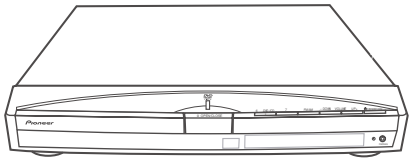
Pioneer sound.vision.soul

Service Manual



XV-DV515

ORDER NO.
RRV2772

DVD/CD RECEIVER

XV-DV515
XV-DV313

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

Model	Types	Power Requirement	Region No.	Remarks
XV-DV515	MYXJ	AC220-230V	2	
XV-DV515	NVXJ	AC230V	2	
XV-DV313	MYXJN	AC220V-230V	2	
XV-DV313	NVXJN	AC230V	2	

For details, refer to "Important symbols for good services" on the next page.

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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 – ZZV MAY. 2003 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 !

THE AEL (ACCESSIBLE EMISSION LEVEL) OF THE LASER POWER OUTPUT IS LESS THAN CLASS 1 BUT THE LASER COMPONENT IS CAPABLE OF EMITTING RADIATION EXCEEDING THE LIMIT FOR CLASS 1.
A SPECIALLY INSTRUCTED PERSON SHOULD DO SERVICING OPERATION OF THE APPARATUS.

LASER DIODE CHARACTERISTICS

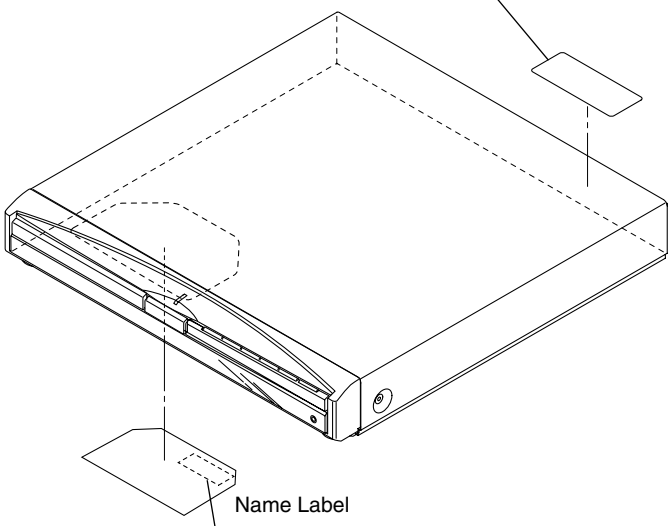
FOR DVD : MAXIMUM OUTPUT POWER : 5 mW
WAVELENGTH : 650 nm
FOR CD : MAXIMUM OUTPUT POWER : 7 mW
WAVELENGTH : 780 nm

LABEL CHECK

CAUTION	: VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
VORSICHT	: SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG, WENNABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN!
ADVARSEL	: SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING	: SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN.
VARO!	: AVATTAESSA ALTISTUT NÄKYVÄ JA NÄKYMÄTTÖMÄLLE LASERSATEIL YLLE. ÄLÄ KATSO SÄTEESEN.
CUIDADO	: RADIACIÓN LÁSER VISIBLE E INVISIBLE AL ESTAR ABIERTO. EVITAR EXPOSICIÓN AL RAYO.

VRW1872

VRW1872



Name Label

CLASS 1
LASER PRODUCT

Additional Laser Caution

1. Laser Interlock Mechanism
   • Loading switch (S101 on the LOAB Assy) is used for interlock mechanism of the laser.
   When this switch turned ON in SW2 (CLOSE) side (OPEN signal is 0V and CLOSE signal is 3.5V), a laser becomes the status which can completely oscillation.
   Furthermore, the laser completely oscillates in the disc judgment and disc playback.
   When player is power ON state and laser diode is not completely oscillating, 780nm laser diode is always oscillating by half power.
   • Laser diode is driving with Q201 (650nm LD) and Q211 (780nm LD) on the DVDM Assy.
   Therefore, when short-circuit between the emitter and collector of these transistors or the base voltage is supplied for transistors turn on, the laser oscillates. (failure mode)
   • In the test mode ∗ , there is the mode that the laser oscillates except for the disc judgment and playback. LD ON mode in the test mode oscillates with the laser forcibly.
   The interlock mechanism mentioned above becomes invalid in this mode.

2. When the cover is open, close viewing through the objective lens with the naked eye will cause exposure to the laser beam.

∗ : See page 90.

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

CONTENTS

1. SPECIFICATIONS

Amplifier section

Continuous Power Output (RMS):
Front, center, surround. . . . . 75 W per channel
(1 kHz, 10 % T.H.D., 6Ω)
Subwoofer . . . 75 W (100 Hz, 10 % T.H.D., 6Ω)
Continuous Power Output :
Front, center, surround. . . . . 62 W per channel
(1 kHz, 1 % T.H.D., 6Ω)
Subwoofer . . . . 62 W (100 Hz, 1 % T.H.D., 6Ω)

Disc section

Digital audio
characteristics . . . . . DVD fs: 96 kHz, 24-bit
Type. . . . . DVD system, video CD system and
compact disc digital audio system
Frequency response. . . . . 4 Hz to 44 kHz
Wow and Flutter. . . . . .Limit of measurement
(±0.001 % W.PEAK) or less (JEITA)

FM tuner section

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

AM tuner section

Frequency range
With 9kHz step. . . . . 531 kHz to 1,602 kHz
Antenna . . . . . .Loop antenna

Miscellaneous

Power requirements
European model . . . AC 220-230 V, 50/60 Hz
U.K. model. . . . . AC 230 V, 50/60 Hz
Power consumption
European/U.K. model. . . . . .160 W
Power consumption in standby . . . . . 0.39 W
Dimensions. . .420 (W) x 70 (H) x 403.5 (D) mm
Weight . . . . . 7.4 kg

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
These operating instructions. 1
Warranty Card 1

Speaker System

Front speakers

Enclosure . . . . . Closed-box bookshelf type
(magnetically shielded)
System. . . . . .15x6 cm 1-way system
Speakers. . . . . .15x6 cm cone type
Nominal impedance. 6Ω
Frequency range . . . . . .90 Hz to 20 kHz
Maximum Input Power. . . . . 75 W
Dimensions. . . . . 78 (W) x 210 (H) x 82 (D) mm
Weight . . . . . 0.7 kg

Center speaker

Enclosure . . . . . Closed-box bookshelf type
(magnetically shielded)
System. . . . . .15x6 cm 1-way system
Speakers. . . . . .15x6 cm cone type
Nominal impedance. 6Ω
Frequency range . . . . . .78 Hz to 20 kHz
Maximum Input Power. . . . . 75 W
Dimensions. . . . . 240 (W) x 85 (H) x 96 (D) mm
Weight . . . . . 0.75 kg

Subwoofer

Enclosure . . . . . Bass-reflex floor type (magnetically shielded)
System. . . . . .16 cm 1-way system
Speaker . . . . . 16 cm cone type
Nominal impedance 6Ω
Frequency range . . . . . 35 Hz to 2.8 kHz
Maximum Input Power. . . . . 75 W
Dimensions . . . 130 (W) x 360 (H) x 360 (D) mm
Weight . . . . . 4.5 kg

Accessories (Speaker system)

Speaker cables. 6

Non-slip pads(Small). 20
Non-slip pads(Large). 4

Note

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

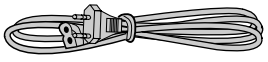
This product includes FontAvenue® fonts licenced by NEC corporation. FontAvenue is a registered trademark of NEC Corporation.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

This product is intended for household purposes. Any failure due to use for other than household purposes (such as long-term use for business purposes in a restaurant or use in a car or ship) and which requires repair will be charged for even in the warranty period. KO41_En

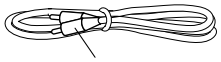
● Accessories

- Power cord (MYXJ, MYXJN : ADG1154)



- FM Antenna (ADH7030)

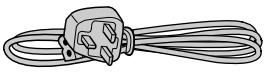
- Video Cord (L = 1.5m)(VDE1065)



Yellow

- Remote Control Unit (XXD3059 for XV-DV515) (XXD3058 for XV-DV313)

- Power cord (NVXJ, NVXJN : ADG1156)



- AM Loop Antenna (ATB7009)

- Dry Cell Battery (R6P, AA)

A

B

C

D

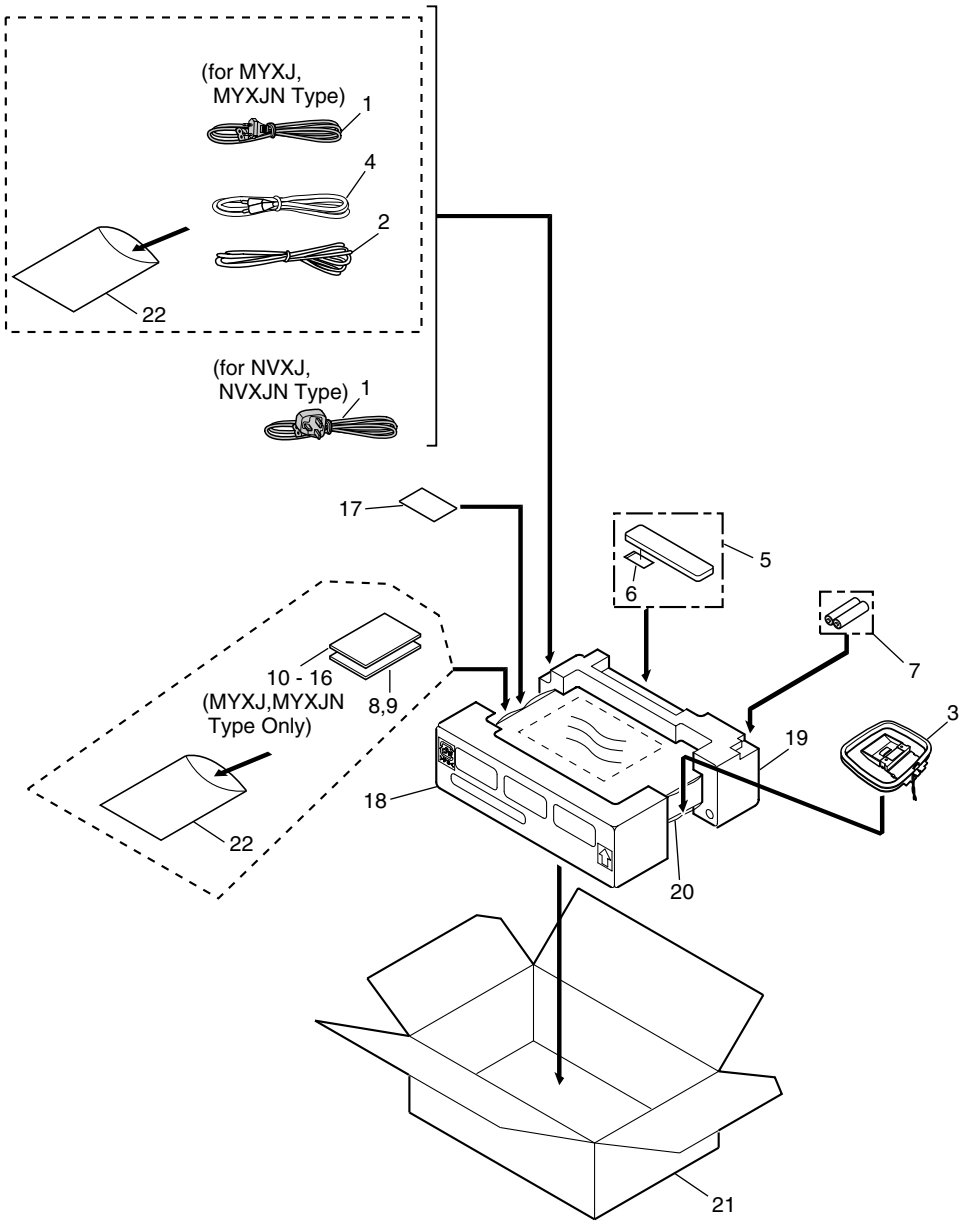
E

F

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



(1) PACKING PARTS LIST

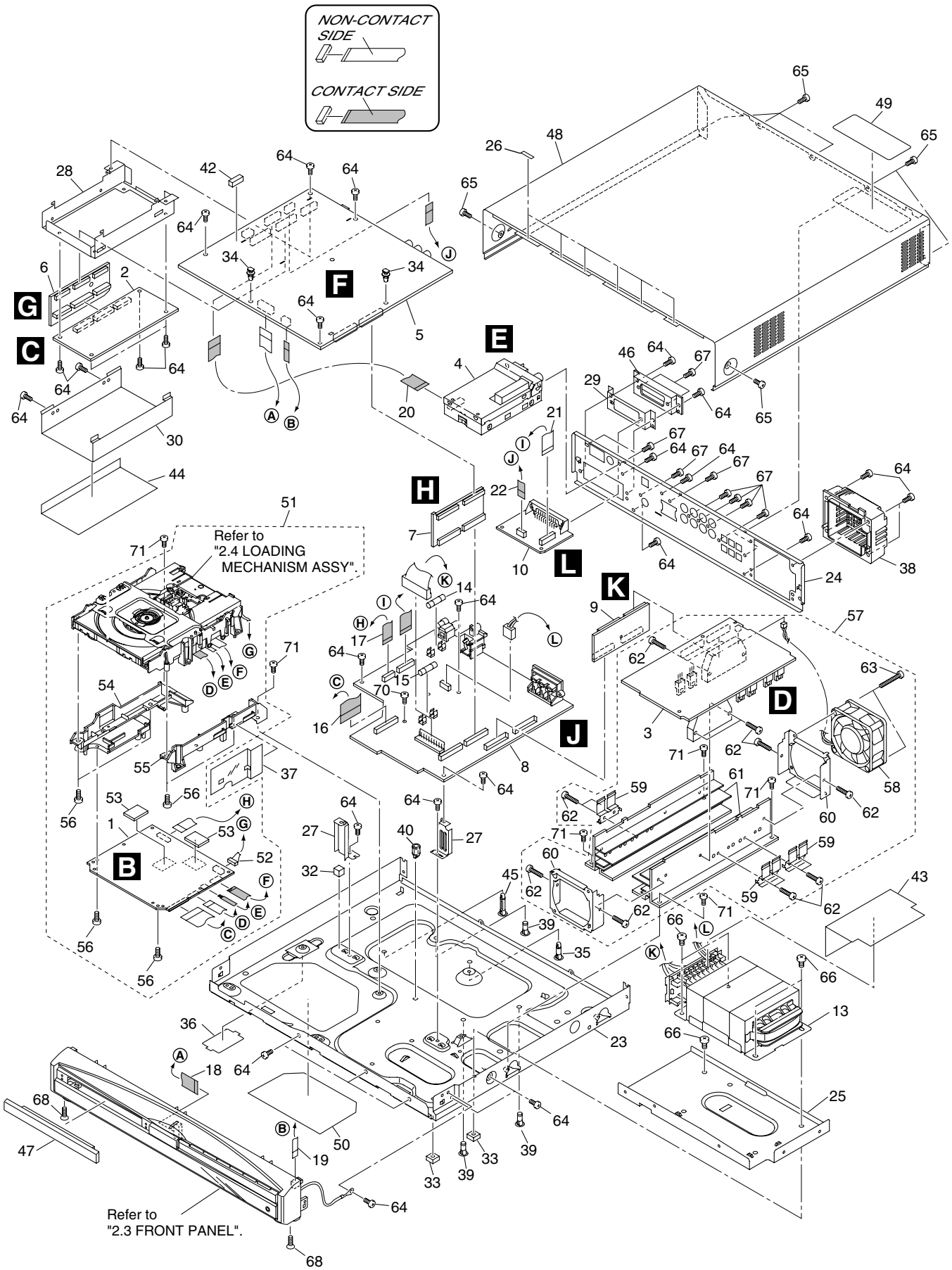
Mark	No.	Description	Part No.
⚠	1	Power Cord	See Contrast table(2)
	2	FM Wire Antena	ADH7030
	3	AM Loop Antenna	ATB7009
	4	Video Cord	VDE1065
	5	Remote Control	See Contrast table(2)
	6	Battery Cover	XZN3130
NSP	7	Dry Cell Batteries(R6P,AA)	VEM1031
	8	Operating Instructions (English)	See Contrast table(2)
	9	Operating Instructions Basic (English, French)	See Contrast table(2)
	10	Operating Instructions Basic (German, Italian)	See Contrast table(2)
	11	Operating Instructions (Dutch, Spanish)	See Contrast table(2)
	12	Operating Instructions (German)	See Contrast table(2)
	13	Operating Instructions (Dutch)	See Contrast table(2)
	14	Operating Instructions (French)	See Contrast table(2)
	15	Operating Instructions (Italian)	See Contrast table(2)
	16	Operating Instructions (Spanish)	See Contrast table(2)
NSP	17	Warranty Card	ARY7065
	18	Front Pad	XHA3140
	19	Rear Pad	XHA3139
	20	Packing Sheet	AHG7010
	21	Packing Case	See Contrast table(2)
NSP	22	Polyethylene Bag	Z21-038

(2)CONTRAST TABLE

XV-DV515/MYXJ, /NVXJ, XV-DV313/MYXJN and NVXJN types are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.				Remarks
			XV-DV515 MYXJ	XV-DV515 NVXJ	XV-DV313 MYXJN	XV-DV313 NVXJN	
⚠	1	Power Cord	ADG1154	ADG1156	ADG1154	ADG1156	
	5	Remote Control	XXD3059	XXD3059	XXD3058	XXD3058	
	8	Operating Instructions (English)	XRB3024	XRB3024	XRB3023	XRB3023	
	9	Operating Instructions Basic (English, French)	XRE3075	XRE3075	XRE3072	XRE3072	
	10	Operating Instructions Basic (German, Italian)	XRC3106	Not used	XRC3101	Not used	
	11	Operating Instructions Basic (Dutch, Spanish)	XRC3107	Not used	XRC3102	Not used	
	12	Operating Instructions(German)	XRC3094	Not used	XRC3084	Not used	
	13	Operating Instructions(Dutch)	XRC3095	Not used	XRC3085	Not used	
	14	Operating Instructions(French)	XRC3096	Not used	XRC3086	Not used	
	15	Operating Instructions(Italian)	XRC3097	Not used	XRC3087	Not used	
	16	Operating Instructions(Spanish)	XRC3098	Not used	XRC3088	Not used	
	21	Packing Case	XHD3380	XHD3380	XHD3351	XHD3351	

2.2 EXTERIOR SECTION



(1) EXTERIOR SECTION PARTS LIST

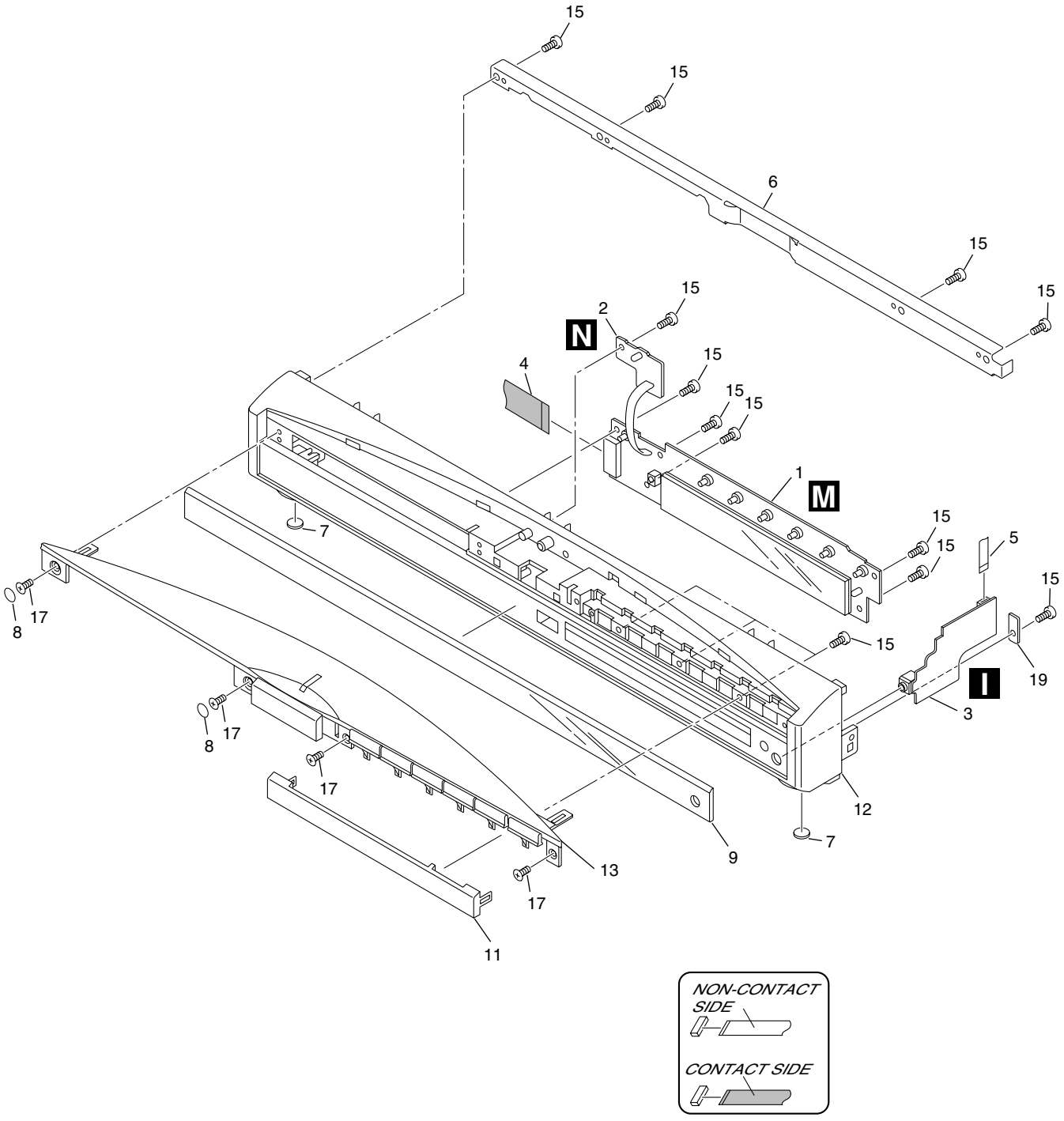
Mark	No.	Description	Part No.
	1	DVDM ASSY	AWM7808
	2	DSP ASSY	AWX8253
	3	6CH AMP	AZW7283
	4	FM/AM TUNER MODULE	AXQ7229
	5	CONTROL ASSY	See Contrast table(2)
	6	TRADE3 ASSY	XWZ3714
	7	TRADE2 ASSY	XWX3071
	8	POWER ASSY	XWZ3716
	9	TRADE1 ASSY	XWZ3725
	10	EURO SCART ASSY	XWZ3724
	11	••••••	
NSP	12	Loading Mechanism ASSY	VWT1208
⚠	13	Power Transformer (T1)	XTS3066
⚠	14	Fuse (FU1 : T2.5A)	REK1026
⚠	15	Fuse (FU2 : T5.0A)	REK1029
	16	30P F.F.C/60V	XDD3128
	17	18P F.F.C/60V	XDD3129
	18	15P F.F.C/60V	XDD3130
	19	5P F.F.C/60V	XDD3131
	20	13P F.F.C/60V	XDD3132
	21	17P F.F.C/60V	XDD3133
	22	7P F.F.C/60V	XDD3134
NSP	23	Chassis	XNA3017
	24	Rear Panel	See Contrast table(2)
	25	Trans Frame	XNG3106
	26	Spacer	XEC3052
	27	Control Angle	XNG3108
	28	DSP Holder	XNG3109
	29	EURO GND	XNG3111
	30	DSP Shield	XNK3010
	31	••••••	
	32	PCB Spacer	AEB7206
	33	S Cover	AEB7262
NSP	34	PCB Spacer(3x6)	AEC7156
	35	Locking Card Spacer	AEC7372
	36	Bottom Plate	AEC7420
	37	Barrier S	AEC7429
	38	Fan Cover	AMR7440
	39	Card Spacer	DNK2769
NSP	40	Spacer	PNY-404
	41	••••••	
	42	Cushion Rubber	XEB3036
	43	Trans Barrier	XEC3046
	44	DSP Barrier	XEC3047
	45	Locking Card Spacer	XEC3051
	46	EURO Cover	XMR3081
	47	Tray Cap	XAK3389
	48	Bonnet Case	XZN3129
	49	Caution Label	VRW1872
NSP	50	Name Label	See Contrast table(2)
NSP	51	DVD Assy	AXA7121
	52	Connector Assy	PG05KK-E25
	53	Cushion	AEB7267
	54	Adapter02 L	ANW7267
	55	Adapter02 R	ANW7268
	56	Screw	BPZ30P080FMC
NSP	57	AMP Module 6ch	AXQ7242
	58	DC Fan Motor	AXM7025
	59	FET Bracket A	ANG7418
	60	Fan Plate	See Contrast table(2)
NSP	61	Heat Sink	See Contrast table(2)
	62	Screw	BBZ30P140FMC
	63	Screw	BBZ30P300FZK
	64	Screw	BBZ30P060FMC
	65	Screw	BBZ30P080FNI
	66	Screw	BBZ40P060FMC
	67	Screw	BPZ30P080FZK
	68	Screw	CBZ30P080FMC
	69	••••••	
	70	Screw	VPZ30P140FMC
	71	Screw	VBZ30P080FMC

(2)CONTRAST TABLE

XV-DV515/MYXJ, /NVXJ, XV-DV313/MYXJN and NVXJN types are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.				Remarks
			XV-DV515 MYXJ	XV-DV515 NVXJ	XV-DV313 MYXJN	XV-DV313 NVXJN	
	5	CONTROL ASSY	XWZ3710	XWZ3710	XWZ3703	XWZ3703	
	24	Rear Panel	XNC3238	XNC3239	XNC3217	XNC3208	
NSP	50	Name Label	XAX3381	XAX3381	XAX3375	XAX3375	
	60	Fan Plate	ANG7462	ANG7462	ANG7425	ANG7425	
	61	Heat Sink	ANH7166	ANH7166	ANH7161	ANH7161	

2.3 FRONT SECTION



■ FRONT SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	DISPLAY ASSY	XWZ3720
	2	LED ASSY	XWZ3721
	3	HP ASSY	XWZ3715
	4	15P F.F.C/60V	XDD3130
	5	5P F.F.C/60V	XDD3131
	6	Top Frame	XNG3107
	7	Leg	AEB7090
	8	Rubber Cover	XEB3034
	9	Display Panel	See Contrast table(2)
NSP	10	Front Panel Assy	XXG3160
	11	Front Cap	XAK3390
	12	Front Panel	XMB3122
	13	Top Panel Assy	XZN3131
	14	•••••	
	15	Screw	BPZ30P080FZK
	16	•••••	
	17	Screw	PBA1096
	18	•••••	
NSP	19	HP Press ASSY	•••••

(2)CONTRAST TABLE

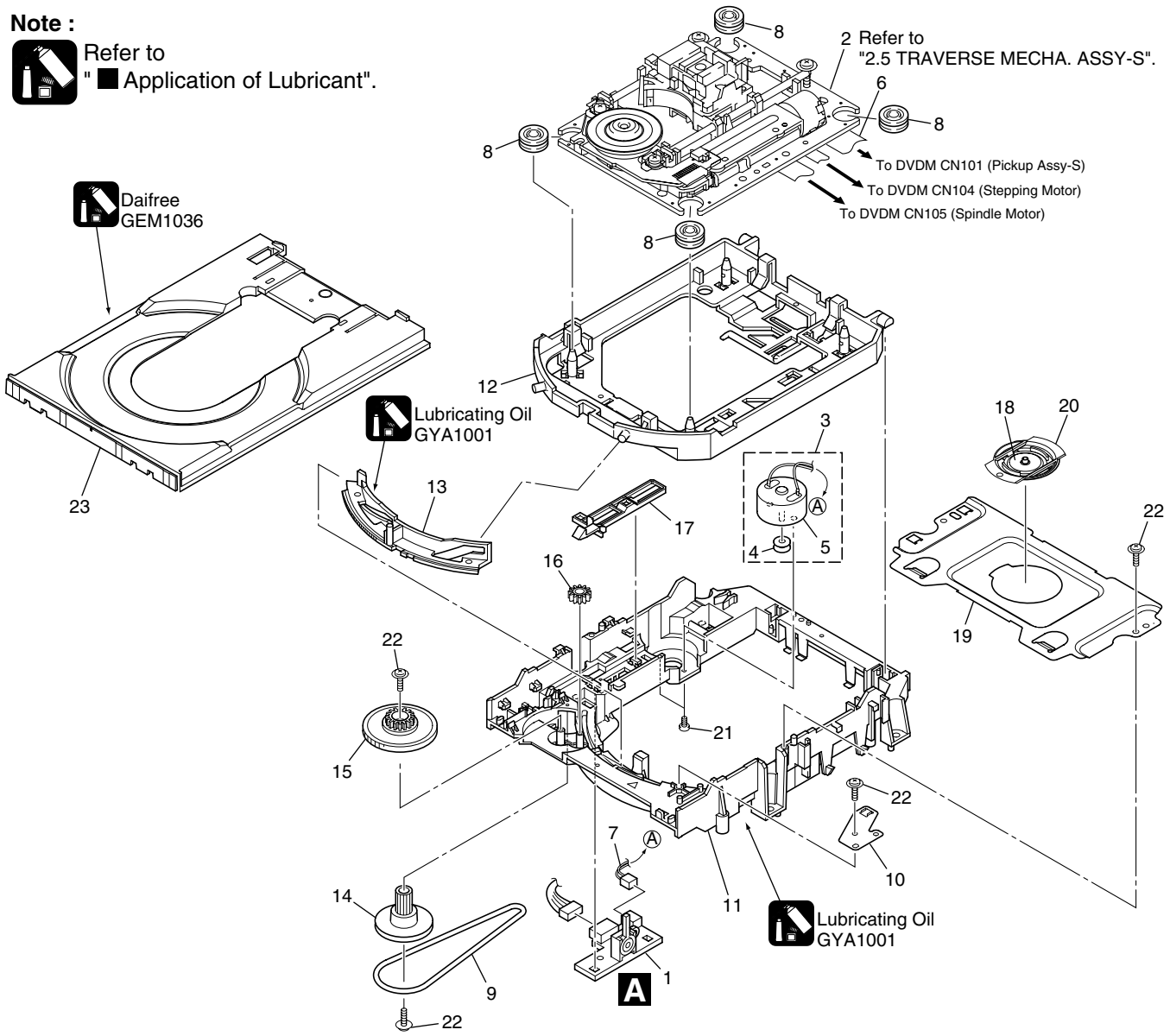
XV-DV515/MYXJ, /NVXJ, XV-DV313/MYXJN and /NVXJN types are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.				Remarks
			XV-DV515 MYXJ	XV-DV515 NVXJ	XV-DV313 MYXJN	XV-DV313 NVXJN	
	9	Display Panel	XAK3410	XAK3410	XAK3408	XAK3408	

2.4 LOADING MECHA ASSY

Note :

Refer to
" ■ Application of Lubricant".



■ LOADING MECHA ASSY PARTS LIST

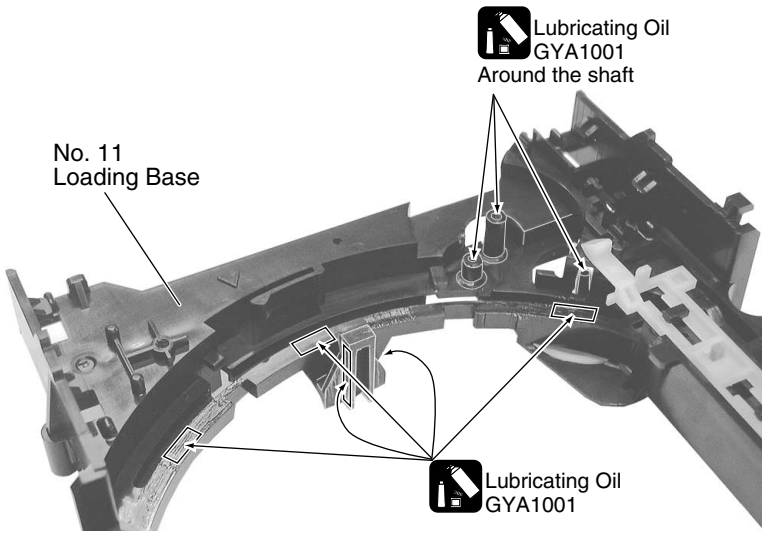
Mark	No.	Description	Part No.
NSP	1	LOAB Assy	See Contrast table(2)
	2	Traverse Mechanism Assy-S	VXX2871
	3	Loading Motor Assy	VXX2872
	4	Motor Pulley	PNW1634
	5	Motor	VXM1105
	6	Flexible Cable (24P)	VDA1947
	7	Connector Assy 2P	VKP2253
	8	Floating Rubber	VEB1351
	9	Belt	VEB1330
	10	Stabilizer	VNE2253
	11	Loading Base	VNL1917
	12	Float Base DVD	VNL1918
	13	Drive Cam	VNL1919
	14	Gear Pulley	VNL1921
	15	Loading Gear	VNL1922
	16	Drive Gear	VNL1923
	17	SW Lever	VNL1925
	18	Clamper Plate	VNE2251
	19	Bridge	VNE2252
	20	Clamper	VNL1924
	21	Screw	JGZ17P028FMC
	22	Screw	Z39-019
	23	Tray	See contrast table(2)

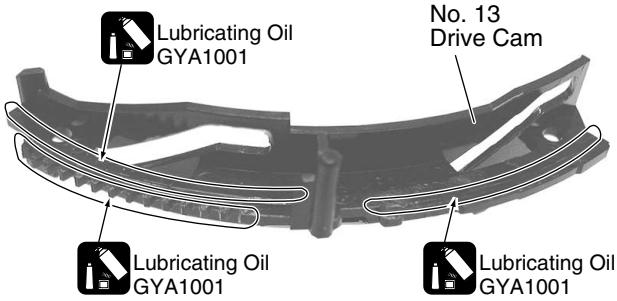
(2)CONTRAST TABLE

XV-DV515/MYXJ, /NVXJ, XV-DV313/MYXJN and /NVXJN types are constructed the same except for the following:

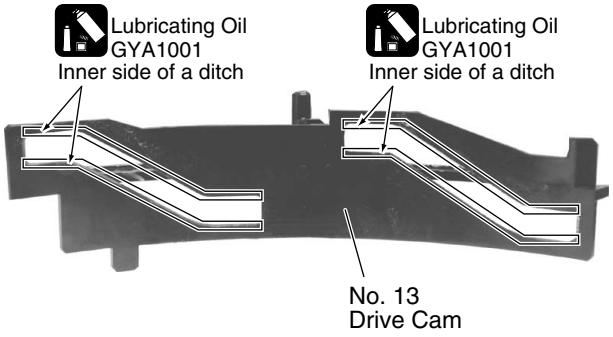
Mark	No.	Symbol and Description	Part No.				Remarks
			XV-DV515 MYXJ	XV-DV515 NVXJ	XV-DV313 MYXJN	XV-DV313 NVXJN	
NSP	1	LOAB ASSY	VWG2346	VWG2346	VWG2279	VWG2279	
	23	Tray	VNL1920	VNL1920	VNL1950	VNL1950	

Application of Lubricant

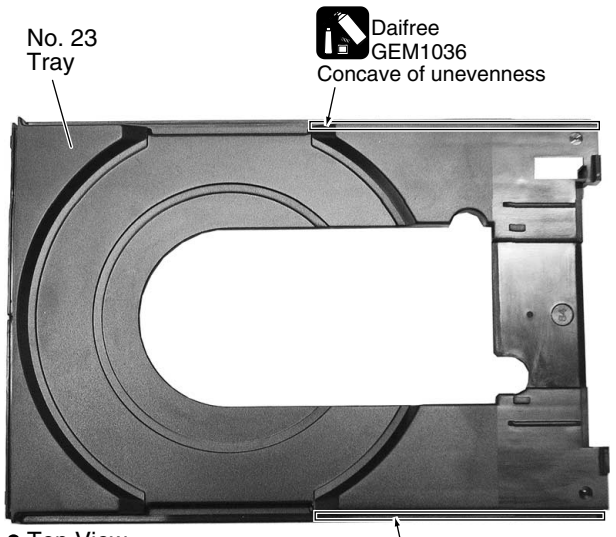




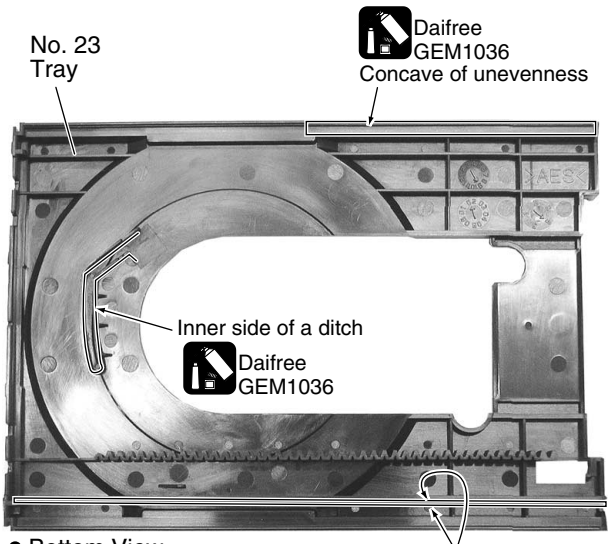
● Front View



● Rear View

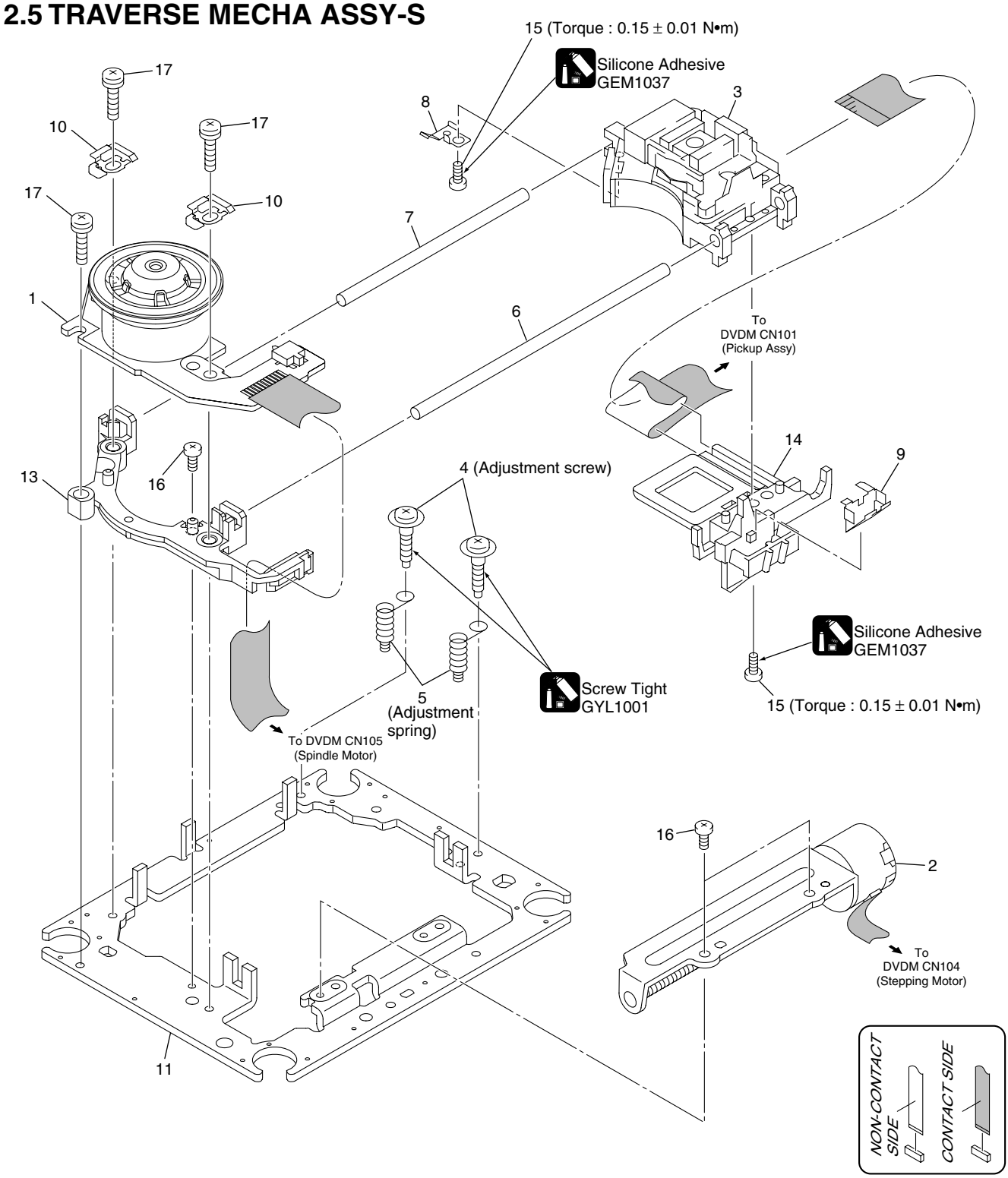


● Top View



● Bottom View

2.5 TRAVERSE MECHA ASSY-S

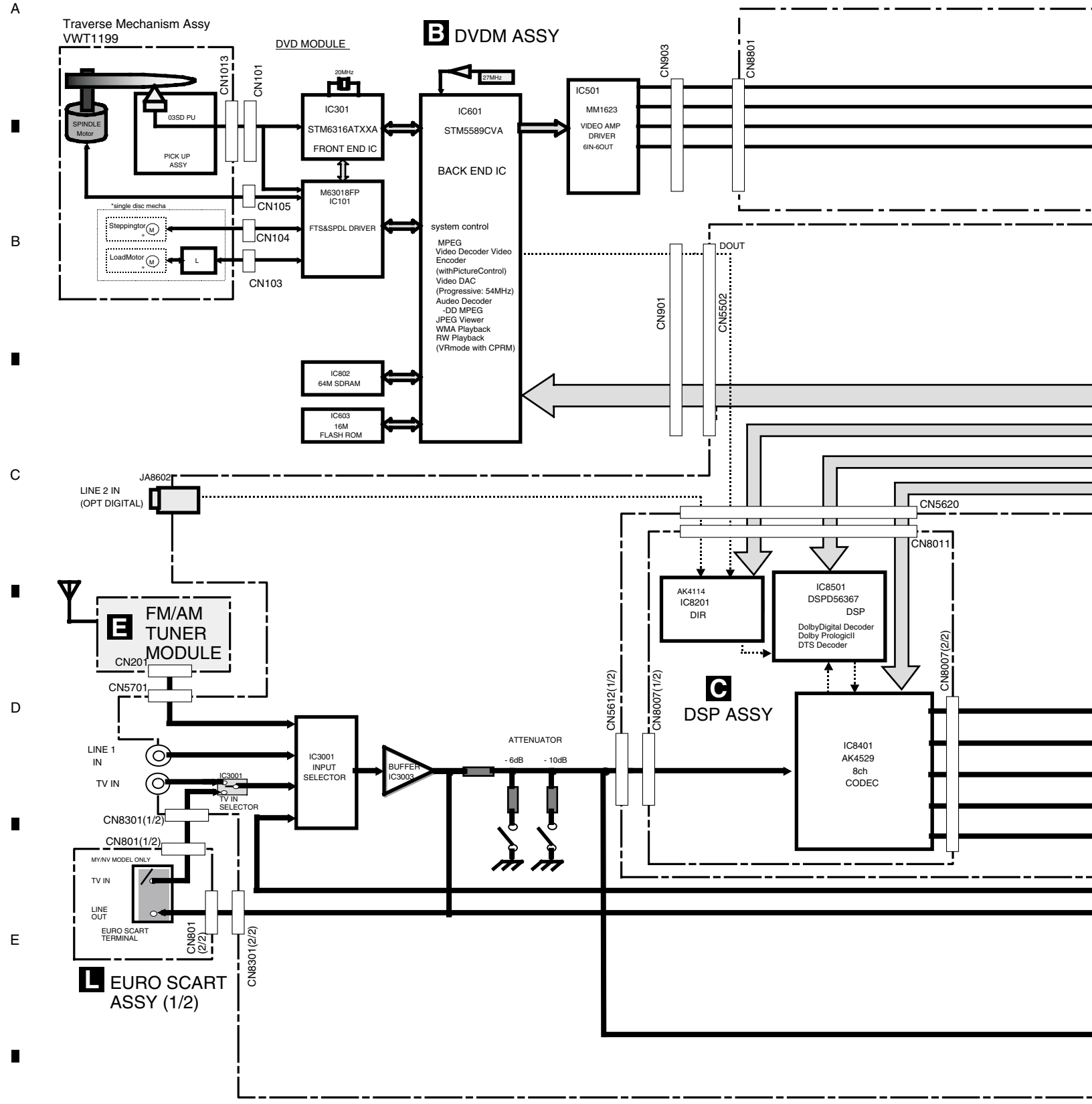


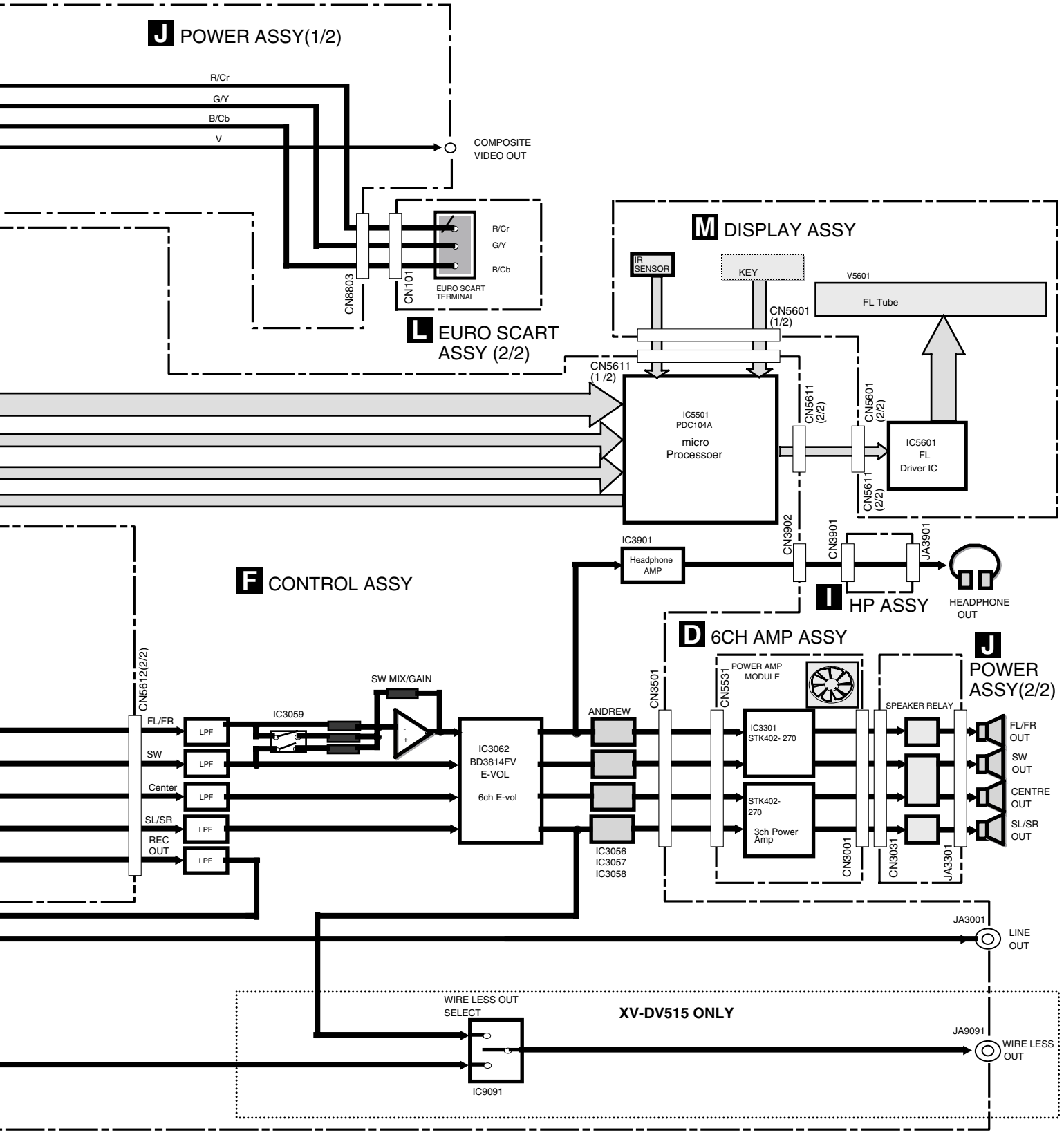
■ TRAVERSE MECHA ASSY-S PARTS LIST

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Spindle Motor	VXM1099		10	Support Spring	VNC1020
	2	Stepping Motor	VXM1101	NSP	11	Mechanism Chassis	VNE2248
⚠	3	Pickup Assy-S	OXX8005		12	••••••	
	4	Skew Screw	VBA1080		13	Spacer	VNL1913
	5	Skew Spring	VBH1335		14	Joint 03	VNL1949
	6	Guide Bar	VLL1514		15	Tapping Screw	OBA8016
	7	Sub Guide Bar	VLL1515		16	Screw	BBZ20P050FZK
	8	Leaf Spring	VNC1023		17	Screw	PMA26P100FMC
	9	Joint Spring	VNC1019				

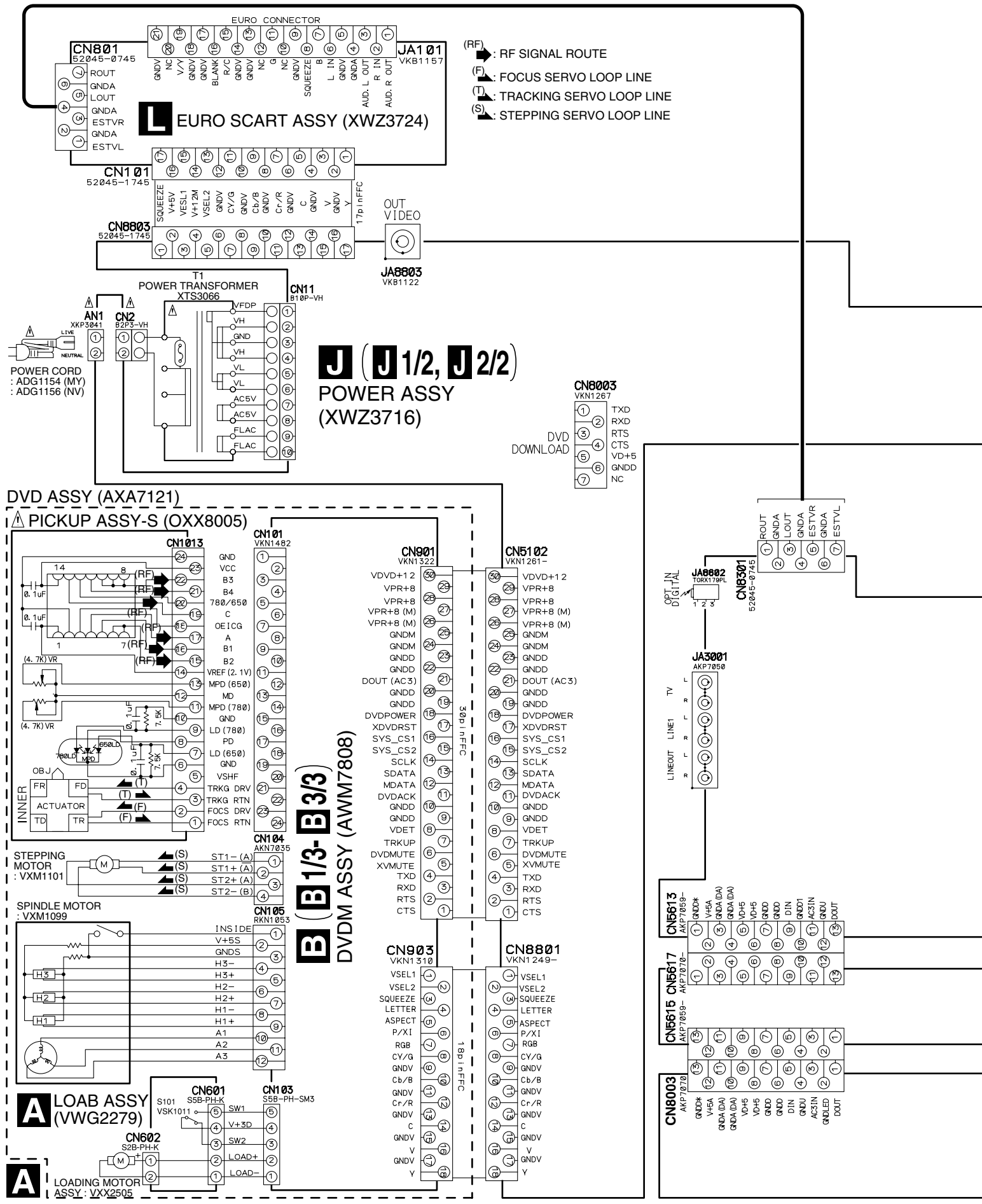
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

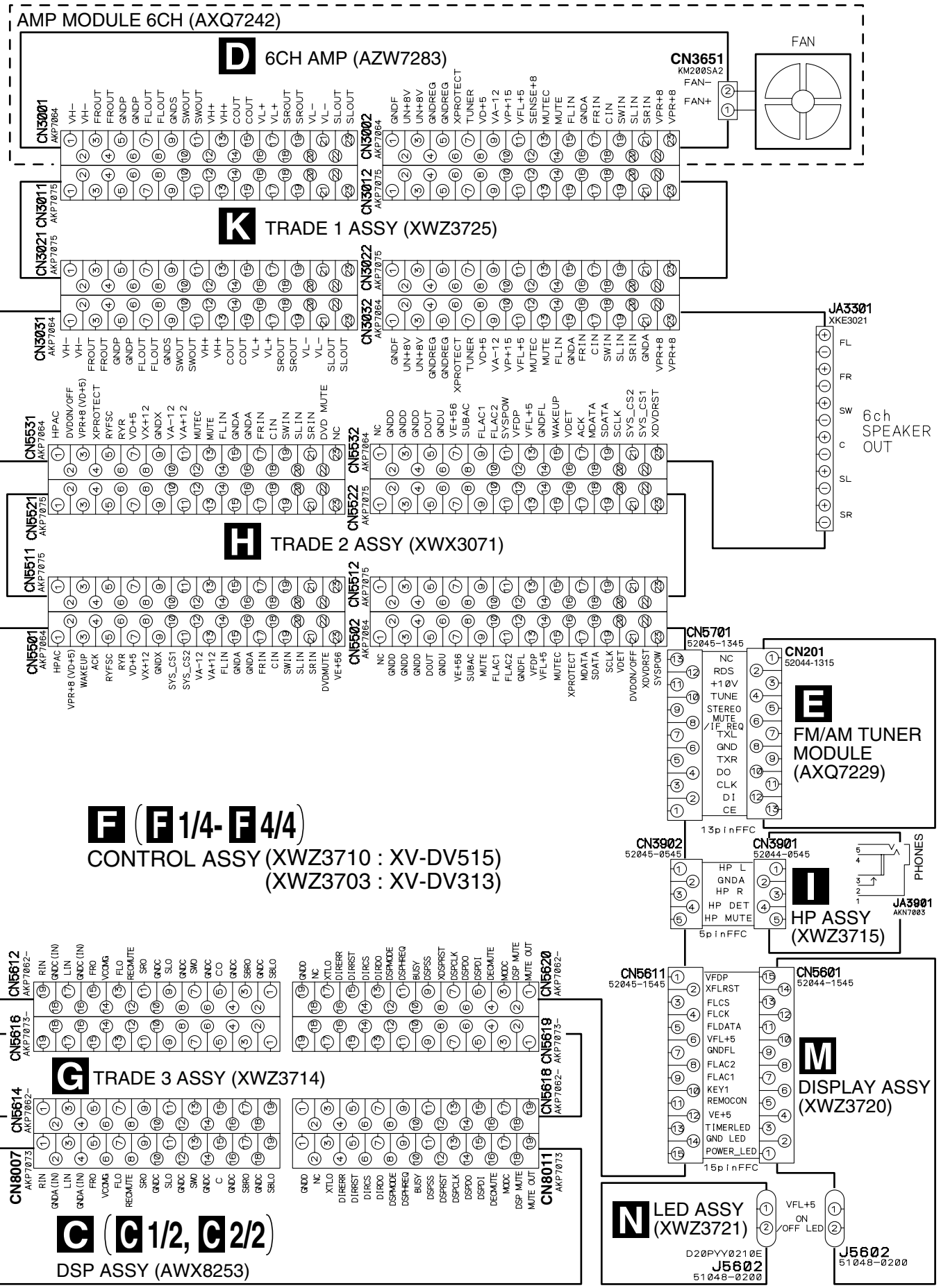



J POWER ASSY(1/2)
R/Cr
G/Y
B/Cb
V
COMPOSITE VIDEO OUT
CN8803
CN101
EURO SCART TERMINAL
L EURO SCART ASSY (2/2)
M DISPLAY ASSY
IR SENSOR
KEY
V5601
FL Tube
CN5601 (1/2)
CN5611 (1 /2)
IC5501 PDC104A micro Processoer
CN5611 (2/2)
CN5601 (2/2)
IC5601 FL Driver IC
CN3902
CN3901
JA3901
IC3901 Headphone AMP
I HP ASSY
HEADPHONE OUT
F CONTROL ASSY
D 6CH AMP ASSY
J POWER ASSY(2/2)
CN5612(2/2)
SW MIX/GAIN
IC3059
FL/FR
SW
Center
SL/SR
REC OUT
LPF
IC3062 BD3814FV E-VOL 6ch E-vol
ANDREW
CN3501
POWER AMP MODULE
CN5531
IC3301 STK402- 270
STK402- 270 3ch Power Amp
SPEAKER RELAY
CN3001
CN3031
JA3301
FL/FR OUT
SW OUT
CENTRE OUT
SL/SR OUT
IC3056 IC3057 IC3058
JA3001
LINE OUT
WIRE LESS OUT SELECT
XV-DV515 ONLY
IC9091
JA9091
WIRE LESS OUT

3.2 LOAB ASSY and OVERALL WIRING DIAGRAM

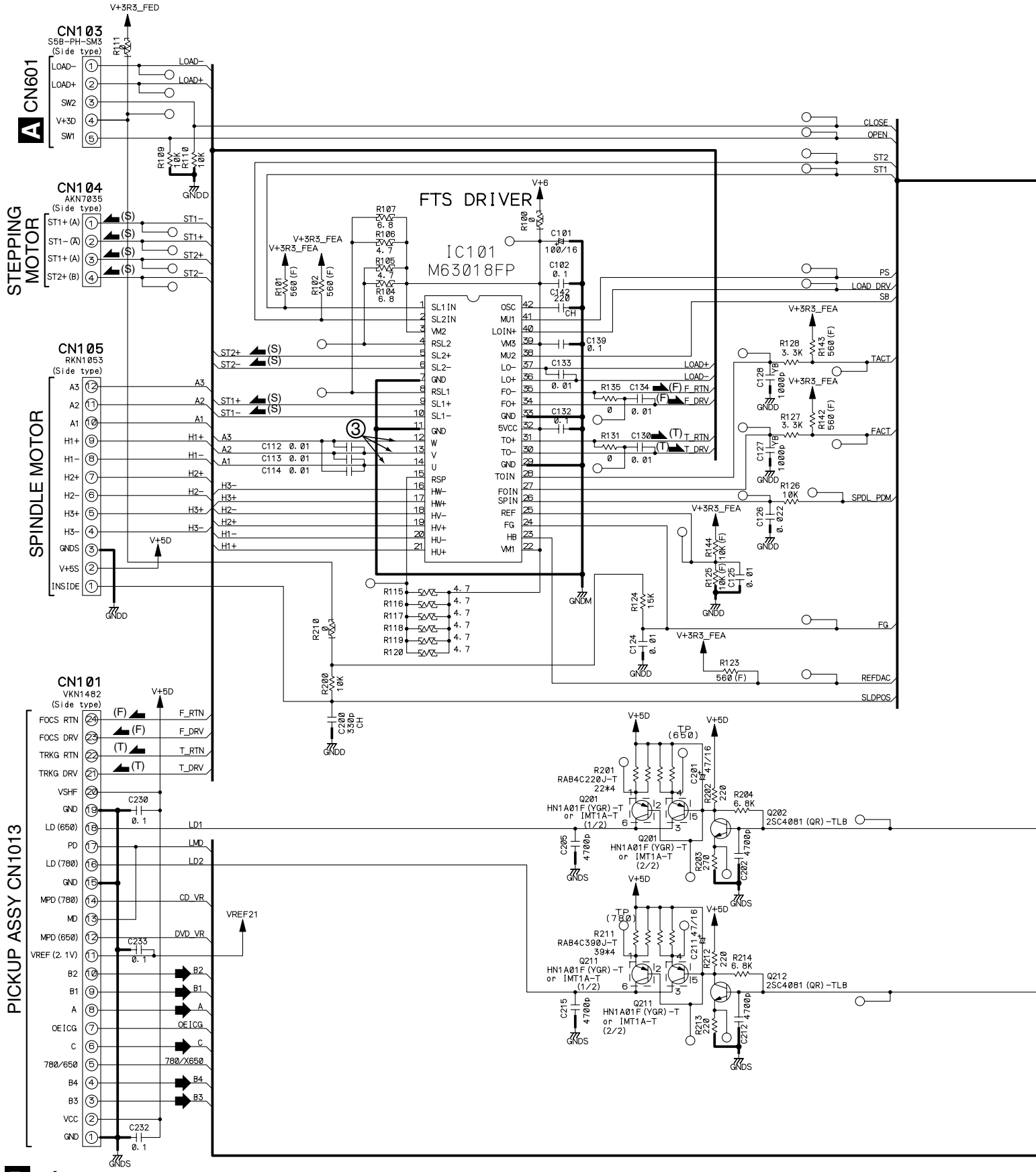


Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".



