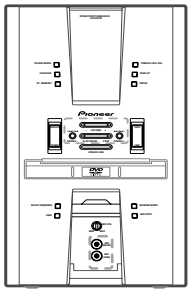
Pioneer sound.vision.soul

Service Manual



XV-EV51

ORDER NO.
RRV2636

STEREO DVD TUNER DECK

XV-EV51
XV-EV21

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

Model	Type	Power Requirement	Regienal restriction codes (Region No.)	Remarks
XV-EV51	ZLXJ/NC	DC Power supplied from other system component	4	
XV-EV21	ZLXJ/NC	DC Power supplied from other system component	4	

This product does not function properly independently; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.

Component	System	System	Service manual
MINI SYSTEM	EVA-5CH	EVA-2CH	
Stereo DVD Tuner Deck	XV-EV51	XV-EV21	RRV2636(This manual)
Stereo Power Amplifier	M-EV51	M-EV21	RRV2663(EV51), RRV2664(EV21)
Speaker System	S-EV51V	S-EV21V	RRV2640(EV51), RRV2641(EV21)

For details, refer to "Important symbols for good services" .

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

T-ZZR AUG. 2002 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.

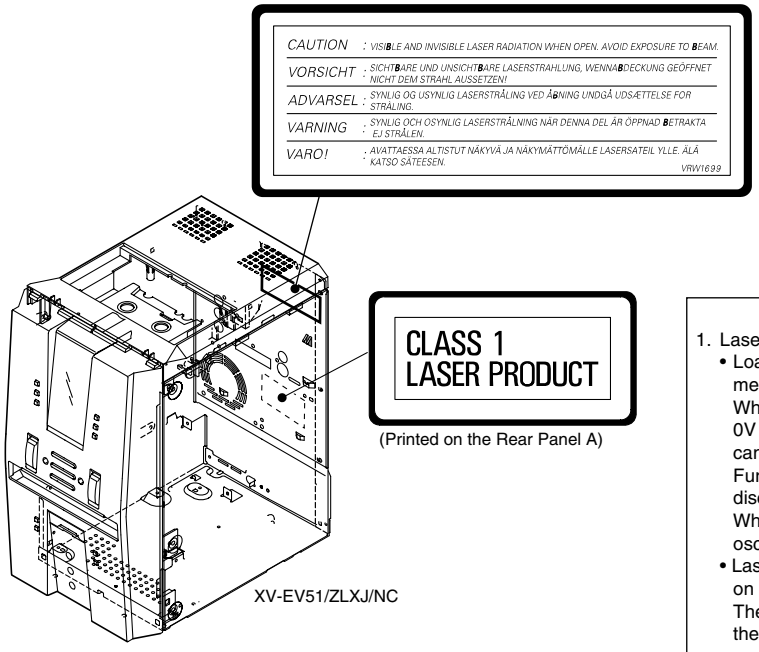
WARNING !

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 : 5 mW
WAVELENGTH : 780 nm

LABEL CHECK



(Printed on the Rear Panel A)

XV-EV51/ZLXJ/NC

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 (XCLOSE) side (OPEN signal is 0V and XCLOSE 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 Q101 (650nm LD) and Q102 (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 80.

[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.

Discs compatible with this player

Any disc that displays one of the following logos should play in this player. Other formats, including DVD-Audio, DVD-RAM, DVD-ROM, CD-ROM (except those that contain MP3 files), SACD and Photo CD will not play.

DVD-Video

Audio-CD Video-CD CD-R * CD-RW *

* : Video Mode Only

CONTENTS

1. SPECIFICATIONS

Specifications

Amplifier Section

X-EV51DVD model
Continuous Power Output:
Front ..... 80 W per channel (1kHz, 10 %, 8 Ω)
Center ..... 33 W (1kHz, 10 %, 8 Ω)
Surround ..... 33 W per channel (1kHz, 10 %, 8 Ω)

X-EV21DVD model
Continuous Power (RMS) ..... 80 W + 80 W (1 kHz, THD 10%, 8Ω)

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
S/N ratio ..... 95 dB
Dynamic range ..... 95 dB
Total harmonic distortion ..... 0.005 %
Wow and Flutter ..... Limit of measurement (±0.001 % W.PEAK) or less (EIAJ)

Cassette deck section

Systems ..... 4 track, 2-channel stereo
Heads ..... Recording/playback head x 1, Erasing head x 1
Motor ..... DC servo motor x 1
Tape types ..... TYPE I (Normal)

FM tuner section

Frequency Range ..... 87.5 - 108MHz
Antenna ..... 75 Ω, unbalanced

AM tuner section

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

Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.

"DTS" and "DTS Digital Surround" are registered trademarks of Digital Theater Systems, Inc. Manufactured under license from Digital Theater Systems, Inc.

Miscellaneous

Power Requirements
Multi voltage model ..... AC 110-127/ 220-230/ 240V(switchable), 50/60 Hz

Power Consumption
X-EV51DVD model
Singapore, Malaysia, Hong Kong models ..... 175 W
All other model ..... 465 W
X-EV21DVD model
Singapore, Malaysia models ..... 150 W
All other model ..... 540 W

Power Consumption in standby mode ..... 1 W

Dimensions:
DVD Tuner Deck ..... 170 (W) x292.5(H) x 260 (D) mm
Power Amplifier ..... 170 (W) x 190 (H) x 254 (D) mm

Weight:
DVD Tuner Deck
XV-EV51 ..... 3.6 kg
XV-EV21 ..... 3.5 kg
Power Amplifier
M-EV51 ..... 5.3 kg
M-EV21 ..... 4.8 kg

Accessories (Stereo DVD Tuner Deck)

Operating instructions 2

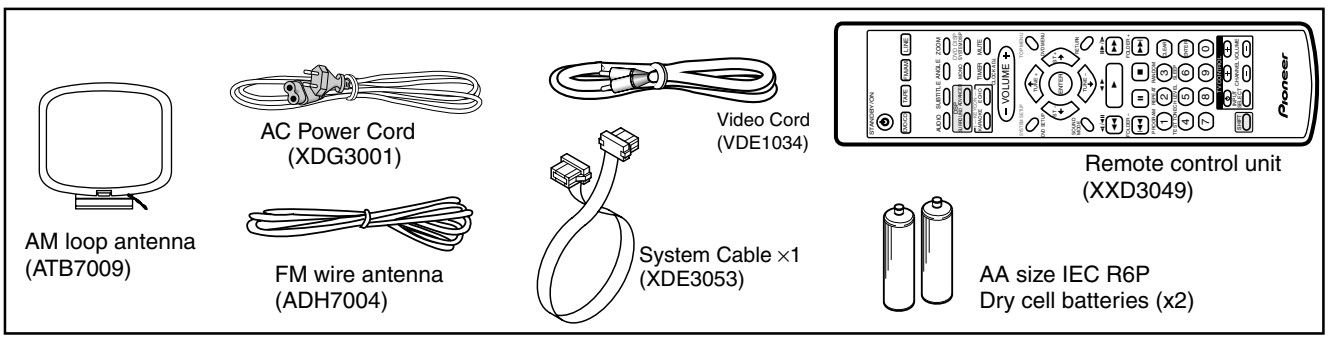
Accessories (Stereo Power Amplifier)

Remote control 1
Power cord
Australian, New Zealand, Central and South American models 2
All other models 1
Power plug adapter (excluding Singapore, Hong Kong and Malaysian models) 1
Video cord 1
System cable (EV51DVD) 2
System cable (EV21DVD) 1
FM antenna 1
AM loop antenna 1
Dry cell batteries (AA/R6) 2

Note

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

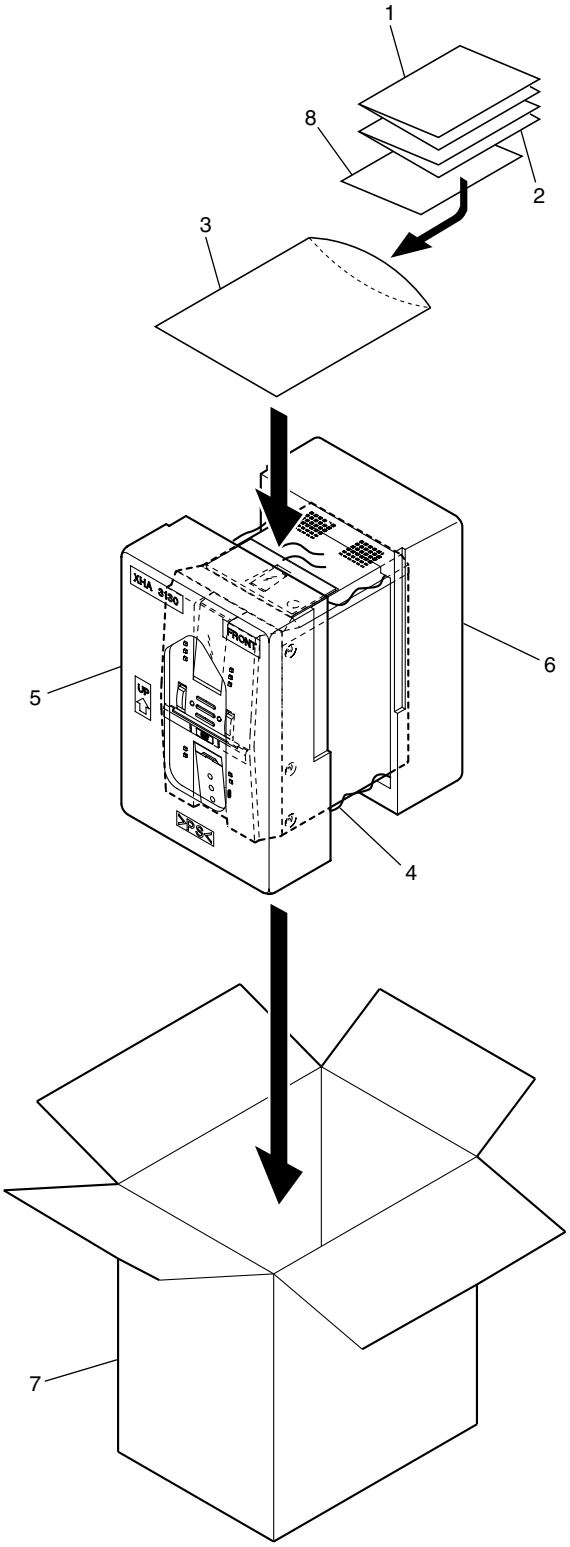
Accessories



2. EXPLODED VIEWS AND PARTS LIST

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

2.1 PACKING



PACKING parts List

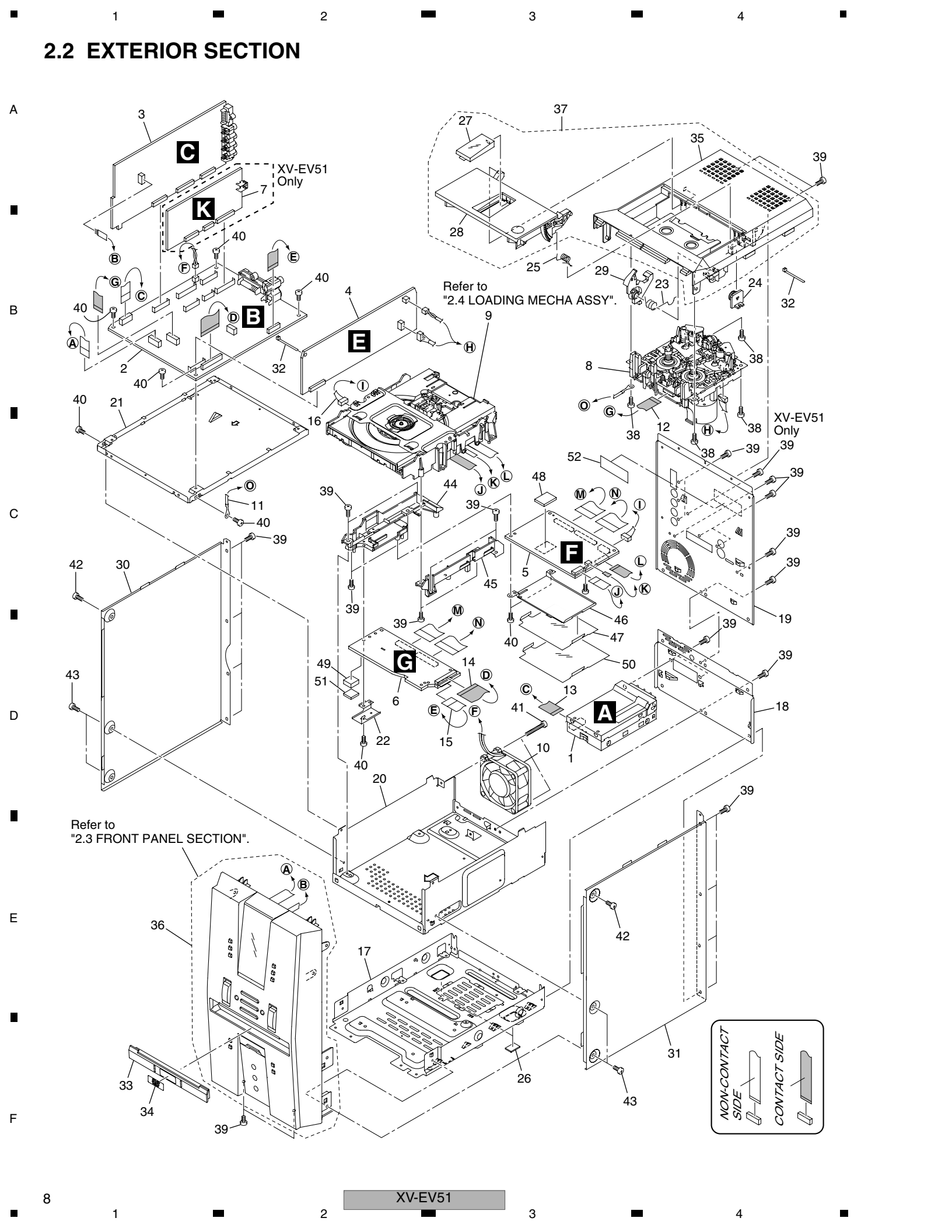
Mark	No.	Description	Part No.
	1	Operating Instructions (English)	XRB3017
	2	Operating Instructions (Chinese)	XRC3073
NSP	3	Polyethylene Bag (0.03 x 230 x 340)	Z21-038
	4	Packing Sheet	AHG7053
	5	Front Pad M	XHA3130
	6	Rear Pad M	XHA3131
	7	Packing Case	See Contrast table (2)
	8	Correct Sheet	XRH3007

(2) CONTRAST TABLE

XV-EV51/ZLXJ/NC and XV-EV21/ZLXJ/NC are constructed the same except for the following :

Mark	No.	Symbol and Description	XV-EV51/ZLXJ/NC	XV-EV21/ZLXJ/NC
	7	Packing Case	XHD3305	XHD3308

2.2 EXTERIOR SECTION



EXTERIOR SECTION parts List

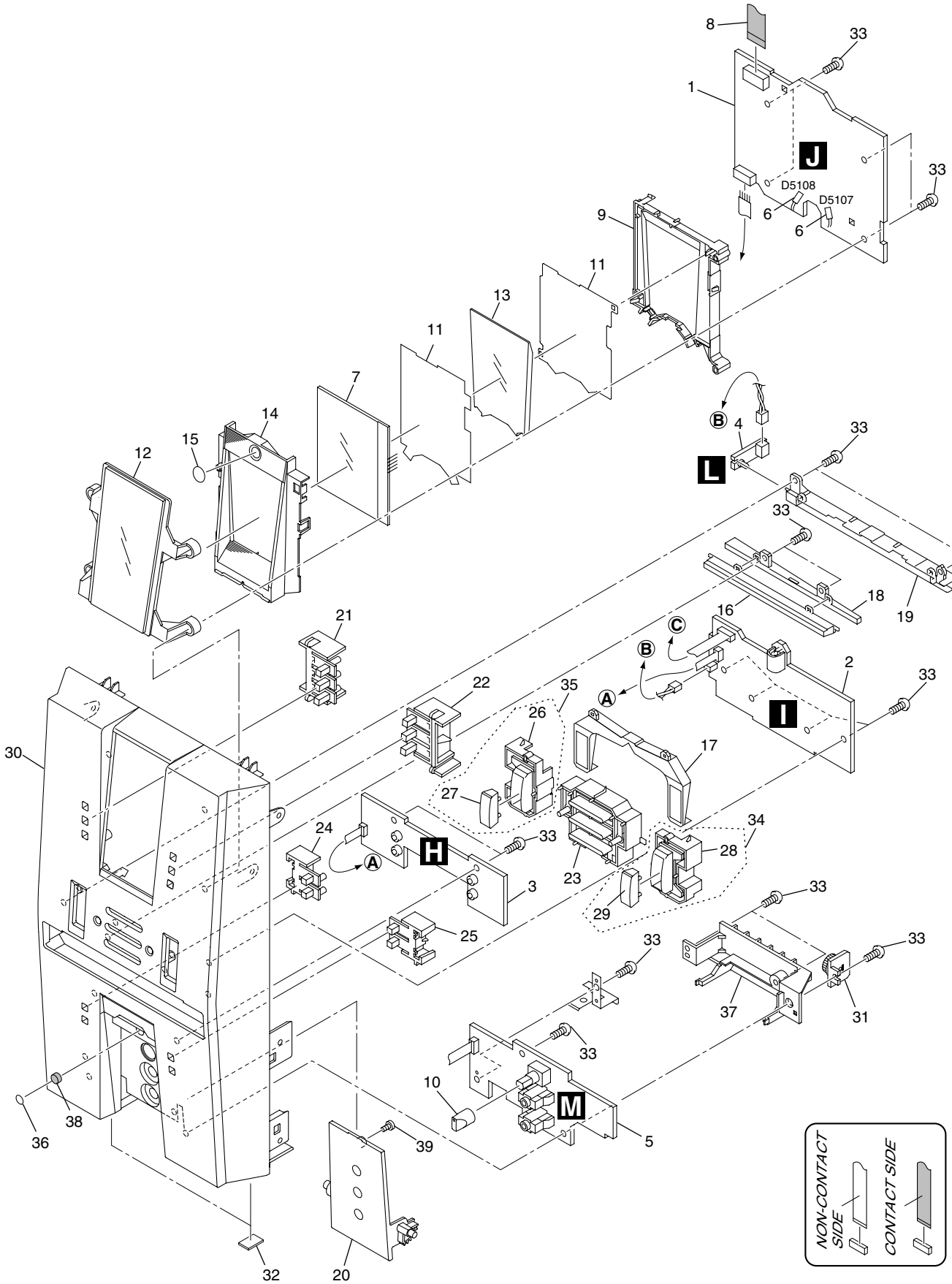
Mark	No.	Description	Part No.
	1	FM/AM TUNER Module	AXQ7228
	2	IF Assy	See Contrast table (2)
	3	AF Assy	See Contrast table (2)
	4	DECK Assy	See Contrast table (2)
	5	DVDM Assy	AWM7684
	6	DVD IF Assy	AWM7677
	7	DSP Assy	See Contrast table (2)
	8	DECK Mechanism Unit	XYM3015
NSP	9	LOADING MECHA Assy	VWT1203
	10	DC Fan Motor	AXM7025
NSP	11	Earth Lead Wire	DE012VF0
	12	11P Flat Flexible Cable	XDD3114
	13	13P Flat Flexible Cable	XDD3115
	14	30P Flat Flexible Cable	XDD3116
	15	16P Flat Flexible Cable	XDD3117
	16	Connector Assy 5P	XDE3055
NSP	17	Chassis	XNA3011
	18	Rear Panel A	See Contrast table (2)
	19	Rear Panel B	See Contrast table (2)
	20	Mecha Frame	XNG3082
	21	DVD Shield	XNG3083
	22	GND Plate	XNG3084
	23	Ratch Spring	ABH7130
	24	Damper Assy	AXA7052
	25	Door Spring L	XBH3010
	26	Leg Cushion	XEB3028
	27	Deck Lens	XAK3327
	28	Deck Door	XAN3047
	29	Ratch Mold	XMR3001
	30	Side Bonnet L	XNE3026
	31	Side Bonnet R	XNE3027
	32	Binder	ZCA-SKB90BK
	33	Tray Cap	XAK3325
	34	DVD Badge	XAK3331
	35	Top Panel	XAK3326
NSP	36	Front Panel Assy	See Contrast table (2)
NSP	37	Top Panel Assy	XXG3131
	38	Screw	VPZ30P080FZK
	39	Screw	BBZ30P080FZK
	40	Screw	BBZ30P080FMC
	41	Screw	BPZ30P350FZK
	42	Screw	VPZ30P080FNI
	43	Screw	BBZ30P080FNI
	44	Adapter 02 L	ANW7247
	45	Adapter 02 R	ANW7248
	46	Shield Case	ANK7108
	47	Heat plate	ANG7426
	48	Radiation Sheet	AEB7255
	49	Cushion	AEB7267
	50	FFC Barrier	AEC7443
	51	FFC Spacer	AEC7442
	52	Caution Label	VRW1699

(2) CONTRAST TABLE

XV-EV51/ZLXJ/NC and XV-EV21/ZLXJ/NC are constructed the same except for the following :

Mark	NO	Symbol and Description	XV-EV51/ZLXJ/NC	XV-EV21/ZLXJ/NC
	2	IF Assy	XWZ3617	XWZ3627
	3	AF Assy	XWZ3618	XWZ3628
	4	DECK Assy	XWX3067	XWX3066
	7	DSP Assy	AWX8059	Not used
	18	Rear Panel A	XNC3160	XNC3180
	19	Rear Panel B	XNC3161	XNC3176
NSP	37	Front Panel Assy	XXG3129	XXG3130

2.3 FRONT PANEL SECTION



FRONT PANEL SECTION parts List

Mark	No.	Description	Part No.
	1	DISP 1 Assy	XWZ3619
	2	DISP 2 Assy	XWZ3620
	3	DISP 3 Assy	XWZ3621
	4	LED Assy	XWZ3622
	5	MIC Assy	See Contrast table (2)
	6	LED (D5107, D5108)	NSPWF50BS-9706
	7	LCD	XAV3016
	8	11P Flat Flexible Cable	XDD3113
	9	LCD Holder	XMR3052
	10	MIC Knob	XAA3024
	11	Diffusion Sheet	XAK3321
	12	Display Window	See Contrast table (2)
	13	LCD LT Cond	XAK3323
	14	LCD Cover	XAK3324
	15	Sensor Cover	XAK3330
	16	Tray Lens	XAK3332
	17	FUNC. LT Cond	XAK3333
	18	LT Cond	XAK3334
	19	LT Cover	XAK3335
	20	Jack Door	XAN3048
	21	Display Button L	XAD3149
	22	Display Button R	XAD3150
	23	Play Button	XAD3151
	24	Dolby Button L	XAD3154
	25	Dolby Button R	XAD3155
	26	FUNC. Button L	XAD3152
	27	FUNC. Cover L	XAK3328
	28	FUNC. Button R	XAD3153
	29	FUNC. Cover R	XAK3329
	30	Front Panel M	See Contrast table (2)
	31	Damper Assy	XXA3029
	32	Leg Cushion	XEB3028
	33	Screw	VPZ30P080FZK
	34	FUNC. Assy R	XAD3158
	35	FUNC. Assy L	XAD3157
	36	Cushion	XEB3004
	37	Gap Cover	XMR3055
	38	Magnet	XMF3003
	39	Screw 2x4 B	XBA3011

(2) CONTRAST TABLE

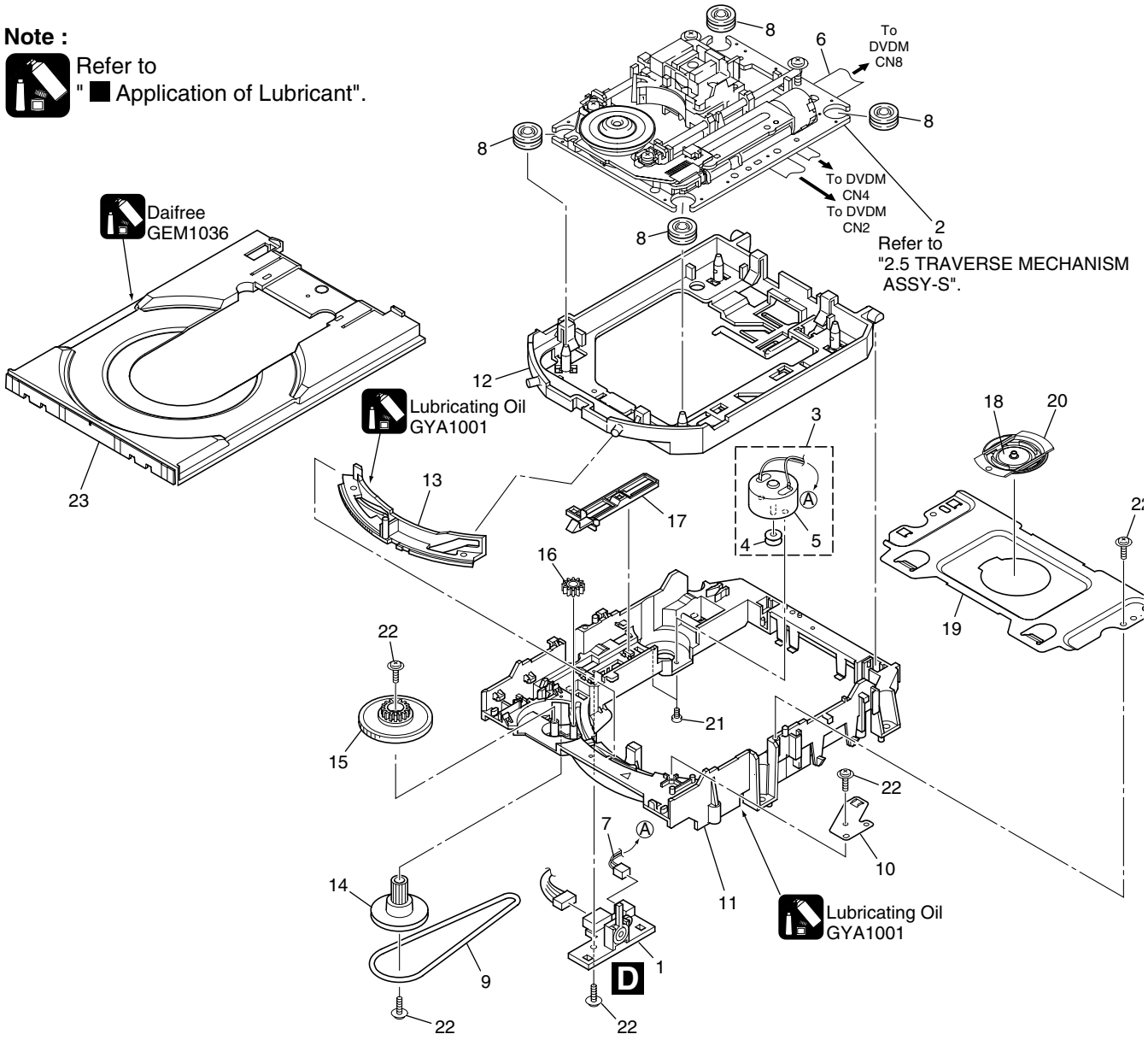
XV-EV51/ZLXJ/NC and XV-EV21/ZLXJ/NC are constructed the same except for the following :

Mark	No.	Symbol and Description	XV-EV51/ZLXJ/NC	XV-EV21/ZLXJ/NC
	5	MIC Assy	XWZ3626	XWZ3623
	12	Display Window	XAK3322	XAK3343
	30	Front Panel M	XMB3084	XMB3089

2.4 LOADING MECHANISM ASSY

Note :

Refer to
" ■ Application of Lubricant".

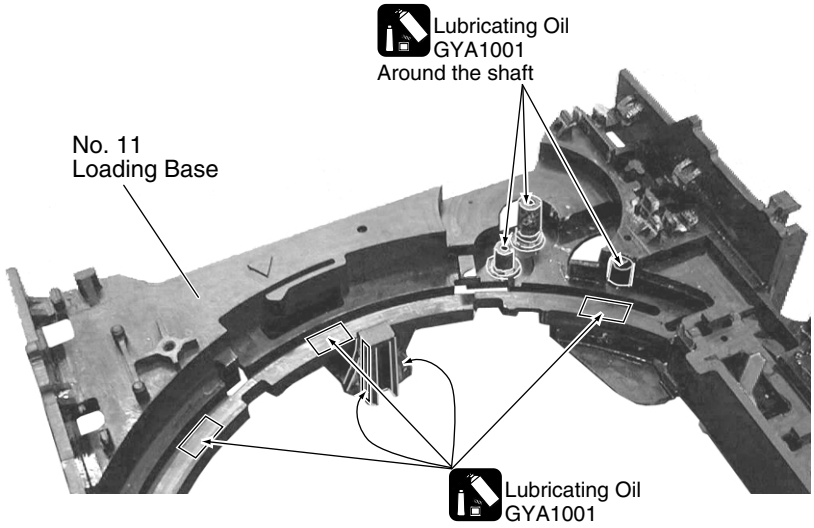


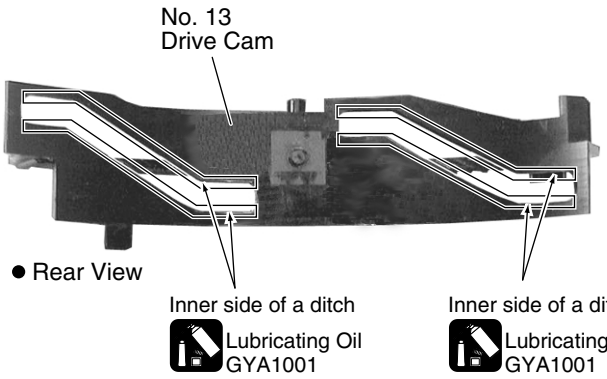
LOADING MECHANISM ASSY parts List

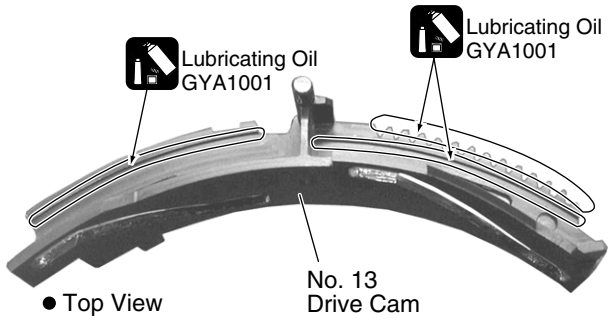
Mark	No.	Description	Part No.
NSP	1	LOAB Assy	VWG2346
	2	Traverse Mechanism Assy-S	VXX2858
	3	Loading Motor Assy	VXX2505
	4	Motor Pulley	PNW1634
	5	Carriage DC Motor / 0.3W	PXM1027
	6	Flexible Cable (26P)	VDA1864
	7	Connector Assy 2P	VKP2253
	8	Float Rubber	VEB1327
	9	Belt	VEB1330
	10	Stabilizer	VNE2253
	11	Loading Base	VNL1917
	12	Float Base DVD	VNL1918
	13	Drive Cam	VNL1919
	14	Gear Pulley	VNL1921
	15	Loading Gear	VNL1922

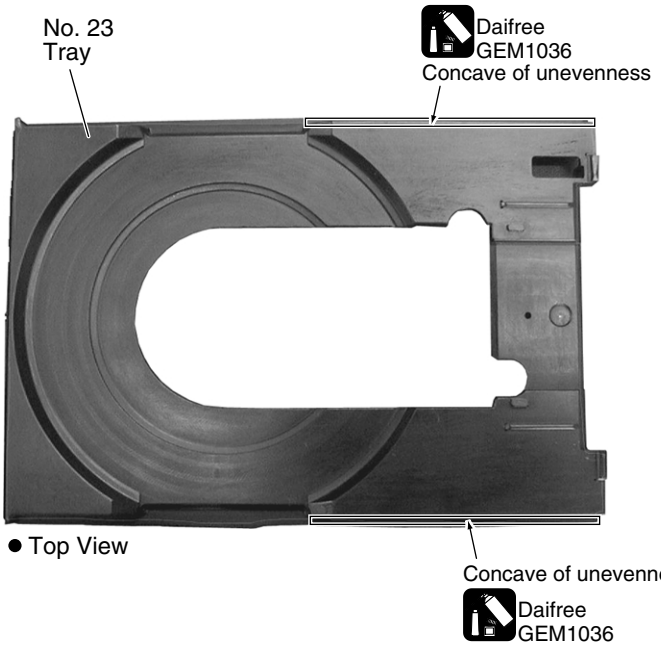
Mark	No.	Description	Part No.
	16	Drive Gear	VNL1923
	17	SW Lever	VNL1925
	18	Clamper Plate	VNE2251
	19	Bridge	VNE2252
	20	Clamper	VNL1924
	21	Screw	JGZ17P028FMC
	22	Screw	Z39-019
	23	Tray	VNL1920

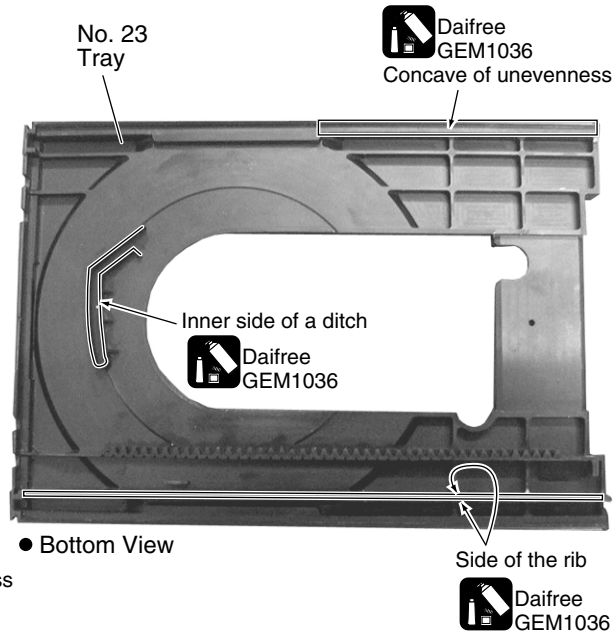
Application of Lubricant



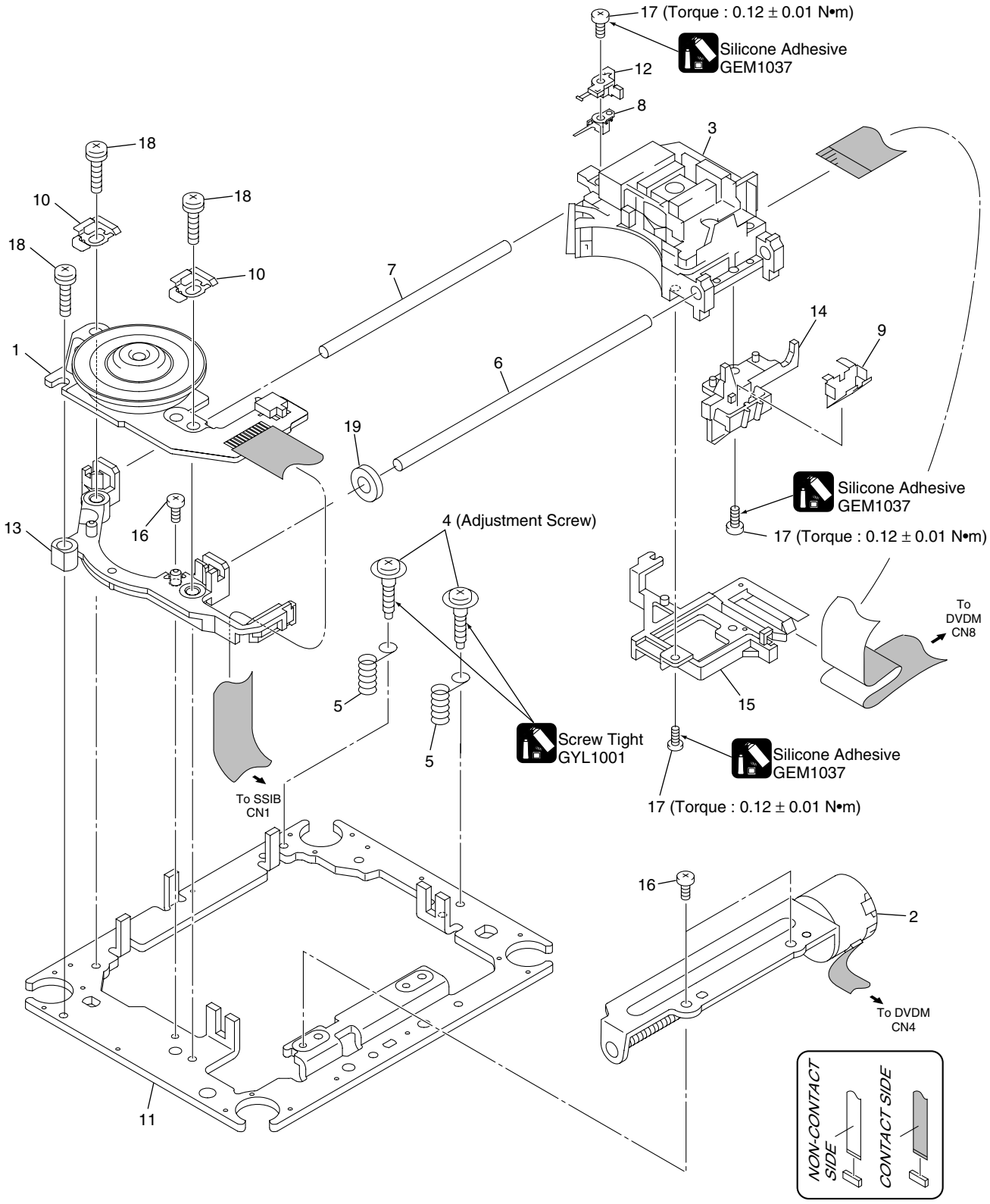








2.5 TRAVERSE MECHANISM ASSY



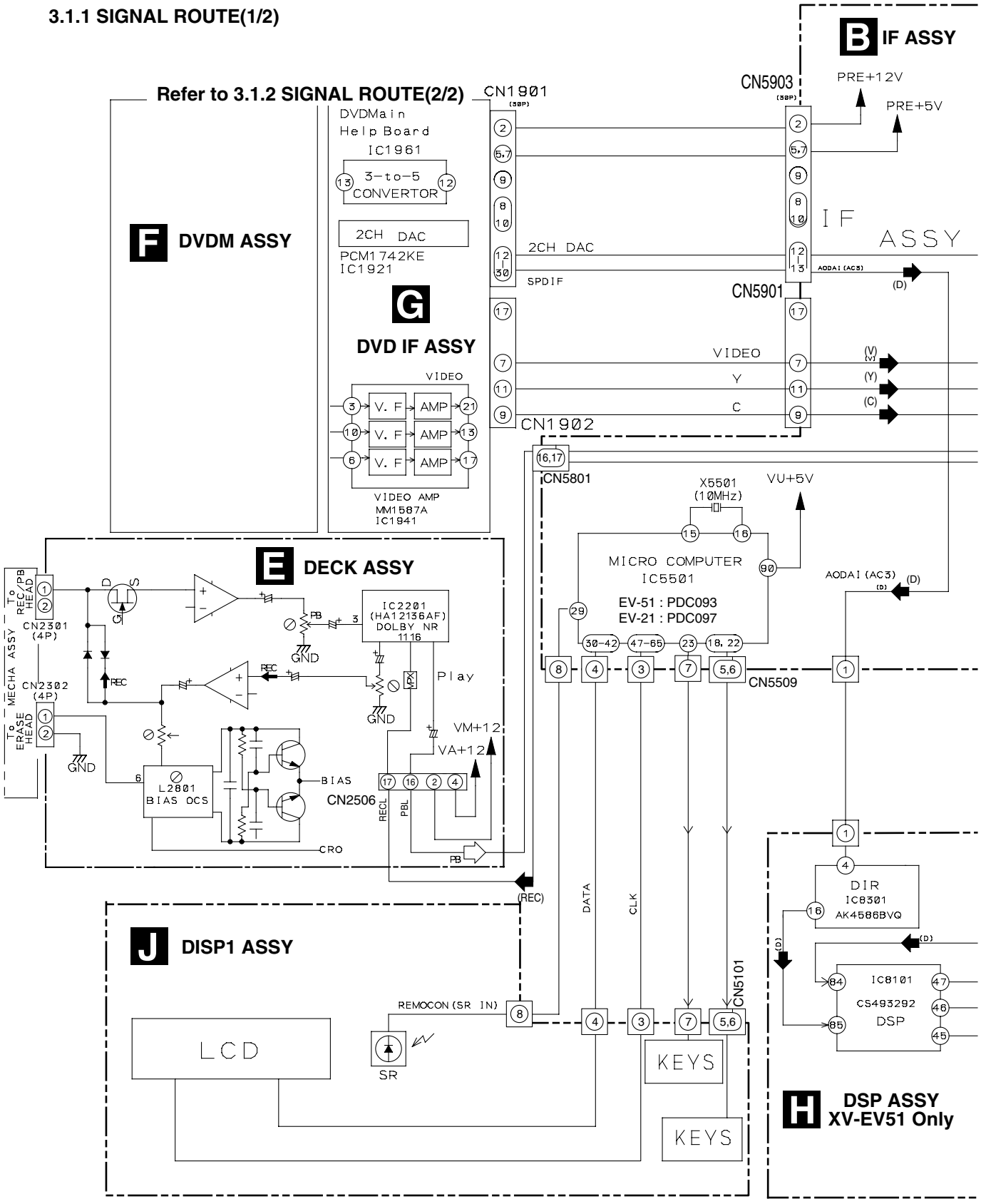
TRAVERSE MECHANISM ASSY parts List

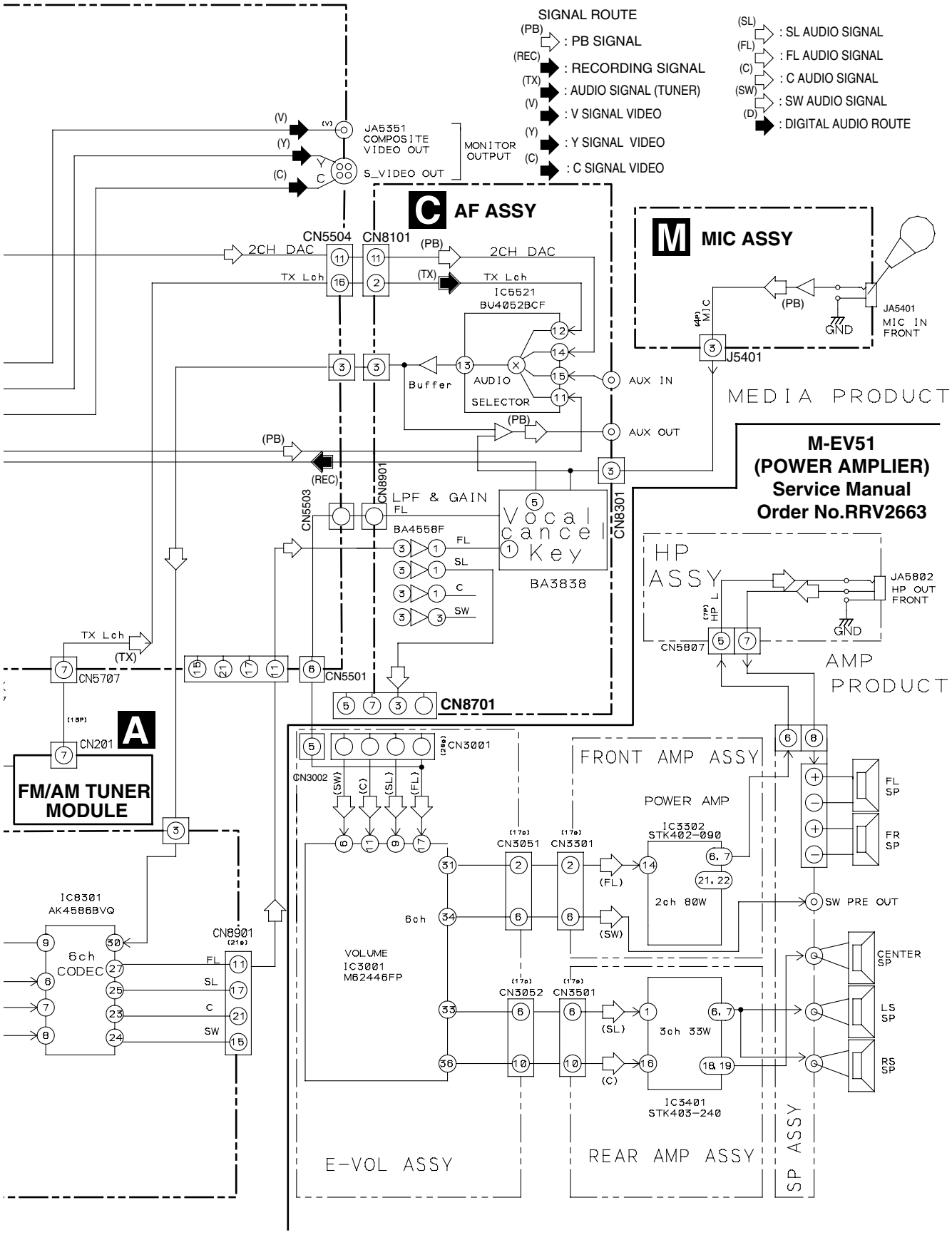
Mark	No.	Description	Part No.
	1	Spindle Motor	VXM1088
	2	Stepping Motor	VXM1090
⚠	3	Pickup Assy-S	OXX8004
	4	Skew Screw	VBA1080
	5	Skew Spring	VBH1335
	6	Guide Bar	VLL1514
	7	Sub Guide Bar	VLL1515
	8	Hold Spring	VNC1017
	9	Joint Spring	VNC1019
	10	Support Spring	VNC1020
NSP	11	Mechanism Chassis	VNE2248
	12	Slider	VNL1811
	13	Spacer	VNL1913
	14	Joint	VNL1914
	15	FFC Holder	VNL1915
	16	Screw	BBZ20P050FZK
	17	Tapping Screw	OBA8009
	18	Screw	PMA26P100FMC
	19	Damper Sheet	VEB1335

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

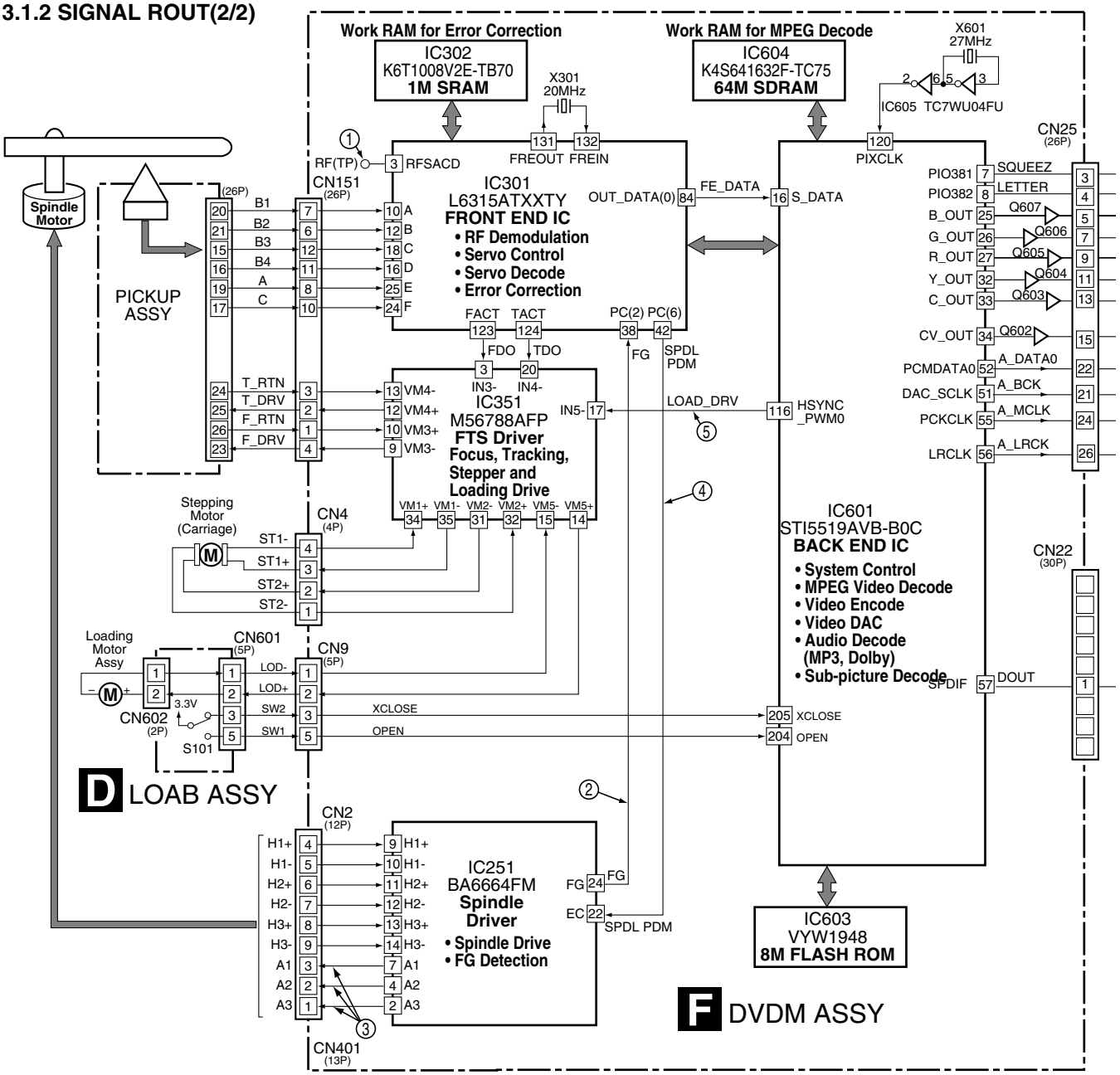
3.1 BLOCK DIAGRAM

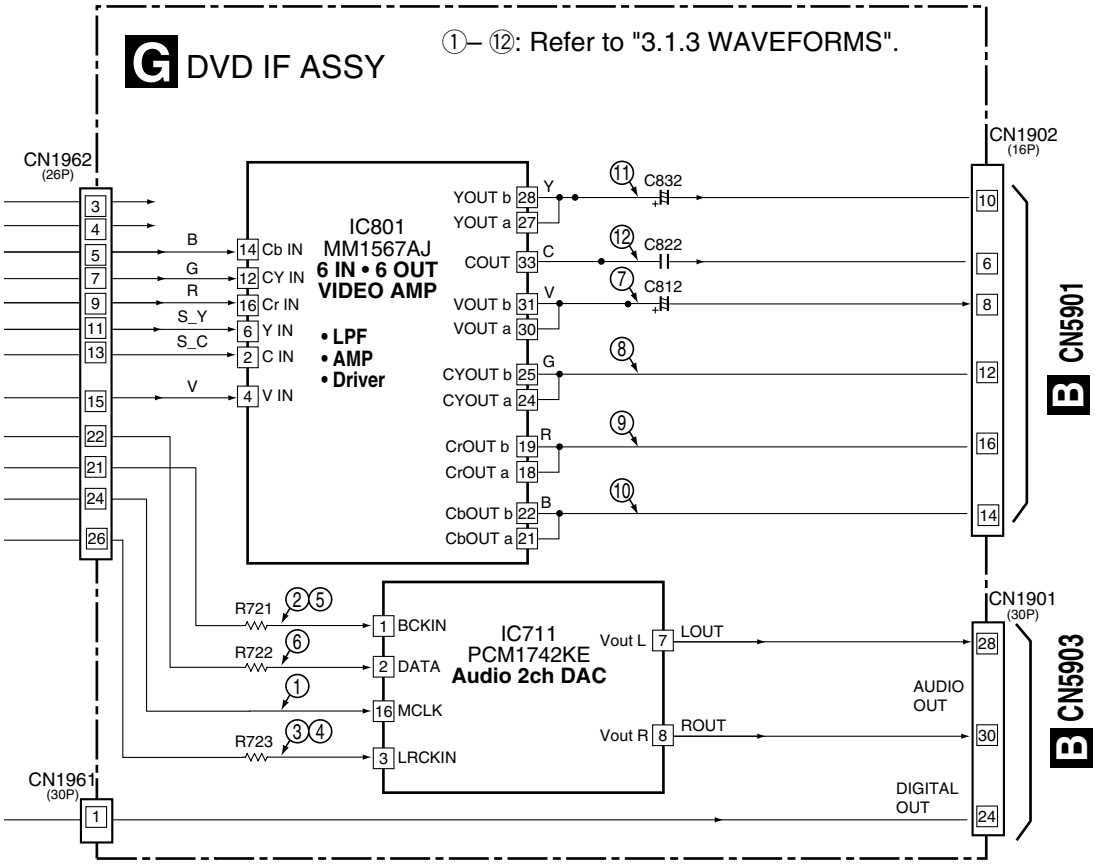
3.1.1 SIGNAL ROUTE(1/2)




