SONY

PROFESSIONAL DISC CAMCORDER

PDW-F330
PDW-F350

XDCAM HD Professional Disc System

Professional Disc

MPEG HD

DVCAM™

MEMORY STICK™

CINEALTA

SERVICE MANUAL

Volume 1 1st Edition

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠ WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠ WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠ AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

For the customers in the U.S.A. and Canada

RECYCLING LITHIUM-ION BATTERIES

Lithium-Ion batteries are recyclable.
You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.

For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit http://www.rbrc.org/

Caution: Do not handle damaged or leaking Lithium-Ion batteries.

Laser Diode Properties

Wavelength : 403 to 410 nm
Emission duration : Continuous
Laser output power : 65 mW (max. of pulse peak), 35 mW (max. of CW)

CAUTION

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

CAUTION

The use of optical instruments with this product will increase eye hazard.

CLASS 1 LASER PRODUCT
LASER KLASSE 1 PRODUKT
LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

This Professional Disc Camcorder is classified as a CLASS 1 LASER PRODUCT.
The CLASS 1 LASER PRODUCT label is located on the outseide panel.

VARO!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

GEFAHR

Bei geöffnetem Laufwerk und beschädigter oder deaktivierter Verriegelung tritt ein unsichtbarer Laserstrahl aus. Direkter Kontakt mit dem Laserstrahl ist unbedingt zu vermeiden.

This label is located inside the outside panel of the unit.

For the customers in the Netherlands
Voor de klanten in Nederland

Hoe u de batterijen moet verwijderen, leest u in de tekst van deze handleiding.

Gooi de batterij niet weg maar lever deze in als klein chemisch afval (KCA).

Für Kunden in Deutschland

Entsorgungshinweis: Bitte werfen Sie nur entladene Batterien in die Sammelboxen beim Handel oder den Kommunen. Entladen sind Batterien in der Regel dann, wenn das Gerät abschaltet und signalisiert “Batterie leer” oder nach längerer Gebrauchsdauer der Batterien “nicht mehr einwandfrei funktioniert”. Um sicherzugehen, kleben Sie die Batteriepole z.B. mit einem Klebestreifen ab oder geben Sie die Batterien einzeln in einen Plastikbeutel.

注意

指定以外の電池に交換すると，破裂する危険があります。
使用済の電池は，説明書に従って処理してください。

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.
Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri - Eksplosjonsfare.
Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en likvärdig typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt gällande föreskrifter.

VAROITUS

Paristo voi räjähtää jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

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Manual Structure

Purpose of this manual

This manual is the service manual volume 1 of the Professional Disc Camcorder PDW-F330/F350.

This service manual (volume 1) is intended for use by trained system and service engineers, and provides the information of maintenance and detailed service (parts replacement, adjustment, service menu etc.).

Related manuals

Besides this “service manual volume 1”, the following manuals are available.

- **Operating Instructions (Supplied with this unit.)**
  This manual is necessary for application and operation (and installation) of this unit.

- **Service Manual Volume 2 (Available on request)**
  The volume 2 manual describes parts list, block diagrams, schematic diagrams, and board layouts.

- **DXF-801, 801CE Service Manual (Available on request)**
  This manual the service manual for the view finder supplied with the camcorder PDW-F330.

- **DXF-20W Service Manual (Available on request)**
  This is the service manual for the view finder supplied with the camcorder PDW-F350.

Section 1
Installing Optional Parts

1-1. Installing 5-inch Viewfinder

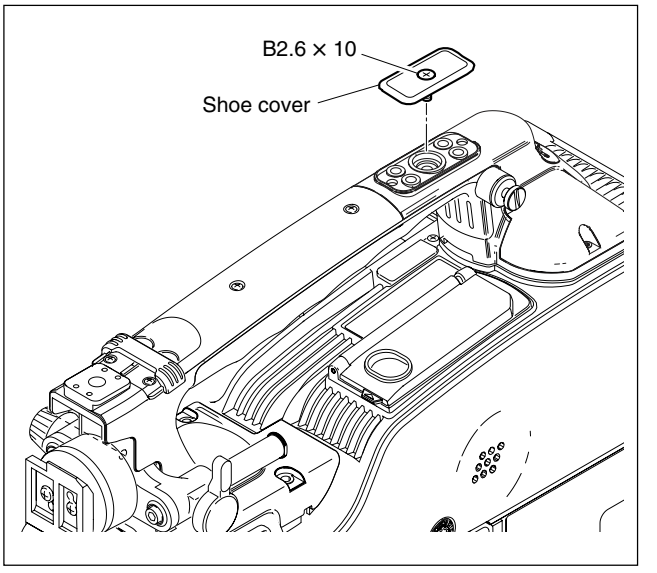
Install an optional 5-inch viewfinder DXF-51 in the following procedure.

Parts required for installation (separately available): Accessory shoe kit (A-8274-968-B)

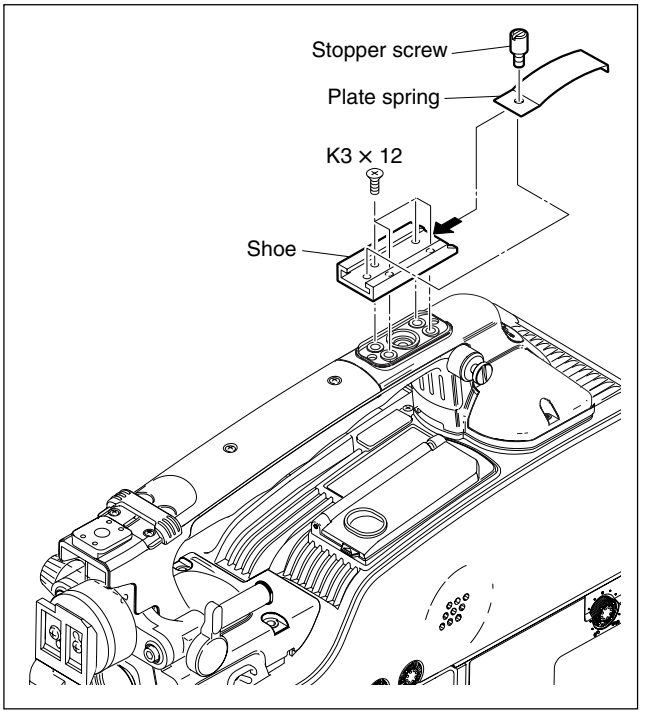
Part name	Sony part number
Shoe	3-664-218-0X
Plate spring	3-664-228-0X
Stopper screw	3-664-213-0X
Screw K3 × 12 (4)	7-682-250-04

Installation

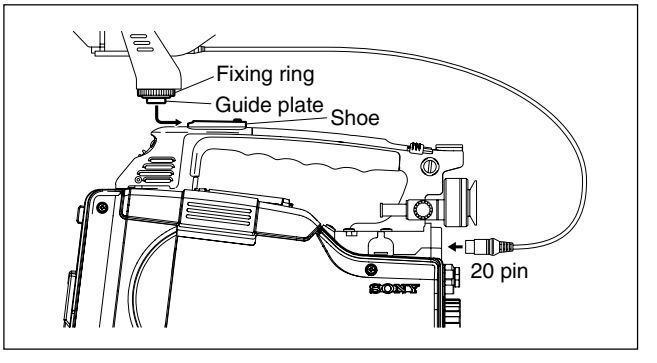
1. Loosen the screw to detach the shoe cover. (The screw has a drop safe.)



2. Secure the shoe with four screws.
3. Secure the plate spring with the stopper screw.



4. Insert the guide plate into the shoe, and tighten the fixing ring.



1-2. Installing the Slide-type Accessory Shoe

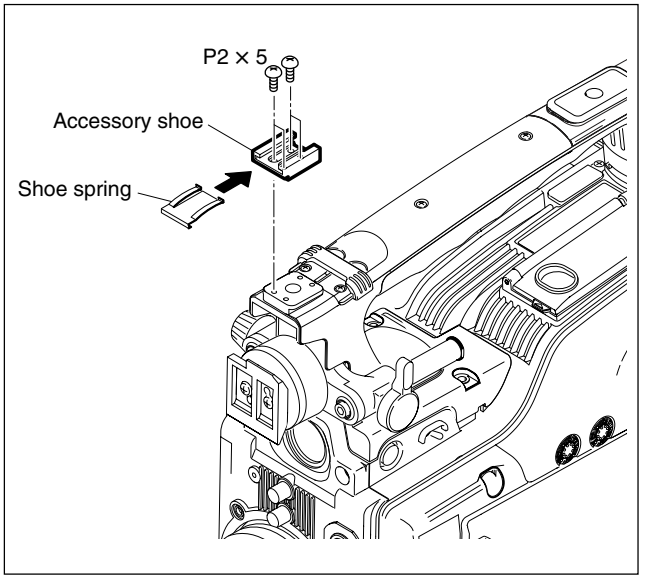
Instead of the 1/4-inch screw-type light that can be installed as standard, the light for the slide-type accessory shoe can be installed in the following procedure.

Parts required for installation (separately available):

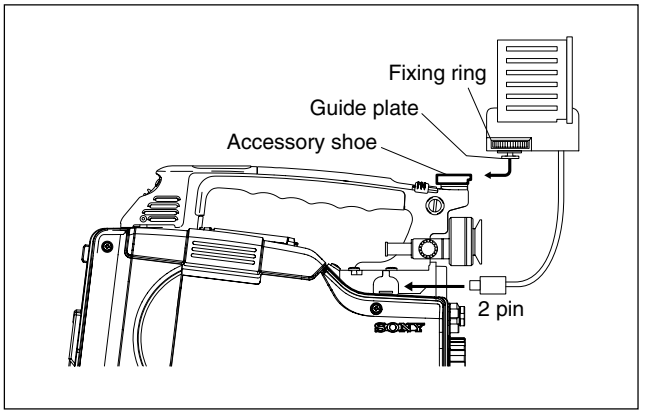
Part name	Sony part number
Accessory shoe	3-688-755-13
Shoe spring	3-688-754-11
P2 × 5 (4)	7-621-255-35

Installation

1. Secure the accessory shoe with four screws.
2. Install the shoe spring in the direction of the arrow.



3. Insert the guide plate into the accessory shoe, and tighten the fixing ring.



1-3. Installing the 2-inch Viewfinder (PDW-F330 Only)

To install 2-inch viewfinder DXF-20W (separately available) on PDW-F330, refer to the Operating Instructions supplied with DXF-20W.
PDW-F350 is shipped with 2-inch viewfinder DXF-20W included.

1-4. Adjusting Viewfinder for Left Eye Use (PDW-F330 Only)

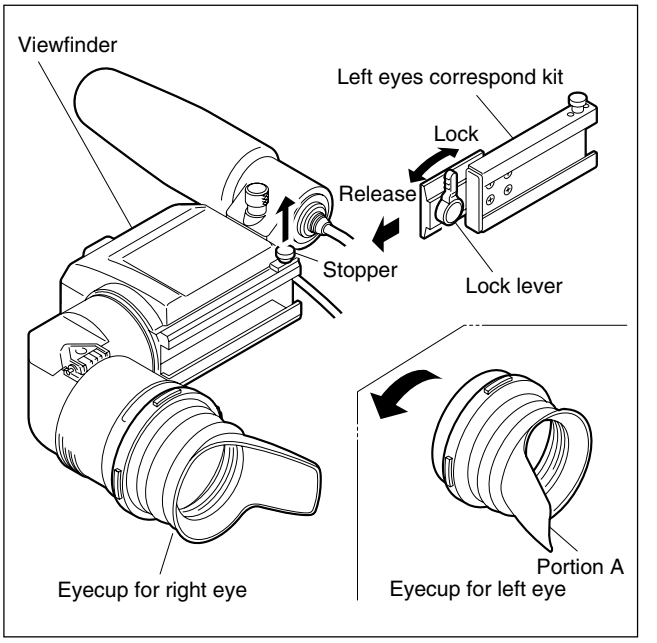
The viewfinder for left eye use is only available for PDW-F330.

Parts required for installation (separately available)

Left eyes correspond kit (Sony part number: A-8267-181-B)

Installation

1. Remove the viewfinder from the unit.
   (Refer to the Operating Instructions.)
2. Remove the eyecup, and reinstall it with the portion A outside.
3. Turn the lock lever to release the lock, and then install the kit for left eye use while pulling the viewfinder stopper.
4. Then turn the lock lever to its original position to lock the kit.
5. Install the viewfinder to the unit.
   (Refer to the Operating Instructions.)

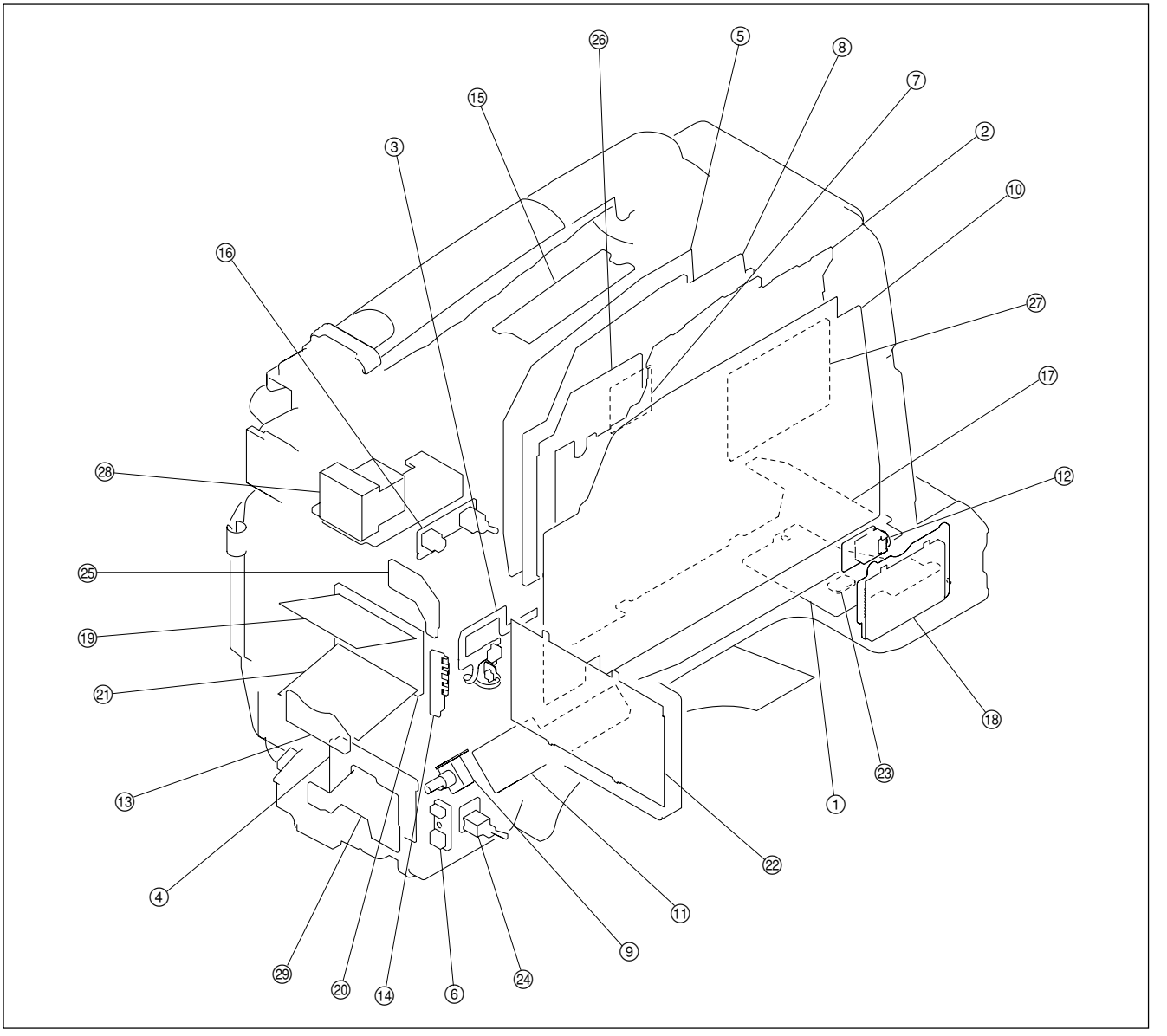


Section 2
Service Overview

2-1. Locations of Main Parts

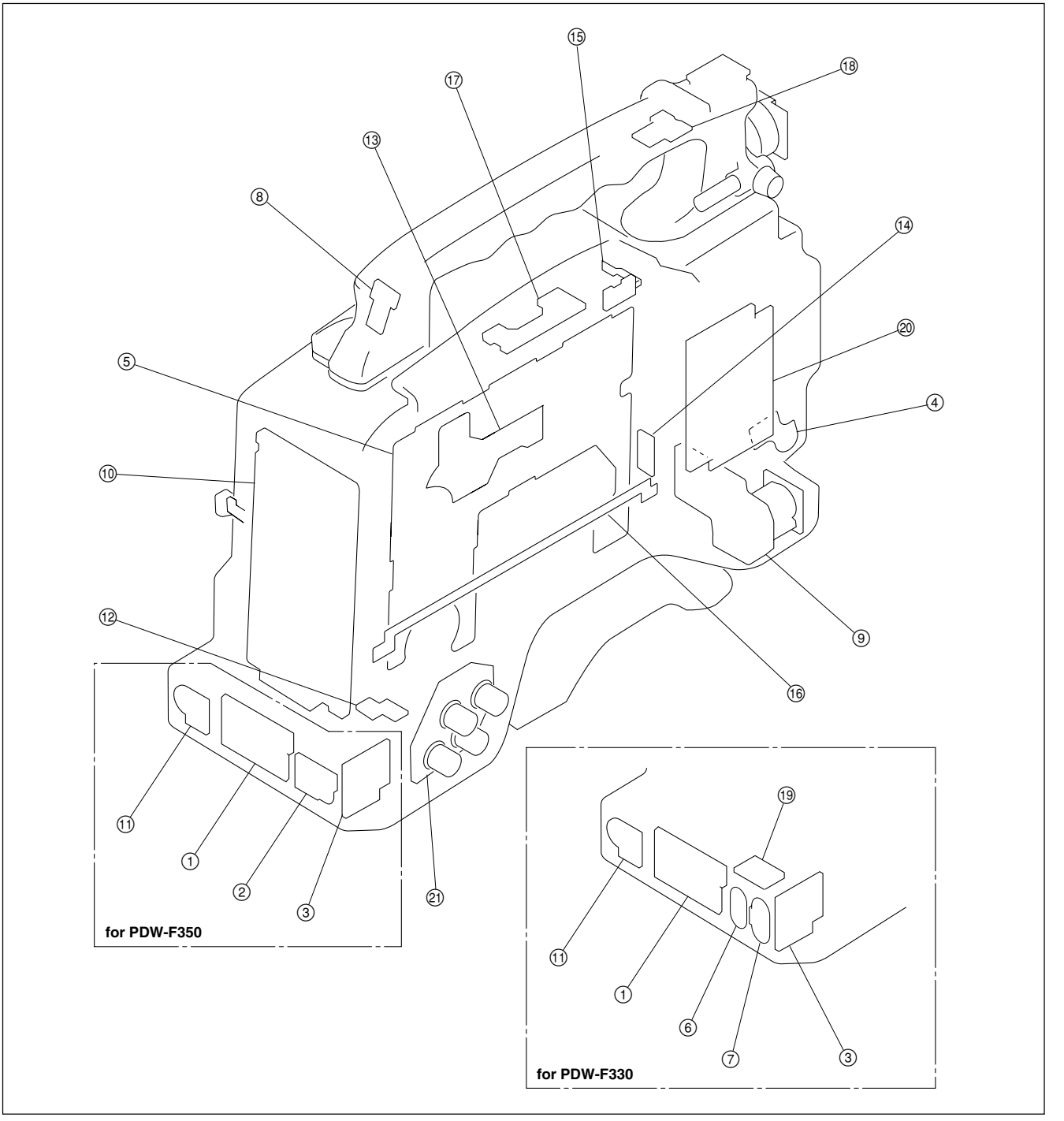
2-1-1. Locations of the Printed Wiring Boards

Front side



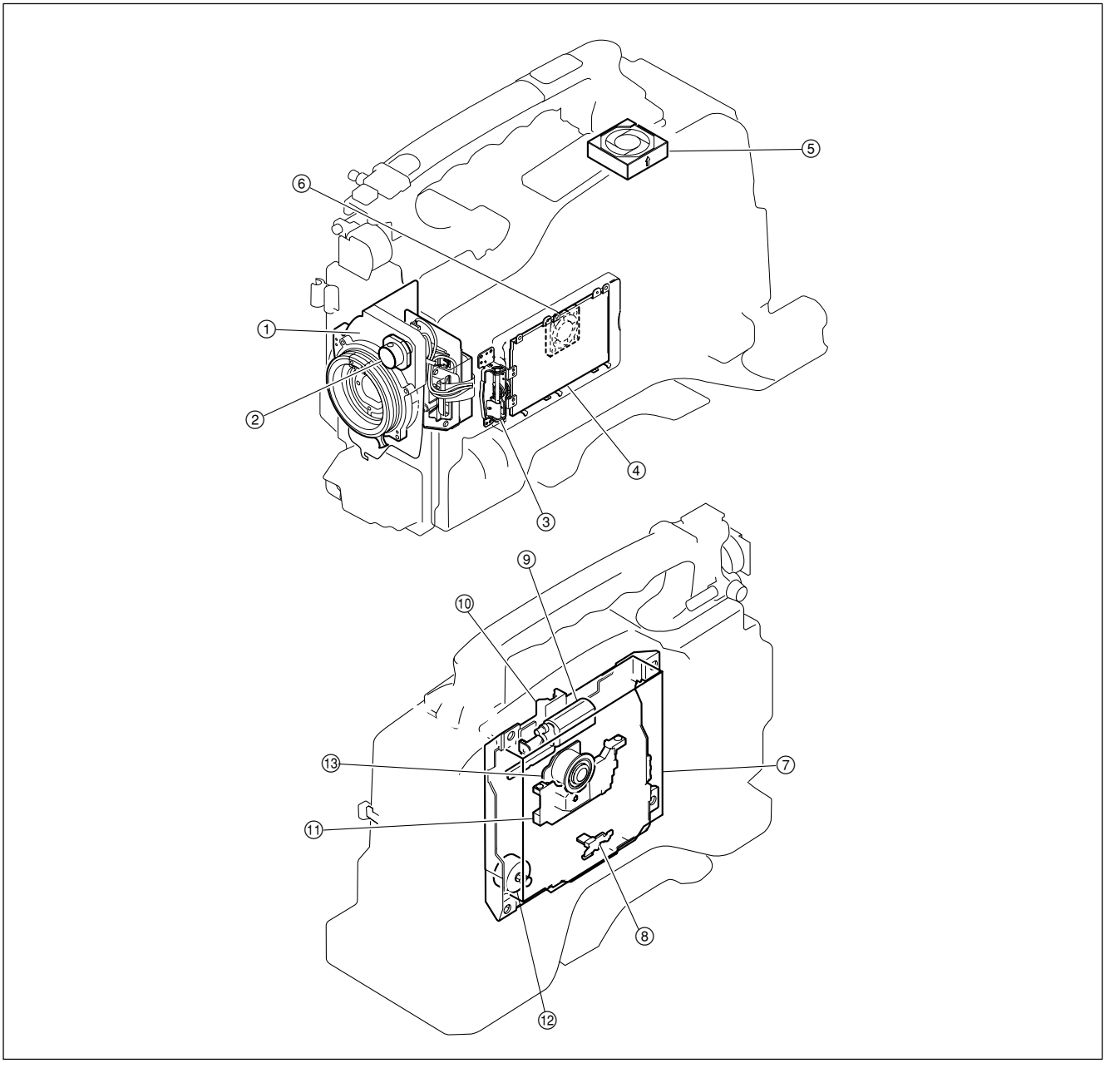
① CNB-18
② DCP-37 (for PDW-F350)
DCP-37A (for PDW-F330)
③ DET-43G
④ DIF-167
⑤ DR-550G
⑥ DU-318
⑦ DU-398
⑧ DVP-29
⑨ ENC-100
⑩ FP-144 (for PDW-F350)
FP-144A (for PDW-F330)
⑪ GCN-17
⑫ HP-124
⑬ IR-36
⑭ KSW-51
⑮ KY-573
⑯ LGT-12
⑰ MB-1028
⑱ MS-71
⑲ PA-328
⑳ PA-329
㉑ PA-330
㉒ PD-115
㉓ PS-708
㉔ PSW-85
㉕ SE-743
㉖ SY-322
㉗ TX-105 (for PDW-F350)
㉘ VF-87
㉙ VR-312

Rear side



① AA-112
② AU-307 (for PDW-F350)
AU-307C (for PDW-F350)
③ CN-2624
④ CN-2829
⑤ HN-300G
⑥ IO-228 (for PDW-F330)
⑦ JK-73 (for PDW-F330)
⑧ LED-428
⑨ MA-136
⑩ RE-236
⑪ RM-203
⑫ RX-96
⑬ SE-709
⑭ SE-800
⑮ SW-1124G
⑯ SW-1125G
⑰ SW-1246
⑱ SW-1249
⑲ TC-110 (for PDW-F330)
⑳ TG-249
㉑ VIO-36 (for PDW-F350)
VIO-36A (for PDW-F330)

2-1-2. Locations of Main Mechanical Parts



① CCD unit
② Filter knob
③ LCD Hinge assembly
④ LCD back light
⑤ Fan motor (top)
⑥ Fan motor (drive)
⑦ Loader (P1) assembly
⑧ Cleaner (P1) assembly
⑨ Loading motor (P1) assembly
⑩ Drive (P10) sub assembly
⑪ Optical block assembly
⑫ Seek motor (P10) assembly
⑬ Spindle motor

2-2. Circuit Description

2-2-1. Video Signal System

DVP-29 board

The DVP-29 board contains interface circuits such as the video data I/F with the camera board (DCP-37 board), the ATA bus with the Drive board (DR-550 board), the audio I/F with the inside panel board (FP-144 board), the PCI bus with the CPU board (SY-322 board) and other communication interfaces. The DVP-29 board also contains the following devices for the signal processing circuit that is required for disc recording: MPEG ENCODER (IC700), two pieces of the MPEG DECODER (IC800, IC900), the baseband processing (IC400), the data stream processing (IC1100), the video DSP (IC1900) and two pieces of the audio DSP (IC1500, IC1501).
The above described circuits that are contained in the DVP-29 board are controlled by the CPU of the SY-322 board that is connected via a 140-pin connector (CN1600).

1. Main devices

< MPEG ENCODER (IC700) >

The MPEG ENCODER (IC700) is the IC that converts the HD video data to the MPEG-2 video format. It receives the 8 bits component input signal of 74 MHz Y/Pb/Pr, and it outputs the ES stream 33 MHz with the bus width of 16 bits.
It supports the profile of MP@HL (1440 × 1080 or 1440 × 540) with the bit rate of 18 Mbps to 35 Mbps. The standard picture rate is 15 pictures per 1 GOP.
Because the core voltage of this IC is as low as 1 V, it is generated from 2.5 V using IC1010.

< MPEG DECODER (IC800, 900) >

This is the IC that converts the MPEG-2 video data to the HD video data. The input signal is a 33 MHz signal with the bus width of 16 bits.
It receives the ES stream, and outputs the 74 MHz Y/Pb/Pr 8 bits component signal.
The 2-3 pull-down during 24P playback is performed in this IC.

< Baseband processor (IC400) >

The baseband processor (IC400) performs the following functions:
Selection of decoder during playback
Generation of the OSD (thumbnail and Proxy video display) signal and up-conversion to the HD size.
DV Video CODEC
Video DSP I/F and video filter
Audio DSP I/F and selector
Generation of the sync signal interrupt vector
Interface with the peripheral CPU and devices.

< Data-stream processing (IC1100) >

The Data-stream processing (IC1100) is a gigantic memory controller that controls the SDRAM of 1.5 Gbits and SRAM of 8 Mbits. It performs the mutual data conversion between the disc, CODEC, and IEEE1394.
In practice, a CPU controls this IC. This IC is equipped with the PCI bus I/F and the ATA bus I/F separately. This IC is connected to the CODEC by the dedicated I/F. This IC also performs the I/F function between the baseband processor IC and the CPU.

