1SS355TE*-17
D31	0B13151A	DI 1SS355TE*-17
D32	0B13151A	DI 1SS355TE*-17
D33	0B13253A	ZD UDZ10BTE*-17
P100	0B85720A	SO 40FLZ-RSM1*-RTB

Schematic Ref. No.	Part No.	Description
P200	0B85719A	SO 30FLS-RSM1*-TB
P300	0B85722A	SO SFW11R*-1STE1

5.5. Operation P.C.B. Ass'y

Schematic Ref. No.	Part No.	Description
	BK10453A	Operation P.C.B. Ass'y
IC100	0B13234A	IC UPD16311GC-AB6*
IC101	0B13224A	IC BU2092F*
TR101	0B13244A	TR 2SD2144S-U,V,W
TR102	0B13207A	DTR DTA143ES
TR103	0B13210A	DTR DTC144TS
D100	0B13201A	DI 1SS133T-77
D101	0B13201A	DI 1SS133T-77
D102	0B13201A	DI 1SS133T-77
D103	0B13201A	DI 1SS133T-77
D105	0B13251A	ZD MTZ4.7C
D106	0B13250A	ZD MTZ2.0B
D120	0B13236A	LED SEL5821ATP15
D121	0B13236A	LED SEL5821ATP15
D122	0B13236A	LED SEL5821ATP15
D123	0B13236A	LED SEL5821ATP15
D124	0B13236A	LED SEL5821ATP15
D125	0B13236A	LED SEL5821ATP15
D126	0B13236A	LED SEL5821ATP15
FL100	0B90976A	LCD 13-BT-160GK
P102	0B85723A	Socket 16-FMZ-ST
PH100	0B13240A	PHT S. GP1U261X
SW100	0B70305A	SW Rotary Encoder MXS00380ZMB4
SW101	0B70308A	SW Tact SKHYBE
SW102	0B70308A	SW Tact SKHYBE
SW103	0B70308A	SW Tact SKHYBE
SW104	0B70308A	SW Tact SKHYBE
SW105	0B70308A	SW Tact SKHYBE
SW106	0B70308A	SW Tact SKHYBE
SW107	0B70308A	SW Tact SKHYBE
SW120	0B70308A	SW Tact SKHYBE
SW121	0B70308A	SW Tact SKHYBE

5.6. Power LED P.C.B. Ass'y

Schematic Ref. No.	Part No.	Description
	BK10476A	Power LED P.C.B Ass'y
D201	0B13237A	LED SML78423CTP15
D204	0B13236A	LED SEL5821ATP15
D206	0B13249A	ZD MTZJ2.0A

5.7. Headphone/MIC P.C.B. Ass'y

Schematic Ref. No.	Part No.	Description
	BK10477A	Headphone/MIC P.C.B.Ass'y
IC303	0B13226A	IC MS218AFP*-73A
TR301	0B13242A	TR 2SC3576
TR302	0B13242A	TR 2SC3576
TR303	0B13242A	TR 2SC3576
TR304	0B13242A	TR 2SC3576
TR305	0B13209A	DTR DTC144ES
L303	0B50393A	Coil LAP02TA 101J
L304	0B50393A	Coil LAP02TA 101J
VR302	0B30231A	VR RK09K12A L20
PI301	0B90975A	JPH HTJ-064-05AG

