

DCR-HC17E/HC19E/HC21/HC21E/HC22E/ HC32/HC32E/HC33/HC33E

RMT-830/831

SERVICE MANUAL

LEVEL 2

Ver 1.4 2006.10

Revision History

How to use
Acrobat Reader



Photo: DCR-HC32

Z MECHANISM (MDX-Z210)

DCR-HC21/HC32
US Model
Canadian Model
Korea Model
DCR-HC17E/HC19E/HC22E/HC32E
AEP Model
East European Model
North European Model
DCR-HC19E/HC22E/HC32E
UK Model
DCR-HC21/HC21E/HC32/HC32E
E Model
DCR-HC21E/HC32E
Australian Model
Hong Kong Model
DCR-HC21/HC33
Brazilian Model
DCR-HC21E/HC33E
Chinese Model
DCR-HC32/HC32E
Tourist Model

Link

SPECIFICATIONS	BLOCK DIAGRAMS	PRINTED WIRING BOARDS
SERVICE NOTE	FRAME SCHEMATIC DIAGRAMS	REPAIR PARTS LIST
DISASSEMBLY	SCHEMATIC DIAGRAMS	

NON MS model: DCR-HC17E/HC19E/HC21/HC21E/HC22E

MS model: DCR-HC32/HC32E/HC33/HC33E

- For ADJUSTMENTS (SECTION 6), refer to SERVICE MANUAL, ADJ (9-876-782-51).
- For INSTRUCTION MANUAL, refer to SERVICE MANUAL, LEVEL 1 (9-876-782-41).
- For MECHANISM ADJUSTMENTS, refer to the "DV MECHANICAL ADJUSTMENT MANUAL VIII [Z (Z200/Z210/Z300/Z310) MECHANISM]" (9-876-724-1□).
- Reference No. search on printed wiring boards is available.
- Table for differences of function of each model.
- TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)
- HELP: Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

On the VC-376/377 boards

This service manual provides the information that is premised the circuit board replacement service and not intended repair inside the VC-376/377 boards.

Therefore, schematic diagrams, printed wiring boards, mounted parts location and electrical parts list of the VC-376/377 boards are not shown.

Mini DV Digital Video Cassette

DIGITAL VIDEO CAMERA RECORDER

SONY®

SPECIFICATIONS

System

Video recording system	2 rotary heads, Helical scanning system
DCR-HC32/HC32E/HC33/HC33E:	
Still image recording system	Exif Ver. 2.2*1
Audio recording system	Rotary heads, PCM system Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)
Video signal	DCR-HC21/HC32/HC33: NTSC color, EIA standards DCR-HC17E/HC19E/HC21E/HC22E/HC32E/HC33E: PAL color, CCIR standards
Usable cassette	Mini DV cassette with the Mini DV mark printed
Tape speed	SP: Approx. 18.81 mm/s LP: Approx. 12.56 mm/s
Recording/playback time	SP: 60 min LP: 90 min (using a DVM60 cassette)
Fast forward/rewind time	Approx. 2 min 40 s (using a DVM60 cassette)
Viewfinder	Electric viewfinder (black and white)
Image device	3 mm (1/6 type) CCD (Charge Coupled Device) DCR-HC32/HC33: Gross: Approx. 680 000 pixels Effective (still): Approx. 340 000 pixels Effective (movie): Approx. 340 000 pixels DCR-HC21: Gross: Approx. 680 000 pixels Effective (movie): Approx. 340 000 pixels DCR-HC17E/HC19E/HC21E/HC22E: Gross: Approx. 800 000 pixels Effective (movie): Approx. 400 000 pixels DCR-HC32E/HC33E: Gross: Approx. 800 000 pixels Effective (still): Approx. 400 000 pixels Effective (movie): Approx. 400 000 pixels
Lens	Carl Zeiss Vario-Tessar Combined power zoom lens Filter diameter: 25 mm (1 in.) 20 × (Optical), 640 × (Digital, DCR-HC17E), 800 × (Digital, DCR-HC19E/HC21/HC21E/HC22E/HC32/HC32E/HC33/HC33E) F=1.8 - 3.1 f=2.3 - 46 mm (3/32 - 1 13/16 in.) When converted to a 35 mm still camera DCR-HC17E/HC19E/HC21/HC21E/HC22E: In CAMERA: 44 - 880 mm (1 3/4 - 34 1/32 in.) DCR-HC32/HC32E/HC33/HC33E: In CAMERA-TAPE: 44 ~ 880 mm (1 3/4 - 34 1/32 in.) In CAMERA-MEMORY: 44 ~ 880 mm (1 3/4 - 34 1/32 in.)
Focal length	
Color temperature	[AUTO], [ONE PUSH], [INDOOR] (3 200 K), [OUTDOOR] (5 800 K)

Minimum illumination	5 lx (lux) (F 1.8) 0 lx (lux) (during NightShot plus function)*2
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*1“Exif” is a file format for still images, established by the JEITA (Japan Electronics and Information Technology Industries Association). Files in this format can have additional information such as your camcorder's setting information at the time of recording.

*2 Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

Audio/Video input/output (DCR-HC32/HC32E/HC33/HC33E)	10-pin connector Input/output auto switch Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced Chrominance signal: 0.286 Vp-p, 75 Ω (ohms, DCR-HC32/HC33), 0.3 Vp-p, 75 Ω (ohms, DCR-HC32E/HC33E), unbalanced Audio signal: 327 mV (at output impedance more than 47 kΩ (kilohms)), Input impedance more than 47 kΩ (kilohms), Output impedance with less than 2.2 kΩ (kilohms)
Audio/Video output (DCR-HC17E/HC19E/HC21/HC21E/HC22E)	10-pin connector Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced Chrominance signal: 0.286 Vp-p, 75 Ω (ohms, DCR-HC21), 0.3 Vp-p, 75 Ω (ohms, DCR-HC17E/HC19E/HC21E/HC22E), unbalanced Audio signal: 327 mV (at output impedance more than 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
USB jack (DCR-HC17E/HC19E/HC21/HC21E)	mini-B
LANC jack	Stereo mini-minijack (φ 2.5 mm)
DV input/output (DCR-HC21/HC21E)	4- pin connector
DV output (DCR-HC17E/HC19E)	4- pin connector

LCD screen

Picture	6.2 cm (2.5 type)
Total dot number	123 200 (560 × 220)

General

Power requirements	DC 7.2 V (battery pack) DC 8.4 V (AC Adaptor)
Average power consumption	DCR-HC32/HC32E/HC33/HC33E: During camera recording using the viewfinder 2.1 W During camera recording using the LCD 2.5 W During camera recording using the viewfinder and the LCD 2.6 W DCR-HC17E/HC19E/HC21/HC21E/HC22E: During camera recording using the viewfinder 1.9 W During camera recording using the LCD 2.4 W 0 °C to 40 °C (32 °F to 104 °F)
Operating temperature	
Storage temperature	-20 °C to + 60 °C (-4 °F to + 140 °F)
Dimensions (approx.)	54.7 × 90 × 111.7 mm (2 1/4 × 3 5/8 × 4 1/2 in.) (w/h/d)
Mass (approx.)	400 g (14 oz) main unit only 460 g (1 lb) including the NP-FP30 rechargeable battery pack and DVM60 cassette.
Supplied accessories	AC Adaptor (1) Power cord (1) Handycam Station (1) (DCR-HC22E/HC32/HC32E/HC33/HC33E) Wireless Remote Commander (1) (DCR-HC19E/HC21/HC21E/HC22E/HC32/HC32E/HC33/HC33E) A/V connecting cable (1) USB cable (1) (DCR-HC19E/HC21/HC21E/HC22E/HC32/HC32E/HC33/HC33E) Shoulder Strap (1) (DCR-HC19E/HC21/HC21E/HC22E/HC32/HC32E/HC33/HC33E) Rechargeable battery pack NP-FP30 (1) CD-ROM “Picture Package Ver. 1.5” (1) Shoe cover (1) Operating Guide (1) 21-pin adaptor (1) (DCR-HC22E/HC32E) Conversion 2P adaptor (1) (DCR-HC21/HC32: E, JE/HC32E: JE) “Memory Stick Duo” 16MB (1) (DCR-HC33/HC33E) Memory Stick Duo adaptor (1) (DCR-HC33/HC33E) See page 5-29

– Continued on next page –

Handycam Station DCRA-C121 (DCR-HC32/HC32E/HC33/HC33E)

Audio/Video input/output	10-pin connector Input/output auto switch Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced Chrominance signal: 0.286 Vp-p, 75 Ω (ohms, DCR-HC32/HC33), 0.3 Vp-p, 75 Ω (ohms, DCR-HC32E/HC33E), unbalanced Audio signal: 327 mV (at output impedance more than 47 k Ω (kilohms)), Input impedance more than 47 k Ω (kilohms), Output impedance with less than 2.2 k Ω (kilohms)
USB jack	mini-B
DV input/output	4-pin connector

Handycam Station DCRA-C122 (DCR-HC22E)

Audio/Video output	10-pin connector Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced Chrominance signal: 0.3 Vp-p, 75 Ω (ohms), unbalanced Audio signal: 327 mV (at output impedance more than 47 k Ω (kilohms)), Output impedance with less than 2.2 k Ω (kilohms)
USB jack	mini-B
DV input/output	4-pin connector

AC Adaptor AC-L25A/L25B

Power requirements	AC 100 - 240 V, 50/60 Hz
Current consumption	0.35 - 0.18 A
Power consumption	18 W
Output voltage	DC 8.4 V*
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Storage temperature	-20 °C to + 60 °C (-4 °F to + 140 °F)
Dimensions (approx.)	56 × 31 × 100 mm (2 1/4 × 1 1/4 × 4 in.) (w/h/d) excluding the projecting parts
Mass (approx.)	190 g (6.7 oz) excluding the power cord

* See the label on the AC Adaptor for other specifications.

Rechargeable battery pack NP-FP30

Maximum output voltage	DC 8.4 V
Output voltage	DC 7.2 V
Capacity	3.6 wh (500 mAh)
Dimensions (approx.)	31.8 × 18.5 × 40.5 mm (1 5/16 × 3/4 × 1 13/16 in.) (w/h/d)
Mass (approx.)	40 g (1.5 oz)
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Type	Lithium ion

Design and specifications are subject to change without notice.

Table for differences of function

NON MS model

Model	DCR-HC17E	DCR-HC19E	DCR-HC21	DCR-HC21E	DCR-HC22E
Destination	AEP, NE, EE	AEP, UK, NE, EE	US, CND, E, KR, BR	E, HK, AUS, CH	AEP, UK, NE, EE
Color system	PAL	PAL	NTSC	PAL	PAL
Memory Stick Duo	×	×	×	×	×
A/V jack	OUT	OUT	OUT	OUT	OUT
DV Interface	OUT	OUT	IN/OUT	IN/OUT	IN/OUT (Note)
Remote commander	×	○ (RMT-830)	○ (RMT-830)	○ (RMT-830)	○ (RMT-830)
Cradle (Handycam Station)	×	×	×	×	○
CR board	×	×	×	×	CR-050
VC board	VC-376	VC-376	VC-376	VC-376	VC-376

MS model

Model	DCR-HC32	DCR-HC32E	DCR-HC33	DCR-HC33E
Destination	US, CND, E, KR, JE	AEP, UK, NE, EE, E, HK, AUS, JE	BR	CH
Color system	NTSC	PAL	NTSC	PAL
Memory Stick Duo	○	○	○	○
A/V jack	IN/OUT	IN/OUT	IN/OUT	IN/OUT
DV Interface	IN/OUT (Note)	IN/OUT (Note)	IN/OUT (Note)	IN/OUT (Note)
Remote commander	○ (RMT-831)	○ (RMT-831)	○ (RMT-831)	○ (RMT-831)
Cradle (Handycam Station)	○	○	○	○
CR board	CR-050	CR-050	CR-050	CR-050
VC board	VC-377	VC-377	VC-377	VC-377

Note: DV Interface on the Cradle (Handycam Station)

- Abbreviation
 - AUS : Australian model
 - BR : Brazilian model
 - CH : Chinese model
 - CND: Canadian model
 - EE : East European model
 - HK : Hong Kong model
 - JE : Tourist model
 - KR : Korean model
 - NE : North European model

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK $\triangle$ OR DOTTED LINE WITH MARK $\triangle$ 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.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE $\triangle$ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. FLEXIBLE Circuit Board Repairing
 - Keep the temperature of the 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.

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.

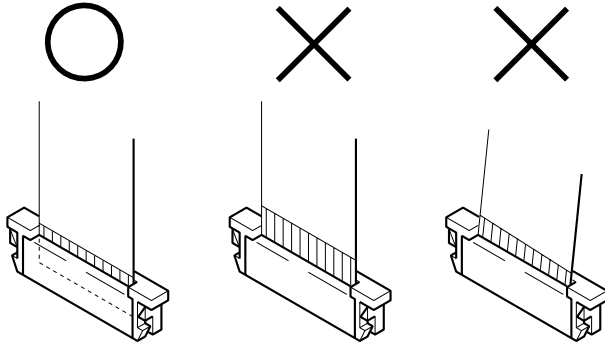
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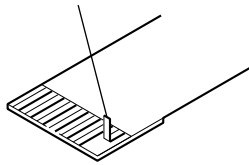
1. SERVICE NOTE

1-1. NOTE FOR REPAIR

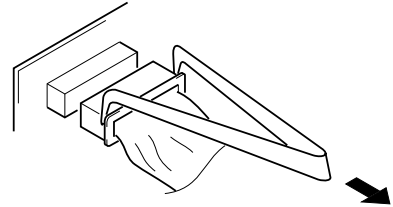
Make sure that the flat cable and flexible board are not cracked or bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



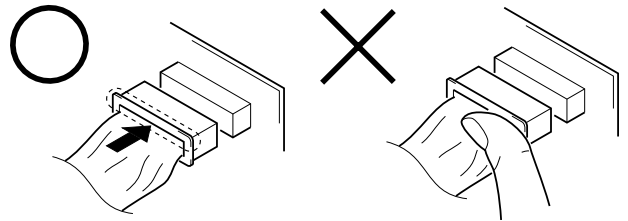
Cut and remove the part of gilt which comes off at the point.
(Be careful or some pieces of gilt may be left inside)



When remove a connector, don't pull at wire of connector.
It is possible that a wire is snapped.



When installing a connector, don't press down at wire of connector.
It is possible that a wire is snapped.



1-2. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied to the battery terminal using the regulated power supply (8.4V), the power is shut off so that the unit cannot operate.

These following method is available to prevent this.

Method:

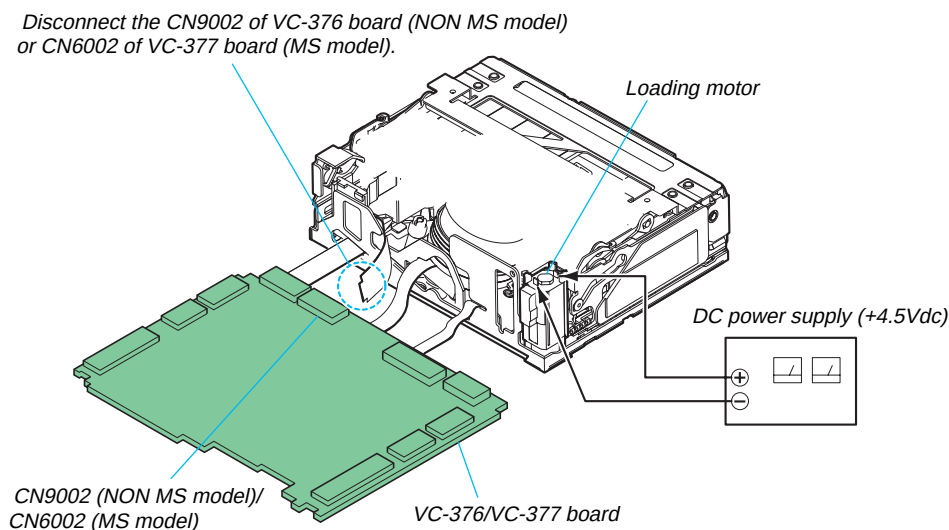
Use the AC power adaptor (AC-L25A/L25B).

1-3. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

- ① Refer to "2. DISASSEMBLY" to remove the mechanism deck block.
- ② Disconnect the CN9002 of VC-376 board (NON MS model) or CN6002 of VC-377 board (MS model).
- ③ Supply +4.5V from the DC power supply to the loading motor and unload with a pressing the cassette compartment.

NON MS model: DCR-HC17E/HC19E/HC21/HC21E/HC22E

MS model: DCR-HC32/HC32E/HC33/HC33E



1-4. SELF-DIAGNOSIS FUNCTION

1-4-1. Self-diagnosis Function

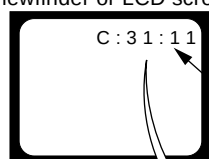
When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD screen what to do. This function consists of two display; self-diagnosis display and service mode display.

Details of the self-diagnosis functions are provided in the Instruction manual.

1-4-2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or LCD screen shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the "repaired by:", "block" in which the problem occurred, and "detailed code" of the problem.

Viewfinder or LCD screen



Blinks at 3.2Hz

C : 31 : 11

Repaired by:

C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer

Block

Indicates the appropriate step to be taken.
E.g.
31Reload the tape.
32Turn on power again.

Detailed Code

Refer to "1-4-3. Self-diagnosis Code Table".

1-4-3. Self-diagnosis Code Table

Repaired by:	Self-diagnosis Code		Symptom/State	Correction
	Block Function	Detailed Code		
C	0 4	0 0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	2 1	0 0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2 2	0 0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3 1	1 0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	1 1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	2 0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	2 3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	3 0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3 1	3 1	FG fault during normal capstan operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 1	PG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 3	PG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 4	Phase fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 2	1 0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	1 1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 1	FG fault during normal capstan operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 0	FG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 1	PG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 2	FG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 3	PG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 4	Phase fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
E	6 1	0 0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Note) when focusing is performed when the touch panel is operated in the focus manual mode and the focus motor drive circuit (Note) when the focusing is not performed.
E	6 1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Note) when zooming is performed when the zoom switch is operated and the zoom motor drive circuit (Note) when zooming is not performed.
E	6 1	1 1	Focus lens initializing failure and zoom lens initializing failure occur simultaneously.	Inspect the flexible board for breakage or loose connection. If not faulty, inspect the focus and zoom motor drive circuit (Note).
E	6 2	0 0	Steadyshot function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE601 of SI-042 board) peripheral circuits.
E	6 2	0 1	Steadyshot function does not work well. (With yaw angular velocity sensor output stopped.)	Inspect yaw angular velocity sensor (SE602 of SI-042 board) peripheral circuits.

Note:

Focus reset sensor	Pin ②① of CN3101 on VC-376 board (NON MS model)
	Pin ②① of CN3701 on VC-377 board (MS model)
Focus motor drive circuit	IC3101 of VC-376 board (NON MS model)
	IC3707 of VC-377 board (MS model)
Zoom reset sensor	Pin ①⑥ of CN3101 on VC-376 board (NON MS model)
	Pin ①⑥ of CN3701 on VC-377 board (MS model)
Zoom motor drive circuit	IC3101 of VC-376 board (NON MS model)
	IC3707 of VC-377 board (MS model)

NON MS model: DCR-HC17E/HC19E/HC21/HC21E/HC22E

MS model: DCR-HC32/HC32E/HC33/HC33E

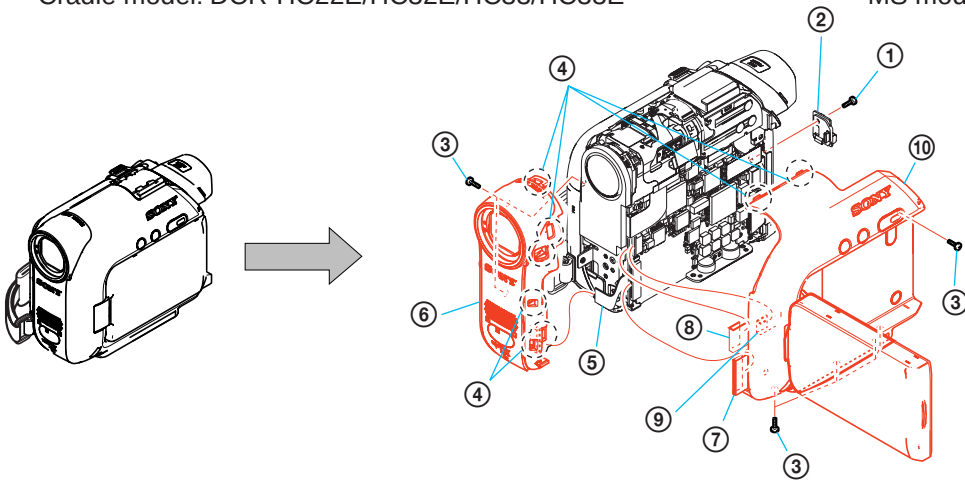
2. DISASSEMBLY

The following flow chart shows the disassembly procedure.

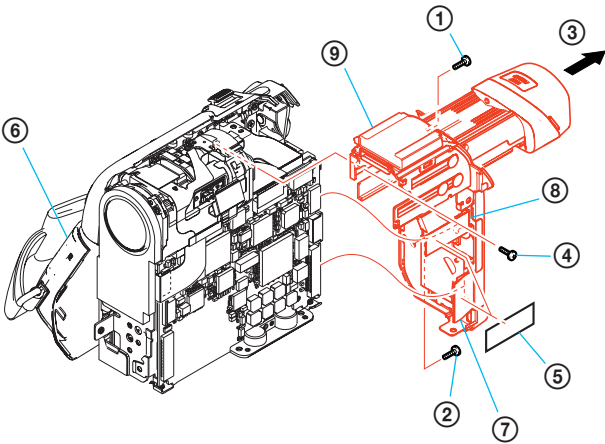
2-1. DISASSEMBLY

Non Cradle model: DCR-HC17E/HC19E/HC21/HC21E
Cradle model: DCR-HC22E/HC32E/HC33/HC33E

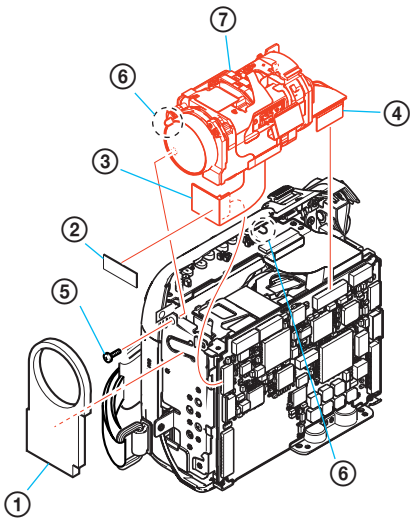
Non MS model: DCR-HC17E/HC19E/HC21/HC21E/HC22E
MS model: DCR-HC32/HC32E/HC33/HC33E



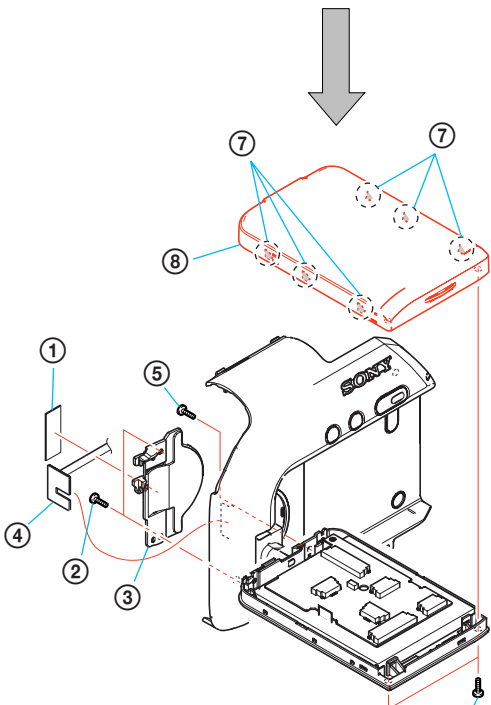
- ① P2 lock ace screw (M1.7) x1
- ② Cpc lid
- ③ Screw (M1.7) x7
- ④ Claw x8
- ⑤ Flexible flat cable (FFC-038): CN603
- ⑥ F panel block
- ⑦ FP-190 flexible board: CN1003 (cradle model)
- ⑧ FP-185 flexible board: CN1006
- ⑨ FP-187 flexible board: CN1002
- ⑩ Cabinet (R) block



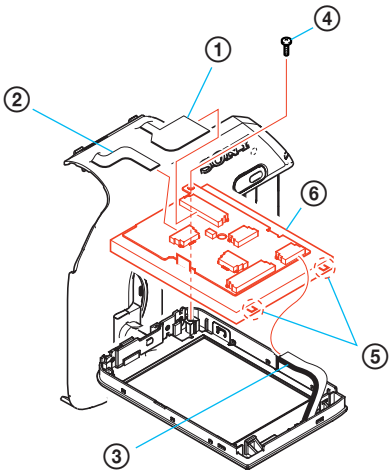
- ① P2 lock ace screw (M1.7) x1
- ② P2 lock ace screw (M1.7) x1
- ③ Slide the EVF block.
- ④ P2 tapping screw x1
- ⑤ Tape (A) x2
- ⑥ Open the cabinet (G) block.
- ⑦ FP-180 flexible board: CN2001
- ⑧ FP-181 flexible board: CN7001 (MS model)/CN9301 (non MS model)
- ⑨ BAT EVF block



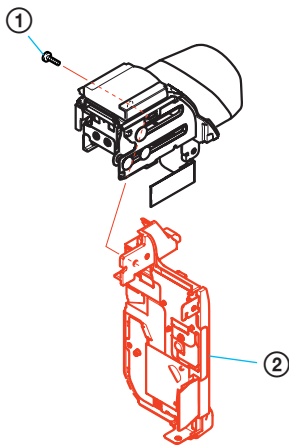
- ① Cushion (F2)
- ② Tape (W) x1
- ③ Flexible board: CN 3101 (VC-376 board)/CN3701 (VC-377 board)
- ④ FP-178 flexible board: CN3002 (VC-376 board)/CN3101 (VC-377 board)
- ⑤ P2 lock ace screw (M1.7) x1
- ⑥ Boss x2
- ⑦ Lens block



- ① Tape (A) x1
- ② P2 tapping screw x2
- ③ Hinge blind
- ④ FP-187 flexible board
- ⑤ Tapping screw x1
- ⑥ P2 tapping screw x2
- ⑦ Claw x6
- ⑧ P cabinet (C) 103



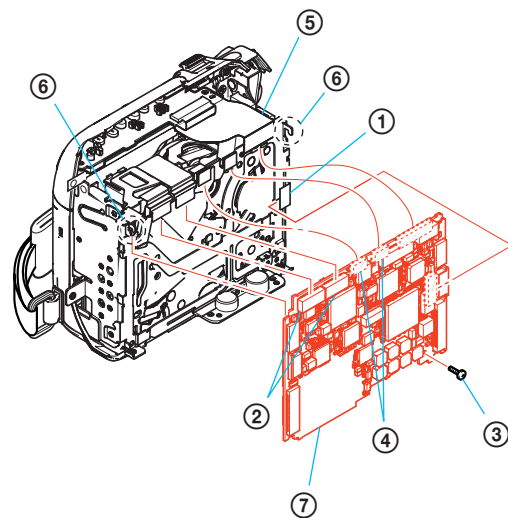
- ① FP-185 flexible board: CN601
- ② FP-186 flexible board: CN609
- ③ Control key block (SB9000): CN602
- ④ P2 tapping screw x1
- ⑤ Claw x2
- ⑥ PD-237 board, D901, LCD901



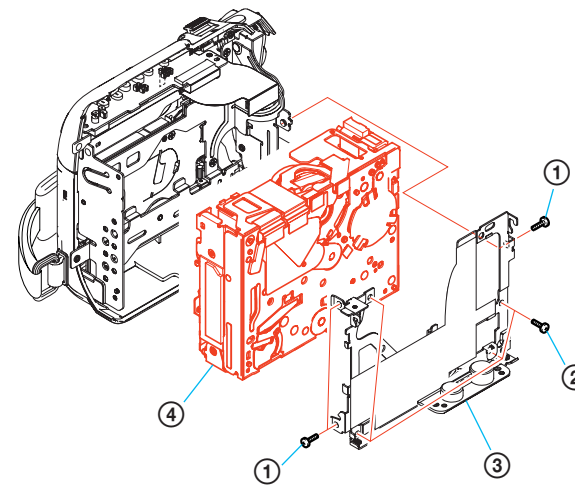
- ① Ccrew (M1.7) x1
- ② BT panel block

to Page 2-3

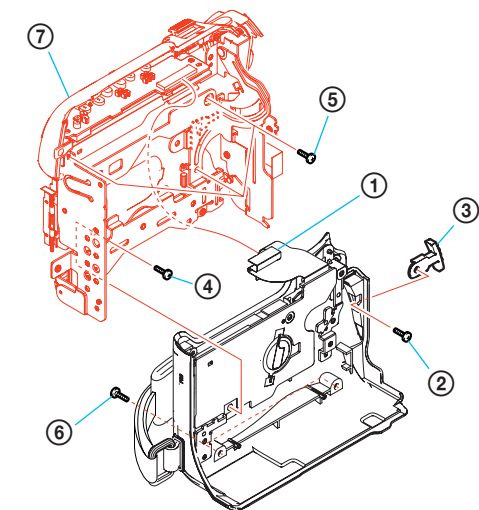
from Page 2-2



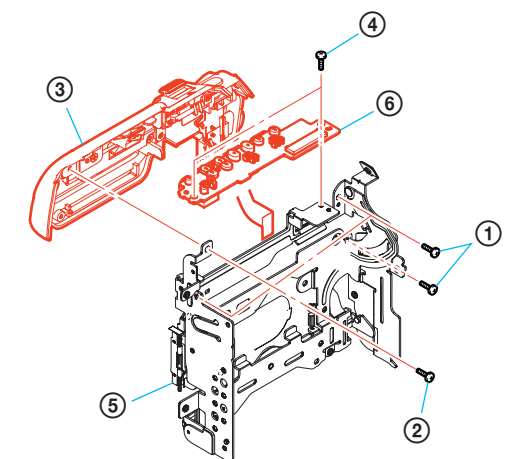
- ① Flexible board: CN1001
- ② Connector x2: CN9002, 9003 (VC-376 board)/
CN6002, 6003 (VC-377 board)
- ③ P2 lock ace screw (M1.7) x1
- ④ Connector x2: CN6501, 9001 (VC-376 board)/
CN4301, 6001 (VC-377 board)
- ⑤ FP-182 flexible board: CN1008
- ⑥ Hook x2
- ⑦ VC-376 board/VC-377 board



- ① P2 lock ace screw (M1.7) x3
- ② Screw (M1.4x1.5) x4
- ③ MD frame block
- ④ Mechanism deck

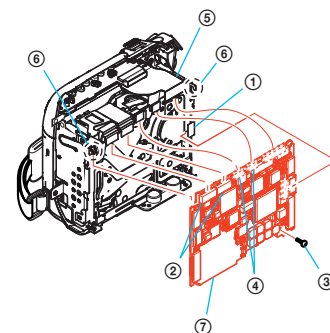
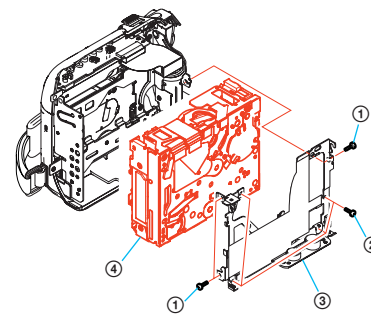
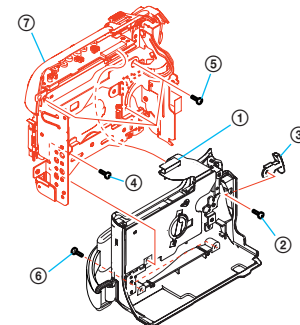
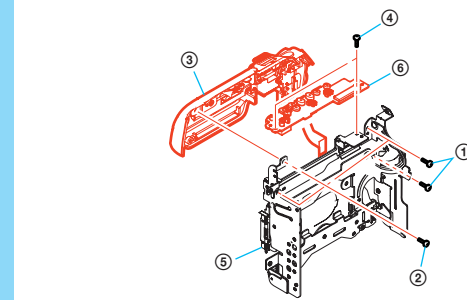
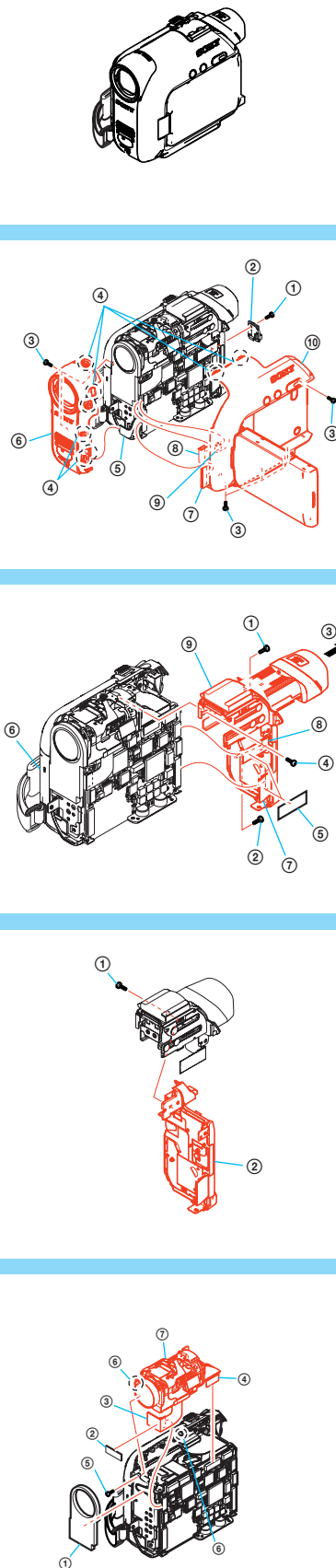


- ① Flexible board: CN704
- ② P2 lock ace screw (M1.7) x1
- ③ Eject knob
- ④ P2 lock ace screw (M1.7) x1
- ⑤ Tapping screw x3
- ⑥ P2 lock ace screw (M1.7) x2
- ⑦ CS block



- ① P2 tapping screw (M1.7) x3
- ② P2 lock ace screw (M1.7) x1
- ③ Control key block (SS10300)
- ④ P2 lock ace screw (M1.7) x2
- ⑤ CS frame block
- ⑥ JK-278 board

2-2. MECHANISM DECK SERVICE POSITION



Connection to Check the Mechanism deck

To check the mechanism deck, set the Camera or VTR to the "Forced power ON" mode.
(Or, connect the control key block (SS10300) to the CN1001 of VC-376/VC-377 board and set the power switch to the "CAMERA" or "PLAY/EDIT" position.)
Operate the VTR function using the adjustment remote commander (with the HOLD switch set in the OFF position).

Setting the "Forced Camera Power ON" mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: A (MS model)/ D (Non MS model), address: 10, set data: 01 and press the PAUSE button of the adjustment remote commander.

Setting the "Forced VTR Power ON" mode

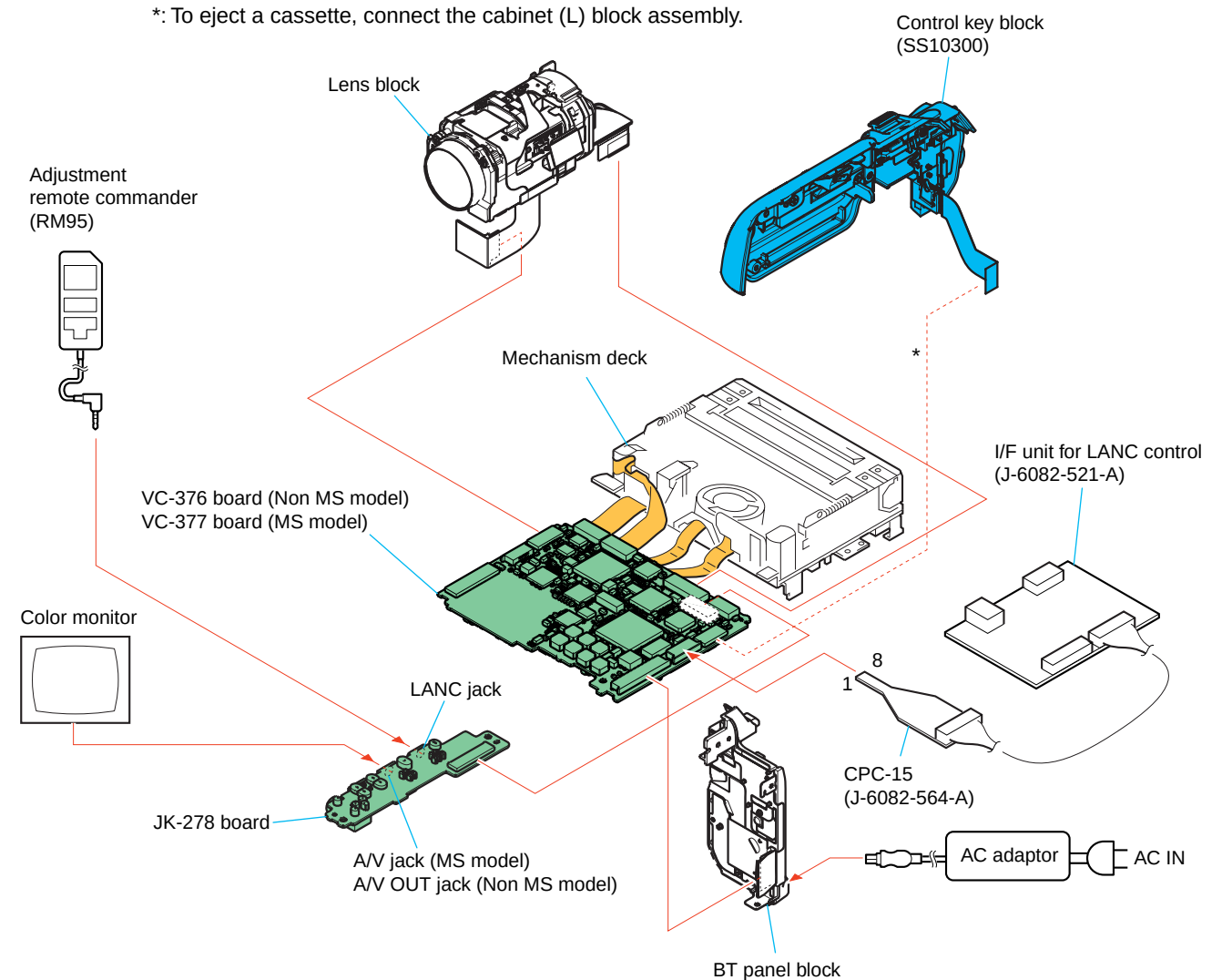
- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: A (MS model)/ D (Non MS model), address: 10, set data: 02 and press the PAUSE button of the adjustment remote commander.

Non MS model: DCR-HC17E/HC19E/HC21E/HC22E
MS model: DCR-HC32E/HC33E

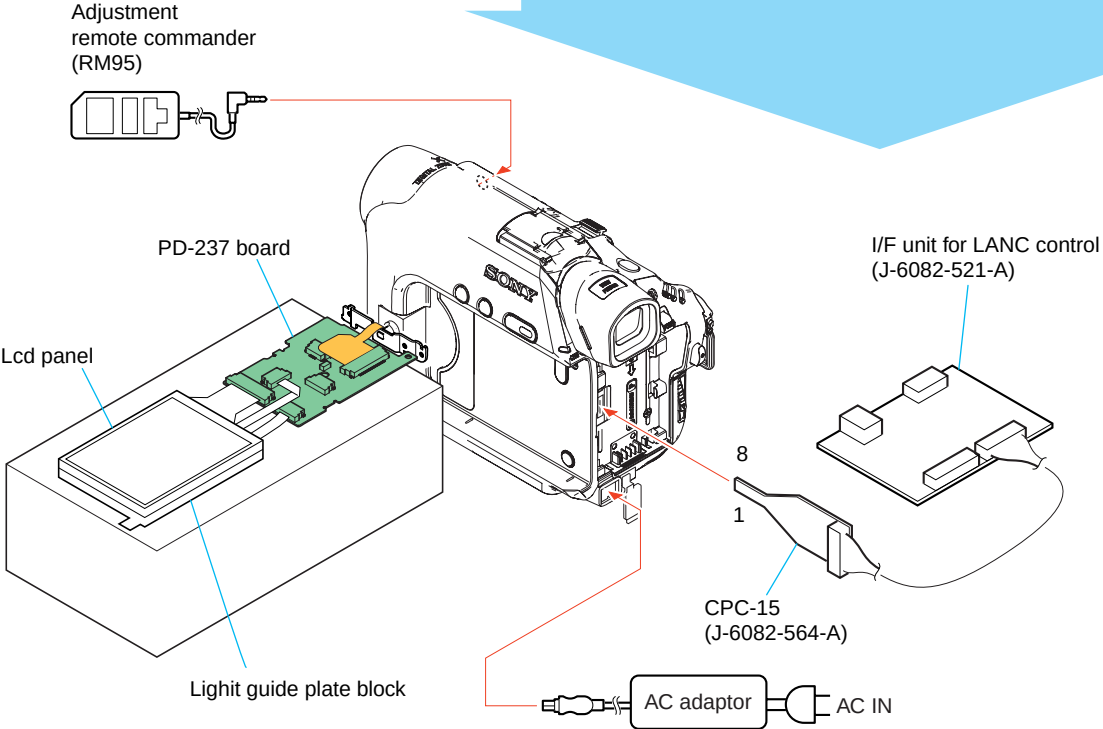
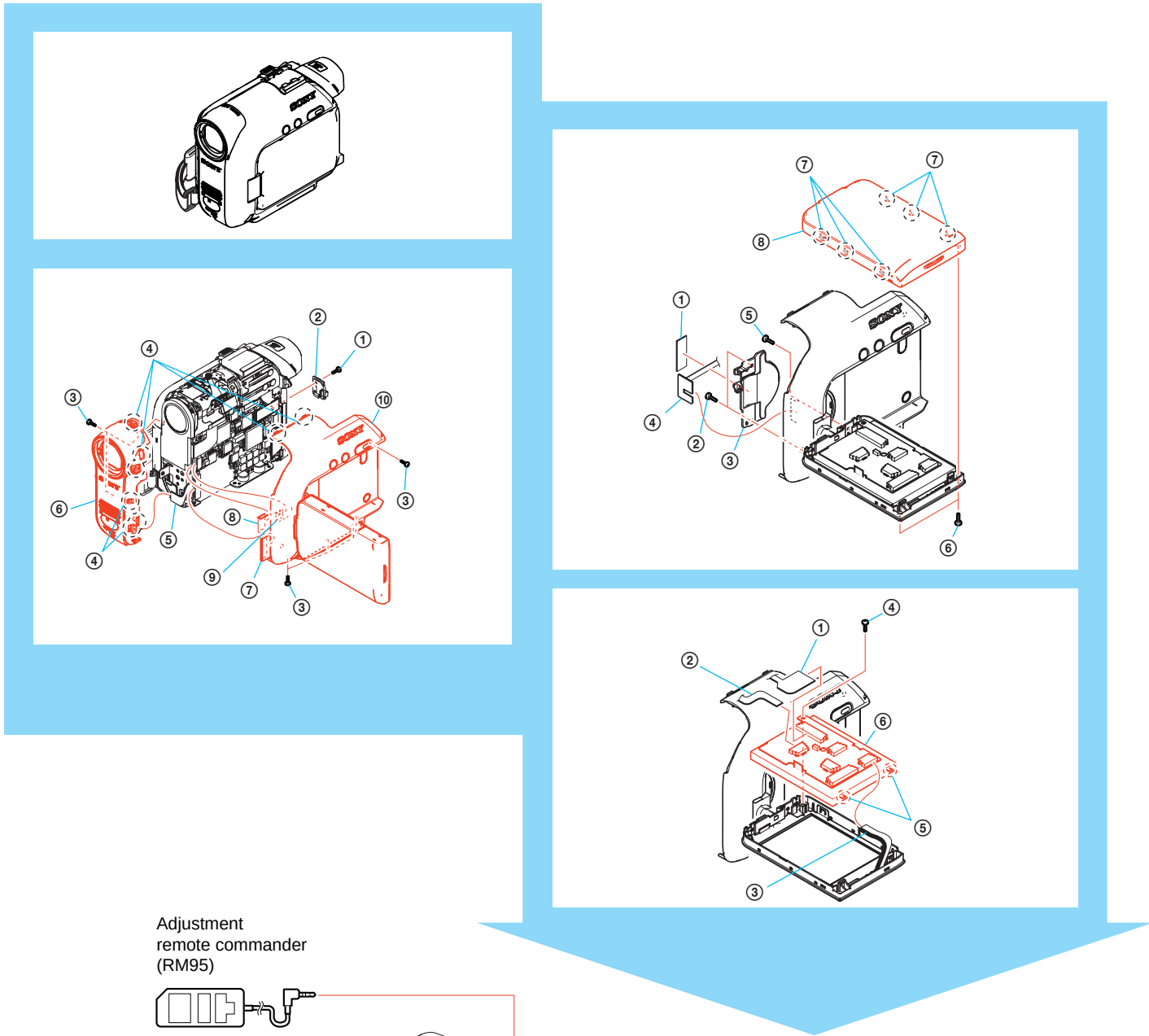
*: To eject a cassette, connect the cabinet (L) block assembly.