2. A/V signal system overview

< HD video recording >

The Y signal and the Pb/Pr signal (8 bits, 74 MHz) are supplied from the DCP-37 board and input to the MPEG ENCODER (IC700).
In IC700, they are coded to the MPEG-2 video data (MP@HL), and then are sent to the steam processor (IC1100) where they are arranged into the disc recording image chain on the SDRAMs (IC1402 to IC1407) by IC1100. The disc recording image chain data is sent to the Drive board (DR-550 board) via the ATA bus.
During the HD recording, there is a signal path that outputs the DV signal via i-Link. This signal path will be described in the latter part < DV video recording > of this circuit description.

< Proxy video recording >

The Y signal and the R-Y/ B-Y signal (8 bits, 27 MHz) that are down-converted in the DCP-37 board are input to the baseband processor (IC400).
In IC400, these signals receive the conversion for the number of pixels and are sent to the video DSP (IC1900) where they are coded to the MPEG-4 video data. This MPEG-4 video data is also called as Proxy video.
Later, this data is sent to IC1100 via IC400, and then sent to the SDRAMs (IC1402 to IC1407) where the data is re-arranged to the disc recording image chain. This signal is sent to the Drive board (DR-550 board) via the ATA bus.

< DV video recording >

The Y signal and the R-Y/ B-Y signal (8 bits, 27 MHz) that are down-converted in the DCP-37 board are input to the baseband processor (IC400).
In IC400, these signals pass through the chroma filter. Then they are converted to the DV video data. The converted DV video data is sent to IC1100.

The DV video data is re-arranged to the disc recording image chain by IC1100 using the SDRAMs (IC1402 to IC1407), and is sent to the Drive board (DR-550 board) via the ATA bus.
During the HD recording, the Proxy video signal is output as the DV output signal through i-Link. In this circuit configuration, the DV video data is sent to IC500 of the SY-322 board from the SDRAM via the PCI bus so that the DV video data is output via i-Link.

< HD video playback >
The data that is supplied from the DR-550 board is input to IC1100, where it is expanded on the SDRAMs (IC1402 to IC1407). In practice, the HD video data is separated in IC1100 from the input data, and is sent to two pieces to the MPEG DECODER (IC800, IC900).
In IC800 and IC900, the HD video data is decoded to the Y/Pb/Pr signal. From the Y/Pb/Pr signal, only the desired data is selected by IC400, and the selected data is sent to the DCP-37 board.
Two pieces are used for the decoder in order to enable VTR-like playback. While one decoder is decoding the main line signal, the other decoder decodes the next clip in advance.
Outputs from two pieces of the decoder are switched at the switching point of clips using IC400 so that video signals are switched smoothly.

< Proxy video playback >
The data that is supplied from the DR-550 board is input to IC1100 where it is expanded on the SDRAMs (IC1402 to IC1407).
In practice, the Proxy video data is separated from the input signal in IC1100. The separated Proxy video data is sent to the video DSP (IC1900) via IC400.
The video signal that is decoded by the video DSP is returned to IC400 again where it is up-converted to the HD size after passing through the OSD block. The up-converted signal and the main line video signal are switched as required, and the switched signal is sent to the DCP-37 board.

< DV video playback >
The data that is supplied from the DR-550 board is input to IC1100 where it is expanded on the SDRAMs (IC1402 to IC1407). In practice, the DV video data is separated in IC1100, and the separated data is sent to the baseband processor (IC400) where the data is decoded and sent to the DCP-37 board.
At the same time, the DV video data is sent to the SY-322 board from IC1100 via the PCI bus where the DV video data is output to i-Link.

< Audio recording >
The serial audio signal (2 channels) that is supplied from the FP-144 board passes through the baseband processor (IC400). Then it is sent to the Audio DSP (IC1500).
In IC1500, the audio recording signal receives the ACG and filter processing. After the processing, the audio data is sent to the stream processor (IC1100) via IC400.
The audio recording signal is expanded to disc recording image chain on the SDRAMs (IC1402 to IC1407) by IC1100, and is sent to the Drive board (DR-550 board) via the ATA bus.
The audio data that is going to be output to i-Link is read from the SDRAMs and is sent to the sampling rate converter (IC603, IC604). In the IC603 and IC604, the audio data is converted to the sampling frequency of 48 kHz (during 2 channel operation) or 32 kHz (during 4 channel operation) and is returned to IC1100.
After the audio data is shuffled by IC1100, it is sent to IC500 of the SY-322 board together with the DV video data via the PCI bus. This data is output to the i-Link.

< Proxy audio recording >
The recording audio data that have been expanded on the SDRAMs (IC1402 to IC1407) is read out by IC1100. The read data is sent to the Audio DSP (IC1501).
In IC1501, the sampling rate of the recorded audio data is converted from FS: 48 kHz to 8 kHz. After the sampling rate is converted, the recorded audio signal is returned to IC1100 where the audio signal is converted to the A-Law, and is arranged to the disc recording image chain on the SDRAM. This data is sent to the Drive board (DR-550 board) via the ATA bus.

< Audio playback >
The audio playback data that is supplied from the DR-550 board is input to IC1100 where the data is expanded on the SDRAMs (IC1402 to IC1407).
The audio data is separated in IC1100. The separated audio data is sent to the Audio DSP (IC1500) via IC400. The desired audio volume control is executed in IC1500. The audio signal after volume control is sent to the FP-144 board via IC400.

< Proxy audio playback >
The audio playback data is supplied from the DR-550 board and input to IC1100 where the data is expanded on the SDRAMs (IC1402 to IC1407).

The Proxy audio data is separated in IC1100. The separated audio data is converted from A-Law to PCM and is sent to the Audio DSP (IC1501).
In IC1501, the sampling frequency of the playback audio signal is converted to 48 kHz. The converted audio signal receives the pitch-shift and filter processing according to the selected playback speed. After this processing, the audio signal is sent to the FP-144 board via IC400.

3. Sync signal system overview

The HD video data and the SD video data are 74 MHz (CN100 pins-112, -136) and 27 MHz (CN100 pin-82) respectively, and are supplied from the DCP-37 board. The sync signal reference of video data is based on the sync signal that has been multiplexed in the video data. However, the HD decoder receives the dedicated frame pulse (CN100 pin-139) from the DCP-37 board.
There are three sync signals used in the control system: the HD_Frame (CN100 pin-76), the SD_Frame (CN100 pin-78), and the 24P_Frame (CN100 pin-77). The HD CORDEC is controlled based on the reference of the HD_Frame or the 24P_Frame pulse. The Proxy Video and the DV Video are controlled based on the reference of the SD_Frame pulse.
All of these signals are supplied from the DCP-37 board, and are processed as the interrupt into the CPU on the SY-322 board by IC400.
The 24.576 MHz audio clock (CN100 pin-81) that is supplied from the DCP-37 board is used as the audio data transfer clock between IC400, IC1100, IC1500, and IC1501.
This clock signal is frequency-divided into 256FS/64FS/FS by IC400. The divided frequencies are supplied to the FP-144 board and the DCP-37 board.
The 33.1 MHz PCI clock (CN1600 pin-61) that is supplied from the SY-322 board is distributed to the respective devices by IC1701, and is used the main clock signal commonly by the respective devices.
The 40 MHz clock that is generated by X1700 is used as the DV video clock by IC400, and is used as the SDRAM clock by IC1100 after its frequency is doubled.

4. Communication and others

Most of the controls for the respective devices are performed from the PCI bus except that initialization of the respective devices is performed from the I/O port of the CPU on the SY-322 board.
The CPU is connected to IC1100 via the PCI bus. IC1100 functions as the interface between IC400 and Audio DSP (IC1500, IC1501), and the CPU.
In addition to the above function, IC400 functions as the interface between the video DSP (IC1900), the FP CPU (FP-144 board), the AT CPU (DCP-37 board), the character generator (IC109), and the CPU.
The character generator (IC109) is used for status display on the color LCD. The character generator signal is sent to the FP-144 board.

2-2-2. Disc Recording System

SY-322 board

In this equipment, the RISC microprocessor (VR4131) and the IEEE1394 (i-Link) controller are installed and used as the CPU board for the disc recording control.
In these CPUs, the real-time OS (iTRON) is installed so that they can control almost all the devices on the DVP-29 board via the PCI bus and its expansion I/O port.
All of the commands such as the disc modes, creation of the disc recording signals, and creation of the disc playback data are controlled by this CPU.
The CPU of the SY-322 board establishes communication with the DR CPU, the AT CPU, and the FP CPU via IC400 and IC1100 of the PCI bus and the DVP-29 board respectively so that all operations are synchronized and interlocked each other.
The PCI bus, the power supply control line, and other control lines inside the DVP-29 board are connected by the 140-pin connector (CN100).
The program version can be upgraded by re-writing the flash memory.

< CPU peripheral circuit >

The CPU operates on the clock signals of internal core 200 MHz, SDRAM I/F 100 MHz and PCI bus 33.1 MHz using X201 as the master clock generator.
As the external memory of the CPU, the 32 bits × 32 M words SDRAMs (IC210, IC211, IC215, IC216) and the flash memories (IC213, IC214) of 32 bits × 4 M words and the 256 kbits non-volatile FRAM (IC309) is used.
The EEPROM (IC203) is connected to the CPU serial port, and the hours meter data and other data are stored in the EEPROM.
The CPU bus is expanded to the two channels of A and B. The A-bus uses ROM TOOL (CN300) with IC304 and IC305 as buffers. The B-bus is used as the external I/O and the FRAM I/F with IC306 and IC307 as buffers.
The CPLD (IC400) is functioning mainly as the I/O address decoder and the real-time clock frequency-divider.
The connector CN201 is the serial communication connector to which a PC can be connected for debugging and

version upgrading. The MB-1028 board is equipped with the connector for the same function as described above. (The connector is installed on the bottom of the equipment.)
The switch S201 is the hard reset switch and the switch S200 is the switch for debugging. All switches of the DIP switch must be set in the OFF positions for the normal operation.

< i-Link >
The IEEE1394 controller (IC500) is connected to the CPU and to IC1100 of the DVP-29 board via the PCI bus. The IEEE1394 controller (IC500) enables mutual data communication between them.
The i-Link bus is connected to the CN-2624 board (IEEE1394 connector pin-6) that is located on the rear of the equipment using a shielded wire from CN500.
This bus is equipped with the protection diode (D500) that functions as the protection diode when the i-Link connector is inserted in the reverse polarity.

2-2-3. Audio System

FP-144 board

The FP-144 board contains H8S CPU as the sub CPU of the SY-322 board. The FP-144 board also contains the analog audio circuit, the A/D converter, the D/A converter, the LOC display switcher circuit, and the power supply circuit.
The CPU runs on 16 MHz, and is equipped with the multiple numbers of I/O, three channels of serial communication and two channels of the I^2C communication.
Because the lithium coin battery is installed, the watch information and the data stored in the RAM inside the CPU are kept even when the power supply to the main unit is turned off.
The CPU performs functions such as reading the audio circuit setups, reading key switches, setting the color LCD, monitoring the power supplies and battery, and managing the TC data.
The FP-144 board is equipped with the serial communication connector that enables debugging and writing of the internal flash memory.
All switches of the DIP switch (S500) must be set in the OFF positions for the normal operation.

Main Functions of the CPU and Peripherals

1. Audio circuit control

It receives the audio mode information and the menu setup information from the CPU (IC200, referred to as “disc CPU” hereafter) of the SY-322 board, and performs the audio circuit control according to the input information.
The respective switches are connected to the I/O port of the CPU (IC505, referred to as “FP_CPU” hereafter) so that the information from these switches is sent to the disc CPU.
It also controls the phantom power supply (CN105 pins-4, -6) of the MA-136 board, and switches the microphone gains (CN107 pin-8) of the AA-112 board.

2. KY-573 board communication

The KY-573 board contains the mode selector keys such as STOP and PLAY. It is located on the top of the equipment.
The KY-573 board and the FP_CPU are connected by the I^2C bus (CN105 pins-7, -8). This reads the key switch information and controls the LED.

3. Color LCD control

The PD-115 board and the FP_CPU are connected by the serial bus. The FP_CPU sets the color LCD adjustment values, sets the backlight brightness, and reads the switch data.

4. Watch IC control and EEPROM control

The watch IC (IC503) and the EEPROM (IC506) are connected to the I^2C bus that is connected to the KY-573 board.
The watch IC power supply is backed up by the lithium coin battery. The FP_CPU sets and reads of the present time in accordance with the request from the disc_CPU.
The EEPROM stores the A/D compensation values and the LCD initial setting values.

5. Info-Battery communication

This equipment supports the batteries with the SM Bus specifications. The I^2C bus (IC505 pins-137, -138) of the FP_CPU is connected to the Info-Battery serial terminal on the rear of the equipment via the selector switch (IC500, IC501).
The FP_CPU reads out the battery types and the residual hours information from the battery and sends the information the disc_CPU (IC200). IC500 and IC501 function as the switch depending on whether the installed battery supports the Info-Battery specifications.
The battery’s ID resistance value is converted to the voltage value by IC504, and is read out by A/D converter (IC505 pin 118) of the FP_CPU.
The IC504 circuit of the pin-5 to pin-7 converts the remaining power of the Anton Bauer battery to the voltage value in the range of 0 to 3 V, and the converted voltage data is sent to the A/D (IC505 pin-116) of the FP_CPU.

6. Measurement of power supply voltage
(For the batteries except for the ones connected to DC-IN and the Info-Battery)

CN107 pin-21 is connected to the primary circuit of the input power supply. The primary power supply voltage passes through R523. Then it is sent to the offset addition circuit (IC502) so that the primary power voltage is converted to the voltage value within the voltage range (0 to 3 V) that can be read out by the FP_CPU. The converted voltage is read out by the A/D (IC505 pin-117) of the FP_CPU.
The amount of offset addition is controlled by the D/A converter output (IC505 pin-120) of the FP_CPU. The measured value is converted back the actual voltage value by the FP_CPU, and is sent to the disc_CPU.

7. Demodulation of infra-red remote control signal

The DU-318 board is connected to CN502 to which the CIRCS data from which the carrier wave has already been removed. The FP_CPU demodulates the data input that is supplied from pin-57 to the command code and is sent to the disc_CPU.

8. POWER OFF soft control

The FP_CPU keeps supplying the main power to the equipment through CN107 pin-18 until the power supply OFF command is supplied from the disc_CPU.

Audio Circuit

< Input system >

The audio signal from the front microphone is supplied from the MA-136 board, the audio signal from the rear input is supplied from the AA-112 board, and the audio signal from the wireless microphone receiver is supplied from the RX-96 board. All of these audio input signals are sent to the FP-144 board.
The front microphone signal is fed to both circuits where one circuit contains the low-cut filter (IC50, IC51) while the other circuit does not contain the low-cut filter. These circuits are selected by IC54 to IC57 that are located in the latter circuit. The low-cut filter has the characteristics of fc = 220 Hz and −12 dB/octave.
The signal path of the respective audio signals is selected by the selector switch (IC1 to IC4) of the FP_CPU.
The selected audio signal is converted to the unbalanced format by IC5 and IC6, and is sent to the ATT circuit.
The FP_CPU selects the operation modes of the circuits Q200 to Q202 and Q250 to Q252. These circuits determine the attenuation levels of the audio signal.
The attenuation levels are −8/−6/−4/0 dB at the headroom 20/18/16/12 dB respectively.
The audio signal is then buffered by the amplifier (IC200, IC201, IC250, IC251) and is input to the A/D converter (IC202, IC252).
The serial audio data after the A/D conversion is sent to the stream processor (IC400) of the DVP-29 board.
The audio volume controls and the AGC control are not applied in the form of the analog signal, but is digitally applied by the Audio DSP of the DVP-29 board.

< Output system >

The serial audio data that is supplied from the DVP-29 board is input to IC301 where channels are selected and then is sent to the D/A converter (IC302).
The MONITOR switch (S602) on the side panel of the equipment controls switching IC301.
The D/A-converted signal passes through the post-filter (IC303). Then it is sent to the attenuation circuit.
The FP_CPU selects the operation modes of the circuit Q301 to Q304. This circuit determines the attenuation levels of the audio signal.
The attenuation levels are 0/−2/−4/−8 dB at the headroom 20/18/16/12 dB respectively.
The audio signal is buffered by the amplifier (IC304) and is distributed to the rear output connector and to the headphones output circuit.
The audio signal for the rear output connector passes through the drive amplifier (IC305 to IC307) and is sent to the connector (JK or AU board). The circuit Q307 to Q310 functions as the pop noise suppressor at the time of power supply ON/OFF.
The switch S300 is a special switch for specific customers and its lever should be set to pin-3 side of S300 for normal operation.
The channel combination of the audio output signal for the headphone output is determined by IC406. The MONITOR switch (S601) on the side panel of the equipment controls switching IC406.
The selected signal receives the audio volume control by the VCA amplifier (IC402), and is sent to the drive amplifier (IC408) together with the alarm tone signal that is supplied from the FP_CPU.
The VCA amplifier (IC402) is controlled of its gain by the MONITOR VR (RV400) on the side panel of the equipment.

Other Circuits

- IC400, IC401, Q401, and Q402 are the power supply circuit for removing ripple effects.
- Q412 and Q414 are the muting signal generator circuit at the moment of power supply ON/OFF.

- Q502 and Q503 are the circuit to switchover between the main power supply source and the lithium battery source for the FP_CPU power.
- IC602 and IC604 are the color LCD display switching circuit.
- IC603 and Q600 are the color LCD panel power supply circuit
- IC600 is the interface circuit for the toggle switch and rotary switch on the side panel. IC600 is connected to the AT_CPU (DCP-37 board).

MA-136 board

The MA-136 board is the stereo front microphone amplifier.
The amplifier gain is fixed to +20 dB. The input impedance of this circuit is 3 kΩ. IC1 and IC2 are the balanced amplifier of +20 dB. Its output is sent to the FP-144 board.
Q1, Q2 and Q5, Q6 constitute the switch circuit for the phantom power supply. During the stereo mode, pins-11, 9 of CN2 are set to 'L'. During the monaural mode, pin-11 is set to 'L', and pin-9 is set to 'H'.
This control is performed by the CPU of the FP-144 board.

AA-112 board

Rear audio input circuit
The AA-112 board is the audio input amplifier with gain of −24/+10/+20/+30 dB and input impedance of 3 kΩ (during the input gain of +10 to +30 dB) or 10 kΩ (at the gain of −24 dB).
The AA-112 board consists of the input attenuation circuit, the balanced amplifier, and the amplifier gain switching circuit.
IC2 and IC3 are the balanced amplifier that is capable of switching its gain in the steps of 0/+10/+20/+30 dB. The output signal from the AA-112 board is sent to the FP-144 board.

< LINE input >
The LINE input circuit functions as an attenuator of −24 dB with the composite input resistance of 10 kΩ load.
When the input signal is supplied to this LINE input, the circuit between pins-2, -5 of the balanced amplifier is opened so that the amplifier gain becomes 0 dB. As a result, the LINE input circuit functions as an amplifier of −24 dB gain.

< MIC input >
The MIC input circuit functions as an input circuit with the composite resistance value of 3 kΩ load. This circuit gives no signal attenuation. Gain of the balanced amplifier can be selected from +10/+20/+30 dB.

< MIC+48 V input >
The MIC+48 V input circuit functions as an input circuit with the composite resistance value of 3 kΩ load. This circuit gives no signal attenuation. Gain of the balanced amplifier can be selected from +10/+20/+30 dB.
When the input signal is supplied, Q5 and Q6 are turned ON so that the +48 V phantom power is supplied to the input circuit.

< Gain switching >
The gain switching signal is supplied from the FP-144 board to CN2 pin-13 with the three-valued data. The three-valued data are the voltage value of 0/3/5 V for the amplifier gain of +10/+20/+30 dB respectively.
When the control line remains in 0 V, both Q7 and Q8 are turned OFF. When the control line is 3 V, Q8 is turned ON. When the control line is 5 V, both Q7 and Q8 are turned ON.
As the result, the amplifier gains are switched by the combination of the FET operations in the subsequent circuit.

2-2-4. CCD Block System

PA-328/329/330 board

The PA-328/329/330 boards are mounted directly on the CCD block. These circuits have the main function of driving the CCD imager and sampling of the CCD output signal.
The PA-328 board is for the B channel, the PA-329 board is for the G channel, and the PA-330 board is for the R channel.
The drive pulses that are supplied from the TG-249 board are amplified so that these pulses can drive the CCD imagers directly. (IC9, IC10: H Driver)
On the other hand, the CCD output signals are amplified approximately two to three times (different depending on the signal channels) by IC13. The amplified signals are converted to the video signal by the co-related dual sampling by IC14.
IC14 performs the sensitivity adjustment at the same time. In addition to the above operations, the temperature that is detected by the temperature sensor (IC15) is converted to the voltage data and is sent to the microprocessor of the DCP-37 board.
IC17 of the PA-330 board is the EEPROM that stores the Vsub voltage data of the CCD imagers.

TG-249 board

The pulses that drive the CCD imagers and the pulses that are used for sample-and-hold of the CCD output signals

are generated by IC15 and are sent to the PA board.
The V drive signal is used to drive the CCD imagers via IC3, IC6, and IC9.
These pulses are generated from the 55 MHz clock that is created by the VCO in this board.

2-2-5. Camera Block System

DCP-37 board

The DCP-37 board has the function of analog signal processing of camera, the digital signal processing of the camera, down-conversion and sync signal generator.
Analog signal processing circuit:
The video signals that are output from the PA-328/329/330 boards receive the various signal processing as follows: black shading correction, gain increase control, blanking cleaning, white shading correction, feedback clamp, band-width limiting by the low-pass filter and white balance processing by IC10, IC13, and IC14.
After these processing are applied, the video signals receive the feedback clamp and flare compensation by IC15, IC16, and IC17. After these processes, the video signals are converted to 12 bits digital RGB signals at the rate of 55 MHz by the A/D converter (IC18, IC19, and IC20). The 12 bits digital RGB signals at the rate of 55 MHz are input to the camera signal processor IC (IC1).
The camera signal processor IC (IC1) detects the average value and the peak value of the camera video signals that are required for the AUTO operations of the camera such as the AUTO black balance operation, AUTO white balance operation, and AUTO iris control. The detected average value and peak value are sent to the microprocessor (IC425).
In addition to the above operations, the PsF conversion function and the Slow & Quick function are realized by using the SDRAM (IC800, IC801, and IC802).
At the same time, various control signals are controlled by the microprocessor (IC425) via IC517 and IC502. The camera main video signal passes through the 1H-delay line generating the V-detail signal. After the 1H-delay line, the matrix signal and the detail signal are added to the camera main signal. Then the camera main signal receives the pedestal control, gamma correction, knee correction, and white clip processing.
After passing through the selector circuit with which either the camera main video signal or the color bar signal can be selected, the selected signal becomes the digital output signal.
The digital output signal that is supplied from the camera signal processor is input to the baseband processor IC (IC2).
The baseband processor IC (IC2) provides the timebase conversion for the progressive signal and the down-conversion for the signal to be output as the SD output signal. The output signal of the baseband processor IC (IC2) for recording on disc is sent to DVP-29 board.
The output signal of the baseband processor IC (IC2) is also supplied to external equipment as the analog output signal. For this purpose, the video signal is sent to the signal processor IC (IC203, IC204, IC216) containing the built-in D/A converter. The video signal that is going to be output as the SD output signal is down-converted by IC2 and mixed with the characters and markers in IC374. Then its aspect ratio is converted for the LCD output. The video signal that is going to be output to external equipment as the analog output signal is sent to the signal processor IC (IC203, IC204, IC216) containing the built-in D/A converter.
IC203 provides the camera signal to be output to external equipment. IC204 provides the camera signal to be sent to the VF board. IC216 provides the camera signal to be sent to LCD.
Sync signals are generated by IC600.
A total of three main VCO systems are used (using a total of five pieces of VCO device). The first VCO system is the 55 MHz VCO system in the TG board (using a total of two pieces of VCO device). The second VCO system is the 74 MHz VCO system for the HD format (using a total of two pieces of VCO device). The third VCO system is the 27 MHz VCO system for the SD format (using one piece of VCO device).
In addition to the above signals, IC631 generates the 24 MHz signal to be used for audio system.
When the HD gen-lock signal is input, the HD gen-lock signal receives the binarization processing by IC613. Then it is sent to IC600.
When the SD gen-lock signal is input, the SD gen-lock signal receives the binarization processing by IC603. Then it is sent to IC600.
The PLL IC (IC618, IC619, IC620) applies the PLL control over the respective systems of the VCO.
The microprocessor (IC425) is in charge of overall control of the entire camera system. The following peripheral ICs are installed to the microprocessor (IC425): the FLASH ROM (IC436 and IC437), the SDRAM (IC439 and IC440), the FRAM (IC442 and IC443), the memory stick controller (IC404), and the camera remote control I/F (IC402).

DIF-167 board

The DIF-167 board contains the interface circuit with the lens, the interface circuit for distance measurement sensor

for auto focus, and the angular velocity sensor circuit.
CN5 is connected to the 12-pin lens connector (for 2/3-inch lens). CN1 is connected to the 14-pin lens connector (for 1/2-inch lens).
When a lens with the serial interface function is connected, the communication with a lens is performed via the LENS_Rx and Tx signals.
When a lens with only the analog interface is connected, the inch size is detected by Q4 and is sent to the microprocessor via IC1.
For zoom control of a 1/2-inch lens, the output signals from IC1 pin-18, pin-19 and pin-20 are added at IC6 and are sent to the lens.
CN3 is connected to the front panel switch board (VR-312 board) to read out the switch status with IC1.
CN4 is connected to the distance measurement sensor for auto focus. It sends the detected distance data to the microprocessor of the DCP-37 board.
VS1 and VS2 are the angular velocity sensor for auto focus. They detect the camera movement in the horizontal and vertical direction. The detected values are sent to the microprocessor via IC2.

2-2-6. LCD System

PD-115 board

The PD-115 board consists of the color LCD panel drive circuit and the power supply circuit for LCD backlight.
IC1 is the color LCD panel drive IC that contains the built-in video signal RGB driver, the timing generator, and the VCO.
IC1 also contains the serial interface circuit and electronic potentiometers that are used to establish the various setups in accordance with the commands from the microprocessor (IC505) of the FP-144 board.
The RGB video signals that are input to IC1 pin-37 through pin-39 receive contrast adjustment and brightness adjustment. Then, they pass through the output signal polarity inversion circuit and are output from IC1 pin-20 through pin-22. The factory adjustment data is stored in the IC3 EEPROM.
The respective timing signals for driving the LCD panel are generated from the sync signals that are input to IC1 pin-41 and pin-42.
The operations such as turning off the backlight, inverting the video signal left to right or up to down, and switching the aspect ratio between 4:3 and 16:9 are performed in accordance with the control signals supplied from the microprocessor (IC505) of the FP-144 board.

2-2-7. Power Supply System and Others

CNB-18 board

The CNB-18 board checks the input voltage (+11 V to 17 V), and controls distribution of the input power to each circuit board.

• Power ON/OFF control
Power ON/OFF is controlled by the POWER switch position and by the microprocessor of the FP-144 board. When the CPU of the FP-144 board detects that the POWER switch is turned OFF, it sets the POWER HOLD signal to “L” to turn off the power after disc operation is completed if the equipment is in the midst of operating a disc.

• Input excess voltage protection
The comparator (IC4) monitors the power voltage that is input from EXT DC connector and from battery.
If either voltage is higher than 19.7 V, Q5 is turned ON so that the power is shut down.
This circuit does not have the latch function so that the power is recovered immediately when the input power voltage reaches less than +19.7 V.

• Battery or EXT DC power selector circuit
The comparator (IC8) detects the input voltage from the EXT DC connector. Only when this voltage is less than the specified voltage, the main power supply is switched to the battery.
The comparator output signal passes through IC101, IC102, IC105, and IC108, and finally drives the FET DRIVER (IC106) that turns ON/OFF of a group of FETs. (Q105 to Q108: Turned ON when battery is used. Q110 to Q113: Turned ON when EXT DC is used.)
IC106 is equipped with the voltage boost circuit (Vcc +8.5 V) that drives the gate of the N-channel MOS FET.