SIGNAL ROUTE
(PB) : PB SIGNAL
(REC) : RECORDING SIGNAL
(TX) : AUDIO SIGNAL (TUNER)
(V) : V SIGNAL VIDEO
(Y) : Y SIGNAL VIDEO
(C) : C SIGNAL VIDEO
(SL) : SL AUDIO SIGNAL
(FL) : FL AUDIO SIGNAL
(C) : C AUDIO SIGNAL
(SW) : SW AUDIO SIGNAL
(D) : DIGITAL AUDIO ROUTE
JA5351 COMPOSITE VIDEO OUT
S_VIDEO OUT
MONITOR OUTPUT
C AF ASSY
CN5504
CN8101
2CH DAC
TX Lch
IC5521 BU4052BCF
Buffer
AUDIO SELECTOR
AUX IN
AUX OUT
CN8901
CN5503
LPF & GAIN
BA4558F
Vocal cancel Key
BA3838
CN8301
M MIC ASSY
JA5401 MIC IN FRONT
J5401
MEDIA PRODUCT
M-EV51
(POWER AMPLIER)
Service Manual
Order No.RRV2663
HP ASSY
JA5802 HP OUT FRONT
CN5807
AMP PRODUCT
CN5707
CN5501
CN8701
A
CN201
FM/AM TUNER MODULE
CN3001
CN3002
FRONT AMP ASSY
POWER AMP
IC3302 STK402-090
2ch 80W
CN3051
CN3301
CN3052
CN3501
IC3401 STK403-240
3ch 33W
SW PRE OUT
FL SP
FR SP
CENTER SP
LS SP
RS SP
IC8301 AK4586BVQ
6ch CODEC
VOLUME IC3001 M62446FP
E-VOL ASSY
REAR AMP ASSY
SP ASSY

3.1.2 SIGNAL ROUT(2/2)



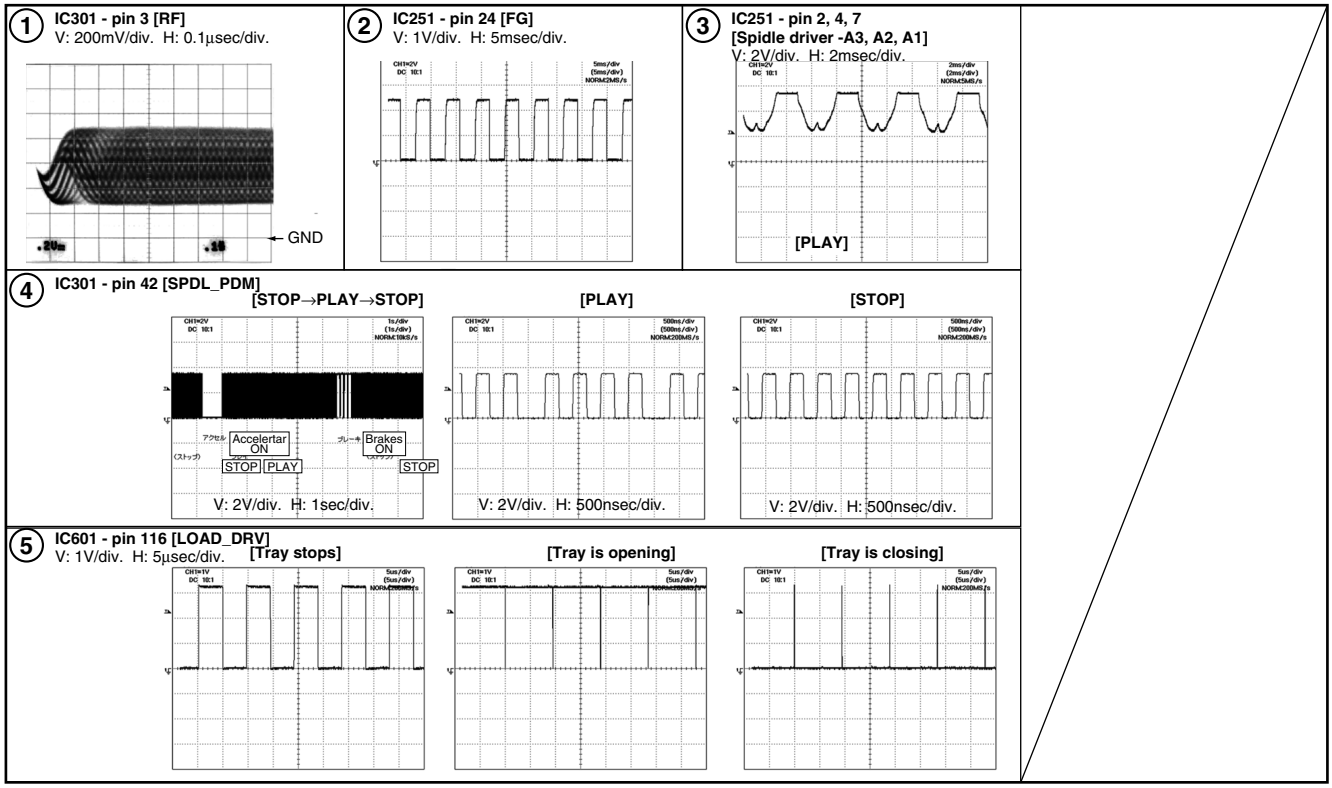


3.1.3 WAVEFORMS

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

F DVDM ASSY

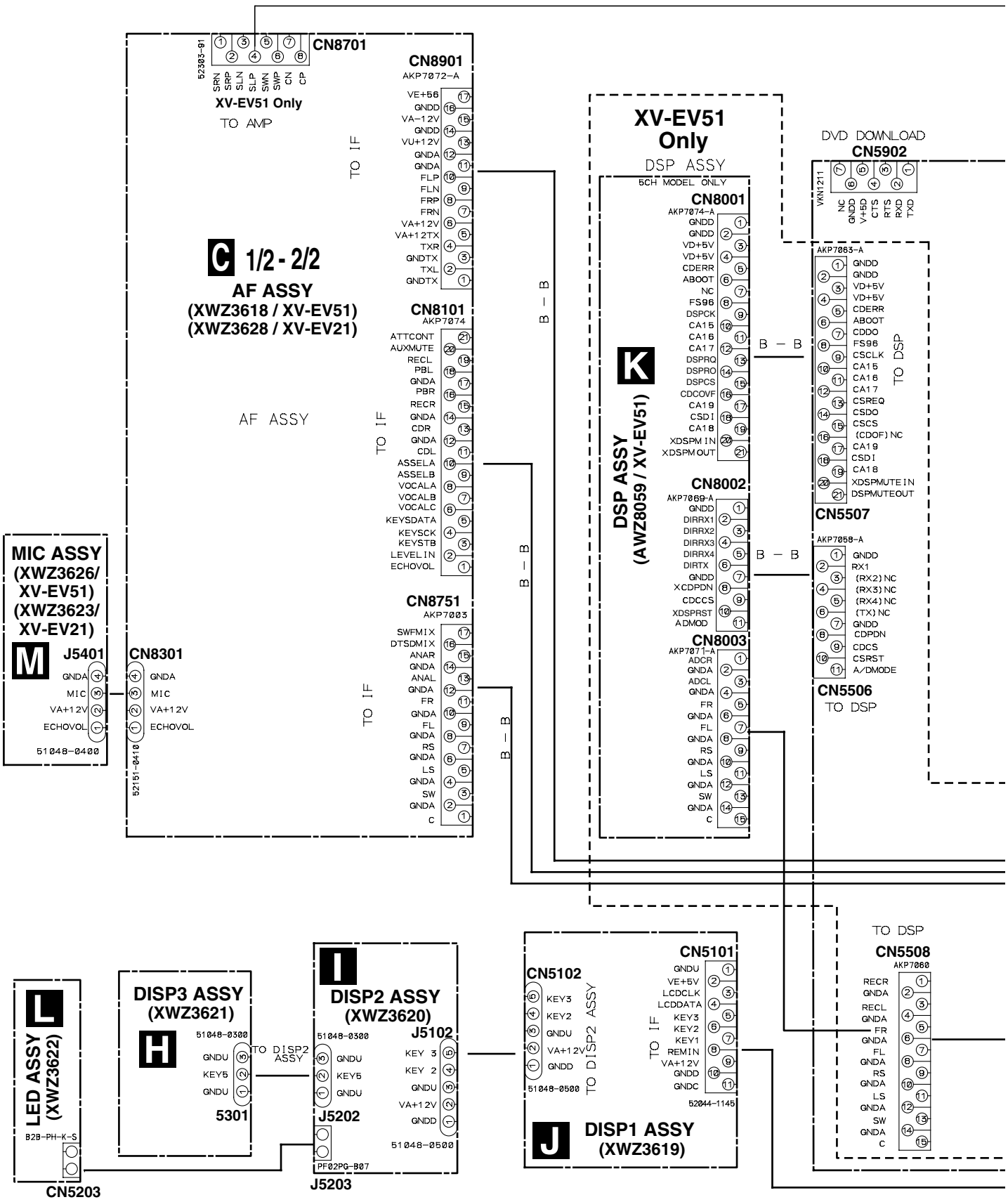
Measurement condition : No. 1 and 2 : reference A1 (DVD), T2-chp 19, Color-bar

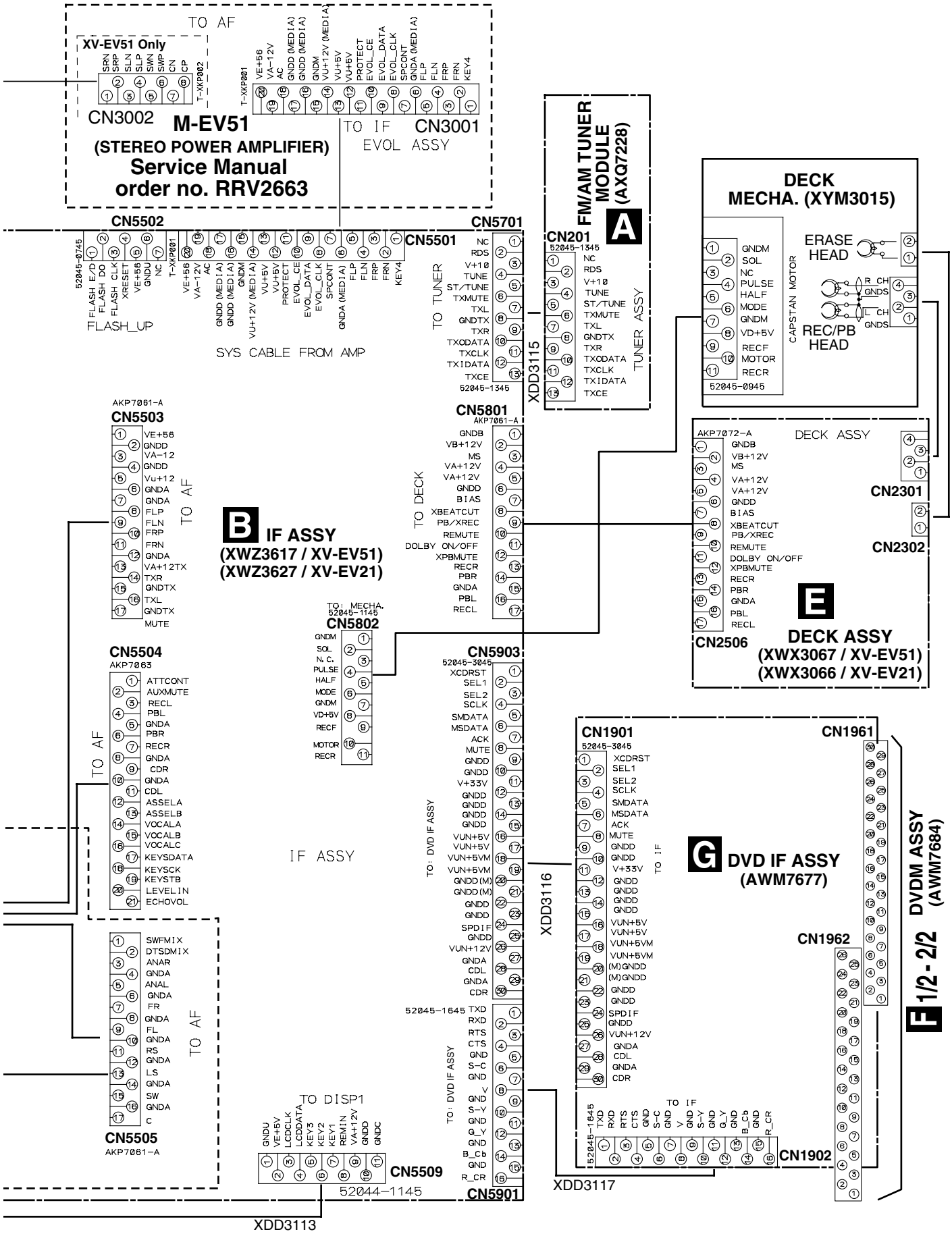


3.2 OVERALL WIRING DIAGAM

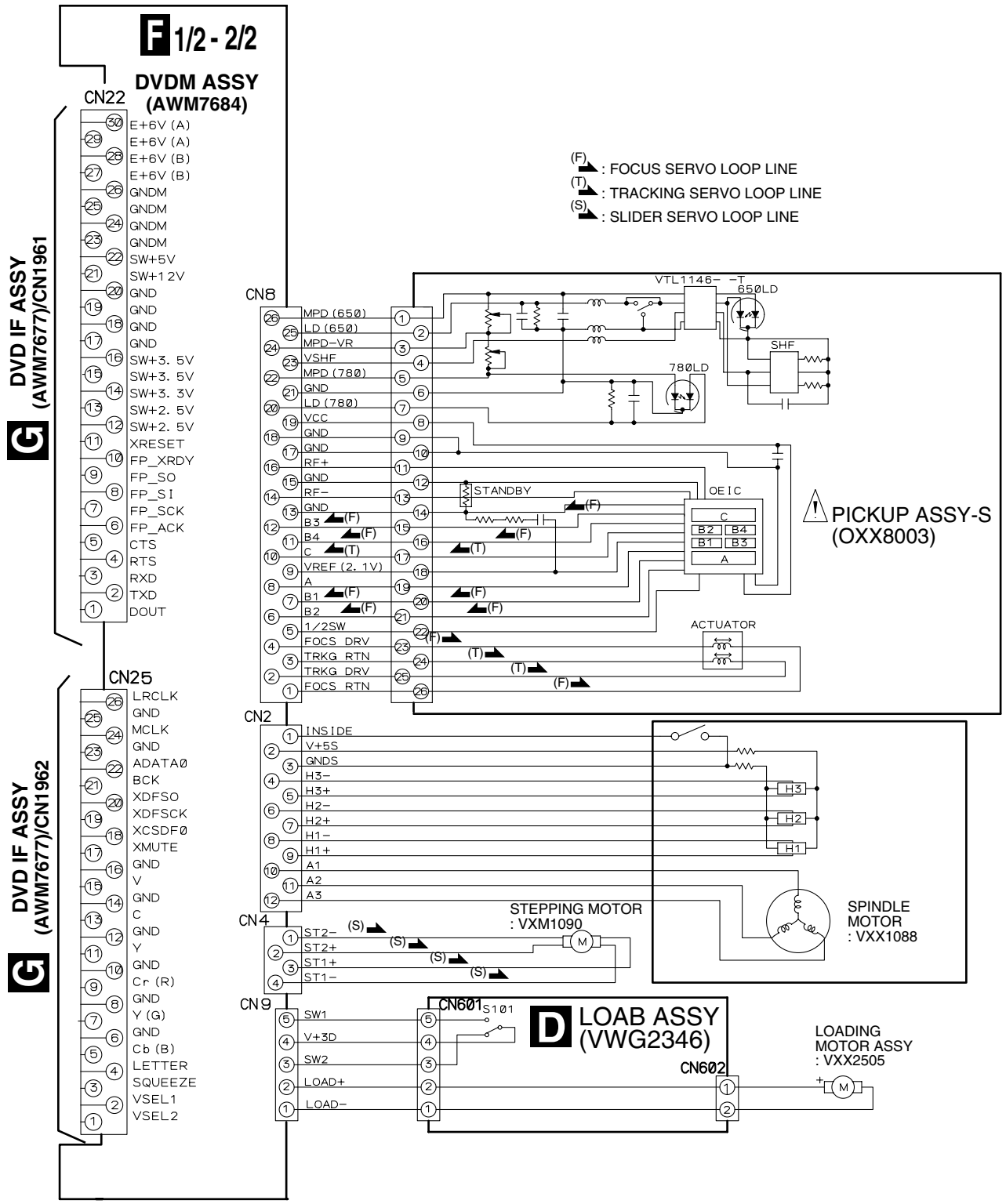
3.2.1 OVERALL WIRING DIAGRAM(MEDIA PART 1/2)

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




M-EV51
(STEREO POWER AMPLIFIER)
Service Manual
order no. RRV2663
TO AF
XV-EV51 Only
CN3002
TO IF CN3001
EVOL ASSY
FM/AM TUNER MODULE (AXQ7228)
A
TUNER ASSY
DECK MECHA. (XYM3015)
ERASE HEAD
REC/PB HEAD
CAPSTAN MOTOR
CN5502
CN5701
CN5501
FLASH_UP
SYS CABLE FROM AMP
TO TUNER
XDD3115
CN5801
TO DECK
CN5503
B IF ASSY
(XWZ3617 / XV-EV51)
(XWZ3627 / XV-EV21)
DECK ASSY
CN2301
CN2302
CN2506
E
DECK ASSY
(XWX3067 / XV-EV51)
(XWX3066 / XV-EV21)
CN5802
CN5903
CN5504
IF ASSY
TO: DVD IF ASSY
XDD3116
CN1901
CN1961
G DVD IF ASSY
(AWM7677)
CN1962
F 1/2 - 2/2 DVDM ASSY
(AWM7684)
CN5505
CN5509
CN5901
TO DISP1
52044-1145
XDD3113
XDD3117
CN1902

3.2.2 OVERALL WIRING DIAGRAM (MEDIA PART 2/2)



D

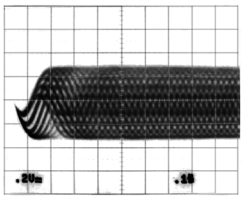
3.1.3 WAVEFORMS

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

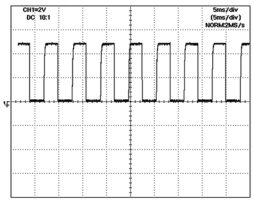
F DVDM ASSY

Measurement condition : No. 1 and 2 : reference A1 (DVD), T2-chp 19, Color-bar

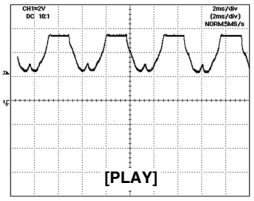
(1) IC301 - pin 3 [RF]
V: 200mV/div. H: 0.1µsec/div.



(2) IC251 - pin 24 [FG]
V: 1V/div. H: 5msec/div.

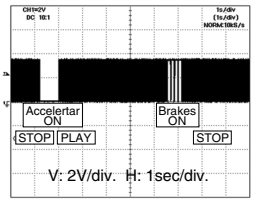


(3) IC251 - pin 2, 4, 7
[Spidle driver -A3, A2, A1]
V: 2V/div. H: 2msec/div.

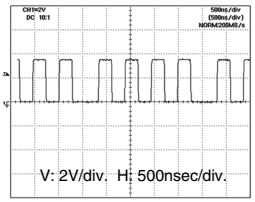


(4) IC301 - pin 42 [SPDL_PDM]

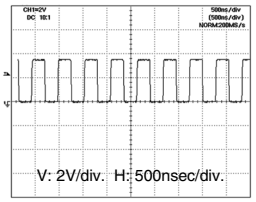
[STOP→PLAY→STOP]



[PLAY]

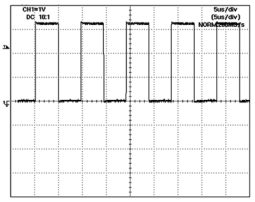


[STOP]

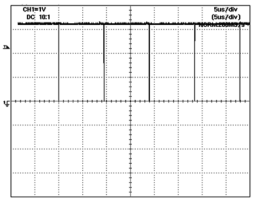


(5) IC601 - pin 116 [LOAD_DRV]
V: 1V/div. H: 5µsec/div.

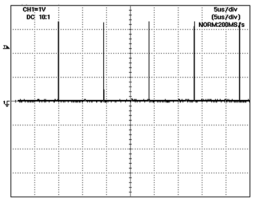
[Tray stops]



[Tray is opening]



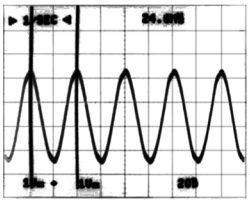
[Tray is closing]



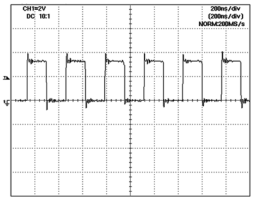
G DVD IF ASSY

Measurement condition : No. 1 to 6 : reference A1 (DVD), T2-chp 1
No. 7 to 12 : reference A1 (DVD), T2-chp 19, Color-bar

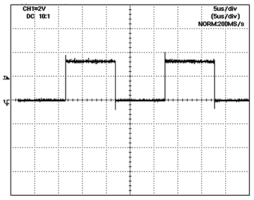
(1) IC711 - pin 16 [AUDIO DAC -MCK]
V: 1V/div. H: 20nsec/div.



(2) IC711 - pin 1 [AUDIO DAC -BCK]
V: 2V/div. H: 200nsec/div.



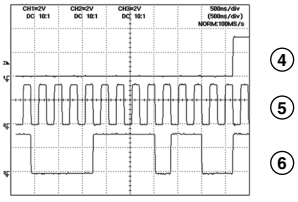
(3) IC711 - pin 3 [AUDIO DAC -LRCK]
V: 2V/div. H: 5µsec/div.



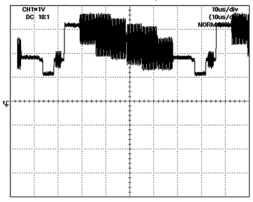
(4) IC711 - pin 3
[AUDIO DAC -LRCK]
V: 2V/div. H: 500nsec/div.

(5) IC711 - pin 1
[AUDIO DAC -BCK]
V: 2V/div. H: 500nsec/div.

(6) IC711 - pin 2
[AUDIO DAC -DATA]
V: 2V/div. H: 500nsec/div.



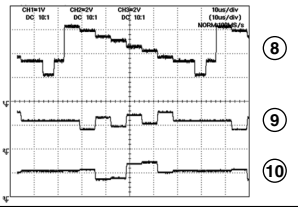
(7) Foot of C812 (IC801 - pin 30, 31)
[Composite Video output]
V: 1V/div. H: 10µsec/div.



(8) Foot of C842 (IC801 - pin 24, 25)
[Component Video output -Y]
V: 1V/div. H: 10µsec/div.

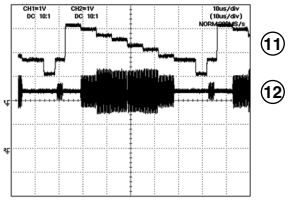
(9) Foot of C852 (IC801 - pin 18, 19)
[Component Video output -Cb]
V: 2V/div. H: 10µsec/div.

(10) Foot of C862 (IC801 - pin 21, 22)
[Component Video output -Cr]
V: 2V/div. H: 10µsec/div.



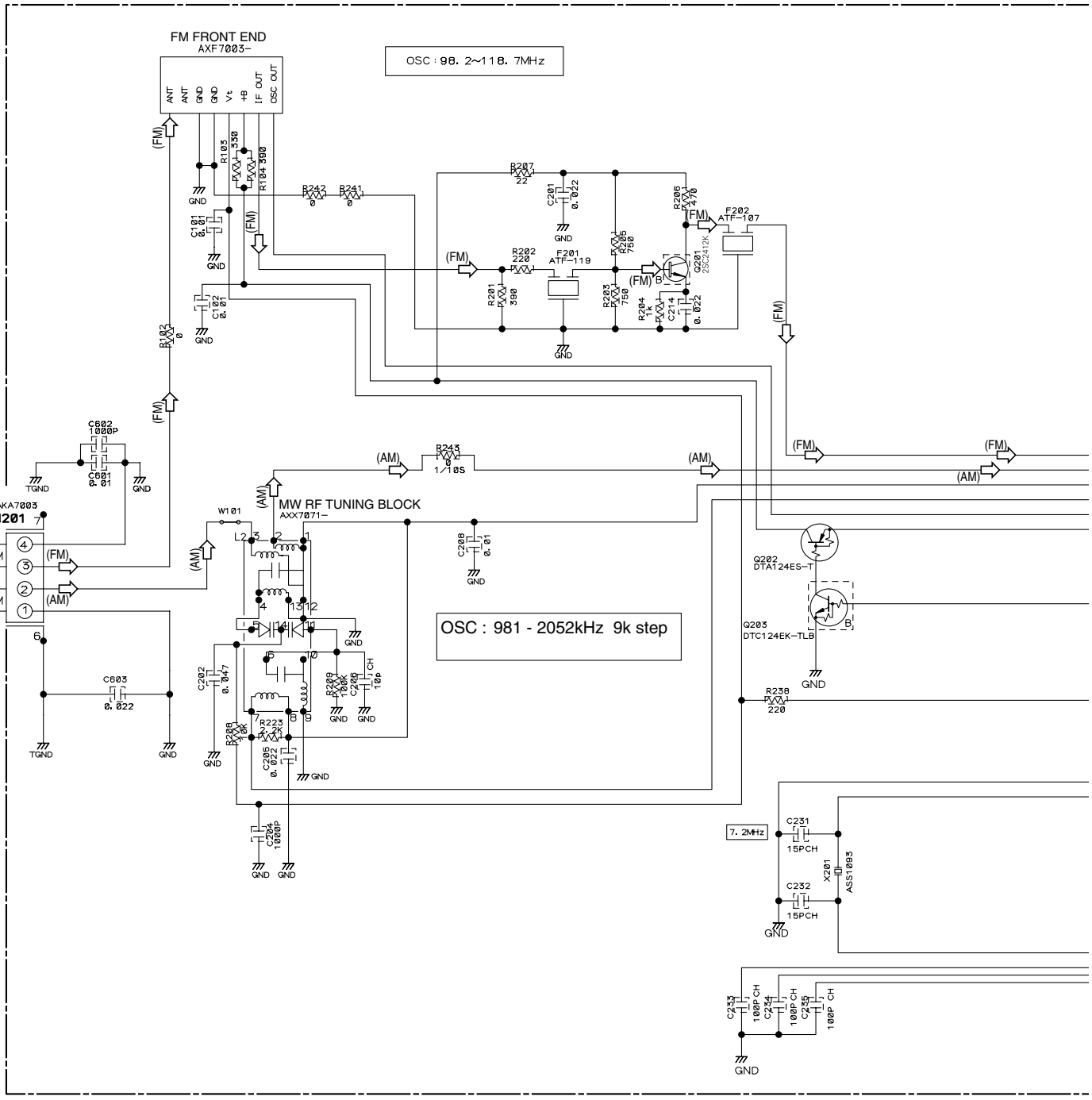
(11) Foot of C832 (IC801 - pin 27, 28)
[S Video output -Y]
V: 1V/div. H: 10µsec/div.

(12) Foot of C822 (IC801 - pin 33)
[S Video output -C]
V: 1V/div. H: 10µsec/div.



3.3 FM/AM TUNER MODULE

A FM/AM TUNER MODULE (AXQ7228)

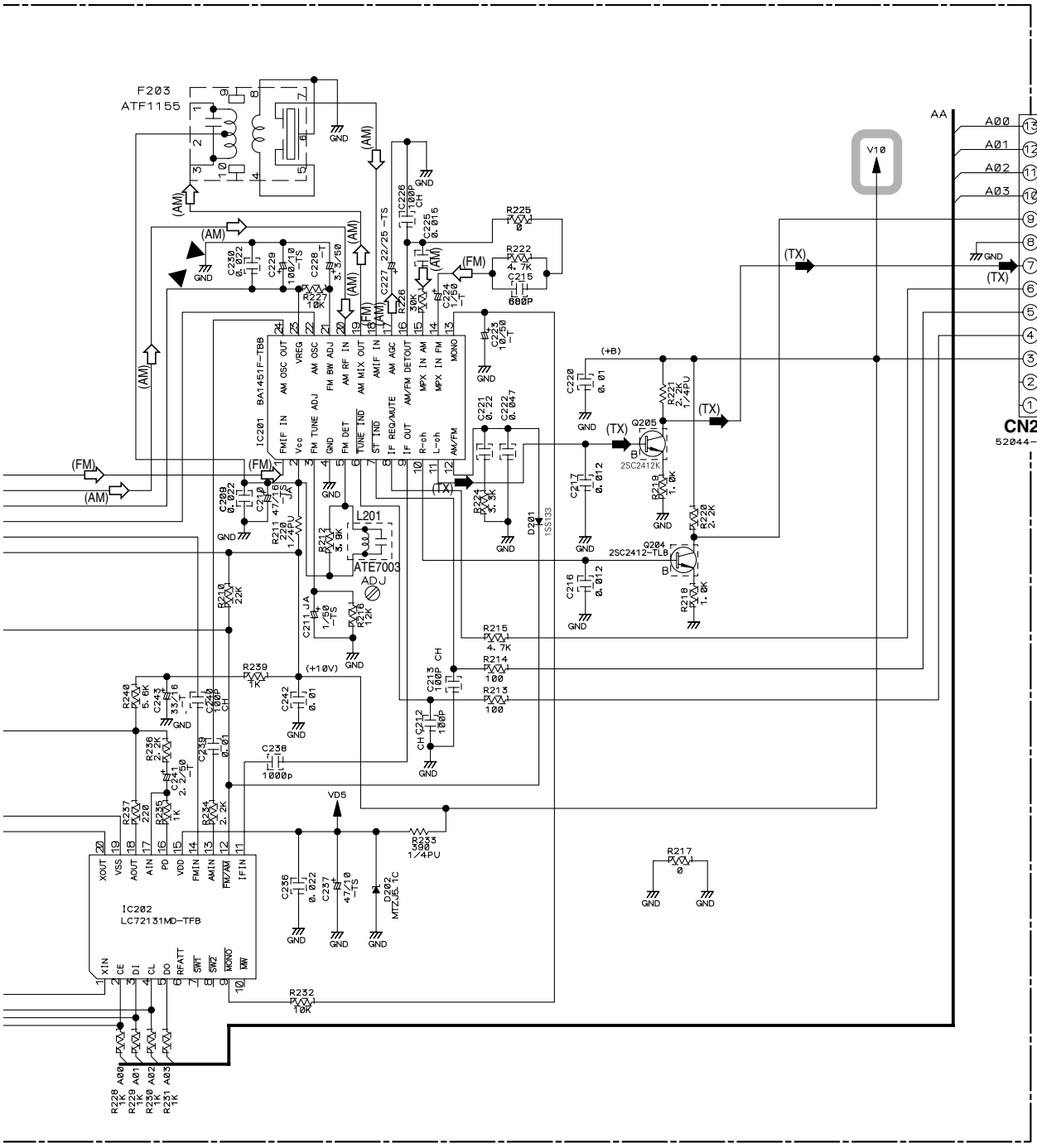


Notes

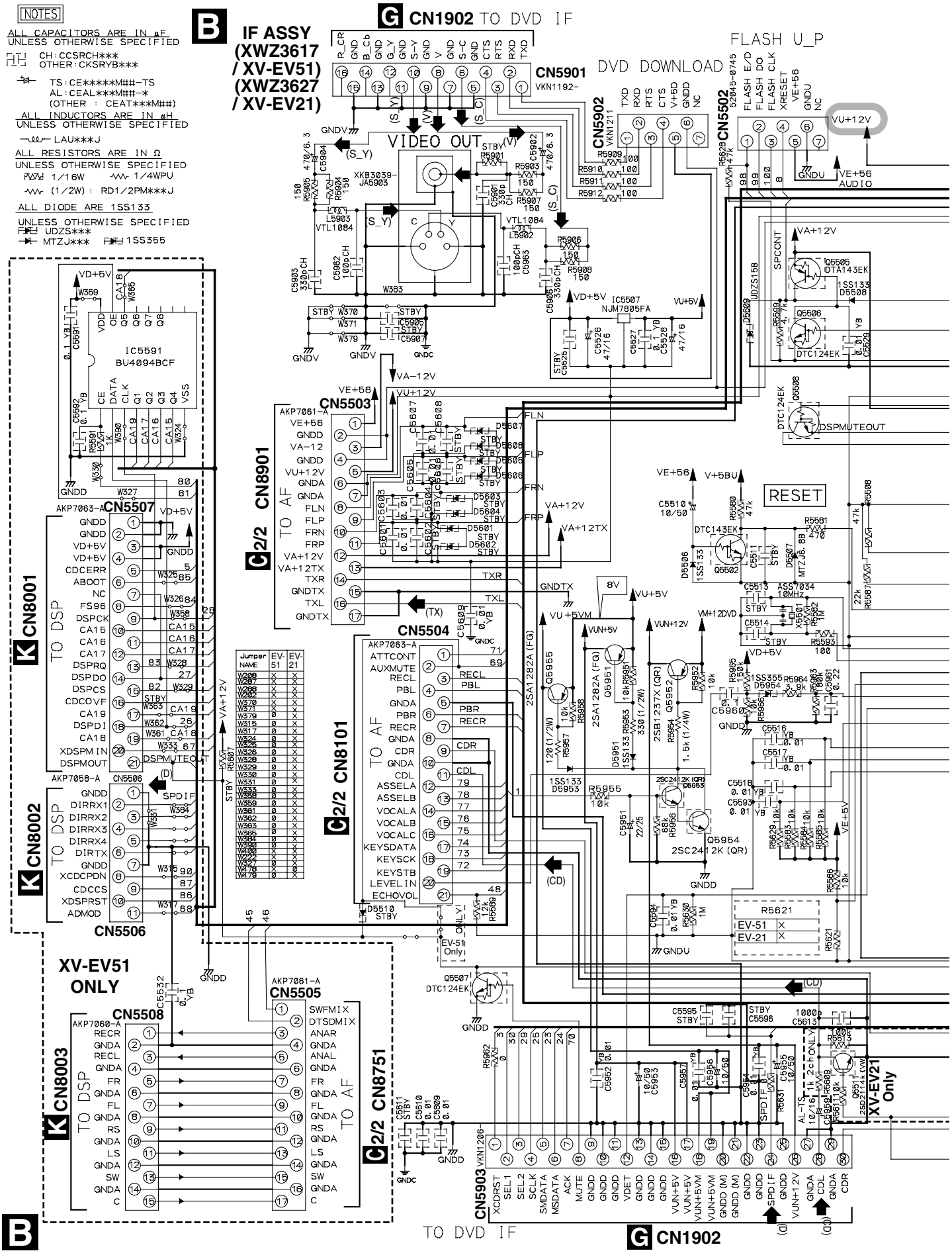
1. RESISTORS
   Indicated in Ω, 1/16W±5% Tolerance unless otherwise noted K:KΩ, M:MΩ.
2. CAPACITORS
   Indicated in Capacity(μF)/VOLTAGE(V) unless otherwise noted P:PF.
3. DIODES
   No mark diode is 1SS133.

: The power supply is shown with the marked box.

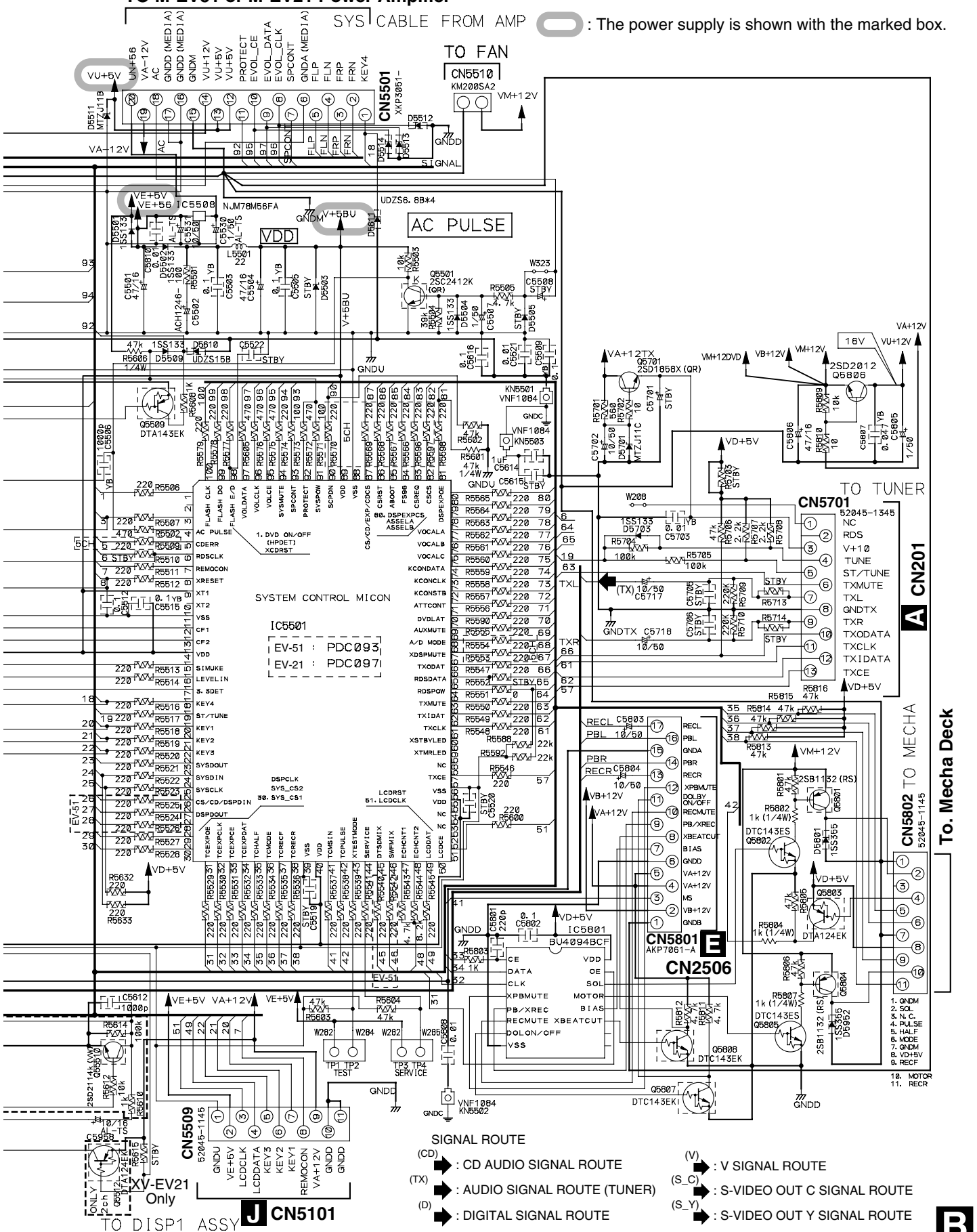
(TX) : AUDIO SIGNAL ROUTE (TUNER)
(AM) : AM SIGNAL ROUTE
(FM) : FM SIGNAL ROUTE



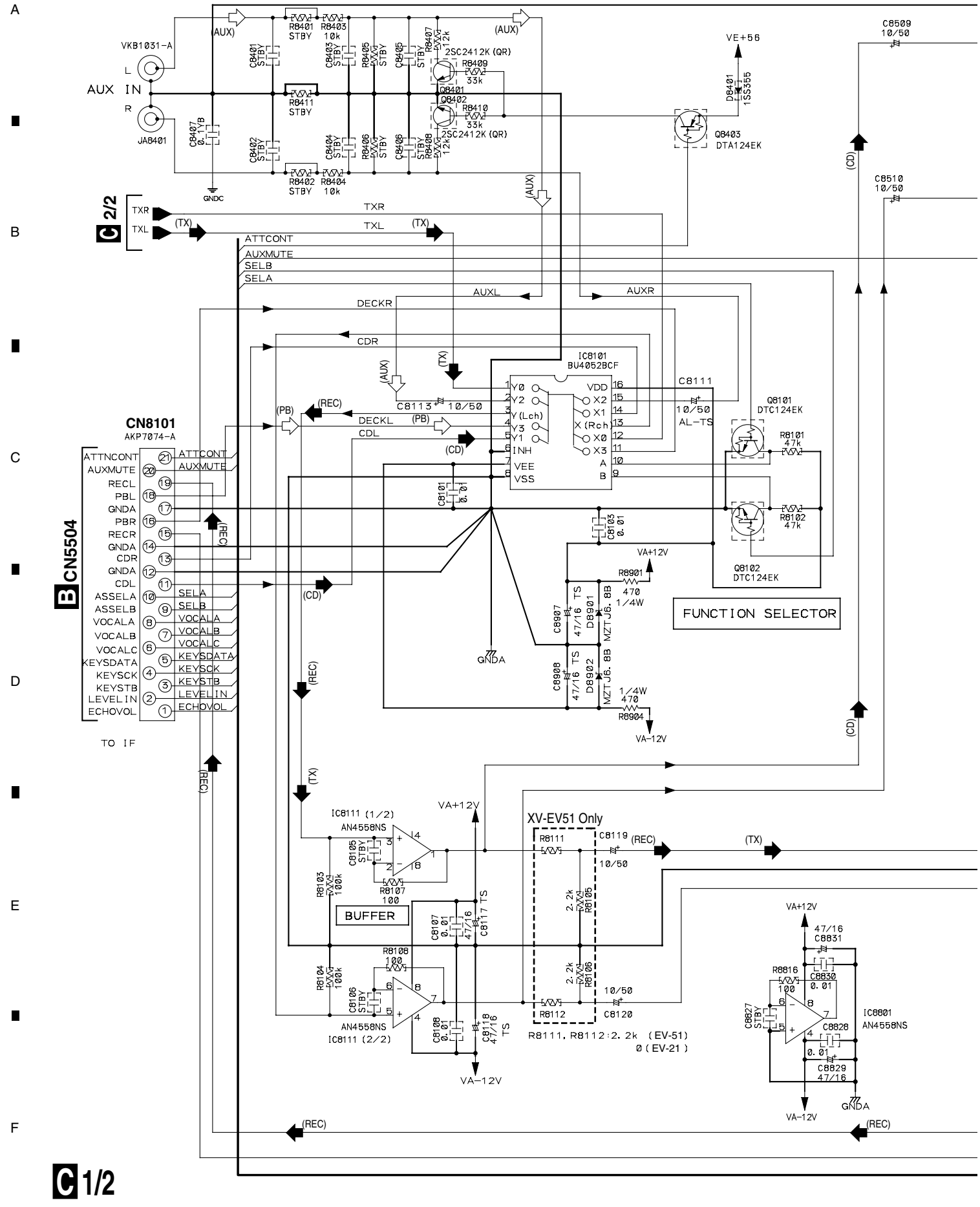
3.4 IF ASSY

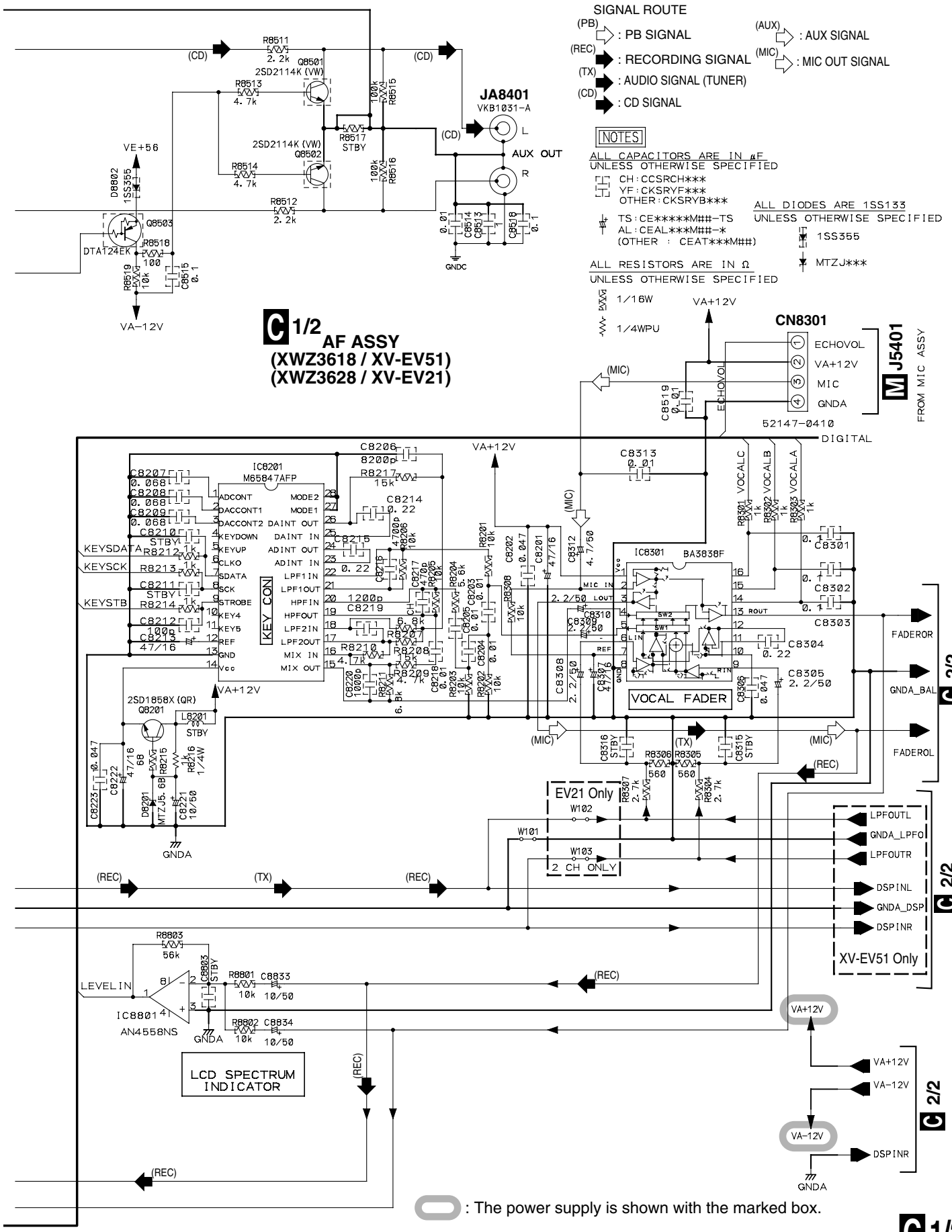

NOTES
ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED
CH:CCSRCH***
OTHER:CKSRYB***
TS:CE*****M###-TS
AL:CEAL***M###-*
(OTHER : CEAT***M###)
ALL INDUCTORS ARE IN μH
UNLESS OTHERWISE SPECIFIED
LAU***J
ALL RESISTORS ARE IN Ω
UNLESS OTHERWISE SPECIFIED
1/16W
1/4WPU
(1/2W) : RD1/2PM***J
ALL DIODE ARE 1SS133
UNLESS OTHERWISE SPECIFIED
UDZS***
MTZJ***
1SS355
B
IF ASSY
(XWZ3617
/ XV-EV51)
(XWZ3627
/ XV-EV21)
G CN1902 TO DVD IF
CN5901
VKN1192-
DVD DOWNLOAD
FLASH U_P
CN5502
62045-0745
CN5902
VKN1211
VIDEO OUT
XKB3039-
JA5903
VU+12V
VE+56
AUDIO
VA+12V
SPCONT
Q5505
DTA143EK
1SS133
D5508
Q5506
DTC124EK
UDZS15B
IC5507
NJM7805FA
VU+5V
VD+5V
IC5591
BU4094BCF
CN5503
VE+56
VU+12V
VA-12
VA+12V
VA+12TX
CN8901
C2/2 TO AF
CN5504
AKP7063-A
CN8001
TO DSP
CN5507
CN8002
CN5506
AKP7058-A
CN5508
AKP7060-A
CN8003
CN5505
AKP7061-A
C2/2 CN8101
C2/2 CN8751
RESET
V+5BU
DTC143EK
Q5502
ASS7034
10MHz
VM+12DVD
VUN+12V
VUN+5V
VU+5VM
2SA1282A (FG)
Q5955
2SB1237X (QR)
Q5952
2SC2412K (QR)
Q5954
Q5507
DTC124EK
R5621
EV-51
EV-21
XV-EV51
ONLY
XV-EV21
Only
CN5903
VKN1206
TO DVD IF
G CN1902
XV-EV51

