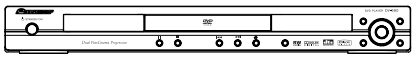
Pioneer sound.vision.soul

Service Manual



DV-393-S

ORDER NO.
RRV3379

DVD PLAYER

DV-393-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Remarks
DV-393-S	KUCXZT	AC120V	1	

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936

T-ZZR MAR. 2006 printed in Japan

SAFETY INFORMATION

This service manual is intended for qualified service technicians ; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to causecancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts mustbe of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les piècesde remplacement doivent avoir la même désignation.

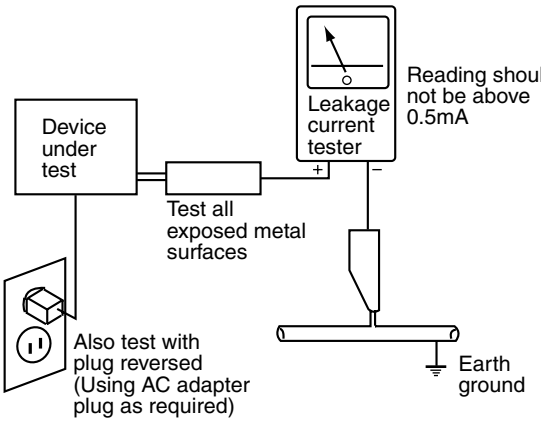
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (waterpipe , conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

CONTENTS

1. SPECIFCATIONS

Specifications

General

System . . . . . DVD player
Power requirements . . . . . AC 120 V, 60 Hz
Power consumption . . . . . 7 W
Power consumption (standby) . . . . . 0.5 W
Weight . . . . . 1.8kg / 4lb

Dimensions:

. . . 420 (W) x 49.5 (H) x 214 (D) mm
(16-9/16 (W) x 1-15/16 (H) x 8-7/16 (D)in.)

Operating temperature . . . . . +5°C to +35°C
(+41°F to +95°F)
Operating humidity . . . . . 5% to 85%
(no condensation)

Component video output

Y (luminance) - Output level . . . 1 Vp-p (75 Ω)
P_B (color) - Output level . . . . 0.7 Vp-p (75Ω)
P_R (color) - Output level . . . . . 0.7 Vp-p (75 Ω)
Jack . . . . . RCA

S-video output

Y (luminance) - Output level . . . . . .1 Vp-p (75 Ω)
C (color) - Output level . . . . . 286 mVp-p (75 Ω)
Jack . . . . . S-video

Video output

Output level. . . . . .1 Vp-p (75 Ω)
Jack. . . . . RCA

Audio output (1 stereo pair)

Output level . . . . . During audio output
200 mVrms (1 kHz, –20 dB)
Number of channels 2
Jacks . . . . . .RCA

Digital audio characteristics

Frequency response . . . . . 4 Hz to 44 kHz
(DVD fs: 96 kHz)

S/N ratio . . . . . 115 dB
Dynamic range . . . . . 88 dB
Total harmonic distortion . . . . . 0.0065 %
Wow and flutter . . . . . Limit of measurement
(±0.001% W. PEAK) or lower

Digital output

Coaxial digital output . . . . . RCAjack

Accessories

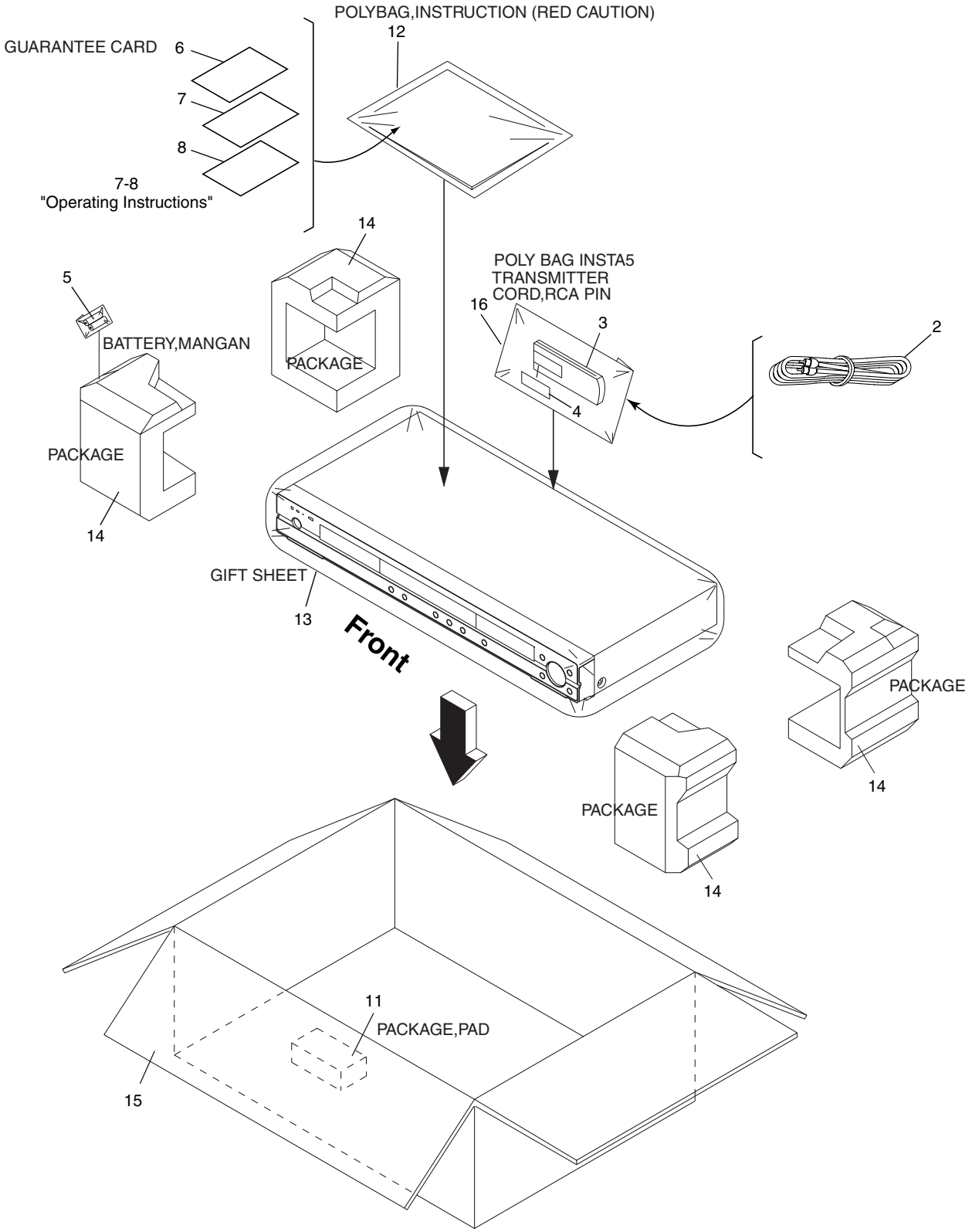
Audio/video cable. 1
Remote control. 1
AA/R6P dry cell batteries 2
Warranty card. 1
Operating Instructions

The specifications and design of this product are subject to change without notice, due to improvement.

2. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

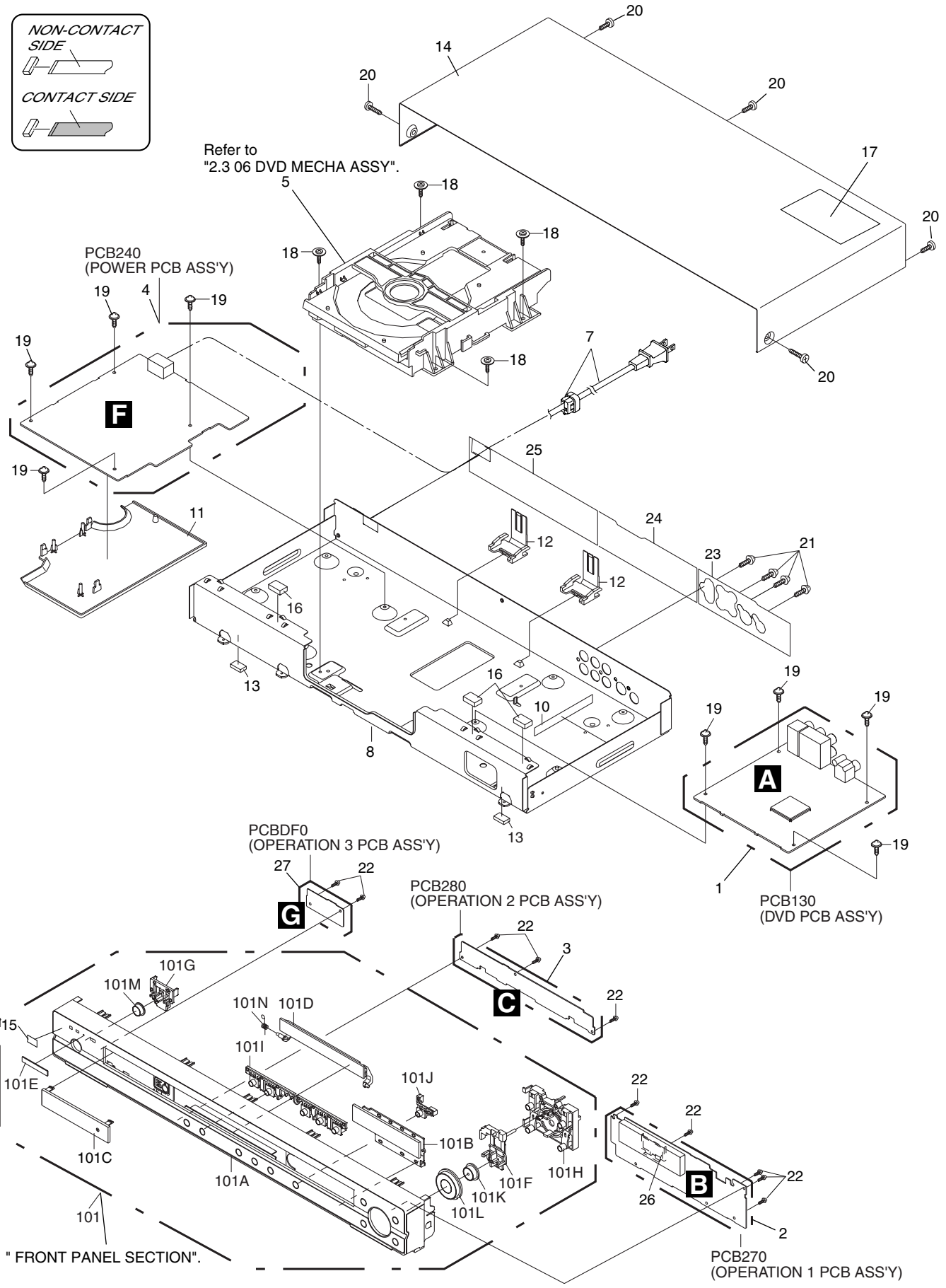
2.1 PACKING SECTION



PACKING SECTION parts List

Mark	No.	Description	Part No.
	1	• • • •	
	2	Cord, RCA Pin	06CPBA2006
	3	Remote Control	07650KY010
	4	Battery Cover	VNK4998
NSP	5	Battery,Mangan (AR, R6P)	141L003010
NSP	6	Guarantee Card	J2I80102A
	7	Instruction Book (English)	J2I80101B
	8	Instruction Book (French)	J2I80110B
	11	Package.Pad	792WHA0604
	12	Polyethylene Bag,Instruction	JB5UD300
	13	Gift Sheet	791WHA0100
	14	Package	792WHAA190
	15	Gift Box	793WCD1754
	16	Poly. Bag	791WHAA040

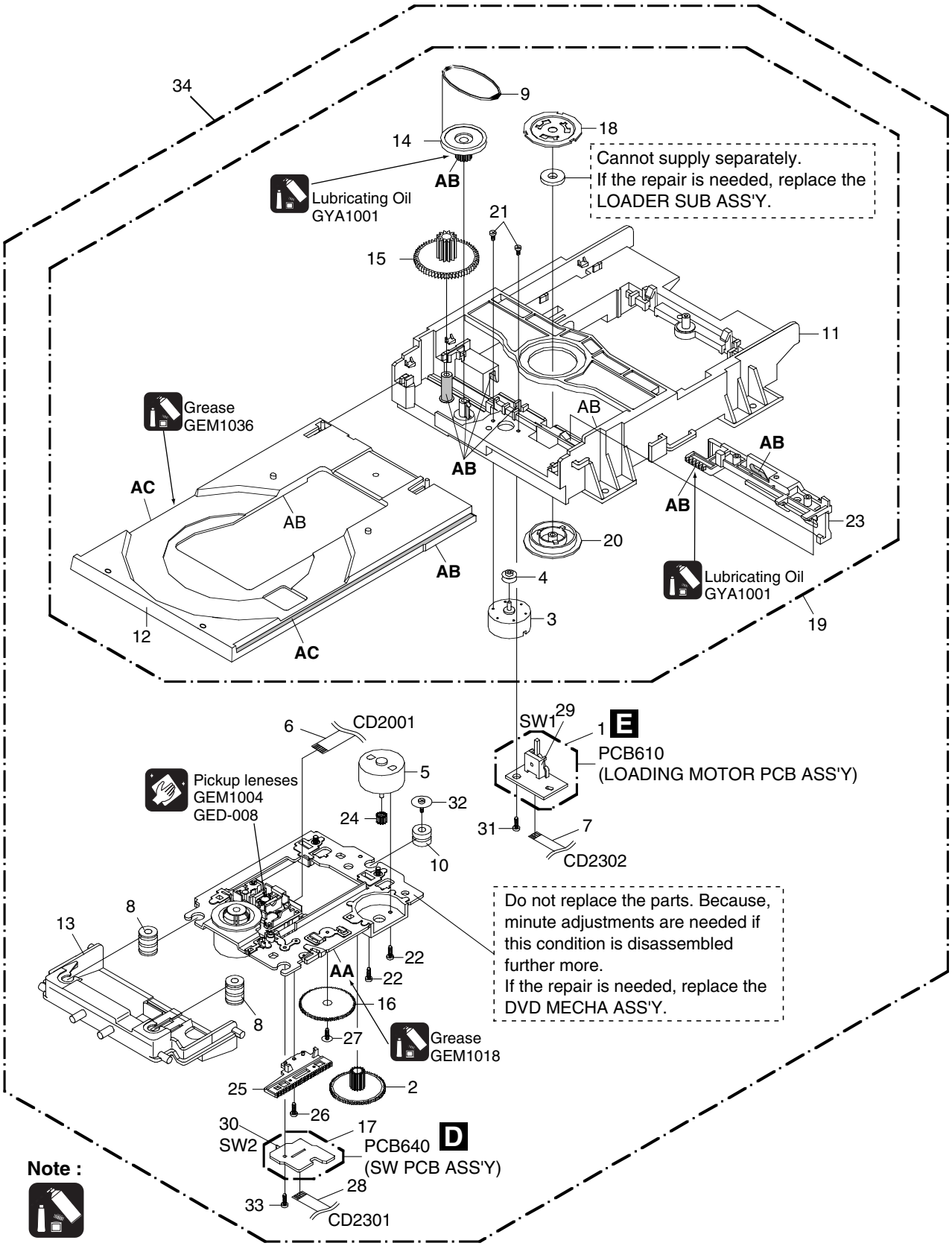
2.2 EXTERIOR SECTION



EXTERIOR SECTION parts List

Mark	No.	Description	Part No.
	1	DVD MT PCB Assy	A2I801A130
	2	OPERATION 1 PCB Assy	A2I801A270
	3	OPERATION 2 PCB Assy	A2I802A280
⚠	4	POWER PCB Assy	A2I801A240
	5	DVD MECHA ASSY	A2I802A650
	6	• • • •	
⚠	7	Cord AC Bush	1209618901
NSP	8	Plate,Bottom	702WSA0250
	9	• • • •	
NSP	10	Sheet,Caution	7250000597
	11	Plate,Cover power	755WPAA031
	12	Holder,FFC	761WPA0396
	13	Cushion,Leg	VEB1349
	14	Cabinet,Top	702WSB0114
NSP	15	ENERGY STAR Label	7230007965
	16	Cushion (15x20x16)	8965TS101B
NSP	17	Sheet Caution	726000A140
	18	Screw,Tap Tite(S)-Bind Wash.	816423063U
	19	Screw,Tap Tite(S) (3x5.5)	8107D3055U
	20	Screw,Tap Tite(B) (3x6.0)	8109K3060U
	21	Screw,Tap Tite(B)Pan (3x6)	810913060U
	22	Screw,Tap Tite(P) (2.6x8)	811022680U
NSP	23	Sheet,Jack 1	7226310102
NSP	24	Sheet,Jack 2	7226310104
NSP	25	Sheet,Jack 3	7226310103
NSP	26	Double,Face-Tape	7290000156
	27	OPERATION 3 PCB Assy	A2I802ADF0
	101	Front Cabi Assy	7A7010210A
NSP	101A	Cabinet,Front	701WPJ1431
NSP	101B	Plate, Display	711WPA0253
NSP	101C	Plate, Cover	711WPD0704
	101D	Flap,DVD	712WPD0184
NSP	101E	Badge,Brand	7236310014
NSP	101F	Button,Frame 1	735WPA0874
NSP	101G	Button,Frame 4	735WPA0879
NSP	101H	Button,Frame 2	735WPB0328
NSP	101I	Button,Frame 5	735WPB0329
NSP	101J	Button,Frame 3	735WPB0330
NSP	101K	Button, Cap	737WPB0005
NSP	101L	Button, Cap 2	737WPB0006
NSP	101M	Button, Cap 1	737WPJ0002
	101N	Spring,Flap-DVD	743WKA0052

2.3 06 DVD MECHA SECTION



Note :

CLASS	PART NO.	PART NAME	MARK
GREASE	GEM1018	G-555G	**AA**
	GYA1001	G-313Y	**AB**
	GEM1036	FL-78A	**AC**

NOTE: Applying positions AA, AB and AC for the grease are displayed for this section. Check if the correct grease is applied for each position.

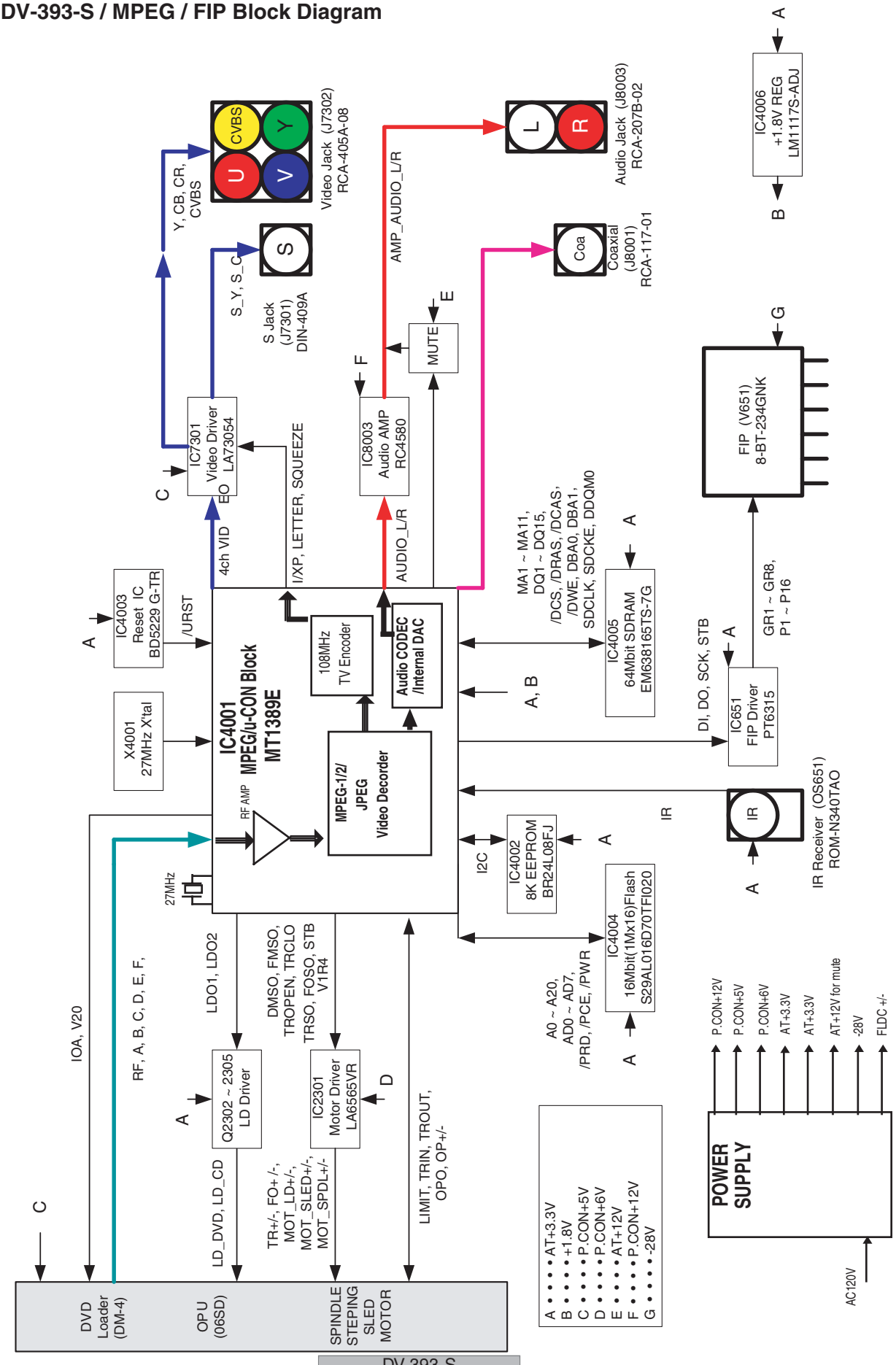
06 DVD MECHA SECTION parts List

Mark	No.	Description	Part No.
	1	Loading Motor PCB Assy	A2F101A610
	2	Gear,Middle	92P100117A
	3	Loading Motor	1515S98004
	4	Pulley,Motor	92P100097A
	5	FEED Motor	1515S98004
	6	Cord Jumper (24P)(CD2001)	122J402202
	7	Cord Jumper (CD2302)	122H051602
	8	Insulator (F)	92P200013A
	9	Belt,Loading	92P200015A
	10	Insulator (R)	92P200016A
	11	Frame,main	92P100119A
	12	Tray (B)	92P100127B
	13	Holder ,Traverse	92P100125A
	14	Gear,Pulley	92P100123A
	15	Gear,Main	92P100124A
	16	Gear,Feed	92P100116A
	17	SW PCB Assy (PCB640)	A2F101A640
	18	Plate, Clamper	92P000023A
	19	LOADER SUB ASSY (B)	92AAA0019B
	20	Clamper	92P100122A
	21	Screw,Pan (M1.7x3 P3)	814011730U
	22	Screw,Pan (M1.7x2.3 P3)	814011723U
	23	Rack,Loading	92P100121A
	24	Gear,Motor	92P100088A
	25	Feed Rack Assy	92AAA0017A
	26	Screw,T-Tite(B) (M1.7x5.0 P3)	813381750U
	27	Screw,Gear Feed	92P700007A
	28	Cord Jumper (CD2301)	122H061605
	29	Switch (SW1)	0515S32003
	30	Push Switch (SW2)	0500101036
	31	Screw,Tap Tite(P) (2.6x8)	811022680U
	32	Sems.Tap Tite(P) (2x8)	816112080U
	33	Screw (Bind 2x8)	811022080U
	34	DVD MECHA ASSY	A2I802A650

