HVR-Z7J/Z7U/Z7N/Z7E/Z7P/Z7C

RMT-831

SERVICE MANUAL

Ver. 1.5 2009.02

Revision History

Revised-2

Replacement of the previously issued SERVICE MANUAL 9-852-265-14 with this manual.



Photo: HVR-Z7U

US Model
Canadian Model
AEP Model
E Model
Chinese Model
Japanese Model

N MECHANISM (MDX-N231)

Link

SPECIFICATIONS	BLOCK DIAGRAMS	REPAIR PARTS LIST
MODEL INFORMATION TABLE	FRAME SCHEMATIC DIAGRAMS	ADJUSTMENTS
SERVICE NOTE	SCHEMATIC DIAGRAMS	INSTRUCTION MANUAL
DISASSEMBLY	PRINTED WIRING BOARDS	

- Addition of “60i/50i SEL” Menu

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.

Mini DV Digital Video Cassette

DIGITAL HD VIDEO CAMERA RECORDER

SONY®

HVR-Z7J/Z7U/Z7N/Z7E/Z7P/Z7C
9-852-265-15

Sony EMCS Co.

2009B0500-1

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Published by Kohda TEC

These specifications are extracted from instruction manual of HVR-Z7E/Z7P.

ENGLISH | JAPANESE

SPECIFICATIONS

System

Video recording system (HDV)
2 rotary heads, Helical scanning system
Video recording system (DVCAM (DV))
2 rotary heads, Helical scanning system
Still image recording system
Exif Ver. 2.2*
Audio recording system (HDV)
Rotary heads, MPEG-1 Audio Layer-2,
Quantization: 16 bits
Fs48kHz (stereo)
transfer rate: 384 kbps
Audio recording system (DVCAM (DV))
Rotary heads, PCM system
Quantization: 12 bits
Fs32kHz (channel 1/2 stereo),
Quantization: 16 bits
Fs48kHz (channel 1/2 stereo)
Video signal
PAL color, CCIR standards
1080/50i specification
Usable cassette
Mini DV cassette with the Mini DV mark printed or Mini DVCAM cassette with the DVCAM mark printed
Tape speed (HDV)
Approx. 18.812 mm/s
Tape speed (DVCAM)
Approx. 28.218 mm/s
Tape speed (DV SP)
Approx. 18.812 mm/s
Recording/playback time (HDV)
63 min (using a PHDVM-63DM cassette)
Recording/playback time (DVCAM)
41 min (using a PHDVM-63DM cassette)
Recording/playback time (DV SP)
63 min (using a PHDVM-63DM cassette)
Fast forward/rewind time
Approx. 2 min 40 s (using a PHDVM-63DM cassette and rechargeable battery pack)
Approx. 1 min 45 s (using a PHDVM-63DM cassette and AC Adaptor)
Viewfinder
Electric viewfinder (color, black and white)
Picture
1.1cm (0.45 type, aspect ratio 16:9)
Total dot number
1 226 880 (approx. 852 × 3[RGB] × 480)
Image device
6.0 mm (1/3 type) 3CMOS sensor
Recording Pixels (HDV/DV16:9 still recording):
Max. 1.20 Mega (1 440 × 810) pixels**
Gross: Approx. 1 120 000 pixels
Effective (movie, 16:9):
1 037 000 pixels
Effective (movie, 4:3):
778 000 pixels
Effective (still, 16:9):
1 037 000 pixels
Effective (still, 4:3):
778 000 pixels
Lens
Carl Zeiss Vario-Sonnar T*
12 × (Optical), Approx. 18 × (Digital, when [D.EXTENDER] is set to [ON])
Focal length
f=4.4 - 52.8 mm (3/16 - 2 1/8 in.)
When converted to a 35 mm still camera
32.0 - 384 mm (1 5/16 - 15 1/8 in.) (16:9),
39.5 - 474 mm (1 9/16 - 18 3/4 in.) (4:3)
F1.6 - 2.0
Filter diameter: 72 mm (2 7/8 in.)
Color temperature
[AUTO]
(one push) A/B
[INDOOR] (3 200K)
[OUTDOOR] (5 800K±7 offset levels)
[MANU WB TEMP] (2 300K - 15 000K in 100K steps)
Minimum illumination
1.5 lx (lux) (Fixed Shutter Speed 1/25, auto gain, auto iris) (F 1.6)

* "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.
**Still image resolution is obtained by the unique pixel array of Sony's ClearVid CMOS Sensor and image processing system (new Enhanced Imaging Processor).

Output connectors

A/V OUT jack
10-pin connector
Video signal: 1 Vp-p, 75 Ω (ohms)
Luminance signal: 1 Vp-p, 75 Ω (ohms)
Chrominance signal: 0.3 Vp-p (burst signal), 75 Ω (ohms)
Audio signal: -10 dBu (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
(0 dBu=0.775 Vrms)
COMPONENT OUT jack
Y: 1 Vp-p, 75Ω (ohms), PB/PR, CB/CR: +/- 350 mV, 75 Ω (ohms)
HDMI OUT jack
TypeA (19-pin)

Input/Output connectors

LANC jack
Stereo mini-minijack (Ø 2.5 mm)
(headphones) jack
Stereo-minijack (Ø 3.5 mm)
LENS jack
12-pin connector
INPUT1/INPUT2 jack
XLR 3-pin, female,
-48 dBu: 3kΩ (kilohms)
+4 dBu: 10kΩ (kilohms)
(0 dBu=0.775 Vrms)
HDV/DV jack
i.LINK interface (IEEE 1394, 6-pin connector S100)

LCD screen

Picture
8.0 cm (3.2 type, aspect ratio 16:9)
Total dot number
921 600 (1 920 × 480)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor)
Average power consumption*
During camera recording using the microphone ECM-XM1 and viewfinder with normal brightness:
HDV recording 7.0 W
DVCAM (DV) recording 6.8 W
During camera recording using the microphone ECM-XM1 and LCD with normal brightness:
HDV recording 7.1 W
DVCAM (DV) recording 6.9 W
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.)
176 × 199 × 439 mm
(6 15/16 × 7 13/16 × 17 9/32 in.) (w/h/d)
including the projecting parts
176 × 199 × 439 mm
(6 15/16 × 7 13/16 × 17 9/32 in.) (w/h/d)
including the projecting parts with the battery pack (NP-F570)
Mass (approx.)
1.3 kg (2 lb 13 oz) camera body only
2.4 kg (5 lb 4 oz) including the Carl Zeiss lens (VCL-412BWH)
2.8 kg (6 lb 3 oz) including the battery pack (NP-F570), cassette (PHDVM-63DM), Carl Zeiss lens (VCL-412BWH), lens hood with lens cover and microphone (ECM-XM1)

* When the HVR-MRC1 is used, the average power consumption increases about 2.5 W.

AC Adaptor/Charger AC-VQ1050

Power requirements
AC 100 V - 240 V, 50/60 Hz
Power consumption
22 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.)
123 × 53 × 135 mm
(4 7/8 × 2 1/8 × 5 3/8 in.) (w/h/d)
excluding the projecting parts
Mass (approx.)
390 g (13.8 oz) excluding the power cord

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

Rechargeable battery pack NP-F570

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Capacity
15.8 Wh (2 200 mAh)
Type
Li-ion

Design and specifications are subject to change without notice.

These specifications are extracted from instruction manual of HVR-Z7U/Z7N.

ENGLISH | JAPANESE

SPECIFICATIONS

System

Video recording system (HDV)
2 rotary heads, Helical scanning system
Video recording system (DVCAM (DV))
2 rotary heads, Helical scanning system
Still image recording system
Exif Ver. 2.2*
Audio recording system (HDV)
Rotary heads, MPEG-1 Audio Layer-2,
Quantization: 16 bits
Fs48kHz (stereo)
transfer rate: 384 kbps
Audio recording system (DVCAM (DV))
Rotary heads, PCM system
Quantization: 12 bits
Fs32kHz (channel 1/2 stereo),
Quantization: 16 bits
Fs48kHz (channel 1/2 stereo)
Video signal
NTSC color, EIA standards
1080/60i specification
Usable cassette
Mini DV cassette with the Mini DV mark printed or Mini DVCAM cassette with the DVCAM mark printed
Tape speed (HDV)
Approx. 18.812 mm/s
Tape speed (DVCAM)
Approx. 28.218 mm/s
Tape speed (DV SP)
Approx. 18.812 mm/s
Recording/playback time (HDV)
63 min (using a PHDVM-63DM cassette)
Recording/playback time (DVCAM)
41 min (using a PHDVM-63DM cassette)
Recording/playback time (DV SP)
63 min (using a PHDVM-63DM cassette)
Fast forward/rewind time
Approx. 2 min 40 s (using a PHDVM-63DM cassette and rechargeable battery pack)
Approx. 1 min 45 s (using a PHDVM-63DM cassette and AC Adaptor)
Viewfinder
Electric viewfinder (color, black and white)
Picture
1.1cm (0.45 type, aspect ratio 16:9)
Total dot number
1 226 880 (approx. 852 × 3[RGB] × 480)
Image device
6.0 mm (1/3 type) 3CMOS sensor
Recording Pixels (HDV/DV16:9 still recording):
Max. 1.20 Mega (1 440 × 810) pixels**
Gross: Approx. 1 120 000 pixels
Effective (movie, 16:9):
1 037 000 pixels
Effective (movie, 4:3):
778 000 pixels
Effective (still, 16:9):
1 037 000 pixels
Effective (still, 4:3):
778 000 pixels
Lens
Carl Zeiss Vario-Sonnar T*
12 × (Optical), Approx. 18 × (Digital, when [D.EXTENDER] is set to [ON])
Focal length
f=4.4 - 52.8 mm (3/16 - 2 1/8 in.)
When converted to a 35 mm still camera
32.0 - 384 mm (1 5/16 - 15 1/8 in.) (16:9),
39.5 - 474 mm (1 9/16 - 18 3/4 in.) (4:3)
F1.6 - 2.0
Filter diameter: 72 mm (2 7/8 in.)
Color temperature
[AUTO]
(one push) A/B
[INDOOR] (3 200K)
[OUTDOOR] (5 800K±7 offset levels)
[MANU WB TEMP] (2 300K - 15 000K in 100K steps)
Minimum illumination
1.5 lx (lux) (Fixed Shutter Speed 1/30, auto gain, auto iris) (F 1.6)

* "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.
**Still image resolution is obtained by the unique pixel array of Sony's ClearVid CMOS Sensor and image processing system (new Enhanced Imaging Processor).

Output connectors

A/V OUT jack
10-pin connector
Video signal: 1 Vp-p, 75 Ω (ohms)
Luminance signal: 1 Vp-p, 75 Ω (ohms)
Chrominance signal: 0.286 Vp-p (burst signal), 75 Ω (ohms)
Audio signal: -10 dBu (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
(0 dBu=0.775 Vrms)
COMPONENT OUT jack
Y: 1 Vp-p, 75Ω (ohms), PB/PR, CB/CR: +/- 350 mV, 75 Ω (ohms)
HDMI OUT jack
TypeA (19-pin)

Input/Output connectors

LANC jack
Stereo mini-minijack (Ø 2.5 mm)
(headphones) jack
Stereo-minijack (Ø 3.5 mm)
LENS jack
12-pin connector
INPUT1/INPUT2 jack
XLR 3-pin, female,
-48 dBu: 3kΩ (kilohms)
+4 dBu: 10kΩ (kilohms)
(0 dBu=0.775 Vrms)
HDV/DV jack
i.LINK interface (IEEE 1394, 6-pin connector S100)

LCD screen

Picture
8.0 cm (3.2 type, aspect ratio 16:9)
Total dot number
921 600 (1 920 × 480)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor)
Average power consumption*
During camera recording using the microphone ECM-XM1 and viewfinder with normal brightness:
HDV recording 7.2 W
DVCAM (DV) recording 6.9 W
During camera recording using the microphone ECM-XM1 and LCD with normal brightness:
HDV recording 7.3 W
DVCAM (DV) recording 7.0 W
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.)
176 × 199 × 439 mm
(6 15/16 × 7 13/16 × 17 9/32 in.)
(w/h/d)
including the projecting parts
176 × 199 × 439 mm
(6 15/16 × 7 13/16 × 17 9/32 in.)
(w/h/d)
including the projecting parts with the battery pack (NP-F570)
Mass (approx.)
1.3 kg (2 lb 13 oz) camera body only
2.4 kg (5 lb 4 oz) including the Carl Zeiss lens (VCL-412BWH)
2.8 kg (6 lb 3 oz) including the battery pack (NP-F570), cassette (PHDVM-63DM), Carl Zeiss lens (VCL-412BWH), lens hood with lens cover and microphone (ECM-XM1)

* When the HVR-MRC1 is used, the average power consumption increases about 2.5 W.

AC Adaptor/Charger AC-VQ1050

Power requirements
AC 100 V - 240 V, 50/60 Hz
Power consumption
22 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.)
123 × 53 × 135 mm
(4 7/8 × 2 1/8 × 5 3/8 in.) (w/h/d)
excluding the projecting parts
Mass (approx.)
390 g (13.8 oz) excluding the power cord

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

Rechargeable battery pack NP-F570

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Capacity
15.8 Wh (2 200 mAh)
Type
Li-ion

Design and specifications are subject to change without notice.

自己診断搭載機種 HDV HDV 1080i DVCAM PROGRESSIVE InfoLITHIUM MEMORY STICK HDMI

概略仕様

システム

録画方式(HDV)	回転2ヘッドヘリカルスキャン
録画方式(DVCAM(DV))	回転2ヘッドヘリカルスキャン
静止画記録方式	Exif Ver.2.2*
録音方式(HDV)	回転ヘッド MPEG-1 Audio Layer2 16ビットFs48kHz(ステレオ) 転送レート 384kbps
録音方式(DVCAM(DV))	回転ヘッド、PCMシステム 12ビット Fs32kHz (チャンネル1/2 ステレオ) 16ビット Fs48kHz (チャンネル1/2 ステレオ)
映像信号	NTSCカラー、EIA標準方式 1080/60i方式
使用可能カセット	Mini DV マークのついたミニDVカセットまたは DVCAM マークのついたミニDVCAMカセット
テープ速度(HDV)	約18.812mm/秒
テープ速度(DVCAM)	約28.218mm/秒
テープ速度(DV SP)	約18.812mm/秒
録画/再生時間(HDV)	63分(PHDVM-63DM使用時)
録画/再生時間(DVCAM)	41分(PHDVM-63DM使用時)
録画/再生時間(DV SP)	63分(PHDVM-63DM使用時)
早送り、巻き戻し時間	バッテリー使用時: 約2分40秒(PHDVM-63DM使用時) ACアダプター/チャージャー使用時: 約1分45秒(PHDVM-63DM使用時)
ファインダー	電子ファインダー:カラー、モノクロ 画面サイズ:1.1cm(0.45型、アスペクト比16:9) 総ドット数:1 226 880ドット (852 x 3[RGB] x 480相当)
撮像素子	6.0mm(1/3型)3CMOSセンサー 総画素数:約112万画素 静止画記録画素数:最大120万画素相当**(1440×810)(HDV/DV 16:9記録時) 動画時有効画素数(16:9モード):約104万画素 動画時有効画素数(4:3モード):約78万画素 静止画時有効画素数(16:9モード):約104万画素 静止画時有効画素数(4:3モード):約78万画素
ズームレンズ	カール ツァイス バリオゾナー T* 12倍(光学)、約18倍(デジタル、デジタルエクステンダー[ON]時) f=4.4 ～ 52.8mm 35mmカメラ換算 32.0～384mm(16:9モード) (4:3モードでは39.5～474mm) F1.6～2.0 フィルター径72mm
色温度切り換え	オート ワンプッシュ(A, B) 屋内(3 200K) 屋外(5 800K±7段階) 色温度指定(2 300～15 000K、100K刻み)
最低被写体照度	1.5 lx(ルクス)(シャッタースピード固定(1/30)、オートゲインコントロール、アイリスオート) (F1.6)

* (社)電子情報技術産業協会(JEITA)にて制定された、撮影情報などの付帯情報を追加することができる静止画用のファイルフォーマット。

** ソニー独自のクリアビットCMOSセンサーの画素配列と画像処理システム新エンハンスドイメージングプロセッサーにより、静止画は表記の記録サイズを実現しています。

出力端子

A/V OUT端子	10ピン特殊コネクター 映像:1 Vp-p、75Ω Y出力 1Vp-p、75Ω C出力 0.286Vp-p(バースト)、75Ω 音声:-10 dBu(47kΩ負荷時)、出力インピーダンス2.2 kΩ以下 (0dBu=0.775Vrms)
COMPONENT OUT端子	Y:1Vp-p、75Ω PB/PR. CB/CR:±350mV、75Ω
HDMI OUT端子	タイプA(19ピン)
∩(ヘッドホン)端子	ステレオミニジャック (φ3.5mm)

入/出力端子

LANC端子	ステレオミニミニジャック (ø 2.5mm)
LENS端子	12ピンコネクター
INPUT1/INPUT2端子	XLR3ピン、凹 -48dBu:3kΩ +4dBu:10kΩ (0dBu=0.775Vrms)
HDV/DV端子	i.LINK(IEEE1394 6ピンコネクター S100)

液晶画面

画面サイズ	8.0cm(3.2型、アスペクト比16:9)
総ドット数	921 600ドット 横1 920×縦480

電源部、その他

電源電圧	DC7.2V(バッテリーパック使用時) DC8.4V(ACアダプター使用時)
消費電力*	マイク(ECM-XM1)、ファインダー使用時、明るさ標準: HDV記録時 7.2W DVCAM(DV)記録時 6.9W マイク(ECM-XM1)、液晶画面使用時、明るさ標準: HDV記録時 7.3W DVCAM(DV)記録時 7.0W
動作温度	0℃～+40℃
保存温度	−20℃～+60℃
外形寸法	176×199×439mm (最大突起部を含む)(幅×高さ×奥行き) 176×199×439mm (最大突起部含む、バッテリーパック(NP-F570)装着状態) (幅×高さ×奥行き)
本体質量	約1.3kg(本体のみ) 約2.4kg(カールツァイスレンズVCL-412BWH含む)
撮影時総質量	約2.8kg (バッテリーパック(NP-F570)、テープ(PHDVM-63DM)、カールツァイスレンズ(VCL-412BWH)、レンズカバー付きフード、マイク(ECM-XM1)含む。)

* HVR-MRC1使用時は消費電力が約2.5W増加します。

本機の仕様および外観は、改良のため予告なく変更することがありますが、ご了承ください。

Model information table

Model	HVR-Z7J	HVR-Z7U	HVR-Z7N	HVR-Z7E	HVR-Z7P	HVR-Z7C
Destination	J	US, CND	E	AEP	E	CH
Color system	NTSC	NTSC	NTSC	PAL	PAL	PAL

- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea 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 ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS 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.

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

サービス，点検時には次のことにご注意下さい。

1. 注意事項をお守りください。
   サービスのとき特に注意を要する個所については，キャビネット，シャーシ，部品などにラベルや捺印で注意事項を表示しています。これらの注意書き及び取扱説明書等の注意事項を必ずお守り下さい。
2. 指定部品のご使用を
   セットの部品は難燃性や耐電圧など安全上の特性を持ったものとなっています。従って交換部品は，使用されていたものと同じ特性の部品を使用して下さい。特に回路図，部品表に⚠印で指定されている安全上重要な部品は必ず指定のものをご使用下さい。
3. 部品の取付けや配線の引きまわしはもとどおりに
   安全上，チューブやテープなどの絶縁材料を使用したり，プリント基板から浮かして取付けた部品があります。また内部配線は引きまわしやクランパによって発熱部品や高圧部品に接近しないよう配慮されていますので，これらは必ずもとどおりにして下さい。
4. サービス後は安全点検を
   サービスのために取外したネジ，部品，配線がもとどおりになっているか，またサービスした個所の周辺を劣化させてしまったところがないかなどを点検し，安全性が確保されていることを確認して下さい。
5. チップ部品交換時の注意
   - 取外した部品は再使用しないで下さい。
   - タンタルコンデンサのマイナス側は熱に弱いため交換時は注意して下さい。
6. フレキシブルプリント基板の取扱いについて
   - コテ先温度を270℃前後にして行なって下さい。
   - 同一パターンに何度もコテ先を当てないで下さい。（3回以内）
   - パターンに力が加わらないよう注意して下さい。
7. 無鉛半田について
   無鉛半田を使用している基板には，無鉛（Lead Free）を意味するレッドフリーマークがプリントされています。
   （注意：基板サイズによっては，無鉛半田を使用していてもレッドフリーマークがプリントされていないものがあります）
   ：レッドフリーマーク
   無鉛半田には，以下の特性があります。
   - 融点が従来の半田よりも約40℃高い。
     従来の半田こてをそのまま使用することは可能ですが，少し長めにこてを当てる必要があります。
     温度調節機能のついた半田こてを使用する場合，約350℃に設定して下さい。
     注意：半田こてを長く当てすぎると，基板のパターン（銅箔）がはがれてしまうことがありますので，注意して下さい。
   - 粘性が強い
     従来の半田よりも粘性が強いため，IC端子などが半田ブリッジしないように注意して下さい。
   - 従来の半田と混ぜて使用可能
     無鉛半田には無鉛半田を追加するのが最適ですが，従来の半田を追加しても構いません。

1. SERVICE NOTE

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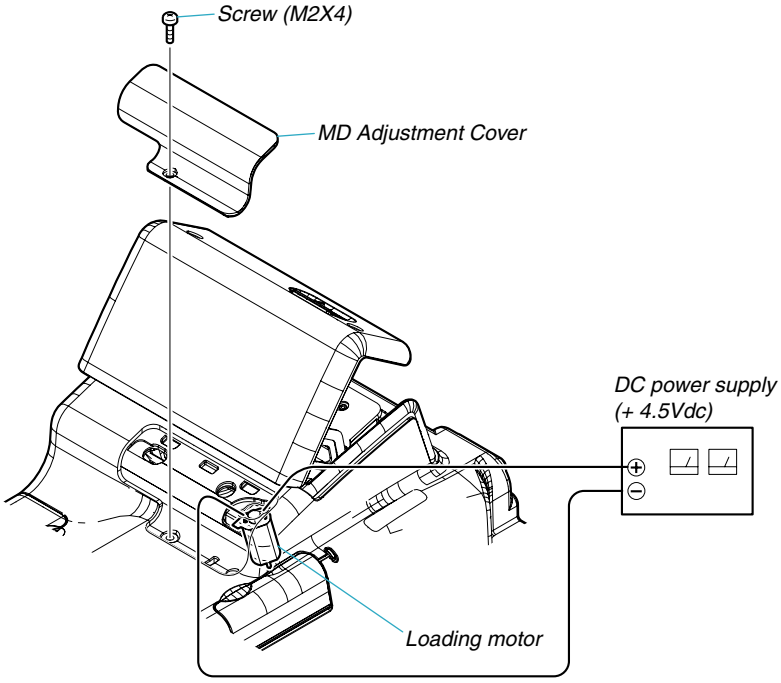
1-1. POWER SUPPLY DURING REPAIRS

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 adaptor/charger (AC-VQ1050) and connecting cord (DK-415).

1-2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Remove the power supply.
② Remove the screw and the MD adjustment cover.
③ Supply +4.5V from the DC power supply to the loading motor and unload with a pressing the cassette compartment.



1-3. SETTING THE "FORCED POWER ON" MODE

It is possible to turn on power by adjustment remote commander (RM-95 or NEW LANC JIG).
Operate the VTR function using the adjustment remote commander.

1-3-1. Setting the "Forced Camera Power ON" Mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: A, address: 10, set data: 01 and press the "PAUSE (Write) " button of the adjustment remote commander.

1-3-2. Setting the "Forced VTR Power ON" Mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: A, address: 10, set data: 02 and press the "PAUSE (Write) " button of the adjustment remote commander.

1-3-3. Exiting the "Forced Power ON" Mode

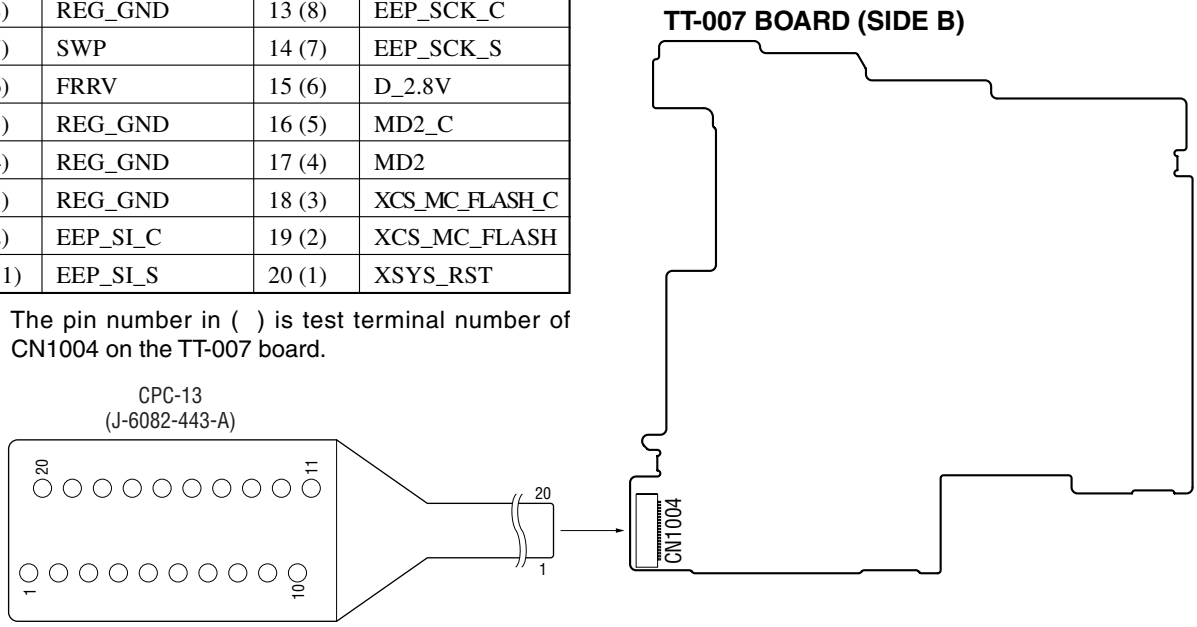
1) Select page: 0, address: 01, and set data: 01.
2) Select page: A, address: 10, set data: 00 and press the "PAUSE (Write) " button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

1-4. USING SERVICE JIG

Connect the CPC-13 jig (J-6082-443-A) to the CN1004 on the TT-007 board.

Pin No.	Signal Name	Pin No.	Signal Name
1 (20)	REG_GND	11 (10)	EEP_SO_C
2 (19)	RF_MON	12 (9)	EEP_SO_S
3 (18)	REG_GND	13 (8)	EEP_SCK_C
4 (17)	SWP	14 (7)	EEP_SCK_S
5 (16)	FRRV	15 (6)	D_2.8V
6 (15)	REG_GND	16 (5)	MD2_C
7 (14)	REG_GND	17 (4)	MD2
8 (13)	REG_GND	18 (3)	XCS_MC_FLASH_C
9 (12)	EEP_SI_C	19 (2)	XCS_MC_FLASH
10 (11)	EEP_SI_S	20 (1)	XSYS_RST

Note: The pin number in ( ) is test terminal number of CN1004 on the TT-007 board.



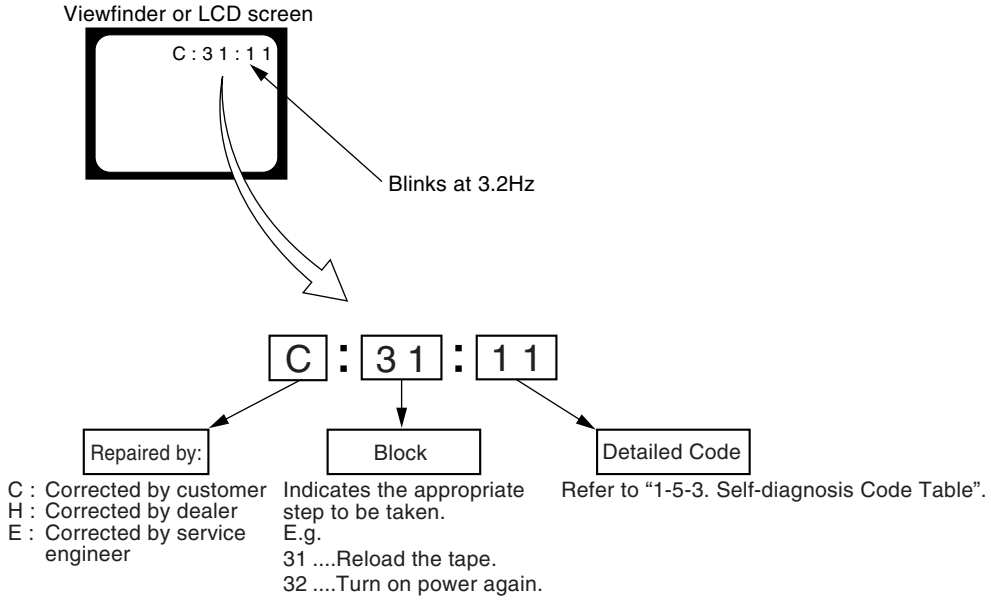
1-5. SELF-DIAGNOSIS FUNCTION

1-5-1. 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.
Details of the self-diagnosis functions are provided in the Instruction manual.

1-5-2. 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.



1-5-3. Self-diagnosis Code Table

Self-diagnosis Code				Symptom/State	Correction
Repaired by:	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	2 4	T reel and S reel FG short 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	4 0	FG 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	7 2	Retry fault when catching one's finger in cassette compartment.	Load the tape again, and perform operations from the beginning.
C	3	1	9 7	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Load the tape again, and perform operations from the beginning.
C	3	1	9 8	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Load the tape again, and perform operations from the beginning.
C	3	1	9 9	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	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	2 4	T reel and S reel FG short 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	4 0	FG 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	6 0	Difficult to adjust focus (Cannot initialize focus.)	Remove the battery or power cable, connect, and perform operations from the beginning. If it does not recover, inspect the focus MR sensor of lens drive block (Pin ㉒, ㉔ of CN1003 on the LG-005 board). If not faulty, inspect the focus motor drive circuit (IC2001 on the LG-005 board).
C	3	2	6 F	Bayonet mount fault	Remove the lens block, battery or power cable, connect, and perform oprations from the beginning. If it does not recover, inspect the cathode of D1001 to D1005 on the LG-005 board (ten places).

Self-diagnosis Code				Symptom/State	Correction
Repaired by:	Block Function		Detailed Code		
C	3	2	7 2	Retry fault when catching one's finger in cassette compartment.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	9 7	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	9 8	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	9 9	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Remove the battery or power cable, connect, and perform operations from the beginning.
E	2	0	0 0	EEPROM data are rewritten.	Make EEPROM data correct value.
E	6	1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the zoom MR sensor of lens drive block (Pin ⑫, ⑭ of CN1001 on the LG-005 board) when zooming is performed when the zoom switch is operated and the zoom motor drive circuit (IC2001 on the LG-005 board) when zooming is not performed.
E	6	1	1 1	Focus lens initializing failure and zoom lens initializing failure occur simultaneously.	Check both C: 32: 60 and E: 61: 10 of the self-diagnosis code.
E	6	1	3 0	Reset position detect error when stepper iris is initialized.	Set the ZOOM switch to the "MANUAL" and set the T (telephoto) end with ZOOM manual ring, then turn the power ON. After turning the power ON, check the whether the iris operates seeing the wing in the lens or hearing the operation sound. Inspect the iris drive motor of lens drive block (Pin ⑱ to ㉑ of CN1001 on the LG-005 board), when the iris does not operate. Inspect the iris reset sensor of lens drive block (Pin ⑮ to ⑰ of CN1001 on the LG-005 board), when the iris operate.
E	6	2	0 0	Steadyshot function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE8501 on the GY-005 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 (SE8502 on the GY-005 board) peripheral circuits.
E	6	2	0 2	Abnormality of IC for steadyshot.	Inspect the steadyshot circuit (IC4003 on the LG-005 board). If it does not recover, replace the LG-005 board. (Note) If an error occurs again, replace the lens block.
E	6	2	0 3	IC for steadyshot and micro controller communication abnormality among.	Inspect the steadyshot circuit (IC4003 on the LG-005 board).
E	6	2	1 0	Shift lens initializing failure	Inspect the EEPROM (IC6005 on the LG-005 board). If it does not recover, replace the LG-005 board. (Note) If an error occurs again, replace the lens block.
E	6	2	1 1	Shift lens overheating (Pitch)	Inspect the IC4003 and peripheral circuits on the LG-005 board. If it does not recover, replace the LG-005 board. (Note) If an error occurs again, replace the lens block.
E	6	2	1 2	Shift lens overheating (Yaw)	Inspect the IC4003 and peripheral circuits on the LG-005 board. If it does not recover, replace the LG-005 board. (Note) If an error occurs again, replace the lens block.
E	6	2	2 0	Abnormality of thermister	Check the connection of flexible flat cable and connectors between the lens drive block and LG-005 board. If it does not recover, replace the LG-005 board. (Note) If an error occurs again, replace the lens block.

Note: When replacing the LG-005 board, remove the EEPROM (IC6005) from the LG-005 board that is going to be repaired. Install the removed EEPROM (IC6005) to the replaced LG-005 board.

1-6. ADDITION OF "60i/50i SEL" MENU

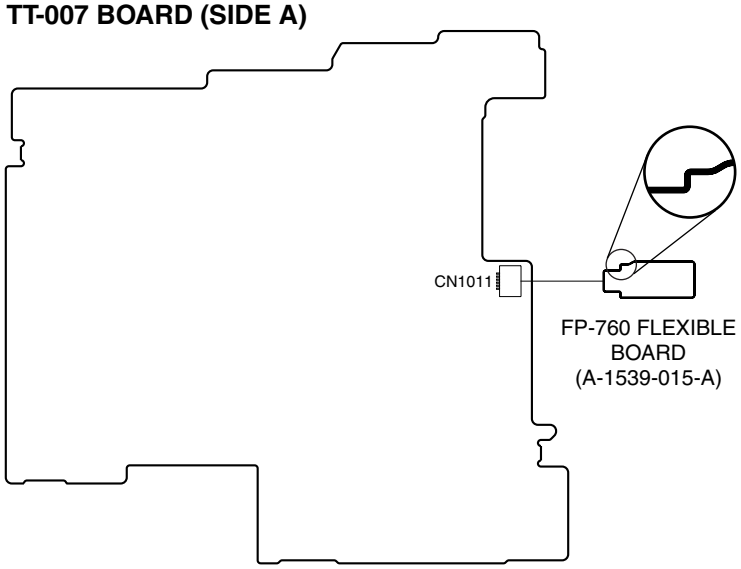
It is possible to add the "60i/50i SEL" menu by adjustment remote commander (RM-95 or NEW LANC JIG) and FP-760 flexible board (A-1539-015-A).

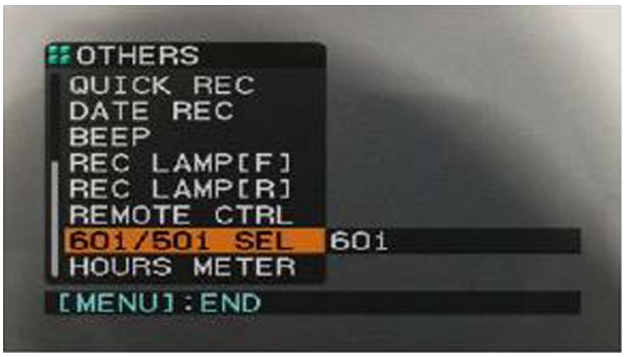
Note: When FP-760 flexible board (A-1539-015-A) is removed, "60i/50i SEL" menu is not displayed. Use FP-760 flexible board while connected with CN1011 on the TT-007 board.

Method:

① Connect the FP-760 flexible board to the CN1011 on the TT-007 board.
② Select page: 0, address: 01, and set data: 01.
③ Select page: A, address: 99, set data: 01 and press the "PAUSE (Write) " button of the adjustment remote commander.
④ Select page: 0, address: 01, and set data: 00.
⑤ Check that "60i/50i SEL" is displayed in the "OTHERS" of the "MENU" on the LCD screen.

TT-007 BOARD (SIDE A)





LCD screen

1. SERVICE NOTE

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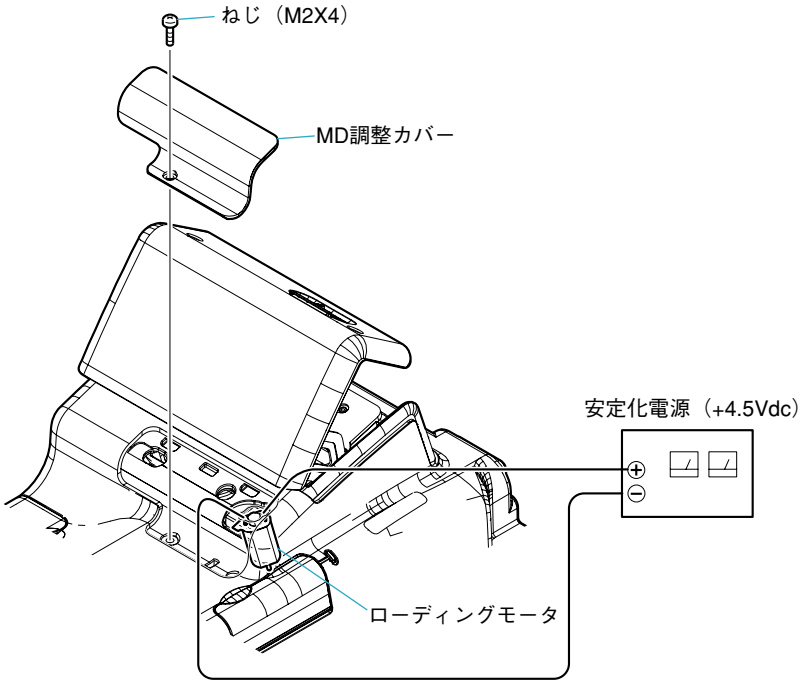
1-1. 修理時の電源供給について

本機では，安定化電源（8.4Vdc）からバッテリ端子に電源を供給した場合，約10秒後にシャットオフし，動作しなくなります。
これを避けるため，下記の方法を用いてください。

方法：
ACアダプタ/チャージャ（AC-VQ1050）と接続コード（DK-415）を使用する。

1-2. イジェクトしない時のカセット取出し方法（強制イジェクト）

① 電源を外す。
② ねじとMD調整カバーを外す。
③ カセコン組立を押さえながら，安定化電源より＋4.5Vをローディングモータに加え，アンローディングさせる。



1-3. 強制電源ONモードの設定

調整リモコン（RM-95またはNEW LANC JIG）を使用して，電源を入れることが出来ます。
VTR操作は調整リモコンで行えます。

1-3-1. 強制カメラ電源ONモードの設定

1) ページ：0，アドレス：01にデータ：01をセット。
2) ページ：A，アドレス：10にデータ：01をセットしPAUSE（Write）ボタンを押す。

1-3-2. 強制VTR電源ONモードの設定

1) ページ：0，アドレス：01にデータ：01をセット。
2) ページ：A，アドレス：10にデータ：02をセットしPAUSE（Write）ボタンを押す。

1-3-3. 強制電源ONモードの解除

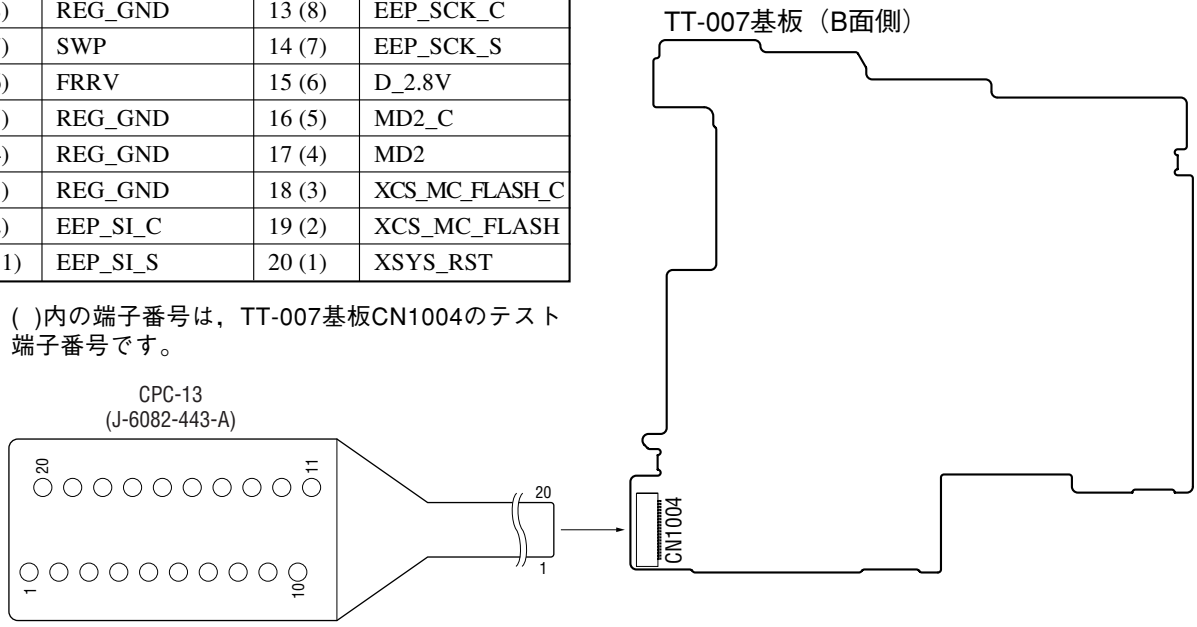
1) ページ：0，アドレス：01にデータ：01をセット。
2) ページ：A，アドレス：10にデータ：00をセットしPAUSE（Write）ボタンを押す。
3) ページ：0，アドレス：01にデータ：00をセット。

1-4. 使用サービス治具

CPC-13治具（J-6082-443-A）をTT-007基板CN1004に接続します。

端子番号	信号名称	端子番号	信号名称
1 (20)	REG_GND	11 (10)	EEP_SO_C
2 (19)	RF_MON	12 (9)	EEP_SO_S
3 (18)	REG_GND	13 (8)	EEP_SCK_C
4 (17)	SWP	14 (7)	EEP_SCK_S
5 (16)	FRRV	15 (6)	D_2.8V
6 (15)	REG_GND	16 (5)	MD2_C
7 (14)	REG_GND	17 (4)	MD2
8 (13)	REG_GND	18 (3)	XCS_MC_FLASH_C
9 (12)	EEP_SI_C	19 (2)	XCS_MC_FLASH
10 (11)	EEP_SI_S	20 (1)	XSYS_RST

注意：( )内の端子番号は，TT-007基板CN1004のテスト端子番号です。



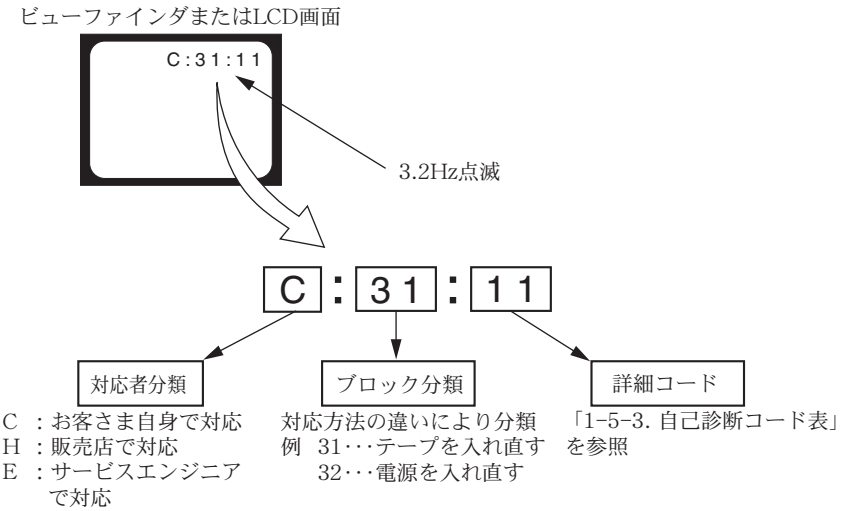
1-5. 自己診断機能

1-5-1. 自己診断機能について

本機の動作に不具合が生じたとき，自己診断機能が働き，ビューファインダまたはLCD画面に，どう処置したらよいか判断できる表示を行います。自己診断機能については取扱説明書にも掲載されています。

1-5-2. 自己診断表示

本機の動作に不具合が生じたとき，ビューファインダまたはLCD画面のカウンタ表示部分がアルファベットと数字の4桁表示になり，3.2Hzで点滅します。この5文字の表示によって対応者分類および不具合の生じたブロックの分類，不具合の詳細コードを示します。



1-5-3. 自己診断コード表

自己診断コード			症状／状態	対応／方法
対応者	ブロック 機能	詳細 コード		
C	0 4	0 0	標準でないバッテリを使用している	インフォリチウムバッテリを使用する。
C	2 1	0 0	結露している	カセットを取り出して，約1時間してからもう一度入れ直す。
C	2 2	0 0	ビデオヘッドが汚れている	別売のクリーニングカセットできれいにする。
C	3 1	1 0	LOAD方向，ローディング所定時間内終了せず	テープを入れ直し，再度操作し直す。
C	3 1	1 1	UNLOAD方向，ローディング所定時間内終了せず	テープを入れ直し，再度操作し直す。
C	3 1	2 0	UNLOAD時，Tリール側テープ弛み	テープを入れ直し，再度操作し直す。
C	3 1	2 1	UNLOAD時，Sリール側テープ弛み	テープを入れ直し，再度操作し直す。
C	3 1	2 2	Tリール異常	テープを入れ直し，再度操作し直す。
C	3 1	2 3	Sリール異常	テープを入れ直し，再度操作し直す。
C	3 1	2 4	TリールおよびSリールFGショート異常	テープを入れ直し，再度操作し直す。
C	3 1	3 0	キャプスタン起動時FG異常	テープを入れ直し，再度操作し直す。
C	3 1	4 0	ドラム起動時FG異常	テープを入れ直し，再度操作し直す。
C	3 1	4 2	ドラム定常時FG異常	テープを入れ直し，再度操作し直す。
C	3 1	7 2	カセコン指はさみリトライ異常	テープを入れ直し，再度操作し直す。
C	3 1	9 7	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	テープを入れ直し，再度操作し直す。
C	3 1	9 8	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	テープを入れ直し，再度操作し直す。
C	3 1	9 9	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	テープを入れ直し，再度操作し直す。
C	3 2	1 0	LOAD方向，ローディング所定時間内終了せず	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	1 1	UNLOAD方向，ローディング所定時間内終了せず	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 0	UNLOAD時，Tリール側テープ弛み	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 1	UNLOAD時，Sリール側テープ弛み	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 2	Tリール異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 3	Sリール異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 4	TリールおよびSリールFGショート異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	3 0	キャプスタン起動時FG異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	4 0	ドラム起動時FG異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	4 2	ドラム定常時FG異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	6 0	フォーカスが合いにくい（フォーカスの初期化ができない）	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。復帰しない場合,レンズドライブブロックのフォーカスMRセンサ(LG-005基板CN1003 ㉒, ㉔ ピン)を点検。問題がなければフォーカスモータドライブ回路(LG-005基板IC2001)を点検。
C	3 2	6 F	バヨネットマウント異常	レンズブロック,バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。復帰しない場合,LG-005基板D1001～D1005のカソード(10箇所)を点検。

自己診断コード			症状／状態	対応／方法
対応者	ブロック機能	詳細コード		
C	3 2	7 2	カセコン指はさみリトライ異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	9 7	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	9 8	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	9 9	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
E	2 0	0 0	EEPROMが書き換えられている	EEPROMのデータを元の値に戻す。
E	6 1	1 0	ズーム動作の異常（ズームレンズの初期化ができない）	ズームレバーを操作した時,ズーム動作をすればレンズドライブブロックのズームMRセンサ（LG-005基板CN1001 ⑫, ⑭ピン）を点検。ズーム動作をしなければズームモータドライブ回路（LG-005基板IC2001）を点検。
E	6 1	1 1	フォーカスレンズ初期化異常,ズームレンズ初期化異常の同時発生	自己診断コードC: 32: 60とE: 61: 10の両方を点検。
E	6 1	3 0	ステッパアイリス初期化時リセット位置検出エラー	ZOOM スイッチを“MANUAL”にし,ズームマニュアルリングでT（telephoto）端にした後,電源を投入する。電源投入後,レンズ内の羽を見るか,または動作音を聞いてアイリスが動作しているか確認する。アイリスが動作しない場合は,レンズドライブブロックのアイリスモータドライブ（LG-005基板CN1001 ⑱～㉑ピン）を点検。アイリスが動作する場合は,レンズドライブブロックのアイリスリセットセンサ（LG-005基板CN1001 ⑮～⑰ピン）を点検。
E	6 2	0 0	手振れ補正が効きにくい（PITCH角速度センサ出力張り付き）	PITCH角速度センサ（GY-005基板SE8501）周辺回路を点検。
E	6 2	0 1	手振れ補正が効きにくい（YAW角速度センサ出力張り付き）	YAW角速度センサ（GY-005基板SE8502）周辺回路を点検。
E	6 2	0 2	手振れ補正用ICの異常	手振れ補正回路（LG-005基板IC4003）を点検。復帰しない場合,LG-005基板を交換する。（注意）エラーが再度発生する場合は,レンズブロックを交換する。
E	6 2	0 3	手振れ補正用ICとマイクロコントローラとの通信異常	手振れ補正回路（LG-005基板IC4003）を点検。
E	6 2	1 0	シフトレンズ初期化異常	EEPROM（LG-005基板IC6005）を点検。復帰しない場合,LG-005基板を交換する。（注意）エラーが再度発生する場合は,レンズブロックを交換する。
E	6 2	1 1	シフトレンズオーバーヒート(PITCH)	LG-005基板のIC4003および周辺回路を点検。復帰しない場合,LG-005基板を交換する。（注意）エラーが再度発生する場合は,レンズブロックを交換する。
E	6 2	1 2	シフトレンズオーバーヒート(YAW)	LG-005基板のIC4003および周辺回路を点検。復帰しない場合,LG-005基板を交換する。（注意）エラーが再度発生する場合は,レンズブロックを交換する。
E	6 2	2 0	サーミスタの異常	レンズドライブブロックとLG-005基板間の各フレキシブルフラットケーブルとコネクタの接続を確認する。復帰しない場合,LG-005基板を交換する。（注意）エラーが再度発生する場合は,レンズブロックを交換する。

注意 ：LG-005基板を交換する場合は，修理するLG-005基板からEEPROM（IC6005）を取り外す。取り外したEEPROM（IC6005）は取り替えたLG-005基板に取り付ける。

1-6. “60i/50i切替”メニューの追加

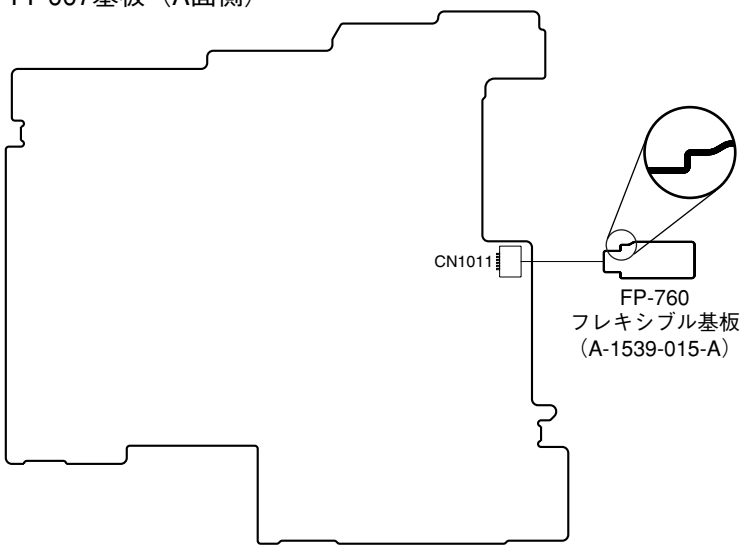
調整リモコン（RM-95またはNEW LANC JIG）とFP-760フレキシブル基板（A-1539-015-A）を使用して，“60i/50i切替”メニューを追加することができます。

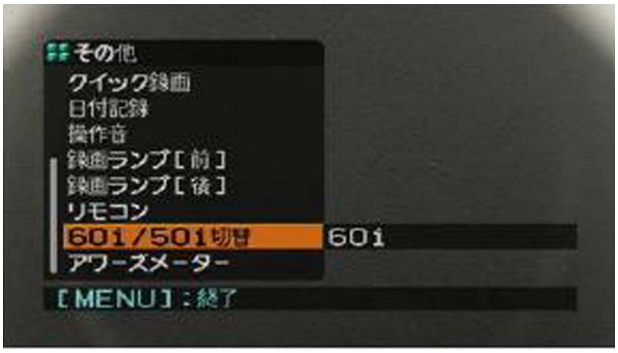
注意 ： FP-760フレキシブル基板(A-1539-015-A)を外すと“60i/50i切替”メニューは表示されません。FP-760フレキシブル基板はTT-007基板のCN1011に接続したまま使用してください。

方法：

① TT-007基板のCN1011にFP-760フレキシブル基板を接続する。
② ページ：0，アドレス：01にデータ：01をセット。
③ ページ：A，アドレス：99にデータ：01をセットしPAUSE（Write）ボタンを押す。
④ ページ：0，アドレス：01にデータ：00をセット。
⑤ LCD画面で“MENU”の“その他”に“60i/50i切替”が表示されることを確認する。

TT-007基板（A面側）





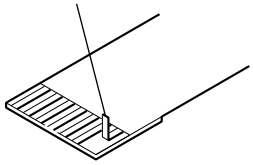
LCD画面

2. DISASSEMBLY

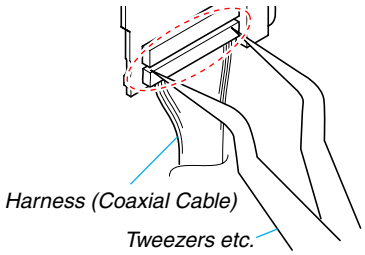
NOTE FOR REPAIR

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

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

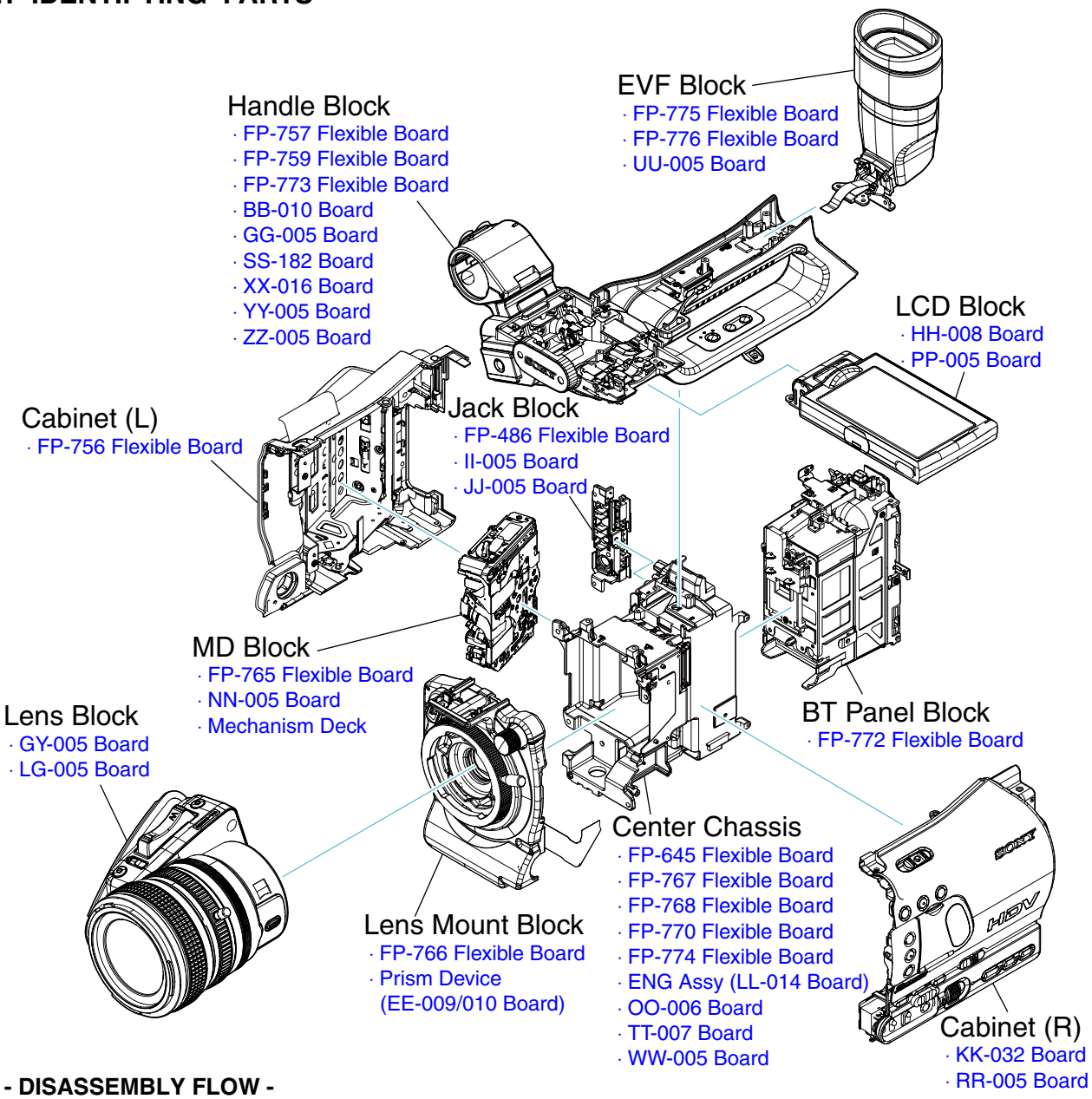


NOTE FOR DISCONNECTING THE HARNESS (COAXIAL CABLE)



When disconnecting the harness (coaxial cable), do not pull the harness part but pull off the connector body with tweezers etc.

2-1. IDENTIFYING PARTS



- DISASSEMBLY FLOW -

2-2-1. OVERALL SECTION-1
- Lens Block
- Handle Block

2-2-2. HANDLE SECTION-1
- Handle Cabinet (Upper)
- EVF Block

2-2-3. HANDLE SECTION-2
- ZZ-005 Board
- LCD Block

2-2-4. LCD SECTION
- Hinge Block
- LCD

2-2-5. OVERALL SECTION-2
- Bottom Cabinet
- Cabinet (L)
- Cabinet (R)

2-2-6. MD/JK SECTION
- Mechanism Deck
- Jack Block

2-2-7. MAIN BOARD SECTION
- TT-007 Board

2-2-8. MS/ENG SECTION
- OO-006 Board
- WW-005 Board
- ENG Assy (LL-014 Board)

2-2-9. BT PANEL SECTION
- Lens Mount Block
- BT Panel Block

2-2. DISASSEMBLY

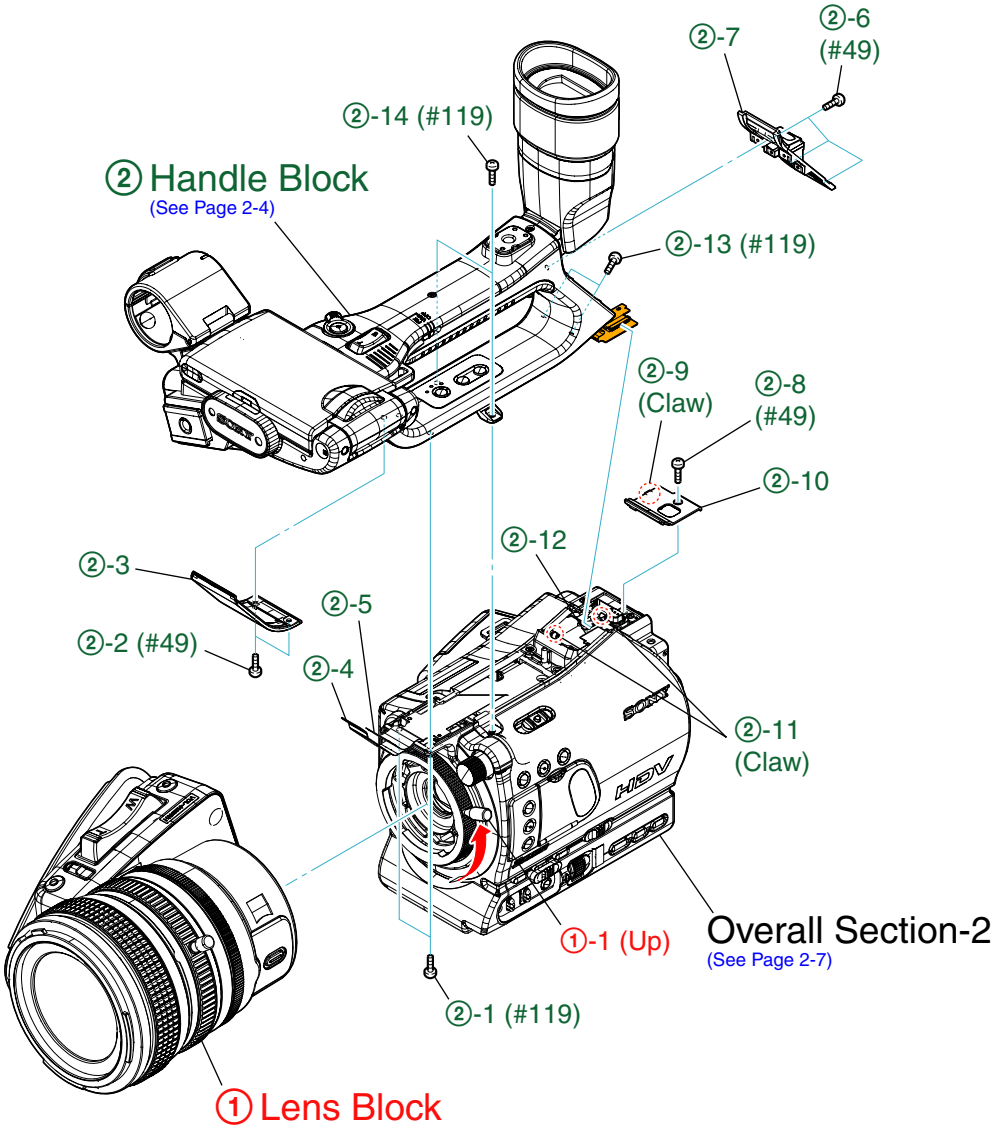
EXPLODED VIEW HARDWARE LIST

2-2-1. OVERALL SECTION-1

Follow the disassembly in the numerical order given.

① Lens Block (①-1)

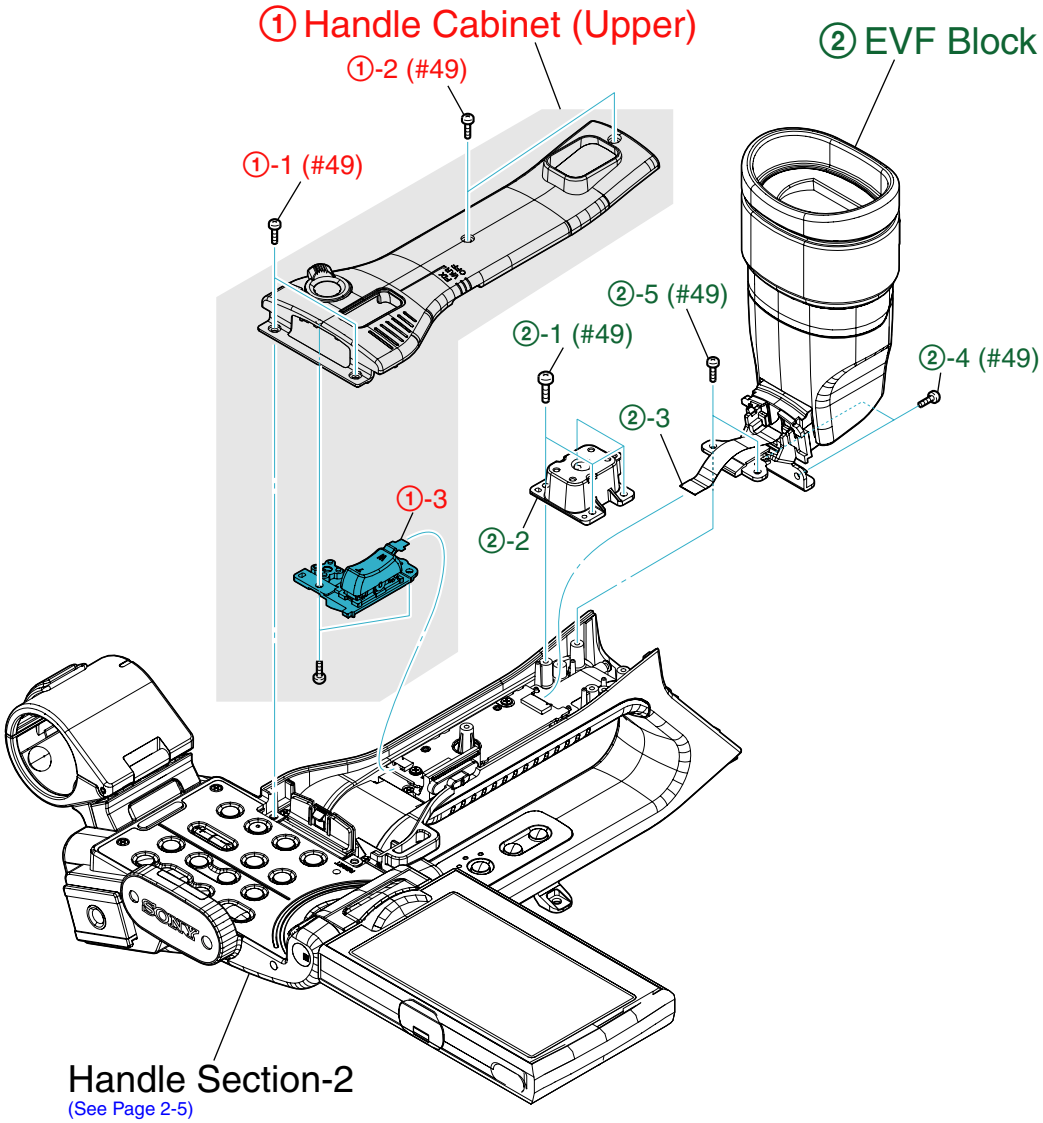
② Handle Block (②-1 to ②-14)



2-2-2. HANDLE SECTION-1

EXPLODED VIEW HARDWARE LIST

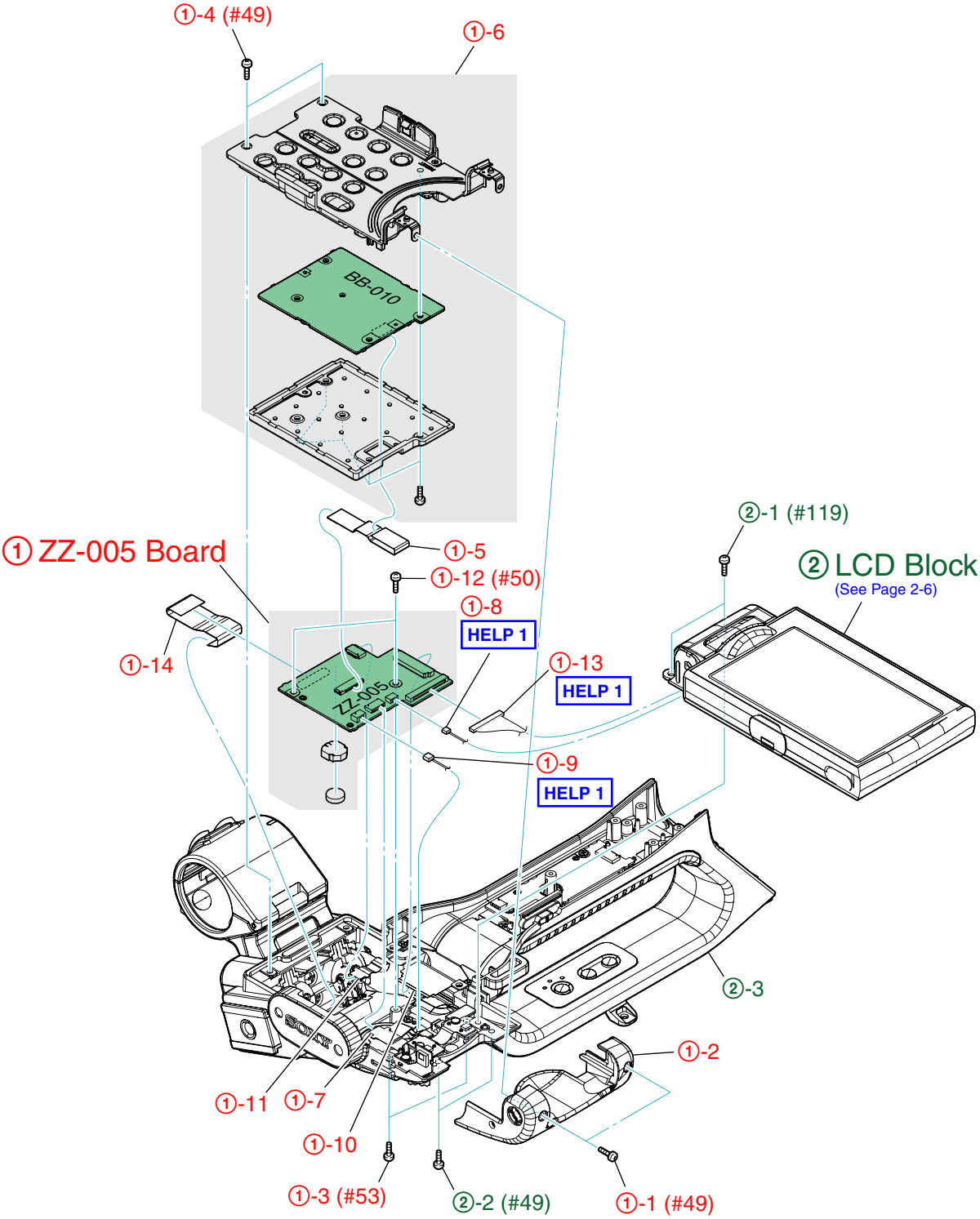
Follow the disassembly in the numerical order given.
① Handle Cabinet (Upper) (①-1 to ①-3)
② EVF Block (②-1 to ②-5)



2-2-3. HANDLE SECTION-2

Follow the disassembly in the numerical order given.
① ZZ-005 Board (①-1 to ①-14)
② LCD Block (②-1 to ②-3)

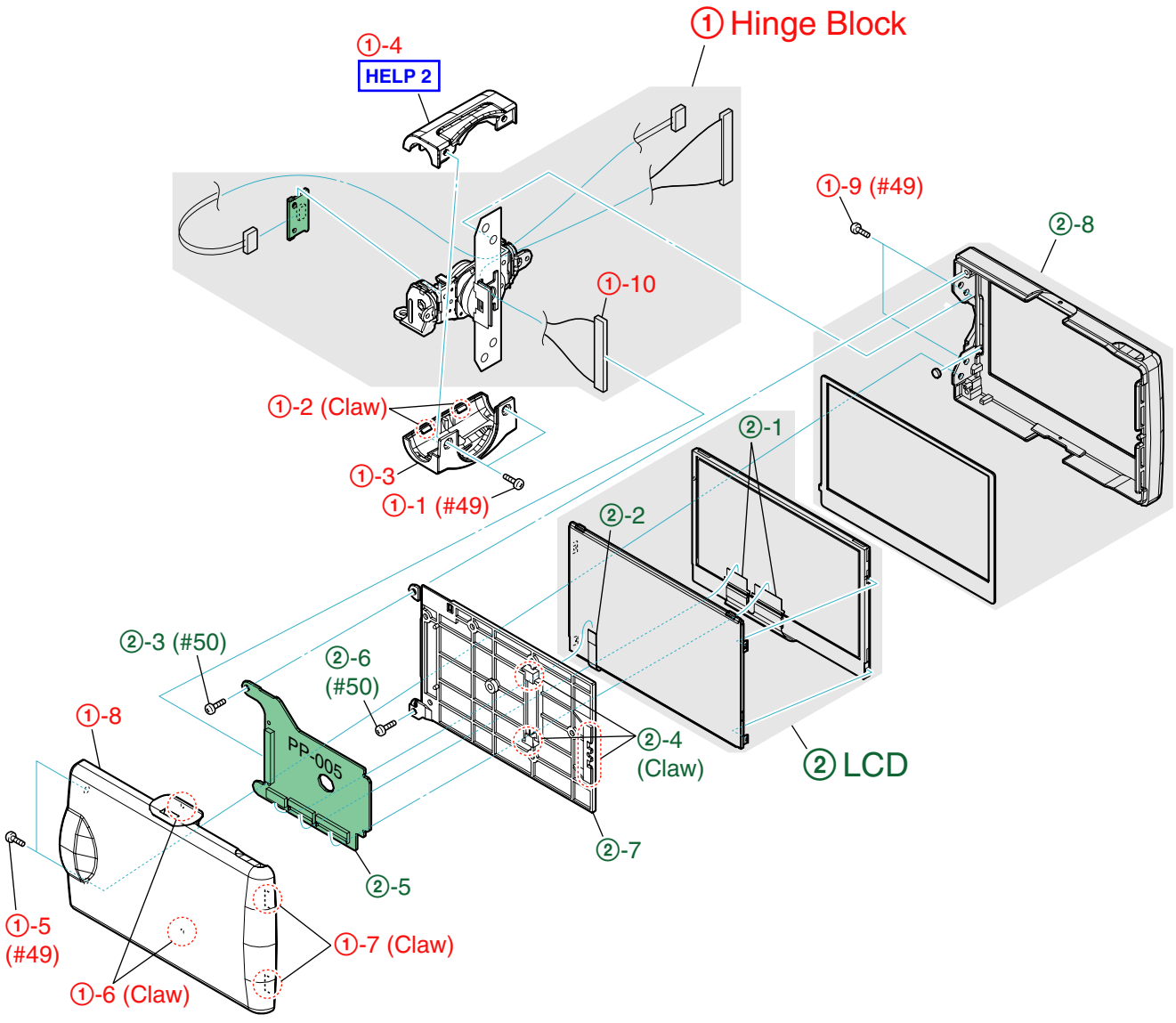
EXPLODED VIEW HARDWARE LIST



2-2-4. LCD SECTION

Follow the disassembly in the numerical order given.
① Hinge Block (①-1 to ①-10)
② LCD (②-1 to ②-8)

EXPLODED VIEW HARDWARE LIST

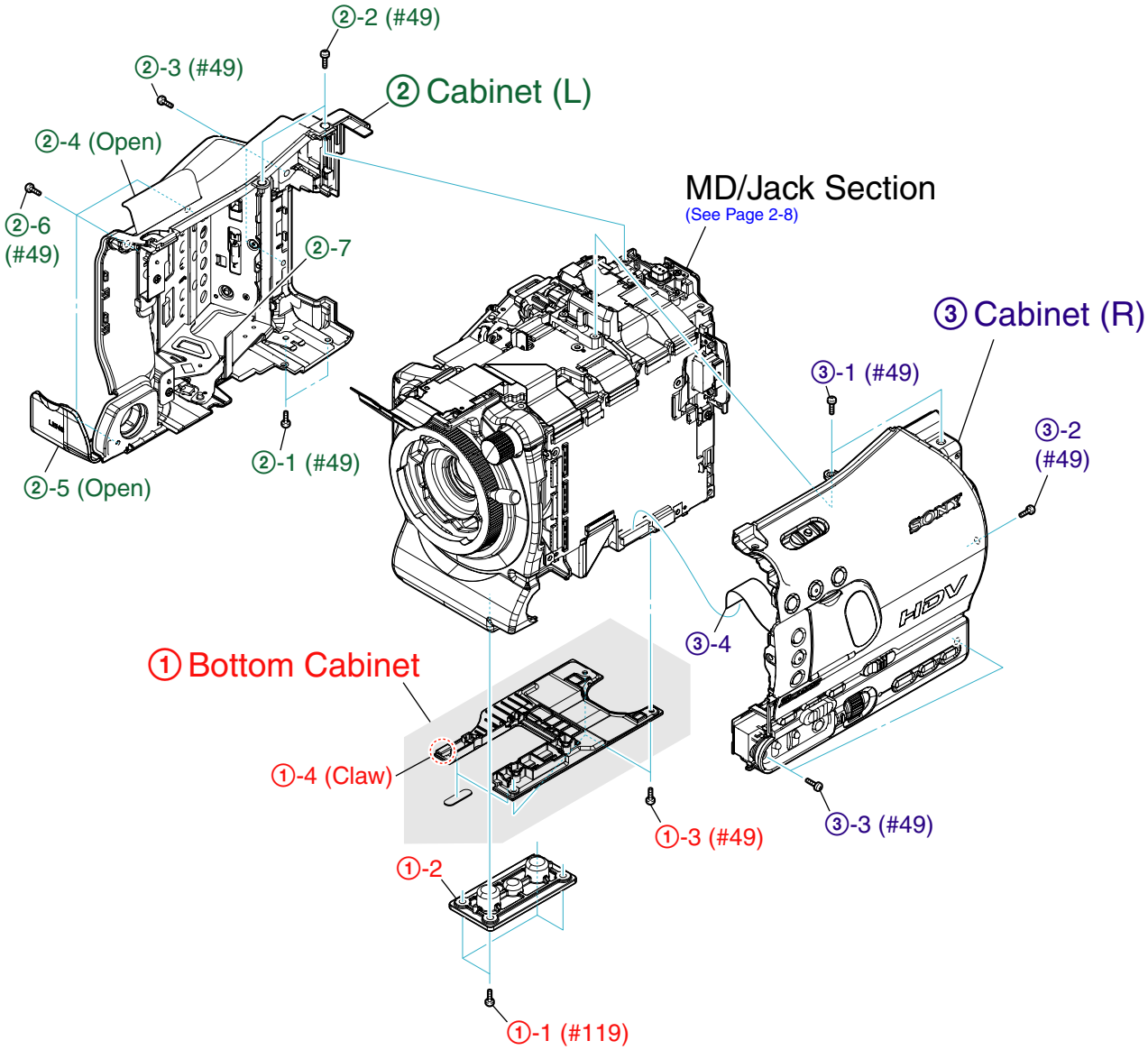


2-2-5. OVERALL SECTION-2

EXPLODED VIEW HARDWARE LIST

Follow the disassembly in the numerical order given.

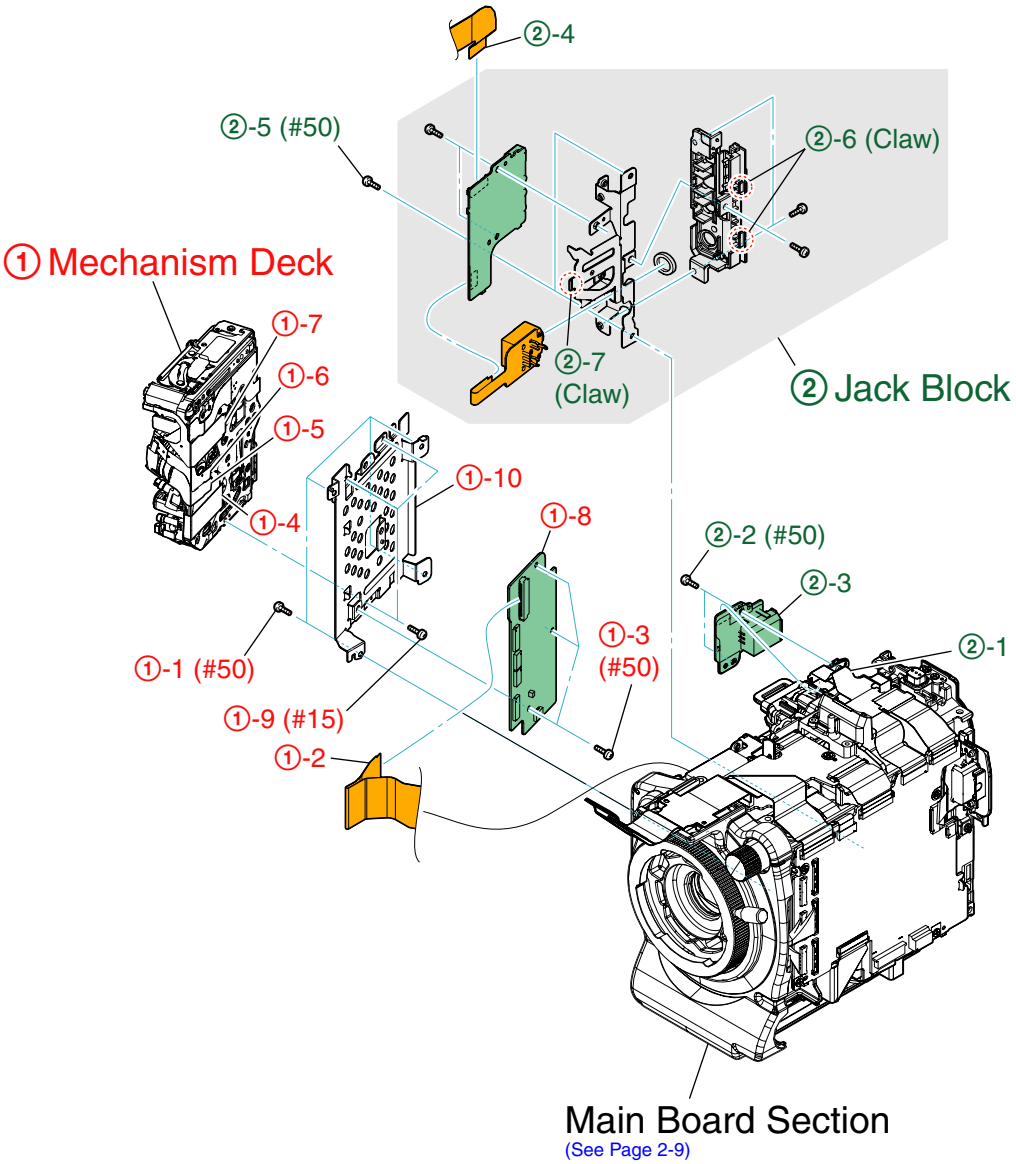
① Bottom Cabinet (①-1 to ①-4)
② Cabinet (L) (②-1 to ②-7)
③ Cabinet (R) (③-1 to ③-4)



2-2-6. MD/JACK SECTION

Follow the disassembly in the numerical order given.
① Mechanism Deck (①-1 to ①-10)
② Jack Board (②-1 to ②-7)

EXPLODED VIEW HARDWARE LIST

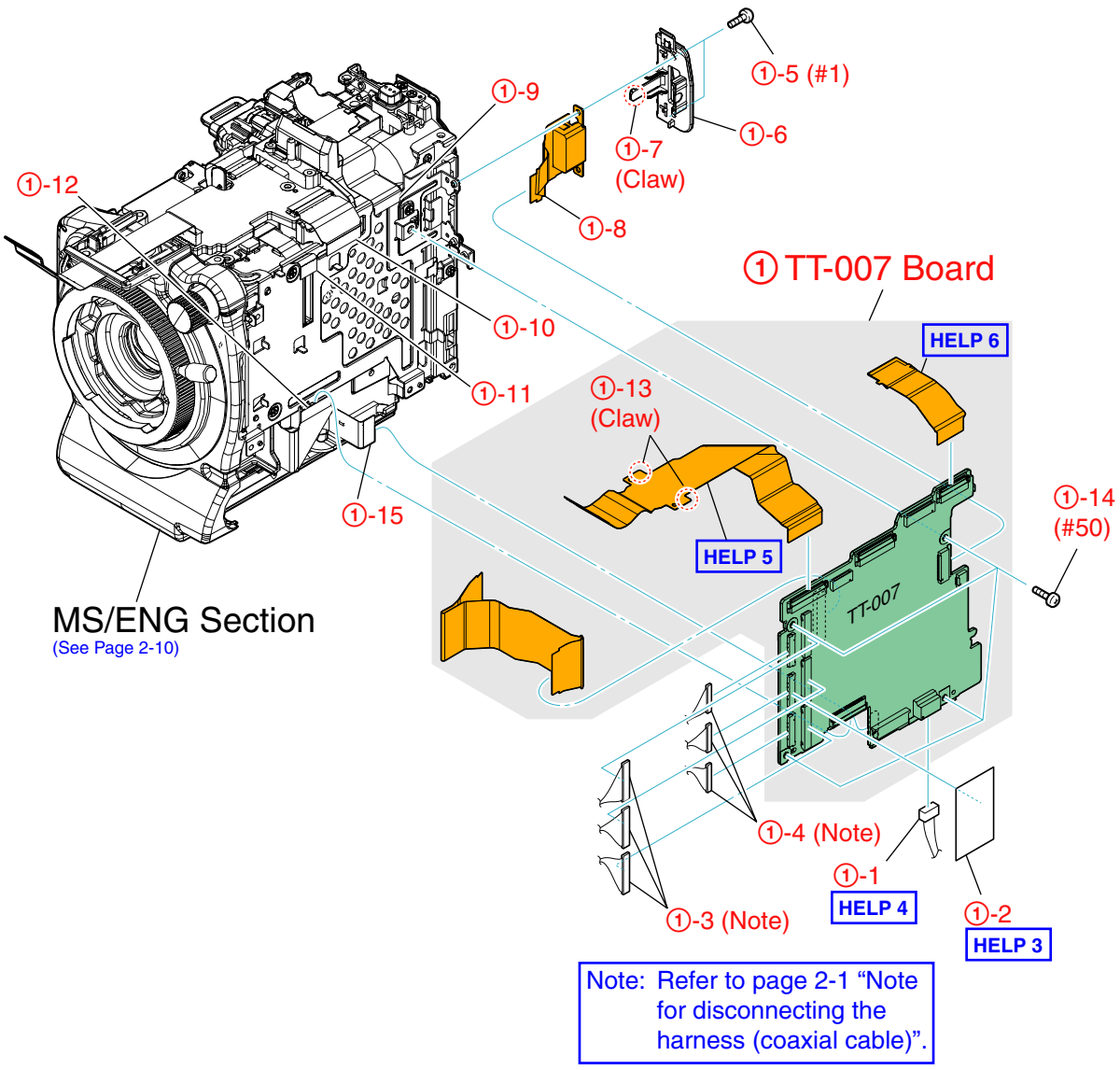


2-2-7. MAIN BOARD SECTION

Follow the disassembly in the numerical order given.

① TT-007 Board (①-1 to ①-15)

EXPLODED VIEW HARDWARE LIST

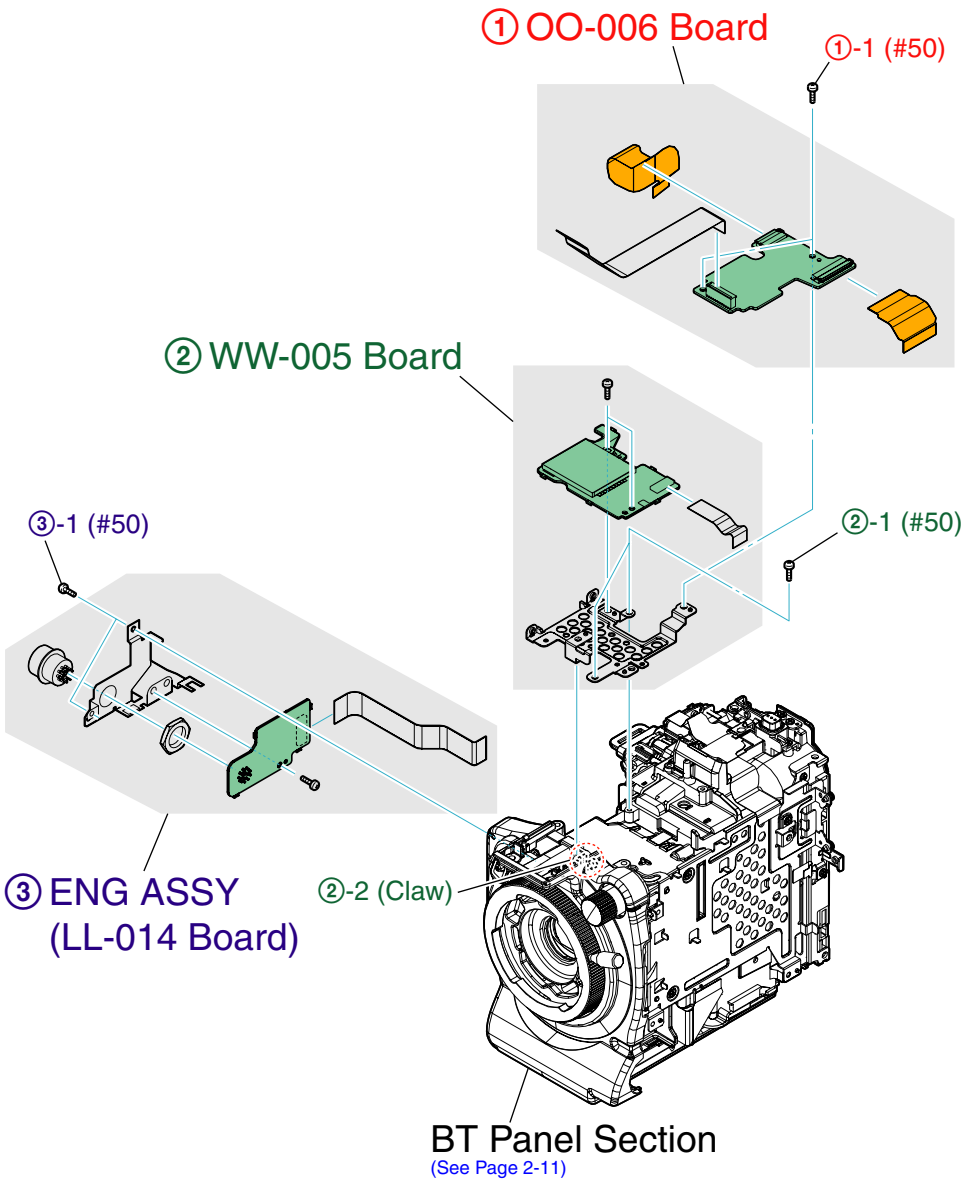


2-2-8. MS/ENG SECTION

EXPLODED VIEW HARDWARE LIST

Follow the disassembly in the numerical order given.

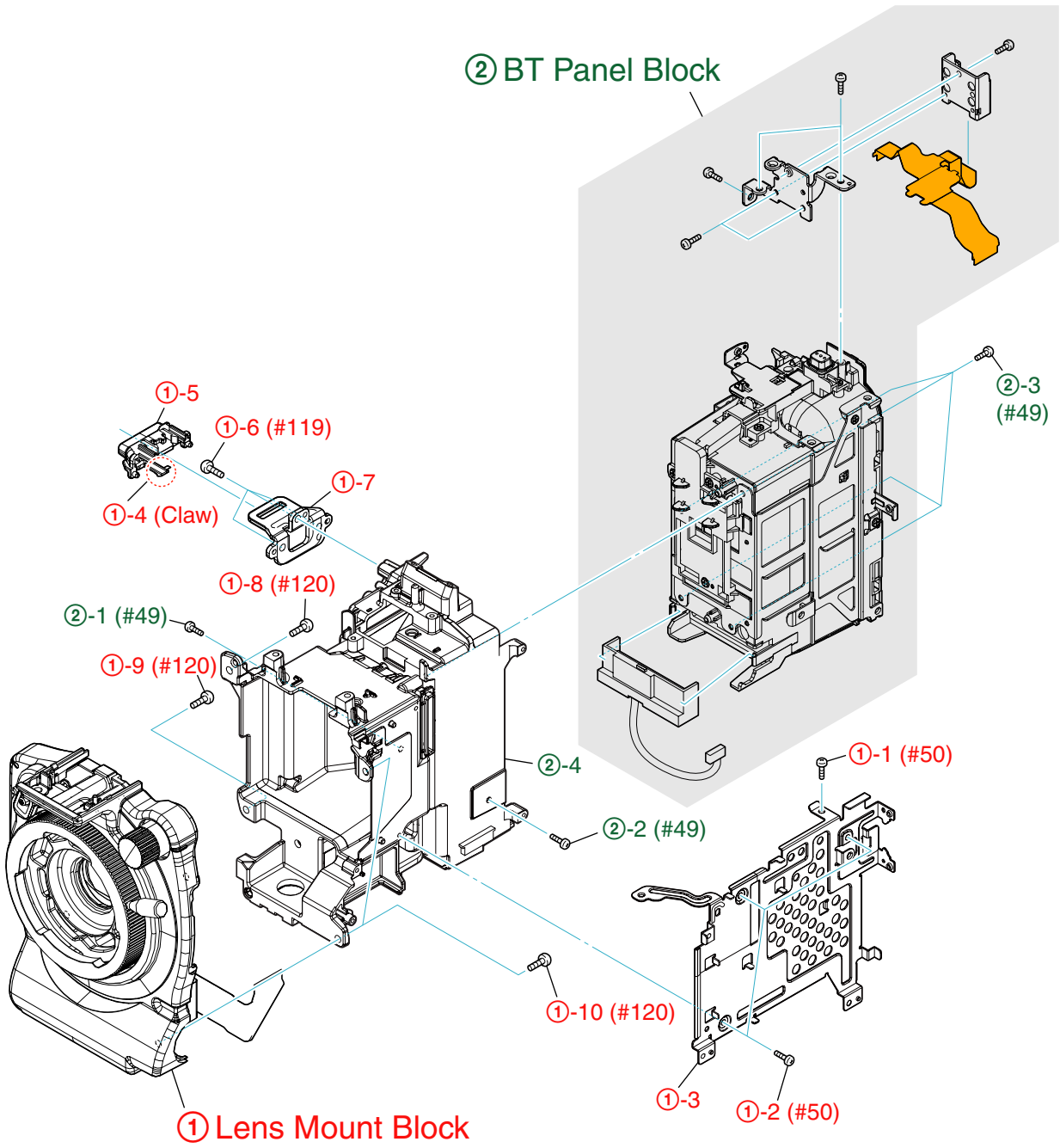
① OO-006 Board (①-1)
② WW-005 Board (②-1 to ②-2)
③ ENG ASSY (LL-014 Board) (③-1)



2-2-9. BT PANEL SECTION

Follow the disassembly in the numerical order given.
① Lens Mount Block (①-1 to ①-10)
② BT Panel Block (②-1 to ②-4)

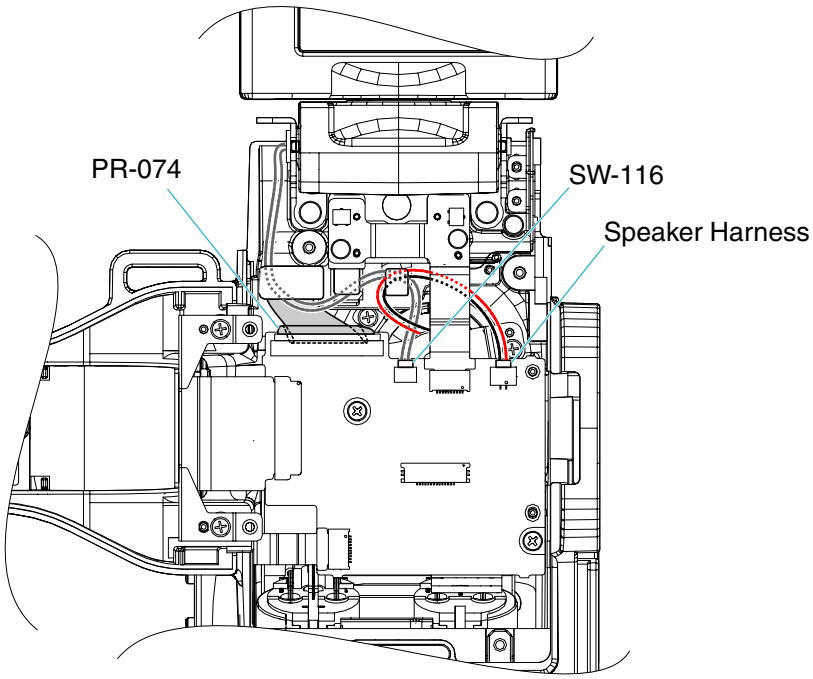
EXPLODED VIEW HARDWARE LIST



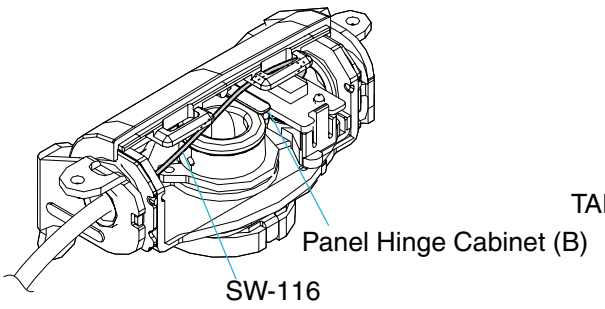
HELP

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

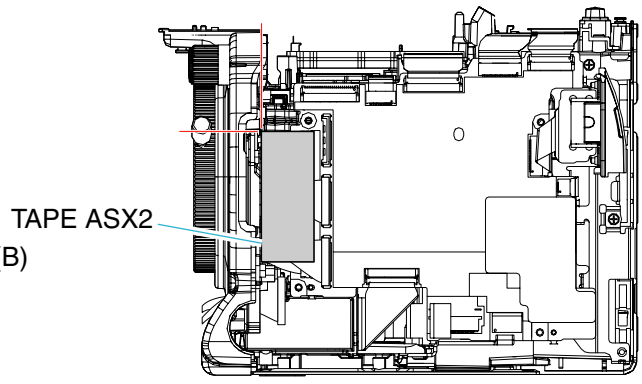
HELP 1: PR-074/SW-116/Speaker Harness

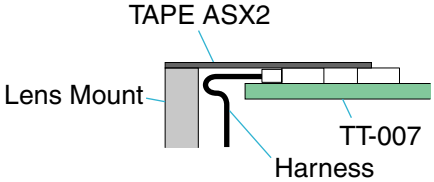


HELP 2: SW-116 Harness



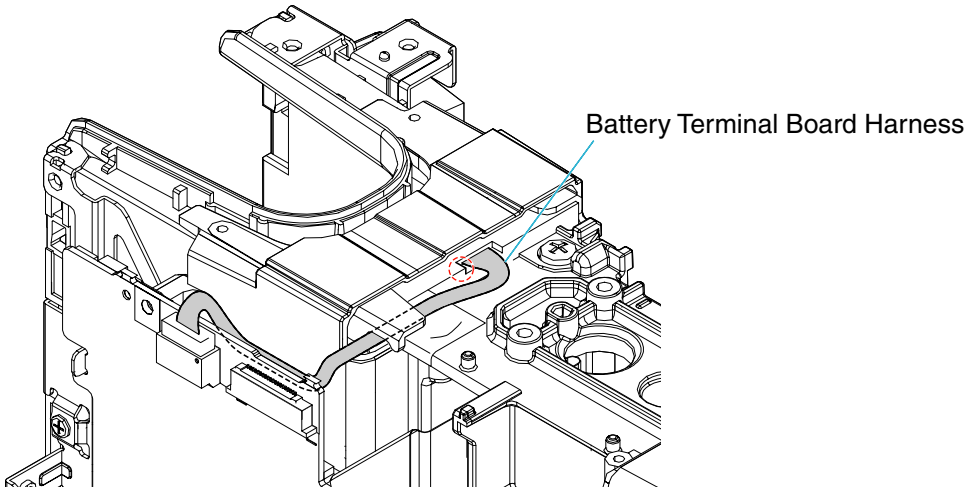
HELP 3: TAPE ASX2



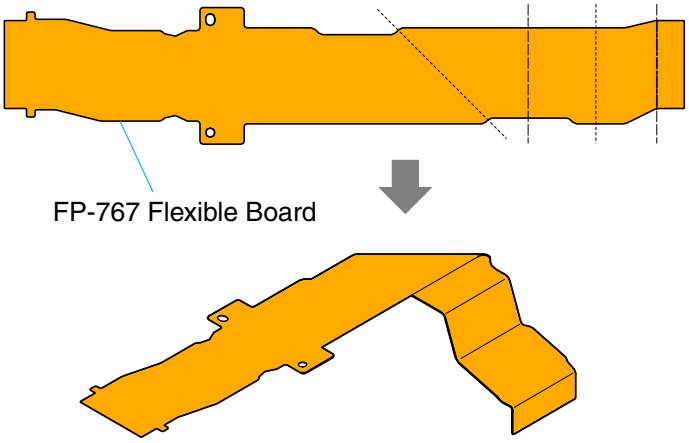


Note: Harness must not run aground on the lens mount.

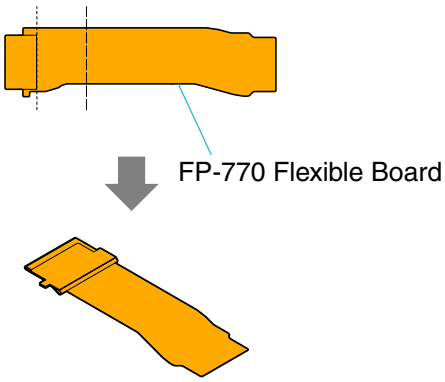
HELP 4: Battery Terminal Board Harness



HELP 5: FP-767 Flexible Board



HELP 6: FP-770 Flexible Board



3. BLOCK DIAGRAMS

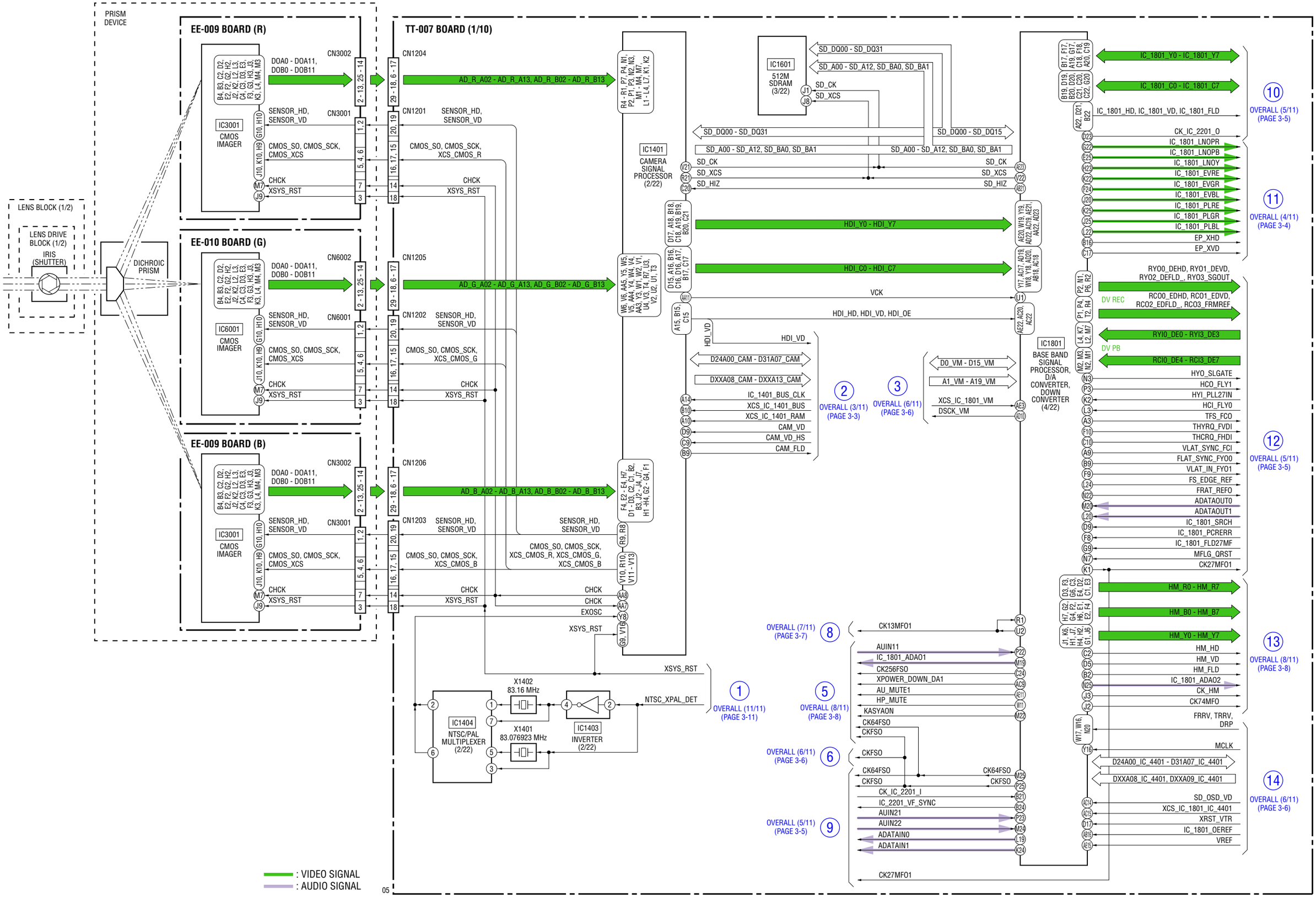
Link

- OVERALL BLOCK DIAGRAM (1/11)
- OVERALL BLOCK DIAGRAM (2/11)
- OVERALL BLOCK DIAGRAM (3/11)
- OVERALL BLOCK DIAGRAM (4/11)
- OVERALL BLOCK DIAGRAM (5/11)
- OVERALL BLOCK DIAGRAM (6/11)
- OVERALL BLOCK DIAGRAM (7/11)
- OVERALL BLOCK DIAGRAM (8/11)
- OVERALL BLOCK DIAGRAM (9/11)
- OVERALL BLOCK DIAGRAM (10/11)
- OVERALL BLOCK DIAGRAM (11/11)
- POWER BLOCK DIAGRAM (1/4)
- POWER BLOCK DIAGRAM (2/4)
- POWER BLOCK DIAGRAM (3/4)
- POWER BLOCK DIAGRAM (4/4)

3. BLOCK DIAGRAMS

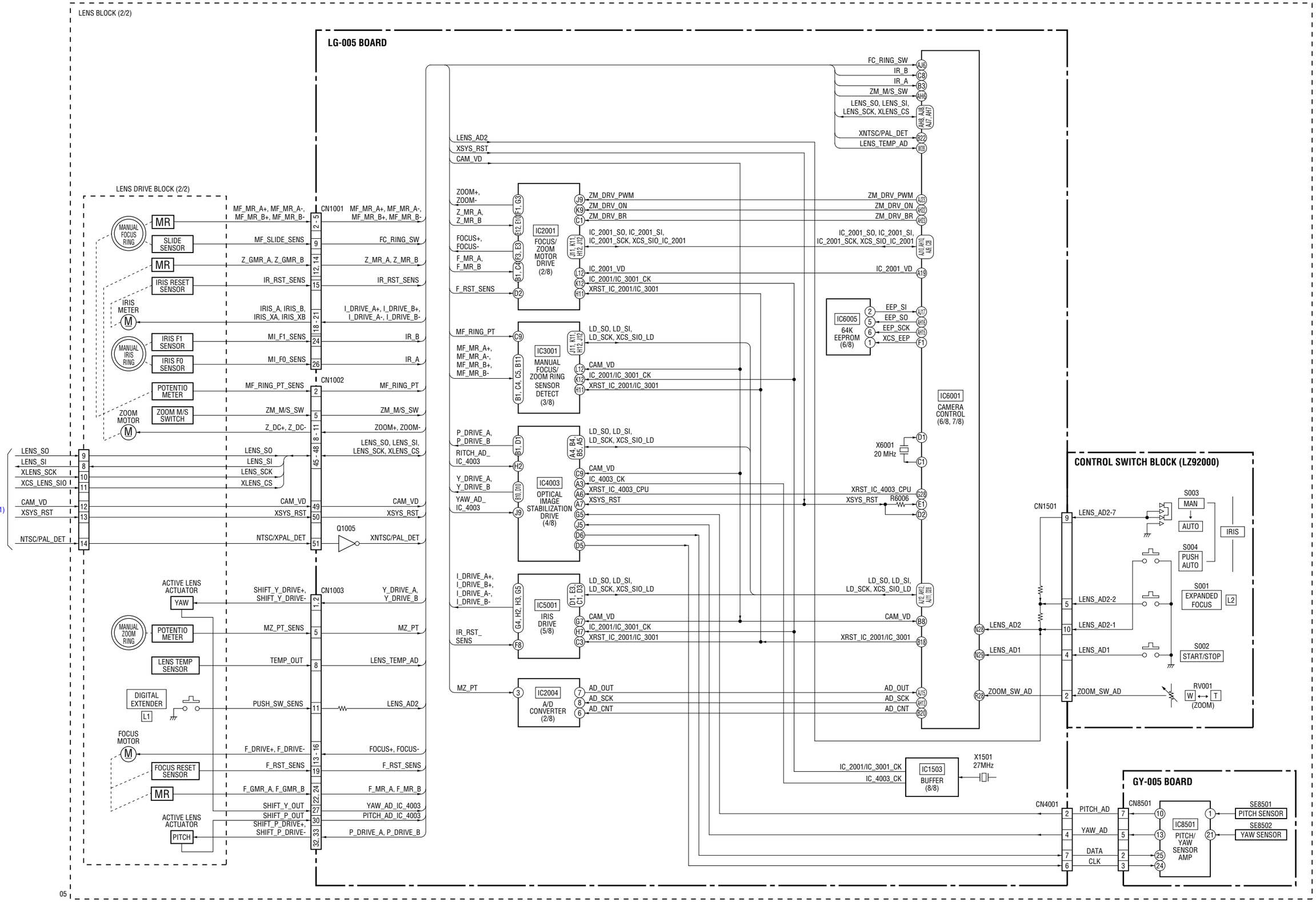
3-1. OVERALL BLOCK DIAGRAM (1/11)

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

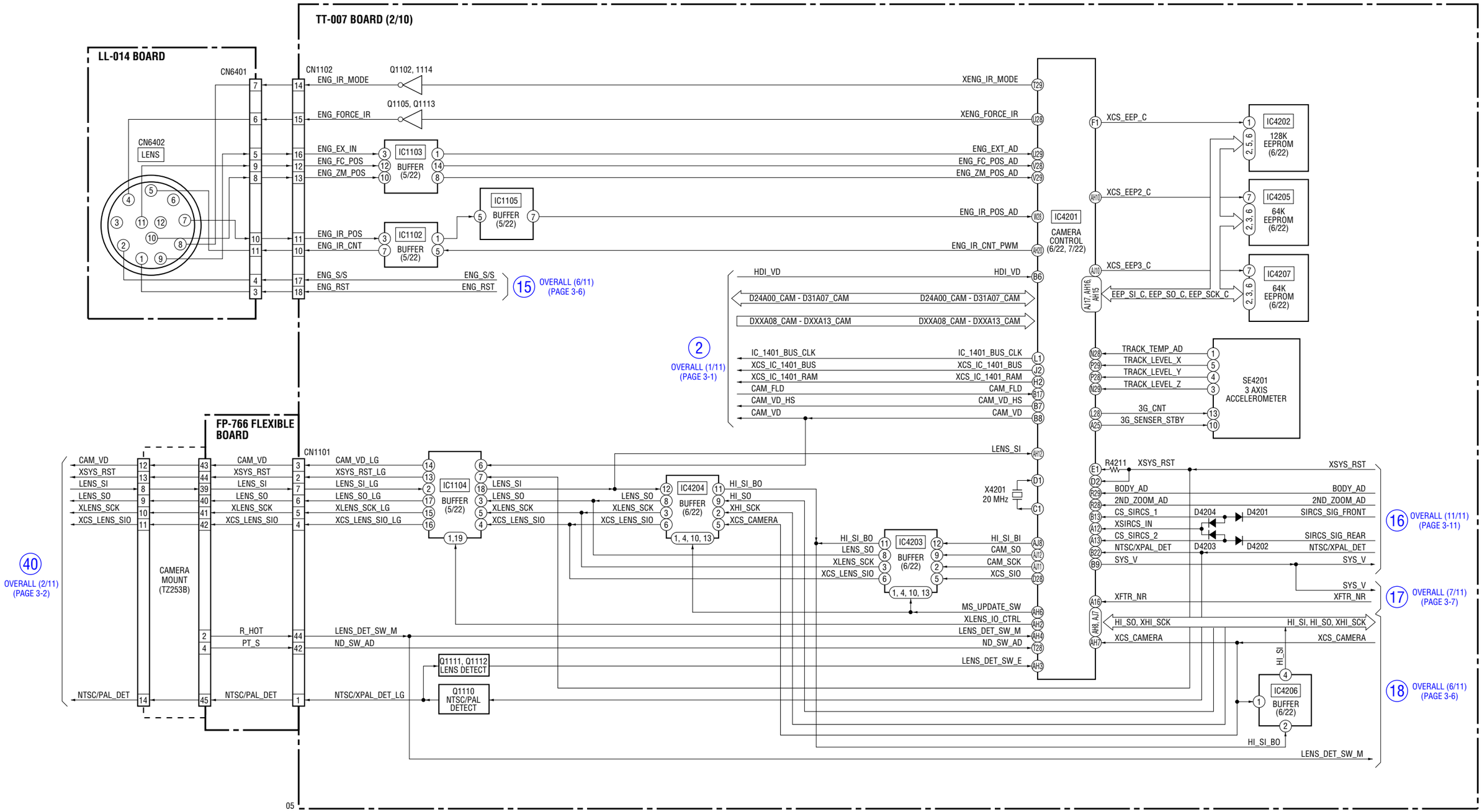


3-2. OVERALL BLOCK DIAGRAM (2/11)

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

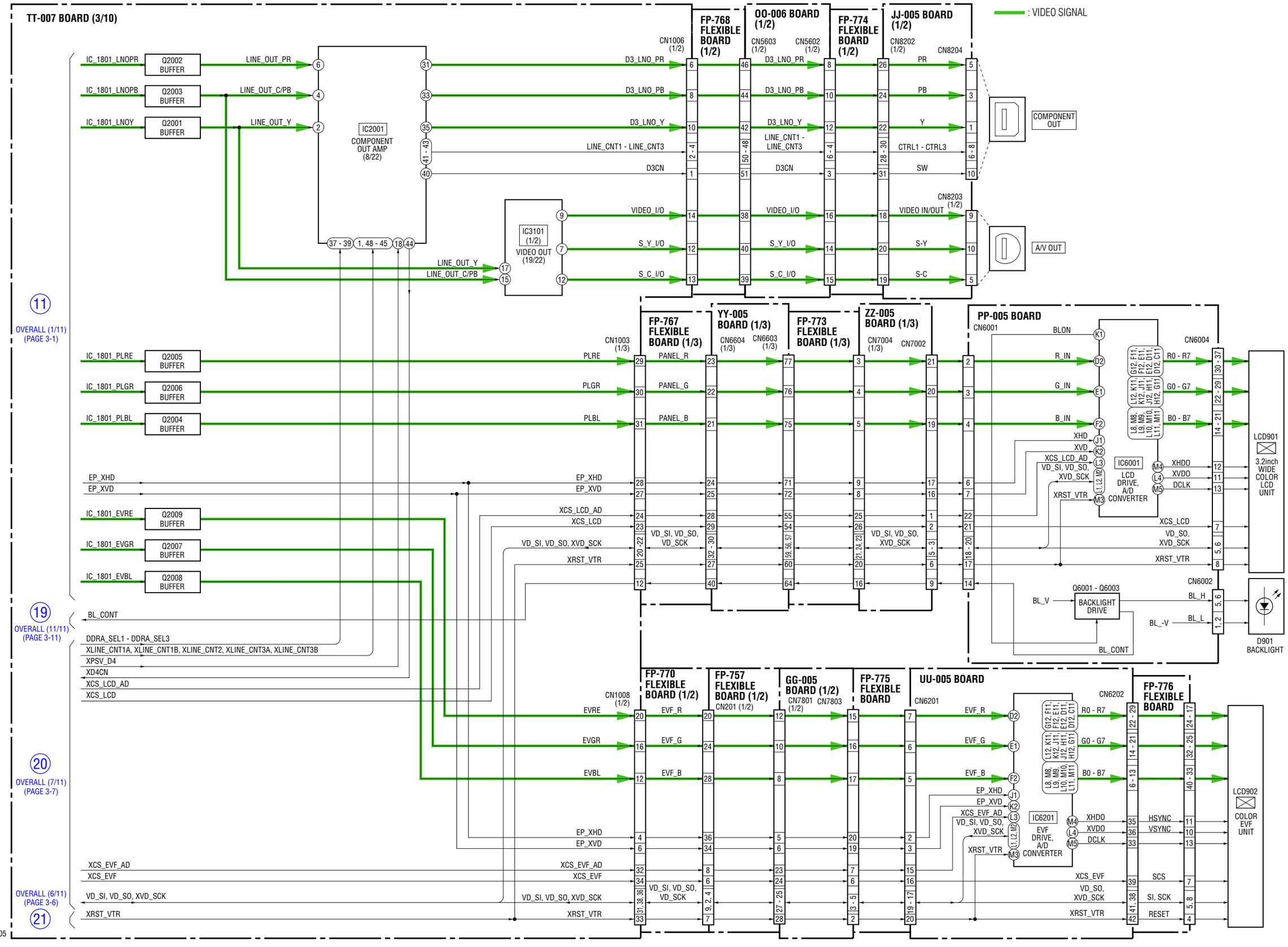


3-3. OVERALL BLOCK DIAGRAM (3/11) ( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.

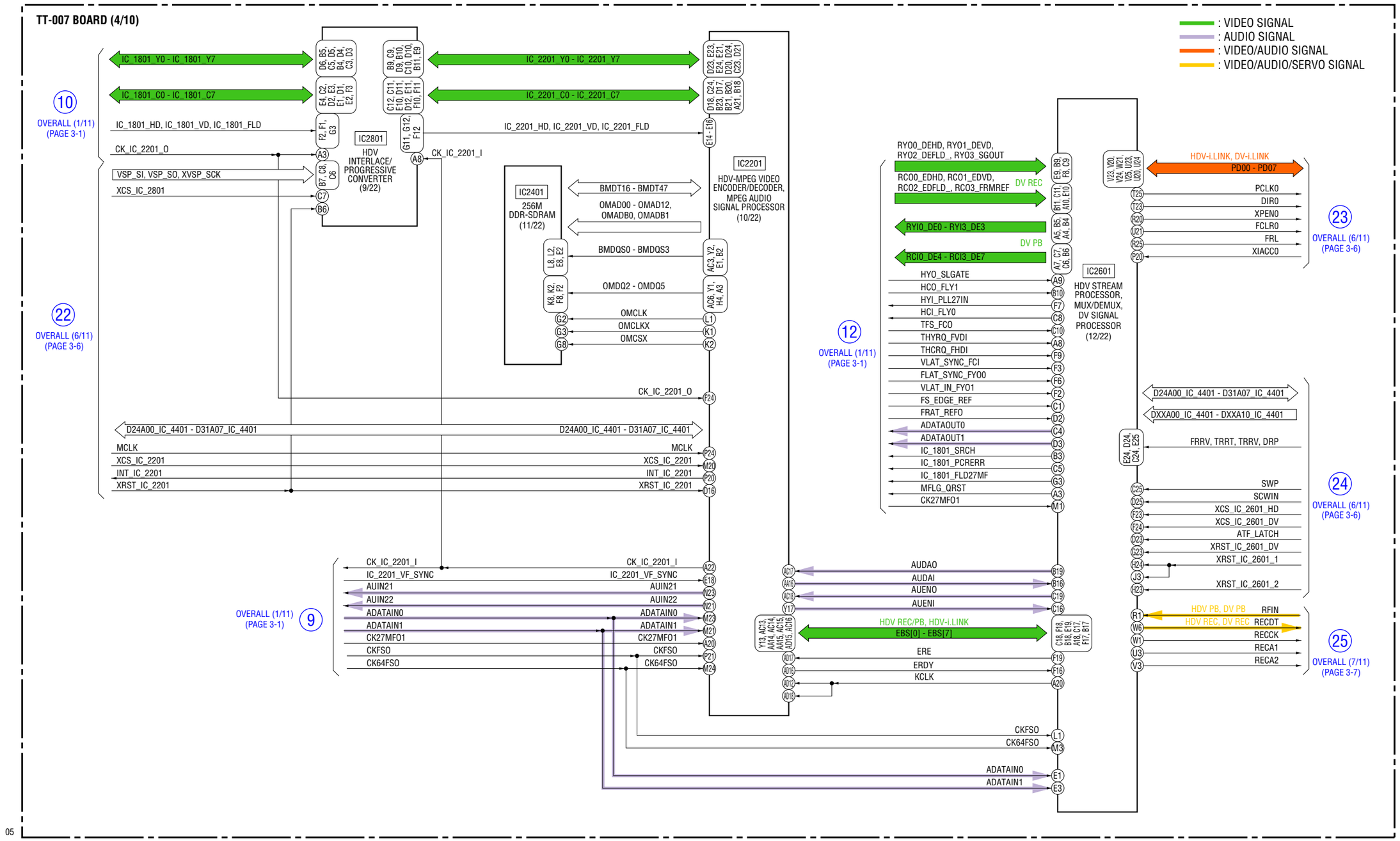


3-4. OVERALL BLOCK DIAGRAM (4/11)

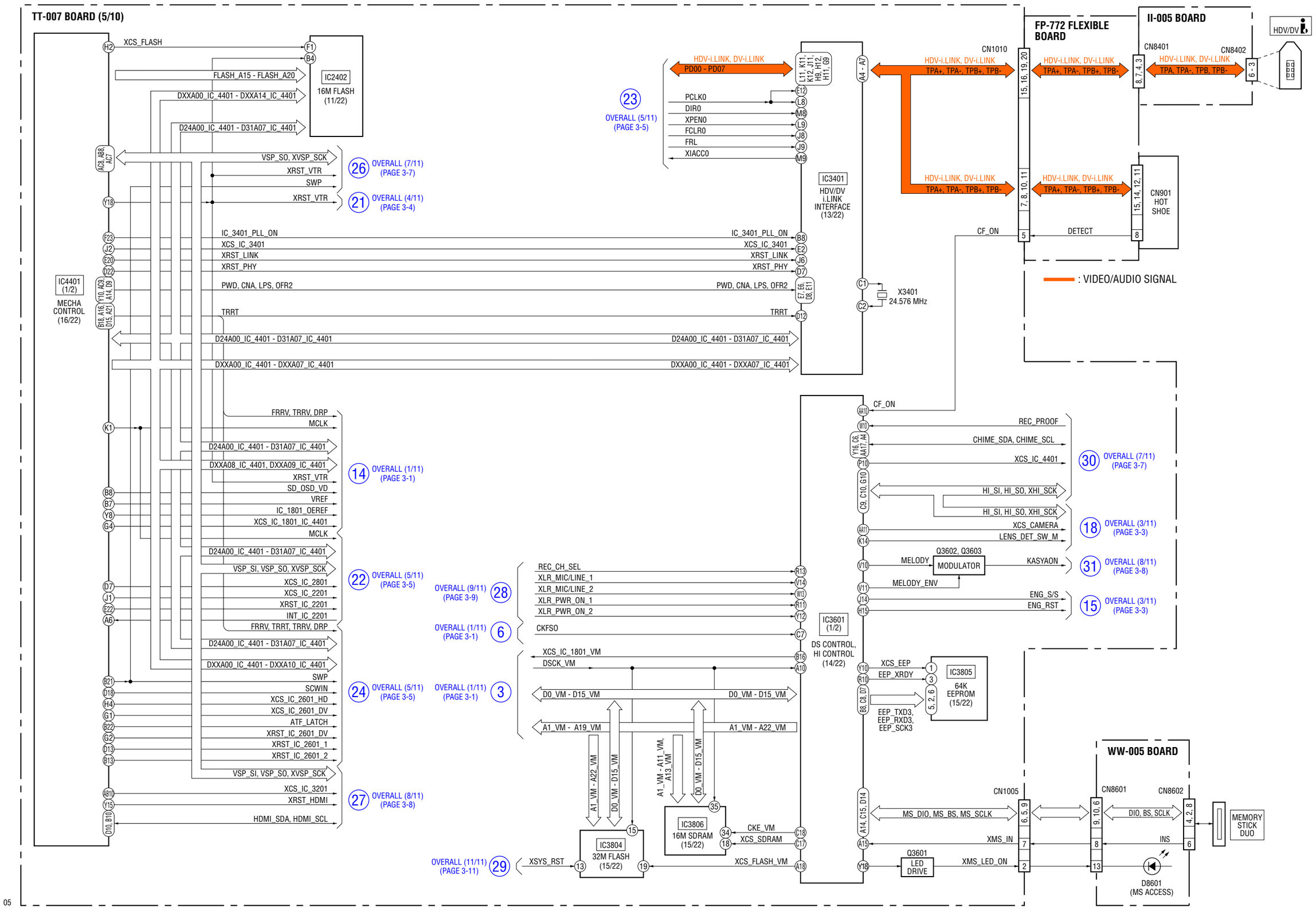
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



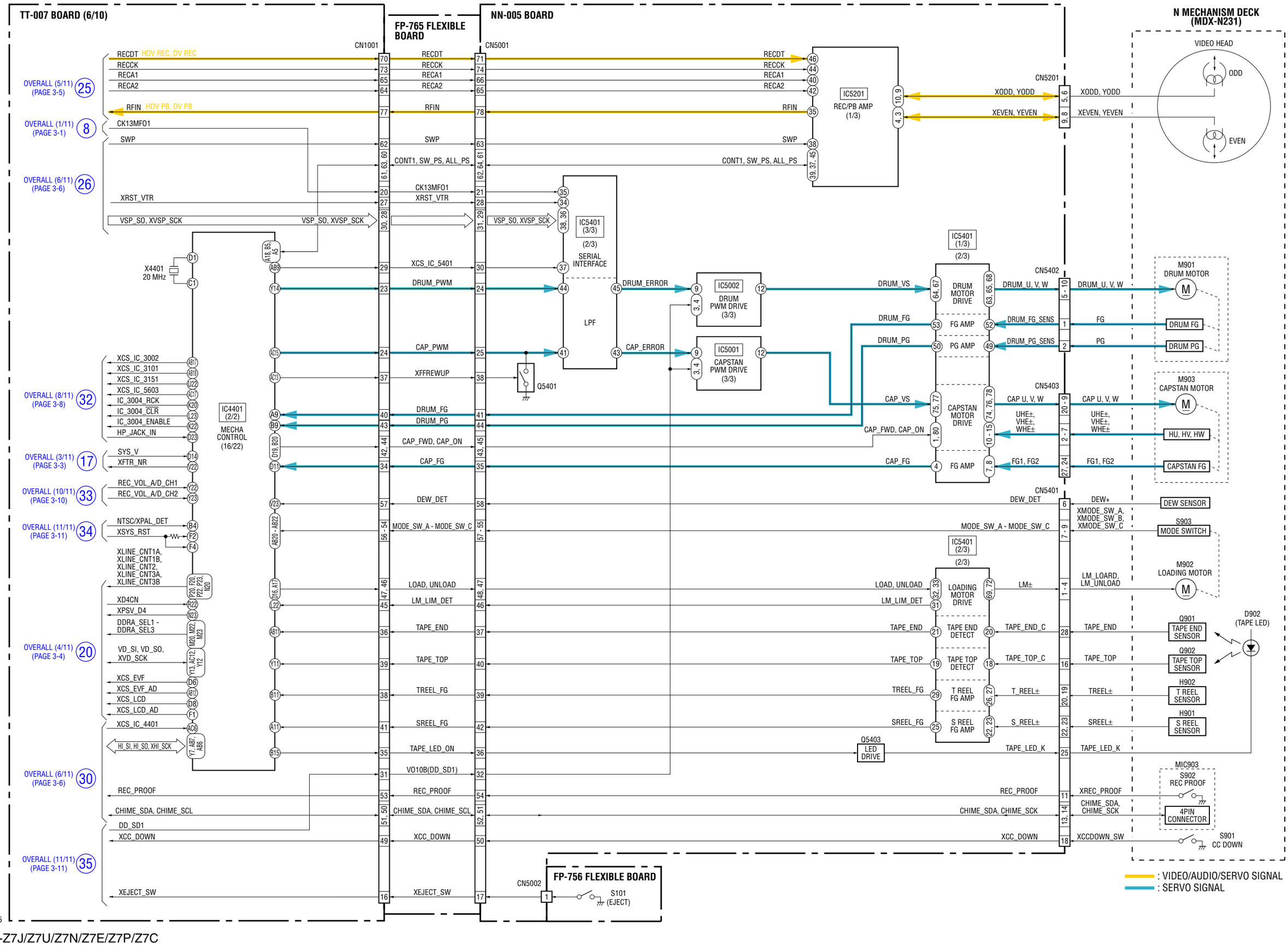
3-5. OVERALL BLOCK DIAGRAM (5/11) ( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



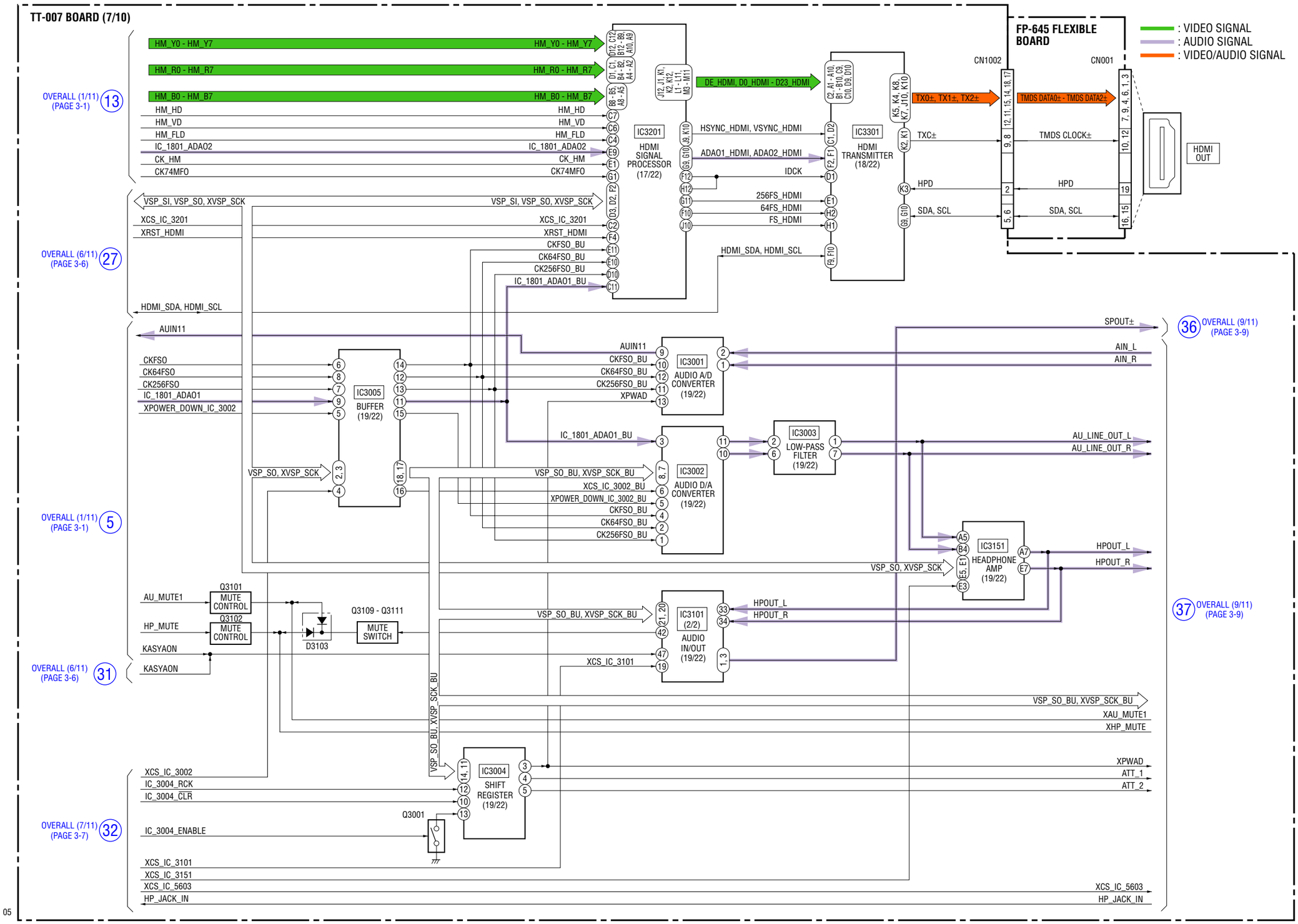
3-6. OVERALL BLOCK DIAGRAM (6/11) ( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



3-7. OVERALL BLOCK DIAGRAM (7/11) ( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.

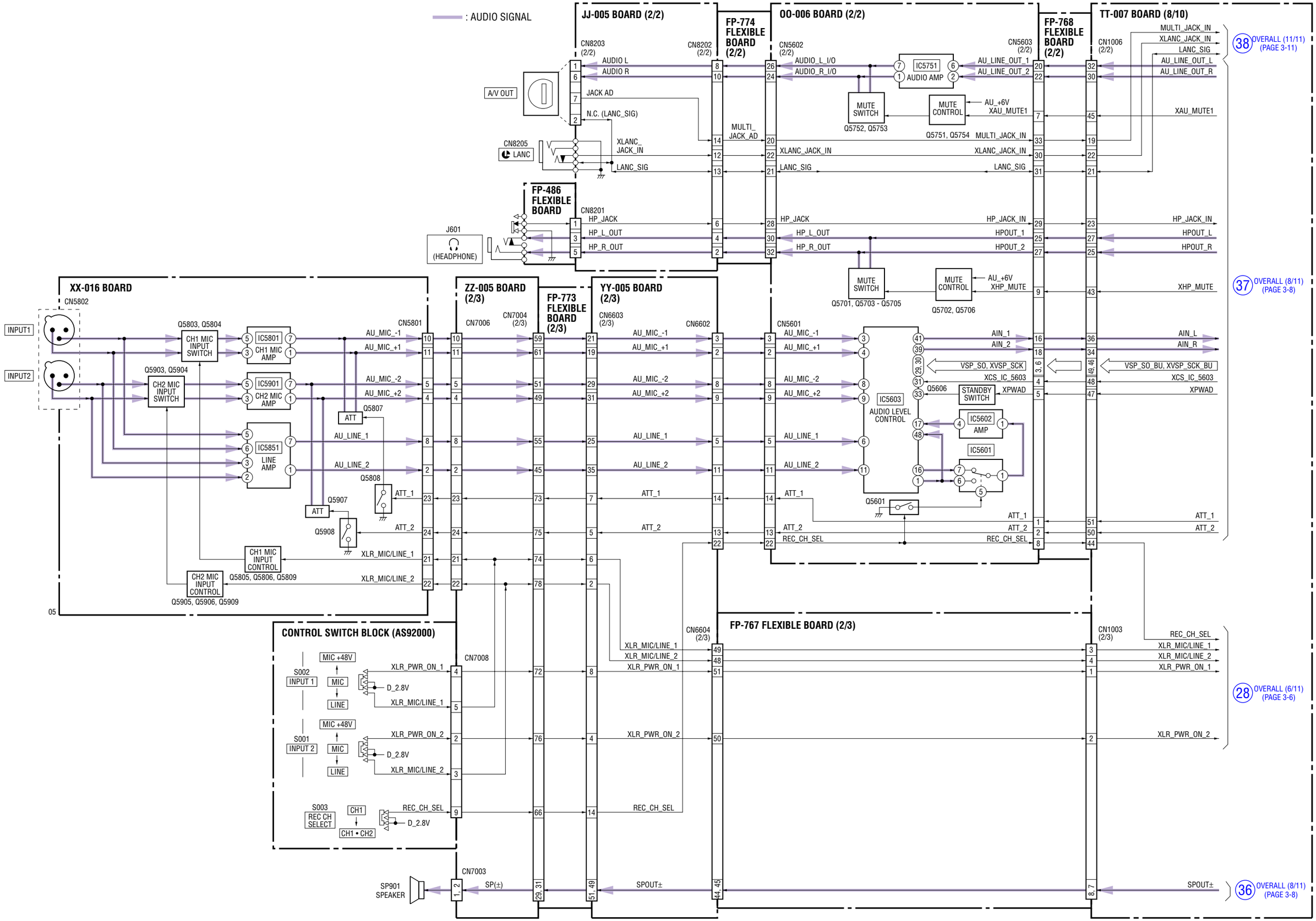


3-8. OVERALL BLOCK DIAGRAM (8/11) ( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



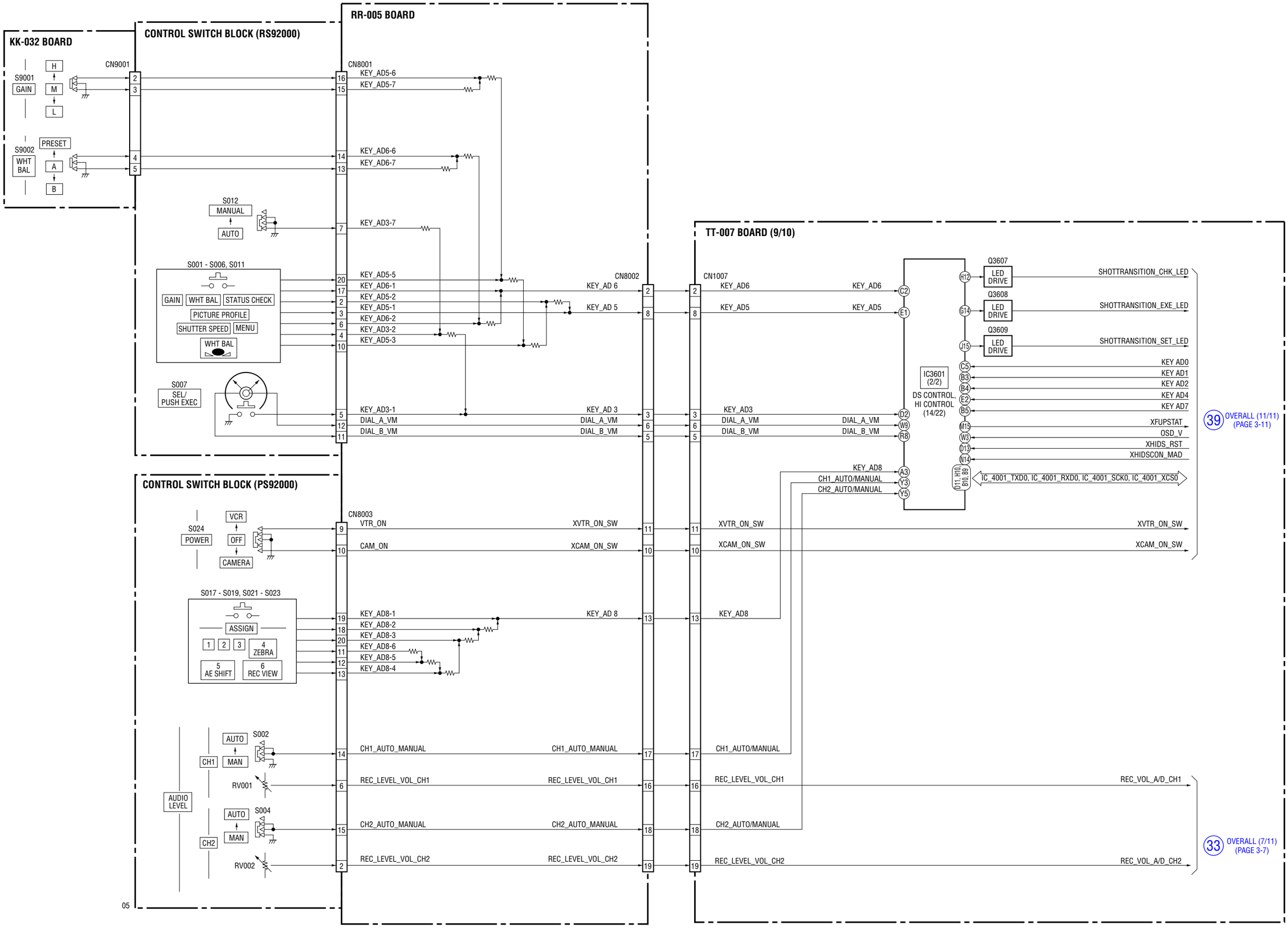
3-9. OVERALL BLOCK DIAGRAM (9/11)

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



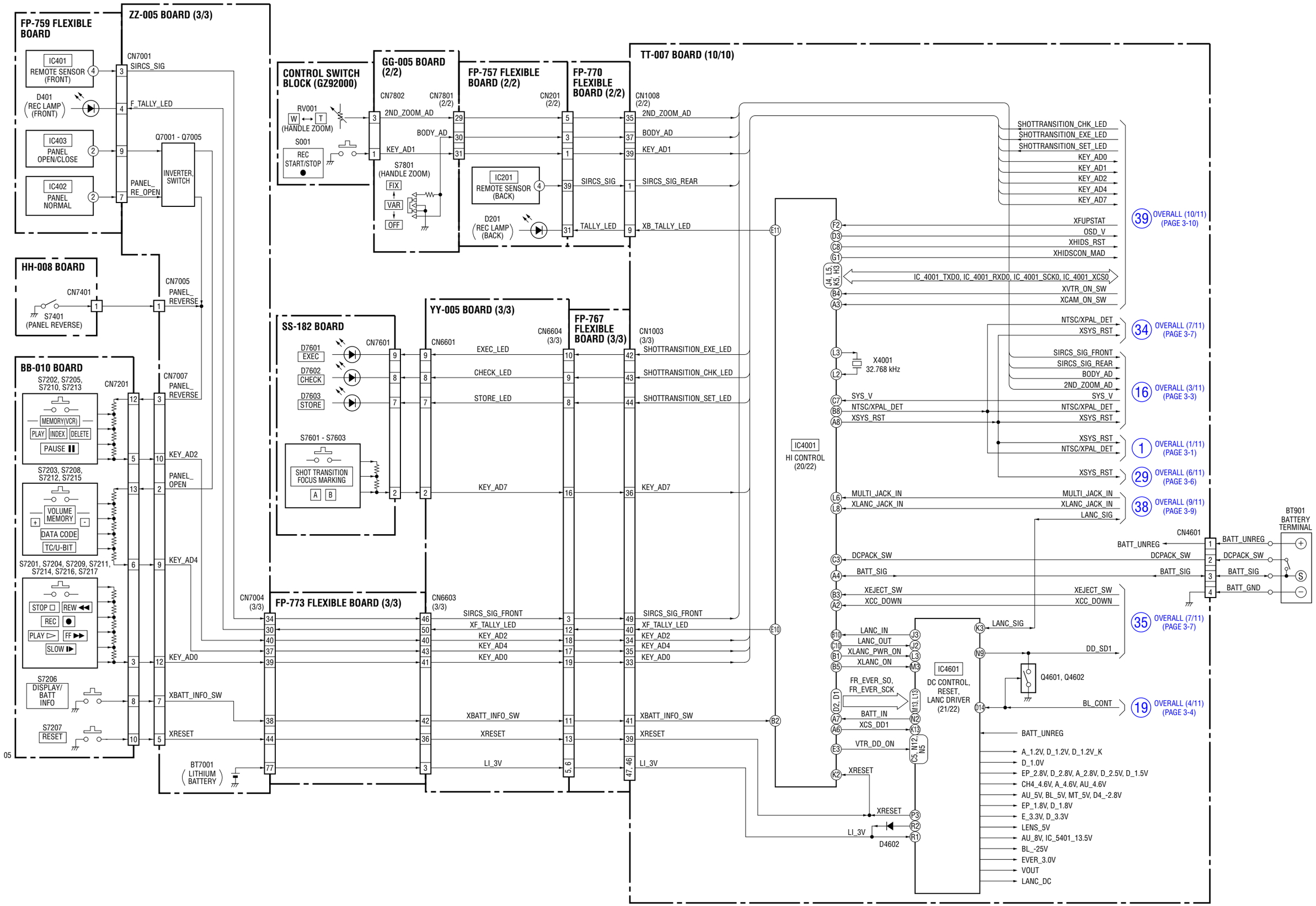
3-10. OVERALL BLOCK DIAGRAM (10/11)

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



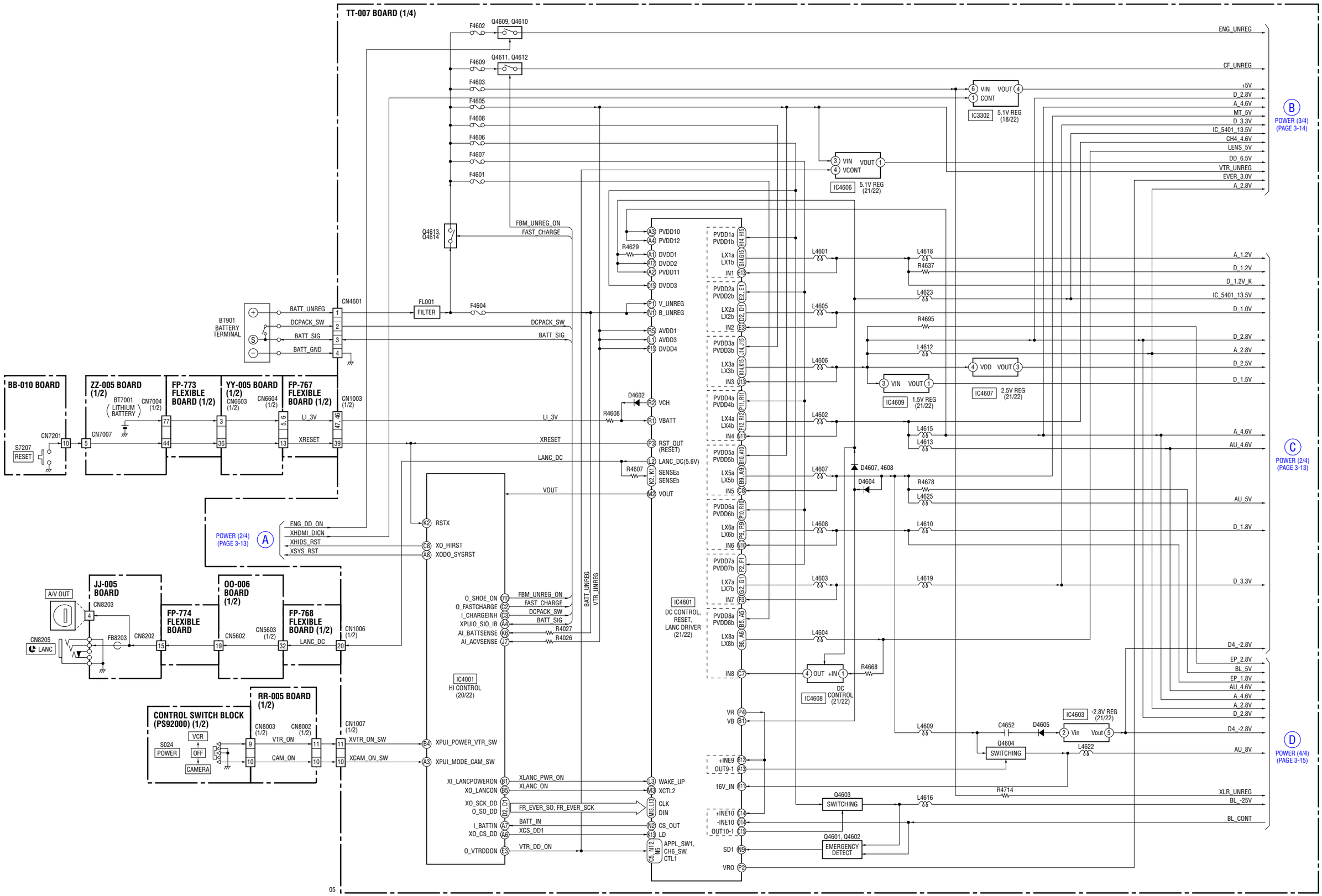
3-11. OVERALL BLOCK DIAGRAM (11/11)

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



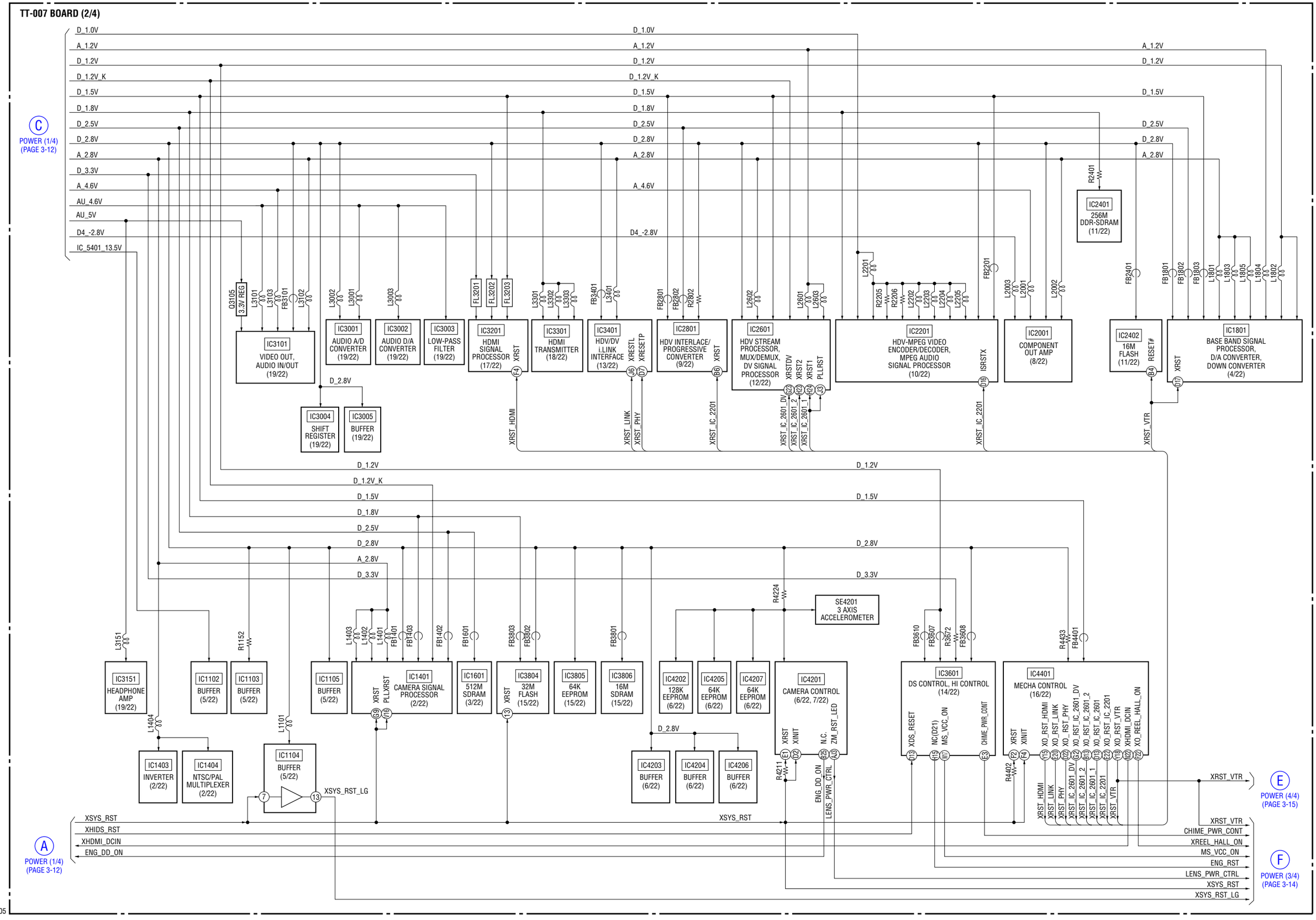
3-12. POWER BLOCK DIAGRAM (1/4)

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



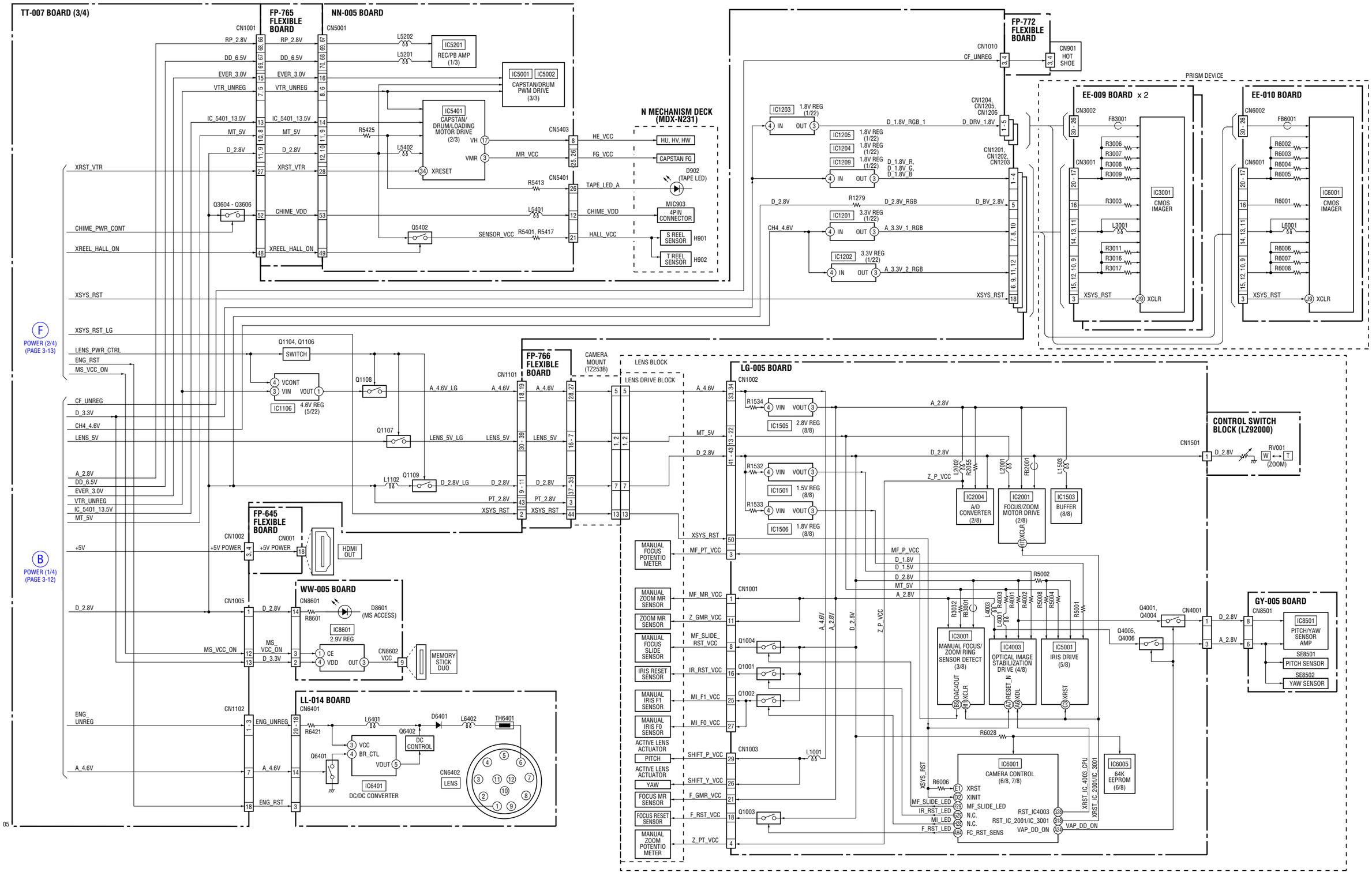
3-13. POWER BLOCK DIAGRAM (2/4)

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



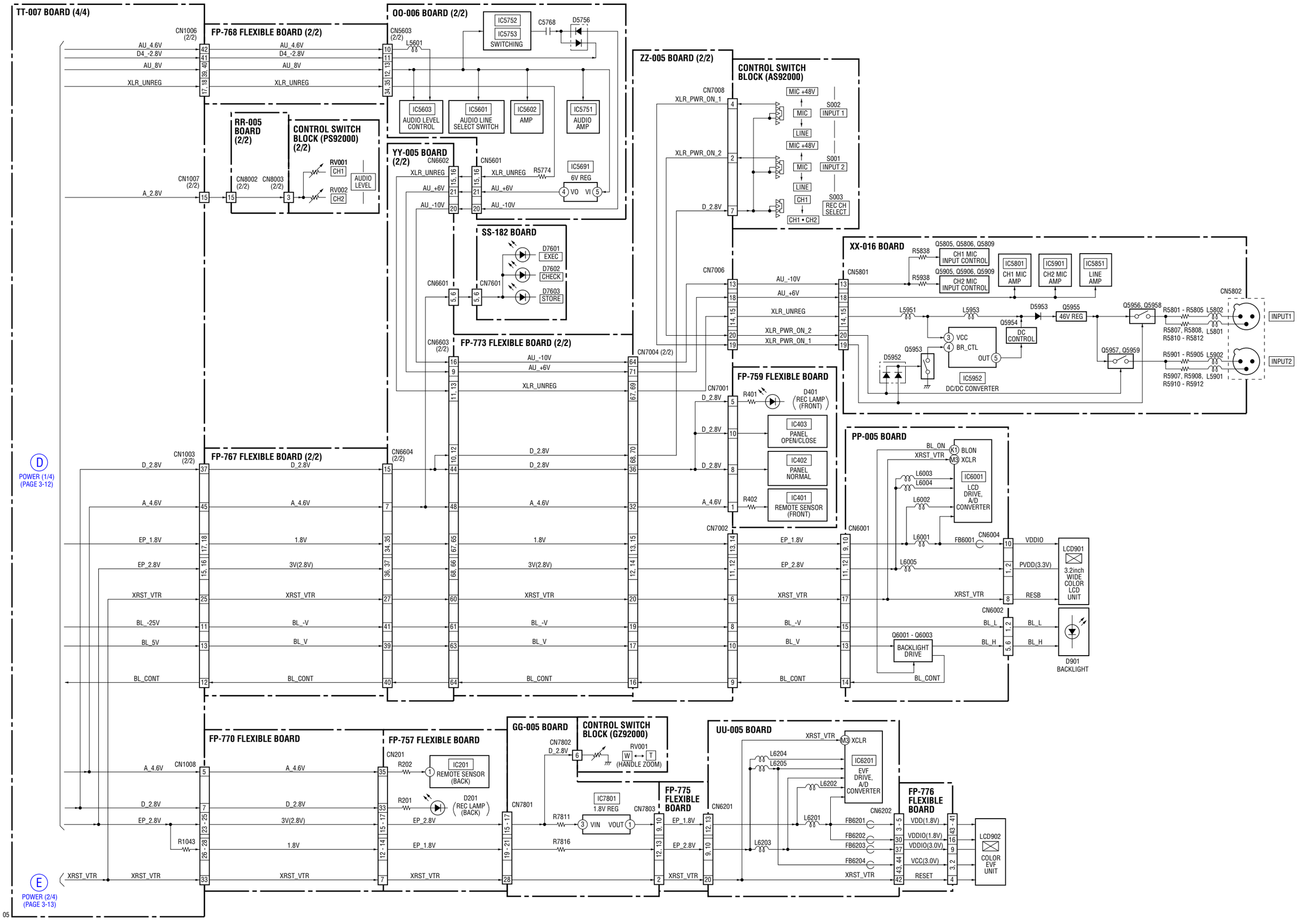
3-14. POWER BLOCK DIAGRAM (3/4)

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



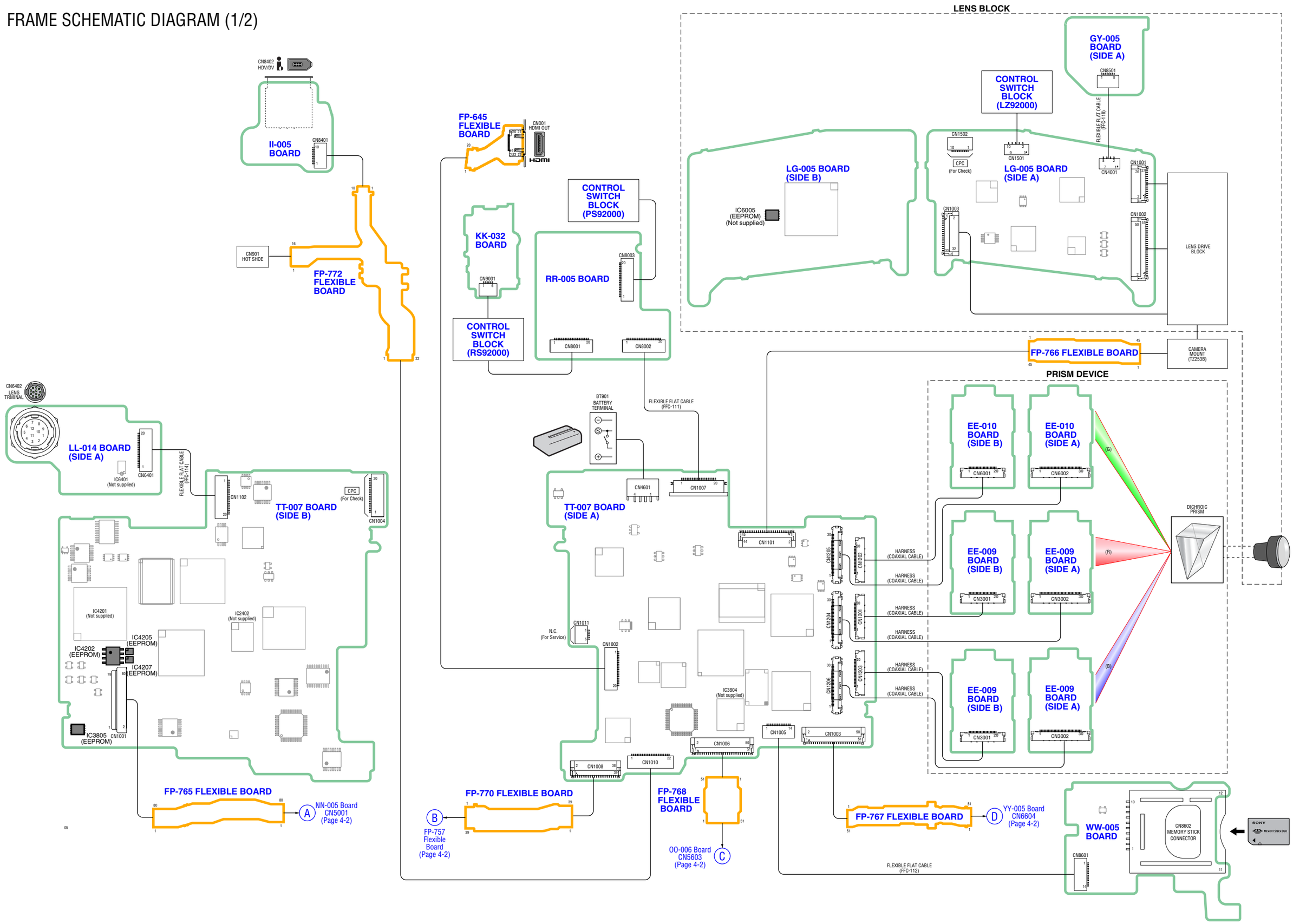
3-15. POWER BLOCK DIAGRAM (4/4)

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

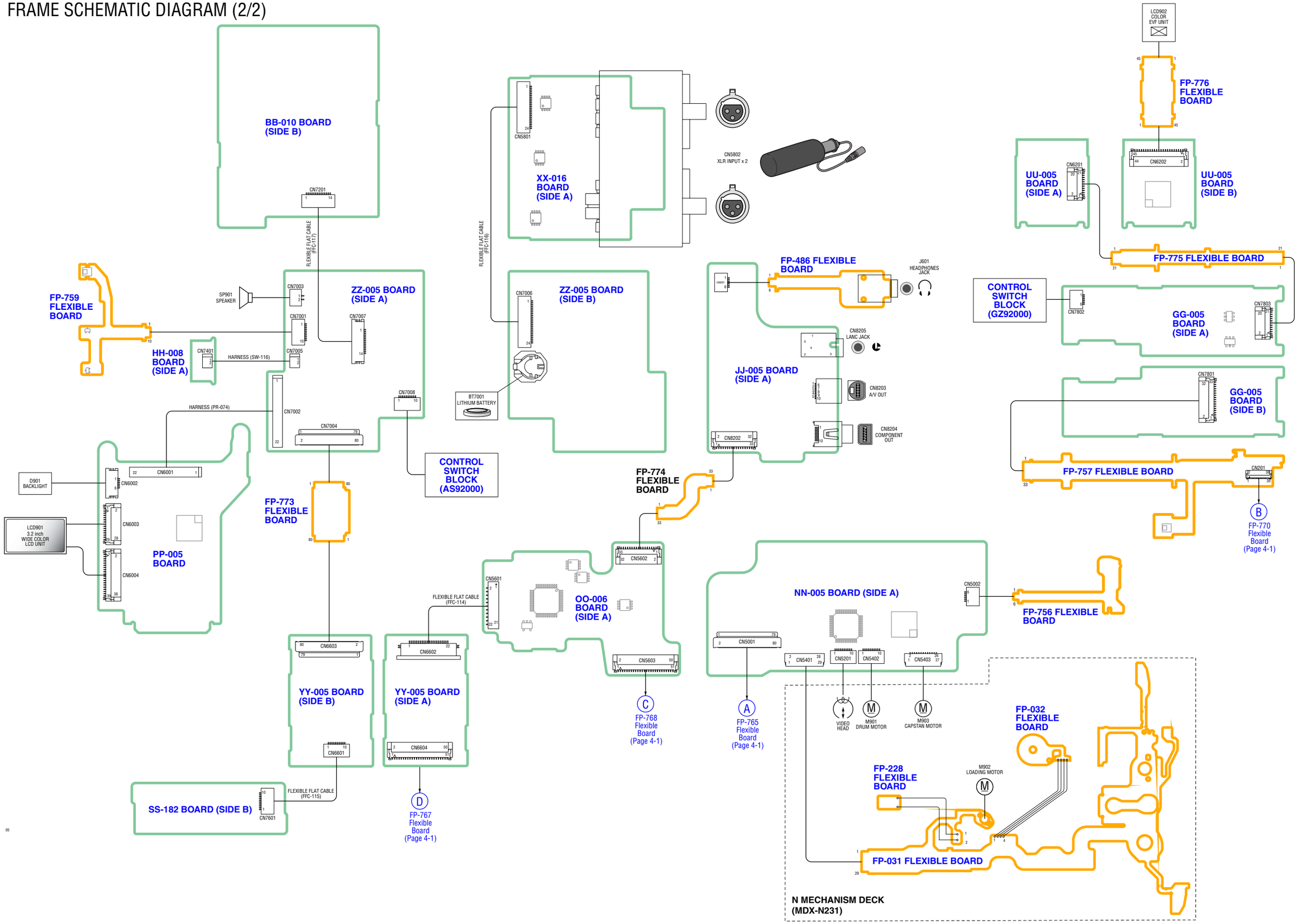


4-1. FRAME SCHEMATIC DIAGRAMS

FRAME SCHEMATIC DIAGRAM (1/2)



FRAME SCHEMATIC DIAGRAM (2/2)



4-2. SCHEMATIC DIAGRAMS (1/2)

Link

TO (2/2)

EE-009 BOARD (CMOS IMAGER)	TT-007 BOARD (17/22) (HDMI SIGNAL PROCESS)
EE-010 BOARD (CMOS IMAGER)	TT-007 BOARD (18/22) (HDMI OUT)
TT-007 BOARD (1/22) (REGULATOR)	TT-007 BOARD (19/22) (VIDE OUT, AUDIO IN/OUT)
TT-007 BOARD (2/22) (CAMERA SIGNAL PROCESS)	TT-007 BOARD (20/22) (HI CONTROL)
TT-007 BOARD (3/22) (SDRAM)	TT-007 BOARD (21/22) (DC/DC CONVERTER)
TT-007 BOARD (4/22) (BASE BAND SIGNAL PROCESS)	TT-007 BOARD (22/22) (CONNECTOR)
TT-007 BOARD (5/22) (LENS-ENG LENS CONNECTION)	LG-005 BOARD (1/8) (LENS CONNECTOR)
TT-007 BOARD (6/22) (CAMERA CONTROL 1)	LG-005 BOARD (2/8) (LENS DRIVE)
TT-007 BOARD (7/22) (CAMERA CONTROL 2)	LG-005 BOARD (3/8) (LENS DETECT)
TT-007 BOARD (8/22) (COMPONENT OUT AMP)	LG-005 BOARD (4/8) (OIS DRIVE)
TT-007 BOARD (9/22) (HDV INTERLACE/ PROGRESSIVE CONVERTER)	LG-005 BOARD (5/8) (IRIS DRIVE)
TT-007 BOARD (10/22) (HDV-MPEG VIDEO ENCODE/DECODE)	LG-005 BOARD (6/8) (CAMERA CONTROL 1)
TT-007 BOARD (11/22) (SDRAM, FLASH)	LG-005 BOARD (7/8) (CAMERA CONTROL 2)
TT-007 BOARD (12/22) (HDV STREAM PROCESS)	LG-005 BOARD (8/8) (REGULATOR)
TT-007 BOARD (13/22) (HDV/DV i.LINK INTERFACE)	GY-005 BOARD (PITCH/YAW SENSOR)
TT-007 BOARD (14/22) (DS CONTROL, HI CONTROL)	LL-014 BOARD (LENS CONNECTOR, DC/DC CONVERTER)
TT-007 BOARD (15/22) (SDRAM, FLASH, EEPROM)	FP-766 FLEXIBLE BOARD (TT-LENS CONNECTION)
TT-007 BOARD (16/22) (MECHA CONTROL)	FP-768 FLEXIBLE BOARD (TT-OO CONNECTION)

COMMON NOTE FOR SCHEMATIC DIAGRAMS

4-2. SCHEMATIC DIAGRAMS (2/2)

TO (1/2)

OO-006 BOARD (AUDIO LEVEL CONTROL)	NN-005 BOARD (2/3) (SERVO)
JJ-005 BOARD (LANC, A/V, COMPONENT CONNECTOR)	NN-005 BOARD (3/3) (CAPSTAN/DRUM MOTOR DRIVE)
FP-767 FLEXIBLE BOARD (TT-YY CONNECTION)	FP-756 FLEXIBLE BOARD (EJECT SWITCH)
FP-770 FLEXIBLE BOARD (TT-FP757 CONNECTION)	FP-486 FLEXIBLE BOARD (HEADPHONES JACK)
YY-005 BOARD (RELAY CONNECTOR)	FP-645 FLEXIBLE BOARD (HDMI CONNECTOR)
FP-773 FLEXIBLE BOARD (YY-ZZ CONNECTION)	XX-016 BOARD (XLR INPUT)
ZZ-005 BOARD (PANEL RELAY CONNECTOR)	CONTROL SWITCH BLOCK (LZ92000)
PP-005 BOARD (LCD DRIVE, A/D CONVERTER)	CONTROL SWITCH BLOCK (AS92000)
FP-757 FLEXIBLE BOARD (REMOTE SENSOR (BACK))	KK-032 BOARD (GAIN, WHITE BALANCE SELECT)
GG-005 BOARD (RELAY CONNECTOR)	HH-008 BOARD (PANEL REVERSE DETECT)
UU-005 BOARD (EVF DRIVE, A/D CONVERTER)	CONTROL SWITCH BLOCK (RS92000)
FP-775 FLEXIBLE BOARD (GG-UU CONNECTION)	CONTROL SWITCH BLOCK (PS92000)
II-005 BOARD (HDV/DV CONNECTOR)	RR-005 BOARD (TT-CONTROL SWITCH CONNECTION)
FP-776 FLEXIBLE BOARD (UU-EVF CONNECTION)	FP-759 FLEXIBLE BOARD (REMOTE SENSOR (FRONT), PANEL DETECT)
FP-772 FLEXIBLE BOARD (TT-II CONNECTION)	BB-010 BOARD (CONTROL SWITCH)
WW-005 BOARD (MS CONNECTOR)	CONTROL SWITCH BLOCK (GZ92000)
FP-765 FLEXIBLE BOARD (TT-NN CONNECTION)	SS-182 BOARD (SHOT TRANSITION/FOCUS MARKING)
NN-005 BOARD (1/3) (REC/PB AMP)	FP-031, FP-032, FP-228 FLEXIBLE BOARD (MECHANISM BLOCK)

COMMON NOTE FOR SCHEMATIC DIAGRAMS

4-2. SCHEMATIC DIAGRAMS (ENGLISH)

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. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- 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 22U TA A — Kinds of capacitor / Case size
  L452 10UH 2520 — External dimensions (mm)
- 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
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B– Line
- : IN/OUT direction of (+,–) B LINE.
- : adjustment for repair.
- : not use circuit

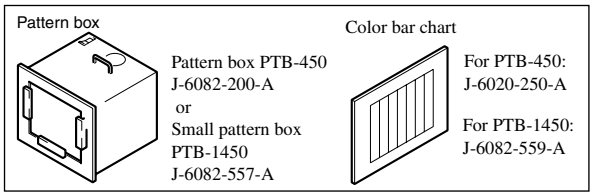
(Measuring conditions voltage and waveform)

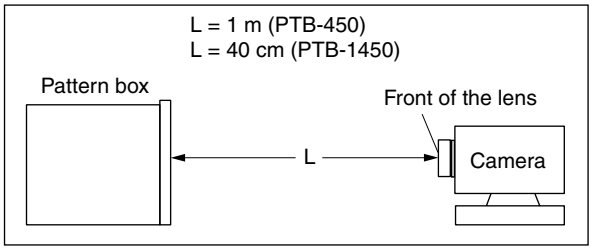
- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

Precautions for Replacement of Imager

- If the imager has been replaced, carry out all the adjustments for the camera section.
- As the 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.

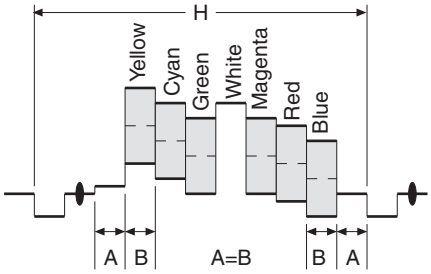


Fig. a (Video output terminal output waveform)

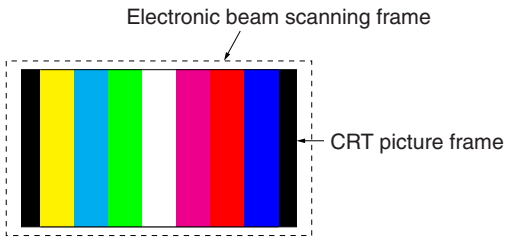


Fig.b (Picture on monitor TV)

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

The components identified by mark ⚠ 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 spécifie.

(JAPANESE)

回路図共通ノート
（他に必要なノートは各ブロックに記載してあります）
【回路図ノート】
・ケミコン，タンタルを除くコンデンサで，耐圧50V以下のものはその耐圧を省略。単位はすべてμF（pはpF）。
・チップ抵抗で指示のないものは，1／10W以下。
kΩ＝1000Ω，MΩ＝1000kΩ
・チップ部品交換時の注意
取り外した部品は再使用せず，未使用の部品をご使用ください。
タンタルコンデンサのマイナス側は熱に弱いため注意してください。
・チップ部品には下記のように表示したものがあります。

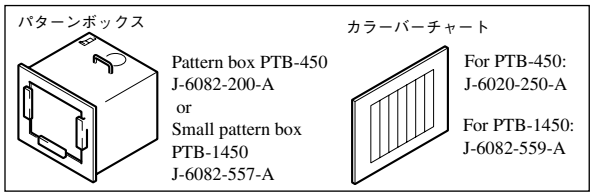
例	C 541	L 452
	22U	10UH
	TA A	2520
	↑ ↑	↑
	種類 ケースサイズ	外形寸法（mm）

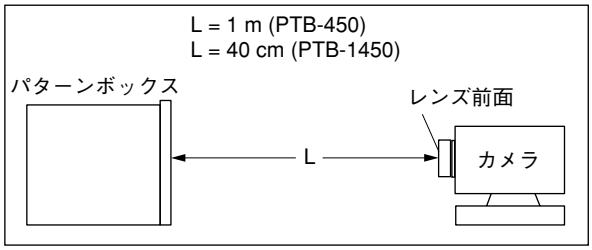
・抵抗，コンデンサ，ICなど定数にXXがあるものは，使用していない事を示しています。このため，使用していない回路が記載されている事があります。
・★印のある部品は，機種などにより異なりますので機能別マウント一覧表を参照してください。
・可変抵抗と半固定抵抗で，B特性の表示を省略。
・信号名表記について，下記のような場合があります。
XEDIT → $\overline{\text{EDIT}}$　　PB/XREC → PB/$\overline{\text{REC}}$
・  は不燃性抵抗。
・  はヒューズ抵抗。
・  はパネル表示名称。
・はB＋ライン。
・はB－ライン。
・  はBライン（＋，－）の入出力方向を示す。
・  は調整名称。
・  は未使用回路。

【電圧・波形測定条件ノート】
・電圧値及び信号波形はパターンボックスのカラーバーチャートを被写体としたときの測定点対アース間の参考値。
（デジタルマルチメータ；入力インピーダンス　DC10MΩ使用）
・使用テスタの入力インピーダンスにより電圧値が多少異なります。

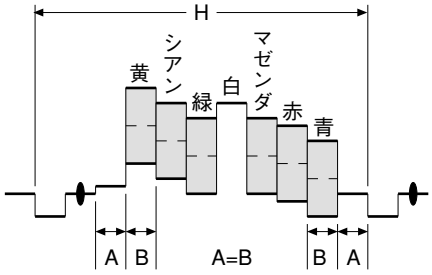
イメージャ交換時の注意
・イメージャを交換した場合は，カメラ部の全調整を行ってください。
・イメージャは構造上，静電気により破壊される恐れがあるため，MOS ICと同様に注意して取り扱ってください。
また，受光部にはゴミの付着，および強い光がはいることのないように注意してください。

1. 接続図

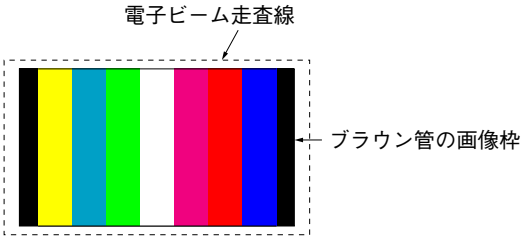




2. 図a及び図bの波形が得られるように画枠調整して下さい。



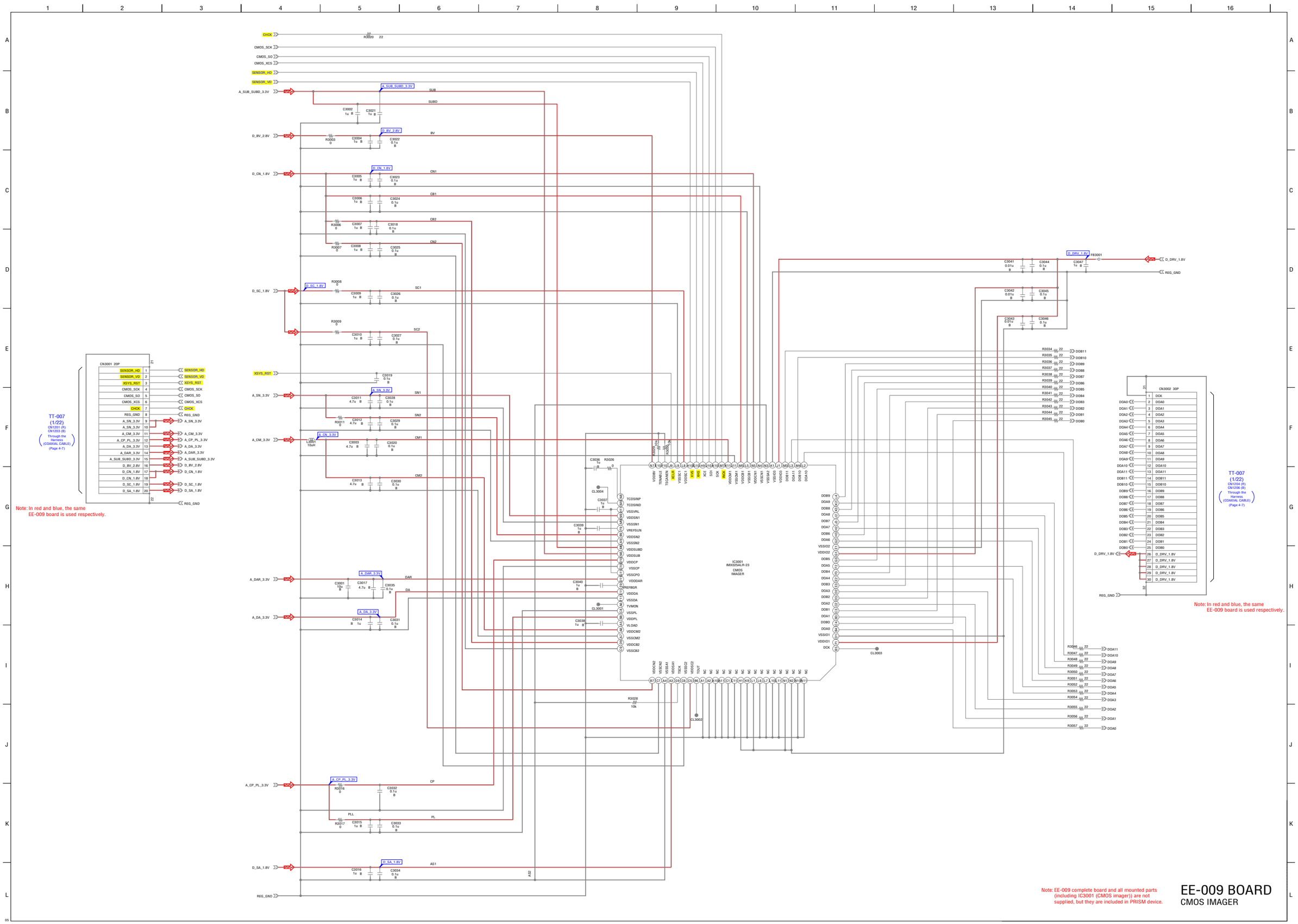
図a（映像入出力端子出力波形）



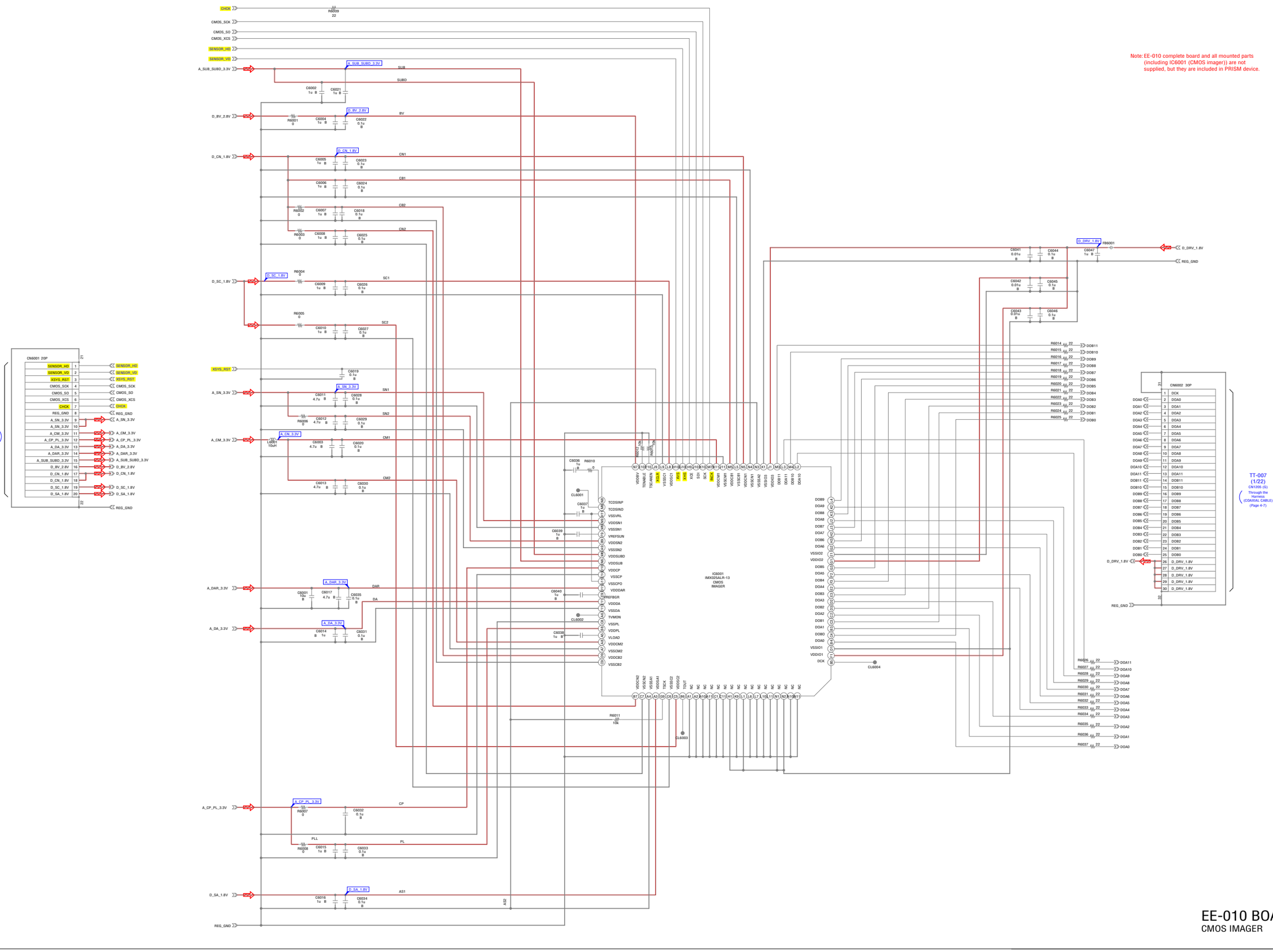
図b（テレビモニタの映像）

⚠印の部品，または⚠印付きの点線で囲まれた部品は，安全性を維持するために重要な部品です。
従って交換時は，必ず指定の部品を使用して下さい。

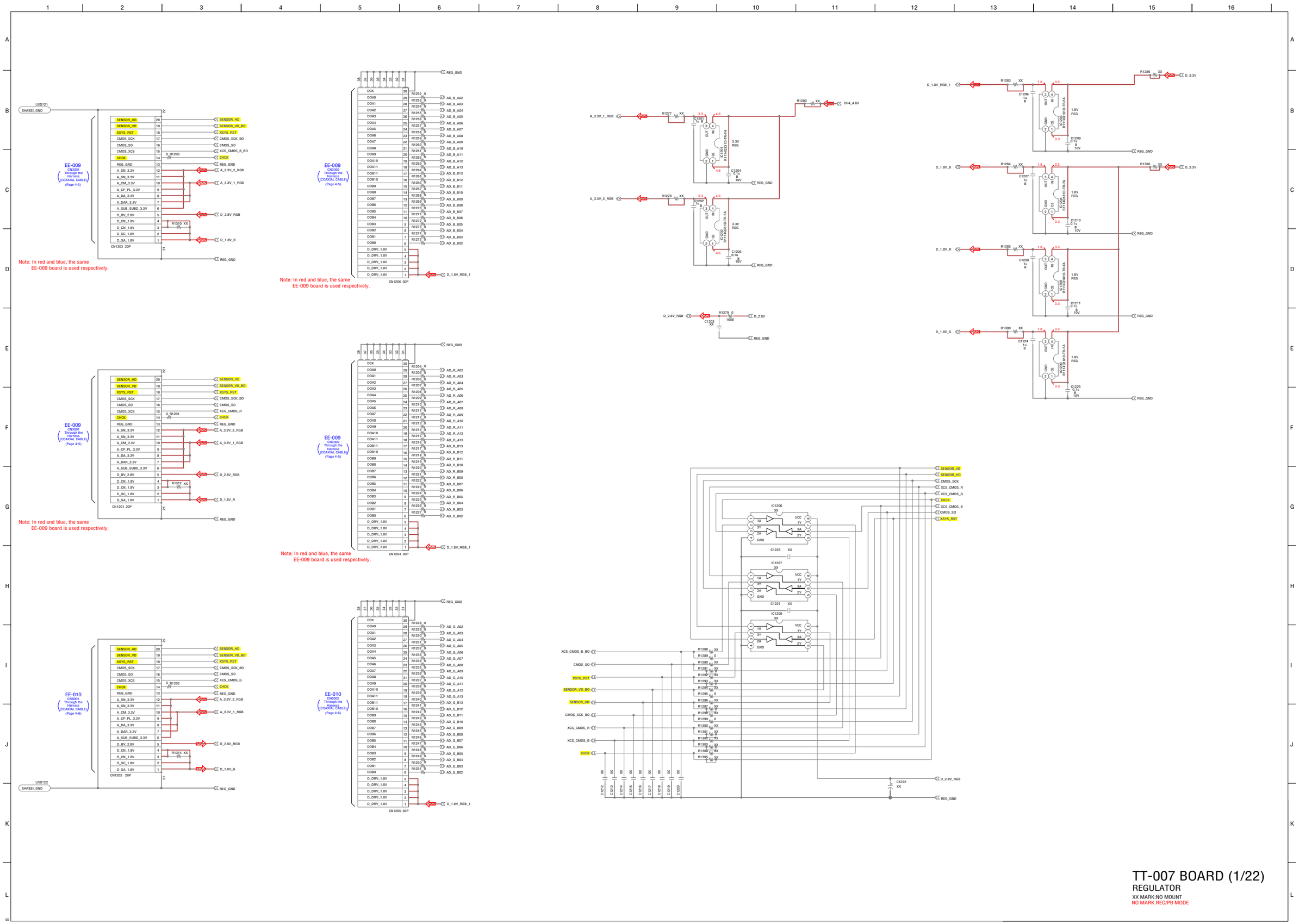
お願い
図面番号で部品を指定するときは基板名又はブロックを併せて指定して下さい。


CN3001 20P
SENSOR_HD
SENSOR_VD
XSYS_RST
CMOS_SCK
CMOS_SO
CMOS_XCS
CHDK
REG_GND
A_SN_3.3V
A_CM_3.3V
A_CP_PL_3.3V
A_DA_3.3V
A_DAR_3.3V
A_SUB_SUBD_3.3V
D_BV_2.8V
D_CN_1.8V
D_SC_1.8V
D_SA_1.8V
TT-007 (1/22) CN1201 (R) CN1203 (B) Through the Harness (COAXIAL CABLE) (Page 4-7)
Note: In red and blue, the same EE-009 board is used respectively.
IC3001 IMX025ALR-23 CMOS IMAGER
CN3002 30P
TT-007 (1/22) CN1204 (R) CN1206 (B) Through the Harness (COAXIAL CABLE) (Page 4-7)
Note: In red and blue, the same EE-009 board is used respectively.
Note: EE-009 complete board and all mounted parts (including IC3001 (CMOS imager)) are not supplied, but they are included in PRISM device.
EE-009 BOARD
CMOS IMAGER

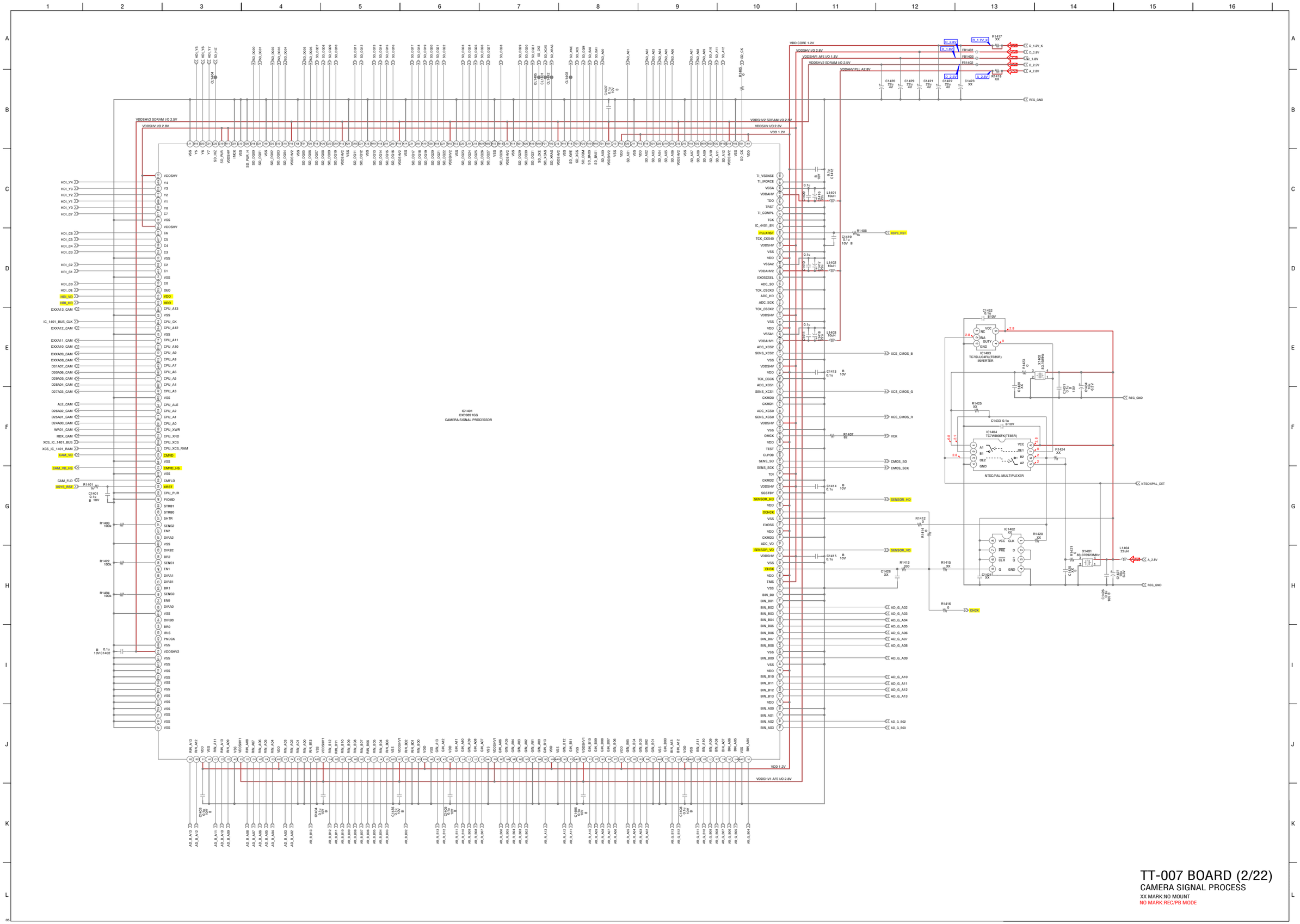
Note: EE-010 complete board and all mounted parts (including IC6001 (CMOS imager)) are not supplied, but they are included in PRISM device.