TO M-EV51 or M-EV21 Power Amplfier

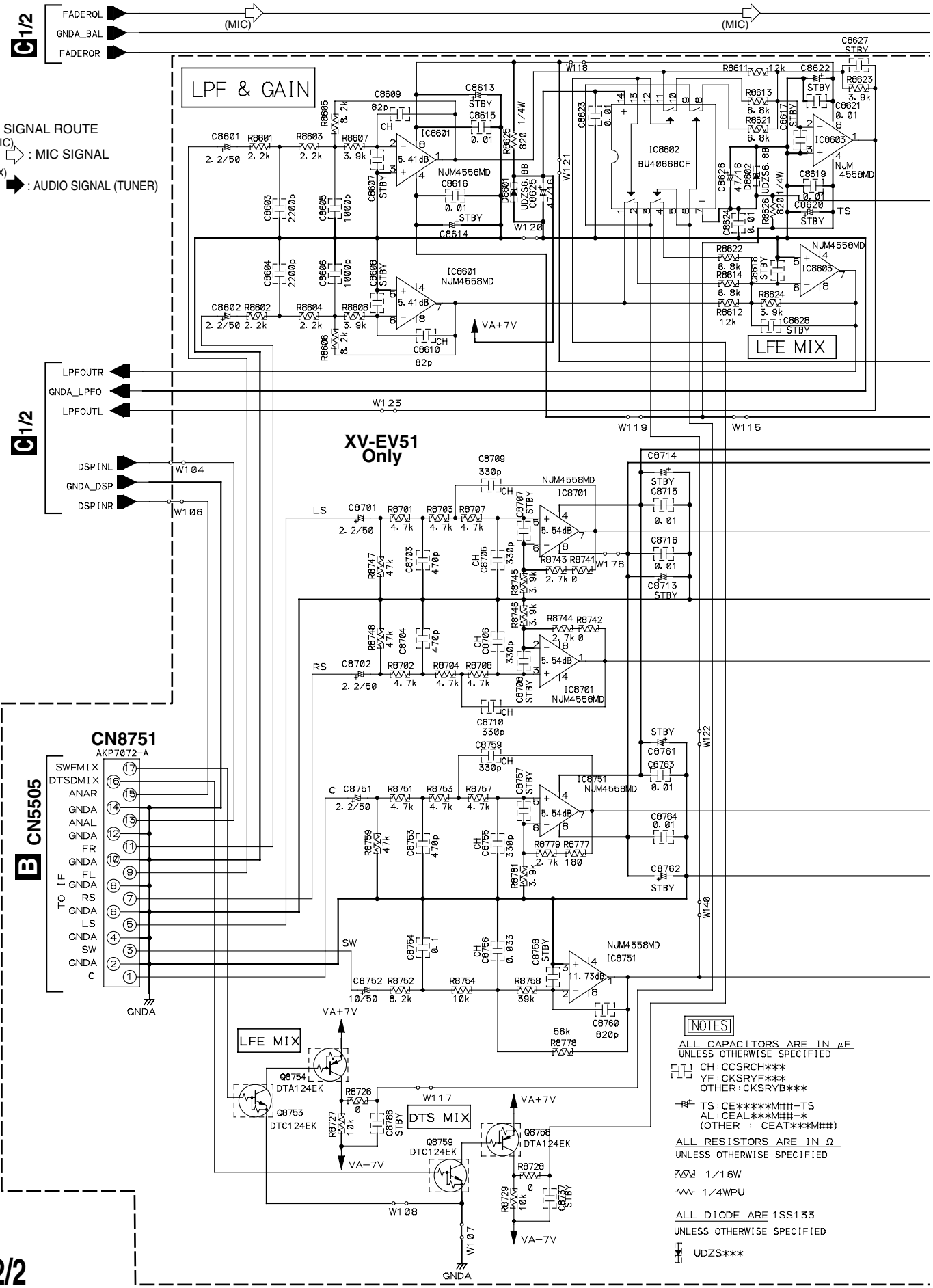


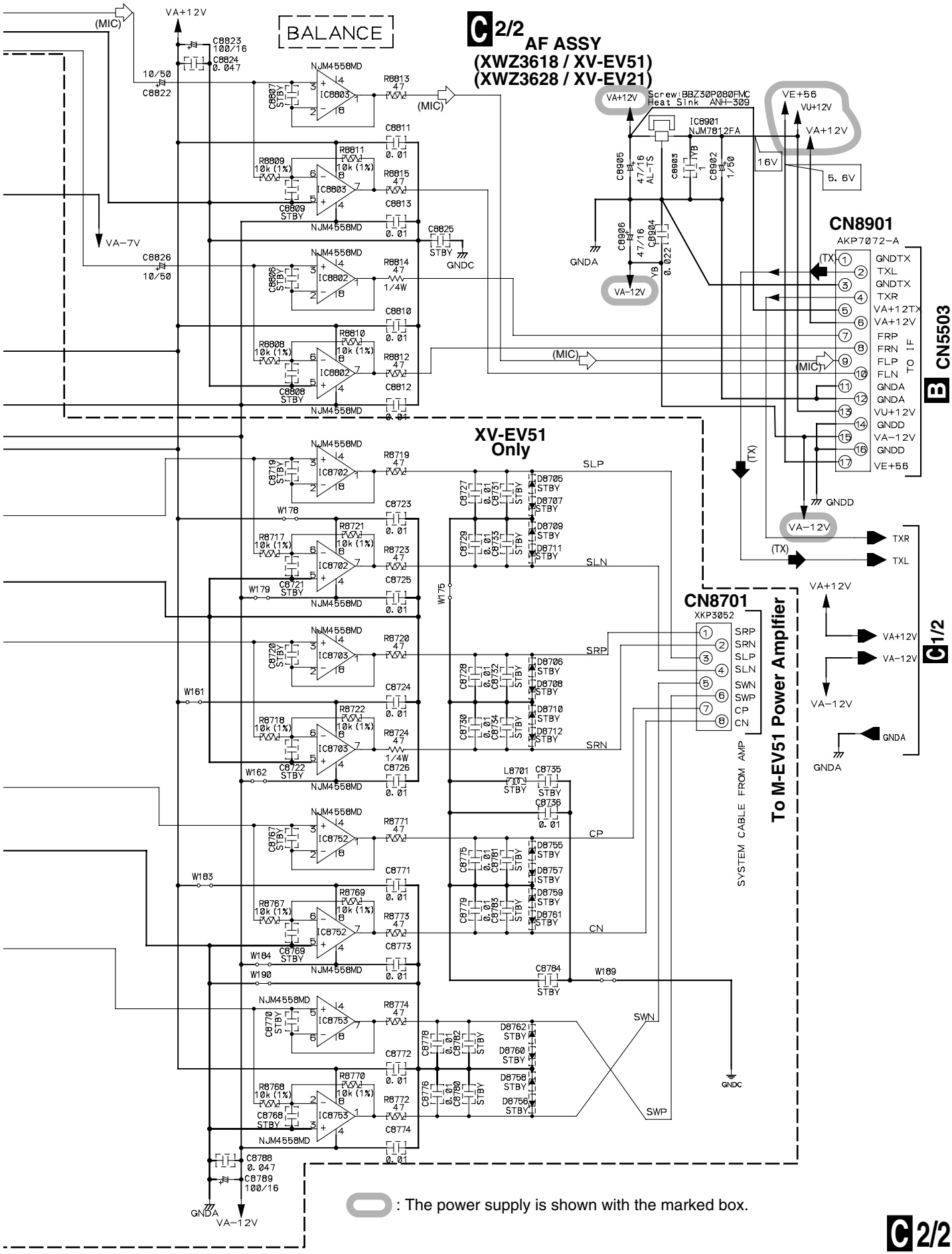
3.5 AF ASSY(1/2)


AUX IN
VKB1031-A
JA8401
2SC2412K (QR)
Q8403 DTA124EK
D8401 1SS355
VE+56
C8509 10/50
C8510 10/50
C 2/2
TXR
TXL
ATTCONT
AUXMUTE
SELB
SELA
AUXL
AUXR
DECKR
CDR
DECKL
CDL
IC8101 BU4052BCF
C8111 10/50 AL-TS
Q8101 DTC124EK
Q8102 DTC124EK
CN8101 AKP7074-A
CN5504
TO IF
FUNCTION SELECTOR
VA+12V
VA-12V
GNDA
XV-EV51 Only
IC8111 (1/2) AN4558NS
IC8111 (2/2) AN4558NS
BUFFER
R8111, R8112:2.2k (EV-51)
0 (EV-21)
IC8801 AN4558NS
C 1/2

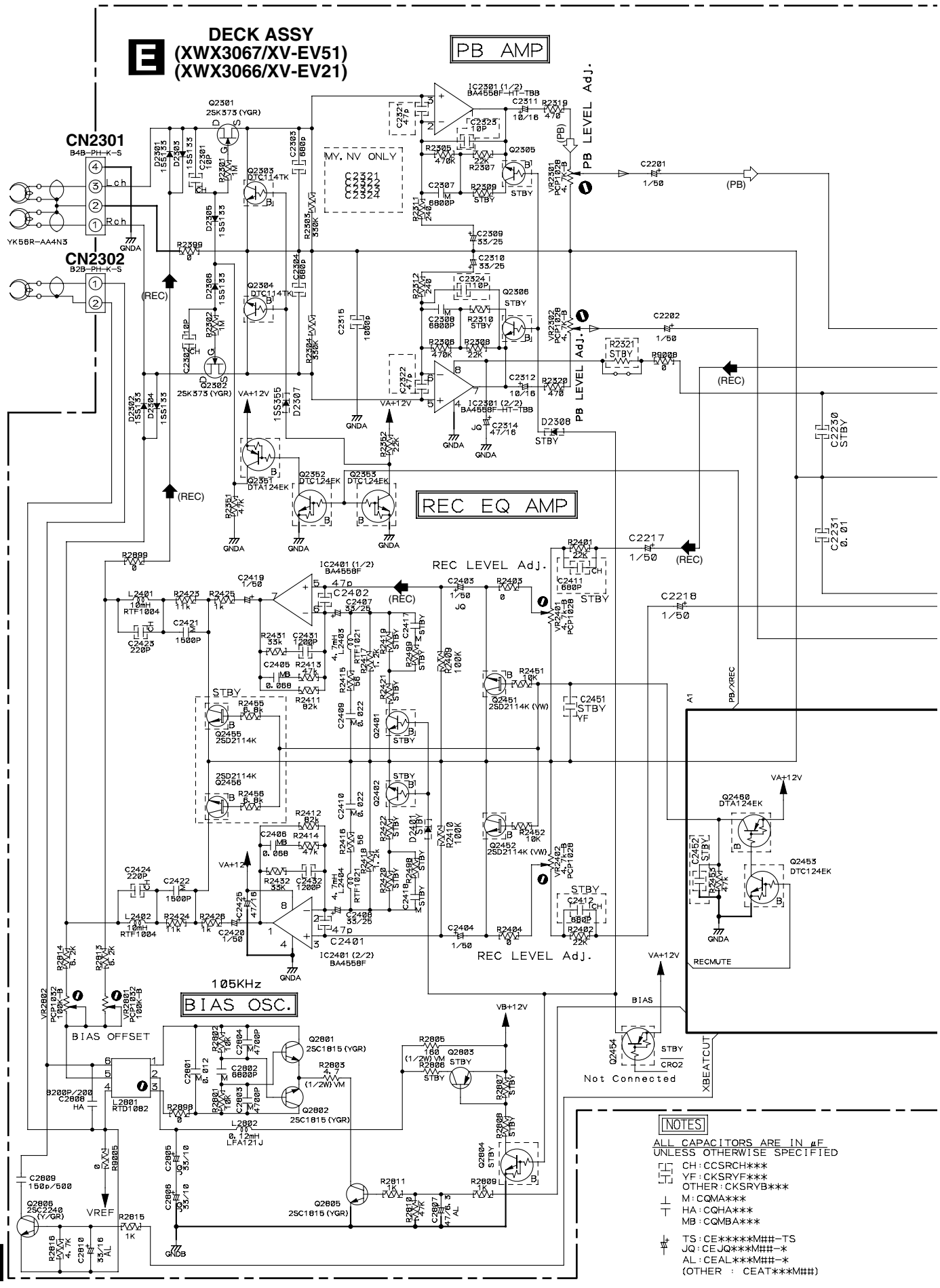

SIGNAL ROUTE
(PB) : PB SIGNAL
(REC) : RECORDING SIGNAL
(TX) : AUDIO SIGNAL (TUNER)
(CD) : CD SIGNAL
(AUX) : AUX SIGNAL
(MIC) : MIC OUT SIGNAL
NOTES
ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED
CH : CCSRCH***
YF : CKSRYF***
OTHER : CKSRYB***
TS : CE*****M###-TS
AL : CEAL***M###-*
(OTHER : CEAT***M##)
ALL RESISTORS ARE IN Ω
UNLESS OTHERWISE SPECIFIED
ALL DIODES ARE 1SS133
UNLESS OTHERWISE SPECIFIED
1SS355
MTZJ***
1/16W
1/4WPU
C 1/2 AF ASSY
(XWZ3618 / XV-EV51)
(XWZ3628 / XV-EV21)
JA8401
VKB1031-A
AUX OUT
CN8301
J5401
FROM MIC ASSY
52147-0410
ECHOVOL
VA+12V
MIC
GNDA
DIGITAL
IC8201
M65847AFP
KEY CON
IC8301
BA3838F
VOCAL FADER
FADERQR
GNDA_BAL
FADEROL
EV21 Only
2 CH ONLY
LPFOUTL
GNDA_LPFO
LPFOUTR
DSPINL
GNDA_DSP
DSPINR
XV-EV51 Only
LEVELIN
IC8801
AN4558NS
LCD SPECTRUM INDICATOR
VA-12V
: The power supply is shown with the marked box.
C 1/2

3.6 AF ASSY(2/2)

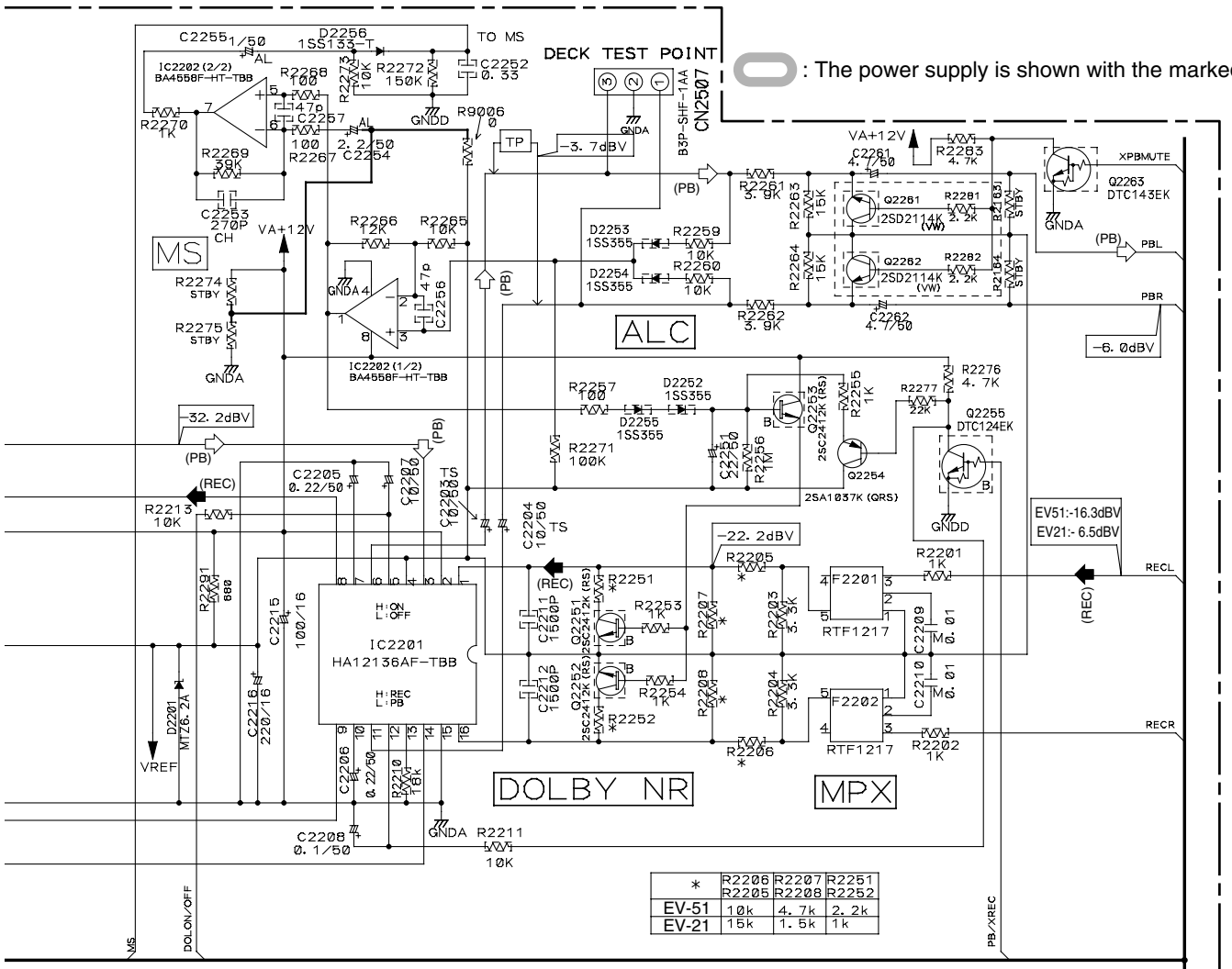

C1/2
FADEROL
GNDA_BAL
FADEROR
(MIC)
(MIC)
LPF & GAIN
SIGNAL ROUTE
(MIC) : MIC SIGNAL
(TX) : AUDIO SIGNAL (TUNER)
IC8601
NJM4558MD
IC8602
BU4066BCF
IC8603
NJM 4558MD
VA+7V
LFE MIX
LPFOUTR
GNDA_LPFO
LPFOUTL
C1/2
DSPINL
GNDA_DSP
DSPINR
W104
W106
W123
W119
W115
XV-EV51
Only
LS
RS
SW
C
IC8701
NJM4558MD
IC8751
NJM4558MD
CN8751
AKP7072-A
B CN5505
TO IF
SWFMIX
DTSDMIX
ANAR
GNDA
ANAL
FR
FL
RS
LS
SW
C
GNDA
LFE MIX
Q8754
DTA124EK
Q8753
DTC124EK
Q8756
DTA124EK
Q8759
DTC124EK
DTS MIX
VA+7V
VA−7V
W117
W108
W107
W122
W140
W176
NOTES
ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED
CH : CCSRCH***
YF : CKSRYF***
OTHER : CKSRYB***
TS : CE*****M##-TS
AL : CEAL***M##-*
(OTHER : CEAT***M##)
ALL RESISTORS ARE IN Ω
UNLESS OTHERWISE SPECIFIED
1/16W
1/4WPU
ALL DIODE ARE 1SS133
UNLESS OTHERWISE SPECIFIED
UDZS***
C2/2


BALANCE
C 2/2 AF ASSY
(XWZ3618 / XV-EV51)
(XWZ3628 / XV-EV21)
XV-EV51 Only
CN8901
AKP7072-A
CN5503
B
CN8701
XKP3052
To M-EV51 Power Amplfier
SYSTEM CABLE FROM AMP
C 1/2
GNDTX
TXL
GNDTX
TXR
VA+12TX
VA+12V
FRP
FRN
FLP
FLN
GNDA
GNDA
VU+12V
GNDD
VA-12V
GNDD
VE+56
SRP
SRN
SLP
SLN
SWN
SWP
CP
CN
: The power supply is shown with the marked box.
C 2/2

3.7 DECK ASSY


DECK ASSY
(XWX3067/XV-EV51)
(XWX3066/XV-EV21)
PB AMP
REC EQ AMP
REC LEVEL Adj.
PB LEVEL Adj.
BIAS OSC.
105KHz
BIAS OFFSET
CN2301
B4B-PH-K-S
YK56R-AA4N3
CN2302
B2B-PH-K-S
MY. NV ONLY
Not Connected
XBEATCUT
RECMUTE
PB/XREC
BIAS
VREF
NOTES
ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED
CH : CCSRCH***
YF : CKSRYF***
OTHER : CKSRYB***
M : CQMA***
HA : CQHA***
MB : CQMBA***
TS : CE****M##-TS
JQ : CEJQ***M##-*
AL : CEAL***M##-*
(OTHER : CEAT***M##)

: The power supply is shown with the marked box.

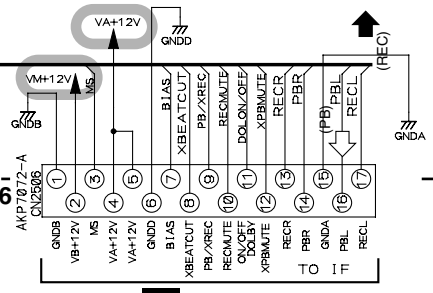


*	R2206 R2205	R2207 R2208	R2251 R2252
EV-51	10k	4.7k	2.2k
EV-21	15k	1.5k	1k

SIGNAL ROUTE

(PB) : PB SIGNAL

(REC) : RECORDING SIGNAL

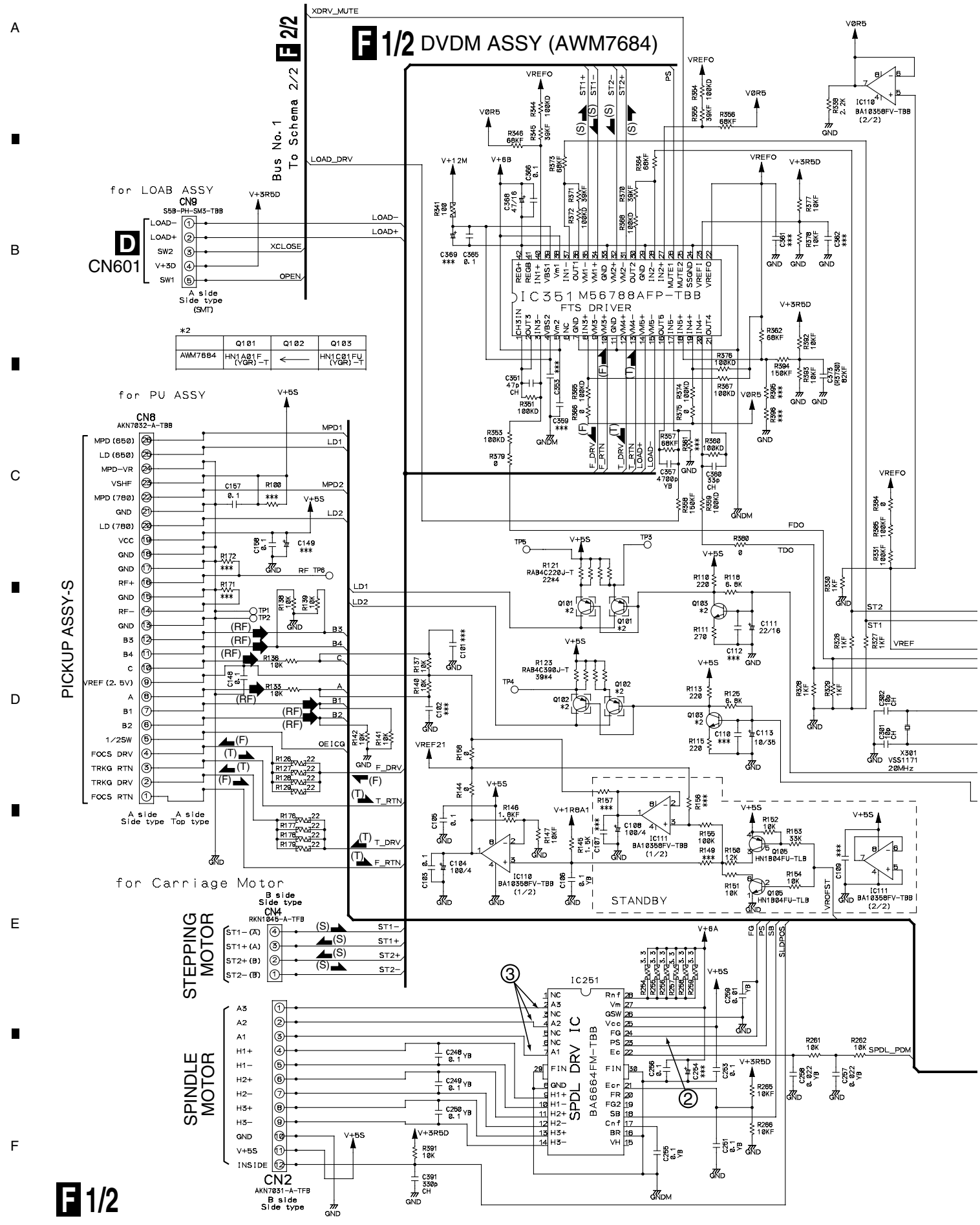


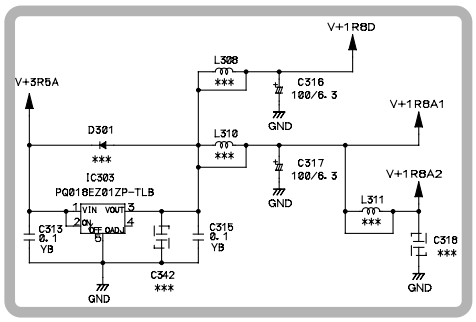
ALL RESISTORS ARE IN Ω
UNLESS OTHERWISE SPECIFIED
1/16W 1/4WPU

ALL COILS ARE IN μH
UNLESS OTHERWISE SPECIFIED
LAU***J

ALL DIODES ARE 1SS133
UNLESS OTHERWISE SPECIFIED
1SS133 1SS355
MTZJ***

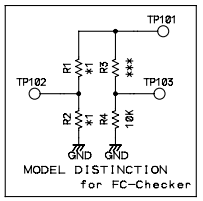
3.8 DVDM ASSY(1/2)





①,②,③,④ : Refer to "3.1.3 WAVEFORMS".

(RF) : RF SIGNAL ROUTE
: DATA SIGNAL ROUTE
(F) : FOCUS SERVO LOOP LINE
(T) : TRACKING SERVO LOOP LINE
(S) : SLIDER SERVO LOOP LINE

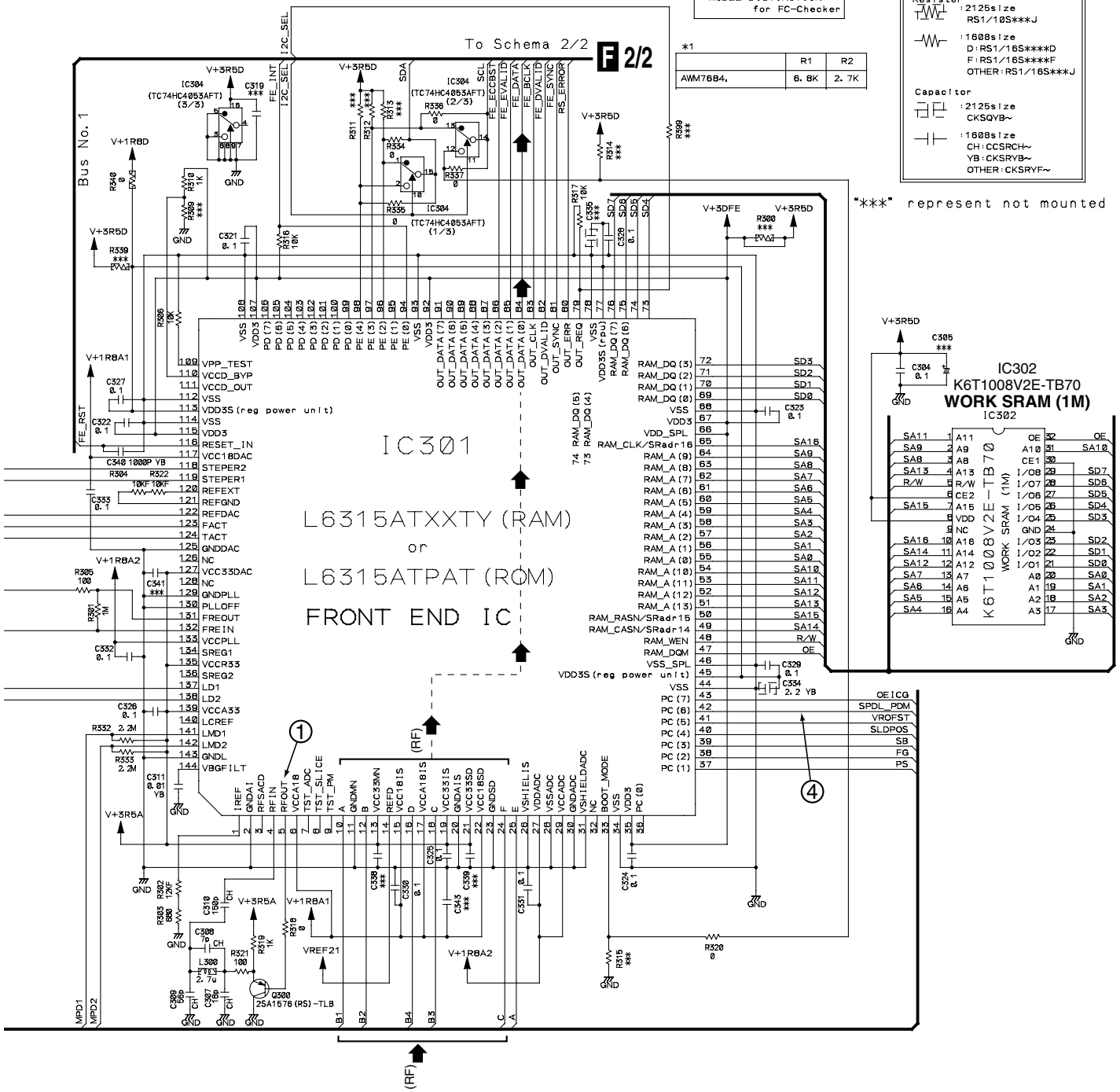


NOTES
Resister
:2125size RS1/10S***J
:1608size D:RS1/16S****D F:RS1/16S****F OTHER:RS1/16S***J
Capacitor
:2125size CKSQYB~
:1608size CH:CCSRCH~ YB:CKSRYB~ OTHER:CKSRYF~

"***" represent not mounted

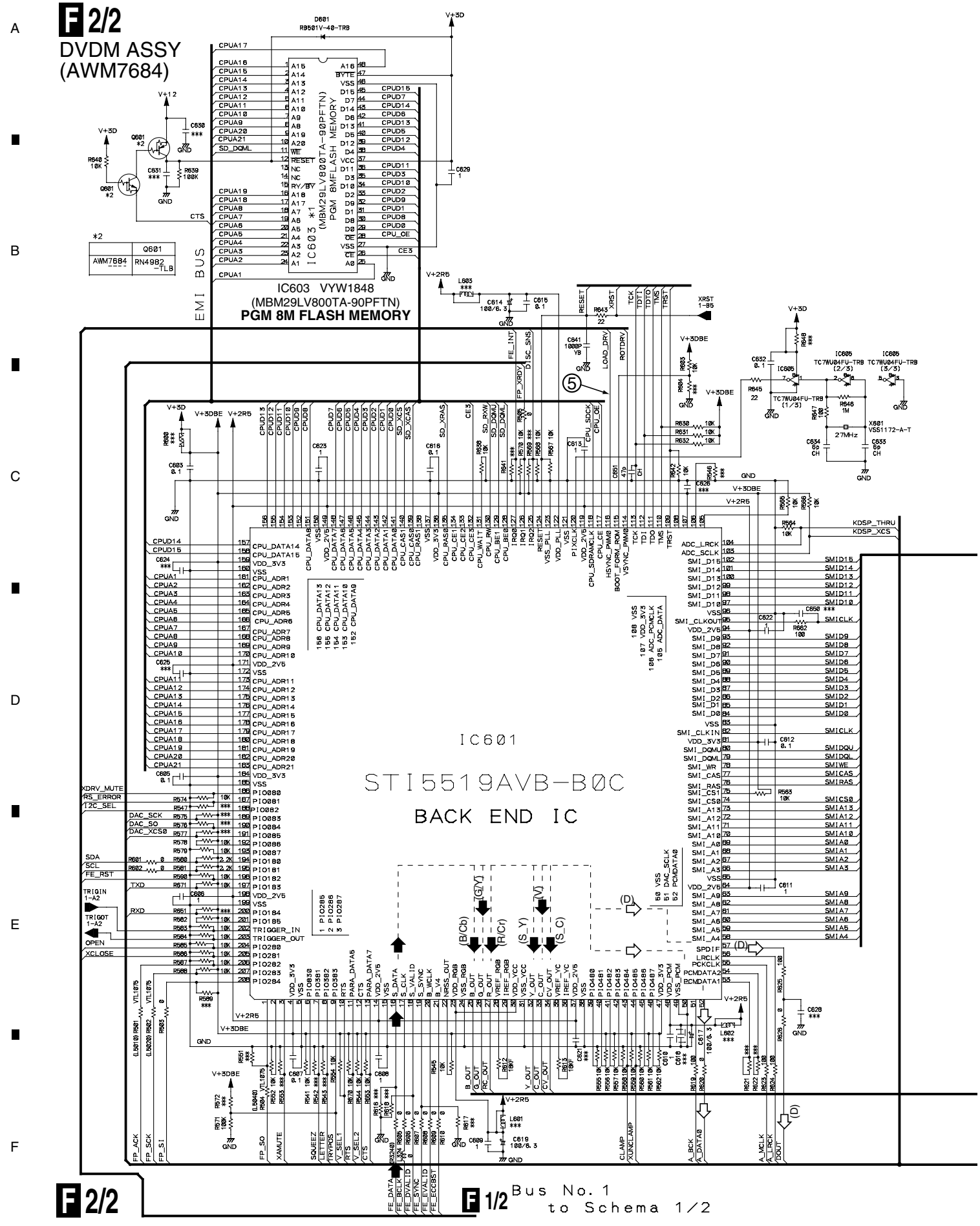
*1

	R1	R2
AWM7684.	6.8K	2.7K



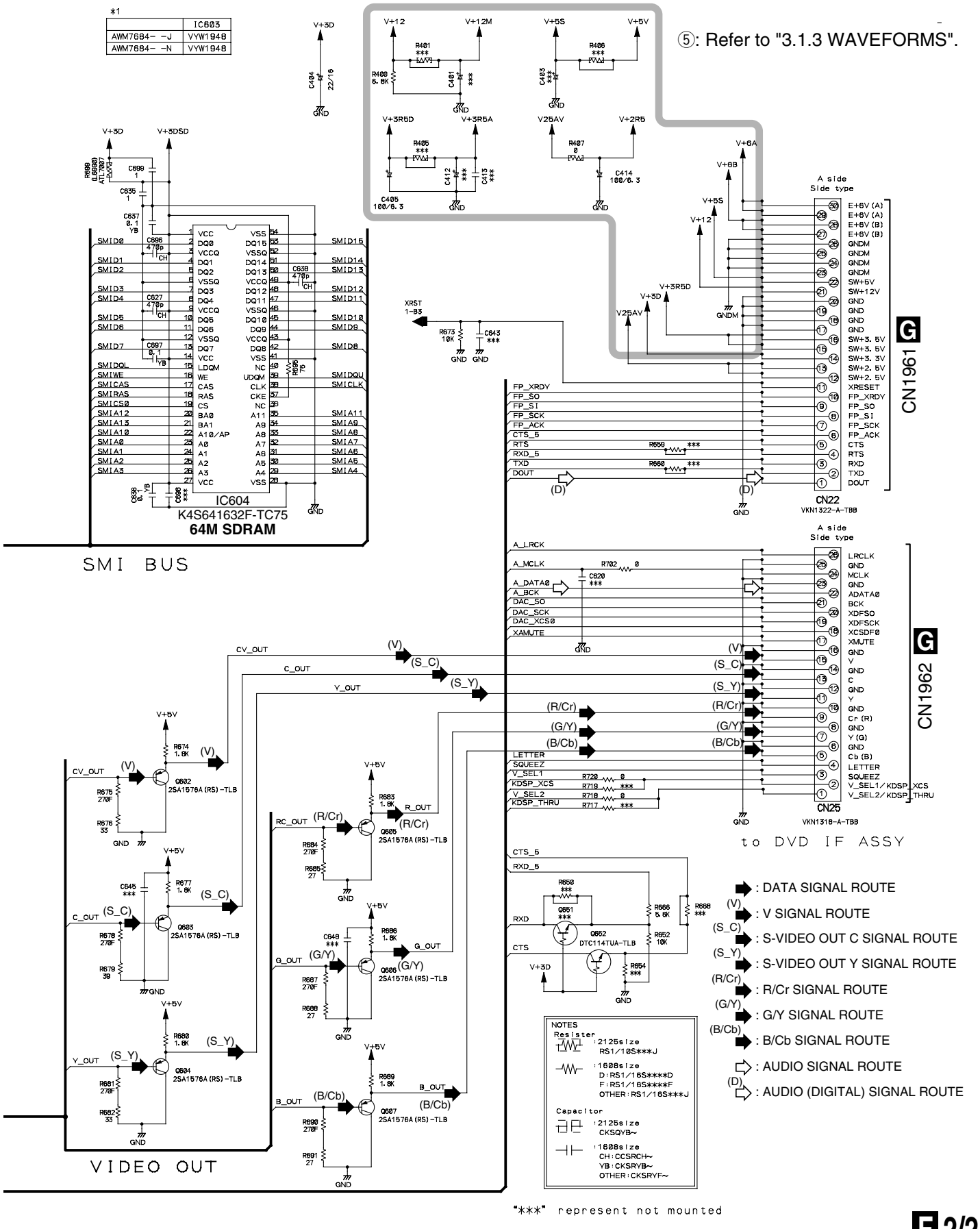
: The power supply is shown with the marked box.

3.9 DVDM ASSY(2/2)

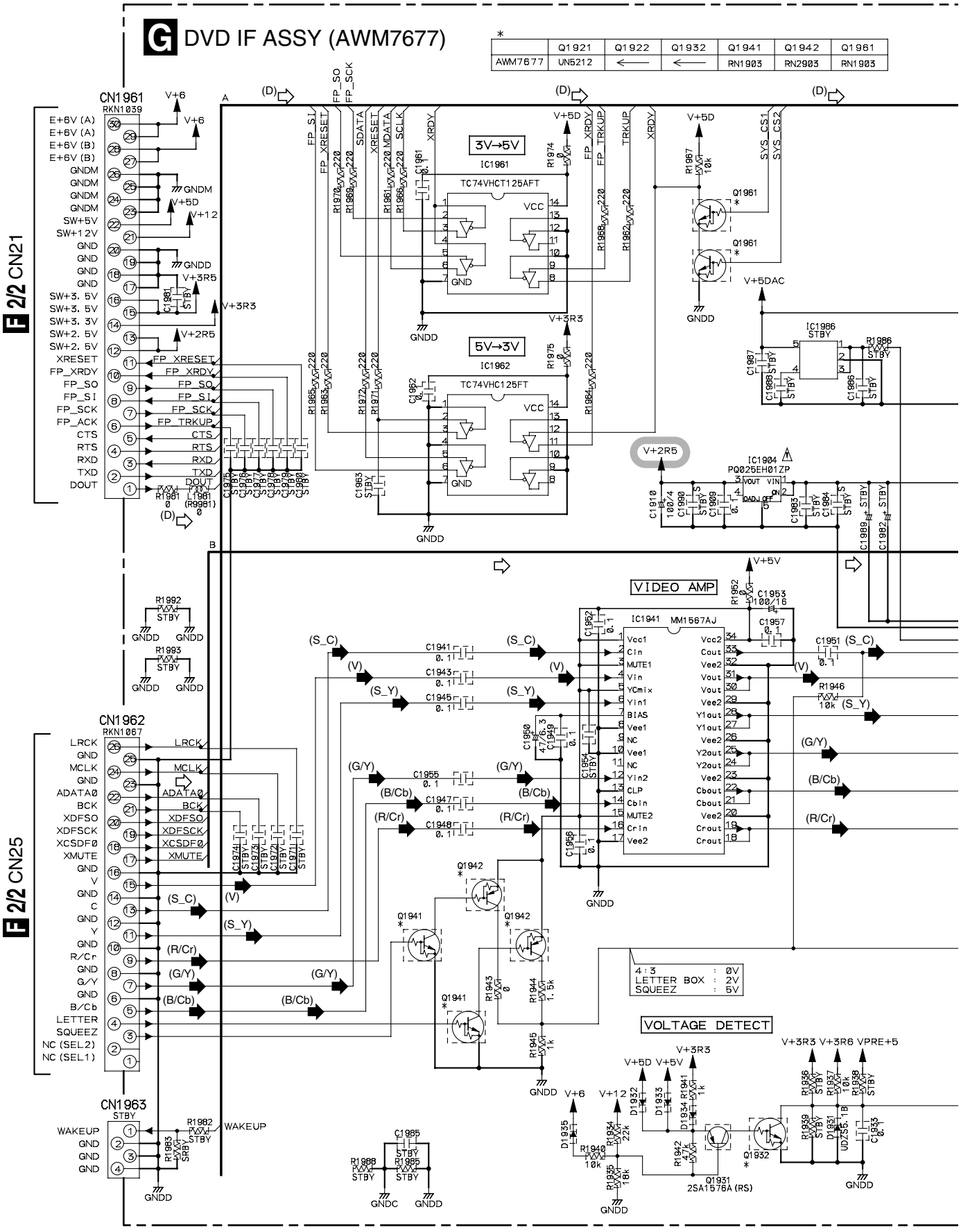


: The power supply is shown with the marked box.

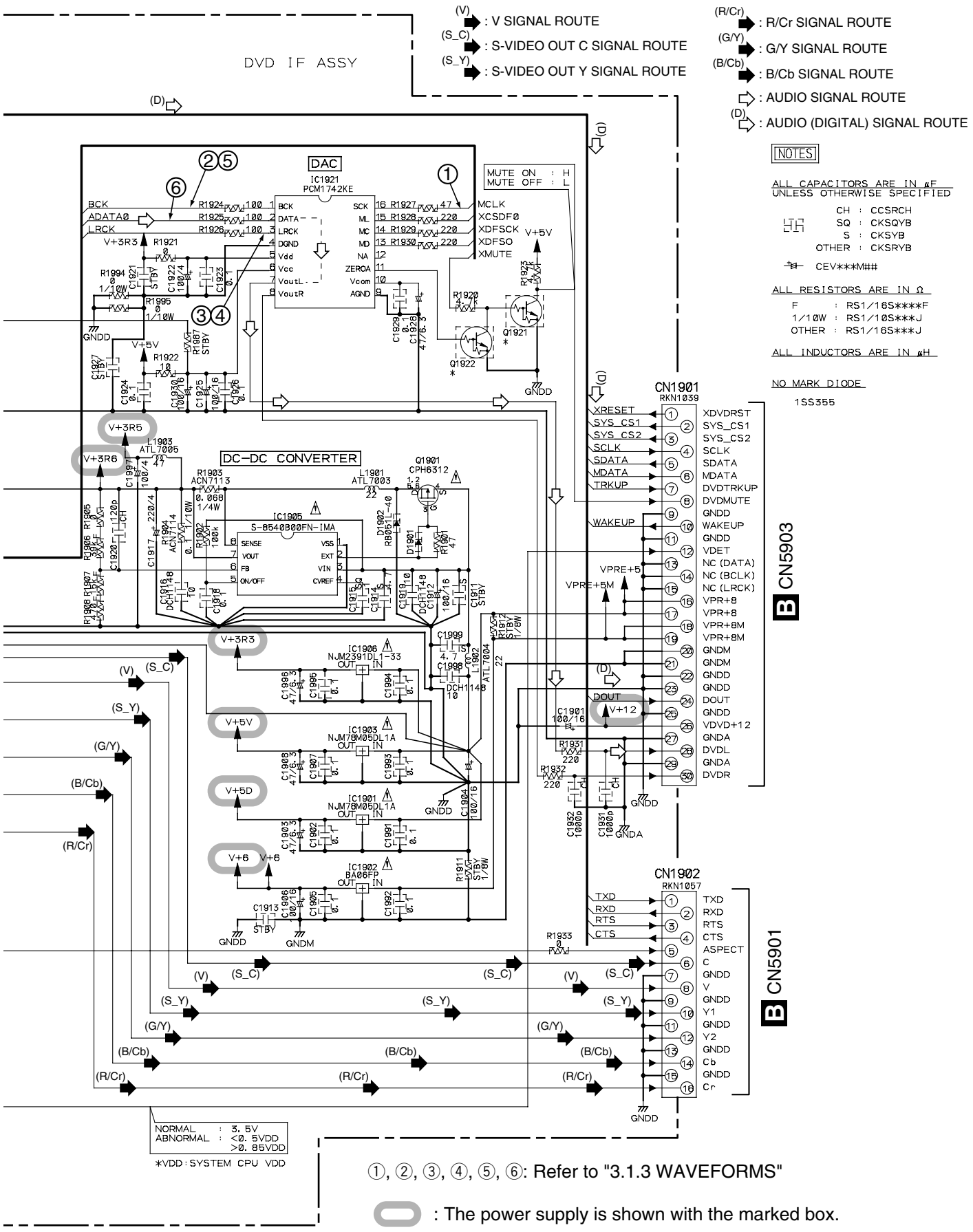
⑤: Refer to "3.1.3 WAVEFORMS".



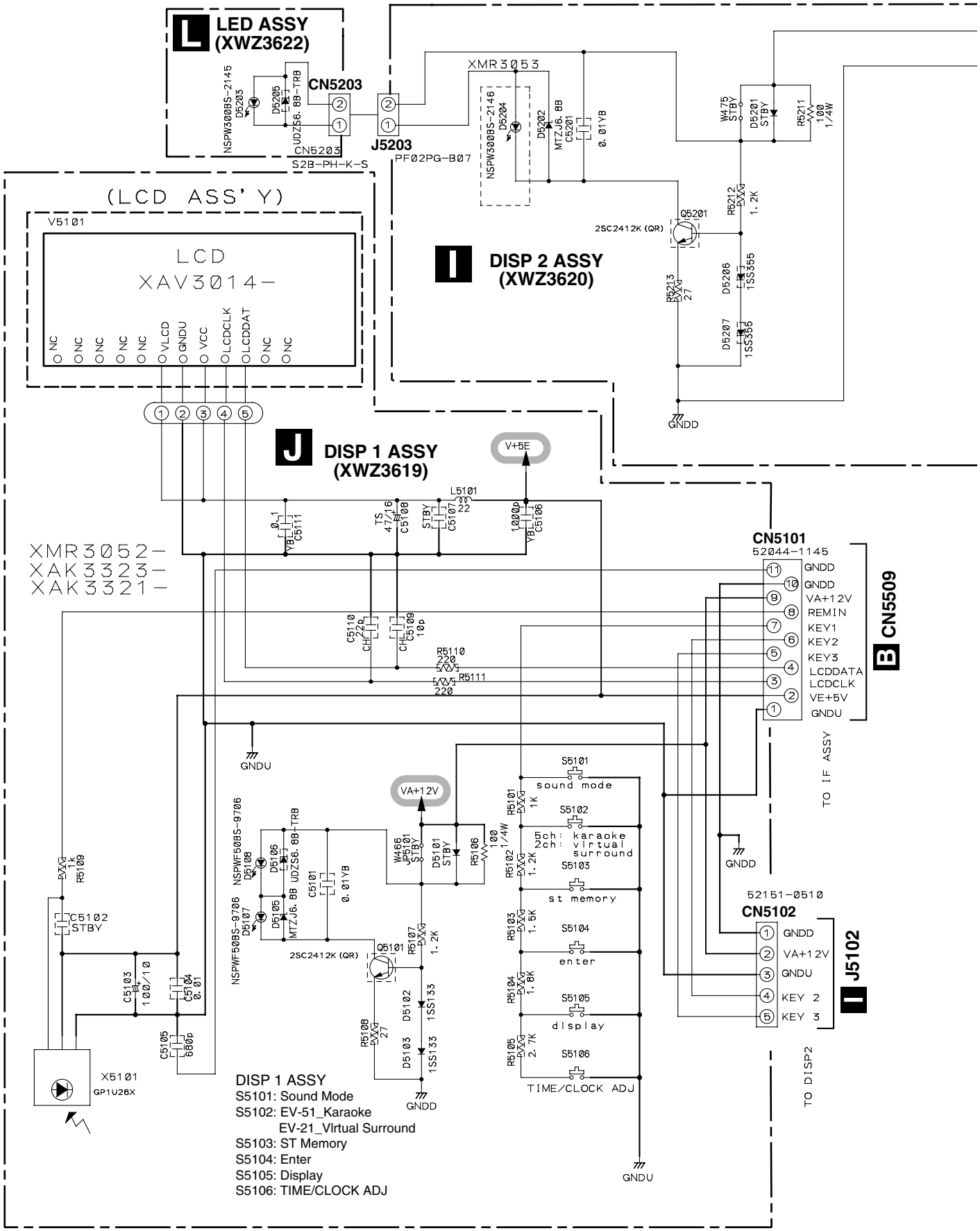
3.10 DVD IF ASSY



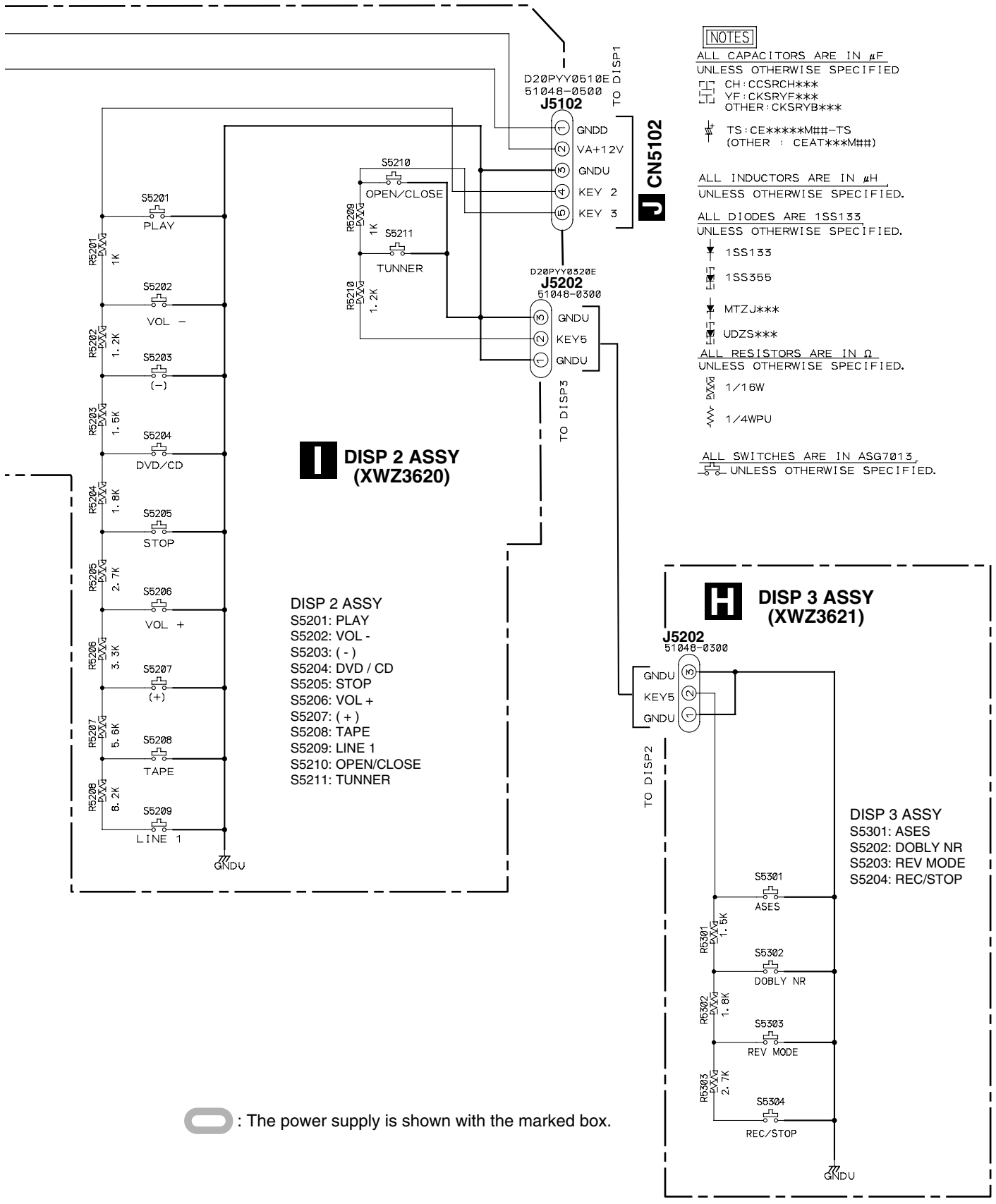
*	Q1921	Q1922	Q1932	Q1941	Q1942	Q1961
AWM7677	UN5212	←	←	RN1903	RN2903	RN1903


DVD IF ASSY
(V) : V SIGNAL ROUTE
(S_C) : S-VIDEO OUT C SIGNAL ROUTE
(S_Y) : S-VIDEO OUT Y SIGNAL ROUTE
(R/Cr) : R/Cr SIGNAL ROUTE
(G/Y) : G/Y SIGNAL ROUTE
(B/Cb) : B/Cb SIGNAL ROUTE
: AUDIO SIGNAL ROUTE
(D) : AUDIO (DIGITAL) SIGNAL ROUTE
NOTES
ALL CAPACITORS ARE IN μF UNLESS OTHERWISE SPECIFIED
CH : CCSRCH
SQ : CKSQYB
S : CKSYB
OTHER : CKSRYB
CEV***M##
ALL RESISTORS ARE IN Ω
F : RS1/16S****F
1/10W : RS1/10S***J
OTHER : RS1/16S***J
ALL INDUCTORS ARE IN μH
NO MARK DIODE
1SS355
DAC
IC1921 PCM1742KE
MUTE ON : H
MUTE OFF : L
DC-DC CONVERTER
IC1905 S-8540B00FN-IMA
IC1906 NJM2391DL1-33
IC1903 NJM78M05DL1A
IC1901 NJM78M05DL1A
IC1902 BA06FP
CN1901 RKN1039
CN1902 RKN1057
B CN5903
B CN5901
NORMAL : 3.5V
ABNORMAL : <0.5VDD
>0.85VDD
*VDD:SYSTEM CPU VDD
①, ②, ③, ④, ⑤, ⑥: Refer to "3.1.3 WAVEFORMS"
: The power supply is shown with the marked box.