Exiting the "Forced Power ON" mode

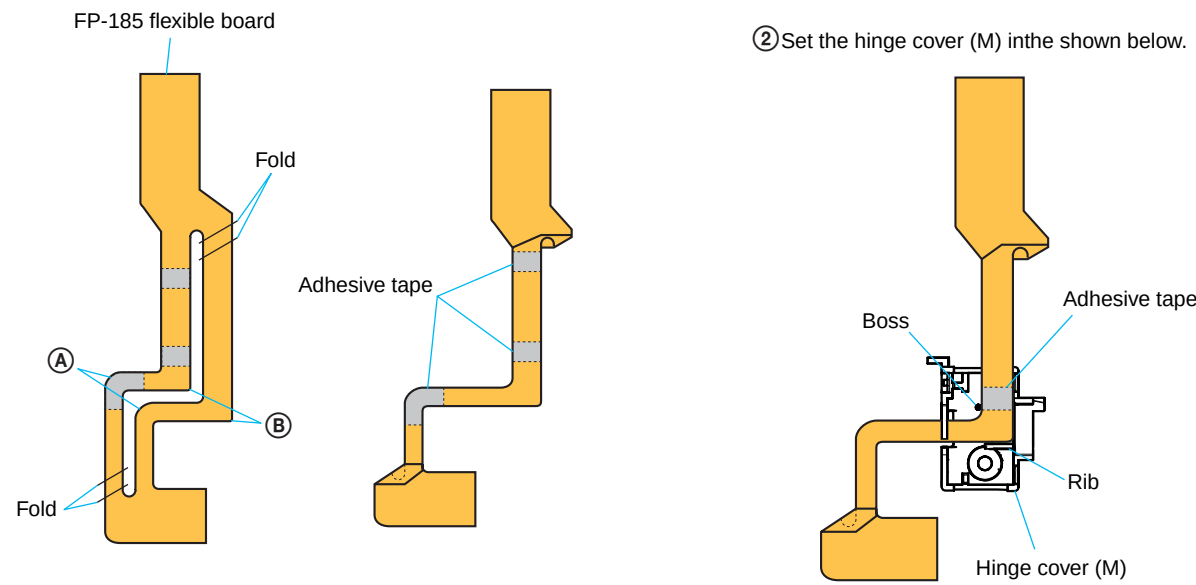
- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: A (MS model)/ D (Non MS model), address: 10, data: 00, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 0, address: 01, and set data: 00.



2-3. LCD SERVICE POSITION

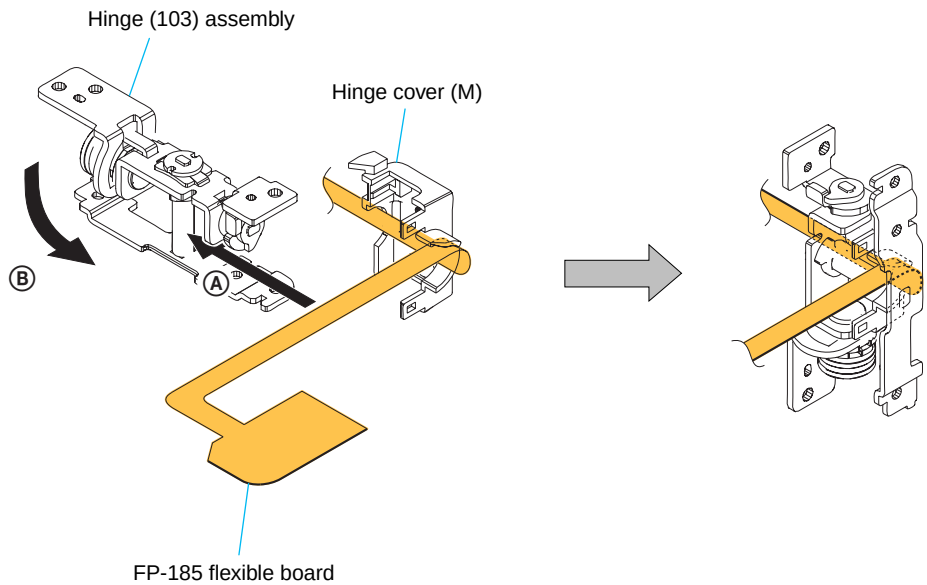


2-4. THE METHOD OF ATTACHMENT OF FP-185 FLEXIBLE BOARD



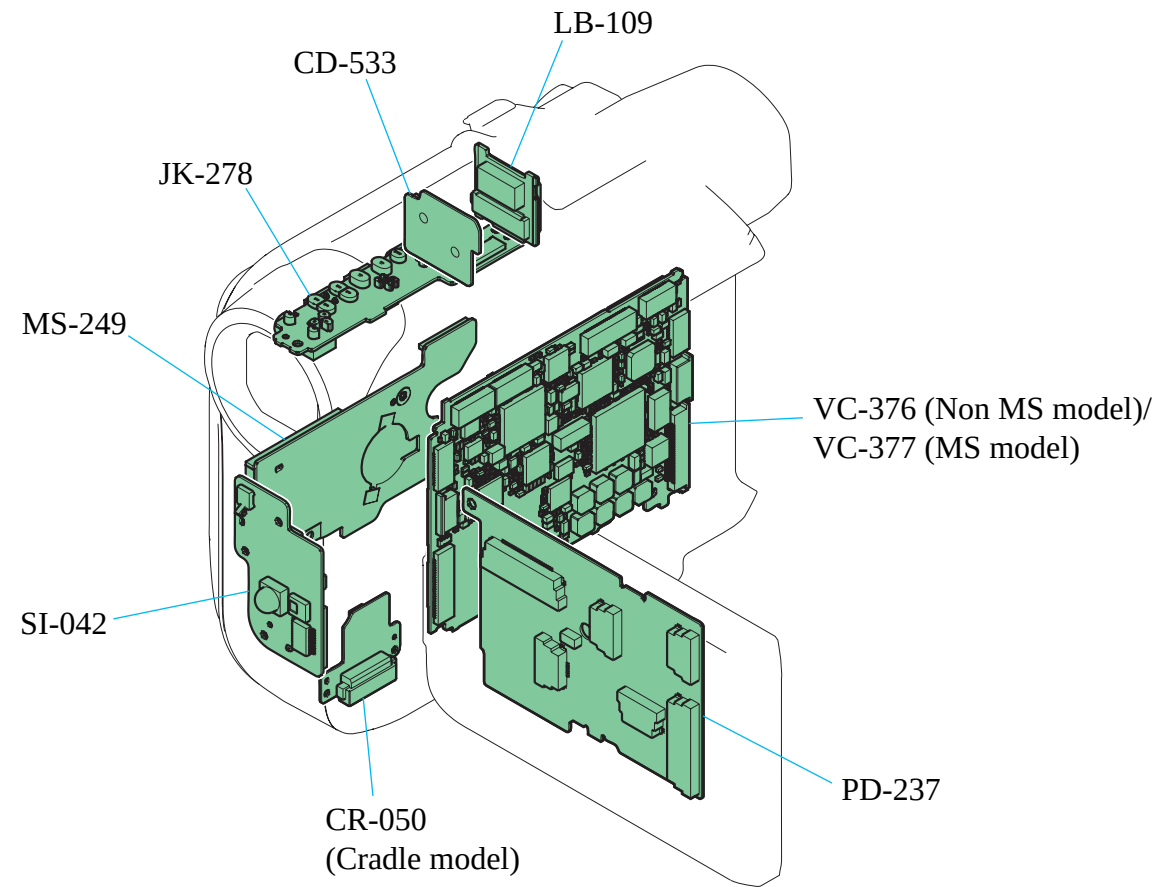
① The (A) and (A), (B) and (B) section are united and an angle is folded.

③ Set the FP-185 flexible board in the direction of arrow (A), and then turn the hinge (103) assembly in the direction of arrow (B).



2-5. CIRCUIT BOARDS LOCATION

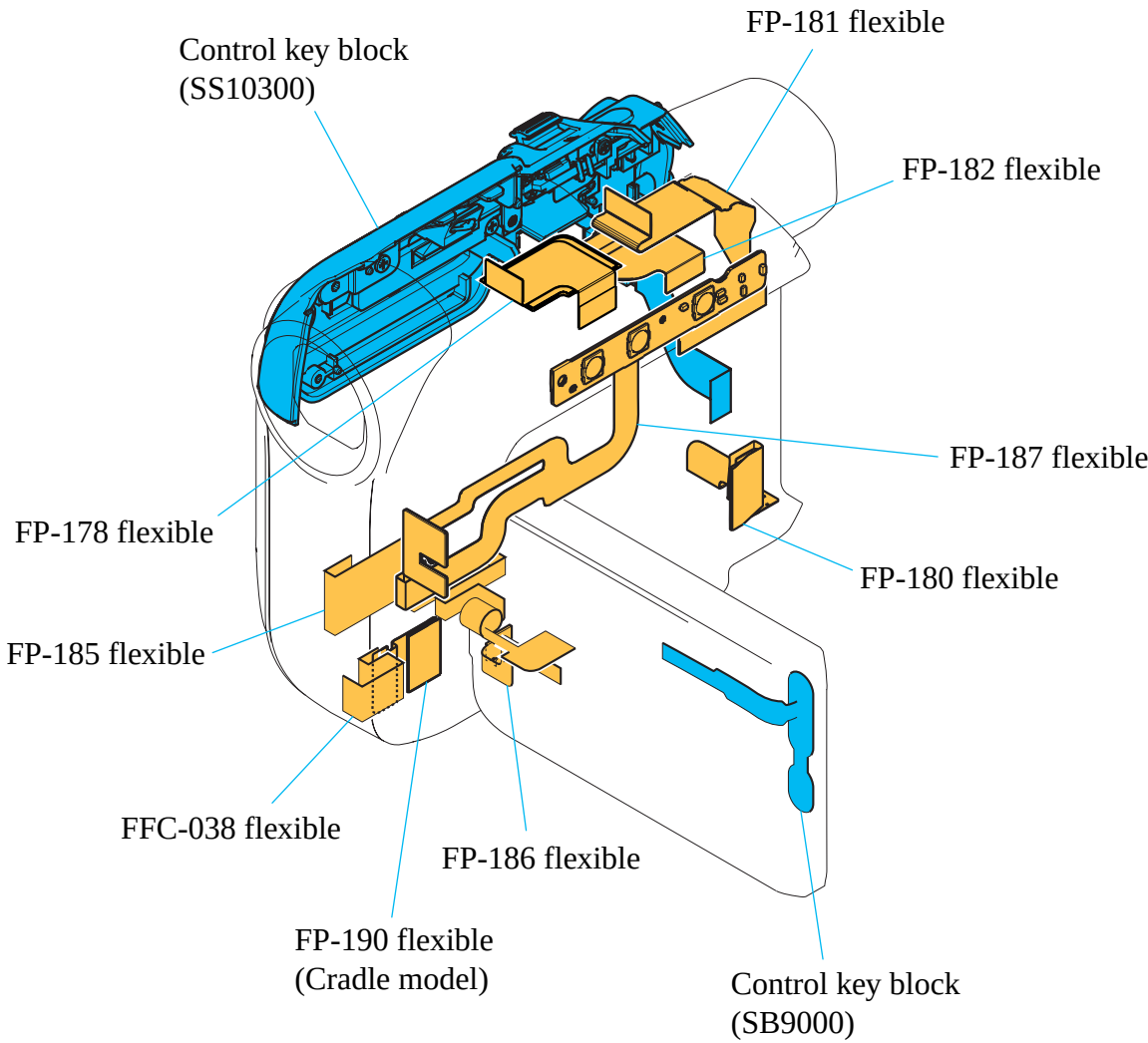
Non Cradle model: DCR-HC17E/HC19E/HC21/HC21E
Cradle model: DCR-HC22E/HC32/HC32E/HC33/HC33E
Non MS model: DCR-HC17E/HC19E/HC21/HC21E/HC22E
MS model: DCR-HC32/HC32E/HC33/HC33E



Board Name	Function
CD-533	CCD IMAGER
CR-050	CRADLE TERMINAL
JK-278	JACK
LB-109	EVF, EVF BACKLIGHT
MS-249	MS CONNECTOR
PD-237	LCD DRIVE, BACKLIGHT DRIVE
SI-042	REMOTE COMMANDER RECEIVER, PITCH/YAW SENSOR
VC-376	A/D CONVERTER, TIMING GENERATOR, LENS DRIVE, EVR, DV SIGNAL PROCESS, DV INTERFACE, REC/PB AMP, VIDEO OUT, AUDIO I/O EVF DRIVE, CAMERA/MECHA CONTROL, SERVO, HI CONTROL, DC IN, DC/DC CONVERTER, CONNECTOR
VC-377	A/D CONVERTER, TIMING GENERATOR, LENS DRIVE, VIDEO/AUDIO DSP, DS/HI CONTROL, FLASH, SDRAM, DV SIGNAL PROCESS, DV INTERFACE, REC/PB AMP, VIDEO, AUDIO I/O, EVF DRIVE, CAMERA/MECHA CONTROL, SERVO, HI CONTROL, DC IN, DC/DC CONVERTER, CONNECTOR

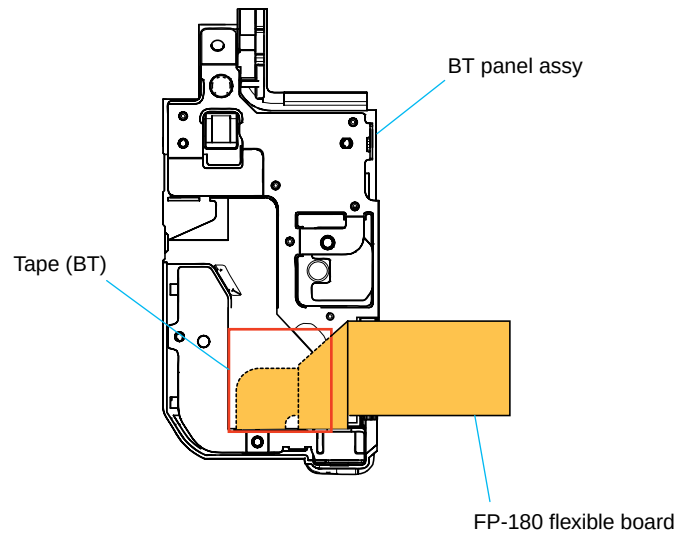
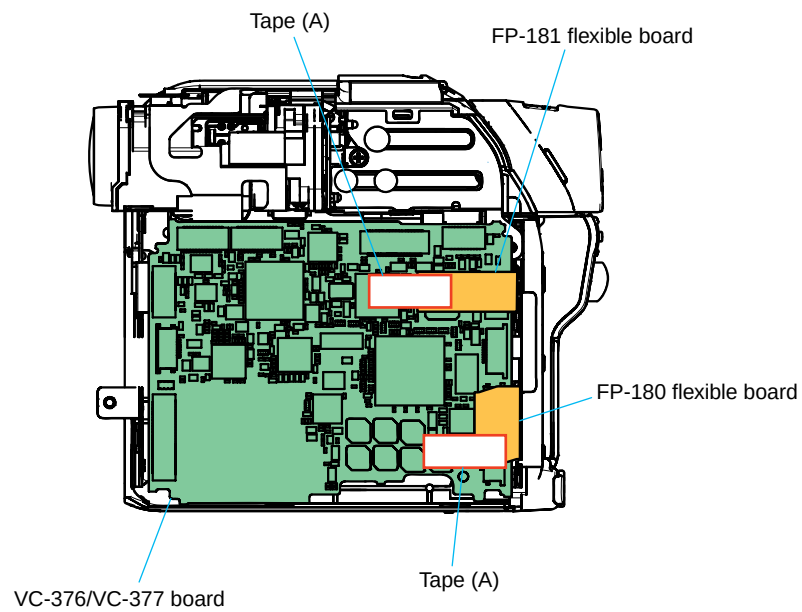
2-6. FLEXIBLE BOARDS LOCATION

Non Cradle model: DCR-HC17E/HC19E/HC21/HC21E
Cradle model: DCR-HC22E/HC32/HC32E/HC33/HC33E



HELP

Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.



3. BLOCK DIAGRAMS

NON MS model

Link

OVERALL BLOCK DIAGRAM (1/5)	OVERALL BLOCK DIAGRAM (5/5)
OVERALL BLOCK DIAGRAM (2/5)	POWER BLOCK DIAGRAM (1/3)
OVERALL BLOCK DIAGRAM (3/5)	POWER BLOCK DIAGRAM (2/3)
OVERALL BLOCK DIAGRAM (4/5)	POWER BLOCK DIAGRAM (3/3)

MS model

Link

OVERALL BLOCK DIAGRAM (1/6)	OVERALL BLOCK DIAGRAM (6/6)
OVERALL BLOCK DIAGRAM (2/6)	POWER BLOCK DIAGRAM (1/3)
OVERALL BLOCK DIAGRAM (3/6)	POWER BLOCK DIAGRAM (2/3)
OVERALL BLOCK DIAGRAM (4/6)	POWER BLOCK DIAGRAM (3/3)
OVERALL BLOCK DIAGRAM (5/6)	

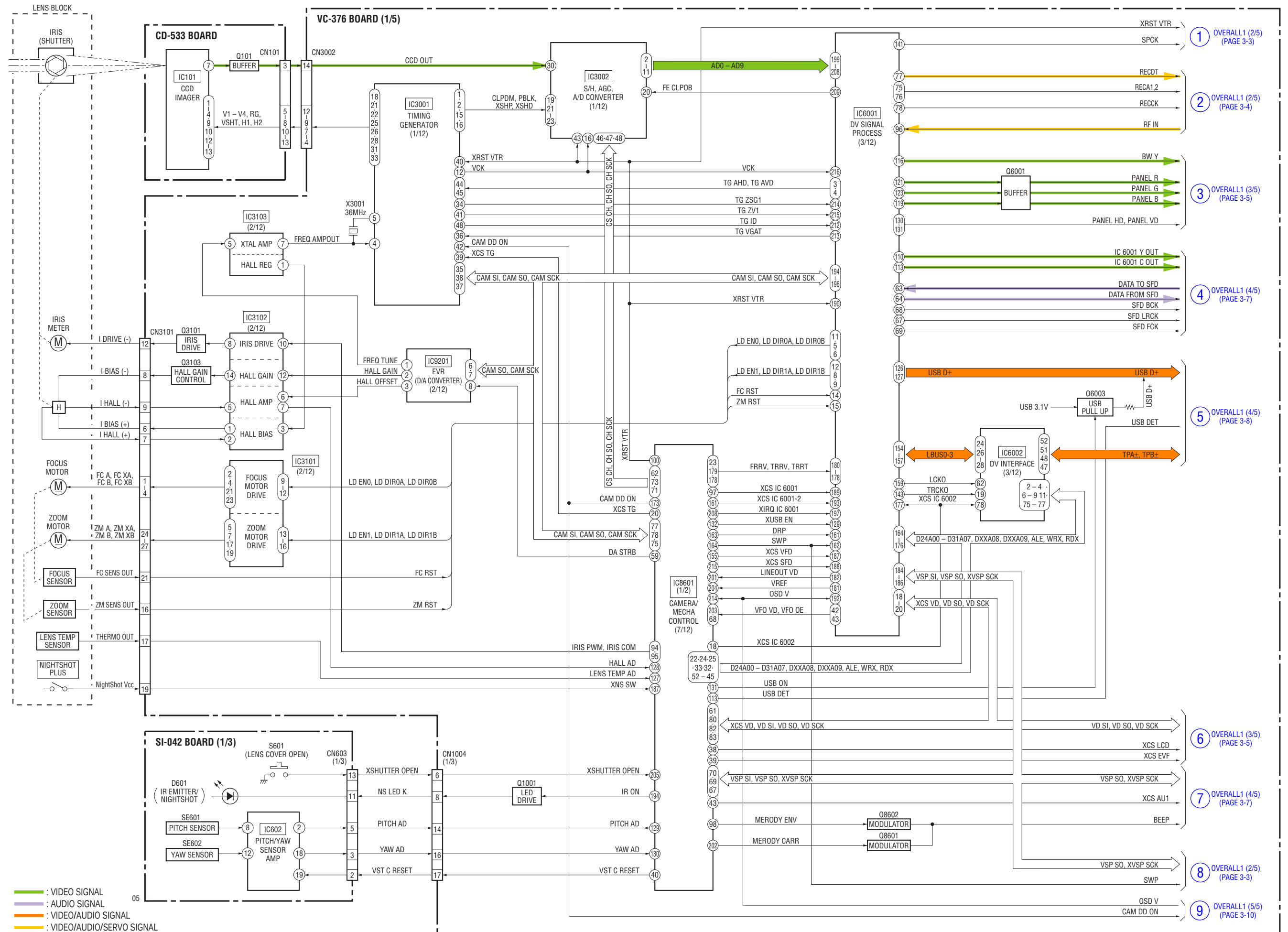
NON MS model: DCR-HC17E/HC19E/HC21/HC21E/HC22E

MS model: DCR-HC32/HC32E/HC33/HC33E

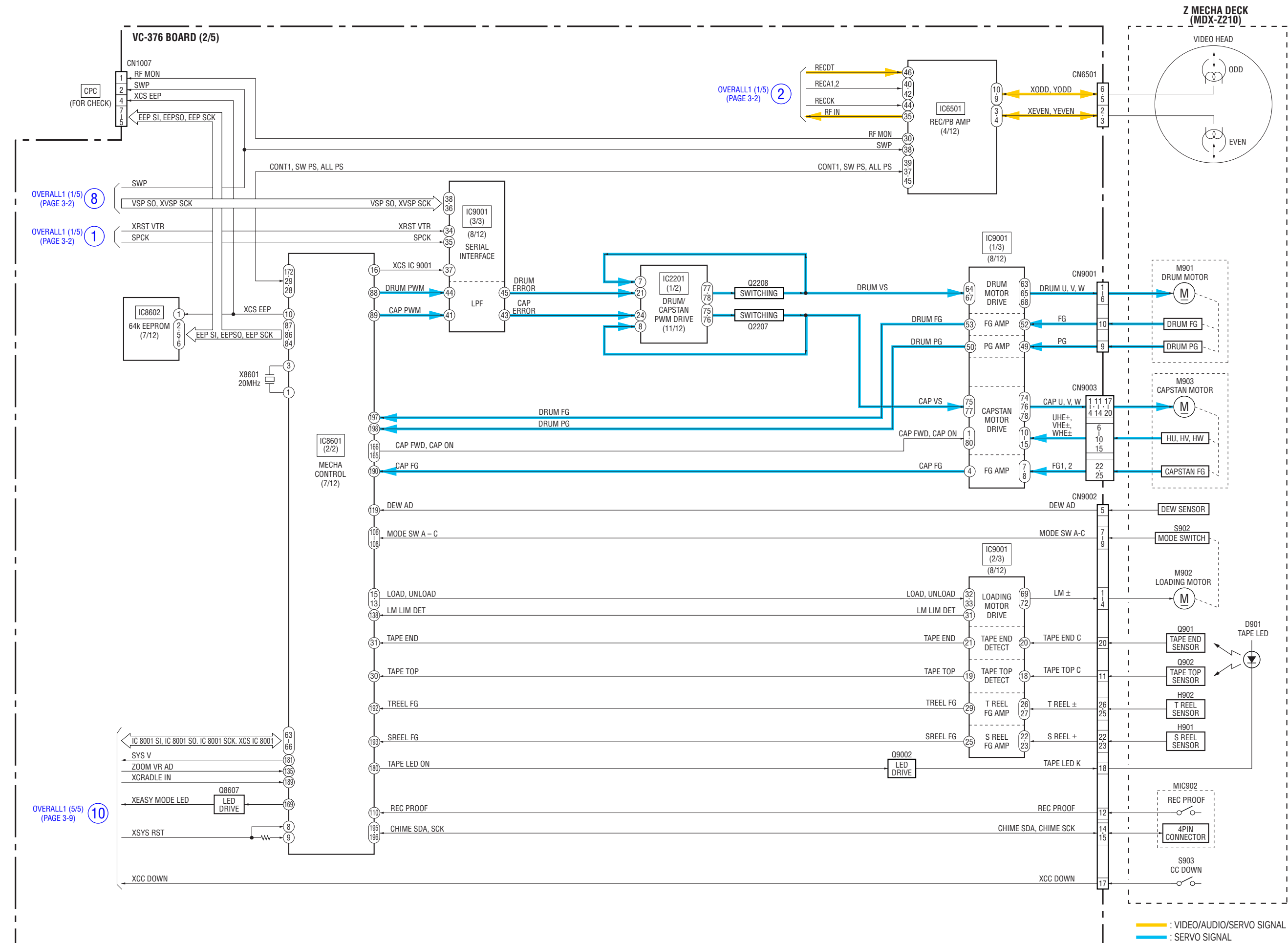
3. BLOCK DIAGRAMS

3-1. BLOCK DIAGRAMS (NON MS model)

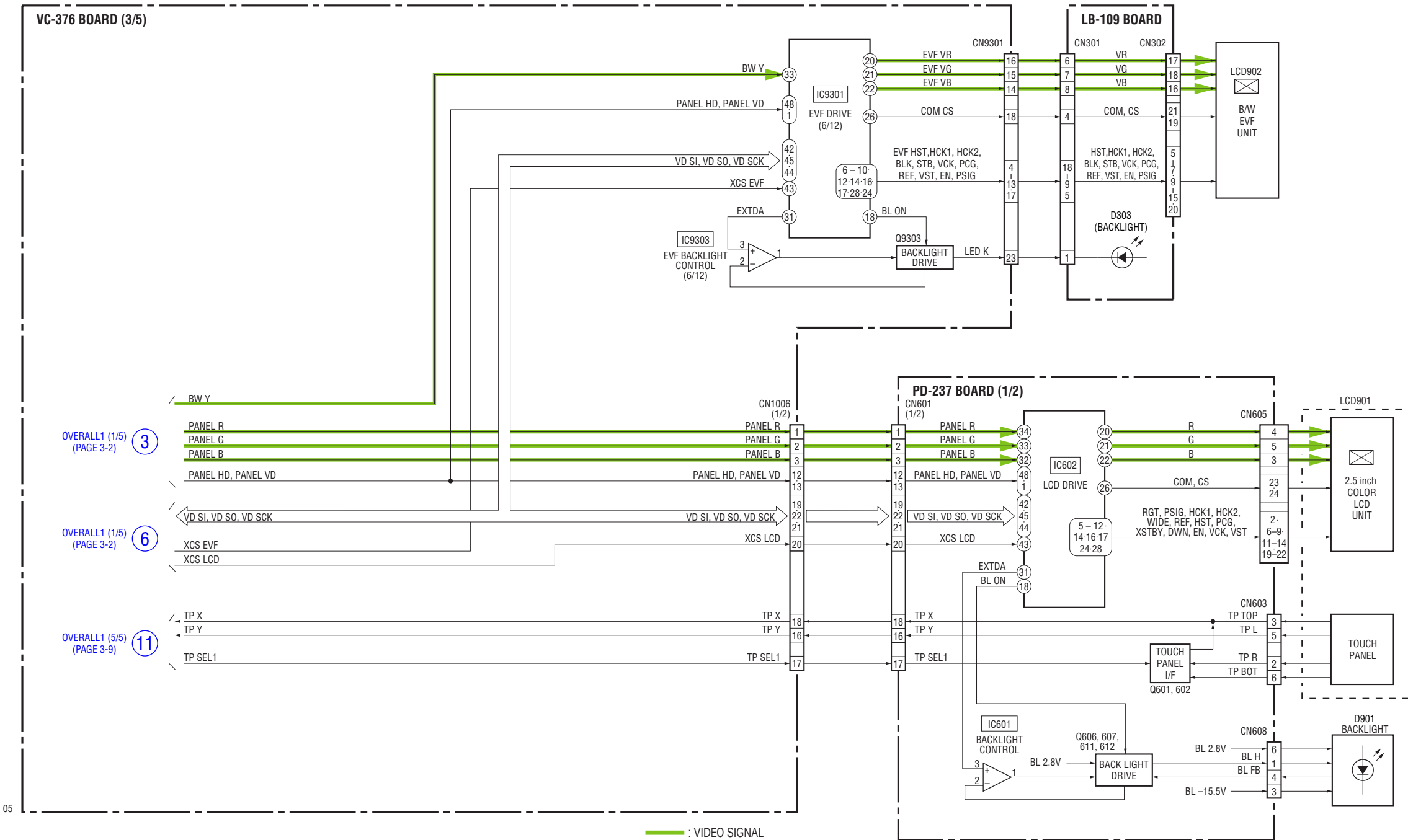
3-1-1. OVERALL BLOCK DIAGRAM (1/5) (NON MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



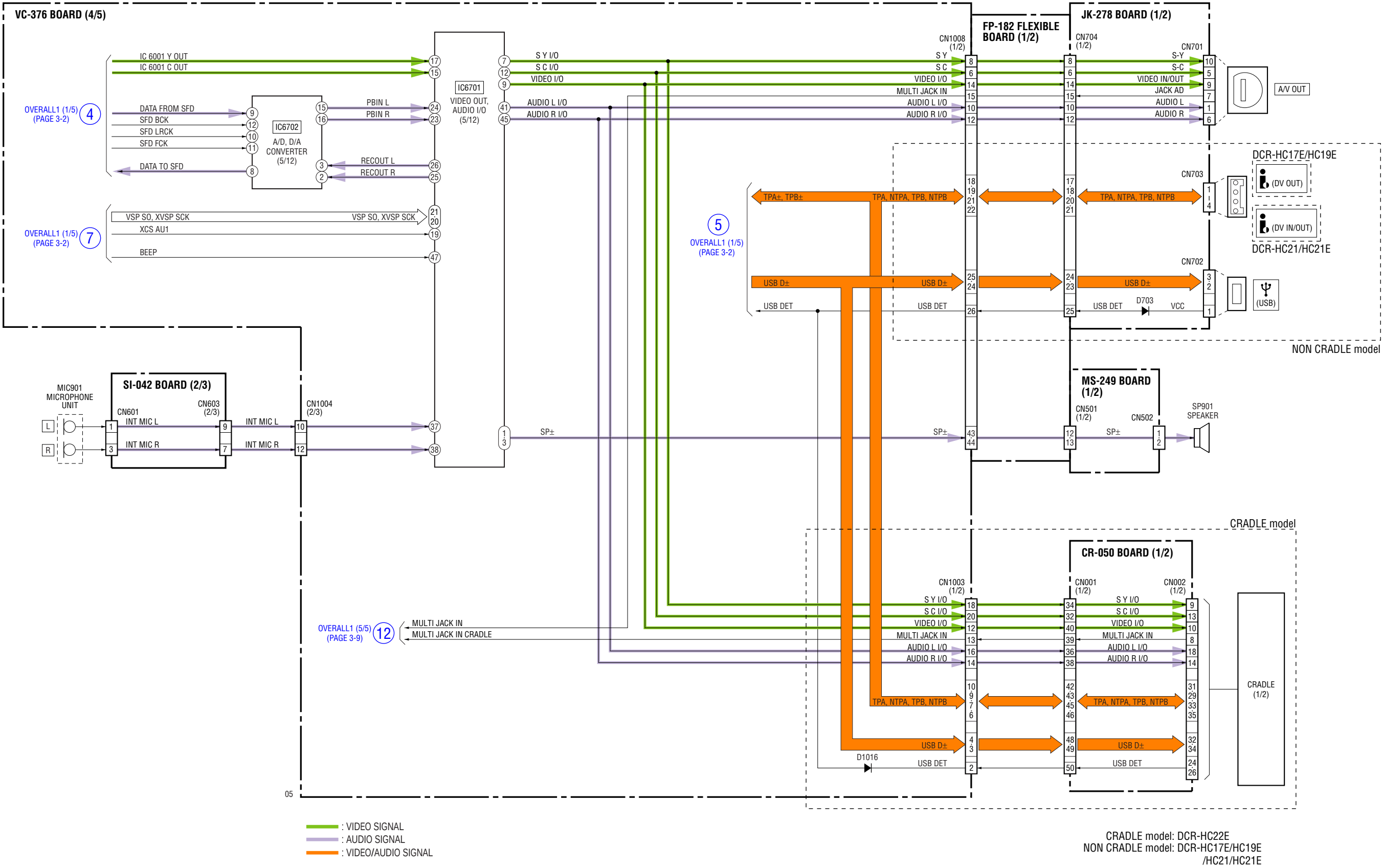
3-1-2. OVERALL BLOCK DIAGRAM (2/5) (NON MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



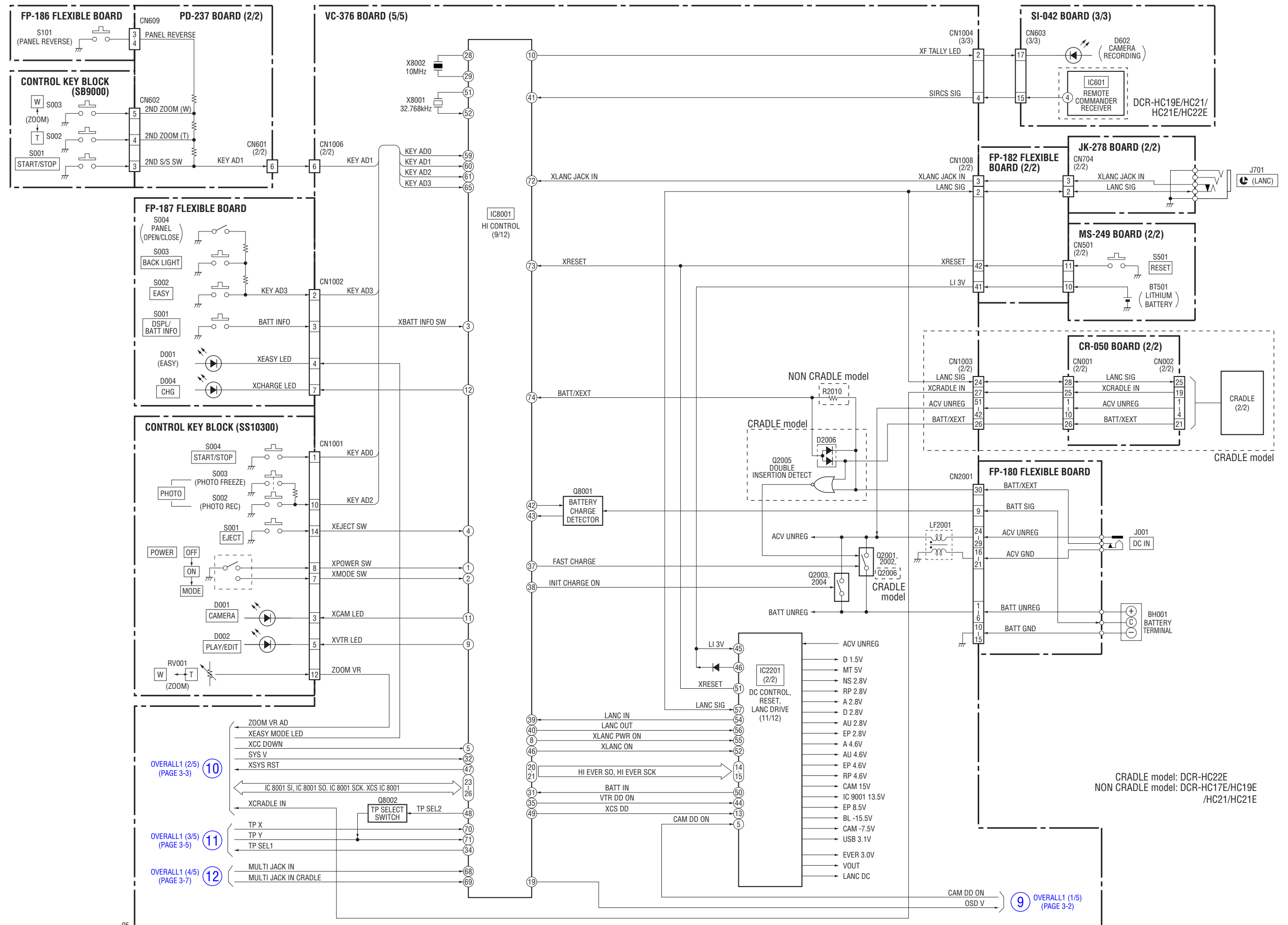
3-1-3. OVERALL BLOCK DIAGRAM (3/5) (NON MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



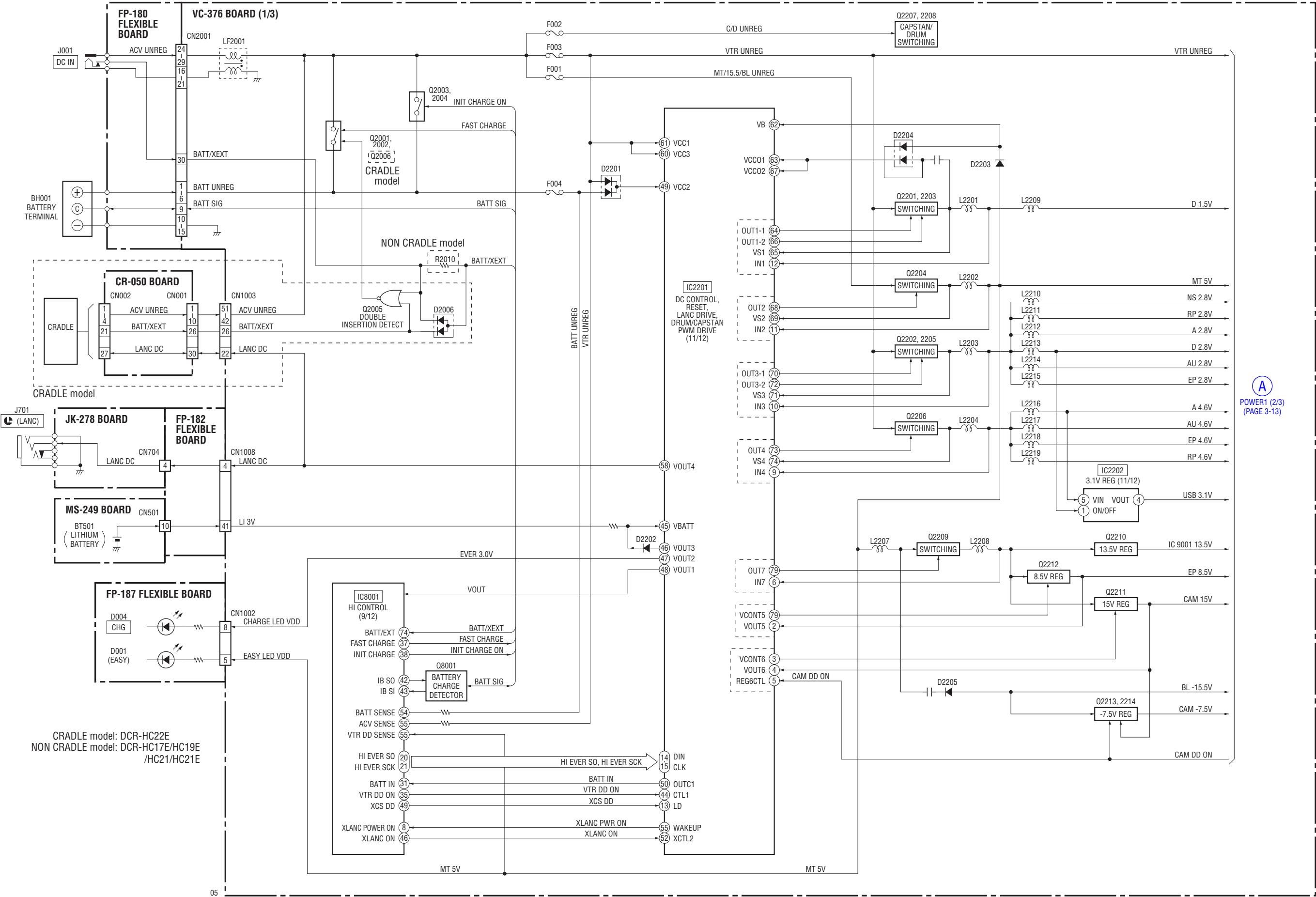
3-1-4. OVERALL BLOCK DIAGRAM (4/5) (NON MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



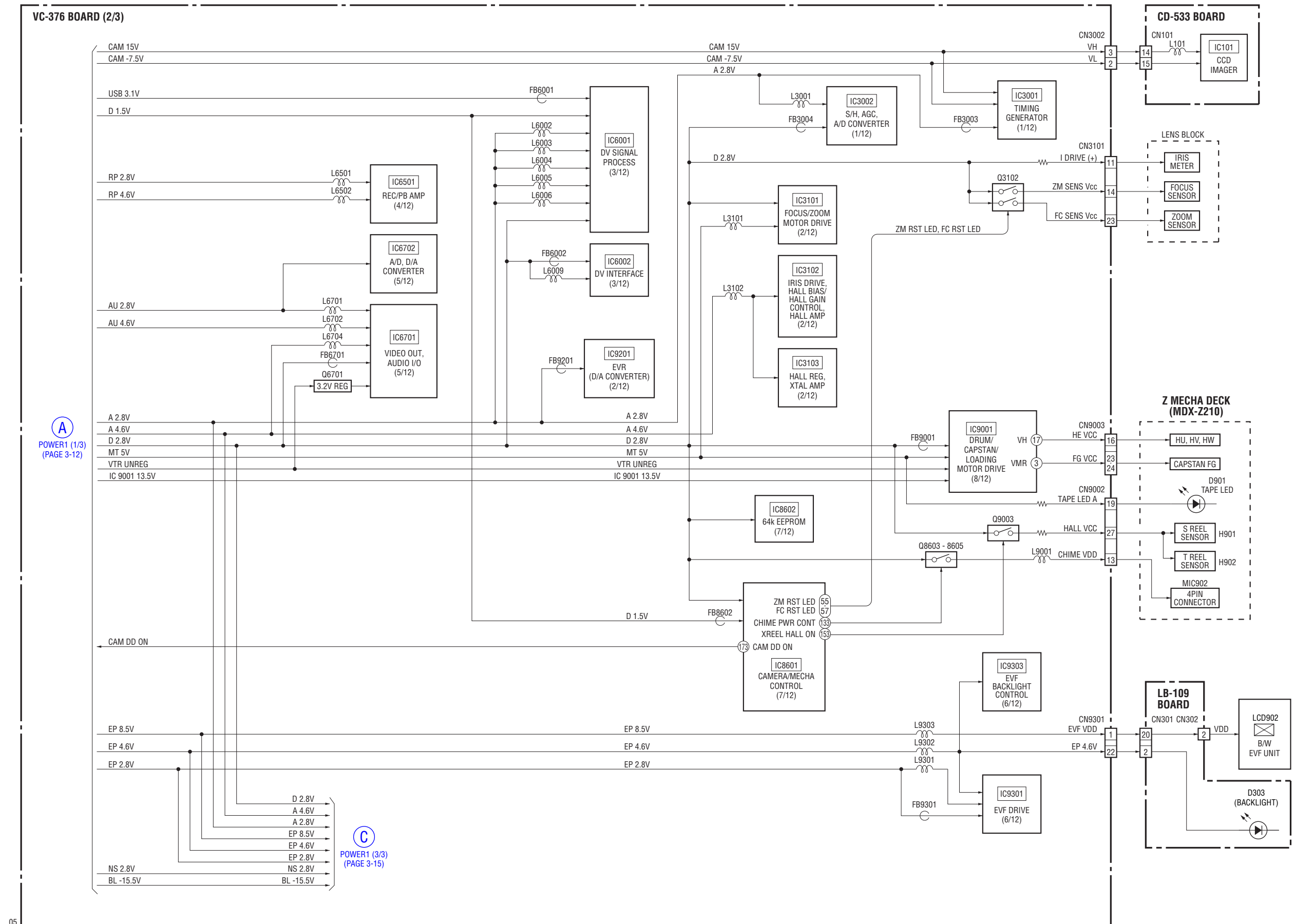
3-1-5. OVERALL BLOCK DIAGRAM (5/5) (NON MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



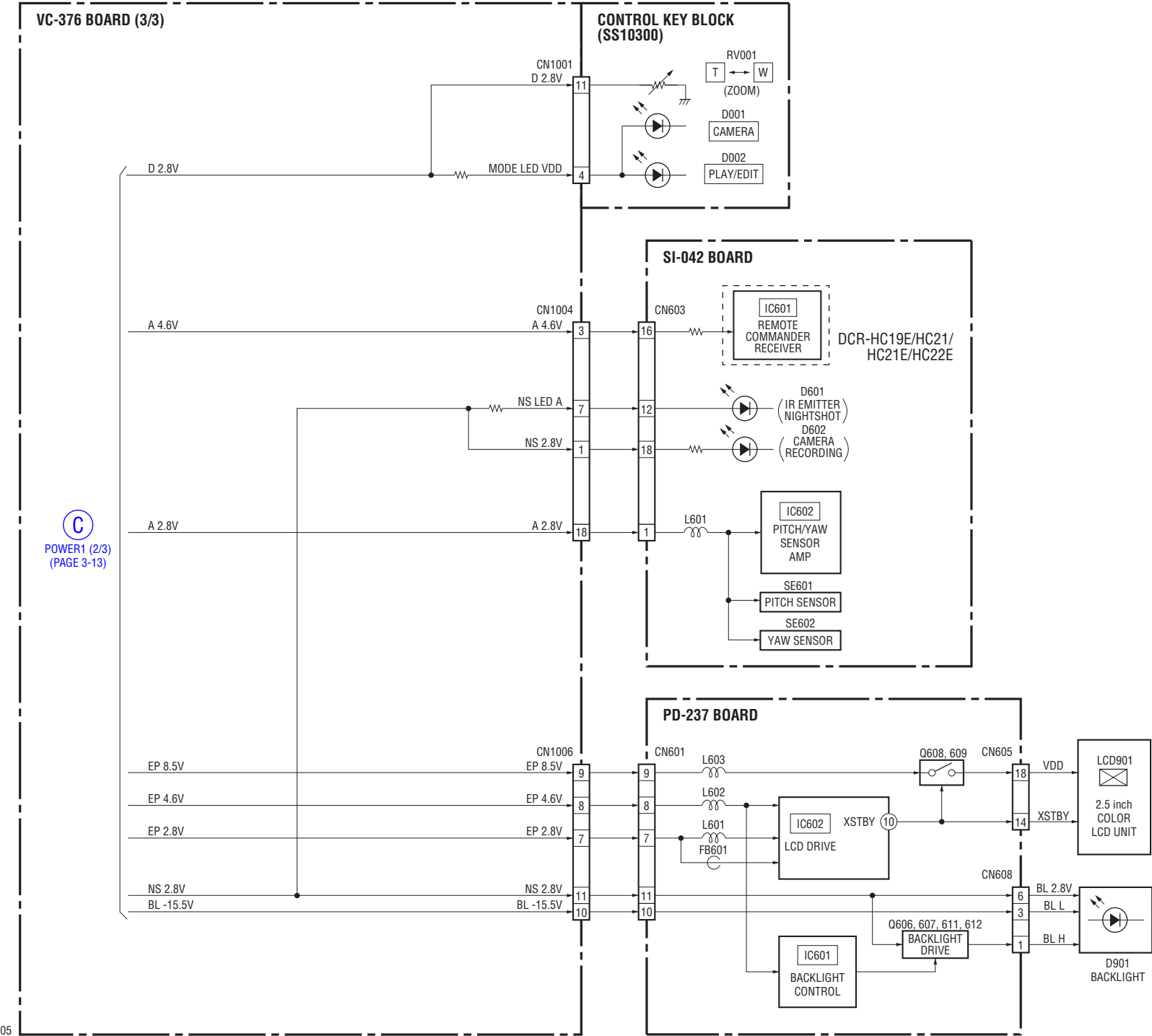
3-1-6. POWER BLOCK DIAGRAM (1/3) (NON MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