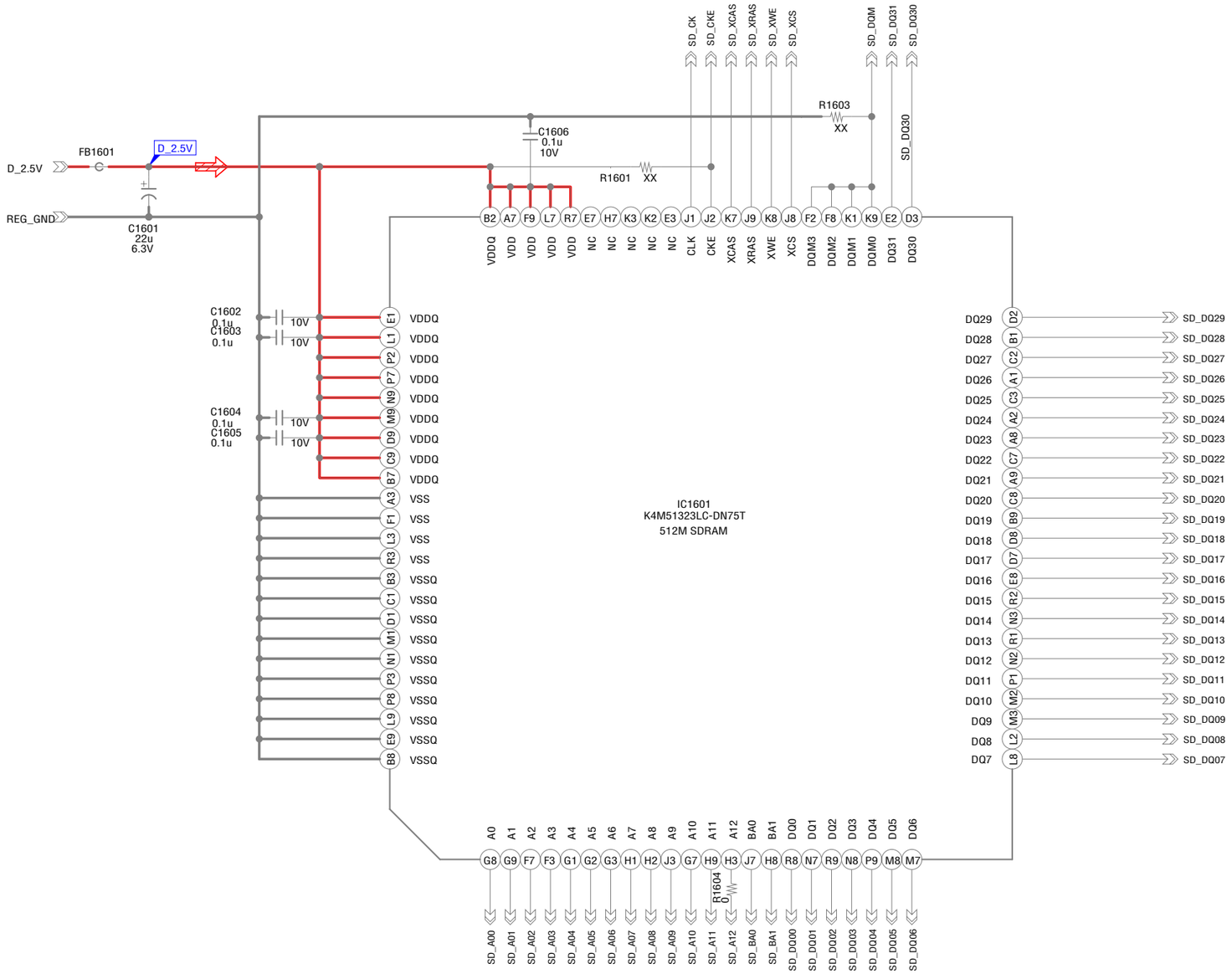


EE-010 BOARD
CMOS IMAGER



TT-007 BOARD (1/22)
REGULATOR
XX MARK:NO MOUNT
NO MARK:REC/PB MODE

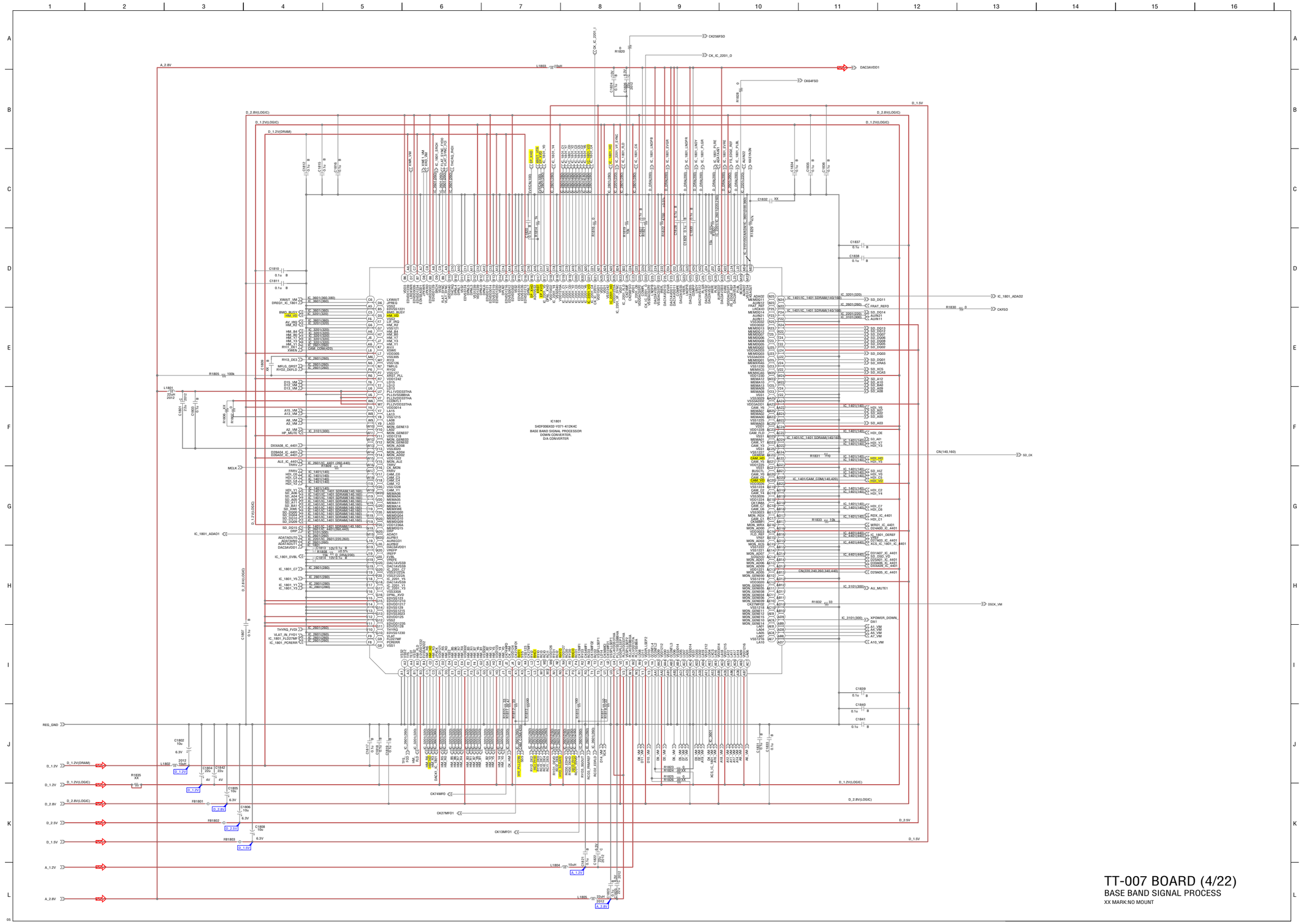

IC1401
CXD98916GG
CAMERA SIGNAL PROCESSOR
IC1403
TC7SLU04FU(TE85R)
INVERTER
IC1404
TC7WB66FK(TE85R)
NTSC/PAL MULTIPLEXER
IC1402
VDD CORE 1.2V
VDDSHV I/O 2.8V
VDDSHV1 AFE I/O 1.8V
VDDSHV2 SDRAM I/O 2.5V
VDDAHV PLL A2.8V
REG_GND
NTSC/XPAL_DET
XSYS_RST
CHCK
VCK
CMOS_SD
CMOS_SCK
SENSOR_HD
SENSOR_VD
XCS_CMOS_B
XCS_CMOS_G
XCS_CMOS_R
CAM_VD
CAM_VD_HS
CAM_FLD
XRST
CPU_PUR
CPU_XWR
CPU_XRD
CPU_XCS
CPU_XCS_RAM
CMVD
CMVD_HS
CMFLD
PIOMD
STRB1
STRB0
SHTR
SENS2
ENZ
DIRA2
DIRB2
SENS1
EN1
DIRA1
DIRB1
SENS0
EN0
DIRA0
DIRB0
PNDCK
VDDSHV2
CPU_A13
CPU_A12
CPU_A11
CPU_A10
CPU_A9
CPU_A8
CPU_A7
CPU_A6
CPU_A5
CPU_A4
CPU_A3
CPU_A2
CPU_A1
CPU_A0
CPU_ALE
CPU_CK
C7
C6
C5
C4
C3
C2
C1
C0
OEO
VDO
HDO
HDI_Y4
HDI_Y3
HDI_Y2
HDI_Y1
HDI_Y0
HDI_C7
HDI_C6
HDI_C5
HDI_C4
HDI_C3
HDI_C2
HDI_C1
HDI_C0
HDI_OE
HDI_VS
HDI_HS
DXXA13_CAM
IC_1401_BUS_CLK
DXXA12_CAM
DXXA11_CAM
DXXA10_CAM
DXXA09_CAM
DXXA08_CAM
D31A07_CAM
D30A06_CAM
D29A05_CAM
D28A04_CAM
D27A03_CAM
ALE_CAM
D26A02_CAM
D25A01_CAM
D24A00_CAM
WR01_CAM
RDX_CAM
XCS_IC_1401_BUS
XCS_IC_1401_RAM
TI_VSENSE
TI_IFORCE
TDO
TRST
TI_COMPL
TCK
IC_4401_EN
PLLXRST
TCK_CKS40
TCK_CSCK3
TCK_CSCK2
TCK_CSCK
TCK_CSCK1
TEST
CLPOB
SENS_SO
SENS_SCK
TDI
SGSTBY
DCHCK
EXOSC
CKMD3
ADC_VD
ADC_SO
ADC_HD
ADC_SCK
ADC_XCS2
SENS_XCS2
ADC_XCS0
SENS_XCS0
ADC_XCS1
SENS_XCS1
CKMD0
CKMD1
CKMD2
TMS
BIN_B0
BIN_B01
BIN_B02
BIN_B03
BIN_B04
BIN_B05
BIN_B06
BIN_B07
BIN_B08
BIN_B09
BIN_B10
BIN_B11
BIN_B12
BIN_B13
BIN_A00
BIN_A01
BIN_A02
BIN_A03
AD_G_A02
AD_G_A03
AD_G_A04
AD_G_A05
AD_G_A06
AD_G_A07
AD_G_A08
AD_G_A09
AD_G_A10
AD_G_A11
AD_G_A12
AD_G_A13
AD_G_B02
AD_G_B03
L1401 10uH
L1402 10uH
L1403 10uH
L1404 22uH
X1401 83.376923MHz
X1402 8.192MHz
R1401 1k
R1402 1k
R1403 100k
R1404 100k
R1405 0
R1406 0
R1407 82
R1408 1k
R1412 0
R1413 330
R1414 0
R1415 XX
R1416 0
R1417 XX
R1418 XX
R1420 XX
R1421 XX
R1422 XX
R1423 XX
R1424 XX
R1425 XX
C1401 0.1u B 10V
C1402 0.1u B 10V
C1403 0.1u B 10V
C1404 0.1u B 10V
C1405 0.1u B 10V
C1406 0.1u B 10V
C1407 0.1u B 10V
C1408 0.1u B 10V
C1409 0.1u B 10V
C1410 0.1u B 10V
C1411 0.1u B 10V
C1412 0.1u B 10V
C1413 0.1u B 10V
C1414 0.1u B 10V
C1415 0.1u B 10V
C1416 0.1u B 10V
C1417 0.1u B 10V
C1418 0.1u B 10V
C1419 0.1u 10V B
C1420 22u 4V
C1421 22u 4V
C1422 22u 4V
C1423 XX
C1424 XX
C1425 XX
C1426 0.1u 10V B
C1427 0.1u 6.3V
C1428 XX
C1429 22u 4V
C1430 0.1u 10V B
C1431 0.1u 10V B
C1432 0.1u B 10V
C1433 0.1u B 10V
C1434 0.1u 10V B
C1435 0.1u 10V B
C1436 0.1u 10V B
C1437 0.1u 10V B
C1438 0.1u 10V B
C1439 0.1u 10V B
C1440 0.1u 10V B
C1441 0.1u 10V B
C1442 0.1u 10V B
C1443 0.1u 10V B

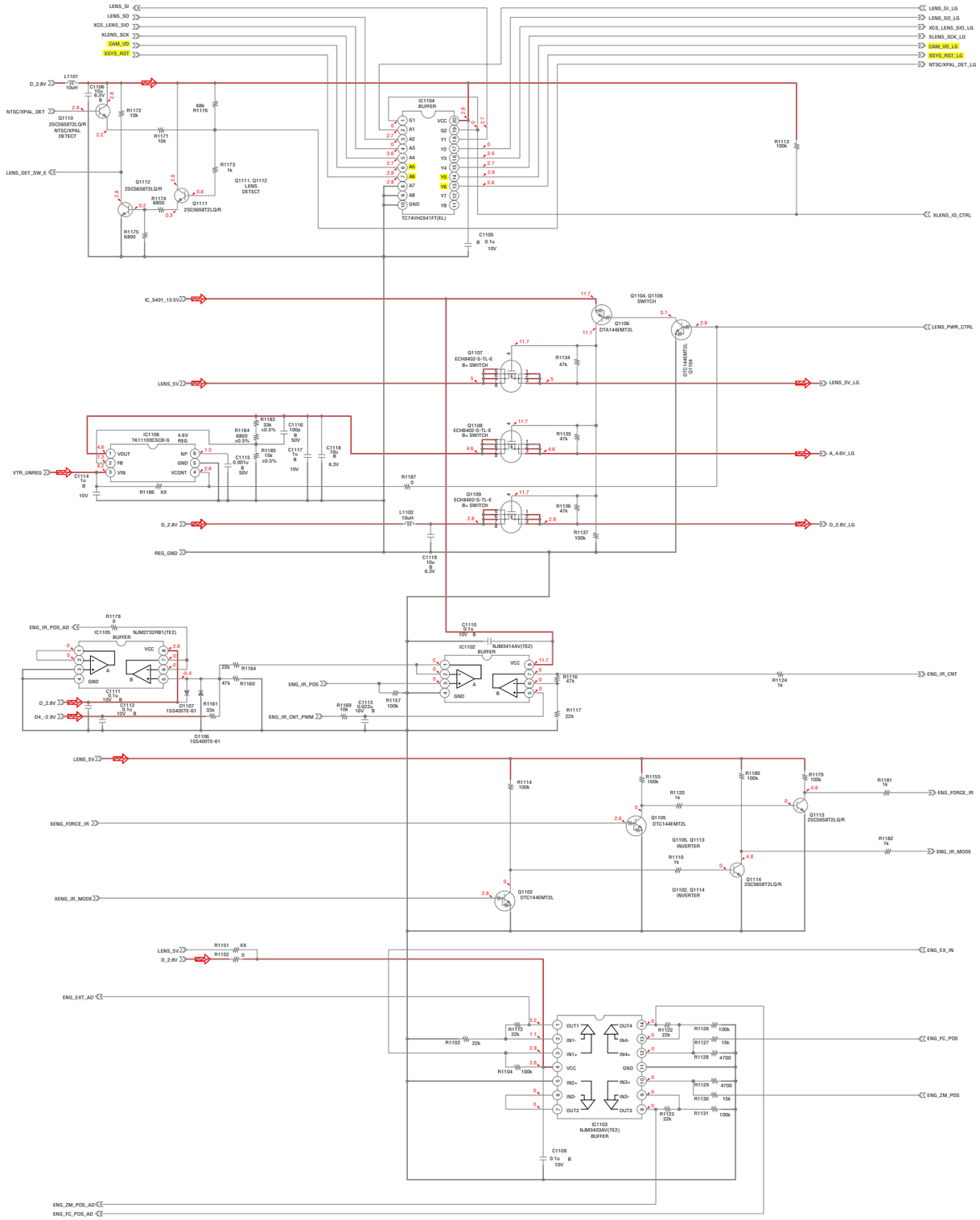


TT-007 BOARD (3/22)

SDRAM

XX MARK:NO MOUNT


IC1801
S4DF006X02-Y071-K12K4C
BASE BAND SIGNAL PROCESSOR
DOWN CONVERTER,
D/A CONVERTER
TT-007 BOARD (4/22)
BASE BAND SIGNAL PROCESS
XX MARK:NO MOUNT



TT-007 BOARD (5/22)

LENS-ENG LENS CONNECTION

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

Note: IC4201 is not supplied, but this is
included in TT-007 complete board.

IC4201 (1/2)
MB91F196BGL1-G-101-ERE1
CAMERA CONTROL

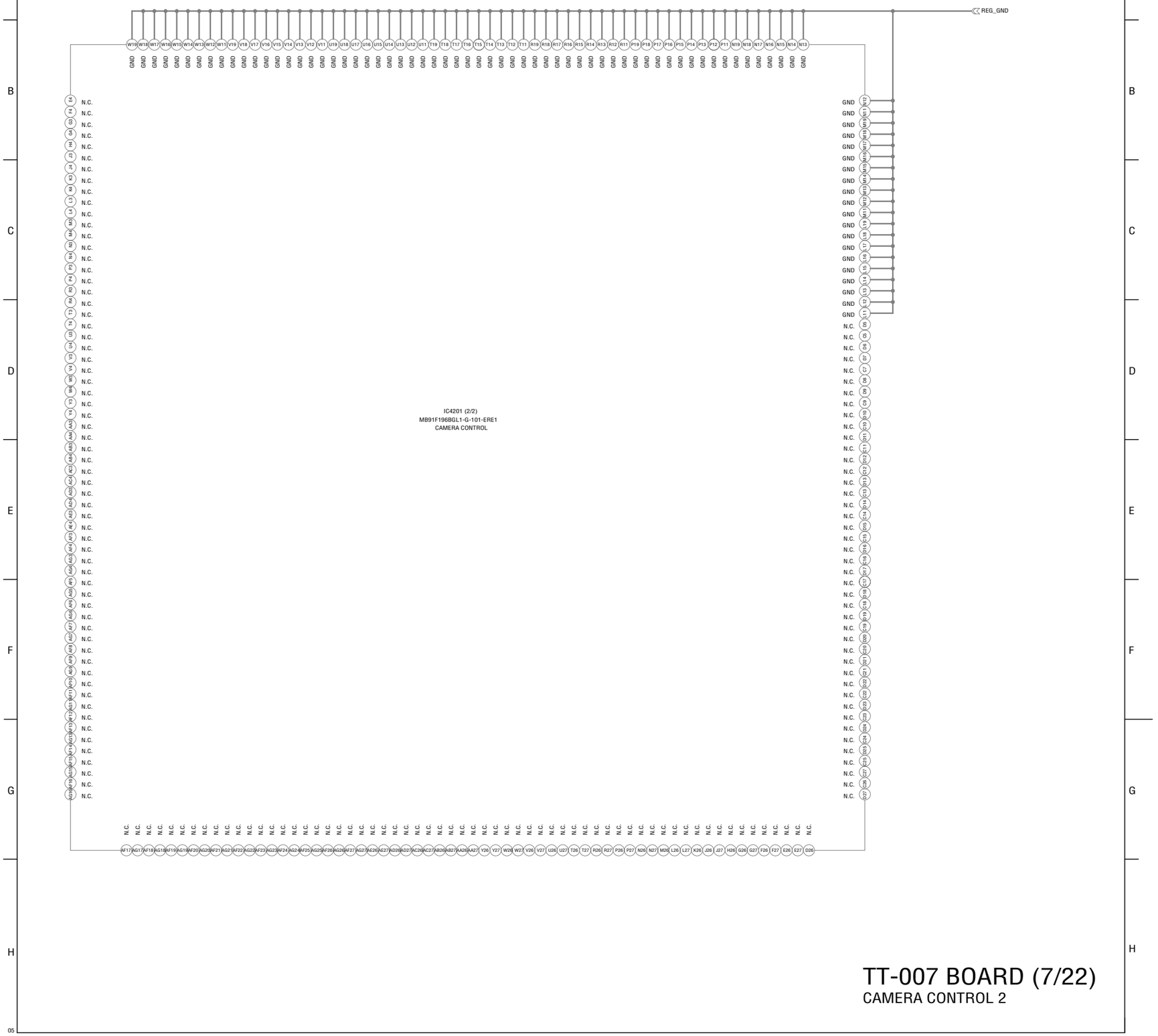
TT-007 BOARD (6/22)

CAMERA CONTROL 1

XX MARK:NO MOUNT

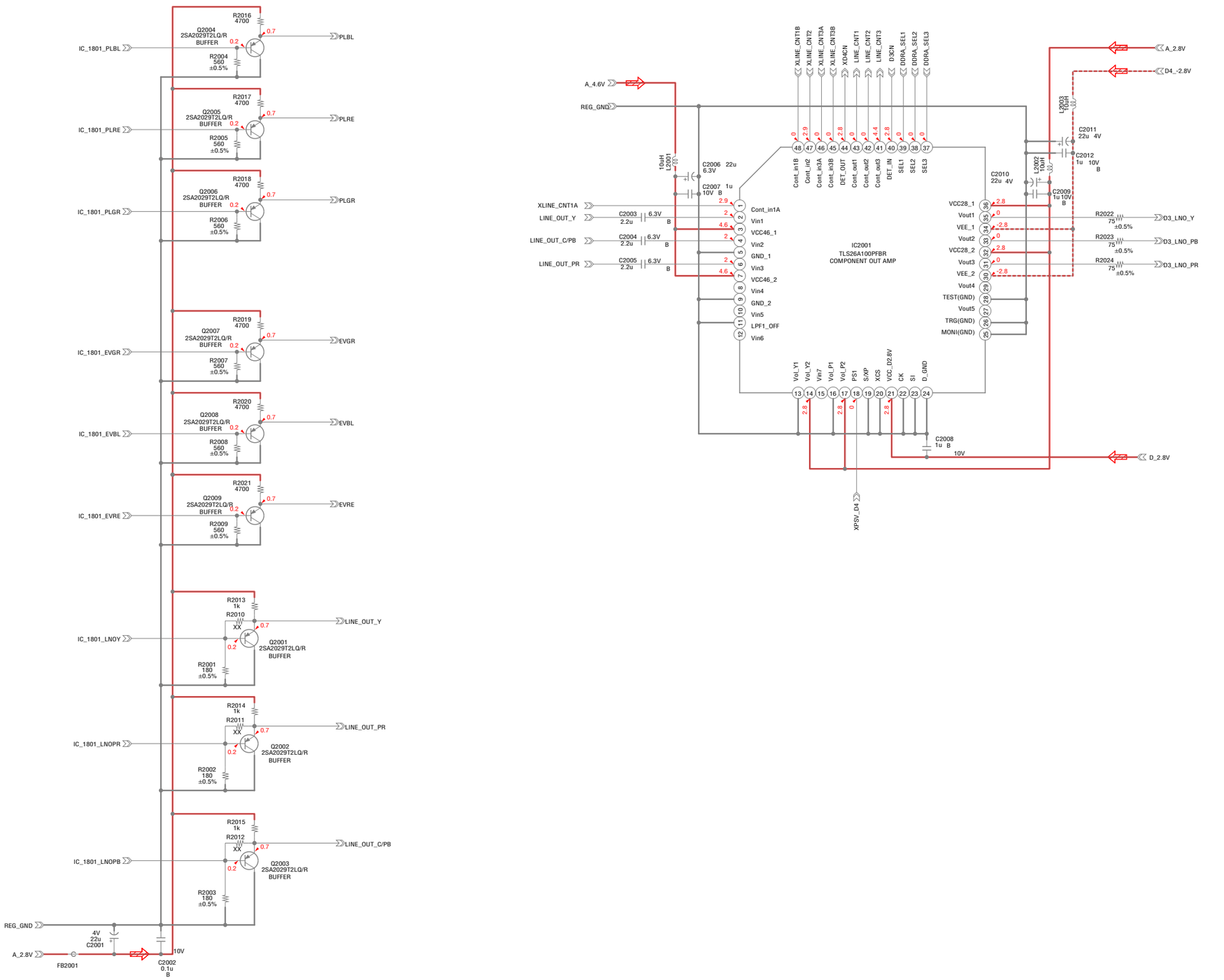
NO MARK:REC/PB MODE

Note: IC4201 is not supplied, but this is
included in TT-007 complete board.



TT-007 BOARD (7/22)

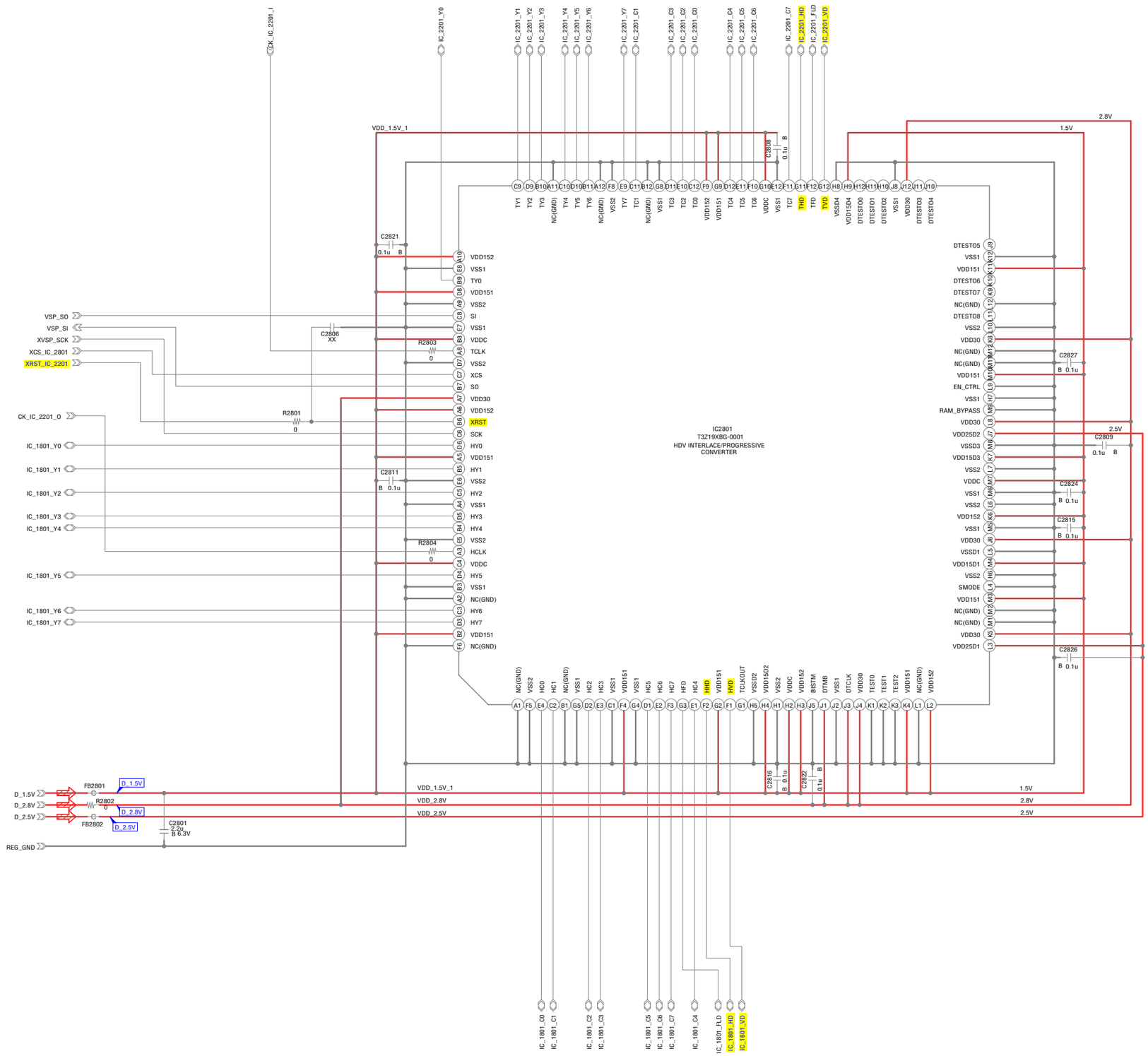
CAMERA CONTROL 2



TT-007 BOARD (8/22)

COMPONENT OUT AMP

XX MARK:NO MOUNT
NO MARK:REC/PB MODE



TT-007 BOARD (9/22)

HDV INTERLACE/PROGRESSIVE CONVERTER

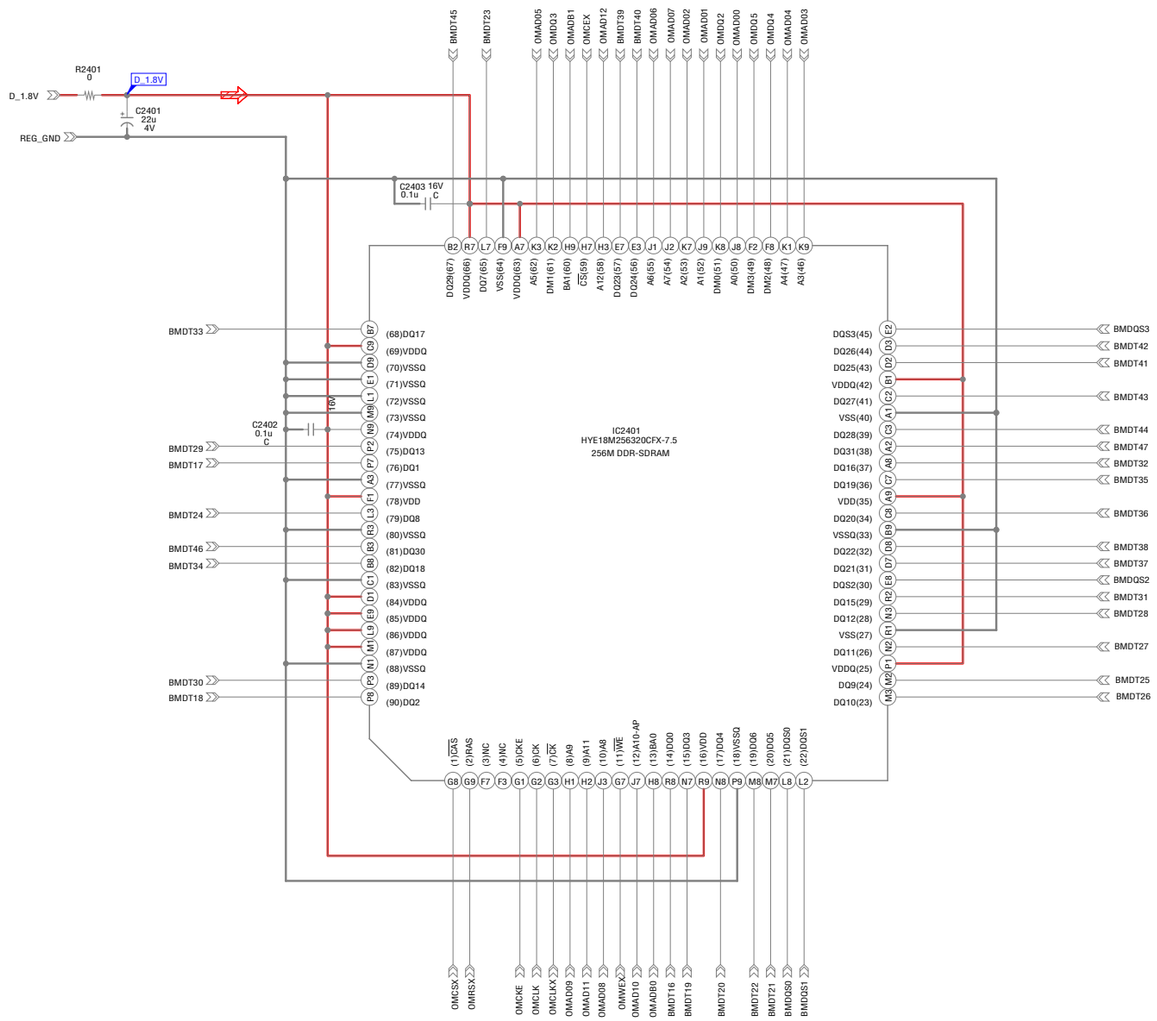
XX MARK:NO MOUNT

IC2201
CXD3195AGG-T6
HDV-MPEG VIDEO
ENCODER/DECODER,
MPEG AUDIO SIGNAL PROCESSOR

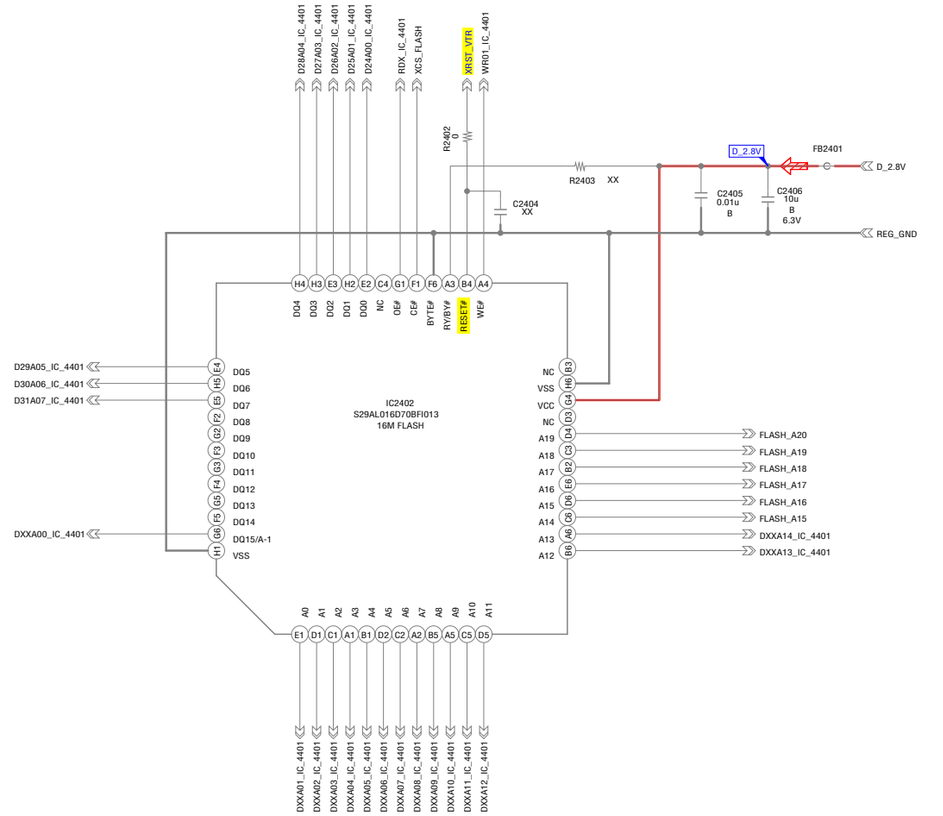
TT-007 BOARD (10/22)

HDV-MPEG VIDEO ENCODE/DECODE

XX MARK:NO MOUNT



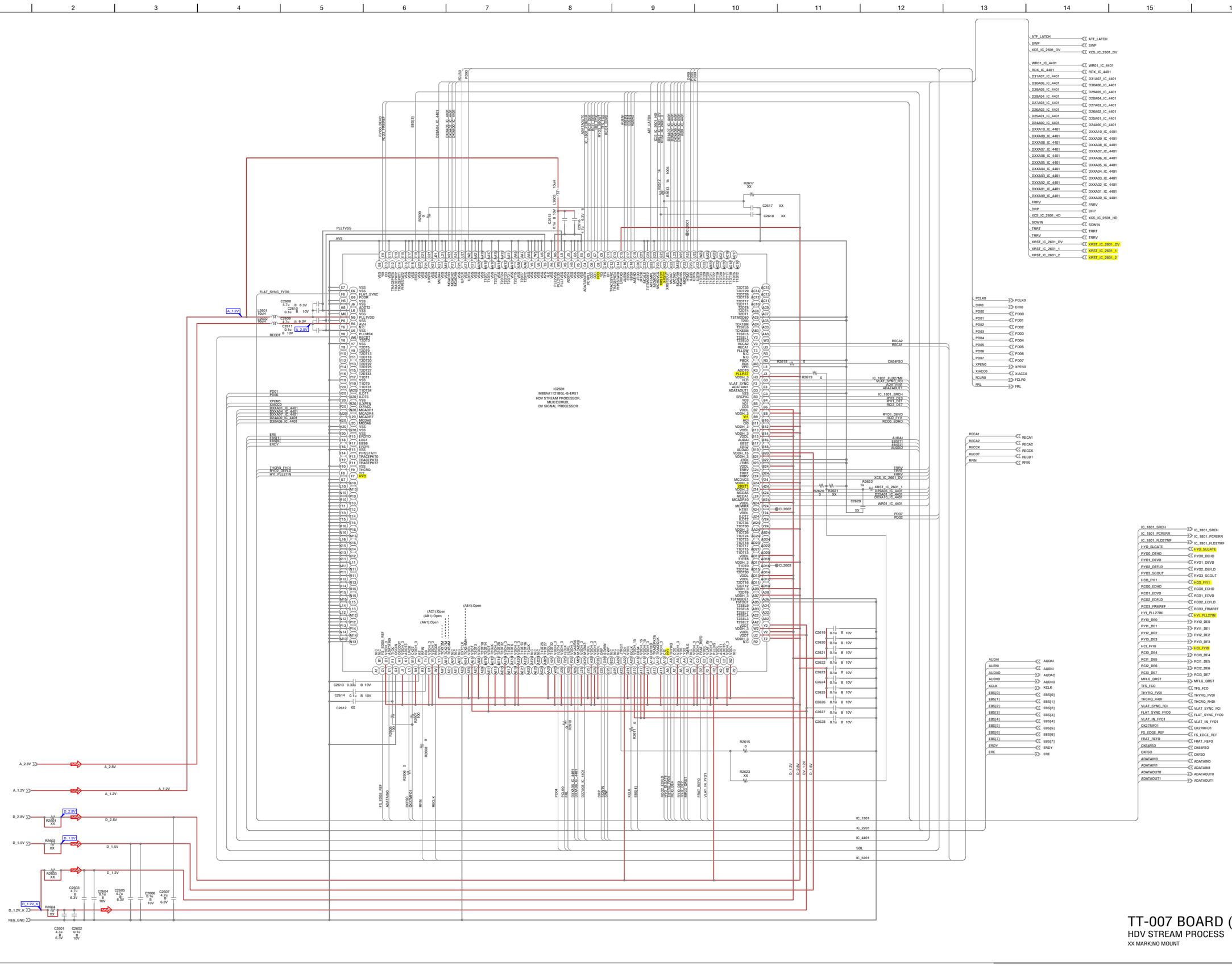
Note: IC2402 is not supplied, but this is included in TT-007 complete board.

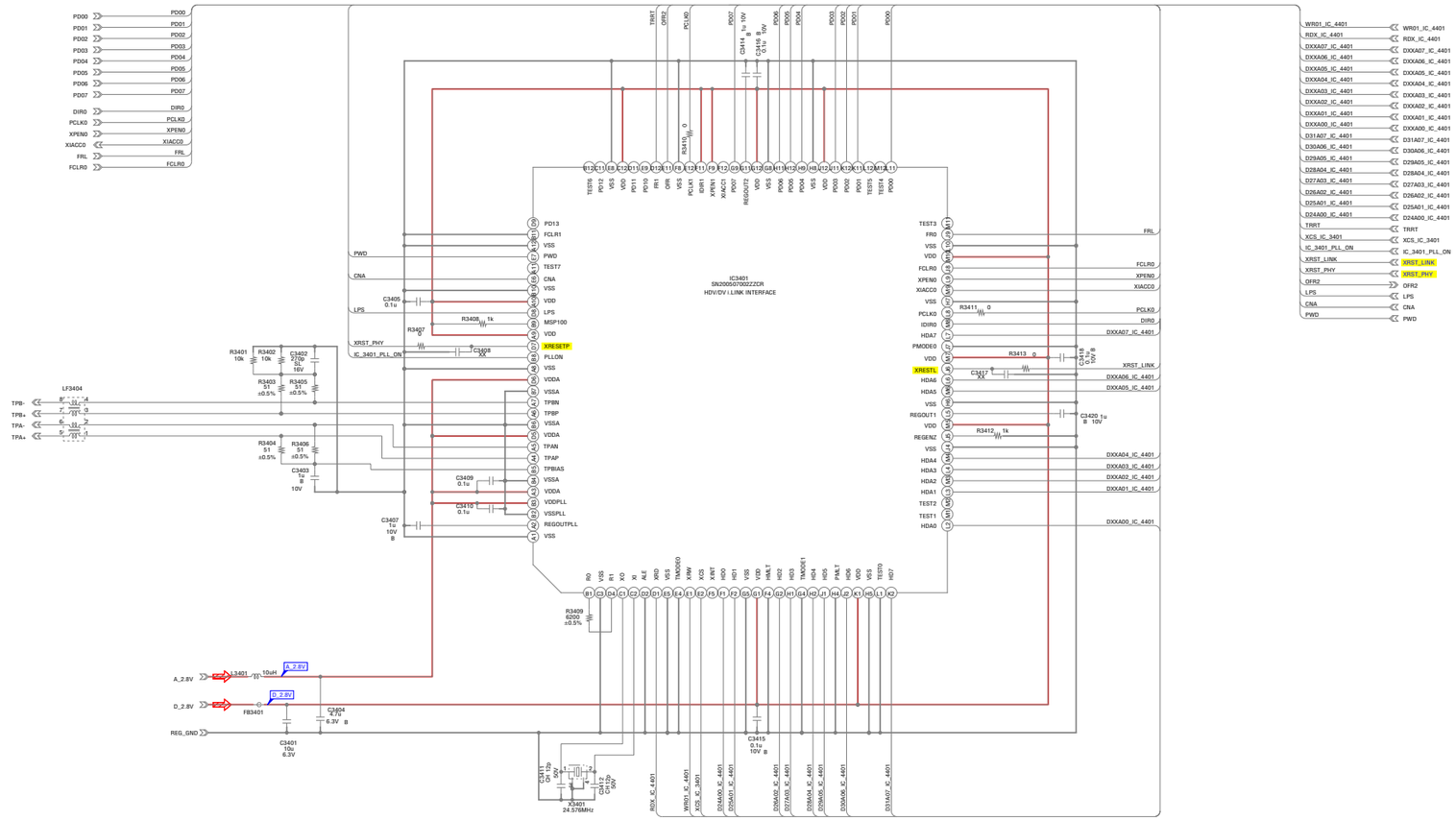


TT-007 BOARD (11/22)

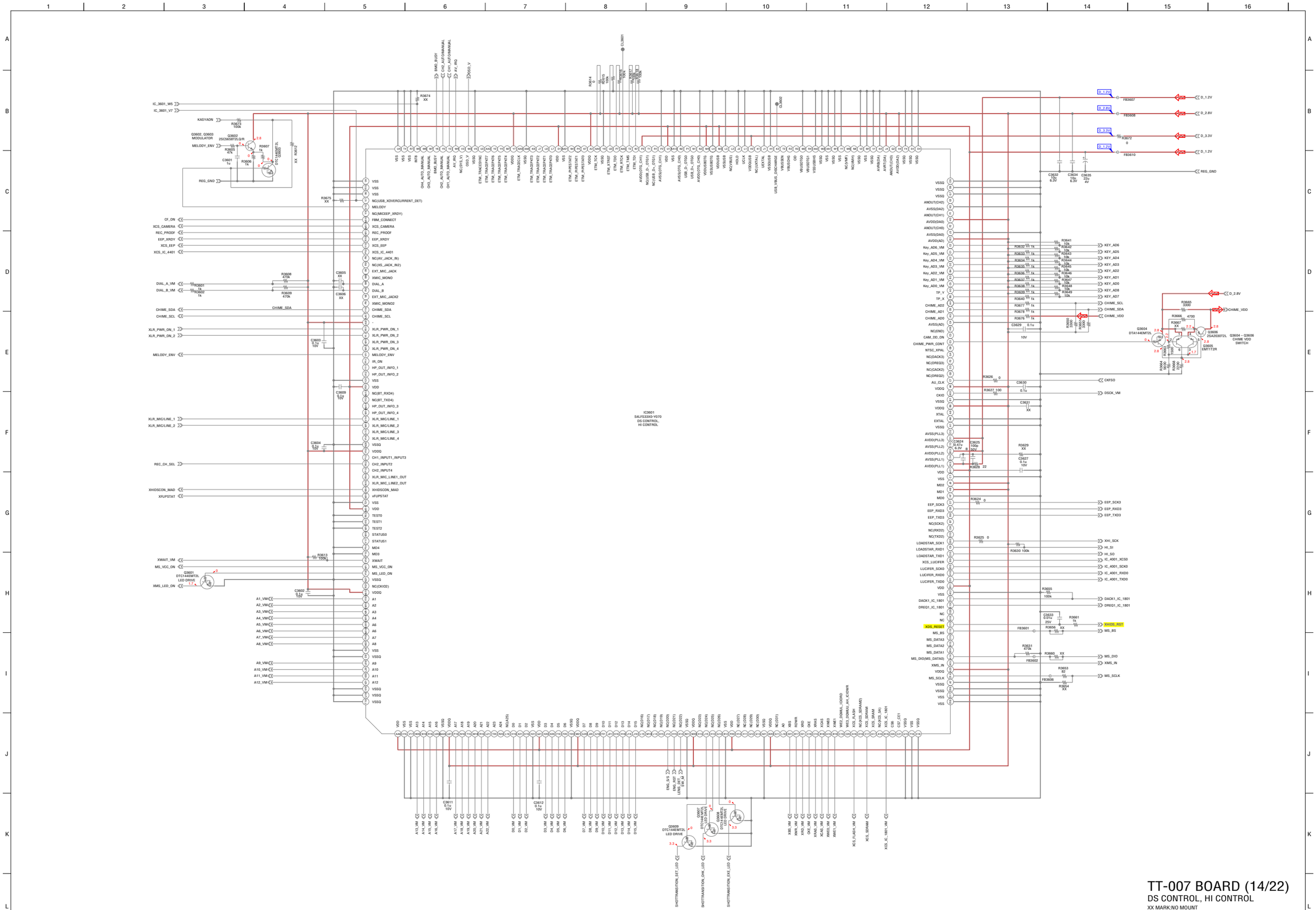
SDRAM, FLASH

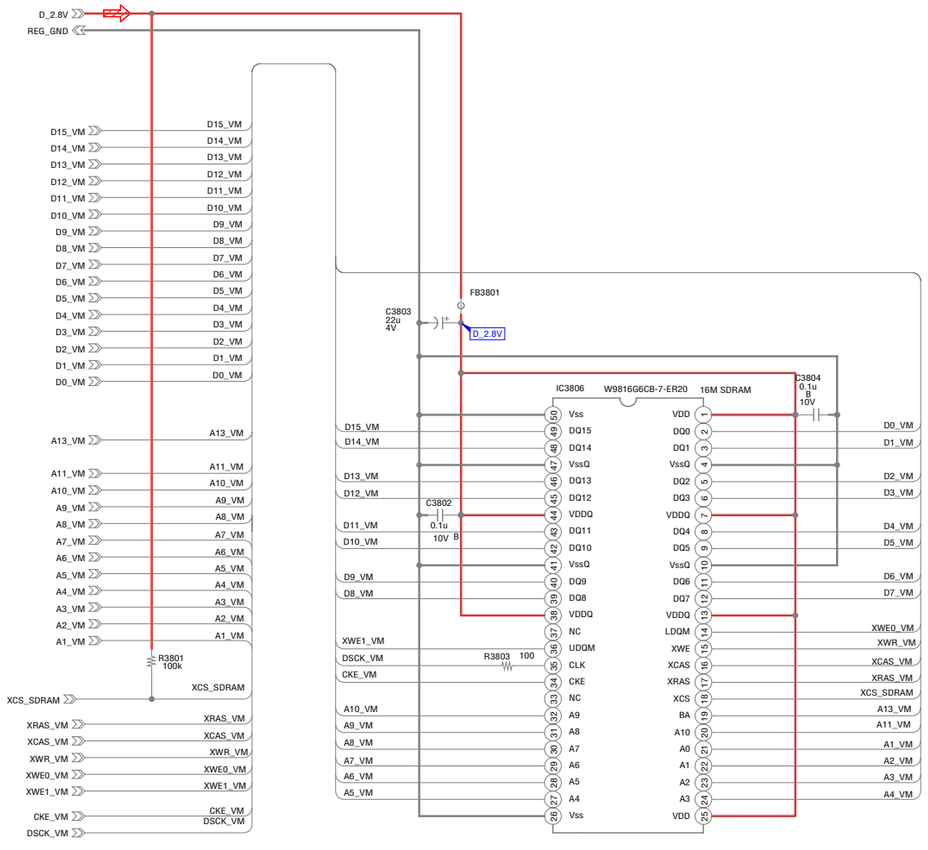
XX MARK:NO MOUNT

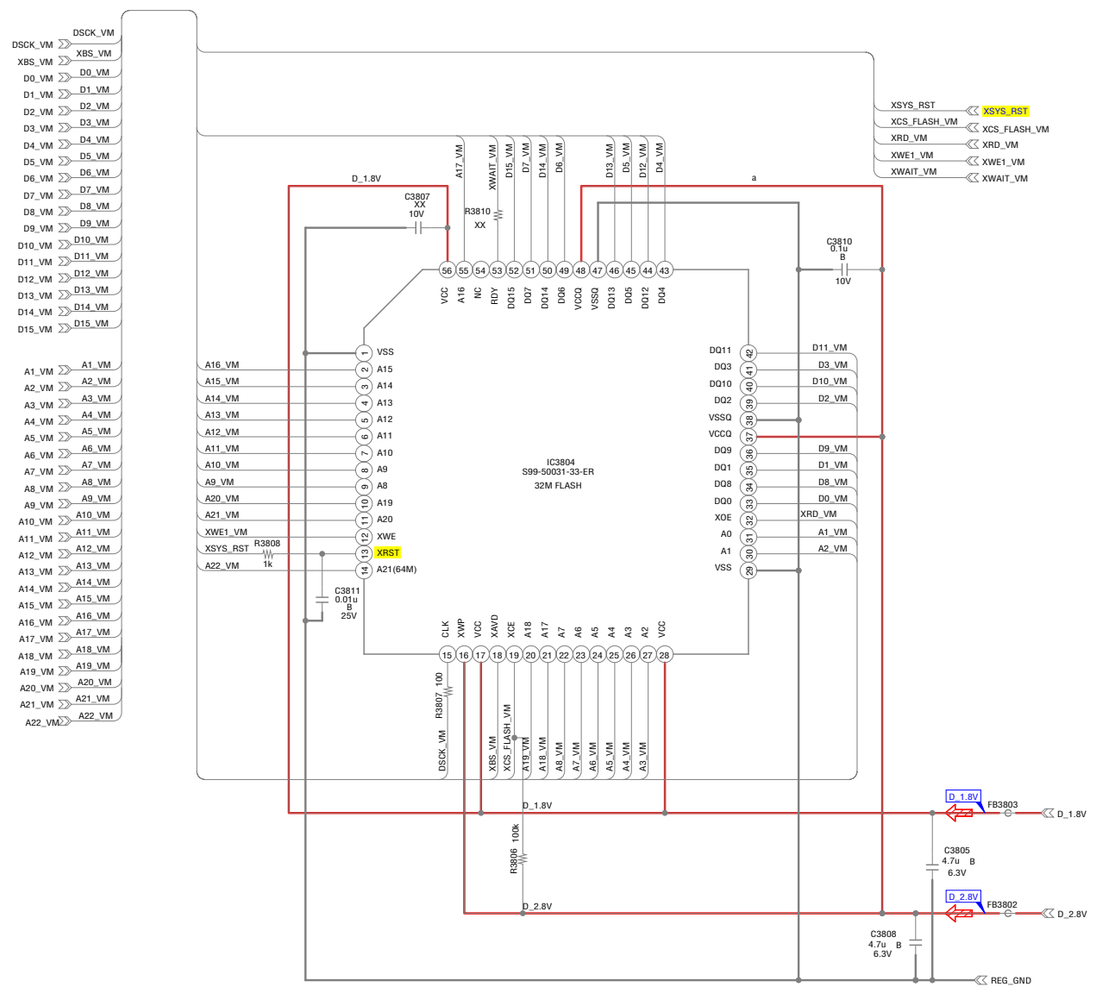

IC2601
MB8AA11218GL-G-ERE1
HDV STREAM PROCESSOR,
MUX/DEMUX,
DV SIGNAL PROCESSOR
TT-007 BOARD (12/22)
HDV STREAM PROCESS
XX MARK:NO MOUNT

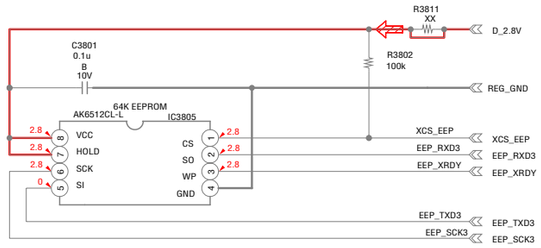


TT-007 BOARD (13/22)
HDV/DV i.LINK INTERFACE
XX MARK:NO MOUNT


IC3601
S4LFS33X0-Y070
DS CONTROL,
HI CONTRL
TT-007 BOARD (14/22)
DS CONTROL, HI CONTROL
XX MARK:NO MOUNT
NO MARK:REC/PB MODE





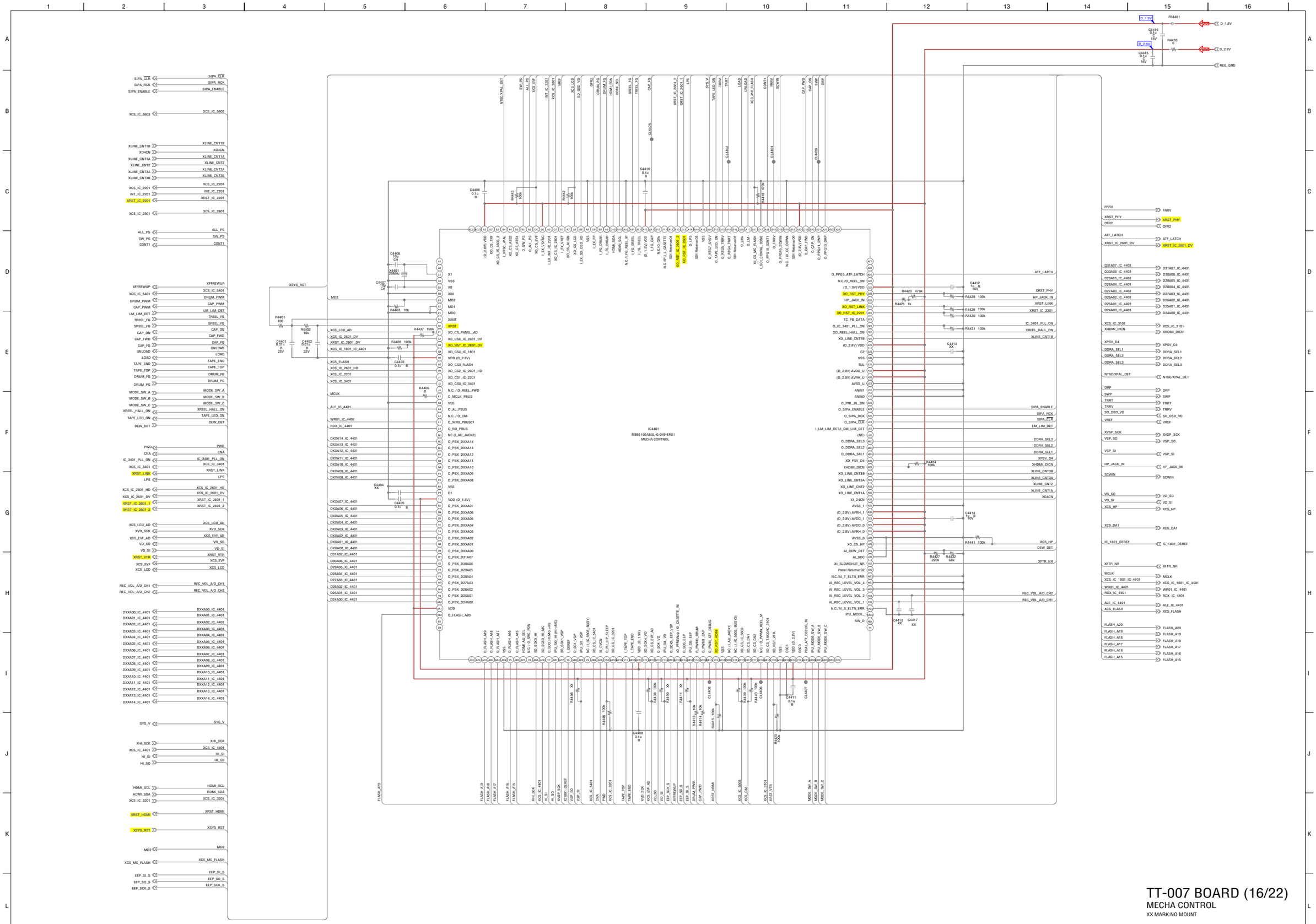


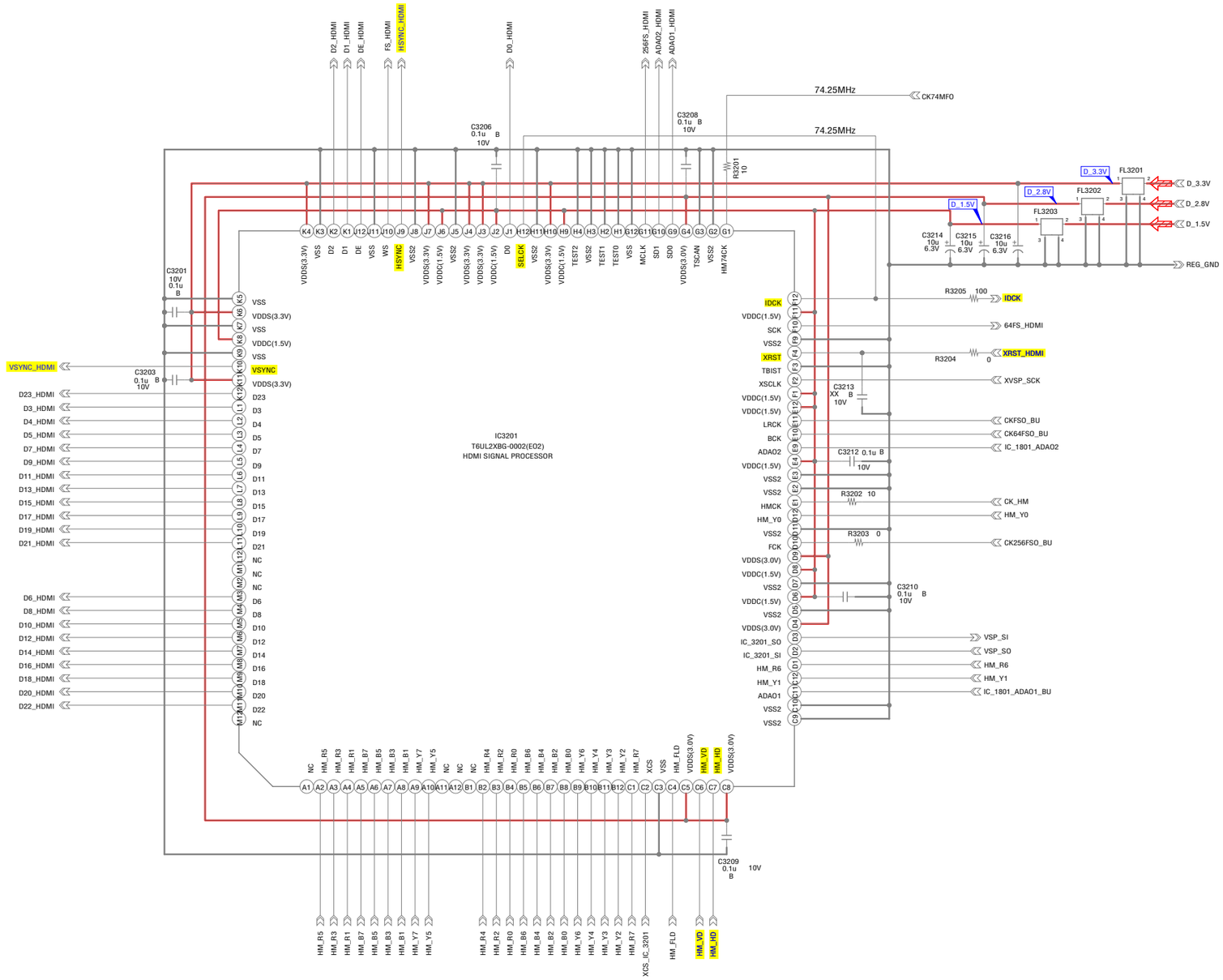
TT-007 BOARD (15/22)

SDRAM, FLASH, EEPROM

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

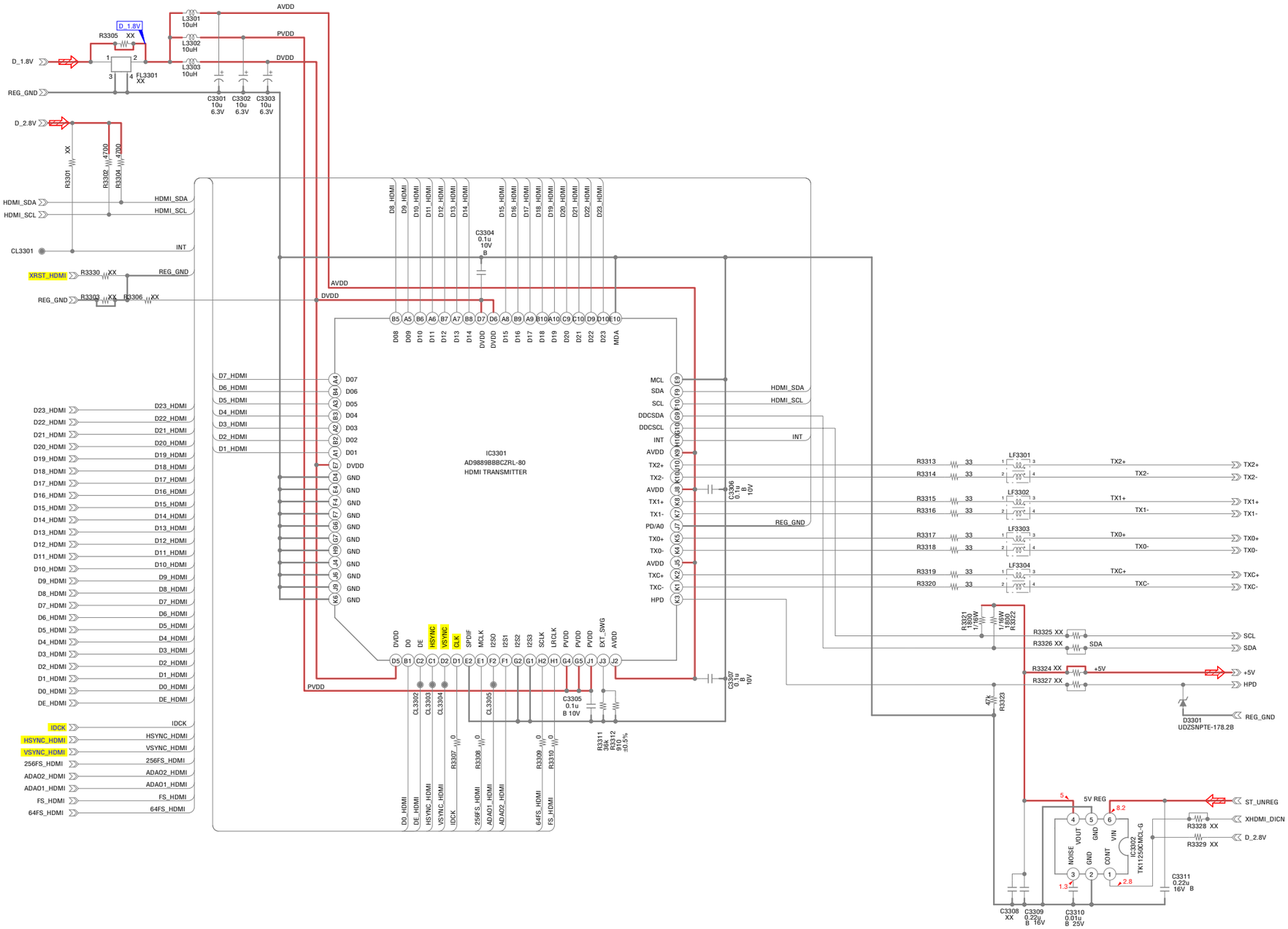

IC4401
MB91195ABGL-G-249-ERE1
MECHA CONTROL
TT-007 BOARD (16/22)
MECHA CONTROL
XX MARK:NO MOUNT

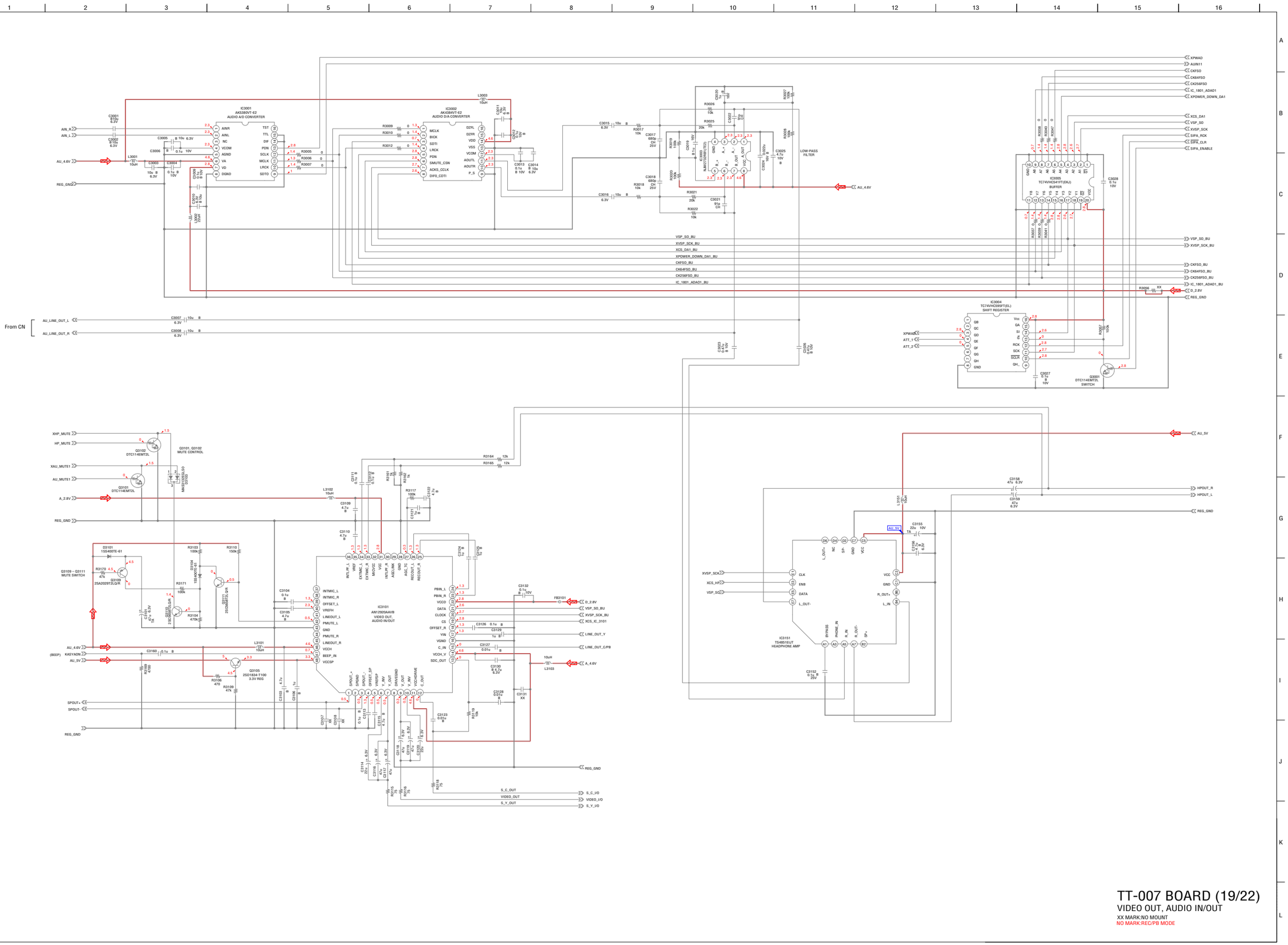


TT-007 BOARD (17/22)

HDMI SIGNAL PROCESS

XX MARK:NO MOUNT


IC3301
AD9889BBBCZRL-80
HDMI TRANSMITTER
TT-007 BOARD (18/22)
HDMI OUT
XX MARK:NO MOUNT
NO MARK:REC/PB MODE

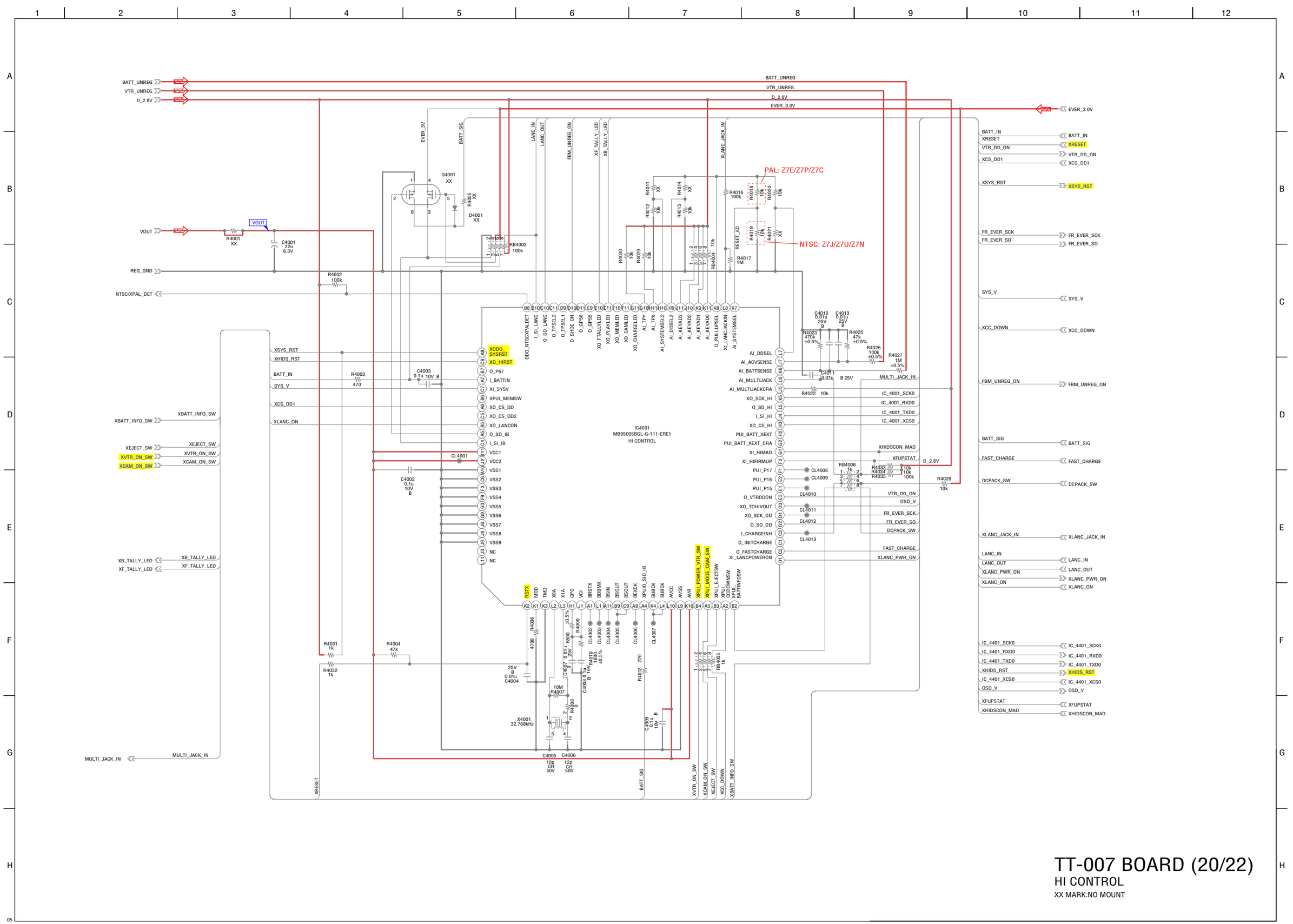


TT-007 BOARD (19/22)

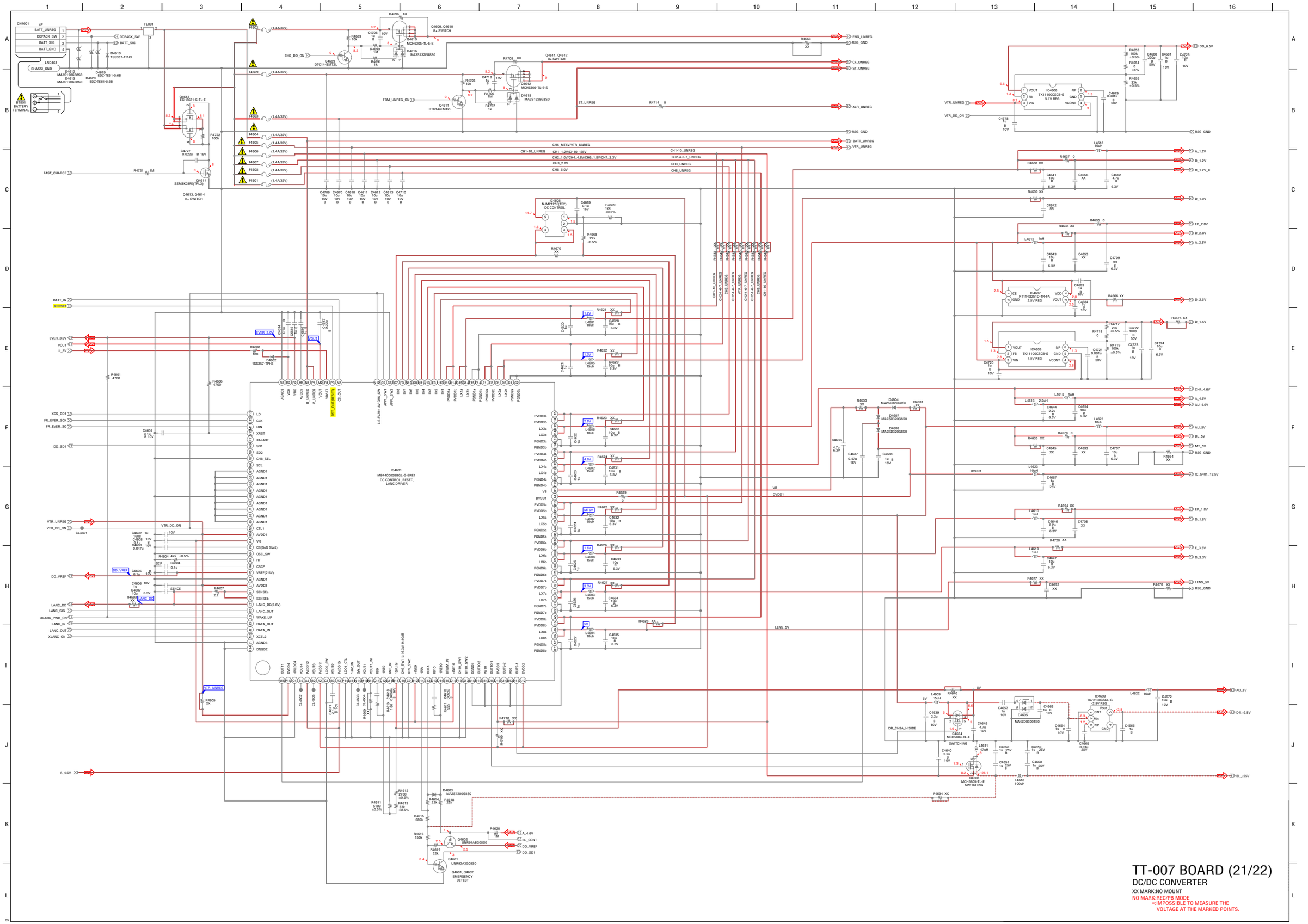
VIDEO OUT, AUDIO IN/OUT

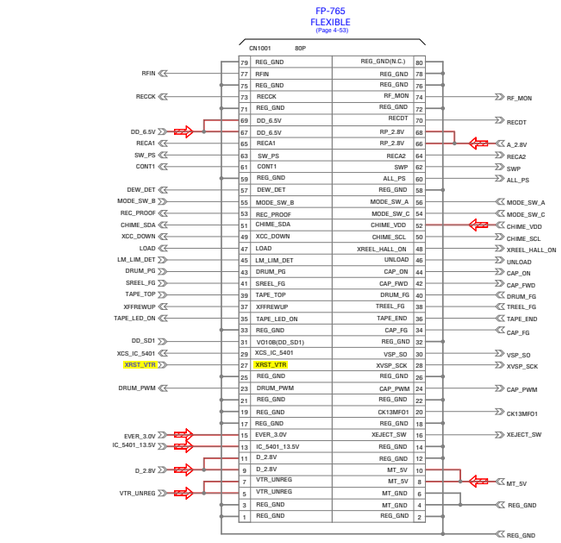
XX MARK:NO MOUNT

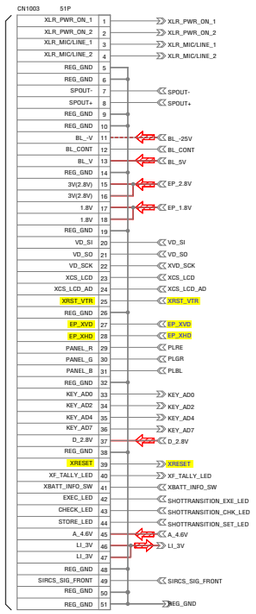
NO MARK:REC/PB MODE

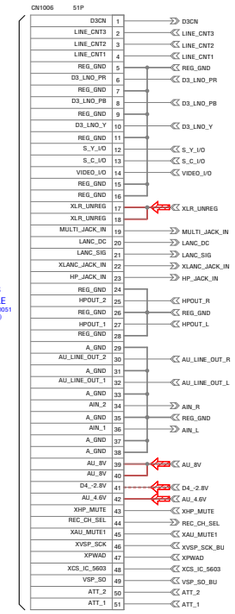

IC4001
MB95005BGL-G-111-ERE1
HI CONTROL
PAL: Z7E/Z7P/Z7C
NTSC: Z7J/Z7U/Z7N
TT-007 BOARD (20/22)
HI CONTROL
XX MARK:NO MOUNT

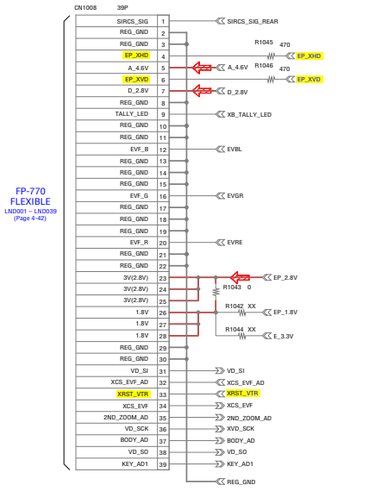
• Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.

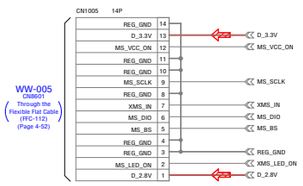


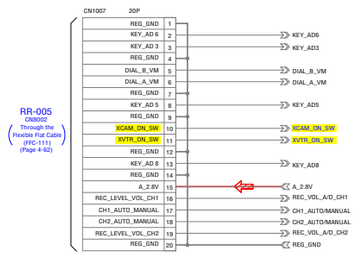


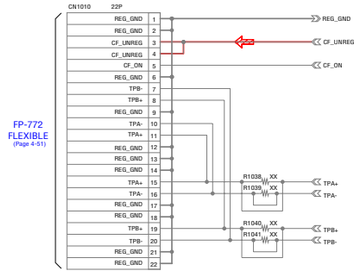


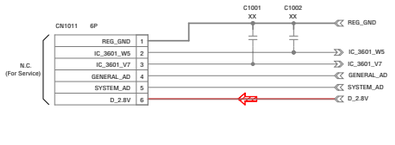


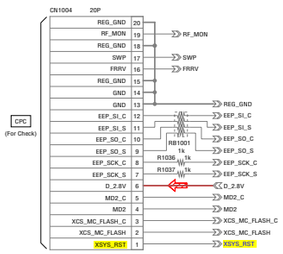


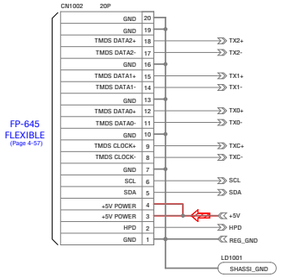




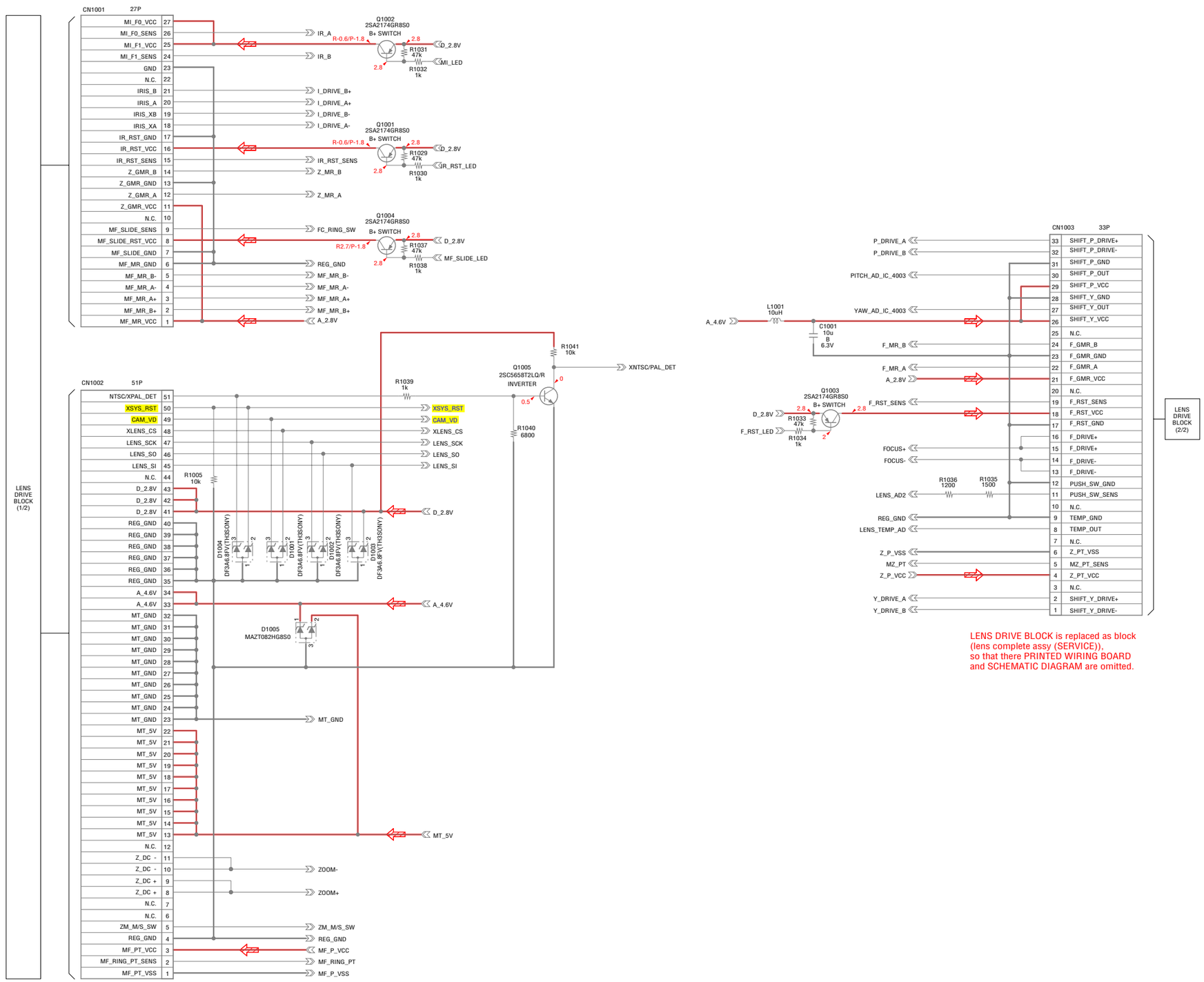








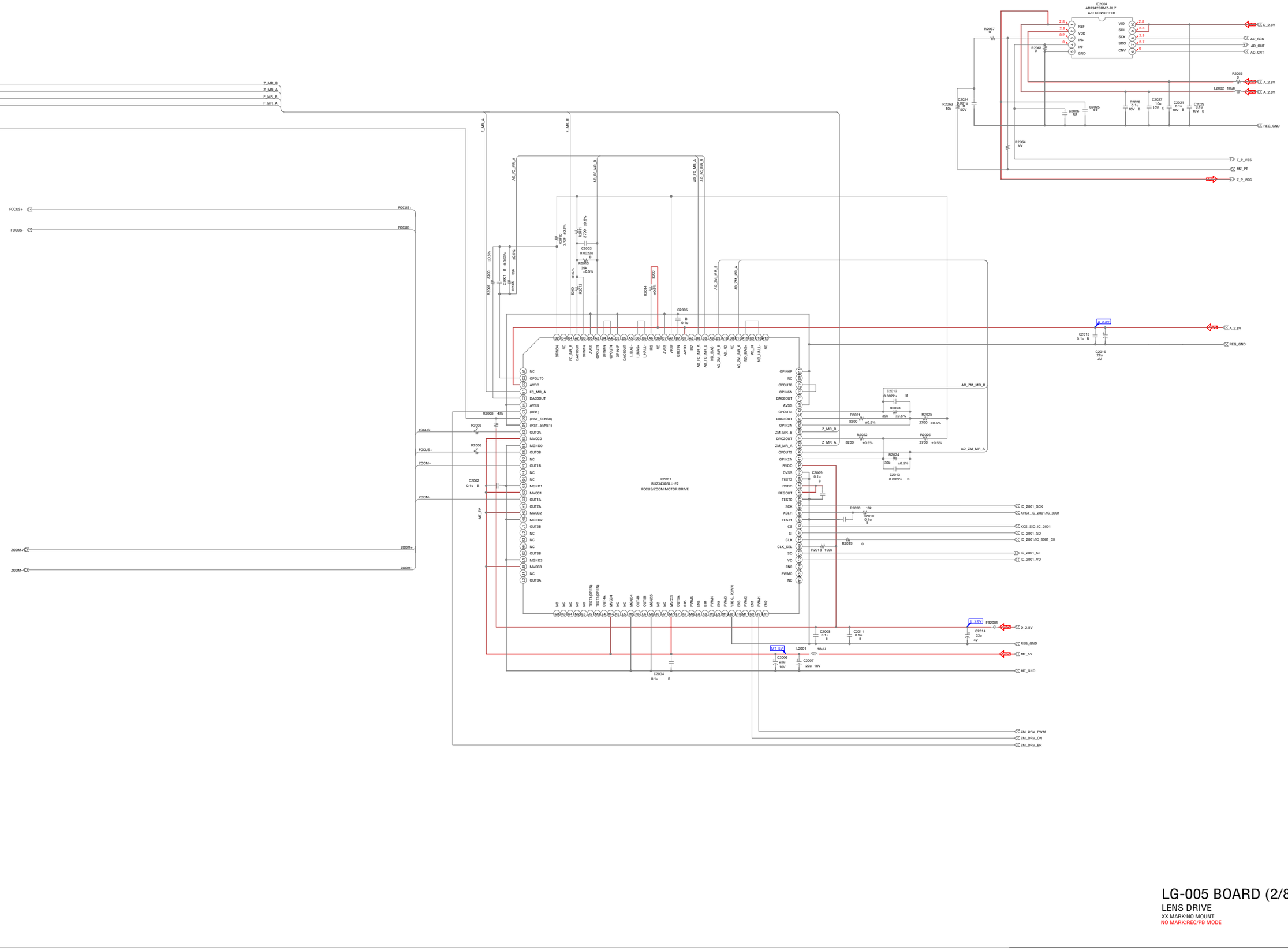
TT-007 BOARD (22/22)
CONNECTOR
XX MARK:NO MOUNT



LG-005 BOARD (1/8)

LENS CONNECTOR

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

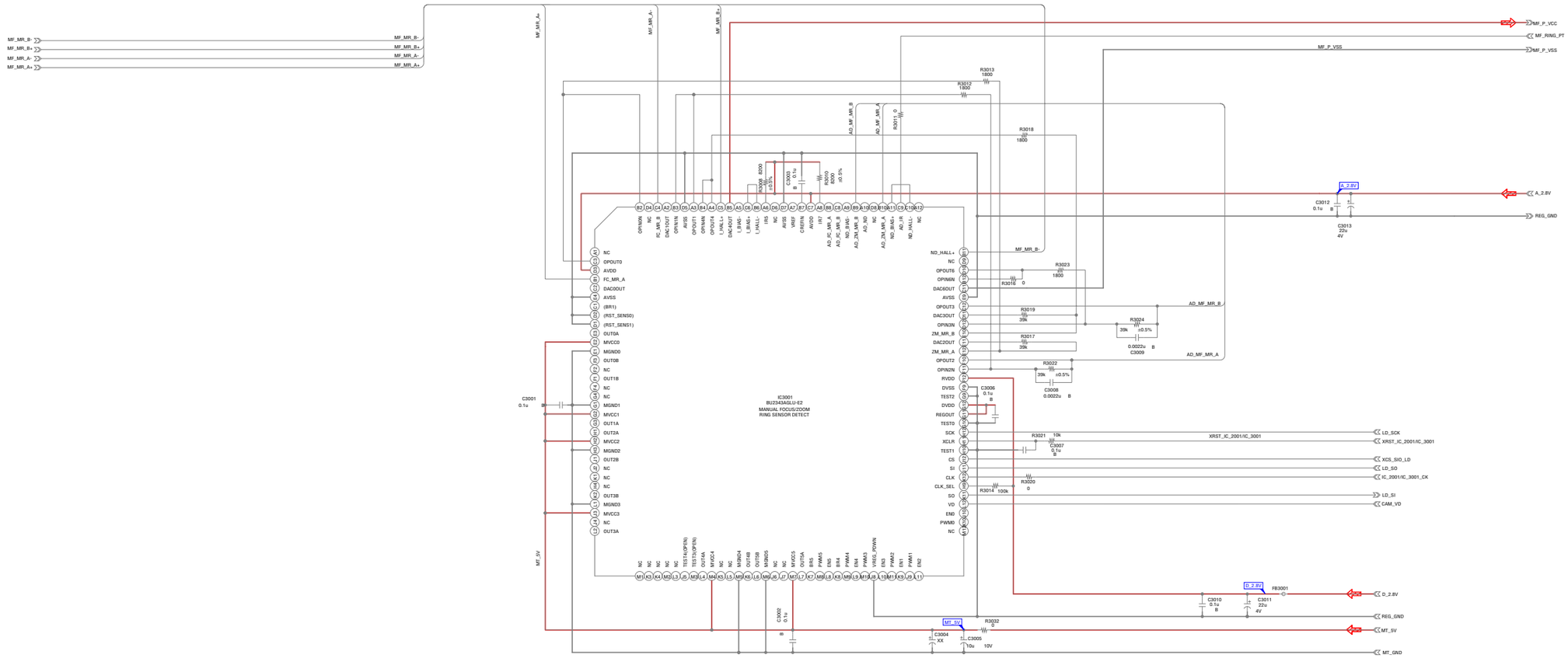


LG-005 BOARD (2/8)

LENS DRIVE

XX MARK:NO MOUNT

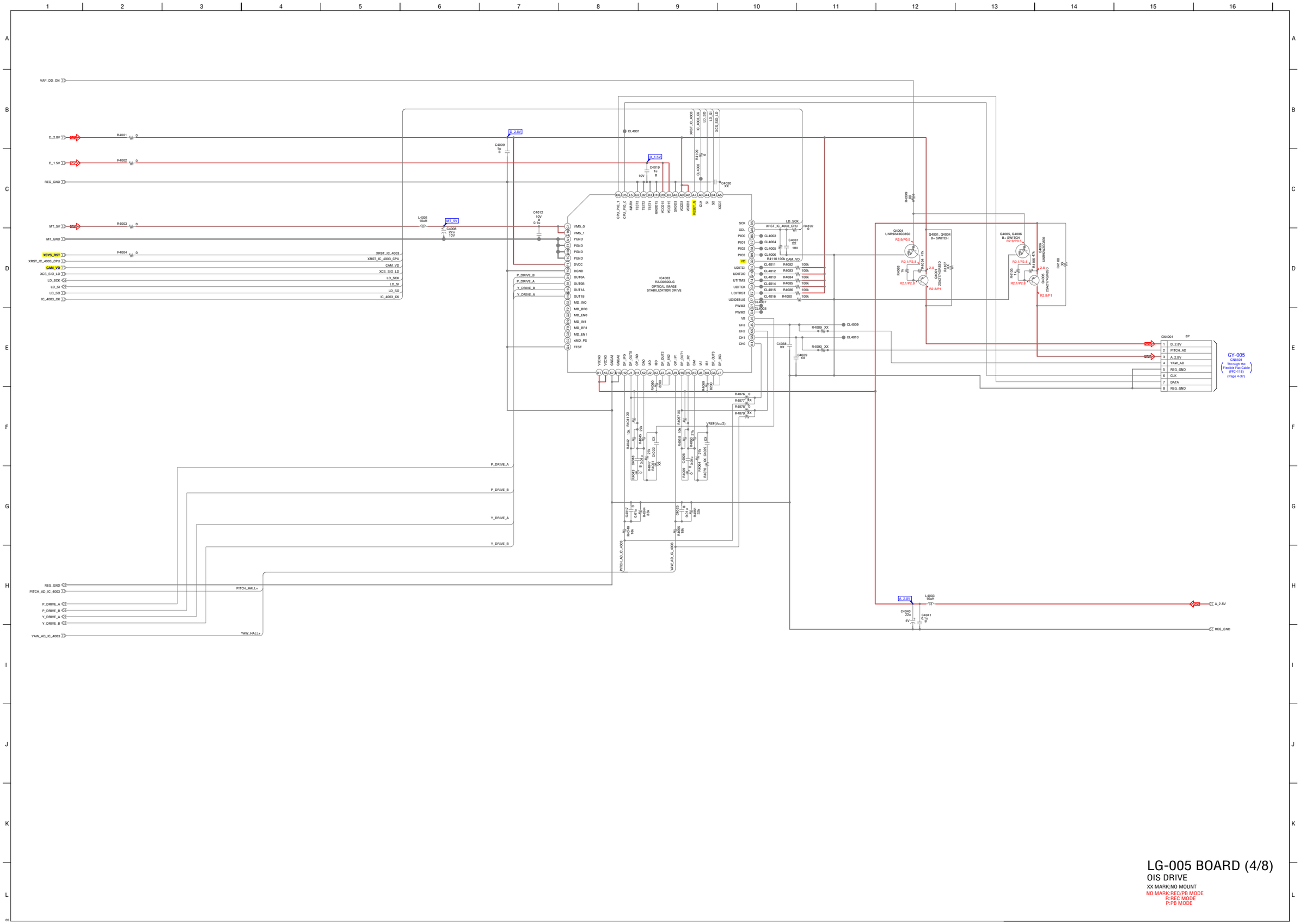
NO MARK:REC/PB MODE



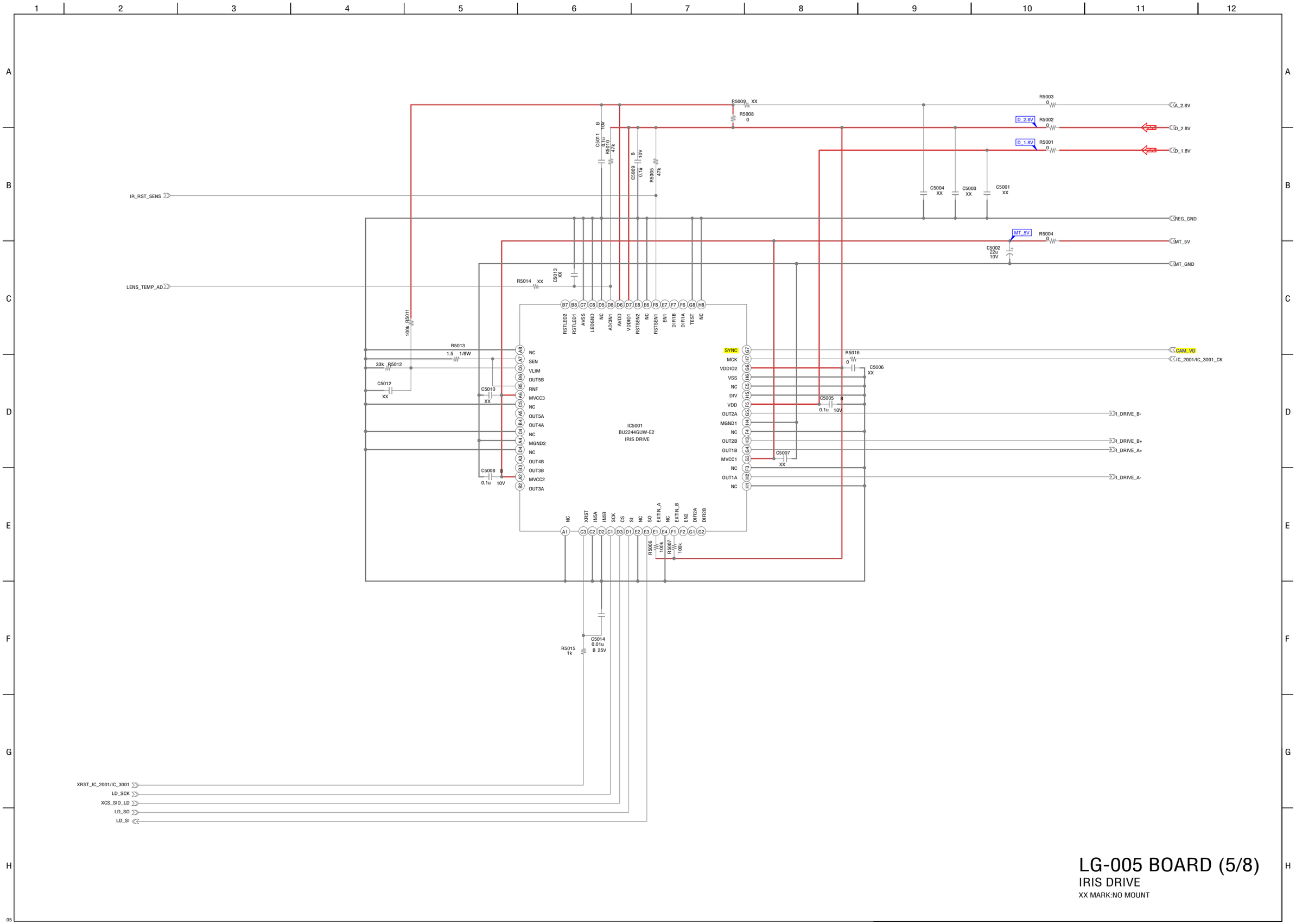
LG-005 BOARD (3/8)

LENS DETECT

XX MARK:NO MOUNT



1	D_2.8V	
2	PITCH_AD	
3	A_2.8V	
4	YAW_AD	
5	REG_GND	
6	CLK	
7	DATA	
8	REG_GND	



LG-005 BOARD (5/8)

IRIS DRIVE

XX MARK:NO MOUNT

Note: IC6005 is not supplied, but this is included in LG-005 complete board.

IC6001 (1/2)
MB91F136BGLL-G-102-ERE1
CAMERA CONTROL

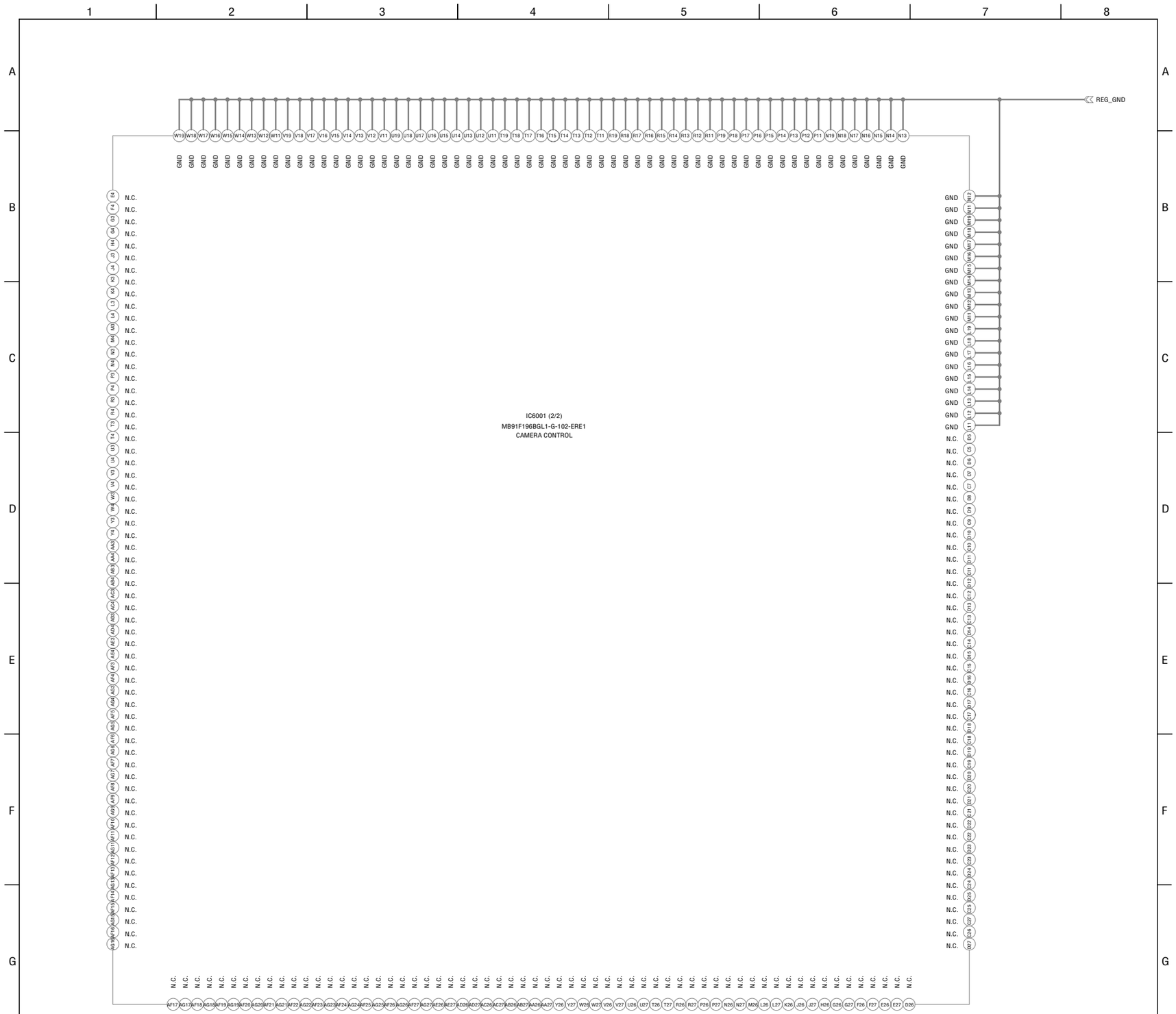
IC6005
AK6512CL-L
64K EEPROM

LG-005 BOARD (6/8)

CAMERA CONTROL 1

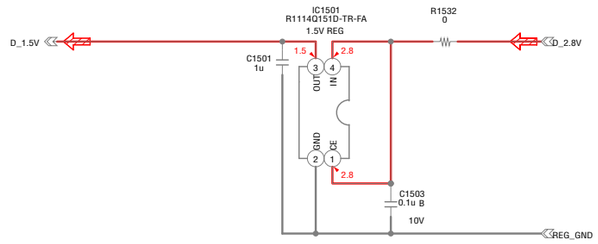
XX MARK:NO MOUNT

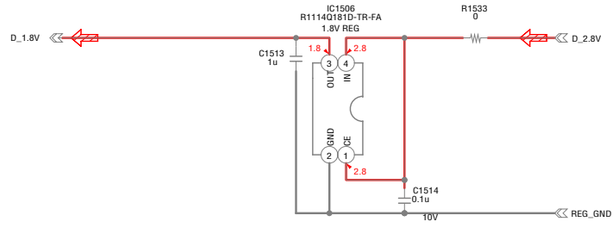
NO MARK:REC/PB MODE

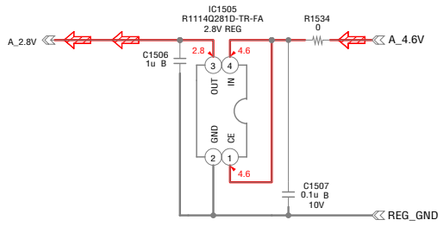


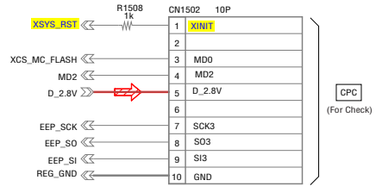
LG-005 BOARD (7/8)

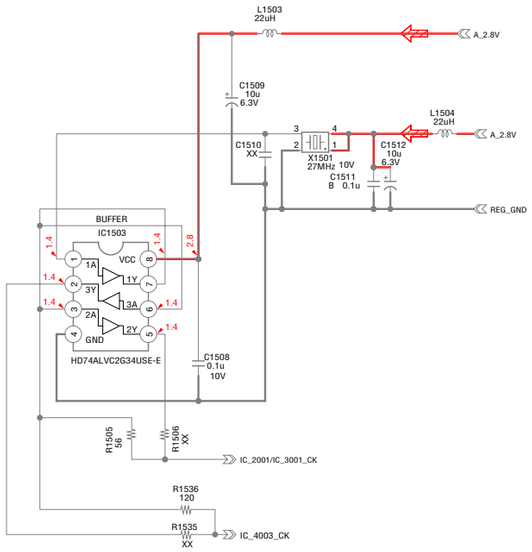
CAMERA CONTROL 2

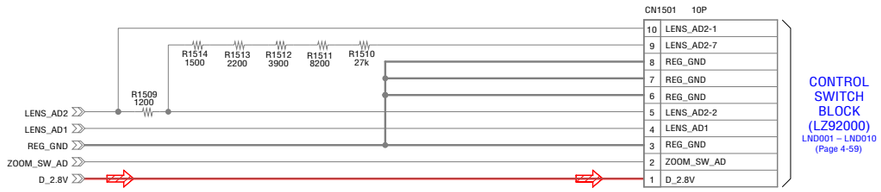










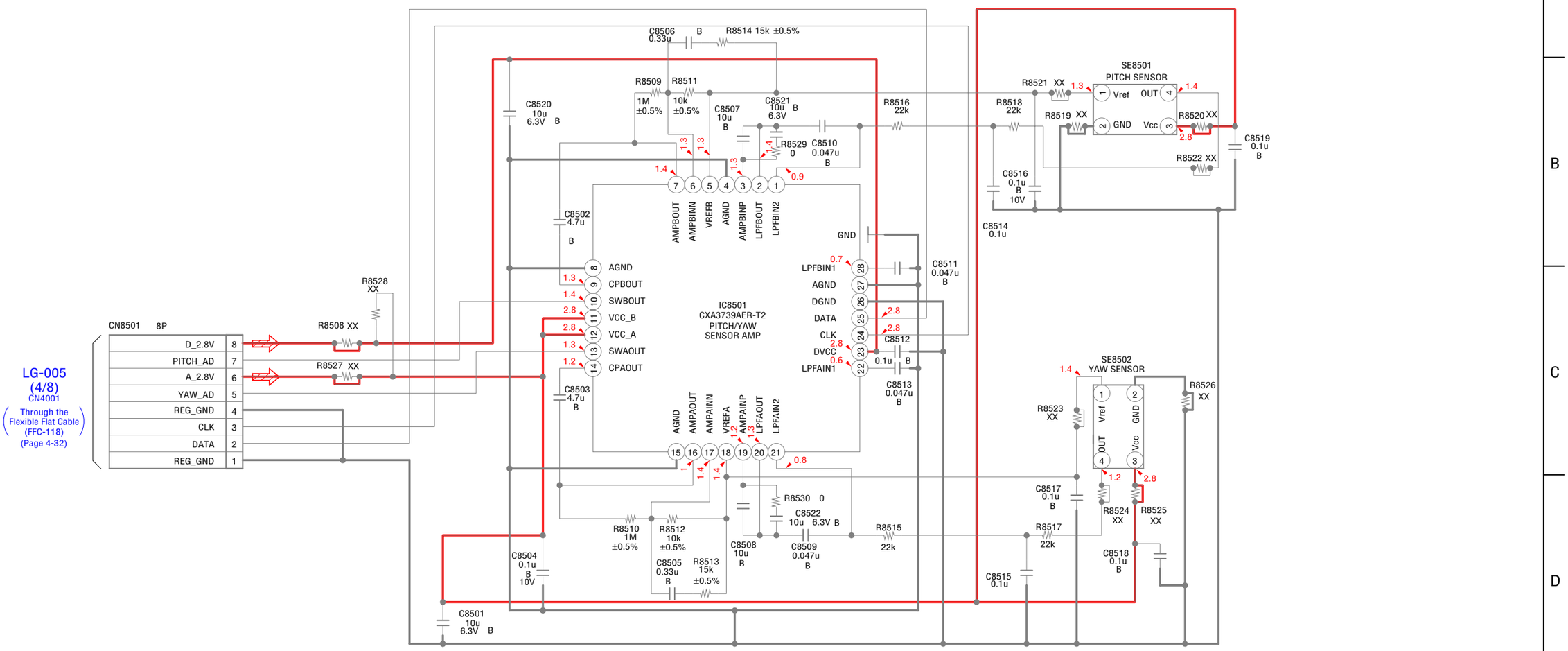


LG-005 BOARD (8/8)

REGULATOR

XX MARK:NO MOUNT

NO MARK:REC/PB MODE



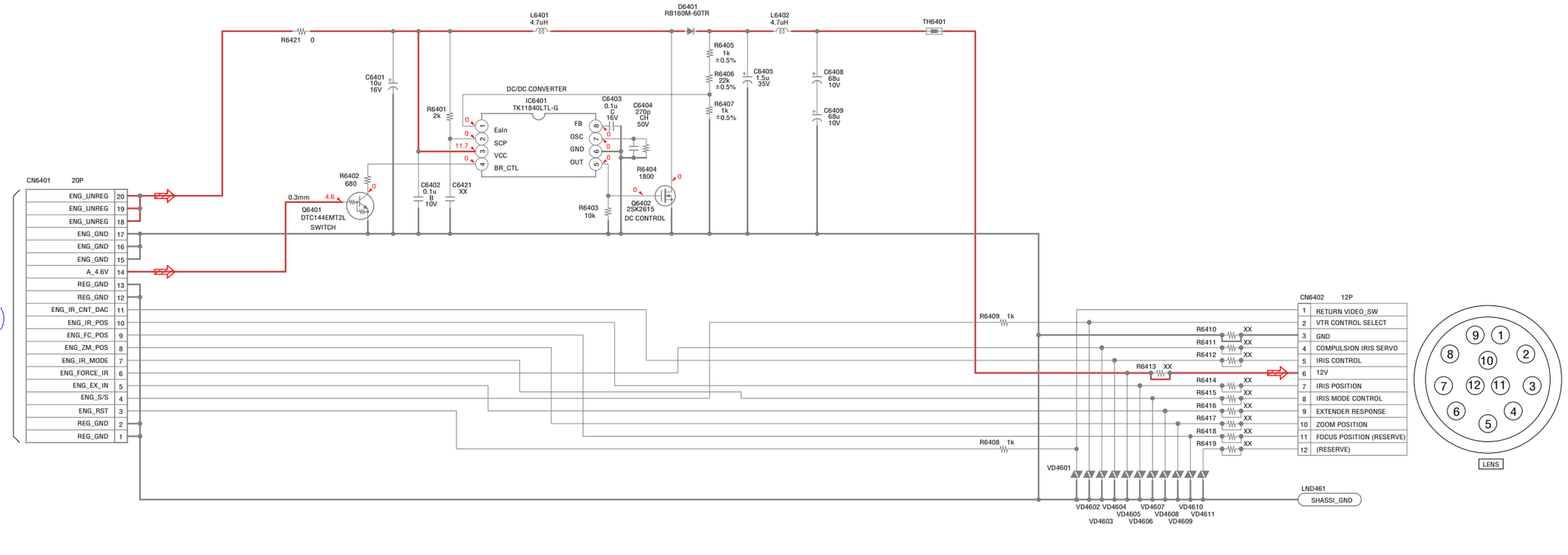
GY-005 BOARD

PITCH/YAW SENSOR

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

Note: LL-014 complete board and IC6401 are not supplied,
but they are included in ENG assy (SERVICE).

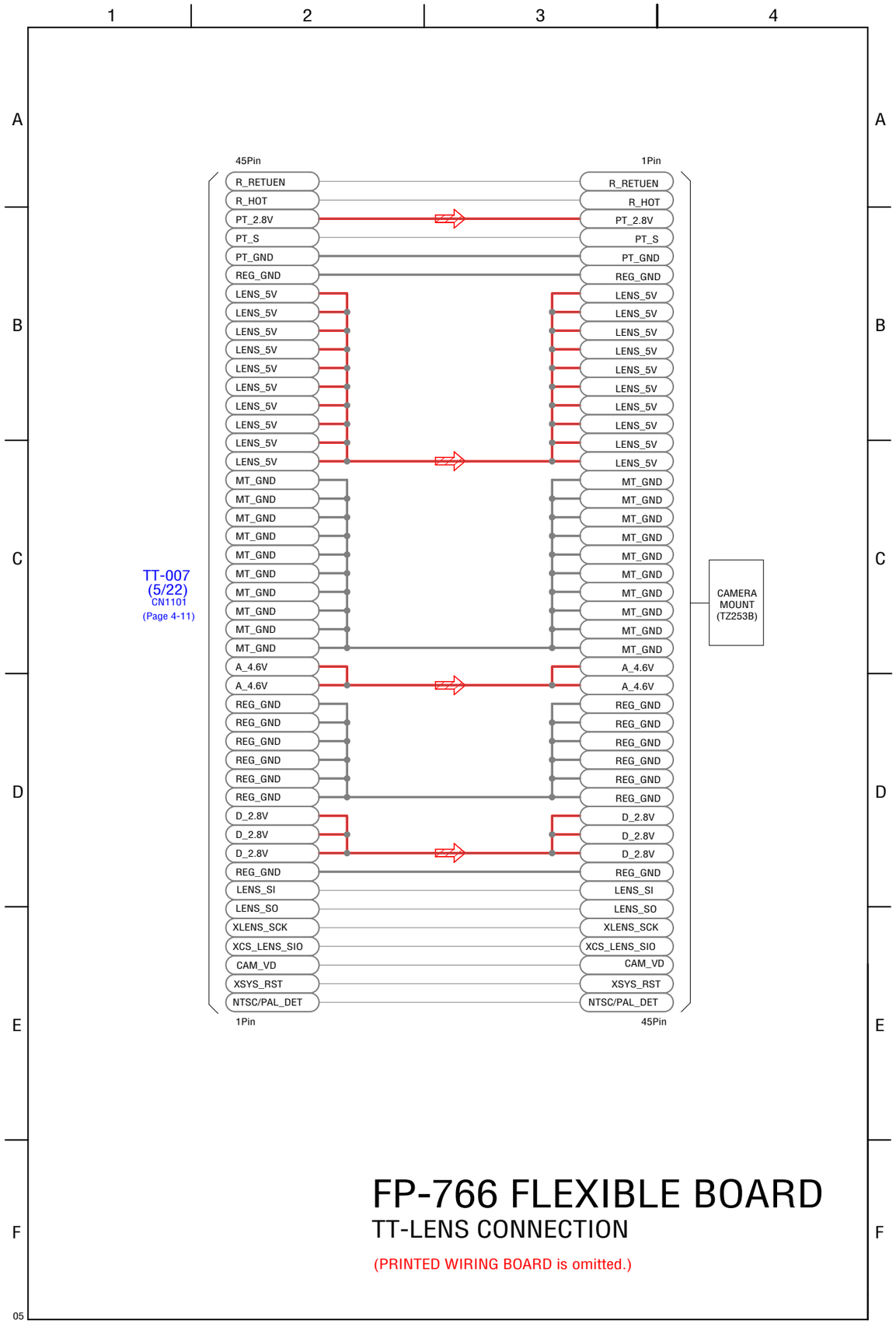


LL-014 BOARD

LENS CONNECTOR, DC/DC CONVERTER

XX MARK:NO MOUNT

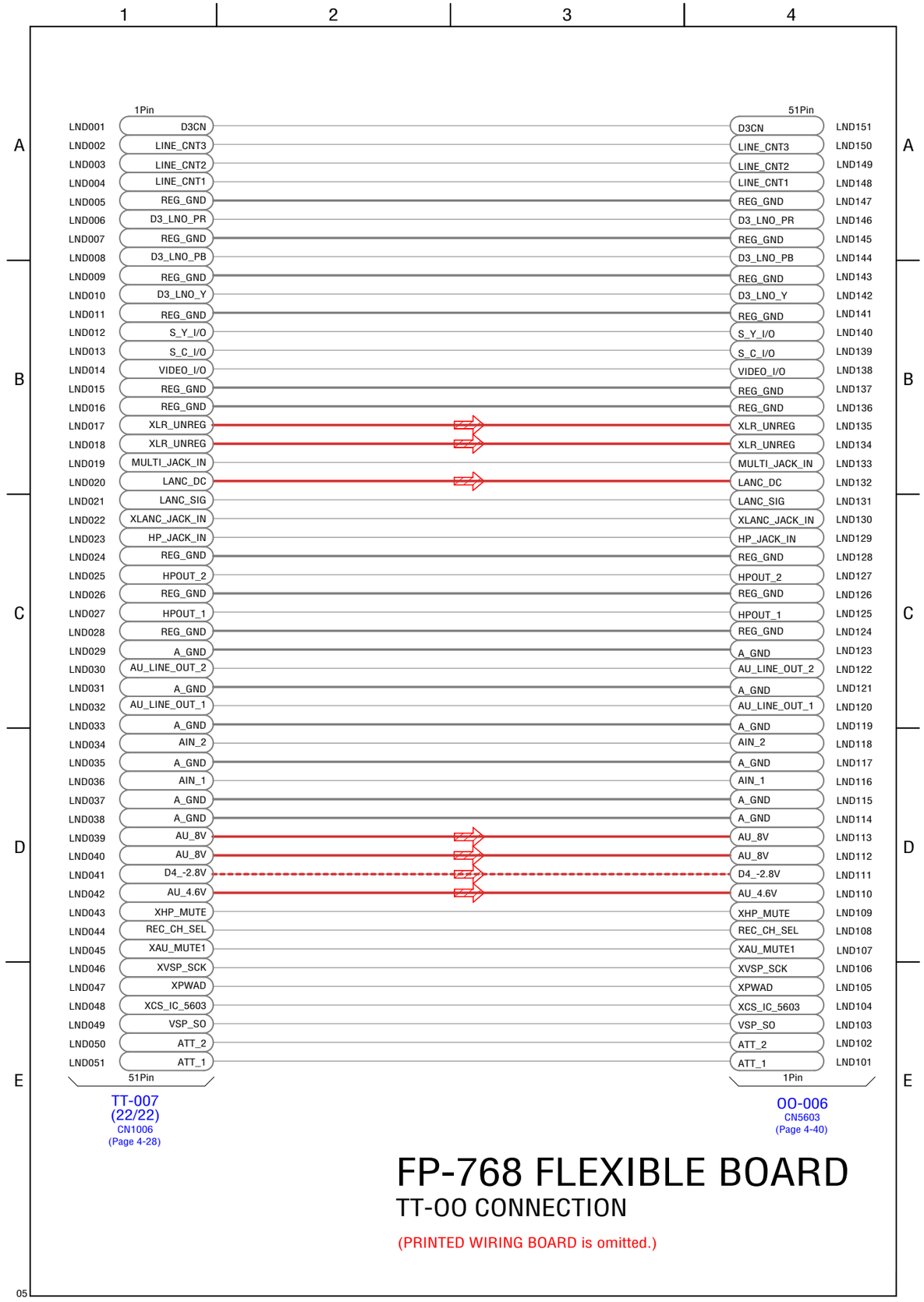
NO MARK:REC/PB MODE



FP-766 FLEXIBLE BOARD

TT-LENS CONNECTION

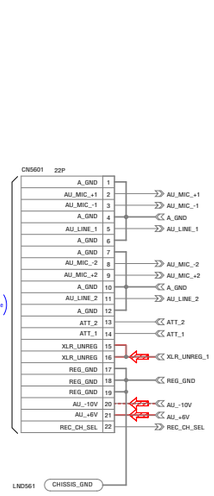
(PRINTED WIRING BOARD is omitted.)



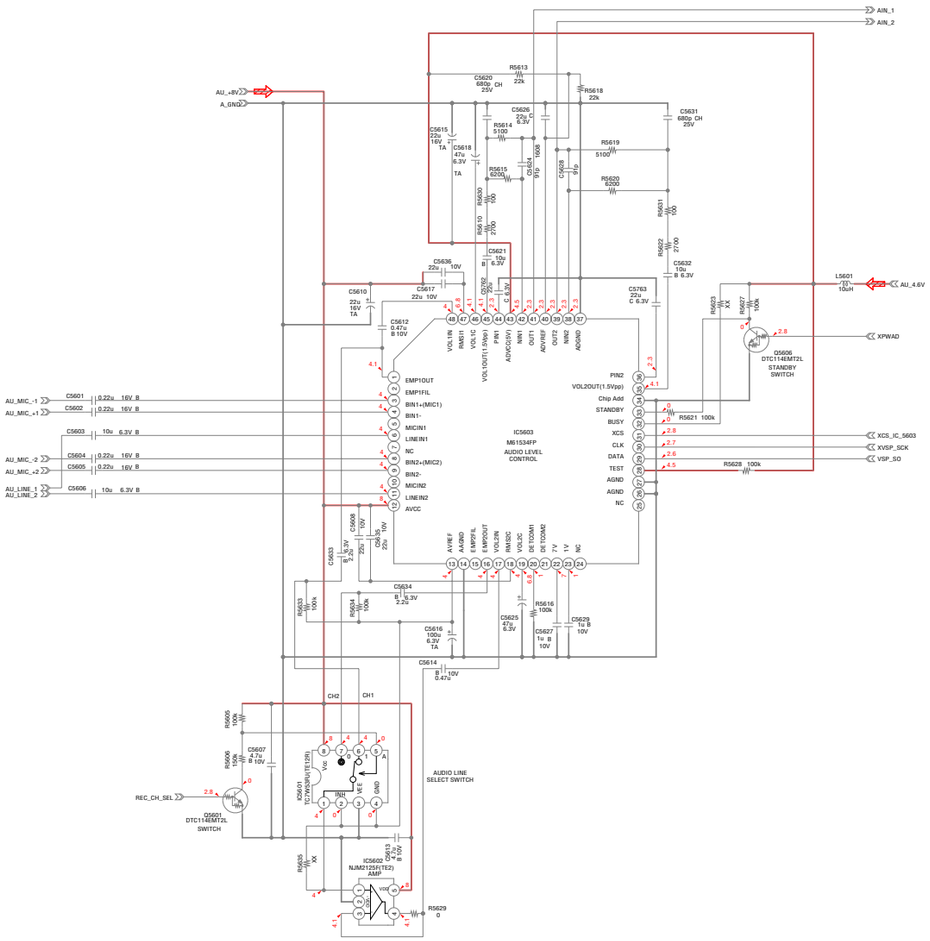
FP-768 FLEXIBLE BOARD

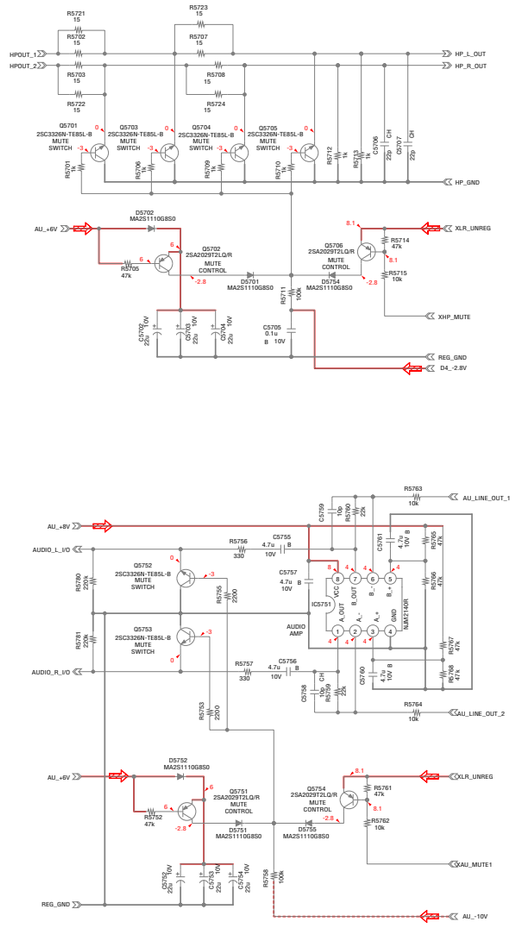
TT-OO CONNECTION

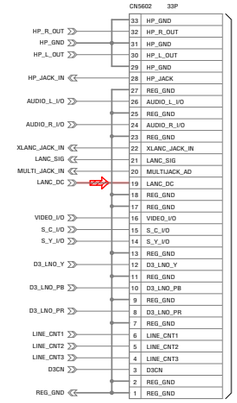
(PRINTED WIRING BOARD is omitted.)



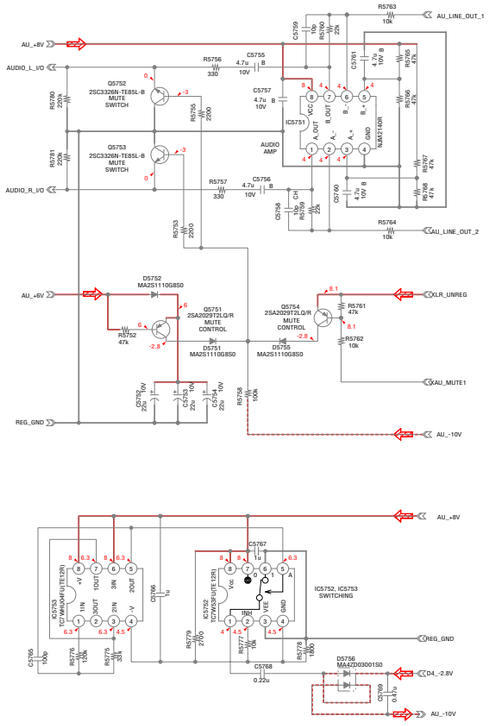
YY-005
CN6602
(Through the Flexible Flat Cable (FFC-114))
(Page 4-43)

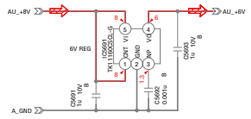


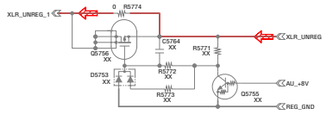


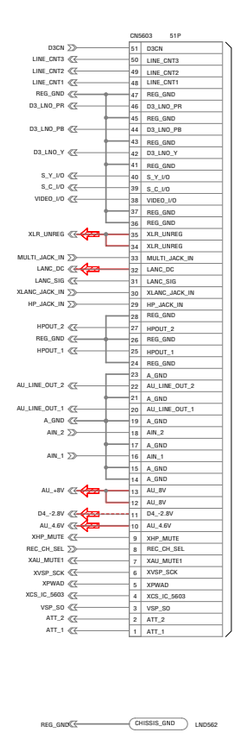


JJ-005
CN8202
(Through the FP-774 Flexible)
(Page 4-41)









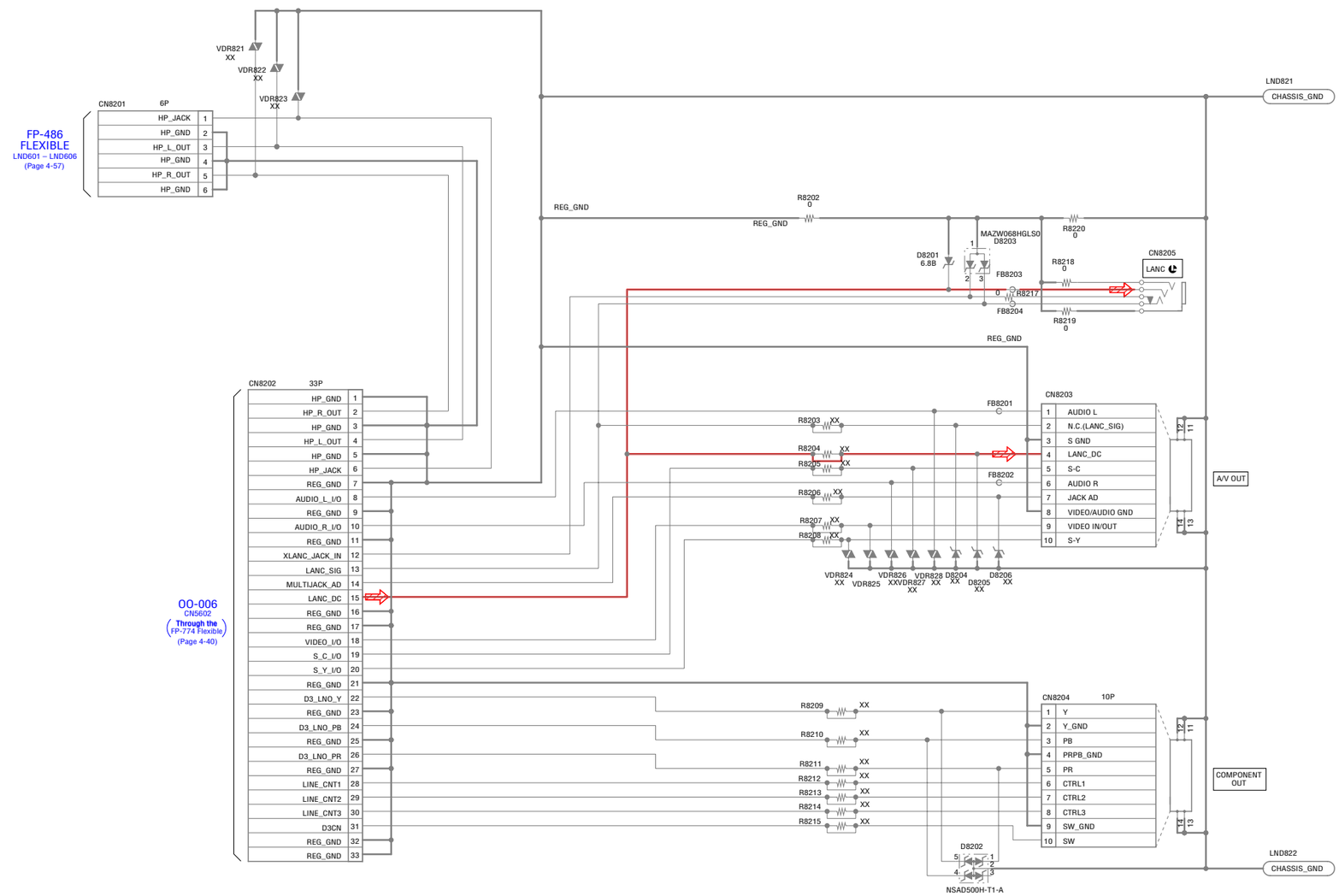
FP-768
FLEXIBLE
LND101 ~ LND151
(Page 4-39)

OO-006 BOARD

AUDIO LEVEL CONTROL

XX MARK:NO MOUNT

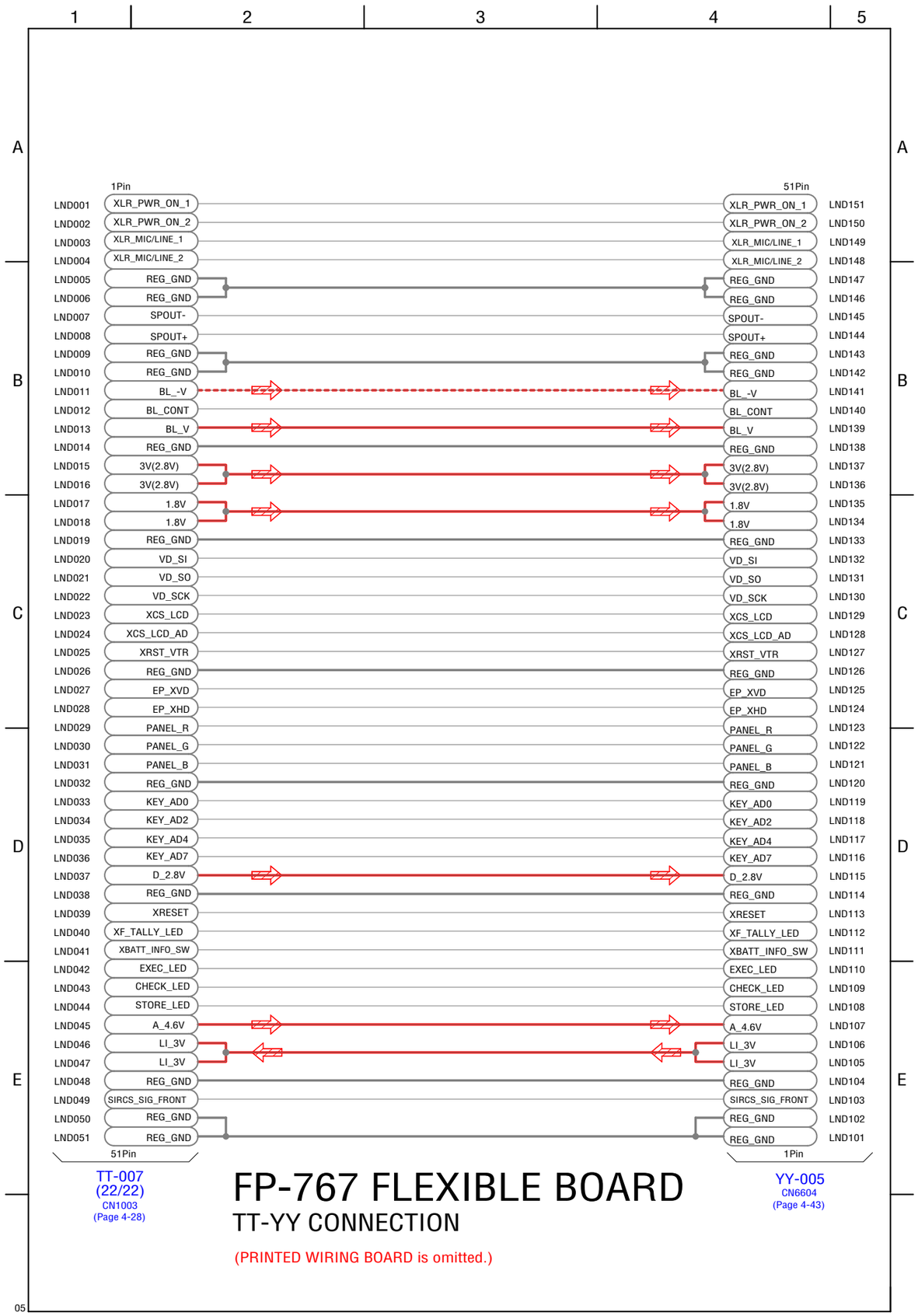
NO MARK:REC/PB MODE

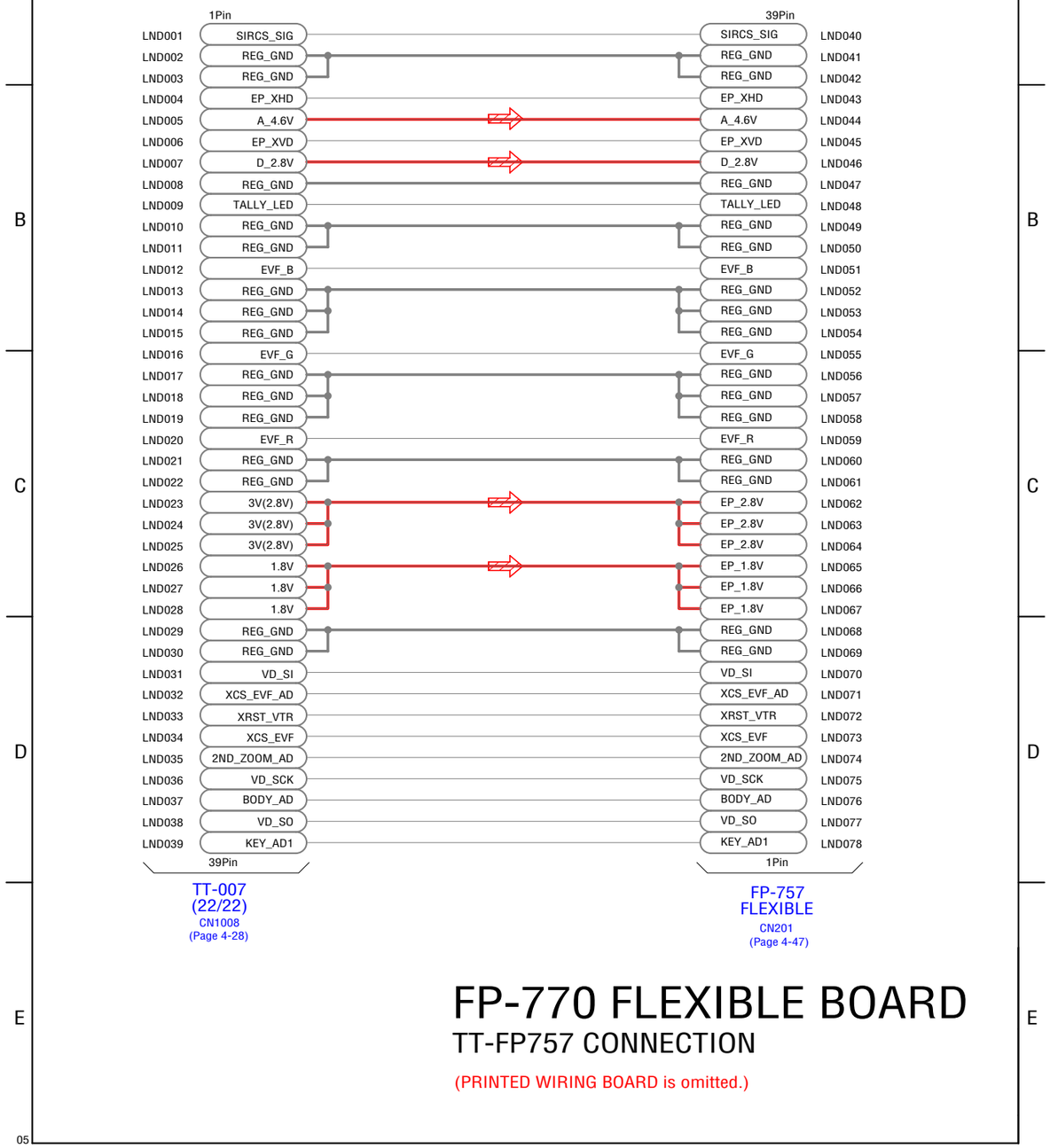


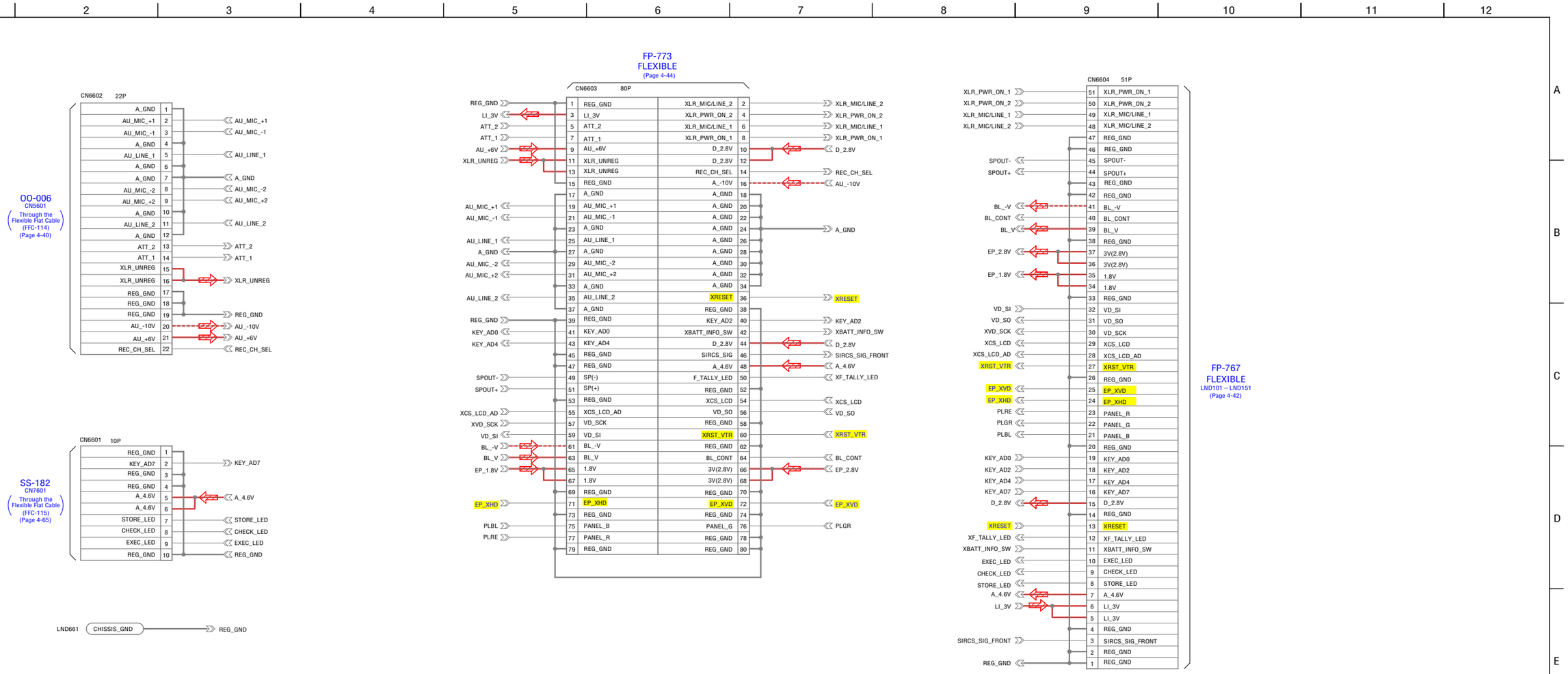
JJ-005 BOARD

LANC, A/V, COMPONENT CONNECTOR

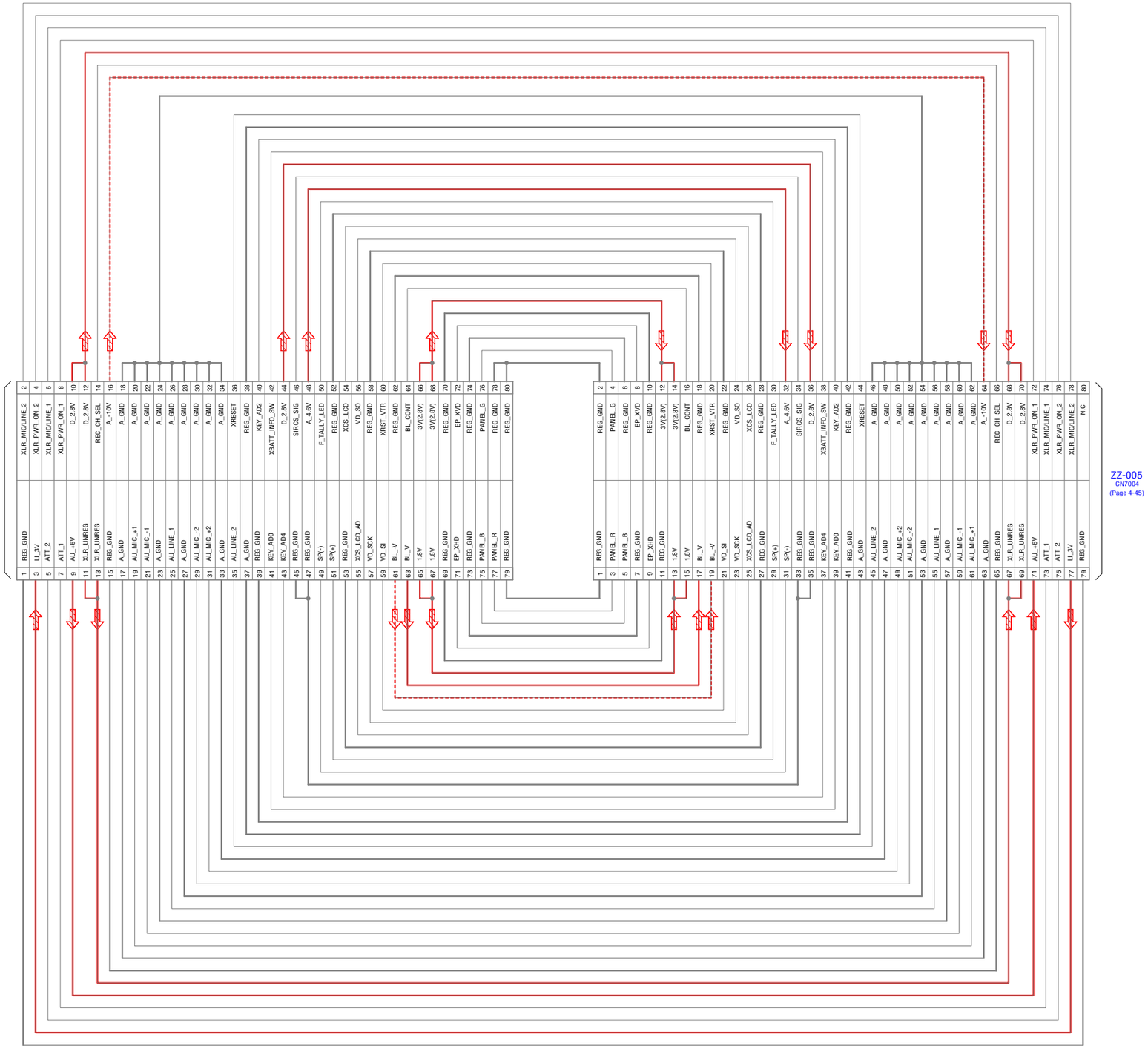
XX MARK:NO MOUNT


1Pin
51Pin
LND001 XLR_PWR_ON_1 XLR_PWR_ON_1 LND151
LND002 XLR_PWR_ON_2 XLR_PWR_ON_2 LND150
LND003 XLR_MIC/LINE_1 XLR_MIC/LINE_1 LND149
LND004 XLR_MIC/LINE_2 XLR_MIC/LINE_2 LND148
LND005 REG_GND REG_GND LND147
LND006 REG_GND REG_GND LND146
LND007 SPOUT- SPOUT- LND145
LND008 SPOUT+ SPOUT+ LND144
LND009 REG_GND REG_GND LND143
LND010 REG_GND REG_GND LND142
LND011 BL_-V BL_-V LND141
LND012 BL_CONT BL_CONT LND140
LND013 BL_V BL_V LND139
LND014 REG_GND REG_GND LND138
LND015 3V(2.8V) 3V(2.8V) LND137
LND016 3V(2.8V) 3V(2.8V) LND136
LND017 1.8V 1.8V LND135
LND018 1.8V 1.8V LND134
LND019 REG_GND REG_GND LND133
LND020 VD_SI VD_SI LND132
LND021 VD_SO VD_SO LND131
LND022 VD_SCK VD_SCK LND130
LND023 XCS_LCD XCS_LCD LND129
LND024 XCS_LCD_AD XCS_LCD_AD LND128
LND025 XRST_VTR XRST_VTR LND127
LND026 REG_GND REG_GND LND126
LND027 EP_XVD EP_XVD LND125
LND028 EP_XHD EP_XHD LND124
LND029 PANEL_R PANEL_R LND123
LND030 PANEL_G PANEL_G LND122
LND031 PANEL_B PANEL_B LND121
LND032 REG_GND REG_GND LND120
LND033 KEY_AD0 KEY_AD0 LND119
LND034 KEY_AD2 KEY_AD2 LND118
LND035 KEY_AD4 KEY_AD4 LND117
LND036 KEY_AD7 KEY_AD7 LND116
LND037 D_2.8V D_2.8V LND115
LND038 REG_GND REG_GND LND114
LND039 XRESET XRESET LND113
LND040 XF_TALLY_LED XF_TALLY_LED LND112
LND041 XBATT_INFO_SW XBATT_INFO_SW LND111
LND042 EXEC_LED EXEC_LED LND110
LND043 CHECK_LED CHECK_LED LND109
LND044 STORE_LED STORE_LED LND108
LND045 A_4.6V A_4.6V LND107
LND046 LI_3V LI_3V LND106
LND047 LI_3V LI_3V LND105
LND048 REG_GND REG_GND LND104
LND049 SIRCS_SIG_FRONT SIRCS_SIG_FRONT LND103
LND050 REG_GND REG_GND LND102
LND051 REG_GND REG_GND LND101
51Pin
1Pin
TT-007
(22/22)
CN1003
(Page 4-28)
YY-005
CN6604
(Page 4-43)
FP-767 FLEXIBLE BOARD
TT-YY CONNECTION
(PRINTED WIRING BOARD is omitted.)


1Pin
39Pin
LND001 SIRCS_SIG SIRCS_SIG LND040
LND002 REG_GND REG_GND LND041
LND003 REG_GND REG_GND LND042
LND004 EP_XHD EP_XHD LND043
LND005 A_4.6V A_4.6V LND044
LND006 EP_XVD EP_XVD LND045
LND007 D_2.8V D_2.8V LND046
LND008 REG_GND REG_GND LND047
LND009 TALLY_LED TALLY_LED LND048
LND010 REG_GND REG_GND LND049
LND011 REG_GND REG_GND LND050
LND012 EVF_B EVF_B LND051
LND013 REG_GND REG_GND LND052
LND014 REG_GND REG_GND LND053
LND015 REG_GND REG_GND LND054
LND016 EVF_G EVF_G LND055
LND017 REG_GND REG_GND LND056
LND018 REG_GND REG_GND LND057
LND019 REG_GND REG_GND LND058
LND020 EVF_R EVF_R LND059
LND021 REG_GND REG_GND LND060
LND022 REG_GND REG_GND LND061
LND023 3V(2.8V) EP_2.8V LND062
LND024 3V(2.8V) EP_2.8V LND063
LND025 3V(2.8V) EP_2.8V LND064
LND026 1.8V EP_1.8V LND065
LND027 1.8V EP_1.8V LND066
LND028 1.8V EP_1.8V LND067
LND029 REG_GND REG_GND LND068
LND030 REG_GND REG_GND LND069
LND031 VD_SI VD_SI LND070
LND032 XCS_EVF_AD XCS_EVF_AD LND071
LND033 XRST_VTR XRST_VTR LND072
LND034 XCS_EVF XCS_EVF LND073
LND035 2ND_ZOOM_AD 2ND_ZOOM_AD LND074
LND036 VD_SCK VD_SCK LND075
LND037 BODY_AD BODY_AD LND076
LND038 VD_SO VD_SO LND077
LND039 KEY_AD1 KEY_AD1 LND078
39Pin
1Pin
TT-007
(22/22)
CN1008
(Page 4-28)
FP-757
FLEXIBLE
CN201
(Page 4-47)
FP-770 FLEXIBLE BOARD
TT-FP757 CONNECTION
(PRINTED WIRING BOARD is omitted.)



YY-005 BOARD
RELAY CONNECTOR



FP-773 FLEXIBLE BOARD

YY-ZZ CONNECTION

(PRINTED WIRING BOARD is omitted.)

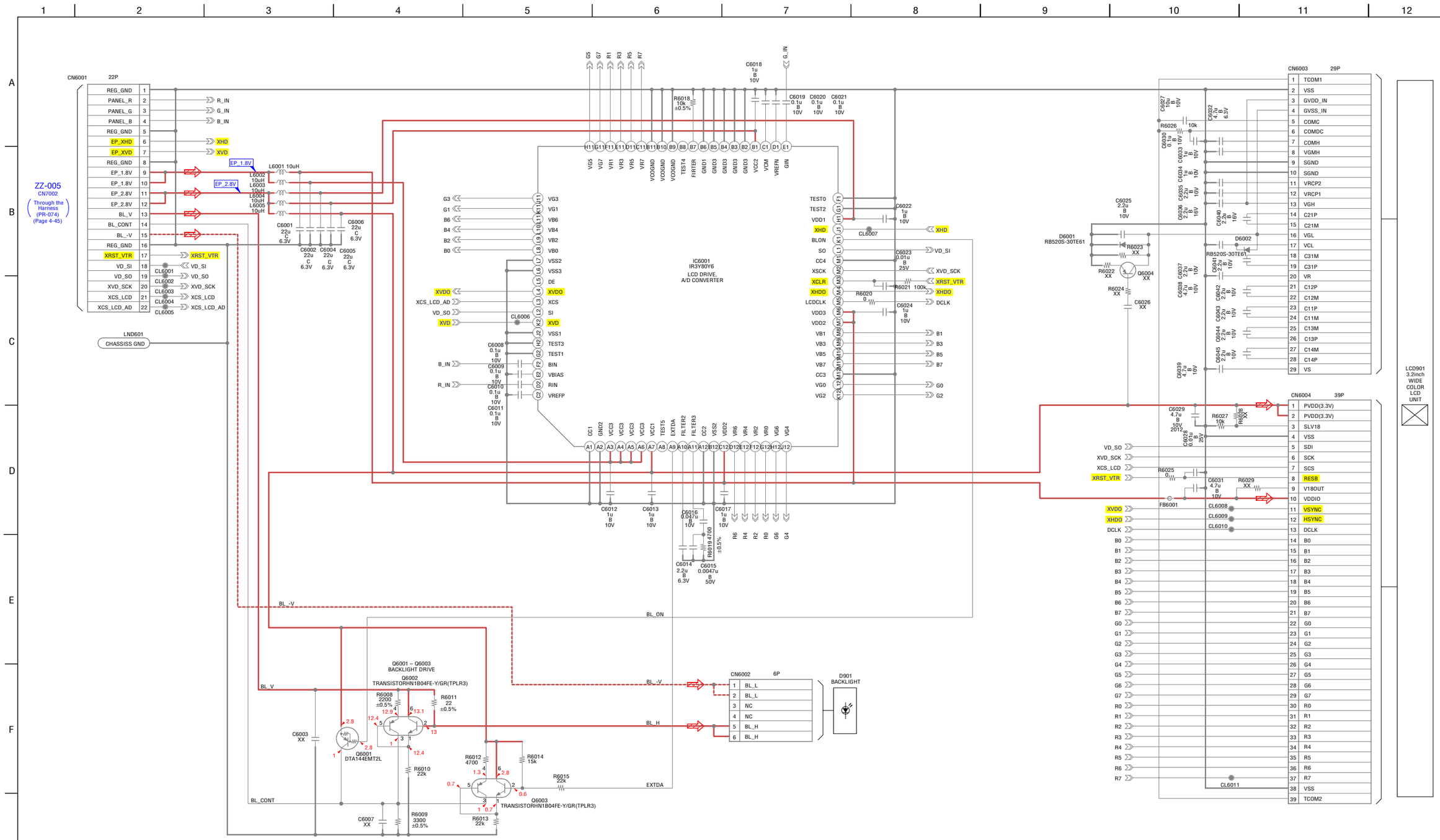
• Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.

ZZ-005 BOARD

PANEL RELAY CONNECTOR

NO MARK:REC/PB MODE

Note: BT7001 (lithium battery) is not included in ZZ-005 complete board.

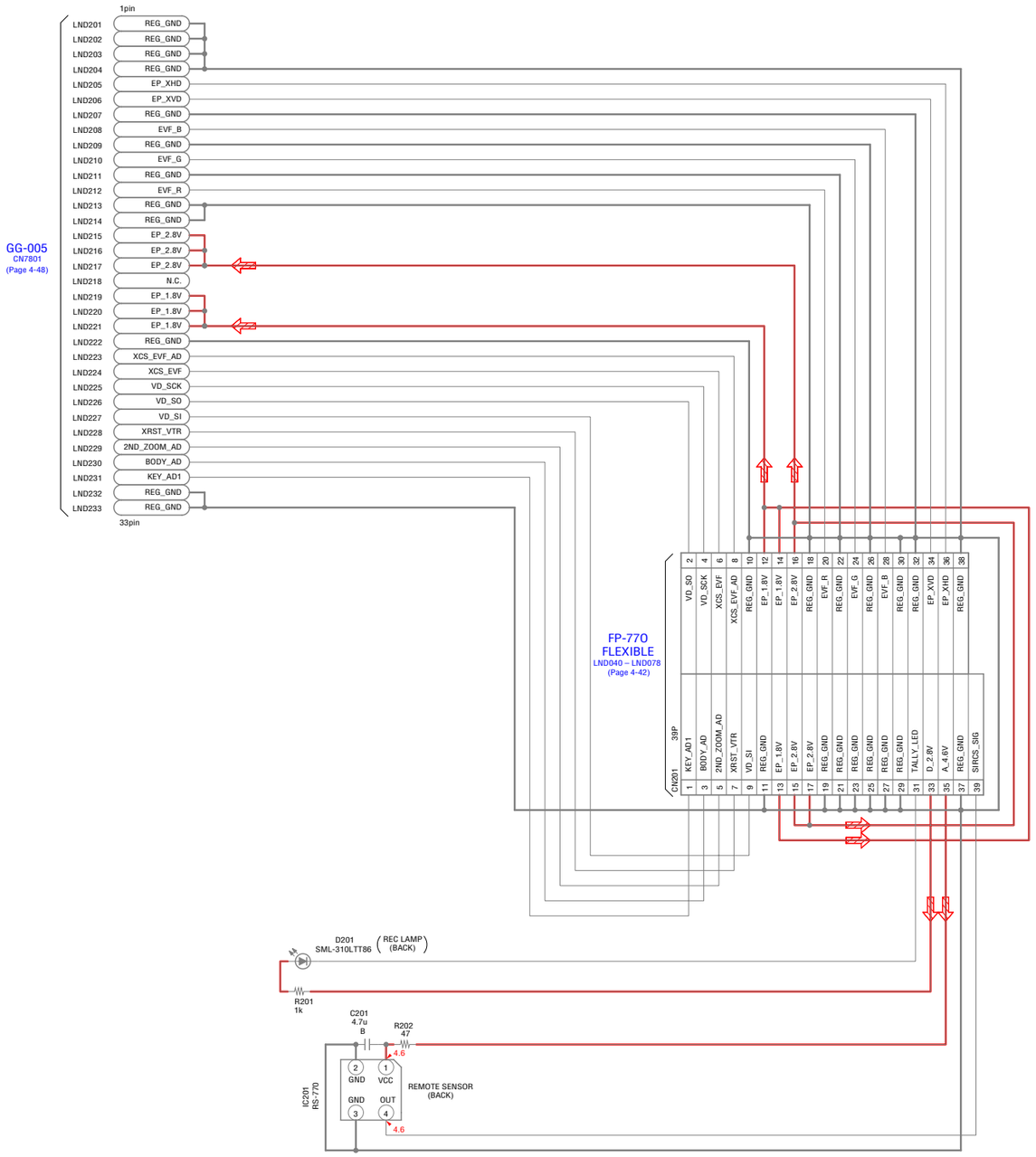


PP-005 BOARD

LCD DRIVE, A/D CONVERTER

XX MARK:NO MOUNT

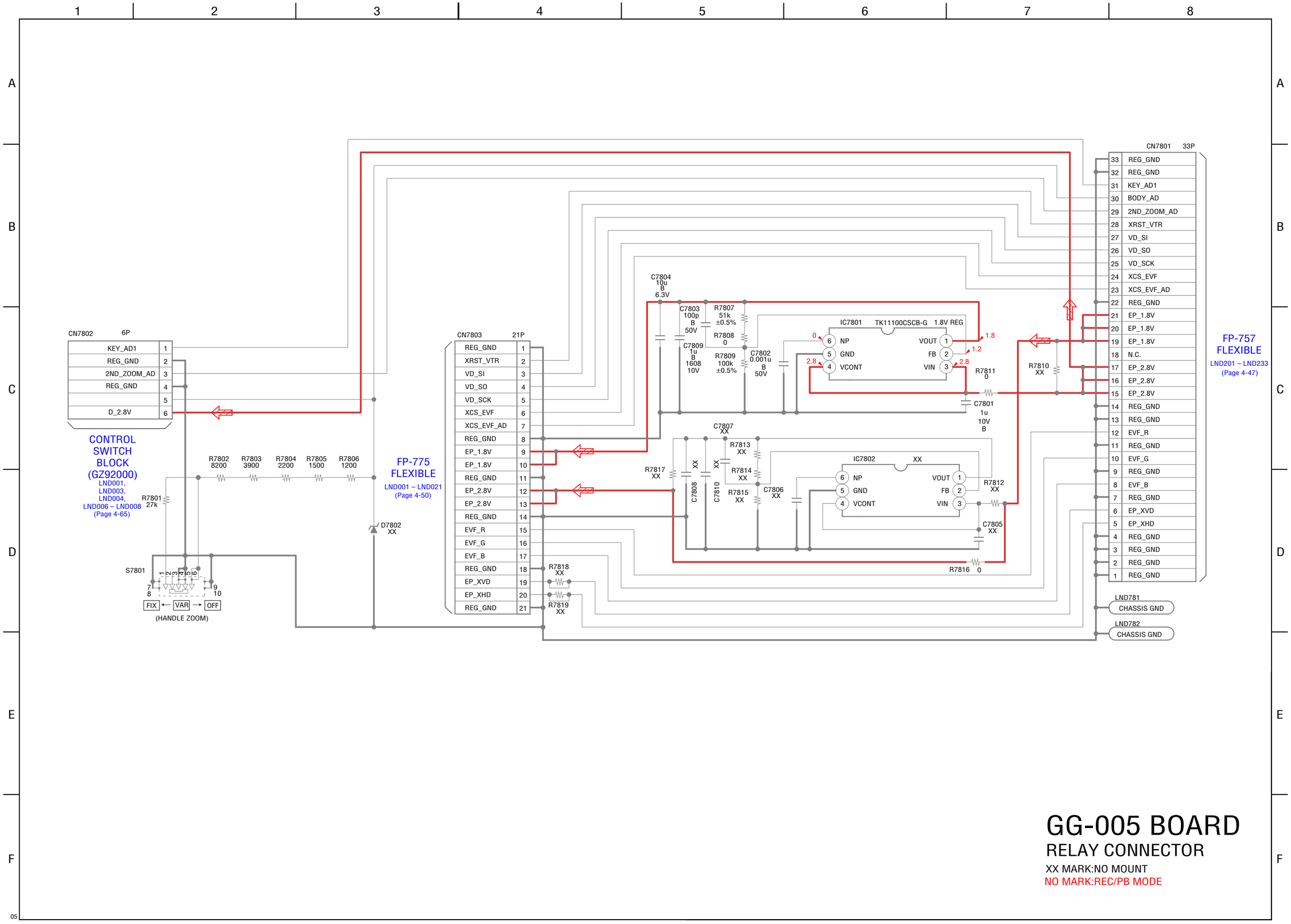
NO MARK:REC/PB MODE

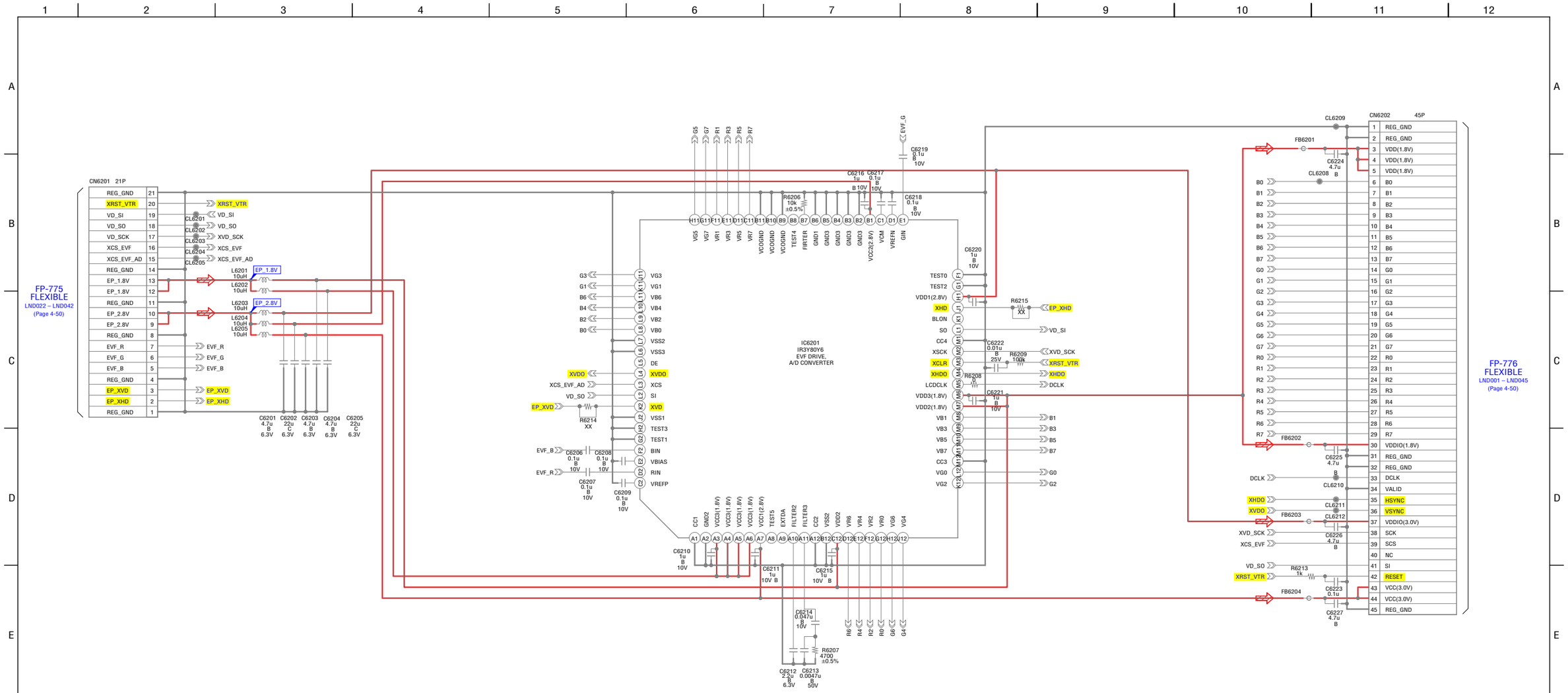


FP-757 FLEXIBLE BOARD

REMOTE SENSOR (BACK)

NO MARK:REC/PB MODE

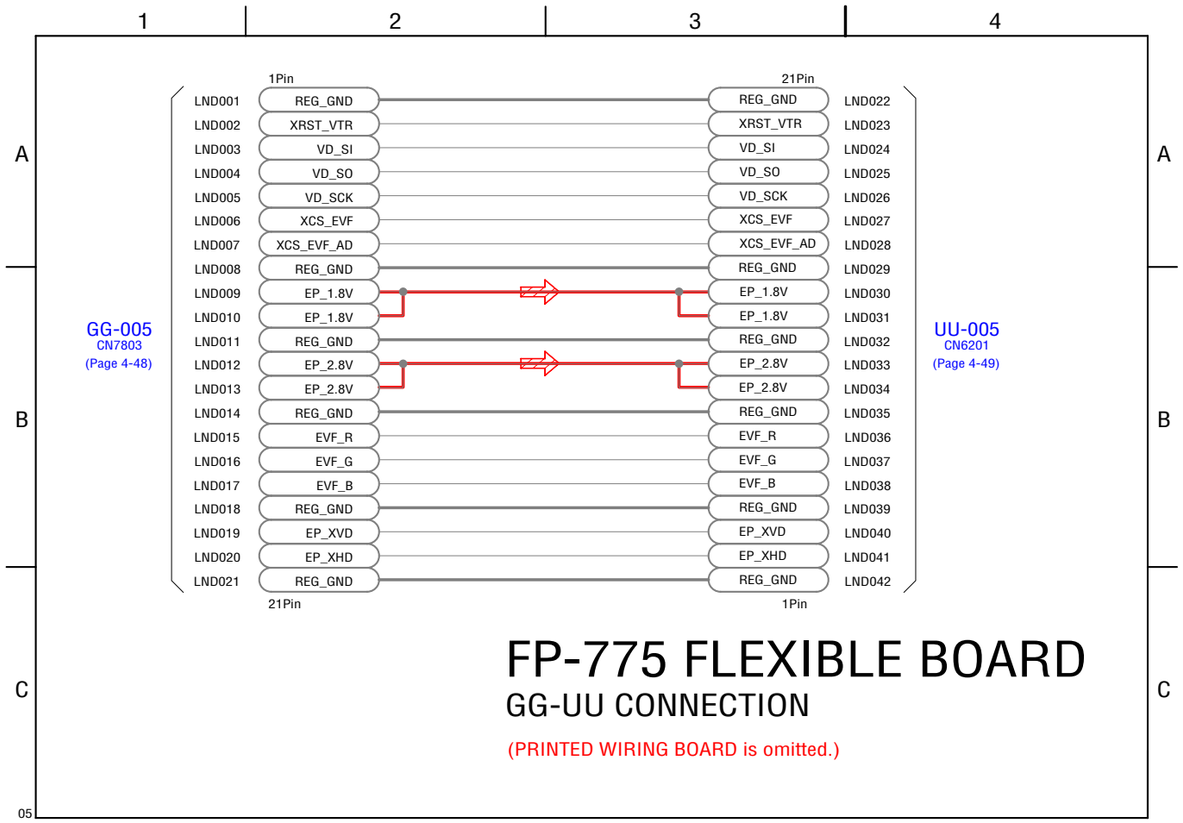

CN7802 6P
KEY_AD1 1
REG_GND 2
2ND_ZOOM_AD 3
REG_GND 4
5
D_2.8V 6
CONTROL SWITCH BLOCK (GZ92000)
LND001, LND003, LND004, LND006 – LND008
(Page 4-65)
R7801 27k
R7802 8200
R7803 3900
R7804 2200
R7805 1500
R7806 1200
S7801
FIX
VAR
OFF
(HANDLE ZOOM)
D7802 XX
FP-775 FLEXIBLE
LND001 – LND021
(Page 4-50)
CN7803 21P
REG_GND 1
XRST_VTR 2
VD_SI 3
VD_SO 4
VD_SCK 5
XCS_EVF 6
XCS_EVF_AD 7
REG_GND 8
EP_1.8V 9
EP_1.8V 10
REG_GND 11
EP_2.8V 12
EP_2.8V 13
REG_GND 14
EVF_R 15
EVF_G 16
EVF_B 17
REG_GND 18
EP_XVD 19
EP_XHD 20
REG_GND 21
C7804 10u B 6.3V
C7803 100p B 50V
C7809 1u B 1608 10V
R7807 51k ±0.5%
R7808 0
R7809 100k ±0.5%
C7802 0.001u B 50V
IC7801 TK11100CSCB-G 1.8V REG
NP
GND
VCONT
VOUT
FB
VIN
R7811 0
C7801 1u 10V B
C7807 XX
R7813 XX
R7814 XX
R7815 XX
C7806 XX
C7808 XX
C7810 XX
R7817 XX
IC7802 XX
R7812 XX
C7805 XX
R7816 0
R7818 XX
R7819 XX
R7810 XX
CN7801 33P
33 REG_GND
32 REG_GND
31 KEY_AD1
30 BODY_AD
29 2ND_ZOOM_AD
28 XRST_VTR
27 VD_SI
26 VD_SO
25 VD_SCK
24 XCS_EVF
23 XCS_EVF_AD
22 REG_GND
21 EP_1.8V
20 EP_1.8V
19 EP_1.8V
18 N.C.
17 EP_2.8V
16 EP_2.8V
15 EP_2.8V
14 REG_GND
13 REG_GND
12 EVF_R
11 REG_GND
10 EVF_G
9 REG_GND
8 EVF_B
7 REG_GND
6 EP_XVD
5 EP_XHD
4 REG_GND
3 REG_GND
2 REG_GND
1 REG_GND
FP-757 FLEXIBLE
LND201 – LND233
(Page 4-47)
LND781 CHASSIS GND
LND782 CHASSIS GND
GG-005 BOARD
RELAY CONNECTOR
XX MARK:NO MOUNT
NO MARK:REC/PB MODE



UU-005 BOARD

EVF DRIVE, A/D CONVERTER

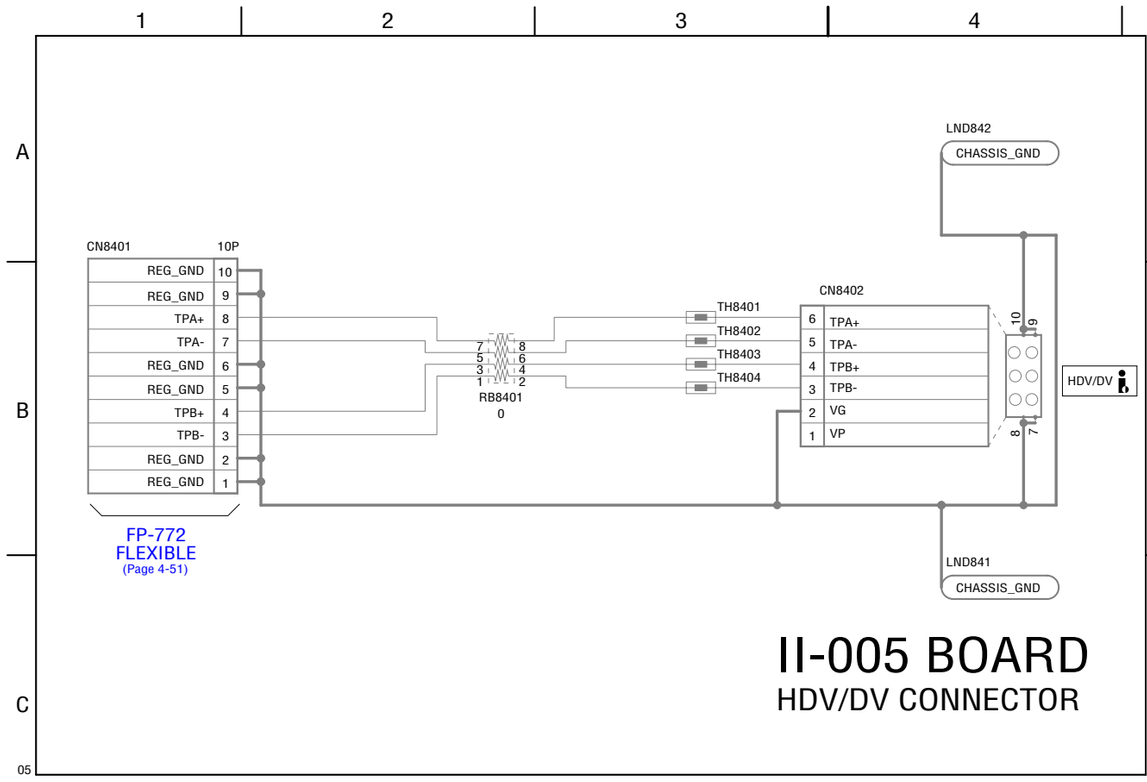
XX MARK:NO MOUNT



FP-775 FLEXIBLE BOARD

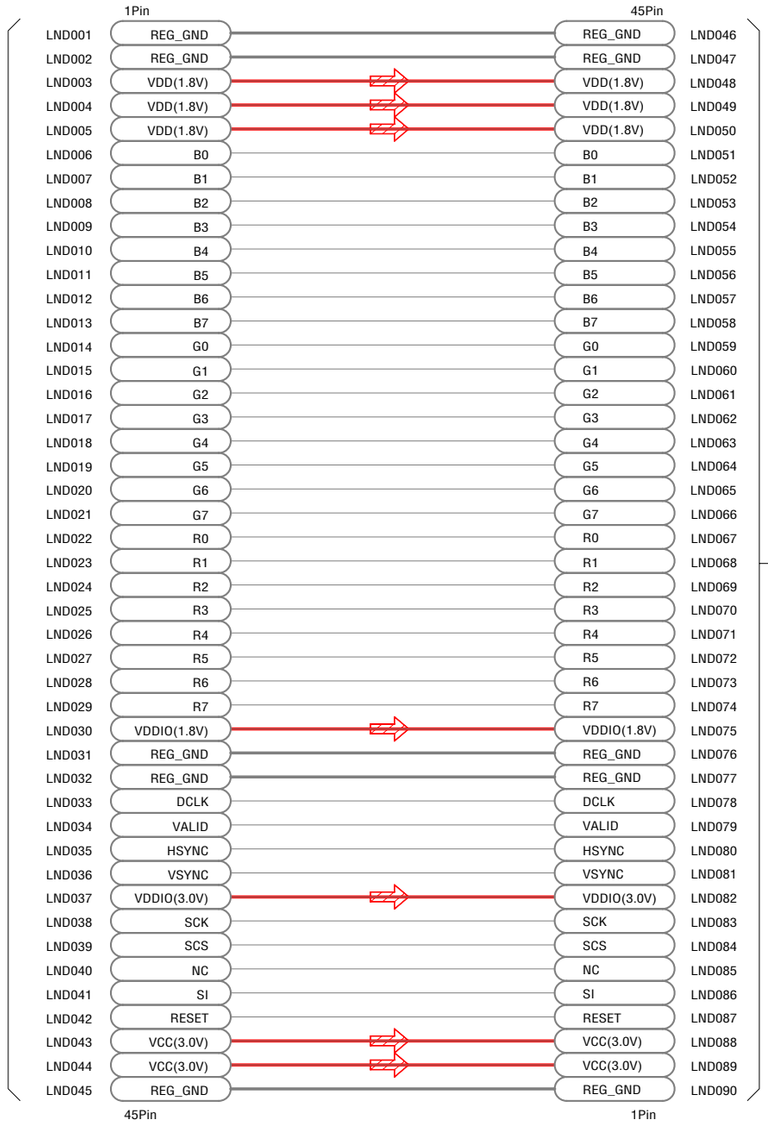
GG-UU CONNECTION

(PRINTED WIRING BOARD is omitted.)