3.11 DISP1, DISP2, DISP3 and LED ASSYS



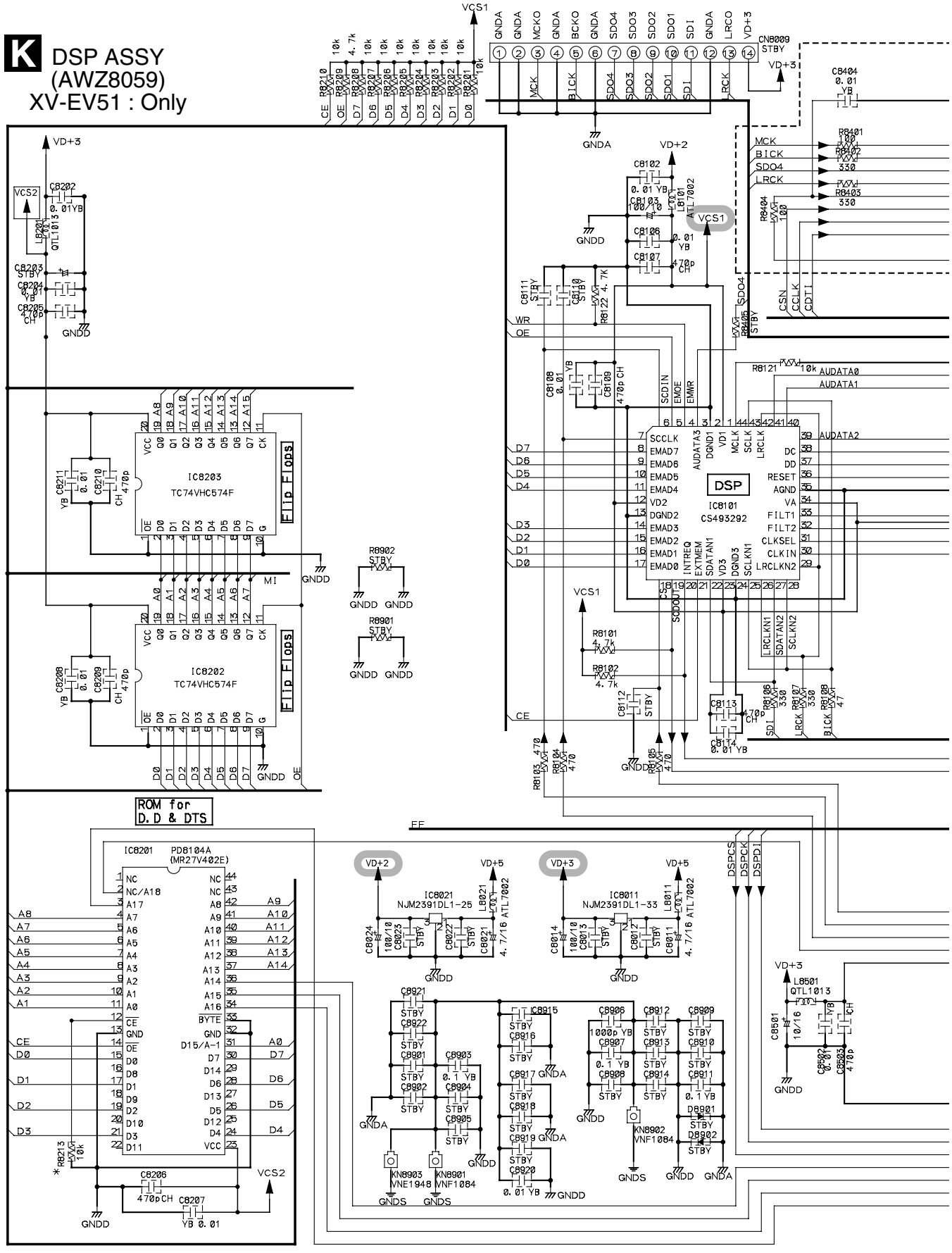
I J L

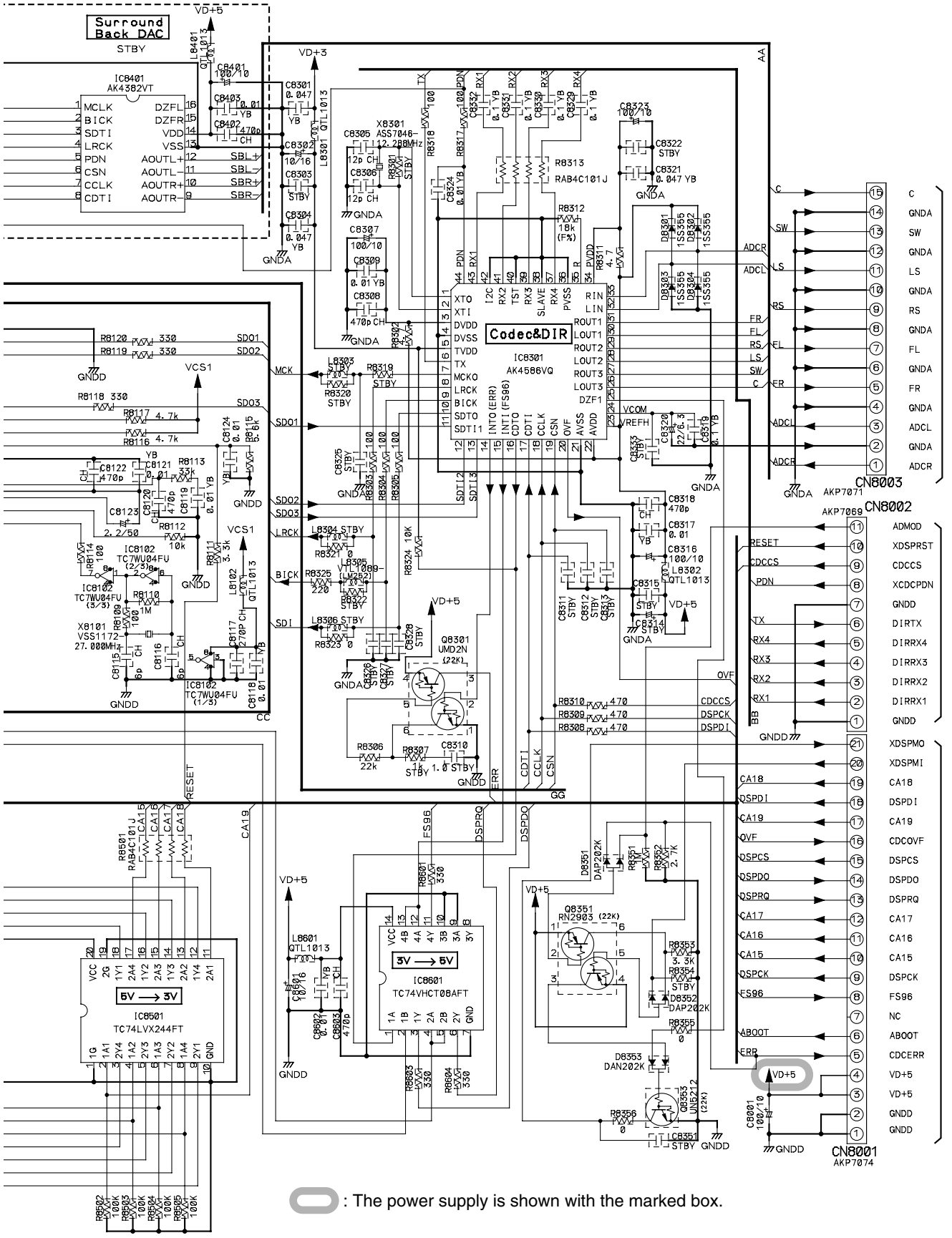


: The power supply is shown with the marked box.

3.12 DSP ASSY

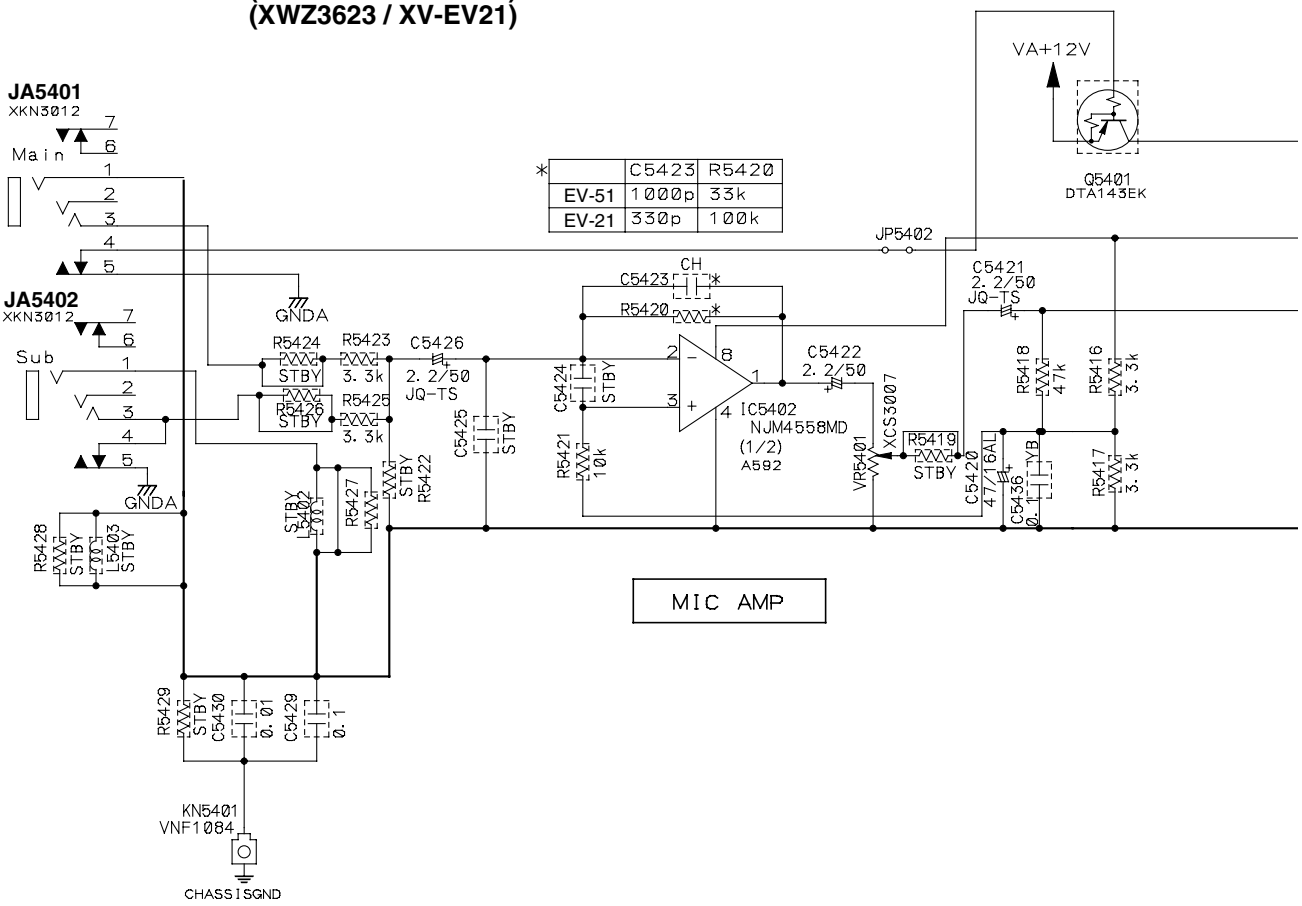
DSP ASSY
(AWZ8059)
XV-EV51 : Only




Surround Back DAC
STBY
IC8401 AK4382VT
MCLK
BICK
SDTI
LRCK
PDN
CSN
CCLK
CDTI
DZFL
DZFR
VDD
VSS
AOUTL+
AOUTL-
AOUTR+
AOUTR-
SBL+
SBL-
SBR+
SBR-
VD+5
VD+3
X8301 ASS7046-112.288MHz
Codec&DIR
IC8301 AK4586VQ
XTO
XTI
DVDD
DVSS
TVDD
TX
MCKO
LRCK
BICK
SDTO
SDTI1
INTO(ERR)
INTI(FS96)
I2C
CDTO
CDTI
CCLK
CSN
OVF
AVSS
AVDD
VCOM
VREFH
RIN
LIN
ROUT1
LOUT1
ROUT2
LOUT2
ROUT3
LOUT3
DZF1
RAB4C101J
VCS1
IC8102 TC7WU04FU
IC8601 TC74VHCT08AFT
3V ⟶ 5V
IC8501 TC74LVX244FT
5V ⟶ 3V
Q8301 UMD2N (22K)
Q8351 RN2903 (22K)
D8351 DAP202K
D8352 DAP202K
D8353 DAN202K
D8354 UDZ5.1B
CN8003 AKP7071
CN8002 AKP7069
CN8001 AKP7074
B CN5503
B CN5506
B CN5504
GNDA
GNDD
: The power supply is shown with the marked box.

3.13 MIC ASSY

MIC ASSY
(XWZ3626 / XV-EV51)
(XWZ3623 / XV-EV21)



*	C5423	R5420
EV-51	1000p	33k
EV-21	330p	100k

NOTES

ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED

CH : CCSRCH***
OTHER : CKSRYB***

TS : CE*****M###-TS
JQ : CEJQ***M###-*
AL : CEAL***M###-*
OTHER : CEAT***M###

ALL INDUCTORS ARE IN μH
UNLESS OTHERWISE SPECIFIED.

LAU***J

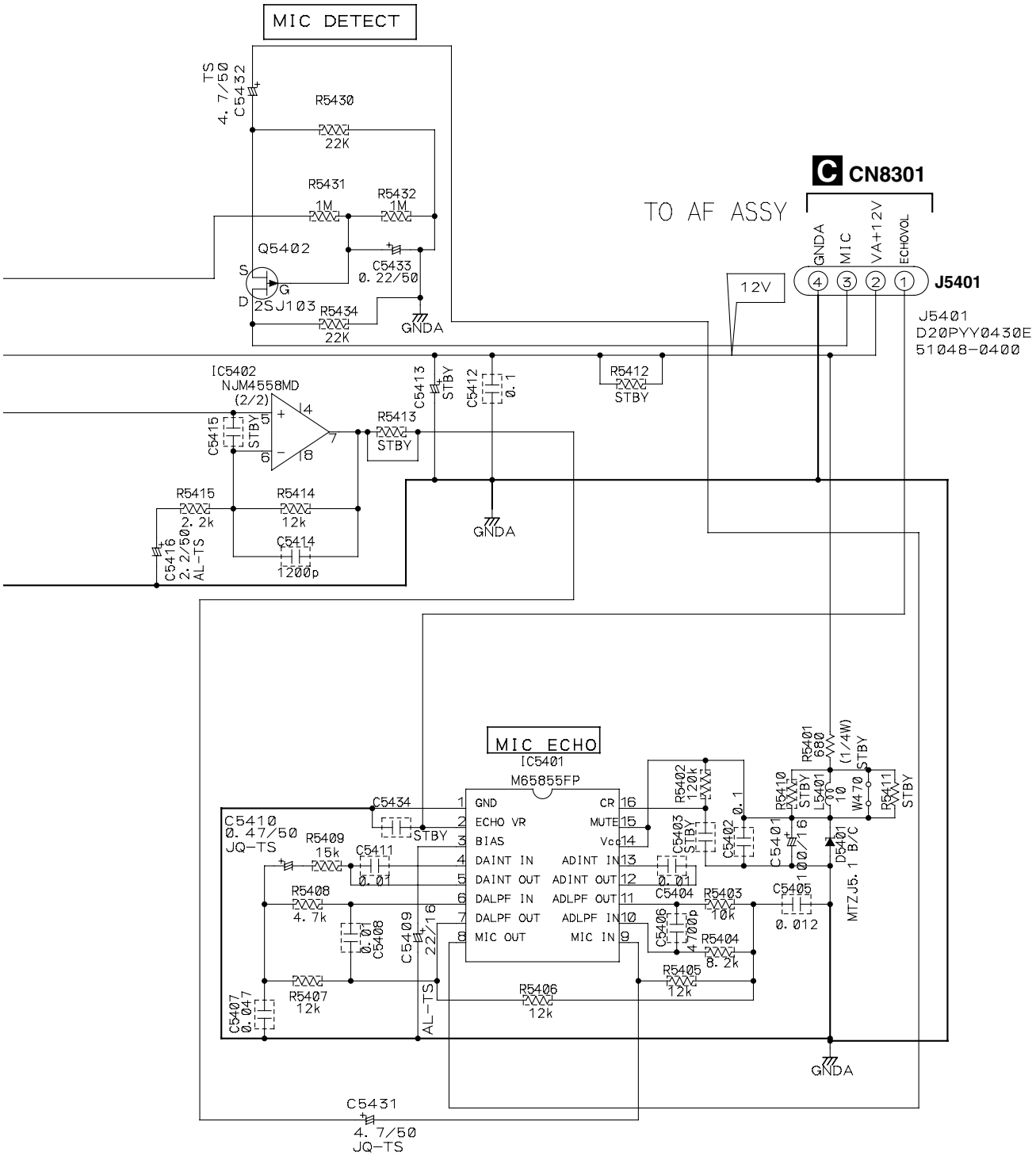
ALL RESISTORS ARE IN Ω,
UNLESS OTHERWISE SPECIFIED.

1/16W

1/4WPU

ALL DIODES ARE 1SS133
UNLESS OTHERWISE SPECIFIED.

MTZJ***


MIC DETECT
TS
4.7/50
C5432
R5430
22K
R5431
1M
R5432
1M
Q5402
S
G
D
2SJ103
C5433
0.22/50
R5434
22K
GNDA
C CN8301
TO AF ASSY
GNDA
MIC
VA+12V
ECHOVOL
12V
J5401
J5401
D20PYY0430E
51048-0400
IC5402
NJM4558MD
(2/2)
C5413
STBY
C5412
0.1
R5412
STBY
C5415
STBY
R5413
STBY
R5415
2.2k
R5414
12k
C5414
1200p
C5416
2.2/50
AL-TS
GNDA
MIC ECHO
IC5401
M65855FP
GND
ECHO VR
BIAS
DAINT IN
DAINT OUT
DALPF IN
DALPF OUT
MIC OUT
CR
MUTE
Vcc
ADINT IN
ADINT OUT
ADLPF OUT
ADLPF IN
MIC IN
C5434
STBY
C5410
0.47/50
JQ-TS
R5409
15k
C5411
0.01
R5408
4.7k
C5408
0.01
C5409
22/16
R5407
12k
C5407
0.047
AL-TS
R5406
12k
R5405
12k
C5406
4700p
R5404
8.2k
C5404
R5403
10k
C5405
0.012
R5402
120k
C5403
STBY
0.01
C5402
0.1
R5401
680
(1/4W)
R5410
STBY
L5401
10
W470
STBY
R5411
STBY
C5401
100/16
D5401
MTZJ5.1 B/C
GNDA
C5431
4.7/50
JQ-TS

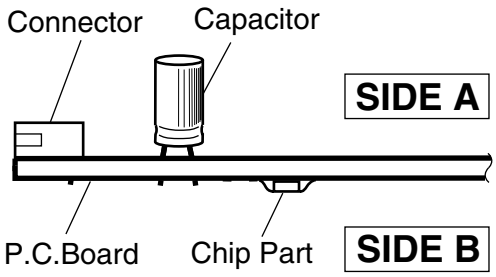
4. PCB CONNECTION DIAGRAM
4.1 LOAB ASSY

NOTE FOR PCB DIAGRAMS :

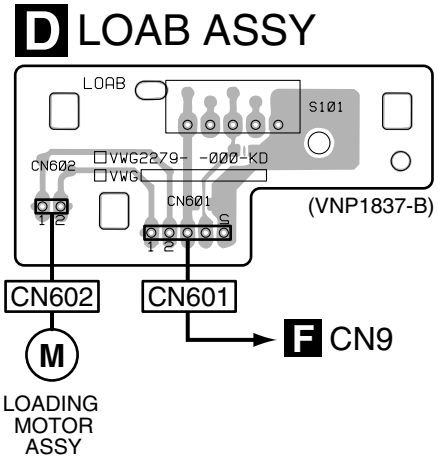
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

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

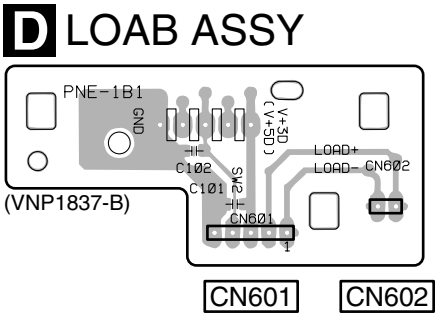
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



SIDE A



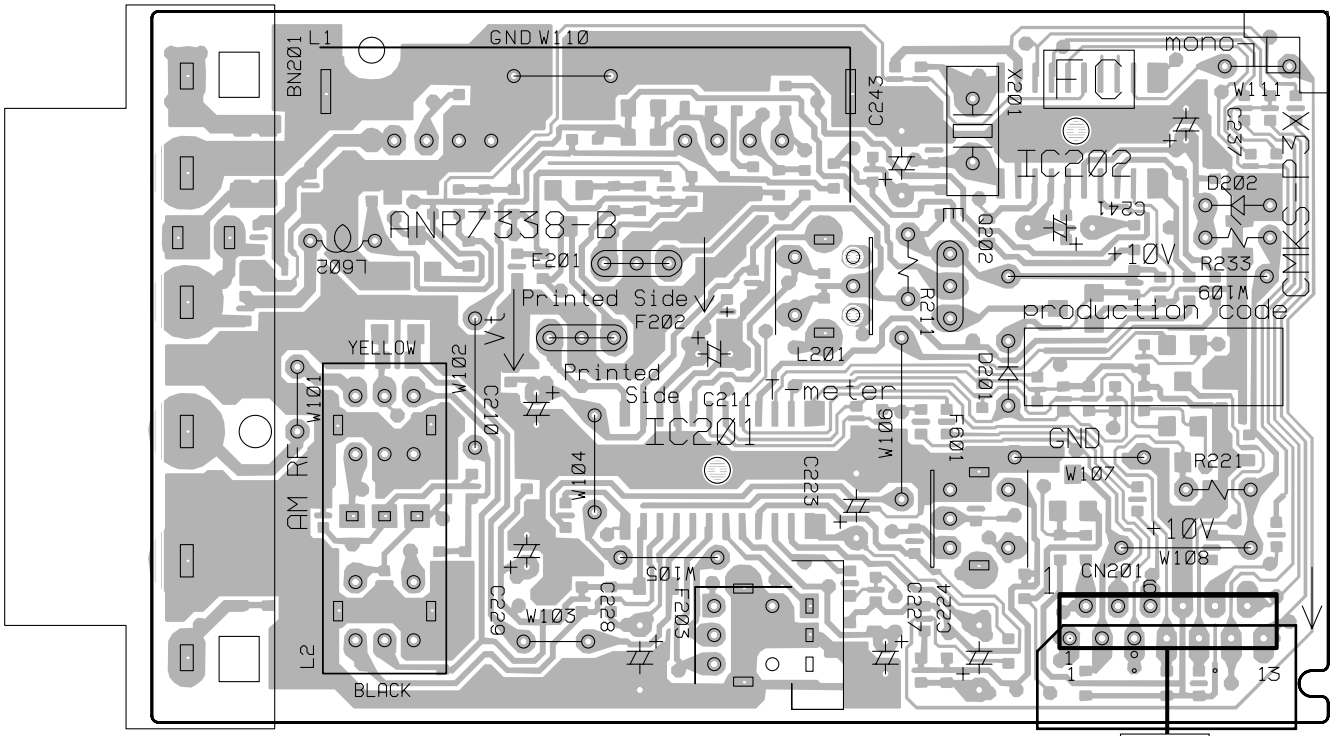
SIDE B



4.2 FM/AM TUNER MODULE

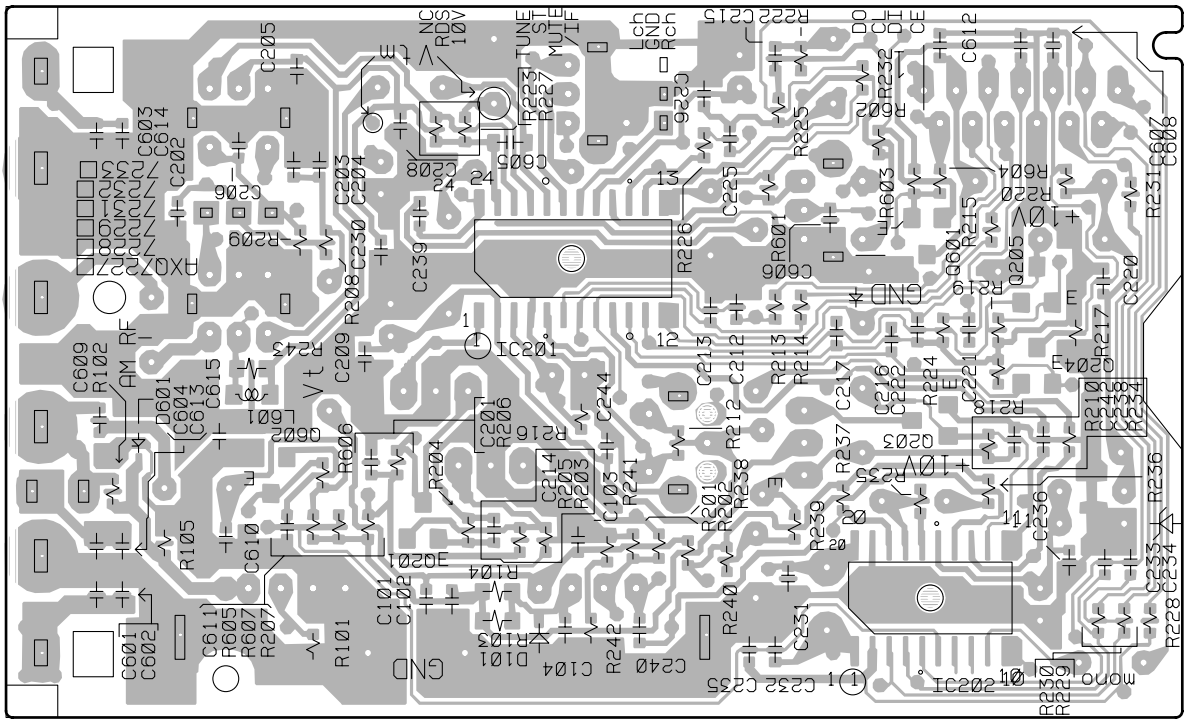
SIDE A **SIDE B**

A FM/AM TUNER MODULE **SIDE A**



Q202

A FM/AM TUNER MODULE **SIDE B**

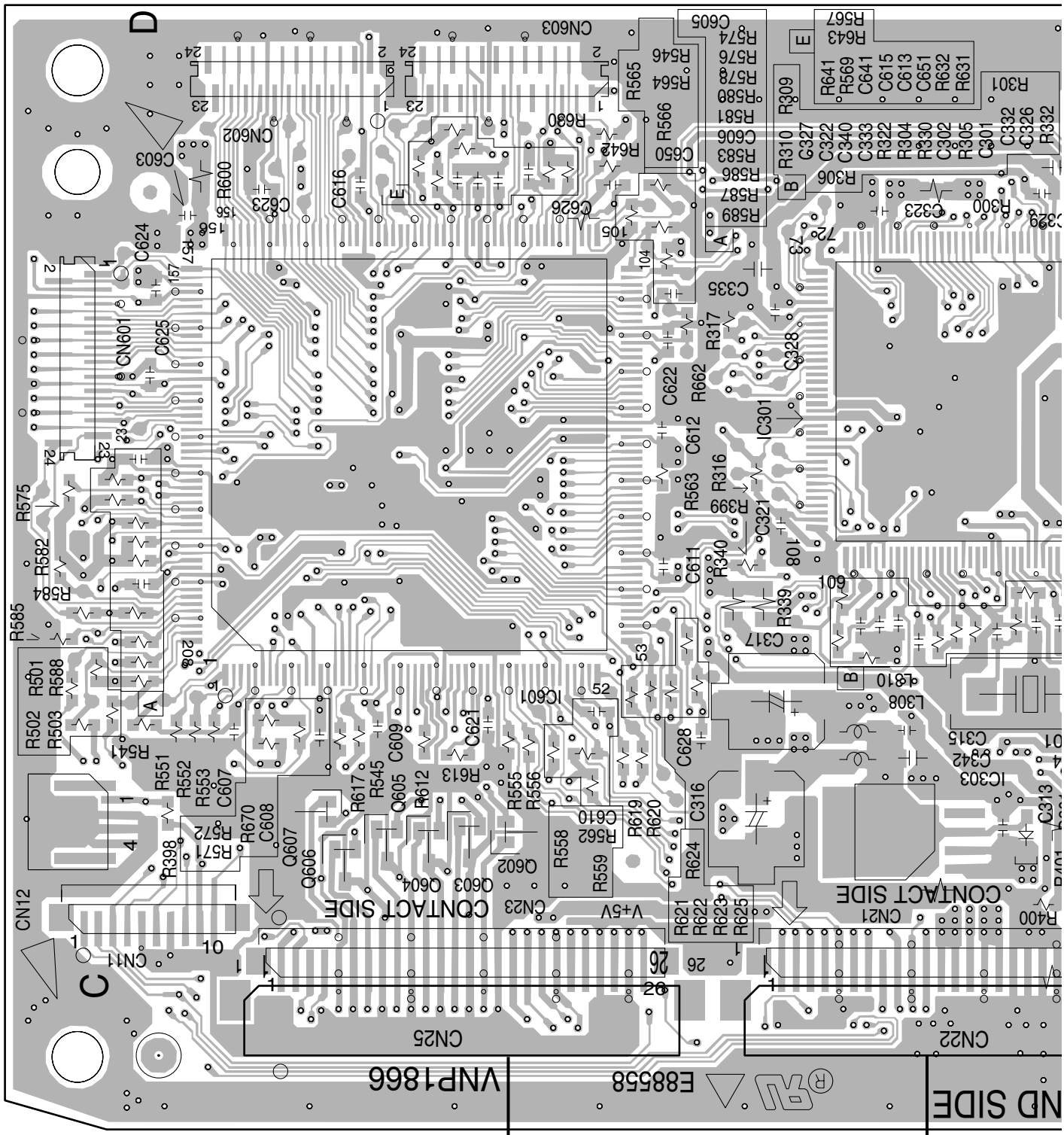


Q201 IC201 Q203 IC202 Q205 Q204

4.3 DVDM ASSY

SIDE A

F DVDM ASSY

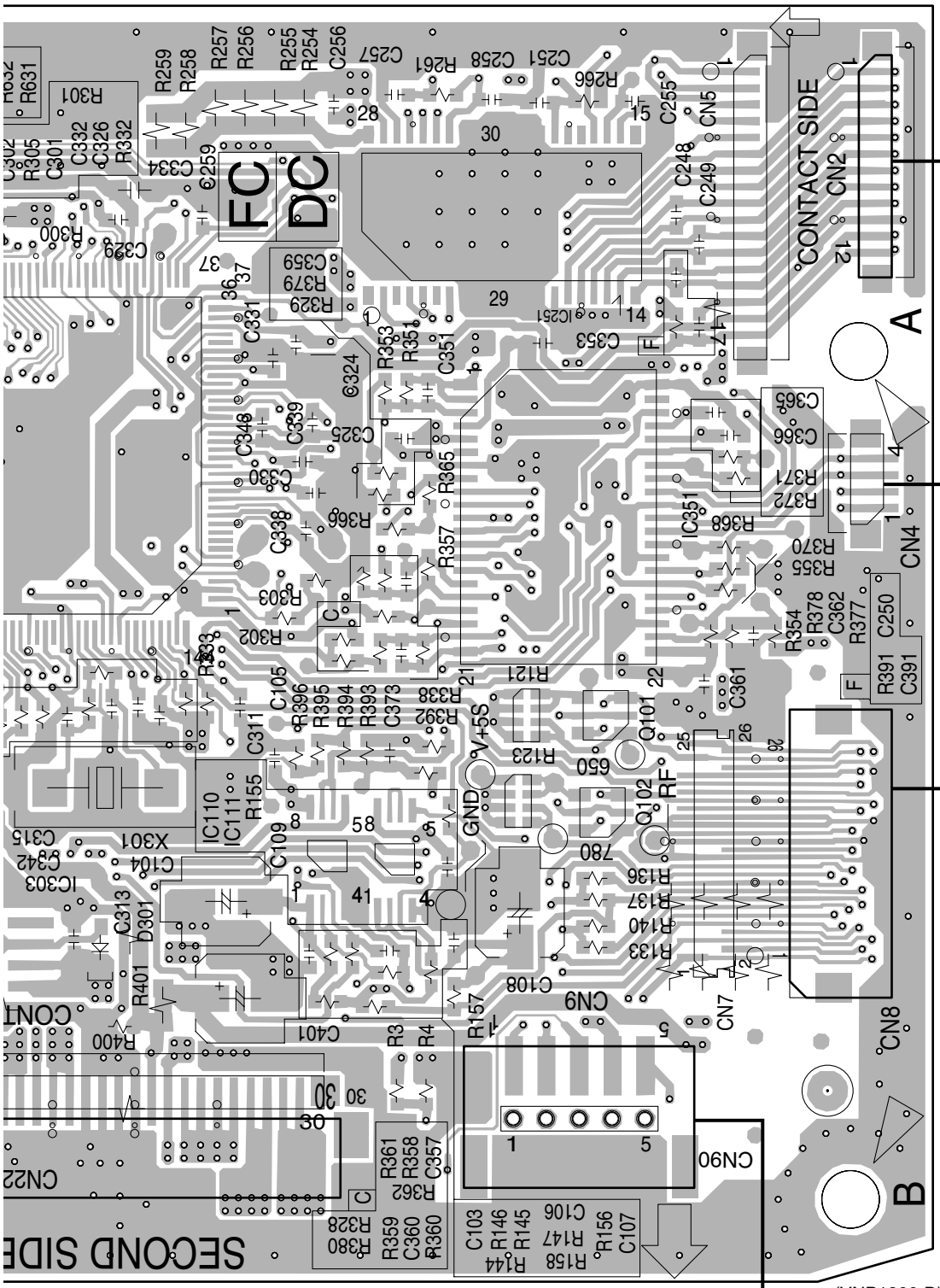


F **G** CN1962 (CN25)

F **G** CN1961 (CN22)

SIDE A

IC301 IC251 IC351 Q101
IC110 IC111 Q102



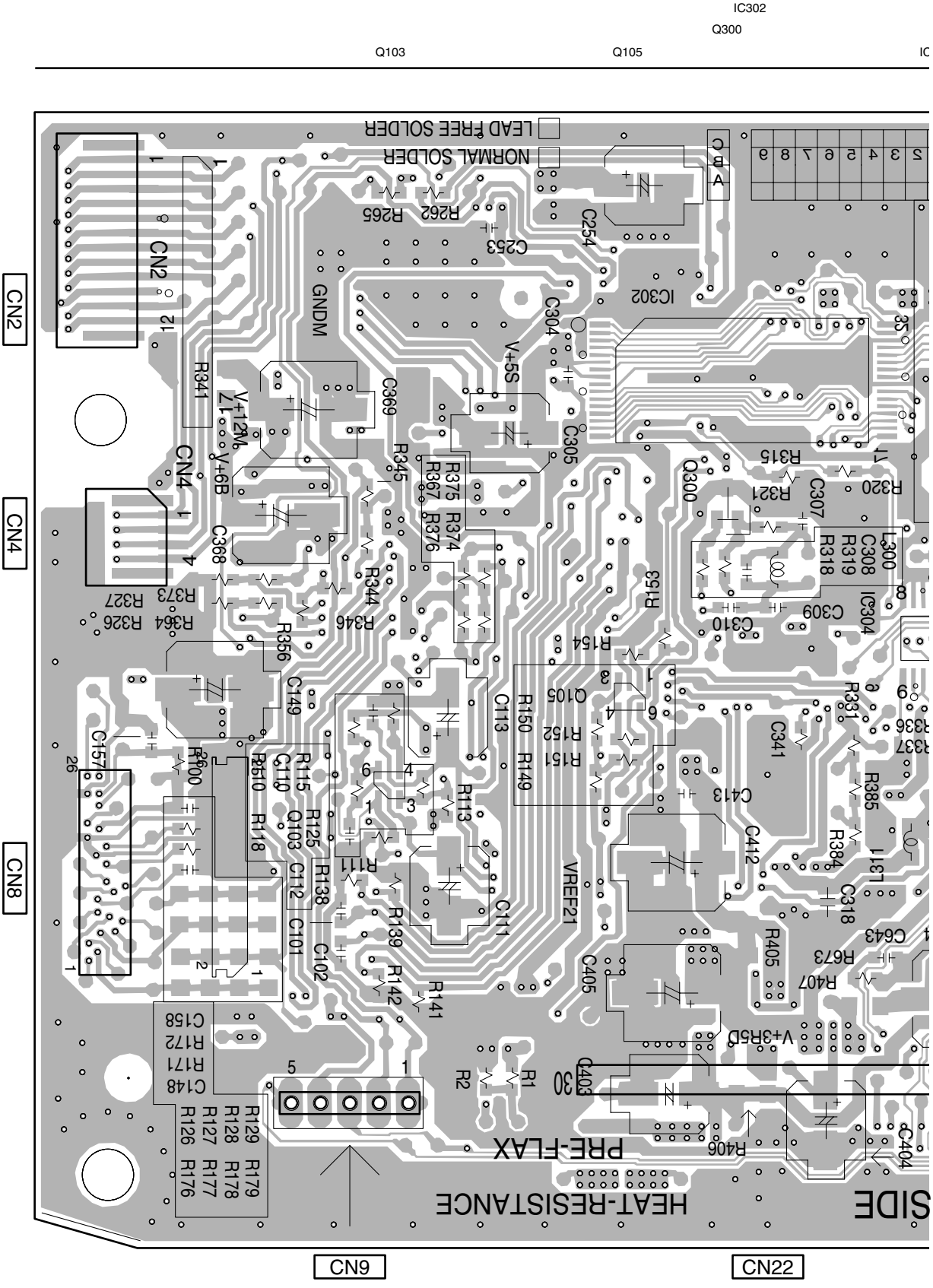
CN2 → SPINDLE MOTOR

CN4 → STEPPING MOTOR

CN8 → PICKUP ASSY

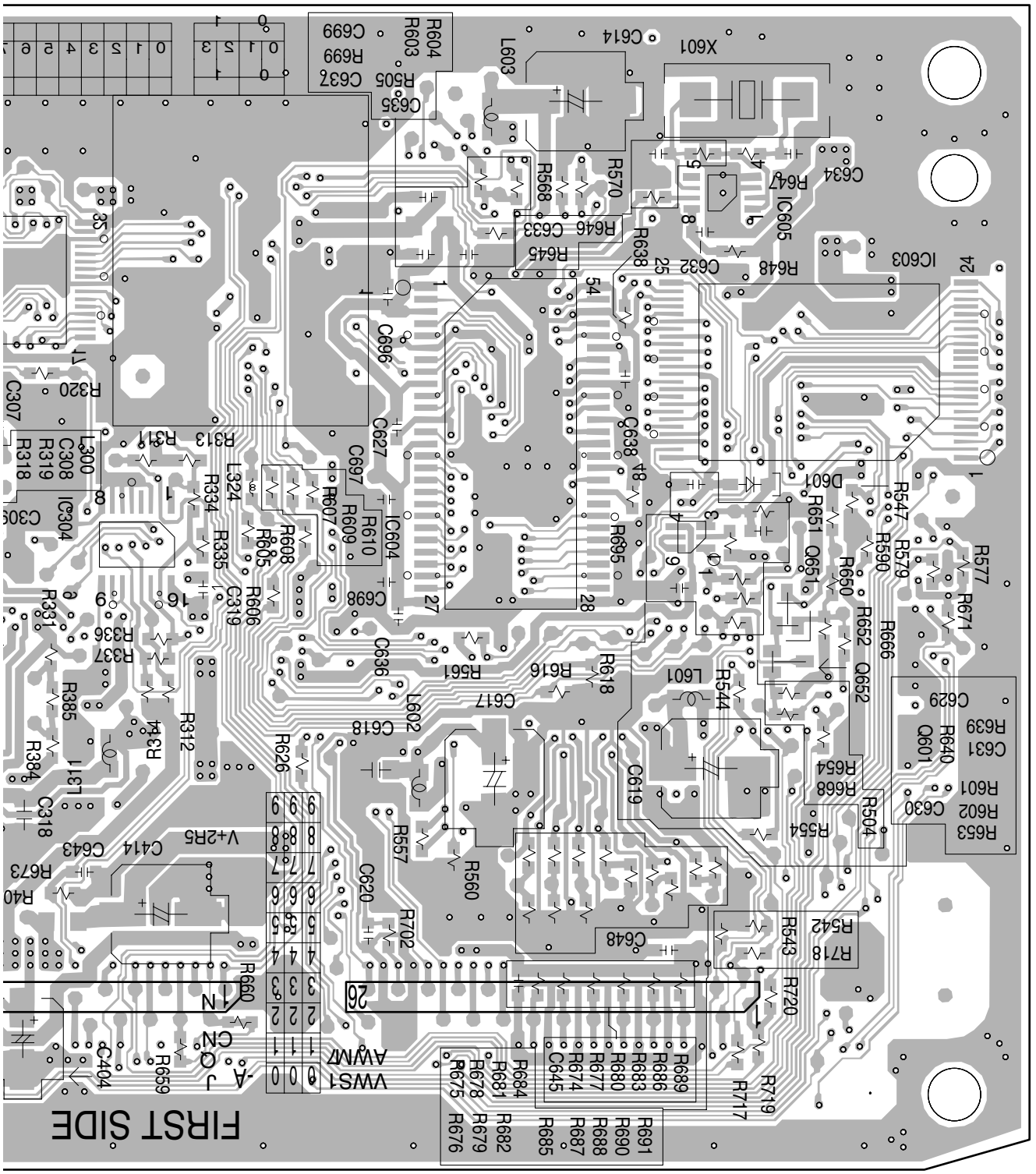
CN9 → D CN601

F DVDM ASSY


IC302
Q300
Q103
Q105
LEAD FREE SOLDER
NORMAL SOLDER
CN2
CN4
CN8
CN9
CN22
HEAT-RESISTANCE
PRE-FLAX
SIDE
GNDM
V+5S
V+12V
V+6B
V+3R5D
VREF21

SIDE B

IC605 IC603
Q651
IC304 IC604 Q601 Q652

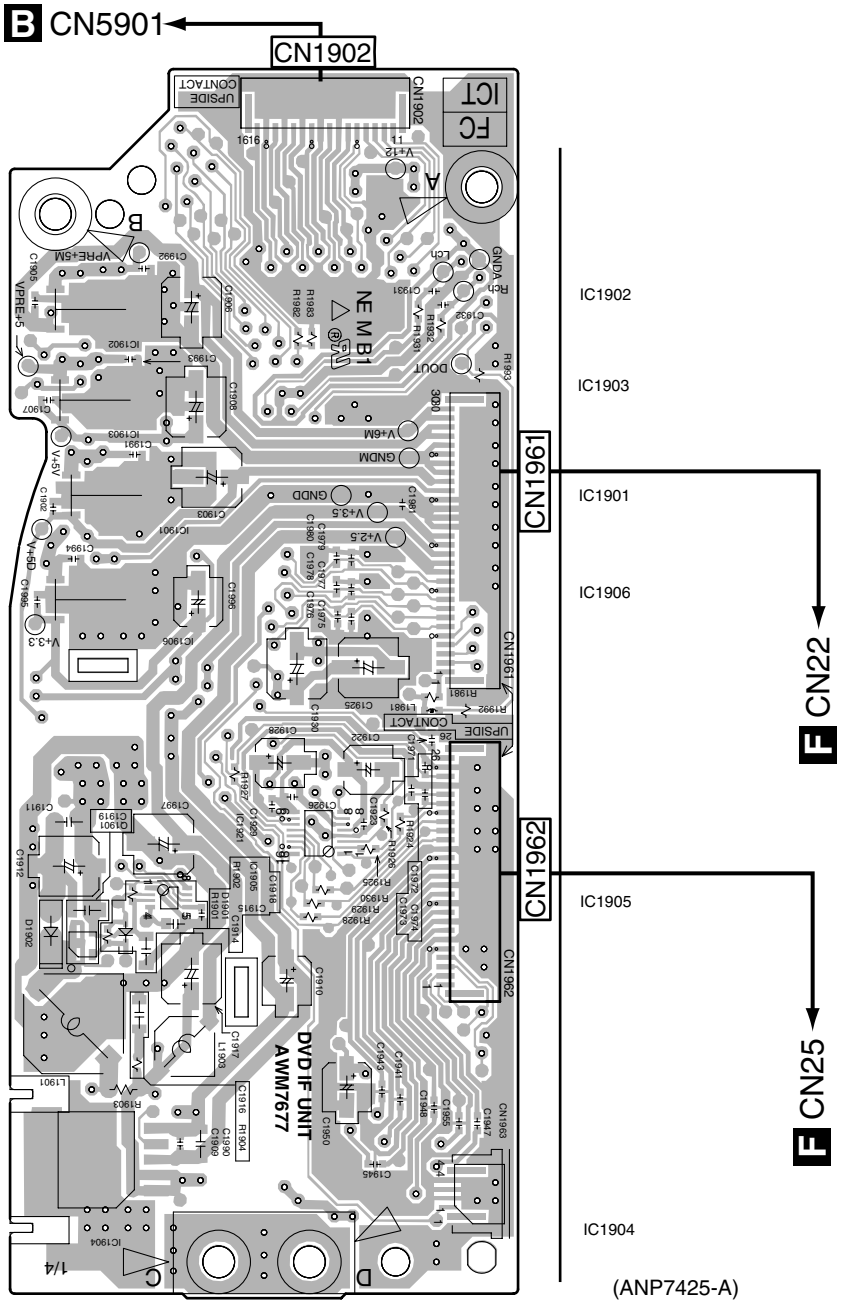


4.4 DVD IF ASSY

SIDE A

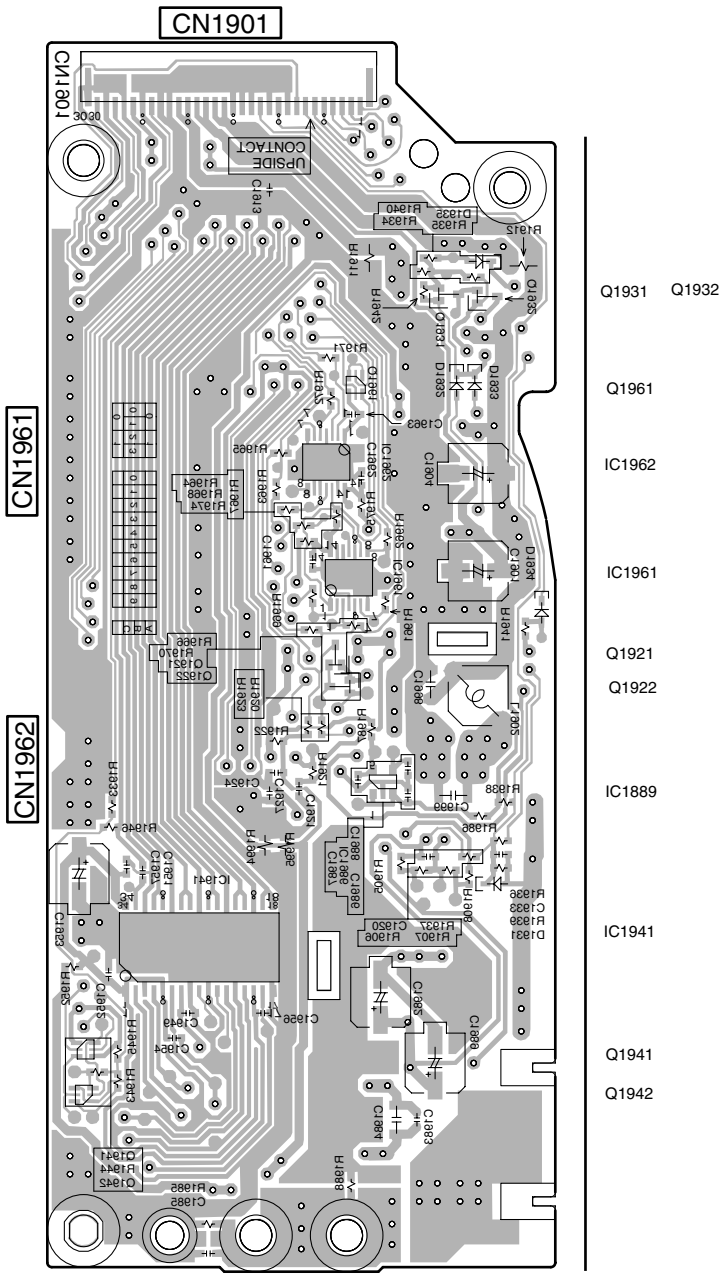
SIDE A

G DVDIF ASSY



SIDE B **SIDE B**

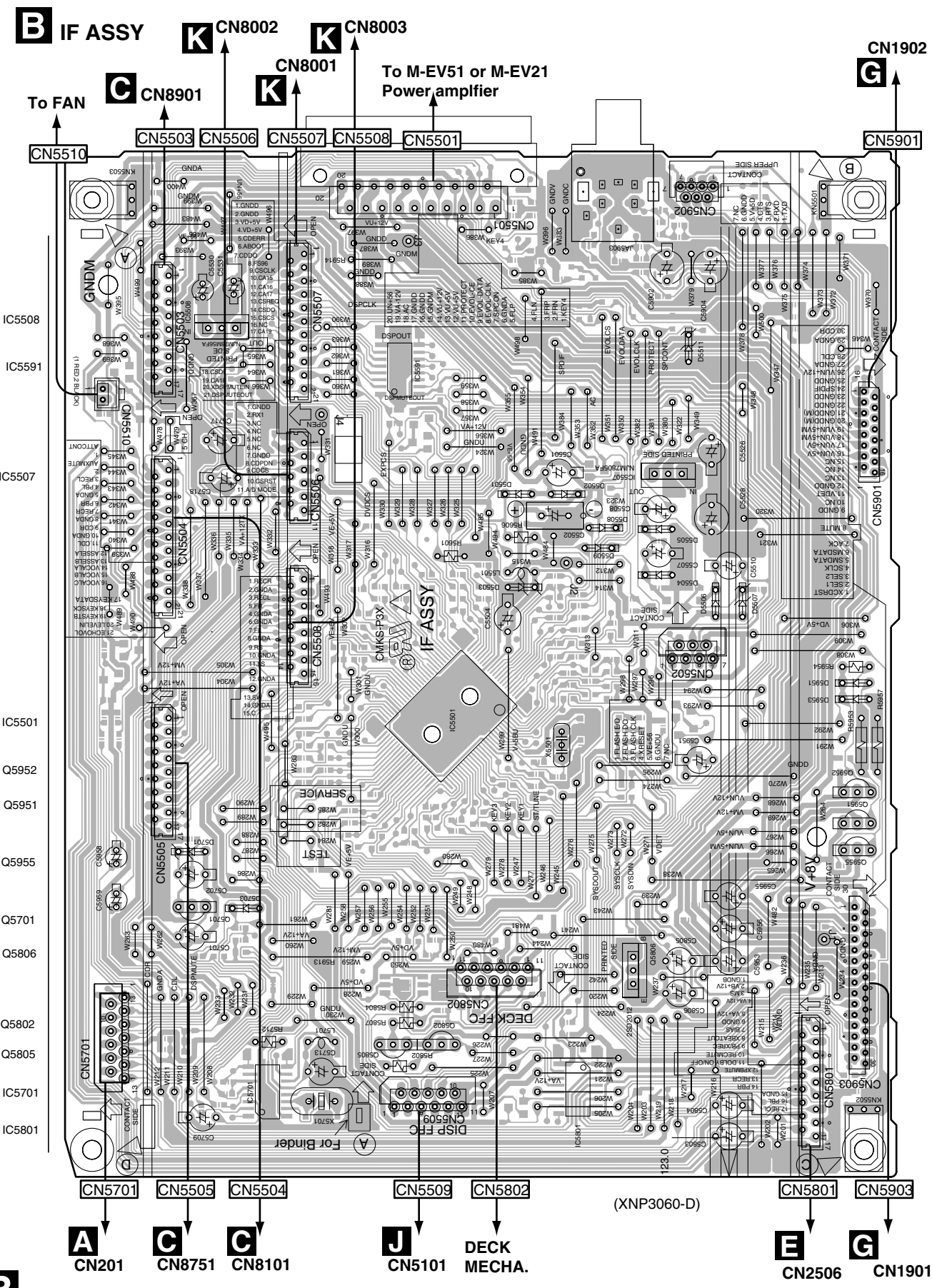
G DVD IF ASSY



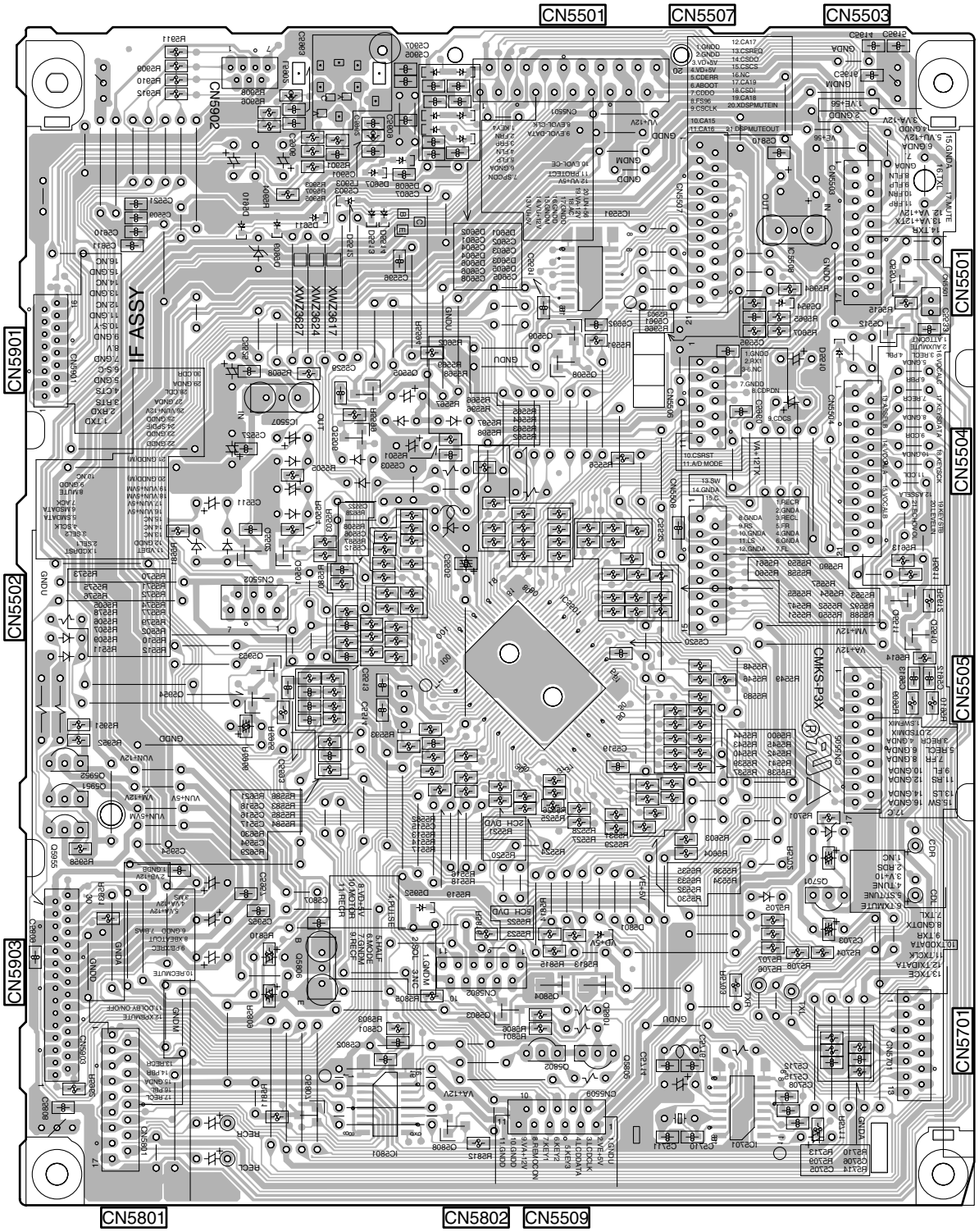
(ANP7425-A)