3-1-7. POWER BLOCK DIAGRAM (2/3) (NON MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



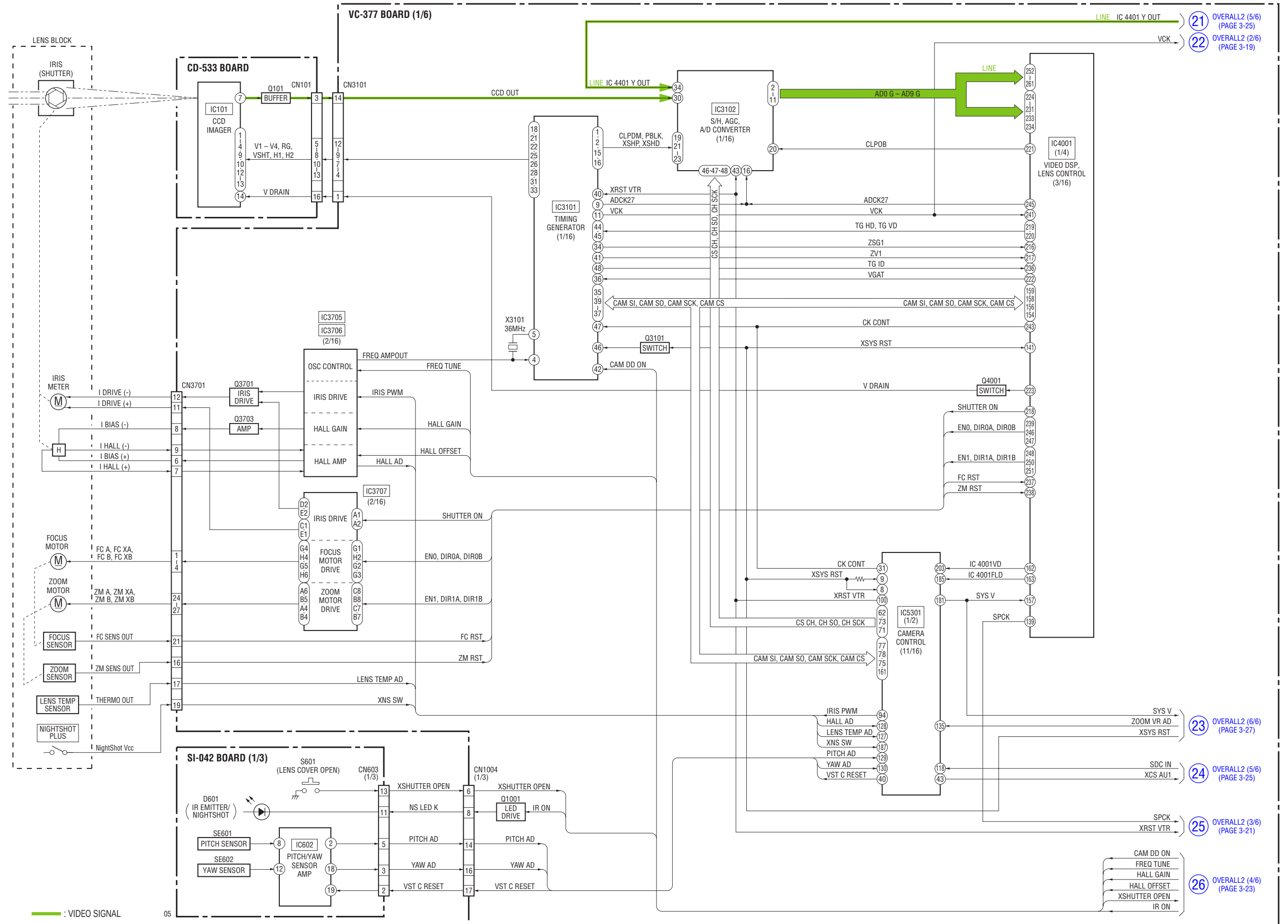
3-1-8. POWER BLOCK DIAGRAM (3/3) (NON MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



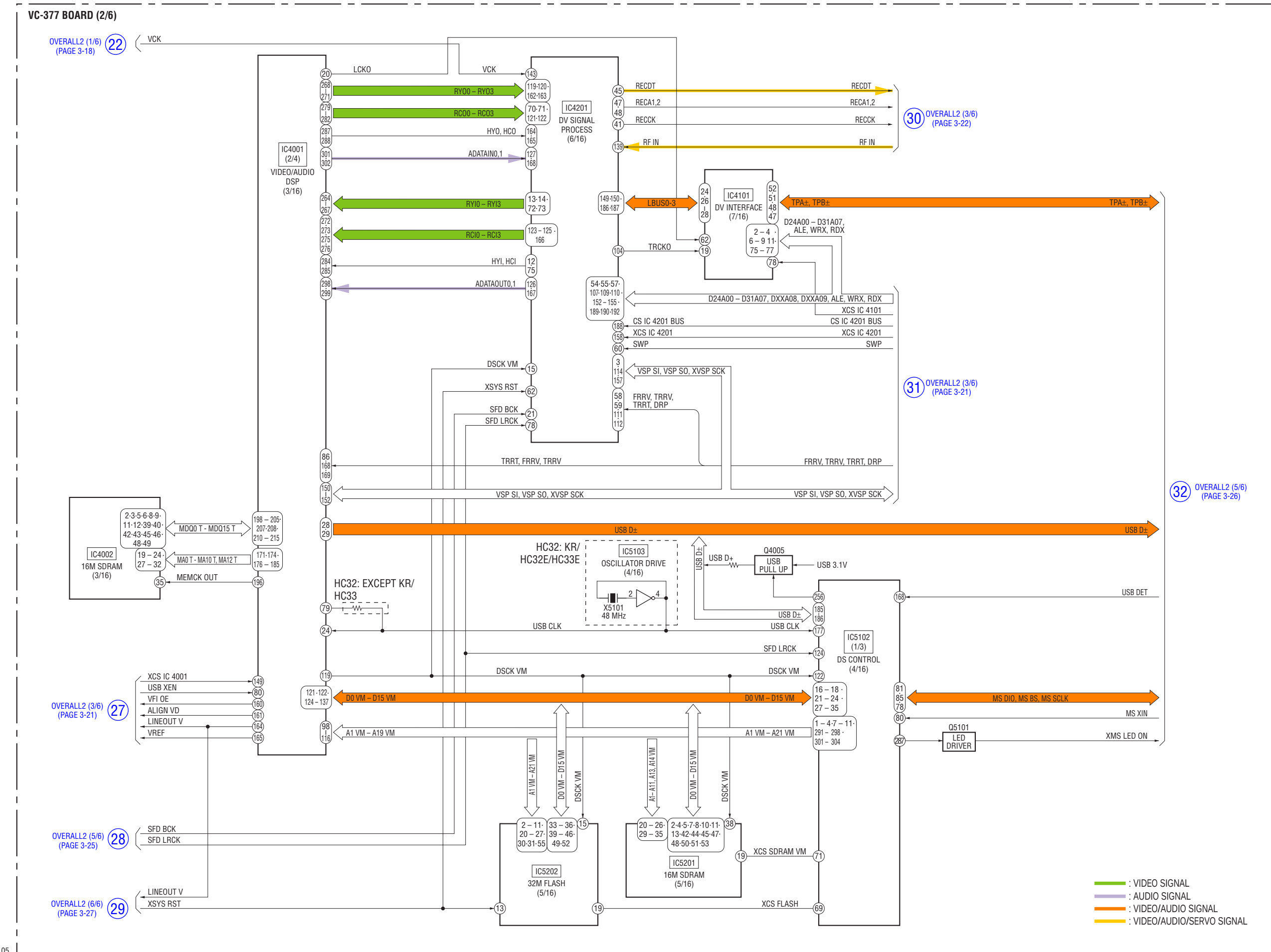
3-2. BLOCK DIAGRAMS (MS model)

3-2-1. OVERALL BLOCK DIAGRAM (1/6) (MS model)

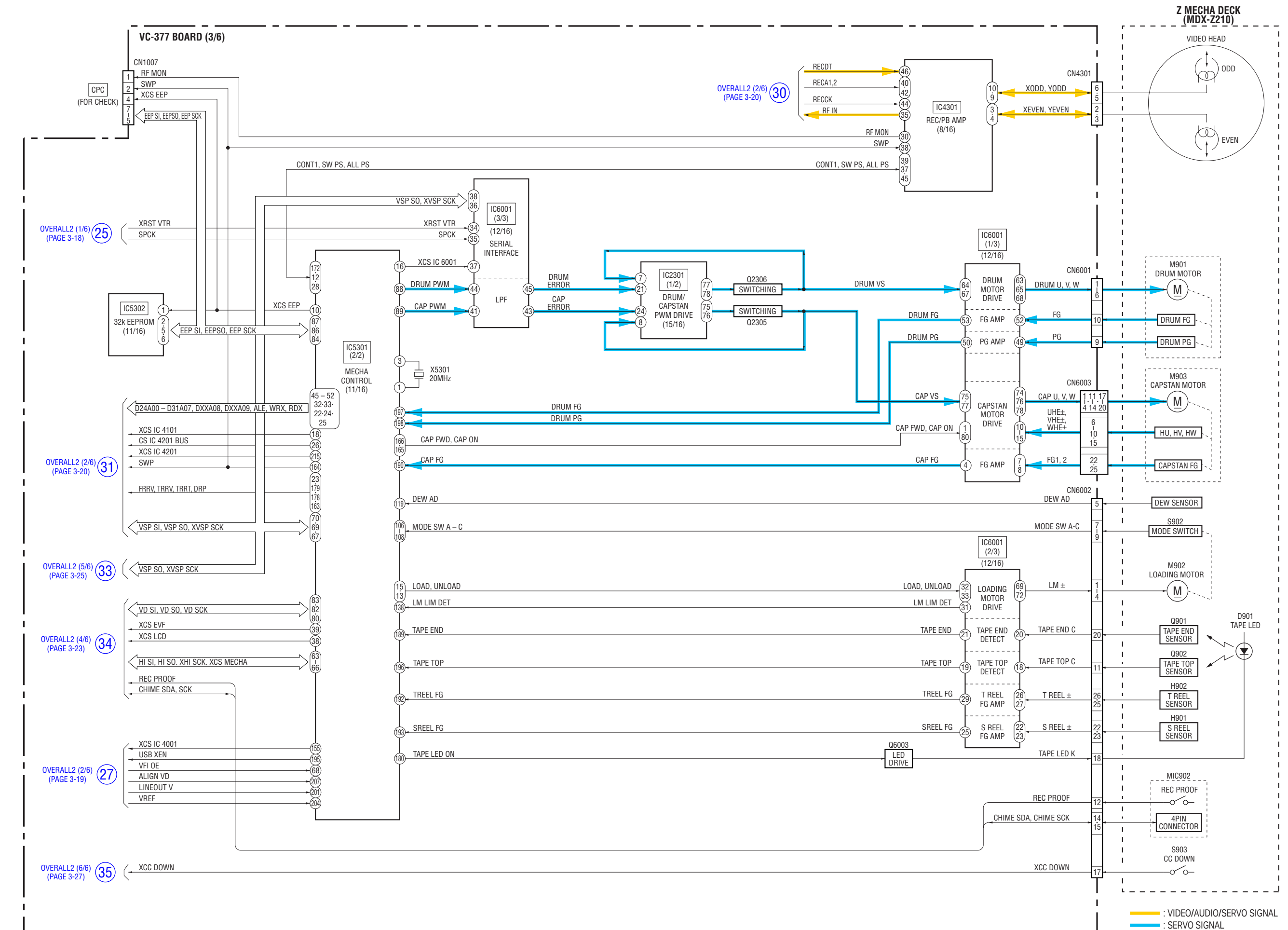
() : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



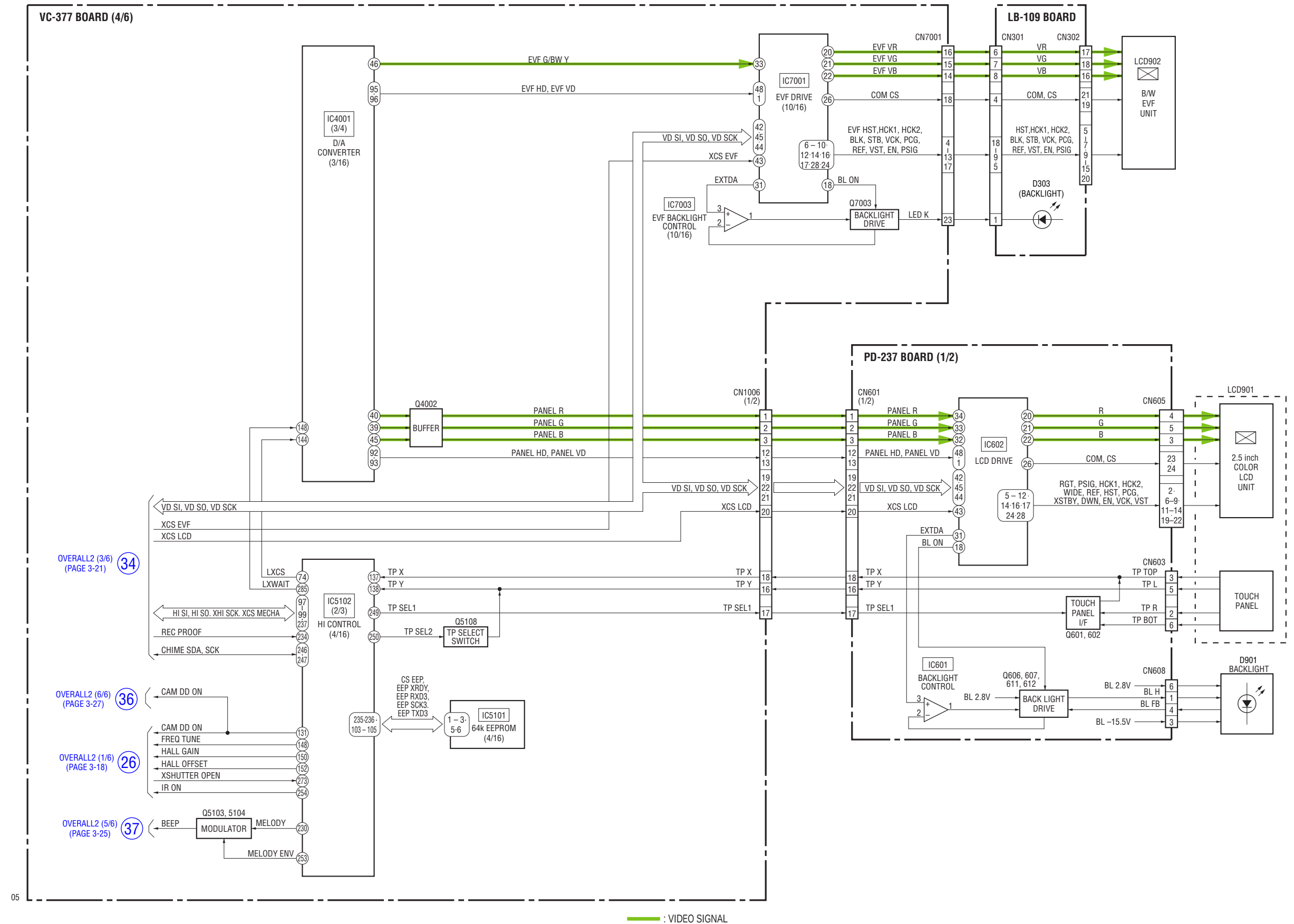
3-2-2. OVERALL BLOCK DIAGRAM (2/6) (MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



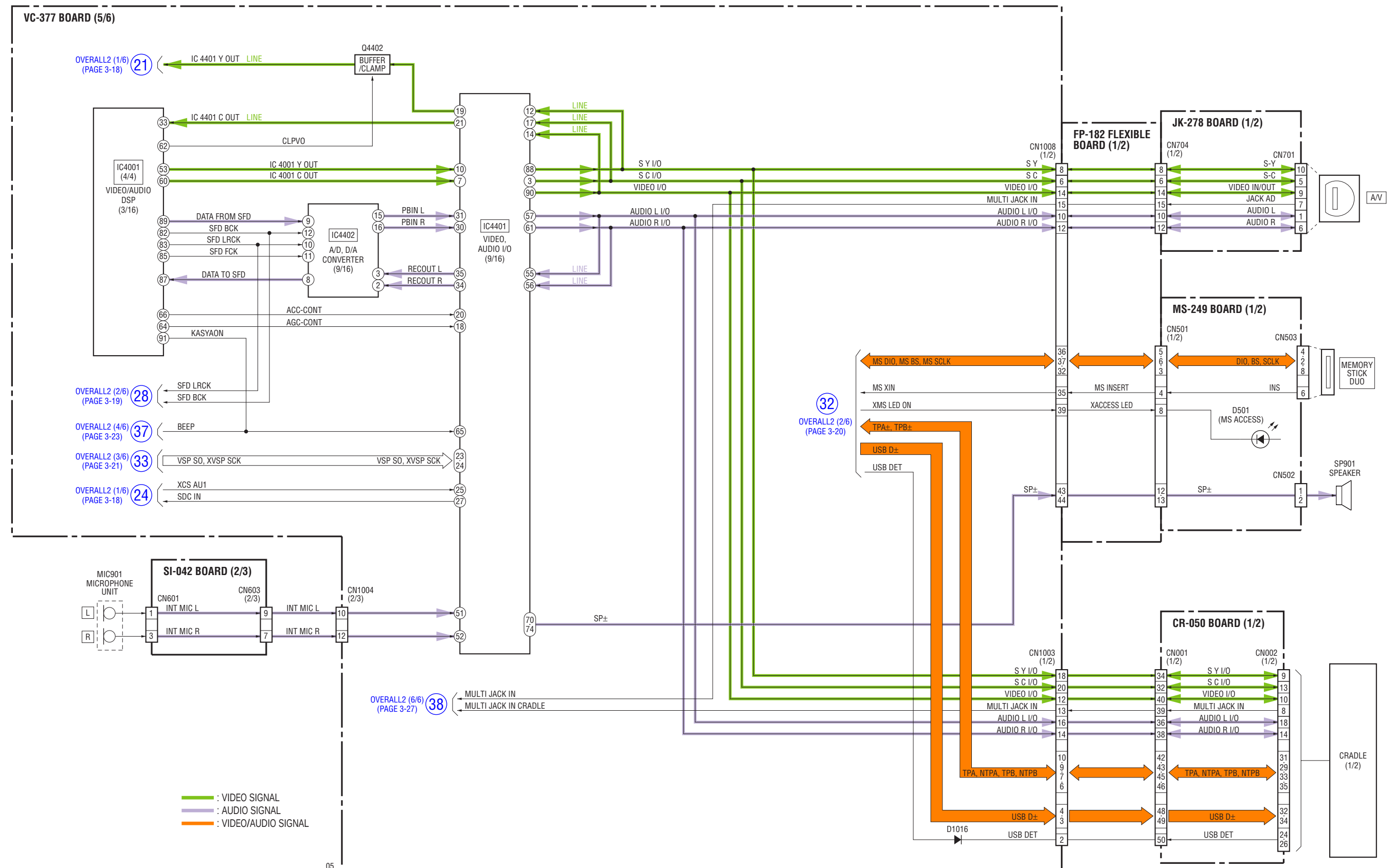
3-2-3. OVERALL BLOCK DIAGRAM (3/6) (MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



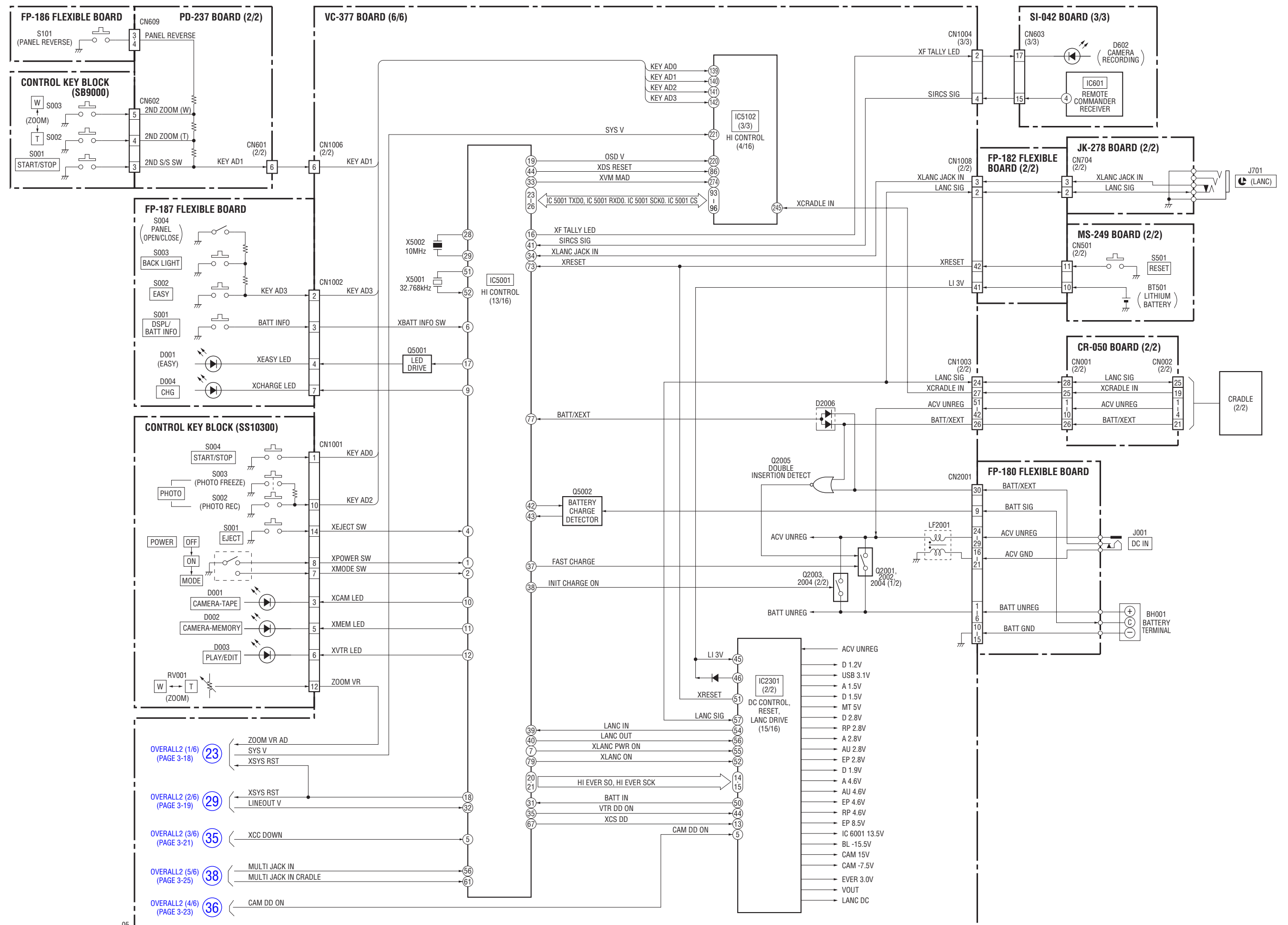
3-2-4. OVERALL BLOCK DIAGRAM (4/6) (MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



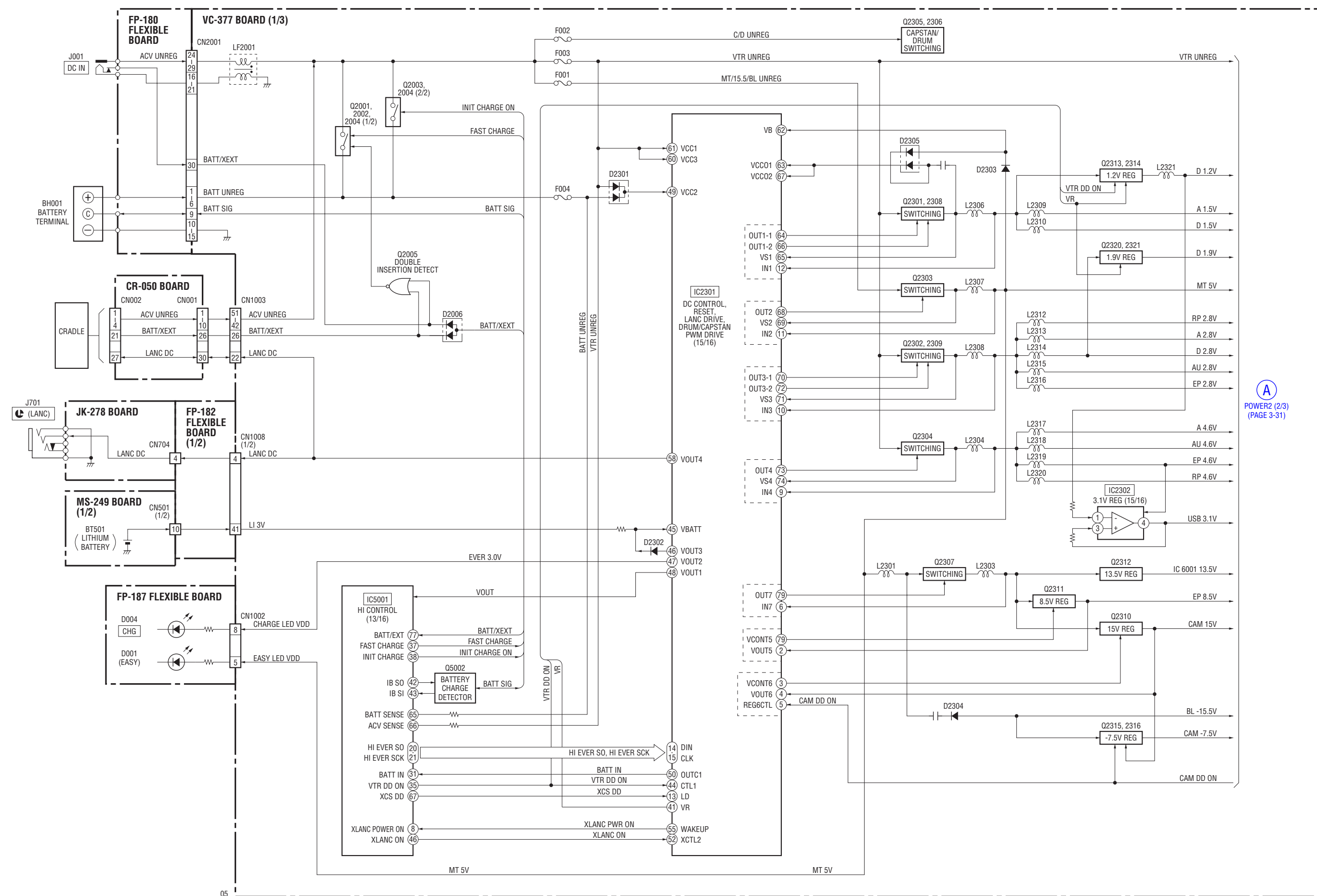
3-2-5. OVERALL BLOCK DIAGRAM (5/6) (MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



3-2-6. OVERALL BLOCK DIAGRAM (6/6) (MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.

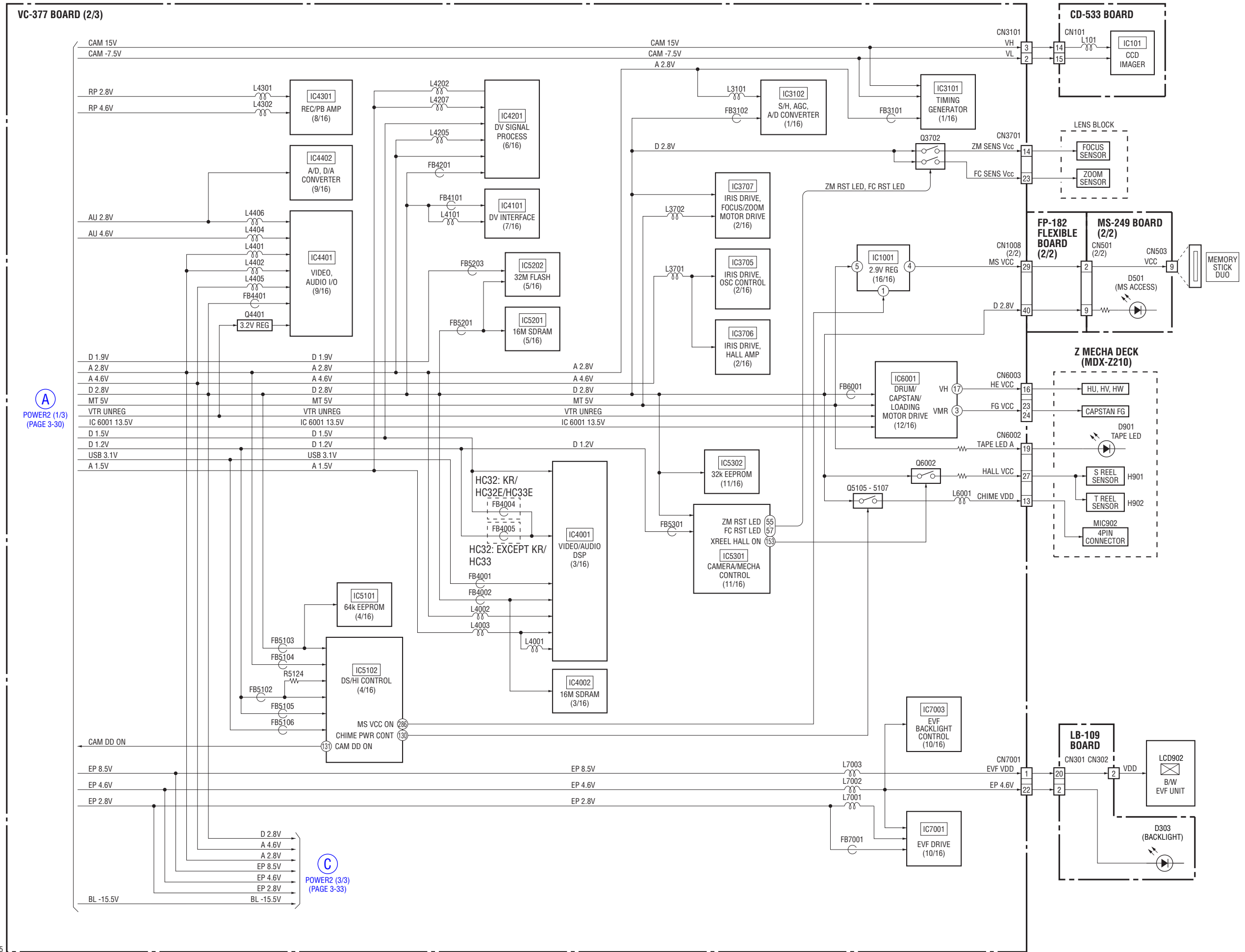


3-2-7. POWER BLOCK DIAGRAM (1/3) (MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.

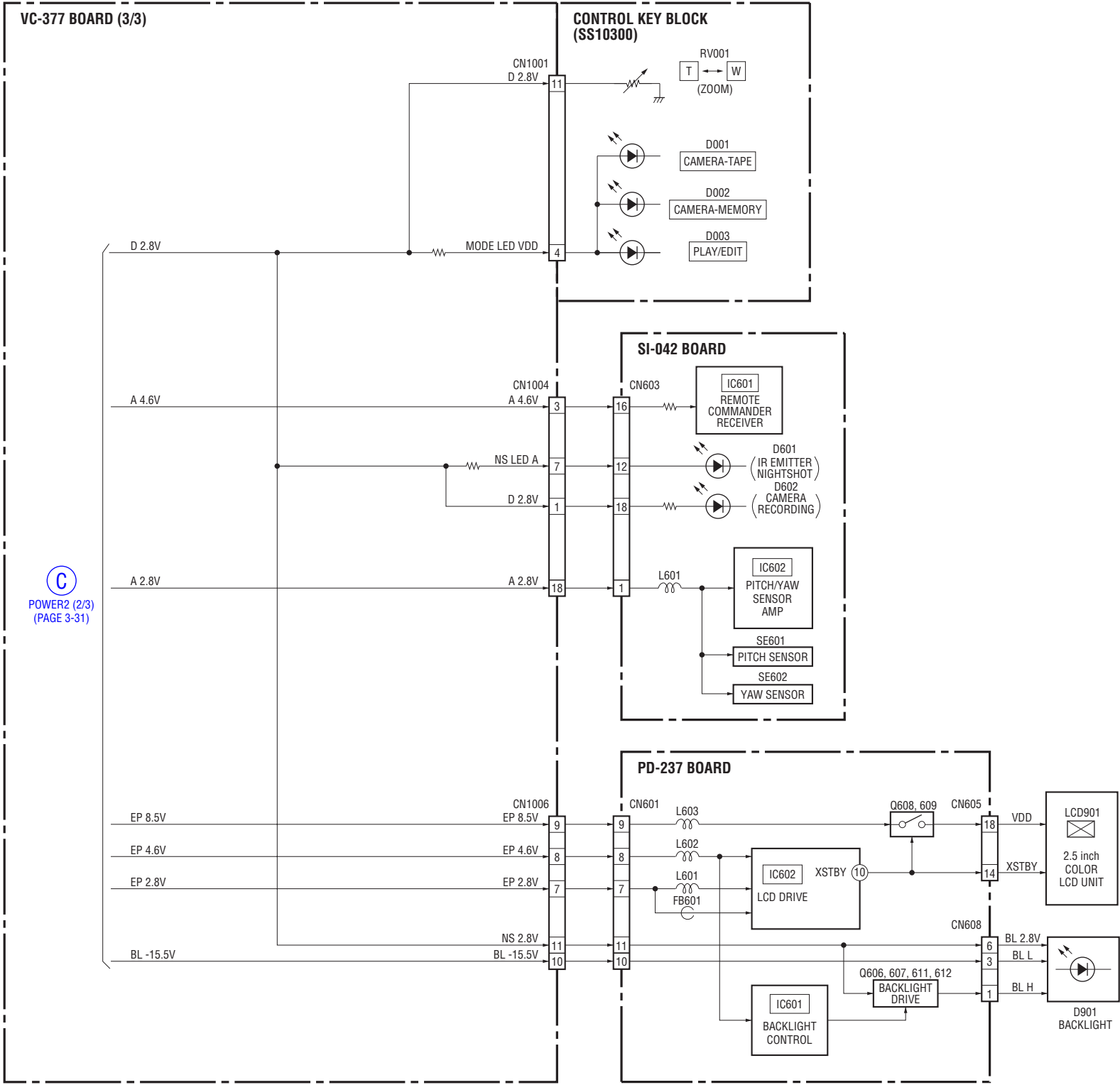


A
POWER2 (2/3)
(PAGE 3-31)

3-2-8. POWER BLOCK DIAGRAM (2/3) (MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.

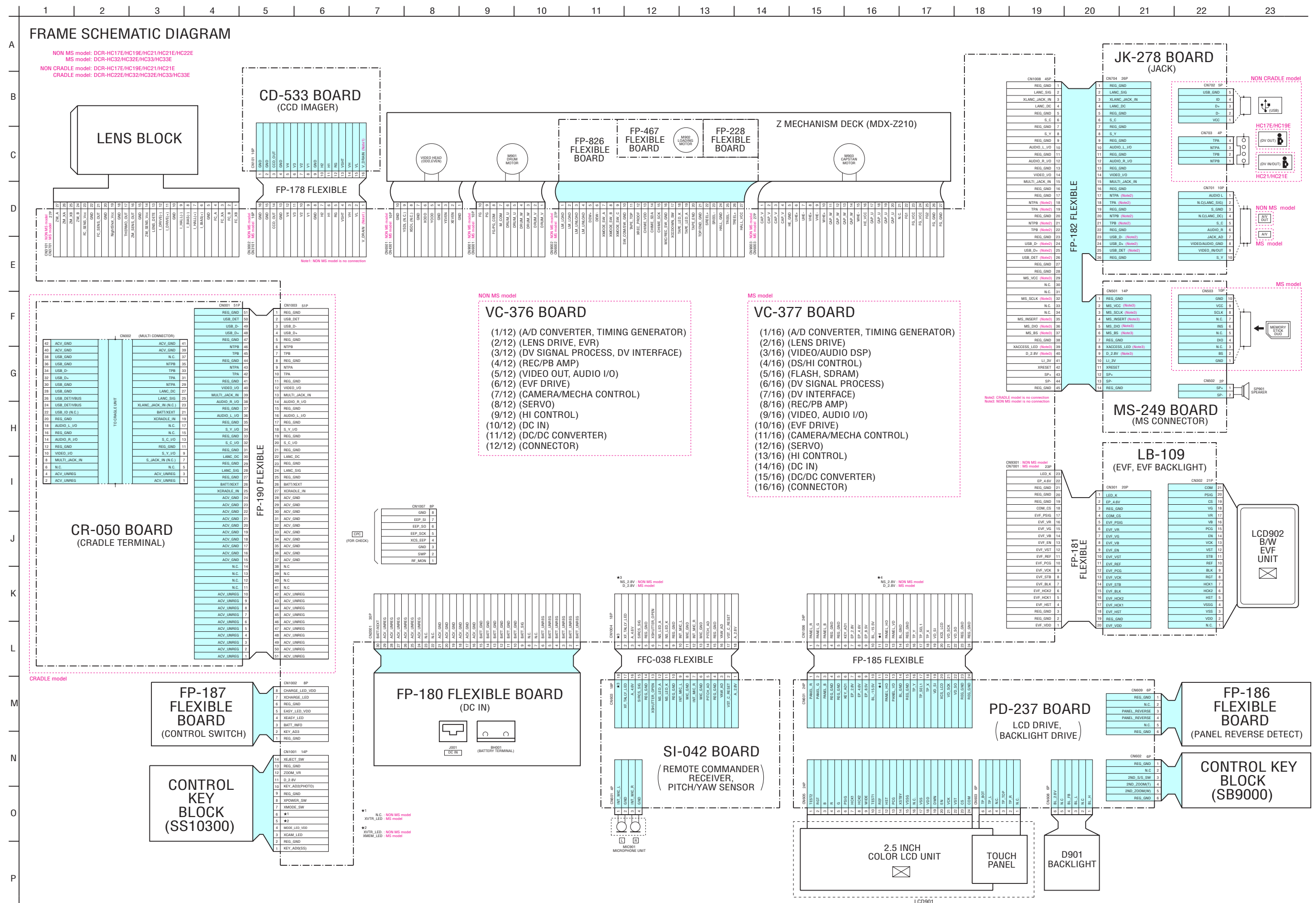


3-2-9. POWER BLOCK DIAGRAM (3/3) (MS model) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. SCHEMATIC DIAGRAMS

Link

• CD-533 BOARD (CCD IMAGER)	• LB-109 BOARD (EVF, EVF BACKLIGHT)
• PD-237 BOARD (LCD DRIVE, BACKLIGHT DRIVE)	• FP-186 FLEXIBLE BOARD (PANEL REVERSE DETECT)
• CR-050 BOARD (CRADLE TERMINAL)	• FP-180 FLEXIBLE BOARD (DC IN)
• SI-042 BOARD (REMOTE COMMANDER RECEIVER, PITCH/YAW SENSOR)	• FP-187 FLEXIBLE BOARD (CONTROL SWITCH)
• FP-182 FLEXIBLE BOARD	• FP-826, FP-467, FP-228 FLEXIBLE BOARD
• JK-278 BOARD (JACK)	• CONTROL KEY BLOCK (SS10300)
• MS-249 BOARD (MS CONNECTOR)	• CONTROL KEY BLOCK (SB9000)
• COMMON NOTE FOR SCHEMATIC DIAGRAMS	• WAVEFORMS

4-2. SCHEMATIC DIAGRAMS

4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS

(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. $\text{pF} : \mu\text{F} : 50\text{ V}$ or less are not indicated except for electrolytics and tantalums.
- Chip resistors are $1/10\text{ W}$ unless otherwise noted.
 $\text{k}\Omega=1000\ \Omega$, $\text{M}\Omega=1000\ \text{k}\Omega$.
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example	C541	L452
	22U	10UH
	TA A	2520
	TA	A
Kinds of capacitor	External dimensions (mm)	Case size

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
 $\text{XEDIT} \rightarrow \text{EDIT}$ $\text{PB/XREC} \rightarrow \text{PB/REC}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B- Line
- : IN/OUT direction of (+,-) B LINE.
- : adjustment for repair.
- : not use circuit
- Circled numbers refer to waveforms.

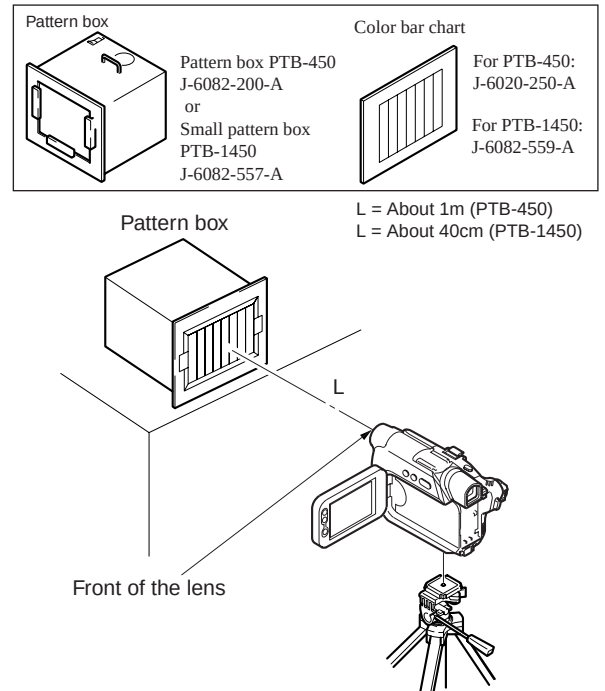
(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
(VOM of DC $10\text{ M}\Omega$ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

Precautions for Replacement of CCD Imager

- The CD-533 board mounted as a repair part is not equipped with a CCD imager.
When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

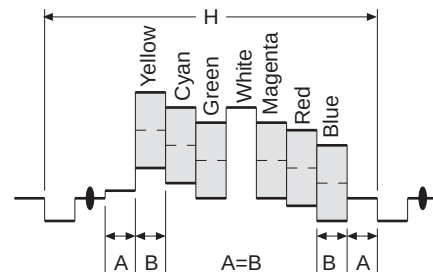


Fig. a (Video output terminal output waveform)

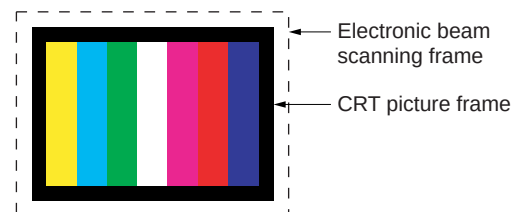


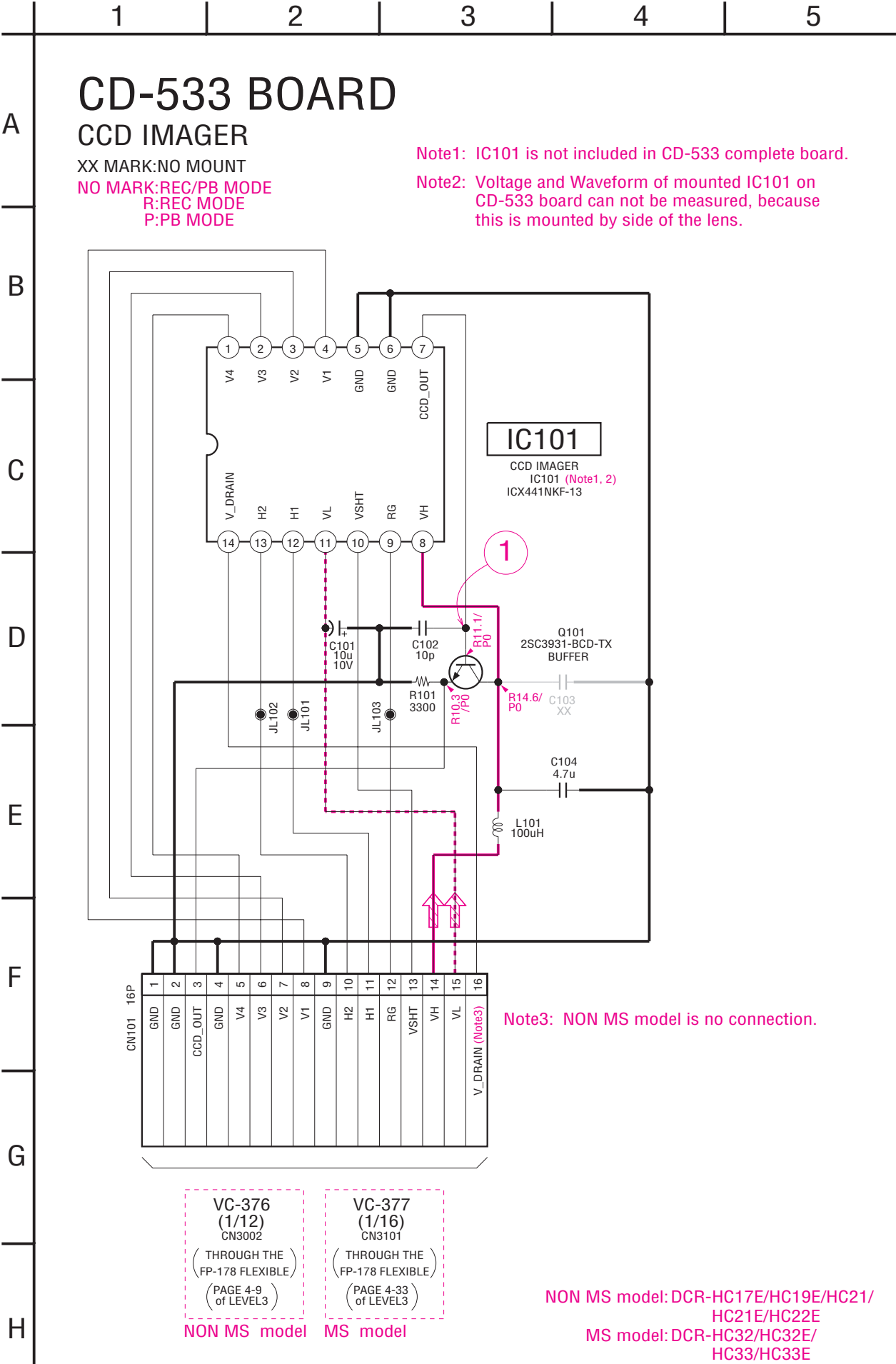
Fig.b (Picture on monitor TV)

When indicating parts by reference number, please include the board name.