• Over-current detector
An over-current detecting resistors R51 to R53 are connected in the circuit before the UREG power output from the CNB-18 board. The FET DRIVER (IC11) detects the voltage across the resistors.
When the voltage across the over-current detecting resistors exceeds 200 mV, the power is shut down. There is another power shut-down signal, the H SHUT DOWN signal supplied from the RE-236 board. If either one of the DC-DC converter outputs is short-circuit, the power is also shut down. Because the FET DRIVER (IC11) of the CNB-18 board has the latch function, the power does not recover

automatically and the POWER switch should be turned ON in order to recover the power.

• Protection against reverse-polarity connection of input power

When the input power is connected in reverse polarity, the FET (Q1) is turned OFF so that the GND connection of the control circuit is disconnected for protection of the control circuit, and for stopping the +12 V power to the respective circuit boards.

RE-236 board

The RE-236 board is the DC-DC converter board.

The regulated powers of +2.7 V, −4.8 V, and 10.2 V are generated by the switching regulator IC (TL1451) circuit of IC2 and IC6. The regulated powers of +46 V, +25.5 V, +15.5 V, and −8 V are generated by the IC3 switching regulator IC (TL1451) and the transformer circuit. The regulated powers of +4.9 V, +3.3 V, +2.5 V, +1.5 V, +5.4 V, and +1.8 V are generated by the switching regulator IC (TPS5120) using IC200, IC201, and IC202.

In addition to the above regulators, the 12 V power that is supplied to the externally connected illumination lamps is generated by the IC401 switching regulator IC (LTC1625).

• Input voltage monitoring circuit

The input voltage monitoring circuit (IC8) detects the input voltage, and allows the controller IC to run only when the input voltage stays within the specified voltage range.

• Protection circuit against shorted output

Every regulated power outputs contain a diode or a transistor that is reverse-biased so that they are turned OFF during the normal operation.

If any one of the regulated outputs is short circuited, or if it does not provide the voltage output during an error, Q33 is turned ON so that the H SHUT DOWN signal is output.

When the H SHUT DOWN signal is output, the clock signals to all ICs are stopped so that the output voltages of all regulators are stopped.

The H SHUT DOWN signal is also sent to the FET DRIVER (IC11) of the CNB-18 board so that supply of the UNREG power is also stopped.

VF-87 board

The VF-87 board reads data from the VF interface, the light switch, and the handle switch.

The VF-87 board not only relays the video signal and the VF power supply to the VF connector, but also performs input/output of the various VF control signals and the switch signals by setting data in the 16 bits I^2C I/O port (IC1).

MS-67 board

The MS-67 board is the connector board for memory stick connection.

When a memory stick is inserted, the INS signal is set to LOW so that the camera microprocessor checks capacity and types of the memory stick inserted.

VCC is supplied to a memory stick only when a memory stick is inserted, or only when accessing a file on a memory stick. When VCC is supplied, the ACTIVE_LED (D2) is turned ON.

Access to the memory stick data is processed in the following order: VCC ON → SCLK ON → BS Pulse → DATA IN/OUT → SCLK OFF → • • → SCLK ON → BS ON → DATA IN/OUT → SCLK OFF → • • → VCC OFF.

2-3. Matching Connectors

Use the following connectors at the ends of the cables when connecting the cables during installation and maintenance, or alternately use the following cables.

Panel indication	Matching connectors/cables
GENLOCK IN TC IN TC OUT VIDEO OUT VIDEO OUT Y/P_B/P_R	1-569-370-12 Plug, BNC
AUDIO IN CH-1/CH-2	1-508-084-00 XLR 3-pin, male
MIC IN	1-508-370-11 XLR 5-pin, male
DC IN	1-508-362-00 XLR 4-pin, female
DC OUT 12 V	1-566-425-11 round type 4-pin, male
REMOTE	1-766-848-11 round type 8-pin, male
LIGHT	Power tap (OE) Made by ANTONBAUER Inc., 33710 or equivalent
AUDIO OUT CH-1/CH-2	• PDW-F330 1-506-138-11 RCA Pin, male • PDW-F350 1-508-370-11 XLR 5-pin, female
VF	CONNECTOR, 20-pin, male HIROSE HR 12-14PA-20PC or equivalent
WRR	1-569-200-11 CONNECTOR, 7-pin, male
i.LINK	DV Cable (6-pin-4-pin) : CCFD-3L DV Cable (6-pin-6-pin) : CCF-3L

2-4. Signal Inputs and Outputs

Inputs

GENLOCK IN : BNC type
1.0 V p-p, 75 Ω, unbalanced

TC IN : BNC type
0.5 V to 18 V p-p, 10 kΩ

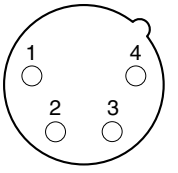
Outputs

VIDEO OUT*1 : BNC type
VBS 1.0 V p-p, 75 Ω unbalanced, or SDI
0.8 V p-p, 75 Ω, 270 Mbps

TC OUT : BNC type
BNC type 1.0 V p-p, 75 Ω

*1 : Selected by the REAR BNC OUT SEL in the OUTPUT SEL page of the menu.

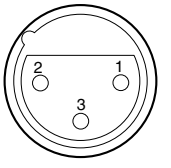
DC IN : XLR (4-pin, Male)



– EXT VIEW –

No.	Signal	I/O	Specifications
1	GND	–	GND for BATT OUT (+)
2	–		No connection
3	–		No connection
4	BATT OUT (+)	IN	+11 to 17 V dc

AUDIO IN CH-1, CH-2 : XLR (3-pin, Female)

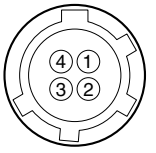


– EXT VIEW –

(0 dBu = 0.775 V rms)

No.	Signal	I/O	Specifications
1	MIC/LINE (G)	–	–60 dBu/–50 dBu/–40 dBu/
2	MIC/LINE (X)	IN	+4 dBu, selectable
3	MIC/LINE (Y)	IN	High impedance, Balanced

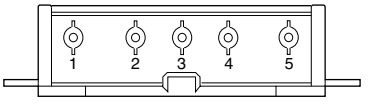
DC OUT 12 V : DIN (4-pin, Female)



– EXT VIEW –

No.	Signal	I/O	Specifications
1	UNREG GND	–	GND for POWER
2	–		No connection
3	–		No connection
4	UNREG +12 V	OUT	+11 to 17 V dc

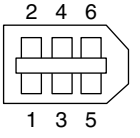
BATTEY IN : (5-pin, Male)



– EXT VIEW –

No.	Signal	I/O	Specifications
1	BATT (–)	IN	
2	BATT ID	IN	
3	INFO BATTERY SDA	IN/OUT	
4	INFO BATTERY SCL	IN/OUT	
5	BATT (+)	IN	+11 to 17 V dc

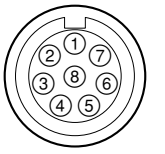
i.LINK : (6-pin)



– EXT VIEW –

No.	Signal	Specification
1	VP	BVS POWER
2	VG	GND
3	TPB	STROBE B (–)
4	TPB	STROBE B (+)
5	TPA	DATA A (–)
6	TPA	DATA A (+)

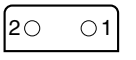
REMOTE : (8-pin, Female)



– EXT VIEW –

No.	Signal	I/O	Specifications
1	TX RCP DATA (X)	OUT	SERIAL DATA OUT
2	TX RCP DATA (Y)	OUT	SERIAL DATA OUT
3	RX RCP DATA (X)	IN	SERIAL DATA IN
4	RX RCP DATA (Y)	IN	SERIAL DATA IN
5	VIDEO (G)	–	GND for VIDEO
6	UNREG +12 V	OUT	+11 V to 17 V
7	UNREG (GND)	–	GND for UNREG
8	VIDEO (X)	OUT	1.0 V p-p, Zo = 75 Ω
	CHASSIS GND	–	CHASSIS GND

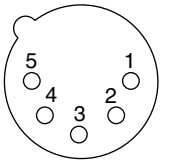
LIGHT : (2-pin, Female)



– EXT VIEW –

No.	Signal	Specifications
1	LIGHT +12 V OUT	50 W MAX
2	GND	

MIC IN : XLR (5-pin, Female)

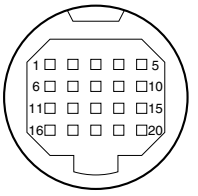


– EXT VIEW –

(0 dBu = 0.775 V rms)

No.	Signal	Specification
1	MIC IN (G)	–50 dBu High impedance balance
2	MIC1 IN (X)	
3	MIC1 IN (Y)	
4	MIC2 IN (X)	
5	MIC2 IN (Y)	

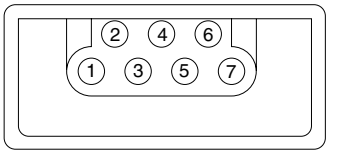
VF : (20-pin, Female)



– EXT VIEW –

No.	Signal	Specification
1	PEAKING CONT IN	Zi ≧ 5 kΩ
2	POWER +12 V DC OUT	10.6 V to 17.0 V dc
3	REC TALLY IND OUT	Zo ≦ 500 Ω
4	BATT IND OUT	Zo ≦ 1.1 kΩ
5	ZEBRA SW IN	ON: 0 ±0.5 V
6	VF VIDEO (X) OUT	V = 1.0 V p-p
7	POWER +12 V DC OUT	10.6 V to 17.0 V dc
8	(SPARE)	
9	(SPARE)	
10	SDA (VF) OUT	Zo ≦ 500 Ω, 5 V p-p
11	VF VIDEO (G) OUT	GND for VF VIDEO
12	POWER +12 V DC GND	GND for +12 V dc
13	(SPARE)	
14	(SPARE)	
15	SCL (VF) OUT	Zo ≦ 500 Ω, 5 V p-p
16	R-Y (VF) OUT	V = 830 mV
17	POWER +12 V DC GND	GND for +12 V dc
18	B-Y (VF) OUT	V = 830 mV
19	SYNC (VF) OUT	V = 5 V p-p
20	LD (VF) OUT	Zo ≦ 500 Ω, 5 V p-p

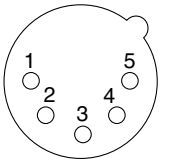
WRR : (7-pin, Female)



– EXT VIEW –

No.	Signal	Specification
1	WIRELESS GND	
2	AF OUTPUT (X)	–40 dBu BALANCED
3	AF OUTPUT (Y)	Zi ≧ 3 kΩ
4	(SPARE)	
5	(SPARE)	
6	(SPARE)	
7	POWER +12 V DC OUT	10.6 V to 17.0 V dc

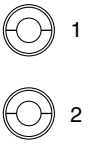
AUDIO OUT : XLR (5-pin, Male) (PDW-F350)



– EXT VIEW –

No.	Signal	I/O	Specifications
1	ANALOG GND	–	
2	AUDIO CH-1 (X)	OUT	+4 dBm (600 Ω terminated)
3	AUDIO CH-1 (Y)	OUT	
4	AUDIO CH-2 (X)	OUT	
5	AUDIO CH-2 (Y)	OUT	

AUDIO OUT : RCA Pin (PDW-F330)

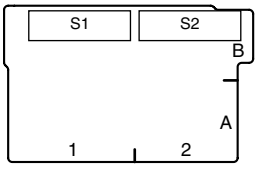


– EXT VIEW –

No.	Signal	I/O	Specifications
1	AUDIO CH-1	OUT	–10 dBu
2	AUDIO CH-2	OUT	

2-5. On-Board Switch and LED Function

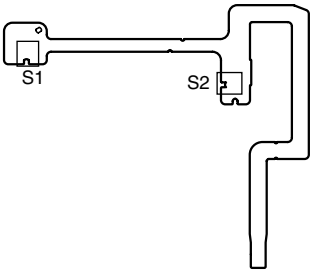
AA-112 board



Ref.No.	Name	Function	Factory setting
S1	AUDIO (CH1 SELECT)	LINE/MIC/MIC+48V*	LINE
S2	AUDIO (CH2 SELECT)	LINE/MIC/MIC+48V*	LINE

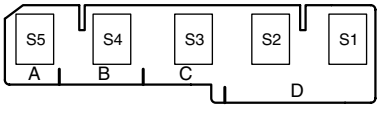
* : Refer to the “Operating Instructions”.

DET-43 board



Ref.No.	Name	Function	Factory setting
S1	REVERSE	LCD panel rotation state OFF : Normal ON : Reverse	OFF
S2	OPEN	LCD panel open/close state OFF : Close ON : Open	OFF

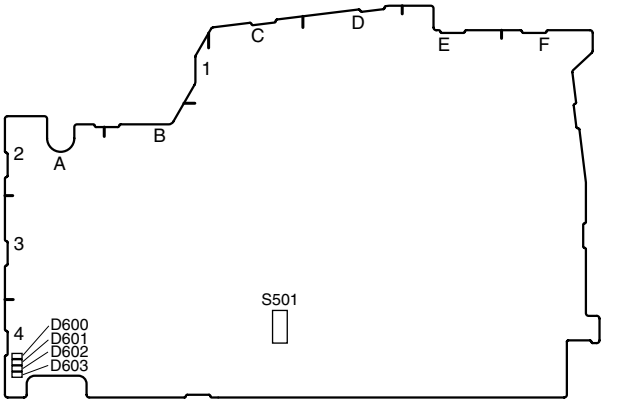
GCN-17 board



Ref.No.	Name	Function	Factory setting
S1	VDR	SAVE/STBY*	SAVE
S2	GAIN	L/M/H*	L
S3	OUTPUT/DCC	DCC ON/DCC OFF/BARS*	BARS
S4	WHITE BAL	PRST/A/B*	PRST
S5	MENU	MENU/OFF/STATUS*	OFF

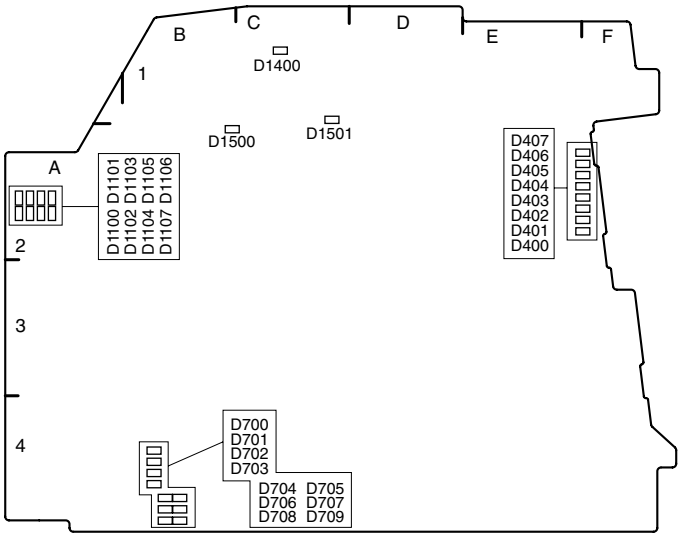
* : Refer to the “Operating Instructions”.

DCP-37/37A board



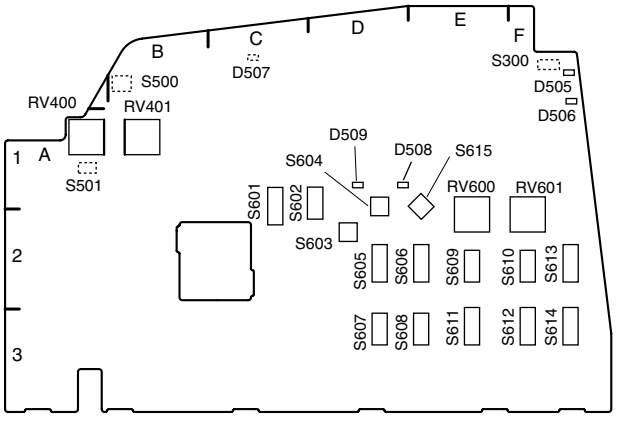
Ref.No.	Bit	Name	Function	Factory setting
D600	–	–	(Factory use)	–
D601	–	–	(Factory use)	–
D602	–	–	(Factory use)	–
D603	–	–	(Factory use)	–
S501	1	Service mode setting	Sets the service mode. ON : Service mode (The SERVICE menu is displayed.) OFF : Normal mode The factory default setting is OFF.	OFF
	2	Backup	The factory default setting is OFF.	OFF
	3	Backup	The factory default setting is OFF.	OFF
	4	Backup	The factory default setting is OFF.	OFF
	5	For production	The factory default setting is OFF.	OFF
	6	For production	The factory default setting is OFF.	OFF
	7	For production	The factory default setting is OFF.	OFF
	8	FRAM initialization	ON : Initializes the FRAM/DCP-37 board. OFF : Normal mode The factory default setting is OFF.	OFF

DVP-29 board



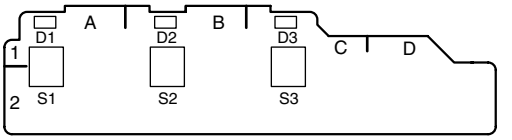
Ref.No.	Name	Function	Factory setting
D400	74	74 MHz clock (normally flashes)	–
D401	27	27 MHz clock (normally flashes)	–
D402	F	Frame pulse	–
D403	PLL UNLOCK	Lights when PLL is unlocked.	–
D404	P Fsync	PROX frame sync (normally flashes)	–
D405	P EE/ENC	PROX ENC mode	–
D406	P MUTE	PROX mute	–
D407	P EE/DEC	PROX DEC mode	–
D700-709		Displays the operation status of IC700.	–
D1100-1107		Displays the operation status of IC1100 (only D1101 and D1106 light).	–
D1400	ACCESS	Lights when the disk drive is being accessed.	–
D1500	R0	Displays the operation status of IC1100 (flashes every second).	–
D1501	R1	Displays the operation status of IC1100 (flashes every 0.5 seconds).	–

FP-144 board



Ref.No.	Name	Function	Factory setting
D505	WARNING	Warning light. Lights when FP-CPU is abnormal.	–
D506	ACCESS	Lights when the disk drive is being accessed.	–
D507	TEST	Lights during the FP-CPU initialization.	–
D508	SEL/SET	Plays the clip list.	–
D509	THUMBNAIL	Displays thumbnails.	–
RV400	MONITOR	Adjusts the monitor volume.	MIN
RV401	ALARM	Adjusts the alarm volume.	MIN
RV600	CH1 ADJ	Adjusts the audio CH1 record level.	MIN
RV601	CH2 ADJ	Adjusts the audio CH2 record level.	MIN
S300	MONO	Switches the MONITOR output to the MONO mode.	Pin-3 side (STEREO)
S500	CPU MODE	Sets the CPU mode.	All OFF
S501	RESET	Resets the CPU.	–
S601	MONITOR	CH-1, 3/MIX/CH-2, 4	MIX
S602	MONITOR	CH-1/2, CH-3/4	CH-1/2
S603	SHIFT	Shift	–
S604	THUMBNAIL	Thumbnail	–
S605	TC MODE①	PRESET/REGENE/CLOCK	PRESET
S606	TC MODE②	FREERUN/SET/RECRUN	R-RUN
S607	LOW CUT	Cuts low frequencies in the front microphone.	OFF
S608	MONI CHARA	Displays characters on the monitor.	OFF
S609	CH1 AGC	AGC for AUDIO CH1	AUTO
S610	CH2 AGC	AGC for AUDIO CH2	AUTO
S611	CH1	FRONT/WRR/REAR	FRONT
S612	CH2		
S613	CH3		
S614	CH4		
S615	JOYSTICK	LEFT/RIGHT/UP/DOWN/OK	–

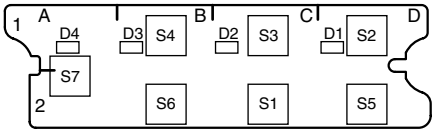
KSW-51 board



Ref.No.	Name	Function	Factory setting
D1	ZEBRA	ZEBRA ON/OFF display*	–
D2	ASSIGN1 (EZ MODE)	ON/OFF display of the assigned function*	–
D3	ASSIGN2	ON/OFF display of the assigned function*	–
S1	ZEBRA	Turns ON/OFF the ZEBRA function.*	OFF
S2	ASSIGN1 (EZ MODE)	Turns ON/OFF the assigned function.*	OFF (assigned to the EZ MODE)
S3	ASSIGN2	Turns ON/OFF the assigned function.*	OFF

* : Refer to the “Operating Instructions”.

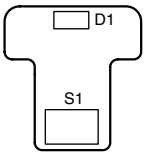
KY-573 board



Ref.No.	Name	Function	Factory setting
D1	F.FWD	Displays fast forward playback.*	–
D2	PLAY	Displays disc playback.*	–
D3	F.REV	Displays fast rewind playback.*	–
D4	EJECT	Displays disc ejection.*	–
S1	STOP	Stops playback.*	–
S2	F.FWD	Fast forward*	–
S3	PLAY	Disc playback*	–
S4	F.REV	Fast rewind*	–
S5	NEXT	Moves to the next clip.*	–
S6	PREV	Moves to the previous clip.*	–
S7	EJECT	Ejects the disc.*	–

* : Refer to the “Operating Instructions”.

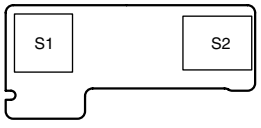
LED-428 board



Ref.No.	Name	Function	Factory setting
D1	BACK TALLY	LED*	–
S1	BACK TALLY ON/OFF	ON/OFF*	ON

* : Refer to the “Operating Instructions”.

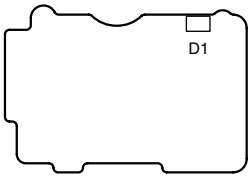
LGT-12 board



Ref.No.	Name	Function	Factory setting
S1	FILTER 5600K	ON/OFF*	OFF
S2	LIGHT	AUTO/MAN*	AUTO

* : Refer to the “Operating Instructions”.

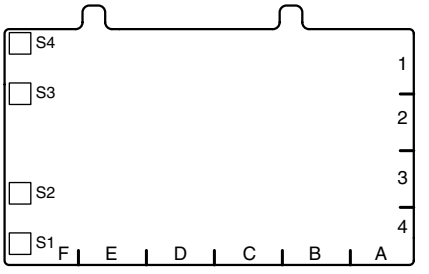
MS-71 board



Ref.No.	Name	Function	Factory setting
D1	MEMORY STICK	Lights when being accessed.*	–

* : Refer to the “Operating Instructions”.

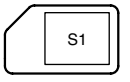
PD-115 board



Ref.No.	Name	Function	Factory setting
S1	DISPLAY EXPAND	Display selection, expansion*	OFF
S2	COUNTER CHAPTER	Counter display switching, chapter*	OFF
S3	RESET	Reset*	OFF
S4	BRIGHT	Brightness adjustment*	OFF

* : Refer to the “Operating Instructions”.

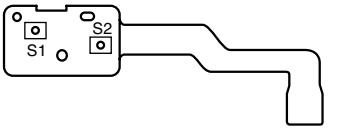
PSW-85 board



Ref.No.	Name	Function	Factory setting
S1	POWER	ON/OFF*	OFF

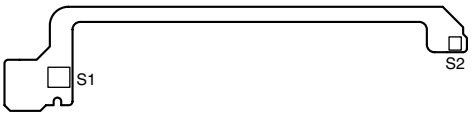
* : Refer to the “Operating Instructions”.

SW-1124G board



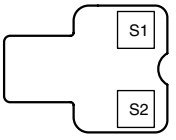
Ref.No.	Name	Function	Factory setting
S1	REC_INH	Record inhibition switch on the cartridge OFF : Recording possible ON : Recording not possible	OFF
S2	CARTRIDGE_DOWN	Cartridge position OFF : Cartridge up ON : Cartridge down	OFF

SW-1125G board



Ref.No.	Name	Function	Factory setting
S1	IN_SENSE	Cartridge presence	OFF
S2	STBY_OFF	Cartridge chucking state	OFF

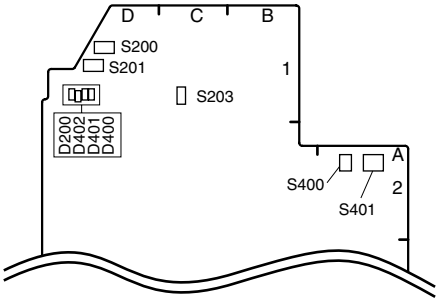
SW-1249 board



Ref.No.	Name	Function	Factory setting
S1	ASSIGN3	Turns ON/OFF the assigned function.*	OFF
S2	ASSIGN4	Turns ON/OFF the assigned function.*	OFF

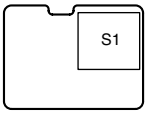
* : Refer to the “Operating Instructions”.

SY-322 board



Ref.No.	Name	Function	Factory setting
D200	LED OUT	CPU operation state display (flashes every 2 seconds)	–
D400	LED	For software debug (flashes fast)	–
D401	LED	For software debug	–
S200	HELP	Forcible interruption	–
S201	CPU POWER	For CPU hardware reset	–
S203	ICE MD	ICE MODE	OFF
S400	CPU SW2	For software debug	All OFF
S401	CPU SW1	For software debug	All OFF

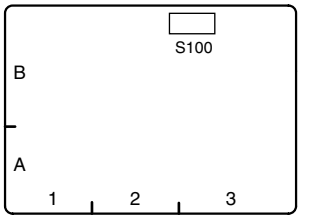
TC-110 board



Ref.No.	Name	Function	Factory setting
S1	TC IN/OUT	Switches I/O of the TC connector.*	IN

* : Refer to the “Operating Instructions”.

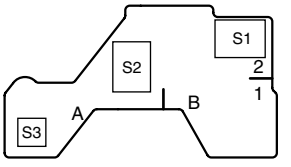
TX-105 board



Ref.No.	Name	Function	Factory setting
S100	–	(Factory use)	All OFF

* : Refer to the “Operating Instructions”.

VR-312 board



Ref.No.	Name	Function	Factory setting
S1	SHUTTER	OFF/ON/SEL*	OFF
S2	WHT	WHT/OFF/BLACK*	OFF
S3	REC	START/STOP*	–

* : Refer to the “Operating Instructions”.

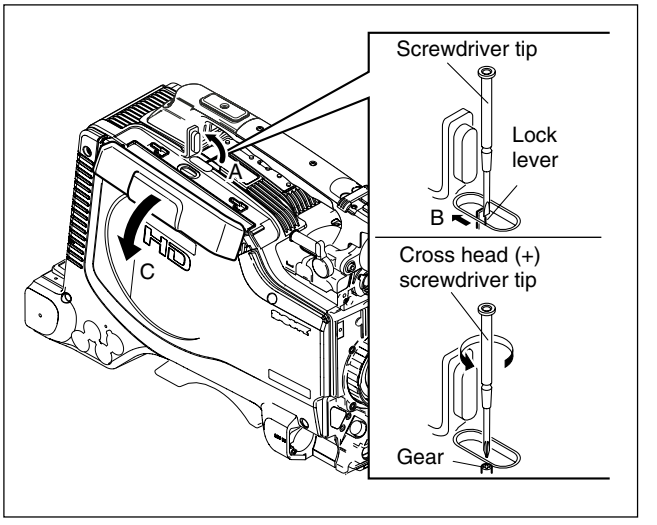
2-6. How to Take Out a Cartridge Manually

2-6-1. Taking out a cartridge at power-off

1. Open the cover in the direction of the arrow A.
2. Push the lock lever in the direction of the arrow B with a screwdriver. The cartridge lid assembly is opened in the direction of the arrow C.
3. Rotate the gear counterclockwise with a crosshead screwdriver to eject the cartridge.
   If a cartridge cannot be taken out, turn the gear clockwise until it will go and then turn it counterclockwise again.

Notes

- Turn the gear slowly and gently. Be careful not to force the gear past their stopping points.
- Even when the cartridge cannot be ejected with this procedure, do not rotate the gear with an excessive force. This error may be caused by a problem in the loader (P1) assembly.
  In this case, refer to Section 2-6-2.