4.5 IF ASSY

SIDE A



B IF ASSY



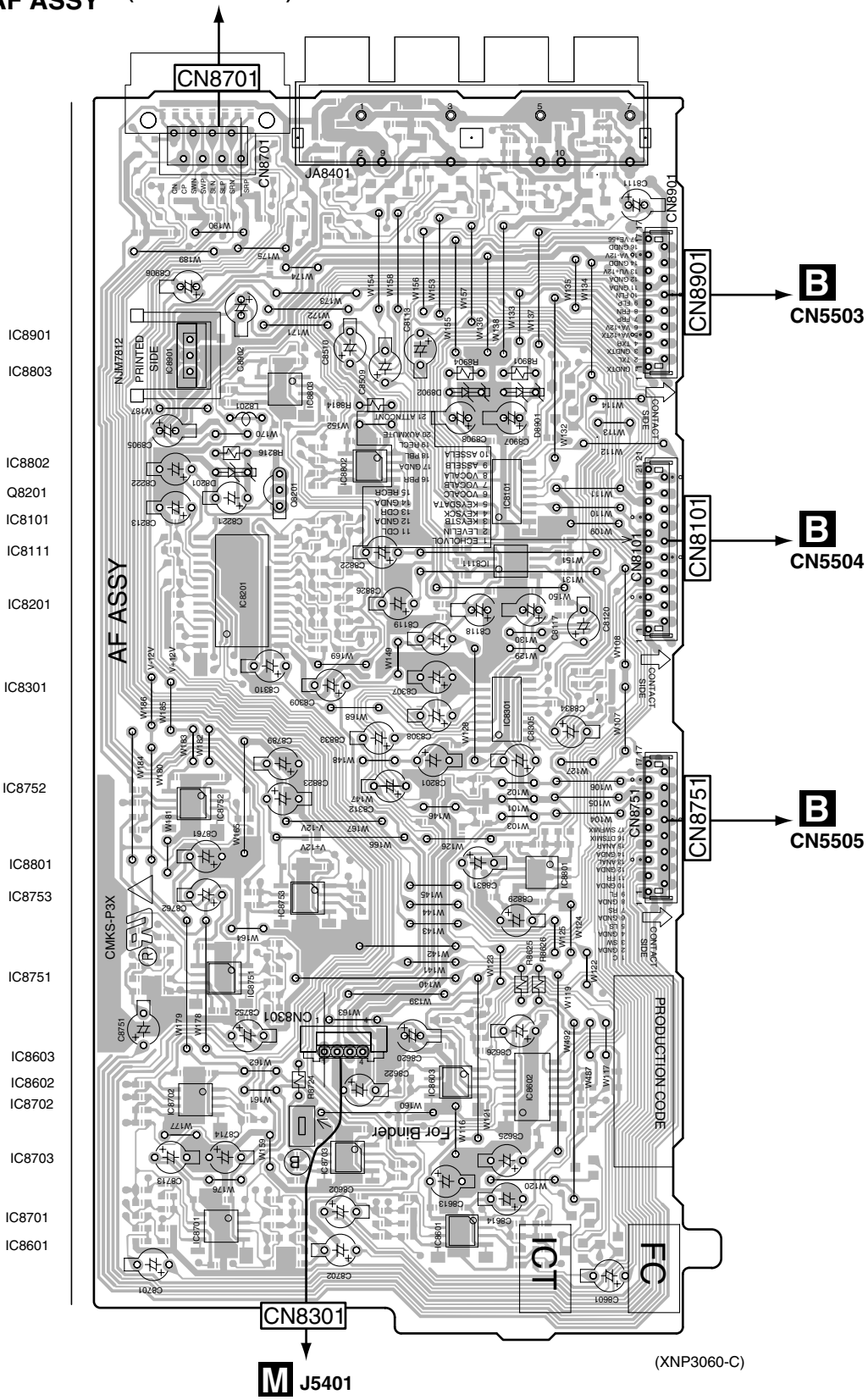
(XNP3060-D)

4.6 AF ASSY

SIDE A

C **AF ASSY**

TO. STEREO POWER AMPLIFIER
(M-EV51 CN-3002)

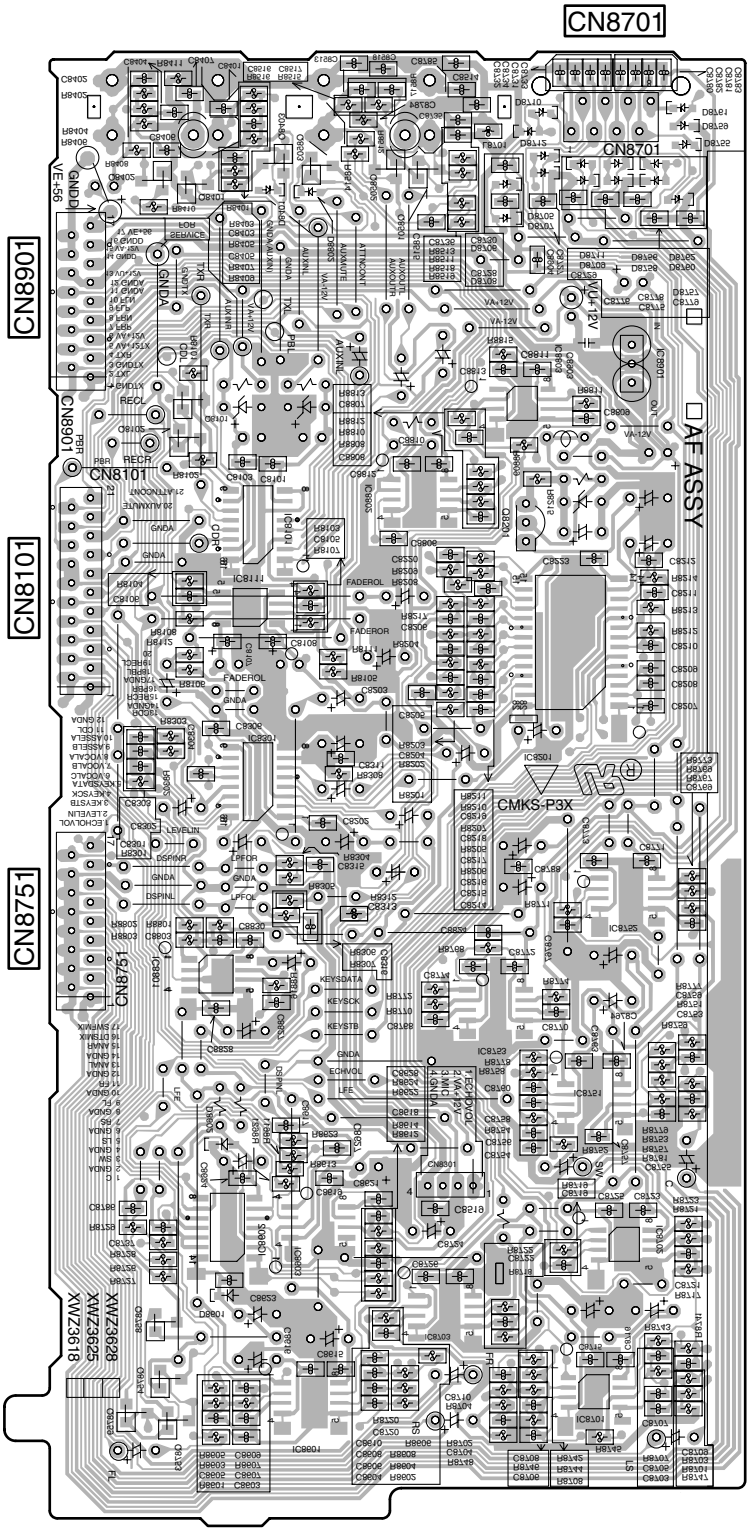


(XNP3060-C)

C

SIDE B

C AF ASSY

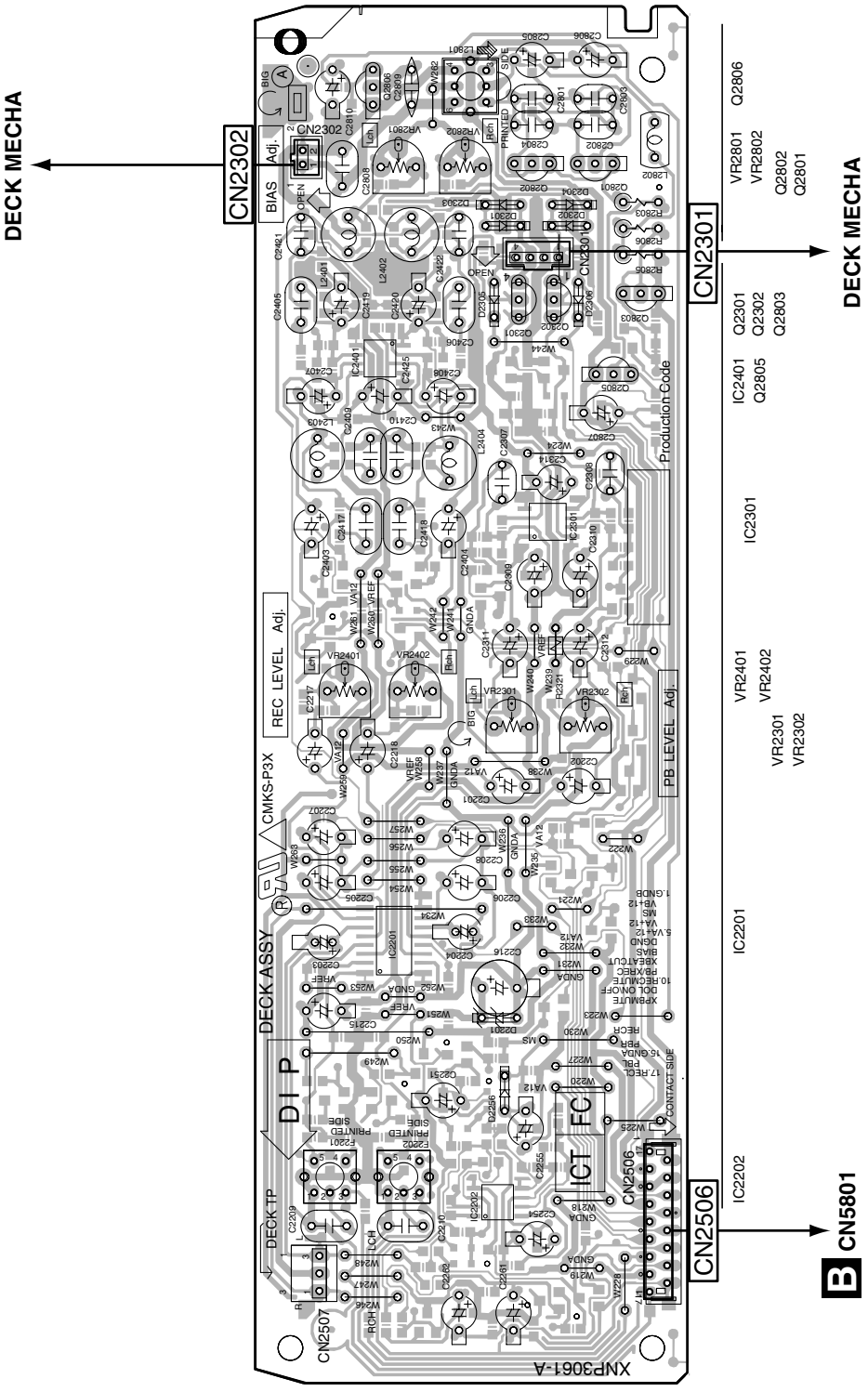


(XNP3060-C)

4.7 DECK ASSY

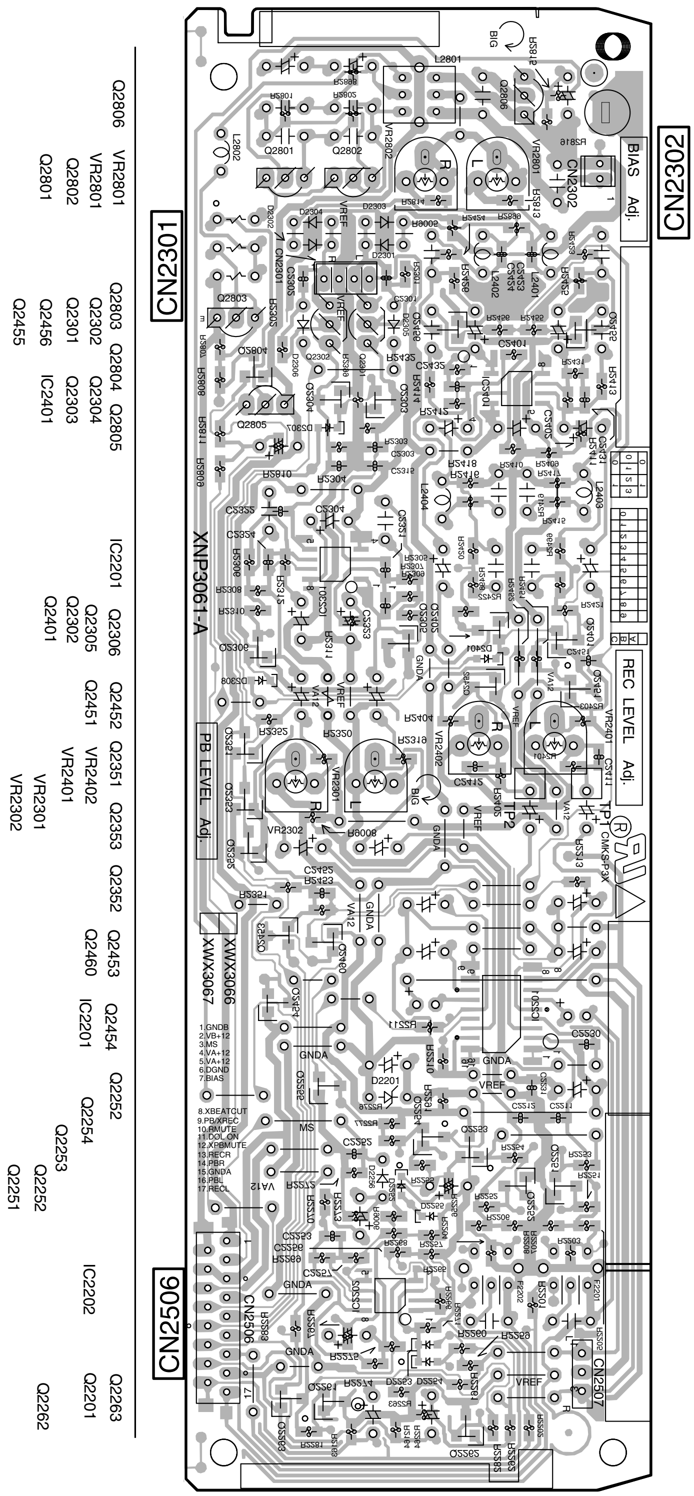
SIDE A

E DECK ASSY



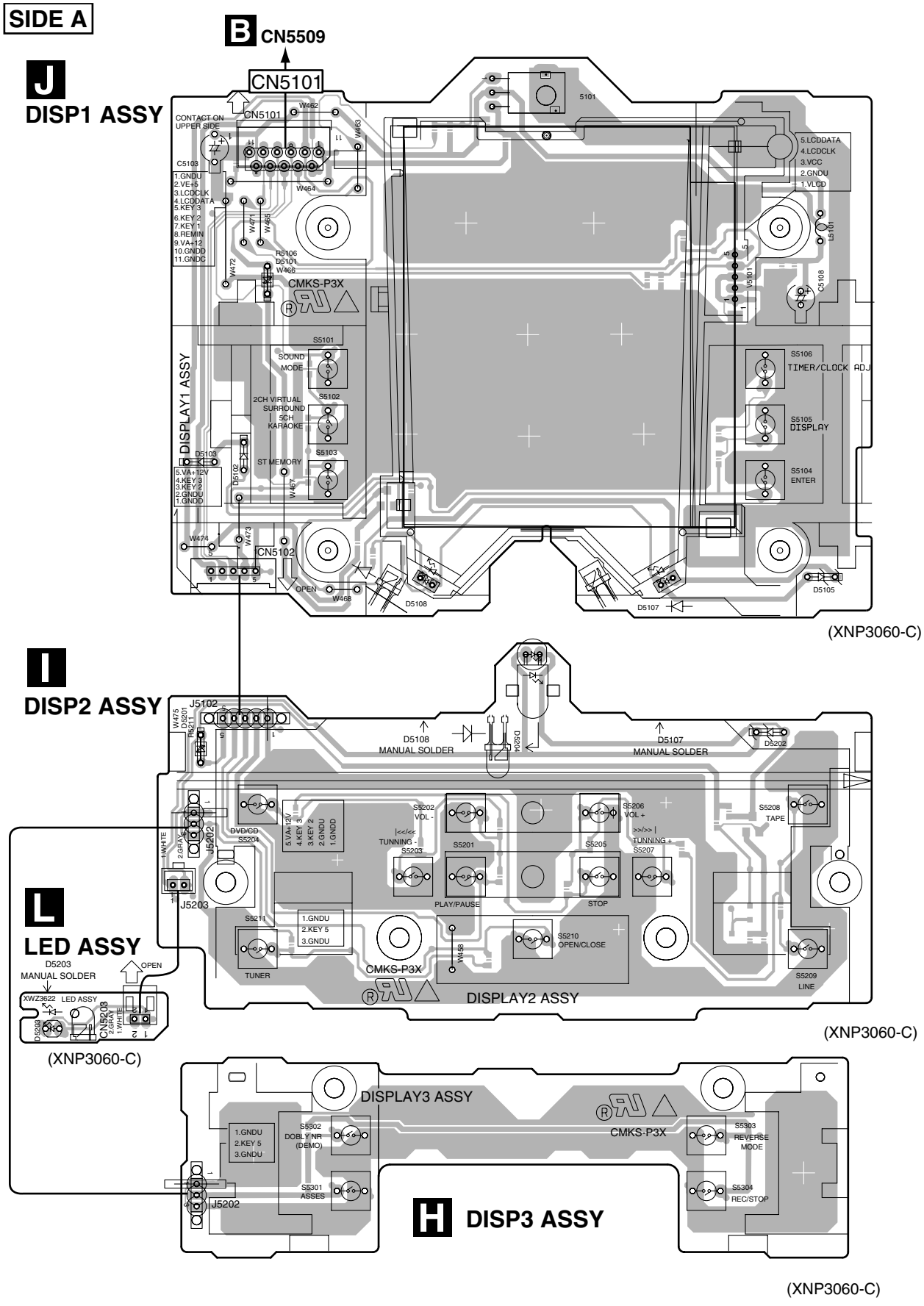
(XNP3061-A)

SIDE B



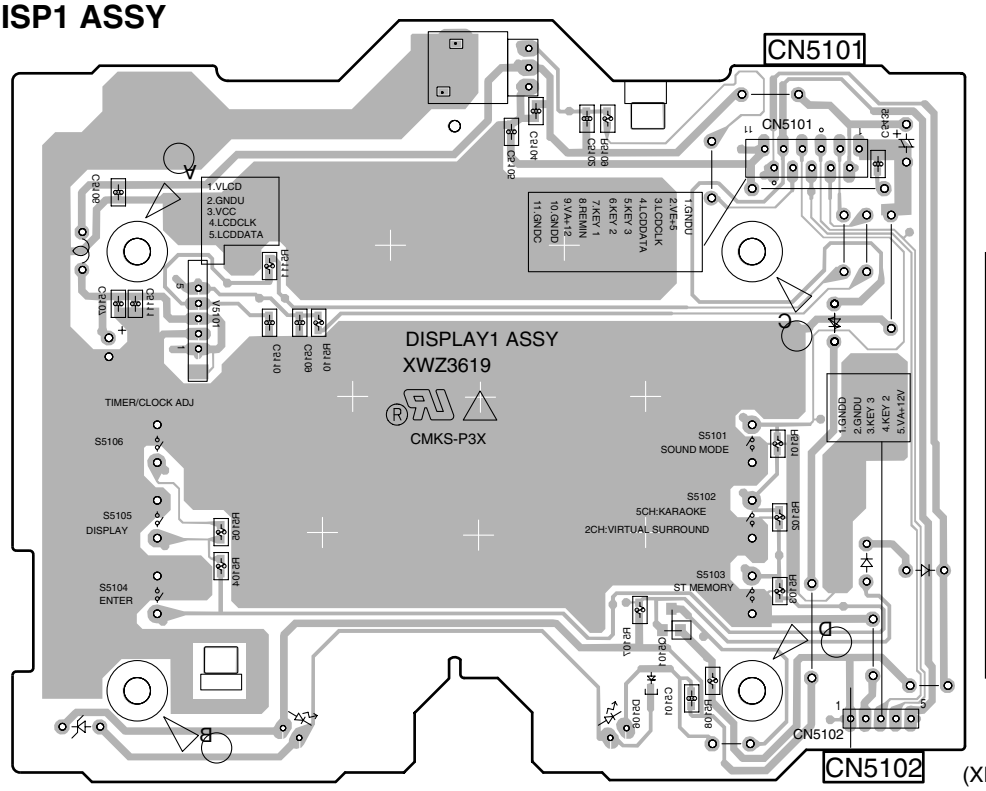
(XNP3061-A)

4.8 DISP1, DISP2, DISP3 and LED ASSYS

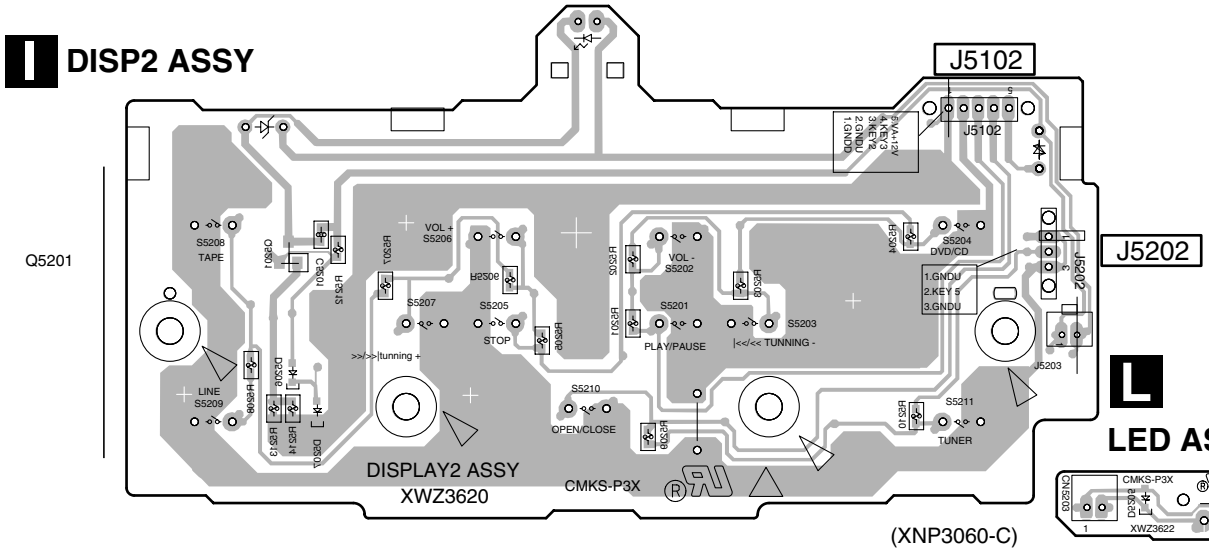


SIDE B

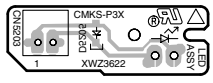
J DISP1 ASSY



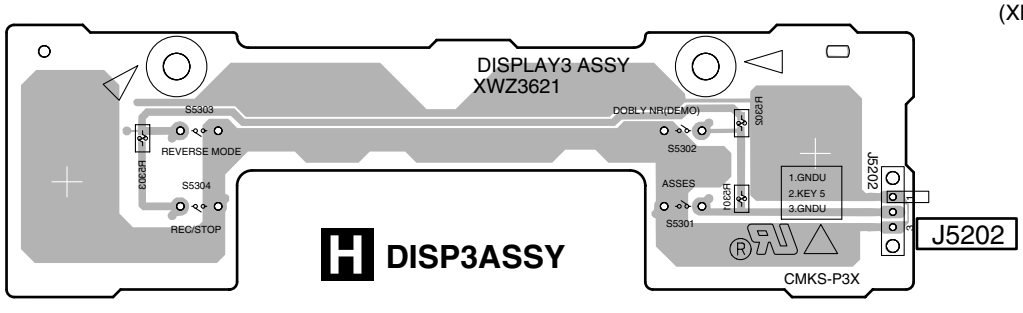
I DISP2 ASSY



L LED ASSY



(XNP3060-C)



H DISP3ASSY

(XNP3060-C)

H I J L

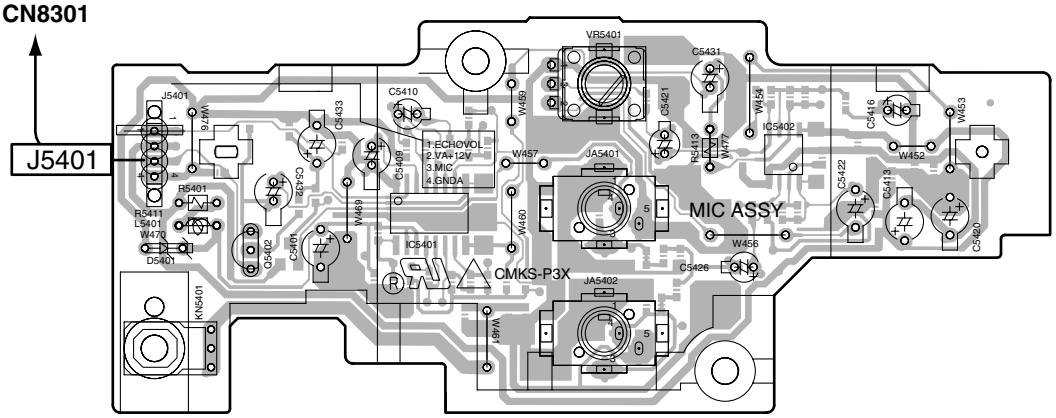
4.9 MIC ASSY

SIDE A

SIDE A

M MIC ASSY

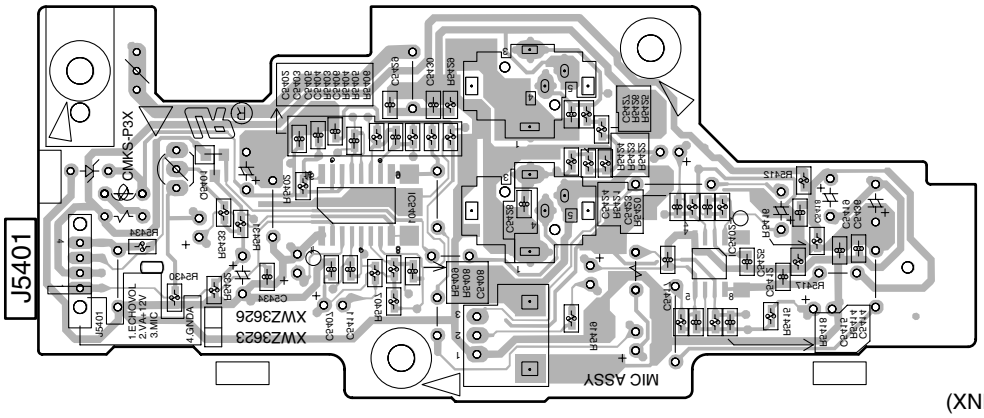
C **CN8301**



(XNP3060-C)

Q5402 IC5401 IC5402

SIDE B



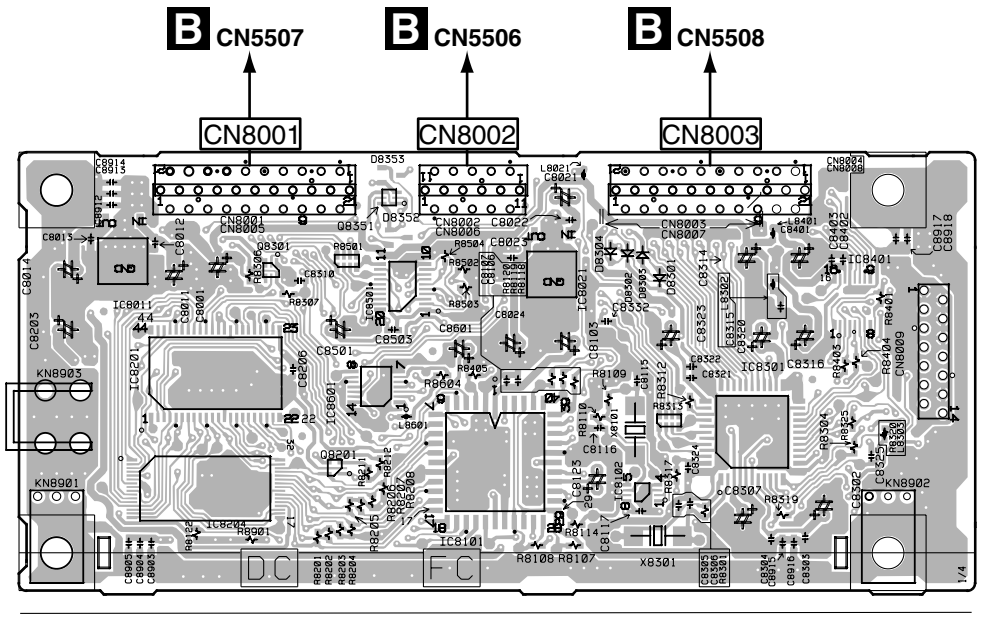
(XNP3060-C)

Q5401 IC5401 IC5402

4.10 DSP ASSY(XV-EV51 Only)

SIDE A **SIDE A**

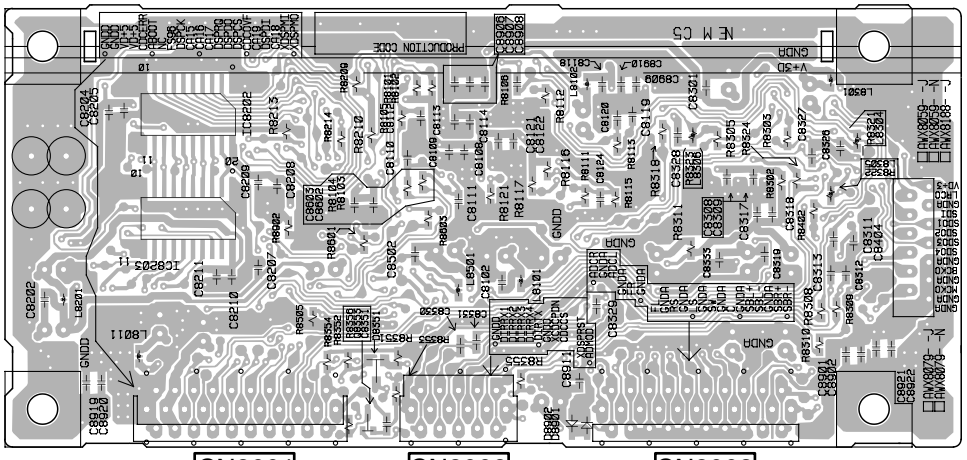
K DSP ASSY(XV-EV51_Only)



IC8201 Q8301 Q8201 IC8501 IC8101 IC8102 IC8301 IC8401
IC8204 IC8601 IC8021
Q8351

(ANP7442-B)

SIDE B



IC8202 Q8353
IC8203

(ANP7442-B)

5. PCB PARTS LIST

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

560 Ω	→ *56 x 10[1]* →	*561*	····· *RD1/4PU 5 6 1 J*
47k Ω	→ *47 x 10[3]* →	*473*	····· *RD1/4PU 4 7 3 J*
0.5 Ω	→ *R50*		····· *RN2H R 5 0 K*
1 Ω	→ *1R0*		····· *RS1P 1 R 0 K*

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

5.62k Ω	→ *562 x 10[1]* →	*5621*	····· *RN1/4PC 5 6 2 1 F*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
		XV-EV51/ZLXJ/NC	
	1	..DSP ASSY	AWX8059
NSP	1	..MEDIA ASSY	XWM3206
	2	..IF ASSY	XWZ3617
	2	..AF ASSY	XWZ3618
	2	..DISP 1 ASSY	XWZ3619
	2	..DISP 2 ASSY	XWZ3620
	2	..DISP 3 ASSY	XWZ3621
	2	..LED ASSY	XWZ3622
	2	..MIC ASSY	XWZ3626
	1	..DECK ASSY	XWZ3067
NSP	1	..DVD ASSY	AXA7110
	2	..DVD IF ASSY	AWM7677
	2	..DVDM ASSY	AWM7684
NSP	1	..LOADING MECHANISM ASSY	VWT1203
NSP	2	..LOAB ASSY	VWG2346
	1	..FM/AM TUNER MODULE	AXQ7228
		XV-EV21/ZLXJ/NC	
NSP	1	..MEDIA ASSY	XWM3208
	2	..IF ASSY	XWZ3627
	2	..AF ASSY	XWZ3628
	2	..DISP 1 ASSY	XWZ3619
	2	..DISP 2 ASSY	XWZ3620
	2	..DISP 3 ASSY	XWZ3621
	2	..LED ASSY	XWZ3622
	2	..MIC ASSY	XWZ3623
	1	..DECK ASSY	XWZ3066
NSP	1	..DVD ASSY	AXA7110
	2	..DVD IF ASSY	AWM7677
	2	..DVDM ASSY	AWM7684
NSP	1	..LOADING MECHANISM ASSY	VWT1203
NSP	2	..LOAB ASSY	VWG2346
	1	..FM/AM TUNER MODULE	AXQ7228

Mark	No.	Description	Part No.

K DSP Assy (EV51 Only)

SEMICONDUCTORS

IC8301		AK4586VQ
IC8101		CS493292
⚠ IC8021		NJM2391DL1-25
⚠ IC8011		NJM2391DL1-33
IC8201		PD8104A
IC8501		TC74LVX244FT
IC8202, IC8203		TC74VHC574F
IC8601		TC74VHCT08AFT
IC8102		TC7WU04FU
Q8351		RN2903
Q8301		UMD2N
Q8353		UN5212
D8301-D8304		1SS355
D8353		DAN202K
D8351, D8352		DAP202K

COILS AND FILTERS

L8011, L8102, L8201 Chip Inductor	QTL1013
L8301, L8302, L8501, L8601	QTL1013
L8305 Chip Beads	VTL1089

CAPACITORS

C8305, C8306	CCSRCH120J50
C8117	CCSRCH271J50
C8107, C8109, C8113, C8120, C8122	CCSRCH471J50
C8205, C8206, C8209, C8210, C8308	CCSRCH471J50
C8318, C8503, C8603	CCSRCH471J50
C8115, C8116	CCSRCH6R0D50
C8302, C8501, C8601	CEAL100M16
C8001, C8014, C8024, C8103, C8307	CEAL101M10
C8316, C8323	CEAL101M10
C8320	CEAL220M6R3
C8123	CEAL2R2M50
C8011, C8021	CEAL4R7M16
C8906	CKSRYB102K50
C8102, C8106, C8108, C8114	CKSRYB103K50
C8118, C8119, C8121, C8124, C8202	CKSRYB103K50
C8204, C8207, C8208, C8211, C8309	CKSRYB103K50
C8317, C8324, C8502, C8602, C8920	CKSRYB103K50
C8319, C8329-C8332, C8903, C8907	CKSRYB104K25
C8911	CKSRYB104K25
C8301, C8304, C8321	CKSRYB473K25

RESISTORS

R8313, R8501	RAB4C101J
R8312	RS1/16S1802F
Other Resistors	RS1/16S###J

OTHERS

CN8002 11P SOCKET	AKP7069
CN8003 15P SOCKET	AKP7071

Mark	No.	Description	Part No.
	CN8001	21P SOCKET	AKP7074
	X8301	CRYSTAL RES.(12.28MHz)	ASS7046
	8903	SCREW PLATE	VNE1948
	KN8901, KN8902	EARTH METAL FIT.	VNF1084
	X8101	CRYSTAL RES.(27MHz)	VSS1172

A FM/AM TUNER MODULE

SEMICONDUCTORS

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

COILS AND FILTERS

	L201	(FM Detector coil) ATE7003
	F202	(Ceramic filter) ATF-107
	F201	(Ceramic filter) ATF-119
	F203	(AM Ceramic filter) ATF1155

CAPACITORS

	C206	CCSRCH100D50
	C212, C213, C226, C233-C235	CCSRCH101J50
	C240	CCSRCH101J50
	C231, C232	CCSRCH150J50
	C223	CEAT100M50
	C229	CEAT101M10
	C224	CEAT1R0M50
	C227	CEAT220M25
	C241	CEAT2R2M50
	C243	CEAT330M16
	C228	CEAT3R3M50
	C237	CEAT470M10
	C211	CEJA1R0M50
	C210	CEJA470M16
	C204, C238, C602	CKSRYB102K50
	C101, C102, C208, C220, C239	CKSRYB103K50
	C242, C601	CKSRYB103K50
	C216, C217	CKSRYB123K50
	C225	CKSRYB153K50
	C201, C205, C209, C214, C230	CKSRYB223K50
	C236, C603	CKSRYB223K50
	C221	CKSRYB224K10
	C202, C222	CKSRYB473K16
	C215	CKSRYB681K50

RESISTORS

	R211	RD1/4PU221J
	R221	RD1/4PU222J
	R233	RD1/4PU391J
	R243	RS1/10S0R0J
	R103	RS1/10S331J
	R104	RS1/10S391J
	Other Resistors	RS1/16S###J

OTHERS

	CN201	13P Connector 52044-1345
	BN201	4P Terminal AKA7003
		Shield Case T ANK7072
		Shield Case B ANK7073

Mark	No.	Description	Part No.
	X201	Crystal RES.(7.2MHz)	ASS1093

B IF ASSY (XWZ3617)

SEMICONDUCTORS

	IC5591, IC5801	BU4094BCF
⚠	IC5507	NJM7805FA
⚠	IC5508	NJM78M56FA
	IC5501	PDC093A
	Q5951, Q5801, Q5952	2SB1237X
	Q5501, Q5953, Q5954	2SC2412K
	Q5701	2SD1858X
	Q5806	2SD2012
	Q5803	DTA124EK
	Q5505, Q5509	DTA143EK
	Q5506, Q5507, Q5508	DTC124EK
	Q5502, Q5807, Q5808, Q5802, Q5805	DTC143EK
	D5501, D5502, D5506, D5508, D5509	1SS133
	D5703, D5951, D5953, D5801, D5952	1SS133
	D5954	1SS355
	D5511	MTZJ11B
	D5701	MTZJ11C
	D5507	MTZJ6.8B
	D5609, D5512, D5513, D5514	UDZS6.8B

COILS AND FILTERS

	L5501	LAU220J

CAPACITORS

	C5502	(0.047F) ACH1246
	C5962, C5963,	CCSRCH101J50
	C5901, C5903, C5906	CCSRCH331J50
	C5958, C5959	CEAL100M16
	C5531	CEAL100M50
	C5530	CEAL1R0M50
	C5510, C5702, C5717, C5718, C5803	CEAT100M50
	C5804, C5953, C5955, C5956	CEAT100M50
	C5526	CEAT101M16
	C5507, C5805	CEAT1R0M50
	C5951	CEAT220M50
	C5501, C5504, C5806	CEAT470M16
	C5528	CEAT470M50
	C5902, C5904	CEAT471M6R3
	C5506, C5612,	C5613CKSRYB102K50
	C5516, C5517, C5518, C5521, C5529	CKSRYB103K50
	C5593, C5594, C5601, C5603, C5605	CKSRYB103K50
	C5607, C5609, C5610, C5703, C5808	CKSRYB103K50
	C5809, C5810, C5952, C5954, C5957	CKSRYB103K50
	C5503, C5505, C5509, C5512, C5515	CKSRYB104K16
	C5527, C5532, C5591, C5616, C5802	CKSRYB104K16
	C5960	CKSRYB104K16
	C5592, C5801	CKSRYB221K50
	C5961	CKSRYB224K10
	C5807	CKSRYB473K25
	C5614	CKSRYF105Z10

RESISTORS

	R5957	RD1/2PM121J
	R5953	RD1/2PM331J
	R5802, R5804, R5807	RD1/4PU102J
	R5954	RD1/4PU152J
	R5601, R5606	RD1/4PU473J

Mark	No.	Description	Part No.
		Other Resistors	RS1/16S###J
		OTHERS	
		CN5502 7P Connector	52045-0745
		CN5509, CN5802 11P Connector	52045-1145
		CN5701 13P Connector	52045-1345
		CN5506 11P Plug	AKP7058
		CN5508 15P Plug	AKP7060
		CN5503, CN5505, CN5801 17P Plug	AKP7061
		CN5504, CN5507 21P Plug	AKP7063
		X5501 Ceramic RES. (10MHz)	ASS7034
		CN5510 2P Plug	KM200SA2
		CN5901 16P Connector	VKN1192
		CN5903 30P Connector	VKN1206
		CN5902 7P Connector	VKN1211
		KN5501, KN5502 Earth metal FIT.	VNF1084
		KN5503 Earth metal FIT.	VNF1084
		JA5903 2P Pinjack	XKB3039
		CN5501 20P Socket	XKP3051

B IF ASSY(XWZ3627)

Mark	No.	Description	Part No.
		SEMICONDUCTORS	
		IC5801	BU4094BCF
⚠		IC5507	NJM7805FA
⚠		IC5508	NJM78M56FA
		IC5501	PDC097A
		Q5951, Q5955	2SA1282
		Q5801, Q5804	2SB1132
		Q59522	SB1237X
		Q5501, Q5701	2SD1858X
		Q5806	2SD2012
		Q5510, Q5511	2SD2114K
		Q5512, Q5803	DTA124EK
		Q5505, Q5509	DTA143EK
		Q5506-Q5508	DTC124EK
		Q5502, Q5805	DTC143ES
		D5501, D5502, D5504, D5506	1SS133
		D5508, D5509, D5703, D5951, D5953	1SS133
		D5510, D5801, D5952, D5954	1SS355
		D5511	MTZJ11B
		D5701	MTZJ11C
		D5507	MTZJ6.8B
		D5609, D5610	UDZS15B
		D5512-D5514	UDZS6.8B
		COILSANDFILTERS	
		L5501	LAU220J
		CAPACITORS	
		C5502 (0.047F)	ACH1246
		C5962, C5963	CCSRCH101J50
		C5901, C5903, C5906	CCSRCH331J50
		C5958, C5959	CEAL100M16
		C5531	CEAL100M50
		C5530	CEAL1R0M50
		C5510, C5702, C5717, C5718	CEAT100M50
		C5803, C5804, C5953, C5955, C5956	CEAT100M50
		C5507, C5805	CEAT1R0M50
		C5951	CEAT220M50
		C5501, C5504, C5526, C5806	CEAT470M16
		C5528	CEAT470M50
		C5902, C5904	CEAT471M6R3
		C5506, C5612, C5613	CKSRYB102K50
		C5516-C5518, C5521, C5529	CKSRYB103K50
		C5593, C5594, C5601, C5603, C5605	CKSRYB103K50
		C5607, C5609, C5610, C5703	CKSRYB103K50
		C5808-C5810, C5952, C5954, C5957	CKSRYB103K50
		C5503, C5505, C5509, C5512, C5515	CKSRYB104K16
		C5527, C5532, C5616, C5802, C5960	CKSRYB104K16
		C5801	CKSRYB221K50
		C5961	CKSRYB224K10
		C5807	CKSRYB473K25
		RESISTORS	
		R5957	RD1/2PM121J
		R5953	RD1/2PM331J
		R5802, R5804, R5807	RD1/4PU102J
		R5954	RD1/4PU152J
		R5601, R5606	RD1/4PU473J
		OTHERS	
		CN5502 7P Connector	52045-0745
		CN5509, CN5802 11P Connector	52045-1145
		CN5701 13P Connector	52045-1345
		CN5503, CN5801 17P Plug	AKP7061
		CN5504 21P Plug	AKP7063
		X5501 Ceramic RES. (10MHz)	ASS7034
		CN5510 2P Plug	KM200SA2
		CN5901 16P Connector	VKN1192
		CN5903 30P Connector	VKN1206
		CN5902 7P Connector	VKN1211
		KN5501, KN5502 Earth metal FIT.	VNF1084
		L5902, L5903	VTL1084
		JA5903 2P Pinjack	XKB3039
		CN5501 20P Socket	XKP3051

C AF ASSY(XWZ3618)

Mark	No.	Description	Part No.
		SEMICONDUCTORS	
		IC8111, IC8801	AN4558NS
		IC8301	BA3838F
		IC8101	BU4052BCF
		IC8602	BU4066BCF
		IC8201	M65847AFP
		IC8601, IC8603, IC8701, IC8702,	IC8703NJM4558MD
		IC8751, IC8752, IC8753, IC8802,	IC8803NJM4558MD
		IC8901	NJM7812FA
		Q8401, Q8402	2SC2412K
		Q8201	2SD1858X
		Q8501, Q8502	2SD2114K
		Q8403, Q8503, Q8754, Q8758	DTA124EK
		Q8101, Q8102, Q8753, Q8759	DTC124EK
		D8401, D8802	1SS355
		D8201	MTZJ5.6B
		D8901, D8902	MTZJ6.8B
		D8601, D8602	UDZS6.8B
		CAPACITORS	
		C8212	CCSRCH101J50
		C8705, C8706, C8709, C8710, C8755	CCSRCH331J50
		C8759	CCSRCH331J50
		C8217	CCSRCH471J50

Mark No.	Description	Part No.
	C8609, C8610	CCSRCH820J50
	C8111	CEAL100M50
	C8113, C8119, C8120, C8221, C8509	CEAT100M50
	C8510, C8752, C8752, C8822, C8826	CEAT100M50
	C8833, C8834	CEAT100M50
	C8789, C8823	CEAT101M16
	C8902	CEAT1R0M50
	C8305, C8308, C8309, C8310, C8601	CEAT2R2M50
	C8602, C8701, C8702, C8751	CEAT2R2M50
	C8117, C8118, C8201, C8213, C8222	CEAT470M16
	C8307, C8625, C8626, C8829, C8831	CEAT470M16
	C8905, C8906, C8907, C8908	CEAT470M16
	C8312	CEAT4R7M50
	C8903	CKSQYF105Z25
	C8220, C8605, C8606	CKSRYB102K50
	C8101, C8103, C8107, C8108, C8203	CKSRYB103K50
	C8204, C8205, C8218, C8313, C8514	CKSRYB103K50
	C8519, C8615, C8616, C8619, C8621	CKSRYB103K50
	C8623, C8624, C8715, C8716, C8723	CKSRYB103K50
	C8724, C8725, C8726, C8727, C8728	CKSRYB103K50
	C8729, C8730, C8736, C8763, C8764	CKSRYB103K50
	C8771, C8772, C8773, C8774, C8775	CKSRYB103K50
	C8776, C8778, C8779, C8810, C8811	CKSRYB103K50
	C8812, C8813, C8828, C8830	CKSRYB103K50
	C8301, C8302, C8303, C8407, C8515	CKSRYB104K16
	C8518, C8754	CKSRYB104K16
	C8219	CKSRYB122K50
	C8603, C8604	CKSRYB222K50
	C8904	CKSRYB223K50
	C8304	CKSRYB224K10
	C8756	CKSRYB333K25
	C8703, C8704, C8753	CKSRYB471K50
	C8216	CKSRYB472K50
	C8202, C8223, C8306, C8788, C8824	CKSRYB473K25
	C8207, C8208, C8209	CKSRYB683K16
	C8760	CKSRYB821K50
	C8206	CKSRYB822K50
	C8513	CKSRYF105Z10
	C8214, C8215	CKSRYF224Z16
RESISTORS		
	R8216	RD1/4PU102J
	R8724, R8814	RD1/4PU470J
	R8901, R8904	RD1/4PU471J
	R8625,	R8626RD1/4PU821J
	R8717, R8718,	R8721RS1/16S1002F
	R8722, R8767, R8768, R8769	RS1/16S1002F
	R8770, R8808, R8809, R8810, R8811	RS1/16S1002F
	Other Resistors	RS1/16S###J
OTHERS		
	CN8301 4P Jumper connector	52147-0410
	CN8751, CN8901 17P Socket	AKP7072
	CN8101 21P Socket	AKP7074
	Heat sink	ANH-309
	Screw	BBZ30P080FMC
	JA8401 4P Pinjack	XKB3040
	CN8701 8P Socket	XKP3052