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

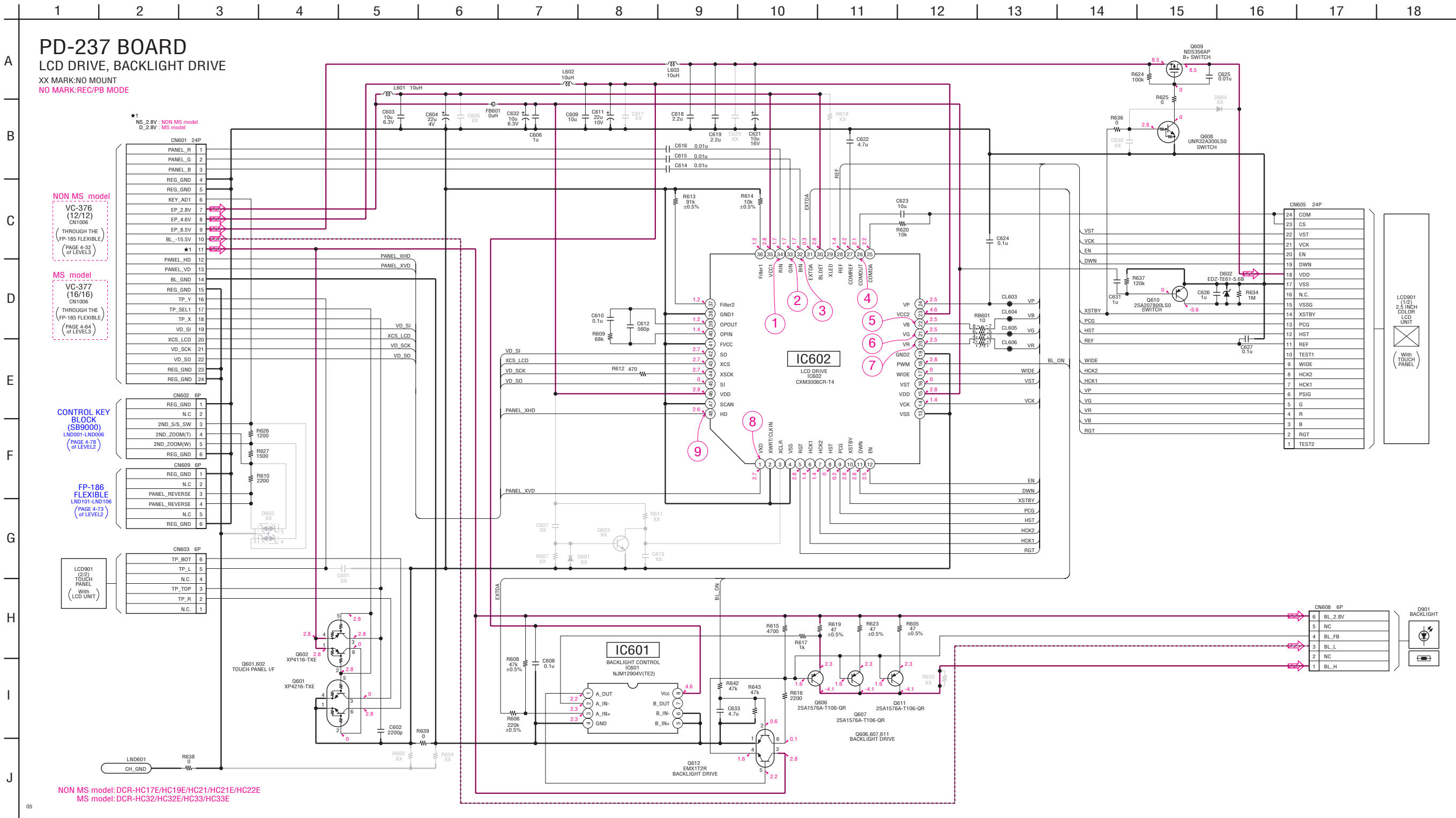
Les composants identifiés par une marque $\triangle$ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

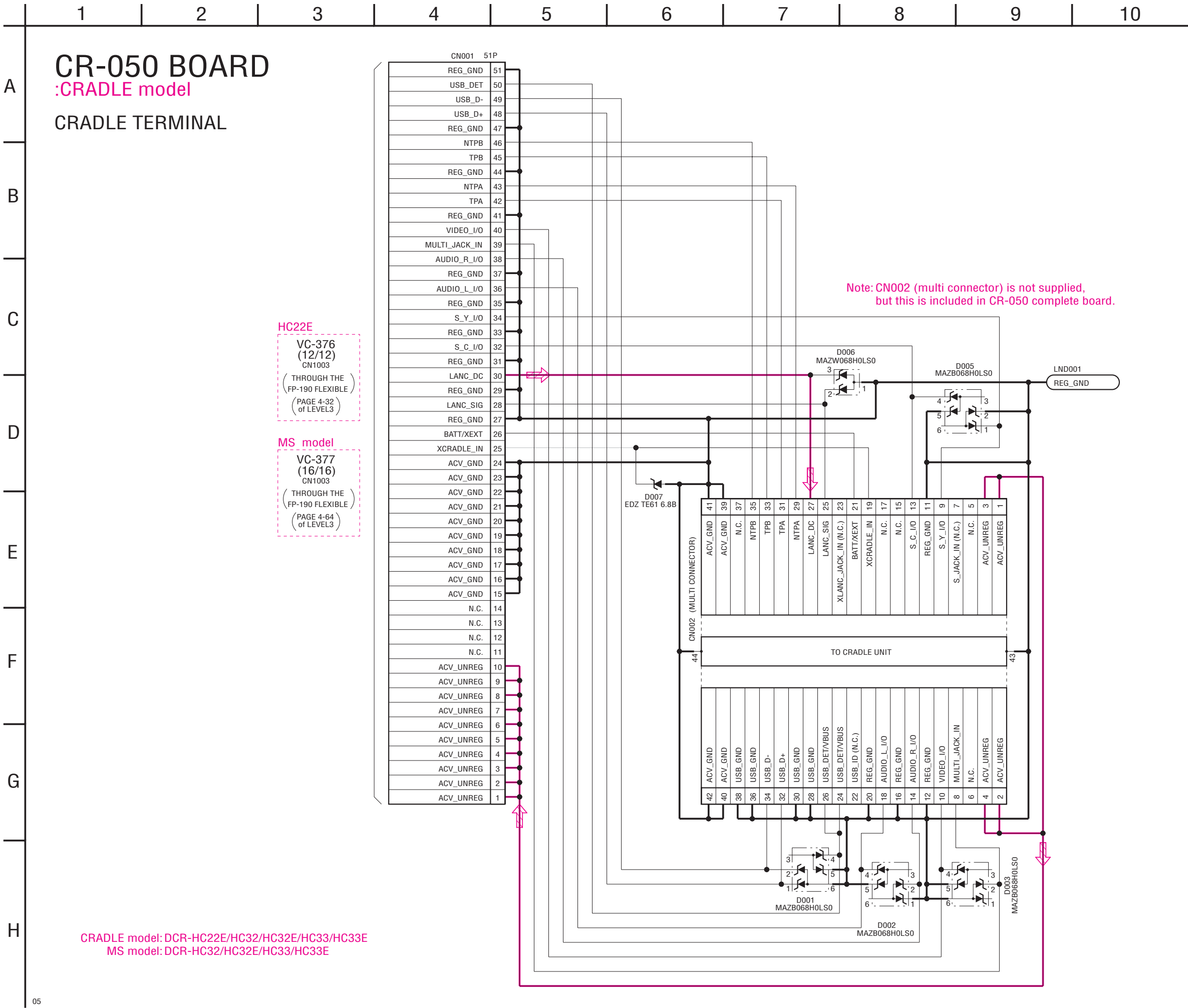
For Schematic Diagram
• Refer to page 4-81 for printed wiring board.



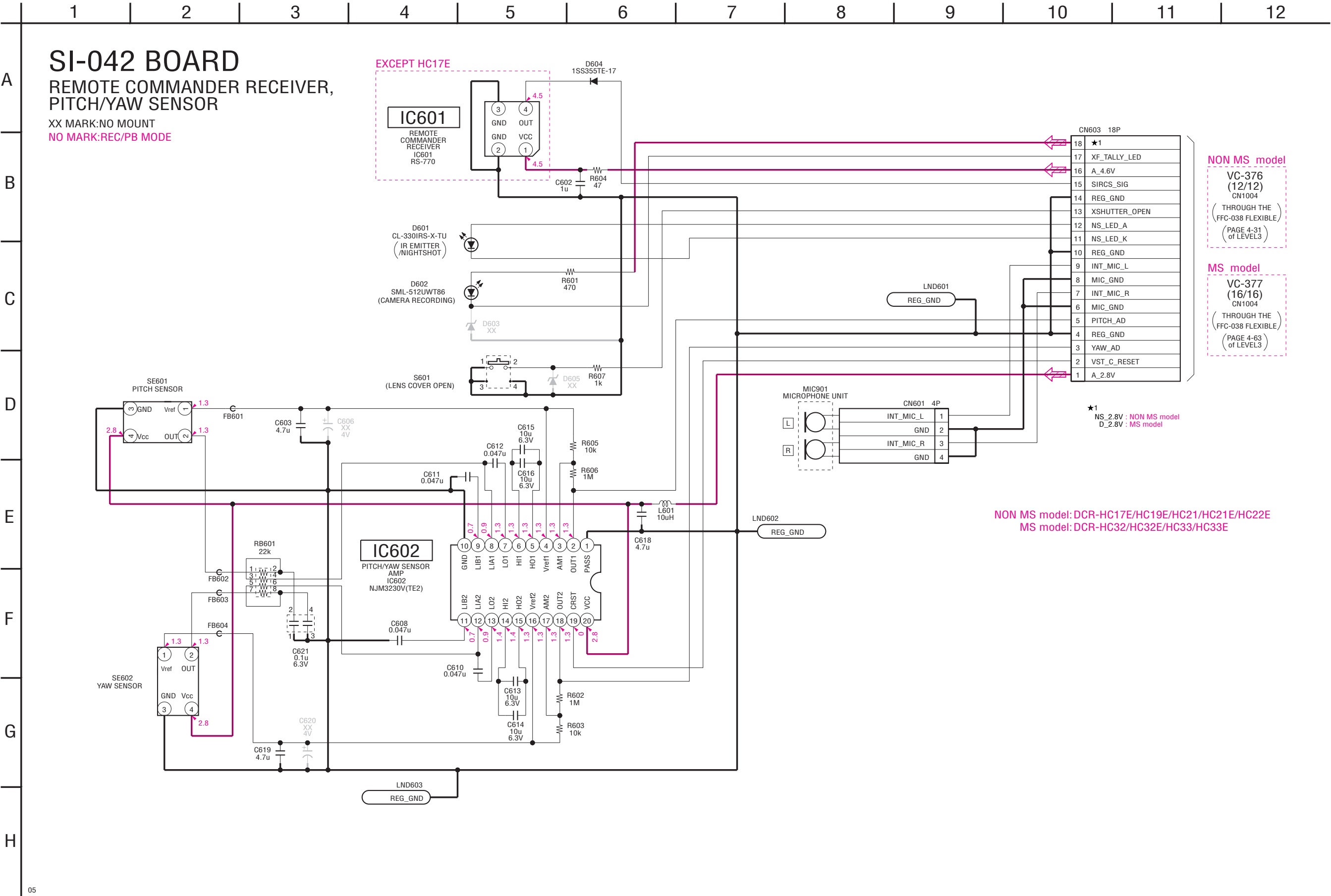
Schematic diagrams of the VC-376/377 board are not shown.
Pages from 4-9 to 4-64 are not shown.

For Schematic Diagram
• Refer to page 4-91 for printed wiring board.

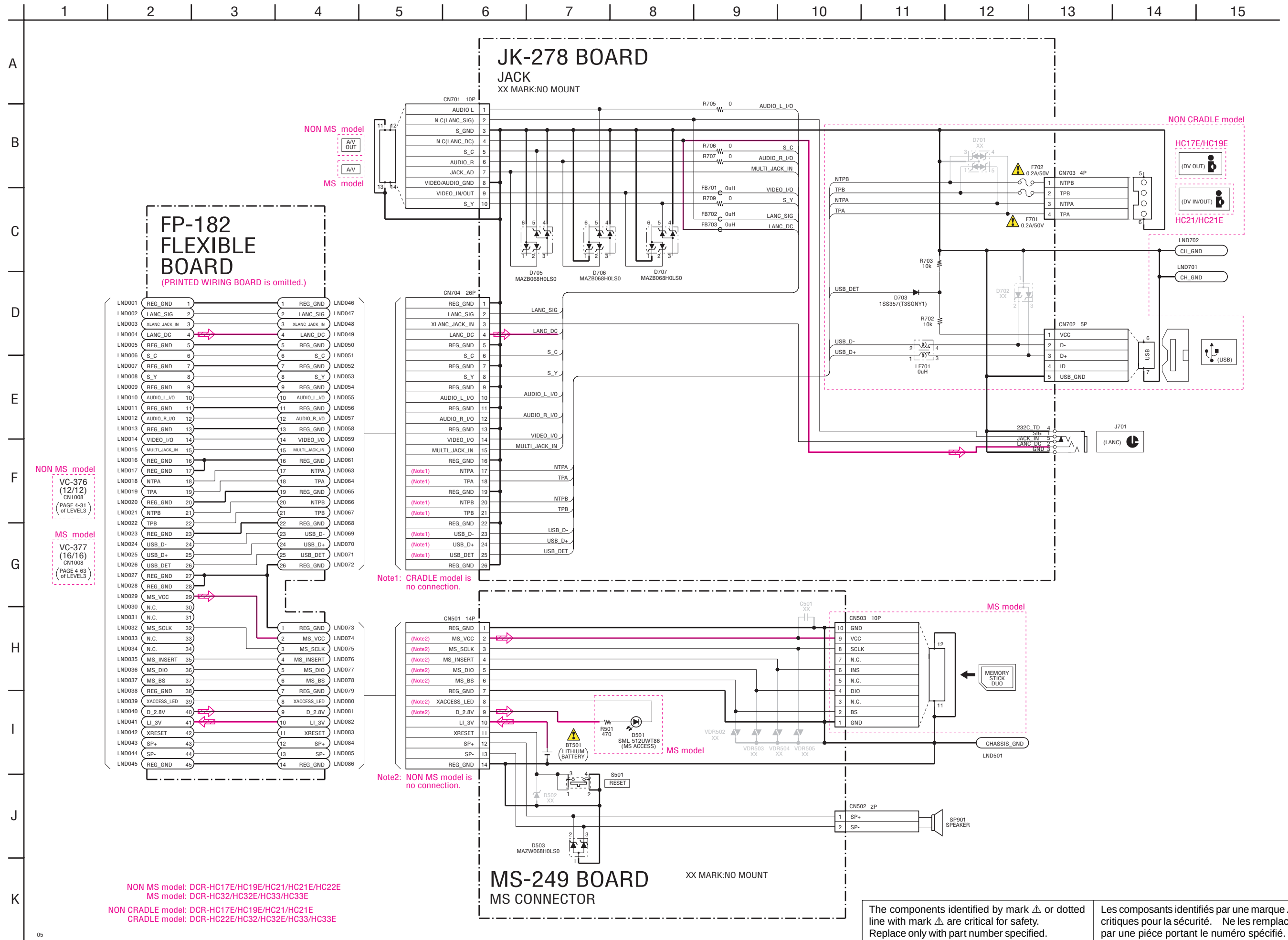




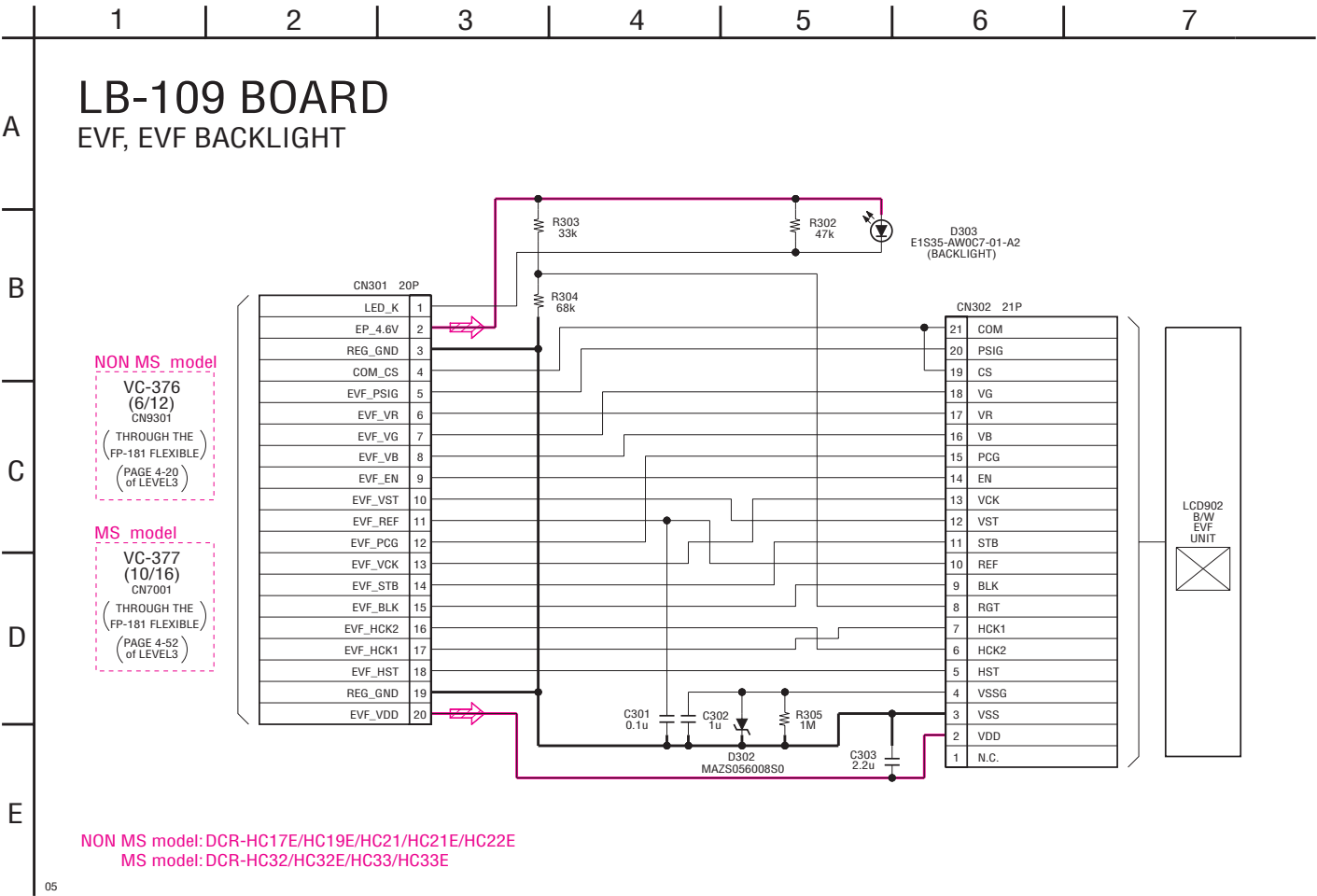
For Schematic Diagram
• Refer to page 4-93 for printed wiring board.



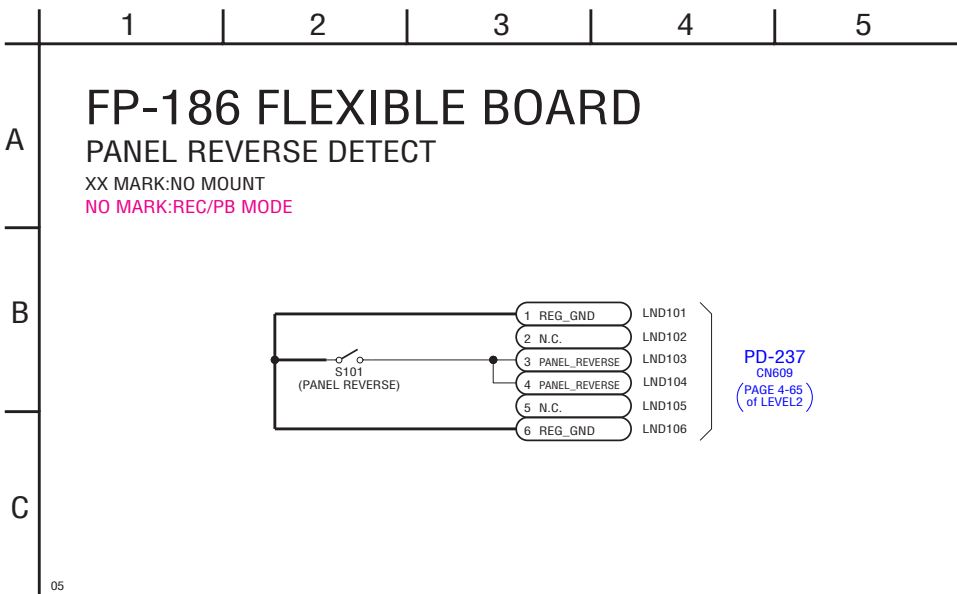
- Refer to page 4-95 for printed wiring board.



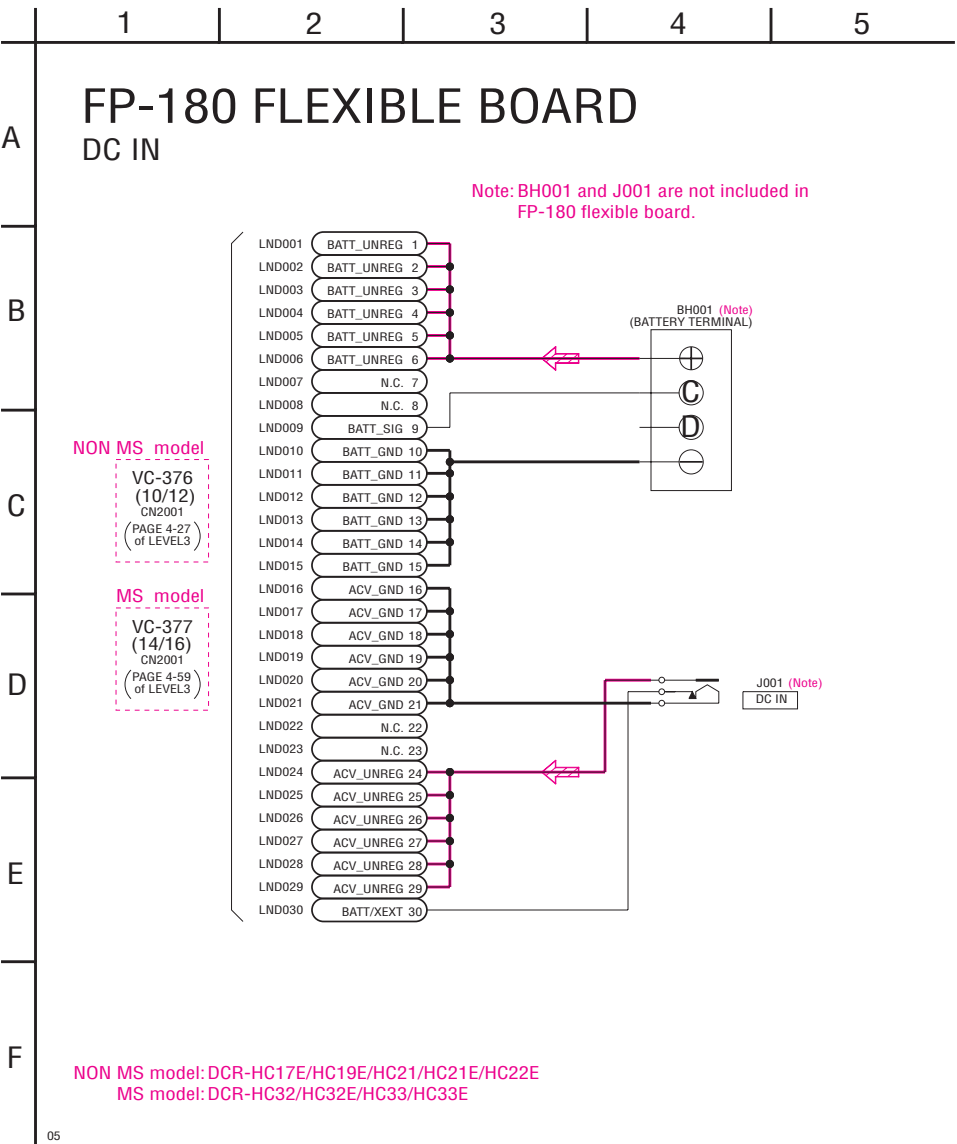
For Schematic Diagram
• Refer to page 4-93 for printed wiring board.



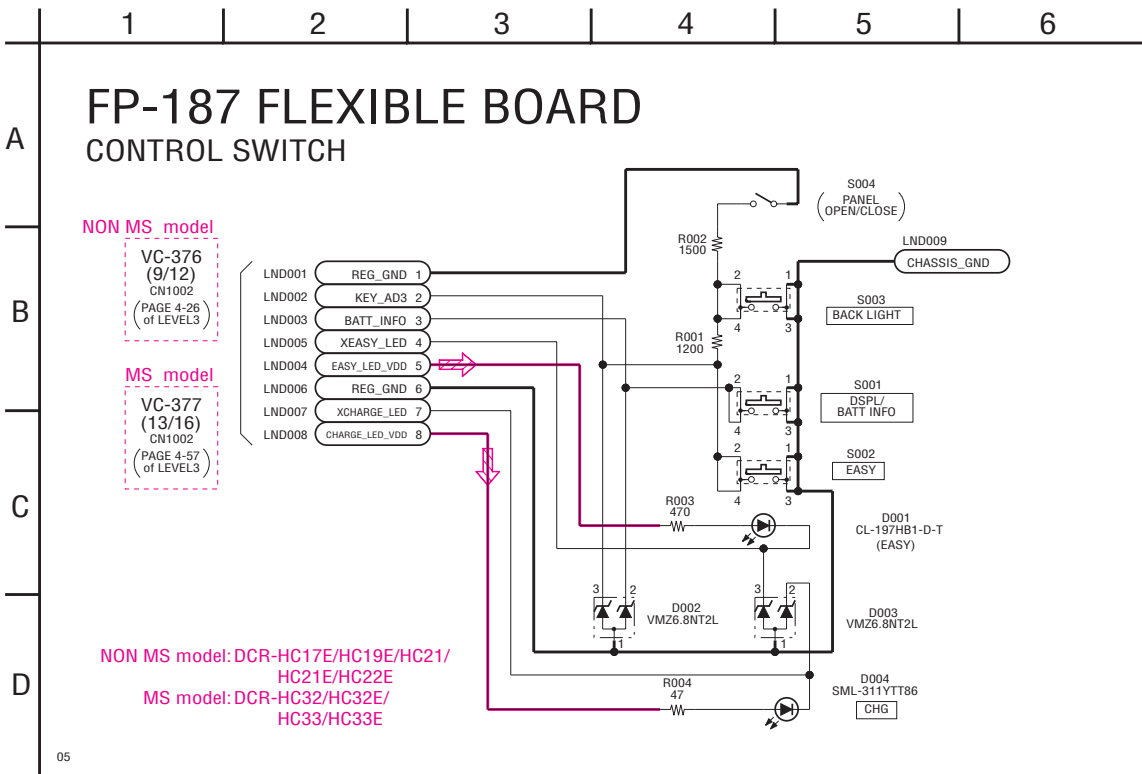
For Schematic Diagram
• Refer to page 4-97 for printed wiring board.



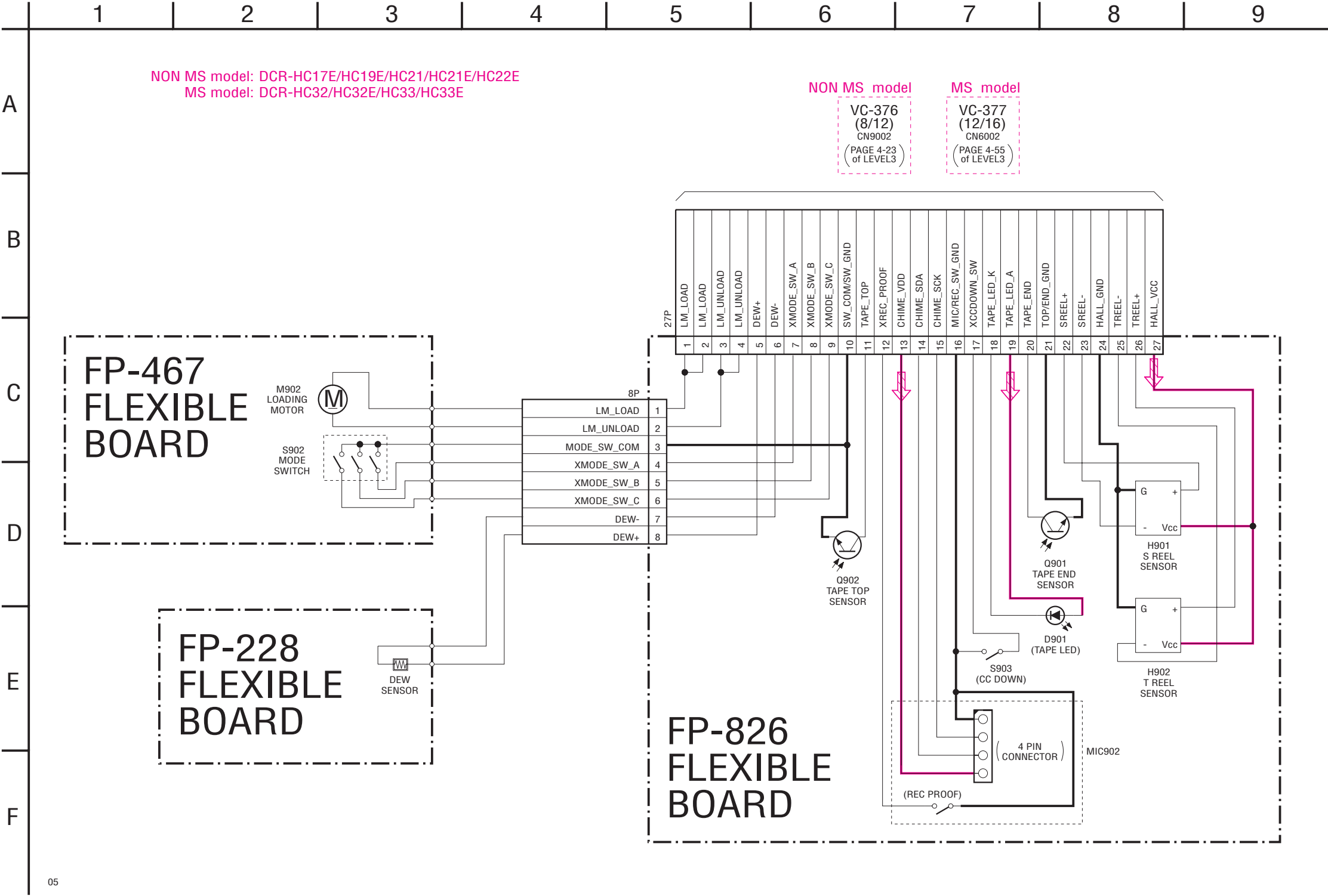
For Schematic Diagram
• Refer to page 4-97 for printed wiring board.

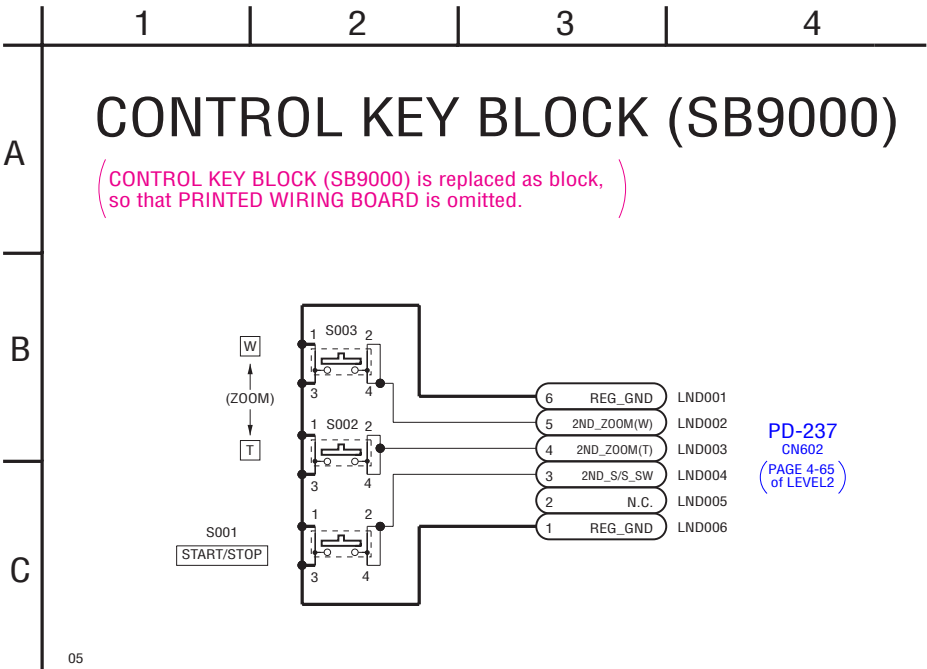
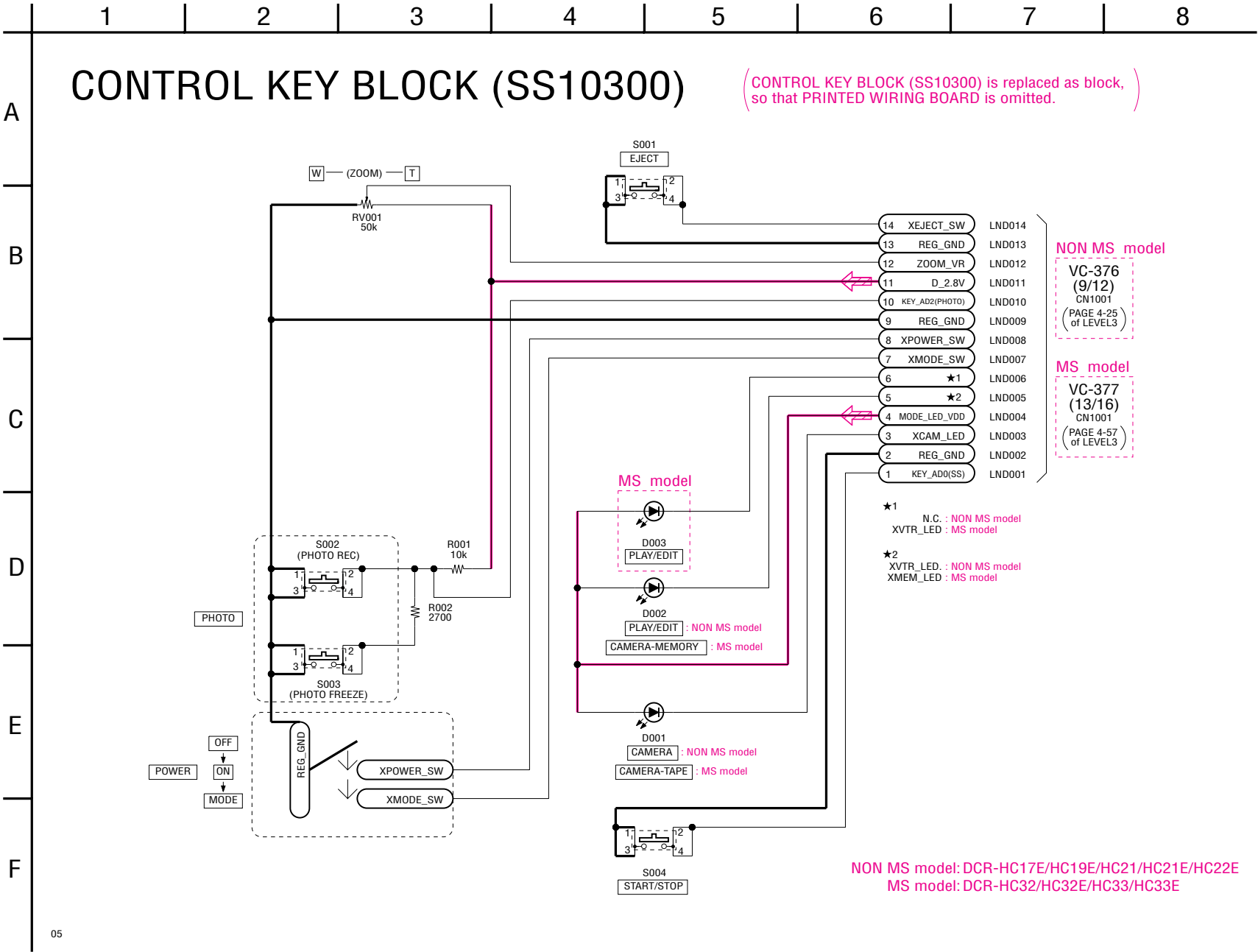


For Schematic Diagram
• Refer to page 4-97 for printed wiring board.



For Schematic Diagram
• Refer to page 4-99 for printed wiring board.





4-3. PRINTED WIRING BOARDS

Link

• CD-533 BOARD	• JK-278 BOARD
• PD-237 BOARD	• MS-249 BOARD
• CR-050 BOARD	• FP-180, FP-186, FP-187 FLEXIBLE BOARD
• SI-042 BOARD	• FP-826, FP-467, FP-228 FLEXIBLE BOARD
• LB-109 BOARD	

• COMMON NOTE FOR PRINTED WIRING BOARDS		• WAVEFORMS
• MOUNTED PARTS LOCATION	• CIRCUIT BOARDS LOCATION	• FLEXIBLE BOARDS LOCATION

Board Name	Function
CD-533	CCD IMAGER
PD-237	LCD DRIVE, BACKLIGHT DRIVE
CR-050	CRADLE TERMINAL
SI-042	REMOTE COMMANDER RECEIVER, PITCH/YAW SENSOR
LB-109	EVE, EVF BACKLIGHT
JK-278	JACK
MS-249	MS CONNECTOR
FP-180	DC IN
FP-186	PANEL REVERSE DETECT
FP-187	CONTROL SWITCH

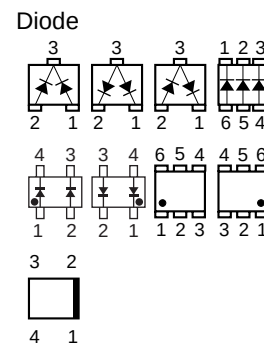
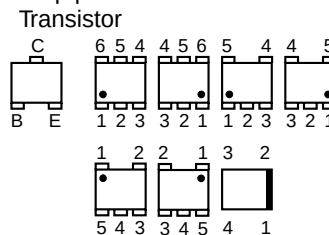
4-3. PRINTED WIRING BOARDS

4-3. PRINTED WIRING BOARDS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS

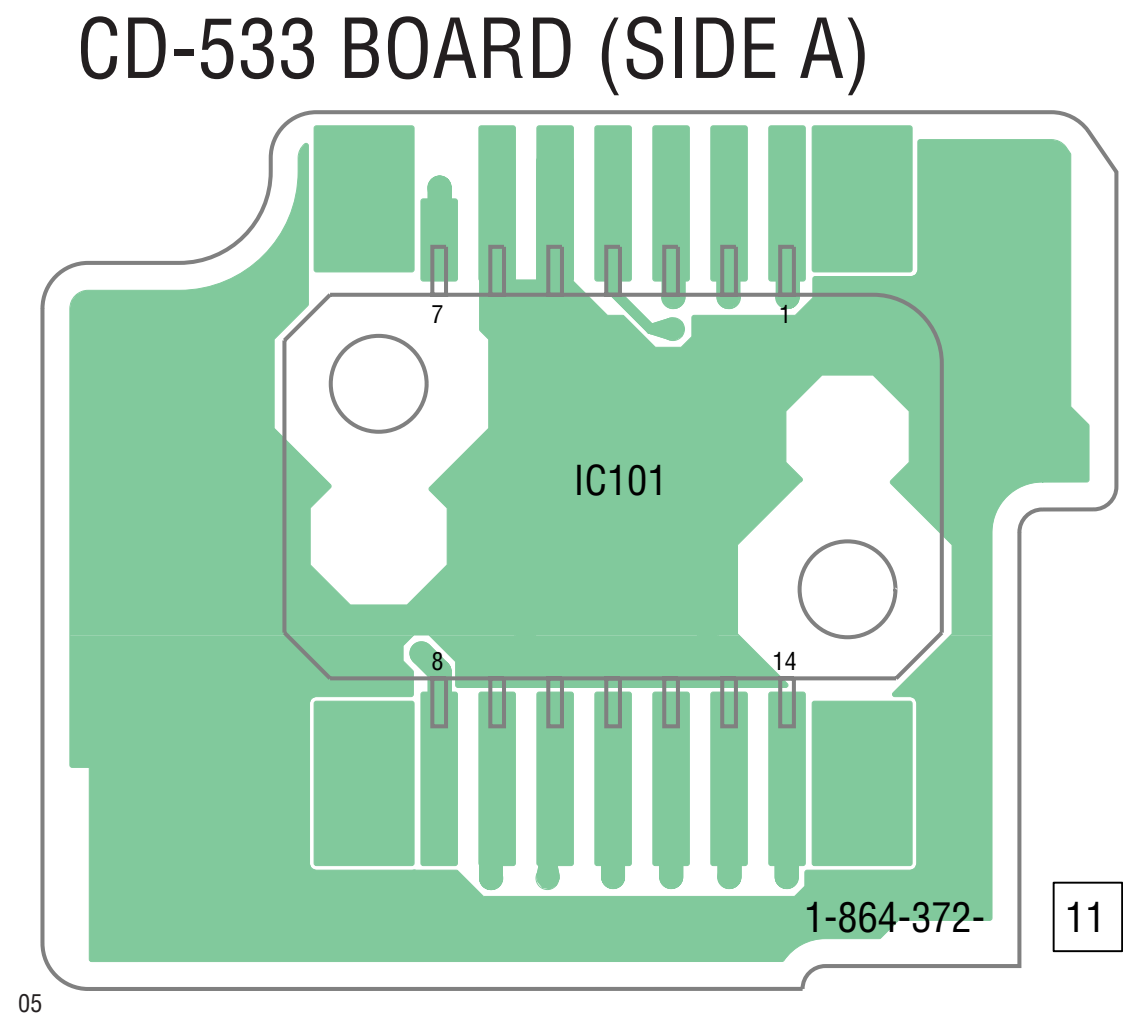
-  : Uses unleaded solder.
-  : Circuit board
-  : Flexible board
Pattern from the side which enables seeing.
-  : pattern of the rear side
(The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are a few cases that the part printed on diagram isn't mounted in this model.
-  : panel designation

- Chip parts.