II-005 BOARD

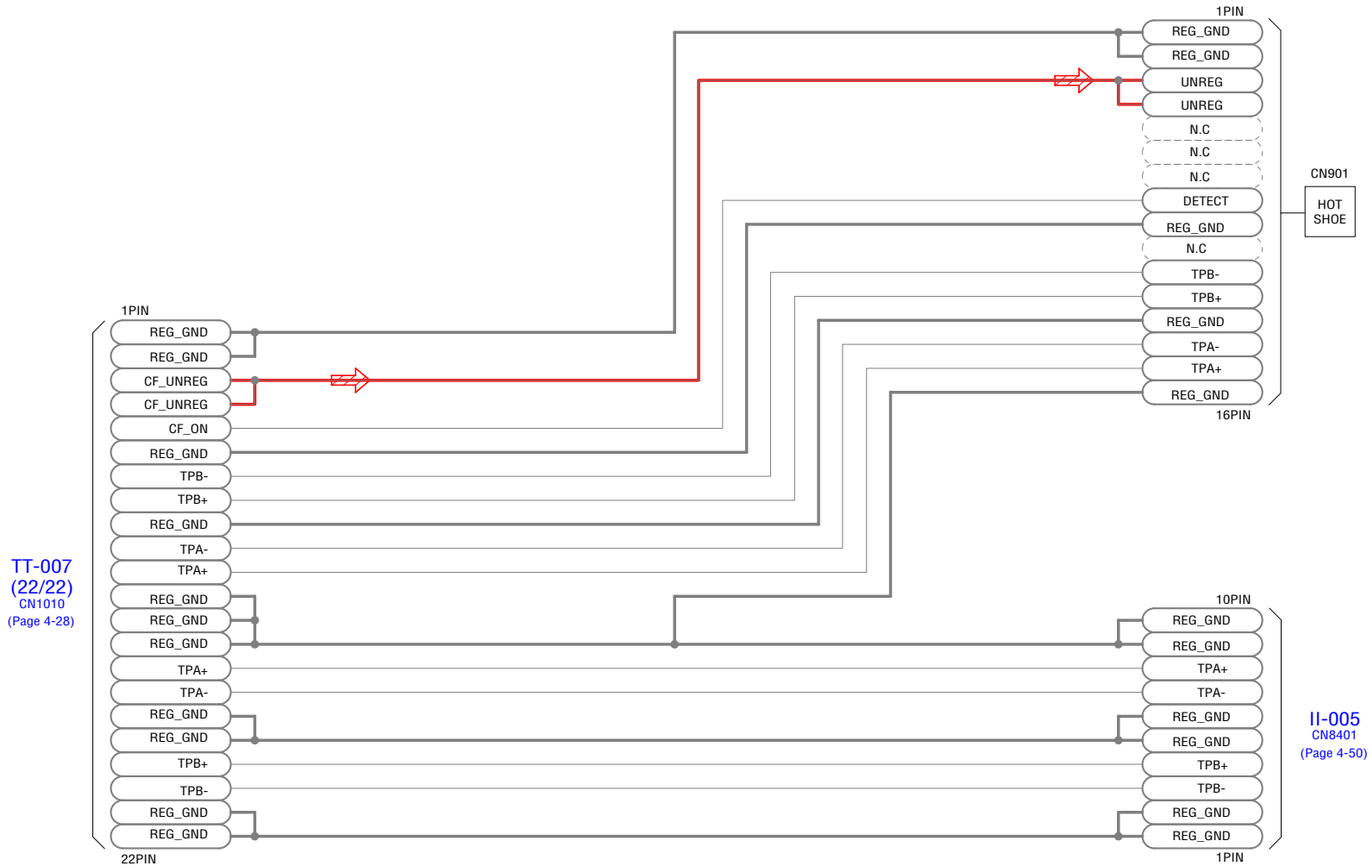
HDV/DV CONNECTOR



FP-776 FLEXIBLE BOARD

UU-EVF CONNECTION

(PRINTED WIRING BOARD is omitted.)



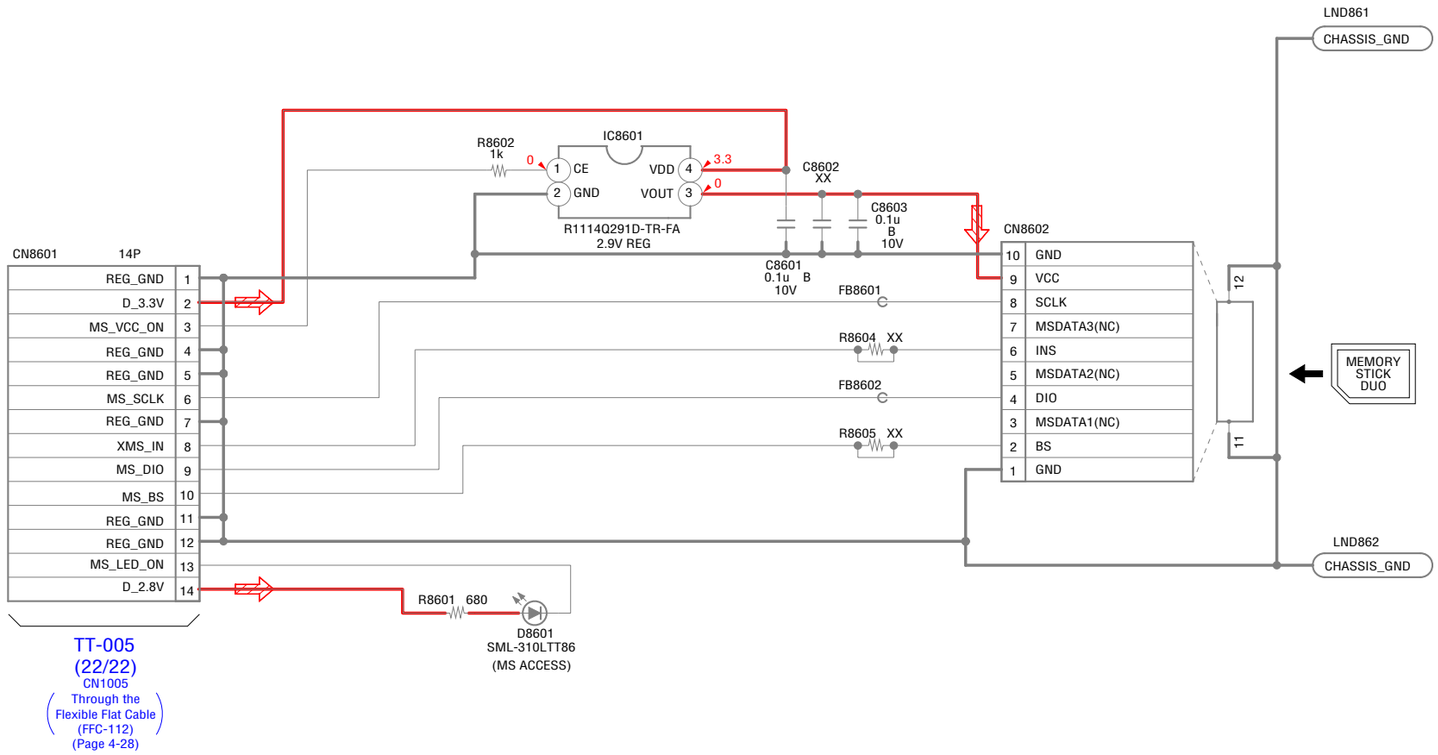
TT-007
(22/22)
CN1010
(Page 4-28)

II-005
CN8401
(Page 4-50)

FP-772 FLEXIBLE BOARD

TT-II CONNECTION

(PRINTED WIRING BOARD is omitted.)

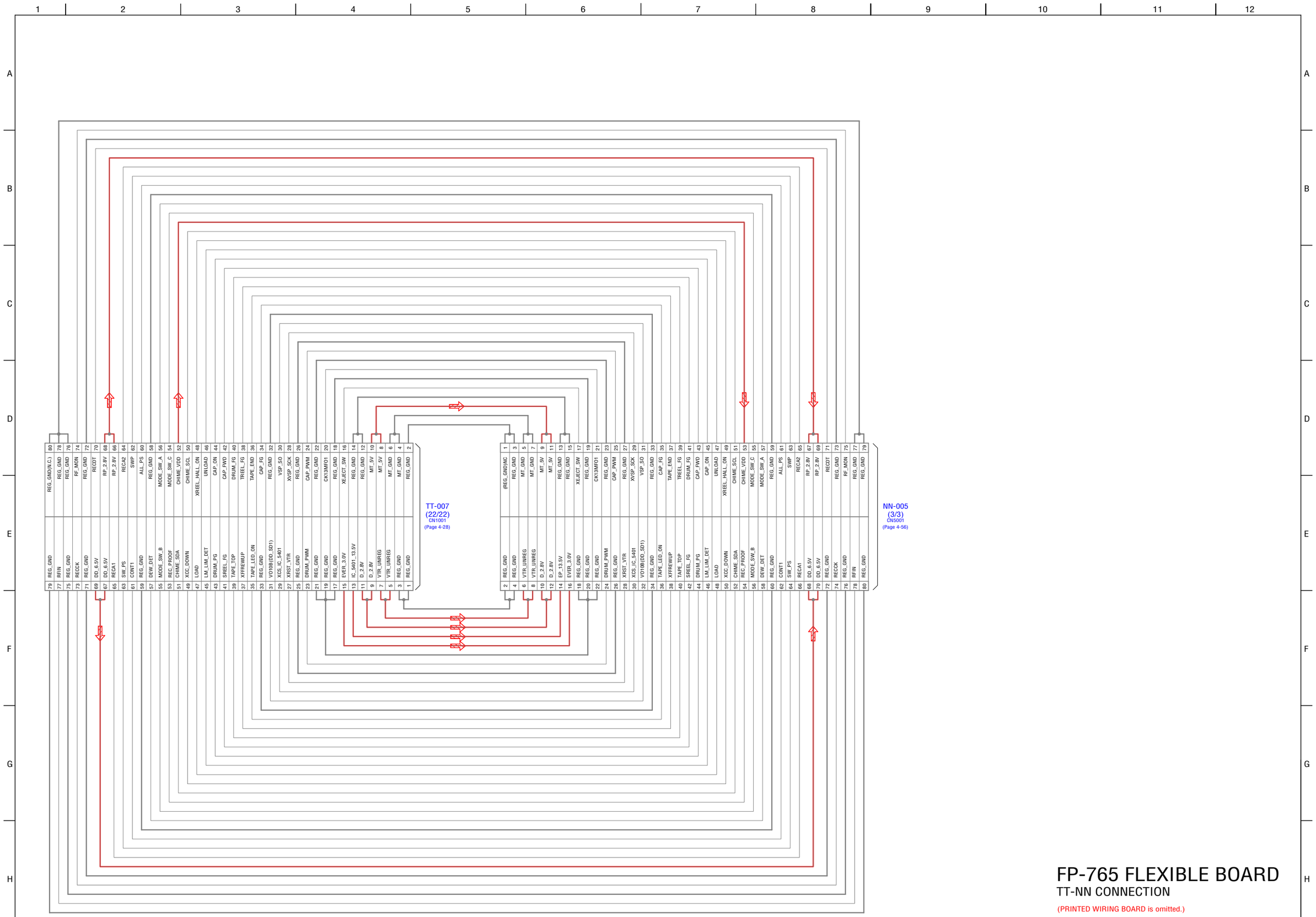


WW-005 BOARD

MS CONNECTOR

XX MARK:NO MOUNT

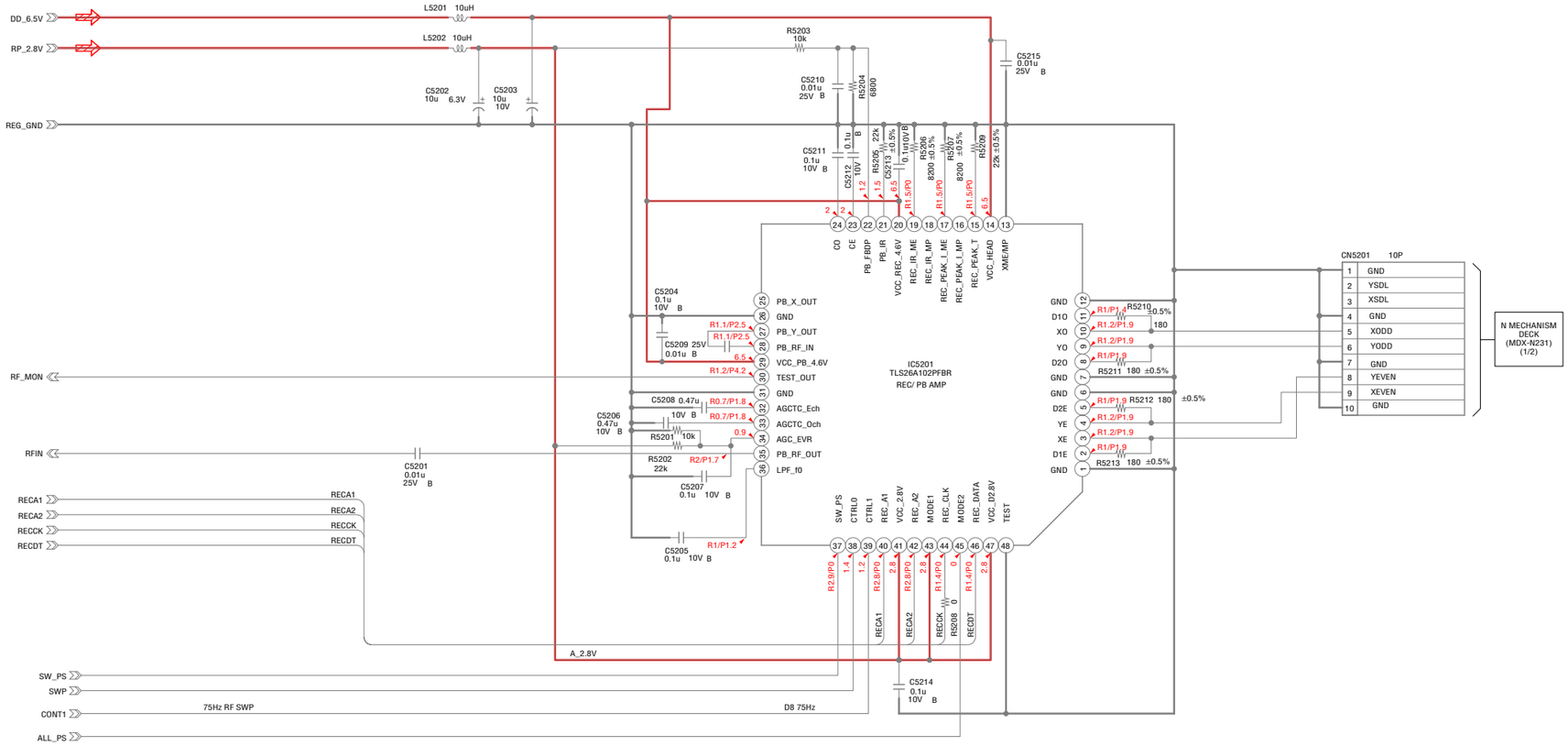
NO MARK:REC/PB MODE



FP-765 FLEXIBLE BOARD

TT-NN CONNECTION

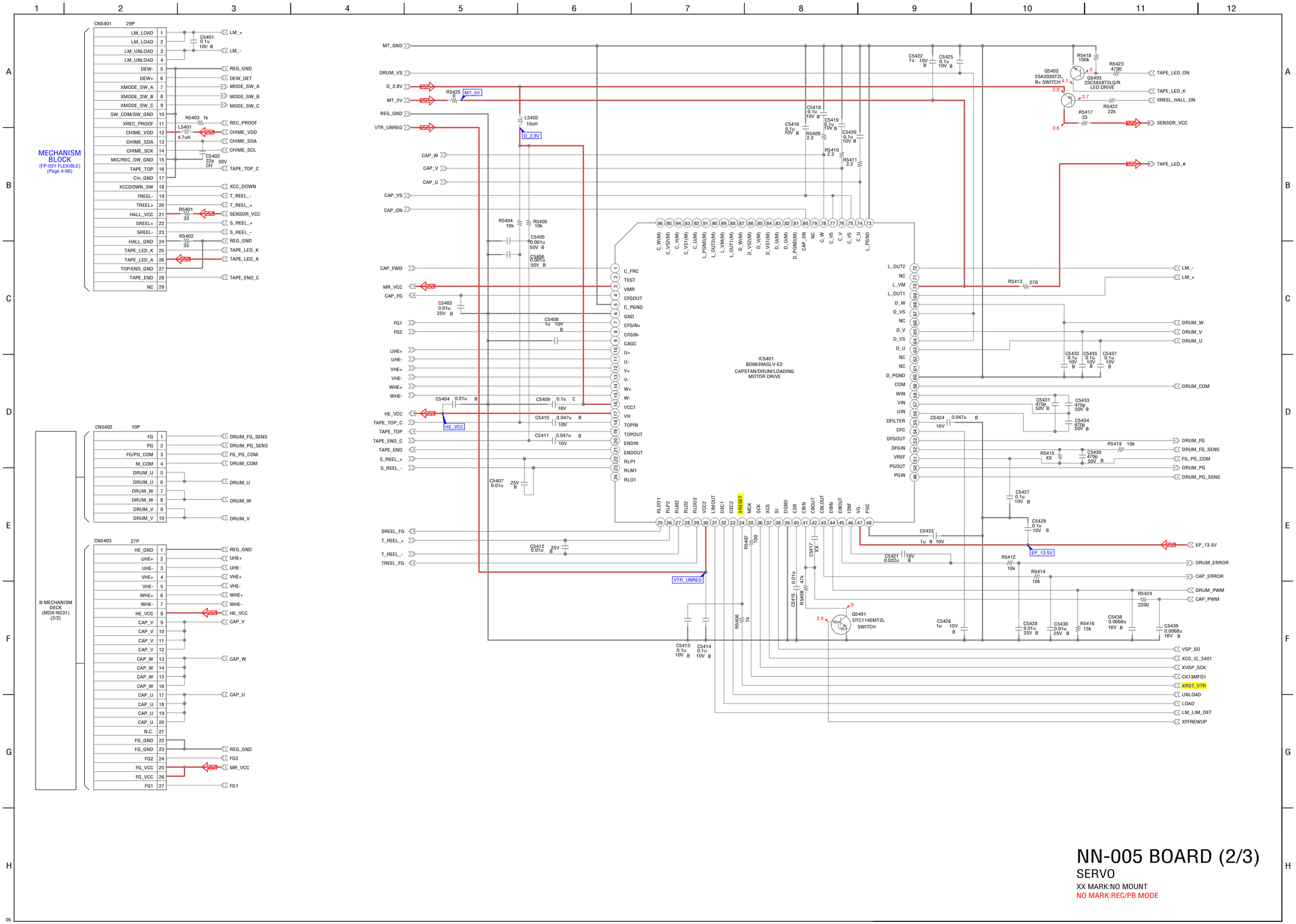
(PRINTED WIRING BOARD is omitted.)

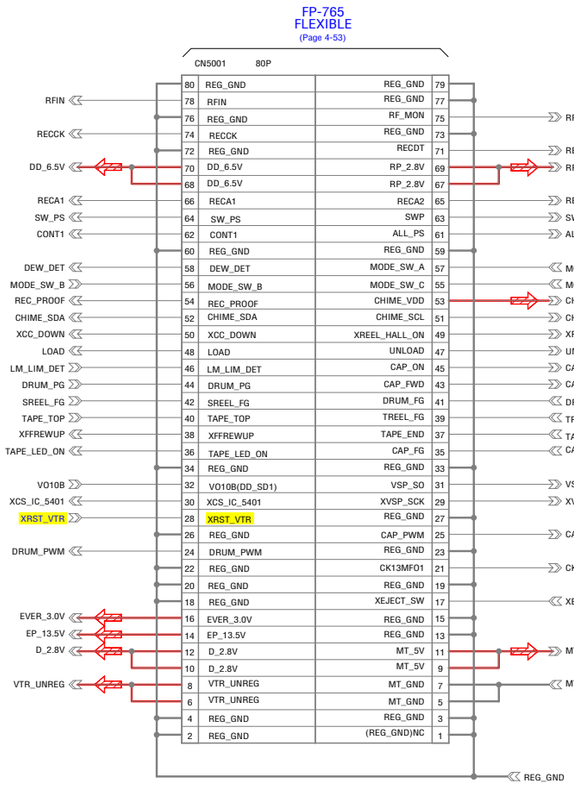


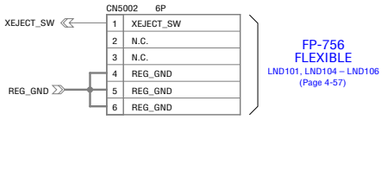
NN-005 BOARD (1/3)

REC/PB AMP

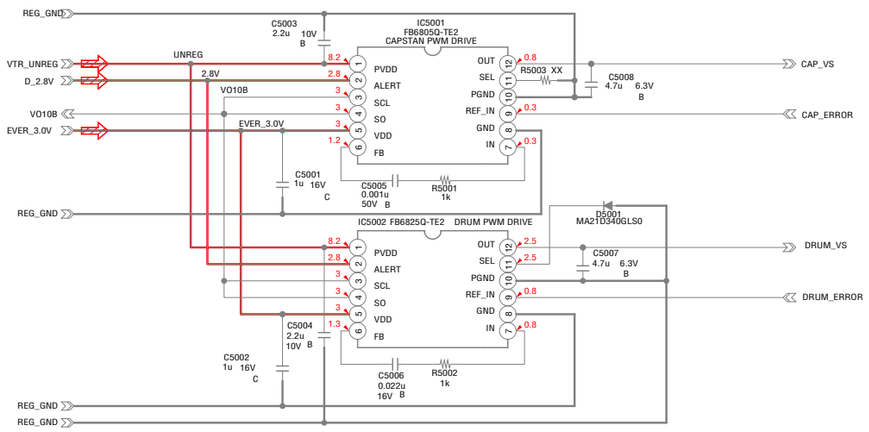
NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE


MECHANISM BLOCK
(FP-031 FLEXIBLE)
(Page 4-66)
CN5401 29P
LM_LOAD 1
LM_LOAD 2
LM_UNLOAD 3
LM_UNLOAD 4
DEW- 5
DEW+ 6
XMODE_SW_A 7
XMODE_SW_B 8
XMODE_SW_C 9
SW_COM/SW_GND 10
XREC_PROOF 11
CHIME_VDD 12
CHIME_SDA 13
CHIME_SCK 14
MIC/REC_SW_GND 15
TAPE_TOP 16
Cin_GND 17
XCCDOWN_SW 18
TREEL- 19
TREEL+ 20
HALL_VCC 21
SREEL+ 22
SREEL- 23
HALL_GND 24
TAPE_LED_K 25
TAPE_LED_A 26
TOP/END_GND 27
TAPE_END 28
NC 29
LM_+
LM_-
REG_GND
DEW_DET
MODE_SW_A
MODE_SW_B
MODE_SW_C
REC_PROOF
CHIME_VDD
CHIME_SDA
CHIME_SCL
TAPE_TOP_C
XCC_DOWN
T_REEL_-
T_REEL_+
SENSOR_VCC
S_REEL_+
S_REEL_-
REG_GND
TAPE_LED_K
TAPE_LED_A
TAPE_END_C
CN5402 10P
FG 1
PG 2
FG/PG_COM 3
M_COM 4
DRUM_U 5
DRUM_U 6
DRUM_W 7
DRUM_W 8
DRUM_V 9
DRUM_V 10
DRUM_FG_SENS
DRUM_PG_SENS
FG_PG_COM
DRUM_COM
DRUM_U
DRUM_W
DRUM_V
N MECHANISM DECK (MDX-N231) (2/2)
CN5403 27P
HE_GND 1
UHE+ 2
UHE- 3
VHE+ 4
VHE- 5
WHE+ 6
WHE- 7
HE_VCC 8
CAP_V 9
CAP_V 10
CAP_V 11
CAP_V 12
CAP_W 13
CAP_W 14
CAP_W 15
CAP_W 16
CAP_U 17
CAP_U 18
CAP_U 19
CAP_U 20
N.C. 21
FG_GND 22
FG_GND 23
FG2 24
FG_VCC 25
FG_VCC 26
FG1 27
REG_GND
UHE+
UHE-
VHE+
VHE-
WHE+
WHE-
HE_VCC
CAP_V
CAP_W
CAP_U
REG_GND
FG2
MR_VCC
FG1
IC5401
BD6639AGLV-E2
CAPSTAN/DRUM/LOADING
MOTOR DRIVE
C_FRC
TEST
VMR
CFGOUT
C_PGND
GND
CFGIN+
CFGIN-
CAGC
U+
U-
V+
V-
W+
W-
VCC1
VH
TOPIN
TOPOUT
ENDIN
ENDOUT
RLP1
RLM1
RLO1
L_OUT2
NC
L_VM
L_OUT1
D_W
D_VS
NC
D_V
D_VS
D_U
NC
NC
D_PGND
COM
WIN
VIN
UIN
DFILTER
DFC
DFGOUT
DFGIN
VREF
PGOUT
PGIN
DRUM_COM
DRUM_FG
DRUM_FG_SENS
FG_PG_COM
DRUM_PG
DRUM_PG_SENS
MT_GND
DRUM_VS
D_2.8V
MT_5V
REG_GND
VTR_UNREG
CAP_W
CAP_V
CAP_U
CAP_VS
CAP_ON
CAP_FWD
MR_VCC
CAP_FG
FG1
FG2
UHE+
UHE-
VHE+
VHE-
WHE+
WHE-
HE_VCC
TAPE_TOP_C
TAPE_TOP
TAPE_END_C
TAPE_END
S_REEL_+
S_REEL_-
SREEL_FG
T_REEL_+
T_REEL_-
TREEL_FG
RLDO1
RLP2
RLM2
RLO2
RLDO2
VCC2
LIMOUT
DEC1
DEC2
XRESET
MCK
SCK
XCS
SI
DGND
CSR
CBIN
CBOUT
CBLOUT
DBIN
DBOUT
ISNF
VG
PGG
C_W(M)
C_VS2(M)
C_V(M)
C_VS1(M)
C_U(M)
L_PGND(M)
L_OUT2(M)
L_VM(M)
L_OUT1(M)
D_W(M)
D_VS2(M)
D_V(M)
D_VS1(M)
D_U(M)
D_U(M)
D_PGND(M)
CAP_ON
NC
C_W
C_VS
C_V
C_VS
C_U
L_PGND
R5425 0 MT_5V
L5402 10uH
D_2.8V
L5401 4.7uH
R5403 1k
C5402 22p 50V CH
R5401 33
R5402 33
R5404 10k
R5405 10k
C5405 0.001u 50V B
C5406 0.001u 50V B
C5403 0.01u 25V B
C5408 1u 10V B
C5404 0.01u B
C5409 0.1u C 16V
C5410 0.047u B 10V
C5411 0.047u B 10V
C5407 0.01u 25V B
C5412 0.01u 25V B
C5413 0.1u 10V B
C5414 0.1u 10V B
C5416 0.1u 10V B
C5418 0.1u 10V B
C5419 0.1u 10V B
C5420 0.1u 10V B
R5409 2.2
R5410 2.2
R5411 2.2
C5422 1u 10V B
C5425 0.1u 10V B
R5418 100k
R5423 4700
Q5402 2SA2030T2L B+ SWITCH
Q5403 2SC5658T2LQ/R LED DRIVE
R5422 22k
R5417 33
TAPE_LED_ON
TAPE_LED_K
XREEL_HALL_ON
SENSOR_VCC
TAPE_LED_A
R5413 270
C5432 0.1u 10V B
C5435 0.1u 10V B
C5437 0.1u 10V B
C5431 470p 50V B
C5433 470p 50V B
C5434 470p 50V B
C5424 0.047u B 16V
R5419 10k
R5415 XX
C5436 470p 50V B
C5427 0.1u 10V B
C5429 0.1u 10V B
C5423 1u B 10V
C5421 0.022u 16V B
EP_13.5V
R5412 10k
R5414 10k
R5424 2200
C5438 0.0068u 16V B
C5439 0.0068u 16V B
C5426 1u 10V B
C5428 0.01u 25V B
C5430 0.01u 25V B
R5416 15k
C5415 0.01u
R5408 47k
R5406 1k
R5407 100
C5417 XX
Q5401 DTC114EMT2L SWITCH
VSP_SO
XCS_IC_5401
XVSP_SCK
CK13MFO1
XRST_VTR
UNLOAD
LOAD
LM_LIM_DET
XFFREWUP
NN-005 BOARD (2/3)
SERVO
XX MARK:NO MOUNT
NO MARK:REC/PB MODE







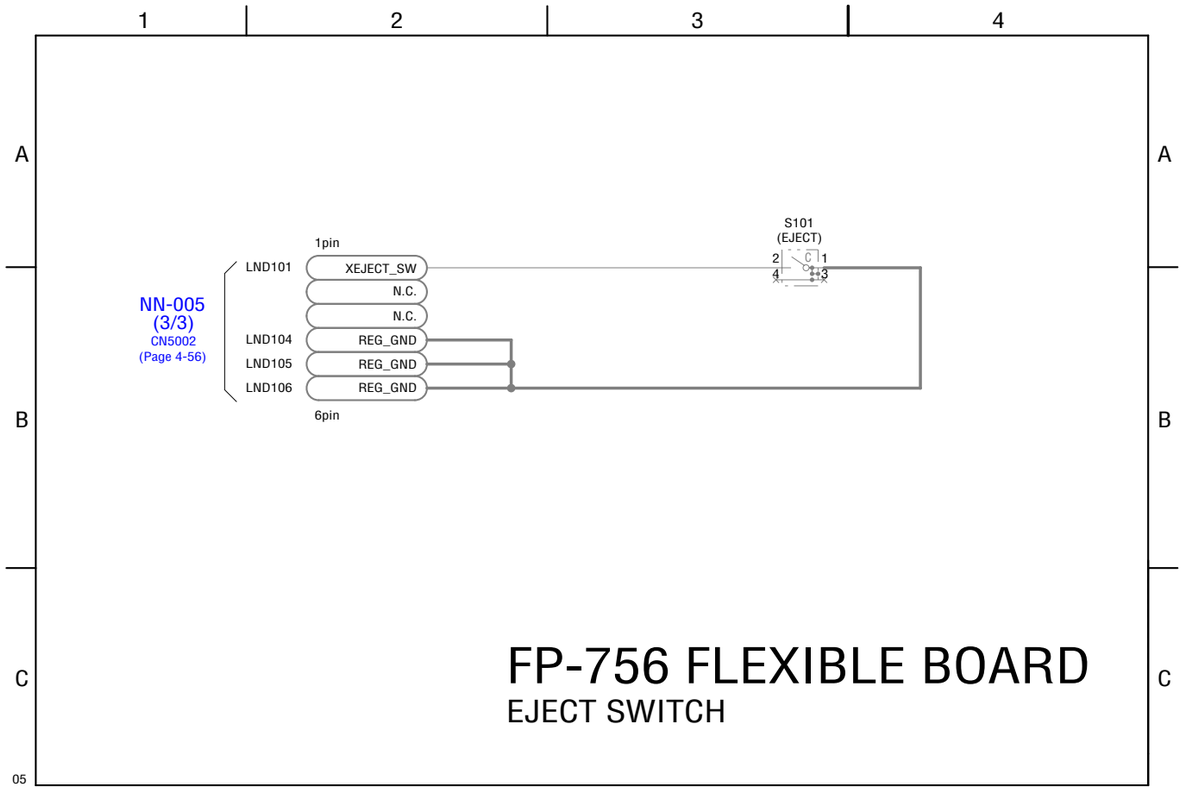


NN-005 BOARD (3/3)

CAPSTAN/DRUM MOTOR DRIVE

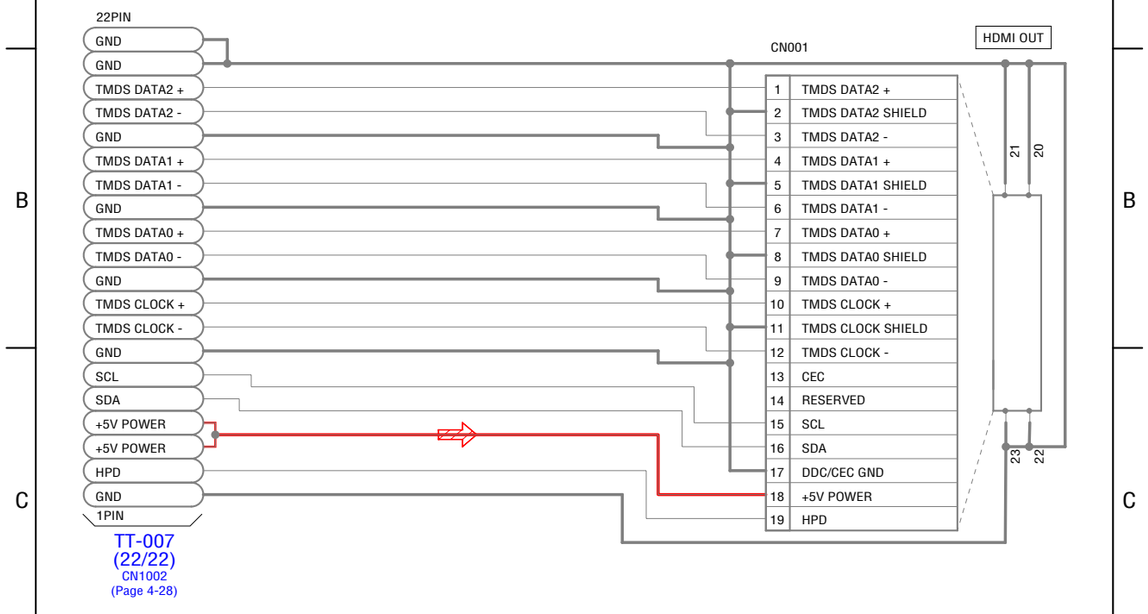
XX MARK:NO MOUNT

NO MARK:REC/PB MODE



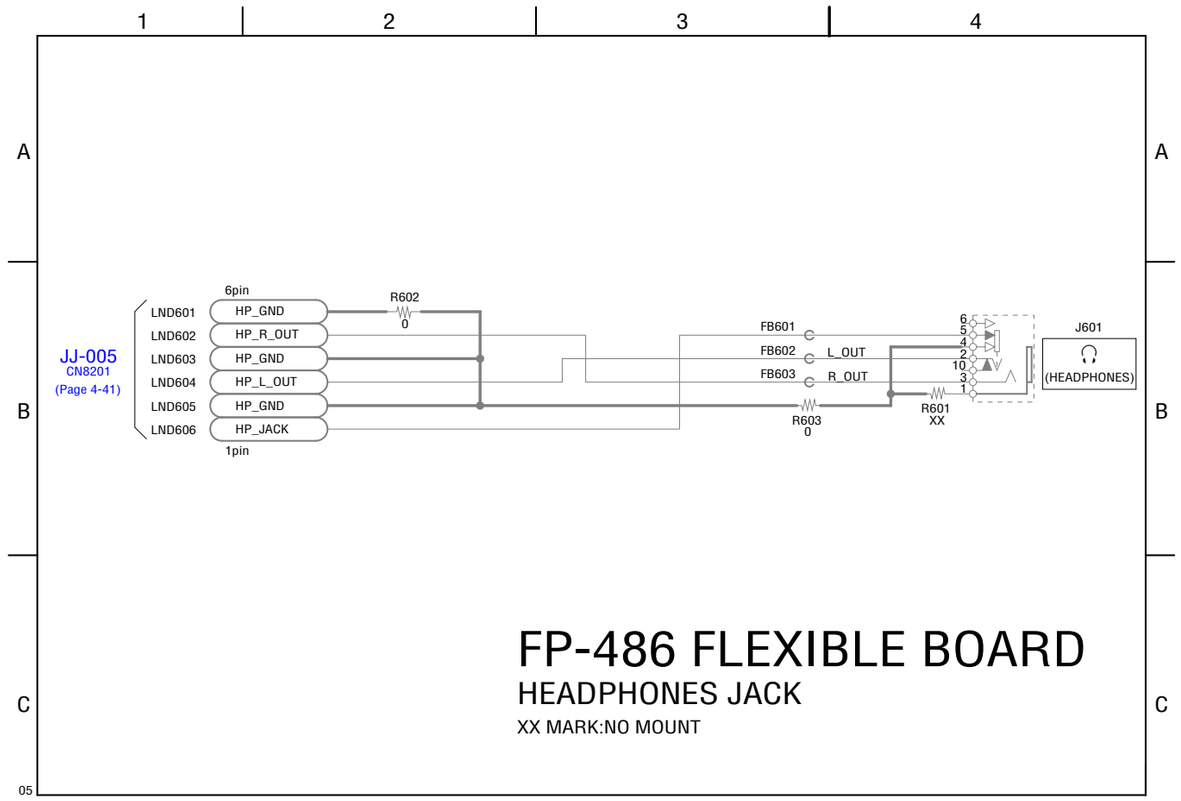
FP-756 FLEXIBLE BOARD

EJECT SWITCH



FP-645 FLEXIBLE BOARD

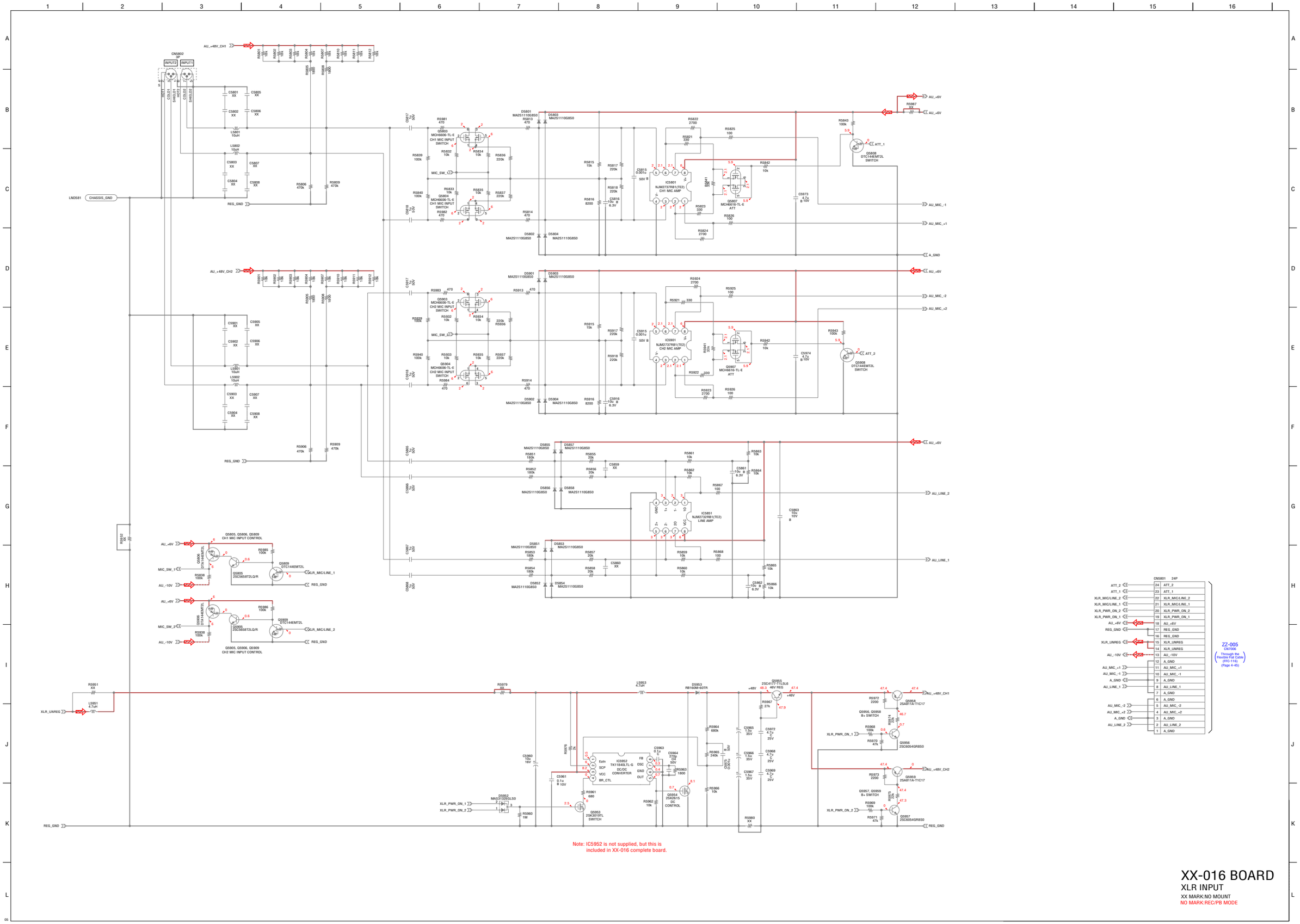
HDMI CONNECTOR



FP-486 FLEXIBLE BOARD

HEADPHONES JACK

XX MARK:NO MOUNT

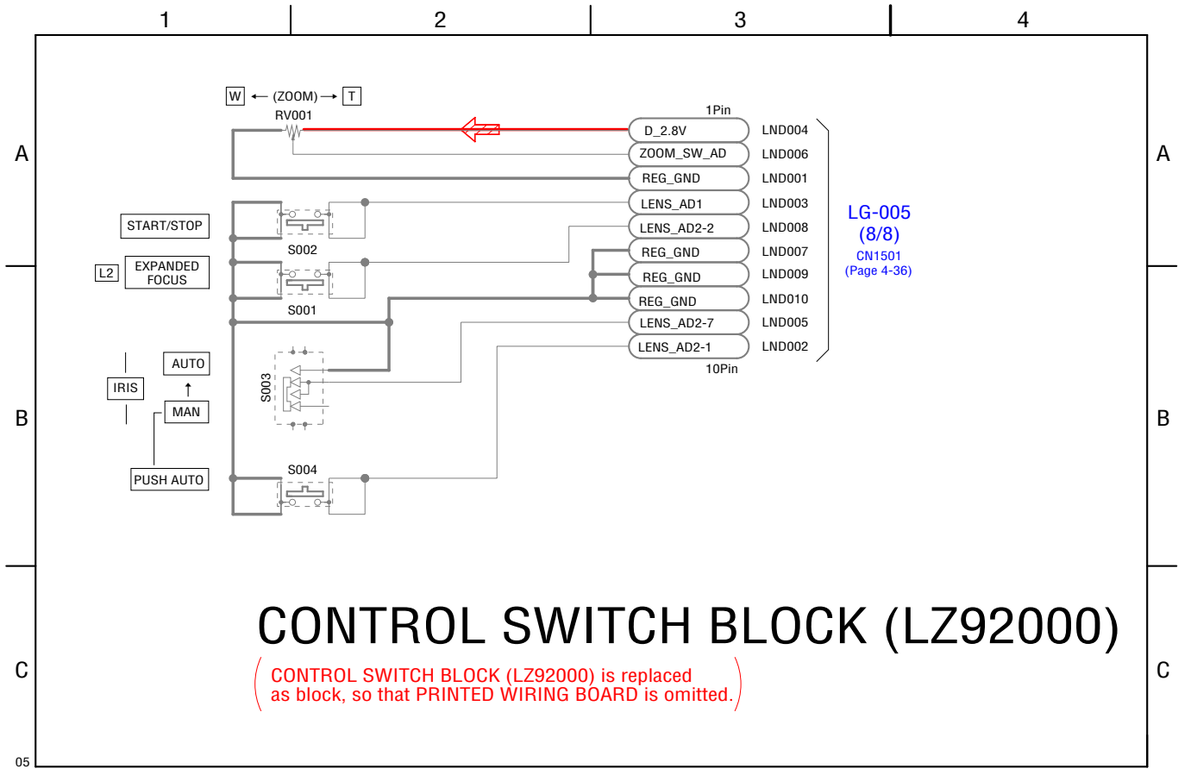


XX-016 BOARD

XLR INPUT

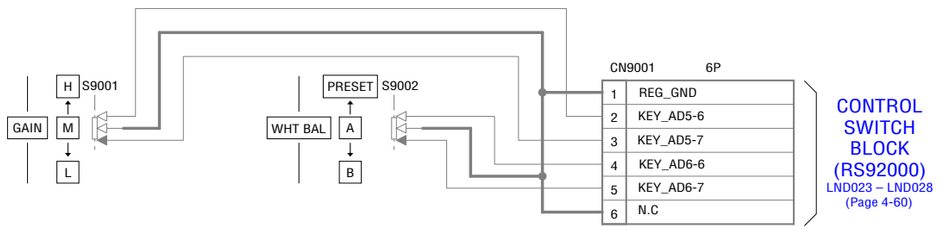
XX MARK:NO MOUNT

NO MARK:REC/PB MODE



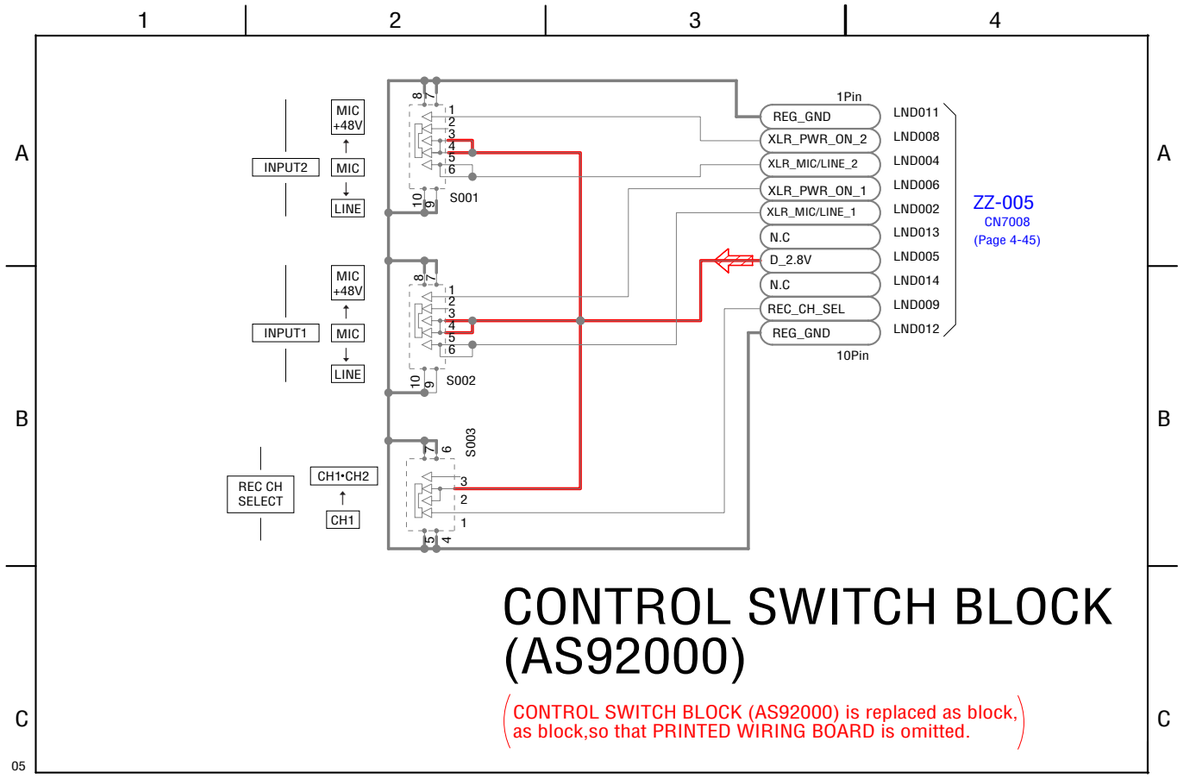
CONTROL SWITCH BLOCK (LZ92000)

CONTROL SWITCH BLOCK (LZ92000) is replaced as block, so that PRINTED WIRING BOARD is omitted.



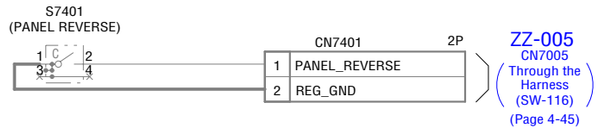
KK-032 BOARD

GAIN, WHITE BALANCE SELECT



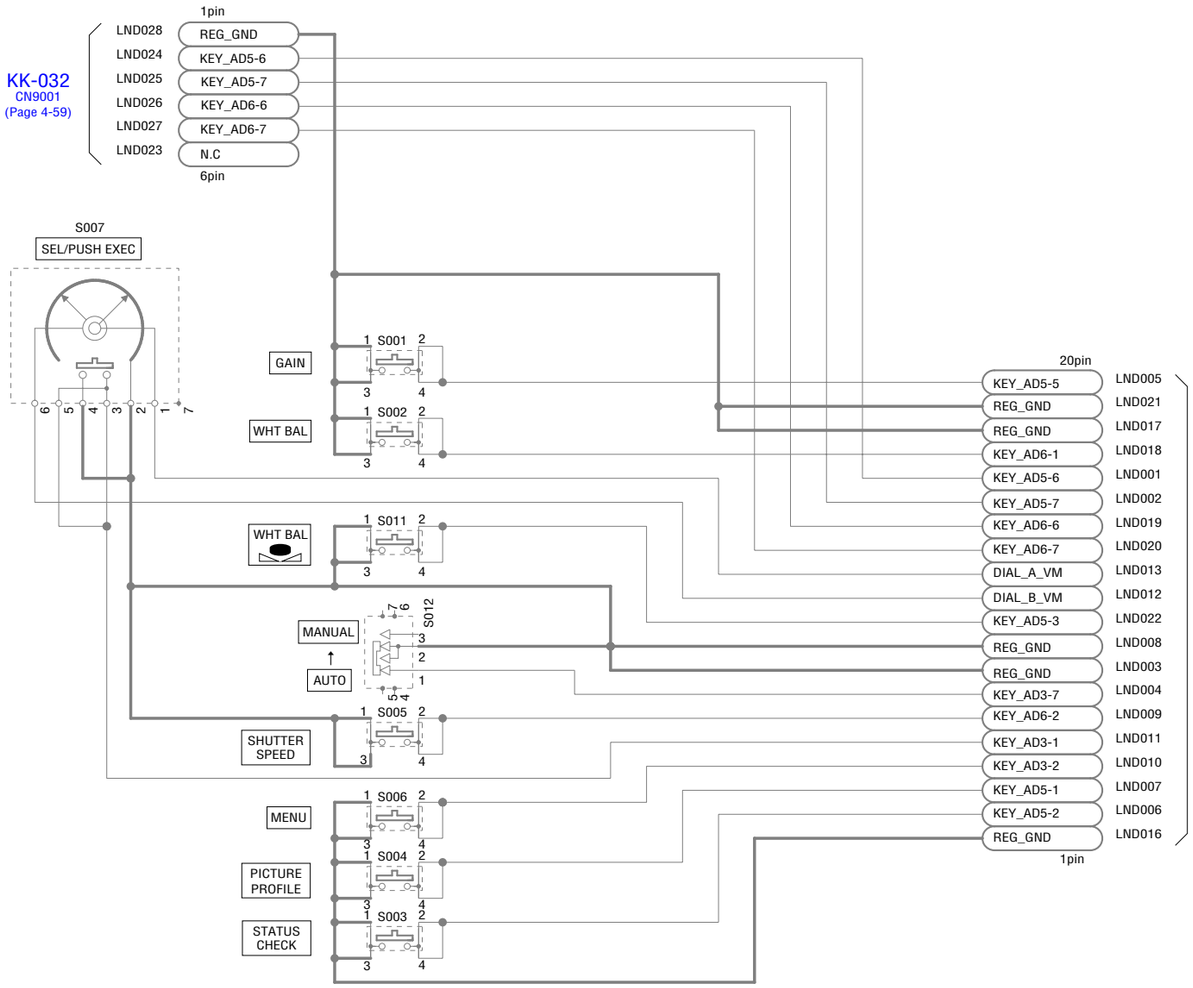
CONTROL SWITCH BLOCK (AS92000)

CONTROL SWITCH BLOCK (AS92000) is replaced as block, as block,so that PRINTED WIRING BOARD is omitted.



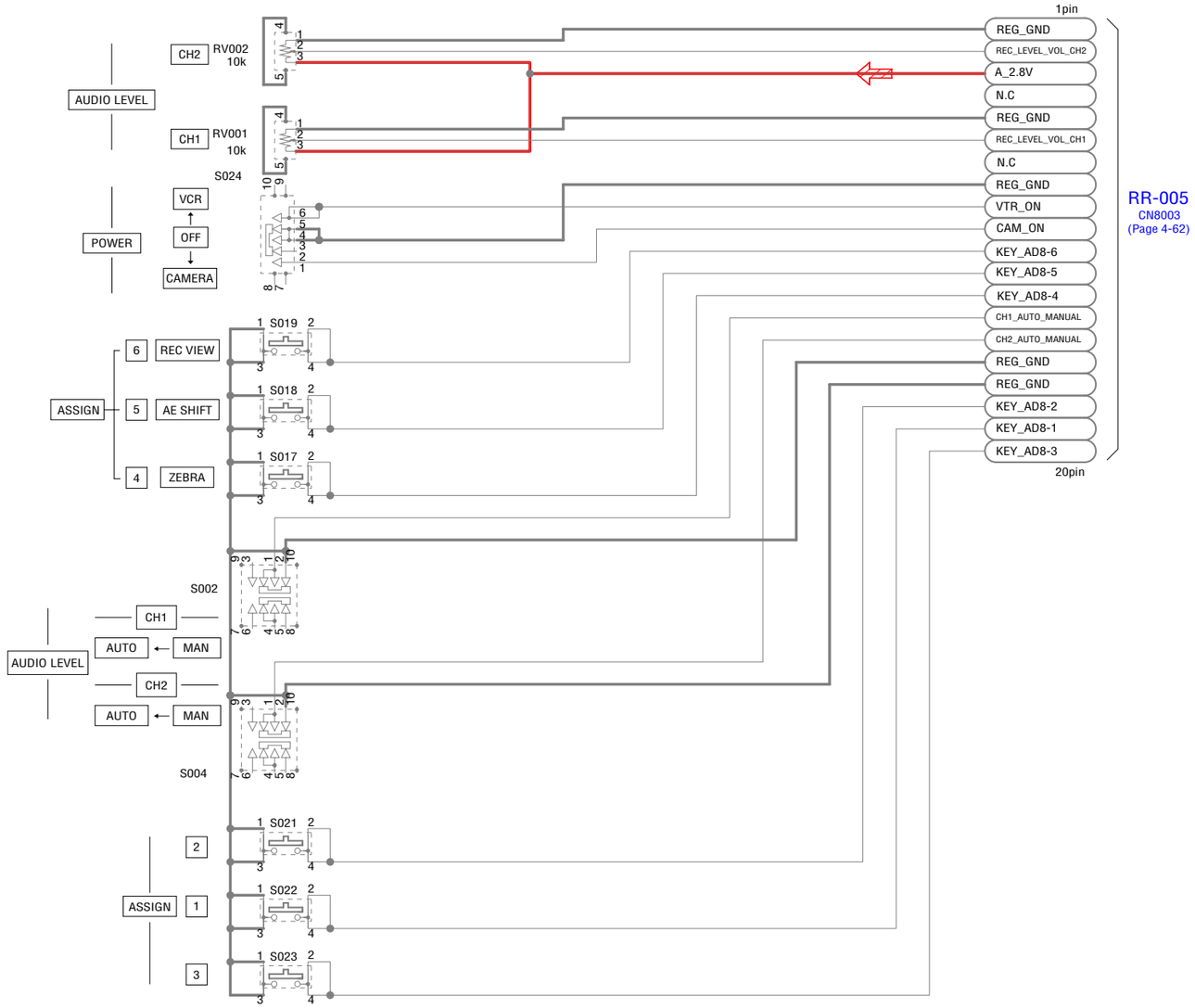
HH-008 BOARD

PANEL REVERSE DETECT



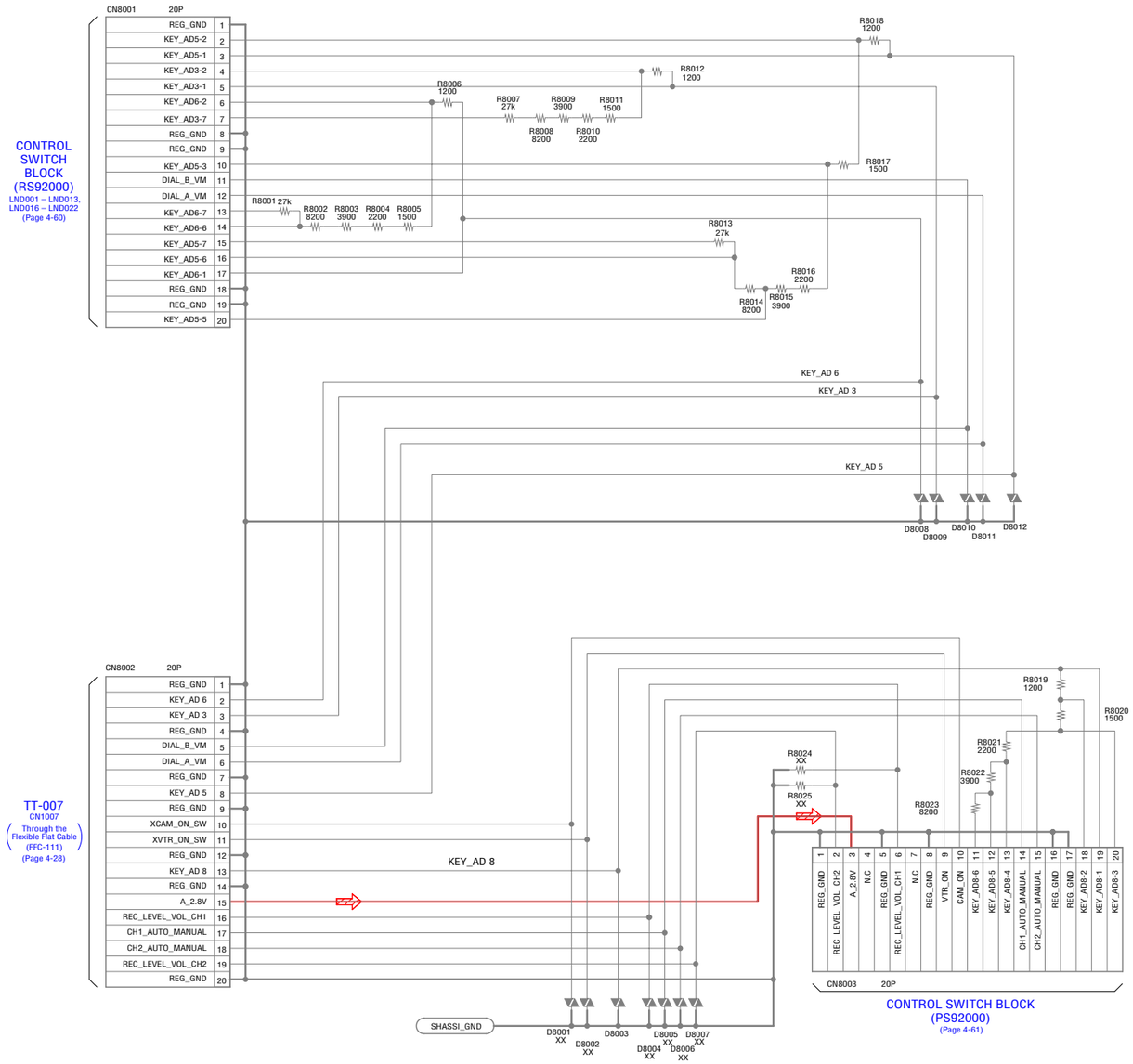
CONTROL SWITCH BLOCK (RS92000)

CONTROL SWITCH BLOCK (RS92000) is replaced as block, so that PRINTED WIRING BOARD is omitted.



CONTROL SWITCH BLOCK (PS92000)

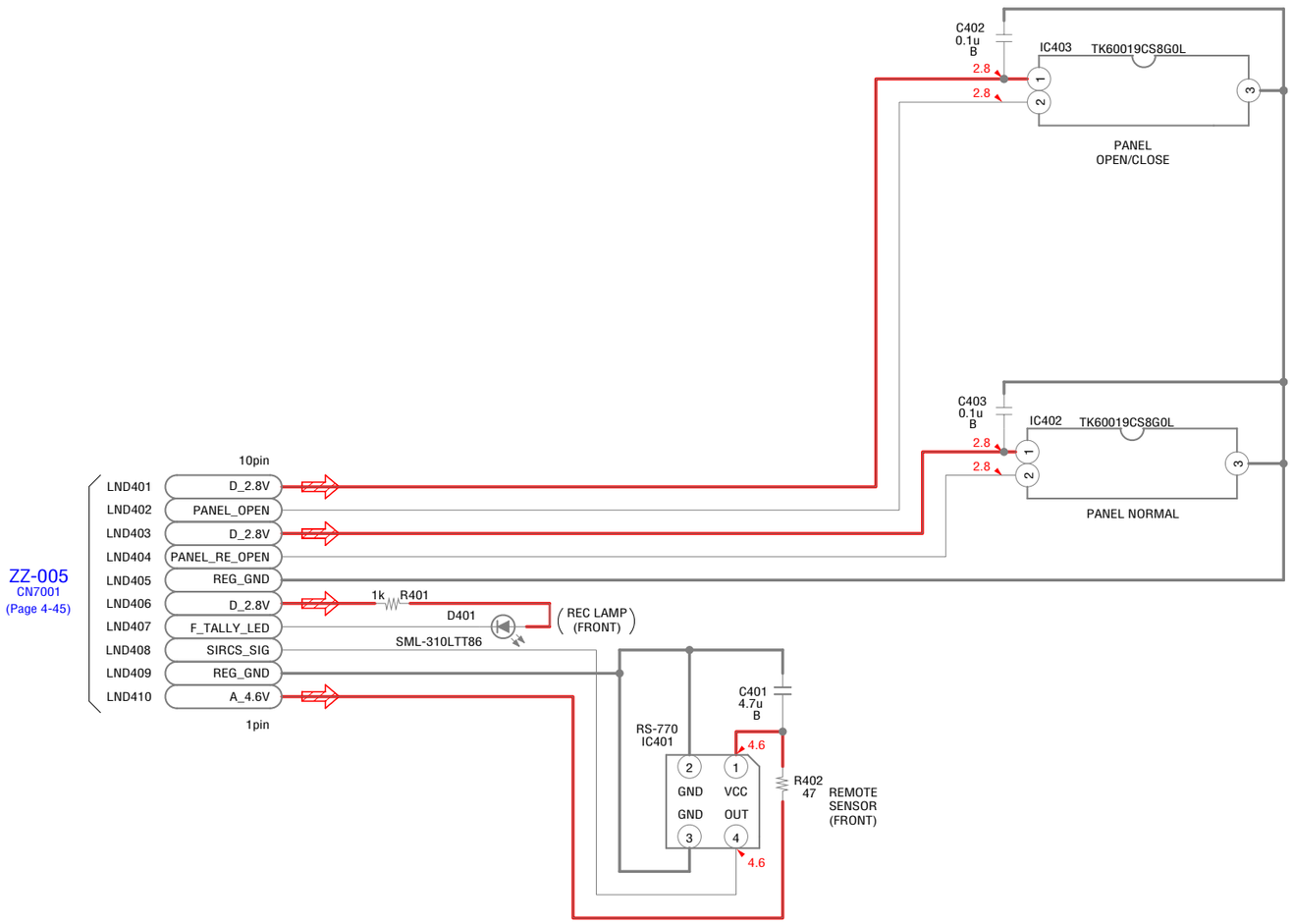
CONTROL SWITCH BLOCK (PS92000) is replaced as block, so that PRINTED WIRING BOARD is omitted.



RR-005 BOARD

TT-CONTROL SWITCH CONNECTION

XX MARK:NO MOUNT

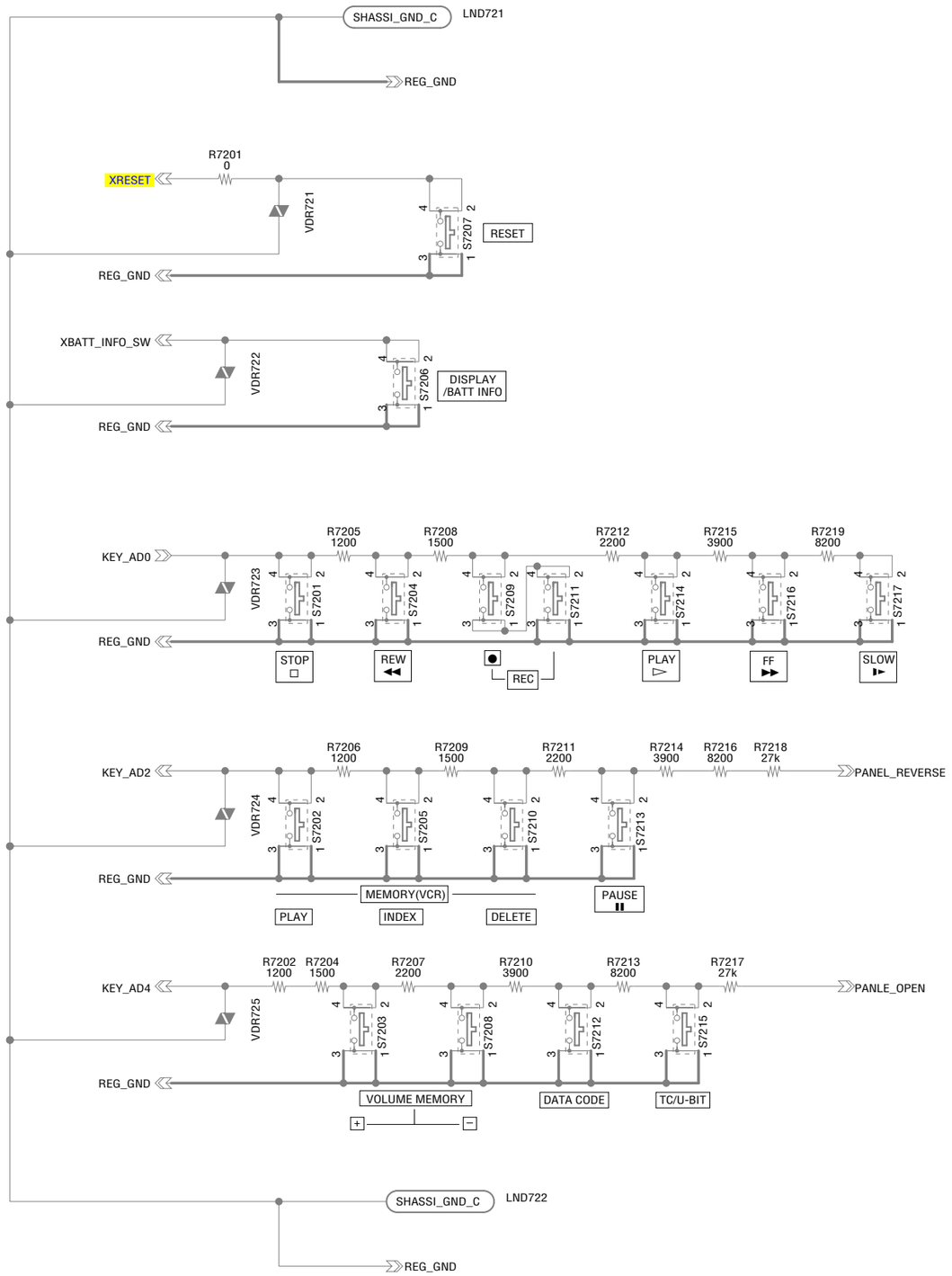


FP-759 FLEXIBLE BOARD

REMOTE SENSOR (FRONT), PANEL DETECT

NO MARK:REC/PB MODE

05

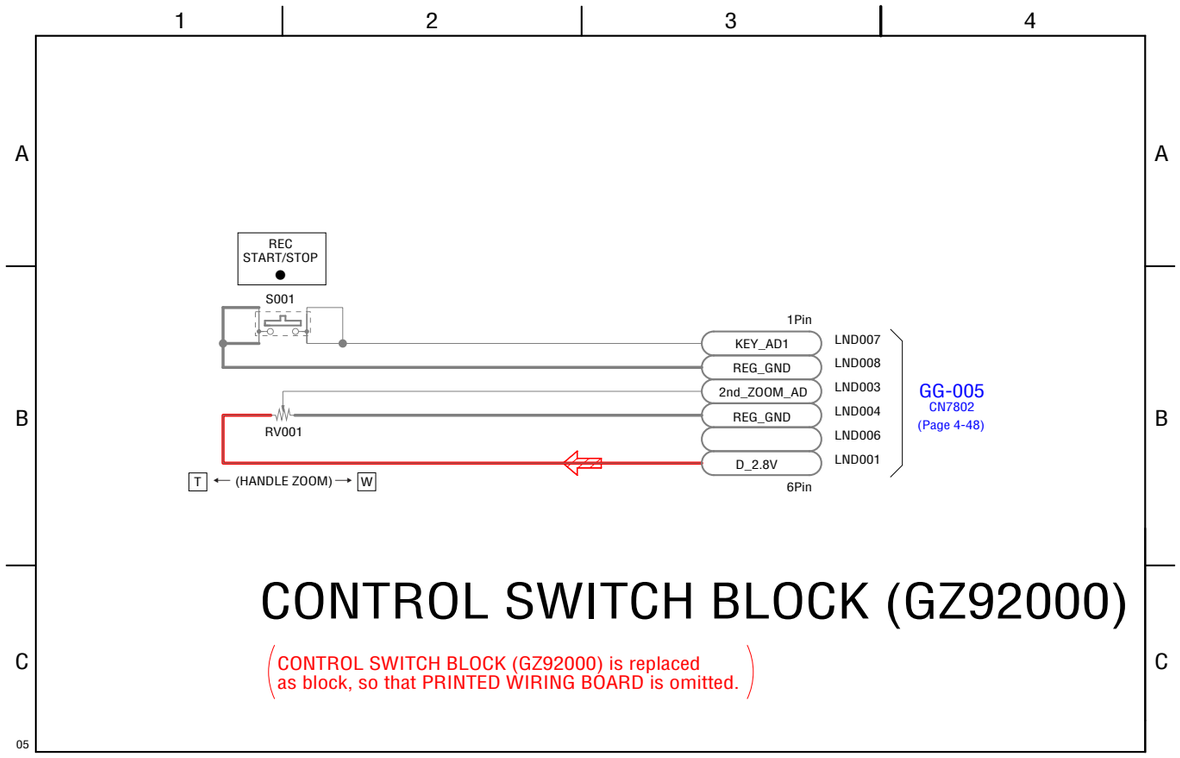


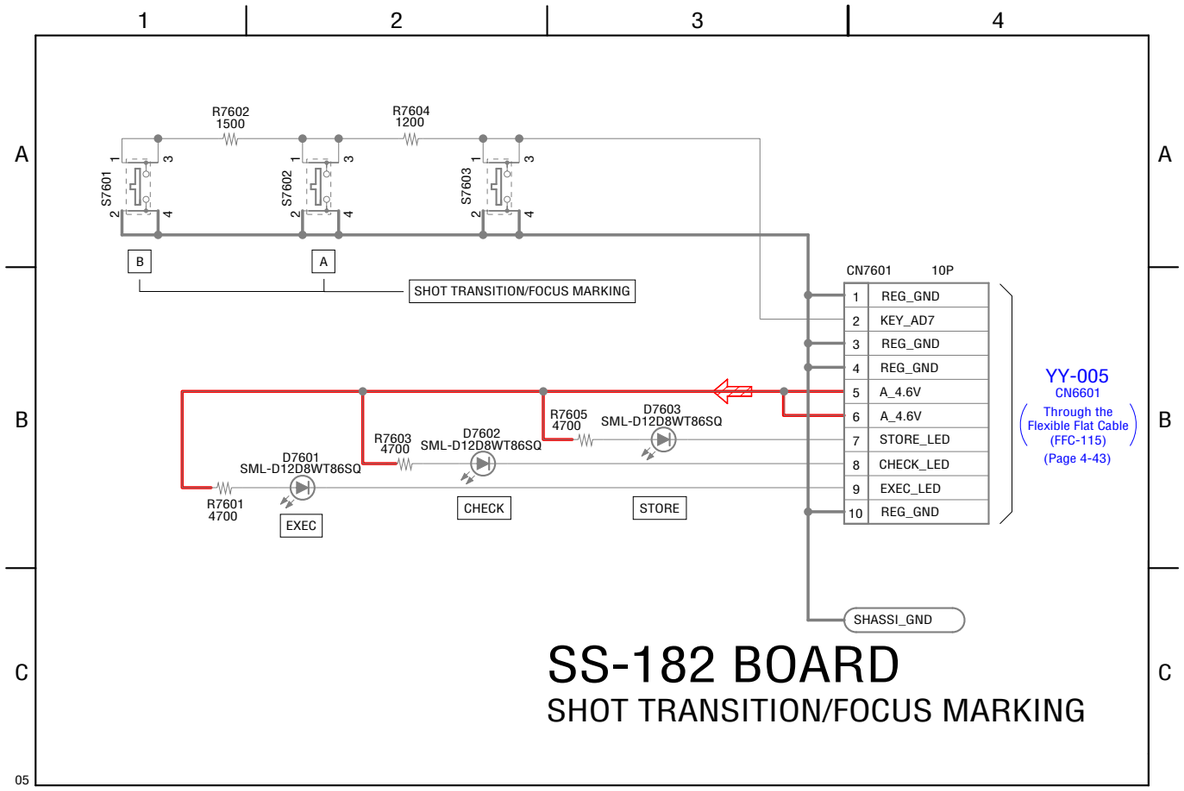
ZZ-005
CN7007
Through the Flexible Flat Cable (FFC-117)
(Page 4-45)

CN7201 14P

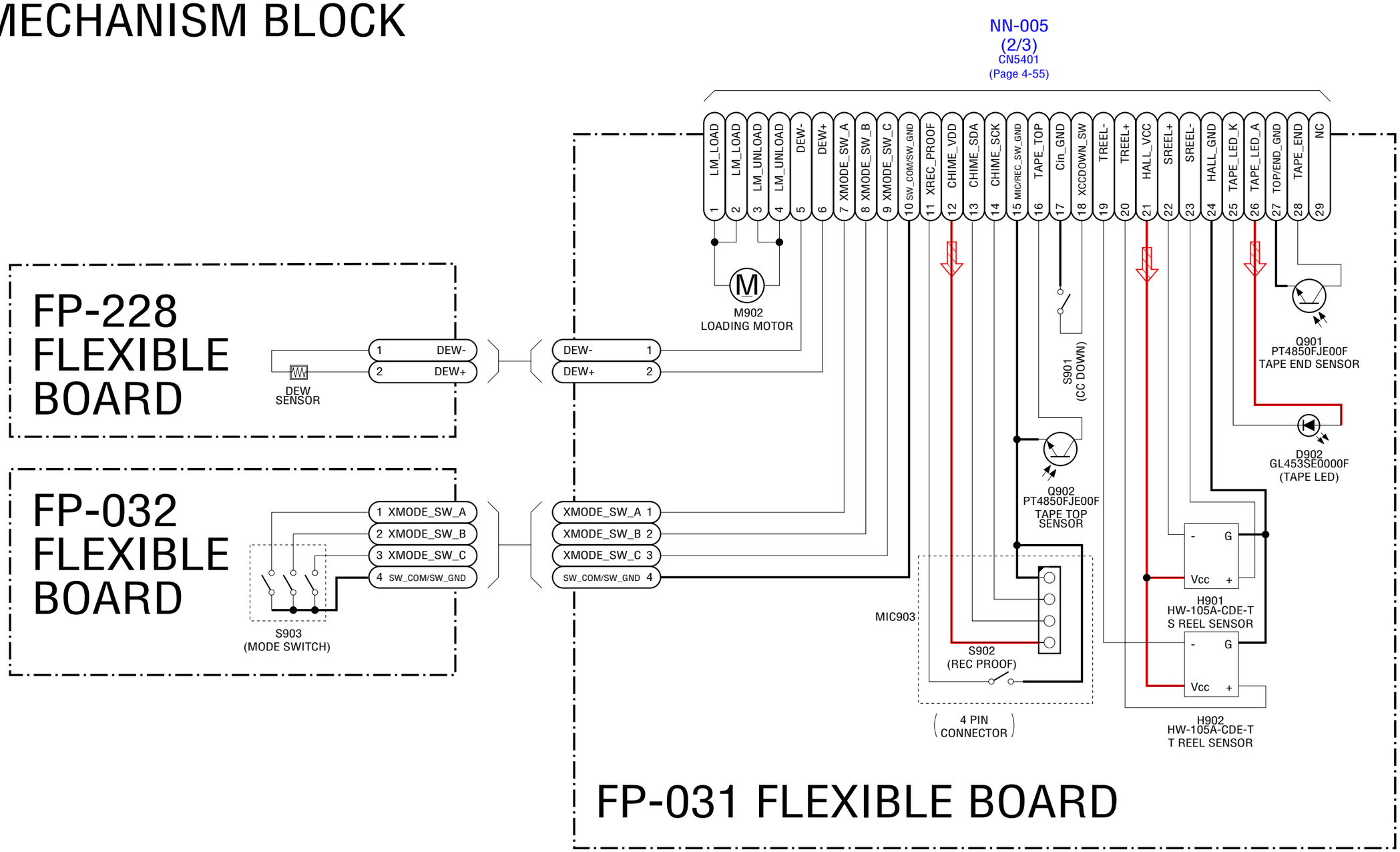
REG_GND	1	REG_GND
REG_GND	2	
KEY_AD0	3	KEY_AD0
REG_GND	4	
KEY_AD2	5	KEY_AD2
KEY_AD4	6	KEY_AD4
REG_GND	7	
XBATT_INFO_SW	8	XBATT_INFO_SW
REG_GND	9	
XRESET	10	XRESET
REG_GND	11	
PANEL_REVERSE	12	PANEL_REVERSE
PANEL_OPEN	13	PANLE_OPEN
REG_GND	14	

BB-010 BOARD
CONTROL SWITCH


1
2
3
4
A
B
C
05
REC
START/STOP
S001
RV001
T
(HANDLE ZOOM)
W
1Pin
KEY_AD1
REG_GND
2nd_ZOOM_AD
REG_GND
D_2.8V
6Pin
LND007
LND008
LND003
LND004
LND006
LND001
GG-005
CN7802
(Page 4-48)
CONTROL SWITCH BLOCK (GZ92000)
CONTROL SWITCH BLOCK (GZ92000) is replaced
as block, so that PRINTED WIRING BOARD is omitted.


1
2
3
4
A
B
C
05
R7602
1500
R7604
1200
S7601
S7602
S7603
B
A
SHOT TRANSITION/FOCUS MARKING
R7605
4700
D7603
SML-D12D8WT86SQ
R7603
4700
D7602
SML-D12D8WT86SQ
D7601
SML-D12D8WT86SQ
R7601
4700
EXEC
CHECK
STORE
CN7601 10P
1 REG_GND
2 KEY_AD7
3 REG_GND
4 REG_GND
5 A_4.6V
6 A_4.6V
7 STORE_LED
8 CHECK_LED
9 EXEC_LED
10 REG_GND
SHASSI_GND
YY-005
CN6601
Through the
Flexible Flat Cable
(FFC-115)
(Page 4-43)
SS-182 BOARD
SHOT TRANSITION/FOCUS MARKING

MECHANISM BLOCK



05

4-3. PRINTED WIRING BOARDS

Link

EE-009 BOARD	FP-756 FLEXIBLE BOARD
EE-010 BOARD	GG-005 BOARD
TT-007 BOARD (SIDE A)	UU-005 BOARD
TT-007 BOARD (SIDE B)	II-005 BOARD
LG-005 BOARD (SIDE A)	WW-005 BOARD
LG-005 BOARD (SIDE B)	NN-005 BOARD
GY-005 BOARD	FP-645 FLEXIBLE BOARD
LL-014 BOARD	FP-486 FLEXIBLE BOARD
OO-006 BOARD	XX-016 BOARD
JJ-005 BOARD	KK-032 BOARD
YY-005 BOARD	HH-008 BOARD
PP-005 BOARD	RR-005 BOARD
ZZ-005 BOARD	BB-010 BOARD
FP-757 FLEXIBLE BOARD	SS-182 BOARD
FP-759 FLEXIBLE BOARD	FP-031, FP-032, FP-228 FLEXIBLE BOARD

COMMON NOTE FOR PRINTED WIRING BOARDS

4-3. PRINTED WIRING BOARDS

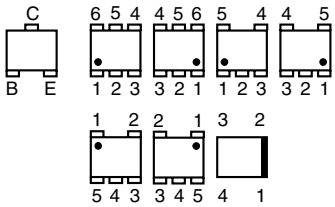
(ENGLISH)

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS

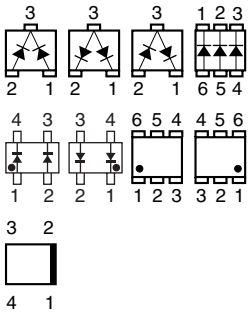
- : Uses unleaded solder.
- : Circuit board
  : Flexible board
  Pattern from the side which enables seeing.
  : pattern of the rear side
  (The other layers' patterns are not indicated)
- Through hole is omitted.
- There are a few cases that the part printed on diagram isn't mounted in this model.
-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

- Chip parts.

Transistor



Diode



(JAPANESE)

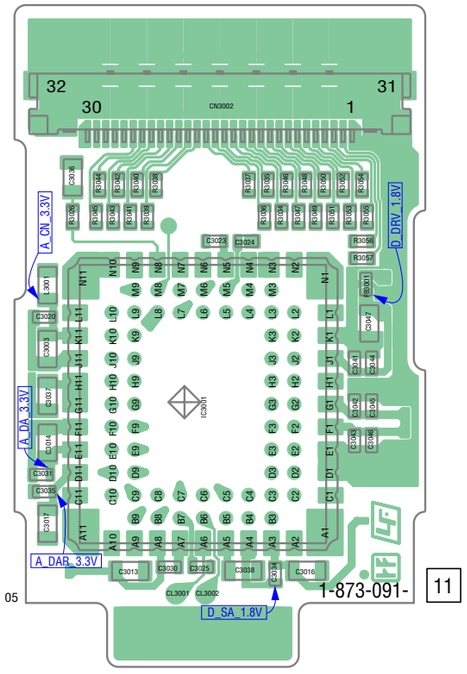
プリント図共通ノート
【プリント図ノート】

- ：無鉛半田を使用しています。
- ：基板
  ：フレキシブル配線板
  見ている面側のパターン。
  ：裏側のパターン
  （他のパターンについては表示されていません）
- スルーホールは省略。
- プリント図には，本機で使用していない部品が記載されている場合があります。
- はパネル表示名称。

EE-009 (6 layers), EE-010 (6 layers)

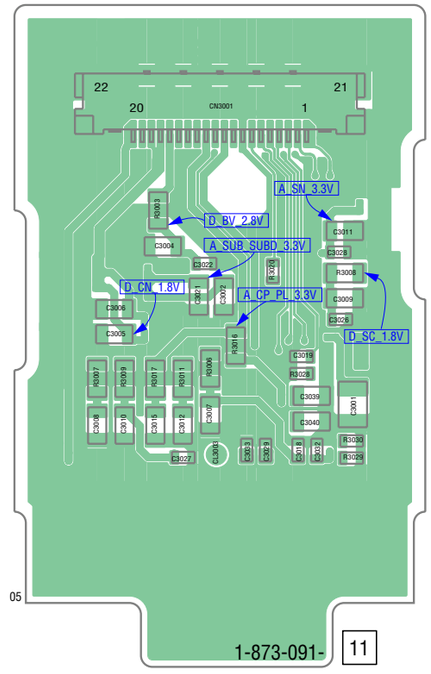
: Uses unleaded solder.

EE-009 BOARD (SIDE A)



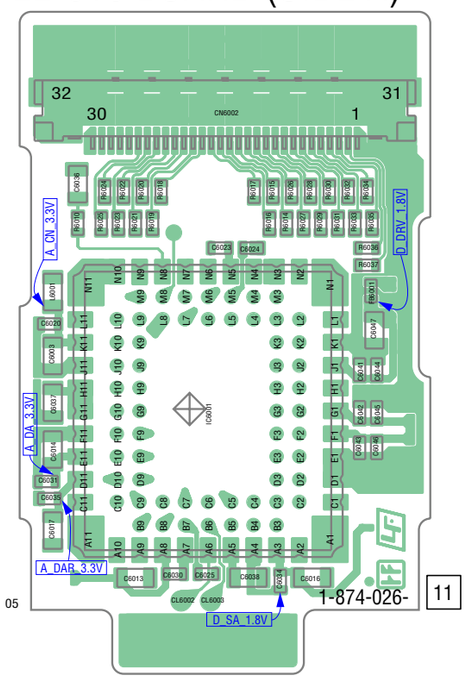
Note: In red and blue, the same EE-009 board is used respectively.

EE-009 BOARD (SIDE B)

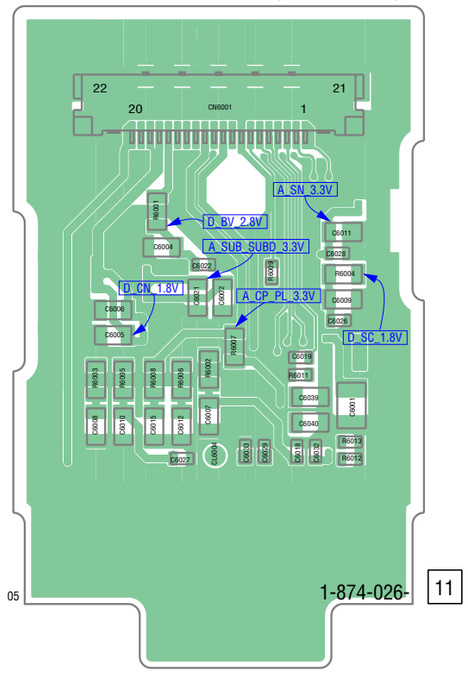


Note: EE-009 board and all mounted parts (including IC3001 (CMOS imager)) are not supplied, but they are included in PRISM device.

EE-010 BOARD (SIDE A)



EE-010 BOARD (SIDE B)



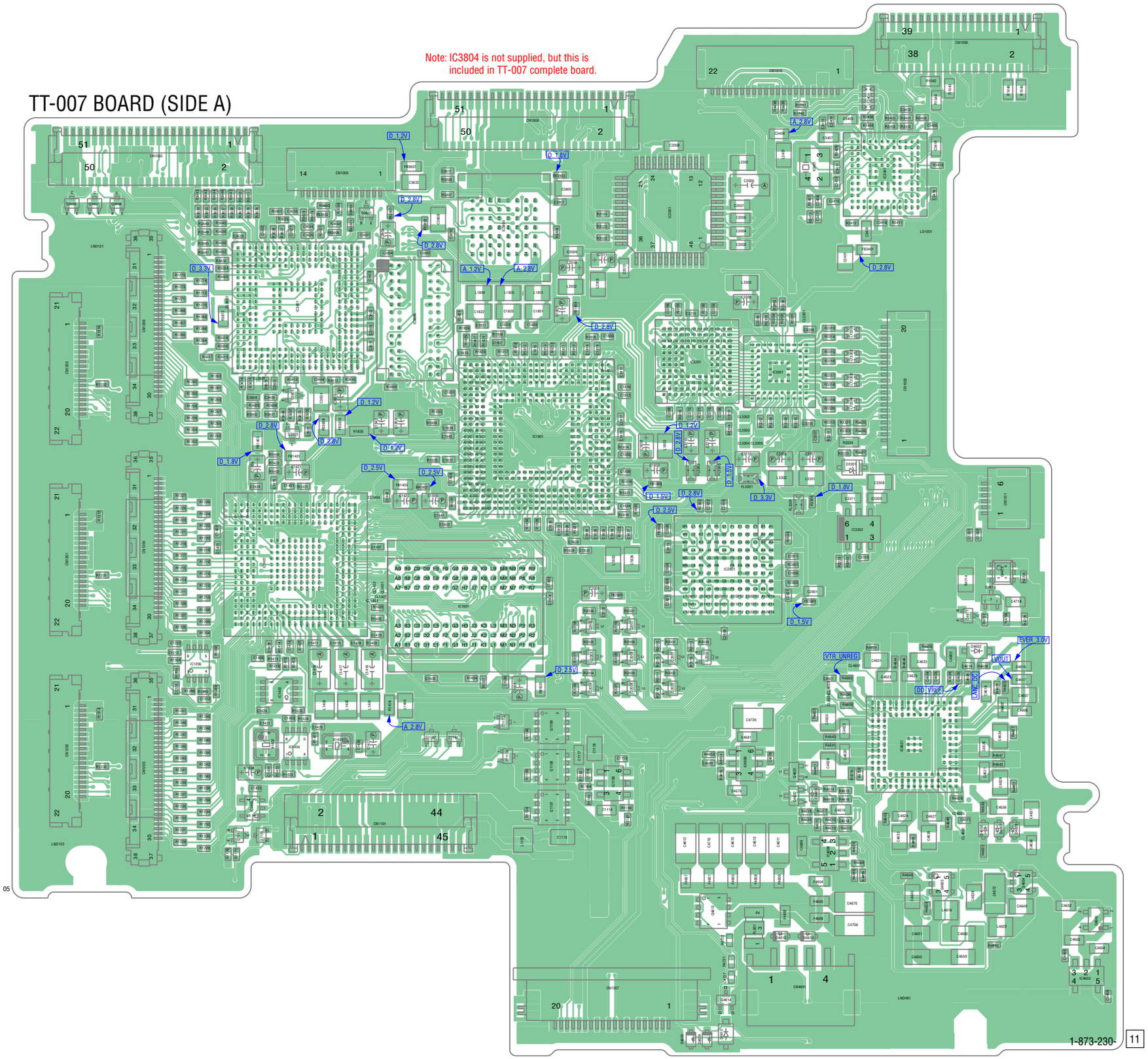
Note: EE-010 board and all mounted parts (including IC6001 (CMOS imager)) are not supplied, but they are included in PRISM device.

TT-007 (10 layers)

: Uses unleaded solder.

Note: IC3804 is not supplied, but this is included in TT-007 complete board.

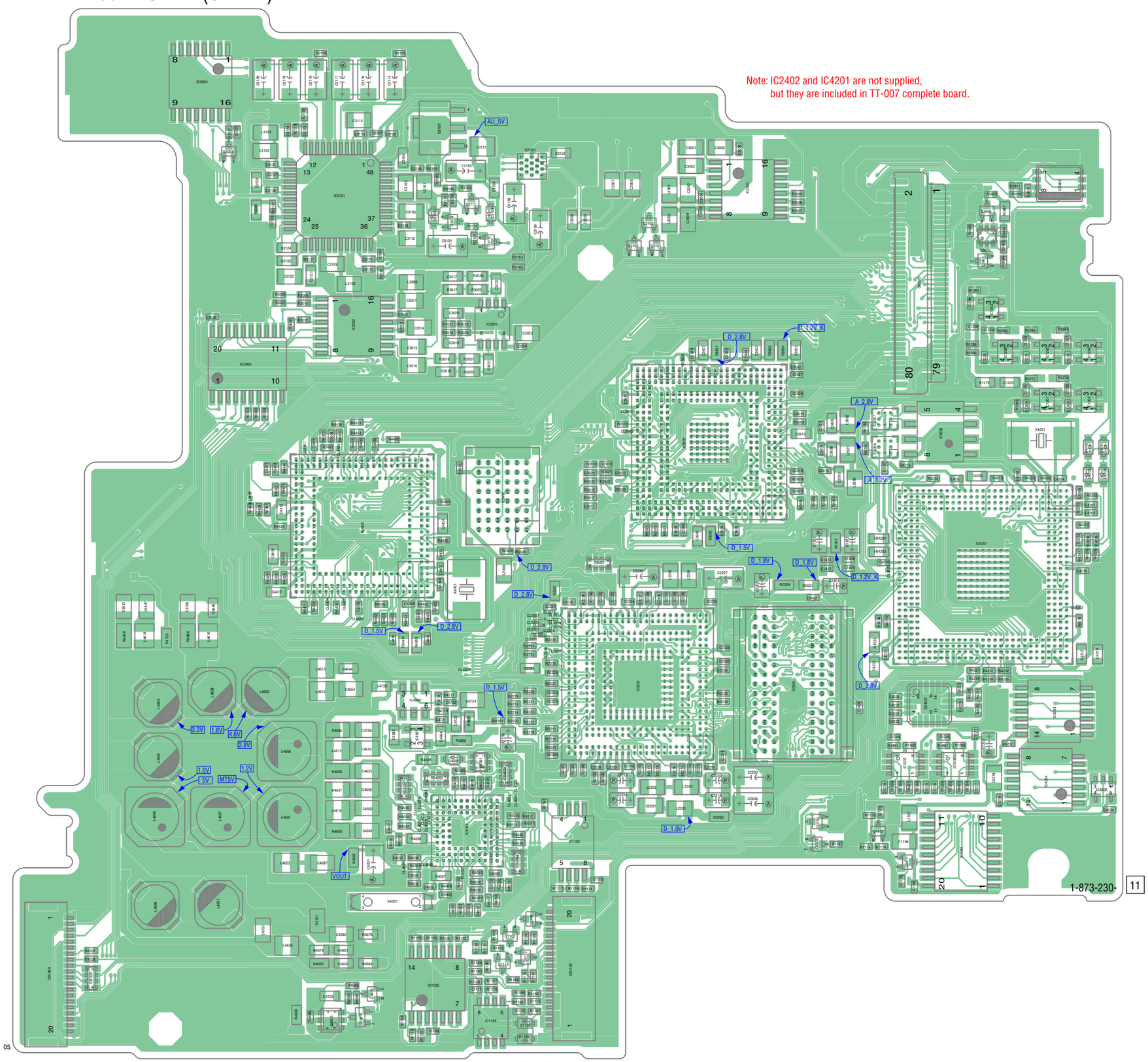
TT-007 BOARD (SIDE A)



TT-007 (10 layers)

: Uses unleaded solder.

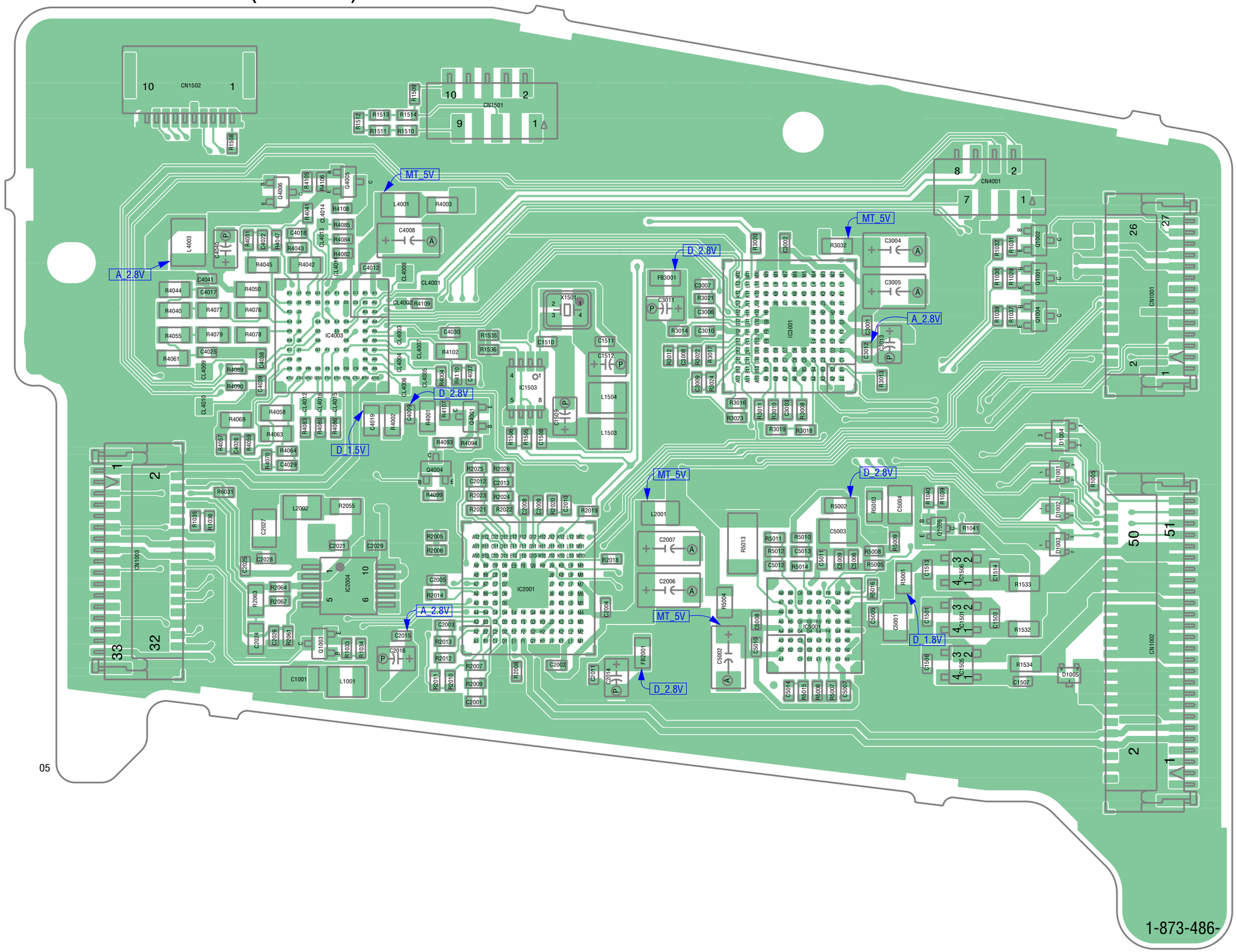
TT-007 BOARD (SIDE B)



LG-005 (6 layers)

: Uses unleaded solder.

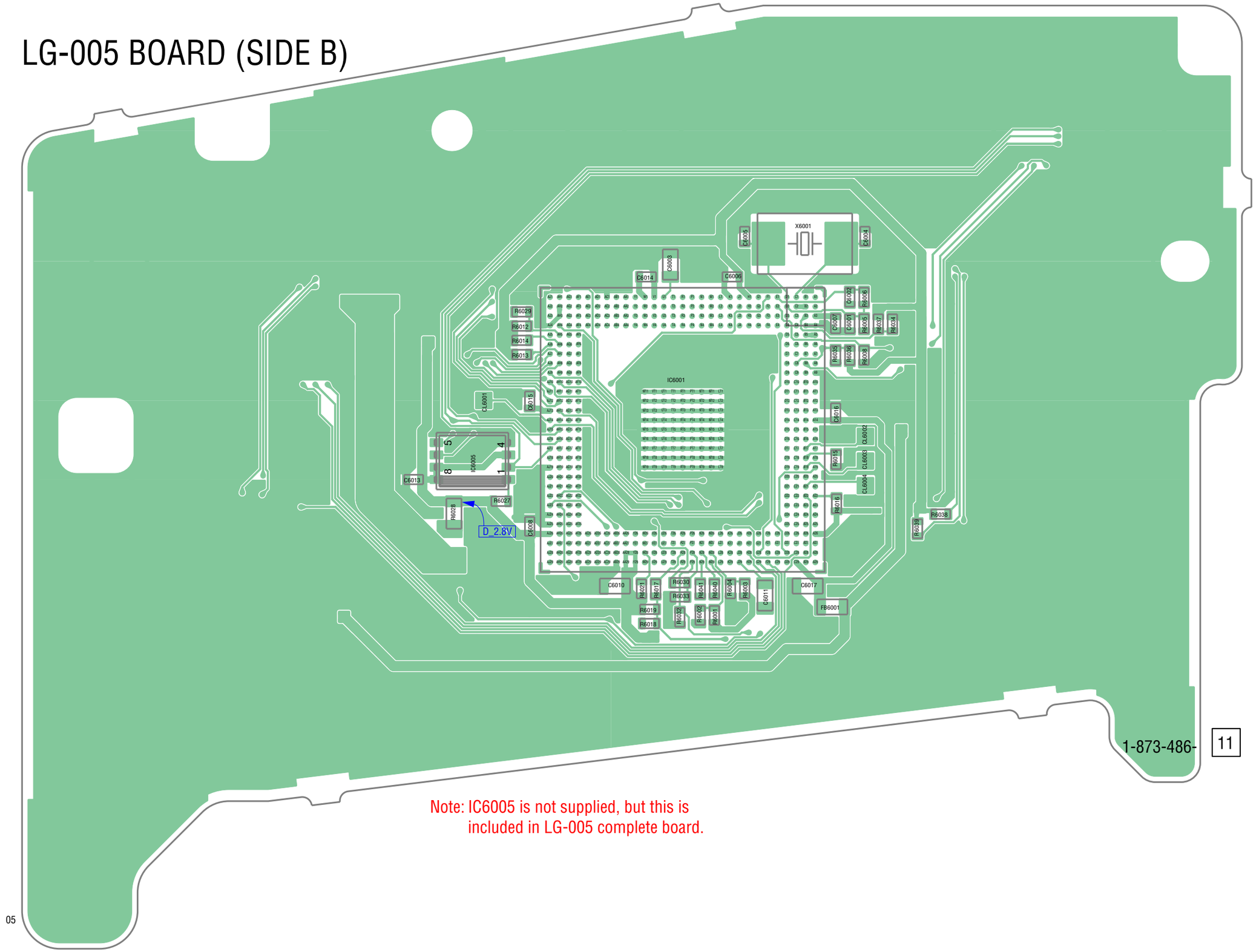
LG-005 BOARD (SIDE A)



LG-005 (6 layers)

: Uses unleaded solder.

LG-005 BOARD (SIDE B)



1-873-486- 11

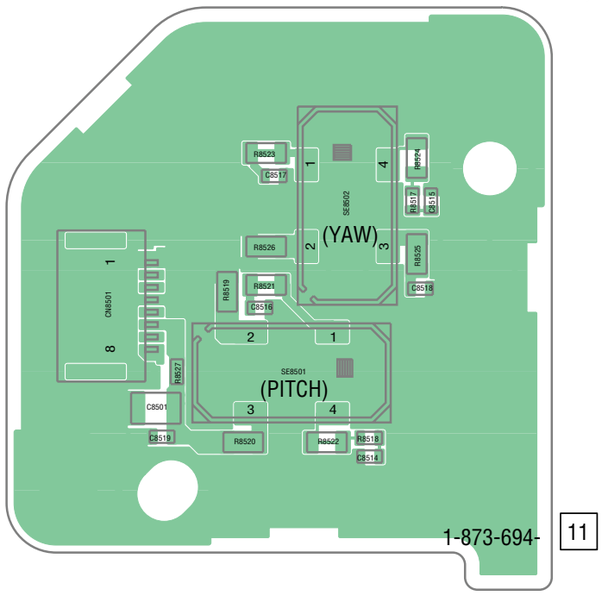
Note: IC6005 is not supplied, but this is
included in LG-005 complete board.

05

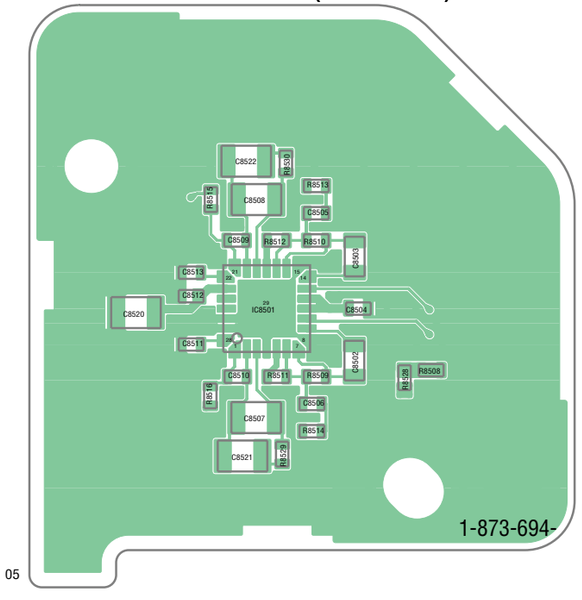
GY-005 (6 layers), LL-014 (6 layers)

: Uses unleaded solder.

GY-005 BOARD (SIDE A)



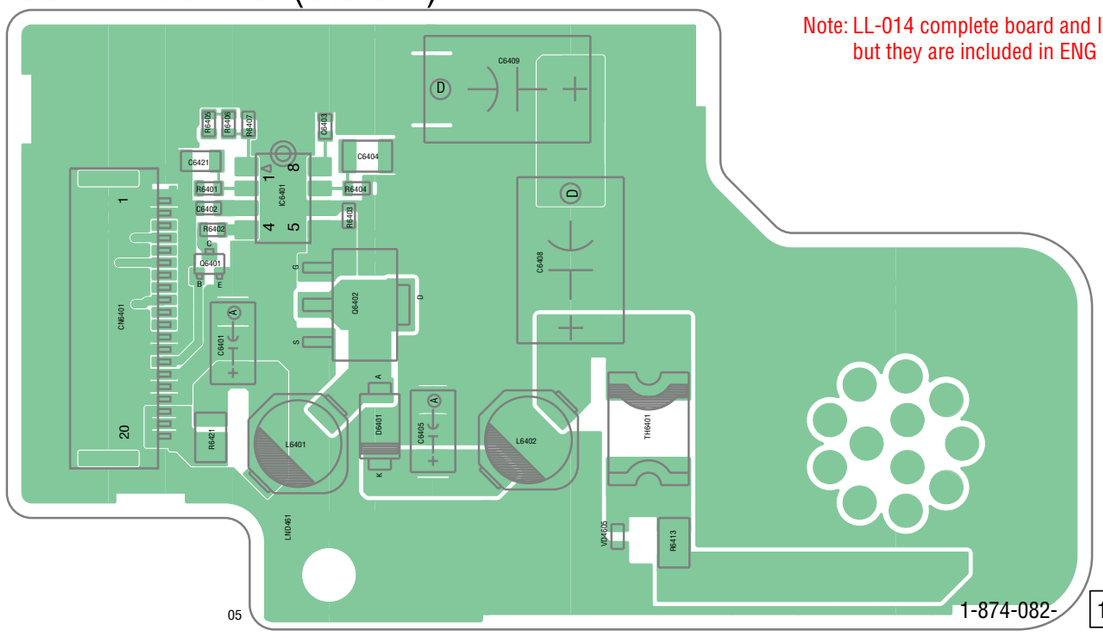
GY-005 BOARD (SIDE B)



05

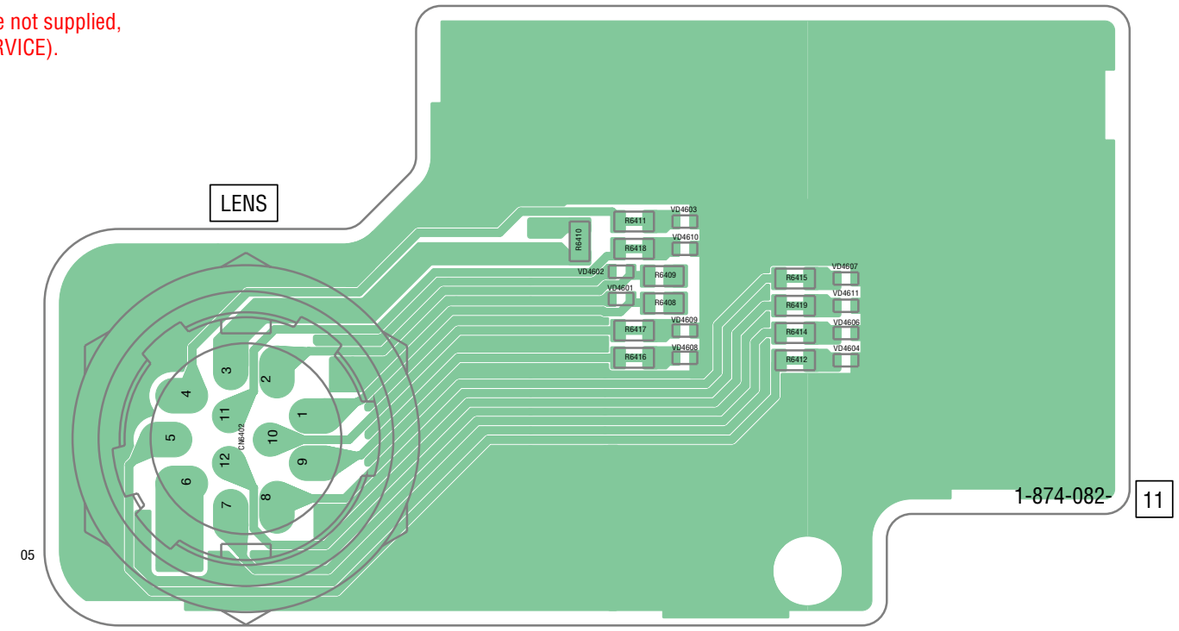
LL-014 BOARD (SIDE A)

Note: LL-014 complete board and IC6401 are not supplied, but they are included in ENG assy (SERVICE).



05

LL-014 BOARD (SIDE B)

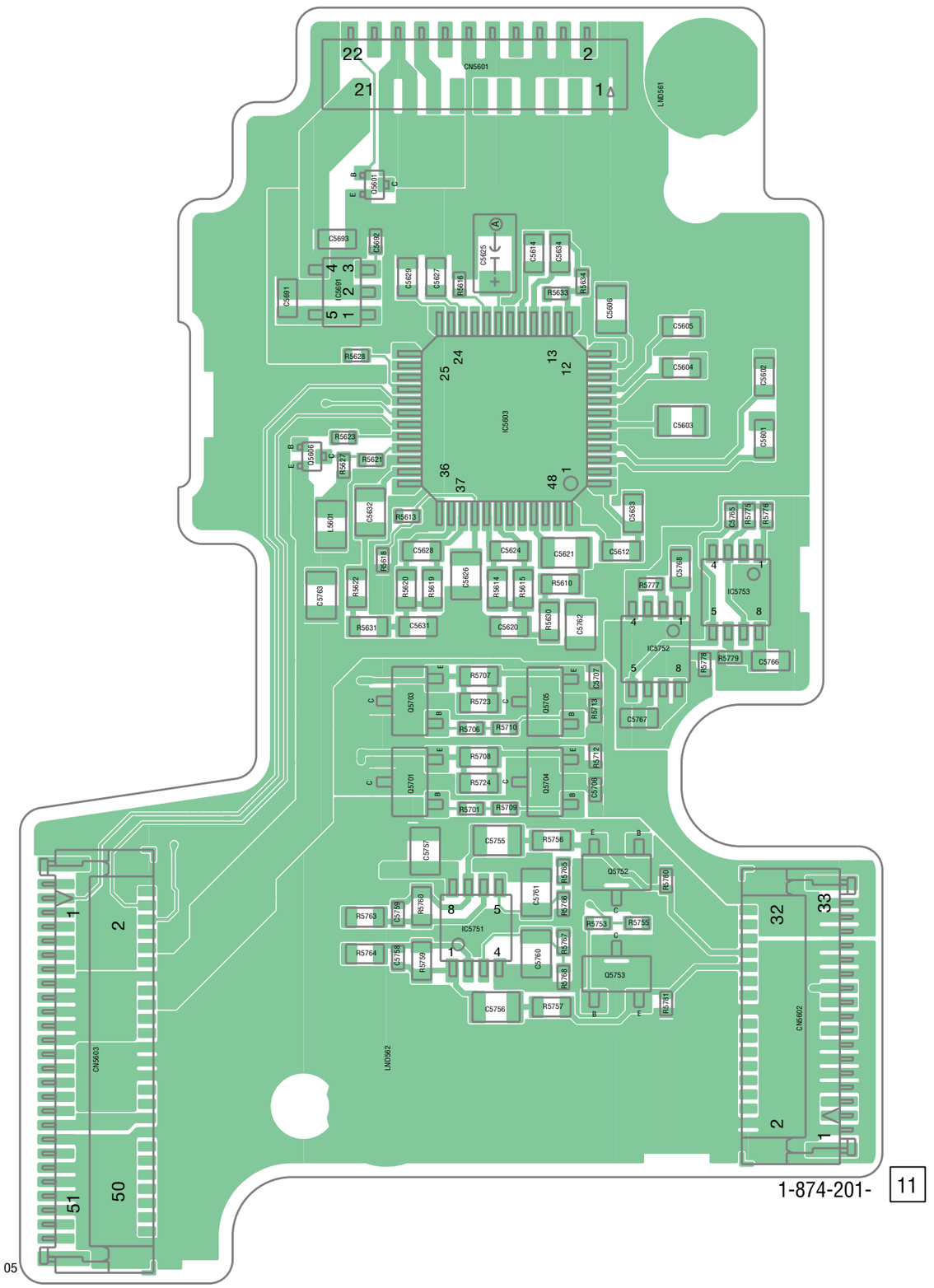


05

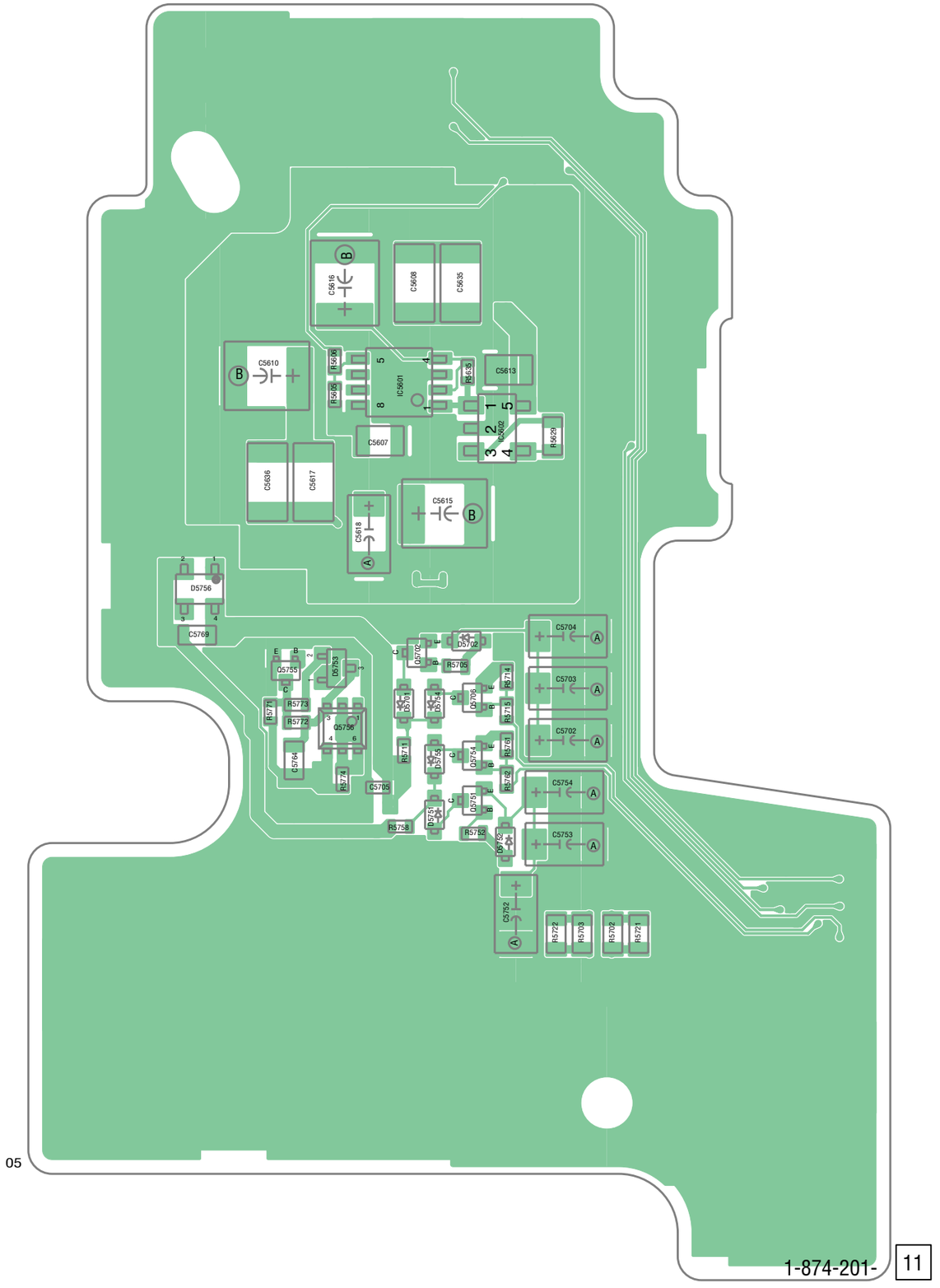
OO-006 (6 layers)

: Uses unleaded solder.

OO-006 BOARD (SIDE A)



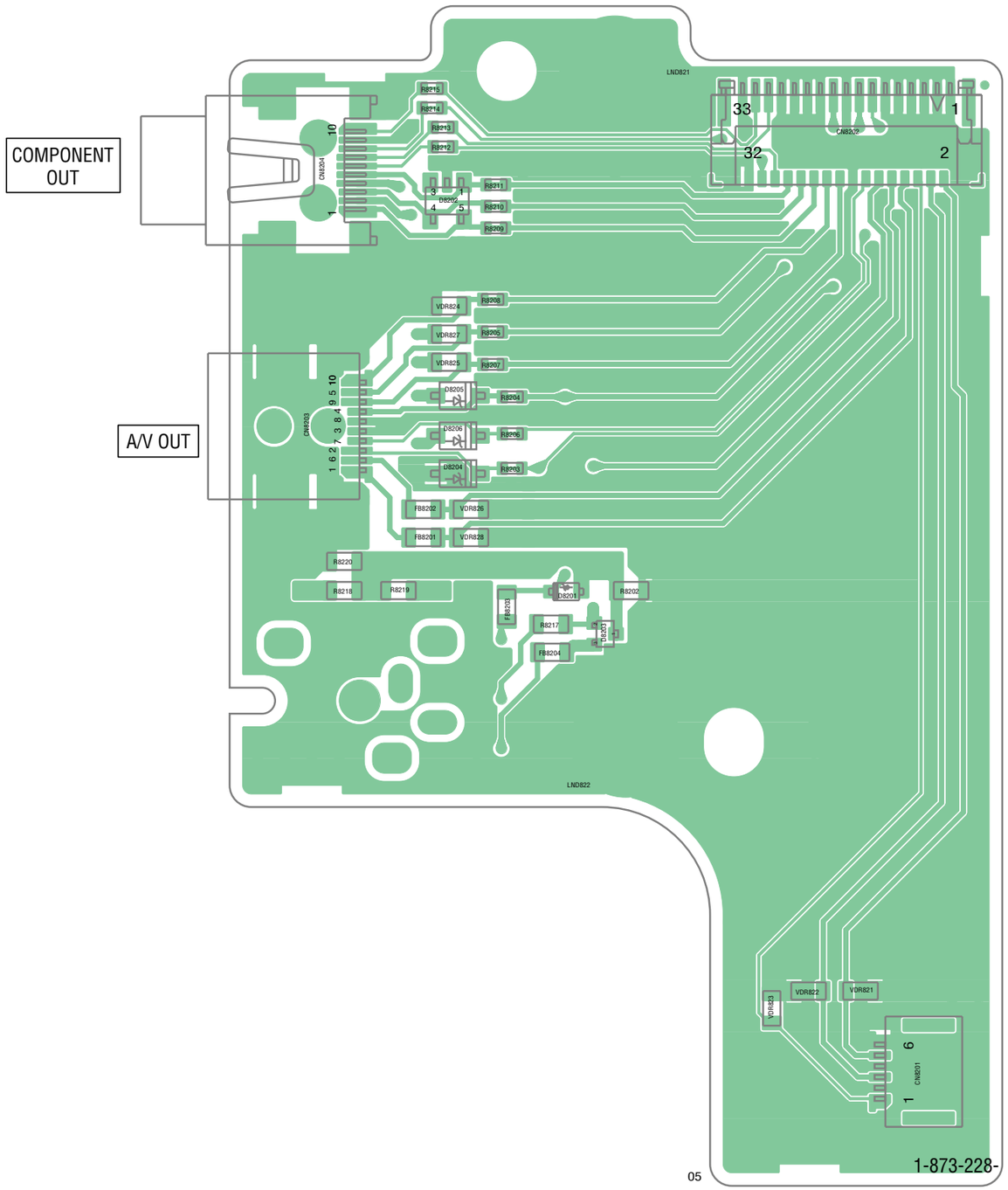
OO-006 BOARD (SIDE B)



JJ-005 (2 layers)

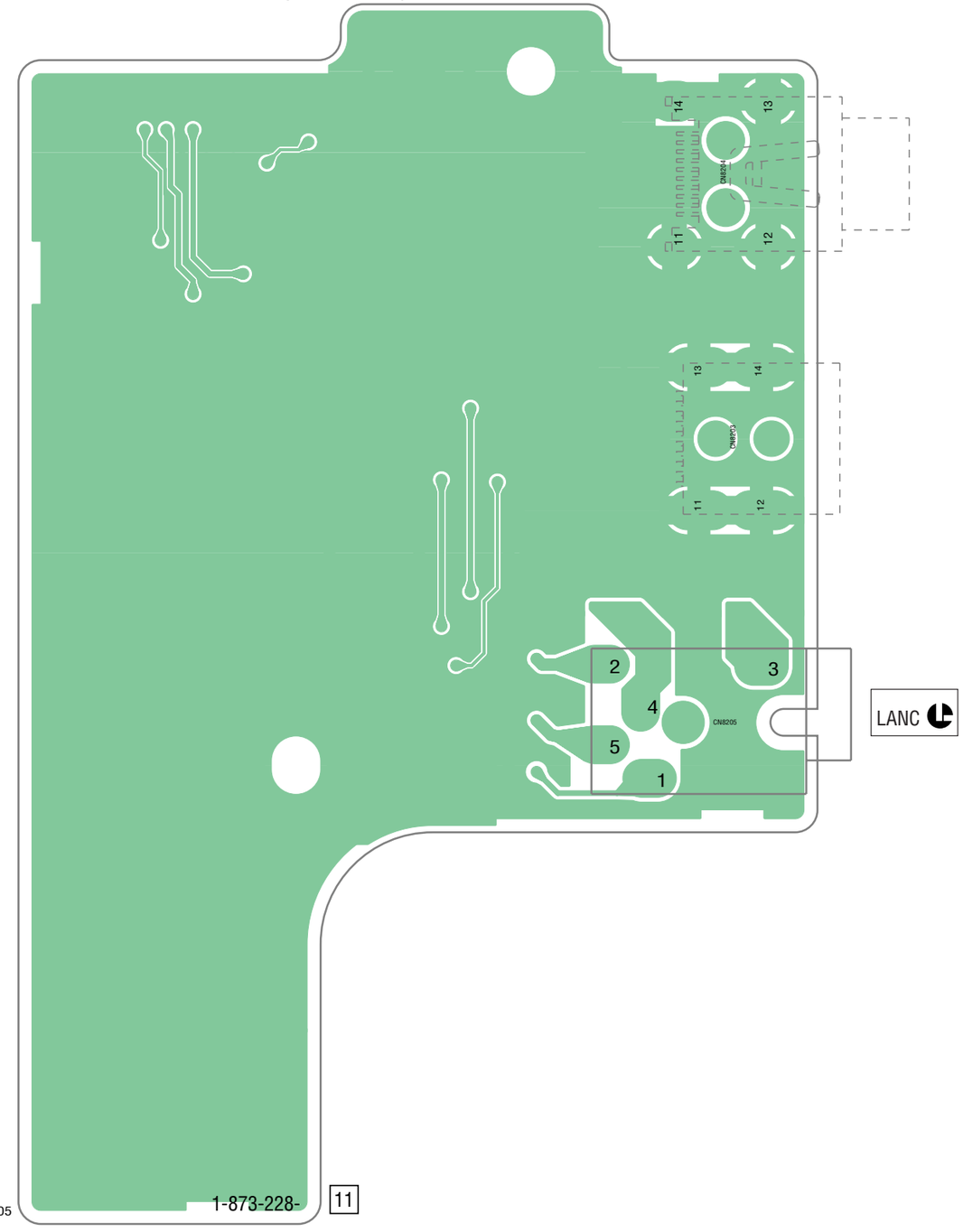
: Uses unleaded solder.

JJ-005 BOARD (SIDE A)



05 1-873-228- 11

JJ-005 BOARD (SIDE B)

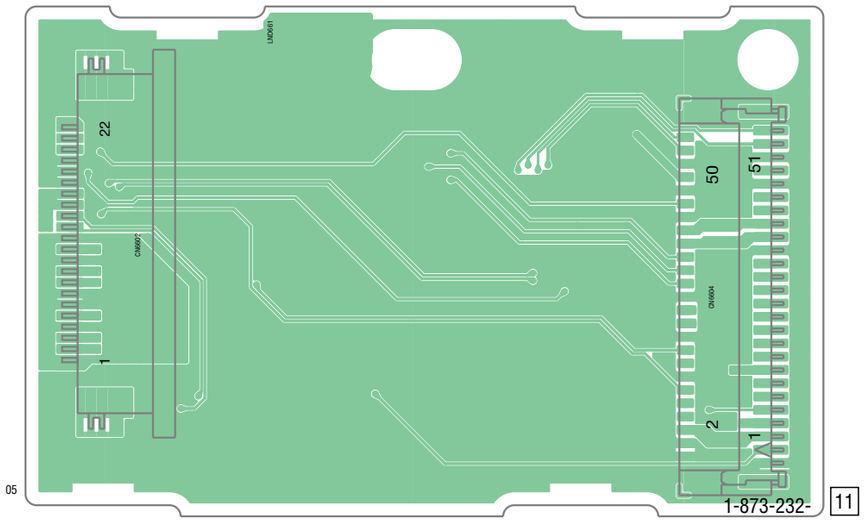


05 1-873-228- 11

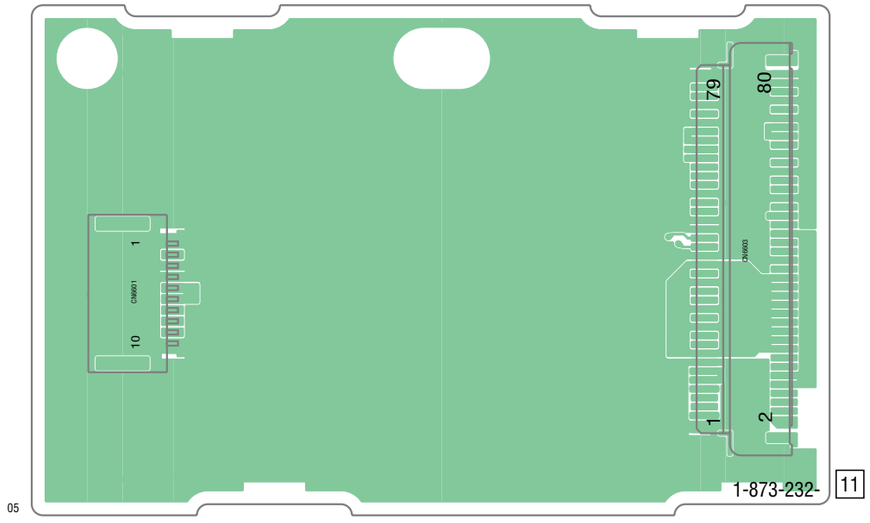
YY-005 (6 layers), PP-005 (6 layers)

: Uses unleaded solder.

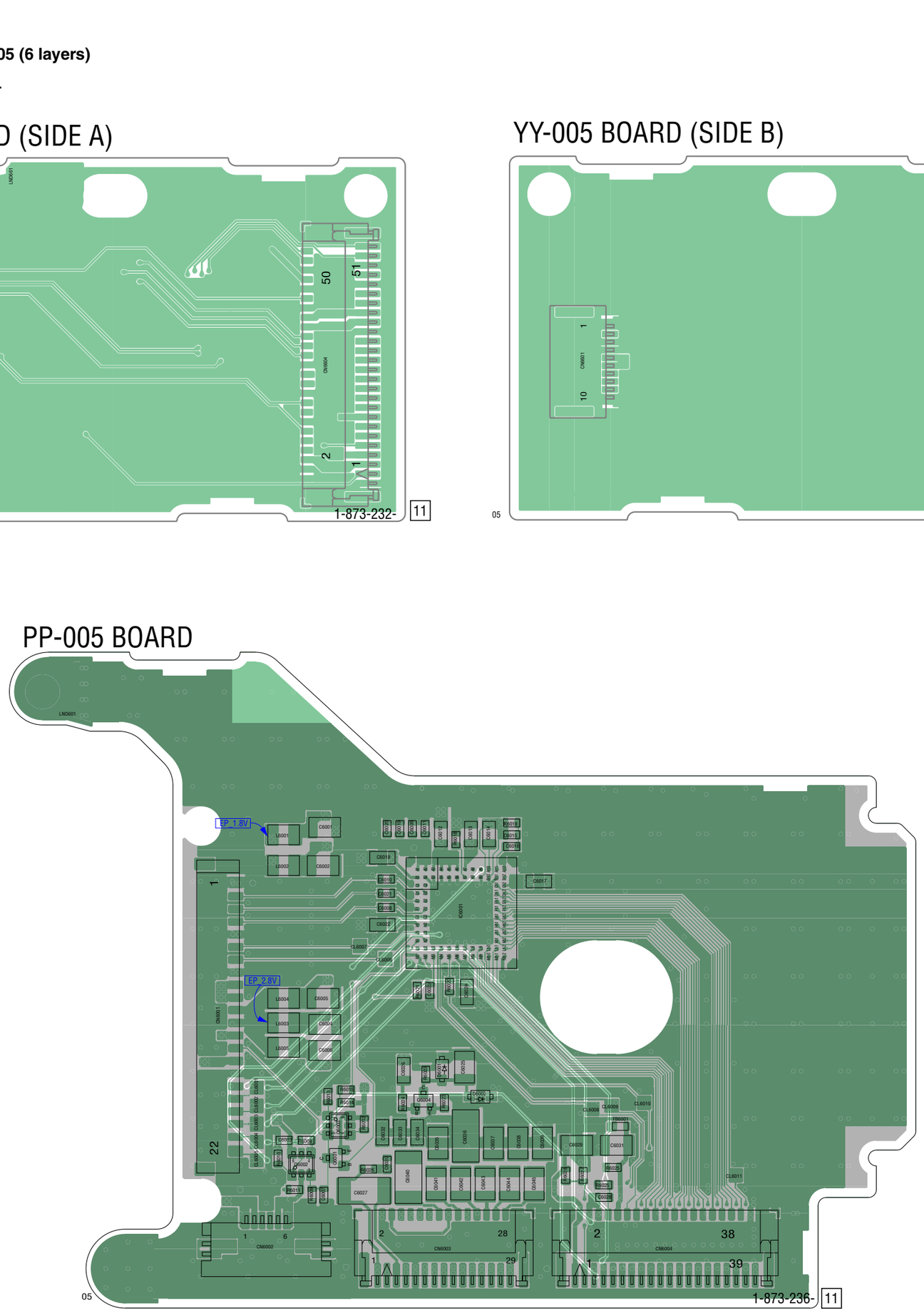
YY-005 BOARD (SIDE A)



YY-005 BOARD (SIDE B)



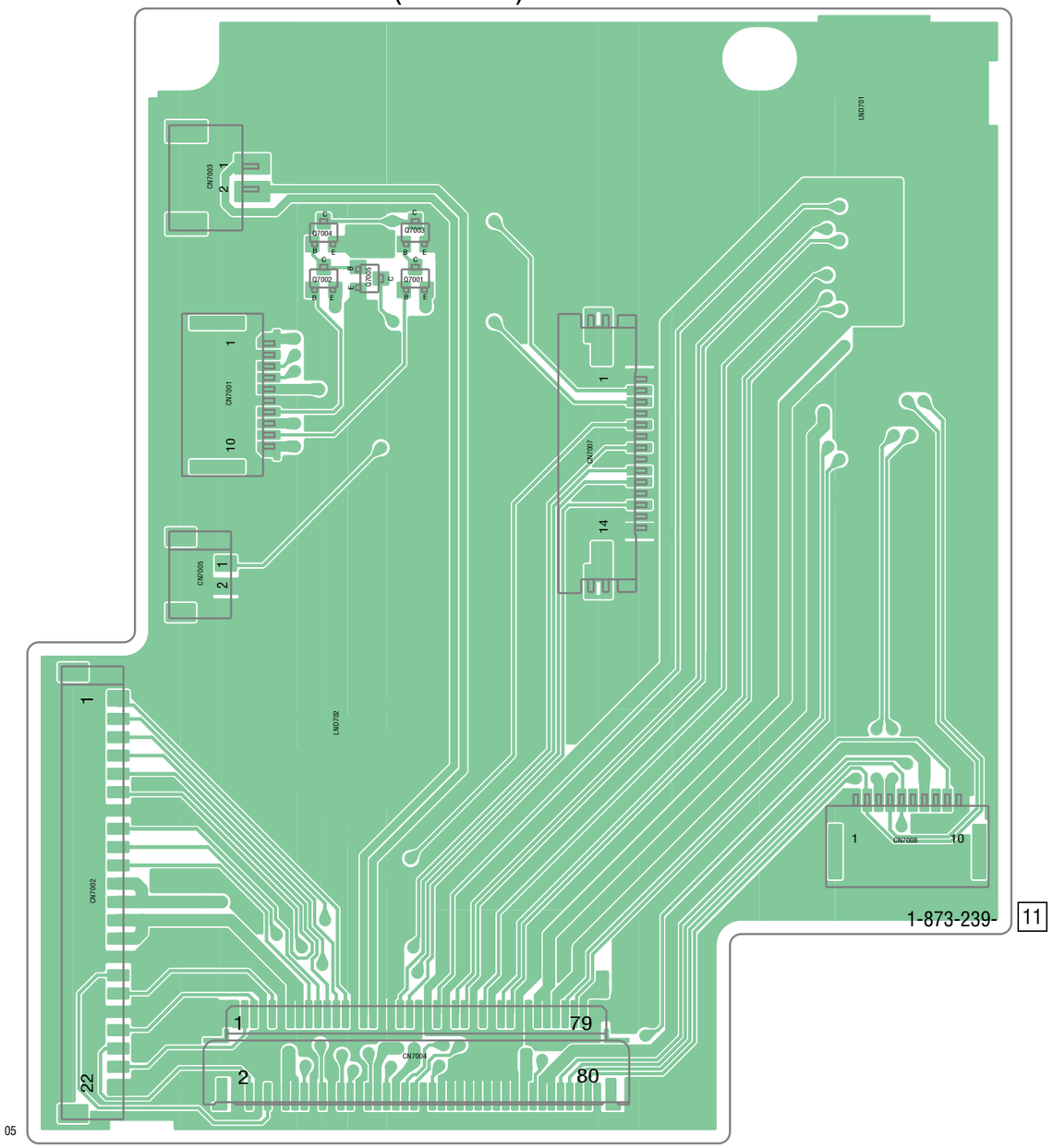
PP-005 BOARD



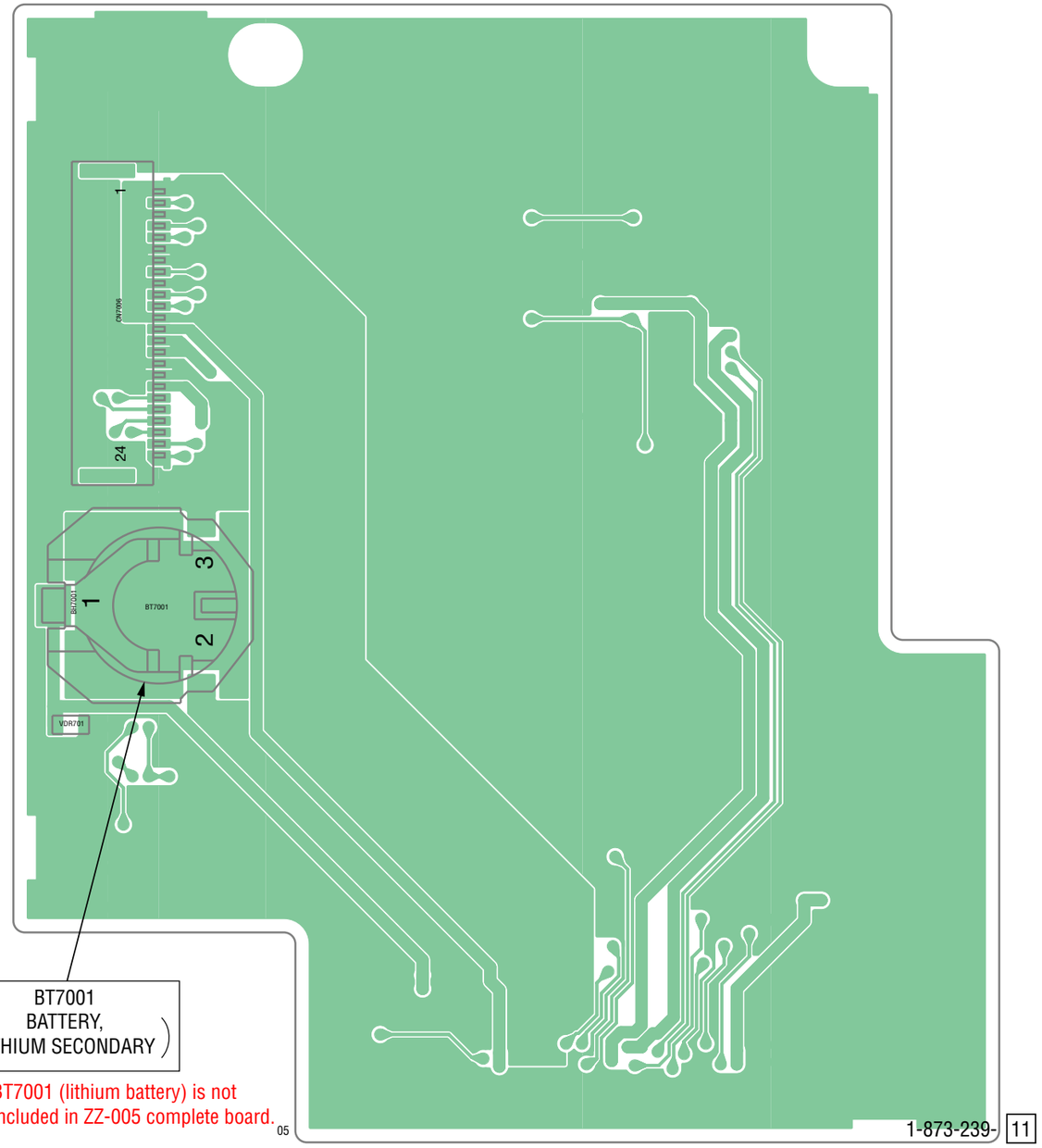
ZZ-005 (2 layers)

: Uses unleaded solder.

ZZ-005 BOARD (SIDE A)



ZZ-005 BOARD (SIDE B)



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

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

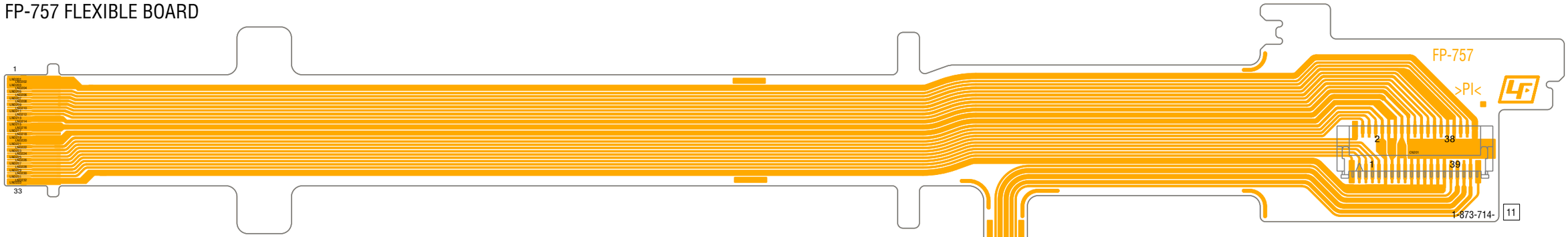
Note: Replace the battery holder (BH7001) together when replacing the lithium battery (BT7001) on the ZZ-005 board. (The battery holder removed once cannot be used again.)
When mounting these parts, mount new battery holder first and attach new lithium battery next.

Note: ZZ-005基板のリチウム電池（BT7001）を交換する場合はバッテリホルダ（BH7001）も同時に新品に交換してください。（一度使用したバッテリホルダは再使用できません。）
部品取り付けの際は，先にバッテリホルダを取り付けてからリチウム電池を装着してください。

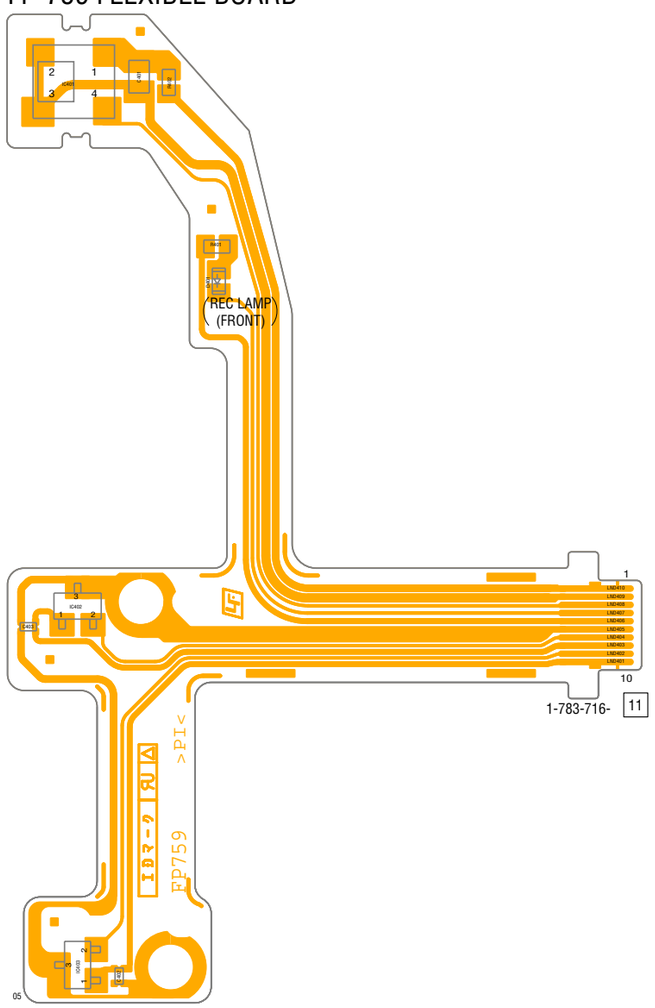
FP-757 (1 layer), FP-759 (1 layer), FP-756 (1 layer)

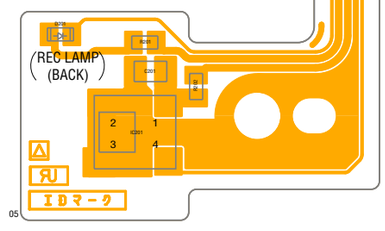
: Uses unleaded solder.

FP-757 FLEXIBLE BOARD

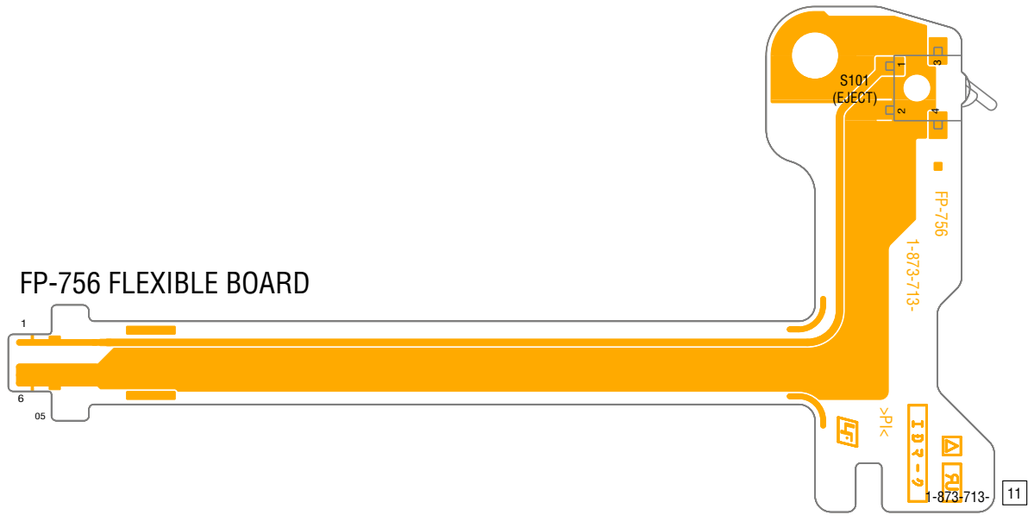


FP-759 FLEXIBLE BOARD





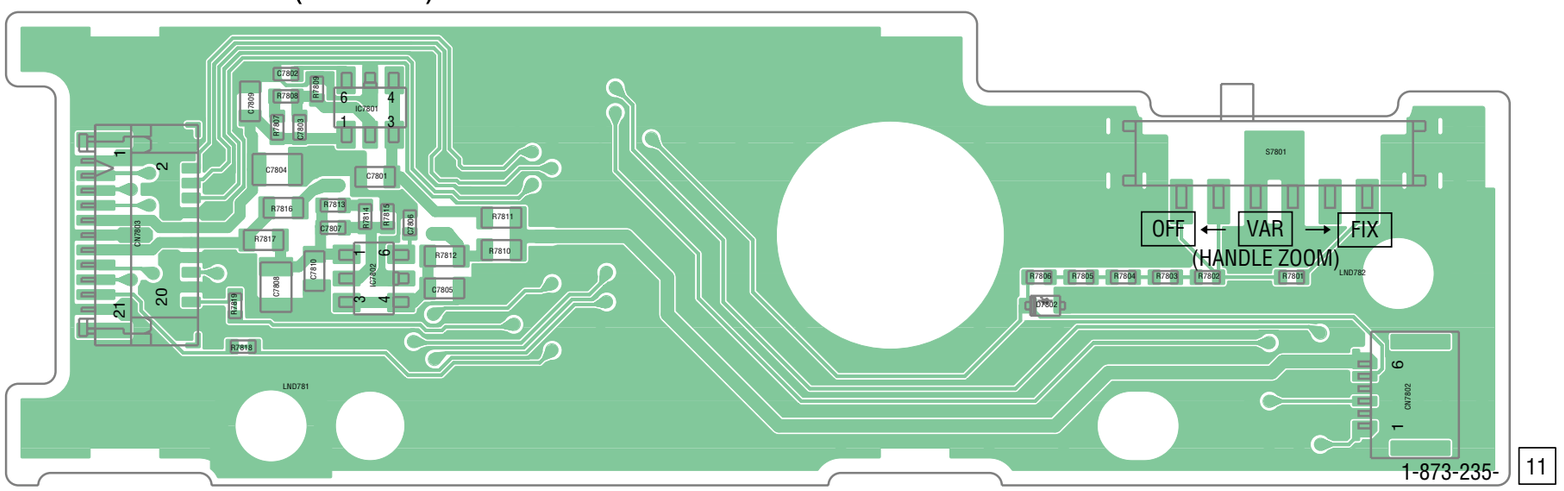
FP-756 FLEXIBLE BOARD



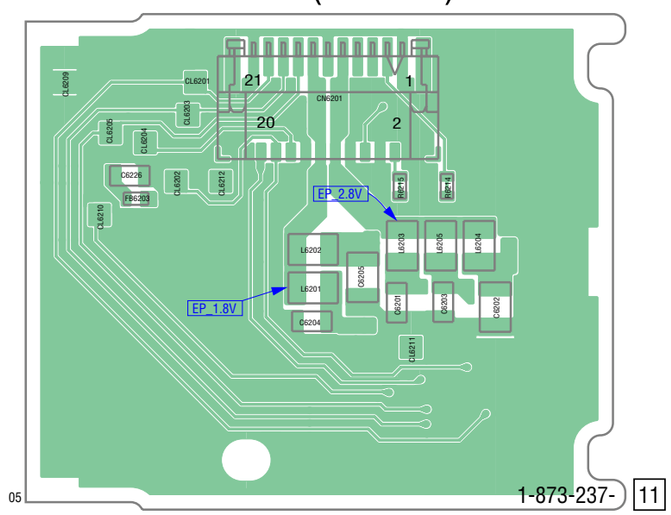
GG-005 (2 layers), UU-005 (6 layers)

: Uses unleaded solder.

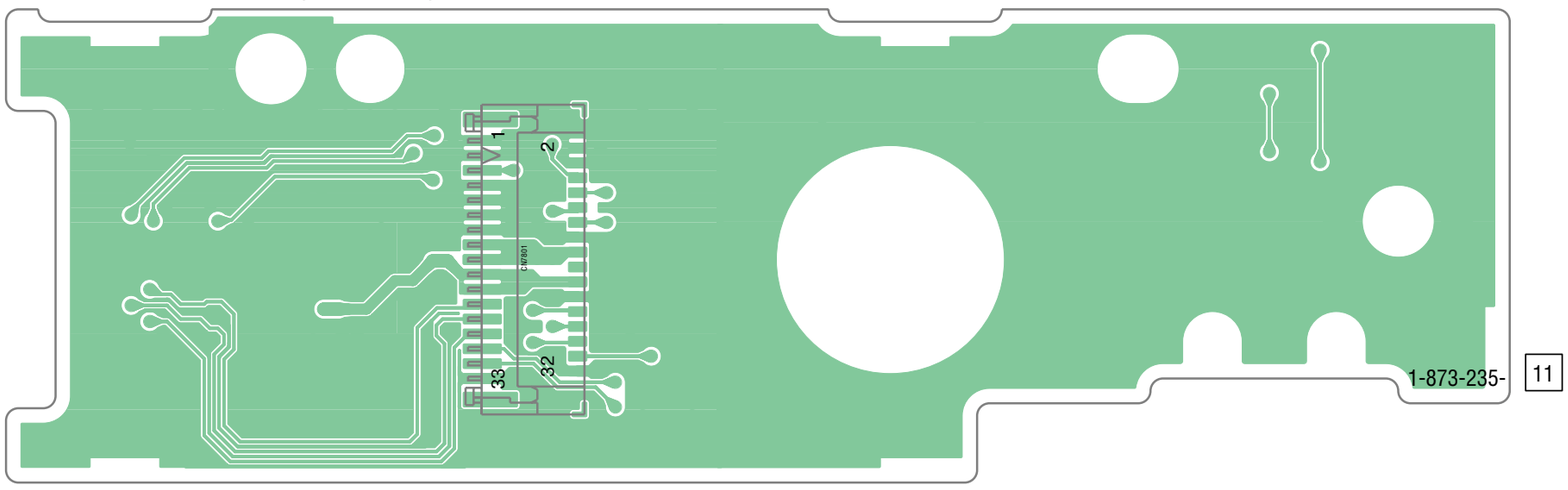
GG-005 BOARD (SIDE A)



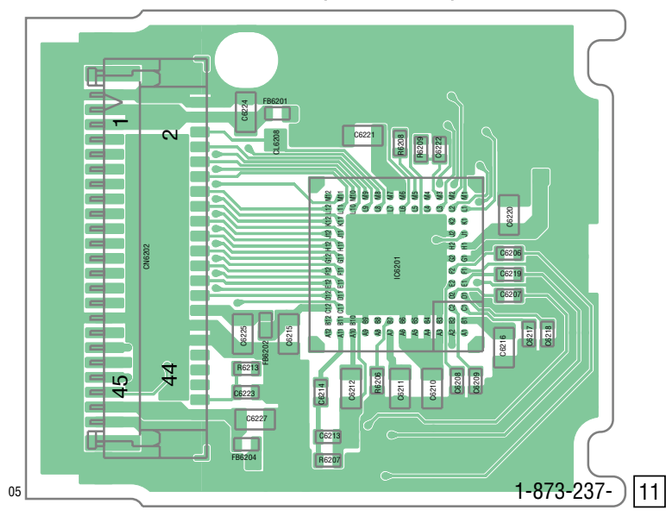
UU-005 BOARD (SIDE A)



GG-005 BOARD (SIDE B)



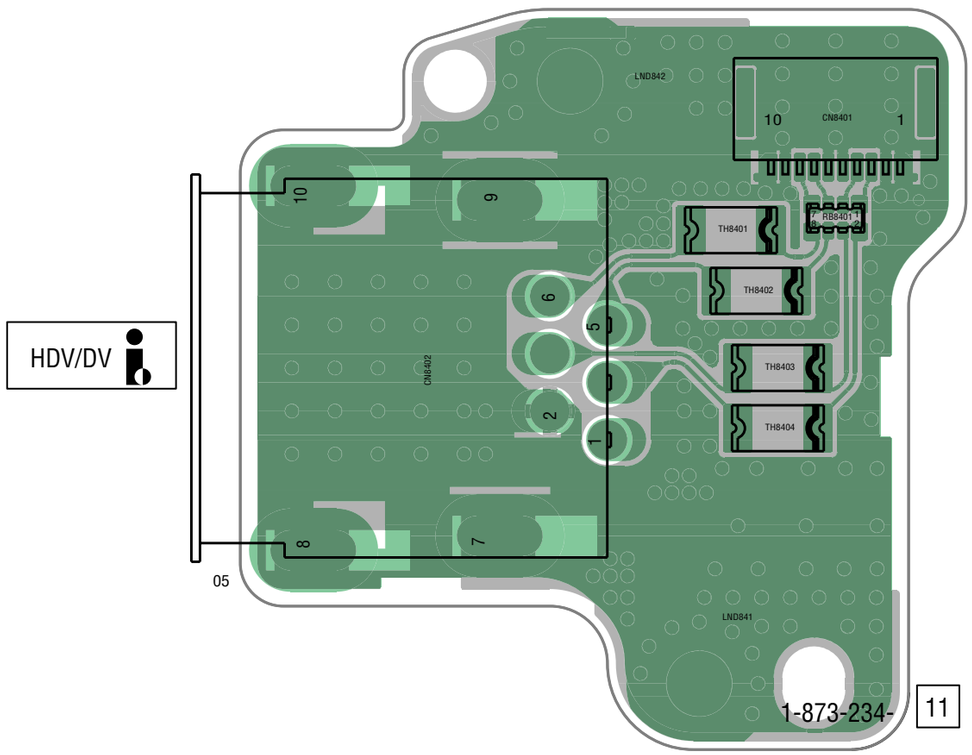
UU-005 BOARD (SIDE B)



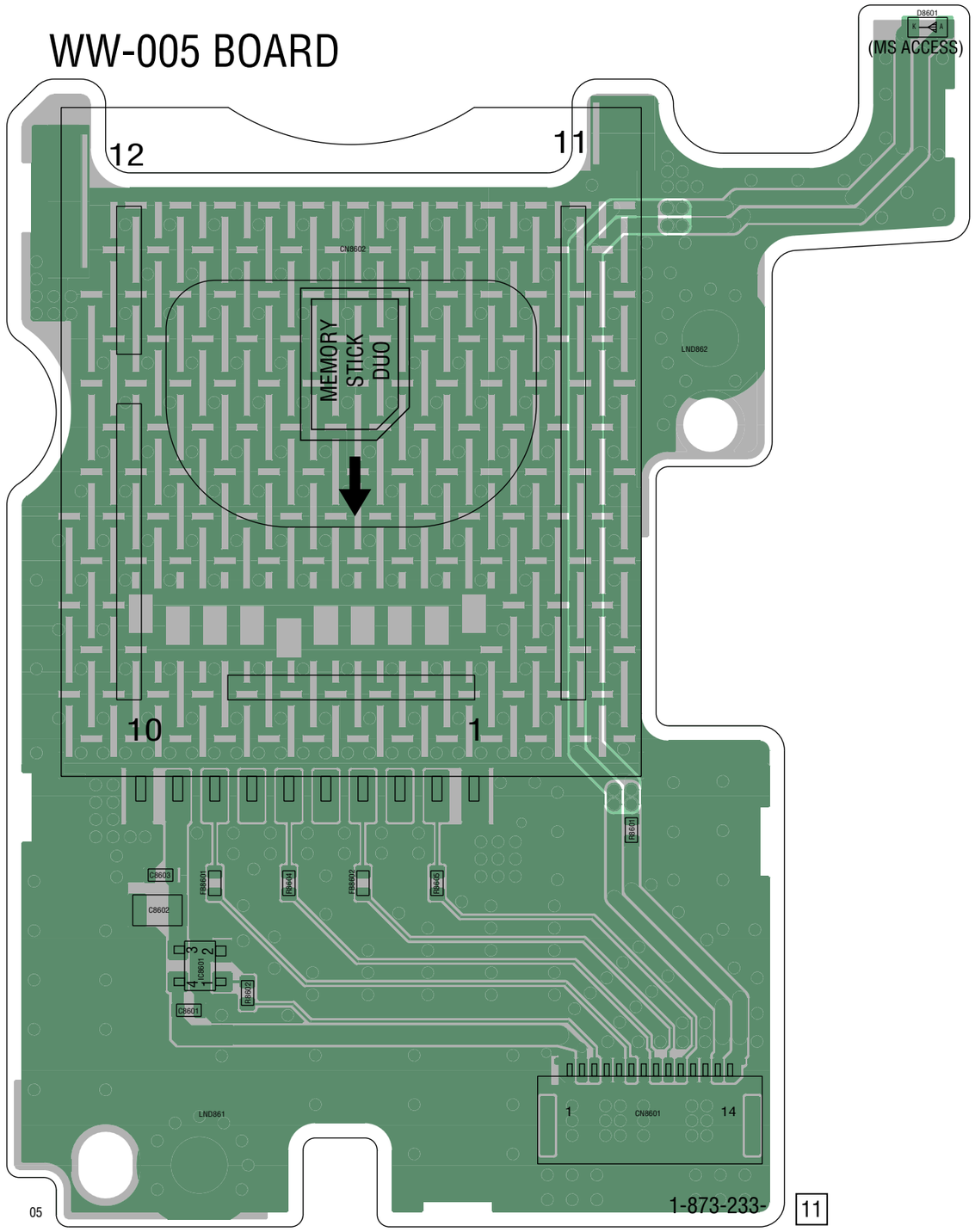
II-005 (2 layers), WW-005 (2 layers)

: Uses unleaded solder.

II-005 BOARD



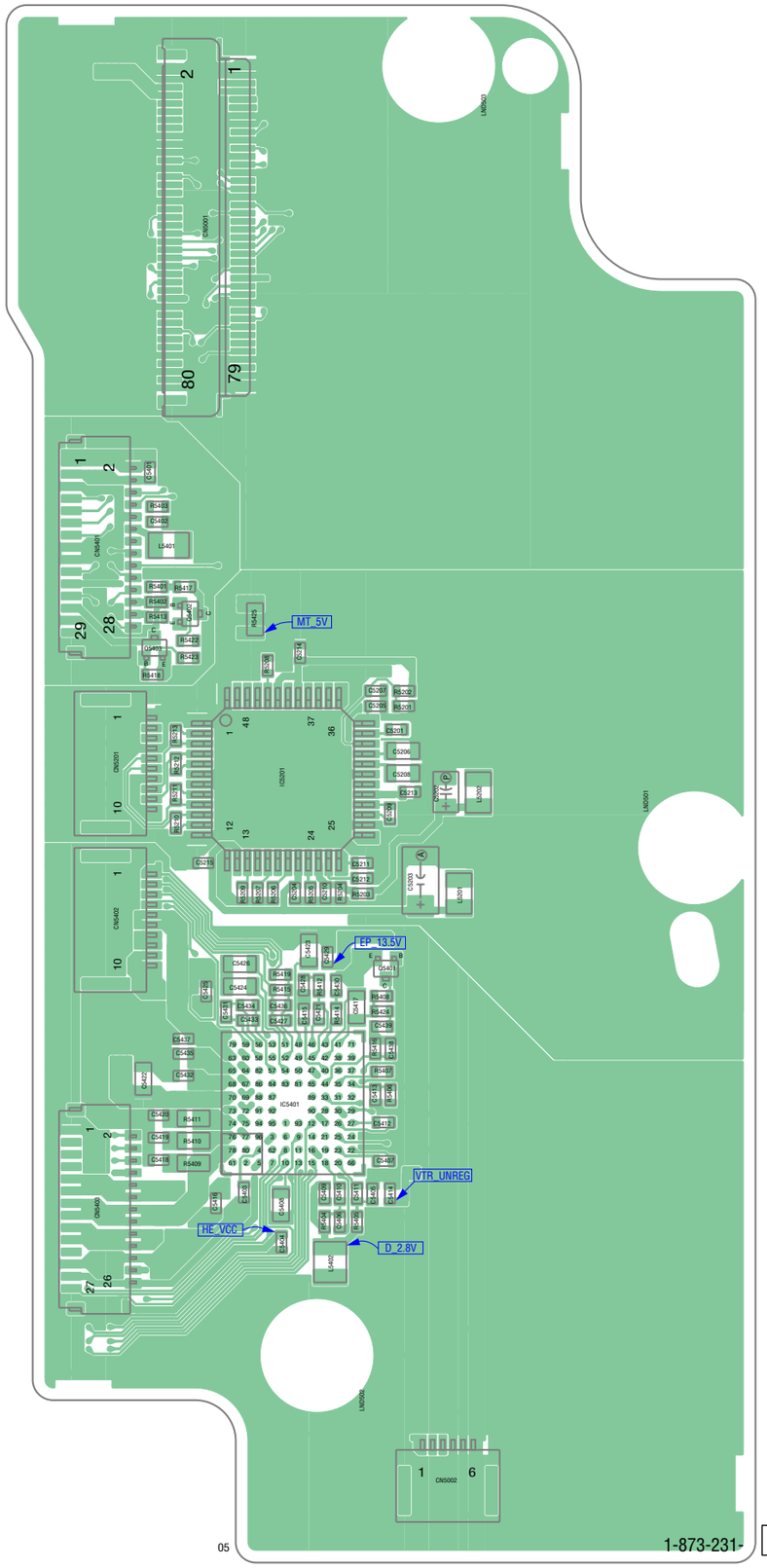
WW-005 BOARD



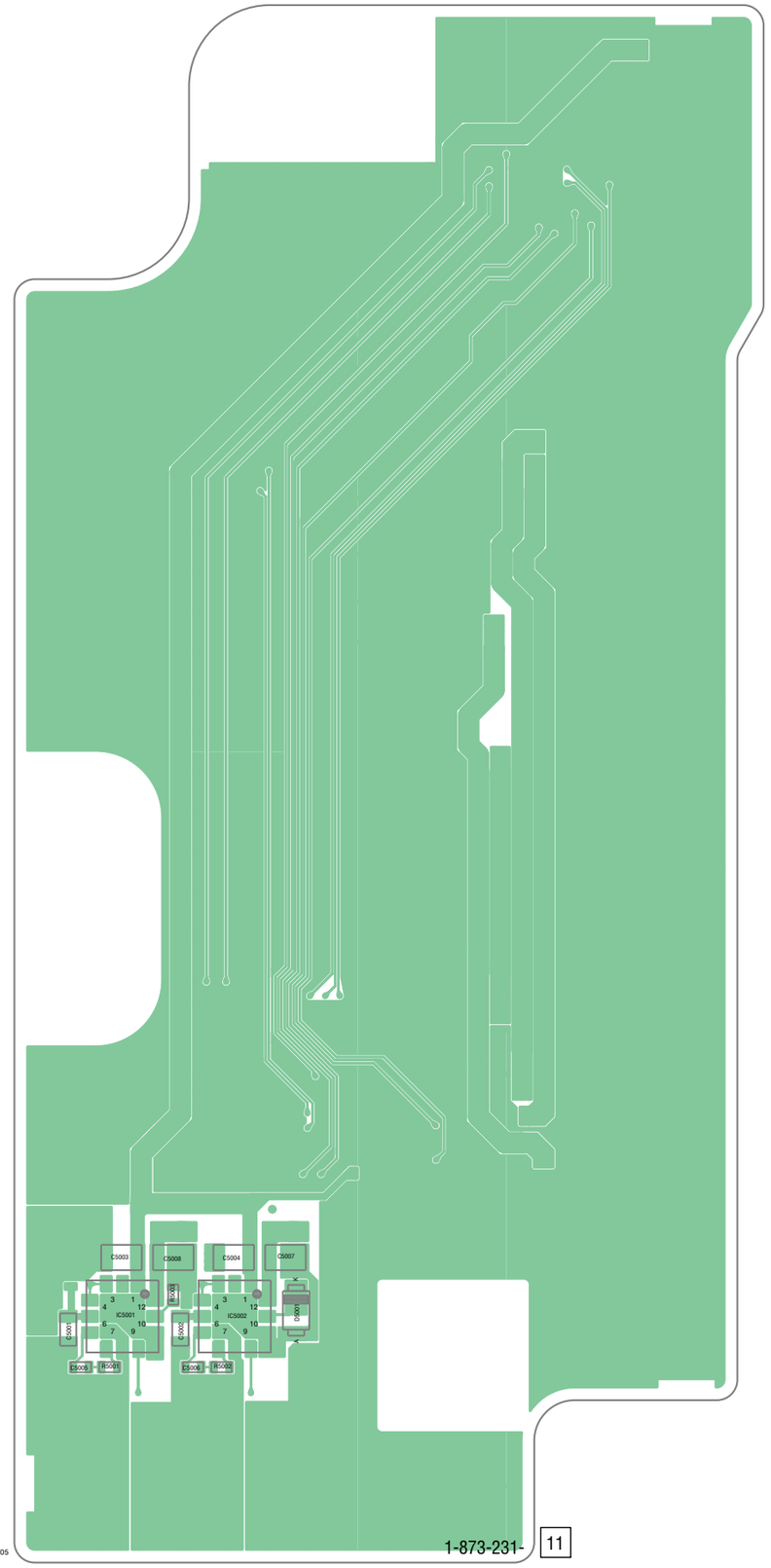
NN-005 (6 layers)

: Uses unleaded solder.

NN-005 BOARD (SIDE A)



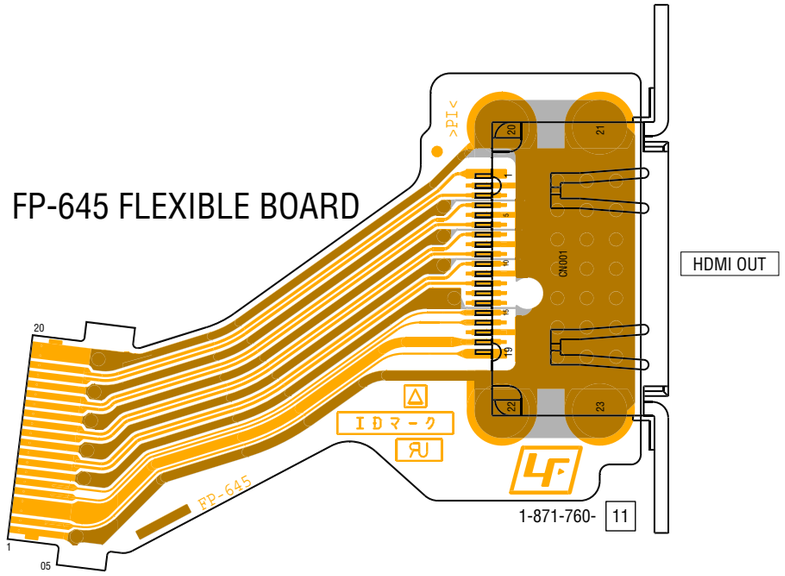
NN-005 BOARD (SIDE B)



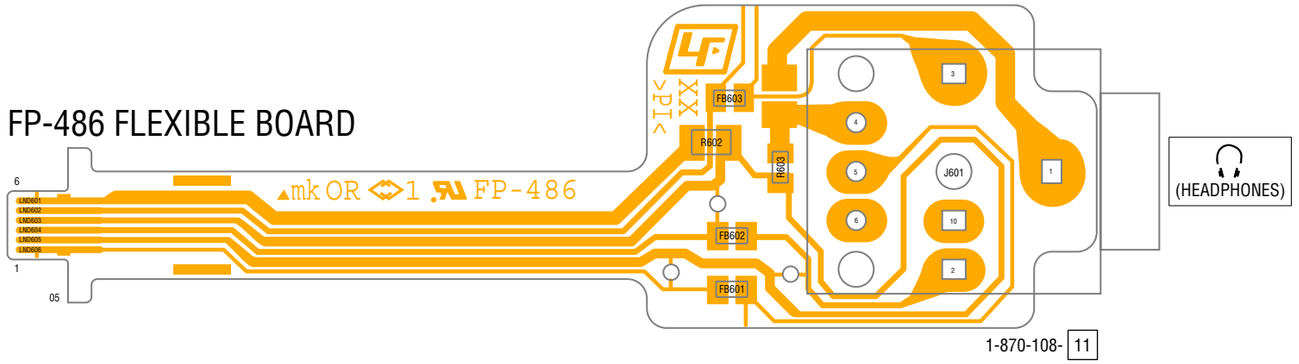
FP-645 (2 layers), FP-486 (1 layer), XX-016 (6 layers)

: Uses unleaded solder.

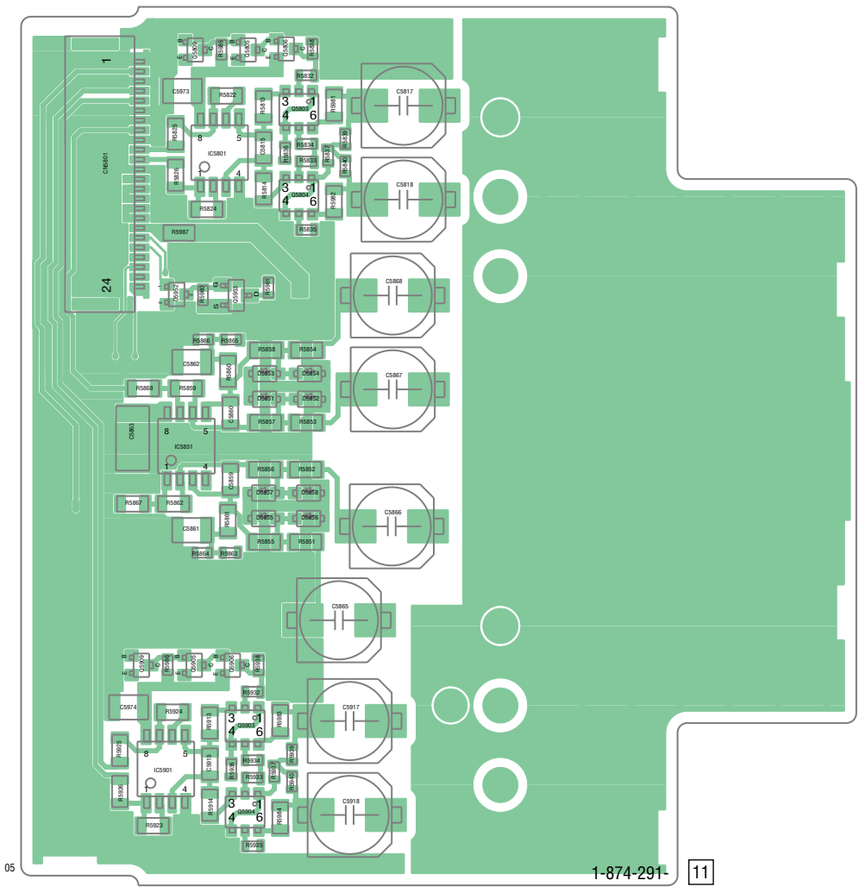
FP-645 FLEXIBLE BOARD



FP-486 FLEXIBLE BOARD

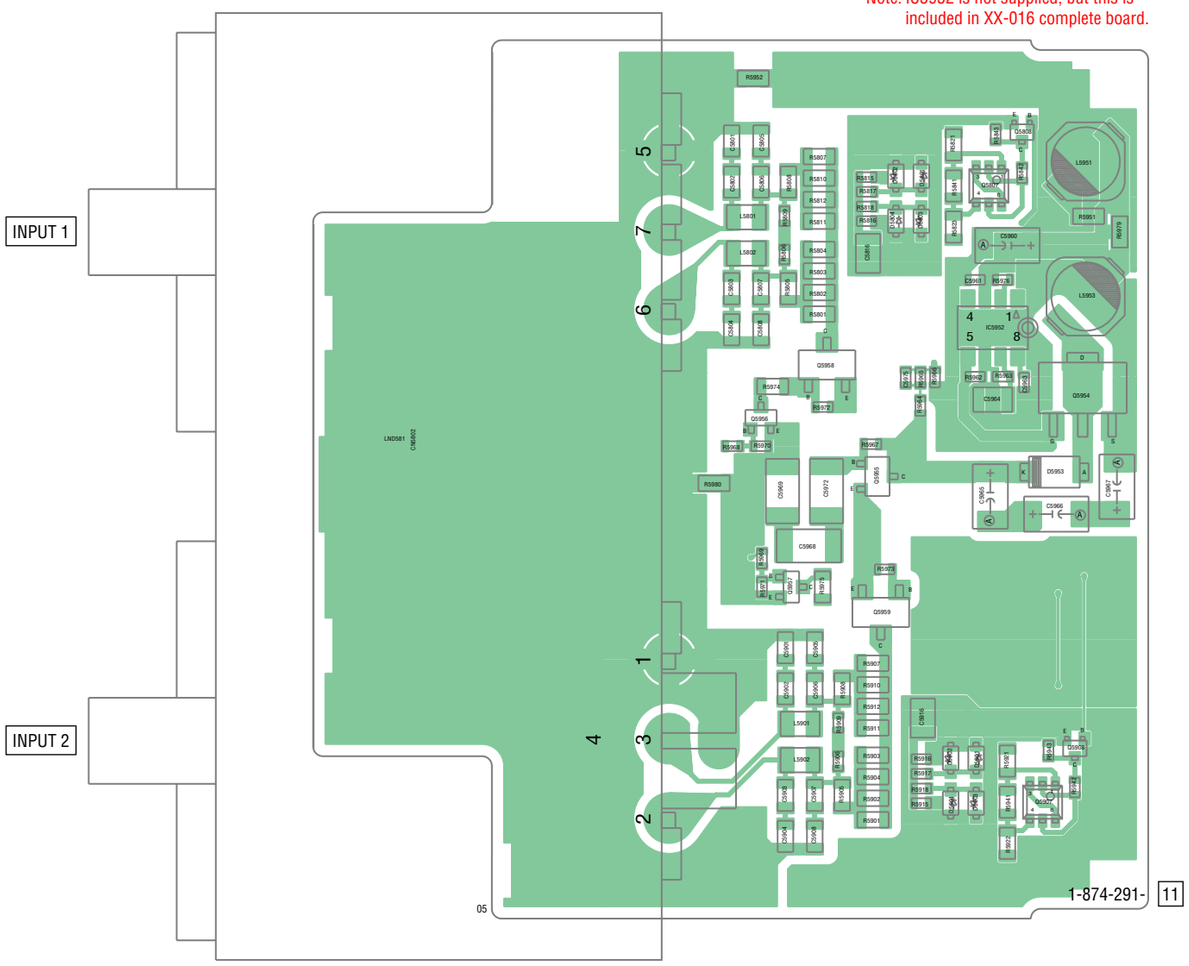


XX-016 BOARD (SIDE A)



XX-016 BOARD (SIDE B)

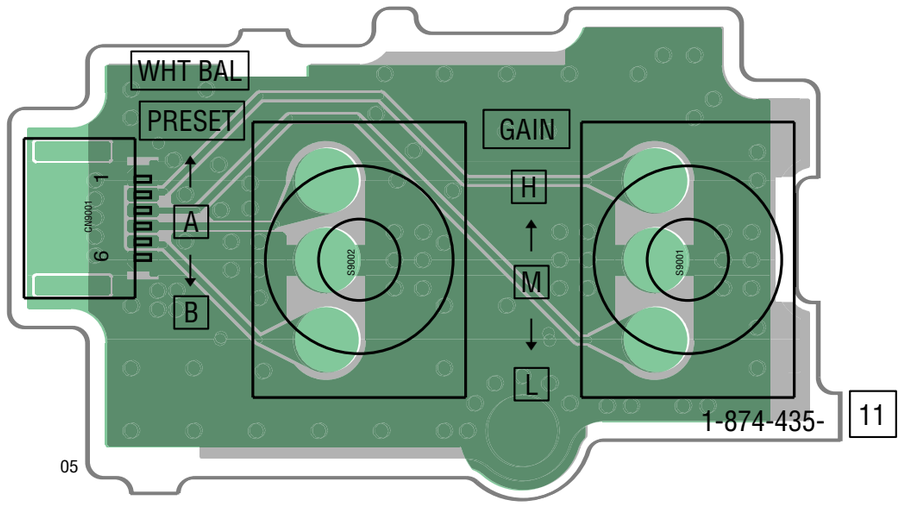
Note: IC5952 is not supplied, but this is included in XX-016 complete board.



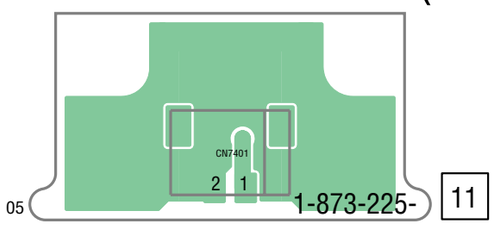
KK-032 (2 layers), HH-008 (2 layers), RR-005 (2 layers)

: Uses unleaded solder.

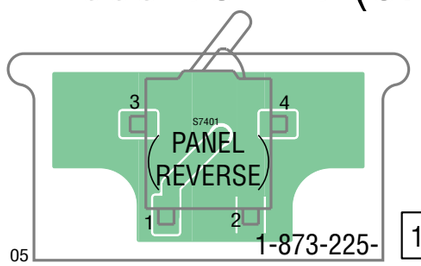
KK-032 BOARD



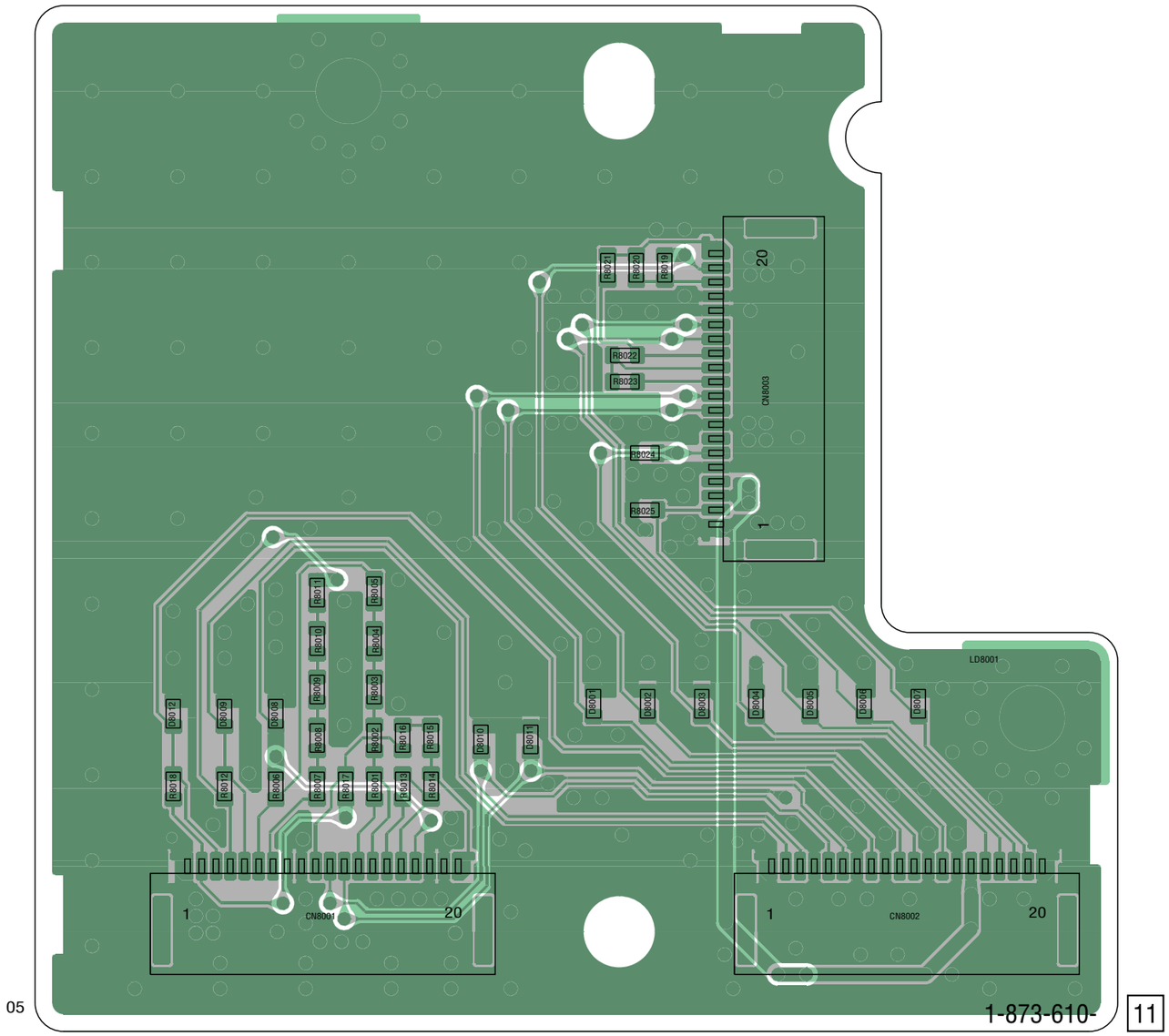
HH-008 BOARD (SIDE A)



HH-008 BOARD (SIDE B)



RR-005 BOARD

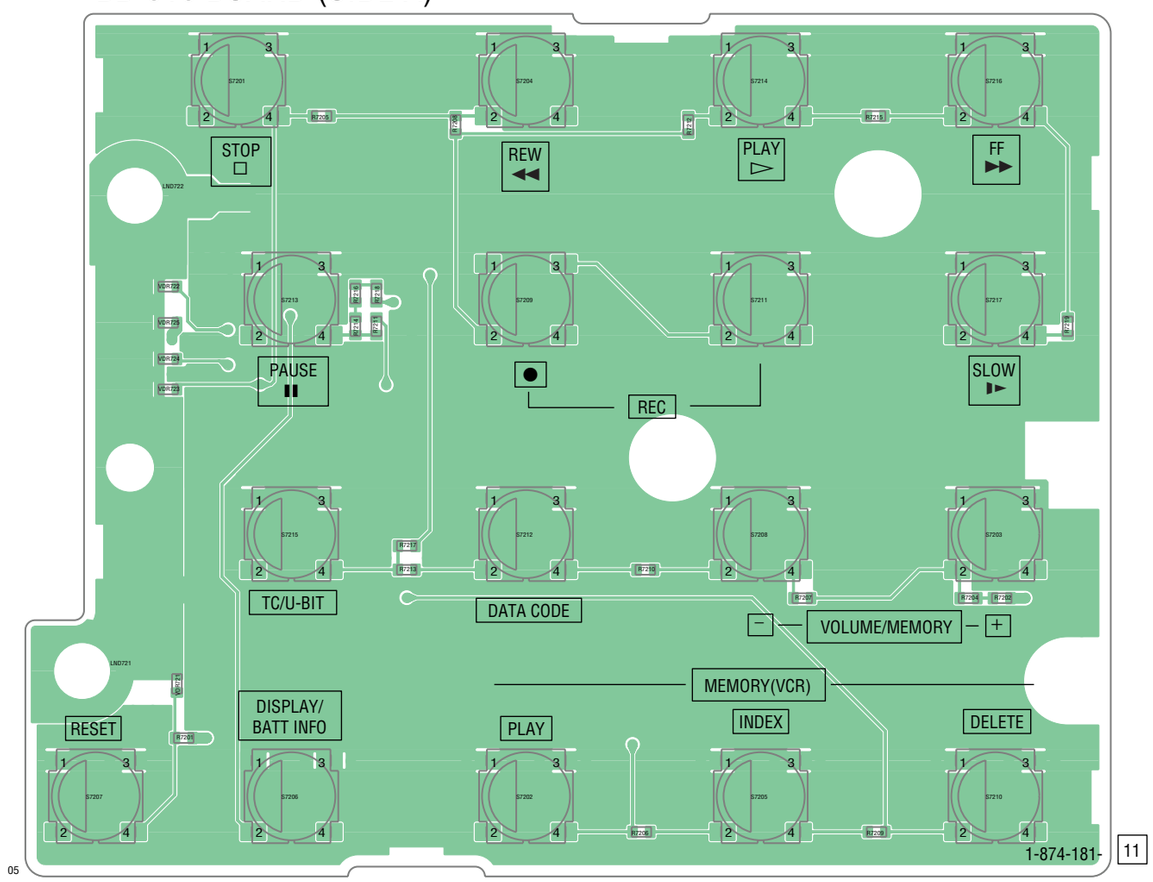


Ver. 1.1 2008.02

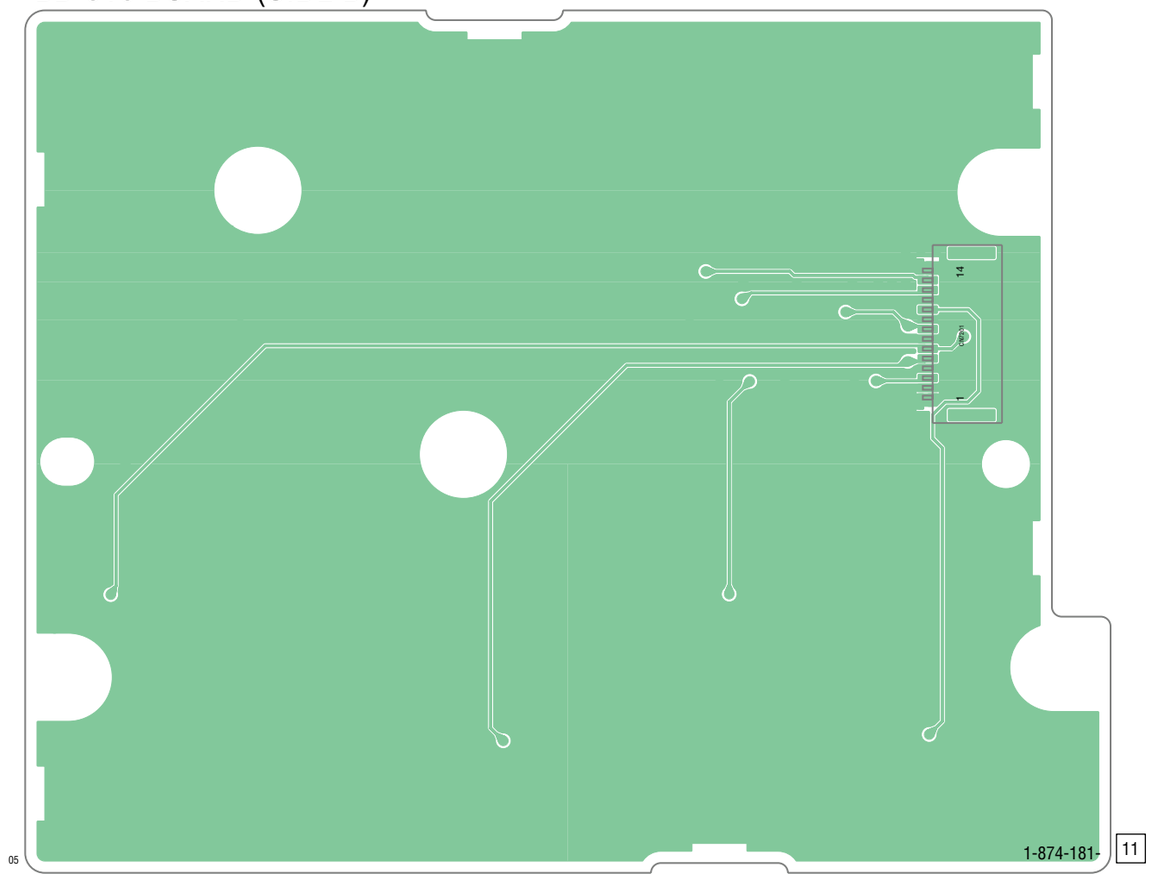
BB-010 (2 layers), SS-182 (2 layers)

: Uses unleaded solder.