C AF ASSY(XWZ3628)

Mark No.	Description	Part No.
SEMICONDUCTORS		
	IC8111, IC8801	AN4558NS
	IC8301	BA3838F
	IC8101	BU4052BCF
	IC8201	M65847AFP
	IC8802, IC8803	NJM4558MD
	IC8901	NJM7812FA
	Q8401, Q8402	2SC2412K
	Q8201	2SD1858X
	Q8501, Q8502	2SD2114K
	Q8403, Q8503	DTA124EK
	Q8101, Q8102	DTC124EK
	D8401, D8802	1SS355
	D8201	MTZJ5.6B
	D8901, D8902	MTZJ6.8B
CAPACITORS		
	C8212	CCSRCH101J50
	C8217	CCSRCH471J50
	C8111	CEAL100M50
	C8113, C8119, C8120, C8221	CEAT100M50
	C8509, C8510, C8822, C8826	CEAT100M50
	C8833, C8834	CEAT100M50
	C8789, C8823	CEAT101M16
	C8902	CEAT1R0M50
	C8305, C8308-C8310	CEAT2R2M50
	C8117, C8118, C8201, C8213, C8222	CEAT470M16
	C8307, C8829, C8831, C8905-C8908	CEAT470M16
	C8312	CEAT4R7M50
	C8903	CKSQYF105Z25
	C8220	CKSRYB102K50
	C8101, C8103, C8107, C8108	CKSRYB103K50
	C8203-C8205, C8218, C8313, C8514	CKSRYB103K50
	C8519, C8810-C8813, C8828, C8830	CKSRYB103K50
	C8301-C8303, C8407, C8515, C8518	CKSRYB104K16
	C8219	CKSRYB122K50
	C8904	CKSRYB223K50
	C8304	CKSRYB224K10
	C8216	CKSRYB472K50
	C8202, C8223, C8306, C8788, C8824	CKSRYB473K25
	C8207-C8209	CKSRYB683K16
	C8206	CKSRYB822K50
	C8513	CKSRYF105Z10
	C8214, C8215	CKSRYF224Z16
RESISTORS		
	R8216	RD1/4PU102J
	R8814	RD1/4PU470J
	R8901, R8904	RD1/4PU471J
	R8808-R8811	RS1/16S1002F
OTHERS		
	CN8301 4P Jumper connector	52147-0410
	CN8901 17P Socket	AKP7072
	CN8101 21P Socket	AKP7074
	Heat sink	ANH-309
	Screw	BBZ30P080FMC
	JA8401 4P Pinjack	XKB3040

J DISP 1 ASSY

Mark	No.	Description	Part No.
		SEMICONDUCTORS	
	Q5101		2SC2412K
A	D5102, D5103		1SS133
	D5105, D5106		MTZJ6.8B
		COILS AND FILTERS	
	L5101		LAU220J
		SWITCHES AND RELAYS	
	S5101, S5102, S5103, S5104, S5105		ASG7013
		CAPACITORS	
	C5109		CCSRCH100D50
	C5110		CCSRCH220J50
B	C5103		CEAT101M10
	C5108		CEAT470M16
	C5106		CKSRYB102K50
	C5101, C5104		CKSRYB103K50
	C5111		CKSRYB104K16
	C5105		CKSRYB681K50
		RESISTORS	
	R5106		RD1/4PU101J
	Other Resistors		RS1/16S###J
		OTHERS	
C	CN5101 11P Connector		52044-1145
	5101 Remote recevier unit		GP1U26X

I DISP 2 ASSY

Mark	No.	Description	Part No.
		SEMICONDUCTORS	
	Q5201		2SC2412K
	D5206, D5207		1SS355
	D5202, D5204		MTZJ6.8B
		SWITCHES AND RELAYS	
	S5201, S5202, S5203, S5204, S5205		ASG7013
D	S5206, S5207, S5208, S5209, S5210		ASG7013
	S5211		ASG7013
		CAPACITORS	
	C5201		CKSRYB103K50
		RESISTORS	
	R5211		RD1/4PU101J
	Other Resistors		RS1/16S###J
		OTHERS	
	5202 3P Cable holder		51048-0300
E	5201 5P Cable holder		51048-0500
	J5202 3P Jumper wire		D20PYY0320E
	J5102 Jumper wire		D20PYY0510E
	J5203 Connector Assy		PF02PG-B07
	LED Holder		XMR3053

H DISP 3 ASSY

Mark	No.	Description	Part No.
		SWITCHES AND RELAYS	
	S5301, S5302, S5303		ASG7013
F		**RESISTORS**	
	Other Resistors		RS1/16S###J
		OTHERS	
	5301 3P Cable holder		51048-0300

L LED ASSY

Mark	No.	Description	Part No.
		SEMICONDUCTORS	
	D5203, D5205		UDZS6.8B
		OTHERS	
	CN5203 KR Connector		S2B-PH-K

M MIC ASSY

Mark	No.	Description	Part No.
		SEMICONDUCTORS	
	IC5401		M65855FP
	IC5402		NJM4558MD
	Q5402		2SJ103
	Q5401		DTA143EK
	D5401		MTZJ5.1B
		COILS AND FILTERS	
	L5401		LAU100J
		CAPACITORS	
	C5418, C5419, C5427, C5428		CCSRCH101J50
	C5409		CEAL220M16
	C5416		CEAL2R2M50
	C5401		CEAT101M16
	C5422		CEAT2R2M50
	C5420		CEAT470M16
	C5432		CEAT4R7M50
	C5433		CEATR22M50
	C5421, C5426		CEJQ2R2M50
	C5431		CEJQ4R7M50
	C5410		CEJQR47M50
	C5423 (XWZ3626)		CKSRYB102K50
	C5423 (XWZ3623)		CKSRYB331K50
	C5404, C5408, C5411, C5430		CKSRYB103K50
	C5402, C5412, C5429, C5436		CKSRYB104K16
	C5414		CKSRYB122K50
	C5405		CKSRYB123K50
	C5406		CKSRYB472K50
	C5407		CKSRYB473K25
		RESISTORS	
	R5401		RD1/4PU561J
	VR5401 10k-B		XCS3007
	Other Resistors		RS1/16S###J
		OTHERS	
	5401 4P Cable holder		51048-0400
	J5401 Jumper wire		D20PYY0430E
	KN5401 Earth metal FIT.		VNF1084
	JA5401, JA5402 MIC Jack		XKN3012

G DVD IF ASSY

Mark	No.	Description	Part No.
		SEMICONDUCTORS	
⚠	IC1902		BA06FP
	IC1941		MM1567AJ
⚠	IC1906		NJM2391DL1-33
⚠	IC1901, IC1903		NJM78M05DL1A
	IC1921		PCM1742KE
⚠	IC1904		PQ025EH01ZP

Mark	No.	Description	Part No.
⚠	IC1905S-8540		B00FN-IMA
	IC1962		TC74VHC125FT
	IC1961		TC74VHCT125AFT
	Q1931		2SA1576A
⚠	Q1901C		PH6312
	Q1941, Q1961		RN1903
	Q1942		RN2903
	Q1921, Q1922, Q1932		UN5212
	D1901, D1932-D1935		1SS355
	D1902		RB051L-40
	D1931		UDZS5.1B

COILSANDFILTERS

	L1901 (SMP Power Inductor)	ATL7003
	L1902 (SMP Power Inductor)	ATL7004
	L1903 (SMP Power Inductor)	ATL7005

CAPACITORS

	C1931, C1932	CCSRCH102J50
	C1920	CCSRCH121J50
	C1901, C1904, C1906, C1912, C1925	CEV101M16
	C1930, C1953	CEV101M16
	C1910, C1917	CEV221M4
	C1903, C1908, C1928, C1950, C1996	CEV470M6R3
	C1915	CKSQYB105K16
	C1902, C1905, C1907, C1909, C1918	CKSRYB104K16
	C1923, C1924, C1926, C1929, C1933	CKSRYB104K16
	C1941, C1943, C1945, C1947-C1949	CKSRYB104K16
	C1951, C1952, C1955-C1957	CKSRYB104K16
	C1961, C1962, C1991-C1995	CKSRYB104K16
	C1914, C1999	CKSYB475K16
	C1916, C1919, C1998 (Ceramic C)	DCH1148

RESISTORS

	R1903 (0.068 1/4w)	ACN7113
	R1904 (0.1 1/10w)	ACN7114
	R1994, R1995	RS1/10S0R0J
	R1907	RS1/16S1502F
	R1906	RS1/16S3902F
	R1908	RS1/16S4700F

OTHERS

	CN1901, CN1961 30P Connector	RKN1039
	CN1902 16P Connector	RKN1057
	CN1962 26P Connector	RKN1067

F DVDM ASSY

SEMICONDUCTORS

	IC110	BA10358FV
	IC251	BA6664FM
	IC604	K4S641632F-TC75
	IC302	K6T1008V2E-TB70
	IC301	L6315ATXXTY
	IC351	M56788AFP
⚠	IC303 (1.8V)	PQ018EZ01ZP
	IC601	STI5519AVB-B0C
	IC605	TC7WU04FU
	IC603	VYW1948
	Q300, Q602-Q607	2SA1576A
	Q652	DTC114TUA
	Q101, Q102	HN1A01F
	Q103	HN1C01FU
	Q601	RN4982
	D601	RB501V-40

COILSANDFILTERS

	L6990 (330mH)	ATL7007
	L300	LCYA2R7J2520
	L5010, L5020, L5040 (Chip 60mH)	VTL1075

CAPACITORS

	C301, C302	CCSRCH100D50
	C310	CCSRCH151J50
	C307	CCSRCH180J50
	C360	CCSRCH330J50
	C391	CCSRCH331J50
	C351, C651	CCSRCH470J50
	C627, C638, C696	CCSRCH471J50
	C309	CCSRCH560J50
	C633, C634	CCSRCH6R0D50
	C308	CCSRCH7R0D50
	C113	CEV100M35
	C104	CEV101M4
	C316, C317, C405, C617, C619	CEV101M6R3
	C111, C404	CEV220M16
	C368	CEV470M16
	C334	CKSQYB225K10
	C340, C641	CKSRYB102K50
	C259, C311	CKSRYB103K50
	C106, C248-C251, C255, C313	CKSRYB104K16
	C315, C636, C637, C697	CKSRYB104K16
	C257, C258	CKSRYB223K50
	C357	CKSRYB472K50
	C103, C105, C148, C157, C158	CKSRYF104Z25
	C253, C256, C304, C321-C333	CKSRYF104Z25
	C365, C366, C603, C605, C607	CKSRYF104Z25
	C612, C615, C616, C632	CKSRYF104Z25
	C606, C608-C611, C613	CKSRYF105Z10
	C622, C623, C629, C635, C699	CKSRYF105Z10

RESISTORS

	R121	RAB4C220J
	R123	RAB4C390J
	R340, R407	RS1/10S0R0J
	R341	RS1/10S101J
	R126-R129, R176-R179	RS1/10S220J
	R254-R259	RS1/10S3R3J
	R326-R330	RS1/16S1001F
	R147, R265, R266, R304, R322	RS1/16S1002F
	R377, R378, R392, R393	RS1/16S1002F
	R344, R351, R353, R354	RS1/16S1003D
	R359, R360, R365, R367, R368	RS1/16S1003D
	R372, R374, R376	RS1/16S1003D
	R331, R385	RS1/16S1003F
	R302	RS1/16S1202F
	R358, R394	RS1/16S1503F
	R146	RS1/16S1801F
	R612, R613	RS1/16S1802F
	R675, R678, R681, R684, R687	RS1/16S2700F
	R690	RS1/16S2700F
	R345, R355, R370, R371	RS1/16S3902F
	R346, R356, R357, R362, R364	RS1/16S6802F
	R373	RS1/16S6802F
	R3730	RS1/16S8202F

Mark No.	Description	Part No.
	OTHERS	
	CN2 12P Connector	AKN7031
	CN8 26P Connector	AKN7032
	CN4 4P Connector	RKN1045
	CN9 PH Connector	S5B-PH-SM3
	7P Flexible Cable	VDA1681
	CN25 26P Connector	VKN1318
	CN22 30P Connector	VKN1322
	X301 Crystal RES.(20MHz)	VSS1171
	X601 Crystal RES.(27MHz)	VSS1172

D LOAB ASSY

	OTHERS	
	CN602 KR Connector	S2B-PH-K
	CN601 KR Connector	S5B-PH-K
	PCB BORD	VNP1836
	101 Reaf SWITCH	VSK1011

E DECK ASSY(XWX3067)

	SEMICONDUCTORS	
	IC2202, IC2301, IC2401	BA4558F-HT
	IC2201	HA12136AF
	Q2254	2SA1037K
	Q2801, Q2802, Q2805	2SC1815
	Q2806	2SC2240
	Q2251-Q2253	2SC2412K
	Q2261, Q2262, Q2301, Q2302	2SK373
	Q2351, Q2460	DTA124EK
	Q2303, Q2304	DTC114TK
	Q2255, Q2352, Q2263	DTC143EK
	D2256, D2301-D2306	1SS133
	D2252-D2255, D2307	1SS355
	D2201	MTZJ6.2A
	COILSANDFILTERS	
	L2802	LFA121J
	L2801 (OSC 105kHz)	RTD1082
	L2401, L2402 (10mH)	RTF1004
	L2403, L2404 (4.7mH)	RTF1021
	F2201, F2202 (MPX. Filter)	RTF1217
	CAPACITORS	
	C2809	CCCSL151K2H
	C2301, C2302	CCSRCH100D50
	C2423, C2424	CCSRCH221J50
	C2253	CCSRCH271J50
	C2256, C2257, C2321-C2324	CCSRCH470J50
	C2401, C2402	CCSRCH470J50
	C2303, C2304	CCSRCH681J50
	C2807	CEAL470M6R3
	C2203, C2204, C2207, C2311, C2312	CEAT100M50
	C2215	CEAT101M16
	C2201, C2202, C2217, C2218, C2255	CEAT1R0M50
	C2404, C2419, C2420	CEAT1R0M50
	C2251	CEAT220M50
	C2216	CEAT221M16
	C2254	CEAT2R2M50
	C2309, C2310, C2407, C2408	CEAT330M50
	C2425	CEAT470M16
	C2261, C2262	CEAT4R7M50
	C2208	CEATR10M50
	C2205, C2206	CEATR22M50
	C2403	CEJQ1R0M50
	C2805, C2806, C2810	CEJQ330M10
	C2314	CEJQ470M16
	C2315	CKSRYB102K50
	C2231	CKSRYB103K50
	C2431, C2432	CKSRYB122K50
	C2211, C2212	CKSRYB152K50
	C2252	CKSRYB334K10
	C2808	CQHA822J2A
	C2801	CQMA123J50
	C2421, C2422	CQMA152J50
	C2409, C2410	CQMA223J50
	C2803, C2804	CQMA472J50
	C2802	CQMA682J50
	C2209, C2210	CQMBA103J50
	C2307, C2308	CQMBA682J50
	C2405, C2406	CQMBA683J50
	RESISTORS	
	R2805	RD1/2VM161J
	R2803	RD1/2VM4R7J
	VR2301,VR2302,VR2401,VR2402(4.7k)	PCP1028
	VR2801, VR2802(100k-B)	PCP1032
	OTHERS	
	CN2506	AKP7072
	CN2302	B2B-PH-K
	CN2507	B3P-SHF-1AA
	CN2301	B4B-PH-K
	PCB	VEF1040

E DECK ASSY(XWX3066)

	SEMICONDUCTORS	
	IC2202, IC2301, IC2401	BA4558F-HT
	IC2201	HA12136AF
	Q2254	2SA1037K
	Q2801, Q2802, Q2805	2SC1815
	Q2806	2SC2240
	Q2251-Q2253	2SC2412K
	Q2261, Q2262, Q2301, Q2302	2SK373
	Q2351, Q2460	DTA124EK
	Q2303, Q2304	DTC114TK
	Q2255, Q2352, Q2263	DTC143EK
	D2256, D2301-D2306	1SS133
	D2252-D2255, D2307	1SS355
	D2201	MTZJ6.2A
	COILSANDFILTERS	
	L2802	LFA121J
	L2801 (OSC Coil 105k)	RTD1082
	L2401, L2402 (10mH)	RTF1004
	L2403, L2404 (4.7mH)	RTF1021
	F2201, F2202 (MPX FIL.)	RTF1217
	CAPACITORS	
	C2809	CCCSL151K2H
	C2301, C2302	CCSRCH100D50
	C2423, C2424	CCSRCH221J50
	C2253	CCSRCH271J50
	C2303, C2304	CCSRCH681J50

Mark No.	Description	Part No.
	C2807	CEAL470M6R3
	C2203, C2204, C2207, C2311, C2312	CEAT100M50
	C2215	CEAT101M16
	C2201, C2202, C2217, C2218, C2255	CEAT1R0M50
	C2404, C2419, C2420	CEAT1R0M50
	C2251	CEAT220M50
	C2216	CEAT221M16
	C2254	CEAT2R2M50
	C2309, C2310, C2407, C2408	CEAT330M50
	C2425	CEAT470M16
	C2261, C2262	CEAT4R7M50
	C2208	CEATR10M50
	C2205, C2206	CEATR22M50
	C2403	CEJQ1R0M50
	C2805, C2806, C2810	CEJQ330M10
	C2314	CEJQ470M16
	C2315	CKSRYB102K50
	C2231	CKSRYB103K50
	C2431, C2432	CKSRYB122K50
	C2211, C2212	CKSRYB152K50
	C2252	CKSRYB334K10
	C2808	CQHA822J2A
	C2801	CQMA123J50
	C2421, C2422	CQMA152J50
	C2409, C2410	CQMA223J50
	C2803, C2804	CQMA472J50
	C2802	CQMA682J50
	C2209, C2210	CQMBA103J50
	C2307, C2308	CQMBA682J50
	C2405, C2406	CQMBA683J50

RESISTORS

	R2805	RD1/2VM161J
	R2803	RD1/2VM4R7J
	VR2301,VR2302,VR2401,VR2402(4.7k)	PCP1028
	VR2801, VR2802 (100k-B)	PCP1032

OTHERS

	CN2506 17P SOCKET	AKP7072
	CN2302 CONNECTOR POST	B2B-PH-K
	CN2507 3P CONNECTOR	B3P-SHF-1AA
	CN2301 KR CONNECTOR	B4B-PH-K
	PCB BINDER	VEF1040

6. ADJUSTMENT

6.1 DECK SECTION

6.1.1 Adjustment condition

For adjustment, use the stereo power amplifier (M-EV51 or M-EV21).

■ Adjustment Condition

(1) The ground at the time of adjustment shall be W166. (Refer to Fig. 6–3).
(2) Clean the heads and demagnetize them using a head eraser.
(3) Set the measurement level to 0 dBV = 1 Vrms.
(4) Use the specified tape for adjustment. Use the labeled (A) side of the test tape.
NCT–111 : For Tape Speed adjustment
NCT-112 : For Playback adjustment
STD–633 : Normal blank tape

* As the reference recording level is 250 nwb/m for NCT–112, the recording level will be higher than 4 dB for NCT–112 (160nwb/m). When adjusting, pay carefully attention to the type of tape used.

(5) Provide yourself with the following measuring devides:
- AC millivoltmeter
- Low-frequency oscillator
- Attenuator
- Oscilloscope

(6) Adjust both right and left channels unless other wise specified.
(7) Turn the DOLBY NR switch off unless otherwize specified.
(8) Warm up the unit for several minutes before adjustment. In particular, be sure to warm up the unit in the REC/PLAY mode for 3 to 5 minutes before starting recording/playback frequency characteristics adjustment.
(9) Always follow the indicated adjustment order. Otherwise, a complete adjustment may not be achieved.

■ List of Adjustments

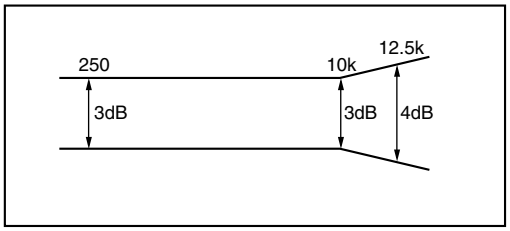
● Playback Section

(1) Tape Speed Confirmation
(2) Head Azimuth Adjustment
(3) Playback Level Adjustment

● Recording Section

(1) Recording Bias Adjustment
(2) Recording Level Adjustment

PLAY BACK



RECORDING

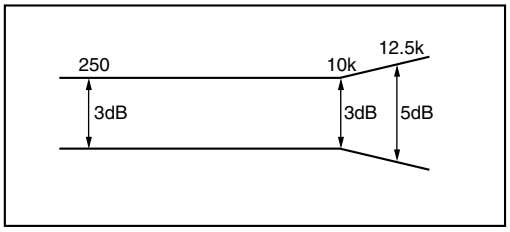


Fig. 6-1 Frequency Characteristics

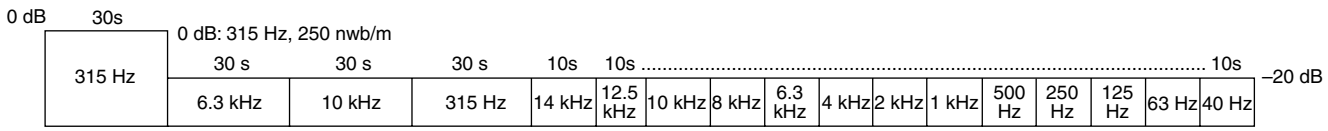


Fig. 6-2 Test Tape NCT– 112

6.1.2 Playback and Recording section

■ Playback Section

(1) Tape Speed Confirmation

No.	Mode	Input Signal/Test Tape	Adjustment Points	Measurement Points	Adjustment Value	Remarks
1	PLAY	NCT-111 (3 kHz)	VR2701 (DECK ASSY) (Refer to Fig. 6-3)	P1 R(CN2507) (DECK ASSY)	3000 Hz $^{+10}_{-10}$ Hz	FWD adjustment REV Confirmation (3000 Hz $^{+40}_{-40}$ Hz)

(2) Head Azimuth Adjustment

- This unit is equipped with auto tape selector.
- Do not switch between forward and reverse operation with the screwdriver inserted.

No.	Mode	Input Signal/Test Tape	Adjustment Points	Measurement Points	Adjustment Value	Remarks
1	PLAY	NCT-110 test tape (Playback: 10 kHz, –20 dB)	Head azimuth adjustment Screw (Refer to Fig. 6-3)	P3 L (CN2507) P1 R (CN2507) (DECK ASSY)	Max. Playback signal level	After adjustment, apply silicon bond to the head azimuth adjustment screw.

(3) Playback Level Adjustment

- Since this adjustment determines playback DolbyNR level, Perform it carefully.

No.	Mode	Input Signal/Test Tape	Adjustment Points		Measurement Points	Adjustment Value	Remarks
1	PLAY	NCT-112 test tape (Playback: 315 Hz, 4 dB)	L ch	VR2301	P3 L (CN2507) P1 R (CN2507) (DECK ASSY)	–3.7 dBV	
			R ch	VR2302			

■ Recording Section

(1) Recording Bias Adjustment

- After the adjustment, caution should be exercised so as not to become under bias by checking the distortion rate.

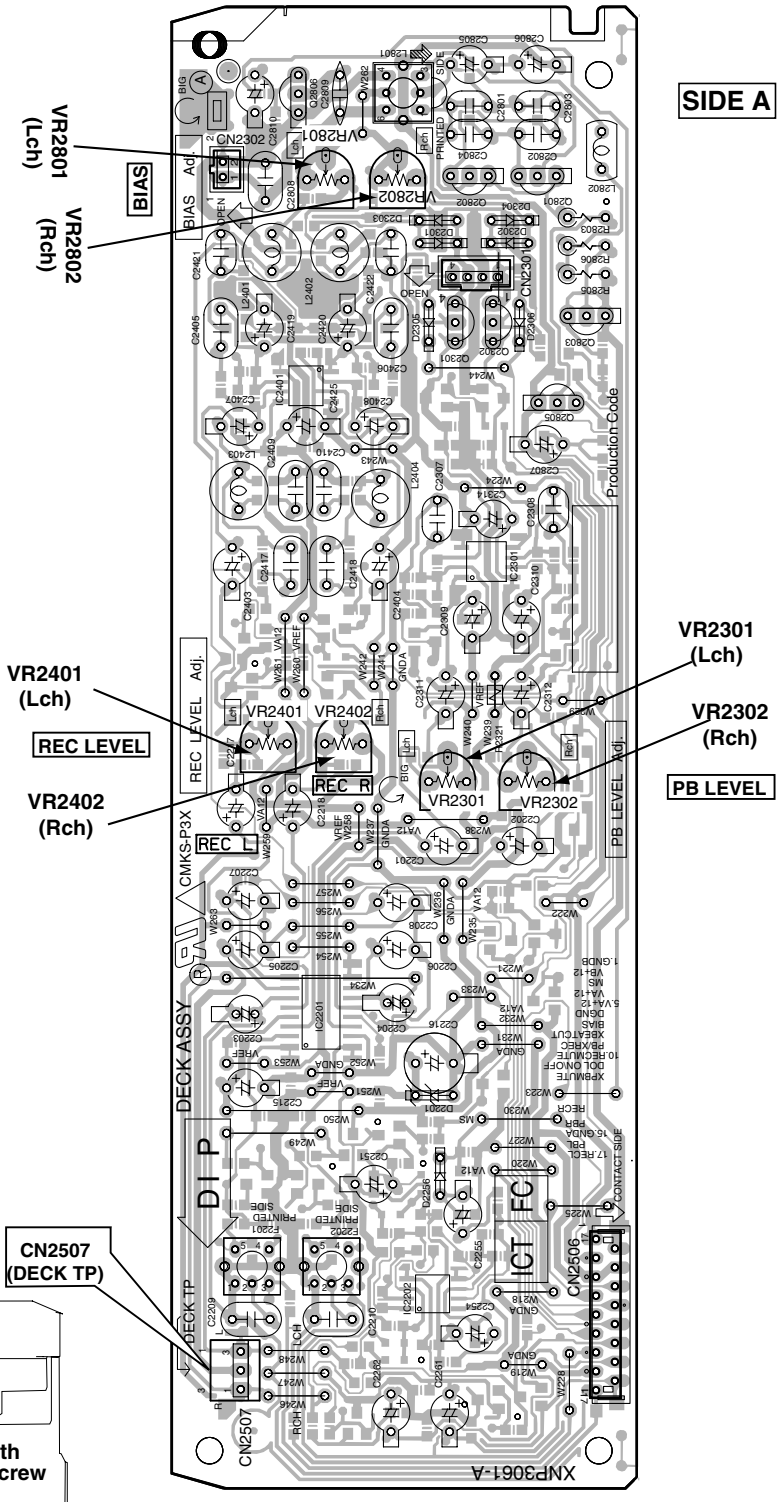
No.	Mode	Input Signal/Test Tape	Adjustment Points		Measurement Points	Adjustment Value	Remarks
1	REC/ PAUSE	Input a 315Hz signal to the LINE - IN terminal. *	Input signal level		P3 L (CN2507) P1 R (CN2507) (DECK ASSY)	–23.7 dBV	
2	REC → PLAY	Load the STD–633 test tape and record/playback the 315Hz and 10kHz signals. (see the Note below)	L ch	VR2801		Repeat adjustment until playback level of the 10kHz signal is within 0dBV ±0.5dB from that of the 315Hz signal.	
			R ch	VR2802			

Note: Set the 10kHz input signal level to the same value as the 315Hz input signal level of step 1.

(2) Recording Level Adjustment

No.	Mode	Input Signal/Test Tape	Adjustment Points		Measurement Points	Adjustment Value	Remarks
1	REC/ PAUSE	Input a 315Hz signal to the LINE- IN terminal.*	Input signal level		P3 L (CN2507) P1 R (CN2507) (DECK ASSY)	–7.7 dBV	
2	REC → PLAY	STD–633 test tape and record/ playback the 315Hz signal.	L ch	VR2401		Repeat recording, playback and adjustment until playback level of the 315Hz signal becomes –7.7dBV±0.5dB.	
			R ch	VR2402			

● DECK ASSY E



● MECHANISM UNIT

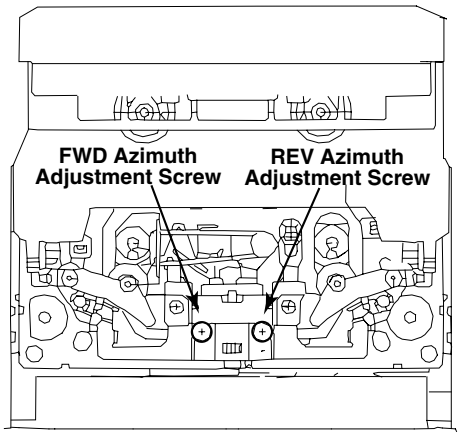


Fig. 6-3 Adjustment and Measurement Points

6.2 TUNER SECTION

6.2.1 AM TUNER SECTION

There is no adjustment in the AM tuner.

6.2.2 FM TUNER SECTION

Set the mode selector to FM BAND.
Connect the wiring as shown in Fig. 6-5.

Step No.	Adjustment Title	ANT. Input level and signal condition			Adjustment	
		Frequency (MHz)	Modulation	Input Level (dBμV)	Adjust point	Contents
1	T-METER Adjustment	98	OFF	80	L201	Adjust L201 so that the DC voltage between Pin 21 and Pin 23 of IC201 (Test point Vtm) gets within 0 ± 50mV.

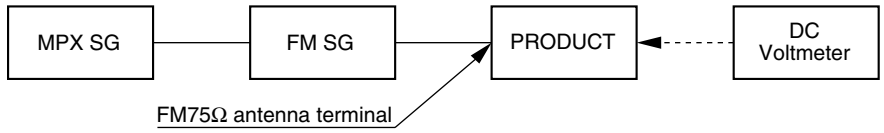


Fig.6.5 Adjustment Wiring Diagram

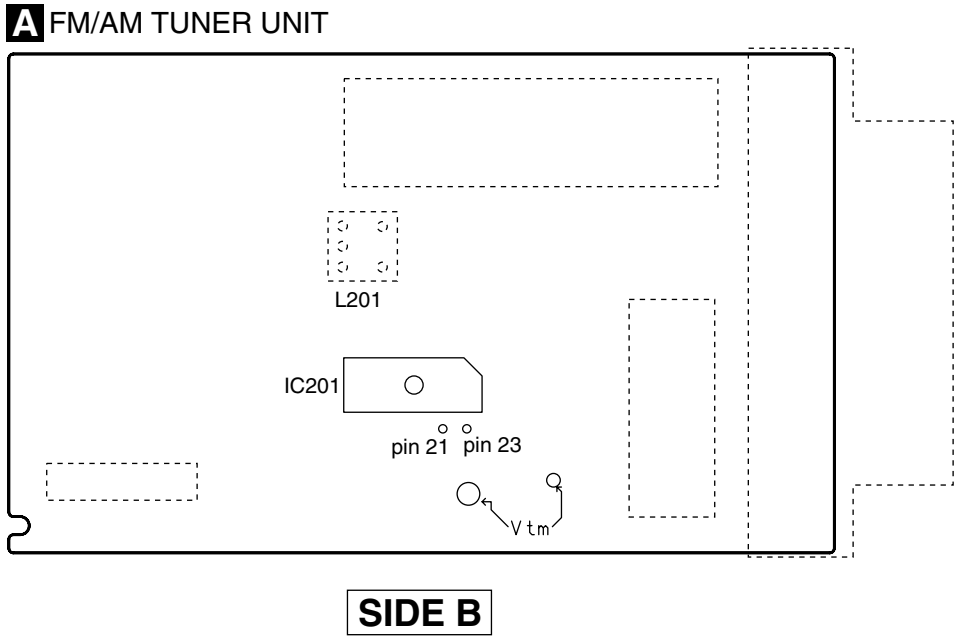


Fig.6.6 Adjustment Point

6.3 DVD SECTION ADJUSTMENT ITEMS ana LOCATION

■ Adjustment Items

[Mechanism Part]

❶ Tangential and Radial Height Coarse Adjustment

❷ DVD Jitter Adjustment

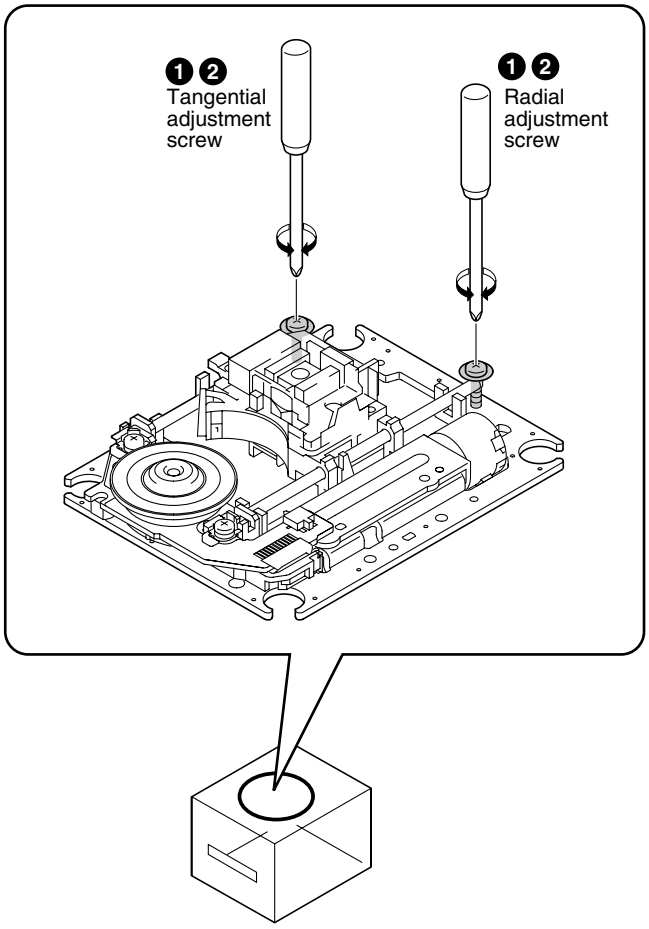
❸ Initialize the Focus Sweep Setting

[Electrical Part]

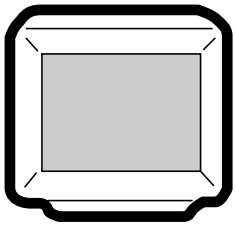
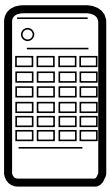
Electrical adjustments are not required.

■ Adjustment Points (Mechanism Part)

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



6.4 JIGS and MEASURING INSTRUMENTS

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

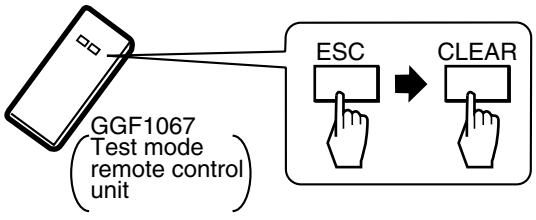
6.5 NECESSARY ADJUSTMENT POINTS

When	Adjustment Points	
■ Exchange Parts of Mechanism Assy		
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		
Exchange PC Board LOAB, DVDIF and DVDM ASSY	Mechanical point	———
	Electric point	———

＊

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

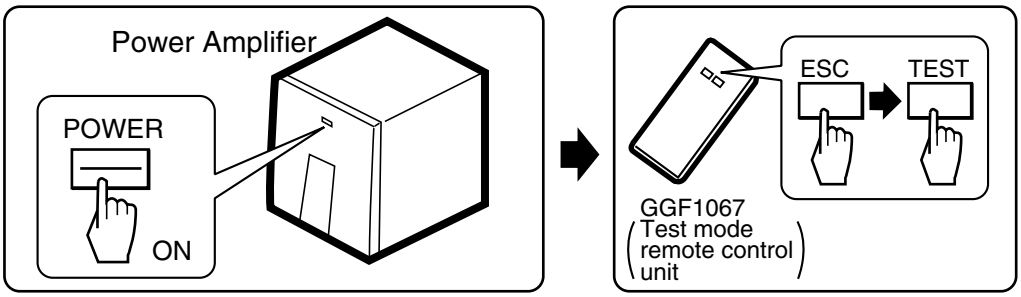
Be sure to perform the following step finally when replaced Pickup, Traverse Mechanism and Spindle Motor.



(It is necessary when performed adjustment procedure ❷.)

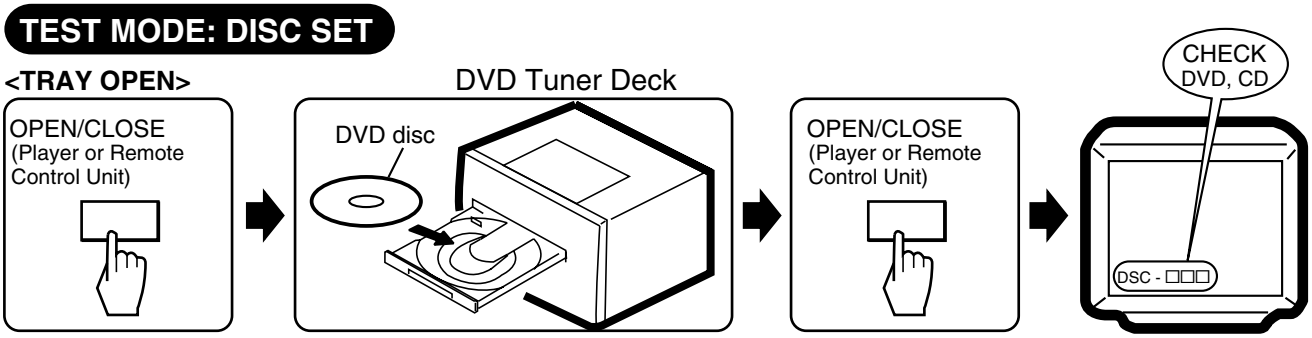
6.6 TEST MODE

TEST MODE: ON



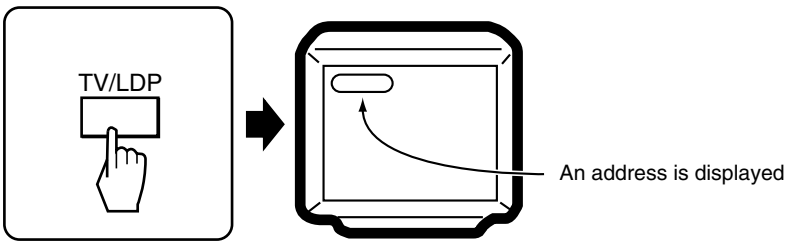
TEST MODE: DISC SET

<TRAY OPEN>



TEST MODE: PLAY

<PLAY>

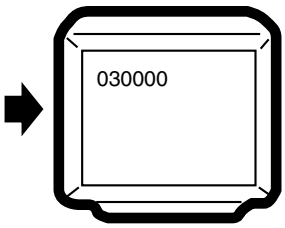


CAUTION:
Perform only trace, video and audio output are nothing.

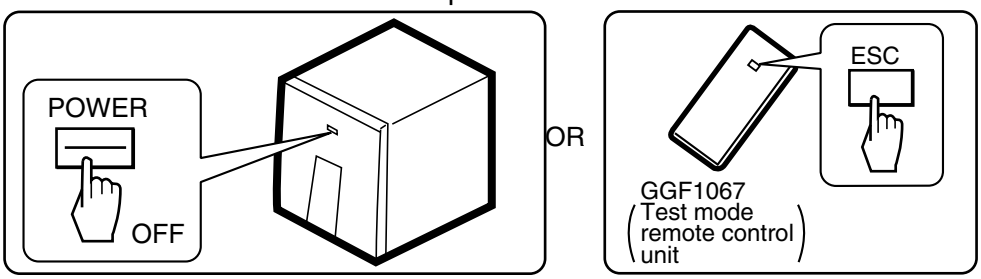
< When playback with the target address of disc (DVD)>

For example, when playback with # 30000

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



TEST MODE: OFF

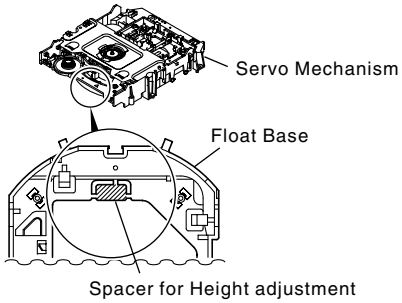


6.7 MECHANISM ADJUSTMENT

1 Tangential and Radial Height Coarse Adjustment

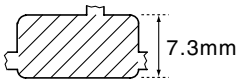
START

- Remove the servo mechanism.
- Remove a Spacer for height adjustment attached to the back side (shaded area) of the Servo Mechanism (Float Base) with nippers.

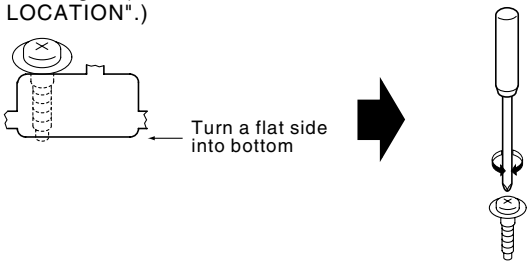


Note:
Turn the Short switch to Short side when removing the Pickup Flexible Cable.
(Refer to "7.1.6 DISASSEBLY".)

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 2001 years)



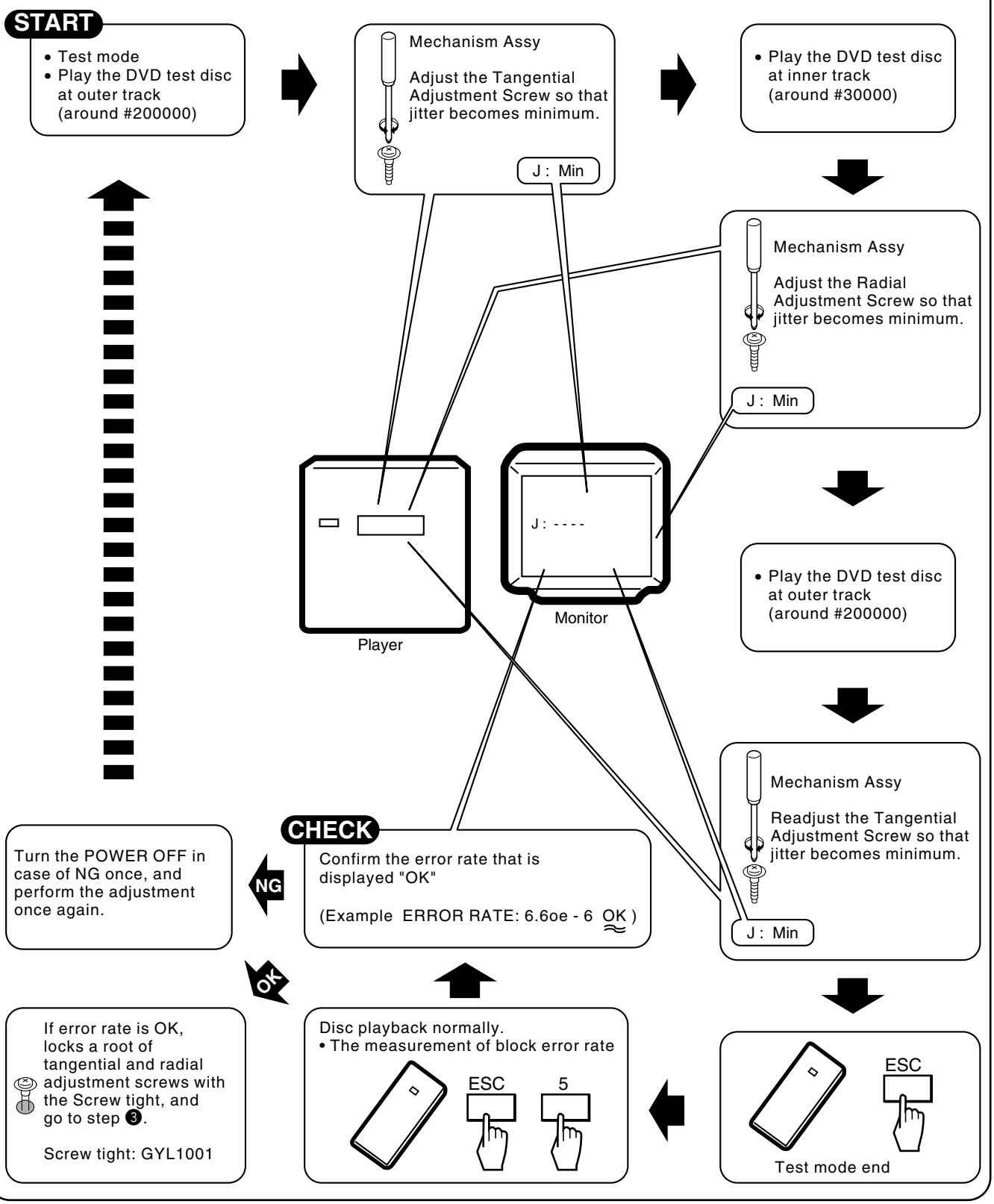
Put a spacer between a Tangential (or Radial) adjustment screw and Mechanism Base and turn each screw to adjust the height. (Refer to "6.3 ADJUSTMENT ITEMS AND LOCATION".)



❷ DVD Jitter Adjustment

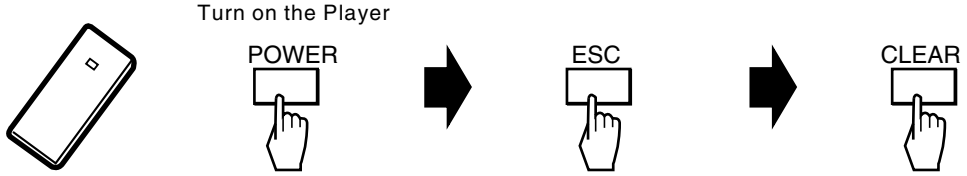
- Playback method of inner and outer address for the purpose is refererd to "6.6 TEST MODE".
- Jitter indication of the monitor is refererd to "7.1.1 TEST MODE (Display Specification of the Test Mode)".

Use disc: GGV1025



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 How to Enter Test mode

Turn the power on while short-circuiting with TEST jumper (W284) and VE+5 jumper (W282) on the IF Assy.
Indicate with "U-TEST" in this time.

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

- Press the [REPEAT] (A8 - 44) key of the remote control unit from the playback state.

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 it becomes FG servo on.
CLV : Press the [TEST] (A8-5E) and [9] (A8-09) keys in order,then rise up the spindle and it becomes FG servo 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 output 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.
- In this time, do not accept the [7],[8],[9] and [0] keys. Hexadecimal input and decimal input can switch with toggle.
- In case of CD, perform only the absolute time search.

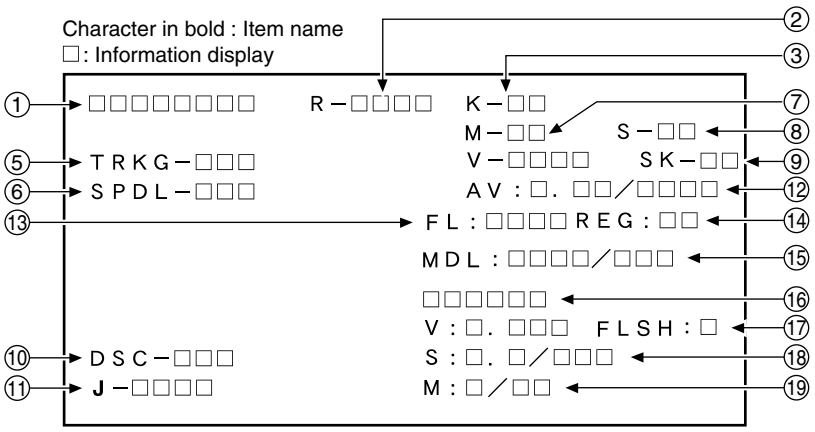
3. Search execution

- 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.

Display Specification of the Test Mode



① **Address indication**
The address being traced is displayed in number.
(as for the DVD, indication of decimal number is possible.)
DVD : ID indication (hexadecimal number, 8 digits)
[＊＊＊＊＊＊＊＊]
CD : 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], [A/B] (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 – ＊＊＊＊]**
CD TOC area : [IN]
CD active area : [CD]

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: /RAM/RL/RD, LB: /LB, WY: /WY

⑯ **Part number of the flash ROM [＊＊＊＊＊]**

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

⑱ **Revision of the system controller [S: ＊ . ＊ / ＊＊＊]**

⑲ **Revision of the DVD mechanism controller [M: ＊ / ＊＊]**

Shortcut key Functional Specification

Only in the normal playback, the following setting can by pressing the required key after having pressed the "TEST" key of the remote control unit. How to release: Press the "ESC" key. (function with indication)

Command Contents	Conditions	Remote Control Key Name	Remote Control Code
Memory clear & region / revision indication		CLEAR (LD remote control unit)	A8-45
Average value measurement of DVD error rate		5 (LD remote control unit)	A8-05
CD error rate measurement		5 (LD remote control unit)	A8-05
Aspect: Pan scan		2	A6-01
Aspect: Letter box		3	A6-02
Aspect: Wide		4	A6-03
Digital: PCM		5	A6-04
Digital: AC-3/PCM		6	A6-05
Virtual Dolby: VDD=OFF	Only correspondence model	7	A6-06
Virtual Dolby: VDD=ON	Only correspondence model	8	A6-07
Digital output ON		REPEAT A	A6-A1, AF-E8
Digital output OFF		REPEAT B	A6-95
DTS Digital Out ON		STEP FWD	A6-A1, AF-B7
DTS Digital Out OFF		STEP REV	A6-A1, AF-B8
Scart terminal output: VIDEO	WY, Model to include scart	AUDIO	A6-A1, AF-BE
Scart terminal output: S-VIDEO	WY, Model to include scart	SUBTITLE	A6-A1, AF-36
Scart terminal output: RGB	WY, Model to include scart	ANGLE	A6-A1, AF-B5
Audio 5.1CH ON	Only correspondence model	KD_ENTER	A6-74
FL indication of EDC / ID error		CX (LD remote control unit)	A8-0E
ZOOM ON	Only correspondence model	ZOOM	A6-A1, AF-37
ZOOM OFF	Only correspondence model	< X3 (LD remote control unit)	A8-59
Service mode indication (error rate indication, etc.)		CHP/TIM (LD remote control unit)	A8-13
Model information indication		CHAP (LD remote control unit)	A8-40
Background color change		+10 (LD remote control unit)	A8-1F
Audio last stage mute ON		9	A6-08
Audio last stage mute OFF		0	A6-09
Title search Input mode IN Title No. input Search execution		SIDE A (LD remote control unit) Numbers (LD remote control unit) PLAY (LD remote control unit)	A8-4D A8-00 to A8-09 A8-17
Region confirmation mode		AUDIO (LD remote control unit) Numbers (LD remote control unit)	A8-1E A8-01 to A8-08

• Service mode indication

ID Address
Always display error rate. Exponential indication ∗.∗∗e-∗ (with both DVD and CD)
EDC/ID/AV1 error history (ID Address, EDC/ID/AV1 Error, errors of past eight times)
Self-diagnostic function (when mechanism error occurred, display the mechanism error history)

• Error rate average value total (ESC +5)

Calculation number of times displays exponent from average value of eight times.
After the calculation result, display OK/NG. Tray is open in case of NG (with both DVD and CD)
DVD: OK with less than 8.0e-4 CD: OK with less than 7.6e-4

Note: Because an OK/NG judgment cannot be DVD with a static image mode as menu screen, confirm it by an animation.