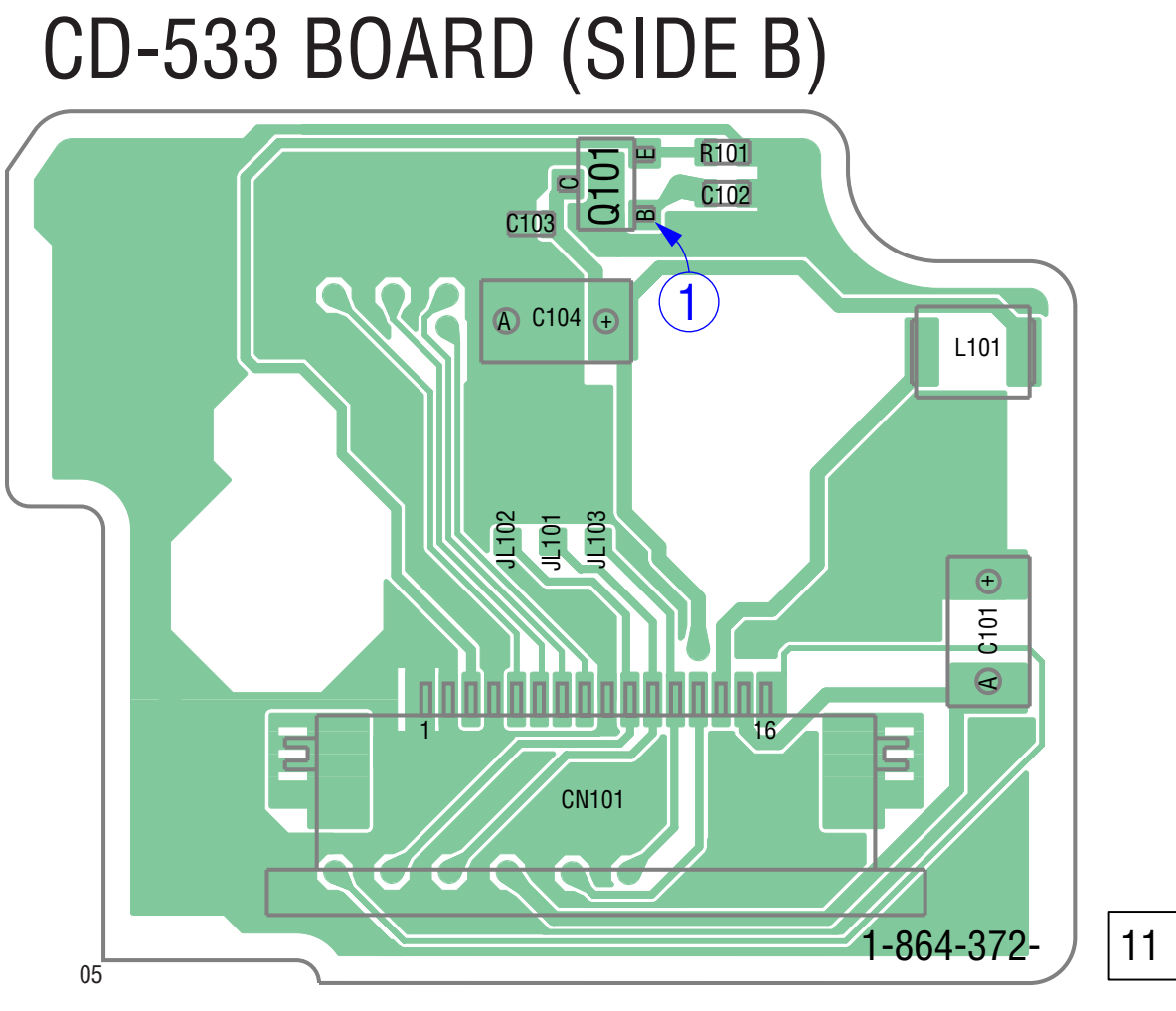


BOARD INFORMATION

Board Name	Waveform (Shown on Page)	Parts Location (Shown on Page)	Pattern	
			Total Number of Layers	Layers Not Indicated
CD-533	4-101	—	2 layers	—
PD-237	4-112	4-117	2 layers	—
CR-050	—	—	2 layers	—
SI-042	—	4-117	2 layers	—
LB-109	—	—	2 layers	—
JK-278	—	4-117	2 layers	—
MS-249	—	—	2 layers	—
FP-180 Flexible	—	—	1 layer	—
FP-186 Flexible	—	—	1 layer	—
FP-187 Flexible	—	—	1 layer	—
FP-826 Flexible	—	—	1 layer	—
FP-467 Flexible	—	—	1 layer	—
FP-228 Flexible	—	—	1 layer	—



Note: IC101 is not included in CD-533 complete board.

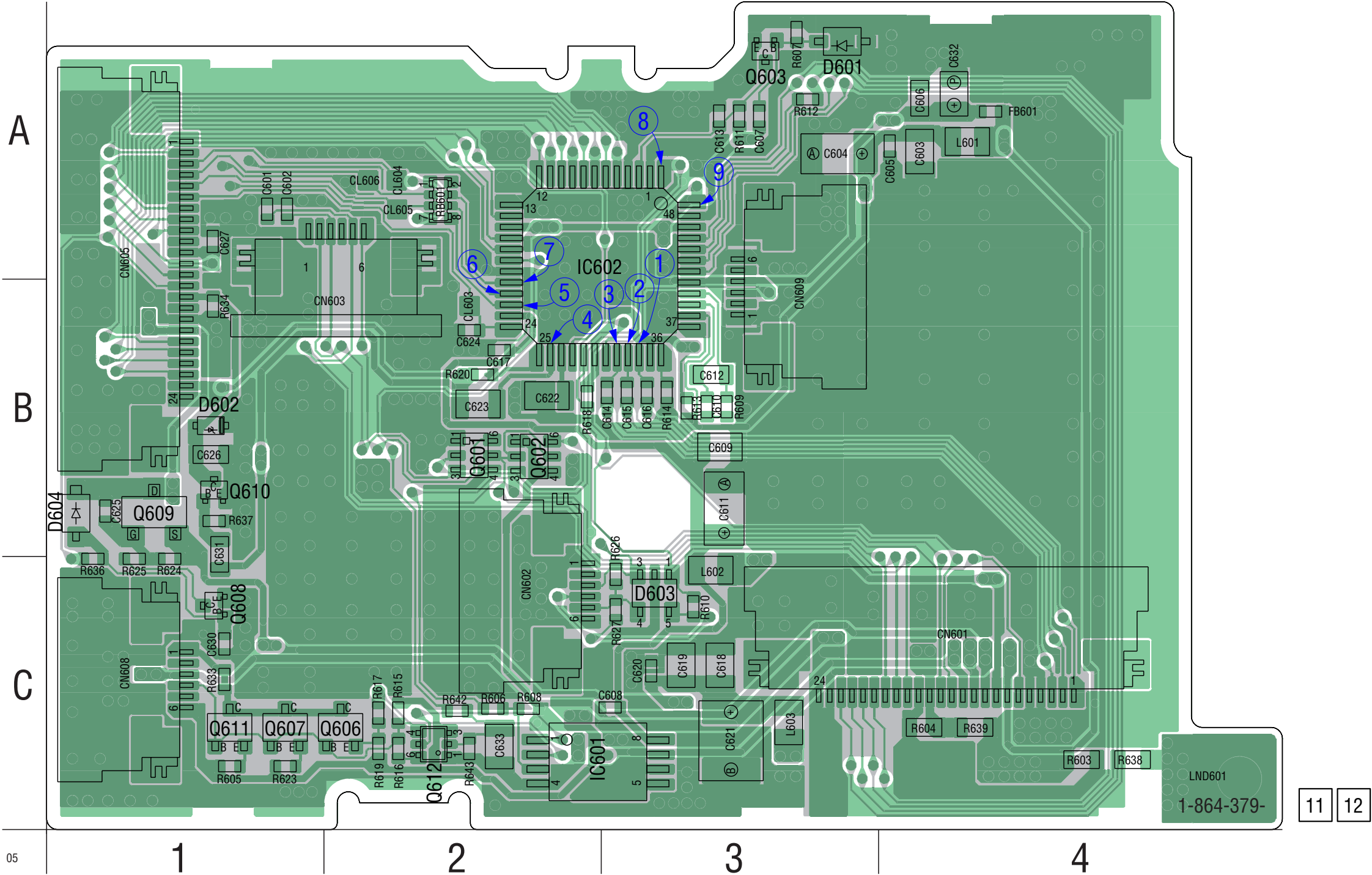


Printed wiring boards of the VC-376/377 board are not shown.
Pages from 4-83 to 4-90 are not shown.

Note for Printed Wiring Board (See page 4-79).

 : Uses unleaded solder.

PD-237 BOARD



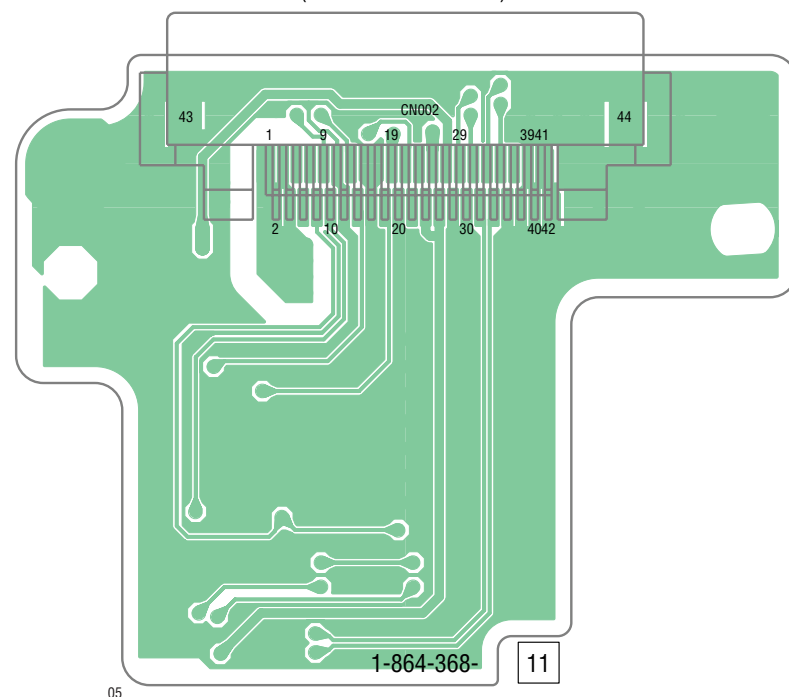
CR-050

LF : Uses unleaded solder.

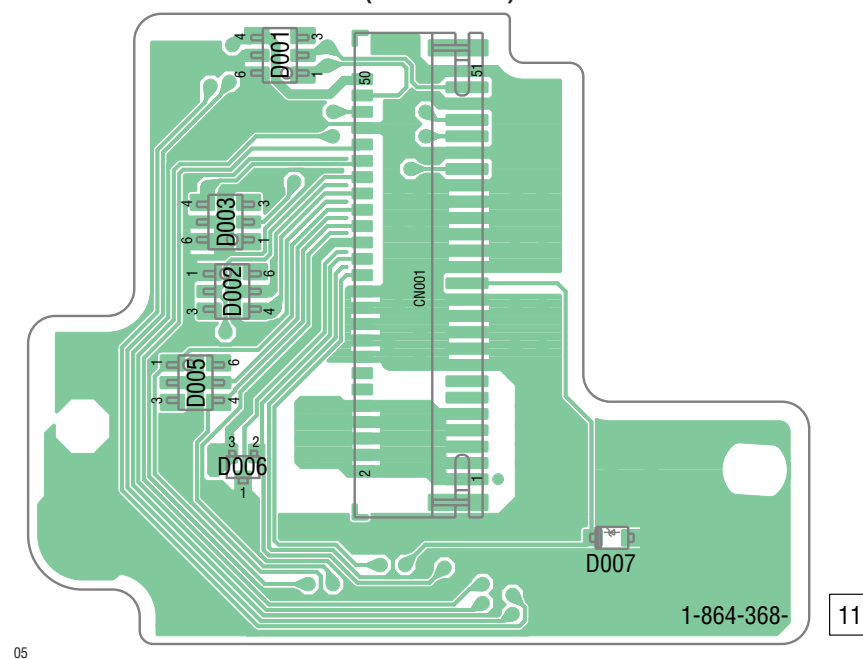
CR-050 BOARD (SIDE A)

Note: CN002 (multi connector) is not supplied,
but this is included in CR-050 complete board.

(MULTI CONNECTOR)



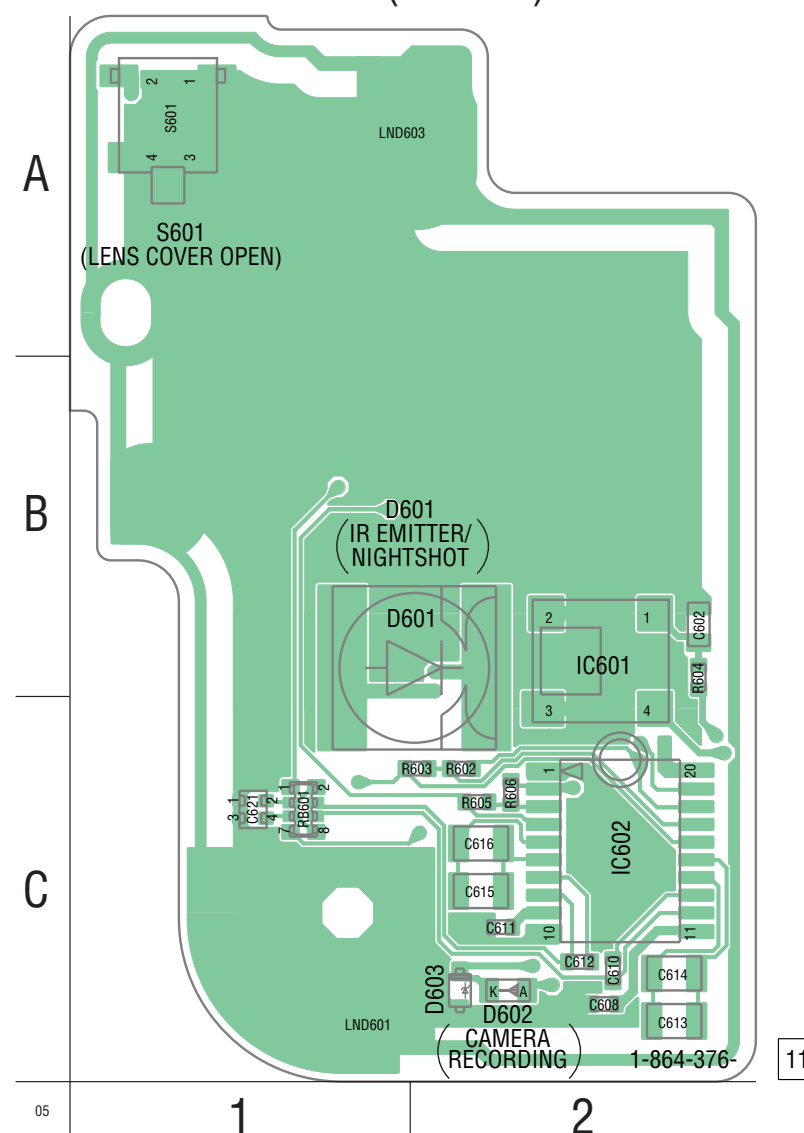
CR-050 BOARD (SIDE B)



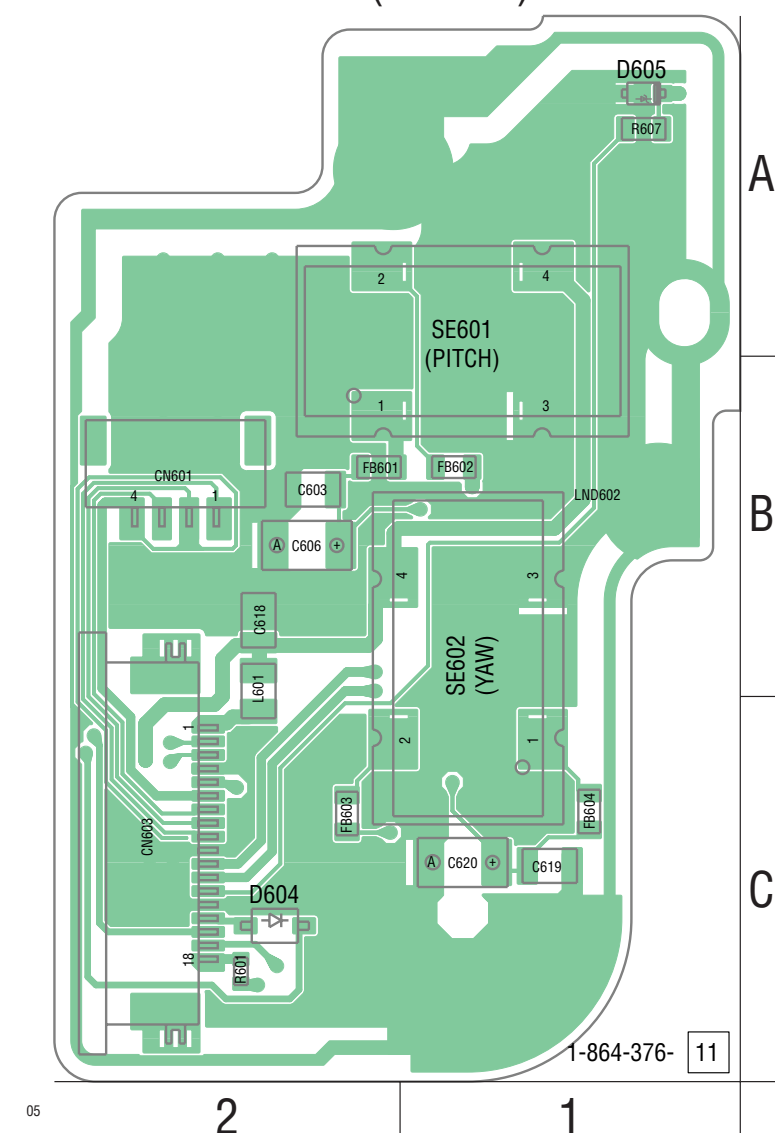
SI-042

LF : Uses unleaded solder.

SI-042 BOARD (SIDE A)



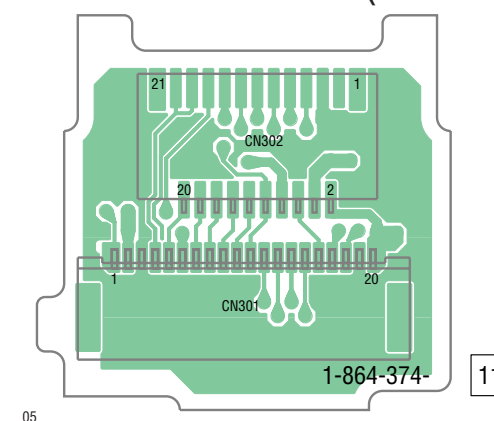
SI-042 BOARD (SIDE B)



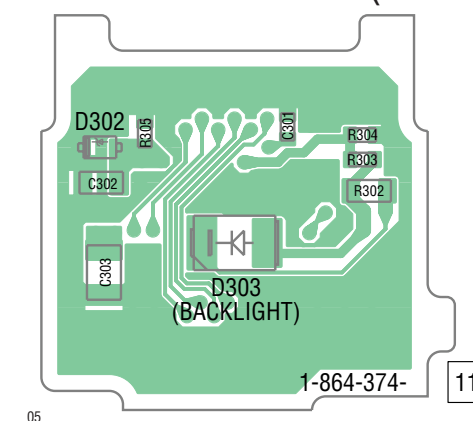
LB-109

LF : Uses unleaded solder.

LB-109 BOARD (SIDE A)



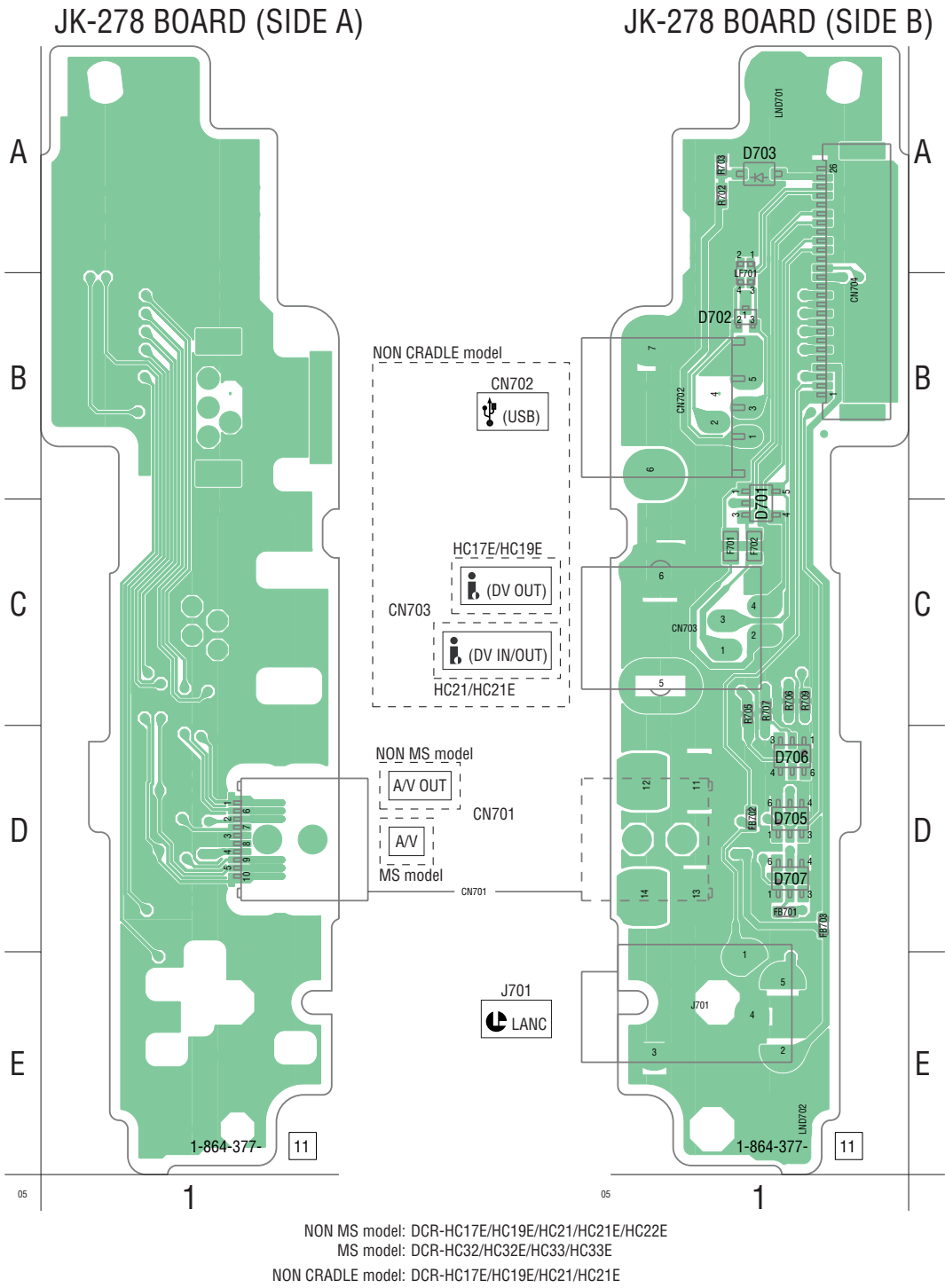
LB-109 BOARD (SIDE B)



Note for Printed Wiring Board (See page 4-79).

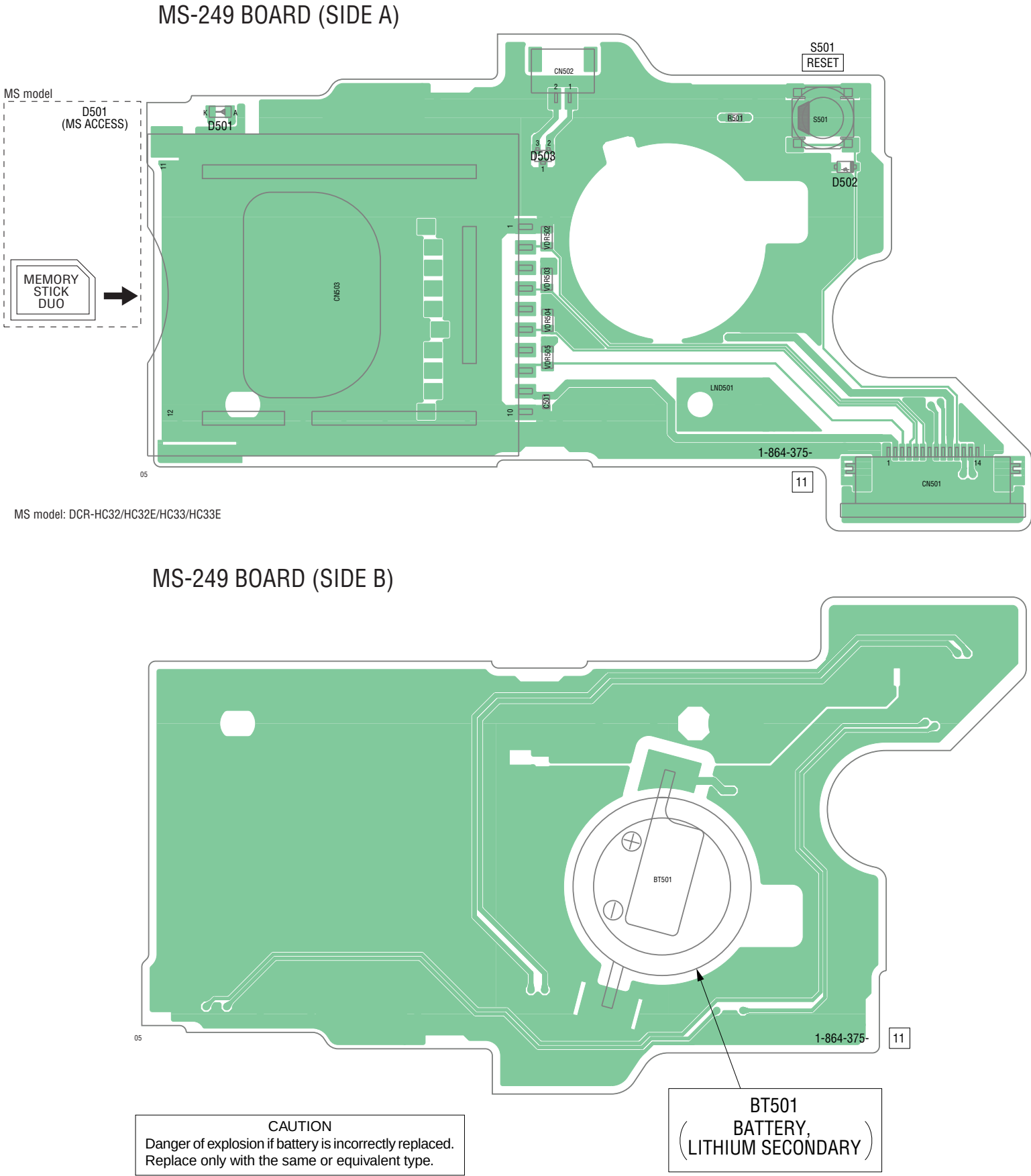
JK-278

 : Uses unleaded solder.



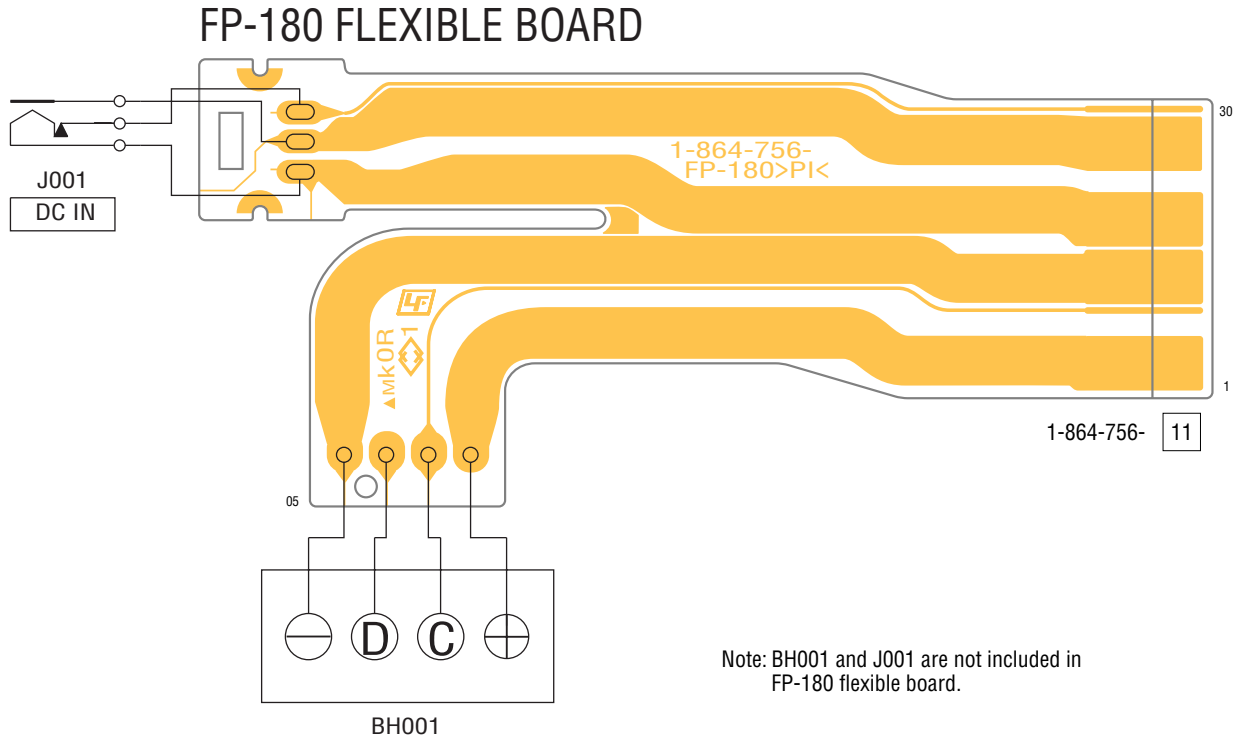
MS-249

 : Uses unleaded solder.



FP-180

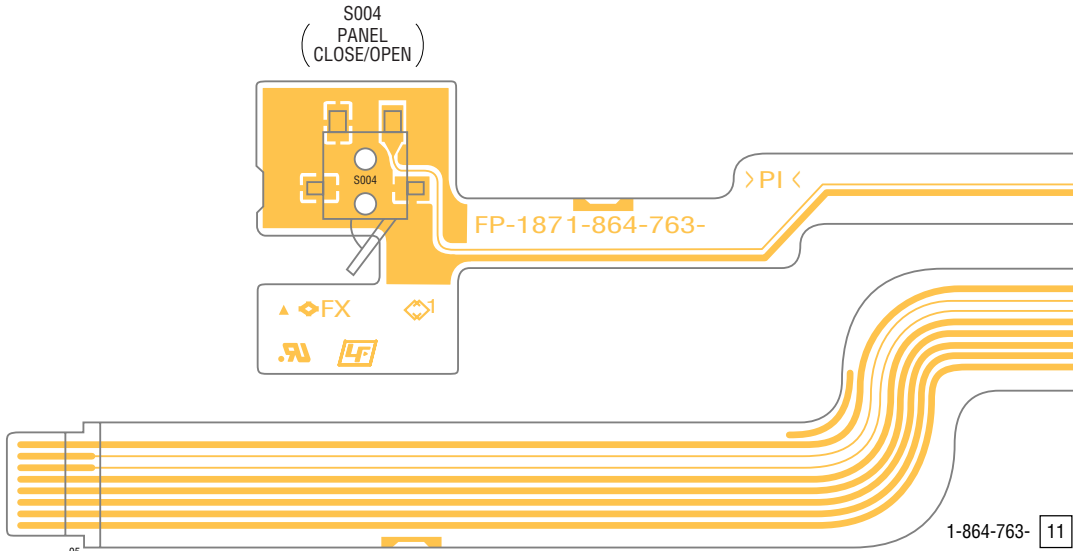
 : Uses unleaded solder.



FP-187

 : Uses unleaded solder.

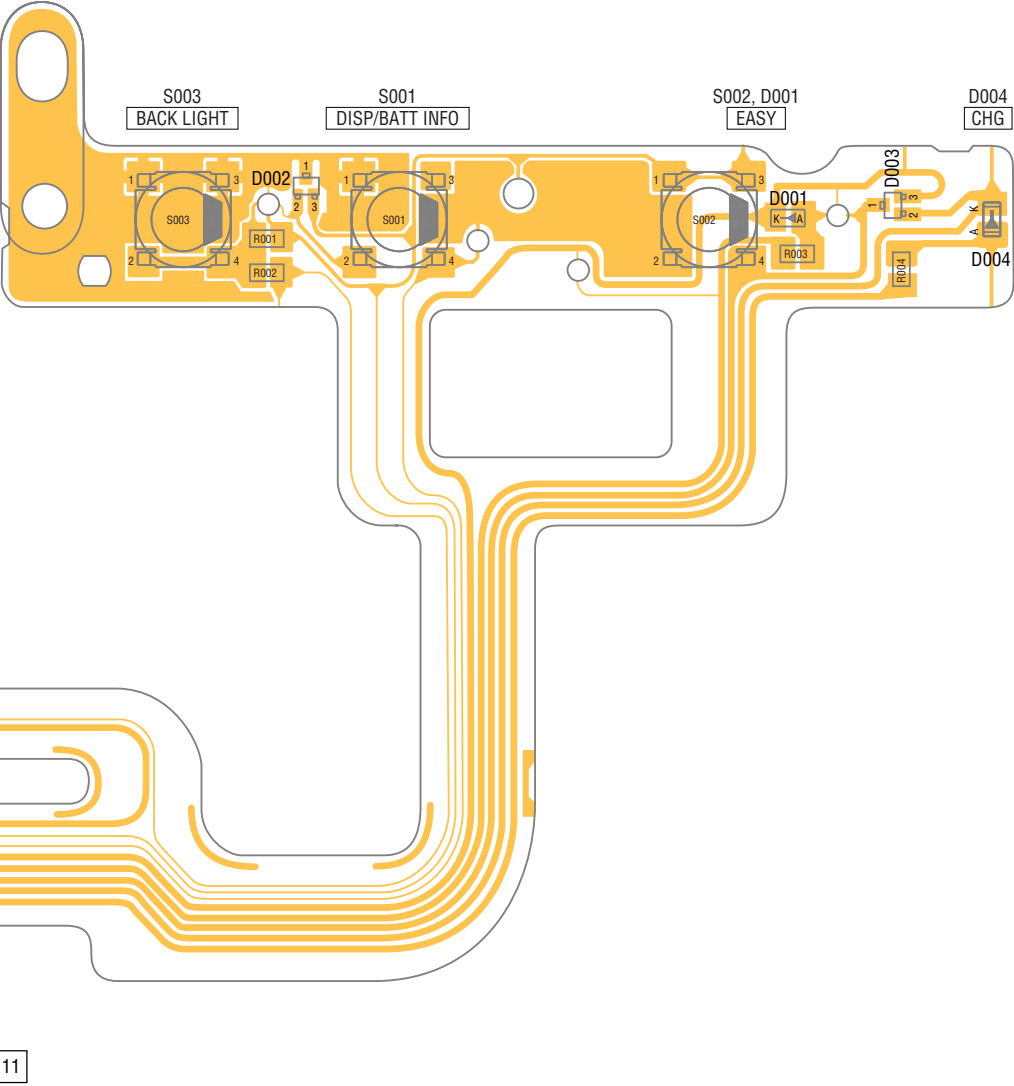
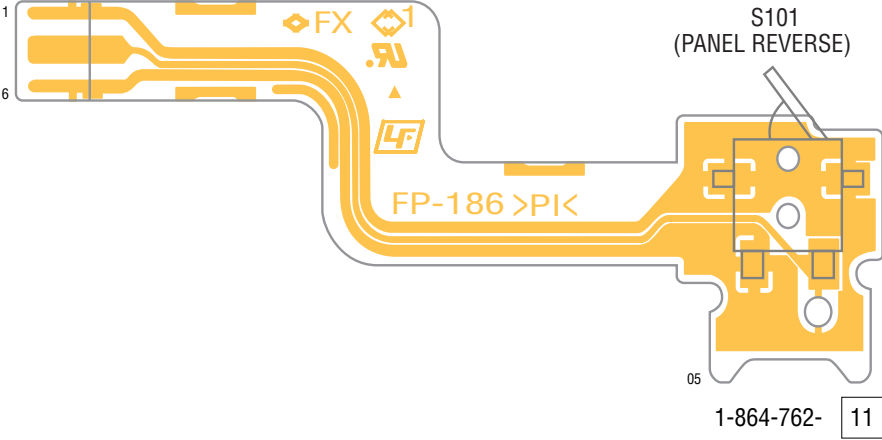
FP-187 FLEXIBLE BOARD



FP-186

 : Uses unleaded solder.

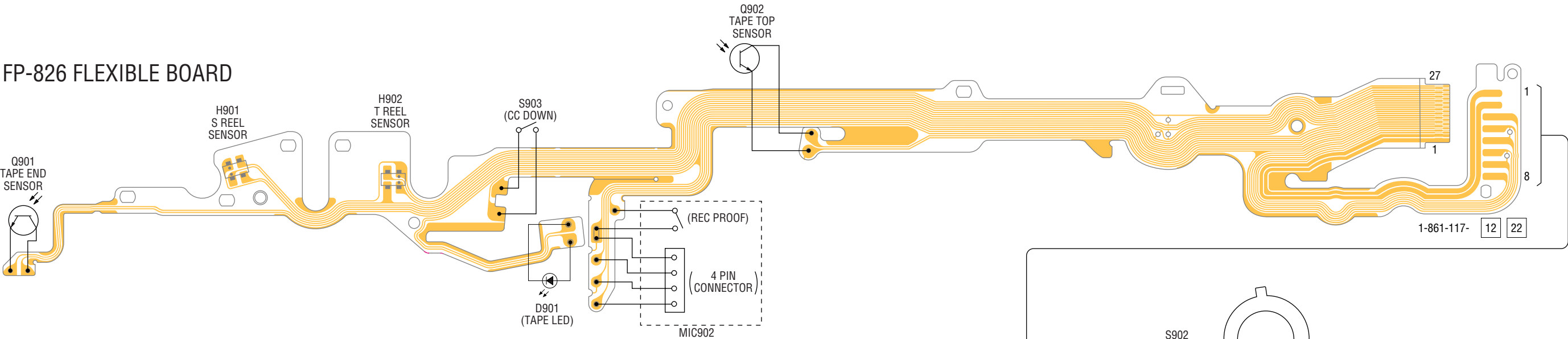
FP-186 FLEXIBLE BOARD



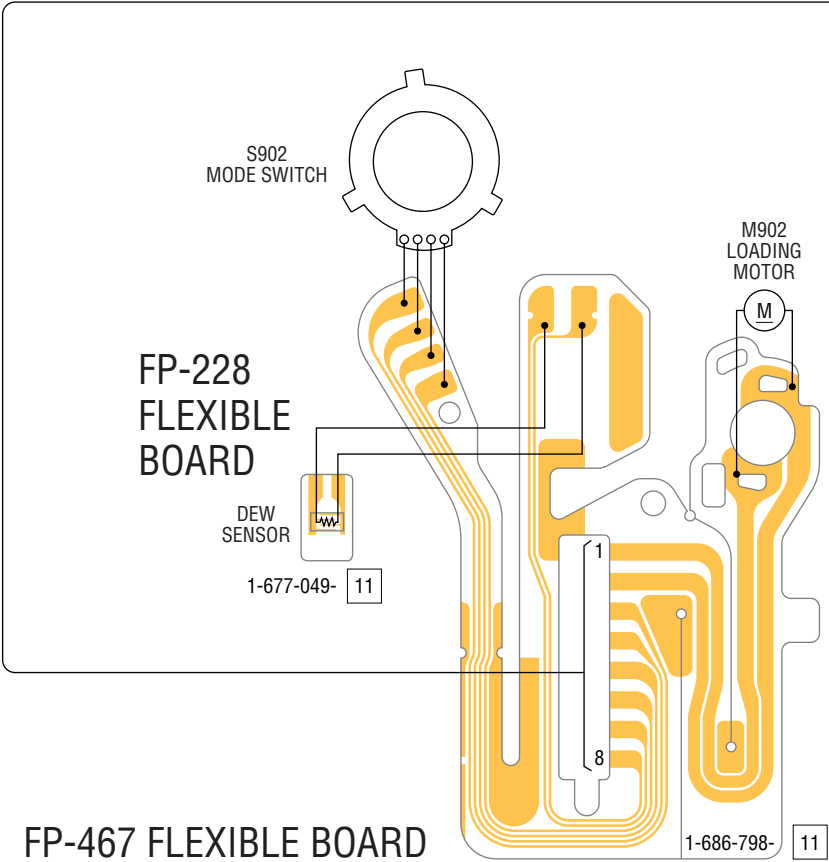
Note for Printed Wiring Board (See page 4-79).

 : Uses unleaded solder.

FP-826 FLEXIBLE BOARD



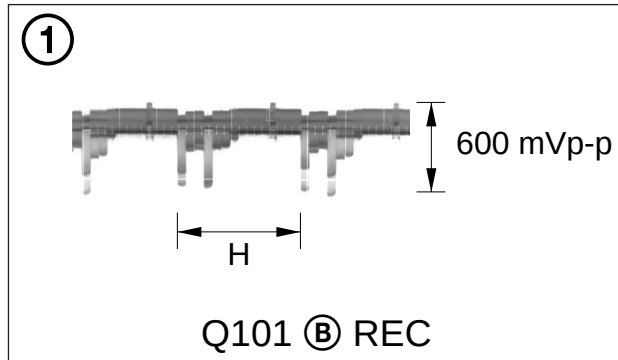
FP-228 FLEXIBLE BOARD



FP-467 FLEXIBLE BOARD

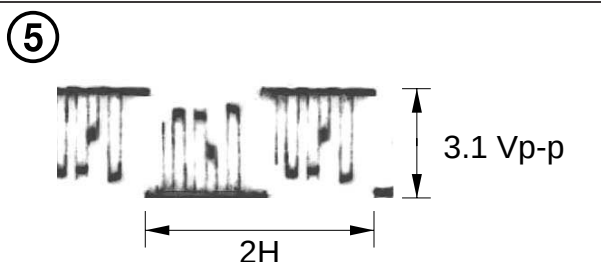
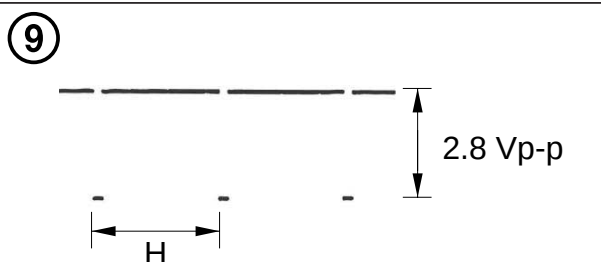
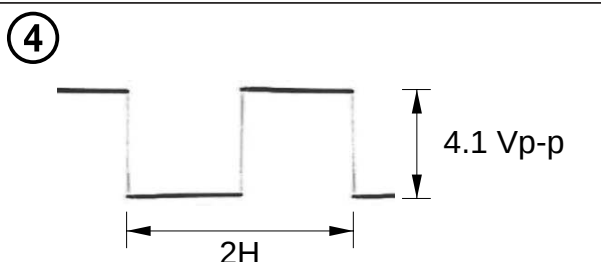
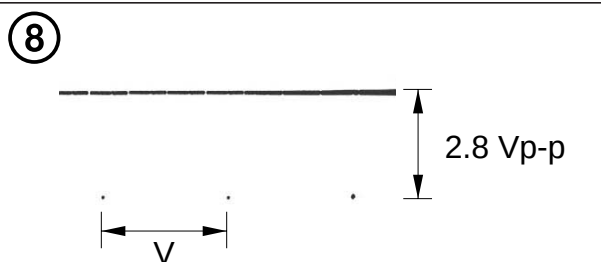
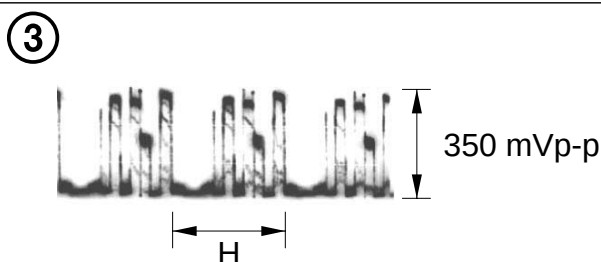
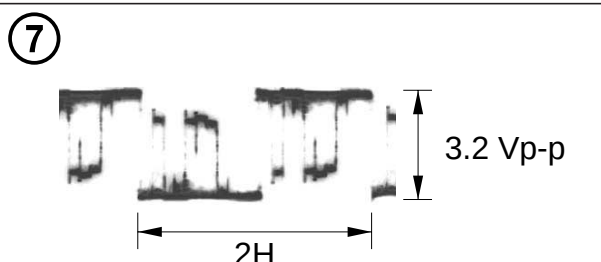
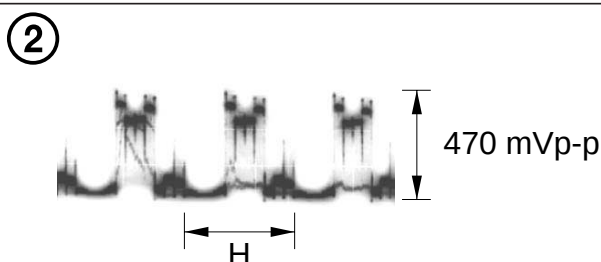
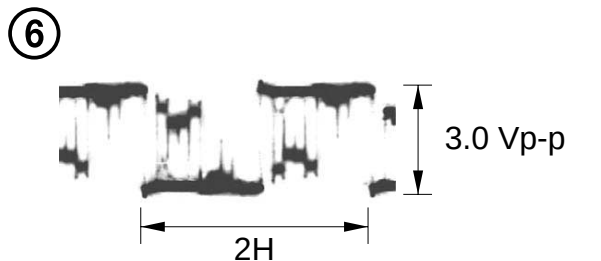
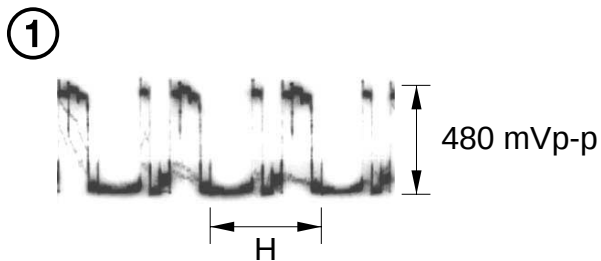
4-4. WAVEFORMS

CD-533 BOARD



Waveforms of the VC-376/377 board are not shown.
Pages 4-102 to 4-111 are not shown.

PD-237 BOARD



Mounted parts location of the VC-376/377 board are not shown.
Pages 4-113, 4-114, 4-115, 4-116 are not shown.