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

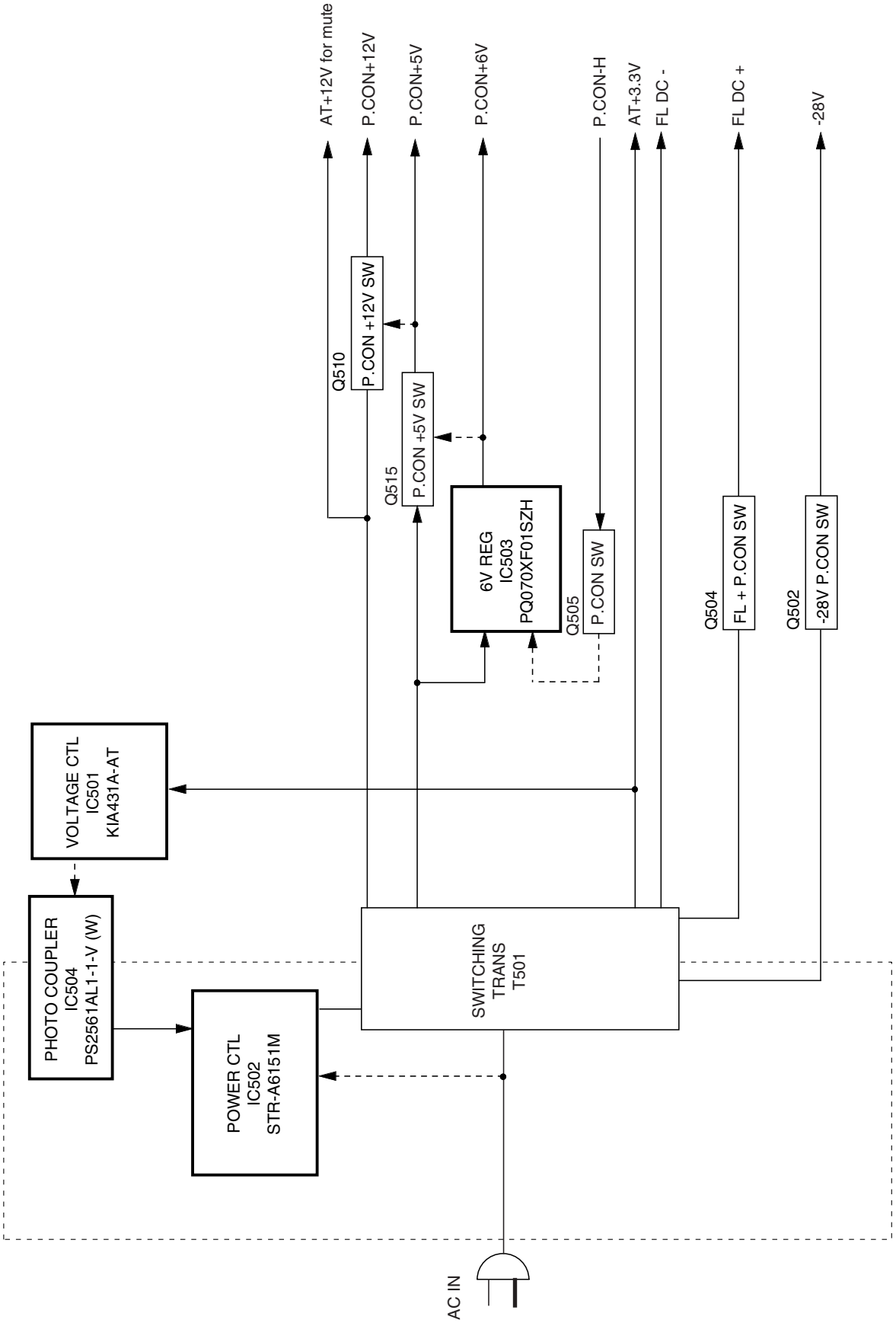
3.1 BLOCK DIAGRAM

• **DV-393-S / MPEG / FIP Block Diagram**

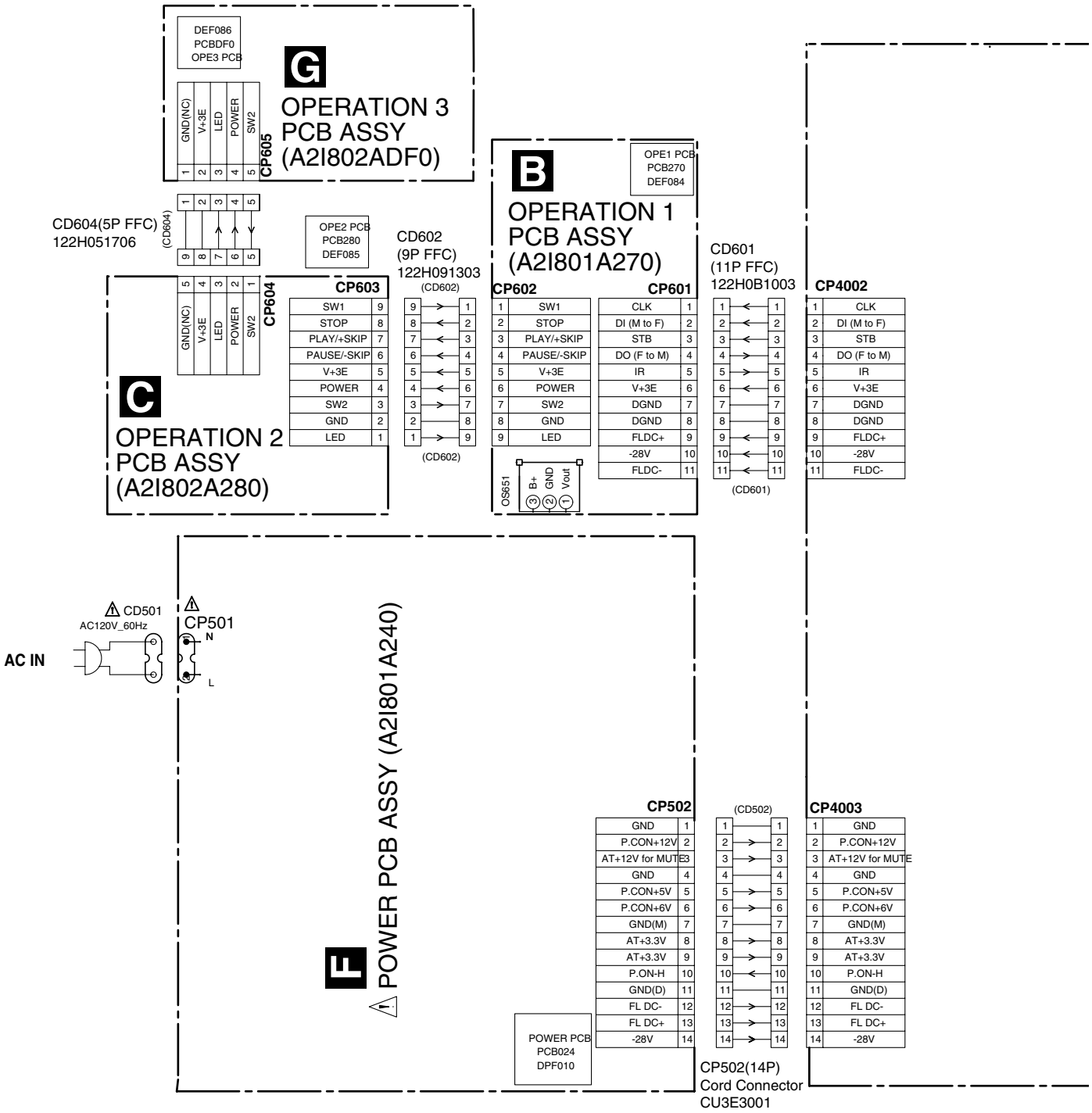


3.2 POWER BLOCK DIAGRAM

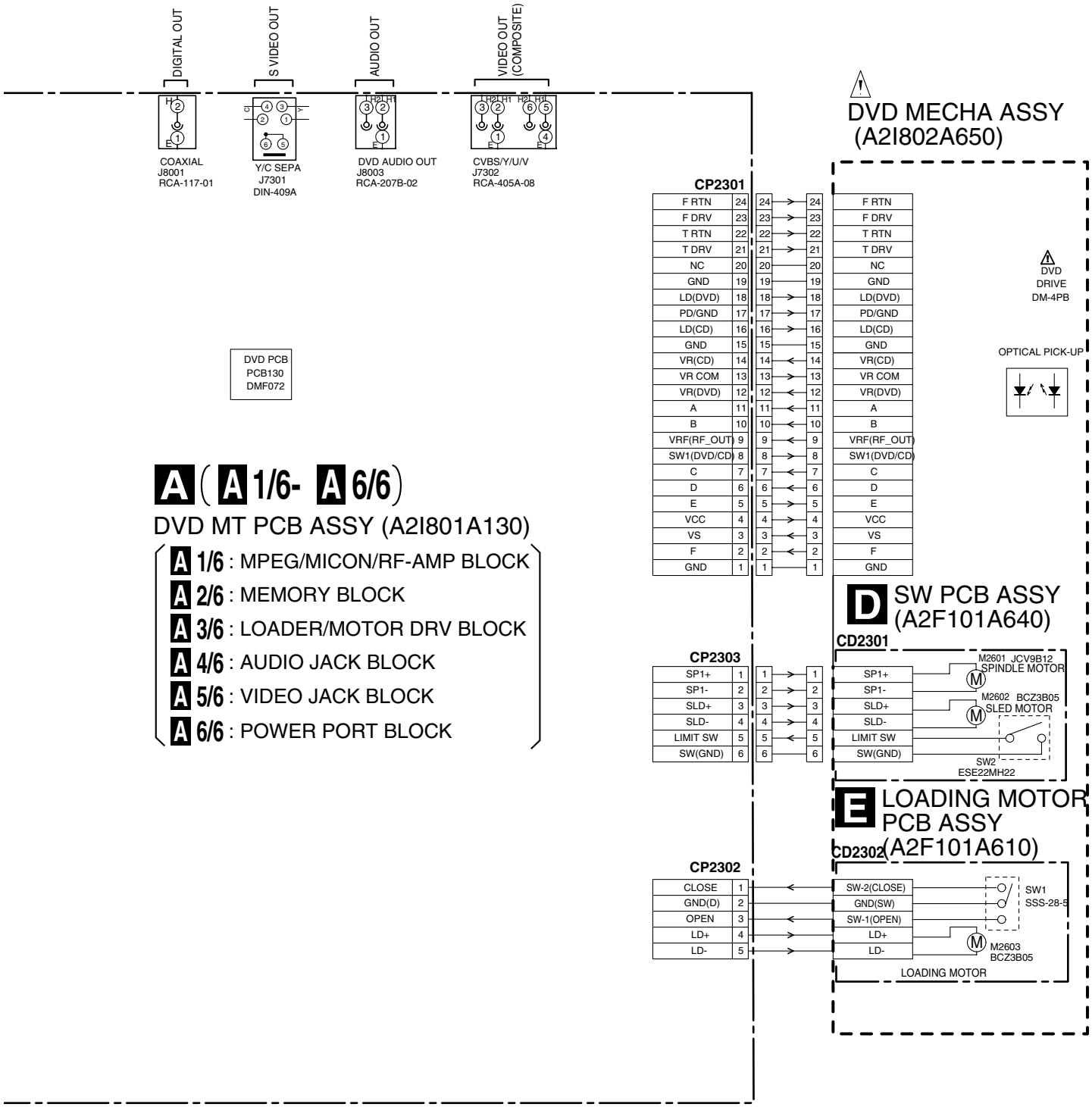
• POWER BLOCK DIAGRAM



3.3 OVERALL WIRING CONNECTION DIAGRAM



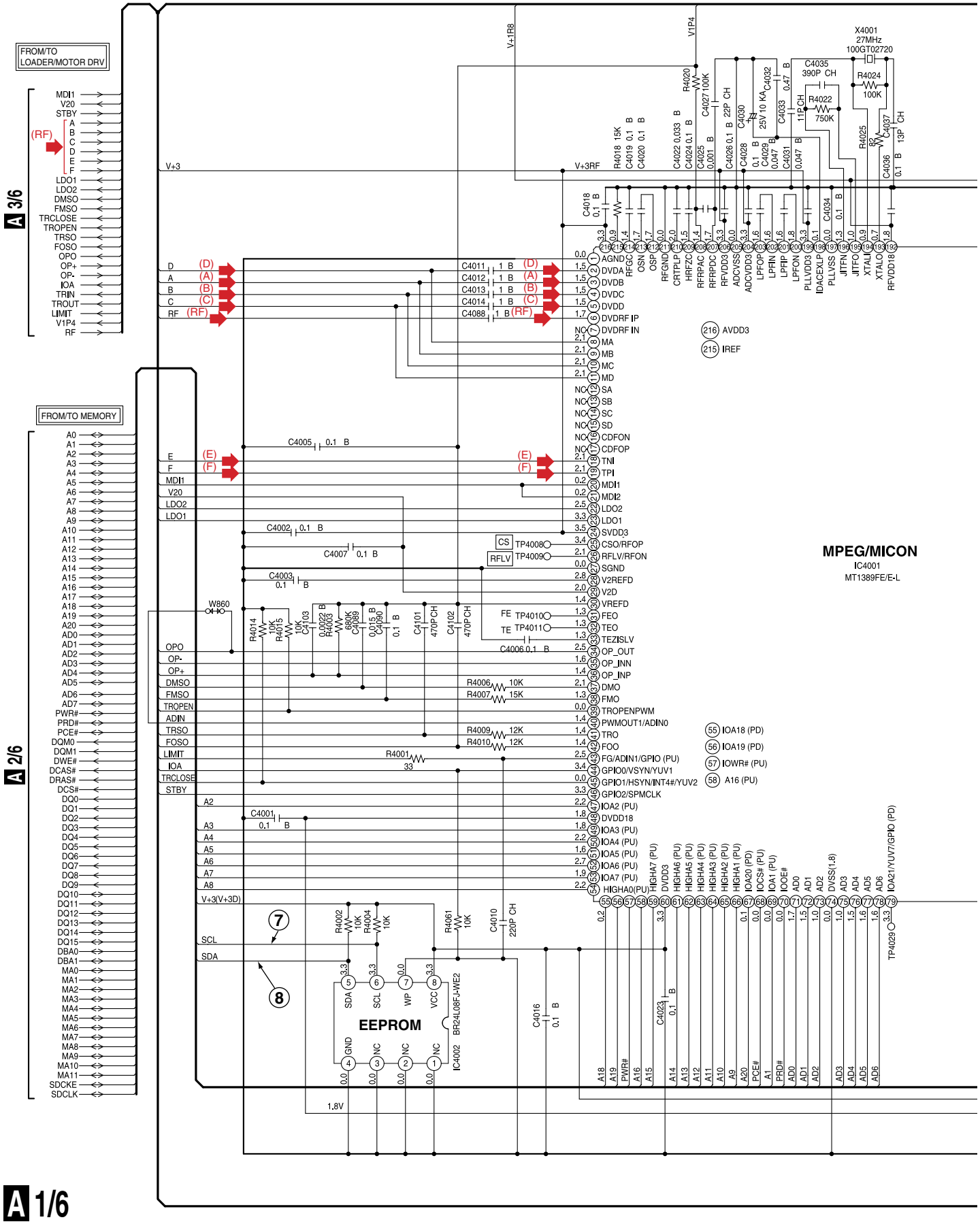
- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- : The power supply is shown with the marked box.



3.4 DVD MT PCB ASSY (1/6)

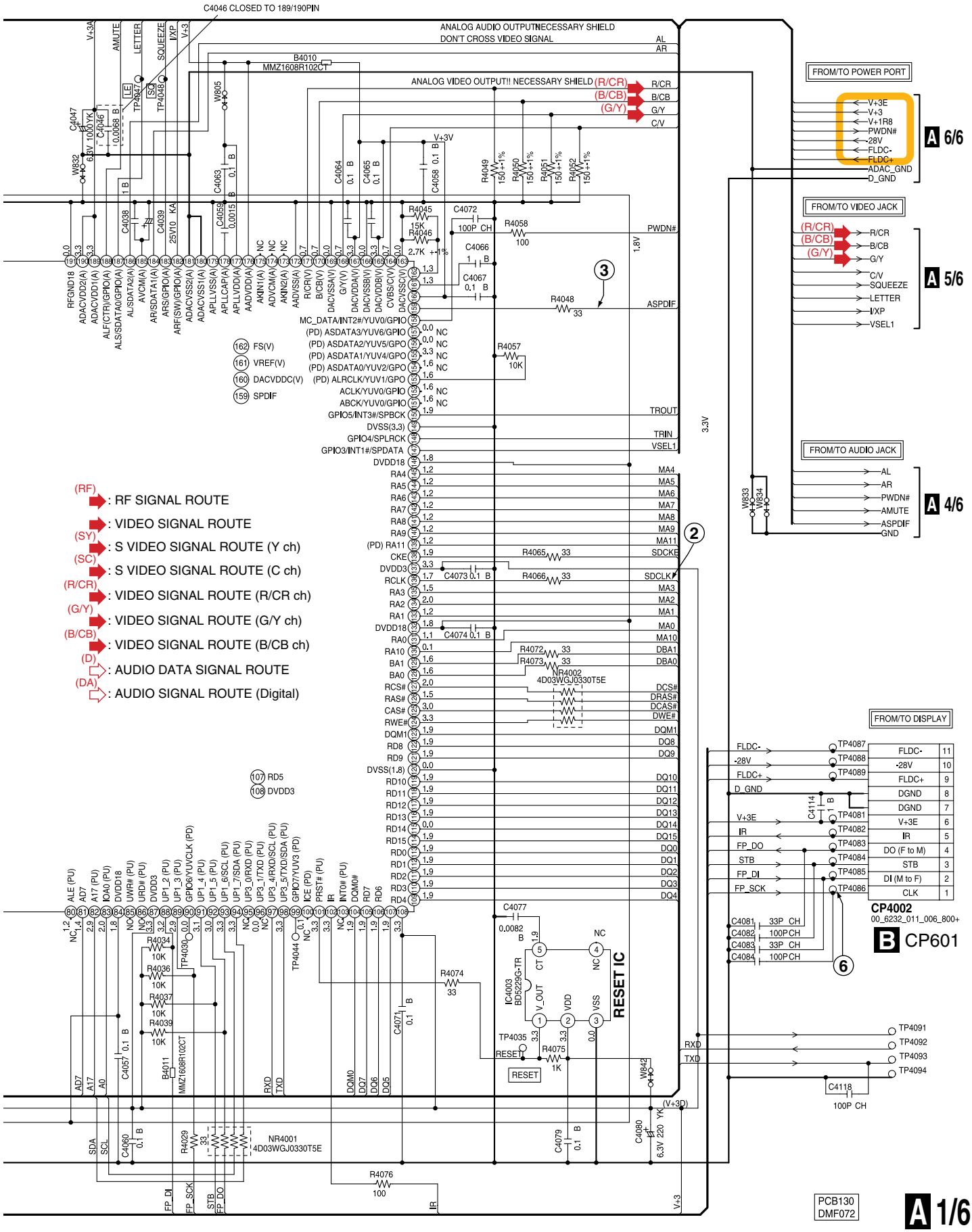
A 1/6 DVD MT PCB ASSY (A2I802A130)

● **MPEG/MICON/RF-AMP BLOCK**



NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

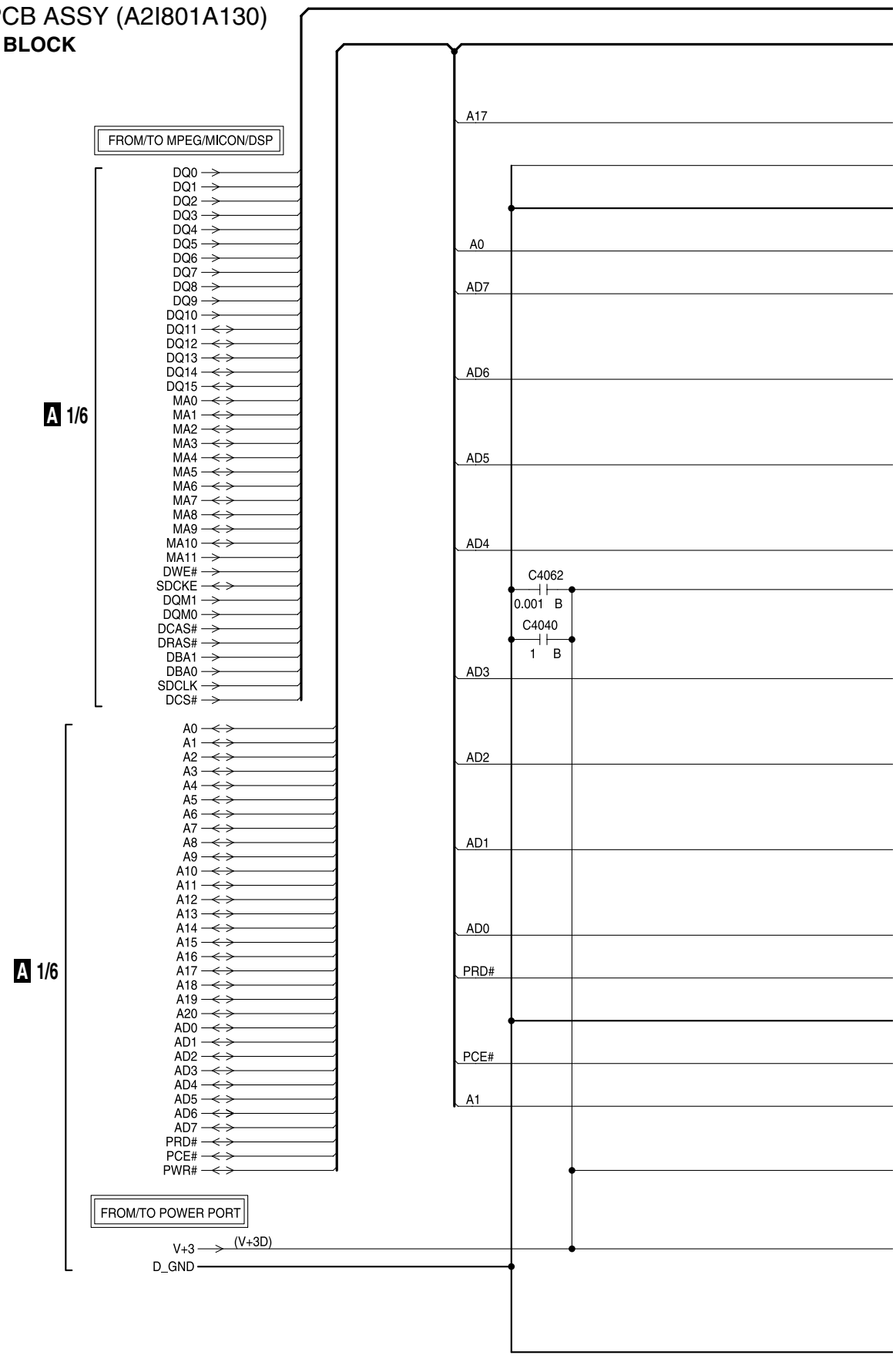
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE



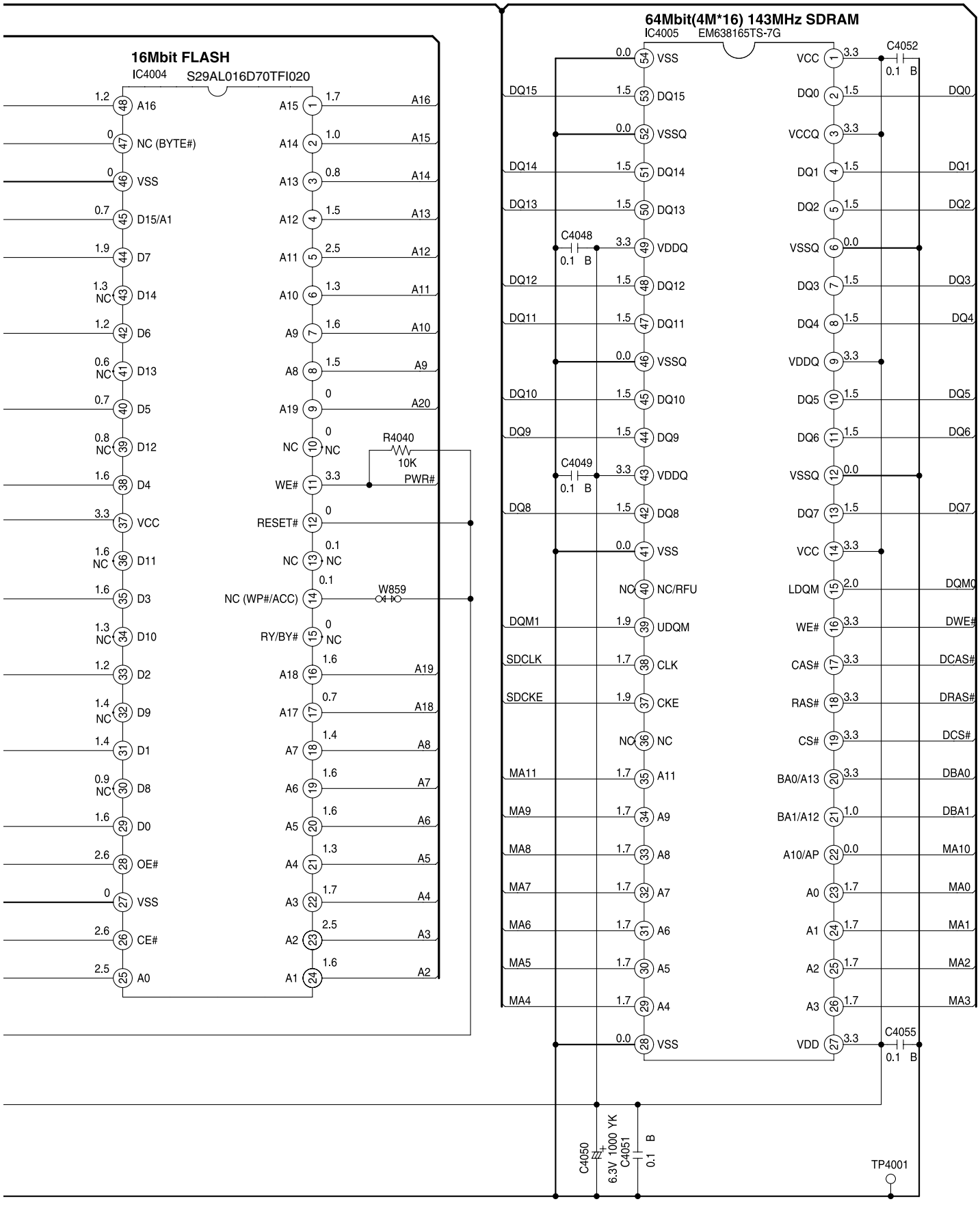
3.5 DVD MT PCB ASSY(2/6)

A 2/6 DVD MT PCB ASSY (A2I801A130)

● **MEMORY BLOCK**



A 2/6



NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

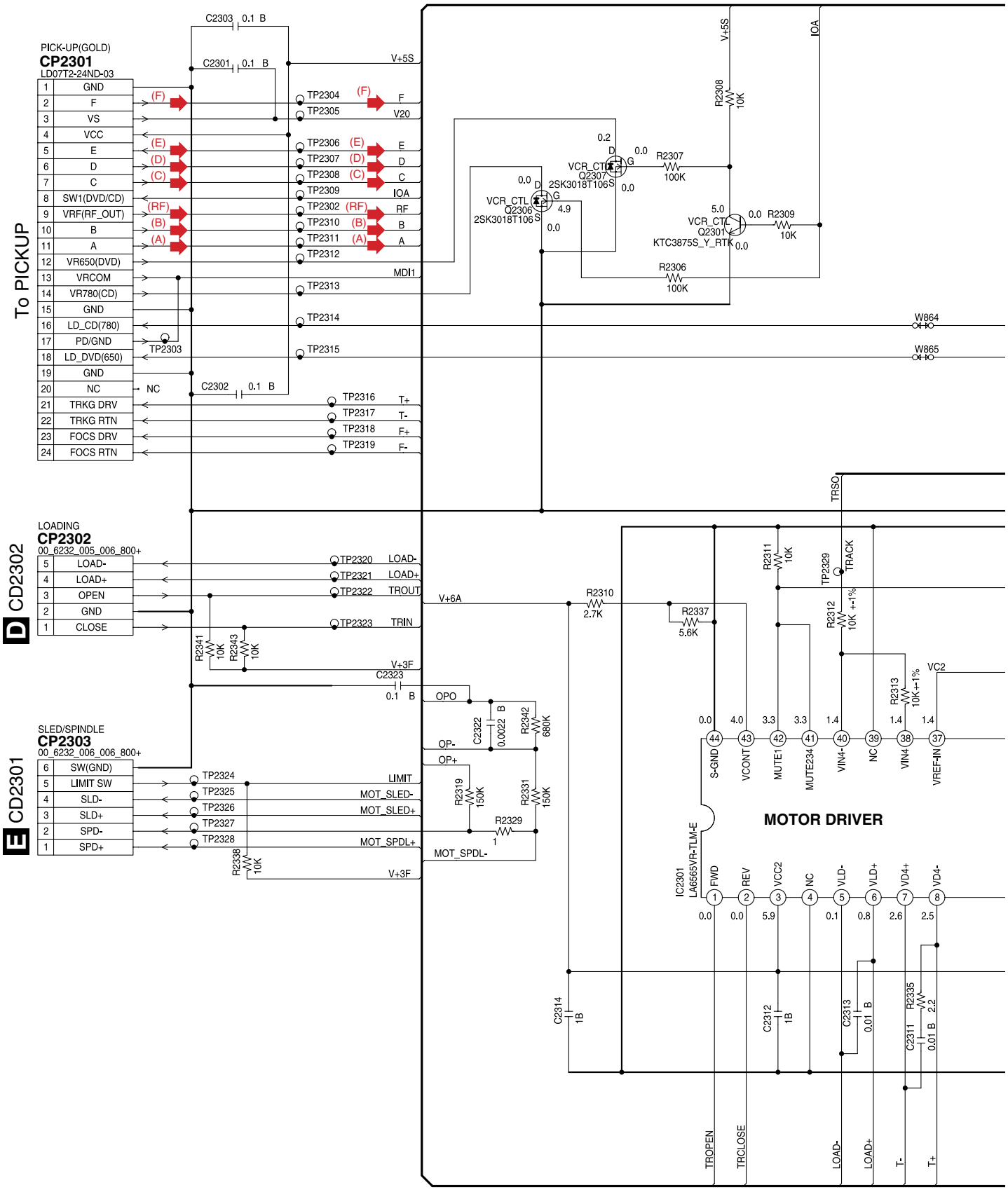
NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB130
DMF072

3.6 DVD MT PCB ASSY(3/6)

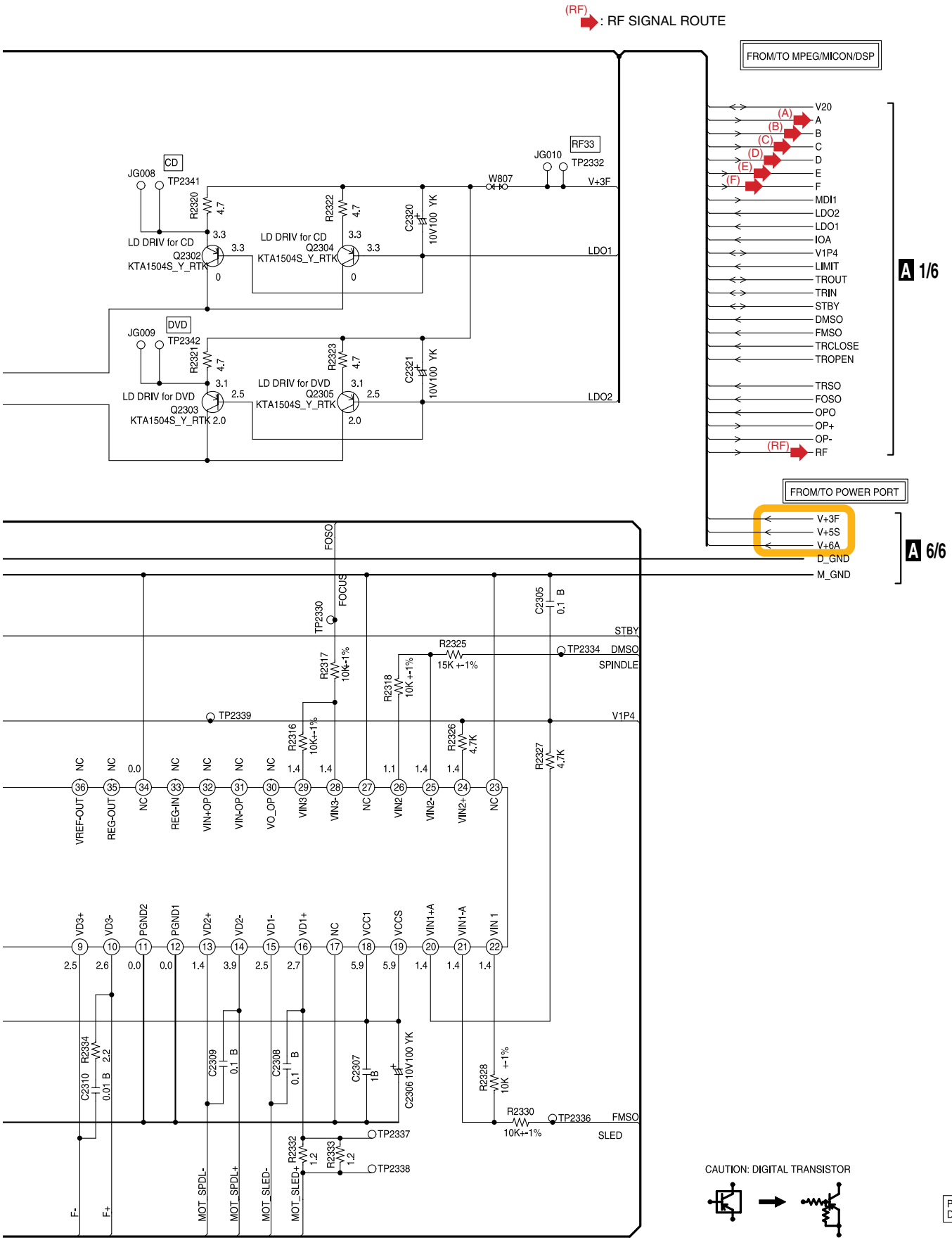
A 3/6 DVD MT PCB ASSY (A2I802A130)

● **LOADER/MOTOR DRIVE BLOCK**



ATTENTION : LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION : SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY.



