HCD-DX400

SERVICE MANUAL

Ver. 1.0 2010.04

AEP Model
E Model
Australian Model

- HCD-DX400 is the amplifier, disc player, USB and tuner section in CMT-DX400.

Model Name Using Similar Mechanism	NEW
DVD Mechanism Type	CDM85 (MB)
Optical Pick-up Block Name	KHM-313CAA

SPECIFICATIONS

Amplifier section

Power output (rated): 20 + 20 watts (6 ohm at 1 kHz, 1% THD)
Continuous RMS power output (reference): 25 + 25 watts (6 ohm at 1 kHz, 10% THD)
The following measured at 220 V – 240 V AC, 50/60 Hz (AEP, Russian, Singapore, Thai and Australian models)
110 V – 120 V/220 V – 240 V AC, 50/60 Hz (Chilean and Peruvian models)
120 V AC, 60 Hz (Mexican model)
120 V AC, 50/60 Hz (Taiwan model)
220 V – 240 V ∼, 60 Hz (Korean model)
Power output (rated): 20 + 20 watts (6 ohm at 1 kHz, 1% THD)
Continuous RMS power output (reference): 25 + 25 watts (6 ohm at 1 kHz, 10% THD)
* The system is not support C-Load testing.
Inputs
Audio In (3.5mm stereo jack): sensitivity 700 mV, impedance 10 kilohms
MIC (monaural mini jack) (Russian, Singapore, Taiwan, Korean, Thai and Australian models): sensitivity 4 mV, impedance 10 kilohms
Outputs
VIDEO OUT (RCA jack): max. output level 1 Vp-p, unbalanced, Sync negative, load impedance 75 ohm
COMPONENT VIDEO OUT:
Y: 1 Vp-p, 75 ohm
PB, PR: 0.7 Vp-p, 75 ohm
PHONES (stereo φ3.5 mm jack): accepts headphones of 32 ohm
SPEAKER: accepts impedance of 6 ohm

Disc player section

System: Compact disc and digital audio and video system
Laser: Laser Diode Properties
- Emission duration: continuous
- Laser Output*: Less than 1000 μW

* This output is the value measurement at a distance of 200mm from the objective lens surface on the Optical Pick-up Block with 7mm aperture.

Semiconductor laser (DVD: λ=650 nm, CD: λ=790 nm)
Frequency response: DVD (PCM 48 kHz): 20 Hz – 20 kHz (±1 dB)
CD: 20 Hz – 20 kHz (±1 dB)

USB section

Supported bit rate
MP3(MPEG/Audio Layer–3): 32 kbps – 320 kbps
WMA: 48 kbps – 192 kbps
Sampling frequencies
MP3(MPEG/Audio Layer–3): 32/44.1/48 kHz
WMA: 44.1 kHz
USB port (maximum current): 5V 500mA

Tuner section

FM stereo, FM superheterodyne tuner
FM tuner section
Tuning range: 87.5 MHz – 108.0 MHz (50 kHz step)
Antenna: FM lead antenna
Antenna terminals: 75 ohm unbalanced
Intermediate frequency: 10.7 MHz
AM tuner section (Chilean, Peruvian and Mexican models)
Tuning range: 530 kHz – 1,710 kHz/10 kHz (Default)
531 kHz – 1,710 kHz/9 kHz
Antenna: AM loop antenna
Antenna terminals: External antenna terminal
Intermediate frequency: 450 kHz
AM tuner section (Singapore, Taiwan, Korean and Thai models)
Tuning range: 531 kHz – 1,602 kHz/9 kHz (Default)
530 kHz – 1,610 kHz/10 kHz
Antenna: AM loop antenna
Antenna terminals: External antenna terminal
Intermediate frequency: 450 kHz
AM tuner section (Australian model)
Tuning range: 531 kHz – 1,710 kHz/9 kHz (Default)
530 kHz – 1,710 kHz/10 kHz
Antenna: AM loop antenna
Antenna terminals: External antenna terminal
Intermediate frequency: 450 kHz

– Continued on next page –

DVD RECIEVER

9-889-852-01
2010D05-1

Sony Corporation
Audio&Video Business Group
Published by Sony Techno Create Corporation

SONY®

General

Power requirements
Chilean and Peruvian models:
110 V – 120 V/220 V – 240 V AC, 50/60Hz
Mexican model: 120 V AC, 60 Hz
Taiwan model: 120 V AC, 50/60 Hz
Korean model: 220 V – 240 V ∼, 60 Hz
Other models: 220 V – 240 V AC, 50/60 Hz
Power consumption:
On: 25 watts
Standby: 0.5 watts
Dimensions (w/h/d) (excl. speakers):
Approx. 175 × 240 × 210 mm
Mass (excl. speakers): 2.4 kg

Design and specifications are subject to change without notice.

- This system incorporates Dolby Digital.
- Manufactured under license from Dolby Laboratories. Dolby and the double-D symbol are trademarks of Dolby Laboratories.
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  Visit www.divx.com for more information and software tools to convert your files into DivX video.
  ABOUT DIVX VIDEO-ON-DEMAND: This DivX Certified® device must be registered in order to play DivX Video-on-Demand (VOD) content. To generate the registration code, locate the DivX VOD section in the device setup menu. Go to vod.divx.com with this code to complete the registration process and learn more about DivX VOD.
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  (ii) DECODING MPEG-4 VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL AND NON-COMMERCIAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED BY MPEG LA TO PROVIDE MPEG-4 VIDEO.
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NOTES ON CHIP COMPONENT REPLACEMENT

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

FLEXIBLE CIRCUIT BOARD REPAIRING

- Keep the temperature of soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This appliance is classified as a CLASS 1 LASER product. This marking is located on the rear exterior.

TABLE OF CONTENTS

SAFETY-RELATED COMPONENT WARNING!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pickup block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(**Caution:** Some printed circuit boards may not come printed with the lead free mark due to their particular size)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350 °C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

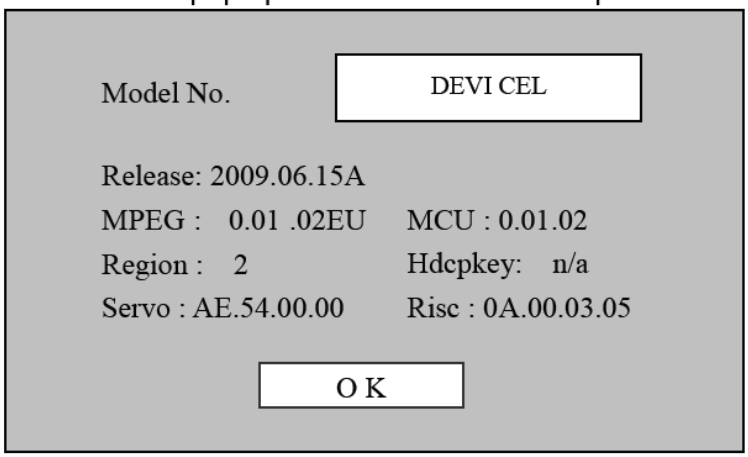
NOTE THE EACH BOARDS REPAIRING

The mount parts on each boards installed in this set cannot exchange with single. When the each mount parts are damaged, exchange the entire mounted board.
Printed wiring board and schematic diagram have been described to this service manual is for the reference.

MODEL CLASSIFICATION

The set shipped to different destination will have different function and different default setting. Service people can change software version for different destination. The process as below:

1. Switch on the system in “No Disc”.
2. Orderly presses “STOP”, “4”, “5”, “6”, “ENTER” keys of RC.
3. A menu will pop up on the TV. As attached picture:



4. Press LEFT/RIGHT keys of RC to move the cursor.
5. When cursor is on “Model no.” button, press UP/DOWN keys of RC to select the version you want.
6. Then move cursor to “OK” button, press ENTER key to confirm.
7. The system will switch off automatically. And the version will be changed.

Note: For Release: 2009.06.15A, A is represent this that this software is the first time release on 2009.06.15. If it is the second time release, it will be 2009.06.15B.

Remark: After operate above process, the system will be reset to factory setting. This operation also can be used for factory reset.

Feature table for different version:

Destination	EU	Russia	Singapore	Australia	Taiwan
Model No.	DEVI CEL	Devi RU1	DEVI SP1	DEVI AU1	DEVI TW2
View Version	MPEG: 0.01.02 MCU: 0.01.02	MPEG: 0.01.02 MCU: 0.01.02	MPEG: 0.01.02 MCU: 0.01.02	MPEG: 0.01.02 MCU: 0.01.02	MPEG: 0.01.02 MCU: 0.01.02
Region	2	5	3	4	3
Function	DVD/CD → FM → AUDIO IN → USB	DVD/CD → FM → AUDIO IN → USB	DVD/CD → FM→ AM → AUDIO IN → USB	DVD/CD → FM→ AM → AUDIO IN → USB	DVD/CD → FM→ AM → AUDIO IN → USB
OSD Lang List	**Refer to OSD Languege (Page 5)**	**Refer to OSD Languege (Page 5)**	**Refer to OSD Languege (Page 5)**	**Refer to OSD Languege (Page 5)**	**Refer to OSD Languege (Page 5)**
OSD Lang (Default)	English	РУССКИЙ	English	English	中文 1

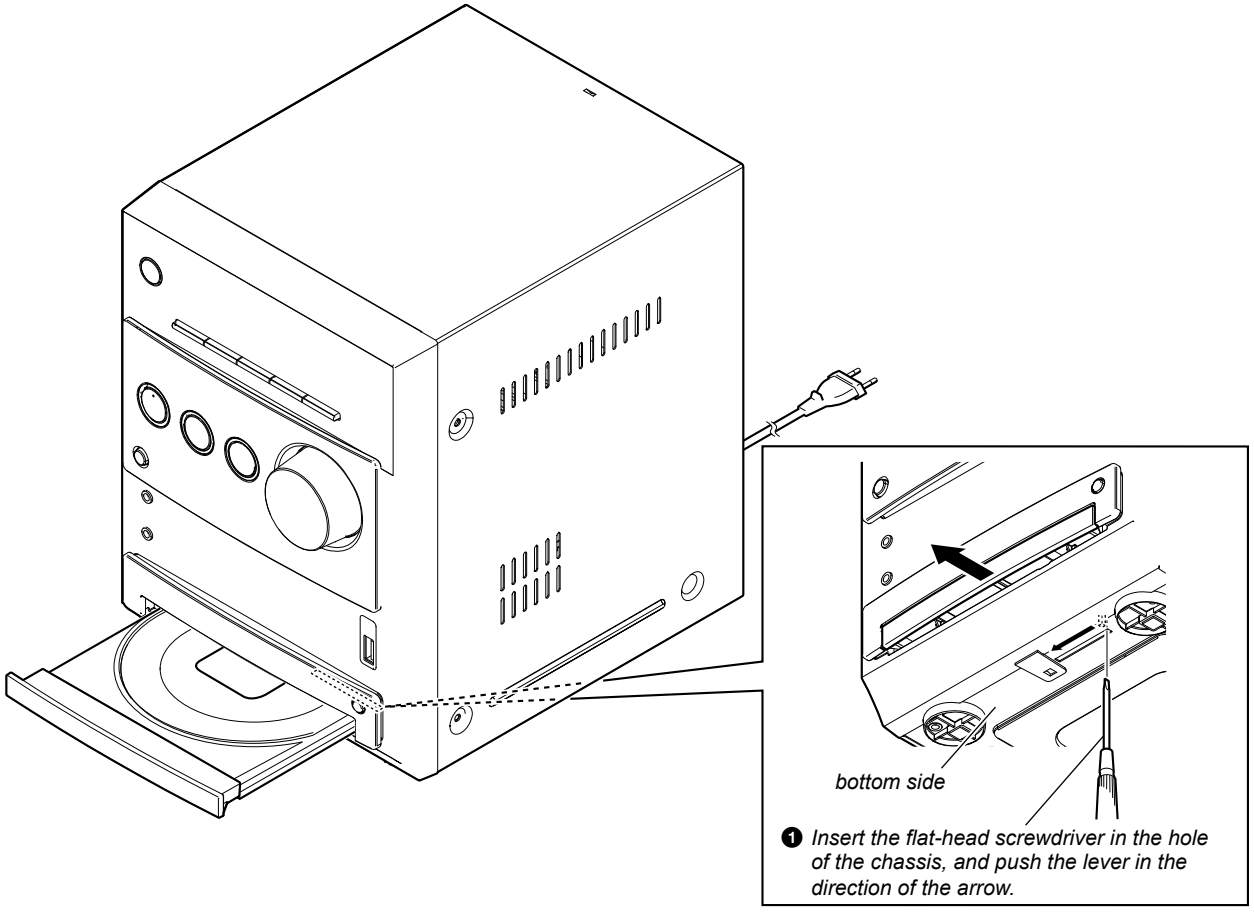
Continued on next page.