4-3. PRINTED WIRING BOARDS

4-5. MOUNTED PARTS LOCATION

no mark : side A

* mark : side B

PD-237 BOARD SI-042 BOARD JK-278 BOARD

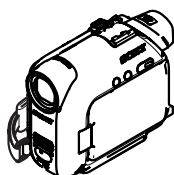
C602	A-1	C602	B-2	* CN701	D-1
C603	A-4	* C603	B-2	* CN702	B-1
C604	A-3	C608	C-2	* CN703	C-1
C606	A-4	C610	C-2	* CN704	B-1
C608	C-3	C611	C-2		
C609	B-3	C612	C-2	* D703	A-1
C610	B-3	C613	C-2	* D705	D-1
C611	B-3	C614	C-2	* D706	D-1
C612	B-3	C615	C-2	* D707	D-1
C614	B-2	C616	C-2		
C615	B-3	* C618	B-2	* F701	C-1
C616	B-3	* C619	C-1	* F702	C-1
C618	C-3	C621	C-1		
C619	C-3			* FB701	D-1
C621	C-3	* CN601	B-2	* FB702	D-1
C622	B-2	* CN603	C-2	* FB703	D-1
C623	B-2				
C624	B-2	D601	B-2	* J701	E-1
C625	B-1	D602	C-2		
C626	B-1	* D604	C-2	* LF701	B-1
C627	A-1				
C631	C-1	* FB601	B-2	* R702	A-1
C632	A-4	* FB602	B-1	* R703	A-1
C633	C-2	* FB603	C-2	* R705	C-1
		* FB604	C-1	* R706	C-1
CN601	C-4			* R707	C-1
CN602	C-2	IC601	B-2	* R709	C-1
CN603	B-2	IC602	C-2		
CN605	A-1				
CN608	C-1	* L601	B-2		
CN609	B-3				
D602	B-1	* R601	C-2		
FB601	A-4	R602	C-2		
IC601	C-3	R603	C-2		
IC602	A-2	R604	C-2		
		R605	C-2		
		R606	C-2		
		* R607	A-1		
L601	A-4	RB601	C-1		
L602	C-3				
L603	C-3	S601	A-1		
Q601	B-2	* SE601	A-1		
Q602	B-2	* SE602	B-1		
Q606	C-1				
Q607	C-1				
Q608	C-1				
Q609	B-1				
Q610	B-1				
Q611	C-1				
Q612	C-2				
R605	C-1				
R606	C-2				
R608	C-2				
R609	B-3				
R610	C-3				
R612	A-3				
R613	B-3				
R614	B-3				
R615	C-2				
R616	C-2				
R617	C-2				
R619	C-2				
R620	B-2				
R623	C-1				
R624	C-1				
R625	C-1				
R626	C-3				
R627	C-3				
R634	B-1				
R636	C-1				
R637	B-1				
R638	C-4				
R639	C-4				
R642	C-2				
R643	C-2				
RB601	A-2				

5. REPAIR PARTS LIST

NOTE: Characters **A** to **Z** of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link

EXPLODED VIEWS



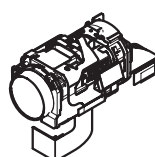
A

OVERALL ASSEMBLY



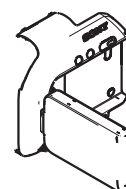
B

F PANEL BLOCK



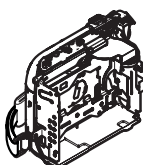
C

LENS BLOCK



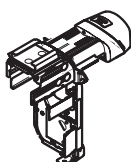
D

CABINET (R) BLOCK



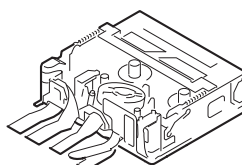
E

CS BLOCK



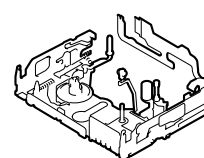
F

BAT EVF BLOCK



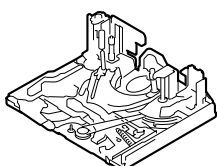
G

MECHANISM DECK



H

LS CHASSIS BLOCK
ASSEMBLY



I

MECHANICAL CHASSIS
BLOCK ASSEMBLY

Link

ELECTRICAL PARTS LIST

ACCESSORIES

• CD-533 BOARD C	• FP-187 FLEXIBLE BOARD D	• LB-109 BOARD F
• CR-050 BOARD D	• FP-467 FLEXIBLE BOARD I	• MS-249 BOARD E
• FP-180 FLEXIBLE BOARD F	• FP-826 FLEXIBLE BOARD H	• PD-237 BOARD D
• FP-186 FLEXIBLE BOARD D	• JK-278 BOARD E	• SI-042 BOARD B

5. REPAIR PARTS LIST

5. REPAIR PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some differences 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.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
uF: μ F
- COILS
uH: μ H
- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A... , uPA... , μ PA... ,
uPB... , μ PB... , uPC... , μ PC... ,
uPD..., μ PD...
- Abbreviation
AUS : Australian model
CH : Chinese model
CND : Canadian model
EE : East European model
HK : Hong Kong model
JE : Tourist model
KR : Korea model
NE : North European model

When indicating parts by reference number, please include the board name.

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

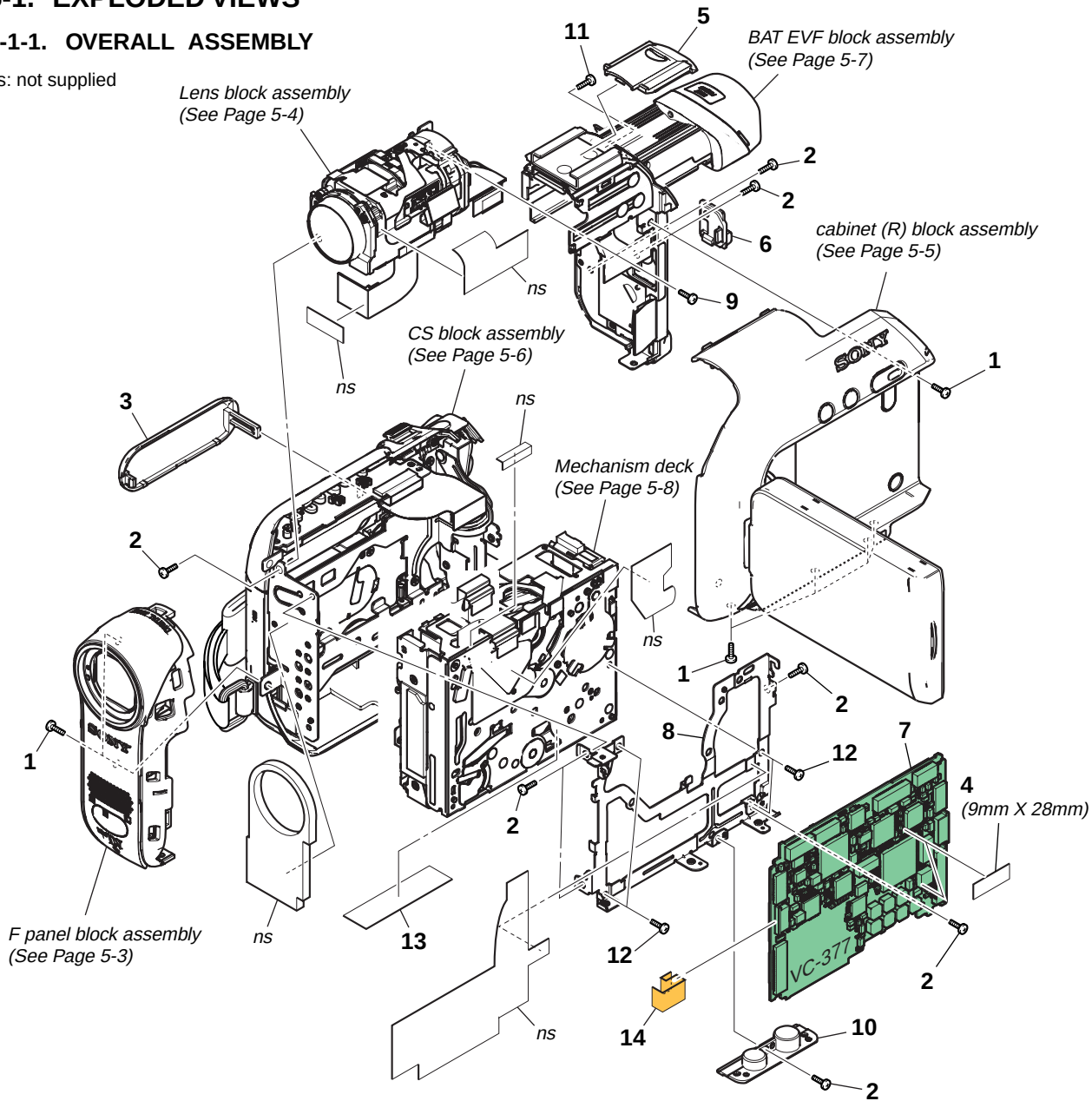
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

5-1-1. OVERALL ASSEMBLY

ns: not supplied



CAUTION :

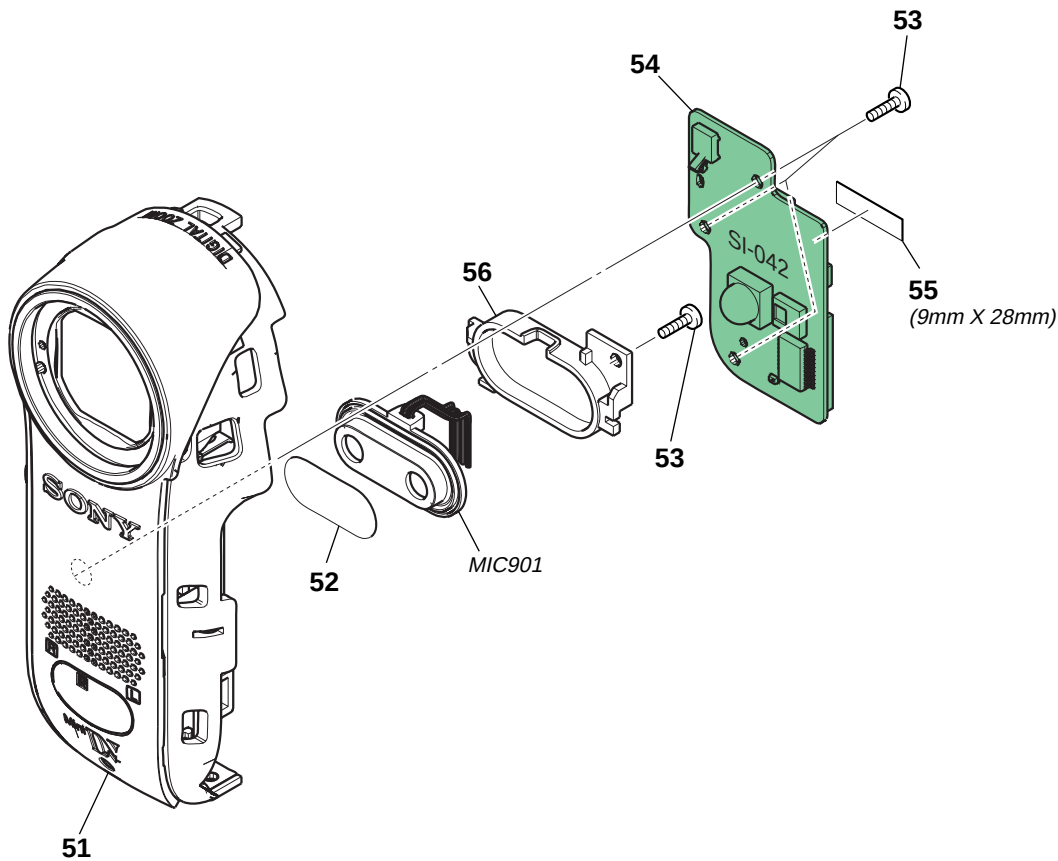
For the part of 4 : TAPE (A) (3-080-272-01), cut WOVEN (T0.25), FABRIC NON (3-941-343-21) into the desired length and use it.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	3-078-889-31	SCREW (M1.7)	7	A-1101-185-A	VC-377 BOARD, COMPLETE (SERVICE) (HC32: EXCEPT KR/HC33)
2	3-080-198-11	SCREW (M1.7), LOCK ACE, P2	7	A-1101-190-A	VC-377 BOARD, COMPLETE (SERVICE) (HC32E/HC33E)
3	2-188-477-01	COVER, JACK	7	A-1113-387-A	VC-377 BOARD, COMPLETE (SERVICE) (HC32: KR)
4	CAUTION	TAPE (A)	8	X-2023-772-1	FRAME ASSY, MD
5	2-188-481-01	COVER (103), SHOE	9	3-080-204-21	SCREW, TAPPING, P2
6	2-188-478-01	LID, CPC	10	3-089-520-01	SCREW
7	A-1101-182-A	VC-376 BOARD, COMPLETE (SERVICE) (HC17E/HC19E)	11	3-080-198-31	SCREW (M1.7), LOCK ACE, P2
7	A-1101-183-A	VC-376 BOARD, COMPLETE (SERVICE) (HC21/HC21E)	12	3-062-214-01	SCREW (M1.4X1.5)
7	A-1101-184-A	VC-376 BOARD, COMPLETE (SERVICE) (HC22E)	13	3-081-221-01	LABEL (Z), LS
			14	1-829-774-11	CABLE, FLEXIBLE FLAT (FFC-038)

5. REPAIR PARTS LIST

5-1-2. F PANEL BLOCK

ns: not supplied



CAUTION :
For the part of 55 : TAPE (A) (3-080-272-01), cut WOVEN (T0.25), FABRIC NON (3-941-343-21) into the desired length and use it.

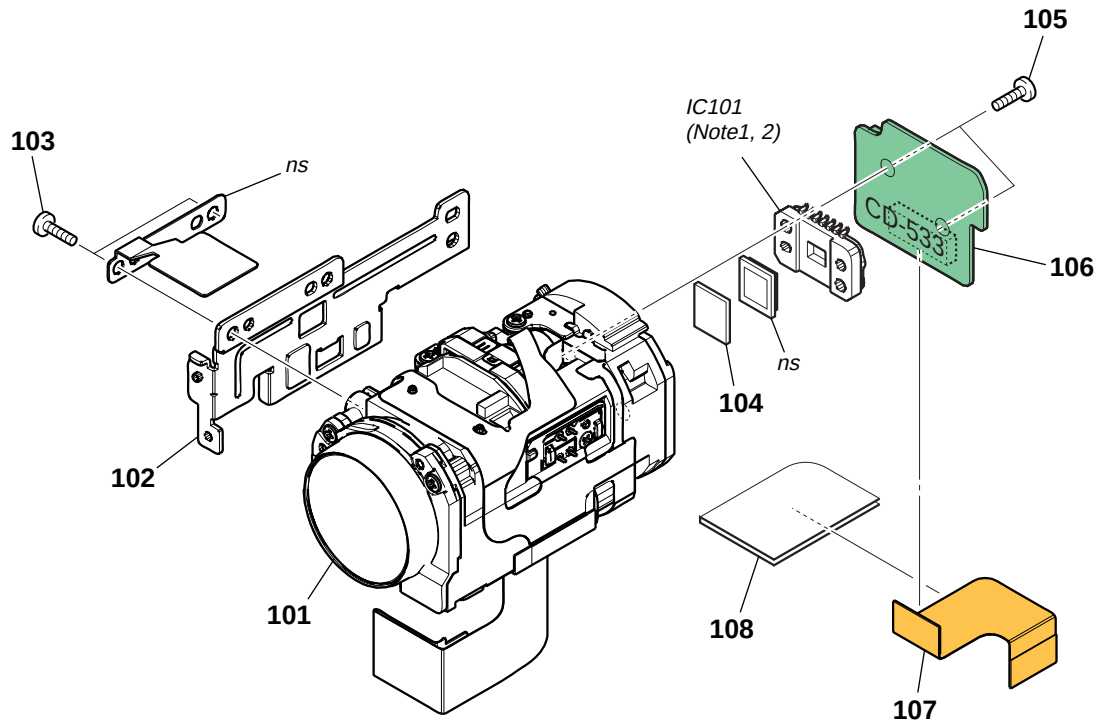
Ref. No.	Part No.	Description
51	X-2023-770-1	PANEL ASSY, FRONT (EXCEPT HC17E)
51	X-2048-777-1	PANEL ASSY, FRONT (HC17E)
52	3-089-771-01	CUSHION, MICROPHONE
53	3-078-890-11	SCREW, TAPPING
54	A-1081-844-A	SI-042 BOARD, COMPLETE (EXCEPT HC17E)

Ref. No.	Part No.	Description
54	A-1084-828-A	SI-042 BOARD, COMPLETEED) (HC17E)
55	CAUTION	TAPE (A)
56	2-188-425-01	RETAINER, IR
MIC901	1-542-513-21	MICROPHONE

5. REPAIR PARTS LIST

5-1-3. LENS BLOCK

ns: not supplied



Note 1: IC101 is not included in CD-533 complete board.

Note 2: Be sure to read "Precautions for Replacement of CCD Imager" on page 4-5 when changing the CCD imager.

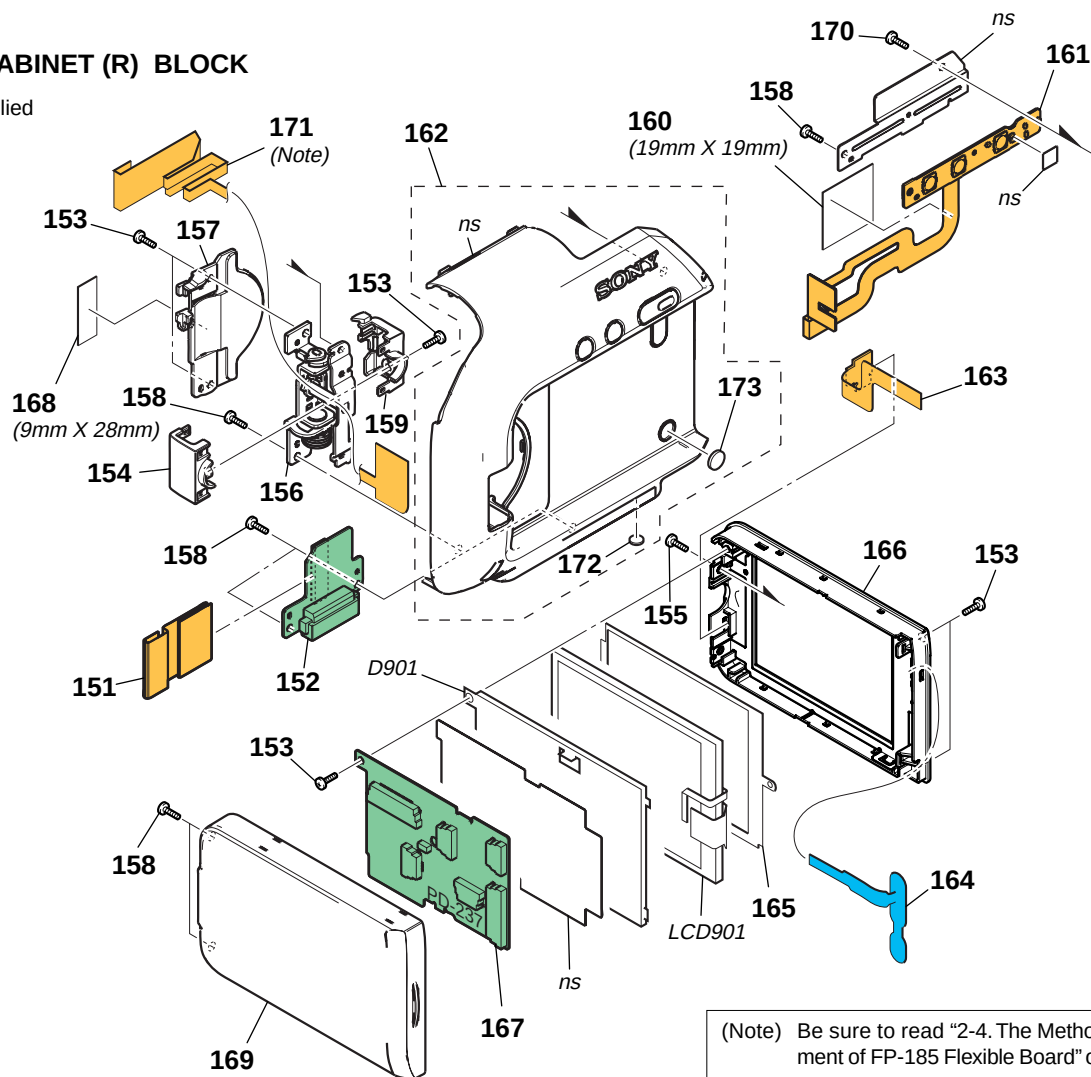
Ref. No.	Part No.	Description
101	1-788-210-11	OPTICAL UNIT (EG03)
102	2-188-472-01	FRAME LENS
103	3-080-204-01	SCREW, TAPPING, P2
104	1-788-242-11	OPTICAL FILTER BLOCK
105	3-080-204-21	SCREW, TAPPING, P2
106	A-1081-698-A	CD-533 BOARD, COMPLETE

Ref. No.	Part No.	Description
107	1-864-754-11	FP-178 FLEXIBLE BOARD
108	2-188-482-01	SHEET, CD SHIELD
IC101	8-753-215-47	ICX440NKF-13 (CCD IMAGER) (HC21/HC32/HC33) (Note1, 2)
IC101	8-753-215-49	ICX441NKF-13 (CCD IMAGER) (EXCEPT HC21/HC32/HC33) (Note1, 2)

5. REPAIR PARTS LIST

5-1-4. CABINET (R) BLOCK

ns: not supplied



CAUTION 1 :

For the part of 160 : TAPE (BT) (2-349-851-01), cut WOVEN (T0.25), FABRIC NON (3-076-631-01) into the desired length and use it.

CAUTION 2 :

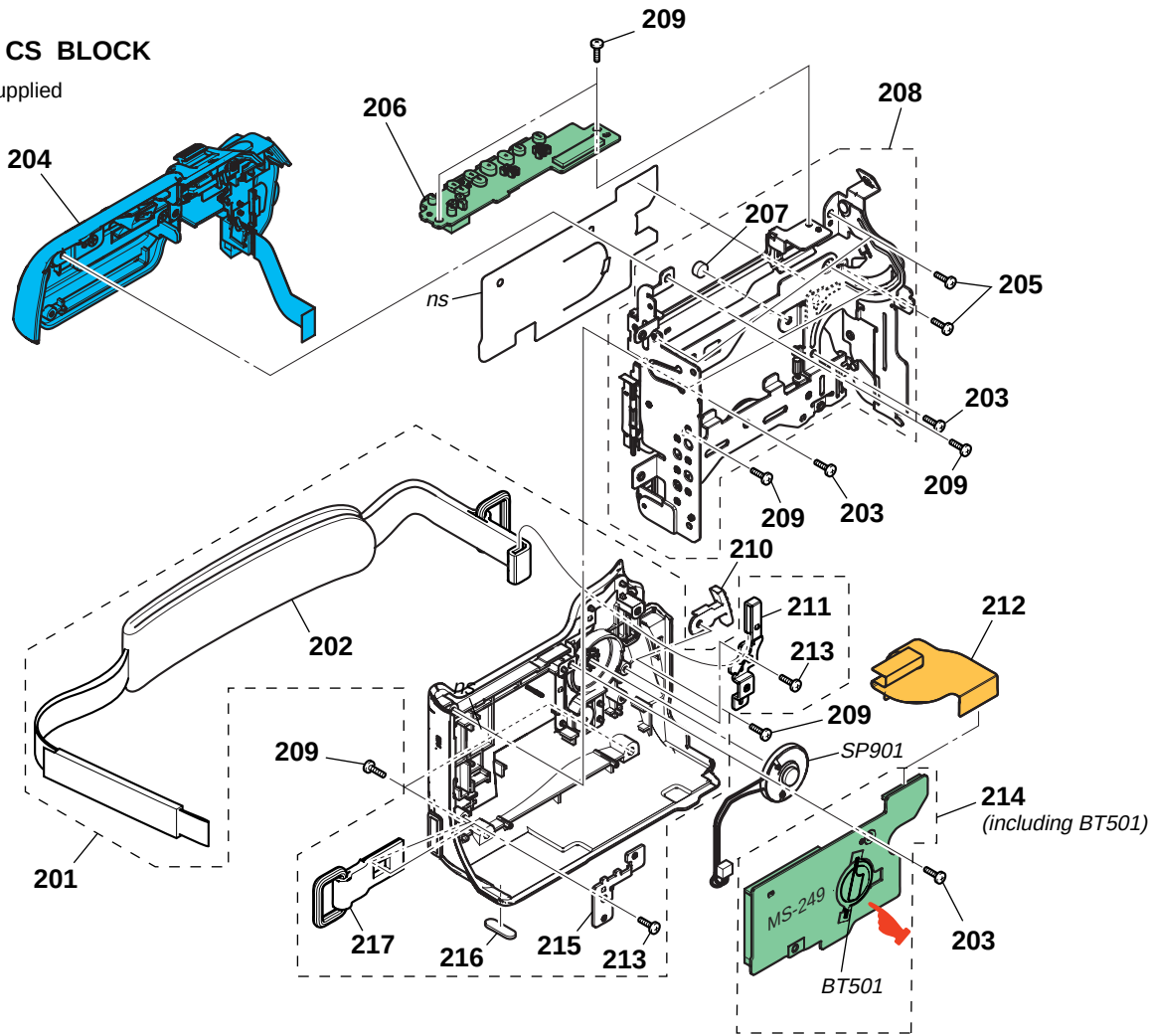
For the part of 168 : TAPE (A) (3-080-272-01), cut WOVEN (T0.25), FABRIC NON (3-941-343-21) into the desired length and use it.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
151	1-864-764-11	FP-190 FLEXIBLE BOARD (HC22E/HC32/HC32E/HC33/HC33E)	167	A-1081-848-A	PD-237 BOARD, COMPLETE
152	A-1081-704-A	CR-050 BOARD, COMPLETE (HC22E/HC32/HC32E/HC33/HC33E)	168	CAUTION 2	TAPE (A)
153	3-080-204-21	SCREW, TAPPING, P2	169	2-188-432-01	CABINET (C)103, P (HC21)
154	2-188-434-01	COVER (C), HINGE	169	2-188-432-11	CABINET (C)103, P (HC17E)
155	3-078-889-21	SCREW (M1.7)	169	2-188-432-21	CABINET (C)103, P (HC19E)
156	X-2023-771-1	HINGE (103) ASSY	169	2-188-432-31	CABINET (C)103, P (HC21E)
157	2-188-476-01	BLIND, HINGE	169	2-188-432-41	CABINET (C)103, P (HC32)
158	3-078-890-11	SCREW, TAPPING	169	2-188-432-51	CABINET (C)103, P (HC32E)
159	2-188-433-01	COVER (M), HINGE	169	2-188-432-61	CABINET (C)103, P (HC33)
160	CAUTION 1	TAPE (BT)	169	2-188-432-71	CABINET (C)103, P (HC33E)
161	A-1082-203-A	FP-187 FLEXIBLE BOARD	169	2-188-432-81	CABINET (C)103, P (HC22E)
162	X-2023-839-1	CABINET R ASSY (HC17E/HC19E/HC21/HC21E)	170	3-085-397-01	SCREW
162	X-2024-694-1	CABINET R ASSY (HC22E/HC32/HC32E/HC33/HC33E)	171	1-864-761-11	FP-185 FLEXIBLE BOARD
163	A-1082-042-A	FP-186 FLEXIBLE BOARD	172	3-082-519-01	FOOT (R), RUBBER
164	1-479-063-21	KEY BLOCK, CONTROL (SB9000)	173	3-089-565-01	CUSHION (R), PANEL
165	2-188-436-01	CUSHION (103), PANEL	D901	1-479-067-11	BLOCK, LIGHT GUIDE PLATE (2.5)
166	X-2024-273-1	CABINET (M) (103) ASSY, P	LCD901	A-1090-678-A	(TP) BLOCK ASSY (2.5AUMG) (HC32)
			LCD901	A-1090-679-A	(TP) BLOCK ASSY (2.5STFU) (HC17E/HC19E/HC21E/HC22E)
			LCD901	A-1090-680-A	(TP) BLOCK ASSY (2.5STMG) (HC21/HC32/HC32E/HC33/HC33E)

5. REPAIR PARTS LIST

5-1-5. CS BLOCK

ns: not supplied



 **BT501(BATTERY, LITHIUM SECONDARY)**
Board on the mount position (See page 4-96).

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

The components identified by
mark  or dotted line with
mark  are critical for safety.
Replace only with part num-
ber specified.

Les composants identifiés par une
marque  sont critiques pour la
sécurité.
Ne les remplacer que par une pièce
portant le numéro spécifié.

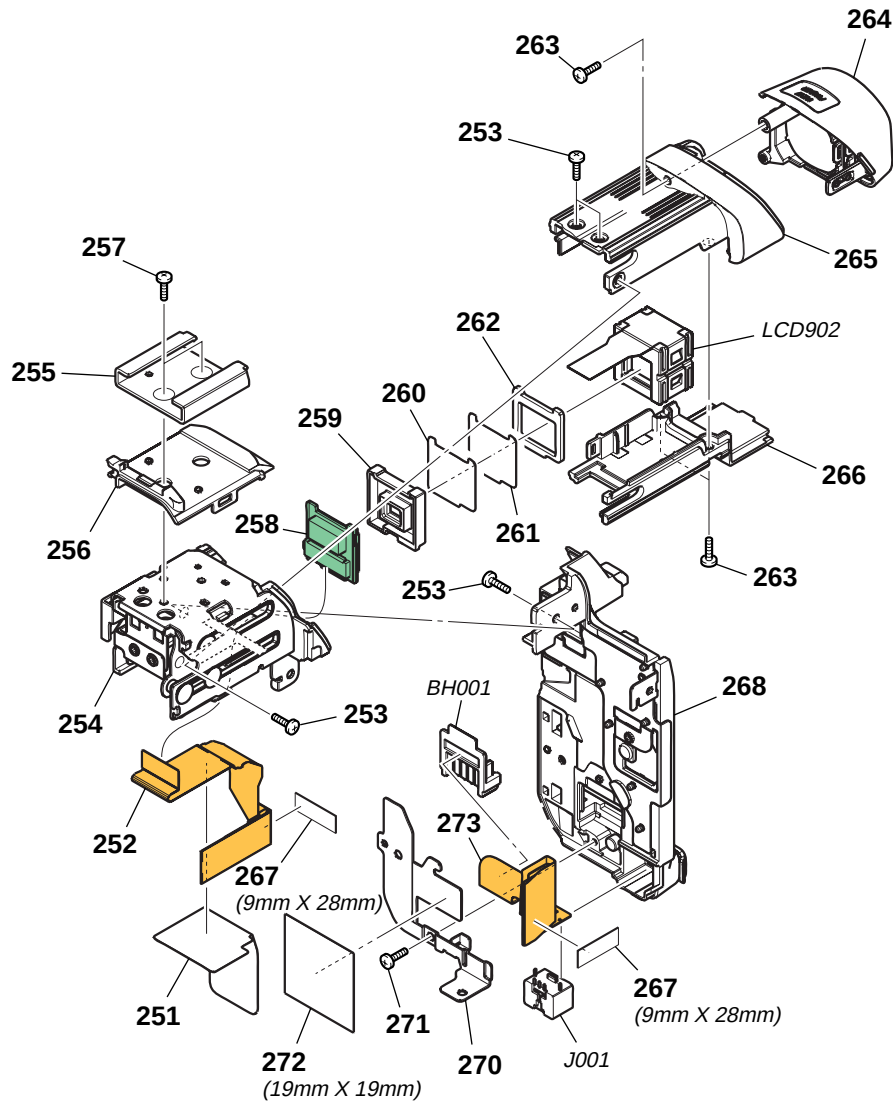
Ref. No.	Part No.	Description
201	X-2023-774-1	CABINET (G) ASSY (HC17E/HC19E/HC21/HC21E/HC22E)
201	X-2024-840-1	CABINET (G) ASSY (HC32/HC32E/HC33/HC33E)
202	2-583-631-01	BELT, GRIP
203	3-078-890-11	SCREW, TAPPING
204	1-478-982-11	KEY BLOCK, CONTROL (SS10300) (HC17E/HC19E)
204	1-478-982-21	KEY BLOCK, CONTROL (SS10300) (HC21/HC21E)
204	1-478-982-31	KEY BLOCK, CONTROL (SS10300) (HC22E)
204	1-478-982-41	KEY BLOCK, CONTROL (SS10300) (HC32/HC32E/HC33/HC33E)
205	3-080-204-01	SCREW, TAPPING, P2
206	A-1081-840-A	JK-278 BOARD, COMPLETE (HC17E/HC19E/HC21/HC21E)
206	A-1081-841-A	JK-278 BOARD, COMPLETE (HC22E/HC32/HC32E/HC33/HC33E)

Ref. No.	Part No.	Description
207	3-959-978-02	CUSHION, PANEL
208	X-2023-773-1	FRAME ASSY, CS
209	3-080-198-11	SCREW (M1.7), LOCK ACE, P2
210	2-188-450-01	KNOB, EJECT
211	2-188-455-01	SHEET METAL (REAR), GRIP BELT
212	1-864-758-11	FP-182 FLEXIBLE BOARD
213	3-080-204-11	SCREW, TAPPING, P2
214	A-1081-842-A	MS-249 BOARD, COMPLETE (HC17E/HC19E/HC21/HC21E/HC22E)
214	A-1081-843-A	MS-249 BOARD, COMPLETE (HC32/HC32E/HC33/HC33E)
215	2-188-453-01	SHEET METAL (FRONT), GRIP BELT
216	2-188-514-01	FOOT (G), RUBBER
217	2-583-616-01	BELT (FRONT), GRIP
 BT501	1-756-075-21	BATTERY, LITHIUM (SECONDARY)
SP901	1-825-260-23	LOUD SPEAKER (1.6cm)

5. REPAIR PARTS LIST

5-1-6. BAT EVF BLOCK

ns: not supplied



CAUTION 1 :
For the part of 267 : TAPE (A) (3-080-272-01), cut
WOVEN (T0.25), FABRIC NON (3-941-343-21) into
the desired length and use it.

CAUTION 2 :
For the part of 272 : TAPE (BT) (2-349-851-01), cut
WOVEN (T0.25), FABRIC NON (3-076-631-01) into
the desired length and use it.

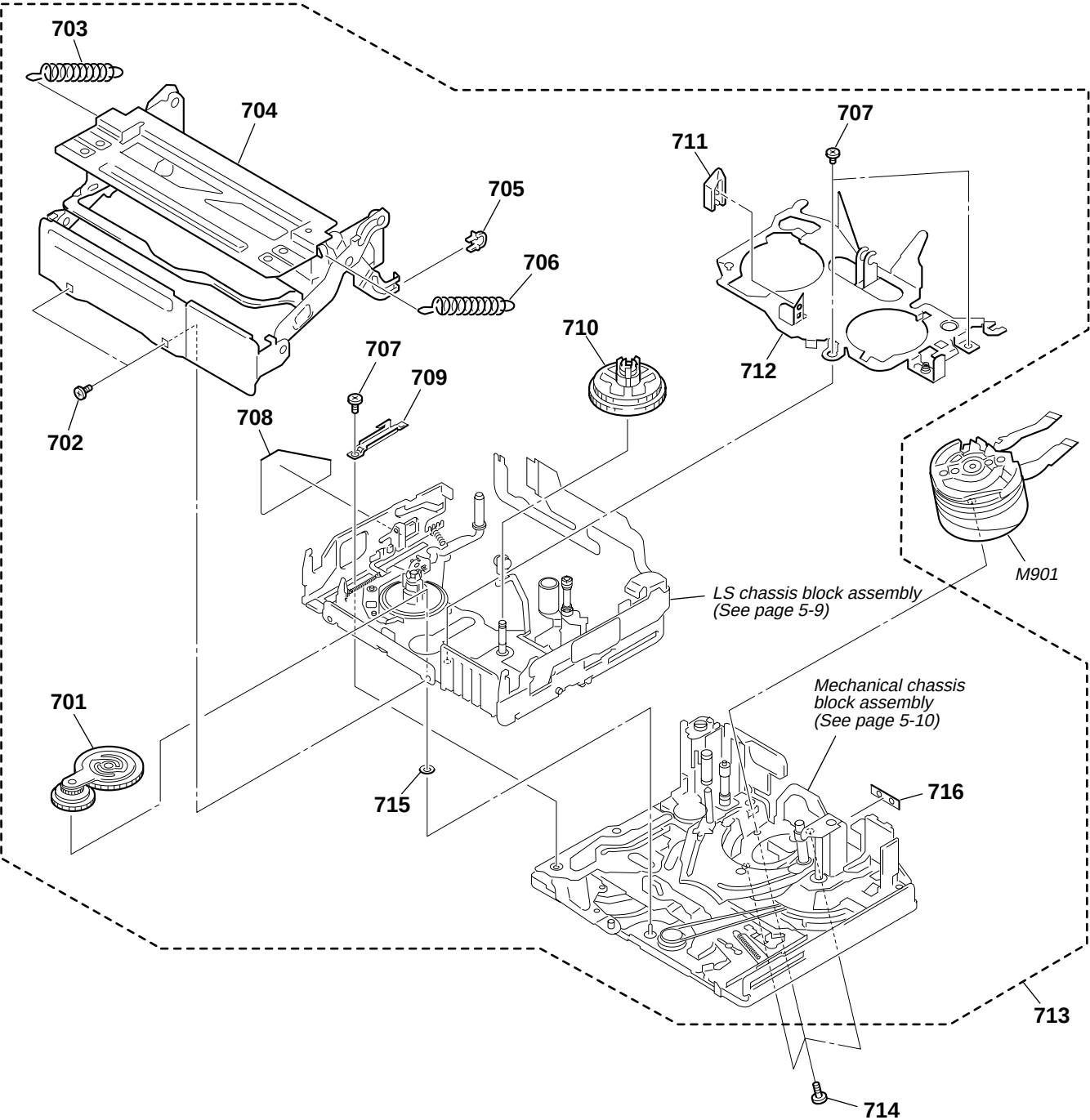
Ref. No.	Part No.	Description
251	2-188-512-01	SHEET, VF FLEXIBLE FIXED
252	1-864-757-11	FP-181 FLEXIBLE BOARD
253	3-078-889-21	SCREW (M1.7)
254	X-2023-650-1	VF SLIDE ASSY
255	3-067-469-11	SHOE, ACCESSORY
256	2-188-479-01	BASE (103), SHOE
257	2-188-485-01	O PLATE BIS M1.7
258	A-1081-845-A	LB-109 BOARD, COMPLETE
259	3-089-415-01	GUIDE, LAMP
260	3-089-417-01	ILLUMINATOR
261	3-089-416-01	SHEET, PRISM
262	3-089-419-01	CUSHION, LCD
263	3-080-204-21	SCREW, TAPPING, P2

Ref. No.	Part No.	Description
264	X-2023-648-1	EYE CUP ASSY
265	X-2023-647-1	CABINET UPPER ASSY VF
266	2-188-511-01	CABINET LOWER, VF
267	CAUTION 1	TAPE (A)
268	X-2048-504-1	BT PANEL ASSY
270	2-188-500-01	PLATE, BT TERMINAL RETAINER
271	3-080-204-01	SCREW, TAPPING, P2
272	CAUTION 2	TAPE (BT)
273	1-864-756-11	FP-180 FLEXIBLE BOARD
BH001	1-780-064-21	BATTERY TERMINAL BOARD
J001	1-815-792-11	CONNECTOR, DC-IN (7.2V)
LCD902	8-753-208-84	LCX059ALA-1 (EXCEPT HC33E)
LCD902	8-753-234-60	LCX059ZLA-1 (HC33E)

5. REPAIR PARTS LIST

5-1-7. MECHANISM DECK

ns: not supplied

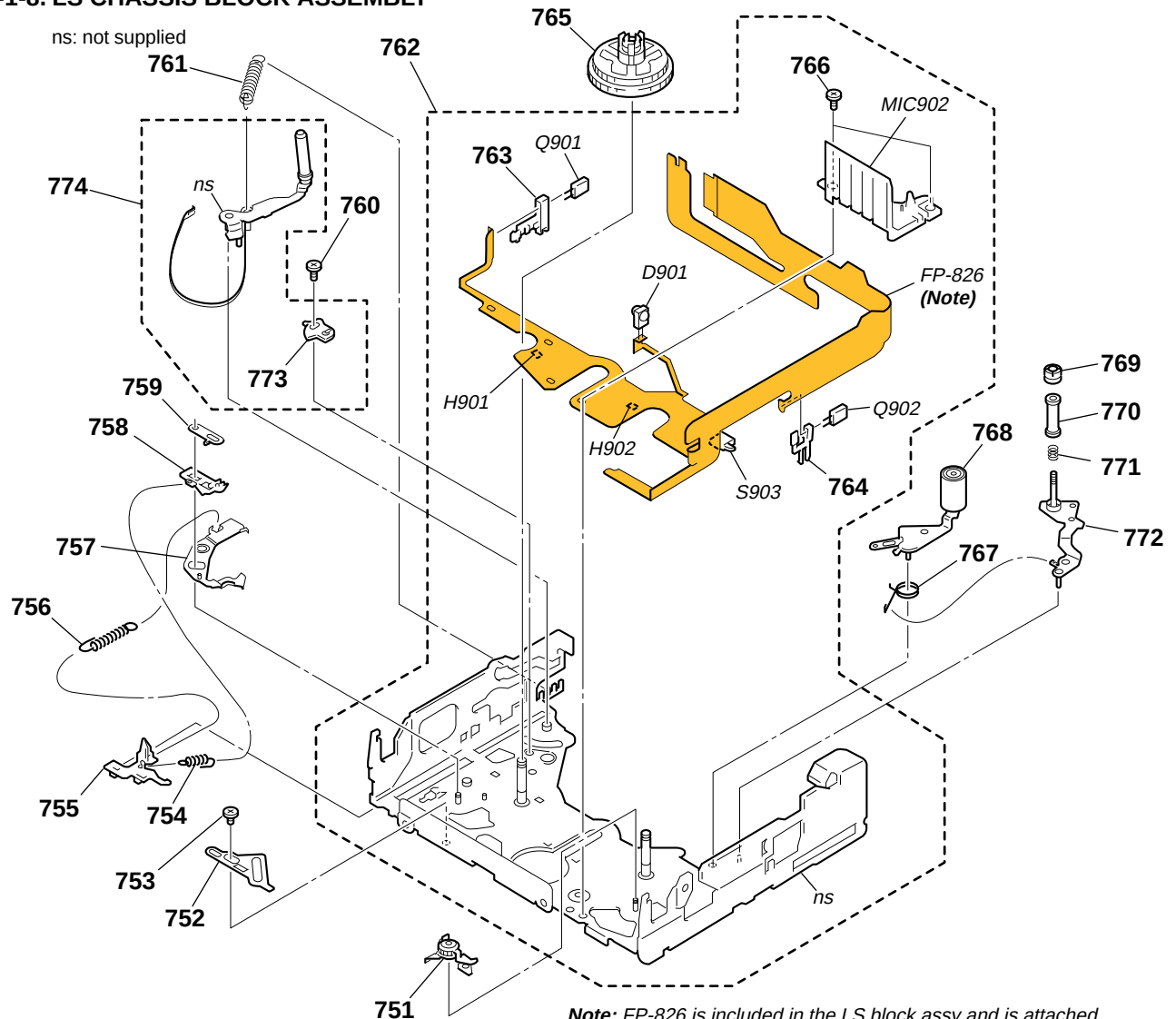


Ref. No.	Part No.	Description
701	X-3952-938-6	GEAR ASSY, GOOSENECK
702	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
703	3-079-206-02	SPRING (POP UP S), TXTENSION
704	X-2024-802-1	COMPARTMENT ASSY, CASSETTE
705	3-079-367-01	DAMPER, CASSETTE COMPARTMENT
706	3-079-215-02	SPRING (POP UP T), EXTENSION
707	3-085-330-01	SCREW, SPECIAL
708	3-080-545-01	COVER, SENSOR S
709	3-079-364-01	RETAINER, LS GUIDE

Ref. No.	Part No.	Description
710	X-3952-937-1	TABLE ASSY, T REEL
711	3-079-366-01	RELEASE, REEL LOCK
712	X-3953-257-1	PLATE ASSY, RETAINER
713	A-1082-424-A	MD (Z210) SUB ASSY
714	3-079-741-02	SCREW, DRUM FIXING
715	3-748-682-01	WASHER, T
716	3-087-881-01	SHEET, ADHESIVE, FLEXIBLE
M901	A-7048-994-A	DRUM (DEH-30B-R) (SERVICE)