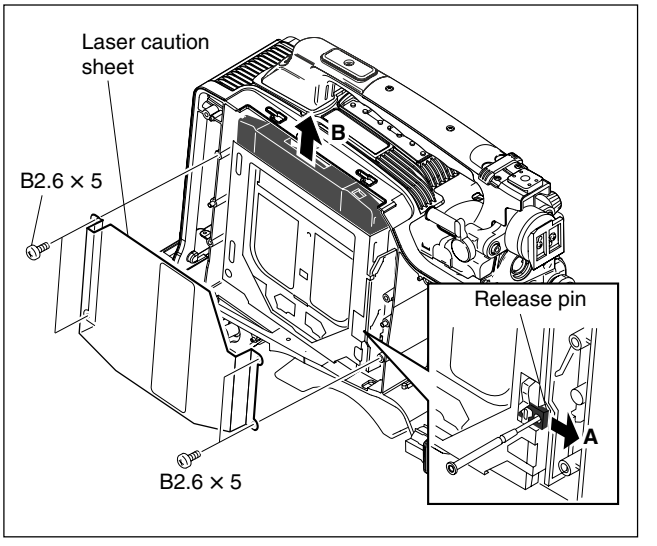


2-6-2. When you cannot take out a cartridge even if pressing the EJECT button at power-on

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the four screws and remove the laser caution sheet.
3. Push the release pin in the direction arrow A, and pull out the cartridge from the unit in the direction of the arrow B.

Note

Be careful not to touch the disc surface in the cartridge.



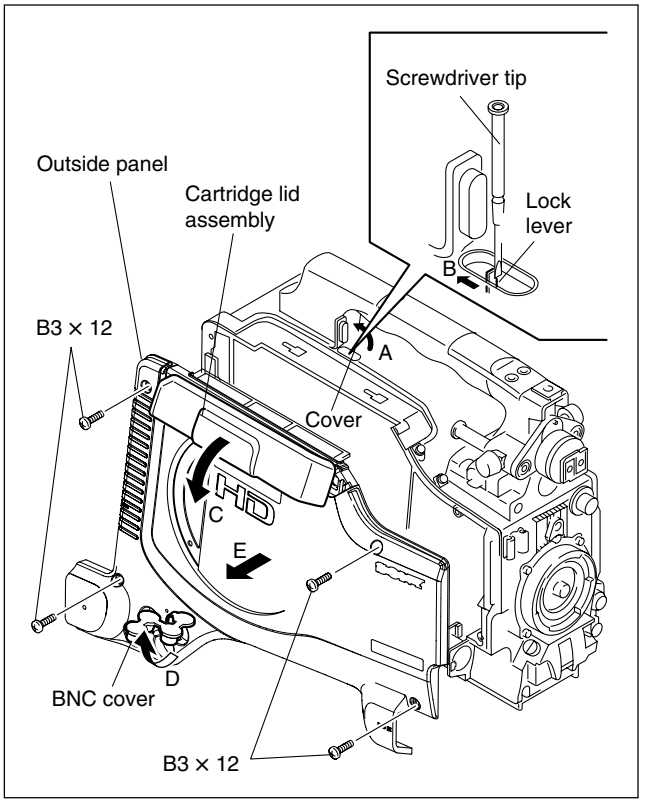
2-7. Removing/Installing

2-7-1. Removing Outside Panel

1. Open the cover in the direction of the arrow A.
2. Push the lock lever in the direction of the arrow B with a screwdriver. The cartridge lid assembly is opened in the direction of the arrow C.
3. Open the BNC cover in the direction of the arrow D.
4. Remove the four screws, and remove the outside panel in the direction of the arrow E.

Note

Be careful not to lose the screws of the outside panel.



2-7-2. Reinstalling Outside Panel

1. Reinstall the outside panel to the unit with its cartridge lid assembly opened, by tightening the four screws. Tightening torque: $80 \times 10^{-2} \pm 0.01$ N•m (8 ±0.1 kgf•cm)

Note

Do not tighten the screws with the cartridge inside. Be sure to take out the cartridge before installing the outside panel. (Refer to Section 2-6.)

2. Close the cartridge lid assembly.
3. Close the BNC cover.

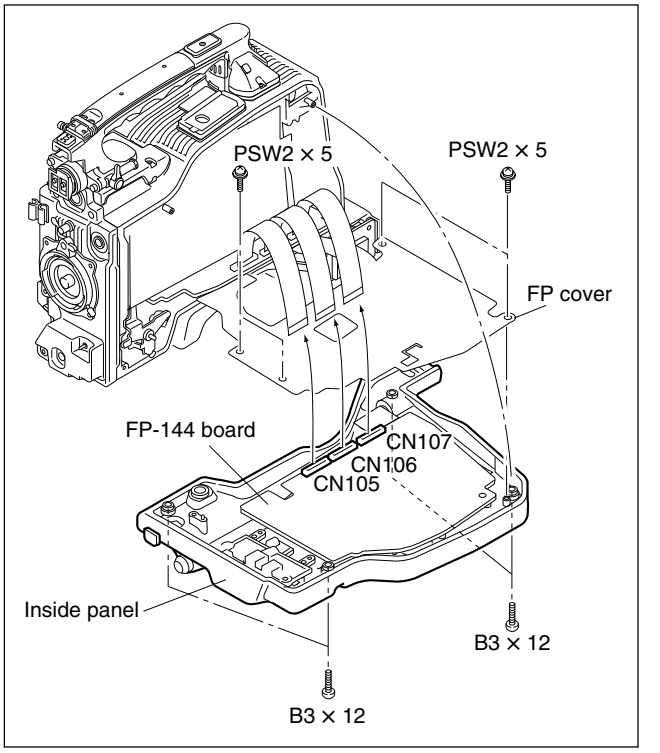
2-7-3. Inside Panel

1. Remove the four screws of the inside panel, and open the inside panel.

Note

Be careful not to lose the screws of the inside panel.

2. Disconnect the three flexible card wires from the connectors (CN105, CN106, CN107) on the FP-144 board.
3. Remove the four screws of the FP cover, and remove the inside panel.

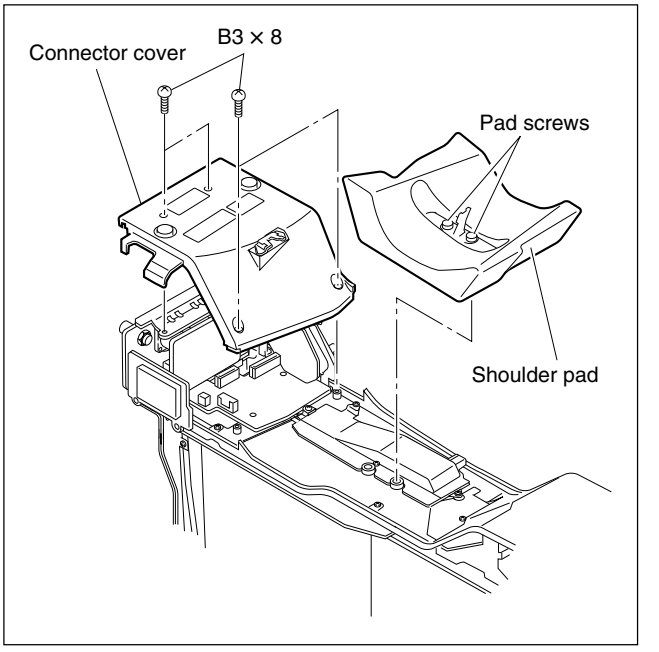


2-7-4. Shoulder Pad, Connector Cover

1. Loosen the two pad screws, and remove the connector cover.
2. Remove the four screws to detach the connector cover.

Note

When the shoulder pad is reattached, check that it slides smoothly.

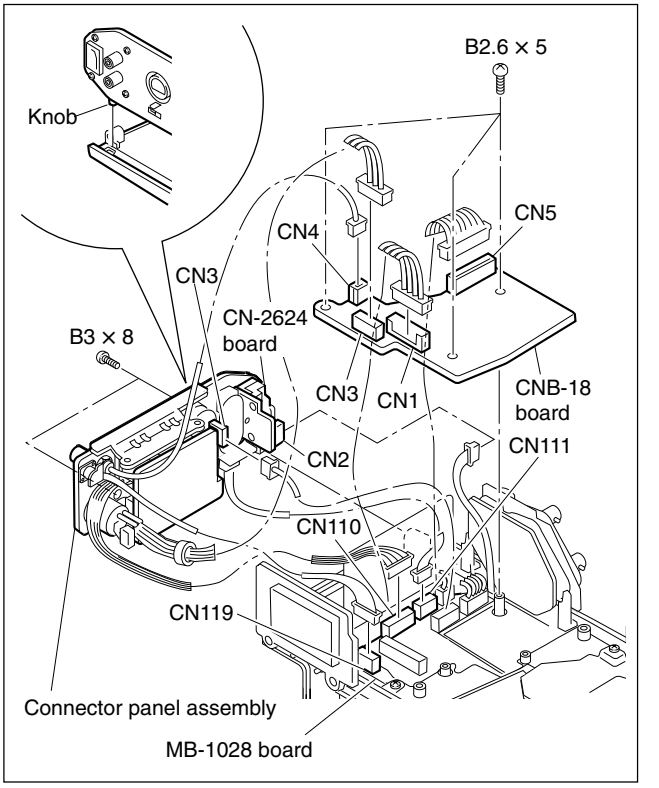


2-7-5. Connector Panel Assembly

1. Remove the connector cover. (Refer to Section 2-7-4.)
2. Disconnect the four cables from the connectors (CN1, CN3, CN4, CN5) on the CNB-18 board.
3. Remove the three screws (B2.6 × 5), and remove the CNB-18 board.
4. Disconnect the three cables from the connectors (CN110, CN111, CN119) on the MB-1028 board, and connector (CN2) on the CN-2624 board.
5. Disconnect the cable from the connector (CN3) on the IO-228 board. (PDW-F330 only)
6. Remove the two screws (B3 × 8) to detach the connector panel assembly.

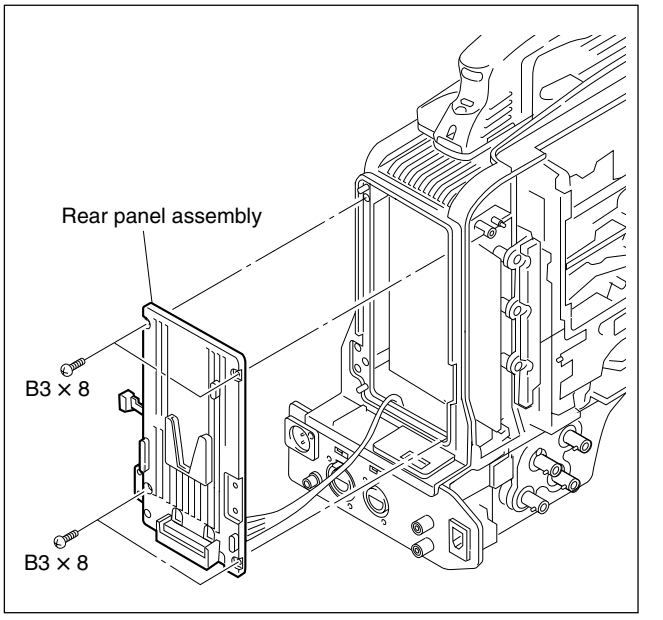
Note on installation:

Fit the knob of the connector panel assembly into the hole of the unit.



2-7-6. Rear Panel Assembly

1. Remove the connector cover. (Refer to Section 2-7-4.)
2. Remove the four screws, and then disconnect the connector CN5 on the CNB-18 board to detach the rear panel assembly. (Refer to Section 2-7-5.)

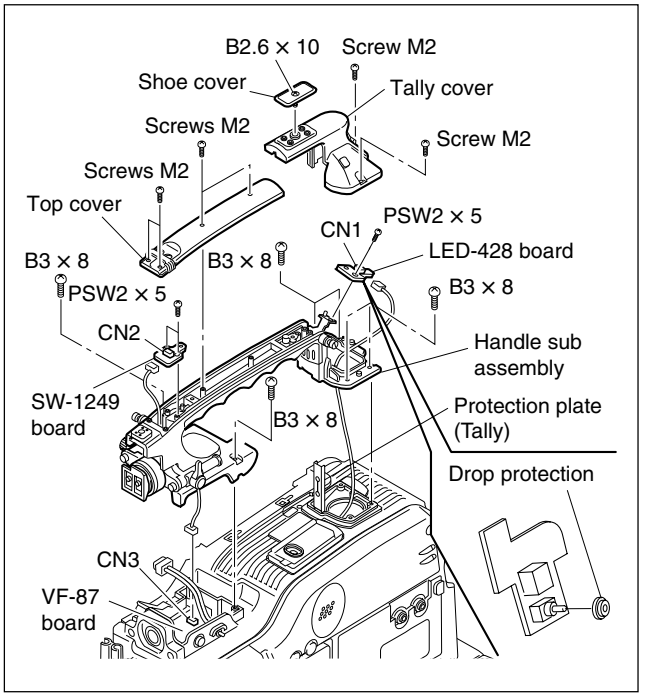


2-7-7. Handle Assembly (Including SW-1249 Board and LED-428 Board)

1. Remove the screw (B2.6 × 10) of the shoe cover and the two screws (M2) of the tally cover to detach the tally top cover.
2. Remove the six screws (B3 × 8) of the handle sub assembly.
3. Disconnect the connector CN1 on the LED-428 board, and lift the handle sub assembly. Then disconnect the connector CN3 on the VF-87 board to remove the handle sub assembly.
4. Remove the screw (PSW2 × 5) to detach the LED-428 board.
5. Remove the four screws (M2) to detach the top cover.
6. Disconnect the connector CN2 and remove the two screws (PSW2 × 5) on the SW-1249 board, and then remove the SW-12490 board.

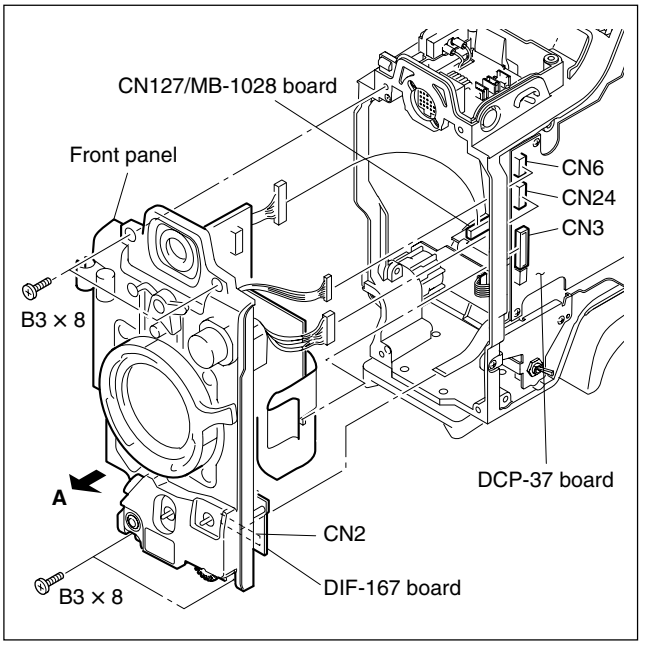
Notes

- Be careful not to lose the drop protection on the LED-428 board, since it is not fixed.
- When reinstalling the handle assembly, pass the protection plate (tally) through the hole on the handle.



2-7-8. Front Panel

1 Remove the outside panel. (Refer to Section 2-7-1.)
2. Open the inside panel. (Refer to Section 2-7-3.)
3. Disconnect the harnesses from the connectors (CN6 and CN24), and disconnect the flexible card wire (CN3) of the DCP-37 board.
4. Disconnect the harnesses from the connector (CN127) of the MB-1028 board.
5. Disconnect the flexible card wire from the connector (CN2) of the DIF-167 board.
6. Remove the four screws, and remove the front panel assembly in the direction of the arrow A.



2-7-9. Removing/Reinstalling SW Guard Assembly

Removal

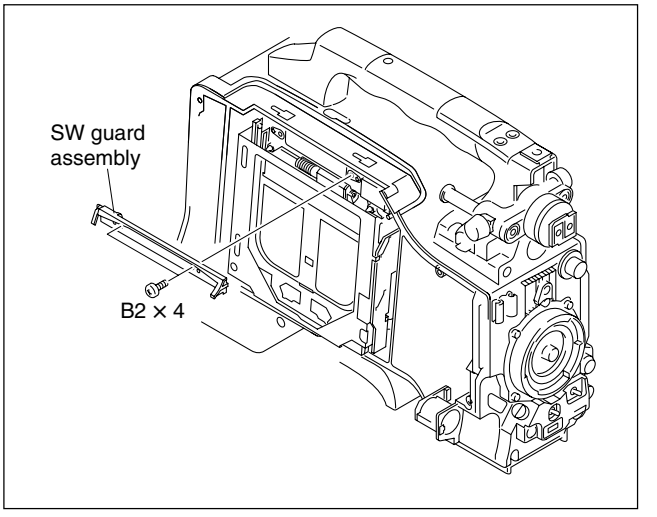
1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the two screws to remove the SW guard assembly.

Reinstallation

Reinstall the SW guard assembly by reversing the steps of removal.

Note

Tightening torque:
Removal step 2, SW guard assembly: $20 \times 10^{-2} \pm 0.01$ N•m (2.0 ±0.1 kgf•cm)



2-8. Removing/Installing LCD Block

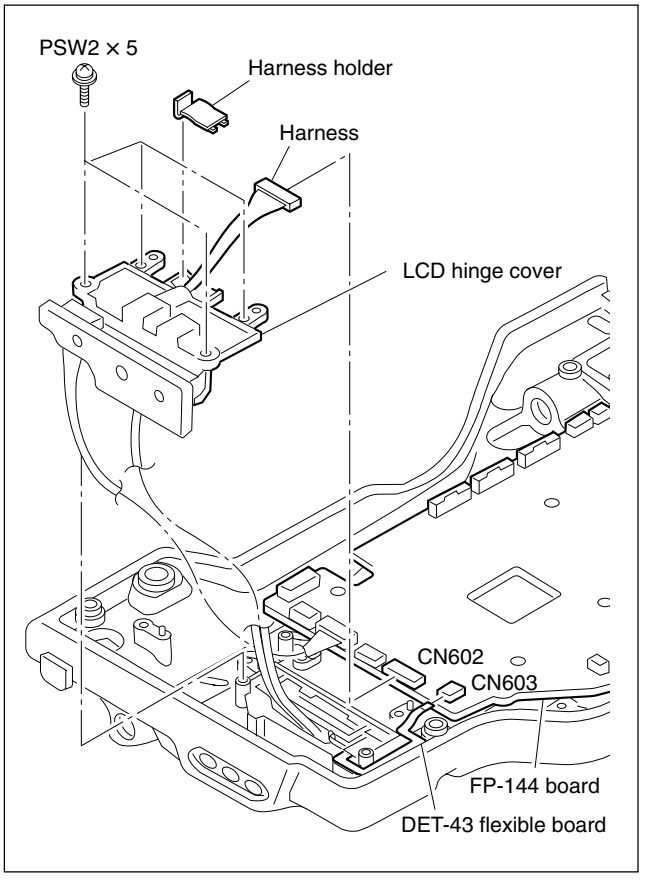
2-8-1. LCD Block

1. Open the inside panel.
   (Refer to Sections 2-7-3.)
2. Disconnect the flexible card wires from the connectors (CN105 to CN107) on the FP-144 board.
   (Refer to Section 2-7-3.)

   Note

   Life of flexible card wire will be significantly shortened if it is folded. Be very careful not to fold it.

3. Remove the four screws to detach the FP cover, and remove the inside panel. (Refer to Section 2-7-3.)
4. Detach the harness holder and disconnect the harnesses from the connectors (CN602) on the FP-144 board.
5. Disconnect the DET-43 flexible board from the connector (CN603) on the FP-144 board.
6. Remove the four screws, remove the harness through the hole of the LCD hinge cover, and then detach the LCD hinge cover.



7. Remove the hinge blind plate.

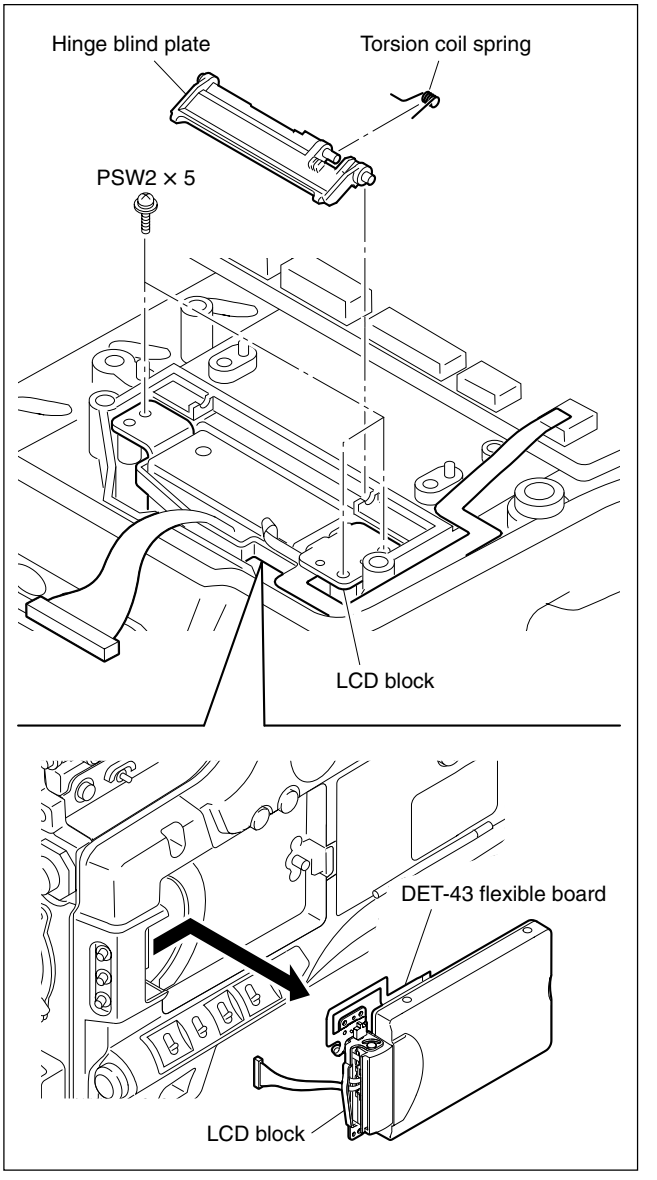
Note

Be careful not to lose the torsion coil spring.

8. Remove the three screws to remove the LCD block.

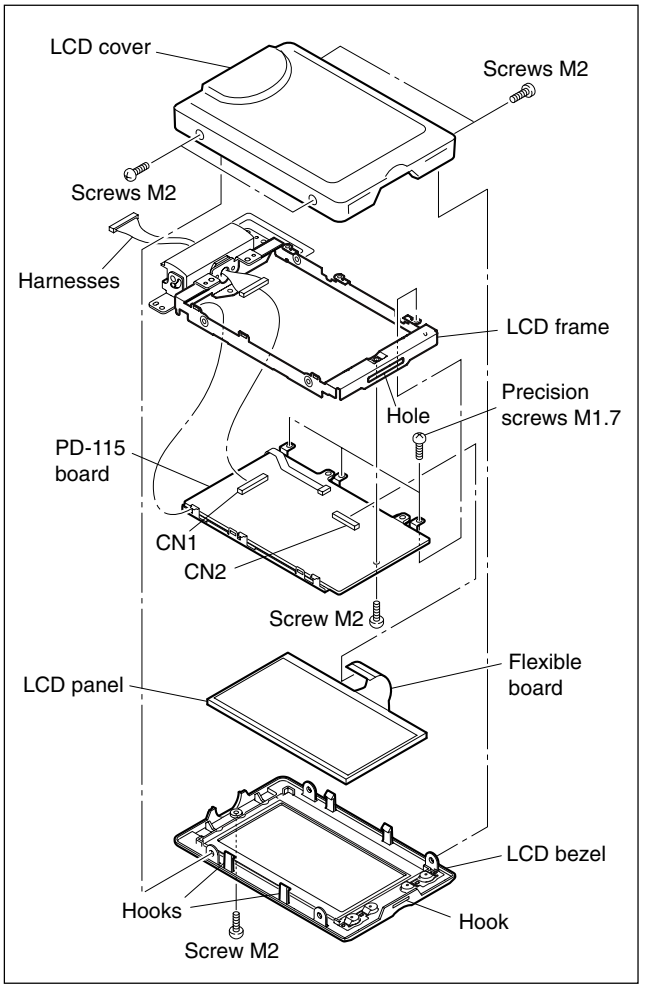
Note

Be careful not to damage the DET-43 flexible board.



2-8-2. LCD Backlight and LCD Panel

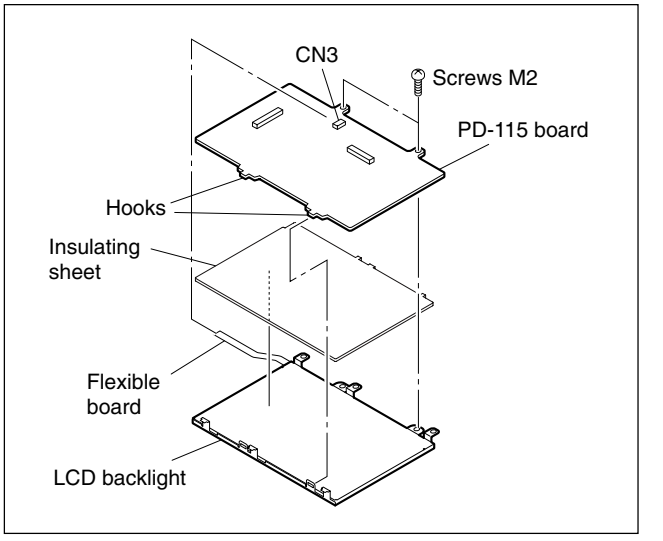
1. Remove the LCD block. (Refer to Section 2-8-1.)
2. Remove the four screws (M2) to detach the LCD cover.
3. Disconnect the flexible board from the connector (CN2) on the PD-115 board.
4. Remove the LCD hige.
   (Refer to Section 2-8-3, step 3.)
5. Remove the screw (M2) and release the five hooks on the LCD bezel from the LCD frame, and detach the LCD frame.
6. Remove the three precision screws M1.7 from the LCD back light (The PD-115 board is included.), remove the screw (M2), and remove the LCD frame.
7. Disconnect the harness from the connector (CN1) on the PD-115 board.



8. Disconnect the flexible board from the connector (CN3) on the PD-115 board.
9. Remove the two screws (M2) and release the PD-115 board from the hooks on the LCD backlight.
10. Remove the insulating sheet from the LCD backlight.

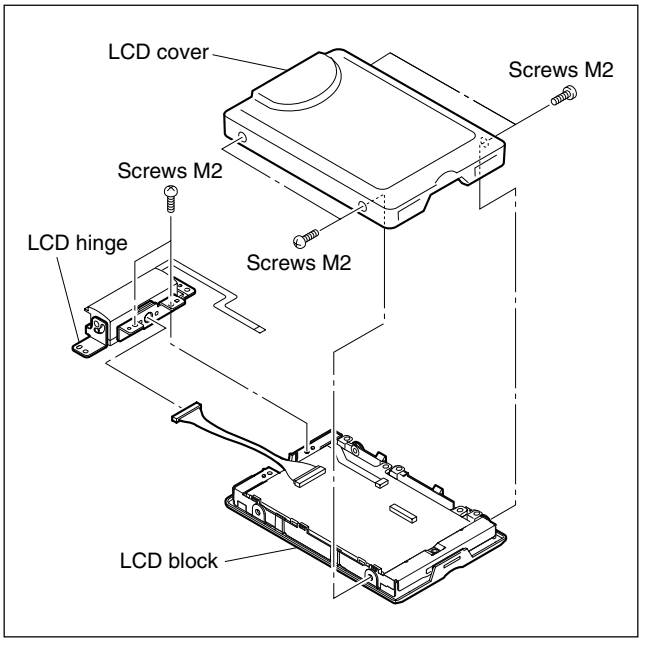
Note

When reattaching the LCD cover, press it so that it is not raised.