TV Type (Default)	PAL	PAL	Multi	PAL	Multi

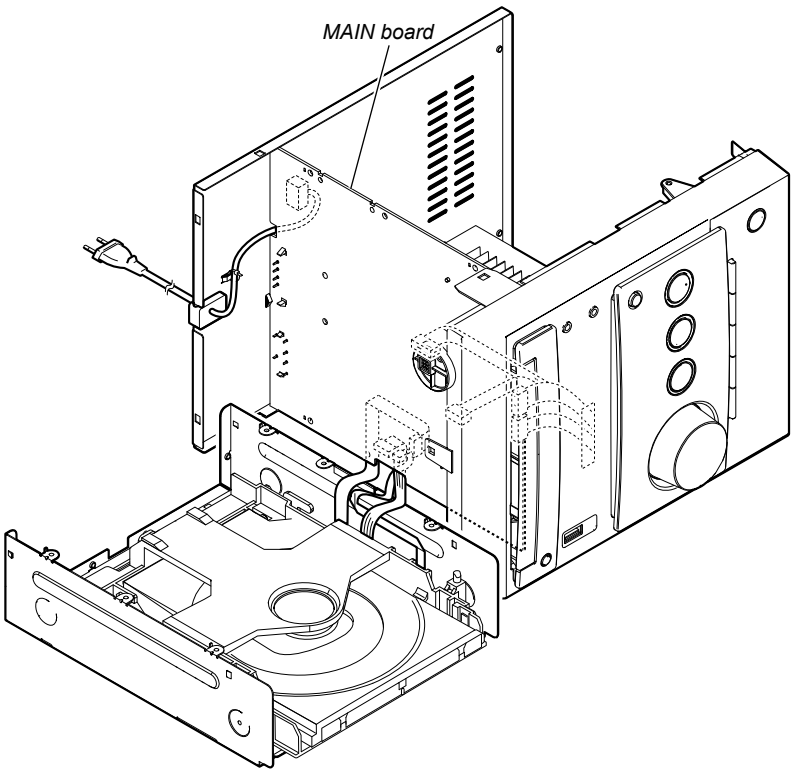
Destination	Korea	Thailand		Mexico	Chile & Peru
Model No.	DEVI KR2	Devi TH1		Devi MX2	Devi E51
View Version	MPEG: 0.01.02 MCU: 0.01.02	MPEG: 0.01.02 MCU: 0.01.02		MPEG: 0.01.02 MCU: 0.01.02	MPEG: 0.01.02 MCU: 0.01.02
Region	3	3		4	4
Function	DVD/CD → FM→ AM → AUDIO IN → USB	DVD/CD → FM→ AM → AUDIO IN → USB		DVD/CD → FM→ AM → AUDIO IN → USB	DVD/CD → FM→ AM → AUDIO IN → USB
OSD Lang List	**Refer to following OSD Languege**	**Refer to following OSD Languege**		**Refer to following OSD Languege**	**Refer to following OSD Languege**
OSD Lang (Default)	English	Thai		English	English
TV Type (Default)	Multi	Multi		Multi	Multi

OSD Language	English	Select OSD language.
	FRANÇAIS	
	Nederlands	
	Deutsch	
	Svenska	
	Italiano	
	ESPAÑOL	
	Suomi	
	Ε Λ Λ Η Ν Ι Κ Α	
	Dansk	
	Norsk	
	PORTUGUÊS	
	Русский	
	THAI	
	中文 1	
	中文 2	

HOW TO OPEN THE TRAY WHEN POWER SWITCH TURN OFF



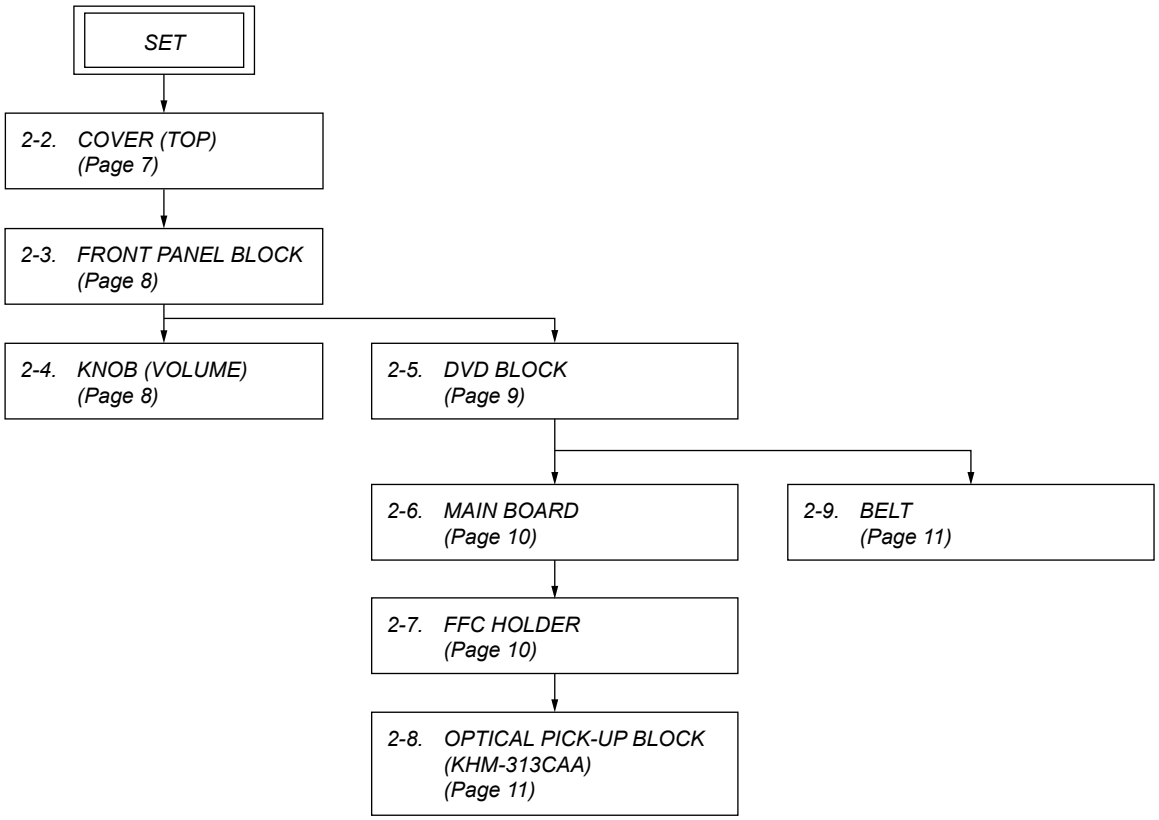
MAIN BOARD SERVICE POSITION



SECTION 2
DISASSEMBLY

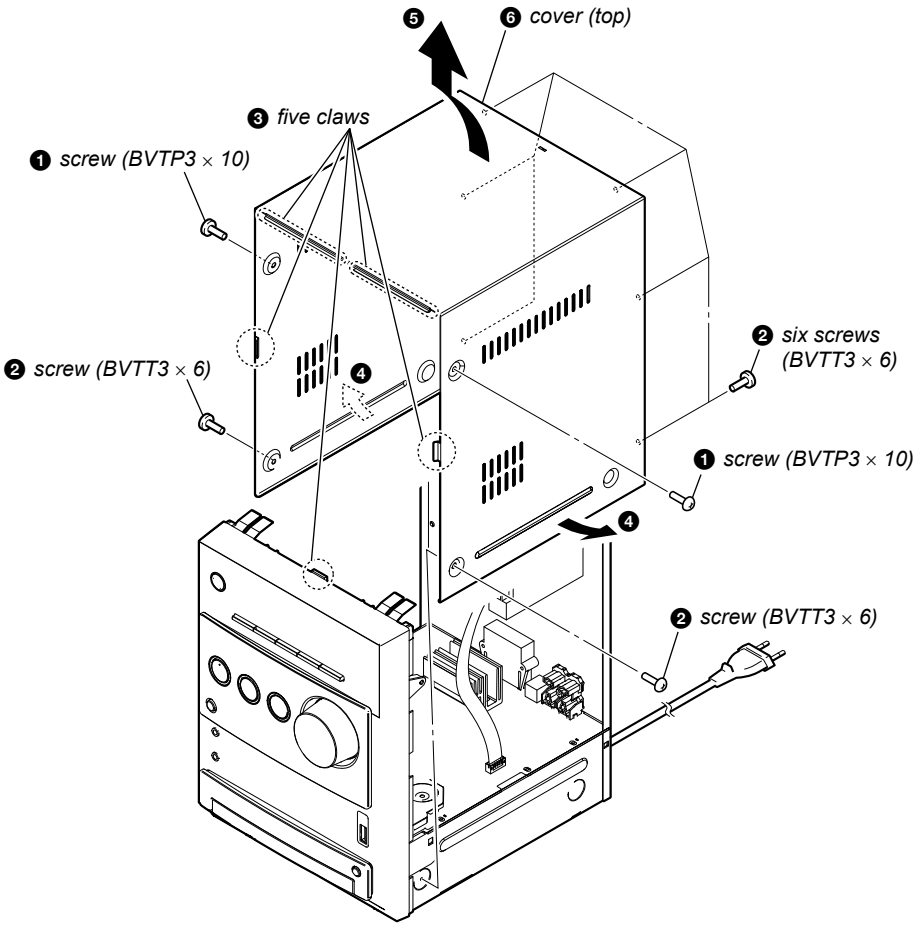
- This set can be disassembled in the order shown below.

2-1. DISASSEMBLY FLOW

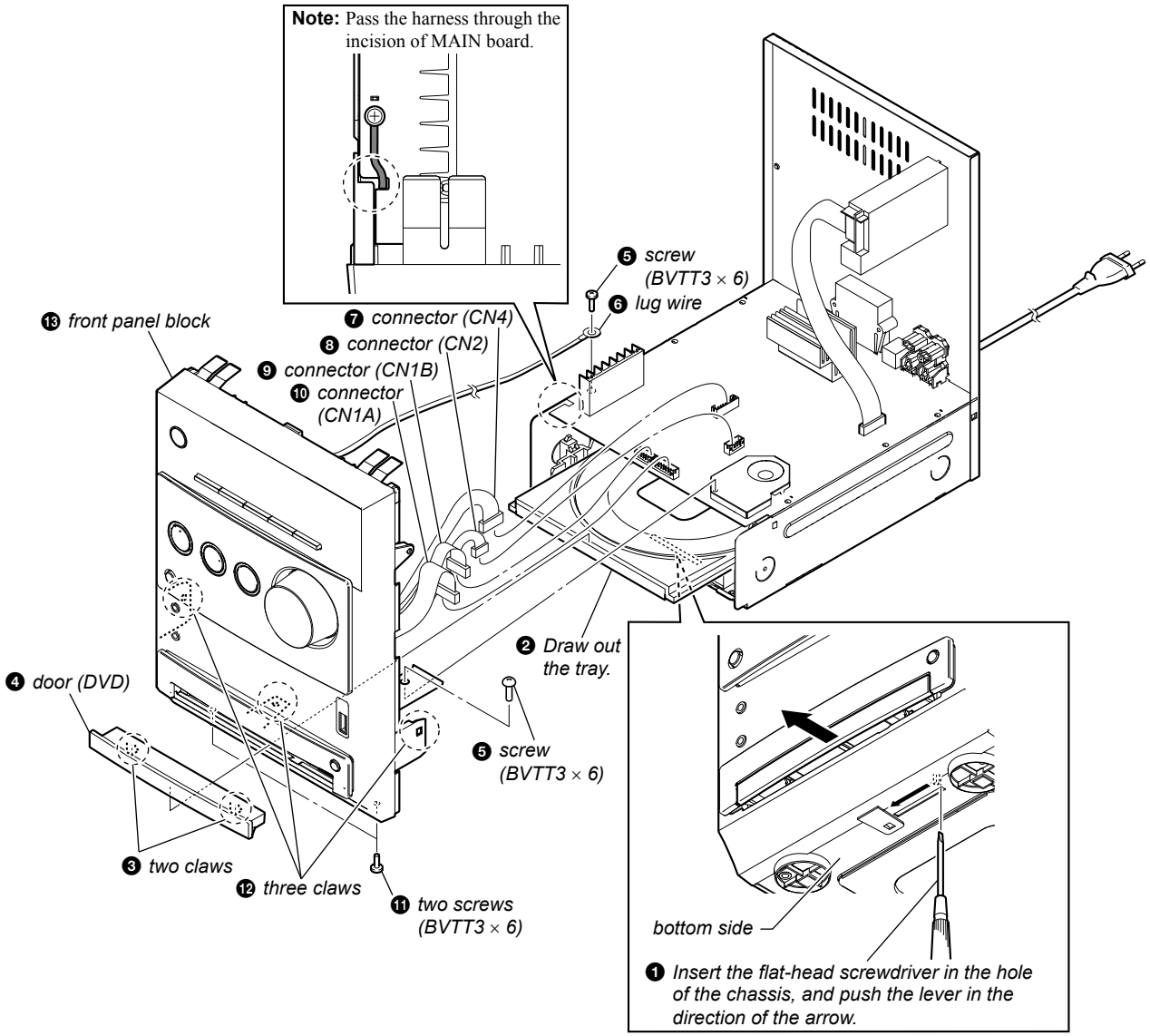


Note: Follow the disassembly procedure in the numerical order given.