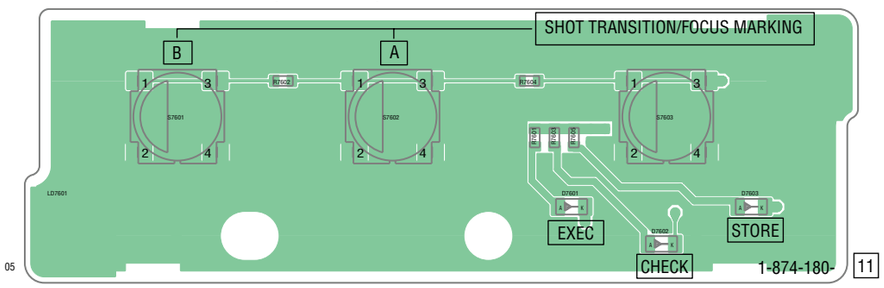
BB-010 BOARD (SIDE A)



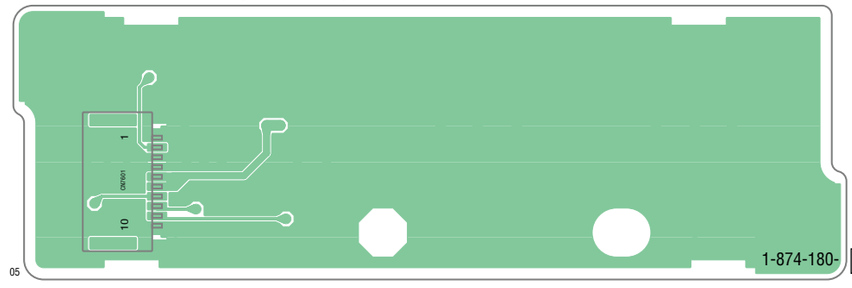
BB-010 BOARD (SIDE B)



SS-182 BOARD (SIDE A)

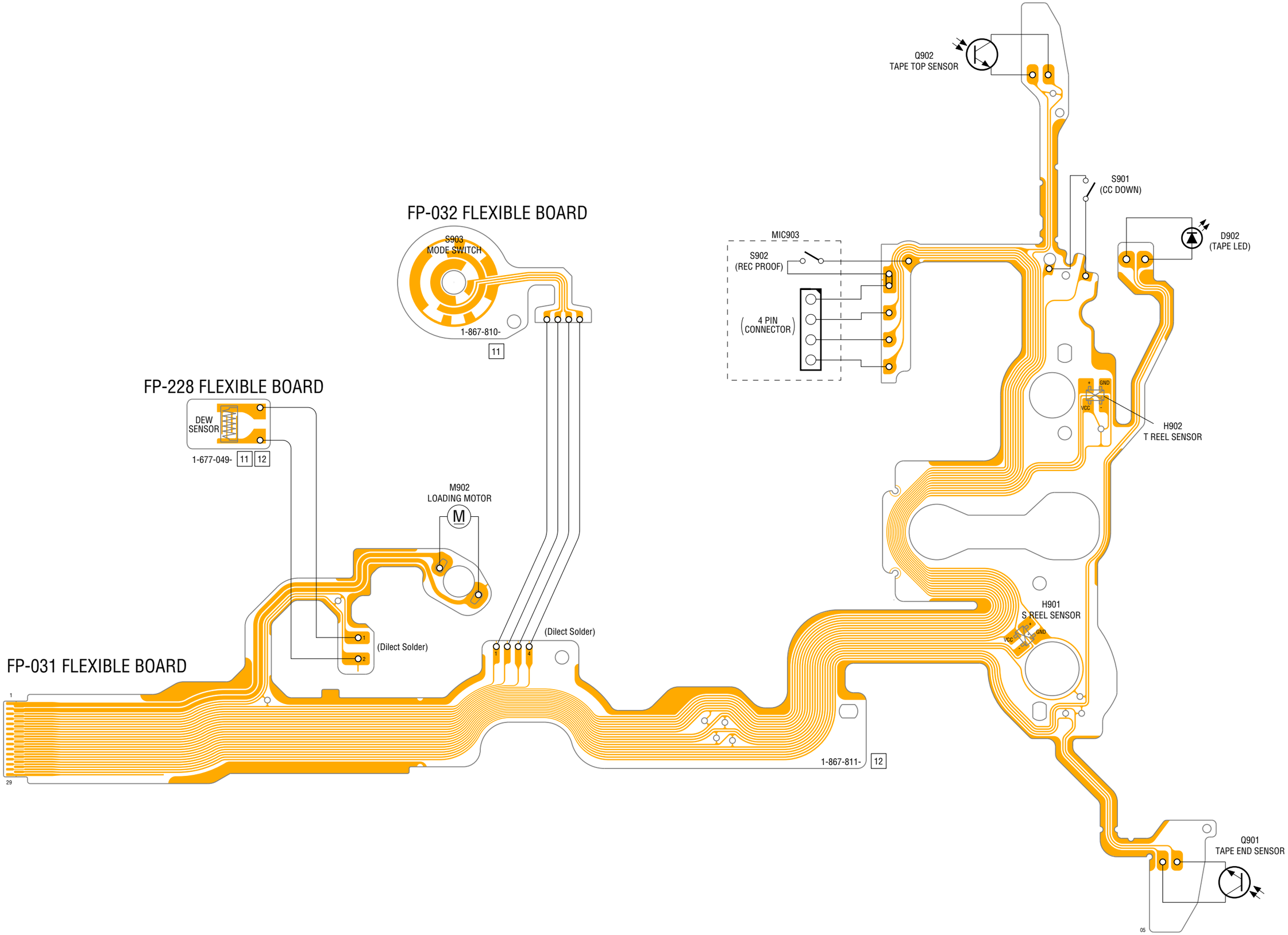


SS-182 BOARD (SIDE B)



FP-031 (1 layer), FP-032 (1 layer), FP-228 (1 layer)

: Uses unleaded solder.



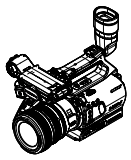
NOTE

5. REPAIR PARTS LIST (1/2)

TO (2/2)

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



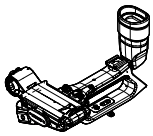
A

OVERALL SECTION-1



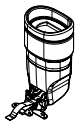
B

LENS SECTION



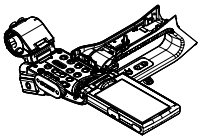
C

HANDLE SECTION-1



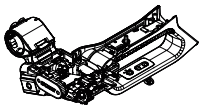
D

EVF SECTION



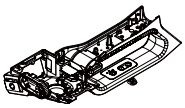
E

HANDLE SECTION-2



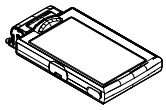
F

HANDLE SECTION-3



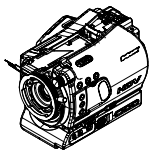
G

HANDLE SECTION-4



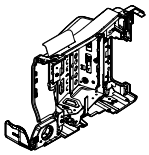
H

LCD SECTION



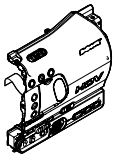
I

OVERALL SECTION-2



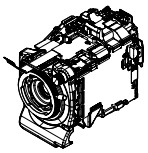
J

CABINET (L) SECTION



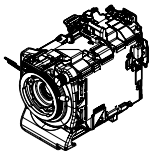
K

CABINET (R) SECTION



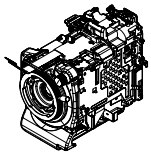
L

MD/JACK SECTION



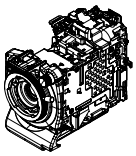
M

MAIN BOARD SECTION



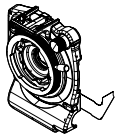
N

MS/ENG SECTION



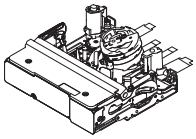
O

BT PANEL SECTION



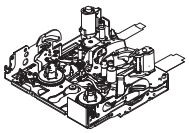
P

LENS MOUNT SECTION



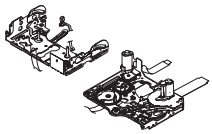
Q

MECHANISM DECK SECTION



R

LS/MECHANICHAL CHASSIS BLOCK ASSEMBLY-1



S

LS/MECHANICHAL CHASSIS BLOCK ASSEMBLY-2

NOTE

5. REPAIR PARTS LIST (2/2)

TO (1/2)

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

Link

ELECTRICAL PARTS LIST

ACCESSORIES

BB-010 BOARD E	FP-759 FLEXIBLE BOARD F	OO-006 BOARD N
EE-009 BOARD P	GG-005 BOARD F	PP-005 BOARD H
EE-010 BOARD P	GY-005 BOARD B	RR-005 BOARD K
FP-031 FLEXIBLE BOARD S	HH-008 BOARD H	SS-182 BOARD G
FP-032 FLEXIBLE BOARD S	II-005 BOARD L	TT-007 BOARD M
FP-228 FLEXIBLE BOARD S	JJ-005 BOARD L	UU-005 BOARD D
FP-486 FLEXIBLE BOARD L	KK-032 BOARD K	WW-005 BOARD N
FP-645 FLEXIBLE BOARD M	LG-005 BOARD B	XX-016 BOARD F
FP-756 FLEXIBLE BOARD J	LL-014 BOARD N	YY-005 BOARD G
FP-757 FLEXIBLE BOARD F	NN-005 BOARD L	ZZ-005 BOARD E

5. REPAIR PARTS LIST

(ENGLISH)

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: µF
- COILS
  uH: µH
- 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...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

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

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.

- Color Indication of Appearance Parts
  Example:
  (SILVER) : Cabinet's Color
  (Silver) : Parts Color

(JAPANESE)

【使用上の注意】

- ここに記載されている部品は, 補修用部品であるため, 回路図及びセットに付いている部品と異なる場合があります。
- -XX, -Xは標準化部品のため, セットに付いている部品と異なる場合があります。
- *印の部品は常備在庫しておりません。
- コンデンサの単位でuFは µFを示します。
- 抵抗の単位Ωは省略してあります。
  金　　被：金属被膜抵抗。
  サンキン：酸化金属被膜抵抗。
- インダクタの単位でuHは µHを示します。
- 半導体の名称でuA..., uPA..., uPB..., uPC..., uPD...等はそれぞれ µA..., µPA..., µPB..., µPC..., µPD...を示します。

お願い
図面番号で部品を指定するときは基板名又はブロックを併せて指定してください。

⚠印の部品，または⚠印付の点線で囲まれた部品は，安全性を維持するために，重要な部品です。
従って交換時は，必ず指定の部品を使用してください。

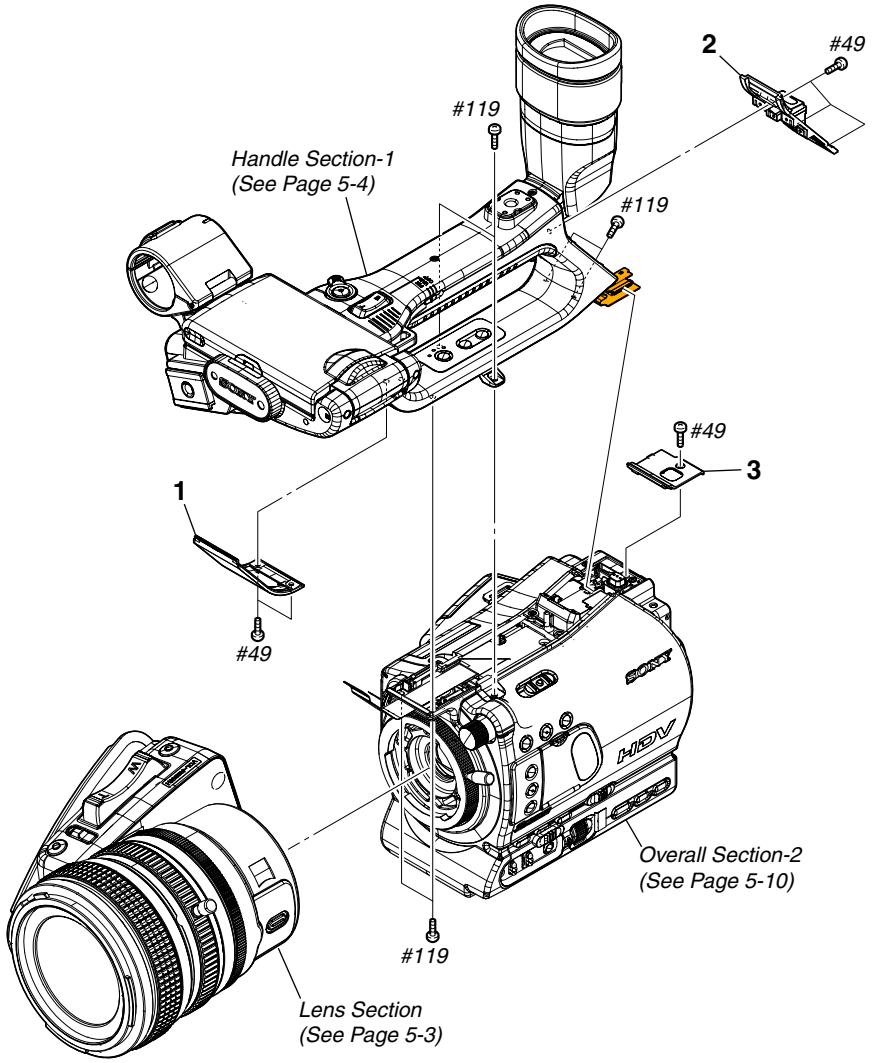
- 外装部品色表示
  例：
  (SILVER):セットの色を表す。
  (Silver) : 部品の色を表す。

- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea model
  NE : North European model

DISASSEMBLY HARDWARE LIST

5-1. EXPLODED VIEWS

5-1-1. OVERALL SECTION-1

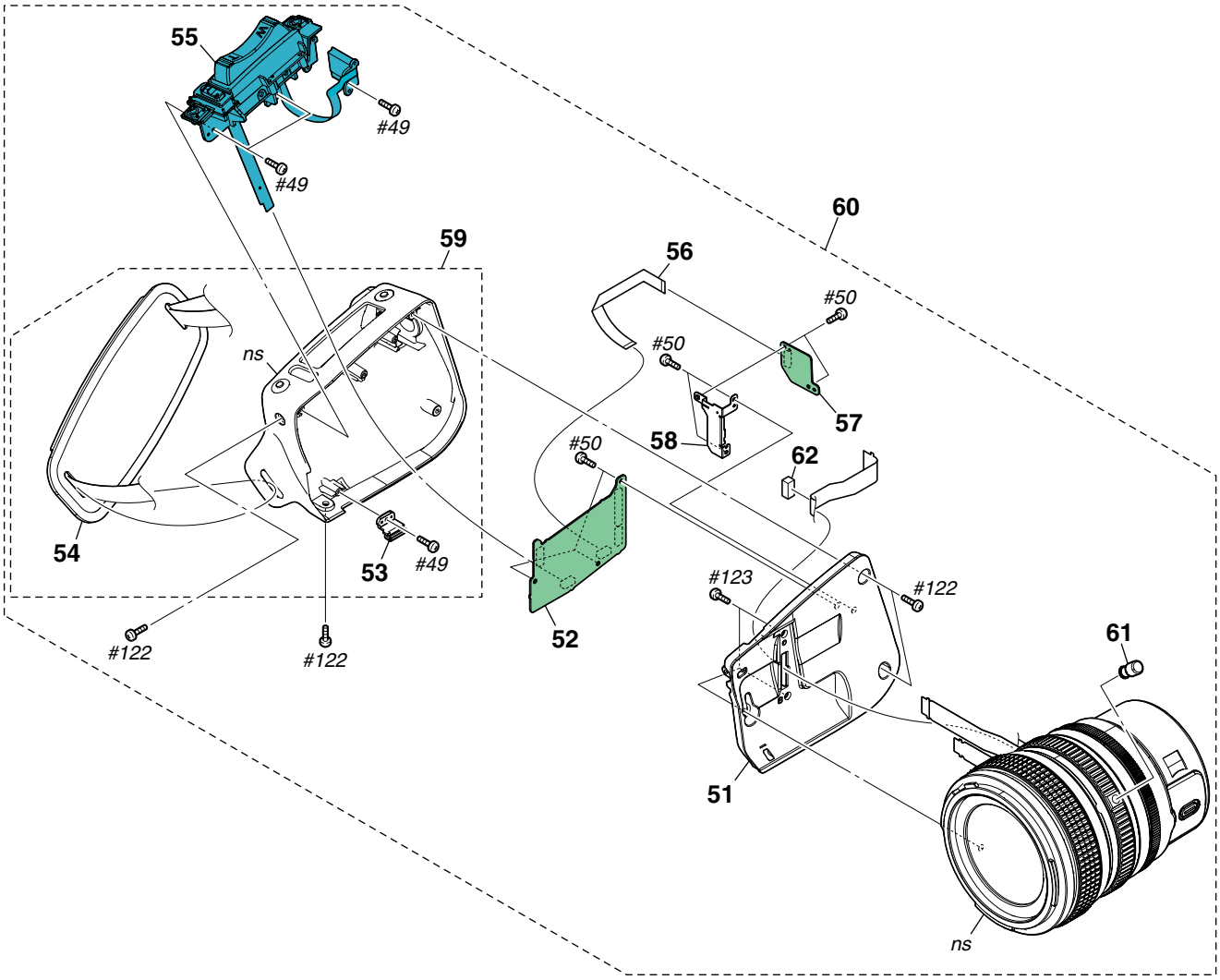


Ref. No.	Part No.	Description
1	3-288-534-01	CABINET (FRONT), HANDLE
2	X-2188-603-1	CABINET (REAR) ASSY, HANDLE
3	3-288-398-01	CABINET (TOP)

Ref. No.	Part No.	Description
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)

5-1-2. LENS SECTION

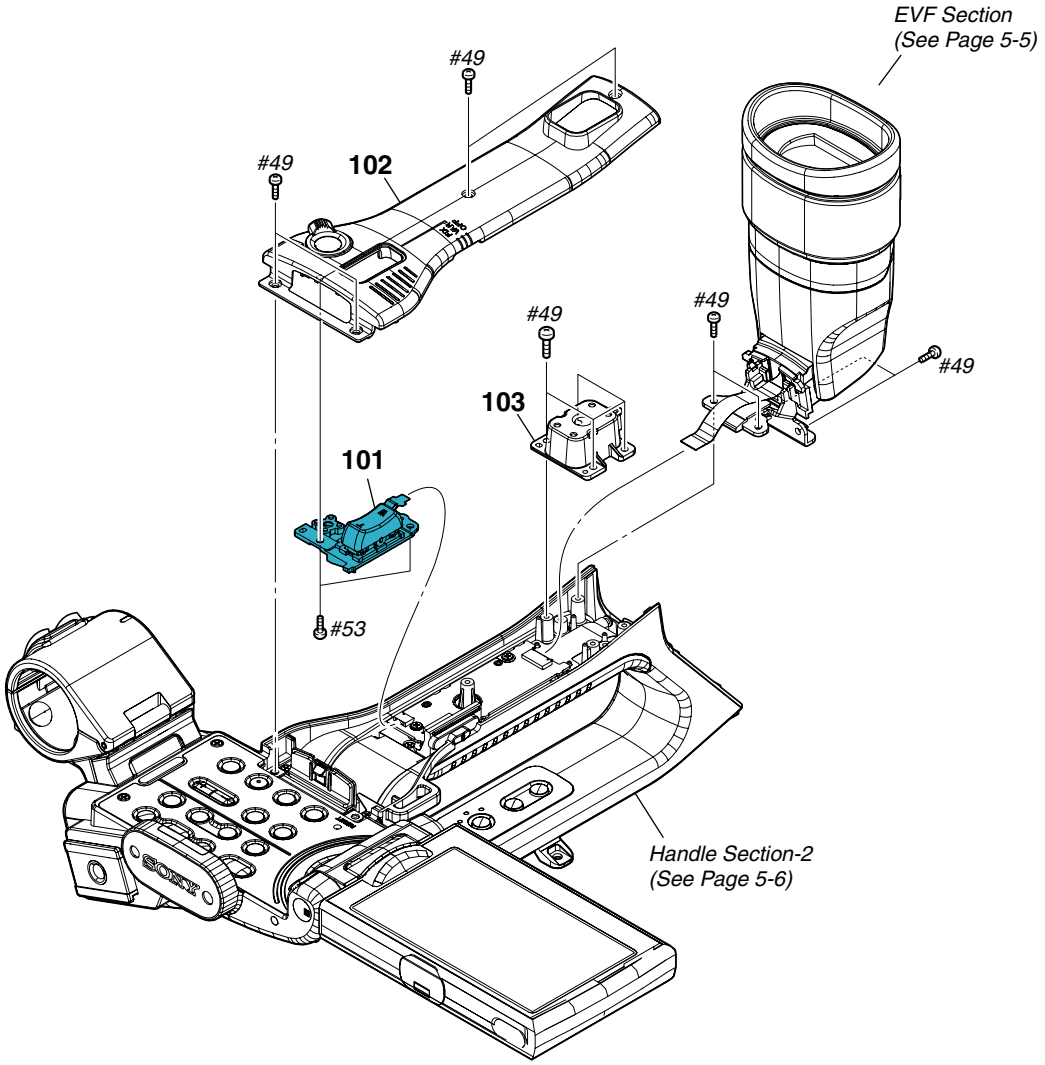
ns: not supplied



Ref. No.	Part No.	Description
51	3-288-599-01	COVER, GRIP
52	A-1486-850-A	LG-005 BOARD, COMPLETE
53	3-288-595-01	FOOT, GRIP
54	3-288-596-01	BELT, GRIP
55	1-480-300-11	SWITCH BLOCK, CONTROL (LZ92000)
56	1-834-246-11	FLEXIBLE FLAT CABLE (FFC-118)
57	A-1510-484-A	GY-005 BOARD, COMPLETE (SERVICE)
* 58	3-288-600-01	HOLDER, GYRO PC BOARD
59	X-2188-617-1	CABINET ASSY, GRIP

Ref. No.	Part No.	Description
60	A-1539-025-A	LENS COMPLETE ASSY (SERVICE)
61	3-292-214-01	LEVER, ZOOM
* 62	3-299-763-01	CUSHION (LN)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#122	7-682-547-09	SCREW +B 3X6 (Black)
#123	7-682-561-09	SCREW +B 4X8 (Black)

5-1-3. HANDLE SECTION-1

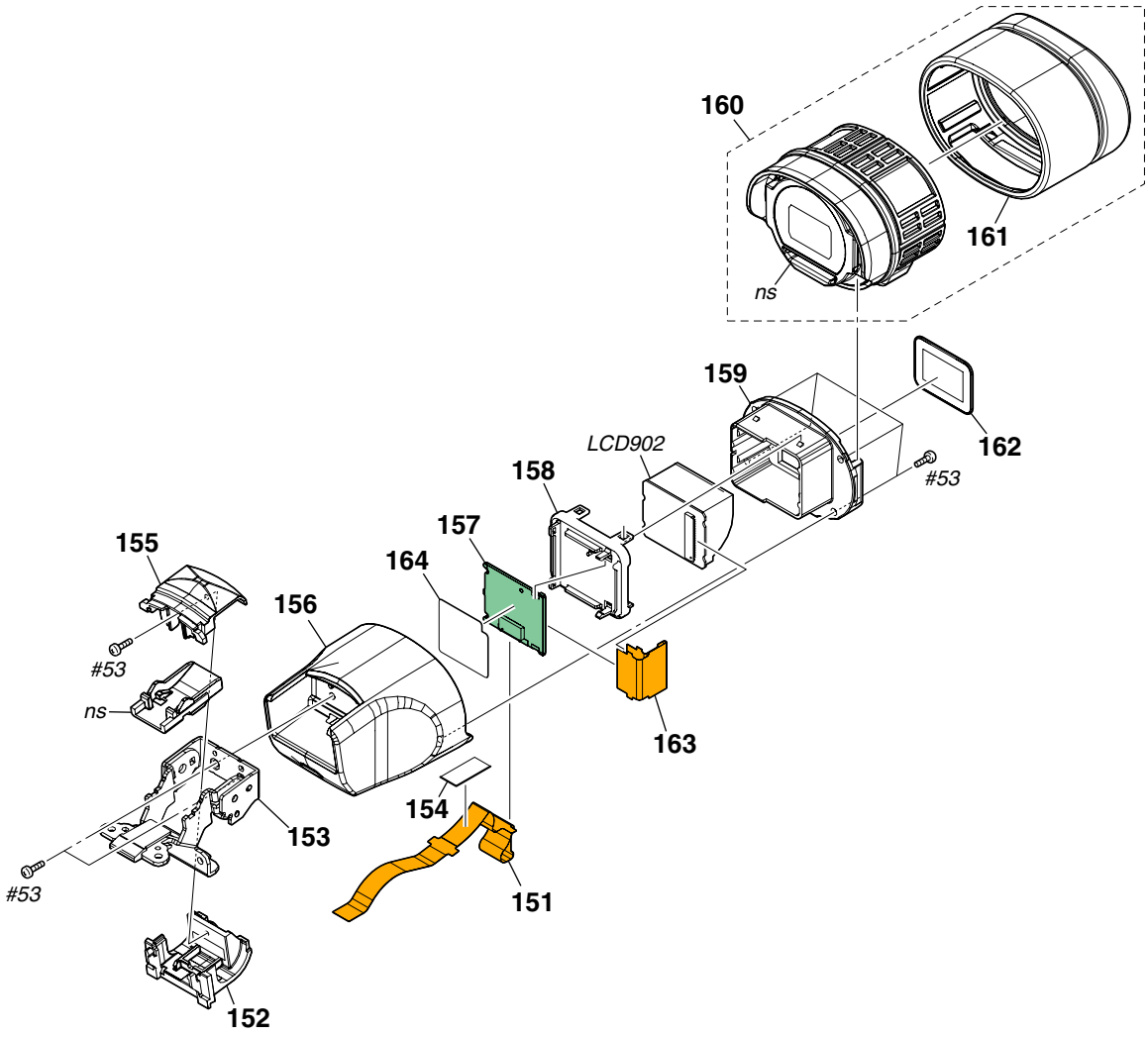


Ref. No.	Part No.	Description
101	1-480-298-11	SWITCH BLOCK, CONTROL (GZ92000)
102	X-2188-601-1	CABINET (UPPER) ASSY, HANDLE
103	3-288-538-01	SHOE, REAR (COLD)

Ref. No.	Part No.	Description
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)

5-1-4. EVF SECTION

ns: not supplied

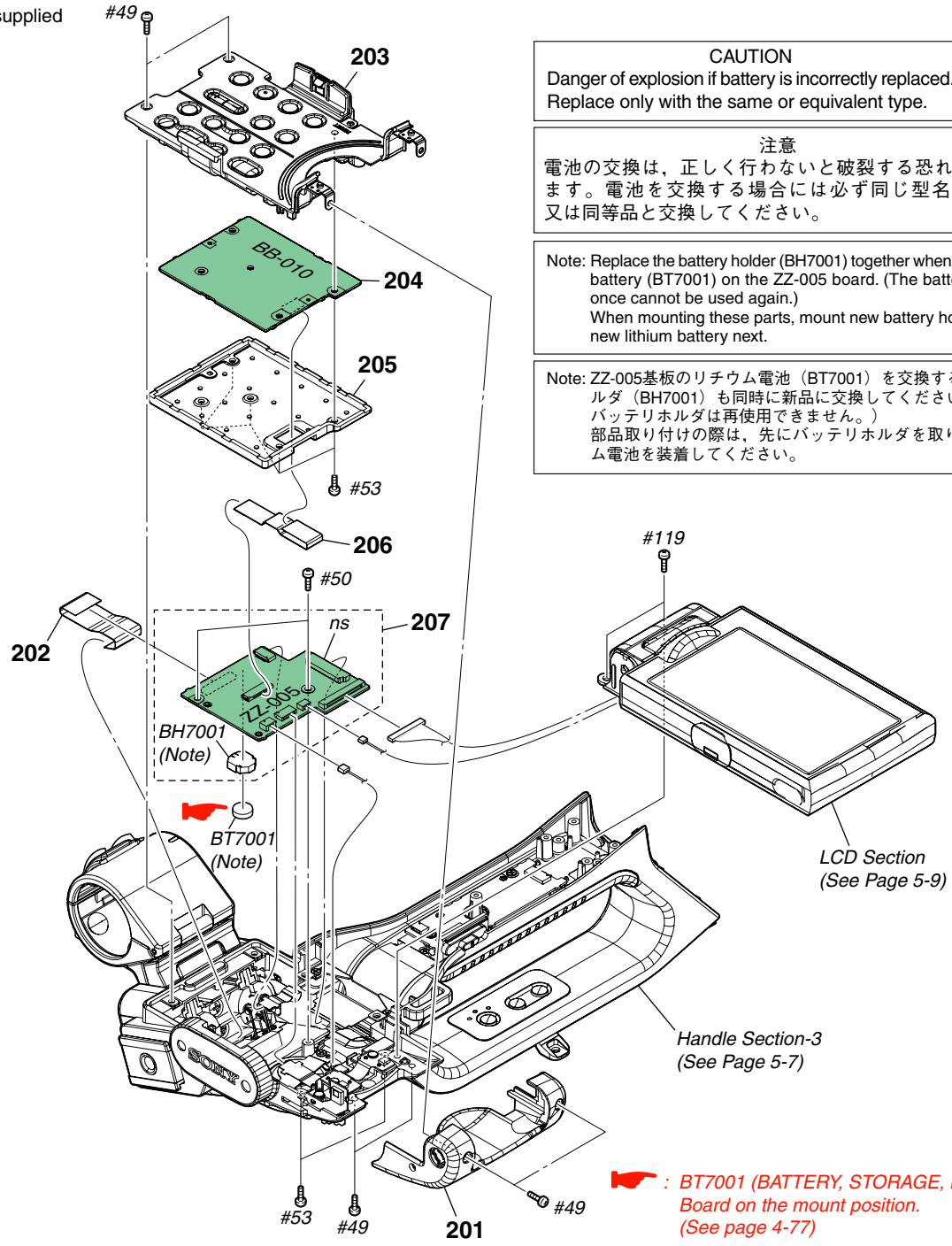


Ref. No.	Part No.	Description
151	1-873-732-11	FP-775 FLEXIBLE BOARD
152	3-288-588-01	CABINET (LOWER), VF HINGE
153	X-2188-615-1	TILT ASSY, VF
154	3-291-247-02	TAPE (VF)
155	3-288-587-01	CABINET (UPPER), VF HINGE
156	X-2188-614-1	CABINET ASSY, VF
157	A-1486-837-A	UU-005 BOARD, COMPLETE
158	3-288-586-01	LID, PANEL
159	3-288-585-01	CASE, PANEL

Ref. No.	Part No.	Description
160	X-2188-616-1	FINDER ASSY
161	3-288-590-01	EYE CUP
162	3-288-591-01	SHEET, VF PROTECTION
163	1-873-733-11	FP-776 FLEXIBLE BOARD
* 164	3-299-948-01	SHEET (UU)
LCD902	1-802-560-11	LCD MODULE
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)

5-1-5. HANDLE SECTION-2

ns: not supplied



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

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

Note: Replace the battery holder (BH7001) together when replacing the lithium battery (BT7001) on the ZZ-005 board. (The battery holder removed once cannot be used again.)
When mounting these parts, mount new battery holder first and attach new lithium battery next.

Note: ZZ-005基板のリチウム電池（BT7001）を交換する場合はバッテリホルダ（BH7001）も同時に新品に交換してください。（一度使用したバッテリホルダは再使用できません。）
部品取り付けの際は，先にバッテリホルダを取り付けてからリチウム電池を装着してください。

• Refer to page 5-1 for mark ⚠.

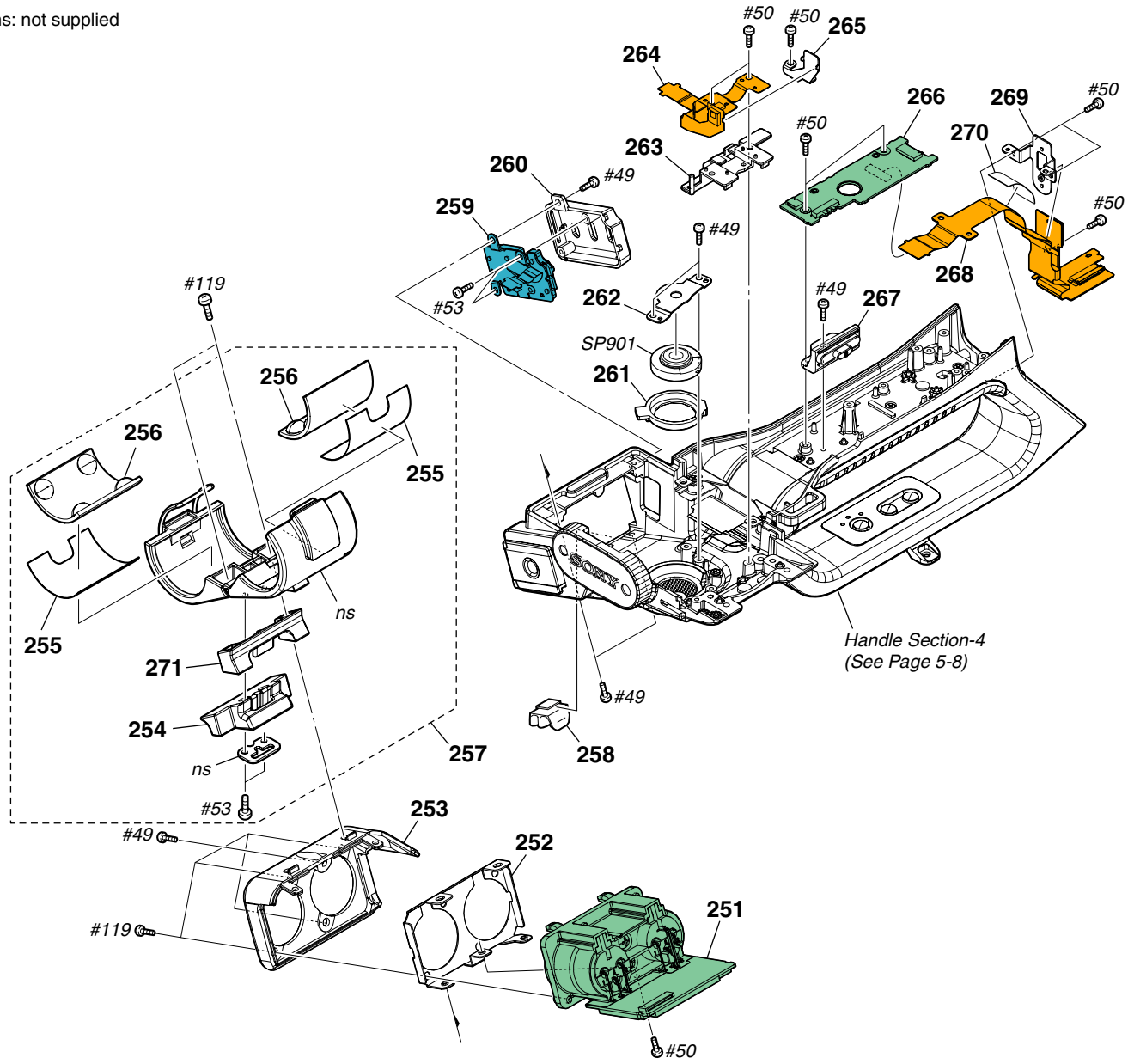
Ref. No.	Part No.	Description
201	X-2188-604-1	CABINET (HORIZONTAL) ASSY
202	1-834-244-11	FLEXIBLE FLAT CABLE (FFC-116)
203	X-2188-605-1	PANEL ASSY, CONTROL
204	A-1486-841-A	BB-010 BOARD, COMPLETE
* 205	3-288-540-01	COVER (BB)
206	1-834-245-11	FLEXIBLE FLAT CABLE (FFC-117)
207	A-1486-840-A	ZZ-005 BOARD, COMPLETE

Ref. No.	Part No.	Description
⚠*BH7001	1-756-615-51	HOLDER, BATTERY (Note)
⚠BT7001	1-756-134-12	BATTERY, STORAGE, LITHIUM (Note)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)

HARDWARE LIST

5-1-6. HANDLE SECTION-3

ns: not supplied

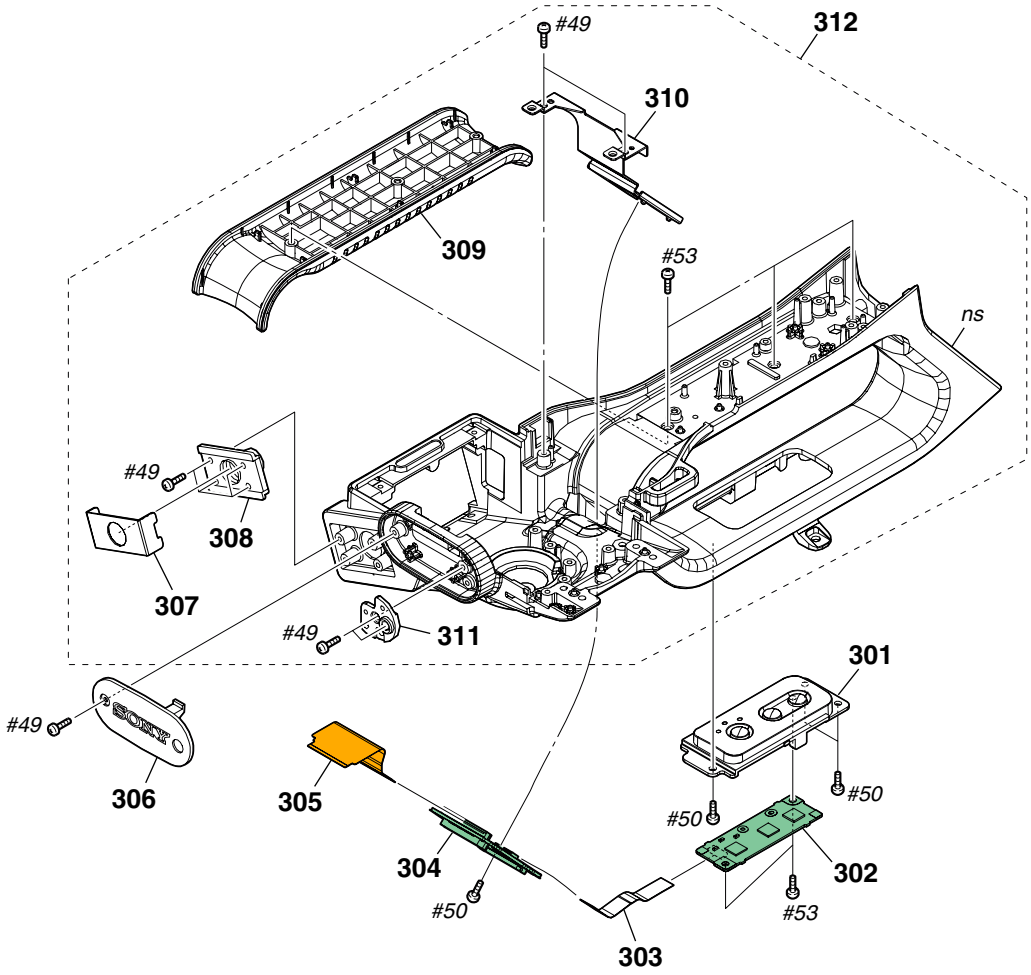


Ref. No.	Part No.	Description
251	A-1486-835-A	XX-016 BOARD, COMPLETE
* 252	3-288-536-01	FLAME, XL
253	3-288-535-01	CABINET, XL
254	3-284-074-01	RUBBER, MICROPHONE HOLDER
255	3-284-081-01	SHEET, RUBBER ADHESIVE
256	3-284-080-01	RUBBER, MICROPHONE
257	X-2187-986-1	HOLDER ASSY, MICROPHONE
258	2-892-095-01	CLAMP, CABLE
259	1-480-299-11	SWITCH BLOCK, CONTROL (AS92000)
260	3-288-541-01	CABINET, AS
261	2-178-550-01	HOLDER, SPEAKER
262	X-2188-608-1	RETAINER ASSY, SPEAKER
* 263	3-288-539-01	HOLDER, FLEXIBLE
264	A-1486-854-A	FP-759 FLEXIBLE BOARD, COMPLETE

Ref. No.	Part No.	Description
265	X-2188-609-1	FIXED (759) ASSY
266	A-1486-844-A	GG-005 BOARD, COMPLETE
267	X-2188-599-1	KNOB ASSY, ZOOM SELECTION
268	A-1486-853-A	FP-757 FLEXIBLE BOARD, COMPLETE
* 269	3-288-537-01	PLATE, REAR TALLY FIXED
* 270	3-398-545-01	SHEET (VF), SHIELD
271	3-284-075-01	COVER, MICROPHONE HOLDER RUBBER
SP901	1-825-968-11	LOUDSPEAKER (1.8CM)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)

5-1-7. HANDLE SECTION-4

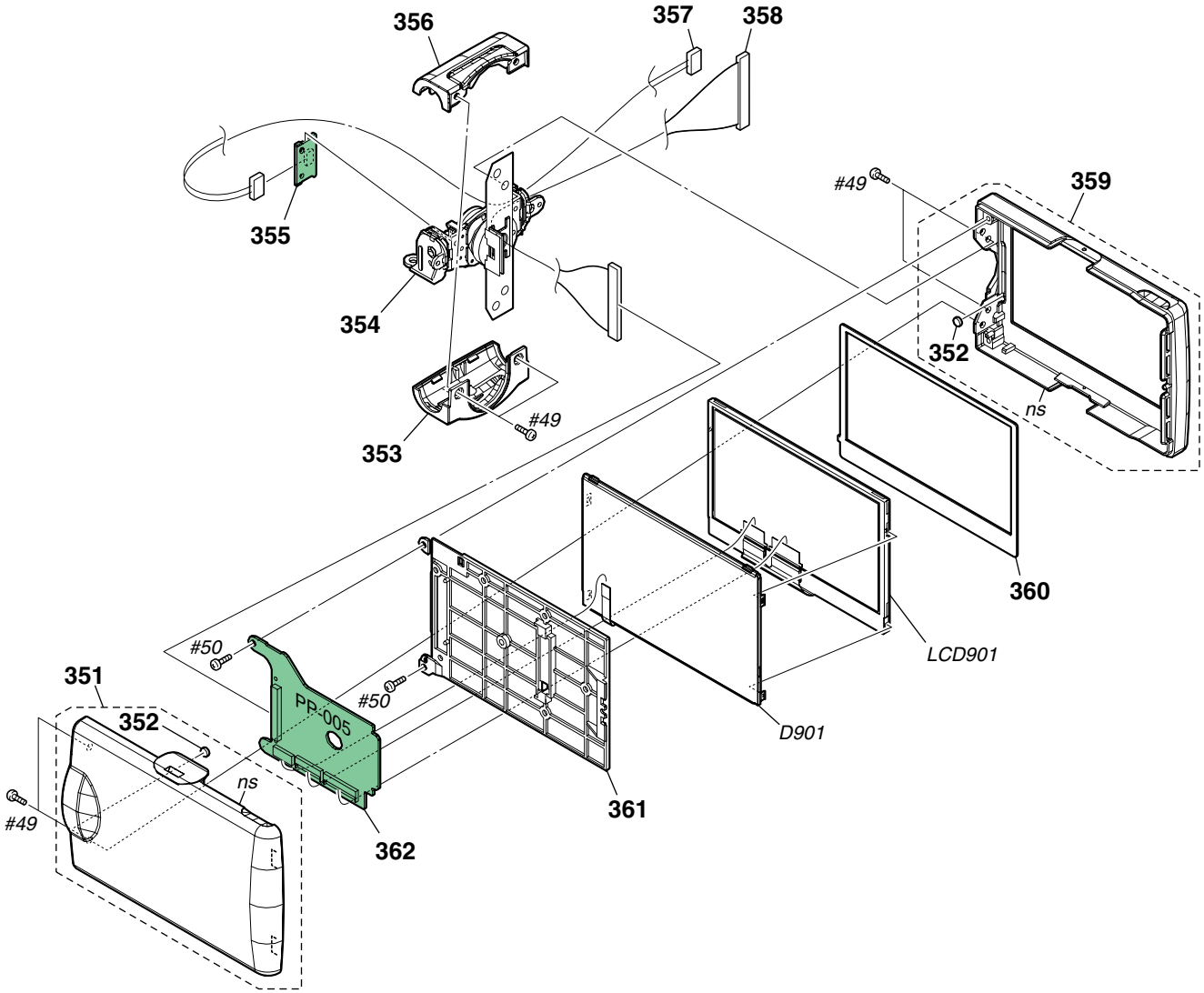
ns: not supplied



Ref. No.	Part No.	Description
301	X-2188-602-1	CABINET ASSY, ST
302	A-1486-843-A	SS-182 BOARD, COMPLETE
303	1-834-243-11	FLEXIBLE FLAT CABLE (FFC-115)
304	A-1486-839-A	YY-005 BOARD, COMPLETE
305	1-873-730-11	FP-773 FLEXIBLE BOARD
306	X-2188-598-1	LID ASSY, FRONT
307	2-178-568-01	COVER, ACCESSORY FITTING WASHER
308	2-178-567-01	WASHER, ACCESSORY FITTING
309	3-288-471-01	CABINET (LOWER), HANDLE
310	3-288-472-01	PLATE, YY FIXED
311	3-288-473-01	BASE, SHOE FITTING
312	X-2188-597-1	HANDLE ASSY
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)

5-1-8. LCD SECTION

ns: not supplied

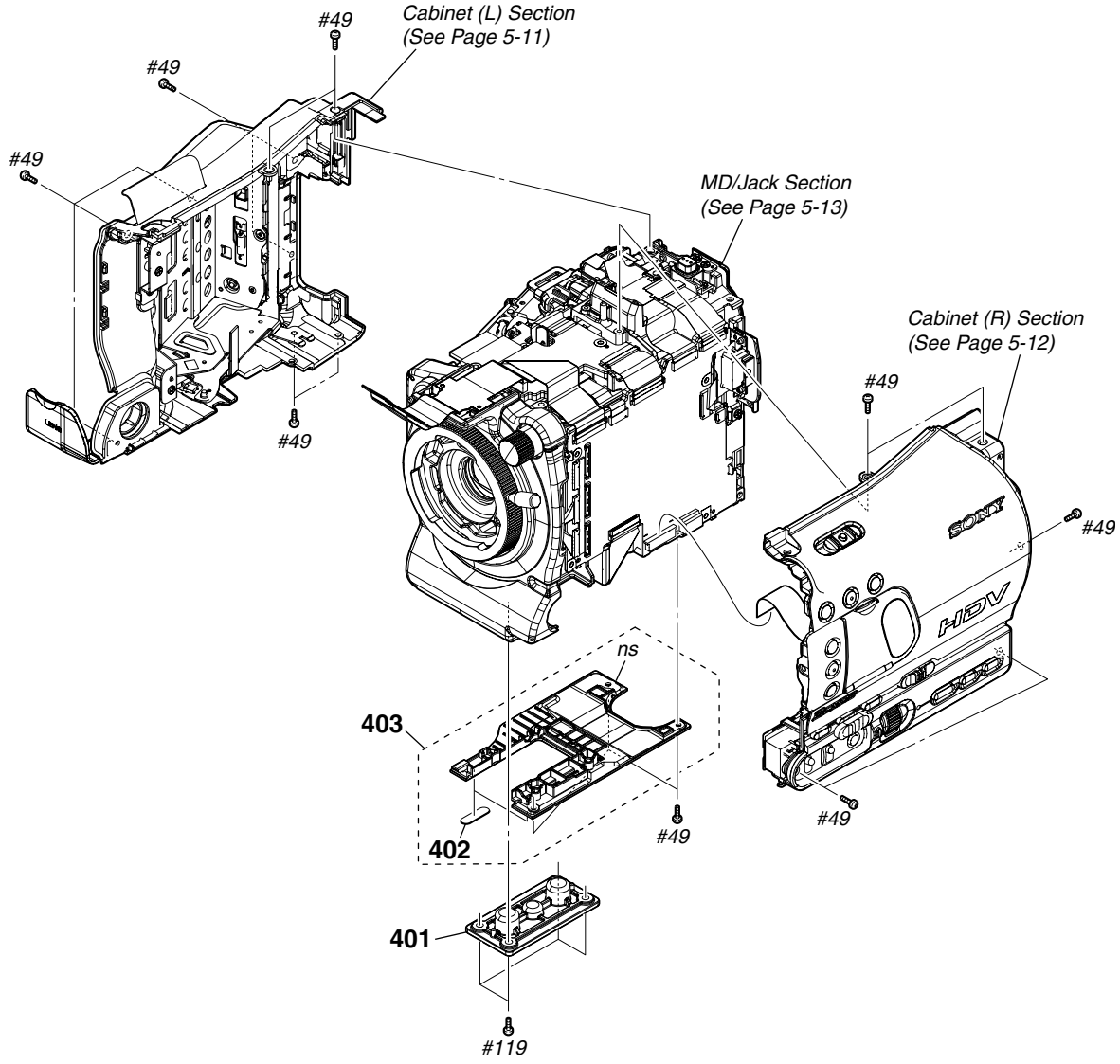


Ref. No.	Part No.	Description
351	X-2188-612-1	CABINET (UPPER) ASSY, PANEL
352	1-471-278-11	MAGNET
353	3-288-566-01	CABINET (T), PANEL HINGE
354	X-2188-610-1	HINGE ASSY, PANEL
355	A-1486-842-A	HH-008 BOARD, COMPLETE
356	3-288-567-01	CABINET (B), PANEL HINGE
357	1-963-030-21	HARNESS (SW-116)
358	1-964-790-21	HARNESS (PR-074)
359	X-2188-613-1	CABINET (LOWER) ASSY, PANEL

Ref. No.	Part No.	Description
360	3-288-565-01	CUSHION, PANEL
361	X-2188-611-1	FRAME ASSY, BL
362	A-1486-836-A	PP-005 BOARD, COMPLETE
D901	1-480-358-11	BLOCK, LIGHT GUIDE PLATE (3.2)
LCD901	1-802-590-11	INDICATOR MODULE, LIQUIDCRYSTAL
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)

5-1-9. OVERALL SECTION-2

ns: not supplied

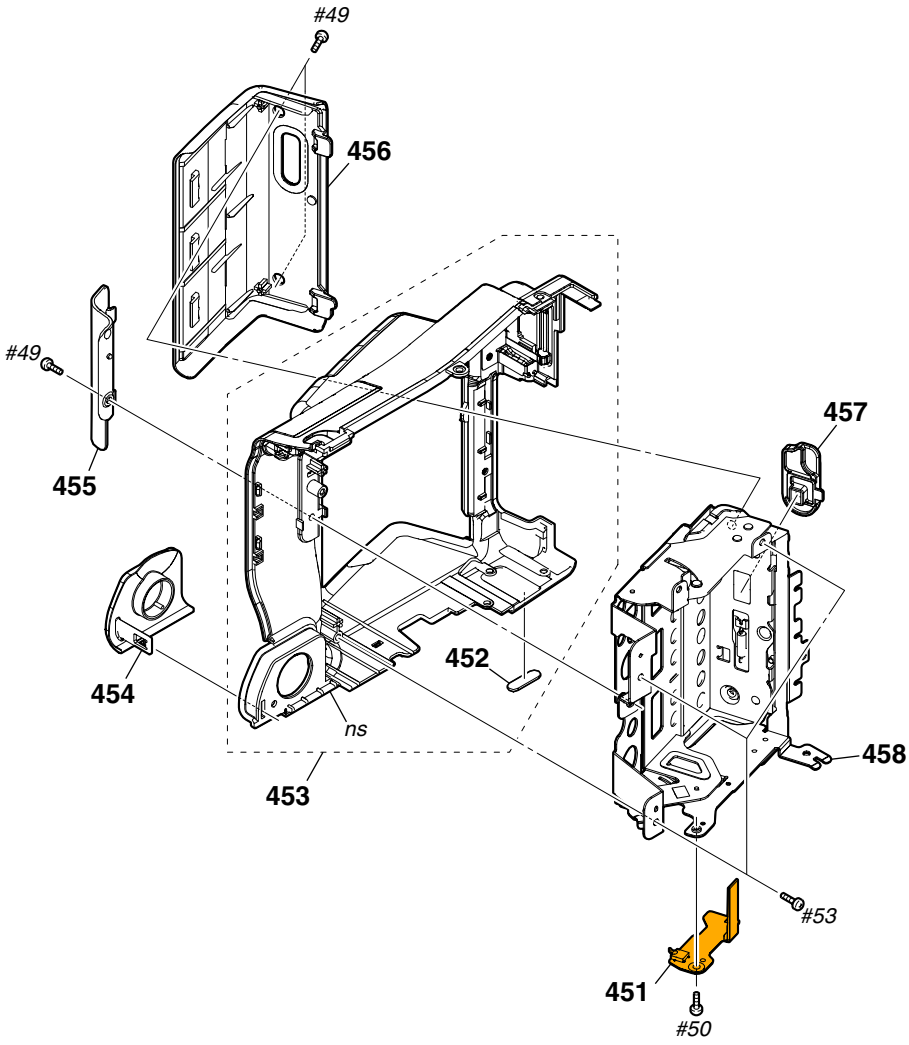


Ref. No.	Part No.	Description
401	3-288-392-01	WASHER (D), TRIPOD
402	2-178-805-01	FOOT, RUBBER
403	X-2188-586-1	CABINET ASSY, BOTTOM

Ref. No.	Part No.	Description
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)

5-1-10. CABINET (L) SECTION

ns: not supplied

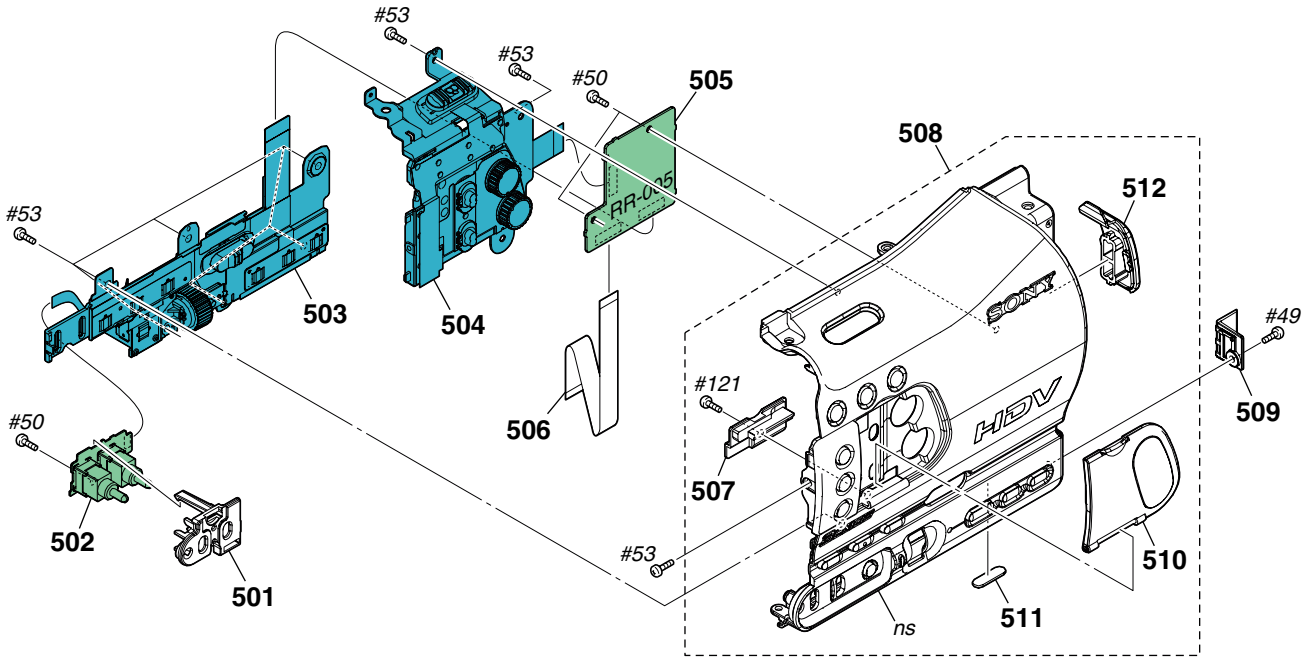


Ref. No.	Part No.	Description
451	A-1486-852-A	FP-756 FLEXIBLE BOARD, COMPLETE
452	2-178-805-01	FOOT, RUBBER
453	X-2188-594-1	CABINET (L) ASSY
* 454	3-288-458-01	LID, ENG CONNECTOR
455	3-288-461-01	COVER, MD ADJUSTMENT
456	3-288-459-01	LID, CASSETTE

Ref. No.	Part No.	Description
457	3-288-460-01	KNOB, EJECT
458	X-2188-595-1	FRAME ASSY, CS
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)

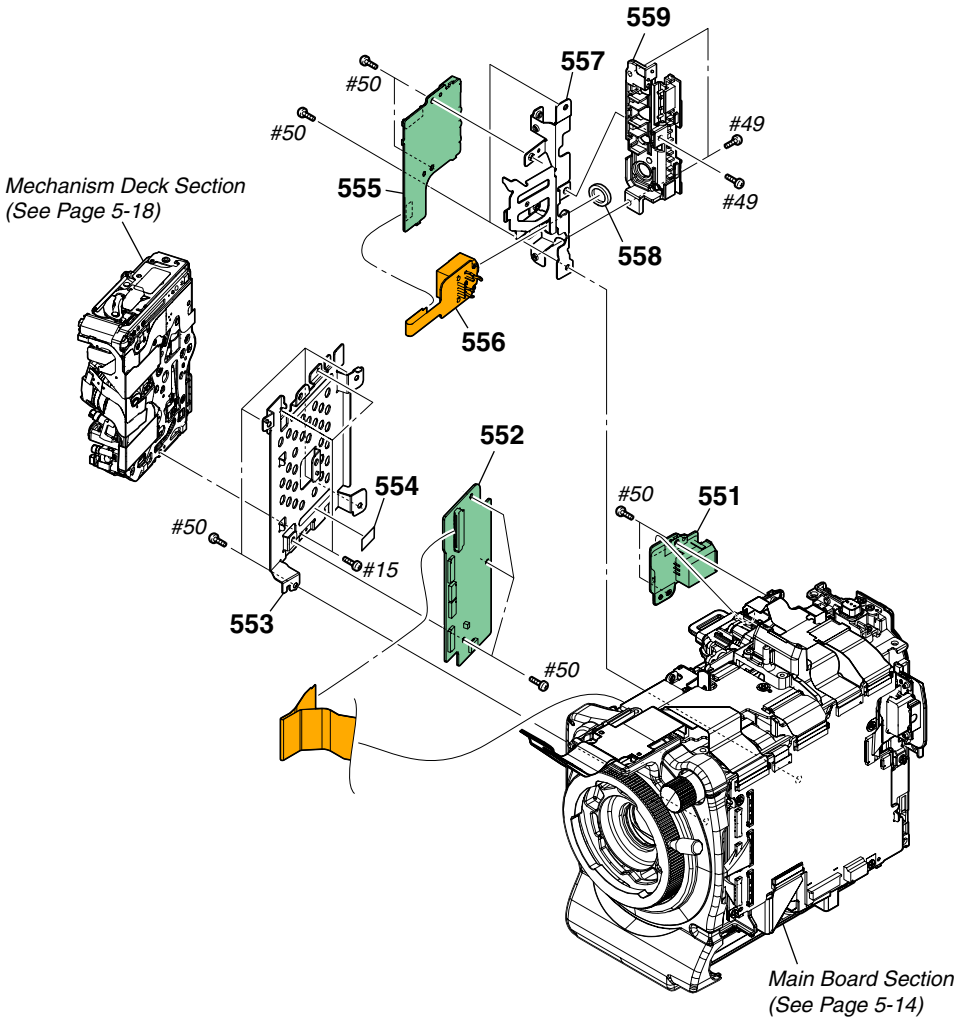
5-1-11. CABINET (R) SECTION

ns: not supplied



Ref. No.	Part No.	Description
501	3-288-437-01	COVER, KK
502	A-1486-849-A	KK-032 BOARD, COMPLETE
503	1-480-297-11	SWITCH BLOCK, CONTROL (RS92000)
504	1-480-296-11	SWITCH BLOCK, CONTROL (PS92000)
505	A-1486-845-A	RR-005 BOARD, COMPLETE
506	1-834-239-11	FLEXIBLE FLAT CABLE (FFC-111)
507	3-288-426-01	RETAINER, AL SHAFT
508	X-2188-593-1	CABINET (R) ASSY
509	3-288-397-01	COVER, INSPECTION TERMINAL
510	X-2189-669-1	LID ASSY, AL
511	2-178-805-01	FOOT, RUBBER
512	3-288-438-01	COVER, HM
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)
#121	3-080-205-11	SCREW, TAPPING, P2 (Silver)

5-1-12. MD/JACK SECTION

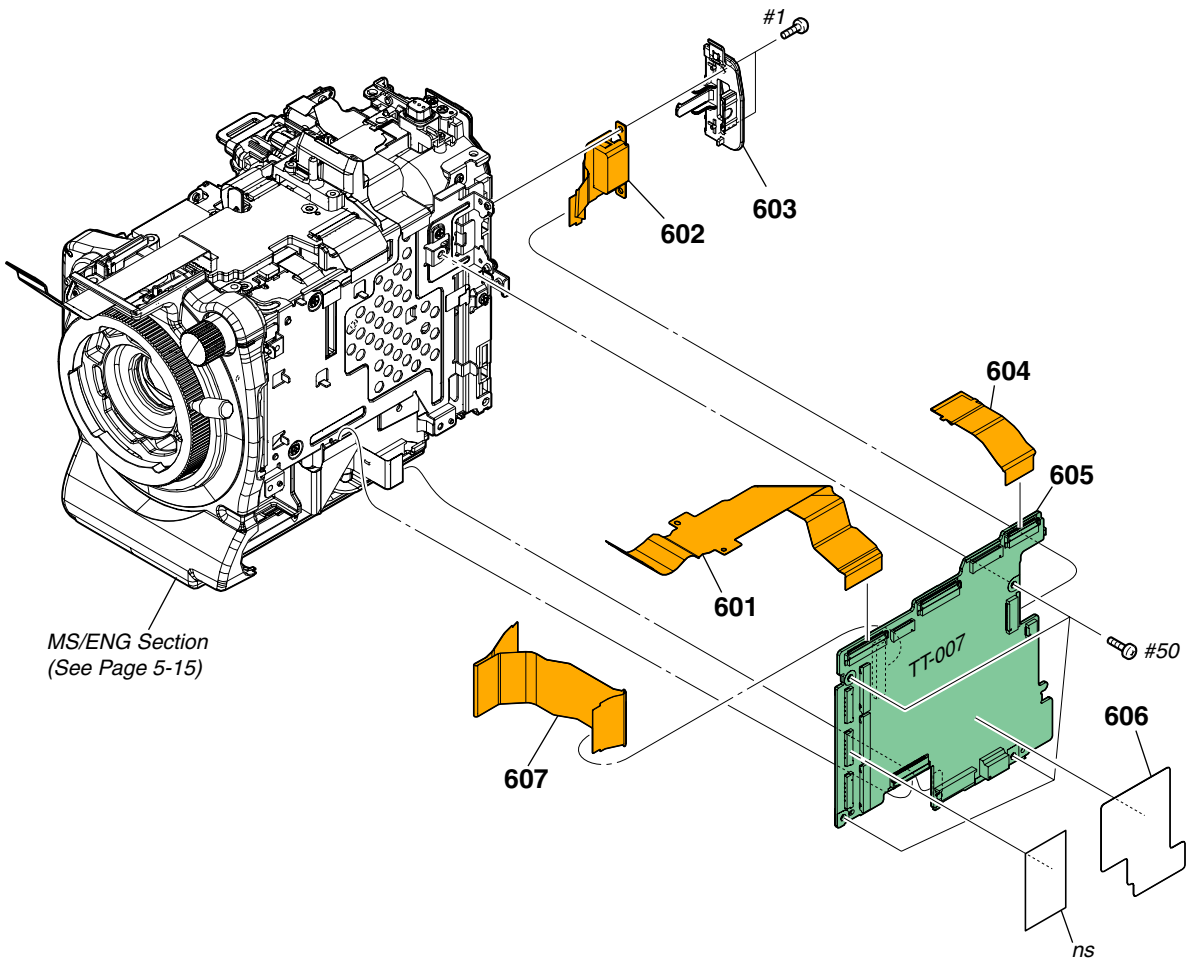


Ref. No.	Part No.	Description
551	A-1486-847-A	II-005 BOARD, COMPLETE
552	A-1486-833-A	NN-005 BOARD, COMPLETE
553	X-2188-589-1	FRAME ASSY, MD
* 554	3-291-245-01	SHEET (MD), SHIELD
555	A-1486-846-A	JJ-005 BOARD, COMPLETE
556	A-1217-231-A	FP-486 FLEXIBLE BOARD, COMPLETE

Ref. No.	Part No.	Description
* 557	3-288-469-01	PLATE, JACK
558	3-061-234-01	NUT (M6X0.5)
559	X-2188-596-1	CABINET ASSY, JACK
#15	3-062-214-01	SCREW (M1.4X1.5) (Silver)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)

5-1-13. MAIN BOARD SECTION

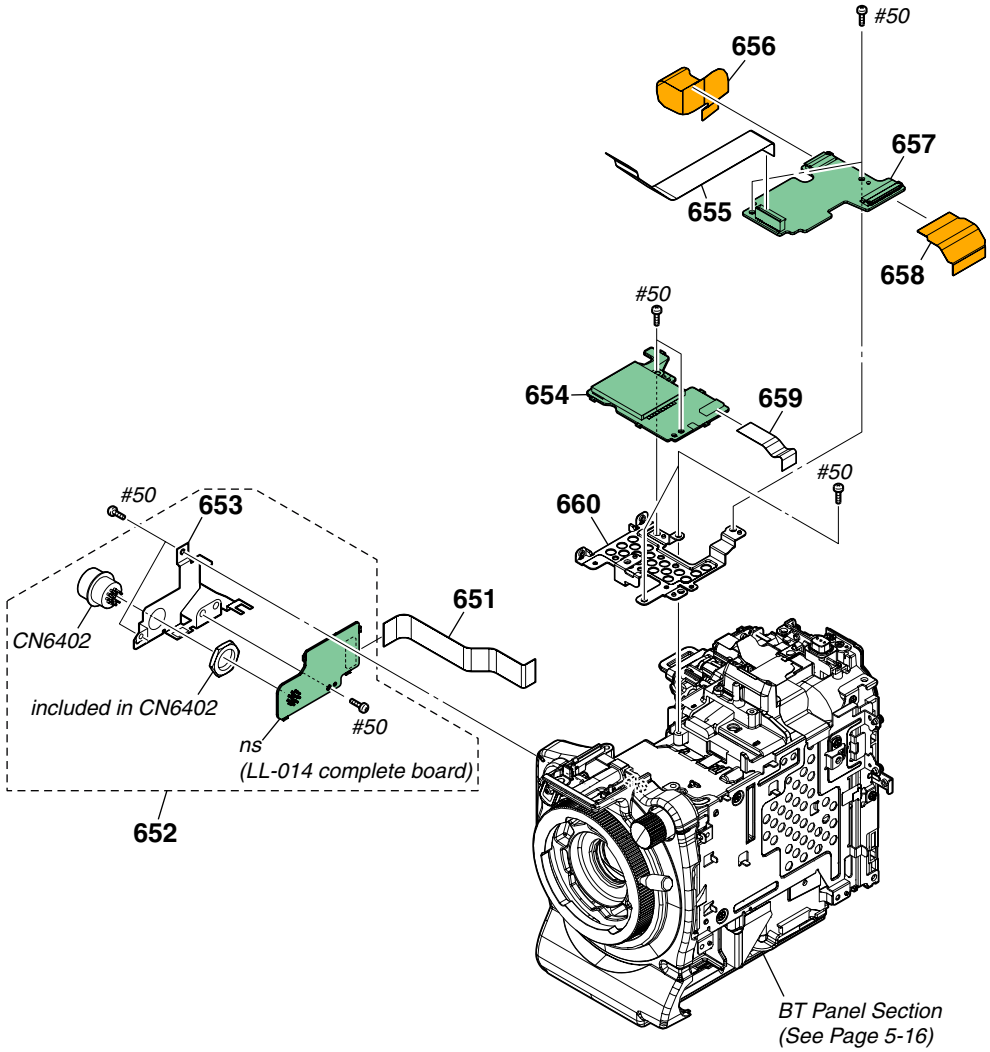
ns: not supplied



Ref. No.	Part No.	Description
601	1-873-724-11	FP-767 FLEXIBLE BOARD
602	A-1231-941-A	FP-645 FLEXIBLE BOARD, COMPLETE
603	3-288-393-01	CLAMP, HDMI
604	1-873-727-11	FP-770 FLEXIBLE BOARD
605	A-1494-308-A	TT-007 BOARD, COMPLETE (SERVICE) (NTSC: Z7J/Z7U/Z7N)
605	A-1494-309-A	TT-007 BOARD, COMPLETE (SERVICE) (PAL: Z7E/Z7P/Z7C)
* 606	3-288-399-01	LABEL, FUSE REPLACEMENT CAUTION
607	1-873-722-11	FP-765 FLEXIBLE BOARD
#1	2-635-562-11	SCREW (M1.7) (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)

5-1-14. MS/ENG SECTION

ns: not supplied

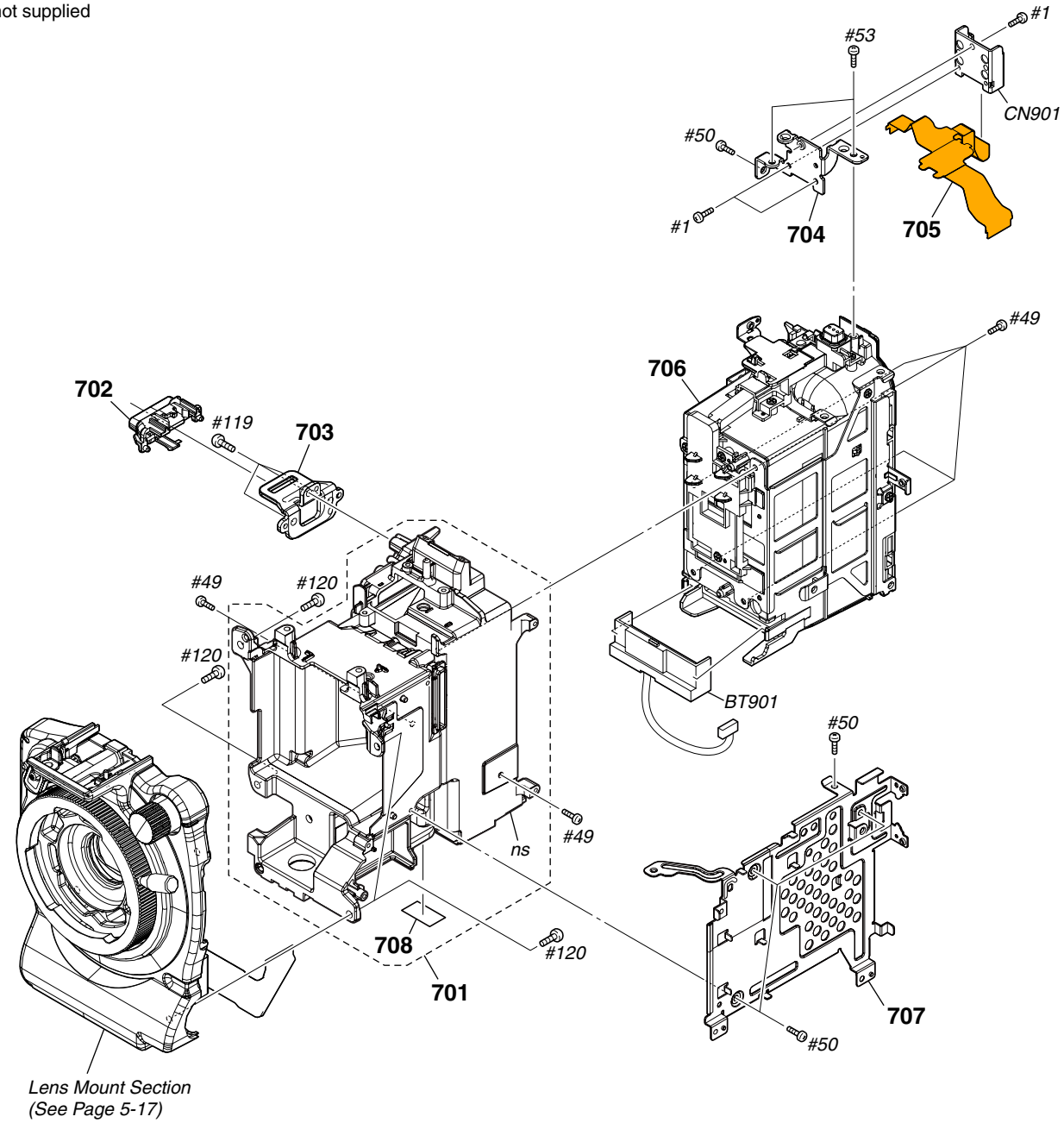


Ref. No.	Part No.	Description
651	1-834-239-11	FLEXIBLE FLAT CABLE (FFC-111)
652	A-1544-576-A	ENG ASSY (SERVICE) (including LL-014 complete board)
* 653	3-288-395-01	PLATE, ENG FIXED
654	A-1486-848-A	WW-005 BOARD, COMPLETE
655	1-834-242-11	FLEXIBLE FLAT CABLE (FFC-114)
656	1-873-731-11	FP-774 FLEXIBLE BOARD

Ref. No.	Part No.	Description
657	A-1486-834-A	OO-006 BOARD, COMPLETE
658	1-873-725-11	FP-768 FLEXIBLE BOARD
659	1-834-240-11	FLEXIBLE FLAT CABLE (FFC-112)
* 660	3-288-394-01	PLATE, MS FIXED
CN6402	1-562-221-31	CONNECTOR (ROUND TYPE) (R-F) 12P
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)

5-1-15. BT PANEL SECTION

ns: not supplied



• Refer to page 5-1 for mark ⚠.

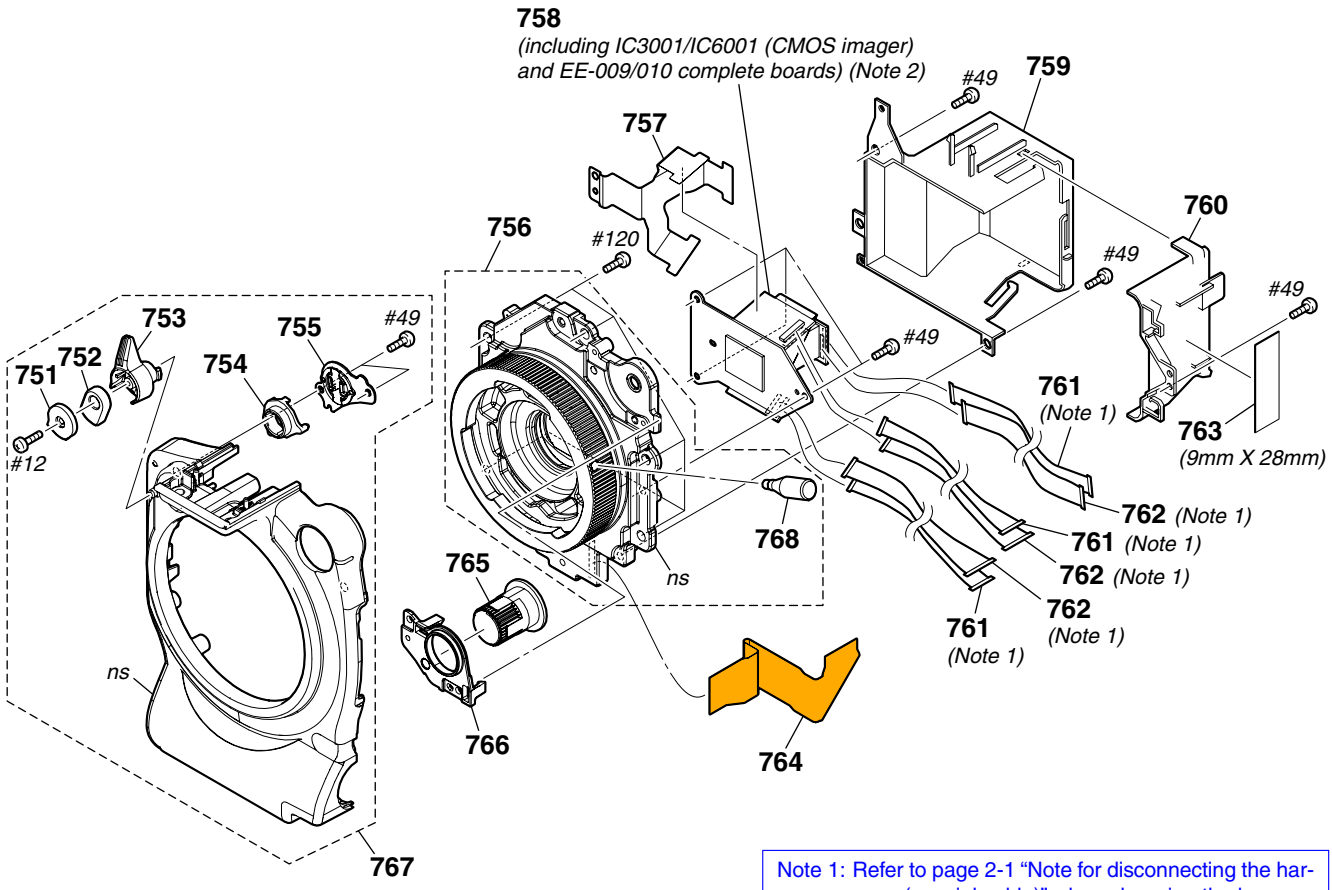
Ref. No.	Part No.	Description
701	X-2188-585-1	CHASSIS ASSY, CENTER
702	3-288-391-01	CABINET, STRAP
703	3-288-390-01	SHEET METAL, STRAP
* 704	3-288-400-01	BRACKET, CF SHOE
705	1-873-729-11	FP-772 FLEXIBLE BOARD
706	X-2188-587-1	PANEL ASSY, BT
* 707	3-288-389-01	FRAME, MAIN
708	2-590-635-01	TAPE (AS 1/2)
⚠BT901	1-694-411-12	TERMINAL BOARD, BATTERY

Ref. No.	Part No.	Description
CN901	1-818-890-21	CONNECTOR, EXTERNAL (HOT SHOE)
#1	2-635-562-11	SCREW (M1.7) (Black)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)
#120	7-621-770-67	SCREW +B 2.6X6 (Silver)

HARDWARE LIST

5-1-16. LENS MOUNT SECTION

ns: not supplied



CAUTION:
For the part of 763, cut SHEET, LENS FLEXIBLE (3-052-196-01) into the desired length and use it.

CAUTION:
763番は，レンズフレキシート(3-052-196-01)を切って使用。

Note 1: Refer to page 2-1 “Note for disconnecting the harness (coaxial cable)” when changing the harness (coaxial cable).

Note 1: ハーネス（coaxial cable）の交換時は2-1ページの“Note for disconnecting the harness (coaxial cable)”を参照してください。

Note 2: Be sure to read “Precautions for Replacement of Imager” on page 4-3 when changing the imager.

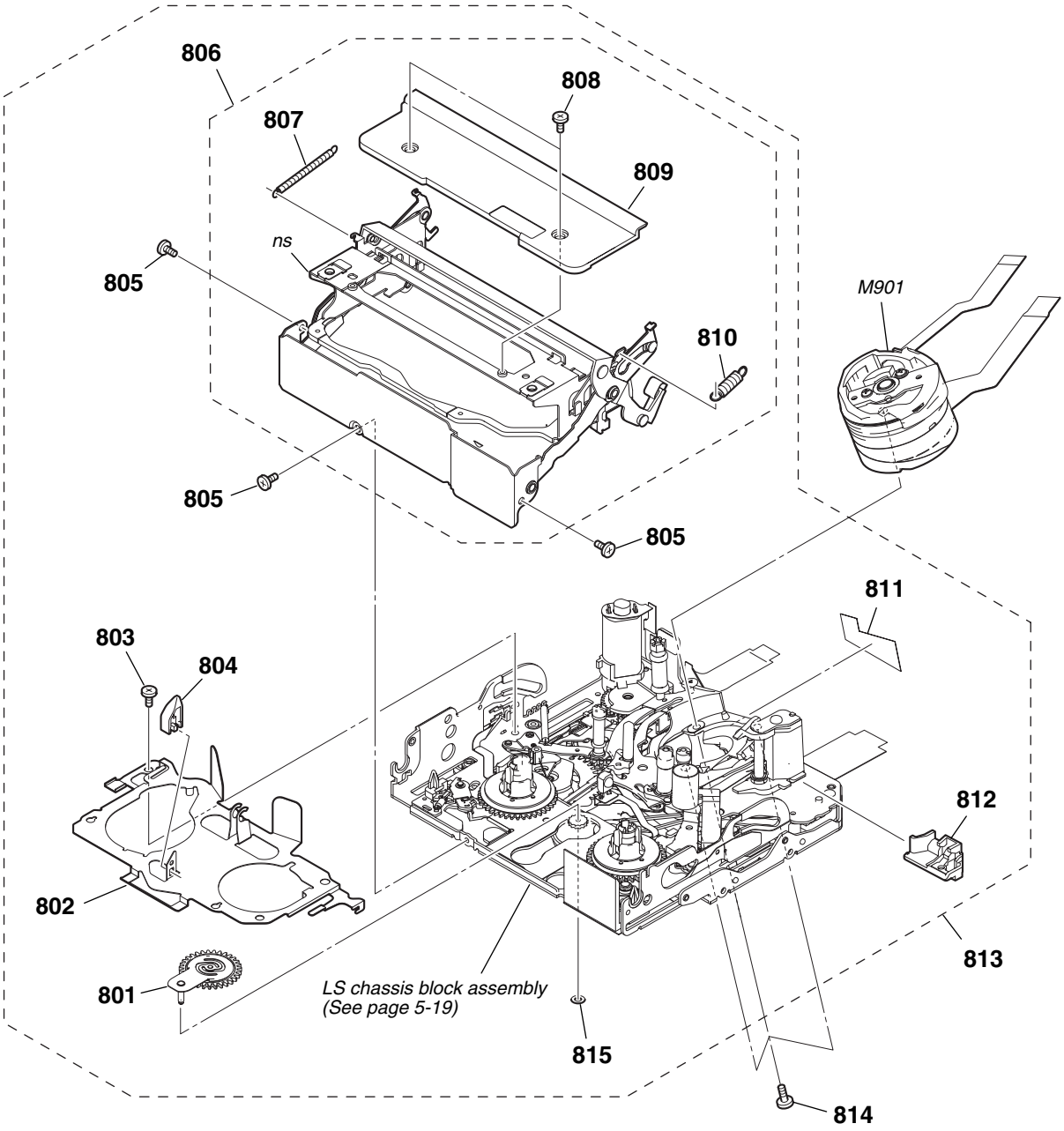
Note 2: イメージャの交換時は4-4ページの“イメージャ交換時の注意”を必ずお読みください。

Ref. No.	Part No.	Description
751	3-288-407-01	LID (Y), KNOB
752	3-288-408-01	STOPPER (Y)
753	3-288-406-01	KNOB (Y)
754	3-288-405-01	GUIDE (Y)
755	X-2188-592-1	PLATE ASSY, CLICK
756	1-788-732-11	MOUNT, CAMERA (TZ253B)
757	3-291-246-01	HEAT SINK, CMOS
758	A-1494-846-A	DEVICE, PRISM (SERVICE) (including IC3001/IC6001 (CMOS imager) and EE-009/010 complete boards) (Note 2)
* 759	3-288-415-01	CABINET (A), LIGHT INTERCEPTION
* 760	3-288-416-01	CABINET (B), LIGHT INTERCEPTION

Ref. No.	Part No.	Description
761	1-963-577-41	HARNESS (COAXIAL CABLE) (20 PIN) (Note 1)
762	1-965-937-11	HARNESS (COAXIAL CABLE) (30 PIN) (Note 1)
763	CAUTION	TAPE AS
764	1-873-723-11	FP-766 FLEXIBLE BOARD
765	3-288-413-01	KNOB, ND
* 766	3-288-414-01	HOLDER, ND KNOB
767	X-2188-590-1	CABINET (FRONT) ASSY
768	3-292-379-01	LEVER, MOUNT TUBE
#12	3-080-204-21	SCREW, TAPPING, P2 (Black)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#120	7-621-770-67	SCREW +B 2.6X6 (Silver)

5-1-17. MECHANISM DECK SECTION

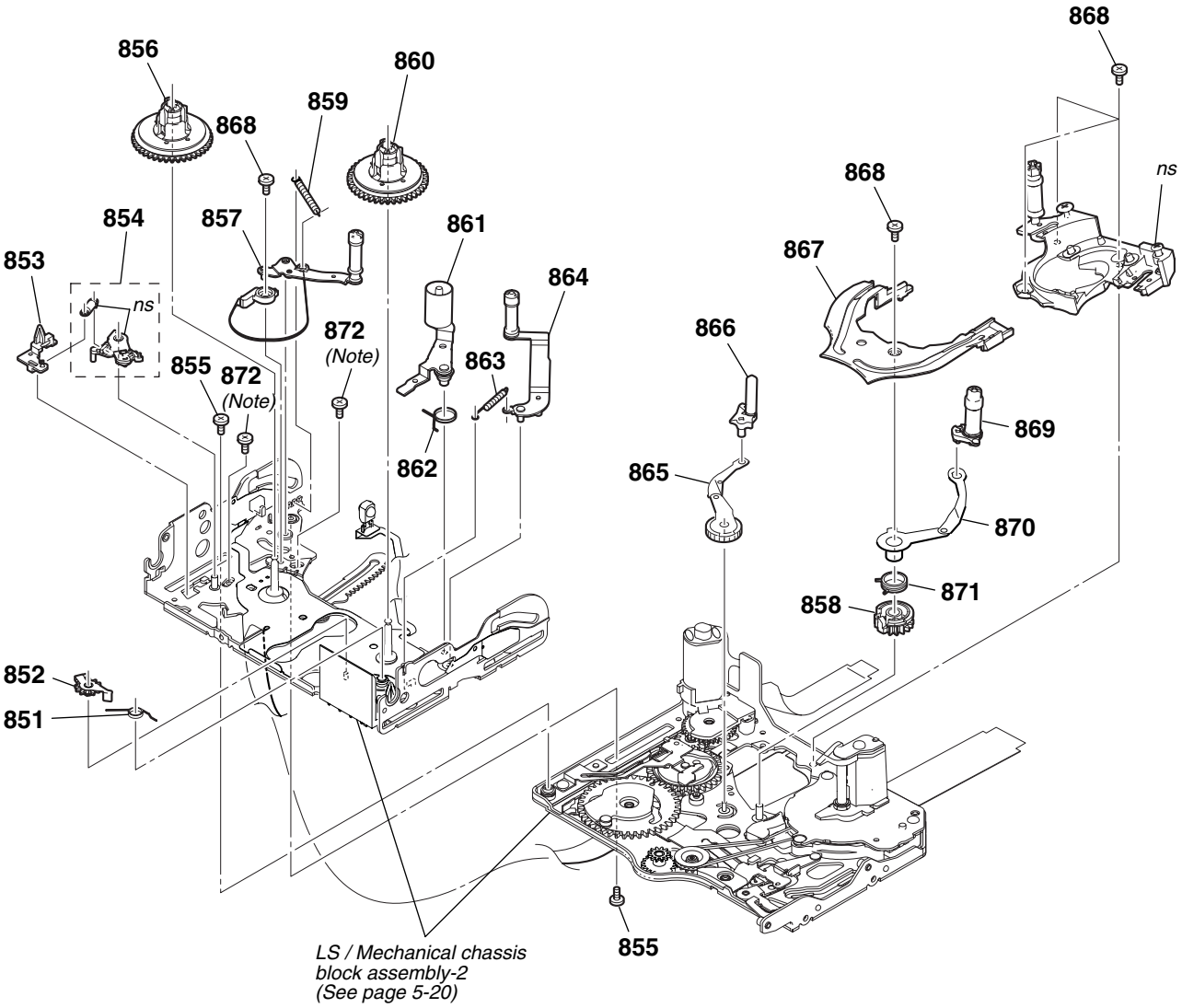
ns: not supplied



Ref. No.	Part No.	Description
801	X-2024-478-1	PENDULUM ASSY
802	2-342-917-02	BASE, LED
803	7-627-850-77	SCREW, PRECISION +P 1.4X1.8
804	3-079-366-11	RELEASE, REEL LOCK
805	3-703-816-08	SCREW (M1.4X1.4), SPECIAL HEAD
806	X-2024-450-3	CASSETTE COMPARTMENT ASSY
807	2-342-926-01	SPRING (ARM S), TENSION COIL
808	2-546-417-01	SCREW (M1.4)
809	2-342-933-02	PLATE, TOP
810	2-342-927-01	SPRING (ARM T), TENSION COIL
811	2-541-585-01	SHEET, FLEXIBLE ADHESIVE
812	2-342-918-01	TG6 CATCHER
813	A-1437-006-A	MD (N220) SUB ASSY (S) A
814	3-703-816-13	SCREW (M1.4X2.0), SPECIAL HEAD
815	3-315-414-31	WASHER
M901	A-1128-533-A	DRUM (DEH-33B-R)

5-1-18. LS/MECHANICAL CHASSIS BLOCK ASSEMBLY-1

ns: not supplied



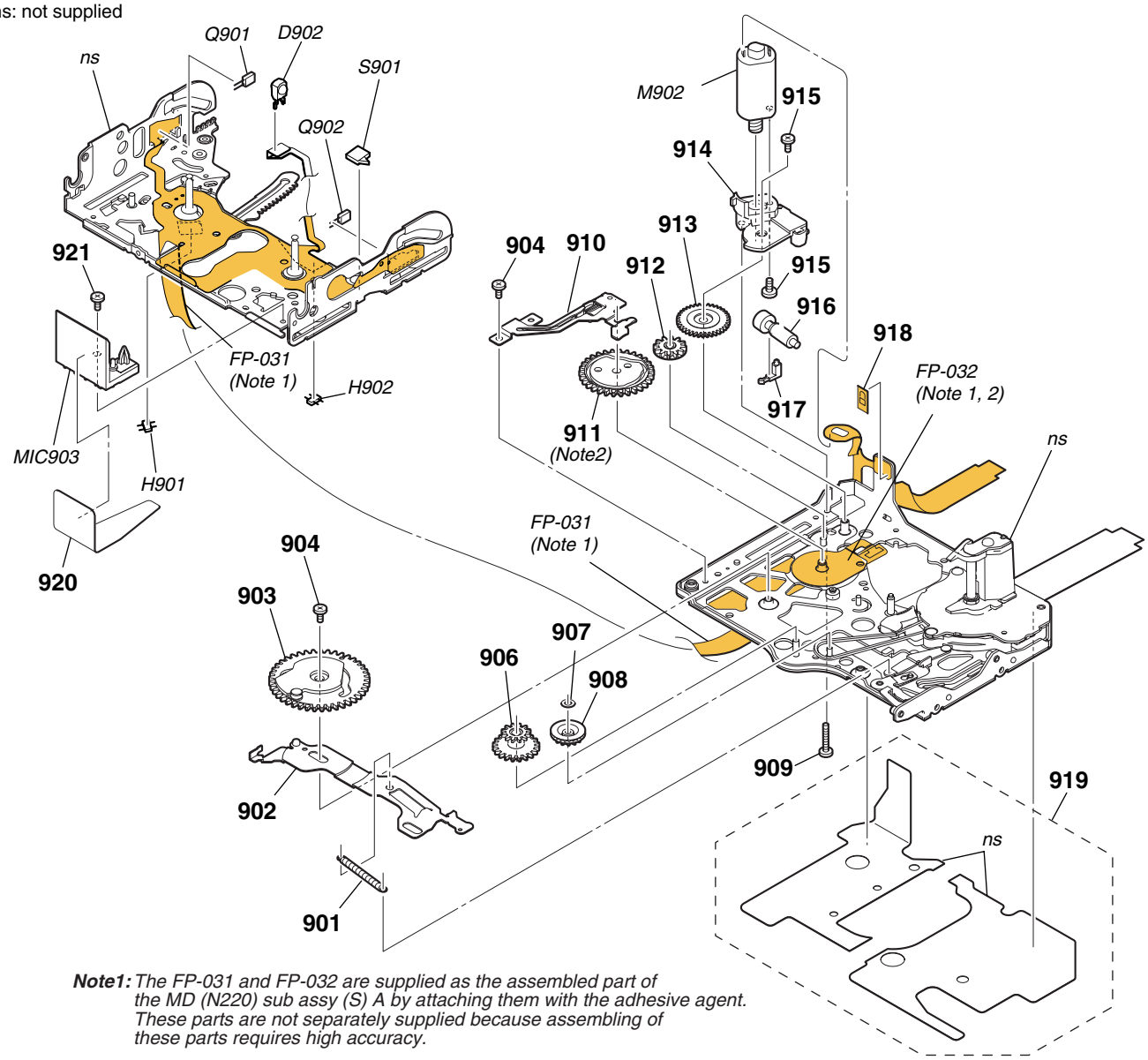
Note: *These two screws are the fixing screws of the LS cam plate.*
These two fixing screws are used for adjsting the LS cam plate position.
(refer to 4-2. LS cam adjustment of 6-2. MECHANISM SECTION ADJUSTMENTS)

Ref. No.	Part No.	Description
851	2-342-759-01	SPRING, RVS BRAKE
852	A-1083-005-A	BRAKE BLOCK ASSY, RVS
853	2-342-731-01	POSITIONING (S)
854	A-1083-006-A	BRAKE BLOCK ASSY, S
855	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
856	X-2067-290-1	TABLE ASSY, S REEL
857	A-1132-279-A	REGULATOR BLOCK ASSY, TENSION
858	2-342-705-01	GEAR (T), GL
859	2-342-902-01	SPRING, TENSION REGULATOR
860	X-2067-291-1	TABLE ASSY, T REEL
861	X-2067-295-4	ARM ASSY, PINCH
862	2-342-906-01	SPRING (PINCH RETURN), TORSION

Ref. No.	Part No.	Description
863	2-342-626-01	SPRING (TG6 RETURN), COIL
864	A-1083-002-A	TG6 BLOCK ASSY
865	X-2024-468-1	ARM (S) ASSY, GL
866	X-2024-465-1	COASTER (S) ASSY
867	2-342-612-01	RAIL
868	3-703-816-13	SCREW (M1.4X2.0), SPECIAL HEAD
869	X-2024-466-1	COASTER (T) ASSY
870	X-2024-469-1	ARM (T) ASSY, GL
871	2-342-716-01	SPRING (T), GL TORSION
872	3-703-816-08	SCREW (M1.4X1.4), SPECIAL HEAD (for adjustment)

5-1-19. LS/MECHANICAL CHASSIS BLOCK ASSEMBLY-2

ns: not supplied



Note1: *The FP-031 and FP-032 are supplied as the assembled part of the MD (N220) sub assy (S) A by attaching them with the adhesive agent. These parts are not separately supplied because assembling of these parts requires high accuracy.*

Note2: *The mode switch (S903) function works when the contactor of the FP-032 contacts with the bottom surface of wiper of the mode gear assy.*

Ref. No.	Part No.	Description
901	2-342-624-01	SPRING (PINCH LIMITTER), COIL
902	X-2024-463-2	SLIDER ASSY, MODE
903	X-2024-462-1	GEAR ASSY, CAM
904	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
906	2-342-621-01	GEAR, RELAY
907	3-315-414-31	WASHER
908	2-342-620-01	GEAR, CONVERSION
909	3-084-377-01	HEAD (SCREW M1.2)
910	X-2024-460-1	BASE ASSY, CAM
911	X-2024-461-1	GEAR ASSY, MODE
912	2-342-615-01	GEAR, NO.2
913	2-342-691-01	GEAR, NO.1
914	2-637-945-01	HOLDER, MOTOR
915	3-895-822-71	SCREW (M1.2X2), SPECIAL, 0
916	2-342-689-01	SHAFT (2J), WORM

Ref. No.	Part No.	Description
917	2-637-947-01	BASE, MOTOR HOLDER
918	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)
919	2-342-686-01	COVER, CAPSTAN
920	2-541-984-01	MIC COVER
921	3-703-816-13	SCREW (M1.4X2.0), SPECIAL HEAD
D902	6-500-652-01	DIODE GL453SE0000F (TAPE LED)
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)
M902	X-2024-464-1	MOTOR ASSY (LOADING)
MIC903	1-818-576-11	PIN, CONNECTOR (WITH DETECTION)
Q901	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE END)
Q902	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE TOP)
S901	1-786-448-22	SWITCH, PUSH (1 KEY) (CC DOWN)

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description			
	A-1486-841-A	BB-010 BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
* CN7201	1-816-645-51	FFC/FPC CONNECTOR (LIF) 14P			
		< RESISTOR >			
R7201	1-218-990-81	SHORT CHIP	0		
R7202	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R7204	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R7205	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R7206	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R7207	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R7208	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R7209	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R7210	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R7211	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R7212	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R7213	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R7214	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R7215	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R7216	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R7217	1-218-970-11	RES-CHIP	27K	5%	1/16W
R7218	1-218-970-11	RES-CHIP	27K	5%	1/16W
R7219	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
		< SWITCH >			
S7201	1-786-157-31	TACTILE SWITCH (STOP □)			
S7202	1-786-157-31	TACTILE SWITCH (MEMORY(VCR) PLAY)			
S7203	1-786-157-31	TACTILE SWITCH (VOLUME/MEMORY +)			
S7204	1-786-157-31	TACTILE SWITCH (REW ◀◀)			
S7205	1-786-157-31	TACTILE SWITCH (MEMORY(VCR) INDEX)			
S7206	1-786-157-31	TACTILE SWITCH (DISPLAY/BATT INFO)			
S7207	1-786-157-31	TACTILE SWITCH (RESET)			
S7208	1-786-157-31	TACTILE SWITCH (VOLUME/MEMORY –)			
S7209	1-786-157-31	TACTILE SWITCH (REC ●)			
S7210	1-786-157-31	TACTILE SWITCH (MEMORY(VCR) DELETE)			
S7211	1-786-157-31	TACTILE SWITCH (REC)			
S7212	1-786-157-31	TACTILE SWITCH (DATA CODE)			
S7213	1-786-157-31	TACTILE SWITCH (PAUSE ❚❚)			
S7214	1-786-157-31	TACTILE SWITCH (PLAY ▷)			
S7215	1-786-157-31	TACTILE SWITCH (TC/U-BIT)			
S7216	1-786-157-31	TACTILE SWITCH (FF ▶▶)			
S7217	1-786-157-31	TACTILE SWITCH (SLOW ▮►)			
		< VARISTOR >			
* VDR721	1-802-279-11	VARISTOR (SMD)			
* VDR722	1-802-279-11	VARISTOR (SMD)			
* VDR723	1-802-279-11	VARISTOR (SMD)			
* VDR724	1-802-279-11	VARISTOR (SMD)			
* VDR725	1-802-279-11	VARISTOR (SMD)			

Ref. No.	Part No.	Description
	A-1494-846-A	DEVICE, PRISM (SERVICE) (Note)
	(Not supplied)	EE-009 BOARD, COMPLETE
		**********
		(EE-009 board and all mounted parts (including IC3001 (CMOS imager)) are not supplied, but they are included in PRISM device.)
	A-1494-846-A	DEVICE, PRISM (SERVICE) (Note)
	(Not supplied)	EE-010 BOARD, COMPLETE
		**********
		(EE-010 board and all mounted parts (including IC6001 (CMOS imager)) are not supplied, but they are included in PRISM device.)
	(Not supplied)	FP-031 FLEXIBLE BOARD
		**********
		(This flexible board is included in MD (N220) SUB ASSY (S) A (A-1437-006-A).)
		< DIODE >
D902	6-500-652-01	DIODE GL453SE0000F (TAPE LED)
		< HOLE 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 >
MIC903	1-818-576-11	PIN, CONNECTOR (WITH DETECTION)
		< TRANSISTOR >
Q901	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE END)
Q902	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE TOP)
		< SWITCH >
S901	1-786-448-22	SWITCH, PUSH (1 KEY) (CC DOWN)
	(Not supplied)	FP-032 FLEXIBLE BOARD
		**********
		(This flexible board with S903 is included in MD (N220) SUB ASSY (S) A (A-1437-006-A).)
	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)
		**********
	A-1217-231-A	FP-486 FLEXIBLE BOARD, COMPLETE
		**********
		< FERRITE BEAD >
FB601	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB602	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB603	1-500-238-11	BEAD, FERRITE (CHIP) (1608)

Note: Be sure to read “Precautions for Replacement of Imager” on page 4-3 when changing the imager.

Note: イメージャの交換時は4-4ページの“イメージャ交換時の注意”を必ずお読みください。

Ref. No.	Part No.	Description			
		< JACK >			
J601	1-794-525-12	JACK, MIC (🎧 (HEADPHONES))			
		< RESISTOR >			
R602	1-216-295-91	SHORT CHIP	0		
R603	1-216-864-11	SHORT CHIP	0		
	A-1231-941-A	FP-645 FLEXIBLE BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
* CN001	1-819-696-21	CONNECTOR, HDMI (HDMI OUT)			
	A-1486-852-A	FP-756 FLEXIBLE BOARD, COMPLETE			
		**********			
		< SWITCH >			
S101	1-786-180-31	SWITCH, PUSH (1KEY) (EJECT)			
	A-1486-853-A	FP-757 FLEXIBLE BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C201	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
		< CONNECTOR >			
* CN201	1-817-544-71	CONNECTOR, FPC (ZIF) 39P			
		< DIODE >			
D201	8-719-064-07	DIODE SML-310LTT86 (REC LAMP (BACK))			
		< IC >			
IC201	6-600-163-01	IC RS-770			
		< RESISTOR >			
R201	1-216-821-11	METAL CHIP	1K	5%	1/10W
R202	1-216-805-11	METAL CHIP	47	5%	1/10W
	A-1486-854-A	FP-759 FLEXIBLE BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C401	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C403	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< DIODE >			
D401	8-719-064-07	DIODE SML-310LTT86 (REC LAMP (FRONT))			
		< IC >			
IC401	6-600-163-01	IC RS-770			
IC402	6-600-513-11	IC TK60019CS8G0L			
IC403	6-600-513-11	IC TK60019CS8G0L			

Ref. No.	Part No.	Description			
		< RESISTOR >			
R401	1-216-821-11	METAL CHIP	1K	5%	1/10W
R402	1-216-805-11	METAL CHIP	47	5%	1/10W
	A-1486-844-A	GG-005 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C7801	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C7802	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C7803	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C7804	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C7809	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
		< CONNECTOR >			
* CN7801	1-817-564-71	CONNECTOR, FPC (ZIF) 33P			
* CN7802	1-816-654-51	FFC/FPC CONNECTOR (LIF) 6P			
* CN7803	1-817-560-71	CONNECTOR, FPC (ZIP) 21P			
		< IC >			
IC7801	6-707-208-01	IC TK11100CSCB-G			
		< RESISTOR >			
R7801	1-218-970-11	RES-CHIP	27K	5%	1/16W
R7802	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R7803	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R7804	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R7805	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R7806	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R7807	1-208-928-11	METAL CHIP	51K	0.5%	1/16W
R7808	1-218-990-81	SHORT CHIP	0		
R7809	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R7811	1-216-864-11	SHORT CHIP	0		
R7816	1-216-864-11	SHORT CHIP	0		
		< SWITCH >			
S7801	1-771-487-11	SWITCH, SLIDE(HANDLE ZOOM (FIX/VAR/OFF))			
	A-1510-484-A	GY-005 BOARD, COMPLETE (SERVICE)			
		**********			
		< CAPACITOR >			
C8501	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
* C8502	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
* C8503	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C8504	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8505	1-114-411-21	CERAMIC CHIP	0.33uF	10%	6.3V
C8506	1-114-411-21	CERAMIC CHIP	0.33uF	10%	6.3V
C8507	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C8508	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C8509	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C8510	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C8511	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C8512	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8513	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V

Ref. No.	Part No.	Description			
C8514	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8515	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8516	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8517	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8518	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8519	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8520	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C8521	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C8522	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
		< CONNECTOR >			
* CN8501	1-816-655-51	FFC/FPC CONNECTOR (LIF) 8P			
		< IC >			
IC8501	8-753-284-38	IC CXA3739AER-T2			
		< RESISTOR >			
R8509	1-218-989-11	RES-CHIP	1M	5%	1/16W
R8510	1-218-989-11	RES-CHIP	1M	5%	1/16W
R8511	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R8512	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R8513	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R8514	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R8515	1-218-969-11	RES-CHIP	22K	5%	1/16W
R8516	1-218-969-11	RES-CHIP	22K	5%	1/16W
R8517	1-218-969-11	RES-CHIP	22K	5%	1/16W
R8518	1-218-969-11	RES-CHIP	22K	5%	1/16W
R8529	1-218-990-81	SHORT CHIP	0		
R8530	1-218-990-81	SHORT CHIP	0		
		< SENSOR >			
* SE8501	1-480-218-11	SENSOR, ANGULAR VELOCITY (PITCH)			
* SE8502	1-479-022-61	SENSOR, ANGULAR VELOCITY (YAW)			

	A-1486-842-A	HH-008 BOARD, COMPLETE
		**********
		< CONNECTOR >
CN7401	1-794-375-21	PIN, CONNECTOR 2P
		< SWITCH >
S7401	1-786-180-11	SWITCH, PUSH (1KEY) (PANEL REVERSE)

	A-1486-847-A	II-005 BOARD, COMPLETE
		**********
		< CONNECTOR >
* CN8401	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P
CN8402	1-785-444-11	CONNECTOR, SQUARE TYPE (HDV/DV)
		< COMPOSITION CIRCUIT BLOCK >
RB8401	1-234-400-21	CONDUCTOR, NETWORK (1005X4)

Ref. No.	Part No.	Description
		< THERMISTOR >
TH8401	1-805-726-11	THERMISTOR, POSITIVE
TH8402	1-805-726-11	THERMISTOR, POSITIVE
TH8403	1-805-726-11	THERMISTOR, POSITIVE
TH8404	1-805-726-11	THERMISTOR, POSITIVE

	A-1486-846-A	JJ-005 BOARD, COMPLETE
		**********
		< CONNECTOR >
* CN8201	1-816-654-51	FFC/FPC CONNECTOR (LIF) 6P
* CN8202	1-817-564-71	CONNECTOR, FPC (ZIF) 33P
CN8203	1-815-794-13	CONNECTOR (MULTIPLE) (A/V OUT)
CN8204	1-818-607-12	CONNECTOR, SQUARE TYPE 10P (COMPONENT OUT)
CN8205	1-793-995-31	JACK, SUPER SMALL TYPE (LANC)
		< DIODE >
D8201	8-719-083-91	DIODE EDZ TE61 6.8B
D8202	6-500-750-01	DIODE NSAD500H-T1-A
* D8203	6-501-930-01	DIODE MAZW068HGLS0
		< FERRITE BEAD >
FB8201	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB8202	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB8203	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB8204	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
		< RESISTOR >
R8202	1-216-864-11	SHORT CHIP 0
R8217	1-216-864-11	SHORT CHIP 0
R8218	1-216-864-11	SHORT CHIP 0
R8219	1-216-864-11	SHORT CHIP 0
R8220	1-216-864-11	SHORT CHIP 0
		< VARISTOR >
VDR825	1-803-974-21	VARISTOR, CHIP (1608)

	A-1486-849-A	KK-032 BOARD, COMPLETE
		**********
		< CONNECTOR >
* CN9001	1-816-654-51	FFC/FPC CONNECTOR (LIF) 6P
		< SWITCH >
S9001	1-570-985-31	SWITCH, TOGGLE (GAIN (H/M/L))
S9002	1-570-985-31	SWITCH, TOGGLE (WHT BAL (PRESET/A/B))

	A-1486-850-A	LG-005 BOARD, COMPLETE
		**********
		(IC6005 is not supplied, but this is included in LG-005 complete board.)
		< CAPACITOR >
C1001	1-165-989-11	CERAMIC CHIP 10uF 10% 6.3V
C1501	1-112-717-91	CERAMIC CHIP 1uF 10% 6.3V
C1503	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V

Ref. No.	Part No.	Description			
C1506	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1507	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1508	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1509	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1511	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1512	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1513	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1514	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2001	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C2002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2003	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C2004	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2005	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2006	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C2007	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C2008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2011	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2012	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C2013	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C2014	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2015	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2016	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2021	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2024	1-162-964-11	CERAMIC CHIP	0.001uF	5%	50V
C2027	1-112-342-91	CERAMIC CHIP	10uF	20%	10V
C2028	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2029	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3001	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3003	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3005	1-137-704-91	TANTAL. CHIP	10uF	20%	10V
C3006	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3007	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3008	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C3009	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C3010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3011	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C3012	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3013	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C4008	1-100-844-91	TANTAL. CHIP	22uF	20%	10V
C4009	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C4012	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4017	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4018	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4019	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4025	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4026	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4040	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C4041	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5002	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C5005	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5011	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5014	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			
C6001	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C6002	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
* C6003	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6004	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C6005	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C6006	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6007	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6010	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
* C6011	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6013	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
* CN1001	1-817-543-71	CONNECTOR, FPC (ZIF) 27P			
* CN1002	1-817-283-71	CONNECTOR, FPC (ZIF) 51P			
* CN1003	1-817-564-71	CONNECTOR, FPC (ZIF) 33P			
* CN1501	1-779-329-51	CONNECTOR, FFC/FPC 10P			
* CN1502	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P			
CN4001	1-779-328-51	CONNECTOR, FFC/FPC 8P			
		< DIODE >			
D1001	6-500-776-01	DIODE MAZW068H0LS0			
D1002	6-500-776-01	DIODE MAZW068H0LS0			
D1003	6-500-776-01	DIODE MAZW068H0LS0			
D1004	6-500-776-01	DIODE MAZW068H0LS0			
* D1005	6-502-153-01	DIODE MAZT082HG8S0			
		< FERRITE BEAD >			
FB2001	1-500-238-11	BEAD, FERRITE (CHIP) (1608)			
FB3001	1-500-238-11	BEAD, FERRITE (CHIP) (1608)			
		< IC >			
* IC1501	6-708-457-01	IC R1114Q151D-TR-FA			
IC1503	6-706-689-01	IC HD74ALVC2G34USE-E			
* IC1505	6-708-444-01	IC R1114Q281D-TR-FA			
IC1506	6-703-976-01	IC R1114Q181D-TR-FA			
* IC2001	6-807-895-01	IC BU2343AGLU-E2			
* IC2004	6-712-231-01	IC AD7942BRMZ-RL7			
* IC3001	6-807-895-01	IC BU2343AGLU-E2			
* IC4003	6-709-026-01	IC R2J30500LG			
* IC5001	6-711-626-01	IC BU2244GUW-E2			
* IC6001	6-807-886-01	IC MB91F196BGL1-G-102-ERE1			
IC6005	(Not supplied)	IC AK6512CL-L			
		< COIL >			
L1001	1-469-555-21	INDUCTOR	10uH		
L1503	1-469-557-21	INDUCTOR	22uH		
L1504	1-469-557-21	INDUCTOR	22uH		
L2001	1-469-757-21	INDUCTOR	10uH		
L2002	1-400-588-11	INDUCTOR	10uH		
L4001	1-469-757-21	INDUCTOR	10uH		
L4003	1-469-967-21	INDUCTOR	10uH		
		< TRANSISTOR >			
* Q1001	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
* Q1002	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
* Q1003	6-551-881-01	TRANSISTOR	2SA2174GR8S0		

Ref. No.	Part No.	Description			
* Q1004	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
Q1005	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R		
* Q4001	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
* Q4004	6-551-796-01	TRANSISTOR	UNR92A3G08S0		
* Q4005	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
* Q4006	6-551-796-01	TRANSISTOR	UNR92A3G08S0		
		< RESISTOR >			
R1005	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1029	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1030	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1031	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1032	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1033	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1034	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1035	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R1036	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R1037	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1038	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1039	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1040	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1041	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1505	1-218-938-11	RES-CHIP	56	5%	1/16W
R1508	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1509	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R1510	1-218-970-11	RES-CHIP	27K	5%	1/16W
R1511	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R1512	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R1513	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1514	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R1532	1-216-864-11	SHORT CHIP	0		
R1533	1-216-864-11	SHORT CHIP	0		
R1534	1-216-864-11	SHORT CHIP	0		
R1536	1-218-942-11	RES-CHIP	120	5%	1/16W
R2005	1-218-990-81	SHORT CHIP	0		
R2006	1-218-990-81	SHORT CHIP	0		
R2007	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R2008	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2009	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R2010	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R2011	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R2012	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R2013	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R2014	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R2018	1-218-977-11	RES-CHIP	100K	5%	1/16W
R2019	1-218-990-81	SHORT CHIP	0		
R2020	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2021	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R2022	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R2023	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R2024	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R2025	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R2026	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R2055	1-216-864-11	SHORT CHIP	0		
R2061	1-218-990-81	SHORT CHIP	0		
R2063	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2067	1-218-990-81	SHORT CHIP	0		
R3008	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W

Ref. No.	Part No.	Description			
R3010	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R3011	1-218-990-81	SHORT CHIP	0		
R3012	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R3013	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R3014	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3016	1-218-990-81	SHORT CHIP	0		
R3017	1-218-972-11	RES-CHIP	39K	5%	1/16W
R3018	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R3019	1-218-972-11	RES-CHIP	39K	5%	1/16W
R3020	1-218-990-81	SHORT CHIP	0		
R3021	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3022	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R3023	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R3024	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R3032	1-216-864-11	SHORT CHIP	0		
R4001	1-216-864-11	SHORT CHIP	0		
R4002	1-216-864-11	SHORT CHIP	0		
R4003	1-216-864-11	SHORT CHIP	0		
R4004	1-218-990-81	SHORT CHIP	0		
R4040	1-218-722-11	METAL CHIP	18K	0.5%	1/10W
R4042	1-218-716-11	METAL CHIP	10K	0.5%	1/10W
R4043	1-218-990-81	SHORT CHIP	0		
R4044	1-218-728-11	METAL CHIP	33K	0.5%	1/10W
R4045	1-218-726-11	METAL CHIP	27K	0.5%	1/10W
R4047	1-208-717-11	METAL CHIP	27K	0.5%	1/16W
R4050	1-218-869-11	METAL CHIP	8.2K	0.5%	1/10W
R4055	1-218-722-11	METAL CHIP	18K	0.5%	1/10W
R4058	1-218-716-11	METAL CHIP	10K	0.5%	1/10W
R4059	1-218-990-81	SHORT CHIP	0		
R4061	1-218-728-11	METAL CHIP	33K	0.5%	1/10W
R4063	1-218-726-11	METAL CHIP	27K	0.5%	1/10W
R4064	1-208-717-11	METAL CHIP	27K	0.5%	1/16W
R4069	1-218-869-11	METAL CHIP	8.2K	0.5%	1/10W
R4076	1-216-864-11	SHORT CHIP	0		
R4078	1-216-864-11	SHORT CHIP	0		
R4080	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4082	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4083	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4084	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4085	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4086	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4093	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4094	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4102	1-216-864-11	SHORT CHIP	0		
R4105	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4106	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4109	1-218-990-81	SHORT CHIP	0		
R4110	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5001	1-216-864-11	SHORT CHIP	0		
R5002	1-216-864-11	SHORT CHIP	0		
R5003	1-216-864-11	SHORT CHIP	0		
R5004	1-216-864-11	SHORT CHIP	0		
R5005	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5006	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5007	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5008	1-218-990-81	SHORT CHIP	0		
R5010	1-218-973-11	RES-CHIP	47K	5%	1/16W

Ref. No.	Part No.	Description			
R5011	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5012	1-218-971-11	RES-CHIP	33K	5%	1/16W
R5013	1-219-107-91	RES-CHIP	1.5	5%	1/8W
R5015	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5016	1-218-990-81	SHORT CHIP	0		
R6002	1-218-990-81	SHORT CHIP	0		
R6004	1-218-990-81	SHORT CHIP	0		
R6005	1-218-941-81	RES-CHIP	100	5%	1/16W
R6006	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6008	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6012	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6013	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6014	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6015	1-218-977-11	RES-CHIP	100K	5%	1/16W
R6016	1-218-985-11	RES-CHIP	470K	5%	1/16W
R6017	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6018	1-218-989-11	RES-CHIP	1M	5%	1/16W
R6019	1-218-989-11	RES-CHIP	1M	5%	1/16W
R6021	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6027	1-218-977-11	RES-CHIP	100K	5%	1/16W
R6028	1-216-864-11	SHORT CHIP	0		
R6032	1-218-977-11	RES-CHIP	100K	5%	1/16W
R6033	1-218-977-11	RES-CHIP	100K	5%	1/16W
R6036	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6037	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6038	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6039	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6040	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6041	1-218-953-11	RES-CHIP	1K	5%	1/16W
		< VIBRATOR >			
* X1501	1-813-856-11	OSCILLATOR, CRYSTAL (27MHz)			
* X6001	1-767-205-81	VIBRATOR, CRYSTAL (20MHz)			

	A-1544-576-A	ENG ASSY (SERVICE)			
	(Not supplied)	LL-014 BOARD, COMPLETE			
		**********			
		(LL-014 complete board and IC6401 are not supplied, but they are included in ENG assy (SERVICE).)			
		< CAPACITOR >			
C6401	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C6402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6403	1-100-505-11	CERAMIC CHIP	0.1uF	20%	16V
C6404	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C6405	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C6408	1-128-709-21	TANTAL. CHIP	68uF	20%	10V
C6409	1-128-709-21	TANTAL. CHIP	68uF	20%	10V
		< CONNECTOR >			
* CN6401	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P			
CN6402	1-562-221-31	CONNECTOR (ROUND TYPE) (R-F) 12P			
		< DIODE >			
D6401	6-501-123-01	DIODE RB160M-60TR			

Ref. No.	Part No.	Description			
		< IC >			
IC6401	(Not supplied)	IC TK11840LTL-G			
		< COIL >			
L6401	1-456-499-11	INDUCTOR	4.7uH		
L6402	1-456-499-11	INDUCTOR	4.7uH		
		< TRANSISTOR >			
Q6401	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L		
Q6402	8-729-048-72	TRANSISTOR	2SK2615		
		< RESISTOR >			
R6401	1-208-894-81	METAL CHIP	2K	0.5%	1/16W
R6402	1-208-883-81	METAL CHIP	680	0.5%	1/16W
R6403	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R6404	1-208-893-11	METAL CHIP	1.8K	0.5%	1/16W
R6405	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R6406	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R6407	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R6408	1-216-821-11	METAL CHIP	1K	5%	1/10W
R6409	1-216-821-11	METAL CHIP	1K	5%	1/10W
R6421	1-216-295-91	SHORT CHIP	0		
		< THERMISTOR >			
TH6401	1-803-615-21	THERMISTOR, POSITIVE			
		< VARISTOR >			
* VD4601	1-802-279-11	VARISTOR (SMD)			
* VD4602	1-802-279-11	VARISTOR (SMD)			
* VD4603	1-802-250-11	VARISTOR (SMD)			
* VD4604	1-802-128-11	VARISTOR (SMD)			
* VD4605	1-802-070-11	VARISTOR, CHIP			
* VD4606	1-802-128-11	VARISTOR (SMD)			
* VD4607	1-802-250-11	VARISTOR (SMD)			
* VD4608	1-802-279-11	VARISTOR (SMD)			
* VD4609	1-802-128-11	VARISTOR (SMD)			
* VD4610	1-802-128-11	VARISTOR (SMD)			
* VD4611	1-802-279-11	VARISTOR (SMD)			

	A-1486-833-A	NN-005 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C5001	1-100-352-91	CERAMIC CHIP	1uF	20%	16V
C5002	1-100-352-91	CERAMIC CHIP	1uF	20%	16V
C5003	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C5004	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C5005	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5006	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C5007	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C5008	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C5201	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5202	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C5203	1-137-704-91	TANTAL. CHIP	10uF	20%	10V
C5204	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5205	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C5206	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C5207	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5208	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C5209	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5210	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5211	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5212	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5213	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5214	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5215	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5401	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5402	1-164-858-11	CERAMIC CHIP	22PF	5%	50V
C5403	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5404	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5405	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5406	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5407	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5408	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5409	1-100-505-11	CERAMIC CHIP	0.1uF	20%	16V
C5410	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C5411	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C5412	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5413	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5414	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5415	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5416	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5418	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5419	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5420	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5421	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C5422	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5423	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5424	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C5425	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5426	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5427	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5428	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5429	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5430	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5431	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5432	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5433	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5434	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5435	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5436	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5437	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5438	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C5439	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
		< CONNECTOR >			
CN5001	1-817-920-11	CONNECTOR, FPC (ZIF) 80P			
* CN5002	1-816-654-51	FFC/FPC CONNECTOR (LIF) 6P			
* CN5201	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P			
* CN5401	1-818-818-81	CONNECTOR, FPC (ZIF) 29P			
* CN5402	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P			
* CN5403	1-817-829-81	CONNECTOR, FPC (ZIF) 27P			

Ref. No.	Part No.	Description			
		< DIODE >			
* D5001	6-502-145-01	DIODE MA21D340GLS0			
		< IC >			
IC5001	6-707-401-01	IC FB6805Q-TE2			
IC5002	6-707-633-01	IC FB6825Q-TE2			
IC5201	6-707-432-01	IC TLS26A102PFBR			
IC5401	6-707-428-01	IC BD6639BGLV-E2			
		< COIL >			
L5201	1-400-588-11	INDUCTOR	10uH		
L5202	1-400-588-11	INDUCTOR	10uH		
* L5401	1-400-411-21	INDUCTOR	4.7uH		
L5402	1-469-555-21	INDUCTOR	10uH		
		< TRANSISTOR >			
Q5401	6-550-242-01	TRANSISTOR	DTC114EMFS6T2L		
Q5402	6-550-174-01	TRANSISTOR	2SA2030T2L		
Q5403	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R		
		< RESISTOR >			
R5001	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5002	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5201	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5202	1-218-969-11	RES-CHIP	22K	5%	1/16W
R5203	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5204	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R5205	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R5206	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R5207	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R5208	1-218-990-81	SHORT CHIP	0		
R5209	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
* R5210	1-208-869-11	METAL CHIP	180	0.5%	1/16W
* R5211	1-208-869-11	METAL CHIP	180	0.5%	1/16W
* R5212	1-208-869-11	METAL CHIP	180	0.5%	1/16W
* R5213	1-208-869-11	METAL CHIP	180	0.5%	1/16W
R5401	1-218-935-11	RES-CHIP	33	5%	1/16W
R5402	1-218-935-11	RES-CHIP	33	5%	1/16W
R5403	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5404	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5405	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5406	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5407	1-218-941-81	RES-CHIP	100	5%	1/16W
R5408	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5409	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R5410	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R5411	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R5412	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5413	1-218-946-11	RES-CHIP	270	5%	1/16W
R5414	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5416	1-218-967-11	RES-CHIP	15K	5%	1/16W
R5417	1-218-935-11	RES-CHIP	33	5%	1/16W
R5418	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5419	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5422	1-218-969-11	RES-CHIP	22K	5%	1/16W
R5423	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R5424	1-218-957-11	RES-CHIP	2.2K	5%	1/16W

Ref. No.	Part No.	Description			
R5425	1-216-864-11	SHORT CHIP	0		
	A-1486-834-A	OO-006 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C5601	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C5602	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C5603	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C5604	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C5605	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C5606	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C5607	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5608	1-114-238-91	CERAMIC CHIP	22uF	20%	10V
C5610	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C5612	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C5613	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5614	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C5615	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C5616	1-128-964-91	TANTAL. CHIP	100uF	20%	6.3V
C5617	1-114-238-91	CERAMIC CHIP	22uF	20%	10V
C5618	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C5620	1-115-412-11	CERAMIC CHIP	680PF	5%	25V
C5621	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C5624	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C5625	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C5626	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C5627	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5628	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C5629	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5631	1-115-412-11	CERAMIC CHIP	680PF	5%	25V
C5632	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C5633	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C5634	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C5635	1-114-238-91	CERAMIC CHIP	22uF	20%	10V
C5636	1-114-238-91	CERAMIC CHIP	22uF	20%	10V
C5691	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5692	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5693	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5702	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C5703	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C5704	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C5705	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5706	1-164-858-11	CERAMIC CHIP	22PF	5%	50V
C5707	1-164-858-11	CERAMIC CHIP	22PF	5%	50V
C5752	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C5753	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C5754	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C5755	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5756	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5757	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5758	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C5759	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C5760	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5761	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5762	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C5763	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V

Ref. No.	Part No.	Description			
C5765	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
* C5766	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
* C5767	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C5768	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C5769	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
		< CONNECTOR >			
CN5601	1-779-335-51	CONNECTOR, FFC/FPC 22P			
* CN5602	1-817-564-71	CONNECTOR, FPC (ZIF) 33P			
* CN5603	1-817-283-71	CONNECTOR, FPC (ZIF) 51P			
		< DIODE >			
* D5701	6-501-947-01	DIODE MA2S1110G8S0			
* D5702	6-501-947-01	DIODE MA2S1110G8S0			
* D5751	6-501-947-01	DIODE MA2S1110G8S0			
* D5752	6-501-947-01	DIODE MA2S1110G8S0			
* D5754	6-501-947-01	DIODE MA2S1110G8S0			
* D5755	6-501-947-01	DIODE MA2S1110G8S0			
D5756	8-719-074-08	DIODE MA4ZD03001S0			
		< IC >			
IC5601	8-759-564-49	IC TC7W53FU (TE12R)			
IC5602	8-759-581-11	IC NJM2125F (TE2)			
IC5603	6-707-170-01	IC M61534FP			
IC5691	6-703-228-01	IC TK11160CSCL-G			
IC5751	8-759-572-38	IC NJM2140R			
IC5752	8-759-564-49	IC TC7W53FU (TE12R)			
IC5753	8-759-591-61	IC TC7WHU04FU (TE12R)			
		< COIL >			
L5601	1-400-588-11	INDUCTOR	10uH		
		< TRANSISTOR >			
Q5601	6-550-242-01	TRANSISTOR	DTC114EMFS6T2L		
Q5606	6-550-242-01	TRANSISTOR	DTC114EMFS6T2L		
Q5701	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q5702	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R		
Q5703	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q5704	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q5705	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q5706	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R		
Q5751	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R		
Q5752	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q5753	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q5754	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R		
		< RESISTOR >			
R5605	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5606	1-218-979-11	RES-CHIP	150K	5%	1/16W
R5610	1-218-857-11	METAL CHIP	2.7K	0.5%	1/10W
R5613	1-218-969-11	RES-CHIP	22K	5%	1/16W
R5614	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W
R5615	1-218-866-11	METAL CHIP	6.2K	0.5%	1/10W
R5616	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5618	1-218-969-11	RES-CHIP	22K	5%	1/16W
R5619	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W
R5620	1-218-866-11	METAL CHIP	6.2K	0.5%	1/10W

Ref. No.	Part No.	Description			
R5621	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5622	1-218-857-11	METAL CHIP	2.7K	0.5%	1/10W
R5627	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5628	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5629	1-216-864-11	SHORT CHIP	0		
R5630	1-218-823-11	METAL CHIP	100	0.5%	1/10W
R5631	1-218-823-11	METAL CHIP	100	0.5%	1/10W
R5633	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5634	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5701	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5702	1-211-973-11	METAL CHIP	15	0.5%	1/10W
R5703	1-211-973-11	METAL CHIP	15	0.5%	1/10W
R5705	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5706	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5707	1-211-973-11	METAL CHIP	15	0.5%	1/10W
R5708	1-211-973-11	METAL CHIP	15	0.5%	1/10W
R5709	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5710	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5711	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5712	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5713	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5714	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5715	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5721	1-211-973-11	METAL CHIP	15	0.5%	1/10W
R5722	1-211-973-11	METAL CHIP	15	0.5%	1/10W
R5723	1-211-973-11	METAL CHIP	15	0.5%	1/10W
R5724	1-211-973-11	METAL CHIP	15	0.5%	1/10W
R5752	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5753	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5755	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5756	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5757	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5758	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5759	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R5760	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R5761	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5762	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5763	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5764	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5765	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5766	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5767	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5768	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5774	1-218-990-81	SHORT CHIP	0		
R5775	1-218-971-11	RES-CHIP	33K	5%	1/16W
R5776	1-218-978-11	RES-CHIP	120K	5%	1/16W
R5777	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5778	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R5779	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R5780	1-218-981-91	RES-CHIP	220K	5%	1/16W
R5781	1-218-981-91	RES-CHIP	220K	5%	1/16W

Ref. No.	Part No.	Description			
	A-1486-836-A	PP-005 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C6001	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6002	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6004	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6005	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6006	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6011	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6012	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6013	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6014	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C6015	1-100-581-81	CERAMIC CHIP	0.0047uF	10%	50V
C6016	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C6017	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6018	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6019	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6020	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6021	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6022	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6023	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C6024	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6025	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6027	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C6028	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C6029	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C6030	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6031	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
* C6032	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6033	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6034	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6035	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6036	1-127-861-11	CERAMIC CHIP	2.2uF	10%	16V
C6037	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6038	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C6039	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C6040	1-127-861-11	CERAMIC CHIP	2.2uF	10%	16V
C6041	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6042	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6043	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6044	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6045	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
		< CONNECTOR >			
CN6001	1-816-928-11	PIN, CONNECTOR 22P			
* CN6002	1-794-322-51	FFC/CONNECTOR, FPC (ZIF) 6P			
* CN6003	1-819-914-71	CONNECTOR, FPC (ZIF) 29P			
* CN6004	1-817-544-71	CONNECTOR, FPC (ZIF) 39P			
		< DIODE >			
D6001	8-719-069-29	DIODE RB520S-30FJTE61			
D6002	8-719-069-29	DIODE RB520S-30FJTE61			

Ref. No.	Part No.	Description			
		< FERRITE BEAD >			
FB6001	1-400-331-11	FERRITE, EMI (SMD) (1005)			
		< IC >			
* IC6001	6-712-180-01	IC IR3Y80Y6			
		< COIL >			
L6001	1-400-588-11	INDUCTOR	10uH		
L6002	1-400-588-11	INDUCTOR	10uH		
L6003	1-400-588-11	INDUCTOR	10uH		
L6004	1-400-588-11	INDUCTOR	10uH		
L6005	1-400-588-11	INDUCTOR	10uH		
		< TRANSISTOR >			
Q6001	6-550-239-01	TRANSISTOR	DTA144EMFS6T2L		
Q6002	8-729-054-48	TRANSISTOR	UP04601008S0		
Q6003	8-729-054-48	TRANSISTOR	UP04601008S0		
		< RESISTOR >			
R6008	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R6009	1-208-695-11	METAL CHIP	3.3K	0.5%	1/16W
R6010	1-218-969-11	RES-CHIP	22K	5%	1/16W
R6011	1-208-643-11	METAL CHIP	22	0.5%	1/16W
R6012	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R6013	1-218-969-11	RES-CHIP	22K	5%	1/16W
R6014	1-218-967-11	RES-CHIP	15K	5%	1/16W
R6015	1-218-969-11	RES-CHIP	22K	5%	1/16W
R6018	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R6019	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R6020	1-218-990-81	SHORT CHIP	0		
R6021	1-218-977-11	RES-CHIP	100K	5%	1/16W
R6025	1-218-990-81	SHORT CHIP	0		
R6026	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6027	1-218-965-11	RES-CHIP	10K	5%	1/16W

	A-1486-845-A	RR-005 BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
* CN8001	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P			
* CN8002	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P			
* CN8003	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P			
		< VARISTOR >			
* D8003	1-802-279-11	VARISTOR (SMD) (Note)			
* D8008	1-802-279-11	VARISTOR (SMD) (Note)			
* D8009	1-802-279-11	VARISTOR (SMD) (Note)			
* D8010	1-802-279-11	VARISTOR (SMD) (Note)			
* D8011	1-802-279-11	VARISTOR (SMD) (Note)			
* D8012	1-802-279-11	VARISTOR (SMD) (Note)			
		< RESISTOR >			
R8001	1-218-970-11	RES-CHIP	27K	5%	1/16W
R8002	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R8003	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R8004	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R8005	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R8006	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R8007	1-218-970-11	RES-CHIP	27K	5%	1/16W
R8008	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R8009	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R8010	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R8011	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R8012	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R8013	1-218-970-11	RES-CHIP	27K	5%	1/16W
R8014	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R8015	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R8016	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R8017	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R8018	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R8019	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R8020	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R8021	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R8022	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R8023	1-218-964-11	RES-CHIP	8.2K	5%	1/16W

	A-1486-843-A	SS-182 BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
* CN7601	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P			
		< DIODE >			
D7601	6-502-195-01	DI SML-D12D8WT86SQ			
D7602	6-502-195-01	DI SML-D12D8WT86SQ			
D7603	6-502-195-01	DI SML-D12D8WT86SQ			
		< RESISTOR >			
R7601	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R7602	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R7603	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R7604	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R7605	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
		< SWITCH >			
S7601	1-786-157-31	TACTILE SWITCH (SHOT TRANSITION/FOCUS MARKING B)			
S7602	1-786-157-31	TACTILE SWITCH (SHOT TRANSITION/FOCUS MARKING A)			
S7603	1-786-157-31	TACTILE SWITCH (SHOT TRANSITION/FOCUS MARKING)			

	A-1494-308-A	TT-007 BOARD, COMPLETE (NTSC: Z7J/Z7U/Z7N)			
	A-1494-309-A	TT-007 BOARD, COMPLETE (PAL: Z7E/Z7P/Z7C)			
		**********			
		(IC2402, IC3804 and IC4201 are not supplied, but they are included in TT-007 complete board.)			
		< CAPACITOR >			
C1105	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1106	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C1108	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Note: Varistor are mounted to the location where D8003, D8008, D8009, D8010, D8011 and D8012 are printed.

Note: D8003，D8008，D8009，D8010，D8011およびD8012にはバリスタがマウントされています。

Ref. No.	Part No.	Description			
C1110	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1111	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1112	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1113	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C1114	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1115	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C1116	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C1117	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1118	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C1119	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C1201	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1202	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1204	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1205	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1206	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1207	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1208	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1211	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1224	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1225	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1401	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1403	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1404	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1405	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1406	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1407	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1408	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1409	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1410	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1411	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1412	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1413	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1414	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1415	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1416	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C1417	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C1418	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C1419	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1420	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1421	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1422	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1426	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1427	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1429	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1431	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1432	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1433	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1434	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1435	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1601	1-100-786-91	TANTAL. CHIP	22uF	20%	6.3V
C1602	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1603	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1605	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C1606	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1801	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1802	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1803	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1804	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1805	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1806	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1807	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1808	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1810	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1811	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1812	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1813	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1814	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1815	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1816	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1817	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1818	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1819	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1820	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1821	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1822	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1823	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1824	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1825	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1826	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1827	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1828	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1829	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1830	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1831	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1833	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1834	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1835	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1836	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1837	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1838	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1839	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1840	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1841	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1842	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2001	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2003	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C2004	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C2005	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C2006	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C2007	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2008	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2009	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2010	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2011	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2012	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2201	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2202	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C2203	1-100-842-91	TANTAL. CHIP	47uF	20%	6.3V
C2204	1-100-842-91	TANTAL. CHIP	47uF	20%	6.3V
C2205	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V

Ref. No.	Part No.	Description			
C2206	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2207	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2211	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2212	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2213	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2214	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2215	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2217	1-100-505-11	CERAMIC CHIP	0.1uF	20%	16V
C2218	1-100-505-11	CERAMIC CHIP	0.1uF	20%	16V
C2219	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2220	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2221	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2222	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2223	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2224	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2225	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2226	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2227	1-100-842-91	TANTAL. CHIP	47uF	20%	6.3V
C2228	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2229	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2230	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2231	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2232	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2233	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2234	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2235	1-100-842-91	TANTAL. CHIP	47uF	20%	6.3V
C2401	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2402	1-100-505-11	CERAMIC CHIP	0.1uF	20%	16V
C2403	1-100-505-11	CERAMIC CHIP	0.1uF	20%	16V
C2405	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C2406	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
* C2601	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2602	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
* C2603	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
* C2605	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2606	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
* C2607	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
* C2608	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
* C2609	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2610	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2611	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2613	1-128-934-61	CERAMIC CHIP	0.33uF	10%	10V
C2614	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2615	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2616	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2619	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2620	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2621	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2622	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2623	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2624	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2625	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2626	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C2627	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2628	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2801	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C2808	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2809	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2811	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2815	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2816	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2821	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2822	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2824	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2826	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2827	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3001	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3002	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3003	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3004	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3005	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3006	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3007	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3008	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3010	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3011	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3012	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3013	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3014	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3015	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3016	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3017	1-115-412-11	CERAMIC CHIP	680PF	5%	25V
C3018	1-115-412-11	CERAMIC CHIP	680PF	5%	25V
* C3019	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
* C3020	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C3021	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C3022	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C3023	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C3024	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C3025	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C3026	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C3027	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3028	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3101	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3103	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3104	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3105	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3106	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3109	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3110	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3111	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3112	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3113	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3114	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C3115	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3116	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3117	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3118	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3119	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3120	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V

Ref. No.	Part No.	Description			
C3121	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3122	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3123	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C3124	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3125	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3126	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3127	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C3128	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C3129	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3130	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3132	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3152	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C3155	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
* C3156	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3158	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3159	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3160	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3201	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3203	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3206	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3212	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3214	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3215	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3216	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3301	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3302	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3303	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3304	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3305	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3306	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3307	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3309	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C3310	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C3311	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C3401	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3402	1-164-928-11	CERAMIC CHIP	270PF	5%	16V
C3403	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
* C3404	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3405	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3407	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3409	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3410	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3411	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C3412	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C3414	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3415	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3416	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3418	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3420	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3601	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C3602	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3603	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3609	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C3611	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3612	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3624	1-100-415-91	CERAMIC CHIP	0.47uF	10%	6.3V
C3625	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C3627	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3629	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3630	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3632	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3633	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C3634	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C3635	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C3801	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3802	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3803	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C3804	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3805	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3808	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3810	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3811	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4001	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C4002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4003	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4004	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4005	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C4006	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C4007	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4011	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4012	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4013	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4201	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4202	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
* C4203	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4204	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C4205	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C4206	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4211	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4213	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
* C4214	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4216	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4217	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4218	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4219	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4220	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C4221	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C4222	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C4223	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4225	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C4226	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C4227	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4401	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4402	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4403	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4405	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4406	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C4407	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V

Ref. No.	Part No.	Description			
C4408	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4409	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4410	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4411	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4412	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4413	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4415	1-100-505-11	CERAMIC CHIP	0.1uF	20%	16V
C4416	1-100-505-11	CERAMIC CHIP	0.1uF	20%	16V
C4601	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4602	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4603	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C4604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4605	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4606	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4607	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4608	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4610	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4611	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4612	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4613	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4614	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4615	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4616	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4617	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C4618	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C4619	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C4620	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4621	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4622	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4623	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4624	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4625	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4626	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4627	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4628	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4629	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4630	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4631	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4632	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4633	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4634	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4635	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4636	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4637	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
* C4638	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C4639	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C4640	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C4641	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4643	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4644	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C4646	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C4647	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4649	1-100-503-11	CERAMIC CHIP	4.7uF	20%	10V
C4650	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C4651	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C4652	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4654	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V

Ref. No.	Part No.	Description			
C4659	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C4660	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C4662	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4663	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4664	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4665	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4666	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C4670	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4671	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4672	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4678	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4679	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C4680	1-164-933-11	CERAMIC CHIP	220PF	10%	50V
C4681	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4683	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4684	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4687	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C4689	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4705	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4706	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4707	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4710	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4718	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4720	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4721	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C4722	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C4723	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4724	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C4726	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4727	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V

< CONNECTOR >

CN1001	1-817-920-11	CONNECTOR, FPC (ZIF) 80P	
* CN1002	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P	
* CN1003	1-817-283-71	CONNECTOR, FPC (ZIF) 51P	
* CN1004	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P	
* CN1005	1-816-645-51	FFC/FPC CONNECTOR (LIF) 14P	
* CN1006	1-817-283-71	CONNECTOR, FPC (ZIF) 51P	
* CN1007	1-691-358-51	CONNECTOR, FFC/FPC (ZIF) 20P	
* CN1008	1-817-544-71	CONNECTOR, FPC (ZIF) 39P	
* CN1010	1-816-649-51	FFC/FPC CONNECTOR (LIF) 22P	
* CN1011	1-816-654-51	FFC/FPC CONNECTOR (LIF) 6P	
* CN1101	1-817-910-71	CONNECTOR, FPC (ZIF) 45P	
* CN1102	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P	
* CN1201	1-820-806-21	CONNECTOR, COAXIAL (RECEPTACLE)	
* CN1202	1-820-806-21	CONNECTOR, COAXIAL (RECEPTACLE)	
* CN1203	1-820-806-21	CONNECTOR, COAXIAL (RECEPTACLE)	
* CN1204	1-821-760-21	CONNECTOR, COAXIAL (RECEPTACLE)	
* CN1205	1-821-760-21	CONNECTOR, COAXIAL (RECEPTACLE)	
* CN1206	1-821-760-21	CONNECTOR, COAXIAL (RECEPTACLE)	
CN4601	1-580-057-11	PIN, CONNECTOR (SMD) 4P	

< DIODE >

D1106	8-719-069-28	DIODE	1SS400TE-61
D1107	8-719-069-28	DIODE	1SS400TE-61
D3101	8-719-069-28	DIODE	1SS400TE-61
* D3103	6-501-928-01	DIODE	MAS3132EGLS0
D3104	8-719-069-28	DIODE	1SS400TE-61

Ref. No.	Part No.	Description
D3301	8-719-069-59	DIODE UDZSNPTE-178.2B
D4201	8-719-069-28	DIODE 1SS400TE-61
D4202	8-719-069-28	DIODE 1SS400TE-61
D4203	8-719-069-28	DIODE 1SS400TE-61
D4204	8-719-069-28	DIODE 1SS400TE-61
D4602	8-719-027-76	DIODE 1SS357-TPH3
* D4603	6-502-146-01	DIODE MA2S7280G8S0
D4604	6-500-813-01	DIODE MA2SD32008S0
D4605	8-719-074-08	DIODE MA4ZD03001S0
D4607	6-500-813-01	DIODE MA2SD32008S0
D4608	6-500-813-01	DIODE MA2SD32008S0
D4610	8-719-027-76	DIODE 1SS357-TPH3
* D4612	6-501-961-01	DIODE MAZS120G08S0
* D4613	6-501-961-01	DIODE MAZS120G08S0
* D4616	6-502-144-01	DIODE MA3S132EG8S0
* D4618	6-502-144-01	DIODE MA3S132EG8S0
D4619	8-719-074-67	DIODE EDZ-TE61-5.6B
D4620	8-719-074-67	DIODE EDZ-TE61-5.6B
		< FUSE >
⚠F4601	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)
⚠F4602	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)
⚠F4603	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)
⚠F4604	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)
⚠F4605	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)
⚠F4606	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)
⚠F4607	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)
⚠F4608	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)
⚠F4609	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)
		< FERRITE BEAD >
FB1401	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB1402	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB1403	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB1601	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB1801	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB1802	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB1803	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB2001	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB2201	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB2401	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB2801	1-400-331-11	FERRITE, EMI (SMD) (1005)
FB2802	1-400-331-11	FERRITE, EMI (SMD) (1005)
FB3101	1-400-331-11	FERRITE, EMI (SMD) (1005)
FB3401	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB3601	1-469-581-21	INDUCTOR, FERRITE BEAD (1005)
FB3602	1-469-581-21	INDUCTOR, FERRITE BEAD (1005)
FB3606	1-400-723-11	INDUCTOR, FERRITE BEAD (1005)
FB3607	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB3608	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB3610	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB3801	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB3802	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB3803	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB4401	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
		< FILTER >
FL001	1-400-259-21	FILTER, EMI
FL3201	1-234-939-21	FILTER, EMI REMOVAL (SMD)
FL3202	1-234-939-21	FILTER, EMI REMOVAL (SMD)
FL3203	1-234-939-21	FILTER, EMI REMOVAL (SMD)
		< IC >
IC1102	8-759-359-49	IC NJM3414AV (TE2)
IC1103	8-759-058-45	IC NJM3403AV
IC1104	8-759-524-50	IC TC74VHC541FT (EL)
IC1105	6-706-906-01	IC NJM2732RB1 (TE2)
IC1106	6-707-208-01	IC TK11100CSCB-G
IC1201	6-703-977-01	IC R1114Q331D-TR-FA
IC1202	6-703-977-01	IC R1114Q331D-TR-FA
IC1203	6-703-976-01	IC R1114Q181D-TR-FA
IC1204	6-703-976-01	IC R1114Q181D-TR-FA
IC1205	6-703-976-01	IC R1114Q181D-TR-FA
IC1209	6-703-976-01	IC R1114Q181D-TR-FA
* IC1401	6-710-308-01	IC CXD9891GG
IC1403	8-759-643-94	IC TC7SLU04FU (TE85R)
IC1404	6-701-979-01	IC TC7WB66FK (TE85R)
* IC1601	6-712-228-01	IC K4M51323LC-DN75T
* IC1801	6-710-743-01	IC S4DF006X02-Y071-K12K4C
IC2001	6-708-108-01	IC TLS26A100PFBR
* IC2201	8-753-276-37	IC CXD3195AGG-T6
* IC2401	6-710-306-01	IC HYE18M256320CFX-7.5
IC2402	(Not supplied)	IC S29AL016D70BFI013
* IC2601	6-710-783-01	IC MB8AA1121BGL-G-ERE1
* IC2801	6-712-134-01	IC T3Z19XBG-0001 (E02)
IC3001	6-702-527-01	IC AK5380VT-E2
IC3002	6-704-682-01	IC AK4384VT-E2
IC3003	6-706-906-01	IC NJM2732RB1 (TE2)
IC3004	8-759-529-76	IC TC74VHC595FT (EL)
IC3005	6-707-879-01	IC TC74VHC541FT (EKJ)
* IC3101	6-707-959-01	IC AN12920AAVB
IC3151	6-707-171-01	IC TS4851EIJT
IC3201	6-711-003-01	IC T6UL2XBG-0002 (EO2)
* IC3301	6-710-770-01	IC AD9889BBBCZRL-80
IC3302	6-705-338-01	IC TK11250CMCL-G
* IC3401	6-710-516-01	IC SN200507002ZZCR
* IC3601	6-710-594-01	IC S4LFS33X0-Y070
IC3804	(Not supplied)	IC S99-50031-33-ER
IC3805	6-702-356-01	IC AK6512CL-L
IC3806	6-707-634-01	IC W9816G6CB-7-ER20
* IC4001	6-807-881-01	IC MB95005BGL-G-111-ERE1
IC4201	(Not supplied)	IC MB91F196BGL1-G-101-ERE1
* IC4202	6-706-013-01	IC AK6514CF-E2
IC4203	8-759-524-04	IC TC74VHC125FT (EL)
IC4204	8-759-524-05	IC TC74VHC126FT (EL)
IC4205	6-704-974-01	IC AK6512CAS-E2
IC4206	6-710-786-01	IC TC7SH125FU (T5RSOYF
IC4207	6-704-974-01	IC AK6512CAS-E2
* IC4401	6-808-033-01	IC MB91195ABGL-G-249-ERE1
* IC4601	6-710-636-01	IC MB44C005BBGL-G-ERE1
IC4603	6-708-133-01	IC TK72130CSCL-G
IC4606	6-707-208-01	IC TK11100CSCB-G
* IC4607	6-708-464-01	IC R1114Q251D-TR-FA
IC4608	8-759-581-11	IC NJM2125F (TE2)
IC4609	6-707-208-01	IC TK11100CSCB-G

• Refer to page 5-1 for mark ⚠.

Ref. No.	Part No.	Description	
		< COIL >	
L1101	1-469-757-21	INDUCTOR	10uH
L1102	1-469-555-21	INDUCTOR	10uH
L1401	1-469-555-21	INDUCTOR	10uH
L1402	1-469-555-21	INDUCTOR	10uH
L1403	1-469-555-21	INDUCTOR	10uH
L1404	1-400-353-21	INDUCTOR	22uH
L1801	1-400-676-11	INDUCTOR	22uH
L1802	1-400-675-11	INDUCTOR	10uH
L1803	1-400-588-11	INDUCTOR	10uH
L1804	1-400-588-11	INDUCTOR	10uH
L1805	1-400-676-11	INDUCTOR	22uH
L2001	1-400-588-11	INDUCTOR	10uH
L2002	1-400-588-11	INDUCTOR	10uH
L2003	1-400-588-11	INDUCTOR	10uH
L2201	1-400-675-11	INDUCTOR	10uH
L2202	1-400-676-11	INDUCTOR	22uH
L2203	1-400-676-11	INDUCTOR	22uH
L2204	1-400-676-11	INDUCTOR	22uH
L2205	1-400-676-11	INDUCTOR	22uH
L2601	1-400-675-11	INDUCTOR	10uH
L2602	1-400-675-11	INDUCTOR	10uH
L2603	1-400-675-11	INDUCTOR	10uH
L3001	1-400-588-11	INDUCTOR	10uH
L3002	1-400-676-11	INDUCTOR	22uH
L3003	1-400-588-11	INDUCTOR	10uH
L3101	1-400-588-11	INDUCTOR	10uH
L3102	1-400-588-11	INDUCTOR	10uH
L3103	1-400-588-11	INDUCTOR	10uH
L3151	1-469-555-21	INDUCTOR	10uH
L3301	1-400-588-11	INDUCTOR	10uH
L3302	1-400-588-11	INDUCTOR	10uH
L3303	1-400-588-11	INDUCTOR	10uH
L3401	1-400-588-11	INDUCTOR	10uH
L4601	1-456-136-21	INDUCTOR	10uH
L4602	1-456-497-11	INDUCTOR	15uH
L4603	1-456-497-11	INDUCTOR	15uH
L4604	1-456-136-21	INDUCTOR	10uH
L4605	1-456-497-11	INDUCTOR	15uH
L4606	1-456-136-21	INDUCTOR	10uH
L4607	1-456-136-21	INDUCTOR	10uH
L4608	1-456-497-11	INDUCTOR	15uH
L4609	1-456-497-11	INDUCTOR	15uH
L4610	1-469-549-21	INDUCTOR	1uH
L4611	1-456-498-11	INDUCTOR	47uH
L4612	1-469-549-21	INDUCTOR	1uH
L4613	1-469-551-21	INDUCTOR	2.2uH
L4615	1-469-549-21	INDUCTOR	1uH
L4616	1-469-561-21	INDUCTOR	100uH
L4618	1-469-555-21	INDUCTOR	10uH
L4619	1-469-549-21	INDUCTOR	1uH
L4622	1-469-555-21	INDUCTOR	10uH
L4623	1-469-555-21	INDUCTOR	10uH
L4625	1-469-555-21	INDUCTOR	10uH
		< COIL >	
LF3301	1-457-223-11	COMMON MODE CHOKE COIL	
LF3302	1-457-223-11	COMMON MODE CHOKE COIL	
LF3303	1-457-223-11	COMMON MODE CHOKE COIL	
LF3304	1-457-223-11	COMMON MODE CHOKE COIL	
LF3404	1-457-064-13	COMMON MODE CHOKE COIL	
		< TRANSISTOR >	
Q1102	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q1104	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q1105	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q1106	6-550-239-01	TRANSISTOR	DTA144EMFS6T2L
Q1107	6-551-536-01	TRANSISTOR	ECH8402-S-TL-E
Q1108	6-551-536-01	TRANSISTOR	ECH8402-S-TL-E
Q1109	6-551-536-01	TRANSISTOR	ECH8402-S-TL-E
Q1110	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q1111	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q1112	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q1113	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q1114	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q2001	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2002	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2003	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2004	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2005	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2006	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2007	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2008	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2009	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q3001	6-550-242-01	TRANSISTOR	DTC114EMFS6T2L
Q3101	6-550-242-01	TRANSISTOR	DTC114EMFS6T2L
Q3102	6-550-242-01	TRANSISTOR	DTC114EMFS6T2L
Q3105	8-729-921-51	TRANSISTOR	2SD1834-T100
Q3109	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q3110	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q3111	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q3601	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q3602	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q3603	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q3604	6-550-239-01	TRANSISTOR	DTA144EMFS6T2L
Q3605	8-729-053-54	TRANSISTOR	HN1A01FE-Y/GR (TPLR3)
Q3606	6-550-174-01	TRANSISTOR	2SA2030T2L
Q3607	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q3608	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q3609	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
* Q4601	6-551-796-01	TRANSISTOR	UNR92A3G08S0
Q4602	6-551-792-01	TRANSISTOR	UNR91ABG08S0
Q4603	8-729-056-72	TRANSISTOR	MCH5805-TL-E
Q4604	8-729-056-02	TRANSISTOR	MCH5804-TL-E
Q4609	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q4610	6-551-184-01	TRANSISTOR	MCH6305-TL-E-S
Q4611	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q4612	6-551-184-01	TRANSISTOR	MCH6305-TL-E-S
Q4613	6-551-115-01	TRANSISTOR	ECH8631-S-TL-E
Q4614	8-729-047-68	TRANSISTOR	SSM3K03FE (TPL3)
		< RESISTOR >	
R1036	1-218-953-11	RES-CHIP	1K 5% 1/16W
R1037	1-218-953-11	RES-CHIP	1K 5% 1/16W
R1043	1-216-864-11	SHORT CHIP	0

Ref. No.	Part No.	Description			
R1045	1-216-817-11	METAL CHIP	470	5%	1/10W
R1046	1-216-817-11	METAL CHIP	470	5%	1/10W
R1102	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R1104	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R1110	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1112	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R1113	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1114	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1116	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R1117	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R1120	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1122	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R1123	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R1124	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R1126	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R1127	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R1128	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R1129	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R1130	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R1131	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R1134	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1135	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1136	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1137	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1152	1-218-990-81	SHORT CHIP	0		
R1155	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1157	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R1160	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R1161	1-208-923-11	METAL CHIP	33K	0.5%	1/16W
R1164	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R1169	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R1171	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1172	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1173	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1174	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1175	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1176	1-218-975-11	RES-CHIP	68K	5%	1/16W
R1178	1-218-990-81	SHORT CHIP	0		
R1179	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1180	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1181	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1182	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1183	1-208-923-11	METAL CHIP	33K	0.5%	1/16W
R1184	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W
R1185	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R1187	1-218-990-81	SHORT CHIP	0		
R1201	1-218-990-81	SHORT CHIP	0		
R1202	1-218-990-81	SHORT CHIP	0		
R1203	1-218-990-81	SHORT CHIP	0		
R1204	1-218-990-81	SHORT CHIP	0		
R1205	1-218-990-81	SHORT CHIP	0		
R1206	1-218-990-81	SHORT CHIP	0		
R1207	1-218-990-81	SHORT CHIP	0		
R1208	1-218-990-81	SHORT CHIP	0		
R1209	1-218-990-81	SHORT CHIP	0		
R1210	1-218-990-81	SHORT CHIP	0		
R1211	1-218-990-81	SHORT CHIP	0		

Ref. No.	Part No.	Description	
R1212	1-218-990-81	SHORT CHIP	0
R1213	1-218-990-81	SHORT CHIP	0
R1214	1-218-990-81	SHORT CHIP	0
R1215	1-218-990-81	SHORT CHIP	0
R1216	1-218-990-81	SHORT CHIP	0
R1217	1-218-990-81	SHORT CHIP	0
R1218	1-218-990-81	SHORT CHIP	0
R1219	1-218-990-81	SHORT CHIP	0
R1220	1-218-990-81	SHORT CHIP	0
R1221	1-218-990-81	SHORT CHIP	0
R1222	1-218-990-81	SHORT CHIP	0
R1223	1-218-990-81	SHORT CHIP	0
R1224	1-218-990-81	SHORT CHIP	0
R1225	1-218-990-81	SHORT CHIP	0
R1226	1-218-990-81	SHORT CHIP	0
R1227	1-218-990-81	SHORT CHIP	0
R1228	1-218-990-81	SHORT CHIP	0
R1229	1-218-990-81	SHORT CHIP	0
R1230	1-218-990-81	SHORT CHIP	0
R1231	1-218-990-81	SHORT CHIP	0
R1232	1-218-990-81	SHORT CHIP	0
R1233	1-218-990-81	SHORT CHIP	0
R1234	1-218-990-81	SHORT CHIP	0
R1235	1-218-990-81	SHORT CHIP	0
R1236	1-218-990-81	SHORT CHIP	0
R1237	1-218-990-81	SHORT CHIP	0
R1238	1-218-990-81	SHORT CHIP	0
R1239	1-218-990-81	SHORT CHIP	0
R1240	1-218-990-81	SHORT CHIP	0
R1241	1-218-990-81	SHORT CHIP	0
R1242	1-218-990-81	SHORT CHIP	0
R1243	1-218-990-81	SHORT CHIP	0
R1244	1-218-990-81	SHORT CHIP	0
R1245	1-218-990-81	SHORT CHIP	0
R1246	1-218-990-81	SHORT CHIP	0
R1247	1-218-990-81	SHORT CHIP	0
R1248	1-218-990-81	SHORT CHIP	0
R1249	1-218-990-81	SHORT CHIP	0
R1250	1-218-990-81	SHORT CHIP	0
R1251	1-218-990-81	SHORT CHIP	0
R1252	1-218-990-81	SHORT CHIP	0
R1253	1-218-990-81	SHORT CHIP	0
R1254	1-218-990-81	SHORT CHIP	0
R1255	1-218-990-81	SHORT CHIP	0
R1256	1-218-990-81	SHORT CHIP	0
R1257	1-218-990-81	SHORT CHIP	0
R1258	1-218-990-81	SHORT CHIP	0
R1259	1-218-990-81	SHORT CHIP	0
R1260	1-218-990-81	SHORT CHIP	0
R1261	1-218-990-81	SHORT CHIP	0
R1262	1-218-990-81	SHORT CHIP	0
R1263	1-218-990-81	SHORT CHIP	0
R1264	1-218-990-81	SHORT CHIP	0
R1265	1-218-990-81	SHORT CHIP	0
R1266	1-218-990-81	SHORT CHIP	0
R1267	1-218-990-81	SHORT CHIP	0
R1268	1-218-990-81	SHORT CHIP	0
R1269	1-218-990-81	SHORT CHIP	0

Ref. No.	Part No.	Description			
R1270	1-218-990-81	SHORT CHIP	0		
R1271	1-218-990-81	SHORT CHIP	0		
R1272	1-218-990-81	SHORT CHIP	0		
R1273	1-218-990-81	SHORT CHIP	0		
R1274	1-218-990-81	SHORT CHIP	0		
R1275	1-218-990-81	SHORT CHIP	0		
R1279	1-216-864-11	SHORT CHIP	0		
R1289	1-218-990-81	SHORT CHIP	0		
R1295	1-218-990-81	SHORT CHIP	0		
R1299	1-218-990-81	SHORT CHIP	0		
R1401	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1403	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1404	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1405	1-218-990-81	SHORT CHIP	0		
R1407	1-218-940-11	RES-CHIP	82	5%	1/16W
R1408	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1412	1-218-990-81	SHORT CHIP	0		
R1413	1-218-947-11	RES-CHIP	330	5%	1/16W
R1414	1-218-990-81	SHORT CHIP	0		
R1416	1-218-990-81	SHORT CHIP	0		
R1421	1-218-990-81	SHORT CHIP	0		
R1422	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1423	1-218-990-81	SHORT CHIP	0		
R1604	1-218-990-81	SHORT CHIP	0		
R1805	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1807	1-218-990-81	SHORT CHIP	0		
R1808	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R1809	1-218-990-81	SHORT CHIP	0		
R1810	1-218-935-11	RES-CHIP	33	5%	1/16W
R1811	1-218-937-11	RES-CHIP	47	5%	1/16W
R1812	1-218-935-11	RES-CHIP	33	5%	1/16W
R1813	1-218-941-81	RES-CHIP	100	5%	1/16W
R1814	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1815	1-218-941-81	RES-CHIP	100	5%	1/16W
R1816	1-218-990-81	SHORT CHIP	0		
R1817	1-218-929-11	RES-CHIP	10	5%	1/16W
R1818	1-218-935-11	RES-CHIP	33	5%	1/16W
R1819	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1820	1-218-990-81	SHORT CHIP	0		
R1821	1-218-990-81	SHORT CHIP	0		
R1822	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R1823	1-218-990-81	SHORT CHIP	0		
R1825	1-218-990-81	SHORT CHIP	0		
R1827	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R1828	1-218-990-81	SHORT CHIP	0		
R1829	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1830	1-218-990-81	SHORT CHIP	0		
R1831	1-218-990-81	SHORT CHIP	0		
R1832	1-218-935-11	RES-CHIP	33	5%	1/16W
R1833	1-218-965-11	RES-CHIP	10K	5%	1/16W
* R2001	1-208-869-11	METAL CHIP	180	0.5%	1/16W
* R2002	1-208-869-11	METAL CHIP	180	0.5%	1/16W
* R2003	1-208-869-11	METAL CHIP	180	0.5%	1/16W
R2004	1-208-677-11	METAL CHIP	560	0.5%	1/16W
R2005	1-208-677-11	METAL CHIP	560	0.5%	1/16W
R2006	1-208-677-11	METAL CHIP	560	0.5%	1/16W
R2007	1-208-677-11	METAL CHIP	560	0.5%	1/16W

Ref. No.	Part No.	Description			
R2008	1-208-677-11	METAL CHIP	560	0.5%	1/16W
R2009	1-208-677-11	METAL CHIP	560	0.5%	1/16W
R2013	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2014	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2015	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2016	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2017	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2018	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2019	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2020	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2021	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2022	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R2023	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R2024	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R2205	1-218-990-81	SHORT CHIP	0		
R2206	1-218-990-81	SHORT CHIP	0		
R2207	1-218-933-11	RES-CHIP	22	5%	1/16W
R2208	1-218-941-81	RES-CHIP	100	5%	1/16W
R2209	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2210	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2211	1-218-990-81	SHORT CHIP	0		
R2212	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2213	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2214	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2215	1-218-990-81	SHORT CHIP	0		
R2217	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2218	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2219	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2220	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2221	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2222	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2223	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2224	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2226	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2227	1-218-990-81	SHORT CHIP	0		
R2228	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2229	1-218-990-81	SHORT CHIP	0		
R2230	1-218-990-81	SHORT CHIP	0		
R2231	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2233	1-218-990-81	SHORT CHIP	0		
R2235	1-218-990-81	SHORT CHIP	0		
R2236	1-218-990-81	SHORT CHIP	0		
R2237	1-218-990-81	SHORT CHIP	0		
R2238	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2239	1-218-990-81	SHORT CHIP	0		
R2401	1-216-864-11	SHORT CHIP	0		
R2402	1-218-990-81	SHORT CHIP	0		
R2605	1-218-941-81	RES-CHIP	100	5%	1/16W
R2606	1-218-990-81	SHORT CHIP	0		
R2607	1-218-941-81	RES-CHIP	100	5%	1/16W
R2608	1-218-990-81	SHORT CHIP	0		
R2609	1-218-990-81	SHORT CHIP	0		
R2610	1-218-990-81	SHORT CHIP	0		
R2611	1-218-990-81	SHORT CHIP	0		
R2612	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2613	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2615	1-218-990-81	SHORT CHIP	0		
R2618	1-218-990-81	SHORT CHIP	0		

Ref. No.	Part No.	Description			
R2619	1-218-990-81	SHORT CHIP	0		
R2620	1-218-990-81	SHORT CHIP	0		
R2622	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2801	1-218-990-81	SHORT CHIP	0		
R2802	1-218-990-81	SHORT CHIP	0		
R2803	1-218-990-81	SHORT CHIP	0		
R2804	1-218-990-81	SHORT CHIP	0		
R3005	1-218-990-81	SHORT CHIP	0		
R3006	1-218-990-81	SHORT CHIP	0		
R3007	1-218-990-81	SHORT CHIP	0		
R3009	1-218-990-81	SHORT CHIP	0		
R3010	1-218-990-81	SHORT CHIP	0		
R3012	1-218-990-81	SHORT CHIP	0		
R3017	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R3018	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R3019	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3020	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3021	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R3022	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R3025	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R3026	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R3027	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3028	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3037	1-218-990-81	SHORT CHIP	0		
R3038	1-218-990-81	SHORT CHIP	0		
R3039	1-218-990-81	SHORT CHIP	0		
R3040	1-218-990-81	SHORT CHIP	0		
R3041	1-218-990-81	SHORT CHIP	0		
R3047	1-218-990-81	SHORT CHIP	0		
R3057	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3103	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3104	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3106	1-218-949-11	RES-CHIP	470	5%	1/16W
R3109	1-218-973-11	RES-CHIP	47K	5%	1/16W
R3110	1-218-979-11	RES-CHIP	150K	5%	1/16W
R3115	1-220-169-11	RES-CHIP	75	5%	1/16W
R3116	1-220-169-11	RES-CHIP	75	5%	1/16W
R3117	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3118	1-220-169-11	RES-CHIP	75	5%	1/16W
R3119	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3161	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3162	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3164	1-218-966-11	RES-CHIP	12K	5%	1/16W
R3165	1-218-966-11	RES-CHIP	12K	5%	1/16W
R3169	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3170	1-218-973-11	RES-CHIP	47K	5%	1/16W
R3171	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3201	1-218-929-11	RES-CHIP	10	5%	1/16W
R3202	1-218-929-11	RES-CHIP	10	5%	1/16W
R3203	1-218-990-81	SHORT CHIP	0		
R3204	1-218-990-81	SHORT CHIP	0		
R3205	1-218-941-81	RES-CHIP	100	5%	1/16W
R3302	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3304	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3307	1-218-990-81	SHORT CHIP	0		
R3308	1-218-990-81	SHORT CHIP	0		
R3309	1-218-990-81	SHORT CHIP	0		

Ref. No.	Part No.	Description			
R3310	1-218-990-81	SHORT CHIP	0		
R3311	1-208-720-11	METAL CHIP	36K	0.5%	1/16W
R3312	1-208-886-81	METAL CHIP	910	0.5%	1/16W
R3313	1-218-935-11	RES-CHIP	33	5%	1/16W
R3314	1-218-935-11	RES-CHIP	33	5%	1/16W
R3315	1-218-935-11	RES-CHIP	33	5%	1/16W
R3316	1-218-935-11	RES-CHIP	33	5%	1/16W
R3317	1-218-935-11	RES-CHIP	33	5%	1/16W
R3318	1-218-935-11	RES-CHIP	33	5%	1/16W
R3319	1-218-935-11	RES-CHIP	33	5%	1/16W
R3320	1-218-935-11	RES-CHIP	33	5%	1/16W
R3321	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R3322	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R3323	1-218-973-11	RES-CHIP	47K	5%	1/16W
R3401	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3402	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3403	1-208-652-11	METAL CHIP	51	0.5%	1/16W
R3404	1-208-652-11	METAL CHIP	51	0.5%	1/16W
R3405	1-208-652-11	METAL CHIP	51	0.5%	1/16W
R3406	1-208-652-11	METAL CHIP	51	0.5%	1/16W
R3407	1-218-990-81	SHORT CHIP	0		
R3408	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3409	1-208-906-81	METAL CHIP	6.2K	0.5%	1/16W
R3410	1-218-990-81	SHORT CHIP	0		
R3411	1-218-990-81	SHORT CHIP	0		
R3412	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3413	1-218-990-81	SHORT CHIP	0		
R3601	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3602	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3605	1-218-973-11	RES-CHIP	47K	5%	1/16W
R3606	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3607	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3608	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3609	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3613	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3614	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3615	1-218-990-81	SHORT CHIP	0		
R3616	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3617	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3618	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3624	1-218-990-81	SHORT CHIP	0		
R3625	1-218-990-81	SHORT CHIP	0		
R3626	1-218-990-81	SHORT CHIP	0		
R3627	1-218-941-81	RES-CHIP	100	5%	1/16W
R3628	1-218-933-11	RES-CHIP	22	5%	1/16W
R3630	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3631	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3632	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3633	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3634	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3635	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3636	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3637	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3638	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3639	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3640	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3641	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3642	1-218-965-11	RES-CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			
R3643	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3644	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3645	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3646	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3647	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3648	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3649	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3650	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R3651	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R3653	1-218-940-11	RES-CHIP	82	5%	1/16W
R3655	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3661	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3663	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R3664	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R3665	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R3666	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3668	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R3672	1-216-864-11	SHORT CHIP	0		
R3673	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3676	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3677	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3678	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3801	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3802	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3803	1-218-941-81	RES-CHIP	100	5%	1/16W
R3806	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3807	1-218-941-81	RES-CHIP	100	5%	1/16W
R3808	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4002	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4003	1-218-949-11	RES-CHIP	470	5%	1/16W
R4004	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4006	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R4007	1-219-570-11	METAL CHIP	10M	5%	1/10W
R4008	1-218-990-81	SHORT CHIP	0		
R4009	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R4010	1-208-893-11	METAL CHIP	1.8K	0.5%	1/16W
R4012	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4013	1-218-945-11	RES-CHIP	220	5%	1/16W
R4015	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4016	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4017	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4018	1-218-965-11	RES-CHIP	10K	5%	1/16W
					(PAL: Z7E/Z7P/Z7C)
R4019	1-218-965-11	RES-CHIP	10K	5%	1/16W
					(NTSC: Z7J/Z7U/Z7N)
R4020	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4022	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R4023	1-218-985-11	RES-CHIP	470K	5%	1/16W
R4025	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R4026	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R4027	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4028	1-216-833-11	METAL CHIP	10K	5%	1/10W
R4029	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4030	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4031	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4032	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4033	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4034	1-218-965-11	RES-CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			
R4035	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4201	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4203	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4204	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4206	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4207	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4208	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4209	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4210	1-218-941-81	RES-CHIP	100	5%	1/16W
R4211	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4212	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4213	1-218-990-81	SHORT CHIP	0		
R4216	1-218-985-11	RES-CHIP	470K	5%	1/16W
R4223	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4224	1-216-864-11	SHORT CHIP	0		
R4226	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4227	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4229	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4230	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4231	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4232	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4233	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4235	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R4236	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R4401	1-218-941-81	RES-CHIP	100	5%	1/16W
R4402	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4403	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4405	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4406	1-218-990-81	SHORT CHIP	0		
R4413	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4414	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4415	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4418	1-218-985-11	RES-CHIP	470K	5%	1/16W
R4420	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4421	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4423	1-218-985-11	RES-CHIP	470K	5%	1/16W
R4424	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4427	1-218-981-91	RES-CHIP	220K	5%	1/16W
R4428	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4429	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4430	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4431	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4432	1-218-975-11	RES-CHIP	68K	5%	1/16W
R4433	1-216-864-11	SHORT CHIP	0		
R4437	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4438	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4439	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4440	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4441	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4442	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4443	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4446	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4601	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R4604	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R4606	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R4607	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R4608	1-218-941-81	RES-CHIP	100	5%	1/16W

Ref. No.	Part No.	Description			
R4610	1-218-944-11	RES-CHIP	180	5%	1/16W
R4611	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W
R4612	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R4613	1-208-923-11	METAL CHIP	33K	0.5%	1/16W
R4614	1-218-969-11	RES-CHIP	22K	5%	1/16W
R4615	1-218-987-11	RES-CHIP	680K	5%	1/16W
R4616	1-218-979-11	RES-CHIP	150K	5%	1/16W
R4617	1-218-947-11	RES-CHIP	330	5%	1/16W
R4618	1-218-969-11	RES-CHIP	22K	5%	1/16W
R4619	1-218-969-11	RES-CHIP	22K	5%	1/16W
R4620	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4629	1-218-990-81	SHORT CHIP	0		
R4637	1-216-295-91	SHORT CHIP	0		
R4653	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R4654	1-218-990-81	SHORT CHIP	0		
R4655	1-208-923-11	METAL CHIP	33K	0.5%	1/16W
R4668	1-218-970-11	RES-CHIP	27K	5%	1/16W
R4669	1-208-709-11	METAL CHIP	12K	0.5%	1/16W
R4678	1-216-864-11	SHORT CHIP	0		
R4689	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4690	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4691	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4695	1-216-295-91	SHORT CHIP	0		
R4705	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4706	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4707	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4714	1-216-295-91	SHORT CHIP	0		
R4717	1-208-918-11	METAL CHIP	20K	0.5%	1/16W
R4718	1-218-990-81	SHORT CHIP	0		
R4719	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R4721	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4722	1-218-977-11	RES-CHIP	100K	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB001	1-234-377-21	RES, NETWORK	4.7K (1005X4)		
RB1001	1-234-375-21	RES, NETWORK	1K (1005X4)		
RB4002	1-234-381-21	RES, NETWORK	100K (1005X4)		
RB4004	1-234-378-11	RES, NETWORK	10K (1005X4)		
RB4005	1-234-375-21	RES, NETWORK	1K (1005X4)		
RB4006	1-234-375-21	RES, NETWORK	1K (1005X4)		
		< SENSOR >			
* SE4201	1-478-556-11	3 AXIS ACCELEROMETER			
		< VIBRATOR >			
* X1401	1-813-907-21	QUARTZ CRYSTAL OSCILLATOR (83.076923MHz)			
* X1402	1-813-906-21	QUARTZ CRYSTAL OSCILLATOR (83.16MHz)			
X3401	1-781-045-21	VIBRATOR, CRYSTAL (24.576MHz)			
X4001	1-781-525-11	VIBRATOR, CRYSTAL (32.768kHz)			
* X4201	1-767-205-81	VIBRATOR, CRYSTAL (20MHz)			
* X4401	1-767-205-81	VIBRATOR, CRYSTAL (20MHz)			

Ref. No.	Part No.	Description			
	A-1486-837-A	UU-005 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
* C6201	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6202	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
* C6203	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
* C6204	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6205	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6206	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6207	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6210	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6211	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6212	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C6213	1-100-581-81	CERAMIC CHIP	0.0047uF	10%	50V
C6214	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C6215	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6216	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6217	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6218	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6219	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6220	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6221	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6222	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C6223	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
* C6224	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
* C6225	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
* C6226	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
* C6227	1-112-746-11	CERAMIC CHIP	4.7uF	10%	6.3V
		< CONNECTOR >			
* CN6201	1-817-560-71	CONNECTOR, FPC (ZIP) 21P			
* CN6202	1-817-910-71	CONNECTOR, FPC (ZIF) 45P			
		< FERRITE BEAD >			
FB6201	1-400-927-31	BEAD, FERRITE (1005)			
FB6202	1-400-927-31	BEAD, FERRITE (1005)			
FB6203	1-400-927-31	BEAD, FERRITE (1005)			
FB6204	1-400-927-31	BEAD, FERRITE (1005)			
		< IC >			
* IC6201	6-712-180-01	IC IR3Y80Y6			
		< COIL >			
L6201	1-400-588-11	INDUCTOR	10uH		
L6202	1-400-588-11	INDUCTOR	10uH		
L6203	1-400-588-11	INDUCTOR	10uH		
L6204	1-400-588-11	INDUCTOR	10uH		
L6205	1-400-588-11	INDUCTOR	10uH		
		< RESISTOR >			
R6206	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R6207	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R6208	1-218-990-81	SHORT CHIP	0		
R6209	1-218-977-11	RES-CHIP	100K	5%	1/16W
R6213	1-218-953-11	RES-CHIP	1K	5%	1/16W

Ref. No.	Part No.	Description			
	A-1486-848-A	WW-005 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C8601	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8603	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< CONNECTOR >			
* CN8601	1-816-645-51	FFC/FPC CONNECTOR (LIF) 14P			
CN8602	1-817-913-41	MEMORY STICK DUO CONNECTOR			
		< DIODE >			
D8601	8-719-064-07	DIODE SML-310LTT86 (MS ACCESS)			
		< FERRITE BEAD >			
FB8601	1-469-581-21	INDUCTOR, FERRITE BEAD (1005)			
FB8602	1-469-581-21	INDUCTOR, FERRITE BEAD (1005)			
		< IC >			
* IC8601	6-708-445-01	IC R1114Q291D-TR-FA			
		< RESISTOR >			
R8601	1-218-951-11	RES-CHIP	680	5%	1/16W
R8602	1-218-953-11	RES-CHIP	1K	5%	1/16W
	A-1486-835-A	XX-016 BOARD, COMPLETE			
		**********			
		(IC5952 is not supplied, but this is included in XX-016 complete board.)			
		< CAPACITOR >			
C5815	1-162-964-11	CERAMIC CHIP	0.001uF	5%	50V
C5816	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C5817	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5818	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5861	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C5862	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C5863	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C5865	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5866	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5867	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5868	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5915	1-162-964-11	CERAMIC CHIP	0.001uF	5%	50V
C5916	1-165-989-11	CERAMIC CHIP	10uF	10%	6.3V
C5917	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5918	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5960	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C5961	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5963	1-100-505-11	CERAMIC CHIP	0.1uF	20%	16V
C5964	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C5965	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C5966	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C5967	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C5968	1-100-671-11	CERAMIC CHIP	4.7uF	20%	25V
C5969	1-100-671-11	CERAMIC CHIP	4.7uF	20%	25V
C5972	1-100-671-11	CERAMIC CHIP	4.7uF	20%	25V
C5973	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5974	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5975	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
* CN5801	1-816-650-51	FFC/FPC CONNECTOR (LIF) 24P			
CN5802	1-820-791-11	XLR CONNECTOR (RECEPTACLE) 3P (INPUT1/INPUT2)			
		< DIODE >			
* D5801	6-501-947-01	DIODE MA2S1110G8S0			
* D5802	6-501-947-01	DIODE MA2S1110G8S0			
* D5803	6-501-947-01	DIODE MA2S1110G8S0			
* D5804	6-501-947-01	DIODE MA2S1110G8S0			
* D5851	6-501-947-01	DIODE MA2S1110G8S0			
* D5852	6-501-947-01	DIODE MA2S1110G8S0			
* D5853	6-501-947-01	DIODE MA2S1110G8S0			
* D5854	6-501-947-01	DIODE MA2S1110G8S0			
* D5855	6-501-947-01	DIODE MA2S1110G8S0			
* D5856	6-501-947-01	DIODE MA2S1110G8S0			
* D5857	6-501-947-01	DIODE MA2S1110G8S0			
* D5858	6-501-947-01	DIODE MA2S1110G8S0			
* D5901	6-501-947-01	DIODE MA2S1110G8S0			
* D5902	6-501-947-01	DIODE MA2S1110G8S0			
* D5903	6-501-947-01	DIODE MA2S1110G8S0			
* D5904	6-501-947-01	DIODE MA2S1110G8S0			
* D5952	6-501-928-01	DIODE MAS3132EGLS0			
D5953	6-501-123-01	DIODE RB160M-60TR			
		< IC >			
* IC5801	6-710-823-01	IC NJM2737RB1 (TE2)			
IC5851	6-706-906-01	IC NJM2732RB1 (TE2)			
* IC5901	6-710-823-01	IC NJM2737RB1 (TE2)			
IC5952	(Not supplied)	IC TK11840LTL-G			
		< COIL >			
L5801	1-400-588-11	INDUCTOR	10uH		
L5802	1-400-588-11	INDUCTOR	10uH		
L5901	1-400-588-11	INDUCTOR	10uH		
L5902	1-400-588-11	INDUCTOR	10uH		
L5951	1-456-499-11	INDUCTOR	4.7uH		
L5953	1-456-499-11	INDUCTOR	4.7uH		
		< TRANSISTOR >			
Q5803	6-551-294-01	TRANSISTOR	MCH6606-TL-E		
Q5804	6-551-294-01	TRANSISTOR	MCH6606-TL-E		
Q5805	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R		
Q5806	6-550-239-01	TRANSISTOR	DTA144EMFS6T2L		
Q5807	6-550-356-01	TRANSISTOR	MCH6616-TL-E		
Q5808	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L		
Q5809	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L		
Q5903	6-551-294-01	TRANSISTOR	MCH6606-TL-E		
Q5904	6-551-294-01	TRANSISTOR	MCH6606-TL-E		
Q5905	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R		
Q5906	6-550-239-01	TRANSISTOR	DTA144EMFS6T2L		
Q5907	6-550-356-01	TRANSISTOR	MCH6616-TL-E		
Q5908	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L		
Q5909	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L		
Q5953	8-729-044-37	TRANSISTOR	2SK3019TL		

Ref. No.	Part No.	Description			
Q5954	8-729-048-72	TRANSISTOR	2SK2615		
Q5955	8-729-117-32	TRANSISTOR	2SC4177-L6		
* Q5956	6-551-877-01	TRANSISTOR	2SC6054GR8S0		
* Q5957	6-551-877-01	TRANSISTOR	2SC6054GR8S0		
Q5958	8-729-119-64	TRANSISTOR	2SA811A-C17		
Q5959	8-729-119-64	TRANSISTOR	2SA811A-C17		
		< RESISTOR >			
R5801	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5802	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5803	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5804	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5805	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R5806	1-218-985-11	RES-CHIP	470K	5%	1/16W
R5807	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5808	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R5809	1-218-985-11	RES-CHIP	470K	5%	1/16W
R5810	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5811	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5812	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5813	1-216-817-11	METAL CHIP	470	5%	1/10W
R5814	1-216-817-11	METAL CHIP	470	5%	1/10W
R5815	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R5816	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R5817	1-218-981-91	RES-CHIP	220K	5%	1/16W
R5818	1-218-981-91	RES-CHIP	220K	5%	1/16W
R5821	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5822	1-218-857-11	METAL CHIP	2.7K	0.5%	1/10W
R5823	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5824	1-218-857-11	METAL CHIP	2.7K	0.5%	1/10W
R5825	1-216-809-11	METAL CHIP	100	5%	1/10W
R5826	1-216-809-11	METAL CHIP	100	5%	1/10W
R5832	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5833	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5834	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5835	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5836	1-218-981-91	RES-CHIP	220K	5%	1/16W
R5837	1-218-981-91	RES-CHIP	220K	5%	1/16W
R5838	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5839	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5840	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5841	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R5842	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5843	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5851	1-218-901-11	METAL CHIP	180K	0.5%	1/10W
R5852	1-218-901-11	METAL CHIP	180K	0.5%	1/10W
R5853	1-218-901-11	METAL CHIP	180K	0.5%	1/10W
R5854	1-218-901-11	METAL CHIP	180K	0.5%	1/10W
R5855	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R5856	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R5857	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R5858	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R5859	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5860	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5861	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5862	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5863	1-208-911-11	METAL CHIP	10K	0.5%	1/16W

Ref. No.	Part No.	Description			
R5864	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5865	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5866	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5867	1-216-809-11	METAL CHIP	100	5%	1/10W
R5868	1-216-809-11	METAL CHIP	100	5%	1/10W
R5901	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5902	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5903	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5904	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5905	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R5906	1-218-985-11	RES-CHIP	470K	5%	1/16W
R5907	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5908	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R5909	1-218-985-11	RES-CHIP	470K	5%	1/16W
R5910	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5911	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5912	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5913	1-216-817-11	METAL CHIP	470	5%	1/10W
R5914	1-216-817-11	METAL CHIP	470	5%	1/10W
R5915	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R5916	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R5917	1-218-981-91	RES-CHIP	220K	5%	1/16W
R5918	1-218-981-91	RES-CHIP	220K	5%	1/16W
R5921	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5922	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5923	1-218-857-11	METAL CHIP	2.7K	0.5%	1/10W
R5924	1-218-857-11	METAL CHIP	2.7K	0.5%	1/10W
R5925	1-216-809-11	METAL CHIP	100	5%	1/10W
R5926	1-216-809-11	METAL CHIP	100	5%	1/10W
R5932	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5933	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5934	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5935	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5936	1-218-981-91	RES-CHIP	220K	5%	1/16W
R5937	1-218-981-91	RES-CHIP	220K	5%	1/16W
R5938	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5939	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5940	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5941	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R5942	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5943	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5960	1-218-989-11	RES-CHIP	1M	5%	1/16W
R5961	1-208-883-81	METAL CHIP	680	0.5%	1/16W
R5962	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5963	1-208-893-11	METAL CHIP	1.8K	0.5%	1/16W
R5964	1-208-955-11	METAL CHIP	680K	0.5%	1/16W
R5965	1-208-944-81	METAL CHIP	240K	0.5%	1/16W
R5966	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R5967	1-218-970-11	RES-CHIP	27K	5%	1/16W
R5968	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5969	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5970	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5971	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5972	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5973	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5974	1-216-837-11	METAL CHIP	22K	5%	1/10W
R5975	1-216-837-11	METAL CHIP	22K	5%	1/10W

Ref. No.	Part No.	Description			
R5976	1-208-894-81	METAL CHIP	2K	0.5%	1/16W
R5981	1-216-817-11	METAL CHIP	470	5%	1/10W
R5982	1-216-817-11	METAL CHIP	470	5%	1/10W
R5983	1-216-817-11	METAL CHIP	470	5%	1/10W
R5984	1-216-817-11	METAL CHIP	470	5%	1/10W
R5985	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5986	1-218-977-11	RES-CHIP	100K	5%	1/16W

	A-1486-839-A	YY-005 BOARD, COMPLETE	
		**********	
		< CONNECTOR >	
* CN6601	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P	
* CN6602	1-691-386-51	CONNECTOR, FFC/FPC 22P	
CN6603	1-817-920-11	CONNECTOR, FPC (ZIF) 80P	
* CN6604	1-817-283-71	CONNECTOR, FPC (ZIF) 51P	

	A-1486-840-A	ZZ-005 BOARD, COMPLETE	
		**********	
		(BT7001 is not included in ZZ-005 complete board.)	
		< BATTERY HOLDER >	
⚠*BH7001	1-756-615-51	HOLDER, BATTERY (Note)	
		< BATTERY >	
⚠BT7001	1-756-134-12	BATTERY, STORAGE, LITHIUM (Note)	
		< CONNECTOR >	
* CN7001	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P	
CN7002	1-816-928-11	PIN, CONNECTOR 22P	
CN7003	1-778-506-21	PIN, CONNECTOR (PC BOARD) 2P	
CN7004	1-817-920-11	CONNECTOR, FPC (ZIF) 80P	
CN7005	1-794-375-21	PIN, CONNECTOR 2P	
* CN7006	1-816-650-51	FFC/FPC CONNECTOR (LIF) 24P	
* CN7007	1-817-459-71	CONNECTOR, FPC (ZIF) 14P	
* CN7008	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P	
		< TRANSISTOR >	
Q7001	6-550-238-01	TRANSISTOR	DTA114EMFS6T2L
Q7002	6-550-238-01	TRANSISTOR	DTA114EMFS6T2L
Q7003	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q7004	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q7005	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
		< VARISTOR >	
VDR701	1-801-862-11	VARISTOR, CHIP (1608)	

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

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

Note: Replace the battery holder (BH7001) together when replacing the lithium battery (BT7001) on the ZZ-005 board. (The battery holder removed once cannot be used again.)
When mounting these parts, mount new battery holder first and attach new lithium battery next.