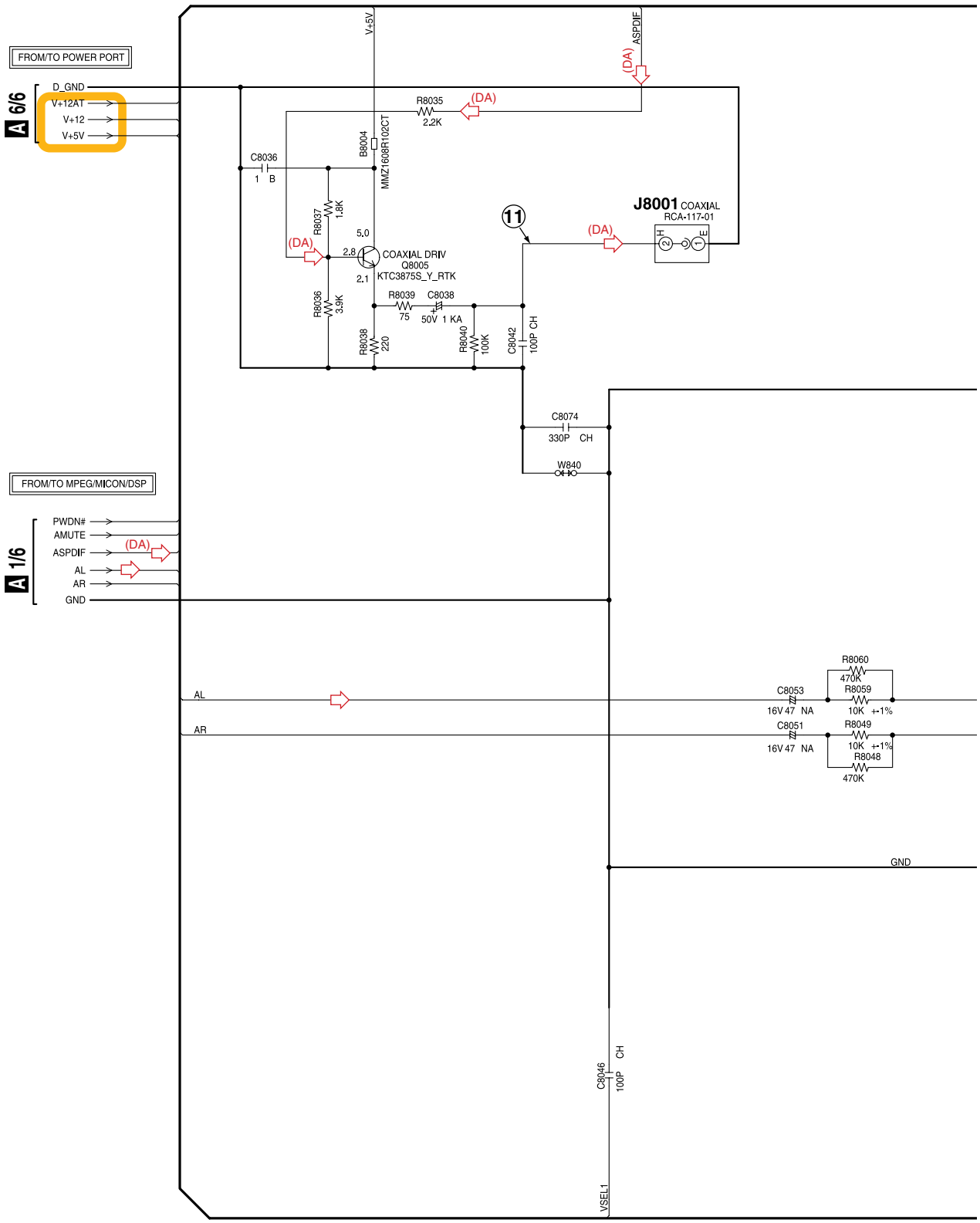
NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

3.7 DVD MT PCB ASSY(4/6)

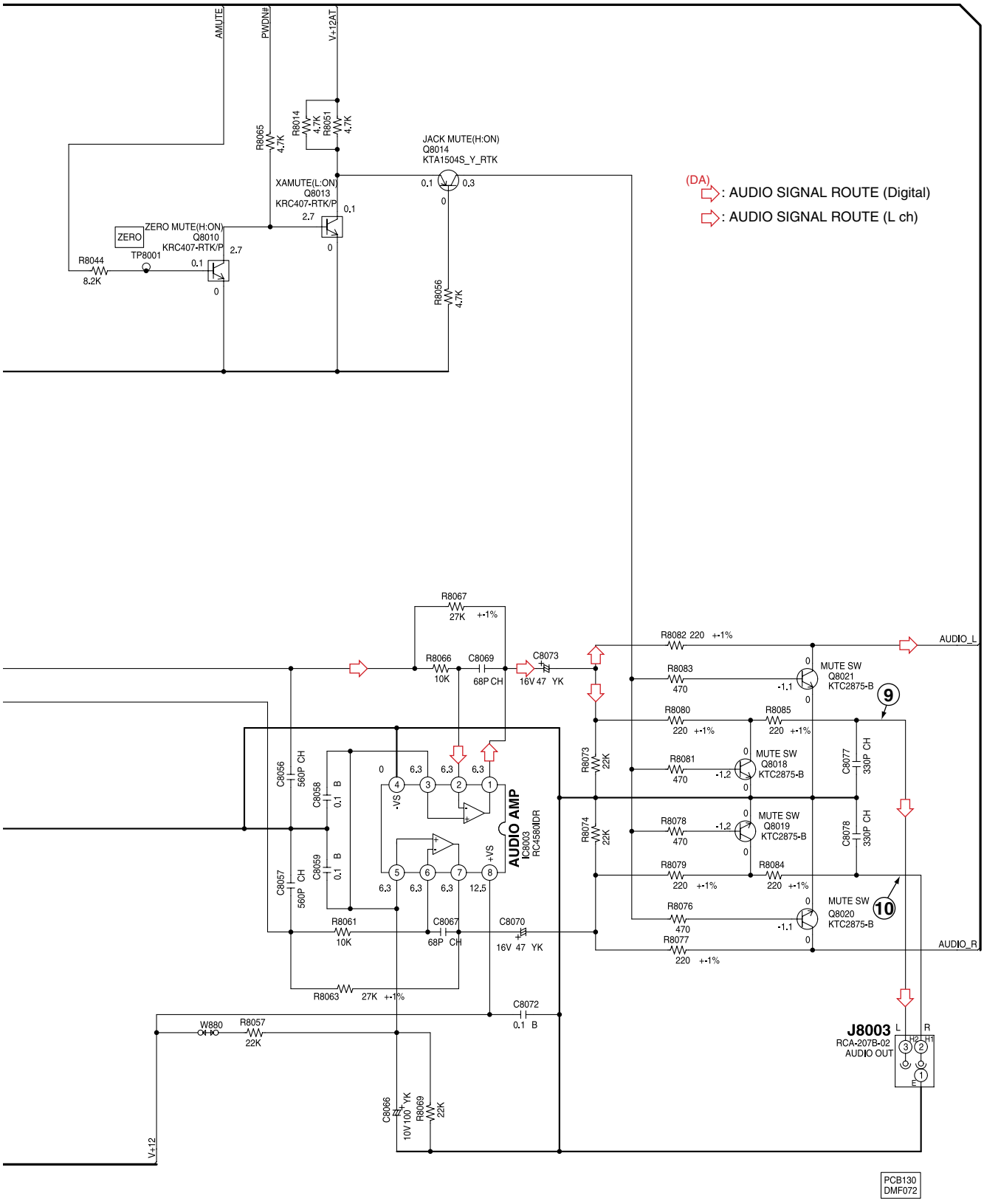
A 4/6 DVD MT PCB ASSY (A2I802A130)

- **AUDIO JACK BLOCK**



NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

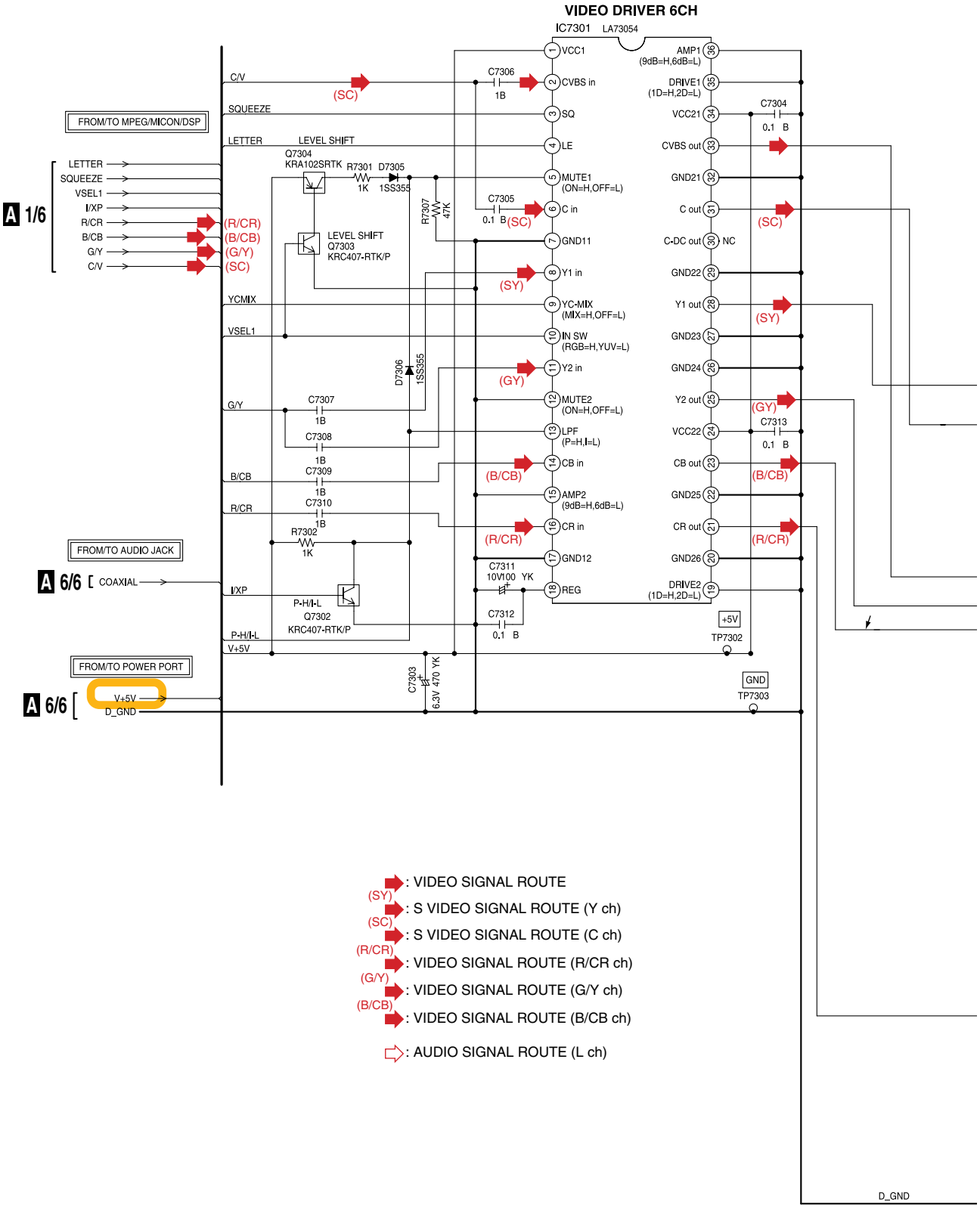
NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.


AMUTE
PWDN#
V+12AT
R8065 4.7K
R8014 4.7K
R8051 4.7K
JACK MUTE(H:ON)
Q8014
KTA1504S_Y_RTK
XAMUTE(L:ON)
Q8013
KRC407-RTK/P
ZERO
ZERO MUTE(H:ON)
Q8010
KRC407-RTK/P
TP8001
R8044 8.2K
R8056 4.7K
(DA)
: AUDIO SIGNAL ROUTE (Digital)
: AUDIO SIGNAL ROUTE (L ch)
R8067 27K +-1%
R8066 10K
C8069 68P CH
C8073 16V 47 YK
R8082 220 +-1%
AUDIO_L
R8083 470
MUTE SW
Q8021
KTC2875-B
R8080 220 +-1%
R8085 220 +-1%
R8081 470
MUTE SW
Q8018
KTC2875-B
R8078 470
MUTE SW
Q8019
KTC2875-B
R8079 220 +-1%
R8084 220 +-1%
R8076 470
MUTE SW
Q8020
KTC2875-B
R8077 220 +-1%
AUDIO_R
R8073 22K
R8074 22K
C8077 330P CH
C8078 330P CH
C8056 560P CH
C8058 0.1 B
C8057 560P CH
C8059 0.1 B
AUDIO AMP
IC8003
RC4580IDR
-VS
+VS
R8061 10K
C8067 68P CH
C8070 16V 47 YK
R8063 27K +-1%
C8072 0.1 B
W880
R8057 22K
C8066 10V 100 YK
R8069 22K
V+12
J8003
RCA-207B-02
AUDIO OUT
PCB130
DMF072
CAUTION : DIGITAL TRANSISTOR
CAUTION : DIGITAL TRANSISTOR

3.8 DVD MT PCB ASSY(5/6)

A 5/6 DVD MT PCB ASSY (A2I802A130)

● **VIDEO JACK BLOCK**



(SY) : VIDEO SIGNAL ROUTE

(SY) : S VIDEO SIGNAL ROUTE (Y ch)

(SC) : S VIDEO SIGNAL ROUTE (C ch)

(R/CR) : VIDEO SIGNAL ROUTE (R/CR ch)

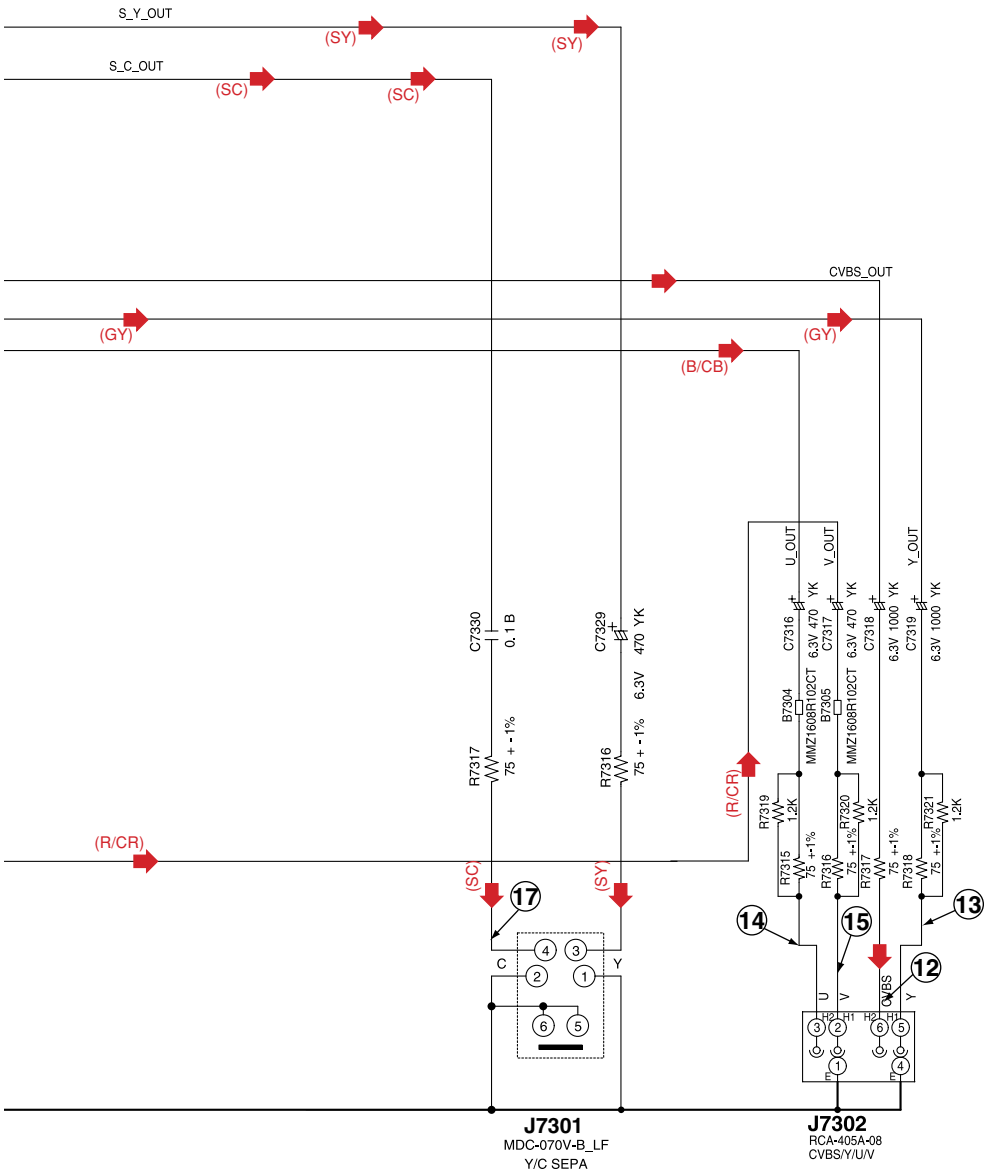
(G/Y) : VIDEO SIGNAL ROUTE (G/Y ch)

(B/CB) : VIDEO SIGNAL ROUTE (B/CB ch)

: AUDIO SIGNAL ROUTE (L ch)

NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

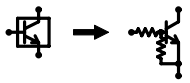
NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.



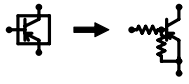
PCB130
DMF072

YUV only ---> W871,W872,W873,R7306 ON
YUV/D ---> W871,W872,W873,W874,W875,W876,R7306 ON
RGB/YUV ---> IC7302 MOUNT,JP DEL,R7305 ON

CAUTION: DIGITAL TRANSISTOR



CAUTION: DIGITAL TRANSISTOR

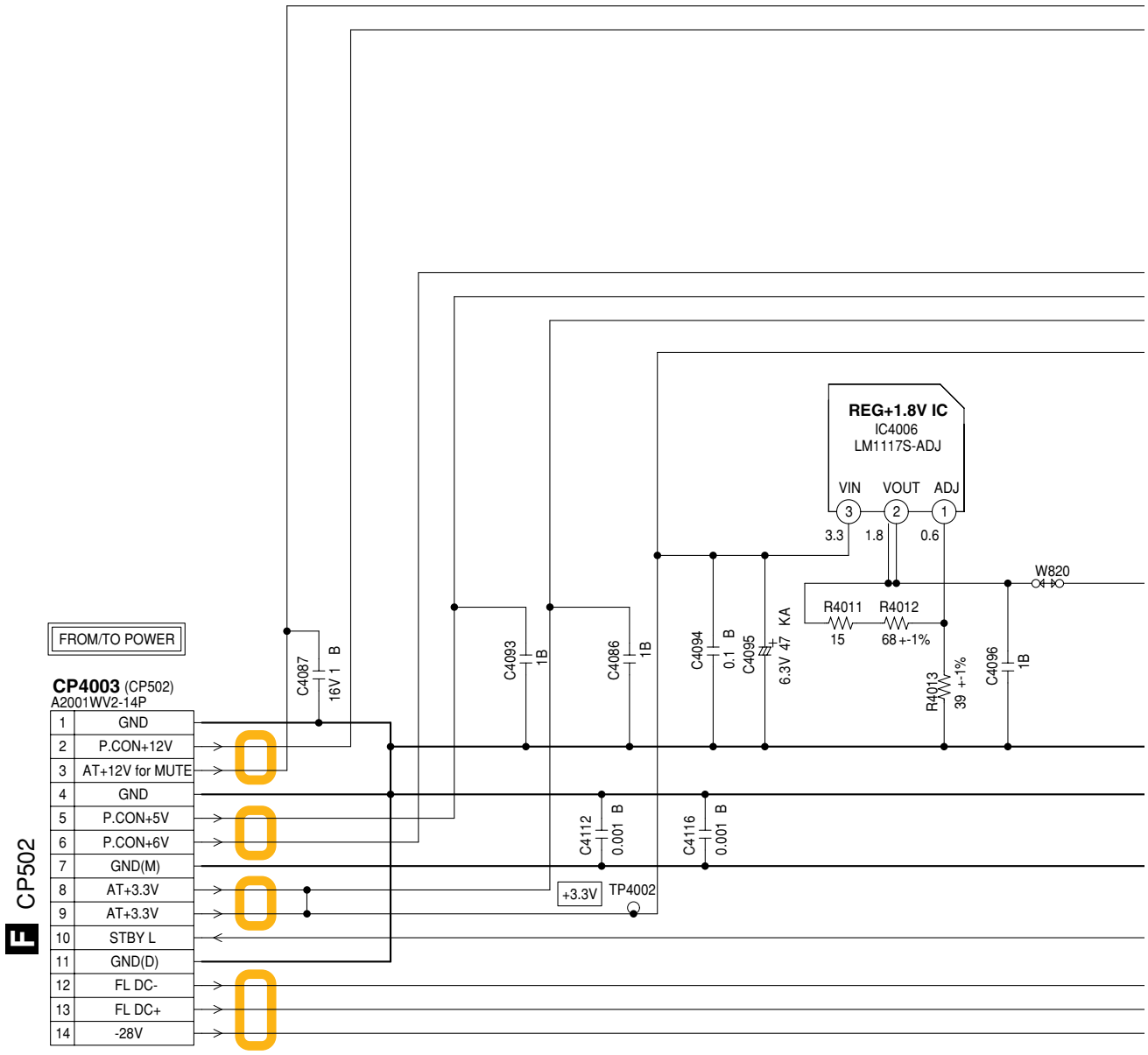


DV-393-S

3.9 DVD MT PCB ASSY(6/6)

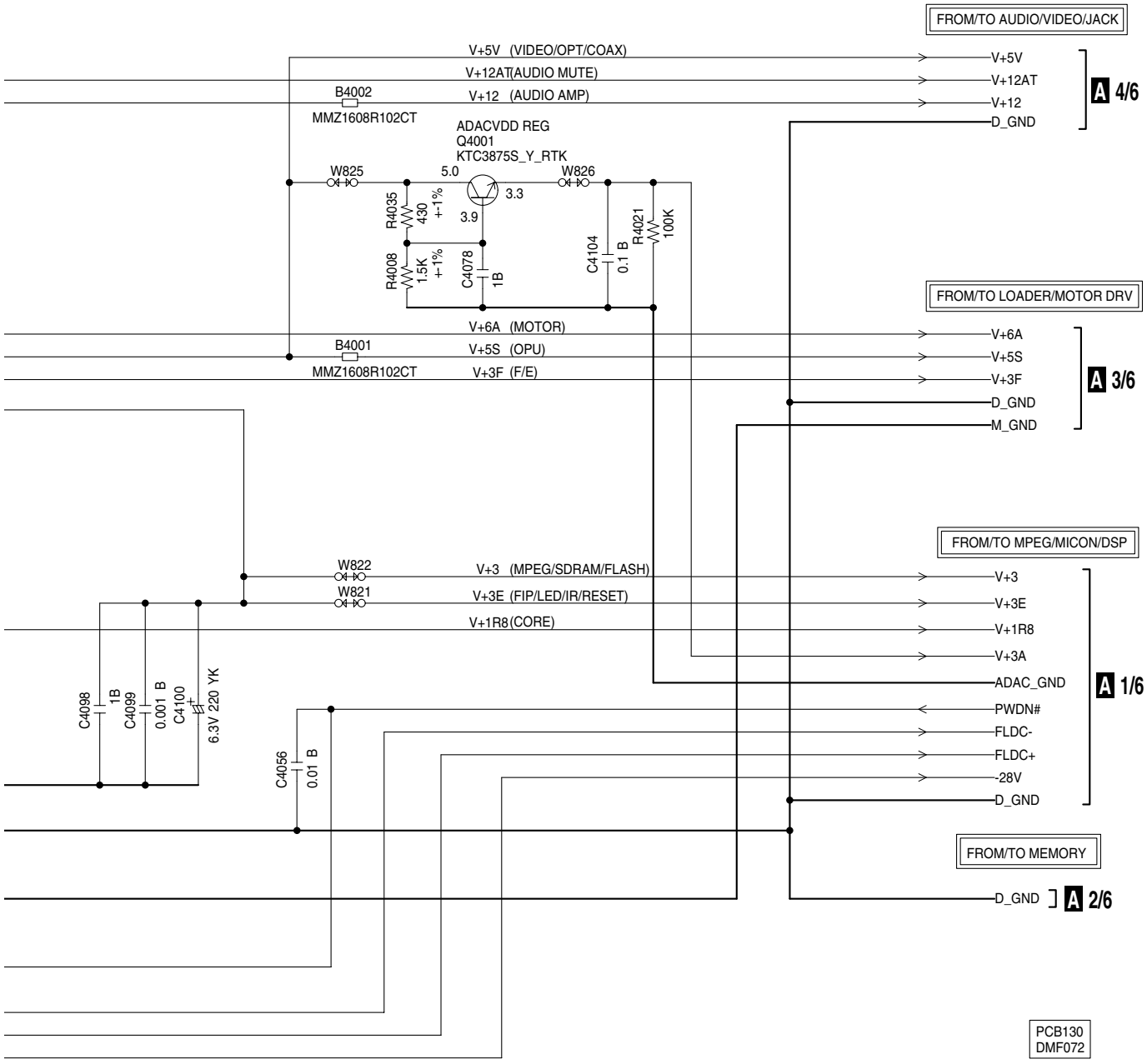
A 6/6 DVD MT PCB ASSY (A2I802A130)

● **POWER PORT BLOCK**



ATTENTION :LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION :SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY.



NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

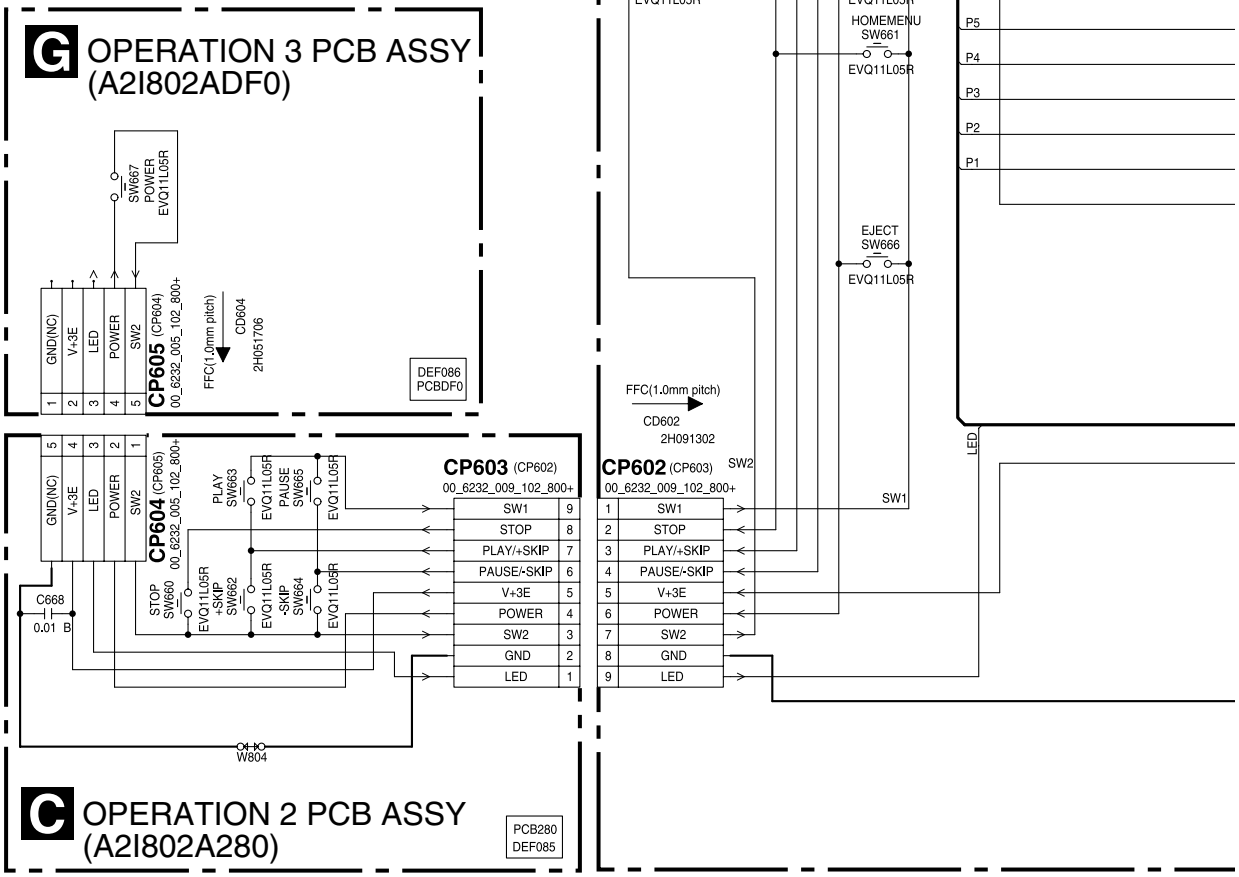
A 6/6

3.10 OPERATION 1, OPERATION 2 and OPERATION 3 PCB ASSYS

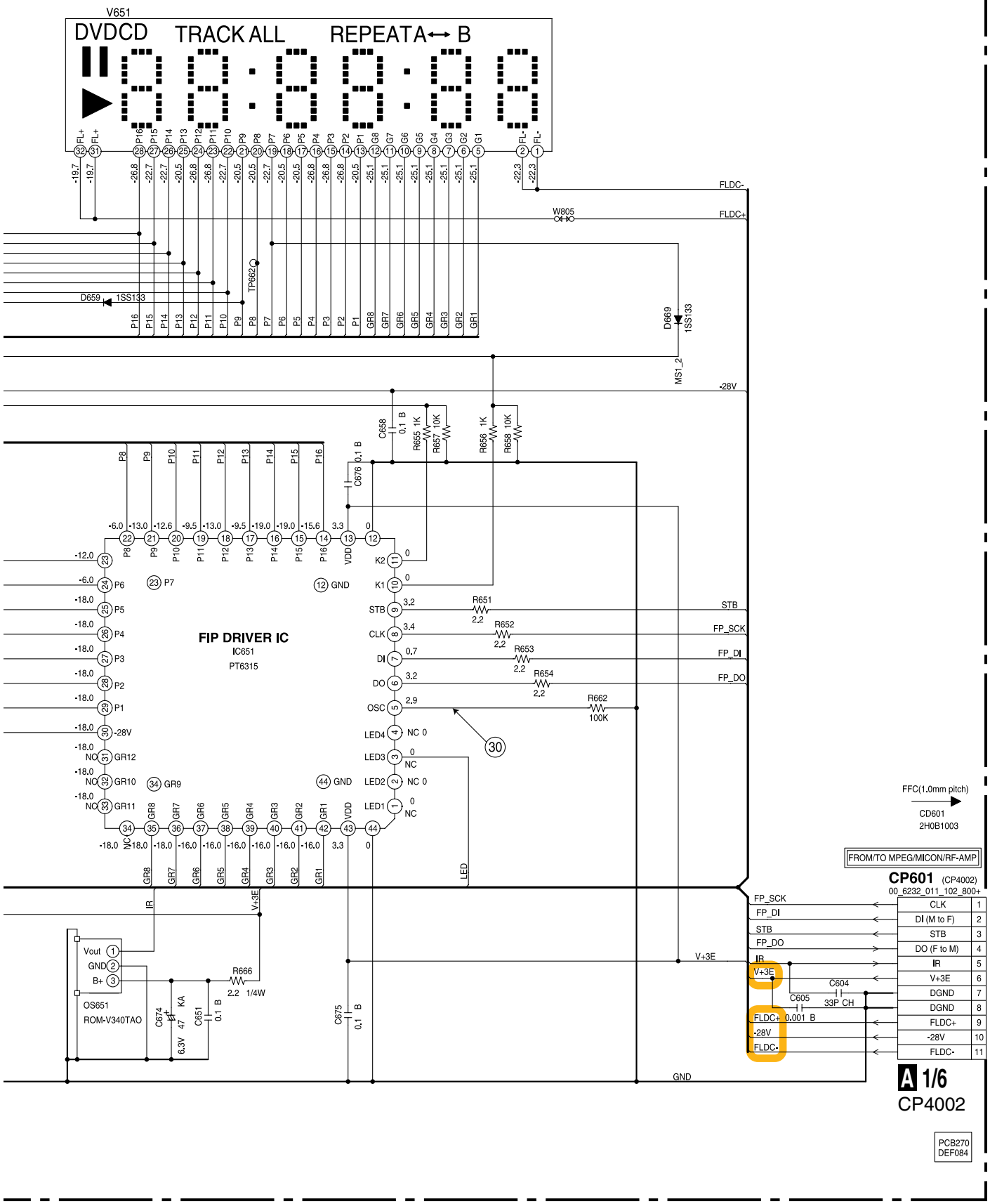
OPERATION 1 PCB ASSY
SW652 : DOWN
SW653 : ENTER
SW654 : RIGHT
SW655 : RETURN
SW656 : MENU
SW657 : UP
SW658 : TOPMENU
SW659 : LEFT
SW661 : HOMEMENU
SW666 : EJECT