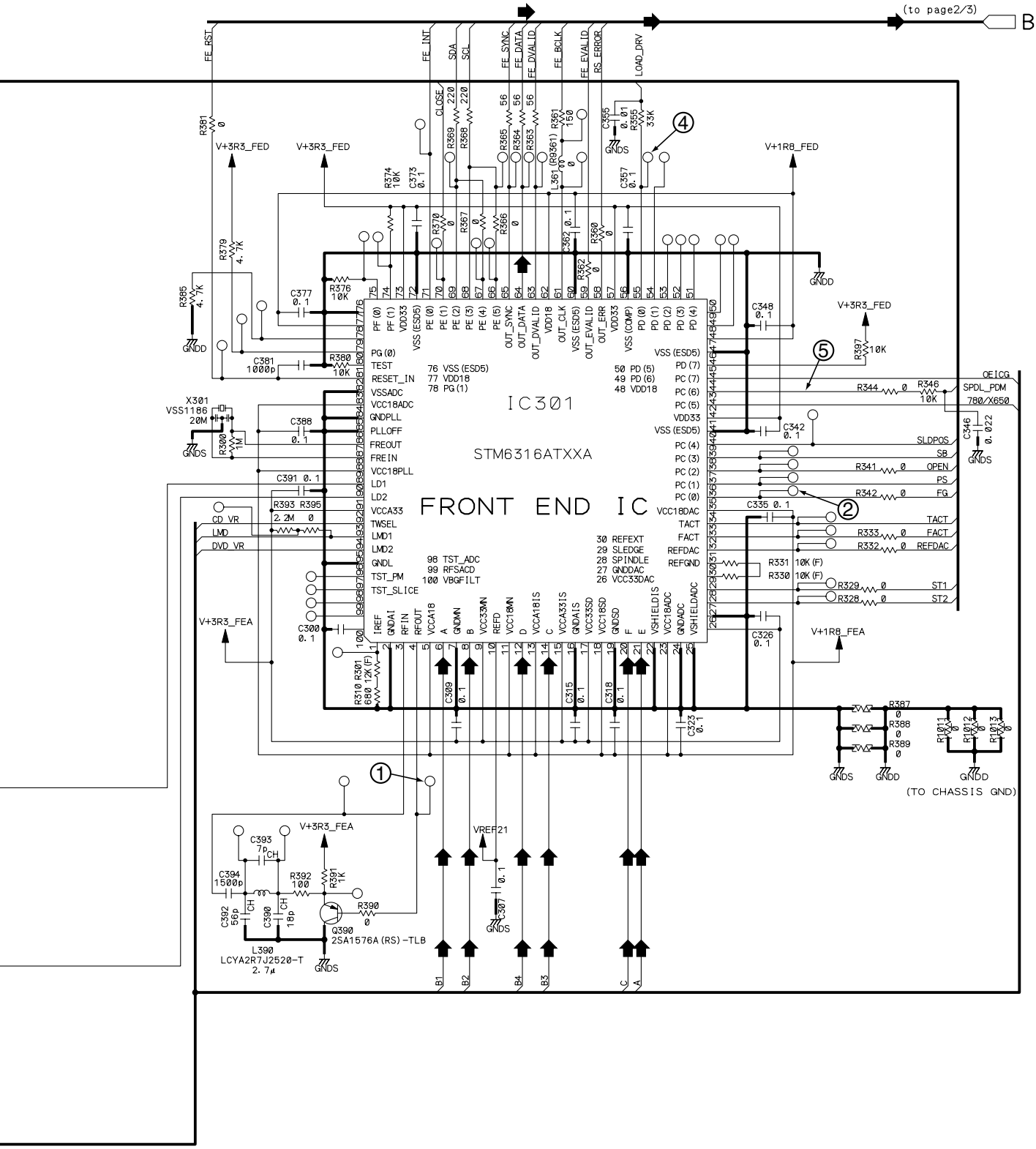
3.3 DVDM ASSY(1/3)

B 1/3 DVDM ASSY (AWM7808)



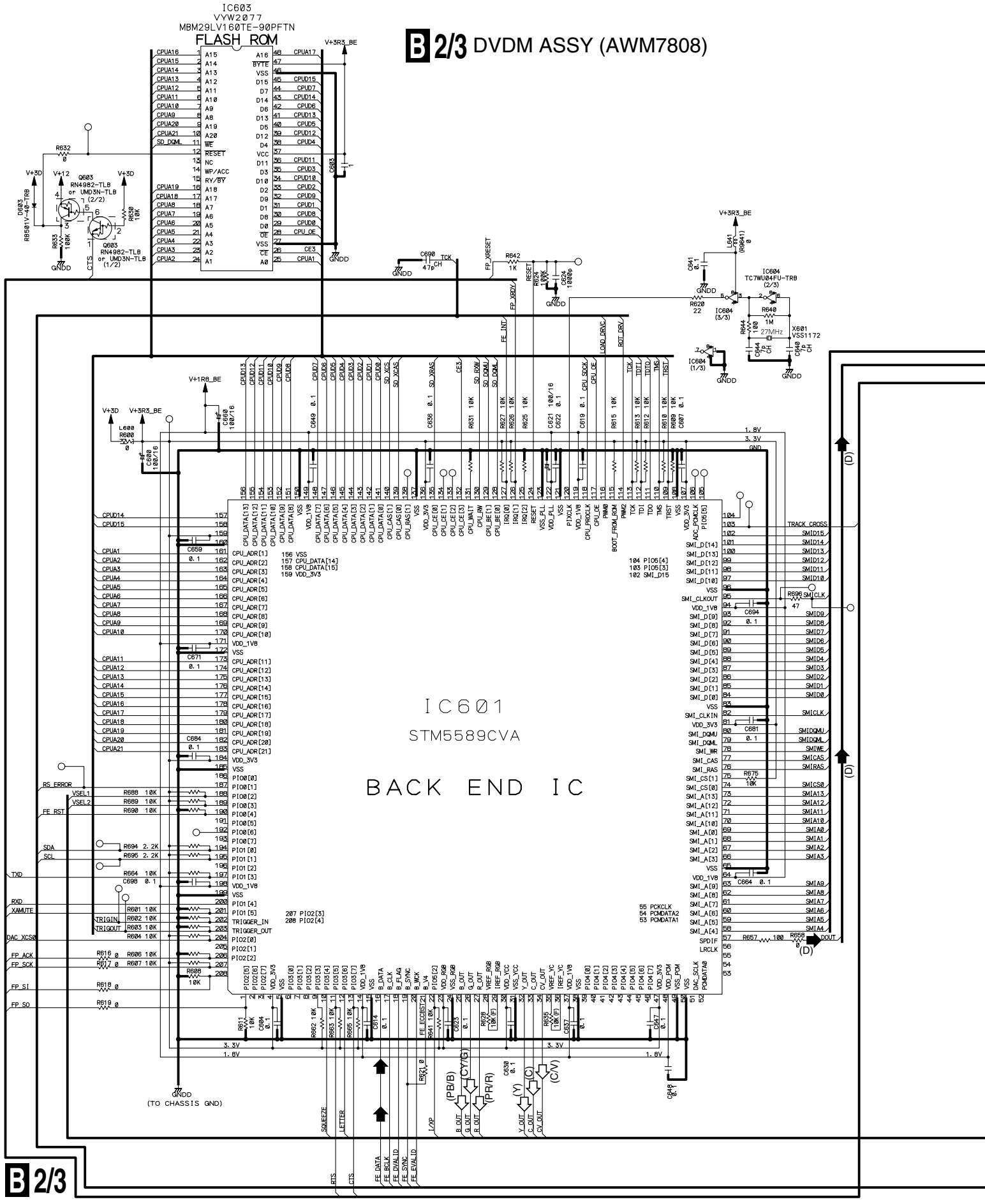
B 1/3

: FE DATA SIGNAL ROUTE
(F): FOCUS SERVO LOOP LINE
(T): TRACKING SERVO LOOP LINE
(S): STEPPING SERVO LOOP LINE

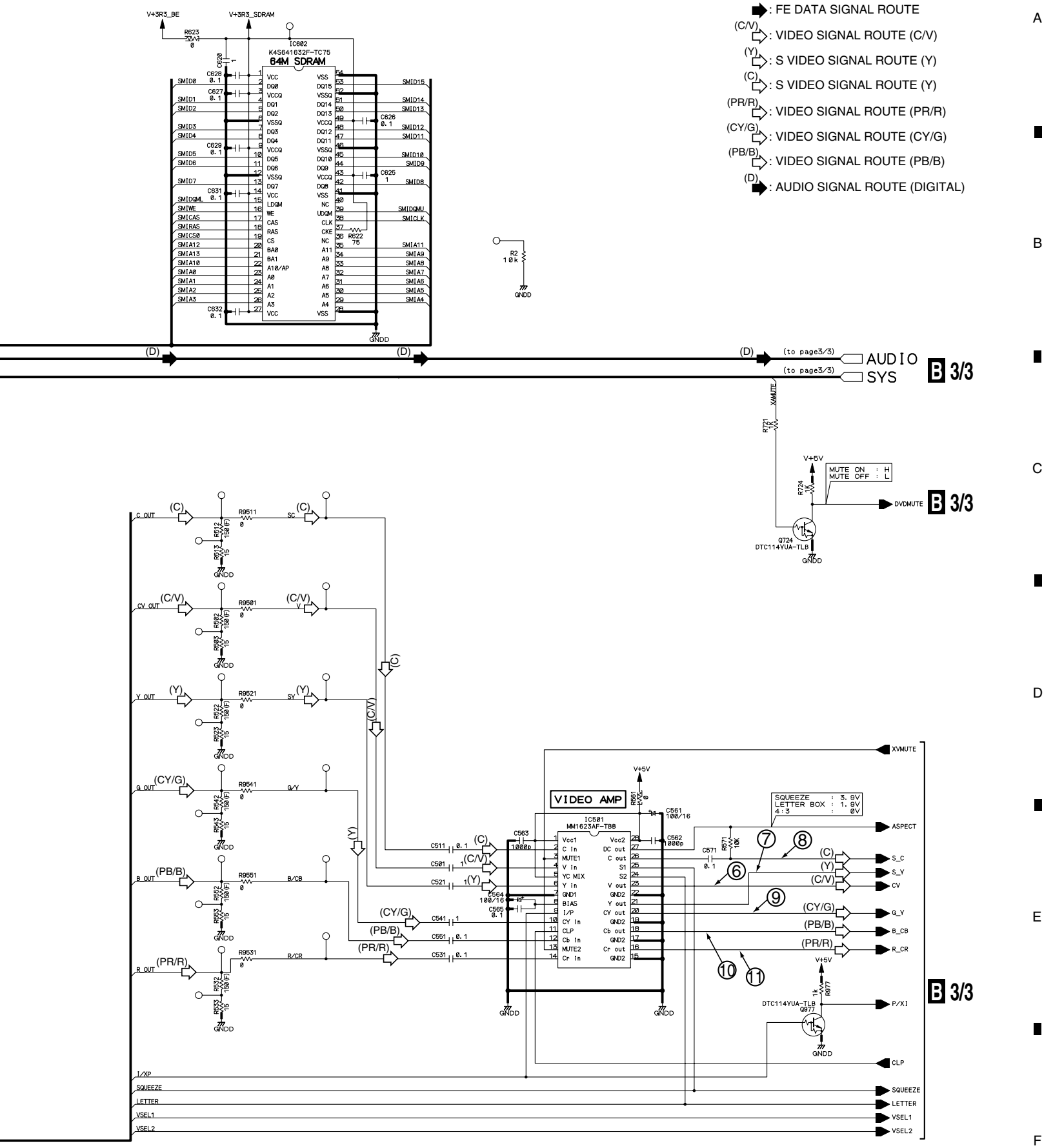


B 1/3

3.4 DVDM ASSY(2/3)

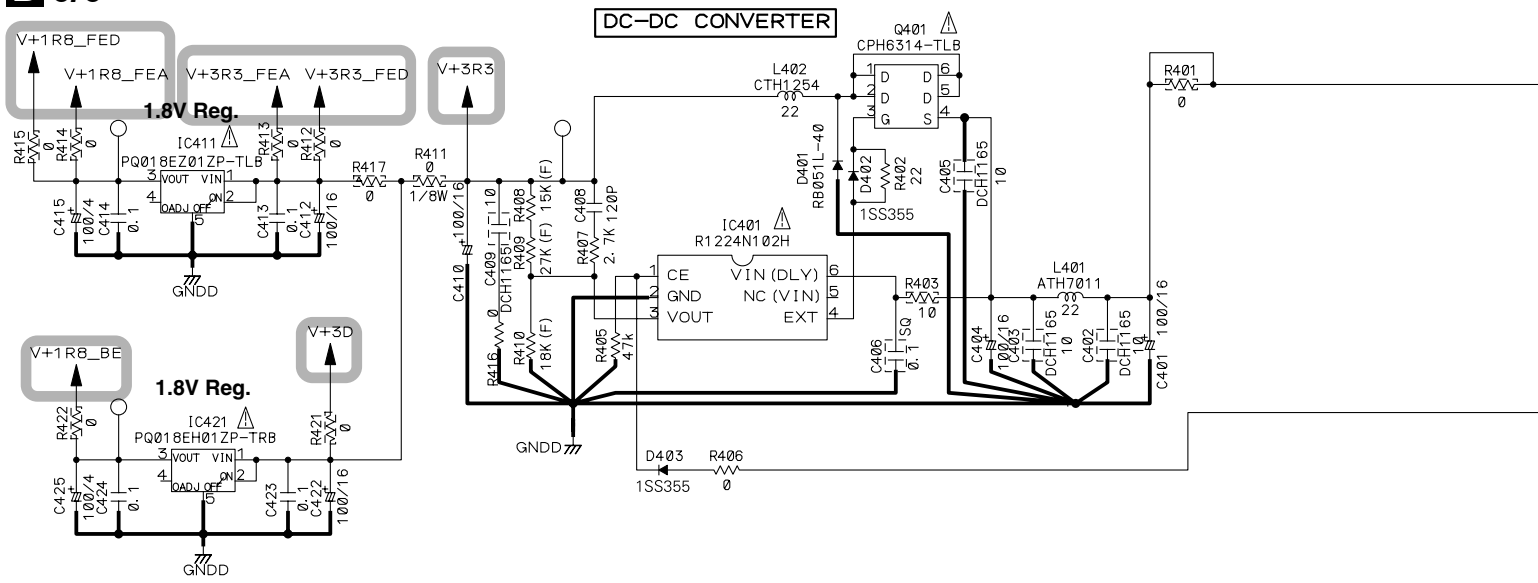


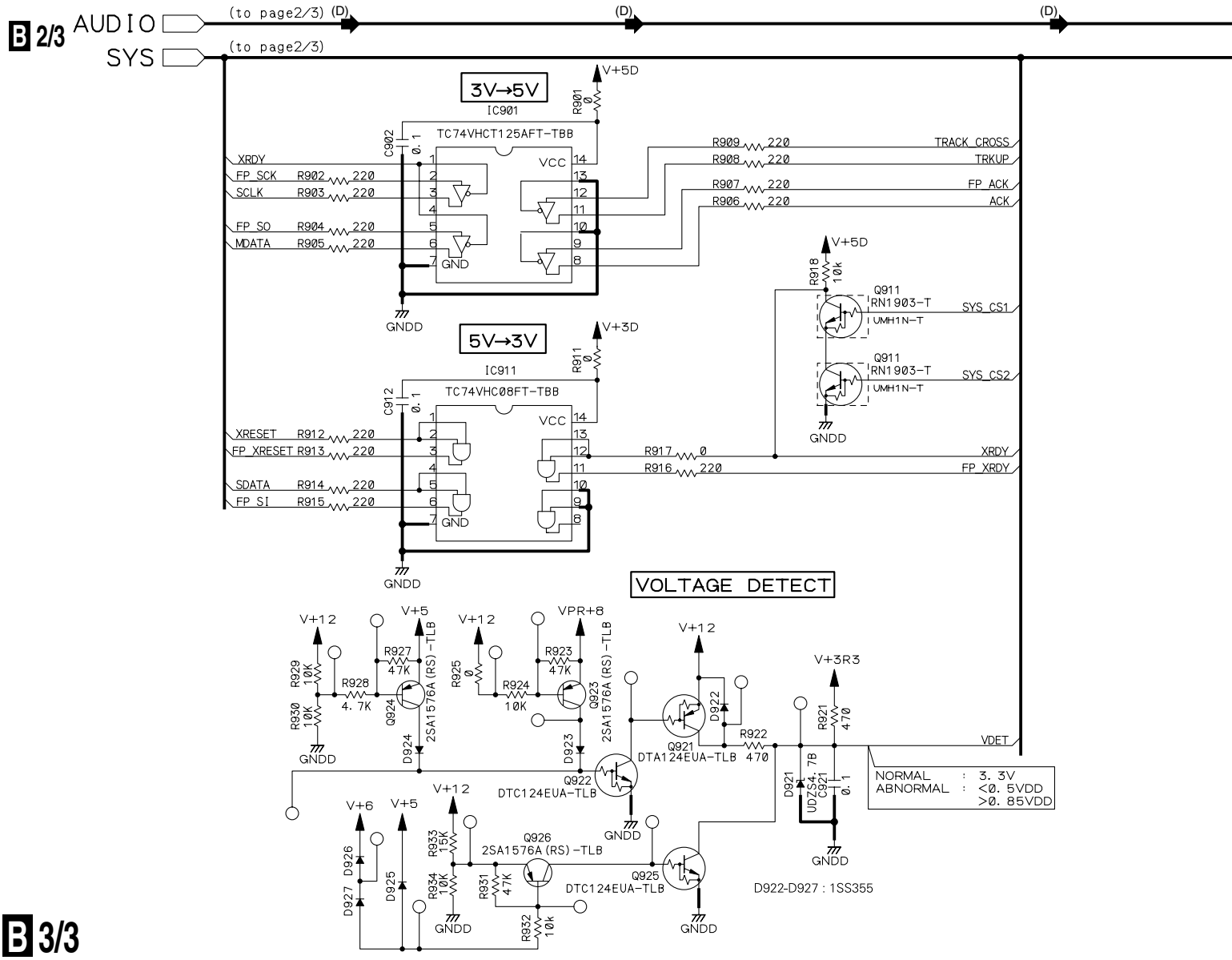
: FE DATA SIGNAL ROUTE
(C/V): VIDEO SIGNAL ROUTE (C/V)
(Y): S VIDEO SIGNAL ROUTE (Y)
(C): S VIDEO SIGNAL ROUTE (Y)
(PR/R): VIDEO SIGNAL ROUTE (PR/R)
(CY/G): VIDEO SIGNAL ROUTE (CY/G)
(PB/B): VIDEO SIGNAL ROUTE (PB/B)
(D): AUDIO SIGNAL ROUTE (DIGITAL)

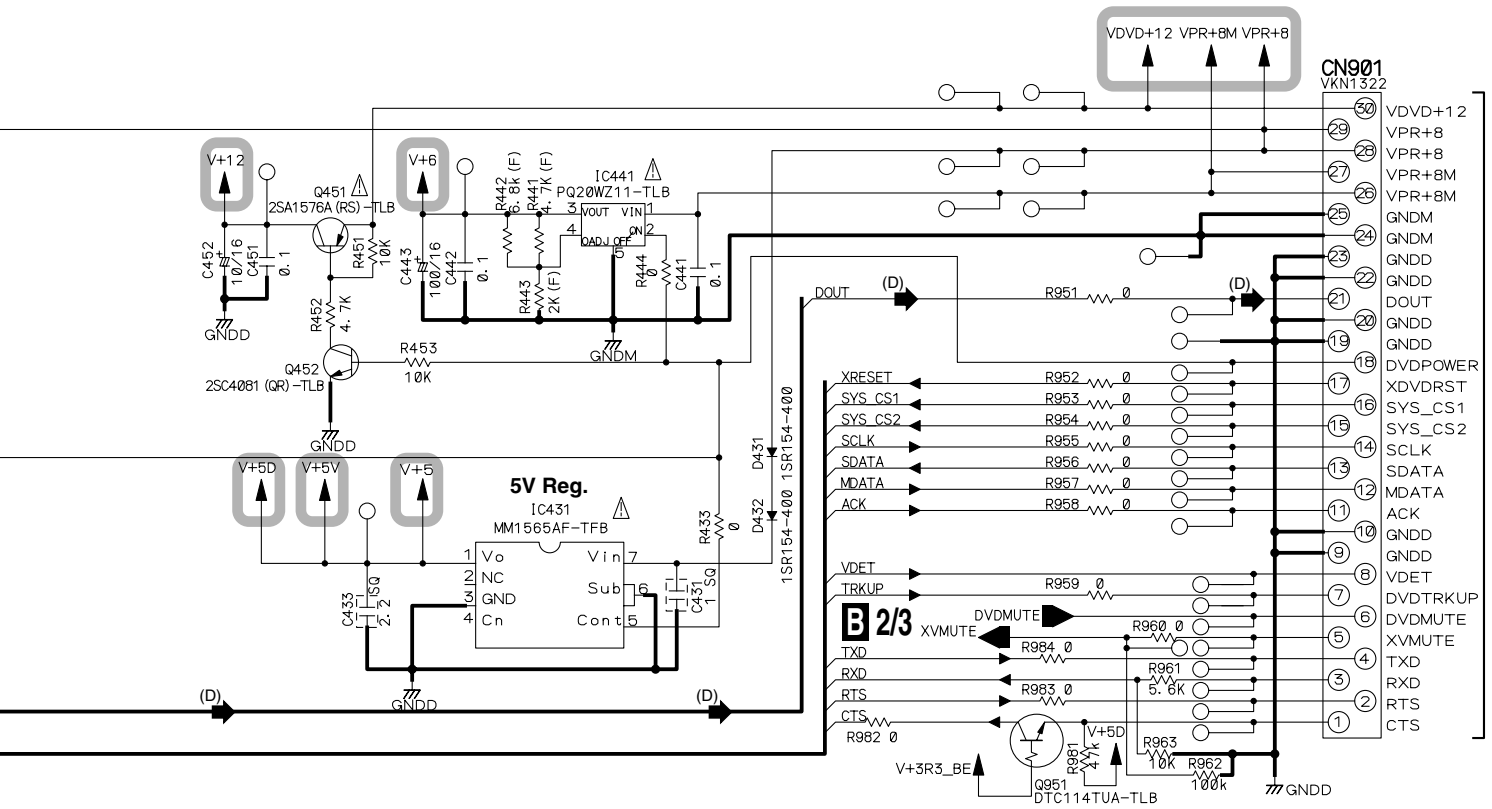


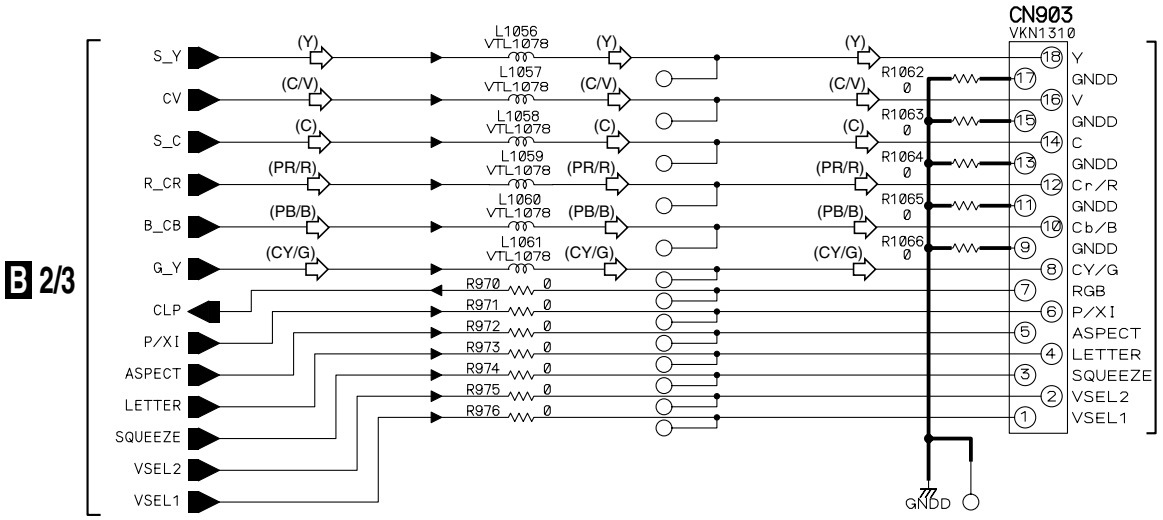
3.5 DVDM ASSY(3/3)

B 3/3 DVDM ASSY (AWM7808)









(C/V) : VIDEO SIGNAL ROUTE (C/V)

(Y) : S VIDEO SIGNAL ROUTE (Y)

(C) : S VIDEO SIGNAL ROUTE (Y)

(PR/R) : VIDEO SIGNAL ROUTE (PR/R)

(CY/G) : VIDEO SIGNAL ROUTE (CY/G)

(PB/B) : VIDEO SIGNAL ROUTE (PB/B)

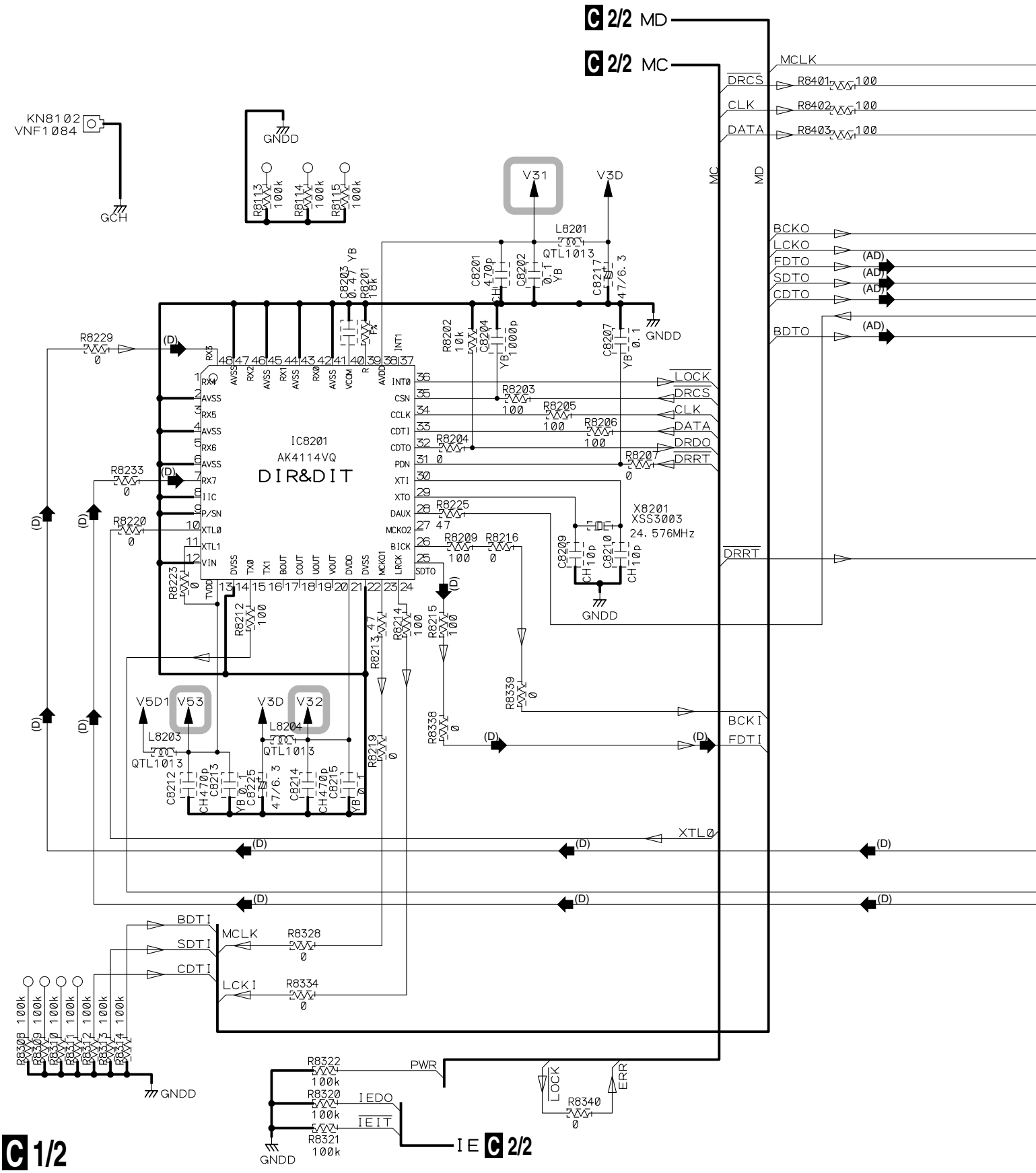
(D) : AUDIO SIGNAL ROUTE (DIGITAL)

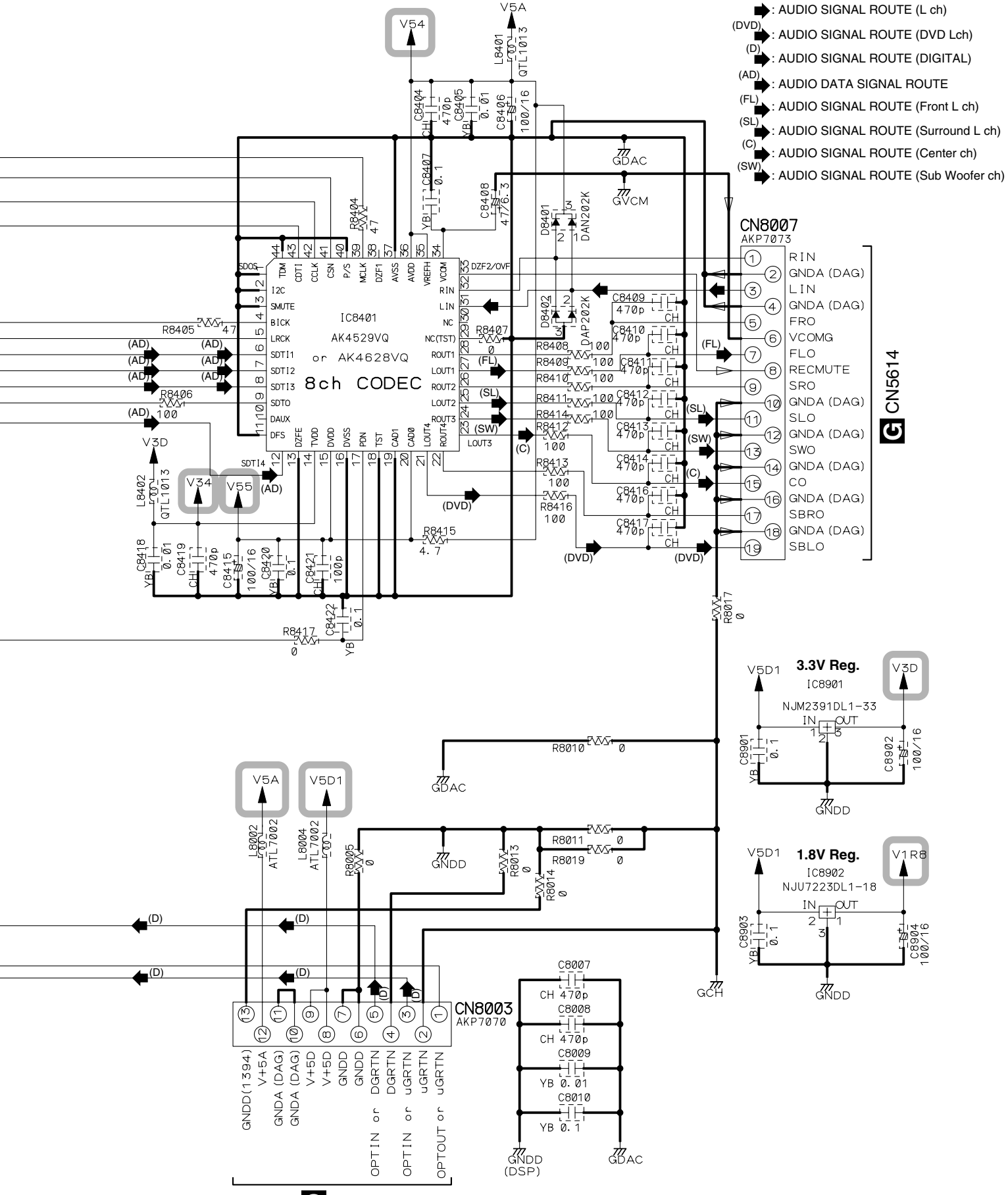
: The power supply is shown with the marked box.

B 3/3

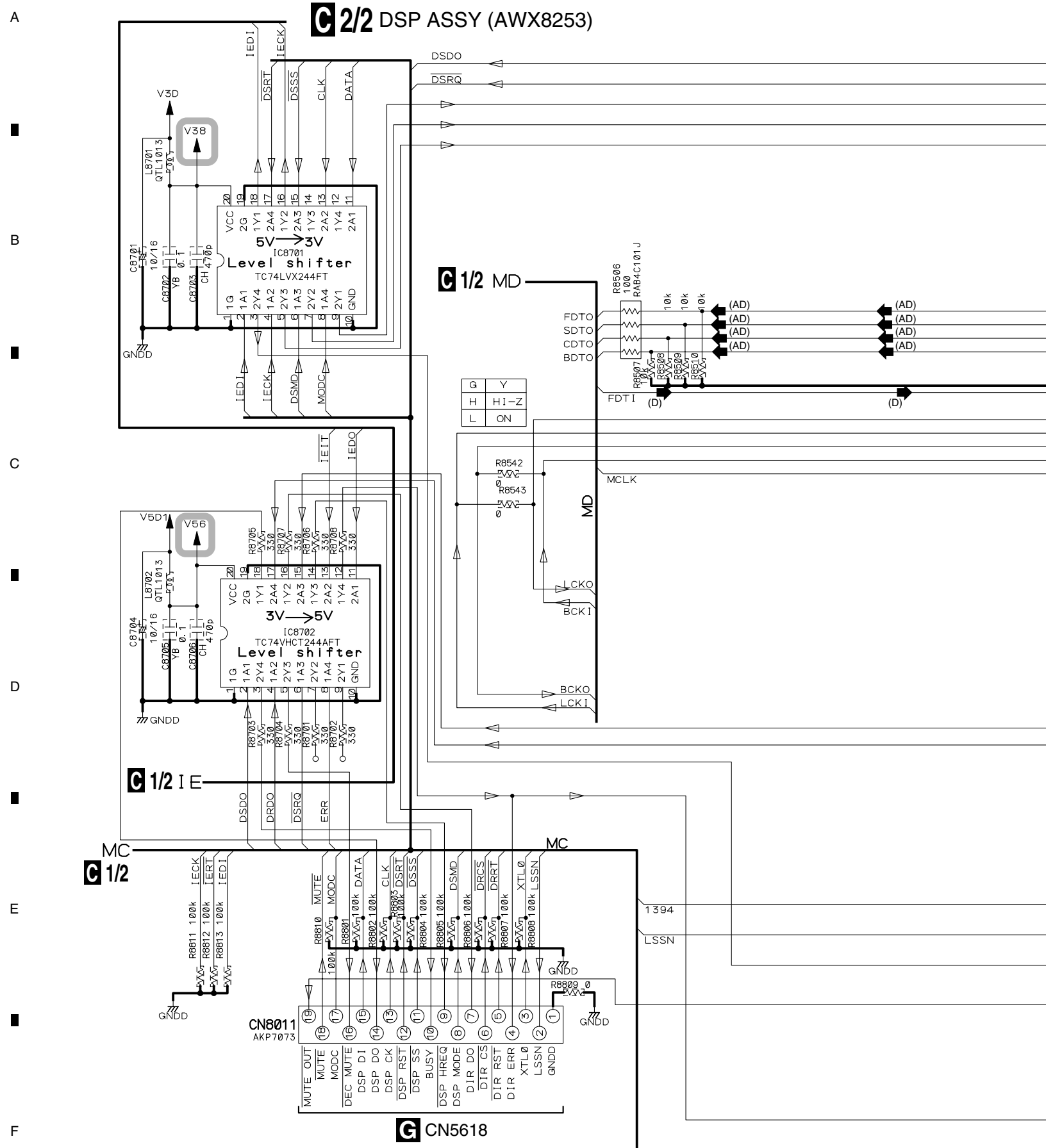
3.6 DSP ASSY(1/2)

C 1/2 DSP ASSY (AWX8253)

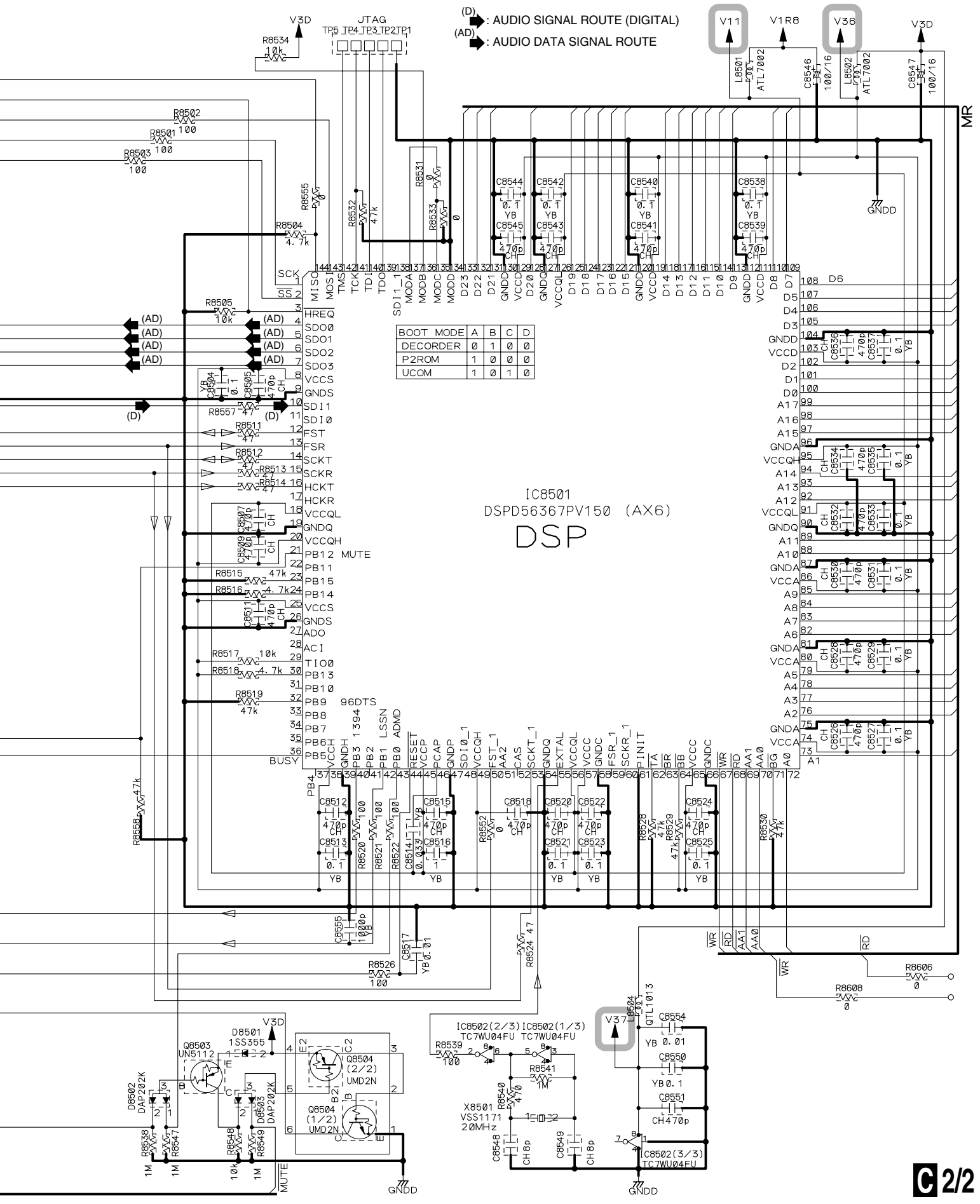



: AUDIO SIGNAL ROUTE (L ch)
(DVD) : AUDIO SIGNAL ROUTE (DVD Lch)
(D) : AUDIO SIGNAL ROUTE (DIGITAL)
(AD) : AUDIO DATA SIGNAL ROUTE
(FL) : AUDIO SIGNAL ROUTE (Front L ch)
(SL) : AUDIO SIGNAL ROUTE (Surround L ch)
(C) : AUDIO SIGNAL ROUTE (Center ch)
(SW) : AUDIO SIGNAL ROUTE (Sub Woofer ch)
IC8401
AK4529VQ
or AK4628VQ
8ch CODEC
CN8007
AKP7073
CN5614
CN8003
AKP7070
CN5615
3.3V Reg.
IC8901
NJM2391DL1-33
1.8V Reg.
IC8902
NJU7223DL1-18
: The power supply is shown with the marked box.

3.7 DSP ASSY(2/2)

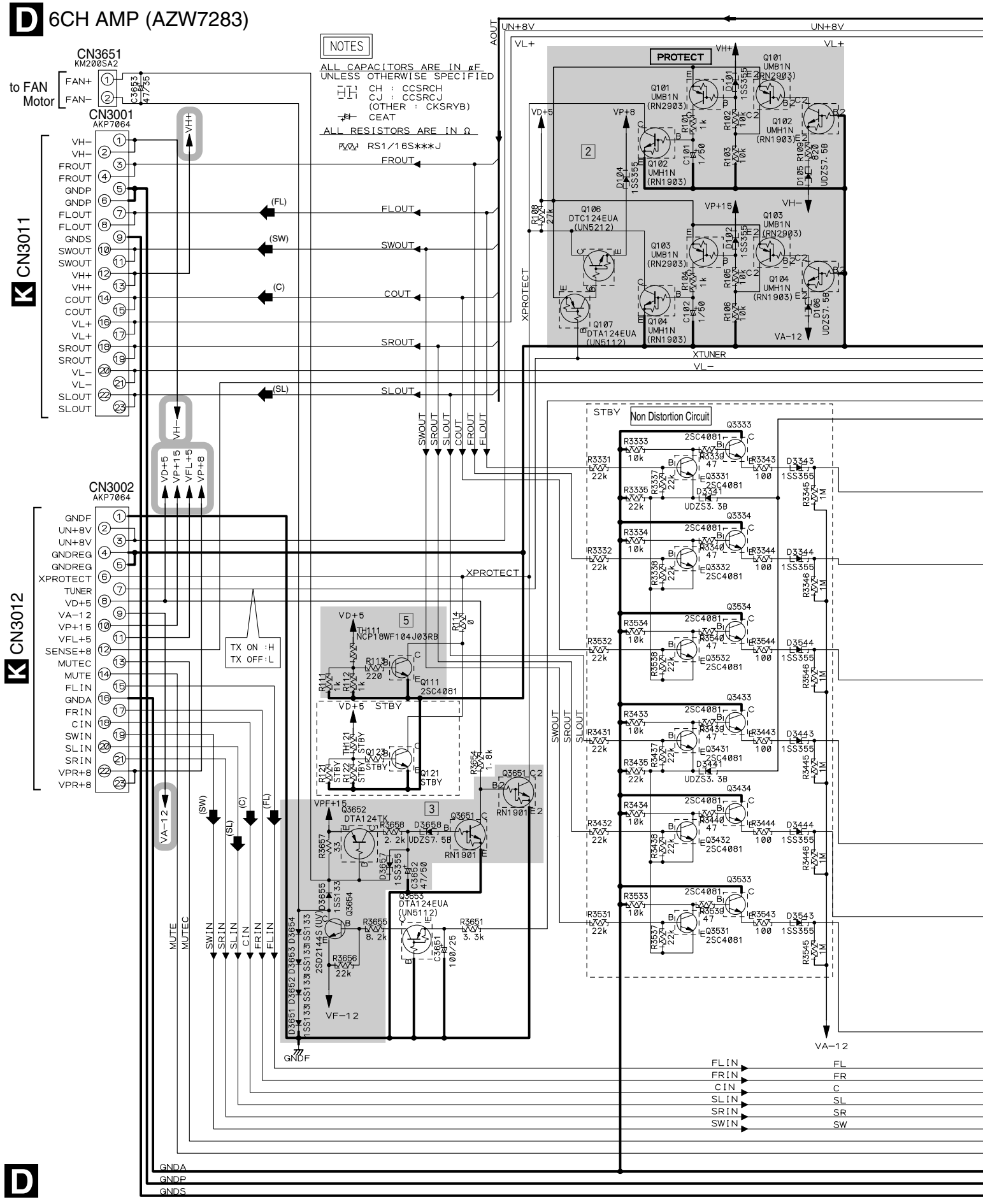


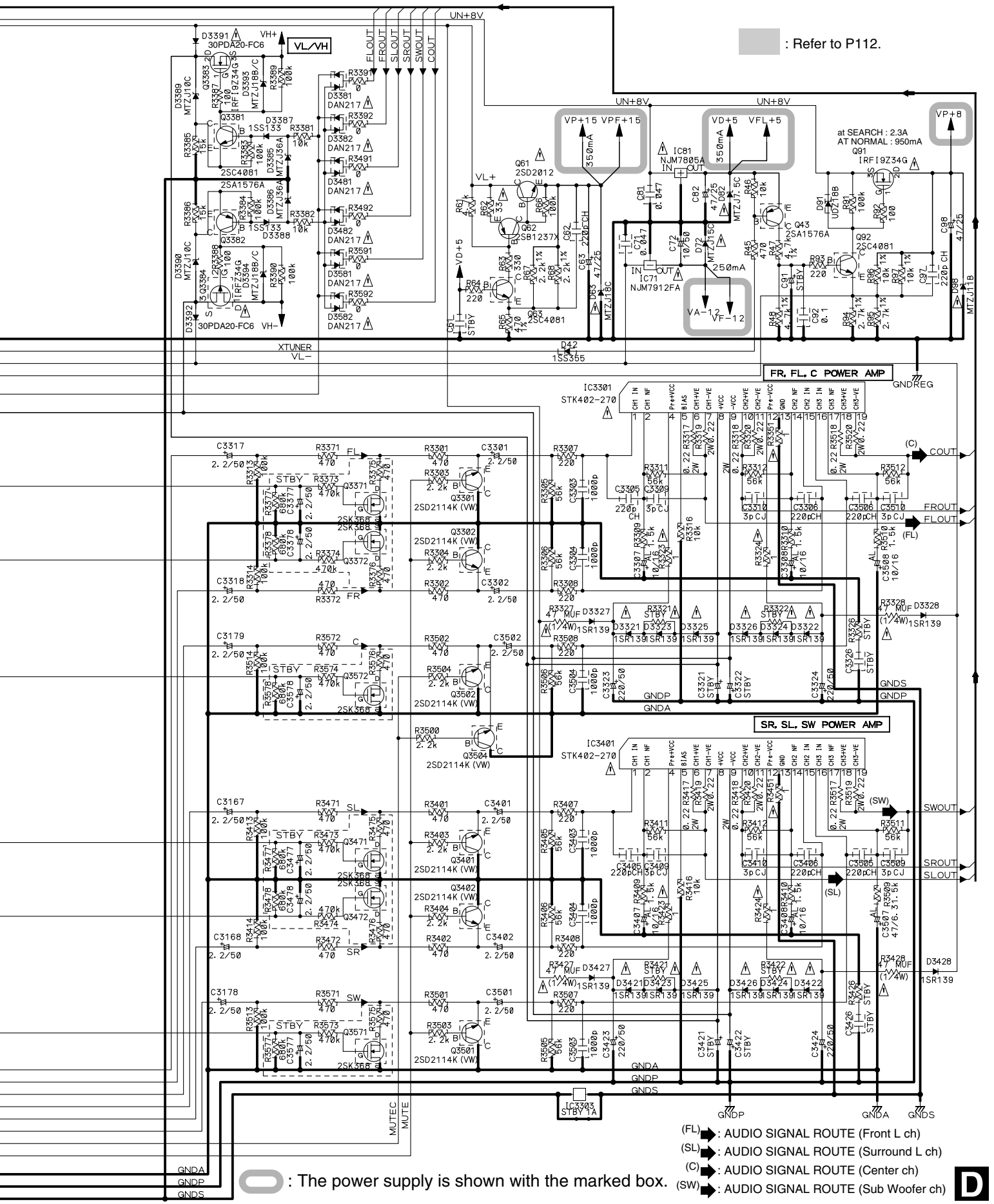
(D): AUDIO SIGNAL ROUTE (DIGITAL)
(AD): AUDIO DATA SIGNAL ROUTE



3.8 6CH AMP ASSY

D 6CH AMP (AZW7283)



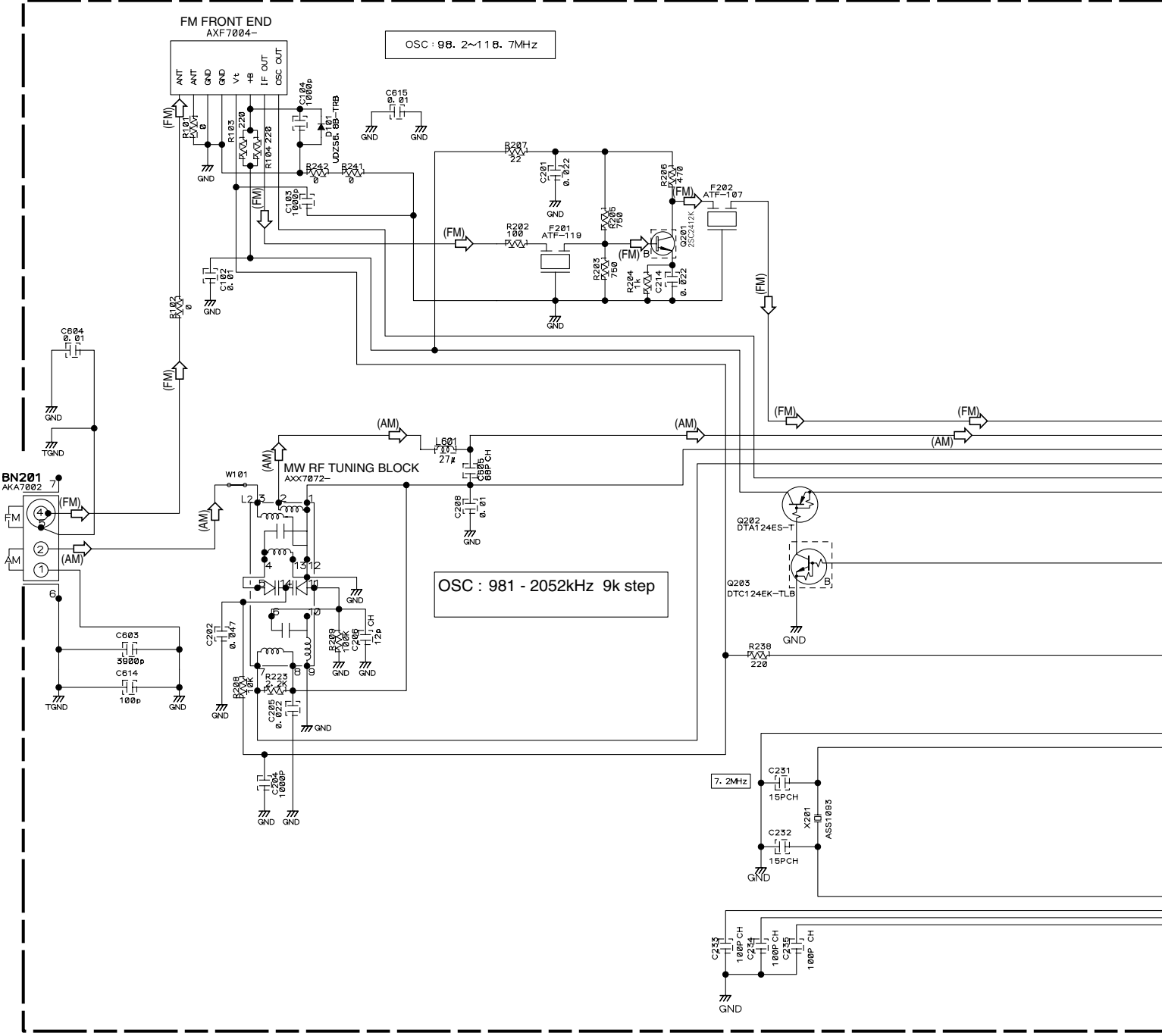

: Refer to P112.
FR, FL, C POWER AMP
SR, SL, SW POWER AMP
VL/VH
VP+15 VPF+15
VD+5 VFL+5
VP+8
VA-12 VF-12
UN+8V
at SEARCH : 2.3A
AT NORMAL : 950mA
IC81 NJM7805A
IC71 NJM7912FA
IC3301 STK402-270
IC3401 STK402-270
IC3303 STBY 1A
XTUNER
VL−
GNDREG
GNDP
GNDA
GNDS
MUTEC
MUTE
COUT
FROUT
FLOUT
SWOUT
SROUT
SLOUT
(FL): AUDIO SIGNAL ROUTE (Front L ch)
(SL): AUDIO SIGNAL ROUTE (Surround L ch)
(C): AUDIO SIGNAL ROUTE (Center ch)
(SW): AUDIO SIGNAL ROUTE (Sub Woofer ch)
: The power supply is shown with the marked box.

3.9 FM/AM TUNER MODULE

Notes

1. RESISTORS
   Indicated in Ω, 1/16W±5% Tolerance unless otherwise noted K:KΩ, M:MΩ.
2. CAPACITORS
   Indicated in Capacity(μF)/VOLTAGE(V) unless otherwise noted P:PF.
3. DIODES
   No mark diode is 1SS133.

E FM/AM TUNER MODULE (AXQ7229)

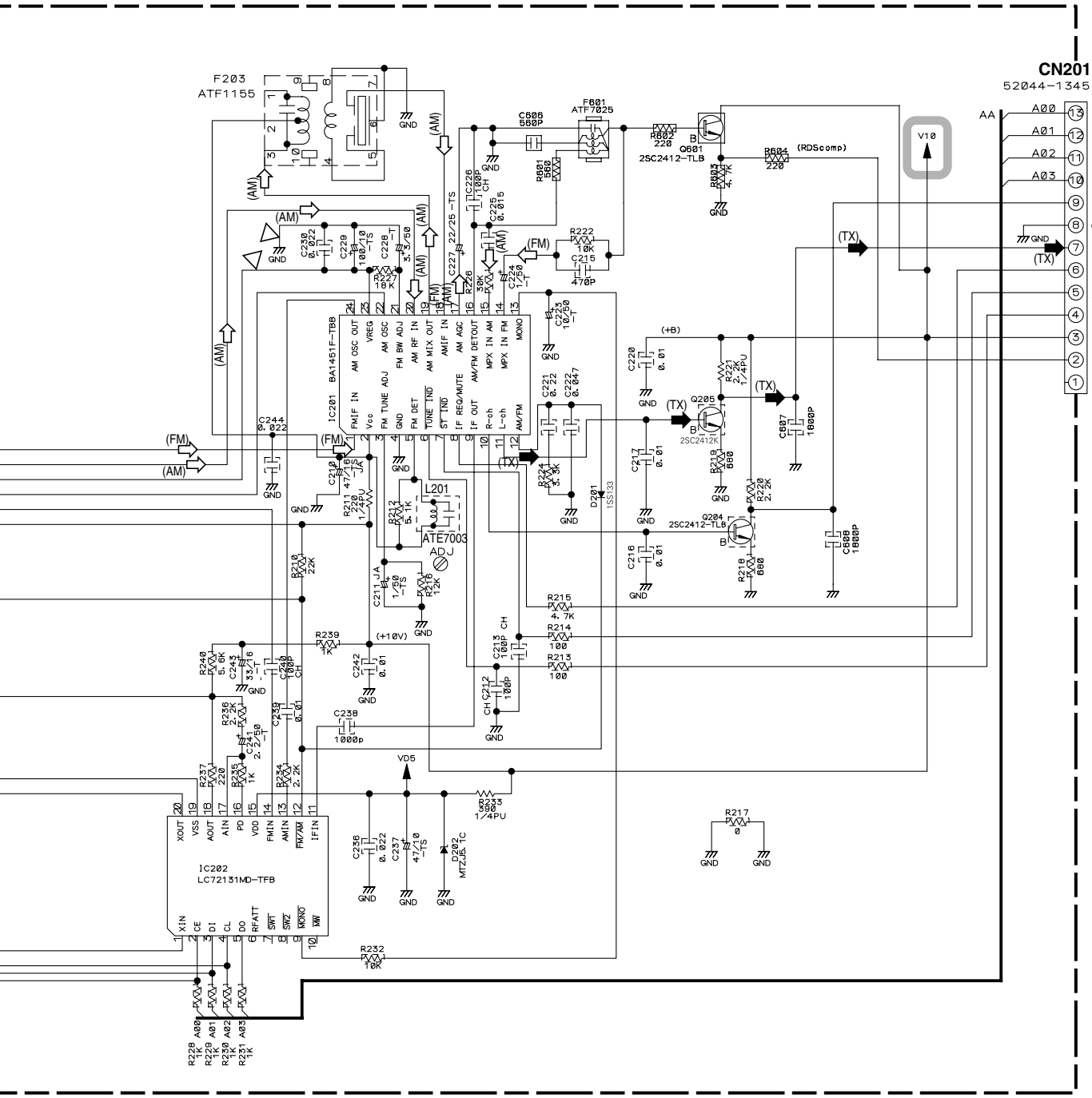


: The power supply is shown with the marked box.

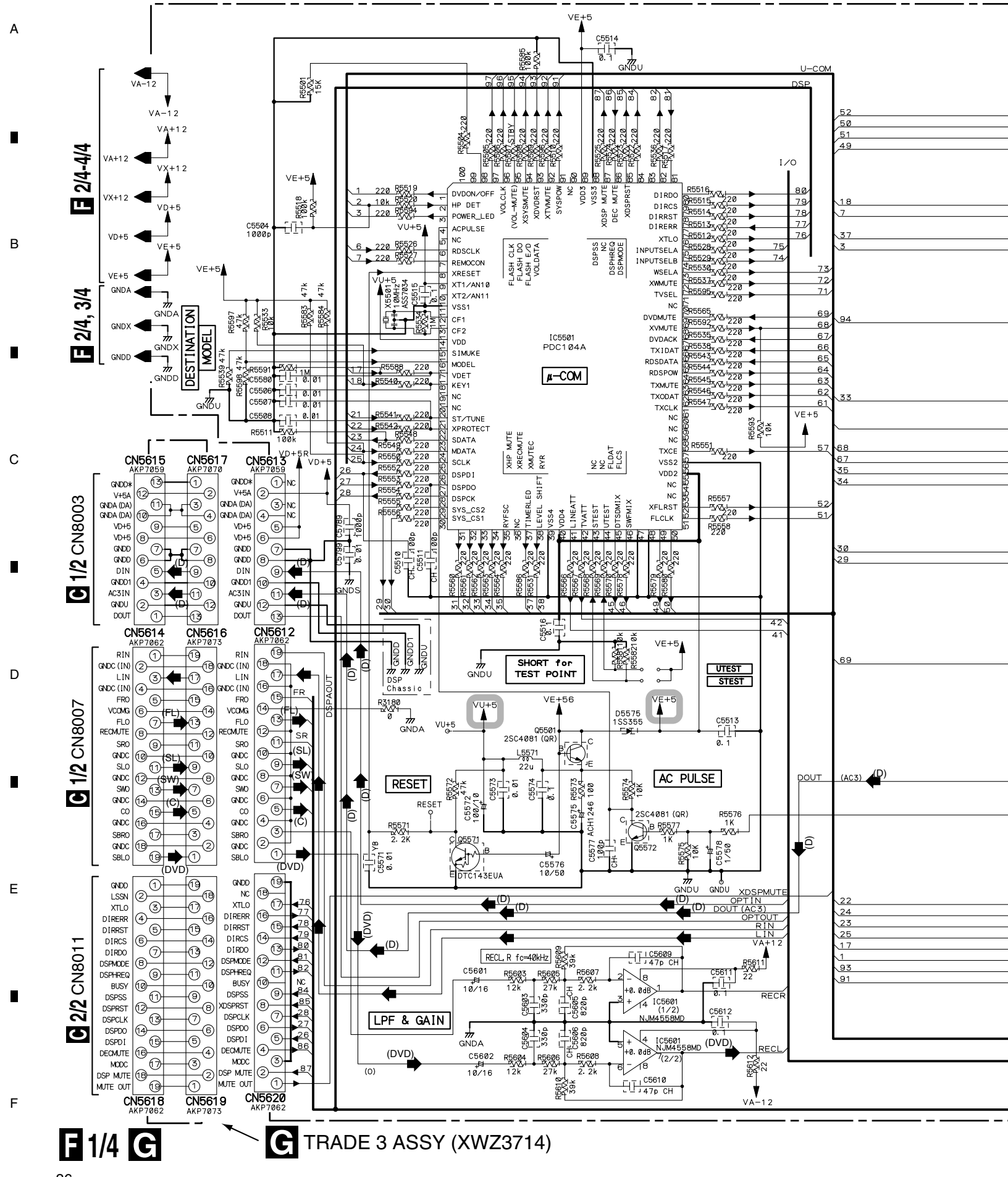
(TX) : AUDIO SIGNAL ROUTE (TUNER)

(AM) : AM SIGNAL ROUTE

(FM) : FM SIGNAL ROUTE



3.10 CONTROL(1/4), TRADE3 and TRADE2 ASSYS



F 1/4 CONTROL ASSY
(XWZ3710 : XV-DV515)
(XWZ3703 : XV-DV313)

(DVD): AUDIO SIGNAL ROUTE (L ch)
(DVD): AUDIO SIGNAL ROUTE (DVD Lch)
(D): AUDIO SIGNAL ROUTE (DIGITAL)
(FL): AUDIO SIGNAL ROUTE (Front L ch)
(SL): AUDIO SIGNAL ROUTE (Surround L ch)
(C): AUDIO SIGNAL ROUTE (Center ch)
(SW): AUDIO SIGNAL ROUTE (Sub Woofer ch)

CN5611
52045-1545
VFDP
XFLRST
FLCS
FLCK
FLDATA
VFL+5
GNDFL
FLAC2
FLAC1
KEY1
REMOCON
VE+5
TIMERLED
GNDLED
POWER_LED

M CN5601

: Refer to P112.