Note: ZZ-005基板のリチウム電池（BT7001）を交換する場合はバッテリホルダ（BH7001）も同時に新品に交換してください。（一度使用したバッテリホルダは再使用できません。）
部品取り付けの際は，先にバッテリホルダを取り付けてからリチウム電池を装着してください。

• Refer to page 5-1 for mark ⚠.

Ver. 1.5 2009.02

The changed portions from
Ver. 1.4 are shown in blue.

• EXCEPT J MODEL

Checking supplied accessories. **to J MODEL**

Note 1: This item is supplied with the unit as an accessory, but is not prepared as a service part.

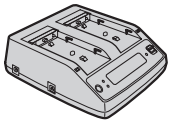
Note 2: Refer to following service manual whan you repair.
• Memory Recording Unit
HVR-MRC1 Service Manual (9-852-266-1□)



Carl Zeiss Lens
VCL-412BWH
(Refer to page 5-3)



Large Eyecup
2-892-124-01



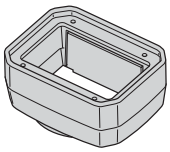
AC Adaptor/Charger
AC-VQ1050
⚠ 1-479-580-12



Wireless Remote Commander
RMT-831
1-478-495-41



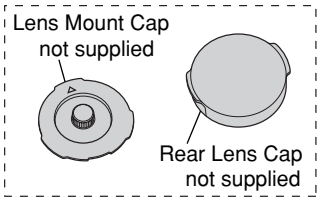
Memory Recording Unit
HVR-MRC1
(Note 2)



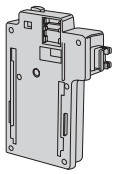
Lens Hood with Lens Cover
X-2188-618-1



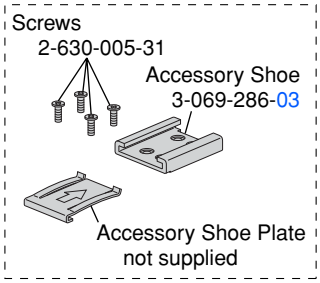
A/V Connecting Cable
1-823-156-61



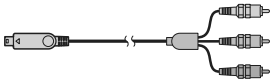
Lens Mount Cap Ass'y
X-2188-940-1



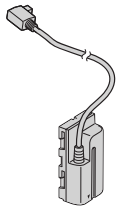
i.LINK Cradle
HVRA-CR1
(Note 2)



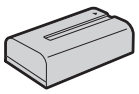
Accessory Shoe Kit
X-2188-877-2



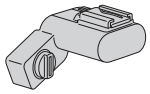
Component Video Cable
1-829-414-61



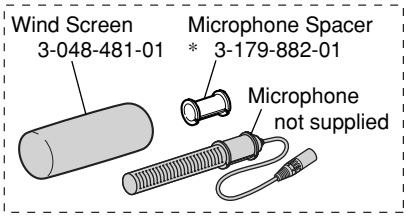
Connecting Cord
DK-415
1-782-361-15



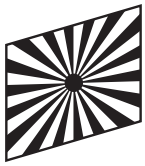
Rechargeable Battery Pack
NP-F570
(Note 1)



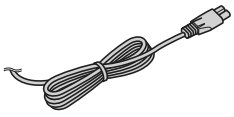
Accessory Shoe Adaptor
X-2188-619-3



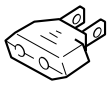
Wind Screen, Microphone
ECM-XM1
1-542-749-11



Test Chart for Flange Focal Length Adjustment
3-291-529-01



Power Cord
⚠ 1-790-107-61 (Z7U)
⚠ 1-834-482-21 (Z7E/Z7N/Z7P)
⚠ 1-832-121-31 (Z7C)



Conversion (2P) Adaptor
⚠ 1-569-008-12 (Z7N)

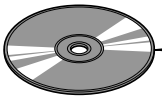
• Refer to page 5-1 for mark ⚠.

Ver. 1.5 2009.02

The changed portions from
Ver. 1.4 are shown in blue.



Operating Guide
3-280-847-12 (ENGLISH) (Z7U/Z7N)
3-280-848-12 (ENGLISH) (Z7E/Z7P)
3-280-848-23 (SIMPLIFIED CHINESE) (Z7C)



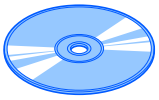
CD-ROM
“Manuals for Digital HD
Video Camera Recorder”
3-280-845-04



Operating Guide (PDF)

The CD-ROM supplied contains all of language version of the Operating Guide (PDF) for printing.
- The printed matter is not supplied. If required, please order it with the part number below.
- (Only for destination Japanese model)
  日本国内については日本語のみが印刷での部品供給可能です。

3-280-847-02 (JAPANESE)
3-280-847-12 (ENGLISH)
* 3-280-847-23 (FRENCH)
3-280-848-12 (ENGLISH)
3-280-848-23 (SIMPLIFIED CHINESE)
* 3-280-848-33 (FRENCH)
* 3-280-848-43 (SPANISH)
* 3-280-848-53 (ITALIAN)
* 3-280-848-63 (GERMAN)



CD-ROM
“Nonlinear editing software”
4-124-517-01

Ver. 1.5 2009.02

Ver. 1.4からの変更部分は
青色で記載されています。

• J MODEL

付属品

Note：修理に関しては下記のサービスマニュアルを参照してください。
• Memory Recording Unit
HVR-MRC1 Service Manual (9-852-266-1□)



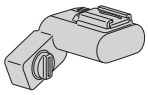
カールツァイスレンズ
VCL-412BWH
(5-3ページ参照)



大型アイカップ
2-892-124-01



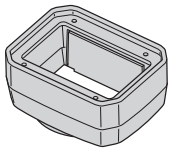
ワイヤレスリモコン
RMT-831
1-478-495-41



アクセサリーシューアダプター
X-2188-619-3



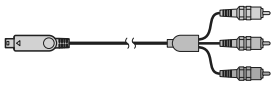
メモリーレコーディング
ユニット
HVR-MRC1
(Note)



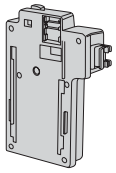
レンズカバー付きフード
X-2188-618-1



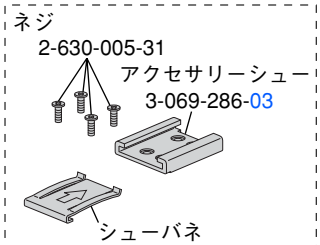
A/V接続ケーブル
1-823-156-61



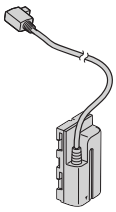
コンポーネントビデオケーブル
1-829-414-61



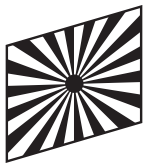
i.LINKクレードル
HVRA-CR1
(Note)



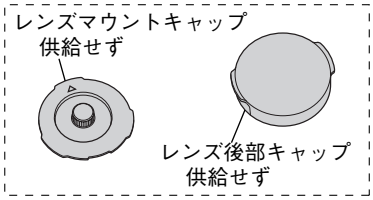
アクセサリーシューキット
X-2188-877-2



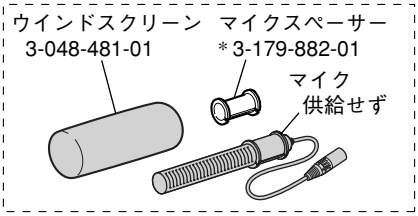
接続コード
DK-415
1-782-361-15



フランジバック調整用チャート
3-291-529-01



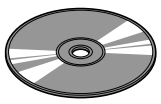
レンズマウントキャップ組立
X-2188-940-1



ウインドスクリーン，マイク
ECM-XM1
1-542-749-11



取扱説明書
3-280-847-02 (日本語)



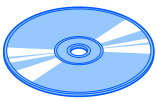
CD-ROM
「Manuals for Digital HD
Video Camera Recorder」
3-280-845-04



取扱説明書 (PDF)

印刷用の取扱説明書（PDF）は全ての言語が付属品の
CD-ROMに含まれています。

3-280-847-02 (日本語)



CD-ROM
「ノンリニア編集ソフトウェア」
4-124-517-01

6. ADJUSTMENTS

Link

- Before starting adjustments
  - Adjusting items when replacing main parts and boards
  - List of service tools
- CAMERA SECTION ADJUSTMENTS
  - PREPARATIONS BEFORE ADJUSTMENTS
  - INITIALIZATION OF EVR DATA
  - CAMERA SYSTEM ADJUSTMENTS
  - ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS
  - LCD SYSTEM ADJUSTMENTS
  - ENG ADJUSTMENTS
- MECHANISM SECTION ADJUSTMENTS
  - PREPARATIONS FOR CHECK, ADJUSTMENT AND REPLACEMENT OF MECHANISM BLOCK
  - PERIODIC INSPECTION AND MAINTENANCE
  - CHECK, ADJUSTMENT AND REPLACEMENT OF MECHANICAL PARTS
  - ADJUSTMENT
- VIDEO SECTION ADJUSTMENTS
  - PREPARATIONS BEFORE ADJUSTMENTS
  - SYSTEM CONTROL SYSTEM ADJUSTMENTS
  - SERVO AND RF SYSTEM ADJUSTMENTS
  - VIDEO SYSTEM ADJUSTMENTS
  - AUDIO SYSTEM ADJUSTMENTS
- SERVICE MODE
  - ADJUSTMENT REMOTE COMMANDER (RM-95)
  - ADJUSTMENT REMOTE COMMANDER (NEW LANC JIG)
  - DATA PROCESS
  - SERVICE MODE

SECTION 6
ADJUSTMENTS

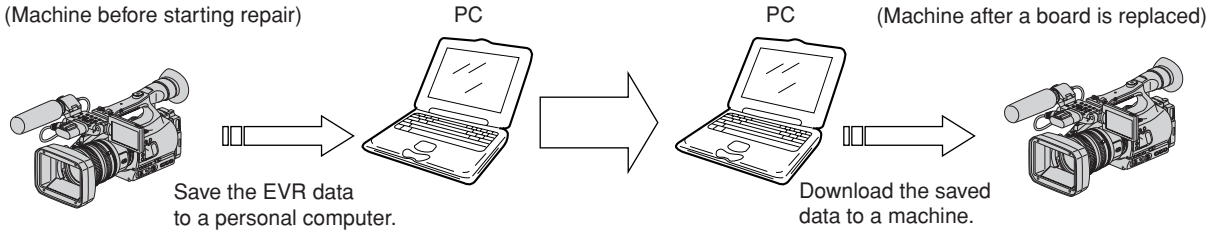
1. Before starting adjustments

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

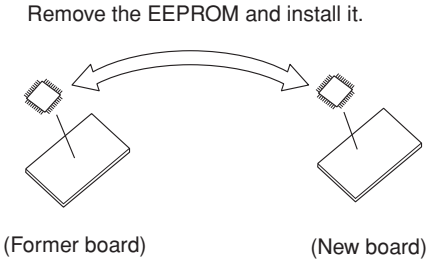
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



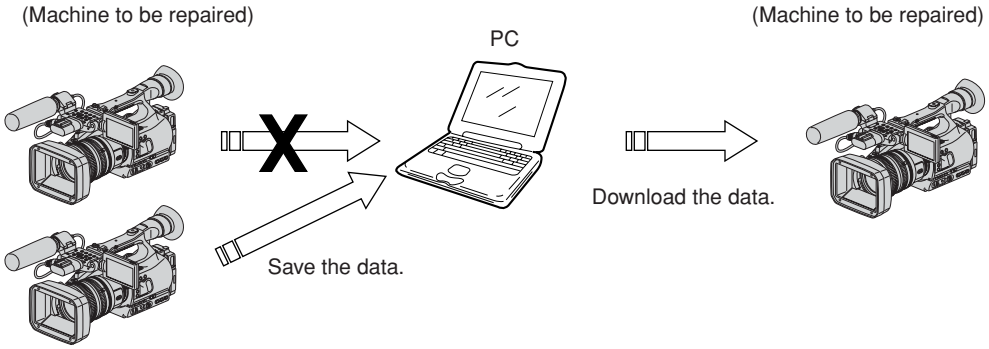
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-3 for the items to be checked)

1-1. Adjusting items when replacing main parts and boards

• Adjusting items when replacing main parts

When replacing main parts, adjust the items indicated by ● in the following table.

Note 1: When replacing the drum assy or the mechanism deck, reset the data of page: 7, address: A8 to AB to "00". (Refer to "Record of Use check" of "6-4. SERVICE MODE")

Note 2: If the lens is broken, it must be replace with the already adjusted lens.

Adjustment Section	Adjustment	Replaced part																					
		Block replacement										Mounted part replacement											
		Lens block (Note 2)	Camera mount (TZ253B)	PRISM device (Incling EE-009 and EE-010 board and CMOS imager (IC3001/IC6001))	LCD block LCD901 (LCD panel)	LCD block D901 (Backlight)	EVF block LCD902 (LCD panel)	Mechanism deck (Note 1)	Mechanism deck M901 (Drum assembly) (Note 1)	Mechanism deck MD block		GY-005 board SE8501, 8502 (PITCH, YAW sensor)	TT-007 board X1401, 1402 (Oscillator)	TT-007 board SE4201 (3 Axis accelerometer)	TT-007 board IC1401 (Camera signal processor)	TT-007 board IC1801 (Base band signal processor, etc.)	TT-007 board IC2601 (DV signal processor, etc.)	TT-007 board IC3101 (Video out, etc.)	TT-007 board IC2001 (Component out AMP)	NN-005 board IC5201 (REC/PB AMP)	UU-005 board IC6201 (EVF drive)	PP-005 board IC6001 (LCD drive)	
Initialization of EVR data	Initialization of A, B, D, 1A, 1B page data																						
	Initialization of 8, 9, C, 13, 18, 1C, 1D, 1E page data																						
	Initialization of camera control page data																						
Camera	Origin oscillation check												●										
	Level vial adj.													●									
	ND filter switch adj.		●																				
	Coaxial harness connecting check			●																			
	Flange back adj. (body) Optical path differencial adj.		●	●																			
	Black balance adj.		●	●												●							
	Linear matrix adj.		●	●												●							
	Auto white balance standard data input		●	●												●							
	LV standard data input		●	●												●							
	STD GAIN adj.		●	●												●							
	Auto white balance adj.		●	●												●							
	Color reproduction adj.		●	●												●							
	White defect adj.		●	●																			
	Black defect adj.		●	●																			
	Angular velocity sensor sensitivity adj.											●											
	Flange back adj. (Set)		●	●																			
EVF	EVF gain adj.																				●		
LCD	PANEL gain adj.																●						●
	V-COM adj.				●																		●
	Transmissive mode white balance adj.				●	●																	●
ENG	Lens jack supply voltage check																						
	Iris control adj.																						
	Iris position adj.																						
Mechanism	Tape path adj.							●	●	●													
System control	Node uniqe ID No. input																						
Servo, RF	CAP FG duty adj.							●		●													
	Switching position adj.							●	●	●													
	Error rate check							●	●	●								●			●		
Video	S VIDEO OUT Y level adj.																●		●				
	S VIDEO OUT chroma level adj.																●		●				
	VIDEO OUT level check																●		●				
	COMPONENT OUT Y level adj.																●			●			
	COMPONENT OUT Pr level adj.																●			●			
	COMPONENT OUT Pb level adj.																●			●			

Table 6-1-1 (1)

• Adjusting items when replacing a board or EEPROM

When replacing a board or EEPROM, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced part										
		GY-005 board (COMPLETE)	LG-005 board (Note 4, 5) (COMPLETE)	TT-007 board (COMPLETE)	NN-005 board (COMPLETE)	UU-005 board (COMPLETE)	PP-005 board (COMPLETE)	TT-007 board IC3805 (EEPROM)	TT-007 board IC4202 (EEPROM)	TT-007 board IC4205 (EEPROM)	TT-007 board IC4207 (EEPROM)	Supporting RadarW
Initialization of EVR data	Initialization of A, B, D, 1A, 1B page data			●				●				
	Initialization of 8, 9, C, 13, 18, 1C, 1D, 1E page data			●								
	Initialization of camera control page data			●					●	●		
Camera	Origin oscillation check			●								
	Level vial adj.			●								
	ND filter switch adj.			●					●			●
	Coaxial harness connecting check			●					●			●
	Flange back adj. (body) Optical path defferencial adj.			●					●			●
	Black balance adj.			●					●			●
	Linear matrix adj.			●					●			●
	Auto white balance standard data input			●					●			●
	LV standard data input			●					●			●
	STD GAIN adj.			●					●			●
	Auto white balance adj.			●					●			●
	Color reproduction adj.			●					●			●
	White defect adj.			●					●			●
	Black defect adj.			●					●			●
	Angular velocity sensor sensitivity adj.	●		●								
	Flange back adj. (Set)			●					●			●
EVF	EVF gain adj.			●		●						
LCD	PANEL gain adj.			●			●					●
	V-COM adj.			●			●					
	Transmissive mode white balance adj.			●			●					
ENG	Lens jack supply voltage check			●								
	Iris control adj.			●					●			●
	Iris position adj.			●					●			●
Mechanism	Tape path adj.											
System control	Node uniqe ID No. input			●								
Servo, RF	CAP FG duty adj.			●	●							●
	Switching position adj.			●	●							●
	Error rate check			●	●							●
Video	S VIDEO OUT Y level adj.			●								
	S VIDEO OUT chroma level adj.			●								
	VIDEO OUT level check			●								
	COMPONENT OUT Y level adj.			●								
	COMPONENT OUT Pr level adj.			●								
	COMPONENT OUT Pb level adj.			●								

Table 6-1-1 (2)

Note 3: IC2402, IC3804 (Flash memory) on the TT-007 board cannot be replaced.

Note 4: If the LG-005 board was damaged, replace the board or lens block.

Note 5: The data cannot be extracted from the EEPROM (IC6005) on the LG-005 board.
If the repair is required, remove the EEPROM from the LG-005 board and reuse it, or replace the board or lens block.

1-2. List of service tools

- Oscilloscope
- Color monitor
- Vectorscope
- Digital voltmeter
- Frequency counter
- Audio level meter
- Audio generator
- Audio attenuator
- Calculating machine capable of calculating hexadecimal numbers

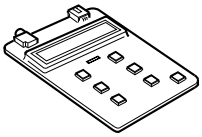
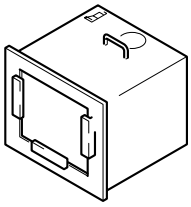
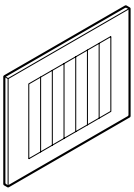
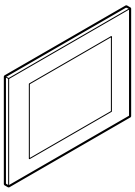
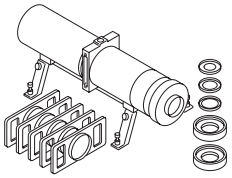
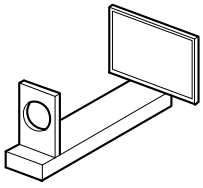
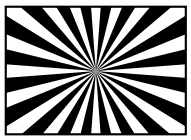
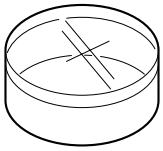
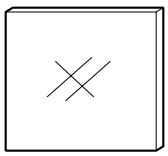
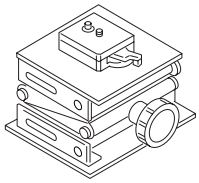
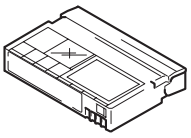
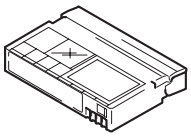
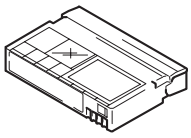
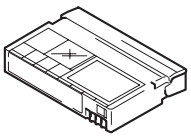
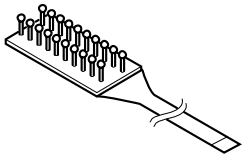
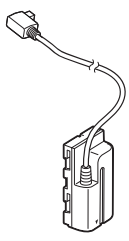
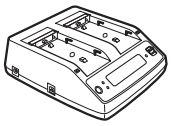
J-1  Adjustment remote commander (RM-95) J-6082-053-B	J-2  Adjustment remote commander (NEW LANC JIG) J-6082-565-A	J-3  LANC cable J-6082-442-A
J-4  Small pattern box PTB-1450 J-6082-557-A	J-5  Color bar chart For PTB-1450: J-6082-559-A	J-6  Clear chart For PTB-1450: J-6082-560-A
J-7  Minipattern box J-6082-353-B	J-8  Flange back adjustment jig J-6082-563-A	J-9  Siemens star chart J-6080-875-A
J-10  Filter for color temperature correction (C14) J-6080-058-A	J-11  ND filter 1.0 J-6080-808-A ND filter 0.4 J-6080-806-A ND filter 0.1 J-6080-807-A	J-12  Camera table J-6082-384-A
J-13  Tracking standard (XH2-1A1) 8-967-999-03	J-14  SW/OL standard (XH2-3) 8-967-997-11	J-15 Audio operation check  for NTSC (XH5-3) 8-967-997-51 for PAL (XH5-3P) 8-967-997-55
J-16 System operation check  for NTSC (XH5-5) 8-967-997-61 for PAL (XH5-5P) 8-967-997-66	J-17  CPC-13 jig J-6082-443-A	J-18  Connecting Cord (DK-415) 1-782-361-15
J-19  AC Adaptor/Charger (AC-VQ1050) 1-479-580-12		

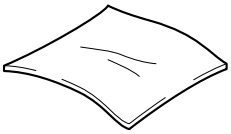
Fig. 6-1-1 (1)

J-20



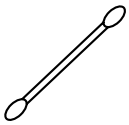
Head cleaning liquid
9-919-573-01

J-21



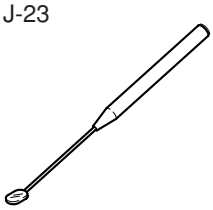
Wiping cloth
7-741-900-53

J-22



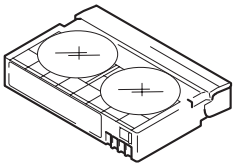
Super-fine applicator
(made by Nippon
Applicator (P752D))

J-23



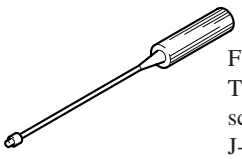
Mirror
(small oval type)
J-6080-840-A

J-24



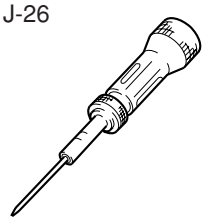
Mini DV
torque cassette
J-6082-360-A

J-25



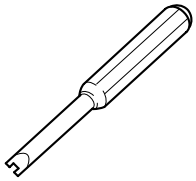
FWD/BACK
T adjustment
screwdriver
J-6082-364-A

J-26



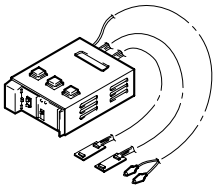
Torque screwdriver
J-9049-330-A

J-27



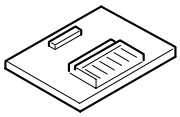
Tape path
screwdriver
J-6082-026-A

J-28



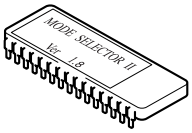
Mode Selector II
J-6082-282-B

J-29



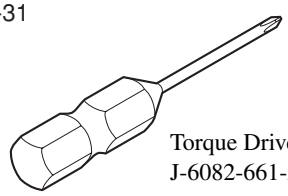
Mode Selector II
conversion board (N)
J-6082-567-A

J-30



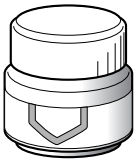
Mode Selector II
ROM (Note1)
J-6082-314-G

J-31



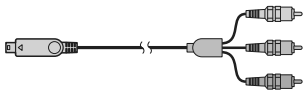
Torque Driver Bit (#0)
J-6082-661-A

J-32



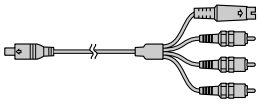
Suncall Grease
(FG-87HSR)
7-640-006-08

J-33



Component Video Cable
(1-829-414-61)

J-34



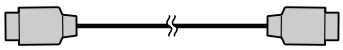
A/V Connecting Cable (1.5 m)
(with S Video terminal)
(1-823-156-13)

J-35



A/V Connecting Cable
1-823-156-61

J-36



HDMI Cable
(Optional)

Fig. 6-1-1 (2)

Note 1: This is the ROM used for upgrading the version of Mode Selector II to enable it to be used for the N mechanism. Set the indication to "Z" when using the mode selector II.

6-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENTS (CAMERA SECTION)

1-1-1. Preparations

Note: Before perform the adjustment, check that the data of page:
0, address: 10 is “00”.
If not, select page: 0, address: 10, and set data “00”.

1) Connect the equipment for adjustments according to Fig. 6-1-2.

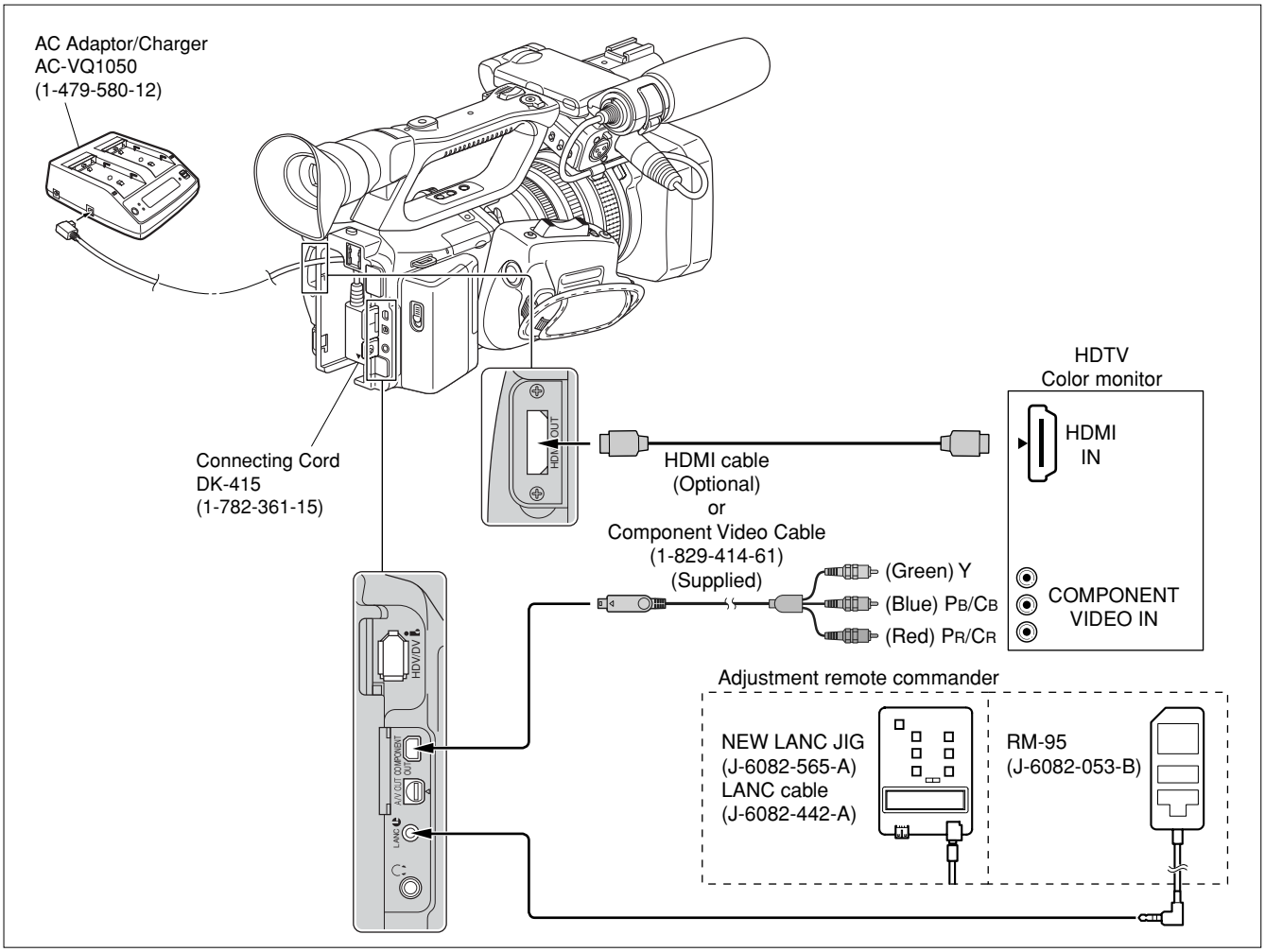


Fig. 6-1-2

1-1-2. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch ..... CAMERA
2. FOCUS ring (Lens block) ..... Mode A
3. ND FILTER 1
4. ZOOM switch (Lens block) ..... SERVO
5. AUTO/MANUAL switch ..... AUTO
6. ASSIGN4/ZEBRA switch ..... OFF
7. ASSIGN5/AE SHIFT 0
8. PICTURE PROFILE switch ..... OFF
9. MENU settings
   - CAMERA SET menu
     - BACK LIGHT ..... OFF
     - SPOT LIGHT ..... OFF
     - STEADYSHOT ..... OFF
     - D. EXTENDER ..... OFF
   - IN/OUT REC menu
     - REC FORMAT HDV1080i

2. Order of Adjustments

Basically carry out adjustments in the order given.

Color bar chart (Color reproduction adjustment frame)

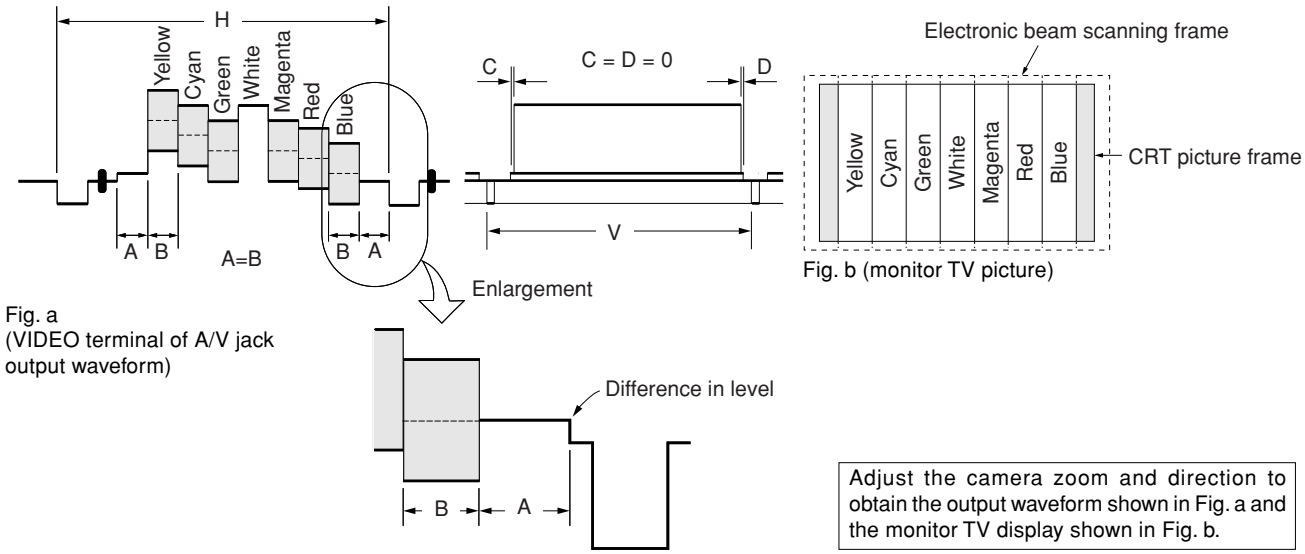


Fig. 6-1-3

3. Subjects

1) Color bar chart (Color reproduction adjustment frame)
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-3. (Color reproduction adjustment frame)
2) Clear chart (Color reproduction adjustment frame)
   Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time)

4. Setting Distance between Pattern Box and Camera

Set the distance from the front of the lens to the pattern box as shown in Fig. 6-1-4.

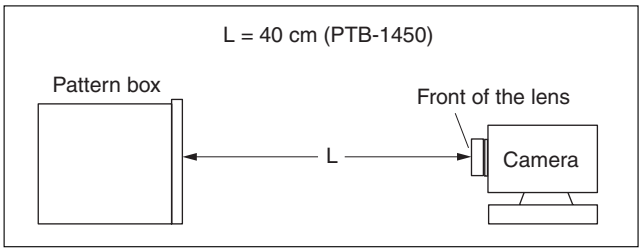
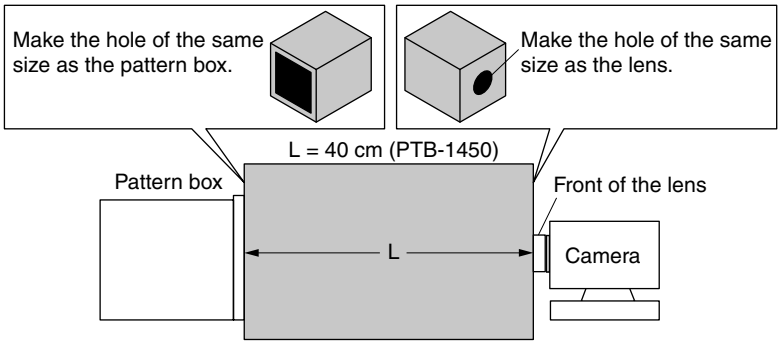


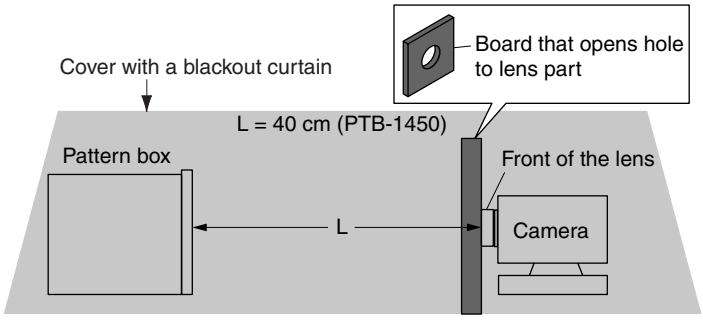
Fig. 6-1-4

5. Precautions When Using Pattern Box

1) It takes about 30 minutes for pattern box to stabilize its brightness.
   Turn on the pattern box 30 minutes before the adjustment starts.
2) Make arrangement so that the outside light does not enter the chart surface in the pattern box.
   Also, place a board between chart and camera, and make a hole at the lens part of the board so that the camera is not reflected in the shot image screen.
   (Adjustment may not be performed correctly due to the influence of outside light.)
   Example 1: Place a box to block a section between pattern box and camera.



Example 2: Place a board having a hole in front of the camera and cover the pattern box and camera with a blackout curtain



3) Control of color chart
   The color chart will fade if it is exposed to direct sunlight or strong light.
   Since the fading of color chart progresses even with the light in the pattern box, remove and store the color chart when it is not used.
   Remove the color chart and store it.
   Store the color chart in a place not exposed to direct light, avoiding high temperature and humidity.
   Use the color chart for about three years, and afterward replace it with a new chart.

1-2. INITIALIZATION OF EVR DATA

Note 1: Pages used for the EVR consists of 42 pages. There are 8, 9, A, B, C, D, 13, 18, 1A, 1B, 1C, 1D, 1E, 6D, 6E, 6F, 8C, 8D, 8E, 8F, 9C, 9D, 9E, 9F, AD, AE, AF, BF, C2, C3, C4, C5, C6, C7, C8, C9, CA, CB, CC, CD, CE, CF pages.

Note 2: If 2-digit page is selected, set higher-order digit to page: 0, address: 10 as data, and then select lower-order digit by a usual method.
e.g.: Set data: 06 to page: 0, address: 10, and then select page: D. Thus, the page 6D can be selected.

1-2-1. Initialization of A, B, D, 1A, 1B Page Data

Note: Check that the data of page: 0, address: 10 is "00".

1. Initializing of A, B, D, 1A, 1B Page Data

Note: If the A, B, D, 1A, 1B page data has been initialized, the following adjustments need to be performed again.
1) Modification of A, B, D, 1A, 1B page data
2) Level vial adjustment

Adjustment Page	A
Adjustment Address	10 to FF
Adjustment Page	B
Adjustment Address	00 to FF
Adjustment Page	D
Adjustment Address	10 to FF
Adjustment Page	1A
Adjustment Address	00 to FF
Adjustment Page	1B
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	2	27		Check the bit2 value. 1: NTSC model 0: PAL model
4	7	04		Set the following data 10: NTSC model 11: PAL model
5	7	01		Set the following data 20: Initializing A page 21: Initializing B page 22: Initializing D page 23: Initializing 1A page 24: Initializing 1B page 25: Initializing A and 1A page 26: Initializing B and 1B page 28: Initializing A, B, D, 1A and 1B page
6	7	02	FF	
7	7	00	01	Press PAUSE (Write) button.
8	7	02		Check the data changes to "01".
9				Perform "Modification of A, B, D, 1A, 1B Page Data"

2. Modification of A, B, D, 1A, 1B Page Data

If the A, B, D, 1A, 1B page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages A, B, D, set data: 00 to page: 0, address: 10, and then select pages A, B, D.
3) If modification of data on pages 1A, 1B, set data: 01 to page: 0, address: 10, and then select pages A, B.
   After the modification of data finished, return the data on page: 0, address: 10 to "00".
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note 1: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification A, B, D, 1A, 1B page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE (Write) button.

Note 2: If following symptoms occur after completing of the "Modification A, B, D, 1A, 1B page data", check that the data of the "Fixed data-2" address of A, B, D, 1A, 1B page are same as those of same model of same destination.
1) The power is shut off so that unit cannot operate.

3. A Page table

Note 1: Check that the data of page: 0, address: 10 is“00”.

Note 2: Fixed data-1: Initialized data. (Refer to“1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to“2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10	00	00	Test mode
11 to 17	Fixed data-1 (Initialized data)		
18	Fixed data-2		
19 to EF	Fixed data-1 (Initialized data)		
F0	Fixed data-2		
F1			
F2			
F3			
F4, F5	Fixed data-1 (Initialized data)		
F6	27	27	Level vial adj.
F7	DE	DE	
F8	28	28	
F9	18	18	
FA	28	28	
FB	22	22	
FC to FF	Fixed data-1 (Initialized data)		

4. B Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

5. D Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10 to FF	Fixed data-1 (Initialized data)		

6. 1A Page table

Note 1: If reading/writing data on pages 1A, set data: 01 to page: 0, address: 10, and then select pages: A. By this data setting, the pages 1A can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

7. 1B Page table

Note 1: If reading/writing data on pages 1B, set data: 01 to page: 0, address: 10, and then select pages: B. By this data setting, the pages 1B can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

1-2-2. Initialization of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data

1. Initializing of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data

Note 1: If "Initialization of Pages 8, 9, C, 13, 18, 1C, 1D, 1E" is executed, all data on pages 8, 9, C, 13, 18, 1C, 1D, 1E are initialized. (Only an individual page cannot be initialized)

Note 2: If the 8, 9, C, 13, 18, 1C, 1D, 1E page data has been initialized, the following adjustments need to be performed again.

1) Modification of 8, 9, C, 13, 18, 1C, 1D, 1E page data
2) Electronic viewfinder system adjustments (if all areas were initialized)
3) LCD system adjustments (if all areas were initialized)
4) Node unique ID No. input (if all areas were initialized)
5) Servo, RF system adjustments (if all areas were initialized)
6) Video system adjustments (if all areas were initialized)

Adjustment Page	8
Adjustment Address	00 to FF
Adjustment Page	9
Adjustment Address	00 to FF
Adjustment Page	C
Adjustment Address	10 to FF
Adjustment Page	13
Adjustment Address	00 to FF
Adjustment Page	18
Adjustment Address	00 to FF
Adjustment Page	1C
Adjustment Address	00 to FF
Adjustment Page	1D
Adjustment Address	00 to FF
Adjustment Page	1E
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	81		Set the following data, and press PAUSE (Write) button. (Note 3) 00: Initializing all areas 01: Initializing other than adjustment address
4	3	80	0C	Press PAUSE (Write) button.
5	3	80		Check the data changes to "1C".
6				Perform "Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data"

Note 3: If other than adjustment address was initialized, the adjusted data is not initialized.

2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data

If the 8, 9, C, 13, 18, 1C, 1D, 1E page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Processing before Modification 8, 9, C, 13, 18, 1C, 1D, 1E page data:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	71	01	Press PAUSE (Write) button.

Modifying Method:

1) If modification of data on pages 8, 9, C, set data: 00 to page: 0, address: 10, and then select pages 8, 9, C.
2) If modification of data on pages 13, 18, 1C, 1D, 1E, set data: 01 to page: 0, address: 10, and then select pages 3, 8, C, D, E. After the modification of data finished, return the data on page: 0, address: 10 to "00".
3) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
4) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
5) If all areas were initialized, check that the data at the addresses for adjustment are initial values (adjustment initial values) listed in the table.
   If different, change them to the adjustment initial values.

Processing after Completing Modification 8, 9, C, 13, 18, 1C, 1D, 1E page data:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	70	10	Press PAUSE (Write) button.
4	3	70		Check the data changes to "11".
5	2	00	29	
6	2	01	29	Press PAUSE (Write) button.

3. 8 Page table

Note 1: Check that the data of page: 0, address: 10 is“00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 92	Fixed data-1 (Initialized data)		
93	Fixed data-2		
94			
95	Fixed data-1 (Initialized data)		
96	Fixed data-2		
97			
98			
99			
9A to AE	Fixed data-1 (Initialized data)		
AF	Fixed data-2		
B0			
B1	Fixed data-1 (Initialized data)		
B2	Fixed data-2		
B3			
B4	Fixed data-1 (Initialized data)		
B5	Fixed data-2		
B6			
B7	Fixed data-1 (Initialized data)		
B8	Fixed data-2		
B9 to F1	Fixed data-1 (Initialized data)		
F2	Fixed data-2		
F3 to FF	Fixed data-1 (Initialized data)		

4. 9 Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

5. C Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
10	EE	EE	Switching position adj.
11	00	00	
12	00	00	
13	00	00	
14, 15			Fixed data-1 (Initialized data)
16	E0	E0	CAP FG duty adj.
17 to 24			Fixed data-1 (Initialized data)
25	70	-	S VIDEO OUT Y level adj. (NTSC)/Fixed data-1 (PAL)
26	8A	-	S VIDEO OUT chroma level adj.
27	61	-	(NTSC)/Fixed data-1 (PAL)
28 to 7D			Fixed data-1 (Initialized data)
7E	-	70	Fixed data-1(NTSC)/S VIDEO OUT Y level adj. (PAL)
7F	-	8A	Fixed data-1(NTSC)/S VIDEO OUT
80	-	61	chroma level adj. (PAL)
81to 8B			Fixed data-1 (Initialized data)
8C	79	79	COMPONENT OUT Y level adj.
8D	31	31	COMPONENT OUT Pb level adj.
8E	32	32	COMPONENT OUT Pr level adj.
8F to A0			Fixed data-1 (Initialized data)
A1	70	70	V-COM adj. (LCD)
A2	20	20	Transmissive mode white balance
A3	20	20	adj. (LCD)
A4, A5			Fixed data-1 (Initialized data)
A6	80	80	PANEL gain adj.
A7	80	80	
A8	80	80	
A9	80	80	EVF gain adj.
AA	80	80	
AB	80	80	
AC to B1			Fixed data-1 (Initialized data)
B2	00	00	Error rate check
B3	00	00	
B4	00	00	
B5	00	00	
B6	00	00	
B7	80	80	
B8	00	00	
B9	00	00	
BA	00	00	
BB	00	00	
BC	00	00	
BD	00	00	
BE	00	00	Error rate check
BF	00	00	
C0	00	00	
C1	00	00	
C2	80	80	
C3	00	00	
C4	00	00	
C5	00	00	
C6	00	00	
C7	00	00	
C8 to F3			Fixed data-1 (Initialized data)
F4	00	00	Emergence memory address (Mechanism section)
F5	00	00	
F6	00	00	
F7	00	00	
F8	00	00	
F9	00	00	
FA	00	00	
FB	00	00	
FC	00	00	
FD	00	00	
FE	00	00	
FF	00	00	

6. 13 Page table

Note 1: If reading/writing data on pages 13, set data: 01 to page: 0, address: 10, and then select pages: 3. By this data setting, the pages 13 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 03	Fixed data-1 (Initialized data)		
04	08	08	Node unique ID No. input
05	00	00	
06	46	46	
07	01	01	
08	02	02	
09	00	00	
0A	00	00	
0B	00	00	
0C to 11	Fixed data-1 (Initialized data)		
12	Fixed data-2		
13 to 24	Fixed data-1 (Initialized data)		
25	Fixed data-2		
26 to FF	Fixed data-1 (Initialized data)		

7. 18 Page table

Note 1: If reading/writing data on pages 18, set data: 01 to page: 0, address: 10, and then select pages: 8. By this data setting, the pages 18 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 66	Fixed data-1 (Initialized data)		
67	Fixed data-2		
68			
69, 6A	Fixed data-1 (Initialized data)		
6B	Fixed data-2		
6C, 6D	Fixed data-1 (Initialized data)		
6E	Fixed data-2		
6F			
70 to 8F	Fixed data-1 (Initialized data)		
90	Fixed data-2		
91			
92, 93	Fixed data-1 (Initialized data)		
94	Fixed data-2		
95			
96			
97			
98 to FF	Fixed data-1 (Initialized data)		

8. 1C Page table

Note 1: If reading/writing data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to"00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

9. 1D Page table

Note 1: If reading/writing data on pages 1D, set data: 01 to page: 0, address: 10, and then select pages: D. By this data setting, the pages 1D can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

10. 1E Page table

Note 1: If reading/writing data on pages 1E, set data: 01 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 1E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 10	Fixed data-1 (Initialized data)		
11	Fixed data-2		
12			
13			
14			
15			
16			
17			
18			
19			
1A			
1B			
1C			
1D			
1E			
1F			
20 to FF	Fixed data-1 (Initialized data)		

1-2-3. Initialization of Camera Control Page Data

1. Initializing of Camera Control Page Data

Note 1: If "Initialization of Camera Control Page Data" is executed, all data on camera control page are initialized. (Only an individual page cannot be initialized)

Note 2: If the camera control page data has been initialized, the following adjustments need to be performed again.
1) Modification of camera control page data
2) Camera system adjustment (if all areas were initialized)

Adjustment Page	6D
Adjustment Address	00 to F9
Adjustment Page	6E
Adjustment Address	00 to FF
Adjustment Page	6F
Adjustment Address	10 to FF
Adjustment Page	8C
Adjustment Address	00 to FF
Adjustment Page	8D
Adjustment Address	00 to FF
Adjustment Page	8E
Adjustment Address	00 to FF
Adjustment Page	8F
Adjustment Address	00 to FF
Adjustment Page	9C
Adjustment Address	00 to FF
Adjustment Page	9D
Adjustment Address	00 to FF
Adjustment Page	9E
Adjustment Address	00 to FF
Adjustment Page	9F
Adjustment Address	00 to FF
Adjustment Page	AD
Adjustment Address	00 to 4F
Adjustment Page	AE
Adjustment Address	00 to 8F
Adjustment Page	AF
Adjustment Address	00 to FF
Adjustment Page	BF
Adjustment Address	00 to FF
Adjustment Page	C2
Adjustment Address	00 to FF
Adjustment Page	C3
Adjustment Address	00 to FF
Adjustment Page	C4
Adjustment Address	00 to FF
Adjustment Page	C5
Adjustment Address	00 to FF
Adjustment Page	C6
Adjustment Address	00 to DF
Adjustment Page	C7
Adjustment Address	00 to FF
Adjustment Page	C8
Adjustment Address	00 to FF
Adjustment Page	C9
Adjustment Address	00 to FF
Adjustment Page	CA
Adjustment Address	00 to FF
Adjustment Page	CB
Adjustment Address	00 to DF
Adjustment Page	CC
Adjustment Address	00 to FF
Adjustment Page	CD
Adjustment Address	00 to FF
Adjustment Page	CE
Adjustment Address	00 to FF
Adjustment Page	CF
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	2	27		Check the bit2 value. 1: NTSC model 0: PAL model
4	6	01		Set the following data, and press PAUSE (Write) button. (Note 3) NTSC model: 2D: Initializing all areas 31: Initializing other than adjustment address PAL model: 2F: Initializing all areas 33: Initializing other than adjustment address
5	6	03	01	Press PAUSE (Write) button.
6	6	02		Check the data changes to "01".
7	6	01	00	Press PAUSE (Write) button.
8				Perform "Modification of Camera Control Data".

Note 3: If other than adjustment address was initialized, the adjusted data is not initialized.

Note 4: NTSC model: HVR-Z7J/Z7U/Z7N
PAL model: HVR-Z7E/Z7P/Z7C

2. Modification of Camera Control Page Data

If the camera control page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If 2-digit page is selected, set higher-order digit to page: 0, address: 10 as data, and then select lower-order digit by a usual method.
   e.g.: Set data: 06 to page: 0, address: 10, and then select page: D. Thus, the page 6D can be selected.
   After the modification of data finished, return the data on page: 0, address: 10 to "00".
3) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
4) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
5) If all areas were initialized, check that the data at the addresses for adjustment are initial values (adjustment initial values) listed in the table. If different, change them to the adjustment initial values.

Processing after Completing Modification Camera Control Data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE button.

3. 6D Page table

Note 1: If reading/writing data on pages 6D, set data: 06 to page: 0, address: 10, and then select pages: D. By this data setting, the pages 6D can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 3F			Fixed data-1 (Initialized data)
40	B0	B0	Iris control adj.
41	00	00	
42	60	60	
43	00	00	
44	48	48	
45	00	00	
46	0B	0B	Iris position adj.
47	40	40	
48	03	03	
49	4A	4A	
4A	01	01	
4B	B6	B6	
4C to 59			Fixed data-1 (Initialized data)
5A	00	00	STD gain adj.
5B			Fixed data-1 (Initialized data)
5C	35	35	LV Standard data input
5D	00	00	
5E	0B	0B	STD gain adj.
5F	86	86	
60 to AF			Fixed data-1 (Initialized data)
B0	04	04	Linear matrix adj.
B1	00	00	
B2	00	00	
B3	00	00	
B4	00	00	
B5	00	00	
B6	00	00	
B7	00	00	
B8	04	04	
B9	00	00	
BA	00	00	
BB	00	00	
BC	00	00	
BD	00	00	
BE	00	00	
BF	00	00	
C0	04	04	
C1	00	00	
C2	04	04	
C3	00	00	

6D Page table

Address	Initial value		Remark
	NTSC	PAL	
C4	00	00	
C5	00	00	
C6	00	00	
C7	00	00	
C8	00	00	
C9	00	00	
CA	04	04	
CB	00	00	
CC	00	00	
CD	00	00	
CE	00	00	
CF	00	00	
D0	00	00	
D1	00	00	
D2	04	04	
D3	00	00	
D4	04	04	
D5	19	19	
D6	FF	FF	
D7	AF	AF	
D8	00	00	
D9	0A	0A	
DA	FF	FF	
DB	B6	B6	Linear matrix adj.
DC	04	04	
DD	70	70	
DE	FF	FF	
DF	8F	8F	
E0	00	00	
E1	00	00	
E2	FF	FF	
E3	EC	EC	
E4	04	04	
E5	2C	2C	
E6	04	04	
E7	D5	D5	
E8	FF	FF	
E9	74	74	
EA	FF	FF	
EB	E1	E1	
EC	FF	FF	
ED	80	80	
EE	04	04	
EF	F3	F3	
F0	FE	FE	
F1	EC	EC	
F2	FF	FF	
F3	F8	F8	
F4	FF	FF	
F5	D5	D5	Linear matrix adj.
F6	05	05	
F7	35	35	
F8, F9	Fixed data-1 (Initialized data)		

4. 6E Page table

Note 1: If reading/writing data on pages 6E, set data: 06 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 6E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to C5	Fixed data-1 (Initialized data)		
C6	00	00	Black Balance Adj.
C7	2D	2D	
C8	00	00	
C9	00	00	
CA	00	00	
CB	00	00	
CC	00	00	
CD	00	00	
CE	00	00	
CF	00	00	
D0	00	00	
D1	00	00	
D2	00	00	
D3	00	00	
D4	00	00	
D5	10	10	
D6	00	00	
D7	00	00	
D8	00	00	
D9	00	00	
DA	00	00	
DB	00	00	
DC	00	00	
DD	00	00	
DE	00	00	
DF	00	00	
E0	00	00	
E1	00	00	
E2	00	00	
E3	80	80	
E4	00	00	
E5	00	00	
E6	00	00	
E7	00	00	
E8	00	00	
E9	00	00	
EA	00	00	
EB	00	00	
EC	00	00	
ED	00	00	
EE	00	00	Black Balance Adj.
EF	00	00	
F0 to FF	Fixed data-1 (Initialized data)		

5. 6F Page table

Note 1: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
10 to 1F			Fixed data-1 (Initialized data)
20	00	00	Optical Path Differencial adj.(ND1 (CLR))
21	00	00	
22	40	40	Optical Path Differencial adj.(ND2)
23	00	00	
24	40	40	Optical Path Differencial adj.(ND3)
25	00	00	
26	40	40	Optical Path Differencial adj.(ND4)
27	00	00	
28	00	00	Optical Path Differencial adj.(ND1 (CLR))
29	00	00	Optical Path Differencial adj.(ND2)
2A	E5	E5	Optical Path Differencial adj.(ND3)
2B	19	19	Optical Path Differencial adj.(ND4)
2C to 5B			Fixed data-1 (Initialized data)
5C	18	18	ND Filter Switch adj.
5D	5D	5D	
5E	A2	A2	
5F	E7	E7	
60 to 81			Fixed data-1 (Initialized data)
82	00	00	AWB Standard data input (ND1 (CLR))
83			Fixed data-1 (Initialized data)
84	2A	2A	AWB adj. (ND1 (CLR))
85	BA	BA	
86	5C	5C	
87	4C	4C	
88	1A	1A	AWB Standard data input (ND1 (CLR))
89	78	78	
8A	09	09	
8B	AD	AD	
8C	1A	1A	AWB Standard data input (ND2)
8D	78	78	
8E	09	09	
8F	AD	AD	
90	1A	1A	AWB Standard data input (ND3)
91	78	78	
92	09	09	
93	AD	AD	
94	1A	1A	AWB Standard data input (ND4)
95	78	78	
96	09	09	AWB Standard data input (ND4)
97	AD	AD	
98	0E	0E	AWB adj. (ND1 (CLR))
99	BC	BC	
9A	10	10	
9B	EB	EB	
9C	0E	0E	AWB adj. (ND2)
9D	BC	BC	
9E	10	10	
9F	EB	EB	
A0	0E	0E	AWB adj. (ND3)
A1	BC	BC	
A2	10	10	
A3	EB	EB	
A4	0E	0E	AWB adj. (ND4)
A5	BC	BC	
A6	10	10	
A7	EB	EB	
A8	D8	D8	Color reproduction adj.
A9	C4	C4	
AA	41	41	
AB	3E	3E	
AC	DC	DC	
AD	D7	D7	
AE	43	43	
AF	42	42	
B0	D8	D8	
B1	C4	C4	
B2	41	41	
B3	3E	3E	
B4	DC	DC	
B5	D7	D7	
B6	43	43	
B7	42	42	
B8 to FF			Fixed data-1 (Initialized data)

6. 8C Page table

Note 1: If reading/writing data on pages 8C, set data: 08 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 8C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 09	Fixed data-1 (Initialized data)		
0A	Fixed data-2		
0B	Fixed data-1 (Initialized data)		
0C	Fixed data-2		
0D			
0E to 11	Fixed data-1 (Initialized data)		
12	Fixed data-2		
13 to 16	Fixed data-1 (Initialized data)		
17	Fixed data-2		
18			
19			
1A to 1D	Fixed data-1 (Initialized data)		
1E	Fixed data-2		
1F to 22	Fixed data-1 (Initialized data)		
23	Fixed data-2		
24			
25			
26 to 29	Fixed data-1 (Initialized data)		
2A	Fixed data-2		
2B to CA	Fixed data-1 (Initialized data)		
CB	Fixed data-2		
CC to D5	Fixed data-1 (Initialized data)		
D6	Fixed data-2		
D7 to DD	Fixed data-1 (Initialized data)		
DE	Fixed data-2		
DF to E5	Fixed data-1 (Initialized data)		
E6	Fixed data-2		
E7 to FF	Fixed data-1 (Initialized data)		

7. 8D Page table

Note 1: If reading/writing data on pages 8D, set data: 08 to page: 0, address: 10, and then select pages: D. By this data setting, the pages 8D can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

8. 8E Page table

Note 1: If reading/writing data on pages 8E, set data: 08 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 8E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

9. 8F Page table

Note 1: If reading/writing data on pages 8F, set data: 08 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 8F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 71	Fixed data-1 (Initialized data)		
72	Fixed data-2		
73			
74	Fixed data-1 (Initialized data)		
75	Fixed data-2		
76, 77	Fixed data-1 (Initialized data)		
78	Fixed data-2		
79	Fixed data-1 (Initialized data)		
7A	Fixed data-2		
7B to FF	Fixed data-1 (Initialized data)		

10. 9C Page table

Note 1: If reading/writing data on pages 9C, set data: 09 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 9C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

11. 9D Page table

Note 1: If reading/writing data on pages 9D, set data: 09 to page: 0, address: 10, and then select pages: D. By this data setting, the pages 9D can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

12. 9E Page table

Note 1: If reading/writing data on pages 9E, set data: 09 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 9E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00	Fixed data-2		
01			
02			
03 to FF	Fixed data-1 (Initialized data)		

13. 9F Page table

Note 1: If reading/writing data on pages 9F, set data: 09 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 9F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 26	Fixed data-1 (Initialized data)		
27	Fixed data-2		
28 to FF	Fixed data-1 (Initialized data)		

14. AD Page table

Note 1: If reading/writing data on pages AD, set data: 0A to page: 0, address: 10, and then select pages: D. By this data setting, the pages AD can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 4F	Fixed data-1 (Initialized data)		

15. AE Page table

Note 1: If reading/writing data on pages AE, set data: 0A to page: 0, address: 10, and then select pages: E. By this data setting, the pages AE can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 11	Fixed data-1 (Initialized data)		
12	Fixed data-2		
13			
14, 15	Fixed data-1 (Initialized data)		
16	Fixed data-2		
17			
18			
19 to 23	Fixed data-1 (Initialized data)		
24	Fixed data-2		
25	Fixed data-1 (Initialized data)		
26	Fixed data-2		
27			
28			
29			
2A			
2B to 8F	Fixed data-1 (Initialized data)		

16. AF Page table

Note 1: If reading/writing data on pages AF, set data: 0A to page: 0, address: 10, and then select pages: F. By this data setting, the pages AF can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to E6	Fixed data-1 (Initialized data)		
E7	Fixed data-2		
E8	Fixed data-1 (Initialized data)		
E9	Fixed data-2		
EA	Fixed data-1 (Initialized data)		
EB	Fixed data-2		
EC	Fixed data-1 (Initialized data)		
ED	Fixed data-2		
EE to FF	Fixed data-1 (Initialized data)		

17. BF Page table

Note 1: If reading/writing data on pages BF, set data: 0B to page: 0, address: 10, and then select pages: F. By this data setting, the pages BF can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to F0	Fixed data-1 (Initialized data)		
F1	Fixed data-2		
F2 to FF	Fixed data-1 (Initialized data)		

18. C2 Page table

Note 1: If reading/writing data on pages C2, set data: 0C to page: 0, address: 10, and then select pages: 2. By this data setting, the pages C2 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

19. C3 Page table

Note 1: If reading/writing data on pages C3, set data: 0C to page: 0, address: 10, and then select pages: 3. By this data setting, the pages C3 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

20. C4 Page table

Note 1: If reading/writing data on pages C4, set data: 0C to page: 0, address: 10, and then select pages: 4. By this data setting, the pages C4 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

21. C5 Page table

Note 1: If reading/writing data on pages C5, set data: 0C to page: 0, address: 10, and then select pages: 5. By this data setting, the pages C5 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

22. C6 Page table

Note 1: If reading/writing data on pages C6, set data: 0C to page: 0, address: 10, and then select pages: 6. By this data setting, the pages C6 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to DF	Fixed data-1 (Initialized data)		

23. C7 Page table

Note 1: If reading/writing data on pages C7, set data: 0C to page: 0, address: 10, and then select pages: 7. By this data setting, the pages C7 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

24. C8 Page table

Note 1: If reading/writing data on pages C8, set data: 0C to page: 0, address: 10, and then select pages: 8. By this data setting, the pages C8 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

25. C9 Page table

Note 1: If reading/writing data on pages C9, set data: 0C to page: 0, address: 10, and then select pages: 9. By this data setting, the pages C9 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

26. CA Page table

Note 1: If reading/writing data on pages CA, set data: 0C to page: 0, address: 10, and then select pages: A. By this data setting, the pages CA can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

27. CB Page table

Note 1: If reading/writing data on pages CB, set data: 0C to page: 0, address: 10, and then select pages: B. By this data setting, the pages CB can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to DF	Fixed data-1 (Initialized data)		

28. CC Page table

Note 1: If reading/writing data on pages CC, set data: 0C to page: 0, address: 10, and then select pages: C. By this data setting, the pages CC can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

29. CD Page table

Note 1: If reading/writing data on pages CD, set data: 0C to page: 0, address: 10, and then select pages: D. By this data setting, the pages CD can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

30. CE Page table

Note 1: If reading/writing data on pages CE, set data: 0C to page: 0, address: 10, and then select pages: E. By this data setting, the pages CE can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

31. CF Page table

Note 1: If reading/writing data on pages CF, set data: 0C to page: 0, address: 10, and then select pages: F. By this data setting, the pages CF can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of "VIDEO SYSTEM ADJUSTMENTS" are satisfied. (Except Origin Oscillation Check")
Check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

1-3-1. Camera System Adjustments (body)

1. Origin Oscillation Check (TT-007 board)

Check the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Subject	Not required
Measurement Point	R1414 (CHCK) on TT-007 board
Measuring Instrument	Frequency counter
Specified value	f = 41538461 ± 835 Hz (NTSC) f = 41580000 ± 835 Hz (PAL)

Switch setting

1) POWER ..... CAMERA mode

Checking method:

1) Check that the frequency (f) satisfies the specified value.

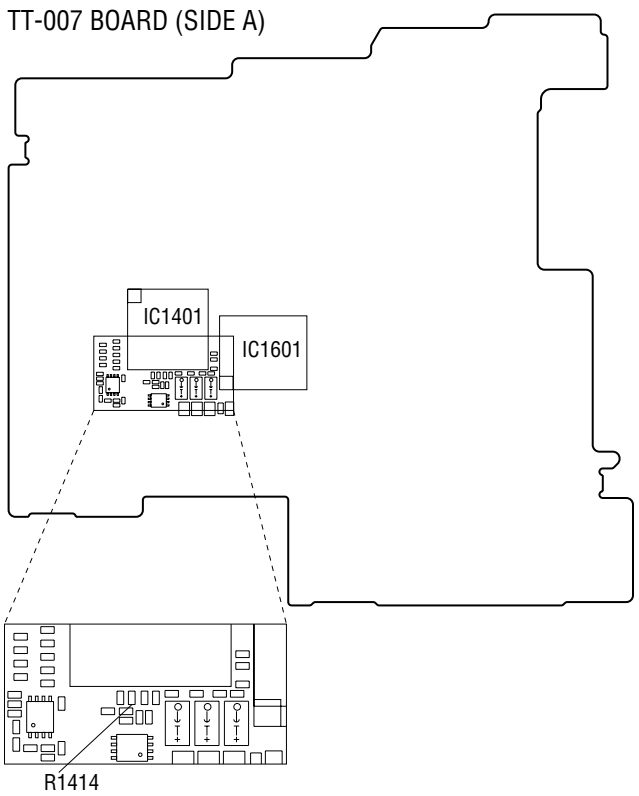


Fig. 6-1-5

2. Level Vial Adjustment (TT-007 board)

Input average offset voltage of the accelerometer (SE4201) on a horizontal plane.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	A
Adjustment Address	F6 to FB
Specified value	Data of page: 7, address: 02 is "01"

Note 1: Set the camera on a horizontal table.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	01	5F	
3	7	00	01	Press PAUSE (Write) button. (Note 2)
4	7	02		Check the data changes to "01". (Note 3)
5	0	01	00	

Note 2: The adjustment data will be automatically input to page: A, address: F6 to FB.

Note 3: If the data is other than "01", adjustment has errors. Contents of error is written into page: 7, address: 02. See the following table.

Data of page: 7, address: 02	Error contents
FD	Not horizontal
FE	Unstable installation
FF	Sensor input not recognization

3. ND Filter Switch Adjustment RadarW

Adjust a variation in AD value of the ND filter switch.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	5C to 5F
Specified value	Data of page: 6 address: D1 is “01”

Note 1: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Perform this adjustment only when replacing the lens block. When the microprocessor, circuit etc. is damaged, don't perform this adjustment but check the steady shot operations only.

Note 3: With the lens not mounted, adjust the ND filter switch while checking visually that the ND filter is surely switched (free from incomplete engagement).

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	07		Check the data is “04”.
3	6	02		Check the data is “00”.
4				Set the ND FILTER to “1”.
5	6	D0	01	
6	6	01	F1	Press PAUSE (Write) button. (Note 4)
7	6	02		Check the data changes to “01”.
8	6	D1		Check the data is “01”. (Note 5)
9	6	01	00	Press PAUSE (Write) button.
10				Set the ND FILTER to “2”.
11	6	D0	02	
12	6	01	F1	Press PAUSE (Write) button. (Note 4)
13	6	02		Check the data changes to “01”.
14	6	D1		Check the data is “01”. (Note 5)
15	6	01	00	Press PAUSE (Write) button.
16				Set the ND FILTER to “3”.
17	6	D0	03	
18	6	01	F1	Press PAUSE (Write) button. (Note 4)
19	6	02		Check the data changes to “01”.
20	6	D1		Check the data is “01”. (Note 5)
21	6	01	00	Press PAUSE (Write) button.
22				Set the ND FILTER to “4”.
23	6	D0	04	
24	6	01	F1	Press PAUSE (Write) button. (Note 4)
25	6	02		Check the data changes to “01”.
26	6	D1		Check the data is “01”. (Note 5)
27	6	01	00	Press PAUSE (Write) button.
28	0	01	00	

Note 4: The adjustment data will be automatically input to page: 6F, address: 5C to 5F.

Note 5: Adjustment error occurs if the data of page: 6, address: D1 is “02”.

4. Coaxial Harness Connecting Check RadarW

Check if the coaxial harness of CMOS is connected correctly.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6
Adjustment Address	D1 to D6
Specified value	Data of page: 6, address: D0 is "07"

Note 1: Check that the data of page: 6, address: 02 is "00"
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	07		Check the data is "04".
3	0	10	01	
4	6 (16)	07		Check the data is "04".
5	0	10	09	
6	E (9E)	90	04	
7	0	10	00	
8	6	01	EB	Press PAUSE (Write) button.(Note 2)
9	6	02		Check the data changes to "01".
10	6	D0		Check the data is "07". (Note 3)

Note 2: The adjustment data will be automatically input to page: 6, address: D1 to D6.

Note 3: For the error codes of bit 0 to bit 2 of data of page: 6, address: D0, see the following table.

Bit value of data of page: 6, address: D0		Error contents	
Bit	Function	When bit value = 0	When bit value = 1
0	R	Error exists	No error
1	G	Error exists	No error
2	B	Error exists	No error

Example: If an error exists in G, data is "05"

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	09	
3	E (9E)	90	00	
4	0	10	00	
5	0	01	00	

5. Flange Back Adjustment (body) (Using the minipattern box or flange back adjustment jig)

[Preparation (Using the minipattern box)]

1) The minipattern box is installed as shown in the following figure.
   Note: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of lens of camera is less than 3 cm.
3) Make the height of minipattern box and the camera equal.
4) Check the output voltage of the regulated power supply is the specified voltage ± 0.01 Vdc.
5) Check that the center of Siemens star chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Specified voltage: The specified voltage varies according to the minipattern box, so adjustment the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

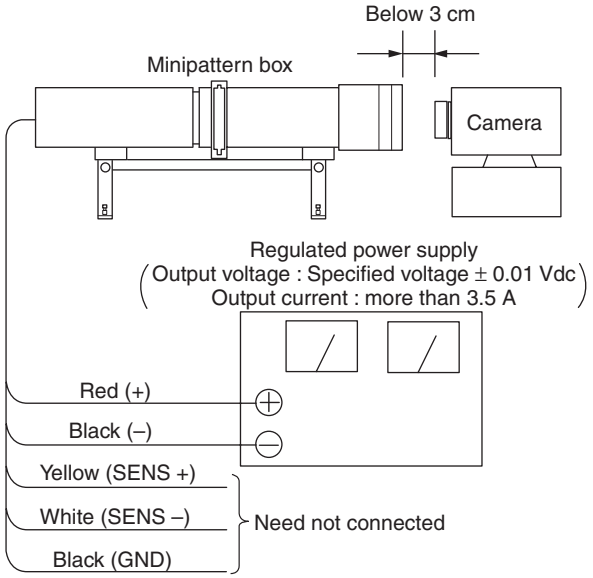


Fig. 6-1-6

[Preparation (Using the flange back adjustment jig)] (Illuminance: 250 to 350 lux)

1) Install the flange back adjustment jig so that the distance between it and the front of lens of camera is less than 3 cm.
2) Make the height of flange back adjustment jig and the camera equal.
3) Check that the center of chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

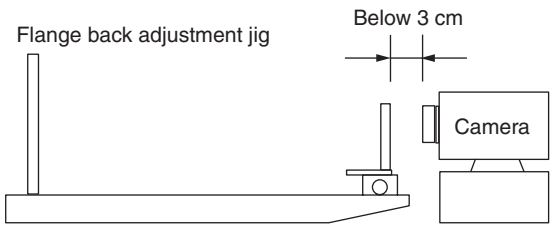


Fig. 6-1-7

5-1. Optical Path Differencial Adjustment (ND1 (CLR))

RadarW

(Using the minipattern box or flange back adjustment jig)

Perform the flange back adjustment on the body side. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for minipattern box (Note 1) or flange back adjustment jig
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	20, 21, 28
Specified value	Data of pege: 16, address: 0C is “00”

Note 1: Dark Siemens star chart.
Note 2: Perform the adjustment with the lens in horizontal state.
Note 3: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.
Note 4: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 5: Don't touch the zoom lever during adjustment.
Note 6: After adjustment, if the focusing to a subject located at infinity failed, increase the illuminance of the chart and perform readjustment.
Note 7: Check that the ZOOM switch is in SERVO position.
Note 8: When mounting the lens, mount the lens firmly, free from a play and tighten up the lever.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) REC FORMAT (Menu setting) HDV1080i
4) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	09	
3	F (9F)	26		Set the bit value of bit0 is “1”, and press PAUSE (Write) button. (Note 9)
4	0	10	00	
5	6	07		Check the data is “04”.
6	0	10	01	
7	6 (16)	07		Check the data is “04”.
8	0	10	00	
9	6	61	01	
10				Wait for 3 seconds.
11	6	99		Check the data is “00”.
12	0	10	01	
13	6 (16)	02		Check the data is “00”.
14	0	10	00	
15	6	02		Check the data is “00”.
16	0	10	01	
17	6 (16)	2C	01	
18	0	10	00	
19	6	4D	40	
20	6	64	04	
21	6	01	13	Press PAUSE (Write) button.
22	0	10	01	
23	6 (16)	01	13	Press PAUSE (Write) button.
24				Wait for 1 seconds.
25	0	10	00	
26	6	01	51	Press PAUSE (Write) button. (Note 10)
27	0	10	01	
28	6 (16)	01	51	Press PAUSE (Write) button. (Note 10)
29	0	10	00	
30	6	02		Check the data changes to “01”.
31	0	10	01	
32	6 (16)	0C		Check the data is “00”.

Note 9: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.
Note 10: The adjustment data will be automatically input to page: 6F, address: 20, 21, 28.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	0	10	00	
3	6	01	00	Press PAUSE (Write) button.
4	6	64	00	
5	6	4D	00	
6	0	10	01	
7	6 (16)	2C	00	
8	6 (16)	01	25	Press PAUSE (Write) button.
9				Wait for 3 seconds.
10	6 (16)	01	00	Press PAUSE (Write) button.
11	0	10	00	
12	6	61	00	
13				Wait for 3 seconds.
14	0	10	09	
15	F (9F)	26		Set the bit value of bit0 is “0”, and press PAUSE (Write) button. (Note 9)
16	0	10	00	
17	0	01	00	
18				Perform “Flange Back Check (ND1)”.
19				Perform “Optical Path Differencial Adjustment (ND2)”.

5-2. Optical Path Differencial Adjustment (ND2)

RadarW

(Using the minipattern box or flange back adjustment jig)

Perform the flange back adjustment on the body side, if the ND filter is set to ND2. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for minipattern box (Note 1) or flange back adjustment jig
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	22, 23, 29
Specified value	Data of pege: 16, address: 0C is “00”

Note 1: Dark Siemens star chart.
Note 2: Perform the adjustment with the lens in horizontal state.
Note 3: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.
Note 4: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 5: Don't touch the zoom lever during adjustment.
Note 6: After adjustment, if the focusing to a subject located at infinity failed, increase the illuminance of the chart and perform readjustment.
Note 7: Check that the ZOOM switch is in SERVO position.
Note 8: When mounting the lens, mount the lens firmly, free from a play and tighten up the lever.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 2
3) REC FORMAT (Menu setting) HDV1080i
4) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	09	
3	F (9F)	26		Set the bit value of bit0 is “1”, and press PAUSE (Write) button. (Note 9)
4	0	10	00	
5	6	07		Check the data is “04”.
6	0	10	01	
7	6 (16)	07		Check the data is “04”.
8	0	10	00	
9	6	61	01	
10				Wait for 3 seconds.
11	6	99		Check the data is “01”.
12	0	10	01	
13	6 (16)	02		Check the data is “00”.
14	0	10	00	
15	6	02		Check the data is “00”.
16	0	10	01	
17	6 (16)	2C	01	
18	0	10	00	
19	6	4D	40	
20	6	64	04	
21	6	01	13	Press PAUSE (Write) button.
22	0	10	01	
23	6 (16)	01	13	Press PAUSE (Write) button.
24				Wait for 1 seconds.
25	0	10	00	
26	6	01	51	Press PAUSE (Write) button. (Note 10)
27	0	10	01	
28	6 (16)	01	51	Press PAUSE (Write) button. (Note 10)
29	0	10	00	
30	6	02		Check the data changes to “01”.
31	0	10	01	
32	6 (16)	0C		Check the data is “00”.

Note 9: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.
Note 10: The adjustment data will be automatically input to page: 6F, address: 22, 23, 29.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	0	10	00	
3	6	01	00	Press PAUSE (Write) button.
4	6	64	00	
5	6	4D	00	
6	0	10	01	
7	6 (16)	2C	00	
8	6 (16)	01	25	Press PAUSE (Write) button.
9				Wait for 3 seconds.
10	6 (16)	01	00	Press PAUSE (Write) button.
11	0	10	00	
12	6	61	00	
13				Wait for 3 seconds.
14	0	10	09	
15	F (9F)	26		Set the bit value of bit0 is “0”, and press PAUSE (Write) button. (Note 9)
16	0	10	00	
17	0	01	00	
18				Perform “Flange Back Check (ND2)”.
19				Perform “Optical Path Differencial Adjustment (ND3)”.

5-3. Optical Path Differencial Adjustment (ND3)

RadarW

(Using the minipattern box or flange back adjustment jig)

Perform the flange back adjustment on the body side, if the ND filter is set to ND3. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for minipattern box (Note 1) or flange back adjustment jig
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	24, 25, 2A
Specified value	Data of pege: 16, address: 0C is “00”

Note 1: Dark Siemens star chart.
Note 2: Perform the adjustment with the lens in horizontal state.
Note 3: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.
Note 4: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 5: Don't touch the zoom lever during adjustment.
Note 6: After adjustment, if the focusing to a subject located at infinity failed, increase the illuminance of the chart and perform readjustment.
Note 7: Check that the ZOOM switch is in SERVO position.
Note 8: When mounting the lens, mount the lens firmly, free from a play and tighten up the lever.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 3
3) REC FORMAT (Menu setting) HDV1080i
4) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	09	
3	F (9F)	26		Set the bit value of bit0 is “1”, and press PAUSE (Write) button. (Note 9)
4	0	10	00	
5	6	07		Check the data is “04”.
6	0	10	01	
7	6 (16)	07		Check the data is “04”.
8	0	10	00	
9	6	61	01	
10				Wait for 3 seconds.
11	6	99		Check the data is “02”.
12	0	10	01	
13	6 (16)	02		Check the data is “00”.
14	0	10	00	
15	6	02		Check the data is “00”.
16	0	10	01	
17	6 (16)	2C	01	
18	0	10	00	
19	6	4D	40	
20	6	64	04	
21	6	01	13	Press PAUSE (Write) button.
22	0	10	01	
23	6 (16)	01	13	Press PAUSE (Write) button.
24				Wait for 1 seconds.
25	0	10	00	
26	6	01	51	Press PAUSE (Write) button. (Note 10)
27	0	10	01	
28	6 (16)	01	51	Press PAUSE (Write) button. (Note 10)
29	0	10	00	
30	6	02		Check the data changes to “01”.
31	0	10	01	
32	6 (16)	0C		Check the data is “00”.

Note 9: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.
Note 10: The adjustment data will be automatically input to page: 6F, address: 24, 25, 2A.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	0	10	00	
3	6	01	00	Press PAUSE (Write) button.
4	6	64	00	
5	6	4D	00	
6	0	10	01	
7	6 (16)	2C	00	
8	6 (16)	01	25	Press PAUSE (Write) button.
9				Wait for 3 seconds.
10	6 (16)	01	00	Press PAUSE (Write) button.
11	0	10	00	
12	6	61	00	
13				Wait for 3 seconds.
14	0	10	09	
15	F (9F)	26		Set the bit value of bit0 is “0”, and press PAUSE (Write) button. (Note 9)
16	0	10	00	
17	0	01	00	
18				Perform “Flange Back Check (ND3)”.
19				Perform “Optical Path Differencial Adjustment (ND4)”.

5-4. Optical Path Differencial Adjustment (ND4)

RadarW

(Using the minipattern box or flange back adjustment jig)

Perform the flange back adjustment on the body side, if the ND filter is set to ND4. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for minipattern box (Note 1) or flange back adjustment jig
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	26, 27, 2B
Specified value	Data of pege: 16, address: 0C is “00”

Note 1: Dark Siemens star chart.
Note 2: Perform the adjustment with the lens in horizontal state.
Note 3: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.
Note 4: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 5: Don't touch the zoom lever during adjustment.
Note 6: After adjustment, if the focusing to a subject located at infinity failed, increase the illuminance of the chart and perform readjustment.
Note 7: Check that the ZOOM switch is in SERVO position.
Note 8: When mounting the lens, mount the lens firmly, free from a play and tighten up the lever.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 4
3) REC FORMAT (Menu setting) HDV1080i
4) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	09	
3	F (9F)	26		Set the bit value of bit0 is “1”, and press PAUSE (Write) button. (Note 9)
4	0	10	00	
5	6	07		Check the data is “04”.
6	0	10	01	
7	6 (16)	07		Check the data is “04”.
8	0	10	00	
9	6	61	01	
10				Wait for 3 seconds.
11	6	99		Check the data is “03”.
12	0	10	01	
13	6 (16)	02		Check the data is “00”.
14	0	10	00	
15	6	02		Check the data is “00”.
16	0	10	01	
17	6 (16)	2C	01	
18	0	10	00	
19	6	4D	40	
20	6	64	04	
21	6	1C	33	
22	6	1D	0F	
23	6	1E	00	
24	6	01	13	Press PAUSE (Write) button.
25	0	10	01	
26	6 (16)	01	13	Press PAUSE (Write) button.
27				Wait for 1 seconds.
28	0	10	00	
29	6	01	51	Press PAUSE (Write) button. (Note 10)
30	0	10	01	
31	6 (16)	01	51	Press PAUSE (Write) button. (Note 10)
32	0	10	00	
33	6	02		Check the data changes to “01”.
34	0	10	01	
35	6 (16)	0C		Check the data is “00”.

Note 9: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.
Note 10: The adjustment data will be automatically input to page: 6F, address: 26, 27, 2B.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	0	10	00	
3	6	01	00	Press PAUSE (Write) button.
4	6	1C	00	
5	6	1D	00	
6	6	1E	00	
7	6	64	00	
8	6	4D	00	
9				Wait for 2 seconds.
10	6	01	00	Press PAUSE (Write) button.
11	0	10	01	
12	6 (16)	2C	00	
13	6 (16)	01	25	Press PAUSE (Write) button.
14				Wait for 3 seconds.
15	6 (16)	01	00	Press PAUSE (Write) button.
16	0	10	00	
17	6	61	00	
18				Wait for 3 seconds.
19	6	D0	96	
20	6	01	21	Press PAUSE (Write) button.
21	6	02		Check the data changes to “01”
22	6	01	00	Press PAUSE (Write) button.
23	0	10	09	
24	F (9F)	26		Set the bit value of bit0 is “0”, and press PAUSE (Write) button. (Note 9)
25	0	10	00	
26	0	01	00	
27				Perform “Flange Back Check (ND4)”.

6. Flange Back Check

6-1. Flange Back Check (ND1)
(Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Siemens star chart) (Illuminance: 250 ± 50 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	(Note 2)
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check with the monitor larger than 40 inches.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) REC FORMAT (Menu setting) HDV1080i

Preparations before adjustments:

1) Install the flange back adjustment jig so that the distance between it and the front of lens of camera is less than 3 cm.
2) With the IRIS fully opened, adjust the illuminance of the chart surface appropriately. (250 ± 50 lux)
3) Check that the center of chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Checking method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "1".
2	0	01	01	
3	6	99		Check the data is "00"."
4	0	10	01	
5	6 (16)	40	01	
6	0	10	00	
7	6	41	01	
8	6	4D	40	
9	6	61	01	
10				Wait for 3 seconds.
11	6	01	13	Press PAUSE (Write) button.
12	0	10	01	
13	6 (16)	01	13	Press PAUSE (Write) button.
14				Wait for 1 second.
15	6 (16)	2C	02	
16				Check that the lens is focused while zooming from TELE end to WIDE end.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	6 (16)	2C	00	
3	6 (16)	40	00	
4	0	10	00	
5	6	01	00	Press PAUSE (Write) button.
6	6	61	00	
7	6	41	00	
8	6	4D	00	
9	0	01	00	

6-2. Flange Back Check (ND2) (Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Siemens star chart) (Illuminance: 250 ± 50 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	(Note 2)
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check with the monitor larger than 40 inches.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 2
3) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "2".
2	0	01	01	
3	6	99		Check the data is "01".
4	0	10	01	
5	6 (16)	40	01	
6	0	10	00	
7	6	41	01	
8	6	4D	40	
9	6	61	01	
10				Wait for 3 seconds.
11	6	01	13	Press PAUSE (Write) button.
12	0	10	01	
13	6 (16)	01	13	Press PAUSE (Write) button.
14				Wait for 1 second.
15	6 (16)	2C	02	
16				Check that the lens is focused while zooming from TELE end to WIDE end.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	6 (16)	2C	00	
3	6 (16)	40	00	
4	0	10	00	
5	6	01	00	Press PAUSE (Write) button.
6	6	61	00	
7	6	41	00	
8	6	4D	00	
9	0	01	00	

6-3. Flange Back Check (ND3) (Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Siemens star chart) (Illuminance: 250 ± 50 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	(Note 2)
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check with the monitor larger than 40 inches.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 3
3) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "3".
2	0	01	01	
3	6	99		Check the data is "02".
4	0	10	01	
5	6 (16)	40	01	
6	0	10	00	
7	6	41	01	
8	6	4D	40	
9	6	61	01	
10	6	1C	33	
11	6	1D	0F	
12	6	1E	00	
13				Wait for 3 seconds.
14	6	01	13	Press PAUSE (Write) button.
15	0	10	01	
16	6 (16)	01	13	Press PAUSE (Write) button.
17				Wait for 1 second.
18	6 (16)	2C	02	
19				Check that the lens is focused while zooming from TELE end to WIDE end.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	6 (16)	2C	00	
3	6 (16)	40	00	
4	0	10	00	
5	6	01	00	Press PAUSE (Write) button.
6	6	1C	00	
7	6	1D	00	
8	6	1E	00	
9	6	61	00	
10	6	41	00	
11	6	4D	00	
12	0	01	00	

6-4. Flange Back Check (ND4)
(Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Siemens star chart) (Illuminance: 250 ± 50 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	(Note 2)
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check with the monitor larger than 40 inches.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 4
3) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "4".
2	0	01	01	
3	6	99		Check the data is "03".
4	0	10	01	
5	6 (16)	40	01	
6	0	10	00	
7	6	41	01	
8	6	4D	40	
9	6	61	01	
10	6	1C	33	
11	6	1D	0F	
12	6	1E	00	
13				Wait for 3 seconds.
14	6	01	13	Press PAUSE (Write) button.
15	0	10	01	
16	6 (16)	01	13	Press PAUSE (Write) button.
17				Wait for 1 second.
18	6 (16)	2C	02	
19				Check that the lens is focused while zooming from TELE end to WIDE end.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	6 (16)	2C	00	
3	6 (16)	40	00	
4	0	10	00	
5	6	01	00	Press PAUSE (Write) button.
6	6	1C	00	
7	6	1D	00	
8	6	1E	00	
9	6	61	00	
10	6	41	00	
11	6	4D	00	
12	0	01	00	

7. Black Balance RadarW

Adjust the black level.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6E
Adjustment Address	C6 to EF

Note 1: If reading/writing data on pages 6E, set data: 06 to page: 0, address: 10, and then select pages E. By this data setting, the pages 6E can be selected.

After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Check that the data of page: 6, address: 02 is "00"
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	07		Check the data is "04".
3	0	10	01	
4	6 (16)	07		Check the data is "04".
5	0	10	00	
6	6	01	BF	Press PAUSE (Write) button. (Note 3)
7	6	02		Check the data changes to "01".

Note 3: The adjustment data will be automatically input to page: 6E, address: C6 to EF.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

8. Linear Matrix Adjustment RadarW

Adjust the matrix coefficient for compensating the variation in spectral sensitivity.

Adjustment Page	6D
Adjustment Address	B0 to F7

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 06.
3) Input the following data to page: D (6D), address: B0 to F7.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data	Address	Data
B0	04	D4	04
B1	00	D5	19
B2	00	D6	FF
B3	00	D7	AF
B4	00	D8	00
B5	00	D9	0A
B6	00	DA	FF
B7	00	DB	B6
B8	04	DC	04
B9	00	DD	70
BA	00	DE	FF
BB	00	DF	8F
BC	00	E0	00
BD	00	E1	00
BE	00	E2	FF
BF	00	E3	EC
C0	04	E4	04
C1	00	E5	2C
C2	04	E6	04
C3	00	E7	D5
C4	00	E8	FF
C5	00	E9	74
C6	00	EA	FF
C7	00	EB	E1
C8	00	EC	FF
C9	00	ED	80
CA	04	EE	04
CB	00	EF	F3
CC	00	F0	FE
CD	00	F1	EC
CE	00	F2	FF
CF	00	F3	F8
D0	00	F4	FF
D1	00	F5	D5
D2	04	F6	05
D3	00	F7	35

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

9. Picture Frame Setting (Color reproduction adjustment frame)

Subject	Color bar chart (Color reproduction adjustment frame) 40 cm (PTB-1450) from the front of lens)
Measurement Point	Video terminal of A/V jack (75 Ω terminated)
Measuring Instrument	Oscilloscope and monitor TV (16:9)
Specified Value	A=B, C=D, E=F

Note 1: "Flange Back Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting

1) POWER ..... CAMERA mode
2) FOCUS ring (Lens block) ..... Mode A
3) D.EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Setting method:

Order	Page	Address	Data	Procedure
1	0	10	01	
2	6 (16)	40	01	
3				Adjust the zoom and the camera direction, and set the specified position.
4				Mark the position of the picture frame on the monitor TV, and adjust the picture frame to this position in following adjustment using "Color reproduction adjustment frame".
5	0	10	00	

How to read the XH, XL, YH and YL data:

Order	Page	Address	Data	Procedure
1	0	03	18	
2	1			Read XH data and XL data. (Note 3)
3	0	03	22	
4	1			Read YH data and YL data. (Note 3)

Note 3: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX : XX
- XL or YL data
- XH or YH data

How to reset the zoom and focus when they deviated:

If the zoom and focus deviated due to some reason, reset them in the following method.

Order	Page	Address	Data	Procedure
1	0	10	01	
2	6 (16)	40	01	
3	6 (16)	2C	01	
4	6 (16)	90	XL	
5	6 (16)	91	XH	
6	6 (16)	92	YL	
7	6 (16)	93	YH	
8	6 (16)	01	79	Press PAUSE (Write) button.
9	0	10	00	

How to release the picture frame setting:

Order	Page	Address	Data	Procedure
1	0	10	01	
2	6 (16)	40	01	
3	6 (16)	01	00	Press PAUSE (Write) button.
4	6 (16)	90	00	
5	6 (16)	91	00	
6	6 (16)	92	00	
7	6 (16)	93	00	
8	6 (16)	2C	00	
9	0	10	00	

Check on the oscilloscope

1. Horizontal period

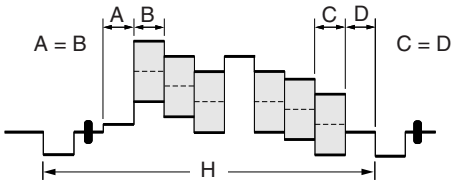


Fig. 6-1-8

2. Vertical period

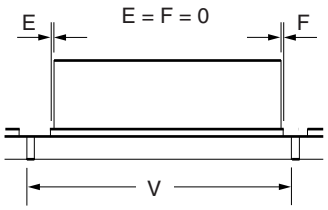


Fig. 6-1-9

Check on the monitor TV (Underscanned mode)

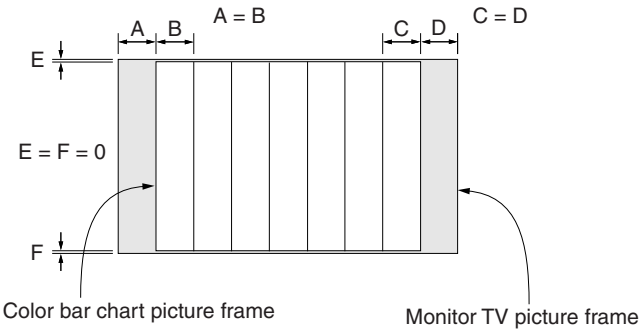


Fig. 6-1-10

10. Auto White Balance Standard Data Input (ND1 (CLR)) RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	6F
Adjustment Address	82, 88 to 8B

Note 1: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) D.EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is "00".
3	6	02		Check the data is "00".
4	6	07		Check the data is "04".
5	0	10	01	
6	6 (16)	07		Check the data is "04".
7	0	10	00	
8	6	61	01	
9				Wait for 3 seconds.
10	0	10	01	
11	6 (16)	40	01	
12	0	10	00	
13	6	41	01	
14	6	01	0B	Press PAUSE (Write) button. (Note 3)
15	6	02		Check the data changes to "01".

Note 3: The adjustment data will be automatically input to page: 6F, address: 82, 88 to 8B.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	40	00	
4	0	10	00	
5	6	41	00	
6	6	61	00	
7				Wait for 3 seconds.
8	0	01	00	

11. LV Standard Data Input RadarW

Adjust the normal coefficient of the light value at 3200K.

Adjustment Page	6D
Adjustment Address	5C, 5D

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 06.
3) Input the following data to page: D (6D), address: 5C and 5D.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
5C	36
5D	10

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

12. STD GAIN Adjustment RadarW

Correct a variation in the CMOS sensitivity setting.
As the CMOS sensitivity is dominant on the variation, correct it with the AGC_GAIN standard setting.

Adjustment Page	6D
Adjustment Address	5A, 5E, 5F

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 06.
3) Input the following data to page: D (6D), address: 5A, 5E and 5F.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
5A	00
5E	0B
5F	86

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

13. Auto White Balance Adjustment (ND1 (CLR))

RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	6F
Adjustment Address	84 to 87, 98 to 9B

Note 1: Perform "Auto White Balance Standard Data Input (ND1 (CLR))" before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is "00".
4	6	02		Check the data is "00".
5	6	07		Check the data is "04".
6	0	10	01	
7	6 (16)	07		Check the data is "04".
8	0	10	00	
9	6	61	01	
10				Wait for 3 seconds.
11	0	10	01	
12	6 (16)	40	01	
13	0	10	00	
14	6	41	01	
15	0	10	06	
16	F (6F)	84	2A	Press PAUSE (Write) button.
17	F (6F)	85	BA	Press PAUSE (Write) button.
18	F (6F)	86	5C	Press PAUSE (Write) button.
19	F (6F)	87	4C	Press PAUSE (Write) button.
20	0	10	00	
21	6	01	81	Press PAUSE (Write) button. (Note 4)
22	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: 6F, address: 98 to 9B.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	40	00	
4	0	10	00	
5	6	41	00	
6	6	61	00	
7				Wait for 3 seconds.
8	0	01	00	
9				Remove the C14 filter on the lens.

14. Auto White Balance Check (ND1 (CLR)) RadarW

Subject	Clear chart (Color reproduction adjustment frame)
Filter	ND filter 1.0, 0.4 and 0.1
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Auto White Balance Standard Data Input (ND1 (CLR))”, “LV Standard Data Input” and “Auto White Balance Adjustment (ND1 (CLR))” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	9B		Check the bit value of bit2 is “0”. (Note 3)
3	6	99		Check the data is “00”.
4	6	07		Check the data is “04”.
5	0	10	01	
6	6 (16)	07		Check the data is “04”.
7	0	10	00	
8	6	61	01	
9				Wait for 3 seconds.
10	0	10	01	
11	6 (16)	40	01	
12	0	10	00	
13	6	41	01	
14	6	CA	85	
15	6	C9	10	
OUTDOOR white balance check				
16	6	01	4F	Press PAUSE (Write) button.
17	6	02		Check the data changes to “01”.
18	6	0C		Check the data is “00”.
19	6	01	00	Press PAUSE (Write) button.
20	6	01	0F	Press PAUSE (Write) button.
21	6	02		Check the data changes to “01”.
22	6	0C		Check the data is “00”.
23	6	01	00	Press PAUSE (Write) button.
24	6	61	00	
25				Wait for 3 seconds.
InOut check				
26				Place the ND filter 1.5 (1.0 +0.4 + 0.1) on the lens.
27	6	C9	11	
28	6	01	4B	Press PAUSE (Write) button.
29	6	02		Check the data changes to “01”.
30	6	0C		Check the data is “00”.
31	6	01	00	Press PAUSE (Write) button.
32				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	C9	00	
2	6	CA	00	
3	0	10	01	
4	6 (16)	40	00	
5	0	10	00	
6	6	41	00	
7	0	01	00	

15. Color Reproduction Adjustment RadarW

Adjust the color separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	A8 to B7
Specified Value	Data of page: 6 address: 0C is “00”

Note 1: Perform “Linear Matrix Adjustment” and “Auto White Balance Standard Data Input (ND1 (CLR))” before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 3: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is “00”.
3	6	02		Check the data is “00”.
4	6	9B		Check the bit value of bit2 is “0”. (Note 4)
5	6	9B		Check the bit value of bit3 is “0”. (Note 4)
6	6	07		Check the data is “04”.
7	0	10	01	
8	6 (16)	07		Check the data is “04”.
9	0	10	00	
10	6	61	01	
11				Wait for 3 seconds.
12	0	10	01	
13	6 (16)	40	01	
14	0	10	00	
15	6	41	01	
16	6	C9	10	
17	6	CA	04	
18	6	D0	34	
19	6	01	61	Press PAUSE (Write) button. (Note 5)
20	6	02		Check the data changes to “01”.
21	6	0C		Check the data is “00”.

Note 4: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Note 5: The adjustment data will be automatically input to page: 6F, address: A8 to B7.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	C9	00	
3	6	CA	00	
4	0	10	01	
5	6 (16)	40	00	
6	0	10	00	
7	6	41	00	
8	6	61	00	
9				Wait for 3 seconds.
10	0	01	00	

16. Color Reproduction Check (ND1 (CLR)) (Outdoor)

RadarW

Subject	Color bar chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Color Reproduction Adjustment” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is “00”.
4	6	02		Check the data is “00”.
5	6	9B		Check the bit value of bit2 is “0”. (Note 3)
6	6	9B		Check the bit value of bit3 is “0”. (Note 3)
7	6	07		Check the data is “04”.
8	0	10	01	
9	6 (16)	07		Check the data is “04”.
10	0	10	00	
11	6	61	01	
12				Wait for 3 seconds.
13	0	10	01	
14	6 (16)	40	01	
15	0	10	00	
16	6	41	01	
17	6	C9	10	
18	6	CA	04	
19	6	D0	34	
20	6	01	3D	Press PAUSE (Write) button.
21	6	02		Check the data changes to “01”.
22	6	0C		Check the data is “00”.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	C9	00	
3	6	CA	00	
4	0	10	01	
5	6 (16)	40	00	
6	0	10	00	
7	6	41	00	
8	6	61	00	
9				Wait for 3 seconds.
10	0	01	00	
11				Remove the C14 filter on the lens.

17. Auto White Balance Standard Data Input (ND2) RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	8C to 8F
Specified Value	Data of page: 6 address: 0C is "00"

Note 1: Perform "Auto White Balance Standard Data Input (ND1 (CLR))" before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 2
3) D.EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is "01".
3	6	02		Check the data is "00".
4	6	07		Check the data is "04".
5	0	10	01	
6	6 (16)	07		Check the data is "04".
7	0	10	00	
8	6	61	01	
9				Wait for 3 seconds.
10	0	10	01	
11	6 (16)	40	01	
12	0	10	00	
13	6	41	01	
14	6	01	0B	Press PAUSE (Write) button. (Note 4)
15	6	02		Check the data changes to "01".
16	6	0C		Check the data is "00".

Note 4: The adjustment data will be automatically input to page: 6F, address: 8C to 8F.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	40	00	
4	0	10	00	
5	6	41	00	
6	6	61	00	
7				Wait for 3 seconds.
8	0	01	00	

18. Auto White Balance Adjustment (ND2) RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	6F
Adjustment Address	9C to 9F

Note 1: Perform "Linear Matrix Adjustment" and "Auto White Balance Standard Data Input (ND1 (CLR))" before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 2
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is "01".
4	6	02		Check the data is "00".
5	6	07		Check the data is "04".
6	0	10	01	
7	6 (16)	07		Check the data is "04".
8	6 (16)	40	01	
9	0	10	00	
10	6	41	01	
11	6	01	81	Press PAUSE (Write) button. (Note 4)
12	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: 6F, address: 9C to 9F.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	40	00	
4	0	10	00	
5	6	41	00	
6	0	01	00	
7				Remove the C14 filter on the lens.

19. Auto White Balance Check (ND2) RadarW

Subject	Clear chart (Color reproduction adjustment frame)
Filter	ND filter 1.0, 0.4 and 0.1
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Auto White Balance Standard Data Input (ND2)”, “LV Standard Data Input” and “Auto White Balance Adjustment (ND2)” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 2
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	9B		Check the bit value of bit2 is “0”. (Note 3)
3	6	99		Check the data is “01”.
4	6	07		Check the data is “04”.
5	0	10	01	
6	6 (16)	07		Check the data is “04”.
7	0	10	00	
8	6	61	01	
9				Wait for 3 seconds.
10	0	10	01	
11	6 (16)	40	01	
12	0	10	00	
13	6	41	01	
14	6	CA	85	
15	6	C9	10	
OUTDOOR white balance check				
16	6	01	4F	Press PAUSE (Write) button.
17	6	02		Check the data changes to “01”.
18	6	0C		Check the data is “00”.
19	6	01	00	Press PAUSE (Write) button.
20	6	01	0F	Press PAUSE (Write) button.
21	6	02		Check the data changes to “01”.
22	6	0C		Check the data is “00”.
23	6	01	00	Press PAUSE (Write) button.
24	6	61	00	
25				Wait for 3 seconds.
InOut check				
26				Place the ND filter 1.5 (1.0 +0.4 + 0.1) on the lens.
27	6	C9	11	
28	6	01	4B	Press PAUSE (Write) button.
29	6	02		Check the data changes to “01”.
30	6	0C		Check the data is “00”.
31	6	01	00	Press PAUSE (Write) button.
32				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	C9	00	
2	6	CA	00	
3	0	10	01	
4	6 (16)	40	00	
5	0	10	00	
6	6	41	00	
7	0	01	00	

20. Auto White Balance Standard Data Input (ND3) RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	90 to 93
Specified Value	Data of page: 6 address: 0C is “00”

Note 1: Perform “Linear Matrix Adjustment” and “Auto White Balance Standard Data Input (ND1 (CLR))” before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 3: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 3
3) D.EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is “02”.
3	6	02		Check the data is “00”.
4	6	07		Check the data is “04”.
5	0	10	01	
6	6 (16)	07		Check the data is “04”.
7	6 (16)	40	01	
8	0	10	00	
9	6	41	01	
10	6	01	0B	Press PAUSE (Write) button. (Note 4)
11	6	02		Check the data changes to “01”.
12	6	0C		Check the data is “00”.

Note 4: The adjustment data will be automatically input to page: 6F, address: 90 to 93.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	40	00	
4	0	10	00	
5	6	41	00	
6	0	01	00	

21. Auto White Balance Adjustment (ND3) RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	6F
Adjustment Address	A0 to A3

Note 1: Perform "Linear Matrix Adjustment" and "Auto White Balance Standard Data Input (ND1 (CLR))" before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 3
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is "02".
4	6	02		Check the data is "00".
5	6	07		Check the data is "04".
6	0	10	01	
7	6 (16)	07		Check the data is "04".
8	6 (16)	40	01	
9	0	10	00	
10	6	41	01	
11	6	13	BF	
12	6	01	81	Press PAUSE (Write) button. (Note 4)
13	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: 6F, address: A0 to A3.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	40	00	
4	0	10	00	
5	6	41	00	
6	6	13	00	
7	0	01	00	
8				Remove the C14 filter on the lens.

22. Auto White Balance Check (ND3) RadarW

Subject	Clear chart (Color reproduction adjustment frame)
Filter	ND filter 1.0, 0.4 and 0.1
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Auto White Balance Standard Data Input (ND3)”, “LV Standard Data Input” and “Auto White Balance Adjustment (ND3)” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 3
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	9B		Check the bit value of bit2 is “0”. (Note 3)
3	6	99		Check the data is “02”.
4	6	07		Check the data is “04”.
5	0	10	01	
6	6 (16)	07		Check the data is “04”.
7	6 (16)	40	01	
8	0	10	00	
9	6	41	01	
10	6	CA	85	
11	6	C9	10	
OUTDOOR white balance check				
12	6	01	4F	Press PAUSE (Write) button.
13	6	02		Check the data changes to “01”.
14	6	0C		Check the data is “00”.
15	6	01	00	Press PAUSE (Write) button.
16	6	01	0F	Press PAUSE (Write) button.
17	6	02		Check the data changes to “01”.
18	6	0C		Check the data is “00”.
19	6	01	00	Press PAUSE (Write) button.
InOut check				
20				Place the ND filter 1.5 (1.0 +0.4 + 0.1) on the lens.
21	6	C9	11	
22	6	13	BF	
23				Wait for 1 second.
24	6	01	4B	Press PAUSE (Write) button.
25	6	02		Check the data changes to “01”.
26	6	0C		Check the data is “00”.
27	6	01	00	Press PAUSE (Write) button.
28				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	C9	00	
2	6	CA	00	
3	0	10	01	
4	6 (16)	40	00	
5	0	10	00	
6	6	41	00	
7	6	13	00	
8	0	01	00	

23. Auto White Balance Standard Data Input (ND4) RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	94 to 97
Specified Value	Data of page: 6 address: 0C is “00”

Note 1: Perform “Linear Matrix Adjustment” and “Auto White Balance Standard Data Input (ND1 (CLR))” before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 3: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 4
3) D.EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is “03”.
3	6	02		Check the data is “00”.
4	6	07		Check the data is “04”.”
5	0	10	01	
6	6 (16)	07		Check the data is “04”.
7	6 (16)	40	01	
8	0	10	00	
9	6	41	01	
10	6	13	BF	
11	6	01	0B	Press PAUSE (Write) button. (Note 4)
12	6	02		Check the data changes to “01”.
13	6	0C		Check the data is “00”.

Note 4: The adjustment data will be automatically input to page: 6F, address: 90 to 93.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	40	00	
4	0	10	00	
5	6	41	00	
6	6	13	00	
7	0	01	00	

24. Auto White Balance Adjustment (ND4) RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	6F
Adjustment Address	A4 to A7

Note 1: Perform "Linear Matrix Adjustment" and "Auto White Balance Standard Data Input (ND1 (CLR))" before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 4
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is "03".
4	6	02		Check the data is "00".
5	6	07		Check the data is "04".
6	0	10	01	
7	6 (16)	07		Check the data is "04".
8	6 (16)	40	01	
9	0	10	00	
10	6	41	01	
11	6	13	BE	
12	6	01	81	Press PAUSE (Write) button. (Note 4)
13	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: 6F, address: A4 to A7.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	40	00	
4	0	10	00	
5	6	41	00	
6	6	13	00	
7	0	01	00	
8				Remove the C14 filter on the lens.

25. Auto White Balance Check (ND4) RadarW

Subject	Clear chart (Color reproduction adjustment frame)
Filter	ND filter 1.0, 0.4 and 0.1
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Auto White Balance Standard Data Input (ND4)”, “LV Standard Data Input” and “Auto White Balance Adjustment (ND4)” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 4
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	9B		Check the bit value of bit2 is “0”. (Note 3)
3	6	99		Check the data is “03”.
4	6	07		Check the data is “04”.
5	0	10	01	
6	6 (16)	07		Check the data is “04”.
7	6 (16)	40	01	
8	0	10	00	
9	6	41	01	
10	6	CA	85	
11	6	C9	10	
OUTDOOR white balance check				
12	6	01	4F	Press PAUSE (Write) button.
13	6	02		Check the data changes to “01”.
14	6	0C		Check the data is “00”.
15	6	01	00	Press PAUSE (Write) button.
16	6	01	0F	Press PAUSE (Write) button.
17	6	02		Check the data changes to “01”.
18	6	0C		Check the data is “00”.
19	6	01	00	Press PAUSE (Write) button.
InOut check				
20				Place the ND filter 1.5 (1.0 +0.4 + 0.1) on the lens.
21	6	C9	11	
22	6	13	BE	
23				Wait for 3 seconds.
24	6	01	4B	Press PAUSE (Write) button.
25	6	02		Check the data changes to “01”.
26	6	0C		Check the data is “00”.
27	6	01	00	Press PAUSE (Write) button.
28				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	C9	00	
2	6	CA	00	
3	0	10	01	
4	6 (16)	40	00	
5	0	10	00	
6	6	41	00	
7	6	13	00	
8	0	01	00	

26. White Defect & HS Defect Adjustment RadarW

Detect white defective pixels of CMOS image sensor.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified value	Data of page: 6 address: D3 is “00”

Note 1: Perform “STD GAIN Adjustment” before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is “00”.
Note 3: Check that the data of page: 6, address: 02 is “00”.
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Preparation for adjustment:

1) Before starting the adjustment, perform the aging to raise the temperature so that the set becomes ready for adjustment.

Aging temperature judge mode:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	09	
3	F (9F)	5D	94	Press PAUSE (Write) button.
4				During the aging, the screen will be as follows. (Fig. 6-1-11)
5				When the aging completed, execute the subsequent steps to exit the aging temperature judge mode.
6	F (9F)	5D	00	Press PAUSE (Write) button.
7	0	10	00	
8	0	01	00	

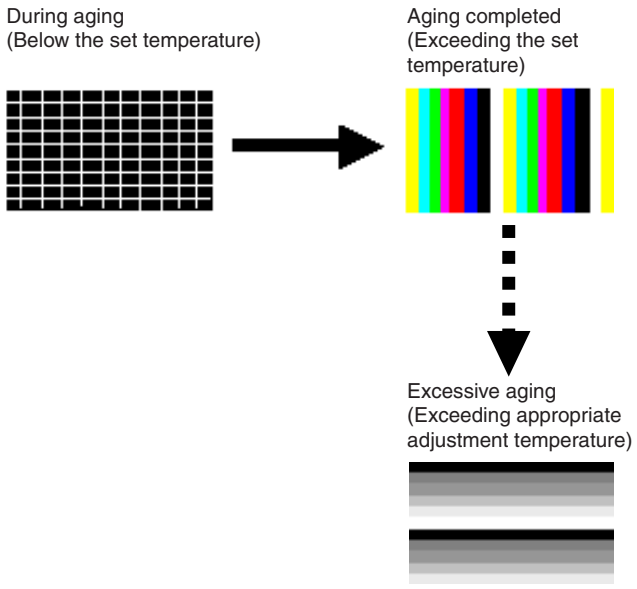


Fig.6-1-11

CMOS temperature checking method:

Order	Page	Address	Data	Procedure
1	0	FF	06	
2	7	64		Check the data is “02”.
3	7	65		Check the data is “4C” to “84”. (Note 4)
4	0	FF	00	

Note 4: If the data is other than “4C” to “84”, perform the aging.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is “00”.
3	6	07		Check the data is “04”.
4	0	10	01	
5	6 (16)	07		Check the data is “04”.
6	0	10	00	
7	6	D0	81	
8	6	01	21	Press PAUSE (Write) button.
9	6	02		Check the data changes to “01”.
10	6	01	00	Press PAUSE (Write) button.
11	6	D0	06	
12	6	01	21	Press PAUSE (Write) button.
13	6	02		Check the data changes to “01”.
14	6	D3		Check the data is “00”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

27. White Defect Adjustment (FD white point) RadarW

Detect white defective pixels (FD white point) of CMOS image sensor.

Subject	Not required

Note 1: Perform "White Defect & HS Defect Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00".
3	6	07		Check the data is "04".
4	0	10	01	
5	6 (16)	07		Check the data is "04".
6	0	10	00	
7	6	D0	0C	
8	6	01	21	Press PAUSE (Write) button.
9	6	02		Check the data changes to "01".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

28. White Defect Check RadarW

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified value 1	Data of page: 6 address: D1 is "00"
Specified value 2	Data of page: 6, address: D2 is "00" to "06"

Note 1: Perform "White Defect Adjustment (FD white point)" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00".
3	6	07		Check the data is "04".
4	0	10	01	
5	6 (16)	07		Check the data is "04".
6	0	10	00	
7	6	D0	04	
8	6	01	21	Press PAUSE (Write) button.
9	6	02		Check the data changes to "01".
10	6	D1		Check the data is "00".
11	6	D2		Check the data is "00" to "06".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

29. Black Defect Adjustment (Bch) RadarW

Detect black defective pixels of CMOS image sensor.

Subject	Clear chart (All white) (Note 1)

Note 1: Shoot the clear chart with the zoom TELE end.
Note 2: Perform "White Defect Check" before this adjustment.
Note 3: Check that the data of page: 0, address: 10 is "00".
Note 4: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "1".
2	0	01	01	
3	6	02		Check the data is "00".
4	6	07		Check the data is "04".
5	6	99		Check the data is "00".
6	0	10	01	
7	6 (16)	07		Check the data is "04".
8	6 (16)	2C	01	
9	6 (16)	90	00	
10	6 (16)	91	04	
11	6 (16)	92	00	
12	6 (16)	93	10	
13	6 (16)	01	79	Press PAUSE (Write) button.
14				Wait for 4 seconds.
15	6 (16)	01	00	Press PAUSE (Write) button.
16	0	10	00	
17				Check that the entire screen is white.
18	6	D0	01	
19	6	D1	01	
20	6	01	21	Press PAUSE (Write) button.
21	6	02		Check the data changes to "01".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	90	00	
4	6 (16)	91	00	
5	6 (16)	92	00	
6	6 (16)	93	00	
7	6 (16)	01	79	Press PAUSE (Write) button.
8				Wait for 4 seconds.
9	6 (16)	01	00	Press PAUSE (Write) button.
10	6 (16)	2C	00	
11	0	10	00	
12	0	01	00	

30. Black Defect Adjustment (Gch) RadarW

Detect black defective pixels of CMOS image sensor.

Subject	Clear chart (All white) (Note 1)

Note 1: Shoot the clear chart with the zoom TELE end.
Note 2: Perform "White Defect Check" before this adjustment.
Note 3: Check that the data of page: 0, address: 10 is "00".
Note 4: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "1".
2	0	01	01	
3	6	02		Check the data is "00".
4	6	07		Check the data is "04".
5	6	99		Check the data is "00".
6	0	10	01	
7	6 (16)	07		Check the data is "04".
8	6 (16)	2C	01	
9	6 (16)	90	00	
10	6 (16)	91	04	
11	6 (16)	92	00	
12	6 (16)	93	10	
13	6 (16)	01	79	Press PAUSE (Write) button.
14				Wait for 4 seconds.
15	6 (16)	01	00	Press PAUSE (Write) button.
16	0	10	00	
17				Check that the entire screen is white.
18	6	D0	01	
19	6	D1	02	
20	6	01	21	Press PAUSE (Write) button.
21	6	02		Check the data changes to "01".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	90	00	
4	6 (16)	91	00	
5	6 (16)	92	00	
6	6 (16)	93	00	
7	6 (16)	01	79	Press PAUSE (Write) button.
8				Wait for 4 seconds.
9	6 (16)	01	00	Press PAUSE (Write) button.
10	6 (16)	2C	00	
11	0	10	00	
12	0	01	00	

31. Black Defect Adjustment (Rch) RadarW

Detect black defective pixels of CMOS image sensor.

Subject	Clear chart (All white) (Note 1)

Note 1: Shoot the clear chart with the zoom TELE end.
Note 2: Perform "White Defect Check" before this adjustment.
Note 3: Check that the data of page: 0, address: 10 is "00".
Note 4: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "1".
2	0	01	01	
3	6	02		Check the data is "00".
4	6	07		Check the data is "04".
5	6	99		Check the data is "00".
6	0	10	01	
7	6 (16)	07		Check the data is "04".
8	6 (16)	2C	01	
9	6 (16)	90	00	
10	6 (16)	91	04	
11	6 (16)	92	00	
12	6 (16)	93	10	
13	6 (16)	01	79	Press PAUSE (Write) button.
14				Wait for 4 seconds.
15	6 (16)	01	00	Press PAUSE (Write) button.
16	0	10	00	
17				Check that the entire screen is white.
18	6	D0	01	
19	6	D1	04	
20	6	01	21	Press PAUSE (Write) button.
21	6	02		Check the data changes to "01".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	01	
3	6 (16)	90	00	
4	6 (16)	91	00	
5	6 (16)	92	00	
6	6 (16)	93	00	
7	6 (16)	01	79	Press PAUSE (Write) button.
8				Wait for 4 seconds.
9	6 (16)	01	00	Press PAUSE (Write) button.
10	6 (16)	2C	00	
11	0	10	00	
12	0	01	00	

32. Angular Velocity Sensor Sensitivity Adjustment

- Perform the angular velocity sensor sensitivity adjustment only when replacing the angular velocity sensor or lens block. When the microprocessor, circuit, etc. malfunctions, do not perform this adjustment but check operations only.
- Record the sensitivity label of the angular velocity sensor (repair part), including to which side of the board it was attached to, etc. If it has been attached incorrectly, the image will move up and down or to the left and right during steady shot operation. Be sure to take note of this.

Precautions on the Parts Replacement

There are two types of repair parts.

Type A ENC03RC-04
Type B ENC03RD

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, readjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

32-1. Angular Velocity Sensor Sensitivity Adjustment (1)

Adjustment Page	7F (Note 1)
Adjustment Address	20

Note 1: If reading/writing data on pages 7F, set data: 07 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 7F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: The PITCH sensor (SE8501 of GY-005 board) sensitivity is labeled only the repair parts.

Preparation

1) Read the PITCH sensor (SE8501 of GY-005 board) sensitivity written on repair parts, and named this as S_{20}.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	07	
3				Calculate D_{20}' using following equations. (decimal calculation) (Note 3) $D_{20}' = 117 \times (60/S_{20})$
4				Convert D_{20}' to a hexadecimal number, and obtain D_{20}. (Note 4)
5	F (7F)	20	D_{20}	Press PAUSE (Write) button.
6	0	10	00	

Note 3: S_{20} is read in "Preparation".

Note 4: Refer to table 6-4-1. "Hexadecimal-decimal conversion table".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	00	
2				Check that the steady shot function operates normally.

32-2. Angular Velocity Sensor Sensitivity Adjustment (2)

Adjustment Page	7F (Note 1)
Adjustment Address	21

Note 1: If reading/writing data on pages 7F, set data: 07 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 7F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: The YAW sensor (SE8502 of GY-005 board) sensitivity is labeled only the repair parts.

Preparation

1) Read the YAW sensor (SE8502 of GY-005 board) sensitivity written on repair parts, and named this as S_{21}.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	07	
3				Calculate D_{21}' using following equations. (decimal calculation) (Note 3) $D_{21}' = 123 \times (60/S_{21})$
4				Convert D_{21}' to a hexadecimal number, and obtain D_{21}. (Note 4)
5	F (7F)	21	D_{21}	Press PAUSE (Write) button.
6	0	10	00	

Note 3: S_{21} is read in "Preparation".

Note 4: Refer to table 6-4-1. "Hexadecimal-decimal conversion table".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	00	
2				Check that the steady shot function operates normally.

1-3-2. Camera System Adjustment (Set)

1. Flange Back Adjustment (Set) RadarW (Using the minipattern box or flange back adjust ment jig)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for minipattern box (Note 1) or flange back adjustment jig
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	FF
Adjustment Address	A0 to AF
Specified value	Data of pege: 16, address: 0C is “00”

Note 1: Dark Siemens star chart.
Note 2: All adjustment in “1-3-1. Camera System Adjustments (Body)” must be already finished.
Note 3: Perform the adjustment with the lens in horizontal state.
Note 4: If reading/writing data on pages FF, set data: 0F to page: 0, address: 10, and then select pages F. By this data setting, the pages FF can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.
Note 5: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 6: Don't touch the zoom lever during adjustment.
Note 7: After adjustment, if the focusing to a subject located at infinity failed, increase the illuminance of the chart and perform readjustment.
Note 8: Check that the ZOOM switch is in SERVO position.
Note 9: When mounting the lens, mount the lens firmly, free from a play and tighten up the lever.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) REC FORMAT (Menu setting) HDV1080i
4) ZOOM switch (Lens block) ..... SERVO

Preparation (Using the minipattern box)

1) The minipattern box is installed as shown in the following figure.
Note 10: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of lens of camera is less than 3 cm.
3) Make the height of minipattern box and the camera equal.
4) Check the output voltage of the regulated power supply is the specified voltage ± 0.01 Vdc.
5) Check that the center of Siemens star chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Specified voltage: The specified voltage varies according to the minipattern box, so adjustment the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

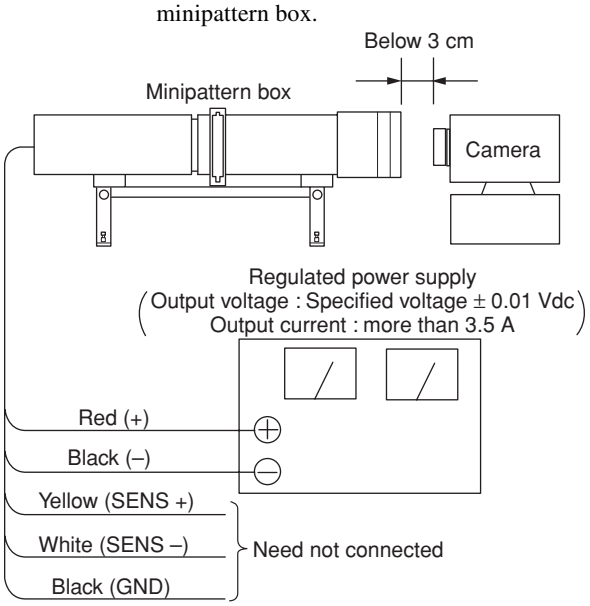


Fig. 6-1-12

Preparation (Using the flange back adjustment jig)
(Illuminance: 200 to 300 lux)

1) Install the flange back adjustment jig so that the distance between it and the front of lens of camera is less than 3 cm.
2) Make the height of flange back adjustment jig and the camera equal.
3) Check that the center of chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

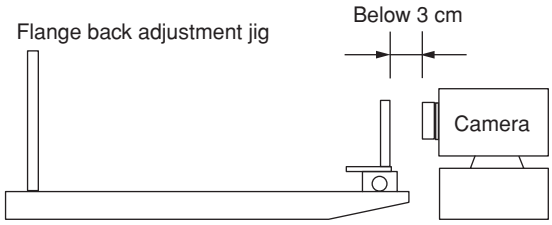


Fig. 6-1-13

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	09	
3	F (9F)	26		Set the bit value of bit0 is “1”, and press PAUSE (Write) button. (Note 11)
4	0	10	00	
5	6	07		Check the data is “04”.
6	0	10	01	
7	6 (16)	07		Check the data is “04”.
8	0	10	00	
9	6	02		Check the data is “00”.
10	6	D0	96	
11	6	01	21	Press PAUSE (Write) button.
12	6	02		Check the data changes to “01”.
13	6	01	00	Press PAUSE (Write) button.
14	6	61	01	
15				Wait for 3 seconds.
16	6	02		Check the data is “00”.
17	0	10	01	
18	6 (16)	2C	01	
19	0	10	00	
20	6	4D	40	
21	6	64	04	
22	0	10	01	
23	6 (16)	22	14	
24	0	10	00	
25	6	01	13	Press PAUSE (Write) button.
26	0	10	01	
27	6 (16)	01	13	Press PAUSE (Write) button.
28				Wait for 1 seconds.
29	6 (16)	01	55	Press PAUSE (Write) button. (Note 12)
30	6 (16)	02		Check the data changes to “01”.
31	0	10	00	
32	6	01	55	Press PAUSE (Write) button. (Note 12)
33	6	02		Check the data changes to “01”.
34	0	10	01	
35	6 (16)	0C		Check the data is “00”.

Note 11: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Note 12: The adjustment data will be automatically input to page: FF, address: A0 to AF.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	0	10	00	
3	6	01	00	Press PAUSE (Write) button.
4	6	64	00	
5	6	4D	00	
6	0	10	01	
7	6 (16)	2C	00	
8	6 (16)	01	25	Press PAUSE (Write) button.
9				Wait for 3 seconds.
10	6 (16)	01	00	Press PAUSE (Write) button.
11	0	10	00	
12	6	61	00	
13				Wait for 3 seconds.
14	0	10	09	
15	F (9F)	26		Set the bit value of bit0 is “0”, and press PAUSE (Write) button. (Note 11)
16	0	10	00	
17	0	01	00	
18				Perform “Flange Back Check (ND2)”.
19				Perform “Optical Path Differential Adjustment (ND3)”.

2. Flange Back Check (Set)

2-1. Flange Back Check (ND1)
(Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Siemens star chart) (Illuminance: 250 ± 50 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	(Note 2)
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check with the monitor larger than 40 inches.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) REC FORMAT (Menu setting) HDV1080i

Preparations before adjustments:

1) Install the flange back adjustment jig so that the distance between it and the front of lens of camera is less than 3 cm.
2) With the IRIS fully opened, adjust the illuminance of the chart surface appropriately. (250 ± 50 lux)
3) Check that the center of chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Checking method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "1".
2	0	01	01	
3	6	99		Check the data is "00"."
4	0	10	01	
5	6 (16)	40	01	
6	0	10	00	
7	6	41	01	
8	6	4D	40	
9	6	61	01	
10				Wait for 3 seconds.
11	6	01	13	Press PAUSE (Write) button.
12	0	10	01	
13	6 (16)	01	13	Press PAUSE (Write) button.
14				Wait for 1 second.
15	6 (16)	2C	02	
16				Check that the lens is focused while zooming from TELE end to WIDE end.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	6 (16)	2C	00	
3	6 (16)	40	00	
4	0	10	00	
5	6	01	00	Press PAUSE (Write) button.
6	6	61	00	
7	6	41	00	
8	6	4D	00	
9	0	01	00	

2-2. Flange Back Check (ND2) (Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Siemens star chart) (Illuminance: 250 ± 50 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	(Note 2)
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check with the monitor larger than 40 inches.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 2
3) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "2".
2	0	01	01	
3	6	99		Check the data is "01".
4	0	10	01	
5	6 (16)	40	01	
6	0	10	00	
7	6	41	01	
8	6	4D	40	
9	6	61	01	
10				Wait for 3 seconds.
11	6	01	13	Press PAUSE (Write) button.
12	0	10	01	
13	6 (16)	01	13	Press PAUSE (Write) button.
14				Wait for 1 second.
15	6 (16)	2C	02	
16				Check that the lens is focused while zooming from TELE end to WIDE end.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	6 (16)	2C	00	
3	6 (16)	40	00	
4	0	10	00	
5	6	01	00	Press PAUSE (Write) button.
6	6	61	00	
7	6	41	00	
8	6	4D	00	
9	0	01	00	

2-3. Flange Back Check (ND3) (Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Siemens star chart) (Illuminance: 250 ± 50 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	(Note 2)
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check with the monitor larger than 40 inches.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 3
3) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "3".
2	0	01	01	
3	6	99		Check the data is "02".
4	0	10	01	
5	6 (16)	40	01	
6	0	10	00	
7	6	41	01	
8	6	4D	40	
9	6	61	01	
10	6	1C	33	
11	6	1D	0F	
12	6	1E	00	
13				Wait for 3 seconds.
14	6	01	13	Press PAUSE (Write) button.
15	0	10	01	
16	6 (16)	01	13	Press PAUSE (Write) button.
17				Wait for 1 second.
18	6 (16)	2C	02	
19				Check that the lens is focused while zooming from TELE end to WIDE end.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	6 (16)	2C	00	
3	6 (16)	40	00	
4	0	10	00	
5	6	01	00	Press PAUSE (Write) button.
6	6	1C	00	
7	6	1D	00	
8	6	1E	00	
9	6	61	00	
10	6	41	00	
11	6	4D	00	
12	0	01	00	

2-4. Flange Back Check (ND4) (Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Siemens star chart) (Illuminance: 250 ± 50 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	(Note 2)
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check with the monitor larger than 40 inches.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 4
3) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1				Set the ND FILTER to "4".
2	0	01	01	
3	6	99		Check the data is "03".
4	0	10	01	
5	6 (16)	40	01	
6	0	10	00	
7	6	41	01	
8	6	4D	40	
9	6	61	01	
10	6	1C	33	
11	6	1D	0F	
12	6	1E	00	
13				Wait for 3 seconds.
14	6	01	13	Press PAUSE (Write) button.
15	0	10	01	
16	6 (16)	01	13	Press PAUSE (Write) button.
17				Wait for 1 second.
18	6 (16)	2C	02	
19				Check that the lens is focused while zooming from TELE end to WIDE end.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6 (16)	01	00	Press PAUSE (Write) button.
2	6 (16)	2C	00	
3	6 (16)	40	00	
4	0	10	00	
5	6	01	00	Press PAUSE (Write) button.
6	6	1C	00	
7	6	1D	00	
8	6	1E	00	
9	6	61	00	
10	6	41	00	
11	6	4D	00	
12	0	01	00	

1-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

Before perform the viewfinder system adjustments, check the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.

1. EVF Gain Adjustment (UU-005 board) RadarW

This adjustment does the following items automatically.
RGB Amp Adjustment
Contrast Adjustment

Mode	VTR stop (VCR mode)
Signal	No signal
Adjustment Page	C
Adjustment Address	A9 to AB
Specified value	The data of page :3, address: 03 is “00”

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	0	10	01	
4	8 (18)	AF		Set the bit value of bit1 is “1”, and press PAUSE (Write) button. (Note 2)
5	8 (18)	AC	04	Press PAUSE (Write) button.
6	8 (18)	A3	44	Press PAUSE (Write) button.
7	0	10	00	
8	3	03	FF	
9	3	01	6B	Press PAUSE (Write) button. (Note 3)
10	3	03		Check the data is "00". (Note 4)
11	3	70	10	Press PAUSE (Write) button.
12	3	70		Check the data changes to “11”.
13	0	01	00	

Note 2: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Note 3: The adjustment data will be automatically input to page: C, address: A9 and AB.

Note 4: If the data is other than “00”, adjustment has errors. Contents of error is written into page: 3, address: 03. See the following table.

Data of page: 3, address: 03	Contents of error
81	EVF_G adjustment error
82	EVF_R adjustment error
83	EVF_B adjustment error.

1-5. LCD SYSTEM ADJUSTMENTS

Before perform the LCD system adjustments, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.
Note 2: Set the “LCD BRIGHT”, “LCD COLOR” to the center with the menu settings of the LCD panel.
Note 3: Open the LCD panel during the LCD system adjustment.

1. PANEL Gain Adjustment (PP-005 board) RadarW

This adjustment does the following items automatically.
RGB Amp Adjustment
Contrast Adjustment

Mode	VTR stop (VCR mode)
Signal	No signal
Adjustment Page	C
Adjustment Address	A6 to A8
Specified value	The data of page: 3, address: 03 is “00”

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	0	10	01	
4	8 (18)	AF		Set the bit value of bit1 is “1”, and press PAUSE (Write) button. (Note 2)
5	8 (18)	AC	04	Press PAUSE (Write) button.
6	8 (18)	A3	44	Press PAUSE (Write) button.
7	0	10	00	
8	3	03	FF	
9	3	01	6A	Press PAUSE (Write) button. (Note 3)
10	3	03		Check the data is "00". (Note 4)
11	3	70	10	Press PAUSE (Write) button.
12	3	70		Check the data changes to “11”.
13	0	01	00	

Note 2: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.
Note 3: The adjustment data will be automatically input to page: C, address: A6 and A8.
Note 4: If the data is other than “00”, adjustment has errors. Contents of error is written into page: 3, address: 03. See the following table.

Data of page: 3, address: 03	Contents of error
01	PANEL_G adjustment error
02	PANEL_R adjustment error
03	PANEL_B adjustment error

2. V-COM Adjustment (PP-005 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will be move, producing flicker and conspicuous vertical lines.

Mode	VTR stop (VCR mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	A1
Specified Value	The brightness difference between the section-A and section-B is minimum

Note 1: Perform "PANEL Gain Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting
BACKLIGHT (MENU setting) ..... ON

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	C	A1	70	
4	C	A1		Change the data so that brightness of the section A and section B is equal.
5	C	A1		Set a value obtained by adding 3 to the forementioned data, and press PAUSE (Write) button.
6	3	70	10	Press PAUSE (Write) button.
7	3	70		Check the data changes to "11".
8	0	01	00	

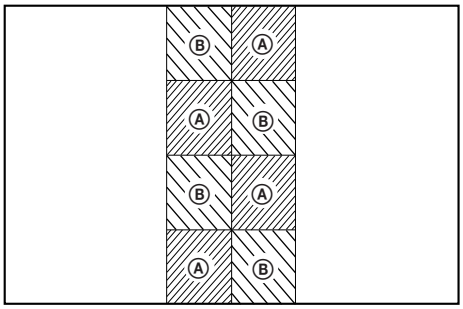


Fig. 6-1-14

3. Transmissive Mode White Balance Adjustment (PP- 005 board)

Correct the white balance at transmissive mode.
If deviated, the LCD screen color cannot be reproduced.

Mode	VTR stop (VCR mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	A2, A3
Specified Value	LCD screen must not be colored

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD block
2. Light induction plate
3. IC6001

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	C	A2	20	Press PAUSE (Write) button.
4	C	A3	20	Press PAUSE (Write) button.
5				Check that the LCD screen is not colored. If not colored, proceed to step 7.
6	C	A2 A3		Change the data so that the LCD screen is not colored. (Note 3)
7	3	70	10	Press PAUSE (Write) button.
8	3	70		Check the data changes to "11".
9	0	01	00	

Note 3: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.

1-6. ENG ADJUSTMENTS

[Connecting the measuring instruments]

Connect the measuring instruments as shown in Fig. 6-1-15.

[Lens jack (CN6402 of LL-014 board)]

The following table shown the Pin No. and signal name of CN6402

Pin No.	Signal Name	Pin No.	Signal Name
1	RETURN VIDEO_SW	7	IRIS POSITION
2	VTR CONTROL SELECT	8	IRIS MODE CONTROL
3	GND	9	EXTENDER RESPONSE
4	COMPULSION IRIS SERVO	10	ZOOM POSITION
5	IRIS CONTROL	11	FOCUS POSITION (RESERVE)
6	12V	12	(RESERVE)

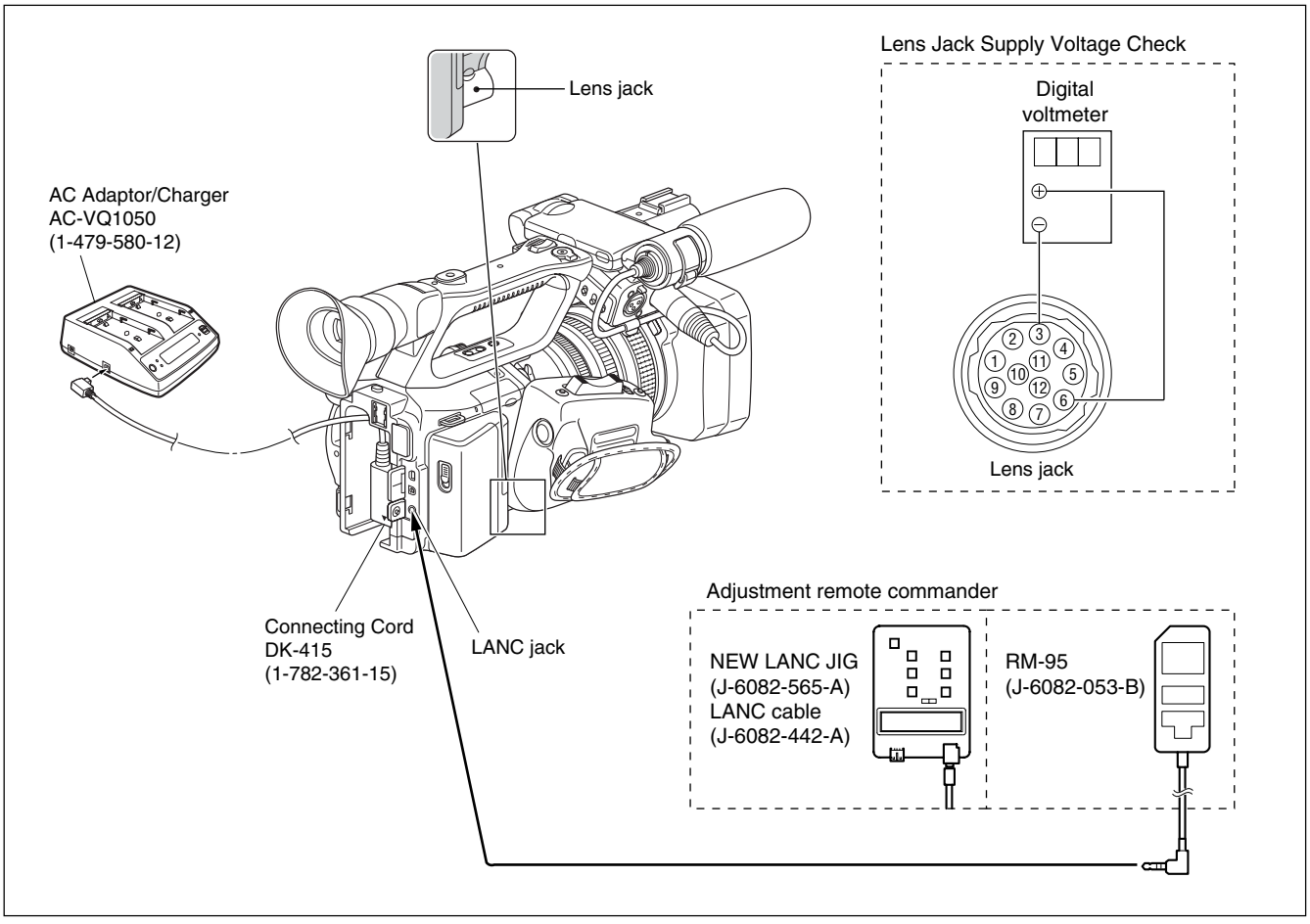


Fig. 6-1-15

1. Lens Jack Supply Voltage Check

Check that +12V is supplied normally from the lens jack.

Mode	CAMERA mode
Signal	No signal
Measurement Point	Lens jack + probe: pin ⑥ – probe: pin ③
Measuring Instrument	Digital voltmeter
Specified value	A = 12.0 ± 1.0 V

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	09	
3	F (9F)	27		Set the bit value of bit1 is "1", and press PAUSE (Write) button. (Note 1)
4				Check that the voltage of lens jack pin ⑥ satisfies the specified value.
5	F (9F)	27		Set the bit value of bit1 is "0", and press PAUSE (Write) button. (Note 1)
6	0	10	00	
7	0	01	00	

Note 1: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

2. Iris Control Adjustment RadarW

Adjust the iris control, and check that it operates normally.

Adjustment Page	6D
Adjustment Address	40 to 45

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 06.
3) Input the following data to page: D (6D), address: 40 to 45.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
40	AB
41	96
42	5D
43	AD
44	44
45	A3

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

3. Iris Position Adjustment RadarW

Adjust the iris position, and check that it operates normally.

Adjustment Page	6D
Adjustment Address	46 to 4B

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 06.
3) Input the following data to page: D (6D), address: 46 to 4B.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
46	0A
47	B9
48	03
49	93
4A	01
4B	46

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

6-2. MECHANISM SECTION ADJUSTMENTS

1. Preparations for Check, Adjustment and Replacement of Mechanism Block

- Refer to the "DISASSEMBLY" section of the SERVICE MANUAL of the respective models for details of removing cabinets and printed wiring boards.
- When making any adjustment to a mechanism or replacing mechanical parts, be sure to use the Mode Selector II and select the appropriate status of the mechanical deck such that the mechanical status is suitable for the desired work. Refer to section "2-4. Mode Selector II Operating Procedure" for details on how to enter the mode shown in a rectangle [____] mode in subsequent paragraphs of this manual.

2. Periodic Inspection and Maintenance

- Be sure to perform the following maintenance and inspection so that the machine delivers its full performance and functions, and to protect the machine and tape. Also, perform the following maintenance items after completing the repair work, regardless of the number of hours the machine has been operated by the user.

2-1. Rotary Drum Cleaning

1) Press a wiping cloth (Ref. No. J-21) moistened with head cleaning liquid (Ref. No. J-20) lightly against the rotary drum. Rotate the upper drum with a super-fine applicator slowly in the counter-clockwise direction to clean the rotary drum.

Caution: Never rotate the rotary drum by turning on the main power of the motor or rotate it in the clockwise direction. Never move the cloth vertically against the head tip, as this will surely damage the video head; the video head must not be cleaned by any other different methods.

2-2. Tape Path System Cleaning (Refer to Fig. 6-2-1.)

1) Set the EJECT state. Clean the tape running path (TG-1, -2, -3, -4, -5 and -6 pinch roller and capstan shaft) and lower drum with a super-fine applicator (Ref. No. J-22) moistened with head cleaning liquid.

Note 1: NBe careful not to allow oil or grease of the various link mechanisms to get on the super-fine applicator (Ref. No. J-22).
Note 2: Once the super-fine applicator has been moistened with alcohol, do not use it to clean other mechanical parts such as the tape guide. However, the pinch roller is cleaned with alcohol.
Note 3: When cleaning the capstan shaft, be carefull not to move the oil seal. If the oil seal is moved, oil will leak.

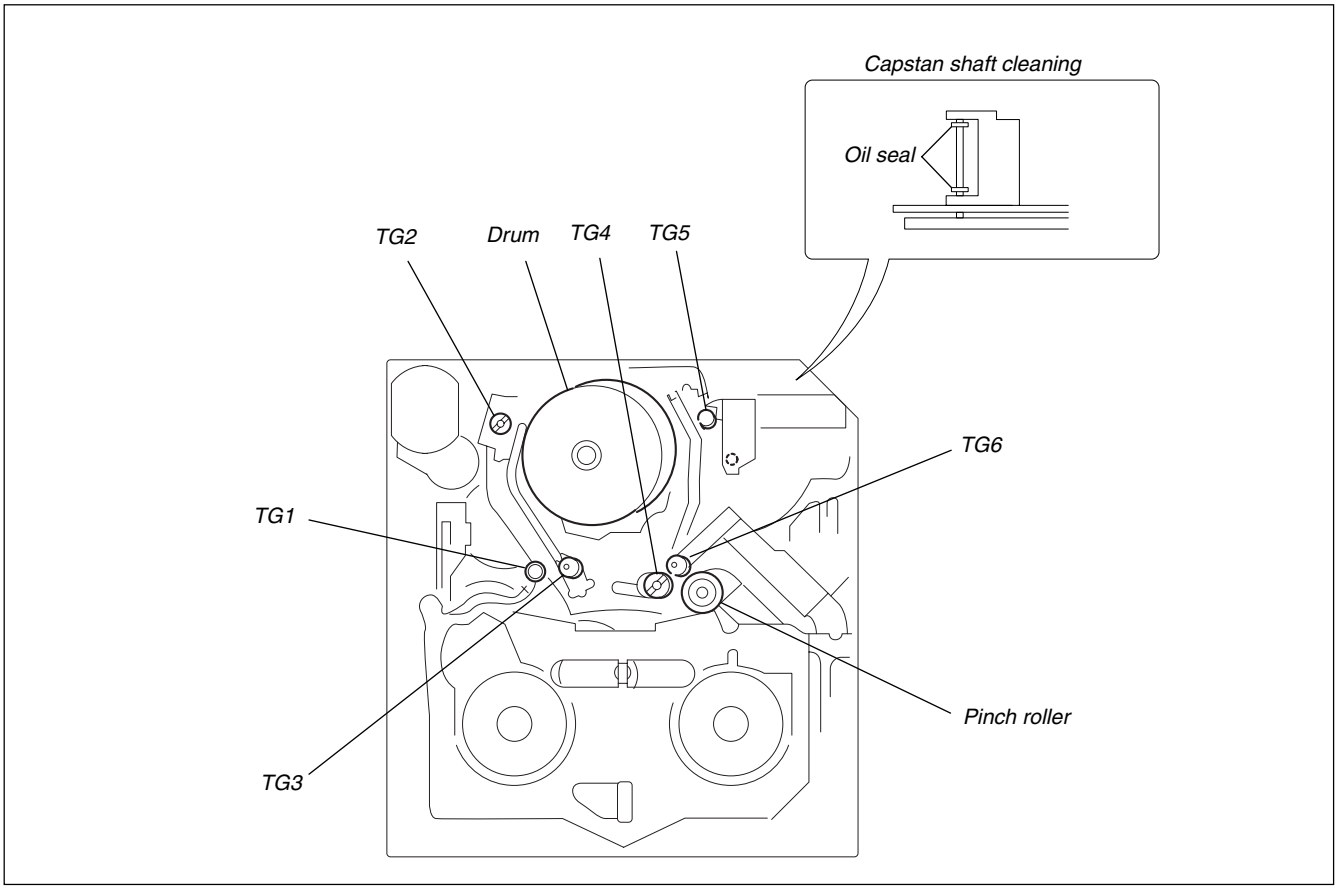


Fig. 6-2-1

2-3. Periodic Inspection List

Maintenance and inspection item		Operating hours (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Tape running surface cleaning	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
	Rotary drum cleaning and degaussing	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
Drive mechanism	Capstan bearing	—	☆	—	☆	—	☆	—	☆	—	☆	
Drive mechanism	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
Performance check	Back-tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	FWD/RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○: Cleaning, ☆: Check

Note 1: When the machine is overhauled, replace the parts referring to the above list.

Note 2: Grease

- Be sure to use the specified grease only. (If grease of different viscosity is used, it can cause various troubles.)
- The grease must not contain any dust or other matter. (otherwise it can cause various trouble.)
- Observe the noted amount of grease. (otherwise the oozed grease can cause troubles.)
- Grease (SUNCALL FG-87HSR) : Part cord. 7-640-006-08

2-4. Mode Selector II Operating Procedure

2-4-1. Introduction

The Mode Selector II is a mechanism drive tool that assists maintenance work of the various mechanism decks. It has the following functions.

1. Manual Test

In this mode, the motor of the mechanism deck is powered only during the period while the switch is turned on manually. Using the Manual Test, the operator can freely control the motor of the mechanism deck.

2. Step Test

In this mode, the motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information. The Step Test is used to confirm a series of movements of the mechanism deck.

3. Auto Test

The Mode Selector II stores the status transition table in its memory as data indicating the respective modes of the mechanism deck. The status transition table can be used to confirm whether a mechanism deck is operating normally or has abnormality from a series of movements of a mechanism deck. If an abnormal status transition is detected during operation, the "NG" indication appears and the mechanism stops moving.

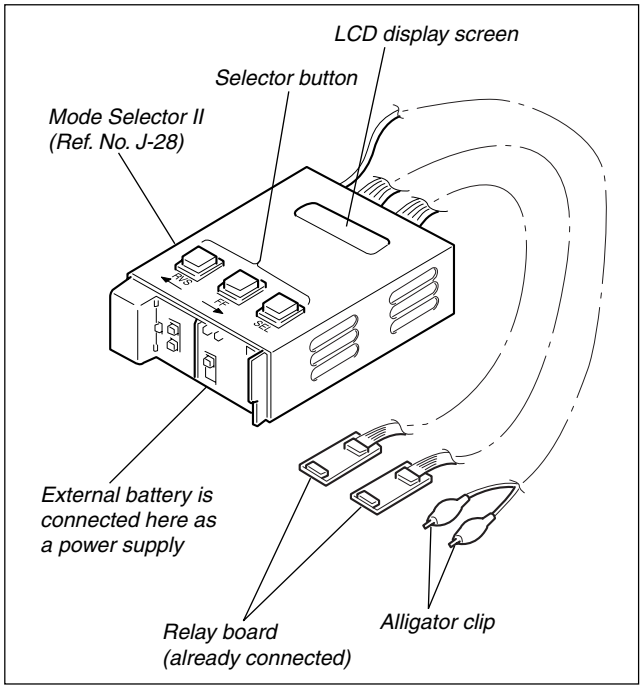


Fig. 6-2-2

Mode Selector II (J-6082-282-B) connection diagram

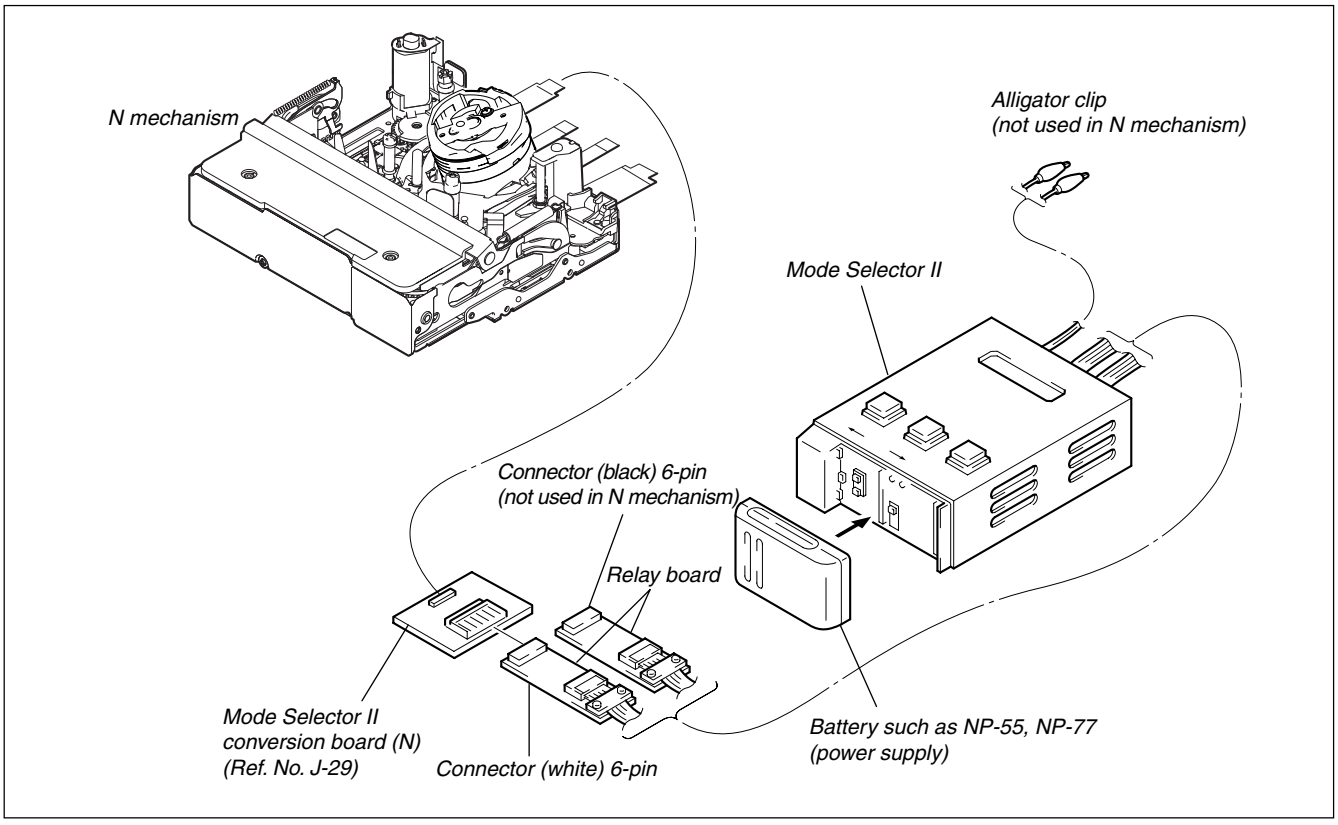
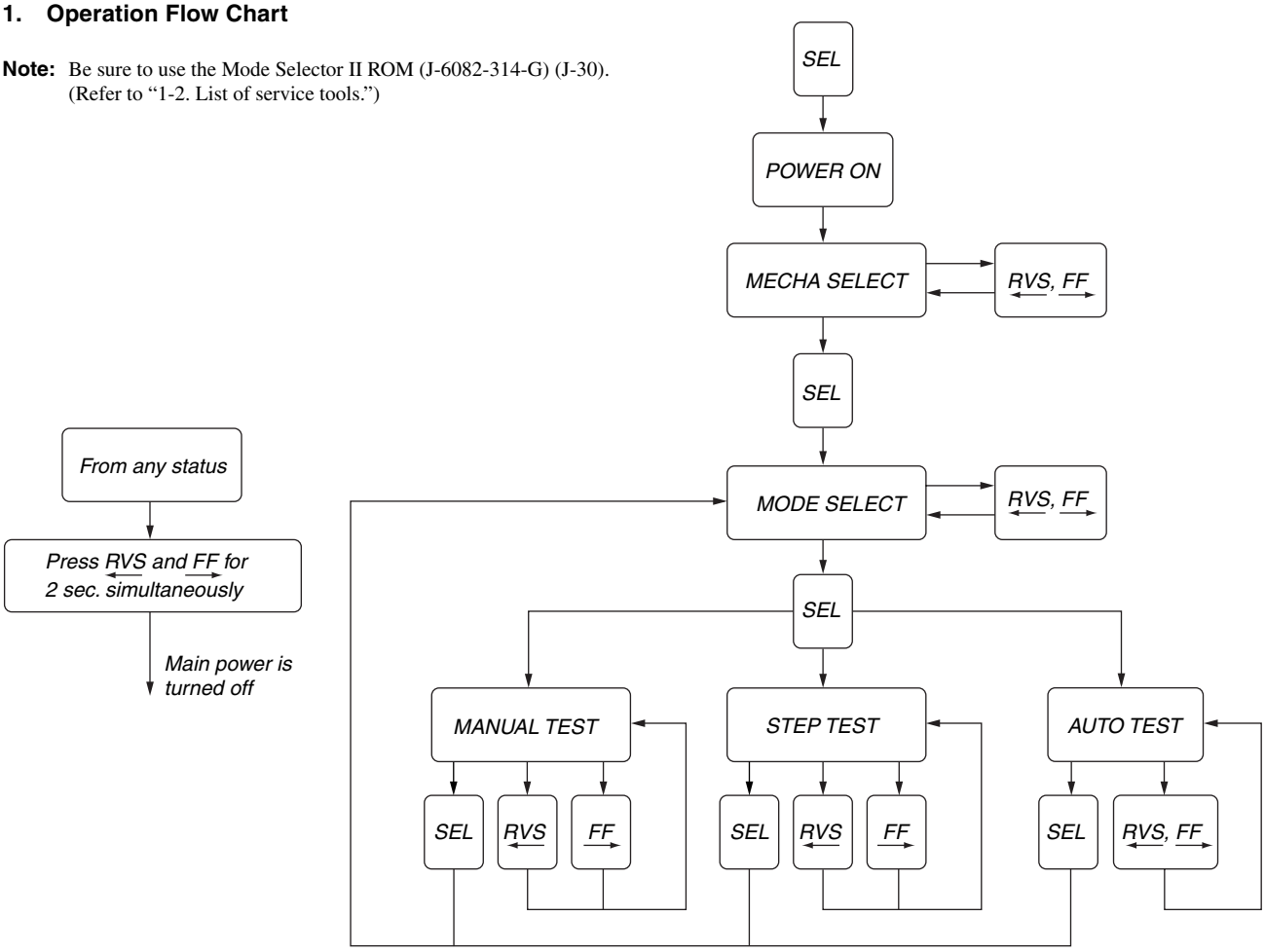


Fig. 6-2-3

2-4-2. Operation

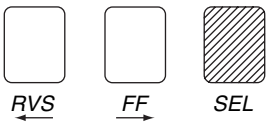
1. Operation Flow Chart

Note: Be sure to use the Mode Selector II ROM (J-6082-314-G) (J-30). (Refer to "1-2. List of service tools.")



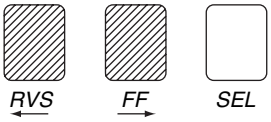
2. Mode Selector II Power On

Turn on the main power of the Mode Selector II as follows.
Press the SEL button.



3. Mode Selector II Power Off

Turn off the main power of the Mode Selector II as follows.
Press the RVS and FF buttons at the same time for 2 seconds or longer while the power is on.



4. Mecha Select

When the main power is turned on, the MECHA SELECT display appears on the LCD screen. Select the desired mechanism name using the RVS and FF buttons. Selection is complete when the SEL button is pressed. (Fig. A shows the N mechanism.)

Note: Set the "MECHA SELECT" indication to "Z" when using the mode selector II to operate the N Mechanism.

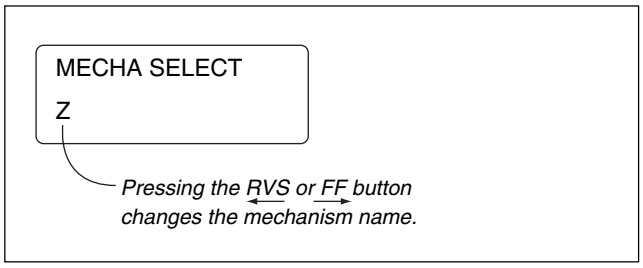


Fig. A

5. Test Type Select

Using the RVS and FF buttons, select a desired test type from the three types of "MANUAL", "STEP" and "AUTO". Selection is complete when the SEL button is pressed.

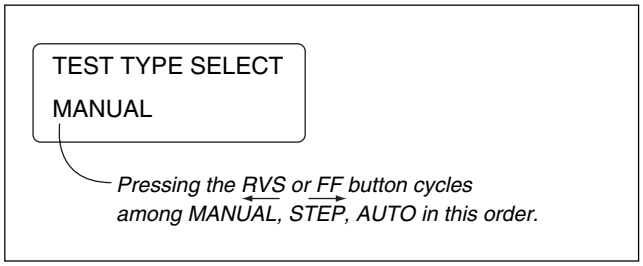


Fig. B

6. Manual Test

In this test, the motor of the mechanism deck is turned on only during the period while the RVS or FF button is pressed manually.

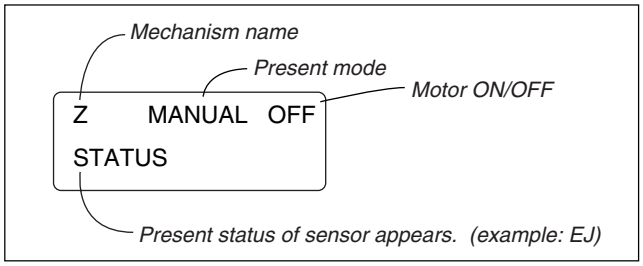


Fig. C

7. Step Test

In this test, the direction of motor movement is determined by the RVS and FF buttons. The motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information.

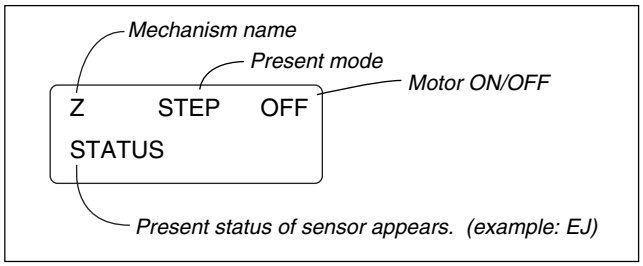


Fig. D

8. Auto Test

In this test, the mechanism deck is tested as to whether it performs a series of movements correctly in accordance with the operation sequence that is memorized earlier for each type of deck, by checking the output signals from sensors with the stored memory. Turning on the RVS or FF button performs the same operation.

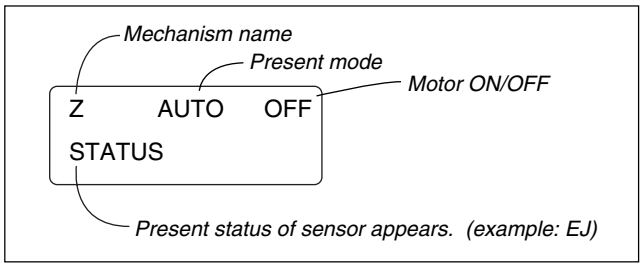


Fig. E

2-4-3. Mechanism Status (Position) Transition Table Using Mode Selector II

After selecting a mechanism deck, select either the MANUAL or STEP test (not AUTO) using the Mode Selector II. The desired mechanism status (position) can be specified by pressing the RVS or FF button. (The selected status appears on STATUS.)
EJ⟷ULE⟷LD1 (SR)⟷LD2 (HL)⟷STOP⟷R/P

Code \ MD name				N Mechanism (Display: Z)
A	B	C		
0	1	0	1	EJ
1	1	0	2	ULE
1	0	0	3	LD1 (SR)
1	0	1	4	LD2 (HL)
0	0	1	5	STOP
0	1	1	6	R/P

2-4-4. Battery Alarm Indication

When the level of the battery used to supply power to this system decreases, this display appears asynchronously. When this happens, all operations are disabled and the battery must be replaced.

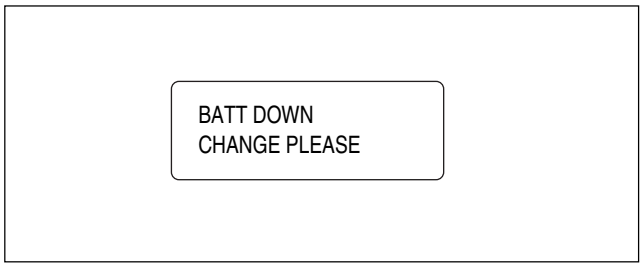
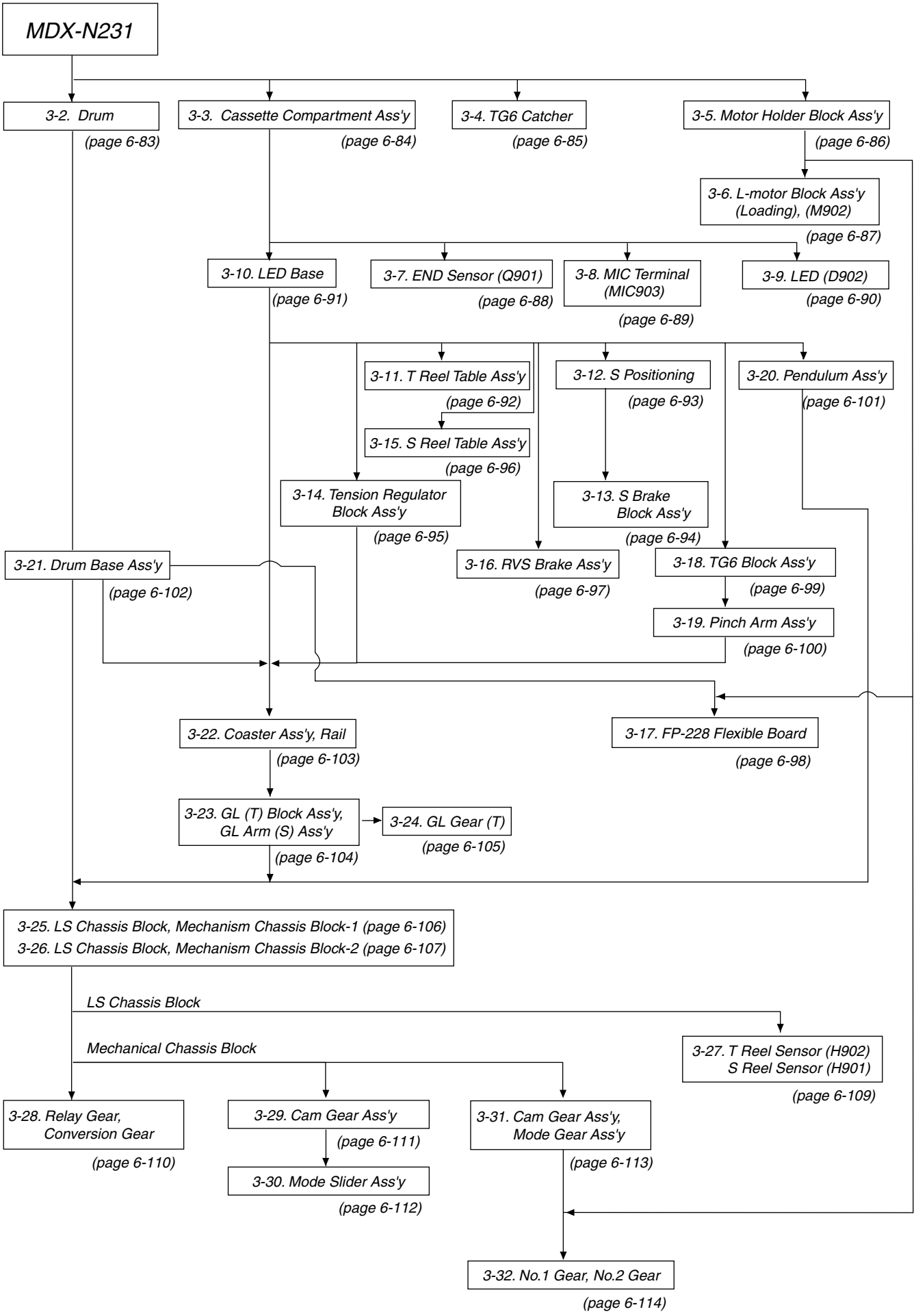


Fig. F

3. Check, Adjustment and Replacement of Mechanical Parts

3-1. Flowchart of Replacement of Mechanical Parts



1. Removal procedure

1) Enter the [ULE] mode.
2) Peel away the portion Ⓐ of the drum flexible board from the flexible adhesive sheet ①.
3) Remove the three screws (special head screw M1.4 × 2.0) ② and remove the drum ③.
4) Peel away the flexible adhesive sheet ④.
(Don't re-use the flexible adhesive sheet.)

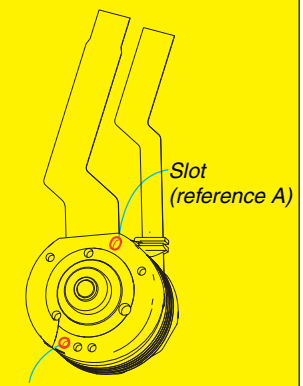
2. Attachment procedure

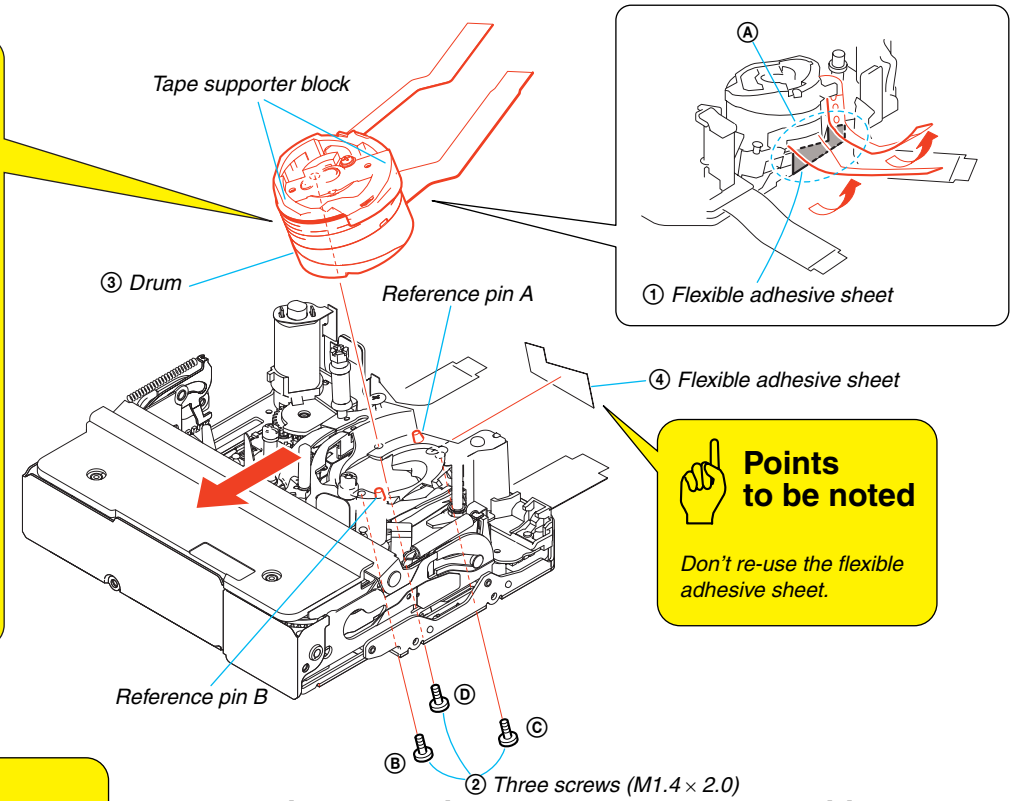
1) Enter the [ULE] mode.
2) Attach the flexible adhesive sheet ④.
3) Hold the tape supporter block, and set the reference holes A and B to the drum base reference pins A and B.
4) Install the the drum ③ with the three screws (special head screw M1.4 × 2.0) ② in the order of Ⓑ, Ⓒ and Ⓓ.
Tightening torque: 0.04 ± 0.01 N•m (0.41 × 0.1 kgf•cm)
5) Attach the portion Ⓐ of the drum flexible board to the flexible adhesive sheet ①.
6) Clean the tape path mechanism by referring to Section 2-2. (Refer to Section "2-2. Tape Path System Cleaning".)
7) Implement the tape path adjustment. (Refer to Section "4-3. Tape Path Adjustment")

Drum (rear view)

Key Points in Re-assembling

Drum (rear view)





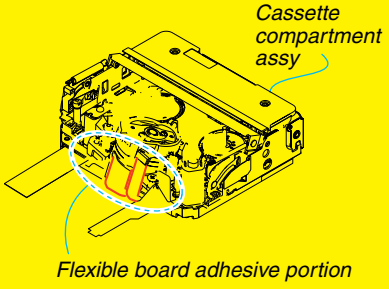
Points to be noted

Don't re-use the flexible adhesive sheet.

HOW TO PLACE THE MECHANISM

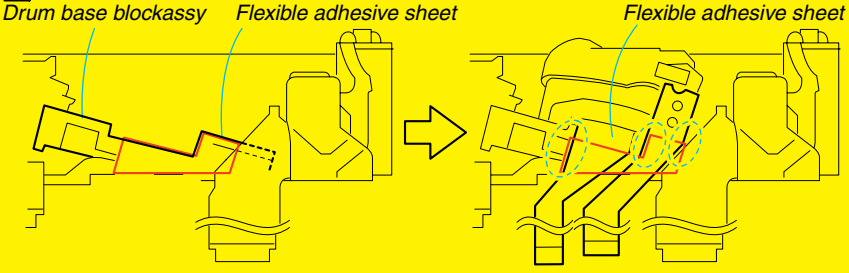
Points to be noted

After the flexible board is attached to the flexible adhesive sheet, place the flexible board, that is folded up, at the rear of the mechanism chassis to prevent the adhered portion from peeling away.



Flexible adhesive sheet attachment position

Key Points in Re-assembling



Attach the flexible adhesive sheet along the outer shape of the drum base block assy.

Attach the flexible board while aligning its side with the outer profile of the flexible adhesive sheet.

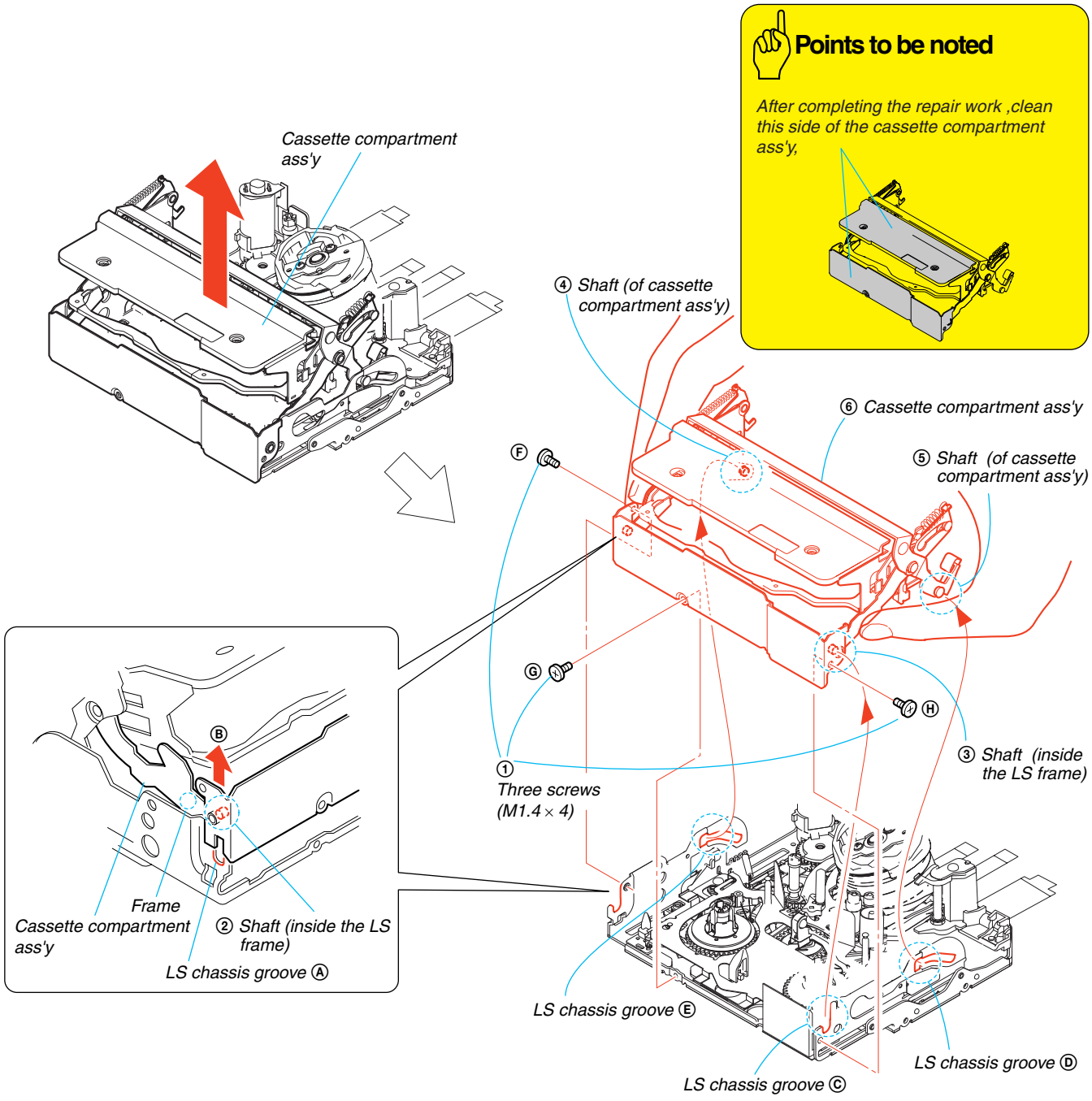
3-3. Cassette Compartment Ass'y

1. Removal procedure

1) Enter the [EJ] mode.
2) Remove the three screws (special head screw M1.4 × 1.4) ①.
3) While pushing the frame of the cassette compartment ass'y toward inside, remove the shaft ② inside the LS frame from the groove Ⓐ of the LS chassis in the direction of the arrow Ⓑ.
4) Remove the shaft ③ inside the LS frame from the groove Ⓒ of the LS chassis.
5) Remove the cassette compartment ass'y shafts ④ and ⑤ from the LS chassis grooves Ⓓ and Ⓔ. Remove the cassette compartment ass'y ⑥.

2. Attachment procedure

1) Enter the [ULE] mode.
2) Install cassette compartment ass'y ⑥ shafts ⑤ and ④ into the LS chassis grooves Ⓔ and Ⓓ.
3) While pushing the LS frame inward, install the shafts ③ and ② inside the LS frame into the grooves Ⓒ and Ⓐ of the LS chassis.
4) Install the three screws (special head screw M1.4 × 1.4) ① in the order of Ⓕ, Ⓖ and Ⓗ.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)



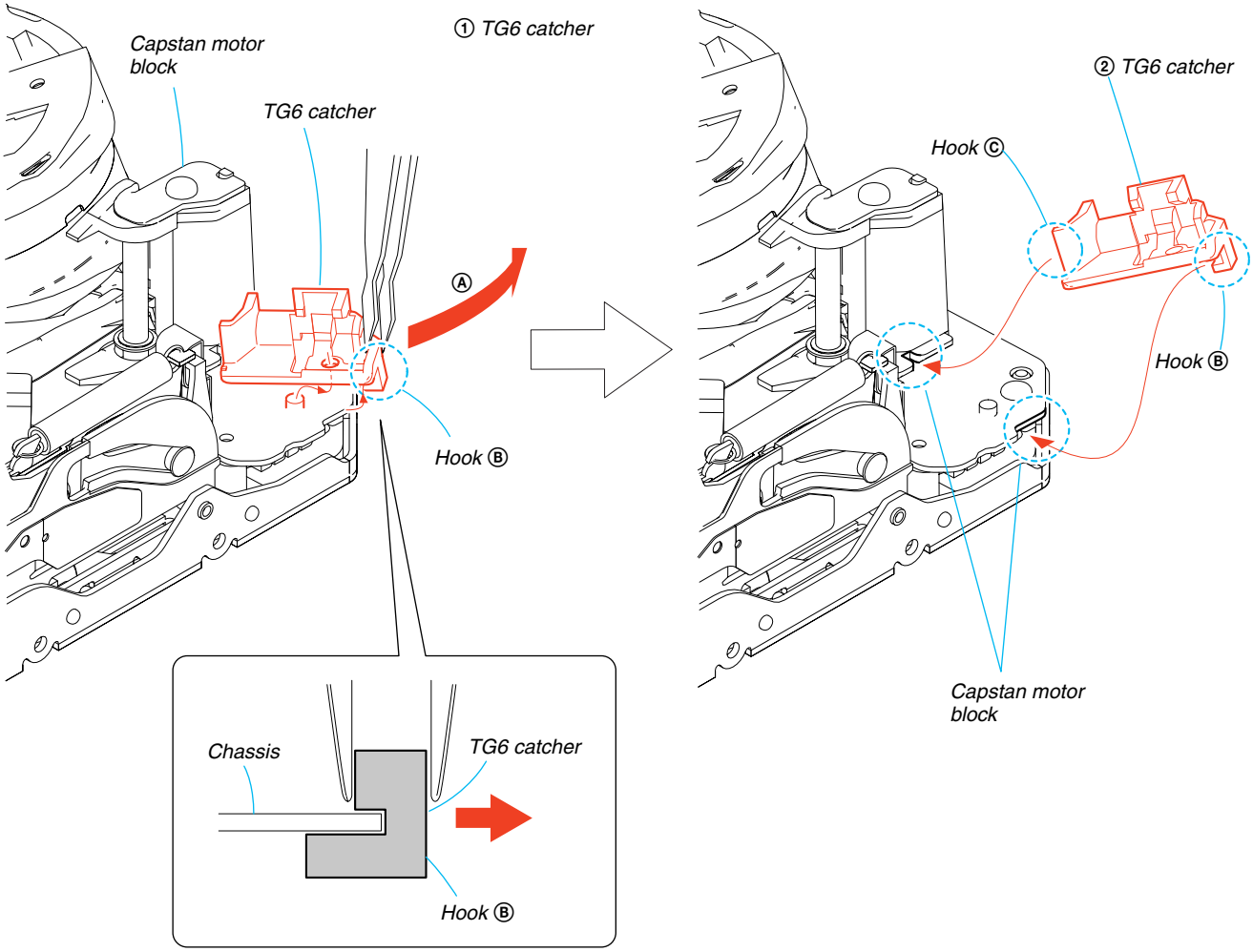
3-4. TG6 Catcher

1. Removal procedure

1) Disengage the hook Ⓑ of the TG6 catcher and remove the TG6 catcher ① from the chassis of the capstan motor block in the direction of the arrow Ⓐ.

2. Attachment procedure

1) Engage the hooks Ⓒ and Ⓑ of the TG6 catcher ② in the capstan motor block.



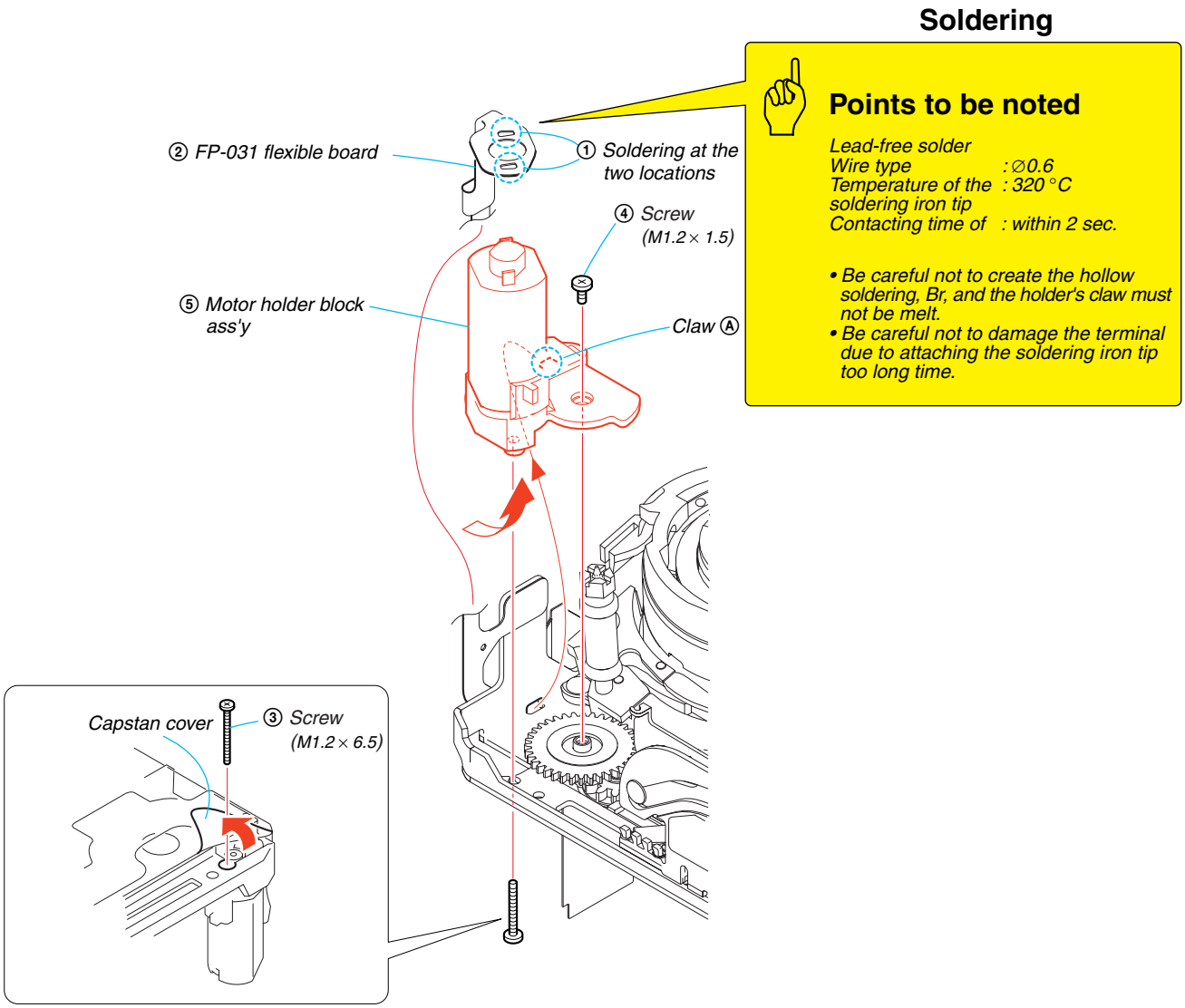
3-5. Motor Holder Block Ass'y

1. Removal procedure

1) Remove the two soldering ① and remove the FP-031 flexible board ② from the motor holder block ass'y ⑤.
2) Turn over the capstan cover and remove the screw (special head screw M1.2 × 6.5) ③.
3) Remove the screw (special head screw M1.2 × 1.5) ④.
4) Disengage the claw Ⓐ and motor holder block ass'y ⑤.