2-8-3. LCD Hinge

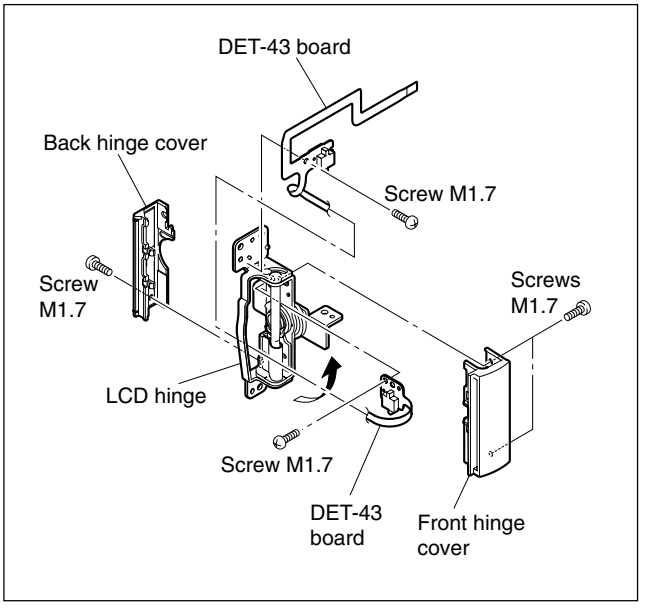
1. Remove the LCD block. (Refer to Section 2-8-1.)
2. Remove the four screws (M2) to detach the LCD cover.
3. Remove the two screws (M2) securing the LCD block and LCD hinge to detach the LCD hinge.



4. Remove the screw M1.7 from the back hinge cover to detach the cover.
5. Turn the hinge and remove the two screws M1.7 from the front hinge cover to detach the cover.
6. Remove the two screws M1.7 from the reinforcing bracket on the DET-43 board, and remove the DET-43 board.

Note

Handle the flexible board carefully because it is easy to break.



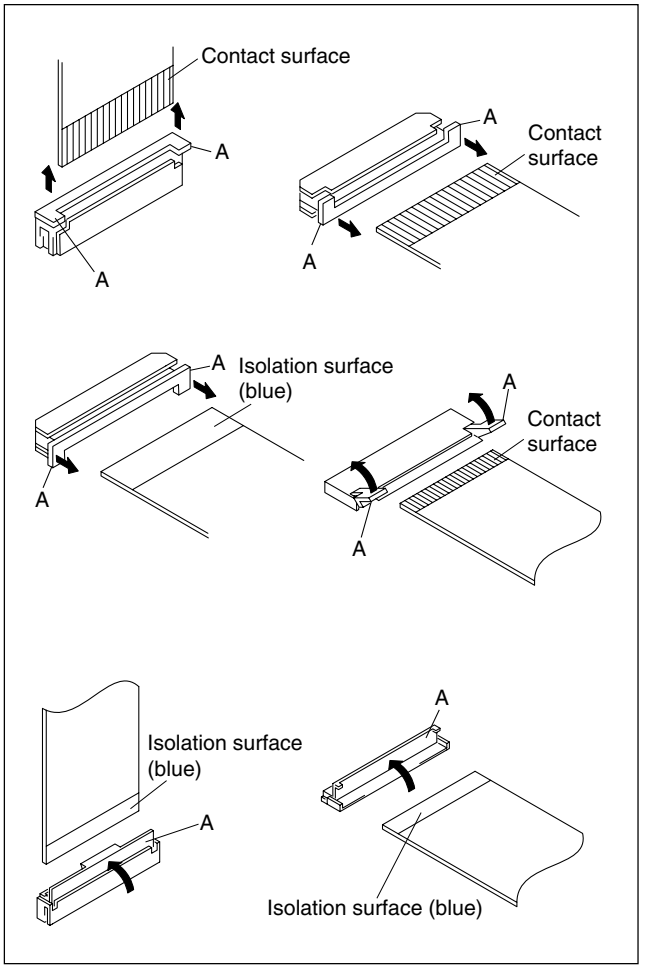
2-9. Replacing the Flat Cables, Flexible Card Wires/Boards

Note

The flat cables, flexible card wires and boards are used to connect between the following boards. Life of flexile card wire will be significantly shortened if it is folded. Be very careful not to fold the flat cables, flexible card wires and boards.

The six types of different shape connectors are used in this unit.

Because the direction of the flat cables, flexible card wires and boards are different depending on the shape of the connector, be careful when connecting the flat cables, flexible card wires and boards.



Disconnecting

1. Turn off the power.
2. Slide or lift up the portion A in the direction of the arrow to unlock and pull out the flexible card wire.

Connecting

Notes

- Do not insert the flexible card wire sideways.
- Confirm that there is no stain or dust on the contact surface of the flexible card wire.

1. Slide or lift up the portion A in the direction of the arrow and securely insert the flexible card wire into the deep end of the connector.
2. Return the portion A to its original position and lock the connector.

Note

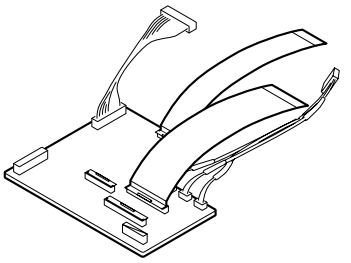
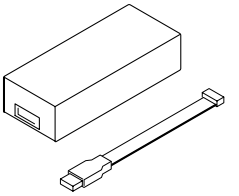
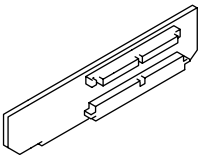
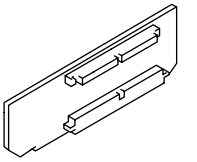
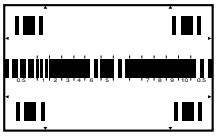
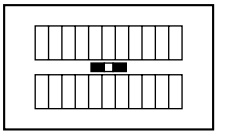
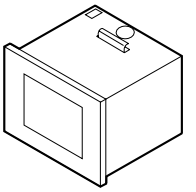
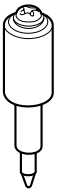
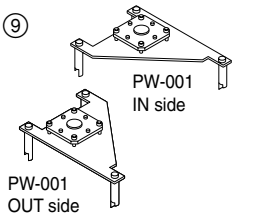
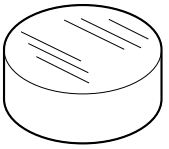
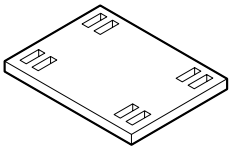
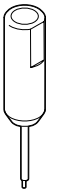
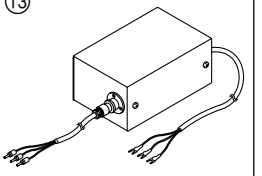
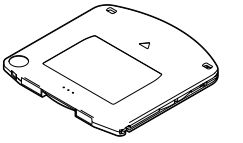
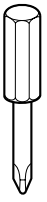
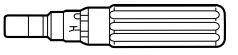
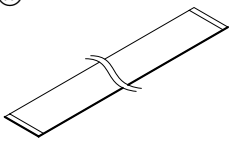
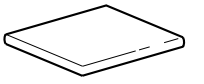
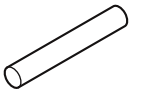
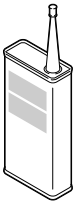
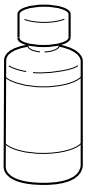
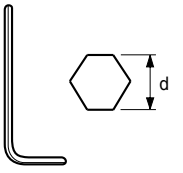
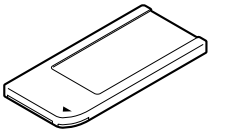
When connecting the flexible card wire, check the connector shape, and great care should be taken for the direction of the contact surface or isolation surface (blue).

2-10. Service Tools/Measuring Equipment List

2-10-1. Service Tools

The tools and fixtures used in this unit are as follows.

Part No.	Name	Usage/Note
① A-1191-309-A	CHB/DCP extension assembly	Extending the DCP board/Extending the CCD unit
② A-1199-179-A	PLD download tool (DIF-176)	Version-upgrade tool for the TX-105 board COPRO FPGA
② A-8327-453-A	EX-784 board	Extending the DCP board assembly
④ A-8327-454-A	EX-785 board	Extending the DVP board assembly
⑤ J-6026-110-A	Multiburst chart	Camera adjustment
⑥ Commercially available	Grayscale chart	reflective type (4 : 3, 16 : 9), Camera adjustment on market
J-6026-130-B		transparent type (4 : 3), Camera adjustment
J-6394-080-A		transparent type (16 : 9), Camera adjustment
⑦ J-6029-140-B	Pattern box PTB-500	Camera adjustment
⑧ J-6323-530-A	Stop washer fastening tool	Stop washer installation
⑨ J-6570-010-A	Triangle plates IN/OUT (PW-001)	For skew adjustment
⑩ J-6570-030-1	BRD-P1/P2 reflection block for auto-collimator (PW-003)	For skew adjustment
⑪ J-6570-040-1	Calibration plate	For skew adjustment
⑫ J-6570-050-A	RD adjustment screwdriver (PW-005)	For RD adjustment
⑬ J-6570-060-A	KES-110A E&F LPF box	For RD adjustment
⑭ J-6570-110-A	Alignment disc (PFD23-RS)	For SERVO and RD adjustments
⑮ J-6325-110-A	Bit for torque driver (M1.4)	For tightening screw
J-6325-380-A	Bit for torque driver (M2)	For tightening screw
J-6323-430-A	Bit for torque driver (M3)	For tightening screw
⑯ J-6325-400-A	Torque driver (3 kg•cm)(0.3N•m)	For tightening screw
J-6252-510-A	Torque driver (6 kg•cm)(0.6N•m)	For tightening screw
J-6252-520-A	Torque driver (10 kg•cm)(1.0N•m)	For tightening screw
⑰ 1-831-602-11	Flexible card wire (50 core/260 mm)	Extending the DVP board assembly
⑱ 3-184-527-01	Cleaning cloth	For cleaning
⑲ 3-703-358-08	Parallel pin (2 × 20)	For gear replacement, two pins required
⑳ 7-432-114-11	Locking compound	For preventing screw from being loosened
㉑ 7-640-010-89	Oil (LX-206)	For lubrication
㉒ 7-700-736-04	L wrench (d = 2.5 mm)	Triangle plates IN•OUT (PW-001) calibration
7-700-736-05	L wrench (d = 1.5 mm)	Triangle plates IN•OUT (PW-001) calibration
7-700-736-06	L wrench (d = 0.89 mm)	Triangle plates IN•OUT (PW-001) calibration
㉓ 9-919-573-01	Cleaning liquid	For cleaning
㉔ Commercially available on market	Memory Stick	Saving data (Up to 128 MB)

① 	② 	③ 	④ 	
⑤ 	⑥ 	⑦ 	⑧ 	⑨ 
⑩ 	⑪ 	⑫ 	⑬ 	⑭ 
⑮ 	⑯ 	⑰ 	⑱ 	⑲ 
⑳ 	㉑ 	㉒ 	㉓ 	㉔ 

2-10-2. Measuring Equipment

Use the calibrated equipment or equivalent as listed below for the adjustments.

Equipment	Model name
AC adaptor	Sony AC-DN10
Viewfinder	Sony DXF-801/DXF-20W
Disc	Sony professional disc PFD23
Auto-collimator	Nikon 6D or equivalent
Oscilloscope	Tektronix TDS3054 or equivalent (150 MHz or more)
HD waveform monitor	LEADER ELECTRONICS CORP.LV5152DA or equivalent
SD waveform monitor	Tektronix 1755A or equivalent
Frequency counter	Advantest TR5821AK or equivalent
Digital voltmeter	Advantest TR6845 or equivalent
Color monitor	Sony HDM-20E1U/14E1U/14E5U or equivalent
Signal generator	Tektronix SG-5010/TG-2000 or equivalent
Luminance meter	Minolta LS-110 or equivalent
Regulated power supply	(Output current: More than 10 A)

2-11. Firmware/Software

2-11-1. EEPROM/FRAM List

Board name	Ref. No.		Saving data	Action to be taken when replacing
DCP-37	IC423	EEPROM	DCP-37 board production/adjustment data	• ∗1
	IC442 IC443	FRAM	All setting values of the menu	• ∗1
PA-330	IC17	EEPROM	PA board production/adjustment data, CCD block specific data	• Replacement not required
SY-322	IC203	EEPROM	Model name, Serial No., Hours Meter	• Replacement not required
	IC309	FRAM	System setting, Clip Info setting, Clip Title Prefix, Hours Meter, Error log	• Not required
FP-144	IC506	EEPROM	Adjustment data (Audio A/D, Audio D/A, Voltage measured at the battery end, Audio level volume correction)	• ∗2

∗1 : IC423, IC442, and IC443 on the DCP-37 board contain user-specific data. If these ICs or the entire board is replaced, the user-specific data is lost, and the setting returns to the factory default values. For details on the menu setting, refer to Section 4 to make a new setting.
∗2 : When the FP-144 board or IC506 is replaced, perform “4-3. Adjusting Battery End Detection Voltage”.

2-11-2. ROM Version Check

Confirm ROM version of the unit on the ROM VERSION page of the SERVICE menu.

Note

ROM upgrade is also available on this window.

```
S02●ROM VERSION 1    TOP

AT      : 1.00-000
PACKAGE : 1.00-0
GEOS    : 1.00-0
NOVA    : 1.00-0
FRESH   : 1.00-0
COPRO   : 1.00-0
```

∗ : COPRO: PDW-F350 only

- For details, refer to “2-12-1. Upgrade Using Memory Stick (DCP-37/TX-105/DVP-29/SY-322/DR-550G/FP-144 Boards)”.
- Description displayed in the ROM VERSION menu (If the ROM is broken, the entire board must be replaced.)

Item	Setting	Description
AT	Display only	Displays the ROM version of the IC436 and 437 on the DCP-37 board. (Can be upgraded from MENU.)
PACKAGE	Display only	Displays the firmware package version. (Can be upgraded with the firmware package file from MENU.)
GEOS	Display only	Displays the ROM version of the IC1100 on the DVP-29 board.
NOVA	Display only	Displays the ROM version of the IC300 on the DVP-29 board.
FRESH	Display only	Displays the ROM version of the IC600 on the DCP-37 board. (Can be upgraded from MENU.)
COPRO	Display only	Displays the ROM version of the IC105 on the TX-105 board. (Only PDW-F350)

Item	Setting	
SYS	Display only	Displays the IC200 version stored in the ROM (IC213, IC214) on the SY-322 board. (Can be upgraded with the firmware package file from MENU.)
DRV	Display only	Displays the IC600 version stored in the ROM (IC602) on the DR-550G board. (Can be upgraded with the firmware package file from MENU.)
FP	Display only	Displays the FP-144 board's IC505 version. (Can be upgraded with the firmware package file from MENU.)
PRXV	Display only	Displays the IC1900 version stored in the ROM (IC1901) on the DVP-29 board. (Can be upgraded with the firmware package file from MENU.)
PRXA	Display only	Displays the DVP-29 board's IC1501 version stored in the ROM (IC213, IC214) on the SY-322 board. (Can be upgraded with the firmware package file from MENU.)
DSPA	Display only	Displays the DVP-29 board's IC1500 version stored in the ROM (IC213, IC214) on the SY-322 board. (Can be upgraded with the firmware package file from MENU.)
NIOS	Display only	Displays the DVP-29 board's IC300 version stored in the ROM (IC213, IC214) on the SY-322 board. (Can be upgraded with the firmware package file from MENU.)
OSD	Display only	Displays the DVP-29 board's IC300 version stored in the ROM (IC213, IC214) on the SY-322 board. (Can be upgraded with the firmware package file from MENU.)
TSYS	Display only	Displays the DVP-29 board's IC700 version stored in the ROM (IC213, IC214) on the SY-322 board. (Can be upgraded with the firmware package file from MENU.)
TMBP	Display only	Displays the DVP-29 board's IC700 version stored in the ROM (IC213, IC214) on the SY-322 board. (Can be upgraded with the firmware package file from MENU.)

2-12. Memory Stick (AT, PACKAGE, FRESH)

2-12-1. Upgrade Using Memory Stick (DCP-37/TX-105/DVP-29/SY-322/DR-550G/FP-144 Boards)

Upgrade the onboard ROM as follows.
The ROM includes the BOOT program and the MAIN program.
The BOOT program does not need to be written, since it is already written in the onboard ROM.

Main program upgrade

The following description shows how to upgrade the MAIN program in the onboard ROM.
Two upgrade methods are provided: (1) upgrade on the ROM VERSION page of the SERVICE menu, and (2) upgrade in the power-on startup process.

Tool

Memory Stick (commercially available)

Notes

- The data size that can be written in a Memory Stick is 2 MByte for AT, 4 MByte for PACKAGE, and 300 KByte for FRESH.
- A commercial Memory Stick and a MagicGate Memory Stick with copyright protection technology are available for this unit. However, data recorded in this unit is not copyright protected, because this unit does not support the MagicGate function.

  Note

  Memory Stick PRO is not available for this unit.

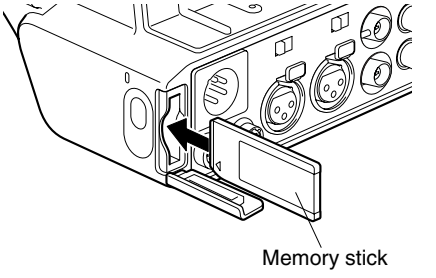
Preparation

Notes

- The battery power may lower during the upgrading process. Use the AC power supply for this unit when upgrading the program.
- Use the Memory Stick that has at least 16 MB.
- For how to obtain the BOOT program or the MAIN program, contact your local Sony Sales Office/Service Center.
- Do not remove the Memory Stick or turn off the power during the upgrading process.

Upgrading the program using the SERVICE menu

1. Open the inside panel. (Refer to Section 2-7-3, step 1.)
2. Set S500-1 on the DCP-37 board to ON. (Refer to Section 4-1.)
3. Close the inside panel. (Refer to Section 2-7-3, step 1.)
4. Turn on the power of the unit, and insert a formattable Memory Stick into the Memory Stick slot.



5. Set the MENU switch to ON, and display the SERVICE menu.

```
S    <TOP MENU>
↓↓
 USER
 USER MENU CUSTOMIZE
 ALL
 ·OPERATION
 ·PAINT
 ·MAINTENANCE
→·FILE
 ·DIAGNOSIS
 SERVICE
```

6. Turn the MENU knob, select “07 MEMORY STICK” from the FILE menu, and execute “MS FORMAT”.

```
 F07●MEMORY STICK     TOP

 MS FORMAT        :  EXEC
```

7. Insert the Memory Stick formatted in step 6 into the PC, and copy (store) the following files to "¥¥MSSONY¥PRO¥CAMERA¥PDWF350" in the Memory Stick.
   - AT : f350at.rom
   - PACKAGE : F350PK.ROM
   - FRESH : f350fc.rom

Upgrading Procedure

Note

The version numbers in the menu screen are reference values. They are different from the actual numbers.

1. Upgrading AT
   1) Turn on the power of the unit.
   2) Insert the Memory Stick into the Memory Stick slot on the unit.
   3) Set the MENU switch to ON, and display the SERVICE menu.
   4) Turn the MENU knob, and select "S02 ROM VERSION 1" from the SERVICE menu.

```
S    <TOP MENU>
↓↓
 USER
 USER MENU CUSTOMIZE
 ALL
 ·OPERATION
 ·PAINT
 ·MAINTENANCE
 ·FILE
 ·DIAGNOSIS
→SERVICE
```

   5) Press and hold the MENU knob. (The arrow → points to AT.)

```
  S02●ROM VERSION 1    TOP

→AT      :▷1.00  → X.XX —①
 PACKAGE: 1.040  → Y.YY —②
 GEOS    : 1.500
 NOVA    : 1.001
 FRESH   : 1.00  → Z.ZZ —③
 COPRO   : 1.05
```

   ∗ : New versions are displayed for ①, ②, and ③.

   6) Press the MENU knob with the arrow → pointing to AT.
   7) "VERSION UP OK? YES → NO" is displayed.

```
  S02●ROM VERSION 1    TOP
  VERSION UP OK? YES →NO
→AT      :▷1.00  → X.XX
 PACKAGE: 1.040  → Y.YY
 GEOS    : 1.500
 NOVA    : 1.001
 FRESH   : 1.00  → Z.ZZ
 COPRO   : 1.05
```

   8) Point the arrow → to "YES", and press the MENU knob to start upgrading AT.
   The WARNING lamp may light during the upgrading process, but it does not indicate any abnormality.
   9) "COMPLETED" is displayed in about a minute.

```
<FIRMWARE UPDATE>
        COMPLETED.

ERASING
[■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■]
100%

PROGRAMING
[■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■]
100%
```

   10) Turn off the power of the unit.

2. Upgrading PACKAGE
   1) Turn on the power of the unit.
   2) Insert the Memory Stick into the Memory Stick slot on the unit.
   3) Set the MENU switch to ON, and display the SERVICE menu.
   4) Turn the MENU knob, and select "S02 ROM VERSION 1" from the SERVICE menu.

```
S    <TOP MENU>
↓↓
 USER
 USER MENU CUSTOMIZE
 ALL
 ·OPERATION
 ·PAINT
 ·MAINTENANCE
 ·FILE
 ·DIAGNOSIS
→SERVICE
```

   5) Press and hold the MENU knob. (The arrow → points to AT.)
   6) Turn the MENU knob to point the arrow → to "PACKAGE", and press the MENU knob.

```
  S02●ROM VERSION 1    TOP

 AT      : 1.00-801
→PACKAGE: 0.00
 GEOS    : 1.500
 NOVA    : 1.001
 FRESH   : 1.00
 COPRO   : 1.05
```

   7) "VERSION UP OK? YES → NO" is displayed.

```
  S02●ROM VERSION 1    TOP
  VERSION UP OK? YES →NO
 AT      : 1.00-801
→PACKAGE: 0.00
 GEOS    : 1.500
 NOVA    : 1.001
 FRESH   : 1.00
 COPRO   : 1.05
```

8) Point the arrow → to "YES", and press the MENU knob to start upgrading PACKAGE.
The display changes in the following order:
VERSION UP 0% grows into 100%.
↓
FLASH WRITING… is displayed.
↓
The LCD turns black, and the ACCESS lamp (blue) flashes at the same time.
↓
The ACCESS lamp (blue) and the WARNING lamp (red) flashes alternately.
↓
"VERSION UP" completes in about 11 minutes, and "COMPLETE" is displayed on the LCD.

9) Thrn off the power of the unit, and then turn it on again.

10) Check that the version of PACKAGE is correctly displayed in the SERVICE menu.

```
  S02●ROM VERSION 1    TOP

  AT      : 1.00-801
→PACKAGE: 1.010
  GEOS    : 1.500
  NOVA    : 1.001
  FRESH   : 1.00
  COPRO   : 1.05
```

11) Turn off the power of the unit.

3. Upgrading FRESH

1) Turn on the power of the unit.
2) Insert the Memory Stick into the Memory Stick slot on the unit.
3) Set the MENU switch to ON, and display the SERVICE menu.
4) Turn the MENU knob, and select "S02 ROM VERSION 1" from the SERVICE menu.

```
S     <TOP MENU>
↓↓
 USER
 USER MENU CUSTOMIZE
 ALL
 ·OPERATION
 ·PAINT
 ·MAINTENANCE
 ·FILE
 ·DIAGNOSIS
→SERVICE
```

5) Press and hold the MENU knob. (The arrow → points to AT.)

6) Turn the MENU knob to point the arrow → to "FESH", and press the MENU knob.

```
  S02●ROM VERSION 1    TOP

  AT      : 1.00-801
  PACKAGE: 1.010
  GEOS    : 1.500
  NOVA    : 1.001
→FRESH   : 1.00
  COPRO   : 1.05
```

7) "VERSION UP OK? YES → NO" is displayed.

```
  S02●ROM VERSION 1    TOP
  VERSION UP OK? YES →NO
  AT      : 1.00-801
  PACKAGE: 1.010
  GEOS    : 1.500
  NOVA    : 1.001
→FRESH   : 1.00
  COPRO   : 1.05
```

8) Point the arrow → to "YES", and press the MENU knob to start upgrading FRESH.
The display changes in the following order:
UPDATE FRESH…
↓
progrmming EPC device (s)…..
↓
verifying EPC device (s)…..
↓
"DONE" is displayed in about eight minutes, and "Turn off/on POWER!!" is displayed at the top.

10) Turn off the power of the unit.

Upgrade in the power-on startup process (Only AT microcomputer on the DCP-37 board)

1. Check that the power of the unit is off, and insert the Memory Stick with the latest program into the Memory Stick slot of the unit.
2. Turn on the power while pressing the MENU knob on the inside panel of the unit, and the REC button on the front of the unit. The program upgrade starts.
   (1) The ACCESS lamp blinks for about 10 seconds with no display on the viewfinder.
   Note
   Do not remove the Memory Stick or turn off the power until the upgrade finishes.

   (2) The upgrade execution screen is displayed on the viewfinder.
   (3) Then the screen immediately displays upgrade progress. (The number in front of "%" increases.)
   (4) The upgrade finishes, and "UPDATE COMPLETED" is displayed.

3. Remove the Memory Stick from the slot.
4. Turn off and on the power. The upgraded ROM runs.

2-12-2. Error Messages When Using Memory Stick

Error messages appearing on the camera viewfinder

Error message	Description and action to be taken
NO MEMORY STICK	No Memory Stick is inserted. Insert a Memory Stick with file data.
FORMAT ERROR	Memory Stick is not formatted. Format the Memory Stick on the MEMORY STICK page of the FILE menu.
OTHER MODEL'S FILE	The Memory Stick file data was saved in another model, and is not available in this unit.
FILE NOT FOUND	No file data in the Memory Stick is available for this unit.
FILE ERROR	The file data cannot be handled properly due to circuit failure, Memory Stick defect or Memory Stick data error.

2-12-3. Writing/Rewriting COPRO

The TX-105 board uses FPGA that supports the new e- Production (EPR2) system to write and rewrite the internal data to the configuration memory.
If it needs to be upgraded, contact Sony Sales/Service Office.

Data write procedure

Data write procedure in the FPGA configuration memory is outlined below.
For details of data write procedure, refer to “Download Tool Operating Instruction for Device Programming”.
“Download Tool Operating Instruction for Device Programming” will be available in the same site where the PLD Download Tool software (V3.0 or higher) is available.

Equipment required

New PLD download fixture (Sony part number : A-1199-179-A) : Cable that connects a PC to the board

Note

When connecting the fixture, remove the fixture cable from the fixture itself, and then connect the opposite end of the cable to the fixture.

PC: A USB port must be available.
The PLD Download Tool software (V3.0 or higher) must be already installed.
For the applicable OS and the operating environment, refer to “Download Tool Operating Instruction for Device Programming”.

1. Prepare the Project file.
   Note
   Download the Project file from the Sony Database Server.

2. Turn off the power of this unit. Connect the PC’s USB port to the EPR2 connector of the target board using the PLD download fixture (cable).
3. Turn on the power of this unit.
   Start the Download Tool software (V3.0 or higher) and import the Project file.
4. Program the FPGA configuration memory with the Download Tool software (V3.0 or higher).
5. When programming is complete, check that no error message is displayed. Turn off the power of this unit, and turn it back on.

Board Name	FPGA/ROM	EPR	Project File No.	Remarks Connector
TX-105	IC104 (FPGA) IC105 (ROM)	CN101	E_000_001_XX_xx	IC104 cannot be replaced. Replace the entire TX-105 board when a failure occurs.

2-13. i.Link Controlling Command

AV/C Command List

The following list shows AV/C command (Only VCR Subunit Command) of which are supported with this unit. AV/C command conform to 1394 TA Document AV/C Digital Interface Command Set General Specification/VCR Subunit Specification Version 2.0.1 Jan.5,1998.

AV/C command has the following three types.

- CONTROL Command : Control command
- STATUS Inquiry Command : Sense command
- SPECIFIC Inquiry Command : Inquiry command whether control command are supported or not.