6. RECOMMENDED SPARE PARTS LIST

No.	Part No.	Description	No.	Part No.	Description
1	CA09494A	Traverse Assy TKM-002	79	0B21719A	RF RSSX1VTPA 683J
2	CA09493A	Loading Motor Assy	80	0B21721A	RF RSSX1VYTPA R36J
3	0B90969A	Motor CDS8A50T30-A/TT	81	0B70306A	SW LEVER MXS01070MLB0 1-01-02S
4	CA09489A	Sled Motor Assy	82	0B70304A	SW MICRO MPU10420MLB0
5	0B50401A	Transformer Power D6003KALL	83	0B70307A	SW PUSH SDKLA10200 01-1
6	0B50402A	Transformer Pulse TC-1027-04	84	0B70305A	SW ROTARY ENCODER MXS00380ZMB4
7	0B13205A	D SCHOT.FMB-G14L 405.0A	85	0B70308A	SW TACT SKHYBE T05
8	0B13204A	DI AK060 600/7A	86	0B13238A	PHT C. PFS001-B0D
9	0B13206A	DI RK16LF-C1	87	0B13239A	PHT C. PS261-1V
10	0B13203A	DI AK03V0	88	0B13244A	TR 2S02144S-U.V.W
11	0B13202A	DI 1SS244T-77	89	0B13246A	TR 2SB1132-P.Q.R
12	0B13152A	DI DA204U-T106*	90	0B13211A	DTR DTA114EUA*
13	0B13153A	DI UMN11N-TN*	91	0B13212A	DTR DTA143ZKA*
14	0B13151A	DI 1SS355TE-17*	92	0B13158A	DTR DTCA144EUA*
15	0B13201A	DI 1SS1331-77	93	0B13213A	DTR DTCA147UA*
16	0B13253A	ZD UDZ10BTE-17*	94	0B13214A	DTR DTC143ZKA*
17	0B13254A	ZD UDZ12BTE-17*	95	0B13159A	DTR DTC144EUA*
18	0B13255A	ZD UDZS6.2BTE-17*	96	0B13160A	DTR DTC144TUA*
19	0B13249A	ZD MTJ2.0A	97	0B13154A	DTR FMV4A-T148*
20	0B13250A	ZD MTJ2.0B	98	0B13161A	DTR UMG4N-TR*
21	0B13251A	ZD MTJ2.1C	99	0B13156A	DTC UMX3N-TR*
22	0B13252A	ZD MTJ2.5.1C	100	0B13207A	DTR DTCA143ES
23	0B90972A	FUSE 219 T 250V 3.15A	101	0B13208A	DTR DTC143ZS
24	0B13168A	IC BA05FP-E2*	102	0B13209A	DTR DTC144ES
25	0B13220A	IC BA5938FM-E2*	103	0B13210A	DTR DTC144TIS
26	0B13221A	IC BA6859AFP-E2*	104	0B13162A	FET 2SK2145*-TE85L
27	0B13222A	IC BA7660FS-E2*	105	0B13163A	FET 2SK880*-TE85L
28	0B13223A	IC BA7666FS-E2*	106	0C10547A	Bell Loading
29	0B13169A	IC BU4011BEV-E2*	107	BK10455A	Main P.C.B. Assy (C3)
30	0B13170A	IC BU4S81-TR*	108	BK10451A	Output P.C.B. Assy (JPN)
31	0B13171A	IC CYC11AP000* (HERCULES)	109	BK10452A	Output P.C.B. Assy (EXCEPT JPN,EP,UK)
32	0B13172A	IC CYC12MP000* (LION)	110	BK10450A	Output P.C.B. Assy (EP,UK)
33	0B13173A	IC CYC13DD000* (MERMAID)	111	BK10454A	Mechanism P.C.B. Assy (C3)
34	0B13174A	IC HY57V16161D0TC*	112	BK10447A	Power Supply P.C.B. Assy
35	0B13175A	IC HY628100ALG-55*			(Except USA,CAN,TW)
36	0B13215A	IC KA431AZ1A	113	BK10449A	Power Supply P.C.B. Assy (USA,CAN,TW)
37	0B13216A	IC KA78R33	114	BK10448A	Power Supply P.C.B. Assy (KR)
38	0B13176A	IC M24C16-MN6T*	115	BK10453A	Operation P.C.B. Assy
39	0B13225A	IC M38022*-M4-467	116	BK10477A	Headphone/MIC P.C.B. Assy
40	0B13226A	IC M5218AFP-73A*	117	BK10476A	Power LED P.C.B. Assy
41	BA10459A	IC MB90F574APFV-G AK-SYSA			
42	0B13165A	IC MN66261			
43	0B13177A	IC MN67700V/RZB*			
44	BA10460A	IC MX29F1610MC-12-NC090303			
45	0B13228A	IC NJM2904M*			
46	0B13229A	IC NJM4580M*			
47	0B13180A	IC PCM1735E2K*			
48	0B13182A	IC SM8701BM-ET*			
49	0B13219A	IC STR-F6672			
50	0B13230A	IC TC4053BF*			
51	0B13231A	IC TC74AHC4053AFT*			
52	0B13232A	IC TC74AHC004F*			
53	0B13183A	IC TC74AHC00FT*			
54	0B13184A	IC TC74AHC08FTEL*			
55	0B13185A	IC TC74AHC157FTEL*			
56	0B13187A	IC TC74AHC574FTEL*			
57	0B13188A	IC TC74AHC86FT*			
58	0B13189A	IC TC74VHC124SAFT*			
59	0B13233A	IC TC7SET08FT*			
60	0B13190A	IC TC7SHU04FU*			
61	0B13192A	IC TC7WH157FU*			
62	0B13193A	IC TC7WH74FUTE12L*			
63	0B13191A	IC TC7W04FUTE12L*			
64	0B13234A	IC UPD16311GC-AB6*			
65	0B13235A	IC XC61AN44002MR*			
66	0B13195A	IC ZIVA-3-PEO*			
67	0B90964A	XTAL CCR4.0MC3T*			
68	0B90978A	XTAL CCR8.0MC5T*			
69	0B90965A	XTAL CX-11F* 27MH			
70	0B90966A	XTAL CX-16F* 40MHZ			
71	0B90976A	LCD FL 13-BT-160GK			
72	0B21717A	RF RDT-16S1 5R6J			
73	0B21718A	RF RDT-16S1 681J			
74	0B21722A	RFU RF25SCVTP R10K			
75	0B21723A	RFU RF25SCVTP R24K			
76	0B21724A	RFU RF25SCVTP R75K			
77	0B21725A	RFU RF25SVTP 220J			
78	0B21720A	RF RSSX R75J (2W)			

