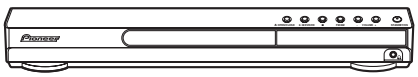
Pioneer sound.vision.soul

Service Manual



XV-DV350

ORDER NO.
RRV3187

DVD/CD RECEIVER

XV-DV350

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

Model	Type	Power Requirement	Regional restriction codes (Region No.)	Remarks
XV-DV350	KUCXJ	AC120V	1	

For details, refer to "Important Check Points for Good Servicing".

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-ZZK JULY 2005 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 cause cancer, 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 must be 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 pièces de remplacement doivent avoir la même désignation.

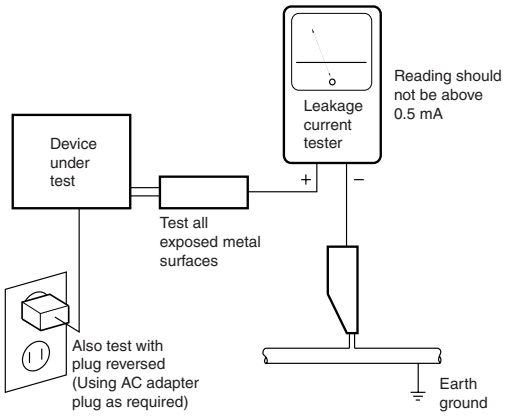
(FOR USA MODEL ONLY)

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 (water pipe, 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 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



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. SPECIFICATIONS

- **Amplifier section**

Continuous Power Output (FTC):
Front, Center, Surround
. . . . . .13 W per channel*
(200 Hz – 20 kHz, 1.0 %**, 6 Ω)
Subwoofer. . . . . .13 W*
(45 Hz – 200 Hz, 1.0 %**, 6 Ω)

RMS Power Output :
Front, Center, Surround. . . 60 W per channel
(1 kHz, 10 % T.H.D., 4 Ω)
50 W per channel
(1 kHz, 10 % T.H.D., 6 Ω)
Subwoofer. . .60 W (100 Hz, 10 % T.H.D., 4 Ω)
50 W (100 Hz, 10 % T.H.D., 6 Ω)

* Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.
** Measured by audio spectrum analyzer.

- **Disc section**

Digital audio
characteristics . . . . . DVD fs: 96 kHz, 24-bit
Type . . . . . DVD system, Video CD/Super VCD system and Compact Disc digital audio system
Frequency
response . . . 4 Hz to 44 kHz (96kHz sampling) / 4 Hz to 22 kHz (48kHz sampling)
Wow and Flutter . . . . . Limit of measurement (±0.001 % W.PEAK) or less (JEITA)

- **FM tuner section**

Frequency range. . . . . 87.5 MHz to 108 MHz
Antenna. . . . . 75 Ω, unbalanced

- **AM tuner section**

Frequency range:
With 9kHz step . . . . . 531 kHz to 1,602 kHz
With 10kHz step . . . . . 530 kHz to 1,700 kHz
Antenna. . . . . Loop antenna

- **Miscellaneous**

Power requirements. . . . . AC 120 V, 60 Hz
Power consumption. . . . . 45 W
Power consumption in standby. . . . . 0.25 W
Dimensions. . . 420 (W) x 60 (H) x 331.5 (D) mm
($16^{9}/_{16}$ (W) x $2^{3}/_{8}$ (H) x 13 (D) in.)
Weight . . . . . 3.1 kg / 6 lbs. 13 oz.

Note • Specifications and design subject to possible modification without notice, due to improvements.

- **Accessories (DVD/CD receiver)**

Remote control 1
AA/R6 dry cell batteries 2
Video cable (yellow plugs) 1
AM loop antenna 1
FM antenna 1
Power cord. 1
Setup Guide 1
Warranty card 1
Operating instructions

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 the Disc compatibility tablebelow for more information.

DVD-Video DVD-R DVD-RW

Audio CD Video CD CD-R CD-RW

Fujicolor CD

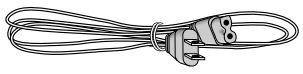
- is a trademark of Fuji Photo Film Co. Ltd.
- is a trademark of DVD Format/Logo Licensing Corporation
- Also compatible with KODAK Picture CD

This player supports the IECís Super VCD standard for superior picture quality, dual soundtracks, and widescreen support.

Super Video CD (Super VCD)

● Accessories

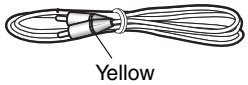
• Power cord (ADG7021)



• FM Antenna (ADH7030)

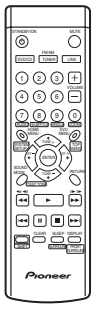
• AM Loop Antenna (ATB7013)

• Video Cable (L = 1.5m) (XDE3046)



• Dry Cell Batteries

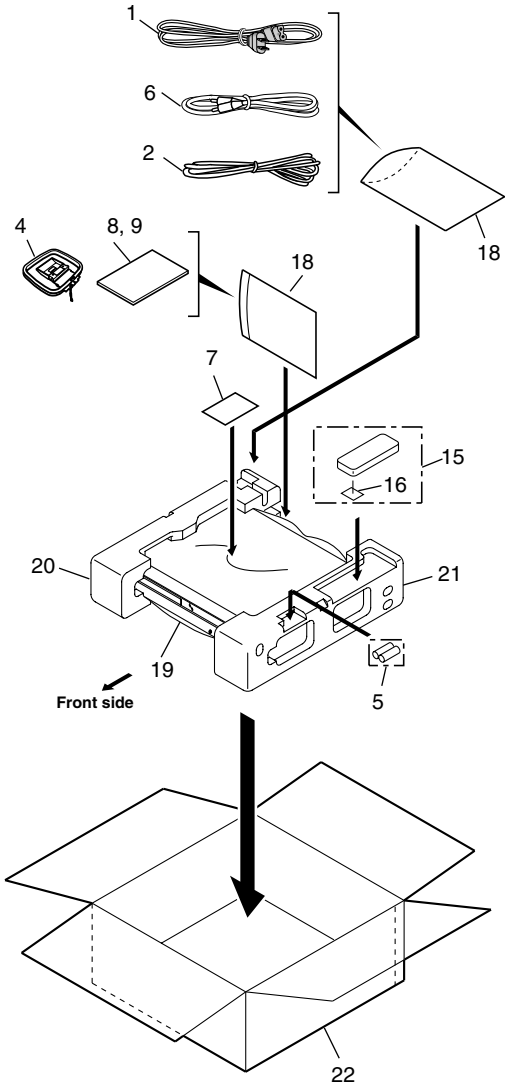
• Remote Control (AXD7407)



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.)*

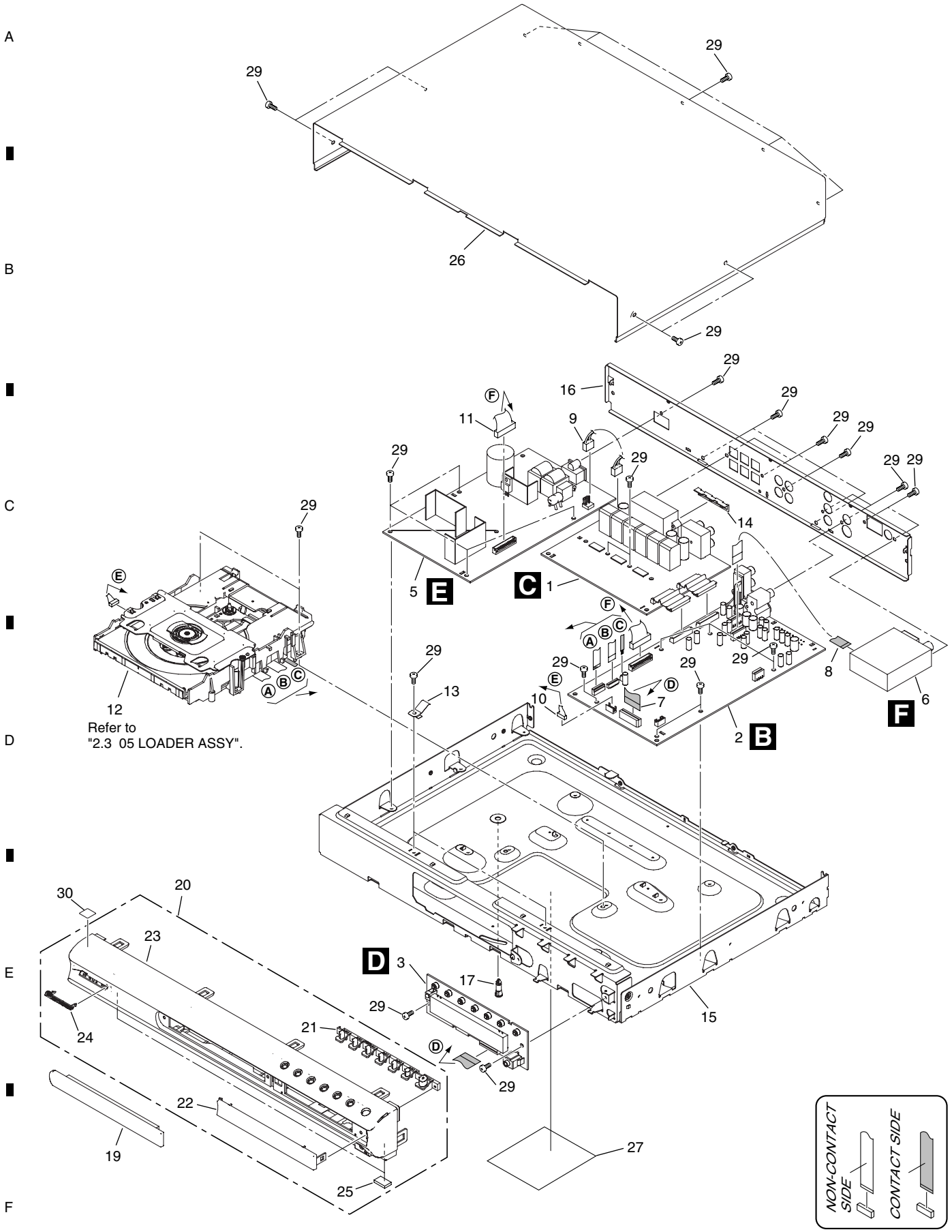
2.1 PACKING



PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
⚠	1	Power Cord	ADG7021
	2	FM Antenna	ADH7030
	3	••••••	
	4	AM Loop Antenna	ATB7013
NSP	5	Dry Cell Batteries(R6/AA)	VEM1031
	6	Video Cable	XDE3046
NSP	7	Warranty Card	ARY7045
	8	Operating Instructions (English/French)	ARE7356
	9	Setup Guide (English/French)	ARE7366
	10	••••••	
	11	••••••	
	12	••••••	
	13	••••••	
	14	••••••	
	15	Remote Control	AXD7407
	16	Battery Cover	VNK4998
	17	••••••	
NSP	18	Polyethylene Bag (0.03*230*340)	Z21-038
	19	Packing Sheet	AHG7015
	20	Pad L W5.1	AHA7444
	21	Pad R W5.1	AHA7445
	22	Packing Case	AHD8380

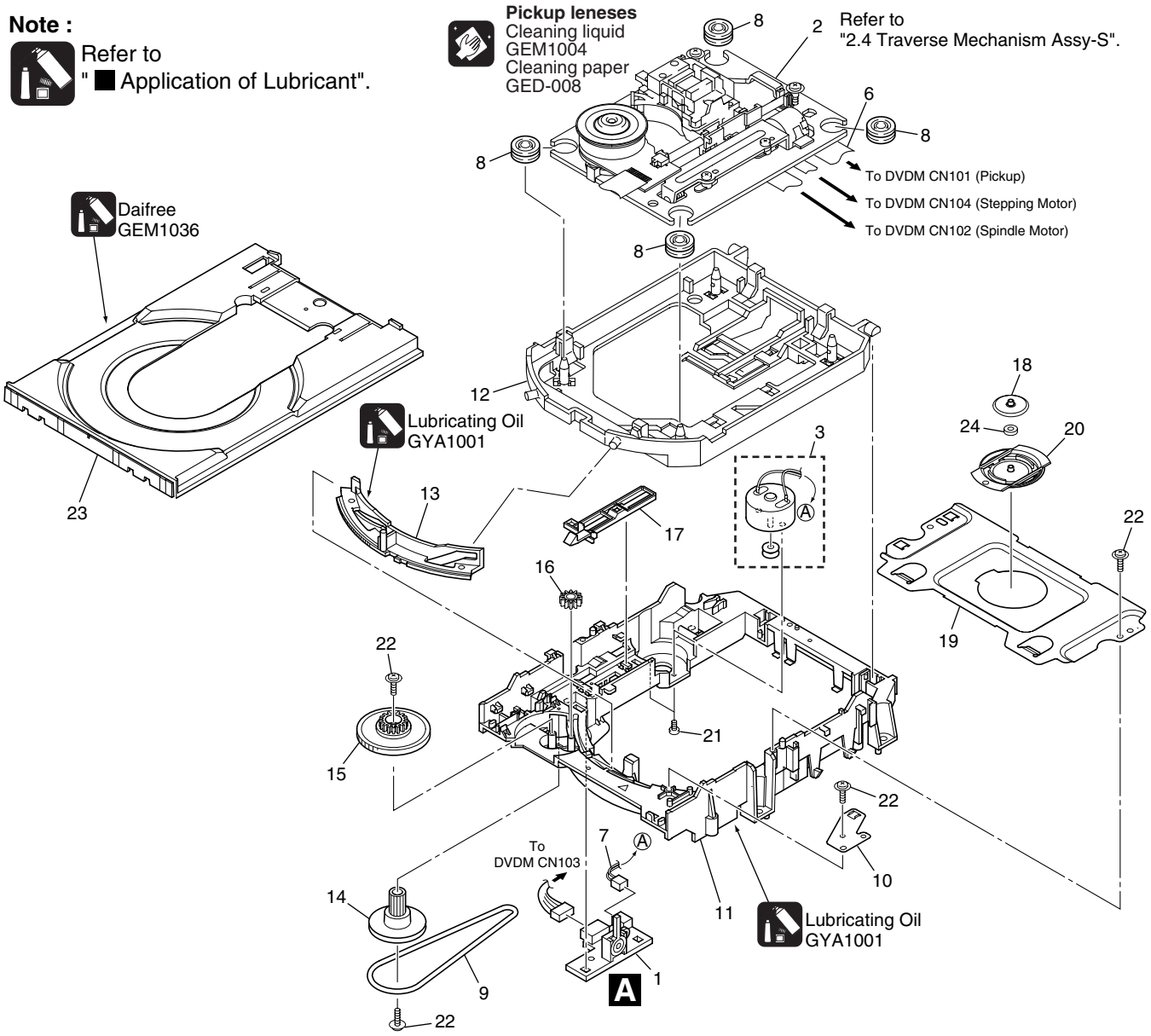
2.2 EXTERIOR SECTION



EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	DAMP ASSY	AWK7875
	2	DVDMAIN ASSY	AWM8004
	3	FUNCTION ASSY	AWU8256
	4	••••••	
⚠	5	POWER SUPPLY UNIT	AWR7022
	6	FM/AM TUNER UNIT	AXX7172
	7	17P FFC/60V	ADD7502
	8	11P FFC/60V	ADD7504
	9	2P Housing Wire Assy	ADX7480
	10	CONNECTOR ASSY	PF05PP-B40
	11	CONNECTOR ASSY	PF13PP-C22
NSP	12	05 Loader Assy	VWT1219
	13	Earth Spring W5.1	ABH7240
	14	Gnd Plate W5.1	ABH7241
NSP	15	Chassis W51	ANA7185
	16	Rear Panel W51	ANC8355
	17	Locking Card Spacer	AEC7372
	18	••••••	
	19	Tray Panel W51	AAK8277
	20	Front Panel Assy W51	AXG7281
NSP	21	Button W51	AAD7739
	22	Display Window W51	AAK8276
NSP	23	Front Panel W51	AMB7896
	24	Pioneer Name Plate	VAM1129
	25	Leg Cushion	XEB3028
	26	Bonnet W51	AZN8009
NSP	27	Name Label W51	AAL7408
	28	••••••	
	29	Screw	BBZ30P080FNI
NSP	30	Energy Star Label	AAX8022

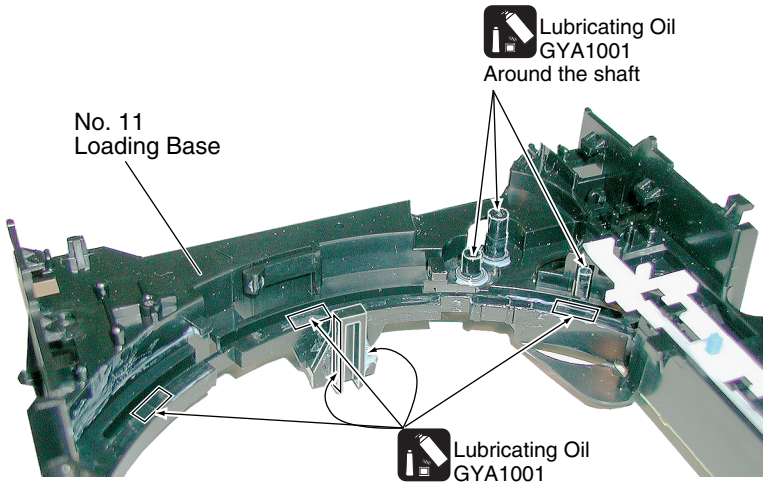
2.3 05 LOADER ASSY

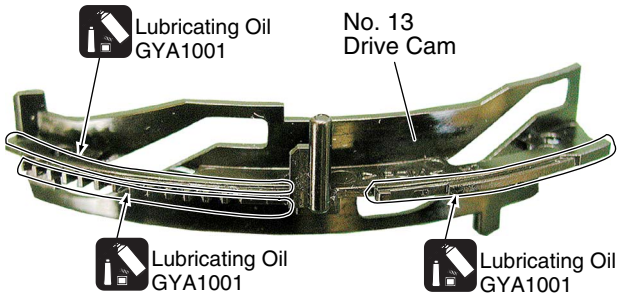


05 LOADER ASSY PARTS LIST

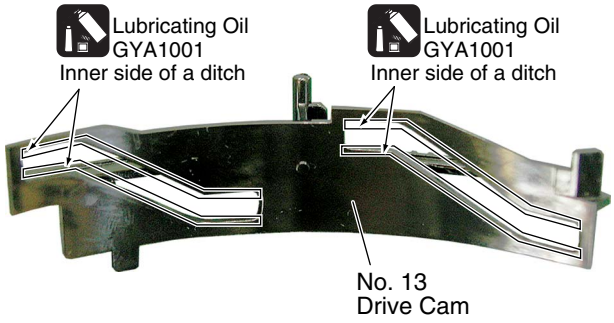
Mark	No.	Description	Part No.
NSP	1	LOAB Assy	VWG2346
	2	Traverse Mechanism Assy-S	DXX2568
	3	Loading Motor Assy	VXX2912
	4	• • • • •	
	5	• • • • •	
	6	Flexible Cable (24P)	VDA2008
	7	Connector Assy 2P	VKP2253
	8	Floating Rubber	VEB1351
	9	Belt	VEB1358
	10	Stabilizer	VNE2253
	11	Loading Base	VNL1917
	12	Float Base 04	VNL1968
	13	Drive Cam	VNL1919
	14	Gear Pulley	VNL1921
	15	Loading Gear	VNL1922
	16	Drive Gear	VNL1923
	17	SW Lever	VNL1925
	18	Clamper Plate 04	VNE2342
	19	Bridge 04	VNE2343
	20	Clamper 04	VNL1969
	21	Screw	JGZ17P028FTC
	22	Screw	VBA1094
	23	Tray	VNL1920
	24	Clamp Magnet	VMG1029

Application of Lubricant

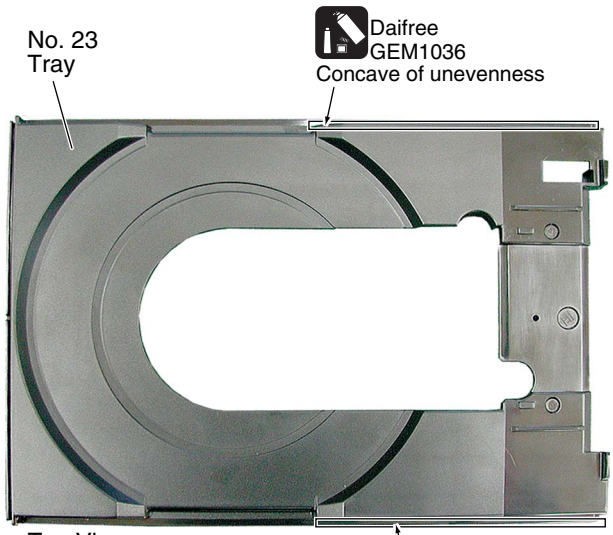




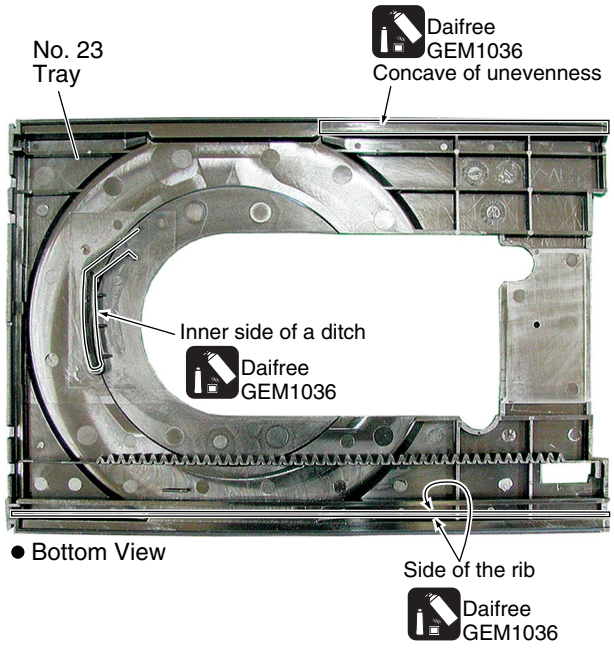
● Front View



● Rear View

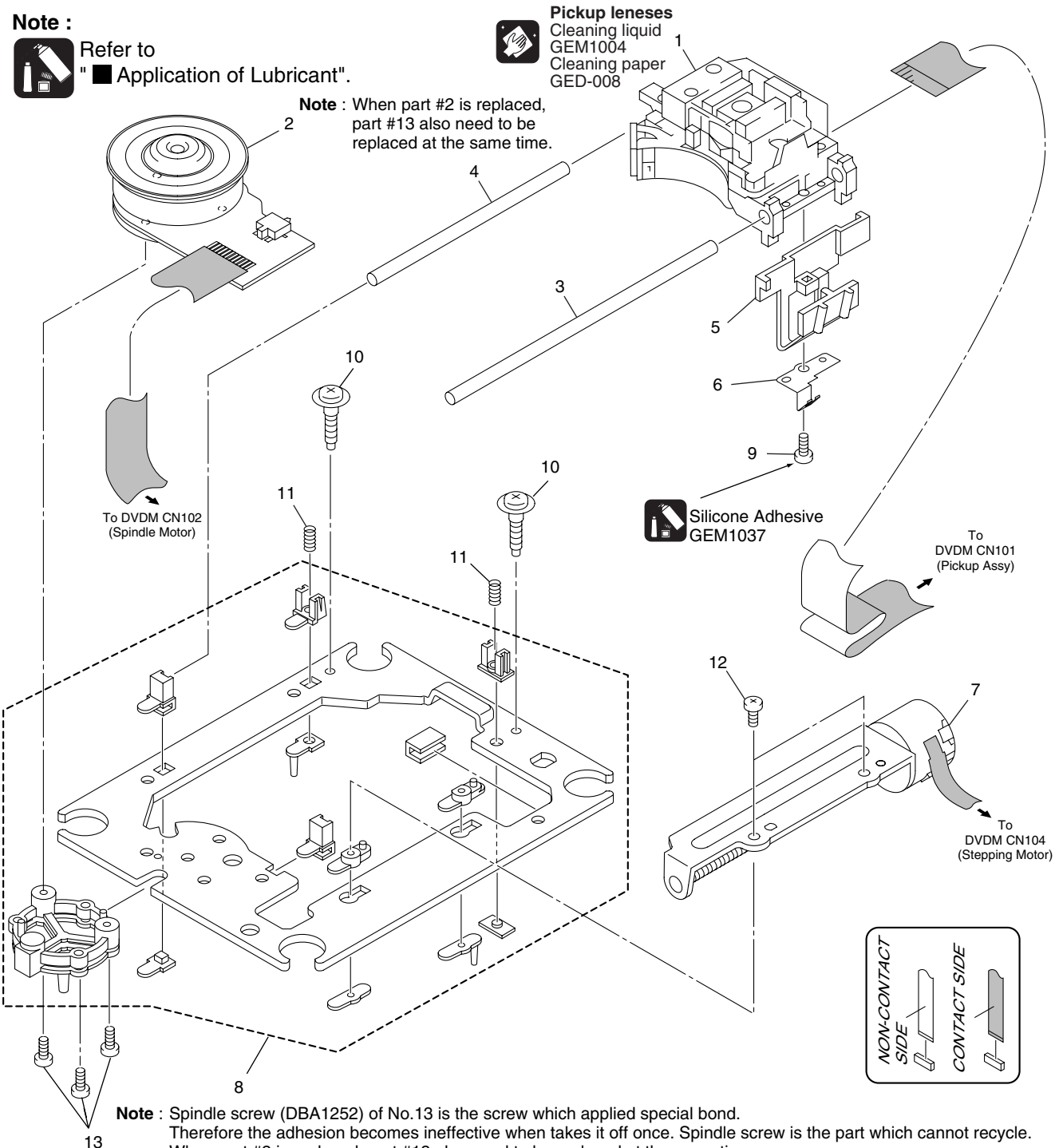


● Top View



● Bottom View

2.4 Traverse Mechanism Assy-S



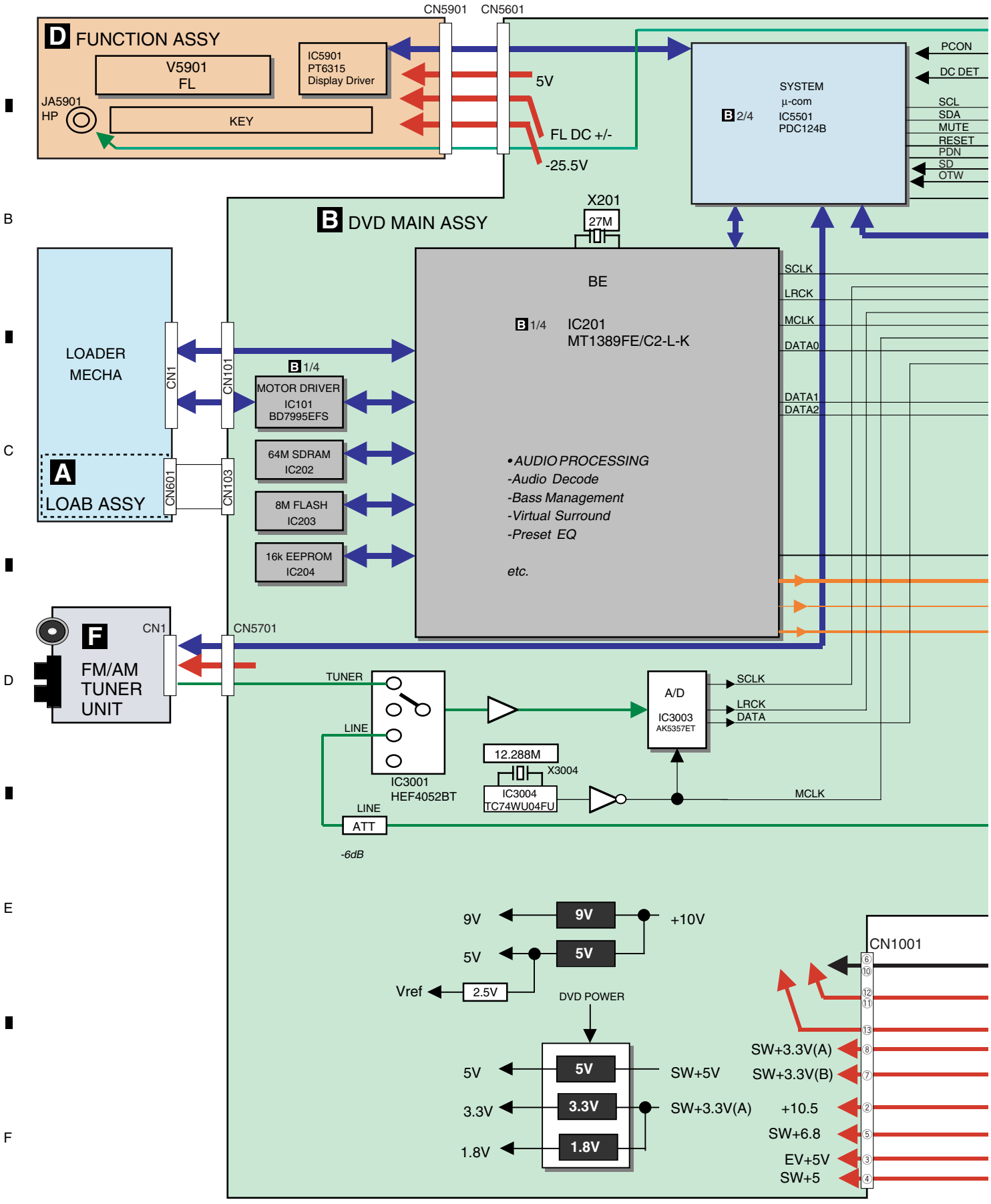
Note : Spindle screw (DBA1252) of No.13 is the screw which applied special bond.
Therefore the adhesion becomes ineffective when takes it off once. Spindle screw is the part which cannot recycle.
When part #2 is replaced, part #13 also need to be replaced at the same time.

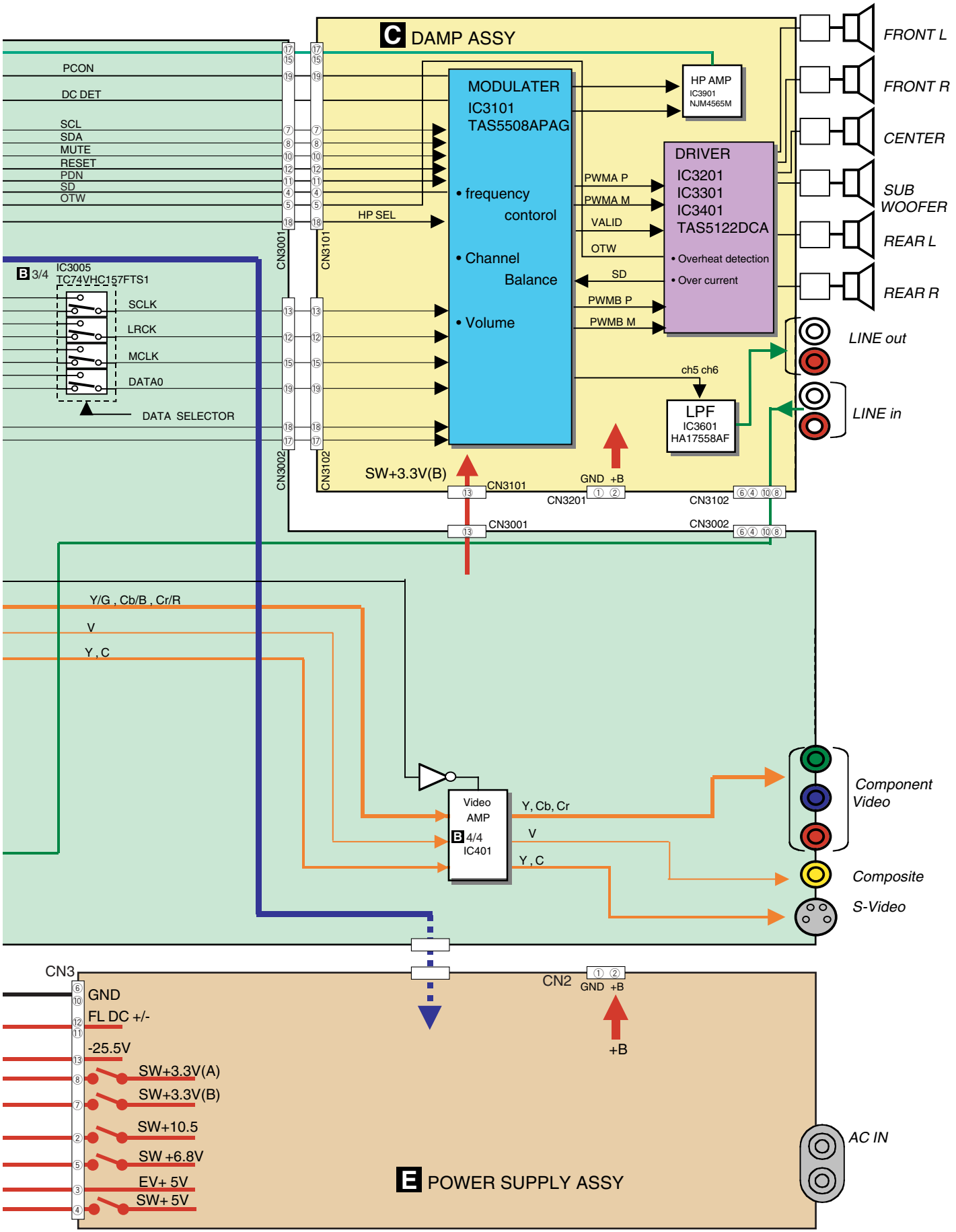
Traverse Mechanism Assy-S PARTS LIST

Mark	No.	Description	Part No.
⚠	1	05SD Pickup Assy-S	OXX8014
	2	Spindle Motor N200	DXM1197
	3	Guide Shaft VK1	DLA1940
	4	Sub Guide Shaft VK1	DLA1941
NSP	5	Joint VK1B	DNK4272
	6	Joint Spring VK1	DBK1235
	7	Stepping Motor VK1	DXM1201
NSP	8	Mechanism Frame VK1	DNK4160
	9	Precision Screw VK1	DBA1209
	10	Skew Screw VK1	DBA1211
	11	Skew Spring VK1	DBH1516
NSP	12	Stepping Screw	DBA1205
	13	Spindle Screw VK1(for Service)	DBA1252

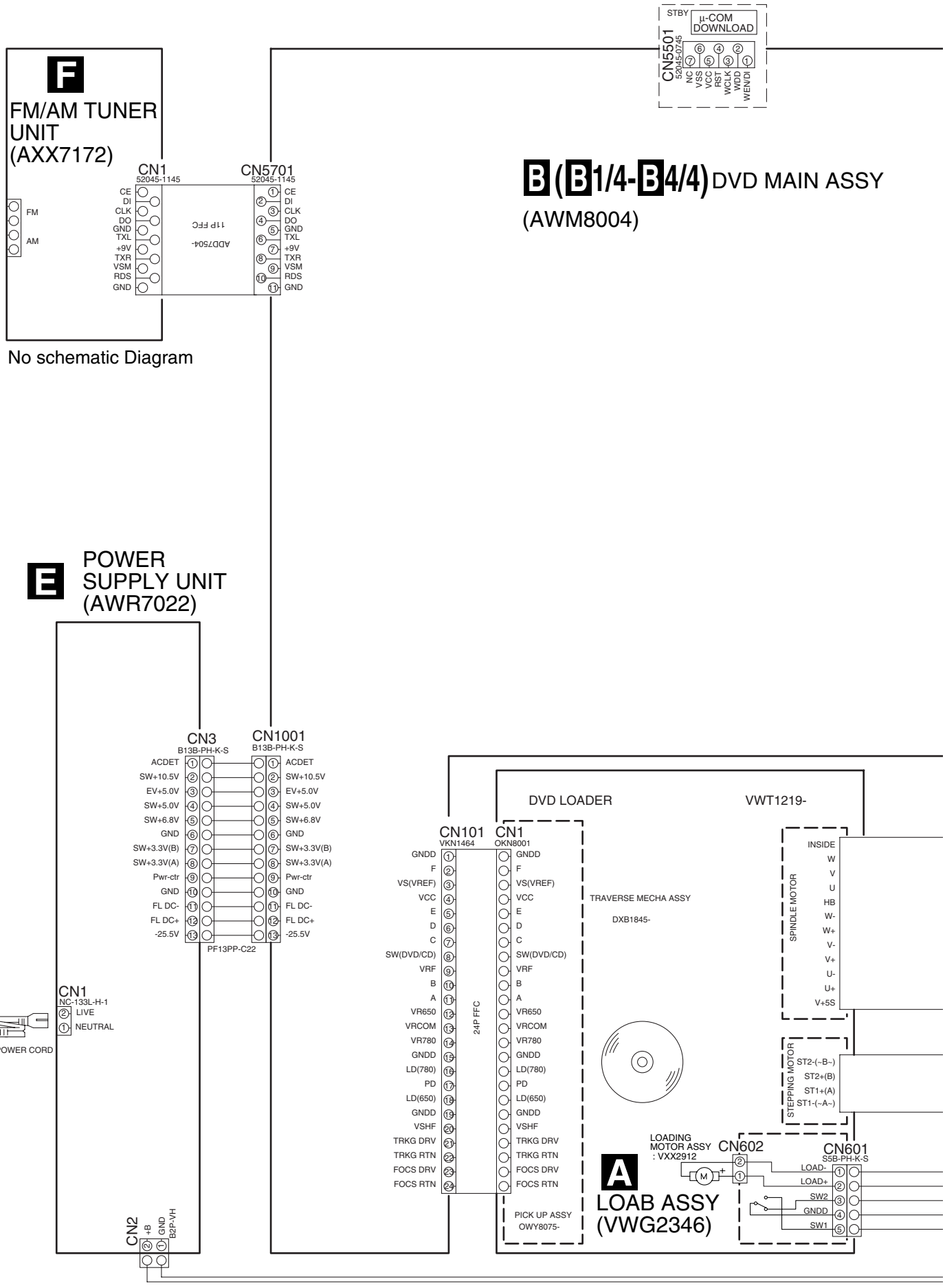
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