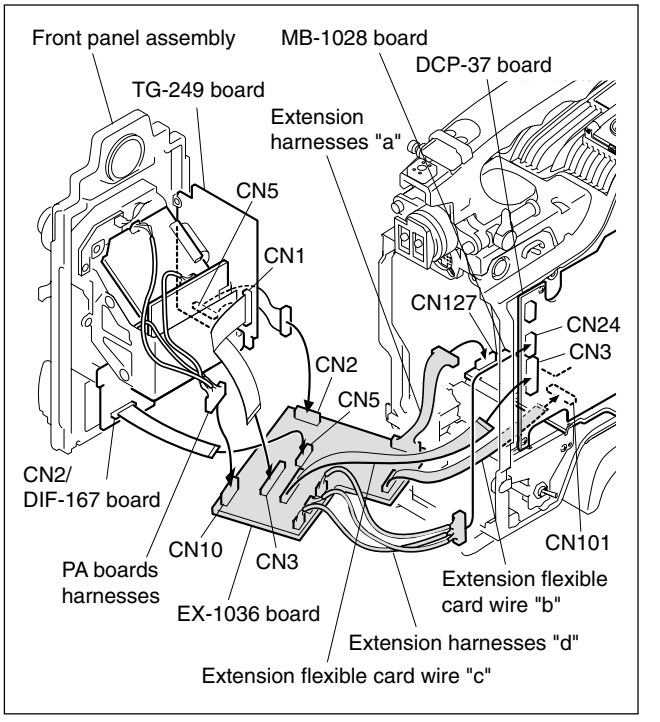
* C and S of the Support shows the CONTROL Command and STATUS Command.

Opecode	Value	Support C	Support S	Comments
ABSOLUTE TRACK NUMBER	52h	○	○	Absolute Track Number search/sense command
BINARY GROUP	5Ah		○	Binary Group Data sense command
LOAD MEDIUM	C1h	○		Eject command
MEDIUM INFO	DAh		○	Tape Information sense command
OUTPUT SIGNAL MODE	78h	○	○	Output Signal Mode control command
PLAY	C3h	○		Play/Search command
RECORD	C2h	○		Record command
RELATIVE TIME COUNTER	57h	○	○	COUNTER search/sense/preset command
SEARCH MODE	50h		○	Search Mode sense command
SMPTE/EBU TIME CODE	59h	○	○	Time Code search/sense command
TIME CODE	51h	○	○	Time Code search/sense command
TRANSPORT STATE	D0h		○	Tape transport sense command
WIND	C4h	○		STOP/FF/REW command

2-14. How to Extend the Circuit Board

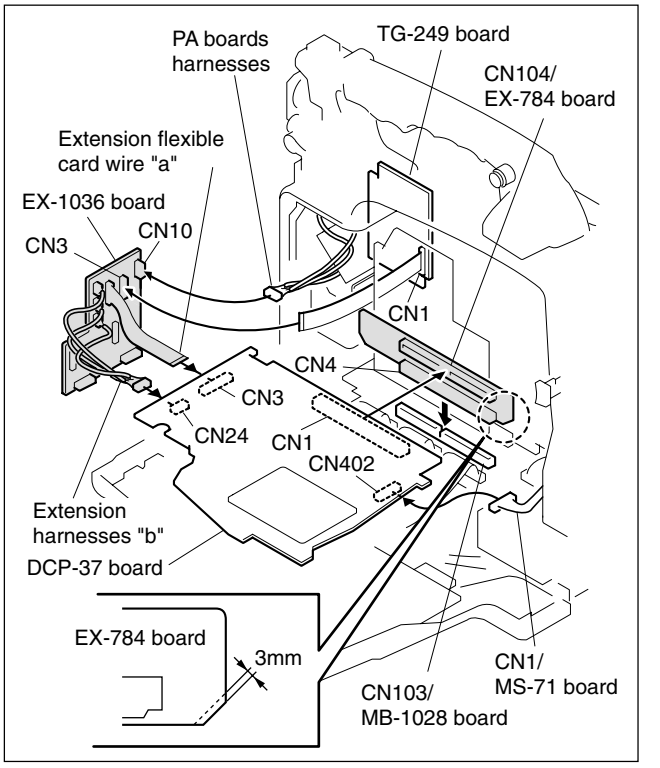
2-14-1. Extending CCD Unit

1. Open the inside panel. (Refer to Section 2-7-3, step 1.)
2. Remove the front panel assembly.
   (Refer to Section 2-7-8.)
3. Connect the extension harnesses “a” of the EX-1036 board to the connector (CN127) on the MB-1028 board.
4. Connect the extension flexible card wire “b” of the EX-1036 board to the connector (CN101) on the MB-1028 board.
5. Connect the extension flexible card wire “c” of the EX-1036 board to the connector (CN3) on the DCP-37 board.
6. Connect the extension harnesses “d” of the EX-1036 board to the connector (CN24) on the DCP-37 board.
7. Connect the flexible card wire of the DIF-167 board (CN2) to the connector (CN5) on the EX-1036 board.
8. Connect the flexible card wire of the TG-249 board (CN1) to the connector (CN3) on the EX-1036 board.
9. Connect the harnesses of the PA board to the connector (CN10) on the EX-1036 board.
10. Connect the harnesses of the TG-249 board (CN5) to the connector (CN2) on the EX-1036 board.



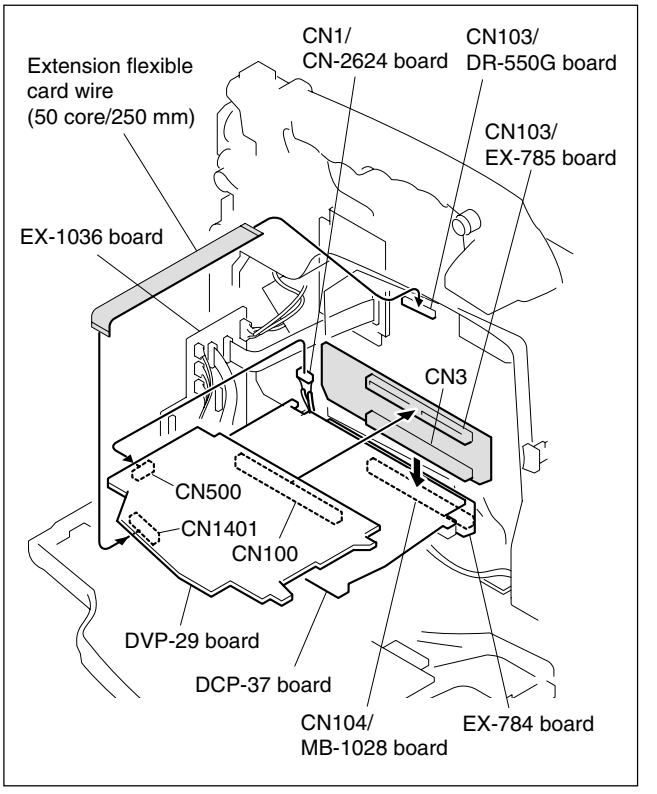
2-14-2. Extending DCP-37 Board

1. Open the inside panel. (Refer to Section 2-7-3, step 1.)
2. Remove the DCP-37 board. (Refer to Section 7-7-4.)
3. Cut the right corner of the EX-784 board with a nipper. If the corner is already cut, use the board as it is.
4. Connect the connector (CN104) on the EX-784 board to the connector (CN1) on the DCP-37 board.
5. Connect the connector (CN4) on the EX-784 board that is connected to the DCP 37 board to the connector (CN103) on the MB-1028 board.
6. Connect the extension flexible card wire “a” of the EX-1036 board to the connector (CN3) on the DCP-37 board.
7. Connect the extension harnesses “b” of the EX-1036 board to the connector (CN24) on the DCP-37 board.
8. Connect the flexible card wire of the TG-249 board (CN1) to the connector (CN3) on the EX-1036 board.
9. Connect the harnesses of the PA board to the connector (CN10) on the EX-1036 board.
10. Connect the harnesses of the MS-71 board (CN1) to the connector (CN402) on the DCP-37 board.



2-14-3. Extending DVP-29 Board

1. Open the inside panel. (Refer to Section 2-7-3, step 1.)
2. Remove the DCP-37 board. (Refer to Section 7-7-4.)
3. Remove the DVP-29 board. (Refer to Section 7-7-6.)
4. Extend the DCP-37 board assembly using the EX-784 board. (Refer to Section 1-14-2.)
5. Connect the connector (CN103) on the EX-785 board to the connector (CN100) on the removed DVP-29 board.
6. Connect the connector (CN3) on the EX-785 board to the connector (CN104) on the MB-1028 board.
7. Connect the extension flexible card wire (50 core/250 mm) to the connector (CN103) on the DR-550G board and the connector (CN1401) on the DVP-29 board.
8. Connect the harnesses of the CN-2624 board (CN1) to the connector (CN500) on the DVP-29 board.



2-15. Service Overview

2-15-1. Notes on Handling Optical Block Assembly

To prevent the damage due to the electrostatic charge, be sure to put the following grounding while handling the optical block assembly (KES-110A).

Grounding for the human body

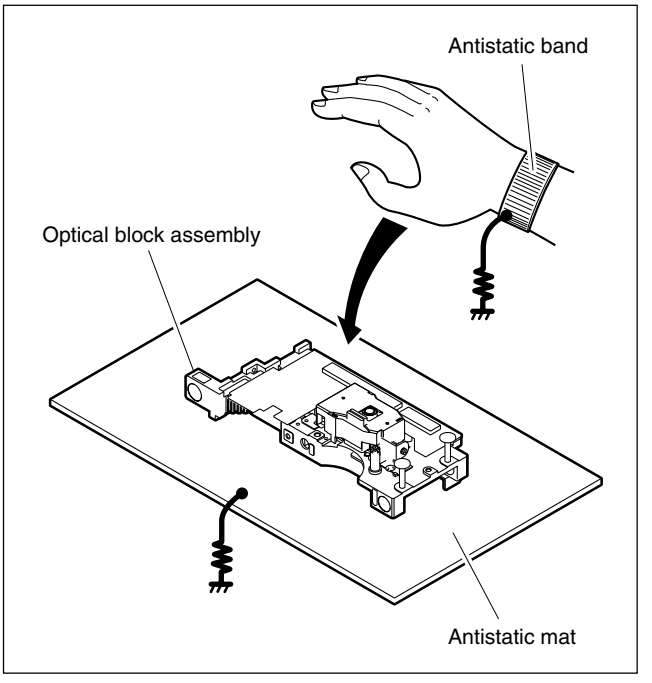
Be sure to put on an antistatic band for grounding (with impedance lower than 10^8 Ω) whose other end is grounded.

Note

Because static electricity charged on clothes is not drained away, be careful not to touch your clothes to the optical block assembly.

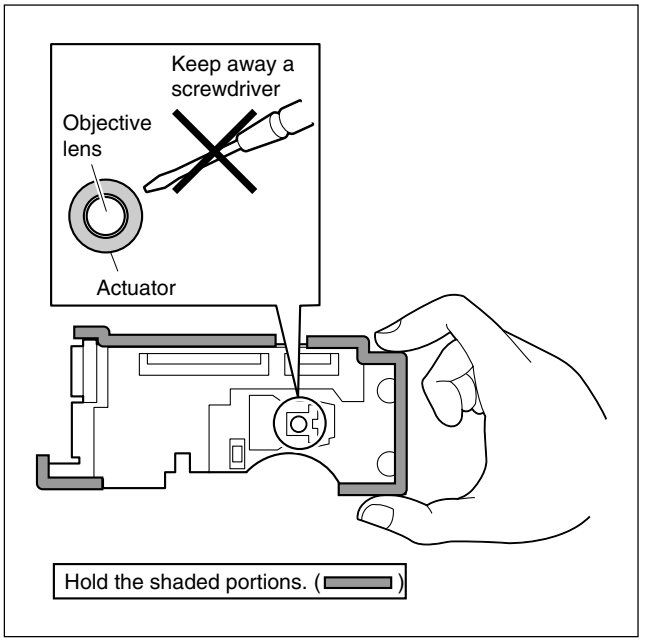
Grounding for the work table

Be sure to place the optical block assembly on an antistatic mat (with impedance lower than 10^9 Ω recommended) or a copper sheet for grounding.



Precautions

- The optical block assembly is a precise unit. Be careful not to subject it to shocks by dropping or rough handling.
- Do not touch the objective lens.
- Hold the slide base (die casting part) when handling the optical block assembly.
  Do not touch the circuit on the print board with your hand or a substance directly; otherwise, the circuit may be damaged.
- The performance of the actuator may be affected if a magnetic material is located nearby, since the actuator has a strong magnetic field.
  Keep magnetic substance away from the actuator. if the magnetic force makes a metallic material such as a screwdriver, reflection block and so on hit the actuator, the objective lens will be damaged.
- Do not allow foreign materials to enter through gap in the cover of the actuator.



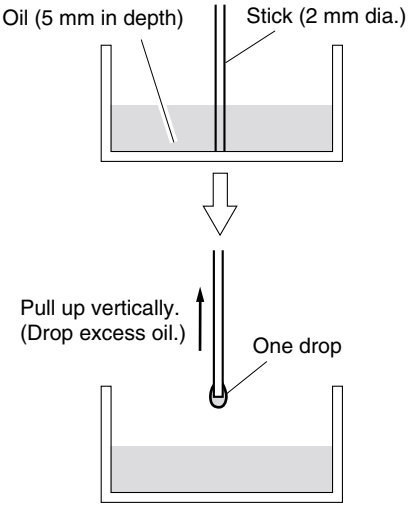
2-15-2. Oil

Be sure to use the specified oil.
If not, the unit may have a serious trouble due to the difference of the viscosity and the ingredient.
Also, oil containing dust may cause a serious unit trouble.

Use the following oil for this unit:

- Oil (LX-206) (Sony part number : 7-640-010-89)
  : Slide main shaft and slide sub shaft of the optical block

- One drop of oil means the amount of extent to which the stick of 2mm in the diameter previously adheres shown in figure.
- Never use neither oil nor grease except the specified place.



2-15-3. Standard Torque for Screws

When tightening a screw, be sure to use the specified torque driver and tightening torque.
When a tightening torque is specified in each removal, reinstallation, replacement, or adjustment procedure in this manual, be sure to use it. When no tightening torque is specified, use the following standard tightening torques.

Fixtures

- Bit for torque driver (for M1.4 / M1.7)
- Bit for torque driver (for M2)
- Bit for torque driver (for M3)
- Torque driver (for 3 kg)
- Torque driver (for 6 kg)
- Torque driver (for 10 kg)

M1.7 (+) screw : $15 \times 10^{-2} \pm 0.01$ N•m (1.5 ±0.1 kgf•cm)
M2 (+) screw : $20 \times 10^{-2} \pm 0.01$ N•m (2.0 ±0.1 kgf•cm)
M2.6 (+) screw : $53 \times 10^{-2} \pm 0.01$ N•m (5.3 ±0.1 kgf•cm)
M3 (+) screw : $80 \times 10^{-2} \pm 0.01$ N•m (8.0 ±0.1 kgf•cm)

2-15-4. Stop Washer

Never re-use the pre-used stop washers.
When attaching the part, be sure to use the new stop washer.

• Stop washer (Sony part number : 3-559-408-11)

How to remove stop washer

1. Remove the stop washer using a pair of small nippers or tweezers.

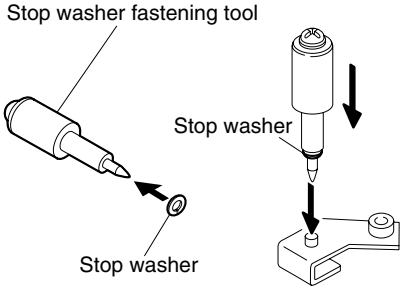
Notes

- Be careful not to drop the stop washer in the unit.
- Be careful not to bring the tool into contact with the other parts, especially the drum.

How to install stop washer

When attaching, it is recommended to use the following tool.(Refer to "2-10-1. Service Tools". for details)
Stop washer fastening tool

1. Put the stop washer to the top thin part of the stop washer fastening tool.
2. Stand the thin top of the tool on the top of the shaft in an upright position.
3. Press thick part of the tool downward and attach the stop washer to the shaft.



2-15-5. Description of CCD Block Number

All of the CCD units have their unique ID numbers.
This number is called the CCD block number indicating the type of the CCD block and serial number.
The label indicating the CCD block number is attached inside of each CCD unit.

Example) ABC xxxxx
- Serial number of the CCD unit
- Type of the CCD block

Aplicable Model Bock	Serial No.	Type of the CCD
PDW-F330/F350	10001 and Higher	MIA

2-15-6. Memory Backup Battery

WARNING

The lithium battery is critical part to safe operation. Replace the component with Sony part whose part number appears in the manual published by Sony. If the component is replaced by any part other than the specified ones, this may cause a fire or electric shock.

CAUTION

When replacing the lithium battery, ensure that the battery is installed with "+" and "−" poles connected to the correct terminals.
An improper connection may cause an explosion or leakage of fluid result in physical damage in the surrounding materials.

The FP-144 board is equipped with the data backup battery. When replacing it, be sure to use the specified part.

Replacement part : BT500 (on the FP-144 board)
Part name : CR-2032 (lithium battery)
Part No. : ⚠ 1-528-174-31
Recommended replacement period : Every year

The memory IC stores the data such as date and time. If the backup memory battery is dead or replaced, these data are all cleared.
For replacing the battery and re-setting the data, refer to "Attaching and Replacing the Lithium Battery" and "Setting the Date and Time of the Internal Clock" in Section 2 of the Operating Instructions.

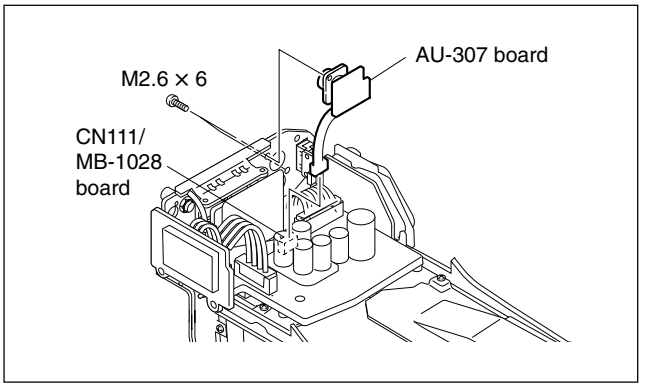
2-15-7. Modifying the AUDIO OUT Connector (to Support Monaural Output) (PDW-F350 only)

The monaural output can be supported by replacing the AUDIO OUT connector in the following steps.

Parts required

AU-307C board (Sony part No.: A-1189-037-A)

1 Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the connector cover. (Refer to Section 2-7-4.)
4. Disconnect the harness from the connector (CN111) on the MB-1028 board, remove the two screws, and remove the AU-307 board.



5. Install the AU-307C board that supports the monaural output by reversing the steps of removal.

Note after replacement

After installing the AU-307C board, switch S300 on the FP-144 board to the pin-3 (STEREO) side to the pin-2 (MONAURAL) side.

2-15-8. Circuit Protection Element

The CNB-18, RX-96 and DR-550G board of this unit is equipped with the positive characteristics thermister (power thermister) as the circuit protection element. The positive characteristics thermister limits the electric current flowing through the circuit as the internal resistance increases when an excessive current flows or when the ambient temperature increases. If the positive characteristics thermister works, turn off the main power of the unit and inspect the internal circuit of this unit. After the cause of the trouble is removed, turn on the main power back again. The unit works normally. It takes about one minute to cool down the positive characteristics thermister after the main power is turned off.

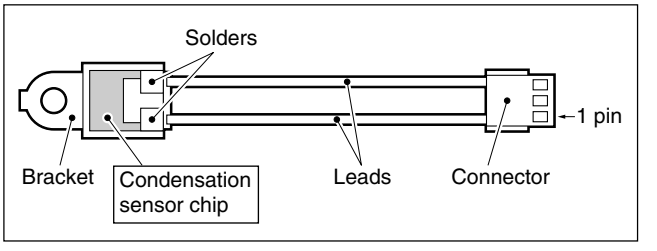
Board	Ref. No.	Address	Part Number
CNB-18	THP1	A2 (B side)	⚠ 1-803-615-21
RX-96	THP1	– (A side)	⚠ 1-803-615-21
DR-550G	THP500	4F (B side)	⚠ 1-771-075-21

2-15-9. Precautions for Use of Condensation Sensor

Due to the foreign substances adhering to the condensation sensor chip (see figure below), the sensor fails to measure the correct value of residence to humidity. This prevents the unit from functioning properly. If any foreign substance gets adhered to the chip, replace the condensation sensor with a new one.

Notes

- Do not touch the chip with bare hands.
- Do not clean the chip with alcohol or other similar agents.



2-15-10. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with "o" at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.

2-15-11. Unleaded Solder

Boards requiring use of unleaded solder are printed with a 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

Notes

- Be sure to use the unleaded solder for the printed circuit board printed with the lead free mark.
- The unleaded solder melts at a temperature about 40 °C higher than the ordinary solder, therefore, it is recommended to use the soldering iron having a temperature regulator.
- The ordinary soldering iron can be used but the iron tip has to be applied to the solder joint for a slightly longer time. The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful.

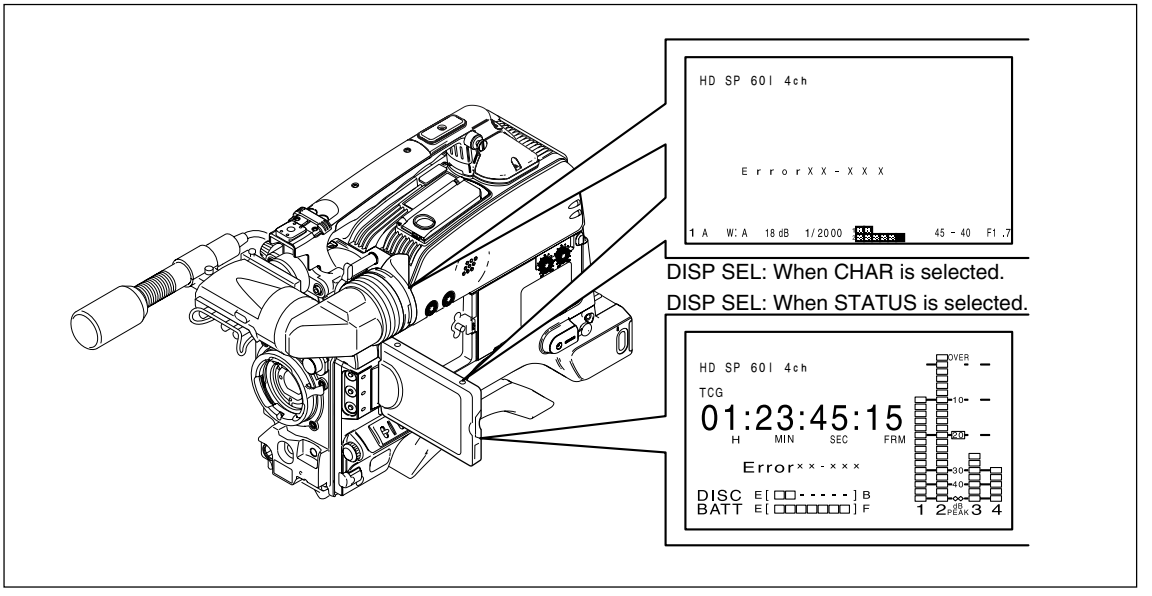
Section 3
Error Messages

3-1. Error Messages Overview

This unit has a self diagnosis function to check internal errors. When the unit detects an error, its error code and description are displayed on the following display units.

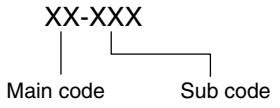
- Viewfinder display (error code only)
- Color LCD display

When an error occurs, its error code information is recorded in the error logger (maintenance logger) of the main unit and also in the error logger (drive logger) of the drive unit.
Refer to respective error tables for display contents on the viewfinder display and for recording/non-recording in the error loggers.



3-2. Error Code List

An error code is provided in combination of 2-digit main code and 3-digit sub code.



Main code	Main error description
0X	Optical drive control errors, device errors
	• 02: Optical devices (LD, LCD)
	• 03: Optical drive two-axis (FCS, TRK)
	• 04: Optical drive seeking
	• 06: Optical drive expander
	• 08: Optical drive spindle
20	Loader (P1) assembly errors
3X	Optical drive sensor system errors
5X	Read data errors
6X	Startup errors
91	Interface errors between CPU and peripheral devices
92	Synchronization system errors
95	Video/audio signal processing device errors

For details of sub codes, refer to respective error tables.

If multiple errors occur simultaneously

The highest-priority error is displayed.
When a higher-priority error is cleared, the following-priority error code is displayed.

Protection Mode

When this unit detects an error, it enters a protection mode to prevent the cartridge disc, optical drive, and other components from damage or failure.
The protection mode depends on error status. When a cartridge is inserted, press the EJECT button and remove the cartridge.

3-2-1. Error 0X

When errors related to optical drive control or to devices are detected, the following error codes are displayed.

Main code	Sub code	Time data display	Maintenance logger	Drive logger	Description
02	020	←	○	○	Optical block assembly (refer to as OP hereafter) is recording at maximum laser output. Perform the pickup lens cleaning. (Refer to Section 6-4.)
	X25	←	○	○	OP laser output error is detected.
	X26	←	○	○	OP laser output coefficient cannot be adjusted.
	X27	←	○	○	OP laser current is abnormal (zero or excessive).
	X28	←	○	○	OP laser output is stopped judging that no cartridge is inserted.
	X31	←	○	○	OP LCD shutter does not open.
03	X54	←	○	○	No signal from disc required for OP focus servo can be detected.
	X57	←	○	○	No control current is detected in OP focus servo.
	X58	←	○	○	Excessive control current is detected in OP focus servo.
	X67	←	○	○	No control current is detected in OP tracking servo.
	X68	←	○	○	Excessive control current is detected in OP tracking servo.
	060	←	×	○	OP is operating with tracking servo characteristics down.
04	X7C	←	○	○	OP cannot move to disc's innermost circumference.
	X7D	←	○	○	OP cannot move to disc's outermost circumference.
06	E41	←	○	○	OP expander home position cannot be detected during startup adjustment.
	F41	←	○	○	OP expander home position cannot be detected during power-on initialization.
08	091	←	○	○	Spindle motor does not rotate after the predetermined time has passed (or no FG signal is detected).
	095	←	○	○	Spindle motor cannot be stopped (or abnormal FG signal is detected).
	292	←	○	○	Spindle motor rotation is detected during vertical move of loading.*
	992	←	○	○	Spindle motor rotation is detected during vertical move of unloading.*

* : The vertical move of loading/unloading is also carried out by STBY ON/OFF.

Note

Any number of the following is applicable for "X" in the sub codes above, showing an operation status where the error is detected.

Example) Sub code X27 : 8 27:

- 27: Laser current of optical block assembly is abnormal (zero or excessive)
- 8: During horizontal move of unloading

0: Operation cannot be identified or no need to be identified.
1: During loading
2: During vertical move of loading
3: Disc is not rotating
4: Seeking
5: Reading
6: Writing
7: Standby state
8: During horizontal move of unloading
9: During vertical move of unloading
A: During disc removal
B: During lens cleaning or device checking
C, D: (Not used)
E: During startup adjustment of optical block assembly
F: During power-on initialization of optical block assembly expander

3-2-2. Error 20

When errors related to loader (P1) assembly are detected, the following error codes are displayed.

Main code	Sub code	Time data display	Maintenance logger	Drive logger	Description
20	111	←	○	○	Horizontal move of loading did not end within the predetermined time.
	117	←	○	○	Displacement of cartridge is detected in the loader during horizontal move of loading.
	211	←	○	○	Vertical move of loading did not end within the predetermined time.
	213	←	○	○	Cartridge cannot be detected after loading.
	217	←	○	○	Displacement of cartridge is detected in the loader during vertical move of loading.
	811	←	○	○	Horizontal move of unloading did not end within the predetermined time.

3-2-3. Error 3X

When errors related to the optical drive sensor system are detected, the following error codes are displayed.

Main code	Sub code	Time data display	Maintenance logger	Drive logger	Description
34	500	←	○	○	Loader position sensor (SE-709 board) is detects abnormal code.
35	500	ACC Sensor!	×	○	Abnormality of acceleration sensor is detected.
37	500	High TEMP!	×	○	Optical block assembly temperature sensor detects abnormal status.
39	500	Skew Sensor	×	○	Abnormality of skew sensor in optical block assembly is detected.
3A	500	Skew Sensor	×	○	Abnormality of skew sensor in optical block assembly is detected.
3C	500	HUMID!	×	○	Dew condensation is detected.