• Model information indication contents (ESC+CHAP)

Display ⑫ to ⑲ in the test mode indication. However, Change the indication of S as B.E VERSION and it of M as F.E VERSION.
Refer to the "Specification of Model Information Display".

• Background color change (ESC+ +10)

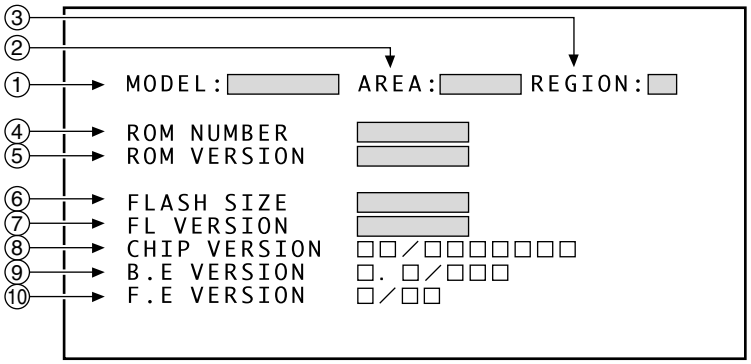
Change black and green with toggle whenever pressing the key (the background color that green is using with SETUP NAVIGATOR).

• Region confirmation mode (ESC+ A.MON + 1to 8)

Input region No. after pressing the ESC+A.MON keys. When it is different from the setting, display and open the tray.

Specification of Model Information Display

- **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 / SubVersion

Functional Specification of the Service Mode

• FL indication of EDC / ID error (short cut function)

Display it in FL with ESC+CX keys (LD remote control unit).
Indication is released with ESC key during indication.

FL indication contents

0 0 / 0 0 / 0 1 ∗

- Display number of the location that caused EDC and ID errors
- Retry number of times of the latest ID error
- Retry number of times of the latest EDC error

∗ mark: When even once causes AV1 error, lights.

• Service mode screen display

Display to the screen with ESC+CHP/TIM keys.
Release the indication with ESC key.
Indication contents

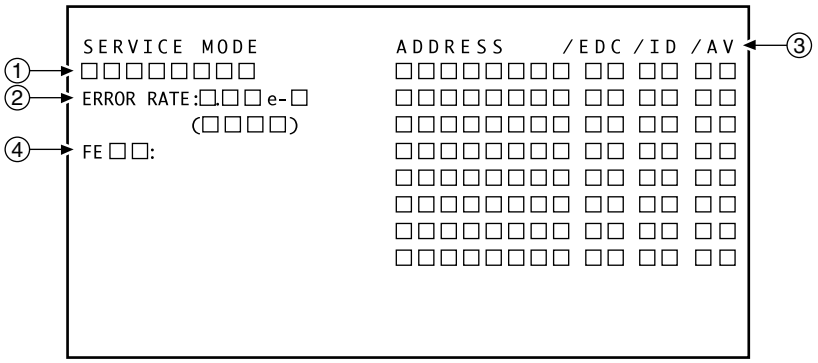
ID Address ①
Always indicate error rate ② and exponent indication
EDC/ID/AV1 error history (ID Address, EDC/ID/AV1 Error, past eight times) ③
Contents of AV1 error
BIT 0: EDC error, FEC I/F buffer overflow and not valid occur in the BE code (B.E error).
BIT 1: ID is different from the target in the BE code (B.E error).
BIT 2: There is error in the EDC data of 2 bytes which added to the FE (F.E error).

• Self-diagnostic function ④

Check that the F.E is normal or not.

FE OK : Abnormality is not found in the F.E.
FE Error : Abnormality is found in the F.E.
Indicate the mechanism error history by pressing the CHP/TIM key once again.
Change indication by pressing the CHP/TIM key with toggle afterwards.
Refer to the "Display of the Mechanism Error History".

Indication plan contents



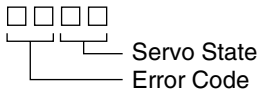
Character in bold : Item name
□: Information display

7.1.2 DISPLAY OF THE MECHANISM ERROR HISTORY

When mechanism error (FE error) occurred, the mechanism error history of maximum past eight times is displayed by pressing the CHP/TIM key during service mode screen display.
Indication displayed in the screen upper part is new error.

• Indication contents

① Error code
Two characters in the front represent the Error Code and two characters in the back represent the Servo State. The detail is as follows.



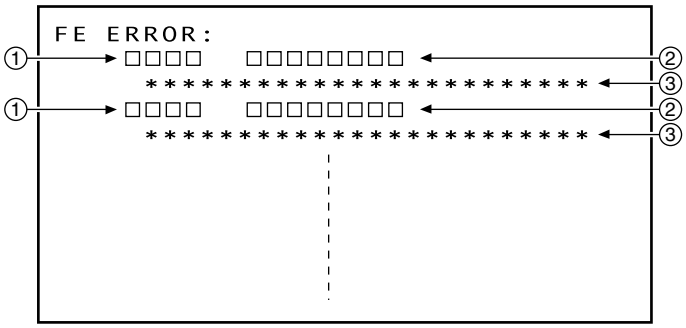
② Error occurrence time
Error indicates the time which occurred after system turned on the power supply.
∗ When time of new error is short, it becomes assumed power off once.

③ Error contents indication
Indicate the error contents which occurred with character.

Examples: When Error code is 0x13 (Focus lost timeout) and Servo state is 0x05 (Disc judge),
"Focus lost timeout in Disc judge"

∗ Movement in the error occurrence: open the tray when SERVO STATE is Disc Judgs, and others stop.
However, error code is exception in the device error of 0xd∗.

Indication contents



• Table of Error Code

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
Tracking jump error	0x26	Tracking jump timeout	0x36
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∗	**FAIL SAFE**	0xe∗
SRAM error	0xd1	unexpected error	0xe1

• Table of Servo State

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	
0x0F	

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. L6315 (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. L6315 (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. L6315 (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. L6315 (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. L6315 (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. L6315 (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. L6315 (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. L6315 (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. L6315 (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. L6315 (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. L6315 (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. L6315 (Front End IC) 3. L6315-SRAM bus line	
FAILSAFE (0 x e∗)					
Unexpected error	0 x e1	Unexpected error		1. software runaway 3. Software bug	

7.1.3 TRUBLE SHOOTNG

Confirm the error history at first.
When a history was not displayed, refer to the following table.

No.	Symptoms	Diagnosis Contents	Defectiveness Assumption Points
1	Cannot power on	Check Voltage of CN8901-17pin(VE+56) on the AF assy.	M-EV51(21) , system cable connection
		Check the stand by indicator. If the indicator brinking , the protect circuit working. (Stand by indicator brinking)	AMP PROTECT , DVD POWER SUPPLY
		Check IC5501-4pin(AC PULSE).	M-EV51(21) , system cable connection
		Check IC5501-12pin,13pin (CF1,CF2)	U-COM
2	Standby indicator brinking (DVD ERR)	Check IC5501-17pin(VDET) is 3.5V	1.Connection of DVDIF assy & IF assy. 2.DVD power supply, 3.M-EV51(21) POWER SUPPLY
	Standby indicator brinking (AMP ERR)	Check FAN connect in M-EV51(21).	M-EV51(21) , system cable connection
		Check FAN connect in M-EV51(21).	M-EV51(21) , system cable connection
		Check IC3301,IC3401 in AMP module.	M-EV51(21) , system cable connection
3	Audio is not out put	Check connection AF assy & IF assy.	AF ASSY & IF ASSY
		Check signal waveform of CN8751 1,3,5,7,9,11pin (C,SW,LS,RS,FL,FR) at DOLBY PROLOGIC mode.	DSP ASSY
		Check signal waveform at CN8701-all pin., CN8751-13,15pin(ANAL,ANAR)	AF ASSY
4	VIDEO no out put	Are the signals output from IC11-pin 9, 8 and 7 on the FLKB Assy ? (around 0-3V)	IF assy & DVD IF assy connection. DVD IF ASSY

No.	Symptoms	Diagnosis Contents	Defectiveness Assumption Points
4	Cannot open a tray (An opening screen is displayed on the monitor)	Does voltage of CN9-pin 3 and 5 on the DVDM Assy change normally ? pin 3 (XCLOSE) : It is "H" level by the state that has finished doing CLOSE. pin 5 (OPEN) : It is "H" level by the state that has finished doing OPEN.	Tray switch
		Does LOAD_DRV signal come ?	BACK END IC (DVDM IC601)
		Is a signal output from IC351-pin 14 and 15 (CN9-pin 1 and 2) on the DVDM Assy ? (pin 15 : It is about 6V during tray opening, It is about 0V during tray closing) (pin 14 : It is about 0V during tray opening, It is about 6V during tray closing)	FTS Driver IC (DVDM IC351)
		Are not there wire rod coming out, damage the connectors of CN9 and CN5 on the DVDM Assy ?	Connector / wire rod
		Does voltage of CN5-pin 1 on the DVDM Assy change when pressed the inside switch ?	Inside switch
5	Cannot playback (Focus does not inn)	Are the signals output from IC351-pin 9 and 10 on the DVDM Assy ?	FTS Driver IC (DVDM IC351)
		Does 650 LD emit light ? Does a pickup lens do up / down ? Does not an actuator spring bend ?	Pickup
		Are not resin part damage, a shaft missing ? Are not there falling off of turn table, lean abnormality ?	Mechanism Assy
		Is not flexible cable of CN7 on the DVDM Assy coming off and damaged ?	Flexible cable / connector
		Is signal output from IC301-pin 123 (FACT) on the DVDM Assy ? (Device control of around 500 mV is output usually. It is ± around 100 mV swing by focus up / down.)	FRONT END IC (DVDM IC301)
6	Cannot playback (Spindle does not turn)	Are the signals output from IC251-pin 2 (A3), pin 4 (A2) and pin 7 (A1) on the DVDM Assy ? It is fixed, and is not there pin 18 HIGH whethere it is fixed, and there is not pin 23 LOW ?	Spindle Driver IC (DVDM IC251)
		Are not there part falling off, alien substance adhesion in spindle motor part ?	Mechanism Assy (Spindle motor)
		Is not flexible cable of CN7 on the DVDM Assy coming off and damaged ?	Flexible cable / connector
		Is signal output from IC301-pin 123 (SPDL_PDM) on the DVDM Assy ?	FRONT END IC (DVDM IC301)
7	Cannot playback (Playback stops)	Does not 650nm LD deteriorate ? If there is the both ends voltage of R121 on the DVDM Assy more than 0.7V, 650nm LD deteriorates surely.	650nm LD deteriorates. (Cannot playback DVD)
		Does not 780nm LD deteriorate ? If there is the both ends voltage of R123 on the DVDM Assy more than 1.2V, 780nm LD deteriorates surely.	780nm LD deteriorates. (Cannot playback CD)
		Is not there abnormality in FG waveform ?	FG output : Spindle Driver IC (DVDM IC251)
		Are not there scratch and a dirt on the disc ?	Disc
8	Picture disturbance during playback (block noise, freeze, other)	Are not there scratch and a dirt on the disc ? Do not you set a disc of standard outside ?	Disc
9	Audio is not output (Picture is normal)	Check the waveform (BCK, LRCK, MCLK, DATA).	BACK END IC (DVDM IC601)
		Is signal output from IC711-pin 7 and 8 on the JCKB Assy ?	AUDIO DAC IC (JCKB IC711)

EVA emergency processing specification

1. About Emergency process
When abnormality of hardware of power supply short circuits and so on occurred, turn the power OFF without an usual step in a moment. And perform process to limit the later power ON operation.

2. Category of error to perform the Emergency process
As for the error to perform the Emergency process, there are two kinds of the following.
• PROTECT error: Error by power supply of the amplifier section and abnormality of the fan
Overcurrent detection of amplifier
DC voltage detection of amplifier
Fan open and lock detection
Abnormal detection of 8V and 15V

• DVD error: Error by power-failure in the DVD module

3. Condition to enter Emergency process
• PROTECT error: When PROTECT port (pin 92) of the microcomputer was L more than 90 mS (less than 0.15VDD +0.4V).
• DVD error: When 3.3DET port (pin 17) of the microcomputer was more than 90mS, and were less than 2.5V or more than 4.25V.
* Do not perform the error detection during 1.5 seconds after the power ON operation start at both ports.

4. State after the power OFF
STANDBY LED flashes in case of both of PROTECT and DVD errors

5. Possibility or no of re-power ON
• PROTECT error: Power ON is once again possible after the power OFF 60 seconds later.
Indicates "POW ERR" instead of "WELCOME" in this time.
* When pulled the AC power cord out after the power OFF within 60 seconds, cannot turn the power ON for 60 seconds after inserting the AC power cord once again.
* Flash of STANBY LED is continued even if it passes after the power OFF for 60 seconds.

• DVD error: Power ON is once again possible after the power OFF 60 seconds later.
Indicates "DVD ERR" instead of "WELCOME" in this time.
* When pulled the AC power cord out after the power OFF within 60 seconds, cannot turn the power ON for 60 seconds after inserting the AC power cord once again.
* Flash of STANBY LED is continued even if it passes after the power OFF for 60 seconds.

6. Recovery method of within 60 seconds after PROTECT error, and after DVD error
When turn the power ON once again after turning the power OFF within 60 seconds in the PROTECT error, and after turned the power OFF in the DVD error, it is necessary to start with the test mode.
To enter the Test mode, turn the power on while short-circuiting with TEST jumper (W284) and VE+5 jumper (W282) on the IF Assy.
Indicate with "U-TEST" in this time.

In addition, RAM of the microcomputer is reset to the factory shipping state when releasing the service test mode with the power OFF. Then power ON can normally from the next time.
(When error is left, enter the Emergency process once again.)

Protection circuit

1 Diagnosis method when the protection circuit turned to OFF at normal connection (MEDIA-AMP)

→ When enter the individual operation mode, a protection circuit does not work.

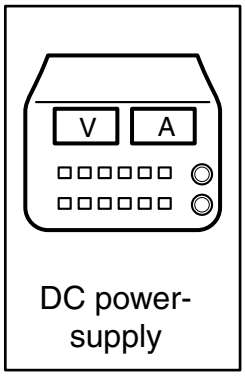
2 The release method that "power cannot turn on for 60 seconds"

→ Enter the test mode by supplying AC power (or DC power in the individual operation) while short-circuiting the jumpers with "TEST" indication on the IF ASSY, waiting for 60 seconds is released. Be because the microcomputer was reset then.

■ SINGLE OPERATION METHOD

Individual operation method of XV-EV51,EV21 (MEDIA)

■ Jigs and Measuring instruments



■ Single purpose operation method.

① Supply DC power to each point, and all the divided GND short-circuits.

DC apply point

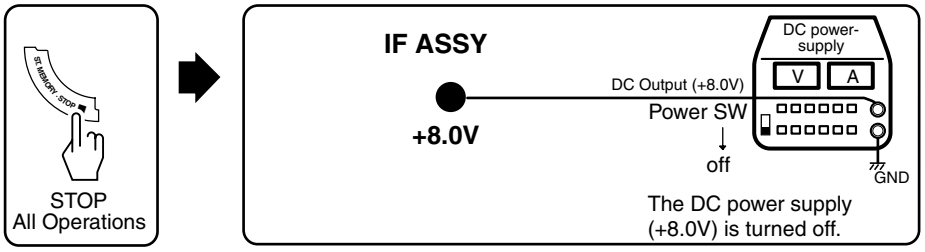
	Voltage	Locations	Apply Point Name	Assy Name
1	8V	W497	IC5508 IN	IF Assy
2	8V	W264	V+8V	IF Assy
3	16V	C8902 + side	VU+12V	AF Assy

IGND short circuit point

	Locations	GND Name	Assy Name
1	CN8901 16PIN	GNDD	AF ASSY
2	W132	GNDA	AF ASSY
3	W395	GNDM	IF ASSY

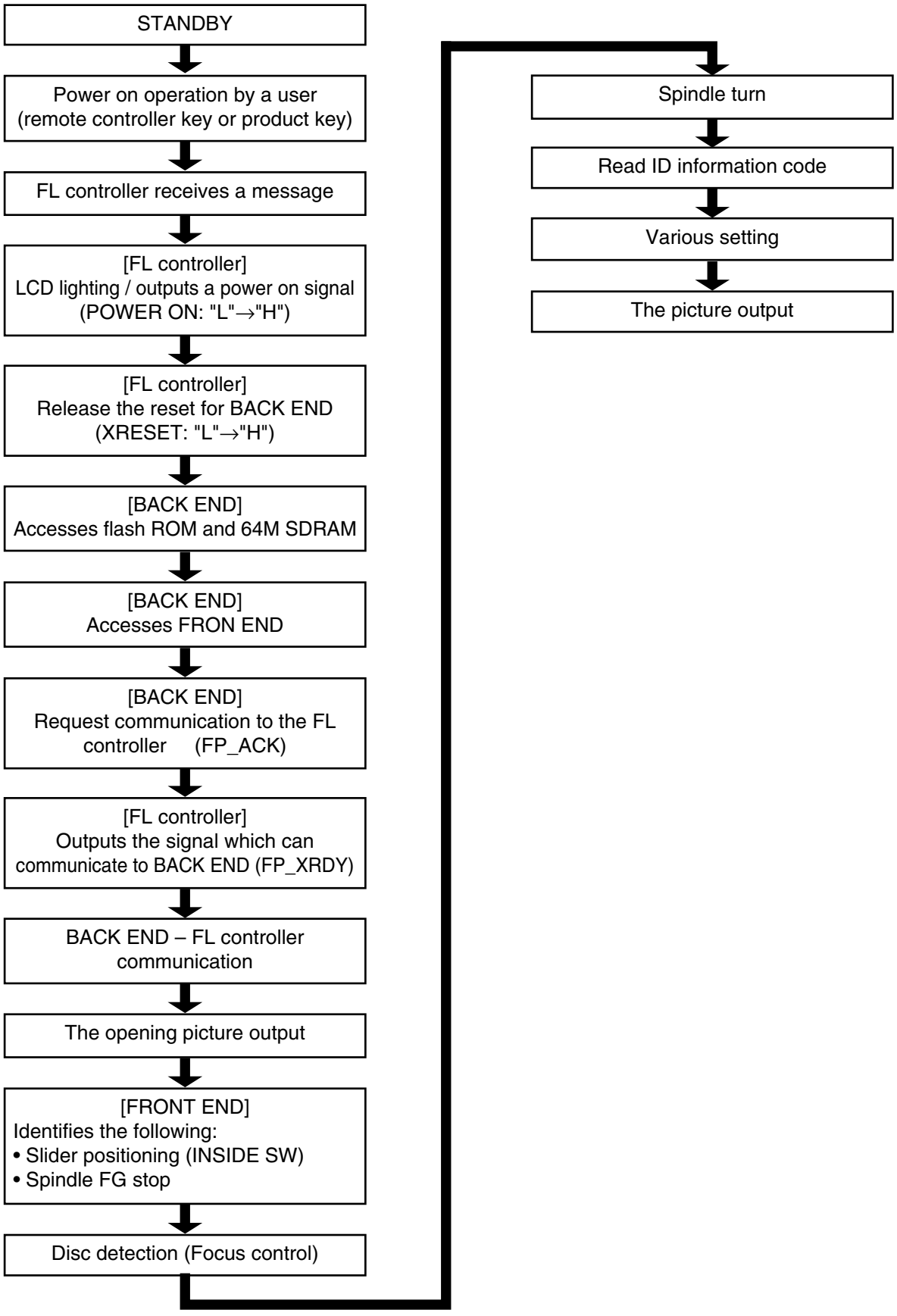
② Supply a DC power while short-circuiting the jumpers (W282 and W285) with "SERVICE" indication on the IF Assy.

TEST MODE : STOP → CANCEL



7.1.4 SEQUENCE AFTER POWER ON

■ Flow chart from power on to the picture output

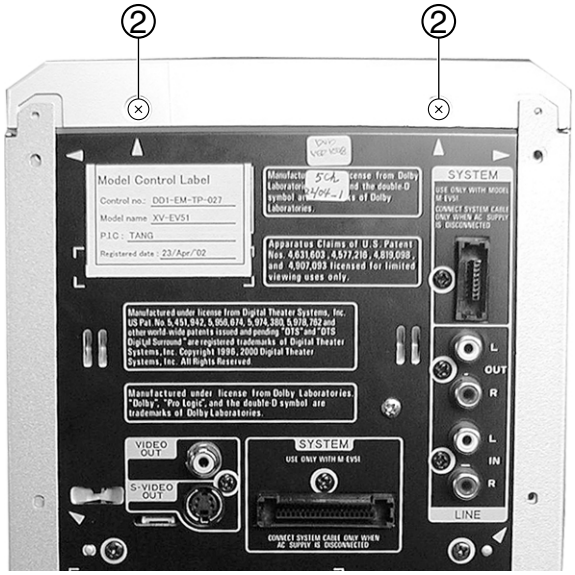


7.1.5 DISASSEMBLY

1 Deck Mechanism Section

① Remove the Side Bonnet L and R (screws × 14)

② Remove two screws

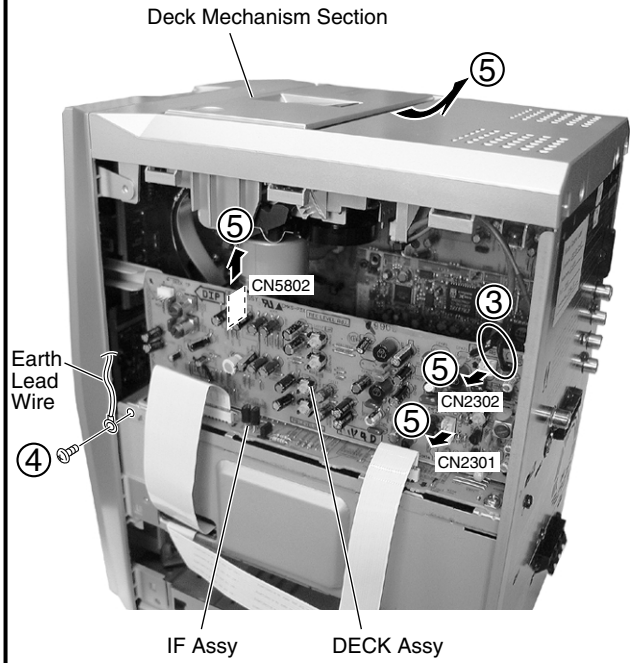


● Rear View

③ Release two binders

④ Remove the earth lead wire (screw × 1)

⑤ Remove the Deck Mechanism Section (FFC × 1, connectors × 2)



Note : Operation check of the main unit is possible even if removes the Deck Mechanism Section.

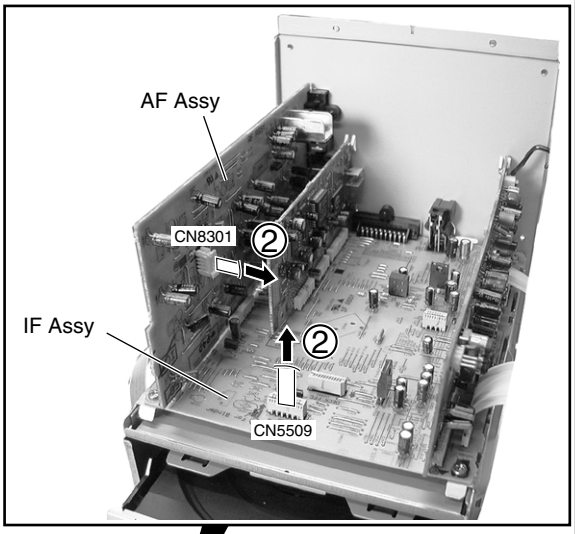
2 Front Panel Section

① Remove two screws

② Remove a FFC and connector

③ Unhook × 4

④ Remove the Front Panel Section

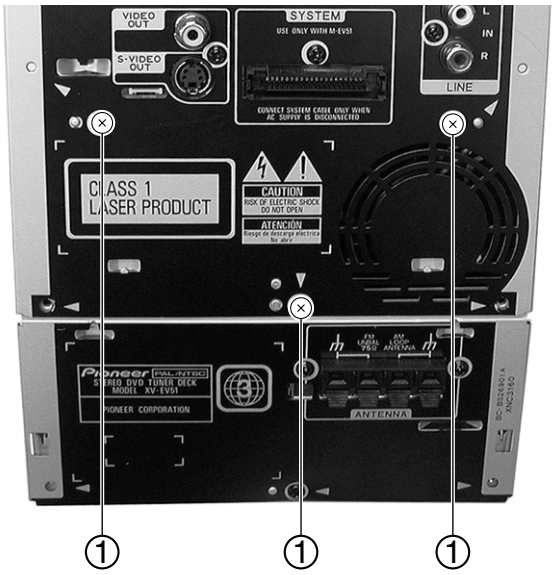


Note : Front Panel can removes with the state which Tray Panel was attached to it.
In this time, remove bottom part of the Front Panel first so that the Tray Panel is not caught.

3 DVD Mechanism Section

① Remove three screws

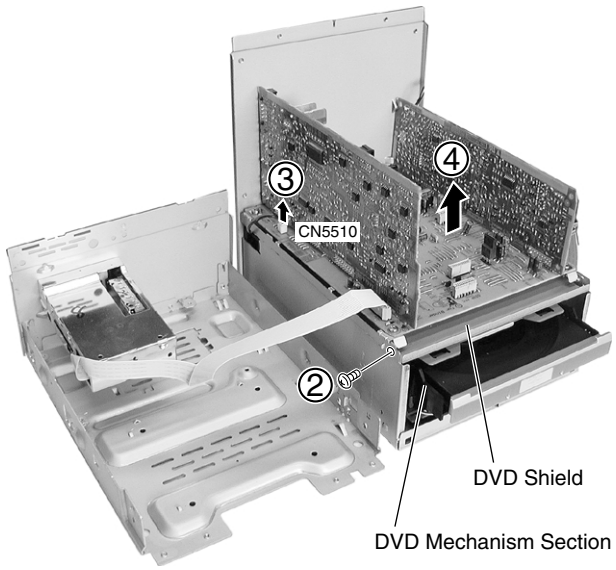
● Rear View



② Remove a screw

③ Remove a Fan connector

④ Remove the DVD Shield Section

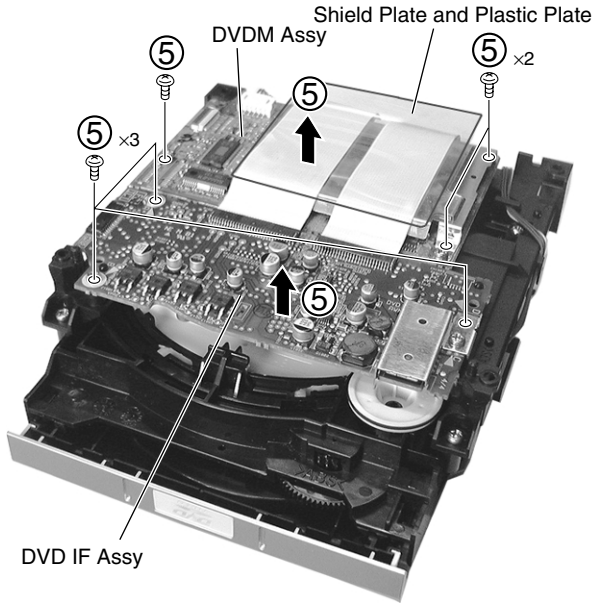


⑤ Remove four screws

● Top View

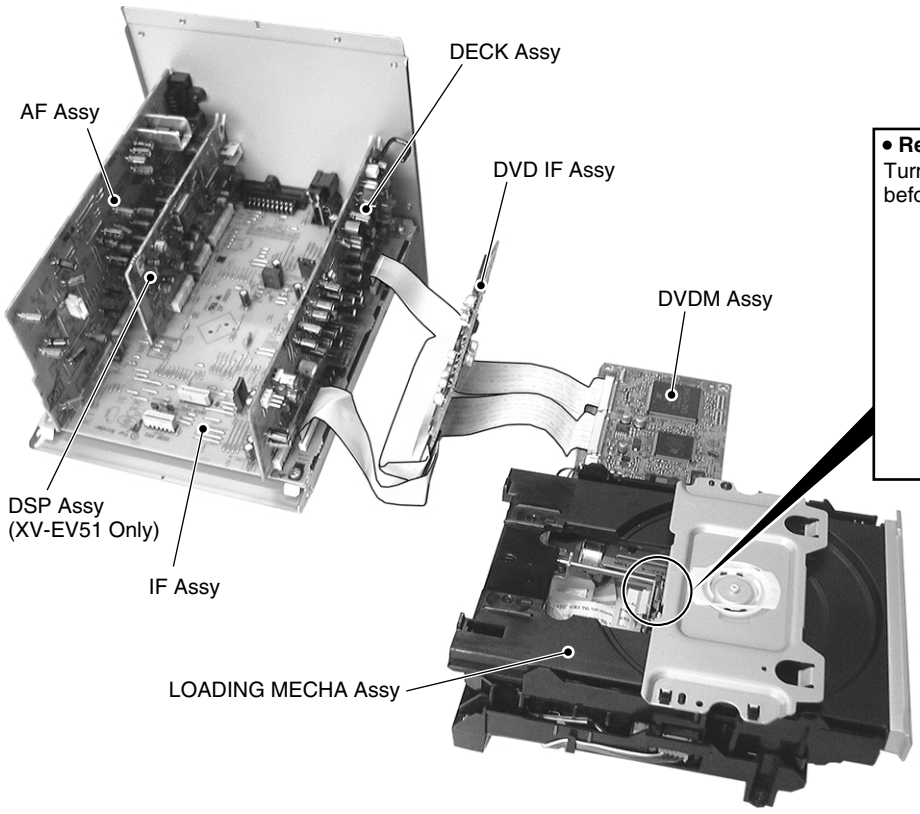
⑥ Remove the DVDM and DVD IF Assys (screws × 6)
(with Shield Plate and Plastic Plate)

Caution : Be careful to installation order of the Shield Plate and Plastic Plate.

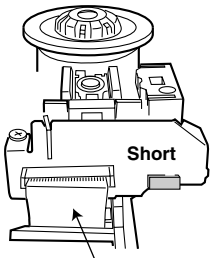


● Bottom View

⑦ Styling like figure below.



• Rear View
Turn the Pickup Short SW
before Pickup Flexible Cable removed.



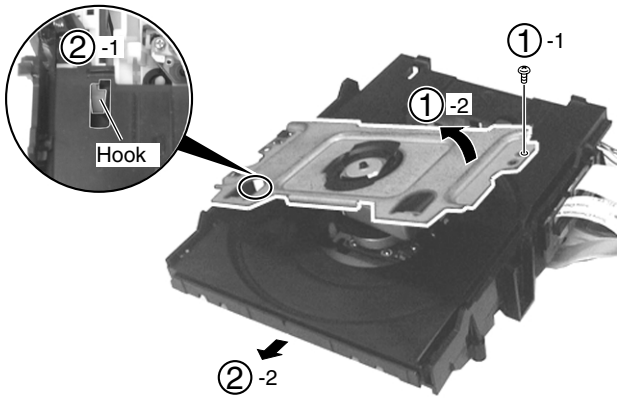
" before Pickup Flexible cable removed
make short by solder "

Diagnosis

4 Tray

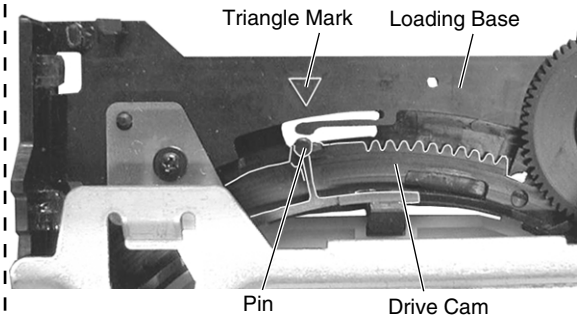
① Remove the Bridge (screw ×1).

② Pull out the Tray and remove it while unhooking a hook.



☞Caution in the Tray Insertion

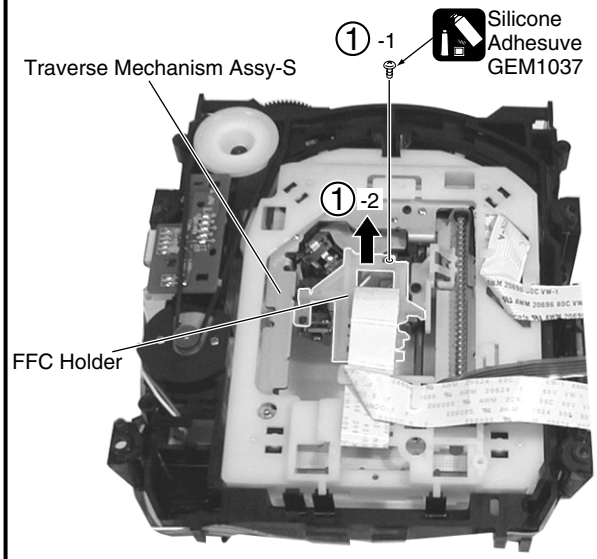
In the Tray insertion, insert it after matching a triangle mark of the Loading Base and a position of pin of the Drive Cam.



5 Traverse Mechanism Assy-S

① Remove the FFC Holder with the state which Flexible Cable was atatched. (Screw × 1)

Cautions :
Screw is locked with Silicone Adhesive.
Please lock it with Silicone Adhesive when installs it.



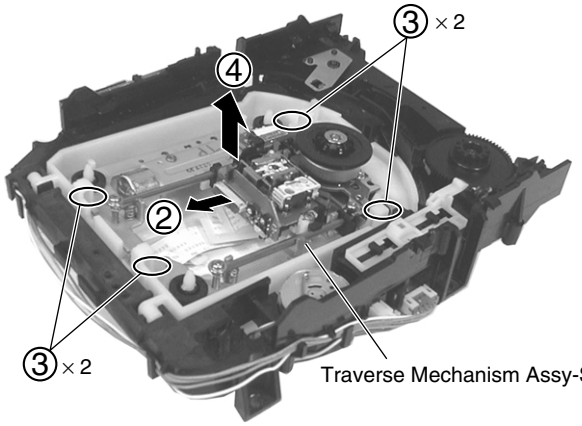
● Bottom View

② Remove the Pickup Flexible Cable

Pickup Assy-S

③ Unhook (× 4)

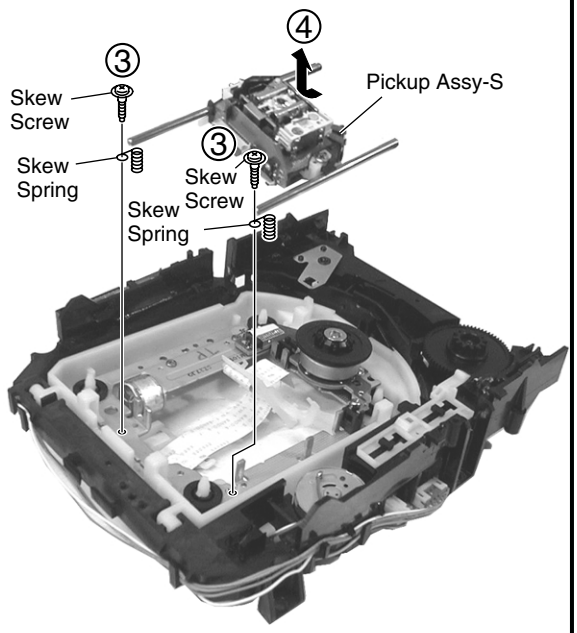
④ Remove the Traverse Mechanism Assy-S



● When Removing The Pickup Assy-S

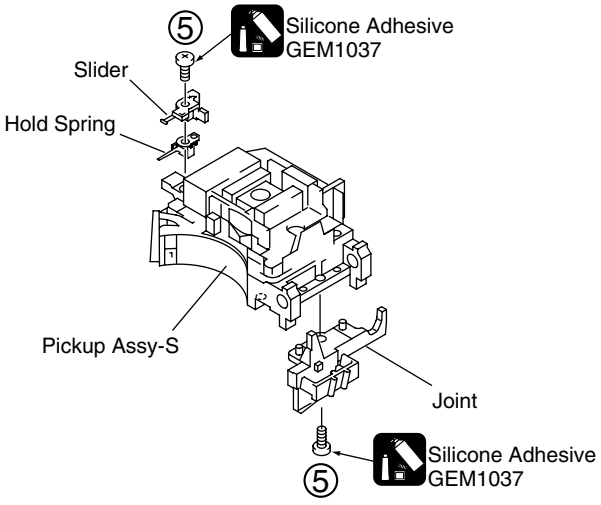
③ Remove two Skew Screws and two Skew Springs

④ Remove the Pickup Assy-s



⑤ Remove two Screws

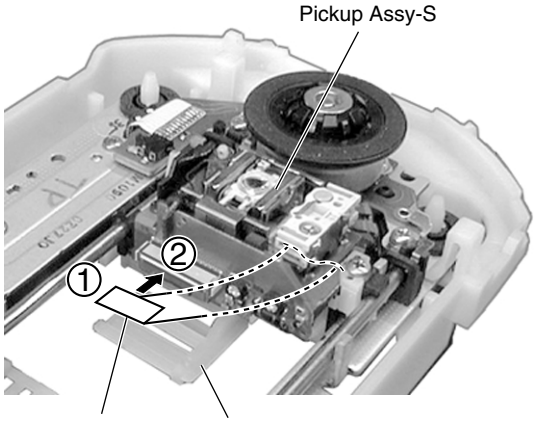
Cautions :
Screw is locked with Silicone Adhesive.
Please lock it with Silicone Adhesive when installs it.



☞STYLING THE PICKUP FLEXIBLE CABLE

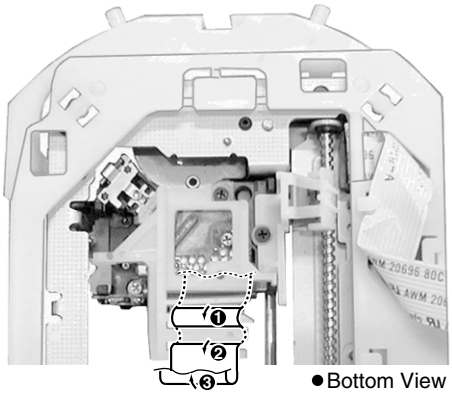
① FOLD a edge of lining part of the Pickup Flexible Cable.

② Insert the Pickup Flexible Cable in connector, and lock it surely.



Caution :
Move the Pickup to the innermost of the disc

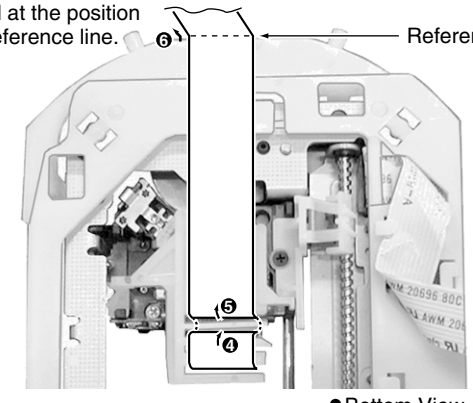
③ Perform the styling as shown in figure below.



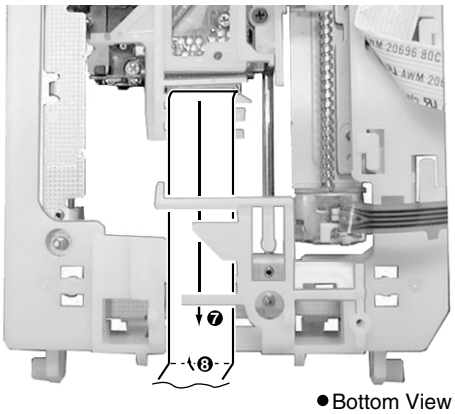
● Bottom View

Fold at the position of reference line.

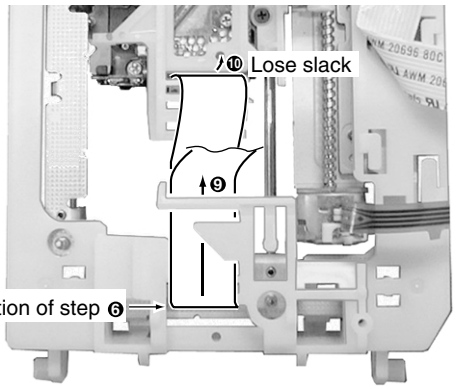
Reference line



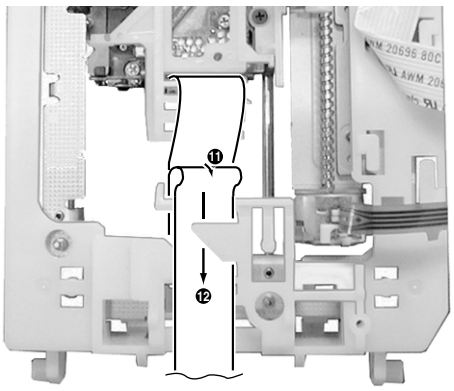
● Bottom View



● Bottom View



● Bottom View



● Bottom View

7.2 PARTS

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

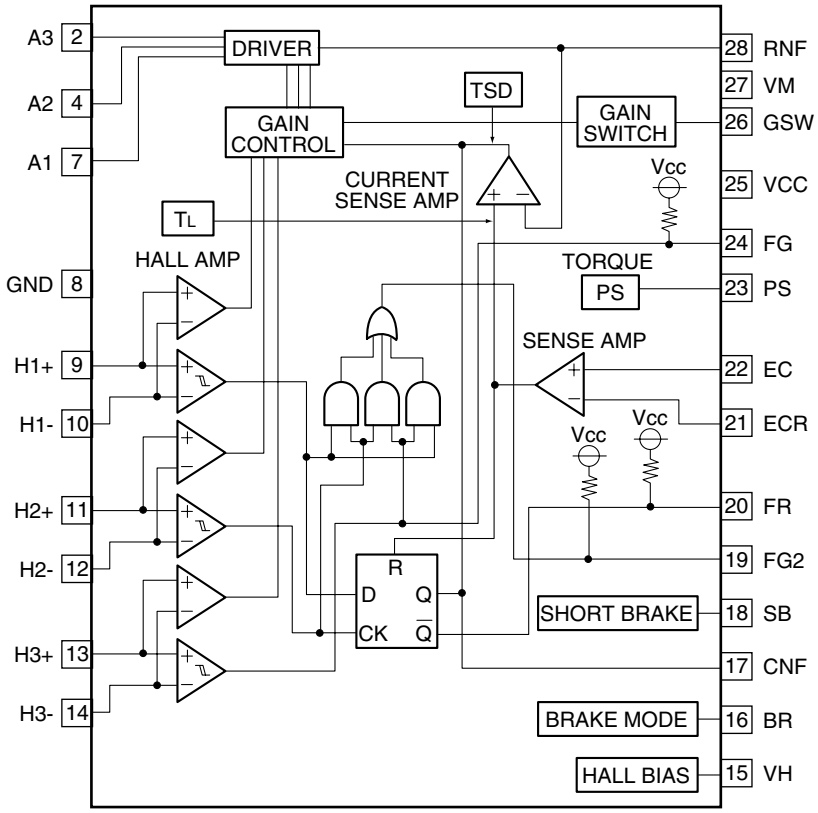
● **List of IC**

BA6664FM, L6315ATXXTY, M56788AFP, STI5519AVB-B0C, PCM1742KE, MM1567AJ, PDC093

■ BA6664FM (DVDM ASSY : IC251)

• Spindle Driver

● **Block Diagram**



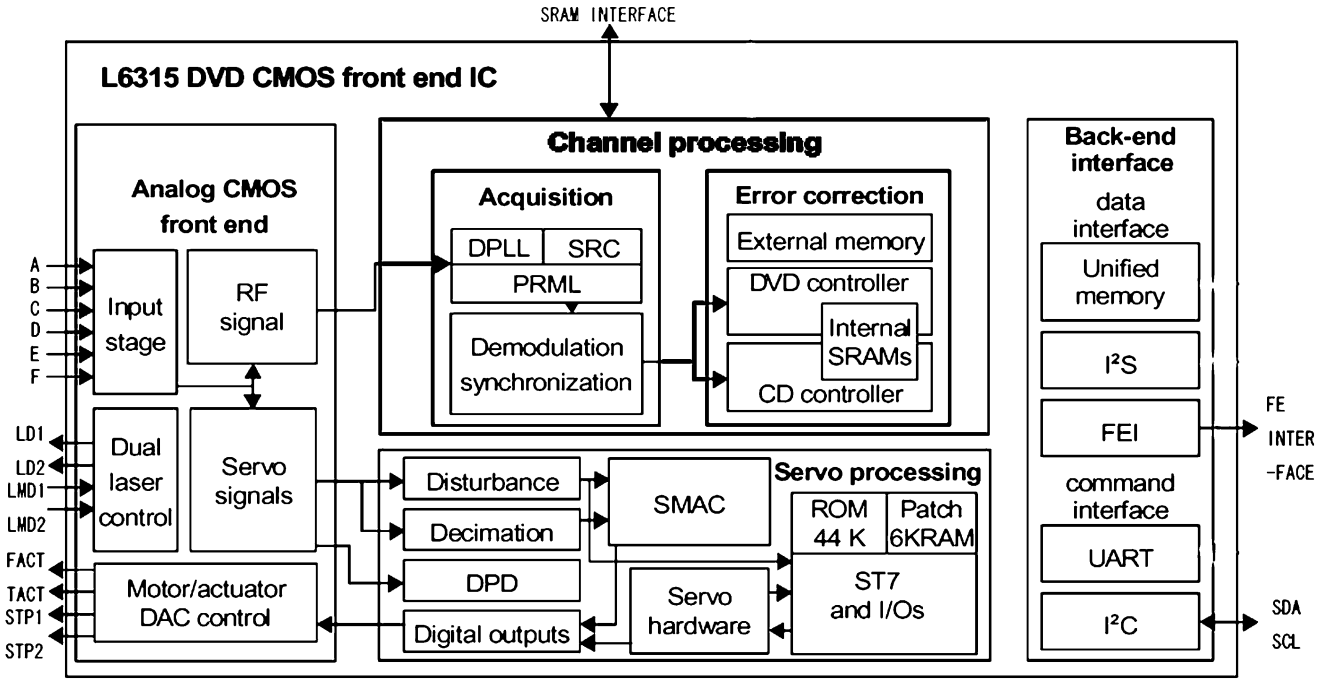
● **Pin Function**

No.	Pin Name	Pin Function	No.	Pin Name	Pin Function
1	N.C.	N.C.	16	BR	Brake mode switching pin
2	A3	Output pin	17	CNF	Capacitor connection pin for phase compensation
3	N.C.	N.C.	18	SB	Short brake pin
4	A2	Output pin	19	FG2	FG 3-phase mix signal output pin
5	N.C.	N.C.	20	FR	Rotation detecting pin
6	N.C.	N.C.	21	ECR	Control reference pin of output voltage
7	A1	Output pin	22	EC	Output voltage control pin
8	GND	GND pin	23	PS	Power save pin
9	H1+	Hall signal input pins	24	FG	FG signal output pin
10	H1-		25	VCC	Power supply pin
11	H2+		26	GSW	Gain switching pin
12	H2-		27	VM	Motor power pin
13	H3+		28	RNF	Resistor connection pin for output current detection
14	H3-		FIN	FIN	GND
15	VH	Hall bias pin			

■ L6315ATXXTY (DVDM ASSY : IC301)

• Front End IC

● **Block Diagram**



● **Pin Function**

No.	Pin Name	I/O	Pin Function
1	IREF	Analog input	Bandgap filtering input
2	GNDAI	Analog ground	Analog power supply ground
3	RFSACD	Analog output	RF output for SA-CD support
4	RFIN	Analog input	RF path data input (after AC coupling)
5	RFOUT	Analog output	RF path data output (before AC coupling)
6	VCCA18	Analog supply	Input stage power supply
7	TST_ADC	Analog output	RF path analog test pin
8	TST_SLICE	Analog output	PM analog test pin
9	TST_PM	Analog output	PM analog test pin
10	A	Analog input	Input stages laser diode A
11	GNDMN	Analog ground	Input stages ground main
12	B	Analog input	Input stages laser diode B
13	VCC33MN	Analog supply	Input stages 3.3 V misc.
14	REFD	Analog output	Reference voltage for pickup
15	VCC18IS	Analog supply	Input stages 1.8 V main
16	D	Analog input	Input stages laser diode D
17	VCCA18IS	Analog supply	Input stages 1.8 V misc.
18	C	Analog input	Input stages laser diode C
19	VCC33IS	Analog supply	Input stages 3.3 V misc.
20	GNDAIS	Analog ground	Input stages ground misc.
21	VCC33SD	Analog supply	Input stages 3.3 V side
22	VCC18SD	Analog supply	Input stages 1.8 V side
23	GNDSD	Analog ground	Input stages ground side
24	F	Analog input	Input stages laser diode F
25	E	Analog input	Input stages laser diode E
26	VSHIELIS	Analog ground	IS shield
27	VDDADC	Analog supply	ADC digital power supply
28	VSSADC	Analog ground	ADC digital ground supply
29	VCCADC	Analog supply	ADC analog power supply
30	GNDADC	Analog ground	ADC analog ground supply
31	VSHIELDADC	Analog ground	ADC shield
32	NC	–	–
33	BOOT_MODE	Digital input	Boot mode
34	VSS	Digital ground	VSS I/O
35	VDD3	Digital supply	VDD I/O (3.3 V)
36	PC[0] (NC)	Digital I/O	–
37	PC[1] (PS)	Digital I/O	Driver IC power save
38	PC[2] (FG)	Digital I/O	FG pulse input
39	PC[3] (SB)	Digital I/O	Spindle short brake
40	PC[4] (SLDPOS)	Digital I/O	Slider position input

No.	Pin Name	I/O	Pin Function
41	PC[5] (VROFST)	Digital I/O	VREF offset adjustment (stand-by)
42	PC[6] (SPDL_PDM)	Digital I/O	Spindle drive output
43	PC[7] (OEICG)	Digital I/O	OEIC gain sw
44	VSS	Digital ground	VSS core
45	VDD3S	Digital supply	VDD core
46	VSS_SPL	Digital ground	VSS I/O
47	RAM_DQM	Digital output	SDRAM DQM
48	RAM_WEN	Digital output	RAM write enable
49	RAM_CASN / Sradr14	Digital output	SRAM address
50	RAM_RASN / Sradr15		
51	RAM_A[13]		
52	RAM_A[12]		
53	RAM_A[11]		
54	RAM_A[10]		
55	RAM_A[0]		
56	RAM_A[1]		
57	RAM_A[2]		
58	RAM_A[3]		
59	RAM_A[4]		
60	RAM_A[5]		
61	RAM_A[6]		
62	RAM_A[7]		
63	RAM_A[8]		
64	RAM_A[9]		
65	RAM_CLK / Sradr16		
66	VDD_SPL	Digital supply	VDD I/O
67	VDD3	Digital supply	VDD I/O
68	VSS	Digital ground	VSS I/O
69	RAM_DQ[0]	Digital I/O	SRAM data
70	RAM_DQ[1]		
71	RAM_DQ[2]		
72	RAM_DQ[3]		
73	RAM_DQ[4]		
74	RAM_DQ[5]		
75	RAM_DQ[6]		
76	RAM_DQ[7]		
77	VDD3S	Digital supply	VDD core
78	VSS	Digital ground	VSS core
79	OUT_REQ	Reserved	Must be set to ground
80	OUT_ERR	Digital output	Output interface