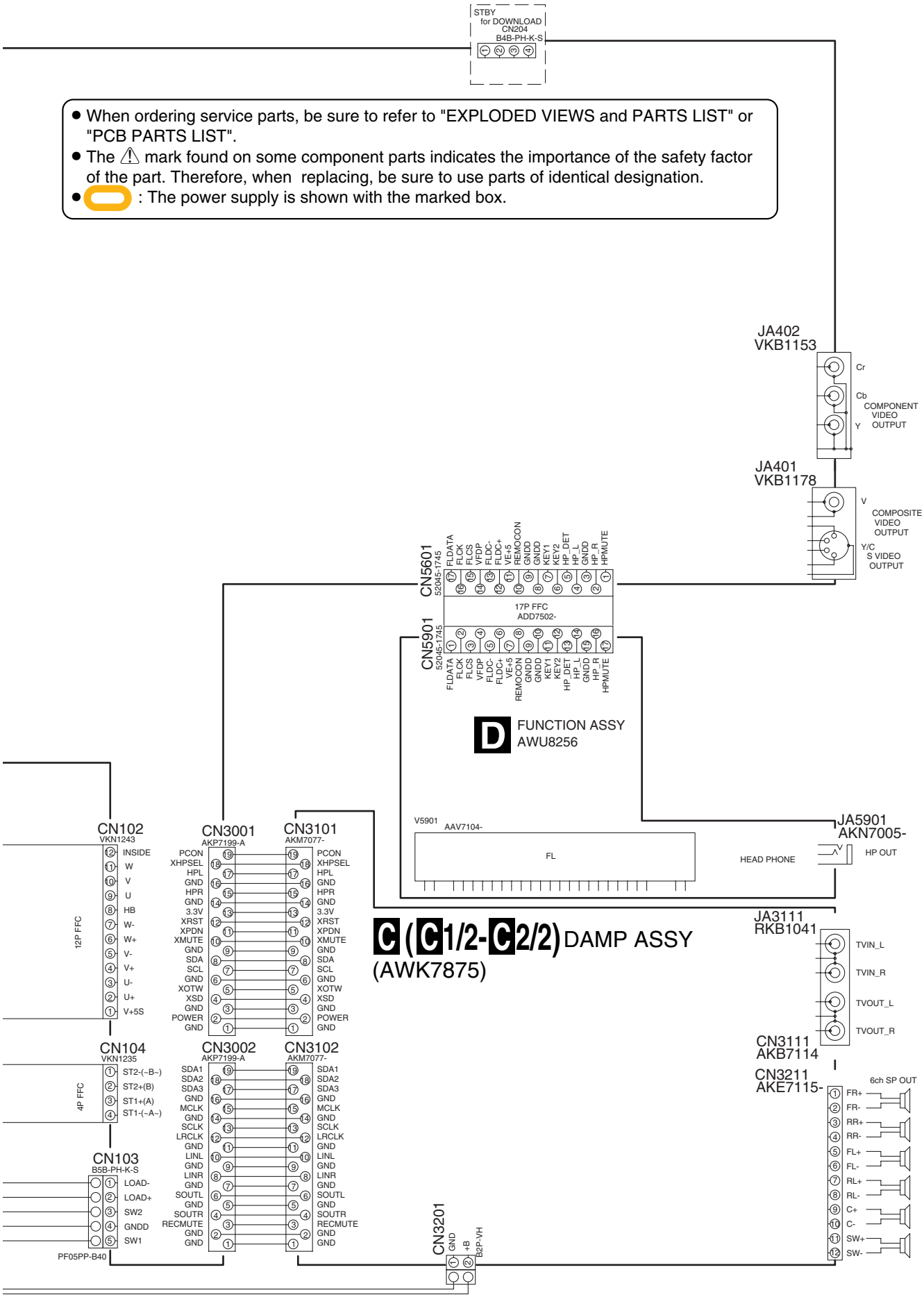



C DAMP ASSY
MODULATER
IC3101
TAS5508APAG
• frequency contorol
• Channel Balance
• Volume
HP AMP
IC3901
NJM4565M
DRIVER
IC3201
IC3301
IC3401
TAS5122DCA
• Overheat detection
• Over current
PWMA P
PWMA M
VALID
OTW
SD
PWMB P
PWMB M
HP SEL
ch5 ch6
LPF
IC3601
HA17558AF
PCON
DC DET
SCL
SDA
MUTE
RESET
PDN
SD
OTW
CN3001
CN3101
CN3002
CN3102
B 3/4
IC3005
TC74VHC157FTS1
SCLK
LRCK
MCLK
DATA0
DATA SELECTOR
SW+3.3V(B)
GND +B
CN3201
CN3101
CN3001
CN3102
CN3002
FRONT L
FRONT R
CENTER
SUB WOOFER
REAR L
REAR R
LINE out
LINE in
Y/G , Cb/B , Cr/R
V
Y , C
Video AMP
B 4/4
IC401
Y, Cb, Cr
V
Y , C
Component Video
Composite
S-Video
CN3
GND
FL DC +/-
-25.5V
SW+3.3V(A)
SW+3.3V(B)
SW+10.5
SW +6.8V
EV+ 5V
SW+ 5V
CN2
GND +B
+B
E POWER SUPPLY ASSY
AC IN

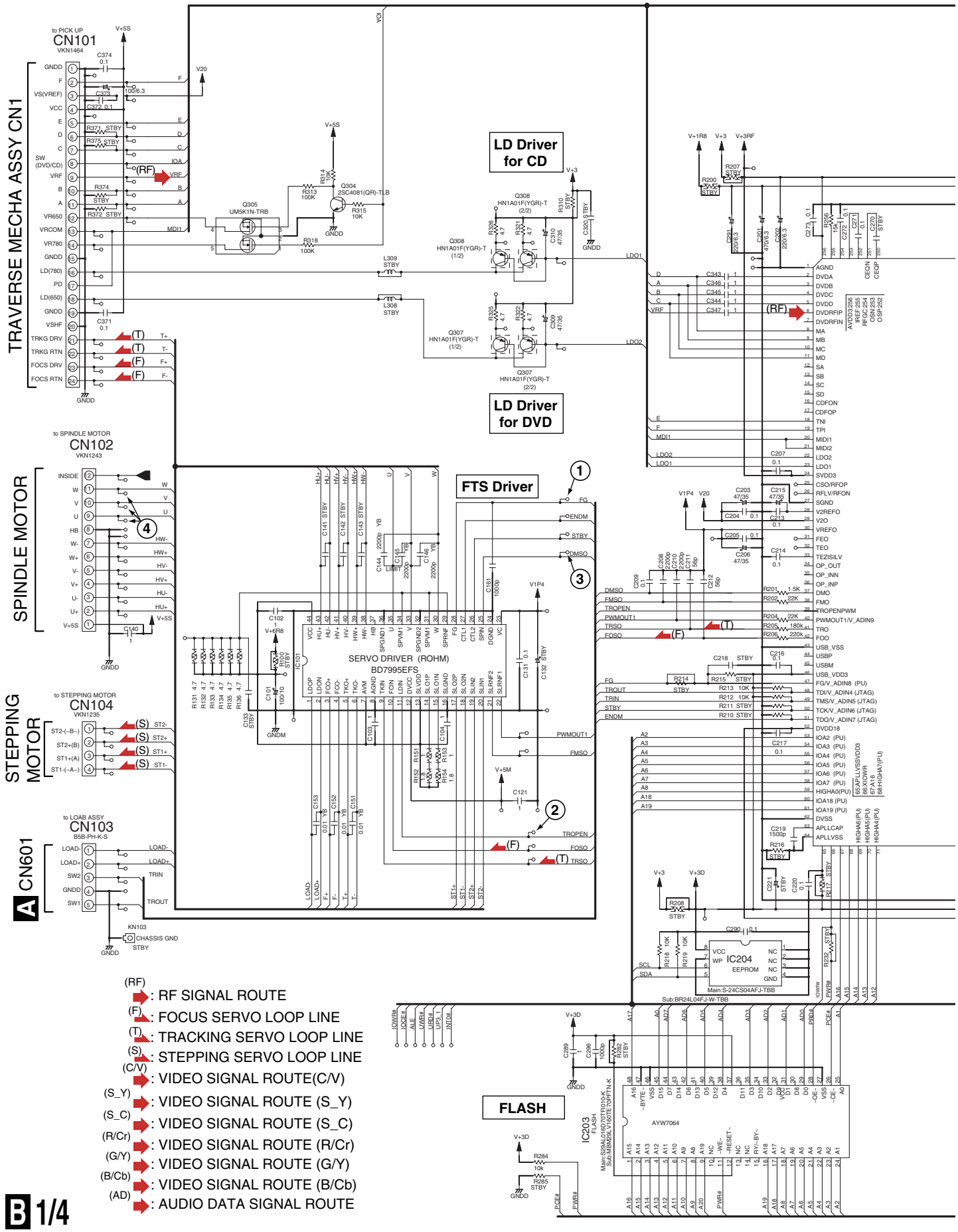
3.2 LOAB ASSY and OVERALL WIRING CONNECTION DIAGRAM



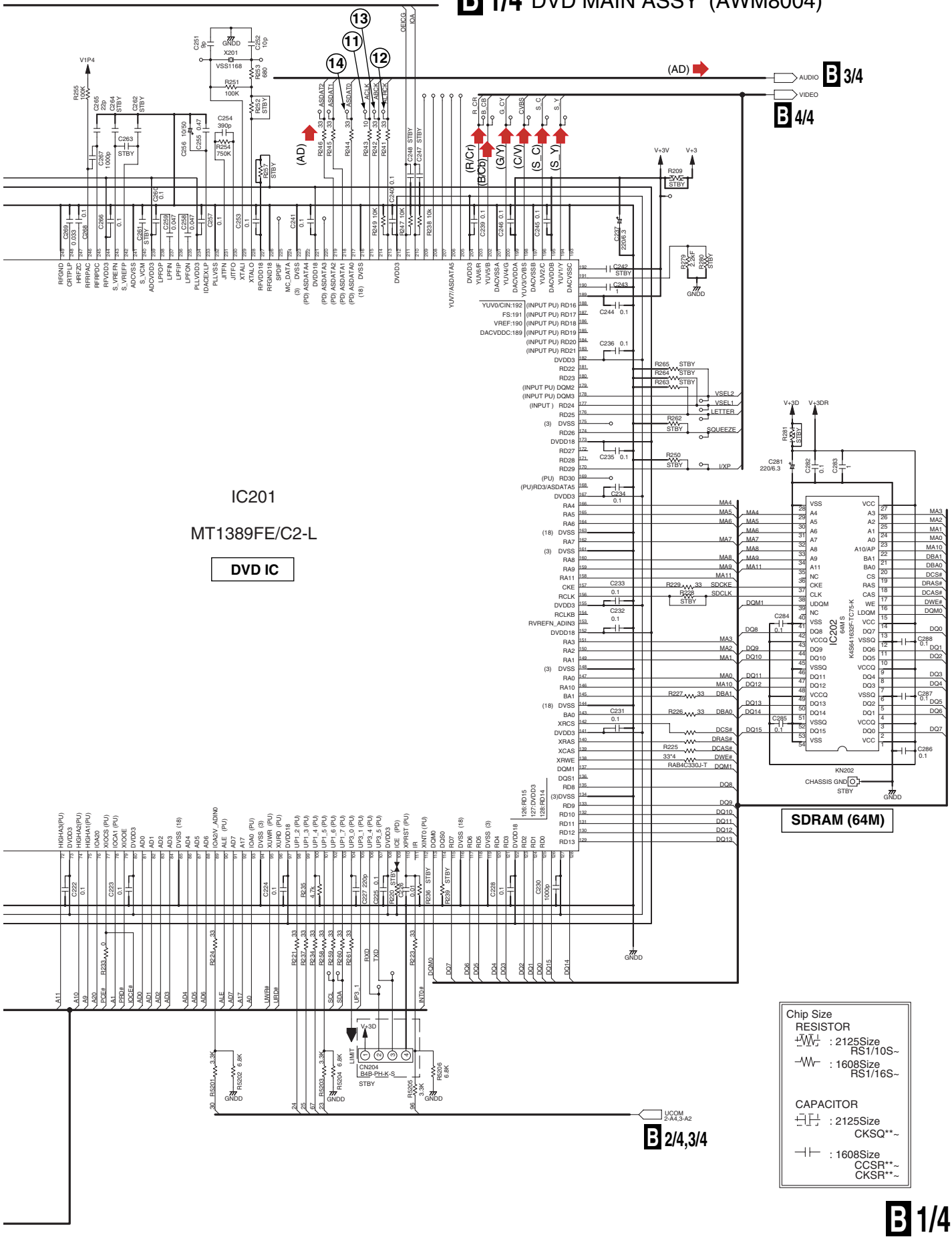
- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- : The power supply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



3.3 DVD MAIN ASSY (1/4)

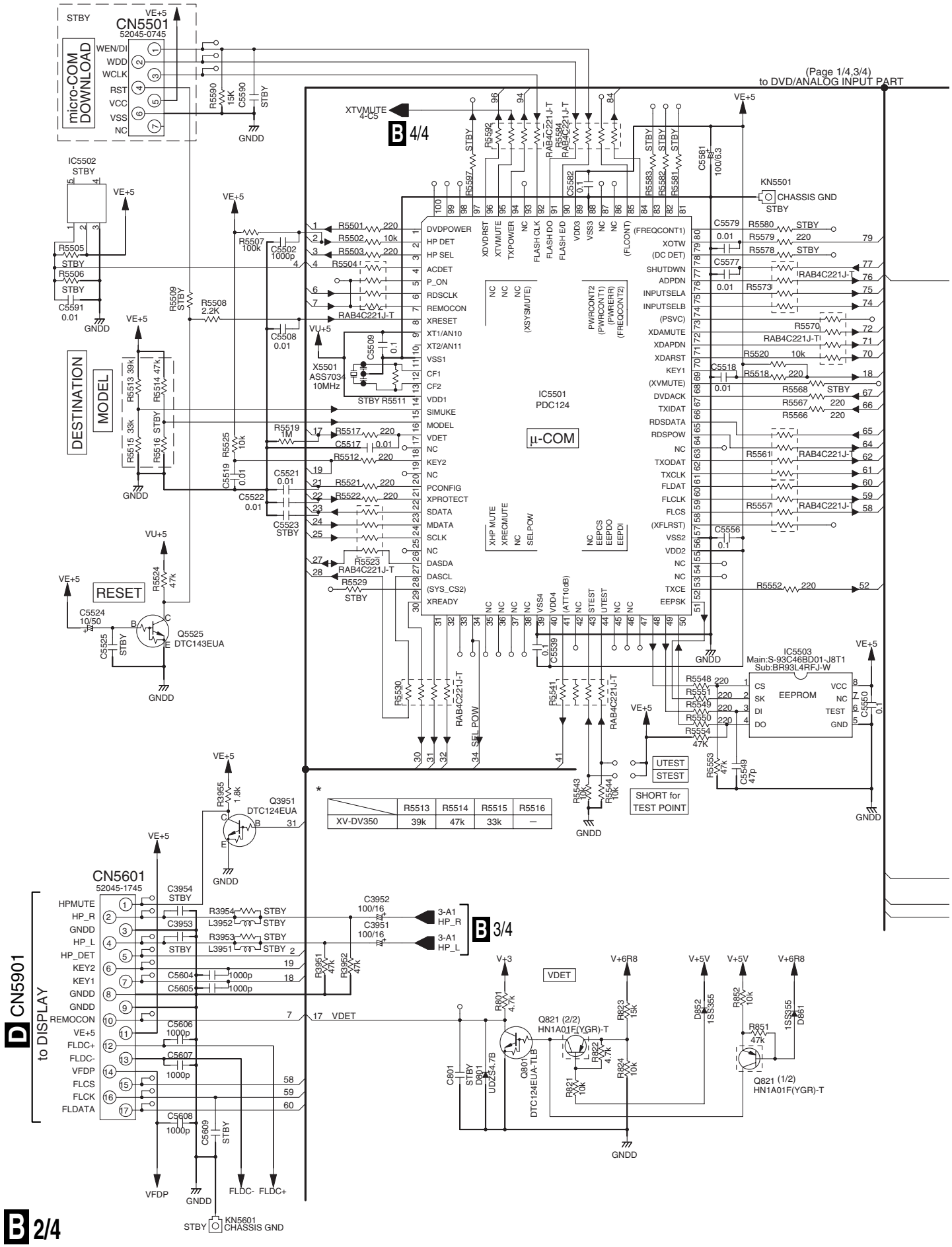


B 1/4 DVD MAIN ASSY (AWM8004)



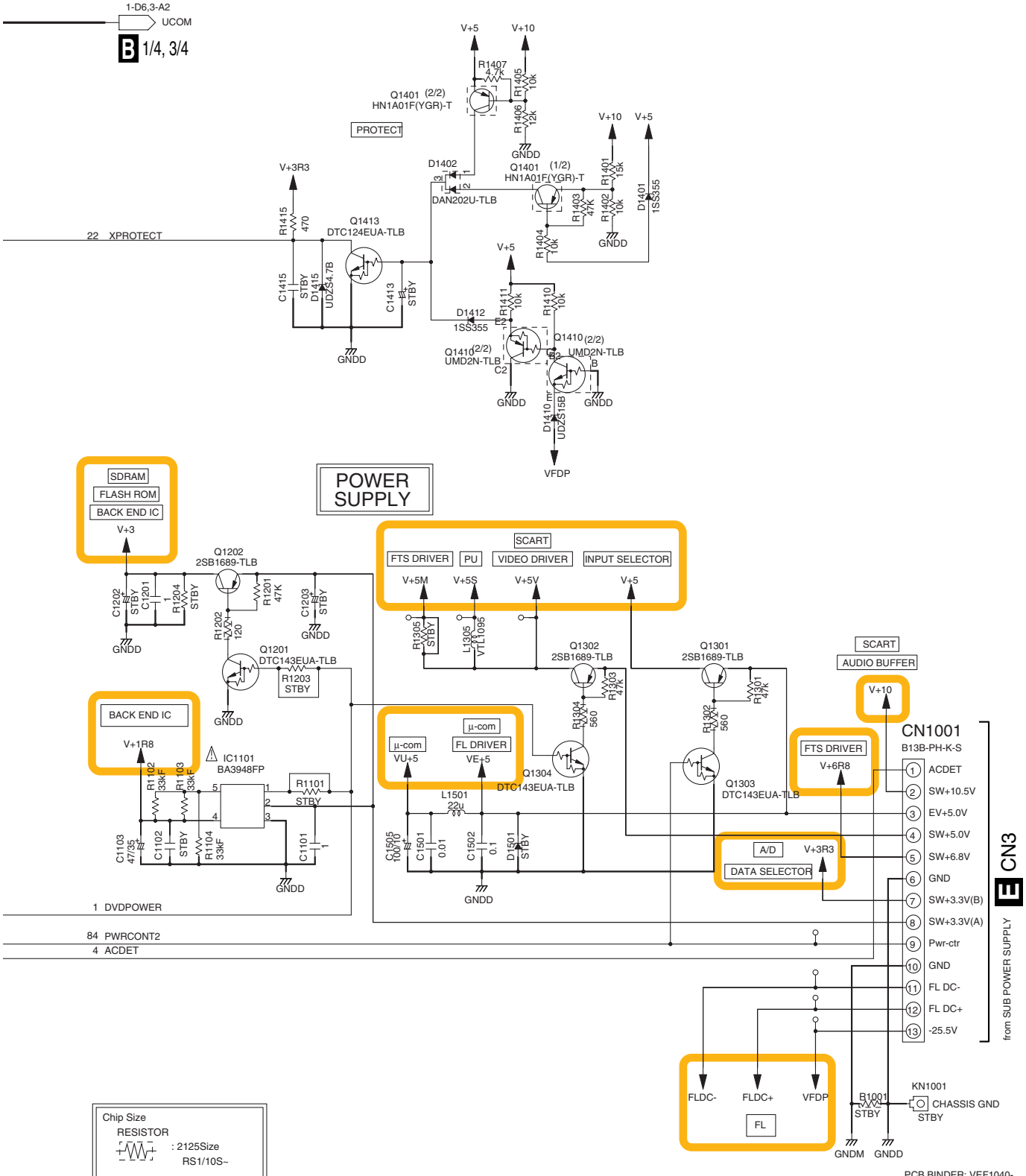
B 1/4

3.4 DVD MAIN ASSY (2/4)



	R5513	R5514	R5515	R5516
XV-DV350	39k	47k	33k	—

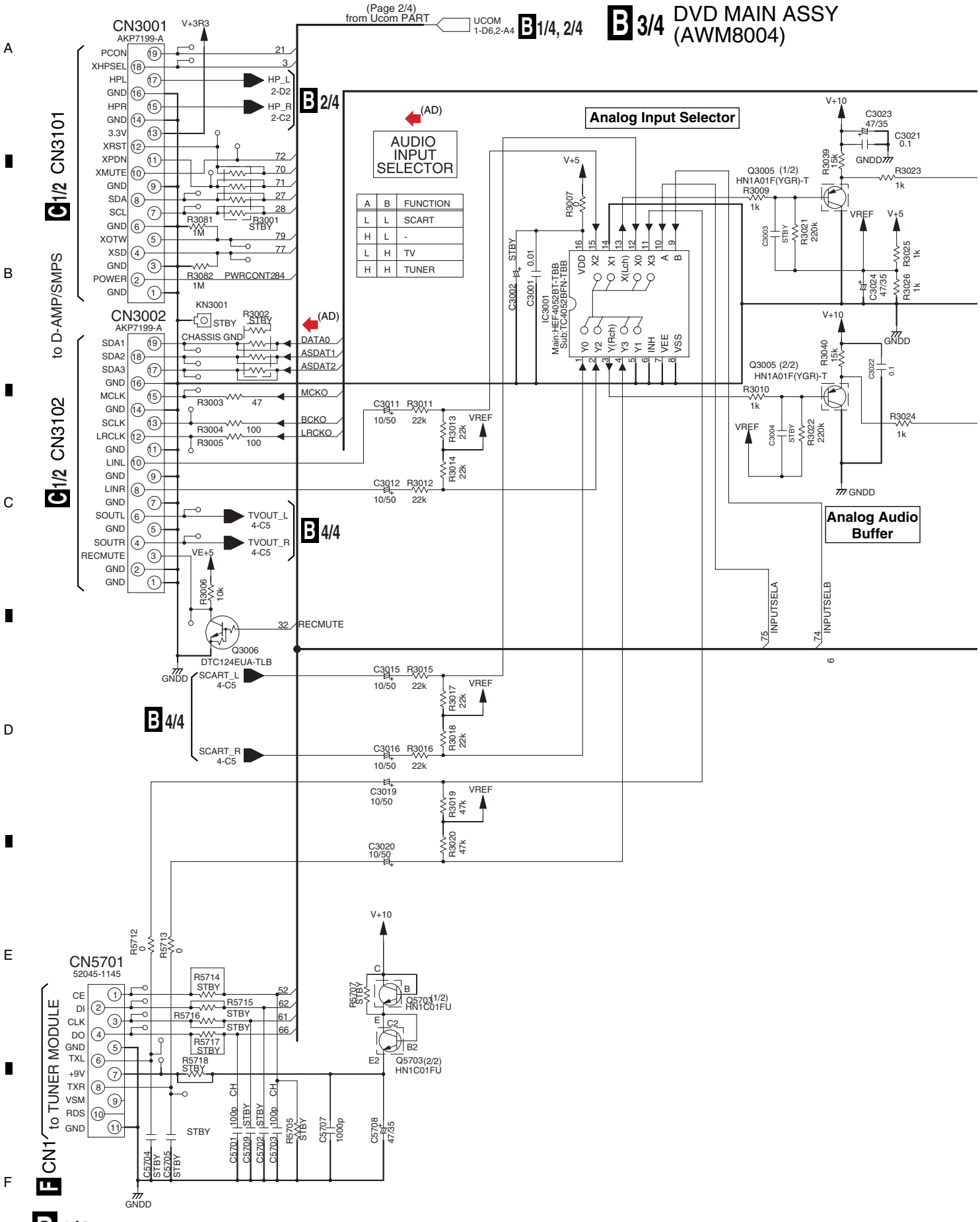
B 2/4 DVD MAIN ASSY (AWM8004)

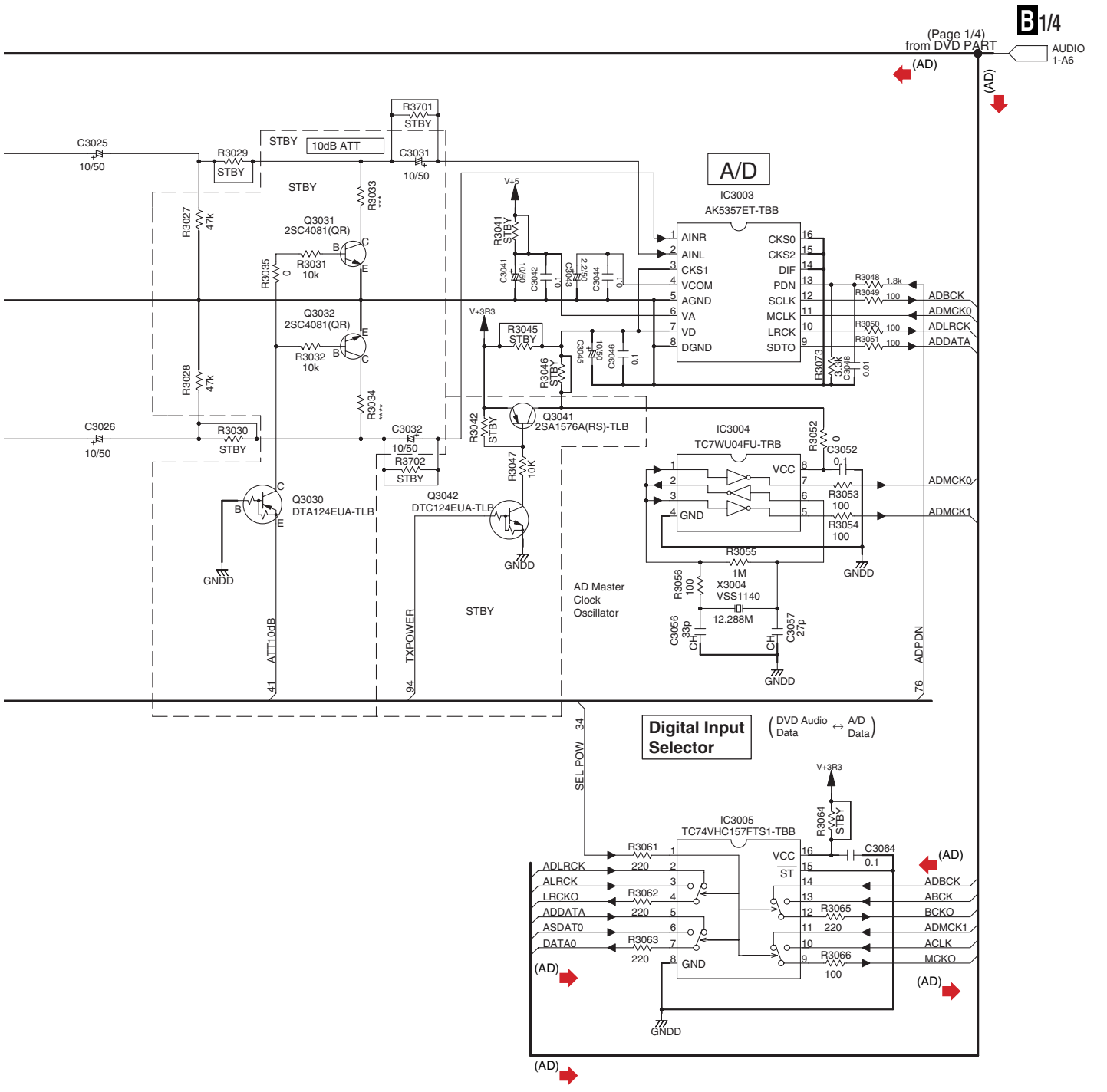


PCB BINDER: VEF1040-

B 2/4

3.5 DVD MAIN ASSY (3/4)

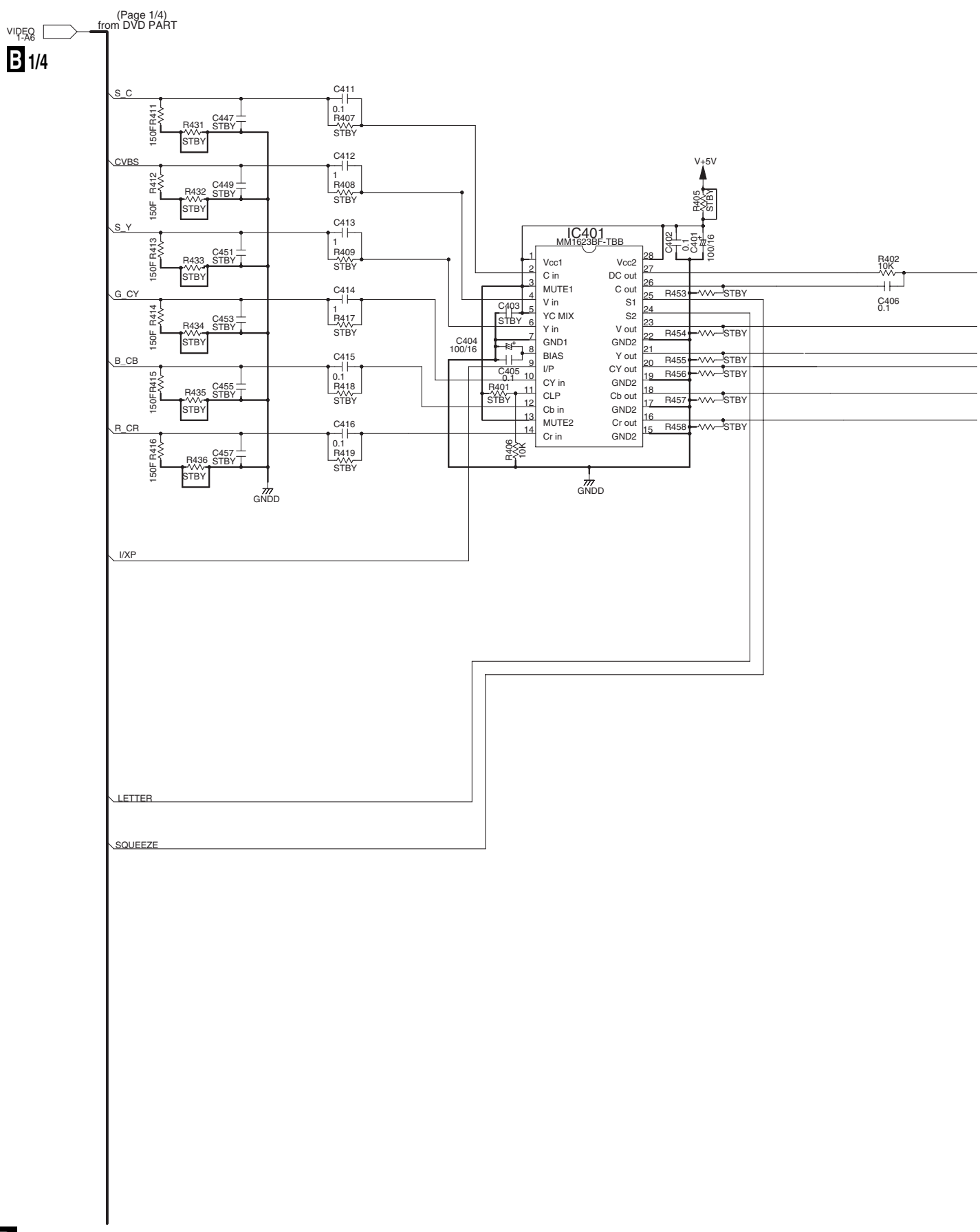




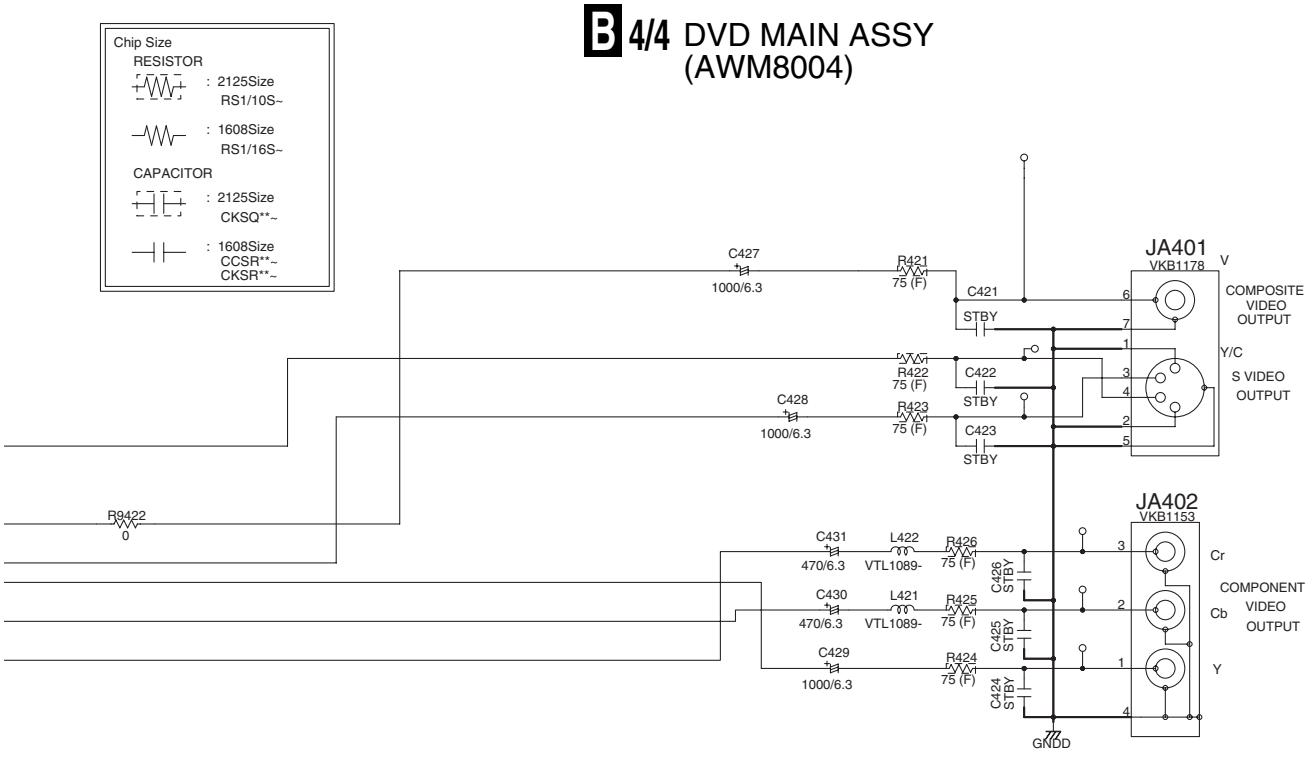
: AUDIO DATA SIGNAL ROUTE

Chip Size
RESISTOR
: 2125Size RS1/10S~
: 1608Size RS1/16S~
CAPACITOR
: 2125Size CKSQ**~
: 1608Size CCSR**~ CKSR**~

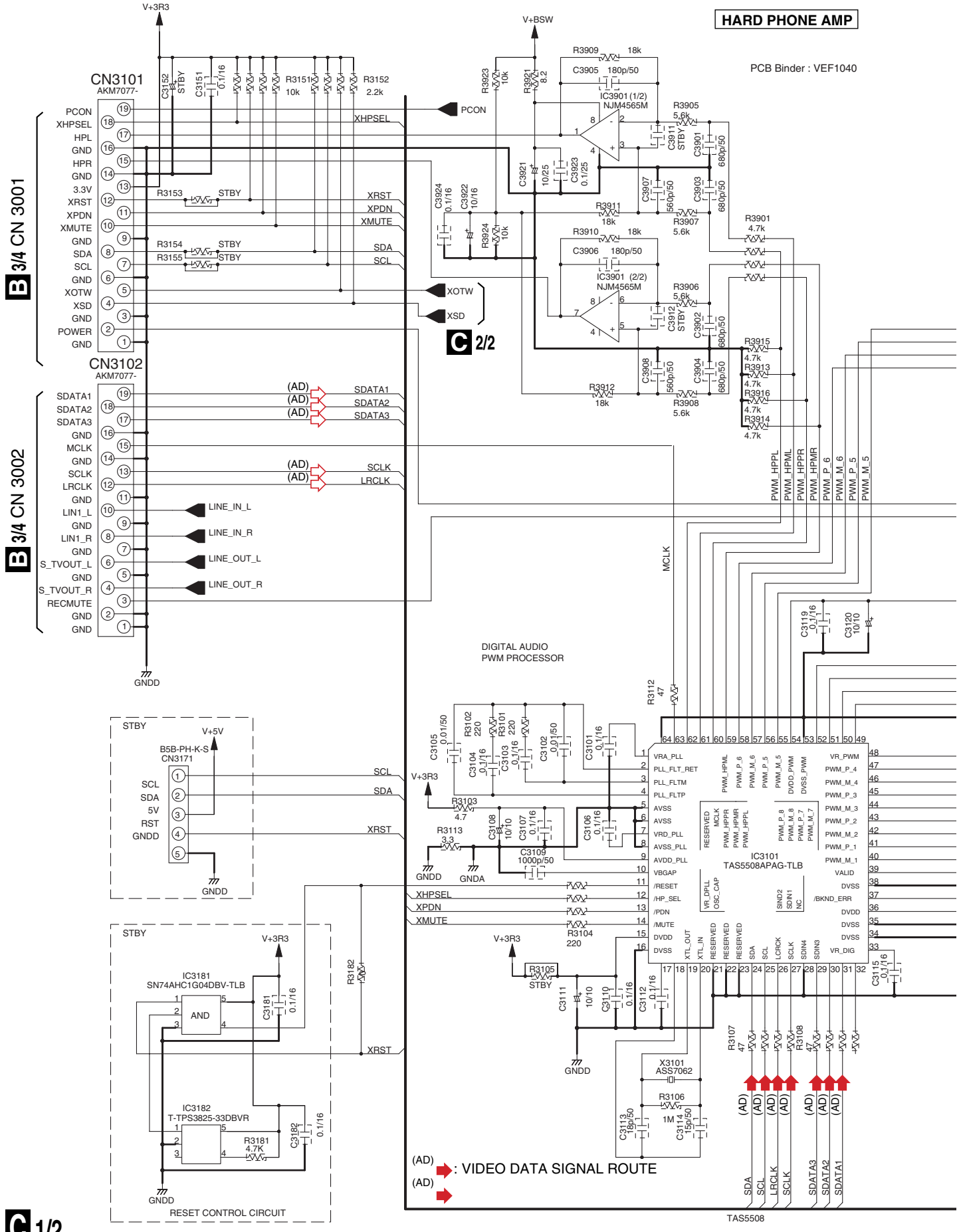
3.6 DVD MAIN ASSY (4/4)