OPERATION 2 PCB ASSY
SW660 : STOP
SW662 : +SKIP
SW663 : PLAY
SW664 : - SKIP
SW665 : PAUSE

OPERATION 3 PCB ASSY
SW667 : POWER



B C G



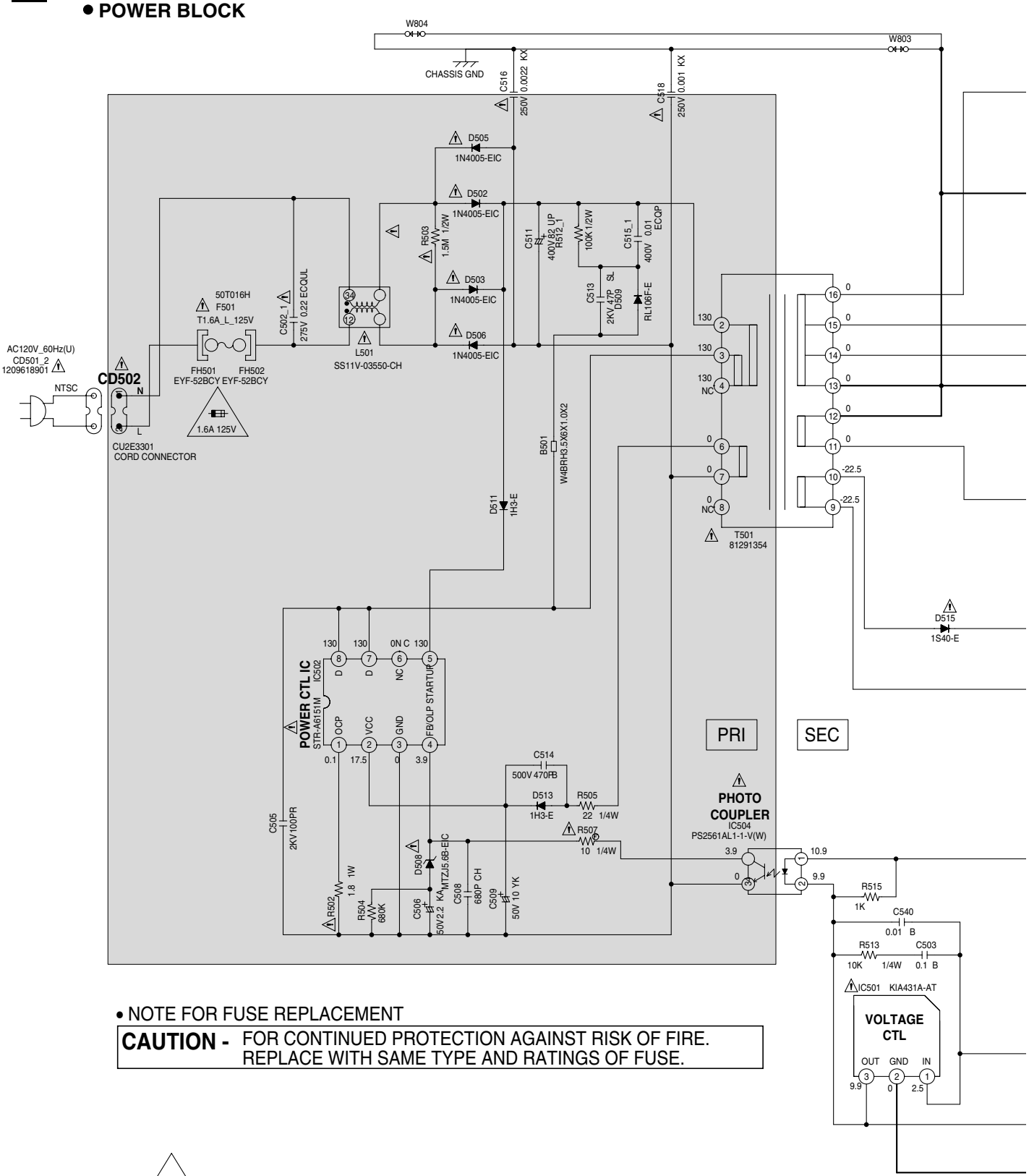
NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

3.11 POWER PCB ASSY

POWER PCB ASSY (A2I801A240)

- **POWER BLOCK**



- NOTE FOR FUSE REPLACEMENT

CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE AND RATINGS OF FUSE.

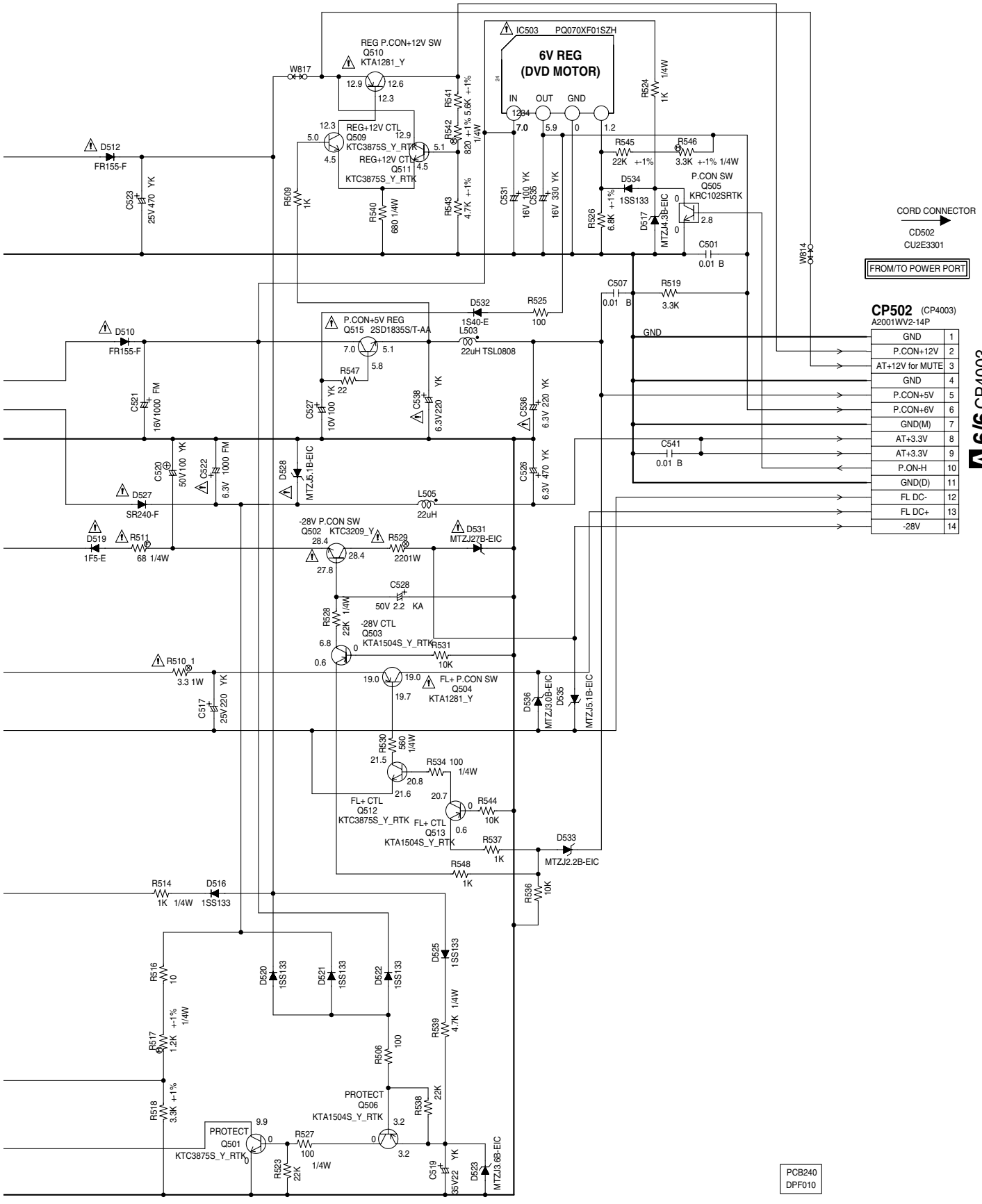
1.6A 125V

CAUTION : FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 1.6A 125V{F501}

ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 1.6A 125V{F501}

CAUTION : SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY.

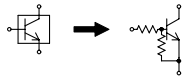
ATTENTION : LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES



NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR



3.12 WAVE FORMS

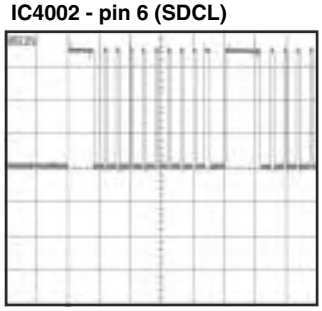
A DVD MT PCB ASSY

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram

IC4002 - pin 6 (SDCL)

50µs
1.0V

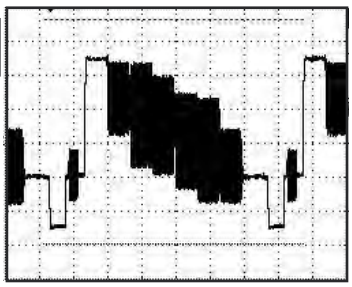
⑦



VIDEO JACK J7302 -pin 6 (CVBS)

10µs
200mV

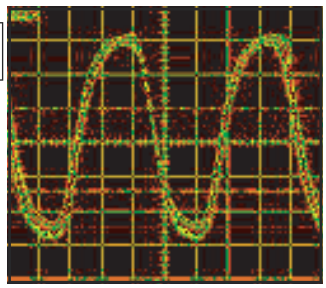
⑫



IC4001 - pin 136 (SDCLK)

2ns
1.0V

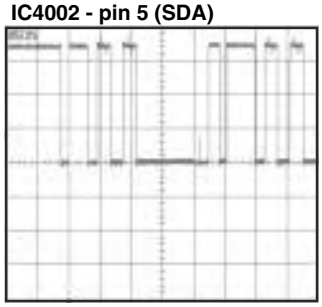
②



IC4002 - pin 5 (SDA)

50µs
1.0V

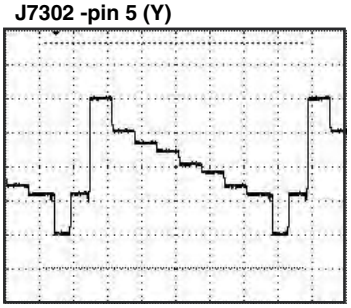
⑧



J7302 -pin 5 (Y)

10µs
500mV

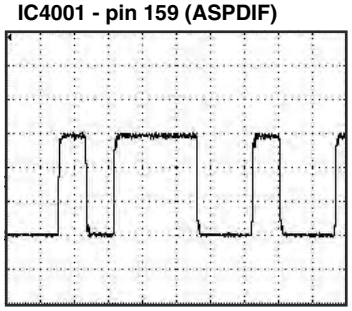
⑬



IC4001 - pin 159 (ASPDIF)

200ns
1.0V

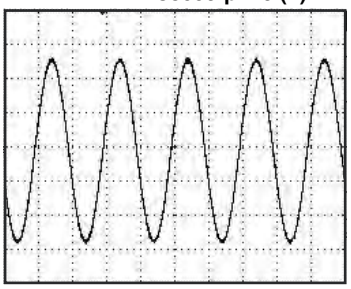
③



AUDIO JACK J8003-pin 3 (L)

500µs
1.0V

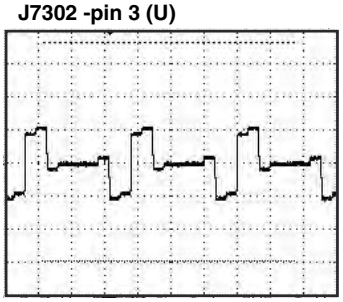
⑨



J7302 -pin 3 (U)

20µs
500mV

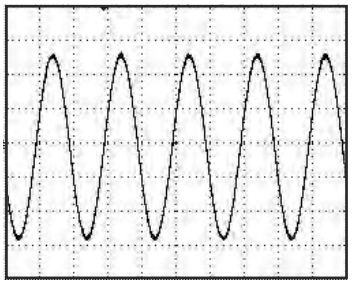
⑭



J8003-pin 2 (R)

500µs
1.0V

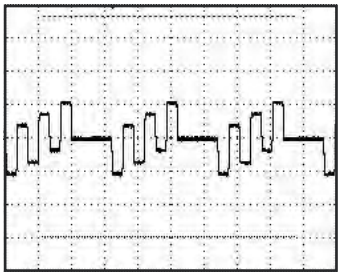
⑩



J7302 -pin 2 (V)

20µs
500mV

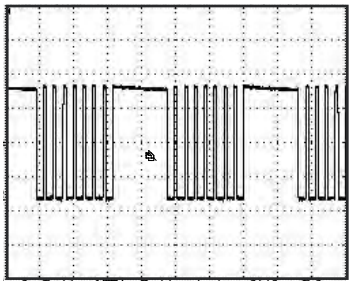
⑮



TP4086 (FP-SCK)

20µs
1.0V

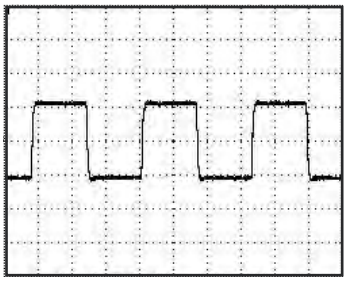
⑥



J8001-pin 2 (H)

200ns
500mV

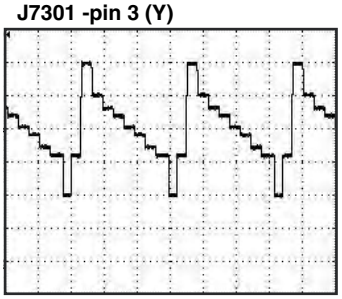
⑪



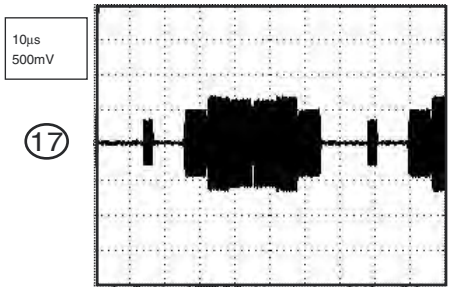
J7301 -pin 3 (Y)

20µs
500mV

⑯

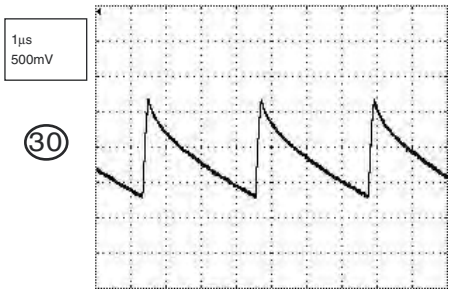


J7301-pin 4 (C)



DISPLAY

IC651 -pin 5 (OSC)



A

B

C

D

E

F

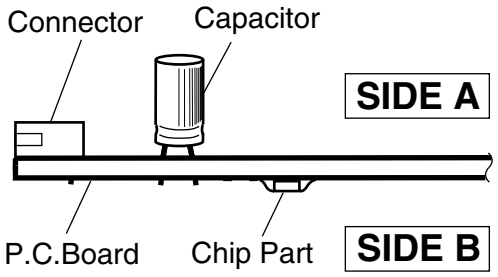
4. PCB CONNECTION DIAGRAM
4.1 LOADING and SW PCB ASSYS

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

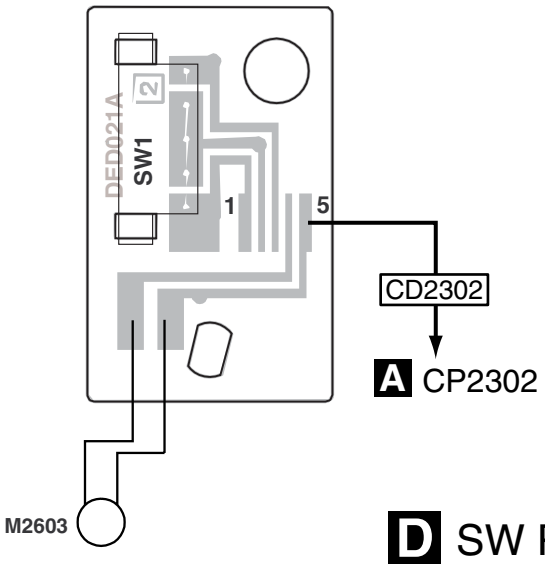
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



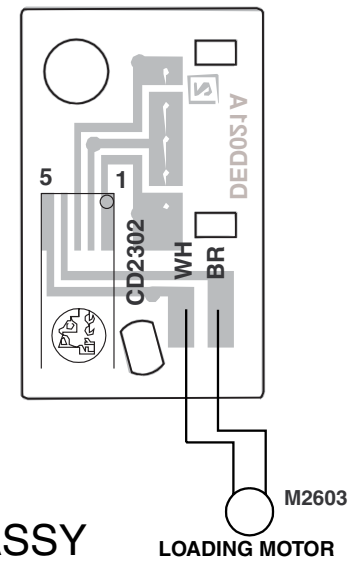
E LOADING MOTOR PCB ASSY
(INSERTED PARTS)

SIDE A

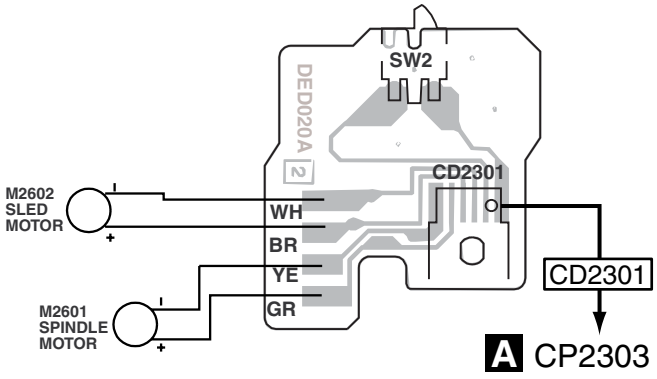


E LOADING MOTOR PCB ASSY
(CHIP MOUNTED PARTS)