H TRADE 2 ASSY (XWX3071)

CN5501 AKP7064
HPAC
VPR+8V
XVMUTE
DVDACK
RYFSC
RYR
VD+5
VX+12
GNDX
SYS_CS1
SYS_CS2
VA-12
VA+12
FLIN
GNDA
GNDA
FRIN
CIN
SWIN
SLIN
SRIN
DVDMUTE
VE+56

CN5511 AKP7075

CN5521 AKP7075
NC
DVDMUTE
SRIN
SLIN
SWIN
CIN
FRIN
GNDA
GNDA
FLIN
MUTE
MUTEC
VA+12
VA-12
GNDX
VX+12
VD+5
RYR
RYFSC
XPROTECT
VPR+8 (VD+5)
DVDON/OFF
HPAC

J 1/2 CN5531

CN5502 AKP7064
NC
GNDD
GNDD
GNDD
DOUT
GNDU
VE+56
SUBAC
MUTE
FLAC1
FLAC2
GNDFL
VFDP
VFL+5
MUTEC
XPROTECT
MDATA
SDATA
SCLK
VDET
DVDON/OFF
XDVDRST
SYSPOW

CN5512 AKP7075

CN5522 AKP7075
XDVDRST
SYS_CS1
SYS_CS2
SCLK
SDATA
MDATA
ACK
VDET
XVMUTE
GNDFL
VFL+5
VFDP
SYSPOW
FLAC2
FLAC1
SUBAC
VE+56
GNDU
DOUT
GNDD
GNDD
GNDD
NC

J 1/2 CN5532

Q114 2SD2114K (VW)
BR112 1k
Q115 DTA124EUA
R113 220k
R114 82k
R5559 270k
VNF1084-KN5501
C5798 0.01

NORMAL : H (5V)
ABNORMAL : L (0V)

EVOLAOUT F 2/4
U-COM F 2/4-4/4
I/O F 3/4, 4/4
DSPAOUT F 2/4

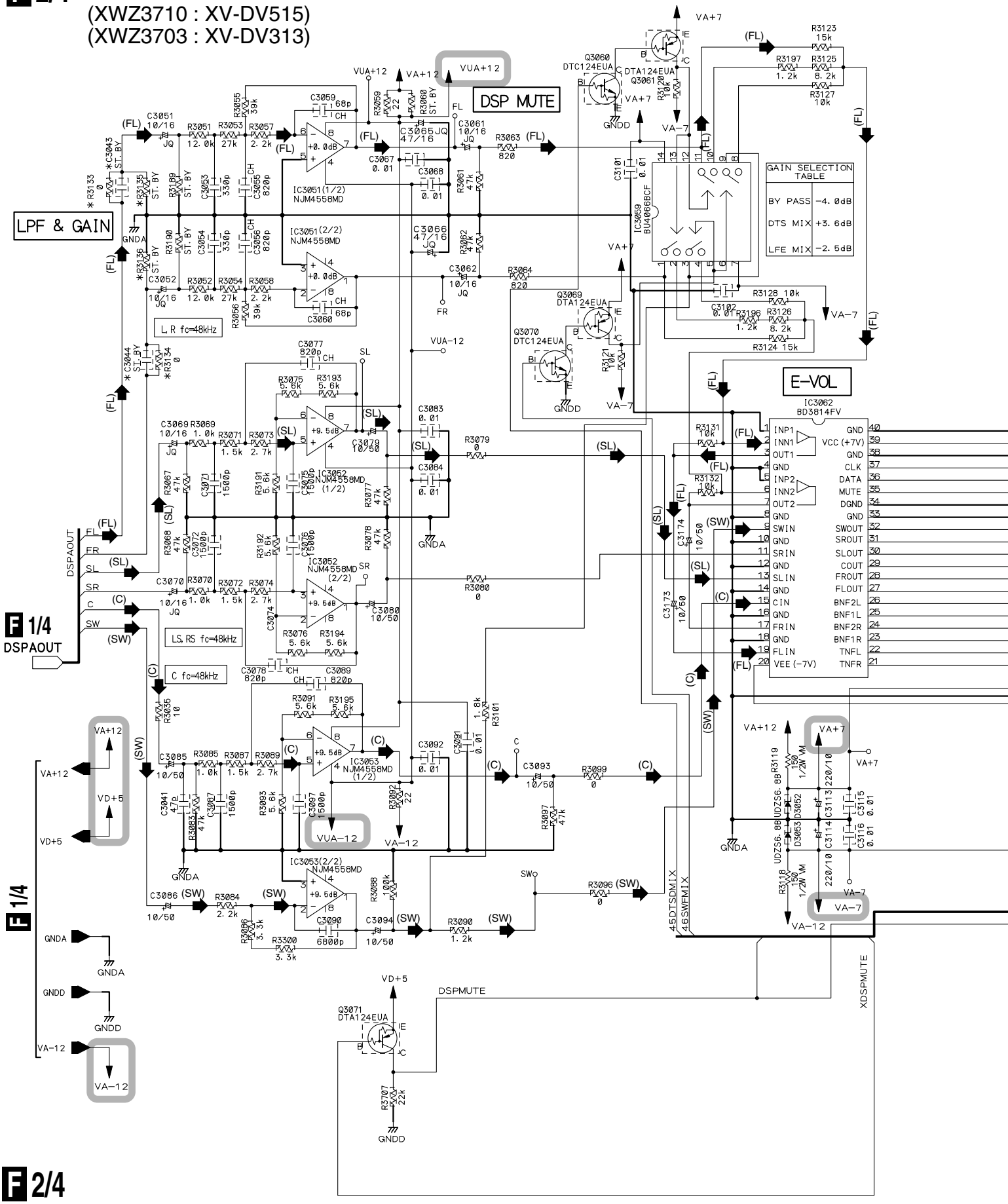
: The power supply is shown with the marked box.

F 1/4 H

3.11 CONTROL ASSY(2/4)

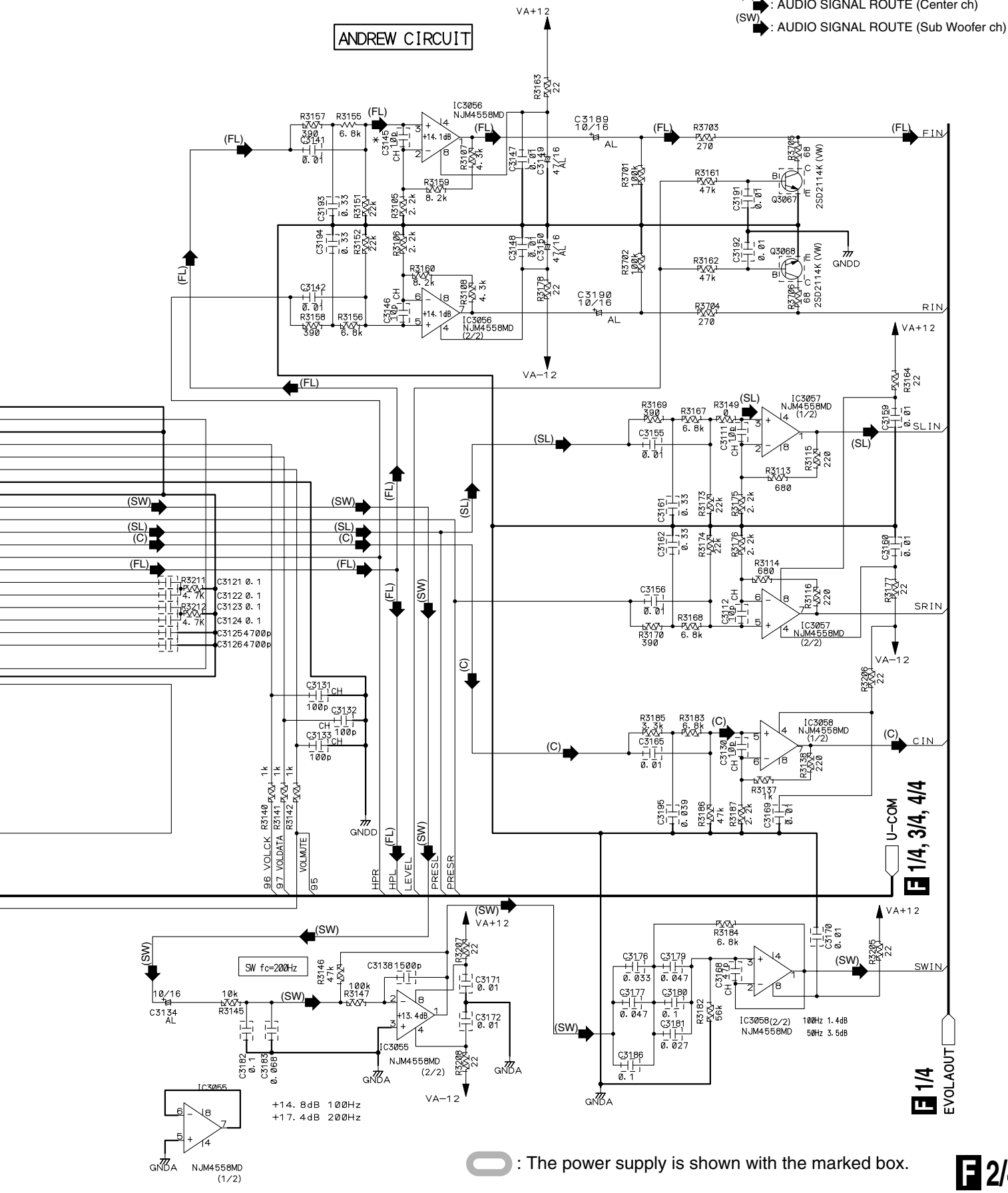
F 2/4 CONTROL ASSY

(XWZ3710 : XV-DV515)
(XWZ3703 : XV-DV313)



(FL): AUDIO SIGNAL ROUTE (Front L ch)
(SL): AUDIO SIGNAL ROUTE (Surround L ch)
(C): AUDIO SIGNAL ROUTE (Center ch)
(SW): AUDIO SIGNAL ROUTE (Sub Woofer ch)

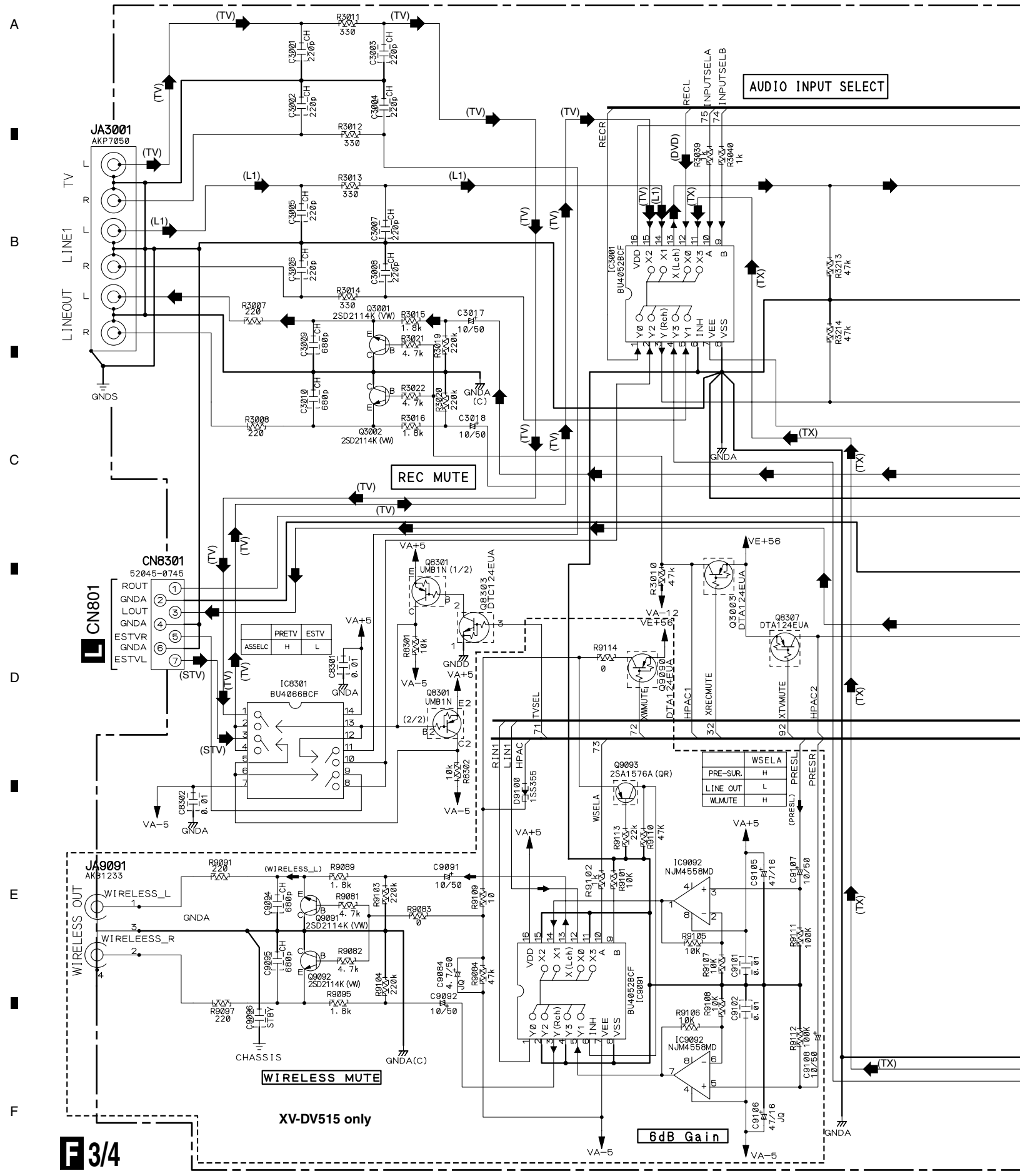
ANDREW CIRCUIT



F 1/4, 3/4, 4/4
F 1/4
F 2/4

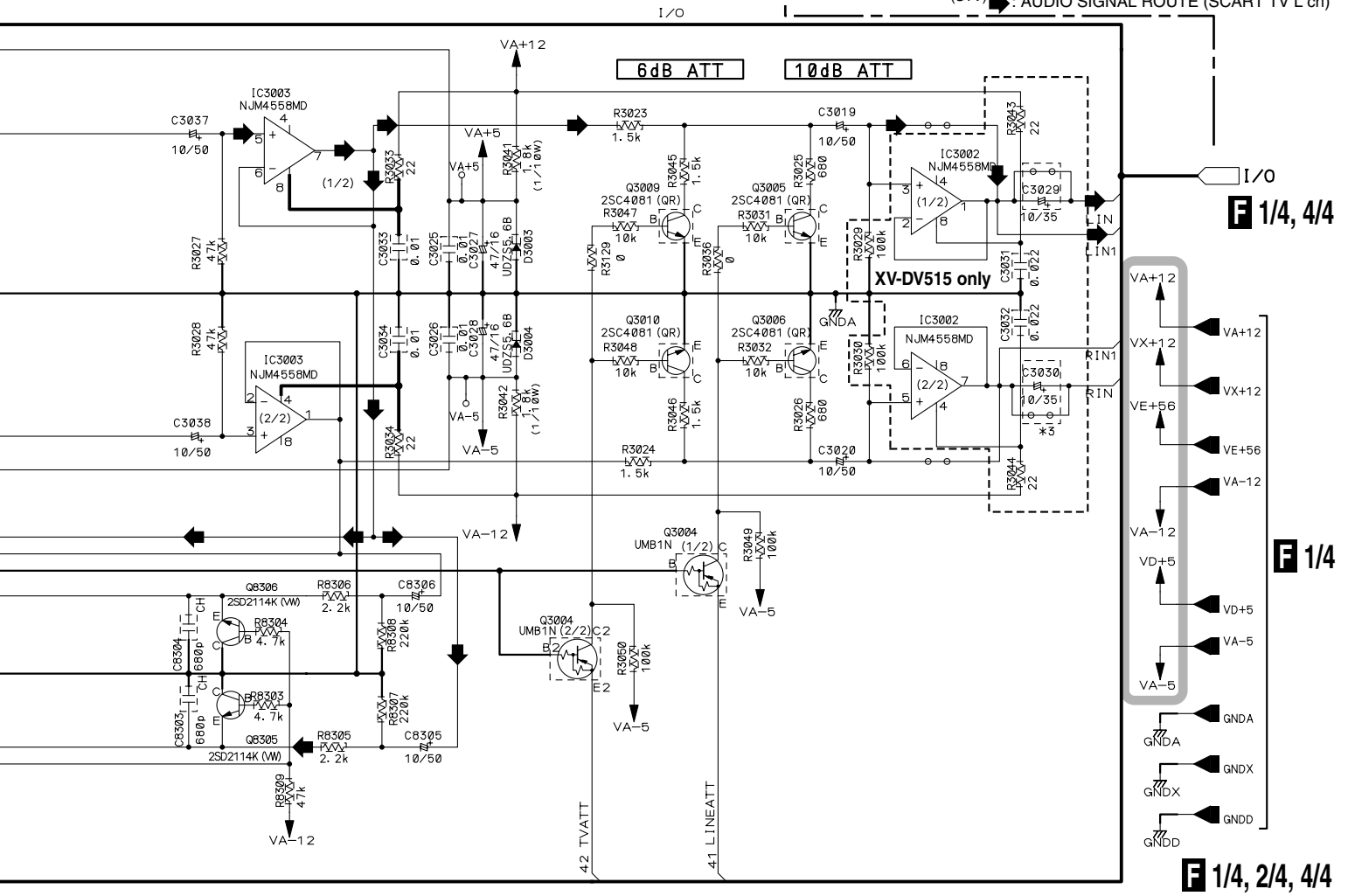
: The power supply is shown with the marked box.

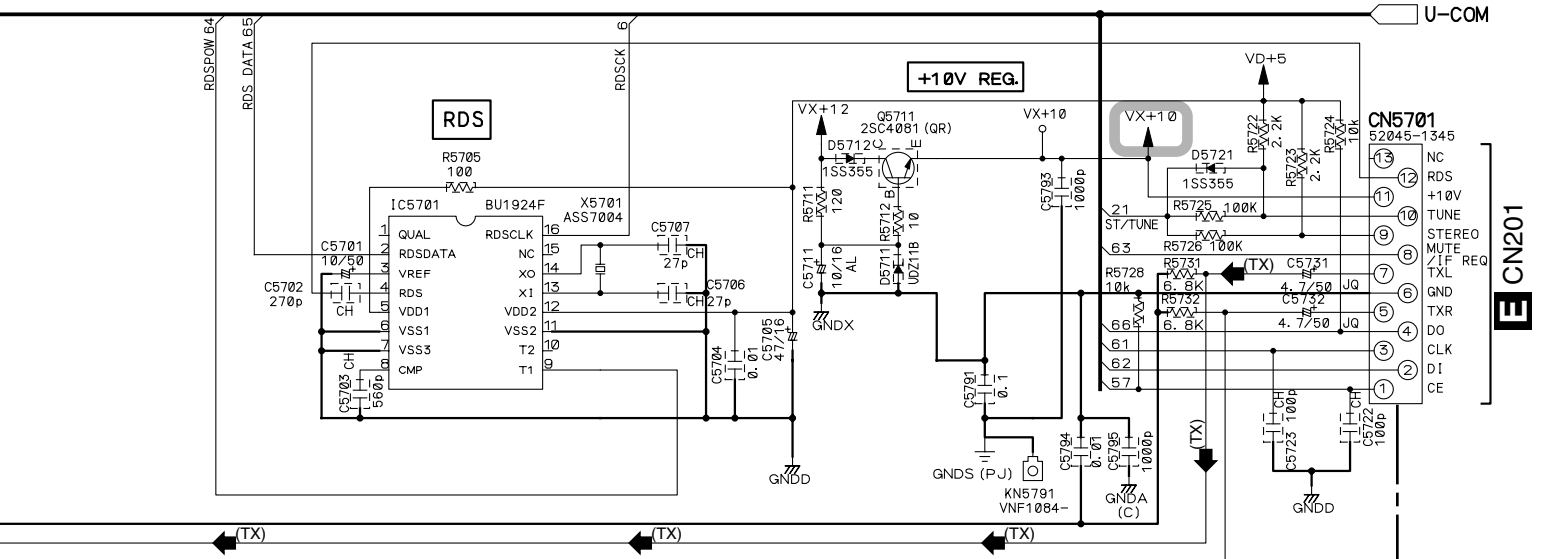
3.12 CONTROL ASSY(3/4)



F 3/4 CONTROL ASSY
(XWZ3710 : XV-DV515)
(XWZ3703 : XV-DV313)

: AUDIO SIGNAL ROUTE (L ch)
(DVD) : AUDIO SIGNAL ROUTE (DVD L ch)
(L1) : AUDIO SIGNAL ROUTE (LINE 1 L ch)
(TV) : AUDIO SIGNAL ROUTE (TV L ch)
(TX) : AUDIO SIGNAL ROUTE (TUNER L ch)
(STV) : AUDIO SIGNAL ROUTE (SCART TV L ch)

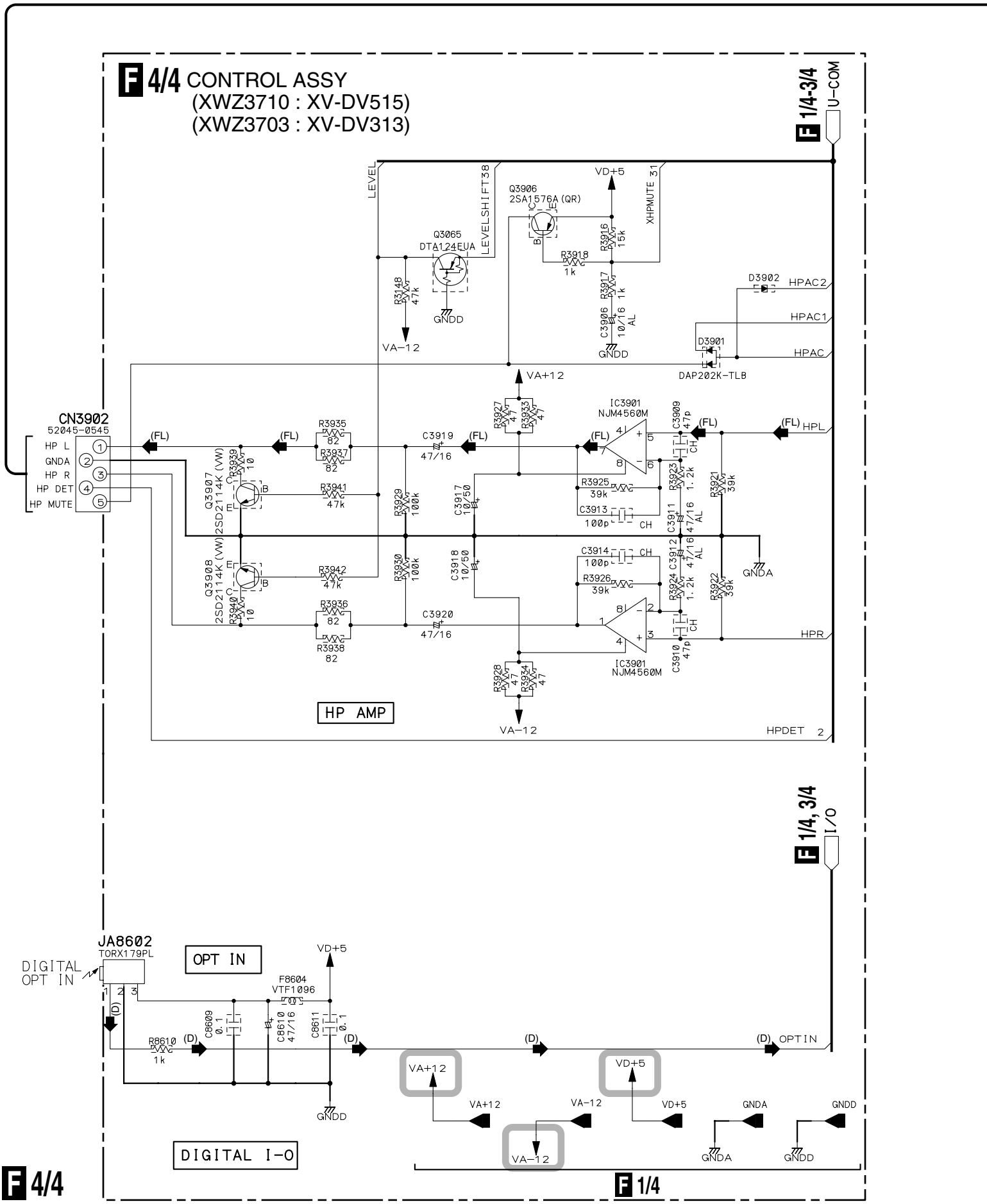




: The power supply is shown with the marked box.

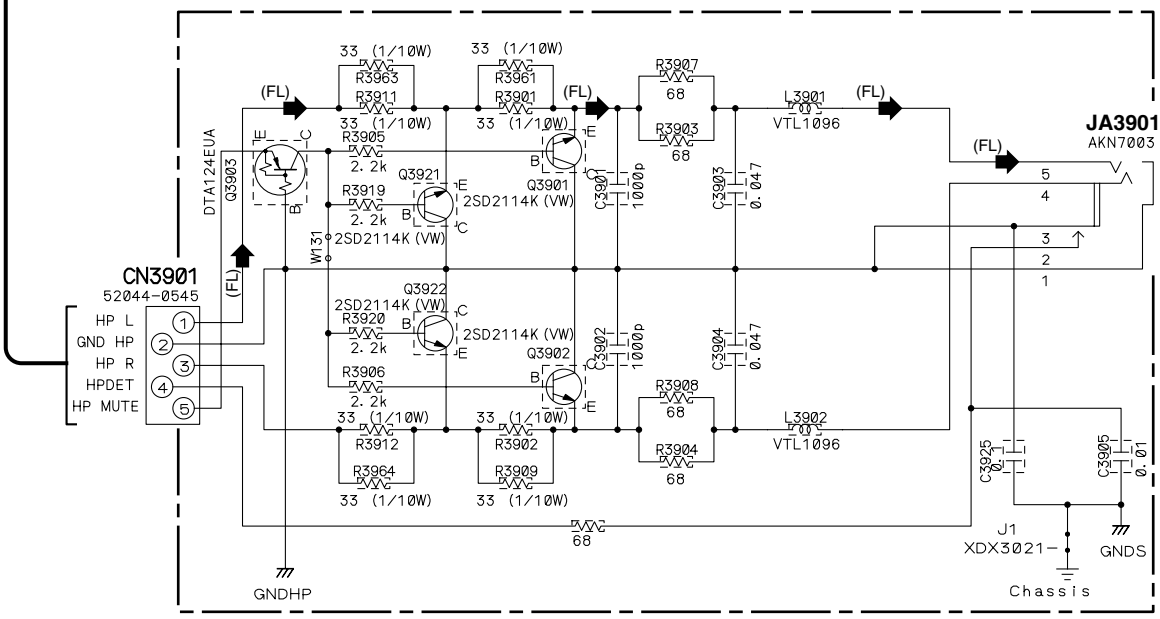
F 3/4

3.13 CONTROL ASSY(4/4) and HP ASSYS



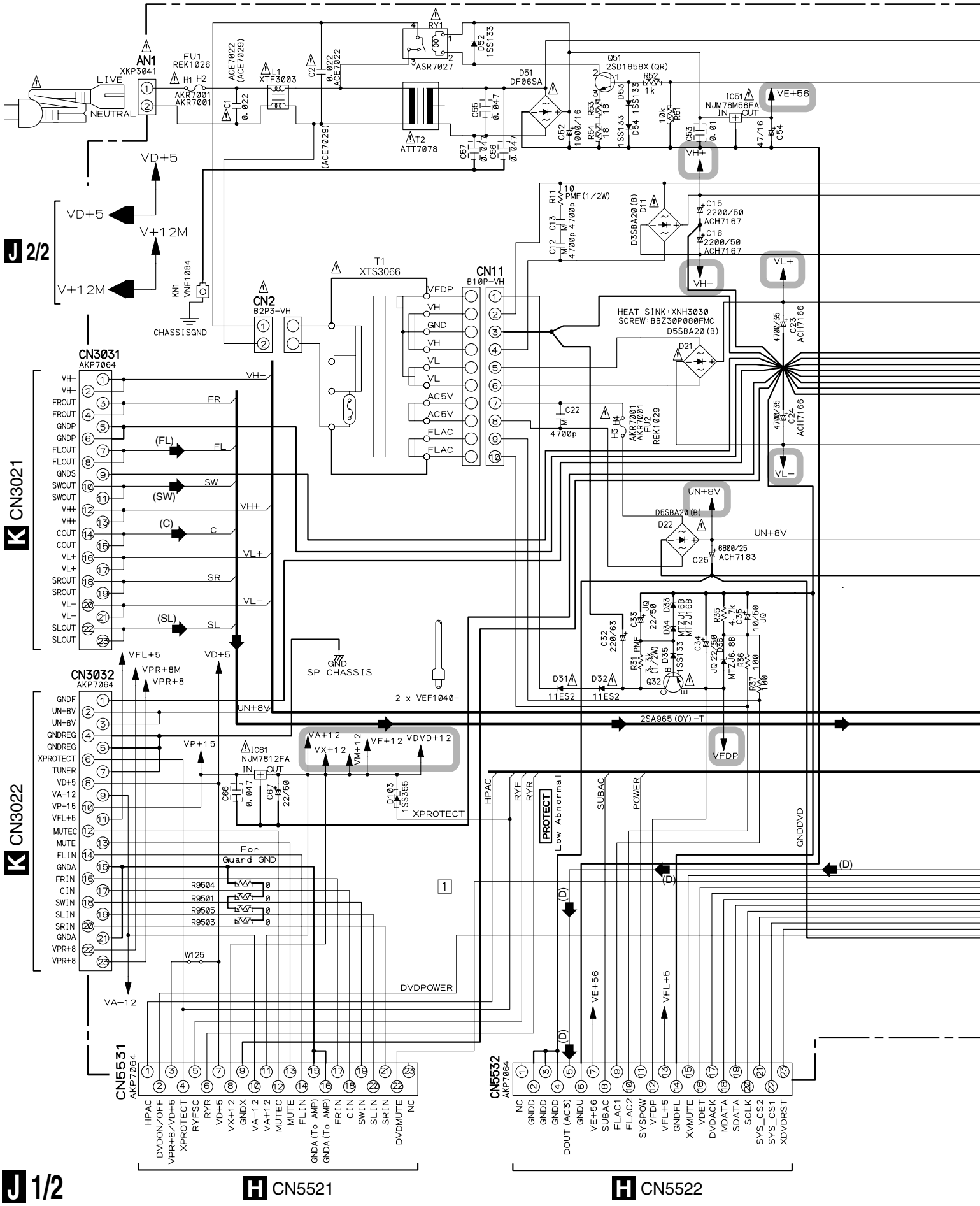
(D) : AUDIO SIGNAL ROUTE (DIGITAL)
(FL) : AUDIO SIGNAL ROUTE (Front L ch)

HP ASSY (XWZ3715)

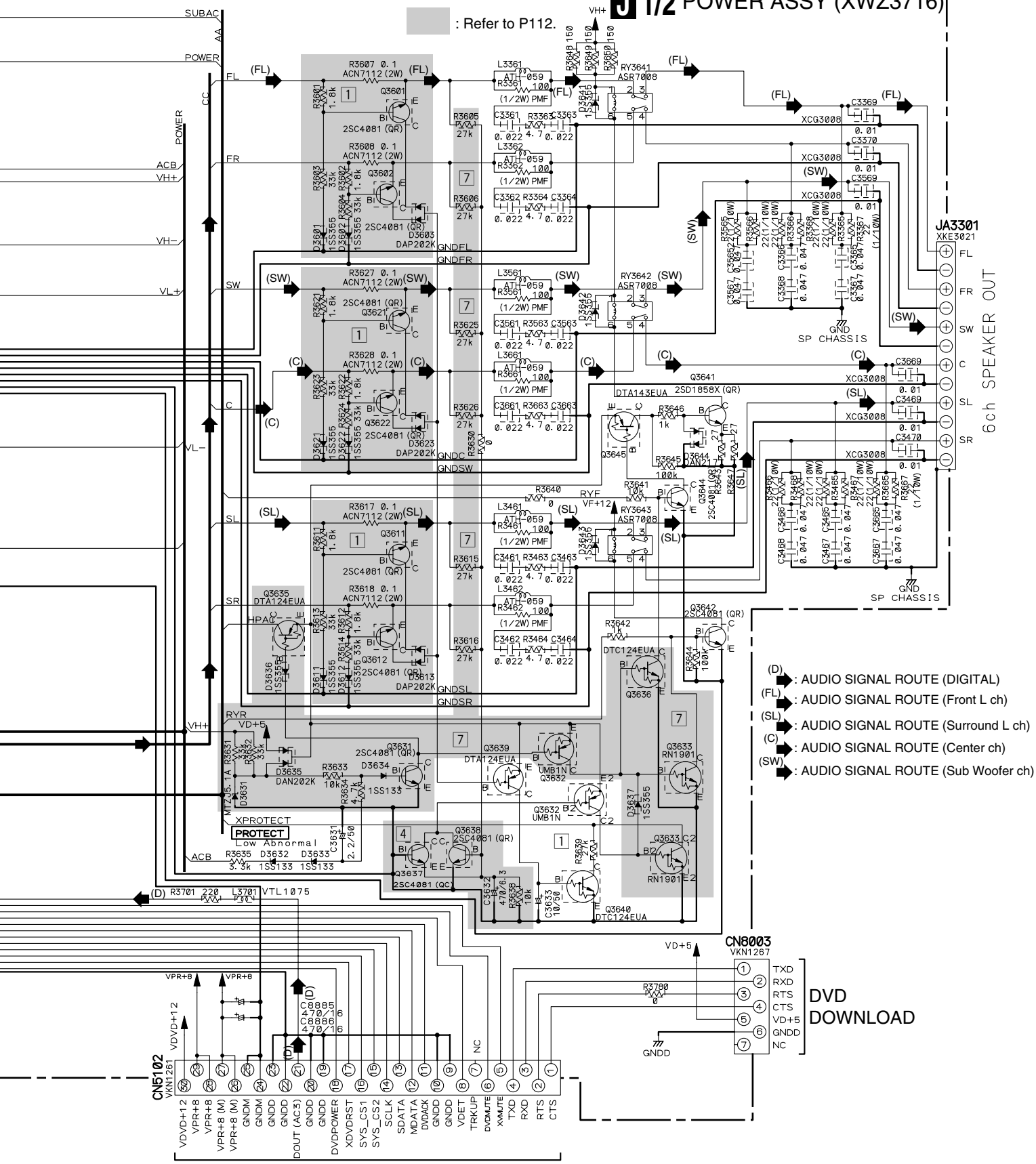


: The power supply is shown with the marked box.

3.14 POWER ASSY(1/2)



J 1/2 POWER ASSY (XWZ3716)



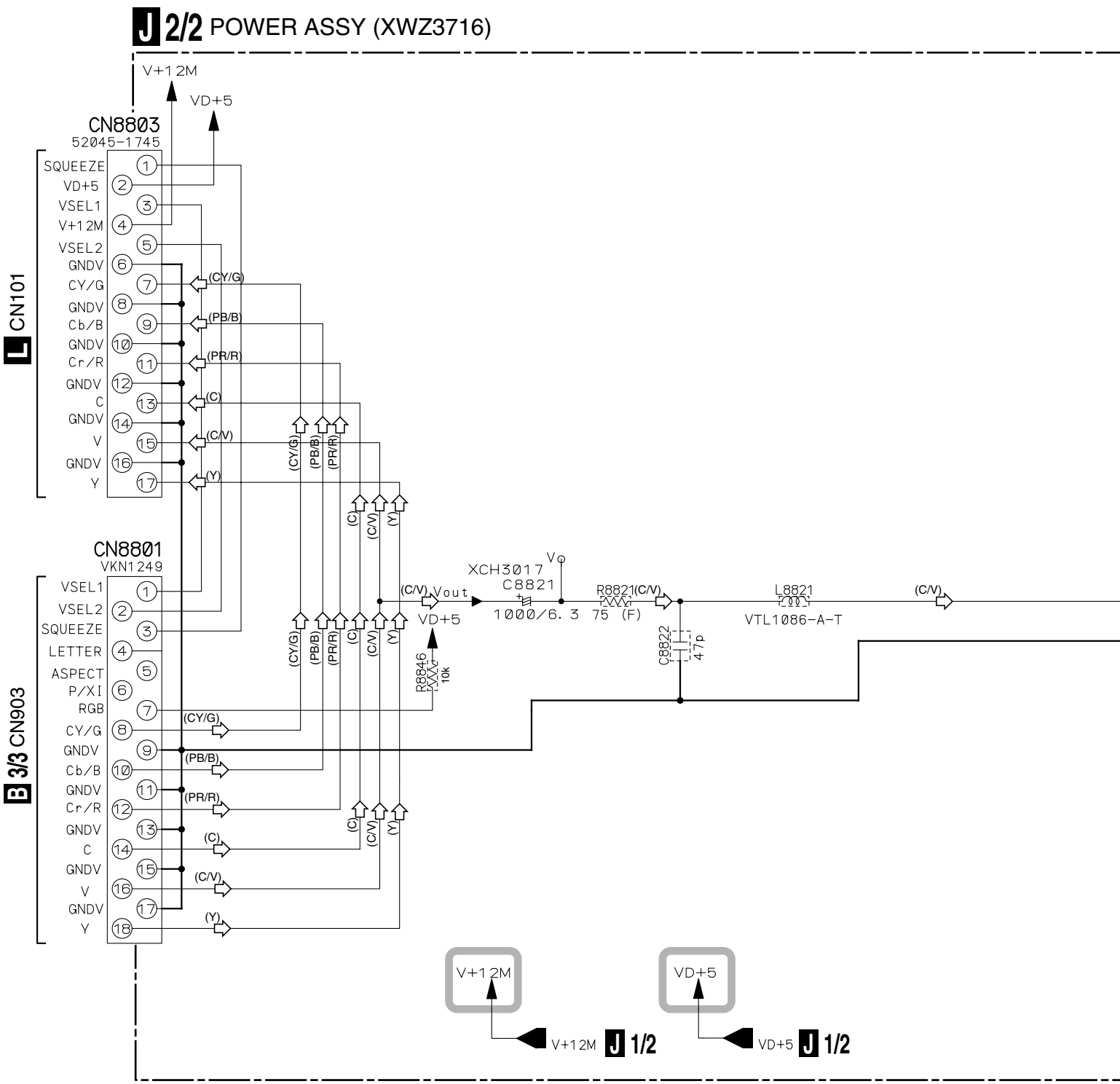
B 3/3 CN901 : The power supply is shown with the marked box.

• NOTE FOR FUSE REPLACEMENT

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

J 1/2

3.15 POWER ASSY(2/2) and TRADE1 ASSYS



: The power supply is shown with the marked box.

J 2/2

(C/V): VIDEO SIGNAL ROUTE (C/V)

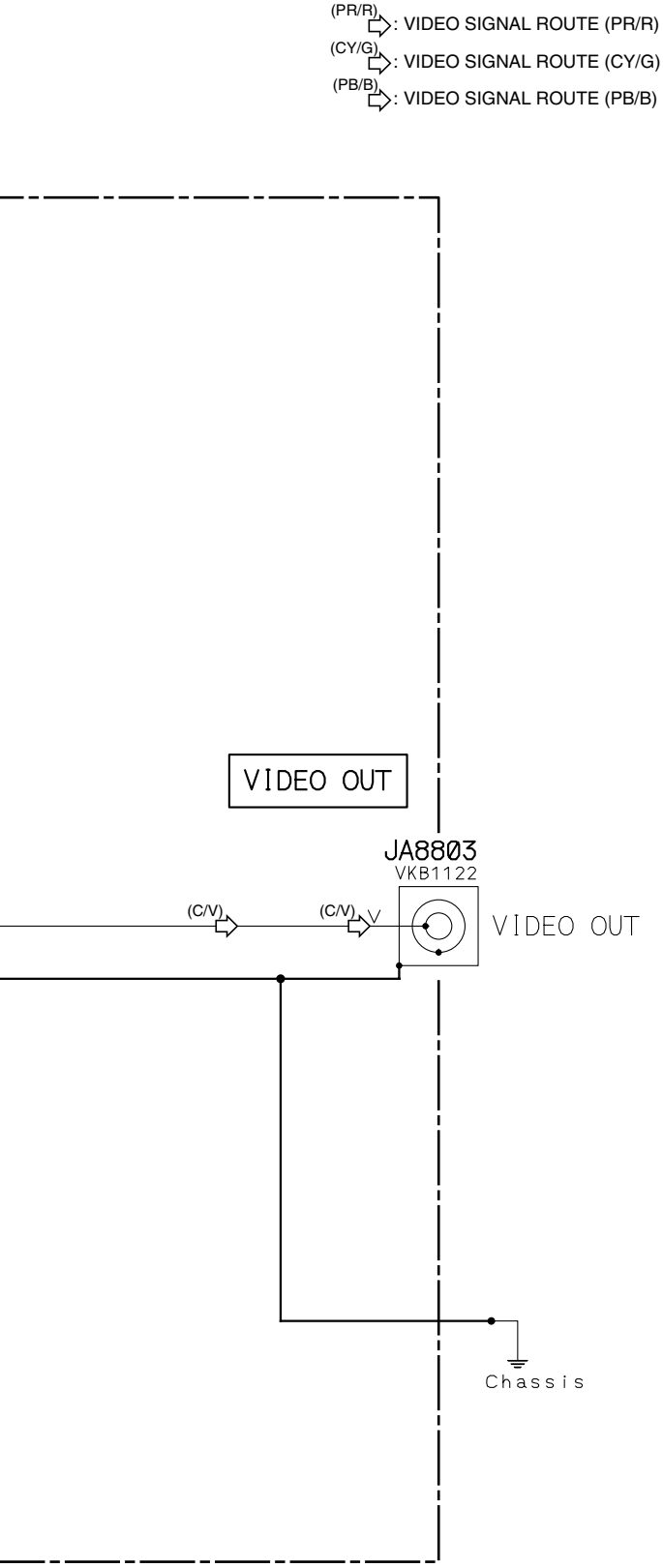
(Y): S VIDEO SIGNAL ROUTE (Y)

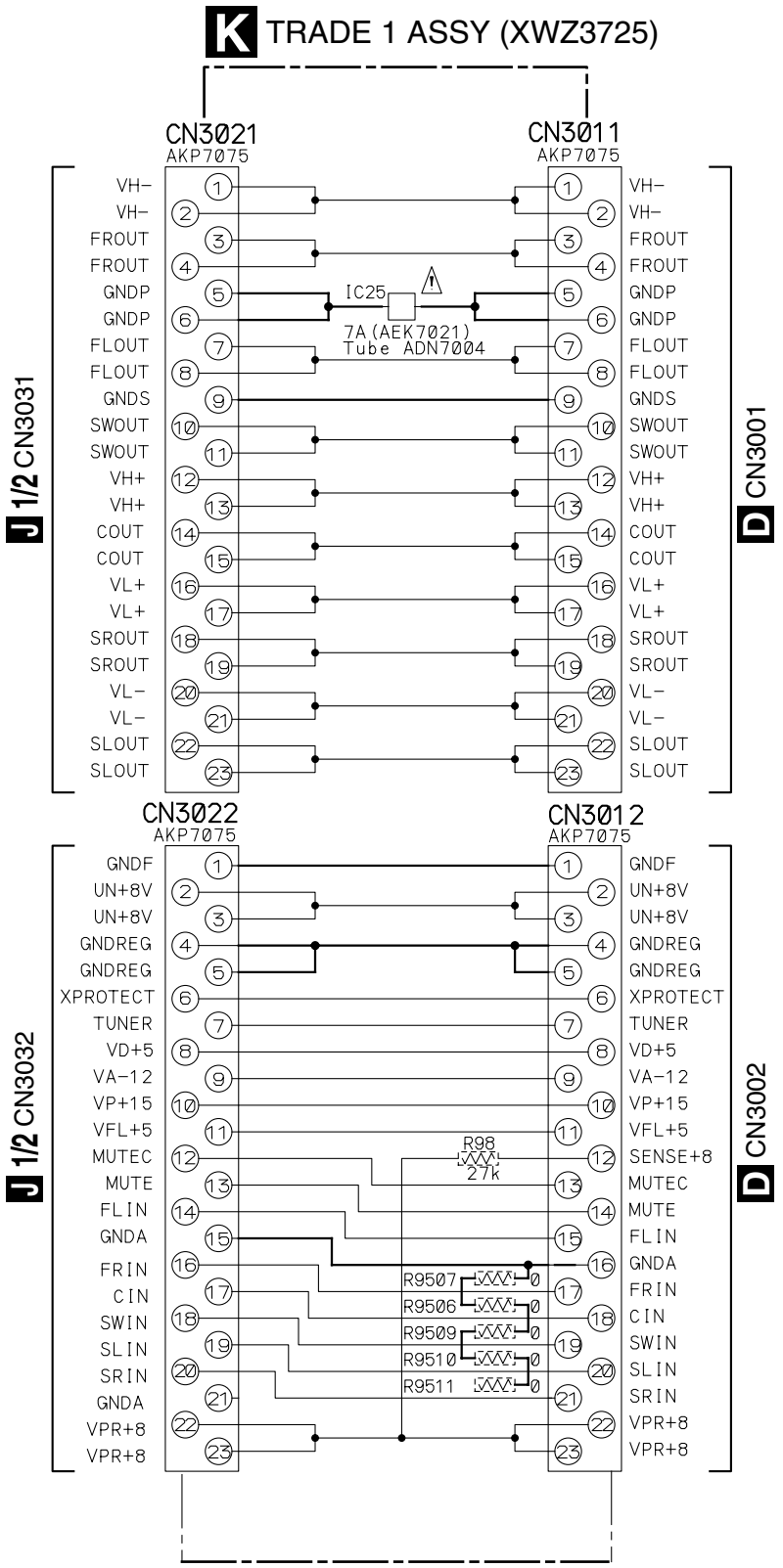
(C): S VIDEO SIGNAL ROUTE (Y)

(PR/R): VIDEO SIGNAL ROUTE (PR/R)

(CY/G): VIDEO SIGNAL ROUTE (CY/G)

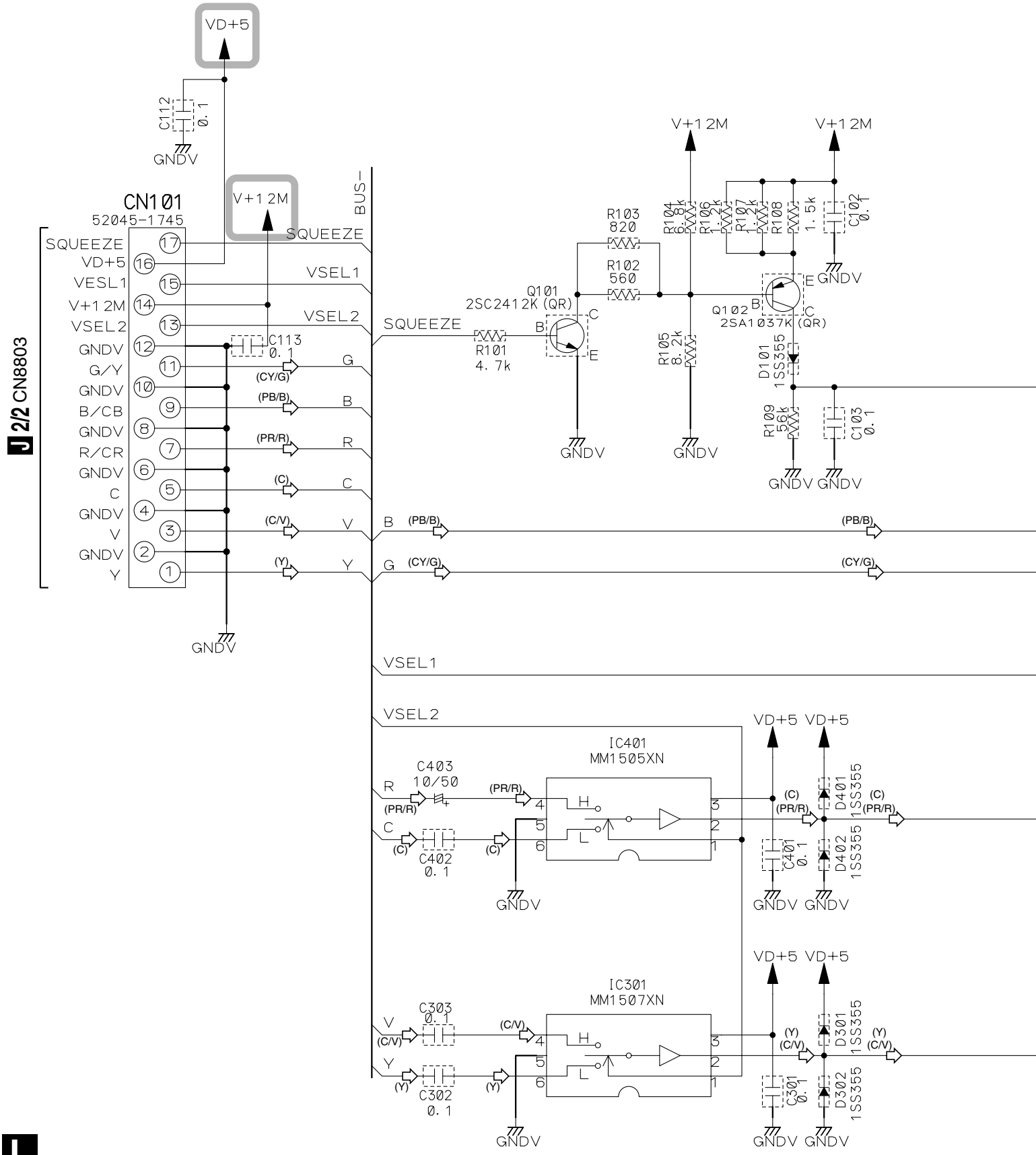
(PB/B): VIDEO SIGNAL ROUTE (PB/B)

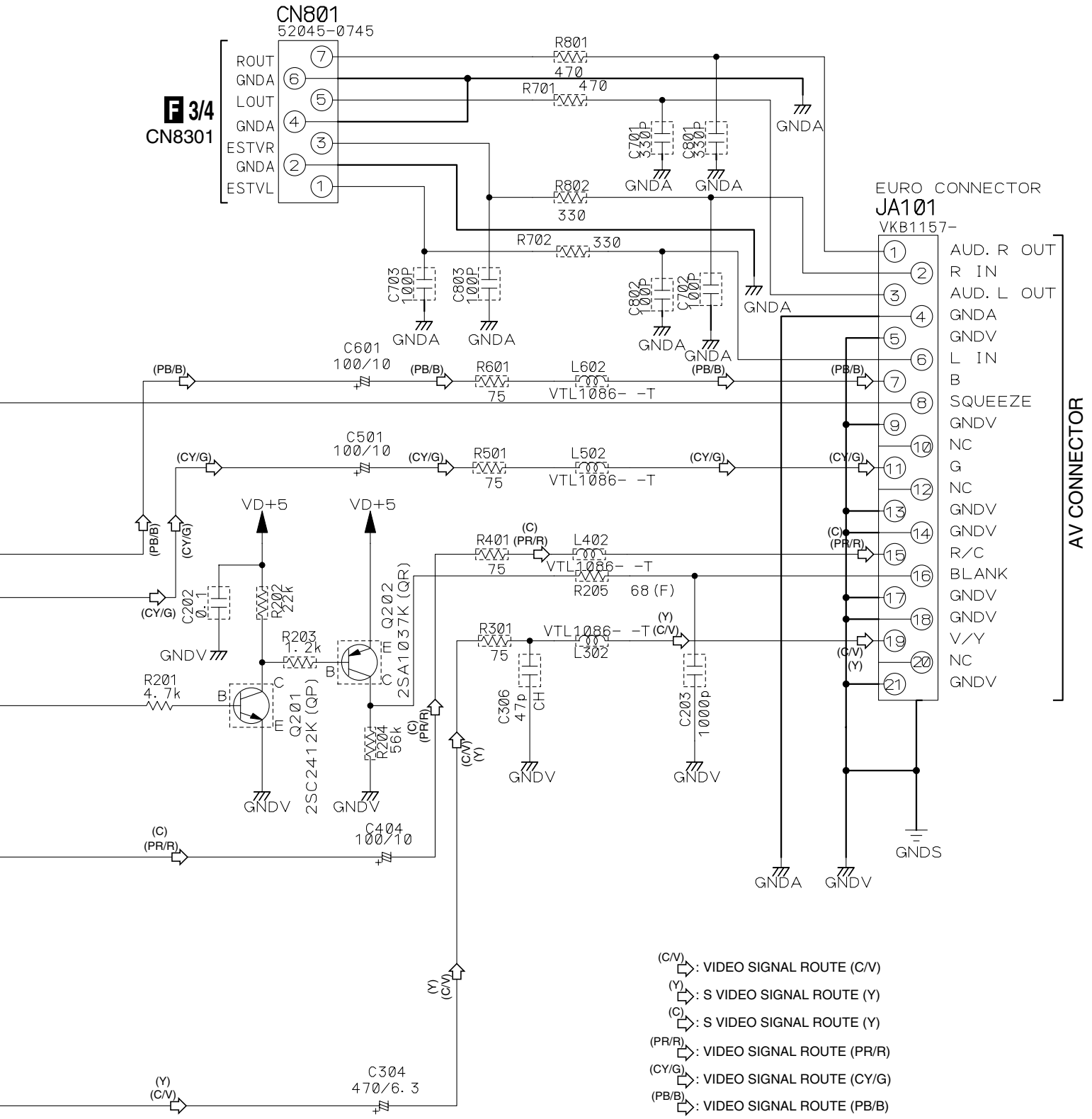




3.16 EURO SCART ASSY

L EURO SCRAT ASSY (XWZ3724)

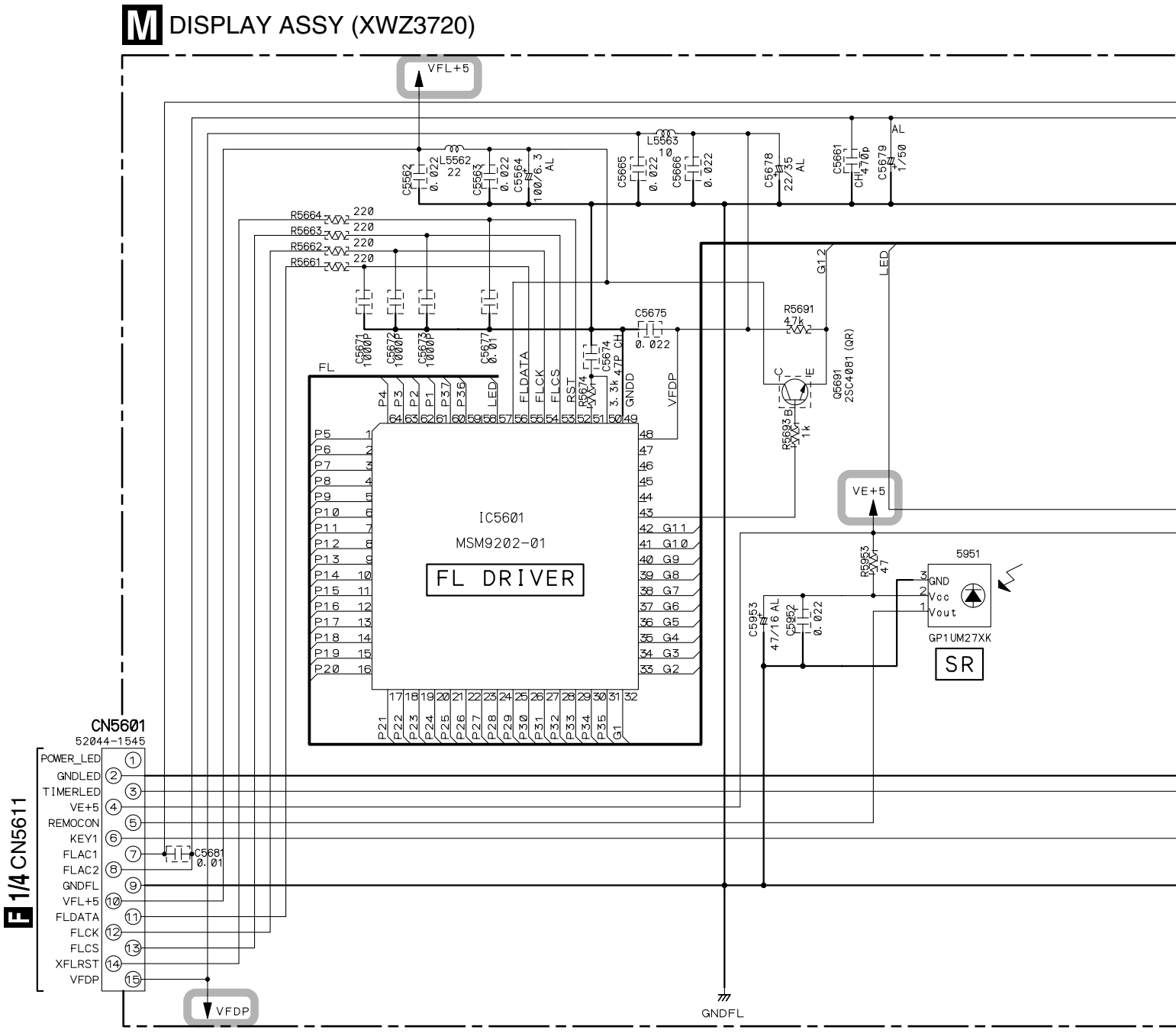


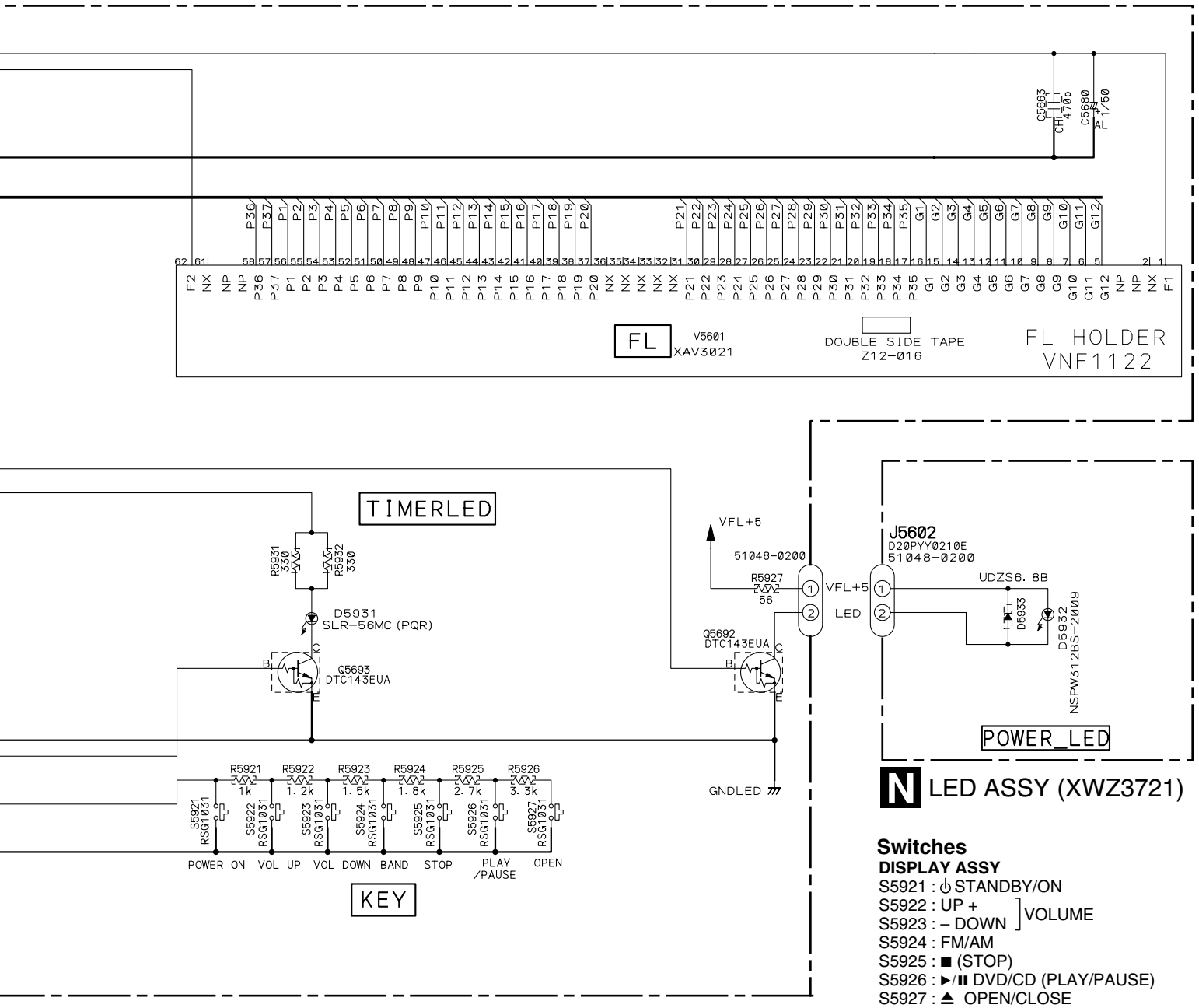


(C/V): VIDEO SIGNAL ROUTE (C/V)
(Y): S VIDEO SIGNAL ROUTE (Y)
(C): S VIDEO SIGNAL ROUTE (Y)
(PR/R): VIDEO SIGNAL ROUTE (PR/R)
(CY/G): VIDEO SIGNAL ROUTE (CY/G)
(PB/B): VIDEO SIGNAL ROUTE (PB/B)

: The power supply is shown with the marked box.