2-2. COVER (TOP)

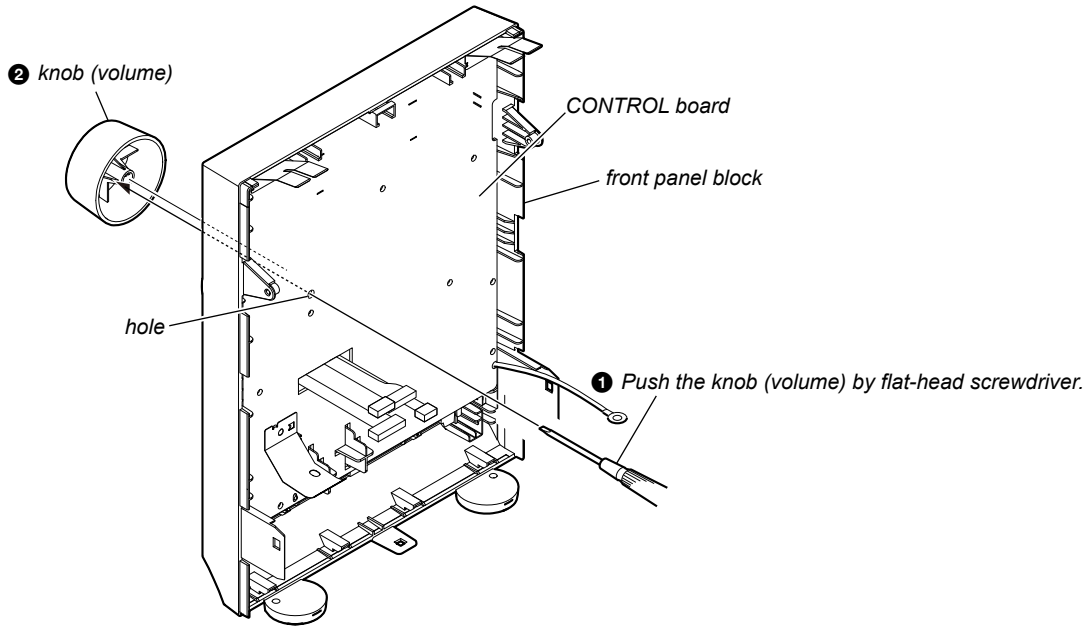


2-3. FRONT PANEL BLOCK

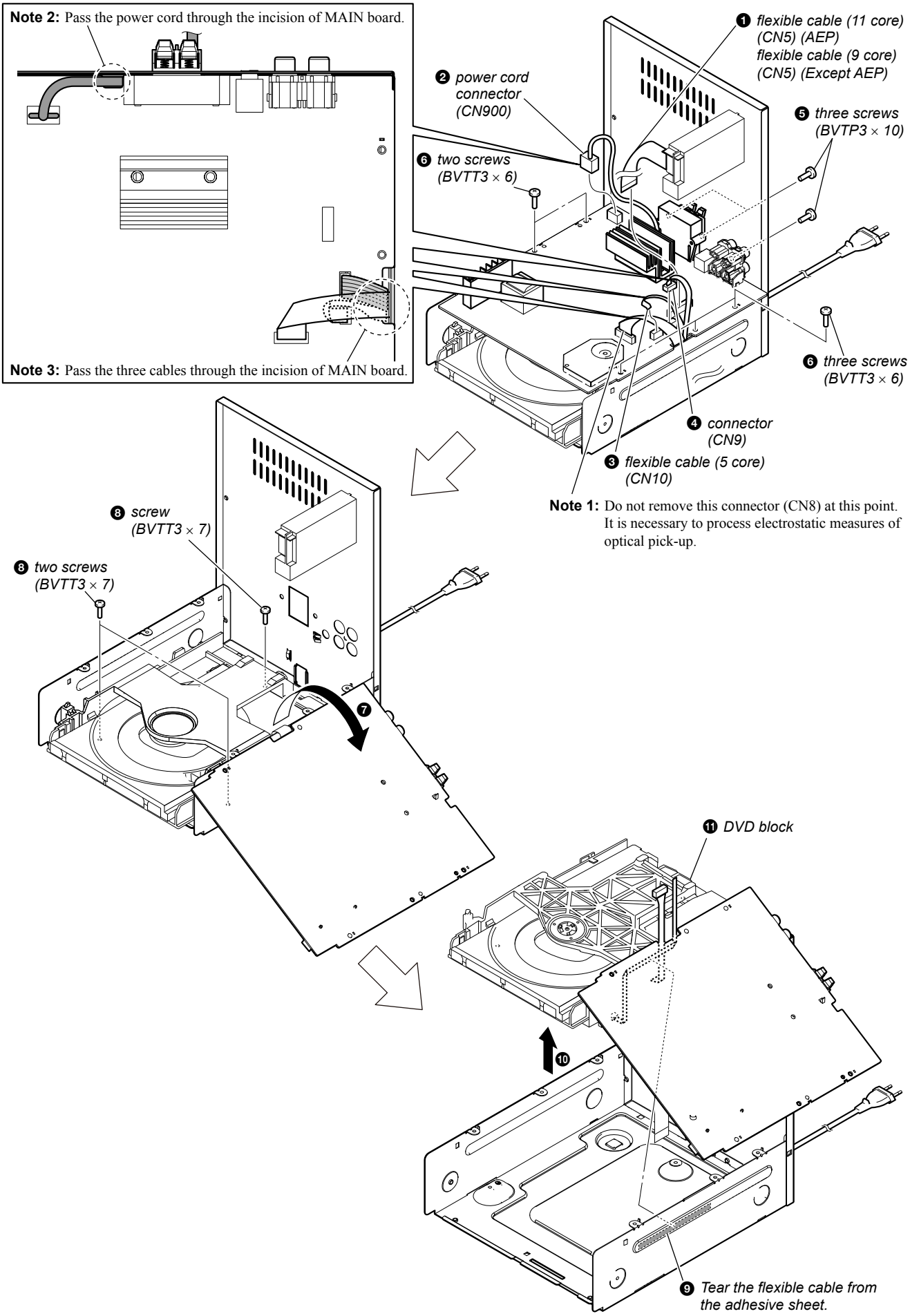


2-4. KNOB (VOLUME)

Note: This illustration sees the front panel block from CONTROL board side.

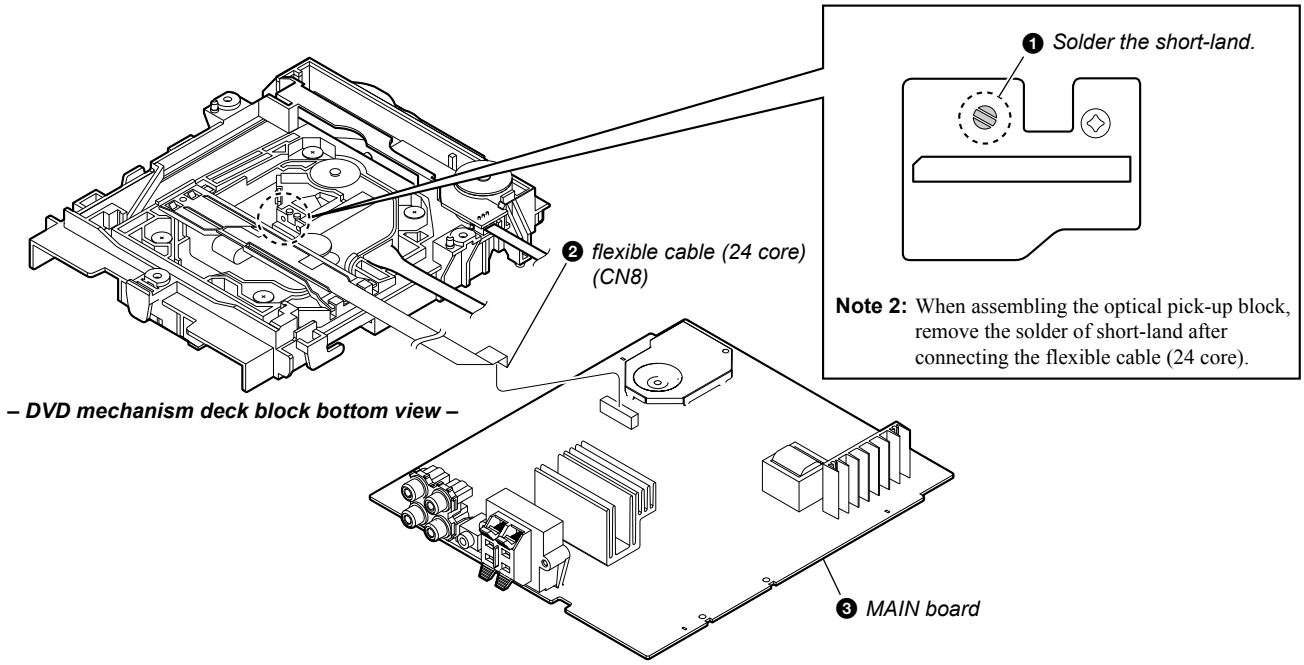


2-5. DVD BLOCK


Note 2: Pass the power cord through the incision of MAIN board.
Note 3: Pass the three cables through the incision of MAIN board.
❶ flexible cable (11 core) (CN5) (AEP) flexible cable (9 core) (CN5) (Except AEP)
❷ power cord connector (CN900)
❺ three screws (BVTP3 × 10)
❻ two screws (BVTT3 × 6)
❻ three screws (BVTT3 × 6)
❹ connector (CN9)
❸ flexible cable (5 core) (CN10)
Note 1: Do not remove this connector (CN8) at this point. It is necessary to process electrostatic measures of optical pick-up.
❽ screw (BVTT3 × 7)
❽ two screws (BVTT3 × 7)
❼
❿
⓫ DVD block
❾ Tear the flexible cable from the adhesive sheet.

2-6. MAIN BOARD

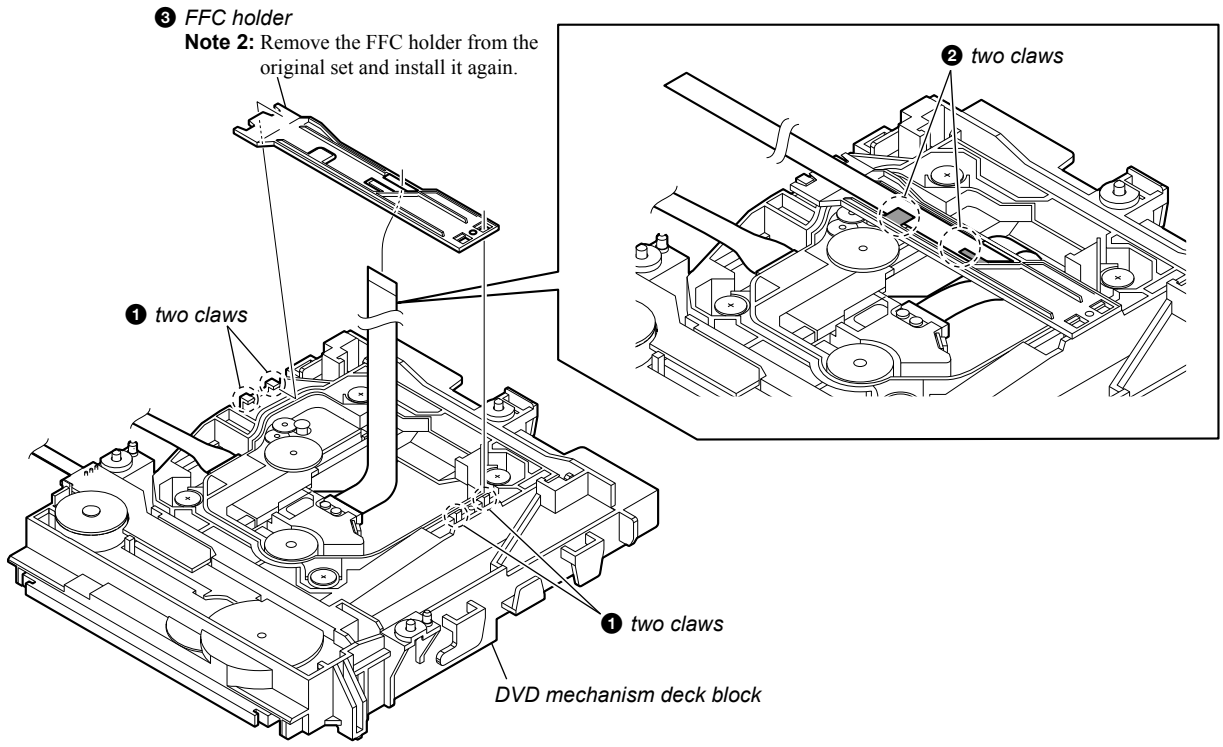
Note 1: When disconnecting the flexible cable (24 core) of optical pick-up block, solder the short-land.



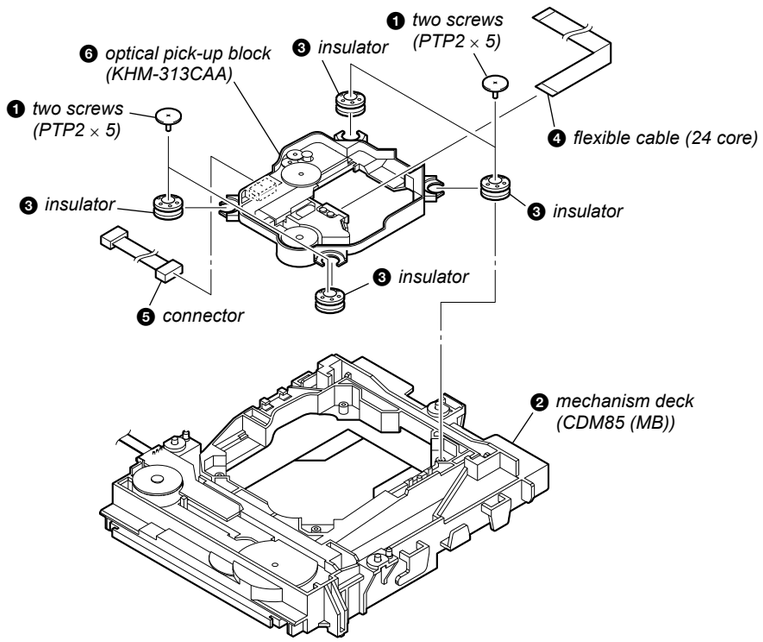
Note 2: When assembling the optical pick-up block, remove the solder of short-land after connecting the flexible cable (24 core).