SIDE B



D SW PCB ASSY



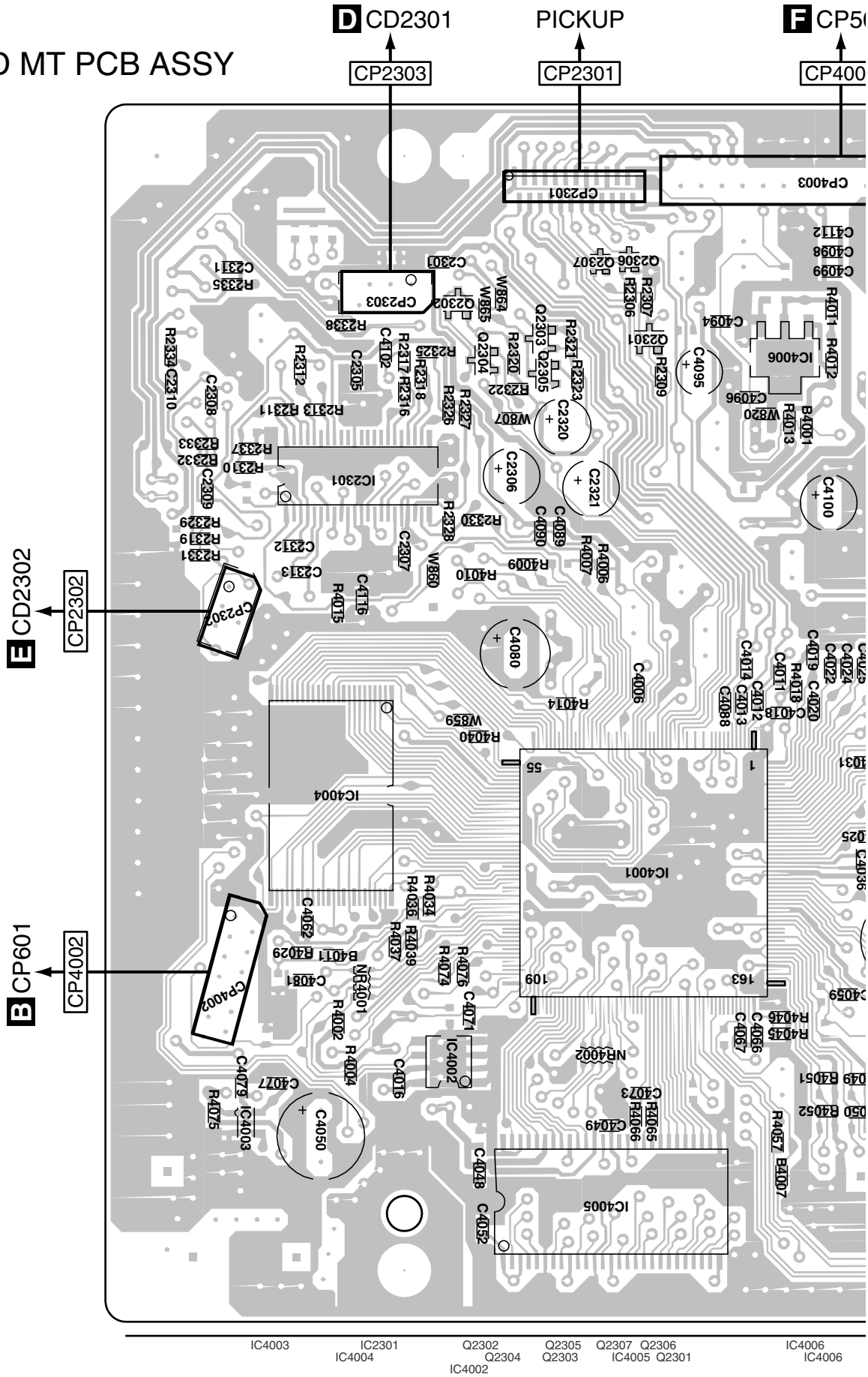
D E

D E

4.2 DVD MT PCB ASSY

SIDE A

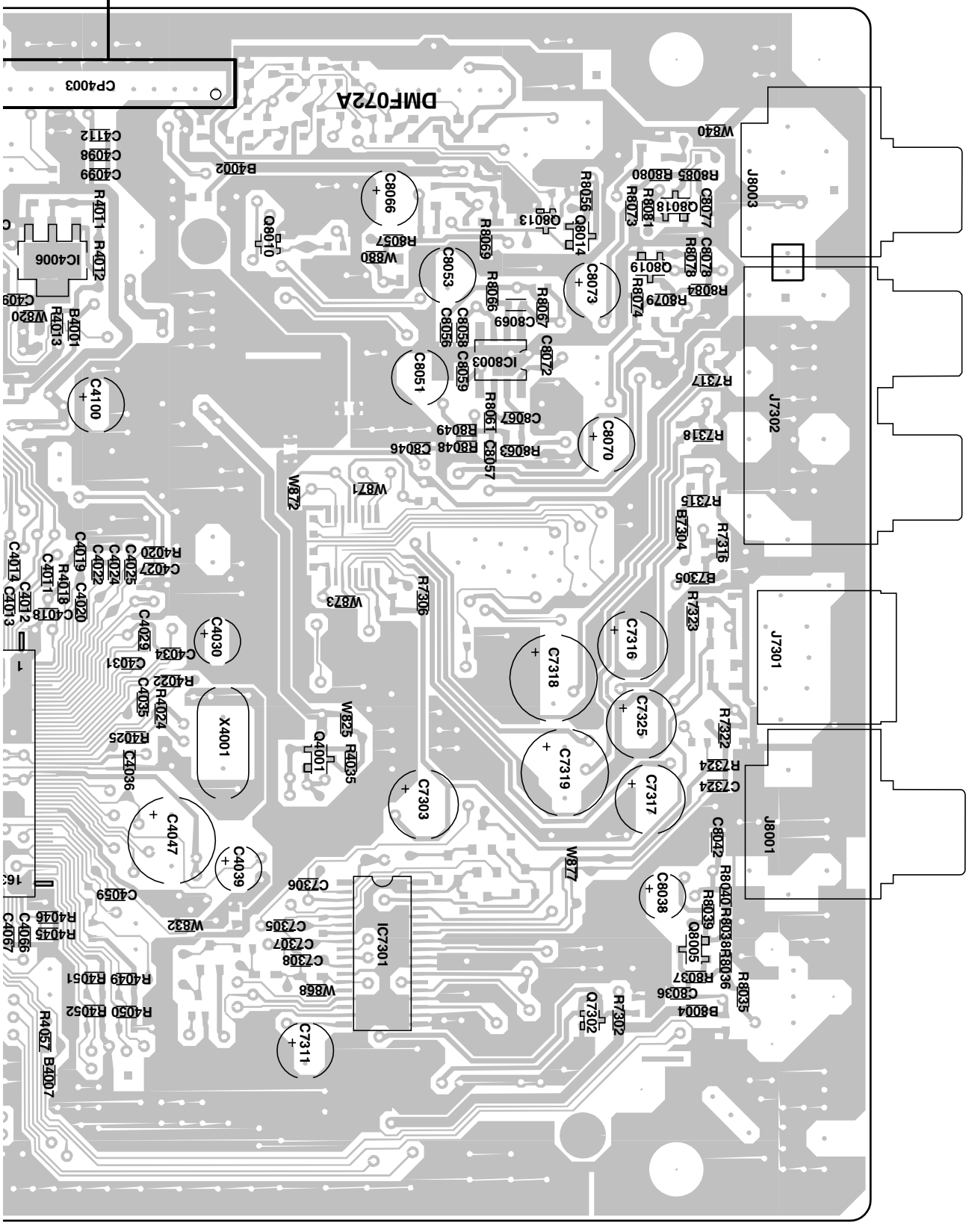
A DVD MT PCB ASSY



F CP502

CP4003

SIDE A

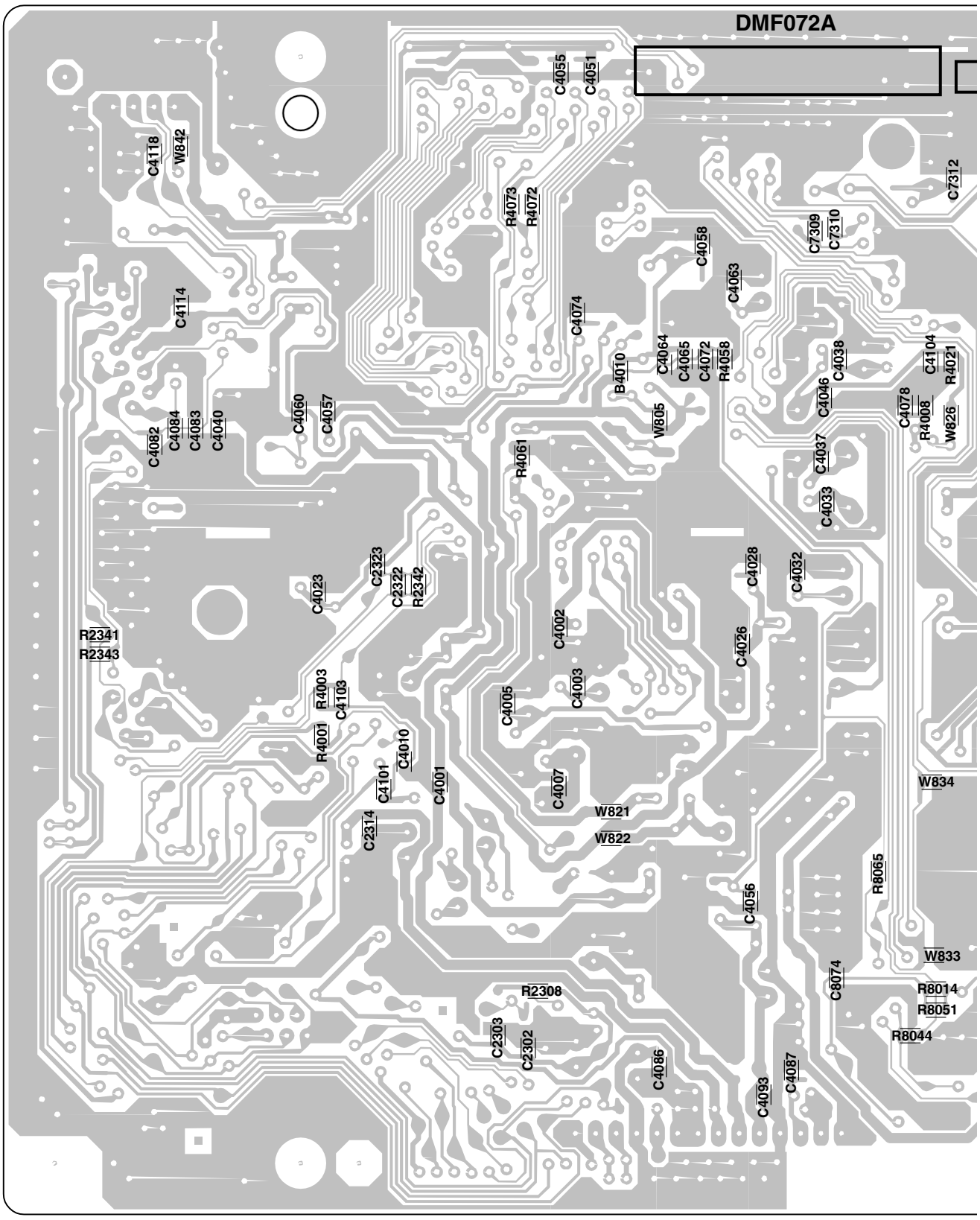


IC4006 Q7303 Q8010 Q4001 IC7301 IC8003 Q8013 Q8014 Q8018–Q8021
IC4006 Q7304 IC7302 Q7302 Q8005

A

SIDE B

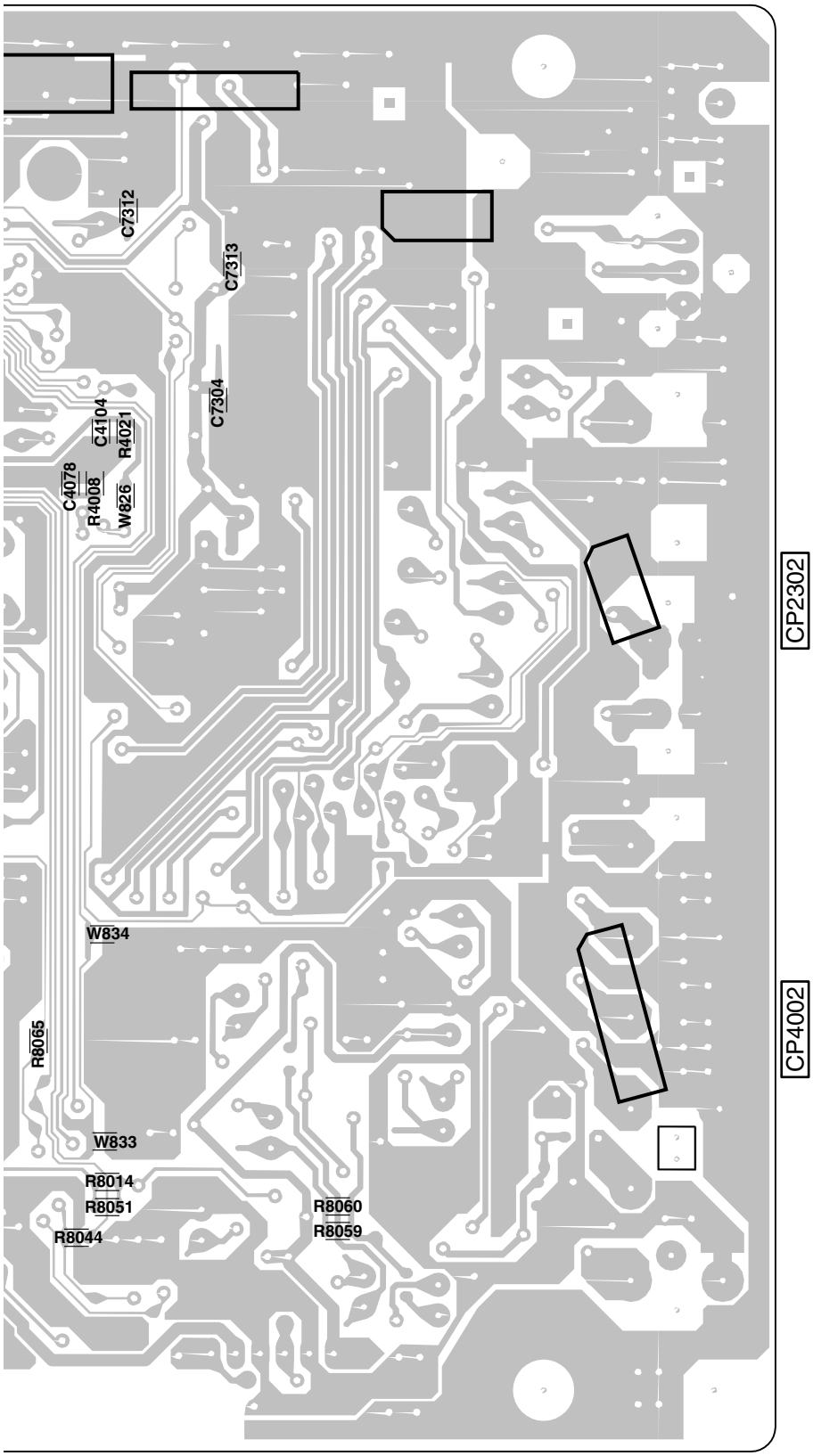
CP4003



A

SIDE B

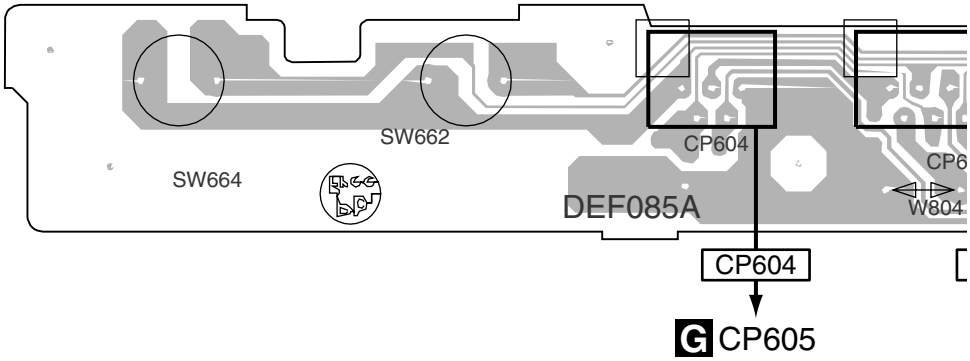
A DVD MT PCB ASSY



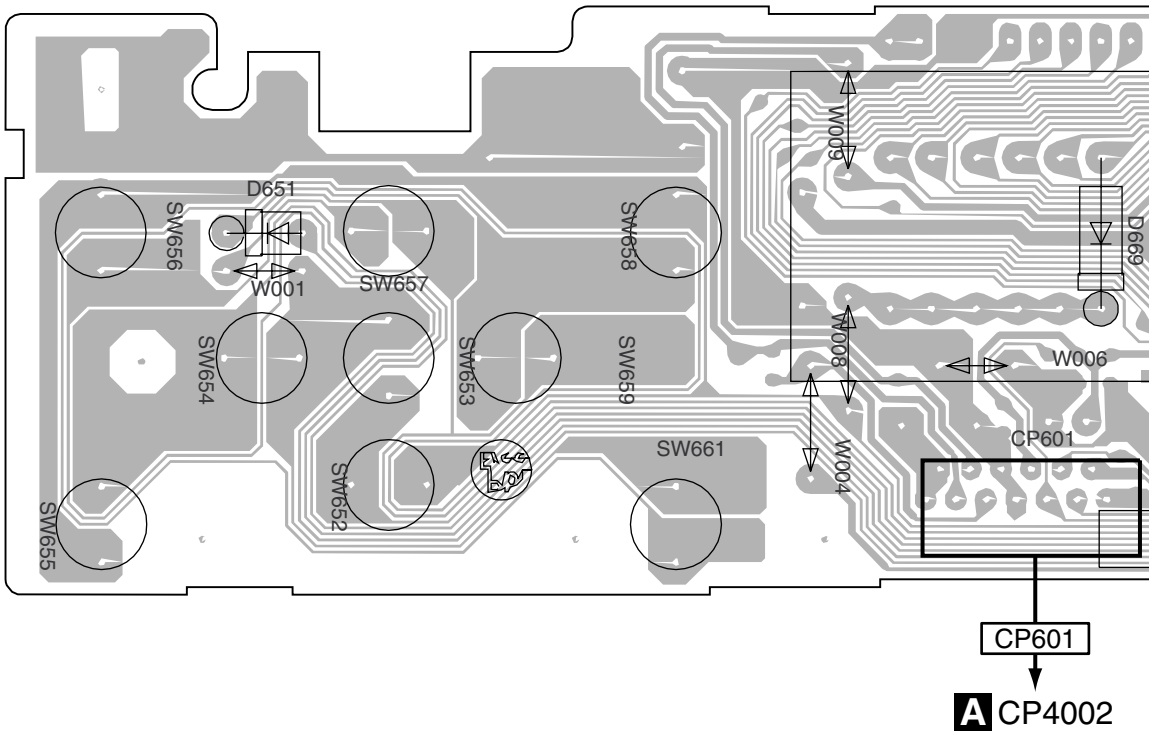
4.3 OPERATION 1, OPERATION 2 and OPERATION 3 PCB ASSYS

SIDE A

C OPERATION 2 PCB ASSY

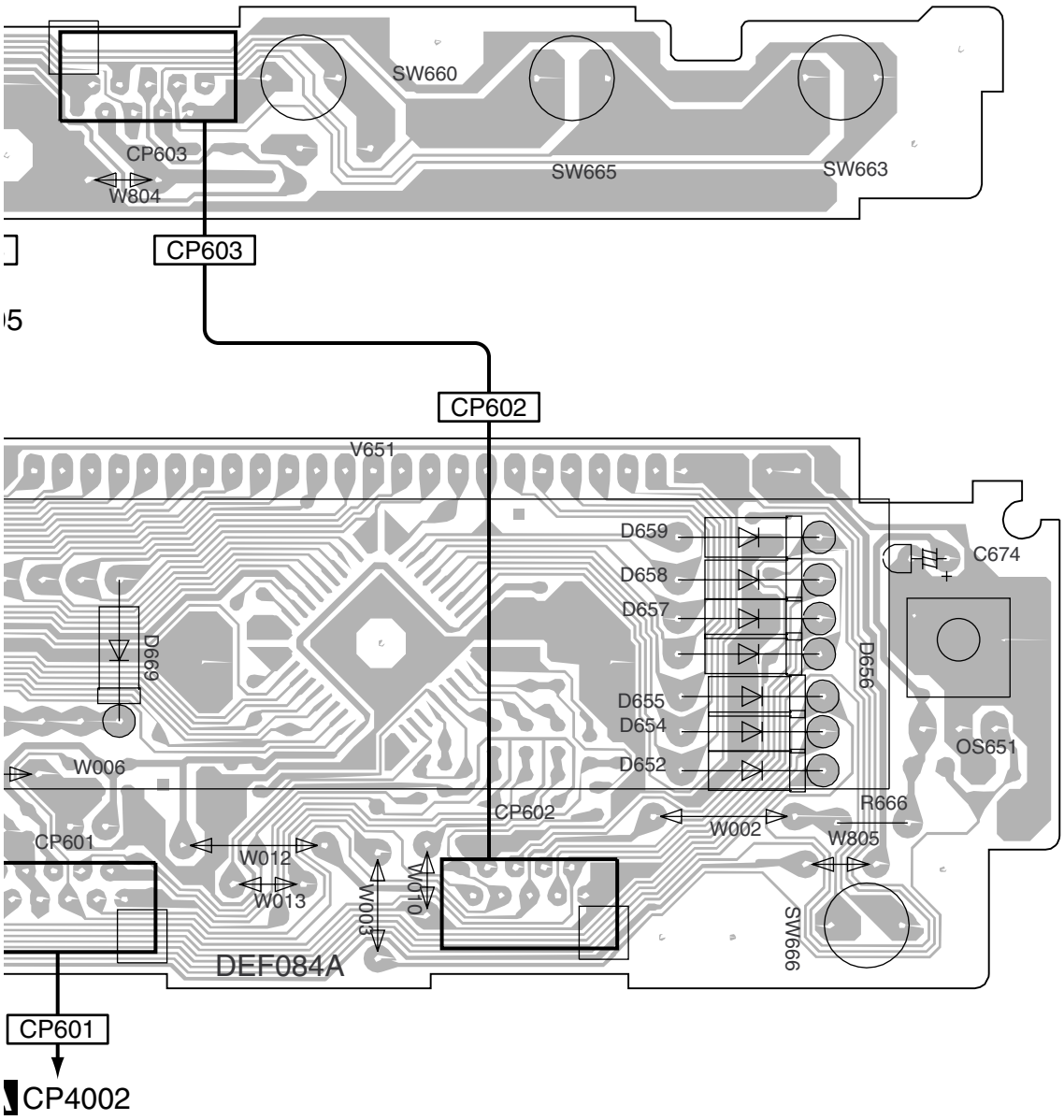


B OPERATION1 PCB ASSY

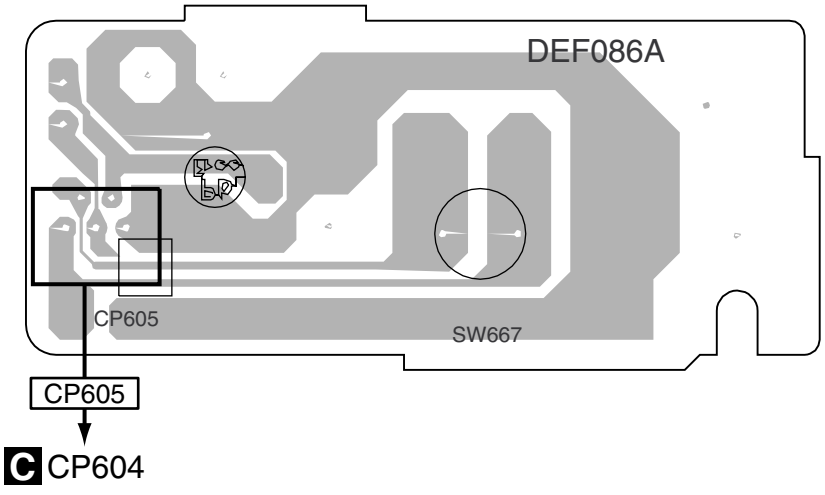


B C

SIDE A



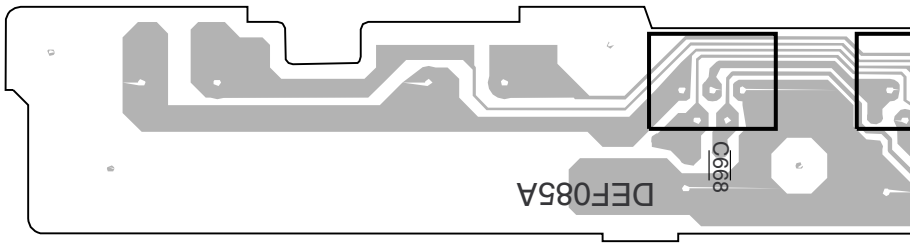
G OPERATION 3 PCB ASSY



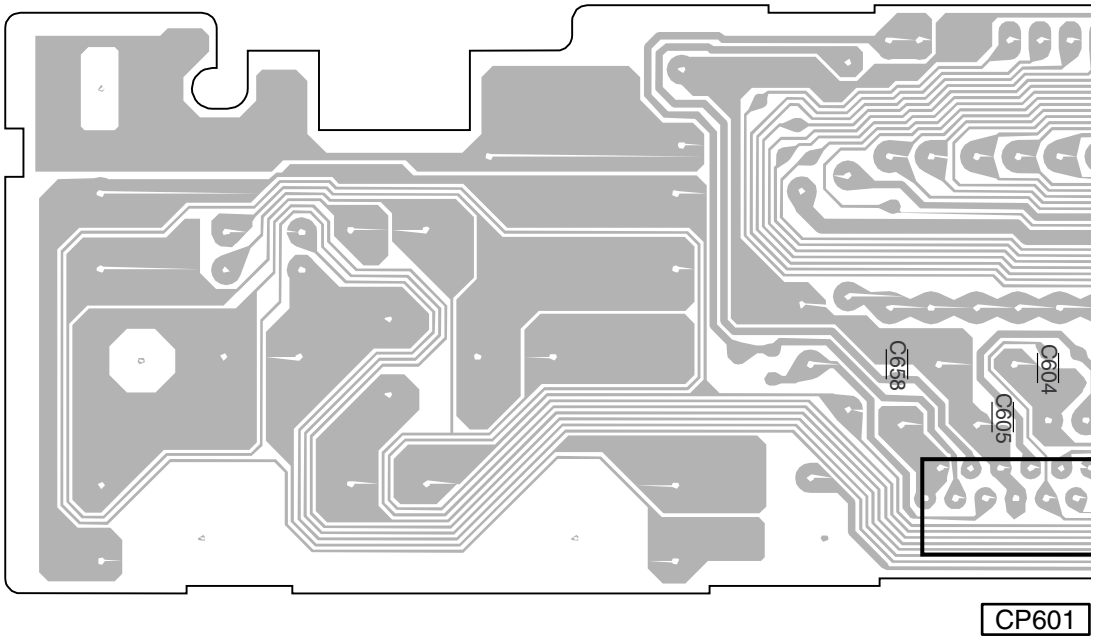
B C G

SIDE B

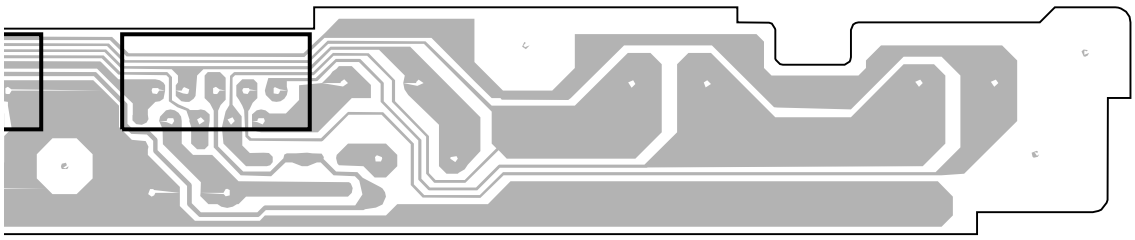
C OPERATION 2 PCB ASSY



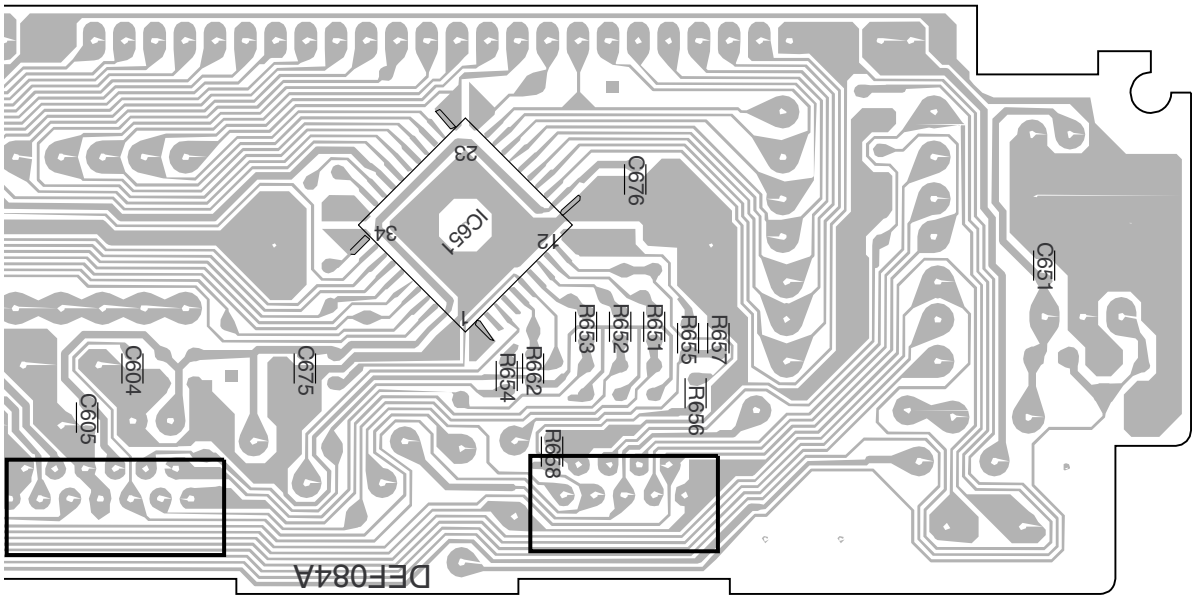
B OPERATION 1 PCB ASSY



SIDE B

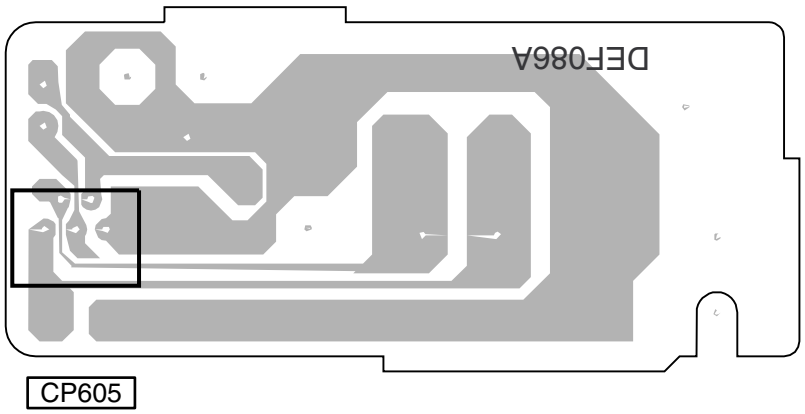


4 CP603



IC651

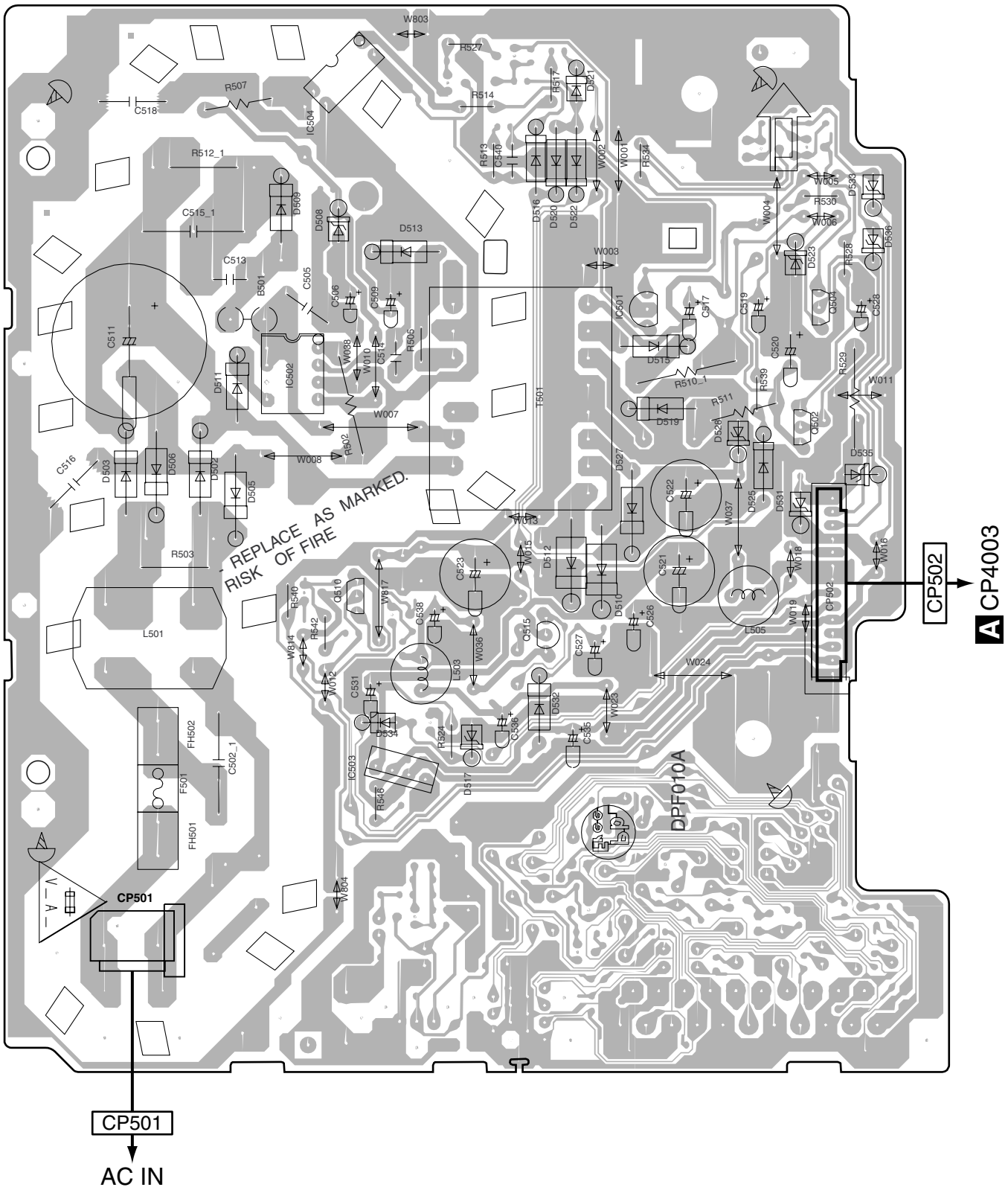
G OPERATION 3 PCB ASSY



4.4 POWER PCB ASSY

SIDE A

F POWER PCB ASSY

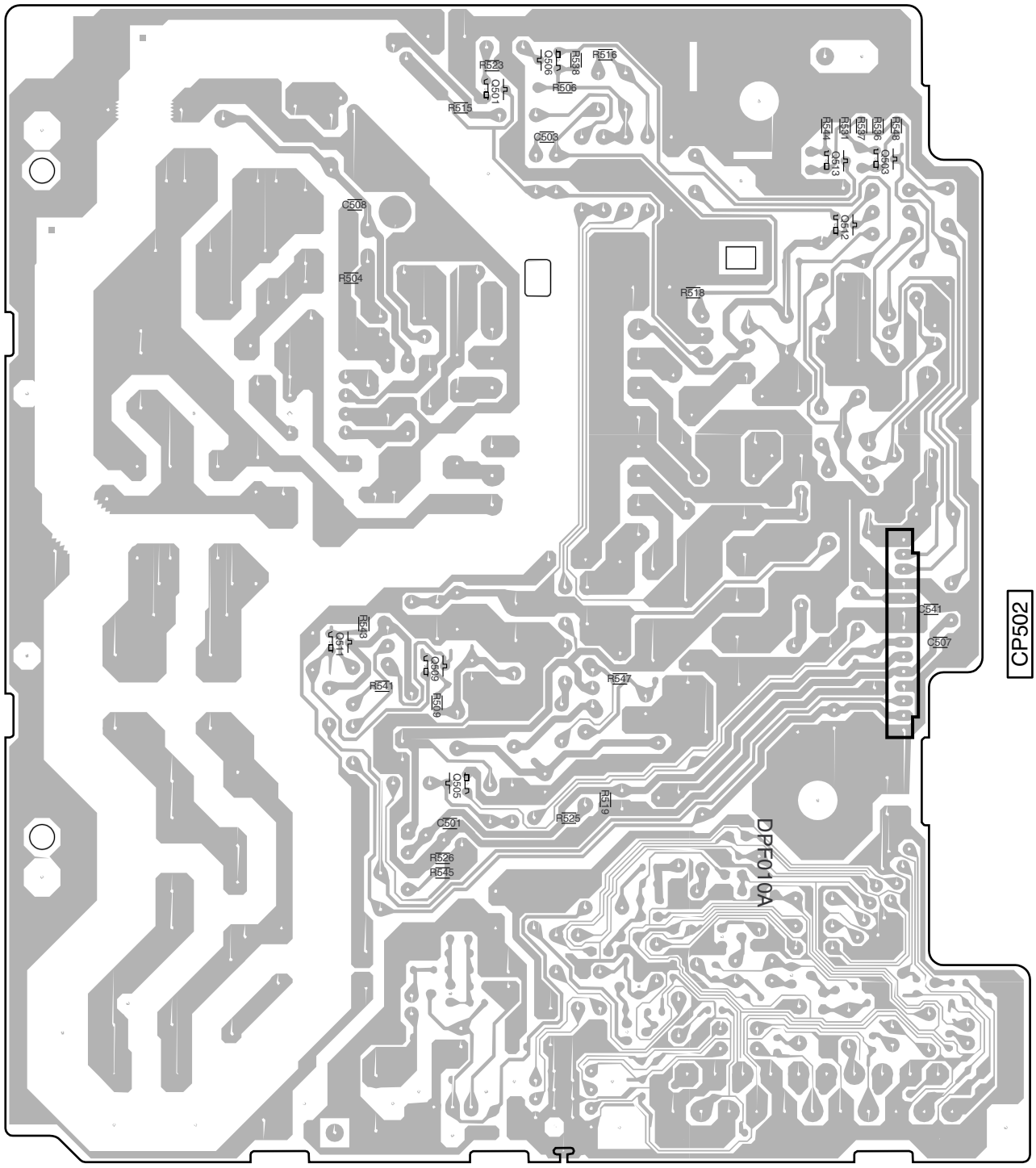


IC502 Q510 Q515 IC501 Q502
IC504 IC503 Q504

F

SIDE B

F POWER PCB ASSY



Q511 Q509 Q501 Q506 Q8104 Q8101 Q8102 Q512 Q503
Q505 Q8105 Q513

F

5. PCB PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5 and K=10%).

560 Ω	→ *56 x 10¹* →	*561*	*RD1/4PU 5 6 1 J*
47k Ω	→ *47 x 10³* →	*473*	*RD1/4PU 4 7 3 J*
0.5 Ω	→ *R50*		*RN2H R 5 0 K*
1 Ω	→ *1R0*		*RS1P 1 R 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω	→ *562 x 10¹* →	*5621*	*RN1/4PC 5 6 2 1 F*

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
	1	..DVD MT PCB ASSY	A2I801A130
	1	..OPERATION PCB ASSY	A2I801A270
	1	..OPERATION 2 PCB ASSY	A2I802A280
	1	..OPERATION 3 PCB ASSY	A2I802ADF0
⚠	1	..POWER PCB ASSSY	A2I801A240
NSP	1	..DVD MECHA ASSY	A2I802A650
	2	..LOADING PCB ASSY	A2F101A610
	2	..SW PCB ASSY	A2F101A640

Mark	No.	Description	Part No.
A DVD MT PCB ASSY			
SEMICONDUCTORS			
	IC2301	IC LA6565VR-TLM-E	I03FV65650
	IC4001	IC MT1389FE/E-L	IC8K0389E0
	IC4002	IC BR24L08FJ-WE2	I57F04L080
	IC4003	IC BD5229G-TR	I97F052290
	IC4004	IC S29AL016D70TFI020	S2I802AF01
	IC4005	IC EM638165TS-7G	IG2J081657
	IC4006	IC LM1117S-ADJ	I1TF911170
	IC7301	IC LA73054-TLM	I03FG30540
	IC8003	IC RC4580IDR	I04J045800
OTHERS			
	J7301	RCA JACK	063R700013
	J7302	RCA JACK	060R451010
	J8001	RCA JACK	060R401122
	J8003	RCA JACK	060J451009
	X4001	CRYSTAL (27MHz)	100GT02720
B OPERATION PCB ASSY			
SEMICONDUCTORS			
	IC651	IC PT6315	IF4K063150
SWITCHES AND RELAYS			
	SW652 - SW659	SWITCH TACT	0504R01T38
OTHERS			
	V651	TUBE FLUORESCENT	096F82R601
	OS651	REMOTE RECEIVER	077A040001

Mark	No.	Description	Part No.
C OPERATION 2 PCB ASSY			
SWITCHES AND RELAYS			
	SW660-SW665	SWITCH TACT	0504R01T38
F POWER PCB ASSY			
RESISTORS			
⚠	R511	R,FUSE 68 OHM 1/4W	R65584680J
G OPERATION 3 PCB ASSY			
SWITCHES AND RELAYS			
	SW667	SWITCH TACT	0504R01T38
D SW PCB ASSY			
There is no Service Parts			
E LOADING MOTOR PCB ASSY			
There is no Service Parts			

6. ADJUSTMENT

6.1 WHEN REPLACING DVD DECK

WHEN REPLACING DVD DECK

[Removing the DVD Deck]

Before removing Pick Up PCB and DVD PCB connector, short circuit the position shown in **Fig. 1** using a soldering iron. If you remove the DVD Deck with no soldering, the Laser may be damaged.