3.17 DISPALY and LED ASSYS





N LED ASSY (XWZ3721)

Switches

DISPLAY ASSY

S5921 : ⏻ STANDBY/ON
S5922 : UP +
S5923 : – DOWN
] VOLUME
S5924 : FM/AM
S5925 : ■ (STOP)
S5926 : ▶/❚❚ DVD/CD (PLAY/PAUSE)
S5927 : ⏏ OPEN/CLOSE

: The power supply is shown with the marked box.

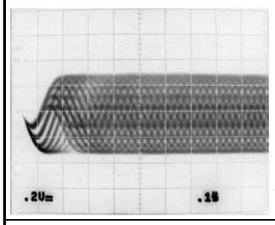
3.18 WAVEFORMS

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

B DVDM ASSY

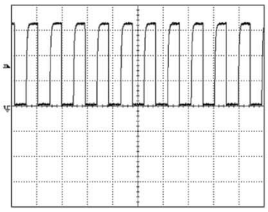
Measurement condition ; No. 1, 2 and 12 to 17 : MJK1, Title 1-chp 1
No. 8 : CD, ABEX-784 Track 1
No. 13, 14 and 17 : DVD-REF-A1, T2-Chap.1
No. 3 to 5 : DVD-REF-A1, T2-Chap.19

(1) IC301 - pin 4 [RFOUT]
V: 200mV/div. H: 0.1µsec/div.

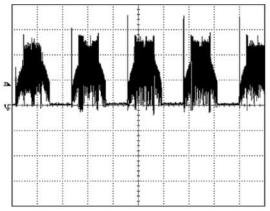


← GND

(2) IC301 - pin 36 [FG]
V: 1V/div. H: 5msec/div.

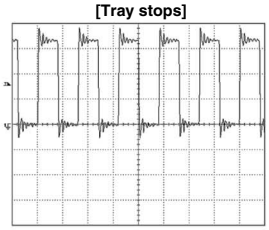


(3) IC101 - pin 14 [A1], 13 [A2], 12 [A3]
V: 2V/div. H: 2msec/div.

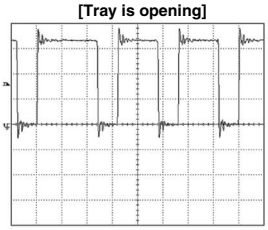


(4) IC301 - pin 55 [LOAD_DRV]
V: 1V/div. H: 500nsec/div.

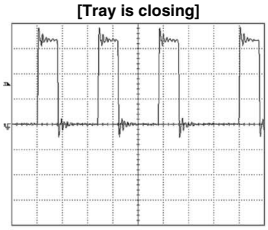
[Tray stops]



[Tray is opening]

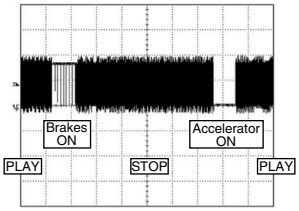


[Tray is closing]

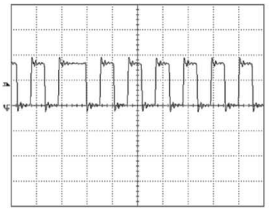


(5) IC301 - pin 44 [SPDL_PDM]

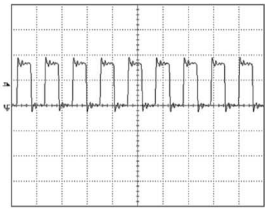
[PLAY → STOP → PLAY]
V: 2V/div. H: 1sec/div.



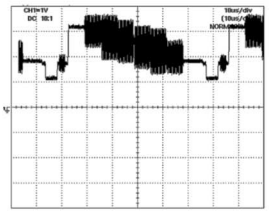
[PLAY]
V: 2V/div. H: 500nsec/div.



[STOP]
V: 2V/div. H: 500nsec/div.

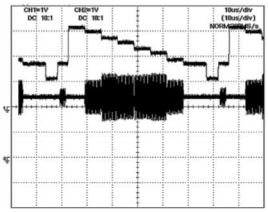


(6) IC501 - pin 23 [Composite Video out]
V: 1V/div. H: 10µsec/div.



(7) IC501 - pin 21 [S Video out-Y]
V: 1V/div. H: 10µsec/div.

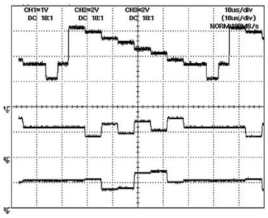
(8) IC501 - pin 26 [S Video out-C]
V: 1V/div. H: 10µsec/div.



(9) IC501 - pin 20 [Component Video out-Y]
V: 1V/div. H: 10µsec/div.

(10) IC501 - pin 18 [Component Video out-Pb]
V: 2V/div. H: 10µsec/div.

(11) IC501 - pin 16 [Component Video out-Pr]
V: 2V/div. H: 10µsec/div.



A

B

C

D

E

F

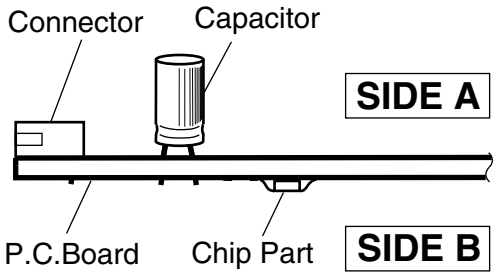
4. PCB CONNECTION DIAGRAM

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

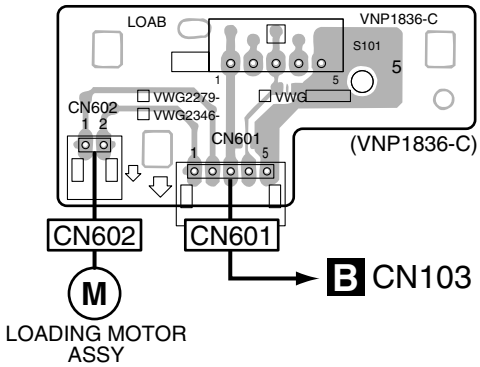
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



4.1 LOAB ASSY

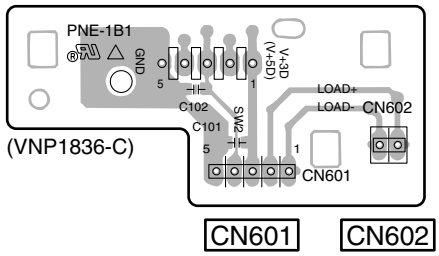
SIDE A

A LOAB ASSY



SIDE B

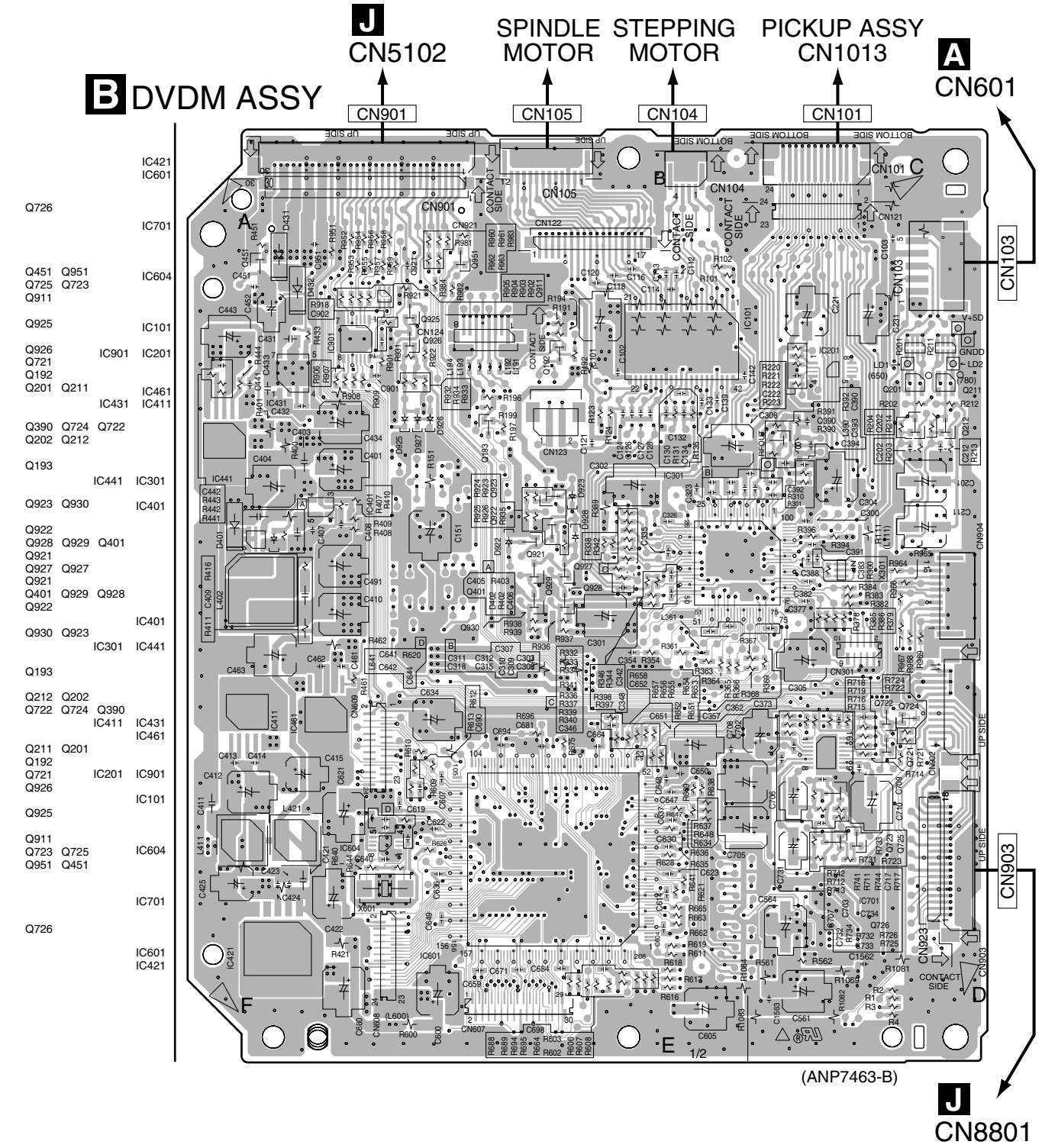
A LOAB ASSY



4.2 DVDM ASSY

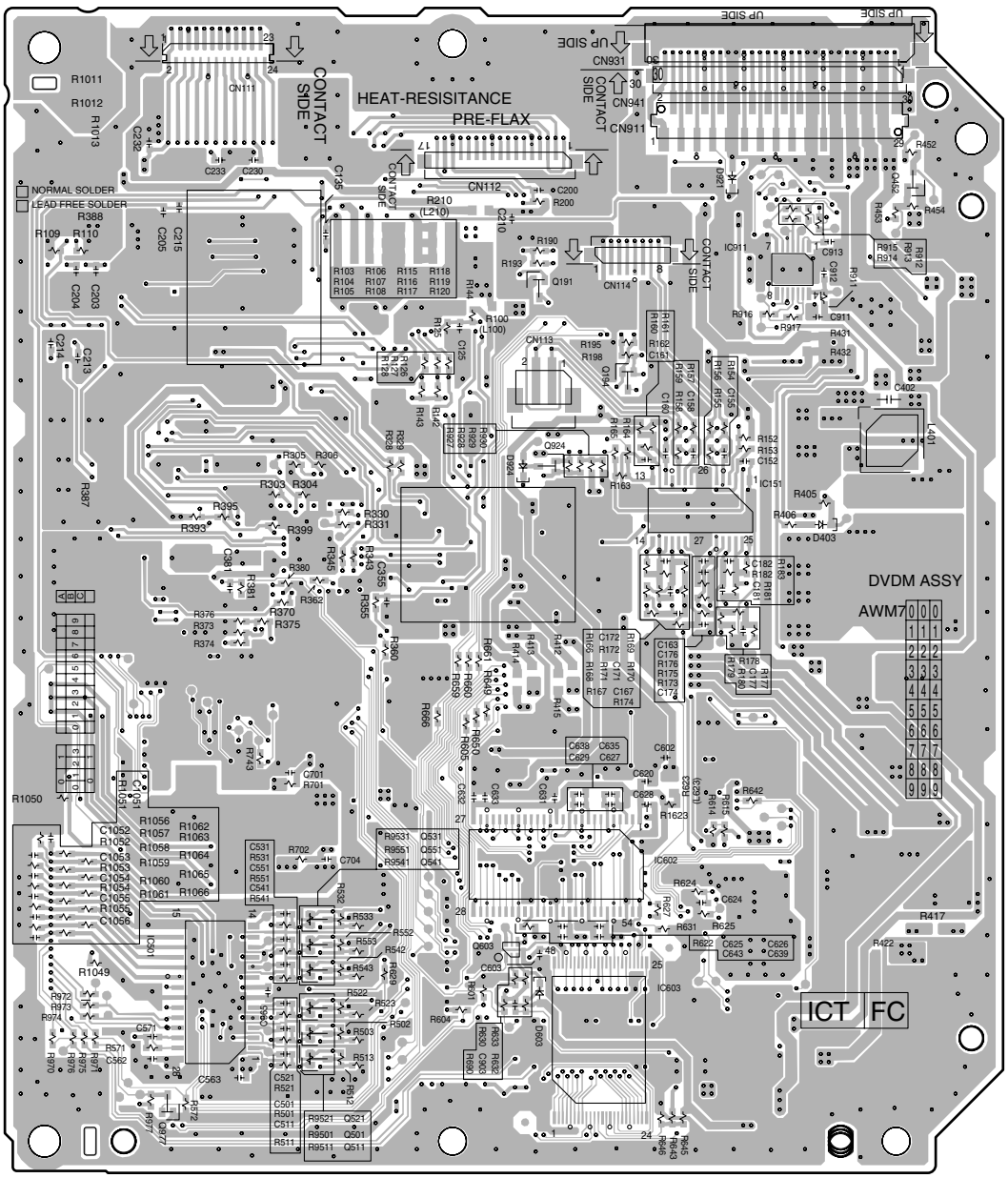
SIDE A

SIDE A



SIDE B

B DVDM ASSY



IC603

Q603 Q452
IC501

Q541 IC602 IC911
Q551
Q531
Q191

Q194

Q924

IC151

IC151

Q924

Q194

Q191
Q531
Q551
Q541 IC911 IC602

IC501
Q452 Q603

IC603

Q977 Q521
Q501
Q511

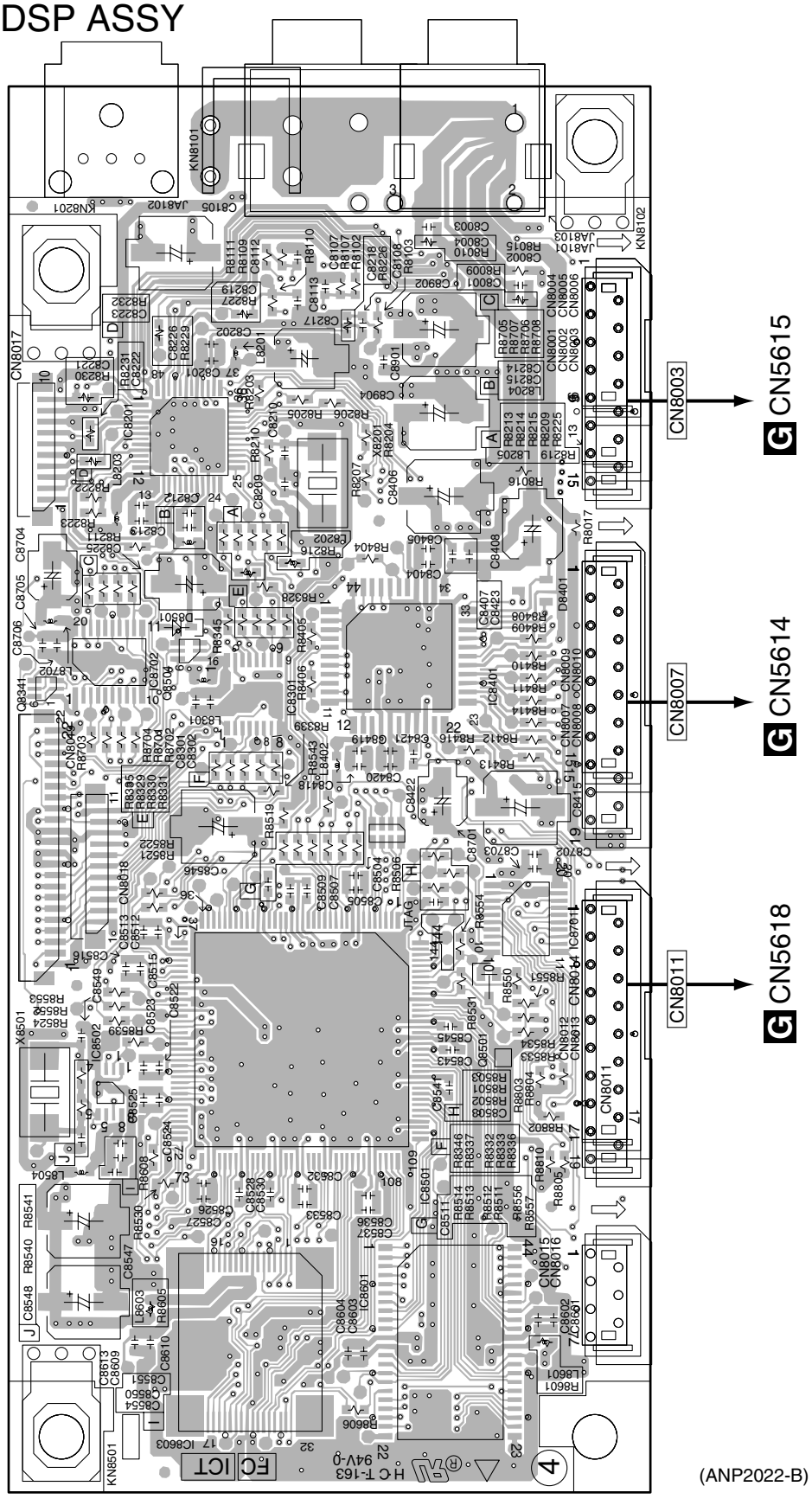
(ANP7463-B)

4.3 DSP ASSY

SIDE A

C DSP ASSY

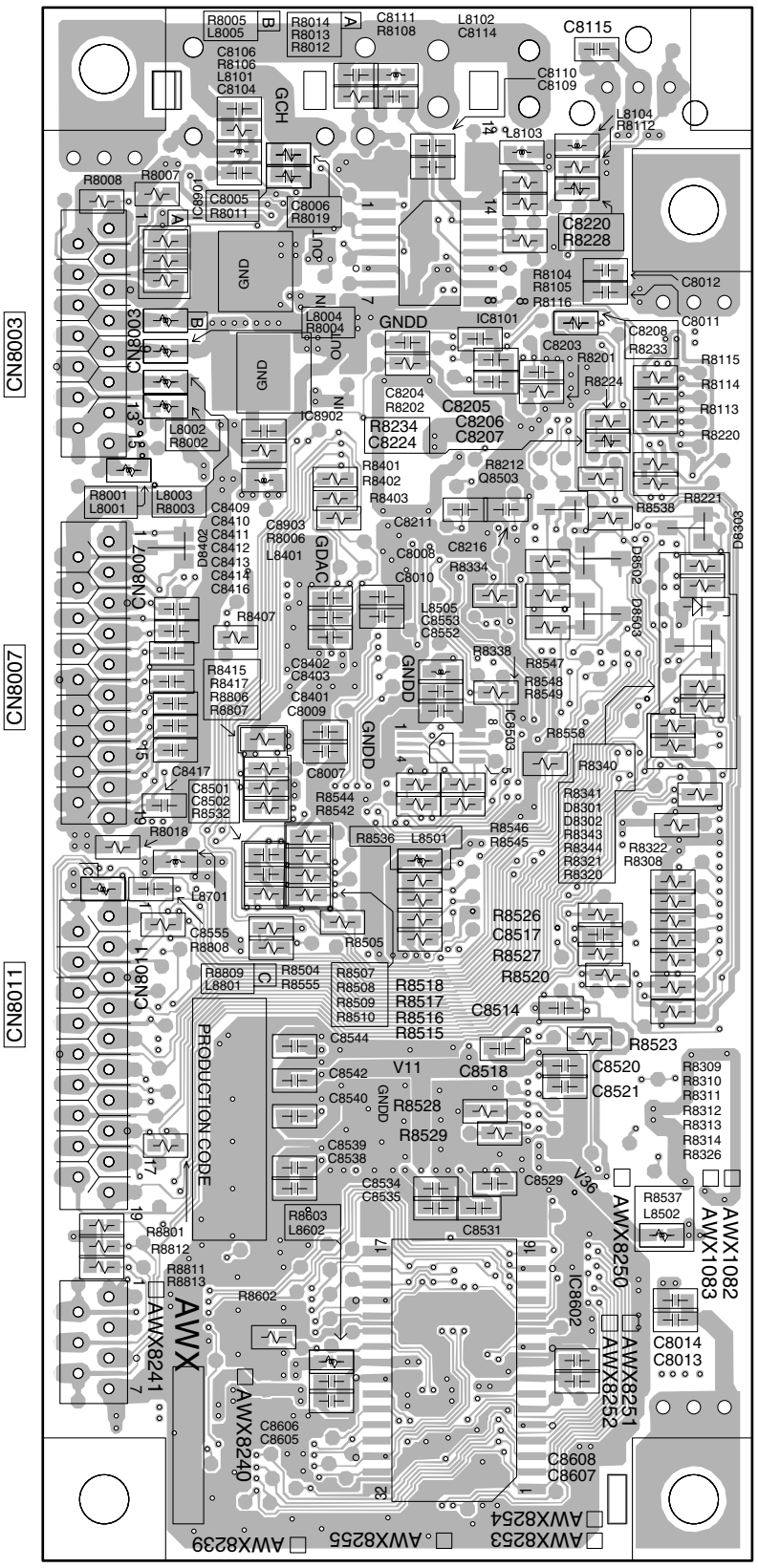
SIDE A



SIDE B

SIDE B

C DSP ASSY



(ANP2022-B)

C

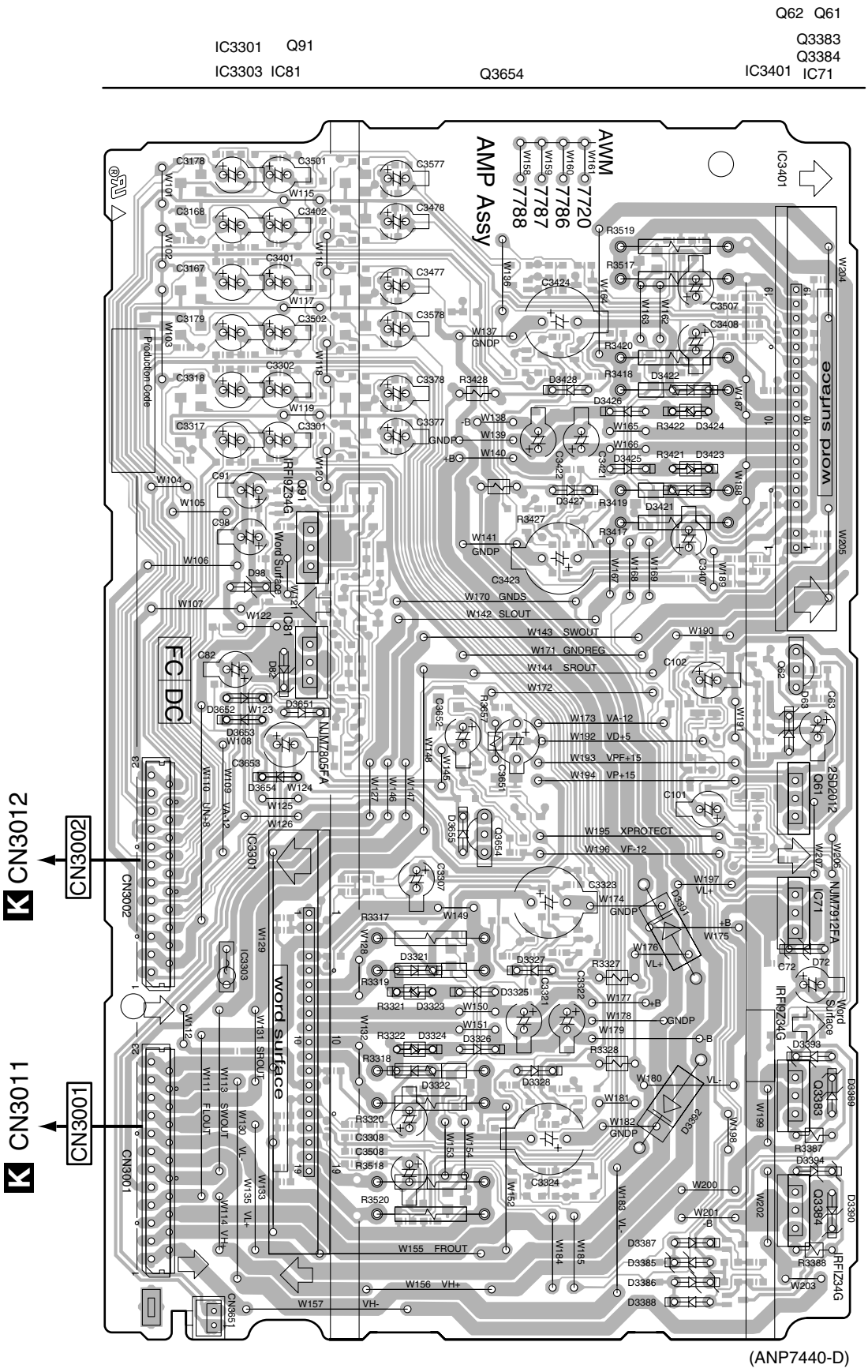
C

4.4 6CH AMP ASSY

SIDE A

SIDE A

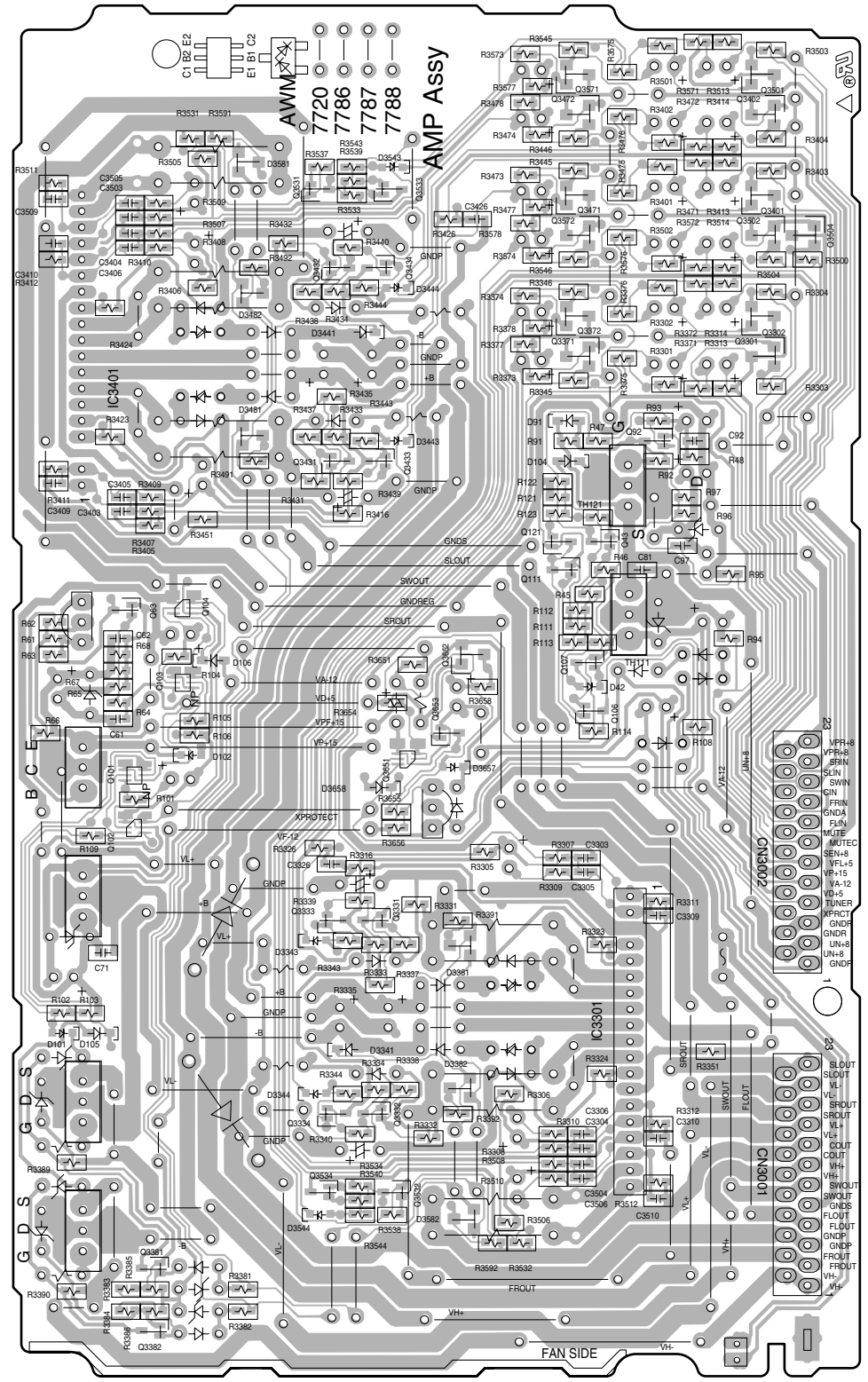
D 6CH AMP ASSY



SIDE B

D 6CH AMP ASSY

Q101 Q63 Q3333 Q3331 Q3533 Q3572 Q3402
Q102 Q3381 Q3334 Q3332 Q3653 Q121 Q3471 Q3371 Q3372 Q92 Q3502 Q3401
Q103 Q3534 Q3532
Q3382 Q104 Q3432 Q3651 Q3652 Q111 Q107 Q106 Q43 Q3301 Q3302 Q3504



(ANP7440-D)

D

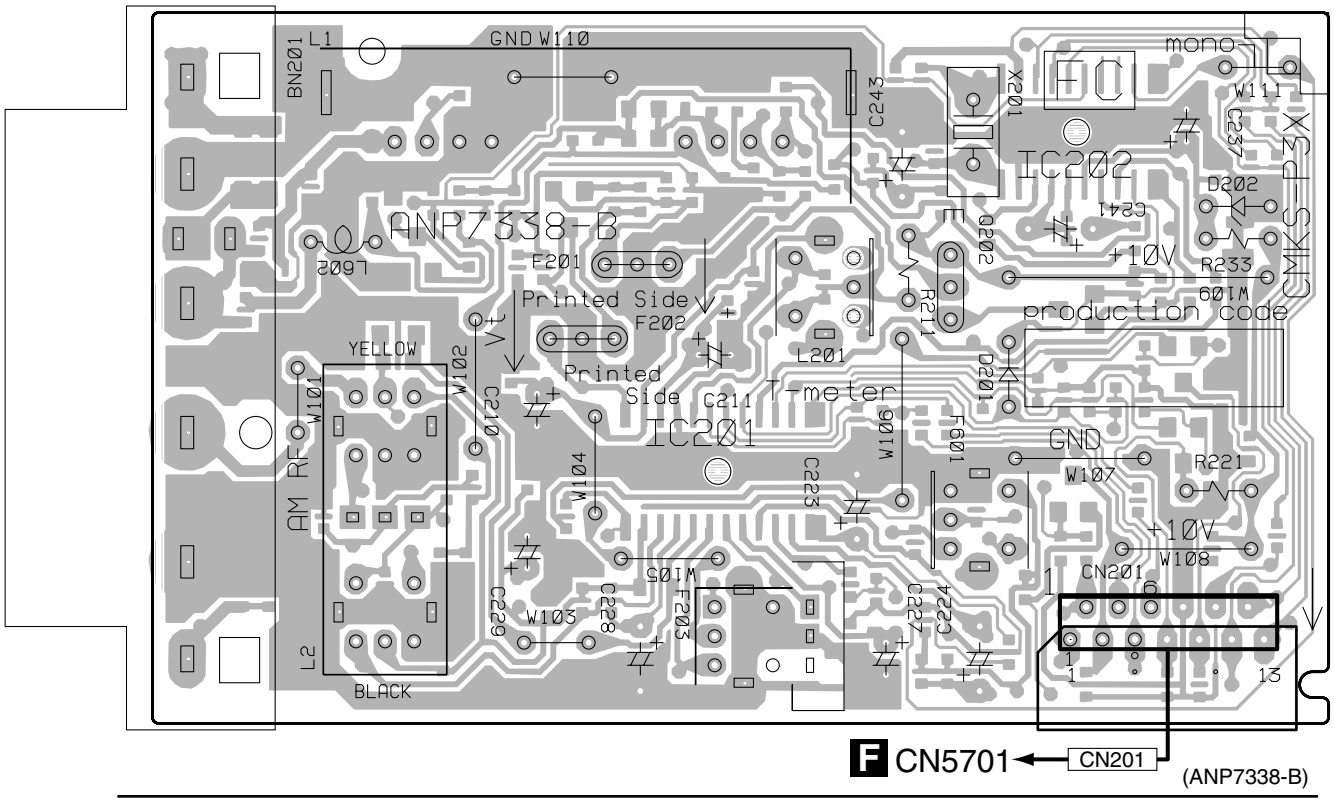
D

4.5 FM/AM TUNER MODULE

SIDE A

SIDE A

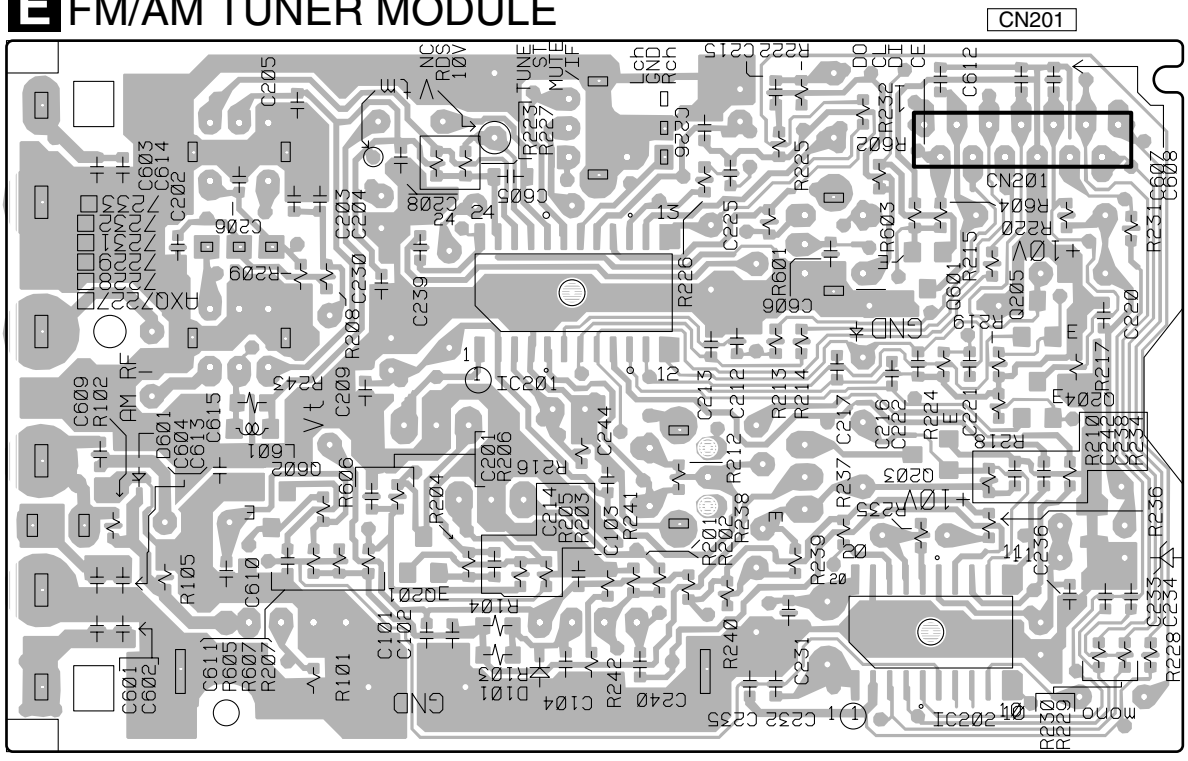
E FM/AM TUNER MODULE



SIDE B

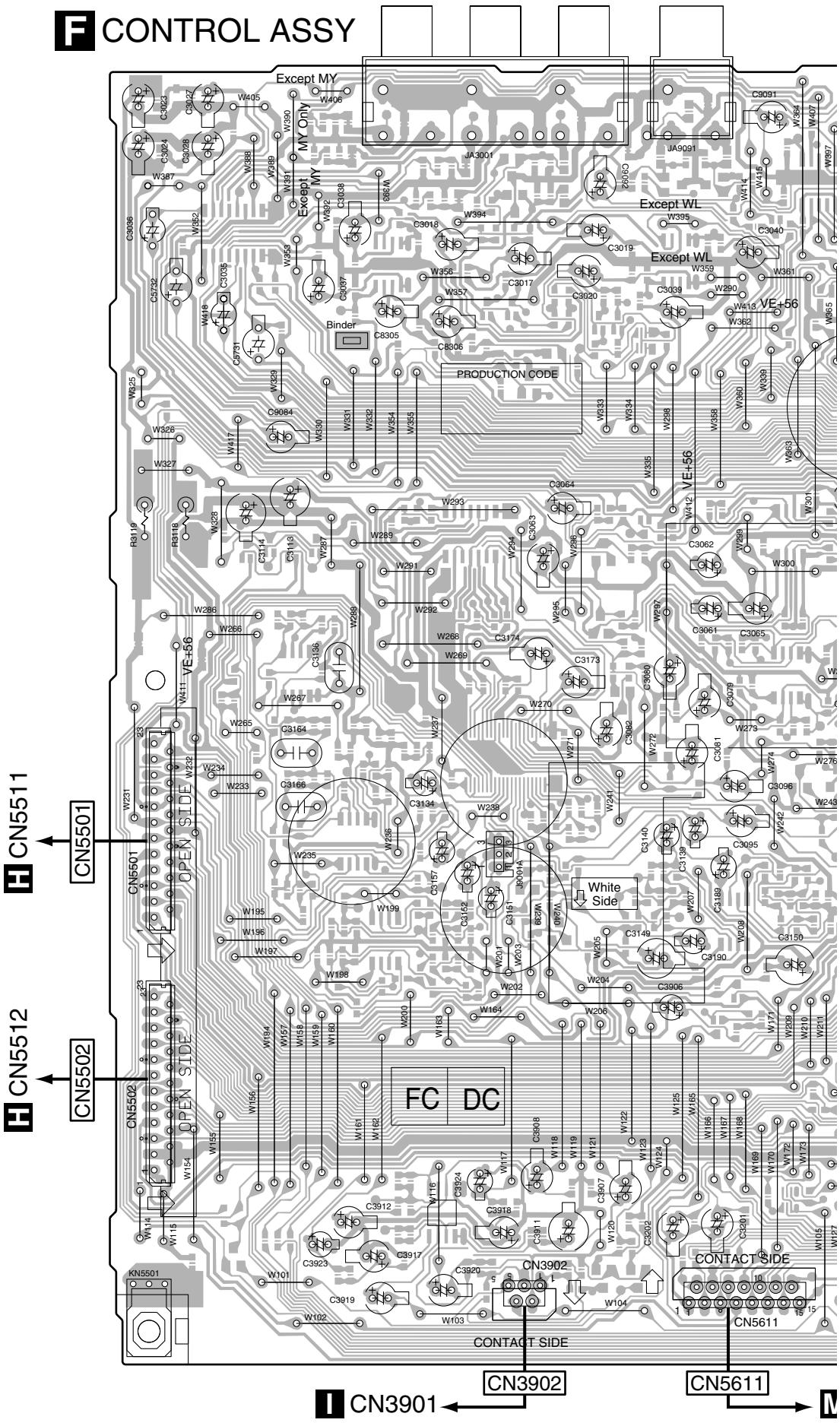
SIDE B

E FM/AM TUNER MODULE

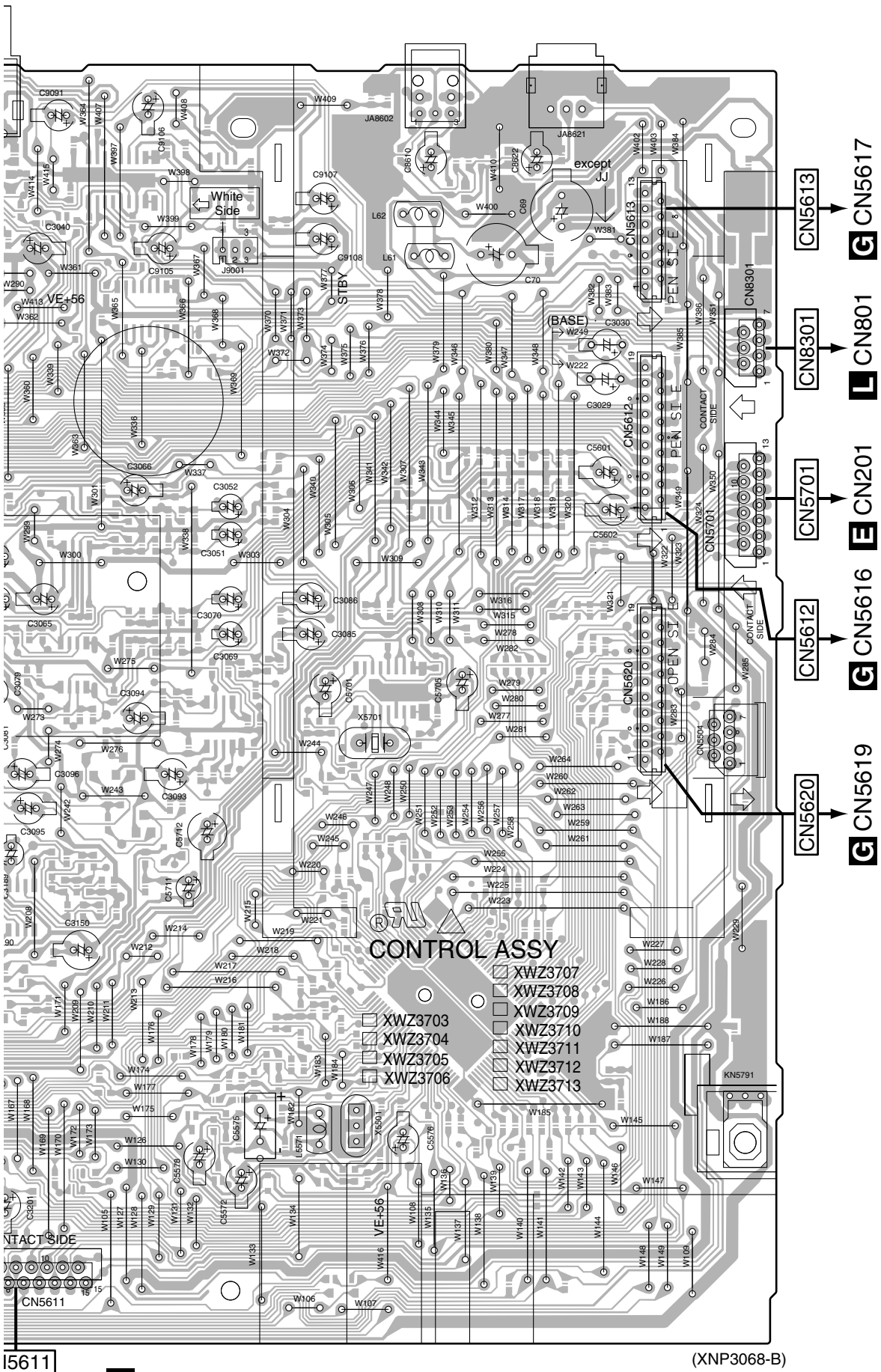


4.6 CONTROL ASSY

SIDE A



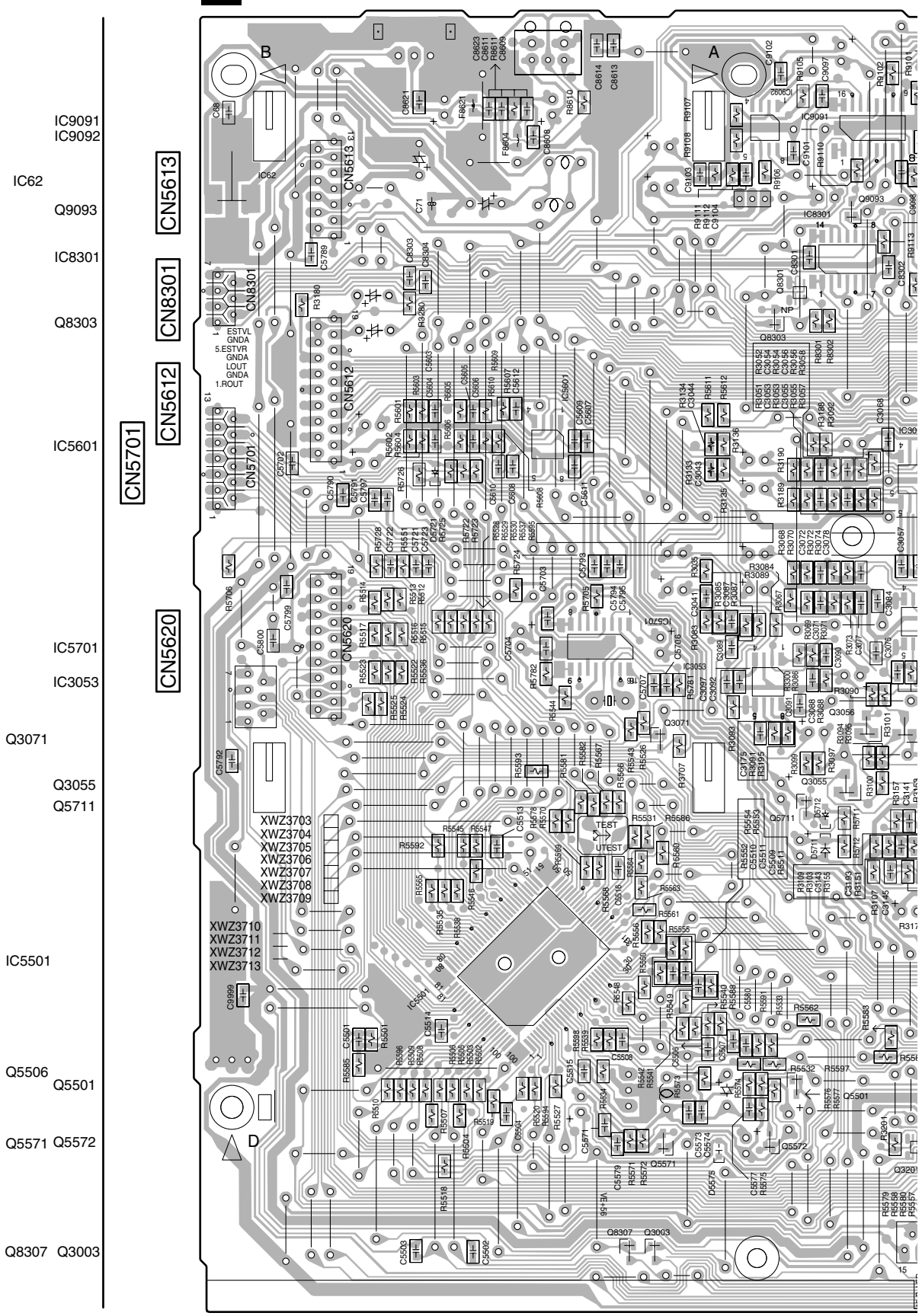
SIDE A



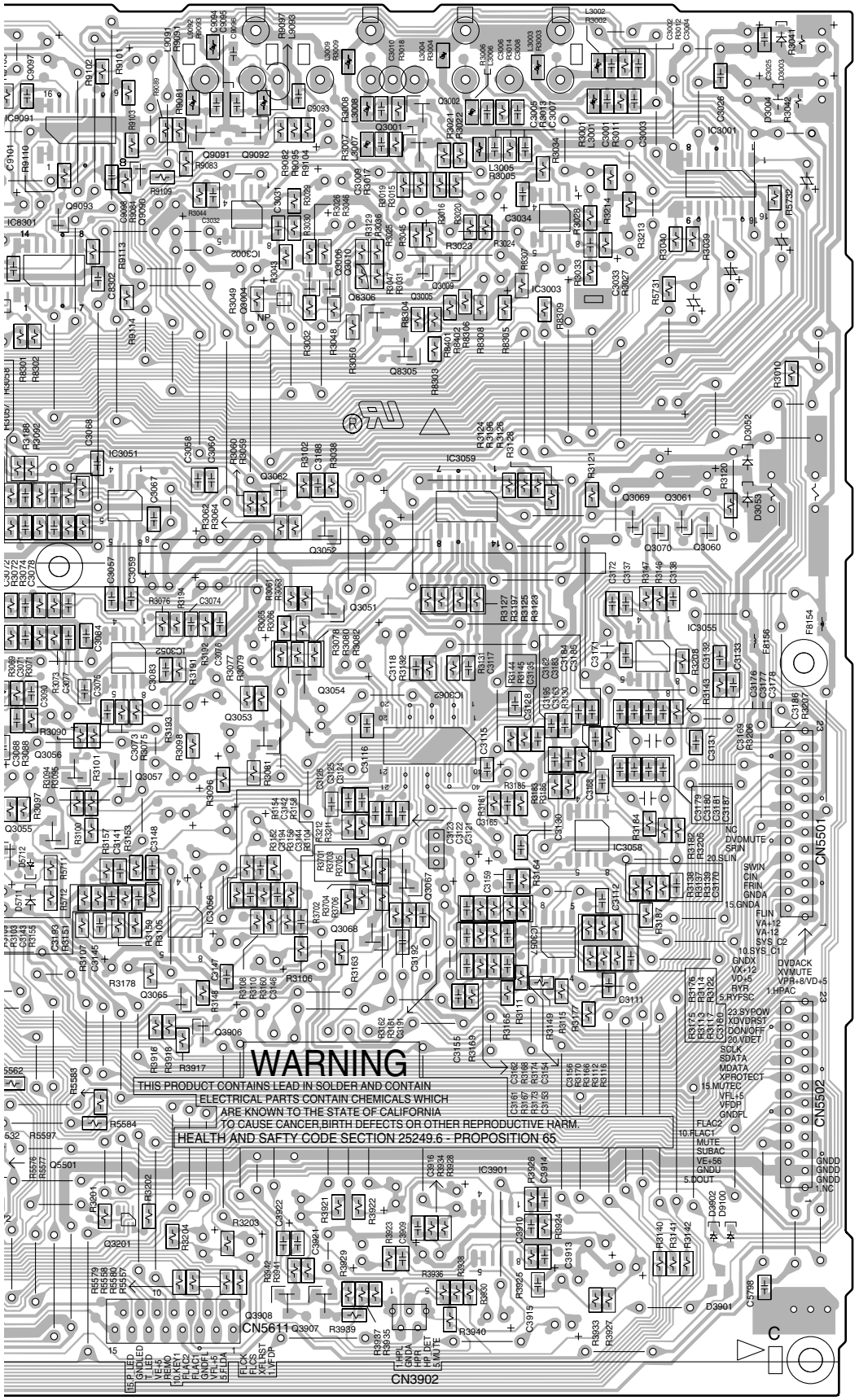
(XNP3068-B)

SIDE B

F CONTROL ASSY



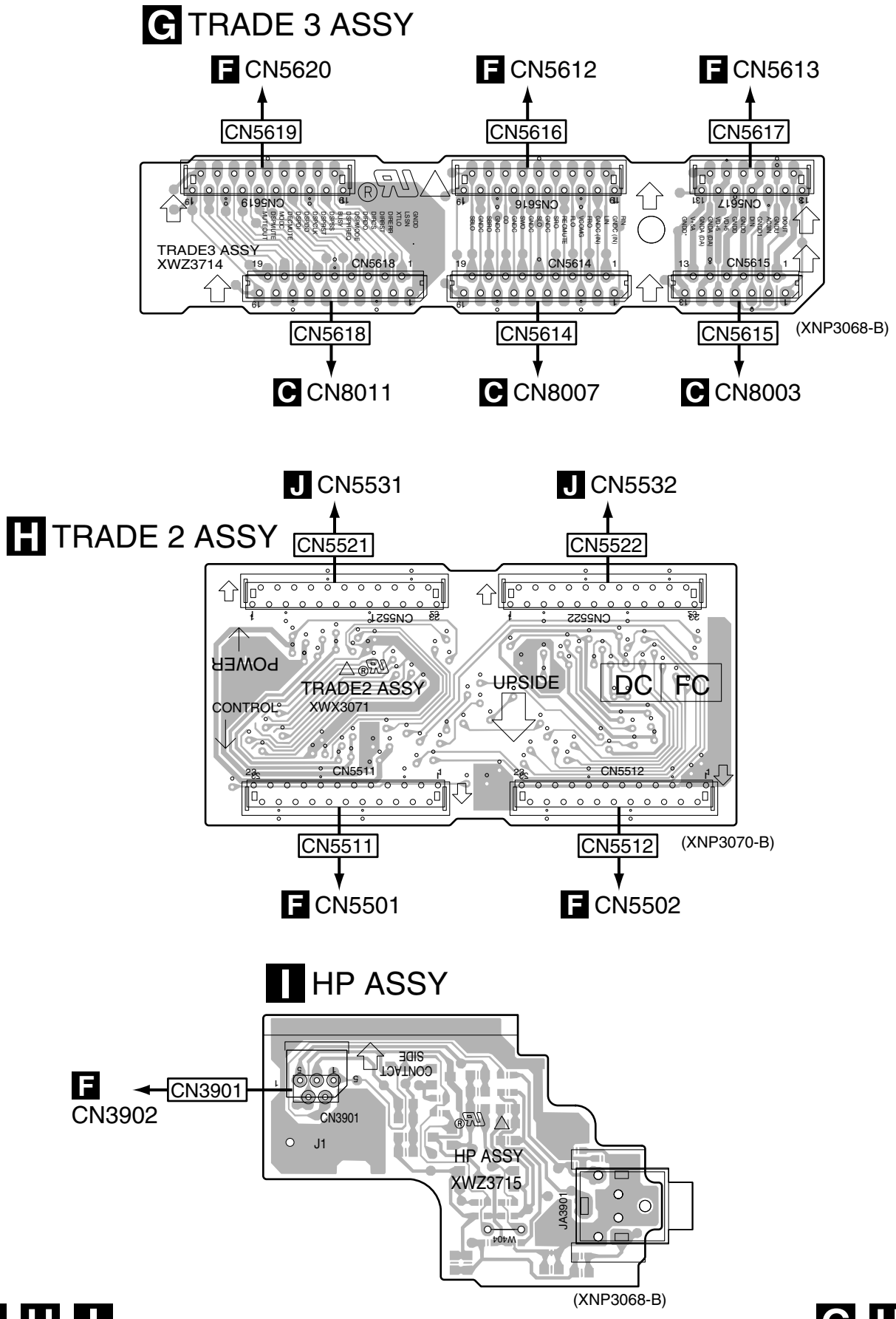
SIDE B



Q3002
Q9091
Q9092
Q3001
Q9090
IC3001
IC3002
IC3003
Q3009
Q3006
Q3005
Q3010
Q8306
Q8305
IC3051
Q3062
IC3059
Q3052
Q3069
Q3061
Q3070
Q3060
Q3051
IC3052
IC3055
Q3054
Q3053
IC3062
Q3056
Q3057
IC3058
Q3067
IC3056
Q3068
Q3065
Q3906
IC5501
IC3901
Q3201
Q3908
Q3907