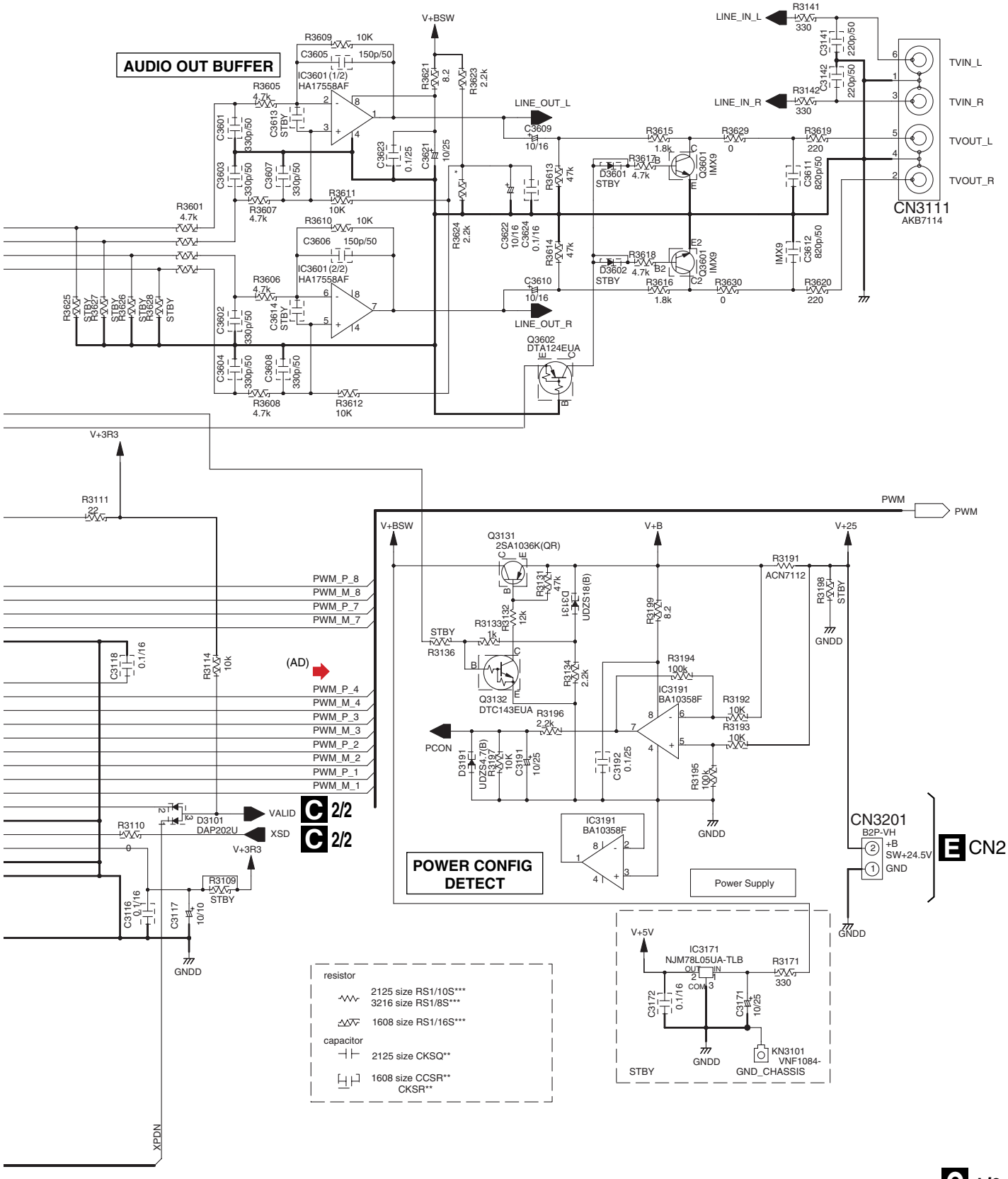
B 4/4 DVD MAIN ASSY (AWM8004)



3.7 DAMP ASSY (1/2)

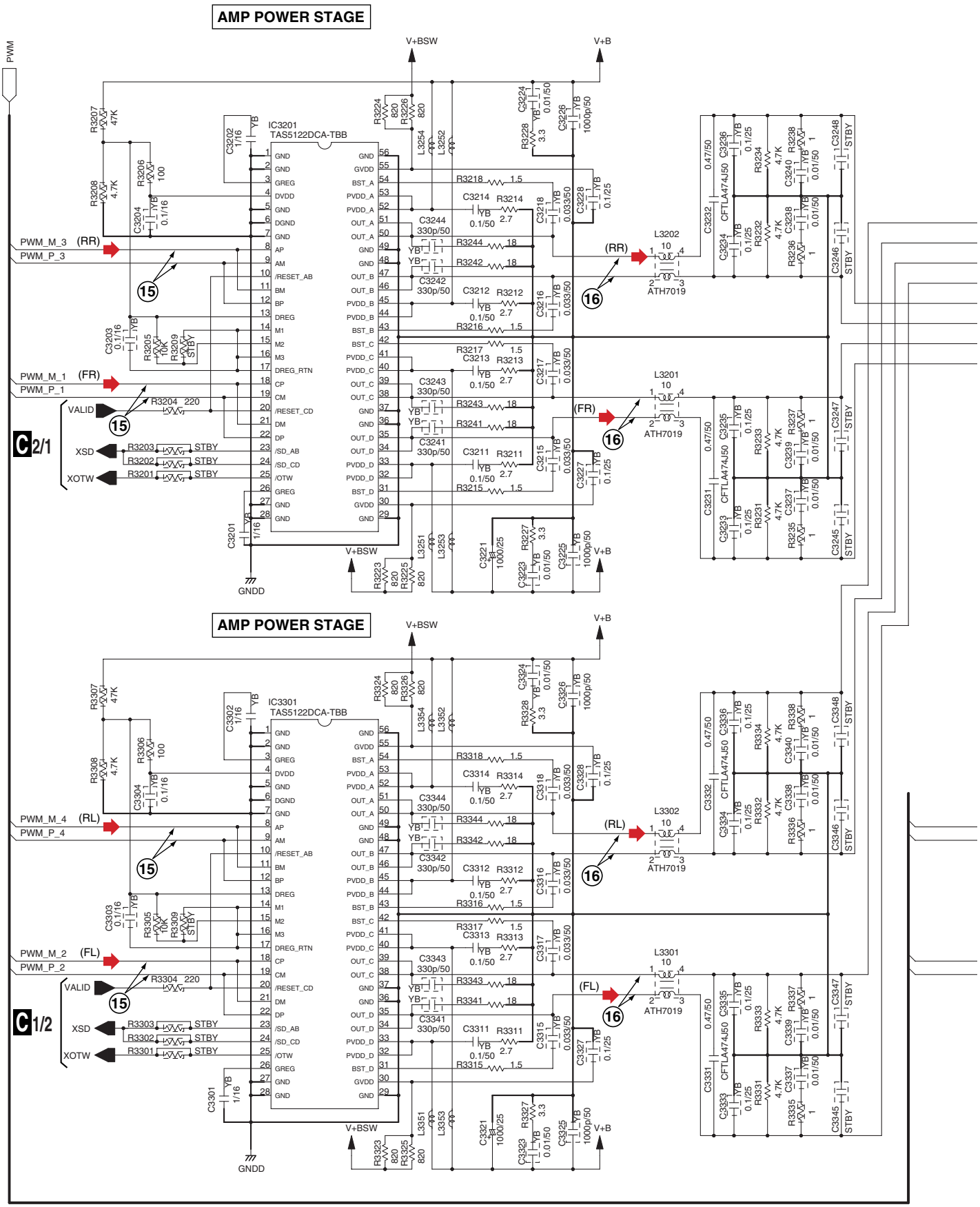


C 1/2 D-AMP ASSY (AWK7875)

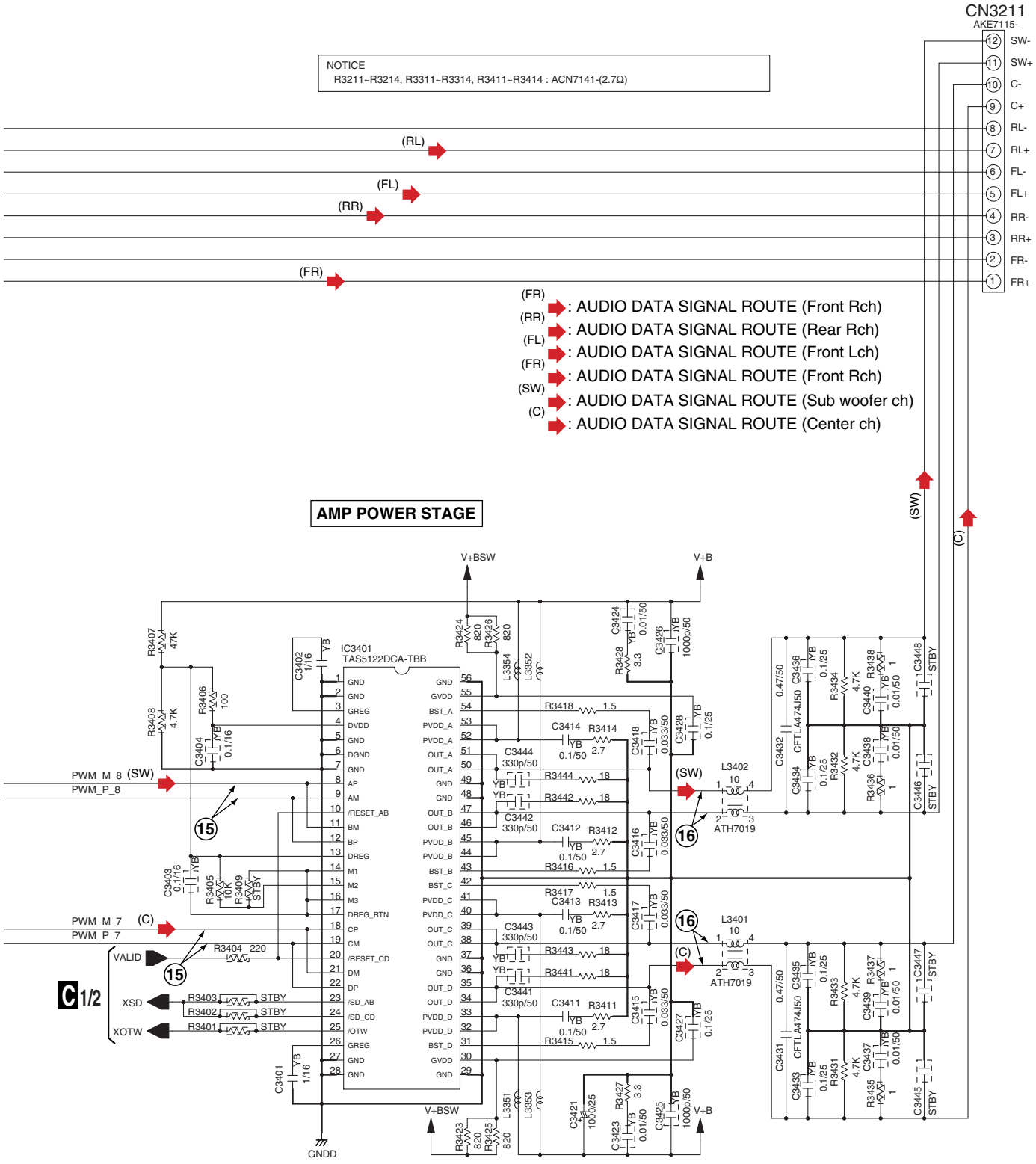


C 1/2

3.8 DAMP ASSY (2/2)

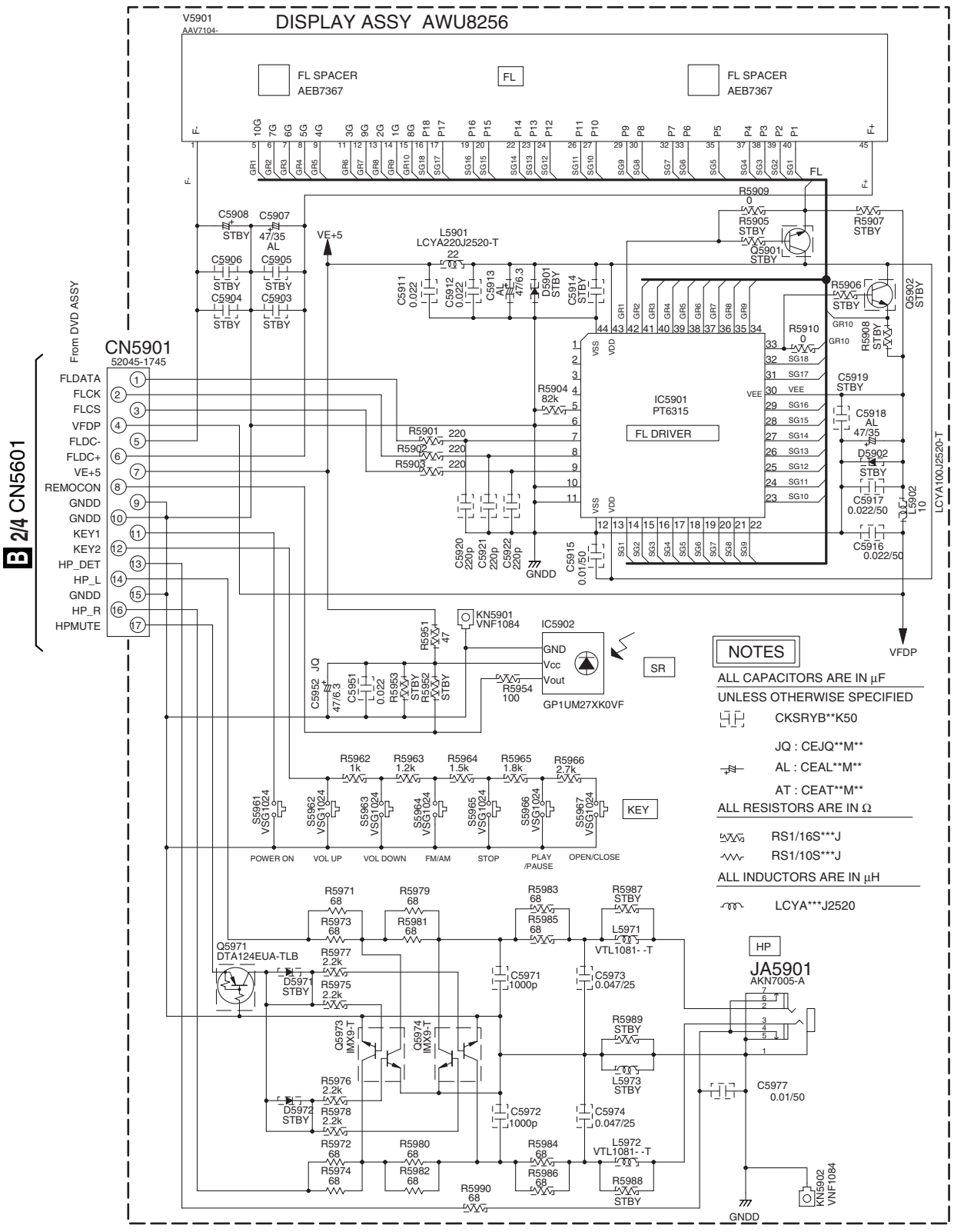


C 2/2 D-AMP ASSY (AWK7875)



3.9 FUNCTION ASSY

D FUNCTION ASSY (AWU8256)



FUNCTION ASSY
S5961 : POWER ON
S5962 : VOL UP
S5963 : VOL DOWN
S5964 : FM/AM
S5965 : STOP
S5966 : PLAY/PAUSE
S5967 : OPEN/CLOSE

A

B

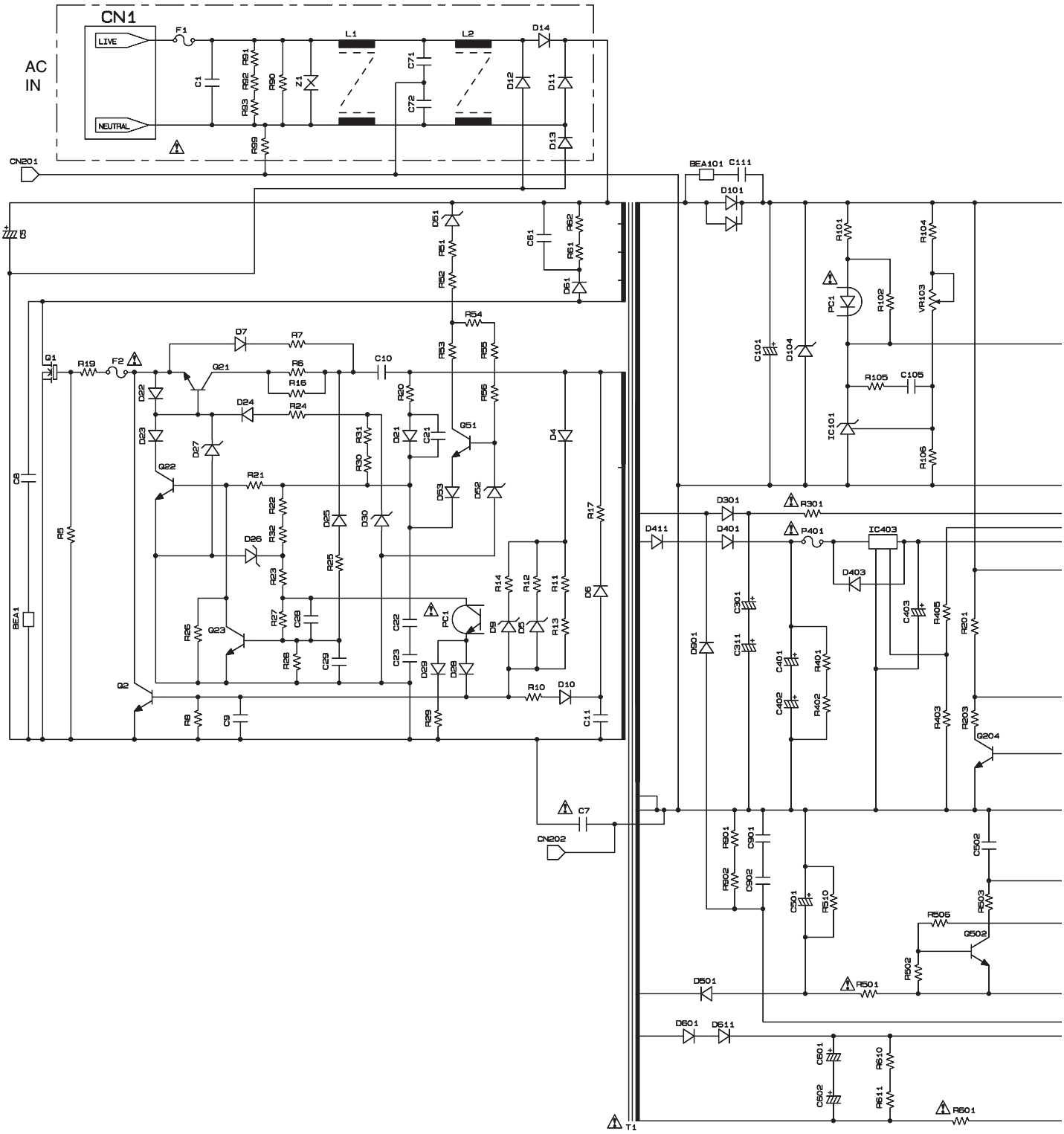
C

D

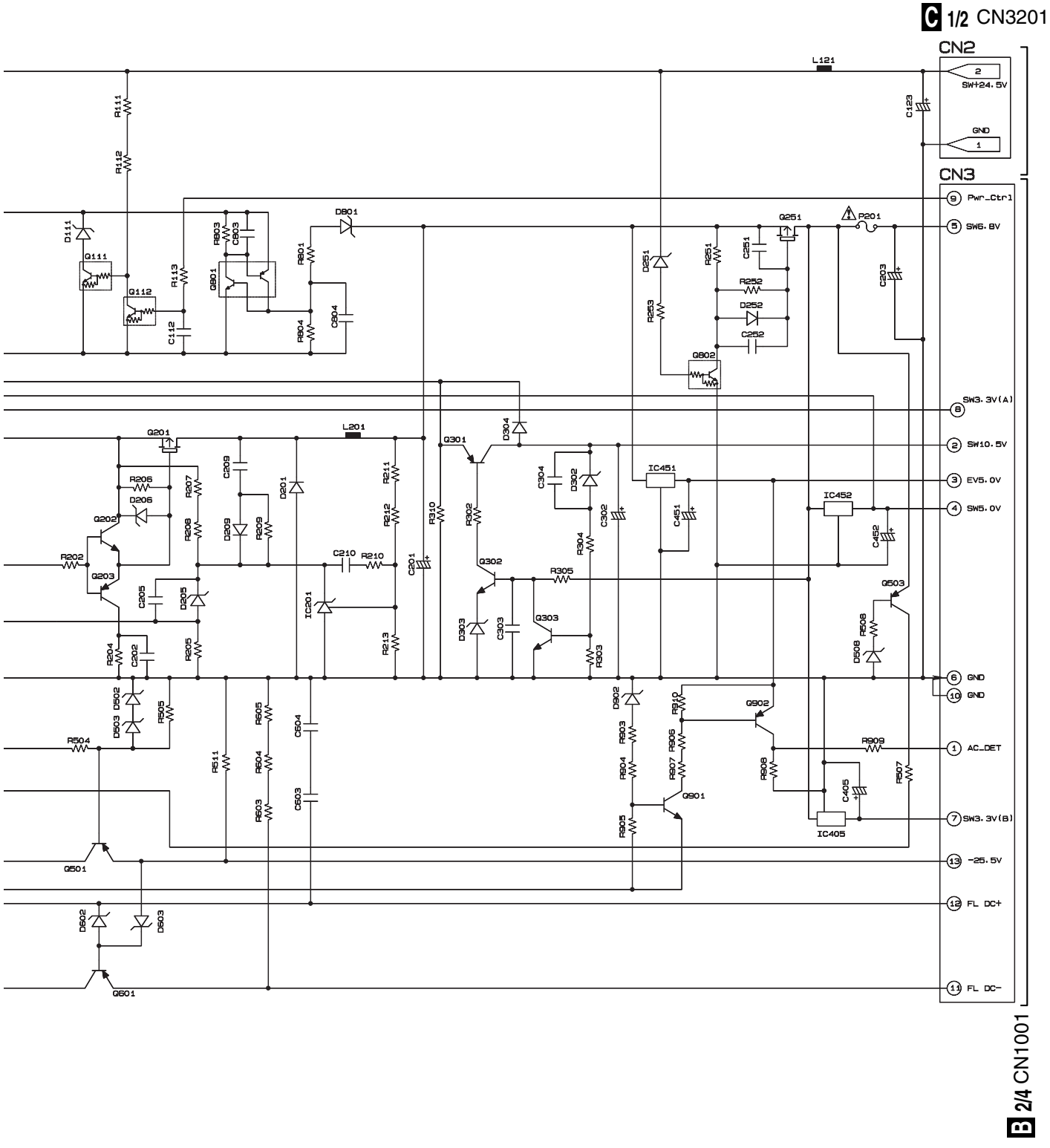
E

F

3.10 POWER SUPPLY UNIT



E POWER SUPPLY UNIT (AWR7022)



3.11 WAVEFORMS

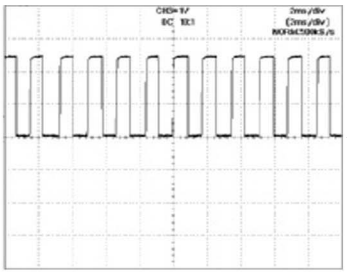
Note : The encircled numbers denote measuring point in the schematic diagram.

B DVDM ASSY

Measurement condition ;

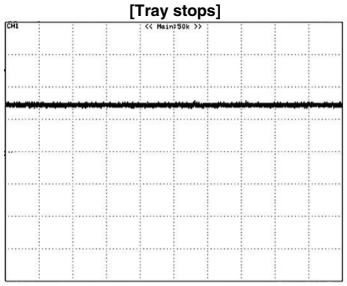
No. 1 to 10 : reference A1 (DVD), T2-chp 19, Color-bar
No. 11 to 14 : reference A1 (DVD), T1

1 **IC201-pin47 [FG]**
V: 1V/div. H: 2msec/div.

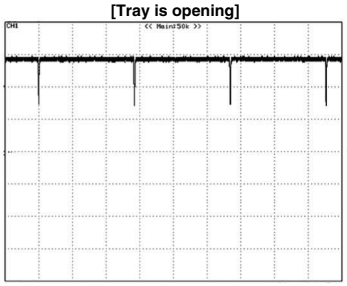


2 **IC201-pin 39 [TROPENPWM]**
V: 1V/div. H: 5µsec/div.

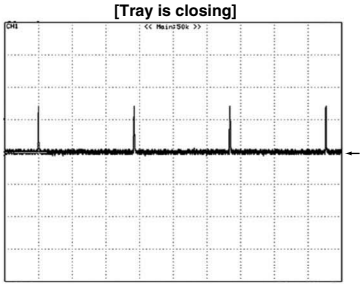
[Tray stops]



[Tray is opening]

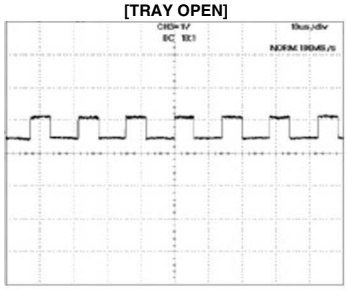


[Tray is closing]



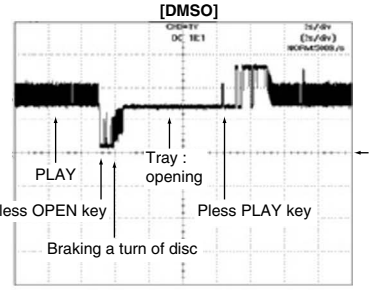
3 **IC201-pin37 [DMSO]**

[TRAY OPEN] V: 1V/div. H: 10µsec/div.

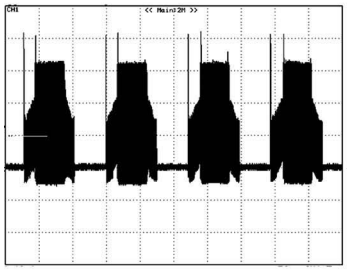


[DVD PLAY] V: 1V/div. H: 10µsec/div.

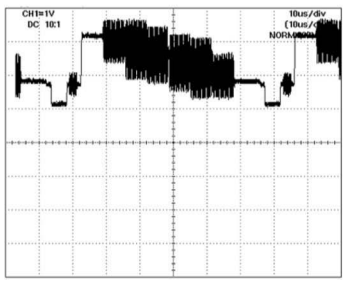
[DMSO] V: 1V/div. H: 2sec/div.



4 **CN102-pin 11, 10, 9 (IC101-pin 14, 13, 12) [SPINDLE (WVU)]**
V: 2V/div. H: 2msec/div.

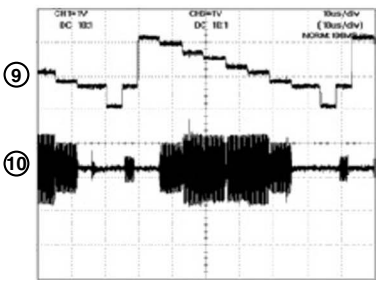


8 **IC401-pin23 [CompositeVideo Out]**
V: 1V/div. H: 10µsec/div.

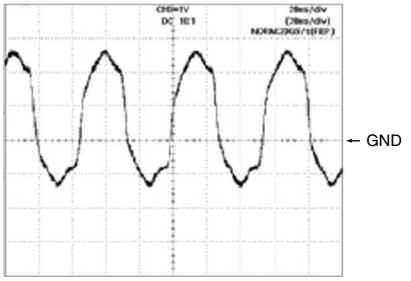


9 **IC401-pin21 [S VIDEO OUT - Y]**
V: 1V/div. H: 10µsec/div.

10 **IC401-pin26 [S VIDEO OUT - C]**
V: 1V/div. H: 10µsec/div.



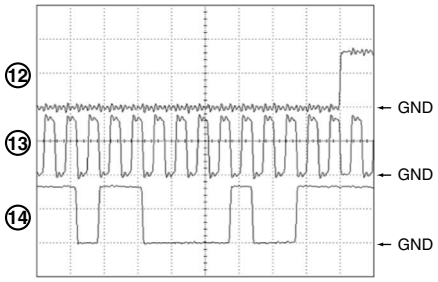
⑪ **IC201-pin215 [ACLK]**
V: 1V/div. H: 20nsec/div.



⑫ **IC201-pin210 [ALRCK]**
V: 2V/div. H: 500nsec/div.

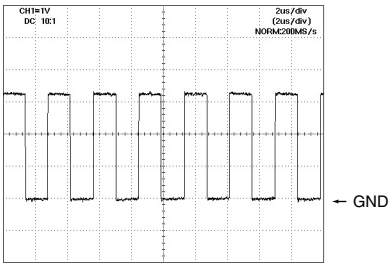
⑬ **IC201-pin208 [ABCK]**
V: 2V/div. H: 500nsec/div.

⑭ **IC201-pin209 [ASDATA0]**
V: 2V/div. H: 500sec/div.

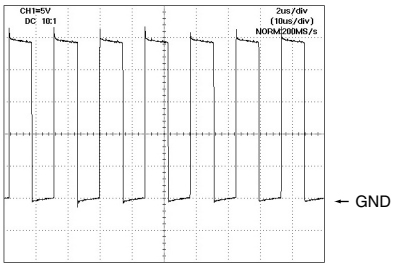


C DAMP ASSY

⑮ **IC3201, IC3301, IC3401 [PWM_M, PWM_P]**
V: 1V/div. H: 2µsec/div.



⑯ **IC3201, IC3301, IC3401 [OUT_A, B, C, D]**
V: 5V/div. H: 2µsec/div.



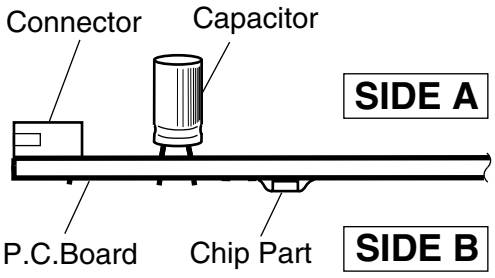
4. PCB CONNECTION DIAGRAM

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.

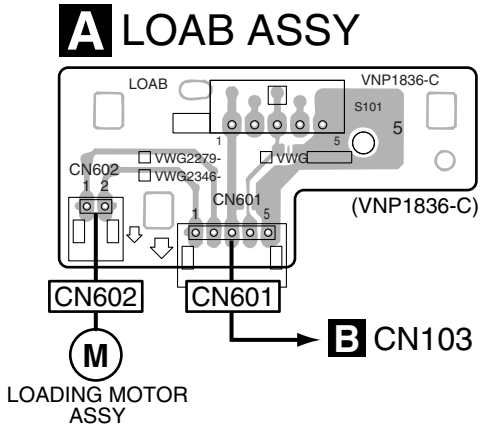
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

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.