5. REPAIR PARTS LIST

5-1-8. LS CHASSIS BLOCK ASSEMBLY

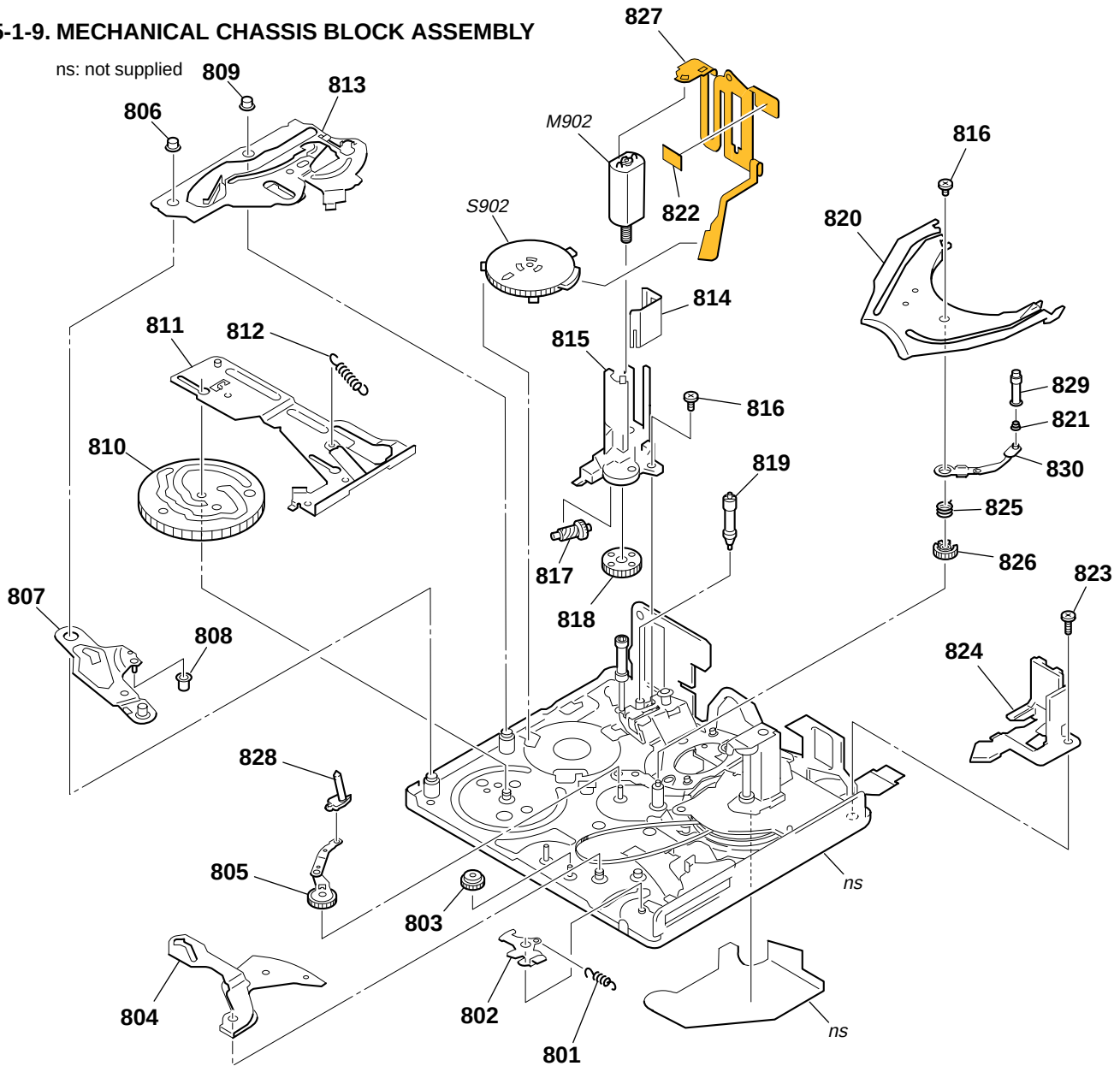


Note: FP-826 is included in the LS block assy and is attached to chassis by hot-press.
Because installation of FP-826 requires a very high accuracy, FP-826 is not supplied as an independent service parts.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
751	A-7095-402-B	BRAKE (T) BLOCK ASSY (S)	767	3-079-243-02	SPRING (PINCH RETURN), TORSION
752	3-079-241-01	PLATE, LS CAM	768	X-3952-934-1	ARM ASSY, PINCH
753	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD	769	3-052-062-02	NUT, TG7
754	3-079-246-01	SPRING (RELEASE RACK), EXTENSION	770	3-079-219-02	TG7
755	3-079-248-01	POSITIONING (S), CASSETTE	771	3-081-591-01	SPRING, COMPRESSION (TG7)
756	3-079-244-01	SPRING (ULE), EXTENSION	772	X-3952-935-3	ARM ASSY, TG7
757	X-3952-932-1	BRAKE ASSY, ULE	773	3-079-237-01	ADJUSTOR, BAND
758	3-079-245-01	RACK (S), RELEASE	774	A-7095-403-B	TG2 ARM BLOCK ASSY
759	3-079-247-01	BRAKE (S)	D901	6-500-652-01	DIODE GL453SE0000F (TAPE LED)
760	3-059-090-11	SCREW (M1.4X2.5), SPECIAL HEAD	H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)
761	3-079-242-01	SPRING, TENSION	H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)
762	A-7095-951-A	LS BLOCK ASSY	MIC902	1-817-175-12	PIN, CONNECTOR (WITH DETECTION SWITCH)
763	3-079-267-01	HOLDER (S), SENSOR	Q901	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE END)
764	3-079-268-01	HOLDER (T), SENSOR	Q902	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE TOP)
765	X-3952-936-2	TABLE ASSY, S REEL	S903	1-529-566-51	SWITCH, PUSH (1 KEY) (C.C. DOWN)
766	3-085-330-01	SCREW, SPECIAL			

5. REPAIR PARTS LIST

5-1-9. MECHANICAL CHASSIS BLOCK ASSEMBLY



Ref. No.	Part No.	Description
801	3-079-314-01	SPRING (EJ), EXTENSION
802	3-079-327-01	ARM, EJ
803	3-079-323-01	GEAR, CONVERSION
804	3-079-324-01	ARM, GL DRIVING
805	X-3952-928-1	GL (S) ASSY
806	3-079-315-01	ROLLER (S1), LS GUIDE
807	X-3952-925-1	ARM ASSY, LS
808	3-079-320-01	ROLLER, LS
809	3-079-316-01	ROLLER (S2), LS GUIDE
810	3-079-319-01	GEAR, CAM
811	X-3954-274-2	SLIDER ASSY (N), M
812	3-079-321-02	SPRING (PINCH), EXTENSION
813	X-3954-273-2	PLATE ASSY (N), TG2 CAM
814	3-079-312-01	SHIELD, MOTOR
815	3-079-307-02	HOLDER, MOTOR
816	3-085-330-01	SCREW, SPECIAL

Ref. No.	Part No.	Description
817	3-079-308-01	SHAFT, WORM
818	3-079-309-01	GEAR, DECELERATION
819	X-3952-942-2	ROLLER ASSY, TG3
820	3-079-325-01	RAIL, GUIDE
821	3-079-295-02	SPRING, TG5
822	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)
823	3-079-328-01	SCREW (M1.4), SPECIAL HEAD
824	3-079-326-02	SUPPORT, TG7
825	3-079-301-01	SPRING (GLT), TORSION
826	3-079-298-01	GEAR (T), GL
827	1-686-798-11	FP-467 FLEXIBLE BOARD
828	X-3952-927-2	COASTER (S) ASSY
829	X-3952-930-3	ROLLER ASSY, TG5
830	X-3952-929-1	COASTER (T) ASSY
M902	A-7095-396-A	MOTOR BLOCK ASSY, L (LOADING)
S902	1-477-679-11	ROTARY, ENCODER (SWITCH) (MODE SWITCH)

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
A-1081-698-A	CD-533 BOARD, COMPLETE	***** (IC101 is not included in this complete board)
	< CAPACITOR >	
C101	1-104-851-11	TANTAL. CHIP 10uF 20% 10V
C102	1-164-850-11	CERAMIC CHIP 10PF 0.5PF 50V
C104	1-127-820-11	CERAMIC CHIP 4.7uF 10% 16V
	< CONNECTOR >	
CN101	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P
	< COIL >	
L101	1-469-528-91	INDUCTOR 100uH
	< IC >	
IC101	8-753-215-47	ICX440NKF-13 (CCD IMAGER) (HC21/HC32/HC33) (Note)
IC101	8-753-215-49	ICX441NKF-13 (CCD IMAGER) (EXCEPT HC21/HC32/HC33) (Note)
	< TRANSISTOR >	
Q101	8-729-423-55	TRANSISTOR 2SC3931-D
	< RESISTOR >	
R101	1-218-959-11	RES-CHIP 3.3K 5% 1/16W
A-1081-704-A	CR-050 BOARD, COMPLETE	(HC22E/HC32/HC32E/HC33/HC33E) *****
	< CONNECTOR >	
CN001	1-817-283-41	CONNECTOR, FPC (ZIF) 51P
CN002	(Not supplied)	CONNECTOR, MULTIPLE (SOCKET)
	< DIODE >	
D001	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D002	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D003	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D005	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D006	6-500-776-01	DIODE MAZW068H0LS0
D007	8-719-083-91	DIODE EDZ TE61 6.8B
1-864-756-11	FP-180 FLEXIBLE BOARD	***** (BH001 and J001 are not included in this flexible board)
	< BATTERY TERMINAL >	
BH001	1-780-064-21	BATTERY TERMINAL BOARD
	< JACK >	
J001	1-815-792-11	CONNECTOR, DC-IN (7.2V) (DC IN)

Ref. No.	Part No.	Description
A-1082-042-A	FP-186 FLEXIBLE BOARD, COMPLETE	*****
	< SWITCH >	
S101	1-786-179-31	SWITCH, PUSH (1KEY) (PANEL REVERSE)
A-1082-203-A	FP-187 FLEXIBLE BOARD, COMPLETE	*****
	< DIODE >	
D001	6-501-052-01	DIODE CL-197HB1-D-T (EASY)
D002	6-500-776-01	DIODE MAZW068H0LS0
D003	6-500-776-01	DIODE MAZW068H0LS0
D004	8-719-060-92	DIODE SML-311YTT86 (CHG)
	< RESISTOR >	
R001	1-216-822-11	METAL CHIP 1.2K 5% 1/10W
R002	1-216-823-11	METAL CHIP 1.5K 5% 1/10W
R003	1-216-817-11	METAL CHIP 470 5% 1/10W
R004	1-216-805-11	METAL CHIP 47 5% 1/10W
	< SWITCH >	
S001	1-771-138-82	SWITCH, KEY BOARD (DSPL/BATT INFO)
S002	1-771-138-82	SWITCH, KEY BOARD (EASY)
S003	1-771-138-82	SWITCH, KEY BOARD (BACK LIGHT)
S004	1-786-180-31	SWITCH, PUSH (1KEY) (PANEL OPEN/CLOSE)
1-686-798-11	FP-467 FLEXIBLE BOARD	***** (S902 is not included in this flexible board)
	< SWITCH >	
S902	1-477-679-11	ROTARY, ENCODER (SWITCH) (MODE SWITCH)
(Not supplied)	FP-826 FLEXIBLE BOARD	***** (This flexible board is included in LS BLOCK ASSY (A-7095-951-A))
	< DIODE >	
D901	6-500-652-01	DIODE GL453SE0000F (TAPE LED)
	< HOLL ELEMENT >	
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)
	< CONNECTOR >	
MIC902	1-817-175-12	PIN, CONNECTOR (WITH DELCTION SWITCH)
	< TRANSISTOR >	
Q901	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE END)
Q902	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE TOP)

FP-826

JK-278

LB-109

MS-249

PD-237

Ref. No.	Part No.	Description
		< SWITCH >
S903	1-529-566-51	SWITCH, PUSH (1 KEY) (C.C. DOWN)
	A-1081-840-A	JK-278 BOARD, COMPLETE (HC17E/HC19E/HC21/HC21E)
	A-1081-841-A	JK-278 BOARD, COMPLETE (HC22E/HC32E/HC33E/HC33E)

		< CONNECTOR >
CN701	1-815-794-21	CONNECTOR (MULTIPLE) (A/V OUT: HC17E/HC19E/HC21/HC21E/HC22E) (A/V: HC32/HC32E/HC33/HC33E)
CN702	1-794-962-11	CONNECTOR, SQUARE TYPE (USB 5P) (USB) (HC17E/HC19E/HC21/HC21E)
CN703	1-794-276-11	CONNECTOR, SQUARE TYPE 4P (DV OUT: HC17E/HC19E) (DV IN/OUT: HC21/HC21E)
CN704	1-818-087-31	CONNECTOR, FFC/FPC (LIF) 26P
		< DIODE >
D703	8-719-078-02	DIODE 1SS357 (T3SONY1) (HC17E/HC19E/HC21/HC21E)
D705	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D706	6-500-044-01	DIODE DF6A6.8FU (TE85R)
D707	6-500-044-01	DIODE DF6A6.8FU (TE85R)
		< FUSE >
△ F701	1-576-647-11	FUSE (0.2A/50V) (HC17E/HC19E/HC21/HC21E)
△ F702	1-576-647-11	FUSE (0.2A/50V) (HC17E/HC19E/HC21/HC21E)
		< FERRITE BEAD >
FB701	1-400-823-11	EMI FERRITE (SMD)(1005)
FB702	1-400-823-11	EMI FERRITE (SMD)(1005)
FB703	1-400-823-11	EMI FERRITE (SMD)(1005)
		< JACK >
J701	1-793-995-11	JACK, SUPER SMALL TYPE (LANC)
		< LINE FILTER >
LF701	1-456-583-11	COMMON MODE CHOKE COIL (HC17E/HC19E/HC21/HC21E)
		< RESISTOR >
R702	1-218-965-11	RES-CHIP 10K 5% 1/16W (HC17E/HC19E/HC21/HC21E)
R703	1-218-965-11	RES-CHIP 10K 5% 1/16W (HC17E/HC19E/HC21/HC21E)
R705	1-218-990-11	SHORT CHIP 0
R706	1-218-990-11	SHORT CHIP 0
R707	1-218-990-11	SHORT CHIP 0
R709	1-218-990-11	SHORT CHIP 0

Ref. No.	Part No.	Description
	A-1081-845-A	LB-109 BOARD, COMPLETE *****
		< CAPACITOR >
C301	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C302	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C303	1-164-505-11	CERAMIC CHIP 2.2uF 16V
		< CONNECTOR >
CN301	1-818-046-11	CONNECTOR, FFC/FPC 20P
CN302	1-784-420-11	CONNECTOR, FFC/FPC (ZIF) 21P
		< DIODE >
D302	6-500-941-01	DIODE MAZS056008S0
D303	6-500-874-01	DIODE E1S35-AW0C7-01-A2 (BACKLIGHT)
		< RESISTOR >
R302	1-216-841-11	METAL CHIP 47K 5% 1/10W
R303	1-218-971-11	RES-CHIP 33K 5% 1/16W
R304	1-218-975-11	RES-CHIP 68K 5% 1/16W
R305	1-218-989-11	RES-CHIP 1M 5% 1/16W
	A-1081-842-A	MS-249 BOARD, COMPLETE (HC17E/HC19E/HC21/HC21E/HC22E)
	A-1081-843-A	MS-249 BOARD, COMPLETE (HC32/HC32E/HC33/HC33E)

		< BATTERY >
△ BT501	1-756-075-21	BATTERY, LITHIUM (SECONDARY)
		< CONNECTOR >
* CN501	1-691-378-21	CONNECTOR, FFC/FPC 14P
CN502	1-778-506-21	PIN, CONNECTOR (PC BOARD) 2P
CN503	1-817-913-41	MEMORY STICK DUO CONNECTOR (HC32/HC32E/HC33/HC33E)
		< DIODE >
D501	6-500-817-01	DIODE SML-512UWT86 (MS ACCESS) (HC32/HC32E/HC33/HC33E)
D503	6-500-776-01	DIODE MAZW068HOLS0
		< RESISTOR >
R501	1-218-949-11	RES-CHIP 470 5% 1/16W (HC32/HC32E/HC33/HC33E)
		< SWITCH >
S501	1-771-138-82	SWITCH, KEY BOARD (RESET)
	A-1081-848-A	PD-237 BOARD, COMPLETE *****
C602	1-164-939-11	CERAMIC CHIP 0.002uF 10% 50V
C603	1-137-710-11	CERAMIC CHIP 10uF 20% 6.3V

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

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

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description
C604	1-104-847-11	TANTAL. CHIP 22uF 20% 4V
C606	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C608	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C609	1-137-710-11	CERAMIC CHIP 10uF 20% 6.3V
C610	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C611	1-165-897-11	TANTAL. CHIP 22uF 20% 10V
C612	1-164-739-11	CERAMIC CHIP 560PF 5% 50V
C614	1-164-943-11	CERAMIC CHIP 0.01uF 10% 16V
C615	1-164-943-11	CERAMIC CHIP 0.01uF 10% 16V
C616	1-164-943-11	CERAMIC CHIP 0.01uF 10% 16V
C618	1-125-889-91	CERAMIC CHIP 2.2uF 10% 10V
C619	1-125-889-91	CERAMIC CHIP 2.2uF 10% 10V
C621	1-135-957-91	TANTAL. CHIP 10uF 20% 16V
C622	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C623	1-137-710-11	CERAMIC CHIP 10uF 20% 6.3V
C624	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C625	1-164-943-11	CERAMIC CHIP 0.01uF 10% 16V
C626	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C627	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C631	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C632	1-117-919-11	TANTAL. CHIP 10uF 20% 6.3V
C633	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
< CONNECTOR >		
CN601	1-815-031-11	FFC/CONNECTOR, FPC (ZIF) 24P
CN602	1-816-176-11	FFC/CONNECTOR, FPC (ZIF) 6P
CN603	1-691-370-11	CONNECTOR, FFC/FPC 6P
CN605	1-815-031-11	FFC/CONNECTOR, FPC (ZIF) 24P
CN608	1-816-176-11	CONNECTOR, FFC/FPC (ZIF) 6P
CN609	1-816-176-11	CONNECTOR, FFC/FPC (ZIF) 6P
< DIODE >		
D602	8-719-074-67	DIODE EDZ-TE61-5.6B
< FERRITE BEAD >		
FB601	1-400-461-21	FERRITE, EMI (SMD)(1005)
< IC >		
IC601	8-759-693-13	IC NJM12904V (TE2)
IC602	8-753-229-98	IC CXM3006CR-T4
< COIL >		
L601	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
L602	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
L603	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
< TRANSISTOR >		
Q601	8-729-427-52	TRANSISTOR XP4216
Q602	8-729-427-23	TRANSISTOR XP4116-TXE
Q606	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR
Q607	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR
Q608	6-550-234-01	TRANSISTOR UNR32A300LS0
Q609	8-729-041-23	TRANSISTOR NDS356AP
Q610	6-550-232-01	TRANSISTOR 2SA2029T2LQ/R
Q611	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR
Q612	8-729-053-52	TRANSISTOR HN1C01FE-Y/GR (TPLR3)

Ref. No.	Part No.	Description
< RESISTOR >		
R605	1-208-855-81	METAL CHIP 47 0.5% 1/16W
R606	1-208-943-11	METAL CHIP 220K 0.5% 1/16W
R608	1-208-927-11	METAL CHIP 47K 0.5% 1/16W
R609	1-218-975-11	RES-CHIP 68K 5% 1/16W
R610	1-218-957-11	RES-CHIP 2.2K 5% 1/16W
R612	1-218-949-11	RES-CHIP 470 5% 1/16W
R613	1-208-934-11	METAL CHIP 91K 0.5% 1/16W
R614	1-208-911-11	METAL CHIP 10K 0.5% 1/16W
R615	1-218-961-11	RES-CHIP 4.7K 5% 1/16W
R616	1-218-957-11	RES-CHIP 2.2K 5% 1/16W
R617	1-218-953-11	RES-CHIP 1K 5% 1/16W
R619	1-208-855-81	METAL CHIP 47 0.5% 1/16W
R620	1-218-965-11	RES-CHIP 10K 5% 1/16W
R623	1-208-855-81	METAL CHIP 47 0.5% 1/16W
R624	1-218-977-11	RES-CHIP 100K 5% 1/16W
R625	1-218-990-11	SHORT CHIP 0
R626	1-218-954-11	RES-CHIP 1.2K 5% 1/16W
R627	1-218-955-11	RES-CHIP 1.5K 5% 1/16W
R634	1-218-989-11	RES-CHIP 1M 5% 1/16W
R636	1-218-990-11	SHORT CHIP 0
R637	1-218-978-11	RES-CHIP 120K 5% 1/16W
R638	1-216-864-11	SHORT CHIP 0
R639	1-216-864-11	SHORT CHIP 0
R642	1-218-973-11	RES-CHIP 47K 5% 1/16W
R643	1-218-973-11	RES-CHIP 47K 5% 1/16W
< COMPOSITION CIRCUIT BLOCK >		
RB601	1-234-369-21	RES. NETWORK 10 (1005X4)
A-1084-828-A SI-042 BOARD, COMPLETE (HC17E)		
A-1081-844-A SI-042 BOARD, COMPLETE (EXCEPT HC17E)		

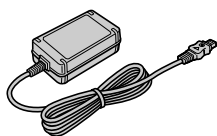
< CAPACITOR >		
C602	1-125-837-91	CERAMIC CHIP 1uF 10% 6.3V
C603	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C608	1-119-923-11	CERAMIC CHIP 0.047uF 10% 10V
C610	1-119-923-11	CERAMIC CHIP 0.047uF 10% 10V
C611	1-119-923-11	CERAMIC CHIP 0.047uF 10% 10V
C612	1-119-923-11	CERAMIC CHIP 0.047uF 10% 10V
C613	1-137-710-11	CERAMIC CHIP 10uF 20% 6.3V
C614	1-137-710-11	CERAMIC CHIP 10uF 20% 6.3V
C615	1-137-710-11	CERAMIC CHIP 10uF 20% 6.3V
C616	1-137-710-11	CERAMIC CHIP 10uF 20% 6.3V
C618	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C619	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C621	1-100-252-11	CERAMIC CHIP 0.1uF 10% 6.3V
< CONNECTOR >		
CN601	1-778-507-21	PIN, CONNECTOR (PC BOARD) 4P
CN603	1-766-348-21	CONNECTOR, FFC/FPC 18P
< DIODE >		
D601	6-500-512-01	DIODE CL-330IRS-X-TU (IR EMITTER/NIGHTSHOT)

SI-042

Ref. No.	Part No.	Description
D602	6-500-817-01	DIODE SML-512UWT86 (CAMERA RECORDING)
D604	8-719-988-61	DIODE 1SS355TE-17
< FERRITE BEAD >		
FB601	1-469-179-21	INDUCTOR, FERRITE BEAD
FB602	1-469-179-21	INDUCTOR, FERRITE BEAD
FB603	1-469-179-21	INDUCTOR, FERRITE BEAD
FB604	1-469-179-21	INDUCTOR, FERRITE BEAD
< IC >		
IC601	6-600-163-01	IC RS-770 (EXCEPT HC17E)
IC602	8-759-489-19	IC uPC6756GR-8JG-E2
< COIL >		
L601	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
< RESISTOR >		
R601	1-218-949-11	RES-CHIP 470 5% 1/16W
R602	1-218-989-11	RES-CHIP 1M 5% 1/16W
R603	1-218-965-11	RES-CHIP 10K 5% 1/16W
R604	1-218-937-11	RES-CHIP 47 5% 1/16W
R605	1-218-965-11	RES-CHIP 10K 5% 1/16W
R606	1-218-989-11	RES-CHIP 1M 5% 1/16W
R607	1-216-821-11	METAL CHIP 1K 5% 1/10W
< COMPOSITION CIRCUIT BLOCK >		
RB601	1-234-379-21	RES, NETWORK 22K (1005X4)
< SWITCH >		
S601	1-786-148-11	SWITCH, PUSH (1 KEY) (LENS COVER OPEN)
< SENSOR >		
SE601	1-476-807-41	SENSOR, ANGULAR VELOCITY (PITCH SENSOR)
SE602	1-476-807-31	SENSOR, ANGULAR VELOCITY (YAW SENSOR)

Electrical parts list of the VC-376/377 board
is not shown.
Pages 5-15 to 5-28 are not shown.

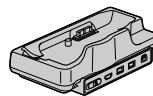
Checking supplied accessories.



AC-L AC Adaptor (1)
 ▲ 1-477-534-11



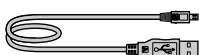
Power Cord (1)
 ▲ 1-769-608-31 (AEP, E)
 ▲ 1-776-985-11 (KR)
 ▲ 1-782-476-51 (CH)
 ▲ 1-783-374-12 (UK, HK)
 ▲ 1-790-107-41 (US, CND)
 ▲ 1-790-732-71 (JE)
 ▲ 1-827-945-11 (AUS)



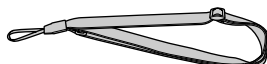
Handycam station (1)
 DCRA-C121
 1-818-729-11
 (HC32/HC32E/HC33E)
 DCRA-C122
 1-818-729-21 (HC22E)



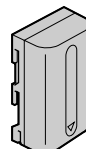
Shoe cover (1)
 2-188-481-01



USB cable (1)
 1-829-868-31
 (EXCEPT HC17E)



Shoulder strap (1)
 2-176-235-01
 (EXCEPT HC17E)



Rechargeable battery pack
 NP-FP30 (1)
 ▲ A-1082-950-A (US, CND)
 ▲ A-1082-951-A
 (EXCEPT US, CND)



A/V connecting cable (1)
 1-823-156-51



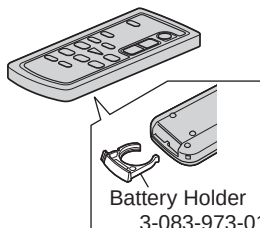
21-pin adaptor (1)
 1-770-783-21
 (HC22E/HC32E)



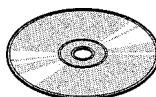
Conversion 2P adaptor (1)
 ▲ 1-569-008-12
 (HC21/HC32: E)



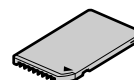
Conversion 2P adaptor (1)
 ▲ 1-569-007-12 (JE)



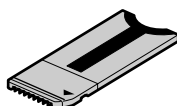
Wireless Remote Commander
 RMT-831 (1)
 1-477-898-41
 (HC32/HC32E/HC33/HC33E)
 RMT-830
 1-477-898-71
 (HC19E/HC21/HC21E/HC22E)



CD-ROM
 (SPVD-012 2005 USB Driver)
 (Picture Package Ver. 1.5) (1)
 2-515-350-01 (EXCEPT HC33E)
 2-586-797-01 (HC21E/HC33E)



Memory Stick Duo (1)
 (not supplied)
 (HC33/HC33E)



Memory Stick Duo adaptor (1)
 (not supplied)
 (HC33/HC33E)

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

Les composants identifiés par une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Checking supplied accessories.

Other accessories

2-584-905-11	MANUAL, INSTRUCTION (ENGLISH) (HC21: US, CND, E/HC32: CND, E)
2-584-905-21	MANUAL, INSTRUCTION (FRENCH) (HC21: CND)
2-584-905-31	MANUAL, INSTRUCTION (SPANISH) (HC21: E/HC32: E)
2-584-905-41	MANUAL, INSTRUCTION (PORTUGUESE) (HC21: E/HC32: E)
2-584-905-51	MANUAL, INSTRUCTION (TRADITIONAL CHINESE) (HC21: E/HC32: E)
2-584-905-61	MANUAL, INSTRUCTION (KOREAN) (HC21: KR/HC32: KR)
2-584-906-11	MANUAL, INSTRUCTION (ENGLISH) (HC32: US, CND, JE/HC32E: JE)
2-584-906-21	MANUAL, INSTRUCTION (FRENCH) (HC32: CND)
2-584-906-31	MANUAL, INSTRUCTION (SPANISH) (HC32: JE/HC32E: JE)
2-584-906-41	MANUAL, INSTRUCTION (PORTUGUESE) (HC32: JE/HC32E: JE)
2-584-907-11	MANUAL, INSTRUCTION (ENGLISH) (HC32E: AEP, UK)
2-584-907-21	MANUAL, INSTRUCTION (FRENCH) (HC32E: AEP)
2-584-907-31	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE) (HC32E: AEP)
2-584-907-41	MANUAL, INSTRUCTION (ITALIAN, GREEK) (HC32E: AEP)
2-584-907-51	MANUAL, INSTRUCTION (GERMAN, DUTCH) (HC32E: AEP)
2-584-907-61	MANUAL, INSTRUCTION (SWEDISH, RUSSIAN) (HC32E: AEP)
2-584-907-71	MANUAL, INSTRUCTION (DANISH, FINNISH) (HC32E: NE)
2-584-907-81	MANUAL, INSTRUCTION (POLISH, CZECH) (HC32E: EE)
2-584-907-91	MANUAL, INSTRUCTION (HUNGARIAN, SLOVAKIAN) (HC32E: EE)
2-586-501-11	MANUAL, INSTRUCTION (ENGLISH) (HC17E: AEP/HC19E: AEP, UK/HC21E: E, HK/HC22E: AEP, UK/HC32E: E, HK, AUS)
2-586-501-21	MANUAL, INSTRUCTION (FRENCH) (HC17E: AEP/HC19E: AEP/HC21E: E/HC22E: AEP/HC32E: E)
2-586-501-31	MANUAL, INSTRUCTION (SPANISH) (HC17E/HC19E/HC22E)
2-586-501-41	MANUAL, INSTRUCTION (PORTUGUESE) (HC17E: AEP/HC19E: AEP/HC22E: AEP)
2-586-501-51	MANUAL, INSTRUCTION (ITALIAN) (HC17E: AEP/HC19E: AEP/HC22E: AEP)
2-586-501-61	MANUAL, INSTRUCTION (GREEK) (HC17E: AEP/HC19E: AEP/HC22E: AEP)
2-586-501-71	MANUAL, INSTRUCTION (GERMAN) (HC17E: AEP/HC19E: AEP/HC22E: AEP)
2-586-501-81	MANUAL, INSTRUCTION (DUTCH) (HC17E: AEP/HC19E: AEP/HC22E: AEP)
2-586-501-91	MANUAL, INSTRUCTION (SWEDISH) (HC17E: NE/HC19E: NE/HC22E: NE)
2-586-507-11	MANUAL, INSTRUCTION (RUSSIAN) (HC17E: NE/HC19E: NE/HC22E: NE)
2-586-507-21	MANUAL, INSTRUCTION (DANISH) (HC17E: NE/HC19E: NE/HC22E: NE)
2-586-507-31	MANUAL, INSTRUCTION (FINNISH) (HC17E: NE/HC19E: NE/HC22E: NE)
2-586-507-41	MANUAL, INSTRUCTION (POLISH) (HC17E: EE/HC19E: EE/HC22E: EE)
2-586-507-51	MANUAL, INSTRUCTION (CZECH) (HC17E: EE/HC19E: EE/HC22E: EE)
2-586-507-61	MANUAL, INSTRUCTION (HUNGARIAN) (HC17E: EE/HC19E: EE/HC22E: EE)
2-586-507-71	MANUAL, INSTRUCTION (SLOVAKIAN) (HC17E: EE/HC19E: EE/HC22E: EE)
2-586-507-81	MANUAL, INSTRUCTION (ARABIC) (HC21E: E/HC32E: E)
2-586-507-91	MANUAL, INSTRUCTION (PERSIAN) (HC21E: E/HC32E: E)
2-586-574-11	MANUAL, INSTRUCTION (TRADITIONAL CHINESE) (HC21E: HK/HC32E: HK)
2-586-574-21	MANUAL, INSTRUCTION (SIMPLIFIED CHINESE) (HC21E: E/HC32E: E)

DCR-HC17E/HC19E/HC21/HC21E/HC22E/ HC32/HC32E/HC33/HC33E

RMT-830/831

SONY®

LEVEL 2

SERVICE MANUAL

Ver 1.1 2005.09

DCR-HC21/HC32

US Model

Canadian Model

Korea Model

DCR-HC17E/HC19E/HC22E/HC32E

AEP Model

East European Model

North European Model

DCR-HC19E/HC22E/HC32E

UK Model

DCR-HC21/HC21E/HC32/HC32E

E Model

DCR-HC21E/HC32E

Australian Model

Hong Kong Model

DCR-HC21/HC33

Brazilian Model

DCR-HC21E/HC33E

Chinese Model

DCR-HC32/HC32E

Tourist Model

SUPPLEMENT-1

File this supplement with the service manual.

(PV05-039)

- Addition of Green and Pink Models (HC33E)
- Change of Repair Parts

• Addition of Green and Pink Models (HC33E)

5-1. EXPLODED VIEWS

: Points added portion.

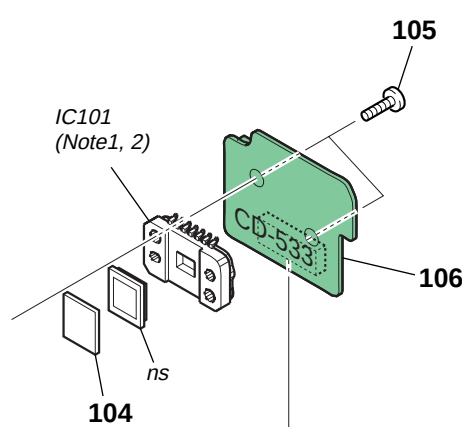
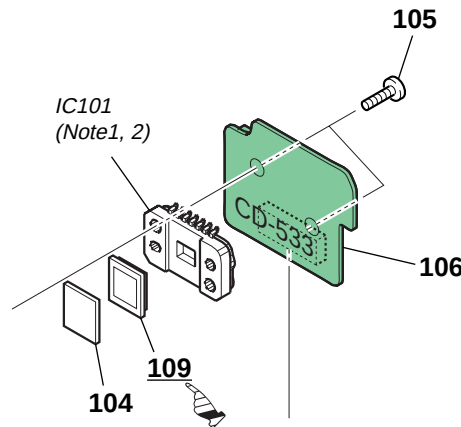
Page	Former			New		
5-3	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	51	X-2023-770-1	PANEL ASSY, FRONT (EXCEPT HC17E)	51	X-2023-770-1	PANEL ASSY, FRONT (SILVER) (EXCEPT HC17E)
				51	X-2048-775-1	PANEL ASSY, FRONT (GREEN) (HC33E)
5-5				51	X-2048-776-1	PANEL ASSY, FRONT (PINK) (HC33E)
	154	2-188-434-01	COVER (C), HINGE	154	2-188-434-01	COVER (C), HINGE (SILVER)
				154	2-188-434-21	COVER (C), HINGE (GREEN) (HC33E)
	162	X-2024-694-1	CABINET R ASSY (HC22E/HC32/HC32E/HC33/HC33E)	154	2-188-434-31	COVER (C), HINGE (PINK) (HC33E)
				162	X-2024-694-1	CABINET R ASSY (SILVER) (HC22E/HC32/HC32E/HC33/HC33E)
	169	2-188-432-71	CABINET (C)103, P (HC33E)	162	X-2048-772-1	CABINET R ASSY (GREEN) (HC33E)
				162	X-2048-773-1	CABINET R ASSY (PINK) (HC33E)
				169	2-188-432-71	CABINET (C) 103, P (SILVER) (HC33E)
				169	2-188-456-01	CABINET (C) 103, P (GREEN) (HC33E)
				169	2-188-456-11	CABINET (C) 103, P (PINK) (HC33E)

• Change of Repair Parts

5-1. EXPLODED VIEWS

: Points added portion.

: Points changed portion.

Page	Former			New		
5-4						
	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	—	—	—	109	2-318-138-01	RUBBER, SEAL

DCR-HC17E/HC19E/HC21/HC21E/HC22E/ HC32/HC32E/HC33/HC33E

RMT-830/831

SONY®

LEVEL 2

SERVICE MANUAL

Ver 1.2 2006.03

DCR-HC21/HC32

US Model

Canadian Model

Korea Model

DCR-HC17E/HC19E/HC22E/HC32E

AEP Model

East European Model

North European Model

DCR-HC19E/HC22E/HC32E

UK Model

DCR-HC21/HC21E/HC32/HC32E

E Model

DCR-HC21E/HC32E

Australian Model

Hong Kong Model

DCR-HC21/HC33

Brazilian Model

DCR-HC21E/HC33E

Chinese Model

DCR-HC32/HC32E

Tourist Model

SUPPLEMENT-2

File this supplement with the service manual
(PV05-095)

- Addition of LCD Type (AUO TYPE: HC21/HC32)

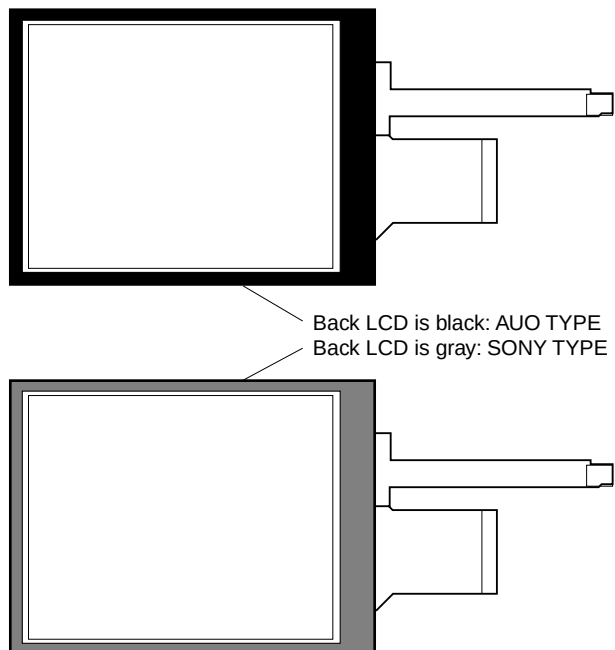
- Along with SONY TYPE, AUO TYPE is added at type of LCD (DCR-HC21/HC32 only).
- When the machine needs to be repaired, please refer to page 2 to discriminate the type of LCD.

1. SERVICE NOTE

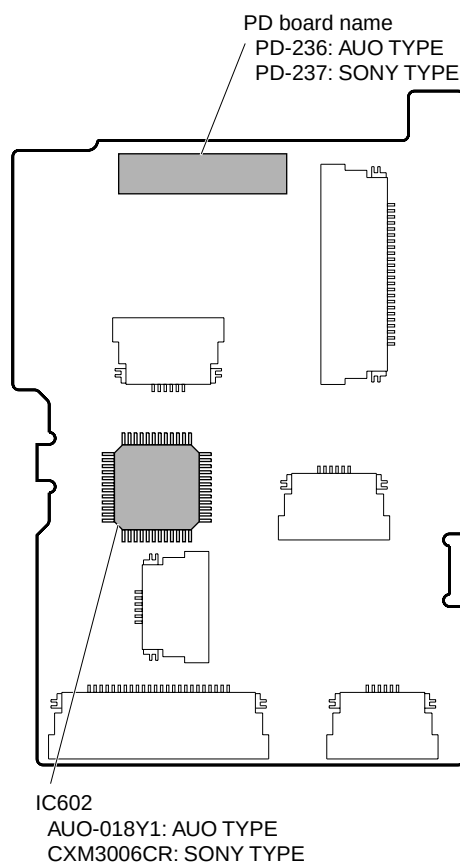
1-5. LCD TYPE CHECK (DCR-HC21/HC32)

Note: About PD-236/237 board and TP assy, discriminate LCD type on the machine, and replace the same type.

• Discrimination method by TP assy



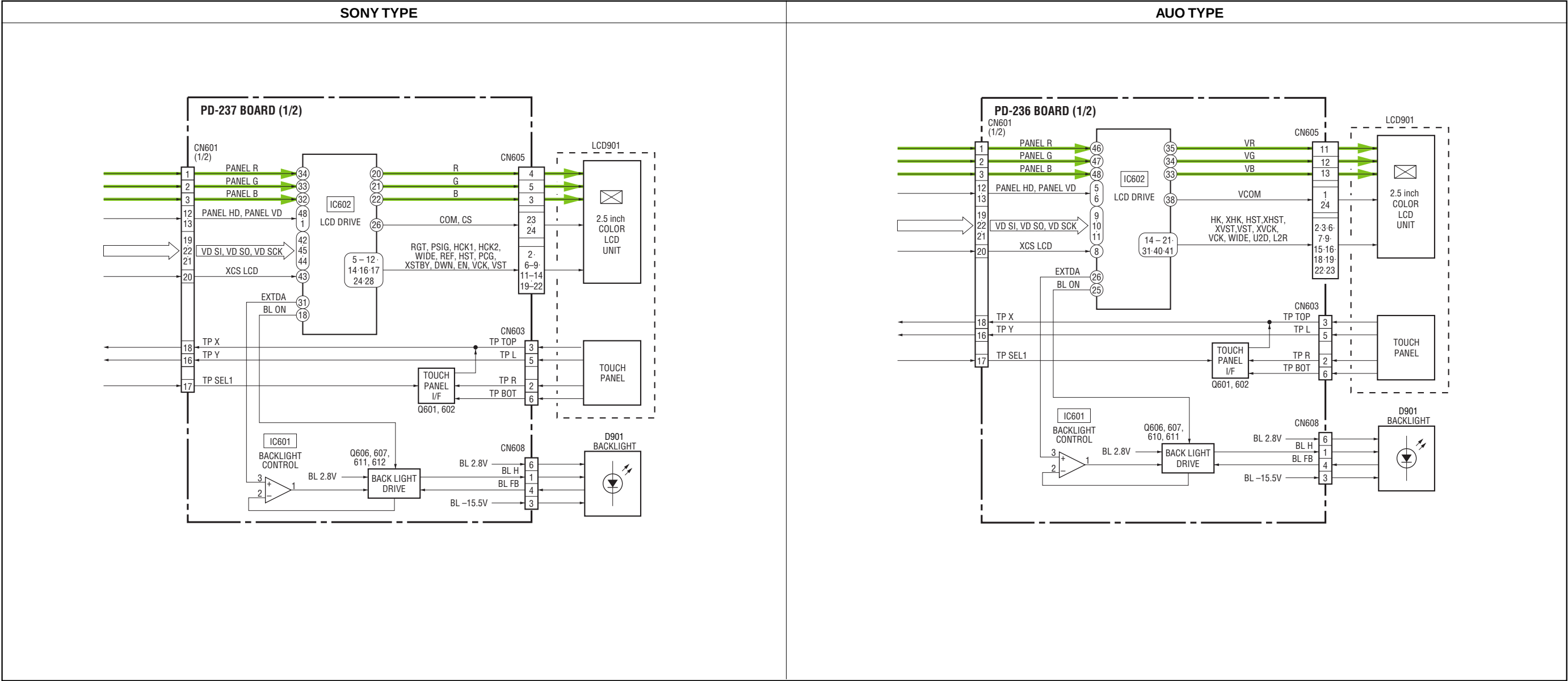
• Discrimination method by PD board



3. BLOCK DIAGRAMS

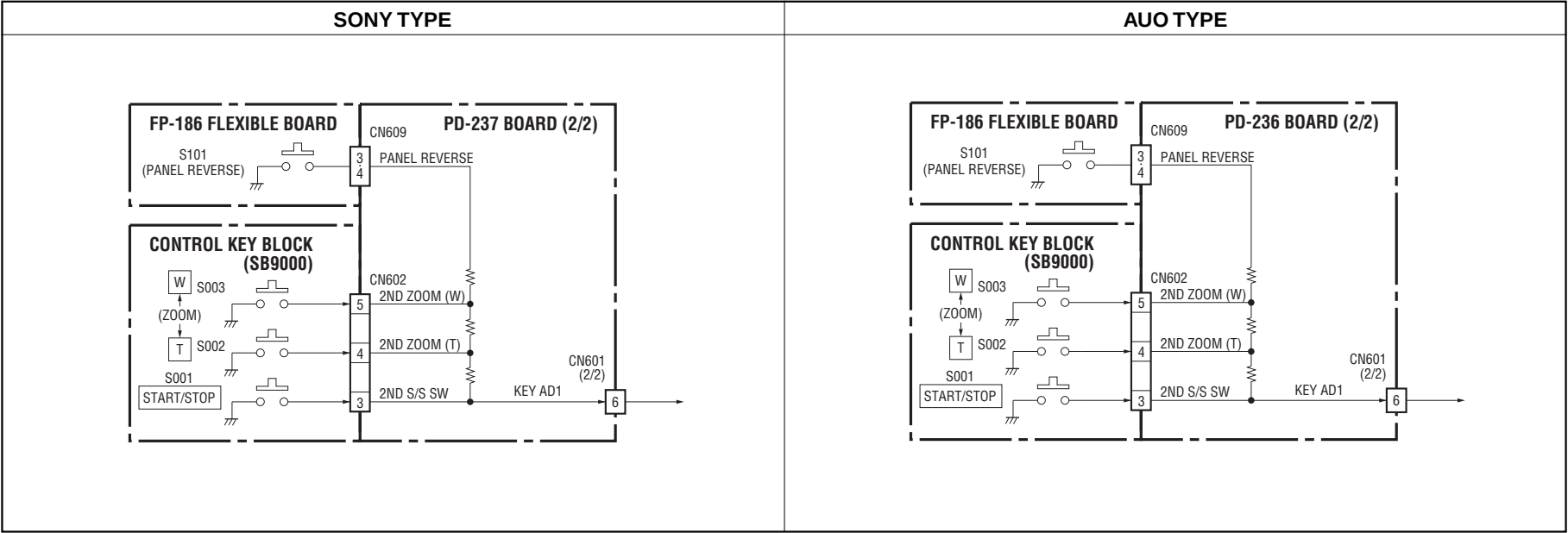
3-1-3. OVERALL BLOCK DIAGRAM (3/5) (NON MS model)
(Service manual page 3-6)

3-2-4. OVERALL BLOCK DIAGRAM (4/6) (MS model)
(Service manual page 3-24)



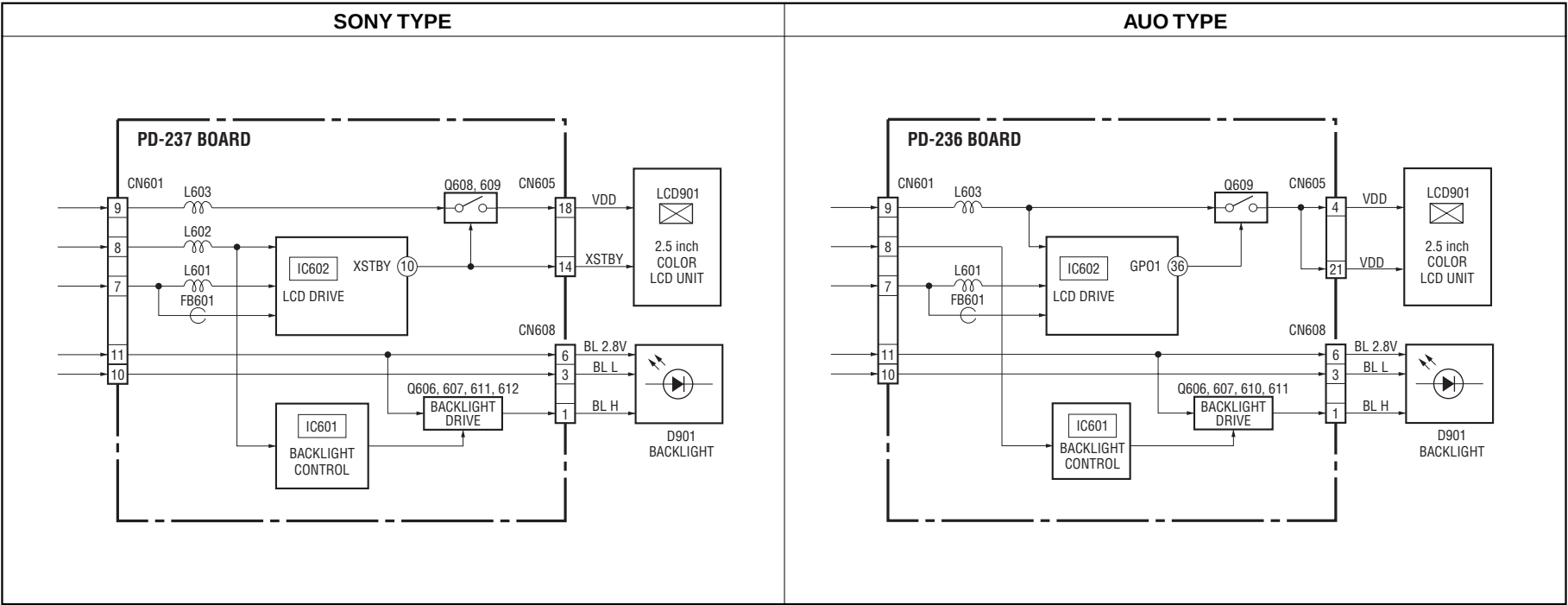
3-1-5. OVERALL BLOCK DIAGRAM (5/5) (NON MS model)
(Service manual page 3-9)