2-7. FFC HOLDER

Note 1: This illustration sees the DVD mechanism deck block from optical pick-up block side.

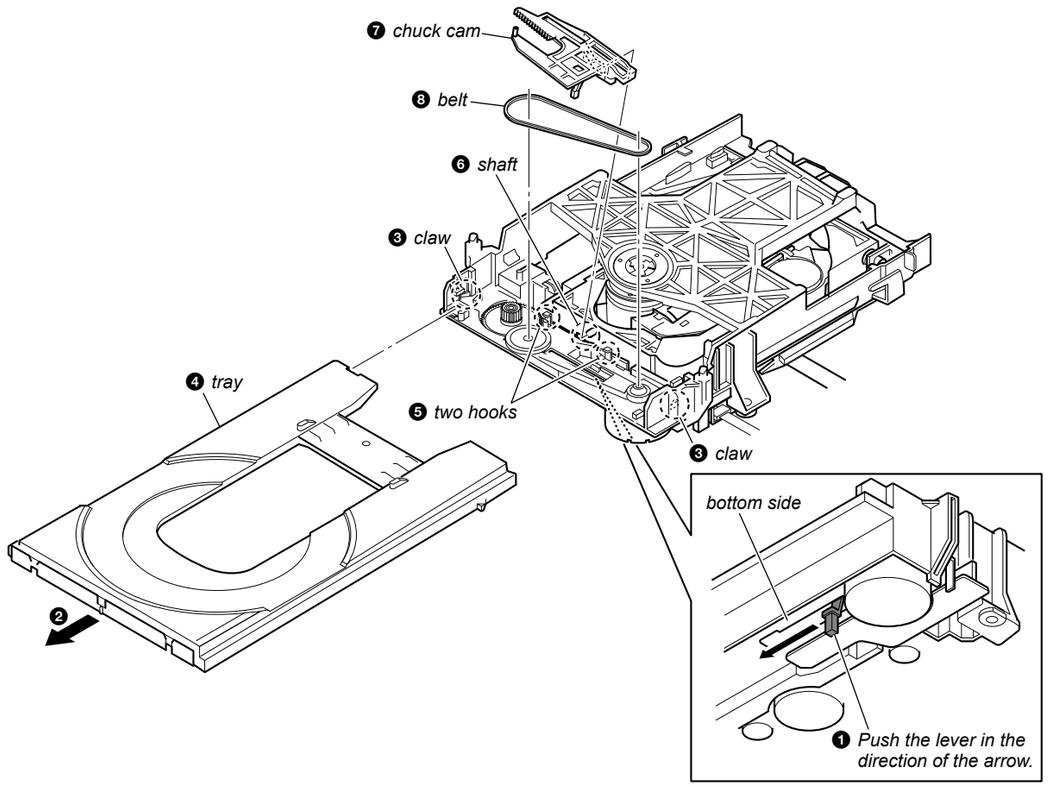


2-8. OPTICAL PICK-UP BLOCK (KHM-313CAA)



– DVD mechanism deck block bottom view –

2-9. BELT



SECTION 3
TEST MODE

Remote commander is necessary for the execution of test mode.
It is necessary to connect the TV monitor with the set for the test mode confirmation.

SOFTWARE VERSION CHECK AND FACTORY RESET

Refer to servicing notes “MODEL CLASSIFICATION” (page 4) for details.

TRAY LOCK MODE

Procedure:

1. Press the [I/⏻] button to turn on the system.
2. Press and hold the [■] and [OPEN/CLOSE ⏏] buttons (around 5 seconds).
3. The message “LOCKED” appears on the fluorescent indicator tube, and disc tray is locked.
4. To release this mode, do the step 2 again.
5. The message “UNLOCKED” is displayed on the fluorescent indicator tube, and the disc tray is unlocked.

DivX CODE VERSION CHECK

Procedure:

1. Press the [I/⏻] button to turn on the system.
2. Press the [OPEN/CLOSE ⏏] button to open the disc tray.
3. The button on the remote commander is press in order of [■] → [SHIFT] press and hold → [3] → [4] → [8] → [9] → [SHIFT] release → [ENTER].
4. The DivX code version is appears under the left of the TV screen.
   Example: “DIVX: 1389 05.10.02.01”
5. The display disappears in a few seconds.

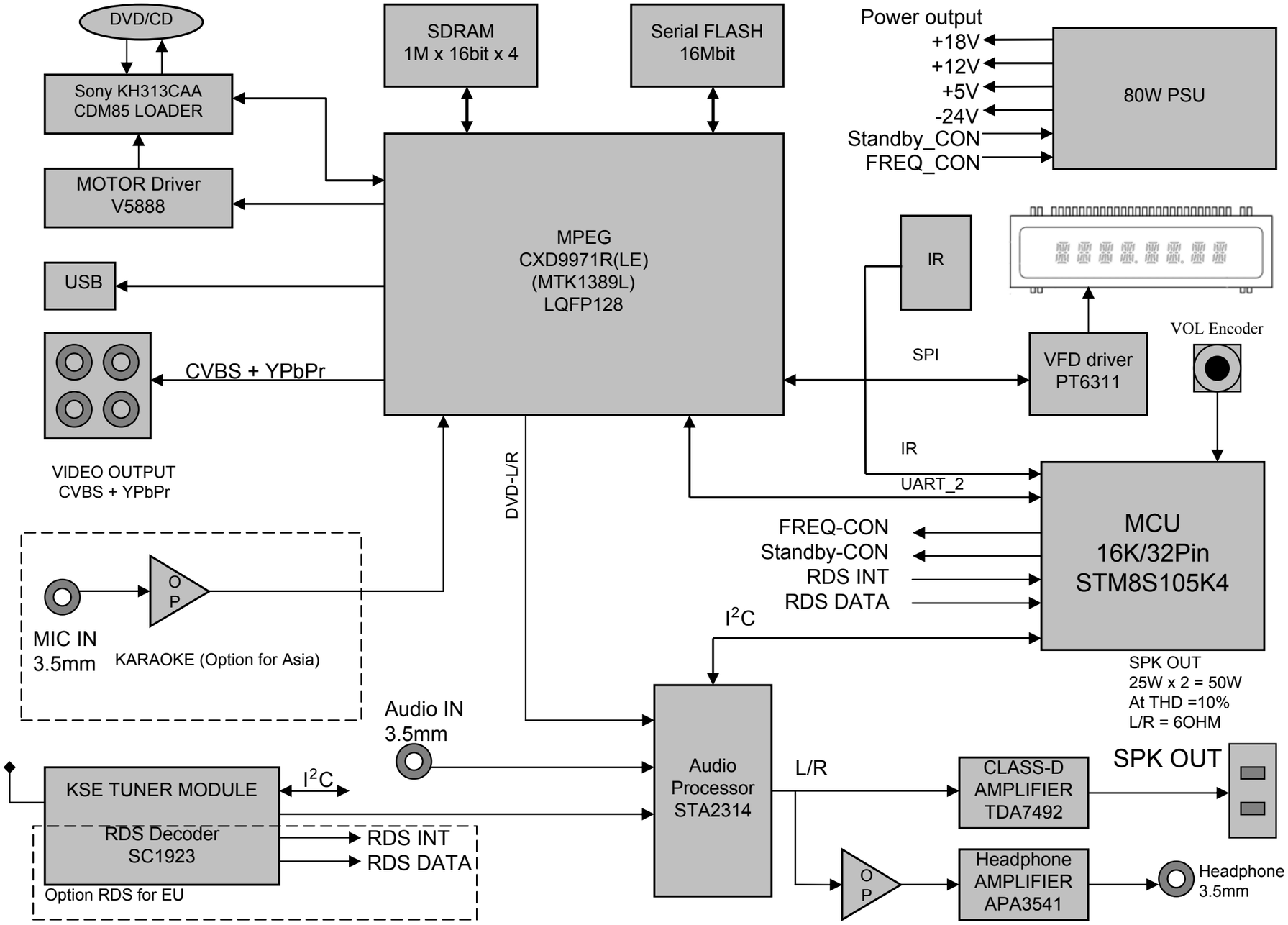
MACROVISION VERSION CHECK

Procedure:

1. Press the [I/⏻] button to turn on the system.
2. Press the [OPEN/CLOSE ⏏] button to open the disc tray.
3. The button on the remote commander is press in order of [■] → [SHIFT] press and hold → [6] → [2] → [2] → [7] → [6] → [SHIFT] release → [ENTER].
4. The Macrovision version is appears under the left of the TV screen.
   Example: “MAC: 1389 05.00.04.07”
5. The display disappears in a few seconds.