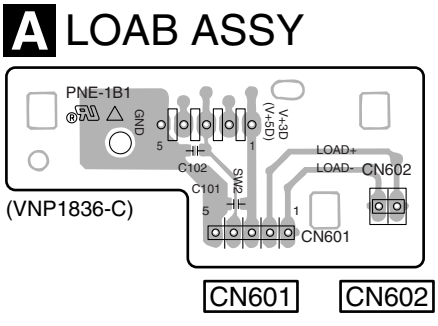


4.1 LOAB ASSY

SIDE A



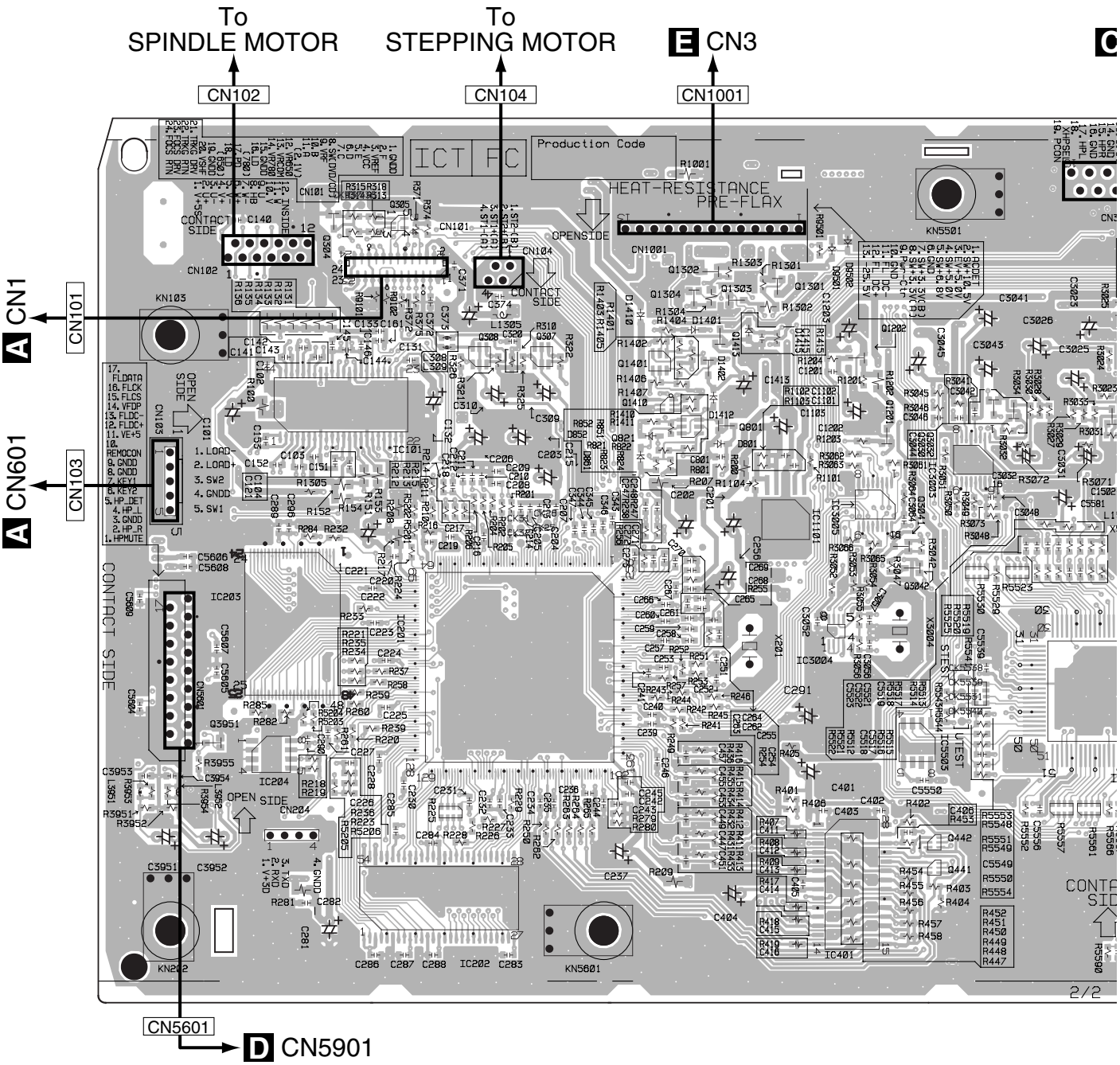
SIDE B



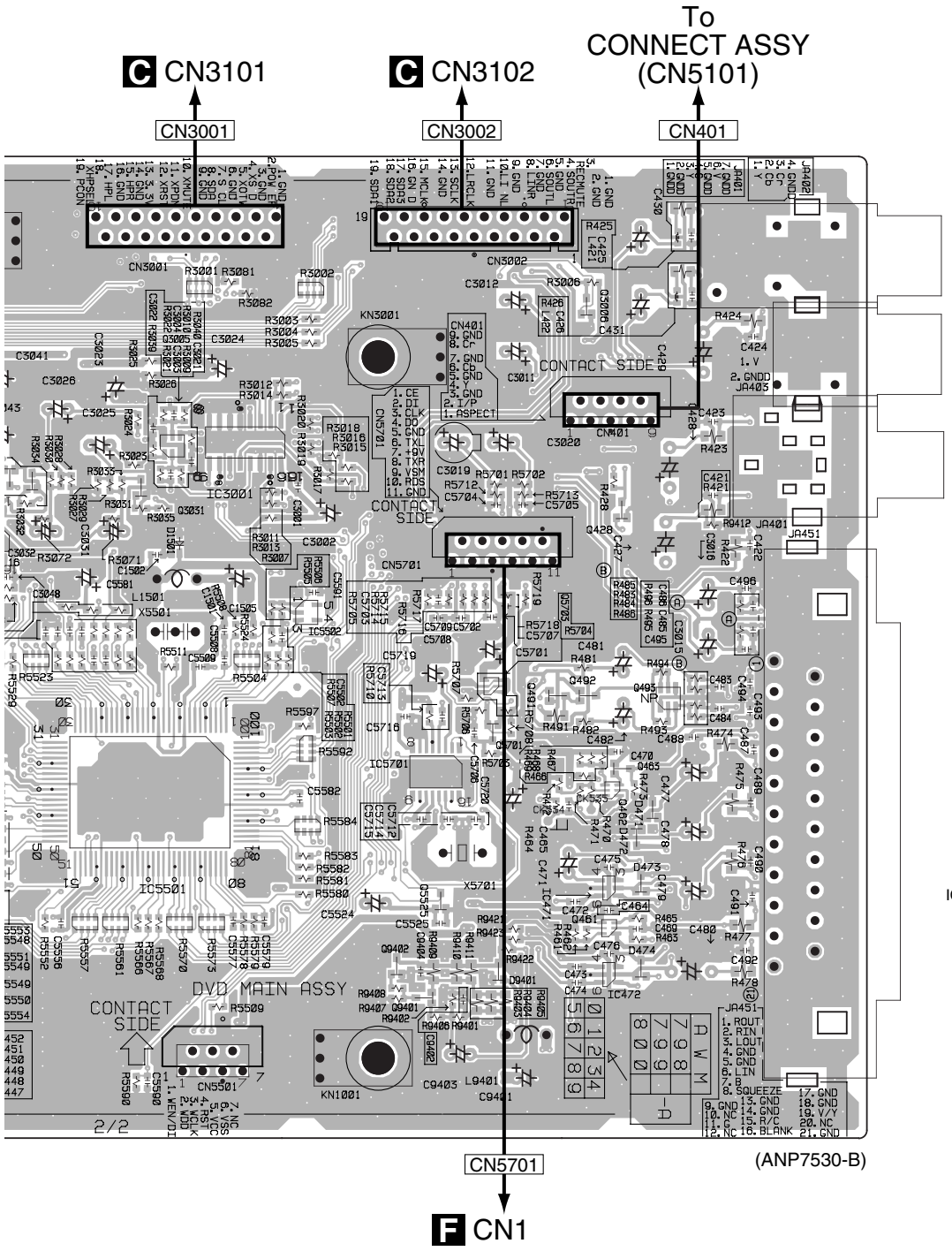
4.2 DVD MAIN ASSY

SIDE A

B DVD MAIN ASSY



SIDE A



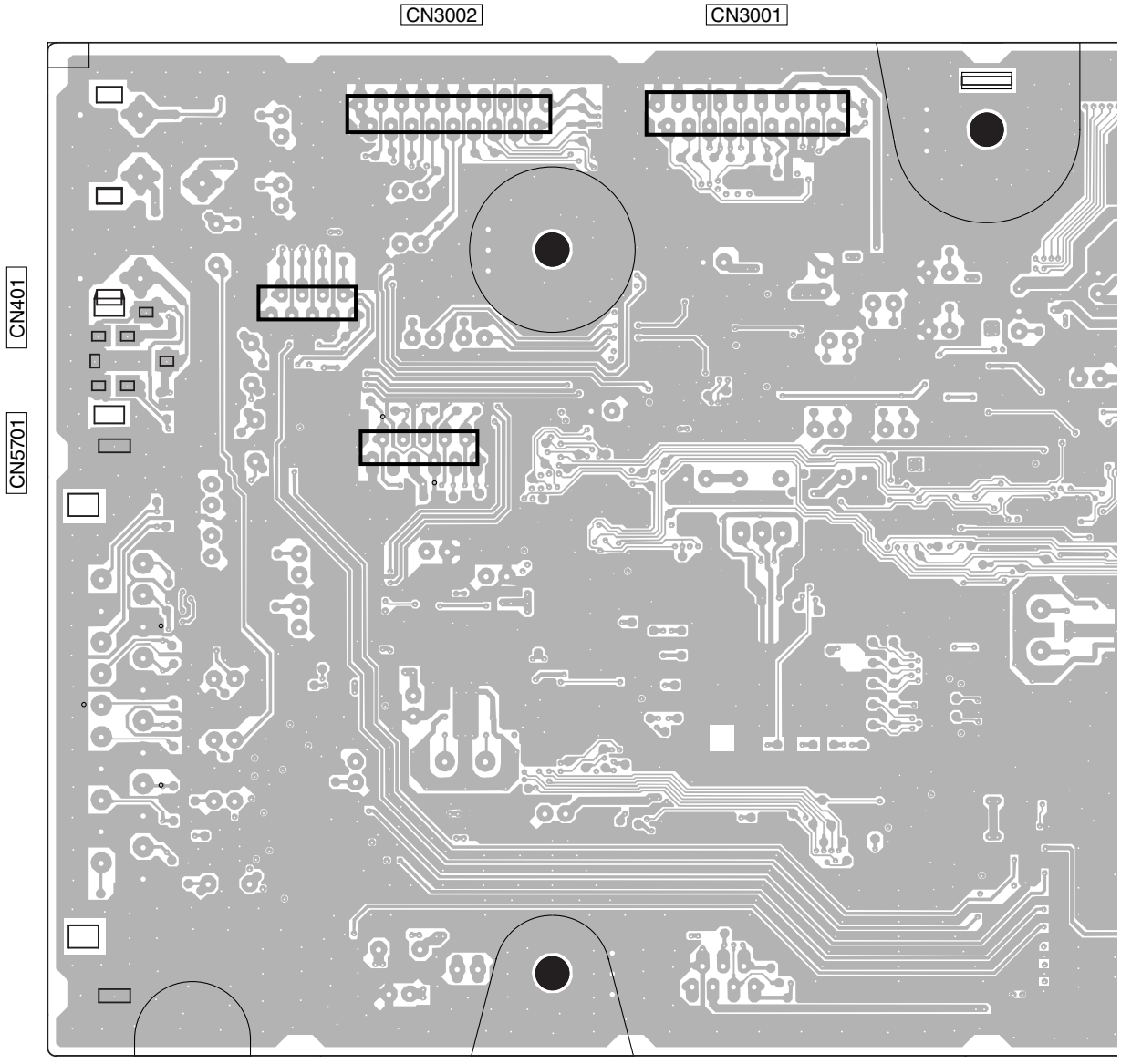
	Q305
	Q304 Q3006
	Q1302
	Q3005
	Q1304 Q1303 Q1301
	Q308 Q307 Q1413 Q1202
	Q1401
	Q1201
	Q1410
IC3001	Q801 Q3030 Q3032
	Q821 Q3031
IC101	Q428
IC3003	
IC3005	Q3041
IC1101	Q5703
IC5502	
	Q3042
IC203	Q491 Q492 Q493
IC201	
IC3004	Q5701
IC5701	Q463
	Q462
IC5503	Q3951
IC471	Q5525
IC204 IC5501	
	Q461
	Q4902
	Q442
IC472	Q441
	Q9401
IC202 IC401	

SIDE B

A

B DVD MAIN ASSY

B



C

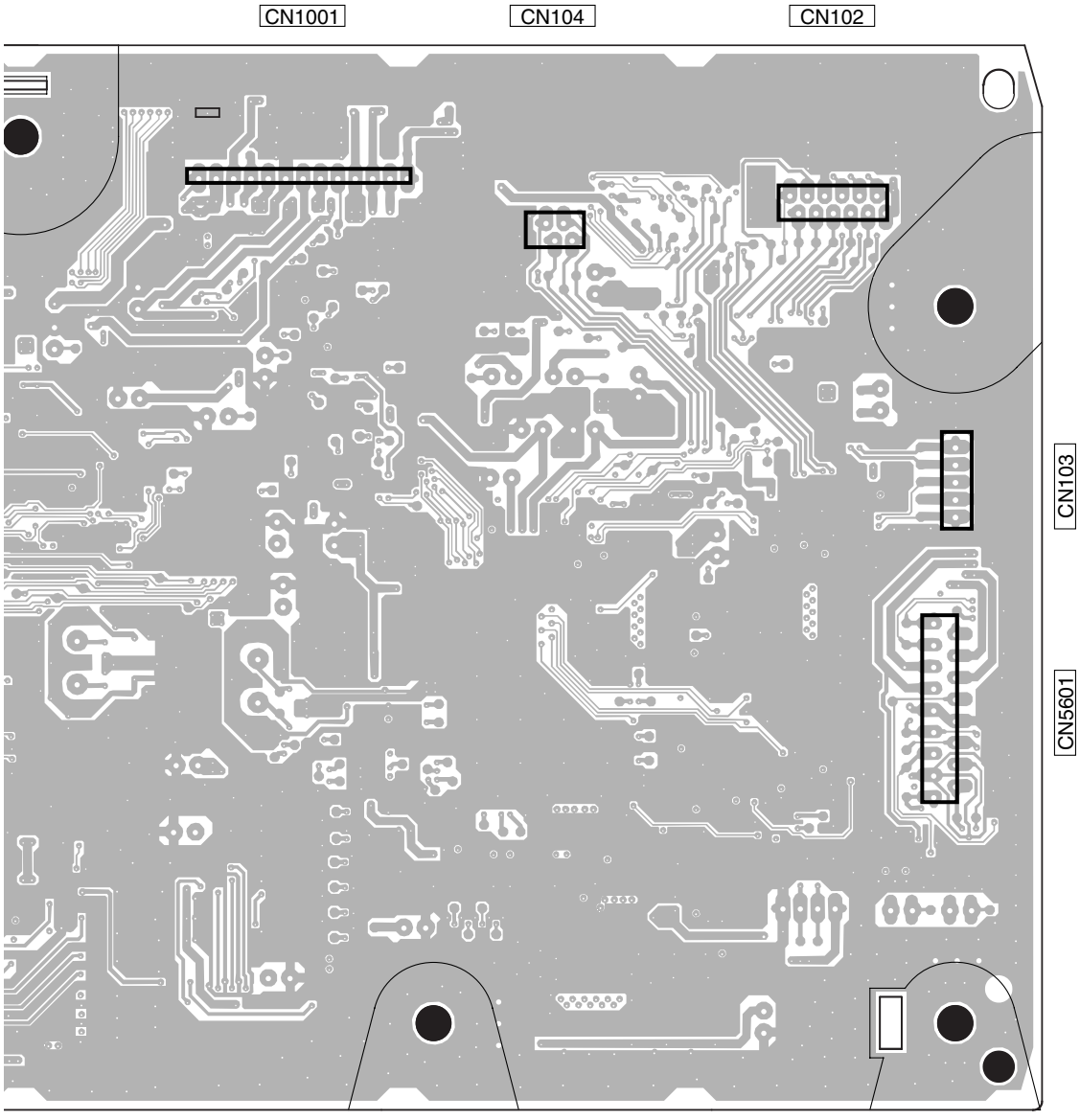
D

E

F

B

SIDE B



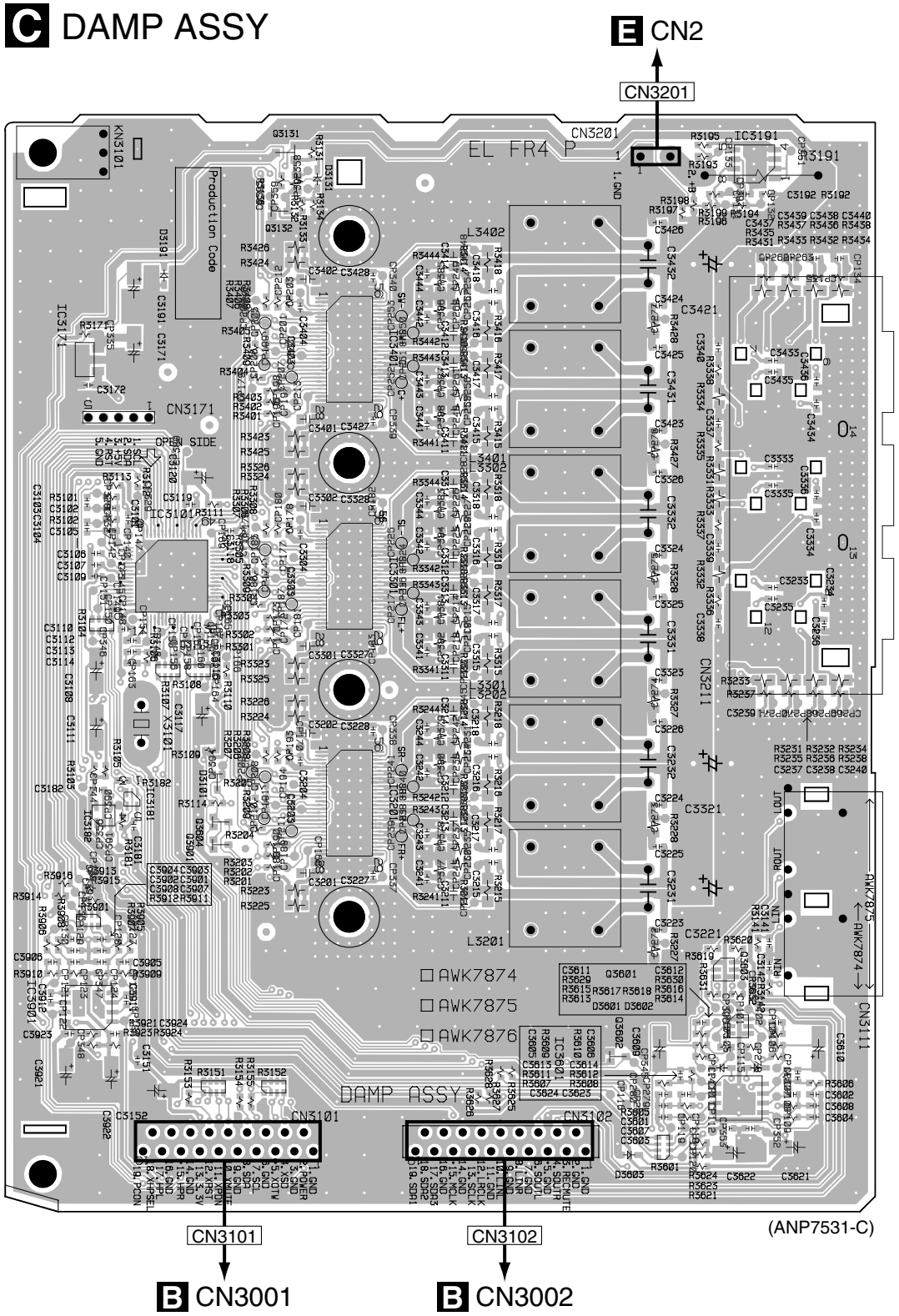
(ANP7530-B)

4.3 DAMP ASSY

SIDE A

SIDE A

C DAMP ASSY



IC3191 Q3131
Q3132
IC3171
IC3401
IC3101
IC3301
IC3201
IC3181
IC3182 Q3604 Q3901
Q3603 Q3601
IC3901
Q3602
IC3601

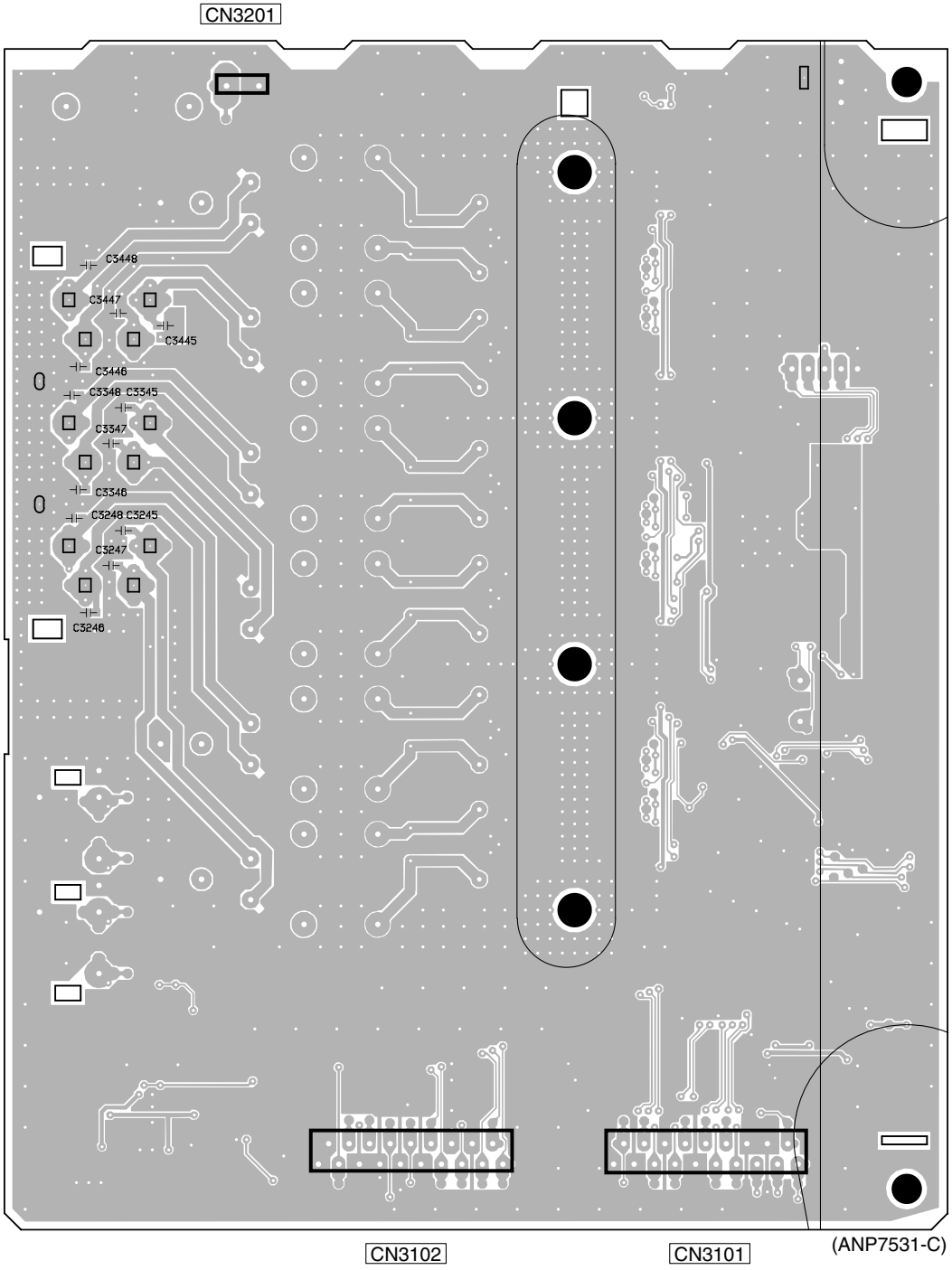
C

C

SIDE B

SIDE B

C DAMP ASSY



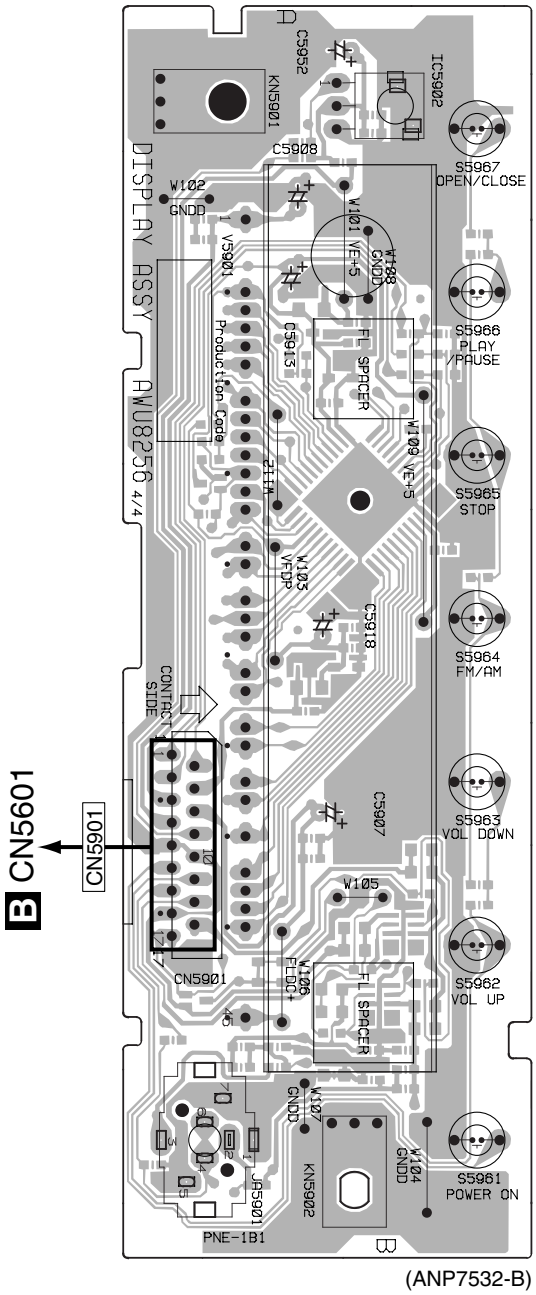
4.4 FUNCTION ASSY

A

SIDE A

SIDE A

D FUNCTION ASSY



(ANP7532-B)

IC5902

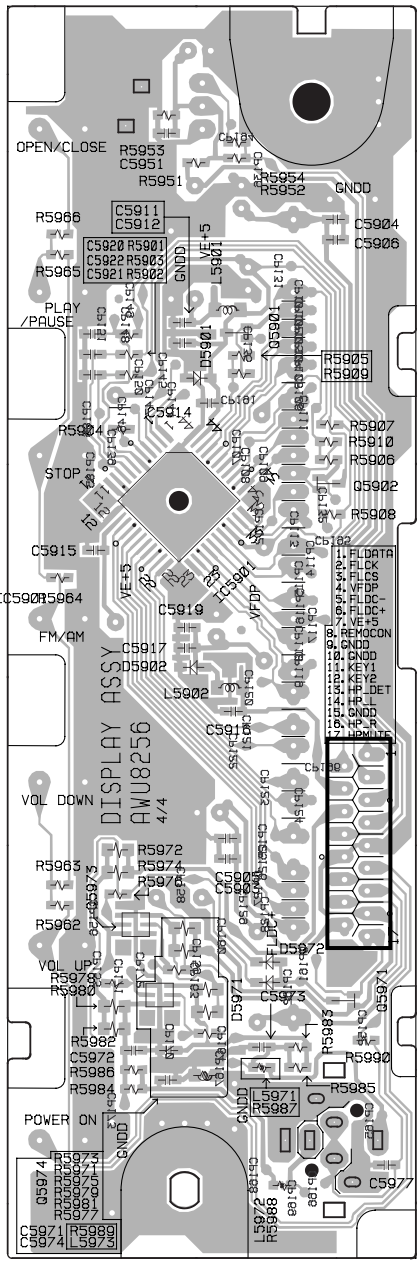
F

D **D**

SIDE B

SIDE B

D FUNCTION ASSY



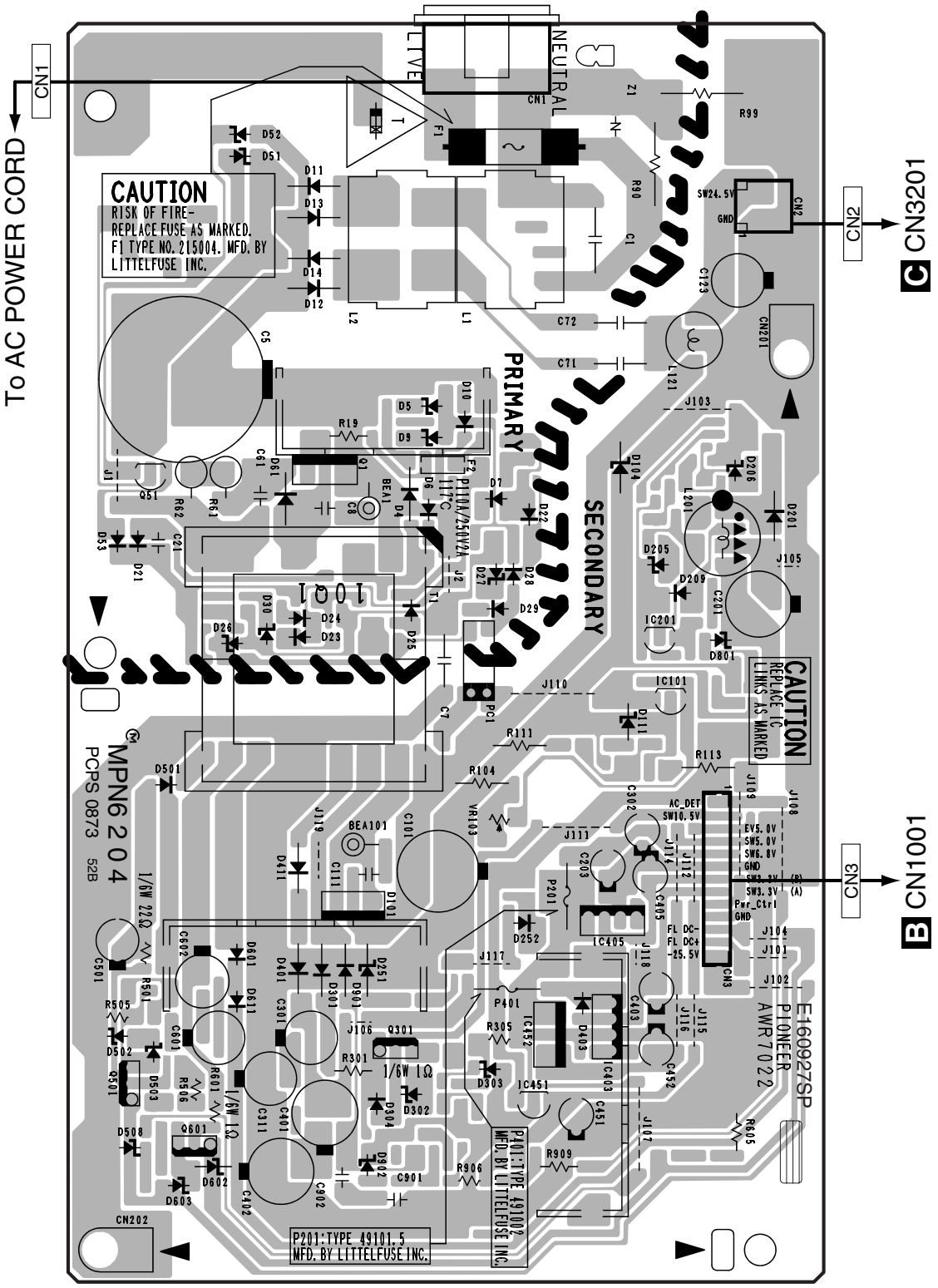
(ANP7532-B)

4.5 POWER SUPPLY UNIT

SIDE A

SIDE A

E POWER SUPPLY UNIT



Q51 Q601 Q1 Q301 IC452 IC405 IC201
Q501 IC451 IC403 IC101

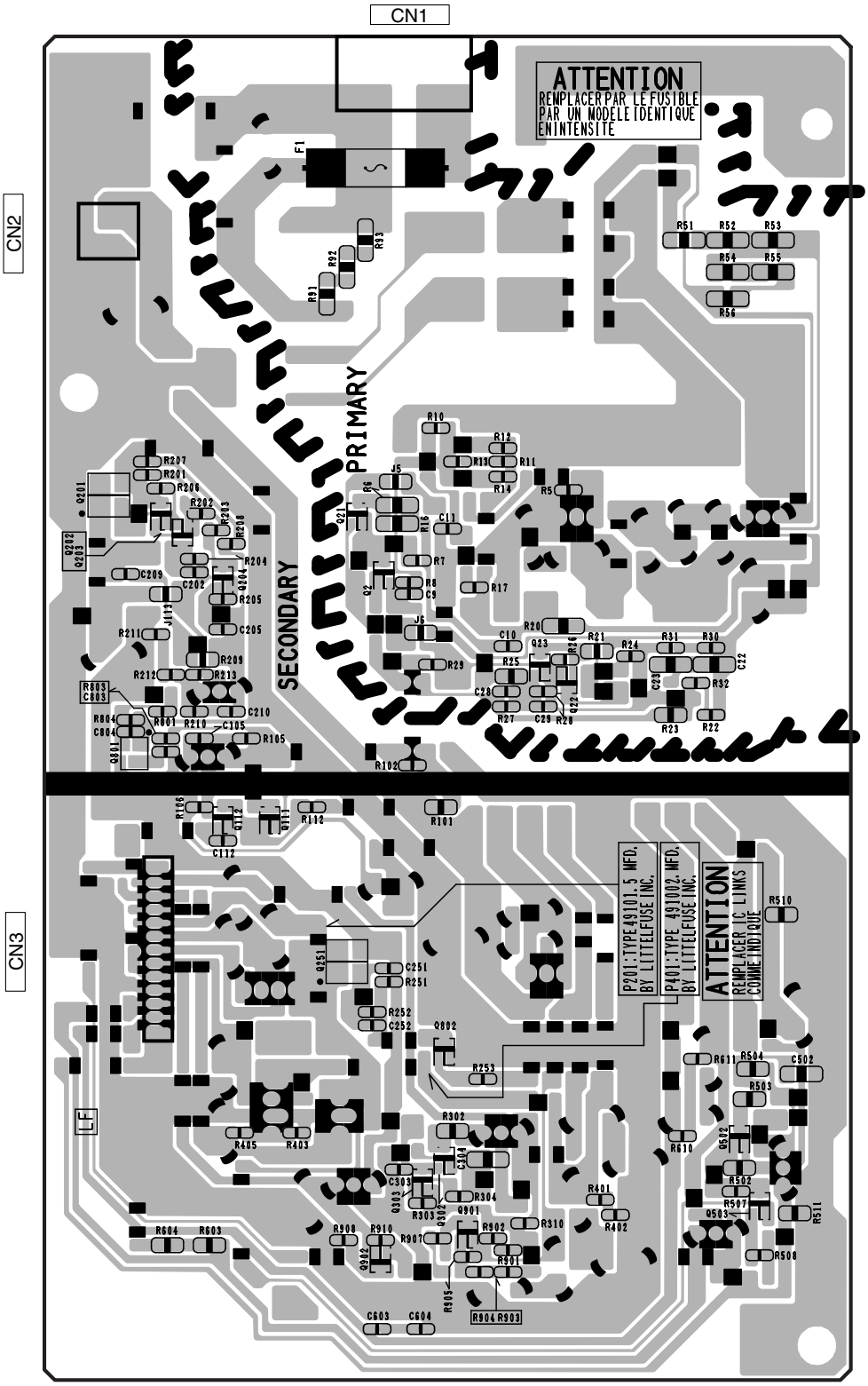
SIDE E

SIDE E

SIDE B

SIDE B

E POWER SUPPLY UNIT



Q201 Q204 Q111 Q21 Q2 Q802 Q23 Q502
Q202 Q112 Q251 Q303 Q901 Q22 Q503
Q203 Q902 Q302
Q801

E E

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 10[1]* →	*561*	*RD1/4PU 5 6 1 J*
47k Ω	→ *47 x 10[3]* →	*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 10[1]* →	*5621*	*RN1/4PC 5 6 2 1 F*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
	1	LOAB ASSY	VWG2346
	1	DAMP ASSY	AWK7875
	1	DVD MAIN ASSY	AWM8004
NSP	1	COMPLEX ASSY	AWM7998
	2	FUNCTION ASSY	AWU8256
⚠	1	POWER SUPPLY UNIT	AWR7022
	1	FM/AM TUNER UNIT	AXX7172

A LOAB ASSY

SWITCH

Mark	No.	Description	Part No.
	S101		VSK1011

OTHERS

Mark	No.	Description	Part No.
	CN602	CONNECTOR	S2B-PH-K
	CN601	CONNECTOR	S5B-PH-K

B DVD MAIN ASSY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC3003		AK5357ET
	IC203		AYW7064
	IC0		S29AL016D70TFI010
⚠	IC1101		BA3948FP
	IC101		BD7995EFS
	IC3001		HEF4052BT
	IC202		K4S641632H-TC75
	IC401		MM1623BF
	IC201		MT1389FE/C2-L
	IC5501		PDC124B
	IC204		S-24CS04AFJ
	IC5503		S-93C46BD0I-J8T1
	IC3005		TC74VHC157FTS1
	IC3004		TC7WU04FU
⚠	Q1202		2SB1689
	Q1301		2SB1689
⚠	Q1302		2SB1689
	Q304		2SC4081
	Q1413, Q3006, Q3951, Q801		DTC124EUA
	Q1201, Q1303, Q1304, Q5525		DTC143EUA
	Q1401, Q3005, Q307, Q308, Q821		HN1A01F
	Q5703		HN1C01FU
	Q305		UM5K1N
	Q1410		UMD2N
	D1401, D1412, D852, D861		1SS355
	D1402		DAN202U
	D1410		UDZS15(B)
	D1415, D801		UDZS4R7(B)

COILS AND FILTERS

Mark	No.	Description	Part No.
	L1501		LFEA220J
	L421, L422	CHIP BEADS	VTL1089
	L1305	CHIP BEADS	VTL1095

CAPACITORS

Mark	No.	Description	Part No.
	C252		CCSRCH100D50
	C5701, C5703		CCSRCH101J50
	C265		CCSRCH220J50
	C227		CCSRCH221J50
	C3057		CCSRCH270J50
	C3056		CCSRCH330J50
	C254		CCSRCH391J50
	C5549		CCSRCH470J50
	C211, C212		CCSRCH560J50
	C251		CCSRCH9R0D50
	C256, C3011, C3012, C3015, C3016		CEAT100M50
	C3019, C3020, C3025, C3026, C3041		CEAT100M50
	C3045, C5524		CEAT100M50
	C101, C1505, C5581		CEAT101M10
	C3951, C3952, C401, C404		CEAT101M16
	C373		CEAT101M6R3
	C427–C429		CEAT102M6R3
	C202, C237, C281, C291		CEAT221M6R3
	C3043		CEAT2R2M50
	C1103, C203, C206, C215		CEAT470M35
	C3023, C3024, C309, C310, C5708		CEAT470M35
	C201, C430, C431		CEAT471M6R3
	C161, C230, C267, C296, C5502		CKSRYB102K50
	C5604-C5608, C5707		CKSRYB102K50
	C1501, C151–C153, C226, C3001		CKSRYB103K50
	C3048, C5508, C5517-C5519		CKSRYB103K50
	C5521, C5522, C5577, C5579, C5591		CKSRYB103K50
	C131, C1502, C204, C205, C207		CKSRYB104K16

Mark	No.	Description	Part No.
	C209, C213, C214, C216, C217		CKSRYB104K16
	C220, C222–C225, C228		CKSRYB104K16
	C231–C236, C239–C241		CKSRYB104K16
	C244–C246, C253, C257, C260		CKSRYB104K16
	C266, C268, C271–C273, C282		CKSRYB104K16
	C284–C288, C290, C3021, C3022		CKSRYB104K16
	C3042, C3044, C3046, C3052, C3064		CKSRYB104K16
	C371, C372, C374, C402		CKSRYB104K16
	C405, C406, C411, C415, C416		CKSRYB104K16
	C5509, C5539, C5550, C5556, C5582		CKSRYB104K16
	C102–C104		CKSRYB105K10
	C1101, C1201, C121, C140, C243		CKSRYB105K6R3
	C283, C289, C343–C347		CKSRYB105K6R3
	C412–C414		CKSRYB105K6R3
	C219		CKSRYB152K50
	C144–C146, C208, C210		CKSRYB222K50
	C269		CKSRYB333K16
	C258, C259		CKSRYB473K25
	C255		CKSRYB474K10

RESISTORS

	R5504, R5523, R5530, R5541, R5557	RAB4C221J
	R5561, R5570, R5573, R5584, R5592	RAB4C221J
	R225	RAB4C330J
	R1202	RS1/10S121J
	R151, R153	RS1/10S1R0J
	R152, R154	RS1/10S1R8J
	R131–R136	RS1/10S4R7J
	R1302, R1304	RS1/10S561J
	R421–R426	RS1/10S75R0F
	R411–R416	RS1/16S1500F
	R279	RS1/16S2201F
	R1102-R1104	RS1/16S3302F
	Other Resistors	RS1/16S###J

OTHERS

	CN5701 11P FFC CONNECTOR	52045-1145
	CN5601 17P FFC CONNECTOR	52045-1745
	CN3001, CN3002 19P RECEPTACLE	AKP7199
	X5501 CERAMIC RESONATOR	ASS7034
	CN1001 KR CONNECTOR	B13B-PH-K
	CN103 CONNECTOR POST	B5B-PH-K
	PCB BINDER	VEF1040
	JA402 3P PIN JACK	VKB1153
	JA401 2P PIN JACK	VKB1178
	CN104 4P CONNECTOR	VKN1235
	CN102 12P CONNECTOR	VKN1243
	CN101 24P CONNECTOR	VKN1464
	X3004 CRYSTAL RESONATOR (12.288MHz)	VSS1140
	X201 CRYSTAL RESONATOR (27MHz)	VSS1168

C DAMP ASSY ASSY

SEMICONDUCTORS

	IC3191	BA10358F
	IC3601	HA17558AF
	IC3901	NJM4565M
⚠	IC3201, IC3301, IC3401	TAS5122DCA
	IC3101	TAS5508APAG
	Q3131	2SA1036K
	Q3602	DTA124EUA
	Q3132	DTC143EUA
	Q3601	IMX9
	D3101	DAP202U
	D3131	UDZS18(B)
	D3191	UDZS4R7(B)

COILS AND FILTERS

	L3201, L3202, L3301, L3302	ATH7019
	L3401, L3402 INDUCTORS	ATH7019

CAPACITORS

	C3114	CCSRCH150J50
	C3605, C3606	CCSRCH151J50
	C3113	CCSRCH180J50
	C3905, C3906	CCSRCH181J50
	C3141, C3142	CCSRCH221J50
	C3601-C3604, C3607, C3608	CCSRCH331J50
	C3907, C3908	CCSRCH561J50
	C3901-C3904	CCSRCH681J50
	C3611, C3612	CCSRCH821J50
	C3221, C3321, C3421	CEAT102M25
	C3108, C3111, C3117, C3120	CEVW100M10
	C3609, C3610, C3622, C3922	CEVW100M16
	C3191, C3621, C3921	CEVW100M25
	C3231, C3232, C3331, C3332	CFTLA474J50
	C3431, C3432	CFTLA474J50
	C3211-C3214, C3311-C3314	CKSQYB104K50
	C3411-C3414	CKSQYB104K50
	C3201, C3202, C3301, C3302	CKSQYB105K16
	C3401, C3402	CKSQYB105K16
	C3109, C3225, C3226, C3325, C3326	CKSRYB102K50
	C3425, C3426	CKSRYB102K50
	C3102, C3105, C3223, C3224	CKSRYB103K50
	C3237-C3240, C3323, C3324	CKSRYB103K50
	C3337-C3340, C3423, C3424	CKSRYB103K50
	C3437-C3440	CKSRYB103K50
	C3101, C3103, C3104, C3106, C3107	CKSRYB104K16
	C3110, C3112, C3115, C3116	CKSRYB104K16
	C3118, C3119, C3151, C3203, C3204	CKSRYB104K16
	C3303, C3304, C3403, C3404, C3624	CKSRYB104K16
	C3924	CKSRYB104K16
	C3192, C3227, C3228, C3233-C3236	CKSRYB104K25
	C3327, C3328, C3333-C3336	CKSRYB104K25
	C3427, C3428, C3433-C3436, C3623	CKSRYB104K25
	C3923	CKSRYB104K25
	C3241-C3244, C3341-C3344	CKSRYB331K50
	C3441-C3444	CKSRYB331K50
	C3215-C3218, C3315-C3318	CKSRYB333K50
	C3415-C3418	CKSRYB333K50

RESISTORS

	R3191 (0.1ohm/2W)	ACN7112
⚠	R3211-R3214, R3311-R3314	ACN7141
⚠	R3411-R3414 (2.7 ohm)	ACN7141
	R3151	RAB4C103J
	R3104	RAB4C221J
	R3152	RAB4C222J
	R3107, R3108	RAB4C470J
	R3601, R3901	RAB4C472J
	R3132	RS1/10S123J

Mark	No.	Description	Part No.
⚠	R3241-R3244, R3341-R3344		RS1/10S180J
⚠	R3441-R3444		RS1/10S180J
⚠	R3227, R3228, R3327, R3328		RS1/10S3R3J
⚠	R3427, R3428		RS1/10S3R3J
	R3231-R3234, R3331-R3334		RS1/10S472J
	R3431-R3434		RS1/10S472J
	R3223-R3226, R3323-R3326		RS1/10S821J
	R3423-R3426		RS1/10S821J
⚠	R3235-R3238, R3335-R3338		RS1/16S1R0J
⚠	R3435-R3438		RS1/16S1R0J
⚠	R3199, R3621, R3921		RS1/16S8R2J
	R3215-R3218, R3315-R3318		RS1/8S1R5J
	R3415-R3418		RS1/8S1R5J
	Other Resistors		RS1/16S###J

OTHERS

	CN3111 PIN JACK(4P)	AKB7114
	CN3211 6CH SPEAKER JACK	AKE7115
	CN3101, CN3102 19P PLUG	AKM7077
	X3101 CRYSTAL RESONATOR (13.5 MHz)	ASS7062
	CN3201 2P CONNECTOR	B2P-VH
	PCB BINDER	VEF1040

D FUNCTION ASSY

SEMICONDUCTORS

	IC5901	PT6315
	Q5971	DTA124EUA
	Q5973, Q5974	IMX9

COILS AND FILTERS

	L5902	LCYA100J2520
⚠	L5901	LCYA220J2520
	L5971, L5972 CHIP BEADS	VTL1081

SWITCHES AND RELAYS

	S5961-S5967	VSG1024

CAPACITORS

	C5920-C5922	CCSRCH221J50
	C5907, C5918	CEAL470M35
	C5913	CEAL470M6R3
	C5952	CEJQ470M6R3
	C5971, C5972	CKSRYB102K50
	C5915, C5977	CKSRYB103K50
	C5911, C5912, C5916, C5917, C5951	CKSRYB223K50
	C5973, C5974	CKSRYB473K25

RESISTORS

	R5971-R5974, R5979-R5982	RS1/10S680J
	Other Resistors	RS1/16S###J

OTHERS

	CN5901 17P FFC CONNECTOR	52045-1745
	V5901 FL TUBE	AAV7104
	5971 FL SPACER	AEB7367
	JA5901 MINITURE JACK	AKN7005
	IC5902 REMOTE RECEIVER UNIT	GP1UM27XK0VF
	KN5901, KN5902 WRAPPING TERMINAL	VNF1084

E POWER SUPPLY UNIT

Mark	No.	Description	Part No.