[Installing the DVD Deck]

Remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

NOTE

- Before your operation, please read “PREPARATION OF SERVICING” .
- Use the Lead Free solder.
- Manual soldering conditions
  - Soldering temperature: 320 ± 20˚C
  - Soldering time: Within 3 seconds
  - Soldering combination: Sn-3.0Ag-0.5Cu
- When Soldering/Removing of solder, use the draw in equipment over the Pick Up Unit to prevent the Flux smoke from it.

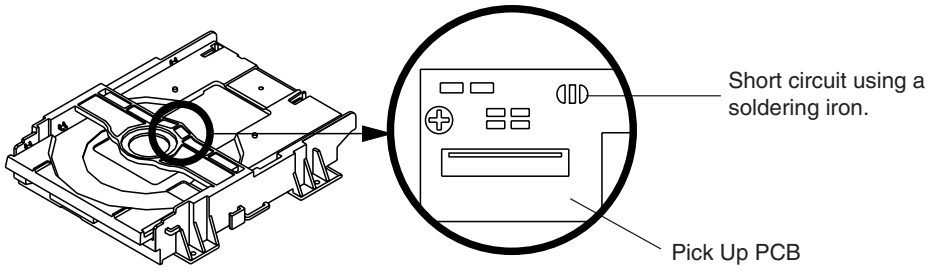
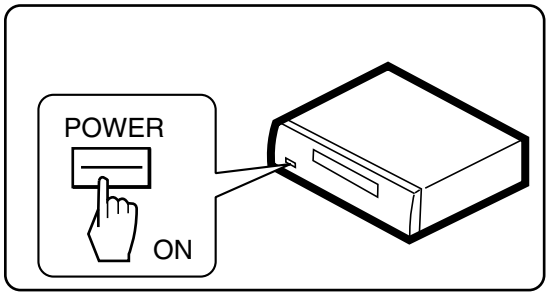


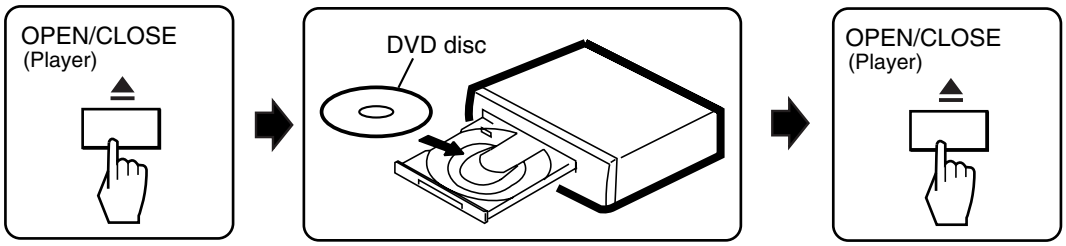
Fig. 1

6.2 TEST MODE

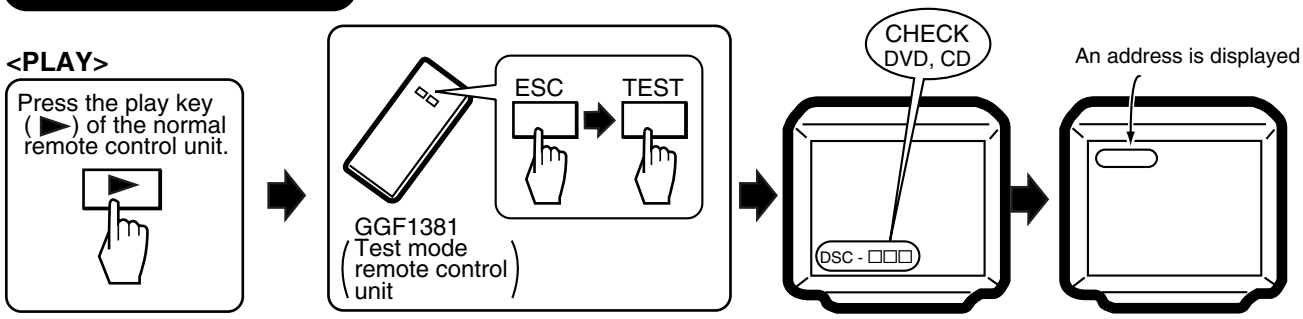
POWER ON



DISC SET

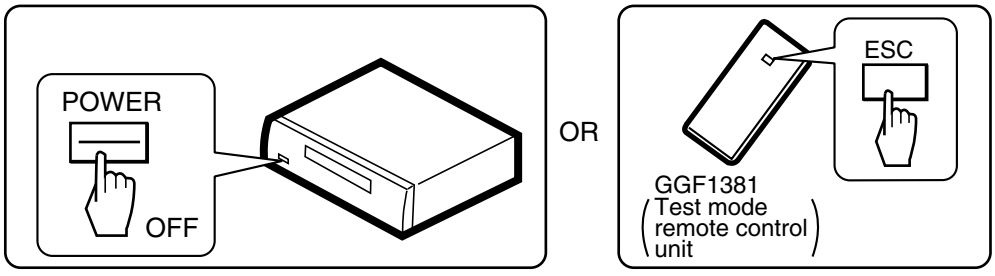


TEST MODE: PLAY



Notes:
- After going into test mode, if you play back the disc, "DISC-NON" is displayed.
- The video signal and the audio signal are outputted during the test mode.
- The SKIP key and the SCAN key are effective during the test mode.

TEST MODE: OFF



6.3 TEST MODE IN

Test Mode Functional Specification

① Test mode entry

In the power ON state, press the [ESC] (A8-5F) key and [TEST / RANDOM] (A8-5E) key in order of the Test mode remote control unit.

- Light the all FL and LEDs.
- OSD displays test mode.

Note:

* When pressing the keys of something, the FL displays "NO DISC" and the LED lighting disappears.

② Release the Test mode

- Turn off the power.
- Press the [ESC] (A8-5F) key of the remote control unit.

③ LD ON

DVD : Press the [TEST] (A8-5E) and [1] (A8-01) keys in order, and turn on the laser diode (650n).
CD : Press the [TEST] (A8-5E) and [4] (A8-04) keys in order, and turn on the laser diode (780n).

6.4 DISC REMOVAL METHOD

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet and Front Cabinet. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Rotate the Main Gear in the direction of the arrow by hand.
   (Refer to Fig. 1, Fig.2)
3. Draw the Tray.

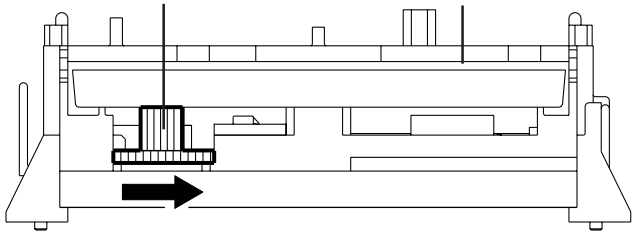


Fig. 1

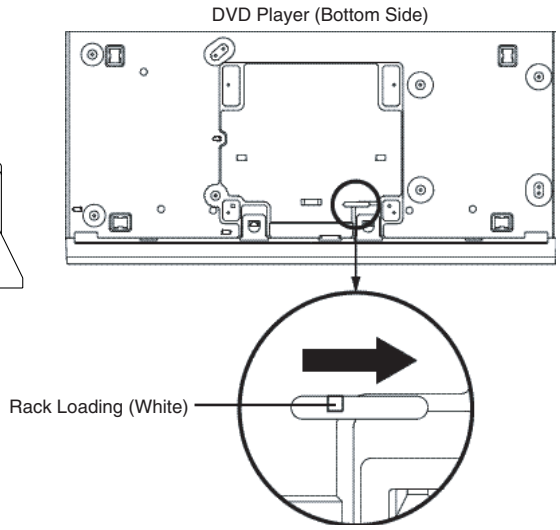


Fig. 2

PARENTAL CONTROL - RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Set the DVD to the Stand-by Mode.
2. Press and hold the 'STOP' key on the front panel.
3. Simultaneously press and hold the POWER key on the front panel.
4. The 4 digit password has now been cleared.

NOTE: The above procedure will reset ALL of the player's settings to the default factory state.

PREPARATION OF SERVICING

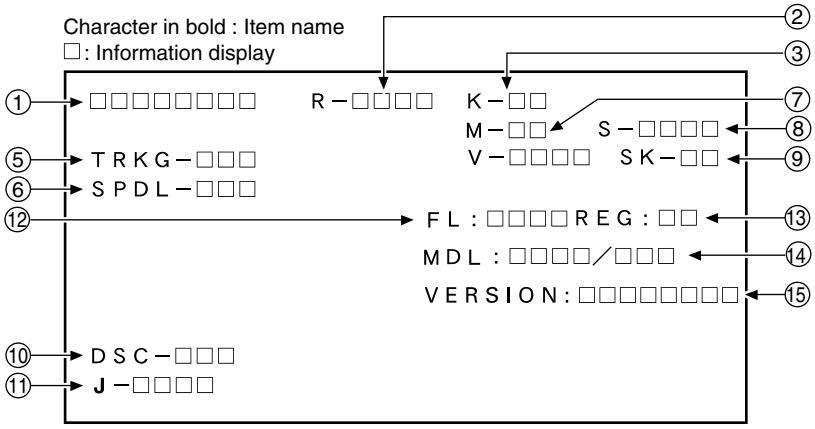
The laser diode used for a pickup head may be destroyed with external static electricity. Moreover, even if it is operating normally after repair, when static electricity discharge is received at the time of repair, the life of the product may be shortened.
Please perform the following measure against static electricity, be careful of destruction of a laser diode at the time of repair.

- Place the unit on a workstation equipped to protect against static electricity, such as conductive mat.
- Soldering iron with ground wire or ceramic type is used.
- A worker needs to use a ground conductive wrist strap for body.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISPLAY SPECIFICATION OF THE TEST MODE



① **Address indication**
The address being traced is displayed in number.
(as for the DVD, indication of decimal number is possible.)
DVD : ID indication (hexadecimal number, 8 digits)
[＊＊＊＊＊＊＊＊]
CD : ID indication [＊＊＊＊＊＊＊＊]

② **Code indication of remote control unit [R – ＊＊＊＊]**
In case of double code, display a 2nd code.

③ **Main unit keycode indication [K – ＊＊]**

⑤ **Tracking status [TRKG – ＊＊＊]**
Tracking on : [ON]
Tracking off : [OFF]

⑥ **Spindle status [SPDL – ＊＊＊]**
[OFF], [CLV]

⑦ **Mechanism (loading) position value [M – ＊＊]**
Unknown : [01] or [41]
Open state : [04]
Close state : [08]
During opening : [12]
During closing : [22]

⑧ **Slider position [S – ＊＊＊＊]**
In Side Switch ON : [01]
In Side Switch OFF : [00]

⑨ **Output video system [V – ＊＊＊＊]**
NTSC system : [NTSC]
PAL system : [PAL]
Automatic setting : [AUTO]

Scart terminal output [SK – ＊＊]
(Display only the WY model which can do the output setting of scart terminal.)
VIDEO : [00]
S-VIDEO : [01]
RGB : [02]

⑩ **Disc sensing [DSC – ＊＊＊]**
The type of discs loaded is displayed.
[DVD], [CD], [VCD], [ ]

⑪ **Jitter value [J – ＊＊＊＊]** Note:Don't use it.

⑫ **Version of the FL controller [FL: ＊＊＊＊]**

⑬ **Region setting of the player [REG: ＊]**
Setting value : [1] to [6]

⑭ **Destination setting of the FL controller [MDL: ＊＊＊＊ / ＊＊＊]**
Four characters in the front represent code 01.
Three characters in the back represent the destination code.
J: /J, K: /KU, /KC, /KU/KC, R: /RL/RD, RAM : /RAM,
LB: /LB, WY: /WY

⑮ **Version of the flash ROM [VERSION: ＊＊＊＊＊＊＊＊]**

7.1.2 FUNCTIONAL SPECIFICATION OF THE SHORTCUT KEY

Only during normal playback, the following shortcut keys can be assigned by pressing a required key after pressing the ESC key of the remote control unit. To quit, press the ESC key

Command Contents	Conditions	Remote Control Key Name	Remote Control Code
Memory clear and region / revision indication		CLEAR (∗1)	A8-45
Average value measurement of DVD error rate		5 (∗1)	A8-05
CD error rate measurement		5 (∗1)	A8-05
Scart terminal output : VIDEO	WY, models equipped with Scart terminal	AUDIO	AF-BE
Scart terminal output : S-VIDEO		SUBTITLE	AF-36
Scart terminal output : RGB		ANGLE	AF-B5
Progressive OFF	Only for progressive models	R_SKIP	A3-9D
Progressive ON		F_SKIP	A3-9C
ZOOM ON (X2 -> X4 -> x1)		ZOOM	AF-37
Service mode indication (error rate indication, etc.)		CHP/TIM (∗1)	A8-13
Model information indication		CHAP (∗1)	A8-40
Title search Input mode IN Title No. input Search execution		SIDE A (∗1) Numbers (∗1) PLAY (∗1)	A8-4D A8-00 to A8-09 A8-17
Region confimation mode		A.MON (∗1) Numbers (∗1)	A8-1E A8-01 to A8-08

∗1 : Test mode remote control unit

• Service mode indication (ESC + CHP/TIM keys)

ID Address
The error rate is always displayed in exponential notation, e.g., ∗.∗ ∗ e - ∗, for both DVDs and CDs.
EDC/ID/AV 1 error history (ID Address, EDC/ID Error, last eight errors)

• Calculation of the average error rate (ESC + "5" [Test mode remote control unit] keys)

The average of the last eight error rates is calculated and indicated in exponential notation. After the calculation is completed, "OK" or "NG" is displayed. If "NG" is displayed, the disc tray will open (for both DVDs and CDs)
For DVDs: OK with 5.0e-4 or less, for CDs: OK with 7.6e-3 or less

• Indication of model information (ESC + CHAP keys)

The items from 12 to 15 of the TEST MODE Indications are displayed. However, in the indications, S in the standard test mode is changed to CHIP VERSION, and M is changed to FL VERSION. For details, see 7.1.3.

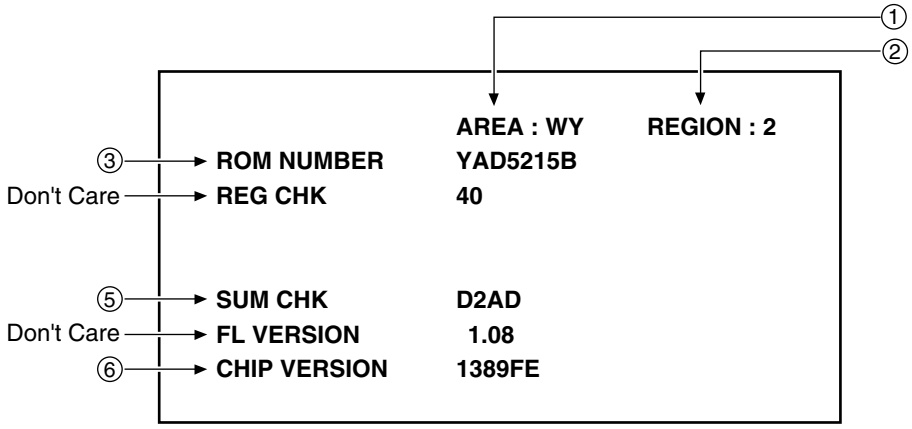
• Region confirmation mode (ESC + A.MON [Test mode remote control unit] + "1"-"8" [Test mode remote control unit] keys)

After you press the A.MON key while holding the ESC key pressed and then input the region number, if the number is different from that set in the unit, an error message is displayed, and the tray opens.

7.1.3 SPECIFICATION OF MODEL INFORMATION DISPLAY

To display model information : Press the ESC key then the CHAP key.
To close the model information display : Press the ESC key.

• Display contents



Character in bold : Item name
☐: Information display

① **Destination indication**
Display it according to model information set from the FL Driver IC.
② **Region No.**

③ **ROM number**

④ **REG CHK**

⑤ **SUM CHK**

⑥ **CHIP VERSION**

7.1.4 FUNCTIONAL SPECIFICATION OF THE SERVICE MODE

• Display during Service Mode

To enter Service Mode, press the CHP/TIM key while holding the ESC key pressed.
To quit, press the ESC key.

Service mode display

① ID Address

② Error rate (always displayed), in exponential notation

ERROR RATE : ＊＊＊＊＊＊＊
(＊＊＊＊)
Number of error

• Calculation of the average error rate
For DVDs: OK with 5.0e-4 or less, for CDs: OK with 7.6e-3 or less

ex) For DVDs

• Step 1		• Step 2	
△△e -□		△△e -4	
△△e -6	: OK	3.0e -4	: OK
△△e -5	: OK	4.0e -4	: OK
△△e -4	: Refer to Step 2	5.0e -4	: OK
△△e -3	: NG	6.0e -4	: NG
△△e -2	: NG	7.0e -4	: NG

③ EDC/ID error history (ID Address, EDC/ID errors, last eight errors)

Note:
＊ Error of AV1 is not supported in this player.

Indication plan contents

Character in bold : Item name
□: Information display

7.1.5 METHOD FOR DIAGNOSING DEGRADATION OF THE LDS ON THE PICKUP ASSY

Case when this diagnosis is required :
When playback of any disc, including a test disc (DVD: GGV1025, CD: STD-905), cannot be performed

How to diagnose

In the case mentioned above, degradation of the laser diodes (LDs) mounted on the PICKUP Assy is suspected.
Measure the voltage between the two ends of one of the resistors mentioned below.

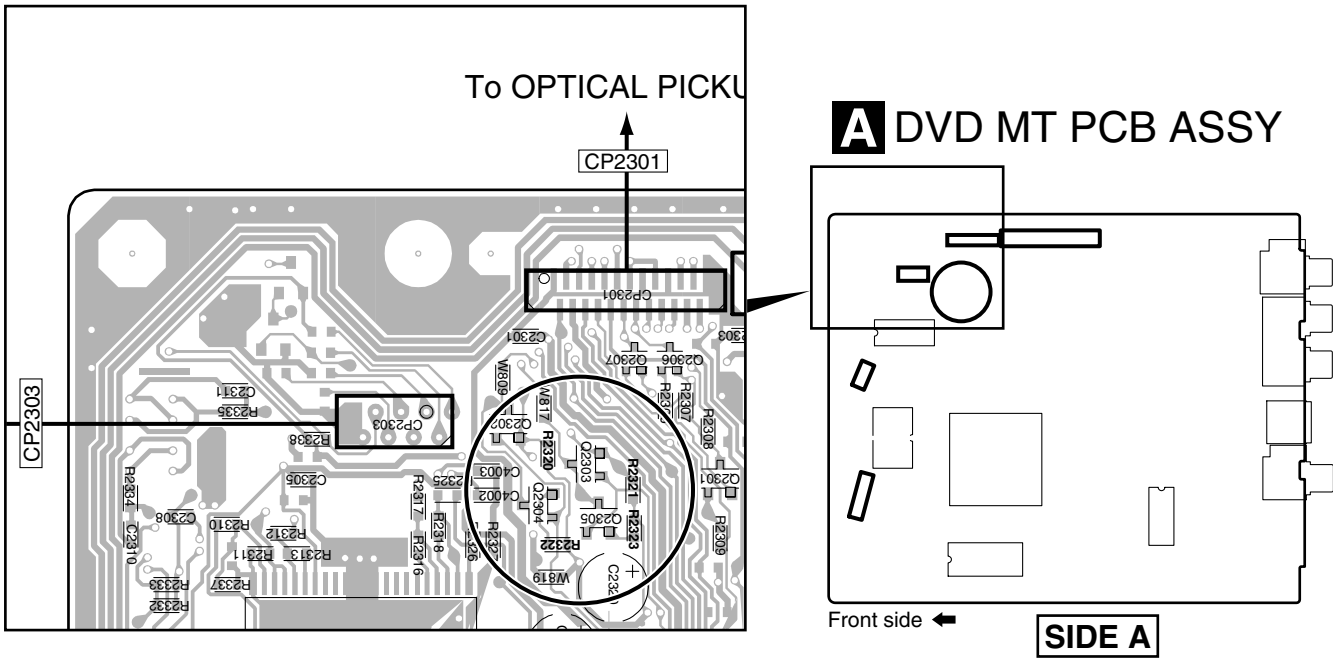
- **No playback of a DVD :**

  Measure the voltage between the two ends of R2321 or R2323 on the DVDM Assy. If the voltage is 0.4 V or higher, the 650-nm LD is degraded.

- **No playback of a CD :**

  Measure the voltage between the two ends of R2320 or R2322 on the DVDM Assy. If the voltage is 0.4 V or higher, the 780-nm LD is degraded.

If the measurements show degradation of an LD, replace the PICKUP Assy.



7.1.6 TROUBLE SHOOTING

No.	Symptoms	Diagnosis Contents	Possible Defective Points
1	The power is not turned on.	Check the voltage of AT+3.3V, –28V and FLDC on the POWER SUPPLY Unit.	**POWER PCB ASSY**
		Are wires of output connector (POWER PCB ASSY) and CP4003 (DVDM Assy) disconnected or damaged ?	Connector / cable
		Check that the voltage at IC651-pin 10 (K 1) on the FLKY Assy becomes about 2.7V when the POWER key is pressed and 0 V when it is released.	**OPERATION 2 Assy** Tact SW (when operation of only the POWER key on the main unit is not accepted)
		Check that the voltage at OS651-pin 1 (IR) on the OPERATION1 Assy is in the range between 0 and 3.3 V while receiving signals from the remote control unit when any key on it is pressed.	**FLKY Assy** Remote receiver section (when operation of only the POWER key on the remote control unit is not accepted)
2	An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.)	• Check the voltage of E+6.8V and SW+3.3V on the POWER SUPPLY Unit. • Check the voltage of P.ON-H is about 2.8V on the POWER SUPPLY Unit.	**POWER SUPPLY Unit**
		Check that the following voltage are output : IC4006-pin 5 : 1.8V, on the DVD MT PCB Assy.	**DVD MT PCB Assy** 1.8V Regulator IC (IC4006)
		Is a resonator (X4001 : 27MHz) on the DVDM Assy oscillating ?	**DVD MT PCB Assy** Crystal resonator (X4001)
		• Is a signal input into IC4004-pin26 (PCE#) on the DVDM Assy ? (Is a signal "H" for 80 mS and then "L" after the power is turned on ?) → Communication with flash ROM. • Are the signals input into IC4005-pin 16 (DWE#), pin 19 (DCS#) and pin 38 (SDCLK) on the DVDM Assy ? (Is a signal fluctuating ?) → Communication with SDRAM	**DVD MT PCB Assy** DVD IC (IC4001) Flash ROM (IC4004) SDRAM (IC4005)
		Is a signal output from IC4004-pin 28 (PRD#) on the DVD MT Assy? (Is a signal fluctuating for several hundred mS after the power is turned on ?)	**DVD MT PCB Assy** Flash ROM (IC4004)
		Are the signals of IC4003-pin 5(SDA) and pin 6(SCL) on the DVDM Assy fluctuating for one or two seconds after the power is turned ?	**DVD MT PCB Assy** EEPROM (IC4003)
3	An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.)	Check the video signal path between DVD IC (DVD MT Assy IC4002) and video-out terminal (see the block diagram)	**DVD MT PCB Assy** Video circuit after DVD IC (IC4001)

No.	Symptoms	Diagnosis Contents	Possible Defective Points
4	A tray cannot be opened. (An opening screen is displayed on the monitor)	Does the voltage of CP2302-pin 3 and pin 1 on the DVD MT Assy change normally ? Pin 5 (SW2(TRIN)): Tray is fully closed: "L" Pin 3 (SW1(TROUT)): Tray is fully opened: "L"	Tray SW
		Is a LOAD-DRV signal reaching ?	**DVD MT PCB Assy** DVD IC (IC4002)
		Are the signals output from IC2301-pin 5 and pin 6 (CP2302-pin 4 and pin 5) on the DVDM Assy ? Pin 5: Approx. 45V during opening tray approx. 0V during closing tray. Pin 4: Approx. 0V during opening tray approx. 4.5V during closing tray.	**DVD MT PCB Assy** FTS Driver IC (IC2301)
		Are wires of CP2302 and CP2303 on the DVDM Assy disconnected or damaged ?	Connector / cable
		Does the voltage of CP2303-pin 5 change by pressing the Inside switch.	Inside switch
5	Playback impossible (no focusing)	Are the signals output from IC2301-pin 9 (F+) and pin 8 (F–) on the DVDM Assy ?	**DVD MT PCB Assy** FTS Driver IC (IC2301)
		Does 650-nm LD emit light ? Does a pickup lens move up / down ? Does an actuator spring bend ?	Pickup
		Are plastic parts damaged ? Or is a shaft detached ? Is the turntable detached or tilted ?	Mechanism section (motor)
		Is flexible cable of CP2301 on the DVD MT Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC4002-pin 42 (FOSO) on the DVDM Assy ? (Device control of about 1.4 V is output usually. It is fluctuated by about ± 250 mV with focus up / down.)	**DVD MT PCB Assy** DVD IC (IC4002)
6	Playback impossible (Spindle does not turn)	Are the signals output from IC2301-pin 13 (MOT SPDL–), and pin 14 (MOT SPDL+) on the DVD MT Assy ? Is pin 41, 42 (STBY) fixed LOW?	**DVD MT PCB Assy** FTS Driver IC (IC2301)
		Is there any part detached from the spindle motor ? Or Is there any foreign object lodged in it ?	Mechanism section (Spindle motor)
		Are wires of CP2303 on the DVD MT Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC4002-pin 37 (DMSO) on the DVDM Assy ?	**DVD MT PCB Assy** DVD IC (IC4002)
7	Playback impossible (Playback stops)	Does 650-nm LD deteriorate ? If the voltage at each both ends of R2303 and R2305 on the DVD MT Assy is 0.4 V or more, the 650-nm LD is definitely deteriorated.	650-nm LD deteriorated. (When playback of a DVD is impossible)
		Does 780-nm LD deteriorate ? If the voltage at each both ends of R2302 and R2304 on the DVD MT Assy is 0.4 V or more, the 780-nm LD is definitely deteriorated.	780-nm LD deteriorated. (When playback of a CD is impossible)
		Are there scratches or dirt on the disc ?	Disc
8	Picture disturbance during playback (block noise, freeze, other)	Are there scratches or dirt on the disc ? Is there a problem with the format of the disc ?	Disc
9	No sound (Picture is normal)	Is signal output from IC4001-pin184 and pin 186 on the DVD MT Assy ?	**DVD MT PCB Assy** DVD IC (IC4001)

● Symptoms That May Occur When Any Of The Following ICs Is In Failure

IC	Symptoms
EEP ROM (DVD MT Assy : IC4003)	User's data cannot be stored in memory. The ID number is lost.
16M Flash ROM (DVD MT Assy : IC4004)	The power cannot be turned on. Downloading of the firmware cannot be performed.
DVD IC (DVD MT Assy : IC4001)	Any kind of symptoms (no power, a failure in any of the servo, video and audio systems, etc.) may be generated, because the DVD processing is performed by a single chip.
64M SDRAM (DVD MT Assy : IC4005)	No power. Block noise is generated during playback.