7. IC BLOCK DIAGRAMS

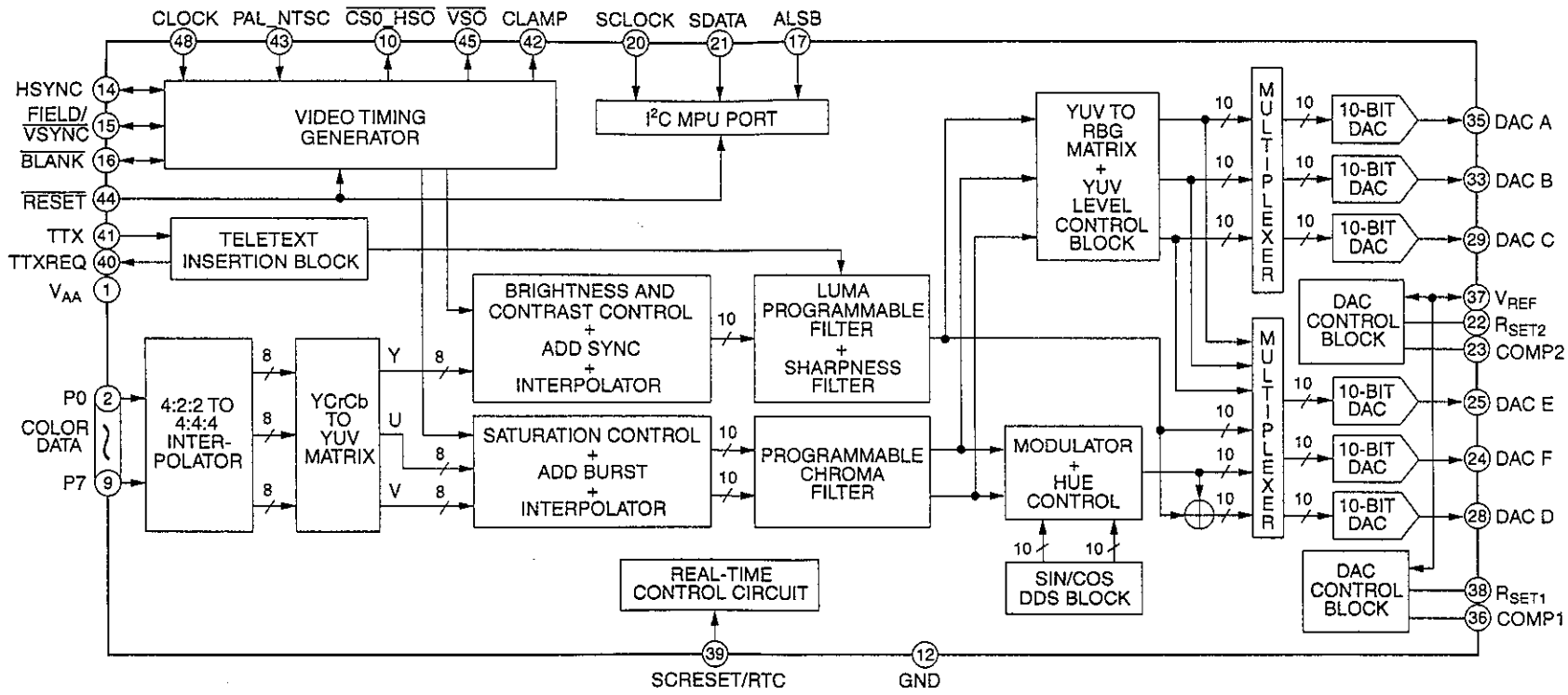
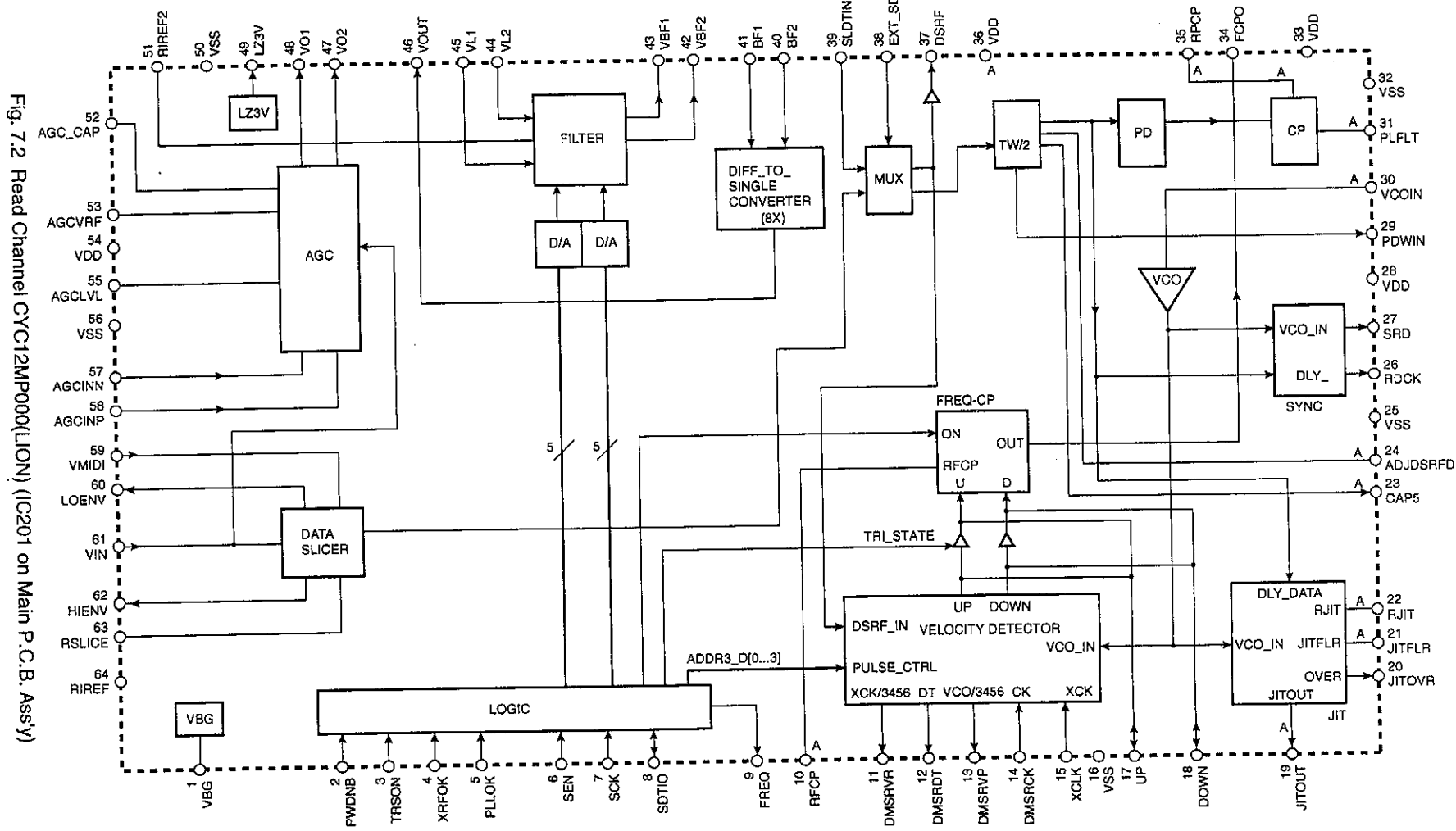