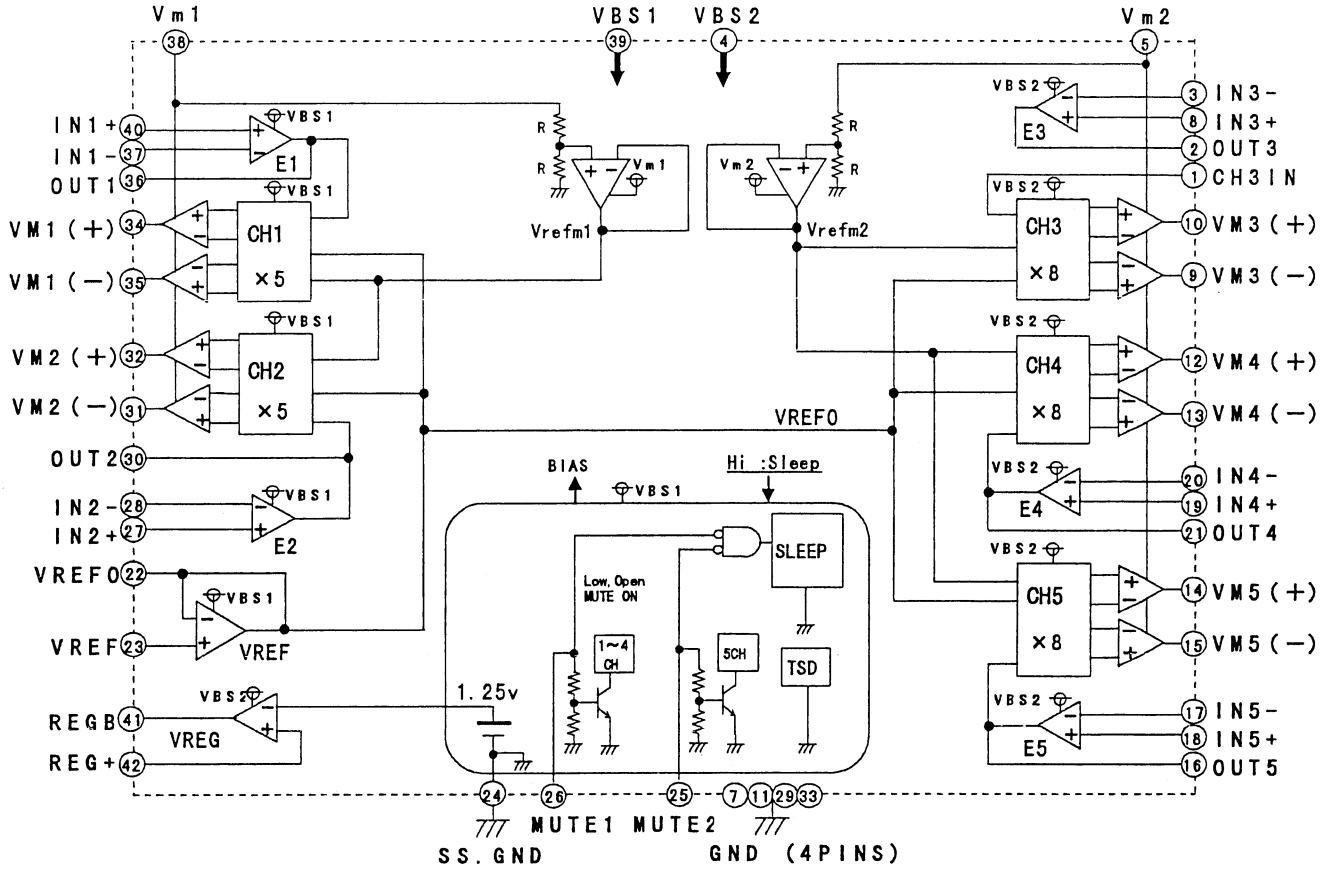
No.	Pin Name	I/O	Pin Function
81	OUT_SYNC	Digital output	Output interface
82	OUT_DVALID	Digital output	Output interface
83	OUT_CLK	Digital output	Output interface
84	OUT_DATA[0] (FE_DATA)	Digital output	Output interface
85	OUT_DATA[1] (FE_EVALID)	Digital output	Output interface: BW com
86	OUT_DATA[2] (FE_ECCBST)	Digital output	Output interface: BW com
87	OUT_DATA[3]	Digital output	Reserved
88	OUT_DATA[4]		
89	OUT_DATA[5]		
90	OUT_DATA[6]		
91	OUT_DATA[7]		
92	VDD3	Digital supply	VDD I/O
93	VSS	Digital ground	VSS I/O
94	PE[0] (FE_INIT)	Digital I/O	FE initialize input
95	PE[1] (NC)	Digital I/O	–
96	PE[2] (DMA)	Digital I/O	DMA input
97	PE[3] (SCL)	Digital I/O	I2C clock input
98	PE[4] (SDA)	Digital I/O	I2C data input
99	PD[0] (NC)	Digital I/O	–
100	PD[1] (NC)	Digital I/O	–
101	PD[2] (NC)	Digital I/O	–
102	PD[3] (NC)	Digital I/O	–
103	PD[4] (NC)	Digital I/O	–
104	PD[5] (NC)	Digital I/O	–
105	PD[6] (NC)	Digital I/O	–
106	PD[7] (NC)	Digital I/O	–
107	VDD3	Digital supply	VDD I/O
108	VSS	Digital ground	VSS I/O
109	VPP_TEST	Digital input	Test input
110	VCCD_BYP	Digital supply	VDD core
111	VCCD_OUT	–	No voltage to be applied
112	VSS	Digital ground	VSS core
113	VDD3S	Digital supply	VDD core
114	VSS	Digital ground	VSS I/O
115	VDD3	Digital supply	VDD I/O
116	RESET_IN	Digital input	Global reset signal
117	VCC18DAC	Analog supply	DAC analog power supply
118	STEPER1	Analog output	DAC spindle motor
119	STEPER2	Analog output	DAC sled motor
120	REFEXT	Analog input	DAC external reference

No.	Pin Name	I/O	Pin Function
121	REFGND	Analog ground	DAC analog ground supply
122	REFDAC	Analog output	DAC reference voltage
123	FACT	Analog output	DAC focus actuator
124	TACT	Digital output	DAC tracking actuator
125	GNDDAC	Analog ground	DAC analog ground
126	NC	–	–
127	VCCA33	Analog supply	DAC analog power supply
128	NC	–	–
129	GNDPLL	Analog ground	PM analog ground
130	PLLOFF	Analog input	PM reference disable PLL
131	FREOUT	Analog output	PM reference frequency output
132	FREIN	Analog input	PM reference frequency input
133	VCCPLL	Analog supply	PM analog power supply
134	SREG1	Analog output	External bipolar base
135	VCCR33	Analog supply	Analog power supply for regulator
136	SREG2	Analog output	External bipolar base
137	LD1	Analog output	Laser control laser diode 1
138	LD2	Analog output	Laser control laser diode 2
139	VCCA33	Analog supply	Analog power supply for input stages +
140	LCREF	Analog output	Laser control DAC reference
141	LMD1	Analog input	Laser control monitor diode 1
142	LMD2	Analog input	Laser control monitor diode 2
143	GNDL	Analog ground	Ground for laser control detection
144	VBGFILT	Analog input	Bandgap filtering input

■ M56788AFP (DVDM ASSY : IC351)

• FTS Driver IC

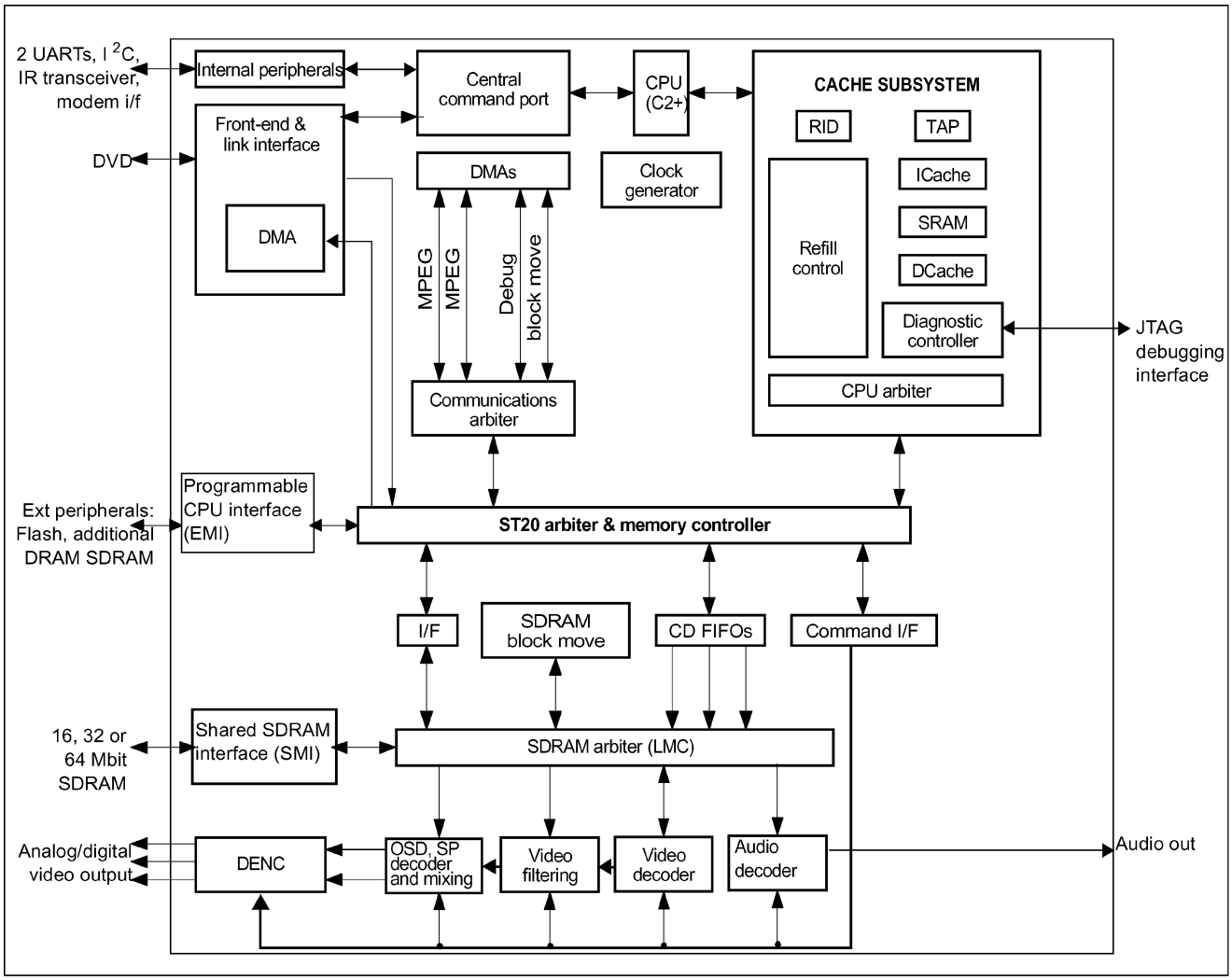
● Block Diagram



■ STI5519AVB-B0C (DVDM ASSY : IC601)

• Back End IC

● Block Diagram



● **Pin Function**

No.	Pin Name	I/O	Pin Function
1	FP_SO	OUT	Front Panel interface. (Soft) Serial transfer data output.
2	A_DATA3	OUT	Reserved
3	XAMUTE	OUT	Analog audio output line muteing output 'L'.
4	VDD_3V3	–	3.3 V Power supply
5	VSS	–	Ground
6	AQE_XCS	OUT	Reserved Audio Quality Enhancer IC's chip-select output.
7	SQUEEZ	OUT	S-Video output S1/S2 control signal at squeez output mode 'H'.
8	LETTER	OUT	S-Video output S1/S2 control signal & EURO(SCART) connecter (FUNCTION SWITCHING) signal at letter-box output mode 'H'.
9	TRYPOS	OUT	In case of NOT carusel 5 disc changer, this port is N.C.(output)
	TRYPOS	IN	Carousel 5 Disc Chenger only Tray rotete puls input. Capture function can be used.
10	V_SEL1	OUT	For EURO(SCART) connecter (BLINKING) signal 'L' : RGB output disable 'H' : RGB output enable
11	RTS	OUT	UART(RS-232C) Request To Send signal output.
12	V_SEL2	OUT	For EURO(SCART) connecter V/Y, R/C signal select 'L' : VRGB output = VRGB 'H' : VRGB output = YCGB
13	CTS	IN	UART(RS-232C) Clear To Send signal input.
14	VDD_2V5	–	2.5 V Power supply
15	VSS	–	Ground
16	FE_DATA	IN	Front-End L6315 stream interface. Searial data input.
17	FE_BCLK	IN	Front-End L6315 stream interface. Searial clock input.
18	FE_DVALID	IN	Front-End L6315 stream interface. Data valid flag input.
19	FE_SYNC	IN	Front-End L6315 stream interface. Searial synchronize flag input.
20	FE_EVALID	IN	Front-End L6315 stream interface. If STi5588 then RS-SPLIT error valid flag.
21	FE_ECCBST	IN	Front-End L6315 stream interface. If STi5588 then RS-SPLIT ECC Block Start flag.
22	TP- (VQE_XCS)	OUT	Reserved
23	VDD_RGB	–	RGB circuit 2.5 V Power supply
24	VSS_RGB	–	RGB circuit Ground
25	B_OUT	OUT	B / Cb
26	G_OUT	OUT	G / Y
27	RC_OUT	OUT	R / Cr
28	VREF_RGB	IN	RGB DAC reference
29	IREF_RGB	IN	RGB DAC electric current reference
30	VDD/YCC	–	YC circuit 2.5 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_YC	IN	YCC DAC reference

No.	Pin Name	I/O	Pin Function
36	IREF_YC	IN	YCC DAC electric current reference
37	VDD_2V5	–	2.5 V Power supply
38	VSS	–	Ground
39	XAMUTE2	OUT	In case of NOT Karaoke model, this port is N.C.(output).
			Karaoke model Before MIC mixing stage audio muteing output 'L'.
40	MIC_XON1	OUT	In case of NOT Karaoke model, this port is N.C.(output).
			Karaoke model MIC mixing chanel control output.
41	MIC_XON2	OUT	In case of NOT Karaoke model, this port is N.C.(output).
		OUT	MIC_ON2 : MIC_ON1 : mode 0 0 : Don't use. 0 1 : Mix to Center Speaker 1 0 : Mix to main L/R channel 1 1 : OFF
42	TP-x	OUT	Reserved
43	CLAMP	OUT	In case of NOT carusel 5 disc changer, this port is N.C.(output)
		IN	Carousel 5 Disc Chenger only. 'H' show disc clampe complete postion.
44	XUNCLAMP	OUT	In case of NOT carusel 5 disc changer, this port is N.C.(output)
		IN	Carousel 5 Disc Chenger only. 'H' show disc un-clampe complete postion.
45	KDSP_RST	OUT	Reserved
46	44X48	OUT	In case of NOT Karaoke model, this port is N.C.(output)
			Karaoke model KARAOKE-DSP master clock 1/2 mode 'L'.
47	VDD3V3	–	3.3 V Power supply
48	VDD_PCM	–	2.5 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	Audio DAC Center, LFE data
54	A_DATA2	OUT	Audio DAC Surround L,R data
55	A_MCLK	OUT	Audio DAC Master clock
56	A_LRCK	OUT	Audio DAC L/R clock
57	DOUT	OUT	S/PDIF(IEC60958) digital audio output.
58	SMI_A4	OUT	SMI SDRAM addresss
59	SMI_A5		
60	SMI_A6		
61	SMI_A7		
62	SMI_A8		
63	SMI_A9		
64	VDD_2V4	–	2.5 V Power supply

No.	Pin Name	I/O	Pin Function
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		
74	SMI_CS0	OUT	SMI SDRAM chip select
75	SMI_CS1	OUT	2nd SMI SDRAM chip select
76	SMI_RAS	OUT	SMI SDRAM RAS
77	SMI_CAS	OUT	SMI SDRAM CAS
78	SMI_WE	OUT	SMI SDRAM Write Enable
79	SMI_DQML	OUT	SMI SDRAM Lower DQM
80	SMI_DQMU	OUT	SMI SDRAM Upper DQM
81	VDD_3V3	–	3.3 V Power supply
82	SMI_CLK	IN	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_2V5	–	2.5 V Power supply
95	SMI_CLK	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	KDSP_XCS	OUT	In case of NOT Karaoke model, this port is N.C.(output).
			Karaoke model Exteranal DSP chip select 'L'.
104	KDSP_THRU	OUT	In case of NOT Karaoke model, this port is N.C.(output).
			Karaoke model Exteranal DSP through pass mode 'L'.

No.	Pin Name	I/O	Pin Function
105	LFEON	OUT	Reserved for high-quality audio model's LFE control.
106	TP-	OUT	Not use.
107	VDD_3V3	–	3.3 V Power supply
108	VSS	–	Ground
109	TRST		Diagnostic Controle Unit interface
110	TMS		Diagnostic Controle Unit interface
111	TDTO		Diagnostic Controle Unit interface
112	TDTI		Diagnostic Controle Unit interface
113	TCK		Diagnostic Controle Unit interface
114	ROTDRV	OUT	Carousel 5 disc changer model Tray rotation drive PWM output.
115	B_F_ROM	IN	Boot select 'L' : Boot from DCU. 'H' : Boot form ROM.
116	LOAD_DRV	OUT	Tray Open/Close drive PWM output (SINGL & CAROUSEL)
117	CPU_OE	OUT	8M / 16M bits FLASH memory for firmware.
118	CPU_SDCK	OUT	64M bits SDRAM for debugging firmware .
119	VDD_2V5	–	2.5 V Power supply
120	CLK27M	IN	Master 27MHz system clock input.
121	VSS	–	Ground
122	VDD_PLL	–	Clock PLL circuit 2.5 V Power supply
123	VSS_PLL	–	Clock PLL circuit Ground
124	RESET	IN	Power ON system RESET signal 'L' input.
125	DISC_SNS	IN	In case of NOT carusel 5 disc changer, this port is N.C.(input). Carousel 5 disc changer model Disc sense input. Pull up resistor is in another changer board.
126	FP_XRDY	IN	Front Panel interface. Hand-shake(request) input.
127	FE_INT	IN	Front-End L6315 Interrupt request input.
128	SD_DQML	OUT	Flash memory write enable 'L'. Debug SDRAM Lower DQM.
129	SD_DQMU	OUT	Debug SDRAM Upper DQM
130	SD_RXW		Debug SDRAM Read/~Write
131	CPU_WAIT	OUT	CPU wait 'H' input
132	CE3	OUT	Flash memory Chip Eenable 'L'
133	–	OUT	TP-x
134	–	OUT	TP-x
135	SD_XRAS	OUT	Debug SDRAM RAS 'L'
136	VDD_3V3	–	3.3V Vdd
137	VSS	–	GND
138	–	OUT	TP-x
139	SD_XCAS	OUT	Debug SDRAM CAS 'L'
140	SD_XCS	OUT	Debug SDRAM Chip Select 'L'

No.	Pin Name	I/O	Pin Function
141	CPU_D0	I/O	FLASH, Debug SDRAM DATA
142	CPU_D1		
143	CPU_D2		
144	CPU_D3		
145	CPU_D4		
146	CPU_D5		
147	CPU_D6		
148	CPU_D7		
149	VDD_2V5	–	2.5 V Power supply
150	VSS	–	Ground
151	CPU_D8	I/O	FLASH, Debug SDRAM 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
161	CPU_A1	OUT	FLASH, Debug SDRAM 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_2V5	–	2.5 V Power supply
172	VSS	–	Ground
173	CPU_A11	OUT	FLASH, Debug SDRAM 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

No.	Pin Name	I/O	Pin Function
185	VSS	–	Ground
186	XDRVMUTE	OUT	Motor driver muting signal 'L'.
187	RS_ERROR	IN	Front-End L6315 stream interface. If STi5588 then ECC Error flag.
188	I2C_SEL	OUT	Reserved (Front-End L6315 command interface.) ('L' : I2C bus connect to I2C_DMA) ('H' : I2C bus connect to I2C_COMAND)
189	DAC_SCK	OUT	Audio DAC serial control clock output.
190	DAC_SO	OUT	Audio DAC serial control data output.
191	DAC_XCS0	OUT	Audio DAC serial control chip select output.
192	DAC_XCS1	OUT	Reserved (Audio DAC serial control chip select output. For addition DAC)
193	6CH_MODE	OUT	In case of NOT 6ch audio output model, this port is N.C.(output).
			6ch audio output model Audio quality up control signal output.
194	SDA	SDA	Front-End L6315 command interface I2C bus serial data line.
195	SCL	SCL	Front-End L6315 command interface I2C bus serial clock line.
196	FE_RST	OUT	Front-End L6315 Hard reset output.
197	TXD	TXD	UART(RS-232C) data output
198	VDD_2V5		2.5 V Power supply
199	VSS	IN	Ground
200	RXD	RXD	UART(RS-232C) data input
201	TP-x	OUT	Reserved
202	TRIGIN	–	Diagnostic Controle Unit interface
203	TRIGOUT	–	Diagnostic Controle Unit interface
204	OPEN	IN	'H' show tray loading "OPEN" complete position.
205	XCLOSE	IN	'H' show tray loading "CLOSE" complete position.
206	FP_ACK	OUT	Front Panel interface. Hand-shake (acknowledge) output.
207	FP_SCK	OUT	Front Panel interface. (Soft) Serial transfer clock output.
208	FP_SI	IN	Front Panel interface. (Soft) Serial transfer data input.

■ PCM1742KE (DVD IF ASSY : IC1921)

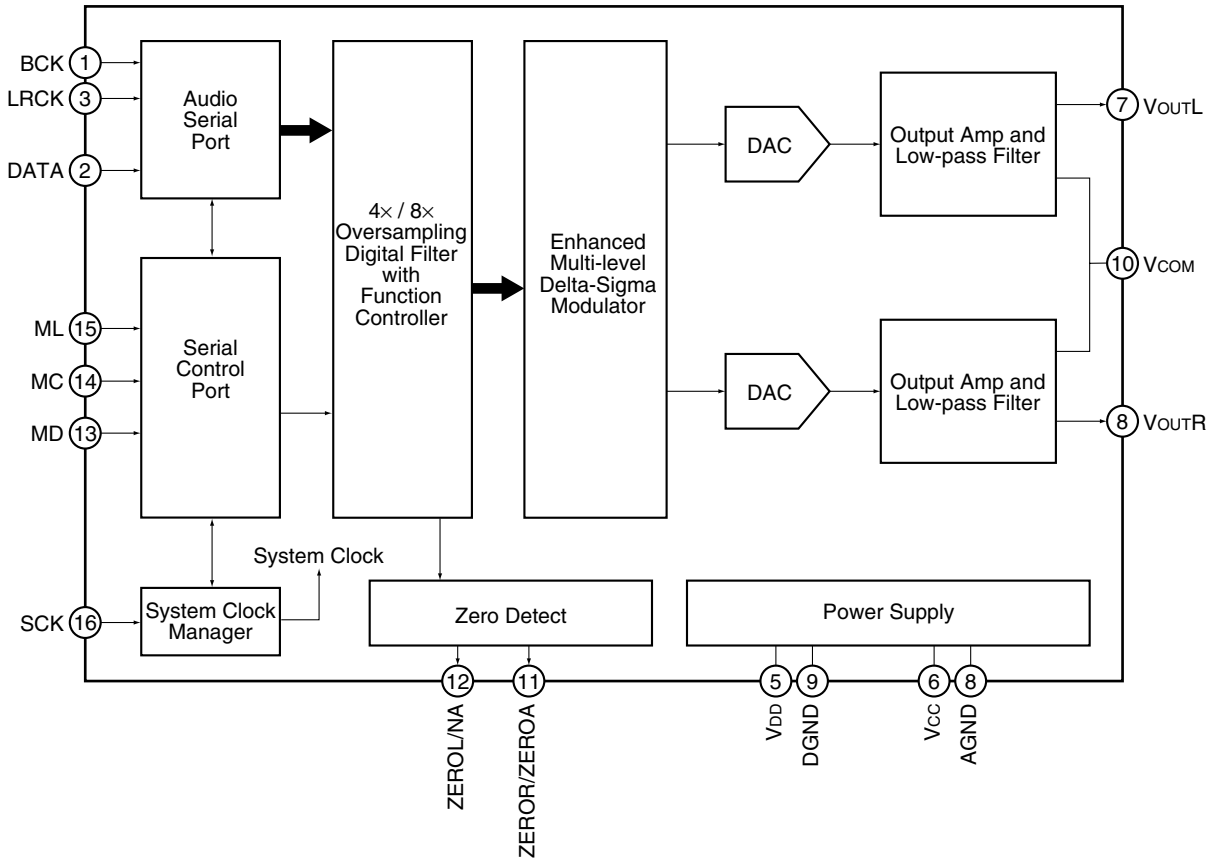
• D/A Converter

● Pin Arrangement

● Pin Function

No.	Pin Name	I/O	Pin Function
1	BCK	I	Audio data bit clock input
2	DATA	I	Audio data digital input
3	LRCK	I	L-channel and R-channel Audio data latch enable input
4	DGND	–	Digital ground
5	V_{DD}	–	Digital power supply +3.3V
6	V_{CC}	–	Analog power supply +5V
7	V_{OUT}L	O	Analog output for L-channel
8	V_{OUT}R	O	Analog output for R-channel
9	AGND	–	Analog ground
10	V_{COM}	–	Common voltage decoupling
11	ZEROR/ZEROA	O	Zero flag output for R-channel / Zero flag output for L/R-channel
12	ZEROL/NA	O	Zero flag output for L-channel / No assign
13	MD	I	Mode control data input
14	MC	I	Mode control clock input
15	ML	I	Mode control latch input
16	SCK	I	System clock input

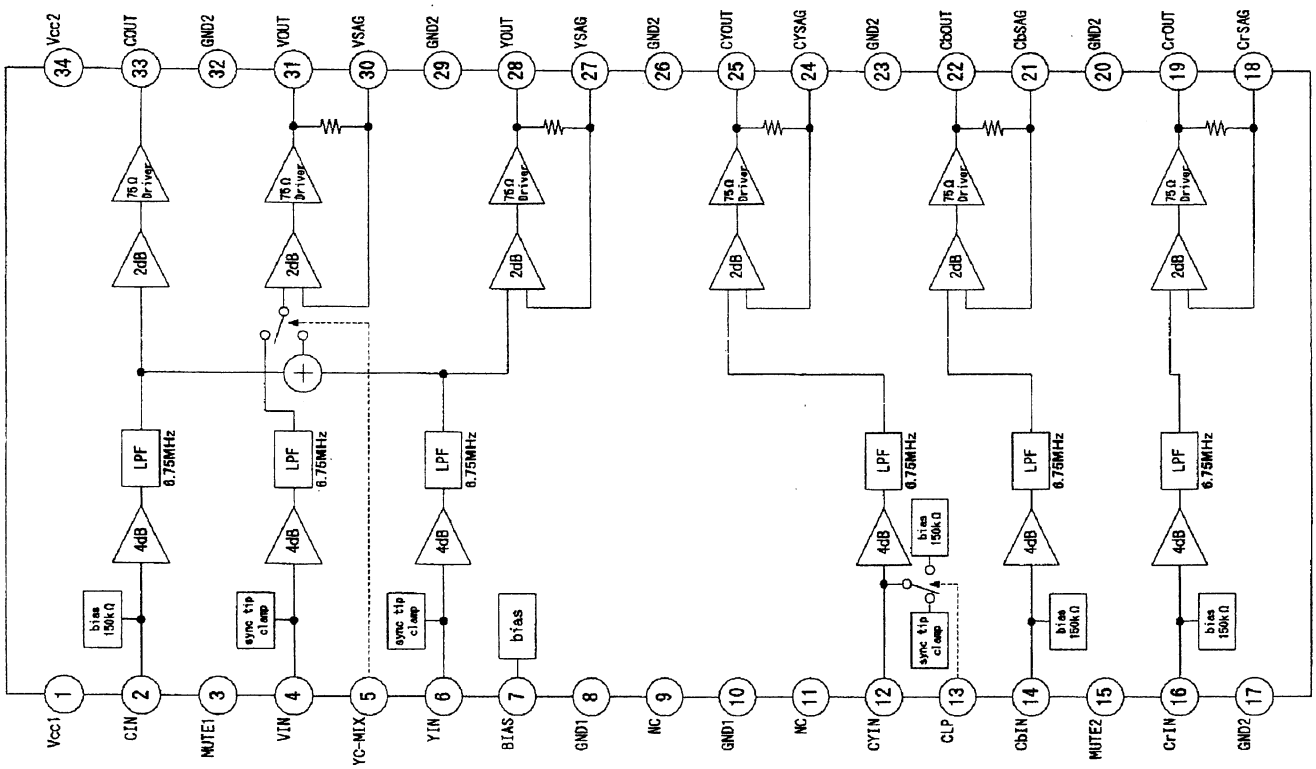
● Block Diagram



■ MM1567AJ (DVD IF ASSY : IC1941)

• DVD Video Amp. IC

● Block Diagram



● Pin Function

No.	Pin Name	Pin Function	No.	Pin Name	Pin Function
1	VCC1	VCC	18	CrOUT	Signal output (Cr)
2	CIN	Crroma input	19	CrSAG	SAG correction (Cr)
3	MUTE1	Mute select	20	GND2	GND
4	VIN	Video input	21	CbOUT	Signal output (Cb)
5	YC MIX	YC MIX select	22	CbSAG	SAG correction (Cb)
6	YIN	Video input (Y)	23	GND2	GND
7	BIAS	Bias	24	CYOUT	Signal output (CY)
8	GND1	GND	25	CYSAG	SAG correction (CY)
9	NC	NC	26	GND2	GND
10	GND1	GND	27	YOUT	Signal output (Y)
11	NC	NC	28	YSAG	SAG correction (Y)
12	CYIN	Luminance input	29	GND2	GND
13	CLP	Input clamp select	30	VOUT	Signal output (V)
14	CbIN	Component input (Cb)	31	VSAG	SAG correction (V)
15	MUTE2	Mute select	32	GND2	GND
16	CrIN	Component input (Cr)	33	COUT	Chromatic output
17	GND2	GND	34	VCC2	VCC

■ PDC093 (IF ASSY : IC5501)

• System Control Microcomputer

● Pin Function

No.	Port Name	Pin Name	I/O	Function
1	PA3/WR#	DVD ON/OFF	O	Control power supply for DVD
2	PA4/RD#	(HPDET)	O	Detect to insert headphone (reserve) → If don't use, set I/O to output
3	PA5/RS	XCDRST	O	Reset for CD / VCD / DVD microcomputer
4	P70 / INT0 / T0LCP / AN8	ACPULSE	I	AC PULSE input
5	P71 / INT1 / T0HCP / AN9	CDERR	I	ERR and OVER input from CODEC
6	P72 / INT2 / T0IN	RDSCLK	I	Clock input from RDS decoder (without RDS : Low output)
7	P73 / INT3 / T0IN	REMOCON	I	REMOCON signal input
8	RES#	XRESET	I	Reset input
9	XT1 / AN10	–	–	
10	XT2 / AN11	–	–	
11	VSS1	–	–	
12	CF1	–	–	
13	CF2	–	–	
14	VDD1	–	–	Power supply
15	P80 / AN0	SIMUKE	I	Destination setting input
16	P81 / AN1	LEVELIN	I	Level meter signal input
17	P82 / AN2	3.3DETECT	I	DVD 3.3V detection input
18	P83 / AN3	KEY4	I	Key input (for AMP)
19	P84 / AN4	ST/TUNE	I	STEREO tuned detection input
20	P85 / AN5	KEY1	I	Key input
21	P86 / AN6	KEY2	I	Key input
22	P87 / AN7	KEY3	I	Key input
23	P10/SO0	SYS_DOUT	O	System bus data output (AMP side output)
24	P11 / SI0 / SB0	SYS_DIN	I	System bus data input (AMP side input)
25	P12 / SCK0	SYS_CLK	I	System bus clock input
26	P13 / SO1	DSPDIN	O	Data output for CODEC + DIR IC, TC9164, EXPAND IC (only for DSP), CRISTAL's DSP (AMP side output) [DSP core CDDI + CSDI]
27	P14 / SI1 / SB1	DSPDOUT	I	Data input for CODEC + DIR IC, TC9164, EXPAND IC (only for DSP), CRISTAL's DSP AMP side input) [DSP core CDDO + CSDO]
28	P15 / SCK1	DSPCLK	O	Clock for CODEC + DIR IC, TC9164, EXPAND IC (only for DSP), CRISTAL's DSP [DSP core CDCK + CSCK]
29	P16/T1PWML	SYS_CS2	O	Chip select 2 for system bus
30	P17/T1PWMH/BUZ	SYS_CS1	O	Chip select 1 for system bus
31	PE0	TCEXPOE	O	Output enable to EXPAND IC for deck
32	PE1	TCEXPCLK	O	Clock to EXPAND IC for deck
33	PE2	TCEXPCE	O	Chip enable to EXPAND IC for deck
34	PE3	TCEXPDAT	O	Data to EXPAND IC for deck
35	PE4	TCHALF	I	Input switch of mecha half
36	PE5	TCMODE	I	Input switch of mecha mode
37	PE6	TCRECF	I	Input switch of mecha during recording forward
38	PE7	TCRECR	I	Input switch of mecha during recording reverse
39	VSS4	–	–	Ground
40	VDD4	–	–	Power supply

No.	Port Name	Pin Name	I/O	Function
41	PF0	TCMSIN	I	Input MS signal
42	PF1	TCPULSE	I	Input pulse of TC reel
43	PF2	XTESTMODE	I	Set TEST MODE for product line (service) and unit checker
44	PF3	SERVICE	I	Set SELF CHECK for service
45	PF4	DTSDMIX	O	Cntrol of gain-up for dts down-mix
46	PF5	SWFMIX	O	Control for subwoofer mix
47	PF6	ECHCNT1	O	Control of echo level 1
48	PF7	ECHCNT2	O	Control of echo level 2
49	SI2P0/SO2	LCDDAT	O	Data for FL (LCD) driver
50	SI2P1/SI2/SB2	LCDCE	O	Chip enable for FL (LCD) driver
51	SI2P2/SCK2	LCDCLK	O	Clock for FL (LCD) driver
52	SI2P3/SCK20	LCDRST	O	Reset for FL (LCD) driver
53	PWM1	–	–	
54	PWM0	–	–	
55	VDD2	–	–	Power supply
56	VSS2	–	–	Ground
57	P00	TXCE	O	Chip enable for tuner LSI
58	P01	NC	O	No connection
59	P02	XTMRLED	O	Control timer standby LED
60	P03	XSTBYLED	O	Control standby LED
61	P04	TXCLK	O	Clock for tuner LSI
62	P05	TXIDAT	O	Data for tuner LSI
63	P06	TXMUTE	O	Control mute of tuner
64	P07	RDSPOW	O	Control power supply of RDS
65	P20/INT4/T1IN	RDSDATA	I	Input RDS data
66	P21/INT4/T1IN	TXODAT	I	Input data from tuner LSI
67	P22/INT4/T1IN	XDSPMUTE	O	Control mute of DSP (board)
68	P23/INT4/T1IN	A/D MODE	O	DSP mute when ANALOG
69	P24/INT5/T1IN	AUXMUTE	O	Control mute of AUX output
70	P25/INT5/T1IN	DVDLAT	I	Input latch signal from DVD connection
71	P26/INT5/T1IN	ATTCONT	O	Control ATT of AUX
72	P27/INT5/T1IN	KCONSTB	O	Strobe for Key Control IC
73	P30	KCONCLK	O	Clock for Key Control IC
74	P31	KCONDATA	O	Data for Key Control IC
75	P32	VOCALC	O	
76	P33	VOCALB	O	
77	P34	VOCALA	O	
78	P35	ASSELB	O	Audio source select B
79	P36	ASSELA	O	Audio source select A (CD, TUNER, TAPE, AUX) BU4052
80	PB7/D7	DSP EXP CS	O	Chip select for EXPAND

No.	Port Name	Pin Name	I/O	Function
81	PB6/D6	DSP EXP OE	O	Output enable for EXPAND (no use)
82	PB5/D5	CSCS	O	Chip select for CRISTAL's DSP
83	PB4/D4	CSREQ	I	Request for CRISTAL's DSP
84	PB3/D3	FS96	I	96k input fron CODEC
85	PB2/D2	ABOOT	O	Chip select for SRAM / P2ROM
86	PB1/D1	CSRST	O	RESET for CRISTAL's DSP
87	PB0/D0	CDCS	O	Chip select for CODEC
88	VSS3	–	–	Ground
89	VDD3	–	–	Power supply
90	PC7/A7	CDPDN	O	Power down (RESET) for CODEC
91	PC6/A6	SYSPOW	O	Control power supply of system
92	PC5/A5	PROTECT	I	Protection and Fan Error detection input
93	PC4/A4	SPCONT	O	Control relay of speaker output
94	PC3/A3	SYSMUTE	O	Control mute of system
95	PC2/A2	VOLCE	O	Chip enable for E-vol IC
96	PC1/A1	VOLCLK	O	Clock for E-vol IC
97	PC0/A0	VOLDATA	O	Data for E-vol IC
98	PA0/CS2#	FLASH E/D	–	for FLASH writing
99	PA1/CS1#	FLASH DO	–	for FLASH writing
100	PA2/CS0#	FLASH CLK	–	for FLASH writing

- Port 0 (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.
- Port 1 (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.
- Port 2 (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.
- Port 3 (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.
- Port 7 (P70-P73) can be selected for input or output by each 1 bit. Set for input when reset.
- Port 8 (P80-P87) can be selected for input or output by each 1 bit. Set for input when reset.
- Port A (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.
- Port B (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.
- Port C (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.
- Port E 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.
- Port 0 cannot output High level during HALT mode.

7.3 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

8. PANEL FACILITIES

Front panel

Note

The front panel controls for the EV51DVD model are shown in the illustrations below.

1 SURROUND (EV51DVD mode)

Selects a surround listening mode

SFC (EV21DVD mode)
Selects sound modes or custom settings from the Sound Field Control

2 STANDBY/ON

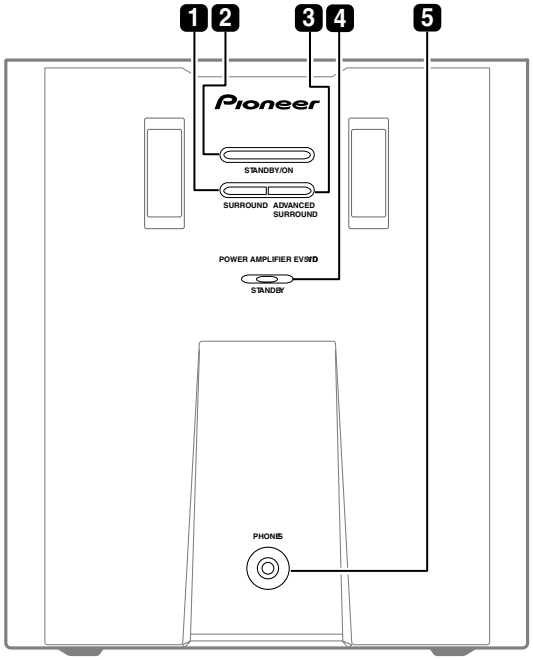
Switches the player on or into standby

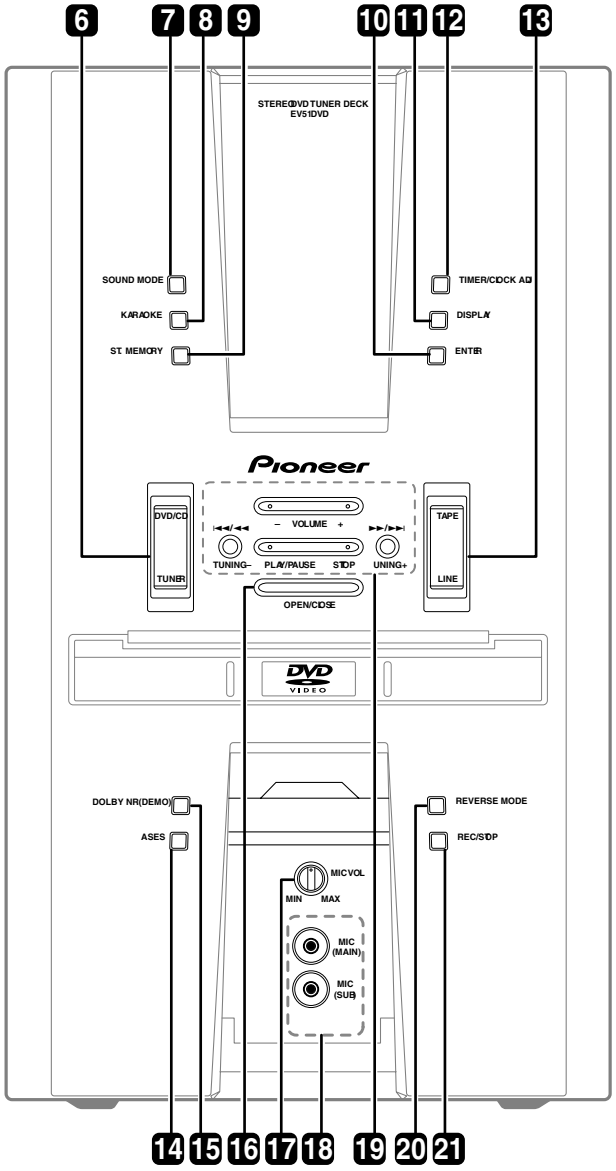
3 ADVANCED SURROUND (EV51DVD model)

Selects an advanced listening mode

CENTER SP (**ON/OFF**) (EV21DVD model)

Switches the center speaker on or off





A

4 STANDBY indicator
Lights when the system is in standby

5 PHONES jack
Headphone jack

6 DVD/CD and TUNER select button
Press to select the source you want to listen to

7 SOUND MODE
Adjusts the tone, balance and (EV51DVD model only) DSP controls

8 KARAOKE (EV51DVD model)
Selects audio channels for karaoke

VIRTUAL SURROUND (EV21DVD model)
Switches the Virtual Surround effect on or off

9 ST. MEMORY
Use for saving and listening to station presets

10 ENTER
Select an option or execute a command

11 DISPLAY
Changes the information shown in the display

12 TIMER/CLOCK ADJ
Use for setting the clock, as well as for setting and checking the timers

13 TAPE and LINE select button
Press to select the source you want to listen to

14 ASES
Press for CD-to-tape synchro recording

15 DOLBY NR (DEMO)
Switches Dolby Noise Reduction on or off

16 OPEN/CLOSE
Opens the disc tray

17 MIC VOL
Controls the volume of the karaoke mics

18 MIC input jacks

19 VOLUME, TUNING and playback control buttons
The **TUNING** /scan/skip buttons are used for tuning into stations, skipping or scanning tracks on discs or tapes. The playback control button is used for playing, pausing and stopping playback.

20 REVERSE MODE
Selects the playback mode for tapes

21 REC/STOP
Starts/stops recording on the tape deck

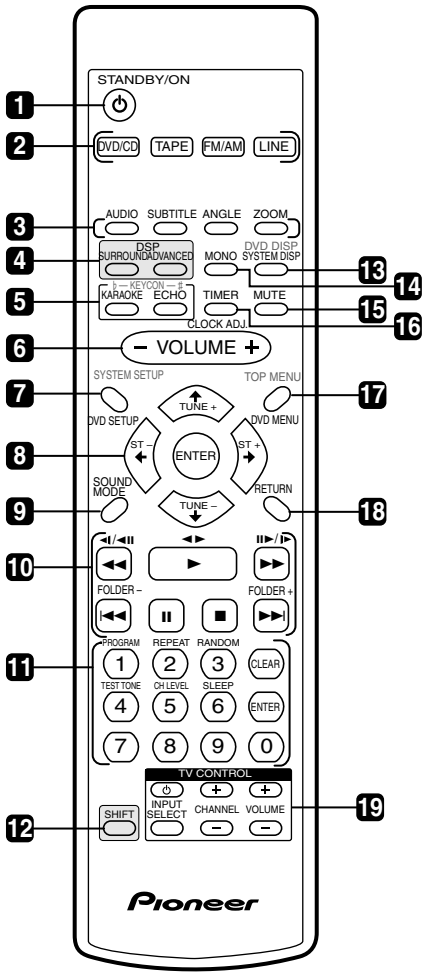
B C D E F

Controls and displays

Remote control

Note

The remote control for the EV51DVD model is shown in the illustration below



1 ⏻ STANDBY/ON
Switches the player on or into standby

2 Function select buttons
Selects the source you want to listenot

3 DVD control buttons

AUDIO
Selects the audio channel or language

SUBTITLE
Selects a subtitle display

ANGLE
Changes the camera angle during DVD multi-angle scene playback

ZOOM
Changes the zoom level

4 DSP buttons (EV51DVD model)

SURROUND
Selects a surround mode for multi-channel sound

ADV. SURROUND
Selects a DSP mode for multi-channel sound

Sound Field buttons (EV21DVD model)

SFC
Selects sound modes or custom settings from the Sound Field Control

VIRTL. SURR.
Switches the Virtual Surround effect on or off

5 KARAOKE buttons

KARAOKE
Selects audio channels for karaoke

ECHO
Changes the echo level on the karaoke mics

KEYCON (SHIFT+KARAOKE/ECHO)
Lowers/raises the pitch of the backing track

Controls and displays

6 VOLUME
Adjusts the volume level

7 DVD SETUP
Press to make DVD settings

SYSTEM SETUP (SHIFT+DVD SETUP)
(EV51DVD model)
Press to make DSP settings

8 ENTER, TUNE & cursor control buttons
Navigates on-screen displays and menus. **ENTER** selects an option or executes a command.

9 SOUND MODE
Adjusts the tone, balance and (EV51DVD model only) DSP controls

10 Playback controls
►
Starts/resumes 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

I◄◄
Jumps to the beginning of the current chapter or track, then to previous chapters/tracks

►►I Jumps to the next chapter or track

II Pauses playback; press again to restart

■ Stops playback

11 Number buttons and SHIFT functions
The number buttons can be used for selecting tracks directly, the functions above the buttons are accessed by pressing **SHIFT** at the same time as the button.

PROGRAM (SHIFT+1)
Use to program/play a program list

REPEAT (SHIFT+2)
Selects a repeat play mode

RANDOM (SHIFT+3)
Selects a random play mode

TEST TONE (SHIFT+4)
(EV51DVD model only)
Outputs the test tone for speaker setup (EV51DVD model only)

CH LEVEL (SHIFT+5)
Press to adjust the speaker level

SLEEP (SHIFT+6)
Switches the sleep timer on or off

CLEAR
Clears an entry

ENTER
Selects menu options, etc. (works exactly the same as the **ENTER** button in 8 above)

12 SHIFT
Press to access the functions/commands written in green on the remote

13 SYSTEM DISP
Switches between information and clock displays

DVD DISP (SHIFT+SYSTEM DISP)
Changes the information shown in the display

14 MONO
Press to listen to a stereo FM broadcast in mono (sound quality is usually improved)

CENTER SP (SHIFT+MONO)
(EV21DVD model only)
Switches the center speaker on or off

15 MUTE
Mutes the volume

16 TIMER/CLOCK ADJ.
Use for setting the clock, as well as for setting and checking the timers

17 DVD MENU
Displays the DVD menu (for CDs, Video CDs, and MP3 discs, the Disc Navigator screen appears)

TOP MENU (SHIFT+DVD MENU)
Displays the top menu of a DVD disc

18 RETURN
Press to return to a previous menu screen

19 TV CONTROL

Note

Refer to Setting the remote to control your TV on page 27 to use these controls with your TV.

⏻ Switches the TV on or into standby

INPUT SELECT
Switches the TV input

CHANNEL +/–
Selects channels

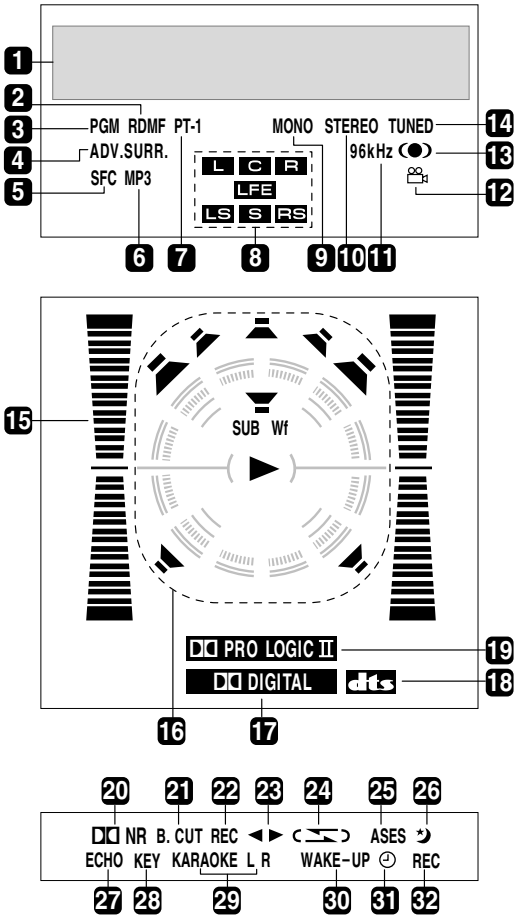
VOLUME +/–
Adjusts the volume on the TV

Controls and displays

Display

Note

The front panel display for the EV51DVD model is shown in the illustration below



1 Character display

2 RDM
Lights during random playback

3 PGM
Lights during program play

4 ADV. SURR. (EV51DVD model only)
Lights when one of the Advanced Surround listening modes is selected

5 SFC (EV21DVD model only)
Lights when one of the Sound Field Control listening modes is selected

6 MP3
Lights during playback of an MP3 disc

7 RPT-1
RPTlights during repeat play (**RPT-1** lights during repeat one-track play)

8 Format indicator (EV51DVD model only)
These indicators will light according to which channels are encoded on the Dolby Digital or DTS multi-channel disc currently in the player. **LFE** lights when the disc has an LFE channel.

9 MONO
Lights when FM mono reception is selected

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

11 96 kHz
Lights when a 96kHz source is detected
(wont light if the source is copy-protected)

12
Lights during multi-angle scenes on a DVD disc

13
Lights when Virtual Surround is switched on

14 TUNED
Lights when a broadcast is being received

15 Level meter
Shows the level of the source selected

16 Speaker and playback indicators
The speaker indicators() show the speakers currently active. The playback indicator (►) lights during playback.

17 DIGITAL
This lights to indicate decoding of a Dolby Digital signal

18 DTS
This lights to indicate decoding of a DTS signal

19 PRO LOGIC II (EV51DVD model only)
This lights to indicate Prologic II decoding

20 NR
Lights when Dolby Noise Reduction is on

Controls and displays

19 PRO LOGIC II (EV51DVD model only)
This lights to indicate Prologic II decoding

20 NR
Lights when Dolby Noise Reduction is on

21 B.CUT
Lights when the beat cut mode has been switched to **B.CUT2**

22 REC
Lights when recording to the tape deck

23 ◄►
Indicates the direction of tape playback

24
Indicates the reverse mode:

- - Single side playback
- - Auto-reverse playback: stops after finishing playback in the reverse (◄) direction
- - Continuous playback (up to 16 complete plays)

25 ASES
Lights during ASES recording

26
Lights when the sleep timer is active

27 ECHO
Lights when the Karaoke **ECHO** effect is selected

28 KEY
Lights when the Karaoke pitch control is selected

29 KARAOKE LR
Lights when one of the Karaoke modes is selected:

- **KARAOKE** (Vocal cancel) - Vocals in the backing track are partially eliminated using EQ.
- **L** - Left channel only. Use for tracks that have a vocal recorded in the right channel.
- **R** - Right channel only. Use for tracks that have a vocal recorded in the left channel.
- **L R** - Use to put a a single-channel vocal track into the center of the mix.

30 WAKE-UP
Lights in standby when the wake-up timer is set and flashes when the wake-up timer activates

31
Lights in standby when either timer is set and flashes when they activate

32 REC
Lights in standby when the record timer is set and flashes when the timer starts recording