4.7 TRADE2, TRADE3 and HP ASSYS

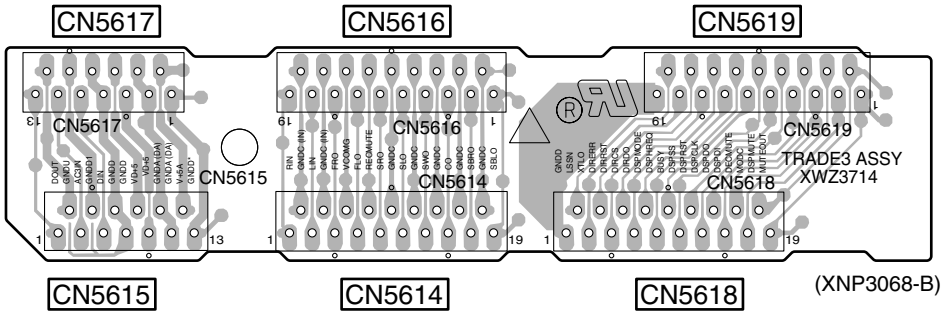
SIDE A **SIDE A**



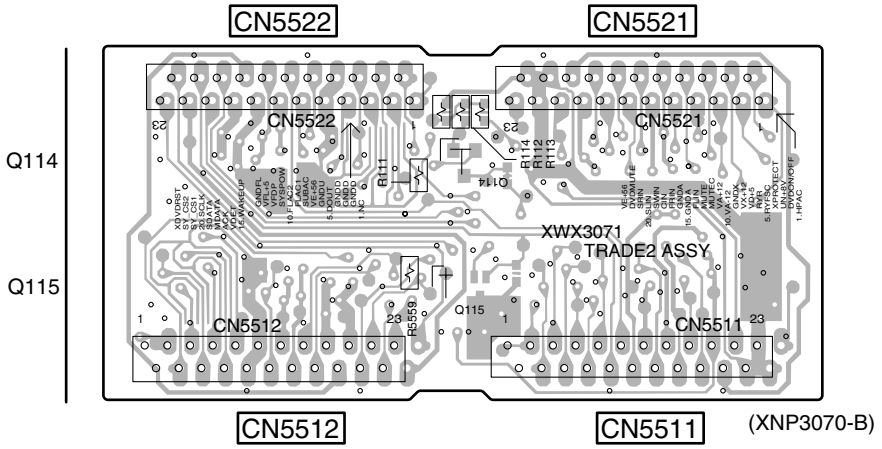
G H I **G H I**

SIDE B

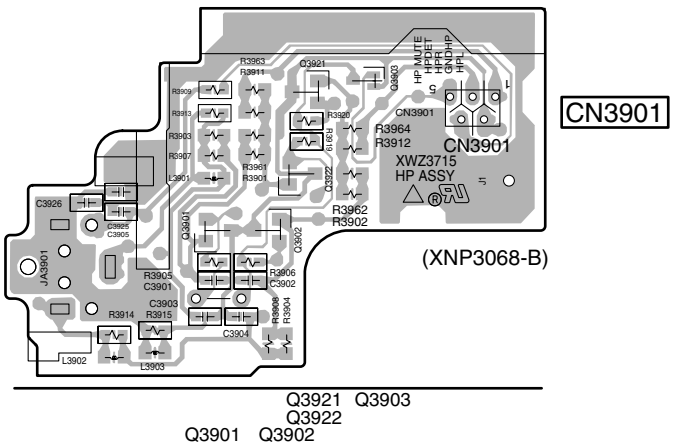
G TRADE 3 ASSY



H TRADE 2 ASSY



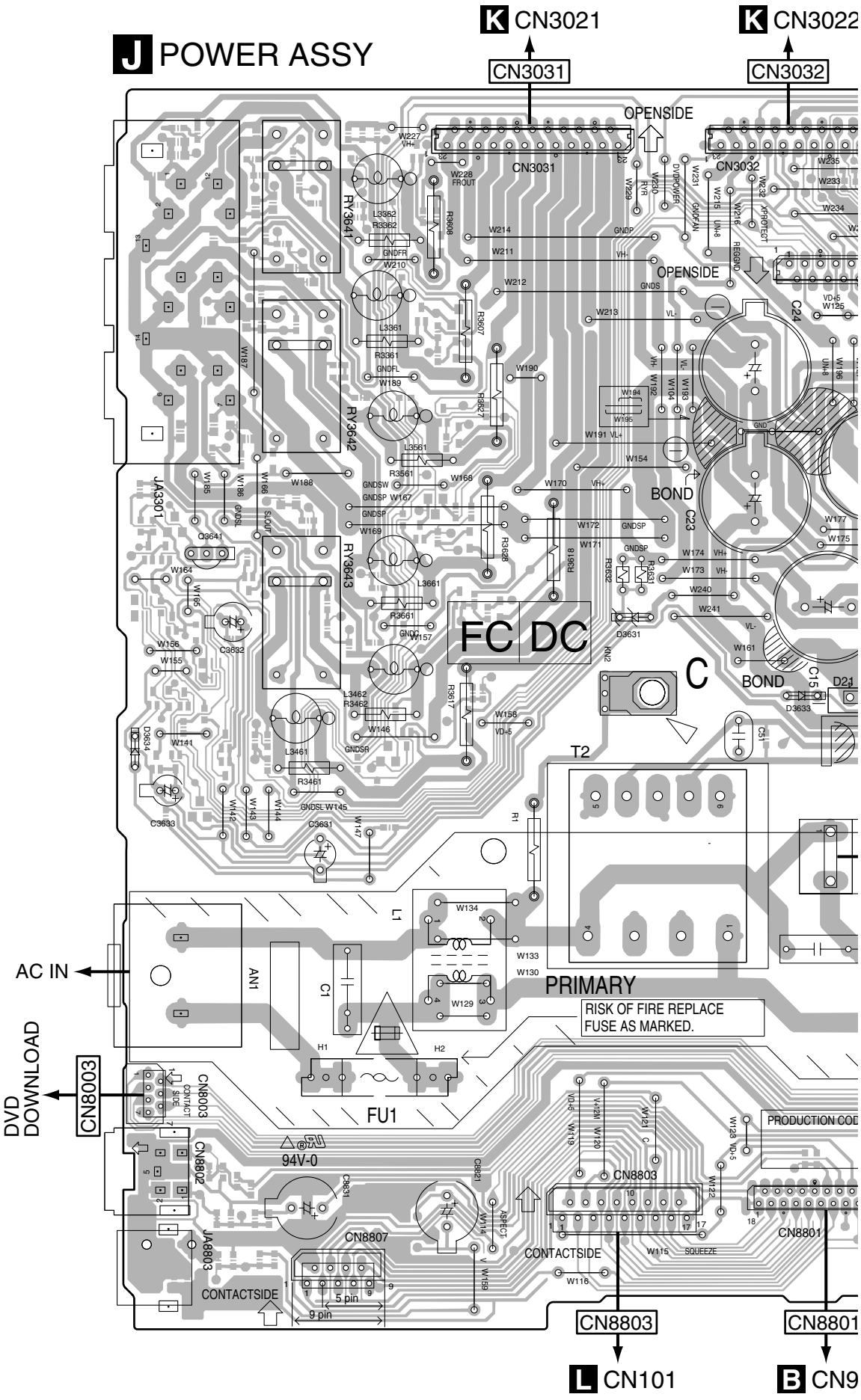
I HP ASSY



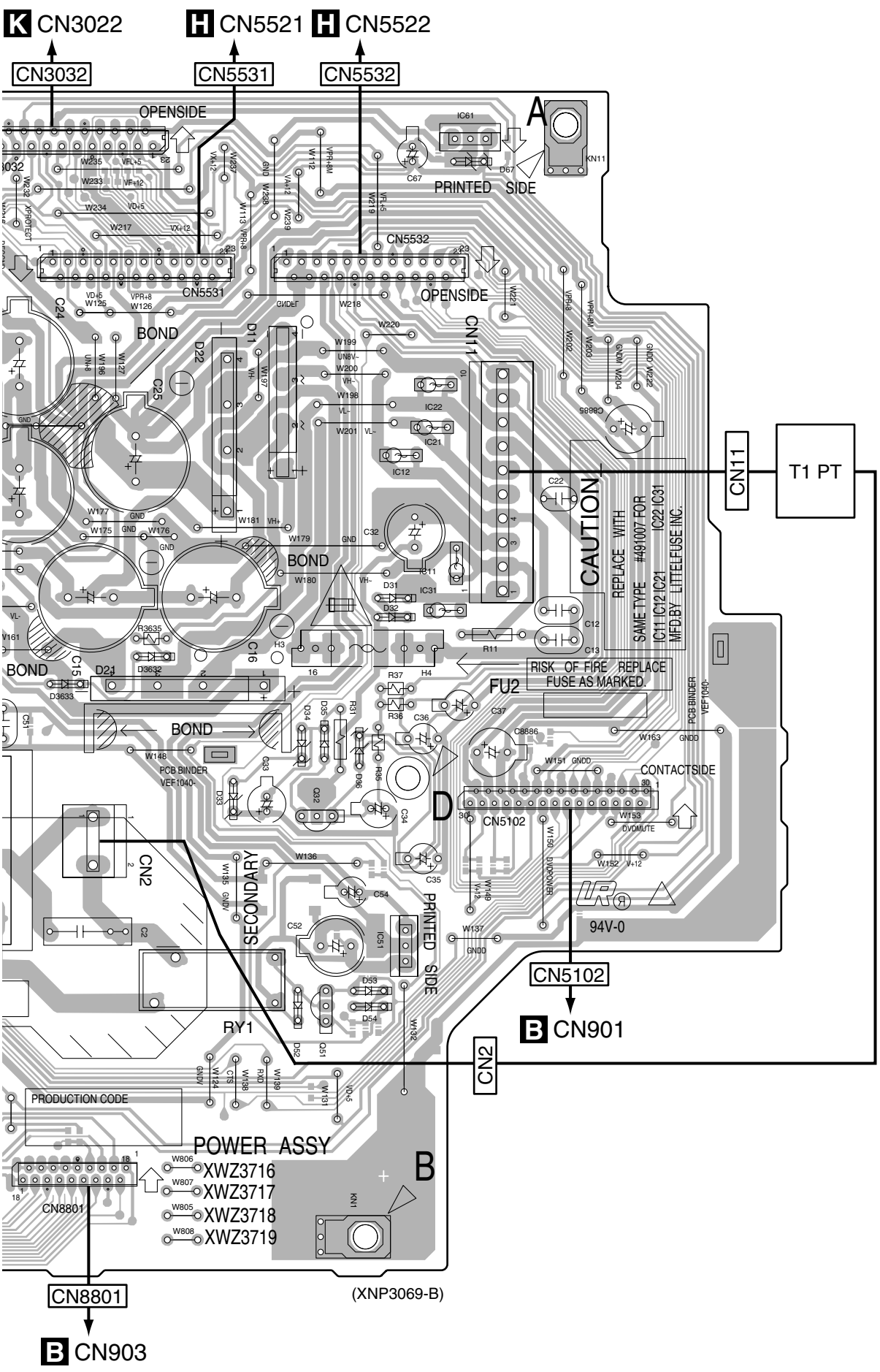
G H I

4.8 POWER ASSY

SIDE A

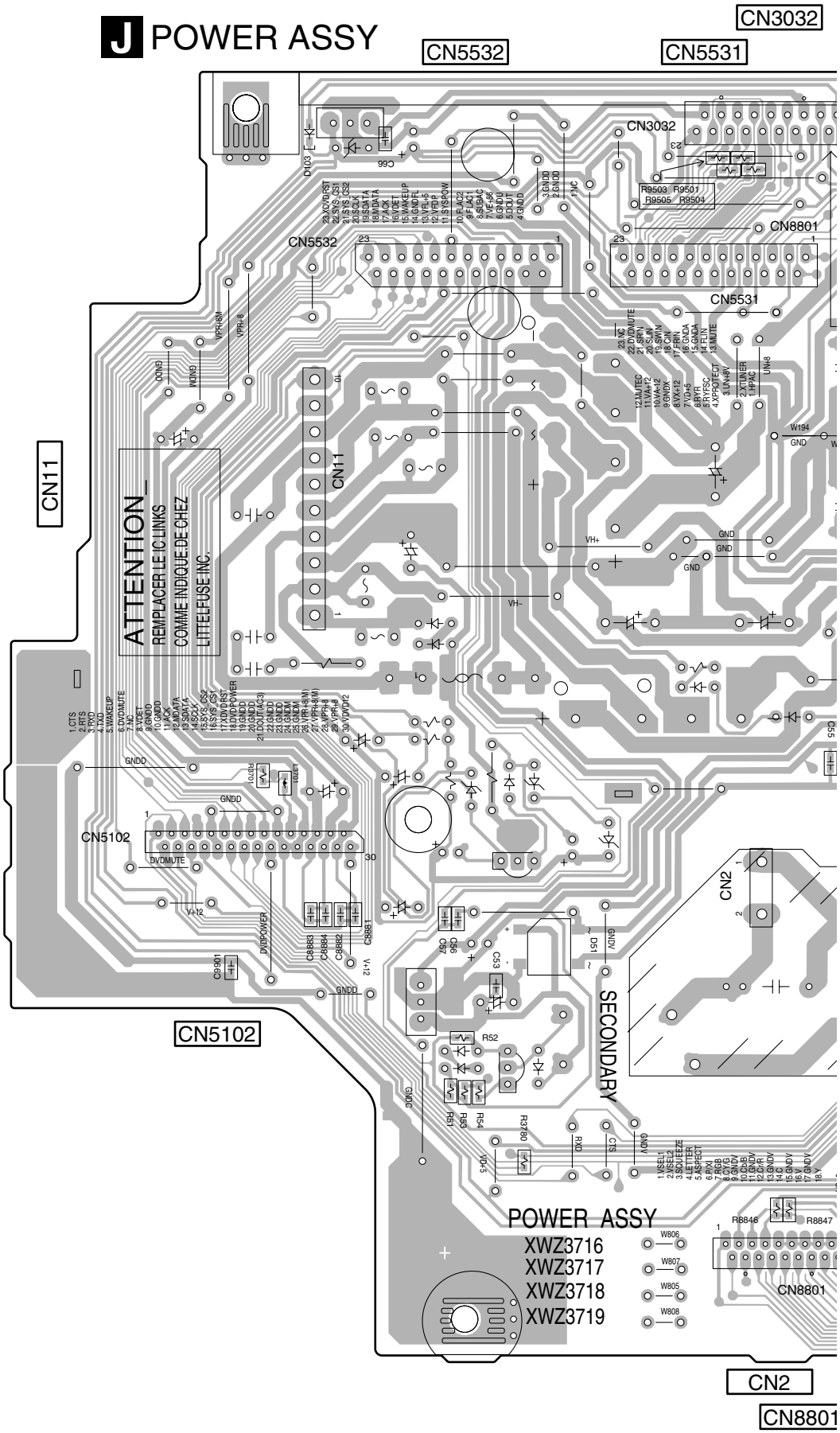


SIDE A

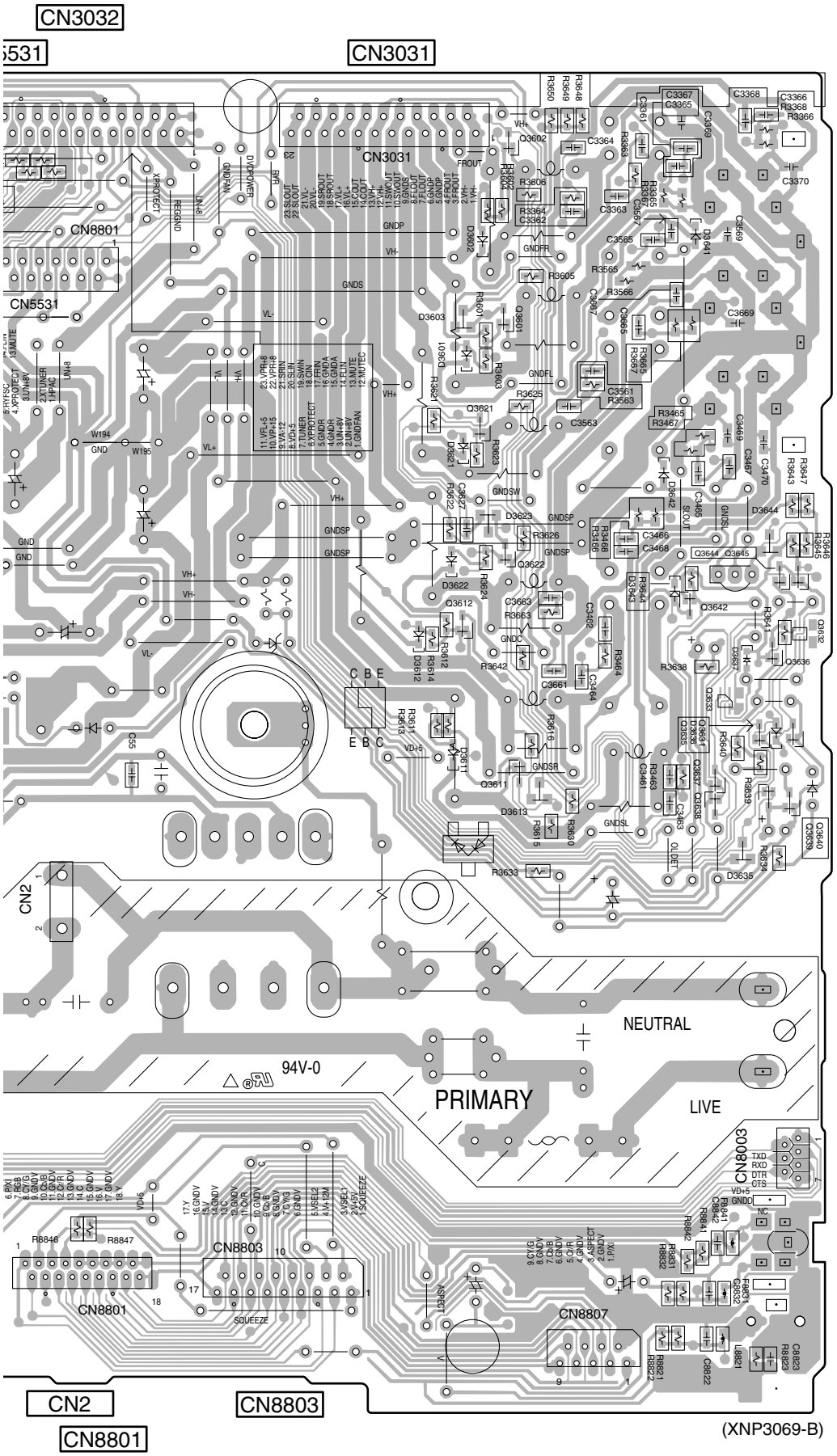

K CN3022
H CN5521
H CN5522
CN3032
CN5531
CN5532
OPENSIDE
PRINTED SIDE
CN11
T1 PT
CAUTION
REPLACE WITH SAME TYPE #491007 FOR IC11,IC12,IC21 IC22,IC31 MFD.BY LITTELFUSE INC.
RISK OF FIRE REPLACE FUSE AS MARKED.
FU2
BOND
PCB BINDER VEF1040-
CONTACTSIDE
CN5102
DVDMUTE
DVDPOWER
94V-0
SECONDARY
PRIMARY SIDE
CN2
RY1
PRODUCTION CODE
POWER ASSY
XWZ3716
XWZ3717
XWZ3718
XWZ3719
CN8801
B CN901
B CN903
(XNP3069-B)

SIDE B

J POWER ASSY



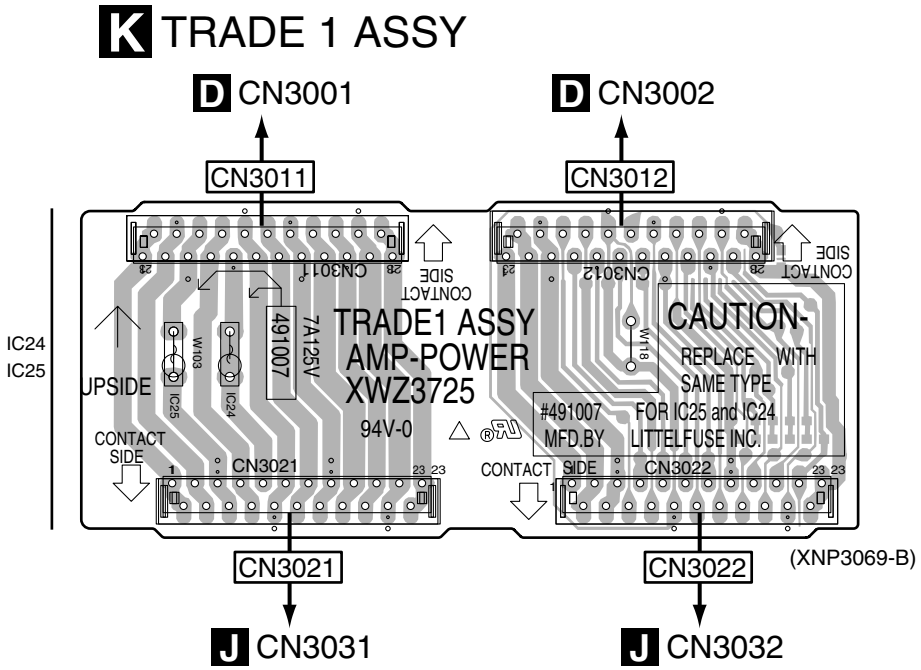
SIDE B

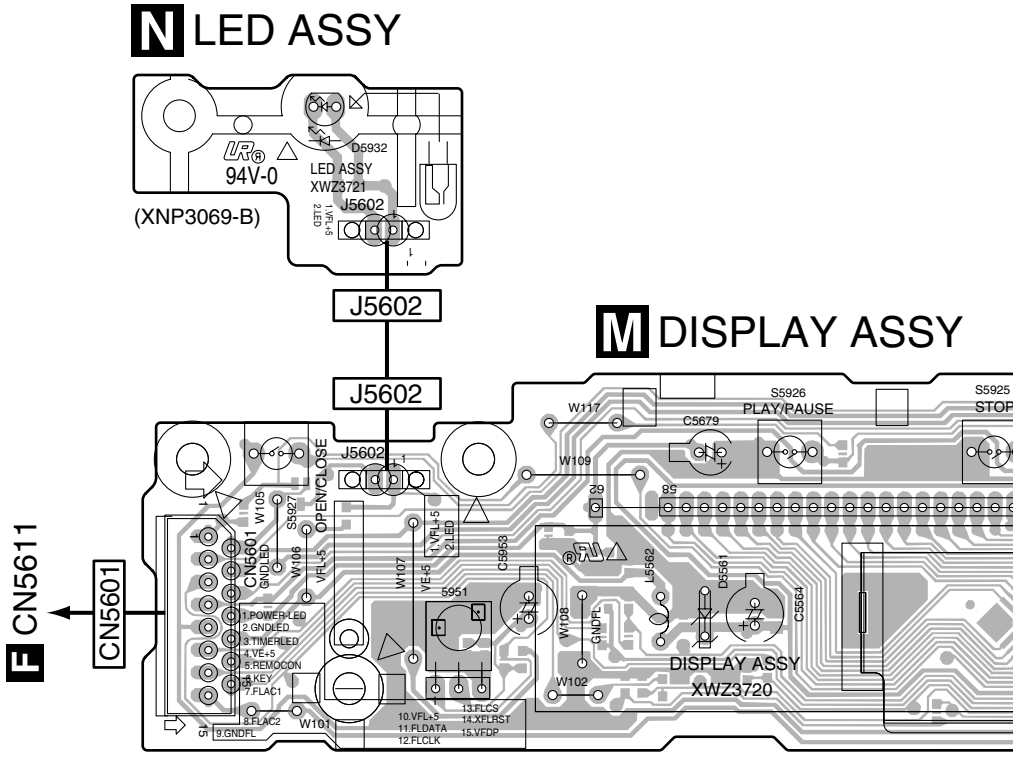


Q3602
Q3601
Q3621
Q3622
Q3644
Q3645
Q3642
Q3612
Q3636
Q3633
Q3631
Q3635
Q3611
Q3637
Q3639
Q3638
Q3640

4.9 TRADE1, EURO SCART, DISPLAY and LED ASSYS

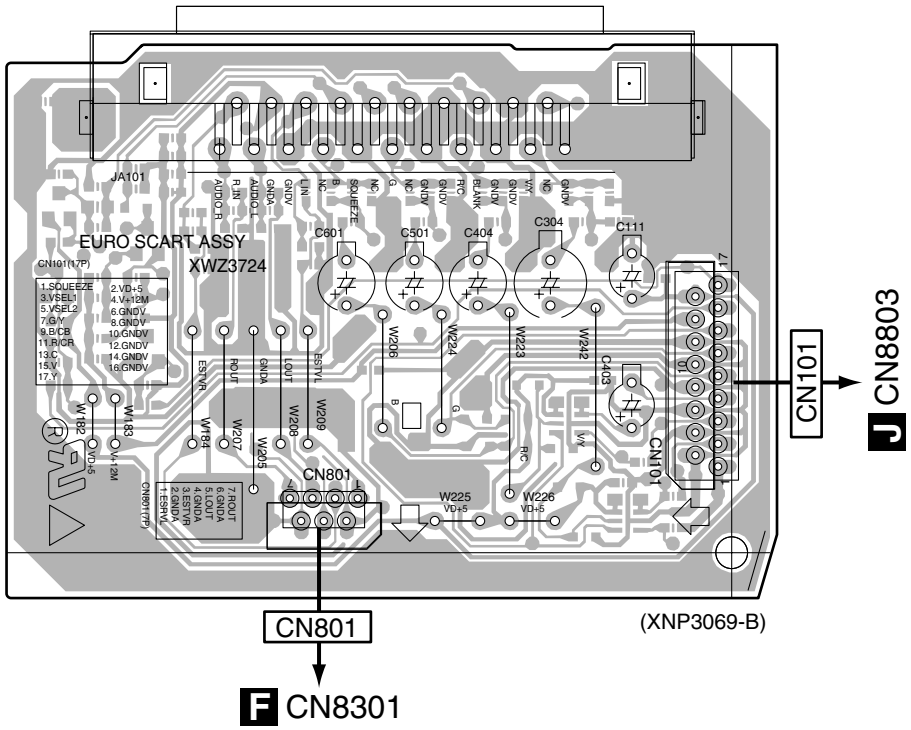
SIDE A



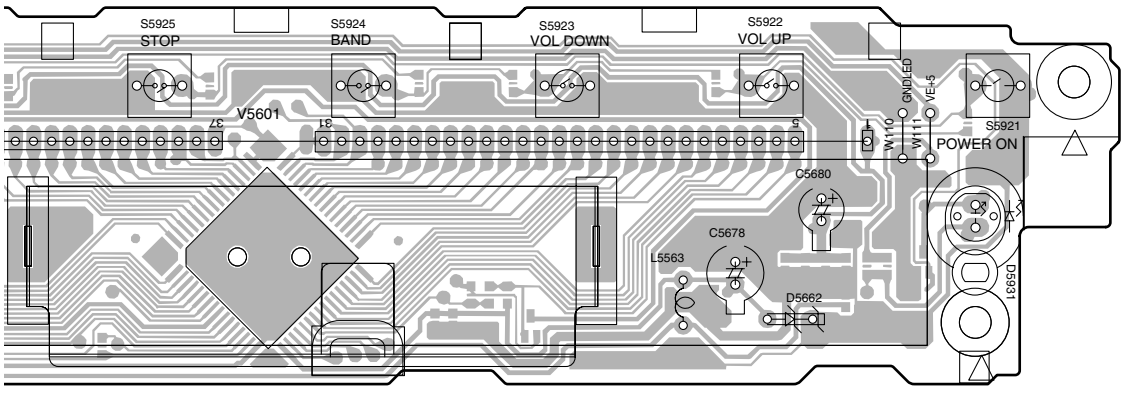


SIDE A

L EURO SCART ASSY

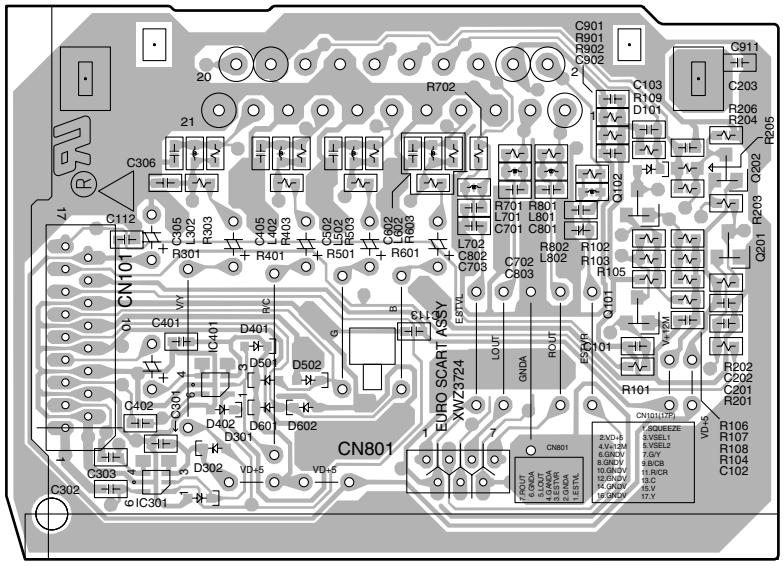


ASSY



SIDE B

L EURO SCART ASSY

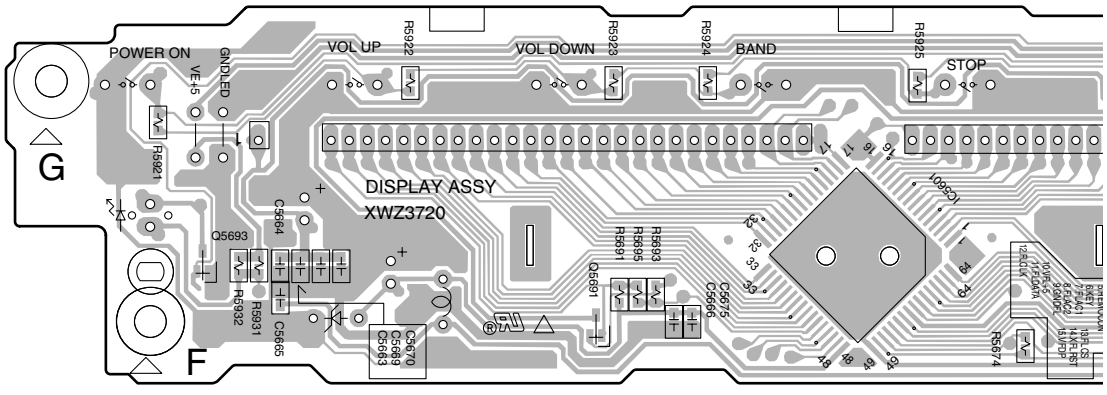


CN801

(XNP3069-B)

IC301	IC401	Q102	Q202
		Q101	Q201

M DISPLAY ASSY



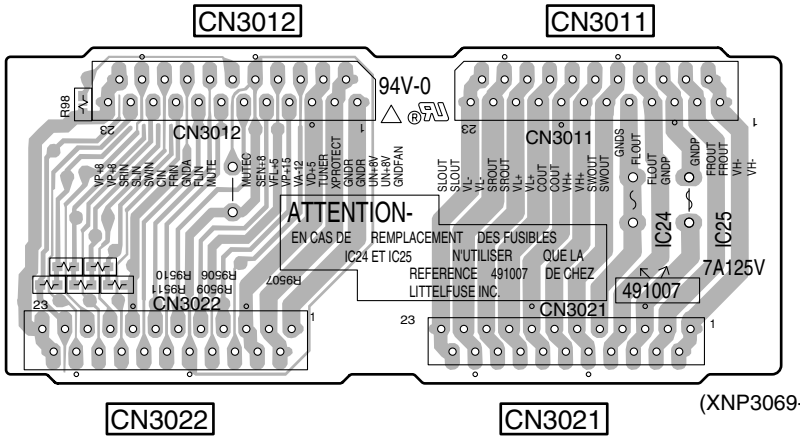
Q5693	Q5691	IC5601

L M

SIDE B

A

K TRADE 1 ASSY

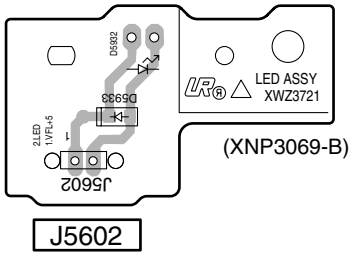


IC24 IC25

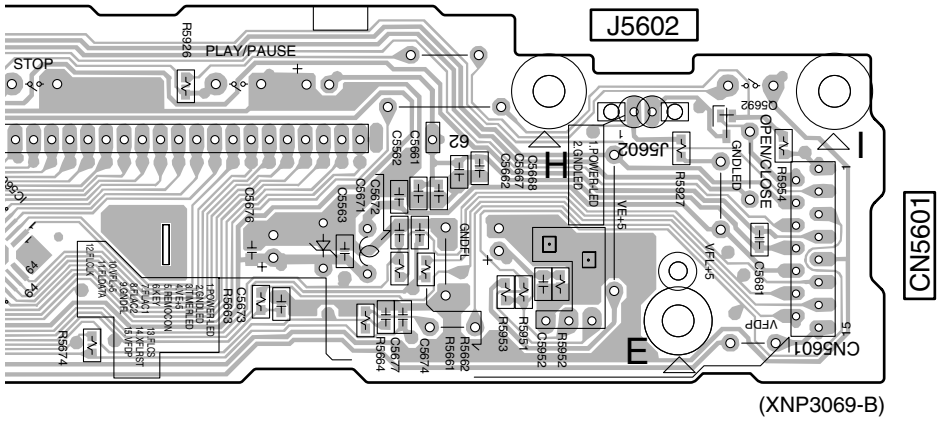
B

C

N LED ASSY



D



Q5692

E

F

5. PCB PARTS LIST

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

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

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

5.62k Ω	→	*562 × 10¹*	→	*5621* ..... *RN1/4PC [5][6][2][1] F*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
NSP	1	DVD ASSY	AXA7121
	2	DVDM ASSY	AWM7808
NSP	2	LOADING MECHA ASSY	VWT1208
	3	LOAB ASSY (for XV-DV313)	VWG2279*1
	3	LOAB ASSY (for XV-DV515)	VWG2346*1
	1	DSP ASSY	AWX8253
NSP	1	AMP MODULE 6CH	AXQ7242
	2	6CH AMP ASSY	AZW7283
NSP	1	MAIN ASSY(for XV-DV313)	XWM3211
	2	CONTROL ASSY	XWZ3703
	2	TRADE3 ASSY	XWZ3714
	2	HP ASSY	XWZ3715

Mark	No.	Description	Part No.
NSP	1	MAIN ASSY(for XV-DV515)	XWM3218
	2	CONTROL ASSY	XWZ3710
	2	TRADE3 ASSY	XWZ3714
	2	HP ASSY	XWZ3715
	1	TRADE2 ASSY	XWX3071
NSP	1	COMPLEX ASSY	XWM3222
	2	TRADE1 ASSY	XWZ3725
	2	POWER ASSY	XWZ3716
	2	EURO SCART ASSY	XWZ3724
	2	DISPLAY ASSY	XWZ3720
	2	LED ASSY	XWZ3721

*1 Costructed same.

F CONTROL Assy

XWZ3703 and XWZ3710 are constructed the same except for the following:

Mark	Symbol and Description	Part No.		Remarks
		XWZ3703	XWZ3710	
	IC3002	Not used	NJM4558MD	
	IC9091,IC9092	Not used	BU4052BCF	
	D9100	Not used	1SS355	
	Q9090	Not used	DTA124EUA	
	Q9093	Not used	2SA1576A	
	Q9091, Q9092	Not used	2SD2114K	
	C9091, C9092, C9107, C9108	Not used	CEAT100M50	
	C9105	Not used	CEAT470M16	
	C9084	Not used	CEJQ4R7M50	
	C3029, C3030	Not used	CEJQ100M35	
	C9106	Not used	CEJQ470M16	
	C9094, C9095	Not used	CCSRCH681J50	
	C9101, C9102	Not used	CKSRYB103K50	
	C3032	Not used	CKSRYB223K50	
	R3041, R3042	RS1/10S182J	RS1/10S681J	
	R9083, R9114	Not used	RS1/16S0R0J	
	R9109	Not used	RS1/16S100J	
	R3043, R3044	Not used	RS1/16S220J	
	R9091, R9097	Not used	RS1/16S221J	
	R9102	Not used	RS1/16S102J	
	R9089, R9095	Not used	RS1/16S182J	
	R9081, R9082	Not used	RS1/16S472J	
	R9101, R9105-R9108	Not used	RS1/16S103J	

Mark	Symbol and Description	Part No.		Remarks
		XWZ3703	XWZ3710	
	R9113	Not used	RS1/16S223J	
	R5597, R9084, R91110	Not used	RS1/16S473J	
	R3029, R3030, R9111, R9112	Not used	RS1/16S104J	
	R9103, R9104	Not used	RS1/16S224J	
	J9001(Connector Assy 3P)	Not used	XDE3061	
	Pin Jack 2P	Not used	AKB1233	

Mark	No.	Description	Part No.
A		**LOAB ASSY**	
		SWITCHES AND RELAYS	
	S101		VSK1011
		OTHERS	
	CN602	KR CONNECTOR	S2B-PH-K
	CN601	KR CONNECTOR	S5B-PH-K
B		**DVDM ASSY**	
		SEMICONDUCTORS	
	IC602		K4S641632F-TC75
	IC101		M63018FP
⚠	IC431		MM1565AF
	IC501		MM1623AF
⚠	IC421		PQ018EH01ZP
⚠	IC411		PQ018EZ01ZP
⚠	IC441		PQ20WZ11
⚠	IC401		R1224N102H
	IC601		STM5589CVA
	IC301		STM6316ATXXA
	IC911		TC74VHC08FT
	IC901		TC74VHCT125AFT
	IC604		TC7WU04FU
	IC603		VYW2077
	Q390		2SA1576A
⚠	Q451		2SA1576A
	Q923,Q924,Q926		2SA1576A
	Q202,Q212,Q452		2SC4081
⚠	Q401		CPH6314
	Q921		DTA124EUA
	Q951		DTC114TUA
	Q724,Q977		DTC114YUA
	Q922,Q925		DTC124EUA
	Q201,Q211		HN1A01F
	Q911		RN1903
	Q603		RN4982
	D431,D432		1SR154-400
	D402,D403,D922-D927		1SS355
	D401		RB051L-40
	D603		RB501V-40
	D921		UDZS4.7B
		COILS AND FILTERS	
	L401	POWER INDUCTOR	ATH7011
	L402	INDUCTOR	CTH1254
	L390		LCYA2R7J2520
	L1056-L1061	CHIP BEAD	VTL1078

Mark	No.	Description	Part No.
		CAPACITORS	
	C408		CCSRCH121J50
	C390		CCSRCH180J50
	C142		CCSRCH221J50
	C200		CCSRCH331J50
	C690		CCSRCH470J50
	C392		CCSRCH560J50
	C393,C640,C644		CCSRCH7R0D50
	C452		CEV100M16
	C101,C401,C404,C410,C412		CEV101M16
	C422,C443,C561,C564,C600		CEV101M16
	C621,C660		CEV101M16
	C415,C425		CEV101M4
	C201,C211		CEV470M16
	C406		CKSQYB104K25
	C431		CKSQYB105K16
	C433		CKSQYB225K10
	C127,C128,C381,C562,C563		CKSRYB102K50
	C624		CKSRYB102K50
	C112-C114,C124,C125,C130		CKSRYB103K50
	C133,C134,C355		CKSRYB103K50
	C102,C132,C139,C230		CKSRYB104K16
	C232,C233,C300,C307,C309		CKSRYB104K16
	C315,C318,C323,C326,C335		CKSRYB104K16
	C342,C348,C357,C362,C373		CKSRYB104K16
	C377,C388,C391,C413,C414		CKSRYB104K16
	C423,C424,C441,C442,C451		CKSRYB104K16
	C511,C531,C551,C565,C571		CKSRYB104K16
	C604,C607,C614,C619		CKSRYB104K16
	C622,C623,C626-C632		CKSRYB104K16
	C636,C637,C641,C647-C649		CKSRYB104K16
	C659,C664,C671,C681,C684		CKSRYB104K16
	C694,C698,C902,C912,C921		CKSRYB104K16
	C501,C521,C541,C603,C620		CKSRYB105K10
	C625		CKSRYB105K10
	C394		CKSRYB152K50
	C126,C346		CKSRYB223K50
	C202,C205,C212,C215		CKSRYB472K50
	C402,C403,C405,C409		DCH1165
		RESISTORS	
	R201		RAB4C220J
	R211		RAB4C390J
	R100,R1011-R1013,R111,R210		RS1/10S0R0J
	R387-R389,R412-R415,R417		RS1/10S0R0J
	R421,R422,R561,R600,R623		RS1/10S0R0J
	R403		RS1/10S100J
	R105,R106,R115-R120		RS1/10S4R7J
	R104,R107		RS1/10S6R8J
	R125,R144,R330,R331,R628		RS1/16S1002F
	R635		RS1/16S1002F

Mark No.	Description	Part No.
	R301	RS1/16S1202F
	R502,R512,R522,R532,R542	RS1/16S1500F
	R552	RS1/16S1500F
	R408	RS1/16S1502F
	R410	RS1/16S1802F
	R443	RS1/16S2001F
	R409	RS1/16S2702F
	R441	RS1/16S4701F
	R101,R102,R123,R142,R143	RS1/16S5600F
	R442	RS1/16S6801F
	R411	RS1/8S0R0J
	Other Resistors	RS1/16S###J

OTHERS

CN104	4P CONNECTOR	AKN7035
CN105	12P FFC CONNECTOR	RKN1053
CN103	PH CONNECTOR	S5B-PH-SM3
	FLEXIBLE CABLE 7P	VDA1681
CN903	18P FFC CONNECTOR	VKN1310
CN901	30P FFC CONNECTOR	VKN1322
CN101	0.5-24P CONNECTOR	VKN1482
X601	CRYSTAL RESONATOR (27MHz)	VSS1172
X301	CHIP CERAMIC RESONATOR (20MHz)	VSS1186

C DSP ASSY

SEMICONDUCTORS

IC8201	AK4114VQ
IC8401	AK4529VQ
IC8501	DSPD56367PV150
IC8901	NJM2391DL1-33
IC8902	NJU7223DL1-18
IC8701	TC74LVX244FT
IC8702	TC74VHCT244AFT
IC8502	TC7WU04FU
Q8504	UMD2N
Q8503	UN5112
D8501	1SS355
D8401	DAN202K
D8402,D8502,D8503	DAP202K

COILS AND FILTERS

L8002,L8004,L8501,L8502 CHIP FERRITE BEAD	ATL7002
L8201,L8203,L8204,L8401,L8402 CHIP SOLID INDUCTOR	QTL1013
L8504,L8701,L8702 CHIP SOLID INDUCTOR	QTL1013

CAPACITORS

C8209,C8210	CCSRCH100D50
C8421	CCSRCH101J50
C8007,C8008,C8201,C8212,C8214	CCSRCH471J50
C8404,C8409-C8414,C8416,C8417	CCSRCH471J50
C8419,C8505,C8507,C8509	CCSRCH471J50
C8511,C8512,C8515,C8518,C8520	CCSRCH471J50
C8522,C8524,C8526,C8528,C8530	CCSRCH471J50
C8532,C8534,C8536,C8539,C8541	CCSRCH471J50
C8543,C8545,C8551,C8703,C8706	CCSRCH471J50
C8548,C8549	CCSRCH8R0D50
C8701,C8704	CEV100M16
C8406,C8415,C8546,C8547,C8902	CEV101M16

Mark No.	Description	Part No.
	C8904	CEV101M16
	C8217,C8225,C8408	CEV470M6R3
	C8204,C8555	CKSRYB102K50
	C8009,C8405,C8418,C8517,C8554	CKSRYB103K50
	C8010,C8202,C8207,C8213,C8215	CKSRYB104K16
	C8407,C8420,C8422,C8504,C8513	CKSRYB104K16
	C8521,C8523,C8525,C8527,C8529	CKSRYB104K16
	C8531,C8533,C8535,C8537,C8538	CKSRYB104K16
	C8540,C8542,C8544,C8550,C8702	CKSRYB104K16
	C8705,C8901,C8903	CKSRYB104K16
	C8516	CKSRYB105K6R3
	C8514	CKSRYB333K16
	C8203	CKSRYB473K50

RESISTORS

R8506	RAB4C101J
R8201	RS1/16S1802F
Other Resistors	RS1/16S###J

OTHERS

X8501	CRYSTAL RESONATOR (20MHz)	VSS1171
X8201	CRYSTAL RESONATOR (24.576MHz)	XSS3003
CN8003	13P SOCKET	AKP7070
CN8007,CN8011	19P SOCKET	AKP7073
KN8102	WRAPPING TERMINAL	VNF1084

D 6CH AMP ASSY

SEMICONDUCTORS

⚠ IC81	NJM7805FA
⚠ IC71	NJM7912FA
⚠ IC3301,IC3401	STK402-270
Q3382,Q43	2SA1576A
Q62	2SB1237X
Q111,Q3381,Q63,Q92	2SC4081
⚠ Q61	2SD2012
Q3301,Q3302,Q3401,Q3402	2SD2114K
Q3501,Q3502,Q3504	2SD2114K
Q3654	2SD2144S
Q107,Q3653	DTA124EUA
Q3652	DTA124TK
Q106	DTC124EUA
⚠ Q3383,Q91	IRFI9Z34G
⚠ Q3384	IRFIZ34G
Q3651	RN1901
Q101,Q103	UMB1N
Q102,Q104	UMH1N
⚠ D3321-D3326	1SR139-400
D3327,D3328	1SR139-400
⚠ D3421-D3426	1SR139-400
D3427,D3428	1SR139-400
D3387,D3388,D3651-D3655	1SS133
D101,D102,D104,D3657,D42	1SS355
D3391,D3392	30PDA20-FC6
⚠ D3381,D3382,D3481,D3482	DAN217
⚠ D3581,D3582	DAN217
D3389,D3390	MTZJ10C
⚠ D98	MTZJ11B
⚠ D72	MTZJ15C
D3393,D3394	MTZJ18B

Mark	No.	Description	Part No.
⚠	D63		MTZJ18C
	D3385,D3386		MTZJ36A
⚠	D82		MTZJ7.5C
	D91		UDZS18B
	D105,D106,D3658		UDZS7.5B
	TH111		NCP18WF104J03RB

CAPACITORS

	C3305,C3306,C3405,C3406	CCSRCH221J50
	C3505,C3506,C62,C97	CCSRCH221J50
	C3309,C3310,C3409,C3410	CCSRCJ3R0C50
	C3509,C3510	CCSRCJ3R0C50
	C3307,C3308,C3407,C3408,C3508	CEAL100M16
	C3507	CEAL470M6R3
	C72	CEAT100M50
	C3651	CEAT101M25
	C101,C102	CEAT1R0M50
	C3323,C3324,C3423,C3424	CEAT221M50
	C3167,C3168,C3178,C3179	CEAT2R2M50
	C3301,C3302,C3317,C3318	CEAT2R2M50
	C3401,C3402,C3501,C3502	CEAT2R2M50
	C3652,C63,C82,C98	CEAT470M25
	C3653	CEAT470M35
	C3303,C3304,C3403,C3404	CKSRYB102K50
	C3503,C3504	CKSRYB102K50
	C92	CKSRYB104K16
	C71,C81	CKSRYB473K50

RESISTORS

	R3317-R3320,R3417-R3420	ACN7122
	R3517-R3520 (0.22Ω/2W)	ACN7122
⚠	R3327,R3328,R3427,R3428	RD1/4MUF470J
	R3387,R3388	RD1/4PU101J
	R3657	RD1/4PU330J
	R96,R97	RS1/16S1002F
⚠	R3323,R3324,R3351,R3423,R3424	RS1/16S1R0J
⚠	R3451	RS1/16S1R0J
	R67,R68	RS1/16S2201F
	R94,R95	RS1/16S2701F
⚠	R62	RS1/16S330J
	R65	RS1/16S4700F
	R47,R48	RS1/16S4701F
	Other Resistors	RS1/16S###J

OTHERS

	CN3001,CN3002 23P PLUG	AKP7064
	CN3651 2P PLUG	KM200SA2

E FM/AM TUNER MODULE

SEMICONDUCTORS

	IC201	BA1451F
	IC202	LC72131MD
	Q201,Q204,Q205,Q601	2SC2412K
	Q202	DTA124ES
	Q203	DTC124EK
	D201	1SS133
	D202	MTZJ5.1C
	D101	UDZS6.8B

COILS AND FILTERS

	L201 FM DETECTOR COIL	ATE7003
	F202 FM CERAMIC FILTER	ATF-107
	F201 FM CERAMIC FILTER	ATF-119
	F203 AM CERAMIC FILTER	ATF1155
	F601 ANTIBIRDY FILTER	ATF7025
	L601	LCTA270J2520

CAPACITORS

	C605	CCSQCH680J50
	C212,C213,C226,C233-C235	CCSRCH101J50
	C240,C614	CCSRCH101J50
	C206	CCSRCH120J50
	C231,C232	CCSRCH150J50
	C223	CEAT100M50
	C229	CEAT101M10
	C224	CEAT1R0M50
	C227	CEAT220M25
	C241	CEAT2R2M50
	C243	CEAT330M16
	C228	CEAT3R3M50
	C237	CEAT470M10
	C211	CEJA1R0M50
	C210	CEJQ470M16
	C103,C104,C204,C238	CKSRYB102K50
	C102,C208,C216,C217,C220	CKSRYB103K50
	C239,C242,C604,C615	CKSRYB103K50
	C225	CKSRYB153K50
	C607,C608	CKSRYB182K50
	C201,C205,C214,C230,C236	CKSRYB223K50
	C244	CKSRYB223K50
	C221	CKSRYB224K10
	C603	CKSRYB392K50
	C215	CKSRYB471K50
	C202,C222	CKSRYB473K16
	C606	CKSRYB561K50

RESISTORS

	R211	RD1/4PU221J
	R221	RD1/4PU222J
	R233	RD1/4PU391J
	R103,R104	RS1/10S221J
	Other Resistors	RS1/16S###J

OTHERS

	CN201 13P FFC CONNECTOR	52044-1345
	BN201 2P TERMINAL WITH PAL	AKA7002
	SHIELD CASE T	ANK7072
	SHIELD CASE B	ANK7073
	X201 CRYSTAL RESONATOR	ASS1093

F CONTROL ASSY(for XV-DV313)

SEMICONDUCTORS

	IC3062	BD3814FV
	IC5701	BU1924F
	IC3001	BU4052BCF
	IC3059,IC8301	BU4066BCF
	IC3003,IC3051-IC3053,IC3055-IC3058	NJM4558MD
	IC5601	NJM4558MD
	IC3901	NJM4560M
	IC5501	PDC104A
	Q3906	2SA1576A
	Q3005,Q3006,Q3009,Q3010,Q5501	2SC4081
	Q5572,Q5711	2SC4081
	Q3001,Q3002,Q3067,Q3068	2SD2114K

Mark	No.	Description	Part No.
	Q3907,Q3908,Q8305,Q8306		2SD2114K
	Q3003,Q3061,Q3065,Q3069,Q3071		DTA124EUA
	Q8307		DTA124EUA
	Q3060,Q3070,Q8303		DTC124EUA
	Q5571		DTC143EUA
	Q3201		RN2901
	Q3004,Q8301		UMB1N
	D3902,D5575,D5712,D5721		1SS355
	D3901		DAP202K
	D5711		UDZS11B
	D3003,D3004		UDZS5.6B
	D3052,D3053		UDZS6.8B

COILS AND FILTERS

L5571		LFEA220J
F8604	CHIP SOLID INDUCTOR	VTF1096

CAPACITORS

C5575 (0.047F/5.5V)	ACH1246
C3111,C3112,C3130,C3145,C3146	CCSRCH100D50
C3131-C3133,C3913,C3914	CCSRCH101J50
C5510,C5511,C5577,C5722,C5723	CCSRCH101J50
C3001-C3008	CCSRCH221J50
C5706,C5707	CCSRCH270J50
C5702	CCSRCH271J50
C3053,C3054	CCSRCH331J50
C3041,C3168,C3909,C3910	CCSRCH470J50
C5609,C5610	CCSRCH470J50
C5703	CCSRCH561J50
C3059,C3060	CCSRCH680J50
C3009,C3010,C8303,C8304	CCSRCH681J50
C3055,C3056,C3077,C3078,C3089	CCSRCH821J50
C3134,C3189,C3190,C3906,C5711	CEAL100M16
C3149,C3150	CEAL470M16
C3017-C3020,C3037,C3038	CEAT100M50
C3079,C3080,C3085,C3086	CEAT100M50
C3093,C3094,C3173,C3174	CEAT100M50
C3917,C3918,C5576,C5601,C5602	CEAT100M50
C5701,C8305,C8306	CEAT100M50
C5572	CEAT101M10
C5578	CEAT1R0M50
C3113,C3114	CEAT221M10
C3027,C3028,C3911,C3912	CEAT470M16
C3919,C3920,C5705,C8610	CEAT470M16
C3051,C3052,C3061,C3062	CEJQ100M16
C3069,C3070	CEJQ100M16
C3201,C3202	CEJQ220M25
C3065,C3066	CEJQ470M16
C5731,C5732	CEJQ4R7M50
C5504,C5789,C5793,C5795	CKSRYB102K50
C3025,C3026,C3033,C3034	CKSRYB103K50
C3067,C3068,C3083,C3084	CKSRYB103K50
C3091,C3092,C3115,C3116	CKSRYB103K50
C3141,C3142,C3147,C3148	CKSRYB103K50
C3155,C3156,C3159,C3160,C3165	CKSRYB103K50
C3169-C3172,C3191,C3192	CKSRYB103K50
C5506-C5508,C5571,C5573,C5580	CKSRYB103K50
C5704,C5794,C5798,C5799	CKSRYB103K50
C8301,C8302	CKSRYB103K50
C3121-C3124,C3180,C3182,C3186	CKSRYB104K16
C5513-C5516,C5574,C5611,C5612	CKSRYB104K16
C5791,C8609,C8611	CKSRYB104K16
C3071,C3072,C3075,C3076,C3087	CKSRYB152K50
C3097,C3138	CKSRYB152K50
C3181	CKSRYB273K16
C5603,C5604	CKSRYB331K50
C3176	CKSRYB333K16
C3161,C3162,C3193,C3194	CKSRYB334K10
C3195	CKSRYB393K16
C3125,C3126	CKSRYB472K50
C3177,C3179	CKSRYB473K25
C3090	CKSRYB682K50
C3183	CKSRYB683K16
C5605,C5606	CKSRYB821K50
C5733,C5734	CKCYB332K50

RESISTORS

R3118,R3119	RD1/2VM151J
R3041,R3042	RS1/10S182J
Other Resistors	RS1/16S###J

OTHERS

CN3902 5P FFC CONNECTOR	52045-0545
CN8301 7P FFC CONNECTOR	52045-0745
CN5701 13P FFC CONNECTOR	52045-1345
CN5611 15P FFC CONNECTOR	52045-1545
JA3001 6P PIN JACK	AKB7050
CN5613 13P PLUG	AKP7059
CN5612,CN5620 19P PLUG	AKP7062
CN5501,CN5502 23P PLUG	AKP7064
X5701 CRYSTAL RESONATOR	ASS7004
X5501 CERAMIC RESONATOR (10MHz)	ASS7034
JA8602 OPTICAL INPUT JACK	TORX179PL
KN5501,KN5791 TERMINAL	VNF1084

G TRADE 3 ASSY

OTHERS

CN5615 13P PLUG	AKP7059
CN5614,CN5618 19P PLUG	AKP7062
CN5617 13P SOCKET	AKP7070
CN5616,CN5619 19P SOCKET	AKP7073

H TRADE 2 ASSY

SEMICONDUCTORS

Q114	2SD2114K
Q115	DTA124EUA

RESISTORS

All Resistors	RS1/16S###J

OTHERS

CN5511,CN5512,CN5521,CN5522 23P SOCKET	AKP7075

I HP ASSY

SEMICONDUCTORS

Q3901,Q3902,Q3921,Q3922	2SD2114K
Q3903	DTA124EUA

COILS AND FILTERS

L3901,L3902 CHIP BEAD	VTL1096

Mark	No.	Description	Part No.
CAPACITORS			
	C3901,C3902		CKSRYB102K50
	C3905		CKSRYB103K50
	C3925		CKSRYB104K16
	C3903,C3904		CKSRYB473K25
RESISTORS			
	R3901,R3902,R3911,R3912		RS1/10S330J
	R3961-R3964		RS1/10S330J
	Other Resistors		RS1/16S###J
OTHERS			
	CN3901	5P FFC CONNECTOR	52044-0545
	JA3901	MINI JACK	AKN7003

J POWER ASSY

Mark	No.	Description	Part No.
SEMICONDUCTORS			
⚠	IC61		NJM7812FA
⚠	IC51		NJM78M56FA
⚠	Q32		2SA965
	Q3601,Q3602,Q3611,Q3612		2SC4081
	Q3621,Q3622,Q3631,Q3637,Q3638		2SC4081
	Q3642,Q3644		2SC4081
	Q3641,Q51		2SD1858X
	Q3635,Q3639		DTA124EUA
	Q3645		DTA143EUA
	Q3636,Q3640		DTC124EUA
	Q3633		RN1901
	Q3632		UMB1N
⚠	D31,D32		11ES2
	D35,D3632-D3634,D52-D54		1SS133
	D103,D3601,D3602,D3611,D3612		1SS355
	D3621,D3622,D3636,D3637		1SS355
	D3641-D3643		1SS355
⚠	D11		D3SBA20(B)
⚠	D21,D22		D5SBA20(B)
	D3635		DAN202K
	D3644		DAN217
	D3603,D3613,D3623		DAP202K
⚠	D51		DF06SA
	D33,D34		MTZJ16B
	D3631		MTZJ5.1A
	D36		MTZJ6.8B
COILS AND FILTERS			
	L3361,L3362,L3461,L3462,L3561	AF CHOKE COIL	ATH-059
	L3661	AF CHOKE COIL	ATH-059
	L3701	CHIP BEAD	VTL1075
	L8821	CHIP BEAD	VTL1086
⚠	L1	LINE FILTER	XTF3003
TRANSFORMERS			
⚠	T2		ATT7078
SWITCHES AND RELAYS			
	RY3641-RY3643		ASR7008
⚠	RY1		ASR7027
CAPACITORS			
⚠	C1,C2		ACE7022
	C23,C24		ACH7166
	C15,C16		ACH7167
	C25		ACH7183
	C8822		CCSRCH470J50
	C3633		CEAT100M50
	C52		CEAT102M16
	C67		CEAT220M50
	C32		CEAT221M63
	C54		CEAT470M16
	C8885,C8886		CEAT471M16
	C3632		CEAT471M6R3
	C35		CEJQ100M50
	C33,C34		CEJQ220M50
	C3631		CEJQ2R2M50
	C53		CKSRYB103K50
	C3361-C3364,C3461-C3464,C3561		CKSRYB223K50
	C3563,C3661,C3663		CKSRYB223K50
	C3365-C3368,C3465-C3468,C3565		CKSRYB473K50
	C3567,C3665,C3667,C55-C57		CKSRYB473K50
	C66		CKSRYB473K50
	C12,C13,C22		CQMA472J50
	C3369,C3370,C3469,C3470,C3569		XCG3008
	C3669		XCG3008
	C8821		XCH3017
RESISTORS			
	R3607,R3608,R3617,R3618		ACN7112
	R3627,R3628	(0.1Ω/2W)	ACN7112
	R11		RD1/2PMF100J
	R3361,R3362,R3461,R3462,R3561		RD1/2PMF101J
	R3661		RD1/2PMF101J
	R31		RD1/2PMF332J
	R36,R37		RD1/4PU101J
	R3635		RD1/4PU332J
	R3631,R3632		RD1/4PU333J
	R35		RD1/4PU472J
	R3365-R3368,R3465-R3468		RS1/10S220J
	R3565,R3566,R3665,R3667		RS1/10S220J
	R8821		RS1/16S75R0F
	Other Resistors		RS1/16S###J
OTHERS			
	CN8803	17P FFC CONNECTOR	52045-1745
	CN3031,CN3032,CN5531,CN5532	23P PLUG	AKP7064
	H1-H4	FUSE CLIP	AKR7001
	CN11	10P VH CONNECTOR	B10P-VH
⚠	CN2	2P VH CONNECTOR	B2P3-VH
		SCREW	BBZ30P080FMC
		PCB BINDER	VEF1040
	JA8803	1P PIN JACK	VKB1122
	CN8801	18P FFC CONNECTOR	VKN1249
	CN5102	30P FFC CONNECTOR	VKN1261
	CN8003	7P FFC CONNECTOR	VKN1267
	KN1	WRAPPING TERMINAL	VNF1084
	JA3301	6CH SPEAKER JACK	XKE3021
⚠	AN1	1P AC INLET	XKP3041
	D. HEAT SINK		XNH3030

Mark	No.	Description	Part No.
K		**TRADE 1 ASSY**	
		SEMICONDUCTORS	
⚠	IC25 (7A)		AEK7021
		RESISTORS	
	All Resistors		RS1/16S###J
		OTHERS	
	CN3011,CN3012,CN3021,CN3022	23P SOCKET	AKP7075
L		**EURO SCART ASSY**	
		SEMICONDUCTORS	
	IC401		MM1505XN
	IC301		MM1507XN
	Q102,Q202		2SA1037K
	Q101,Q201		2SC2412K
	D101,D301,D302,D401,D402		1SS355
		COILS AND FILTERS	
	L302,L402,L502,L602	CHIP BEAD	VTL1086
		CAPACITORS	
	C702,C703,C802,C803		CCSRCH101J50
	C701,C801		CCSRCH331J50
	C306		CCSRCH470J50
	C403		CEAT100M50
	C404,C501,C601		CEAT101M10
	C304		CEAT471M6R3
	C203		CKSRYB102K50
	C102,C103,C112,C113,C202		CKSRYB104K25
	C301-C303,C401,C402		CKSRYB104K25
		RESISTORS	
	R205		RS1/16S68R0F
	R301,R401,R501,R601		RS1/16S75R0F
	Other Resistors		RS1/16S###J
		OTHERS	
	CN801	7P FFC CONNECTOR	52045-0745
	CN101	17P FFC CONNECTOR	52045-1745
	JA101	RGB CONNECTOR	VKB1157
M		**DISPLAY ASSY**	
		SEMICONDUCTORS	
	IC5601		MSM9202-01
	Q5691		2SC4081
	Q5692,Q5693		DTC143EUA
	D5931		SLR-56MC(PQR)
		COILS AND FILTERS	
	L5563		LAU100J
	L5562		LAU220J
		SWITCHES AND RELAYS	
	S5921-S5927		RSG1031
		CAPACITORS	
	C5674		CCSRCH470J50
	C5661,C5663		CCSRCH471J50
	C5564		CEAL101M6R3
	C5679,C5680		CEAL1R0M50
	C5678		CEAL220M35
	C5953		CEAL470M16
	C5671-C5673		CKSRYB102K50
	C5677,C5681		CKSRYB103K50
	C5562,C5563,C5665,C5666,C5675		CKSRYB223K50
	C5952		CKSRYB223K50
		RESISTORS	
	All Resistors		RS1/16S###J
		OTHERS	
		2P CABLE HOLDER	51048-0200
	CN5601	15P FFC CONNECTOR	52044-1545
		REMOTE RECEIVER UNIT	GP1UM27XK
		FL HOLDER	VNF1122
	V5601	FL TUBE	XAV3021
N		**LED ASSY**	
		SEMICONDUCTORS	
	D5932		NSPW312BS-2009
	D5933		UDZS6.8B
		OTHERS	
		2P CABLE HOLDER	51048-0200
	J5602	JUMPER WIRE 2P	D20PYY0210E

6. ADJUSTMENT
6.1 TUNER SECTION

■ AM Tuner Section
• There is no adjustment in the AM tuner.

■ FM Tuner Section
• Set the mode selector to FM BAND.
• Connect the wiring as shown in Fig. 1.

[ANT. INPUT SIGNAL]
• Frequency : 98 MHz
• Modulation : OFF
• Input Level : 80 dBμV

Step No.	Adjustment Title	Adjustment point	Measurement point	Adjustment value	Adjustment State
1	T-METER Adjustment	L201	IC201 Pin 21/Pin23	0 ± 50mV	Adjust L201 so that the DC voltage between Pin 21 and Pin 23 of IC201 (Test point "Vtm") gets within 0 ± 50mV.