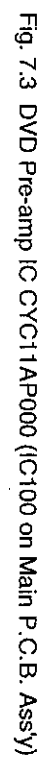
Fig. 7.1 Video Signal Decoder ADV7172 (IC850 on Main P.C.B. Ass'y)



CVC12MP000 (LION) (Read channel) (IC201 on the Main P.C.B. Ass'y)

Pin No.	Port Name	I/O	FUNCTION
1	VBG	O	Band gap reference voltage 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	PLOCK	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	XCCLK	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	RIJT	-	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 data 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 (nominal output : 50 mVp-p).
43	VBf1	O	Buffered filter output 1 (nominal output : 50 mVp-p).
44	VL2	I	Filter input 2.
45	VL1	I	Filter input 1.
46	VOU _T	O	D/S converter output (VOUT = Vb _{f2} - Vb _{f1}) 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.

Pin No.	Port Name	I/O	FUNCTION
57	AGCINN	I	AGC negative signal input.
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.



CYC11AP000 (DVD Pre AMP) (IC100 on the 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	LPC11	I	LPC (laser power control) non-inverting input pin.
5	LPC12	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	VFE1_P	I	Focus AMP positive input pin.
10	VFE1_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	-	+5 V 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 $\pm$ 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	OFTTR_2	O	CD off-track analog output.
46	POFN	I	POF inverting input.
47	POF_2.2	O	2.2 V reference voltage output.
49	XDVD	I	DVD control pin.
50	XCD2	I	CD 2X control pin.
51	XCD4	I	CD 4X control pin.
52	OFTTR	O	Off track detect output pin.
53	COFTR	-	OFTTR AMP filtering capacitor connecting pin.
54	COFTR_FAST	-	OFTTR AMP timing capacitor connecting pin.
55	BUF_COFTR	O	Buffered output of OFTR AMP.
56	OFTRVTH	-	OFTTR AMP threshold voltage setting pin.

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	RFQ2	O	RF phase difference output pin 2.
78	RFQ1	O	RF phase difference output pin 1.
80	RFAS3	O	RF full addition AMP output pin.
81	RF1	I	RF full addition AMP input pin 1.
82	RF2	I	RF full addition AMP input pin 2.
83	RFAS1	O	RF addition AMP output pin 1.
84	RFAS2	O	RF 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.