This assembly has no service parts.

F FM/AM TUNER UNIT

This assembly has no service parts.

6. ADJUSTMENT

6.1 ADJUSTMENT ITEMS AND LOCATION

■ Adjustment Items

[Mechanism Part]

❶ Tangential and Radial Height Coarse Adjustment

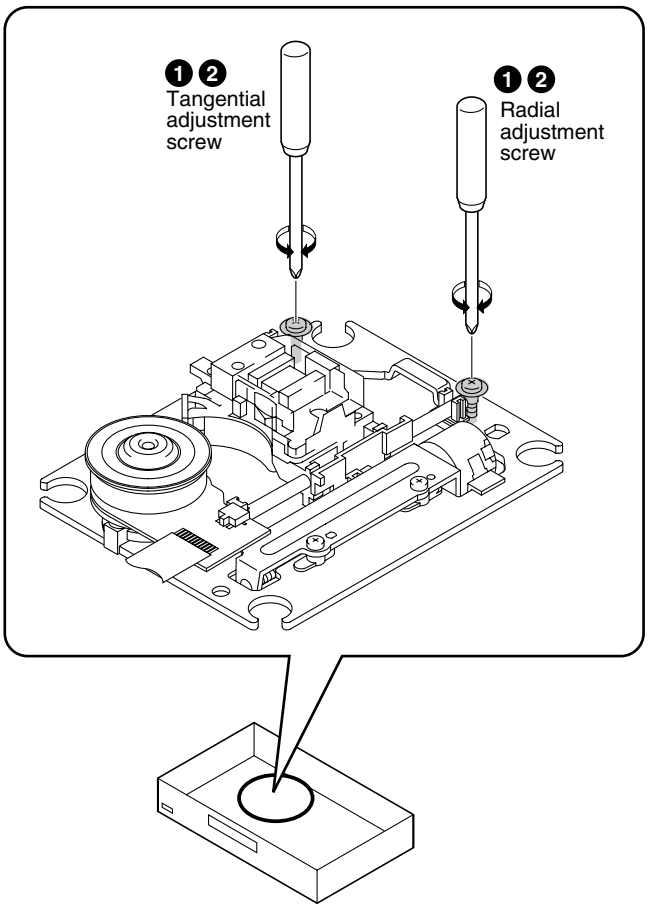
❷ DVD Error Rate Adjustment

[Electrical Part]

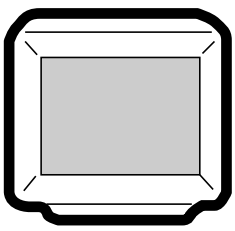
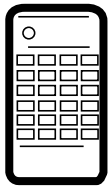
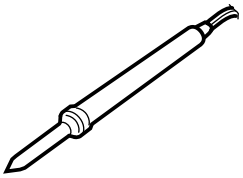
Electrical adjustments are not required.

■ Adjustment Points (Mechanism Part)

Cautions: After adjustment, adjustment screw locks with the Screw tight.



6.2 JIGS AND MEASURING INSTRUMENTS

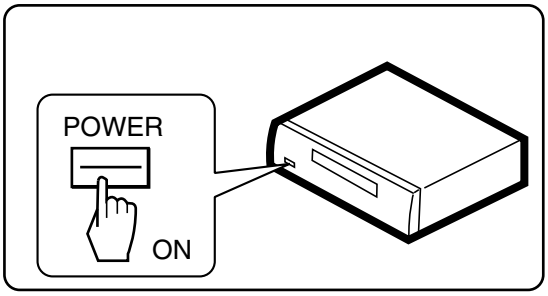
 ⊕ Screwdriver (large)	 ⊕ Screwdriver (medium)	 TV monitor	 Test mode remote control unit (GGF1381)
 ⊕ Precise screwdriver	 DVD test disc (GGV1025)	 Soldering iron	Screw tight (GYL1001)

6.3 NECESSARY ADJUSTMENT POINTS

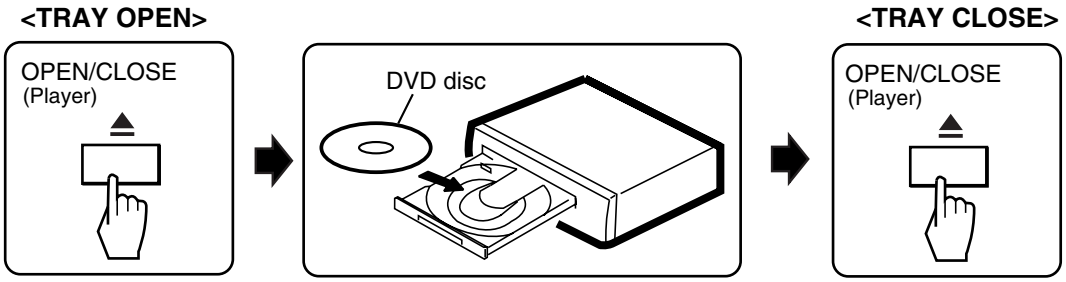
When	Adjustment Points	
■ Exchange Parts of Mechanism		
Exchange the 05SD Pickup Assy	Mechanical point	❶, ❷ ＊ After adjustment, screw locks with the Screw tight.
	Electric point	———
Exchange the Traverse Mechanism Assy-S	Mechanical point	———
	Electric point	———
Exchange the Spindle Motor	Mechanical point	❷ ＊ After adjustment, screw locks with the Screw tight.
	Electric point	———
■ Exchange PCB Assy		
Exchange PC Board LOAB and DVDM ASSYS	Mechanical point	———
	Electric point	———

6.4 TEST MODE

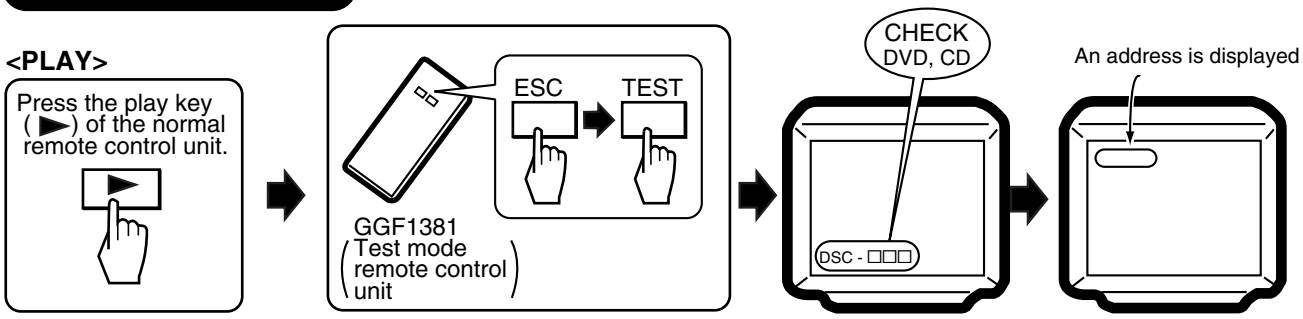
POWER ON



DISC SET

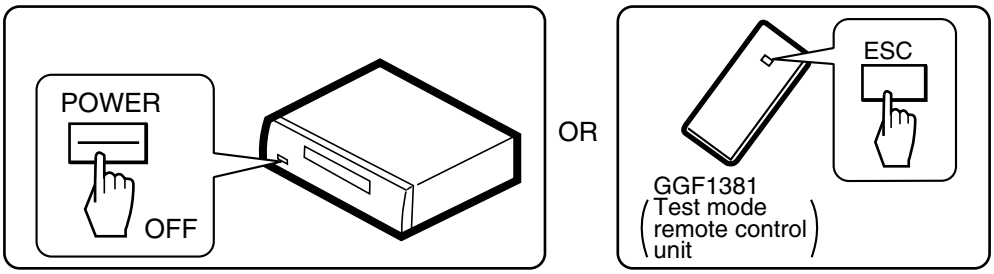


TEST MODE: PLAY



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



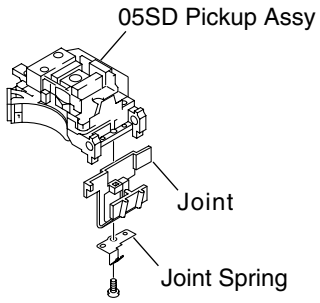
6.5 MECHANISM ADJUSTMENT

1 Tangential and Radial Height Coarse Adjustment

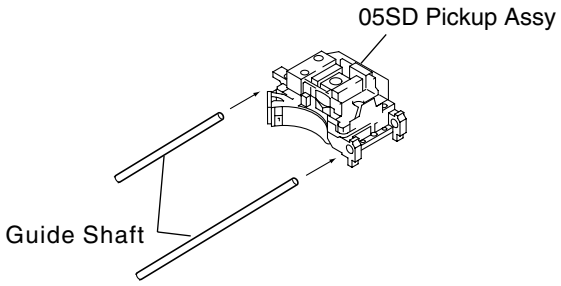
START

- Remove the 05SD Pickup Assy from the Traverse Mechanism Assy-S.
- Remove the joint and the joint spring of the 05SD Pickup Assy.

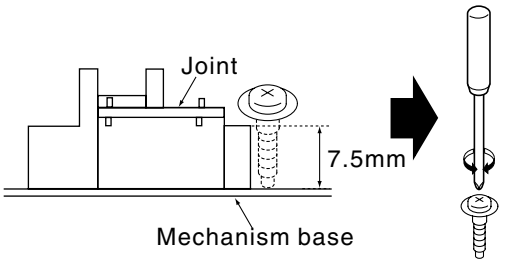
Note:
Before removing the flexible cable for the pickup, soldering of the pickup circuit is necessary.
For details, see "7.1.13 DISASSEMBLY".



- Pass through the guide shaft to a new 05SD Pickup Assy.
- Attach it to the Traverse Mechanism Assy-S.



- Put the joint between the Tangential (or Radial) adjustment screw and the mechanism base and turn each screw to adjust the height.
(Refer to "6.1 ADJUSTMENT ITEMS AND LOCATION".)



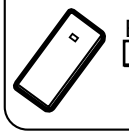
- Attach the Traverse Mechanism Assy-S to the 05 LOADER Assy.
- Turn it over and attach the joint and the joint spring.
- Arrange the flexible cables.
(Refer to "7.1.13 DISASSEMBLY".)

2 DVD Error Rate Adjustment

Notes:
• Use disc: GGV1025

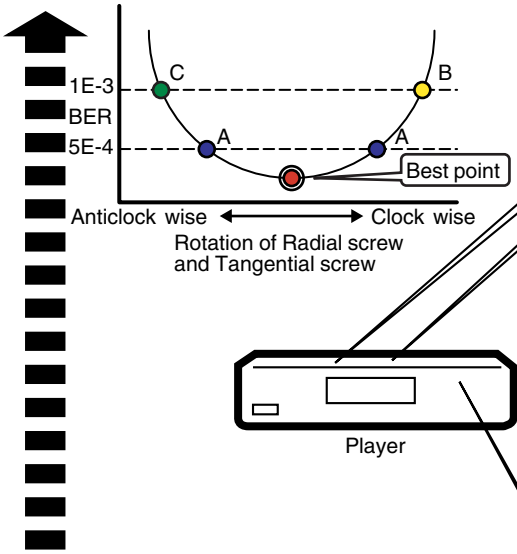
START

• Play the DVD test disc at inner track
• Display ERROR RATE on the monitor



Traverse Mechanism Assy-S
Adjust the radial adjustment screw so that ERROR RATE becomes around "5E-4". ● A

ERROR RATE : "5E-4"



Player

ERROR RATE: - - - -

Monitor

Turn the POWER OFF in case of NG once, and perform the adjustment once again.

If error rate is OK, locks a root of tangential and radial adjustment screws with the Screw tight.
Screw tight: GYL1001

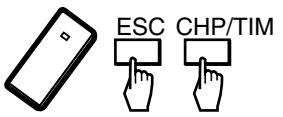
NG

OK

CHECK

In this check, the error rate that is less than "5E-5"is better.

Disc playback normally.
• The measurement of block error rate



Service mode end

• Unfasten the tangential screw by 90 degrees step till ERROR RATE becomes around "1E-3" again . ● C
• Record the number of rotation (N1).

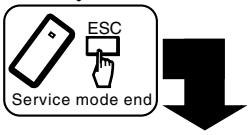
• Fasten the tangential adjustment screw till the number of rotation becomes harf of N1. ● Best tangential point

Traverse Mechanism Assy-S
Fasten the tangential adjustment screw so that ERROR RATE becomes around "1E-3". ● B

ERROR RATE : "1E-3"

➡ Service mode

• Play the DVD test disc at outer track (around #200000)



• Unfasten the radial adjustment screw by 90 degrees step till ERROR RATE becomes around "1E-3" again . ● C
• Record the number of rotation (N1).
(memorizing how much the screw was rotated.)

• Fasten the radial adjustment screw till the number of rotation becomes harf of N1. ● Best Radial point

Traverse Mechanism Assy-S
Fasten the radial adjustment screw so that ERROR RATE becomes around "1E-3". ● B

ERROR RATE : "1E-3"

• Play the DVD test disc at inner track (around #30000)

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 TEST MODE

■ Test Mode Functional Specification

① Test mode entry

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

• OSD displays test mode.

② LD ON

Enter the test mode.

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

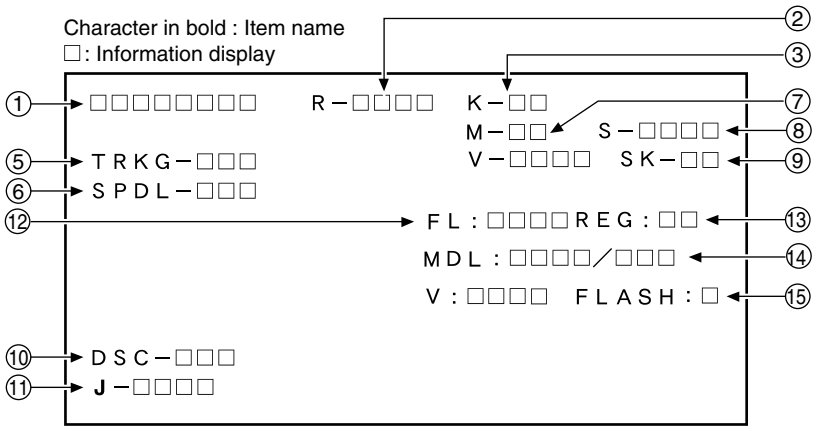
CD : Press the [TEST] (A8-5E) and [4] (A8-04) keys in order, and turn on the laser diode (780n).

③ Release the Test mode

• Turn off the power.

• Press the [ESC] (A8-5F) key of the remote control unit and reset it.

7.1.2 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 – ＊＊＊]**
CLV : [CLV]
Off : [OFF]

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]

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

⑫ **Version of the FL controller [FL: ＊＊＊＊]**
Note: Don't use it.

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 [V: ＊＊. ＊＊]**
Flash ROM size [FLASH = ＊＊]

7.1.3 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	A3-BE
Scart terminal output : S-VIDEO		SUBTITLE	A3-36
Scart terminal output : RGB		ANGLE	A3-B5
Progressive OFF	Only for progressive models	R_SKIP	A3-9D
Progressive ON		F_SKIP	A3-9C
FL indication of ID number		STEREO (∗1)	A8-4A
ZOOM ON (×4)		ZOOM	A3-37
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

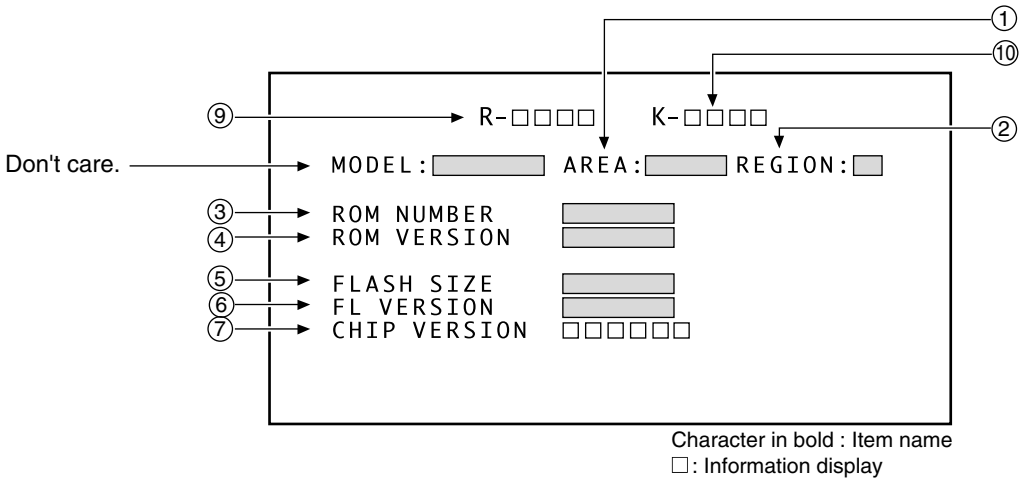
• Indication of model information (ESC + CHAP keys)
The items from 12 to 15 of the TEST MODE Indications are displayed. However, in the indications, S in the standard test mode is changed to CHIP VERSION, and M is changed to RF VERSION. For details, see 7.1.4.

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

7.1.4 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



① **Destination indication**
Display it according to model information set from the FL controller.
② **Region No.**
③ **Part number**
④ **ROM version**
⑤ **Flash size**

⑥ **FL controller version**
⑦ **CHIP VERSION**

⑨ **Remote control code**
⑩ **Key code of Main unit**

7.1.5 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

7.1.6 SERVICE TEST MODE

1. Conditions During Service Test Mode

- During Service Test mode, the unit will not be shut down for an emergency even if one of the failures mentioned below occurs.
- After the unit has been shut down in Normal mode for an emergency upon detection of one of the failures mentioned below, you can turn it on immediately, without waiting for one minute, in Service Test mode.
- The accumulated power-on time can be checked during Service Test mode.

2. How to enter Service Test mode

- Connect AC power cord with the STEST port (microcomputer terminal IC5501: 43-pin) at High (5 V). (See "Service Test mode connecting point".)
  Note: Initial function setting is DVD/CD.
- Connect AC power cord while holding both the OPEN/CLOSE and POWER keys on the main unit pressed. The unit will be turned on, and the following indication will be displayed:

3. How to quit Service Test mode, and conditions for quitting

- To quit Service Test mode, turn the power off or disconnect the AC power cord to turn the power off.
- When Service Test mode is quit, only data on protection in RAM will be initialized, and data on user settings in RAM will not be initialized.

4. Indications on the FL display when Service Test mode is entered

- Indications on the FL display when Service Test mode is entered differ depending on whether the unit was turned off normally or shut down for emergency protection, immediately before Service Test mode starts, as follows:

[After a normal power-off]

FL display `Welcome` ⇩
FL display `Vol 0` ⇩
FL display `DVD SERV`

[After a shutdown caused by an EEPROM (IC5503) failure]

FL display `EEP ERR` ⇩
FL display `Vol 0` ⇩
FL display `DVD SERV`

[After a shutdown caused by an AMP-system failure]

FL display `PRTCT E` ⇩
FL display `Vol 0` ⇩
FL display `DVD SERV`

[After a shutdown caused by high-temperature detection]

FL display `OVERTEMP` ⇩
FL display `Vol 0` ⇩
FL display `DVD SERV`

[After a shutdown caused by a DVD-system failure]

FL display `DVDPRTCT` ⇩
FL display `Vol 0` ⇩
FL display `DVD SERV`

[After a shutdown caused by over current detection]

FL display `OC ERROR` ⇩
FL display `Vol 0` ⇩
FL display `DVD SERV`

5. Operations during Service Test Mode

- Basically, operations in Service Test mode are the same as in Normal mode. However, to indicate that the unit is in Service Test mode, the following are displayed when the functions are changed:

[Functions]	[FL display]	
DVD/CD	`DVD SERV`	
TUNER	`TX SERV`	
LINE1	`LN1 SERV`	(for Europe model)
LINE2	`LN2 SERV`	(for Europe model)
LINE	`LN SERV`	(for North America, general model)

- When the function is set to LINE2 (Europe model) or LINE (Except Europe model), the Surround setting is fixed to 5-channel STEREO, which is only for Service Test mode. (In Normal mode, it is fixed to 2-channel STEREO.) In such a case, do not check the sound through the headphones, because headphone operation with 5-channel STEREO is not guaranteed. If you wish to check the sound through the headphones, use a function other than LINE2 (Europe model) or LINE (Except Europe model).

6. Failures

• Depending on the types of errors, one of the following error messages will be displayed when the unit is turned on:

P R T C T E

A protection circuit was activated:

1. The V+10, V+5, V+3R3, or VFDP was short-circuited (See the protection circuit on "3.4 DVD MAIN ASSY (2/4)"), or the value at V+10, V+5, or V+3R3 exceeded the standard value because of an abnormality in its power section.
2. The XPROTECT line up to the system-control computer (PDC124B) was short-circuited by grounding or was broken.

D V D P R T C T

Abnormality in the DVD section

1. The V+6R8, V+5V, or V+3 was short-circuited, or the value at V+6R8, V+5V, or V+3 exceeded the standard value because of an abnormality in its power section.
2. The VDET line up to the system-control computer (PDC124B) was short-circuited by grounding or was broken. (See VDET circuit on "3.4 DVD MAIN ASSY (2/4)")

E E P E R R

1. Breakage or short-circuiting of the communication line between the μ-COM (IC5501) and the EEPROM (IC5503) can be suspected.
2. A failure in the EEPROM (IC5503) can be suspected.

O C E R R O R

- If "OC ERROR" is not displayed when the unit is turned on in Normal mode, short-circuiting of the speaker terminals can be suspected. (It causes speaker cable "+", "-" short.)
- If "OC ERROR" is displayed again when the unit is turned on in Normal mode, the following causes can be suspected:
  1. One or more of the ICs among the three digital amplifier ICs (IC3201, IC3301, and IC3401: TAS5122DCA) on the W51 DAMP Assy is in failure.
  2. The line between one of the above digital amplifier ICs and the speaker terminals is short-circuited.
  3. The XSD line from one of the above digital amplifier ICs to the system-control computer (PDC124B) is short-circuited by grounding or is broken.

O V E R T E M P

- If "OVERTEMP" is not displayed when the unit is turned on in Normal mode, the unit is normal. The protection circuit was activated because the temperature at the three digital amplifier ICs (IC3201, IC3301, and IC3401: TAS5122DCA) had become too high. Because it is likely that this was a temporary temperature rise, lower the volume of the speakers.
- If "OVERTEMP" is displayed again when the unit is turned on in Normal mode, the following causes can be suspected:
  1. One or more of the ICs among the three digital amplifier ICs (IC3201, IC3301, and IC3401: TAS5122DCA) on the W51 DAMP Assy is in failure.
  2. The XOTW line from one of the above digital amplifier ICs to the system-control computer (PDC124B) is short-circuited by grounding or is broken.

7. Accumulated power-on time display

• Hold the STOP key on the unit pressed for 8 seconds during Service Test mode. After the version for the system-control computer is displayed, the accumulated power-on time is displayed.

Version of the system-controller **P D C 1 2 4 B**

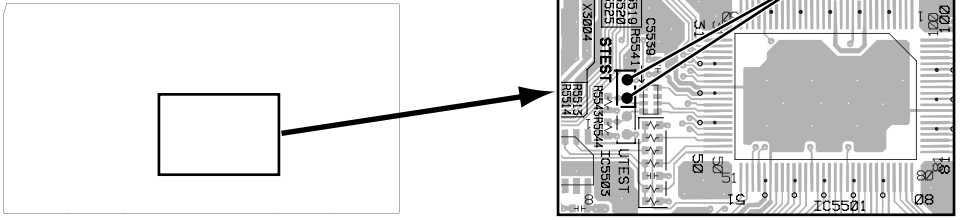
▽ About 3 seconds after

Accumulated power-on time **1 0 H 3 0 M**

- Power-on time is always counted while the power is on, regardless of unit's functions and operations. However, it is not counted during Standby mode.
- The maximum countable power-on time is 255H59M (255 hours 59 minutes.) The indication will not advance beyond that.
- The accumulated power-on time basically cannot be cleared.

■ Service Test Mode connecting point

B DVD MAIN ASSY **SIDE A**



How to release the Tray Lock

Problem

Press the ⏏ OPEN/CLOSE key. The **"TRAYLOCK"** indication flashes.

Remedy

Hold the ⏏ OPEN/CLOSE key pressed for 8 seconds or more until "LOCK Off" is displayed.
Then the tray can be opened/closed, using the ⏏ OPEN/CLOSE key.

Reference information

How to lock the tray

1. Make sure the disc is clamped (in Disc Stop mode).
2. Hold the ⏏ OPEN/CLOSE key pressed for about 8 seconds. (Hold the key pressed even if the tray opens.)
3. The "LOCK?" indication flashes on the FL display.
4. Within 3 seconds after "LOCK?" begins flashing (while it is flashing), release the key, then hold the ⏏ OPEN/CLOSE key pressed again. (If you don't perform this step, the tray will not be locked, and the indication will return to the normal display.)
5. After the key has been held pressed for about 5 seconds, the "LOCK ON" indication appears on the FL display. Once it does, release the key. (If you keep the key pressed, the Tray Lock will be released again.)

7.1.7 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), won't play or doesn't play

How to diagnose

In the case mentioned above, degradation of the laser diodes (LDs) mounted on the 05SD Pickup Assy is suspected. Measure the voltage between the two ends of one of the resistors mentioned below.

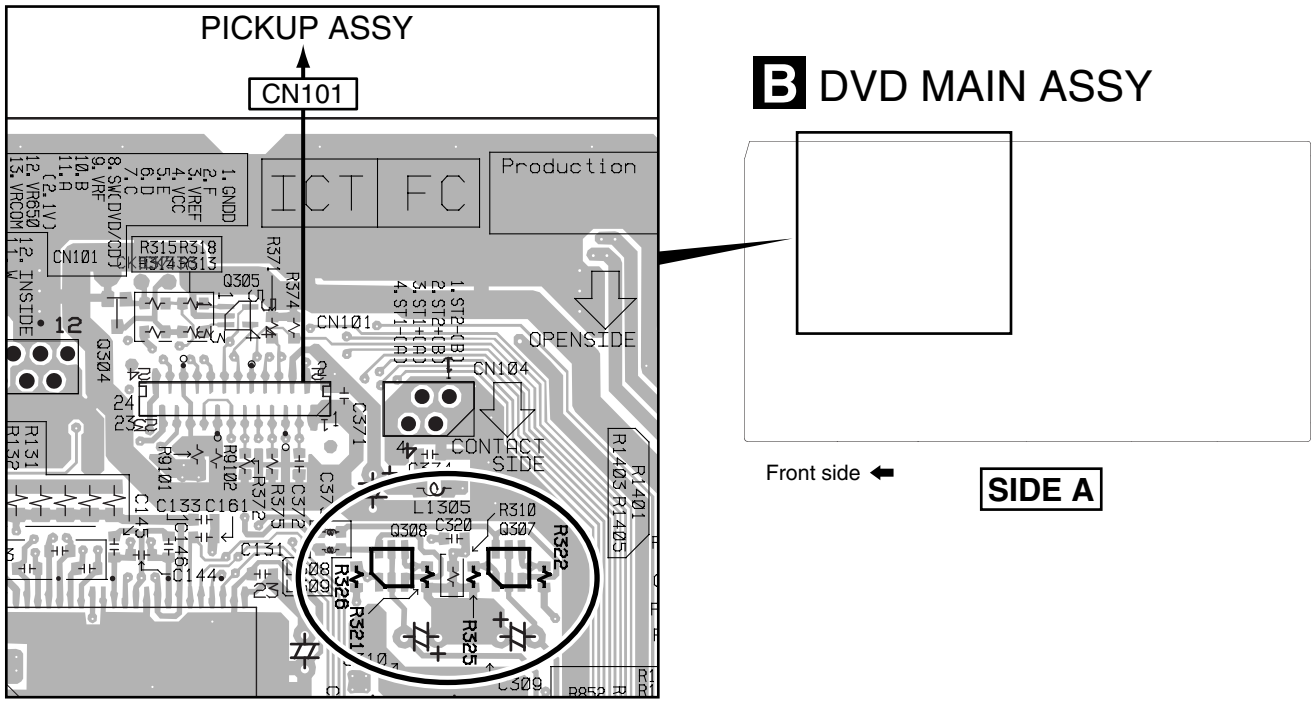
- **No playback of a DVD :**

  Measure the voltage between the both ends of R322 or R325 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 both ends of R321 or R326 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 05SD Pickup Assy.



7.1.8 DVD TROUBLE SHOOTING

No.	Symptoms	Diagnosis Contents	Possible Defective Points
1	The power is not turned on.	Are wires of output connector (POWER SUPPLY Unit) and CN1001 (W51 DVDMAIN Assy) disconnected or damaged ?	Connector / cable
		Check that the following voltage is output : Q1202-collector on the W51 DVDMAIN Assy: 3.3V	**POWER SUPPLY Unit**
2	An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.)	Are the signals output from IC201-pin 98 (MDATA) and pin 99 (SCLK) on the W51 DVDMAIN Assy ? (in the range of 0-3V)	**W51 DVDMAIN Assy** DVD IC (IC201)
		Are the signals input into IC5501-pin 50 (MDATA) and pin 51 (SCLK) on the W51 DVDMAIN Assy ? (in the range of 0-3V)	**W51 DVDMAIN Assy** UCOM (IC5501)
		Check that the following voltage are output : Q1302-collector on the W51 DVDMAIN Assy: 5V	**W51 DVDMAIN Assy** 5V Regulator IC (IC751)
		Is a resonator (X201: 27MHz) on the W51 DVDMAIN Assy oscillating ?	**W51 DVDMAIN Assy** Crystal resonator (X201) DVD IC (IC201)
		• Is a signal input into IC203-pin26 (PCE#) on the W51 DVDMAIN 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 IC202-pin 16 (DWE#), pin 19 (DCS#) and pin 38 (SDCLK) on the W51 DVDMAIN Assy ? (Is a signal fluctuating ?) → Communication with SDRAM	**W51 DVDMAIN Assy** DVD IC (IC201) Flash ROM (IC203) SDRAM (IC202)
		Is a signal output from IC203-pin 28 (PRD#) on the W51 DVDMAIN Assy? (Is a signal fluctuating for several hundred mS after the power is turned on ?)	**W51 DVDMAIN Assy** Flash ROM (IC203)
		Is a signal input into IC5501-pin 67 (DVD ACK) on the W51 DVDMAIN Assy ? (Is a signal fluctuating ?) → Communication with FL Control IC	**W51 DVDMAIN Assy** DVD IC (IC201) UCOM (IC5501)
		Is a signal output from IC5501-pin 30 (XREADY) on the W51 DVD MAIN Assy ? (Is a signal fluctuating in the range of 0-5V ?)	**W51 DVDMAIN Assy** UCOM (IC5501)
		Are the signals output from IC5501-pin 23 (SDATA) on the W51 DVD MAIN Assy ? (in the range of 0-5V)	**W51 DVDMAIN Assy** DVD IC (IC201) UCOM (IC5501)
		Are the signals of IC204-pin 5(SDA) and pin 6(SCL) on the W51 DVD MAIN Assy fluctuating for one or two seconds after the power is turned?	**W51 DVDMAIN Assy** EEPROM (IC204)
3	An opening screen is not displayed on the monitor (The FL display lights. The mechanism works.)	Check the video signal path between DVD IC (W51 DVDMAIN Assy IC201) and video-out terminal (see the block diagram)	**W51 DVDMAIN Assy** Video circuit after DVD IC (IC201)

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 CN104-pin 3 and pin 5 on the W51 DVDMAIN Assy change normally ? Pin 3 (SW2(TRIN)): Tray is fully closed: "L" Pin 5 (SW1(TROUT)): Tray is fully opened: "L"	**LOAB Assy** Tray SW (S101)
		Is the signal input into IC101-pin 11 (TROPEN) on the W51 DVDMAIN Assy? At open: 3.3V, At close: 0V	**W51 DVDMAIN Assy** DVD IC (IC201)
		Are the signals output from IC101-pin 1 and pin 2 (CN103-pin 1 and pin 2) on the W51 DVDMAIN Assy ? Pin 2: Approx. 6V during opening tray approx. 0V during closing tray. Pin 1: Approx. 0V during opening tray approx. 6V during closing tray.	**W51 DVDMAIN Assy** FTS Driver IC (IC101)
		Are wires of CN104 and CN103 on the W51 DVDMAIN Assy disconnected or damaged ?	Connector / cable
		Does the voltage of CN102-pin 1 on the W51 DVDMAIN Assy change to 0V by pressing the Inside switch.	Inside switch
5	Playback impossible (no focusing)	Are the signals output from IC101-pin 3 (FOCS_DRV) and pin 4 (FOCS_RTN) on the W51 DVDMAIN Assy ?	**W51 DVDMAIN Assy** FTS Driver IC (IC101)
		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 CN101 on the W51 DVDMAIN Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC201-pin 42 (FOSO) on the W51 DVDMAIN Assy ? (Device control of about 1.4 V is output usually. It is fluctuated by about ± 250 mV with focus up / down.)	**W51 DVDMAIN Assy** DVD IC (IC201)
6	Playback impossible (Spindle does not turn)	Are the signals output from IC101-pin 30 (W), pin 33 (V) and pin 35 (U) on the W51 DVDMAIN Assy ? Is pin 26 (STBY) fixed LOW ? (pin 26 is High at playback: 3V)	**W51 DVDMAIN Assy** FTS Driver IC (IC101)
		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 CN102 on the W51 DVDMAIN Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC201-pin 37 (DMSO) on the W51 DVDMAIN Assy ?	**W51 DVDMAIN Assy** DVD IC (IC201)
7	Playback impossible (Playback stops)	Does 650-nm LD deteriorate ? If the voltage at each both ends of R322 and R325 on the W51 DVD MAIN 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 R321 and R326 on the W51 DVD MAIN 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)
		Is there abnormality in FG waveform ? (IC201-pin 47)	**W51 DVDMAIN Assy** FG output : FTS Driver IC (IC101)
		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
		Check the video signals. Composite video signal (IC401-pin 25) S video signal (IC401-pin 21, pin 26) RGB video signal (IC401-pin 16, pin 18, pin 20)	**W51 DVDMAIN Assy** DVD IC (IC201) Video IC (IC401, IC451)
9	No sound (Picture is normal)	Check the waveform (SPDIF: CN901-pin 16).	**W51 DVDMAIN Assy** DVD IC (IC201)

● Symptoms that may occur when any of the following ICs is in failure

IC	Symptoms
EEP ROM (W51 DVDMAIN Assy : IC204)	User's data cannot be stored in memory. The ID number is lost.
Flash ROM (W51 DVDMAIN Assy : IC203)	The power cannot be turned on. Downloading of the firmware cannot be performed.
DVD IC (W51 DVDMAIN Assy : IC201)	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 (W51 DVDMAIN Assy : IC202)	No power. Block noise is generated during playback.