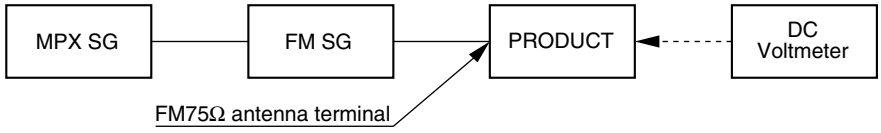


Fig.1 Adjustment Wiring Diagram

F FM/AM TUNER MODULE

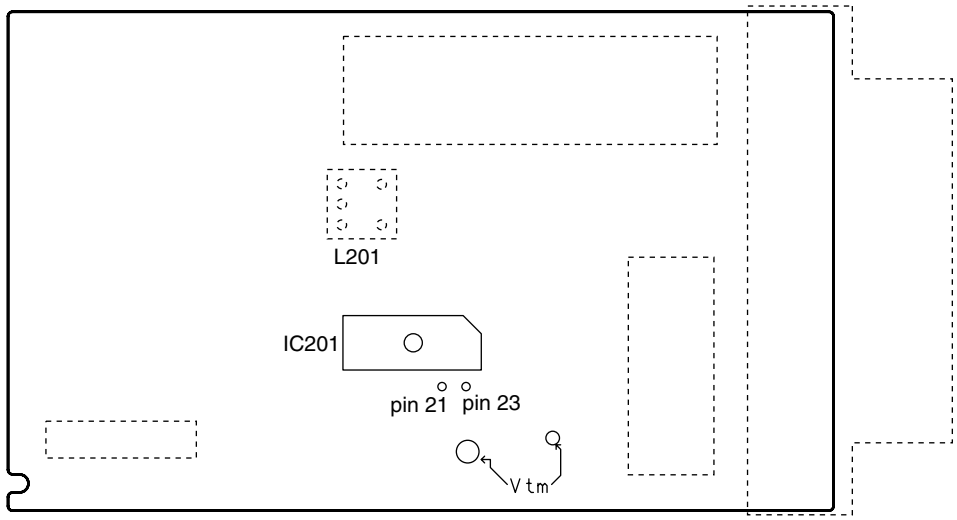


Fig.2 Adjustment Point

6.2 ADJUSTMENT ITEMS AND LOCATION

■ Adjustment Items

[Mechanism Part]

❶ Tangential and Radial Height Coarse Adjustment

❷ DVD Jitter Adjustment

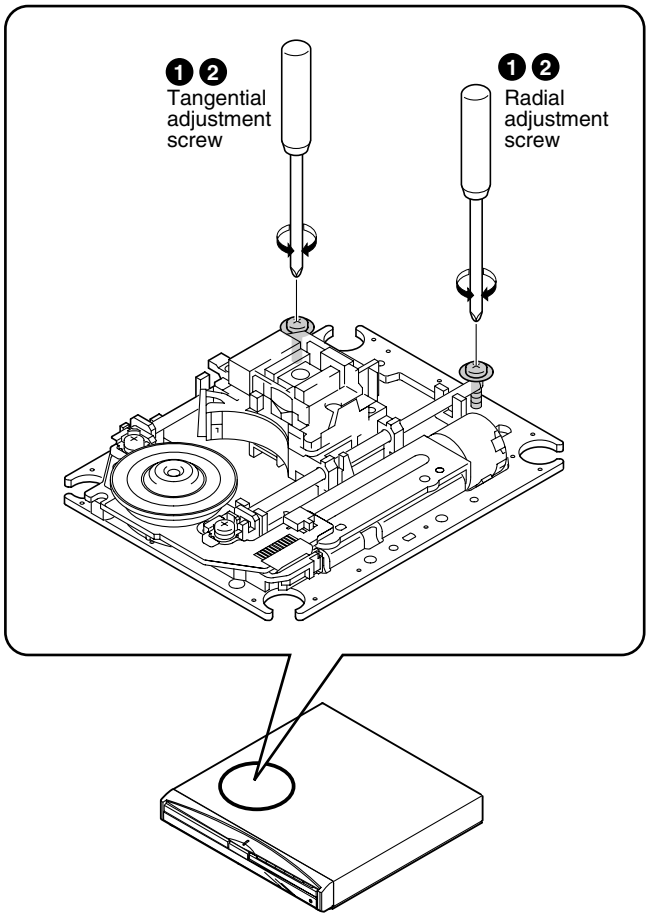
❸ Initialize the Focus Sweep Setting

[Electrical Part]

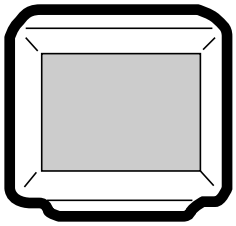
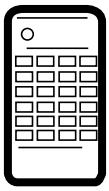
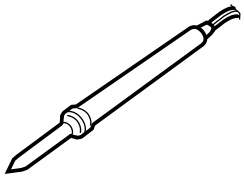
Electrical adjustments are not required.

■ Adjustment Points (Mechanism Part)

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



6.3 JIGS AND MEASURING INSTRUMENTS

 ⊕ Screwdriver (large)	 ⊕ Screwdriver (medium)	 TV monitor	 Test mode remote control unit (GGF1067)
 ⊕ Precise screwdriver	 DVD test disc (GGV1025)	 Soldering iron	Screw tight (GYL1001)

6.4 NECESSARY ADJUSTMENT POINTS

When

Adjustment Points

■ Exchange Parts of Mechanism Assy

When		Adjustment Points	
Exchange the Pickup	Mechanical point	❶, ❷, ❸	＊ After adjustment, screw locks with the Screw tight.
	Electric point	———	
Exchange the Traverse Mechanism	Mechanical point	❸	
	Electric point	———	
Exchange the Spindle Motor	Mechanical point	❷, ❸	＊ After adjustment, screw locks with the Screw tight.
	Electric point	———	

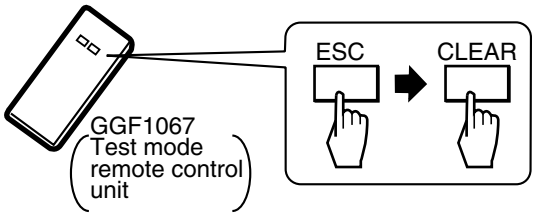
■ Exchange PCB Assy

When		Adjustment Points
Exchange PC Board LOAB and DVDM ASSY	Mechanical point	———
	Electric point	———

＊

Purpose: To set the sweep which was correct with the individual Traverse mechanism.

Be sure to perform the following step finally when replaced Pickup, Traverse Mechanism and Spindle Motor.

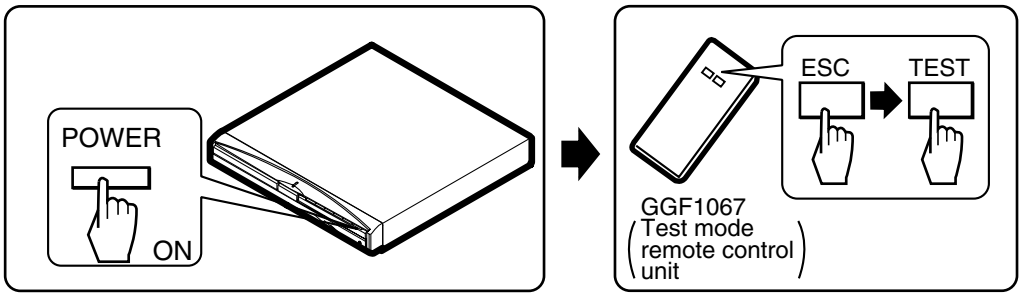


(It is necessary when performed adjustment procedure ❷.)

6.5 TEST MODE

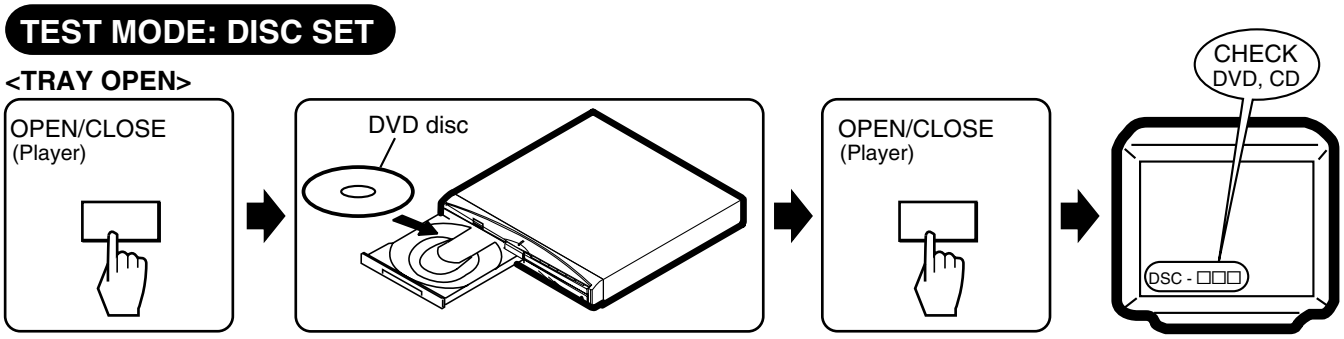
• The TEST MODE functions that are used only during adjustment are described here. For details, see "7.1.1 TEST MODE".

TEST MODE: ON



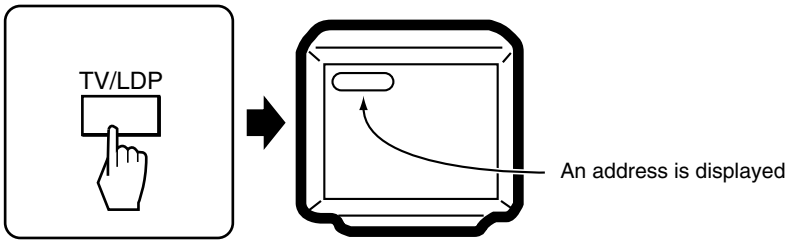
TEST MODE: DISC SET

<TRAY OPEN>



TEST MODE: PLAY

<PLAY>

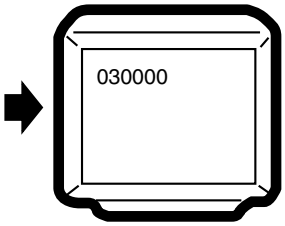


CAUTION:
Perform only trace, video and audio outputs are nothing.

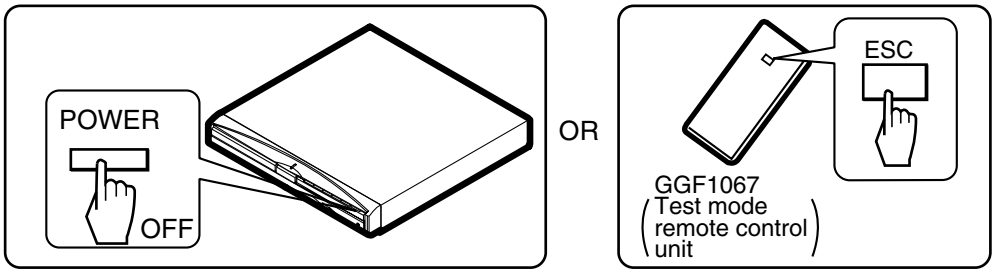
< When playback with the target address of disc (DVD)>

For example, when playback with # 30000

During PLAY [+10] ➡ [3] ➡ [0] ➡ [0] ➡ [0] ➡ [0] ➡ [CHP/TIM] Press keys in order



TEST MODE: OFF

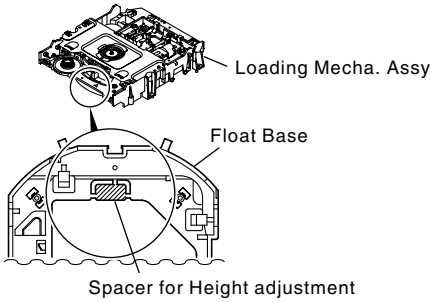


6.6 MECHANISM ADJUSTMENT

1 Tangential and Radial Height Coarse Adjustment

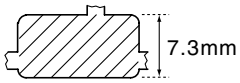
START

- Remove the Loading Mecha. Assy.
- Remove a Spacer for height adjustment attached to the back side (shaded area) of the Loading Mecha. Assy (Float Base) with nippers.

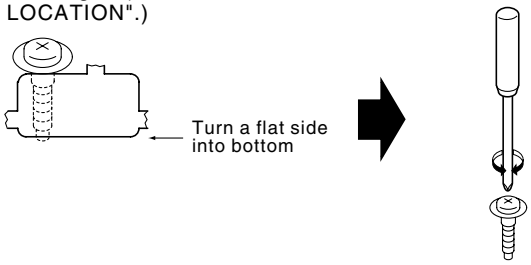


Note:
Before removing the flexible cable for the pickup, soldering of the pickup circuit is necessary.
For details, see "7.1.9 DISASSEMBLY".

Cautions:
Because there is not a Spacer for height adjustment in adjustment after the second time, will keep it at need.
(This parts is Traverse mechanism exclusive use of a model for 2003 years)



Put a spacer between a Tangential (or Radial) adjustment screw and Mechanism Base and turn each screw to adjust the height. (Refer to "6.1 ADJUSTMENT ITEMS AND LOCATION".)



❷ DVD Jitter Adjustment

- Playback method of inner and outer address for the purpose is refererd to "6.5 TEST MODE".
- Jitter indication of the monitor is refererd to "7.1.2 DISPLAY SPECIFICATION OF THE TEST MODE".

Use disc: GGV1025

START

- Test mode
- Play the DVD test disc at outer track (around #200000)

Mechanism Assy

Adjust the Tangential Adjustment Screw so that jitter becomes minimum.

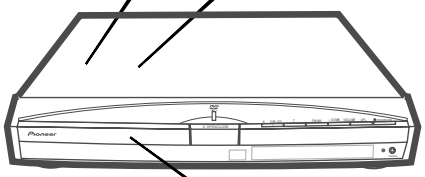
J : Min

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

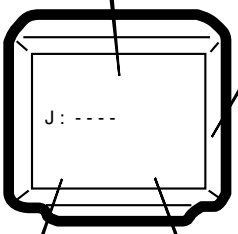
Mechanism Assy

Adjust the Radial Adjustment Screw so that jitter becomes minimum.

J : Min



Player



Monitor

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

Mechanism Assy

Readjust the Tangential Adjustment Screw so that jitter becomes minimum.

J : Min

CHECK

Confirm the error rate that is displayed "OK"

(Example ERROR RATE: 6.6oe - 6 OK)

NG

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

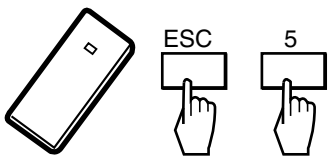
OK

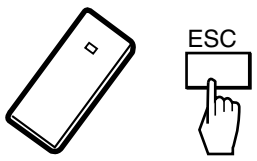
If error rate is OK, locks a root of tangential and radial adjustment screws with the Screw tight, and go to step ❸.

Screw tight: GYL1001

Disc playback normally.

- The measurement of block error rate

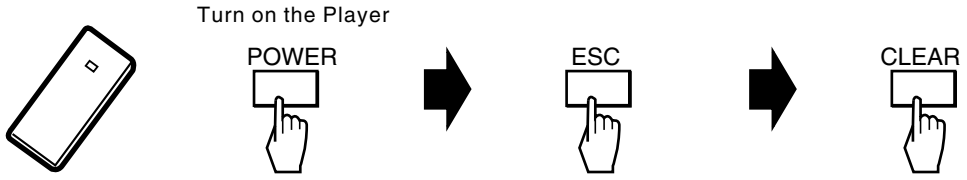




Test mode end

❸ Initialize the Focus Sweep Setting

Purpose: To set the sweep which was correct with the individual Traverse mechanism.



Note: Be sure to perform this step when replaced the Pickup or Traverse mechanism.

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 / RANDOM] (A8-5E) key in order of the Test mode remote control unit.

- Light the all FL and LEDs, and goes out the FL and LEDs when pressing the keys of something.
- OSD displays test mode. Refer to the "7.1.2 DISPLAY SPECIFICATION OF THE TEST MODE".

② Release the Test mode

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

③ Tray open / close

- Press the [REPEAT A-B] (A8 - 48) key of the remote control unit.
- Press the [OPEN / CLOSE] key of the main unit from the stop state.

④ Playback stop

1. Press the [REPEAT] (A8 - 44) key of the remote control unit from the playback state.
2. Press the [STOP] key of the remote control unit or main unit from the playback state.
   (Playback stops, but the loaded disc keeps rotating.)

⑤ LD ON

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

⑥ Focus on / sweep

1. Lock the focus by pressing the [TEST] (A8-5E) and [2] (A8-02) keys in order.
2. Repeat focus sweep by pressing the [TEST] (A8-5E) and [3] (A8-03) keys in order.

⑦ Spindle FG servo

CAV : Press the [TEST] (A8-5E) and [5] (A8-05) keys in order,then rise up the spindle and FG servo becomes on.
CLV : Press the [TEST] (A8-5E) and [9] (A8-09) keys in order,then rise up the spindle and FG servo becomes on.

⑧ Tracking open / close

1. Open tracking by pressing the [STEP FWD] (A8-54) key of the remote control unit in the play state.
2. Close tracking by pressing the [STEP REV] (A8-50) key of the remote control unit in the play state.

⑨ Slider servo on/off

1. Turn on the slider servo by pressing the [TEST] (A8-5E) and [CX] (A8-0E) keys in order.
2. Turn off the slider servo by pressing the [TEST] (A8-5E) and [TV/LDP] (A8-0F) keys in order.

⑩ Slider in / out

Slider in : In the tracking off state, press the [SCAN REV] (A8-11) key of the remote control unit.
Slider out : In the tracking off state, press the [SCAN FWD] (A8-10) key of the remote control unit.

⑪ Play (perform only the ID search and trace to the specified location)

Press the [TV/LDP] (A8-0F) key of the remote control unit from the stop state.
Perform only trace, video and audio outputs are nothing.

⑫ Screen display ON/OFF

1. Turn off the display by pressing the [AUDIO] (A8-1E) key of the remote control unit.
2. Turn on the display by pressing the [DISPLAY] (A8-43) key of the remote control unit.

⑬ Search

1. Search address input entry

- It becomes the address input mode when pressing the [+10] (A8-1F) key. (Most significant digit of an address displays "<".)
- In this time, display the last address as the initial state.

2. Search address input

- Press the [0] to [9] (A8-00 to 09) keys of the remote control unit. In the DVD, set an address with hexadecimal.
- In the address input mode, turn to the hexadecimal input by pressing the [PROGRAM] (A8-4C) key (display a "∗" mark), and [1] to [6] keys are each input as A to F.
- Hexadecimal input and decimal input can switch with toggle.
- In case of CD, perform only the absolute time search.

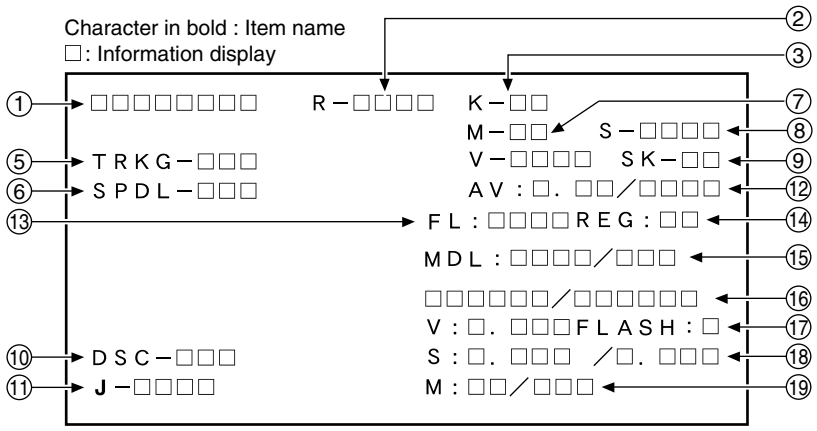
3. Search execution

- Press the [CHP/TM] (A8-13) key of the remote control unit.
- After the search, perform only trace and video and audio outputs are nothing.

4. Release the Search address input

- Clear the address by pressing the [CLEAR] (A8-45) key. Release the address input mode when pressing the [CLEAR] key once again.

7.1.2 DISPLAY SPECIFICATIONS 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 : A-TIME (min. sec.) [0 0 0 0 ＊＊＊＊]

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

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

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

⑥ **Spindle status [SPDL – ＊＊＊]**
[OFF], [ACC/BRK], [CAV], [CLV]

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

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

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

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

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

⑪ **Jitter value [J – ＊＊＊＊]**

⑫ **Version of the AV-1 chip / version of firmware [AV: ＊＊ / ＊＊＊＊＊＊＊＊]**

⑬ **Version of the FL controller [FL: ＊＊＊＊]**

⑭ **Region setting of the player [REG: ＊]**
Setting value : [1] to [6]

⑮ **Destination setting of the FL controller [MDL: ＊＊＊＊ / ＊＊＊]**
Four characters in the front represent the type of model.
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

⑯ **Part number of the flash ROM and system controller [＊＊＊＊＊＊ / ＊＊＊＊＊＊]**

⑰ **Version of the flash ROM [V: ＊. ＊＊＊]**
Flash ROM size [FLASH = ＊＊]

⑱ **Revision of the system controller [S: ＊. ＊＊＊ / ＊. ＊＊＊]**
version . revision / build number of the ST core

⑲ **Revision of the DVD mechanism controller [M: ＊＊ / ＊＊＊]**
Kinds of version / firmware of the FE.
RAM or ROM

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 resion / 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
Aspect : Pan scan		2	AF-A2
Aspect : Letter box		3	AF-A3
Aspect : Wide		4	AF-A4
Digital : AC3		5	AF-A5
Digital : AC-3 > PCM		6	AF-A6
Virtual surround : OFF	Only for models having the corresponding functions	7	AF-A7
Virtual surround : TruSurround		8	AF-A8
Digital output ON		REPEAT A	AF-E8
Digital output OFF		REPEAT B	AF-E4
DTS Digital output ON		STEP FWD	AF-B7
DTS Digtal output OFF		STEP REV	AF-B8
Scart terminal output : VIDEO	WY, models equipped with Scart terminal	AUDIO	AF-BE
Scart terminal output : S-VIDEO		SUBTITLE	AF-36
Scart terminal output : RGB		ANGLE	AF-B5
Progressive OFF	Only for progressive models	R_SKIP	A3-9D
Progressive ON		F_SKIP	A3-9C
Audio 5.1 CH ON	Only for models having the corresponding functions	KD_ENTER	AF-EF
FL indication of EDC / ID error		CX (∗1)	A8-0E
FL indication of ID number		STEREO (∗1)	A8-4A
ZOOM ON (X4)		ZOOM	AF-37
ZOOM OFF		< X3 (∗1)	A8-59
Service mode indication (error rate indication, etc.)		CHP/TIM (∗1)	A8-13
Model information indication		CHAP (∗1)	A8-40
Background color change		+10 (∗1)	A8-1F
Audio last stage mute ON		9	AF-A9
Audio last stage mute OFF		0	AF-A0
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		AUDIO (∗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/AV 1 Error, last eight errors)
Self-diagnosis functions (If a mechanical error has occurred, the mechanical-error history is also displayed.)

• 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 19 of the TEST MODE Indications are displayed. However, in the indications, S in the standard test mode is changed to B.E VERSION, and M is changed to F.E VERSION. For details, see 7.1.4.

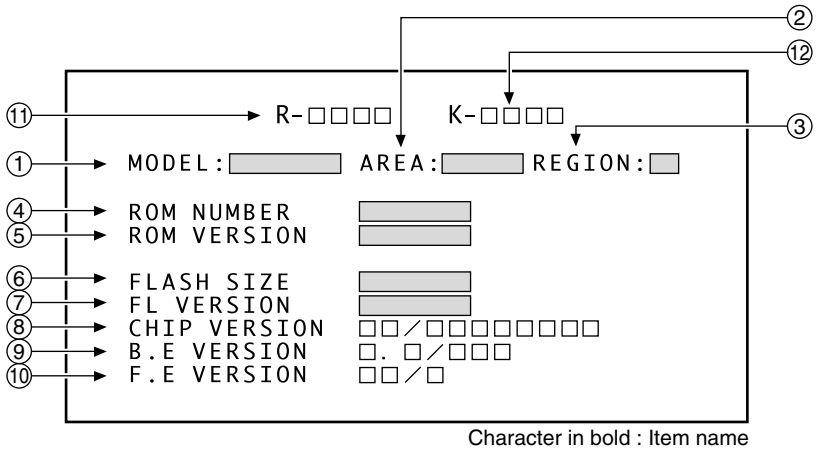
• Change of the background colors (ESC + "+10" [Test mode remote control unit] keys)
Every time the keys are pressed, the background color is changed between blue and green alternately.
(The green background is used in SETUP NAVIGATOR.)

• Region confirmation mode (ESC + AUDIO [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**



Character in bold : Item name
□: Information display

① **Model name**
Display it according to model information set from the FL controller.
② **Destination indication**
Display it according to model information set from the FL controller.
③ **Region No.**
④ **Part number**
⑤ **ROM version**
⑥ **Flash size**
⑦ **FL controller version**

⑧ **CHIP VERSION**
Version of ST CHIP
CUT ID / JTAG ID
(two columns) (eight columns)
⑨ **B.E VERSION**
Version of BACK END (version of ST core software)
□.□ /□□□
softwareVersion . softwareRevision / buildNumber
⑩ **F.E VERSION**
Version of FRONT END (version of mechanism controller CHIP software)
□□/ □
MainVersion / Kinds of firmware RAM or ROM
⑪ **Remote control code**
⑫ **Key code of Main unit**

7.1.5 FUNCTIONAL SPECIFICATION OF THE SERVICE MODE

• EDC / ID error FL display (shortcut function)

EDC/ID error is displayed on the FL display if you press the CX key while holding the ESC key on the TEST MODE remote control unit pressed. To quit while an EDC/ID error is displayed, press the ESC key.

FL display

00 /00 / 01 ∗

∗: Lights when an AV1 error was generated at least once.

Number of sites where an EDC or ID error was generated

Number of retrials while an ID error is being generated
(only displayed at the moment when an error is being generated),
and for the ST models, the number of retrials made for the latest ID error

Number of retrials while an EDC error is being generated
(only displayed at the moment when an error is being generated),
and the number of retrials made for the latest EDC error

• 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

∗∗ (∗∗∗∗)

Number of error rates

02: Indicates use of the same method as for the 02 models,
No indication: Indicates use of the method used for models before the 02 model

③ EDC/ID/AV1 error history (ID Address, EDC/ID/AV1 errors, last eight errors)

Description of AV1 errors
BIT0: In BE code, an EDC error, FEC I/F buffer overflow, or "not valid" is generated (B.E error)
BIT1: In BE code, the ID is different from that of the target (B.E error)
BIT2: An error was generated in FE-added 2-byte EDC data. (F.E error)

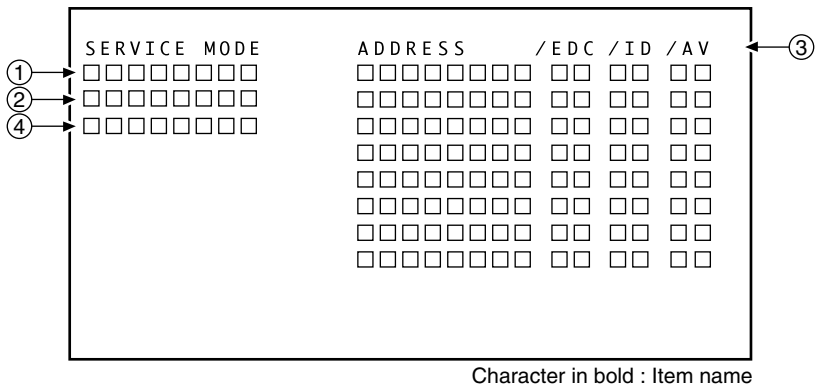
④ Self-diagnosis functions

Whether F.E is normal or not is checked.

FE OK: No abnormality in F.E

FE Error: Abnormality is recognized in F.E.
Pressing the CHP/TIM key again displays the mechanical error history. Each press of the CHP/TIM key changes the displays between the mechanical error history and the Service Mode display.
For details on the mechanical error history, refer to the addendum.

Indication plan contents



AV1 ERR	BIT 2	1	0
00	0	0	0
01	0	0	1
02	0	1	0
03	0	1	1
04	1	0	0
05	1	0	1
06	1	1	0
07	1	1	1

Character in bold : Item name
□: Information display

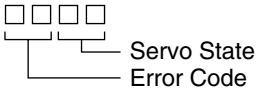
7.1.6 MECHANICAL ERROR HISTORY

■ Mechanical Error History

Only if a mechanical error (FE error) has been generated, a mechanical error history containing up to the last eight errors is displayed if you press the "ESC" + "CHP/TIM" key in Normal Mode.
Errors are displayed in descending order, with the latest one at the top.

Description of the mechanical error history

① Error number
The first two digits are for the error code, and the second two digits are for the servo state.

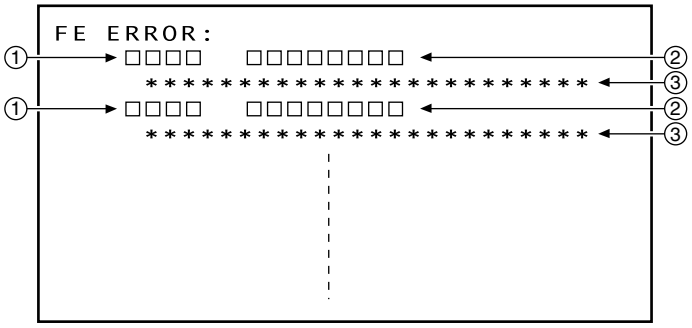


② Error number
The elapsed time from the time when the system was turned on until an error was generated is displayed.
Note: If a later error time is shorter than the previous error time, it means that the unit was turned off then on again.

③ Description of errors
Error messages are displayed.
Example: If the error code is 0x13 (Focus lost timeout) and the servo state is 0x05 (Disc judge), the message becomes "Focus lost timeout in Disc judge."

Note: When an error has been generated, if the servo state is "Disc judge," the disc tray opens, and if the servo state is other than "Disc judge," the unit stops (excluding a case of a device error with the error code 0xd∗).

Indication contents



• List of the error codes

FOCUS ERROR	0x0∗	**FOCUS TIMEOUT**	0x1∗
Focus on error	0x01	Focus on timeout	0x11
Focus off error	0x02	Focus off timeout	0x12
Focus lost error	0x03	Focus lost timeout	0x13
Focus balance adjust error	0x04	Focus balance adjust timeout	0x14
Focus gain adjust error	0x05	Focus gain adjust timeout	0x15
Focus sweep error	0x06	Focus sweep timeout	0x16
Focus reflection error	0x07	Focus reflection timeout	0x17
TRACKING ERROR	0x2∗	**TRACKING TIMEOUT**	0x3∗
Tracking on error	0x21	Tracking on timeout	0x31
Tracking off error	0x22	Tracking off timeout	0x32
Tracking lost error	0x23	Tracking lost timeout	0x33
Tracking balance adjust error	0x24	Tracking balance adjust timeout	0x34
Tracking gain adjust error	0x25	Tracking gain adjust timeout	0x35
STEPPING ERROR	0x4∗	**STEPPING TIMEOUT**	0x5∗
Stepping on error	0x41	Stepping on timeout	0x51
Stepping off error	0x42	Stepping off timeout	0x52
Stepping lost error	0x43	Stepping lost timeout	0x53
Stepping move error	0x44	Stepping move timeout	0x54
SPINDLE ERROR	0x6∗	**SPINDLE TIMEOUT**	0x7∗
Spindle on error	0x61	Spindle on timeout	0x71
Spindle off error	0x62	Spindle off timeout	0x72
Spindle lost error	0x63	Spindle lost timeout	0x73
Spindle CAV error	0x64	Spindle CAV timeout	0x74
Spindle CLV error	0x65	Spindle CLV timeout	0x75
ACQUISITION ERROR	0x8∗	**ACQUISITION TIMEOUT**	0x9∗
PLL lost error	0x83	PLL lost timeout	0x93
DECODER ERROR	0xa∗	**DECODER TIMEOUT**	0xb∗
ID lost error	0xa3	ID lost timeout	0xb3
DEVICE ERROR	0xd∗		
SRAM error	0xd1		

• List of the servo states

0x00	Reset
0x01	Stop (inside position)
0x02	Stop (any position)
0x03	Braking for stop
0x04	New disc
0x05	Disc judge
0x06	Reserved 1
0x07	Playing
0x08	Start up
0x09	Seeking
0x0A	Pausing
0x0B	Reading BCA
0x0C	Reserved 2
0x0D	
0x0E	Tray open
0x0F	Tray moving

Note : 0 x □□
code
(Only this part is displayed to a display)

ERROR CODE TABLE

Error Name	No.	Causes	Check Item	Possibility of Trouble	Remarks
FOCUS ERROR (0 x 0∗)					
Focus on error	0 x 01	Focus on could not be completed	Are not there a dirt or a scratch in the Disc? Does LD become weak? Does the lens move up and down?	1. Pickup 2. Driver 3. Front End IC	
Focus off error	0 x 02	Focus off could not be completed	Unknown		
Focus lost error	0 x 03	Focus servo is lost	Are not there a dirt or a scratch in the Disc? Does LD become weak?	1. Pickup	
Focus balance adjust error	0 x 04	AFB on could not be completed			
Focus gain adjust error	0 x 05	Focus AGC could not be completed			
Focus sweep error	0 x 06				
Focus reflection error	0 x 07	Dimensions of S curve did not reach to the aim value	Does LD become weak?	1. Pickup	
FOCUS TIMEOUT (0 x 1∗)					
Focus on timeout	0 x 11	Did timeout at focus on	Are not there a dirt or a scratch in the Disc? Does LD become weak? Does the lens move up and down?	1. Pickup 2. Driver 3. Front End IC	
Focus off timeout	0 x 12	Did timeout at focus off			
Focus lost timeout	0 x 13	Did timeout at focus backup			
Focus balance adjust timeout	0 x 14	Did timeout at AFB			
Focus gain adjust timeout	0 x 15	Did timeout at AGC			
Focus sweep timeout	0 x 16				
TRACKING ERROR (0 x 2∗)					
Tracking on error	0 x 21	Tracking on could not be completed		1. Pickup 2. Driver 3. Front End IC	
Tracking off error	0 x 22	Tracking off could not be completed			
Tracking lost error	0 x 23	Tracking servo is lost		1. Pickup	
Tracking balance adjust error	0 x 24	ATB could not be completed		1. Pickup	
Tracking gain adjust error	0 x 25	AGC could not be completed		1. Pickup	
Tracking jump error	0 x 26	Tracking jump could not be completed			
TRACKING TIMEOUT (0 x 3∗)					
Tracking on timeout	0 x 31	Did timeout at tracking on	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Driver 3. Front End IC	
Tracking off timeout	0 x 32	Did timeout at tracking off			
Tracking lost timeout	0 x 33	Did timeout at tracking backup	Are not there a dirt or a scratch in the Disc?	1. Pickup	
Tracking balance adjust timeout	0 x 34	Did timeout at ATB		1. Pickup	
Tracking gain adjust timeout	0 x 35	Did timeout at AGC		1. Pickup	
Tracking jump timeout	0 x 36	Did timeout at tracking jump			
STEPPING ERROR (0 x 4∗)					
Stepping on error	0 x 41	Stepping on could not be completed		1. Pickup 2. Driver 3. Front End IC	
Stepping off error	0 x 42	Stepping off could not be completed			
Stepping lost error	0 x 43	Stepping servo is lost			
Stepping move error	0 x 44	Stepping could not move	Do move to inner and outer periphery of the stepping in the test mode? Do indicate "S-04" at the most inner periphery of the stepping?	1. Stepping motor 2. Inside switch 3. Driver	
STEPPING TIMEOUT (0 x 5∗)					
Stepping on timeout	0 x 51	Did timeout at stepping on		1. Pickup 2. Driver 3. Front End IC	
Stepping off timeout	0 x 52	Did timeout at stepping off			
Stepping lost timeout	0 x 53	Did timeout at stepping backup			
Stepping move timeout	0 x 54	Did timeout at stepping movement	Do move to inner and outer periphery of the stepping in the test mode? Do indicate "S-04" at the most inner periphery of the stepping?	1. Stepping motor 2. Inside switch 3. Driver	

Error Name	No.	Causes	Check Item	Possibility of Trouble	Remarks
SPINDLE ERROR (0 x 6∗)					
Spindle on error	0 x 61	Spindle on could not be completed			
Spindle off error	0 x 62	Spindle off could not be completed			
Spindle lost error	0 x 63	Spindle lost control			
Spindle CAV error	0 x 64	CAV on could not be completed			
Spindle CLV error	0 x 65	CLV on could not be completed			
SPINDLE TIMEOUT (0 x 7∗)					
Spindle on timeout	0 x 71	Did timeout at spindle on			
Spindle off timeout	0 x 72	Did timeout at spindle stop			
Spindle lost timeout	0 x 73	Did timeout at spindle backup	Are not there a dirt or a scratch in the Disc? Is FG output from the driver?	1. Spindle motor 2. Spindle driver	
Spindle CAV timeout	0 x 74	Did timeout at CAV on	Is spindle rotating? Is FG output from the driver? Is the PDM output from L6315?	1. Spindle motor 2. Spindle driver 3. Front End IC	
Spindle CLV timeout	0 x 75	Did timeout at CLV on			
ACQUISITION ERROR (0 x 8∗)					
PLL lost error	0 x 83	PLL is lost	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Front End IC	
ACQUISITION TIMEOUT (0 x 9∗)					
PLL lost timeout	0 x 93	Did timeout at PLL backup	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Front End IC	
DECODER ERROR (0 x a∗)					
ID lost error	0 x a3	ID is not readable	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Front End IC	
DECODER TIMEOUT (0 x b∗)					
ID lost timeout	0xb3	Did timeout at ID backup	Are not there a dirt or a scratch in the Disc?	1. Pickup 2. Front End IC	
DEVICE ERROR (0 x d∗)					
SRAM error	0 x d1	Cannot access SRAM	Power supply of SRAM Is not bus line short-circuiting?	1. SRAM 2. Front End IC 3. Front End-SRAM bus line	
FAILSAFE (0 x e∗)					
Unexpected error	0 x e1	Unexpected error		1. software runaway 3. Software bug	

■ Protection Specifications and Service Mode

• Protection Specifications

The system microcomputer (CONTRL Assy IC5501) for this unit always monitors if abnormality of the power is generated, and as soon as an abnormality is detected shuts off the power. The specifications of the microcomputer terminal for monitoring are as follows:

Name of microcomputer terminal		XPROTECT (Pin 22)	VDET (Pin 17)
Monitoring item		Abnormality of AMP-system power Short-circuiting of the SP terminal, etc.	Abnormality of power inside the DVDM Assy
Voltage at terminal	In normal conditions	0.71× Vdd∗ or more	0.5 Vdd-0.85 Vdd∗
	In abnormal conditions	0.36×Vdd–0.71× Vdd∗	
	In failure	0.36×Vdd∗ or less	0.85 Vdd∗ or more 0.5 Vdd∗ or less
Monitoring start time		1.5 sec after power is turned on	1.5 sec after power is turned on
Time required for determining abnormality		0.5 sec after detection	0.5 sec after detection

∗Vdd = Approx. 5 V (depending on the unit)

In abnormal conditions or in failure, the TIMER LED flashes after the power is shut off. If the power was shut off because of an abnormality, it can be turned on by pressing the STANDBY/ON key. However, if the power was shut off because of failure, **for one minute after a shutdown the STANDBY/ON key is disabled in order to protect against possible ignition of fumes.** If the AC power cord is pulled out during this one minute of standby, when the AC power cord is reconnected, the STANDBY/ON key will still be disabled until the remaining seconds have elapsed.

This unit has Service Test mode for analyzing the above power abnormality. Its specifications are as follows:

1. Specific conditions for Service Test mode

- VDET is neglected.
- XPROTECT is neglected.
- **Even if the unit is urgently shut down in failure in Normal mode, you can turn it on without waiting for one minute.**

2. How to enter Service Test mode

- While connecting STEST port (IC5501 Pin43) to "+5V", connect AC power cord. (See next page.)

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

- To quit Service Test mode, turn the power off or disconnect the AC power cord.
- When quitting Service Test mode, only data on protection in RAM are cleared.

4. Indications when Service Test mode starts

- Indications on the FL display when Service Test mode starts differ depending on whether the unit was turned off normally or if the unit was urgently shut down because the abnormality of the power, as described below.

[After the power is turned off normally]

FL display `Welcome!` ⇩
FL display `Volume 0` ⇩
FL display `DV SERVICE`

[After the power is shut down because of an abnormality in the AMP system]

FL display `PRTCT WNG` ⇩
FL display `Volume 0` ⇩
FL display `DV SERVICE`

[After the power is shut down because of a failure in the AMP system]

FL display `PRTCT ERR` ⇩
FL display `Volume 0` ⇩
FL display `DV SERVICE`

[After the power is shut down because of a failure in the DVD system]

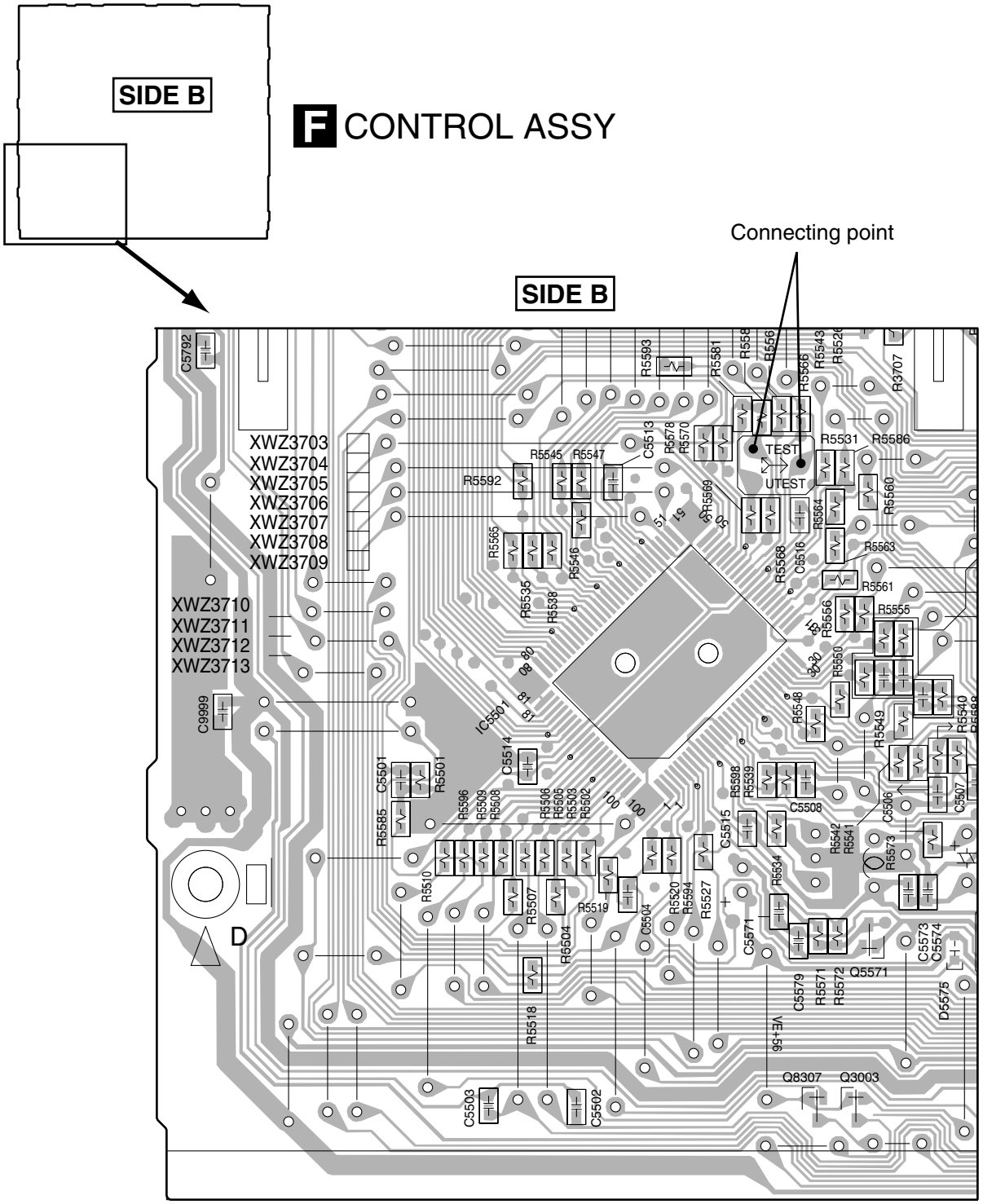
FL display `DVD PRTECT` ⇩
FL display `Volume 0` ⇩
FL display `DV SERVICE`

5. Operations during Service Test mode

- Basically, operations in Service Test mode are the same as in Normal mode. However, to clarify that it is in Service Test mode, during this mode, when functions are changed, the indications on the FL display become as follows:

[Functions]	[Indications on the FL display]	[Functions]	[Indications on the FL display]
DVD/CD	`DV SERVICE`	LINE2	`L2 SERVICE`
TUNER	`TX SERVICE`	TV	`TV SERVICE`
LINE1	`L1 SERVICE`		

■ Service Test mode connecting point



7.1.7 ID NUMBER AND 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. The following operations are all made with the TEST MODE remote control unit (GGF1067).

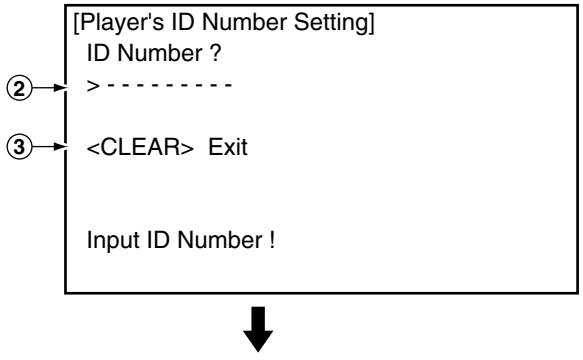
■ ID Number Input Mode

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.

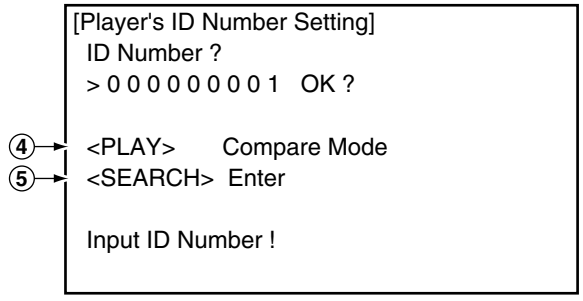
③ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.



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.

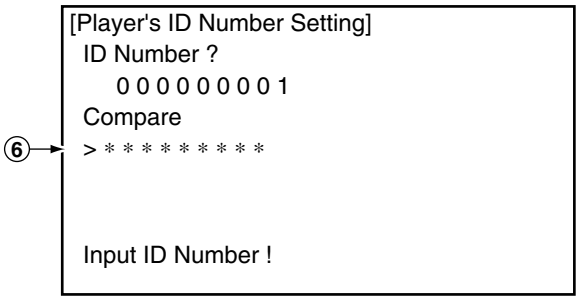
Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ② without doing anything else.

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.)



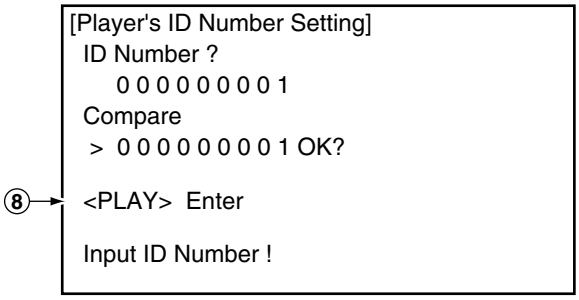
⑥ This display appears when the PLAY key is pressed in Step 4. Enter a 9-digit number to compare. The number is also displayed on the FL display.

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.



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.



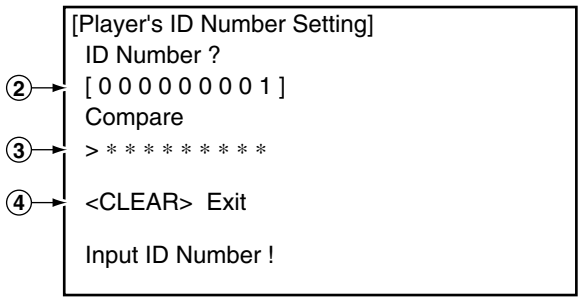
ID Number Confirmation Mode

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.)

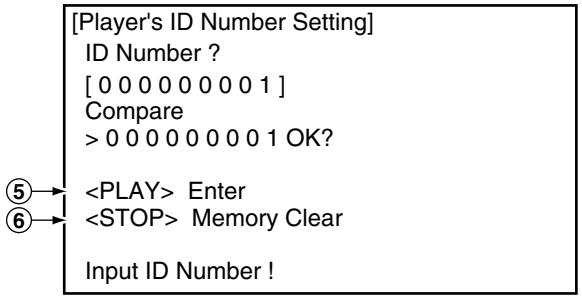
④ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.



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.

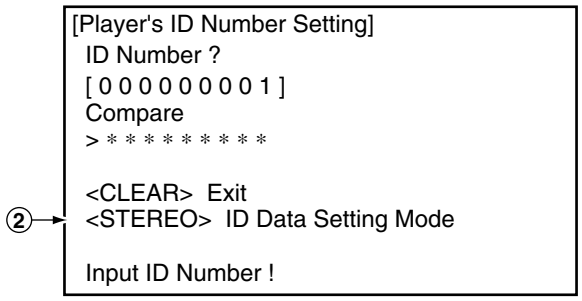
• Indication when no ID number is set

If no ID number is set, the message "No ID Number!" 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

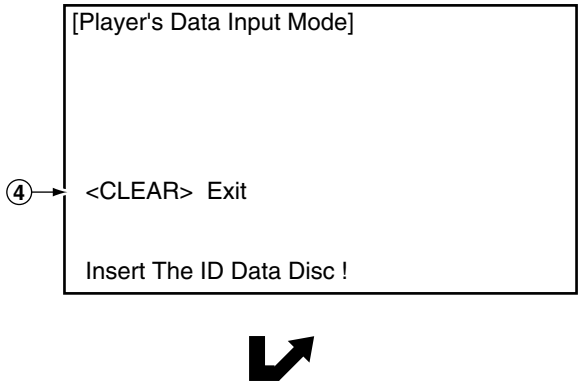
① To enter ID DATA Input Mode, with the ID number set, press the ESC key then the STEREO key.

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



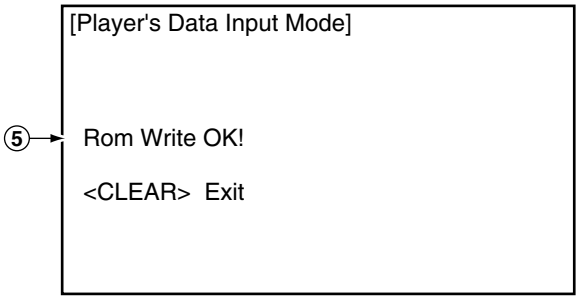
③ If the DVD DATA DISC (GGV1085) is loaded in this mode, the unit automatically starts reading the data.
(If the ID DISC has already been loaded, the unit does not start reading the data. In this case, open then close the tray.)

④ To exit this mode, press the CLEAR key. While data are being read from the DVD DATA DISC (GGV1085), you cannot exit this mode.

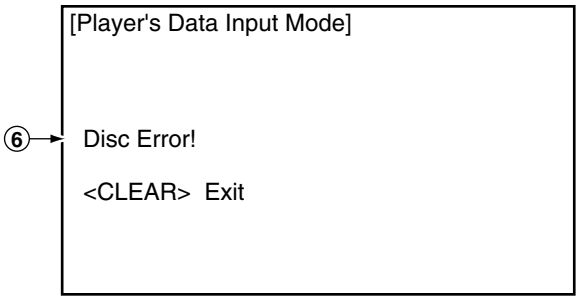


⑤ When writing of the data read from the disc to flash ROM is completed, "Rom Write OK!" is displayed. After seeing this message, you can exit this mode by pressing the CLEAR key.

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 ID DATA" flashes on the screen and FL display for a few seconds after the power is turned on or during Stop mode.

7.1.8 TROUBLE SHOOTING

Microcomputer Section (CONTROL Assy : IC5501)

Symptom	Possible Cause	Check Method
• The unit cannot be turned on.	The microcomputer was not reset.	Check if the level of the terminal XRESET (Pin 8) is "H." If it is not, check the RESET circuit.
	The AC pulse is not input.	Check if the AC pulse is input to Pin 4 of the AC input terminal. If it is not, check the AC pulse generation circuit.
	The oscillation circuit of the microcomputer does not function.	The microcomputer or the oscillation circuit is broken. Change the microcomputer or the oscillation circuit.
The unit shuts itself off soon after it is turned on.	• If the Function is DVD, the voltage of the VDET input (Pin 17) is either 0.5 Vdd* or less or 0.85 Vdd* or more. • The voltage of the PROTECT input (Pin 22) is 0.71 Vdd* or less.	If the voltage at Pin 17 of the VDET terminal of the microcomputer is either 0.5 Vdd or less or 0.85 Vdd or more, adjust so that it stays between 0.5 and 0.85 Vdd.
• DVD does not operate at all. • Time is not displayed in FL display during DVD function.	Communication with the DVD microcomputer has not been established.	• Check that the terminal (Pins 23-25, 29, and 30) for communication with the DVD microcomputer is live, and if it is not, check if the flexible cable is disconnected. • Check if an "H" signal is output to Pin 93 of the XDVDRST terminal.
All operation keys are disabled.	The unit recognizes that an operation key has already been pressed.	If no operation key has been pressed, check if the voltage at Pins 18 of the KEY input terminal is 5 V. If it is not, check if the operation switch on the line is in failure.

* Vdd= Approx. 5V (depending on the unit)
ex.) 0.85Vdd= 0.85 × 5 (V)
= 4.25 (V)

DVD Section

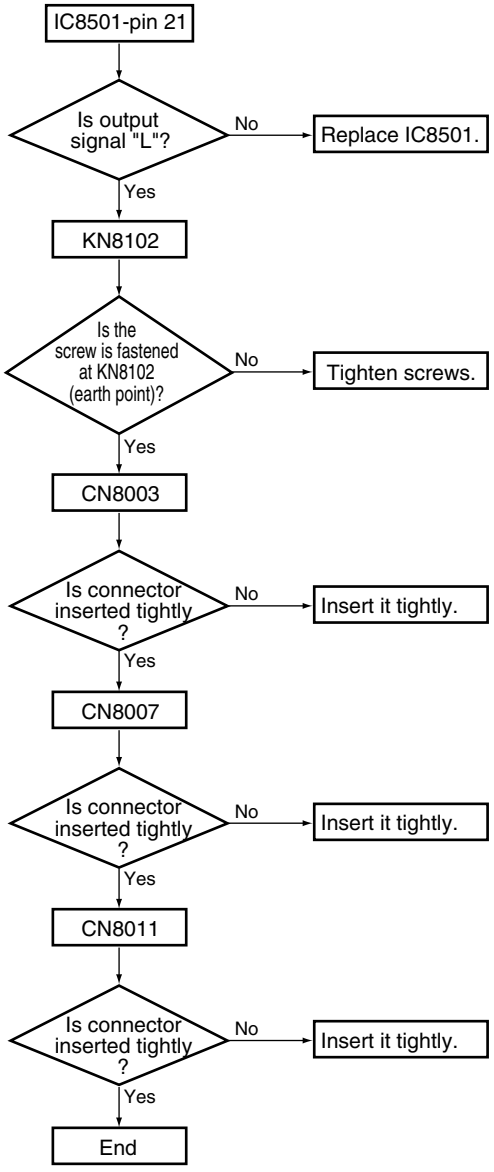
No.	Symptoms	Diagnosis Contents	Possible Defective Points
1	An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.)	Is the level at both IC5501-pin 93 (XDVDRST) and pin 1(DVD ON/OFF) on the CONTROL Assy "H" ?	µcom (CONTROL IC5501)
		Check the voltage of CN901-pin 28 and 29 (VPR+8) on the DVDM Assy.	DVDM Assy CN901
		Check that the following voltages are output : IC411-pin 3 : 1.8V, IC421-pin 3 : 1.8V and IC431-pin 1 : 5V on the DVDM Assy	Each regulator on the DVDM Assy
		Are resonators (27MHz, 20MHz) on the DVDM Assy oscillating ?	Crystal resonator (DVDM Assy X601 and X301)
		Refer to contents of an FE error displayed on the FL display. (SRAM defectiveness, I2C communication line defectiveness, etc.)	FRONT END IC (DVDM IC301)
		• Is a signal input into IC601-pin 132 (CE3) on the DVDM Assy ? (Is a signal fluctuating for several seconds after the power is turned on ?) → Communication with flash ROM • Are the signals input into IC602-pin 16 (SMIWE), pin 19 (SMICS0) and pin 38 (SMICLK) on the DVDM Assy ? (Is a signal fluctuating ?) → Communication with flash ROM	• BACK END IC (DVDM IC601) • Flash ROM (DVDM IC603) • 64M SDRAM (DVDM IC602)
		Is a signal output from IC603-pin 28 (CPU_OE) on the DVDM Assy? (Is a signal fluctuating for several seconds after the power is turned on ?)	• BACK END IC (DVDM IC601) • Flash ROM (DVDM IC603)
		Is a signal input into IC5501-pin 67 (DVDACK) on the CONTROL Assy ? (Is a signal fluctuating ?)	µcom (CONTROL IC5501)
		Is a signal output from IC5501-pin 29 and 30 (SYS_1, 2) on the AF Assy ? (Is a signal fluctuating in the range of 0-5V ?)	µcom (CONTROL IC5501)
		Are the signals output from IC5501-pin 23, 24 and 25 on the CONTROL Assy? (in the range of 0-5V)	µcom (AF IC5501) – BACK END IC (DVDM IC601) communication line
2	An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.)	Check the video signal path between BACK END IC (DVDM IC601) and video-out terminal (see the block diagram)	DVDM Assy • Video circuit • after BACK END IC (IC601)
3	A tray cannot be opened. (An opening screen is displayed on the monitor)	• Are wires of CN103 on the DVDM Assy disconnected or damaged ?	Connector / wire LOADING SW (LOAB S101)
		• Is a LOAD-DRVC signal reaching ? • Does the voltage of CN105 pin 1 change by pressing the Inside switch.	BACK END IC (DVDM IC601) Inside switch

No.	Symptoms	Diagnosis Contents	Possible Defective Points
4	Playback impossible (no focusing)	Are the signals output from IC101-pin 34 (F_DRV) and pin 35 (F_RTN) on the DVDM Assy ?	FTS Driver IC (DVDM 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
		Is flexible cable of CN101 on the DVDM Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC301-pin 33 (FACT) on the DVDM Assy ? (Device control of about 2.6 V is output usually. It is fluctuated by about ± 100 mV with focus up / down.)	FRONT END IC (DVDM IC301)
5	Playback impossible (Spindle does not turn)	Are the signals output from IC101-pin 12 (A3), pin 13 (A2) and pin 14 (A1) on the DVDM Assy ? Is pin 41 fixed LOW and is pin 38 fixed HIGH ?	FTS Driver IC (DVDM 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 CN105 (DVDM Assy) disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC301-pin 44 (SPDL_PDM) on the DVDM Assy ?	FRONT END IC (DVDM IC301)
6	Playback impossible (Playback stops)	Does 650-nm LD deteriorate ? If the voltage at both ends of R201 on the DVDM Assy is 0.7 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 both ends of R211 on the DVDM Assy is 1.5 V or more, the 780-nm LD is definitely deteriorated.	780-nm LD deteriorated. (When playback of CD is impossible)
		Is there abnormality in FG waveform ?	FG output : FTS Driver IC (DVDM IC101)
		Are there scratches or dirt on the disc ?	Disc
7	Picture disturbance during playback (block noise, freeze, other)	Are there scratches or dirt on the disc ?	Disc
		Is there a problem with the format of the disc?	Disc
8	No sound (Picture is normal)		
		Is signal output from DOUT signal (CN901-pin 21) on the DVDM Assy ?	DVDM CN901-pin 21

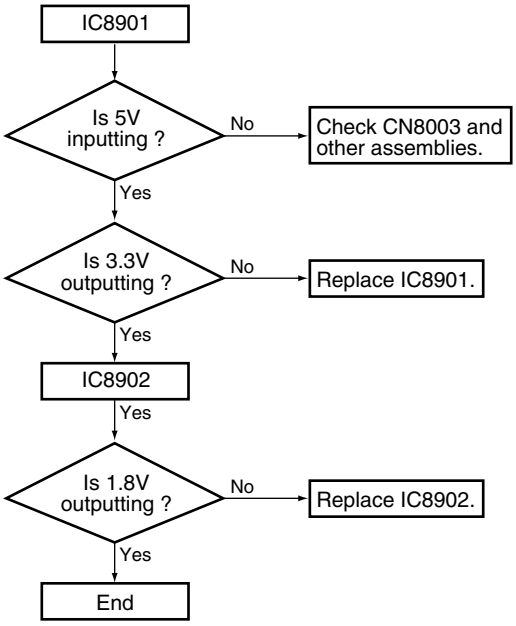
7.1.9 DSP TROUBLE SHOOTING

- When a sound is not out in the surround mode with the digital signal input.
- Suppose C,R parts to be poor contact and that is not damaged.
- This shows failure analysis of DSP Assy.