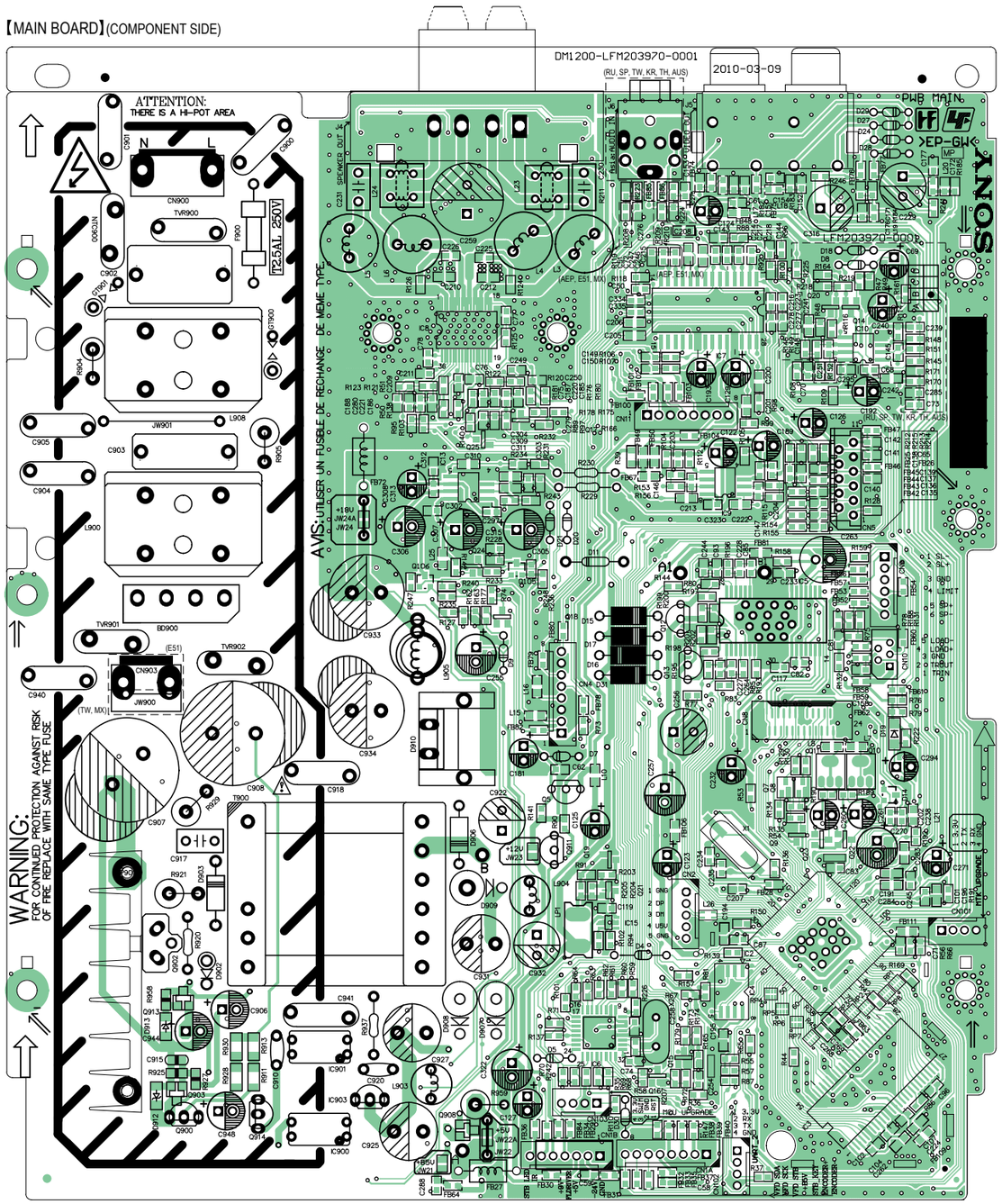
SECTION 4
DIAGRAMS

4-1. BLOCK DIAGRAM

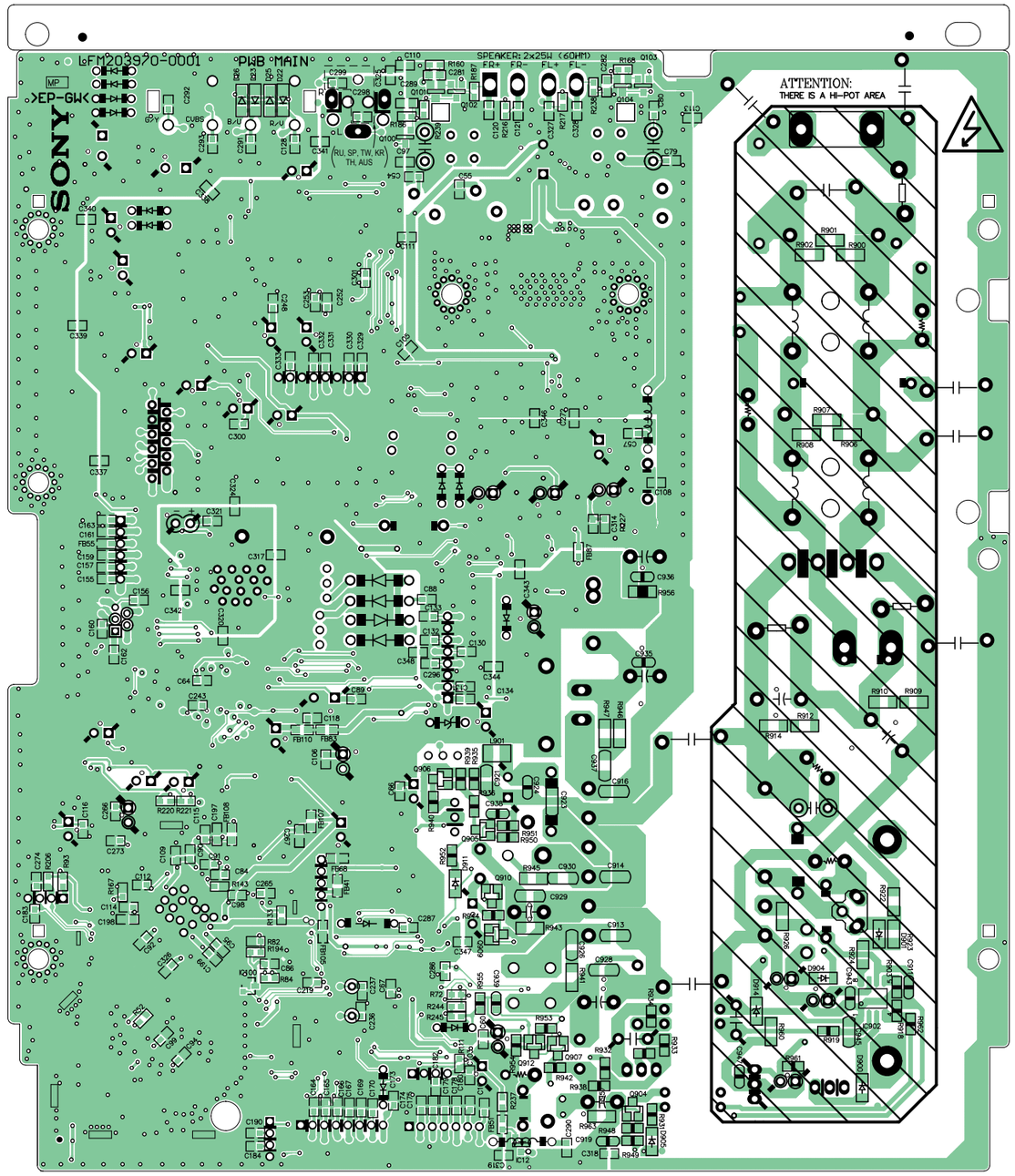


4-2. PRINTED WIRING BOARD - MAIN Board - • : Uses unleaded solder.

【MAIN BOARD】(COMPONENT SIDE)



【MAIN BOARD】(CONDUCTOR SIDE)



Note:

- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

Caution:

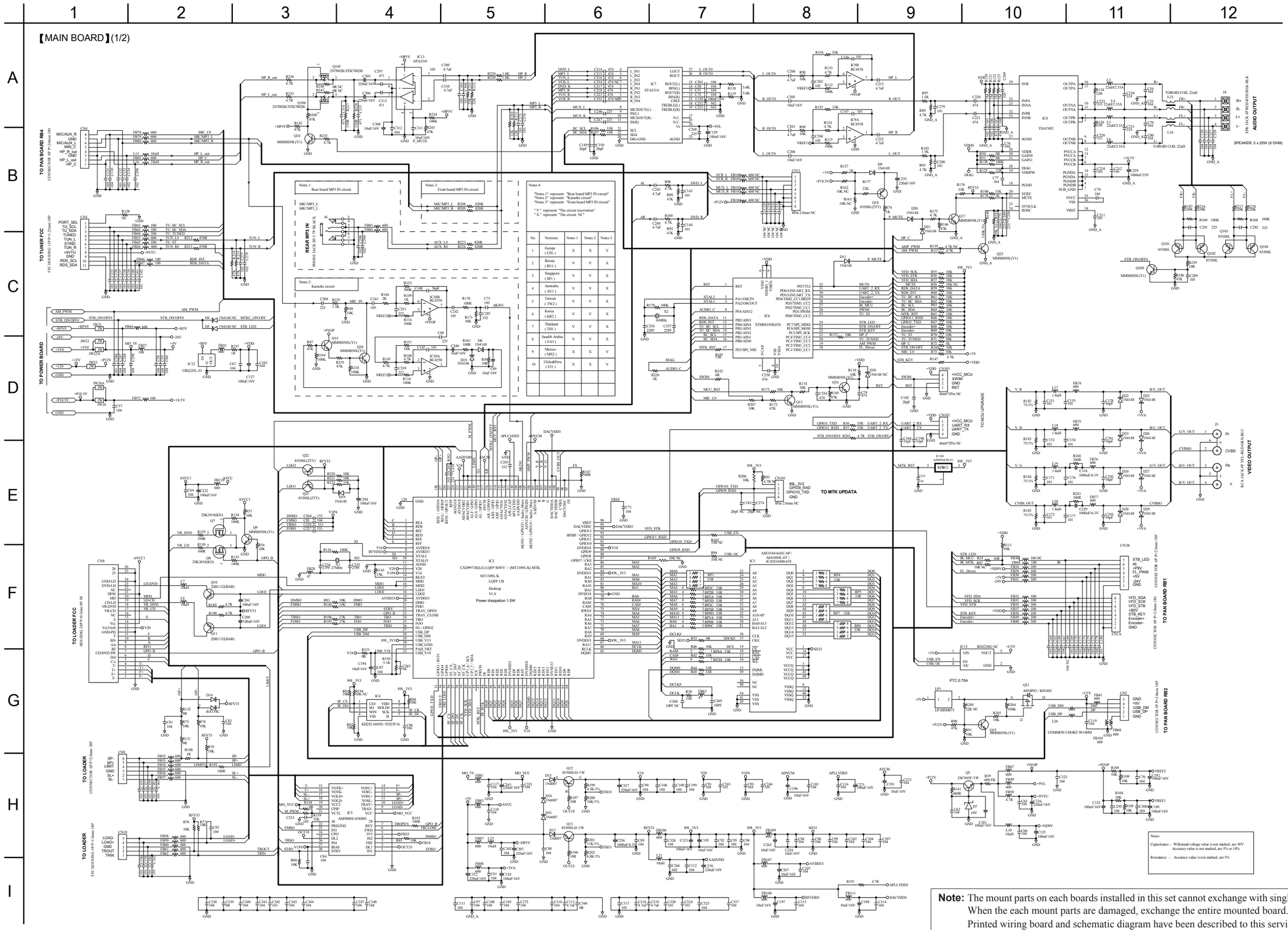
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

- Abbreviation
  - AUS : Australian model
  - E51 : Chilean and Peruvian models
  - KR : Korean model
  - MX : Mexican model
  - RU : Russian model
  - SP : Singapore model
  - TH : Thai model
  - TW : Taiwan model

Note: The mount parts on each boards installed in this set cannot exchange with single. When the each mount parts are damaged, exchange the entire mounted board. Printed wiring board and schematic diagram have been described to this service manual is for the reference.

4-3. SCHEMATIC DIAGRAM - MAIN Board (1/2) - • See page 18 for IC Pin Function Description.

【MAIN BOARD】(1/2)



No.	Versions	Notes 1	Notes 2	Notes 3
1	Europe (CEL)	X	X	V
2	Russia (RU1)	V	V	X
3	Singapore (SP1)	V	V	X
4	Australia (AU1)	V	V	X
5	Taiwan (TW2)	V	V	X
6	Korea (KR2)	V	V	X
7	Thailand (TH1)	V	V	X
8	Saudih Arabia (EA3)	V	V	X
9	Mexico (MX2)	X	X	V
10	Chile&Peru (ES1)	X	X	V

Note: The mount parts on each boards installed in this set cannot exchange with single. When the each mount parts are damaged, exchange the entire mounted board. Printed wiring board and schematic diagram have been described to this service manual is for the reference.

4-4. SCHEMATIC DIAGRAM - MAIN Board (2/2) -

Notes :

1. When the AC input 230V then JW900 CN903 and SW should be take off "

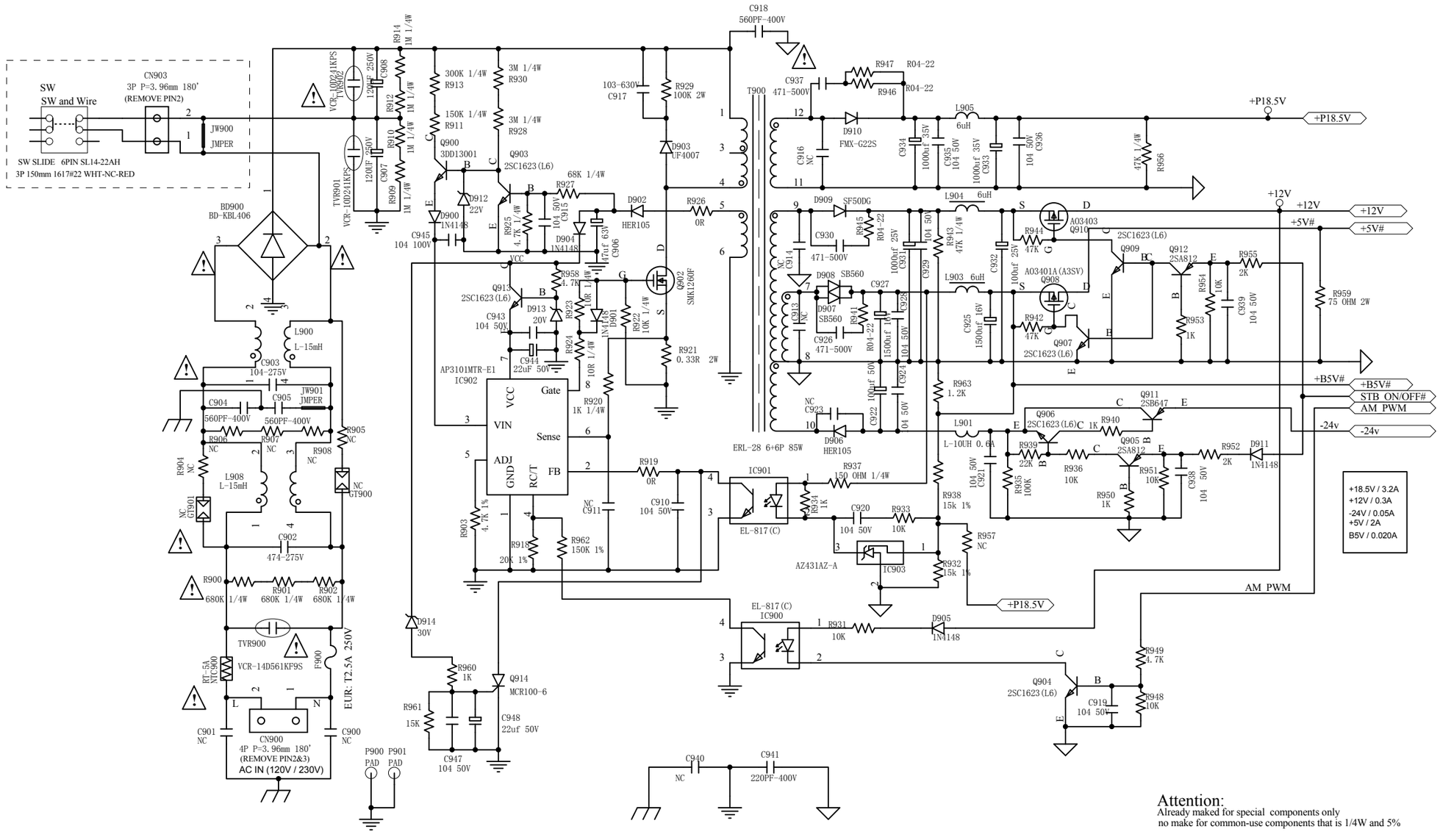
2. When the AC input 110V then JW900 should be put on PCB board that SW take off"

3. When the AC input 110~230V then JW900 should be take off that CN903 and SW put on PCB board"

" V " represent "The circuit reservation"
" X " represent "The circuit NC"

No.	Versions	JW900	CN903	SW
1	Europe (CEL)	X	X	X
2	Russia (RU1)	X	X	X
3	Singapore (SP1)	X	X	X
4	Australia (AU1)	X	X	X
5	Taiwan (TW2)	V	X	X
6	Korea (KR2)	X	X	X
7	Thailand (TH1)	X	X	X
8	Saudib Arabia (EA3)	X	X	X
9	Mexico (MX2)	V	X	X
10	Chile&Peru (E51)	X	V	V

【MAIN BOARD】(2/2)