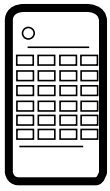
7.1.9 ID NUMBER AND ID DATA SETTING

Caution:
For the DVD players compatible with DVD-RW, for playback of a DVD-RW disc (CPRM), it is necessary that an individual ID number and ID data are set for each player. If the ID number and ID data be not properly set in the manner described below, future operations cannot be guaranteed. The ID number is written on the yellow label at the rear panel of the player.
If there is no yellow label, before downloading FLASH ROM, take note of the ID number set following the procedures outlined in "ID Number Confirmation Mode" on the next page.

Note: Enter ID numbers while the unit is in Stop mode so that the values set will be immediately written to the flash ROM.

Setting an ID number or ID data is required in the following case:
If "No NUM" or "NO DATA" is displayed on the FL display for a few seconds immediately after the power to the player is turned on or during Stop mode.

JIGS AND MEASURING INSTRUMENTS

 Service Remote Control Unit [GGF1381]	 DVD Data Disc [GGV1175]

ID Number Input Mode

① To enter ID Number Input Mode, with no ID number set, such as in a case of immediately after upgrading the firmware, press the ESC key then the STEREO key.

Note: If a previous ID number and ID data, such as a factory-preset ID number and ID data, are maintained, the unit enters ID Number Confirmation Mode when the above keys are pressed. However, if only an ID number is maintained, the unit enters ID Data Input Mode.

② Enter a 9-digit ID number. The ID number is also displayed on the FL display.

③ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
 ---------
②
③ <CLEAR>  Exit

 Input ID Number !
```

④ After entering all 9 digits, if you press the PLAY key, the unit enters Compare mode. Enter the same ID number again. Only if your two input numbers match, the ID number is set. Compare mode helps eliminate mistyping of the ID number.

Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ② without doing anything else.

⑤ After entering all 9 digits, if you press the SEARCH key, the unit unconditionally sets the input number as the ID number. Then the unit automatically enters Player's Data Input Mode. (The SEARCH key is not accepted after all 9 digits have been entered.)

```
[Player's ID Number Setting]
 ID Number ?
  0 0 0 0 0 0 0 0 1

④ <PLAY>      Compare Mode
⑤ <SEARCH>  Enter

 Input ID Number !
```

⑥ This display appears when the PLAY key is pressed in Step 4. Enter a 9-digit number to compare. The number is also displayed on the FL display.

⑦ By pressing the CLEAR key without having input a number, the unit returns to Step ② without doing anything else. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
⑥   * * * * * * * * *


 Input ID Number !
```

⑧ After entering all 9 digits, if you press the PLAY key, the unit compares the numbers input in Steps ② and ⑥, and only if the numbers match, that number is set as the ID. Then the unit automatically enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Input Mode.

Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ⑥ without doing anything else.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
    0 0 0 0 0 0 0 0 1