MB90F574 (CPU/System control MI-COM) (IC600 on the Main P.C.B. Assy)

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	RDY	I	System bus ready input.
7	LD.SW2	O	Laser control output 2.
8,54,94	Vcc	-	+5 V power supply pin.
9-11,21,23,56	N.C	-	No connection.
(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	SL.LV	O	PWM output for data slice level control of the read channel MI-COM.
16	L.M.V.C	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.
22	SACK	O	Clock output for CD-DSP Q data.
24	CRCOK	I	Sector ID error O.K. input.
25	XCHANGER	I	Disc changer operation setting pin. (Not used)
26	XDAMUTE0	O	Audio section mute control output. (L: mute on)
27	ICESEL	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	AVss	-	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.
51	DACML	O	Audio DAC serial latch output.
52	DACMC	O	Audio DAC serial clock output.
53	DACMD	O	Audio DAC serial data output.
55	DASW0	O	Audio DAC mix channel input data select control output.
57	DEC.CS	O	Ziva MI-COM chip select output.

Pin No.	Port Name	I/O	FUNCTION
58	XDACS1	O	Audio DAC (L/R) chip select output.
59	XDACS2	O	Audio DAC (S/L/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	XMULTI	I	2 CH/XMULTICH setting control input.
66	DASW2	O	Four audio DAC test mode input data select.
67	AVRTM	I	ECC interruption request input (end of output stream of 2060 bytes data).
68,69	DGND	-	Ground for digital section.
70	SDA(12C)	I/O	Serial data in/out from/to EEPROM & video encoder.
71	SCL	O	Serial clock output to the EEPROM & video encoder.
72	STAT	I	CD-DSP status input.
73	X0A	I	Not used.
74	X1A	O	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. (Not used)
81	PHOT-IN	I	Disc changer tray position detect photo sensor input pin. (Not used)
82	LOAD.F	O	Loading motor direction control outputs.
83	LOAD.R		
84	CHG.M.R	O	Disc changer motor control output. (Not used)
85	CHG.M.L		
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	System 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.