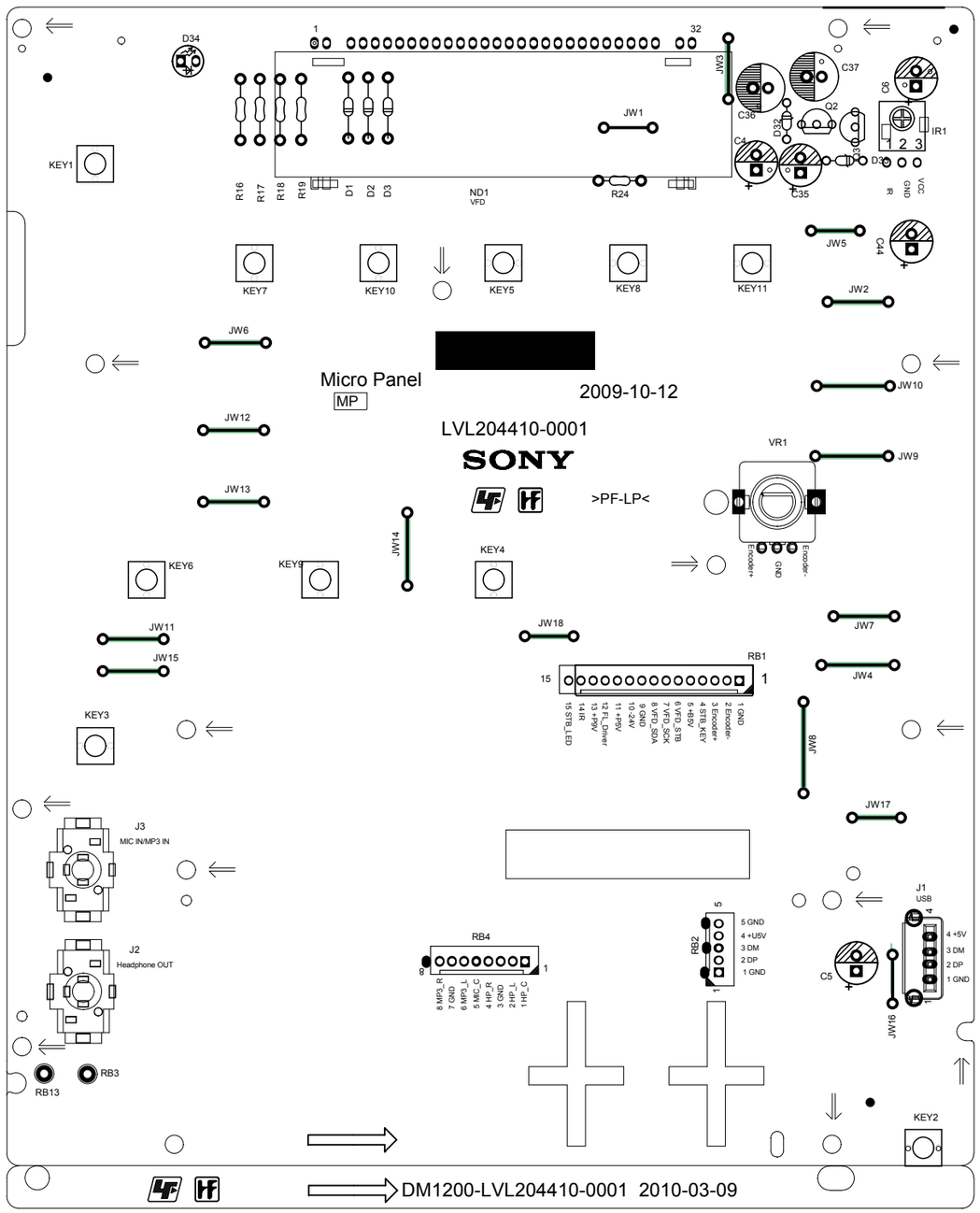


Attention:
Already maked for special components only
no make for common-use components that is 1/4W and 5%

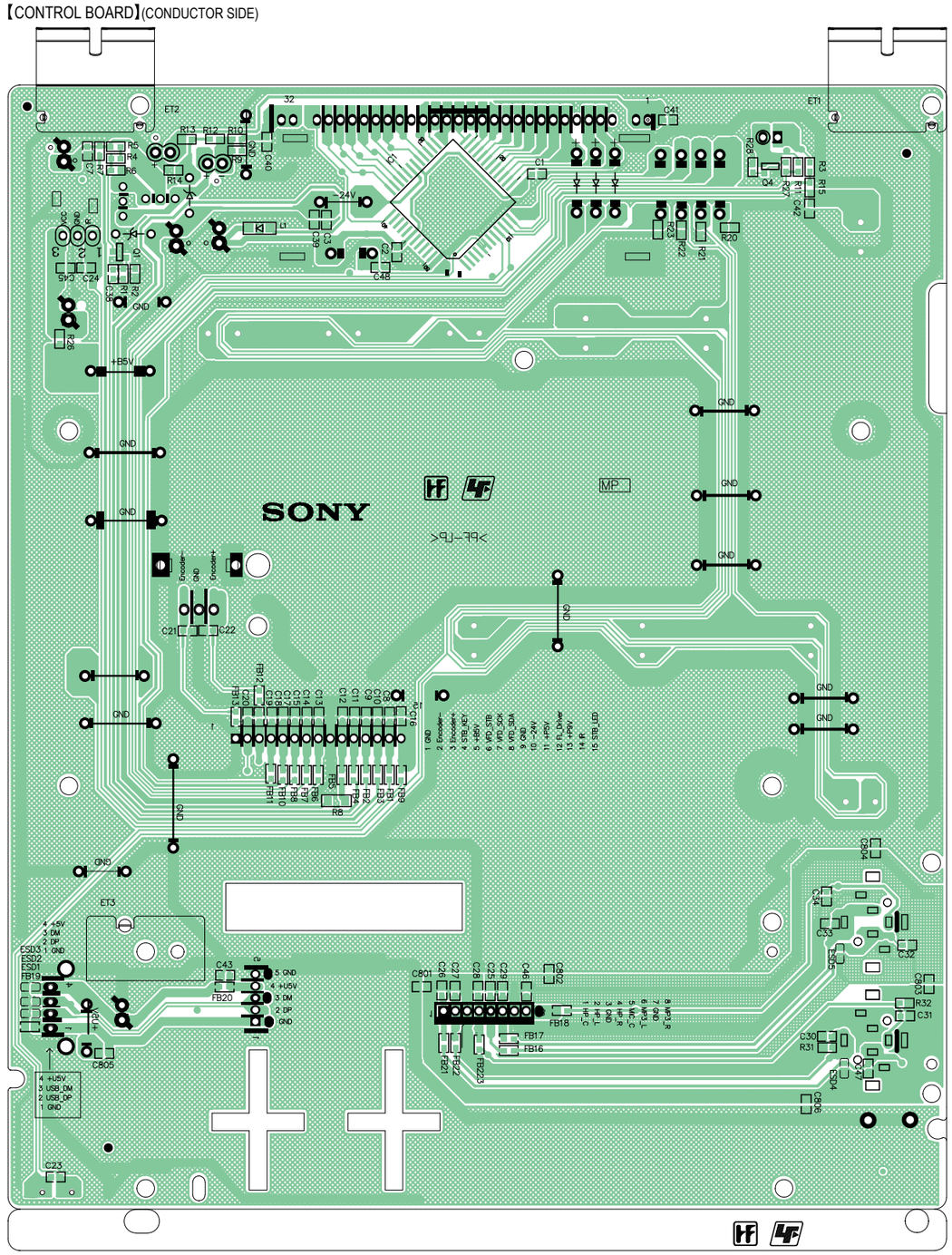
Note: The mount parts on each boards installed in this set cannot exchange with single. When the each mount parts are damaged, exchange the entire mounted board. Printed wiring board and schematic diagram have been described to this service manual is for the reference.

4-5. PRINTED WIRING BOARD - CONTROL Board - • : Uses unleaded solder.

【CONTROL BOARD】(COMPONENT SIDE)



【CONTROL BOARD】(CONDUCTOR SIDE)



Note:
- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

Caution:
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

Note: The mount parts on each boards installed in this set cannot exchange with single. When the each mount parts are damaged, exchange the entire mounted board. Printed wiring board and schematic diagram have been described to this service manual is for the reference.

4-6. SCHEMATIC DIAGRAM - CONTROL Board - • See page 18 for IC Pin Function Description.

【CONTROL BOARD】

TO MAIN BOARD CN1 8&6/14P 2.0mm 100mm 2008#26

TO MAIN BOARD CN2 SHIELD WIRE 5P 2.0mm 130mm 2854#28

TO MAIN BOARD CN4 8P 2.0mm 160mm 2854#28x2&1533#28x2

TO USB

MIC IN / MP3 IN

Notes:

Capacitance : Withstand voltage value is not marked, are 50V
Accuracy value is not marked, are 5% or 10%

Resistance : Accuracy value is not marked, are 5%

Note: The mount parts on each boards installed in this set cannot exchange with single. When the each mount parts are damaged, exchange the entire mounted board. Printed wiring board and schematic diagram have been described to this service manual is for the reference.

- **IC Pin Function Description**

MAIN BOARD IC2 CXD9971R(LE) LQFP (RF AMP, SERVO DSP, MPEG DECODER)

Pin No.	Pin Name	I/O	Description
1	RFA	I	RF main beam input A
2	RFB	I	RF main beam input B
3	RFC	I	RF main beam input C
4	RFD	I	RF main beam input D
5	RFE	I	RF sub beam input F
6	RFF	I	RF sub beam input E
7	AVDD18_2	-	Analog 1.8V power
8	AVDD33_1	-	Analog 3.3V power
9	XTALI	I	27MHz crystal input
10	XTALO	O	27MHz crystal output For Eastech use only
11	AGND33	-	Analog Ground
12	V20	O	Reference voltage 2.0V
13	V14	O	Reference voltage 1.4V
14	REXT	I	Current reference input. It generates reference current for RF path. Connect an external 15K resistor to this pin and AVSS
15	MDI1	I	Laser power monitor input
16	MDI2	I	Laser power monitor input
17	LDO1	O	Laser driver output (for CD)
18	LDO2	O	Laser driver output (for DVD)
19	AVDD33_2	-	Analog 3.3V power
20	DMO	O	Disk motor control output. PWM output For Eastech use only
21	FMO	O	Feed motor control. PWM output
22	TRAY_OPEN	O	Tray PWM output/Tray open output
23	TRAY_CLOSE	O	Tray PWM output/Tray close output
24	TRO	O	Tracking servo output. PDM output of tracking servo compensator
25	FOO	O	Focus servo output. PDM output of focus servo compensator
26	FG	I	1) Motor Hall sensor input
27	USB_DP	I	USB port DPLUS analog pin
28	USB_DM	I	USB port DMINUS analog pin
29	VDD33_USB	-	USB Power pin 3.3V
30	VSS33_USB	-	USB ground pin
31	PAD_VRT	I	USB generating reference current
32	VDD18_USB	-	USB Power pin 1.8V
33	GPIO3	I/O	Serial for MCU communication
34	GPIO4	I	General purpose IO 4
35	GPIO6	I	General purpose IO 6
36	SF_CS_	O	Serial Flash Chip Select
37	SF_DO	O	Serial Flash Dout
38	SF_DI	I	Serial Flash Din
39	SF_CK	O	Serial Flash Clock
40	UP1_6	O	SPI CLK for PT6311
41	UP1_7	I/O	SPI DA for PT6311
42	ICE	I	Microcontroller ICE mode enable Not used
43	PRST#	I	Power on reset input, active low
44	IR	I	IR control signal input
45 to 49	RD0 to RD4	I/O	DRAM data 0 to DRAM data 4
50	DVDD33	-	3.3V power pin for internal digital circuitry
51 to 53	RD5 to RD7	I/O	DRAM data 5 to DRAM data 7
54	DVDD18	-	1.8V power pin for internal digital circuitry
55	DQM0	O	Data mask 0
56 to 59	RD15 to RD12	I/O	DRAM data 15 to DRAM data 12
60	DVSS	-	3.3V Ground pin for internal digital circuitry
61 to 64	RD11 to RD8	I/O	DRAM data 11 to DRAM data 8
65	DQM1	O	Data mask 1
66	RCLK	O	Dram clock
67	RA11	O	DRAM address bit 11
68	DVDD33	-	3.3V power pin for internal digital circuitry
69 to 74	RA9 to RA4	O	DRAM address 9 to DRAM address 4
75	RWE#	O	DRAM Write enable, active low
76	CAS#	O	DRAM column address strobe, active low
77	RAS#	O	DRAM row address strobe, active low
78	BA0	O	DRAM bank address 0
79	DVSS18	-	1.8V Ground pin for internal digital circuitry
80	BA1	O	DRAM bank address 1
81	RA10	O	DRAM address 10
82, 83	RA0, RA1	O	DRAM address 0, DRAM address 1
84	DVDD33	-	3.3V power pin for internal digital circuitry
85, 86	RA2, RA3	O	DRAM address 2, DRAM address 3
87	GPIO7	I/O	No used
88	GPIO8	I/O	No used
89	GPIO9	I	Code downloading and debugging
90	DVDD18	-	1.8V power pin for internal digital circuitry
91	GPIO10	O	Code downloading and debugging
92	GPIO11	I/O	Serial for MCU communication
93	SPDIF	O	No used
94	GPIO13	O	SPI CS for PT6311
95	DACVDDC	-	3.3V power pin for video DAC circuitry
96	VREF	-	Bandgap reference voltage
97	FS	-	Full scale adjustment (suggest to use 560 ohm) For Eastech use only
98	DACVSSC	-	Ground pin for video DAC circuitry
99	CVBS	O	CVBS video output
100	DACVDDB	-	3.3V power pin for video DAC circuitry
101	DACVDDA	-	3.3V power pin for video DAC circuitry
102	Y/G	O	Y video output
103	B/CB/PB	O	PB video output
104	R/CR/PR	O	PR video output
105	AADVSS	-	Ground pin for 2ch audio ADC circuitry
106	EAKIN2	O	No used
107	ADVCM	-	2ch audio ADC reference voltage C
108	AKIN1	I	Audio ADC input 1
109	AADVDD	-	3.3V power pin for 2ch audio ADC circuitry
110	APLLVDD3	-	3.3V Power pin for audio clock circuitry
111	APLLCAP	-	APLL external capacitance connection
112	ADACVSS2	-	Ground pin for audio DAC circuitry
113	ADACVSS1	-	Ground pin for audio DAC circuitry
114	ARF / LFE	O	MT1389L reset MCU at upgread MCU software
115	ARS	O	No used
116	AR	O	Audio DAC right channel output
117	AVCM	-	Audio DAC reference voltage
118	AL	O	Audio DAC left channel output
119	ALS	I	LOADER LIMIT detection
120	ALF /CENTER	O	No used
121	ADACVDD1	-	3.3V power pin for audio DAC circuitry
122	ADACVDD2	-	3.3V power pin for audio DAC circuitry
123	AVDD18_1	-	Analog 1.8V power
124	AGND18	-	Analog Ground
125	RFIP	I	AC coupled DVD RF signal input RFIP
126	RFIN	I	AC coupled DVD RF signal input RFIN
127	RFG	I	Main beam, RF AC input path
128	RFH	I	Main beam, RF AC input path