⑧ <PLAY>  Enter

 Input ID Number !
```

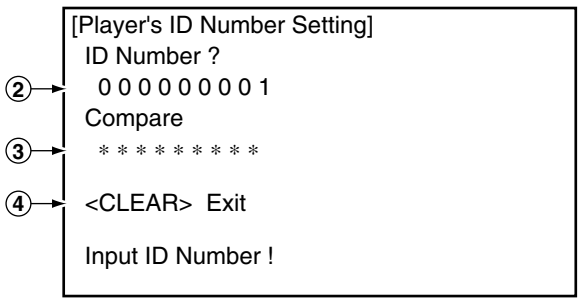
■ ID Number Confirmation Mode

① To enter ID Number Confirmation Mode after the ID number and the ID data are set, press the ESC key then the STEREO key.

② The ID number already set is displayed.
(It is also displayed on the FL display.)

③ Enter a 9-digit number for comparison. This is not required when you only wish to check the ID number visually.
(The number is also displayed on the FL display.)

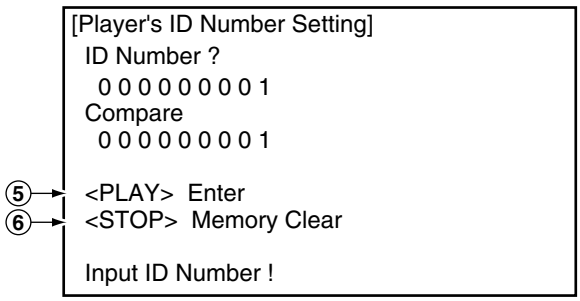
④ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.



⑤ After entering all 9 digits, if you press the PLAY key, the unit compares the number entered in Step ② with the ID number set, and only if the numbers match, the unit automatically exits ID Number Confirmation Mode. If an ID data has not been entered, the unit enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Confirmation Mode.

Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ④ without doing anything else.

⑥ After entering all 9 digits, if you press the STOP key, the unit compares the number entered in Step ③ with the ID number set, and only if the numbers match, the unit automatically deletes the ID number and exits this mode. If the numbers do not match, the disc tray is opened, and the unit exits this mode. (The STOP key is not accepted after all 9 digits have been entered.)



• Indication of an ID number already set

An ID number already set is displayed in the following cases:

1) When the ESC key then the CLEAR key are pressed, user settings are cleared, then the ID number set is displayed on the screen. In this case, the ID number is not displayed on the FL display.
2) When the unit enters ID Number Confirmation Mode by your pressing the ESC key then the CLEAR key, the ID number set is displayed. In this case, the ID number is also displayed on the FL display.
If you only need to confirm the ID number, you can exit this mode by pressing the CLEAR key or turning off the power.

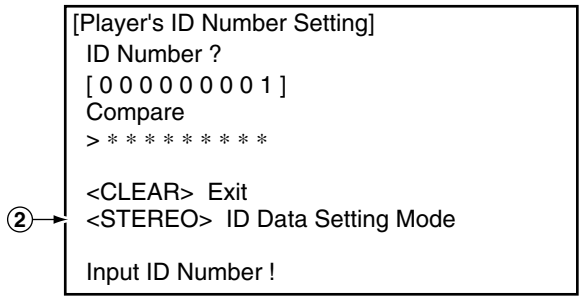
• Indication when no ID number is set

If no ID number is set, the message "No NUM" flashes on the screen and FL display for a few seconds after the power is turned on or during Stop mode.

ID DATA Input Mode

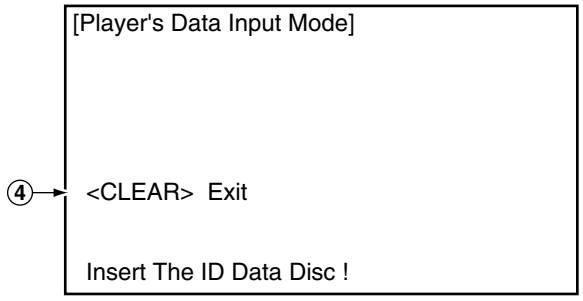
① To enter ID DATA Input Mode, with the ID number set, press the ESC key then the STEREO key.

② When the STEREO key is pressed, the unit enters ID DATA Input Mode.



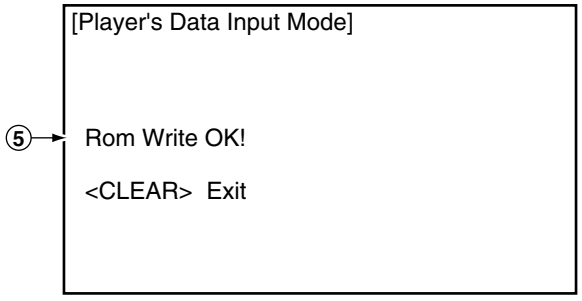
③ If the DVD DATA DISC is loaded in this mode, the unit automatically starts reading the data.
(If the DVD DATA DISC has already been loaded, the unit does not start reading the data. In this case, open then close the tray.)

④ To exit this mode, press the CLEAR key. While data are being read from the DVD DATA DISC, you cannot exit this mode.

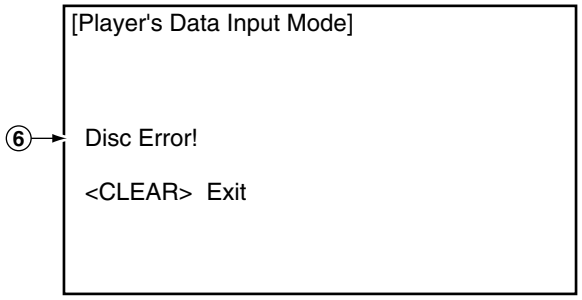


⑤ When writing of the data read from the disc to flash ROM is completed, "Rom Write OK!" is displayed. After seeing this message, you can exit this mode by pressing the CLEAR key.

Note: Whether or not the data have been written to flash ROM can be confirmed by watching for the message "Rom Write OK!" being displayed after the disc is read.



⑥ If the data cannot be read from the disc, "Disc Error!" is displayed on the screen, and the disc is ejected.

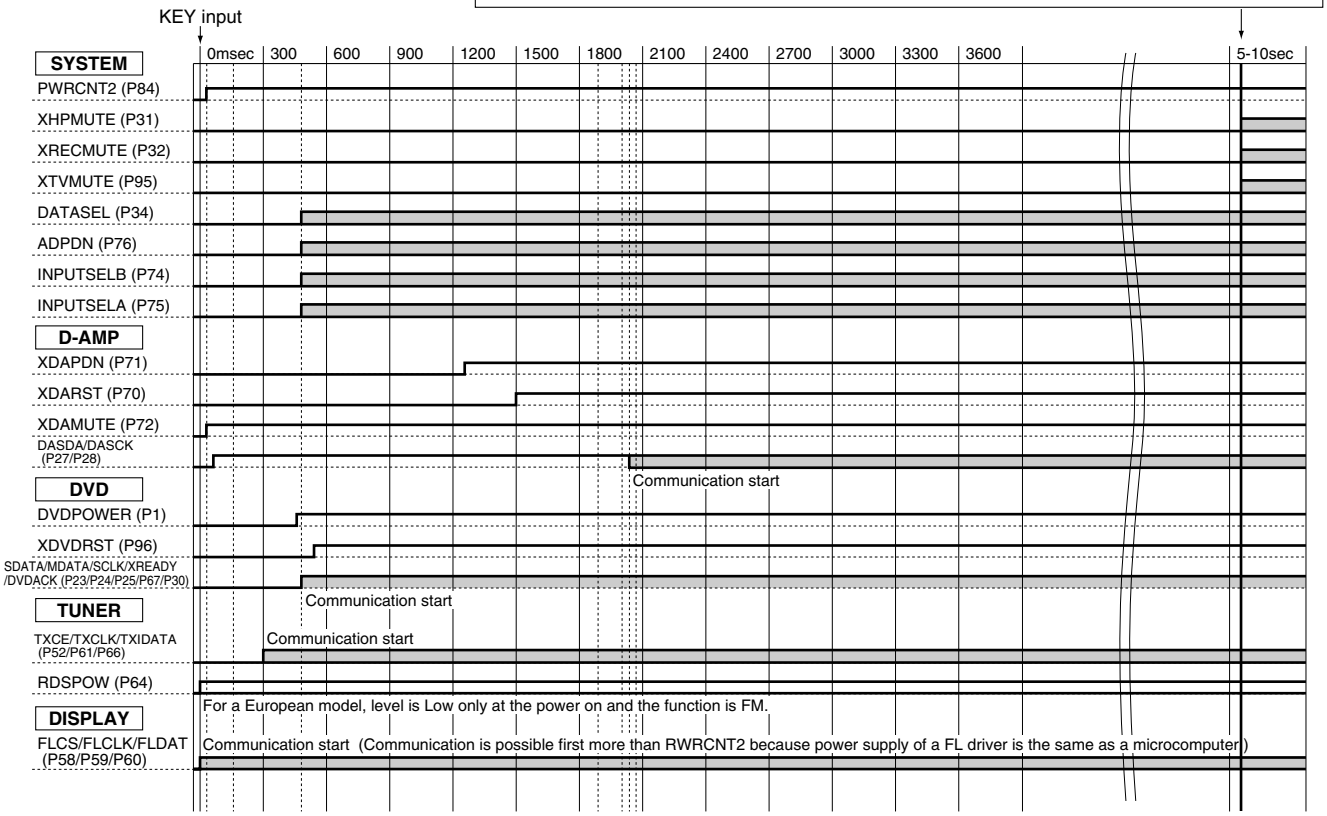


• Indication when the data have not been set
If no ID data are set after the ID number is changed, the message "NO DATA" flashes on the screen and FL display for a few seconds after the power is turned on or during Stop mode.

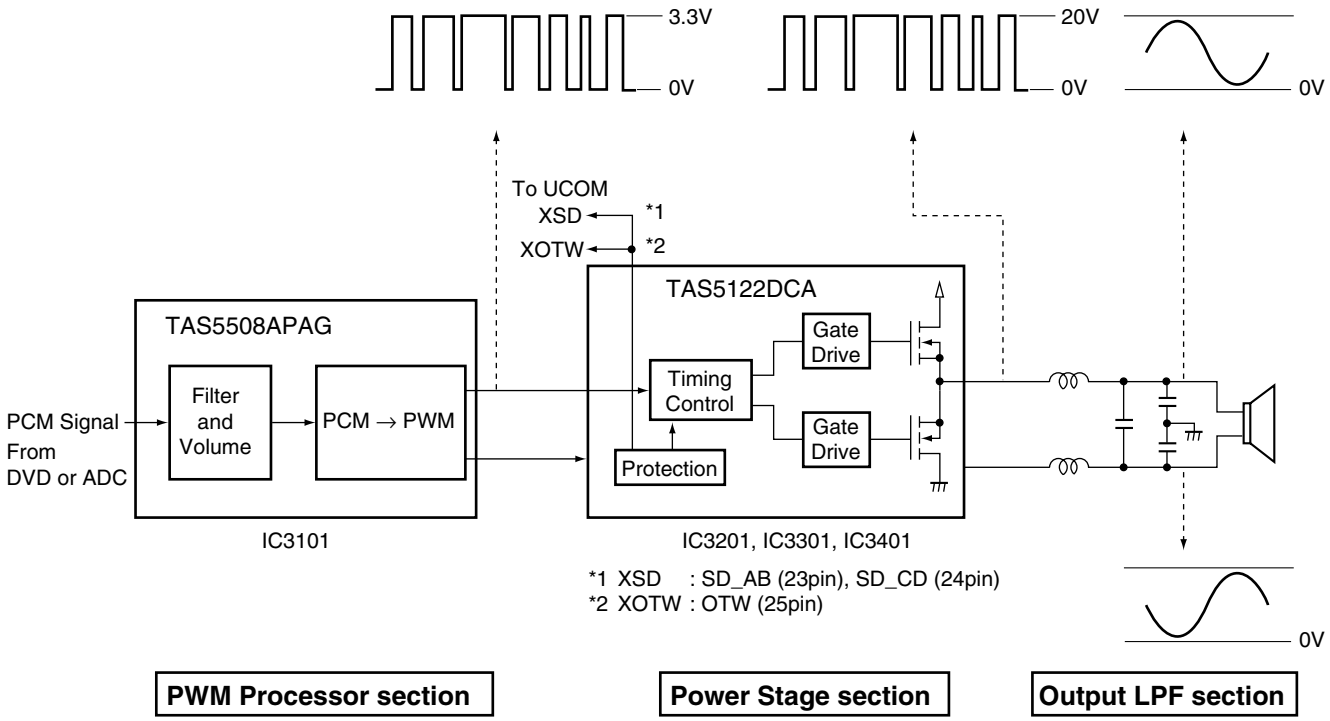
7.1.10 POWER ON SEQUENCE

STANDBY → ON

Canceling muting
- The time required to cancel muting varies depending on the acoustic-field setting. It takes longer to cancel muting if SFC or the channel level has been set.
- When the function is set to DVD, the time required to cancel muting differs depending on a DVD operation. Muting continues until disc detection has been finished.



7.1.11 CIRCUIT DESCRIPTION OF DIGITAL AMP. SECTION



PWM Processor section

The PCM signals output from the DVD decoder or AD converter are input to this section, and their volume and sound quality are digitally adjusted. At the output stage, after conversion from PCM to PWM, the signals are output to the Power stage.

Power Stage section

In this section, timing is controlled so that the MOSFETs on the high and low sides will not be turned on simultaneously. The voltage of the PWM signals are raised to drive the gates of the MOSFET, and the PWM signals to drive the speakers are output from the MOSFET at the output stage. Detection and protection functions against short-circuiting of the output signals and temperature exceeding the standard value are also provided.

If the detection and protection work, the ports of the power stage ICs become the following state.

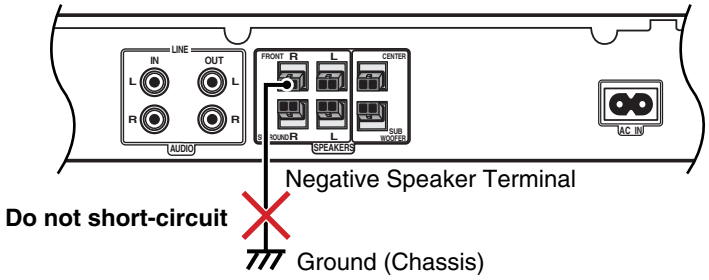
Power Stage ICs No.	Protection Enable State
IC3201	SD_AB (23pin) ⇒ L
IC3301	SD_CD (24pin) ⇒ L
IC3401	OTW (25pin) ⇒ L

Output LPF section

The carrier elements, high-frequency signals that are unnecessary for these speakers, are eliminated. The signals passed through the LPF will become sine-wave signals, as shown in the figure above.

Attention

As a signal to drive the BTL is output from the negative speaker terminal, DO NOT short-circuit between the negative speaker terminal and ground, such as the chassis.



7.1.12 SPECIFICATIONS FOR THE PROTECTION CIRCUITS FOR THE DIGITAL AMPLIFIER

The protection circuits for the Digital Amplifier are activated, following the specifications shown below. The error indication on the FL display shows the reason a protection circuit was activated.
Upon diagnosis of the Digital Amplifier, refer to the specifications for the protection circuits here and the overview of the Digital Amplifier circuitry.

1. Overview

The system microcomputer monitors the ports for shutdown requests (Pin 23:SD_AB and Pin 24: SD_CD) and the ports for abnormal-temperature detection (Pin 25: /OTW) of the Power Stage ICs (IC3201, IC3301, and IC3401). As soon as any abnormality is detected, it shuts the unit down.
To notify the user of the possibility of a too high a volume, when the unit is turned on the next time, the volume level will be set to 0, and an error message will be displayed on the FL display.

2. Ports on the system microcomputer to be used for detection

Pin 77: SHUTDOWN
Low voltage at this pin means overcurrent or voltage too low (= V+B27) at a Power Stage IC.

Pin 79: XOTW
Low voltage at this pin means the temperature at the Power Stage ICs exceeded 125°C.

Note: As one Power Stage IC is provided with two channels, three Power Stage ICs (in total 6 channels) are mounted in this unit. For abnormality detection, the unit implements a logical OR operation regarding these three ICs. Therefore, which IC is abnormal cannot be known directly. To find which IC is abnormal, it ischeck the PWM outputs (35, 38, 47, 50 pin) of the each power stage ICs (IC3201, IC3301, IC3401).

3. Detection timing

Start : Detection starts 500 ms after the PWRCONT 2 port (Pin 84) of the system microcomputer becomes active by your pressing the STANDBY/ON key.

Finish : When the STANDBY/ON key is pressed again (when the power-off process starts).

4. Operation of the protection circuits

The following three protection circuits are activated when the conditions shown below are met:

Overcurrent detection: Indication on the FL display: OC ERROR
Conditions: If the SHUTDOWN ports, which are monitored every 10 ms, become low 7 out of 10 times. (If they become low 7 times in succession, the conditions are met at that point.)

Abnormal temperature detection 1: Indication on the FL display: OVERTEMP
Conditions: If the XOTW ports, which are monitored every 10 ms, become low in succession for one minute.

Abnormal temperature detection 2: Indication on the FL display: OVERTEMP
(Prerequisite: The XOTW ports, which are monitored every 10 ms, become low three times in succession.)
Conditions: The above prerequisite is upheld, and the conditions for an overcurrent detection are met.

5. Process when the protection circuits are activated

The unit is shut down within 30 ms after abnormality detection then the volume level is set to 0. The unit can be turned on immediately after the shutdown.

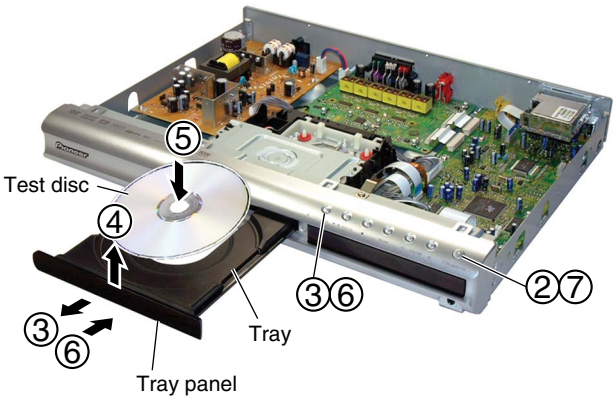
7.1.13 DISASSEMBLY

Note 1: Do NOT look directly into the pickup lens. The laser beam may cause eye injury.
Note 2: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

Diagnosis of PCB's

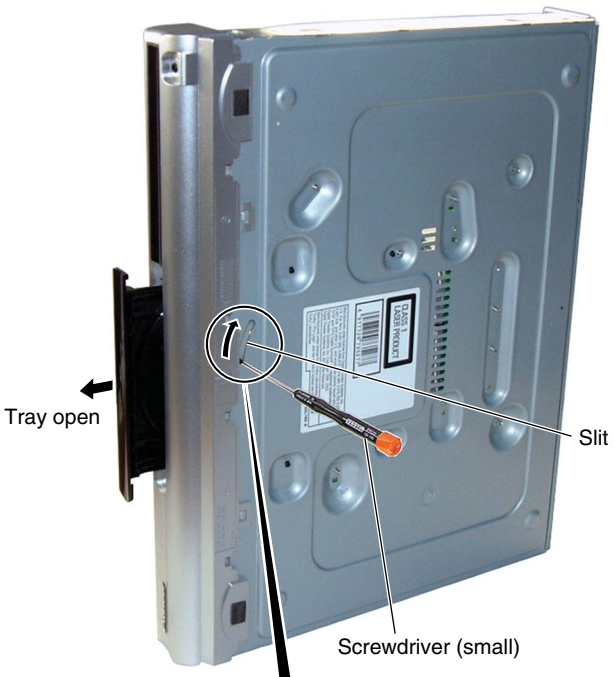
1 Bonnet Case, Tray Panel

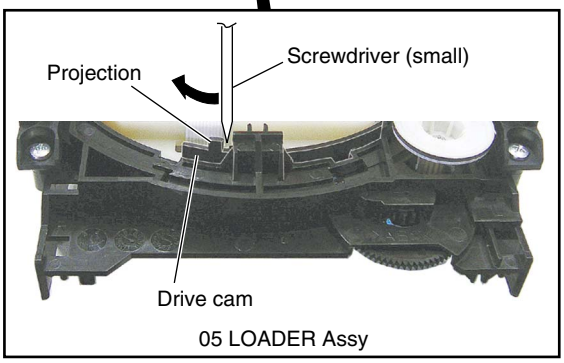
① Remove the bonnet case by removing the nine screws.
② Press the ⏻ STANDBY/ON button to turn on the power.
③ Press the ⏏ OPEN/CLOSE button to open the tray.
④ Remove the tray panel.
⑤ Set the test disc.
⑥ Press the ⏏ OPEN/CLOSE button to close the tray. (Test disc is clamped.)
⑦ Press the ⏻ STANDBY/ON button to turn off the power.
⑧ Pull out the Power cord.



● **How to open the tray when the power cannot be on**

Insert a screwdriver (small) into the slit located at the bottom of the unit, and slide the projection of the drive cam in the 05 LOADER Assy in the direction of the arrow, as indicated in the photo. If the tray pops out a little, fully pull it out by hand.

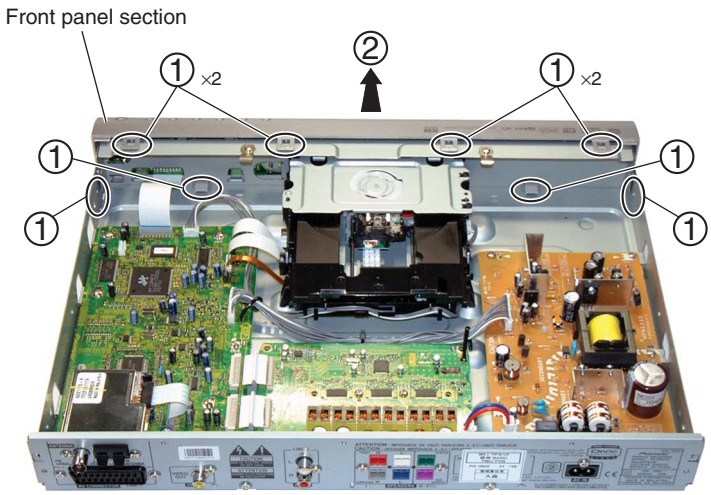




● **Bottom view**

2 Front panel section

① Remove the eight hooks.
② Remove the front panel section.



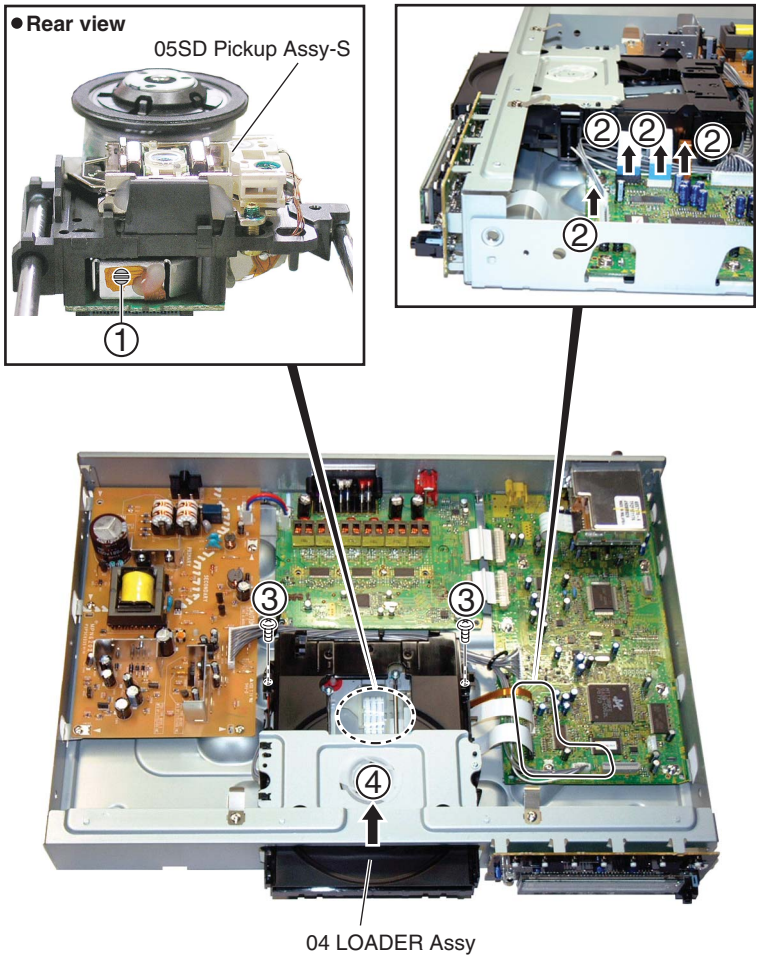
Removing the Traverse Mechanism Assy-S and 05SD Pickup Assy-S

1 05 LOADER Assy

① Short-circuit point by soldering.

Note: After replacement, connect the flexible cable, then remove the soldered joint (open).

② Disconnect the four connectors.
③ Remove the two screws.
④ Remove the 05 LOADER Assy.

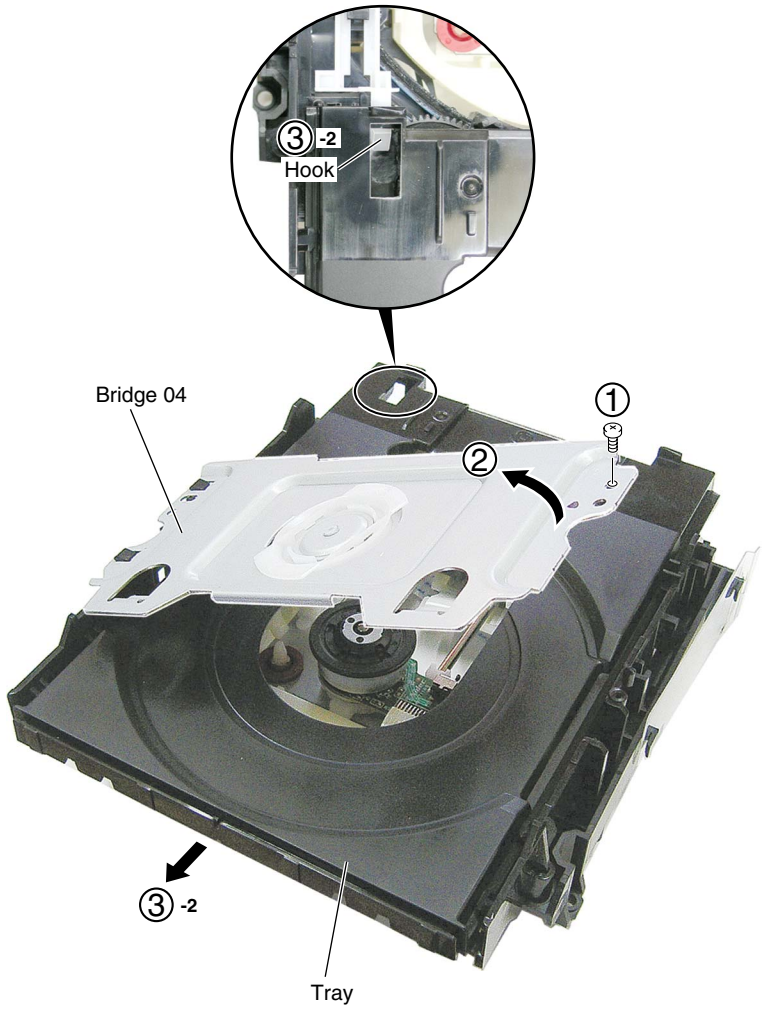


2 Bridge 04, Tray

① Remove the one screw.

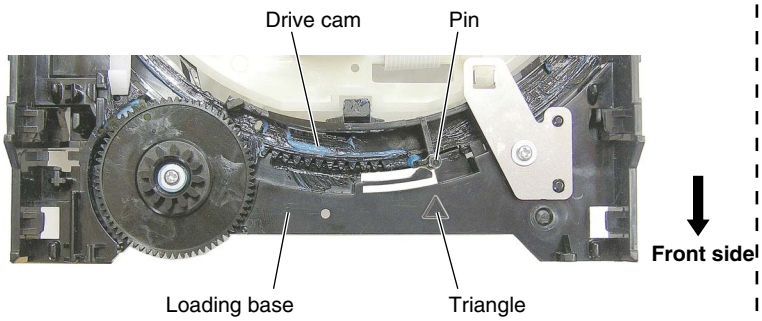
② Remove the bridge 04.

③ Pull out the tray, then remove it by pressing the hook.



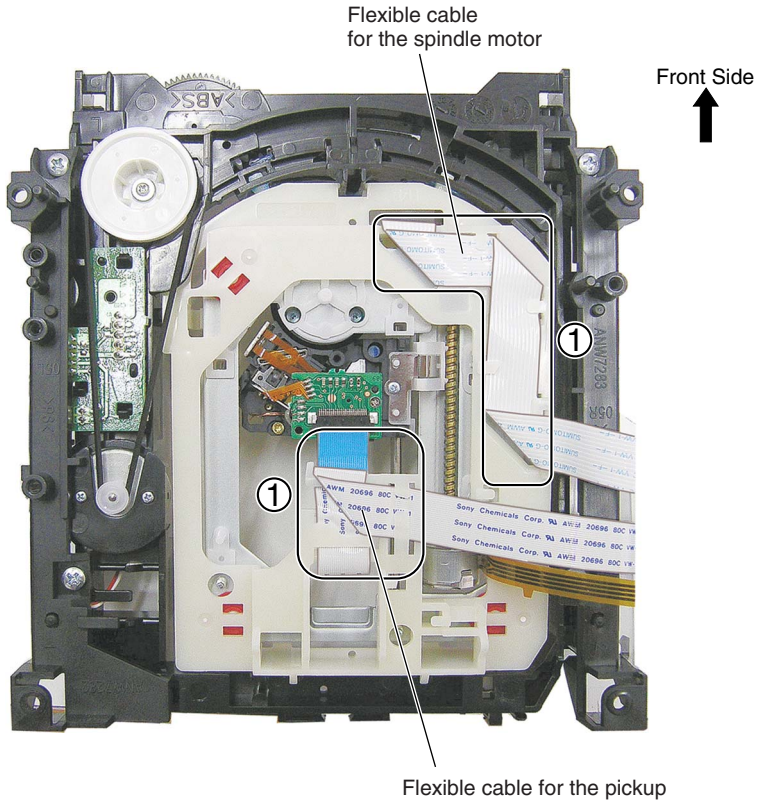
Note when reinserting the tray

When reinserting the tray, first align the triangle printed on the loading base and the pin of the drive cam, then insert the tray.



3 Traverse Mechanism Assy-S

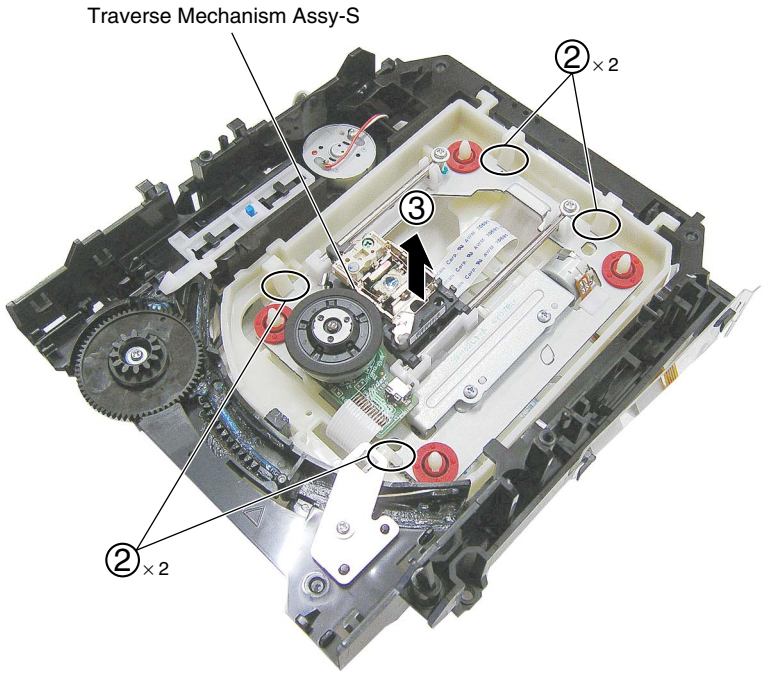
① Dislodge the two flexible cables from their factory placement.



● **Bottom view**

② Unhook the four hooks.

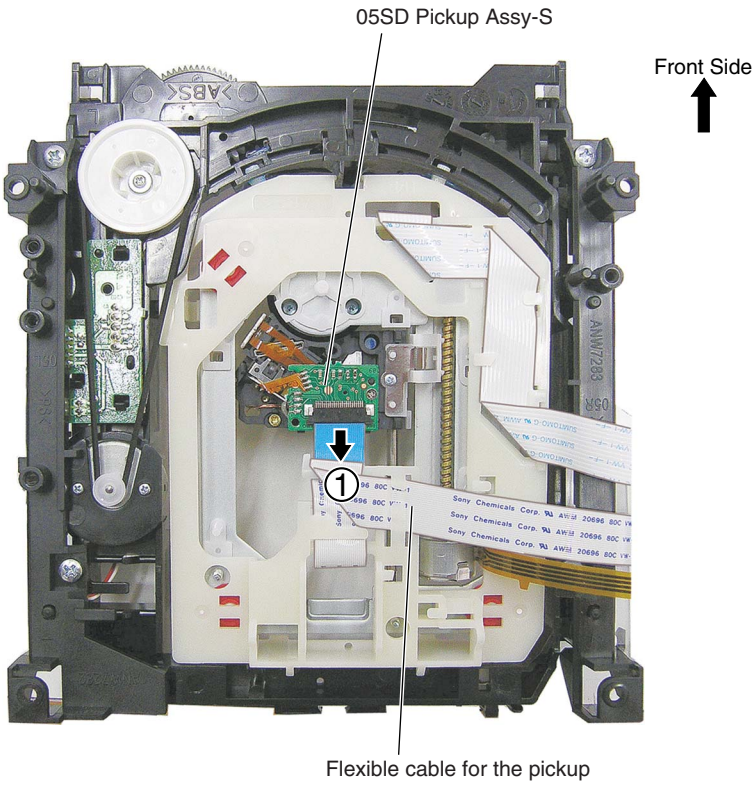
③ Remove the Traverse Mechanism Assy-S



4 05SD Pickup Assy-S

Note: The 05SD Pickup Assy can be removed without removing the TTraverse Mechanism Assy-S.(shown as Step 3.)

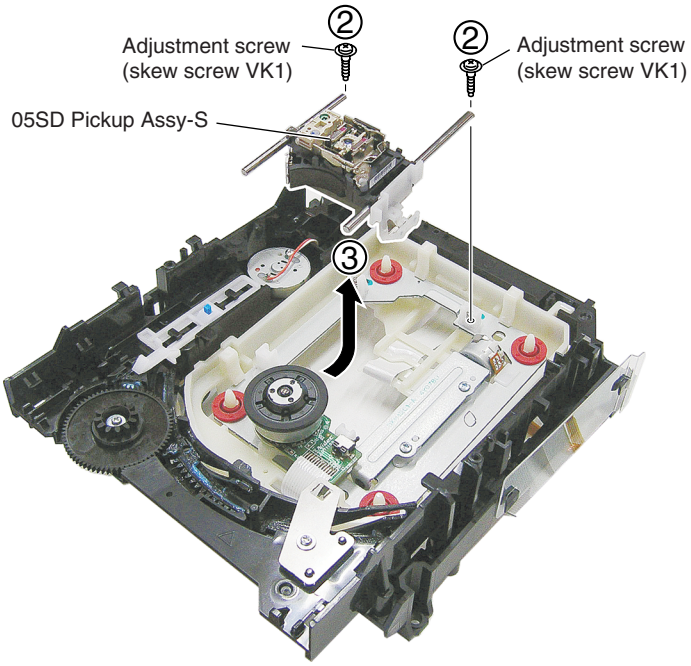
① Disconnect the flexible cable for the pickup.



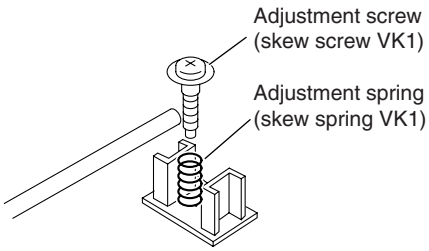
● **Bottom view**

② Remove the two adjustment screws.

③ Remove the 05SD Pickup Assy.

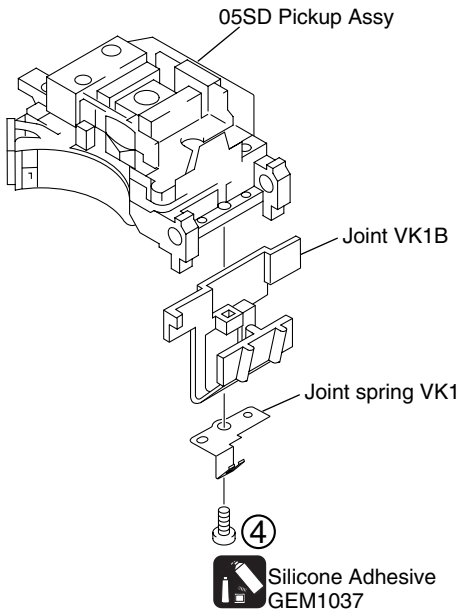


Note: Be careful not to lose the adjustment spring (skew spring VK1).



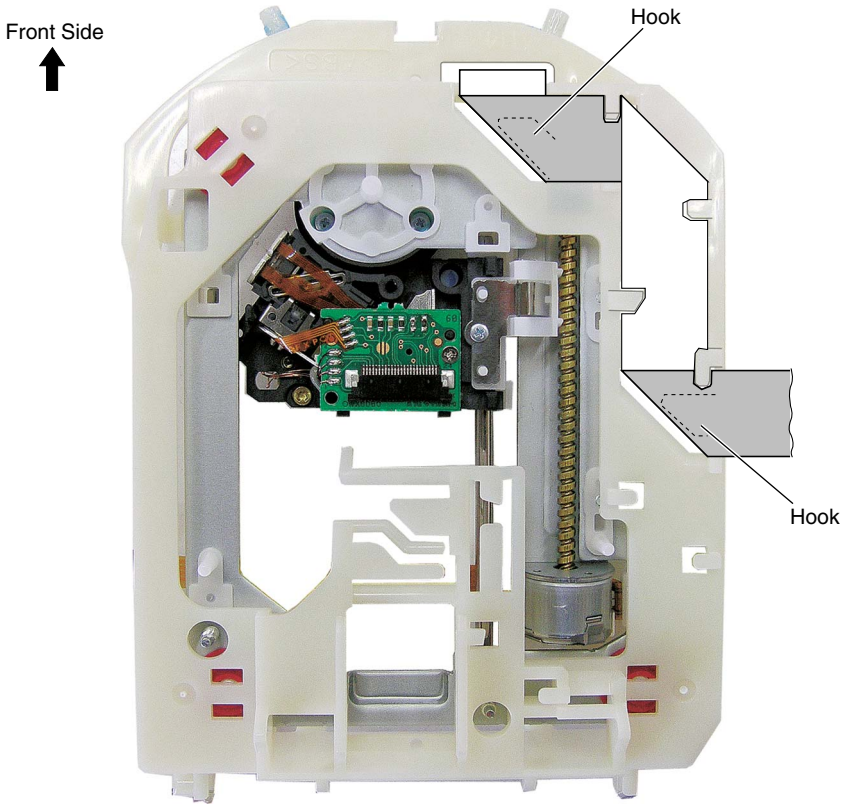
④ Remove the one screw.

Note: The screw is secured with the silicone adhesive.
Make sure to apply the silicone adhesive after reattaching the screw.



Arrangement of the flexible cable for the spindle motor

: Conductive surface



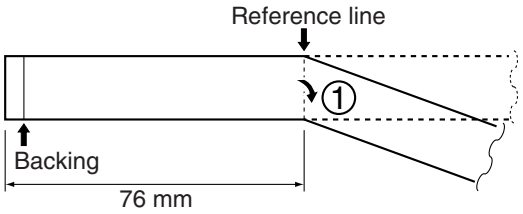
● **Bottom view**

Arrangement of the flexible cable for the pickup

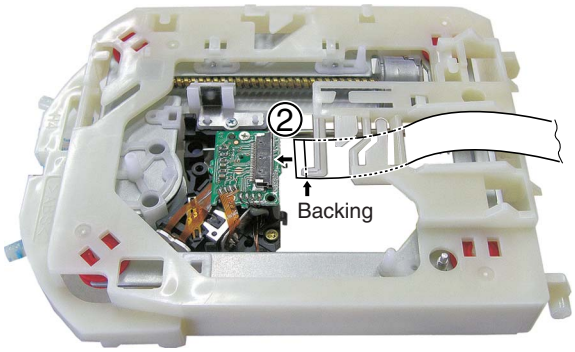
: Conductive surface

Note:
Be sure to move the 05SD Pickup Assy to the innermost perimeter.

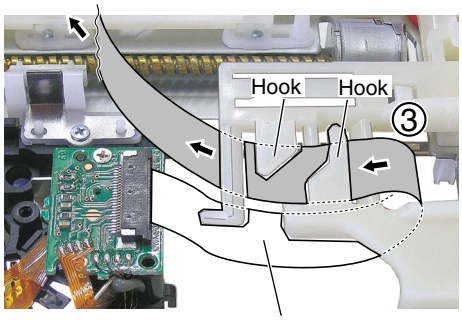
① Fold the flexible cable for the pickup with the backing outward in the illustration below.



② Attach the flexible cable for the pickup to the connector.

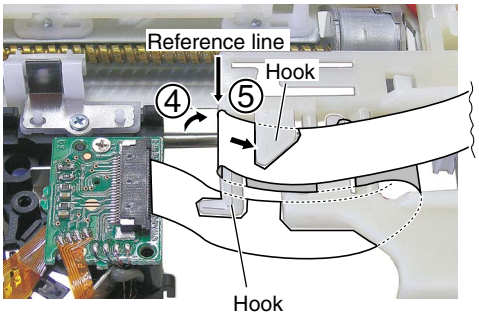


③ Pass the flexible cable through the hook.



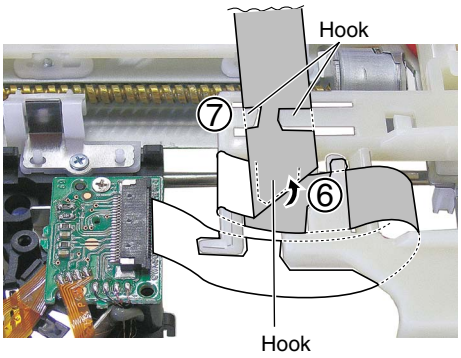
④ Hook the part folded in Step ① to the hook.

⑤ Pass the flexible cable through the hook.



⑥ Fold the flexible cable along the hook.

⑦ Pass the flexible cable through the hook.



7.2 PARTS
7.2.1 IC

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

• List of IC

PDC124B, BD7995EFS, MT1389FE/C2-L, TAS5122DCA, AK5357ET, TAS5508APAG, PT6315, S-93C46BD01-J8T1

■ PDC124B (W51 DVDMAIN ASSY : IC5501)

• System Control Microcomputer

● Pin Functions

No.	Mark	Pin Name	I/O	Pin Function
1	PA3/WR#	DVDPOWER	O	Control power supply for DVD module
2	PA4/RD#	HPDET	I	Detect to insert headphone
3	PA5/RS	HPSEL	O	TAS5508 HP_SEL
4	P70 / INT0 / T0LCP / AN8	ACDET	I	Powerdown Detection
5	P71 / INT1 / T0HCP / AN9	P_ON	I	REMOCON 2 (Power On)
6	P72 / INT2 / T0IN	RDSCLK	I(O)	Clock input from RDS decoder (Interruption 2, without RDS : Low output)
7	P73 / INT3 / T0IN	REMOCON	I	REMOCON signal input (Interruption 3)
8	RES#	XRESET	I	μ-com reset input
9	XT1 / AN10	XT1	–	Subclock (connect to VDD when no use)
10	XT2 / AN11	XT2	–	Subclock (leave open when no use, and set the bit 6 of OCR SFR)
11	VSS1	VSS1	–	Ground
12	CF1	CF1	–	Main Clock (connect to VDD when no use)
13	CF2	CF2	–	Main Clock (leave open when no use)
14	VDD1	VDD1	–	Power supply
15	P80 / AN0	SIMUKE	I	Destination distinction input
16	P81 / AN1	MODEL	I	Model distinction input
17	P82 / AN2	VDET	I	DVD3.3V detection input
18	P83 / AN3		I	
19	P84 / AN4	KEY2	I(O)	Key2 input
20	P85 / AN5		I(O)	
21	P86 / AN6	PCONFIG	I	Power Configuration
22	P87 / AN7	XPROTECT	I	Protection and Fan Error detection input
23	P10/SO0	SDATA	O	System bus data output (AMP side output)
24	P11 / SI0 / SB0	MDATA	I	System bus data input (AMP side input)
25	P12 / SCK0	SCLK	I	System bus clock input
26	P13 / SO1		O	
27	P14 / SI1 / SB1	DASDA	I(O)	I2C data for D-AMP
28	P15 / SCK1	DASCL	O	I2C clock for D-AMP
29	P16/T1PWML		O	
30	P17/T1PWMH/BUZ	XREADY	O	XREADY for DVD module
31	PE0	XHPMUTE	O	HP MUTE ON/OFF
32	PE1	XRECMUTE	O	REC OUTPUT MUTE ON/OFF
33	PE2	(UTEST_CHK)	O	UNITCHECK IN for checker
34	PE3	SELPOW	O	Data Selector
35	PE4	(UTEST_EEPOK)	O	EEPROM CHECK OK for checker
36	PE5	(UTEST_MODE)	O	CHECK MODE of UNITECHECK for checker
37	PE6		O	
38	PE7		O	
39	VSS4	VSS4	–	Ground
40	VDD4	VDD4	–	Power supply

No.	Mark	Pin Name	I/O	Pin Function
41	PF0		O	
42	PF1		O	
43	PF2	STEST	I	Set TESTMODE for Service
44	PF3	UTEST	I	Set UNITCHECK for checker
45	PF4		O	
46	PF5		O	
47	PF6		O	
48	PF7	EEP_CS	O	
49	SI2P0/SO2	EEP_DO	O	
50	SI2P1/SI2/SB2	EEP_DI	I	
51	SI2P2/SCK2	EEP_SK	O	
52	SI2P3/SCK20	TXCE	O	Chip enable for tuner LSI
53	PWM1		O	
54	PWM0		O	
55	VDD2	VDD2	–	Power supply
56	VSS2	VSS2	–	Ground
57	P00		O	Reset for FL driver
58	P01	FLCS	O	Chip enable for FL driver
59	P02	FLCLK	O	Clock for FL driver
60	P03	FLDAT	O	Data for FL driver (serial data input)
61	P04	TXCLK	O	Clock for tuner LSI
62	P05	TXODAT	O	Data for tuner LSI
63	P06		O	
64	P07	RDSPOW	O	Control power supply of RDS(L: POWER ON)
65	P20/INT4/T1IN	RDSDATA	I(O)	Input RDS data
66	P21/INT4/T1IN	TXIDATA	I	Input data from tuner LSI
67	P22/INT4/T1IN	DVDACK	I	Ackknowlegement from DVD MODULE(Interruption 4)
68	P23/INT4/T1IN		O	
69	P24/INT5/T1IN	KEY1	I	Key1 input (PowerOn/Standby key only)
70	P25/INT5/T1IN	XDARST	O	RESET for D-AMP
71	P26/INT5/T1IN	XDAPDN	O	POWER DOWN for D-AMP
72	P27/INT5/T1IN	XDAMUTE	O	D-AMP MUTE
73	P30		O	
74	P31	INPUTSELB	O	AUDIO INPUT SELECT B
75	P32	INPUTSELA	O	AUDIO INPUT SELECT A
76	P33	ADPDN	O	POWER DOWN for A/D
77	P34	SHUTDWN	I	D-AMP SHUTDOWN detection
78	P35		I	
79	P36	XOTW	I	D-AMP Over Temperature Warning
80	PB7/D7		O	

No.	Mark	Pin Name	I/O	Pin Function
81	PB6/D6		O	
82	PB5/D5		I	
83	PB4/D4		O	
84	PB3/D3	PWRCONT2	O	Power control for SMPS
85	PB2/D2		O	
86	PB1/D1		O	
87	PB0/D0		O	
88	VSS3	VSS3	–	Ground
89	VDD3	VDD3	–	Power supply
90	PC7/A7	FLASHE/D	–	for FLASH writing / On board debugger
91	PC6/A6	FLASHDO	–	for FLASH writing / On board debugger
92	PC5/A5	FLASHCLK	–	for FLASH writing / On board debugger
93	PC4/A4		O	
94	PC3/A3	TXPOWER	O	Control power supply of Tuner etc.
95	PC2/A2	XTVMUTE	O	Control mute of SCART(Audio)
96	PC1/A1	XDVDRST	O	RESET to DVD MODULE
97	PC0/A0		O	
98	PA0/CS2#		O	
99	PA1/CS1#		O	
100	PA2/CS0#		O	

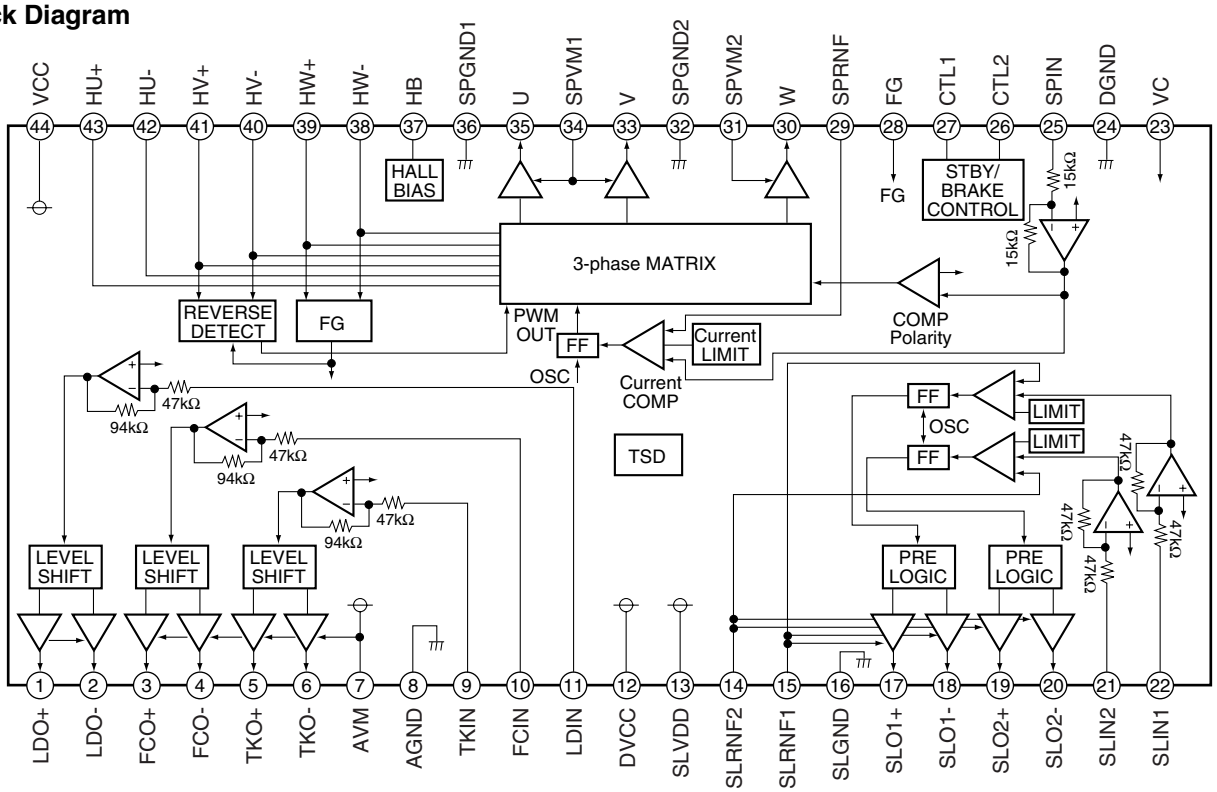
- Port0 (P00-P07) can be selected for input or output by each 4 bits (P00-P03,P04-P07). Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port1 (P10-P17) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1bit in option.
- Port2 (P20-P27) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port3 (P30-P36) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port7 (P70-P73) can be selected for input or output by each 1 bit. Set for input when reset.
- Port8 (P80-P87) can be selected for input or output by each 1 bit. Set for input when reset.
- PortA (PA0-PA5) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortB (PB0-PB7) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortC (PC0-PC7) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortE and PortF can be selected for input or output by each 2 bits.

- In case of without RDS, it is best that RDSDATA and RDSCLK are assigned as I/O port which can be set output and output low level.

■ BD7995EFS (W51 DVDMAIN ASSY : IC101)

• Video Driver

● Block Diagram



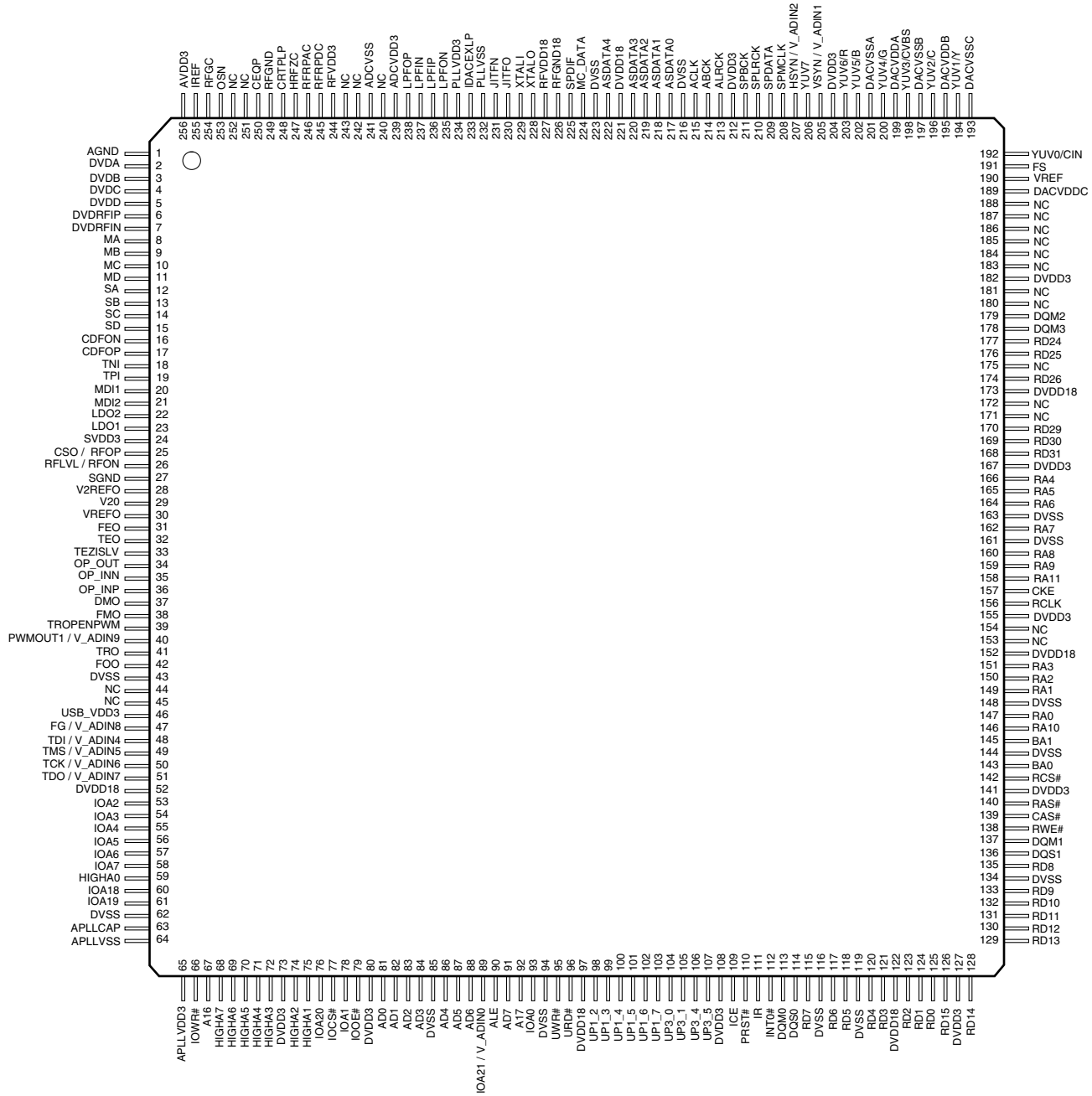
● Pin Function

No.	Pin Name	I/O	Pin Function	No.	Pin Name	I/O	Pin Function
1	LDO+	O	Loading driver positive output	23	VC	I	Control reference voltage input
2	LDO-	O	Loading driver negative output	24	DGND	–	Pre-ground for PWM block
3	FCO+	O	Focus driver positive output	25	SPIN	I	Spindle control input
4	FCO-	O	Focus driver negative output	26	CTL2	I	Driver logic control input 2
5	TKO+	O	Tracking driver positive output	27	CTL1	I	Driver logic control input 1
6	TKO-	O	Tracking driver negative output	28	FG	O	FG signal output
7	AVM	–	Actuater driver power supply	29	SPRNF	I	Spindle current detecting input
8	AGND	–	Ground for BTL block	30	W	O	Spindle W-phase output
9	TKIN	I	Tracking driver input	31	SPVM2	I	Power supply input 2 of spindle block
10	FCIN	I	Focus driver input	32	SPGND2	–	Power ground 2 of spindle block
11	LDIN	I	Loading input	33	V	O	Spindle V-phase output
12	DVCC	–	Control power supply for PWM block	34	SPVM1	I	Power supply input 1 of spindle block
13	SLVDD	–	Pre-power supply for Sled motor MOS	35	U	O	Spindle U-phase output
14	SLRNF2	I	Current detection input of sled motor driver 2	36	SPGND1	–	Power ground 1 of spindle block
15	SLRNF1	I	Current detection input of sled motor driver 1	37	HB	–	Hall bias
16	SLGND	–	Ground of sled motor driver power	38	HW-	I	Hall signal W- input
17	SLO1+	I	Positive output of sled motor driver 1	39	HW+	I	Hall signal W+ input
18	SLO1-	O	Negative output of sled motor driver 1	40	HV-	I	Hall signal V- input
19	SLO2+	O	Positive output of sled motor driver 2	41	HV+	I	Hall signal V+ input
20	SLO2-	O	Negative output of sled motor driver 2	42	HU-	I	Hall signal U- input
21	SLIN2	I	Sled motor driver input 2	43	HU+	I	Hall signal U+ input
22	SLIN1	I	Sled motor driver input 1	44	VCC	–	Pre loading power supply for BTL block

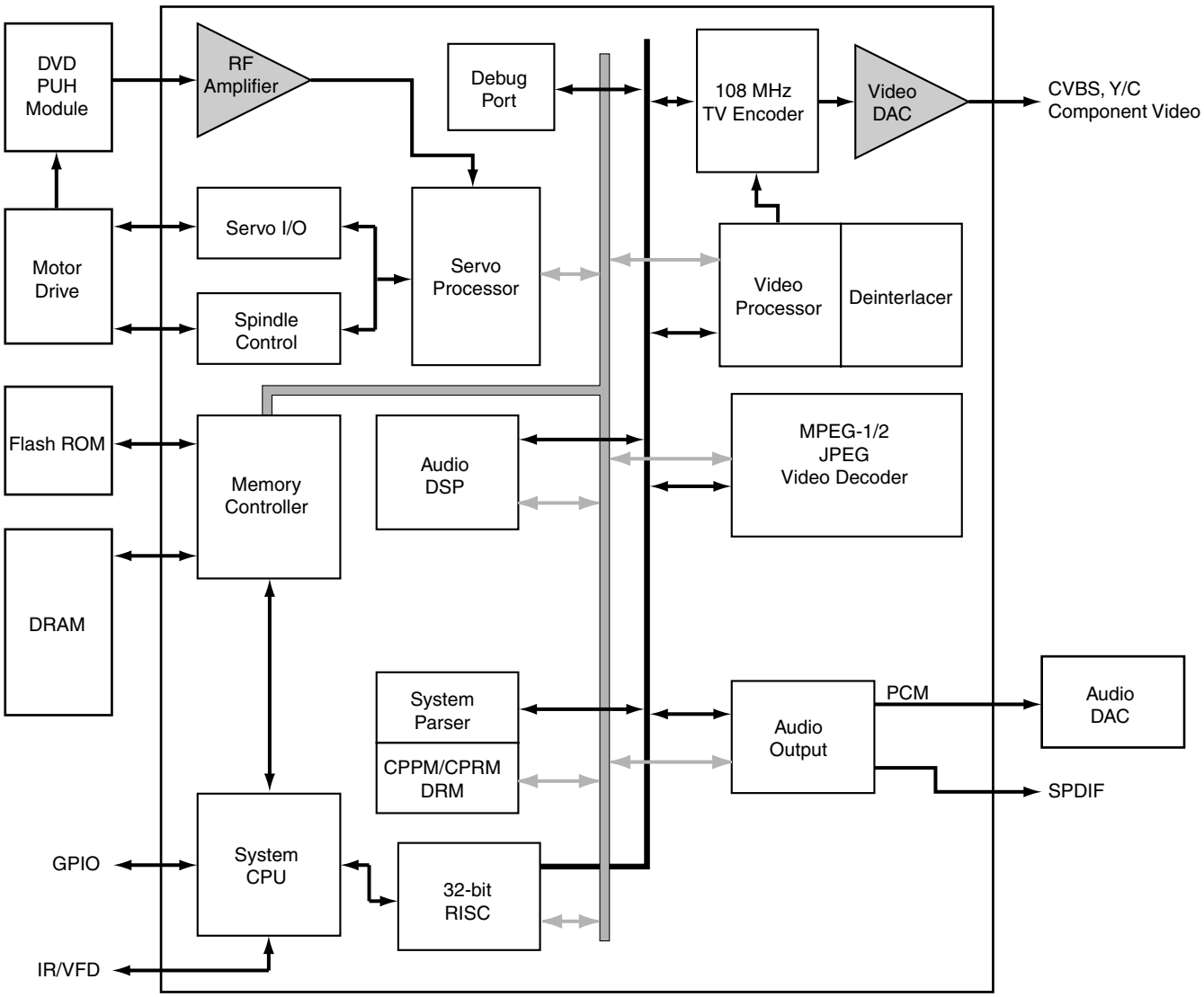
MT1389FE/C2-L (W51 DVDMAIN ASSY : IC201)

• DVD IC

● Pin Arrangement (Top view)



● Block Diagram



● Pin Function

■ RF Interface (28)

No.	Name	Alt.	I/O	Function
226	RFGND18		Ground	Analog ground
227	RFVDD18		Power	Analog power 1.8V
250	NC			
251	NC			
252	OSP		Analog output	RF Offset cancellation capacitor connecting
253	OSN		Analog output	RF Offset cancellation capacitor connecting
254	RFGC		Analog output	RF AGC loop capacitor connecting for DVD-ROM
255	IREF		Analog Input	Current reference input. It generates reference current for RF path. Connect an external 15K resistor to this pin and AVSS.
256	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)

No.	Name	Alt.	I/O	Function
20	MDI1		Analog Input	Laser power monitor input
21	MDI2		Analog Input	Laser power monitor input
22	LDO2		Analog Output	Laser driver output
23	LDO1		Analog Output	Laser driver output

■ ADC for SACD (5)

No.	Name	Alt.	I/O	Function
239	ADCVDD3		Power	Analog 3.3V Power for ADC
240	NC			
241	ADCVSS		Ground	Analog ground for ADC
242	NC			
243	NC			

■ Reference Voltage (3)

No.	Name	Alt.	I/O	Function
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)**

No.	Name	Alt.	I/O	Function
24	SVDD3		Power	Analog power 3.3V
25	CSO	RFOP	Analog output	Central servo Positive main beam summing output
26	RFLVL	RFON	Analog output	RFRP low pass, or 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 (6)**

No.	Name	Alt.	I/O	Function
244	RFVDD3		Power	Analog Power
245	RFRPDC		Analog output	RF ripple detect output
246	RFRPAC		Analog Input	RF ripple detect input(through AC-coupling)
247	HRFZC		Analog Input	High frequency RF ripple zero crossing
248	CRTPLP		Analog output	Defect level filter capacitor connecting
249	RFGND		Ground	Analog Ground

■ **RF Data PLL Interface (9)**

No.	Name	Alt.	I/O	Function
230	JITFO		Analog output	The output terminal of RF jitter meter.
231	JITFN		Analog Input	The input terminal of RF jitter meter.
232	PLLVSS		Ground	Ground pin for data PLL and related analog circuitry.
233	IDACEXLP		Analog output	Data PLL DAC Low-pass filter
234	PLLVDD3		Power	Power pin for data PLL and related analog circuitry.
235	LPFON		Analog Output	The negative output of loop filter amplifier
236	LPFIP		Analog Input	The positive input terminal of loop filter amplifier.
237	LPFIN		Analog Input	The negative input terminal of loop filter amplifier.
238	LPFOP		Analog Output	The positive output of loop filter amplifier

■ **Motor and Actuator Driver Interface (10)**

No.	Name	Alt.	I/O	Function
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	V_ADIN9	Analog Output	1st General PWM output, or Version AD input 9
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
47	FG (Digital pin)	V_ADIN8	LVTTL 3.3V Input, Schmitt Input, pull-up , with analog input path for V_ADIN8	Motor Hall sensor input, or Version AD input 8

■ General Power / Ground (32)

No.	Name	Alt.	I/O	Function
52, 97, 122, 152, 173, 221	DVDD18		Power	1.8V power pin for internal digital circuitry
43, 85, 116, 144, 163, 216	DVSS		Ground	1.8V Ground pin for internal digital circuitry
46, 73, 80, 108, 127, 141, 155, 167, 182, 212	DVDD3		Power	3.3V power pin for internal digital circuitry
62, 94, 119, 134, 148, 161, 223	DVSS		Ground	3.3V Ground pin for internal digital circuitry
204	DVDD3		Power	3.3V power pin Video DAC digital circuitry only
63	APLLCAP		Analog Inout	APLL External Capacitance connection
64	APLLVSS		Ground	Ground pin for audio clock circuitry
65	APLLVDD3		Power	3.3V Power pin for audio clock circuitry
175	NC			

■ Micro Controller and Flash Interface (48)

No.	Name	Alt.	I/O	Function
59	HIGHA0		Inout, 2-16MA, SR, PU	Microcontroller address 8
75	HIGHA1		Inout, 2-16MA, SR, PU	Microcontroller address 9
74	HIGHA2		Inout, 2-16MA, SR, PU	Microcontroller address 10
72	HIGHA3		Inout, 2-16MA, SR, PU	Microcontroller address 11
71	HIGHA4		Inout, 2-16MA, SR, PU	Microcontroller address 12
70	HIGHA5		Inout, 2-16MA, SR, PU	Microcontroller address 13
69	HIGHA6		Inout, 2-16MA, SR, PU	Microcontroller address 14
68	HIGHA7		Inout, 2-16MA, SR, PU	Microcontroller address 15
91	AD7		Inout, 2-16MA, SR	Microcontroller address/data 7
88	AD6		Inout, 2-16MA, SR	Microcontroller address/data 6
87	AD5		Inout, 2-16MA, SR	Microcontroller address/data 5
86	AD4		Inout, 2-16MA, SR	Microcontroller address/data 4
84	AD3		Inout, 2-16MA, SR	Microcontroller address/data 3
83	AD2		Inout, 2-16MA, SR	Microcontroller address/data 2
82	AD1		Inout, 2-16MA, SR	Microcontroller address/data 1
81	AD0		Inout, 2-16MA, SR	Microcontroller address/data 0
93	IOA0		Inout, 2-16MA, SR, PU	Microcontroller address 0 / IO
78	IOA1		Inout, 2-16MA, SR, PU	Microcontroller address 1 / IO