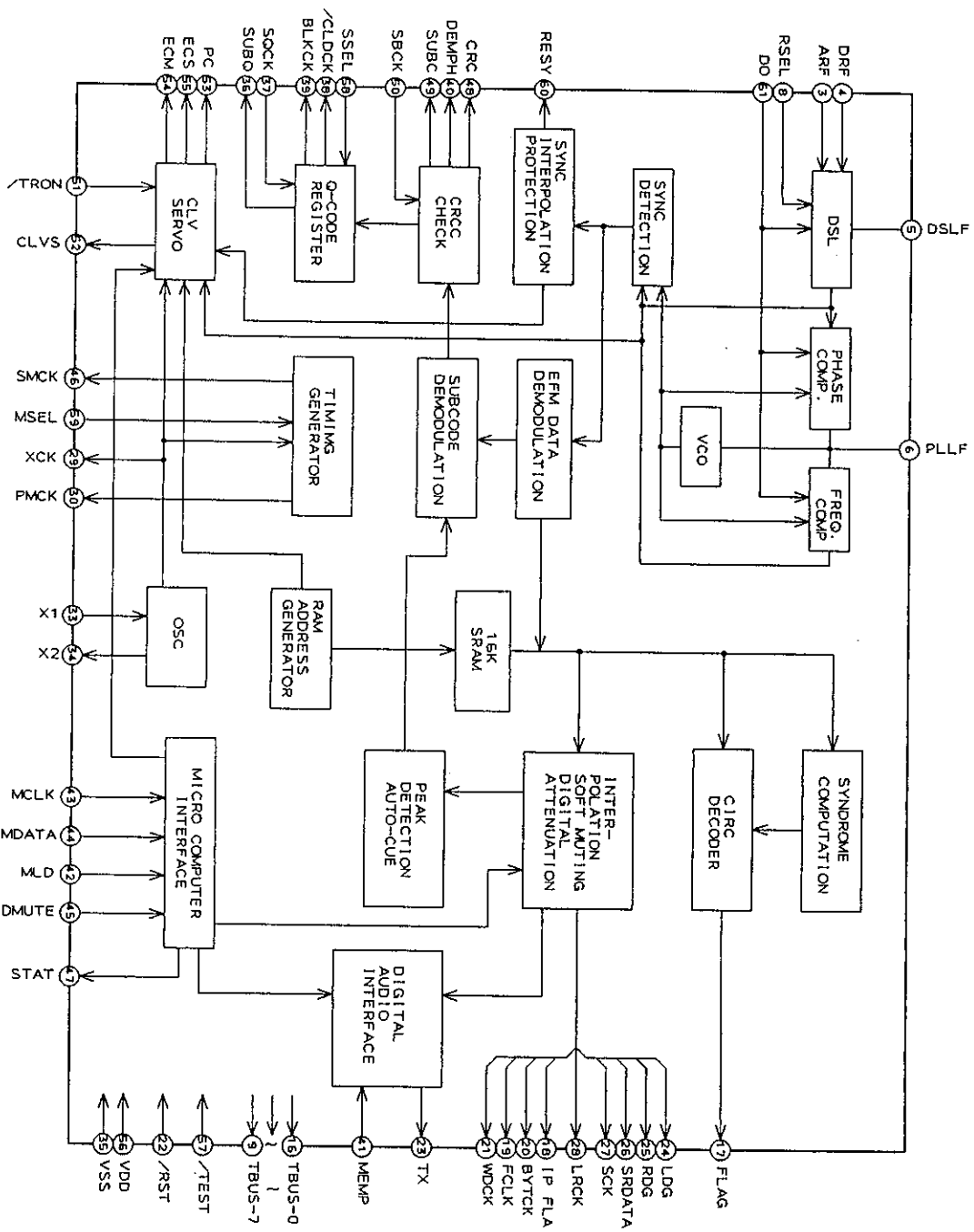


Fig. 7.4 CD Signal Processor MN66261 (IC490 on the Main P.C.B. Ass'y)

MN66261 (CD Signal Processor) (IC490 on the 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	DSL	O	Loop filter pin for DSL.
6	PLL	I/O	Loop filter pin for PLL.
7	Avdd	-	+5V Power supply pin for 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.

Pin No.	Port Name	I/O	FUNCTION
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	BTCK	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 playback)
39	BLCK	O	Subcode block clock signal. (fBLCK = 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	ML-COM command LOAD signal input. (L: LOAD)
43	MCLK	I	ML-COM command CLOCK signal input. (Data will be latched with rising edge of the pulse)
44	MDATA	I	ML-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 servo)
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.
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.