2. Attachment procedure

1) Engage the claw Ⓐ and install the motor holder block ass'y (loading) ⑤.
2) Install the screw (special head screw M1.2 × 1.5) ④.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
3) Turn over the capstan cover and install the screw (special head screw M1.2 × 6.5) ③.
4) Solder the two locations ① and install the FP-031 flexible board ② to the motor holder block ass'y (loading) ⑤.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)



3-6. L-motor Block Ass'y (Loading) (M902)

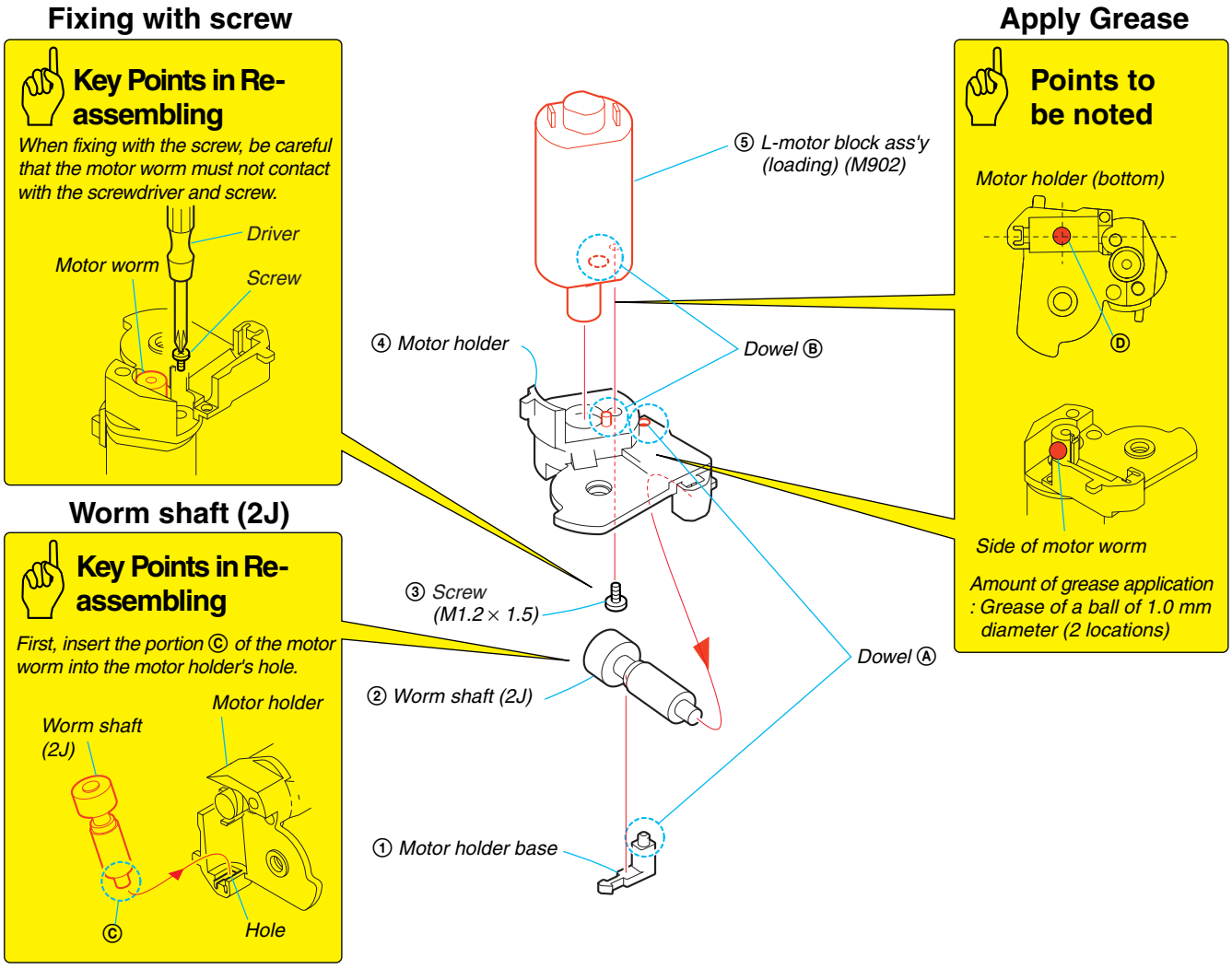
1. Removal procedure

1) Release the dowel Ⓐ, and remove the motor holder base ①.
2) Remove the worm shaft (2J) ②.
3) Remove the screw (special head screw M1.2 × 1.5) ③ and remove the L-motor block ass'y (loading) (M902) ⑤ from the motor holder ④.

2. Attachment procedure

1) Align the L-motor block ass'y (loading) (M902) ⑤ with the dowel Ⓑ, insert it into the motor holder ④. While being careful not to contact the screw and the screwdriver with the motor worm, install the screw (special head screw M1.2 × 1.5) ③.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
2) Apply the grease as much as a ball of 1.0 mm diameter on the portion Ⓓ on the bottom of the motor holder ④ and on the sides of the motor worm.
3) Install the worm shaft (2J) ②.
4) Engage the dowel Ⓐ and install the motor holder base ①.

Note: The motor holder ④ and the motor holder base ① must be replaced simultaneously as a pair.



3-7. END Sensor (Q901)

1. Removal procedure

1) Remove soldering at the two locations ① of the END sensor (Q901).
2) Disengage the claw ② and the END sensor (Q901) ③.
3) Remove soldering at the two locations ④ of the TOP sensor (Q902).
4) Disengage the claw ⑤ and the TOP sensor (Q902) ⑥.

2. Attachment procedure

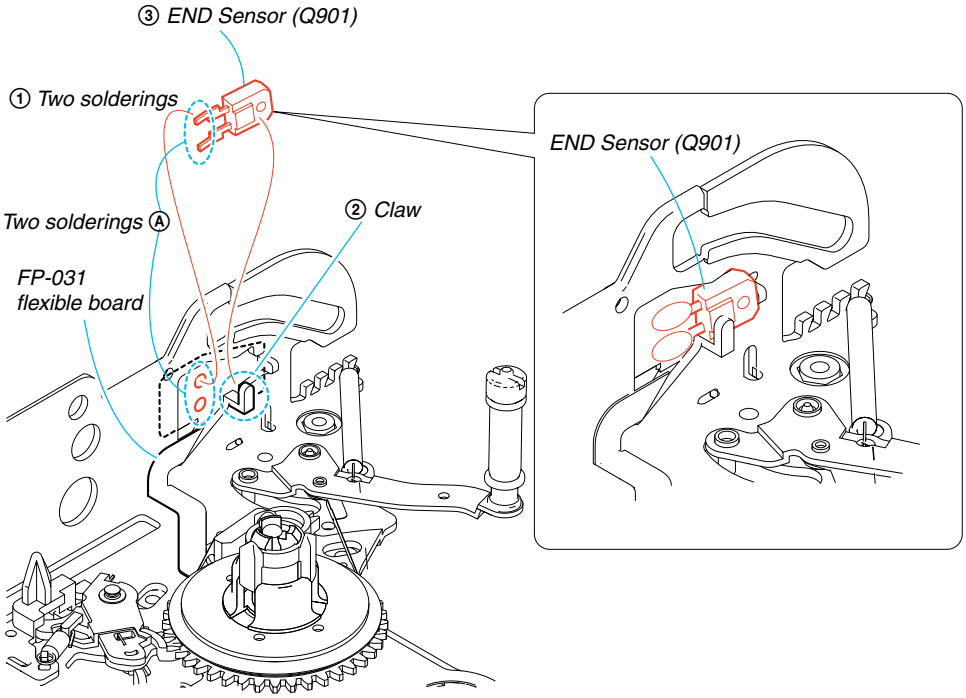
1) Engage the TOP sensor (Q902) ⑥ in the claw ⑤.
2) Solder two locations ④ of the TOP sensor (Q902) and install the TOP sensor (Q902) ⑥ in the FP-031 flexible board.
3) Engage the END sensor (Q901) ③ in the claw ②.
4) Solder two locations ① of the END sensor (Q901) and install the END sensor (Q901) ③ in the FP-031 flexible board.

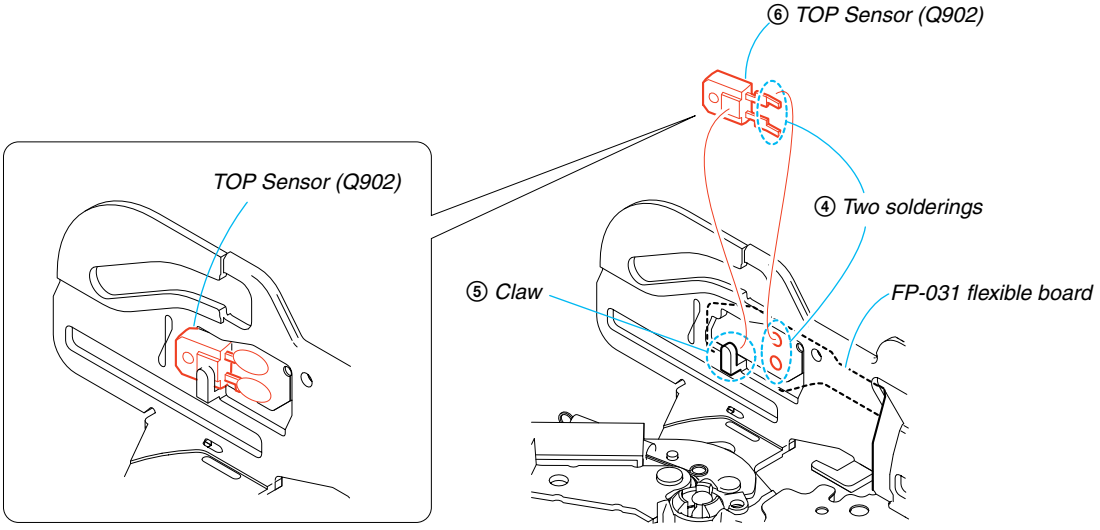
Soldering

Points to be noted

Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC

Soldering iron tip temperature: 300±10 °C
Soldering iron tip contacting time within 2 sec.





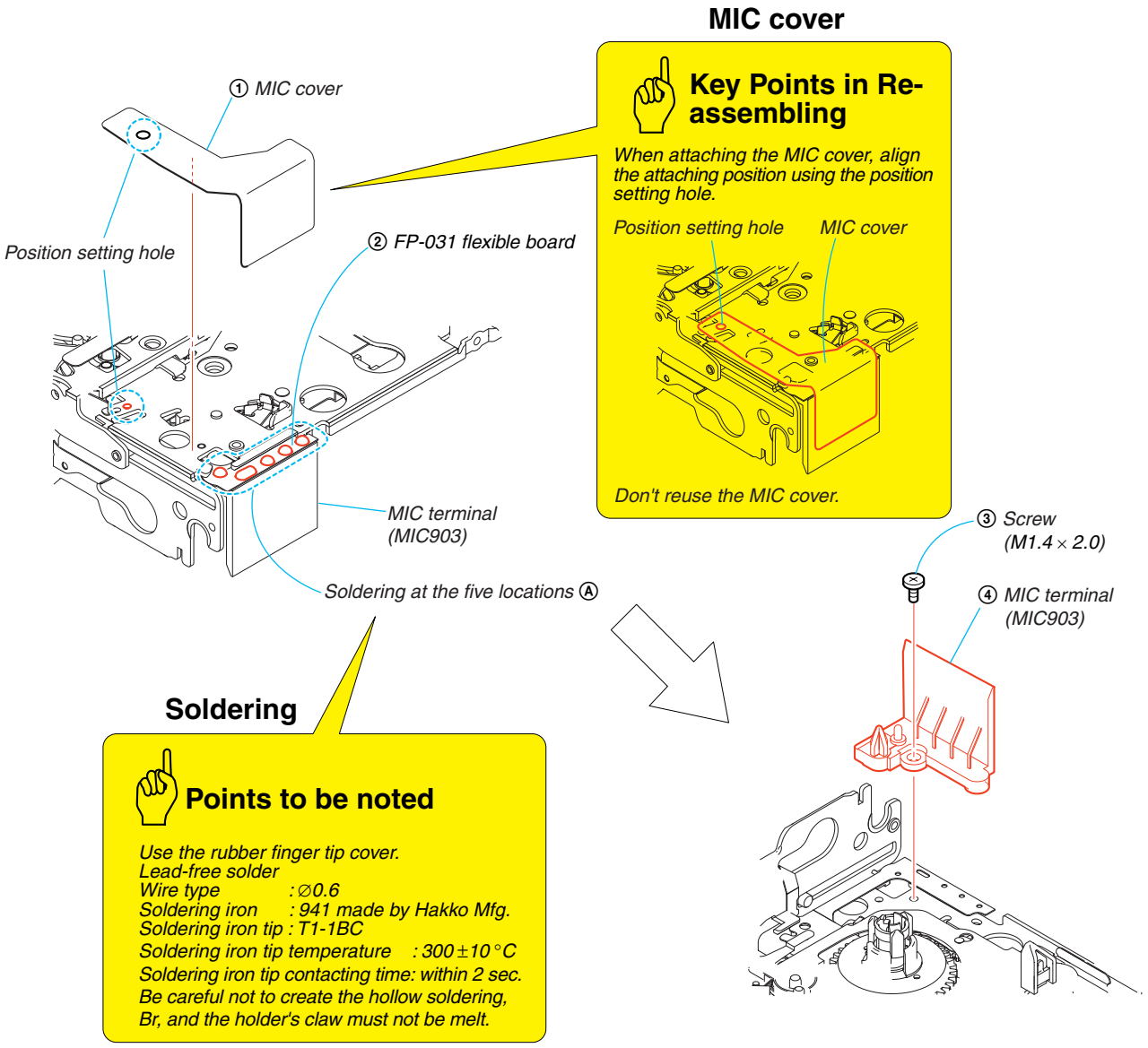
3-8. MIC terminal (MIC903)

1. Removal procedure

1) Enter the [ULE] mode.
2) Peel away the MIC cover ①.
3) Remove soldering at the five locations Ⓐ, and remove the FP-031 flexible board ② from the MIC terminal (MIC903) ④.
4) Remove the screw (special head screw M1.4 × 2.0) ③, and remove the MIC terminal (MIC903) ④.

2. Attachment procedure

1) While pressing the top of the MIC terminal (MIC903) ④, fix it with the screw (special head screw M1.4 × 2.0) ③.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
2) Remove soldering at the five locations Ⓐ, and install the FP-031 flexible board ② to the MIC terminal (MIC903) ④.
3) Align the position setting hole with the hold and attach the MIC cover.
   (Don't reuse the MIC cover.)



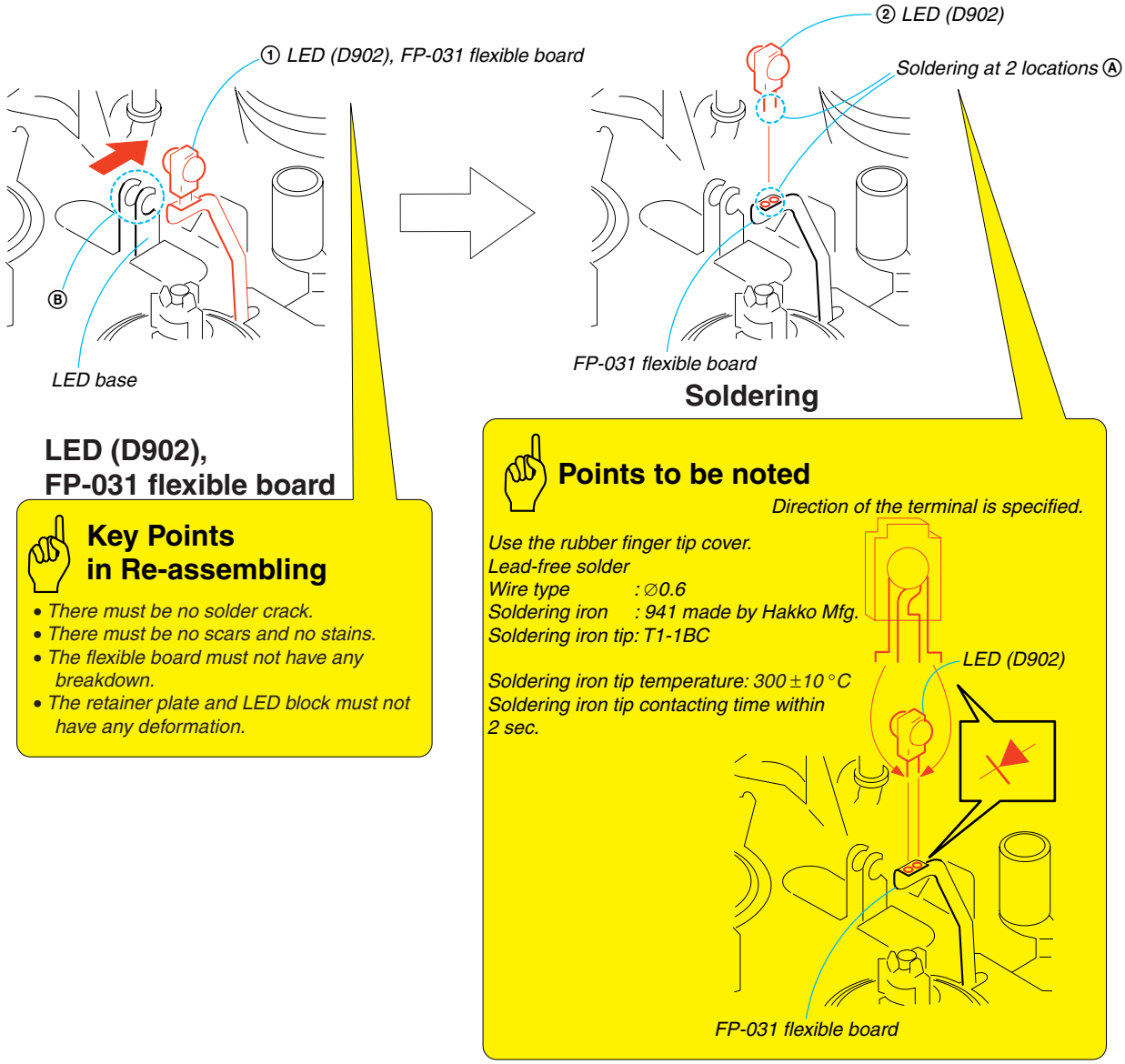
3-9. LED (D902)

1. Removal procedure

1) Remove the LED (D902) and the FP-031 flexible board ① from the LED base.
2) Remove soldering at the two locations Ⓐ, and remove the LED (D902) ②.

2. Attachment procedure

1) Remove soldering at the two locations Ⓐ, and install the LED (D902) ② in the FP-031 flexible board.
2) Roll up the FP-031 flexible board under the LED (D902) ① with fingertip, and insert the LED top head into the portion Ⓑ of the LED base. Then route the flexible board in the specified position.



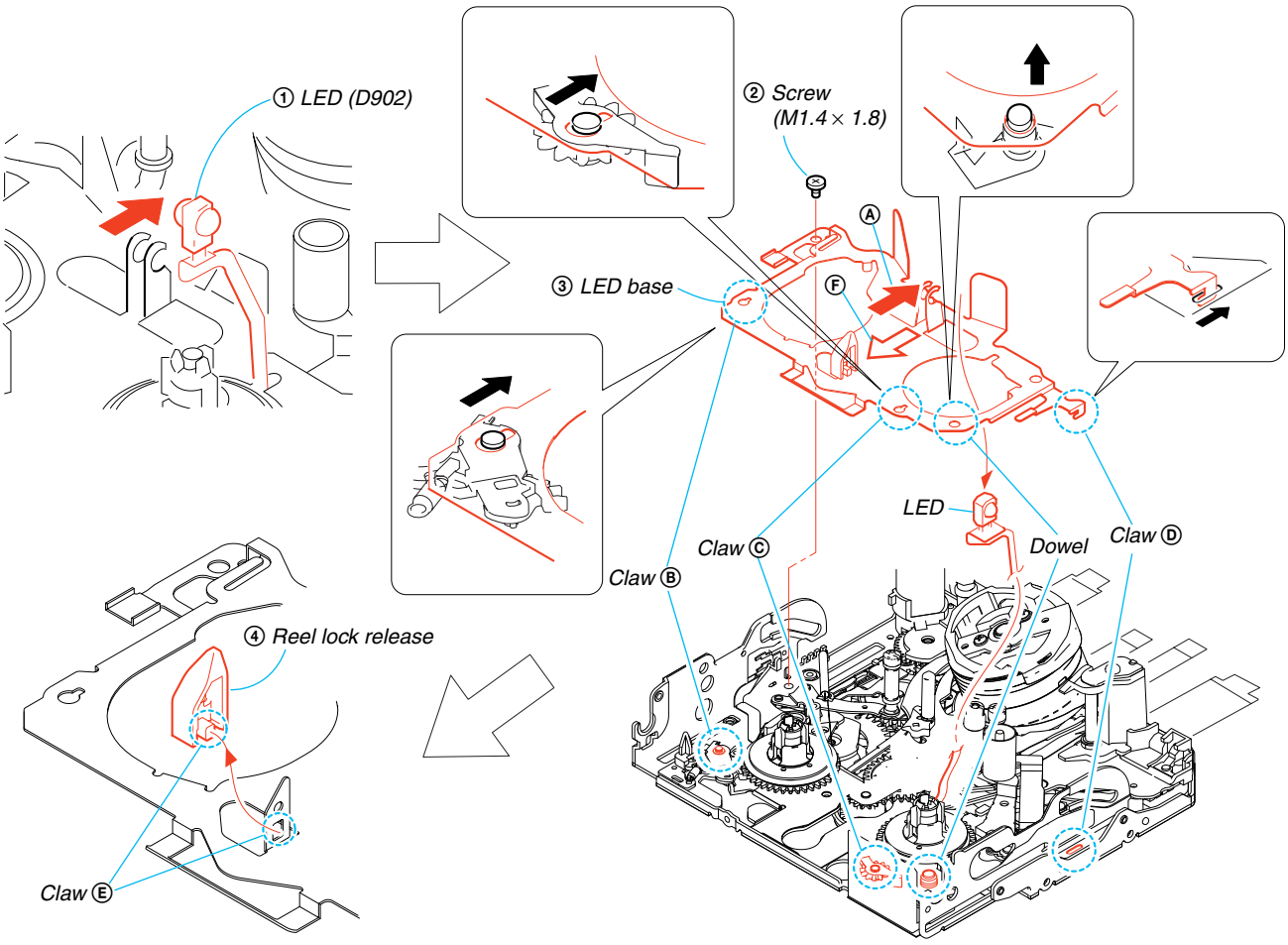
3-10. LED Base

1. Removal procedure

1) Remove the LED (D902) ① from the LED base.
2) Remove the screw (precision screw M1.4 × 1.8) ②.
3) Float the LED base ③ and remove the dowel.
4) Slide the LED base ③ in the direction of the arrow Ⓐ, and disengage the three claws at Ⓑ, Ⓒ and Ⓓ.
5) While freeing the LED from the LED base ③, remove the LED base ③.
6) Disengage the claw Ⓔ and remove the Reel Lock Cancel.

2. Attachment procedure

1) Install the Reel Lock Cancel.
2) While passing the LED (D902) ① through the hole of the LED base ③, place the LED base ③ on top of the LS chassis.
3) Align the position of the LED base ③ first with the claws Ⓑ and Ⓒ, then slide the LED base ③ in the direction of the arrow Ⓕ, and engage the three claws Ⓑ, Ⓒ and Ⓓ, and the dowel.
4) Install the screw (precision screw M1.4 × 1.8) ②.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
5) Install the LED (D902) ① to the LED base.



Reel lock release

Key Points in Re-assembling

- *The reel lock release part must not be re-used.*
- *The retainer plate must not have any deformation.*
- *The reel lock release must be full engaged. (Must not be left in the half-installed state.)*

LED base

Key Points in Re-assembling

- *All claws must be fully engaged. (Caution : No claws should be left disengaged.)*
- *The flexible board should not be pinched by anything.*
- *The retainer plate must not touch with the MIC terminal.*

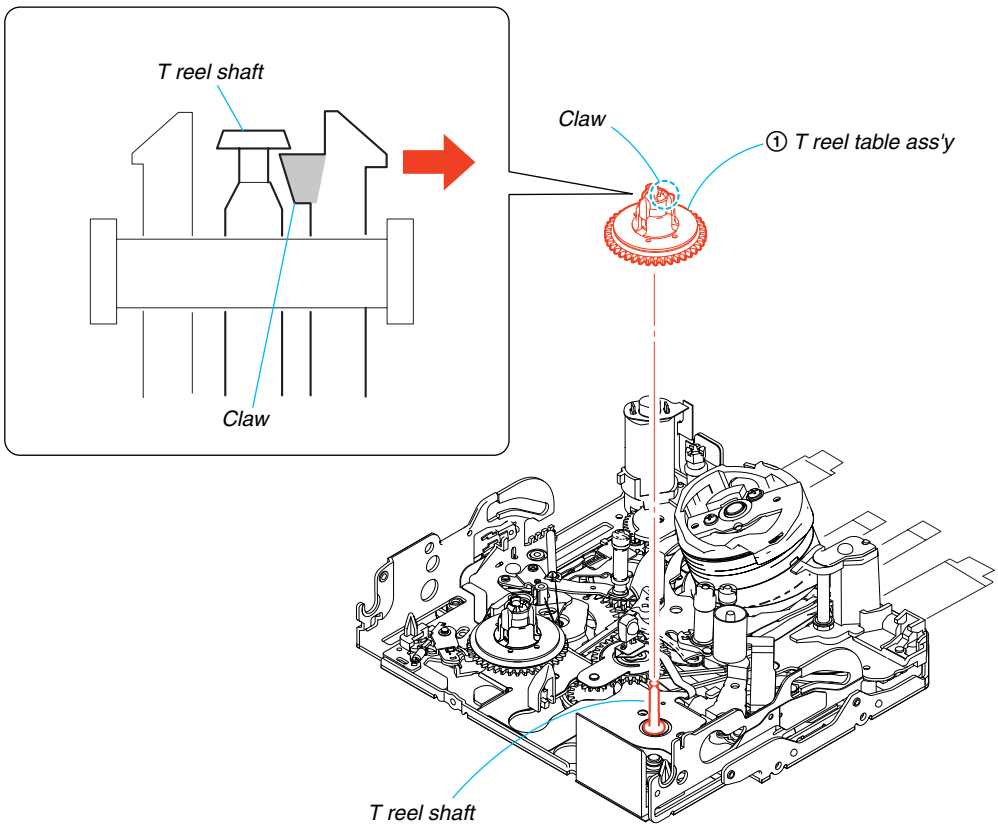
3-11. T-reel Table Ass'y

1. Removal procedure

1) While freeing the claw from the T-reel shaft in the direction of the arrow, remove the T-reel table ass'y ①.

2. Attachment procedure

1) Verify that the part that is going to be installed is the T-reel table ass'y. Then insert it into the T-reel shaft. While rotating it, snap it in. (Verify that it is locked.)



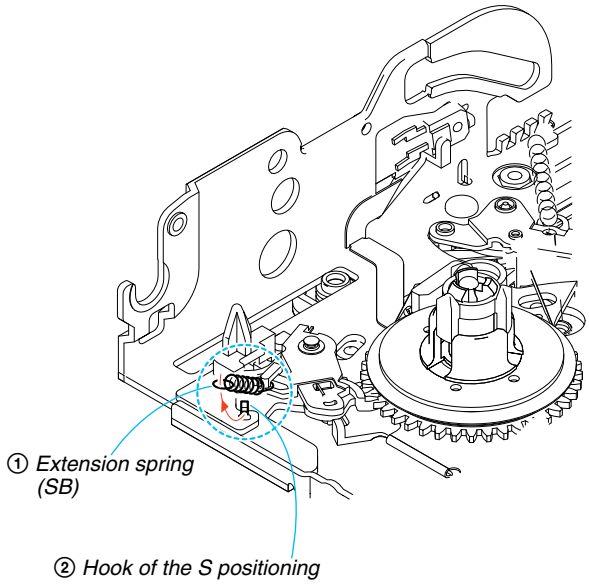
3-12. S Positioning

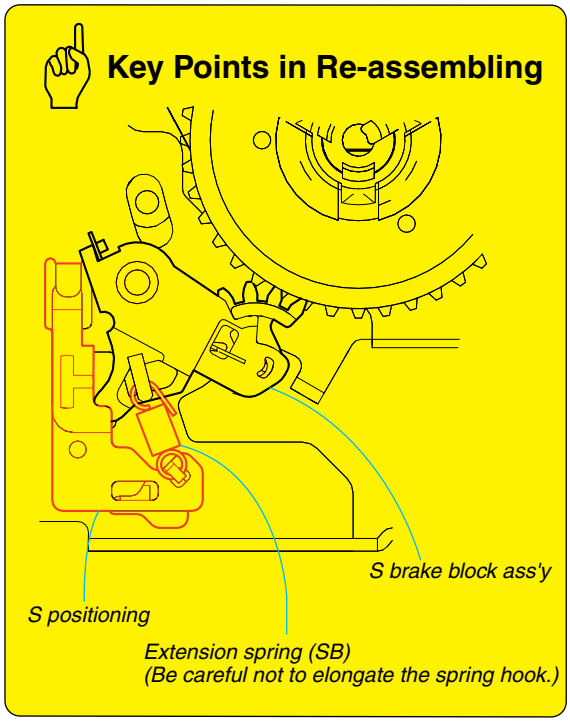
1. Removal procedure

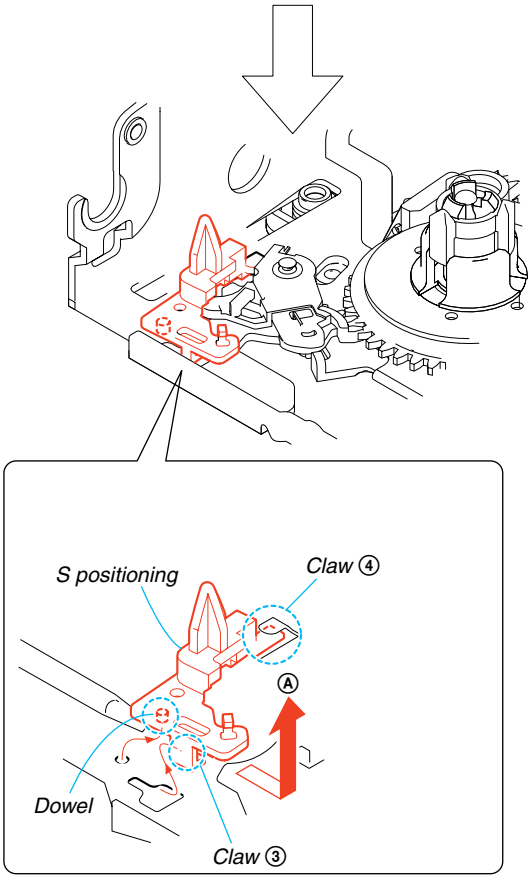
1) Remove the tension coil spring (SB) ① from the hook of the S positioning ②.
2) Rotate the S positioning in the direction of the arrow Ⓐ, and remove the claw ③ and disengage the dowel.
3) Remove the claw ④ and remove the S positioning ⑤.

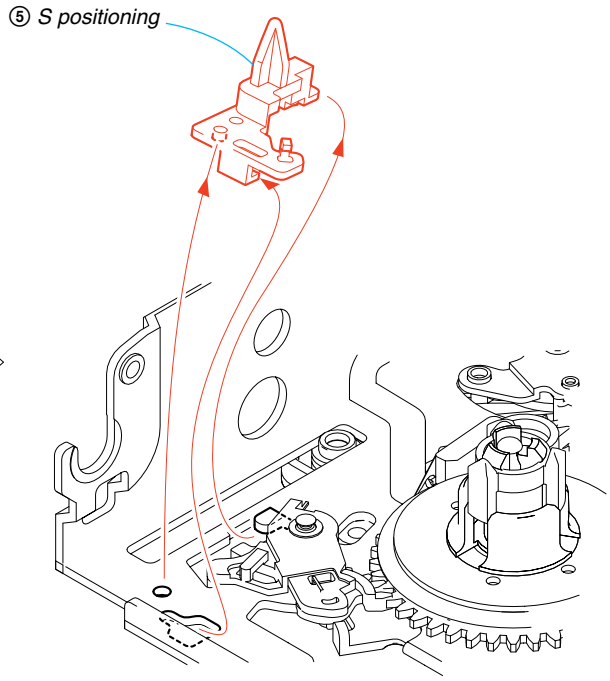
2. Attachment procedure

1) Insert the claw ④ of the S positioning ⑤ in the hole of the LS chassis.
2) Engage the claw ③ and the dowel.
3) Insert the tension coil spring (SB) ① into the hook of the S positioning ②.









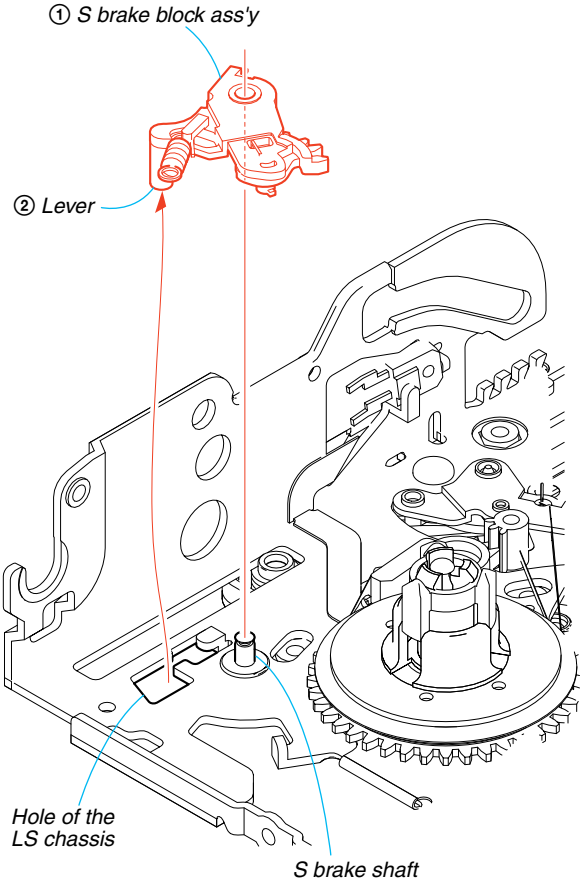
3-13. S Brake Block Ass'y

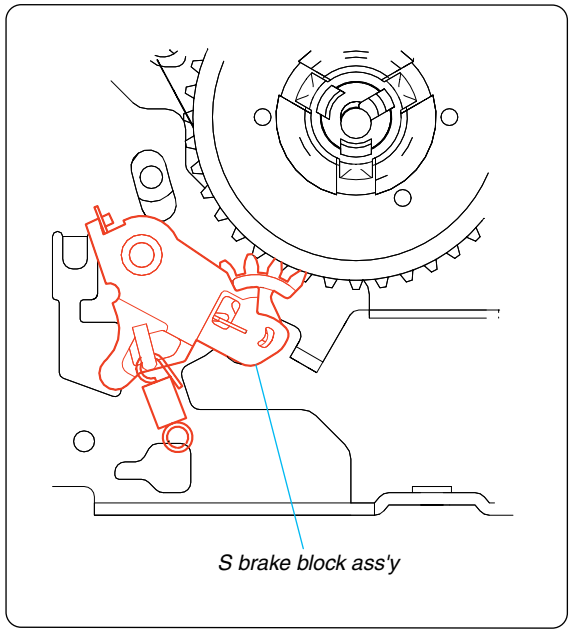
1. Removal procedure

1) Remove the S brake block ass'y ① from the S brake shaft.

2. Attachment procedure

1) Insert the lever ② of the S brake block ass'y into the hole of the LS chassis, and install the S brake block ass'y ① in the S brake shaft.





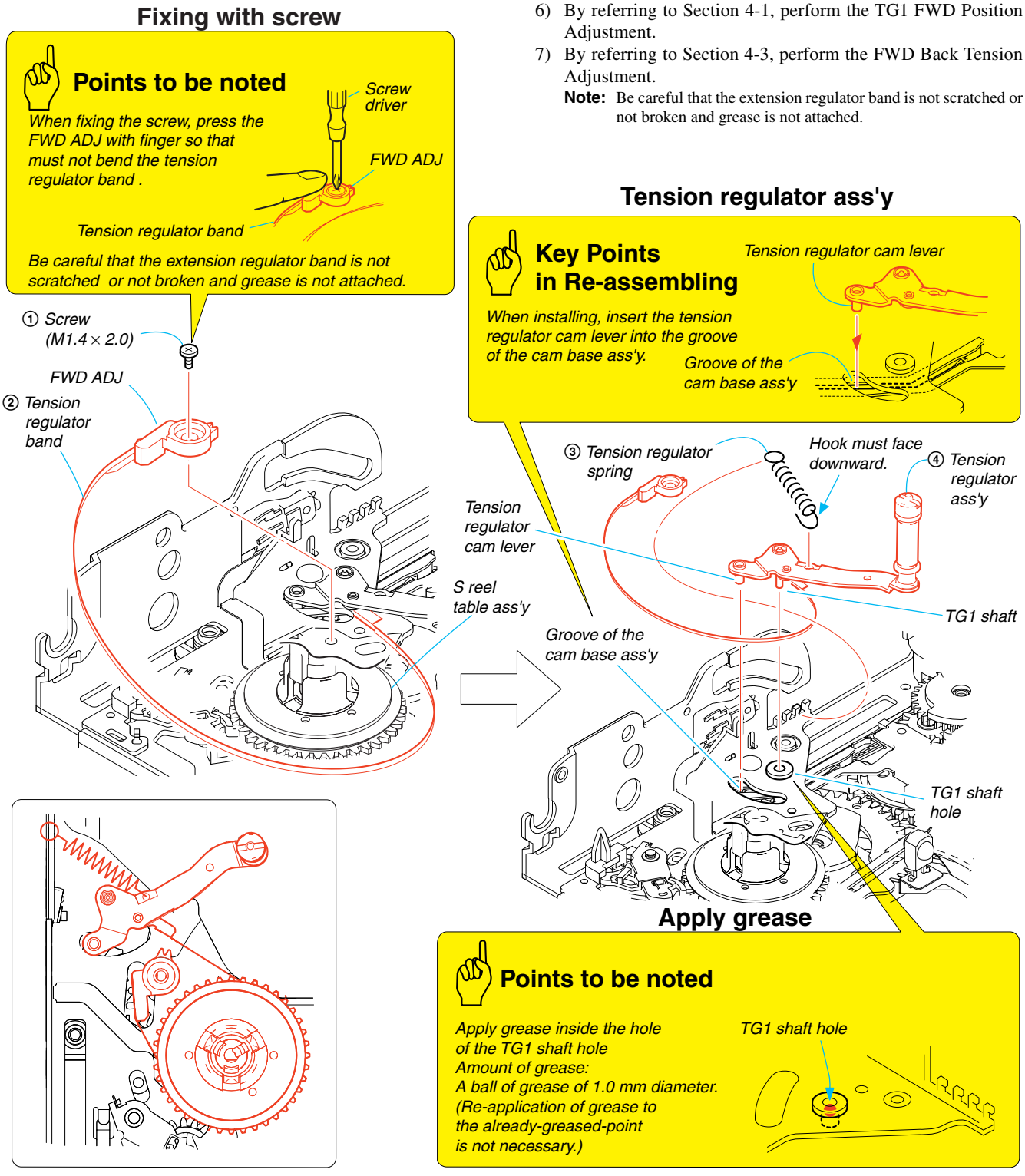
3-14. Tension Regulator Block Ass'y

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 2.0) ①.
2) Remove the tension regulator band ② from the S-reel table ass'y.
3) Remove the tension regulator spring ③.
   Note: Take a note where the tension regulator spring.
4) Remove the tension regulator block ass'y ④.

2. Attachment procedure

1) Apply grease into inside of the TG1 shaft hole.
   Amount of grease: A ball of grease of 1.0 mm diameter.
   Re-application of grease to the already-greased-point is not necessary.
2) While inserting the tension regulator cam lever into the groove of the cam base ass'y, insert the TG1 shaft into the TG1 shaft hole.
3) Hook the tension regulator spring ③ on the tension regulator ass'y ④ with the very end of the spring facing downward.
4) Hook the tension regulator spring ③ on the LS chassis.
   (The position that is taken a note when it is removed.)
5) Insert the tension regulator band ② into the groove of the S-reel table ass'y. While pushing the FWD ADJ with finger, fix it with the screw ① (special head screw M1.4 × 2.0).
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
6) By referring to Section 4-1, perform the TG1 FWD Position Adjustment.
7) By referring to Section 4-3, perform the FWD Back Tension Adjustment.
   Note: Be careful that the extension regulator band is not scratched or not broken and grease is not attached.



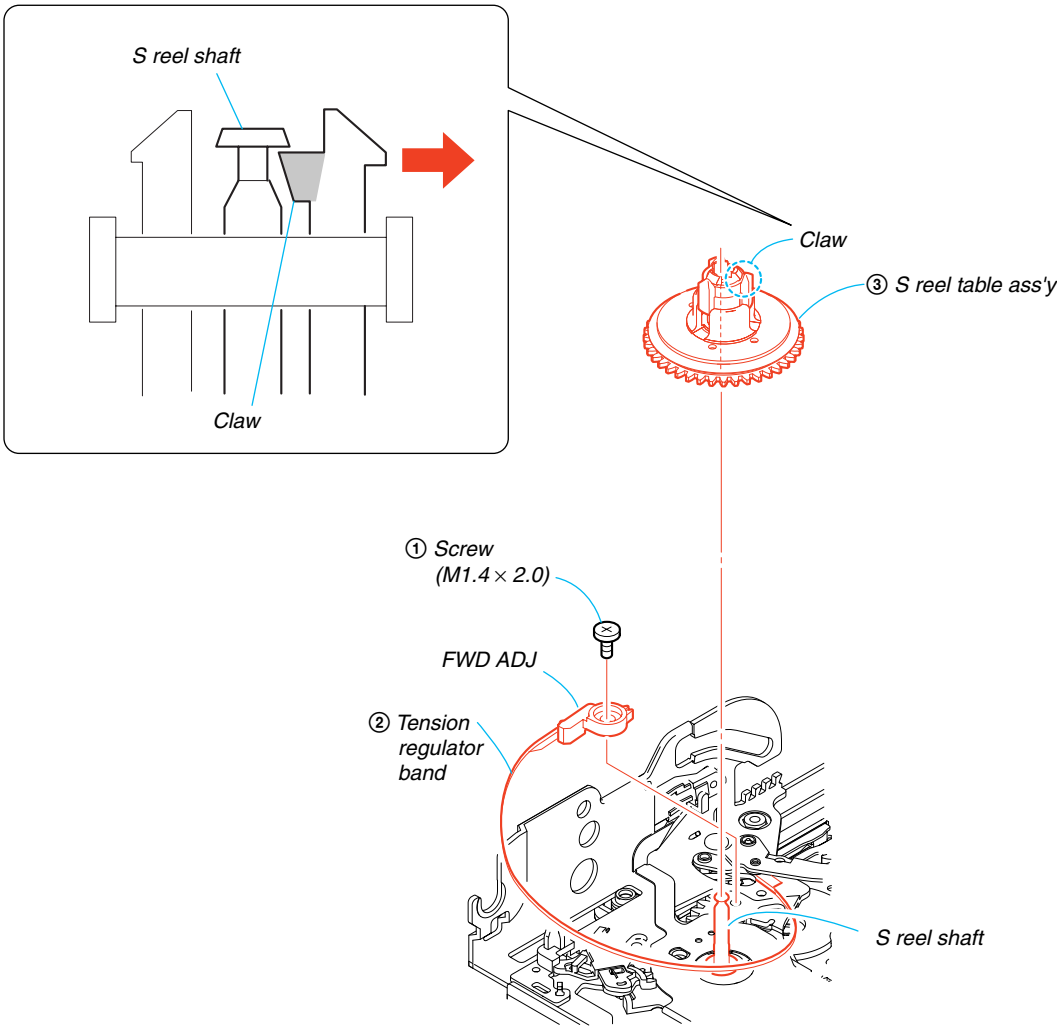
3-15. S Reel Table Ass'y

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 2.0) ① .
2) Remove the tension regulator band ② from the S-reel table ass'y.
3) While freeing the claw at the location in the direction of the arrow, remove the S-reel table ass'y ③ from the S reel shaft.

2. Attachment procedure

1) Insert the S-reel table ass'y ③ into the S-reel shaft. While rotating it, snap it in. (Verify that it is locked.)
2) Insert the tension regulator band into the groove of the S-reel table ass'y. While pushing the FWD ADJ with finger, fix it with the screw 1 (special head screw M1.4 × 2.0).
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)

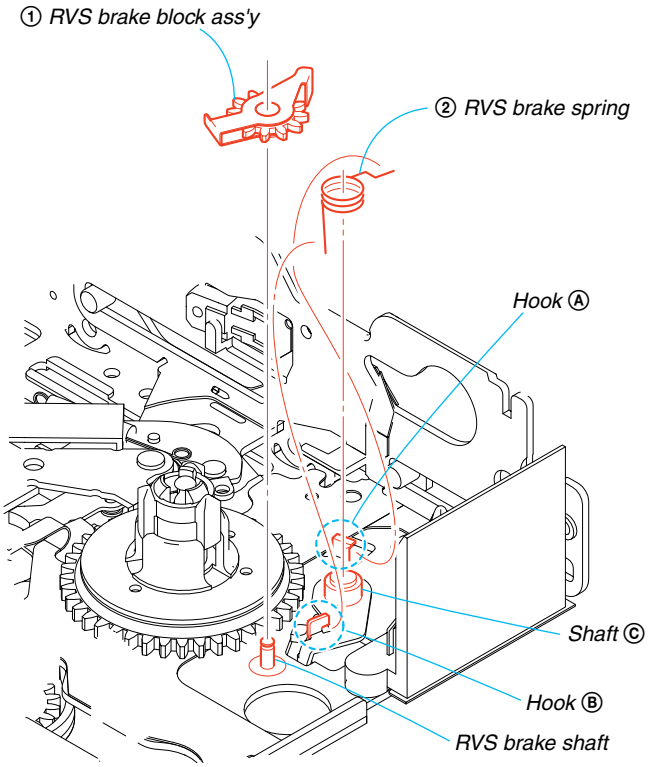


1. Removal procedure

1) Remove the RVS brake ass'y ① from the RVS brake shaft.
2) Remove the RVS brake spring ② from the hooks Ⓐ and Ⓑ.

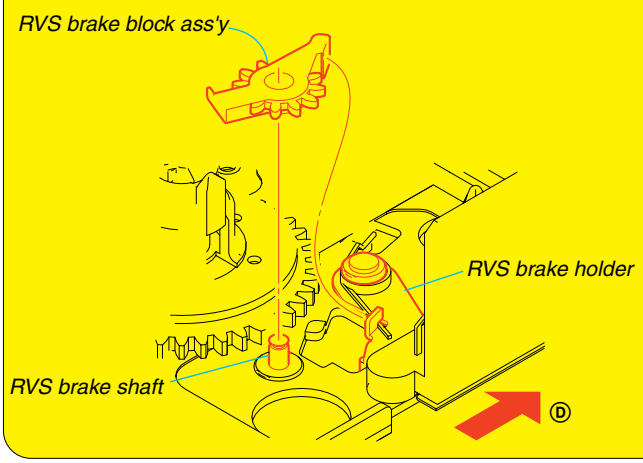
2. Attachment procedure

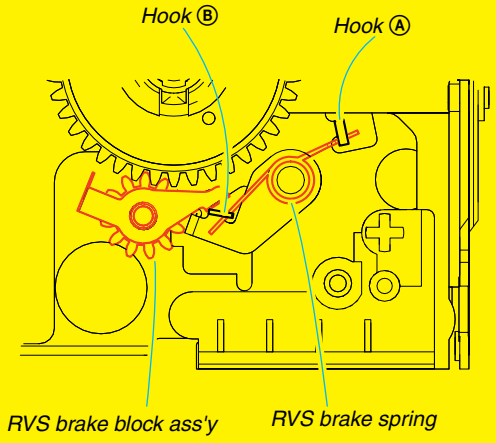
1) Install the RVS brake spring ② in the shaft Ⓒ, and engage the RVS brake spring ② on the hooks Ⓐ and Ⓑ.
2) Open the RVS brake holder in the direction of the arrow Ⓓ, and install the RVS brake ass'y ① into the RVS brake shaft.



RVS brake block ass'y

Key Points in Re-assembling



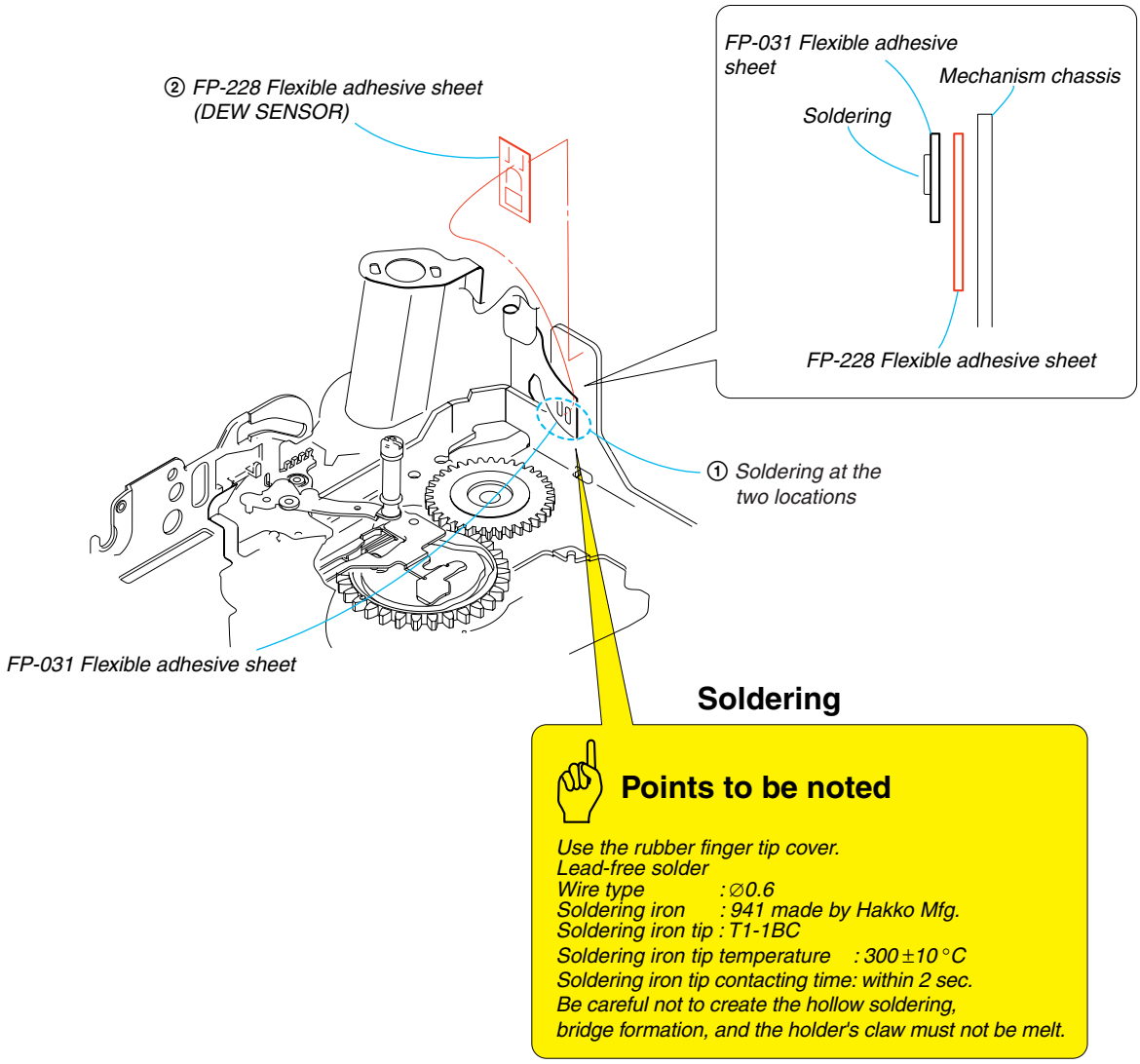


1. Removal procedure

1) Remove soldering at two locations ① on the FP-031 board and the FP-228 flexible board, and remove the FP-228 flexible board (DEW SENSOR) ② from the mechanism chassis.

2. Attachment procedure

1) Attach the FP-228 flexible board (DEW SENSOR) ② to the mechanism chassis and attach the FP-031 board to the FP-228 board.
2) Solder the terminal block at two locations ① on the FP-031 flexible board.



Soldering

Points to be noted

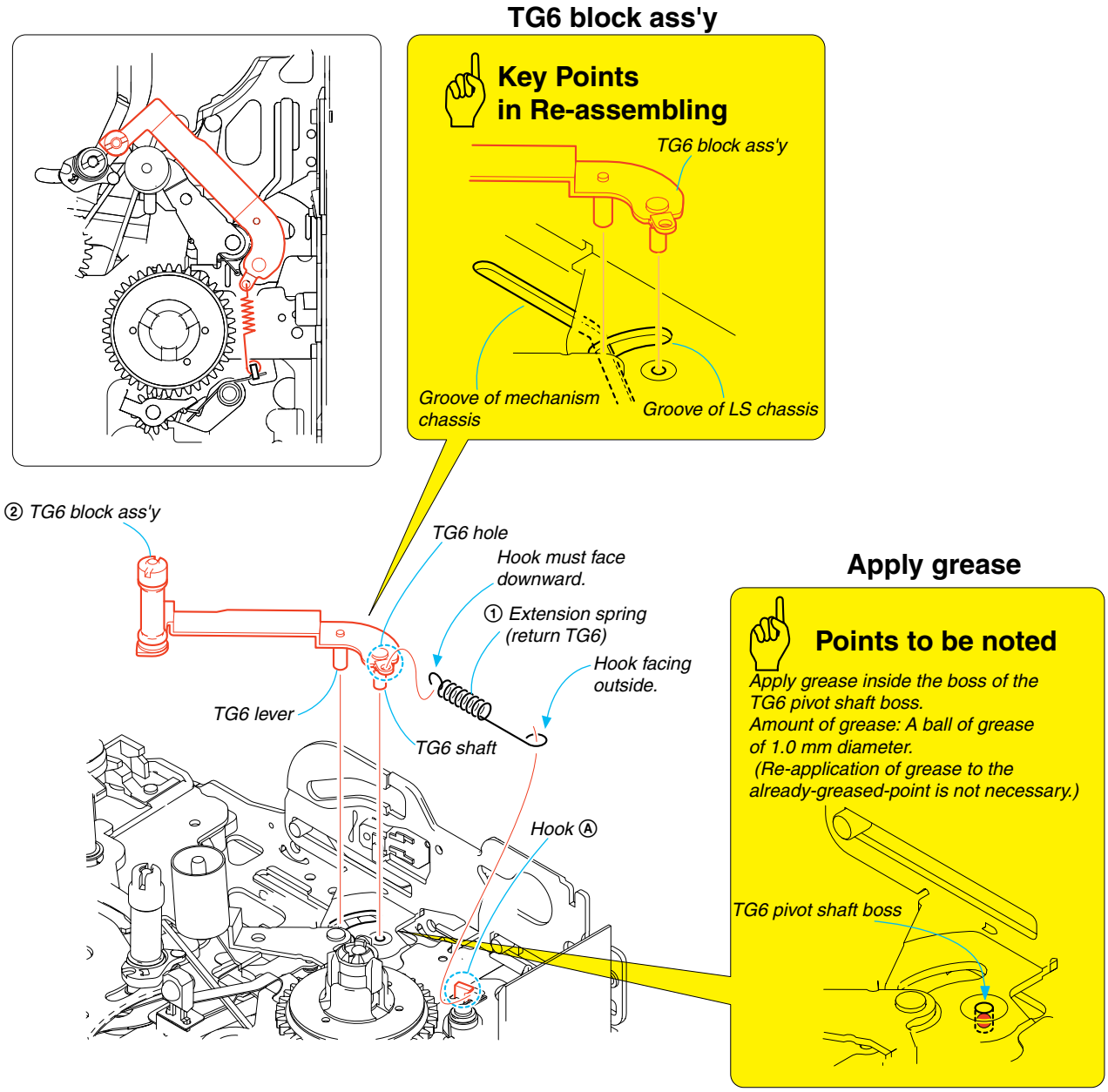
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip : T1-1BC
Soldering iron tip temperature : 300 ±10 °C
Soldering iron tip contacting time: within 2 sec.
Be careful not to create the hollow soldering, bridge formation, and the holder's claw must not be melt.

1. Removal procedure

1) Remove the extension spring (return TG6) ①.
2) Remove the TG6 block ass'y ②.

2. Attachment procedure

1) Apply grease inside the boss of the TG6 shaft hole.
   Amount of grease: A ball of grease of 1.0 mm diameter.
   Re-application of grease to the already-greased-point is not necessary.
2) Insert the TG6 shaft TG6 block ass'y ② in to the TG6 shaft hole. At the same time, insert the TG6 shaft lever into the groove of the LS chassis and that of the mechanism chassis.
3) Engage the extension spring (return TG6) ① on the hook Ⓐ and hole of the TG6.



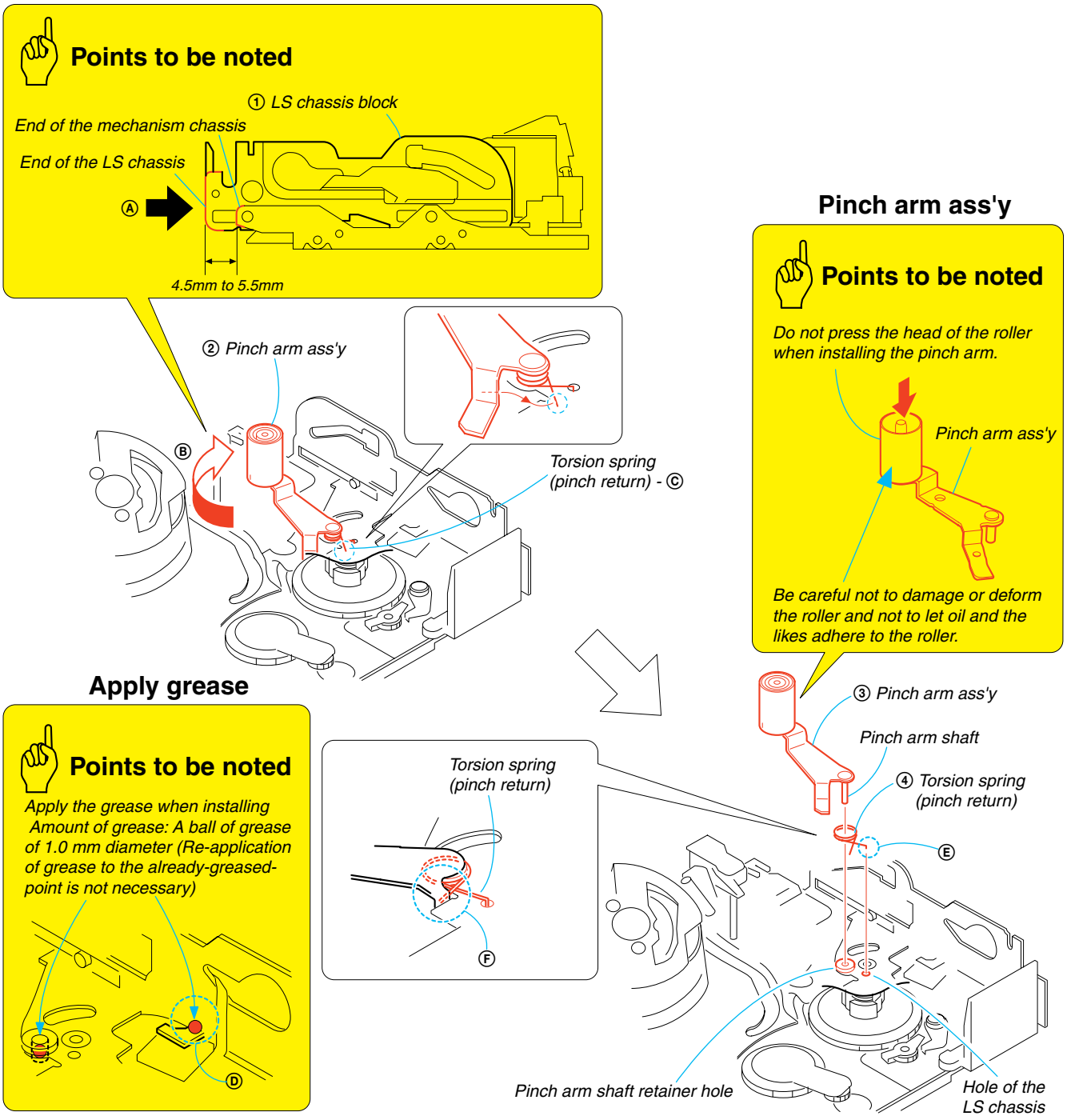
3-19. Pinch Arm Ass'y

1. Removal procedure

1) Move the LS chassis in the direction of arrow Ⓐ so that the distance between the end of the LS chassis and end of the mechanism chassis is in the range of 4.5 mm to 5.5 mm.
2) Rotate the pinch arm ass'y ② in the direction of arrow Ⓑ, and remove the torsion spring (pinch return) Ⓒ.
3) Remove the pinch arm ass'y ③ , and remove the torsion spring (pinch return) ④.

2. Attachment procedure

1) Apply grease on the pinch arm shaft retainer hole and the portion Ⓓ of the LS chassis.
   Amount of grease: A ball of grease of 1.0 mm diameter.
2) Move the LS chassis in the direction of arrow Ⓐ so that the distance between the end of the LS chassis and end of the mechanism chassis is in the range of 4.5 mm to 5.5 mm.
3) Insert the portion Ⓔ of the torsion spring (pinch return) ④ into the hole of the LS chassis, and attach it to the pinch arm shaft retainer hole.
4) Install the pinch arm ass'y ③ in the pinch arm shaft retainer hole.
5) Hook the torsion spring (pinch return) ④ on the pinch arm ass'y ③ as shown in Ⓕ.



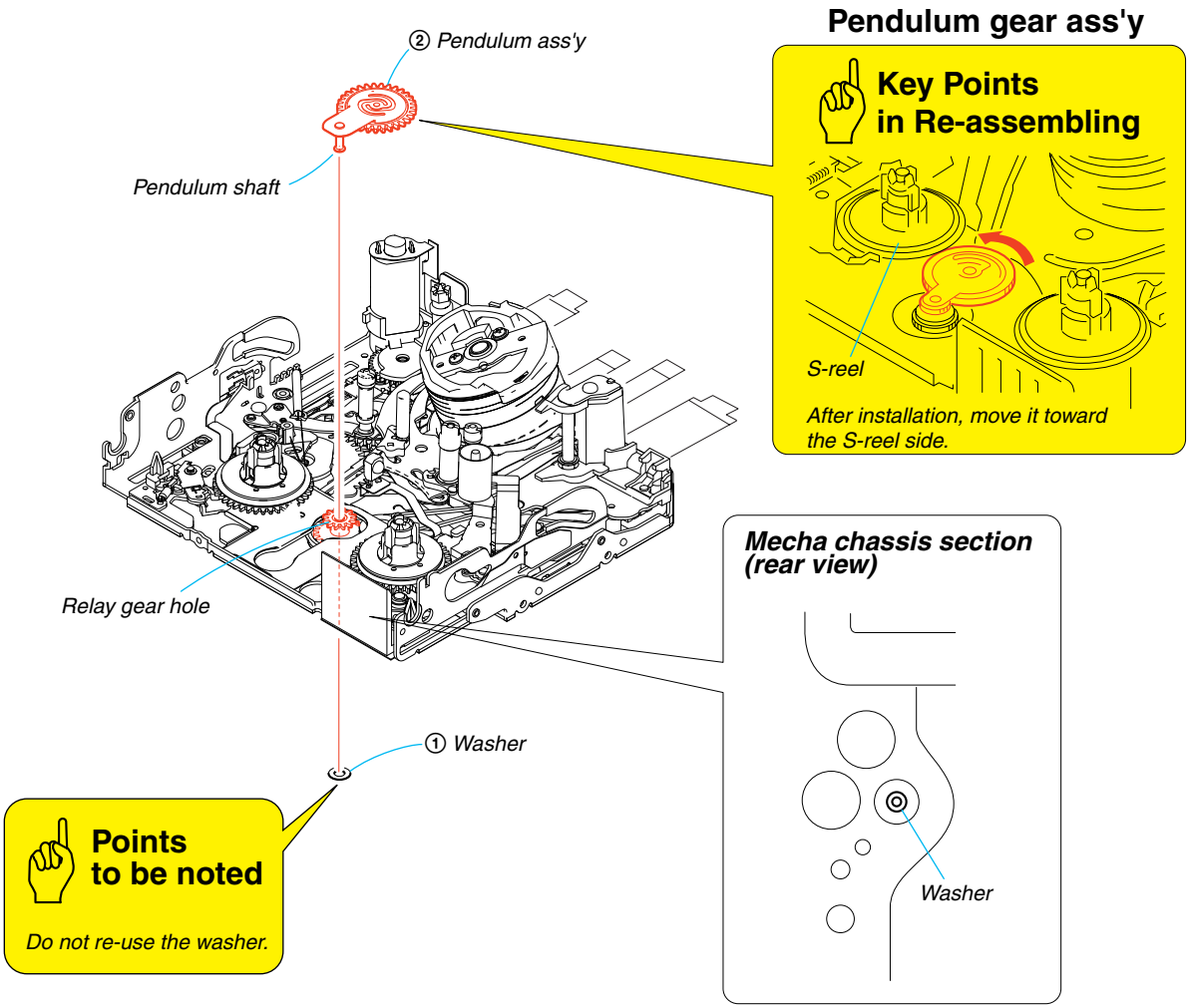
3-20. Pendulum Ass'y

1. Removal procedure

1) Remove the washer ① from the pendulum shaft.
2) Remove the pendulum ass'y ② from the relay gear hole.

2. Attachment procedure

1) Install the pendulum ass'y ② to the relay gear hole.
2) Install the washer ① to the pendulum shaft.
(Do not re-use the washer.)



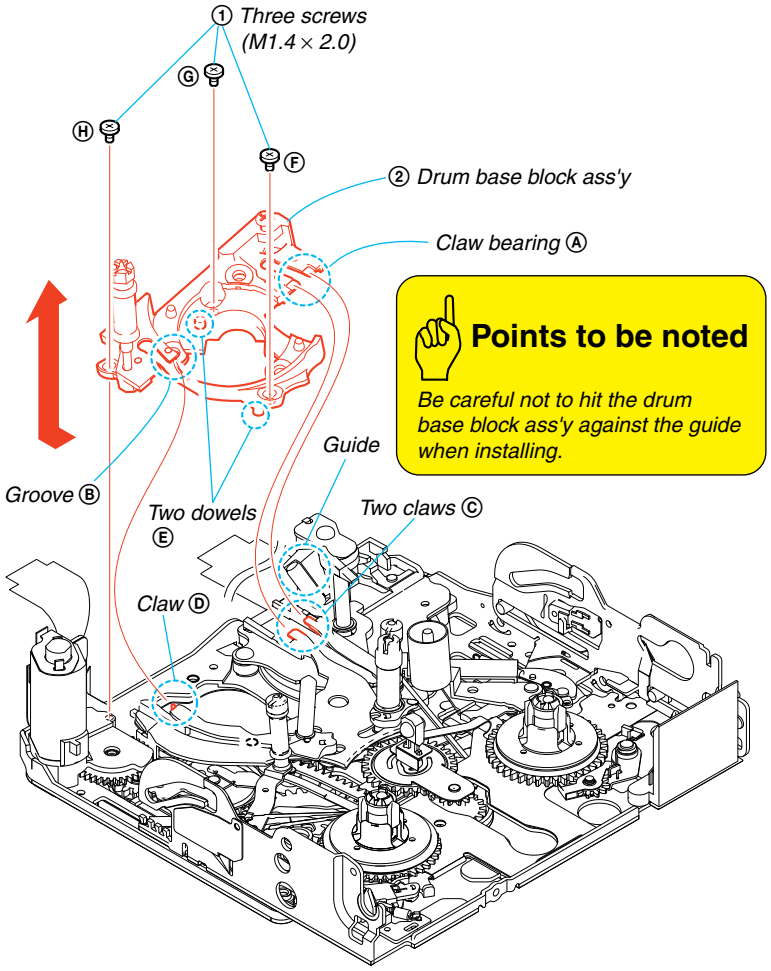
3-21. Drum Base Ass'y

1. Removal procedure

1) Enter the [ULE] mode.
2) Remove the three screws (special head screw M1.4 × 2.0) ①.
3) Remove the drum base ass'y ② in the direction of the arrow.

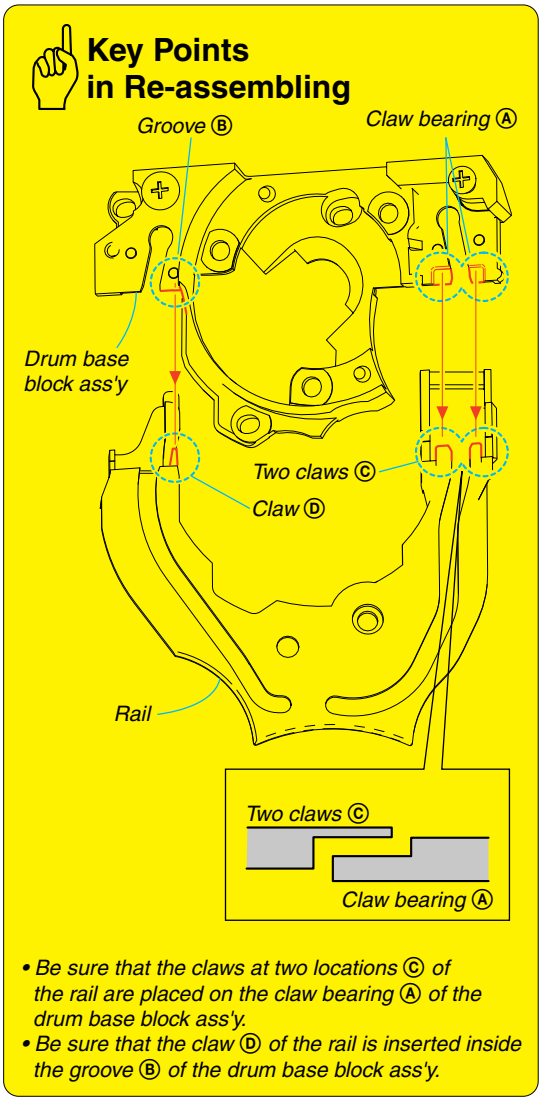
2. Attachment procedure

1) Install the claw bearing Ⓐ and then groove Ⓑ of the drum base ass'y ② in the claws Ⓒ in two locations and the claw Ⓓ of the rail, respectively.
2) Align the two dowels of the drum base ass'y at the Ⓔ position and install the drum base ass'y ②.
3) Install the three screws (special head screw M1.4 × 2.0) ① in the order of Ⓕ, Ⓖ and Ⓗ.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
4) By referring to Section "4-2. LS Cam Adjustment", perform the LS Cam Adjustment.



Points to be noted

Be careful not to hit the drum base block ass'y against the guide when installing.



- *Be sure that the claws at two locations Ⓒ of the rail are placed on the claw bearing Ⓐ of the drum base block ass'y.*
- *Be sure that the claw Ⓓ of the rail is inserted inside the groove Ⓑ of the drum base block ass'y.*

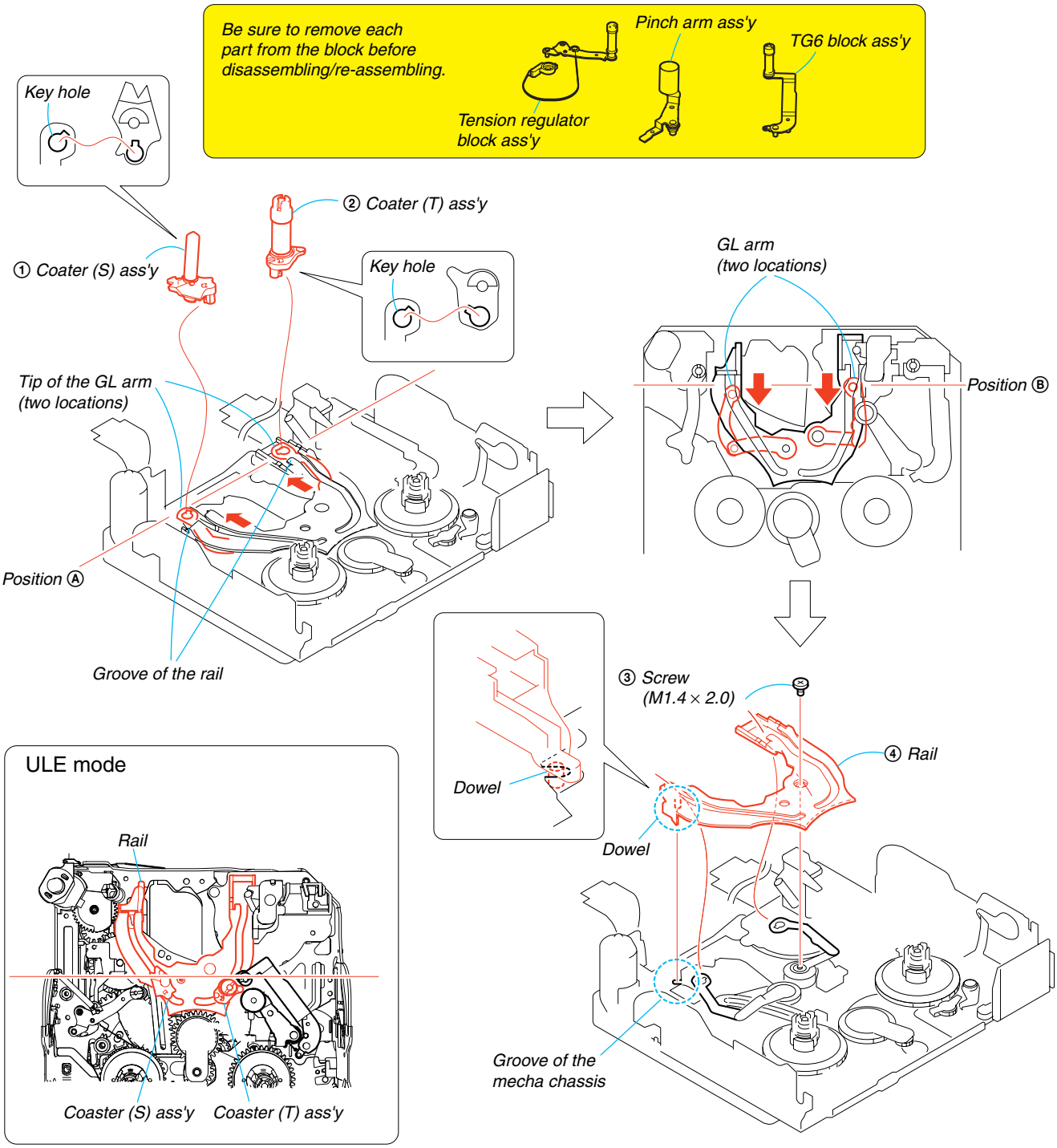
3-22. Coaster Ass'y, Rail

1. Removal procedure

1) Load the GL arms (two locations) until the tips of the arms reach the position Ⓐ.
2) While rotating the coaster (S) ass'y ① and the coaster (T) ass'y ②, remove them through the key hole at the tip of the GL arms (two locations).
3) Load the GL arms (two locations) until the tips of the arms reach the position Ⓑ.
4) Remove the screw (special head screw M1.4 × 2.0) ③, and remove the rail ④.

2. Attachment procedure

1) Set the dowel of the rail to the groove of the mecha chassis, and install the rail and install the screw (special head screw M1.4 × 2.0).
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
2) Load the GL arms (two locations) until the tips of the arms reach the position Ⓐ.
3) While rotating the coaster (S) ass'y ① and the coaster (T) ass'y ②, install them in the key holes at the tips of the GL arms (two locations).
4) Return to the [ULE] mode.



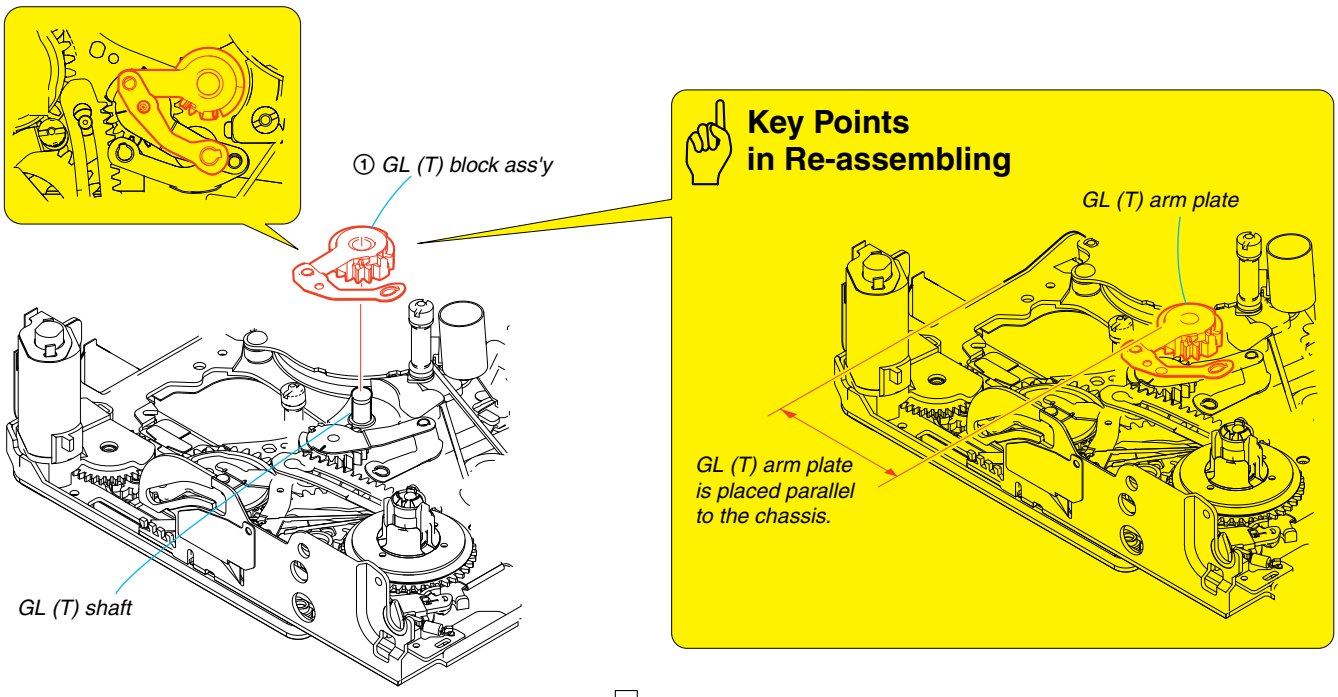
3-23. GL (T) Block Ass'y, GL Arm (S) Ass'y

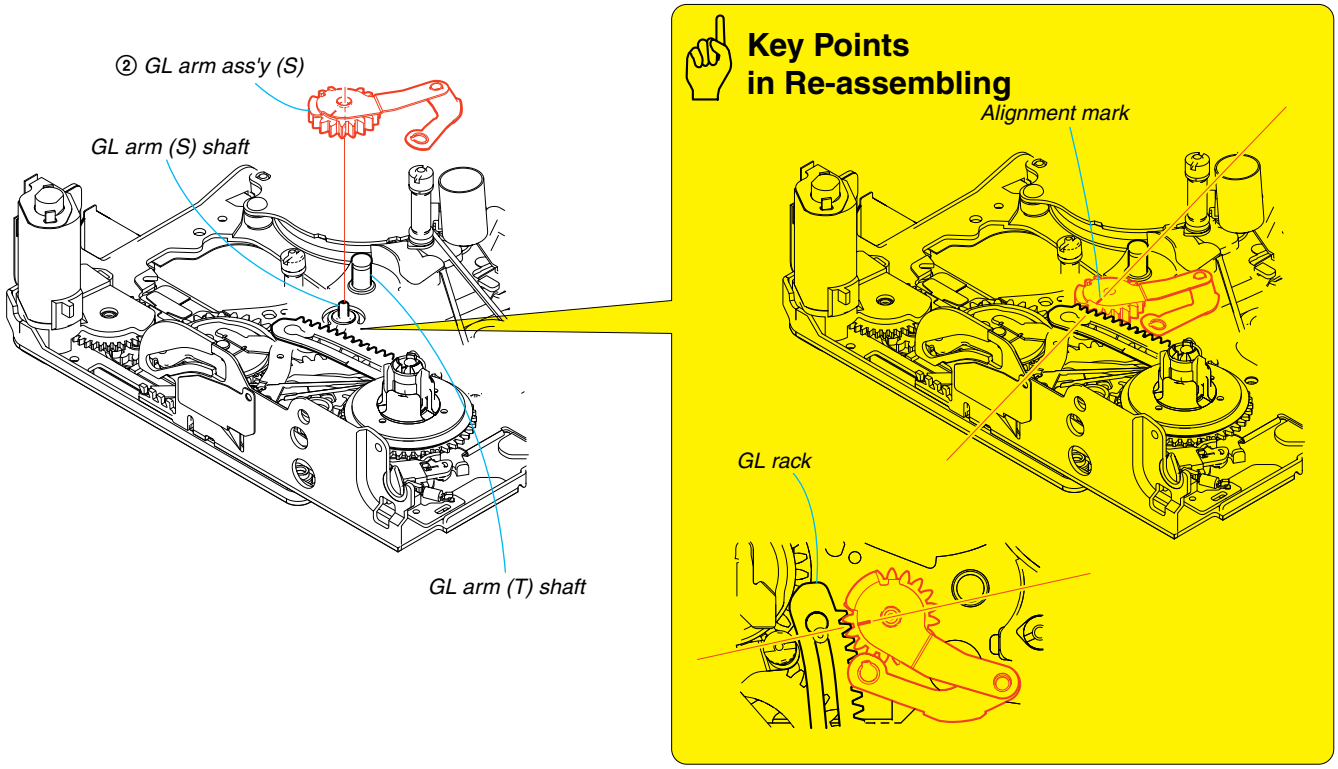
1. Removal

1) Remove the GL (T) block ass'y ① from the GL (T) shaft.
2) Remove the GL (S) block ass'y ② from the GL arm (S) shaft.

2. Attachment procedure

1) Enter the [ULE] mode.
2) Installing the GL arm (S) ass'y
   Install the GL arm (S) ass'y ② to the GL arm (S) shaft, while aligning the second gear of the GL rack with the phase alignment mark.
3) Installing the GL (T) block ass'y
   Install the GL (T) block ass'y ① to the GL (T) shaf, tin the way that the GL (T) arm plate of the GL (T) block ass'y ① is placed parallel to the chassis.





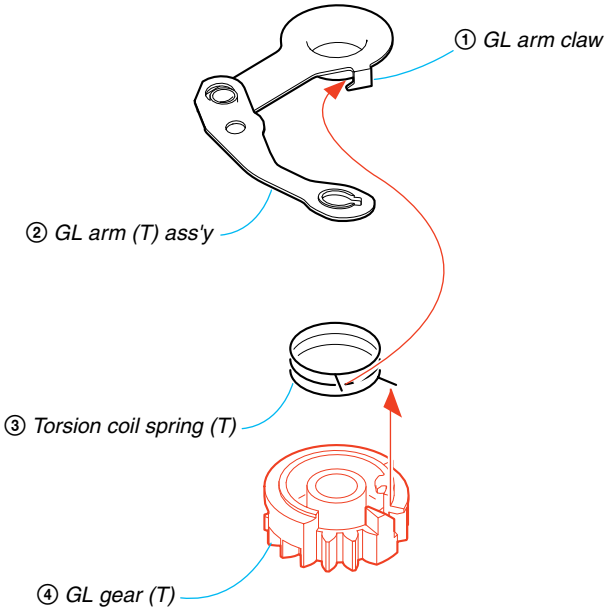
3-24. GL Gear (T)

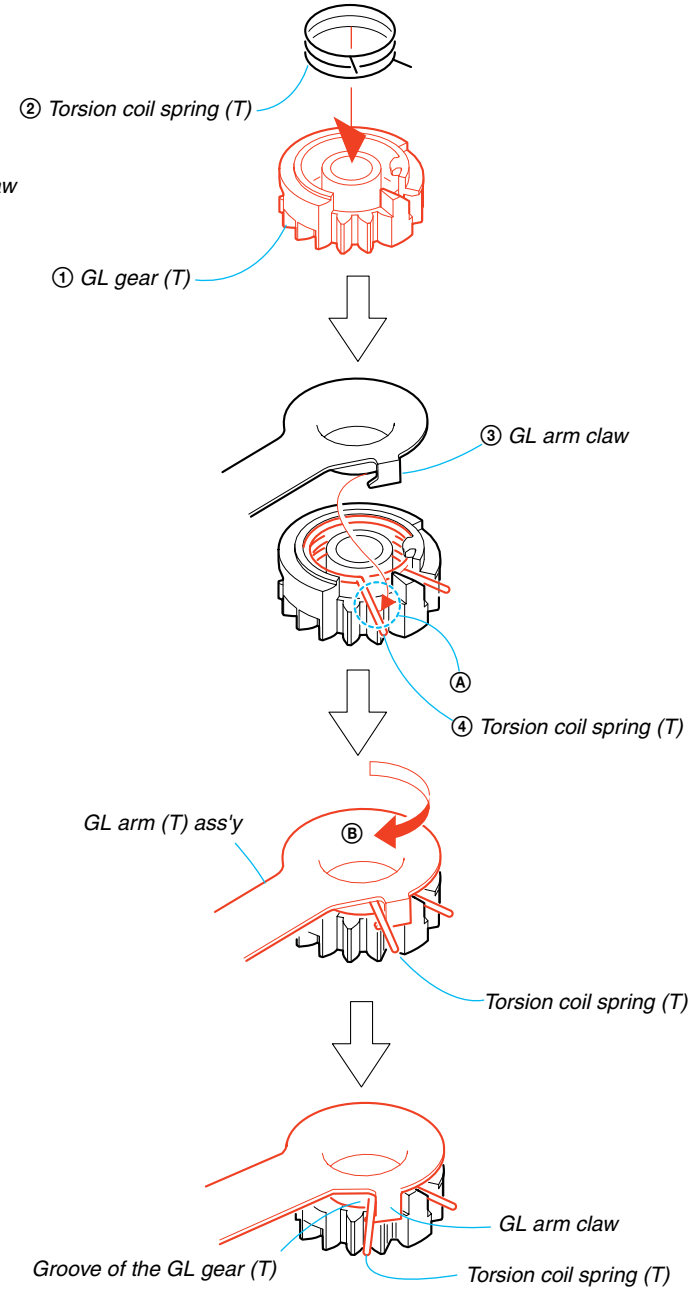
1. Removal procedure

1) Remove the GL arm claw ① in the direction of the arrow.
2) Remove the GL arm (T) ass'y ②.
3) Remove the GL torsion coil spring (T) ③ from the GL gear (T) ④.

2. Attachment procedure

1) Install the torsion coil spring (T) ② in the GL gear (T) ①.
2) Engage the GL arm (T) claw ③ in the Ⓐ portion of the torsion coil spring (T).
3) Engage the GL arm (T) claw in the groove of the GL gear (T) by rotating the GL arm (T) ass'y in the direction of the arrow Ⓑ.

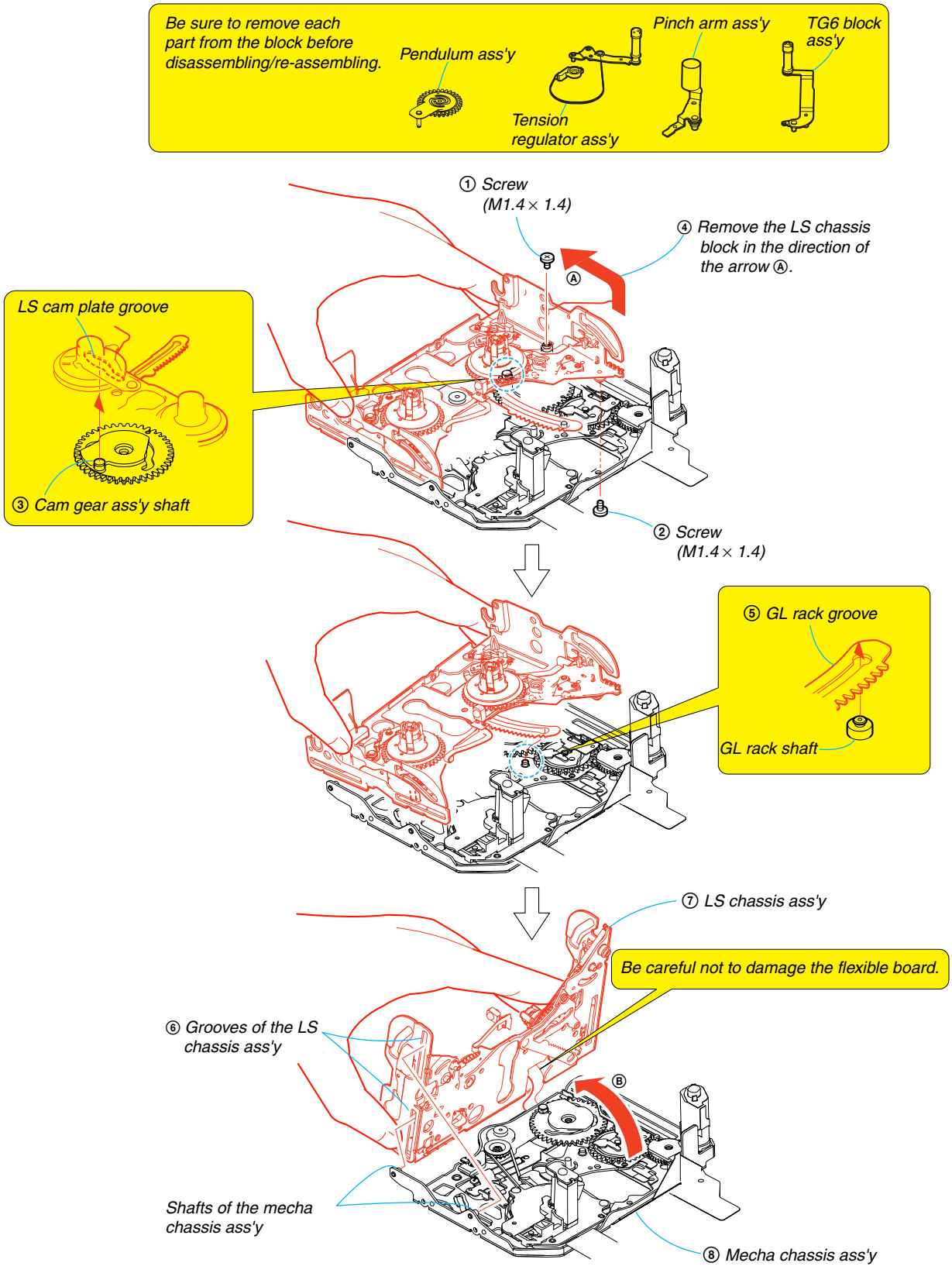




3-25. LS Chassis Block, Mechanism Chassis Block-1

1. Removal procedure

1) Enter the [ULE] mode.
2) Remove the screw (special head screw M1.4 × 1.4) ①.
3) Remove the screw (special head screw M1.4 × 1.4) ②.
4) Remove the cam gear ass'y shaft ③ from the LS cam plate groove of the LS chassis block.
5) Remove the LS chassis block ④ in the direction of the arrow Ⓐ.
6) Disengage the GL rack groove ⑤ of the LS chassis block from the GL rack shaft.
7) Disengage the grooves in two locations ⑥ of the LS chassis from the two shafts of the mechanism chassis.
8) Remove the LS chassis block ⑦ from the mechanism chassis block ⑧ in the direction of the arrow Ⓑ.



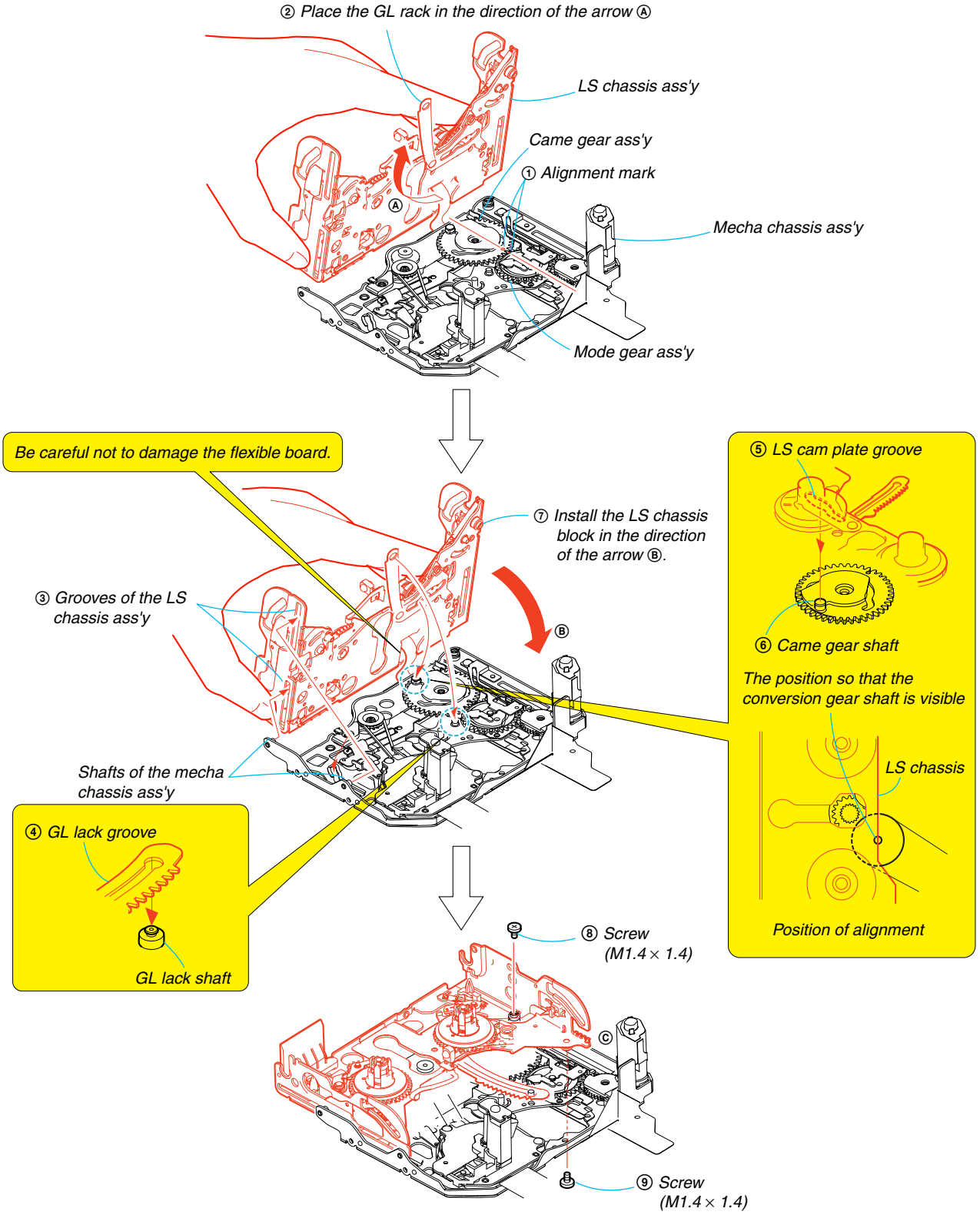
1. Attachment procedure

1) Enter the [ULE] mode.
2) Align the phase alignment mark ① of the cam gear ass'y and the mode gear ass'y of the mechanism chassis.
3) Place the GL rack ② in the direction of the arrow Ⓐ.
4) Insert the mechanism chassis shafts in two locations into the two grooves of the LS chassis block.
5) Insert the GL rack shaft in the GL rack groove ④.
6) Insert the cam gear shaft 6 in the LS cam plate groove ⑤.

Position of alignment

Slide the LS chassis to the position so that the conversion gear shaft is visible, and insert the cam gear shaft into the LS cam plate groove.

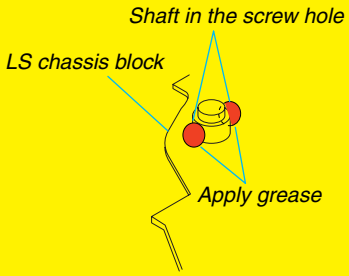
7) Install the LS chassis block ⑦ in the direction of the arrow Ⓑ. (Check if the LS chassis is installed securely in each groove or shaft.)
8) Install the screw (special head screw M1.4 × 1.4) ⑧. Tightening torque: 0.04 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
9) Install the screw (special head screw M1.4 × 1.4) ⑨. Tightening torque: 0.04 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
10) By referring to Section "4-2. LS Cam Adjustment", perform the LS Cam Adjustment.



Apply grease

Points to be noted

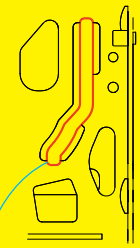
Apply the grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter



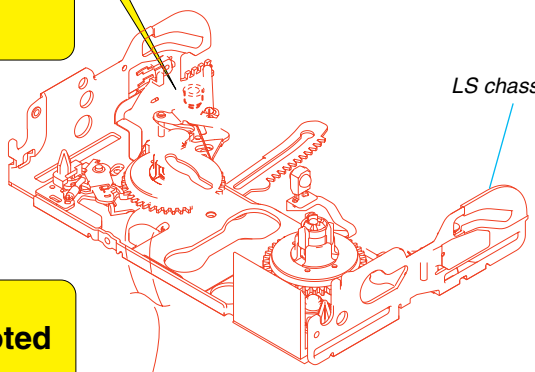
Apply grease

Points to be noted

Apply the grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter



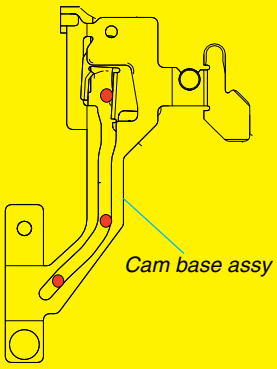
Apply grease on the side inside of the groove of the mechanism chassis block.

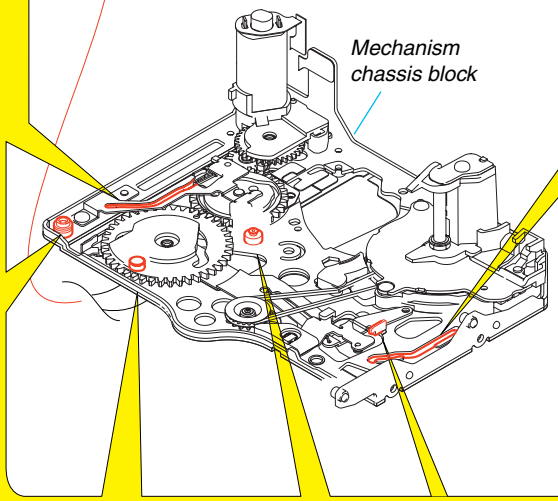


Apply grease

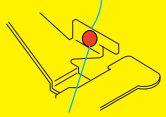
Points to be noted

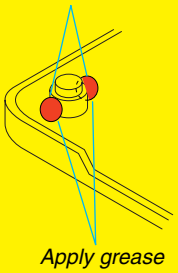
Apply the grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter

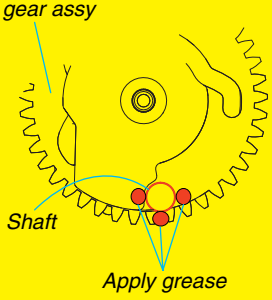


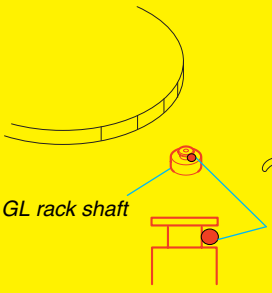


On the side inside of press arm









Apply grease on the sliding surface of the GL rack shaft and the GL rack groove.

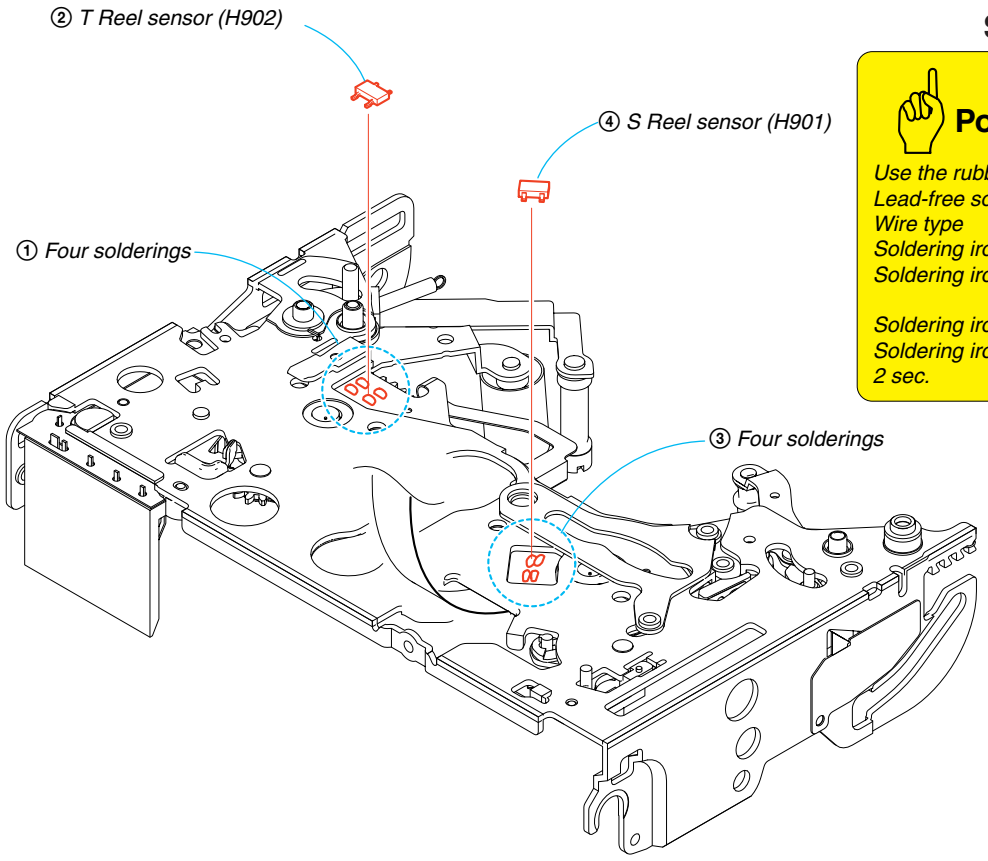
3-27. T Reel Sensor (H902), S Reel Sensor (H901)

1. Removal procedure

1) Remove soldering at the four locations ① of the T reel sensor, and remove the T reel sensor (H902) ②.
2) Remove soldering at the four locations ③ S reel sensor, and remove the S reel sensor (H901) ④.

2. Attachment procedure

1) Solder four locations ③ S reel sensor and install the S reel sensor (H901) ④ in the FP-031 flexible board.
2) Solder four locations ① S reel sensor and install the T reel sensor (H902) ② in the FP-031 flexible board.



Soldering

Points to be noted

Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC

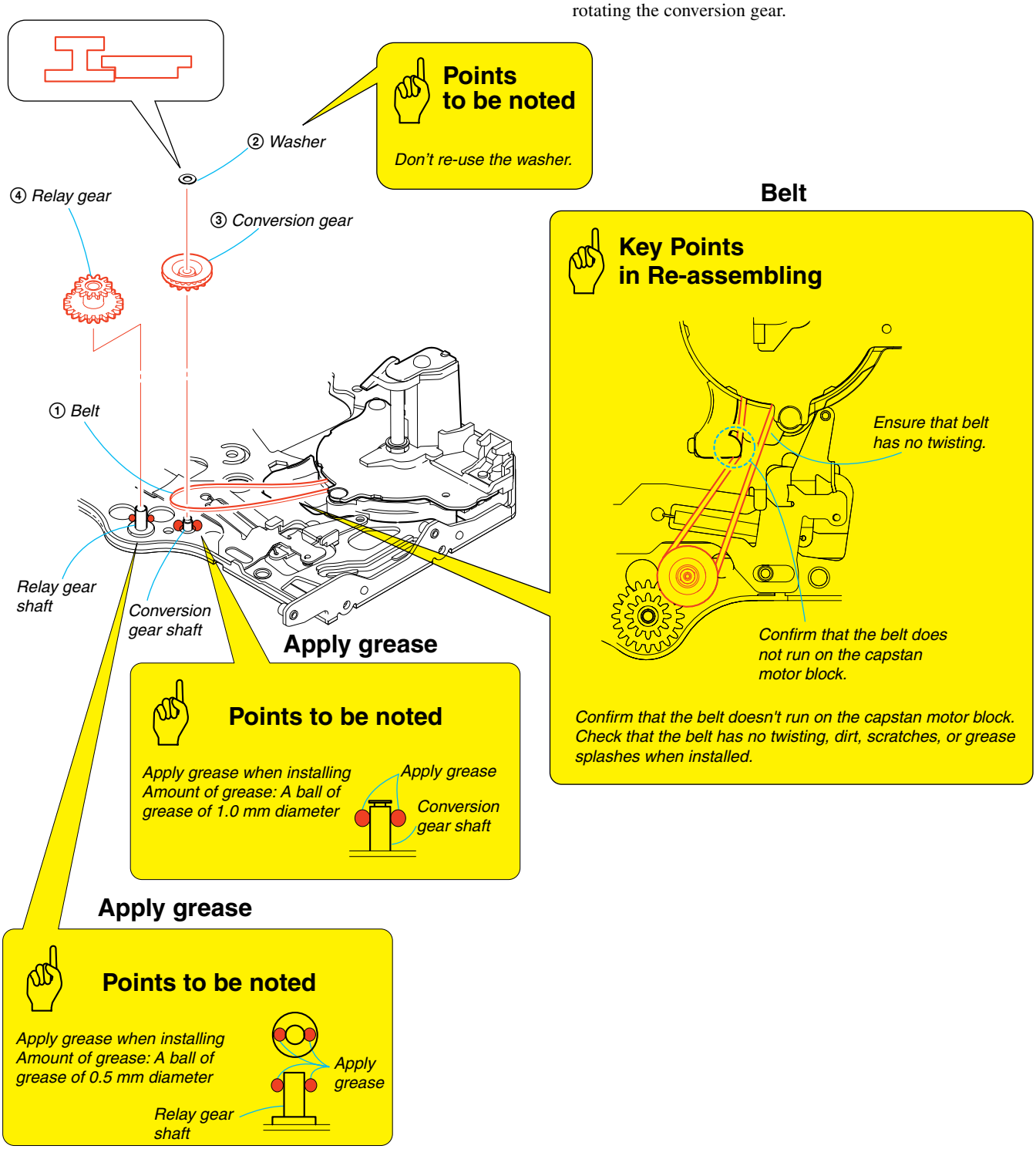
Soldering iron tip temperature: 300 ±10 ∞C
Soldering iron tip contacting time within 2 sec.

1. Removal procedure

1) Remove the belt ① from the conversion gear.
2) Remove the washer ② from the conversion gear shaft.
3) Remove the conversion gear ③.
4) Remove the relay gear ④.

2. Attachment procedure

1) Apply grease on the relay gear shaft.
   Amount of grease: A ball of grease of 0.5 mm diameter.
2) Install the relay gear ④ in the relay gear shaft.
3) Apply grease on the conversion gear shaft.
   Amount of grease: A ball of grease of 1.0 mm diameter.
4) Install the conversion gear ③ in the relay gear shaft.
5) Install the washer ② in the conversion gear shaft (Don't re-use the washer)
6) Hook the belt ① on the conversion gear and install it while rotating the conversion gear.



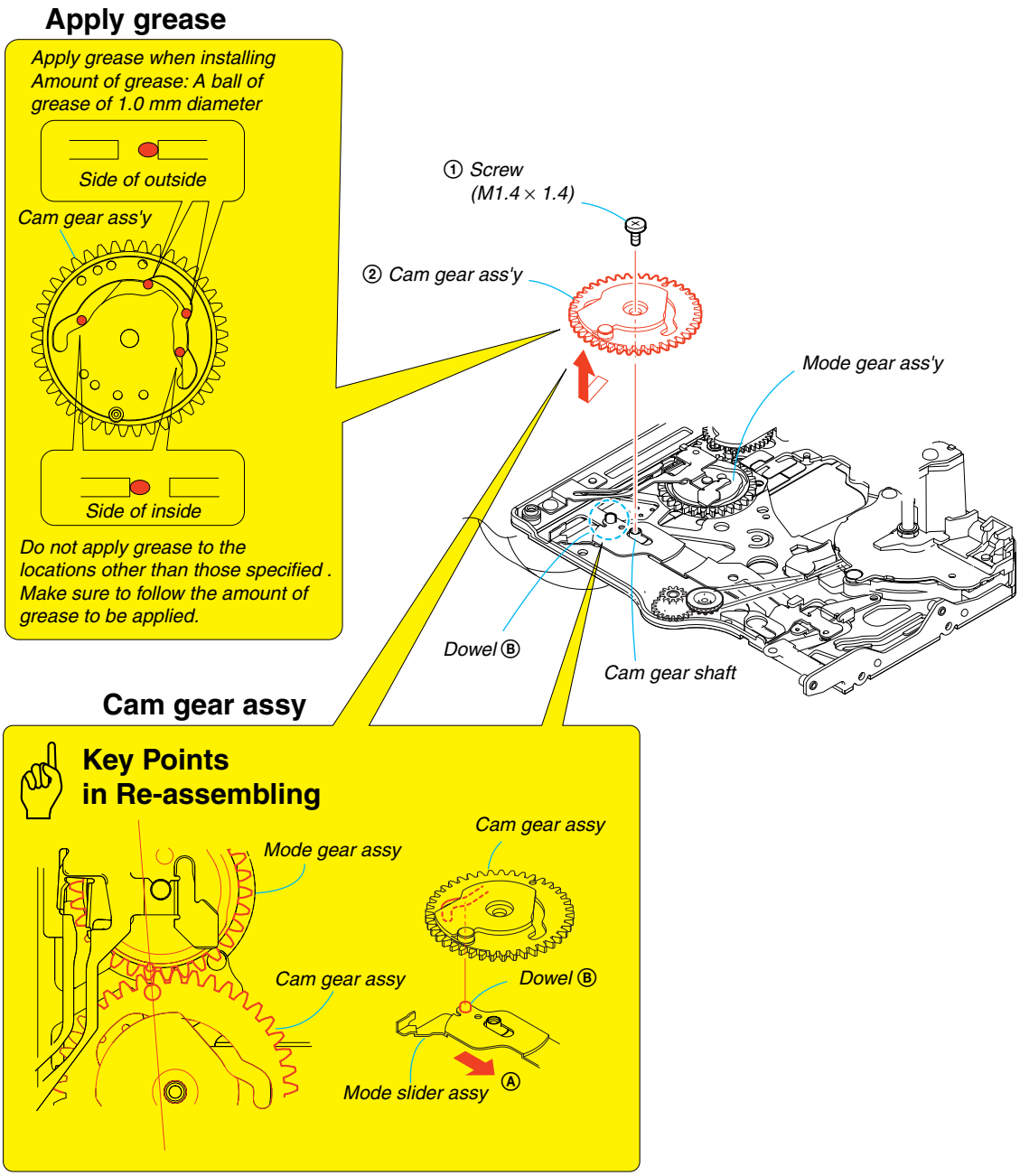
3-29. Cam Gear Ass'y

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 1.4) ①.
2) Remove the cam gear ass'y ② from the cam gear shaft.

2. Attachment procedure

1) Apply grease on the specified locations of the cam gear ass'y ②.
   Amount of grease: A ball of grease of 1.0 mm diameter.
2) Move the mode slider ass'y in the direction of arrow Ⓐ as far as it can go.
3) Align the gear phase of the mode gear ass'y and the cam gear ass'y ②.
4) Install the cam gear ass'y ② while engaging the dowel Ⓑ of the mode slider ass'y into the groove of the cam gear ass'y.
5) Install the screw (special head screw M1.4 × 1.4) ①.
   Tightening torque: 0.04 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)



3-30. Mode Slider Ass'y

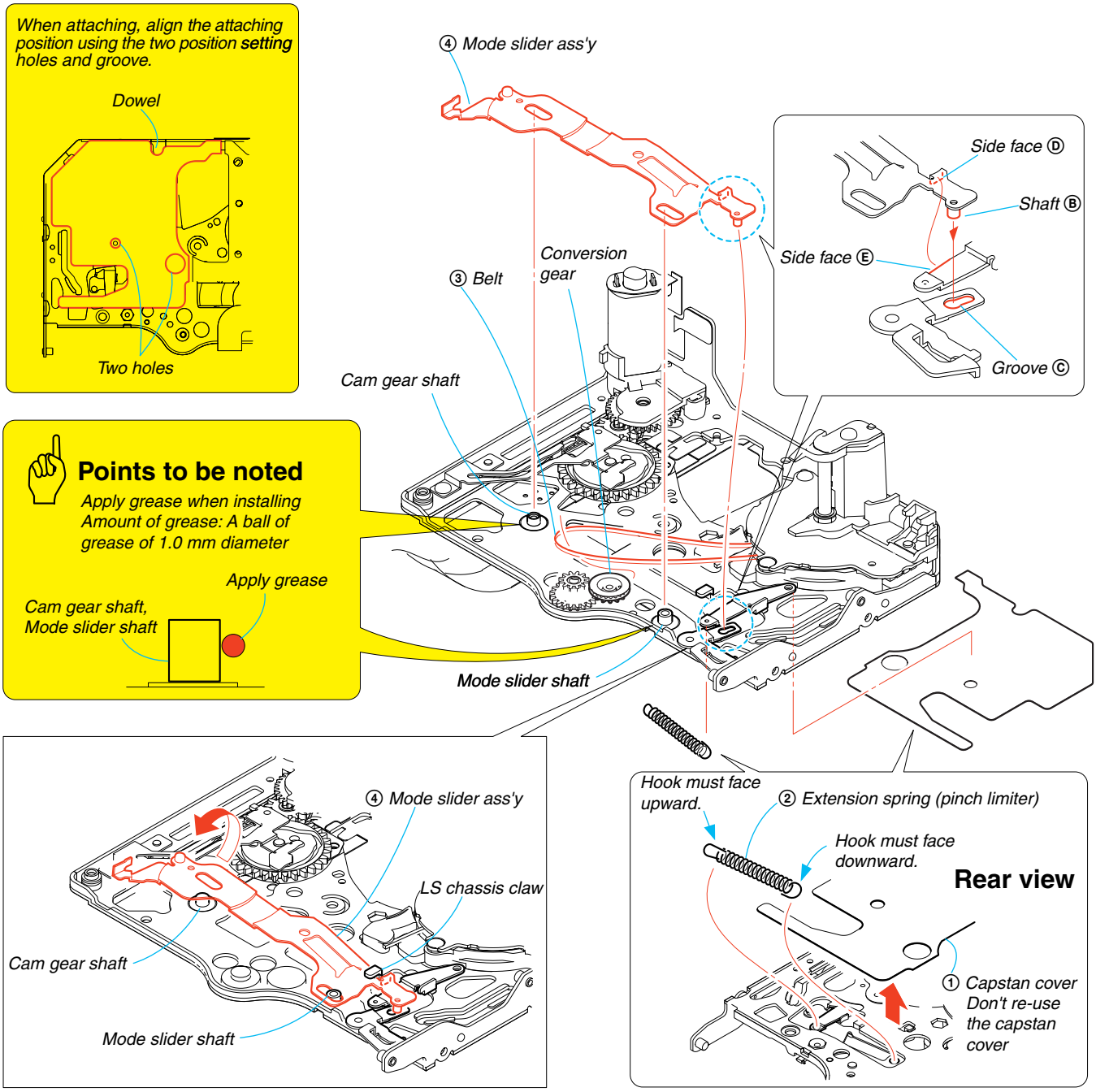
1. Removal procedure

1) Remove the capstan cover ① and remove the extension spring (pinch limiter) ②.
2) Remove the belt ③ from the conversion gear.
3) Remove the mode slider ass'y ④ from the cam gear shaft in the direction of the arrow.

2. Attachment procedure

1) Apply grease on the cam gear shaft and the mode slider shaft.
   Amount of grease: A ball of grease of 1.0 mm diameter.
2) Engage the shaft Ⓑ in the groove Ⓒ and install the mode slider ass'y ④ while aligning its side Ⓓ and Ⓔ engage it in the claw of the LS chassis, then install the mode slider ass'y ④.
3) Hook the belt ③ on the conversion gear and install it while rotating the conversion gear.
4) Install the extension spring (pinch limiter) ② while being careful of the orientation of the hook.
5) And attach the capstan cover ①. (Don't re-use the capstan cover.)

Capstan cover (Align the attaching position)



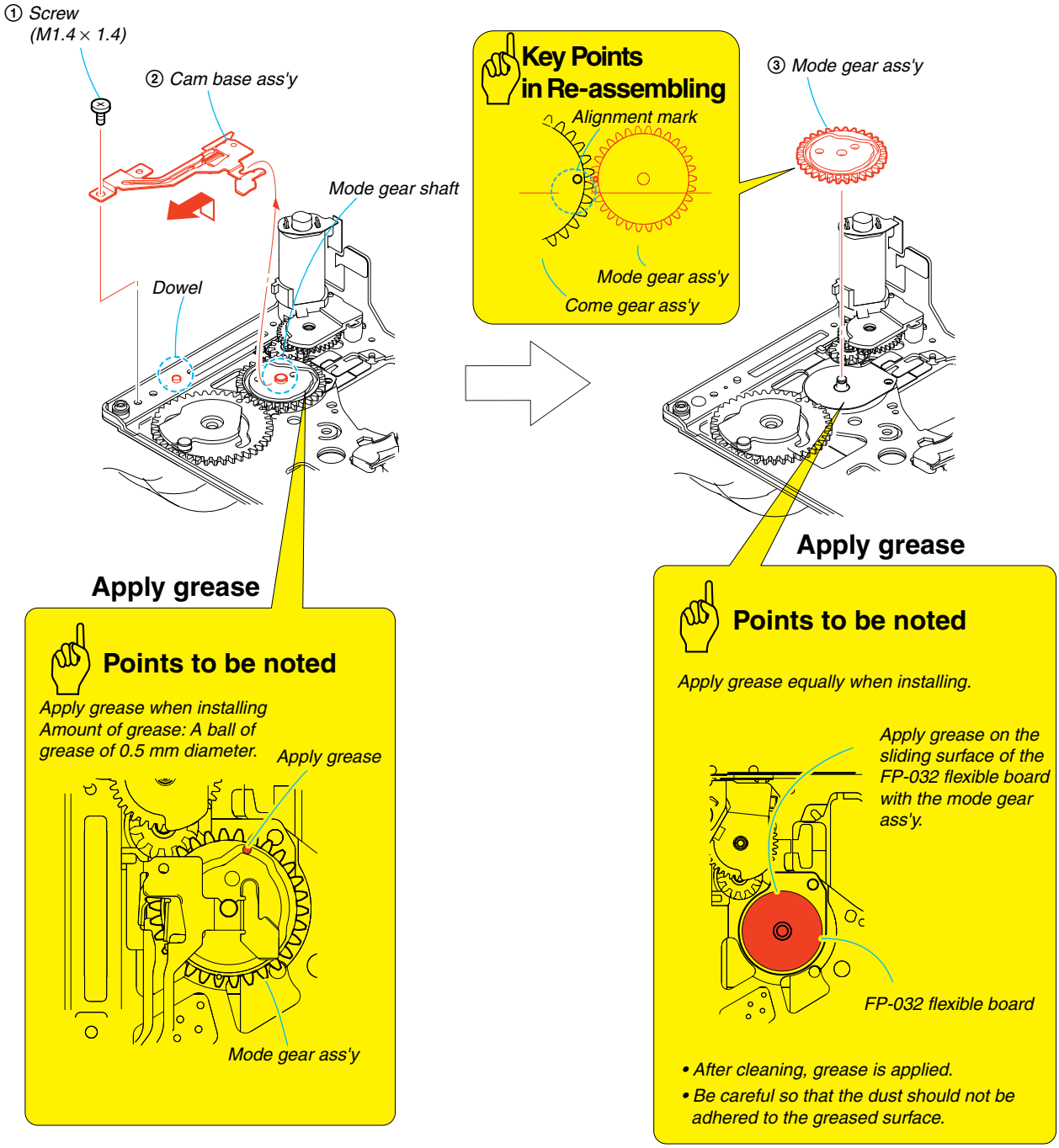
3-31. Cam Gear Ass'y, Mode Gear Ass'y

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 1.4) ①.
2) Remove the dowel from the cam base ass'y ②. Slide the cam base ass'y ②, and remove the pin Ⓒ, and remove the cam base ass'y ②.
3) Remove the mode gear ass'y ③.

2. Attachment procedure

1) Apply grease equally on the sliding surface of the FP-032 flexible board and the mode gear ass'y.
2) Install the mode gear ass'y ③.
3) Install the cam base ass'y ② while engaging it in the pin Ⓒ and the dowel.
4) Install the screw (special head screw M1.4 × 1.4) ①.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm))
5) Apply grease on the specified locations of the mode gear ass'y.
   Amount of grease: A ball of grease of 0.5 mm diameter.



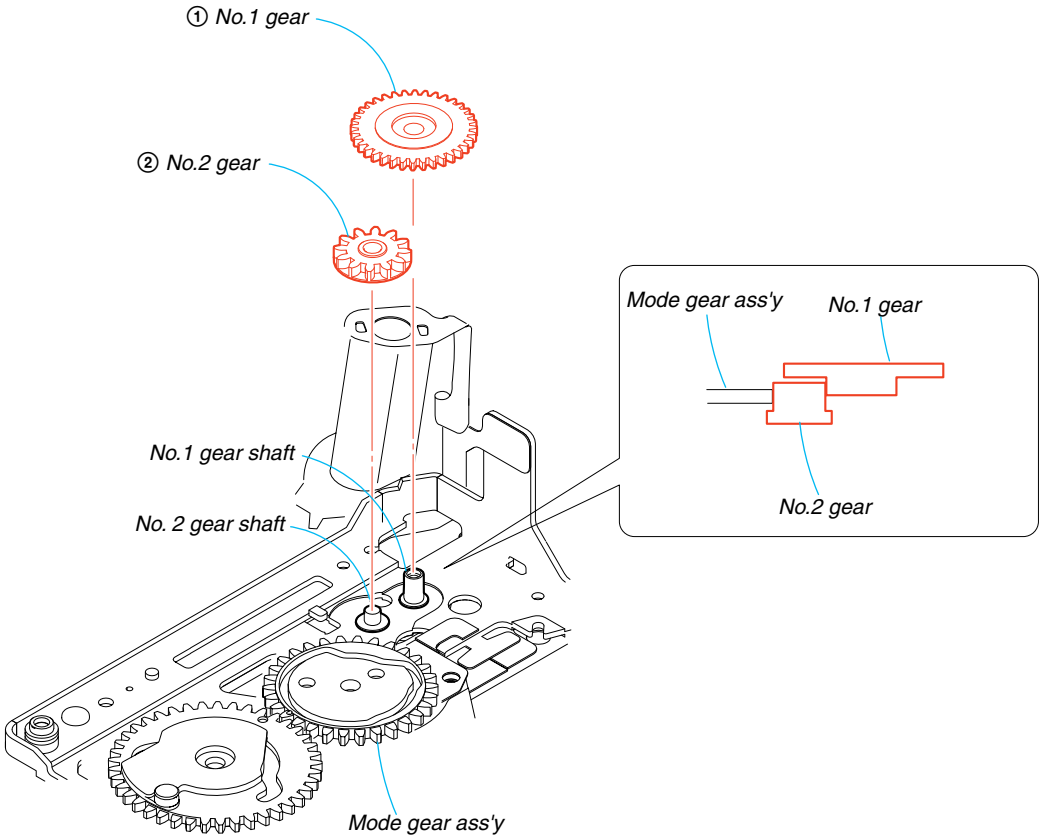
3-32. No. 1 Gear, No. 2 Gear

1. Removal procedure

1) Remove the No. 1 gear ① from the No. 1 gear shaft.
2) Remove the No. 2 gear ② from the No. 2 gear shaft.

2. Attachment procedure

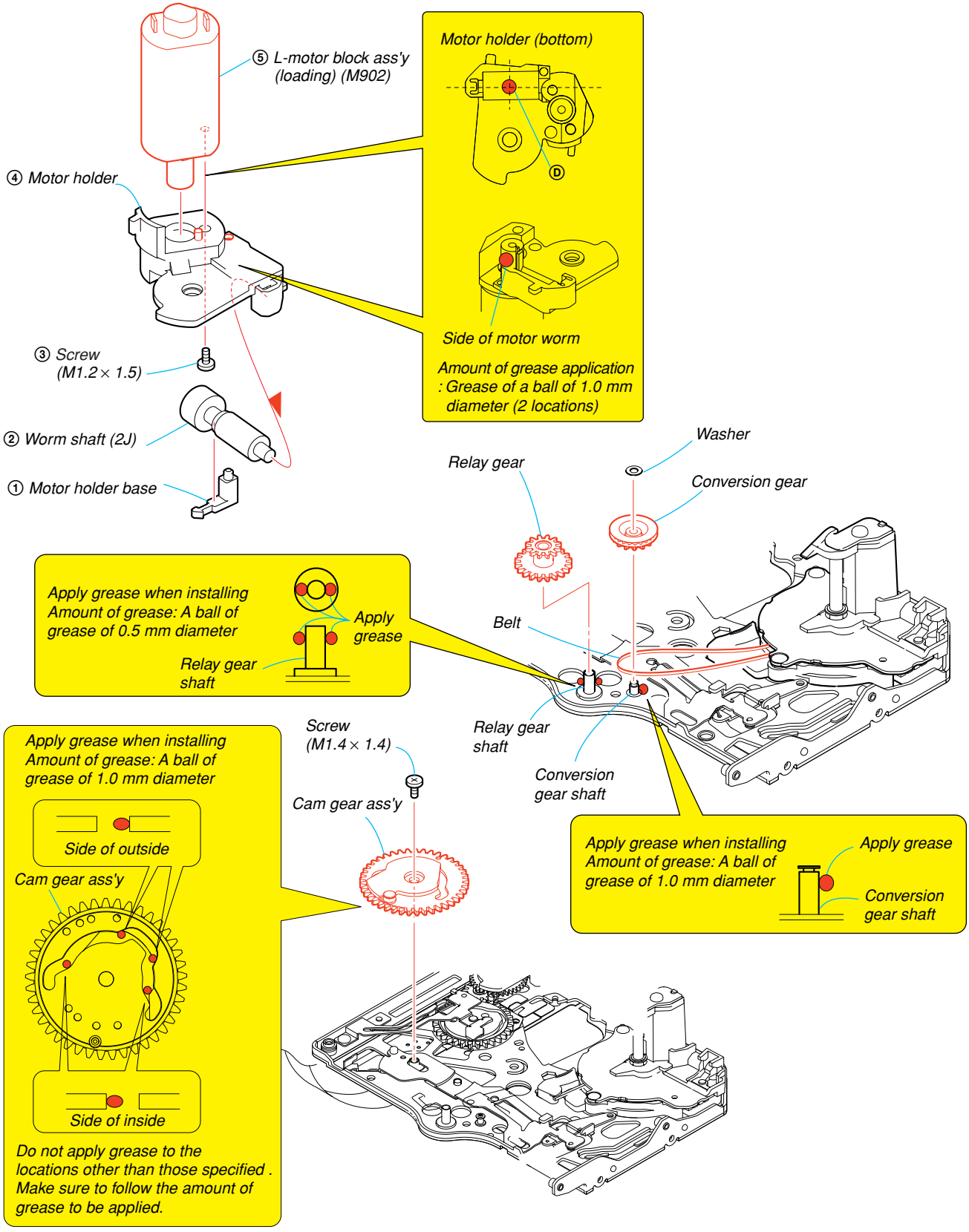
1) Install the No. 2 gear ② in the No. 2 gear shaft.
2) Install the No. 1 gear ① in the No. 1 gear shaft.



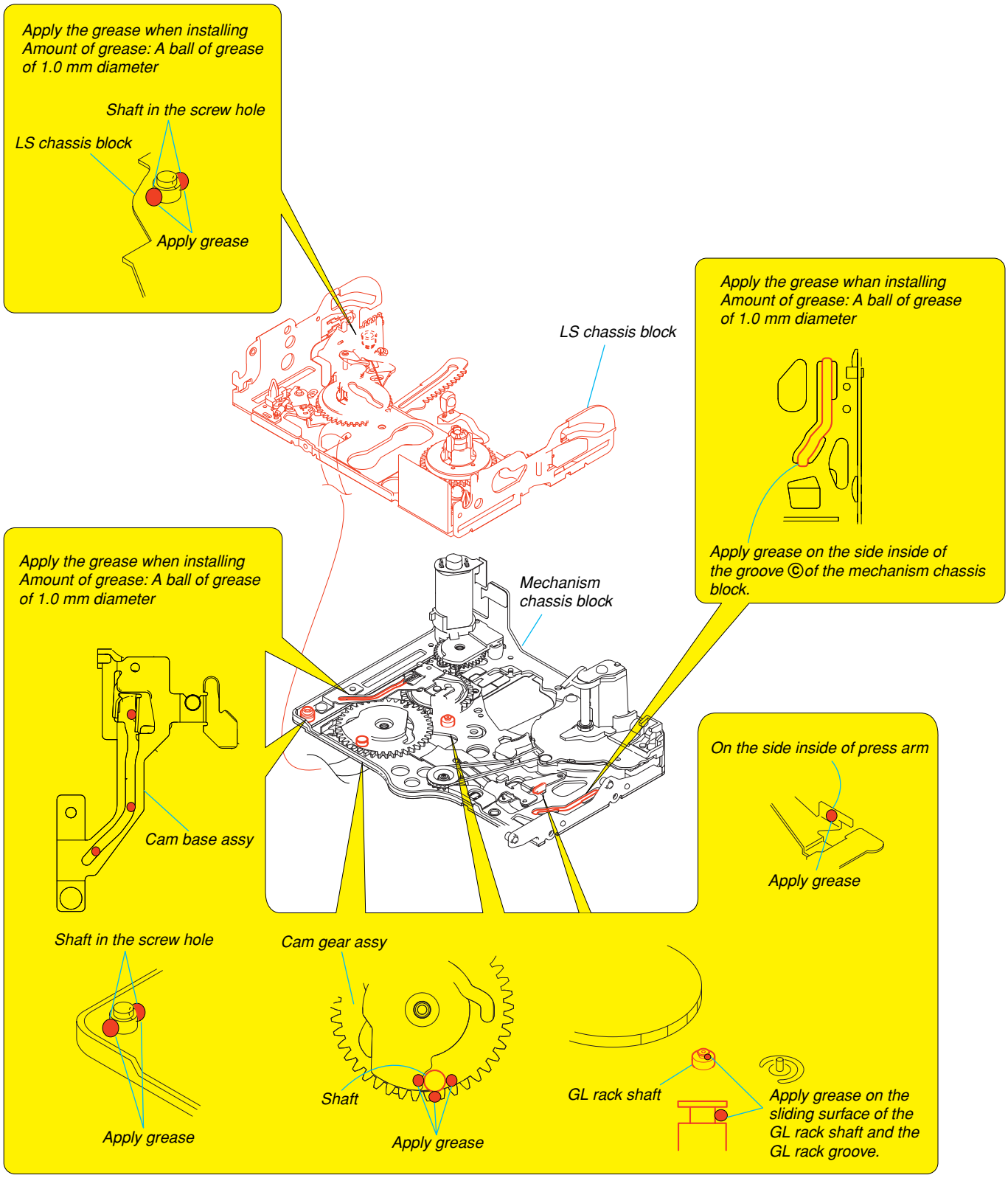
HELP

Application of grease, soldering method and precautions, and phase matching adjustment are compiled and below.

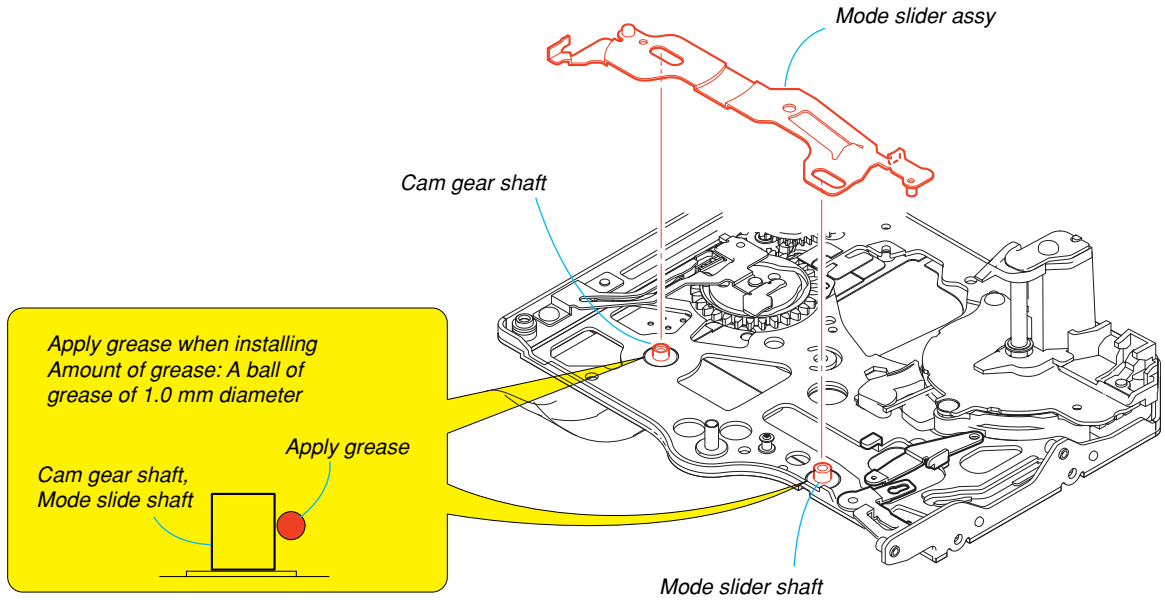
Apply grease (1)

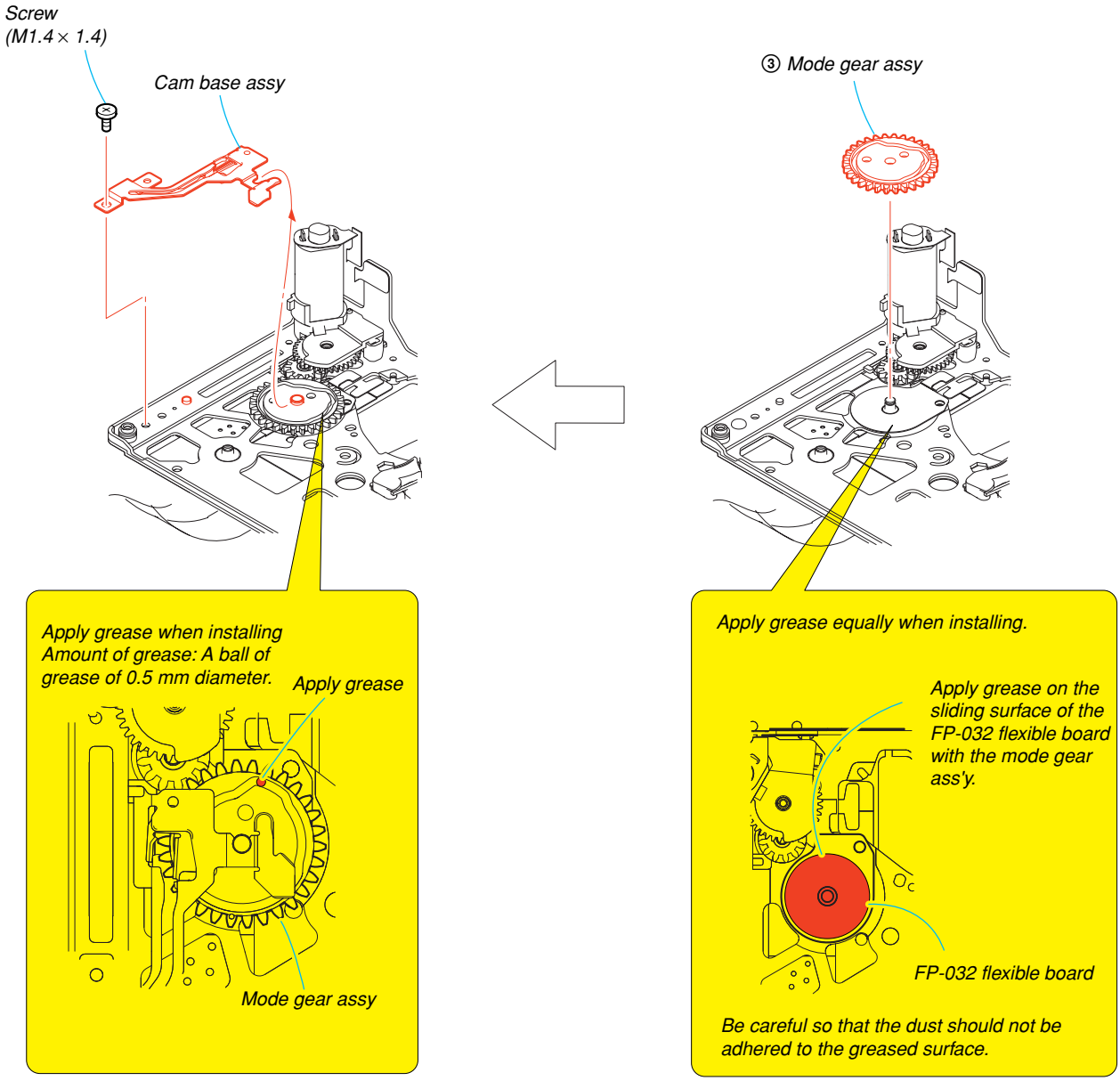


Apply grease (2)

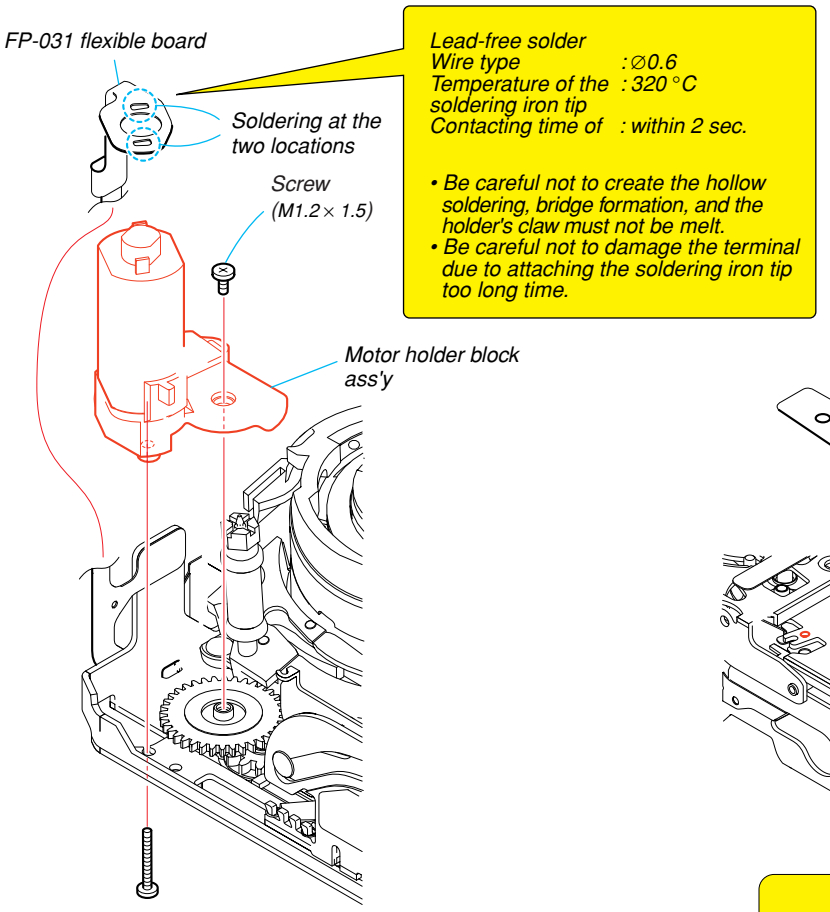


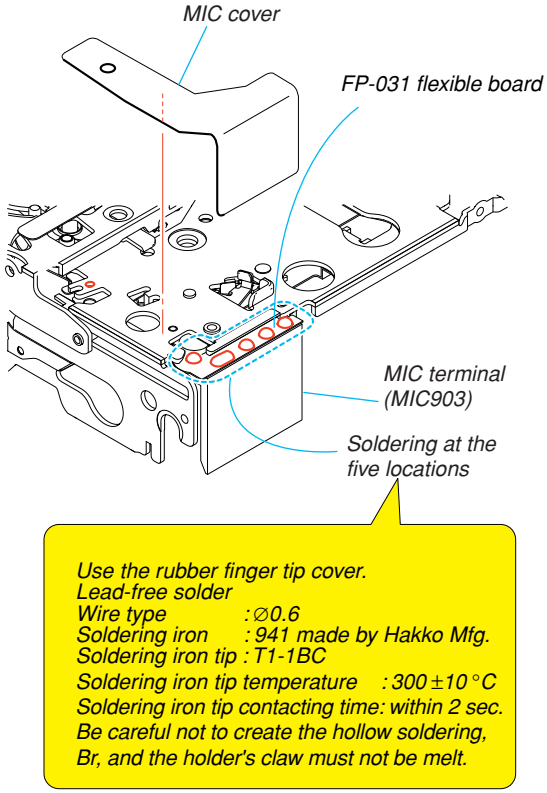
Apply grease (3)

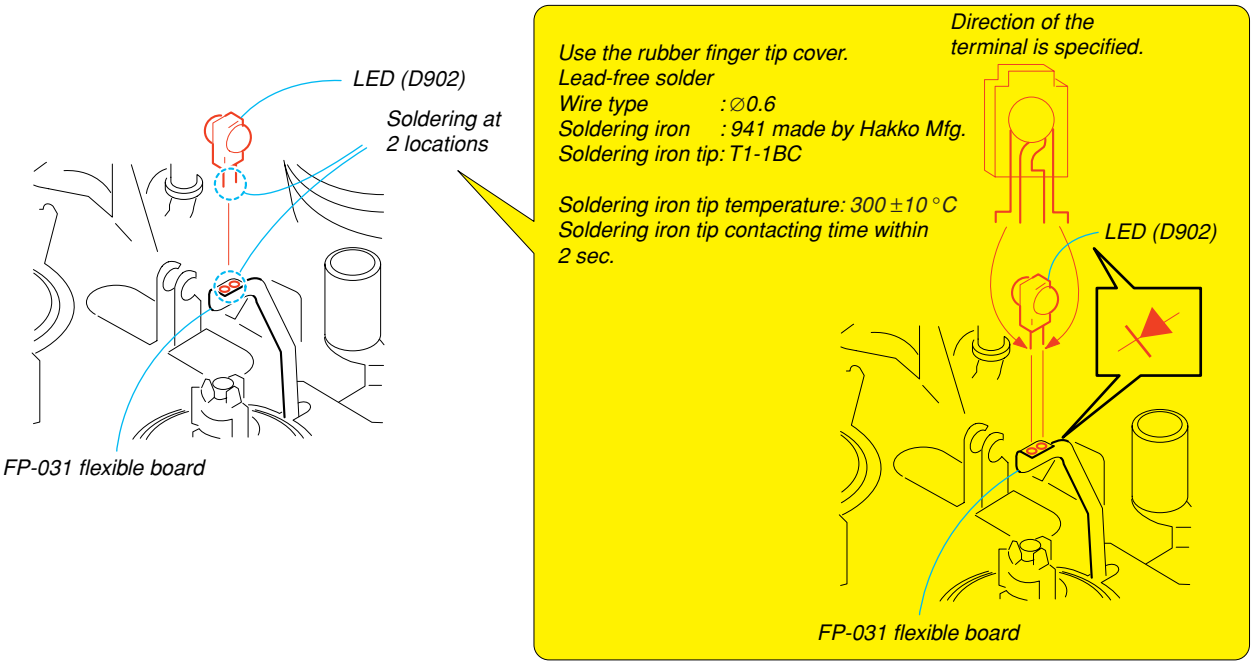




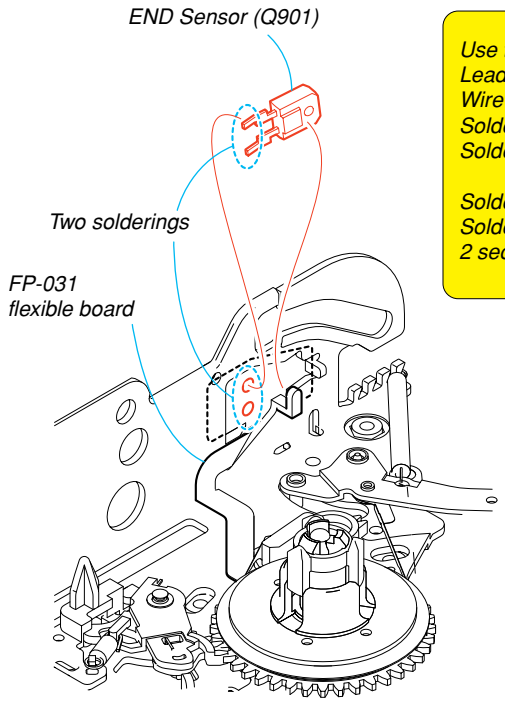
Soldering (1)


FP-031 flexible board
Soldering at the two locations
Screw (M1.2 × 1.5)
Motor holder block ass'y
Lead-free solder
Wire type : ∅0.6
Temperature of the soldering iron tip : 320 °C
Contacting time of : within 2 sec.
• Be careful not to create the hollow soldering, bridge formation, and the holder's claw must not be melt.
• Be careful not to damage the terminal due to attaching the soldering iron tip too long time.


MIC cover
FP-031 flexible board
MIC terminal (MIC903)
Soldering at the five locations
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip : T1-1BC
Soldering iron tip temperature : 300 ±10 °C
Soldering iron tip contacting time: within 2 sec.
Be careful not to create the hollow soldering, Br, and the holder's claw must not be melt.

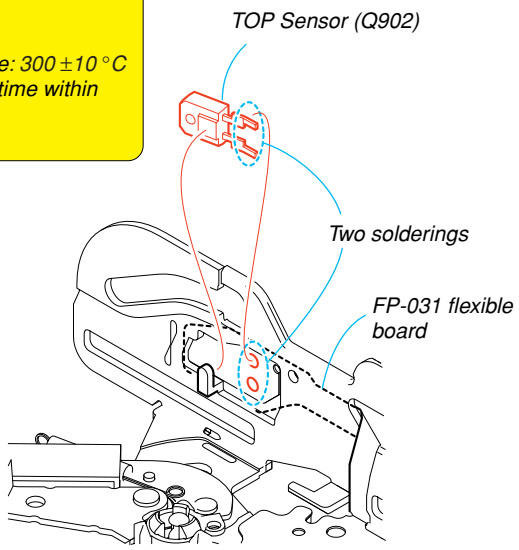

LED (D902)
Soldering at 2 locations
FP-031 flexible board
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC
Soldering iron tip temperature: 300 ±10 °C
Soldering iron tip contacting time within 2 sec.
Direction of the terminal is specified.
LED (D902)
FP-031 flexible board

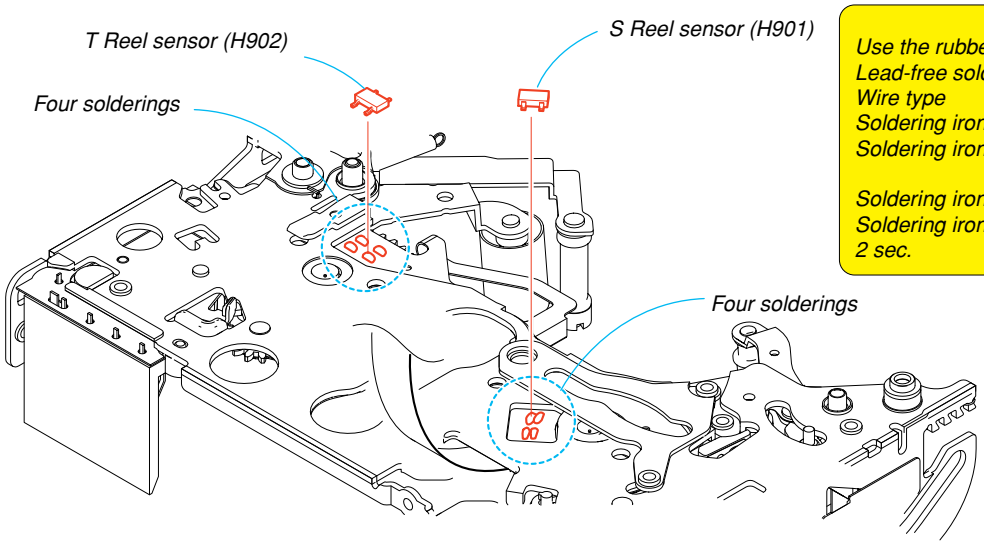
Soldering (2)



Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC

Soldering iron tip temperature: 300 ±10 °C
Soldering iron tip contacting time within 2 sec.

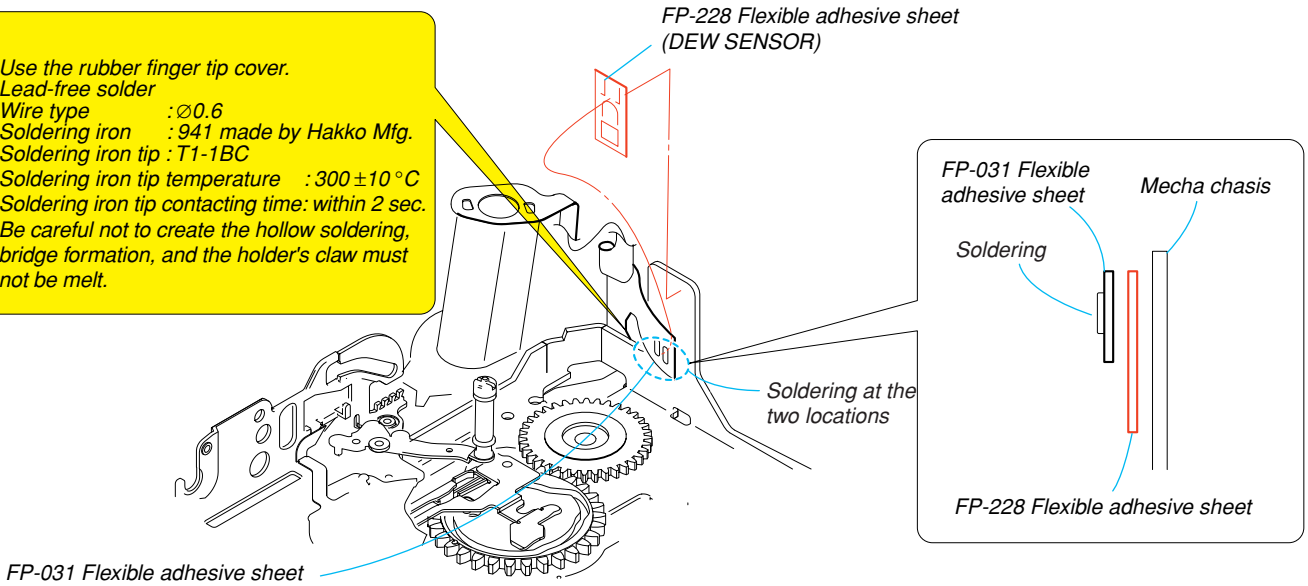




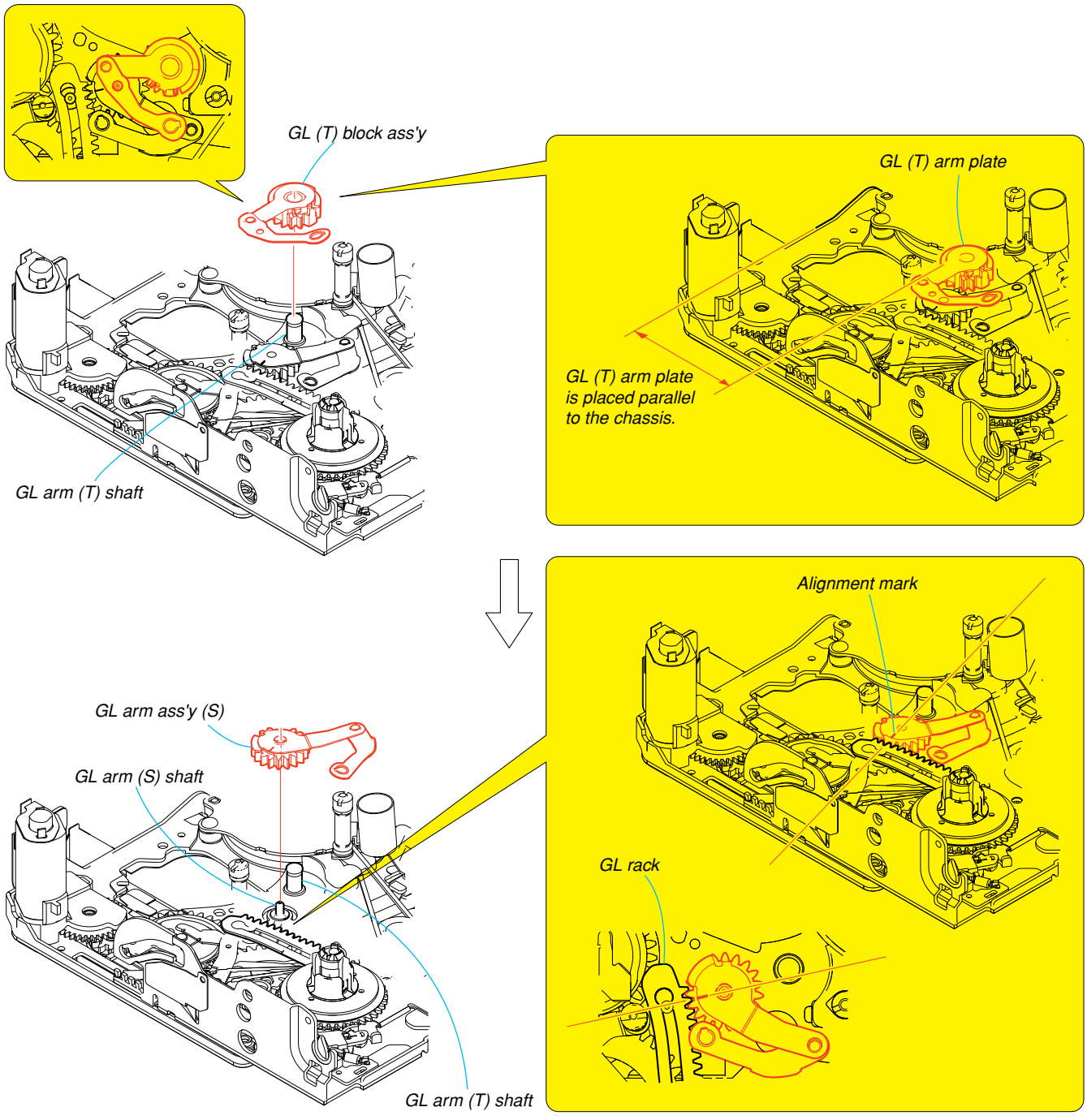
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC

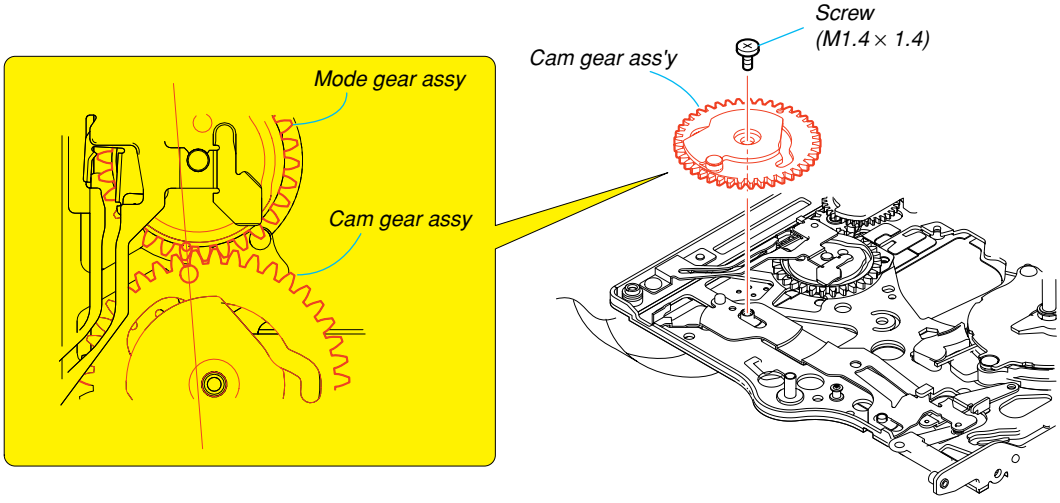
Soldering iron tip temperature: 300 ±10 ∞C
Soldering iron tip contacting time within 2 sec.

Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip : T1-1BC
Soldering iron tip temperature : 300 ±10 °C
Soldering iron tip contacting time: within 2 sec.
Be careful not to create the hollow soldering, bridge formation, and the holder's claw must not be melt.



Matching Phase





4. Adjustment

4-1. FWD Position Adjustment

Perform this adjustment after the tension regulator ass'y and the S-reel table ass'y are replaced or removed.

- TG1 FWD position adjustment
- FWD back tension adjustment (Refer to Page 6-118).

1) Enter the R/P mode and confirm the positions of TG1 guide and the TG2 guide.
   - Confirm that the distance between the flanges on the TG1 guide and the TG2 guide is 2 mm by inserting the block gauge or the pin gauge between them to measure. If the distance is not 2 mm, perform the following adjustment.

2) Loosen the screw and adjust the band adjuster so that the distance between the flanges on the TG1 guide and the TG2 guide becomes 2 mm using the adjustment screwdriver (Ref. No. J-25), and finally tighten the screw.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
   Note: When measuring the distance between guides by inserting the block gauge or pin gauge, be very careful not to damage the roller.

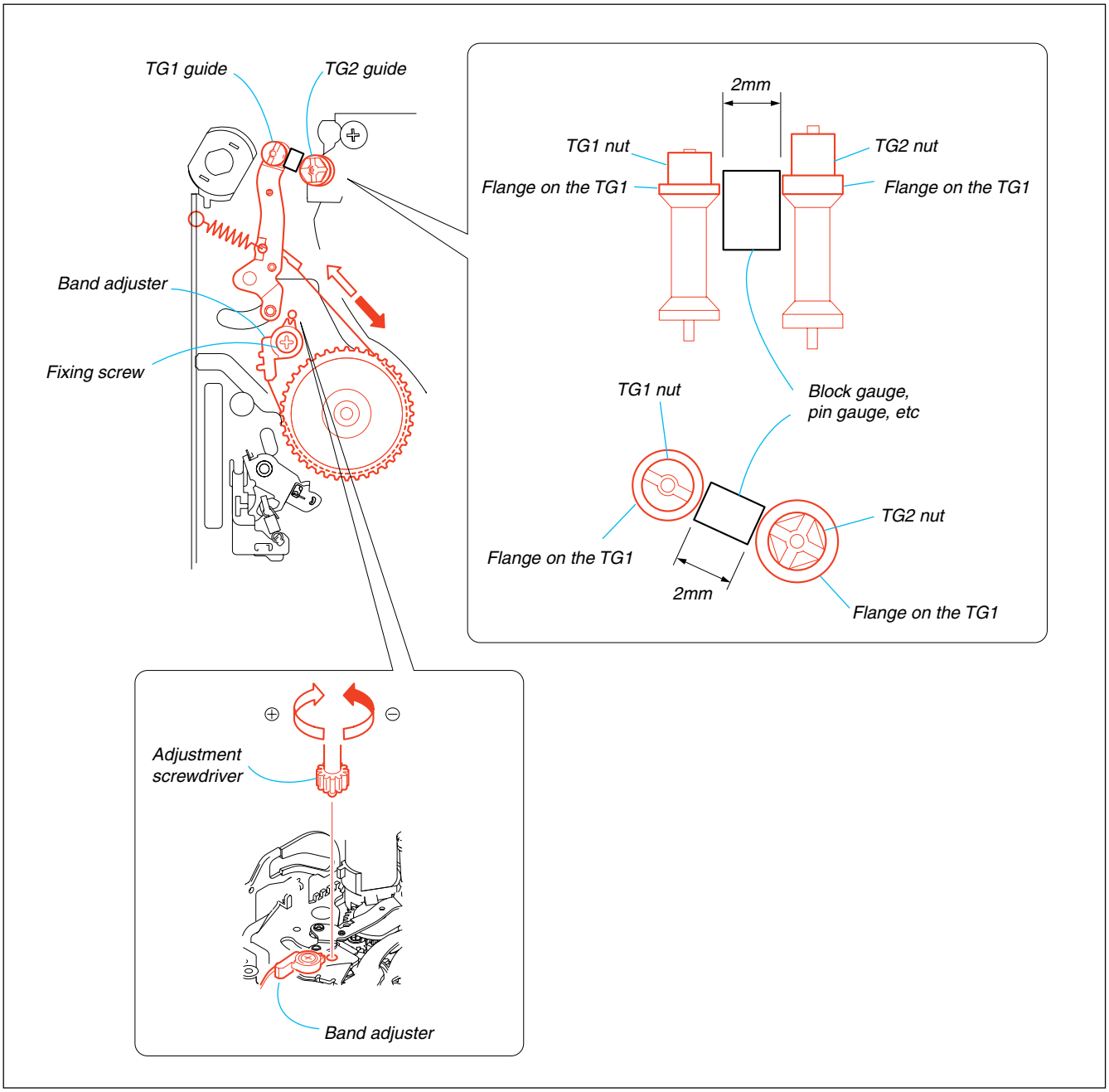


Fig. 6-2-4

4-2. LS Cam Adjustment

The LS Cam Adjustment becomes necessary in the following two cases;
①When the screw fixing the LS cam plate is loosened, and ② when the docking between the LS chassis block and the mechanism chassis block is removed.

Adjustment procedure

1) Enter the R/P mode.
2) Loosen the LS cam plate fixing screws (special head screw M1.4 × 1.4) Ⓐ and Ⓑ by 90 degrees.
3) Pressing the center of the LS chassis block with the force of 15.0 ± 2.0N•m (153.0 ± 25.0kgf•cm) (as shown by the large arrow mark).
4) While pressing the center of the LS chassis block, and while pulling the LS cam plate fixing screw Ⓐ (special head screw M1.4 × 1.4) with the force of 2.5 ± 0.5 N•m (25.5 ± 2.5kgf•cm) (as shown by the small arrow mark), tighten the LS cam plate fixing screw Ⓐ (special head screw M1.4 × 1.4).
   Tightening torque: 0.1 ± 0.01 N•m (1.02 ± 0.1 kgf•cm)
5) Remove the pressing force shown by the large arrow mark in step 3) first. Then remove the pressing force shown by the small arrow mark in step 4), next.
6) Tighten the cam plate fixing screw (special head screw M1.4 × 1.4) Ⓑ.
   Tightening torque: 0.1 ± 0.01 N•m (1.02 ± 0.1 kgf•cm)

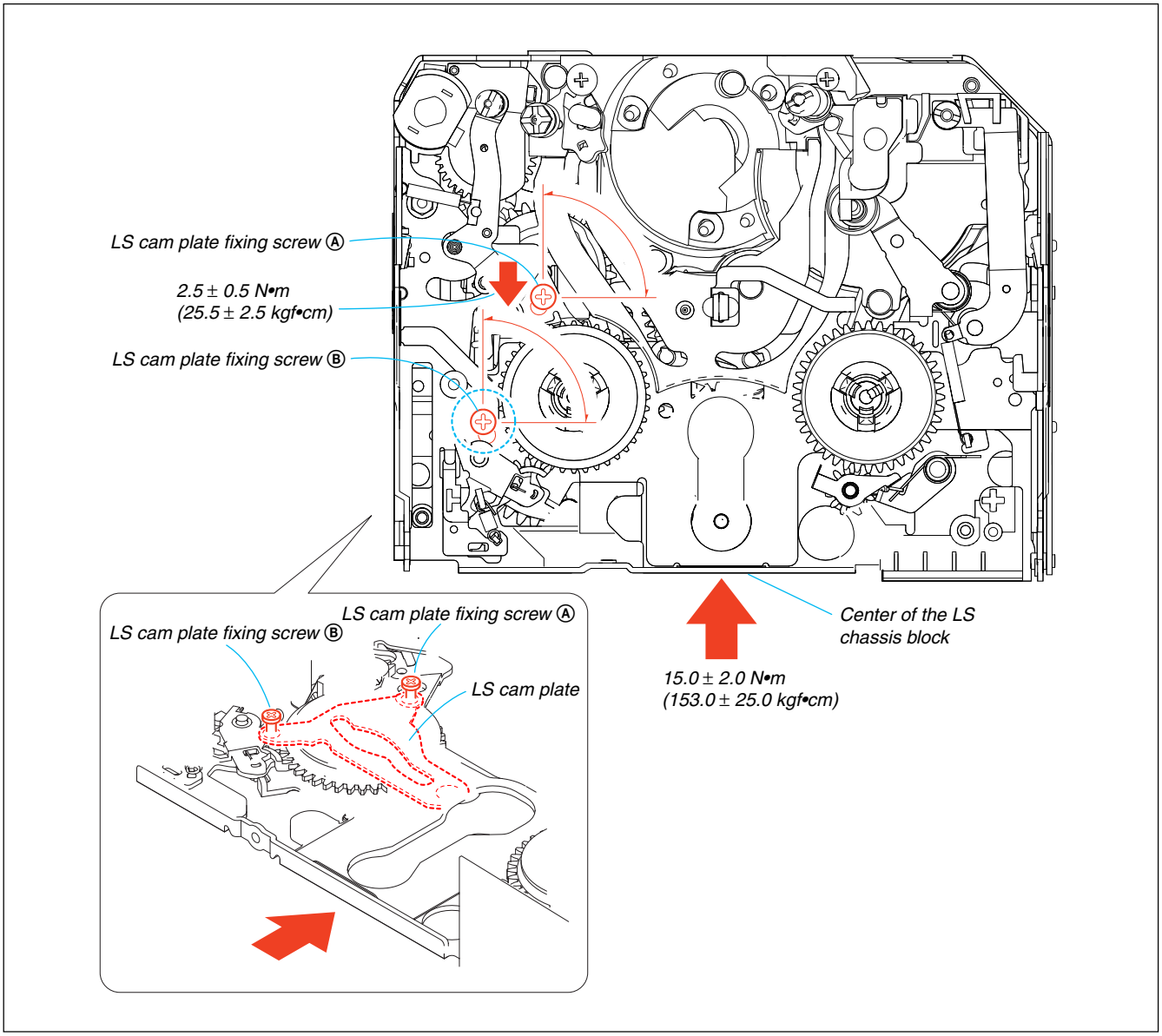
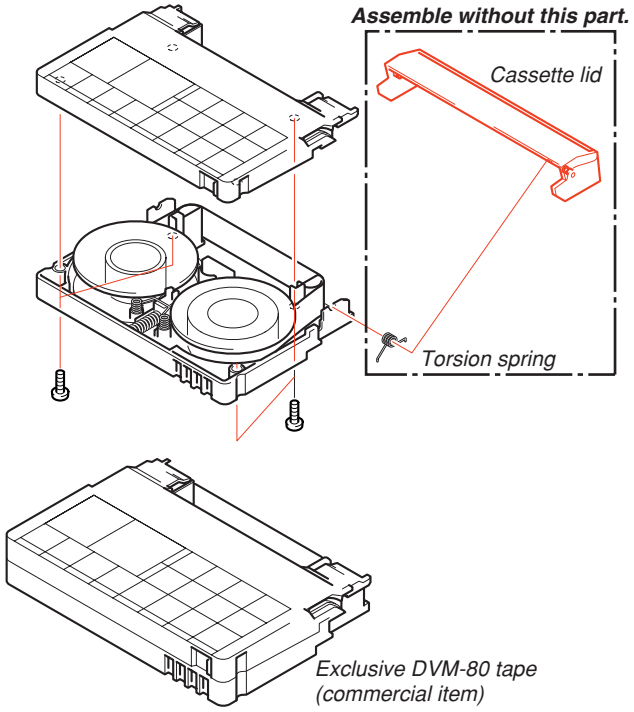


Fig. 6-2-5

4-3. Tape Path Adjustment

3-1. Adjustment Preparation

1) Clean the tape running surface (tape guides, drum, capstan, pinch roller) referring to Section "2-2. Tape Path System Cleaning".
2) Connect the adjustment remote commander (Ref. No. J-1, J-2) to the LANC terminal of the machine. Set the HOLD switch to ON. (Set the slide switch to SERVICE)
3) Connect an oscilloscope to TT-007 board CN1004 via the CPC-13 jig (J-6082-443-A).
   Channel 1: CPC-13 jig, test pin ② (Note 1, 2)
   External trigger: CPC-13 jig, test pin ④
   Note 1: Connect a 75 Ω resistor between test pins ② of CPC-13 jig and ① (GND).
   75 Ω resistor (Parts code: 1-247-804-11)
   Note 2: Pin numbers of CN1004 are different from test pin number of CPC-13 jig. (See page 6-122)
4) Play back the tracking standard (XH2-1A1) (Ref. No. J-13).
5) Select page: 0, address: 10 and set data: 00.
6) Select page: 3, address: 26 and set data: 31, and press the PAUSE (Write) button.
7) Select page: 3, address: 33 and set data: 08.
8) Confirm that the RF waveform on the scope is flat at both of the entrance side and the exit side. (Refer to Fig. 6-2-7A.)
   If the RF waveform is not flat either at the entrance side or the exit side (refer to Fig. 6-2-7 B and C), perform the adjustment of section "3-2. TG2/TG4 Guide Coarse Adjustment" and later.
9) Prepare an exclusive DVM-80 tape (commercial item).
   (Remove the lid of the cassette.)



10) When the required conditions of step 8) are satisfied, perform [Required Work upon Completion of Adjustment] as described below upon completion of adjustment/check.

[Required Work upon Completion of Adjustment]

1) Connect the adjustment remote commander (Ref. No. J-1, J-2) to the LANC terminal of the machine. Set the HOLD switch to ON. (Set the slide switch to SERVICE)
2) Select page: 0, address: 10 and set data: 00.
3) Select page: 3, address: 26 and set data: 00, and press the PAUSE (Write) button.
4) Select page: 3, address: 33 and set data: 00.

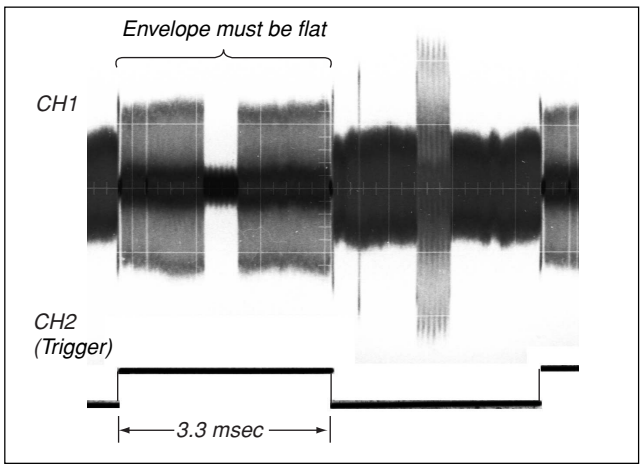


Fig. 6-2-6

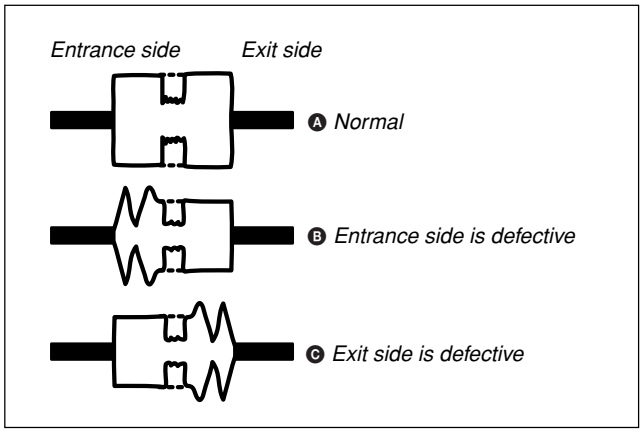


Fig. 6-2-7

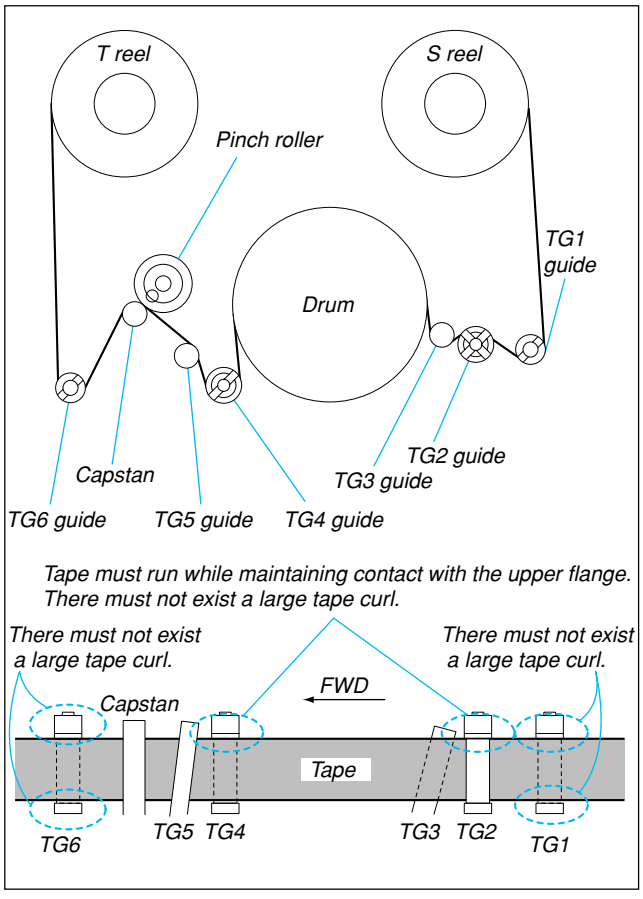


Fig. 6-2-8

3-2. TG2/TG4 Guide Coarse Adjustment

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-13).
2) Adjust the TG2 and TG4 guides until the RF envelope waveform becomes flat. (Refer to Fig. 6-2-11.)

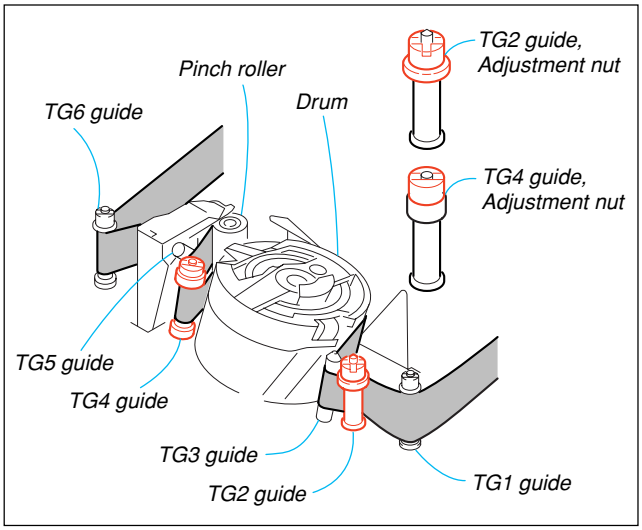


Fig. 6-2-9

3-3. FWD Back Tension Adjustment

1) Set the mini DV torque cassette (Ref. No. J-24) and establish the FWD mode.
2) Confirm that the S side torque cassette reading value is in the range as shown below.
   0.29 to 0.39 mN•m (3.0 to 4.0 gf•cm)
   If the measurement value does not satisfy the specifications, perform the following adjustment.
   - If the measurement value is higher than the specification: (Decreases the spring tension)
     Move the tension coil spring hook to another spring stay in the direction of Ⓑ.
   - If the measurement value is lower than the specification: (Increases the spring tension)
     Move the tension coil spring hook to another spring stay in the direction of Ⓐ.

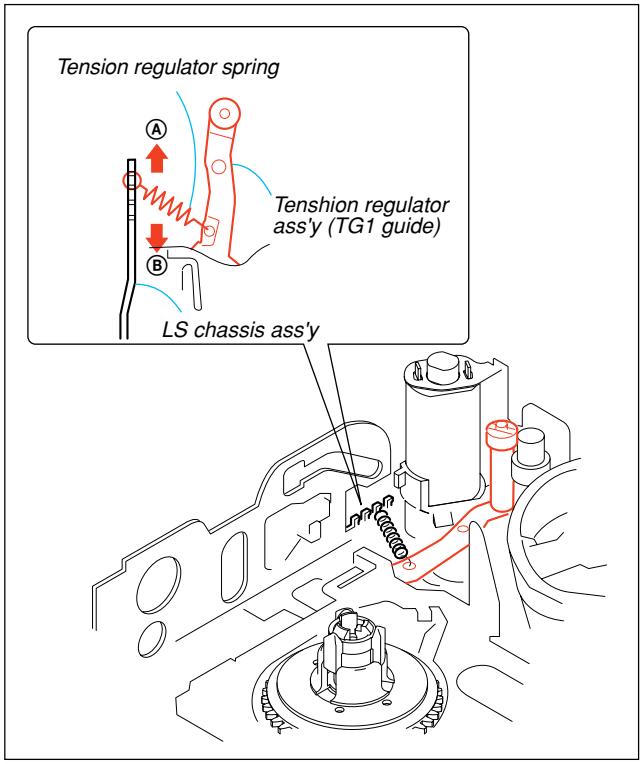


Fig. 6-2-10

3-4. TG2/TG4 Guide Fine Adjustment

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-13).
2) Adjust the TG2 so that the RF envelope has the larger amplitude at the entrance side first, than adjust TG2 guide for flat amplitude. (Refer to Fig. 6-2-11.)
3) Adjust the TG4 so that the RF envelope has the larger amplitude at the exit side first, than adjust TG4 guide for flat amplitude. (Refer to Fig. 6-2-12.)

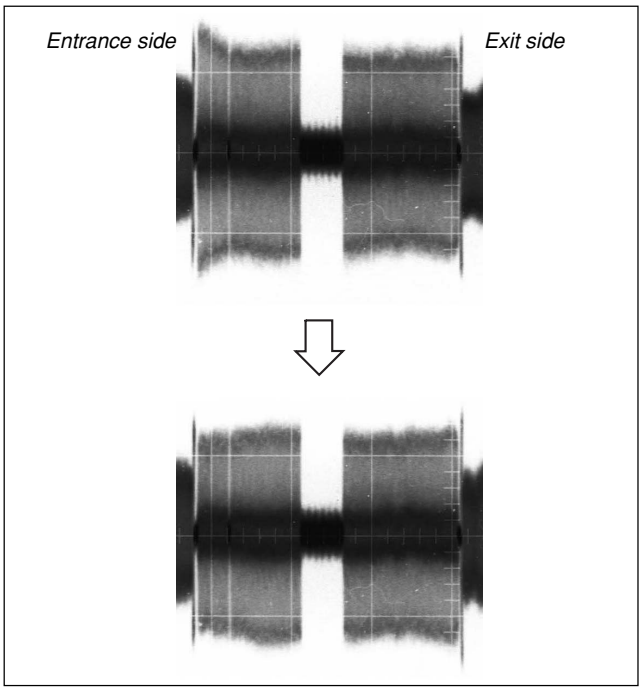


Fig. 6-2-11

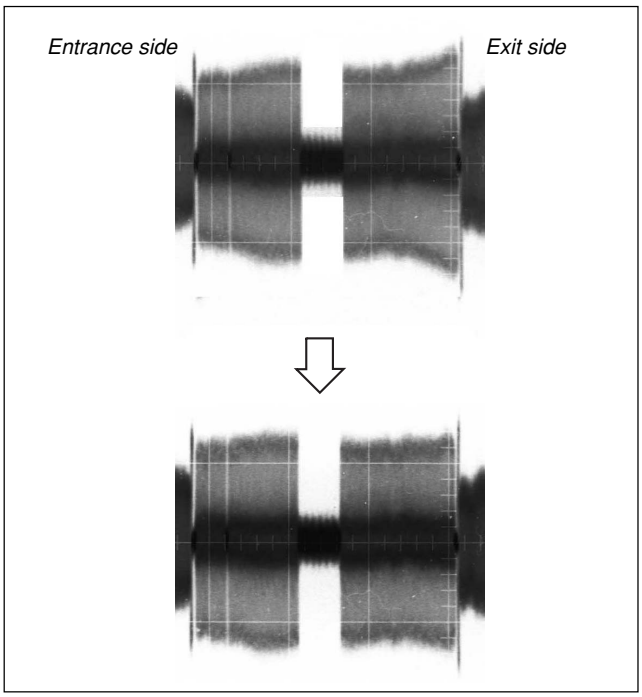


Fig. 6-2-12

3-5. TG1 Height Adjustment

1) Replay the tracking standard (XH2-1A1) (Ref. No. J-13).
2) Confirm that the waveform of the tape path is flat. (Refer to Fig. 6-2-11, and 6-2-12.)
3) Confirm to see that there are gaps between top edge of the tape and the TG1 flange, and bottom edge and the TG1 flange. (Refer to Fig. 6-2-13.)
   If the top and/or the bottom edge of the tape contacts with TG1 flange, adjust the height of the TG1 so that there is gap between the edge of the tape and the flange.
   If the height of the TG1 is adjusted, check the entrance side of the tape path waveform (refer to Fig. 6-2-11, and 6-2-12). If there is any change in the entrance side of the tape path waveform, re-adjust the entrance side (TG2). (Refer to "3-4. TG2/TG4 Guide Fine Adjustment.)

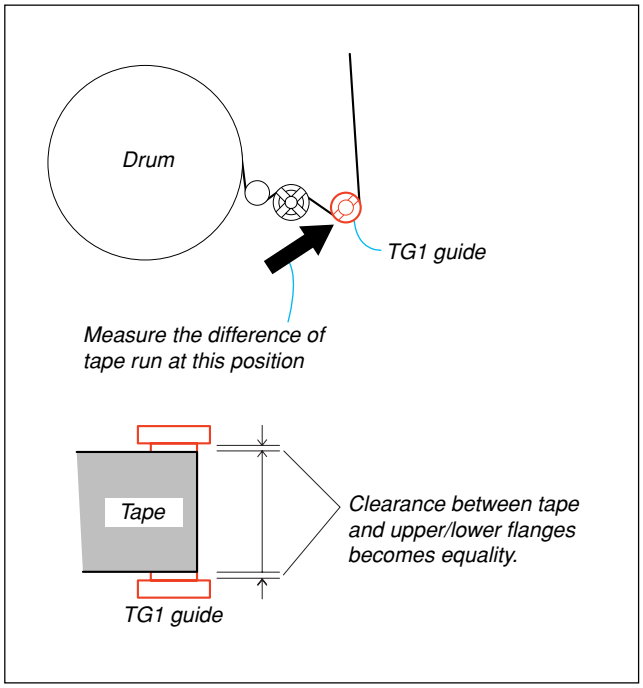


Fig. 6-2-13

3-6. TG6 Height Adjustment

Note: Perform "TG6 height adjustment" using the end segment of the tape which is within the last 5 minutes from the end of the thin DVM-80 tape (commercial item).
When using the DVM-80 (commercial item), use the modified one by removing the cassette rid (Refer to Page 6-117. Adjustment Preparation 9)).

1) Play back the tape (DVM-80) (commercial item).
2) Press the FF button to enter the CUE mode and measure the tape height after 5 seconds have elapsed. (Fig. 6-2-14)
3) Release your finger from the FF button and press the REW button to enter the REV mode.
   Measure the tape height after 3 seconds have elapsed.
4) Release your finger from the REW button.
5) Adjust the TG6 height so that the tape height in the CUE mode is the same as that in the REV mode.
   Adjust the TG6 height by rotating the adjustment nut of the TG6 guide in the following manner.
   - Tape height in the REV mode is higher ⟶ Rotate the adjustment nut clockwise
   - Tape height in the REV mode is lower ⟶ Rotate the adjustment nut counter-clockwise

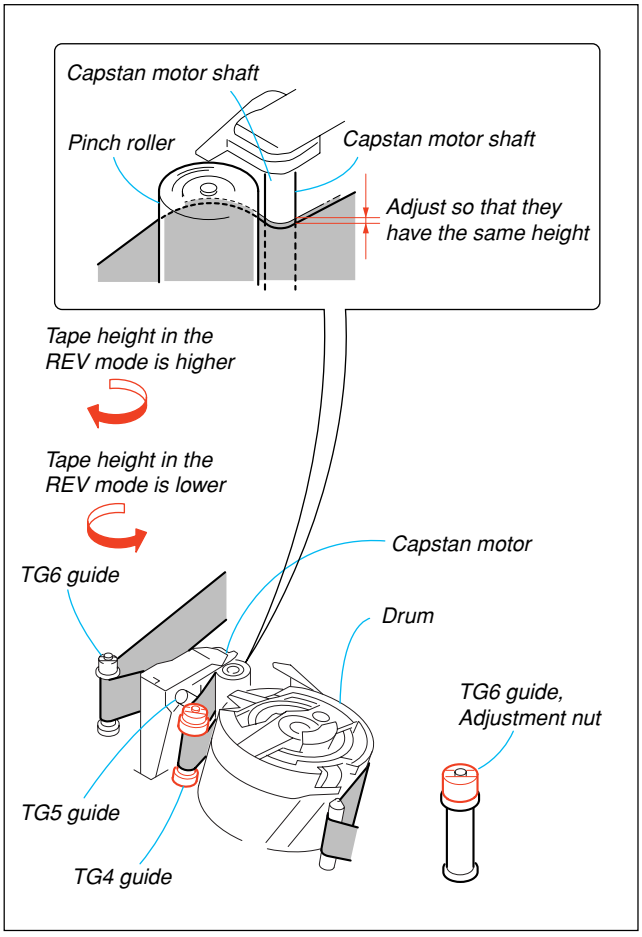


Fig. 6-2-14

6) Repeat the steps from 2 to 5 until the tape height in the CUE mode and REV mode becomes the same.

3-7. Tape Run Check

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-13). Establish the CUE mode first then the REV mode. Confirm in the respective modes that there are no large tape curls at the upper flange of TG2 and TG4. Then confirm in the respective modes that there are no large tape curls at the upper and lower flanges of TG1 and TG6.