53	IOA2		Inout, 2-16MA, SR, PU	Microcontroller address 2 / IO
54	IOA3		Inout, 2-16MA, SR, PU	Microcontroller address 3 / IO
55	IOA4		Inout, 2-16MA, SR, PU	Microcontroller address 4 / IO
56	IOA5		Inout, 2-16MA, SR, PU	Microcontroller address 5 / IO
57	IOA6		Inout, 2-16MA, SR, PU	Microcontroller address 6 / IO
58	IOA7		Inout, 2-16MA, SR, PU	Microcontroller address 7 / IO
67	A16		Output, 2-16MA, SR	Flash address 16
92	A17		Output, 2-16MA, SR	Flash address 17
60	IOA18		Inout, 2-16MA, SR, SMT	Flash address 18 / IO
61	IOA19		Inout, 2-16MA, SR, SMT	Flash address 19 / IO
76	IOA20		Inout, 2-16MA, SR, SMT	Flash address 20 / IO
89	IOA21	V_ADIN0	Inout, 2-16MA, SR, SMT	Flash address 21 / IO While External FLASH size <= 2MB: Version AD input port 0, or GPIO

No.	Name	Alt.	I/O	Function
90	ALE		Inout, 2-16MA, SR, PU, SMT	Microcontroller address latch enable
79	IOOE#		Inout, 2-16MA, SR, SMT	Flash output enable, active low / IO
66	IOWR#		Inout, 2-16MA, SR, SMT	Flash write enable, active low / IO
77	IOCS#		Inout, 2-16MA, SR, PU, SMT	Flash chip select, active low / IO
95	UWR#		Inout, 2-16MA, SR, PU, SMT	Microcontroller write strobe, active low
96	URD#		Inout, 2-16MA, SR, PU, SMT	Microcontroller read strobe, active low
98	UP1_2		Inout, 4MA, SR, PU, SMT	Microcontroller port 1-2
99	UP1_3		Inout, 4MA, SR, PU, SMT	Microcontroller port 1-3
100	UP1_4		Inout, 4MA, SR, PU, SMT	Microcontroller port 1-4
101	UP1_5		Inout, 4MA, SR, PU, SMT	Microcontroller port 1-5
102	UP1_6	SCL	Inout, 4MA, SR, PU, SMT	Microcontroller port 1-6 I^2C clock pin
103	UP1_7	SDA	Inout, 4MA, SR, PU, SMT	Microcontroller port 1-7 I^2C data pin
104	UP3_0	RXD	Inout, 4MA, SR, PU, SMT	Microcontroller port 3-0 8032 RS232 RXD
105	UP3_1	TXD	Inout, 4MA, SR, PU, SMT	Microcontroller port 3-1 8032 RS232 TXD
106	UP3_4	RXD SCL	Inout, 4MA, SR, PU, SMT	Microcontroller port 3-4 Hardwired RD232 RXD I^2C clock pin
107	UP3_5	TXD SDA	Inout, 4MA, SR, PU, SMT	Microcontroller port 3-5 Hardwired RD232 TXD I^2C data pin
111	IR		Input, SMT	IR control signal input
112	INT0#		Inout, 2-16MA, SR, PU, SMT	Microcontroller external interrupt 0, active low

■ **Audio Interface (14)**

No.	Name	Alt.	I/O	Function
208	SPMCLK	SCLK0	Inout	Audio DAC master clock of SPDIF input While SPDIF input is not used: Serial interface port 0 clock pin GPIO
209	SPDATA	SDIN0	Inout	Audio data of SPDIF input While SPDIF input is not used: Serial interface port 0 data-in GPIO
210	SPLRCK	SDO0	Inout	Audio left/right channel clock of SPDIF input While SPDIF input is not used: Serial interface port 0 data-out GPIO
211	SPBCK	SDCS0 ASDATA5	Inout	Audio bit clock of SPDIF input While SPDIF input is not used: Serial interface port 0 chip select Audio serial data 5 part I : DSD data sub-woofer channel or Microphone output GPIO
213	ALRCK		Inout 4MA, PD, SMT	Audio left/right channel clock Trap value in power-on reset: 1 : use external 373 0: use internal 373
214	ABCK	Fs64	Output 4MA	Audio bit clock Phase de-modulation
215	ACLK		Inout, 4MA	Audio DAC master clock
217	ASDATA0		Inout, 4MA, PD SMT	Audio serial data 0 (Front-Left/Front-Right) DSD data left channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
218	ASDATA1		Inout, 4MA, PD SMT	Audio serial data 1 (Left-Surround/Right-Surround) DSD data right channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation While only 2 channels output: GPIO
219	ASDATA2		Inout, 4MA, PD SMT	Audio serial data 2 (Center/LFE) DSD data left surround channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation While only 2 channels output: GPIO
220	ASDATA3		Inout, 4MA, PD SMT	Audio serial data 3 (Center-back/ Center-left-back/Center-right-back, in 6.1 or 7.1 mode) DSD data right surround channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation While only 2 channels output: GPIO
222	ASDATA4	INT1#	Inout, 4MA, PD SMT	Audio serial data 4 (Down-mixed Left/Right) DSD data center channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation While only 2 channels output: Microcontroller external interrupt 1 GPIO
224	MC_DATA	INT2#	Inout	Microphone serial input While not support Microphone: Microcontroller external interrupt 2 GPIO
225	SPDIF		Output, 2-16MA, SR : ON/OFF	SPDIF output

■ **Video Interface (18)**

No.	Name	Alt.	I/O	Function
189	DACVDDC		Power	3.3V power pin for VIDEO DAC circuitry
190	VREF		Analog	Bandgap reference voltage
191	FS		Analog	Full scale adjustment
192	YUV0	CIN	Output 4MA, SR	Video data output bit 0 Compensation capacitor
193	DACVSSC		Ground	Ground pin for VIDEO DAC circuitry
194	YUV1	Y	Output 4MA, SR	Video data output bit 1 Analog Y output
195	DACVDDB		Power	3.3V power pin for VIDEO DAC circuitry
196	YUV2	C	Output 4MA, SR	Video data output bit 2 Analog chroma output
197	DACVSSB		Ground	Ground pin for VIDEO DAC circuitry
198	YUV3	CVBS	Output 4MA, SR	Video data output bit 3 Analog composite output
199	DACVDDA		Power	3.3V power pin for VIDEO DAC circuitry
200	YUV4	Y/G	Output 4MA, SR	Video data output bit 4 Green or Y
201	DACVSSA		Ground	Ground pin for VIDEO DAC circuitry
202	YUV5	B/Cb/Pb	Output 4MA, SR	Video data output bit 5 Blue or CB
203	YUV6	R/Cr/Pr	Output 4MA, SR	Video data output bit 6 Red or CR
205	VSYN	V_ADIN1	Inout 4MA, SR SMT	Vertical sync input/output While no External TV-encoder: Vertical sync for video-input Version AD input port 1 GPIO
206	YUV7	INT3# ASDATA5	Inout 4MA, SR SMT	Video data output bit 7 While no External TV-encoder: Microcontroller external interrupt 3 Audio serial data 5 part II : DSD data sub-woofer channel or Microphone output GPIO
207	HSYN	INT4# V_ADIN2	Inout 4MA, SR SMT	Horizontal sync input/output While no External TV-encoder: Horizontal sync for video-input Microcontroller external interrupt 4 Version AD input port 2 GPIO

■ **MISC (8)**

No.	Name	Alt.	I/O	Function
44	NC			
45	NC			
110	PRST#		Input PU, SMT	Power on reset input, active low
109	ICE		Input PD, SMT	Microcontroller ICE mode enable
228	XTALO		Output	27M crystal out
229	XTALI		Input	27M crystal in

■ **DRAM Interface (63)(sorted by position)**

No.	Name	Alt.	I/O	Function
188	NC			
187	NC			
186	NC			
185	NC			
184	NC			
183	NC			
181	NC			
180	NC			
179	DQM2		Inout Pull-Up	GPIO
178	DQM3		Inout Pull-Up	GPIO
177	RD24		Inout Non-pull	GPIO
176	RD25		Inout Non-pull	GPIO
174	RD26		Inout Non-pull	GPIO
172	NC			
171	NC			
170	RD29		Inout Non-pull	GPIO
169	RD30		Inout Pull-Up	GPIO
168	RD31		Inout Pull-Up	GPIO
166	RA4		Inout	DRAM address 4
165	RA5		Inout	DRAM address 5
164	RA6		Inout	DRAM address 6
162	RA7		Inout	DRAM address 7
160	RA8		Inout	DRAM address 8
159	RA9		Inout	DRAM address 9
158	RA11		Inout Pull-Down	DRAM address 11
157	CKE		output	DRAM clock enable
156	RCLK		Inout	DRAM check
154	NC			
153	NC			
151	RA3		Inout	DRAM address 3
150	RA2		Inout	DRAM address 2
149	RA1		Inout	DRAM address 1
147	RA0		Inout	DRAM address 0
146	RA10		Inout	DRAM address 10

No.	Name	Alt.	I/O	Function
145	BA1		Inout	DRAM bank address 1
143	BA0		Inout	DRAM bank address 0
142	RCS#		output	DRAM chip select, active low
140	RAS#		output	DRAM row address strobe, active low
139	CAS#		output	DRAM column address strobe, active low
138	RWE#		output	DRAM Write enable, active low
137	DQM1		Inout	Data mask 1
136	DQS1		Inout	GPIO
135	RD8		Inout	DRAM data 8
133	RD9		Inout	DRAM data 9
132	RD10		Inout	DRAM data 10
131	RD11		Inout	DRAM data 11
130	RD12		Inout	DRAM data 12
129	RD13		Inout	DRAM data 13
128	RD14		Inout	DRAM data 14
126	RD15		Inout	DRAM data 15
125	RD0		Inout	DRAM data 0
124	RD1		Inout	DRAM data 1
123	RD2		Inout	DRAM data 2
121	RD3		Inout	DRAM data 3
120	RD4		Inout	DRAM data 4
118	RD5		Inout	DRAM data 5
117	RD6		Inout	DRAM data 6
115	RD7		Inout	DRAM data 7
114	DQS0		Inout Non-pull	GPIO
113	DQM0		Inout	Data mask 0

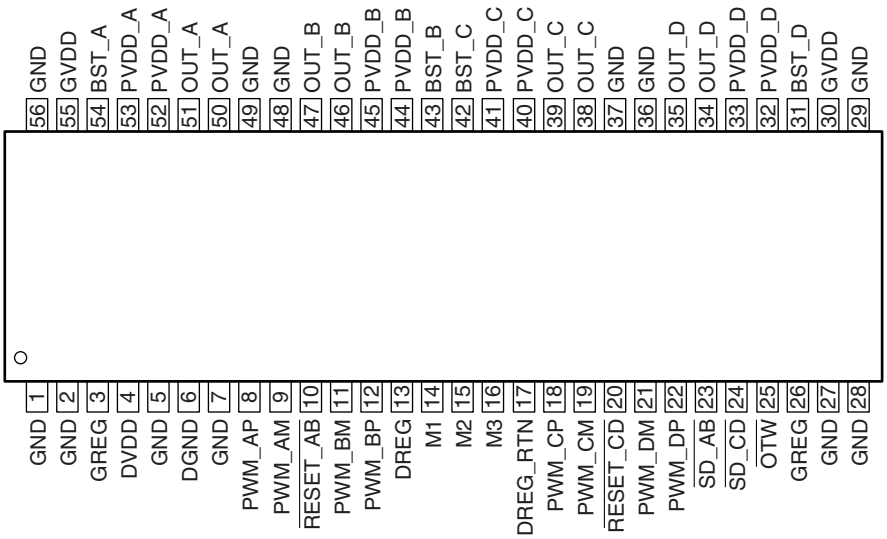
■ JTAG Interface (4)

No.	Name	Alt.	I/O	Function
48	TDI	V_ADIN4	Inout	Serial interface port 3 data-out Version AD input port 4 GPIO
49	TMS	V_ADIN5	Inout	Serial interface port 3 data-in Version AD input port 5 GPIO
50	TCK	V_ADIN6	Inout	Serial interface port 3 clock pin Version AD input port 6 GPIO
51	TDO	V_ADIN7	Inout	Serial interface port 3 chip-select Version AD input port 7 GPIO

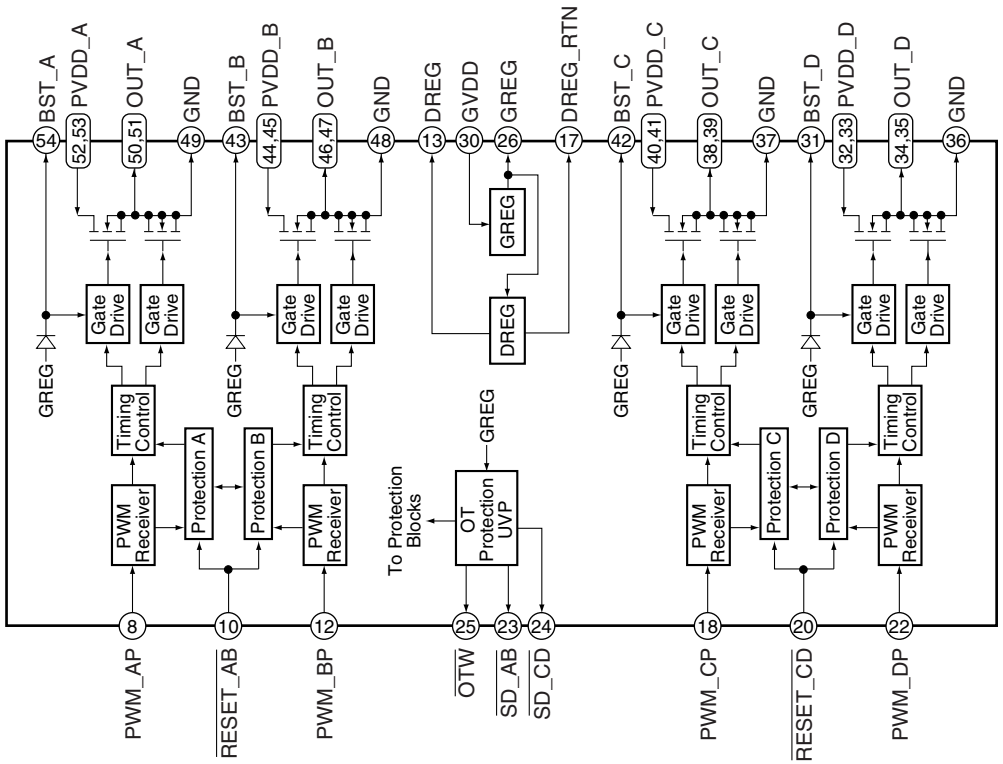
■ TAS5122DCA (W51 DAMP ASSY : IC3201, IC3301, IC3401)

• 30W Stereo Digital Amplifier

● Pin Arrangement (Top view)



● Block Diagram



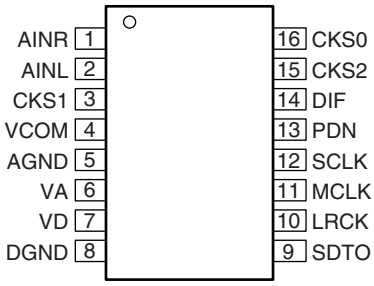
● Pin Function

No.	Pin Name	I/O	Pin Function	No.	Pin Name	I/O	Pin Function
1	GND	–	Power ground	29	GND	–	Power ground
2	GND	–	Power ground	30	GVDD	–	Voltage supply to on-chip gate drive and digital supply voltage regulators
3	GREG	–	Gate drive voltage regulator decoupling pin, capacitor connected to GND	31	BST_D	–	HS bootstrap supply (BST), external capacitor to OUT_D required
4	DVDD	–	I/O reference supply input (3.3V)	32	PVDD_D	–	Power supply input for half-bridge D
5	GND	–	Power ground	33	PVDD_D	–	Power supply input for half-bridge D
6	DGND	–	Digital I/O reference ground	34	OUT_D	O	Output, half-bridge D
7	GND	–	Power ground	35	OUT_D	O	Output, half-bridge D
8	PWM_AP	I	Input signal (positive), half-bridge A	36	GND	–	Power ground
9	PWM_AM	I	Input signal (negative), half-bridge A	37	GND	–	Power ground
10	$\overline{\text{RESET\_AB}}$	I	Reset signal, active low	38	OUT_C	O	Output, half-bridge C
11	PWM_BM	I	Input signal (negative), half-bridge B	39	OUT_C	O	Output, half-bridge C
12	PWM_BP	I	Input signal (positive), half-bridge B	40	PVDD_C	–	Power supply input for half-bridge C
13	DREG	–	Digital supply voltage regulator decoupling pin, capacitor connected to GND	41	PVDD_C	–	Power supply input for half-bridge C
14	M1	I	Mode selection pin	42	BST_C	–	HS bootstrap supply (BST), external capacitor to OUT_C required
15	M2	I	Mode selection pin	43	BST_B	–	HS bootstrap supply (BST), external capacitor to OUT_B required
16	M3	I	Mode selection pin	44	PVDD_B	–	Power supply input for half-bridge B
17	DREG_RTN	–	Digital supply voltage regulator decoupling return pin	45	PVDD_B	–	Power supply input for half-bridge B
18	PWM_CP	I	Input signal (positive), half-bridge C	46	OUT_B	O	Output, half-bridge B
19	PWM_CM	I	Input signal (negative), half-bridge C	47	OUT_B	O	Output, half-bridge B
20	$\overline{\text{RESET\_CD}}$	I	Reset signal, active low	48	GND	–	Power ground
21	PWM_DM	I	Input signal (negative), half-bridge D	49	GND	–	Power ground
22	PWM_DP	I	Input signal (positive), half-bridge D	50	OUT_A	O	Output, half-bridge A
23	$\overline{\text{SD\_AB}}$	O	Shutdown signal for half-bridges A and B	51	OUT_A	O	Output, half-bridge A
24	$\overline{\text{SD\_CD}}$	O	Shutdown signal for half-bridges C and D	52	PVDD_A	–	Power supply input for half-bridge A
25	$\overline{\text{OTW}}$	O	Overtemperature warning output, open drain with internal pullup	53	PVDD_A	–	Power supply input for half-bridge A
26	GREG	O	Gate drive voltage regulator decoupling pin, capacitor connected to GND	54	BST_A	–	HS bootstrap supply (BST), external capacitor to OUT_A required
27	GND	–	Power ground	55	GVDD	I	Voltage supply to on-chip gate drive and digital supply voltage regulators
28	GND	–	Power ground	56	GND	–	Power ground

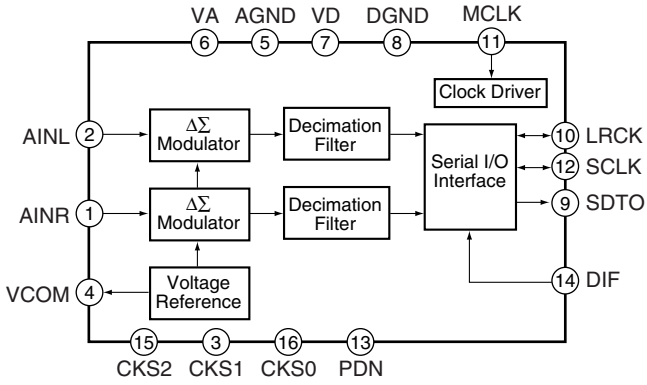
■ AK5357ET (W51 DVDMAIN ASSY : IC3003)

• 96kHz 24-Bit ΔΣ ADC

● Pin Arrangement (Top view)



● Block Diagram



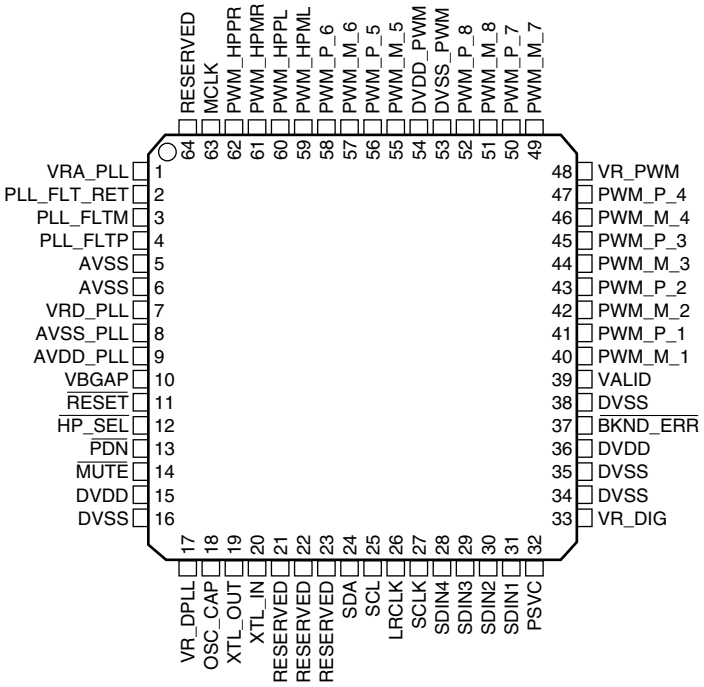
● Pin Function

No.	Pin Name	I/O	Pin Function
1	AINR	I	R ch analog input
2	AINL	I	L ch analog input
3	CKS1	I	Mode select 1
4	VCOM	O	Common voltage output, VA/2 bias voltage of ADC input
5	AGND	–	Analog Ground
6	VA	–	Analog power supply, 2.7-5.5V
7	VD	–	Digital power supply, 2.7-5.5V
8	DGND	–	Digital ground
9	SDTO	O	Audio serial data output "L" output at power-down mode.
10	LRCK	I/O	Output channel clock "L" output in master mode at power-down mode.
11	MCLK	I	Master clock input
12	SCLK	I/O	Audio serial data clock "L" output in master mode at power-down mode.
13	PDN	I	Power down mode "H": Power up, "L": Power down
14	DIF	I	Audio interface format "H": 24bit I²S compatible, "L": 24bit MSB justified
15	CKS2	I	Mode select 2
16	CKS0	I	Mode select 0

■ TAS5508APAG (W51 DAMP ASSY : IC3101)

• 8 ch Digital Audio PWM Processor

● Pin Arrangement (Top view)



● Pin Functions

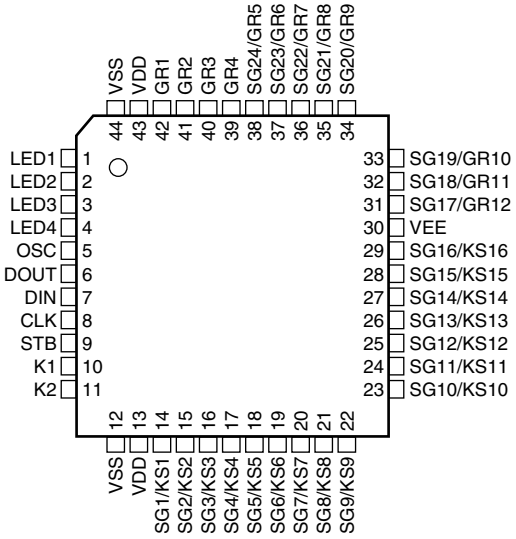
No.	Pin Name	I/O	Pin Function
1	VRA_PLL	–	Voltage reference for PLL analog supply 1.8 V.
2	PLL_FLT_RET	O	PLL external filter return
3	PLL_FLTM	O	PLL negative input. Connected to PLL_FLT_RTN via an RC network
4	PLL_FLTP	I	PLL positive input. Connected to PLL_FLT_RTN via an RC network
5	AVSS	–	Analog ground
6	AVSS	–	Analog ground
7	VRD_PLL	–	Voltage reference for PLL digital supply 1.8 V.
8	AVSS_PLL	–	Analog ground for PLL.
9	AVDD_PLL	–	3.3-V analog power supply for PLL
10	VBGAP	–	Band gap voltage reference.
11	$\overline{\text{RESET}}$	I	System reset input, active low.
12	$\overline{\text{HP\_SEL}}$	I	Headphone in/out selector.
13	$\overline{\text{PDN}}$	I	Power down, active low. PDN powers down all logic and stops all clocks whenever a logic low is applied.
14	$\overline{\text{MUTE}}$	I	Soft mute of outputs, active low (Muted signal = a logic low, normal operation = a logic high)
15	DVDD	–	Digital power 3.3-V supply for digital core and most of I/O buffers
16	DVSS	–	Digital ground for digital core and most of I/O buffers
17	VR_DPLL	–	Voltage reference for digital PLL supply 1.8 V.
18	OSC_CAP	O	Oscillator capacitor
19	XTL_OUT	O	XTL_OUT and XTL_IN are the only LVCMOS terminals on the device.
20	XTL_IN	I	XTL_OUT and XTL_IN are the only LVCMOS terminals on the device.
21	RESERVED	–	Connect to digital ground
22	RESERVED	–	Connect to digital ground
23	RESERVED	–	Connect to digital ground
24	SDA	I/O	I2C serial control data interface input / output

No.	Pin Name	I/O	Pin Function
25	SCL	I	I2C serial control clock input output
26	LRCLK	I	Serial audio data left / right clock (sampling rate clock)
27	SCLK	I	Serial audio data clock (shift clock)
28	SDIN4	I	Serial audio data 4 input is one of the serial data input ports. SDIN4 supports four discrete (stereo) data formats and is capable of inputting data at 64 Fs.
29	SDIN3	I	Serial audio data 3 input is one of the serial data input ports. SDIN3 supports four discrete (stereo) data formats and is capable of inputting data at 64 Fs.
30	SDIN2	I	Serial audio data 2 input is one of the serial data input ports. SDIN2 supports four discrete (stereo) data formats and is capable of inputting data at 64 Fs.
31	SDIN1	I	Serial audio data 1 input is one of the serial data input ports. SDIN1 supports four discrete (stereo) data formats and is capable of inputting data at 64 Fs.
32	PSVC	O	Power supply volume control PWM output
33	VR_DIG	–	Voltage reference for digital core supply 1.8 V.
34	DVSS	–	Digital ground
35	DVSS	–	Digital ground
36	DVDD	–	3.3-V digital power supply
37	$\overline{\text{BKND\_ERR}}$	I	Active low. A backend error sequence is generated by applying logic low to this terminal.
38	DVSS	–	Digital ground
39	VALID	O	Output indicating validity of PWM outputs active high
40	PWM_M_1	O	PWM 1 output (differential -)
41	PWM_P_1	O	PWM 1 output (differential +)
42	PWM_M_2	O	PWM 2 output (differential -)
43	PWM_P_2	O	PWM 2 output (differential +)
44	PWM_M_3	O	PWM 3 output (differential -)
45	PWM_P_3	O	PWM 3 output (differential +)
46	PWM_M_4	O	PWM 4 output (differential -)
47	PWM_P_4	O	PWM 4 output (differential +)
48	VR_PWM	–	Voltage reference for digital PWM core supply 1.8 V.
49	PWM_M_7	O	PWM 7 output (differential -)
50	PWM_P_7	O	PWM 7 output (differential +)
51	PWM_M_8	O	PWM 8 output (differential -)
52	PWM_P_8	O	PWM 8 output (differential +)
53	DVSS_PWM	–	Digital ground for PWM
54	DVDD_PWM	–	3.3-V digital power supply for PWM
55	PWM_M_5	O	PWM 5 output (differential -)
56	PWM_P_5	O	PWM 5 output (differential +)
57	PWM_M_6	O	PWM 6 output (differential -)
58	PWM_P_6	O	PWM 6 output (differential +)
59	PWM_HPML	O	PWM left channel headphone (differential -)
60	PWM_HPPL	O	PWM left channel headphone (differential +)
61	PWM_HPMR	O	PWM right channel headphone (differential -)
62	PWM_HPPR	O	PWM right channel headphone (differential +)
63	MCLK	I	MCLK is a 3.3-V clock master clock input. The input frequency of this clock can range from 4 MHz to 50 MHz.
64	RESERVED	–	Connect to digital ground

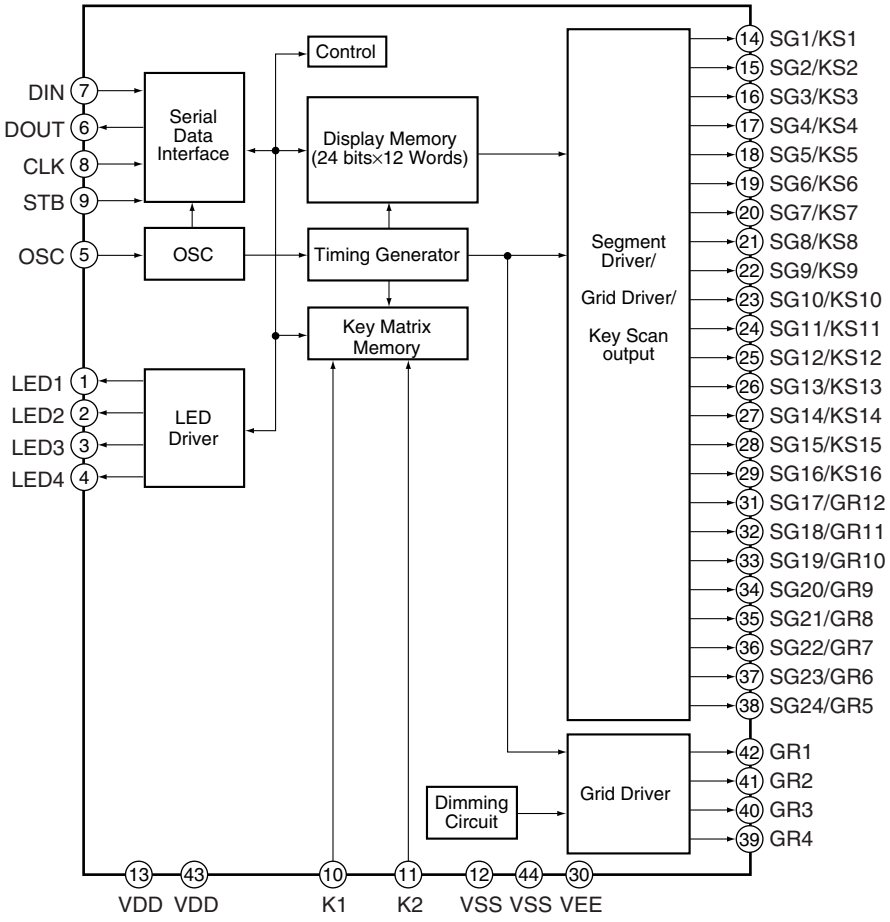
■ PT6315 (W51 DISPLAY ASSY : IC5901)

• FL Driver IC

● Pin Arrangement (Top view)



● Block Diagram



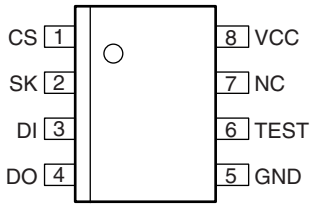
● Pin Functions

No.	Pin Name	I/O	Pin Function
1	LED1	O	LED output
2	LED2	O	LED output
3	LED3	O	LED output
4	LED4	O	LED output
5	OSC	I	Oscillator input
6	DOUT	O	Data output (N-ch, open-drain) This pin outputs serial data at the falling edge of the shift clock.
7	DIN	I	Data input This pin inputs serial data at the rising edge of the shift clock.
8	CLK	I	Clock input This pin reads serial data at the rising edge and outputs data at the falling edge.
9	STB	I	Serial interface strobe The data input after the STB has fallen is processed as a command.
10	K1	I	Key data input The data inputted to this pin is latched at the end of the display cycle.
11	K2	I	Key data input The data inputted to this pin is latched at the end of the display cycle.
12	VSS	–	Logic ground
13	VDD	–	Logic power supply
14	SG1/KS1	O	High-voltage segment output / Key source
15	SG2/KS2	O	High-voltage segment output / Key source
16	SG3/KS3	O	High-voltage segment output / Key source
17	SG4/KS4	O	High-voltage segment output / Key source
18	SG5/KS5	O	High-voltage segment output / Key source
19	SG6/KS6	O	High-voltage segment output / Key source
20	SG7/KS7	O	High-voltage segment output / Key source
21	SG8/KS8	O	High-voltage segment output / Key source
22	SG9/KS9	O	High-voltage segment output / Key source
23	SG10/KS10	O	High-voltage segment output / Key source
24	SG11/KS11	O	High-voltage segment output / Key source
25	SG12/KS12	O	High-voltage segment output / Key source
26	SG13/KS13	O	High-voltage segment output / Key source
27	SG14/KS14	O	High-voltage segment output / Key source
28	SG15/KS15	O	High-voltage segment output / Key source
29	SG16/KS16	O	High-voltage segment output / Key source
30	VEE	–	Pull-down level
31	SG17/GR12	O	High-voltage segment output / Grid output
32	SG18/GR11	O	High-voltage segment output / Grid output
33	SG19/GR10	O	High-voltage segment output / Grid output
34	SG20/GR9	O	High-voltage segment output / Grid output
35	SG21/GR8	O	High-voltage segment output / Grid output
36	SG22/GR7	O	High-voltage segment output / Grid output
37	SG23/GR6	O	High-voltage segment output / Grid output
38	SG24/GR5	O	High-voltage segment output / Grid output
39	GR4	O	High-voltage grid output
40	GR3	O	High-voltage grid output
41	GR2	O	High-voltage grid output
42	GR1	O	High-voltage grid output
43	VDD	–	Logic power supply
44	VSS	–	Logic ground

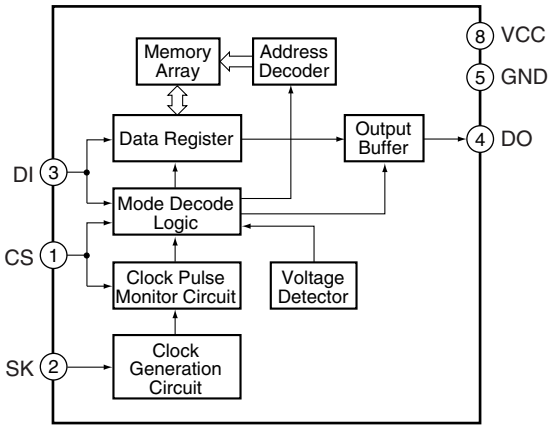
■ S-93C46BD01-J8T1 (W51 DVDMAIN ASSY : IC5503)

• Serial EEPROM

● Pin Arrangement (Top view)



● Block Diagram

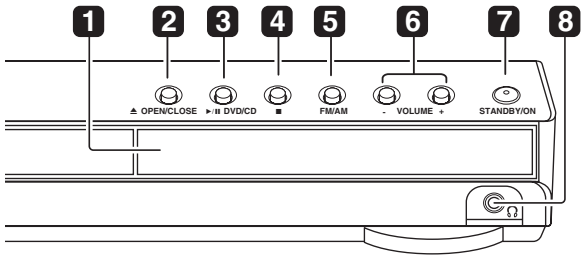


● Pin Function

No.	Pin Name	I/O	Pin Function
1	CS	I	Chip select input
2	SK	I	Serial clock input
3	DI	I	Serial data input
4	DO	O	Serial data output
5	GND	–	Ground
6	TEST	–	Test (Connect to GND or VCC.)
7	NC	–	Non connection
8	VCC	–	Power supply

8. PANEL FACILITIES

Front panel



1 Display
See Display above for detailed information.

2 ▲ OPEN/CLOSE
Opens/closes the disc tray.

3 ▶/II DVD/CD
Selects the **DVD/CD** function and starts/pauses/resumes playback.

4 ■
Stops playback.

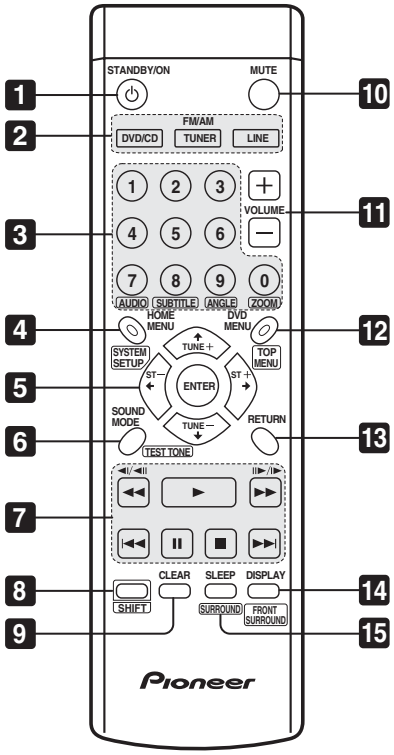
5 FM/AM
Selects the tuner function and toggles between FM/AM bands.

6 VOLUME buttons
Adjusts the volume.

7 ⏻ STANDBY/ON
Switches the system on or into standby.

8 PHONES jack
Headphone jack.

Remote control



1 ⏻ STANDBY/ON
Switches the system on or into standby.

2 Function select buttons
Selects the source you want to listen to (**DVD/CD. TUNER, LINE)**

3 Number buttons
Select chapters/tracks from a disc directly.
Press **DVD/CD** to access these controls:

SHIFT+AUDIO
Selects audio channel/language.

SHIFT+SUBTITLE
Displays/changes the subtitles.

SHIFT+ANGLE
Changes camera angle during DVD multi-angle scene playback.

SHIFT+ZOOM
Changes the screen zoom level.

4 HOME MENU
Displays (or exits) the on-screen menu for Initial Settings, Play Mode functions, etc.

SHIFT+SYSTEM SETUP
Use to make various system and surround sound settings.

5 Cursor buttons, ENTER and tuning buttons

Cursor buttons
Use the cursor buttons (↑/↓/←/→)to navigate on-screen displays and menus.

ENTER
Selects an option or executes a command.

TUNE +/-
Tunes the radio.

ST +/-
Selects station presets when listening to the radio.

6 SOUND MODE
Accesses the sound menu to adjust the SFC Mode, bass and treble, etc.

SHIFT+TEST TONE
Outputs the test tone (for speaker setup).

7 Disc playback controls
See Basic playback controls and Playing discs on for an explanation of these controls.

8 SHIFT
Some of the buttons have alternate functions (they are outlined on the remote control). Press and hold **SHIFT** to access these.

9 CLEAR
Clears an entry.

10 MUTE
Mutes the sound (press again to cancel).

11 VOLUME +/-
Adjusts the volume.

12 DVD MENU
Press to display a DVD disc menu, or the Disc Navigator.

SHIFT+TOP MENU
Displays the top menu of a DVD disc in the play position—thismay be the same as pressing **DVD MENU.**

13 RETURN
Returns to a previous menu screen.

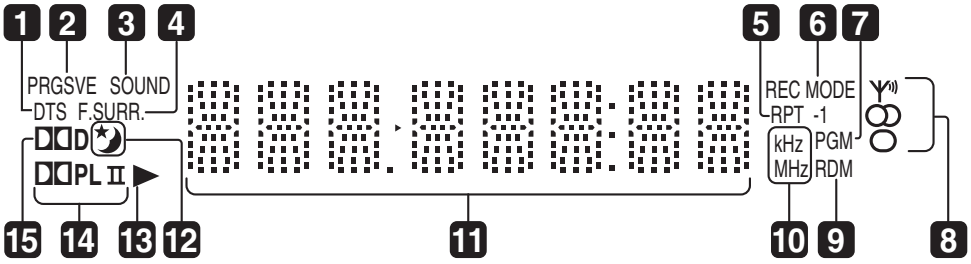
14 DISPLAY
Displays/changes disc information shown on-screen.

SHIFT+FRONT SURROUND
Selects a Front Surround listening mode.

15 SLEEP
Press to set the sleep timer.

SHIFT+SURROUND
Selects a Surround mode.

Display



1 DTS
Lights during playback of a DTS source.

2 PRGSVE
Lights when progressive scan video output is selected.

3 SOUND
Lights when the SFC Modes or the tone controls (treble, bass or bass boost) are active.

4 F.SURR.
Lights when the Front Surround listening mode is selected.

5 RPT and RPT-1
RPT lights during repeat play. **RPT-1** lights during repeat one-track play.

6 REC MODE
Lights when Rec Mode is on

7 PGM
Lights during program play.

8 Tuner indicators
- Lights when a broadcast is being received.

- Lights when a stereo FM broadcast is being received in auto stereo mode.

- Lights when a stereo FM broadcast is selected.

9 RDM
Lights during random play.

10 kHz / MHz
Indicates the frequency unit shown in the character display (**kHz** for AM, **MHz** for FM).

11 Character display

12
Lights when sleep timer is active

13 ►
Lights when a disc is playing.

14 PL II
Lights during Dolby Pro Logic II decoding.

15 D
Lights during playback of a Dolby Digital source.

Troubleshooting

Problem	Remedy
SND. DEMO shows in the display and the unit can't be controlled.	• Press and hold ■ (stop) on the front panel for about five seconds. The disc tray ejects automatically to indicate the Sound Demo mode is disabled.
TRAYLOCK shows in the display and the tray can't be ejected.	• Press and hold ⏏ (eject) on the front panel for about eight seconds. Then the tray can be opened/closed using ⏏ (eject).

■ Jigs list

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	adjustment, diagnosis
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video
CD Test Disc	STD-905	Check of CD
DVD Data Disc	GGV1175	diagnosis (ID data setting)
Speaker Cable with terminal	SDS1174 (FL/WHITE) SDS1175 (FR/RED), SDS1176 (SL/BLUE) SDS1177 (SR/GRAY), SDS1178 (C/GREEN)	For checking audio at the SP terminal

■ Lubricants and Glues list

Name	Lubricants and Glues No.	Remarks
Lubricating Oil	GYA1001	refer to "2.3 05 LOADER ASSY"
Daifree	GEM1036	refer to "2.3 05 LOADER ASSY"
Silicone Adhesive	GEM1037	refer to "2.4 TM ASSY VK1AVC"
Screw tight	GYL1001	refer to "6.5 MECHANISM ADJUSTMENT"

■ 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
Pickup leneses	Cleaning liquid : GEM1004 Cleaning paper : GED-008