7.2 DISASSEMBLY

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET/FRONT CABINET/OPERATION 1/2/3 PCB (Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Disconnect the following connector: (CP4002).
4. Unlock the 4 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).
6. Remove the 10 screws ③.
7. Remove the Operation 1/2/3 PCB in the direction of arrow(C).

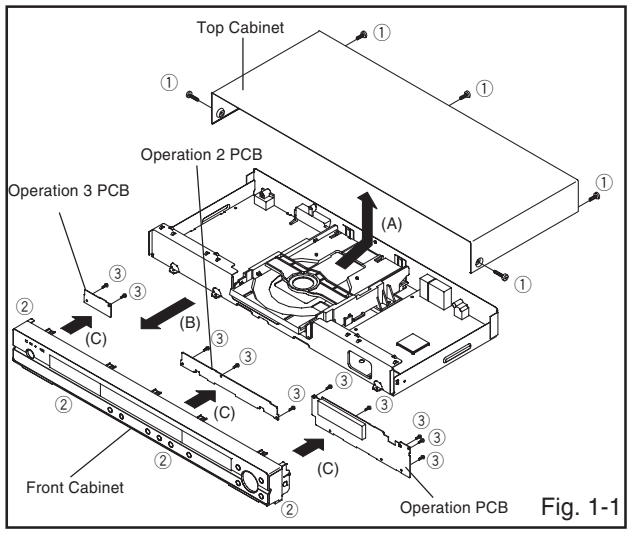


Fig. 1-1

1-2: POWER PCB (Refer to Fig. 1-2)

1. Disconnect the following connectors: (CP4003, CP8001).
2. Remove the screw ①.
3. Remove the 4 screws ②.
4. Remove the Power PCB in the direction of arrow.

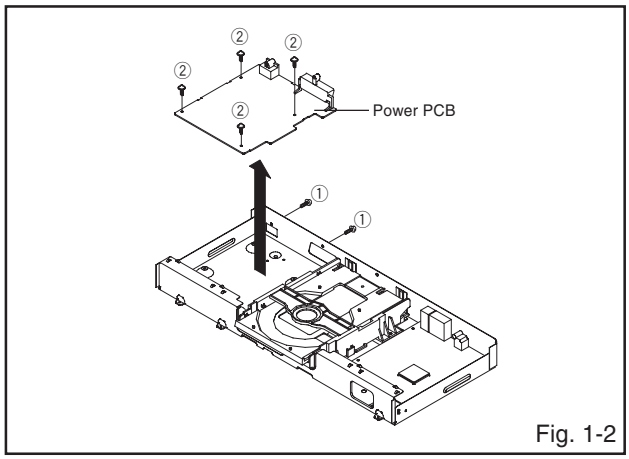


Fig. 1-2

1-3: DVD DECK (Refer to Fig. 1-3)

1. Short circuit the position shown in **Fig. 1-3** using a soldering iron. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Disconnect the following connectors: (CP2301, CP2302, CP2303).
3. Remove the 4 screws ①.
4. Remove the DVD Deck in the direction of arrow.

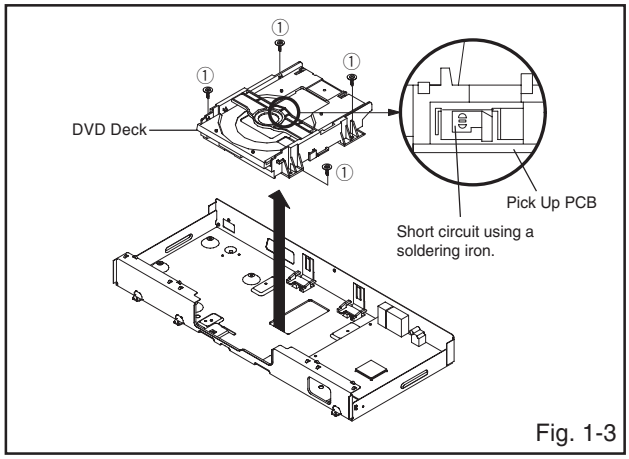


Fig. 1-3

NOTE

1. Before your operation, please read “PREPARATION OF SERVICING”.
2. Use the Lead Free solder.
3. Manual soldering conditions
   - Soldering temperature: 320 ± 20˚C
   - Soldering time: Within 3 seconds
   - Soldering combination: Sn-3.0Ag-0.5Cu
4. When Soldering/Removing of solder, use the drawing equipment over the Pick Up Unit to prevent the Flux smoke from it.
5. When installing the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

1-4: DVD PCB (Refer to Fig. 1-4)

1. Remove the 3 screws ①.
2. Remove the 4 screws ②.
3. Remove the DVD PCB in the direction of arrow.

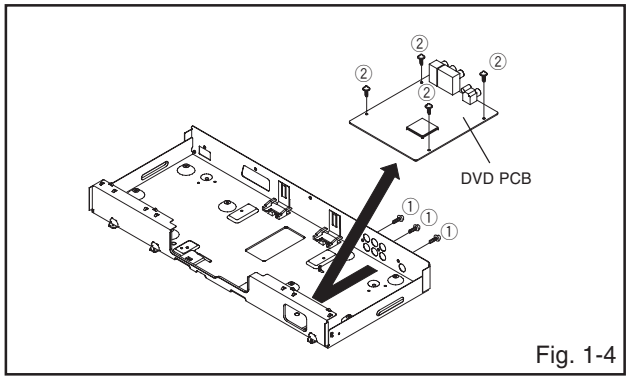


Fig. 1-4

7.3 DVD DECK SECTION

2. REMOVAL OF DVD DECK PARTS

NOTE

1. Do not disassemble the DVD DECK PARTS except listed parts here. Minute adjustments are needed if the disassemble is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

2-1: TRAY (Refer to Fig. 2-1-A)

1. Set the Tray opened. **(Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)**
2. Unlock the 2 supports ① and draw it while sagging the Tray.

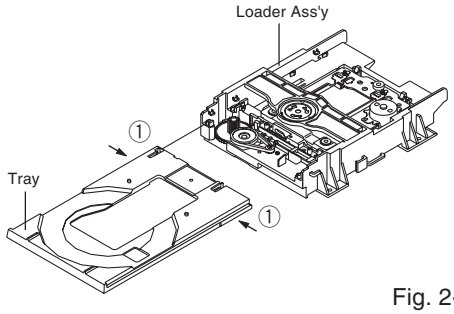


Fig. 2-1-A

NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 2-1-B so that the each markers are met.

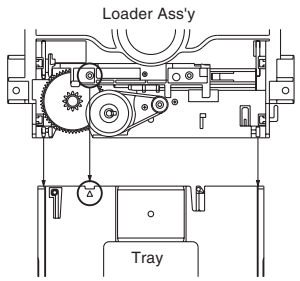


Fig. 2-1-B

2-2: TRAVERSE ASS'Y (Refer to Fig. 2-2-A)

1. Remove the screw ①.
2. Unlock the 2 supports ②.
3. Remove the Insulator (R) from the Loader Sub Ass'y.
4. Remove the Traverse Ass'y.

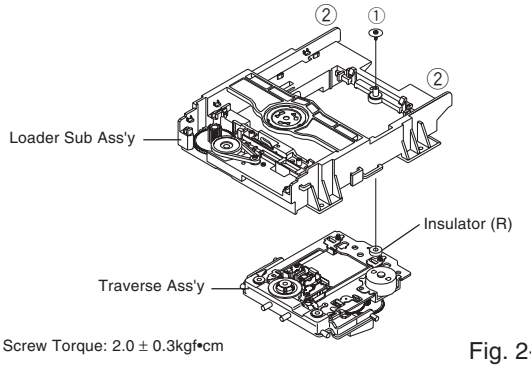


Fig. 2-2-A

NOTE

1. In case of the Traverse Ass'y, install it from (1) to (4) in order. **(Refer to Fig. 2-2-B)**
2. In case of the Traverse Ass'y installation, hook the wire on the Loader Ass'y as shown Fig. 2-2-C.

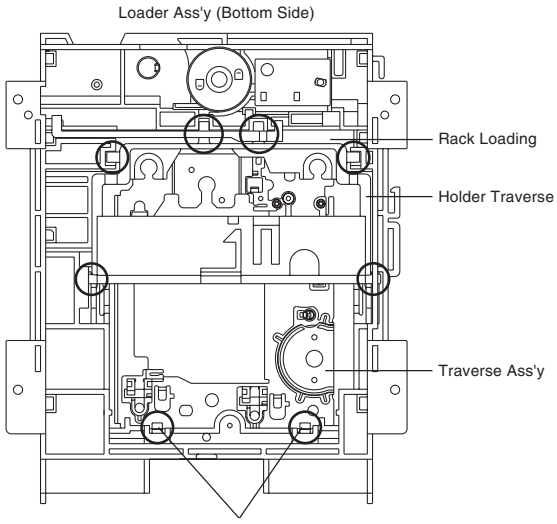


Fig. 2-2-B

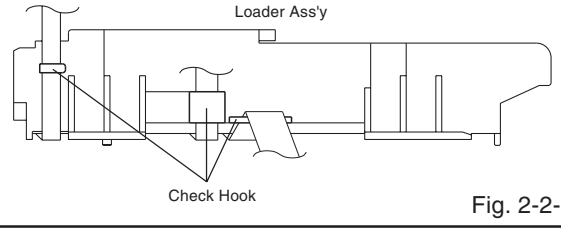


Fig. 2-2-C

2-3: LOADING MOTOR PCB ASS'Y/ LOADING BELT (Refer to Fig. 2-3-A)

1. Remove the Loading Belt.
2. Remove the screw ①.
3. Remove the Loading Motor PCB Ass'y.
4. Remove the 2 screws ②.
5. Remove the Loading Motor.
6. Remove the Gear Pulley.

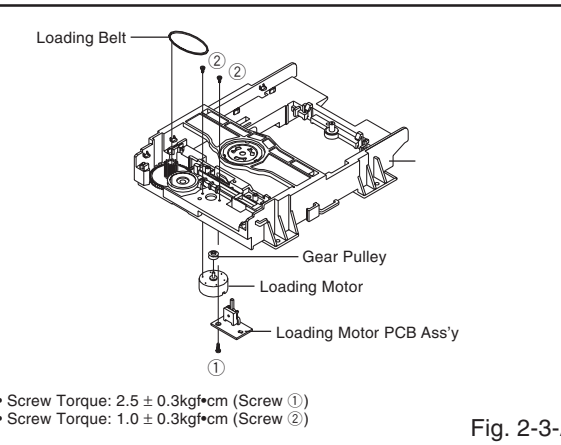


Fig. 2-3-A

NOTE

1. In case of the Pulley Motor installation, check if the value of the Fig. 2-3-B is correct.
2. When installing the wire of the Loading Motor PCB Ass'y, install it correctly as Fig. 2-3-C.
   Manual soldering conditions
   • Soldering temperature: 350 ± 5˚C
   • Soldering time: Within 4 seconds
   • Soldering combination: Sn-3.0Ag-0.5Cu
3. When installing the Loading Motor PCB Ass'y, install it correctly as Fig. 2-3-D.
4. In case of the Loading Motor PCB Ass'y installation, hook the wire on the Loader Sub Ass'y as shown Fig. 2-3-E.

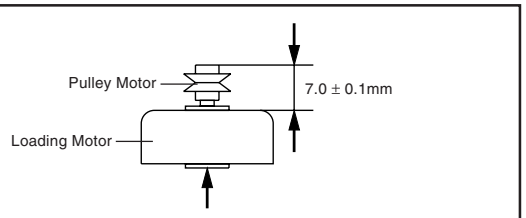


Fig. 2-3-B

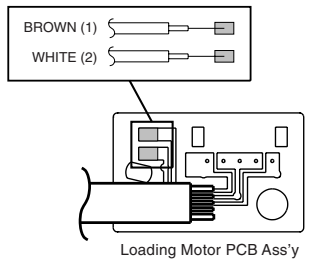


Fig. 2-3-C

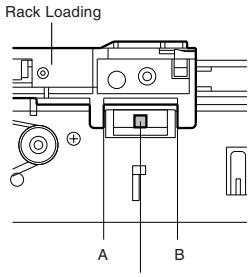


Fig. 2-3-D

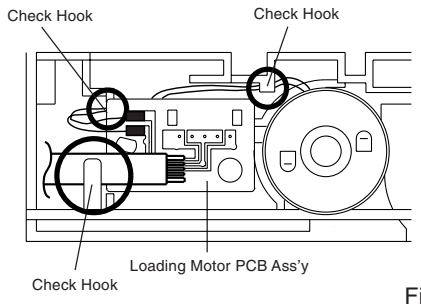


Fig. 2-3-E

2-4: RACK LOADING/MAIN GEAR/PULLEY GEAR (Refer to Fig. 2-4-A)

1. Unlock the support ① and remove the Gear Pulley.
2. Remove the Gear Main.
3. Press down the catcher ② and slide the Rack Loading.

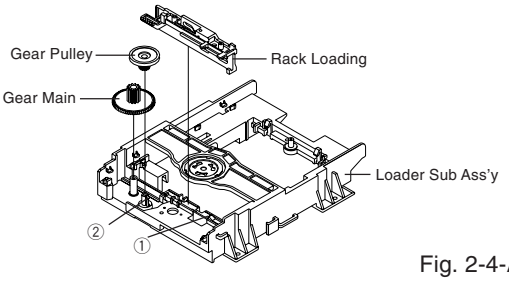


Fig. 2-4-A

NOTE

1. In case of the Rack Loading installation, hook the Rack Loading on the Loader Sub Ass'y as shown Fig. 2-4-B.
2. When installing the Gear Main, take care the direction of up or down as shown Fig. 2-4-C.

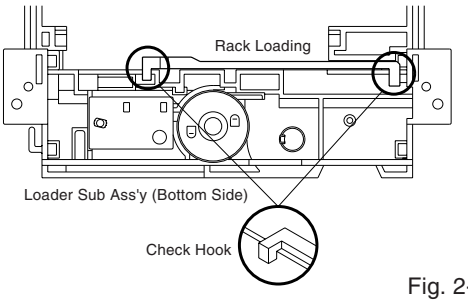


Fig. 2-4-B

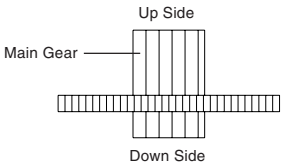


Fig. 2-4-C

2-5: CLAMPER ASS'Y (Refer to Fig. 2-5-A)

1. Press the Clamper and rotate the Plate Clamper clockwise, then unlock the 3 supports ①.
2. Remove the Plate Clamper, Magnet Clamper and Clamper.

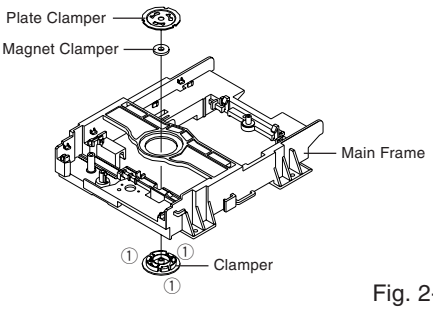


Fig. 2-5-A

NOTE

1. In case of the Clamper Ass'y installation, install correctly as Fig. 2-5-B.

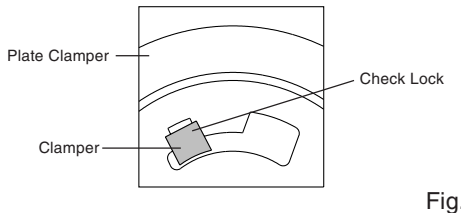


Fig. 2-5-B

2-6: HOLDER TRAVERSE/INSULATOR (F)/INSULATOR (R) (Refer to Fig. 2-6-A)

1. Remove the Holder Traverse.
2. Remove the 2 Insulator (F).
3. Remove the Insulator (R).

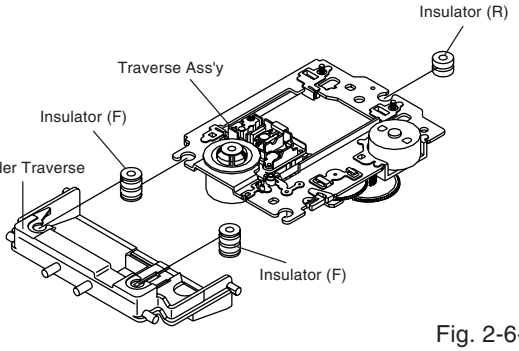


Fig. 2-6-A

NOTE

1. In case of the Insulator (F) installation, install correctly as Fig. 2-6-B.

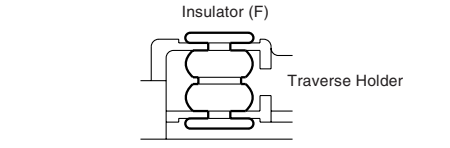
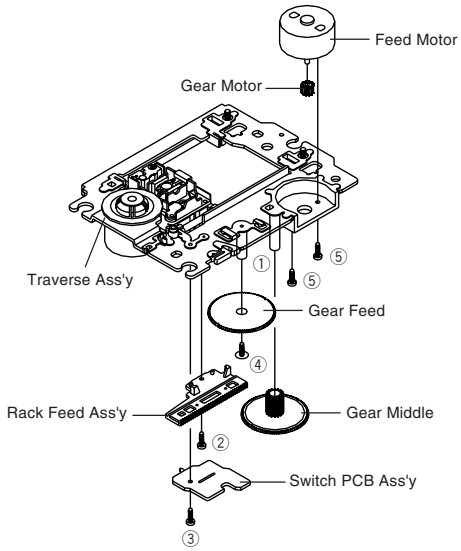


Fig. 2-6-B

2-7: SWITCH PCB ASS'Y/GEAR MIDDLE/GEAR FEED/RACK FEED ASS'Y/FEED MOTOR (Refer to Fig. 2-7-A)

1. Unlock the support ①.
2. Remove the Gear Middle.
3. Remove the screw ②.
4. Remove the Rack Feed Ass'y.
5. Remove the screw ③.
6. Remove the Switch PCB Ass'y.
7. Remove the screw ④.
8. Remove the Gear Feed.
9. Remove the 2 screws ⑤.
10. Remove the Feed Motor.
11. Remove the Gear Motor.



• Screw Torque: 1.3 ± 0.3kgf•cm (Screw ②)
• Screw Torque: 3.0 ± 0.3kgf•cm (Screw ③)
• Screw Torque: 1.0 ± 0.3kgf•cm (Screw ④, ⑤)

Fig. 2-7-A

NOTE

1. When installing the Rack Feed Ass'y, push both ends to align the teeth as shown Fig. 2-7-B. Then install it.
2. In case of the Gear Motor installation, check if the value of the Fig. 2-7-C is correct.
3. When installing the wire of the Switch PCB Ass'y, install it correctly as Fig. 2-7-D.
   Manual soldering conditions
   • Soldering temperature: 350 ± 5˚C
   • Soldering time: Within 4 seconds
   • Soldering combination: Sn-3.0Ag-0.5Cu
4. After the assembly of the Traverse Ass'y, hook the wire on the Traverse Ass'y as shown Fig. 2-7-E.

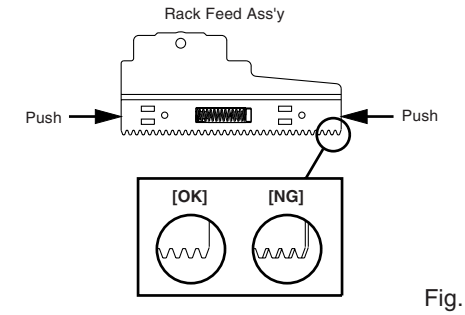


Fig. 2-7-B

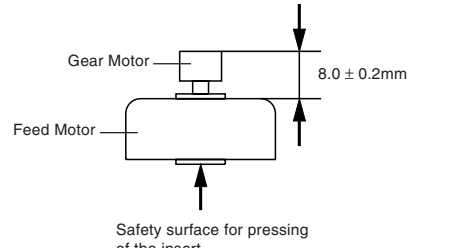


Fig. 2-7-C

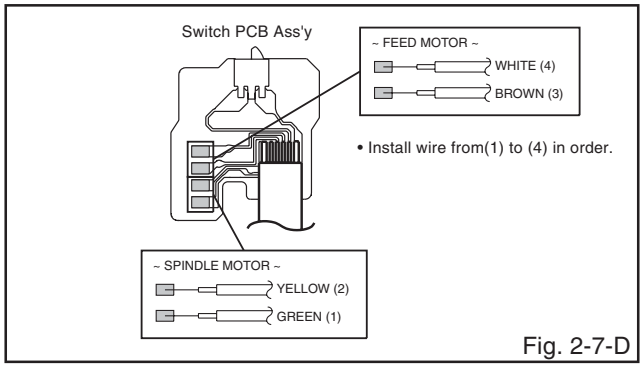


Fig. 2-7-D

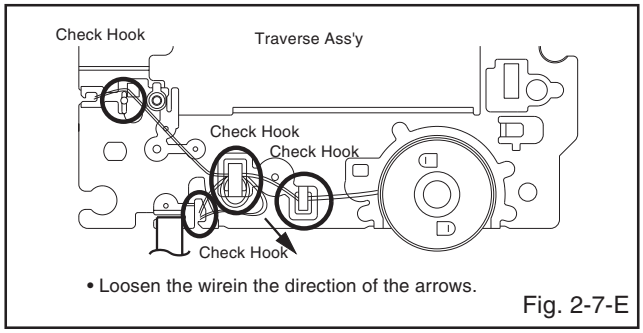


Fig. 2-7-E

2-8: FFC WIRE HANDLING

1. When installing the FFC, fold it correctly and install it as shown from Fig. 2-8.

NOTE

1. Do not make the folding lines except the specified positions for the FFC.

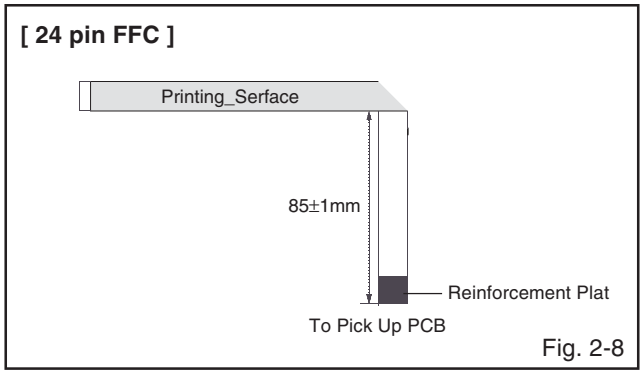


Fig. 2-8

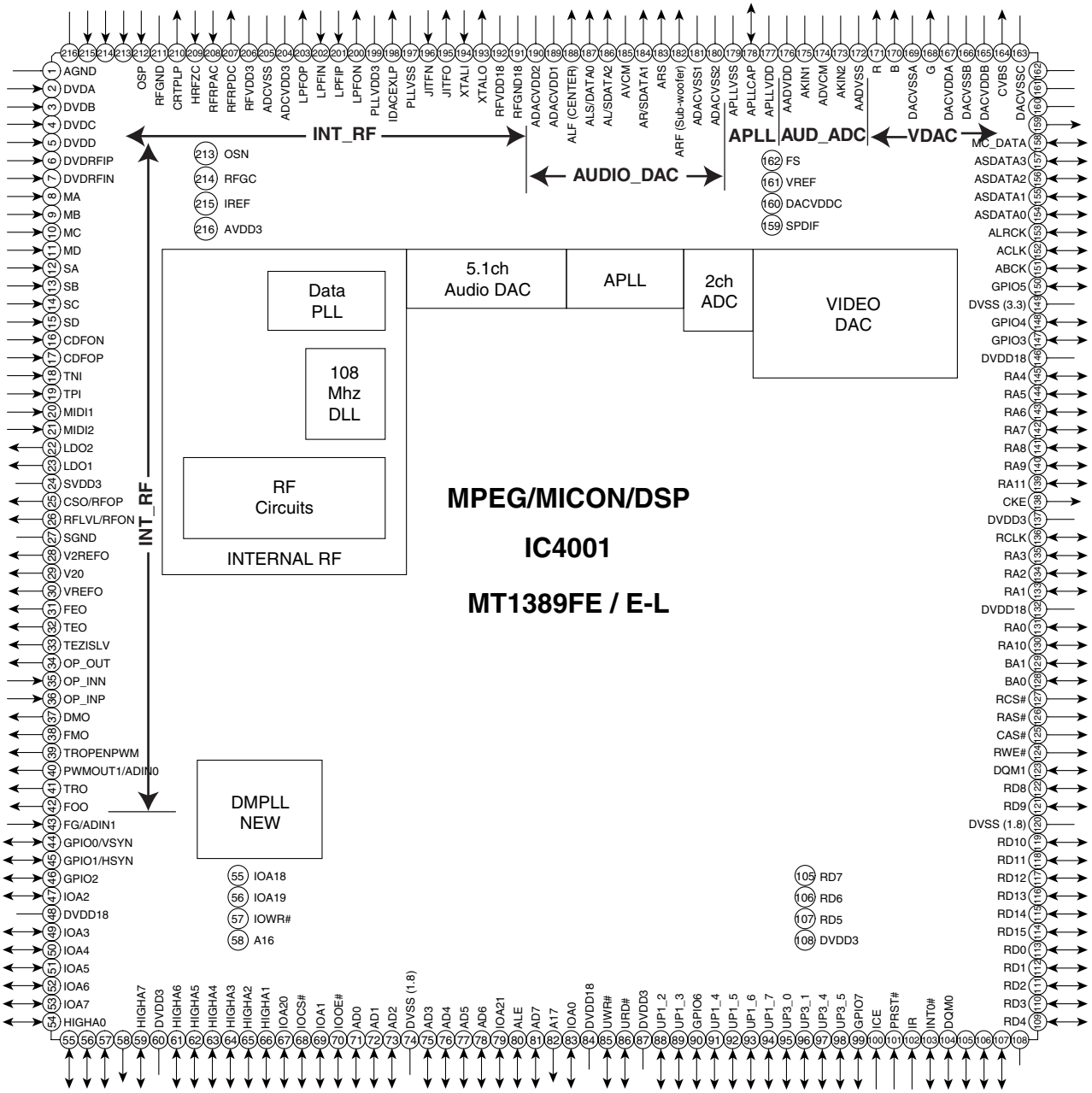
7.4 IC INFORMATION

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■ MT1389FE/E-L (DVD MT PCB ASSY: IC4001)

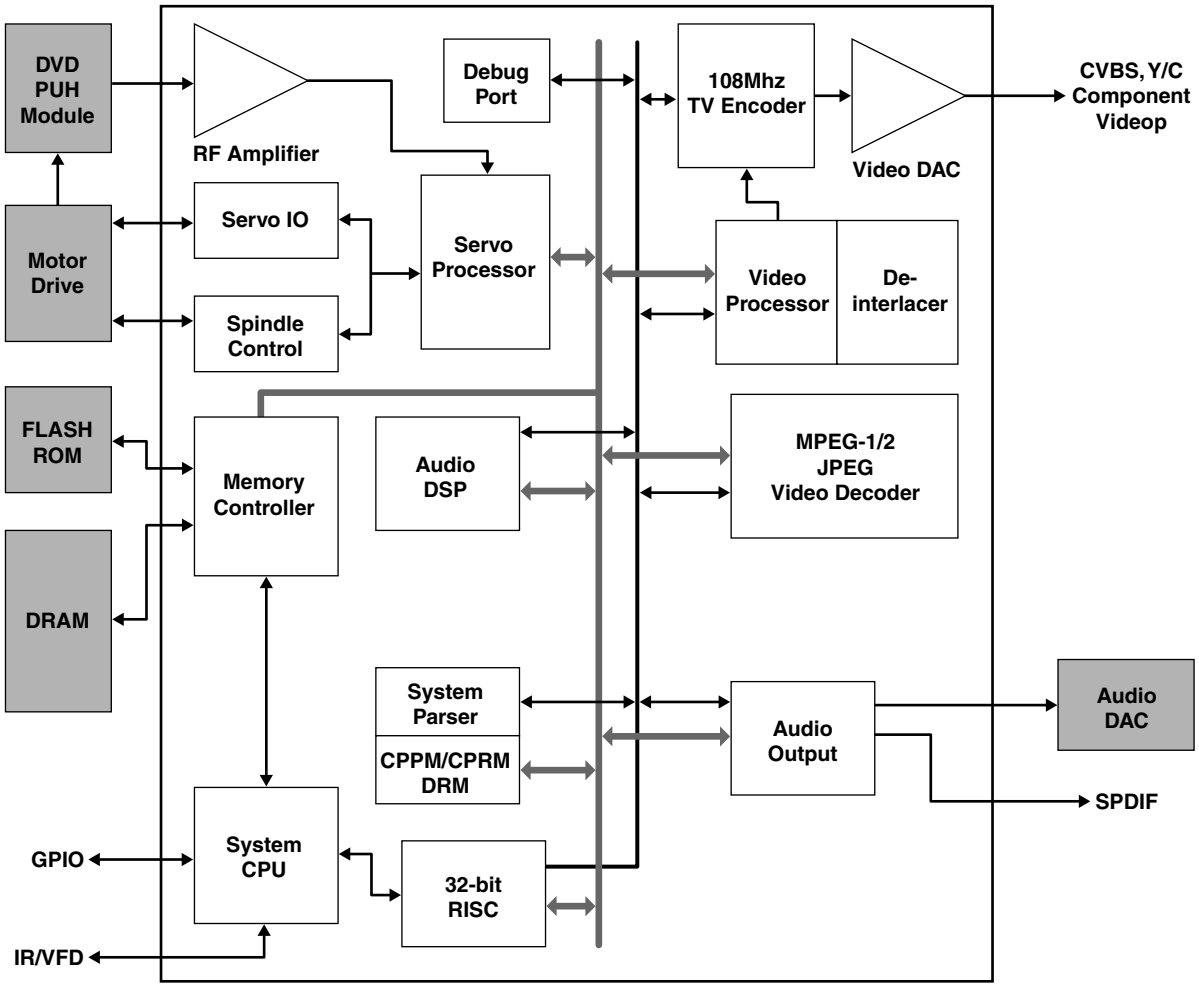
• MPEG / MICON / DSP

• Pin Arrangement (Top view)



• MPEG / MICON / DSP Microcomputer

• Block Diagram



MT1389FE/E-L (DVD MT PCB ASSY : IC4001)

• MPEG/MICON/DSP CPU

• Pin Function

Abbreviations:

- SR: Slew Rate
- PU: Pull Up
- PD: Pull Down
- SMT: Schmitt Trigger
- 4mA~16mA: Output buffer driving strength.