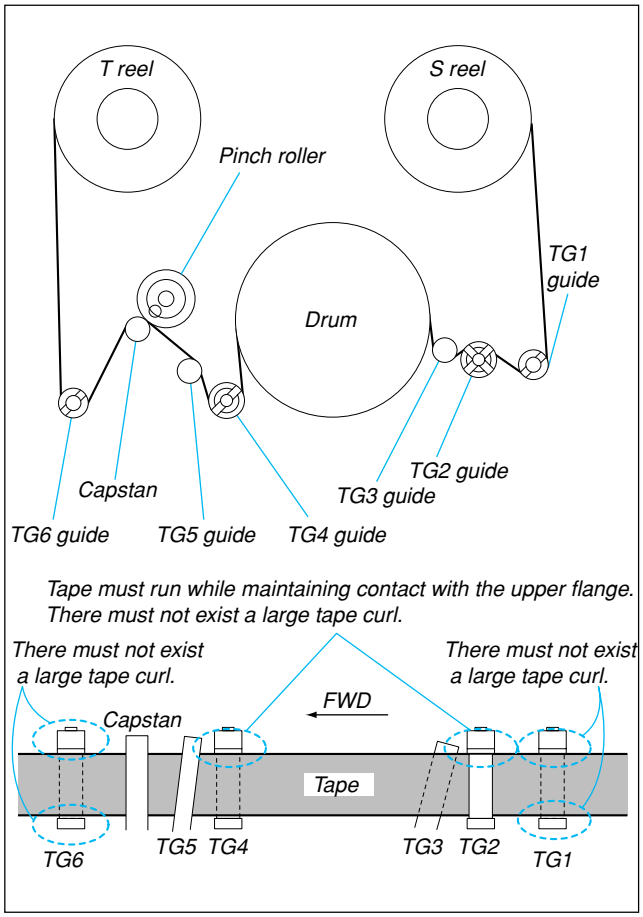


Fig. 6-2-15

3-8. Check upon Completion of Adjustment

1. Tracking Check

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-13).
2) Establish the CUE (or REV) mode. Take the amplitude (A) in this mode as the 100% waveform amplitude. (Refer to Fig. 6-2-16.)
3) Establish the FWD mode. Confirm that the difference between the minimum (E min) and the maximum (E max) is less than 30%. (When taking the amplitude (A) in the CUE or REV mode as 100%)

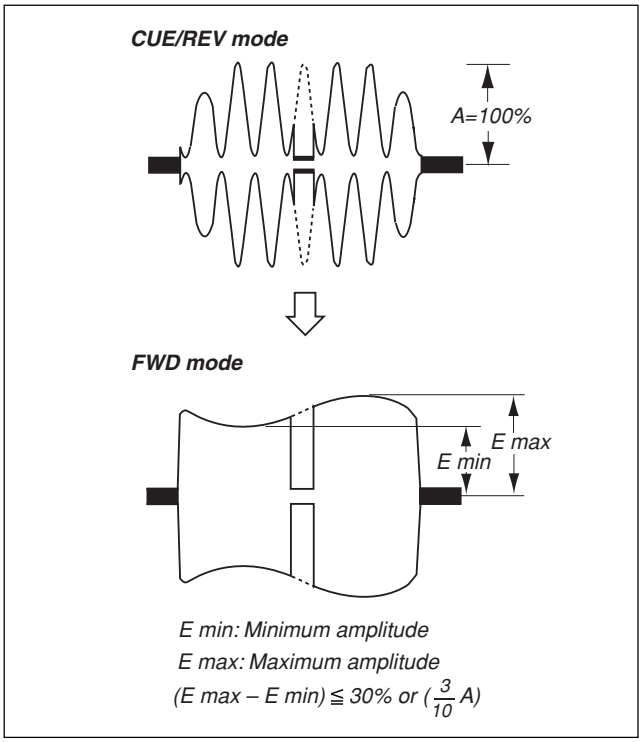


Fig. 6-2-16

4) Confirm that the RF waveform does not have excessive fluctuation of amplitude. (Fluctuation of amplitude should be 10% or less at both entrance side (B) and exit side (C), when taking the amplitude (A) in the CUE or REV mode as 100%)

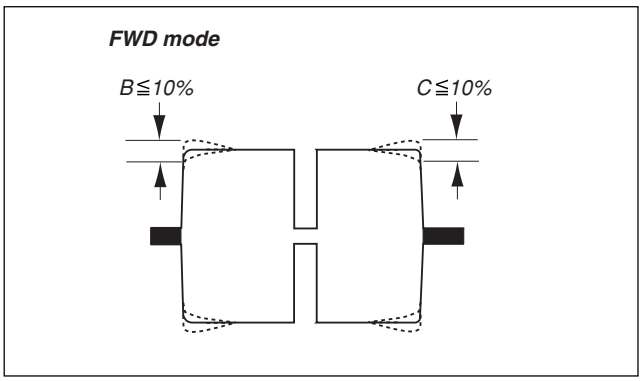


Fig. 6-2-17

2. CUE/REV Check

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-13).
2) Establish the CUE mode. Confirm that the pitches between the peaks of the RF waveform are equally spaced. Also confirm that the RF waveform amplitude at entrance side (B) and exit side (C) is 50% or more respectively, when taking the amplitude (A) in the CUE or REV mode as 100%.
3) Establish the REV mode. Confirm that the pitches between the peaks of the RF waveform are equally spaced. Also confirm that the RF waveform amplitude at entrance side (B) and exit side (C) is 50% or more respectively.

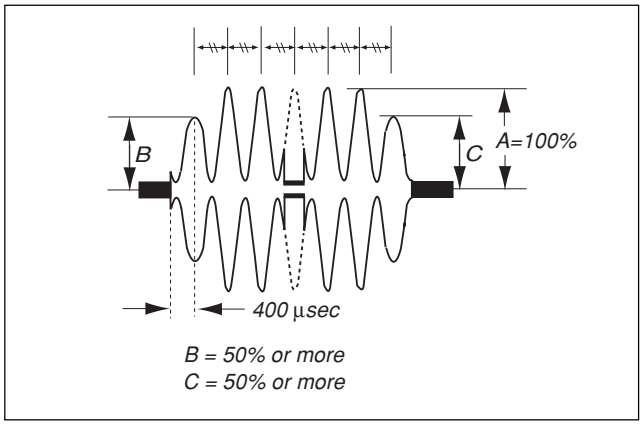


Fig. 6-2-18

3. Rise-up Check

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-13).
2) Change the modes from CUE mode to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from CUE mode to FWD.
3) Change the modes from REV mode (two seconds or more of REV and to the FWD within five seconds) to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from REV mode to FWD.
4) Change the modes from STOP mode to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from STOP mode to FWD.

6-3. VIDEO SECTION ADJUSTMENTS

3-1. PREPARATIONS BEFORE ADJUSTMENTS

3-1-1. Precautions on Adjusting

Note: Before performing the adjustment, check the data of page: 0, address: 10 is "00". If not, select page: 0, address: 00, and set data "00".

1) The adjustments of this unit are performed in the VTR mode (VCR mode) or camera mode (CAMERA mode).

3-1-2. Adjusting Connectors

The measuring point of the playback RF signal is CN1004 of TT-007 board. Connect the measuring instruments via the CPC-13 jig (J-6082-443-A). Refer to "MECHANISM SECTION ADJUSTMENT" for the measuring method. The following table lists the test pin numbers of CPC-13 jig, and the pin numbers and signal names of CN1004.

Pin No.	Signal Name	Pin No.	Signal Name
1 (20)	REG_GND	11 (10)	EEP_SO_C
2 (19)	RF_MON	12 (9)	EEP_SO_S
3 (18)	REG_GND	13 (8)	EEP_SCK_C
4 (17)	SWP	14 (7)	EEP_SCK_S
5 (16)	FRRV	15 (6)	D_2.8V
6 (15)	REG_GND	16 (5)	MD2_C
7 (14)	REG_GND	17 (4)	MD2
8 (13)	REG_GND	18 (3)	XCS_MC_FLASH_C
9 (12)	EEP_SI_C	19 (2)	XCS_MC_FLASH
10 (11)	EEP_SI_S	20 (1)	XSYS_RST

Note: The pin number in ( ) is test terminal number of CN1004 on the TT-007 board.

Table 6-3-1

3-1-3. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 6-3-1, and perform the adjustments.

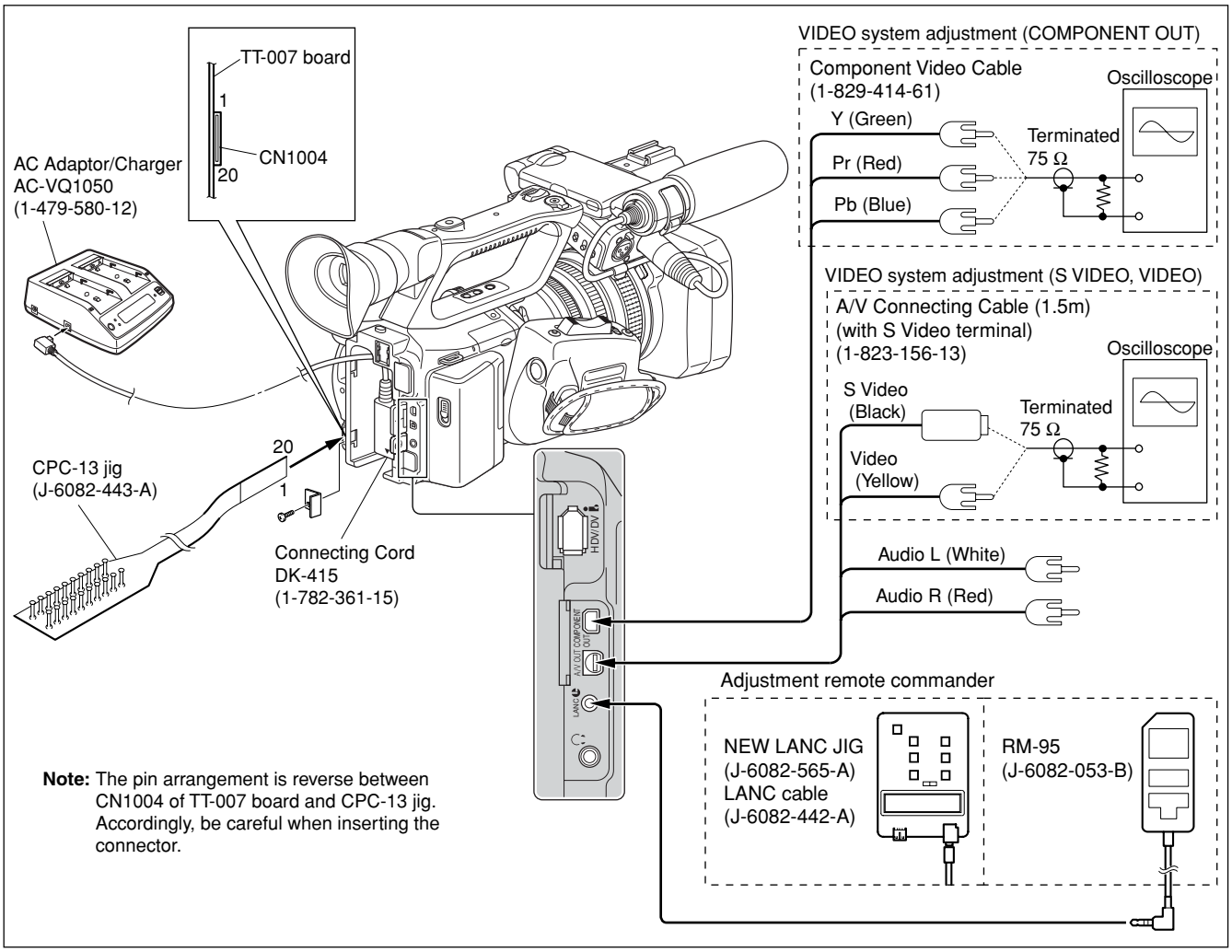


Fig. 6-3-1

3-1-4. Alignment Tapes

Use the alignment tapes shown in the following table.
Use tapes specified in the signal column of each adjustment.

Name	Use
Tracking standard (XH2-1A1)	Tape path adjustment
SW/OL standard (XH2-3)	Switching position adjustment
Audio operation check (XH5-3(NTSC), XH5-3P(PAL))	Audio system adjustment
System operation check (XH5-5(NTSC), XH5-5P(PAL))	Operation check

Fig. 6-3-2 shows the 75% color bar signals recorded on the alignment tape for Audio Operation Check.

Note: Measure with video terminal (Terminated at 75 Ω)

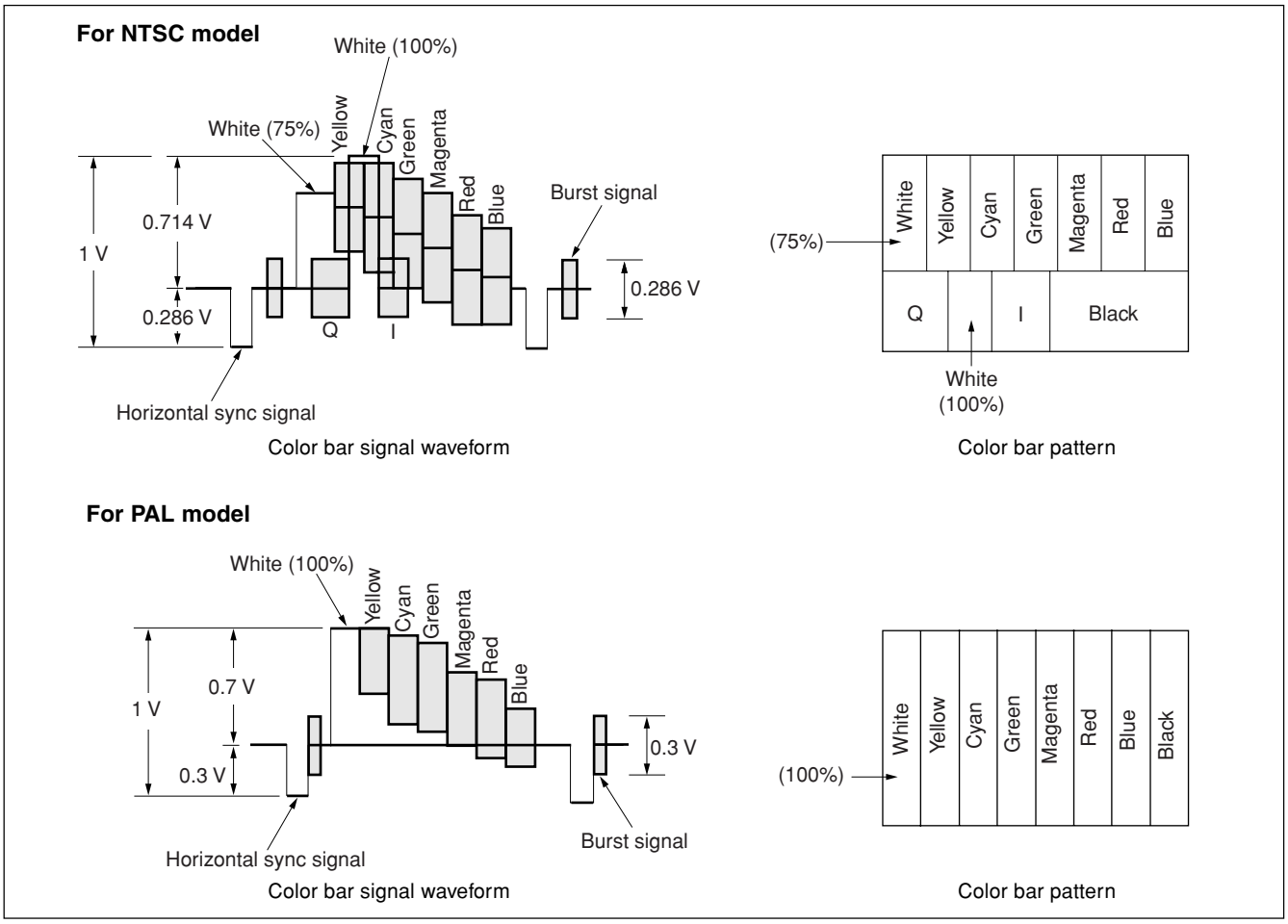


Fig. 6-3-2 Color bar signal of alignment tapes

3-1-5. Output Level and Impedance

A/V OUT jack

10-pin connector
Video signal: 1 Vp-p, 75 Ω (ohms)
Luminance signal: 1 Vp-p, 75 Ω (ohms)
Chrominance signal: 0.286 Vp-p (burst signal), 75 Ω (ohms) (NTSC)
Chrominance signal: 0.3 Vp-p (burst signal), 75 Ω (ohms) (PAL)
Audio signal: -10 dBu (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
(0 dBu=0.775 Vrms)

COMPONENT OUT jack

Y: 1 Vp-p, 75 Ω (ohms), P_B/P_R, C_B/C_R: +/- 350 mV, 75 Ω (ohms)

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Initialization of EEPROM Data

If the EEPROM data is erased due to some reason, perform "1-2. INITIALIZATION OF EVR DATA ", of "6-1. CAMERA SECTION ADJUSTMENTS"

2. Node Unique ID No. Input

Note 1: Perform "2-2. Input of Serial No." if the data on page 13 has been cleared and original node unique ID No. is uncertain.
Usually, read the data on page 13 before repair, and write it after repair.

Note 2: If reading/writing data on pages 13, set data: 01 to page: 0, address: 10, and then select pages: 3. By this data setting, the pages 13 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

2-1. Input of Company ID

Write the company ID to the EEPROM (nonvolatile memory).

Page	13
Address	04, 05, 06, 07, 08

Input method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 71, and set data: 01, then press the PAUSE (Write) button.
3) Select page: 0, address: 10, and set data: 01.
4) Select page: 3 (13), and enter the following data.

Note 3: Each time the data is set, press the PAUSE (Write) button on the adjusting remote commander.

Address	Data
04	08
05	00
06	46
07	01
08	02

5) Select page: 0, address: 10, and set data: 00.
6) Select page: 3, address: 70, and set data: 10, then press the PAUSE (Write) button.
7) Select page: 3, address: 70, and check that the data changes to "11".
8) Select page: 0, address: 01, and set data: 00.

2-2. Input of Serial No.

Write the serial No. and model code to the EEPROM (nonvolatile memory).
In writing the serial No., a decimal number should be converted into a hexadecimal number

Page	13
Address	09, 0A, 0B

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 71, and set data: 01, then press the PAUSE (Write) button.
3) Read the serial No. from the model name label, and it is assumed to be D_1.
   Example: If serial No. is "77881",
   $D_1 = 77881$
4) From Table 6-3-2, obtain D_2 and H_1 that correspond to D_1.
   Example: If $D_1 = 77881$,
   $D_2 = D_1 - 65536 = 12345$
   $H_1 = FE$

D_1 (decimal)	D_2 (decimal)	H_1 (hexadecimal) (Service model code)
00001 to 65535	D_1	FE
65536 to 131071	$D_1 - 65536$	FE
131072 to196607	$D_1 - 131072$	FE
196608 to 262143	$D_1 - 196608$	FE
262144 to 327679	$D_1 - 262144$	FE
327680 to 393215	$D_1 - 327680$	FE
393216 to 458751	$D_1 - 393216$	FE
458752 to 524287	$D_1 - 458752$	FE
524288 to 589823	$D_1 - 524288$	FE
589824 to 655359	$D_1 - 589824$	FE
655360 to 720895	$D_1 - 655360$	FE
720896 to 786431	$D_1 - 720896$	FE
786432 to 851967	$D_1 - 786432$	FE
851968 to 917503	$D_1 - 851968$	FE
917504 to 983039	$D_1 - 917504$	FE
983040 to 999999	$D_1 - 983040$	FE

Table 6-3-2

5) Enter H_1 to address: 09 on page: 13.
   Example: If $H_1 = FE$,
   Select page: 0, address: 10, and set data: 01.
   Select page: 3 (13), address: 09, and set data: FE, then press the PAUSE (Write) button.
6) From Table 6-3-3, obtain the maximum decimal number less than D_2, and it is assumed to be D_3.
   Example: If $D_2 = 12345$.
   $D_3 = 12288$
7) From Table 6-3-3, obtain a hexadecimal number that corresponds to D_3, and it is assumed to be H_3.
   Example: If $D_3 = 12288$,
   $H_3 = 3000$
8) Caluculate D_4 using following equations (decimal caluculation). ($0 \leqq D_4 \leqq 225$)
   $D_4 = D_2 - D_3$
   Example: If $D_2 = 12345$ and $D_3 = 12288$,
   $D_4 = 12345 - 12288 = 57$
9) Convert D_4 into a hexadecimal number to obtain H_4. (See Table 6-4-1 "Hexadecimal - decimal conversion table" in 6-4. Service Mode)
   Example: If $D_4 = 57$,
   $H_4 = 39$
10) Enter higher two digits of H_3 to address: 0A on page: 13.
    Example: If $H_3 = 3000$,
    Select page: 0, address: 10, and set data: 01.
    Select page: 3 (13), address: 0A, and set data: 30, then press the PAUSE (Write) button.
11) Enter H_4 to address: 0B on page: 13.
    Example: If $H_4 = 39$,
    Select page: 0, address: 10, and set data: 01.
    Select page: 3 (13), address: 0B, and set data: 39, then press the PAUSE (Write) button.
12) Select page: 0, address: 10, and set data: 00.
13) Select page: 3, address: 70, and set data: 10, then press the PAUSE (Write) button.
14) Select page: 3, address: 70, and check that the data changes to "11".
15) Select page: 0, address: 01, and set data: 00.

D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3
0	0000	8192	2000	16384	4000	24576	6000	32768	8000	40960	A000	49152	C000	57344	E000
256	0100	8448	2100	16640	4100	24832	6100	33024	8100	41216	A100	49408	C100	57600	E100
512	0200	8704	2200	16896	4200	25088	6200	33280	8200	41472	A200	49664	C200	57856	E200
768	0300	8960	2300	17152	4300	25344	6300	33536	8300	41728	A300	49920	C300	58112	E300
1024	0400	9216	2400	17408	4400	25600	6400	33792	8400	41984	A400	50176	C400	58368	E400
1280	0500	9472	2500	17664	4500	25856	6500	34048	8500	42240	A500	50432	C500	58624	E500
1536	0600	9728	2600	17920	4600	26112	6600	34304	8600	42496	A600	50688	C600	58880	E600
1792	0700	9984	2700	18176	4700	26368	6700	34560	8700	42752	A700	50944	C700	59136	E700
2048	0800	10240	2800	18432	4800	26624	6800	34816	8800	43008	A800	51200	C800	59392	E800
2304	0900	10496	2900	18688	4900	26880	6900	35072	8900	43264	A900	51456	C900	59648	E900
2560	0A00	10752	2A00	18944	4A00	27136	6A00	35328	8A00	43520	AA00	51712	CA00	59904	EA00
2816	0B00	11008	2B00	19200	4B00	27392	6B00	35584	8B00	43776	AB00	51968	CB00	60160	EB00
3072	0C00	11264	2C00	19456	4C00	27648	6C00	35840	8C00	44032	AC00	52224	CC00	60416	EC00
3328	0D00	11520	2D00	19712	4D00	27904	6D00	36096	8D00	44288	AD00	52480	CD00	60672	ED00
3584	0E00	11776	2E00	19968	4E00	28160	6E00	36352	8E00	44544	AE00	52736	CE00	60928	EE00
3840	0F00	12032	2F00	20224	4F00	28416	6F00	36608	8F00	44800	AF00	52992	CF00	61184	EF00
4096	1000	12288	3000	20480	5000	28672	7000	36864	9000	45056	B000	53248	D000	61440	F000
4352	1100	12544	3100	20736	5100	28928	7100	37120	9100	45312	B100	53504	D100	61696	F100
4608	1200	12800	3200	20992	5200	29184	7200	37376	9200	45568	B200	53760	D200	61952	F200
4864	1300	13056	3300	21248	5300	29440	7300	37632	9300	45824	B300	54016	D300	62208	F300
5120	1400	13312	3400	21504	5400	29696	7400	37888	9400	46080	B400	54272	D400	62464	F400
5376	1500	13568	3500	21760	5500	29952	7500	38144	9500	46336	B500	54528	D500	62720	F500
5632	1600	13824	3600	22016	5600	30208	7600	38400	9600	46592	B600	54784	D600	62976	F600
5888	1700	14080	3700	22272	5700	30464	7700	38656	9700	46848	B700	55040	D700	63232	F700
6144	1800	14336	3800	22528	5800	30720	7800	38912	9800	47104	B800	55296	D800	63488	F800
6400	1900	14592	3900	22784	5900	30976	7900	39168	9900	47360	B900	55552	D900	63744	F900
6656	1A00	14848	3A00	23040	5A00	31232	7A00	39424	9A00	47616	BA00	55808	DA00	64000	FA00
6912	1B00	15104	3B00	23296	5B00	31488	7B00	39680	9B00	47872	BB00	56064	DB00	64256	FB00
7168	1C00	15360	3C00	23552	5C00	31744	7C00	39936	9C00	48128	BC00	56320	DC00	64512	FC00
7424	1D00	15616	3D00	23808	5D00	32000	7D00	40192	9D00	48384	BD00	56576	DD00	64768	FD00
7680	1E00	15872	3E00	24064	5E00	32256	7E00	40448	9E00	48640	BE00	56832	DE00	65024	FE00
7936	1F00	16128	3F00	24320	5F00	32512	7F00	40704	9F00	48896	BF00	57088	DF00	65280	FF00

Note: D_3: Decimal
H_3: Hexadecimal

Table 6-3-3

3-3. SERVO AND RF SYSTEM ADJUSTMENTS

Before perform the servo and RF system adjustments, check that the specified values of "Origin Oscillation check" of "1-3. CAMERA SYSTEM ADJUSTMENTS" is satisfied.
Check that the data of page: 0, address: 10 is "00". If not, select page: 0, address: 10, and set the data "00".

Adjusting Procedure:
1. CAP FG duty adjustment
2. Switching position adjustment
3. Error rate check

1. CAP FG Duty Adjustment (TT-007 board)

RadarW

Set the CAP FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur.

Mode	VTR stop (VCR mode)
Signal	No signal
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	16
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2	0	01	01	
3	3	71	01	Press PAUSE (Write) button.
4	3	03	FF	
5	C	16	20	Press PAUSE (Write) button.
6	3	01	1B	Press PAUSE (Write) button.
7	3	02		Check the data changes in the following order "1B" → "2B" → "00"
8	3	03		Check the data is "00". (Note 2)
9	3	01	00	Press PAUSE (Write) button.
10	3	70	10	Press PAUSE (Write) button.
11	3	70		Check the data changes to "11".
12	0	01	00	

Note 2: If the data is "01", adjustment has errors or the mechanism deck is defective.
If the data is "80", the mechanism deck is in emergency state or the end of tape was detected.

2. Switching Position Adjustment (TT-007 board)

RadarW

Mode	VTR playback (VCR mode)
Signal	SW/OL standard (XH2-3)
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	10, 11, 12, 13
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert the SW/OL standard tape and enter the VTR stop mode.
2	0	01	01	
3	3	71	01	Press PAUSE (Write) button.
4	C	10	EE	Press PAUSE (Write) button.
5	3	03	FF	
6	3	21		Check the data is "02". (Note 2)
7	3	01	0D	Press PAUSE (Write) button.
8	3	02		Check the data changes to "00".
9	3	03		Check the data is "00". (Note 3)
10	3	01	00	Press PAUSE (Write) button.
11	3	70	10	Press PAUSE (Write) button.
12	3	70		Check the data changes to "11".
13	0	01	00	

Note 2: If the data is "72", the tape top being played. After playing the tape for 1 to 2 seconds, stop it, perform step 5 and higher.
If the data is "62", the tape end being played. After rewind the tape, perform step 5 and higher.

Note 3: If bit0 of the data is "1", the EVEN channel is defective.
If bit1 of the data is "1", the ODD channel is defective.
Contents of the defect is see written into page: C, address: 10 and 12. See following table.
(For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".)
If bit3 of the data is "1", the tape end being played, so rewind the tape and perform the adjustment again.

When the EVEN channel is defective

Data of page: C, address: 10	Contents of defect
EE	Writing into Flash memory (IC2402) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC2601

When the ODD channel is defective

Data of page: C, address: 12	Contents of defect
EE	Writing into Flash memory (IC2402) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC2601

3. Error Rate Check (TT-007 board) RadarW

Note: Check that the data of page: 0, address: 10 is "00".

3-1. Preparations before adjustments

Mode	Camera recording (CAMERA mode)
Subject	Arbitrary

Switch setting

1) REC FORMAT (Menu setting) ..... DV

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	0	10	01	
4	C (1C)	0D	CC	Press PAUSE (Write) button.
5	0	10	00	
6				Record the camera signal for 2 minutes.

3-2. Error Rate Check

Mode	VTR playback (VCR mode)
Subject	Recorded signal at "Preparations before adjustments"
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	B2 to C7
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Initial Value of Page C: Address: B2 to C7

Address	Initial value	Address	Initial value	Address	Initial value
B2	00	BA	00	C2	80
B3	00	BB	00	C3	00
B4	00	BC	00	C4	00
B5	00	BD	00	C5	00
B6	00	BE	00	C6	00
B7	80	BF	00	C7	00
B8	00	C0	00		
B9	00	C1	00		

Table 6-3-4

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3				Check that the data of page: C, address: B2 to C7 is the initial value. (See Table 6-3-4)
4				Playback the recorded signal at "Preparations before adjustments".
5	3	03	FF	
6	3	01	40	Press PAUSE (Write) button.
7	3	02		Check the data changes to "00".
8	3	03		Check the data is "00". (Note 2)
9	3	01	00	Press PAUSE (Write) button.
10				Perform "Processing after Completing Adjustments".

Note 2: If the data is other than "00", Error rate is abnormal. For the contents of the abnormality, see the following table.

Data of page: 3, address: 03	Contents of defect
01	EVEN channel is abnormal.
02	ODD channel is abnormal.
03	EVEN channel and ODD channel are abnormal.

Note 3: If Error rate is abnormal, Check the use tape, clean the tape running surface. And after inputting initial values to page C: address: B2 to C7, perform re-adjustment. (See Table 6-3-4)

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	C (1C)	0D	00	Press PAUSE (Write) button.
4	0	10	00	
5	3	70	10	Press PAUSE (Write) button.
6	3	70		Check the data changes to "11".
7	0	01	00	

3-4. VIDEO SYSTEM ADJUSTMENTS

Before perform the video system adjustments, check that the specified values of "Origin Oscillation Check" of "1-3. CAMERA SYSTEM ADJUSTMENTS" is satisfied.
Check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".
Note: NTSC model: HVR-Z7J/Z7U/Z7N
PAL model: HVR-Z7E/Z7P/Z7C

Adjusting Procedure:
1. S VIDEO OUT Y level adjustment
2. S VIDEO OUT chroma level adjustment
3. VIDEO OUT level check
4. COMPONENT OUT Y level adjustment
5. COMPONENT OUT Pr level adjustment
6. COMPONENT OUT Pb level adjustment

1. S VIDEO, VIDEO OUT Adjustment

1-1. Preparations

Perform the following data setting before the "S VIDEO, VIDEO OUT Adjustment".

Order	Page	Address	Data	Procedure
1				Set the unit to VCR mode.
2	0	01	01	
3	3	71	01	Press PAUSE (Write) button.
4	0	10	01	
5	C (1C)	0F	10	Press PAUSE (Write) button.
6	8 (18)	00	01	Press PAUSE (Write) button.
7	8 (18)	01	60	Press PAUSE (Write) button.
8	8 (18)	06	55	Press PAUSE (Write) button.
9	8 (18)	04	C0	Press PAUSE (Write) button.
10	0	10	00	
11	0	FF	3E	
12	B	00	02	
13	C	85		Check the data is "55".
14	B	00	00	
15	0	FF	00	

1-2. S VIDEO OUT Y Level Adjustment (TT-007 board)

Mode	VCR mode
Signal	No signal
Measurement Point	Y signal terminal of S VIDEO plug of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	25 (NTSC) 7E (PAL)
Specified value	A = 1000 ± 14 mVp-p

Adjusting method for NTSC model:

Order	Page	Address	Data	Procedure
1				Perform "Preparations"
2	C	25		Change the data and set the Y signal level (A) to the specified value.
3	C	25		Press PAUSE (Write) button.
4	C	7E		Set a value obtained by subtracting 2 from the forementioned data, and press PAUSE (Write) button.
5				Perform "Processing after Complete Adjustment".

Adjusting method for PAL model:

Order	Page	Address	Data	Procedure
1				Perform "Preparations"
2	C	7E		Change the data and set the Y signal level (A) to the specified value.
3	C	7E		Press PAUSE (Write) button.
4	C	25		Set a value obtained by adding 2 to the forementioned data, and press PAUSE (Write) button.
5				Perform "Processing after Complete Adjustment".

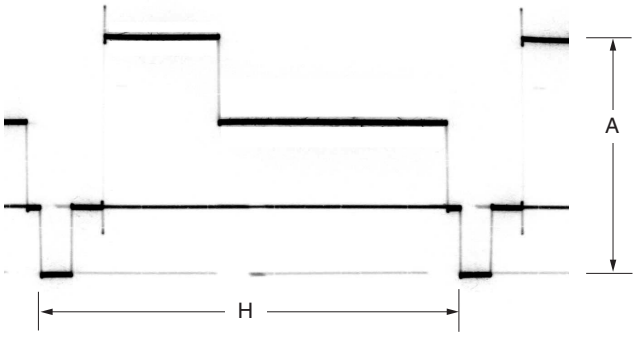


Fig. 6-3-3

1-3. S VIDEO OUT Chroma Level Adjustment (TT-007 board)

Mode	VCR mode
Signal	No signal
Measurement Point	Chroma signal terminal of S VIDEO plug of A/V OUT jack (75 Ω terminated) External trigger: Y signal terminal of S VIDEO plug of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	26, 27 (NTSC) 7F, 80 (PAL)
Specified value	Cr level: A = 714 ± 14 mVp-p (NTSC) A = 700 ± 14 mVp-p (PAL) Cb level: B = 714 ± 14 mVp-p (NTSC) B = 700 ± 14 mVp-p (PAL) Burst level: C = 286 ± 6 mVp-p (NTSC) C = 300 ± 6 mVp-p (PAL)

Adjusting method for NTSC model:

Order	Page	Address	Data	Procedure
1				Perform “Preparations”
2	C	26		Change the data and set the Cr signal level (A) to the specified value.
3	C	26		Press PAUSE (Write) button.
4	C	7F		Set a value obtained by subtracting 3 from the forementioned data, and press PAUSE (Write) button.
5	C	27		Change the data and set the Cb signal level (B) to the specified value.
6	C	27		Press PAUSE (Write) button.
7	C	80		Set a value obtained by subtracting 3 from the forementioned data, and press PAUSE (Write) button.
8				Check the burst signal (C) to the specified value.
9				Perform “Processing after Complete Adjustment”.

Adjusting method for PAL model:

Order	Page	Address	Data	Procedure
1				Perform “Preparations”
2	C	7F		Change the data and set the Cr signal level (A) to the specified value.
3	C	7F		Press PAUSE (Write) button.
4	C	26		Set a value obtained by adding 3 to the forementioned data, and press PAUSE (Write) button.
5	C	80		Change the data and set the Cb signal level (B) to the specified value.
6	C	80		Press PAUSE (Write) button.
7	C	27		Set a value obtained by adding 3 to the forementioned data, and press PAUSE (Write) button.
8				Check the burst signal (C) to the specified value.
9				Perform “Processing after Complete Adjustment”.

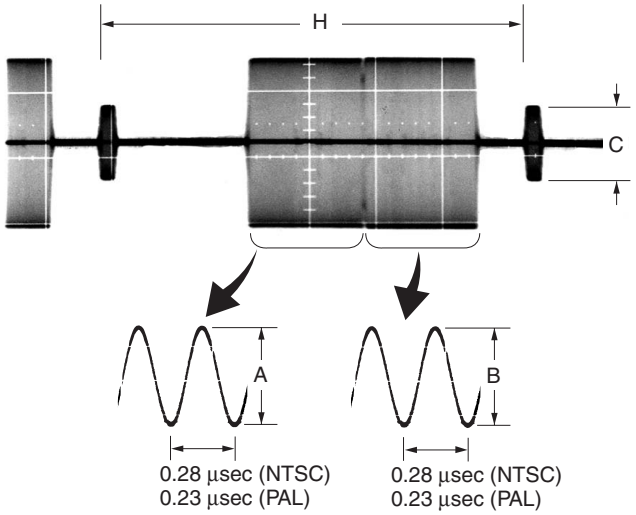


Fig. 6-3-4

1-4. VIDEO OUT Level Check (TT-007 board)

Mode	VCR mode
Signal	No signal
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified value	Sync level: A = 286 ± 18 mVp-p (NTSC) A = 300 ± 18 mVp-p (PAL) Burst level: B = 286 ± 18 mVp-p (NTSC) B = 300 ± 18 mVp-p (PAL)

Checking method:

Order	Page	Address	Data	Procedure
1				Peform “Preparations”
2				Check the sync signal level (A) to the specified value.
3				Check the burst signal level (B) to the specified value.
4				Perform “Processing after Complete Adjustment”.

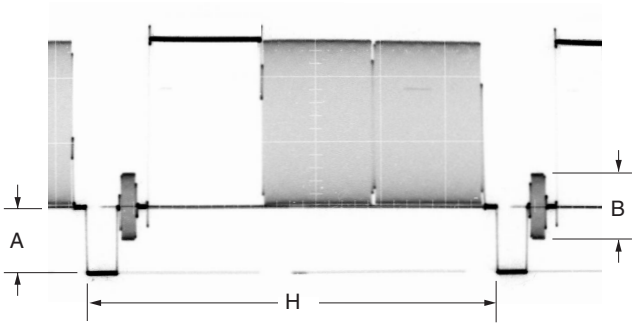


Fig. 6-3-5

1-5. Processing after Complete Adjustment

Perform the setting through the procedure mentioned below when you finish the “S VIDEO, VIDEO OUT Adjustment”.

Order	Page	Address	Data	Procedure
1	0	10	01	
2	C (1C)	0F	00	Press PAUSE (Write) button.
3	8 (18)	04	80	Press PAUSE (Write) button.
4	8 (18)	00	00	Press PAUSE (Write) button.
5	8 (18)	01	00	Press PAUSE (Write) button.
6	8 (18)	06	00	Press PAUSE (Write) button.
7	0	10	00	
8	3	70	10	Press PAUSE (Write) button.
9	3	70		Check the data changes to “11”.
10	0	01	00	

2. COMPONENT OUT Y Level Adjustment (TT-007 board)

Mode	CAMERA mode
Subject	Arbitrary
Measurement Point	Y signal terminal of COMPONENT OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	8C
Specified value	Y level: A = 1000 ± 10 mVp-p Sync level: B = C = 300 ± 10 mVp-p

Switch setting:

1) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	0	10	01	
4	8 (18)	5C		Set the bit value of bit0 is "1", and press PAUSE (Write) button. (Note)
5	8 (18)	5D	05	Press PAUSE (Write) button.
6	0	10	00	
7	C	8C		Change the data and set the Y signal level (A) to the specified value.
8	C	8C		Press PAUSE (Write) button.
9				Check the sync signal (B, C) to the specified value.
10	0	10	01	
11	8 (18)	5C		Set the bit value of bit0 is "0", and press PAUSE (Write) button. (Note)
12	8 (18)	5D	00	Press PAUSE (Write) button.
13	0	10	00	
14	3	70	10	Press PAUSE (Write) button.
15	3	70		Check the data changes to "11".
16	0	01	00	

Note: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

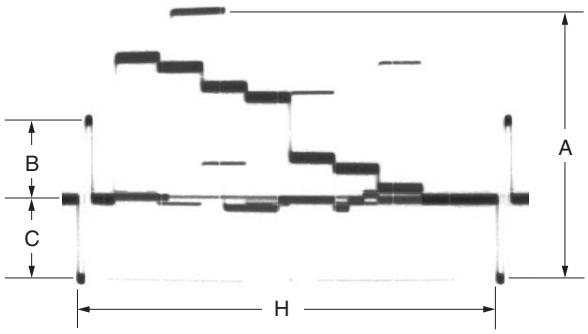


Fig. 6-3-6

3. COMPONENT OUT Pr Level Adjustment (TT-007 board)

Mode	CAMERA mode
Subject	Arbitrary
Measurement Point	Pr signal terminal of COMPONENT OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	8E
Specified value	Pr level: A = 525 ± 10 mVp-p Sync level: B = C = 300 ± 10 mVp-p

Switch setting:

1) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	0	10	01	
4	8 (18)	5C		Set the bit value of bit0 is "1", and press PAUSE (Write) button. (Note)
5	8 (18)	5D	05	Press PAUSE (Write) button.
6	0	10	00	
7	C	8E		Change the data and set the Pr signal level (A) to the specified value.
8	C	8E		Press PAUSE (Write) button.
9				Check the sync signal (B, C) to the specified value.
10	0	10	01	
11	8 (18)	5C		Set the bit value of bit0 is "0", and press PAUSE (Write) button. (Note)
12	8 (18)	5D	00	Press PAUSE (Write) button.
13	0	10	00	
14	3	70	10	Press PAUSE (Write) button.
15	3	70		Check the data changes to "11".
16	0	01	00	

Note: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

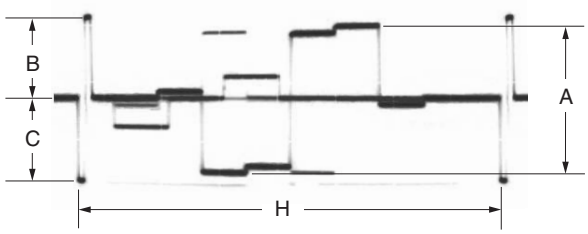


Fig. 6-3-7

4. COMPONENT OUT Pb Level Adjustment (TT-007 board)

Mode	CAMERA mode
Subject	Arbitrary
Measurement Point	Pb signal terminal of COMPONENT OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	8D
Specified value	Pb level: A = 525 ± 10 mVp-p Sync level: B = C = 300 ± 10 mVp-p

Switch setting:

1) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	0	10	01	
4	8 (18)	5C		Set the bit value of bit0 is "1", and press PAUSE (Write) button. (Note)
5	8 (18)	5D	05	Press PAUSE (Write) button.
6	0	10	00	
7	C	8D		Change the data and set the Pb signal level (A) to the specified value.
8	C	8D		Press PAUSE (Write) button.
9				Check the sync signal (B, C) to the specified value.
10	0	10	01	
11	8 (18)	5C		Set the bit value of bit0 is "0", and press PAUSE (Write) button. (Note)
12	8 (18)	5D	00	Press PAUSE (Write) button.
13	0	10	00	
14	3	70	10	Press PAUSE (Write) button.
15	3	70		Check the data changes to "11".
16	0	01	00	

Note: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

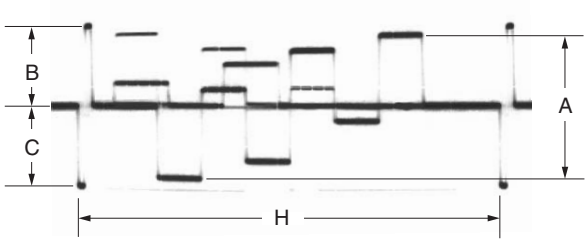


Fig. 6-3-8

3-5. AUDIO SYSTEM ADJUSTMENTS

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments as shown in Fig. 6-3-9.

Menu setting (AUDIO SET menu)

XLR SET

1) AU. MAN GAIN ..... SEPARATE

Switch setting

1) REC CH SELECT switch CH1
2) AUTO/MAN switch (CH1/CH2) ..... AUTO
3) +48 V switch (CH1/CH2) ..... MIC

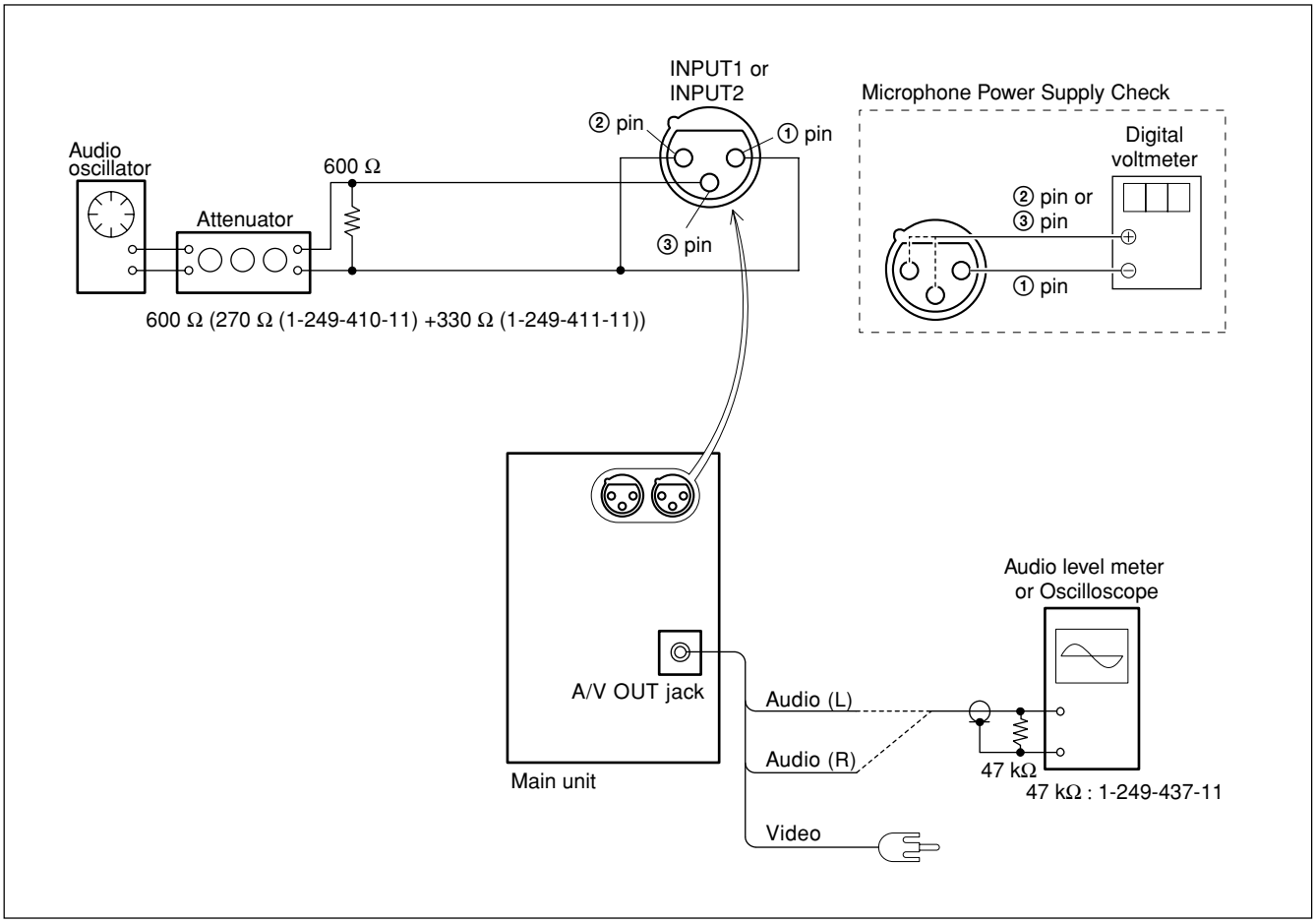


Fig. 6-3-9

1. Signal Output Check

Mode	VCR mode
Signal	Test tone generation (1kHz, 0dBFS)
Measurement Point	Audio L and R terminal of A/V OUT jack
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	+10 dBs ±1 dB (NTSC) +8 dBs ±1 dB (PAL) (Note 2)

Note 1: 0 dBs = 0.775 Vrms
Note 2: The Rch level to the Lch level must be within ±0.5dB.
Note 3: NTSC model: HVR-Z7J/Z7U/Z7N
PAL model: HVR-Z7E/Z7P/Z7C

Checking method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 01.
3) Select page: 8 (18) , address: 5C, and set data: 05.
4) Check that the sound is output from the speaker.
5) Check that the sound from the speaker is interrupted when the LCD panel is closed.
6) Check that the sound from the speaker is interrupted when the plug is inserted in the headphone jack, and also that the sounds are output from the left and right sides of headphone.
7) Select page: 0, address: 10, and set data: 00.
8) Select page: 2, address: 46, and check the following bit value.
If bit value of bit 4 is 1: NTSC model
If bit value of bit 4 is 0: PAL model
9) Check that the Lch and Rch output level of A/V OUT jack is within the specified value.
10) Select page: 0, address: 10, and set data: 01.
11) Select page: 8 (18), address: 5C, and set data: 00
12) Select page: 0, address: 10, and set data: 00
13) Select page: 0, address: 01, and set data: 00.

2. INPUT1 LINE Check

Mode	CAMERA mode
Signal	1 kHz, 0 dBu signal: XLR terminal (INPUT1)
Measurement Point	Audio L terminal of A/V OUT jack
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	–14 dBs ± 2 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT1 switch ..... LINE

Checking method:
1) Input 1 kHz, 0 dBu signal in the XLR terminal (INPUT1).
2) Check that the 1 kHz signal level is the specified value.

3. INPUT2 LINE Check

Mode	CAMERA mode
Signal	1 kHz, 0 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio R terminal of A/V OUT jack
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	–14 dBs ± 2 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT2 switch ..... LINE

Checking method:
1) Input 1 kHz, 0 dBu signal in the XLR terminal (INPUT2).
2) Check that the 1 kHz signal level is the specified value.

4. INPUT1 MIC Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT1)
Measurement Point	Audio L terminal of A/V OUT jack
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	–12 dBs ± 2 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT1 switch ..... MIC

Checking method:
1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT1).
2) Check that the 1 kHz signal level is the specified value.

5. INPUT2 MIC Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio R terminal of A/V OUT jack
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	–12 dBs ± 2 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT2 switch ..... MIC

Checking method:
1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT2).
2) Check that the 1 kHz signal level is the specified value.

6. INPUT1 MIC ATT Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT1)
Measurement Point	Audio L terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Specified value (INPUT1 TRIM: –6 dB)	–18 dBs ± 2 dB

Switch setting
1) INPUT1 switch ..... MIC

Checking method:
1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT1).
2) Set the INPUT1 TRIM (AUDIO SET menu: XLR SET) to "–6dB".
3) Check that the 1 kHz signal level is the specified value.
4) Set the INPUT1 TRIM (AUDIO SET menu: XLR SET) to "0dB".

7. INPUT2 MIC ATT Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio R terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Specified value (INPUT2 TRIM: –6 dB)	–18 dBs ± 2 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT2 switch ..... MIC

Checking method:
1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT2).
2) Set the INPUT2 TRIM (AUDIO SET menu: XLR SET) to "–6dB".
3) Check that the 1 kHz signal level is the specified value.
4) Set the INPUT2 TRIM (AUDIO SET menu: XLR SET) to "0dB".

8. Audio Level Control Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT1, 2)
Measurement Point	Audio L and R terminal of A/V OUT jack
Measuring Instrument	Oscilloscope

Note 1: 0 dBu = 0.775 Vrms/balance

Switch setting

1) INPUT1 switch ..... MIC
2) INPUT2 switch ..... MIC
3) AUTO/MAN switch (CH1) ..... MAN
4) AUTO/MAN switch (CH2) ..... MAN

Checking method:

1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT1).
2) Input 2 kHz, –50 dBu signal in the XLR terminal (INPUT2).
3) Press the STATUS CHECK button to display the Audio Information screen.
4) Rotating the CH1 AUDIO LEVEL control, check that Lch waveform level of A/V OUT jack varies.
5) Rotating the CH2 AUDIO LEVEL control, check that Rch waveform level of A/V OUT jack varies.

Note 2: Along with the waveform check with the oscilloscope, check that the level meter on the STATUS CHECK screen varies.

9. REC CH SELECT Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT1) 100 Hz, –50 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio L and R terminal of A/V OUT jack
Measuring Instrument	Oscilloscope
Specified value (REC CH SELECT: CH1)	Audio L: 1 kHz signal Audio R: 100 Hz signal
Specified value (REC CH SELECT: CH1•CH2)	Audio L: 1 kHz signal Audio R: 1 kHz signal

Note: 0 dBu = 0.775 Vrms/balance

Switch setting

1) INPUT1 switch ..... MIC
2) INPUT2 switch ..... MIC

Checking method:

1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT1).
2) Input 100 Hz, –50 dBu signal in the XLR terminal (INPUT2).
3) Set the REC CH SELECT switch to “CH1”.
4) Check that the 1 kHz signal is output from the audio L terminal.
5) Check that the 100 Hz signal is output from the audio R terminal.
6) Set the REC CH SELECT switch to “CH1•CH2”.
7) Check that the 1 kHz signal is output from the audio L terminal.
8) Check that the 1 kHz signal is output from the audio R terminal.

10. INPUT1 MIC WIND Filter Check

Mode	CAMERA mode
Signal	100 Hz, –50 dBu signal: XLR terminal (INPUT1)
Measurement Point	Audio L terminal of A/V OUT jack
Measuring Instrument	Audio level meter, Oscilloscope
Specified value (INPUT1 WIND OFF)	–13 dBs ± 2 dB
Specified value (INPUT1 WIND ON)	–22 dBs ± 2 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT1 switch ..... MIC

Checking method:
1) Set the INPUT1 WIND (AUDIO SET menu: XLR SET) to "OFF".
2) Input 100 Hz, –50 dBu signal in the XLR terminal (INPUT1).
3) Check that the 100 Hz signal level is the specified value.
4) Set the INPUT1 WIND (AUDIO SET menu: XLR SET) to "ON".
5) Check that the 100 Hz signal level is the specified value.
6) Set the INPUT1 WIND (AUDIO SET menu: XLR SET) to "OFF".

11. INPUT2 MIC WIND Filter Check

Mode	CAMERA mode
Signal	100 Hz, –50 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio R terminal of A/V OUT jack
Measuring Instrument	Audio level meter, Oscilloscope
Specified value (INPUT2 WIND OFF)	–13 dBs ± 2 dB
Specified value (INPUT2 WIND ON)	–22 dBs ± 2 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT2 switch ..... MIC

Checking method:
1) Set the INPUT2 WIND (AUDIO SET menu: XLR SET) to "OFF".
2) Input 100 Hz, –50 dBu signal in the XLR terminal (INPUT2).
3) Check that the 100 Hz signal level is the specified value.
4) Set the INPUT2 WIND (AUDIO SET menu: XLR SET) to "ON".
5) Check that the 100 Hz signal level is the specified value.
6) Set the INPUT2 WIND (AUDIO SET menu: XLR SET) to "OFF".

12. Microphone Power Supply Check

Mode	CAMERA mode
Signal	No signal
Measurement Point	XLR terminal (INPUT1, INPUT2) + probe: pin ②, ③ – probe: pin ①
Measuring Instrument	Digital voltmeter
Specified value	A = 1 V or less B = 46.0 ± 3.0 V

Checking method:
1) Connect the + probe of digital voltmeter to the pin ② on the INPUT1.
2) Check that the DC voltage (A) satisfies the specified value.
3) Connect the + probe of digital voltmeter to the pin ③ on the INPUT1.
4) Check that the DC voltage (A) satisfies the specified value.
5) Set the +48V switch (INPUT1) to "MIC+48 V".
6) Connect the + probe of digital voltmeter to the pin ② on the INPUT1.
7) Check that the DC voltage (B) satisfies the specified value.
8) Connect the + probe of digital voltmeter to the pin ③ on the INPUT1.
9) Check that the DC voltage (B) satisfies the specified value.
10) Set the +48V switch (INPUT1) to "LINE".
11) For the INPUT2, perform checking in the same manner.

6-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER (RM-95)

The adjustment remote commander (RM-95) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (RM-95) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (RM-95)

1) Connect the adjustment remote commander to the LANC terminal.
2) Set the HOLD switch of the adjustment remote commander (RM-95) to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (RM-95) will display as shown in Fig. 6-4-1.



Fig. 6-4-1

3) Operate the adjustment remote commander (RM-95) as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0 1 2 3 4 5 6 7 8 9 A B C D E F
LCD Display	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal notation conversion value	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander (RM-95)

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. ADJUSTMENT REMOTE COMMANDER (NEW LANC JIG)

The adjustment remote commander (New LANC Jig) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (New LANC Jig) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (New LANC Jig))

1) Connect the adjustment remote commander (New LANC Jig) to the LANC terminal via the LANC cable (J-6082-442-A).
2) Set the slide switch of the adjustment remote commander (New LANC Jig) to "SERVICE" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (New LANC Jig) will display as shown in Fig. 6-4-2.

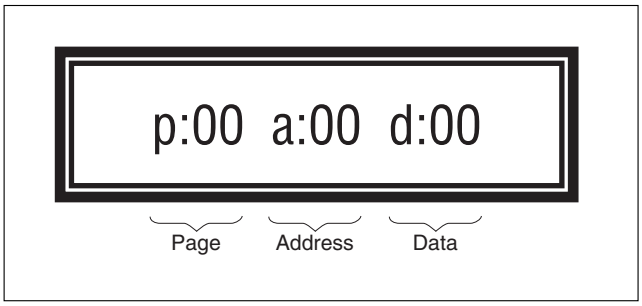


Fig. 6-4-2

3) Operate the adjustment remote commander (New LANC Jig) as follows.
   - Changing the page
     The page increases when the Page+ (▶▶) button is pressed, and decreases when the Page– (◀◀) button is pressed.
   - Changing the address
     The address increases when the ADD+ (▶) button is pressed, and decreases when the ADD– (▮▮) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the Data+ button is pressed, and decreases when the Data– button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The Write (■) button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander (New LANC Jig)

Mishandling of the adjustment remote commander (New LANC Jig) may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-3. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table

Upper digit of hexadecimal \ Lower digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

② (D (d) column)

Note: The characters shown in the parenthesis ( ) shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table 6-4-1

4-4. SERVICE MODE

Note: Before performing the adjustment, check the data of page: 0, address: 10 is "00". If not, select page: 0, address: 00, and set data "00".

1. Setting the Test Mode

Page A	Address 10

Data	Function
00	Normal
01	Forced camera power ON (CAMERA mode)
02	Forced VTR power ON (VCR mode)
03	Forced camera + VTR power ON

- Before setting the data , select page: 0, address: 01, and set data: 01.
- For page A, the data set will be recorded in the non-volatile memory by pressing the PAUSE (Write) button of the adjustment remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off (8.4 Vdc).
- After completing adjustments/repairs, be sure to return the data of this address to 00, and press the PAUSE (Write) button of the adjustment remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergence Memory Address

2-1. Emergence Memory Address (Mechanism section)

Page C	Address F4 to FF

Address	Contents
F4	EMG code when first error occurs
F6	Upper: MSW code when shift starts when first error occurs Lower: MSW code when first error occurs
F7	Lower: MSW code to be moved when first error occurs
F8	EMG code when second error occurs
FA	Upper: MSW code when shift starts when second error occurs Lower: MSW code when second error occurs
FB	Lower: MSW code to be moved when second error occurs
FC	EMG code when last error occurs
FE	Upper: MSW code when shift starts when last error occurs Lower: MSW code when last error occurs
FF	Lower: MSW code to be moved when last error occurs

When no error occurs in this unit, data "00" is written in the above addresses (F4 to FF). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (F4 to F7). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (F8 to FB).
Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (FC to FF).

Note: After completing adjustments, be sure to initialize the data of addresses F4 to FF to "00".

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	3	03	FF	
4	3	01	37	Press PAUSE (Write) button.
5	3	02		Check the data changes to "00".
6	3	03		Check the data changes to "00".
7	3	70	10	Press PAUSE (Write) button.
8	3	70		Check the data changes to "11".
9	0	01	01	

2-2. EMG Code (Emergency Code)

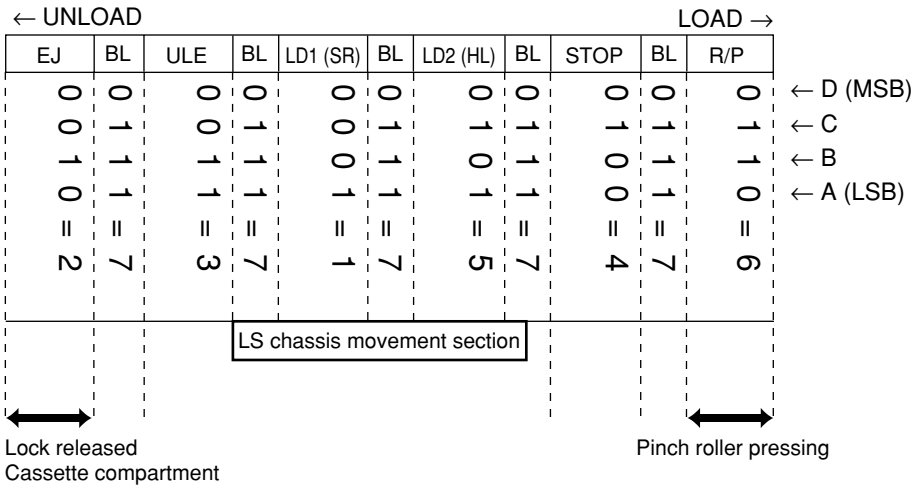
Codes corresponding to the errors which occur are written in C page, addresses F4, F8 and FC . The type of error indicated by the code are shown in the following table.

Code	Emergency Type
00	No error
10	Loading motor emergency during loading
11	Loading motor emergency during unloading
22	T reel emergency during normal rotation
23	S reel emergency during normal rotation
24	T reel emergency (Short circuit between S reel terminal and T reel terminal)
30	FG emergency at the start up of the capstan
40	FG emergency at the start up of the drum
42	FG emergency during normal rotation of the drum

2-3. MSW Code

MSW when errors occur:
Information on MSW (mode SW) when errors occur
MSW when movement starts:
Information on MSW when movements starts when the mechanism position is moved (When the L motor is moved)
MSW of target of movement:
Information on target MSW of movement when the mechanism position is moved

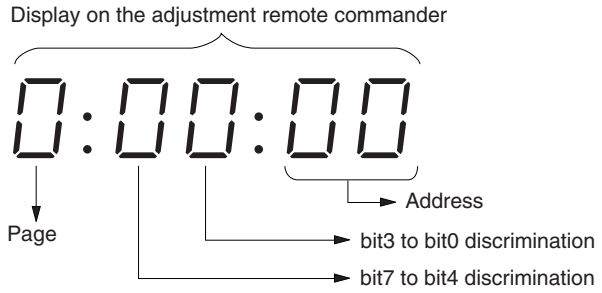
Mechanical Position



Position	Code	Contents
EJ	2	Position at which the cassette component lock is released, at the farthest unload side mechanically at which the mechanism can move no further in the UNLOAD direction.
BL	7	BLANK code, at the boundary between codes.
ULE	3	EJECT completion position. when the cassette is ejected, the mechanism will stop at this position. Cassette IN standby. The guide will start protruding out as the mechanism moves towards the LOAD position.
LD1 (SR)	1	When prepraing TOP load processing or when DEW is detected, rolling up tape by T reel is preformed at this position.
LD2 (HL)	5	When prepraing TOP load processing or when DEW is detected, rolling up tape by S reel is preformed at this position.
STOP	4	Stop position in the loading state. The pinch roller separates, the tension regulator returns, and the brake is imposed on both reels.
R/P	6	PB, REC, CUE, REVIEW, PAUSE, FF, REW positions. When pinch roller is pressed, and the tension regulator is ON, the mechanism is operating at this position in modes in which normal images are shown.
NULL	0	Code not existing in the MD. Default value.
	F	Status before finding any mechanism position.

3. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Us the table below to discriminate if the bit value is "1" or "0".



(Example) If the remote commander display is "8E", bit value from bit 7 to bit 4 can be discriminated from the column Ⓐ, and those from bit 3 to bit 0 from column Ⓑ.

	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (C)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

4. Jack Check (1)

Page 7	Address FF

Bit	Function	When bit value = 1	When bit value = 0
1	COMPONENT OUT jack (JJ-005 board CN8204)	Used	Not used

Using method:

1) Select page: 7, address: FF.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

5. Jack Check (2)

Page 7	Address FB

Bit	Function	When bit value = 1	When bit value = 0
0	A/V OUT jack (JJ-005 board CN8203)	Used	Not used

Using method:

1) Select page: 7, address: FB.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

6. Jack Check (3)

Page 3	Address 61

Bit	Function	When bit value = 1	When bit value = 0
6	HEADPHONES jack (FP-486 flexible J601)	Used	Not used

Using method:

1) Select page: 3, address: 61.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

7. Jack Check (4)

Page 3	Address CF

Bit	Function	When bit value = 1	When bit value = 0
0	HDMI OUT jack (FP-645 flexible CN001)	Used	Not used

Using method:

1) Select page: 3, address: CF.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

8. Switch Check (1)

Page 2	Address 81

Bit	Function	When bit value = 1	When bit value = 0
0	POWER-VCR (PS92000 block)	ON	OFF
1	POWER-CAMERA (PS92000 block)	ON	OFF
3	EJECT (FP-756 flexible S101)	ON	OFF
4	CC DOWN (Mechanism chassis)	ON (DOWN)	OFF (UP)
5	DISPLAY/BATT INFO (BB-010 board S7206)	ON	OFF

Using method:

1) Select page: 2, address: 81.
2) By discriminating the bit value of display data, the state of switch can be discriminated.

9. Switch Check (2)

Page 16	Address 6A

Using method:

1) Select page: 0, address: 10, and set data: 01.
2) Select page: 6 (16), address: 69, and set data: 03.
3) Select page: 6 (16), address: 6A.
4) By discriminating the bit value of display data, the state of switch can be discriminated.

Bit	Function	When bit value = 1	When bit value = 0
4	ZOOM switch (Lens block)	MANUAL	SERVO

5) Select page: 6 (16), address: 69, and set data: 00
6) Select page: 0, address: 10, and set data: 00.

10. Switch Check (3)

Page 7	Address 63 to 6B

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:

1) Select page: 7, address: 63 to 6B.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 27	32 to 3A	4F to 58	73 to 7B	8B to B7	B8 to E6	E7 to FF
63 (KEY AD7) (TT-007) (IC3601 Ⓑ5)	SHOT TRANSITION/ FOCUS MARKING (SS-182) (S7603)	SHOT TRANSITION/ FOCUS MARKING A (SS-182) (S7602)	SHOT TRANSITION/ FOCUS MARKING B (SS-182) (S7601)	–	–	–	–	No key input
64 (KEY AD8) (TT-007) (IC3601 Ⓐ3)	ASSIGN 1 (PS92000 block) (S022)	ASSIGN 2 (PS92000 block) (S021)	ASSIGN 3 (PS92000 block) (S023)	ASSIGN 4 /ZEBRA (PS92000 block) (S017)	ASSIGN 5 /AE SHIFT (PS92000 block) (S018)	ASSIGN 6 /REC REVIEW (PS92000 block) (S019)	–	No key input
65 (KEY AD0) (TT-007) (IC3601 Ⓒ5)	STOP (BB-010) (S7201)	REW (BB-010) (S7204)	REC (BB-010) (S7209, S7211)	PLAY (BB-010) (S7214)	FF (BB-010) (S7216)	SLOW (BB-010) (S7217)	–	No key input
66 (KEY AD1) (TT-007) (IC3601 Ⓑ3)	REC START/STOP (GZ92000 block) (S001)	–	–	–	–	–	–	No key input
67 (KEY AD2) (TT-0007) (IC3601 Ⓑ4)	MEMORY/ PLAY (BB-010) (S7202)	MEMORY/ INDEX (BB-010) (S7205)	MEMORY/ DELETE (BB-010) (S7210)	PAUSE (BB-010) (S7213)	–	–	PANEL REVERS (HH-008) (S7401)	PANEL NORMAL (FP-759 flexible) (IC402)
68 (KEY AD3) (TT-007) (IC3601 Ⓓ2)	SEL PUSH EXEC (RS92000 block) (S007)	MENU (RS92000 block) (S006)	–	–	–	–	AUTO (RS92000 block) (S012)	MANUAL (RS92000 block) (S012)
69 (KEY AD4) (TT-007) (IC3601 Ⓔ2)	–	–	VOLUME/ MEMORY + (BB-010) (S7203)	VOLUME/ MEMORY – (BB-010) (S7208)	DATA CODE (BB-010) (S7212)	TC/ U-BIT (BB-010) (S7215)	PANEL CLOSE (FP-759 flexible) (IC403)	PANEL OPEN (FP-759 flexible) (IC403)
6A (KEY AD5) (TT-007) (IC3601 Ⓔ1)	PICTURE PROFILE (RS92000 block) (S004)	STATUS CHECK (RS92000 block) (S003)	OnePush WHT BAL (RS92000 block) (S011)	–	GAIN (RS92000 block) (S001)	GAIN H (KK-032) (S9001)	GAIN L (KK-032) (S9001)	GAIN M (KK-032) (S9001)
6B (KEY AD6) (TT-007) (IC3601 Ⓒ2)	WHT BAL (RS92000 block) (S002)	SHUTTER SPEED (RS92000 block) (S005)	–	–	–	WHT BAL Preset (KK-032) (S9002)	WHT BAL B (KK-032) (S9002)	WHT BAL A (KK-032) (S9002)

11. Switch Check (4)

Page 6, 16	Address 6A

Note: Check that the data of page: 0, address: 10 is “00”.

Using method 1:
1) Select page: 6, address: 69, and set data: 01.
2) Select page: 6, address: 6A.
3) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 27	32 to 3A	4F to 58	73 to 7B	8B to B7	B8 to E6	E7 to FF
6A (BODY AD) (TT-007) (IC4201 ㉙)	–	–	–	–	–	HANDLE ZOOM OFF (GG-005) (S7801)	HANDLE ZOOM FIX (GG-005) (S7801)	HANDLE ZOOM VAR (GG-005) (S7801)

4) Select page: 6, address: 69, and set data: 00

Using method 2:
1) Select page: 0, address: 10, and set data: 01.
2) Select page: 6 (16), address: 69, set the following data.
   01: (LENS AD1)
   02: (LENS AD2)
3) Select page: 6 (16), address: 6A.
4) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 27	32 to 3A	4F to 58	73 to 7B	8B to B7	B8 to E6	E7 to FF
6A (LENS AD1) (LG-005) (IC6001 ㉙)	START/STOP (LZ92000 block) (S002)	–	–	–	–	–	–	No key input
6A (LENS AD2) (LG-005) (IC6001 ㉘)	IRIS PUSH AUTO (LZ92000 block) (S004)	EXPANDED FOCUS/L2 (LZ92000 block) (S001)	DIGITAL EXTENDER/ L1 (Lens block)	–	–	–	IRIS AUTO (LZ92000 block) (S003)	IRIS MANUAL (LZ92000 block) (S003)

5) Select page: 6 (16), address: 69, and set data: 00
6) Select page: 0, address: 10, and set data: 00.

12. Switch Check (5)

Page 16	Address 6A

Using method:
1) Select page: 0, address: 10, and set data: 01.
2) Select page: 6 (16), address: 69, and set data: 03.
3) Select page: 6 (16), address: 6A.
4) By discriminating the bit value of display data, the state of switch can be discriminated.

Bit	Function	When bit value = 1	When bit value = 0
0	Focus ring (Lens block)	Mode A	Mode B

5) Select page: 6 (16), address: 69, and set data: 00
6) Select page: 0, address: 10, and set data: 00.

13. LED Check

Page 7	Address 00, 01 and 04

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:

Order	Page	Address	Data	Procedure
1				Set the unit to CAMERA mode.
2	7	01	90	
3	7	02	FF	
4	7	04	01	
5	7	00	01	Press PAUSE (Write) button.
6	7	02		Check the data changes to “01”.
7				Check that the following LED are lit. • Front recording lamp • Rear recording lamp • MS ACCESS • SHOT TRANSITION STORE • SHOT TRANSITION CHECK • SHOT TRANSITION EXEC
8	7	01	90	
9	7	02	FF	
10	7	04	00	
11	7	00	01	Press PAUSE (Write) button.
12	7	02		Check the data changes to “01”.
13	7	00	00	
14	7	01	00	

14. Record of Use Check (1)

Page 7	Address A4 to AF

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (ZZ-005 board BT7001) is removed.
Note 2: When the drum was replaced, initialize the drum rotation counted time.
Note 3: Check that the data of page: 0, address: 10 is "00".

Address	Function		Remarks
A4	Power supplying	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A5	time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
A6		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A7	(BCD code)	Minute	
A8	Drum rotation	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A9	counted time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AA		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AB	(BCD code)	Minute	
AC	Tape run time	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
AD		Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AE		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AF	(BCD code)	Minute	

Using method:

1) The record of use data is displayed at page: 7, addresses: A4 to AF.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	A4	00	Press PAUSE (Write) button.
2	7	A5	00	Press PAUSE (Write) button.
3	7	A6	00	Press PAUSE (Write) button.
4	7	A7	00	Press PAUSE (Write) button.
5	7	A8	00	Press PAUSE (Write) button.
6	7	A9	00	Press PAUSE (Write) button.
7	7	AA	00	Press PAUSE (Write) button.
8	7	AB	00	Press PAUSE (Write) button.
9	7	AC	00	Press PAUSE (Write) button.
10	7	AD	00	Press PAUSE (Write) button.
11	7	AE	00	Press PAUSE (Write) button.
12	7	AF	00	Press PAUSE (Write) button.

15. Record of Use Check (2)

Page 7	Address 90 to 95

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (ZZ-005 board BT7001) is removed.
Note 2: When the drum was replaced, initialize the drum rotation counted time.
Note 3: Check that the data of page: 0, address: 10 is "00".

Address	Function		Remarks
90	Eject count with tape	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
91		Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
92	(BCD code)	Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)
93	Eject count without	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
94	tape	Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
95	(BCD code)	Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)

Using method:
1) The record of use data is displayed at page: 7, addresses: 90 to 95.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	90	00	Press PAUSE (Write) button.
2	7	91	00	Press PAUSE (Write) button.
3	7	92	00	Press PAUSE (Write) button.
4	7	93	00	Press PAUSE (Write) button.
5	7	94	00	Press PAUSE (Write) button.
6	7	95	00	Press PAUSE (Write) button.

16. Record of Use Check (3)

Page 7	Address C8 to CD

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (ZZ-005 board BT7001) is removed.
Note 2: Check that the data of page: 0, address 10 is "00".

Address	Function		Remarks
C8	User initial power	Year	After setting the clock, set the date of power on next
C9	on date	Month	
CA	(BCD code)	Day	
CB	Final condensation	Year	
CC	occurrence date	Month	
CD	(BCD code)	Day	

Using method:
1) The record of use data is displayed at page: 7, addresses: C8 to CD.

17. Record of Self-diagnosis Check

Page 7	Address B0 to C6

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (ZZ-005 board BT7001) is removed.
Note 2: Check that the data of page: 0, address 10 is “00”.

Address	Self-diagnosis code
B0	“Repaired by” code (Occurred 1st time) *1
B1	“Block function” code (Occurred 1st time)
B2	“Detailed” code (Occurred 1st time)
B4	“Repaired by” code (Occurred 2nd time) *1
B5	“Block function” code (Occurred 2nd time)
B6	“Detailed” code (Occurred 2nd time)
B8	“Repaired by” code (Occurred 3rd time) *1
B9	“Block function” code (Occurred 3rd time)
BA	“Detailed” code (Occurred 3rd time)
BC	“Repaired by” code (Occurred 4th time) *1
BD	“Block function” code (Occurred 4th time)
BE	“Detailed” code (Occurred 4th time)
C0	“Repaired by” code (Occurred 5th time) *1
C1	“Block function” code (Occurred 5th time)
C2	“Detailed” code (Occurred 5th time)
C4	“Repaired by” code (Occurred the last time) *1
C5	“Block function” code (Occurred the last time)
C6	“Detailed” code (Occurred the last time)

*1 : “01” → “C”, “03” → “E”

Using method:

1) The past self-diagnosis codes are displayed at page: 7, address: BC to C6. Refer to “1-5. SELF-DIAGNOSIS FUNCTION” for detail of the self-diagnosis code.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	01	C0	
2	7	00	01	Press PAUSE button.
3	7	B0 to C6		Check that the data is “00”.
4	7	00	00	
5	7	01	00	

HVR-Z7J/Z7U/Z7N/Z7E/Z7P/Z7C

RMT-831

SONY

SERVICE MANUAL

Ver. 1.3 2008.07

US Model
Canadian Model
AEP Model
E Model
Chinese Model
Japanese Model

SUPPLEMENT-1

File this supplement with the service manual.

(DI08-161)

- **Addition of Service Note**
- **Change of Repair Parts**
- **Revision of Adjustments**

Note: Please refer to Ver. 1.3 of SERVICE MANUAL (9-852-265-13) for the revision of adjustments.

HVR-Z7J/Z7U/Z7N/Z7E/Z7P/Z7C
9-852-265-81

Sony EMCS Co.

2008G0500-1
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• Addition of Service Note

1. SERVICE NOTE

(ENGLISH)

1-7. How to Identify the LG-005 Board for Standard Lens and for Wide Lens

The LG-005 board for standard lens and for wide lens cannot be identified from the appearance.
The LG-005 board can be identified by connecting the adjustment remote commander (RM-95 or NEW LANC JIG) and then checking the data value. Please note that the LG-005 board for wide lens cannot be used for this set.

Checking method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 01.
3) Select page: 6 (16), address: FE.
3) Check the displayed data value to identify the LG-005 board.

Data value	LG-005 board
F1	For standard lens
F2	For wide lens

5) Select page: 0, address: 10, and set data: 00.
6) Select page: 0, address: 01, and set data: 00.

(JAPANESE)

1-7. 標準レンズ用とワイドレンズ用のLG-005基板の見分け方

標準レンズ用とワイドレンズ用のLG-005基板は，外観での見分けが付きません。
調整リモコン（RM-95またはNEW LANC JIG）を接続してデータ値を確認することにより，LG-005基板を判別することが出来ます。本機ではワイドレンズ用LG-005基板は使用できませんので注意してください。

確認方法

1）ページ：0，アドレス：01にデータ：01をセットする。
2）ページ：0，アドレス：10にデータ：01をセットする。
3）ページ：6（16），アドレス：FEを選択する。
4）表示データのデータ値を確認することにより，LG-005基板を判別する。

データ値	LG-005基板
F1	標準レンズ用
F2	ワイドレンズ用

5）ページ：0，アドレス：10にデータ：00をセットする。
6）ページ：0，アドレス：01にデータ：00をセットする。

• Change of Repair Parts

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

Page	Former	New
5-14	Ref. No. Part No. Description 605 A-1494-308-A TT-007 BOARD, COMPLETE (SERVICE) (NTSC: Z7J/Z7U/Z7N) 605 A-1494-309-A TT-007 BOARD, COMPLETE (SERVICE) (PAL: Z7E/Z7P/Z7C)	Ref. No. Part No. Description 605 A-1494-308-B TT-007 BOARD, COMPLETE (SERVICE) (NTSC: Z7J/Z7U/Z7N) 605 A-1494-309-B TT-007 BOARD, COMPLETE (SERVICE) (PAL: Z7E/Z7P/Z7C)

5-2. ELECTRICAL PARTS LIST

Page	Former	New
5-21	Ref. No. Part No. Description **BB-010 Board** < CONNECTOR > * CN7201 1-816-645-51 FFC/FPC CONNECTOR (LIF) 14P	Ref. No. Part No. Description **BB-010 Board** < CONNECTOR > CN7201 1-816-645-61 FFC/FPC CONNECTOR (LIF) 14P
5-22	**GG-005 Board** < CONNECTOR > * CN7802 1-816-654-51 FFC/FPC CONNECTOR (LIF) 6P	**GG-005 Board** < CONNECTOR > CN7802 1-816-654-61 FFC/FPC CONNECTOR (LIF) 6P
5-23	**GY-005 Board** < CONNECTOR > * CN8501 1-816-655-51 FFC/FPC CONNECTOR (LIF) 8P	**GY-005 Board** < CONNECTOR > CN8501 1-816-655-61 CONNECTOR, FFC/FPC 8P
5-23	**JJ-005 Board** < CONNECTOR > * CN8201 1-816-654-51 FFC/FPC CONNECTOR (LIF) 6P	**JJ-005 Board** < CONNECTOR > CN8201 1-816-654-61 FFC/FPC CONNECTOR (LIF) 6P
5-23	**KK-032 Board** < CONNECTOR > * CN9001 1-816-654-51 FFC/FPC CONNECTOR (LIF) 6P	**KK-032 Board** < CONNECTOR > CN9001 1-816-654-61 FFC/FPC CONNECTOR (LIF) 6P
5-24	**LG-005 Board** < DIODE > D1001 6-500-776-01 DIODE MAZW068H0LS0 D1002 6-500-776-01 DIODE MAZW068H0LS0 D1003 6-500-776-01 DIODE MAZW068H0LS0 D1004 6-500-776-01 DIODE MAZW068H0LS0	**LG-005 Board** < DIODE > * D1001 6-501-930-01 DIODE MAZW068HGLS0 * D1002 6-501-930-01 DIODE MAZW068HGLS0 * D1003 6-501-930-01 DIODE MAZW068HGLS0 * D1004 6-501-930-01 DIODE MAZW068HGLS0
5-26	**LL-014 Board** < CONNECTOR > * CN6401 1-816-648-51 FFC/FPC CONNECTOR (LIF) 20P	**LL-014 Board** < CONNECTOR > CN6401 1-816-648-61 FFC/FPC CONNECTOR (LIF) 20P
5-27	**NN-005 Board** < CONNECTOR > * CN5002 1-816-654-51 FFC/FPC CONNECTOR (LIF) 6P	**NN-005 Board** < CONNECTOR > CN5002 1-816-654-61 FFC/FPC CONNECTOR (LIF) 6P
5-30	**PR-005 Board** < CONNECTOR > * CN8001 1-816-648-51 FFC/FPC CONNECTOR (LIF) 20P * CN8002 1-816-648-51 FFC/FPC CONNECTOR (LIF) 20P * CN8003 1-816-648-51 FFC/FPC CONNECTOR (LIF) 20P	**PR-005 Board** < CONNECTOR > CN8001 1-816-648-61 FFC/FPC CONNECTOR (LIF) 20P CN8002 1-816-648-61 FFC/FPC CONNECTOR (LIF) 20P CN8003 1-816-648-61 FFC/FPC CONNECTOR (LIF) 20P

Page	Former			New		
	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
5-30		A-1494-308-A	TT-007 BOARD, COMPLETE (NTSC: Z7J/Z7U/Z7N)		A-1494-308-B	TT-007 BOARD, COMPLETE (SERVICE) (NTSC: Z7J/Z7U/Z7N)
		A-1494-309-A	TT-007 BOARD, COMPLETE (PAL: Z7E/Z7P/Z7C)		A-1494-309-B	TT-007 BOARD, COMPLETE (SERVICE) (PAL: Z7E/Z7P/Z7C)
			**********			**********
			< CONNECTOR >			< CONNECTOR >
5-34	* CN1002	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P	CN1002	1-816-648-61	FFC/FPC CONNECTOR (LIF) 20P
	* CN1004	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P	CN1004	1-816-648-61	FFC/FPC CONNECTOR (LIF) 20P
	* CN1005	1-816-645-51	FFC/FPC CONNECTOR (LIF) 14P	CN1005	1-816-645-61	FFC/FPC CONNECTOR (LIF) 14P
	* CN1011	1-816-654-51	FFC/FPC CONNECTOR (LIF) 6P	CN1011	1-816-654-61	FFC/FPC CONNECTOR (LIF) 6P
	* CN1102	1-816-648-51	FFC/FPC CONNECTOR (LIF) 20P	CN1102	1-816-648-61	FFC/FPC CONNECTOR (LIF) 20P
			< FUSE >			< FUSE >
5-35	⚠F4601	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)	⚠F4601	1-576-406-11	FUSE (1.4A/32V)
	⚠F4602	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)	⚠F4602	1-576-406-11	FUSE (1.4A/32V)
	⚠F4603	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)	⚠F4603	1-576-406-11	FUSE (1.4A/32V)
	⚠F4604	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)	⚠F4604	1-576-406-11	FUSE (1.4A/32V)
	⚠F4605	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)	⚠F4605	1-576-406-11	FUSE (1.4A/32V)
	⚠F4606	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)	⚠F4606	1-576-406-11	FUSE (1.4A/32V)
	⚠F4607	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)	⚠F4607	1-576-406-11	FUSE (1.4A/32V)
	⚠F4608	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)	⚠F4608	1-576-406-11	FUSE (1.4A/32V)
	⚠F4609	1-576-406-21	FUSE, MICRO (1608) (1.4A/32V)	⚠F4609	1-576-406-11	FUSE (1.4A/32V)
			< IC >			< IC >
	* IC4401	6-808-033-01	IC MB91195ABGL-G-249-ERE1	* IC4401	6-808-157-01	IC MB91195ABGL-G-256-ERE1
5-42	**WW-005 Board**			**WW-005 Board**		
			< CONNECTOR >			< CONNECTOR >
	* CN8601	1-816-645-51	FFC/FPC CONNECTOR (LIF) 14P	CN8601	1-816-645-61	FFC/FPC CONNECTOR (LIF) 14P

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.

⚠印の部品，または⚠印付の点線で囲まれた部品は，安全性を維持するために，重要な部品です。
従って交換時は，必ず指定の部品を使用してください。

HVR-Z7J/Z7U/Z7N/Z7E/Z7P/Z7C

RMT-831

SONY

SERVICE MANUAL

US Model
Canadian Model
AEP Model
E Model
Chinese Model
Japanese Model

Ver. 1.5 2009.02

This SUPPLEMENT-3 is the revised version of SUPPLEMENT-2.
Replacement of the SUPPLEMENT-2 (9-852-265-82) with the SUPPLEMENT-3.
Please discard the SUPPLEMENT-2.

SUPPLEMENT-3

File this supplement with the service manual.

(DI08-354)

- **Change of Board's Suffix No.**
- **Change of Repair Parts**
- **Revision of Accessories**
- **Revision of Adjustments**

Note: Please refer to Ver. 1.5 of SERVICE MANUAL (9-852-265-15) for the rivision of accessories and the revision of adjustments.

- **Suffix No. of GY-005, LG-005, NN-005, OO-006, PP-005, UU-005, XX-016 and YY-005 boards have been changed from 11 into 12.**
  About suffix No. 11 and 12, there are no change of schematic diagram and printed wiring board.
- **Suffix No. of LL-014 board has been changed from 11 into 12.**

Sony EMCS Co.

2009B0500-1
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: Points changed portion.

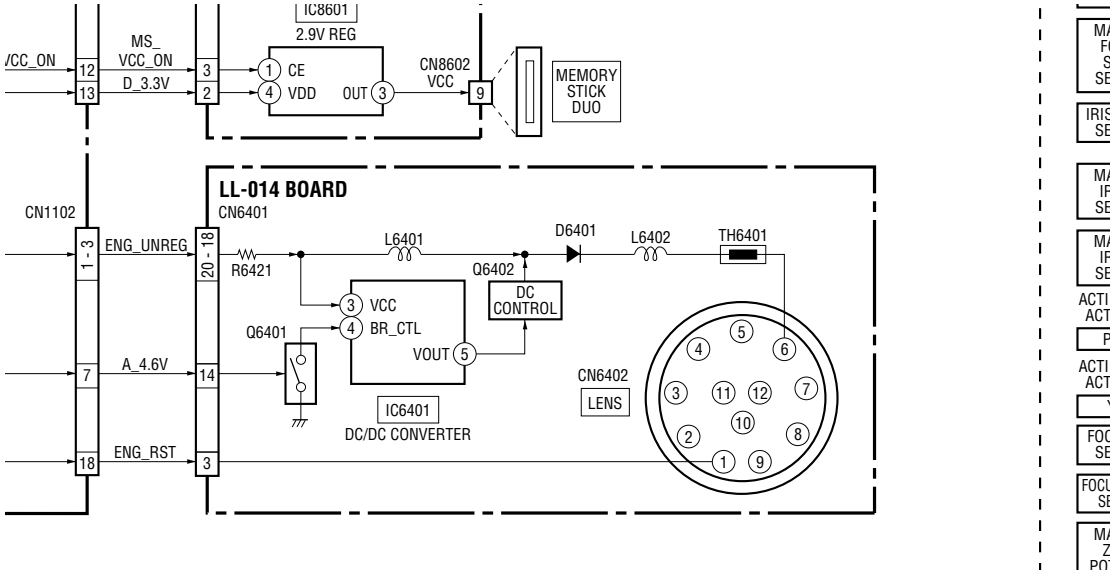
• Change of Board's Suffix No.

3. BLOCK DIAGRAMS

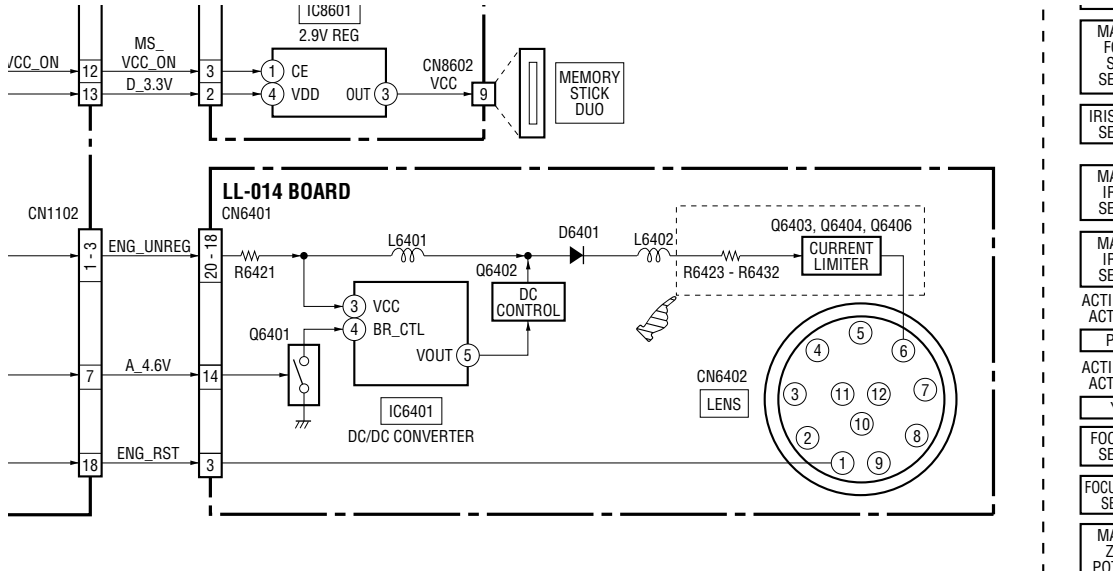
3-14. POWER BLOCK DIAGRAM (3/4)

(Service manual page 3-14)

Suffix: -11



Suffix: -12



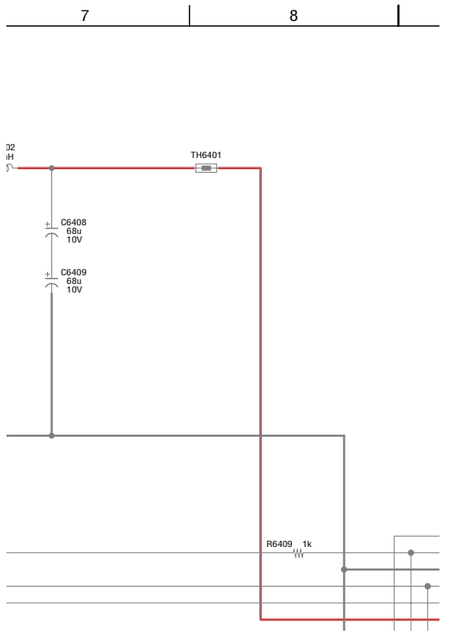
: Points chenged portion.

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

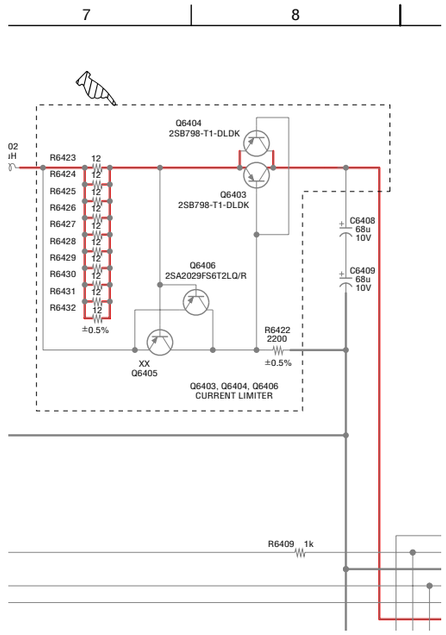
4-2. SCHEMATIC DIAGRAMS

LL-014 BOARD (LENS CONNECTOR, DC/DC CONVERTER)
(Service manual page 4-38, Location A-7 to C-8)

Suffix: -11



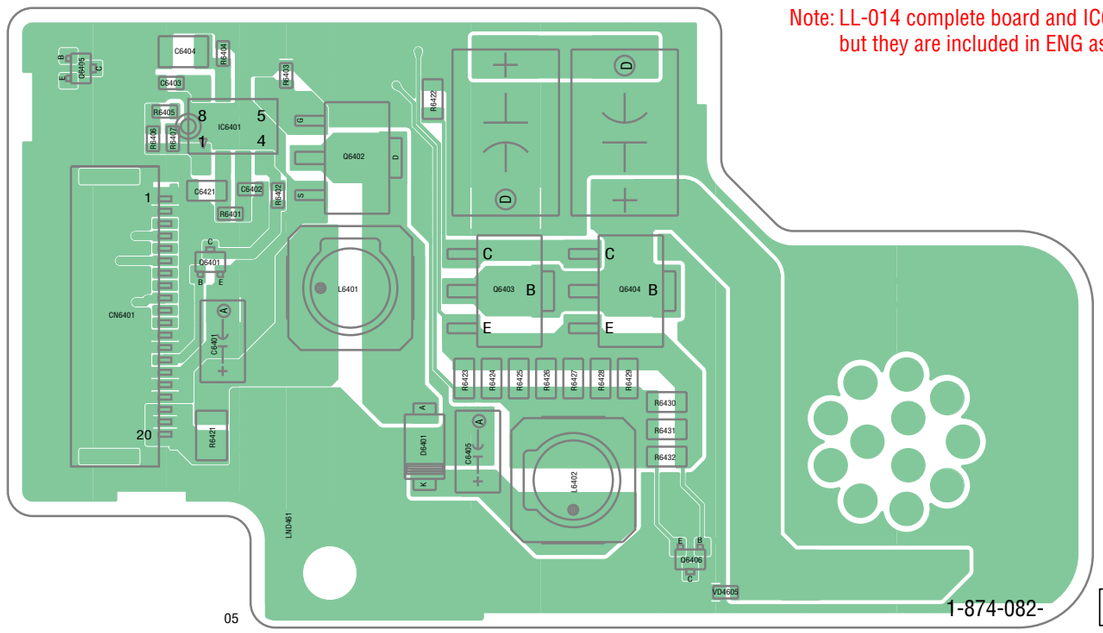
Suffix: -12



4-3. PRINTED WIRING BOARDS

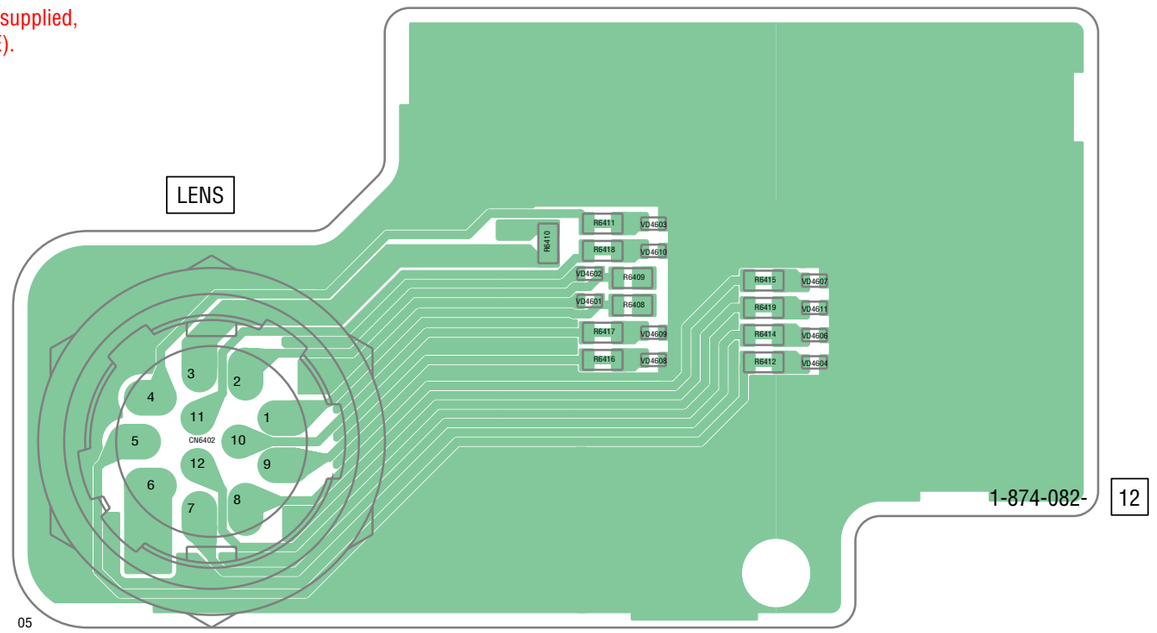
LL-014 BOARD
(Service manual page 4-73)

LL-014 BOARD (SIDE A)



Note: LL-014 complete board and IC6401 are not supplied, but they are included in ENG assy (SERVICE).

LL-014 BOARD (SIDE B)



5-2. ELECTRICAL PARTS LIST

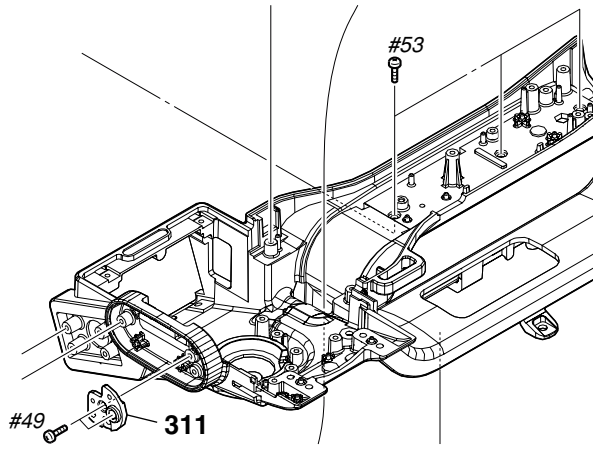
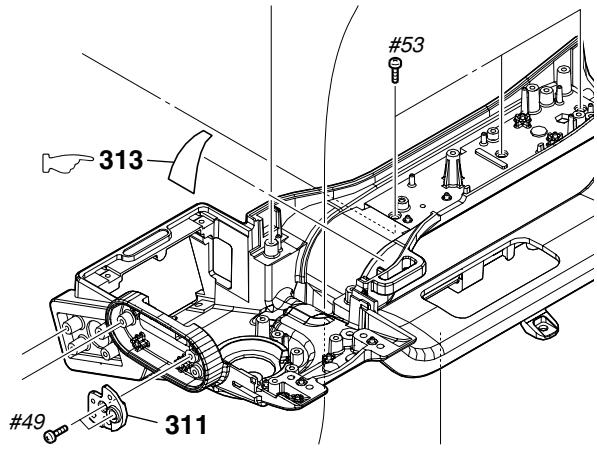
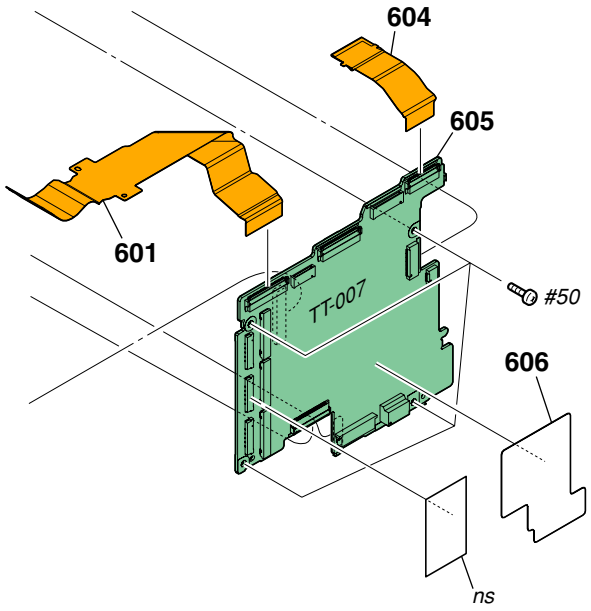
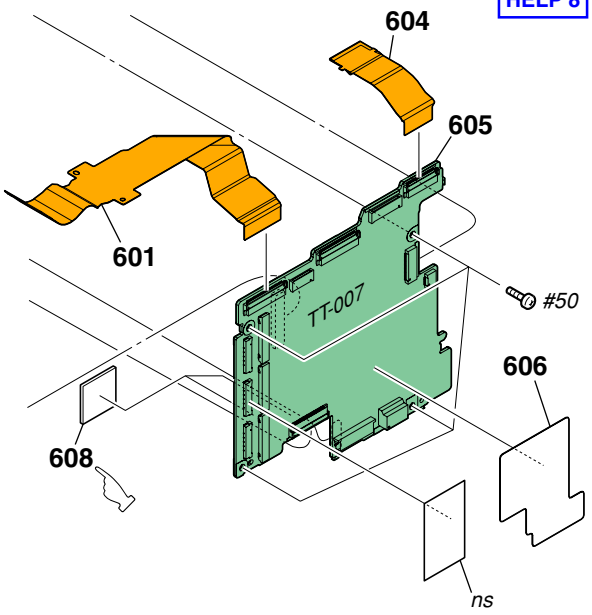
Page	Suffix: -11						Suffix: -12					
	Ref. No.	Part No.	Description				Ref. No.	Part No.	Description			
		A-1544-576-A	ENG ASSY (SERVICE)					A-1544-576-B	ENG ASSY (SERVICE)			
		(Not supplied)	LL-014 BOARD, COMPLETE					(Not supplied)	LL-014 BOARD, COMPLETE			
			**********						**********			
			(LL-014 complete board and IC6401 are not supplied, but they are included in ENG assy (SERVICE).)						(LL-014 complete board and IC6401 are not supplied, but they are included in ENG assy (SERVICE).)			
			< COIL >						< COIL >			
	L6401	1-456-499-11	INDUCTOR	4.7uH			* L6401	1-400-846-11	INDUCTOR	3.3uH		
	L6402	1-456-499-11	INDUCTOR	4.7uH			* L6402	1-400-846-11	INDUCTOR	3.3uH		
			< TRANSISTOR >						< TRANSISTOR >			
							Q6403	8-729-101-07	TRANSISTOR	2SB798-DL		
							Q6404	8-729-101-07	TRANSISTOR	2SB798-DL		
							Q6406	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R		
5-26			< RESISTOR >						< RESISTOR >			
	R6405	1-208-683-11	METAL CHIP	1K	0.5%	1/16W	R6405	1-218-990-81	SHORT CHIP	0		
							R6422	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
							R6423	1-211-971-11	METAL CHIP	12	0.5%	1/10W
							R6424	1-211-971-11	METAL CHIP	12	0.5%	1/10W
							R6425	1-211-971-11	METAL CHIP	12	0.5%	1/10W
							R6426	1-211-971-11	METAL CHIP	12	0.5%	1/10W
							R6427	1-211-971-11	METAL CHIP	12	0.5%	1/10W
							R6428	1-211-971-11	METAL CHIP	12	0.5%	1/10W
							R6429	1-211-971-11	METAL CHIP	12	0.5%	1/10W
							R6430	1-211-971-11	METAL CHIP	12	0.5%	1/10W
							R6431	1-211-971-11	METAL CHIP	12	0.5%	1/10W
							R6432	1-211-971-11	METAL CHIP	12	0.5%	1/10W
			< THERMISTOR >						< THERMISTOR >			
	TH6401	1-803-615-21	THERMISTOR, POSITIVE									

☞ : Points added portion.

• Change of Repair Parts

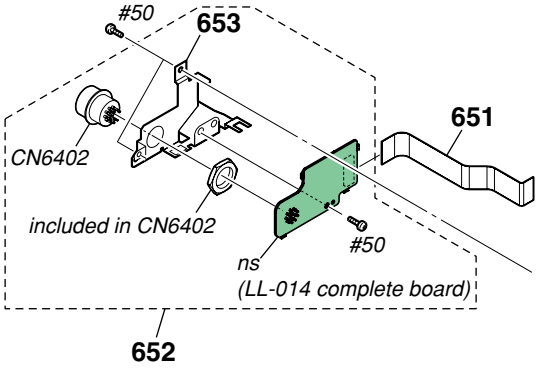
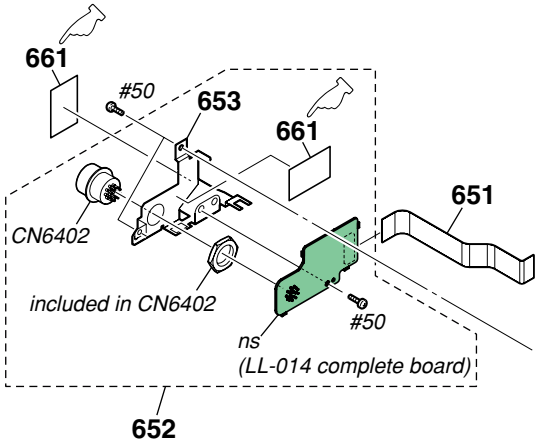
5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

Page	Former	New
5-8	 Ref. No. Part No. Description	HELP 7  Ref. No. Part No. Description 313 4-137-263-01 SHEET, ZOOM (SIDE) ABSORBING
5-9	354 X-2188-610-1 HINGE ASSY, PANEL	354 X-2342-571-1 HINGE (TYPE 07KAI) ASSY, PANEL
5-14	 605 A-1494-308-B TT-007 BOARD, COMPLETE (SERVICE) (NTSC: Z7J/Z7U/Z7N) (Note) 605 A-1494-309-B TT-007 BOARD, COMPLETE (SERVICE) (PAL: Z7E/Z7P/Z7C) (Note)	HELP 8  605 A-1494-308-C TT-007 BOARD, COMPLETE (SERVICE) (NTSC: Z7J/Z7U/Z7N) 605 A-1494-309-C TT-007 BOARD, COMPLETE (SERVICE) (PAL: Z7E/Z7P/Z7C) 608 4-137-537-01 SHEET, LEVEL RADIATION

Note: These parts have been changed in the supplement-1 (9-852-265-81).

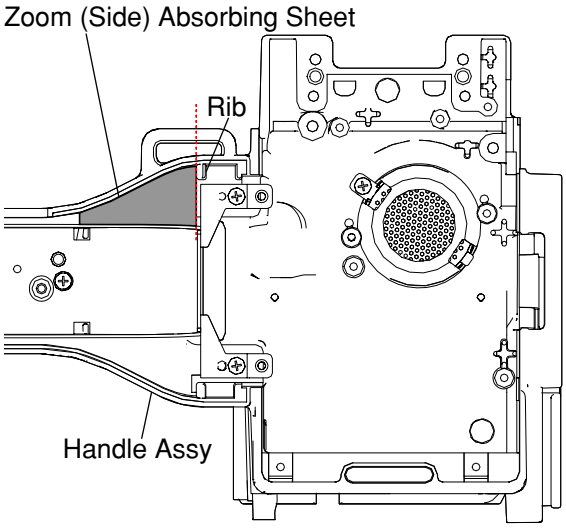
☞ : **Points added portion.**

Page	Former	New
5-15	 Ref. No. Part No. Description 652 A-1544-576-A ENG ASSY (SERVICE) (including LL-014 complete board)	 Ref. No. Part No. Description 652 A-1544-576-B ENG ASSY (SERVICE) (including LL-014 complete board) * 661 4-130-935-01 SHEET, LL-MD RADIATION
5-18	M901 A-1128-533-A DRUM (DEH-33B-R)	M901 A-1541-846-A DRUM (DEH-33F-R)

HELP

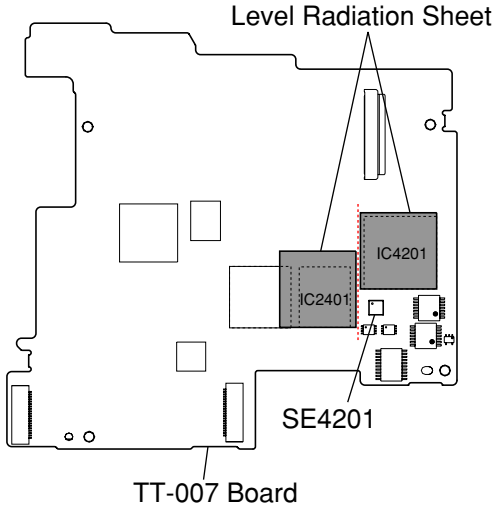
Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

HELP 7: Zoom (Side) Absorbing Sheet



HELP 8: Level Radiation Sheet

Do not cover the sensor (SE4201).



5-2. ELECTRICAL PARTS LIST

Page	Former	New
	Ref. No. Part No. Description	Ref. No. Part No. Description
	LL-014 Board	**LL-014 Board**
5-26	< VARISTOR>	< VARISTOR>
	* VD4603 1-802-250-11 VARISTOR (SMD) * VD4607 1-802-250-11 VARISTOR (SMD)	* VD4603 1-802-128-11 VARISTOR (SMD) * VD4607 1-802-128-11 VARISTOR (SMD)
5-30	A-1494-308-B TT-007 BOARD, COMPLETE (NTSC: Z7J/Z7U/Z7N) (Note) A-1494-309-B TT-007 BOARD, COMPLETE (PAL: Z7E/Z7P/Z7C) (Note) **********	A-1494-308-C TT-007 BOARD, COMPLETE (NTSC: Z7J/Z7U/Z7N) A-1494-309-C TT-007 BOARD, COMPLETE (PAL: Z7E/Z7P/Z7C) **********
	< IC >	< IC >
5-35	* IC4001 6-807-881-01 IC MB95005BGL-G-111-ERE1 * IC4401 6-808-157-01 IC MB91195ABGL-G-256-ERE1 (Note)	* IC4001 6-808-391-01 IC MB95005ABGL-G-119-ERE1 * IC4401 6-808-616-01 IC MB91195ABGL-G-265-ERE1

Note: These parts have been changed in the supplement-1 (9-852-265-81).

SONY

Digital HD Video Camera Recorder

GB

SONY

3-280-848-**11**(2)

Digital HD Video Camera Recorder

Operating Guide

Before operating the unit, please read this manual thoroughly, and retain it for future reference

HDV HDV 1080i

DVCAM

Mini DV Digital Video Cassette

PROGRESSIVE

InfoLITHIUM L SERIES

MEMORY STICK

HDMI

HVR-Z7E/Z7P

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Printed in Japan

3280848110

Read this first

Before operating this unit, please read this manual thoroughly, and retain it for future reference.

Notes on use

Types of cassette you can use in your camcorder

Your camcorder is capable of recording in HDV, DVCAM and DV formats.
When recording in HDV/DV format, Sony recommends that you use mini DV cassettes.
When recording in DVCAM format, Sony recommends that you use mini DVCAM cassettes. Your camcorder does not support the Cassette Memory function (p. 116).

The HDV format

- Digital high-definition (HD) video signals are recorded and played back on a DV format cassette.
- HDV signals are compressed in MPEG2 format, which is adopted in BS (broadcast satellite) digital and terrestrial digital HDTV broadcastings and in Blu-ray disc recorders.

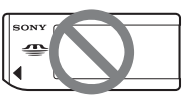
Types of "Memory Stick" you can use in your camcorder

You can use any "Memory Stick" that has the following markings.
MEMORY STICK DUO MEMORY STICK PRO DUO
MEMORY STICK PRO-HG DUO

"Memory Stick Duo"
(This size can be used with your camcorder.)



"Memory Stick"
(You cannot use it in your camcorder.)

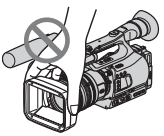


Notes

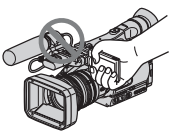
- You cannot use any type of memory card except "Memory Stick Duo."
- "Memory Stick PRO Duo" can be used only with "Memory Stick PRO" compatible equipment.
- Do not attach a label or the like on a "Memory Stick Duo" or a Memory Stick Duo Adaptor.
- When using a "Memory Stick Duo" with "Memory Stick" compatible equipment, insert the "Memory Stick Duo" into the Memory Stick Duo Adaptor.

Using the camcorder

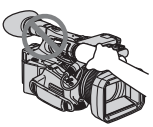
• Do not hold the camcorder by the following part.



Lens hood



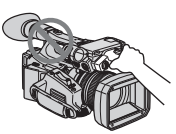
LCD panel



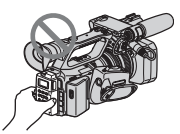
Microphone or Microphone holder



Viewfinder



Accessory shoe adaptor



Memory recording unit

Notes

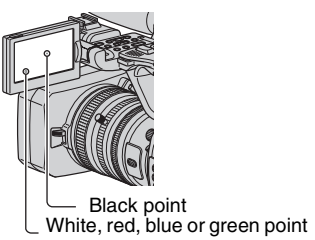
• The camcorder is not dustproof, dripproof or waterproof.
See “About handling of your camcorder” (p. 122).

• Do not connect cables to your camcorder with their terminals placed the wrong way. Squeezing the terminals into your camcorder's jacks may damage them or results in a malfunction of your camcorder.

About menu items, LCD panel, viewfinder, and lens

• A menu item that is grayed out is not available under the current recording or playback conditions.

• The LCD screen and the viewfinder are manufactured using extremely high-precision technology, so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue, or green in color) that appear constantly on the LCD screen and the viewfinder. These points are normal results of the manufacturing process and do not affect the recording in any way.



Do not expose your camcorder’s viewfinder, lens, or LCD screen to the sun or strong light source for extended periods.

• Intense light sources, especially the sun will converge on the viewfinder or lens and damage the internal parts of your camcorder. Avoid sunlight or other strong light sources when storing your camcorder. Protect this device by always closing the lens cover or by placing it in its bag when not in use.

On recording

• Before starting to record, test the recording function to make sure the picture and sound are recorded without any problems.

Continued ➡

- Compensation for the contents of recordings cannot be provided, even if recording or playback is not possible due to a malfunction of the camcorder, storage media, etc.
- TV color systems differ depending on the countries/regions. To view your recordings on a TV, you need a PAL system-based TV.
- Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the copyright laws.
- Because of the way that the image device (CMOS sensor) reads out image signals, the subjects passing by the frame rapidly might appear crooked depending on the recording conditions. This phenomenon may be notable in displays having high motion resolution.

On playing back HDV tapes on other devices

A tape recorded in the HDV format cannot be played back on a device that is not compatible with the HDV format.
Check the contents of tapes by playing them back on this camcorder prior to playing them back on other devices.

Notes on the icons used in this manual

HDV1080i Features available for the HDV format only.

DVCAM Features available for the DVCAM format only.

DV SP Features available for the DV SP format only.

i.LINK The function that can be used when i.LINK cable is connected.

AS The function that can be assigned to an ASSIGN button.

About this manual

- The images of the LCD screen and the viewfinder used in this manual for illustration purposes are captured using a digital still camera, and therefore may appear different.
- The on-screen displays in each local language are used for illustrating the operating procedures. Change the screen language before using your camcorder if necessary (p. 21).
- Design and specifications of recording media and other accessories are subject to change without notice.

About the Carl Zeiss lens

Your camcorder is equipped with a Carl Zeiss lens, which was developed jointly by Carl Zeiss, in Germany, and Sony Corporation, and produces superior images. It adopts the MTF measurement system for video cameras and offers a quality typical of a Carl Zeiss lens. Also, the lens for your camcorder is T*-coated to suppress unwanted reflections and faithfully reproduce colors.
MTF= Modulation Transfer Function. The number value indicates the amount of light from a subject coming into the lens.

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Step 1: Checking supplied items

Make sure that you have following items supplied with your camcorder.
The number in the parentheses indicates the number of that item supplied.

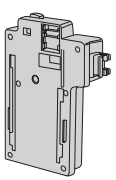
- The cassette tape and "Memory Stick Duo" are not included. See pages 2, 116 and 119 for types of cassette tapes and "Memory Stick Duo" that you can use on your camcorder.

Carl Zeiss lens (VCL-412BWH) (1) (p. 10)
This lens is pre-mounted.

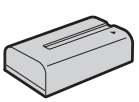
Memory Recording Unit (HVR-MRC1) (1) (p. 13)



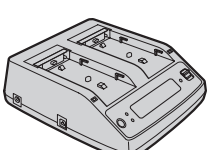
i.LINK Cradle (HVRA-CR1) (1) (p. 13)



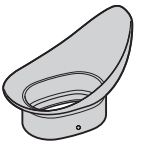
Rechargeable battery pack (NP-F570) (1) (p. 14, 120)



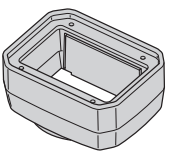
AC Adaptor/Charger (AC-VQ1050) (1) (p. 14)



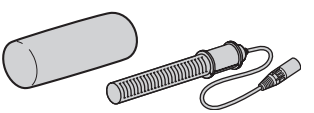
Large eyecup (1) (p. 19)



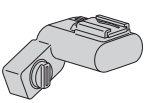
Lens hood with lens cover (1) (p. 12)
This lens hood is pre-mounted.



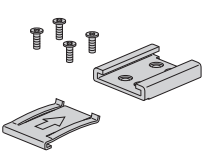
Wind Screen (1), Microphone (ECM-XM1) (1) (p. 12)



Accessory shoe adaptor (1) (p. 131)



Accessory shoe kit (Accessory shoe (1), Accessory shoe plate (1), screws (4)) (p. 130)



Lens mount cap (1) (p. 135),
Rear lens cap (1) (p. 135)
Wireless Remote Commander (RMT-831) (1) (p. 136)
A button-type lithium battery is already installed.

A/V connecting cable (1) (p. 57, 94)

Component video cable (1) (p. 57)

Connecting cord (DK-415) (1) (p. 16)

Test chart for flange focal length adjustment (1) (p. 10)

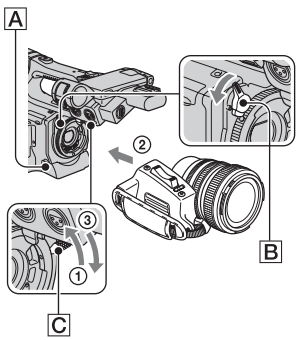
CD-ROM “Manuals for Digital HD Video Camera Recorder” (1)

Operating Guide (This manual) (1)

Step 2: Attaching the supplied items

Mounting the lens

Make sure to turn off the POWER switch of your camcorder before mounting the lens. Refer to the manuals provided with the lens for details on the proper handling of the lens.



Mounting the Carl Zeiss lens

① Push the lens locking lever C up and remove the lens or the lens mount cap from the lens mount.

② Align the center slot in the lens mount with the center pin on the lens, and insert the lens into the mount.

③ While holding the lens in place, push the lens locking lever C down to mount the lens.

Notes

- If the lens is not properly locked, it may come off when in use, which may cause a serious problem. Make sure that the lens is securely locked. Sony recommends that you set the lens securing tab B as illustrated.

Mounting non-Carl Zeiss lens

① Push the lens locking lever C up and remove the lens or the lens mount cap from the lens mount.

② Align the center slot in the lens mount with the center pin on the lens, and insert the lens into the mount.

③ While holding the lens in place, push the lens locking lever C down to mount the lens.

④ Connect the lens cable to the LENS jack A.

Notes

- You can mount a 1/3" lens directly on your camcorder. You can mount a 1/2" lens via the Fujinon ACM-19 or equivalent. You can mount a 2/3" lens via the Fujinon ACM-17 or equivalent.
- If the lens is not properly locked, it may come off when in use, which may cause a serious problem. Make sure that the lens is securely locked. Sony recommends that you set the lens securing tab B as illustrated.
- Press the REC START/STOP button on the handle or the START/STOP button on the Remote Commander to record when using a lens that does not have a lens cable.

Tips

- When you attach a non-Carl Zeiss lens, Sony recommends that you adjust the black balance with the iris closed before recording. (p. 33)

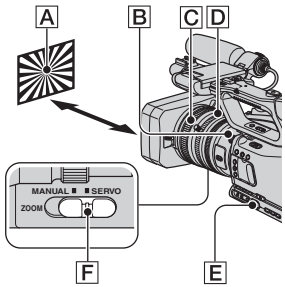
Adjusting the flange focal length (for Carl Zeiss lens)

You need to adjust the flange focal length (the distance from the lens flange to the plane of the image along the optical axis) in the following cases.

- After you have changed lenses.
- When you cannot adjust focus properly during zoom in or out.

Tips

- Your camcorder can store flange focal length data for ten different Carl Zeiss lenses (VCL-412BWH/VCL-308BWH). If you remount the lens after you have mounted ten different lenses and adjusted their flange focal length, you need to adjust the flange focal length for the lens even for the Carl Zeiss lens whose flange focal length has been adjusted.



Adjusting the flange focal length automatically

① Set the ND filter B to 1 to adjust brightness so that the proper video light level is obtained.

② Place the flange focal length adjustment test chart A about 2-3 meters (7-10 feet) away. Zoom in and set your camcorder to locate the center of the chart in the center of the screen.

③ Set the ZOOM switch F to SERVO.

④ Select [AUTO ADJUST] in [FLANGE BACK] of the (CAMERA SET) menu (p. 76).

⑤ Select [YES] with the SEL/PUSH EXEC dial E.

The flange focal length adjustment starts and [EXECUTING] appears on the screen. When the adjustment is completed, [Completed.] appears on the screen. If the adjustment fails, [Could not adjust.] appears on the screen. Try the adjustment again.

Adjusting the flange focal length manually

① Perform steps ① and ② of "Adjusting the flange focal length automatically."

② Set the ZOOM switch F to MANUAL.

③ Select [MANU ADJUST] in [FLANGE BACK] of the (CAMERA SET) menu.

④ Select [YES] with the SEL/PUSH EXEC dial E.

⑤ Turn the zoom ring D to the telephoto position.

⑥ Turn the focus ring C until the subject comes in focus, then press the SEL/PUSH EXEC dial E.

⑦ Turn the zoom ring D to the wide angle position.

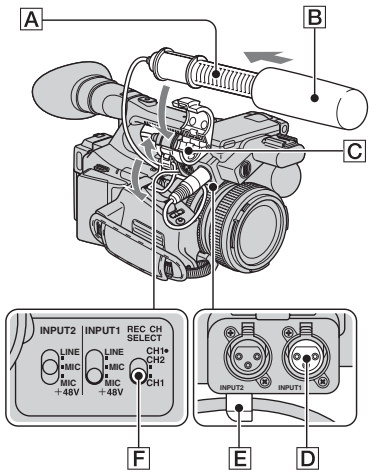
⑧ Turn the focus ring C until the subject comes in focus, then press the SEL/PUSH EXEC dial E.

When the adjustment is completed, [Completed.] appears on the screen. If the adjustment fails, [Could not adjust.] appears on the screen. Try the adjustment again.

Tips

- You can check the focusing easily if you do the following before adjusting the focal length.
  - Set [PEAKING] in the (DISPLAY SET) menu to [ON] (p. 79).
  - Press the ASSIGN button to which [EXP.FOCUS] is assigned (L2 button by default) (p. 43).

Attaching the supplied microphone



1 **Attach the wind screen B to the supplied microphone A.**

2 **Place the microphone A in the microphone holder C with the model name facing upward, close the cover, and shut the clamp.**

3 **Connect the plug of the microphone to the INPUT1 jack D.**

4 **Put the microphone cable into the cable holder E.**

5 **Select the channel with the REC CH SELECT switch F.**

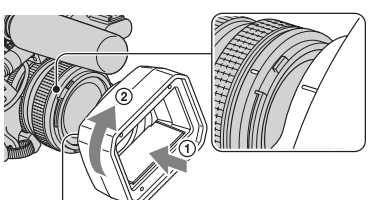
The channel to be used differs depending on the relationship between the REC CH SELECT switch positions and the input jacks.
See the table below.

REC CH SELECT switch position	Input jack	Channel to be used
CH1, CH2	INPUT1	Channel1 Channel2
	INPUT2	-
CH1	INPUT1	Channel1
	INPUT2	Channel2

Tips

- See page 41 for adjusting the volume.
- Set the INPUT1/INPUT2 switch to MIC+48V when you use the supplied microphone.

Attaching the lens hood with lens cover



PUSH (lens hood release) button

Align the marks on the lens hood to those on the camcorder, and turn the lens hood in the direction of the arrow ②.

To remove the Lens hood with lens cover

Turn the lens hood in the opposite direction to the arrow ② in the illustration while

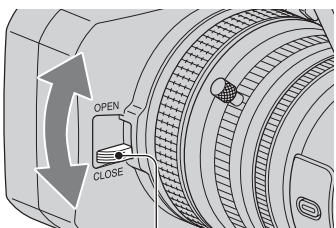
pressing the PUSH (lens hood release) button.

Tips

- If you attach or remove a 72mm (2 7/8 in.) PL filter or MC protector, remove the lens hood with lens cover.

To open or close the shutter of the Lens hood with lens cover

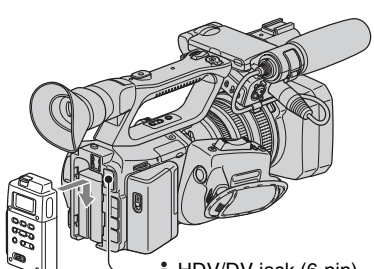
Move the lens cover lever up or down to open or close the lens cover.



Move the lens cover lever to OPEN to open the lens cover, and move the lever to CLOSE to close the lens cover.

Attaching Memory Recording Unit

Make sure that the HDV/DV jack cover is closed.
Attach the Memory Recording Unit to your camcorder as illustrated.
For details, refer to the Operating Instructions of the Memory Recording Unit on the CD-ROM.



Notes

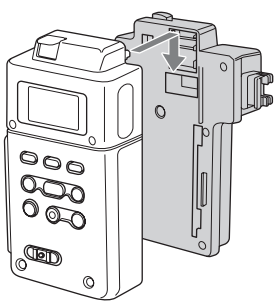
- You cannot use the HDV/DV jack when the Memory Recording Unit is attached to your camcorder.

To remove the Memory Recording Unit

Slide the unit upward while pushing the RELEASE lever of the Memory Recording Unit downward.

To attach the Memory Recording Unit to the i.LINK Cradle

Attach the Memory Recording Unit to the i.LINK Cradle as illustrated.



To remove the Memory Recording Unit from the i.LINK Cradle

Slide the unit upward while pushing the RELEASE lever of the Memory Recording Unit downward.

Tips

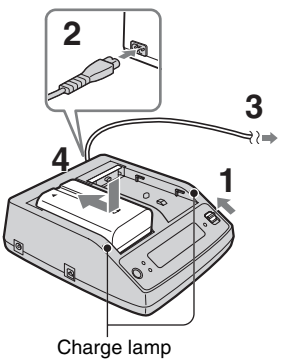
- Refer to the operating instructions of HVR-MRC1 on the supplied CD-ROM for details on the i.LINK cradle.

Step 3: Charging the battery pack

You can charge the "InfoLITHIUM" battery pack (L series) with the supplied AC Adaptor/Charger.

Notes

- You cannot use batteries other than the "InfoLITHIUM" battery pack (L series) (p. 120).



1 Set the mode change switch to CHARGE.

2 Connect the mains lead to the AC Adaptor/Charger.

3 Connect the mains lead to the wall socket.

4 Place the battery pack in the slot of the AC Adaptor/Charger, press it down, and slide it in the direction of the arrow as illustrated.

The charge lamp turns on and charging starts.

After charging the battery

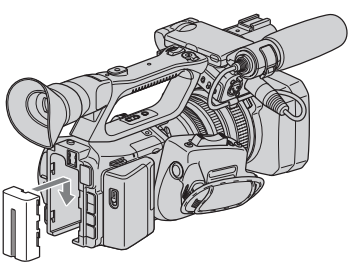
All segments of the battery mark ( ) appear in the display window when the normal charge of the battery is completed. You can fully charge the battery pack if you continue charging the battery pack after the charge lamp turns off until the battery mark with "FULL" appears (full charge). The battery life of the fully charged battery is slightly longer than that of the normally charged battery.
Remove the battery pack from the AC Adaptor/Charger when the charge is completed.

Tips

- You can check the remaining battery life with the battery info function (p. 54).

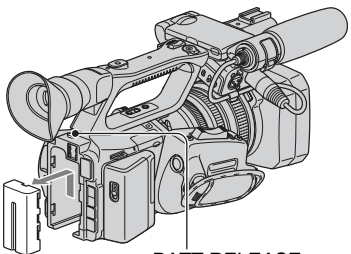
To attach the battery pack

Press the battery pack against the back of your camcorder and slide it down.



To remove the battery pack

Slide the POWER switch to OFF. Push the BATT RELEASE (battery release) button and remove the battery pack.



BATT RELEASE (battery release) button

To store the battery pack

If the battery pack will not be used for a while, run down the battery and store it. See page 121 for details on storage of the battery pack.

Charging time

Approximate time (min.) required when you fully charge a fully discharged battery pack.

Battery pack	Charging time
NP-F570 (supplied)	145
NP-F770	230
NP-F970	310

Recording time

Approximate time (min.) available when you use a fully charged battery pack.

Notes

- You cannot use the NP-F330 battery pack with this camcorder.

Recording in the HDV format

Battery pack	Continuous recording time	Typical recording time*
NP-F570 (supplied)	130	75
	130	75
NP-F770	265	155
	270	155
NP-F970	395	235
	400	235

Recording in the DVCAM (DV) format

Battery pack	Continuous recording time	Typical recording time*
NP-F570 (supplied)	130	75
	135	75
NP-F770	275	160
	280	160
NP-F970	410	240
	415	240

Top: When the LCD backlight turns on.
Bottom: When recording with the viewfinder while the LCD panel is closed.

* Typical recording time shows the time when you repeat recording start/stop, turning the power on/off and zooming.

Playing time

Approximate time (min.) available when you use a fully charged battery pack.

HDV format pictures

Battery pack	LCD panel opened*	LCD panel closed
NP-F570 (supplied)	175	180
NP-F770	360	375
NP-F970	545	570

DVCAM (DV) format pictures

Battery pack	LCD panel opened*	LCD panel closed
NP-F570 (supplied)	180	190
NP-F770	375	390
NP-F970	570	595

* When the LCD backlight turns on.

On the battery pack

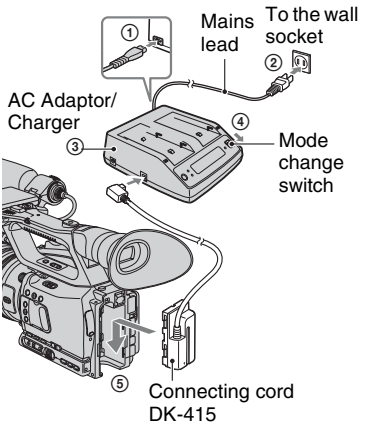
- Before changing the battery pack, slide the POWER switch to OFF.
- The Battery Info (p. 54) will not be correctly displayed under the following conditions.
  - The battery pack is not attached correctly.
  - The battery pack is damaged.
  - The battery pack is worn-out (For Battery Info only).
- Sony recommends that you use an NP-F970 battery pack when you use your camcorder with the Memory Recording Unit or a video light (optional).

On the charging/recording/playback time

- Times measured with the camcorder at 25 °C (77 °F) (10 to 30 °C (50 °F to 86 °F)) is recommended).
- The recording and playback time will be shorter when you use your camcorder in low temperatures.
- The recording and playback time will be shorter depending on the conditions under which you use your camcorder.

Using an outside power source

You can use the AC Adaptor/Charger to obtain AC power.



① Connect the mains lead to the AC Adaptor/Charger.

② Connect the mains lead to the wall socket.

③ Connect the connecting cable (DK-415) to the AC Adaptor/Charger.

④ Set the mode change switch of the AC Adaptor/Charger to VCR/CAMERA.

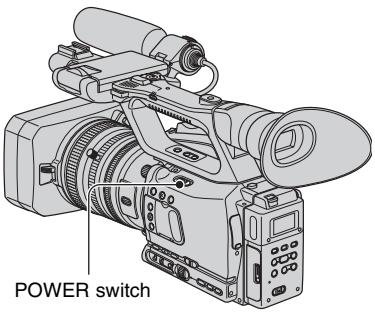
⑤ Press the connecting part of the connecting cable (DK-415) against the back of your camcorder in the battery slot and slide it down.

On the AC Adaptor/Charger

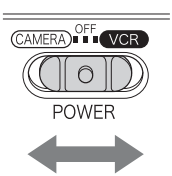
- Use the nearby wall outlet when using the AC Adaptor/Charger. Disconnect the AC Adaptor/Charger from the wall outlet immediately if any malfunction occurs while using your camcorder.
- Do not use the AC Adaptor/Charger placed in a narrow space, such as between a wall and furniture.
- Do not short-circuit the DC plug of the AC Adaptor/Charger or battery terminal with any metallic objects. This may cause a malfunction.
- Even if your camcorder is turned off, AC power (house current) is still supplied to it while connected to the wall outlet via the AC Adaptor/Charger.

Step 4: Turning the power on and holding your camcorder properly

To record or play back, set the POWER switch to the respective positions.
When you use your camcorder for the first time, the [CLOCK SET] screen appears (p. 20).



1 Slide the POWER switch to CAMERA or VCR while you press the green button.



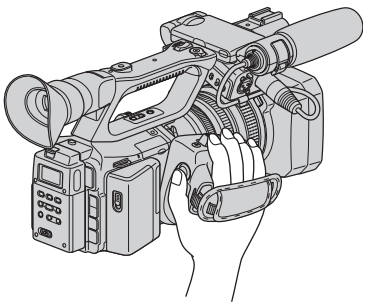
Slide the POWER switch while pressing the green button.

CAMERA: To record pictures.
VCR: To play or edit pictures.

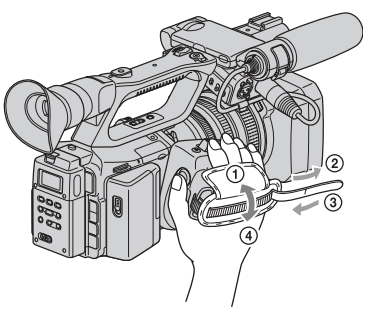
Notes

- The current date and time appear on the LCD screen for a few seconds when you turn on your camcorder once you set the date and time ([CLOCK SET], p. 20).

2 Hold the camcorder properly.



3 Ensure a good grip, then fasten the grip belt.



To turn off the power

Slide the POWER switch to OFF while pressing the green button.

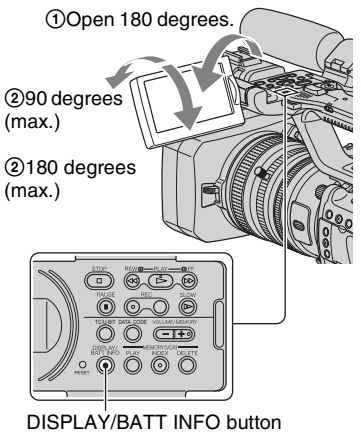
Notes

- If warning messages appear on the screen, follow the instructions.

Step 5: Adjusting the LCD panel and viewfinder

The LCD panel

Open the LCD panel 180 degrees (①), then rotate it to the best angle to record or play back (②).



Tips

- You can see your mirror image on the LCD screen by setting the LCD panel facing you. The image will be recorded in a normal image.

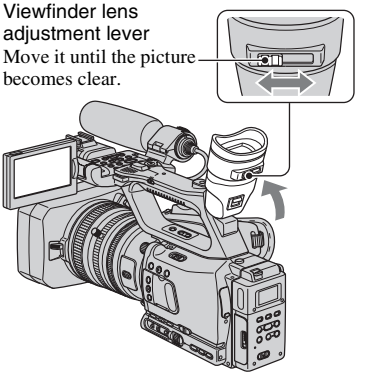
To turn off the LCD backlight to make the battery last longer

Press and hold the DISPLAY/BATT INFO button for a few seconds until OFF appears. This setting is practical when you use your camcorder in bright conditions or when you want to save battery power. The recorded picture will not be affected by the setting. To turn on the LCD backlight, press and hold the DISPLAY/BATT INFO button for a few seconds until OFF disappears.

Tips

- You can adjust the brightness of the LCD screen from [LCD BRIGHT] (p. 82).

The viewfinder



Notes

- You may see primary colors shimmering in the viewfinder when you move your eye line. This is not a malfunction. The shimmering colors will not be recorded on the recording media.

Tips

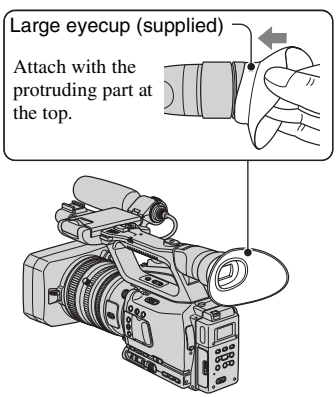
- You can adjust the brightness of the viewfinder backlight from [VF B.LIGHT] (p. 82).
- To display images both on the LCD display and in the viewfinder, set [VF POWERMODE] to [ON](p. 82).
- To display images in black and white in the viewfinder, set [VF COLOR] to [OFF] (p. 82).

When the picture in the viewfinder is hard to see

If you cannot see the picture in the viewfinder clearly under bright circumstances, use the supplied large eyecup. To attach the large eyecup, stretch it slightly and align it with the eyecup groove in the viewfinder. You can attach the large eyecup facing either the right or left side.

Notes

• Do not remove the pre-attached eyecup.

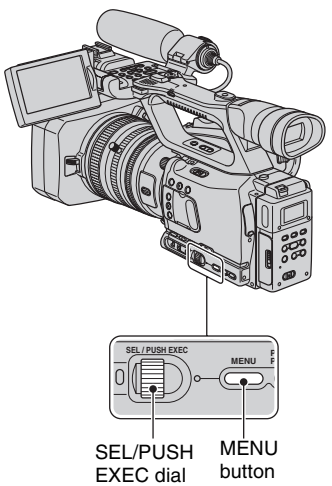


Step 6: Setting the date and time

Set the date and time when using your camcorder for the first time. If you do not set the date and time, [CLOCK SET] screen appears every time you turn on your camcorder or change the POWER switch positions.

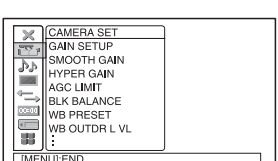
Tips

- If you do not use your camcorder for **about 3 months**, the built-in rechargeable battery gets discharged and the date and time settings may be cleared from the memory. In that case, charge the rechargeable battery and then set the date and time again (p. 125).

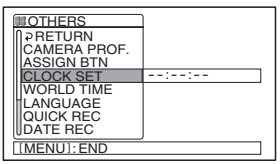


Skip to step **4** when you set the clock for the first time.

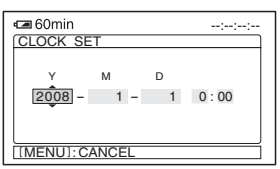
1 Press the MENU button.



2 Select (OTHERS) by turning the SEL/PUSH EXEC dial, then press the dial.

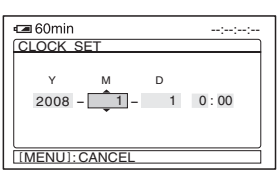


3 Select [CLOCK SET] by turning the SEL/PUSH EXEC dial, then press the dial.



4 Set [Y] (year) by turning the SEL/PUSH EXEC dial, then press the dial.

You can set any year up to the year 2079.



5 Set [M] (month), [D] (day), hour and minute, then press the dial.

The clock starts.

Tips

- The date and time are automatically recorded on the tape, and can be displayed during playback (DATA CODE button, p. 53).

Changing the language setting

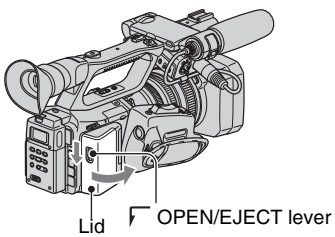
You can change the on-screen displays to show messages in a specified language. Select the screen language in [LANGUAGE] (p. 91).

Step 7: Inserting a tape or a “Memory Stick Duo”

Cassette tape

See page 116 for details on tapes including which tapes can be used and how to protect from overwriting tapes.

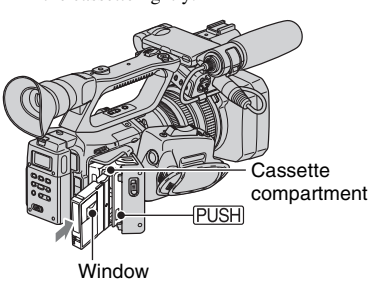
1 Slide and hold the ⌐ OPEN/EJECT lever in the direction of the arrow and open the lid.



The cassette compartment automatically comes out.

2 Insert a cassette with its window facing outwards, then press PUSH.

Push the center of the back of the cassette lightly.



The cassette compartment automatically slides back in.

Notes

- Do not push the portion marked DO NOT PUSH while the cassette compartment is sliding in. Doing so may cause a malfunction.

3 Close the lid.

Tips

- The recordable time varies depending on [DV REC MODE] (p. 84). DVCAM DV

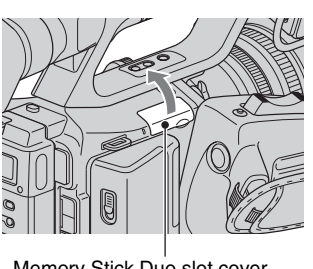
To eject the cassette

Open the lid following the same procedure as described in step **1** and remove the cassette.

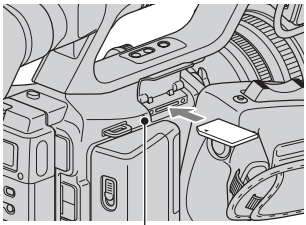
“Memory Stick Duo”

You can use only a “Memory Stick Duo” marked with MEMORY STICK DUO, MEMORY STICK PRO DUO or MEMORY STICK PRO-HG DUO (p. 119).

1 Open the Memory Stick Duo slot cover in the direction of the arrow.



2 Insert the “Memory Stick Duo” into the Memory Stick Duo slot in the right direction until it clicks.



Notes

- If you insert the “Memory Stick Duo” into the slot in the wrong direction, the “Memory Stick Duo,” the Memory Stick Duo slot, or image data may be damaged.

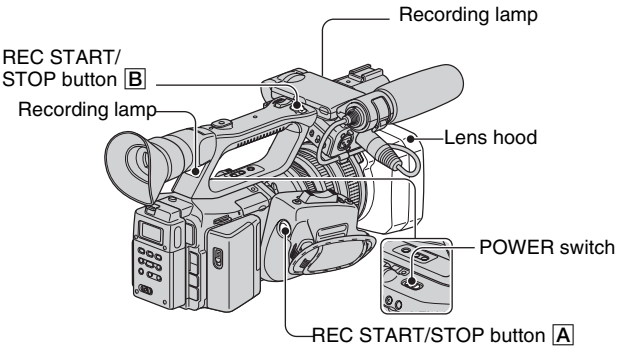
To eject a “Memory Stick Duo”

Lightly push the “Memory Stick Duo” once.

Notes

- When the access lamp is lit or flashing, your camcorder is reading/writing data. Do not shake or knock your camcorder, turn the power off, eject the “Memory Stick Duo,” or remove the battery pack. Otherwise, image data may be damaged.
- When inserting or ejecting the “Memory Stick Duo,” be careful with the “Memory Stick Duo” from popping out and dropping.

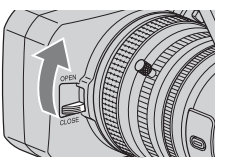
Recording



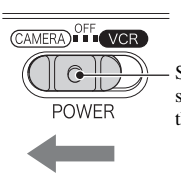
Your camcorder records movies on tape and still images on "Memory Stick Duo." Do the following steps to record movies.

- This camcorder can record movies in HDV or DVCAM (DV) format. The factory setting is HDV format ([REC FORMAT] p. 83).

1 Open the shutter of the lens hood.

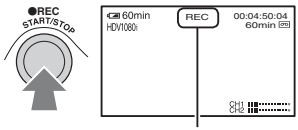


2 Slide the POWER switch to CAMERA while pressing the green button.



Slide the POWER switch while pressing the green button.

3 Press the REC START/STOP button A (or B).



[STBY] → [REC]

The recording lamp lights up during recording.
To stop the movie recording, press the REC START/STOP button again.

Tips

- When recording in HDV format, the aspect ratio is fixed to 16:9. When recording in DVCAM (DV) format, you can switch the aspect ratio to 4:3 ([DV WIDE REC] p. 85).
- You can change the screen display during recording (p. 53).
- Indicators displayed on the screen during recording are shown on page 137.
- The recording lamp can be set to stay off ([REC LAMP[F]], [REC LAMP[R]] p. 92).
- You cannot record movies on a "Memory Stick Duo."
- For low angle recording, the REC START/STOP button on the handle is convenient. Release the HOLD lever to enable the REC START/STOP button. It might be helpful if you set the LCD panel face up or close it after turning it face down, or lift the viewfinder up during the low angle recording.

To capture still images

① Assign [PHOTO] to an ASSIGN button.

② Press the ASSIGN button to which [PHOTO] is assigned or the PHOTO button on the Remote Commander. A still image will be recorded on the "Memory Stick Duo." appears when the recording is completed.

You can capture still images during movie recording.

Tips

- See page 139 for indicators that appear on the screen during recording.

Capacity of the "Memory Stick Duo" (MB) and the number of recordable pictures

	1.2M 1440 × 810 (1.2M)	0.9M 1080 × 810 (0.9M)	VGA 640 × 480 (VGA)	0.2M 640 × 360 (0.2M)
256MB	370	500	1400	1750
512MB	770	1000	2900	3650
1GB	1550	2100	6000	7500
2GB	3150	4300	12000	15000
4GB	6300	8500	23500	29500
8GB	12500	17000	48000	60000

Notes

- Specifications are for Sony "Memory Stick Duo." The actual number of recordable pictures can vary depending on the recording environment and the type of "Memory Stick Duo."

Tips

- Image sizes of still images are as follows:
  - Recording in HDV format/DVCAM (DV) format (16:9): 1.2M
  - Recording in DVCAM (DV) format (4:3): 0.9M
  - Playing back in HDV format: 1.2M
  - Playing back in DVCAM (DV) format (16:9): 0.2M
  - Playing back in DVCAM (DV) format (4:3): VGA

To store still images captured from movies on a tape on "Memory Stick Duo"

You can capture an image in a movie and record it on a "Memory Stick Duo" as a still image. Be sure to insert a recorded tape and a "Memory Stick Duo" in your camcorder, Assign [PHOTO] to any one of ASSIGN buttons (p. 43).

① Set the POWER switch to VCR.

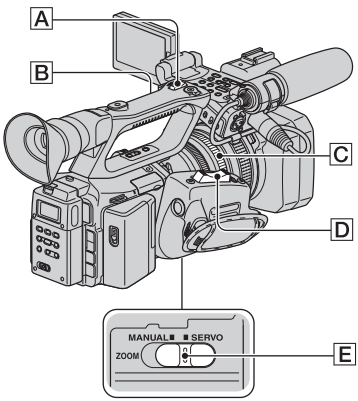
② Press the ► (play) button to search for the scene you want to save as a still image. Press the ASSIGN button to which [PHOTO] is assigned or the PHOTO button on your Remote Commander at the scene.

Notes

- The recorded date and time on the tape and the stored date and time on the "Memory Stick Duo" are both saved on the "Memory Stick Duo." When you view the still images, only the recorded date and time on the tape will be displayed on the screen (Data code, p. 53).
- Camera data stored on the tape will not be copied to the "Memory Stick Duo."
- You cannot store a still image during using your camcorder with [PB ZOOM] set to [ON] (p. 92).
- You cannot store a still image under the following conditions:
  - When the shutter speed is slower than 1/50
  - While using the fader
  - While using smooth slow rec
  - While using shot transition
  - When [SCAN TYPE] is set to [25] (p. 84)

Changing the settings of your camcorder recordings

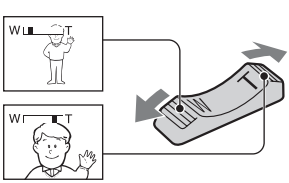
Adjusting the zoom



Using the zoom lever

Set the ZOOM switch E to SERVO. Move the power zoom lever D slightly for a slower zoom. Move it further for a faster zoom.

Wide view: (Wide angle)



Close view: (Telephoto)

Tips

- The minimum distance required between your camcorder and the subject for focus is about 1 cm (about 13/32 in.) for wide angle and about 80 cm (about 2 5/8 feet) for telephoto.
- The focus may not be adjusted at certain zoom positions if the subject is within 80 cm (about 2 5/8 feet) from your camcorder.
- When you set [FOCUS MACRO] to [OFF] or the focus ring to the mode A position (p. 28), you cannot focus on a subject within 80 cm (about 2 5/8 feet) regardless of the zoom position (p. 72).
- Be sure to keep your finger on the power zoom lever D. If you move your finger off the power zoom lever D, the operation sound of the power zoom lever D may also be recorded.

Using the handle zoom

① Set the ZOOM switch E to SERVO.

② Set the handle zoom switch B to VAR or FIX.

Tips

- When you set the handle zoom switch B to VAR, you can zoom in or out at variable speed.
- When you set the handle zoom switch B to FIX, you can zoom in or out at fixed speed set in [HANDLE ZOOM] (p. 72).

③ Press the handle zoom lever A to zoom in or out.

Notes

- You cannot use the handle zoom lever A when the handle zoom switch B is set to OFF.
- You cannot change the zoom speed of the zoom lever D with the handle zoom switch B.

Using the zoom ring

You can zoom at the desired speed by turning the zoom ring C. Fine adjustment is also possible.

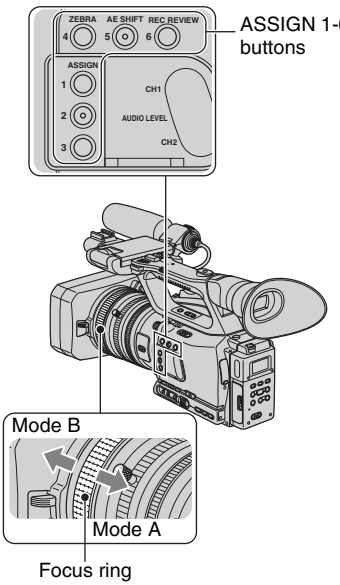
① Set the ZOOM switch E to MANUAL.

② Turn the zoom ring C to zoom in or out.

Tips

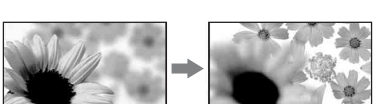
- You can remove the zoom pin.

Adjusting the focus manually



You can adjust the focus manually for different recording conditions.
Use this function in the following cases.

– To record a subject behind a window covered with raindrops.
– To record horizontal stripes.
– To record a subject with little contrast between the subject and its background.
– When you want to focus on a subject in the background.



– To record a stationary subject using a tripod.

Adjusting focus manually in mode A

In mode A, you can manually adjust focus without automatic adjustment functions. Set the focus ring to the mode A position and focus manually using the focus scale on the lens.

Notes

- Turn the focus ring slowly. If it is forced against either end, the focus ring may move toward the mode B position and move past the end, and make noises.

Adjusting focus manually in mode B

In mode B, you can use the automatic adjustment functions during manual focus adjustment. Set the focus ring to the mode B position and do the following steps.

① Assign [FOCUS] to an ASSIGN button (p. 43).

② Press the ASSIGN button to which [FOCUS] is assigned.
MF appears on the screen.

③ Turn the focus ring to adjust the focus.
MF changes to ▲ when you cannot bring any further subject in focus. MF changes to 👤 when you cannot bring any closer subject in focus.

Tips

For manual focus

- Zoom in and bring your camcorder in focus, then gradually zoom out.
- Fully zoom out and gradually zoom in when you shoot a close subject.

To restore automatic adjustment

Press the ASSIGN button to which [FOCUS] is assigned once again.
MF disappears and the automatic focus adjustment is restored.

Tips

- If you want to adjust focus automatically or use automatic adjustment functions such as one push auto focus during manual focus

adjustment, set the focus ring to mode B. You cannot use the automatic adjustment functions in mode A.

Using automatic focus temporarily (One push auto focus)

You can use this function only in mode B. Do steps ① and ② of "Adjusting focus manually in mode B" in advance.

① Assign [ONE PUSH AF] to an ASSIGN button (p. 43).

② Record a movie while holding the ASSIGN button to which [ONE PUSH AF] is assigned.
Automatic focus functions as long as you hold the ASSIGN button (☞ disappears).

Tips

- The focal distance is always displayed while you turn the focus ring in mode A. In mode B, the focal distance is displayed for about 3 seconds in the following cases:
  - When you press the ASSIGN button to which [FOCUS] is assigned (☞ appears on the screen).
  - When you turn the focus ring while ☞ is displayed on the screen.

  The focal distance is not displayed when you use non-Carl Zeiss lenses.

Using the expanded focus (Expanded focus)

During standby, press the ASSIGN button to which [EXP.FOCUS] is assigned. [EXPANDED FOCUS] appears and the center of the screen is magnified by about 2.0 times. It will be easier to confirm the focus setting during manual focusing. The screen returns to the original size when you press the button again.

Notes

- You cannot use the expanded focus when [REC CTL MODE] in [EXT REC CTRL] is set to other than [OFF] (p. 86).
- The center of the screen is magnified by about 1.5 times when [SCAN TYPE] in [HDV PROGRE.] or [DV PROGRE.] of the ⇆ (IN/OUT REC) menu is set to [25].
- The screen returns to the original size when you start recording during the expanded focus display.

Tips

- You can select a type of an expanded image displayed during the expanded focus ([EXP.FOCUS TYPE] p. 80).

Focusing on a distant subject (Focus infinity)

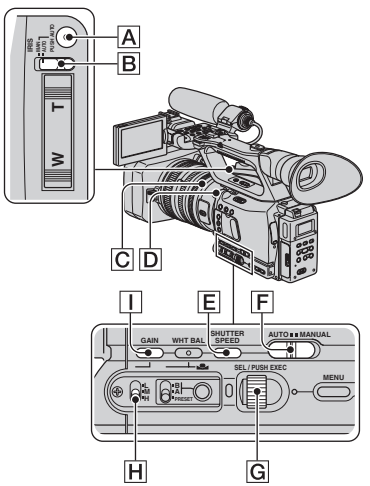
Notes

- Focus infinity is available when the focus ring is set to the mode B position. It is not available during the auto focus.

① Assign [FOCUS INFNTY] to an ASSIGN button (p. 43).

② Press the ASSIGN button to which [FOCUS INFNTY] is assigned.
▲ appears on the screen.
If you release the button, your camcorder returns to the manual focus mode. This function enables you to set focus on a distant subject even when the focus is automatically set on a close subject.

Adjusting the exposure



Adjusting the iris

You can manually adjust the iris to control the volume of the light entering the lens. By adjusting the iris, you can change or close the aperture of the lens, which is expressed as an F value between F1.6 and F11. The volume of the light increases the more that you open the aperture (decreasing F value). The volume of the light decreases the more that you close the aperture (increasing F value). The current F value appears on the screen.

① During recording or standby, set the AUTO/MANUAL switch F to MANUAL.

② Set the IRIS switch B to MAN.

③ Adjust the iris with the iris ring C. During the manual iris adjustment, you can temporarily return to the auto iris adjustment while holding down the PUSH AUTO button A.

Tips

- The F value becomes close to F2.0 as the zoom position changes from W to T even when you open the aperture by setting the F value lower than F2.0, such as F1.6.
- The range of focus, an important effect of the aperture, is called the depth of field. The depth of field gets shallower as the aperture is opened, and deeper as the aperture is closed. Use the aperture creatively to obtain the desired effect in your photography.
- This is handy for making the background blurred or sharp.

To adjust the iris automatically

Set the IRIS switch B or AUTO/MANUAL switch F to AUTO.

Notes

- When you set the AUTO/MANUAL switch F to AUTO, other manually adjusted items (gain, shutter speed, white balance) also become automatic.

Adjusting the volume of light (ND filter)

You can record the subject clearly by using the ND filter D when the recording environment is too bright. If you do not want to reduce the volume of light, use the ND filter 1. The ND filters 2, 3 and 4 reduce the volume of light to about 1/4, 1/16 and 1/64, respectively.

If the ND icon flashes during the iris automatic adjustment, set the ND filter D to the position that the icon indicates. The ND icon does not flash during the manual iris adjustment.

Notes

- If you change the ND filters D during recording, the movie and sound may be distorted.
- **ND** will flash when your camcorder cannot detect the ND filter positions (1/2/3/4). Check the ND filter position.

Tips

- While recording a bright subject, diffraction may occur if you close the aperture further down, resulting in a fuzzy focus (this is a common phenomenon with video cameras). The ND filter D suppresses this phenomenon and gives better recording results.

Adjusting the gain

You can adjust the gain manually when you do not want to use the AGC (automatic gain control).

① Set the AUTO/MANUAL switch F to MANUAL during recording or standby.

② Set the gain switch H to H, M or L.
The gain value set for the selected gain switch position appears on the screen. You can set the gain value for each gain switch position from [GAIN SETUP] of the (CAMERA SET) menu (p. 69).

To adjust the gain automatically

Press the GAIN button I, or set the AUTO/MANUAL switch F to AUTO.

Notes

- When you set AUTO/MANUAL switch F to AUTO, other manually adjusted items (iris, shutter speed, white balance) also become automatic.

Adjusting the shutter speed

You can manually adjust and fix the shutter speed. You can make a moving subject look still or emphasize the movement of a moving subject by adjusting the shutter speed.

① During recording or standby, set AUTO/MANUAL switch F to MANUAL.

② Press the SHUTTER SPEED button E.

③ Change the shutter speed displayed on the screen by turning the SEL/PUSH EXEC dial G.
You can adjust the shutter speed in a range of 1/3 second through 1/10000 second or the extended clear scan (ECS).
The denominator of the set shutter speed appears on the screen. For example, [100] appears on the screen when you set the shutter speed to 1/100 second. The larger the value on the screen, the faster the shutter speed.

④ Press the SEL/PUSH EXEC dial G to lock the shutter speed.
To readjust the shutter speed, do steps ② to ④.

Tips

- When recording a subject such as a monitor screen, set the shutter speed in the extended clear scan (ECS) range in order to obtain images with no horizontal bands of noise. You can set the shutter speed for the extended clear scan from [ECS FREQ.] in the (CAMERA SET) menu (p. 71).

To adjust the shutter speed automatically

Press the SHUTTER SPEED button E twice, or set the AUTO/MANUAL switch F to AUTO.

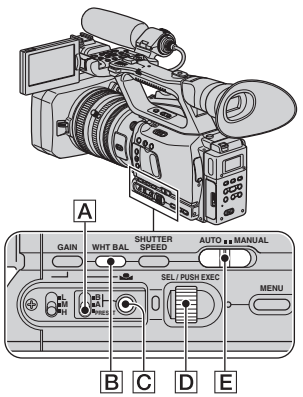
Notes

- When you set the AUTO/MANUAL switch F to AUTO, other manually adjusted items (iris, gain, white balance) also become automatic.

Tips

- It is difficult to focus automatically at a lower shutter speed. Manual focusing with your camcorder attached to a tripod is recommended.
- The picture may flicker or change colors under fluorescent lamps, sodium lamps, or mercury lamps. You can reduce flickering by setting the shutter speed to an appropriate frequency in the extended clear scan (ECS) range ([ECS FREQ.] p. 71).

Adjusting to natural color (White balance)



You can adjust and fix the white balance according to the lighting conditions of recording environment. You can store white balance values in memory A (A) and memory B (B), respectively. Unless a white balance is readjusted, values will remain even after the power has been turned off.

1 During recording or standby, set the AUTO/MANUAL switch E to MANUAL.

2 Press the WHT BAL button B.

3 Set the white balance memory switch A to any one of PRESET/A/B.

Select A or B for recording with the white balance setting stored in memory A or B. Select PRESET for recording with the white balance setting set in [OUTDOOR], [INDOOR] or [MANU WB TEMP], which you have selected in [WB PRESET] of the (CAMERA SET) menu.

Indicator	Shooting conditions
A (Memory A) B (Memory B)	• White balance values adjusted for light sources can be stored in memory A and memory B. Follow the steps in "To save the adjusted white balance value in memory A or B" (p. 33).
Outdoor ([OUTDOOR])	• Recording sunset/sunrise, just after sunset or just before sunrise • Recording neon signs or fireworks • Under daylight color fluorescent lamps
Indoor ([INDOOR])	• Under the lighting conditions that change in many ways, such as a party hall • Under strong light such as in a photography studio • Under sodium lamps or mercury lamps
Color temperature ([MANU WB TEMP])	• Color temperature can be set between 2300K and 15000K (the default setting is 6500K).

Tips

- You can change the outdoor white balance setting by setting offset. Press (one push) button C while (outdoor) is selected and turn the SEL/PUSH EXEC dial D to select an offset value from -7 (bluish) to 0 (normal, the default setting) to +7 (reddish). You can also set the white balance offset value from the menu ([WB OUTDR LVL] p. 69).
- You can change the color temperature. Set [WB PRESET] to [MANU WB TEMP] and the white balance memory switch A to PRESET, then press the (one push) button C. Turn the SEL/PUSH EXEC dial D until the desired temperature appears on the screen, then press

the dial to set the temperature. You can also set the color temperature from the menu ([WB TEMP SET] p. 70).

To save the adjusted white balance value in memory A or B

① Set the white balance memory switch to A (A) or B (B) in step **3** of "Adjusting to natural color (White balance)."

② Capture a white subject, such as white paper, full-screen in the same lighting condition as the one in which the subject is.

③ Press (one push) button C. A or B starts flashing rapidly. It will stay on when the white balance adjustment is completed and the adjusted value is stored in A or B.

To adjust the white balance automatically

Press the WHT BAL button B or set the AUTO/MANUAL switch E to AUTO.

Notes

- When you set the AUTO/MANUAL switch E to AUTO, other manual adjustments (iris, gain, and shutter speed) also become automatic.

Adjusting the black balance

Normally, you do not need to adjust the black balance.
The black balance may become off in some recording conditions.
If that happens, adjust the black balance.
The adjusted settings are stored only temporarily. The settings return to the default settings when you turn the power off and back on.

1 Press the MENU button during standby.

2 Select [BLK BALANCE] in the (CAMERA SET) menu with the SEL/PUSH EXEC dial.

3 Select [YES] with the SEL/PUSH EXEC dial.

The black balance adjustment starts. It will take about 15 seconds.

4 When [Completed.] appears on the screen, press the MENU button to end this menu.

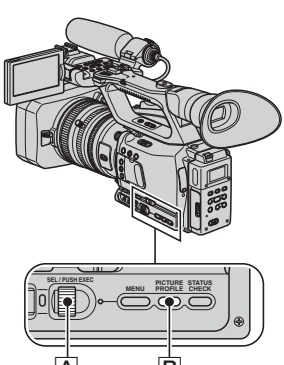
If the black balance adjustment fails

Check that the iris is closed, then try the adjustment again.

Notes

- When using a non-Carl Zeiss lens, close the iris prior to the adjustment.

Customizing the picture quality (Picture profile)



You can customize the picture quality by adjusting picture profile items such as [GAMMA] and [DETAIL].
Connect your camcorder to a TV or monitor, and adjust the picture quality while observing the picture on the TV or monitor screen.
Picture quality settings for different recording conditions are stored in [PP1] through [PP6] as default settings.

Notes

- When you set [x.v.Color] to [ON], the picture profile will be disabled.

Picture profile number (setting name)	Recording condition
PP1 :USER	Default settings the same as when Picture Profile is [OFF]
PP2 :USER	Default settings the same as when Picture Profile is [OFF]
PP3 :PRO COLOR	Example settings of pictures recorded by a professional shoulder camcorder with ITU709 gamma
PP4 :PD COLOR	Example settings of pictures recorded by a professional handy camcorder with PD gamma
PP5 :FILM LOOK1	Example settings of pictures recorded on cinema color negative film
PP6 :FILM LOOK2	Example settings of pictures screened with cinema color print film

1 During standby, press the PICTURE PROFILE button B.

2 Select a picture profile number with the SEL/PUSH EXEC dial A.

You can record with the settings of the selected picture profile.

3 Select [OK] with the SEL/PUSH EXEC dial A.

To cancel the picture profile recording

Select [OFF] in step **2** with the SEL/PUSH EXEC dial A.

To change the picture profile

You can change the settings stored in [PP1] through [PP6].

① Press the PICTURE PROFILE button B.

② Select the PICTURE PROFILE number with the SEL/PUSH EXEC dial A.

③ Select [SETTING] with the SEL/PUSH EXEC dial A.

④ Select an item to be adjusted with the SEL/PUSH EXEC dial A.

⑤ Adjust the picture quality with the SEL/PUSH EXEC dial A.

⑥ Repeat steps ④ and ⑤ to adjust other items.

⑦ Select [↩ RETURN] with the SEL/PUSH EXEC dial A.

⑧ Select [OK] with the SEL/PUSH EXEC dial A.
A picture profile indicator appears.

Tips

- You can assign picture profiles to the ASSIGN buttons and use them to turn the picture profiles on and off (p. 43).

BLACK LEVEL

To set the black level.

Item	Description and settings
[MASTER BLACK]	Sets the master black level. -15 to +15
[BLACK R]	Sets the black level of Rch. [MASTER BLACK] + [BLACK R] is the black level of Rch. -15 to +15
[BLACK G]	Sets the black level of Gch. [MASTER BLACK] + [BLACK G] is the black level of Gch. -15 to +15
[BLACK B]	Sets the black level of Bch. [MASTER BLACK] + [BLACK B] is the black level of Bch. -15 to +15

GAMMA

To select a gamma curve.

Item	Description and settings
[STANDARD]	Standard gamma curve
[CINEMATONE1]	Gamma curve 1 for producing tone of film camera images
[CINEMATONE2]	Gamma curve 2 for producing tone of film camera images
[ITU709]	Gamma curve that corresponds to ITU-709. Gain in low intensity area: 4.5
[G5.0]	Gamma curve with 5.0 of a low intensity area gain
[PD]	Gamma curve for producing tone similar to DCR-PD series
[x.v.]	Gamma curve similar to x.v.Color

BLACK GAMMA

To correct gamma in low intensity area.

Item	Description and settings
[RANGE]	Selects a correcting range. HIGH / MIDDLE / LOW
[LEVEL]	Sets the correcting level. -7 (maximum black compression) to +7 (maximum black stretch)

KNEE

To set knee point and slope for video signal compression to reduce over-highlighting by limiting signals in high contrast area of the subject to the dynamic range of your camcorder.

Item	Description and settings
[MODE]	Selects a mode either automatic or manual. [AUTO] : to set the knee point and slope automatically. [MANUAL] : to set the knee point and slope manually.
[AUTO SET]	Sets the maximum point and sensitivity in the automatic mode. [MAX POINT] : Sets the maximum point. 90% ~ 100% [SENSITIVITY] : Sets the sensitivity. HIGH/MIDDLE/LOW
[MANUAL SET]	Sets the knee point and slope manually. [POINT] : Sets the knee point. 75% ~ 105% [SLOPE] : Sets the knee slope. -5(gentle) ~ +5(steep)

COLOR MODE

To set type and level of colors.

Item	Description and settings
[TYPE]	Selects a type of colors [STANDARD] : Standard colors [CINEMATONE1] : Film camera image-like colors good with [GAMMA] set to [CINEMATONE1] [CINEMATONE2] : Film camera image-like colors good with [GAMMA] set to [CINEMATONE2] [ITU709 MTX] : Colors corresponding to ITU-709
[LEVEL]	Sets a color level when you set [TYPE] to the settings other than [STANDARD]. 1 (close to color settings of [STANDARD]) - 8 (color settings of the selected type)

COLOR LEVEL

To set the color level.

Item	Description and settings
	-7 (light) to +7 (dark), -8: black and white

COLOR PHASE

To set the color phase.

Item	Description and settings
	-7 (greenish) to +7 (reddish)

COLOR DEPTH

To set the color depth for each color phase.
This function is more effective for deep colors and less effective for light colors. The color looks deeper as you decrease the setting value to more negative side, and lighter as you increase the value to more positive side. This function is effective even if you set [COLOR LEVEL] to [-8] (monotone).

Item	Description and settings
[R]	-7 to +7 (depth of red)
[G]	-7 to +7 (depth of green)
[B]	-7 to +7 (depth of blue)
[C]	-7 to +7 (depth of cyan)
[M]	-7 to +7 (depth of magenta)
[Y]	-7 to +7 (depth of yellow)

COLOR CORRCT

To set items for the color correction.

Item	Description and settings
[TYPE]	Selects color correction type. [OFF] : Not correct colors. [COLOR REVISN] : Corrects colors stored in memory. Colors not stored in memory (displayed in black and white when [COLOR EXTRCT] is set) will not be corrected. [COLOR EXTRCT] : Displays areas in colors that are stored in the memory. The other areas are displayed in black and white. You can use this function to add effects on your movies or to confirm the colors to be stored in the memory.
[MEMORY SEL]	Selects a memory to be effective. [1]: Sets Memory 1 to be effective. [2]: Sets Memory 2 to be effective. [1&2]: Sets both Memory 1 and 2 to be effective.

COLOR CORRCT (Continued)

Item	Description and settings
[MEM1 COLOR]	Sets colors stored in Memory 1. [PHASE] : Sets color phase. 0 (purple) → 8 (red) → 16 (yellow) → 24 (green) → 31 (blue) [RANGE] : Sets color phase range. 0 (no color selection), 1 (narrow: to select only a single color) to 31 (wide: to select multiple colors in similar color phase) [SATURATION] : Sets saturation. 0 (to select from light colors to dark colors) to 31 (to select dark color) [ONE PUSH SET]: Automatically sets [PHASE] for a subject at the center of the marker. [SATURATION] is set to 0.
[MEM1 REVISN]	Corrects colors in Memory 1. [R GAIN] : Corrects the redness of the color in Memory 1. Tone of cyan becomes higher as the redness decreases. -15 (less reddish) to +15 (more reddish) 0 for no correction [B GAIN] : Corrects the blueness of the color in Memory 1. Tone of yellow becomes higher as the blueness decreases. -15 (less bluish) to +15 (more bluish) 0 for no correction
[MEM2 COLOR]	Sets colors stored in Memory 2. See [MEM1 COLOR] for description and settings.
[MEM2 REVISN]	Corrects colors in Memory 2. See [MEM1 REVISN] for description and settings.

WB SHIFT

To set items for the white balance shift.

Item	Description and settings
[FILTER TYPE]	Selects a color filter type for the white balance shift. [LB-CC] : Film type (color conversion and correction) [R-B] : Video type (correction of R and B levels)
[LB[COL TEMP]]	Sets a color temperature offset value. -9 (bluish) to +9 (reddish)
[CC[MG/GR]]	Sets a color correct offset value. -9 (greenish) to +9 (magentish)
[R GAIN]	Sets an R level. -9 (low R level) to +9 (high R level)
[B GAIN]	Sets a B level. -9 (low B level) to +9 (high B level)

DETAIL

To set items for the detail.

Item	Description and settings
[LEVEL]	Sets the detail level. -7 to +7
[MANUAL SET]	[ON/OFF] : Turns on and off the manual detail adjustment. [ON] : Enables the manual detail adjustment (automatic optimization will not be performed). [OFF] : Disables the manual detail adjustment. [V/H BALANCE] : Sets the horizontal (H) and vertical (V) balance of detail. [B/W BALANCE]: Selects the balance of the upper DETAIL (P) and the lower DETAIL (N). TYPE 1 (off to the lower DETAIL (N) side) to TYPE 5 (off to the upper DETAIL (P) side) [BLACK LIMIT] : Sets the limit level of the lower DETAIL (N). 0 (Low limit level: likely to be limited) to 7 (High limit level: not likely to be limited) [WHITE LIMIT] : Sets the limit level of the upper DETAIL (P). 0 (Low limit level: likely to be limited) to 7 (High limit level: not likely to be limited) [CRISPENING] : Sets the crispening level. 0 (shallow crispening level) to 7 (deep crispening level) [HI-LIGHT DTL] : Sets the DETAIL level in the high intensity areas. -2 to +2

SKINTONE DTL

To adjust the detail of skintone areas to reduce wrinkles.

Item	Description and settings
[ON/OFF]	Suppresses details in skin-tone areas to reduce wrinkles. Select [ON] when you want to use this function. You can also select other areas.
[LEVEL]	Sets the adjustment level. 1 (less adjust the detail) to 8 (more adjust the detail)
[COLOR SEL]	Sets color items for the detail adjustment. [PHASE] : Sets the color phase. 0 (purple) → 32 (red) → 64 (yellow) → 96 (green) → 127 (blue) [RANGE] : Sets the color range. 0 (selects no color), 1 (narrow: selects a single color) to 31 (wide: selects multiple colors in similar color phases and saturation) The detail will not be adjusted when you set [RANGE] to 0. [SATURATION] : Sets the color saturation. 0 (selects a light color) to 31 (selects a deep color) [REVERSE] : Reverses the selected color range. If you execute this function when a color has been selected, colors that were not selected will be selected instead. [Y LEVEL] : Sets the color brightness. 0 (selects a dark color) to 31 (selects a brigh color) [Y RANGE] : Sets the color brightness range. 1 (narrows the brigtness range) to 32 (expands the brighness range) [ONE PUSH SET]: Automatically adjusts [PHASE], [SATURATION] and [Y LEVEL] for a subject at the center of the marker. [RANGE] and [Y RANGE] will not be changed.

PROFILE NAME

To name the picture profiles set in [PP1] through [PP6] (p. 41).

COPY

To copy the settings of the picture profile to another picture profile number.

RESET

To reset the picture profile to the default setting.

To name the picture profile settings

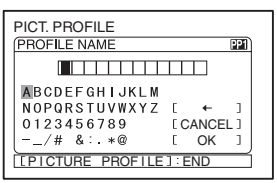
You can name picture profile1 through 6.

① Press the PICTURE PROFILE button B.

② Select the picture profile that you want to name with the SEL/PUSH EXEC dial A.

③ Select [SETTING] → [PROFILE NAME] with the SEL/PUSH EXEC dial A.

④ Select a letter with the SEL/PUSH EXEC dial A. Repeat this operation until a complete name is entered.



Tips

- Each name can be up to 12 characters long. Characters that can be used in profile names:
  - A to Z
  - 0 to 9
  - - _ / # & : . * @

⑤ Select [OK] with the SEL/PUSH EXEC dial A.
The profile name is changed.

⑥ Select [RETURN] → [OK] with the SEL/PUSH EXEC dial A.

To copy the picture profile setting to other picture profiles

① Press the PICTURE PROFILE button B.

② Select the picture profile that you want to copy from with the SEL/PUSH EXEC dial A.

③ Select [SETTING] → [COPY] with SEL/PUSH EXEC dial A.

④ Select the number of the picture profile that you want to copy to with the SEL/PUSH EXEC dial A.

⑤ Select [YES] with the SEL/PUSH EXEC dial A.

⑥ Select [RETURN] → [OK] with the SEL/PUSH EXEC dial A.

To reset the picture profile settings

You can reset the picture profile settings by each picture profile number. You cannot reset all picture profile settings at once.

① Press the PICTURE PROFILE button B.

② Select the number of the picture profile that you want to reset with the SEL/PUSH EXEC dial A.

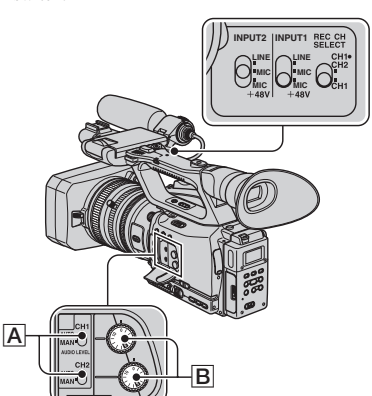
③ Select [SETTING] → [RESET] → [YES] → [RETURN] → [OK] with the SEL/PUSH EXEC dial A.

Adjusting the volume

You can adjust the volume of a microphone connected to the INPUT1/INPUT2 jack.

Tips

- See page 12 for details on attaching the supplied microphone and on the REC CH SELECT switch.



1 Set the AUDIO LEVEL switch (CH1/CH2) A of the channel to be adjusted to MAN.

♪M appears on the screen.

2 Turn the AUDIO LEVEL dial B to adjust the volume during recording or standby.

To restore automatic adjustment

Set the AUDIO LEVEL switch (CH1/CH2) A of the manually adjusted channel to AUTO.

Notes

- When you use a microphone that does not support the MIC+48V, set the INPUT1/INPUT2 switch to MIC. If you use it with the INPUT1/INPUT2 switch set to MIC+48V, it may be damaged or the recorded sound may be distorted.

Tips

- For other settings, see the (AUDIO SET) menu (p. 76).

Assigning the functions to the ASSIGN buttons

Some functions need to be assigned to the ASSIGN buttons for use. You can assign a single function to any one of the ASSIGN 1 to 6 buttons on the body or the L1, L2 and RET buttons on the lens.

Notes

- The following functions cannot be assigned to the RET button.
  - FOCUS (for changing between automatic focus and manual focus)
  - ONE PUSH AF
  - FOCUS INFNTY
  - FOCUS MACRO
  - STEADYSHOT

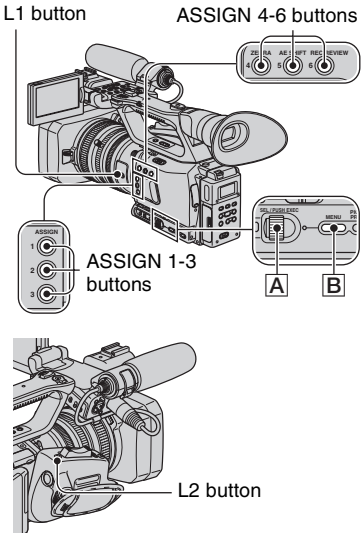
Tips

- The RET button is an assignable button on non-Carl Zeiss lenses.

Functions you can assign to the ASSIGN buttons

The buttons in parentheses indicate that the functions are assigned to the buttons by default.

- FOCUS (p. 28)
- EXP.FOCUS (p. 29) (L2 button)
- ONE PUSH AF (p. 29)
- FOCUS INFNTY (p. 29)
- FOCUS MACRO (p. 72)
- D.EXTENDER (p. 72) (L1 button)
- HYPER GAIN (p. 69)
- BLK BALANCE (p. 33)
- AE SHIFT (p. 70) (ASSIGN 5 button)
- INDEX MARK (p. 44)
- STEADYSHOT (p. 72)
- BACK LIGHT (p. 71)
- SPOTLIGHT (p. 71)
- FADER (p. 72)
- COLOR BAR (p. 75)
- LAST SCN RVW (p. 45)
- REC REVIEW (p. 45) (ASSIGN 6 button/RET button)
- END SEARCH (p. 45)
- ZEBRA (p. 79) (ASSIGN 4 button)
- MARKER (p. 80)
- PEAKING (p. 79)
- DISPLAY (p. 53)
- TC RESET (p. 87)
- TC COUNTUP (p. 87)
- PHOTO (p. 26)
- REC LAMP[F] (p. 92)
- REC LAMP[R] (p. 92)
- PICTURE PROFILE (p. 33)



1 **Press the MENU button B.**

2 **Select the (OTHERS) → [ASSIGN BTN] with the SEL/PUSH EXEC dial A.**

3 **Select [CAMERA] or [LENS], whichever the ASSIGN button to which you want to assign a function is located, with the SEL/PUSH EXEC dial A.**

Continued ➡

4 Select the ASSIGN button to which you want to assign a function with the SEL/PUSH EXEC dial A.

- You can select the ASSIGN 1 through 6 buttons on the body and the L1, L2 and RET button on the lens.
- [------] appears if no function is assigned to the ASSIGN button.

5 Select the function that you want to assign with the SEL/PUSH EXEC dial A.

6 Select [OK] with the SEL/PUSH EXEC dial A.

7 Select [RETURN] with the SEL/PUSH EXEC dial A.

8 Press the MENU button B to hide the menu screen.

Recording an index signal

If you record a scene with an index signal, you can easily find that scene during playback (p. 55).
The index function will make it easier to check the transition of recording or edit your pictures using index signals.

1 Assign [INDEX MARK] to one of the ASSIGN buttons (p. 43).

2 Press the ASSIGN button to which [INDEX MARK] is assinged.

During recording

appears for about 7 seconds and an index signal is recorded.

During standby

flashes.

After you press the REC START/STOP button to start recording, appears for about 7 seconds and an index signal is recorded.

To cancel the operation

Press the ASSIGN button to which [INDEX MARK] is assigned again before you start recording.

Notes

- You cannot record an index signal on a recorded tape afterward.

Reviewing the most recently recorded scenes (Rec review)

You can view about 2 seconds of the scene recorded just before you stopped the tape. This is convenient during playback of the latest scene check.

Press the REC REVIEW button or the ASSIGN button to which [REC REVIEW] is assigned during standby.

The last 2 seconds (approx.) of the most recently recorded scenes will be played back, then your camcorder returns to standby.

Searching for the last scene of the most recent recording (End search)

1 Assign [END SEARCH] to one of the ASSIGN buttons (p. 43).

2 Press the ASSIGN button to which [END SEARCH] is assigned.

The last scene of the most recent recording will be played back for about 5 seconds, and the camcorder goes standby at the point where the last recording has finished.

Notes

- End search will not work once you eject the tape.
- End search will not work correctly if a blank section exists between recorded sections on the tape.

Playing back the most recently recorded movies (Last scene review)

You can set your camcorder to automatically rewind the tape to the beginning of the most recently recorded scene, play back to the end of the scene, then stop the tape.

1 Assign [LAST SCN RVW] to an ASSIGN button (p. 43).

2 During standby, press the ASSIGN button to which [LAST SCN RVW] is assigned.

The last scene review starts.

Notes

- If the recording time of the movie is short, [LAST SCN RVW] may not work correctly.

Tips

- If you press the ASSIGN button again during the last scene review, your camcorder plays back the last 5 seconds of the most recently recorded movie, then goes standby at the end of the recording.

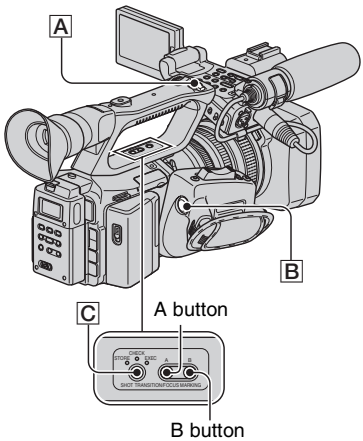
Using the Shot transition

You can store settings of focus, zoom, iris, gain, shutter speed and white balance, and smoothly shift from the current settings to the stored settings (shot transition).
For example, you can shift the focus from closer objects to farther objects, or change the depth of field by adjusting the iris. You can also develop scenes under different conditions smoothly. If you store manually adjusted settings of white balance, you can smoothly shift from one scene to another under different conditions, such as from indoor to outdoor.
Sony recommends that you use a tripod to avoid image blurring.
You can set the following items in [SHOT TRANSITION] of the  (CAMERA SET) menu (p. 74).

Item	Description and settings
TRANS TIME	Setting of transition time (the default setting is [4.0sec]) You can set the transition time by 0.5 sec between [3.5sec] and [15.0sec], or select from [20sec], [30sec], [45sec] and [60sec].
START TIMER	Setting of timer to start shot transition (the default setting is [OFF]) You can select from [5sec], [10sec] and [20sec].
REC LINK	Setting of transition linked with start of recording (the default setting is [OFF]) [OFF]: Not to start transition when the recording is started. [SHOT-A]: To start transition to the SHOT-A when the recording is started. [SHOT-B]: To start transition to the SHOT-B when the recording is started.
FOCUS TRANS	Setting ([ON]/[OFF]) of focus transition (the default setting is [ON])
ZOOM TRANS	Setting ([ON]/[OFF]) of zoom transition (the default setting is [ON])
IRIS TRANS	Setting ([ON]/[OFF]) of iris transition (the default setting is [ON])

Notes

- You cannot manually adjust the focus, zoom, iris, gain, shutter speed and white balance while the CHECK or EXEC lamp is on. You can manually adjust the focus, zoom and iris, even the CHECK or EXEC lamp is on when you set [FOCUS TRANS], [ZOOM TRANS] and [IRIS TRANS] to [OFF], respectively.
- When [EXT REC CTRL] is set to [EXT ONLY], setting [REC LINK] (linked recording) to [SHOT-A] or [SHOT-B] links the start of transition to the start of recording on an external device (HVR-MRC1 or HVR-DR60).



1 Set [S.TRANS/F.MARK] of the (CAMERA SET) menu to [SHOT TRANSITION].

2 Press the SHOT TRANSITION/ FOCUS MARKING button C to bring up the shot transition store screen.

The STORE lamp turns on.

3 Press the A button to store the settings in SHOT-A, or the B button to store the settings in SHOT-B.

Notes

- The settings stored in SHOT-A or SHOT-B will be erased when you set the POWER switch to OFF.

4 Press the SHOT TRANSITION/ FOCUS MARKING button C again to bring up the shot transition check screen.

The CHECK lamp turns on.

Press the A button to check SHOT-A, or the B button to check SHOT-B. The image will be displayed with the settings stored in the selected SHOT. The focus, zoom, iris, gain, shutter speed and white balance are automatically adjusted to the stored settings.

Notes

- The settings do not shift to the stored settings with the transition time set in [TRANS TIME] (p. 46).

5 Press SHOT TRANSITION/FOCUS MARKING button C again to bring up the shot transition execution screen.

The EXEC lamp turns on.

6 Press the REC START/STOP button A (or B) .

Press the A button for recording with SHOT-A, or the B button for recording with SHOT-B.

The settings shift from the current ones to the stored ones.

Notes

- When you change [SHOT TRANSITION] (p. 46), press the SHOT TRANSITION/FOCUS MARKING button repeatedly to exit the shot transition screen.
- You cannot return from the stored SHOT-A or SHOT-B settings to previous settings after you execute the shot transition during recording.

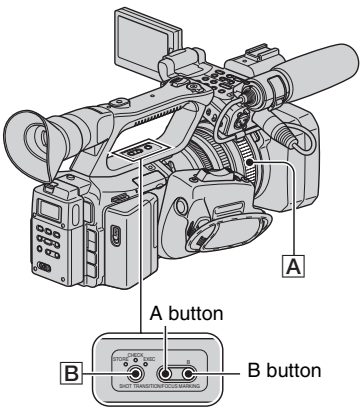
- If you press the following buttons during the shot transition operation, the operation will be canceled:
  – PICTURE PROFILE
  – MENU
  – STATUS CHECK
  – EXPANDED FOCUS
- You can also make a transition from the SHOT-A to the SHOT-B or from the SHOT-B to the SHOT-A. For example, to make a transition from the SHOT-A to the SHOT-B, display the shot transition check screen, press the A button to bring up the SHOT-A and press the REC START/STOP button. Then, display the shot transition execution screen and press the B button.
- You can rehearse the shot transition by pressing the respective buttons (A or B) to which your customized settings are assigned before pressing the REC START/STOP button in step **6**.
- The settings stored in the memory (SHOT-A/SHOT-B) are cleared when you remove the Carl Zeiss lens, or you adjust the flange focal length.

To cancel the operation

Press the SHOT TRANSITION/FOCUS MARKING button C repeatedly to exit the shot transition screen.

Marking focal point on the screen (Focus marking)

You can mark a focal point, at which you set a subject in focus, on the LCD screen prior to the recording. You can use this function during the manual focus.