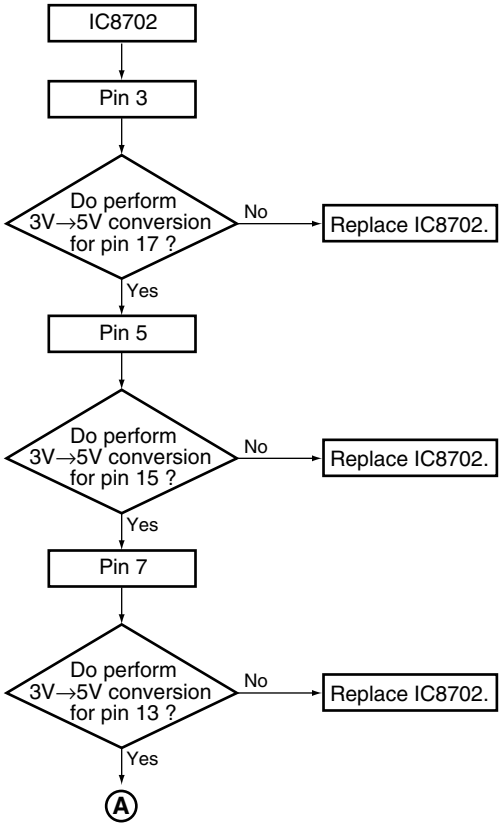
Step 1

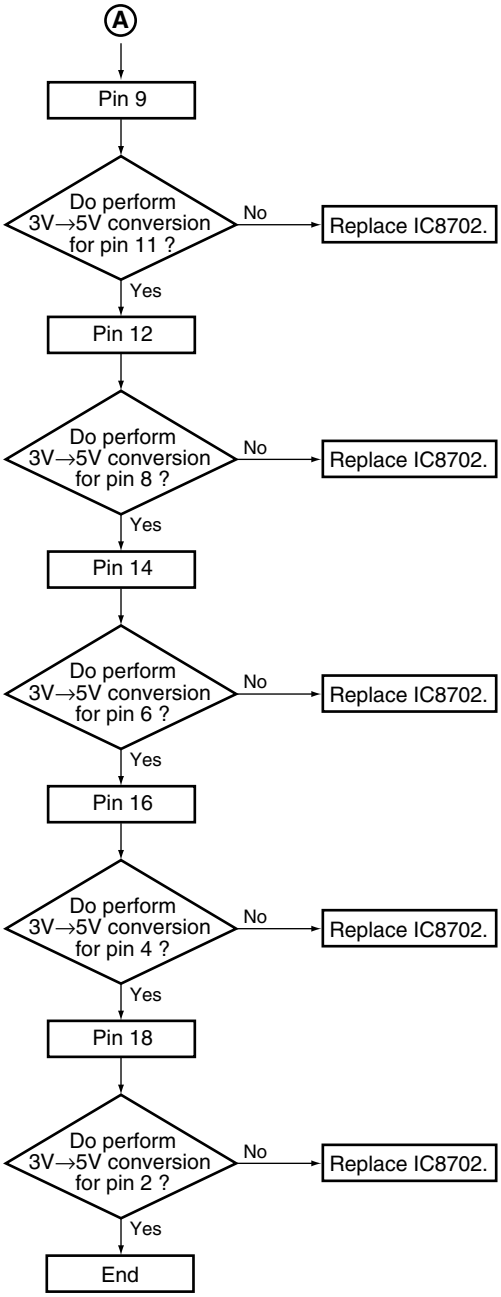


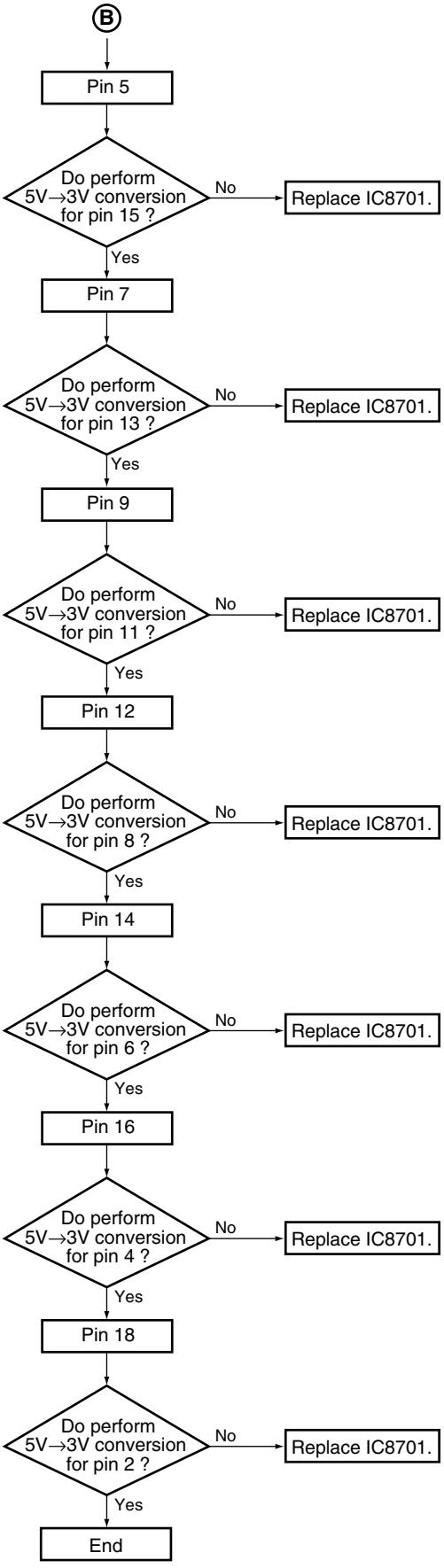
Step 2



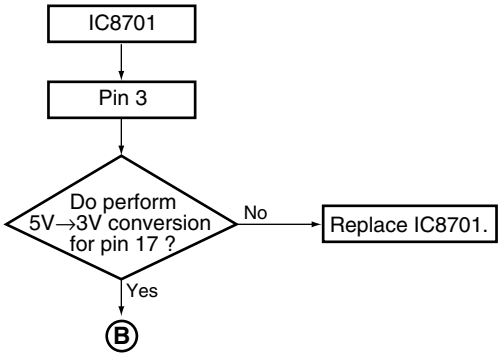
Step 3



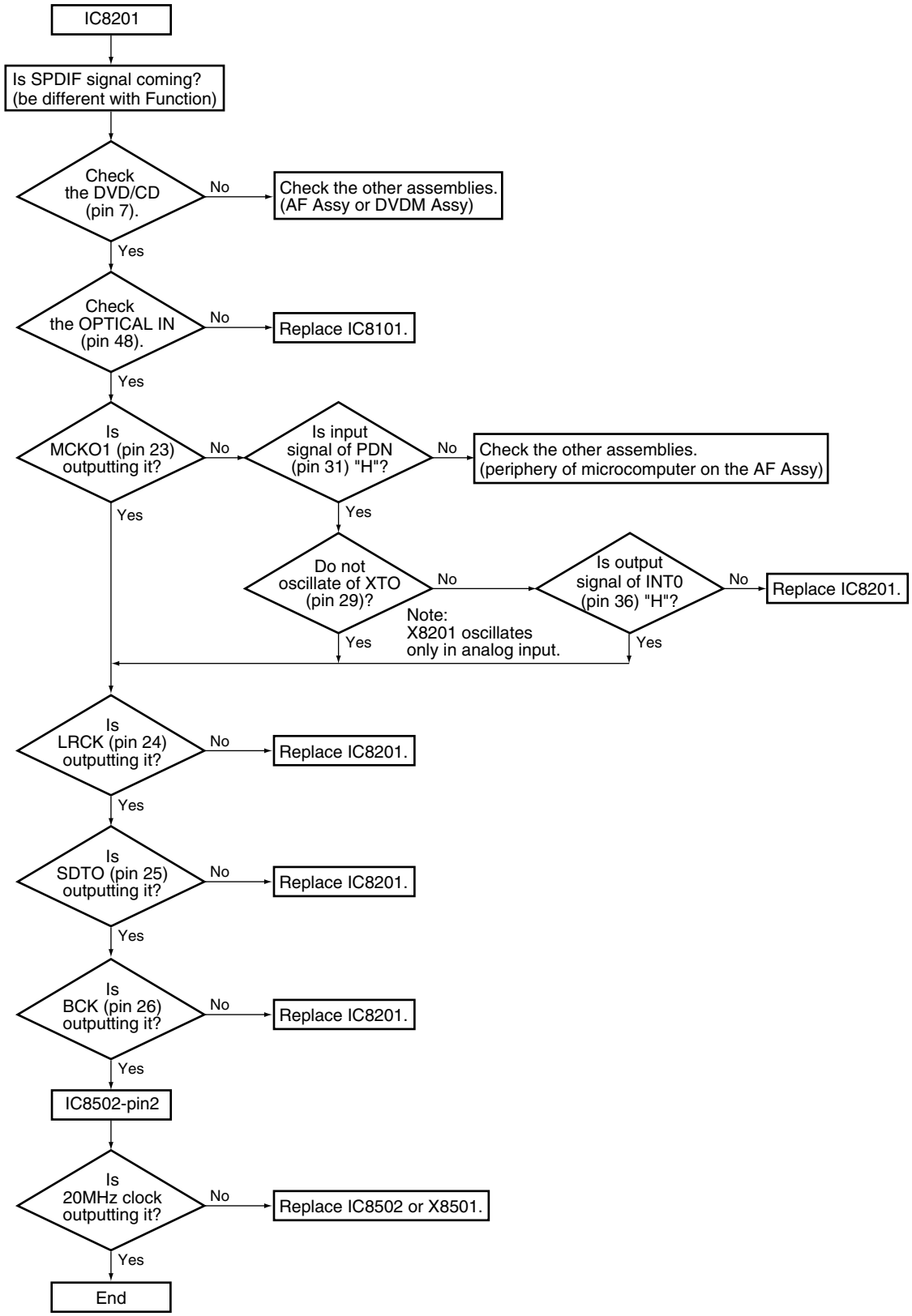

A
Pin 9
Do perform 3V→5V conversion for pin 11 ?
No
Replace IC8702.
Yes
Pin 12
Do perform 3V→5V conversion for pin 8 ?
No
Replace IC8702.
Yes
Pin 14
Do perform 3V→5V conversion for pin 6 ?
No
Replace IC8702.
Yes
Pin 16
Do perform 3V→5V conversion for pin 4 ?
No
Replace IC8702.
Yes
Pin 18
Do perform 3V→5V conversion for pin 2 ?
No
Replace IC8702.
Yes
End


B
Pin 5
Do perform 5V→3V conversion for pin 15 ?
No
Replace IC8701.
Yes
Pin 7
Do perform 5V→3V conversion for pin 13 ?
No
Replace IC8701.
Yes
Pin 9
Do perform 5V→3V conversion for pin 11 ?
No
Replace IC8701.
Yes
Pin 12
Do perform 5V→3V conversion for pin 8 ?
No
Replace IC8701.
Yes
Pin 14
Do perform 5V→3V conversion for pin 6 ?
No
Replace IC8701.
Yes
Pin 16
Do perform 5V→3V conversion for pin 4 ?
No
Replace IC8701.
Yes
Pin 18
Do perform 5V→3V conversion for pin 2 ?
No
Replace IC8701.
Yes
End

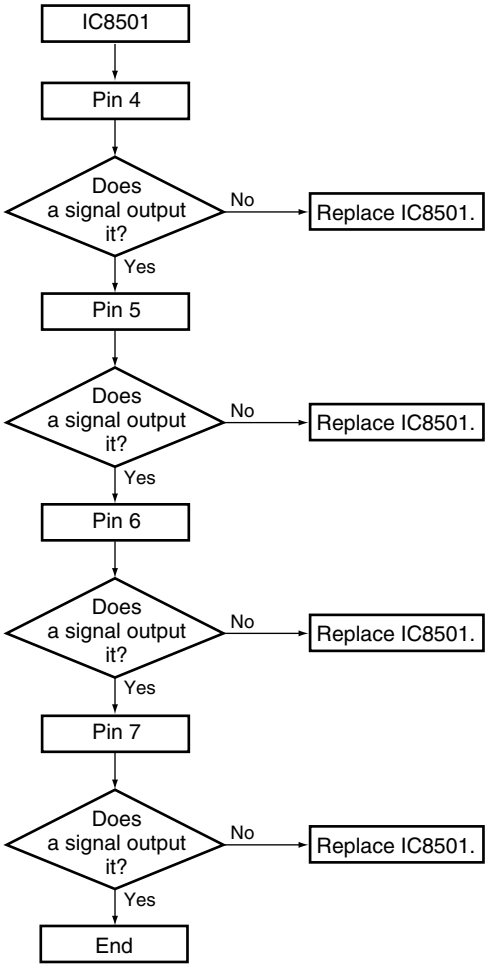
Step 4


IC8701
Pin 3
Do perform 5V→3V conversion for pin 17 ?
No
Replace IC8701.
Yes
B

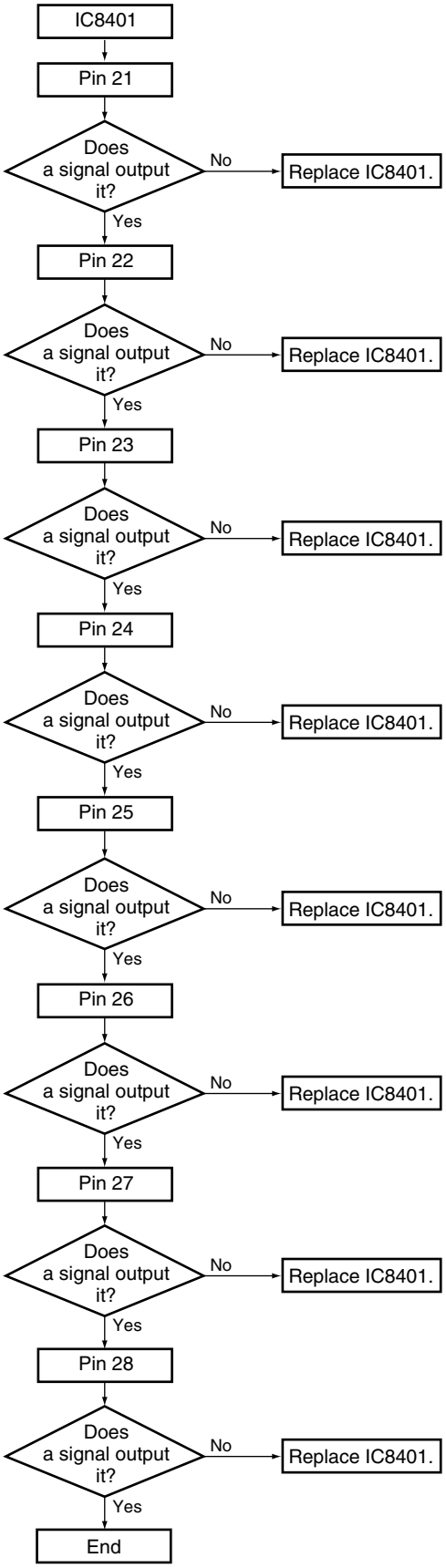
Step 5


IC8201
Is SPDIF signal coming? (be different with Function)
Check the DVD/CD (pin 7).
No
Check the other assemblies. (AF Assy or DVDM Assy)
Yes
Check the OPTICAL IN (pin 48).
No
Replace IC8101.
Yes
Is MCKO1 (pin 23) outputting it?
No
Is input signal of PDN (pin 31) "H"?
No
Check the other assemblies. (periphery of microcomputer on the AF Assy)
Yes
Yes
Do not oscillate of XTO (pin 29)?
No
Is output signal of INT0 (pin 36) "H"?
No
Replace IC8201.
Note: X8201 oscillates only in analog input.
Yes
Yes
Is LRCK (pin 24) outputting it?
No
Replace IC8201.
Yes
Is SDTO (pin 25) outputting it?
No
Replace IC8201.
Yes
Is BCK (pin 26) outputting it?
No
Replace IC8201.
Yes
IC8502-pin2
Is 20MHz clock outputting it?
No
Replace IC8502 or X8501.
Yes
End

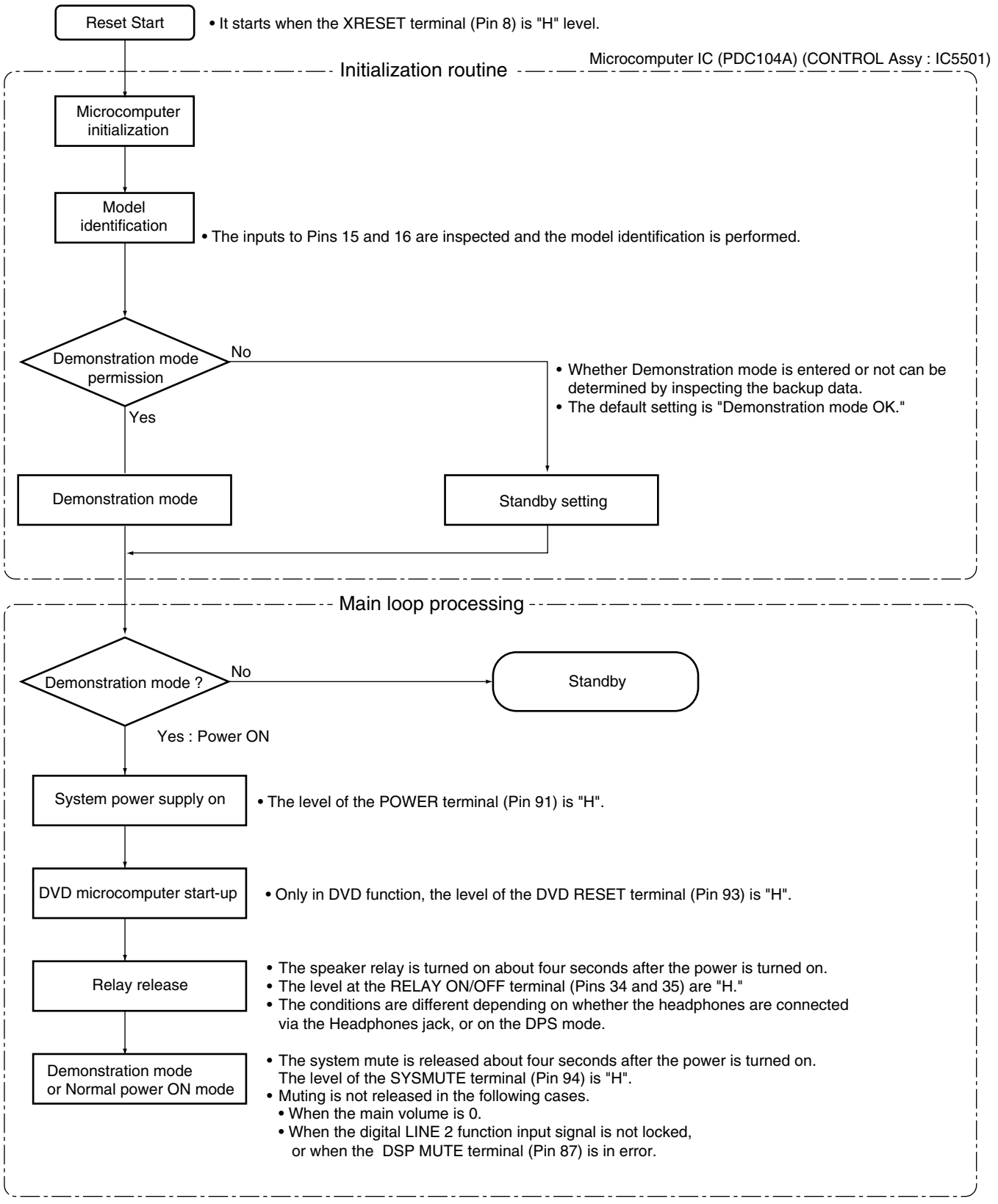
Step 6


IC8501
Pin 4
Does a signal output it?
No
Replace IC8501.
Yes
Pin 5
Does a signal output it?
No
Replace IC8501.
Yes
Pin 6
Does a signal output it?
No
Replace IC8501.
Yes
Pin 7
Does a signal output it?
No
Replace IC8501.
Yes
End

Step 7


IC8401
Pin 21
Does a signal output it?
No
Replace IC8401.
Yes
Pin 22
Does a signal output it?
No
Replace IC8401.
Yes
Pin 23
Does a signal output it?
No
Replace IC8401.
Yes
Pin 24
Does a signal output it?
No
Replace IC8401.
Yes
Pin 25
Does a signal output it?
No
Replace IC8401.
Yes
Pin 26
Does a signal output it?
No
Replace IC8401.
Yes
Pin 27
Does a signal output it?
No
Replace IC8401.
Yes
Pin 28
Does a signal output it?
No
Replace IC8401.
Yes
End

7.1.10 SEQUENCE AFTER POWER ON



- If no pulse is input to the AC terminal (Pin 4) for about 60 msec when the microcomputer is in Memory Backup mode, it will not do any processing.
- The unit will recover from Memory Backup mode if a reset command is input to the XRESET terminal (Pin 8).

7.1.11 PROTECTION CIRCUIT

If the TIMER LED on the front panel flashes, check the protection circuit.
Note: If the protection circuit activates, the unit will not recover for 60 seconds even if the AC power cord is disconnected then reconnected.
If you activate Service Test mode, the protection circuit becomes invalid, which makes diagnosis easy. (To activate Service Test mode, while connecting STEST port (IC5501 Pin43) to "+5V", connect AC power cord.)
There are three types of operations for the protection circuit, which are indicated on the FL display when Service Test mode is entered:

PRTCT WNG: The unit was shut down because of an abnormality in the AMP system. (The PROTECT line operates at the MID level.)
PRTCT ERR: The unit was shut down because of a failure in the AMP system. (The PROTECT line operates at the LO level.)
DVD PRTECT: The unit was shut down because of a failure in the DVD system. (The VDET line operates at the HI or LO level.)

■ Conditions for the protect circuit operations

	Voltage		Conditions	FL display in Service Test mode
PROTECT	HI level	>3.55V	Normal	
	MID level	1.8V - 3.5V	The unit is shut down because of an abnormality.	PRTCT WNG
	LO level	<1.8V	The unit is shut down because of a failure.	PRTCT ERR
VDET	HI level	>4.25V	The unit is shut down because of a failure.	DVD PRTECT
	MID level	3.3V	Normal	
	LO level	<2.5V	The unit is shut down because of an abnormality.	DVD PRTECT

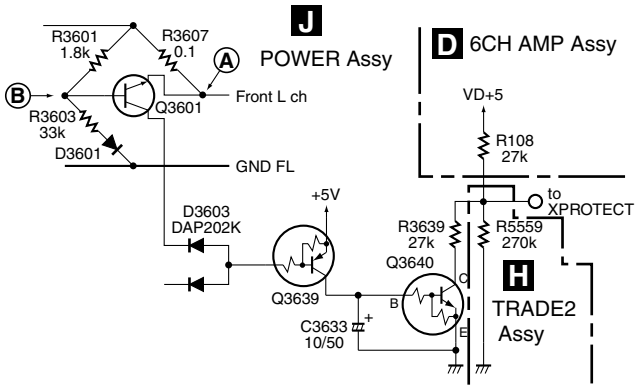
The possible failures for each error message are as follows:
PRTCT WNG:
- The Speaker terminal became overloaded because of short-circuit. (See ①.)

PRTCT ERR:
- The main power supply became LO level because of short-circuit or disconnection of connectors. (See ②.)
- Disconnection of the FAN connector or interruption of rotation of the fan (See ③.)
- DC was generated at the output because of a failure in the AMP system, etc. (See ④.)
- Abnormal temperature was detected by the thermistor. (See ⑤.)

DVD PRTECT:
- An error was generated in the main power supply inside the DVDM. (See ⑥.)

■ Protection circuit that activates against a PRTCT WNG error

① When the Speaker terminal becomes overloaded



In Normal mode, the speaker (6 ohms) is connected between the FL and GND FL points. Because the voltage at Point Ⓐ is higher than that at Point Ⓑ, Q3601 does not operate.

If the resistance between the FL and GND FL points becomes 1.83 ohms or less, Q3601 begins to operate, Q3639 is turned on, Q3640 (E, C, and B)is turned on, and the level of XPROTECT becomes MID.

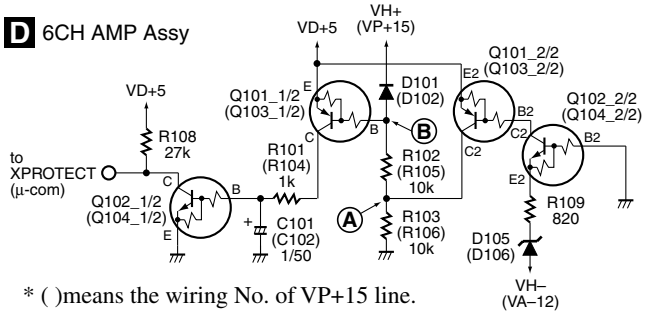
→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

■ Protection circuit that activates against a PRTCT ERR error

② When the main power supply becomes LO level because of short-circuit or disconnection of connectors

② -1 Short-circuit-detection circuit for the amplifier power circuit (VH+[VP+15], VD+5, -12 V [VA-12])

Circuit for shutting the power off when VP+15, VD+5, or VA-12 is short-circuited to ground (GND)



* ( )means the wiring No. of VP+15 line.

- In Normal mode, as Q101 (Q103) (E2, B2, C2) and Q102 (Q104) (E2, B2, C2) are on, the voltage at Point Ⓐ is about 5 V. The voltage at Point Ⓑ is therefore about the same. As Q101 (Q103) (E, C, B) is off, Q102 (Q104) (E, C, B) is also off.

(1) When VH+(VP+15) is short-circuited to GND

As the voltage at Point Ⓑ becomes almost ground potential, and Q101 (Q103) (E, C, B) then Q102 (Q104) (E, C, B) are turned on, the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

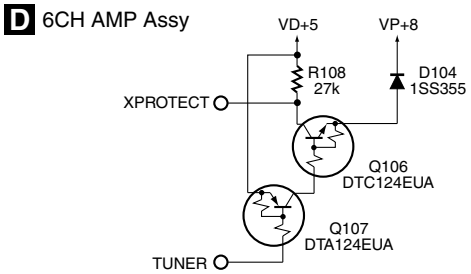
(2) When VH-(VA-12) is short-circuited

As the electric potential of VE at Q102 (Q104) (E2, C2, B2) becomes the same as that at VB, Q102 (Q104) (E2, C2, B2) is turned off. Following this, Q101 (Q103) (E2, B2, C2) is turned off, which changes the voltage at Points Ⓐ and Ⓑ to a value other than 5 V. Therefore, Q101 (Q103) (E, C, B) then Q102 (Q104) (E, C, B) are turned on, the level of XPROTECT becomes low.

(3) When VD+5 is short-circuited

The level of the XPROTECT line becomes low. The microcomputer detects the XPROTECT level and shuts the power to the unit off.

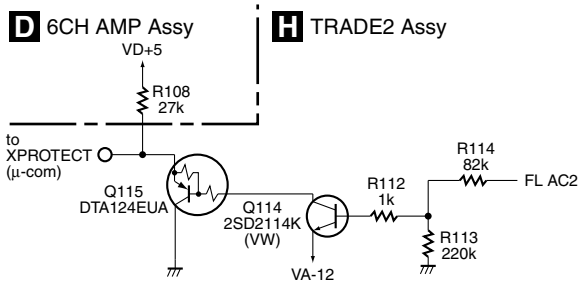
② -2 Short-circuit-detection circuit for the DVD power supply (VP+8)



As the TUNER line is fixed to GND level, Q107 is always on. If the level at VP+8 falls to GND level because of short-circuit, etc., Q106 is turned on, and the level of the XPROTECT line becomes low.

← The microcomputer detects the XPROTECT level and shuts the power to the unit off.

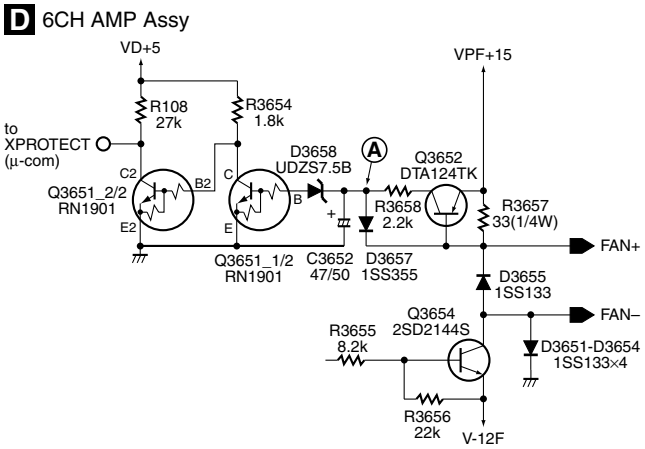
② -3 Short-circuit-detection circuit for VFDP



If VFDP is short-circuited to GND, or if the DC electric potential at FL AC1 becomes GND level (in Normal mode: about -27 V) because of a failure in the DC bias circuit of FL AC1, Q114 then Q115 are turned on, and the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

③ When the FAN connector is disconnected or when rotation of the fan is interrupted

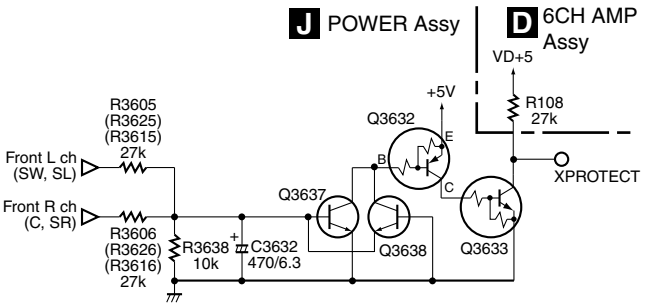


If no fan is connected between FAN+ and FAN-, or when the fan cannot rotate because of a foreign object caught in the blades, the BASE of Q3652 becomes OPEN, and Q3652 and Q3651-1/2 (E, C, B) are turned off. Then Q3651-2/2 (E2, B2, C2) is turned on, and the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

When FAN+ and FAN- are short-circuited, the electric potential at Point Ⓐ becomes higher than GND level by the addition of the values at D3656 and D3657. As this value is lower than that at D3658, Q3651 (E, C, B) is turned off, Q3651 (E2, B2, C2) is turned on, and the level of XPROTECT becomes low.

④ When DC is generated at the output because of a failure in the AMP system, etc.



• In Normal mode, both Q3637 and Q3638 are off.

(1) When positive (+) DC voltage is generated at the SP terminal

When positive (+) DC voltage is generated at the L or R channel, and VB of Q3637 becomes higher than that at the operation point, Q3632 (E, C, B) is turned on, and the level of XPROTECT becomes low.

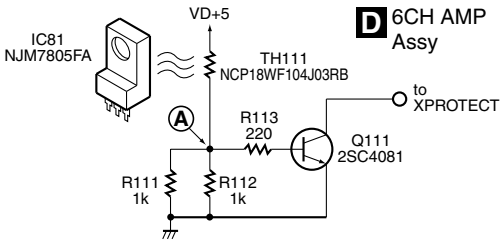
→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

(2) When negative (-) DC voltage was generated at the SP terminal

Q3638 is turned on, and XPROTECT is activated.

⑤ When abnormally high temperature is detected by the thermistor

⑤ -1 IC81 abnormal temperature detection circuit

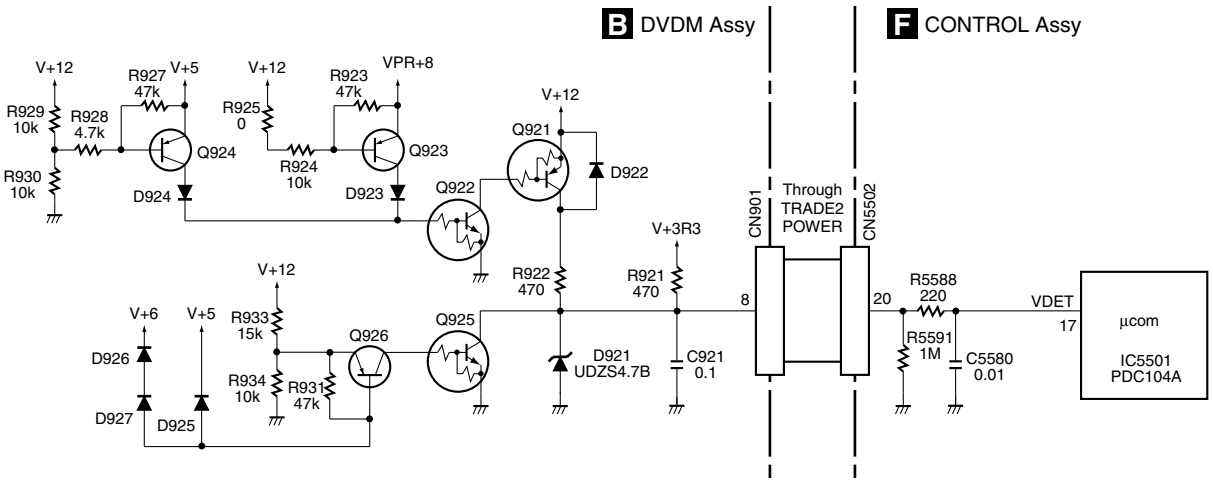


The voltage at Point Ⓐ becomes the divided voltage of TH111 and R111//R112 (combined resistance of parallel-connected resistors R111 and R112.) In Normal mode, the resistance at TH111 is much higher than R111//R112, and Q111 is off. (Note that the resistance at TH111 becomes lower as the temperature increases.) If the solder temperature at IC81 increases abnormally, the temperature at TH111 (thermistor) mounted closest to the land of IC81 increases accordingly, and the resistance at TH111 decreases.

When the temperature at TH111 reaches 90-110_C (varying according to conditions,) the voltage at Point (A) becomes high enough to turn Q111 on, and the level of the XPROTECT line becomes low. The microcomputer detects the XPROTECT level and shuts the power to the unit off.

■ Protection circuit that activates against a DVD PRTECT error

⑥ The DVDM monitors the voltage of the main power supply by VDET signals.
In Normal mode, the VDET signal is at the MID level (3.3 V). In the following conditions, the VDET signal level becomes L or H, and the microcomputer is notified of this abnormality.



Items to be detected by VDET

(1) When the power voltages inside the DVDM become abnormal, as shown in the table below

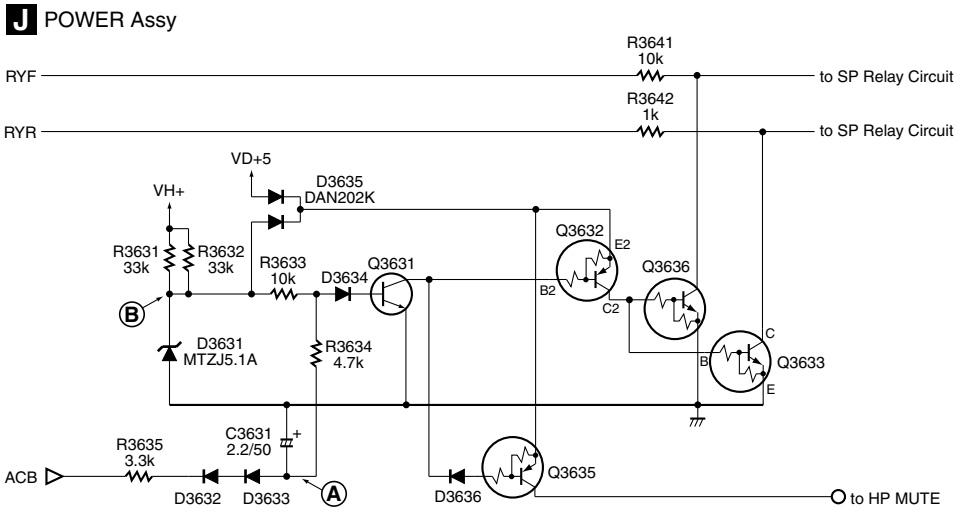
Status	Power	Voltage	Operation								VDET voltage
			Q923	Q924	Q922	Q921	D921	D922	Q926	Q925	
In Normal mode			off	off	off	off	off	off	off	off	Mid
When an abnormality is generat	VDVD+12	<1V	(on)	(on)	(on)	(off)	off	on	off	off	L
		>15.5V	off	off	off	off	off	off	on	on	L
	VPR+8	<5.2V	–	off	off	off	off	–	on	on	L
		>12.6V	–	on	on	on	on	–	off	off	H
	V+6	<3V	–	–	–	–	–	–	on	on	L
	V+5	<3.6V	–	off	off	off	off	–	on	on	L
		>6.6V	–	on	on	on	on	–	off	off	H
	V+3R3	<2.5V	–	–	–	–	–	–	–	–	L
		>4.25V	–	–	–	–	(on)	–	–	–	H

(2) When the VDET signal to the microcomputer is interrupted because of defective soldering of the 30-pin connector or incomplete insertion of FFC
→ The VDET level is lowered by the pull-down resistor (1 Mohms) on the side of the microcomputer.

■ Other protection circuit

AC detection circuit

⑦ This is a protection circuit that prevents popping sounds in the Speaker and Headphones output when the AC power cord is connected or disconnected.



- The voltage at Point Ⓐ is a DC voltage which has been generated by half-wave rectification on the minus side of the AC power.
- The voltage at Point Ⓑ is approx. 5 V.

- The base voltage at Q3631 is a voltage between Points Ⓐ and Ⓑ divided by R3633 and R3634. As this voltage is negative (-) in Normal mode, Q3631 is off.
  When the AC power cord is disconnected and there is no AC power input, the base voltage at Q3631 becomes +0.6 V or more, and Q3631 is turned on. Then, the operations below follow.

(1) SP Relay

Q3632 (E2, C2, B2), Q3633, and Q3636 (E, C, B) are turned on, the line to activate the SP relay becomes low level, and the SP Relay is turned off.

(2) HP MUTE

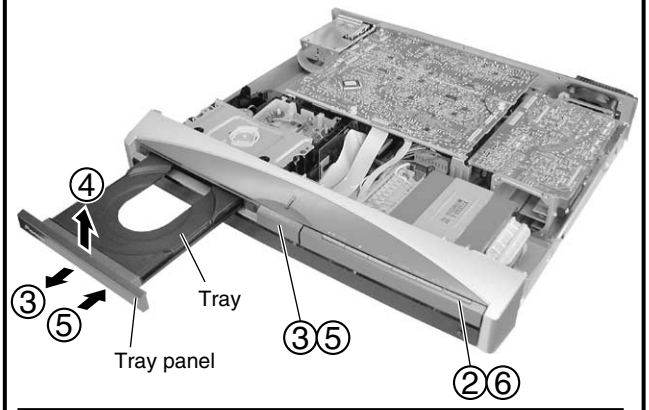
Q3635 is turned on, and the MUTE circuit for HP is turned on.

7.1.12 DISASSEMBLY

Note: For performing the diagnosis shown below, the following jig cables for service are required:
- GGD1266 (×2)
- GGD1222
- GGD1160

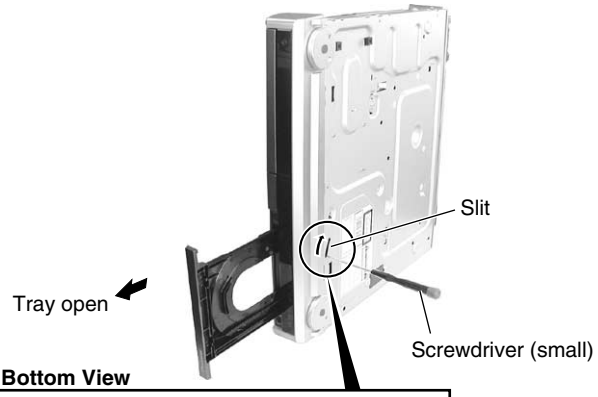
1 Bonnet and Tray panel

① Remove the bonnet by removing the seven 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 Press the ⏏ OPEN/CLOSE button to close the tray.
⑥ Press the ⏻ STANDBY/ON button to turn off the power.

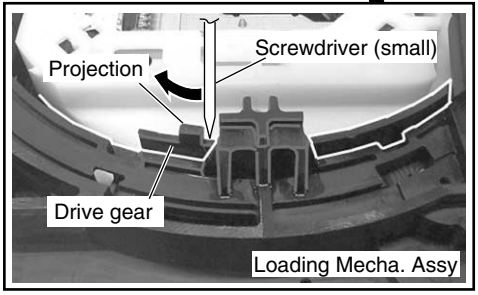


How to open the Tray when the power cannot be on

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

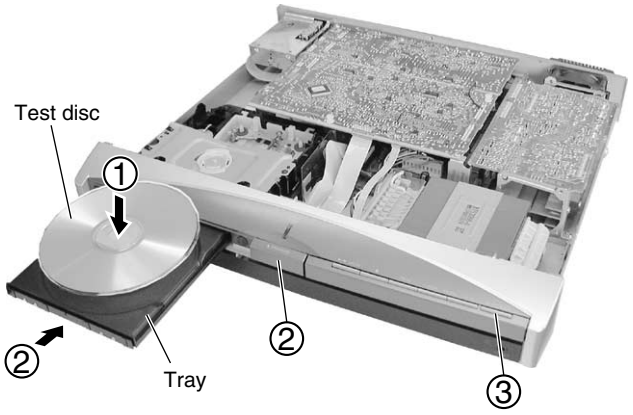


● **Bottom View**



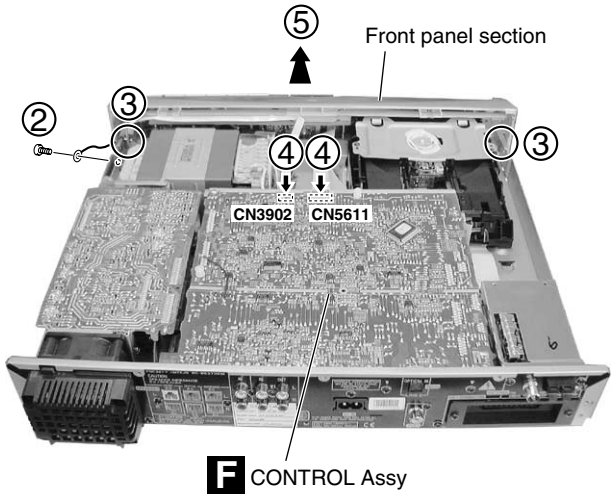
2 Test disc set

① Set the test disc.
② Press the ⏏ OPEN/CLOSE button to close the tray.
(The test disc is clamped.)
③ Press the ⏻ STANDBY/ON button to turn off the power.
④ Pull out the power cord from the outlet



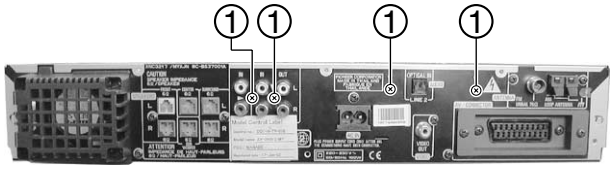
3 Front panel section

① Remove the two screws.
② Remove the one screw.
③ Remove the four hooks.
④ Disconnect the two flexible cables.
⑤ Remove the front panel section.



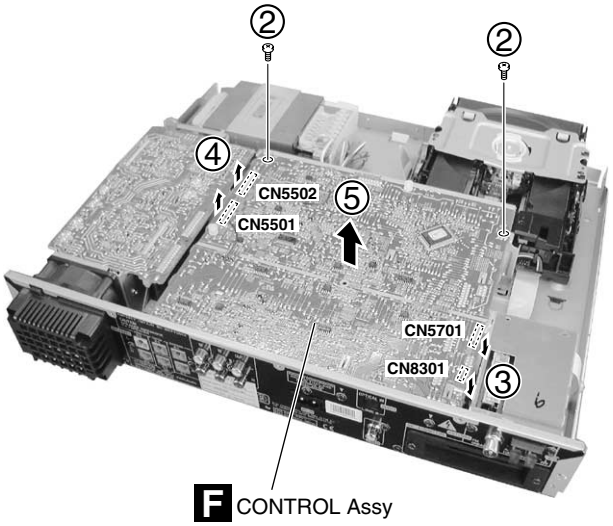
4 CONTROL Assy

① Remove the four screws for XV-DV313.
Remove the five screws for XV-DV515.
(One screw is added for the wireless terminal.)



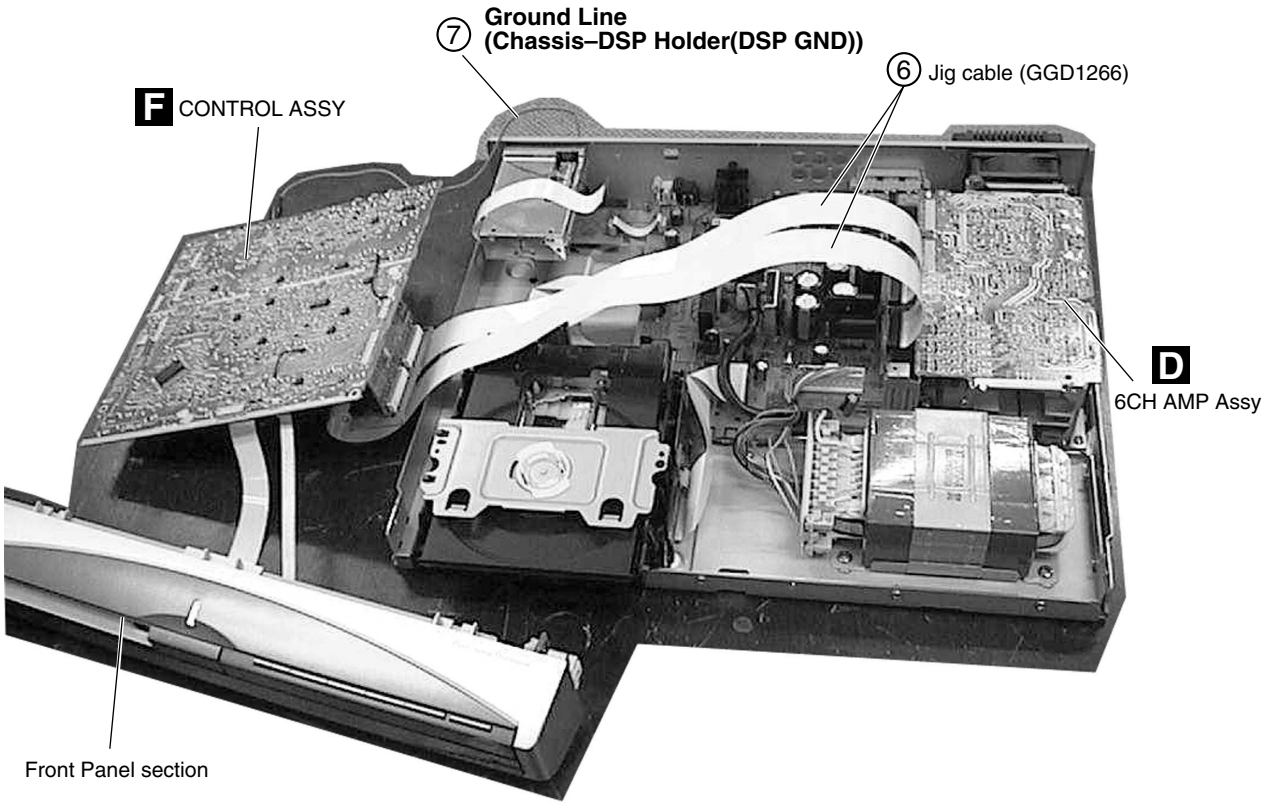
● **Rear View** (This model is XV-DV313.)

② Remove the two screws.
③ Disconnect the two flexible cables.
④ Disconnect the two connectors.
⑤ Remove the CONTROL Assy.



⑥ Connect the two jig cables.

⑦ **Be sure to connect the GND terminal of the DSP ASSY (DSP Holder) to the rear panel (chassis) by the lead wire.**



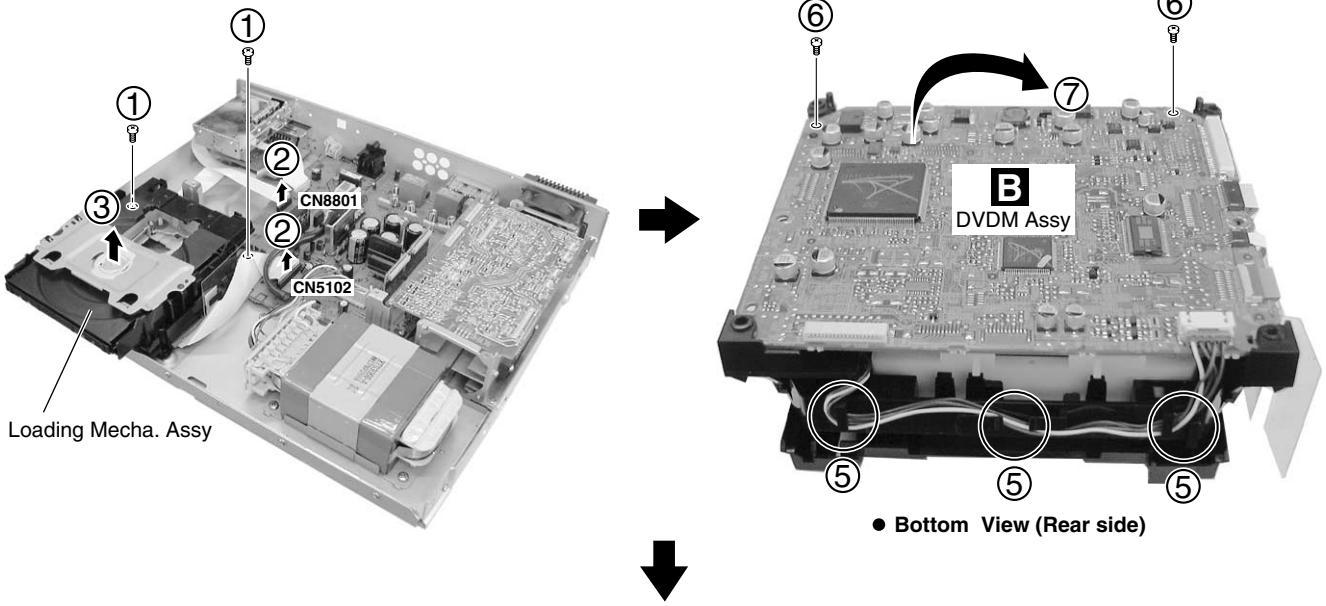
Note :
If the Power is turned On when the DSP Holder (DSP GND) is not connected to the rear panel (chassis), the parts below may be destroyed at the DSP ASSY.

IC8702 : TC74VHCT244AFT
IC8401 : AK4529VQ
R8415 : 4.7Ω

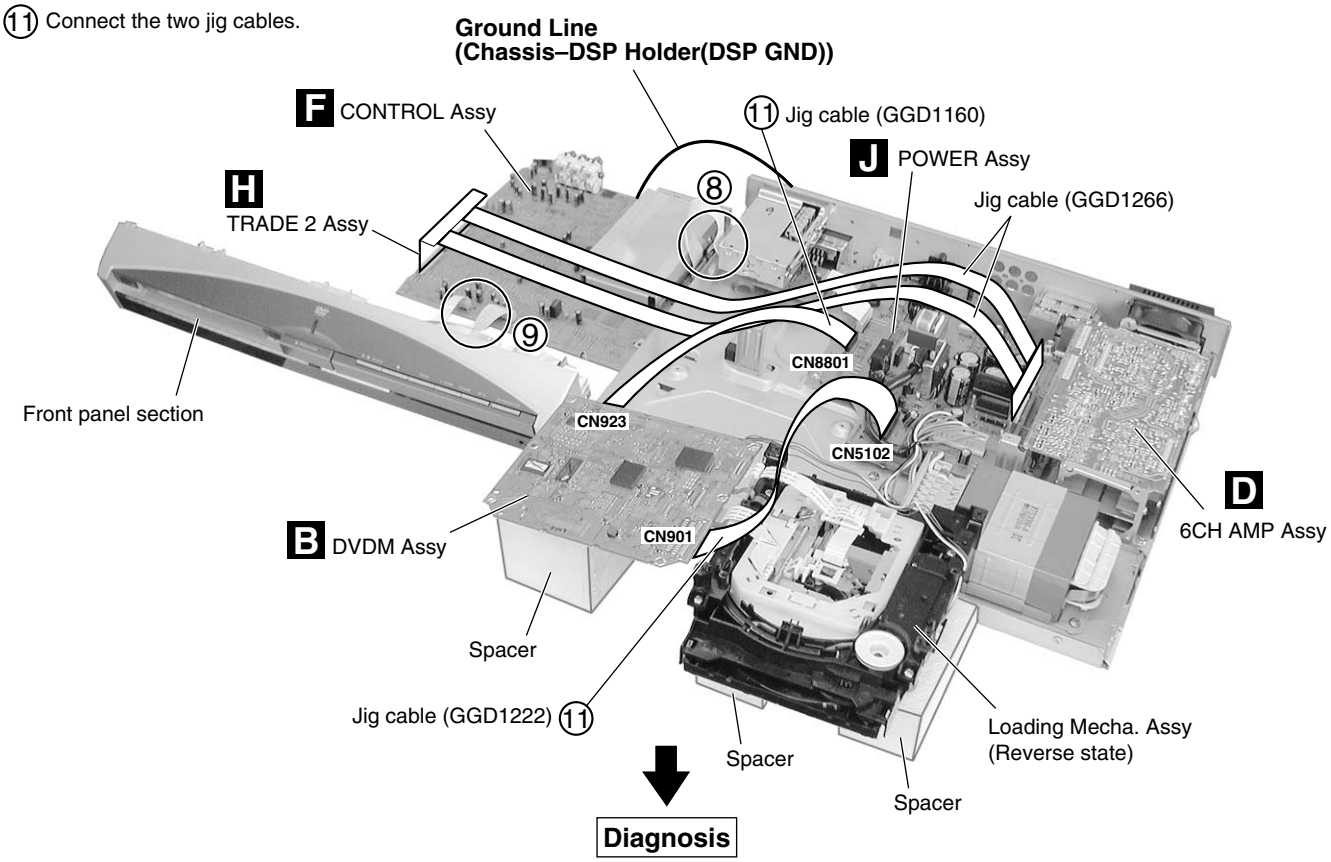
If the above parts are destroyed, the audio signal can not be out.

5 Diagnosis of DVDM Assy

① Remove the two screws.
② Remove the two flexible cables.
③ Remove the Loading Mecha. Assy.
④ Reverse the Loading Mecha. Assy.
⑤ Remove the three hooks.
⑥ Remove the two screws.
⑦ Remove and reverse the DVDM Assy.



⑧ Reattatch the CONTROL Assy.
⑨ Reattatch the front panel section.
⑩ Arrange the Loading Mecha. Assy and the DVDM Assy as shown in the photo below.
⑪ Connect the two jig cables.



Diagnosis

Removing the Traverse Mecha. Assy-S and Pickup Assy-S

1 Loading Mecha. Assy

① Remove the bridge by removing the one screw.

② Pull out the tray, then remove it by pressing the hook.

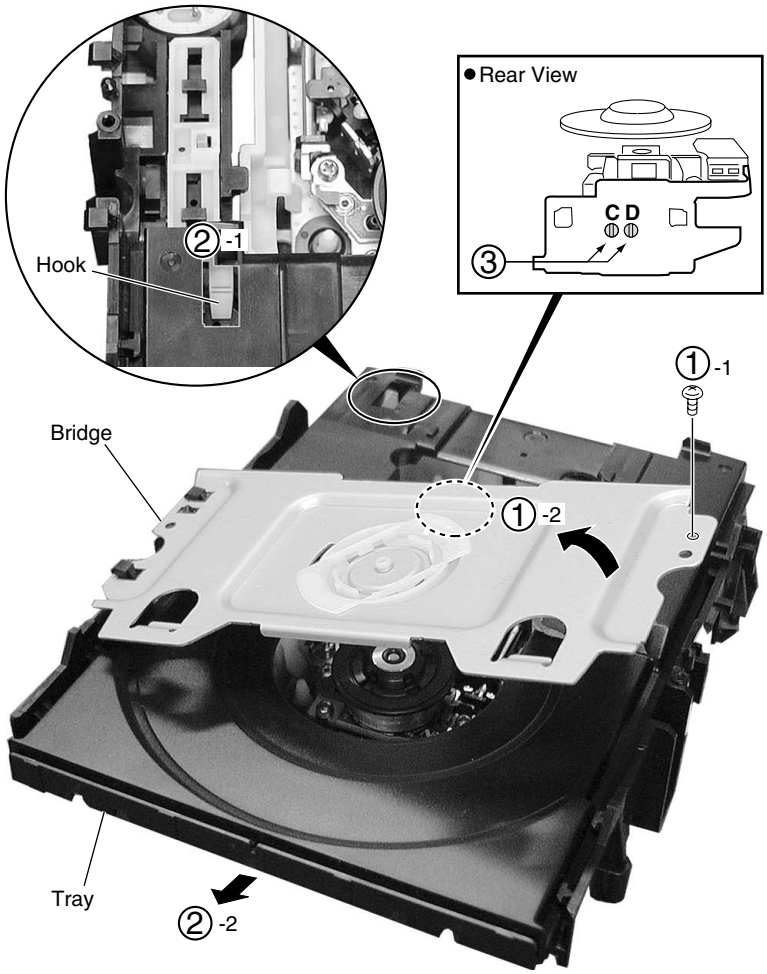
③ Short-circuit two points of C and D by soldering. (*1)

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

④ Remove the four connectors from the Loading Mecha. Assy.

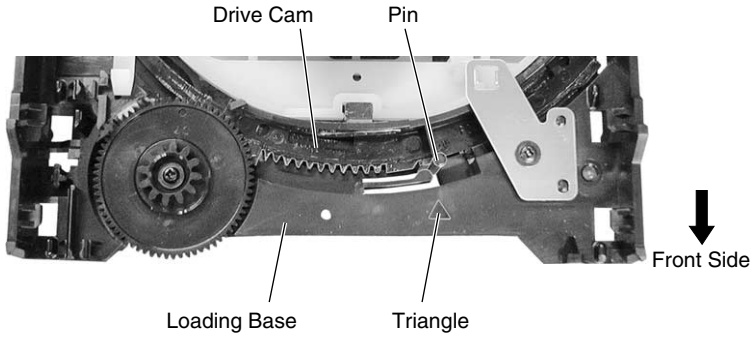
⑤ Remove the four screws that secure the Loading Mecha. Assy to the unit.

*1 : To protect from the electrostatic resisting pressure.



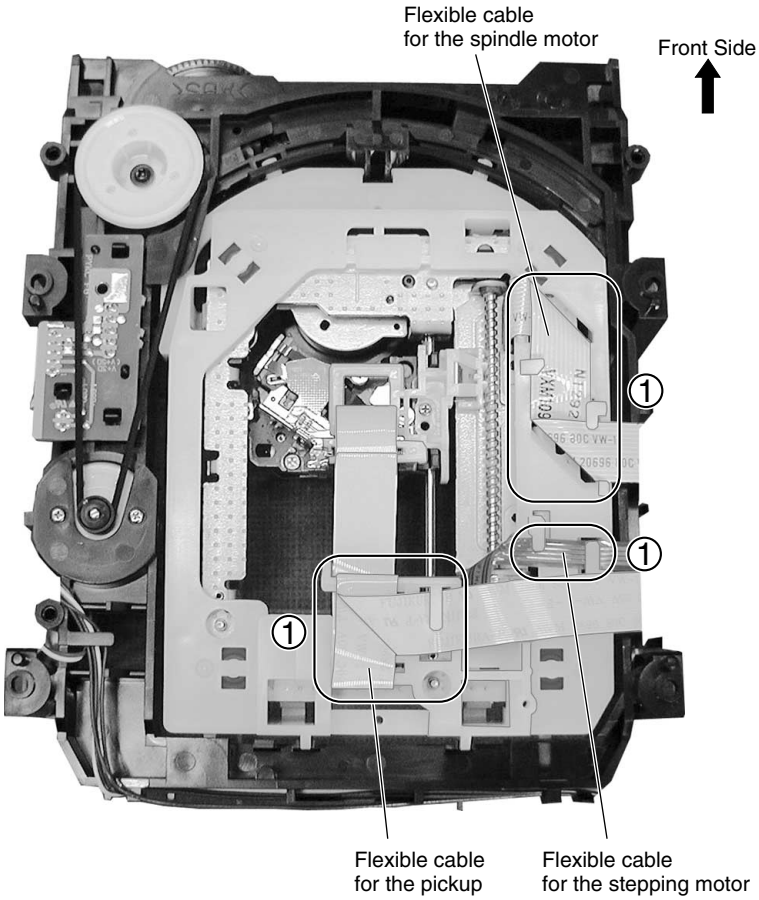
Note when reinserting the Tray

When reinserting the Tray, first align the triangle printed on the Loading Base and the pin of the Drive Cam, then insert the Tray.



2 Traverse Mecha. Assy-S

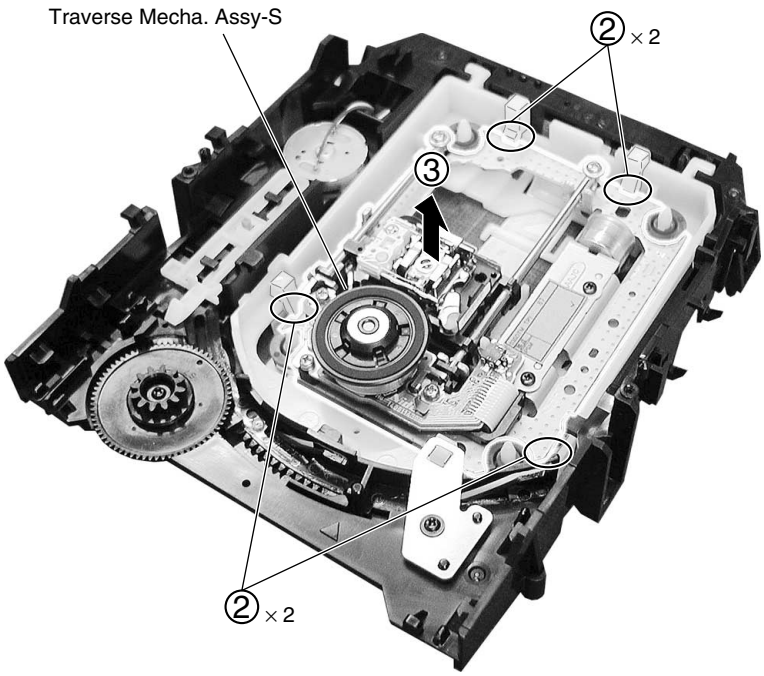
① Dislodge the flexible cables from their packaged placement.