3-2-6. OVERALL BLOCK DIAGRAM (6/6) (MS model)
(Service manual page 3-27)



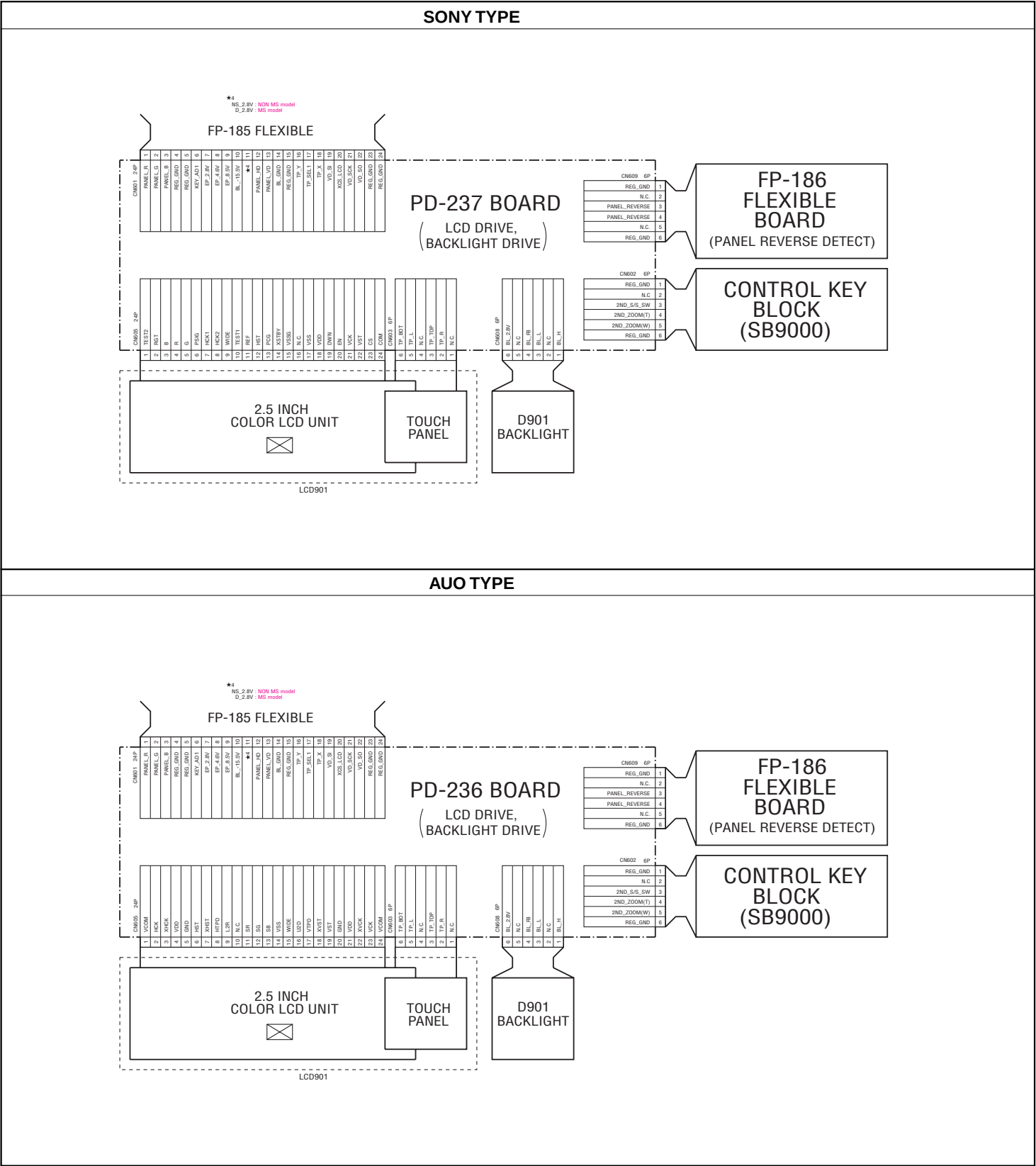
3-1-8. POWER BLOCK DIAGRAM (3/3) (NON MS model)
(Service manual page 3-16)

3-2-9. POWER BLOCK DIAGRAM (3/3) (MS model)
(Service manual page 3-33)



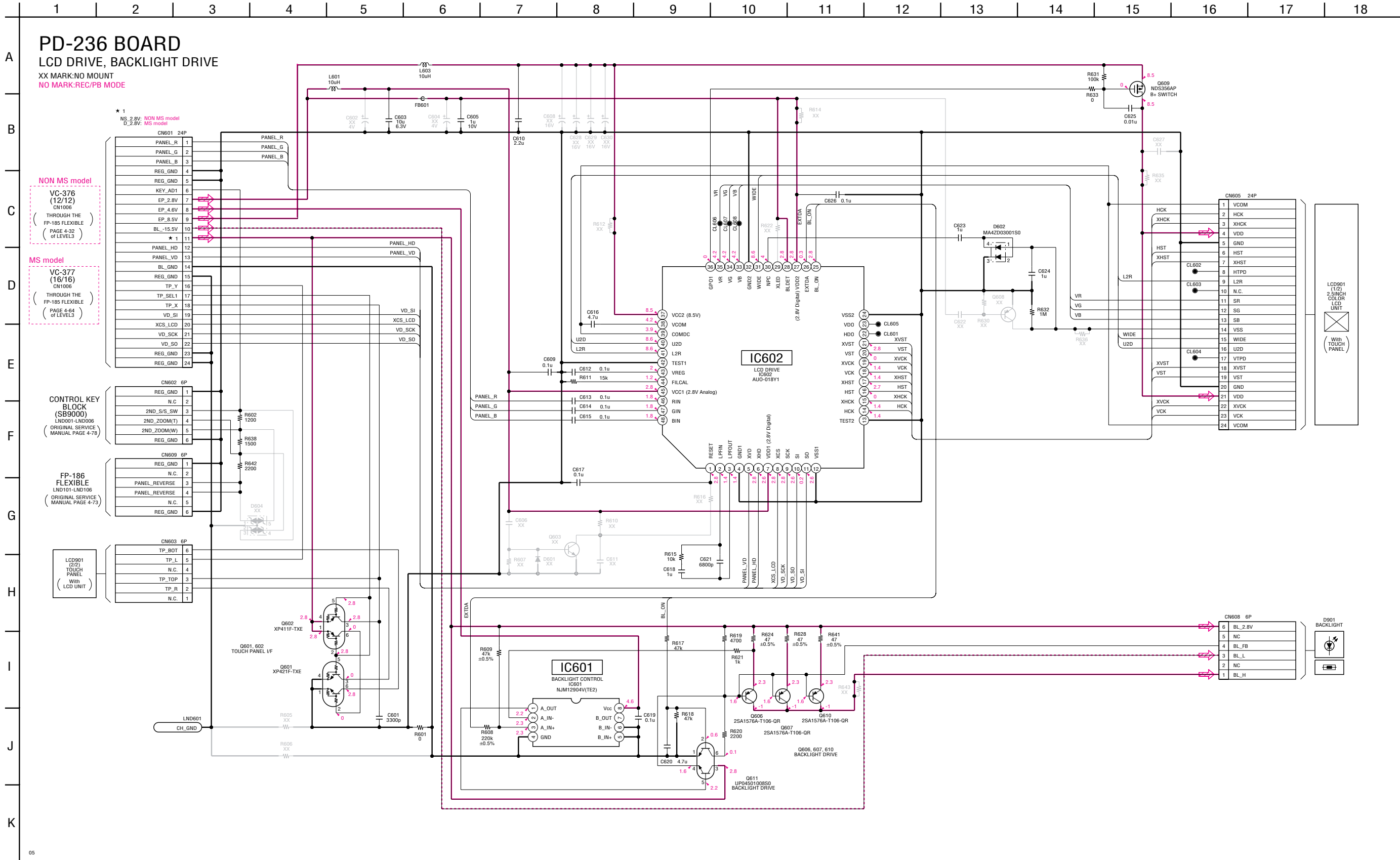
4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM
(Service manual page 4-2, Location L-15 to P-23)



4-2. SCHEMATIC DIAGRAMS

For Schematic Diagram
• Refer to page 7 for printed wiring board.



PD-236

LF : Uses unleaded solder.

4-5. MOUNTED PARTS LOCATION

no mark : side A

* mark : side B

PD-236 BOARD

C601 B-2
C603 A-4
C605 A-3
C609 B-2
C610 C-3
C612 B-3
C613 B-3
C614 B-3
C615 B-3
C616 B-2
C617 B-3
C618 A-3
C619 C-3
C620 C-2
C621 B-3
C623 A-2
C624 A-1
C625 B-1
C626 A-2

CN601 C-4
CN602 C-2
CN603 B-2
CN605 A-1
CN608 C-1
CN609 B-3

D602 A-2

FB601 A-3

IC601 C-2
IC602 A-2

L601 A-4
L603 C-4

Q601 B-2
Q602 B-2
Q606 C-2
Q607 C-1
Q609 B-1
Q610 C-1
Q611 C-2

R601 C-4
R602 C-3
R608 C-2
R609 C-2
R611 B-3
R615 B-3
R617 C-2
R618 C-2
R619 C-1
R620 C-2
R621 C-2
R624 C-2
R628 C-1
R631 C-1
R632 A-1
R633 B-1
R638 C-3
R641 C-1
R642 C-3

5. REPAIR PARTS LIST

 : Points added portion.

5-1. EXPLODED VIEWS

5-1-4. LCD BLOCK

Page	FORMER			NEW		
5-5	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	167	A-1081-848-A	PD-237 BOARD, COMPLETE	167	A-1081-848-A	PD-237 BOARD, COMPLETE (SONY TYPE) (Note)
	—	—	—	167	A-1081-847-A	PD-236 BOARD, COMPLETE (AUO TYPE) (Note)
	LCD901	A-1090-680-A	(TP) BLOCK ASSY (2.5STMG) (HC21/HC32/HC32E/HC33/HC33E)	LCD901	A-1090-680-A	(TP) BLOCK ASSY (2.5STMG) (HC21/HC32/HC32E/HC33/HC33E) (SONY TYPE) (Note)
	—	—	—	LCD901	A-1121-498-A	(TP) BLOCK ASSY (2.5AUFU) (HC21/HC32) (AUO TYPE) (Note)

Note: When the machine needs to be repaired, please refer to page 2 discriminate the type of LCD.

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
	A-1081-847-A	PD-236 BOARD, COMPLETE (AUO TYPE)

		< CAPACITOR >
C601	1-164-940-11	CERAMIC CHIP 0.0033uF 10% 16V
C603	1-137-710-11	CERAMIC CHIP 10uF 20% 6.3V
C605	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C609	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C610	1-125-889-91	CERAMIC CHIP 2.2uF 10% 10V
C612	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C613	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C614	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C615	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C616	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C617	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C618	1-109-982-11	CERAMIC CHIP 1uF 10% 10V
C619	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C620	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V
C621	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V
C623	1-109-982-11	CERAMIC CHIP 1uF 10% 10V
C624	1-109-982-11	CERAMIC CHIP 1uF 10% 10V
C625	1-164-943-81	CERAMIC CHIP 0.01uF 10% 16V
C626	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
		< CONNECTOR >
CN601	1-818-071-51	CONNECTOR, FFC/FPC (ZIF) 24P
* CN602	1-818-069-51	CONNECTOR, FFC/FPC (ZIF) 6P
* CN603	1-691-370-51	CONNECTOR, FFC/FPC 6P
CN605	1-818-071-51	CONNECTOR, FFC/FPC (ZIF) 24P
* CN608	1-818-069-51	CONNECTOR, FFC/FPC (ZIF) 6P
* CN609	1-818-069-51	CONNECTOR, FFC/FPC (ZIF) 6P
		< DIODE >
D602	8-719-074-08	DIODE MA4ZD03001S0
		< FERRITE BEAD >
FB601	1-400-461-21	FERRITE, EMI (SMD) (1005)
		< IC >
IC601	8-759-693-13	IC NJM12904V (TE2)
IC602	6-707-045-01	IC AUO-018Y1-TBM-E
		< COIL >
L601	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
L603	1-400-588-11	INDUCTOR, LAMINATE CHIP 10uH
		< TRANSISTOR >
Q601	8-729-427-67	TRANSISTOR XP421F-TXE
Q602	8-729-427-37	TRANSISTOR XP411F-TXE
Q606	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR
Q607	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR
Q609	8-729-041-23	TRANSISTOR NDS356AP
Q610	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR
Q611	8-729-054-50	TRANSISTOR UP04501008S0

Ref. No.	Part No.	Description
		< RESISTOR >
R601	1-216-864-11	SHORT CHIP 0
R602	1-218-954-11	RES-CHIP 1.2K 5% 1/16W
R608	1-208-943-11	METAL CHIP 220K 0.5% 1/16W
R609	1-208-927-11	METAL CHIP 47K 0.5% 1/16W
R611	1-218-967-11	RES-CHIP 15K 5% 1/16W
R615	1-218-965-11	RES-CHIP 10K 5% 1/16W
R617	1-218-973-11	RES-CHIP 47K 5% 1/16W
R618	1-218-973-11	RES-CHIP 47K 5% 1/16W
R619	1-218-961-11	RES-CHIP 4.7K 5% 1/16W
R620	1-218-957-11	RES-CHIP 2.2K 5% 1/16W
R621	1-218-953-11	RES-CHIP 1K 5% 1/16W
R624	1-208-855-81	METAL CHIP 47 0.5% 1/16W
R628	1-208-855-81	METAL CHIP 47 0.5% 1/16W
R631	1-218-977-11	RES-CHIP 100K 5% 1/16W
R632	1-218-989-11	RES-CHIP 1M 5% 1/16W
R633	1-218-990-81	SHORT CHIP 0
R638	1-218-955-11	RES-CHIP 1.5K 5% 1/16W
R641	1-208-855-81	METAL CHIP 47 0.5% 1/16W
R642	1-218-957-11	RES-CHIP 2.2K 5% 1/16W

SONY®

LEVEL 2

SERVICE MANUAL

Ver 1.4 2006.10

DCR-HC21/HC32

US Model

Canadian Model

Korea Model

DCR-HC17E/HC19E/HC22E/HC32E

AEP Model

East European Model

North European Model

DCR-HC19E/HC22E/HC32E

UK Model

DCR-HC21/HC21E/HC32/HC32E

E Model

DCR-HC21E/HC32E

Australian Model

Hong Kong Model

DCR-HC21/HC33

Brazilian Model

DCR-HC21E/HC33E

Chinese Model

DCR-HC32/HC32E

Tourist Model

SUPPLEMENT-3

File this supplement with the service manual.
(DI06-108)

• Change of Repair Parts

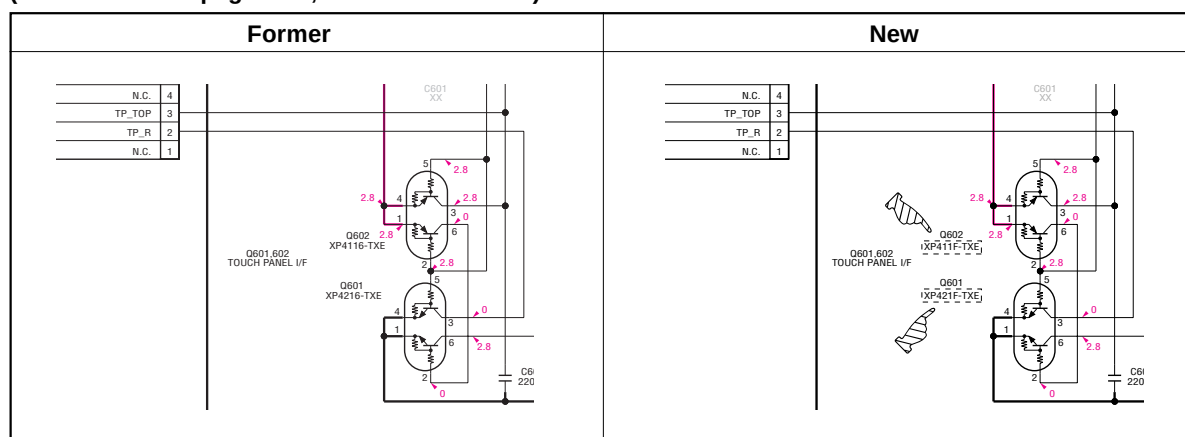
4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

 : Points changed portion.

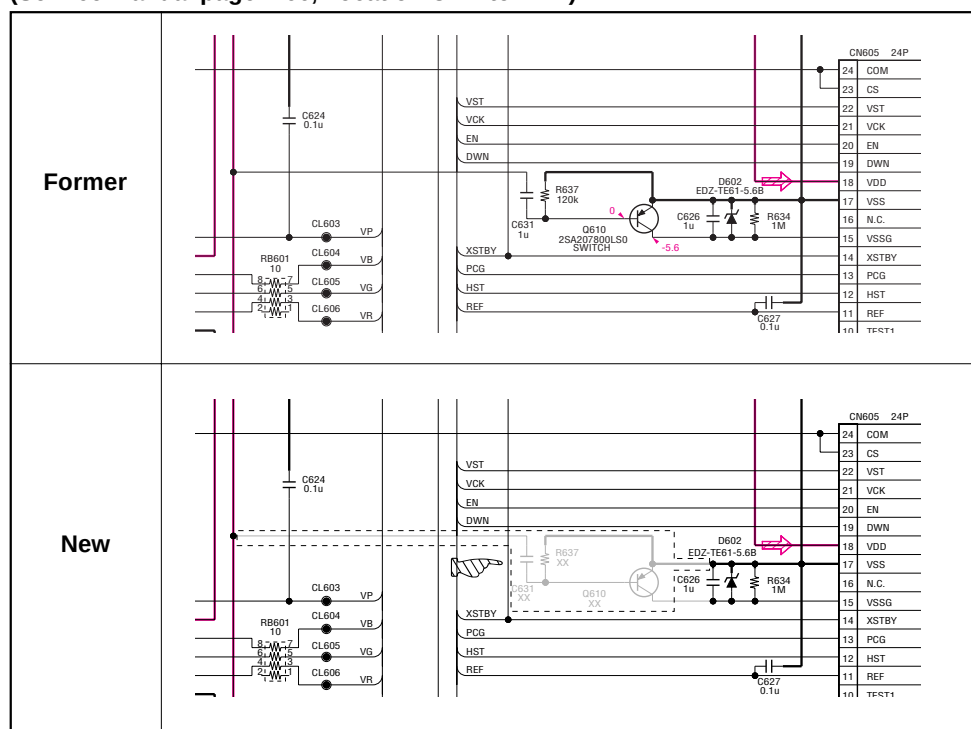
4-2. SCHEMATIC DIAGRAMS

PD-237 BOARD (LCD DRIVE, BACKLIGHT DRIVE)

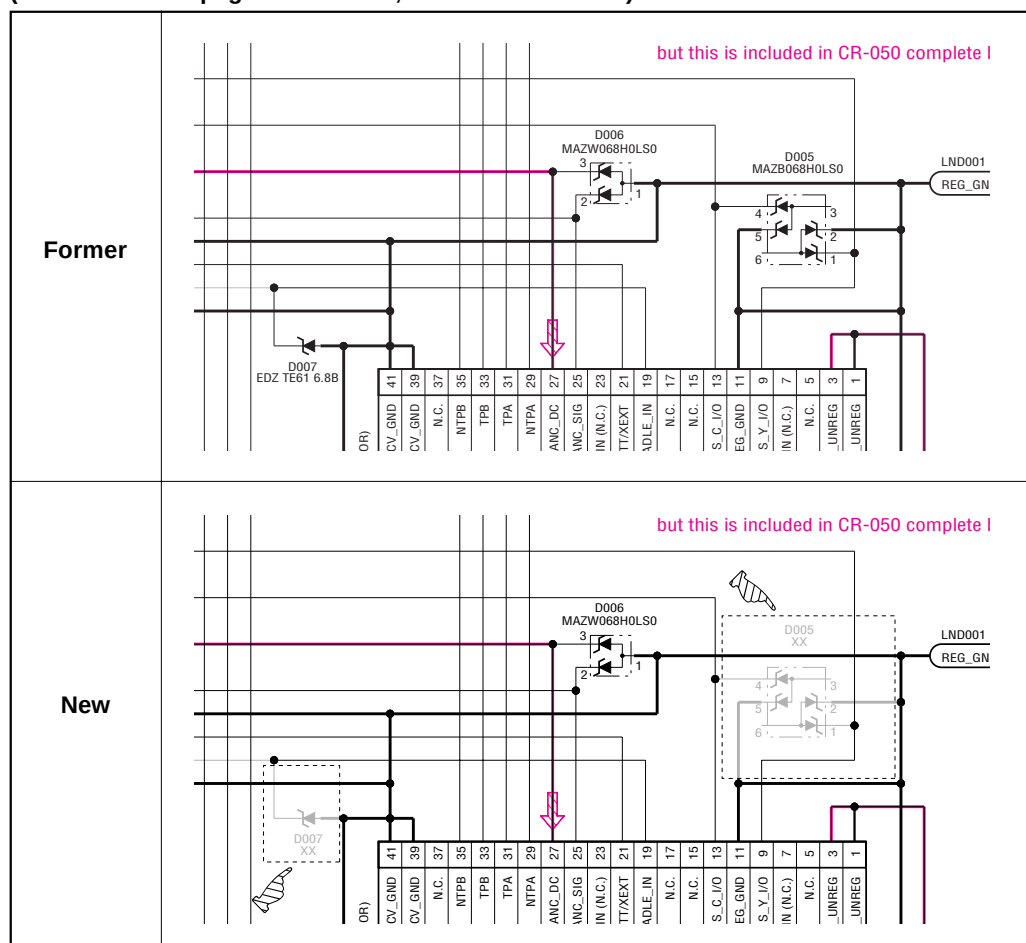
(Service manual page 4-65, Location H-3 to I-5)



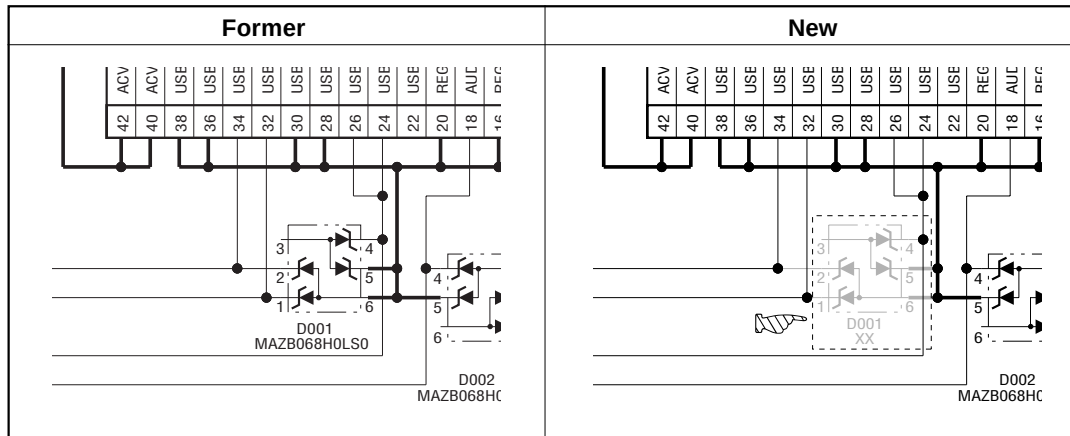
PD-237 BOARD (LCD DRIVE, BACKLIGHT DRIVE)
(Service manual page 4-66, Location C-12 to E-17)



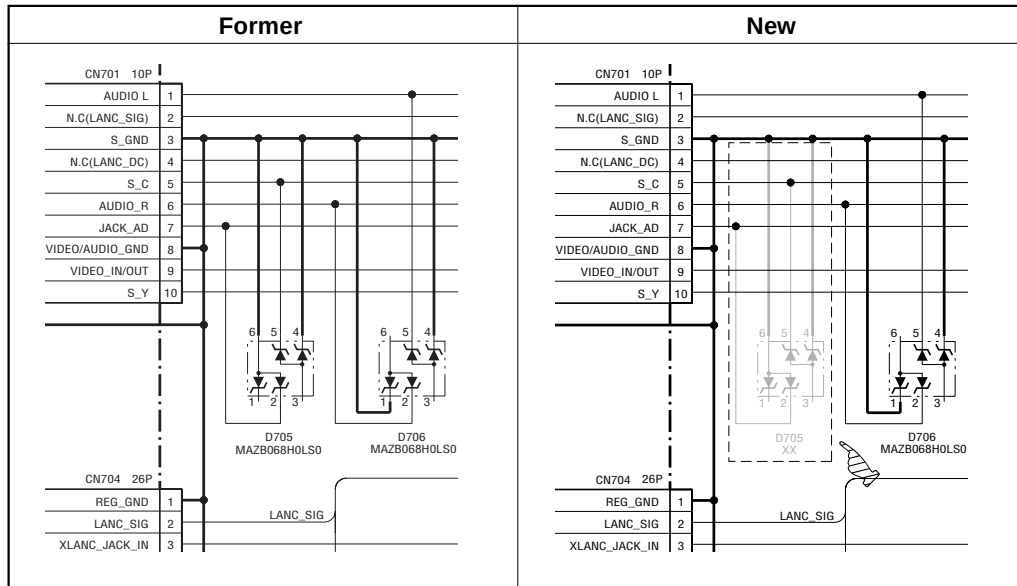
CR-050 BOARD (CRADLE TERMINAL)
(Service manual page 4-67 to 4-68, Location C-6 to E-9)



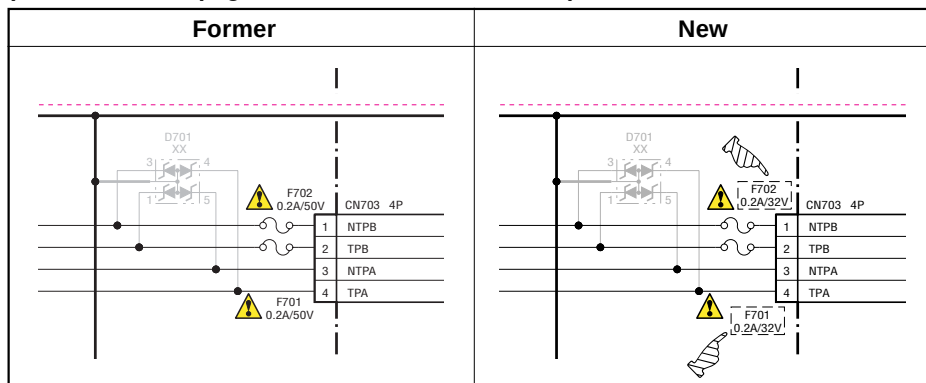
CR-050 BOARD (CRADLE TERMINAL)
(Service manual page 4-68, Location G-6 to H-8)



JK-278 BOARD (JACK)
(Service manual page 4-71, Location B-6 to D-7)



(Service manual page 4-72, Location B-12 to C-13)



• Refer to page 4-5 on the service manual for mark ▲.

 : Points changed portion.

 : Points deleted portion.

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

Page	Former			New		
	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
5-5	154	2-188-434-21	COVER (C), HINGE (GREEN) (HC33E)	154	2-188-434-22	COVER (C), HINGE (GREEN) (HC33E)
	159	2-188-433-01	COVER (M), HINGE	159	2-188-433-02	COVER (M), HINGE
	169	2-188-432-61	CABINET (C) (103), P (HC33)	169	2-188-432-62	CABINET (C) (103), P (HC33)
	169	2-188-432-71	CABINET (C) (103), P (SILVER) (HC33E)	169	2-188-432-72	CABINET (C) (103), P (SILVER) (HC33E)
	169	2-188-456-01	CABINET (C) (103), P (GREEN) (HC33E)	169	2-188-456-02	CABINET (C) (103), P (GREEN) (HC33E)
	169	2-188-456-11	CABINET (C) (103), P (PINK) (HC33E)	169	2-188-456-12	CABINET (C) (103), P (PINK) (HC33E)
	172	3-082-519-01	FOOT (R), RUBBER	172	2-593-937-01	FOOT (RR), RUBBER
	D901	1-479-067-11	BLOCK, LIGHT GUIDE PLATE (2.5)	D901	1-479-067-21	BLOCK, LIGHT GUIDE PLATE (2.5)
	LCD901	A-1090-679-A	(TP) BLOCK ASSY (2.5STFU) (HC17E/HC19E/HC21E/HC22E)	LCD901	A-1084-275-A	TP BLOCK ASSY 25STFU (HC17E/HC19E/HC21E/HC22E)
	LCD901	A-1090-680-A	(TP) BLOCK ASSY (2.5STMG) (HC21/HC32/HC32E/HC33/HC33E) (SONY TYPE) (Note)	LCD901	A-1084-276-A	TP BLOCK ASSY 25STMG (HC21/HC32/HC32E/HC33/HC33E) (SONY TYPE) (Note)
5-6	△ BT501	1-756-075-21	BATTERY, LITHIUM (SECONDARY)	△ BT501	1-756-128-11	BATTERY, LITHIUM (SECONDARY)
5-7	268	X-2048-504-1	BT PANEL ASSY	268	X-2023-646-1	BT PANEL ASSY
	LCD902	8-753-208-84	LCX059ALA-1 (EXCEPT HC33E)	LCD902	8-753-208-87	LCX059ALA-1 (EXCEPT HC33E)
	LCD902	8-753-234-60	LCX059ZLA-1 (HC33E)			
5-8	701	X-3952-938-6	GEAR ASSY, GOOSENECK	701	X-3952-938-9	GEAR ASSY, GOOSENECK
	704	X-2024-802-1	CASSETTE COMPARTMENT ASSY	704	X-3952-393-3	CASSETTE COMPARTMENT ASSY
5-9	751	A-7095-402-B	BRAKE (T) BLOCK ASSY (S)	751	A-7095-663-F	BRAKE (T) BLOCK ASSY
	757	X-3952-932-1	BRAKE ASSY, ULE	757	X-3952-932-5	BRAKE ASSY, ULE
	760	3-059-090-11	SCREW (M1.4X2.5), SPECIAL HEAD	760	3-059-090-21	SCREW (M1.4X2.5), SPECIAL HEAD
	762	A-7095-951-A	LS BLOCK ASSY	762	A-7095-953-A	LS BLOCK ASSY (Y)
5-10	805	X-3952-928-1	GL (S) ASSY	805	X-3952-928-4	GL (S) ASSY
	813	X-3954-273-2	PLATE ASSY (N), TG2 CAM	813	X-3954-273-3	PLATE ASSY (N), TG2 CAM

• Refer to page 5-1 on the service manual for mark △.

5-2. ELECTRICAL PARTS LIST

Page	Former			New		
5-11	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
		A-1081-698-A	CD-533 BOARD, COMPLETE ***** < CONNECTOR >		A-1081-698-A	CD-533 BOARD, COMPLETE ***** < CONNECTOR >
	CN101	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P	CN101	1-691-354-51	CONNECTOR, FFC/FPC (ZIF) 16P
5-11		A-1081-704-A	CR-050 BOARD, COMPLETE (HC22E/HC32/HC32E/HC33/HC33E) ***** < CONNECTOR >		A-1081-704-A	CR-050 BOARD, COMPLETE (HC22E/HC32/HC32E/HC33/HC33E) ***** < CONNECTOR >
	CN001	1-817-283-41	CONNECTOR, FPC (ZIF) 51P < DIODE >	* CN001	1-817-283-51	CONNECTOR, FPC (ZIF) 51P _____ _____ _____
	D001	6-500-044-01	DIODE DF6A6.8FU (TE85R)			
	D005	6-500-044-01	DIODE DF6A6.8FU (TE85R)			
	D007	8-719-083-91	DIODE EDZ TE61 6.8B			
5-11		A-1082-203-A	FP-187 FLEXIBLE BOARD, COMPLETE ***** < DIODE >		A-1082-203-A	FP-187 FLEXIBLE BOARD, COMPLETE ***** < DIODE >
	D001	6-501-052-01	DIODE CL-197HB1-D-T (EASY)	D001	6-501-052-02	DIODE CL-197HB1-D-T (EASY)
5-12		A-1081-840-A	JK-278 BOARD, COMPLETE (HC17E/HC19E/HC21/HC21E)		A-1081-840-A	JK-278 BOARD, COMPLETE (HC17E/HC19E/HC21/HC21E)
		A-1081-841-A	JK-278 BOARD, COMPLETE (HC22E/HC32/HC32E/HC33/HC33E) ***** < CONNECTOR >		A-1081-841-A	JK-278 BOARD, COMPLETE (HC22E/HC32/HC32E/HC33/HC33E) ***** < CONNECTOR >
	CN701	1-815-794-21	CONNECTOR (MULTIPLE) (A/V OUT: HC17E/HC19E/HC21/HC21E/HC22E) (A/V: HC32/HC32E/HC33/HC33E)	CN701	1-815-794-13	CONNECTOR (MULTIPLE) (A/V OUT: HC17E/HC19E/HC21/HC21E/HC22E) (A/V: HC32/HC32E/HC33/HC33E)
	CN704	1-818-087-31	CONNECTOR, FFC/FPC (LIF) 26P < DIODE >	* CN704	1-818-087-51	CONNECTOR, FFC/FPC (LIF) 26P _____
	D705	6-500-044-01	DIODE DF6A6.8FU (TE85R) < FUSE >			< FUSE >
	△ F701	1-576-647-11	FUSE (0.2A/50V) (HC17E/HC19E/HC21/HC21E)	△ F701	1-576-897-21	FUSE (0.2A/32V) (HC17E/HC19E/HC21/HC21E)
	△ F702	1-576-647-11	FUSE (0.2A/50V) (HC17E/HC19E/HC21/HC21E)	△ F702	1-576-897-21	FUSE (0.2A/32V) (HC17E/HC19E/HC21/HC21E)
5-12		A-1081-845-A	LB-109 BOARD, COMPLETE ***** < CONNECTOR >		A-1081-845-A	LB-109 BOARD, COMPLETE ***** < CONNECTOR >
	CN301	1-818-046-11	CONNECTOR, FFC/FPC 20P	CN301	1-818-046-51	CONNECTOR, FFC/FPC 20P
	CN302	1-784-420-11	CONNECTOR, FFC/FPC (ZIF) 21P	CN302	1-784-420-51	CONNECTOR, FFC/FPC (ZIF) 21P

• Refer to page 5-1 on the service manual for mark △.

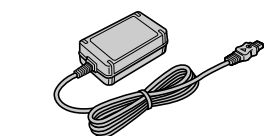
Page	Former			New		
5-12	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
		A-1081-842-A	MS-249 BOARD, COMPLETE (HC17E/HC19E/HC21/HC21E/HC22E)		A-1081-842-A	MS-249 BOARD, COMPLETE (HC17E/HC19E/HC21/HC21E/HC22E)
		A-1081-843-A	MS-249 BOARD, COMPLETE (HC32/HC32E/HC33/HC33E)		A-1081-843-A	MS-249 BOARD, COMPLETE (HC32/HC32E/HC33/HC33E)
			*****			*****
			< BATTERY >			< BATTERY >
	△ BT501	1-756-075-21	BATTERY, LITHIUM (SECONDARY)	△ BT501	1-756-128-11	BATTERY, LITHIUM (SECONDARY)
5-13		A-1081-848-A	PD-237 BOARD, COMPLETE *****		A-1081-848-A	PD-237 BOARD, COMPLETE *****
			< CAPACITOR >			< CAPACITOR >
	C631	1-165-908-11	CERAMIC CHIP 1uF 10% 10V			
			< CONNECTOR >			< CONNECTOR >
	CN601	1-815-031-11	FFC/CONNECTOR, FPC (ZIF) 24P		CN601	1-818-071-51 CONNECTOR, FFC/FPC (ZIF) 24P
	CN602	1-816-176-11	FFC/CONNECTOR, FPC (ZIF) 6P	*	CN602	1-818-069-51 CONNECTOR, FFC/FPC (ZIF) 6P
	CN603	1-691-370-11	CONNECTOR, FFC/FPC 6P	*	CN603	1-691-370-51 CONNECTOR, FFC/FPC 6P
	CN605	1-815-031-11	FFC/CONNECTOR, FPC (ZIF) 24P		CN605	1-818-071-51 CONNECTOR, FFC/FPC (ZIF) 24P
	CN608	1-816-176-11	CONNECTOR, FFC/FPC (ZIF) 6P	*	CN608	1-818-069-51 CONNECTOR, FFC/FPC (ZIF) 6P
	CN609	1-816-176-11	CONNECTOR, FFC/FPC (ZIF) 6P	*	CN609	1-818-069-51 CONNECTOR, FFC/FPC (ZIF) 6P
			< TRANSISTOR >			< TRANSISTOR >
	Q601	8-729-427-52	TRANSISTOR XP4216		Q601	8-729-427-67 TRANSISTOR XP421F-TXE
	Q602	8-729-427-23	TRANSISTOR XP4116-TXE		Q602	8-729-427-37 TRANSISTOR XP411F-TXE
	Q610	6-550-232-01	TRANSISTOR 2SA2029T2LQ/R			
			< RESISTOR >			< RESISTOR >
	R637	1-218-978-11	RES-CHIP 120K 5% 1/16W			
5-13		A-1084-828-A	SI-042 BOARD, COMPLETE (HC17E)		A-1084-828-A	SI-042 BOARD, COMPLETE (HC17E)
		A-1081-844-A	SI-042 BOARD, COMPLETE (EXCEPT HC17E)		A-1081-844-A	SI-042 BOARD, COMPLETE (EXCEPT HC17E)
			*****			*****
			< CONNECTOR >			< CONNECTOR >
	CN603	1-766-348-21	CONNECTOR, FFC/FPC 18P	*	CN603	1-766-348-51 CONNECTOR, FFC/FPC 18P
			< SENSOR >			< SENSOR >
	SE601	1-476-807-41	SENSOR, ANGULAR VELOCITY (PITCH SENSOR)		SE601	1-476-807-21 SENSOR, ANGULAR VELOCITY (25.0KHZ) (PITCH SENSOR)
	SE602	1-476-807-31	SENSOR, ANGULAR VELOCITY (YAW SENSOR)		SE602	1-476-807-11 SENSOR, ANGULAR VELOCITY (22.4KHZ) (YAW SENSOR)

• Refer to page 5-1 on the service manual for mark △.

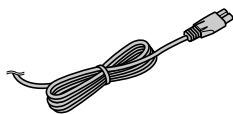
-  : Points added portion
 : Points changed portion.
 : Points deleted portion.

Checking supplied accessories.

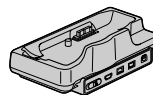
Note: This item is supplied with the unit as an accessory, but is not prepared as a service part.



AC-L AC Adaptor (1)
 ▲ 1-479-288-13



Power Cord (1)
 ▲ 1-823-946-12 (AEP, E)
 ▲ 1-823-947-51 (KR)
 ▲ 1-782-476-51 (CH)
 ▲ 1-783-374-11 (UK, HK)
 ▲ 1-790-107-42 (US, CND)
 ▲ 1-790-732-71 (JE)
 ▲ 1-827-945-11 (AUS)



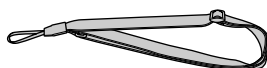
Handycam station (1)
 DCRA-C121
 1-818-729-11
 (HC32/HC32E/HC33E)
 DCRA-C122
 1-818-729-21 (HC22E)



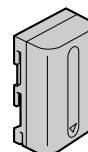
Shoe cover (1)
 2-188-481-01



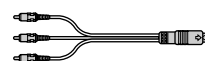
USB cable (1)
 1-829-868-31
 (EXCEPT HC17E)



Shoulder strap (1)
 2-176-235-11
 (EXCEPT HC17E)



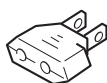
Rechargeable battery pack
 NP-FP30 (1)
 ▲ A-1144-865-A (US, CND)
 ▲ A-1144-866-A
 (EXCEPT US, CND)



A/V connecting cable (1)
 1-823-156-51



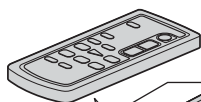
21-pin adaptor (1)
 1-770-783-21
 (HC22E/HC32E)



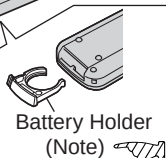
Conversion 2P adaptor (1)
 ▲ 1-569-008-12
 (HC21/HC32: E)



Conversion 2P adaptor (1)
 ▲ 1-569-007-12 (JE)



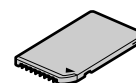
Wireless Remote Commander
 RMT-831 (1)
 1-478-495-41
 (HC32/HC32E/HC33/HC33E)
 RMT-830
 1-478-495-21
 (HC19E/HC21/HC21E/HC22E)



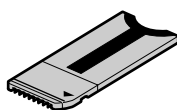
Battery Holder
 (Note)



CD-ROM
 (SPVD-012 2005 USB Driver)
 (Picture Package Ver. 1.5) (1)
 2-515-350-01 (EXCEPT HC33E)
 2-586-797-01 (HC21E/HC33E)



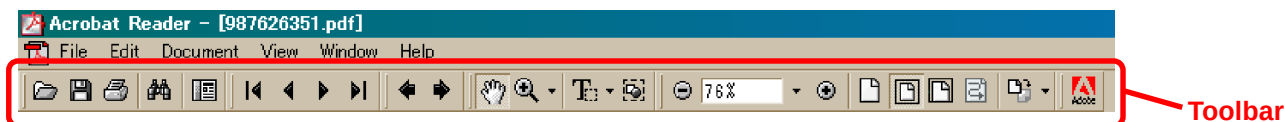
Memory Stick Duo (1)
 (Note)
 (HC33/HC33E)



Memory Stick Duo adaptor (1)
 (Note)
 (HC33/HC33E)

• Refer to page 5-1 on the service manual for mark ▲.

[Description of main button functions on toolbar of the Adobe Acrobat Reader Ver5.0 (for Windows)]



Printing a text

1. Click the Print button .
2. Specify a printer, print range, number of copies, and other options, and then click [OK].

Application of printing:

To set a range to be printed within a page, select the graphic selection tool  and drag on the page to enclose a range to be printed, and then click the Print button.

Reversing the screens displayed once

- To reverse the previous screens (operation) one by one, click the .
- To advance the reversed screens (operation) one by one, click the .

Application to the Service Manual:

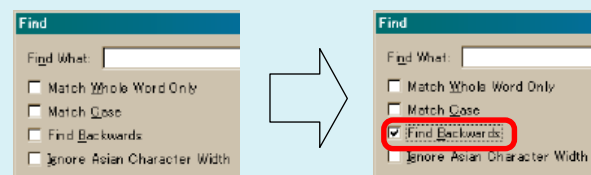
This function allows you to go and back between circuit diagram and printed circuit board diagram, and accordingly it will be convenient for the voltage check.

Finding a text

1. Click the Find button .
2. Enter a character string to be found into a text box, and click the [Find]. (Specify the find options as necessary)

Application to the Service Manual:

To execute "find" from current page toward the previous pages, select the check box "Find Backward" and then click the "Find".



3. Open the find dialog box again, and click the [Find Again] and you can find the matched character strings displayed next. (Character strings entered previously are displayed as they are in the text box.)

Application to the Service Manual:

The parts on the drawing pages (block diagrams, circuit diagrams, printed circuit boards) and parts list pages in a text can be found using this find function. For example, find a Ref. No. of IC on the block diagram, and click the [Find Again] continuously, so that you can move to the Ref. No. of IC on the circuit diagram or printed circuit board diagram successively.

Note: The find function may not be applied to the Service Manual depending on the date of issue.

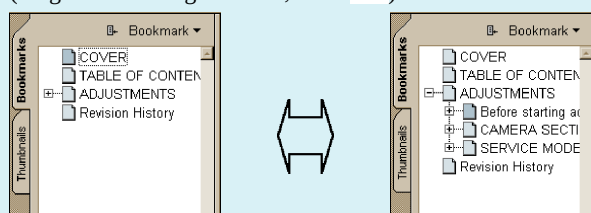
Moving with link

1. Select either palm tool , zoom tool , text selection tool , or graphic selection tool .
2. Place the pointer in the position in a text where the link exists (such as a button on cover and the table of contents page, or blue characters on the removal flowchart page or drawing page), and the pointer will change to the forefinger form .
3. Then, click the link. (You will go to the link destination.)

Moving with bookmark:

Click an item (text) on the bookmark pallet. and you can move to the link destination. Also, clicking  can display the hidden items.

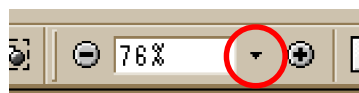
(To go back to original state, click )



Zooming or rotating the screen display

"Zoom in/out"

- Click the triangle button in the zoom control box to select the display magnification. Or, you may click  or  for zooming in or out.



"Rotate"

- Click rotate tool , and the page then rotates 90 degrees each.

Application to the Service Manual:

The printed circuit board diagram you see now can be changed to the same direction as the set.

Switching a page

- To move to the first page, click the .
- To move to the last page, click the .
- To move to the previous page, click the .
- To move to the next page, click the .

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2005.01	Official Release	—	—
1.1	2005.09	Supplement-1 (S1 PV05-039)	• Addition of Green and Pink Models (HC33E) • Change of Repair Parts	No
1.2	2006.03	Supplement-2 (S2 PV05-095)	• Addition of LCD Type (AUO TYPE: HC21/HC32)	No
1.3	2006.09	Correction-1 (C1)	• Correction of Repair Parts S.M. correction : Page 5-7	Yes
1.4	2006.10	Supplement-3 (S3 DI06-108)	• Change of Repair Parts	No