MAIN BOARD IC6 STM8S105K4T6 (Flash, EEPROM, ADC, Timers, UART, SPI, I²C)

Pin No.	Pin Name	I/O	Description
1	RST	I	MCU Reset
2	PA1/OSCIN	I	Crystal in
3	PA2/OSCOUT	O	Crystal out
4	VSS	-	Digital ground
5	VCAP	-	1.8 V regulator capacitor
6	VDD	-	Digital power supply
7	VDDIO_1	-	I/O power supply
8	PF4/AIN12	I	Audio in signal detection
9	VDDA	-	Analog power supply
10	VSSA	-	I/O ground
11	PB5/AIN5	I	Series data of RDS function for tuner
12	PB4/AIN4	I	Series clock of RDS function for tuner
13	PB3/AIN3	O	Series clock for tuner
14	PB2/AIN2	I/O	Series data for tuner
15	PB1/AIN1	O	Series clock for audio control
16	PB0/AIN0	I/O	Series data for audio control
17	PE5/SPI_NSS	O	Reset MT1389L
18	PC1/TIM1_CC1	O	PWM signal for filament voltage
19	PC2/TIM1_CC2	O	PWM signal for power supply frequency control
20	PC3/TIM1_CC3	I	Detect input for tuner
21	PC4/TIM1_CC4	I	Detect input for headphone
22	PC5/SPI_SCK	I	Key input for standby
23	PC6/SPI_MOSI	O	LED control for standby
24	PC7/SPI_MISO	I	Standby control
25	PD0/TIM3_CC2	I	Stereo indication of tuner
26	PD1/SWIM	I	MCU update
27	PD2/TIM3_CC1	I	IR receive input
28	PD3/TIM3_CC2	I	Volume control Encoder-
29	PD4/TIM2_CC1/ BEEP	I	Volume control Encoder+
30	PD5/UART3_TX	I/O	UART_2_TX for MT1389L and MCU
31	PD6/UART3_RX	I/O	UART_2_RX for MT1389L and MCU
32	PD7/TLI	O	Audio output mute

MAIN BOARD IC8 TDA7492 (50W + 50W dual BTL Class-D audio amplifier)

Pin No.	Pin Name	I/O	Description
1	SUB_GND	-	Connect to the frame
2, 3	OUTPUTB	-	Positive PWM for right channel
4, 5	PGNDB	-	Power stage round for right channel
6, 7	PVCCB	-	Power supply for right channel
8, 9	OUTNB	O	Negative PWM output for right channel
10, 11	OUTNA	O	Negative PWM output for right channel
12, 13	PVCCA	-	Power supply for left channel
14, 15	PGNDA	-	Power stage round for left channel
16, 17	OUTPA	O	Positive PWM output for left channel
18	PGND	-	Power stage Ground
19	VDDPW	O	3.3 V (nominal) regulator output referred to ground for power stage
20	STBY	I	Standby mode control
21	MUTE	I	Mute mode control
22	INPA	I	Positive differential input of left channel
23	INNA	I	Negative differential input of left channel
24	ROSC	O	Master oscillator frequency-setting pin
25	SYNCLCK	I/O	Clock in/out for external oscillator No used
26	VDDS	-	3.3 V (nominal) regulator output referred to gnd for signal blocks
27	SGND	-	Signal Ground
28	DIAG	O	Open-drain diagnostic output
29	SVR	-	Supply voltage rejection
30	GAIN0	I	Gain setting input 1
31	GAIN1	I	Gain setting input 2
32	INPB	I	Positive differential input of right channel
33	INNB	I	Negative differential input of right channel
34	VREF	-	Half VDDS (nominal) referred to ground
35	SVCC	-	Signal power supply
36	VSS	-	3.3 V (nominal) regulator output referred to power supply

MAIN BOARD IC7 STA2314 (Volume control, Treble and Bass, Gain, 4 Stereo input 1 Stereo output)

Pin No.	Pin Name	I/O	Description
1	R_IN3	I	Audio 3 right channel input
2	R_IN2	I	Audio 2 right channel input
3	R_IN1	I	Audio 1 right channel input
4	L_IN1	I	Audio 1 left channel input
5	L_IN2	I	Audio 2 left channel input
6	L_IN3	I	Audio 3 left channel input
7	L_IN4	I	Audio 4 left channel input
8	MUXOUT(L)	O	Multiplexer left channel output
9	IN(L)	I	Left channel input
10	MUXOUT(R)	O	Multiplexer right channel output
11	IN(R)	I	Right channel input
12, 13	BIN(R), BOUT(R)	-	Right channel bass peripheral regulation
14, 15	BIN(L), BOUT(L)	-	Left channel bass peripheral regulation
16	N.C.	-	Not used
17	N.C.	-	Not used
18	TREBLE(L)	-	Left channel treble peripheral regulation
19	TREBLE(R)	-	Right channel treble peripheral regulation
20	DIG-GND	-	Digital ground
21	SCL	I	I2C clock
22	SDA	I	I2C data
23	CREF	-	Reference voltage
24	Vs	-	Power supply
25	AGND	-	Analog Ground
26	ROUT	O	Right channel output
27	LOUT	O	Left channel output
28	R_IN4	I	Audio 4 right channel input

PANEL BOARD IC1 PT6311 (VFD Driver, Key Scanning)

Pin No.	Pin Name	I/O	Description
1 to 4	SW1 to SW4	I	General purpose input pins, Not used
5	DOUT	O	Data output Pin
6	DIN	I	Data input Pin
7	NC	-	Not used
8	CLK	I	Clock input Pin
9	STB	I	Serial interface strobe Pin
10 to 13	K1 to K4	I	Key data input Pins
14	VDD	-	Logic power supply
15 to 17	SG1/KS1 to SG11/KS3	O	High-Voltage Segment output Pins, Also acts as the Key source
18 to 29	SG4/KS4 to SG11/KS11	O	High-Voltage Segment output Pins
30	SG16	O	High-Voltage Segment output Pins, Not used
31, 32	SG17/GR12, SG18/GR11	O	Grid output Pins
33	VDD	-	Power supply
34	VEE	-	Pull-Down Level
35, 36	SG19/GR10, SG20/GR9	O	Grid output Pins
37 to 40	GR8 to GR5	O	Grid output Pins
41 to 44	GR4 to GR1	O	Grid output Pins, Not used
45	VDD	-	Logic power supply
46 to 50	LED5 to LED1	O	LED output Pin, Not used
51	GND	-	Ground
52	OSC1	I	Oscillator input Pin

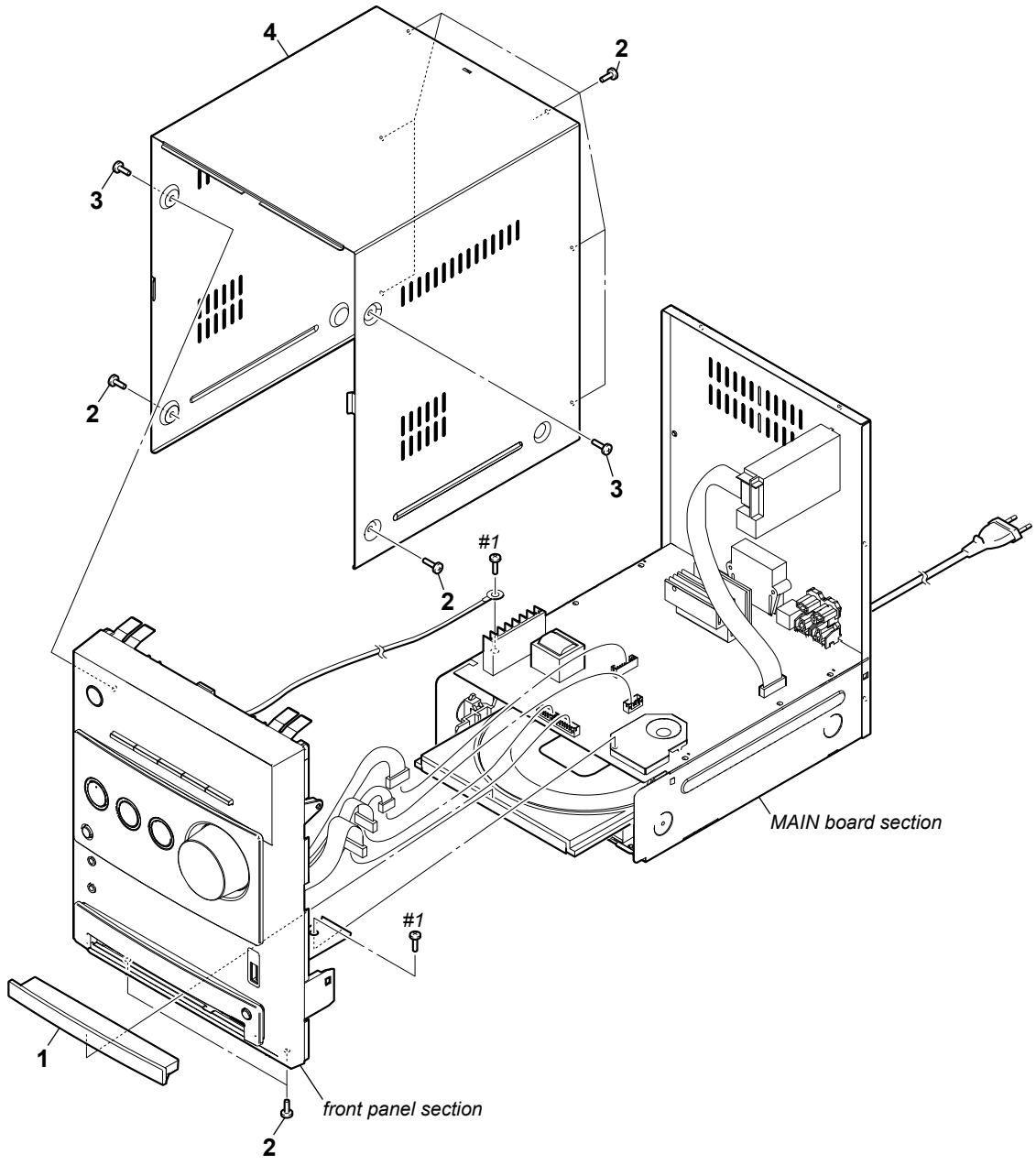
SECTION 5
EXPLODED VIEWS

Note:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Abbreviation
  AUS : Australian model
  E51 : Chilean and Peruvian models
  KR : Korean model
  MX : Mexican model
  RU : Russian model
  SP : Singapore model
  TH : Thai model
  TW : Taiwan model