3-2-4. Error 5X

When read data errors are detected, the following error codes are displayed.

Main code	Sub code	Time data display	Maintenance logger	Drive logger	Description
50	010	(Not displayed)	×	○	BCA area data cannot be read.
	011	(Not displayed)	×	○	BCA area data is invalid.
51	020	DI read err	×	○	PIC area data cannot be read.
	021	DI read err	×	○	PIC area data is invalid.
52	X0B	Read err	×	○	Address cannot be read from disc in optical block assembly.

Note

Any number of the following is applicable for "X" in the sub codes above, showing an operation status where the error is detected.

Example) Sub code X0B : 8 0B:

- 0B: Address cannot be read from the disc in optical block assembly
- 8: During horizontal move of unloading.

0: Operation cannot be identified or no need to be identified.
1: During loading
2: During vertical move of loading
3: Disc is not rotating
4: Seeking
5: Reading
6: Writing
7: Standby state
8: During horizontal move of unloading
9: During vertical move of unloading
A: During disc removal
B: During lens cleaning or device checking
C, D: (Not used)
E: During startup adjustment of optical block assembly
F: During power-on initialization of optical block assembly expander

3-2-5. Error 6X

When errors related to startup operation are detected, the following error codes are displayed.

Main code	Sub code	Time data display	Maintenance logger	Drive logger	Description
60	E00	(Not displayed)	×	○	Optical block assembly cannot seek to target position during startup.
6F	E00	DRV ADJ err	×	○	Optical block assembly startup adjustment cannot be completed.

3-2-6. Error 91

When interface errors between CPU and peripheral devices are detected, the following error codes are displayed.

Note

System control CPU: IC200 on the SY-322 board

Main code	Sub code	Time data display	Maintenance logger	Drive logger	Description
91	125	←	○	×	System control CPU detects interruption in communication with side panel CPU (FP: IC505/FP-144 board).
	130	←	○	×	System control CPU detects flash memory (IC213, IC215/SY-322 board) error.
	139	←	○	×	System control CPU detects an error in setup menu data area (EEPROM: IC703/SY-322 board).
	13A	←	○	×	System control CPU detects NVRAM (IC309/SY-322 board) error.
	13B	←	○	×	System control CPU detects an error in hours meter area (EEPROM: IC203/SY-322 board).
	13D	←	○	×	System control CPU detects an error in hours meter area (EEPROM: IC203/SY-322 board).
	155	←	○	×	Communication between system control CPU and optical drive (DR-550G board) is interrupted.
	165	←	○	×	System control CPU detects interruption in communication with camera control CPU.
	185	←	○	×	System control CPU detects interruption in communication with IC for driving color LCD (IC1/PD-115 board).
	215	←	○	×	Side panel CPU (FP: IC505/FP-144 board) detects interruption in communication with system control CPU.
	551	←	○	○	Optical drive's system control CPU (DRV: IC600/DR-550G board) detects firmware error. Perform the firmware update. (Refer to Section 2-11.)
	595	←	○	○	Optical drive's system control CPU (IC600/DR-550G board) detects interruption in communication with SV DSP (IC400/DR-550G board).

3-2-7. Error 92

When synchronization system errors are detected, the following error codes are displayed.

Note

System control CPU: IC200 on the SY-322 board

Main code	Sub code	Time data display	Maintenance logger	Drive logger	Description
92	101	←	○	×	System control CPU detects REF error.

3-2-8. Error 95

When interface errors between device ICs are detected, the following error codes are displayed.

Note

System control CPU: IC200 on the SY-322 board

Optical drive's system control CPU (DRV): IC600 on the DR-550G board

Main code	Sub code	Time data display	Maintenance logger	Drive logger	Description
95	102	←	○	×	Communication error between system control CPU and i.LINK (IC500/SY-322 board) is detected.
	104	←	○	×	Communication error between system control CPU and MPEG HD encoder (TORINO: IC700/DVP-29 board) is detected.
	109	←	○	×	Communication error between system control CPU and DSP0 (IC1900/DVP-29 board) is detected.
	10C	←	○	×	Communication error between system control CPU and PROXY AUDIO DSP (IC1501/DVP-29 board) is detected.
	10D	←	○	×	GEOS (IC1100/DVP-29 board) configuration error is detected.
	10E	←	○	×	NOVA (IC300/DVP-29 board) configuration error is detected.
	503	←	○	○	Optical drive's BDC (IC300/DR-550G board) error is detected during initial check.
	505	←	○	○	Optical drive's FEP (IC200/DR-550G board) setting value error is detected.
	506	(Not displayed)	×	○	In optical block assembly, laser driver IC setting value error is detected.
	507	(Not displayed)	×	○	Optical drive's FEP (IC200/DR-550G board) setting value error is detected.
	509	←	○	○	Adjustment data cannot be read from optical drive's EEPROM (IC603/DR-550G board).
	50A	←	○	○	Hours meter data cannot be read from optical drive's EEPROM (IC603/DR-550G board).
	50C	←	○	○	Optical drive's SY-PLD (IC700/DR-550G board) configuration error is detected.
	50F	←	○	○	Cannot access SDRAM (IC301/DR-550G board) for Optical driver's BDC (IC300/DR-550G board).
	513	←	○	○	Optical drive's BDC (IC300/DR-550G board) cannot set the SDRAM mode.
	51C	←	○	○	Optical drive's BDC (IC300/DR-550G board) cannot reset free-run by SYSPE (IC700/DR-550G board).
	51F	←	○	○	An error of SDRAM address circuit of optical drive's BDC (IC300/DR-550G board) is detected.
	526	←	○	○	In optical block assembly, laser driver IC setting value cannot be recovered from abnormal state.
	527	←	○	○	Optical drive's FEP (IC200/DR-550G board) setting value cannot be recovered from abnormal state.
	52C	←	○	○	Auto setting by SYSPE (IC700/DR-550G board) is disabled with power control of optical drive's BDC (IC300/DR-550G board).

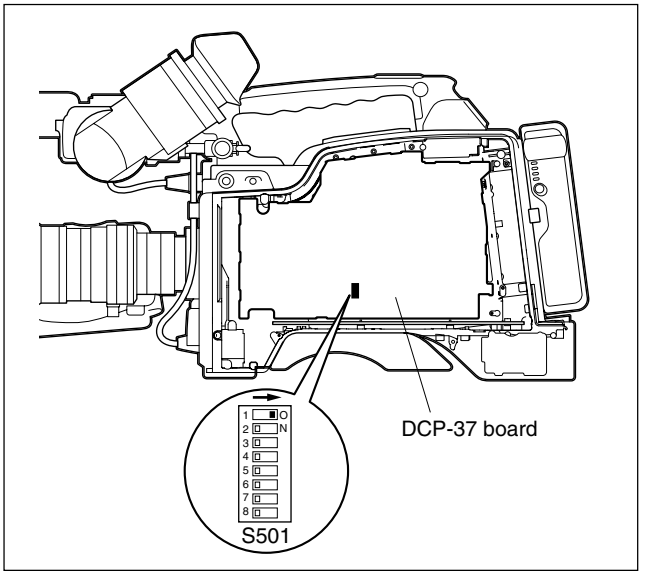
Section 4
Setting Menu

4-1. Displaying the SERVICE Menu

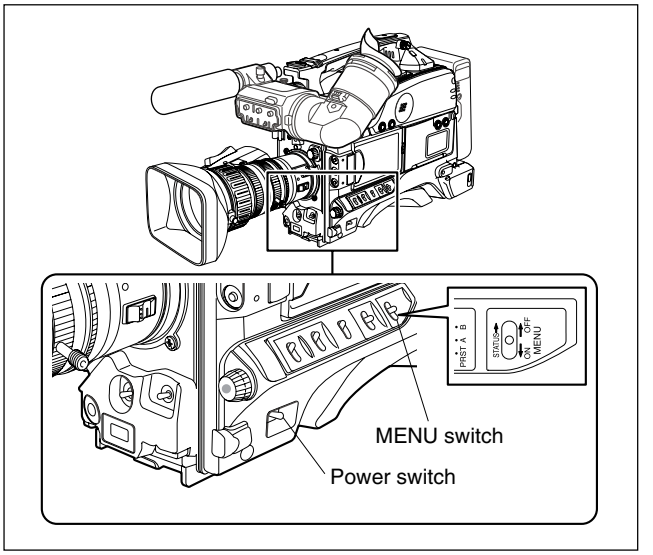
See the Operating Instructions for information about the OPERATION menu, the PAINT menu, the MAINTENANCE menu, the FILE menu, and the DIAGNOSIS menu.

Perform the following steps to display the SERVICE menu.

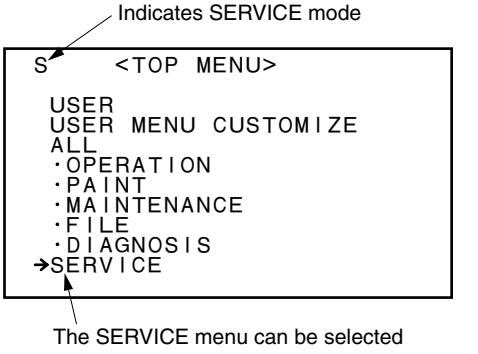
1. Open the inside panel. (Refer to Section 2-7-3, step 1.)
2. Set the S501-1/DCP-37 board to the “ON” position.



3. Close the inside panel. (Refer to Section 2-7-3, step 1.)
4. Turn on the power and flip the MENU switch to ON.



5. Enter SERVICE mode to display the SERVICE menu.



Notes

- After servicing is completed, make sure to set the S501-1/DCP-37 board to the “OFF” position, and exit from SERVICE mode.
- When parameters are changed while the SERVICE menu is displayed, run ALL PRESET from the RESET menu after exiting from SERVICE mode to activate the changed parameters.

4-2. SERVICE Menu

MENU SET

```
S01●MENU SET              TOP

RE ROTATION REV  :    OFF
RE SPEED         :      2
DIRECT VALUE     :    OFF
ABSOLUTE VALUE   :    OFF

SERVICE RESET    :   EXEC

FACTORY PRESET   :   EXEC
```

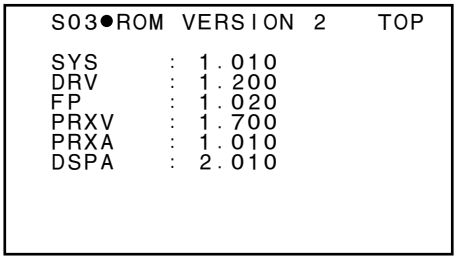
Item	Setting	Description
RE ROTATION REV	OFF/ON	Turns on or off the function to reverse rotation on the MENU knob.
RE SPEED	1/2/3	Sets the MENU knob response speed: 1 (slow) to 3 (fast).
DIRECT VALUE	OFF/ON	ON : The actual setting is displayed. OFF : The setting is converted into a value between –99 and +99 before it is displayed. (This setting is reset to OFF when the power is turned on.)
ABSOLUTE VALUE	OFF/ON	Turns on or off absolute value mode. ON : The actual setting is displayed. OFF : The setting is converted into a value between –99 and 99 before it is displayed. (This setting is reset to OFF when the power is turned on.)
SERVICE RESET	Press the MENU knob to execute.	Resets the SERVICE hierarchy data. For details on the data hierarchical structure, refer to “5-2. Data Structure”.
FACTORY PRESET	Press the MENU knob to execute.	Resets all of the settings to the factory preset default settings (excluding the black balance auto-adjustment data).

ROM VERSION 1

```
S02●ROM VERSION 1    TOP

AT      : 1.00
PACKAGE : 1.01
GEOS    : 1.500
NOVA    : 1.001
FRESH   : 1.00
COPRO   : 1.05
```

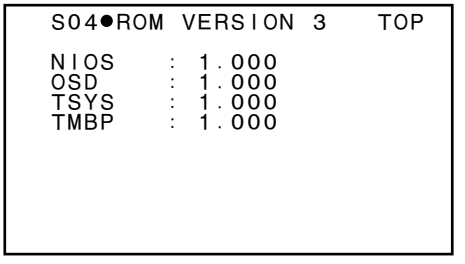
Item	Setting	Description
AT	Display only	Displays the ROM version of IC436 and IC437 on the DCP-37 board. (This ROM can be upgraded from the menu.)
PACKAGE	Display only	Displays the version of the software package. (This can be upgraded from the menu.)
GEOS	Display only	Displays the ROM version of IC1100 on the DVP-29 board. (This ROM cannot be upgraded from the menu.)
NOVA	Display only	Displays the ROM version of IC300 on the DVP-29 board. (This ROM cannot be upgraded from the menu.)
FRESH	Display only	Displays the ROM version of IC611 on the DCP-37 board. (This ROM can be upgraded from the menu.)
COPRO	Display only	Displays the ROM version of IC105 on the TX-105 board. (This ROM cannot be upgraded from the menu.) ∗Only for PDW-F350 (PDW-F330 does not include TX-105 board.)

ROM VERSION 2



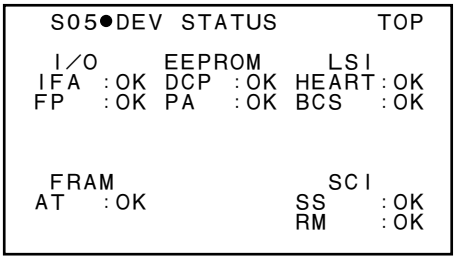
Item	Setting	Description
SYS	Display only	Displays the ROM version of IC200 on the SY-322 board. (This ROM can be upgraded from the menu.)
DRV	Display only	Displays the ROM version of the DR-550G board. (This ROM can be upgraded from the menu.)
FP	Display only	Displays the ROM version of IC505 on the FP-144 board. (This ROM can be upgraded from the menu.)
PRXV	Display only	Displays the ROM version of IC1900 on the DVP-29 board. (This ROM can be upgraded from the menu.)
PRXA	Display only	Displays the ROM version of IC1501 on the DVP-29 board. (This ROM can be upgraded from the menu.)
DSPA	Display only	Displays the ROM version of IC1500 on the DVP-29 board. (This ROM can be upgraded from the menu.)

ROM VERSION 3



Item	Setting	Description
NIOS	Display only	Displays the ROM version of IC300 on the DVP-29 board. (This ROM can be upgraded from the menu.)
OSD	Display only	Displays the ROM version of IC300 on the DVP-29 board. (This ROM can be upgraded from the menu.)
TSYS	Display only	Displays the ROM version of IC700 on the DVP-29 board. (This ROM can be upgraded from the menu.)
TMBP	Display only	Displays the ROM version of IC700 on the DVP-29 board. (This ROM can be upgraded from the menu.)

DEV STATUS



Item	Setting	Description
I/O IFA	Display only	Indicates the status of the I^2C I/O device (IC1) on the DIF-167 board.
I/O FP	Display only	Indicates the status of the CPU (IC505) on the FP-144 board.
FRAM AT	Display only	Indicates the status of the FRAM (IC442 and IC443) on the DCP-37 board.
EEPROM DCP	Display only	Indicates the status of the EEPROM (IC423) on the DCP-37 board.
EEPROM PA	Display only	Indicates the status of the EEPROM (IC17) on the PA-330 board.
LSI HEART	Display only	Indicates the status of the LSI (IC1) on the DCP-37 board.
LSI BCS	Display only	Indicates the status of the LSI (IC741) on the DCP-37 board.
SCI SS	Display only	Indicates the communication status between the main unit, IC102 on the DCP-37 board, and IC200 on the SY-322 board.
SCI RM	Display only	Indicates the communication status between the main unit and the remote control unit (RM-B150 and RM-B750).

HOURS METER 2

```
S06●HOURS METER2      TOP

RESET METER       :  EXEC

OPERATION         :000225H
OPERATION  (rst)  :000225H
SPINDLE    (rst)  :000068H
LASER      (rst)  :000003
LOADING    (rst)  :000356
SEEK       (rst)  :000069H
```

Item	Setting	Description
RESET METER	Press the MENU knob to display the RESET METER menu.	Resets the hours meter.
OPERATION	Display only	OPERATION (operation time display) mode Displays the accumulated time that the unit is turned on in 1 hour units.
OPERATION (rst)	Display only	OPERATION (operation time display) mode [Reset possible] This function is the same as OPERATION mode above, but it can be reset. Reset the time after replacing a part and watch this parameter as a guideline for periodic replacement.
SPINDLE (rst)	Display only	SPINDLE RUNNING (spindle motor rotation time display) mode [Reset possible] Displays the accumulated time that the spindle is rotating in 1 hour units. Reset possible. Reset the time after replacing the spindle and watch this parameter as a guideline for periodic replacement.
LASER (rst)	Display only	LASER PARAMETER (emitting time display for the optical block assembly) mode [Reset possible] Displays the accumulated time that the optical block assembly is emitting (time when the laser is on) in 1 hour units. Reset possible. Reset the time after replacing the optical block assembly and watch this parameter as a guideline for periodic replacement.
LOADING (rst)	Display only	LOADING COUNTER (number of times for disk insertion display) mode [Reset possible] Displays the number of times that a disk in inserted into the unit. Reset possible. Reset the time after replacing the loader (P1) assembly and watch this parameter as a guideline for periodic replacement.
SEEK (rst)	Display only	SEEK RUNNING (optical head seek operation time display) mode [Reset possible] Displays the accumulated time that the optical head performs seek in 1 hour units. Reset possible. Reset the time after replacing the seek motor and watch this parameter as a guideline for periodic replacement.

BATTERY INFO

```
S07●BATTERY INFO    TOP

TYPE              :--------
MFD DATE D/M/Y    :--------
CYCLE COUNT       :   -----
CAPACITY          :--------
VOLTAGE           :   -----
CURRENT           :  -------
REMAINING (%)     :    ----
REMAINING (MAN)   :  ------
MODE              :    ----
STATUS            :    ----
```

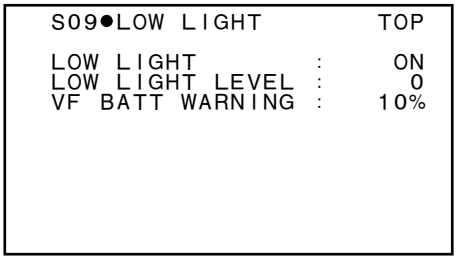
Item	Setting	Description
TYPE	Display only	Displays the selected battery type.
MFD DATE D/M/Y	Display only	Displays the factory shipping date.
CYCLE COUNT	Display only	Displays the number of times that the battery is charged and discharged.
CAPACITY	Display only	Displays the capacity at full charge.
VOLTAGE	Display only	Displays the battery voltage.
CURRENT	Display only	Displays the battery current.
REMAINING (%)	Display only	Displays the remaining battery level (%).
REMAINING (MAN)	Display only	Displays the remaining battery level (minutes).
MODE	Display only	Displays the battery operation mode.
STATUS	Display only	Displays the battery status.

OUTPUT/VCO CONT

```
S08●OUTPUT/VCO CONT TOP

COMPONENT SEL    : YPbPr
VIDEO OUT SEL    :   VBS
CLK OUT SEL      :   OFF
HDCK (NTSC AREA) :    8A
HDCK (PAL AREA)  :    6D
SDCK             :    83
```

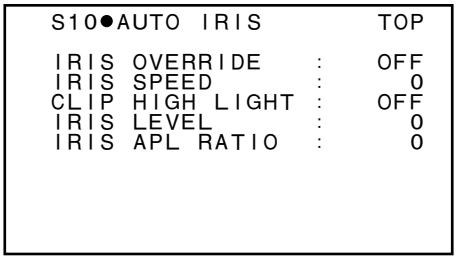
Item	Setting	Description
COMPONENT SEL	YPbPr/RGB	Selects the video signal output from the VIDEO OUT Y/Pb/Pr terminals. (Only available for PDW-F330) (Parameter must be reset to YPbPr after resetting the power.)
VIDEO OUT SEL	VBS/Y/R/G/B	Selects the video signal output from the VIDEO OUT terminal. Y/R/G/B becomes HD output.
CLK OUT SEL	OFF/HDCK (N)/HDCK (P)/ SDCK	Outputs the clock from the VIDEO OUT terminal.
HDCK(NTSC AREA)	00 to FF	Adjusts the HD transmission frequency. Adjusts the HDCK (N) output so that it becomes 37.0879 MHz.
HDCK(PAL AREA)	00 to FF	Adjusts the HD transmission frequency. Adjusts the HDCK (P) output so that it becomes 37.125 MHz.
SDCK	00 to FF	Adjusts the HD transmission frequency. Adjusts the HDCK (N) output so that it becomes 27 MHz.

LOW LIGHT



Item	Setting	Description
LOW LIGHT	OFF/ON	Turns on or off the warning message that is displayed on the screen when the average image level falls below a certain value.
LOW LIGHT LEVEL	–99 to 99	Sets the starting level when the above LOW LIGHT function is turned on.
VF BATT WARNING	10/20%	Sets the amount of remaining charge to start the battery alarm when using batteries from Anton/Bauer, Inc. 10% : The alarm starts blinking when the battery voltage is about 0.67 V. 20% : "20%" appears on the display when the battery voltage is about 1.33 V, and the alarm starts blinking at about 1.0 V.

AUTO IRIS



Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

Item	Setting	Description
IRIS OVERRIDE	OFF/ON	Turns on or off the auto iris override function. When the function is turned on, the reference value for auto iris adjustment can be changed with the MENU knob (5 levels: –1, –0.5, 0, +0.5, +1 aperture)
IRIS SPEED	(–99 to 99)	Sets the auto iris response speed. –99 (Fast) 99 (Slow)
CLIP HIGH LIGHT	OFF/ON	Turns on or off the function that limits the auto iris output to 100% when the video level of the subject rises above 100%.
IRIS LEVEL	(–99 to 99)	Sets the convergence level for the auto iris.
IRIS APL RATIO	(–99 to 99)	Sets the method for performing the auto iris. –99 (Peak value) 99 (Average value)

SW STATUS

```
S11●SW STATUS          TOP

GAMMA              :    ON
MATRIX             :    ON
KNEE               :    ON
WHITE CLIP         :    ON
DETAIL             :    ON
APERTURE           :    ON
FLARE              :    ON
TEST SAW           :   OFF
TEST SAW ANALOG    :   OFF
```

Item	Setting	Description
GAMMA	OFF/ON	Turns on or off the gamma correction function.
MATRIX	OFF/ON	Turns on or off the linear matrix function.
KNEE	OFF/ON	Turns on or off the knee function.
WHITE CLIP	OFF/ON	Turns on or off the white clip function.
DETAIL	OFF/ON	Turns on or off the detail function.
APERTURE	OFF/ON	Turns on or off the aperture function.
FLARE	OFF/ON	Turns on or off the flare correction function.
TEST SAW	OFF/ON	Turns on or off the digital test saw function.
TEST SAW ANALOG	OFF/ON	Turns on or off the analog test saw function.

Note) Digital test saw may not increase the gain depending on the setting for the Gain up switch. The level of the analog test saw is not 100%.
The difference between the RGB levels can be adjusted by using AUTO WHITE BALANCE.

BLACK/FLARE

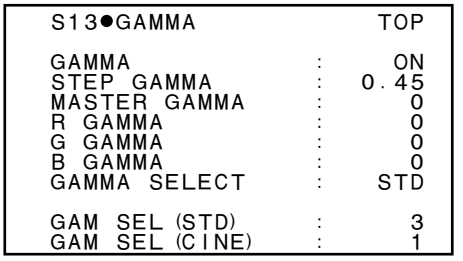
```
S12●BLACK/FLARE        TOP

MASTER BLACK       :    0
R BLACK            :    0
B BLACK            :    0
MASTER FLARE       :    0
R FLARE            :    0
G FLARE            :    0
B FLARE            :    0
FLARE              :   ON

VIDEO OUT SEL      :  VBS
```

Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

Item	Setting	Description
MASTER BLACK	(–99 to 99)	Adjusts the master black level (effective for R, G, and B).
R BLACK	(–99 to 99)	Adjusts the black level for R.
B BLACK	(–99 to 99)	Adjusts the black level for B.
MASTER FLARE	(–99 to 99)	Adjusts the master flare correction level (effective for R, G, and B).
R FLARE	(–99 to 99)	Adjusts the flare correction level for R.
G FLARE	(–99 to 99)	Adjusts the flare correction level for G.
B FLARE	(–99 to 99)	Adjusts the flare correction level for B.
FLARE	OFF/ON	Turns on or off the flare correction function.
VIDEO OUT SEL	VBS/Y/R/G/B	Selects the video signal to output from the VIDEO OUT terminal. Y/R/G/B becomes HD output. (Parameter must be reset to VBS after resetting the power)

GAMMA

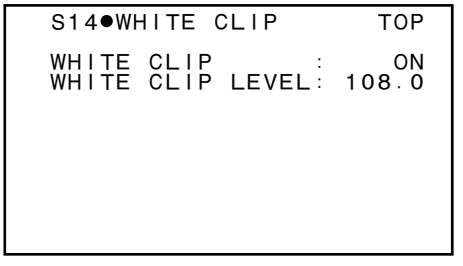


Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

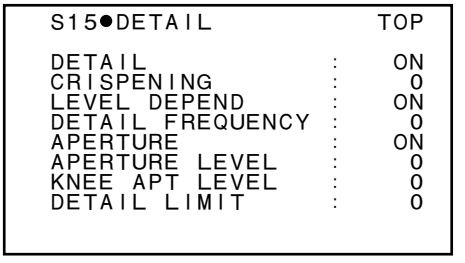
Item	Setting	Description
GAMMA	OFF/ON	Turns on or off the gamma correction function.
STEP GAMMA	0.35 to 0.90	Sets the size of steps in the master gamma correction curve.
MASTER GAMMA	(–99 to 99)	Adjusts the master gamma correction curve.
R GAMMA	(–99 to 99)	Adjusts the gamma correction curve for R.
G GAMMA	(–99 to 99)	Adjusts the gamma correction curve for G.
B GAMMA	(–99 to 99)	Adjusts the gamma correction curve for B.
GAMMA SELECT	STD/CINE	Selects the major type of gamma. STD : Standard CINE : Cinema gamma
GAM SEL (STD)	1 to 4 (STD)	Selects the gamma table when the above parameter GAMMA SELECT is set to STD.
GAM SEL (CINE)	1 to 4 (CINE)	Selects the gamma table when the above parameter GAMMA SELECT is set to CINE.

WHITE CLIP



Item	Setting	Description
WHITE CLIP	OFF/ON	Turns on or off the white clip function.
WHITE CLIP LEVEL	100 to 109.5	Sets the white clip level.

DETAIL

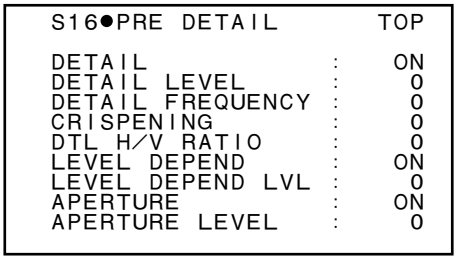


Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

Item	Setting	Description
DETAIL	OFF/ON	Turns on or off the function that adds the detail signal.
CRISPENING	(–99 to 99)	Sets the level of crispening to add to the detail signal.
LEVEL DEPEND	OFF/ON	Turns on or off the level depend function (suppresses the amount of detail to a low level).
DETAIL FREQUENCY	(–99 to 99)	Sets the frequency (width) of the H detail signal.
APERTURE	OFF/ON	Turns on or off the high-pass correction function.
APERTURE LEVEL	(–99 to 99)	Sets the high-pass correction level.
KNEE APT LEVEL	(–99 to 99)	Adjusts the amount of detail that reaches the highlighted portions greater than the knee point.
DETAIL LIMIT	(–99 to 99)	Adjusts the limiter for the detail signal.