Pin	Main	Alt.	Type	Description
RF Interface (26)				
191	RFGND18		Ground	Analog ground
192	RFVDD18		Power	Analog power 1.8V
212	OSP		Analog output	RF Offset cancellation capacitor connecting
213	OSN		Analog output	RF Offset cancellation capacitor connecting
214	RFGC		Analog output	RF AGC loop capacitor connecting for DVD-ROM
215	IREF		Analog Input	Current reference input. It generates reference current for RF path. Connect an external 15K resistor to this pin and AVSS
216	AVDD3		Power	Analog power 3.3V
1	AGND		Ground	Analog ground
2	DVDA		Analog Input	AC coupled input path A
3	DVDB		Analog Input	AC coupled input path B
4	DVDC		Analog Input	AC coupled input path C
5	DVDD		Analog Input	AC coupled input path D
6	DVDRFIP		Analog Input	AC coupled DVD RF signal input RFIP
7	DVDRFIN		Analog Input	AC coupled DVD RF signal input RFIN
8	MA		Analog Input	DC coupled main-beam RF signal input A
9	MB		Analog Input	DC coupled main-beam RF signal input B
10	MC		Analog Input	DC coupled main-beam RF signal input C
11	MD		Analog Input	DC coupled main-beam RF signal input D
12	SA		Analog Input	DC coupled sub-beam RF signal input A
13	SB		Analog Input	DC coupled sub-beam RF signal input B
14	SC		Analog Input	DC coupled sub-beam RF signal input C
15	SD		Analog Input	DC coupled sub-beam RF signal input D
16	CDFON		Analog Input	CD focusing error negative input
17	CDFOP		Analog Input	CD focusing error positive input
18	TNI		Analog Input	3 beam satellite PD signal negative input
19	TPI		Analog Input	3 beam satellite PD signal positive input
ALPC (4)				
20	MDI1		Analog Input	Laser power monitor input

Pin	Main	Alt.	Type	Description
21	MDI2		Analog Input	Laser power monitor input
22	LDO2		Analog Output	Laser driver output
23	LDO1		Analog Output	Laser driver output
Reference Voltage (3)				
28	V2REFO		Analog output	Reference voltage 2.8V
29	V20		Analog output	Reference voltage 2.0V
30	VREFO		Analog output	Reference voltage 1.4V
Analog Monitor Output (7)				
24	SVDD3		Power	Analog power 3.3V
25	CSO	RFOP	Analog output	1) Central servo 2) Positive main beam summing output
26	RFLVL	RFON	Analog output	1) RFRP low pass, or 2) Negative main beam summing output
27	SGND		Ground	Analog ground
31	FEO		Analog output	Focus error monitor output
32	TEO		Analog output	Tracking error monitor output
33	TEZISLV		Analog output	TE slicing Level
Analog Servo Interface (8)				
204	ADCVDD3		Power	Analog 3.3V power for ADC
205	ADCVSS		Ground	Analog ground for ADC
206	RFVDD3		Power	Analog power
207	RFRPDC		Analog output	RF ripple detect output
208	RFRPAC		Analog Input	RF ripple detect input (through AC-coupling)
209	HRFZC		Analog Input	High frequency RF ripple zero crossing
210	CRTPLP		Analog output	Defect level filter capacitor connecting
211	RFGND		Ground	Analog Power
RF Data PLL Interface (9)				
195	JITFO		Analog output	Output terminal of RF jitter meter
196	JITFN		Analog Input	Input terminal of RF jitter meter
197	PLLVSS		Ground	Ground pin for data PLL and related analog circuitry
198	IDACEXLP		Analog output	Data PLL DAC Low-pass filter
199	PLLVDD3		Power	Power pin for data PLL and related analog circuitry
200	LPFON		Analog Output	Negative output of loop filter amplifier
201	LPFIP		Analog Input	Positive input terminal of loop filter amplifier
202	LPFIN		Analog Input	Negative input terminal of loop filter amplifier
203	LPFOP		Analog Output	Positive output of loop filter amplifier
Motor and Actuator Driver Interface (10)				

Pin	Main	Alt.	Type	Description
34	OP_OUT		Analog output	Op amp output
35	OP_INN		Analog input	Op amp negative input
36	OP_INP		Analog input	Op amp positive input
37	DMO		Analog Output	Disk motor control output. PWM output
38	FMO		Analog Output	Feed motor control. PWM output
39	TROPENPWM		Analog Output	Tray PWM output/Tray open output
40	PWMOUT1	ADIN0	Analog Output	1) 1st General PWM output 2) AD input 0
41	TRO		Analog Output	Tracking servo output. PDM output of tracking servo compensator
42	FOO		Analog Output	Focus servo output. PDM output of focus servo compensator
43	FG (Digital pin)	ADIN1 GPIO	LVTTL 3.3V Input, Schmitt Input, pull up, with analog input path for ADIN1	1) Motor Hall sensor input 2) AD input 1 3) GPIO
General Power/Ground (11)				
48,84, 132, 146	DVDD18		Power	1.8V power pin for internal digital circuitry
74, 120	DVSS		Ground	1.8V Ground pin for internal digital circuitry
60,87, 108,137	DVDD3		Power	3.3V power pin for internal digital circuitry
149	DVSS		Ground	3.3V Ground pin for internal digital circuitry
Micro Controller and Flash Interface (48)				
54	HIGHA0		InOut 4~16mA, SR PU	Microcontroller address 8
66	HIGHA1		InOut 4~16mA, SR PU	Microcontroller address 9
65	HIGHA2		InOut 4~16mA, SR PU	Microcontroller address 10
64	HIGHA3		InOut 4~16mA, SR PU	Microcontroller address 11
63	HIGHA4		InOut 4~16mA, SR PU	Microcontroller address 12
62	HIGHA5		InOut 4~16mA, SR PU	Microcontroller address 13
61	HIGHA6		InOut 4~16mA, SR PU	Microcontroller address 14

Pin	Main	Alt.	Type	Description
59	HIGHA7		InOut 4~16mA, SR PU	Microcontroller address 15
81	AD7		InOut 4~16mA, SR	Microcontroller address/data 7
78	AD6		InOut 4~16mA, SR	Microcontroller address/data 6
77	AD5		InOut 4~16mA, SR	Microcontroller address/data 5
76	AD4		InOut 4~16mA, SR	Microcontroller address/data 4
75	AD3		InOut 4~16mA, SR	Microcontroller address/data 3
73	AD2		InOut 4~16mA, SR	Microcontroller address/data 2
72	AD1		InOut 4~16mA, SR	Microcontroller address/data 1
71	AD0		InOut 4~16mA, SR	Microcontroller address/data 0
83	IOA0		InOut 4~16mA, SR PU	Microcontroller address 0 / IO
69	IOA1		InOut 4~16mA, SR PU	Microcontroller address 1 / IO
47	IOA2		InOut 4~16mA, SR PU	Microcontroller address 2 / IO
49	IOA3		InOut 4~16mA, SR PU	Microcontroller address 3 / IO
50	IOA4		InOut 4~16mA, SR PU	Microcontroller address 4 / IO
51	IOA5		InOut 4~16mA, SR PU	Microcontroller address 5 / IO
52	IOA6		InOut 4~16mA, SR PU	Microcontroller address 6 / IO
53	IOA7		InOut 4~16mA, SR PU	Microcontroller address 7 / IO
58	A16		Output 4~16mA, SR PU	Flash address 16

Pin	Main	Alt.	Type	Description
82	A17		Output 4~16mA, SR PU	Flash address 17
55	IOA18		InOut 4~16mA, SR PD, SMT	Flash address 18 / IO
56	IOA19		InOut 4~16mA, SR PD, SMT	Flash address 19 / IO
67	IOA20	YUV0	InOut 4~16mA, SR PD, SMT	1) Flash address 20 / IO 2) While External Flash size <= 1MB: I) Alternate digital video YUV output 0
79	IOA21	YUV7 GPIO	InOut 4~16mA, SR PD, SMT	1) Flash address 21 / IO 2) While External Flash size <= 2MB: I) Digital video YUV output 7 II) GPIO
80	ALE		InOut 4~16mA, SR PU, SMT	Microcontroller address latch enable
70	IOOE#		InOut 4~16mA, SR SMT	Flash output enable, active low / IO
57	IOWR#		InOut 4~16mA, SR PU, SMT	Flash write enable, active low / IO
68	IOCS#		InOut 4~16mA, SR SMT	Flash chip select, active low / IO
85	UWR#		InOut 4~16mA, SR PU, SMT	Microcontroller write strobe, active low
86	URD#		InOut 4~16mA, SR PU, SMT	Microcontroller read strobe, active low
88	UP1_2		InOut 4mA, SR PU, SMT	Microcontroller port 1-2
89	UP1_3		InOut 4mA, SR PU, SMT	Microcontroller port 1-3
91	UP1_4		InOut 4mA, SR PU, SMT	Microcontroller port 1-4
92	UP1_5		InOut 4mA, SR PU, SMT	Microcontroller port 1-5

Pin	Main	Alt.	Type	Description
93	UP1_6	SCL	InOut 4mA, SR PU, SMT	1) Microcontroller port 1-6 2) I^2C clock pin
94	UP1_7	SDA	InOut 4mA, SR PU, SMT	1) Microcontroller port 1-7 2) I^2C data pin
95	UP3_0	RXD	InOut 4mA, SR PU, SMT	1) Microcontroller port 3-0 2) 8032 RS232 RxD
96	UP3_1	TXD	InOut 4mA, SR PU, SMT	1) Microcontroller port 3-1 2) 8032 RS232 TxD
97	UP3_4	RXD SCL	InOut 4mA, SR PU, SMT	1) Microcontroller port 3-4 2) Hardwired RD232 RxD 3) I^2C clock pin
98	UP3_5	TXD SDA	InOut 4mA, SR PU, SMT	1) Microcontroller port 3-5 2) Hardwired RD232 TxD 3) I^2C data pin
102	IR		Input SMT	IR control signal input
103	INT0#		InOut 4~16mA, SR PU, SMT	Microcontroller external interrupt 0, active low
Audio interface (28)				
153	ALRCK	YUV1 GPO	InOut 4mA, PD, SMT	1) Audio left/right channel clock 2) Trap value in power-on reset: I) 1: use external 373 II) 0: use internal 373 3) While internal audio DAC used: I) Digital video YUV output 1 II) GPO
151	ABCK	YUV0 GPIO	InOut 4mA	1) Audio bit clock 2) While internal audio DAC used: I) Digital video YUV output 0 II) GPIO
152	ACLK	YUV0 GPIO	InOut 4mA SMT	1) Audio DAC master clock 2) While internal audio DAC used: I) Alternate digital video YUV output 0 II) GPIO

Pin	Main	Alt.	Type	Description
154	ASDATA0	YUV2 GPO	InOut 4mA PD SMT	1) Audio serial data 0 (Front-Left/Front-Right) 2) Trap value in power-on reset: I) 1: manufactory test mode II) 0: normal operation 3) While internal audio DAC used: I) Digital video YUV output 2 II) GPO
155	ASDATA1	YUV4 GPO	InOut 4mA PD SMT	1) Audio serial data 1 (Left-Surround/Right-Surround) 2) Trap value in power-on reset: I) 1: manufactory test mode II) 0: normal operation 3) While only 2 channels output: I) Digital video YUV output 4 II) GPO
156	ASDATA2	YUV5 GPO	InOut 4mA PD SMT	1) Audio serial data 2 (Center/LFE) 2) Trap value in power-on reset: I) 1: manufactory test mode II) 0: normal operation 3) While only 2 channels output: I) Digital video YUV output 5 II) GPO
157	ASDATA3	YUV6 GPIO	InOut 4mA PD SMT	1) Audio serial data 3 (Center-back/ Center-left-back/Center-right-back, in 6.1 or 7.1 mode) 2) While only 2 channels output: I) Digital video YUV output 6 II) GPIO
158	MC_DATA	INT2# YUV0 GPIO	InOut 2mA	1) Microphone serial input 2) While not support Microphone: I) Microcontroller external interrupt 2 II) Digital video YUV output 0 III) GPIO
159	SPDIF		Output 4~16mA, SR: ON/OFF	S/PDIF output
172	AADVSS		Ground	Ground pin for 2ch audio ADC circuitry
173	AKIN2		Analog	Audio ADC input 2
174	ADVCM		Analog	2ch audio ADC reference voltage
175	AKIN1		Analog	Audio ADC input 1
176	AADVDD		Power	3.3V power pin for 2ch audio ADC circuitry
177	APLLVDD3		Power	3.3V Power pin for audio clock circuitry
178	APLLCAP		Analog InOut	APLL external capacitance connection
179	APLLVSS		Ground	Ground pin for audio clock circuitry
180	ADACVSS2		Ground	Ground pin for audio DAC circuitry
181	ADACVSS1		Ground	Ground pin for audio DAC circuitry
182	ARF	GPIO	Output	1) Audio DAC sub-woofer channel output 2) While internal audio DAC not used: GPIO

Pin	Main	Alt.	Type	Description
183	ARS	GPIO	Output	1) Audio DAC right Surround channel output 2) While internal audio DAC not used: GPIO
184	AR	GPIO	Output	1) Audio DAC right channel output 2) While internal audio DAC not used: a. SDATA1 b. GPIO
185	AVCM		Analog	Audio DAC reference voltage
186	AL	GPIO	Output	1) Audio DAC left channel output 2) While internal audio DAC not used: a. SDATA2 b. GPIO
187	ALS	GPIO	Output	1) Audio DAC left Surround channel output 2) While internal audio DAC not used: a. SDATA0 b. GPIO
188	ALF	GPIO	Output	1) Audio DAC center channel output 2) While internal audio DAC not used: GPIO
189	ADACVDD1		Power	3.3V power pin for audio DAC circuitry
190	ADACVDD2		Power	3.3V power pin for audio DAC circuitry
Video Interface (12)				
160	DACVDDC		Power	3.3V power pin for video DAC circuitry
161	VREF		Analog	Bandgap reference voltage
162	FS		Analog	Full scale adjustment
163	DACVSSC		Ground	Ground pin for video DAC circuitry
164	CVBS		Output 4mA, SR	Analog composite output
165	DACVDDB		Power	3.3V power pin for video DAC circuitry
166	DACVSSB		Ground	Ground pin for video DAC circuitry
167	DACVDDA		Power	3.3V power pin for video DAC circuitry
168	Y/G		Output 4mA, SR	Green, Y, SY, or CVBS
169	DACVSSA		Ground	Ground pin for video DAC circuitry
170	B/CB/PB		Output 4mA, SR	Blue, CB/PB, or SC
171	R/CR/PR		Output 4mA, SR	Red, CR/PR, CVBS, or SY
MISC (12)				
101	PRST#		Input PU, SMT	Power on reset input, active low
100	ICE		Input PD, SMT	Microcontroller ICE mode enable
193	XTALO		Output	27MHz crystal output

Pin	Main	Alt.	Type	Description
194	XTALI		Input	27MHz crystal input
44	GPIO0	VSYN YUV1	InOut 4mA, SR SMT	1) General purpose IO 0 2) Vertical sync for video input 3) Digital video YUV output 1
45	GPIO1	HSYN INT4# YUV2	InOut 4mA, SR SMT	1) General purpose IO 1 2) Horizontal sync for video input 3) Microcontroller external interrupt 4 4) Digital video YUV output 2
46	GPIO2	SPMCLK	InOut 2mA	1) General purpose IO 2 2) Audio S/PDIF SPMCLK input
147	GPIO3	INT1# SPDATA	InOut 2mA	1) General purpose IO 3 2) Microcontroller external interrupt 1 3) Audio S/PDIF SPDATA input
148	GPIO4	SPLRCK	InOut 2mA	1) General purpose IO 4 2) Audio S/PDIF SPLRCK input
150	GPIO5	INT3# SPBCK	InOut 2mA	1) General purpose IO 5 2) Microcontroller external interrupt 3 3) Audio S/PDIF SPBCK input
90	GPIO6	YUVCLK	InOut 4mA, SR PD, SMT	1) General purpose IO 6 2) Digital video clock output
99	GPIO7	YUV3	InOut 4mA, PD, SMT	1) General purpose IO 7 2) Digital video YUV output 3
Dram Interface (38) (Sorted by position)				
145	RA4		InOut	DRAM address 4
144	RA5		InOut	DRAM address 5
143	RA6		InOut	DRAM address 6
142	RA7		InOut	DRAM address 7
141	RA8		InOut	DRAM address 8
140	RA9		InOut	DRAM address 9
139	RA11		InOut Pull-Down	DRAM address bit 11
138	CKE		Output	DRAM clock enable
136	RCLK		InOut	Dram clock
135	RA3		InOut	DRAM address 3
134	RA2		InOut	DRAM address 2
133	RA1		InOut	DRAM address 1
131	RA0		InOut	DRAM address 0
130	RA10		InOut	DRAM address 10
129	BA1		InOut	DRAM bank address 1
128	BA0		InOut	DRAM bank address 0
127	RCS#		Output	DRAM chip select, active low
126	RAS#		Output	DRAM row address strobe, active low

Pin	Main	Alt.	Type	Description
125	CAS#		Output	DRAM column address strobe, active low
124	RWE#		Output	DRAM Write enable, active low
123	DQM1		InOut	Data mask 1
122	RD8		InOut	DRAM data 8
121	RD9		InOut	DRAM data 9
119	RD10		InOut	DRAM data 10
118	RD11		InOut	DRAM data 11
117	RD12		InOut	DRAM data 12
116	RD13		InOut	DRAM data 13
115	RD14		InOut	DRAM data 14
114	RD15		InOut	DRAM data 15
113	RD0		InOut	DRAM data 0
112	RD1		InOut	DRAM data 1
111	RD2		InOut	DRAM data 2
110	RD3		InOut	DRAM data 3
109	RD4		InOut	DRAM data 4
107	RD5		InOut	DRAM data 5
106	RD6		InOut	DRAM data 6
105	RD7		InOut	DRAM data 7
104	DQM0		InOut	Data mask 0

Note:
1. The Main column is the main function, Alt. means alternative function.
2. The external TV encoder mode only supports CCIR-656 mode.

Disc / content format playback compatibility

This player is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the following logos on the disc and/or disc packaging. Note however that some disc types, such as recordable CD and DVD, may be in an unplayable format—see below for further compatibility information.

Pleasealso note that recordable discs cannot be recorded using this player.

DVD-Video DVD-R DVD-RW

Audio CD Video CD CD-R CD-RW

Fujicolor CD

- This unit will play DVD+R/+RW discs.
- DVD is a trademark of DVD Format/Logo Licensing Corporation.
- is a trademark of Fuji Photo Film Co. Ltd.
- Also compatible with KODAK Picture CD

This player supports the IEC's Super VCD standard. Compared to the Video CD standard, Super VCD offers superior picture quality, and allows two stereo soundtracks to be recorded. Super VCD also supports the widescreen size.

About DualDisc playback

A DualDisc is a new two -sided disc, one side of which contains DVD content video, audio, etc. while the other side contains non-DVD content such as digital audio material.

The non-DVD, audio side of the disc is not compliant with the CD Audio specification and therefore may not play.

The DVD side of a DualDisc plays in this product.

Formore detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

CD-R/RW compatibility

- Compatible formats: CD-Audio, Video CD , ISO 9660 CD-ROM* containing MP3, WMA, JPEG or DivX video files
  * ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this player.
- Multi-session playback: No
- Unfinalized disc playback: No
- Filestructure (may differ): Up to 299 folders on a disc; up to 648 folders and files (combined) within each folder

DVD+R/DVD+RW compatibility

Only DVD+R/DVD+RW discs recorded in 'Video Mode (DVD Video Mode)' which have been finalized, can be played back. However, some editing made during the recording may not be played back accurately.

DVD-R/RW compatibility

- Compatible formats: DVD-Video, Video Recording (VR)*
  * Editpoints may not play exactly as edited; screen may go momentarily blank at edited points.
- Unfinalized playback: No
- WMA/MP3/JPEG file playback on DVD-R/RW: No

Compressed audio compatibility

- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)
- Sampling rates: 32 kHz, 44.1 kHz or 48 kHz
- Bit-rates: Any (128 Kbps or higher recommended)
- VBR (variable bit rate) MP3 playback: No
- VBR WMA playback: No
- WMA lossless encoding compatible: No
- DRM (Digital Rights Management) compatible: Yes (DRM-protected audio files will not play in this player—see also DRM in the Glossary)
- Fileextensions: .mp3, .wma (these must be used for the player to recognize MP3 and WMA files – do not use for other file types)

About WMA

The Windows Media ® logo printed on the box indicates that this player can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media®Player version 7, 7.1, Windows Media ® Player for Windows ® XP, or Windows Media ® Player 9 Series.

Microsoft, Windows Media, and the Windows logo are trademarks, or registered trademarks of *Microsoft Corporation in the United States and/* or other countries.

About DivX

DivX is a compressed digital video format created by the DivX®video codec from DivX, Inc.This player can play DivX video files burned on CD-R/RW/ROM discs. Keeping the same terminology as DVD-Video, individual DivX video files are called "Titles". When naming files/titles on a CD-R/RW disc prior to burning, keep in mind that by default they will be played in alphabetical order.

Displaying DivX subtitle files

The font sets listed below are available for DivX external subtitle files. You can see the proper font set on-screen by setting the Subtitle Language to match the subtitle file.

This player supports the following language groups:

Group 1: Albanian (sq), Basque (eu), Catalan (ca), Danish (da), Dutch (nl), English (en), Faroese (fo), Finnish (fi), French (fr), German (de), Icelandic (is), Irish (ga), Italian (it), Norwegian (no), Portuguese (pt), Rhaeto-Romanic (rm), Scottish (gd), Spanish (es), Swedish (sv)
Group 2: Albanian (sq), Croatian (hr), Czech (cs), Hungarian (hu), Polish (pl), Romanian (ro), Slovak (sk), Slovenian (sl)
Group 3: Bulgarian (bg), Byelorussian (be), Macedonian (mk), Russian (ru), Serbian (sr), Ukrainian (uk)
Group 4: Hebrew (iw), Yiddish (ji)
Group 5: Turkish (tr)

- Some external subtitle files may be displayed incorrectly or not at all.
- For external subtitle files the following subtitle format filename extensions are supported (please note that these files are not shown within the disc navigation menu): .srt, .sub, .ssa, .smi
- The filename of the movie file has to be repeated at the beginning of the filename for the external subtitle file.
- The number of external subtitle files which can be switched for the same movie file is limited to a maximum of 10.

DivX video compatibility

- Official DivX®Certified product.
- Playsall versions of DivX®video (including DivX® 6) with standard playback of DivX® media files.
- File extensions: .avi and .divx (these must be used for the player to recognize DivX video files).Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this player.

DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF2.2* still image files up to a resolution of 3072 x 2048.
  *File format used by digital still cameras
- Progressive JPEG compatible: No
- File extensions: .jpg (must be used for the player to recognize JPEG files – do not use for other file types)

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

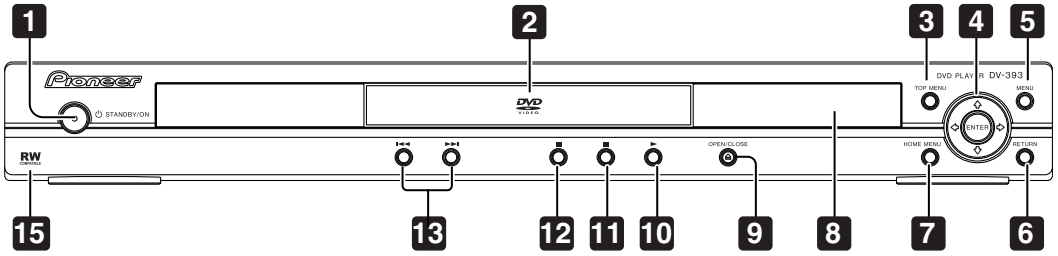
Discs recorded in packet write mode (UDF format) are not compatible with this player.

Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

8. PANEL FACILITIES

8.1 FRONT PANEL SECTION

Front panel



1 ⏻ STANDBY/ON
Press to switch the player on or into standby.

2 Disc tray

3 TOP MENU
Displays the 'top menu' of a DVD disc—this varies with the disc.

4 ENTER & cursor buttons
Selects the current menu option.

5 MENU
Displays a DVD disc menu—this varies with the disc and may be the same as the 'top menu'.

6 RETURN
Returns to the previously dis-played menu screen.

7 HOME MENU

8 Display
Description of the display.

9 ⏏ OPEN/CLOSE
Press to open or close the disc tray.

10 ►
Press to start or resume playback.

11 ❚❚
Press to pause playback. Press again to restart.

12 ■
Press to stop the disc (you can resume playback by pressing ► (play)).

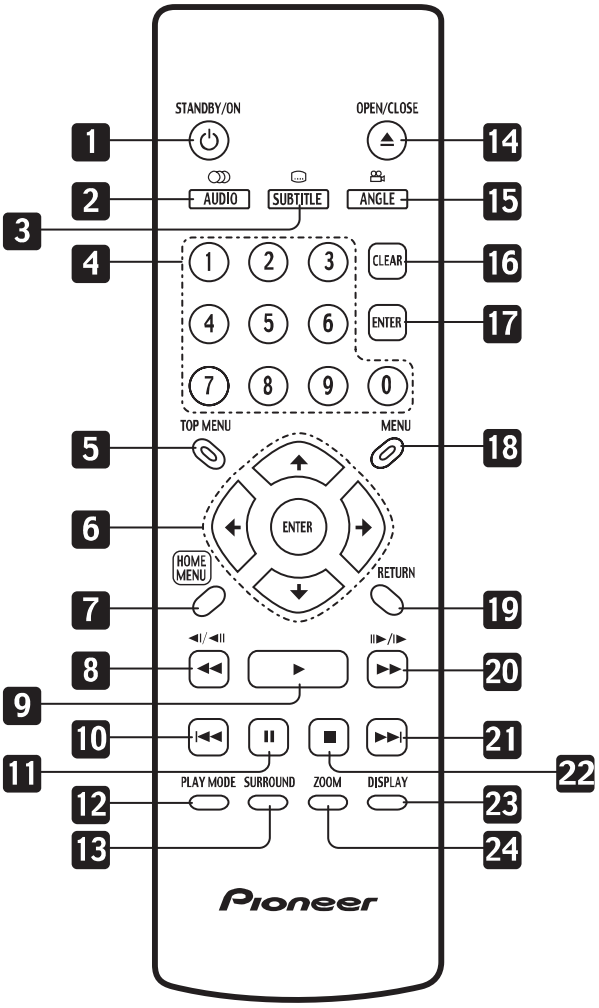
13 I◄◄ and ►►I
- Press and hold for fast reverse/forward scanning.
- Press to jump to the previous/next chapter or track.

15 RW COMPATIBLE Compatible

This mark indicates compatibility with DVD-RW discs recorded on a DVD recorder in Video Recording mode.

8.2 REMOTE CONTROL

Remote control



1 ⏻ STANDBY/ON

Press to switch the player on or into standby.

2 AUDIO

Press to select the audio channel or language.

3 SUBTITLE

Press to select a subtitle display.

4 Number buttons

5 TOP MENU

Press to display the top menu of a DVD disc.

6 ENTER & cursor buttons

Use to navigate on-screen displays and menus. Press **ENTER** to select an option or execute a command.

7 HOME MENU

Press to display (or exit) the on-screen display.

8 ◄◄ and ◄I/◄II

Use for reverse slow motion playback, frame reverse and reverse scanning.

9 ►

Press to start or resume playback.

10 I◄◄

chapter or track, then to previous chapters/ tracks.

11 II

Press to pause playback; press again to restart.

12 PLAY MODE

Press to display the Play Mode menu. (You can also get to the Play Mode menu by pressing **HOME MENU** and selecting Play Mode).

Press to jump to the beginning of the current

Remote control 2

13 SURROUND
Press to activate/switch off DD V/SRS TruSurround.

14 ⏏ OPEN/CLOSE
Press to open or close the disc tray.

15 ANGLE
Press to change the camera angle during DVD multi-angle scene playback.

16 CLEAR
Press to clear a numeric entry.

17 ENTER
Use to select menu options, etc.

18 MENU
Press to display a DVD disc menu, or the Disc Navigator if a VR format DVD-RW, CD, Video CD , MP3, WMA or JPEG disc is loaded.

19 RETURN
Press to return to a previous menu screen.

20 ►► and I►/II►
Use for forward slow motion playback, frame advance and forward scanning.

21 ►►I
Press to jump to the next chapter or track.

22 ■
Press to stop the disc (you can resume playback by pressing ►(play)).

23 DISPLAY
Press to display information about the disc playing.

24 ZOOM
Press to change the zoom level.

A

B

C

D

E

F

■ Jigs list

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	diagnosis
DVD Test Disc (DVD-Video,NTSC)	GGV1025	Operation Check
CD Test Disc	STD-905	Operation Check

■ Lubricants and Glues list

Name	Lubricants and Glues No.	Remark
Daifree	GEM1036 (ZLX-ME413A)	Refer to "2.3 06 DVD MECHA SECTION"
Grease	GYA1001 (ZLB-PN397B)	Refer to "2.3 06 DVD MECHA SECTION"
Grease	GYA1018	Refer to "2.3 06 DVD MECHA SECTION"

■ Cleaning

• Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools	Remark
Pickup leneses	Cleaning liquid : GEM1004	
	Cleaning paper : GED-008	