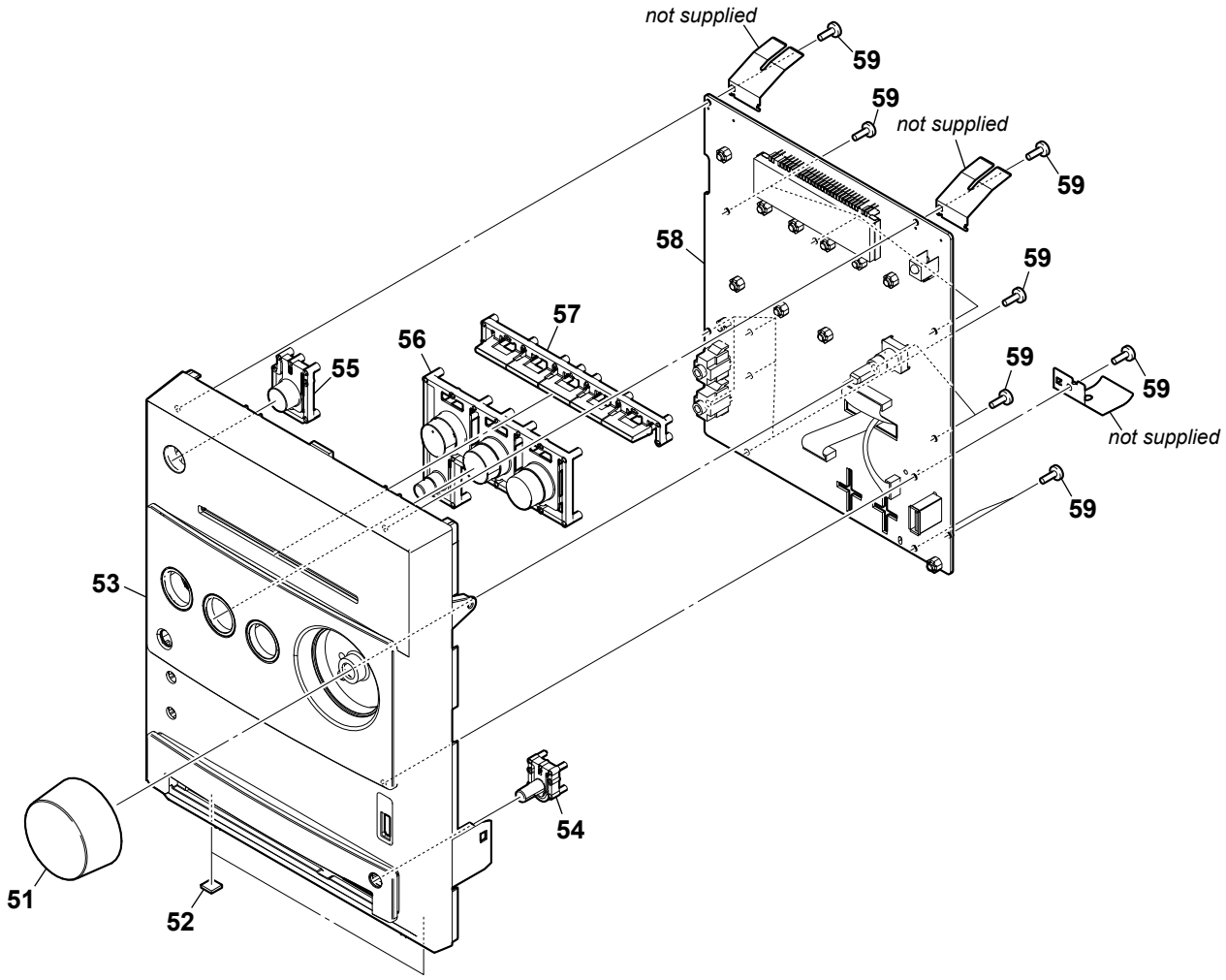
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. COVER SECTION



Ref. No.	Part No.	Description	Remark
1	4-176-949-01	DOOR (DVD)	
2	9-885-144-64	+BVTT 3X6 BZN3	
3	9-885-144-61	+BVTP 3X10 BZN3	
4	4-177-941-01	COVER (TOP)	
#1	7-685-871-01	SCREW +BVTT 3X6 (S)	

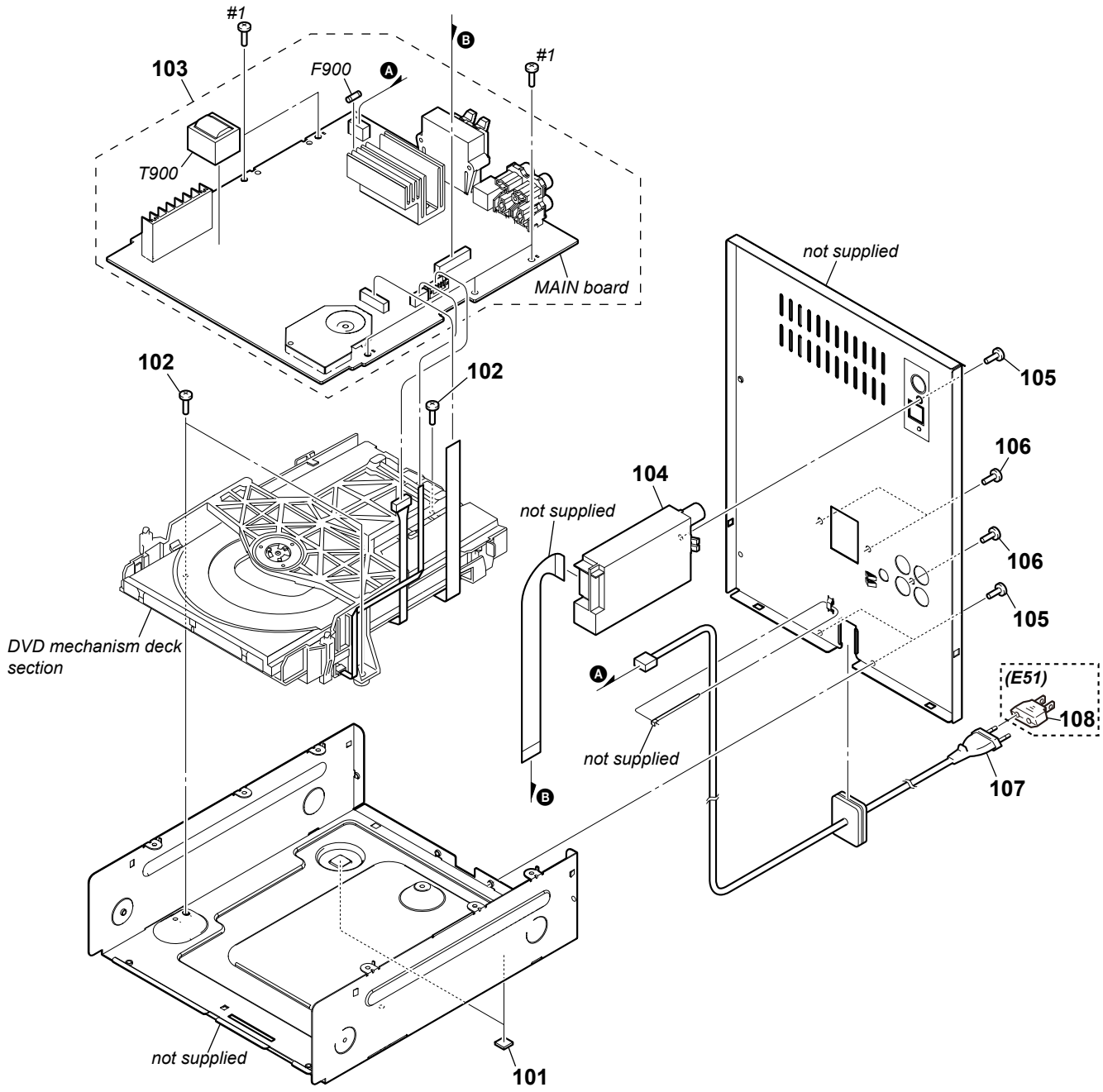
5-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	4-176-950-01	KNOB (VOLUME)	
52	9-885-144-39	FOOT	
53	A-1779-131-A	CABINET FRONT ASSY SV (AEP)	
53	A-1779-132-A	CABINET FRONT ASSY SV (SP, TW, KR, TH, AUS)	
53	A-1779-133-A	CABINET FRONT ASSY SV (E51, MX)	
53	A-1779-134-A	CABINET FRONT ASSY SV (RU)	

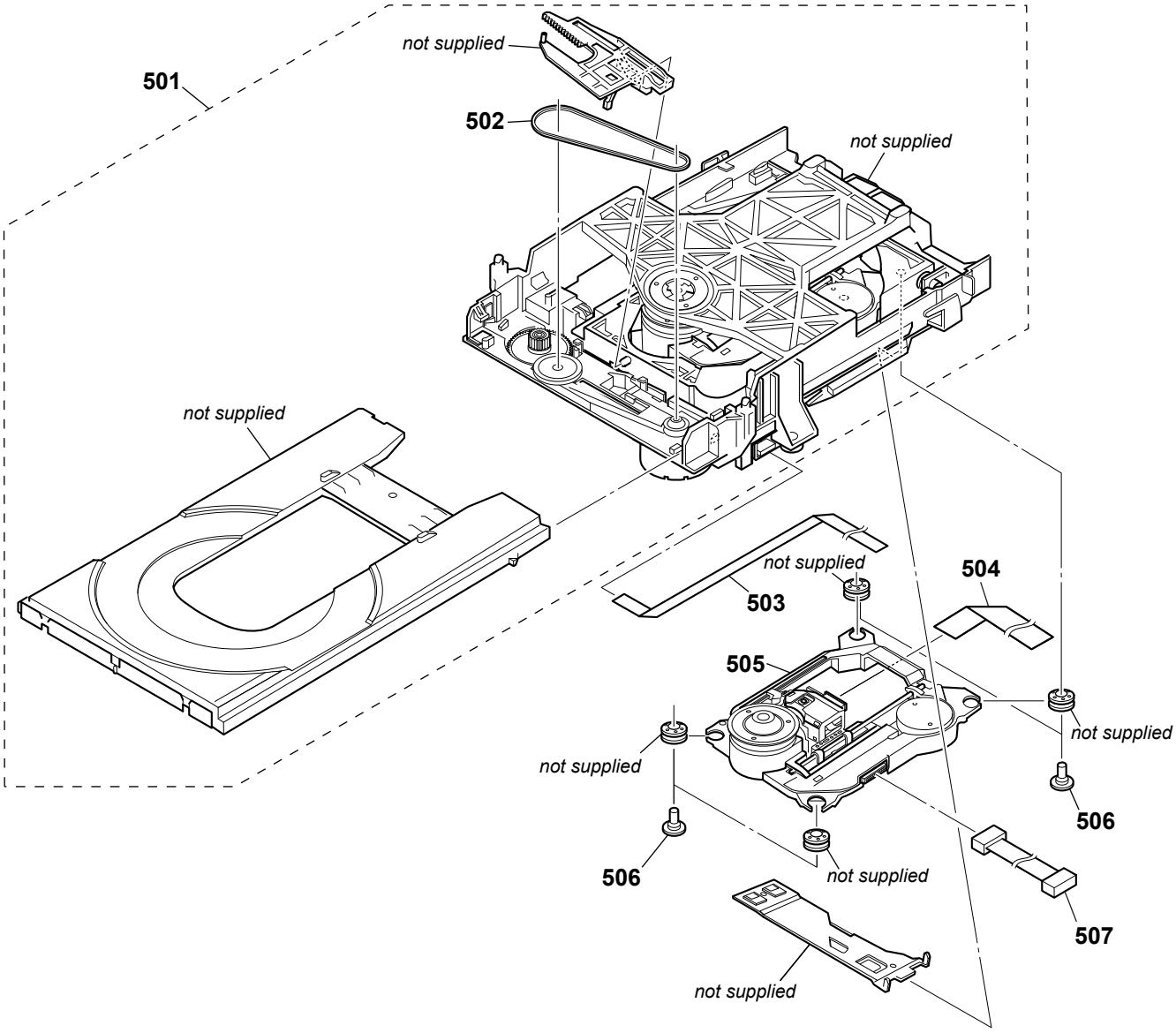
Ref. No.	Part No.	Description	Remark
54	4-176-954-01	BUTTON (EJECT) (⏏)	
55	4-176-951-01	BUTTON (STANBY) (I/⏻)	
56	4-176-953-01	BUTTON (FUNCTION) (►, ❚❚, ■)	
57	4-176-952-01	BUTTON (OPERATE)	
58	A-1779-175-A	CONTROL BOARD, COMPLETE	
59	3-252-827-01	SCREW (B2.6), (+) BV TAPPING	

5-3. MAIN BOARD SECTION



Ref. No.	Part No.	Description	Remark
101	9-885-144-39	FOOT	
102	9-885-144-66	+BVTT 3X7 CZN3 (POINT CIRCLE)	
103	A-1779-171-A	MAIN BOARD, COMPLETE (RU, SP, KR, TH, AUS)	
103	A-1779-172-A	MAIN BOARD, COMPLETE (AEP, E51)	
103	A-1779-173-A	MAIN BOARD, COMPLETE (TW)	
103	A-1779-174-A	MAIN BOARD, COMPLETE (MX)	
104	9-885-144-48	TUNER PACK (FM/AM) (E51, MX, SP, TW, TH, AUS)	
104	9-885-144-49	TUNER PACK (FM) (AEP)	
104	9-885-144-50	TUNER PACK (FM/AM) (KR)	
104	9-885-144-51	TUNER PACK (FM) (RU)	
105	9-885-144-64	+BVTT 3X6 BZN3	
106	9-885-144-61	+BVTP 3X10 BZN3	
⚠ 107	9-885-144-40	CORD, POWER (AEP, RU, SP)	
⚠ 107	9-885-144-41	CORD, POWER (AUS)	
⚠ 107	9-885-144-42	CORD, POWER (KR)	
⚠ 107	9-885-144-43	CORD, POWER (TH)	
⚠ 107	9-885-144-44	CORD, POWER (TW)	
⚠ 107	9-885-144-45	CORD, POWER (MX)	
⚠ 107	9-885-144-46	CORD, POWER (E51)	
⚠ 108	9-885-144-47	ADAPTOR (E51)	
⚠ F900	9-885-144-53	FUSE (T2.5AL/250V)	
⚠ T900	9-885-144-52	POWER TRANSFORMER	
#1	7-685-871-01	SCREW +BVTT 3X6 (S)	

5-4. DVD MECHANISM DECK SECTION



Ref. No.	Part No.	Description	Remark
⚠ 501	A-1749-923-A	CDM85 (MB) ASSY	
502	3-088-371-01	BELT	
503	1-967-369-11	FLEXIBLE CABLE 5PIN	
504	1-967-368-11	FLEXIBLE CABLE 24PIN	

Ref. No.	Part No.	Description	Remark
⚠ 505	8-820-321-05	OPTICAL PICK-UP BLOCK (KHM-313CAA/C2RP)	
506	4-674-137-11	SCREW PTP2X5	
507	1-967-370-11	WIRE CABLE	

MEMO

REVISION HISTORY

Checking the version allows you to jump to the revised page.
Also, clicking the version at the top of the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2010.04	New