1 Set [S.TRANS/F.MARK] of the (CAMERA SET) menu to [FOCUS MARKING].

2 Press the SHOT TRANSITION/ FOCUS MARKING button B.

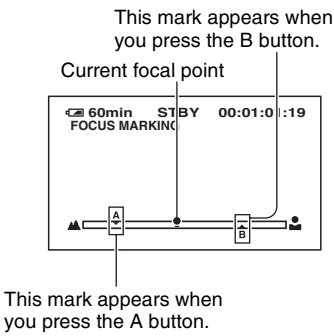
The focus marking bar appears at the bottom of the screen.

3 Adjust the focus by turning the focus ring A and set a focal point.

A cursor on the focus marking bar moves as you turn the focus ring.

4 Press the A button for marking a focal point at position A or the B button for marking a focal point at position B.

When you press the A button, ▼ and A appear on the focus marking bar. When you press the B button, ▲ and B appear on the focus marking bar.



The color of the marks changes when position A or B matches the current focal point.

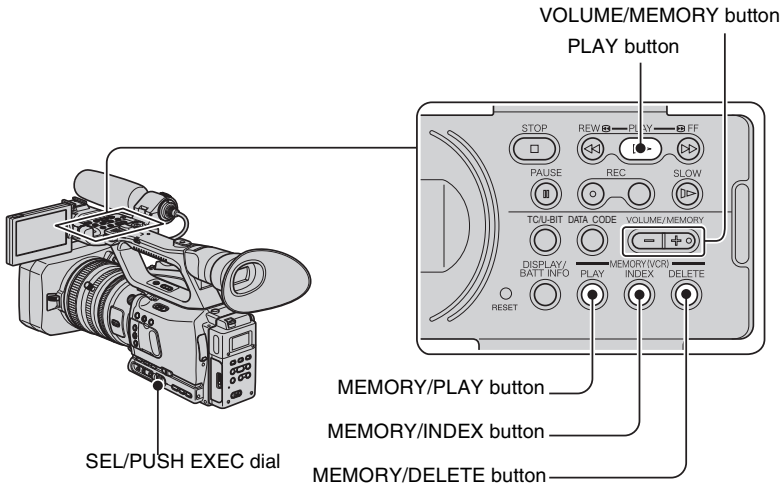
Notes

- The focus marking function does not work when [FOCUS MACRO] is set to [ON].
- You cannot use the focus marking when you use a non-Carl Zeiss lens. Marking positions A and B will be cleared when you dismount the lens or turn off the power.

Tips

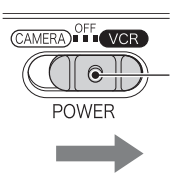
- You can use the focus marking function during the expanded focus.

Playback



You can play back movies as follows:

1 Slide the POWER switch to VCR while pressing the green button.



Slide the POWER switch while pressing the green button.

2 Start playing back.

Press ◄◄ (rewind) to go to the point you want to view, then press ► (play) to start playback.

- ■ : STOP
- ❚❚ : PAUSE (Press ► or ❚❚ again to restart the playback)
- ◄◄ : REW ⏪ (Rewind, review)
- ►► : ⏩ FF (Cue, fast forward)
- ❙► : SLOW

Notes

- Your camcorder automatically goes into a stopped state when it is in pause for more than 3 minutes.
- The screen may temporarily go blank losing images and sound when signals switch between HDV and DVCAM (DV) during playback of a tape in which HDV format and DVCAM (DV) format are mixed.

- You cannot play back movies recorded in HDV format on DVCAM (DV) format video cameras or mini DV players.
- You can play back a DV format tape on your camcorder only when its contents are recorded in the SP mode. You cannot play back movies recorded on the DV format tape in the LP mode.
- Time code and user bits will not be displayed correctly when you play back a tape with no time code or user bit data, or a tape with time code that your camcorder does not support.

Tips

- See page 139 for indicators displayed on the screen during playback.
- See page 53 for how to switch displays during playback.

To search for a scene while viewing a movie

Press and hold ◀◀/▶▶ during playback (Picture Search). To view during fast forward, press and hold ▶▶. To view during rewind, press and hold ◀◀ (Skip Scan).

To adjust the volume

Adjust the volume with the VOLUME/MEMORY button.

To view still images

① Set the POWER switch to VCR.

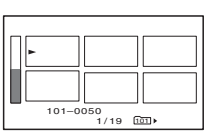
② Press the MEMORY/PLAY button.

③ Select still image that you want to view using the VOLUME/MEMORY button.
To stop viewing still images, press the MEMORY/PLAY button again.

To display the list of still images (index screen)

① Set the POWER switch to VCR.

② Press the MEMORY/INDEX button.



③ Select a still image using the VOLUME/MEMORY button.
To display a single image, move ▶ to that image and press the MEMORY/PLAY button.
To stop displaying the list of still images, press the MEMORY/INDEX button again.

To delete still images from the "Memory Stick Duo"

① Do the steps of "To view still images" to display still images that you want to delete.

② Press the MEMORY/DELETE button.

③ Select [YES] with the SEL/PUSH EXEC dial.
The still image will be deleted.

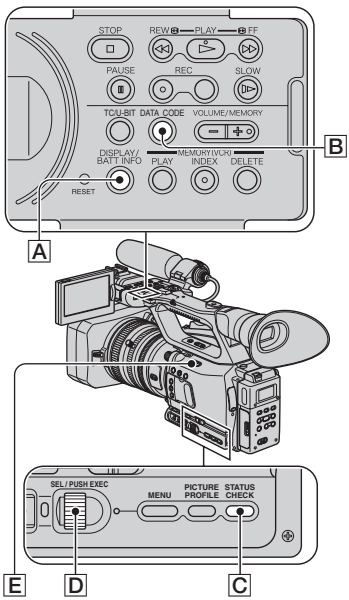
Notes

- Still images cannot be restored once you delete them.
- You cannot delete still images when the “Memory Stick Duo” is write-protected (p. 119) or the still image is protected (p. 104).

Tips

- To delete a still image in the index, move ▶ to the still image using the VOLUME/MEMORY button, then do steps ② and ③.
- To delete all still images, do [ALL ERASE] of the (MEMORY SET) menu (p. 89).

Changing/checking the settings in your camcorder



Changing the screen

You can turn on and off the display of the time code, tape counter, and other information on the screen.

Press the DISPLAY/BATT INFO button A.

The screen indicators turn on (displayed) and off (not displayed) as you press the button.
When the POWER switch is set to CAMERA, the screen changes (detailed display → simple display → no display) as you press the button.

Tips

- You can display the screen indicators during playback on a TV. Select [V-OUT/PANEL] of [DISP OUTPUT] (p. 83).
- When you assign [DISPLAY] of [ASSIGN BTN] to an ASSIGN button, you can use the ASSIGN button to change the screen.

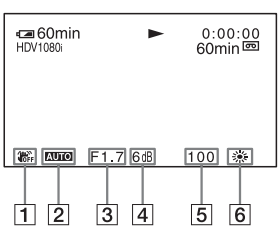
Displaying recording data (Data code)

You can display information, including date, time and camera data, automatically stored during recording on the screen during playback.

1 Set the POWER switch E to VCR.

2 Press the DATA CODE button B during playback or pause.

The screen changes (date and time display → camera data display → no display) as you press the button.



1 SteadyShot off

2 Exposure
AUTO appears during playback of the movie recorded with the iris, gain and shutter speed automatically adjusted.
MANUAL appears during playback of the movie recorded with the iris, gain and shutter speed manually adjusted.

3 Iris
CLOSE appears in the iris value display area during playback of the movie recorded with the iris manually adjusted to its maximum value.

4 Gain

5 Shutter speed

6 White balance
PWB appears during playback of the movie recorded with the shot transition or [MANU WB TEMP].

Notes

- The exposure correction value (0EV), shutter speed and iris will be displayed during viewing of still images on "Memory Stick Duo."
- Date and time will be displayed in the same area when you select the date and time display. If you record without setting date and time, [-- -- ----] and [--:--:--] will be displayed.
- An accurate shutter speed may not be displayed when you play back a tape recorded with your camcorder on another device. Check the data code that is displayed on the screen when you play back the tape on your camcorder for the accurate shutter speed.
- A shutter speed is indicated with [---] during playback of the movie recorded with the extended clear scan (ECS).

Displaying the settings in your camcorder (Status check)

You can check the settings of the following items.

- Audio setup such as microphone volume level (p. 76)
- Output signal setup ([VCR HDV/DV], etc.) (p. 83)
- Functions assigned to the ASSIGN buttons (p. 43)
- Camera setup (p. 69)
- External devices

1 Press the STATUS CHECK button C.

2 Turn the SEL/PUSH EXEC dial D until a desired display shows up on the screen.

When the POWER switch E is set to CAMERA, the display changes in the following sequence:

AUDIO → OUTPUT → ASSIGN → CAMERA → EXT DEVICE (when an external device is connected)

When the POWER switch E is set to VCR, the display changes in the following sequence:

AUDIO → OUTPUT → ASSIGN → EXT DEVICE (when an external device is connected)

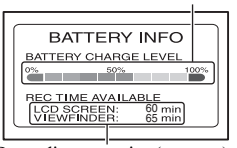
To hide the display

- Press the STATUS CHECK button C.

Checking the remaining battery (Battery Info)

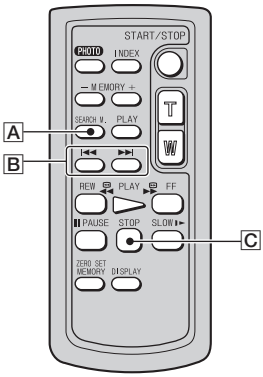
Set the POWER switch E to OFF, then press the DISPLAY/BATT INFO button A. The approximate recordable time in the selected format and battery information appear for about 7 seconds. You can view the battery information for up to 20 seconds by pressing the button again while the information is displayed.

Remaining battery (approx.)



Recording capacity (approx.)

Locating a scene on a tape



Notes

- See page 136 for details on how to use the Remote Commander.

Searching for a scene by date of recording (Date search)

You can search scenes by recording dates.

1 Set the POWER switch to VCR.

2 Press the SEARCH M. button A on the Remote Commander repeatedly to select [DATE SEARCH].

3 Press the I◄◄ (previous)/►►I (next) button B on the Remote Commander to select a recording date.

You can select a date previous or next to the date of the current tape position. Playback automatically starts from the scene recorded on the selected date.

To cancel the operation

Press the STOP button C on the Remote Commander.

Notes

- Each day of recording must be longer than 2 minutes. Your camcorder may not detect the date if the recording of that date is short.
- The date search may not work properly if a blank section exists on the tape.

Searching for a recording start point (Index search)

You can search scenes by indexes recorded at the start of recording (p. 44).

1 Set the POWER switch to VCR.

2 Press the SEARCH M. button A on the Remote Commander repeatedly to select [INDEX SEARCH].

3 Press the I◄◄ (previous)/►►I (next) button B on the Remote Commander to select an index point.

You can select an index previous or next to the index of the current tape position. Playback automatically starts from the scene marked by the index.

To cancel the operation

Press the STOP button C on the Remote Commander.

Notes

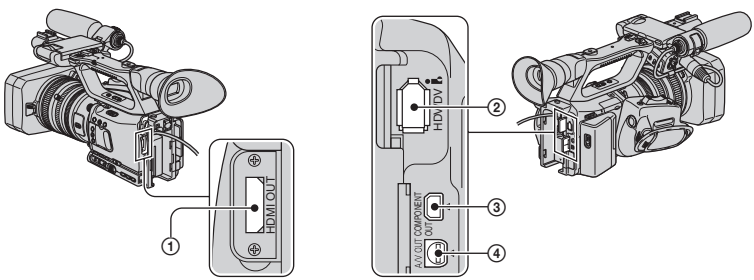
- Recording between indexes must be longer than 2 minutes. Your camcorder may not detect the date if the recording between the indexes is short.
- The index search may not work properly if a blank section exists on the tape.

Playing the picture on a TV

Connection methods and image quality differ depending on what type of TV is connected and connectors used.
Use the supplied AC Adaptor/Charger to obtain AC power (p. 14).
Refer also to the instruction manuals supplied with the device to be connected.

Jacks on your camcorder

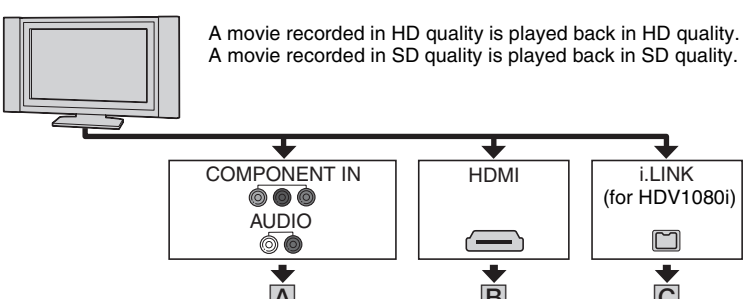
Open the jack cover and connect the cable.



Notes

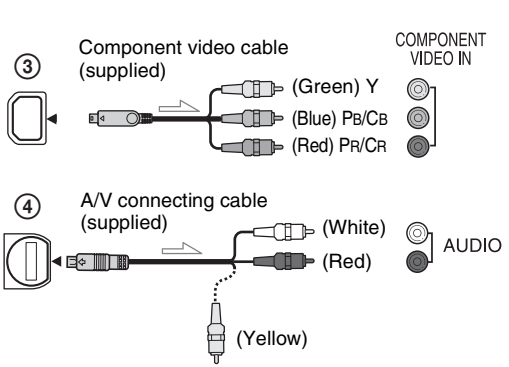
- Set all the necessary menu items before you connect your camcorder to a TV. If you change the settings of [VCR HDV/DV] or [i.LINK SET] after connecting your camcorder to the TV with an i.LINK cable, the TV may not recognize video signals properly.

Connecting to a high definition TV



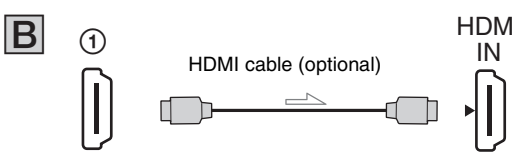
: Signal flow, ( ): Reference pages

Type	Camcorder	Cable	TV	Menu Setting
A	③	Component video cable (supplied) (Green) Y, (Blue) PB/CB, (Red) PR/CR	COMPONENT VIDEO IN	(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [VIDEO OUT] → [COMPONENT] → [1080i/576i] (85)
	④	A/V connecting cable (supplied) (White), (Red), (Yellow)	AUDIO	



Notes

- When you only connect a component video cable, audio signals are not outputted. An A/V connecting cable is also needed to output audio signals. Connect the white and red plugs of the A/V connecting cable to the audio input jack of your TV.



(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83)

Notes

- **Use an HDMI cable with the HDMI logo.**
- Pictures in the DVCAM (DV) format are not output from the HDMI OUT jack, if copyright protection signals are recorded in the pictures.
- DVCAM (DV) format pictures input to the camcorder via i.LINK cable (p. 98) cannot be output.
- Your TVs may not function correctly (for example, no sound or image). Do not connect the HDMI OUT jack of your camcorder and HDMI OUT jack of the external device with the HDMI cable. This may cause a malfunction.

Tips

- HDMI (High-Definition Multimedia Interface) is an interface to send both video and audio signals. Connecting HDMI OUT jack to an external device supplies high quality images and digital audio to you.

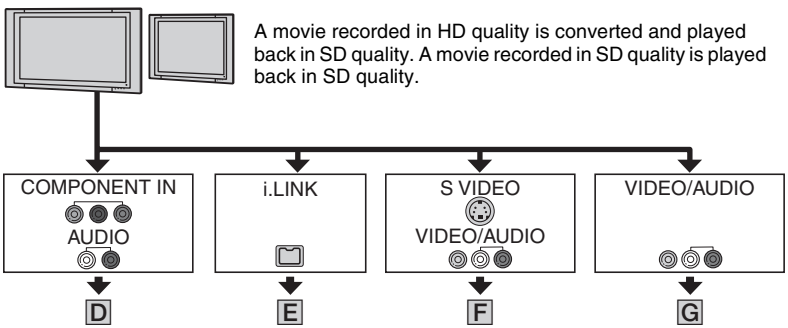
: Signal flow, ( ): Reference pages

Type	Camcorder	Cable	TV	Menu Setting
C	②	i.LINK cable (optional)	i.LINK	(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [i.LINK SET] → [HDV → DV CONV] → [OFF] (86)

Notes

- **Your TV needs to have an i.LINK jack compatible with HDV1080i. For details, confirm the specifications of your TV.**
- If your TV is not compatible with HDV1080i, connect your camcorder and TV with the supplied component video cable and A/V connecting cable as illustrated in A.
- The TV needs to be set so that it recognizes that the camcorder is connected. Refer to the instruction manuals supplied with your TV.
- This camcorder has a 6-pin i.LINK terminal. Select a cable that fits the terminal on the TV to be attached.

Connecting to a 16:9 (wide) or 4:3 TV



To set the aspect ratio according to the connected TV (16:9/4:3)

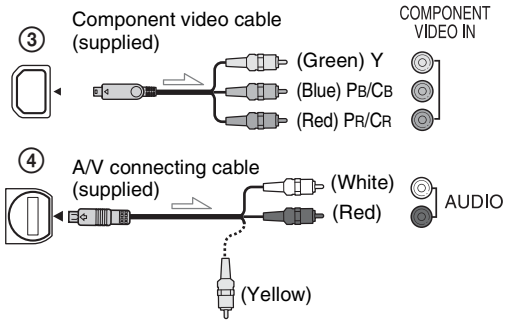
Set the down-convert setting as follows:
For HDV format signals:
(IN/OUT REC) menu → [VIDEO OUT] → [DOWN CONVERT]
For DV format signals:
(IN/OUT REC) menu → [VIDEO OUT] → [DV WIDE CONV]

Tips

- When your TV is monaural (When your TV has only one audio input jack), connect the yellow plug of the A/V connecting cable to the video input jack and connect the white (left channel) or the red (right channel) plug to the audio input jack of your TV or VCR. When you want to play back the sound in monaural mode, use a connecting cable for that purpose.

: Signal flow, ( ): Reference pages

Type	Camcorder	Cable	TV	Menu Setting
D	③	Component video cable (supplied)	COMPONENT VIDEO IN	(IN/OUT REC) [VCR HDV/DV] →[AUTO] (83) [VIDEO OUT] →[COMPONENT] →[1080i/576i] (85) [VIDEO OUT] →[DOWN CONVERT] →[SQUEEZE]/ [LETTER BOX]/[EDGE CROP]* (85)
	④	A/V connecting cable (supplied)	AUDIO	



Notes

- When you only connect a component video cable, audio signals are not outputted. An A/V connecting cable is also needed to output audio signals. Connect the white and red plugs of the A/V connecting cable to the audio input jack of your TV.

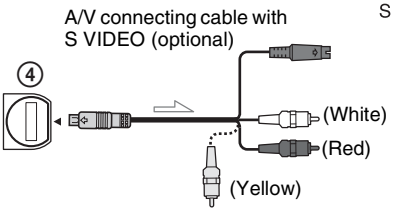
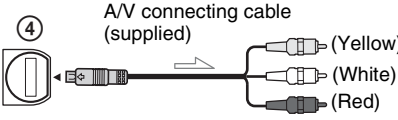
E	②	i.LINK cable (optional)	i.LINK	(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [i.LINK SET] → [HDV → DV CONV] → [ON] (86)

Notes

- The TV needs to be set so that it recognizes that the camcorder is connected. Refer to the instruction manuals supplied with your TV.
- This camcorder has a 6-pin i.LINK terminal. Select a cable that fits the terminal on the TV to be attached.

* Change the settings according to the TV connected.

: Signal flow, ( ): Reference pages

Type	Camcorder	Cable	TV	Menu Setting
F				(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [VIDEO OUT] → [DOWN CONVERT] → [SQUEEZE]/[LETTER BOX]/[EDGE CROP]* (85)
G				(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [VIDEO OUT] → [DOWN CONVERT] → [SQUEEZE]/[LETTER BOX]/[EDGE CROP]* (85)

Notes

- When connecting only an S VIDEO plug (S VIDEO channel), audio signals are not output. To output audio signals, connect the white and red plugs of the A/V connecting cable with an S VIDEO cable to the audio input jack of your TV.
- This connection produces higher resolution pictures compared with the A/V connecting cable (Type G).

* Change the settings according to the TV connected.

Notes

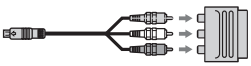
- If you connect your camcorder to the TV using more than one type of cable to output images, the order of priority of the TV input jacks is as follows:
  HDMI → component video → S VIDEO → video.
- See page 121 for the details of i.LINK.

When connecting to your TV via a VCR

Select the connecting method on page 94 depending on the input jack of the VCR. Connect your camcorder to the LINE IN input on the VCR using the A/V connecting cable. Set the input selector on the VCR to LINE (VIDEO 1, VIDEO 2, etc.).

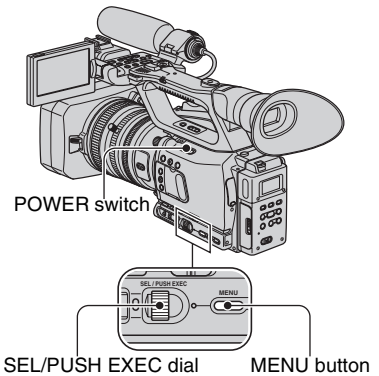
If your TV/VCR has a 21-pin adaptor (EUROCONNECTOR)

Use a 21-pin adaptor (optional) to view playback pictures.



Using the menu items

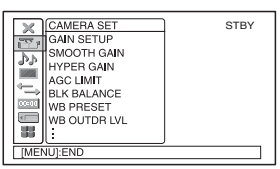
You can change various settings or make detailed adjustments using the menu items displayed on the screen.



1 Set the POWER switch to CAMERA or VCR.

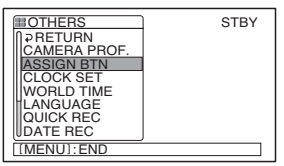
2 Press the MENU button.

The menu index screen appears.

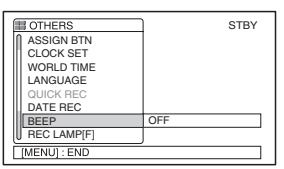


3 Turn the SEL/PUSH EXEC dial until the icon of the desired menu is highlighted, then press the dial to select the menu.

CAMERA SET (p. 69)
AUDIO SET (p. 76)
DISPLAY SET (p. 79)
IN/OUT REC (p. 83)
TC/UB SET (p. 87)
MEMORY SET (p. 89)
OTHERS (p. 90)

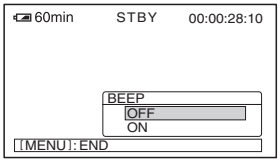


4 Turn the SEL/PUSH EXEC dial until the desired menu item is highlighted, then press the dial to select the item.



The available menu items vary depending on the position of the power switch of your camcorder. Unavailable items will be grayed out.

5 **Turn the SEL/PUSH EXEC dial until the desired setting is highlighted or to bring up the desired setting, then press the dial to confirm the setting.**



6 **Press the MENU button to hide the menu screen.**

To return to the previous screen, select [RETURN].

Menu items

Available menu items (●) vary depending on the POWER switch position.

	Position of POWER switch: CAMERA	VCR
(CAMERA SET) menu (p. 69)		
GAIN SETUP	●	–
SMOOTH GAIN	●	–
HYPER GAIN (AS)	●	–
AGC LIMIT	●	–
BLK BALANCE (AS)	●	–
WB PRESET	●	–
WB OUTDR LVL	●	–
WB TEMP SET	●	–
ATW SENS	●	–
SMOOTH WB	●	–
AE SHIFT (AS)	●	–
AE WINDOW	●	–
AE RESPONSE	●	–
AT IRIS LMT	●	–
ECS FREQ.	●	–
FLCKR REDUCE	●	–
CNTRST ENHCR	●	–
BACK LIGHT (AS)	●	–
SPOTLIGHT (AS)	●	–
STEADYSHOT (AS)	●	–
AF ASSIST	●	–
FOCUS MACRO (AS)	●	–
HANDLE ZOOM	●	–
D.EXTENDER (AS)	●	–
FADER (AS)	●	–
SMTH SLW REC	●	–
INTERVAL REC	●	–
DV FRAME REC DVCAM DV	●	–
SHOT TRANSITION	●	–
S.TRANS/F.MARK	●	–
x.v.Color HDV1080i	●	–
COLOR BAR (AS)	●	–
FLANGE BACK	●	–
(AUDIO SET) menu (p. 76)		
DV AU.MODE DVCAM DV	●	–
AUDIO LIMIT	●	–
XLR SET	●	–
AUDIO CH SEL	–	●
DV AUDIO MIX DVCAM DV	–	●

Position of POWER switch:	CAMERA	VCR
(DISPLAY SET) menu (p. 79)		
ZEBRA (AS)	●	–
HISTOGRAM	●	–
PEAKING (AS)	●	–
MARKER (AS)	●	–
CAM LEVELING	●	–
EXP.FOCUS TYPE	●	–
CAM DATA DSP	●	–
AU.LVL DISP	●	–
ZOOM DISPLAY	●	–
FOCUS DISP	●	–
SHUTTER DISP	●	–
LCD BRIGHT	●	●
LCD COLOR	●	●
LCD BL LEVEL	●	●
VF B.LIGHT	●	●
VF COLOR	●	●
VF POWERMODE	●	●
LETTER SIZE	●	●
REMAINING	●	●
DISP OUTPUT	●	●
(IN/OUT REC) menu (p. 83)		
REC FORMAT	●	–
VCR HDV/DV	–	●
HDV PROGRE. (HDV1080)	●	–
DV PROGRE. (DVCAM) (DV)	●	–
DV REC MODE (DVCAM) (DV)	●	●
DV WIDE REC (DVCAM) (DV)	●	–
VIDEO OUT	●	●
i.LINK SET	●	●
EXT REC CTRL	●	–
(TC/UB SET) menu (p. 87)		
TC PRESET	●	●
TC COUNTUP (AS)	●	●
UB PRESET	●	●
TC RUN	●	●
TC MAKE	●	●
TC LINK	●	–
UB TIME REC	●	●
UB-DATE/TC-TIME	●	●

Continued ➡

Position of POWER switch:	CAMERA	VCR
(MEMORY SET) menu (p. 89)		
ALL ERASE	–	●
FORMAT	●	●
FILE NO.	●	●
NEW FOLDER	●	●
REC FOLDER	●	●
PB FOLDER	–	●
(OTHERS) (p. 90)		
CAMERA PROF.	●	●
ASSIGN BTN	●	●
CLOCK SET	●	●
WORLD TIME	●	●
LANGUAGE	●	●
PB ZOOM	–	●
QUICK REC (HDV1080i)	●	–
DATE REC	●	–
BEEP	●	●
REC LAMP[F] (AS)	●	–
REC LAMP[R] (AS)	●	–
REMOTE CTRL	●	●
HOURS METER	●	●

(CAMERA SET) menu

Settings to adjust your camcorder to the recording conditions (GAIN SETUP/BACK LIGHT/STEADYSHOT, etc.)

The default settings are marked with ▶. The indicators in parentheses appear when the items are selected.

See page 64 for details on selecting menu items.

Press the MENU button → select the (CAMERA SET) with the SEL/PUSH EXEC dial.

GAIN SETUP

You can set gain values for H, M and L positions of the GAIN switch. The default settings of [H], [M] and [L] are 18dB, 9dB and 0dB, respectively.

① Select [H], [M] or [L] with the SEL/PUSH EXEC dial.

② Set the gain value with the SEL/PUSH EXEC dial, and press the dial.
You can select the value between -6dB and 21dB by 3dB. The larger the value, the higher the gain.

③ Select [OK] with the SEL/PUSH EXEC dial.

④ Press the MENU button to hide the menu screen.

SMOOTH GAIN

You can set the transition speed at which the gain setting shifts from one value to another, set for the gain switch positions, when you switch the gain switch from a position to another. You can select the transition speed from [FAST], [MIDDLE] and [SLOW] or set to [OFF]. The default setting is [OFF].

HYPER GAIN (AS)

When you set this function to [ON] (HYPER), you can increase the gain to its limit. The default setting is [OFF].

Notes

- During the hyper gain, you cannot use the following function.
  - [BACK LIGHT]
  - [SPOTLIGHT]
- During the hyper gain, the picture quality will be reduced due to noise.
- [HYPER GAIN] is automatically set to [OFF] if you turn the power off and back on.

Tips

- You are recommended to use this function with manual focus.

AGC LIMIT

You can select the upper limit for the Auto Gain Control (AGC) from [OFF] (21dB, the default setting), [18dB], [15dB], [12dB], [9dB], [6dB], [3dB] and [0dB].

Notes

- If you adjust the gain manually, you cannot obtain the effect of [AGC LIMIT].

BLK BALANCE (AS)

See page 33.

WB PRESET

You can use the preset white balance. For more details, see page 32.

WB OUTDR LVL

You can set an offset value to adjust the outdoor white balance when you set [WB PRESET] to [OUTDOOR]. You can select the offset value from [-7] (bluish) - [0] (normal) - [+7] (reddish). The default setting is [0] .

WB TEMP SET

You can set the color temperature between 2300K and 15000K in 100K steps when you set [WB PRESET] to [MANU WB TEMP].

ATW SENS

You can set the auto white balance operation under a reddish light source such as an incandescent lamp or candle, or under a blueish light source such as in outdoor shade.

►INTELLIGENT

Automatically adjusts the white balance so that scenes look natural for the light source.

HIGH

Automatically adjusts the white balance while reducing redness or blueness.

MIDDLE

LOW

Automatically adjusts the white balance while increasing redness or blueness.

Notes

- This is only effective when white balance is adjusted automatically.
- [ATW SENS] is not effective under a clear sky or the sun.

SMOOTH WB

You can set the transition speed at which the color temperature values shifts from one value to another, set for the white balance memory switch positions, when you switch the white balance memory switch from a position to another. You can select the transition speed from [FAST], [MIDDLE] and [SLOW] or set to [OFF]. The default setting is [OFF].

AE SHIFT (AS)

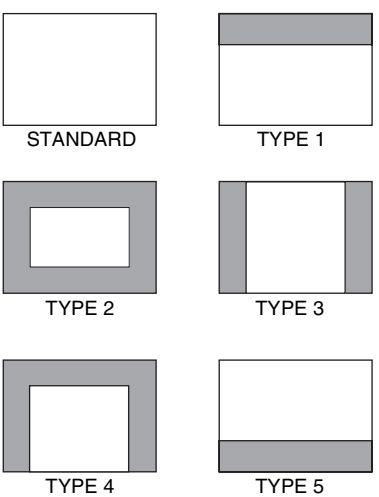
You can set an offset value to adjust the automatic exposure adjustment value between [-7] (dark) and [+7] (bright) with the SEL/PUSH EXEC dial. The default setting is [0] . AS and selected value appears on the screen when you change the value from the default setting.

Notes

- This function is not effective while you adjust the iris, shutter speed and gain all manually.
- This function is not effective when [HYPER GAIN] is set to [ON].

AE WINDOW

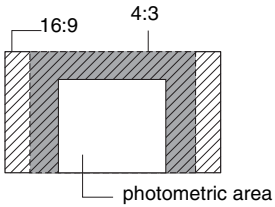
You can select a photometric area in which the automatic exposure adjustment function detects changes in the brightness of the subject to automatically adjust the exposure. This function is not effective during the manual exposure adjustment.



Tips

- The photometric area stays the same even when you change the aspect ratio.

Example: TYPE 4



AE RESPONSE

You can select the speed at which the automatic exposure adjustment function follows changes in the brightness of the subject. You can select the speed from [FAST], [MIDDLE] and [SLOW]. The default setting is [FAST].

AT IRIS LMT

You can select the highest iris value for the automatic adjustment from [F11], [F9.6], [F8], [F6.8], [F5.6], [F4.8] and [F4]. The default setting is [F11].

Notes

- This function is not effective during the manual iris adjustment.

ECS FREQ.

You can set the shutter speed so that horizontal strips do not appear on a monitor screen, which is likely to occur when you record a monitor screen. Change the setting with the SEL/PUSH EXEC dial, then press the dial to confirm the setting. The default setting is [50.00Hz].
You must set the shutter speed to the ECS (ECS) prior to setting this function (p. 31).
You can set the shutter speed in the following frequency ranges depending on the setting of [SCAN TYPE]. How to select [SCAN TYPE] depends on the setting of [REC FORMAT] of (IN/OUT REC) menu.

[HDV1080i]: [HDV PROGRE.] → [REC TYPE] → [SCAN TYPE]
[DV]: [DV PROGRE.] → [SCAN TYPE]

SCAN TYPE	Frequency range
50	50.00 Hz to 200.0 Hz
25	25.00 Hz to 200.0 Hz

FLCKR REDUCE

► ON

Reduces flickering. Flickering of the screen under a light source such as fluorescent lamps will be reduced.

OFF

Not reduce flickering. Select this when you do not want to reduce flickering.

Notes

- Flickering may not be reduced for certain light sources.

CNTRST ENHCR

When you set this function to [ON], your camcorder detects high contrast images, such as backlit scenes, and automatically improves the unexposed images. The default setting is [OFF].

Notes

- When you set [BACK LIGHT] to [ON], [CNTRST ENHCR] is temporarily disabled.

BACK LIGHT (AS)

When you set this function to [ON] (), you can correct backlighting. The default setting is [OFF].

Notes

- The back light function is canceled when you set [SPOTLIGHT] to [ON].

SPOTLIGHT (AS)

When you set this function to [ON] (), you can prevent overexposure of light

during recording of a subject under strong light, such as a stage. For example, you can prevent people's faces from over-highlighting. The default setting is [OFF].

Notes

- The spotlight function is canceled when you set [BACK LIGHT] to [ON].
- You cannot use the spotlight function if at least two of iris, gain, and shutter speed are adjusted manually.

STEADYSHOT (AS)

■ ON/OFF

When you select [ON], you can reduce camera shakes. Select [OFF] ( ) when you use a tripod (optional) to make images look natural. The default setting is [ON].

■ TYPE

You can select a type of camera-shake reduction for different recording situations.

HARD

Reduces camera shakes at a high level. This setting is not suitable for panorama tilt recordings.

►STANDARD

Reduces camera shakes at a standard level.

SOFT

Reduces camera shakes at a low level. Slight unsteadiness remains in movies, which make the movies look as they are.

AF ASSIST

When you set this function to [ON], you can temporarily focus manually using the focus ring during the auto focus adjustment. The default setting is [OFF].

Notes

- This function is effective only when the focus ring is set to the mode B position (p. 28).

FOCUS MACRO (AS)

When you set this function to [ON], you can focus on a subject within 80 cm (about 2 5/8 feet). The default setting is [ON]. When you set this function to [OFF] ( ), you can set fine focus on a subject further than 80 cm regardless of the zoom position although you will lose focus on a subject within 80 cm.

Notes

- This function is effective only when the focus ring is set to the mode B position (p. 28).

HANDLE ZOOM

You can select the zoom speed for the FIX position of the handle zoom switch from [1] (slow) through [8] (fast). The default setting is [3].

D.EXTENDER (AS)

When you set this function to [ON] ( ), the displayed image becomes 1.5 times larger. The image quality decreases because the image is digitally processed. This function helps you to focus on far-away subjects such as a wild bird away at a distance. The default setting is [OFF].

Notes

- This function is automatically set to [OFF] when you turn the power off and back on.

FADER (AS)

You can add visual effects to transition between scenes.

① Select [WHITE FADER] or [BLACK FADER] during standby to fade in with the selected effect or recording to fade out with the selected effect.

② Press the REC START/STOP button.
The fader indicator stops flashing and disappears when the fading is complete.

To cancel before starting the operation, select [OFF] in step ①.
The setting will be cleared every time you press the REC START/STOP button.



Fading out Fading in

WHITE FADER



BLACK FADER



Notes

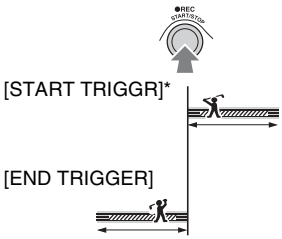
- This function is automatically set to [OFF] when you turn the power off and back on.

SMTH SLW REC

Fast moving subjects and actions, which cannot be captured under the general recording conditions, can be recorded in smooth moving slow-motion.
This is useful for recording fast actions such as a golf or tennis swing.

① Set [REC TIME].
Select the recording time from [3sec] (the default setting), [6sec] and [12sec].
The picture quality deteriorates as the recording time increases.

② Set [REC TIMING].
Select the recording timing from [START TRIGGR] and [END TRIGGER] to record the action after or before the REC START/STOP button is pressed.



* The default setting is [START TRIGGR].

③ Start recording.
Select [EXECUTE], then press the REC START/STOP button on the [SMTH SLW REC] screen.
A slow-motion movie about 4 times longer than your [REC TIME] setting is recorded. Recording ends when [Recording···] disappears from the screen.

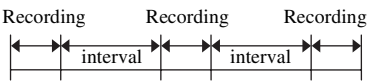
To cancel [SMTH SLW REC], press the MENU button.

Notes

- Sounds cannot be recorded.
- The settings are automatically cleared when you turn the power off and back on.
- The shutter speed is automatically set to 1/215 second when you start [SMTH SLW REC].
- The recording time may be shorter than the set time, depending on recording conditions.
- The image quality is lower than with the regular recording.

INTERVAL REC

You can record a series of movies on a tape at regular intervals. This function is useful to observe things like cloud movements or daylight changes. The scenes run smoothly into each other when you play back the tape. Use the AC Adapter/Charger to obtain AC power for long recording.



① Select [ON/OFF] → [ON] with the SEL/PUSH EXEC dial.
② Perform the following step if you are changing the recording time from the default setting of [0.5sec]. If you are keeping the default recording time, go straight to step ③.
Select [REC TIME] → [0.5sec], [1sec], [1.5sec] or [2sec] with the SEL/PUSH EXEC dial.
③ Perform the following step if you are changing the interval time from the default setting of [30sec]. If you are keeping the default interval time, go straight to step ④.
Select [INTERVAL] → [30sec], [1min], [5min] or [10min].
④ Select [OK] with the SEL/PUSH EXEC dial.
⑤ Press the MENU button to hide the menu screen.
⑥ Press the REC START/STOP button.
The [INTERVAL REC] recording starts.

To cancel [INTERVAL REC], press the REC START/STOP button.
The operation of your camcorder differs depending on when you press the REC START/STOP button.
If you press the button during [INTERVAL REC] recording, the recording temporarily stops. If you press it again, the [INTERVAL REC] recording restarts.
If you press the button during [INTERVAL REC] interval, the [INTERVAL REC] recording stops and regular recording starts. If you press it again, regular recording stops. If you press the button once again, the [INTERVAL REC] recording restarts.
To cancel the [INTERVAL REC] recording, select [ON/OFF] → [OFF] with the SEL/PUSH EXEC dial.

Notes

- The recording time and interval time may differ slightly from the settings.
- If you focus manually, you can get sharp images even if the lighting changes.

DV FRAME REC DVCAM DV SP

You can record stop motion (or frame-by-frame) animation movies. That type of animation uses a technique of changing the subject, such as a doll or a toy's positions and recording it at each different position while your camcorder sits still. Use the Remote Commander to reduce camera shakes.

► OFF

Not use this function.

ON ( )

Records a movie by stop motion (or frame-by-frame) technique.

① Select [ON] with the SEL/PUSH EXEC dial.
② Press the MENU button to hide the menu screen.
③ Press the REC START/STOP button.
Your camcorder records a movie for about 5 frames and returns to standby.
④ Move the subject and repeat step ③.

Notes

- When you use frame recording continuously, the remaining tape time will not be indicated correctly.
- The last scene will be longer than other scenes.
- You cannot record index signals during frame recording.
- This function is automatically set to [OFF] when you turn the power off and back on.

SHOT TRANSITION

See page 46.

S.TRANS/F.MARK

You can select a function to be assigned to the SHOT TRANSITION/FOCUS MARKING button.

► **SHOT TRANSITION**

Select to assign the shot transition function to the button.

FOCUS MARKING

Select to assign the focus marking function to the button.

x.v.Color HDV1080i

When you set this function to [ON], you can record with the wider color range. Your camcorder can reproduce brilliant and vivid colors for flowers and the beautiful blue-green of tropical oceans that cannot be matched by conventional technologies.

Notes

- The colors may not be well reproduced when you play back a movie recorded with this function set to [ON] on a TV that does not support x.v.Color.
- You cannot set [x.v.Color] in the following cases:
  - When recording in SD (standard) format
  - When recording movies
- When you set [x.v.Color] to [ON], the picture profile will be disabled.

COLOR BAR AS

■ ON/OFF

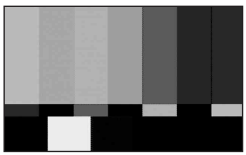
When you select [ON], you can display color bars on the screen or record them on a tape. This function helps you to adjust colors when you view movies recorded with your camcorder on a TV or a monitor. The default setting is [OFF].

Notes

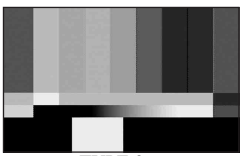
- This function is automatically set to [OFF] when you turn the power off and back on.

■ TYPE

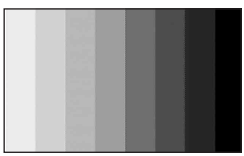
Selects a type of the color bars.



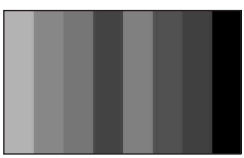
TYPE 1



TYPE 2



TYPE 3



TYPE 4 (75% brightness of TYPE 3)

■ TONE

Outputs audio tone signals (1 kHz: full bit -20 dB) when you set [TONE] to [ON]. The default setting is [OFF].

Press the MENU button → select the (CAMERA SET) with the SEL/PUSH EXEC dial.

FLANGE BACK

You can select a mode for the flange focal length adjustment. The flange focal length is a distance from the lens flange to the plane of the image along the optical axis. See page 10 for details.

►AUTO ADJUST

Automatically adjusts the flange focal length.

MANU ADJUST

Manually adjusts the flange focal length.

(AUDIO SET) menu

Settings for the audio recording (DV AU.MODE/XLR SET, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 64 for details on selecting menu items.

Press the MENU button→ select the (AUDIO SET) with the SEL/PUSH EXEC dial.

DV AU.MODE (DV Audio mode) DVCAM DV SP

FS32K (32k)

Records in the 12-bit mode (2 stereo sounds). Select this setting for the DVCAM/DV SP recording.

►FS48K (48k)

Records in the 16-bit mode (1 stereo sound with high quality). Select this setting for the DVCAM/DV SP recording.

Notes

- When recording in the HDV format, sound is automatically recorded in the [FS48K] mode.

AUDIO LIMIT

You can set the clipping-noise reduction function for CH1/CH2.

►OFF

Disables the function.

ON

Enables the function.

Notes

- This function is available only when you set the AUTO/MAN switch to MAN.

XLR SET

■ XLR AGC LINK

You can select either linked or separate AGC (Auto Gain Control) of CH1 and CH2 when using an external microphone.

► **SEPARATE**

Separately applies the AGC for CH1/CH2. Sound inputs from CH1/CH2 will be recorded as separate sound.

LINKED

Applies the AGC of CH1 linked with that of CH2. Sound inputs from CH1/CH2 will be recorded as a set of sound such as stereo sound. A[appears on the status check screen.

Notes

- This function is available when the CH1 and CH2 switches are set to AUTO and the INPUT1 and INPUT2 switches are both set to MIC or both set to LINE (p. 41).

AU.MAN GAIN

You can select either linked or separate audio level control of CH1 and CH2 when using an external microphone.

► **SEPARATE**

Separately controls the audio levels of CH1 and CH2. Sound inputs from CH1 and CH2 will be recorded as separate sound.

LINKED

Controls the audio level of CH1 linked with that of CH2. Sound inputs from CH1 and CH2 will be recorded as a set of sound such as stereo sound. M[appears on the status check screen.

Notes

- This function is available when the CH1 and CH2 switches are set to MAN and the INPUT1 and INPUT2 switches are both set to MIC or both set to LINE (p. 41).
- When you select [LINKED], you can adjust the volume with the AUDIO LEVEL dial of CH1 (p. 41).

INPUT1 MIC NR

Reduces noise from the microphone.

► **ON**

Reduces noise from the microphone.
NR appears on the status check screen.

OFF

Does not reduce noise from the microphone.

Notes

- The setting is not effective when you set the INPUT1 switch to LINE.

INPUT1 TRIM

Adjusts the input signal level from INPUT1.
You can select from [-18dB], [-12dB], [-6dB], [0dB], [6dB] and [12dB]. The default setting is [0dB].

Notes

- The setting is not effective when you set the INPUT1 switch to LINE.

INPUT1 WIND

► **OFF**

Disables wind noise reduction.

ON

Enables wind noise reduction.
appears on the status check screen.

Notes

- The setting is not effective when you set the INPUT1 switch to LINE.

INPUT2 MIC NR

INPUT2 TRIM

INPUT2 WIND

You can set INPUT2 in the same way as INPUT1.

Tips

- 48 dBu is set as 0dB in your camcorder.
- Set [INPUT TRIM] to [0dB] for the supplied microphone (ECM-XM1).
- Set [INPUT TRIM] to [12dB] for the optional microphone (Sony ECM-NV1).
- The INPUT TRIM function adjusts the input level from an external microphone. When using a highly sensitive microphone or recording loud sound, set this to the minus side. When using a less sensitive microphone or recording quiet sound, set it to the plus side.

- When recording loud sound, the sound may be distorted at either the input point or the recording point. If it is distorted at the input point, adjust the sound using the INPUT TRIM function. If it is distorted at the recording point, lower the total volume level manually.
- If you set INPUT TRIM too far to the minus side, the microphone volume becomes too low, resulting in a poor signal to noise ratio.
- Test the effect of the INPUT TRIM function according to the microphone used or the sound field of the recording site before actual recording.

AUDIO CH SEL

►**CH1,CH2**

Reproduces sound of CH1 and CH2 in respective channels.

CH1

Reproduces sound of CH1 in channels 1 and 2.

CH2

Reproduces sound of CH2 in channels 1 and 2.

Tips

- When you select [CH1,CH2] and play back a tape on your camcorder, sound of CH1 + CH2 comes out of the speakers.

DV AUDIO MIX DVCAM DV SP

You can monitor the sound dubbed from another device or recorded through 4-channel microphone during playback. You can set how to output the sound.

►**CH1,CH2**

Outputs only the sound recorded in CH1 and CH2 during recording.

MIX

Outputs mixed sound of the sound recorded in CH1 and CH2 during recording and the sound dubbed in CH3 and CH4.

CH3,CH4

Outputs only the sound dubbed in CH3 and CH4.

(DISPLAY SET) menu

Display settings of the display and the viewfinder (MARKER/VF B.LIGHT/DISP OUTPUT, etc.)

The default settings are marked with ▶. The indicators in parentheses appear when the items are selected.
See page 64 for details on selecting menu items.

Press the MENU button → select the (DISPLAY SET) with the SEL/PUSH EXEC dial.

ZEBRA (AS)

You can display a zebra pattern as a guide for adjusting brightness.

■ ON/OFF

When you select [ON], and the brightness level appear on the screen. The zebra pattern will not be recorded on a tape or a "Memory Stick Duo."

■ LEVEL

You can select the brightness level between 70 and 100 or 100+.

Tips

- The zebra pattern is a strip pattern displayed over a part of an image on the screen when the part is higher than a preset brightness level.

HISTOGRAM

You can adjust the iris while referring to a histogram. A histogram is a graph that shows the distribution of the image brightness. You can use the histogram as a guide for adjusting the iris. The histogram will not be recorded on a tape or a "Memory Stick Duo."

▶ OFF

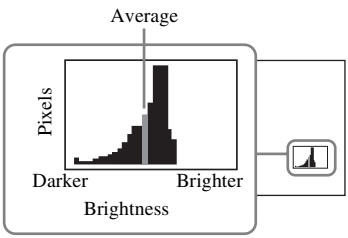
Does not display a histogram.

NORMAL

Displays a histogram.

ADVANCE

Displays a histogram, and a bar that indicates an average of the brightness levels around the center of an image (within the marker) on the histogram.



Tips

- The left area on the graph shows the darker areas of the image while the right area shows the brighter areas.
- A vertical line that indicates the brightness level of [ZEBRA] will be displayed on the histogram when you set [ZEBRA] to [ON].

PEAKING (AS)

■ ON/OFF

When you select [ON], you can display an image on the screen with its details enhanced. This function helps you to adjust the focus. The default setting is [OFF].

■ LEVEL

You can select a peaking sensitivity from [HIGH], [MIDDLE] and [LOW]. The default setting is [MIDDLE].

Notes

- You cannot record an image with enhanced details on a tape or a "Memory Stick Duo."

Tips

- You can focus more easily using this function in combination with the expanded focus function (p. 29).

MARKER (AS)

ON/OFF

When you select [ON], you can display markers. The default setting is [OFF]. Markers will not be recorded on a tape or "Memory Stick Duo."

CENTER

When you select [ON], you can display a marker at the center of the screen. The default setting is [ON].



ASPECT

When you select [ON], you can display markers at boundaries of display area defined by the aspect ratio, which you can select from [4:3], [13:9] and [14:9]. The default setting is [OFF].



SAFETY ZONE

When you select [ON], then [80%] or [90%], you can display markers at boundaries of display area that regular home TVs can display. The default setting is [OFF].



GUIDEFRAME

When you select [ON], you can display frame markers that help you to check horizontal and vertical positions of a subject. The default setting is [OFF].



Notes

- You cannot display markers on an external device connected to your camcorder via an analog jack.
- You cannot display markers when you set [DATE REC] to [ON].

Tips

- You can display all types of markers at the same time.
- You can obtain a balanced composition by positioning the subject at the cross points of the guideframe marker.
- You can display markers only on the LCD panel and viewfinder. You cannot display them on an external device.

CAM LEVELING

When you set this function to [ON], you can display a level meter to check the level of your camcorder. The default setting is [OFF].

EXP.FOCUS TYPE

You can set a type of the expanded focus display.

► TYPE 1

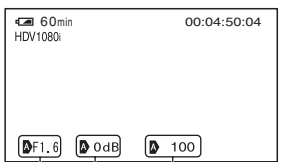
Simply enlarges images.

TYPE 2

Enlarges and shows images in white and black.

CAM DATA DSP (Camera data display)

When you set this function to [ON], you can constantly display the iris, shutter speed and gain settings on the screen. The default setting is [OFF].

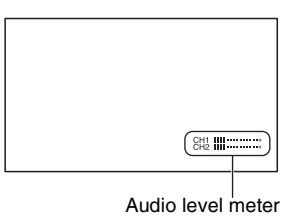


Tips

- The settings appear on the screen during the manual adjustment regardless of the settings of this function.
- indicates that the settings are automatically adjusted values.
- The displayed settings are different from the settings that will be displayed when you press the DATA CODE button (p. 53).

AU.LVL DISP (Audio level display)

When you set this function to [ON], you can display the audio level meter on the screen. The default setting is [ON].



ZOOM DISPLAY

▶ BAR

Displays a bar that indicates the zoom position.

NUMBER

Displays a number (0 through 99) that indicates the zoom position.

FOCUS DISP

You can select how to display the focal distance during manual focus.

▶ METER

Displays the focal distance in meters.

FEET

Displays the focal distance in feet.

SHUTTER DISP

You can select how to display the shutter speed.

▶ SECOND

Displays the shutter speed in seconds.

DEGREE

Displays the shutter speed in degrees.

The shutter speed equal to the period that your camcorder reads image data from the image sensor is defined as 360 degrees. The degree is calculated based on this definition and displayed.

– When [SCAN TYPE] is set to [50], 1/50 second is defined as 360 degrees.

– When [SCAN TYPE] is set to [25], 1/25 second is defined as 360 degrees.

For details on [SCAN TYPE], see [HDV PROGRE.] (p. 84) or [DV PROGRE.] (p. 84).

Notes

- When you press the DATA CODE button, the shutter speed will be displayed in seconds regardless of the setting of this function.

Tips

- Shutter speed slower than 360° are displayed in multiples of 360°, such as 360° × 2.

LCD BRIGHT

You can adjust the brightness of the LCD screen. Changes in the LCD brightness will not affect the brightness of recording images.

Tips

- You can also turn off the LCD backlight (p. 18).

LCD COLOR

You can adjust the color level of the LCD panel. Changes in the LCD color level will not affect the color level of recording images.

LCD BL LEVEL

You can adjust the backlight level of the LCD screen.

►NORMAL
Standard brightness.

BRIGHT
Brightens the LCD screen.

Notes

- When you connect your camcorder to outside power sources, [LCD BL LEVEL] is automatically set to [BRIGHT].
- When you select [BRIGHT], the recordable time with the battery is slightly reduced.

VF B.LIGHT

You can adjust the brightness of the viewfinder.

►NORMAL
Standard brightness.

BRIGHT
Brightens the viewfinder screen.

Notes

- When you connect your camcorder to outside power sources, [BRIGHT] is automatically selected for the setting.
- When you select [BRIGHT], the recordable time with the battery is slightly reduced.

VF COLOR

►ON
Displays images in the viewfinder in color.

OFF
Displays images in the viewfinder in black and white.

VF POWERMODE

►AUTO
Turns on the viewfinder while you close the LCD panel or record in mirror mode.

ON
Always turns on the viewfinder.

LETTER SIZE

►NORMAL
Displays the menu in regular letter size.

2×
Displays the selected menu items in letter size, the height of which is doubled.

REMAINING

►AUTO
Displays the remaining time of a tape for about 8 seconds in the following situation:

- When you set the POWER switch to VCR or CAMERA with a cassette inserted.
- When you press ► (Play) or the DISPLAY/BATT INFO button.

ON
Always displays the remaining time of a tape. The remaining time is not displayed when you insert a new tape or a tape that is

rewound to the beginning. It is displayed when you start playback or recording.

DISP OUTPUT

You can select outputs to which display information, such as time code, is outputted.

►LCD PANEL
Outputs the information to the LCD screen and viewfinder.

V-OUT/PANEL
Outputs the information to the LCD screen and composite output.

ALL OUTPUT
Outputs the information to the LCD screen, HDMI output, component output and composite output.

(IN/OUT REC) menu

Recording settings, input and output settings (REC FORMAT/HDV PROGRE./ VIDEO OUT/EXT REC CTRL, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.
See page 64 for details on selecting menu items.

Press the MENU button→ select the (IN/OUT REC) with the SEL/PUSH EXEC dial.

REC FORMAT

You can select a recording format.

►HDV1080i (HDV1080i)
Records in the HDV1080i format.

DV (DVCAM DV SP)
Records in the DVCAM (DV) format.
Set also [DV REC MODE] when you record in this format.

Notes

- Set also [i.LINK SET] when you output a movie to an external device through an i.LINK cable (p. 86).

VCR HDV/DV

You can select a type of output signal to an external device for playing back a movie on the device. Select [AUTO] in most cases. When you connect your camcorder to an external device with an i.LINK cable, select a type of input and output signals to and from the external device via the HDV/DV jack. You can record or play back a movie reproduced by the selected type of signals.

►AUTO
Automatically switches between HDV signals and DV signals during playback.
During the i.LINK connection, recognizes HDV signals and DVCAM (DV) signals, and automatically inputs or outputs the

signals to or from the external device via the HDV/DV (i.LINK) jack for recording or playback.

HDV (HDV1080i)
Plays back only HDV format sections of a tape.

During the i.LINK connection, inputs or outputs only HDV signals to or from an external device via the HDV/DV (i.LINK) jack for recording or playback. Select this setting when you connect your camcorder to your computer.

DV (DV)
Plays back only DVCAM (DV) format sections of a tape.

During the i.LINK connection, inputs or outputs only DVCAM (DV) signals to or from an external device via the HDV/DV (i.LINK) jack for recording or playback. Select this setting when you connect your camcorder to your computer.

Notes

- Make sure to disconnect the i.LINK cable prior to changing the setting. Otherwise, a video device may not recognize video signals.
- When you select [AUTO], images and sounds may be cut off on switching between HDV signals and DVCAM (DV) signals.
- When you set [i.LINK SET] → [HDV → DV CONV] to [ON], the following signals will be outputted:
  - [AUTO]: HDV signals are converted to DVCAM (DV) signals and outputted. DVCAM (DV) signals are outputted without any conversion.
  - [HDV]: HDV signals are converted to DVCAM (DV) signals and outputted. DVCAM (DV) signals will not be outputted.
  - [DV]: DVCAM (DV) signals are outputted without any conversion. HDV signals will not be outputted.

HDV PROGRE. HDV1080i

REC TYPE

You can select an HDV recording format from [INTERLACE] and [PROGRESSIVE].

SCAN TYPE

You can select a scan type for recording in HDV format.

►50
Records by the interlace scan.

25
Records 25 frames per second.

Notes

- Selectable [SCAN TYPE] settings differ depending on the setting of [REC TYPE].
  - [INTERLACE]: [50], [25]
  - [PROGRESSIVE]: [25]
- You can only play back a tape recorded with the [REC TYPE] set to [PROGRESSIVE] on a device that supports playback of a tape recoded by progressive scanning.

DV PROGRE. DVCAM DV SP

SCAN TYPE

You can select a scan type for recording in DVCAM/DV format.

►50
Records by the interlace scan.

25
Records 25 frames per second.

DV REC MODE (DV Recording mode) DVCAM DV SP

This function is available only when you set [REC FORMAT] to [DV].

►DVCAM (DVCAM)
Records in the DVCAM format.

DV SP (DV SP)
Records in the SP (Standard Play) mode of the DV format to record for a longer time than in the DVCAM format.

Notes

- Mosaic-like disturbance or audio interruption may occur when you play back a movie recorded in the DV SP mode by another device.

• Image may be distorted or time code may not be properly connected between the scenes recorded in the DVCAM mode and DV SP mode.

DV WIDE REC DVCAM DV SP

You can record a movie in an aspect ratio that matches that of a TV that you want to connect. Refer also to the instruction manuals that come with the TV.

►ON

Records a movie in an aspect ratio that matches the full screen of a 16:9 (wide) TV.

OFF (4:3)

Records a movie in an aspect ratio that matches the full screen of a 4:3 TV.

Notes

- Set [DV WIDE CONV] correctly to suite a TV that you want to connect for playback (p. 84).
- The aspect ratio will be fixed to 16:9 and you cannot set it to 4:3 when you record in HDV format.

VIDEO OUT

■ COMPONENT

You can select [576i] or [1080i/576i] depending on your TV when you connect your camcorder to a TV via a component cable.

576i

Supports connection between your camcorder and a TV with a component input jack that supports the 576i format.

►1080i/576i

Supports connection between your camcorder and a TV with a component input jack that supports the 1080i format.

■ DOWN CONVERT

You can select a down convert type when you down-covert HDV signal to DV signal. Use this function for signals outputting from the following output jacks:

– Component (576i)
– S Video
– Audio/Video

►SQUEEZE

Outputs a horizontally compressed image while maintaining its original height.

LETTER BOX

Outputs an image with black bars added to the top and bottom of the original image, while maintaining the original aspect ratio.

EDGE CROP

Outputs the central portion of the original image by cropping its right and left edges.

Notes

- When you view a movie recorded in the DVCAM (DV) format with [DV WIDE REC] set to [ON] on a standard 4:3 TV, images of the movie may appear vertically compressed. In such a case, set [DV WIDE CONV] to [LETTER BOX] or [EDGE CROP].

■ DV WIDE CONV

You can select a down convert type when you down-covert DV widescreen signal to DV signal.
Use this function for signals outputting from the following output jacks:

– Component (576i)
– S Video
– Audio/Video

►SQUEEZE

Outputs a horizontally compressed image while maintaining its original height.

LETTER BOX

Outputs an image with black bars added to the top and bottom of the original image, while maintaining the original aspect ratio.

EDGE CROP

Outputs the central portion of the original image by cropping its right and left edges.

i.LINK SET

■ HDV → DV CONV

When you set this function to [ON], you can convert HDV format signals to DV format signals and output the DV format signals to an external device via the HDV/DV (i.LINK) jack. You can output DV format signals without any format conversion. The default setting is [OFF].

■ DOWN CONVERT

You can set a down convert type when you set [HDV → DV CONV] to [ON] to convert HDV format signals to DV format signals.

►SQUEEZE

Outputs a horizontally compressed image while maintaining its original height.

EDGE CROP

Outputs the central portion of the original image by cropping its right and left edges.

Notes

- For i.LINK connection, see [VCR HDV/DV] (p. 83).
- Disconnect the i.LINK cable before setting [i.LINK SET]. Otherwise, the connected video device may not be able to recognize the video signal from your camcorder.

EXT REC CTRL

You can connect your camcorder to an HDV/DVCAM/DV compatible device (digital HD video camera recorder, digital video camera recorder, hard disc recorder, etc.) with an i.LINK cable, and record movies on your camcorder and the connected device simultaneously, or continue recording from your camcorder to the connected device.
Refer also to the instruction manuals supplied with the connecting devices.

■ REC CTL MODE

►OFF

Does not record on a connected device.

SYNCHRONOUS (EXT)

Records movies, sound and time code on a connected device in synchronization with your camcorder.

RELAY (EXT)

Records movies, sound and time code on a connected device when a tape on your camcorder reaches close to the end during recording.

EXT ONLY (EXT)

You can operate an external recording unit* with the REC START/STOP button of your camcorder.

*HVR-MRC1(supplied) or HVR-DR60 (optional)

Notes

- When this function is set to [EXT ONLY], does not flash even when there is no tape inserted.
- You can use the REC START/STOP button of your camcorder as a recording start/stop button for the external recording unit when you set this function to [EXT ONLY]. Use the REC button of the video control buttons (p. 135) to start recording on a tape or the STOP button to stop recording.
- EXT (EXT ONLY) flashes when you connect an external recording unit that is not supported by [EXT ONLY].

■ STBY COMMAND

►REC PAUSE

Stops recording operation of a connected device by putting it in pause when you stop recording operation of your camcorder.

STOP

Stops recording operation of a connected device when you stop recording operation of your camcorder.

00:00 (TC/UB SET) menu

(TC PRESET/UB PRESET/TC LINK, etc.)

The default settings are marked with ►.
The indicators in parentheses appear when the items are selected.
See page 64 for details on selecting menu items.

Press the MENU button → select the 00:00 (TC/UB SET) with the SEL/PUSH EXEC dial.

TC PRESET

■ PRESET

You can preset the time code.

① Select [TC PRESET] with the SEL/PUSH EXEC dial.
② Select [PRESET] with the SEL/PUSH EXEC dial.
③ Select the first 2 digits with the SEL/PUSH EXEC dial.
You can set the time code between 00:00:00:00 and 23:59:59:24.
④ Set other digits by repeating step ③.
⑤ Select [OK] with the SEL/PUSH EXEC dial.

■ RESET

You can reset the time code (00:00:00:00). Select [RESET] in step ① of the [PRESET].

TC COUNTUP (AS)

You can increment the hour of time code by 1 and reset the minute, second and frame of time code when you execute this function.

Notes

- This function is available only when you set [TC MAKE] to [PRESET].

UB PRESET

■ PRESET

You can preset the user bit.

① Select [UB PRESET] with the SEL/PUSH EXEC dial.
② Select [PRESET] with the SEL/PUSH EXEC dial.
③ Select the first 2 digits with the SEL/PUSH EXEC dial.
④ Set other digits by repeating step ③.
⑤ Select [OK] with the SEL/PUSH EXEC dial.

■ RESET

You can reset the user bit (00 00 00 00). Select [RESET] in step ① of the [PRESET].

TC RUN

You can select how the time code advances.

►REC RUN

Advances the time code only during recording.
Select this setting to record the time code continuous from the last time code of the previous recording.

FREE RUN

Advances the time code regardless of operation of your camcorder.
Select this setting to save the actual time in the time code.

TC MAKE

►REGENERATE

Reads the last time code of the previous recording from the tape and records the new time code consecutively from the last time code during the backspace editing.
The time code runs in [REC RUN] mode regardless of the setting of [TC RUN].

PRESET

Records the newly set time code on the tape.

TC LINK

You can synchronize the time codes of multiple camcorders.
This function is useful for editing movies recorded by multiple camcorders.

① Insert a tape to the main camcorder from which you want to generate the time code.
② Set the POWER switches of the main and sub camcorders to CAMERA.
③ Connect the sub camcorder to the main camcorder with an i.LINK cable.
④ Set the main and sub camcorder as follows:
- Set [TC RUN] to [FREE RUN] (p. 87).
- Set [TC MAKE] to [PRESET] (p. 87).

Set the sub camcorders as follows:

⑤ Select [TC/UB SET] → [TC LINK] with the SEL/PUSH EXEC dial.
The message [Synchronize TC with connected device?] appears.
⑥ Select [YES] to synchronize the time code of the sub camcorder with that of the main camcorder. Disconnect the i.LINK cable from your camcorders when synchronization is completed. You can record with the synchronized time codes using those camcorders.

Notes

- If you want to execute [TC LINK] for more than two camcorders, repeat the steps for multiple sub camcorders with one main camcorder.
- Some frame shifting may occur over time after time code synchronization.
- Some frame shifting may occur if you turn the power off and back on. In such a case, set [TC LINK] again.

UB TIME REC

►OFF

Does not save the actual time in the user bit code.

ON

Saves the actual time in the user bit code.

UB-DATE/TC-TIME

You can save the date and time set in your camcorder in the user bit and time code, respectively, when you do this function.

Notes

- This function is available in the following cases:
  - [TC MAKE] : [PRESET]
  - [TC RUN] : [FREE RUN]
  - [UB TIME REC] : [OFF]
- The time lag may occur between the set time code and the actual time as time goes on. Do [UB-DATE/TC-TIME] again prior to recording.
- The date saved in the user bit will not be automatically updated even when the actual date has been changed.

(MEMORY SET) menu

Settings for the "Memory Stick Duo" (ALL ERASE/FORMAT, etc.)

The default settings are marked with ▶. The indicators in parentheses appear when the items are selected.

See page 64 for details on selecting menu items.

Press the MENU button → select the (MEMORY SET) with the SEL/PUSH EXEC dial.

ALL ERASE

You can delete all the still images without image protection on a "Memory Stick Duo" or in the selected folder.

① Select [ALL FILES] or [CURRENT FLDR].
[ALL FILES]: Deletes all the images on the "Memory Stick Duo."
[CURRENT FLDR]: Deletes all the images in the currently selected folder.
② Select [YES] → [YES] with the SEL/PUSH EXEC dial.
[Erasing all data...] appears.
[Completed.] appears when all unprotected images are deleted.

Notes

- Release the write protect tab on the "Memory Stick Duo" beforehand for the "Memory Stick Duo" with the write-protect tab (p. 119).
- The folder will not be deleted even when you delete all the images in the folder.
- Do not do any of the following while [Erasing all data...] is displayed:
  - Operate the POWER switch/buttons.
  - Eject the "Memory Stick Duo."

FORMAT

You do not need to format the "Memory Stick Duo" since it is already formatted at the factory. If you want to format the "Memory Stick Duo," select [YES]→[YES].

Notes

- Do not do any of the following while [Formatting…] is displayed:
  - Operate the POWER switch/buttons.
  - Eject the "Memory Stick Duo."
- Formatting erases everything on the "Memory Stick Duo" including protected image data and newly created folders.

FILE NO.

▶SERIES

Assigns file numbers in sequence even if the "Memory Stick Duo" is replaced with another one. The file number is reset when a new folder is created or the recording folder is replaced with another.

RESET

Resets the file number to 0001 each time the "Memory Stick Duo" is changed.

NEW FOLDER

When you select [YES], you can create a new folder (102MSDCF to 999MSDCF) on a "Memory Stick Duo." When a folder is full (a maximum of 9,999 images are stored), a new folder is automatically created.

Notes

- You cannot delete the new folder once you have created it on your camcorder. Format the "Memory Stick Duo" (p. 89) or delete it on your computer.
- The number of recordable pictures on a "Memory Stick Duo" may decrease as the number of folders increases.

Press the MENU button → select the (MEMORY SET) with the SEL/PUSH EXEC dial.

REC FOLDER (Recording folder)

You can select a folder in which you want to store still images.
Select the folder with the SEL/PUSH EXEC dial.

Tips

- The still images will be stored in the 101MSDCF folder by default.
- Once you store the still images in the current folder, the folder is selected as a playback folder.

PB FOLDER (Playback folder)

You can select a folder in which still images you want to view are stored.
Select the folder with the SEL/PUSH EXEC dial.

(OTHERS) menu

Settings while recording on a tape or other basic settings (QUICK REC/BEEP, etc.)

The default settings are marked with ►.
The indicators in parentheses appear when the items are selected.
See page 64 for details on selecting menu items.

Press the MENU button → select the (OTHERS) with the SEL/PUSH EXEC dial.

CAMERA PROF. (Camera profile)

You can save up to 99 camera setting profiles on a “Memory Stick Duo” and two profiles in your camcorder. Using these saved profiles let you quickly obtain suitable camera settings later. When using multiple camcorders of this model, you can save the setting on a “Memory Stick Duo” and load them into the other camcorders.

Tips

- You can save menu settings, picture profiles and button settings as a camera profile.

■ To load a camera profile

You can load a camera profile and use it on your camcorder.

① Select [LOAD] with SEL/PUSH EXEC dial.
② Select the camera profile that you want to load with the SEL/PUSH EXEC dial.
③ Select [YES] in the check screen. Your camcorder is restarted and the selected camera profile becomes effective.

Notes

- You cannot load camera profile that has been saved by a different model of camcorder or edited on a computer.

■ To save a camera profile

① Select [SAVE] with the SEL/PUSH EXEC dial.
② Select [MEMORY STICK] with the SEL/PUSH EXEC dial to save the camera profile on the “Memory Stick

Duo" or [CAMERA] to save it in your camcorder.

③ Select [NEW FILE] or an existing profile name with the SEL/PUSH EXEC dial.

④ Select [YES] in the check screen with the SEL/PUSH EXEC dial.
The camera profile is saved.

Tips

- When you select [NEW FILE] in [MEMORY STICK], a camera profile is saved as [MS01] the fist time you save a camera profile.
- When you select [NEW FILE] in [CAMERA], a camera profile is saved as [CAM1] or [CAM2].
- When you select an existing camera profile, the new camera profile is overwritten.
- You cannot view nor edit a camera profile saved on a "Memory Stick Duo" on your computer.
- You can save a camera profile on a "Memory Stick Duo" that has still image data.

■ To change the camera profile name

You can change the camera profile name.

① Select [PROFILE NAME] with the SEL/PUSH EXEC dial.

② Select the camera profile of which you want to change the name with the SEL/PUSH EXEC dial.
[PROFILE NAME] screen appears.

③ Change the profile name with the SEL/PUSH EXEC dial.

Tips

- You can enter the name in the same way as the picture profile (p. 41).

④ Select [OK] with the SEL/PUSH EXEC dial.
Profile name is changed.

■ To delete camera profile settings

① Select [DELETE] with the SEL/PUSH EXEC dial.

② Select the camera profile you want to delete with the SEL/PUSH EXEC dial.

③ Select [YES] on the check screen.

■ To copy a camera profile

You can copy camera profile saved on your camcorder to a "Memory Stick Duo."

① Select [COPY] with the SEL/PUSH EXEC dial.

② Select the camera profile that you want to copy with the SEL/PUSH EXEC dial.

③ Select [MEMORY STICK] or [CAMERA] for a "Memory Stick Duo" or your camcorder as a copy destination of the camera profile.

④ Select [NEW FILE] or an existing profile name with the SEL/PUSH EXEC dial.

⑤ Select [YES] on the check screen.

Tips

- You can copy a camera profile saved on a "Memory Stick Duo" to your camcorder.

ASSIGN BTN

See page 43.

CLOCK SET

See page 20.

WORLD TIME

When you use your camcorder abroad, you can adjust the clock to the local time by setting the time difference with the SEL/PUSH EXEC dial.
When you set the time difference to 0, the clock returns to the original setting.

LANGUAGE

You can select the language to be used on the LCD screen.

Tips

- Your camcorder offers [ENG[SIMP]] (simplified English) in case that you cannot find your native tongue among the options.

PB ZOOM (Playback zoom)

When you set this function to [ON], you can enlarge movie images about 1.1 to 5 times (still images about 1.5 to 5 times) with the handle zoom lever. The default setting is [OFF]. To end the zoom, press and hold the W side of the handle zoom lever until it stops.

Tips

- To move the zoom horizontally, press the SEL/PUSH EXEC dial, then turn the dial. To move the zoom vertically, press the SEL/PUSH EXEC dial one more time, then turn the dial.

QUICK REC HDV1080i

You can slightly reduce the recording start point time when resuming recording by changing the POWER switch from OFF to CAMERA.

►OFF

It takes some time to restart recording from the state that the drum has stopped rotating, but the transition from the last recorded scene is smooth.

ON (Q.REC)

The time shortens slightly until recording restarts from the state that the drum has stopped rotating, but the transition from the last recorded scene may not be smooth.

Select this when you do not want to miss a recording chance.

Tips

- When this function is set to [ON], the interval between scenes freezes for a moment (editing on your computer is recommended).
- When the camcorder is left in standby for more than about 3 minutes, your camcorder exits from standby (the drum stops rotating) to prevent tape wear and battery loss. Since the power does not turn off, you can restart recording by pressing the REC START/STOP button again.

DATE REC

►OFF

Does not superimpose the date and time on images.

ON

Superimposes the date and time on images.

Tips

- When {DV WIDE REC] is set to [OFF], the date and time are displayed outside the 4:3 area but properly recorded on images.
- When you record in the HDV format, the date and time are displayed at different positions during recording and playback.

BEEP

►OFF

Cancels the melody.

ON

Activates a melody when you start/stop recording.

REC LAMP[F] (Recording lamp [front]) AS

When you set this function to [OFF], you can turns off the front camera recording lamp during recording. The default setting is [ON].

REC LAMP[R] (Recording lamp [rear]) AS

When you set this function to [OFF], you can turns off the rear camera recording lamp during recording. The default setting is [ON].

REMOTE CTRL (Remote control)

When you set this function to [ON], you can use the supplied Remote Commander (p. 136). The default setting is [ON].

Tips

- Set to [OFF] to prevent your camcorder from responding to a command sent by another VCR remote control unit.

HOURS METER

You can display the cumulative operation time of your camcorder with the total hours of operation, drum rotation, tape running, or the total number of tape unthreading operations.

OPERATION

Displays the total hours of operation in 10-hour increments.

DRUM RUN

Displays the total hours of drum rotation in 10-hour increments.

TAPE RUN

Displays the total hours of tape running in 10-hour increments.

THREADING

Displays the total number of tape unthreading operation in 10-operation increments.

Dubbing to VCR, DVD/HDD device, etc.

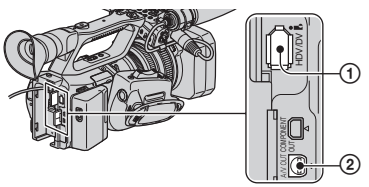
Connect your camcorder to the wall socket using the supplied AC Adaptor for this operation (p. 14). Refer also to the instruction manuals supplied with the devices to be connected.

Connecting to external devices

The connection method and the image quality will differ depending on the VCR, DVD/HDD device and the connectors used.

Jacks on your camcorder

Open the jack cover and connect the cable.



: Signal flow

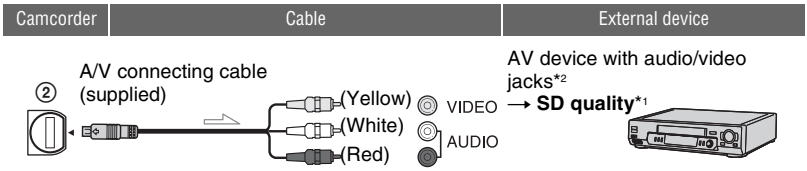
Camcorder	Cable	External device
①	i.LINK cable (optional) — i.LINK	HDV1080i compatible device → **HD quality***1

• i.LINK jack which is compatible with HDV1080i specification is required on the external device.

①	i.LINK cable (optional) — i.LINK	AV device with i.LINK jack → **SD quality***1

②	A/V connecting cable with S VIDEO (optional): S VIDEO, VIDEO, (White), AUDIO, (Red), (Yellow)	AV device with S VIDEO jack → **SD quality***1

: Signal flow



*1 Pictures recorded in the DVCAM (DV) format are dubbed in the SD (standard definition) quality, regardless of the connection.

*2 When connecting your camcorder to a monaural device, connect the yellow plug of the A/V connecting cable to the video jack on the device, and connect the white (left channel) or red (right channel) plug to the audio jack on the device.

Notes

- You cannot dub pictures using the HDMI cable.

Using an i.LINK cable (optional)

The dubbed format (HDV/DV) differs depending on the recording format or the format supported by the VCR/DVD device. See the table below for selecting the appropriate settings, and perform necessary menu setting.

Notes

- Disconnect the i.LINK cable before changing these menu settings, otherwise the VCR/DVD device may not correctly identify the video signal.

Tips

- This camcorder has a 6-pin i.LINK terminal. Select a cable that fits the terminal on the device to be connected.

Copy format	Camcorder recording format	Format supported by the VCR/DVD device		Menu setting	
		HDV format*1	DVCAM (DV) format	[VCR HDV/DV] (p. 83)	[i.LINK SET] (p. 86)
Copy HDV recording as HDV	HDV	HDV	–*3	[AUTO]	[OFF]
Convert HDV recording to DVCAM (DV)	HDV	DVCAM (DV)	DVCAM (DV)		[ON]
Copy DVCAM (DV) recording as DVCAM (DV)	DVCAM (DV)	DVCAM (DV)	DVCAM (DV)		[OFF]
When tape is recorded in both HDV and DVCAM (DV) format					
Convert both HDV and DVCAM (DV) format to DVCAM (DV)	HDV/ DVCAM (DV)	DVCAM (DV)	DVCAM (DV)	[AUTO]	[ON]
Copy only portions recorded in HDV format	HDV	HDV	–*3	[HDV]	[OFF]
	DVCAM (DV)	–*2	–*3		
Copy only portions recorded in DVCAM (DV) format	HDV	–*2	–*2	[DV]	[OFF]
	DVCAM (DV)	DVCAM (DV)	DVCAM (DV)		

*1 Recording device compliant with the HDV1080i specification.

*2 The tape advances, but no video or sound is recorded (blank).

*3 Picture is not recognized (no recording is made).

Notes

- When [VCR HDV/DV] is set to [AUTO], and the signal switches between HDV and DVCAM (DV) formats, the picture and sound are interrupted temporarily.
- When the recorder is HVR-Z7E/Z7P, set [VCR HDV/DV] to [AUTO] (p. 83).
- When the player and the recorder are both HDV1080i compatible devices such as HVR-Z7E/Z7P and connected with the i.LINK cable, after pausing or stopping and then resuming the recording, the images will be a bit choppy or rough at that point.
- Set [DISP OUTPUT] to [LCD PANEL] (the default setting) when connecting with an A/V connecting cable (p. 83).

When connecting with the A/V connecting cable with S VIDEO (optional)

Connect with S VIDEO jack instead of the video plug (yellow). This connection produces pictures more faithfully. This connection produces higher quality DVCAM (DV) format pictures. The audio will not be output when you connect with the S VIDEO cable alone.

Dubbing to another device

1 Prepare your camcorder for playback.

Insert the recorded cassette.
Slide the POWER switch to VCR.

Set [DOWN CONVERT] according to the playback device (TV, etc.) (p. 85).

2 Prepare your VCR/DVD device for recording.

When dubbing to the VCR, insert a cassette for recording.
When dubbing to the DVD recorder, insert a DVD for recording.

If your recording device has an input selector, set it to the appropriate input (such as video input1 and video input2).

3 Connect your VCR/DVD device to your camcorder as a recording device.

See page 94 for connection details.

4 Start playback on the camcorder, and recording on the VCR/DVD device.

Refer to the operating instructions supplied with your recording device for details.

5 When dubbing is complete, stop your camcorder and the VCR/DVD device.

Notes

- The following cannot be output via the i HDV/DV interface (i.LINK):
  - Indicators
  - Titles that are recorded on other camcorders
- Pictures recorded in the HDV format are not output from the i HDV/DV interface (i.LINK) jack during playback pause or in any playback mode other than normal playback.
- Note the following when connecting with an i.LINK cable:
  - The recorded picture becomes rough when a picture is paused on your camcorder while recording to a VCR/DVD device.
  - Data codes (date/time/camera settings data) may not be displayed or recorded depending on the device or application.
  - You cannot record the picture and sound separately.
- When dubbing to a DVD recorder from your camcorder through an i.LINK cable, you may not operate your camcorder on your DVD recorder even if its instruction manual says you can. If you can set the input mode to HDV or DV on your DVD recorder and can input/output pictures, follow the steps in "Dubbing to another device."

Tips

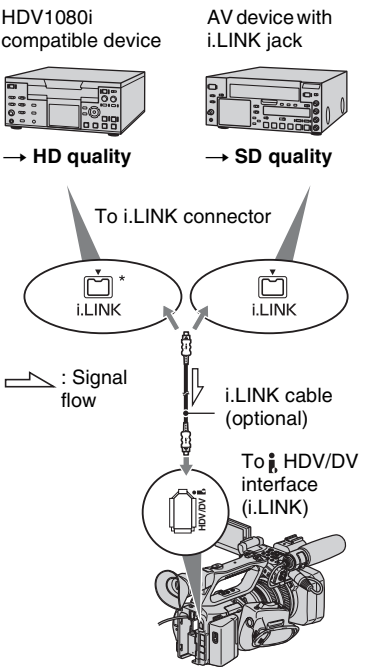
- To record the date/time and camera settings data when connected by the A/V connecting cable, display them on the screen.
- When you use an i.LINK cable, the video and sound signals are transmitted digitally, producing high quality pictures.
- When an i.LINK cable is connected, the format of the output signal (HDV OUT i.LINK or DV OUT i.LINK) will be indicated on the LCD screen of your camcorder.

Recording pictures from a VCR i.LINK

You can record pictures from a VCR on a tape. You can record a scene as a still image on a "Memory Stick Duo." You can record pictures in the HDV format by connecting an HDV1080i specification compatible device. Be sure to insert a cassette or a "Memory Stick Duo" for recording in your camcorder beforehand.
You can connect your camcorder to a VCR device using an i.LINK cable.
Connect your camcorder to the wall socket using the supplied AC Adaptor/Charger for this operation (p. 14). Refer also to the instruction manuals supplied with the devices to be connected.

Notes

- You need an i.LINK cable for this operation.
- You cannot perform this operation with the A/V connecting cable.
- Your camcorder has a 6-pin i.LINK terminal. Select a cable that fits the terminal on the device to be attached.
- Your camcorder can only record from a PAL source. For example, French video or TV programs (SECAM) cannot be recorded correctly. See page 120 for details on TV color systems.
- If you use a 21-pin adaptor to input PAL source, you need a dual direction 21-pin adaptor (optional).



* An i.LINK jack which is compatible with HDV1080i specification is required.

Recording movies

1 Set the POWER switch to VCR.

2 Set the input signal of your camcorder.

Set [VCR HDV/DV] to [AUTO] when recording from an HDV format compatible device.

Set [VCR HDV/DV] to [DV] or [AUTO] when recording from a DVCAM (DV) format compatible device (p. 83).

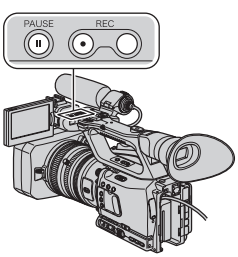
3 Connect your VCR as a player to your camcorder.

When an i.LINK cable is connected, the format of the input signal (HDV IN i.LINK or DV IN i.LINK) will be indicated on the LCD screen of your camcorder (This indicator may appear on the screen of the playback device but it will not be recorded).

4 Insert a cassette into the VCR.

5 Set your camcorder to recording pause.

While pressing II (PAUSE), press both ● REC (record) buttons simultaneously.



6 Start playing the cassette on your VCR.

The picture played on the VCR appears on the LCD screen of your camcorder.

7 Press II (PAUSE) again at the point you want to start recording.

8 Press ■ (STOP) to stop recording.

Notes

- You cannot record TV programs from the i HDV/DV interface (i.LINK).
- User bits are not recorded when dubbing from a DVCAM (DV) device via an i.LINK cable.
- You can record pictures from DV devices only in the DVCAM (DV) format.
- Note the following when connecting with an i.LINK cable:
  - The recorded picture becomes rough when a picture is paused on your camcorder while recording to a VCR.
  - You cannot record the picture and sound separately.
  - If you pause or stop the recording and restart it, the picture may not be recorded smoothly.
- If video signals inputted to your camcorder via the i HDV/DV jack experience the phenomenon of jittering (variation in frequency), that jittering is transmitted to the video signals outputted from the COMPONENT OUT jack and A/V OUT jack. When you monitor a movie on a TV connected to your camcorder via the COMPONENT OUT jack or A/V OUT jack, images may be distorted or not be displayed. Jittering will not affect recording of the movie on a tape with your camcorder but may affect recording of the movie with another VCR connected to your camcorder via the COMPONENT OUT jack or A/V OUT jack.

Tips

- When a 4:3 video signal is input, it appears with black bands on the right and left sides on the screen of your camcorder.

Recording still images

Be sure to insert a “Memory Stick Duo” for recording in your camcorder beforehand, and assign [PHOTO] to any of ASSIGN buttons (p. 43).

1 Perform steps 1 to 4 in “Recording movies.”

2 Start playing the cassette.

The pictures on the VCR appear on the screen of your camcorder.

3 Press the ASSIGN button to which [PHOTO] is assinged or the PHOTO button on the remote commander at the scene you want to record.

Notes

- The image size is 1.2M when capturing a still image from a movie recorded and played back in the HDV format. The image size is 0.2M when capturing a still image from a movie recorded and played back in the DVCAM (DV) and widescreen (16:9) formats, or VGA (0.3M) when the movie is recorded and played back in the DVCAM (DV) and 4:3 formats.

Copying movies on a tape to a computer

Connect your camcorder to the computer with an i.LINK cable.
The computer needs to have an i.LINK connector and be installed with editing software that can copy video signals.
The software required depends on the format of the recorded pictures and the format for copying to the computer (HDV or DVCAM (DV)) as shown in the table below.

Recorded format	Format for copying to the computer	Required software
HDV	HDV	Editing software capable of copying HDV signal
HDV	DVCAM (DV)	Editing software capable of copying DVCAM (DV) signal
DVCAM (DV)	DVCAM (DV)	Editing software capable of copying DVCAM (DV) signal

Notes

- The i.LINK HDV/DV jack of your camcorder does not have a power-supply function.
- You cannot copy movies using a USB cable.
- Refer to the operating instructions of the software for the details on image copying.
- Refer to the operating instructions of the editing software for the recommended connection.
- Some editing software on the computer may not work correctly.
- You cannot change format DVCAM (DV) to HDV.

The required menu settings vary depending on the recorded images and the format (HDV or DVCAM (DV)) to be copied to the computer.

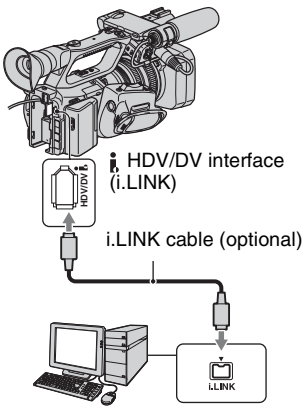
Recorded format	Format for copying to the computer	Menu setting*
HDV	HDV	[VCR HDV/DV] → [HDV] [i.LINK SET] → [HDV → DV CONV] → [OFF]
HDV	DVCAM (DV)	[VCR HDV/DV] → [HDV] [i.LINK SET] → [HDV → DV CONV] → [ON]
DVCAM (DV)	DVCAM (DV)	[VCR HDV/DV] → [DV] [i.LINK SET] → [HDV → DV CONV] → [OFF]

* See page 64 for menu settings.

Tips

- To copy HDV format images as they are without changing their format, an HDV compatible environment is required. For details, refer to your software instruction manual or contact the software manufacturer.
- To play movies by a regular DVD player, you need to create DVD video in the SD format. The DVD video is not in the HDV format.

Step:1 Connect an i.LINK cable



Notes on connecting to the computer

- Connect the i.LINK cable to the computer first, then to your camcorder. Connecting in the opposite order may cause static electricity to build up, resulting in a malfunction of your camcorder.
- The computer may freeze or may not recognize the signal from your camcorder in the following situations.
  - Connecting your camcorder to a computer that does not support the video signal formats appearing on the LCD screen of your camcorder display (HDV or DVCAM (DV)).
  - Changing [VCR HDV/DV] (p. 83) and [i.LINK SET] (p. 86) settings while connected with an i.LINK cable.
  - Changing [REC FORMAT] setting while connected with an i.LINK cable with the POWER switch set to CAMERA (p. 83).
  - Changing the POWER switch position while connected with an i.LINK cable.
- The format (HDV or DVCAM (DV)) of input/output signal appears on the LCD screen of your camcorder while connected with an i.LINK cable.

Step:2 Copying the movies

Use the supplied AC Adaptor/Charger to obtain AC power (p. 14).

① Prepare editing software (not provided).

② Turn on your computer.

③ Insert a tape into your camcorder and set the POWER switch to VCR.

④ Set the menu of your camcorder. The menu settings vary depending on the copying image.

⑤ Copy images to the computer with your software.

Notes

- If images are copied in HDV format but are not recognized, your editing software may not support HDV format. Convert the images to DVCAM (DV) format according to step ④ and copy again.
- A tape recorded in DVCAM (DV) format cannot be copied to a computer in HDV format.

Tips

- When images recorded in HDV format are copied to a computer, the file size is about 2GB (almost the same as a DV file) for a 10-minute movie if the video compression format is MPEG2.

When copying the movie in the HDV format from the computer to your camcorder

Set [VCR HDV/DV] to [HDV] and [HDV → DV CONV] of [i.LINK SET] to [OFF] (p. 83, 86).

Notes

- To copy an HDV format movie edited on a computer back onto a tape in HDV format is possible so long as your editing software supports copying HDV movies onto tape. For details, contact the software manufacturer.

When copying the movie in the DVCAM (DV) format from the computer to your camcorder

Set [VCR HDV/DV] to [DV] (p. 83).

Troubleshooting

If you run into any problems using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer.

• Power sources/LCD screen/Remote Commander···p. 103
• Cassette tapes/"Memory Stick Duo"···p. 104
• Recording···p. 105
• Playback···p. 108
• Connecting to TV···p. 110
• Dubbing/Editing/Connecting to other devices···p. 111
• Connecting to a computer···p. 111

Power sources/LCD screen/Remote Commander

The power does not turn on or abruptly turns off.

- Attach a charged battery pack to the camcorder (p. 14).
- Use the AC Adaptor/Charger to connect to a wall socket (p. 14).

The camcorder does not operate even when the power is set to on.

- Disconnect the AC Adaptor/Charger from the wall socket or remove the battery pack, then reconnect it after about 1 minute.
- Press the RESET button (p. 135) using a sharp-pointed object.

The camcorder gets warm.

- The camcorder may get warmer while you use it. This is not a malfunction.

The remaining battery time indicator does not indicate the correct time.

- Ambient temperature is too high or too low, or the battery pack has not been charged enough. This is not a malfunction.
- Fully charge the battery again. If the problem persists, the battery may be worn-out. Replace it with a new one (p. 14, 120).
- The indicated time may not be correct in certain circumstances. For example, when you open or close the LCD panel, it takes about 1 minute to display the correct remaining battery time.

The battery pack discharges too quickly.

- Ambient temperature is too high or low, or the battery pack has not been charged enough. This is not a malfunction.
- Fully charge the battery again. If the problem persists, the battery may be worn-out. Replace it with a new one (p. 14, 120).

The picture remains on the LCD screen.

- This occurs if you disconnect the DK-415 cable or remove the battery pack without turning off the power first. This is not a malfunction.

The picture in the viewfinder is not clear.

- Move the viewfinder lens adjustment lever until the picture appears clearly (p. 18).

The picture in the viewfinder has disappeared.

- If you change [VF POWERMODE] to [AUTO], the finder light remains off while the LCD panel is open (p. 82).

The supplied Remote Commander does not function.

- Set [REMOTE CTRL] to [ON] (p. 93).
- Remove any obstructions between the Remote Commander and the remote sensor.
- Keep strong light sources, such as sunlight or overhead lighting, away from the remote sensor, otherwise the Remote Commander may not function properly.
- Insert a fresh battery in the compartment with its +/– terminals matching those of the compartment (p. 136).

Another VCR malfunctions when you use the supplied Remote Commander.

- Select a commander mode other than VTR 2 for your VCR.
- Cover the sensor of your VCR with black paper.

Cassette tapes/"Memory Stick Duo"

The cassette cannot be ejected from the compartment.

- Make sure the power source (battery pack or AC Adaptor/Charger) is connected correctly (p. 14).
- Moisture condensation has occurred inside the camcorder (p. 123).

The Cassette Memory indicator or title display does not appear while using a cassette with Cassette Memory.

- This camcorder does not support Cassette Memory, so the indicator does not appear.

The remaining tape indicator is not displayed.

- Set [REMAINING] to [ON] to always display the remaining tape indicator (p. 82).

The cassette is noisier during rewinding or fast-forwarding.

- When using the DK-415 cable, rewind/fast forward speed increases (compared with battery operation) and therefore increases noise. This is not a malfunction.

You cannot delete pictures or format the "Memory Stick Duo."

- The pictures are protected. Release the protect function on your computer, etc.

Recording

The recording does not start when you press the REC START/STOP button.

- Slide the POWER switch to CAMERA (p. 24).
- The tape has reached the end. Rewind it, or insert a new cassette.
- Set the write-protect tab of the cassette to REC or insert a new cassette (p. 116).
- The tape is stuck to the drum due to moisture condensation. Remove the cassette and leave your camcorder for at least 1 hour, then re-insert the cassette (p. 123).
- Set [REC CTL MODE] of [EXT REC CTRL] to other than [EXT ONLY] (p. 86).

The handle zoom does not work.

- Set the handle zoom speed switch to FIX or VAR (p. 27).

You cannot record on the "Memory Stick Duo."

- Assign [PHOTO] to an ASSIGN button (p. 43).
- The "Memory Stick Duo" is full. Delete unnecessary pictures recorded on the "Memory Stick Duo" (p. 119).
- Format the "Memory Stick Duo" on your camcorder (p. 89) or insert another "Memory Stick Duo" (p. 22).
- You cannot record still images on the "Memory Stick Duo" in the following cases.
  – While executing [FADER]
  – While executing [SMTH SLW REC]
  – When the shutter speed is set to slower than 1/50
  – While using shot transition
  – When [SCAN TYPE] is set to [25]

You cannot record a smooth transition on a tape from the last recorded scene to the next.

- Do not record progressive pictures in different [REC TYPE] settings on the same tape.
- Perform End search (p. 45).
- Do not remove the cassette (the picture will be recorded continuously without a break even when you turn the power off).
- Do not record pictures in the HDV and DVCAM (DV) formats on the same tape.
- Do not record pictures in DVCAM mode and DV SP mode on the same tape. DVCAM DV SP
- When [QUICK REC] is set to [ON], you cannot record a smooth transition (p. 92). HDV1080i

The shutter sound is not heard when you record a still image.

- Set [BEEP] to [ON] (p. 92).
- No shutter sound will be outputted during movie recording or while an external device is connected.

End search or last scene review does not work.

- Do not eject the cassette after recording (p. 45).
- There is nothing recorded on the cassette.
- There is a blank section between recorded sections of the tape. This is not a malfunction.

Auto focus does not function.

- Set the focus ring to mode B and press the ASSIGN button to which [FOCUS] is assigned until the automatic focus function is enabled (p. 28, 43).
- Adjust the focus manually if the automatic focus does not work properly (p. 28).

Menu items are grayed out or do not work.

- You cannot select grayed out display items in the current recording/playback situation.
- There are some functions you cannot activate simultaneously. The following list shows examples of unworkable combinations of functions and menu items.

Cannot use	Situation
[BACK LIGHT], [SPOTLIGHT]	Two or more of iris, gain, and shutter speed are set manually.
[AE SHIFT]	Iris, gain, and shutter speed are all set manually.
[CNTRST ENHCR]	During [BACK LIGHT]
[FADER]	No tape is inserted.
[D.EXTENDER]	[REC TYPE] of [HDV PROGRE.] is set to [PROGRESSIVE]. [REC TYPE] of [HDV PROGRE.] is set to [INTERLACE] and [SCAN TYPE] is set to [25]. [SCAN TYPE] of [DV PROGRE.] is set to [25].
[ZEBRA], [PEAKING], [CAM DATA DSP], [HISTOGRAM]	During [COLOR BAR]
[SMTH SLW REC]	[REC TYPE] of [HDV PROGRE.] is set to [PROGRESSIVE]. [REC TYPE] of [HDV PROGRE.] is set to [INTERLACE] and [SCAN TYPE] is set to [25]. [SCAN TYPE] of [DV PROGRE.] is set to [25]. [REC CTL MODE] of [EXT REC CTRL] is set to [EXT ONLY]. During [COLOR BAR]
[MARKER]	During [DATE REC]
[LCD BL LEVEL], [VF B.LIGHT]	During using AC power source
[FOCUS MACRO]	A Carl Zeiss lens is mounted, and the focus ring is set to mode B. A Carl Zeiss lens is not mounted.
[STEADYSHOT], [FLANGE BACK]	A Carl Zeiss lens is not mounted.

Cannot use	Situation
[TC LINK]	Your camcorder is not connected to an external device via an i.LINK cable.
[TC COUNTUP]	[TC MAKE] is set to [REGENERATE].
[UB-DATE/TC-TIME]	[TC MAKE] is set to [REGENERATE]. [TC RUN] is set to [REC RUN]. [UB TIME REC] is set to [ON]. Date and time are not set.
[WORLD TIME], [DATE REC]	Date and time are not set.
[x.v.Color]	[REC FORMAT] is set to [DV].
[ECS FREQ.]	The shutter speed is not set to the ECS.
[INTERVAL REC]	[REC CTL MODE] of [EXT REC CTRL] is set to [EXT ONLY]. [REC TYPE] of [HDV PROGRE.] is set to [PROGRESSIVE]. [REC TYPE] of [HDV PROGRE.] is set to [INTERLACE] and [SCAN TYPE] is set to [25]. [SCAN TYPE] of [DV PROGRE.] is set to [25].
[DV FRAME REC]	[REC CTL MODE] of [EXT REC CTRL] is set to [EXT ONLY].
[EXT REC CTRL]	During [SMTH SLW REC] During [INTERVAL REC] During [DV FRAME REC]

Shutter speed, gain, white balance or iris cannot be adjusted manually.

- Set the AUTO/MANUAL switch to MANUAL.

Tiny spots in white, red, blue, or green appear on the screen.

- This phenomenon appears when using a slow shutter speed (p. 31). This is not a malfunction.

The subjects passing by the frame very fast appear crooked.

- This is called the focal plane phenomenon. This is not a malfunction. Because of the way that the image device (CMOS sensor) reads out image signals, the subjects passing by the frame rapidly might appear crooked depending on the recording conditions.

The screen picture is bright, and the subject does not appear on the screen.

- Set [BACK LIGHT] to [OFF].
- Set [HYPER GAIN] to [OFF].

The screen picture is dark, and the subject does not appear on the screen.

- Press and hold the DISPLAY/BATT INFO button for a few seconds to turn on the backlight (p. 18).

Continued ➡

Horizontal stripes appear on the image.

- This occurs when recording pictures under a fluorescent lamp, sodium lamp, or mercury lamp. This is not a malfunction. This can be improved by changing the shutter speed (p. 31).

Black bands appear when you record a TV screen or computer screen.

- This can be improved by adjusting the shutter speed in the extended clear scan (ECS) range (p. 31).

Fine patterns flicker, diagonal lines look jagged.

- Adjust [DETAIL] to [0] side (p. 39).

Playback

If you are playing back pictures stored on a "Memory Stick Duo," refer also to the Cassette tapes/"Memory Stick Duo" section (p. 104).

You cannot play back tape.

- Slide the POWER switch to VCR.
- Rewind the tape (p. 50).

Image data stored on a "Memory Stick Duo" cannot be played back correctly.

- Image data cannot be played back if you have modified file names or folders, or have edited the data on a computer (In this case, the file name flashes). This is not a malfunction (p. 120).
- Pictures recorded on other devices may not be played back correctly. This is not a malfunction.

The data file name is displayed incorrectly, or flashing.

- The file is damaged.
- The file format is not supported on your camcorder (p. 116).
- Only the file name is displayed if the directory structure does not conform to the universal standard.

Horizontal lines appear on the picture. The displayed pictures are not clear or do not appear.

- Video head is dirty. Clean the head using the cleaning cassette (optional) (p. 124).

You cannot hear the sound recorded with 4CH microphone recording on another camcorder.

- Set [DV AUDIO MIX] for the DVCAM (DV) format 4-ch recording (p. 78).
- You cannot reproduce the sound recorded in CH3 and CH4 on your camcorder for the HDV format 4-ch recording.

No sound or only a low sound is heard.

- Turn up the volume (p. 51).
- Set [DV AUDIO MIX] (p. 78).
- Pictures recorded using [SMTH SLW REC] do not have sounds.

The picture or sound breaks off.

- The tape was recorded in both of the HDV and DVCAM (DV) formats. This is not a malfunction.

The movies freeze for a while, or the sound breaks off.

- This occurs if the tape or video head is dirty (p. 124).
- Use the Sony mini DV cassette tape.

"---" is displayed on the screen.

- The tape you are playing back was recorded without setting the date and time.
- A blank section on the tape is being played back.
- The data code on a tape with a scratch or noise cannot be read.
- A movie recorded in the extended clear scan (ECS) range is being played back.
- When a non-Carl Zeiss lens is attached, the iris value cannot be displayed.

Noises appear and NTSC or 60i is displayed on the screen.

- The tape was recorded in a TV color system other than that of your camcorder (PAL). This is not a malfunction.

Date Search does not work correctly.

- Be sure to record more than 2 minutes after the date changed. If one day's recording is too short, your camcorder may not accurately find the point where the recording date changes.
- There is a blank section between recorded sections of the tape. This is not a malfunction.

No picture appears during End search, Rec review or Last scene review.

- The tape was recorded in both HDV and DVCAM (DV) formats. This is not a malfunction.

New sound added to a recorded tape on another camcorder is not heard.

DVCAM DV SP

- Adjust [DV AUDIO MIX] from [CH1,CH2] (original sound) side until the sound is heard appropriately (p. 78).

2/2-ST appears on the LCD screen.

- This appears when you play back a tape recorded on other recording devices using a 4ch microphone. This camcorder does not comply with the 4ch microphone recording standard.

Connecting to TV

You cannot view the picture on the TV connected with the i.LINK cable.

- You cannot view the picture in the HD (high definition) quality on the TV if an i.LINK jack of the TV is not compatible with the HDV1080i specification (p. 57). Refer to the instruction manuals supplied with your TV.
- Down convert the pictures recorded in HDV format and play back in DVCAM (DV) format (SD image quality) (p. 86).
- Connect the TV with another connecting cable, and play back pictures (p. 57).

You cannot hear the sound on the TV connected with the S VIDEO plug (S VIDEO channel) or component video plug.

- If you are using an S VIDEO plug or component video plug, make sure the red and white plugs of the A/V connecting cable are also connected (p. 57).

You cannot view the picture or hear the sound on the TV connected with the component video cable.

- Set [COMPONENT] according to the requirements of the connected device (p. 85).
- When you are using the component video cable, make sure the red and white plugs of the A/V connecting cable are connected (p. 57).

You cannot view the picture or hear the sound on the TV connected with the HDMI cable.

- Pictures in the HDV format are not output from the HDMI OUT jack, if copyright protection signals are recorded in the pictures.
- DVCAM (DV) format pictures input to the camcorder via i.LINK cable (p. 98) cannot be output.
- This occurs if you record on a tape in both HDV and DVCAM (DV) formats. Disconnect and connect the HDMI cable, or slide the POWER switch to turn on your camcorder again.

The picture appears distorted on the 4:3 TV.

- This happens when viewing a picture recorded in 16:9 (wide) mode on a 4:3 TV. Select the down conversion type from one of the following menus, depending on the recording format.
  – If the recording format is HDV, select from [DOWN CONVERT] in [VIDEO OUT] (p. 85).
  – If the recording format is DVCAM (DV), select from [DV WIDE CONV] in [VIDEO OUT] (p. 85)

Black zone appears at top and bottom of a 4:3 TV screen.

- This happens when viewing a picture recorded in the 16:9 (wide) mode on a 4:3 TV. This is not a malfunction.

Dubbing/Editing/Connecting to other devices

Pictures from connected devices cannot be zoomed.

- You cannot zoom pictures from connected devices on your camcorder.

Time code and other information appear on the display of the connected device.

- Set [DISP OUTPUT] to [LCD PANEL] while connected with an A/V connecting cable (p. 83).

You cannot dub correctly using the A/V connecting cable.

- The A/V connecting cable is not connected properly.
  Make sure that the A/V connecting cable is connected to the input jack of the other device for dubbing a picture from your camcorder.

When connected using an i.LINK cable, no picture appears on the monitor screen during dubbing.

- Set [VCR HDV/DV] according to the requirements of the connected device (p. 83).

You cannot add sound to the recorded tape.

- You cannot add sound to the recorded tape on this unit.

You cannot dub correctly using the HDMI cable.

- You cannot dub pictures using the HDMI cable.

When you copy a movie shot in wide (16:9) format using an i.LINK cable, the screen stretches vertically.

- You cannot output the aspect ratio setting using an i.LINK cable. Set the aspect ratio of the TV instead.
- Connect using an A/V connecting cable instead.

Connecting to a computer

The computer does not recognize your camcorder. i.LINK

- Disconnect the cable from the computer, then connect it again securely.
- Disconnect the cable from the computer, restart the computer, then connect the computer to your camcorder correctly.

You cannot view or copy a movie recorded on a tape to a computer. i.LINK

- Disconnect the cable from the computer, then connect it again.
- You need the editing software (optional) to copy a movie recorded on a tape to your computer (p. 100).

Your computer freezes.

- Set [VCR HDV/DV] correctly according to the connected device (p. 83).
- Disconnect the cable from your computer and camcorder. Reboot your computer, and connect your computer and camcorder following the steps in the correct order (p. 101).

Warning indicators and messages

Self-diagnosis display/Warning indicators

When an error occurs, a warning indicator appears on the LCD screen or in the viewfinder.
You can fix some problems associated with the symptoms yourself. If the problem persists even after you have tried a couple of times, contact your Sony dealer or local authorized Sony service facility.

C:(or E:) □□:□□ (Self-diagnosis display)

C:04:□□

- The battery pack is not an "InfoLITHIUM" battery pack. Use an "InfoLITHIUM" battery pack (p. 120).

C:21:□□

- Moisture condensation has occurred. Remove the cassette and leave your camcorder for at least 1 hour, then re-insert the cassette (p. 123).

C:22:□□

- Clean the head using a cleaning cassette (optional) (p. 124).

C:31:□□ / C:32:□□

- Symptoms that are not described above have occurred. Remove and insert the cassette, then operate your camcorder again. Do not perform this procedure if moisture condensation has occurred (p. 123).
- Remove the power source. Reconnect it and operate your camcorder again.
- Change the cassette. Press the RESET button (p. 135), and operate your camcorder again.

E:61:□□ / E:62:□□

- Contact your Sony dealer or local authorized Sony service facility. Inform them of the 5-digit code, which starts from "E."

101-1001(Warning indicator pertaining to files)

- The file is damaged.
- The file is unreadable (p. 120).

(Battery level warning)

- The battery pack is nearly used up.
- Depending on the operating, environment, or battery conditions, may flash, even if there are approximately 5 to 10 minutes remaining.

(Moisture condensation warning)*

- Eject the cassette, remove the power source, and then leave it for about 1 hour with the cassette lid open (p. 123).

(Warning indicators pertaining to the tape)

Slow flashing:

- There is less than 5 minutes remaining on the tape.
- No cassette is inserted.*
- The write-protect tab on the cassette is set to lock (p. 116).*

Fast flashing:

- The tape has run out.*

⏏ (Eject cassette warning)*

Slow flashing:

- The write-protect tab on the cassette is set to lock (p. 116).

Fast flashing:

- Moisture condensation has occurred (p. 123).
- The self-diagnosis display code is displayed (p. 113).

* When [BEEP] is set to [ON] (p. 92), you hear a melody when the warning indicators appear on the screen.

Warning messagess

If messages appear on the screen, follow the instructions.

Using your camcorder abroad

Power supply

You can use your camcorder in any country/region using the AC Adaptor/ Charger supplied with your camcorder within the AC 100 V to 240 V, 50/60 Hz range.

On TV color systems

Your camcorder is PAL system, so its picture can only be viewed on a PAL system TV with an AUDIO/VIDEO input jack.

System	Used in
PAL	Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Holland, Hong Kong, Hungary, Italy, Kuwait, Malaysia, New Zealand, Norway, Poland, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, United Kingdom, etc.
PAL - M	Brazil
PAL - N	Argentina, Paraguay, Uruguay.
SECAM	Bulgaria, France, Guiana, Iran, Iraq, Monaco, Russia, Ukraine, etc.
NTSC	Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Guyana, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

Viewing HDV format pictures recorded in HDV format HDV1080i

You need an HDV1080i compatible TV (or monitor) with a component jack and AUDIO/VIDEO input jack or an HDMI jack. You also need a component video cable and A/V connecting cable or an HDMI cable (optional).

Viewing DVCAM (DV) format pictures recorded in DVCAM (DV) format DVCAM DV

You need a TV with the AUDIO/VIDEO input jack. A connecting cable is also needed.

Simple setting of the clock by time difference

When you are abroad, you can easily adjust the clock to the local time by setting the time difference. Select [WORLD TIME], then set the time difference (p. 91).

HDV format and recording/ playback

Your camcorder is capable of recording in HDV/DVCAM/DV formats.
It is recommended to use a cassette with the Mini DV mark to record in the HDV/ DVCAM/DV format.
It is recommended to use a cassette with the DVCAM mark to record in the DVCAM format.
Your camcorder is not compatible with the Cassette Memory function.

What is the HDV format?

The HDV format is a video format developed to record and play back digital high definition (HD) video signals on a DV cassette.
Your camcorder adopts the Interlace mode with 1,080 effective scan lines of screen ruling (1080i, number of pixels 1,440 × 1,080 dots).
The video bit rate for recording is about 25 Mbps.
i.LINK is adopted for the digital interface, enabling a digital connection with an HDV compatible TV or computer.

- HDV signals are compressed in MPEG2 format, which is adopted in BS (broadcast satellite) digital, terrestrial digital HDTV broadcastings, in Blu-ray Disc recorders, etc.

Playback

- Your camcorder can play back pictures in both the DVCAM (DV) format and HDV1080i specification.
- Your camcorder can play back pictures recorded in the HDV 720/30p format, but cannot output it from the i.LINK HDV/DV interface (i.LINK).

To prevent a blank section from being created on the tape

Go to the end of the recorded section using [END SEARCH] (p. 45) before you begin the next recording when you have played back the tape.

Copyright signal

■ When you play back

If the cassette you play back on your camcorder contains copyright signals, you cannot copy it to a tape in another video camera connected to your camcorder.

■ When you record

You cannot record software on your camcorder that contains copyright control signals for copyright protection of software. [Cannot record due to copyright protection.] appears on the LCD screen, or on the viewfinder if you try to record such software. Your camcorder does not record copyright control signals on the tape when it records.

Audio mode

The DVCAM format has 2 audio modes.

- You cannot dub sound onto a recorded tape with your camcorder.

■ FS32K (12-bit) mode

The original sound is recorded in channels 1 and 2, and the new sound in channels 3 and 4. The balance between channels 1/2 and channels 3/4 can be adjusted by selecting [DV AUDIO MIX] in the menu settings during playback. If you select [MIX], the sounds of channel 1/2 and channel 3/ 4 are synthesized to be output.

■ FS48K (16-bit) mode

The original sound can be recorded in high quality using 2 channels. The audio mode can be indicated on the LCD screen or in the viewfinder.

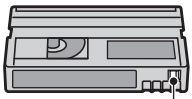
Notes on use

■ When not using your camcorder for a long time

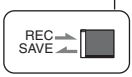
Remove the cassette and store it.

■ To prevent accidental erasure

Slide the write-protect tab on the cassette to set it to SAVE.

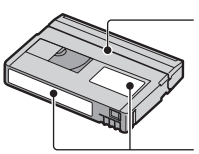


REC: The cassette can be recorded.
SAVE: The cassette cannot be recorded (write-protected).



■ When labeling the cassette

Be sure to place the label only on the locations shown in the following illustration so as not to cause a malfunction of your camcorder.

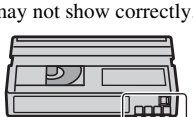


■ After using the cassette

Rewind the tape to the beginning to avoid distortion of the picture or the sound. The cassette should then be put in its case, and stored in an upright position.

■ When cleaning the gold-plated connector

Generally, clean the gold-plated connector on a cassette with a cotton-wool swab after every 10 times it has been ejected.
If the gold-plated connector on the cassette is dirty or dusty, the remaining tape indicator may not show correctly.



Gold-plated connector

On Sony HDV1080i compliant TVs

HDV1080i

An HDV format compatible TV with the component input jack is required to view playback pictures recorded in the HDV format.

Compatibility of the DVCAM/DV formats

The DVCAM format was developed as a more reliable and higher-end format than the consumer DV format. Explained here are the differences, compatibility, and limitations on editing for the DVCAM and DV formats.

Differences between the DVCAM and DV formats

Specification	DVCAM	DV
TRACK Pitch	15 μm	10 μm
Audio sampling frequency	12 bit:32 kHz 16 bit:48 kHz	12 bit:32 kHz 16 bit:48 kHz 44.1 kHz 48 kHz
Audio recording mode*	Lock mode	Lock/Unlock mode

* There are 2 modes for audio recording, lock mode and unlock mode. In lock mode, the sampling frequencies of audio and video are synchronized. Therefore, lock mode is more effective than unlock mode in digital processing and smooth transition during audio editing.

Mini DVCAM and mini DV cassettes

The recording format of the picture is defined according to the recorder's format as described below.

Recorder's format	Cassette's format	Recording format
DVCAM	DVCAM DV	DVCAM
DV	DVCAM DV	DV

Notes

- This camcorder complies with the DVCAM format.Though mini DV cassettes can be used for recording, we recommend you use mini DVCAM cassettes to get the most out of the high reliability of the DVCAM format.
- The recording time of mini DV cassettes is 1/3 shorter than that indicated on mini DV cassettes when recorded in the DVCAM format.

Compatibility on playback

Tape	On DV video equipment	On DVCAM video equipment
DV formatted	Can be playback	Can be played back only when recorded in SP mode
DVCAM formatted	Can be played back on some equipment	Can be playback

Compatibility on editing using DV jacks

When this camcorder is connected to other digital video equipment using an i.LINK cable, the recording format of edited tapes is defined according to the source tape and the recorder's format as described below. Playback or editing using the edited tape may be limited depending on dubbing operation. Start dubbing after reading "Limitations on editing" (p. 119).

Source tape	Player's format	Recorder's format	Recording format
DV formatted (SP mode only)	DVCAM	DVCAM	DVCAM [1]
		DV	DV
DV formatted	DV	DVCAM	DVCAM
		DV	DV
DVCAM formatted [2]	DVCAM	DVCAM	DVCAM
		DV	DV
DVCAM formatted [2]	DV [3]	DVCAM	DVCAM (Compatibility depends on models.)
		DV	DV

[1] When using mini DVCAM video equipment to perform DV dubbing of a tape recorded in DV format, the tape produced will be in the DVCAM format which the time code format will be partly misadjusted. (there will be no effect on the recorded picture except in certain cases.)

[2] If the tape that is to be dubbed is in the DVCAM format as in 1), the tape produced will be in the DVCAM format and the time code format will be partly misadjusted.

[3] Some mini DV video equipment may be able to play back a DVCAM-formatted tape. Even if the tape is played back, quality of the playback cannot be guaranteed. The time code format will be partly misadjusted.

Notes

- If you use tapes as in 1) to 3) above for editing, the functions may be limited regardless of the format of players and recorders.

Limitations on editing

You may find the following limitations when editing a tape produced by dubbing or editing using the HDV/DV Interface (i.LINK) jack:

- Due to the difference in track pitch, you cannot record or edit on DV-formatted tapes using mini DVCAM video equipment.
- Depending on the DVCAM video equipment used, you may not be able to edit DVCAM formatted tapes if the audio recording mode is unlock mode. In this case, dub using audio/video jacks.

About the "Memory Stick"

A "Memory Stick" is a compact, portable IC recording medium with a large data capacity.
You can use the following types of "Memory Stick" listed below on the camcorder. However, we do not guarantee the operation of all types of "Memory Stick" on your camcorder. (See the list below for more details.)

Types of "Memory Stick"	Recording /Playback
"Memory Stick Duo" (with MagicGate)	○
"Memory Stick PRO Duo"	○
"Memory Stick PRO-HG Duo"	○

- This product does not support high speed data transfer via a parallel interface.
- This product cannot record or play data that uses "MagicGate" technology. "MagicGate" is a copyright protection technology that records and transfers the contents in an encrypted format.
- This product is compatible with "Memory Stick Micro" ("M2"). "M2" is the abbreviation for the "Memory Stick Micro."
- Still image format: Your camcorder compresses and records image data in the JPEG (Joint Photographic Experts Group) format. The file extension is ".JPG."
- A "Memory Stick Duo" formatted by a computer (Windows OS/Mac OS) does not have guaranteed compatibility with your camcorder.
- Data read/write speed may vary depending on the combination of the "Memory Stick Duo" and "Memory Stick Duo" compliant product you use.
- You can prevent accidental erasure of images when you slide the write-protect tab on the "Memory Stick Duo" with a small tapered object, to the write-protect position.
- Damaged or lost image data will not be compensated for, and may occur in the following cases:
  - If you eject the "Memory Stick Duo," turn the power off on your camcorder, or remove the battery pack for replacement while your camcorder is reading or writing image files on the "Memory Stick Duo" (while the access lamp is lit or flashing).
  - If you use the "Memory Stick Duo" near magnets or magnetic fields.
- It is recommended to make a back-up of important data on the hard disk of a computer.
- Be careful not to apply excessive force when writing on a memo area on a "Memory Stick Duo."
- Do not attach a label or the like on a "Memory Stick Duo" or a Memory Stick Duo adaptor.
- When you carry or store a "Memory Stick Duo," put it in its case.
- Do not touch, or allow metallic objects to come into contact with the terminals.
- Do not bend, drop or apply strong force to the "Memory Stick Duo."
- Do not disassemble or modify the "Memory Stick Duo."
- Do not let the "Memory Stick Duo" get wet.
- Be careful to keep "Memory Stick Duo" media out of the reach of small children. There is danger that a child might swallow it.
- Do not insert anything other than a "Memory Stick Duo" into the Memory Stick Duo slot. Doing so may cause a malfunction.
- Do not use or keep the "Memory Stick Duo" in the following locations:
  - Places subject to extremely high temperature, such as a car parked outside in the summer.
  - Places under direct sunlight.

– Places with extremely high humidity or subject to corrosive gases.

■ On the Memory Stick Duo adaptor

- When using a "Memory Stick Duo" with a "Memory Stick" compliant device, make sure to insert the "Memory Stick Duo" into a Memory Stick Duo adaptor.
- When inserting a "Memory Stick Duo" into a Memory Stick Duo adaptor, make sure the "Memory Stick Duo" is inserted facing in the correct direction, then insert it all the way in. Note that improper use may cause a malfunction. Also, if you force the "Memory Stick Duo" into the Memory Stick Duo adaptor in the wrong direction, it may be damaged.
- Do not insert a Memory Stick Duo adaptor without a "Memory Stick Duo" attached. Doing so may result in malfunctions of the unit.

■ On a "Memory Stick PRO Duo"

- The maximum memory capacity of a "Memory Stick PRO Duo" that can be used on your camcorder is 8 GB.
- This unit does not support high speed data transfer.

Notes on using "Memory Stick Micro"

- To use a "Memory Stick Micro" with the camcorder, you need a Duo-sized M2 Adaptor. Insert the "Memory Stick Micro" into the Duo-sized M2 Adaptor, then insert the adaptor into the Memory Stick Duo slot. If you insert a "Memory Stick Micro" into the camcorder without using a Duo-sized M2 Adaptor, you might not be able to remove it from the camcorder.
- Do not leave the "Memory Stick Micro" within the reach of small children. They might accidentally swallow it.

On image data compatibility

- Image data files recorded on a "Memory Stick Duo" by your camcorder conform to the "Design rule for Camera File system" universal standard established by the JEITA (Japan Electronics and Information Technology Industries Association).
- On your camcorder, you cannot play back still images recorded on other devices (DCR-TRV900E or DSC-D700/D770) that do not conform to the universal standard. (These models are not sold in some regions.)
- If you cannot use a "Memory Stick Duo" that has been used with another device, format it with your camcorder (p. 89). Note that formatting erases all information on the "Memory Stick Duo."
- You may not be able to play back images with your camcorder:
  – When playing back image data modified on your computer.
  – When playing back image data recorded with other devices.

About the "InfoLITHIUM" battery pack

This unit is compatible with an "InfoLITHIUM" battery pack (L series). Your camcorder operates only with an "InfoLITHIUM" battery pack. "InfoLITHIUM" L series battery packs have the InfoLITHIUM L mark.

What is an "InfoLITHIUM" battery pack?

An "InfoLITHIUM" battery pack is a lithium-ion battery pack that has functions for communicating information related to operating conditions between your camcorder and an supplied AC Adaptor/Charger.
The "InfoLITHIUM" battery pack calculates the power consumption according to the operating conditions of your camcorder, and displays the remaining battery time in minutes.
With an AC Adaptor/Charger, the remaining battery time and charging time appear.

To charge the battery pack

- Be sure to charge the battery pack before you start using your camcorder.
- We recommend charging the battery pack in an ambient temperature of between 10 °C to 30 °C (50 °F to 86 °F) until the charge lamp of the AC Adaptor/Charger turns off. If you charge the

battery pack outside of this temperature range, you may not be able to charge it efficiently.

To use the battery pack effectively

- Battery pack performance decreases when the surrounding temperature is 10 °C (50 °F) or below, and the length of time you can use the battery pack becomes shorter. In that case, do one of the following to use the battery pack for a longer time.
  - Put the battery pack in a pocket to warm it up, and insert it in your camcorder right before you start taking shots.
  - Use a large capacity battery pack: NP-F770/F970 (optional).
- Frequent use of the LCD screen or a frequent playback, fast forward or rewind operation wears out the battery pack faster.
  We recommend using a large capacity battery pack: NP-F770/F970.
- Be sure to set the POWER switch to OFF when not recording or playing back on your camcorder. The battery pack is also consumed when your camcorder is in recording standby or playback pause.
- Have spare battery packs ready for two or three times the expected recording time, and make trial recordings before making the actual recording.
- Do not expose the battery pack to water. The battery pack is not water resistant.

About the remaining battery time indicator

- When the power goes off even though the remaining battery time indicator indicates that the battery pack has enough power to operate, charge the battery pack fully again. Remaining battery time will be indicated correctly. Note, however, that the battery indication will not be restored if it is used in high temperatures for a long time, or if left in a fully charged state, or when the battery pack is frequently used. Use the remaining battery time indication as a rough guide only.
- The ⌧ mark that indicates low battery flashes even if there are still 5 to 10 minutes of battery time remaining, depending on the operating conditions or ambient temperature.

About storage of the battery pack

- If the battery pack is not used for a long time, fully charge the battery pack and use it up on your camcorder once a year to maintain proper function. To store the battery pack, remove it from your camcorder and put it in a dry, cool place.
- To discharge the battery pack on your camcorder completely, leave your camcorder in tape recording standby until the power goes off (p. 17).

About battery life

- Battery capacity decreases over time and through repeated use. If decreased usage time between charges becomes significant, it is probably time to replace it with a new one.
- Each battery's life is governed by storage, operating and environmental conditions.

About i.LINK

The HDV/DV (i.LINK) jack on your camcorder is an i.LINK-compliant 6-pin jack. This section describes the i.LINK standard and its features.

What is i.LINK?

i.LINK is a digital serial interface for transferring digital video, digital audio, and other data to other i.LINK-compatible devices. You can also control other devices using the i.LINK.
i.LINK-compatible devices can be connected using an i.LINK cable. Possible applications are operations and data transactions with various digital AV devices.
When two or more i.LINK-compatible devices are daisy-chained with the unit, operation becomes possible from any device in the chain. Note that operation method may vary, or data transactions may not be possible, depending on specifications and characteristics of the connected devices.

Notes

- Normally, only one device can be connected to this unit with an i.LINK cable. When connecting this unit to an HDV/DV compatible device having two or more i, HDV/DV interfaces, refer to the operating instructions of the device to be connected.
- i.LINK is a more familiar term for the IEEE 1394 data transport bus proposed by Sony, and is a trademark approved by many corporations.
- IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronics Engineers.

About the i.LINK Baud rate

i.LINK's maximum baud rate varies according to the device. There are 3 types.

S100 (approx. 100Mbps*)
S200 (approx. 200Mbps)
S400 (approx. 400Mbps)

The baud rate is listed under "Specifications" in the operating instructions of each piece of equipment. It is also indicated near the i.LINK interface on some devices.
The baud rate may differ from the indicated value when the unit is connected to a device with a different maximum baud rate.

*** What is Mbps?**

Mbps stands for "megabits per second," or the amount of data that can be sent or received in one second. For example, a baud rate of 100 Mbps means that 100 megabits of data can be sent in one second.

To use i.LINK functions on this unit

For details on how to dub when this unit is connected to other video devices having an i.LINK interface, see page 97.
This unit can also be connected to other i.LINK-compatible devices made by Sony (for example, a VAIO series personal computer) as well as to video devices.
Some i.LINK compatible video devices, such as Digital Televisions, DVD, MICROMV or HDV recorders/players are not compatible with this unit. Before connecting to other devices, be sure to confirm whether the device is compatible with an HDV/DV device or not. For details on precautions and compatible application software, refer also to the operating instructions for the device to be connected.

Notes

- When connecting a device with an i.LINK terminal to your camcorder via an i.LINK cable, switch off the device and unplug it from the power socket before plugging in or unplugging the i.LINK cable.

About x.v.Color

- x.v.Color is a more familiar term for the xvYCC standard proposed by Sony, and is a trademark of Sony.
- xvYCC is an international standard for color space in video. This standard can express a wider color range than the currently used broadcast standard.

About handling of your camcorder

On use and care

- Do not use or store the camcorder and accessories in the following locations.
  - Anywhere extremely hot or cold. Never leave them exposed to temperatures above 60 °C (140 °F), such as under direct sunlight, near heaters or in a car parked in the sun. They may malfunction or become deformed.
  - Near strong magnetic fields or mechanical vibration. The camcorder may malfunction.
  - Near strong radio waves or radiation. The camcorder may not be able to record properly.
  - Near AM receivers and video equipment. Noise may occur.
  - On a sandy beach or anywhere dusty. If sand or dust gets in your camcorder, it may malfunction. Sometimes this malfunction cannot be repaired.
  - Near windows or outdoors, where the LCD screen, the viewfinder, or the lens may be

exposed to direct sunlight. This damages the inside of the viewfinder or the LCD screen.
– Anywhere very humid.
- Operate your camcorder on DC 7.2 V (battery pack) or DC 8.4 V (AC Adaptor).
- For DC or AC operation, use the accessories recommended in these operating instructions.
- Do not let your camcorder get wet, for example, from rain or sea water. If your camcorder gets wet, it may malfunction. Sometimes this malfunction cannot be repaired.
- If any solid object or liquid gets inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling, disassembling, modifying, physical shock, or impact such as hammering, dropping or stepping on the product. Be particularly careful of the lens.
- Keep the POWER switch setting to OFF when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- When disconnecting the mains lead, pull it by the plug and not the lead.
- Do not damage the mains lead such as by placing anything heavy on it.
- Keep metal contacts clean.
- Keep the Remote Commander and button-type battery out of children's reach. If the battery is accidentally swallowed, consult a doctor immediately.
- If the battery electrolytic liquid has leaked,
  – consult your local authorized Sony service facility.
  – wash off any liquid that may have contacted your skin.
  – if any liquid gets in your eyes, wash with plenty of water and consult a doctor.

■ When not using your camcorder for a long time

- Periodically turn on the camcorder and play a cassette for about 3 minutes.
- Use up the battery pack completely before storing it.

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this state, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, [Moisture condensation. Eject the cassette] or [Moisture condensation. Turn off for 1H.] appears. The indicator will not appear when the moisture condenses on the lens.

■ If moisture condensation has occurred

None of the functions except cassette ejection will work. Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette lid open. Your camcorder can be used again when both of the following conditions are met:

- The warning message does not appear when the power is turned on.
- Neither ⏬ nor ⏏ flashes when a cassette is inserted and the video operation buttons are pressed.

If moisture starts to condense, your camcorder sometimes cannot detect condensation. If this happens, the cassette is sometimes not ejected for 10 seconds after the cassette lid is opened. This is not a malfunction. Do not close the cassette lid until the cassette is ejected.

■ Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a humid place as shown below.

- When you bring your camcorder from a ski slope into a place warmed up by a heating device.
- When you bring your camcorder from an air conditioned car or room into a hot place outside.
- When you use your camcorder after a squall or a shower.
- When you use your camcorder in a hot and humid place.

■ How to avoid moisture condensation

When you bring your camcorder from a cold place into a warm place, put your

camcorder in a plastic bag and seal it tightly. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about one hour).

Video head

If you play back a tape recorded in HDV format, the image and sound may freeze for a while (about 0.5 seconds).
This occurs if the HDV signals cannot be recorded or played back correctly because of dirt on the tape or video head. Depending on the cassette, this fairly infrequently occurs even if the cassette is brand new or is not used a lot.
If this freezing point is created while playing back, you can solve this problem and see the pictures by rewinding after slightly forwarding. Such a freezing point cannot be recovered if it was created while recording.
To prevent such a problem, use the Sony mini DV cassette.

- If the following problem occurs, clean the video heads for 10 seconds with the Sony cleaning cassette (optional).
  - Playback pictures do not move.
  - Playback pictures do not appear.
  - The sound breaks off.
  - [Dirty video head. Use a cleaning cassette.] appears on the screen during recording.
  - The following phenomenon occurs in HDV format.



The playback screen pauses.



The playback screen goes blank. (Solid blue screen)

  - The following phenomenon occurs in DVCAM (DV) format.



Block-noise appears.



The playback screen goes blank. (Solid blue screen)

- The video heads will be worn after long use. If you cannot obtain a clear image even after using a cleaning cassette (optional), the video heads may be worn out. Please contact your Sony dealer or local authorized Sony service facility to have the video heads replaced.

LCD screen

- Do not exert excessive pressure on the LCD screen, as it may cause damage.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

■ To clean the LCD screen

If fingerprints or dust make the LCD screen dirty, it is recommended you use a soft cloth to clean it. When you use the LCD Cleaning Kit (optional), do not apply the cleaning liquid directly to the LCD screen. Use cleaning paper moistened with the liquid.

On handling the casing

- If the casing is soiled, clean the camcorder body with a soft cloth lightly moistened with water, and then wipe the casing with a dry soft cloth.
- Avoid the following to avoid damage to the finish.
  - Using chemicals such as thinner, benzine, alcohol, chemical cloths, repellent, insecticide and sunscreen.
  - Handling with above substances on your hands.

– Leaving the casing in contact with rubber or vinyl objects for a long period of time.

About care and storage of the lens

- Wipe the surface of the lens clean with a soft cloth in the following instances:
  – When there are fingerprints on the lens surface.
  – In hot or humid locations
  – When the lens is exposed to salty air such as at the seaside.
- Store in a well-ventilated location subject to little dirt or dust.
- To prevent mold, periodically clean the lens as described above. It is recommended that you operate your camcorder about once a month to keep it in optimum state for a long time.

On charging the pre-installed rechargeable battery

Your camcorder has a pre-installed rechargeable battery to retain the date, time, and other settings even when the POWER switch is set to OFF. The pre-installed rechargeable battery is always charged while your camcorder is connected to the wall socket via the AC Adaptor or while the battery pack is inserted. The rechargeable battery will be fully discharged in about **3 months** if you do not use your camcorder at all without the AC Adaptor connected or the battery pack attached. Use your camcorder after charging the pre-installed rechargeable battery.
However, even if the pre-installed rechargeable battery is not charged, the camcorder operation will not be affected as long as you are not recording the date.

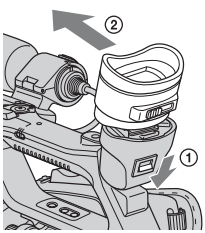
■ Procedures

Connect your camcorder to a wall socket using the supplied AC Adaptor, and leave it with the POWER switch set to OFF for more than 24 hours.

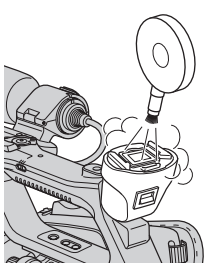
Removing dust from inside the viewfinder

1 Remove the eye piece of the viewfinder.

Slide down the viewfinder release lever and hold it at the position (①), then lift the eye piece of the viewfinder as indicated with the arrow in the illustration (②).



2 Remove dust inside the eye piece and viewfinder with a blower.



Specifications

System

Video recording system (HDV)
2 rotary heads, Helical scanning system
Video recording system (DVCAM (DV))
2 rotary heads, Helical scanning system
Still image recording system
Exif Ver. 2.2*
Audio recording system (HDV)
Rotary heads, MPEG-1 Audio Layer-2,
Quantization: 16 bits
Fs48kHz (stereo)
transfer rate: 384 kbps
Audio recording system (DVCAM (DV))
Rotary heads, PCM system
Quantization: 12 bits
Fs32kHz (channel 1/2 stereo),
Quantization: 16 bits
Fs48kHz (channel 1/2 stereo)
Video signal
PAL color, CCIR standards
1080/50i specification
Usable cassette
Mini DV cassette with the Mini DV mark printed or Mini DVCAM cassette with the DVCAM mark printed
Tape speed (HDV)
Approx. 18.812 mm/s
Tape speed (DVCAM)
Approx. 28.218 mm/s
Tape speed (DV SP)
Approx. 18.812 mm/s
Recording/playback time (HDV)
63 min (using a PHDVM-63DM cassette)
Recording/playback time (DVCAM)
41 min (using a PHDVM-63DM cassette)
Recording/playback time (DV SP)
63 min (using a PHDVM-63DM cassette)
Fast forward/rewind time
Approx. 2 min 40 s (using a PHDVM-63DM cassette and rechargeable battery pack)
Approx. 1 min 45 s (using a PHDVM-63DM cassette and AC Adaptor)
Viewfinder
Electric viewfinder (color, black and white)
Picture
1.1cm (0.45 type, aspect ratio 16:9)
Total dot number
1 226 880 (approx. 852 × 3[RGB] × 480)
Image device
6.0 mm (1/3 type) 3CMOS sensor
Recording Pixels (HDV/DV16:9 still recording):
Max. 1.20 Mega (1 440 × 810) pixels**
Gross: Approx. 1 120 000 pixels
Effective (movie, 16:9):
1 037 000 pixels
Effective (movie, 4:3):
778 000 pixels
Effective (still, 16:9):
1 037 000 pixels
Effective (still, 4:3):
778 000 pixels
Lens
Carl Zeiss Vario-Sonnar T*
12 × (Optical), Approx. 18 × (Digital, when [D.EXTENDER] is set to [ON])
Focal length
f=4.4 - 52.8 mm (3/16 - 2 1/8 in.)
When converted to a 35 mm still camera
32.0 - 384 mm (1 5/16 - 15 1/8 in.) (16:9),
39.5 - 474 mm (1 9/16 - 18 3/4 in.) (4:3)
F1.6 - 2.0
Filter diameter: 72 mm (2 7/8 in.)

Color temperature
[AUTO]
(one push) A/B
[INDOOR] (3 200K)
[OUTDOOR] (5 800K±7 offset levels)
[MANU WB TEMP] (2 300K - 15 000K in 100K steps)

Minimum illumination
1.5 lx (lux) (Fixed Shutter Speed 1/25, auto gain, auto iris) (F 1.6)

* "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.

**Still image resolution is obtained by the unique pixel array of Sony's ClearVid CMOS Sensor and image processing system (new Enhanced Imaging Processor).

Output connectors

A/V OUT jack
10-pin connector
Video signal: 1 Vp-p, 75 Ω (ohms)
Luminance signal: 1 Vp-p, 75 Ω (ohms)
Chrominance signal: 0.3 Vp-p (burst signal), 75 Ω (ohms)
Audio signal: -10 dBu (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
(0 dBu=0.775 Vrms)

COMPONENT OUT jack
Y: 1 Vp-p, 75Ω (ohms), PB/PR, CB/CR: +/- 350 mV, 75 Ω (ohms)

HDMI OUT jack
TypeA (19-pin)

Input/Output connectors

LANC jack
Stereo mini-minijack (Ø 2.5 mm)

(headphones) jack
Stereo-minijack (Ø 3.5 mm)

LENS jack
12-pin connector

INPUT1/INPUT2 jack
XLR 3-pin, female,
-48 dBu: 3kΩ (kilohms)
+4 dBu: 10kΩ (kilohms)
(0 dBu=0.775 Vrms)

HDV/DV jack
i.LINK interface (IEEE 1394, 6-pin connector S100)

LCD screen

Picture
8.0 cm (3.2 type, aspect ratio 16:9)

Total dot number
921 600 (1 920 × 480)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor)

Average power consumption*
During camera recording using the microphone ECM-XM1 and viewfinder with normal brightness:
HDV recording 7.0 W
DVCAM (DV) recording 6.8 W
During camera recording using the microphone ECM-XM1 and LCD with normal brightness:
HDV recording 7.1 W
DVCAM (DV) recording 6.9 W

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.)
176 × 199 × 439 mm
(6 15/16 × 7 13/16 × 17 9/32 in.) (w/h/d)
including the projecting parts
176 × 199 × 439 mm
(6 15/16 × 7 13/16 × 17 9/32 in.) (w/h/d)
including the projecting parts with the battery pack (NP-F570)

Mass (approx.)
1.3 kg (2 lb 13 oz) camera body only
2.4 kg (5 lb 4 oz) including the Carl Zeiss lens (VCL-412BWH)
2.8 kg (6 lb 3 oz) including the battery pack (NP-F570), cassette (PHDVM-63DM), Carl Zeiss lens (VCL-412BWH), lens hood with lens cover and microphone (ECM-XM1)

* When the HVR-MRC1 is used, the average power consumption increases about 2.5 W.

AC Adaptor/Charger AC-VQ1050

Power requirements
AC 100 V - 240 V, 50/60 Hz

Power consumption
22 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.)
123 × 53 × 135 mm
(4 7/8 × 2 1/8 × 5 3/8 in.) (w/h/d)
excluding the projecting parts

Mass (approx.)
390 g (13.8 oz) excluding the power cord

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

Rechargeable battery pack NP-F570

Maximum output voltage
DC 8.4 V

Output voltage
DC 7.2 V

Capacity
15.8 Wh (2 200 mAh)

Type
Li-ion

Design and specifications are subject to change without notice.

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- "Memory Stick," "  ," "Memory Stick Duo," "MEMORY STICK DUO," "Memory Stick PRO Duo," "MEMORY STICK PRO DUO," "Memory Stick PRO-HG Duo," "MEMORY STICK PRO-HG DUO," "Memory Stick Micro," "MagicGate," "MAGICGATE," "MagicGate Memory Stick" and "MagicGate Memory Stick Duo" are trademarks of Sony Corporation.
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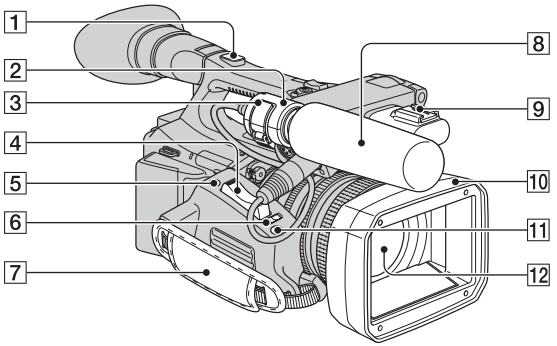
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Identifying parts and controls

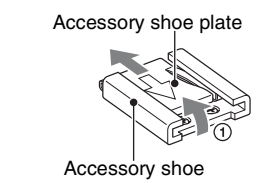
The numbers in ( ) are reference pages.

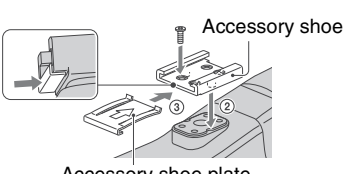


1 Accessory shoe mount (130)
2 Microphone holder (12)
3 Microphone fixing clamper (12)
4 Zoom lever (27)
5 EXPANDED FOCUS/L2 button (43)
6 IRIS switch (30)
7 Grip belt (17)
8 Microphone (12)
9 Accessory shoe adaptor (131)
10 Lens hood with lens cover (12)
11 PUSH AUTO button (30)
12 Lens (10)

To mount the accessory shoe

Mount the accessory shoe on the accessory shoe mount as illustrated.





① Lift the edge of the accessory shoe plate and pull it in the direction opposite to that of the arrow on the accessory shoe plate and remove it from the accessory shoe.

② Place the accessory shoe as its protrusions matches recesses of the accessory shoe mount, then fix it to the mount with four screws.

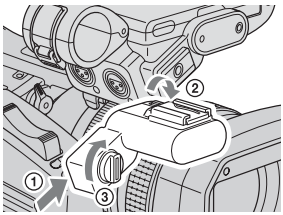
③ Insert the accessory shoe plate in the direction of the arrow on the plate surface until the end of the plate engages the end of the shoe.

To remove the accessory shoe

Remove the shoe plate in the same way as step ① of "To mount the accessory shoe." Loosen the 4 screws and remove the accessory shoe from the accessory shoe mount.

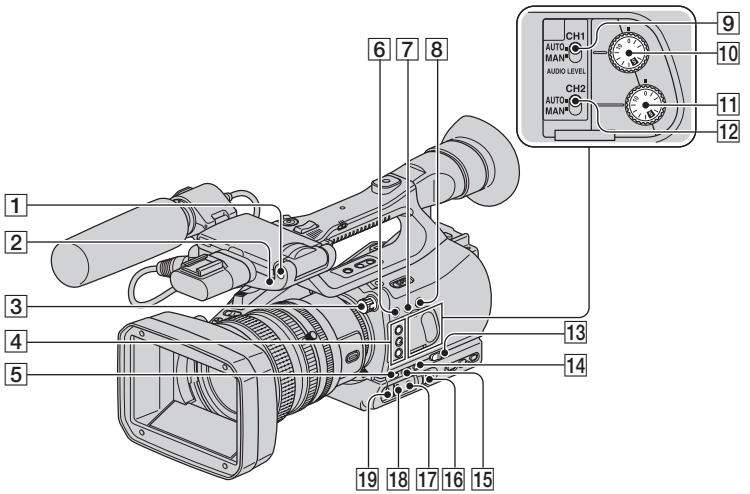
To mount the accessory shoe adaptor

Mount the accessory shoe adaptor on the accessory shoe mount as illustrated.



To remove the accessory shoe adaptor

Do the reverse procedure to mounting the accessory shoe adaptor to remove it.



1 Front remote sensor (93)

2 Front recording lamp (92)
The recording lamp flashes if the remaining tape or battery is low.

3 ND filter (30)

4 ASSIGN buttons 1-3* (43)

5 GAIN button (31)

6 ASSIGN 4 button/ZEBRA button (43)

7 ASSIGN 5 button/AE SHIFT button*(43)

8 ASSIGN 6 button/REC REVIEW button (43)

9 AUDIO LEVEL(CH1) switch (41)

10 AUDIO LEVEL(CH1) dial (41)

11 AUDIO LEVEL(CH2) dial (41)

12 AUDIO LEVEL(CH2) switch (41)

13 AUTO/MANUAL switch (41)

14 SHUTTER SPEED button (31)

15 WHT BAL* button (32)

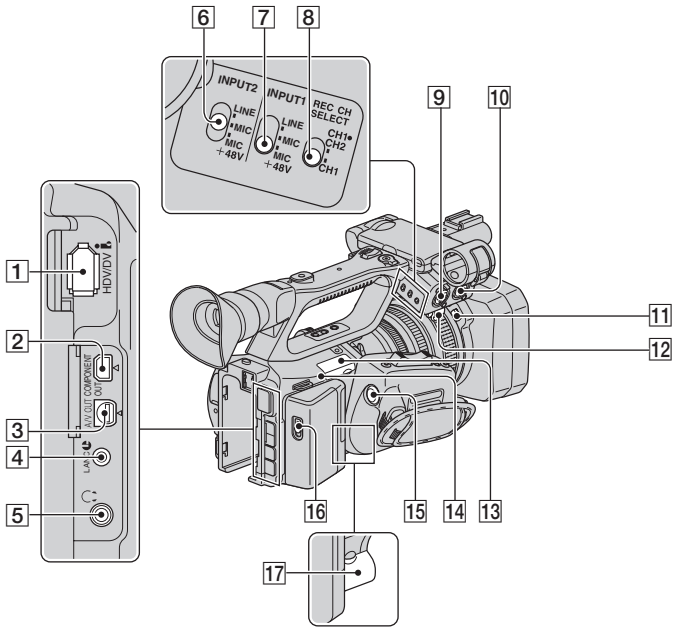
16 SEL/PUSH EXEC dial (20)

17 (one push) button (32)

18 White balance memory switch (32)

19 Gain switch (31)

* The ASSIGN 2 button, ASSIGN 5 button/AE SHIFT button and WHT BAL button have raised tactile dots for your convenience in locating the buttons.



1 HDV/DV jack (57)

2 COMPONENT OUT jack (57)

3 A/V OUT jack (57)

4 LANC jack
The LANC control jack is used for controlling the tape transport of video device and peripherals connected to it.

5 (headphones) jack

6 INPUT2 switch (12)

7 INPUT1 switch (12)

8 REC CH SELECT switch (12)

9 INPUT2 jack (12)

10 INPUT1 jack (12)

11 PUSH (lens hood release) button (12)

12 Cable holder (12)

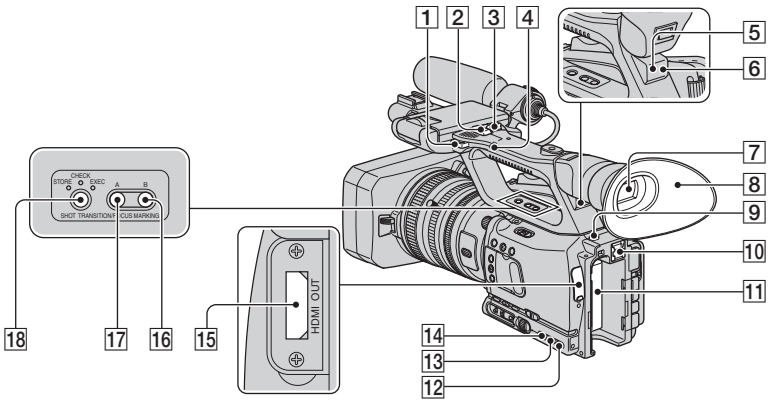
13 Memory Stick Duo slot (22)

14 Access lamp (22)

15 REC START/STOP button (24)

16 OPEN/EJECT lever (22)

17 LENS jack (10)



1 Hook for shoulder strap (134)

2 Handle zoom lever (27)

3 REC START/STOP button (24)

4 Handle zoom switch (27)

5 Rear remote sensor (93)

6 Rear recording lamp (92)
The recording lamp flashes if the remaining tape or battery is low.

7 Viewfinder (18)

8 Large eye cup (19)

9 BATT RELEASE button(15)

10 Accessory interface shoe (13)

11 Battery pack (14)

12 STATUS CHECK button(54)

13 PICTURE PROFILE button (33)

14 MENU button (64)

15 HDMI OUT jack (57)

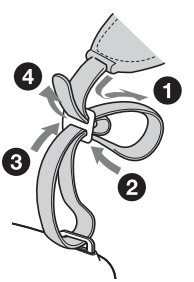
16 B button (46)

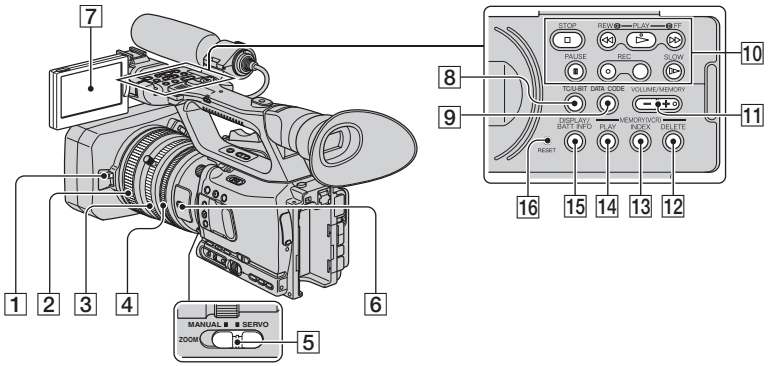
17 A button (46)

18 SHOT TRANSITION/FOCUS MARKING button (46)

To attach the shoulder strap

Attach the shoulder strap (optional) to the hooks for the shoulder strap.





1 Lens cover lever (13)

2 Focus ring (28)

3 Zoom ring (27)

4 Iris ring (30)

5 ZOOM switch (27)

6 DIGITAL EXTENDER/L1 button (43)

7 LCD screen (18)

8 TC/U-BIT button
Switches between time code and user bit to display on the LCD screen.

9 DATA CODE button (53)

10 Video control buttons (STOP/REW/PLAY/FF/PAUSE/REC/SLOW) (50)

11 VOLUME/MEMORY button (50)

12 MEMORY/DELETE button (50)

13 MEMORY/INDEX button (50)

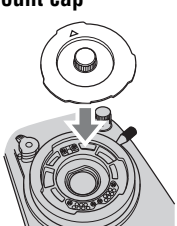
14 MEMORY/PLAY button (50)

15 DISPLAY/BATT INFO button (53)

16 RESET button
If you press the RESET button, all settings including the clock setting (except the Picture profile and Camera profile settings) return to the default.

To attach the lens mount cap

Hold the lens mount cap with the ▲ mark facing up. Attach the lens mount cap to the lens mount with the center pin on the back of the cap inserted in the recess at the top center of the lens mount.



To remove the lens mount cap

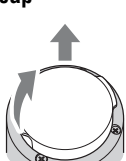
Hold the protrusion at the center of the lens mount cap and remove the cap from the lens mount.

To attach the rear lens cap

Attach the rear lens cap to the rear of the lens.

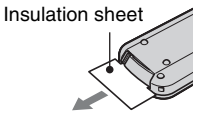
To remove the rear lens cap

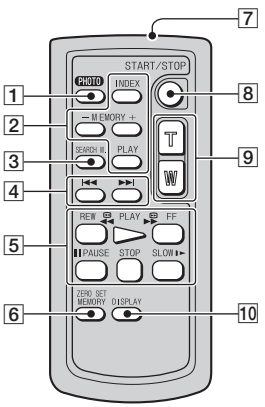
Hold the two protrusions on the edge of the rear lens cap as illustrated and remove the cap from the lens.



Remote Commander

Remove the insulation sheet before using the Remote Commander.





1 PHOTO (26)
The on-screen image when you press this button will be recorded onto the "Memory Stick Duo" as a still image.

2 Memory control buttons (Index, –/+, Memory/playback) (51)

3 SEARCH M. (55)

4 ⏮ ⏭

5 Video control buttons (Rewind, Playback, Fast-forward, Pause, Stop, Slow) (50)

6 ZERO SET MEMORY
This button is invalid with your camcorder.

7 Transmitter

8 START/STOP (24)

9 Power zoom (27)

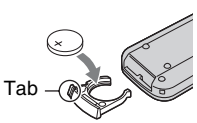
10 DISPLAY (53)

Notes

- Aim the Remote Commander towards the remote sensor to operate your camcorder.
- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- When you are operating with the Remote Commander supplied with your camcorder, your VCR may also operate. In that case, select a commander mode other than VTR 2 for your VCR, or cover the sensor of your VCR with black paper.

To change the battery of the Remote Commander

① While pressing on the tab, inset your fingernail into the slit to pull out the battery case.
② Place a new battery with the + side facing up.
③ Insert the battery case back into the Remote Commander until it clicks.



WARNING

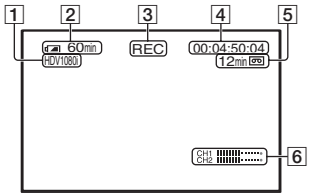
Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire.

- When the lithium battery becomes weak, the operating distance of the Remote Commander may shorten, or the Remote Commander may not function properly. In this case, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.

Indicators for the LCD screen and viewfinder

The numbers in ( ) are reference pages.
The indicators will not be recorded on the tape during recording.

Recording movies



1 Recording format (HDV1080i or DVCAM, DV SP) (83)

2 Remaining battery (approx.)

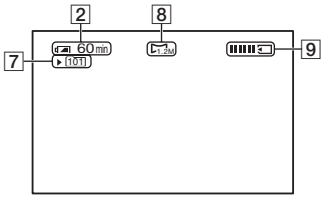
3 Recording status ([STBY] (standby) or [REC] (recording))

4 During recording:
Tape counter (hour: minute: second: frame)
During playback:
Time code (hour: minute: second: frame)

5 Recording capacity of the tape (approx.)

6 Audio level display (81)

Recording still images



7 Recording folder (90)

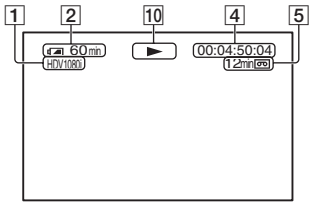
8 Image size (26)

9 Recording indicator (26)

Data code during recording

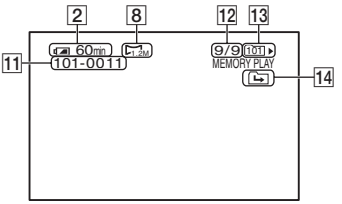
The date/time during recording and the camera setting data will be recorded automatically. They do not appear on the screen during recording, but you can check them on the screen by pressing the DATA CODE button during playback (p. 53).

Viewing movies



10 Tape transport indicator
Recording mode (DVCAM or DV SP) appears when a tape recorded in the DVCAM or DV SP format is played back. DVCAM DV SP

Viewing still images



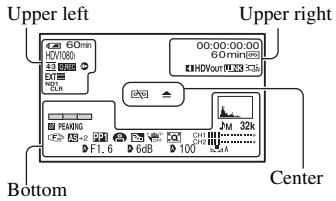
11 Data file name

12 Picture number/Total number of recorded pictures in the current playback folder

13 Playback folder (90)

14 Previous/Next folder icon
The , , or appears when the first or last picture of the current folder is displayed and when there are multiple folders on the same "Memory Stick Duo." You can move to Previous/Next folder with the VOLUME/MEMORY button.

Indicators when you made changes



Upper left

Indicator	Meaning
HDV1080i DVCAM DV SP	Recording format (83)
4:3	DV WIDE REC (85)*
Q.REC	QUICK REC (92)**
	DV FRAME REC (74)*
ND1 ND2 CLR 1/4 ND3 ND4 1/16 1/64 ND	ND filter (30)
	INTERVAL REC (73)
EXT EXT EXT CF	EXT REC CTRL (86)
25pSCAN 25P	REC TYPE SCAN TYPE (84)

Upper right

Indicator	Meaning
	INDEX MARK (44)
HDVIN DVIN	HDV input/ DV input (98)
HDVOUT DVOUT	HDV output/ DV output (97)
i.LINK	i.LINK connection (57, 94)
OFF	LCD backlight off (18)

Center

Indicator	Meaning
	Warning (113)

Bottom

Indicator	Meaning
	HISTOGRAM (79)
	CAM LEVELING (80)
32k 48k	DV AU.MODE (DV Audio mode) (76)*
M	Manual volume control(41)
	Manual focus (28)
PP1 ~ PP6	Picture profile (33)
	SPOTLIGHT (71)
	BACK LIGHT (71)
OFF	SteadyShot off (72)
PEAKING	PEAKING (79)
	D.EXTENDER (72)
AS	AE SHIFT (70)
	Auto setting (81)
ECS	Extended clear scan (31, 71)
A B	White balance (32)
OFF	FOCUS MACRO (72)
HYPER	HYPER GAIN (69)
(COLOR)	x.v.Color (75)**
	ZEBRA (79)

* The settings can be made only for the pictures in the DVCAM (DV) format.

** The setting can be made only for the pictures in the HDV format.

Tips

- Indicators may look different or appear at different positions.

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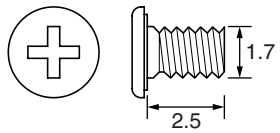
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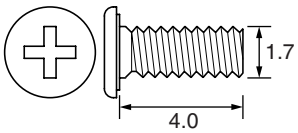
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HARDWARE LIST (1/7)

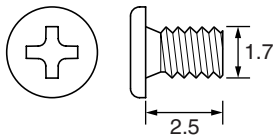
#1: M1.7 X 2.5
(Black)
2-635-562-11



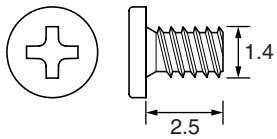
#2: M1.7 X 4.0
(Black)
2-635-562-31



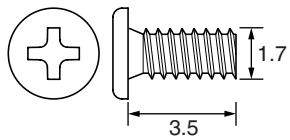
#3: M1.7 X 2.5
(Red)
2-660-401-01



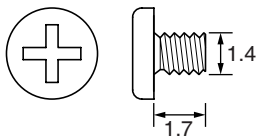
#4: M1.4 X 2.5 (Tapping)
(Dark Silver)
3-348-998-81



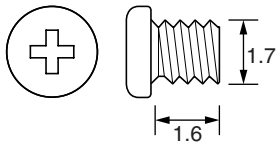
#5: M1.7 X 3.5 (Tapping)
(Black)
3-080-204-01



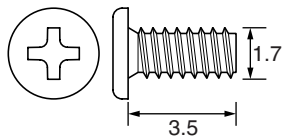
#6: M1.4 X 1.7
(Silver)
2-598-474-01



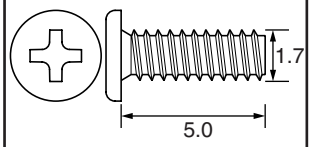
#7: M1.7 X 1.6
(Black)
7-627-552-18



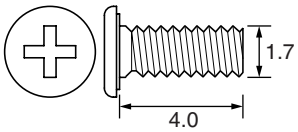
#8: M1.7 X 3.5 (Tapping)
(Silver)
3-078-890-01



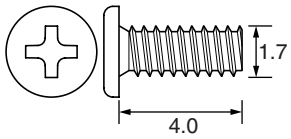
#9: M1.7 X 5.0 (Tapping)
(Silver)
3-078-890-21



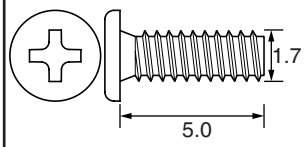
#10: M1.7 X 4.0
(Silver)
2-599-475-31



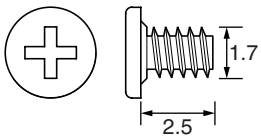
#11: M1.7 X 4.0 (Tapping)
(Silver)
3-078-890-11



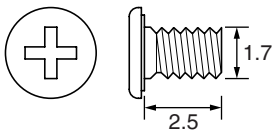
#12: M1.7 X 5.0 (Tapping)
(Black)
3-080-204-21



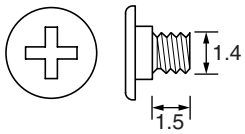
#13: M1.7 X 2.5 (Tapping)
(Silver)
3-085-397-01



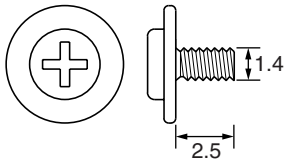
#14: M1.7 X 2.5
(Silver)
2-599-475-11



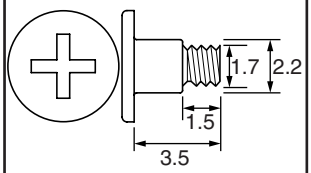
#15: M1.4 X 1.5
(Silver)
3-062-214-01



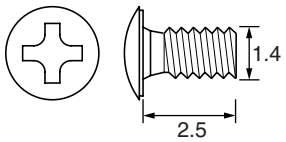
#16: M1.4 X 2.5
(Silver)
2-586-337-01



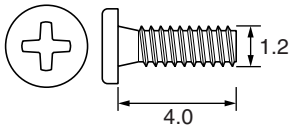
#17: M1.7 X 1.5
(Silver)
2-586-389-01



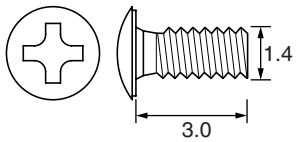
#18: M1.4 X 2.5
(Silver)
2-635-591-21



#19: M1.2 X 4.0 (Tapping)
(Red)
3-086-156-21

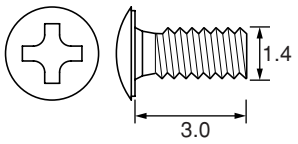


#20: M1.4 X 3.0
(Silver)
2-635-591-31

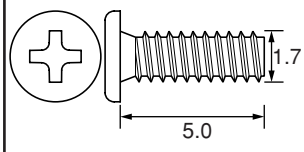


HARDWARE LIST (2/7)

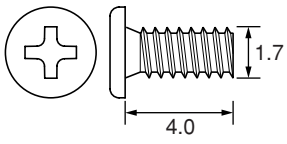
#21: M1.4 X 3.0
(Black)
2-662-396-21



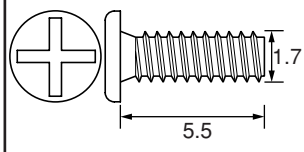
#22: M1.7 X 5.0 (Tapping)
(Silver)
3-083-261-01



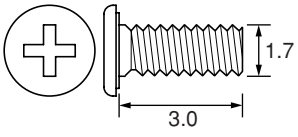
#23: M1.7 X 4.0 (Tapping)
(Black)
3-080-204-11



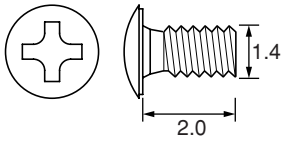
#24: B1.7 X 5.5 (Tapping)
(Black)
4-679-805-11



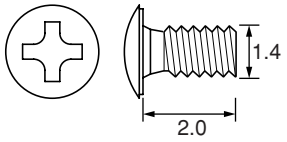
#25: M1.7 X 3.0
(Black)
2-635-562-21



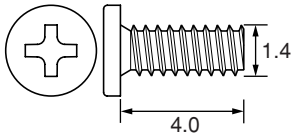
#26: M1.4 X 2.0
(Silver)
2-635-591-11



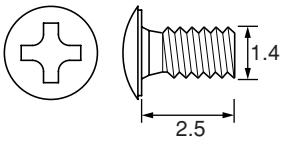
#27: M1.4 X 2.0
(Black)
2-662-396-11



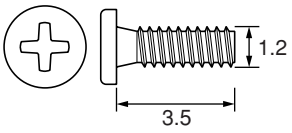
#28: M1.4 X 4.0 (Tapping)
(Silver)
3-348-998-61



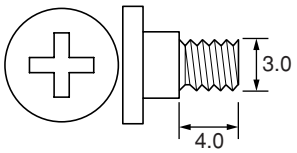
#29: M1.4 X 2.5
(Black)
2-662-396-01



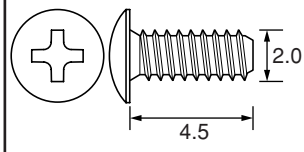
#30: M1.2 X 3.5 (Tapping)
(White)
3-086-156-11



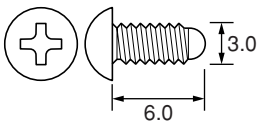
#31: M3.0 X 4.0
(Silver)
2-102-434-01



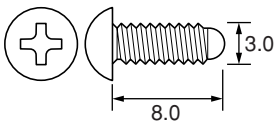
#32: M2.0 X 4.5 (Tapping)
(Silver)
2-102-498-01



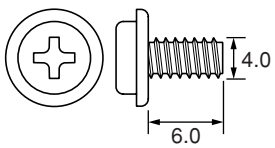
#33: M3.0 X 6.0
(Silver)
3-077-331-21



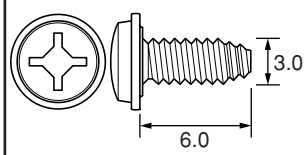
#34: M3.0 X 8.0
(Black)
3-077-331-41



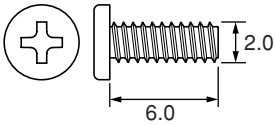
#35: M4.0 X 6.0 (Tapping)
(Silver)
3-975-291-02



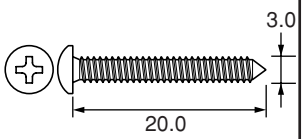
#36: M3.0 X 6.0
(Silver)
4-886-821-11



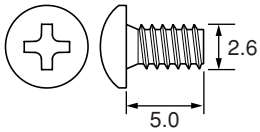
#37: M2.0 X 6.0 (Tapping)
(Black)
3-080-206-31



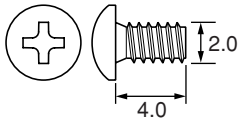
#38: M3.0 X 20.0 (Tapping)
(Silver)
7-685-651-79



#39: M2.6 X 5.0 (Tapping)
(Black)
7-685-791-09

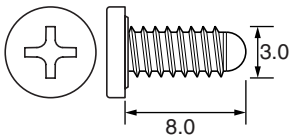


#40: M2.0 X 4.0 (Tapping)
(Silver)
7-685-851-04

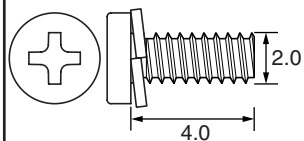


HARDWARE LIST (3/7)

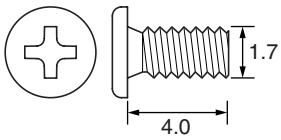
#41: M3.0 X 8.0 (Tapping)
(Silver)
3-065-748-01



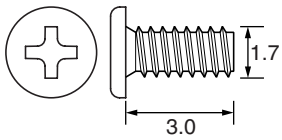
#42: M2.0 X 4.0 (Tapping)
(Silver)
7-628-253-00



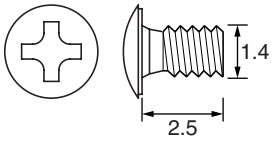
#43: M1.7 X 4.0
(Red)
2-660-401-31



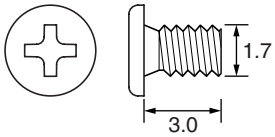
#44: M1.7 X 3.0 (Tapping)
(Silver)
3-078-890-61



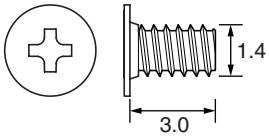
#45: M1.4 X 2.5
(Silver)
2-587-151-01



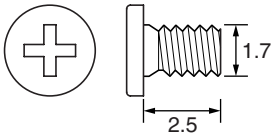
#46: M1.7 X 3.0
(Red)
2-660-401-11



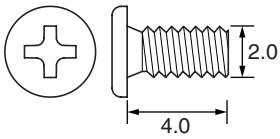
#47: M1.4 X 3.0 (Tapping)
(Silver)
2-665-774-01



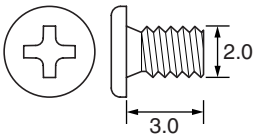
#48: M1.7 X 2.5
(Silver)
3-973-497-91



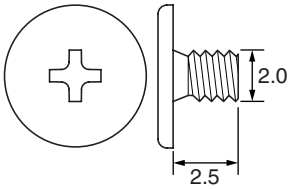
#49: M2.0 X 4.0
(Black)
2-630-005-31



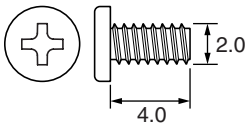
#50: M2.0 X 3.0
(Red)
2-891-494-11



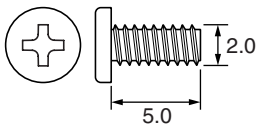
#51: M2.0 X 2.5
(Silver)
3-073-686-01



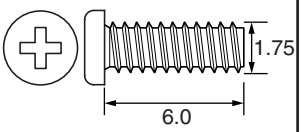
#52: M2.0 X 4.0 (Tapping)
(Black)
3-080-206-11



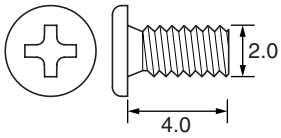
#53: M2.0 X 5.0 (Tapping)
(Black)
3-080-206-21



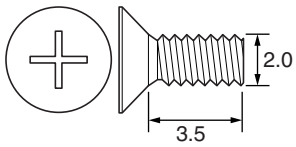
#54: M1.75 X 6.0 (Tapping)
(Black)
3-318-203-11



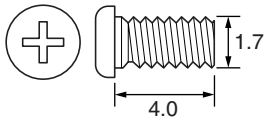
#55: M2.0 X 4.0
(Silver)
2-655-582-11



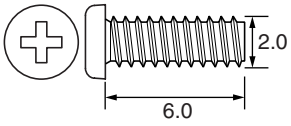
#56: M2.0 X 3.5
(Silver)
3-067-187-11



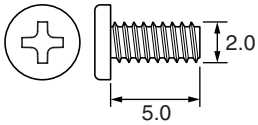
#57: M1.7 X 4.0
(Black)
7-627-852-18



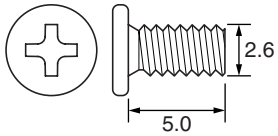
#58: M2.0 X 6.0 (Tapping)
(Silver)
3-719-408-11



#59: M2.0 X 5.0 (Tapping)
(Silver)
3-080-205-21

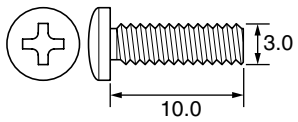


#60: M2.6 X 5.0
(Black)
3-061-062-11

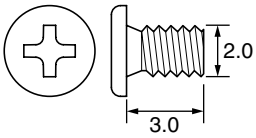


HARDWARE LIST (4/7)

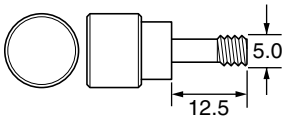
#61: M3.0 X 10.0
(Black)
7-682-549-09



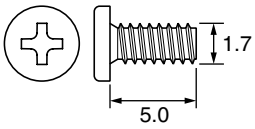
#62: M2.0 X 3.0
(Silver)
3-080-202-21



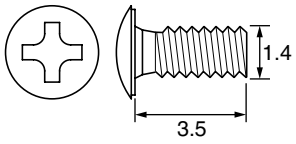
#63: M5.0 X 12.5
(Black)
3-060-811-21



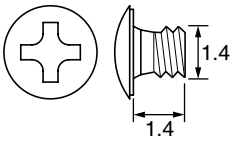
#64: M1.7 X 5.0 (Tapping)
(Silver)
2-666-551-21



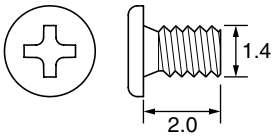
#65: M1.4 X 3.5
(Silver)
2-635-591-01



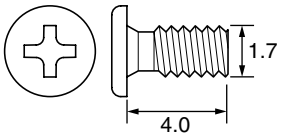
#66: M1.4 X 1.4
(Silver)
2-635-591-41



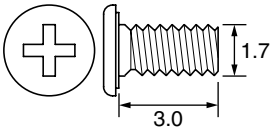
#67: M1.4 X 2.0
(Silver)
3-389-523-16



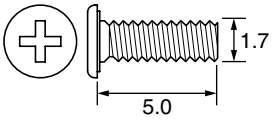
#68: M1.7 X 4.0
(Silver)
2-655-581-01



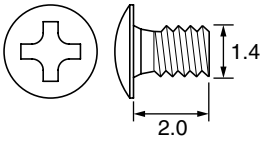
#69: M1.7 X 3.0
(Silver)
2-599-475-21



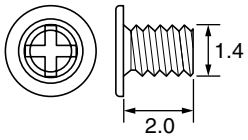
#70: M1.7 X 5.0
(Silver)
2-599-475-41



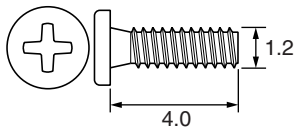
#71: M1.4 X 2.0
(Red)
3-208-537-01



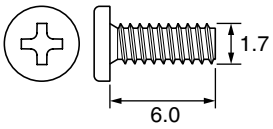
#72: M1.4 X 2.0
(Silver)
4-663-621-41



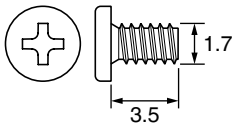
#73: M1.2 X 4.0 (Tapping)
(Black)
3-086-156-61



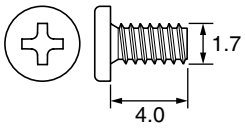
#74: M1.7 X 6.0 (Tapping)
(Silver)
2-666-551-31



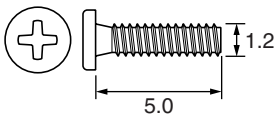
#75: M1.7 X 3.5 (Tapping)
(Silver)
2-666-551-01



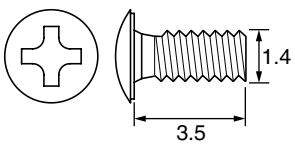
#76: M1.7 X 4.0 (Tapping)
(Silver)
2-666-551-11



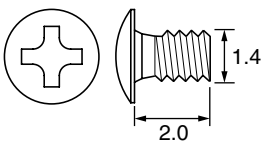
#77: M1.2 X 5.0 (Tapping)
(Silver)
3-086-156-31



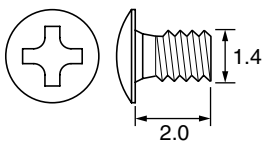
#78: M1.4 X 3.5
(Red)
3-208-537-11



#79: M1.4X 2.0
(Silver)
2-587-151-11

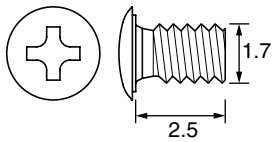


#80: M1.4X 2.0
(Black)
3-279-411-01

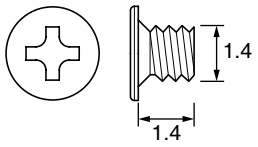


HARDWARE LIST (5/7)

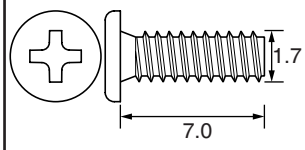
#81: M1.7 X 2.5
(Silver)
2-515-756-01



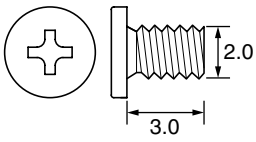
#82: M1.4 X 1.4
(Silver)
3-272-251-01



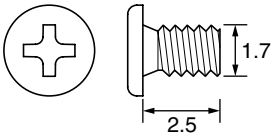
#83: M1.7 X 7.0 (Tapping)
(Black)
3-080-204-41



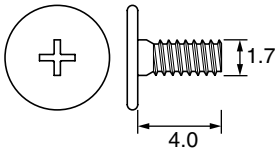
#84: M2.0 X 3.0
(Silver)
3-072-453-11



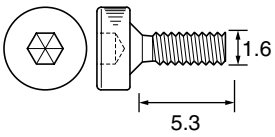
#85: M1.7 X 2.5
(Black)
2-515-483-11



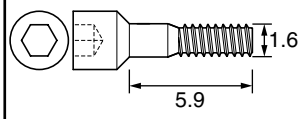
#86: M1.7 X 4.0 (Tapping)
(Silver)
2-695-434-21



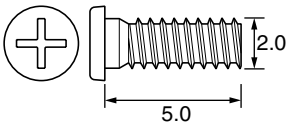
#87: M1.6 X 5.3
(Black)
2-689-328-01



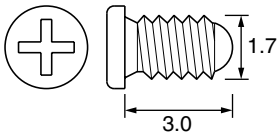
#88: M1.6 X 5.9 (Tapping)
(Silver)
2-689-015-01



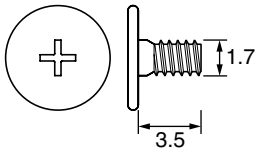
#89: M2.0 X 5.5 (Tapping)
(Silver)
2-695-575-01



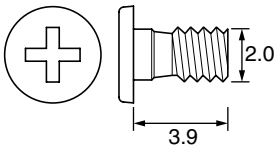
#90: M1.7 X 3.0
(Silver)
3-271-395-01



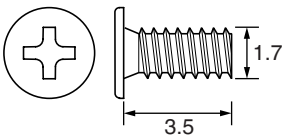
#91: M1.7 X 3.0 (Tapping)
(Silver)
2-695-434-11



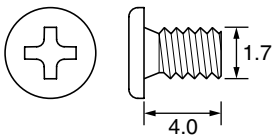
#92: M2.0 X 3.9
(Black)
3-268-954-01



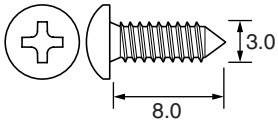
#93: M1.7 X 3.5 (Tapping)
(Silver)
3-254-082-01



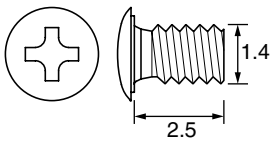
#94: M1.7 X 4.0
(Black)
2-515-483-31



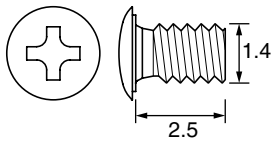
#95: M3.0 X 8.0 (Tapping)
(Black)
7-685-646-79



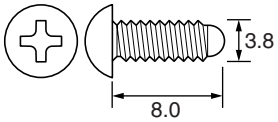
#96: M1.4 X 2.5
(Silver)
2-587-151-21



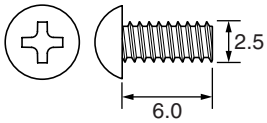
#97: M1.4 X 2.5
(Black)
2-662-396-31



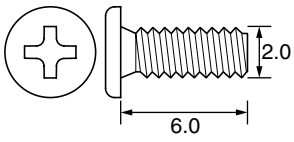
#98: M3.0 X 8.0
(Silver)
3-077-331-01



#99: M2.5 X 6.0 (Tapping)
(Silver)
3-776-750-02

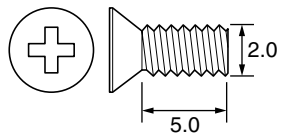


#100: M2.0 X 6.0
(Black)
3-080-203-51

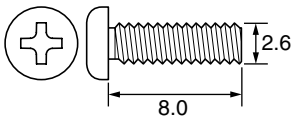


HARDWARE LIST (6/7)

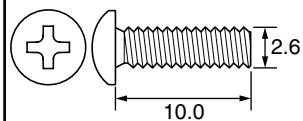
#101: M2.0 X 5.0
(Silver)
7-621-555-39



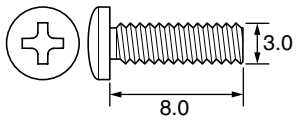
#102: M2.6 X 8.0
(Black)
7-621-284-30



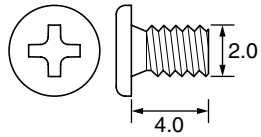
#103: M2.6 X 10.0
(Silver)
7-685-794-09



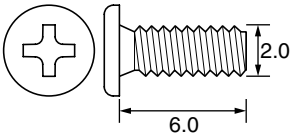
#104: M3.0 X 8.0
(Black)
7-682-548-09



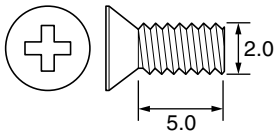
#105: M2.0 X 4.0
(Red)
2-891-494-31



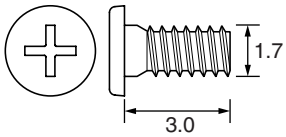
#106: M2.0 X 6.0
(Black)
3-713-786-11



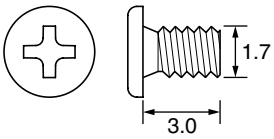
#107: M2.0 X 5.0
(Silver)
3-032-750-01



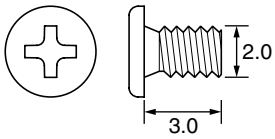
#108: M1.7 X 3.0 (Tapping)
(Black)
2-695-430-01



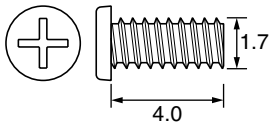
#109: M1.7 X 3.0
(Black)
2-515-483-21



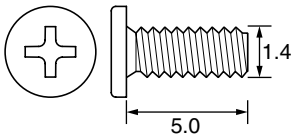
#110: M2.0 X 3.0
(Black)
2-630-005-21



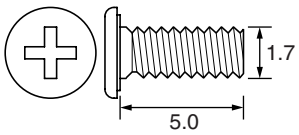
#111: M1.7 X 4.0 (Tapping)
(Black)
2-887-124-01



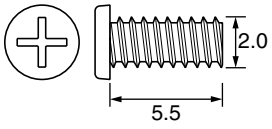
#112: M1.4 X 5.0
(Black)
2-178-410-11



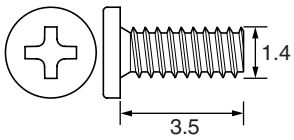
#113: M1.7 X 5.0
(Black)
2-635-562-41



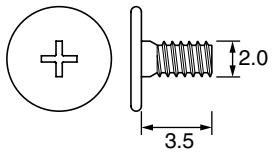
#114: M2.0 X 5.5 (Tapping)
(Silver)
2-698-464-01



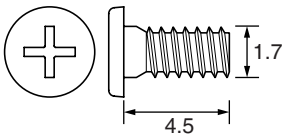
#115: M1.4 X 3.5 (Tapping)
(Silver)
3-348-998-51



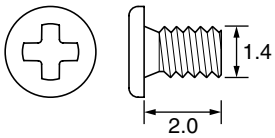
#116: M2.0 X 3.5 (Tapping)
(Silver)
2-695-435-01



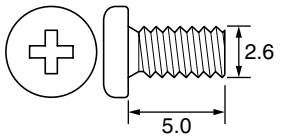
#117: M1.7 X 4.5 (Tapping)
(Silver)
2-695-429-31



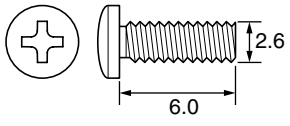
#118: M1.4 X 2.0
(Black)
2-655-580-01



#119: M2.6 X 5.0
(Black)
7-627-556-58

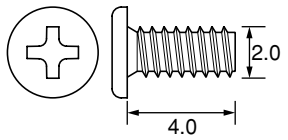


#120: M2.6 X 6.0
(Silver)
7-621-770-67

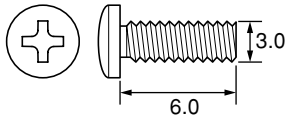


HARDWARE LIST (7/7)

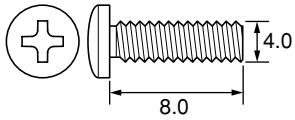
#121: M2.0 X 4.0 (Tapping)
(Silver)
3-080-205-11



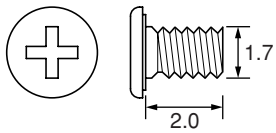
#122: M3.0 X 6.0
(Black)
7-682-547-09



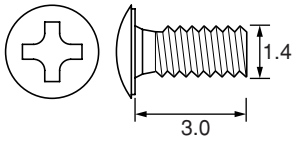
#123: M4.0 X 8.0
(Black)
7-682-561-09



#124: M1.7 X 2.0
(Silver)
2-599-475-01



#125: M1.4 X 3.0
(Black)
3-291-847-01



Revision History (1/2)

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2008.01	Official Release	—	—
1.1	2008.02	Revised-1 (A1 DI07-282)	• Correction of Schematic Diagrams • Correction of Printed Wiring Boards • Correction of Repair Parts S.M. correction: Page 4-5, Page 4-7, Page 4-68, Page 4-84, Page 5-9, Page 5-45, Page 5-47	Yes
1.2	2008.04	Revised-2 (A2 DI08-001)	• Replacement of Instruction Manual S.M. revised: Page 2, Page 3, Page 4	Yes
1.3	2008.07	Supplement-1 (S1 DI08-161)	• Addition of Service Note • Change of Repair Parts • Revision of Adjustments (Addition of “Precautions When Using Pattern Box”) S.M. revised: Page 6-6, Page 6-8	Yes
1.4	2009.02	Supplement-2 (S2 DI08-330)	• Change of Board’s Suffix No. • Change of Repair Parts • Revision of Accessories • Revision of Adjustments (Correction of the model number of the Tracking Tape Change of adjustment condition Change of the “CAMERA SYSTEM ADJUSTMENTS” (Optical Path Differencial Adjustment/ Flange Back Check)) S.M. revised: Page 5-45, Page 5-46, Page 5-47, Page 6-4, Page 6-5, Page 6-6, Page 6-7, Page 6-29, Page 6-30, Page 6-31, Page 6-32, Page 6-33, Page 6-34, Page 6-35, Page 6-36, Page 6-37, Page 6-38, Page 6-39, Page 6-40, Page 6-65, Page 6-66, Page 6-67, Page 6-68, Page 6-69, Page 6-70, Page 6-117, Page 6-118, Page 6-119, Page 6-120, Page 6-121, Page 6-122, Page 6-123	Yes
			– Continued on next page –	

Revision History (2/2)

Ver.	Date	History	Contents	S.M. Rev. issued
1.5	2009.02	Supplement-3 (S3 DI08-354)	• Change of Board's Suffix No. • Change of Repair Parts • Revision of Accessories • Revision of Adjustments (Correction of the model number of the Tracking Tape Change of adjustment condition Change of the "CAMERA SYSTEM ADJUSTMENTS" (Optical Path Differencial Adjustment/ Flange Back Check) S.M. revised: Page 5-45, Page 5-46, Page 5-47, Page 6-4, Page 6-5, Page 6-6, Page 6-7, Page 6-29, Page 6-30, Page 6-31, Page 6-32, Page 6-33, Page 6-34, Page 6-35, Page 6-36, Page 6-37, Page 6-38, Page 6-39, Page 6-40, Page 6-65, Page 6-66, Page 6-67, Page 6-68, Page 6-69, Page 6-70, Page 6-117, Page 6-118, Page 6-119, Page 6-120, Page 6-121, Page 6-122, Page 6-123 This SUPPLEMENT-3 is the revised version of SUPPLEMENT-2. Replacement of the SUPPLEMENT-2 (9-852-265-82) with the SUPPLEMENT-3. Please discard the SUPPLEMENT-2.	Yes