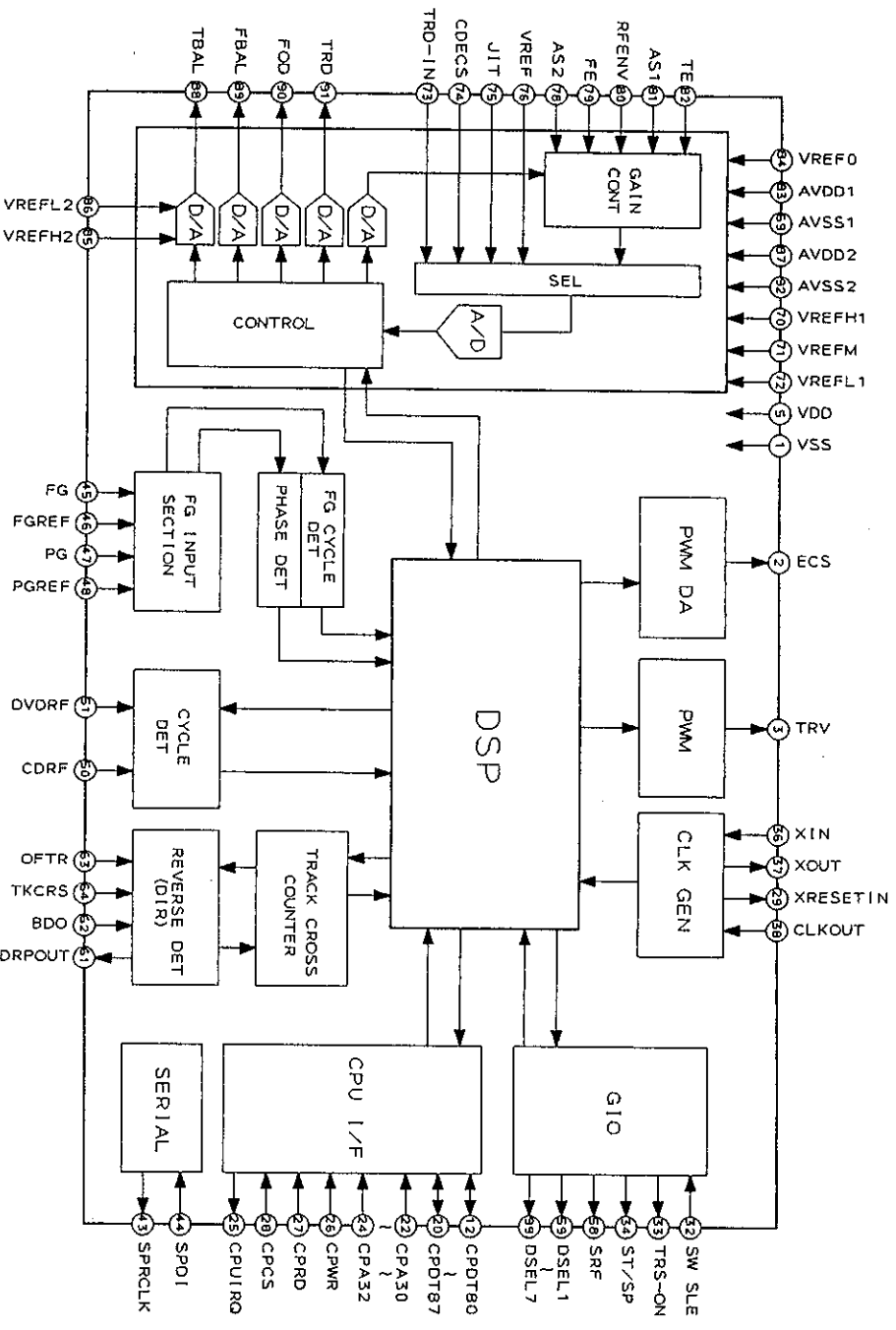


Fig. 7.5 Servo Processing IC MN67700 (IC300 on the Main P.C.B. Ass'y)

MIN67700 (Servo Processing IC) (IC300 on the 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	CPD180-87	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	GIC01	-	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/SH	O	Spindle motor drive (start/stop) control output (H: start).
35	Vss	-	Ground for digital circuit.

Pin No.	Port Name	I/O	FUNCTION
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	MONO-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	OFTF	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 (3.75 V).
71	VREFM	I	AD middle reference voltage input pin (2.5 V).
72	VREFL1	I	AD low level reference voltage input pin (1.25 V).
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.
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 (2.5 V).
85	VREFH2	I	Analog high level reference voltage input pin (3.75 V).
86	VREFL2	I	Analog low level reference voltage input pin (1.25 V)
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	MIN1ST	I	Test mode setting pin (normally open).
100	PWMCTL	I	PWM output control signal input (normal: L)

CYC13D000 (DVD Sync/ECC/Formatter) (IC500 on the 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	-	Ground pins.
2	SEL0	-	Test mode select pins.
3	SEL1		
4-6, 8, 10, 10 11, 14-22, 28 29, 116, 117 119, 125, 126 132, 171-174 194, 197-206	TEST9-46	-	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	VDD5-1to 5-12	-	+5 V power supply pin.
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)
25	VDD5-2	-	+5 V power supply pin.
26	VSS3	-	Ground pin.
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	PLCLK	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 57-61, 64-71 74-77	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.
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.

Pin No.	Port Name	I/O	FUNCTION
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	SDMDQML	O	SDRAM upper byte input/output mask.
115	SDMCKE	O	SDRAM clock enable.
120	XDSKO	O	Chip select signal to the SERVO MI-COM.
121	CRCOK	O	Sector IDs are O.K.
122-124	CPUADR0-2	O	(Video/Audio) HAL [2:0], V/A decoder, CPU address bus.
127-130	CPUADT0-15	I/O	CPU address/data bus.
133-139			
143-147			
141	XRESET	I	Global reset input.
148-152	CPUADT16-20	I	CPU address bus.
153	XALE	I	Address latch enable input.
154	XRE	I	Read strobe.
155	XINTO	O	ECC interrupt request.
158	XWEH	I	Write strobe signal.
159	XWAIT	O	CPU wait state control.
168	XHSTCS	O	Decipher chip select.
176	STENABLE	I	Stream data request.
177-181	STD0-7	O	Output stream data bus.
185-187			
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.

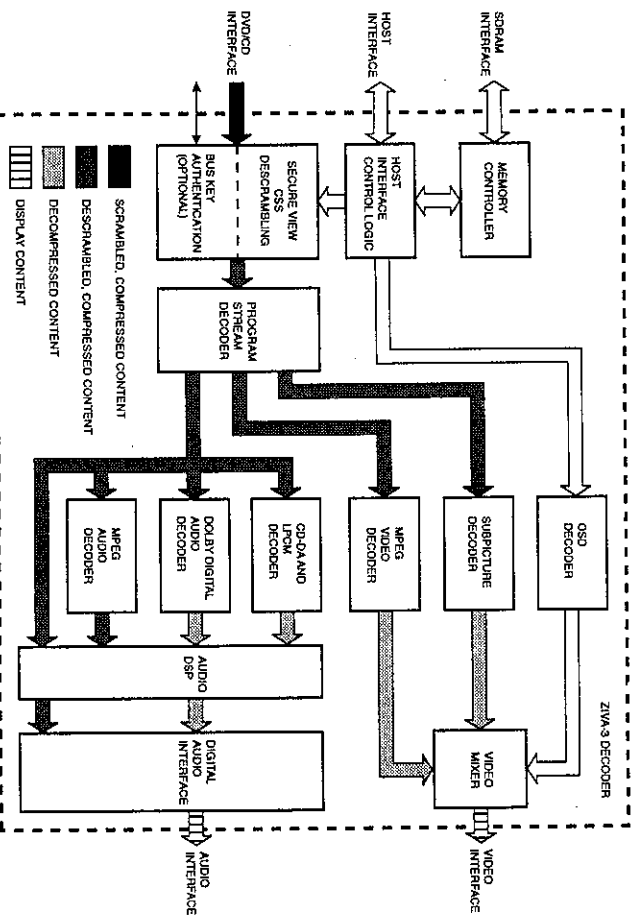


Fig. 7.6 Advanced DVD decoder with integrated Audio DSP ZIVA3 (IC700 on the Main P.C.B. Assy)