● Bottom View

② Remove the four hooks.

③ Remove the Traverse Mecha. Assy-S.

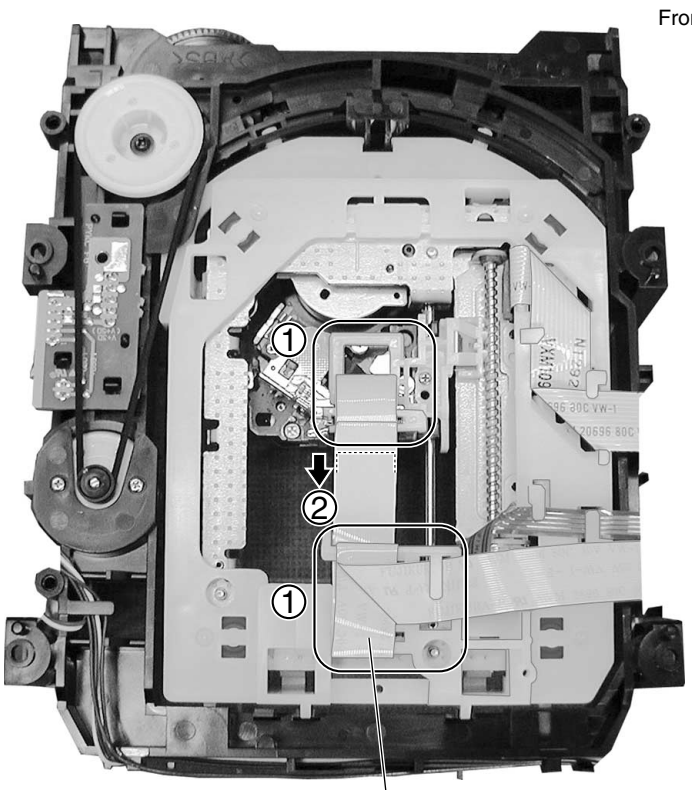


3 Pickup Assy-S

Note: The Pickup Assy-S can be removed without removing the Traverse Mecha. Assy-S. (shown as Step 2.)

① Dislodge the flexible cable for the pickup from its packaged placement.

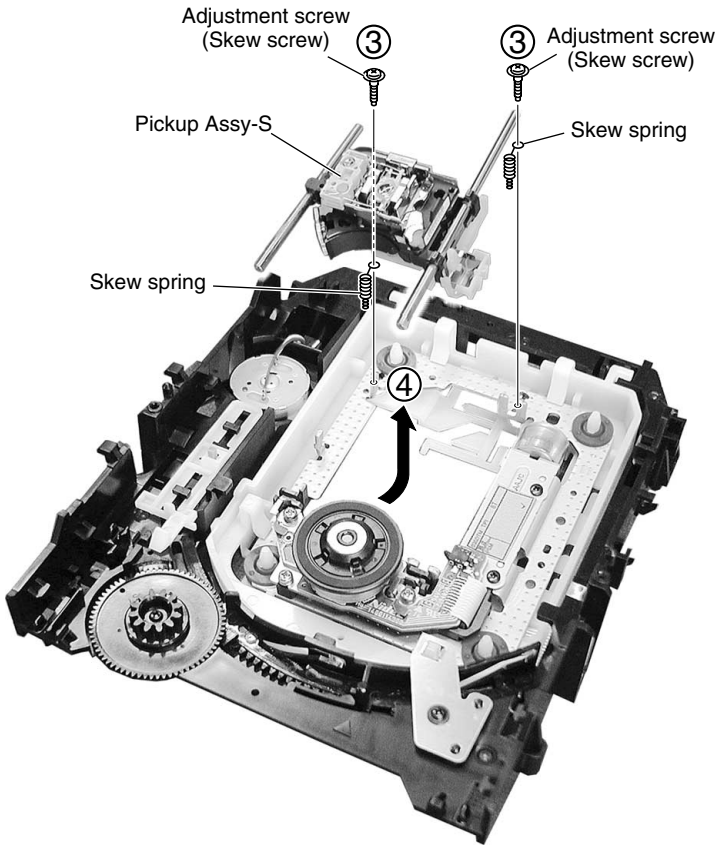
② Remove the flexible cable for the pickup.



● Bottom View

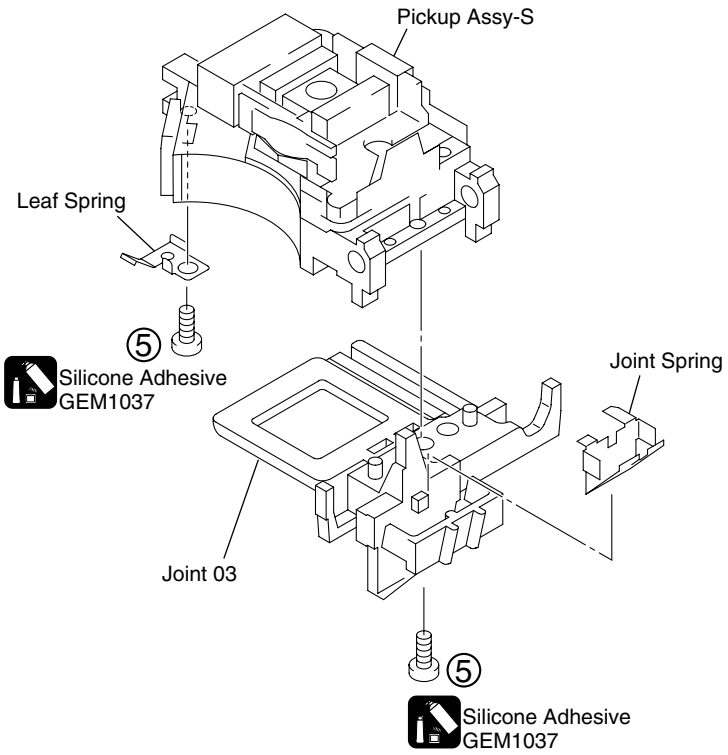
③ Remove the two skew screws and two skew springs.

④ Remove the Pickup Assy-S.



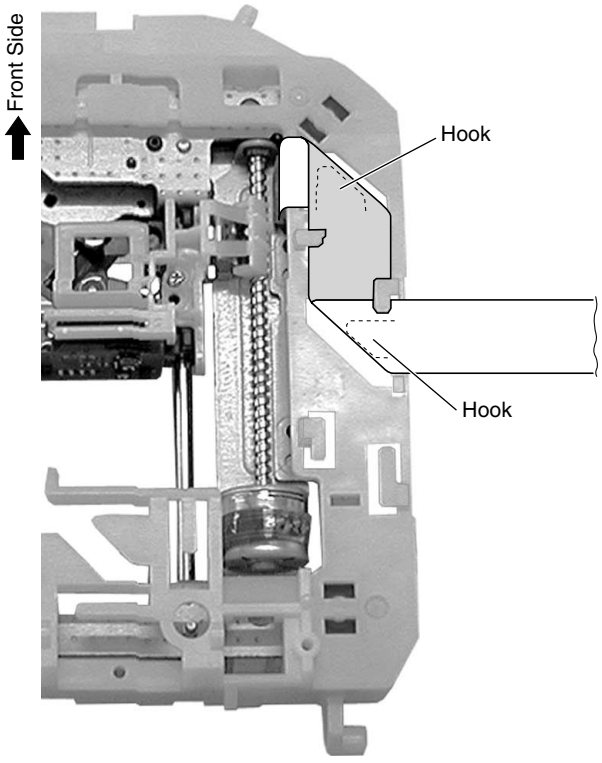
⑤ Remove the two screws.

Note: The screws are secured with epoxy. Make sure to apply epoxy after reattaching the screws.



Arrangement of the flexible cable for the spindle motor

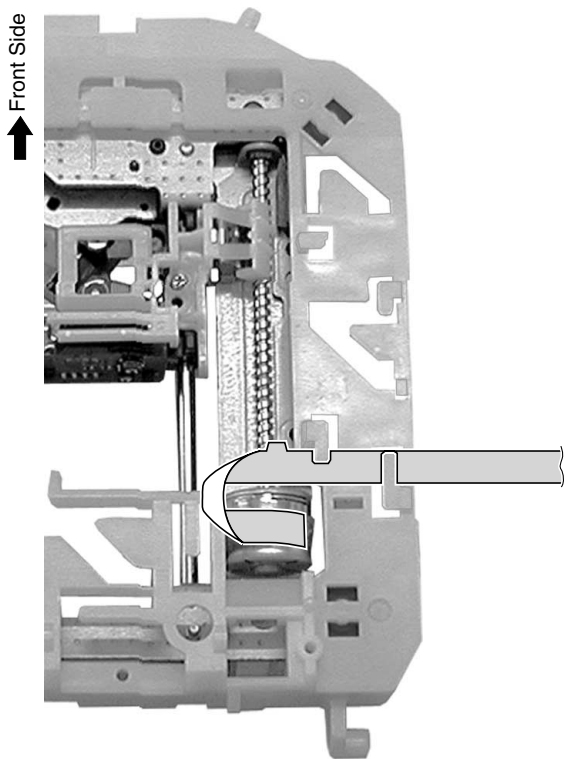
: Conductive surface



● Bottom View

Arrangement of the flexible cable for the stepping motor

: Conductive surface



● Bottom View

Arrangement of the flexible cable for the pickup

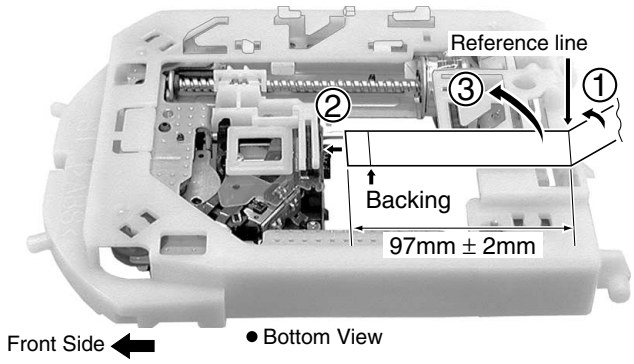
: Conductive surface

Note:
Be sure to move the Pickup Assy-S to the innermost perimeter.

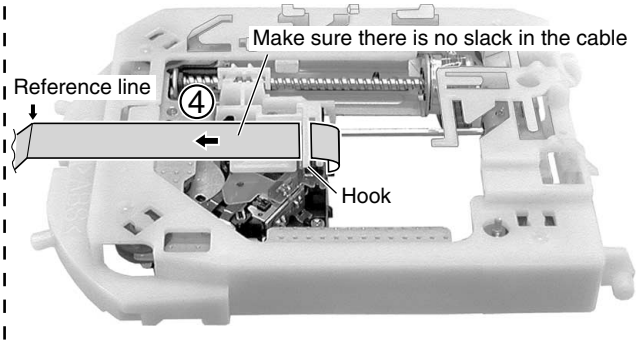
① Fold the flexible cable inward at the position of the reference line

② Attach the flexible cable of the pickup to the connector

③ Fold the flexible cable of the pickup with the backing inward

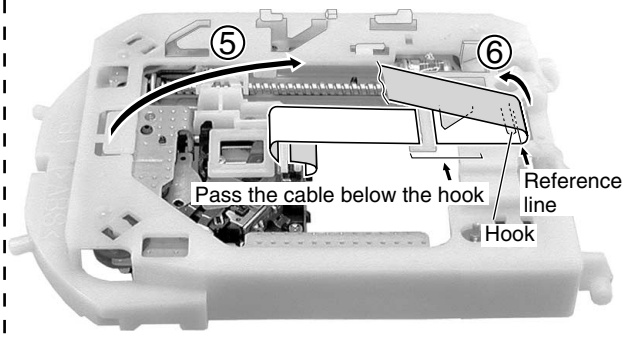


④ Pass the flexible cable through the hook not allowing any slack

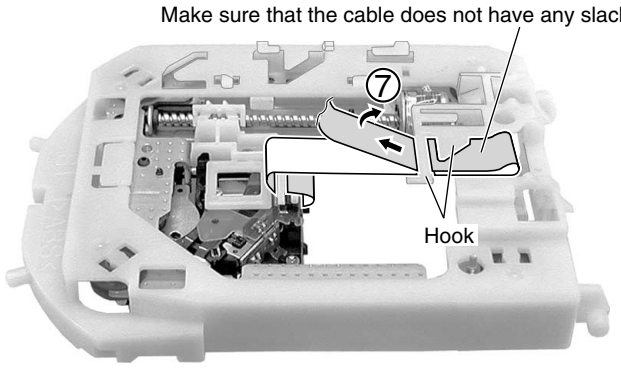


⑤ Fold the flexible cable as indicated in the photo

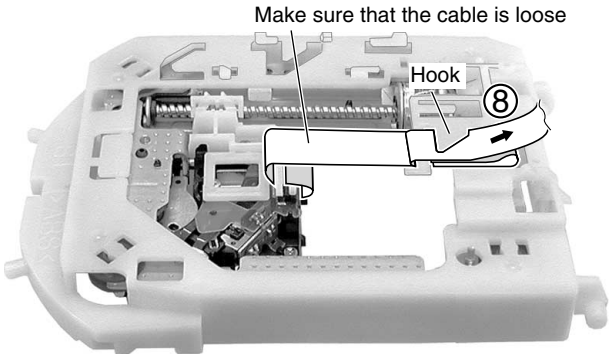
⑥ Hook the part folded in Step ① to the hook



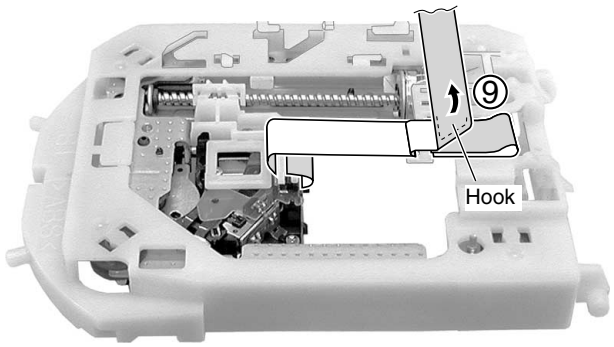
⑦ Pass the flexible cable below the hook, and fold it back



⑧ Fold the flexible cable back at the hook



⑨ Fold the flexible cable along the hook



7.2 IC

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

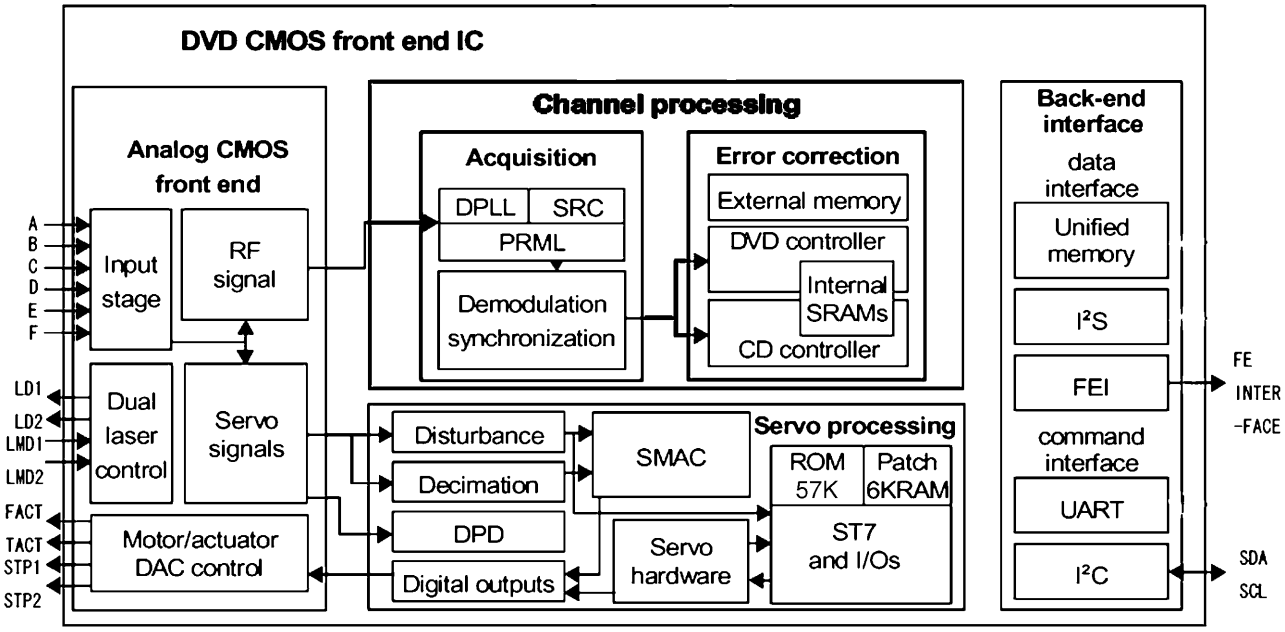
• List of IC

STM6316ATXXA, STM5589CVA, M63108FP, PDC104A, BU1924F

■ STM6316ATXXA (DVDM ASSY : IC301)

• FRONT END IC

● Block Diagram



● Pin Function

No.	PIN name	description	detail
1	IREF	12.7kF	Analog block reference part
2	GNDAI	GNDA	analog gnd
3	RFIN	capacitor	RF signal C association input to a demodulation block
4	RFOUT	capacitor	B1+B2+B3+B4 mixture listing from an analog block
5	VCCA18	1V8A	analog 1V8
6	A	B1	PU - B1 input
7	GNDMN	GNDA	analog gnd
8	B	B2	PU - B2 input
9	VCC33MN	3V3A	analog 3V3
10	REFD	to pick up	2V1 output for PU
11	VCC18MN	1V8A	analog 1V8
12	D	B4	PU - B4 input
13	VCCA18IS	1V8A	analog 1V8
14	C	B3	PU - B3 input
15	VCCA33IS	3V3A	analog 3V3
16	GNDAIS	GNDA	analog gnd
17	VCC33SD	3V3A	analog 3V3
18	VCC18SD	1V8A	analog 1V8
19	GNDSD	GNDA	analog gnd
20	F	C	PU-3 beam C input
21	E	A	PU-3 beam A input
22	VSHIELDIS	GNDA	analog gnd
23	VCC18ADC	1V8A	analog 1V8
24	GNDADC	GNDA	analog gnd
25	VSHIELDADC	GNDA	analog gnd
26	VCC33DAC	3V3A	analog 3V3
27	GNDDAC	GNDA	analog gnd
28	SPINDLE	560ohm(st2)	DAC current listing for stepper drive
29	SLEDGE	560ohm(st1)	DAC current listing for stepper drive
30	REFEXT	20K1%	Reference for DAC
31	REFGND	refext	analog gnd
32	REFDAC	560ohm1%	DAC reference
33	FACT	560ohm1%	DAC current listing for focus
34	TACT	560ohm1%	DAC current listing for tracking
35	VCC18DAC	1V8A	analog 1V8
36	PC0	FG	FG pulse input
37	PC1	PS	Driver control signal
38	PC2	tray SW1(open)	SW input for tray OPEN position
39	PC3	SB	Driver control signal
40	PC4	SLD position	Inside SW input

No.	PIN name	description	detail
41	VSS	GNDD	digital gnd
42	VDD33	3V3D	digital 3V3
43	PC5	780/X650	780nm/650nmLD change control signal
44	PC6	spinde PDM	Control PDM listing for spindle drive
45	PC7	opicgain	OEIC gain control signal
46	PD7	03PU/X02PU	Pull-up settlement
47	VSS	GNDD	digital gnd
48	VDD18	1V8D	digital 1V8
49	PD6	(debug)	test
50	PD5	(debug)	test
51	PD4	(DSPclk)	test
52	PD3	(DSPdata)	test
53	PD2	(DSPstrb1)	test
54	PD1	error monitor	Terminal for TRKG error monitor (30KHzLPF add need)
55	PD0	tray PDM drive	Control PDM signal for tray drive
56	VSS	GNDD	digital gnd
57	VDD33	3V3D	digital 3V3
58	OUT_ERR	RS_ERROR	BE DATA I/F
59	OUT_EVALID	RS_ERR_EN	BE DATA I/F
60	VSS	GNDD	digital gnd
61	OUT_CLK	RS_BCLK	BE DATA I/F
62	VDD18	1V8D	digital 1V8
63	OUT_DVALID	RS_DVALID	BE DATA I/F
64	OUT_DATA	RS_DATA	BE DATA I/F
65	OUT_SYNC	RS_ECCBST	BE DATA I/F
66	PE5	SCL(DMA)	FE routine download input
67	PE4	SDA(DMA)	FE routine download input
68	PE3	SCL	BE command I/F
69	PE2	SDA	BE command I/F
70	PE1	tray SW2(close)	SW input for tray CLOSE position
71	PE0	DXXINT	FE status propagation signal
72	VSS	GNDD	digital gnd
73	VDD33	3V3D	digital 3V3
74	PF1	10K-pullup	Built-in facility setting terminal
75	PF0	10K-pulldown	Built-in facility setting terminal
76	VSS	GNDD	digital gnd
77	VDD18	1V8D	digital 1V8
78	PG1	to EMULATOR	Built-in facility setting terminal
79	PG0	to EMULATOR	Built-in facility setting terminal
80	TEST	10K-pulldown	test

No.	PIN name	description	detail
81	RESET_N	RESET	RESET input
82	VSSADC	GNDA	analog gnd
83	VDD18ADC	1V8A	analog 1V8
84	GNDPLL	GNDA	analog gnd
85	PLLOFF	GNDA	analog gnd
86	FREOUT	20MXtal	SYSTEMCLK oscillating circuit
87	FREIN	20MXtal	SYSTEMCLK oscillating circuit
88	VCC18PLL	1V8A	analog 1V8
89	LD1	650nmLD	650nmLD driving signal
90	LD2	780nmLD	780nmLD driving signal
91	VCCA33	3V3A	digital 3V3
92	TWSEL	CD_VR/GND	Monitor diodes VR junction terminal for CD
93	LMD1	LMD/LMD1	Monitor voltage junction terminal
94	LMD2	DVD_VR/LMD2	Monitor diodes VR junction terminal for DVD
95	GNDL	GNDA	analog gnd
96	TST_PM	nc	tset
97	TST_SLICE	nc	test
98	TST_ADC	nc	test
99	RFSACD	SACD_IC	RF signal output
100	VBGFILT	capacitor	Condenser junction terminal for inside reference stability

■ STM5589CVA (DVDM ASSY : IC601)

• BACK END IC

● Pin Function

No.	Pin Name	Dir.	Pin Function
1	FP_SO	OUT	Front Panel / DAC interface. Serial transfer data output.
2	A_DATA3	OUT	reserved
3	VCLK	OUT	reserved
4	VDD_3V3	-	3.3 V Power supply
5	VSS	-	Ground
6	B_DATA	OUT	reserved
7	B_BCLK	OUT	reserved
8	B_FLAG	OUT	reserved
9	TRYPOS	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Tray rotation pulse input. CAPTURE_IN0 can be used.
10	SQUEEZE	OUT	Output signal for S-Video output S1/S2 control. 'H' : squeeze output mode.
11	RTS	OUT	UART(RS-232C) Request To Send signal output.
12	LETTER	OUT	Output signal for S-Video output S1/S2 control & EURO(SCART) connector (FUNCTION SWITCHING) signal. 'H' : letter-box output mode.
13	CTS	IN	UART(RS-232C) Clear To Send signal input.
14	VDD_1V8	-	1.8 V Power supply
15	VSS	-	Ground
16	FE_DATA	IN	Front-End L6316 stream interface. Serial data input.
17	FE_BCLK	IN	Front-End L6316 stream interface. Serial clock input.
18	FE_DVALID	IN	Front-End L6316 stream interface. Data valid flag input.
19	FE_SYNC	IN	Front-End L6316 stream interface. Serial synchronize flag input.
20	FE_EVALID	IN	Front-End L6316 stream interface. Error valid flag for RS_split.
21	FE_ECCBST	IN	Front-End L6316 stream interface. ECC block start flag for RS_split.
22	I/XP	OUT	Output signal for a change of interlace/Progressive output for video driver. 'L' : progressive 'H' : interlace
23	VDD_RGB	-	RGB circuit 3.3 V Power supply
24	VSS_RGB	-	RGB circuit Ground
25	B_OUT	OUT	B / Cb
26	G_OUT	OUT	G / Y
27	R_OUT	OUT	R / Cr
28	VREF_RGB	IN	RGB DAC reference
29	IREF_RGB	IN	RGB DAC current reference
30	VDD_YCC	-	YC circuit 3.3 V Power supply
31	VSS_YCC	-	YC circuit Ground
32	Y_OUT	OUT	Y
33	C_OUT	OUT	C
34	CV_OUT	OUT	CV
35	VREF_YCC	IN	YCC DAC reference
36	IREF_YCC	IN	YCC DAC current reference
37	VDD_1V8	-	1.8 V Power supply
38	VSS	-	Ground

No.	Pin Name	Dir.	Pin Function
39	XDRVMUTE	OUT	It is not connected except 5 Disc Changer.
			Only 5 Disc Changer. Output signal for motor driver muting. 'L' : muting
40	OPEN	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for tray position. 'H' : complete OPEN position.
41	CLOSE	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for tray position. 'H' : complete CLOSE position.
42	CLAMP	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for showing disc clamp position. 'H' : complete disc clamp position.
43	UNCLAMP	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for showing disc un-clamp position. 'H' : complete disc clamp position.
44	DISC_SNS	OUT	It is not connected except 5 Disc Changer.
		IN	Only 5 Disc Changer. Input signal for disc existing. 'L' : existing
45	XDRVMUTE2	OUT	reserved
46	TP-x	OUT	reserved
47	VDD_3V3	-	3.3 V Power supply
48	VDD_PCM	-	1.8 V Power supply
49	VSS_PCM	-	Ground
50	VSS	-	Ground
51	A_BCK	OUT	Audio DAC clock
52	A_DATA0	OUT	Audio DAC Front L,R data
53	A_DATA1	OUT	reserved
54	A_DATA2	OUT	reserved
55	A_MCLK	OUT	Audio DAC Master clock
56	A_LRCK	OUT	Audio DAC L/R clock
57	A_DOUT	OUT	S/PDIF(IEC60958) digital audio output.
58	SMI_A4	OUT	SMI SDRAM Address
59	SMI_A5		
60	SMI_A6		
61	SMI_A7		
62	SMI_A8		
63	SMI_A9		
64	VDD_1V8	-	1.8 V Power supply
65	VSS	-	Ground
66	SMI_A3	OUT	SMI SDRAM Address
67	SMI_A2		
68	SMI_A1		
69	SMI_A0		
70	SMI_A10		
71	SMI_A11		
72	SMI_A12		
73	SMI_A13		

No.	Pin Name	Dir.	Pin Function
74	SMI_CS0	OUT	SMI SDRAM chip select 'L'.
75	SMI_CS1	OUT	reserved
76	SMI_RAS	OUT	SMI SDRAM RAS 'L'
77	SMI_CAS	OUT	SMI SDRAM CAS 'L'
78	SMI_WE	OUT	SMI SDRAM Write Enable 'L'
79	SMI_DQML	OUT	SMI SDRAM Lower DQM 'L': Lower select
80	SMI_DQMU	OUT	SMI SDRAM Upper DQM 'L': Upper select
81	VDD_3V3	-	3.3 V Power supply
82	SMI_CLKIN	IN	External SDRAM clock input.
83	VSS	-	Ground
84	SMI_D0	I/O	SMI SDRAM Data
85	SMI_D1		
86	SMI_D2		
87	SMI_D3		
88	SMI_D4		
89	SMI_D5		
90	SMI_D6		
91	SMI_D7		
92	SMI_D8		
93	SMI_D9		
94	VDD_1V8	-	1.8 V Power supply
95	SMI_CLKOUT	OUT	SDRAM clock output.
96	VSS	-	Ground
97	SMI_D10	I/O	SMI SDRAM Data
98	SMI_D11		
99	SMI_D12		
100	SMI_D13		
101	SMI_D14		
102	SMI_D15		
103	TRACK_CROSS	OUT	reserved
104	DSD_XPCM	OUT	reserved
105	DAC_XRST	OUT	reserved
106	ADC_PCMCLK	OUT	reserved
107	VDD_3V3	-	3.3 V Power supply
108	VSS	-	Ground
109	XTRST	IN	Diagnostic Control Unit interface
110	TMS	IN	Diagnostic Control Unit interface
111	TDO	OUT	Diagnostic Control Unit interface
112	TDI	IN	Diagnostic Control Unit interface
113	TCK	IN	Diagnostic Control Unit interface
114	ROTDRV	OUT	Only 5 disc changer. PWM output for tray rotation.
115	BOOT_FROM_ROM	IN	Boot select 'L' : Boot from DCU. 'H' : Boot form ROM.
116	LOAD_DRV	OUT	Only 5 disc changer. PWM output for tray Open/Close drive.
117	CPU_OE	OUT	OE signal for 16M bits FLASH memory for firmware. 'L': enable

No.	Pin Name	Dir.	Pin Function
118	CPU_SDCK	OUT	CLOCK for 64M bits SDRAM for debugging firmware.
119	VDD_1V8	-	1.8 V Power supply
120	PIXCLK	IN	Master 27MHz system clock input.
121	VSS	-	Ground
122	VDD_PLL	-	Clock PLL circuit 1.8 V Power supply
123	VSS_PLL	-	Clock PLL circuit Ground
124	XRESET	IN	Power ON system RESET signal. 'L': reset
125	SACD_IRQ	IN	reserved
126	FP_XRDY	IN	Front Panel interface. Hand-shake input.
127	FE_INT	IN	Interrupt input signal from Front-End L6316.
128	F_XWE, SD_DQML	OUT	Flash memory write enable. Debug SDRAM/SRAM Lower DQM. 'L': enable, Lower select.
129	SD_DQMU	OUT	Debug SDRAM/SRAM Upper DQM 'L':upper select
130	SD_RXW	OUT	Debug SDRAM Read/Write 'L':write, 'H':read
131	CPU_WAIT	IN	CPU wait 'H' input
132	CE_FLASH	OUT	Flash memory Chip Enable 'L'.
133	CPU_CE2	OUT	reserved
134	CPU_CE1	OUT	reserved
135	SD_XRAS	OUT	Debug SDRAM RAS 'L' Debug SRAM chip enable 'L'
136	VDD_3V3	-	3.3 V Power supply
137	VSS	-	Ground
138	CPU_RAS1	OUT	reserved
139	SD_XCAS	OUT	Debug SDRAM CAS 'L'
140	SD_XCS	OUT	Debug SDRAM Chip Select 'L'
141	CPU_D0	I/O	FLASH, Debug SDRAM/SRAM data
142	CPU_D1		
143	CPU_D2		
144	CPU_D3		
145	CPU_D4		
146	CPU_D5		
147	CPU_D6		
148	CPU_D7		
149	VDD_1V8	-	1.8 V Power supply
150	VSS	-	Ground
151	CPU_D8	I/O	FLASH, Debug SDRAM/SRAM data
152	CPU_D9		
153	CPU_D10		
154	CPU_D11		
155	CPU_D12		
156	CPU_D13		
157	CPU_D14		
158	CPU_D15		
159	VDD_3V3	-	3.3 V Power supply
160	VSS	-	Ground

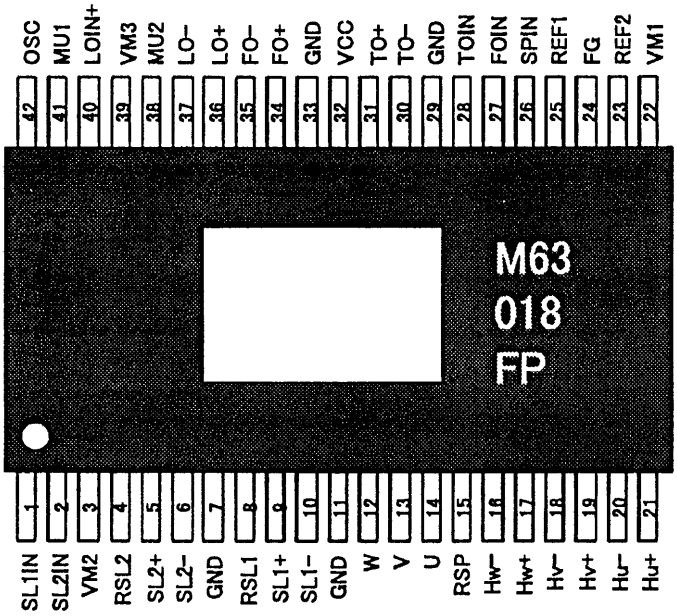
No.	Pin Name	Dir.	Pin Function
161	CPU_A1	OUT	FLASH, Debug SDRAM/SRAM Address
162	CPU_A2		
163	CPU_A3		
164	CPU_A4		
165	CPU_A5		
166	CPU_A6		
167	CPU_A7		
168	CPU_A8		
169	CPU_A9		
170	CPU_A10		
171	VDD_1V8	-	1.8 V Power supply
172	VSS	-	Ground
173	CPU_A11	OUT	FLASH, Debug SDRAM/SRAM Address
174	CPU_A12		
175	CPU_A13		
176	CPU_A14		
177	CPU_A15		
178	CPU_A16		
179	CPU_A17		
180	CPU_A18		
181	CPU_A19		
182	CPU_A20		
183	CPU_A21		
184	VDD_3V3	-	3.3 V Power supply
185	VSS	-	Ground
186	XEXPE	OUT	reserved
187	FE_ERROR	IN	Front-End L6316 stream interface. ECC Error flag
188	VSEL1	OUT	EURO(SCART) connector (BLINKING) output signal 'L' : RGB output disable 'H' : RGB output enable
189	VSEL2	OUT	EURO(SCART) connector V/Y, R/C signal. 'L' : VRGB output = YCGB 'H' : VRGB output = VRGB
190	FE_RST	OUT	Front-End L6316. Hardware reset output. 'L' : reset
191	SACD_XRST	OUT	reserved
192	XMMUTE	OUT	reserved
193	B_SYNC	OUT	reserved
194	SDA	I/O	Front-End L6316 command interface I2C bus serial data line.
195	SCL	OUT	Front-End L6316 command interface I2C bus serial clock line.
196	B_WCLK	OUT	reserved
197	TXD	OUT	UART(RS-232C) data output
198	VDD_1V8		1.8 V Power supply
199	VSS	-	Ground
200	RXD	IN	UART(RS-232C) data input

No.	Pin Name	Dir.	Pin Function
201	XAMUTE	OUT	Output signal for analog audio output line muting. 'L' : muting
202	TRIGIN	IN	Diagnostic Control Unit interface
203	TRIGOUT	OUT	Diagnostic Control Unit interface
204	DAC_XCS0	OUT	Chip enable for audio DAC serial control. 'L' : enable
205	DAC_XCS1	OUT	reserved
206	FP_ACK	OUT	Front Panel / DAC interface. Hand-shake (acknowledge) output 'H'.
207	FP_SCK	OUT	Front Panel / DAC interface. Serial transfer clock output.
208	FP_SI	IN	Front Panel interface. Serial transfer data input.

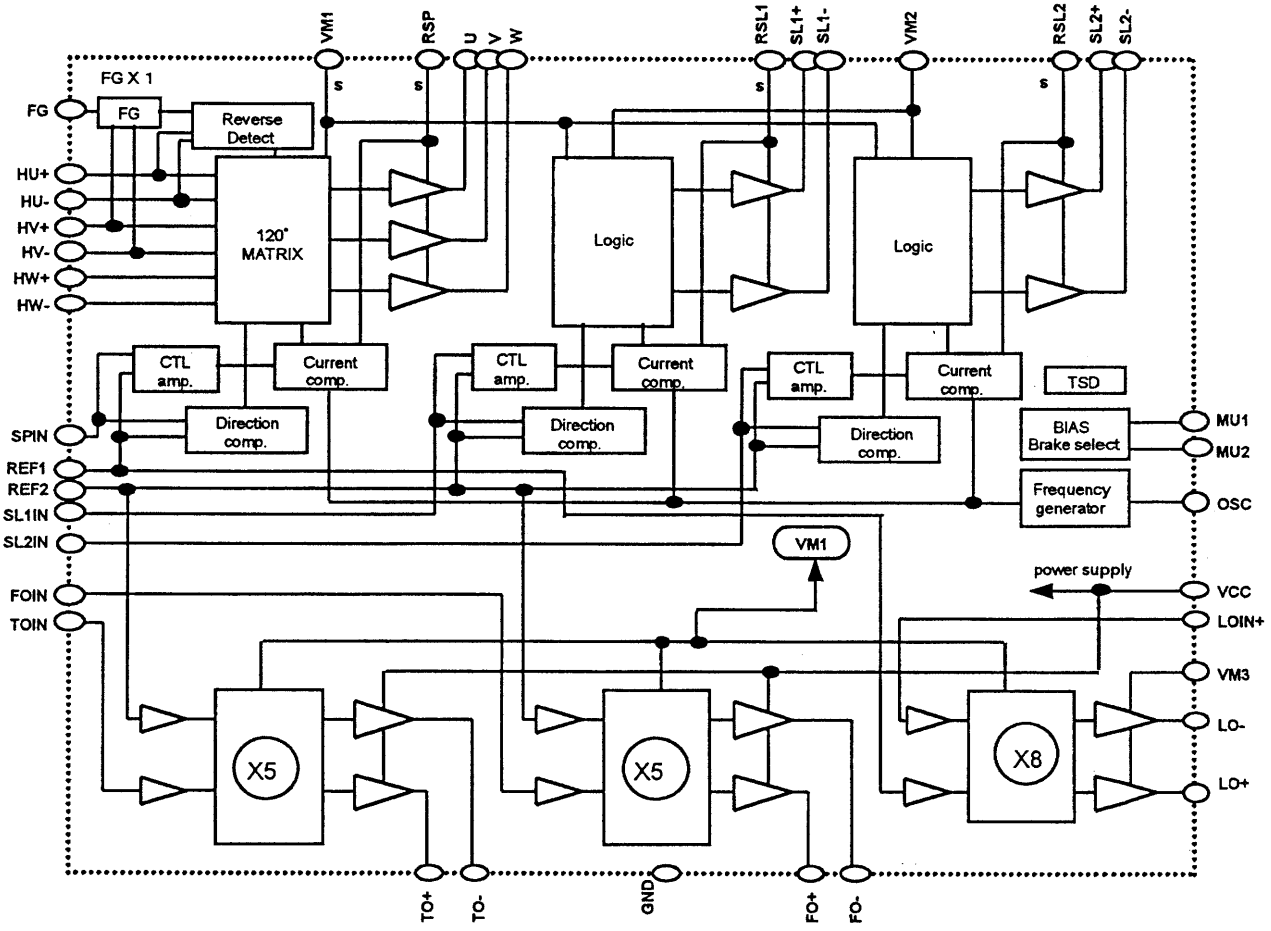
■ M63018FP (DVDM ASSY : IC101)

• FTS Driver IC

● Pin Arrangement



● Block Diagram



● **Pin Function**

TERMINAL	SYMBOL	TERMINAL FUNCTION	TERMINAL	SYMBOL	TERMINAL FUNCTION
1	SL1IN	Slide control voltage input 1	42	OSC	PWM carrier oscillation set
2	SL2IN	Slide control voltage input 2	41	MU1	mute / brake select terminal 1
3	VM2	Motor Power Supply 2 (for Slide)	40	LOIN+	Loading control input(+)
4	RSL2	Slide current sense 2	39	VM3	Power Supply3 (for Loading)
5	SL2+	Slide non-inverted output 2	38	MU2	mute / brake select terminal 2
6	SL2-	Slide inverted output 2	37	LO-	Loading inverted output
7	GND	GND	36	LO+	Loading non-inverted output
8	RSL1	Slide current sense 1	35	FO-	Focus inverted output
9	SL1+	Slide non-inverted output 1	34	FO+	Focus non-inverted output
10	SL1-	Slide inverted output 1	33	GND	GND
11	GND	GND	32	VCC	Power Supply (for FS ,TS)
12	W	Motor drive output W	31	TO+	Tracking non-inverted output
13	V	Motor drive output V	30	TO-	Tracking inverted output
14	U	Motor drive output U	29	GND	GND
15	RSP	Spindle current sense	28	TOIN	Tracking control voltage input
16	HW-	HW- sensor amp. input	27	FOIN	Focus control voltage input
17	HW+	HW+ sensor amp. input	26	SPIN	Spindle control voltage input
18	HV-	HV- sensor amp. input	25	REF1	Reference voltage input 1 (for Spindle,Loading)
19	HV+	HV+ sensor amp. input	24	FG	Frequency generator output
20	HU-	HU- sensor amp. input	23	REF2	Reference voltage input 2 (for Slide Focus Tracking)
21	HU+	HU+ sensor amp. input	22	VM1	Motor Power Supply 1 (for Spindle)

■ PDC104A (CONTROL ASSY : IC5501)

• System Control Microcomputer

● Pin Functions

No.	Mark	Pin Name	I/O	Function
1	PA3/WR#	DVDON/OFF	O	Control power supply for DVD module
2	PA4/RD#	HPDET	I	Detect to insert headphone
3	PA5/RS	(POWERLED)	O	Control POWER LED (Active : H) (standby)
4	P70 / INT0 / T0LCP / AN8	ACPULSE	I	AC PULSE input (Interruption)
5	P71 / INT1 / T0HCP / AN9	NC	O	NC
6	P72 / INT2 / T0IN	RDSCLK	I (O)	Clock input from RDS decoder (without RDS : Low input)
7	P73 / INT3 / T0IN	REMOCON	I	REMOCON signal input (Interruption)
8	RES#	XRESET	I	μ-com reset input
9	XT1 / AN10	XT1	–	(When this port don't use , please connect VDD)
10	XT2 / AN11	XT2	–	(When this port don't use , please set open)
11	VSS1	VSS1	–	
12	CF1	CF1	–	
13	CF2	CF2	–	
14	VDD1	VDD1	–	
15	P80 / AN0	SIMUKE	I	Destination distinction input
16	P81 / AN1	MODEL	I	model distinction input
17	P82 / AN2	VDET	I	DVD 3.3V detection input
18	P83 / AN3	KEY1	I	Key1 input
19	P84 / AN4	NC	O	
20	P85 / AN5	NC	O	
21	P86 / AN6	ST/TUNE	I	STEREO tuned detection input
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	DSPDI	O	Data output to DSP (MOTOROLA) and DIR
27	P14 / SI1 / SB1	DSPDO	I	Data input from DSP (MOTOROLA)
28	P15 / SCK1	DSPCK	O	Clock output to DSP (MOTOROLA) and DIR
29	P16/T1PWML	SYSCS2	O	Chip select 2 for system bus
30	P17/T1PWMH/BUZ	SYSCS1	O	Chip select 1 for system bus
31	PE0	XHPMUTE	O	HP MUTE ON/OFF
32	PE1	XRECMUTE	O	REC OUTPUT MUTE ON/OFF
33	PE2	XMUTEC	O	Cch MUTE ON/OFF
34	PE3	RYR	O	REAR RELAY ON/OFF
35	PE4	RYFSC	O	FRONT/SW/CENTER RELAY ON/OFF
36	PE5	NC	O	
37	PE6	TIMERLED	O	Control TIMER LED
38	PE7	LEVELSHIFT	O	VOL 0 to 5 : H
39	VSS4	VSS4		
40	VDD4	VDD4		

No.	Mark	Pin Name	I/O	Function
41	PF0	ATT10dB	O	Control ATT 10dB
42	PF1	ATT6dB	O	Control ATT 6dB
43	PF2	STEST	I	Set TEST MODE for Service
44	PF3	UTEST	I	Set UNIT CHECK for checker
45	PF4	DTSDMIX	O	Cntrol of gain-up for dts down-mix
46	PF5	SWFMIX	O	Control for subwoofer mix
47	PF6	NC	I	(When this port don't use , please connect GND)
48	PF7	NC	I	(When this port don't use , please connect GND)
49	SI2P0/SO2	FLDAT	O	Data for FL driver
50	SI2P1/SI2/SB2	FLCS	O	Chip enable for FL driver
51	SI2P2/SCK2	FLCLK	O	Clock for FL driver
52	SI2P3/SCK20	XFLRST	O	Reset for FL driver
53	PWM1	NC		NC
54	PWM0	NC		NC
55	VDD2	VDD2		
56	VSS2	VSS2		
57	P00	TXCE	O	Chip enable for tuner LSI
58	P01	NC	O	
59	P02	NC	O	
60	P03	NC	O	
61	P04	TXCLK	O	Clock for tuner LSI
62	P05	TXODATA	O	Data for tuner LSI
63	P06	TXMUTE	O	Control mute of tuner
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)
68	P23/INT4/T1IN	XVMUTE	O	VIDEO MUTE request to DVD MODULE
69	P24/INT5/T1IN	DVDMUTE	I	Request of MUTE from DVD MODULE (Interruption)
70	P25/INT5/T1IN	NC	O	
71	P26/INT5/T1IN	TVSEL	O	TV Audio Input Select
72	P27/INT5/T1IN	XWMUTE	O	WIRE LESS MUTE request
73	P30	WSELA	O	WIRE LESS OUTPUT SELECT A
74	P31	INPUTSELB	O	AUDIO INPUT SELECT B
75	P32	INPUTSELA	O	AUDIO INPUT SELECT A
76	P33	XTL0	O	Selection X'tal to DIR
77	P34	DIRERR	I	LOCK/UNLOCK from DIR
78	P35	DIRRST	O	Reset to DIR /CODEC
79	P36	DIRCS	O	Chip select to DIR/CODEC
80	PB7/D7	DIRDO	I	Data input from DIR/CODEC

No.	Mark	Pin Name	I/O	Function
81	PB6/D6	DSPMODE	O	MODE selection (ROM/RAM) to DSP (MOTOROLA)
82	PB5/D5	DSPHREQ	I	Error detection from DSP (MOTOROLA)
83	PB4/D4	NC	O	NC
84	PB3/D3	DSPSS	O	Slave selection to DSP (MOTOROLA)
85	PB2/D2	XDSPRST	O	RESET to DSP (MOTOROLA) MODULE
86	PB1/D1	DECMUTE	I	Detection of 1st DSP boot success from DSP MODULE
87	PB0/D0	XDSPMUTE	O	MUTE requeat to DSP MODULE
88	VSS3	VSS3	–	
89	VDD3	VDD3	–	
90	PC7/A7	NC	O	NC
91	PC6/A6	SYSPOW	O	Control power supply of system
92	PC5/A5	NC	O	NC
93	PC4/A4	XDVDRST	O	RESET to DVD MODULE
94	PC3/A3	XSYSMUTE	O	Control mute of system
95	PC2/A2	(VOLMUTE)	O	(Contorol mute of E-vol IC)
96	PC1/A1	VOLCLK	O	Clock for E-vol IC
97	PC0/A0	VOLDATA/CE	O	Data/CE for E-vol IC
98	PA0/CS2#	FLASHE/D	–	for FLASH writing
99	PA1/CS1#	FLASHDO	–	for FLASH writing
100	PA2/CS0#	FLASHCLK	–	for FLASH writing

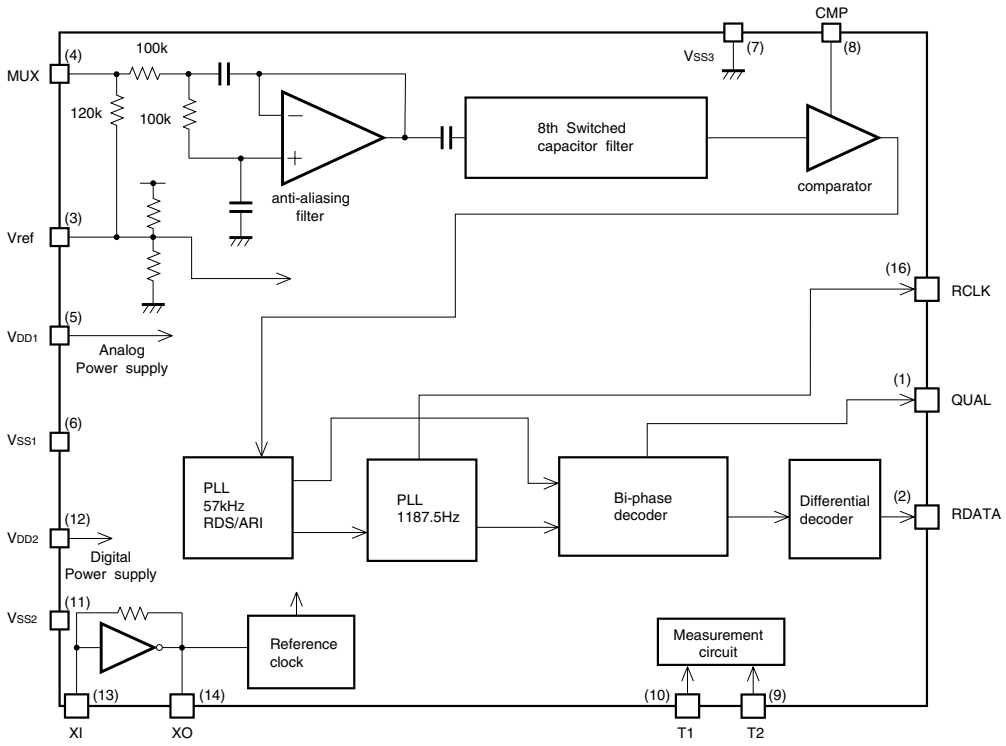
- Port0 (P00-P07) can be selected for input or output by each 4 bits (P00-P03,P04-P07). Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port1 (P10-P17) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD 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.

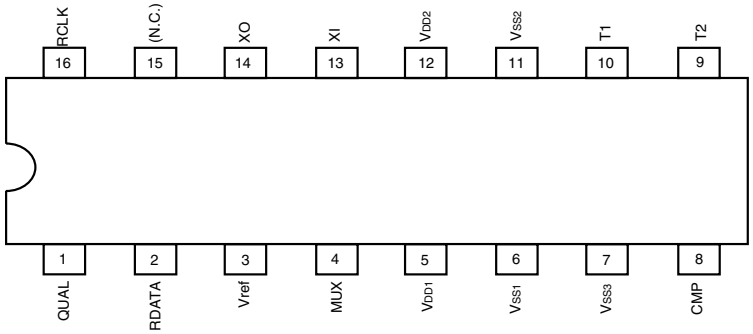
■ BU1924F (CONTROL ASSY : IC5701)

• RDS / RBDS Demodulation IC

■ Block Diagram



■ Pin Arrangement (Top View)



■ Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	QUAL	Demodulation quality fine data :H , error data :L	9	T2	Test input Open or connect to GND.
2	RDATA	Demodulation data	10	T1	
3	Vref	Reference power supply (1/2 VDD1)	11	VSS2	Digital power supply (4.5V to 5.5V)
4	MUX	Composite signal input	12	VDD2	
5	VDD1	Analog power supply (4.5V to 5.5V)	13	XI	Connect the crystal resonator (4.332MHz)
6	VSS1		14	XO	
7	VSS3	GND	15	(NC)	Non connection
8	CMP	Comparator input	16	RCLK	Demodulation clock (1187.5kHZ)

Disc / content format playback compatibility

General disc compatibility

This player was designed and engineered to be compatible with software bearing one or more of the following logos:

DVD-Video DVD-R DVD-RW

Audio CD Video CD CD-R CD-RW

Fujicolor CD

- Kodak Picture CD
- *is a trademark of Fuji Photo Film Co. Ltd.*

Other formats, including but not limited to the following, are not playable in this player:

DVD-Audio / SACD / DVD-RAM
DVD-ROM / CD-ROM*

* *Except those that contain MP3, WMA or JPEG. See also Compressed audio compatibility and JPEG file compatibility below.*

DVD-R/RW and CD-R/RW discs (Audio CDs and Video CDs) recorded using a DVD recorder, CD recorder or personal computer may not be playable on this unit. This may be caused by a number of possibilities, including but not limited to: the type of disc used; the type of recording; damage, dirt or condensation on either the disc or the player's pick-up lens. See below for notes about particular software and formats.

CD-R/RW compatibility

- This unit will play CD-R and CD-RW discs recorded in CD Audio or Video CD format, or as a CD-ROM containing MP3, WMA or JPEG files. However, any other content may cause the disc not to play, or create noise/distortion in the output.
- This unit cannot record CD-R or CD-RW discs.
- Unfinalized CD-R/RW discs recorded as CD Audio can be played, but the full Table of Contents (playing time, etc.) will not be displayed.

DVD-R/RW compatibility

- This unit will play DVD-R/RW discs recorded using the DVD-Video format that have been finalized using a DVD-recorder.
- This unit will play DVD-RW discs recorded using the Video Recording (VR) format.
- **DVD-RW** shows in the display when a VR format DVD-RW disc is loading.
- When playing a VR format DVD-RW discs that was edited on a DVD recorder, the screen may go momentarily black at edited points and/or you may see scenes from immediately before the edited point.
- This unit cannot record DVD-R/RW discs.
- Unfinalized DVD-R/RW discs cannot be played in this player.

PC-created disc compatibility

- If you record a disc using a personal computer, even if it is recorded in a "compatible format" as listed above, there will be cases in which the disc may not be playable in this machine due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.
- Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

7.4 CLEANING

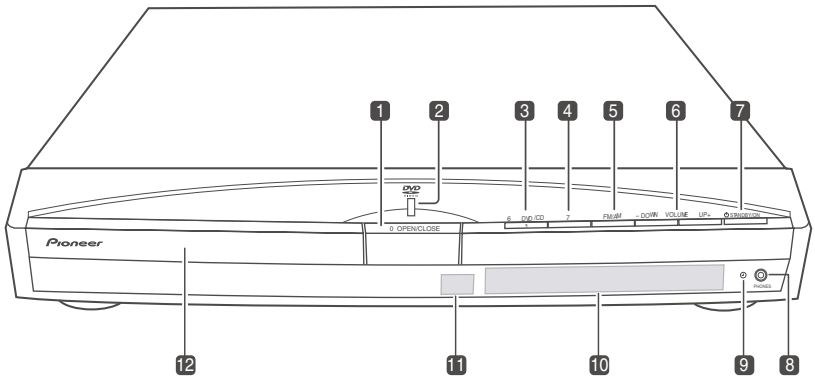
Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

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

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

8. PANEL FACILITIES

Front panel



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

2 Operation indicator

3 ▶/❚❚ DVD/CD
Press to switch to the DVD/CD function. Also press to start/pause/resume playback.

4 ■
Press to stop playback.

5 FM/AM
Press to switch to the tuner function, then to toggle between the FM and AM bands.

6 VOLUME buttons
Use to adjust the volume.

7 ⏻ STANDBY/ON
Press to switch the system on or into standby.

8 PHONES jack
Headphone jack.

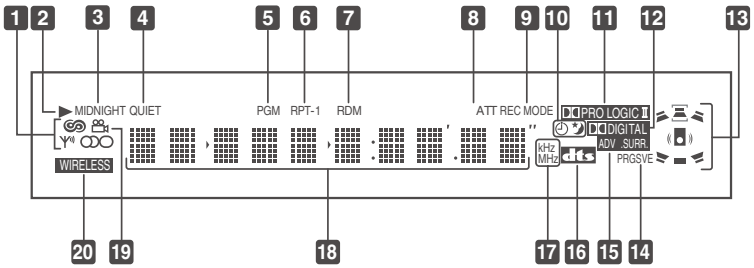
9 Timer indicator
Lights when the wake-up timer is set.

10 Display
See Display on page 143 for detailed information.

11 Remote sensor

12 Disc tray

Display



1 Tuner indicators

Lights when in one of the RDS display or search modes.

Lights when a broadcast is being received.

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

Lights when FM mono reception is selected.

2 ►
Lights when a disc is playing.

3 MIDNIGHT
Lights when the Midnight mode is selected.

4 QUIET
Lights when the Quiet mode is selected.

5 PGM
Lights when a program list has been programmed.

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

7 RDM
Lights during random play.

8 ATT
Lights when the input attenuator is active for the currently selected analog input.

9 REC MODE
Lights when Rec Mode is active.

10 Timer indicators

Lights when the wake-up timer is set.

Lights when the sleep timer is active.

11 PRO LOGIC II
Lights during Dolby Pro Logic decoding.

12 DIGITAL
Lights during playback of a Dolby Digital source.

13 Speaker indicators
These show which speakers are being used to output the current source. The illustrations below show some example displays.


5.1 channel surround sound


Stereo (2.1 channel) sound


3.1 channel sound with Dialogue enhancement on the center channel


5.1 channel surround sound with Virtual Surround Back mode active

14 PRGSVE
Not applicable to the European model

Lights when progressive scan video output is selected.

15 ADV.SURR.
Lights when one of the Advanced Surround listening modes is selected.

16 DTS
Lights during playback of a DTS source.

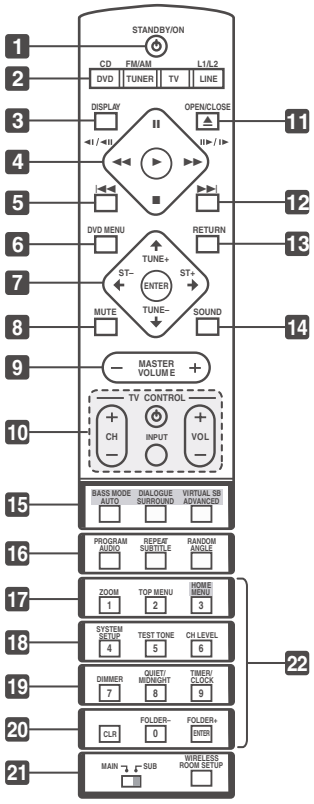
17 kHz / MHz
Indicates the unit of the frequency shown in the character display (**kHz** for AM, **MHz** for FM).

18 Character display

19
Lights during multi-angle scenes on a DVD disc.

20 WIRELESS (XV-DV515 only)
Lights when either the **W.Surr.** or **W. Stereo** mode is selected.

Remote control



Important

- Functions printed in green on the remote control are accessed by switching the **MAIN**/**SUB** switch to **SUB**.

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

2 Function select buttons
Press to select the source you want to listen to (**DVD (CD)**, **TUNER**, **TV**, **LINE**)

3 DISPLAY
Press to display/change disc information shown on-screen.

4 Disc playback controls

►
Press to start or resume playback.

◄◄ and ◄I / ◄II
Use for reverse slow motion playback, frame reverse and reverse scanning.

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

II
Press to pause playback; press again to restart.

■
Press to stop playback.

5 I◄◄
Press to jump to the beginning of the current chapter/track, then to previous chapters/ tracks.

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

7 Cursor buttons, ENTER and tuning buttons

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

ENTER
Press to select an option or execute a command.

TUNE +/–
Use to tune the radio.

ST +/–
Use to select station presets when listening to the radio.

8 MUTE
Press to mute all sound from the speakers and headphones (press again to cancel).

9 MASTER VOLUME
Use to adjust the volume.

10 TV CONTROL

⏻
Press to switch the TV on or into standby.

INPUT
Press to switch the TV input.

CH +/–
Use to select channels on the TV.

VOL +/–
Use to adjust the volume on the TV.

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

12 ⏭
Press to jump to the next chapter/track.

13 RETURN
Press to return to a previous menu screen.

14 SOUND
Press to access the sound menu, from which you can adjust the DSP effect level, bass and treble, etc.

15 Surround sound mode/sound enhancement buttons

AUTO
Press to select the default decoding for the current source.

SURROUND
Use to select a Surround mode.

ADVANCED
Use to select an Advanced Surround.

BASS MODE
Use to select a Bass Mode.

DIALOGUE
Use to select a Dialogue mode.

VIRTUAL SB
Press to switch the Virtual Surround Back speaker effect on/off.

16 DVD/CD buttons

AUDIO
Press to select an audio channel or language.

SUBTITLE
Press to display/change the DVD subtitle display.

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

PROGRAM
Use to program/play a program list.

REPEAT
Use to select a repeat play mode.

RANDOM
Use to select a random play mode.

17 ZOOM
Press to change the screen zoom level.

TOP MENU
Use to display the top menu of a DVD disc in the play position (this may be the same as pressing **DVD MENU**).

HOME MENU
Press to display (or exit) the on-screen menu for Initial Settings, Play Mode functions, etc.

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

TEST TONE
Use to output the test tone (for speaker setup).

CH LEVEL
Use to adjust the speaker level.

19 DIMMER
Press to switch between normal and dimmed front panel display.

QUIET/MIDNIGHT
Use to select the Quiet and Midnight modes.

TIMER/CLOCK
Press to display the clock and to access the timer menu.

20 CLR
Press to clear an entry.

FOLDER –
Press to jump to previous folders.

FOLDER +
Press to jump to the next folder.

ENTER
Selects menu options, etc. (works exactly the same as the **ENTER** button in **7** above).

21 MAIN /SUB
Change from **MAIN** to **SUB** to access the functions/commands printed in green on the remote.

WIRELESS (XV-DV515 only)
Press to switch between modes with the wireless speaker system.

ROOM SETUP
Press to start Room Setup.

22 Number buttons
Use the number buttons for selecting chapters/tracks from a disc directly.