ZIVA-3 (Advanced DVD decoder with integrated Audio DSP)

Pin No.	Port Name	I/O	FUNCTION
1,52,129 133,138,141 147,153,156 174,190	P100-10	I/O	Programmable I/O pins.
2,4,6,8-11 5,12,17,27 36,40,47,55 61,65,69,75 81,87,91,95 101,107,113 117,123,134 149,160,181 193	HDAT1A0-7	I/O	8 bit bi-directional host data bus.
7,14,19,29 38,42,49,57 63,67,71,77 83,89,93,97 103,109,115 119,125,136 146,151,162 170,183,195 199	VDD1-29	-	+3.3 V power supply 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 31-35,37,39 41,43-46	HDAT1A8-15 HADDR12-23	I/O I/O	Programmable I/O pins. Input mode after reset. Programmable I/O pins. Output mode after reset.
51,130	NC	-	No connection.
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 bank 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.

Pin No.	Port Name	I/O	FUNCTION
131,132,135	VDDA-F	–	Connect to +3.3 V power supply line.
137,139,140			
142,143,145			
148,150,152	VDATA0-7	O	Video data bus.
154,155			
157	HSYNC	I/O	Horizontal sync.
158	VSYN	I/O	Vertical sync.
159	DA-IEC	O	Bit stream data in IEC-1937 or PCM data out in IEC-958 format.
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	I/O	Audio master frequency clock.
171	DA-DATA	I	PCM input DATA (not used).
172	DA-LRCK	I	PCM input LRCK (not used).
173	DA-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/SOS1/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 acknowledge (in synchronous mode). Asserted when DVD is valid.
198	A-DACK	I	Audio data acknowledge.
200	ERROR	I	Error in 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	The HIGH to select WAIT signal, LOW to select DTACK signal. (Motorola 68 K 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	R/D	I	Read strobe in I mode. Must be held HIGH in M mode.

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)
 12 cm, 8 cm

Compact disc (CD-DA, Video CD)

Video system

NTSC (525/60)/PAL (625/50)

Audio system

Linear PCM audio
 MPEG 1/2 audio
 Dolby Digital
 DTS audio (Digital output only)

Video Output

Line output level

1.0 Vp-p/75 Ω , unbalanced
 Pin Jack $\times$ 2

S output level

Y output: 1.0 Vp-p/75 Ω , unbalanced

(Monochrome (Bright/Normal) - C output: 0.286 Vp-p/75 Ω (NTSC)

0.3 Vp-p/75 Ω (PAL)

Component output level

4 pin mini DIN $\times$ 1

Y output: 1.0 Vp-p/75 Ω , unbalanced

C_R output: 0.7 Vp-p/75 Ω , unbalanced

C_B output: 0.7 Vp-p/75 Ω , unbalanced

Pin Jack $\times$ 1 system

Audio output

Audio output

2.0 Vrms/10 k Ω

Pin Jack $\times$ 1 system

Dolby Digital 5.1 ch output

Pin Jack $\times$ 1 system

Digital audio output

Optical digital output

Optical connector $\times$ 1

Coaxial output

RCA Pin $\times$ 1

DVD linear audio characteristics

Frequency response

4 Hz-22 kHz (Fs = 48 kHz)

S/N ratio

4 Hz-44 kHz (Fs = 96 kHz)

Dynamic range

100 dB (Fs = 48 kHz, 24 bit PCM)

Total harmonic distortion

100 dB (Fs = 48 kHz, 24 bit PCM)

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 Wavelength: 655 nm (DVD)
Wavelength: 790 nm (CD)

Headphone out ϕ 6.3 headphone jack

Power requirements 120V AC, 60 Hz^{*1} / 110-240V AC, 50/60 Hz^{*2,3} / 220V AC, 60Hz^{*4}

Power consumption 19 W (standby mode = 0.7 W^{*1}, power off = 0 W)

20 W (standby mode = 1.3 W^{*2,3,4}, power off = 0 W)

Operation temperature 5°C-35°C

Operation humidity range 5%-90% (no condensation)

Dimensions 430 (W) × 88 (H) × 310 (D) mm (excluding protrusions)

Weight 3.4 kg^{*1,2}

3.5 kg^{*3,4}

Supplied accessories

AC power cable × 1

Audio/video cable × 1

Remote control unit × 1

Batteries × 2

^{*1} For U.S.A. and Canada

^{*2} For Australia

^{*3} For Southeast Asia, Hong Kong

^{*4} For Korea

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