PRE DETAIL

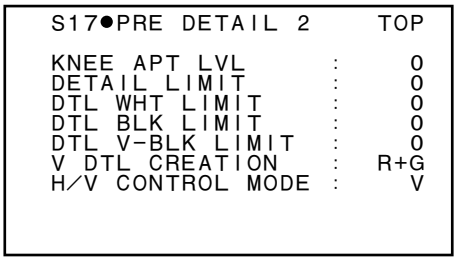


Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

Item	Setting	Description
DETAIL	OFF/ON	Turns on or off the function that adds the detail signal.
DETAIL LEVEL	(–99 to 99)	Sets the overall level for the detail signal.
DETAIL FREQUENCY	(–99 to 99)	Sets the frequency (width) of the H detail signal.
CRISPENING	(–99 to 99)	Sets the level of crispening to add to the detail signal.
DTL H/V RATIO	(–99 to 99)	Sets the mix ratio for the H detail signal and the V detail signal.
LEVEL DEPEND	OFF/ON	Turns on or off the level depend function (suppresses the amount of detail added to a low level).
LEVEL DEPEND LVL	(–99 to 99)	Sets the level to suppress with the level depend.
APERTURE	OFF/ON	Turns on or off the high-pass correction function.
APERTURE LEVEL	(–99 to 99)	Sets the high-pass correction level.

PRE DETAIL 2

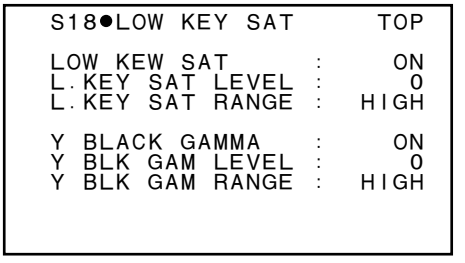


Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

Item	Setting	Description
KNEE APT LVL	(–99 to 99)	Adjusts the amount of detail that reaches the highlighted portions greater than the knee point.
DETAIL LIMIT	(–99 to 99)	Adjusts the limiter for the detail signal.
DTL WHT LIMIT	(–99 to 99)	Adjusts the limiter for the detail signal in the white direction.
DTL BLK LIMIT	(–99 to 99)	Adjusts the limiter for the detail signal in the black direction.
DTL V-BLK LIMIT	(–99 to 99)	Adjusts the limiter for the V detail signal in the black direction.
V DTL CREATION	NAM/G/R+G/Y	Selects the original signal for making the V detail.
H/V CONTROL MODE	H/V /V	Selects the operation mode for the DTL H/V RATIO on page DETAIL 1. H/V : Controls H and V at the same time. V : Controls only V.

LOW KEY SAT



Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

Item	Setting	Description
LOW KEW SAT	OFF/ON	Turns on or off the low key saturation function.
L.KEY SAT LEVEL	(–99 to 99)	Sets the saturation for low intensity levels.
L.KEY SAT RANGE	LOW/L.MID/H.MID/HIGH	Sets the range for using the low key saturation. LOW : 0 to 3.6 % L.MID : 0 to 7.2 % H.MID : 0 to 14.4 % HIGH : 0 to 28.8 %
Y BLACK GAMMA	OFF/ON	Turns on or off the Y black gamma correction function.
Y BLK GAM LEVEL	(–99 to 99)	Adjusts the black gamma correction curve for Y.
Y BLK GAM RANGE	LOW/L.MID/H.MID/HIGH	Sets the range for using the Y black gamma. LOW : 0 to 3.6 % L.MID : 0 to 7.2 % H.MID : 0 to 14.4 % HIGH : 0 to 28.8 %

WHITE SHADING

```
S19●WHITE SHADING    TOP

WHT SHAD CH SEL  :     R
VIDEO OUT SEL    :   VBS
R WHT H SAW      :     0
R WHT H PARA     :     0
R WHT V SAW      :     0
R WHT V PARA     :     0

WHITE SAW/PARA   :    ON
```

Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

Item	Setting	Description
WHT SHAD CH SEL	R/G/B/TEST	Selects the channel where shading should be adjusted. When TEST is selected, the settings for VIDEO OUT SELECT follow. (When VBS is selected for VIDEO OUT SELECT, the previous channel is maintained.)
VIDEO OUT SEL	VBS/Y/R/G/B	Selects the video signal to output from the VIDEO OUT terminal. Y/R/G/B becomes HD output.
R WHT H SAW	(–99 to 99)	Adjusts the H SAW correction amount. This switches between R, G, and B depending on the channel selected for WHT SHAD CH SEL above.
R WHT H PARA	(–99 to 99)	Adjusts the H PARA correction amount. This switches between R, G, and B depending on the channel selected for WHT SHAD CH SEL above.
R WHT V SAW	(–99 to 99)	Adjusts the V SAW correction amount. This switches between R, G, and B depending on the channel selected for WHT SHAD CH SEL above.
R WHT V PARA	(–99 to 99)	Adjusts the V PARA correction amount. This switches between R, G, and B depending on the channel selected for WHT SHAD CH SEL above.
WHITE SAW/PARA	OFF/ON	Turns on or off all of the white shading for R/G/B, H/V, and SAW/PARA.

BLACK SHADING

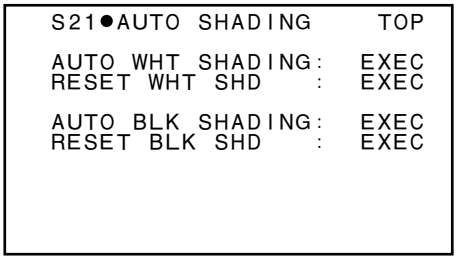
```
S20●BLACK SHADING    TOP

BLK SHAD CH SEL  :     R
VIDEO OUT SEL    :   VBS
R BLK H SAW      :     0
R BLK H PARA     :     0
R BLK V SAW      :     0
R BLK V PARA     :     0

BLACK SAW/PARA   :    ON
MASTER BLACK     :     0
MASTER GAIN(TMP) :   9dB
```

Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

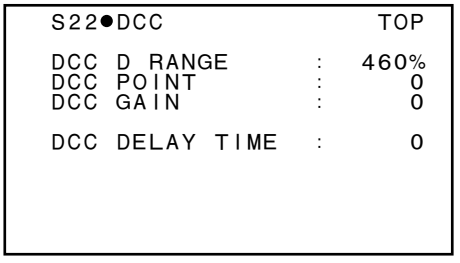
Item	Setting	Description
BLK SHAD CH SEL	R/G/B/TEST	Selects the channel where shading should be adjusted. When TEST is selected, the settings for VIDEO OUT SELECT is followed. (When VBS is selected for VIDEO OUT SELECT, the previous channel is maintained.)
VIDEO OUT SEL	VBS/Y/R/G/B	Selects the video signal to output from the VIDEO OUT terminal. Y/R/G/B becomes HD output.
R BLK H SAW	(–99 to 99)	Adjusts the H SAW correction amount. This switches between R, G, and B depending on the channel selected for BLK SHAD CH SEL above.
R BLK H PARA	(–99 to 99)	Adjusts the H PARA correction amount. This switches between R, G, and B depending on the channel selected for BLK SHAD CH SEL above.
R BLK V SAW	(–99 to 99)	Adjusts the V SAW correction amount. This switches between R, G, and B depending on the channel selected for BLK SHAD CH SEL above.
R BLK V PARA	(–99 to 99)	Adjusts the V PARA correction amount. This switches between R, G, and B depending on the channel selected for BLK SHAD CH SEL above.
BLACK SAW/PARA	OFF/ON	Turns on or off all of the black shading for R/G/B, H/V, and SAW/PARA.
MASTER BLACK	(–99 to 99)	Adjusts the master black level (effective for R, G, and B).
MASTER GAIN(TMP)	–3/0/3/6/9/12/18/24/ 30/36/42/48 dB	Sets a temporary value for master gain.

AUTO SHADING



Item	Setting	Description
AUTO WHT SHADING	Press the MENU knob to execute.	Starts automatic adjustment for the white shading.
RESET WHT SHD	Press the MENU knob to execute.	Clears the white shading offset (SAW and PARA).
AUTO BLK SHADING	Press the MENU knob to execute.	Starts automatic adjustment for the black shading.
RESET BLK SHD	Press the MENU knob to execute.	Clears the black shading offset (SAW and PARA).

DCC

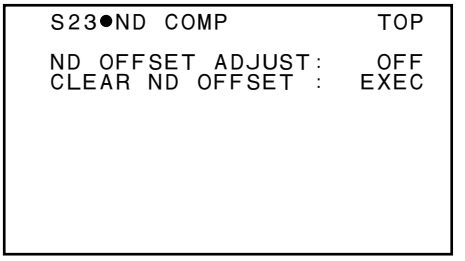


Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

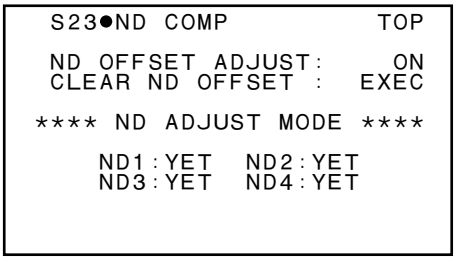
Item	Setting	Description
DCC D RANGE	200 to 460%	Sets the dynamic range when the DCC switch is turned on.
DCC POINT	(–99 to 99)	Sets the minimum knee point when the DCC switch is turned on.
DCC GAIN	(–99 to 99)	Sets the gain for the detection value when the DCC switch is turned on.
DCC DELAY TIME	(–99 to 99)	Sets the response speed for DCC (increasing the value makes the speed slower).

ND COMP



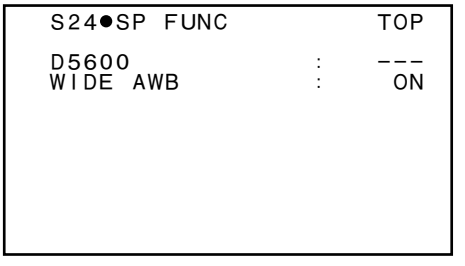
Item	Setting	Description
ND OFFSET ADJUST	OFF/ON	Turns on or off the mode for setting the color shift offset for the ND filter. (For an explanation of the screen when this parameter is turned on, refer to the information below.)
CLEAR ND OFFSET	Press the MENU knob to execute.	Clears the color shift offset for the ND filter.

Description of the screen when ND OFFSET ADJUST is turned on



Item	Setting	Description
CLEAR ND OFFSET	Press the MENU knob to execute.	Returns the ND OFFSET value to manufacturer adjustment value.
ND ADJUST MODE	Display only	This message is displayed when ND OFFSET ADJUST is turned on.
ND1 to 4	Display only	OK : Filter has finished automatically adjusting white balance. YET : Filter has not finished automatically adjusting white balance. (When the power is turned off or the above CLEAR ND OFFSET values are executed, all of the results become “YET”.)

SP FUNC



Item	Setting	Description
D5600	OFF/ON	Turns on or off the function that electrically adds the 5600 K color temperature filter.
WIDE AWB	OFF/ON	Turns on or off the function that widens the range for AWB correction.

CCD ADJUST

```
S25●CCD ADJUST          TOP

R VSUB            :  13.5V
G VSUB            :  13.8V
B VSUB            :  13.8V
R GAIN            :     0
G GAIN            :     0
B GAIN            :     0
R S/H DC          :     0
G S/H DC          :     0
B S/H DC          :     0
```

Item	Setting	Description
R VSUB	9.0 V to 18.0 V	Sets the V substrate voltage level for the R channel.
G VSUB	9.0 V to 8.0 V	Sets the V substrate voltage level for the G channel.
B VSUB	9.0 V to 18.0 V	Sets the V substrate voltage level for the B channel.
R GAIN		Adjusts the sensitivity for the R channel. (Adjust with the 3200 K blackbody pattern box.)
G GAIN		Adjusts the sensitivity for the G channel. (Fixed to 0.)
B GAIN		Adjusts the sensitivity for the B channel. (Adjust with the 3200 K blackbody pattern box.)
R S/H DC		Fixed to 0.
G S/H DC		Fixed to 0.
B S/H DC		Fixed to 0.

FAN

```
S26●FAN                 TOP
FAN MODE          :   AUTO
```

Item	Setting	Description
FAN MODE	AUTO/FIX	Sets the fan mode. This parameter is normally set to “AUTO”. AUTO : Detects rising temperature in the machine and automatically controls the fan. FIX : Controls the fan at a fixed voltage (8 V). (Used for verifying fan operations.)

MEASURE

```
S27●MEASURE              TOP

MEASUREMENT MODE:        OFF

MASTER BLACK      :        0
MASTER GAIN(TMP) :       9dB
```

Note

Setting ranges within parentheses in the table below are relative values. These ranges may differ from actual setting ranges in come cases, depending on the settings for other parameters in this menu.

Item	Setting	Description
MEASUREMENT MODE	OFF/S/N/MODU/RESO/ SENSE/REGI	Selects the measurement mode. S/N : S/N measurement mode MODU : Modulation measurement mode RESO : Resolution measurement mode SENSE : Sensitivity measurement mode REGI : Registration measurement mode
MASTER BLACK	(–99 to 99)	Adjusts the master black level (effective for R, G, and B).
MASTER GAIN(TMP)	–3/0/3/6/9/12/18/24/30/ 36/42/48	Temporarily sets the gain.

MANUAL RPN

(Adjusting MANUAL RPN correction)

```
S28●MANUAL RPN           TOP

RPN CH SEL       :        R
RPN CURSOR       :      OFF
VIDEO OUT MENU   :       ON

CURSOR H POS.    :      730
CURSOR V POS.    :      574
RECORD RPN       :     EXEC
DELETE RPN       :     EXEC

FIELD/FRAME      :    FIELD
```

(Adjusting MANUAL RPN correction during SLS mode)

```
S28●MANUAL RPN           TOP

RPN CH SEL       :        R
RPN CURSOR       :      OFF
VIDEO OUT MENU   :       ON

CURSOR H POS.    :      730
CURSOR V POS.    :      574
RECORD RPN       :     EXEC
DELETE RPN       :     EXEC
```

Item	Setting	Description
PRN CH SEL	R/G/B	Selects the channel to perform RPN correction on. The R/G/B for HD is simultaneously connected and output from the VIDEO OUT terminal.
RPN CURSOR	OFF/ON	Turns on or off the RPN cursor.
VIDEO OUT MENU	OFF/ON	Turns on or off the function that mixes the signal output from the VIDEO OUT terminal with the menu display.
CURSOR H POS.	4 to 1457	Sets the position of the RPN cursor (horizontal).
CURSOR V POS.	34 to 1115	Sets the position of the RPN cursor (vertical).
RECORD RPN	Press the MENU knob to execute.	Records the RPN data at the current cursor position.
DELETE RPN	Press the MENU knob to execute.	Deletes the RPN data at the current cursor position.
FIELD/FRAME	FIELD/FRAME	Sets the method for reading the CCD (except in SLS mode). FIELD : Reads the field (normal reading). FRAME : Reads the frame (used to increase vertical definition).

MANUAL RPN (SLS)

(Adjusting MANUAL RPN correction)

```
S29●MANUAL RPN (SLS)  TOP

RPN CH SEL        :     R
RPN CURSOR        :   OFF
VIDEO OUT MENU    :    ON

CURSOR H POS.     :   730
CURSOR V POS.     :   574
RECORD RPN        :  EXEC
DELETE RPN        :  EXEC

FIELD/FRAME       : FIELD
```

(Adjusting MANUAL RPN correction during SLS mode)

```
S29●MANUAL RPN (SLS)  TOP

RPN CH SEL        :     R
RPN CURSOR        :   OFF
VIDEO OUT MENU    :    ON

CURSOR H POS.     :   730
CURSOR V POS.     :   574
RECORD RPN        :  EXEC
DELETE RPN        :  EXEC
```

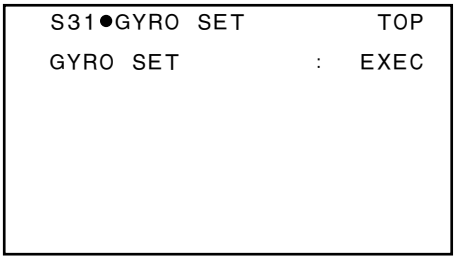
Item	Setting	Description
PRN CH SEL	R/G/B	Selects the channel to perform RPN correction on. The R/G/B for HD is simultaneously connected and output from the VIDEO OUT terminal.
RPN CURSOR	OFF/ON	Turns on or off the RPN cursor.
VIDEO OUT MENU	OFF/ON	Turns on or off the function that mixes the signal output from the VIDEO OUT terminal with the menu display.
CURSOR H POS.	4 to 1457	Sets the position of the RPN cursor (horizontal).
CURSOR V POS.	34 to 1115	Sets the position of the RPN cursor (vertical).
RECORD RPN	Press the MENU knob to execute.	Records the RPN data at the current cursor position.
DELETE RPN	Press the MENU knob to execute.	Deletes the RPN data at the current cursor position.
FIELD/FRAME	FIELD/FRAME	Sets the method for reading the CCD (except in SLS mode). FIELD : Reads the field (normal reading). FRAME : Reads the frame (used to increase vertical definition).

VDR MAINTENANCE

```
S30●VDR MAINTENANCE  TOP

POWER A/D ADJUST:  EXEC
DRIVE MAINTE     :  EXEC
SERVICE SUPPORT  :  EXEC
```

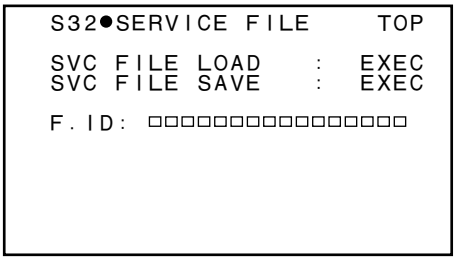
Item	Setting	Description
POWER A/D ADJUST	Press the MENU knob to execute.	Adjusts the battery end detection voltage. (For more details, refer to “4-3. Adjusting Battery End Detection Voltage”.)
DRIVE MAINTE	Press the MENU knob to display the DRIVE MAINTE menu.	Refer to the description of the DRIVE MAINTE menu below. (For more details, refer to “4-5. Drive Maintenance Menu List”.)
SERVICE SUPPORT	Press the MENU knob to display the SERVICE SUPPORT menu.	Sets the methods for displaying or clearing the VDR error log. (For more details, refer to “4-4. SERVICE SUPPORT Menu”.)

GYRO SET



Item	Setting	Description
GYRO SET	Press the MENU knob to execute.	Saves the still state of the gyro sensor for auto focus. Let the camcorder sit for one minute before setting this parameter.

SERVICE FILE



Item	Setting	Description
SVC FILE LOAD	Press the MENU knob to execute.	Loads the service file from the internal memory or a memory stick.
SVC FILE SAVE	Press the MENU knob to execute.	Saves the service file into the internal memory or a memory stick.
F.ID	16 characters (letters, numbers, symbols, or spaces)	Sets the service file ID. (This ID is saved by SVC FILE SAVE.)

4-3. Adjusting Battery End Detection Voltage

Before starting adjustment, refer to “9-1. Preparation”.

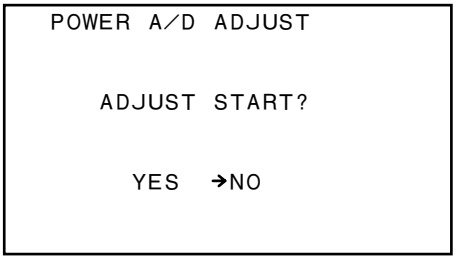
Devices and tools

For more details, refer to “2-10-2. Measuring Equipment”.

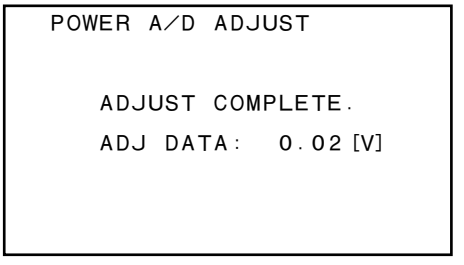
- Rated voltage power source (one that can output at least 10 A)
- Digital voltmeter
- Blank disk

Adjustment Procedure

1. Supply a +12 V voltage to the DC IN connector.
2. Insert a blank disk for recording into the unit, press the REC START button, and begin recording.
3. Execute POWER A/D ADJUST from the page of VDR MAINTENANCE of the SERVICE menu.



4. Turn the MENU knob to select “YES” and press the MENU knob.



5. After adjustment finishes, press down on the MENU ESCAPE switch.

Note

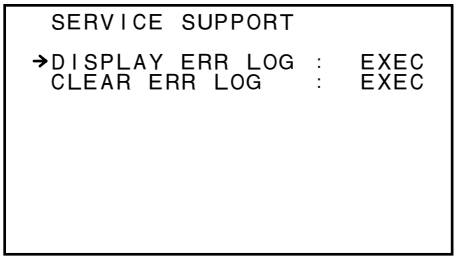
If the message “ADJUST ERROR” appears in the adjustment result menu, recheck whether a +12 V voltage is supplied to the DC IN connector and repeat the adjustment from step 3.

4-4. SERVICE SUPPORT Menu

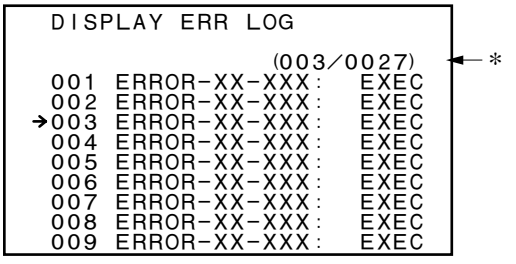
Displays the error log for all errors except for the ones that occur in the optical drive block.

Procedure

1. Execute SERVICE SUPPORT from the VDR MAINTENANCE page of the SERVICE menu.

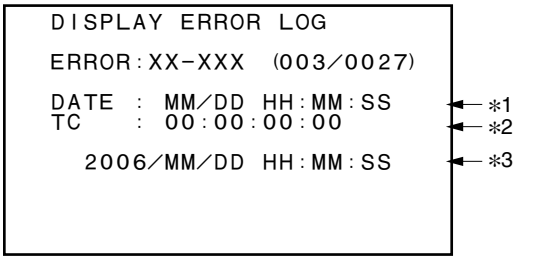


2. Turn the MENU knob to select “DISPLAY ERR LOG” and press the MENU knob.
3. Turn the MENU knob to move the arrow so that it points to the error code that you want to view in more detail.



∗ : (Selected log No./total number of logs)

4. Press the MENU knob to display the detailed menu.



∗1 : (Date when the error has occurred)
∗2 : (TC value when the error has occurred)
∗3 : (Current data and time)

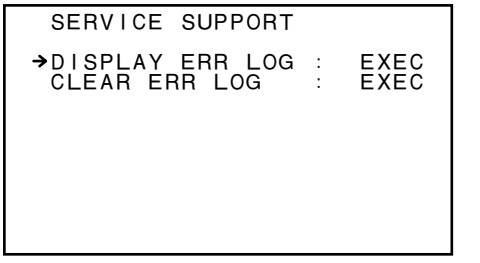
Clearing the Error Log

Note

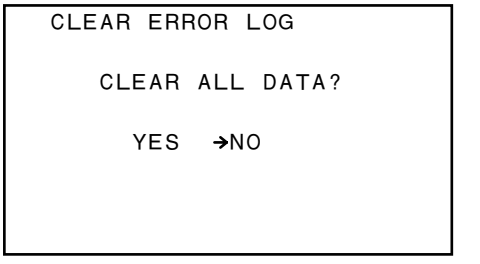
Normally, do not clear the error log. The error log is useful when trying to fix problems that have occurred.
The error log can contain important information for solving these problems.

Procedure

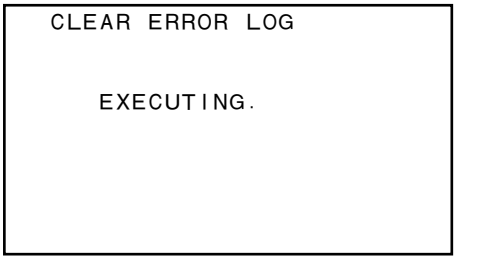
1. Execute SERVICE SUPPORT from the page of VDR MAINTENANCE of the SERVICE menu.



2. Turn the MENU knob to select “CLEAR ERR LOG” and press the MENU knob.
3. Turn the MENU knob to select “YES” or “NO” and press the MENU knob.



Do not clear the log (NO):
The screen returns to the SERVICE SUPPORT menu.
Clear the log (YES):
The screen changes to the following screen and returns to the SERVICE SUPPORT menu after two seconds.



4-5. Drive Maintenance Menu List

Menu	Item	Sub item	Description
CHECK	DEVICE	TEMPERATURE SENSOR	Checks the drive block temperature sensor.
		DEW SENSOR	Checks the drive block dew sensor.
		FAN MOTOR	Checks the fan motor connected to the drive block.
		ACCELERATION SENSOR	Checks the drive block acceleration sensor.
	LOADER		Checks the loader operation.
	SLIDER	AUTO TEST	Checks the slider operation and the limit sensor.
		IN-LIM TEST	Modes to the slider IN LIMIT position.
		OUT-LIM TEST	Modes to the slider OUT LIMIT position.
	SPINDLE MOTOR	AUTO TEST	Checks the spindle motor operation.
	OPTICAL BLOCK	FOCUS ACTUATOR	Checks the focus in the direction of two axes.
		TRACKING ACTUATOR	Checks the tracking in the direction of two axes.
		EXPANDER MOTOR	Checks the expander motor.
		SKEW SENSOR	Checks the skew sensor.
		LASER	Checks the laser.
		LC SHUTTER	Checks the LC shutter.
	LENS CLEANING		Cleans the pickup lens.
ADJUST	OPTICAL BLOCK	SET OPTICAL DATA	Records the bar code information for the optical block to the unit.
		INITIALIZE SE	Sets the judgment value for the laser lifespan.
	SERVO_1		Automatically adjusts servo 1 system (MTX BLOCK, PI/FE BLOCK, FE AGC).
	MECHA RD		Changes the slider position during mechanical RD adjustment.
	SERVO_2		Automatically adjusts servo 2 system (SKEW OFFSET, TE/CE BLOCK, SV LOOP GAIN).
	OTHER ADJUST	ACCELERATION OFFSET	Adjusts the offset for the acceleration sensor.
ERROR LOGGER			Records the errors that occur in the drive block.
OTHERS	VERSION		Displays the version for the drive block.
	SERIAL NO		Displays the serial number for the drive block.
	CLEAR MEDIA LOG		Clears the media information.
	MEMORY SUPPORT	UPLOAD TO EEPROM	Returns the backup data on the DR-550G board. (EEPROM : IC603/DR-550G)

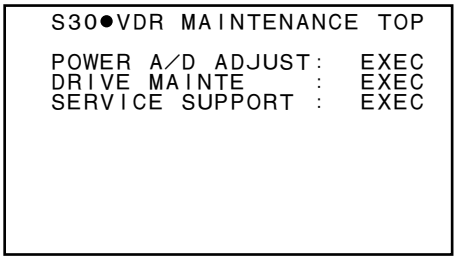
4-6. Drive Maintenance

Used for the maintenance of the optical drive.

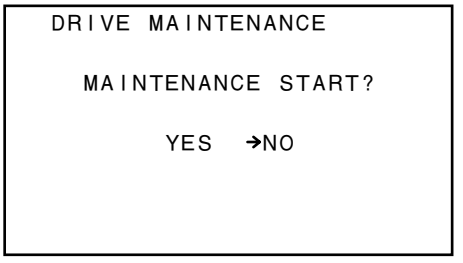
4-6-1. Basic Operation on Drive Maintenance Menus

Enter the drive maintenance menu from the SERVICE menu. (Refer to "4-1. Displaying the SERVICE Menu".)
If a cartridge is remaining inside, it is ejected automatically.

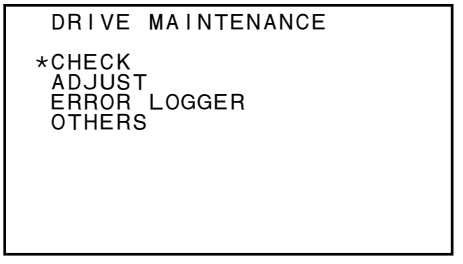
1. Select the "S30 VDR MAINTENANCE" on the SERVICE menu.



2. Select "DRIVE MAINTE" by turning the MENU knob, and press the MENU knob.



3. Select "YES" by turning the MENU knob, and press the MENU knob.
   The drive maintenance menu is displayed.

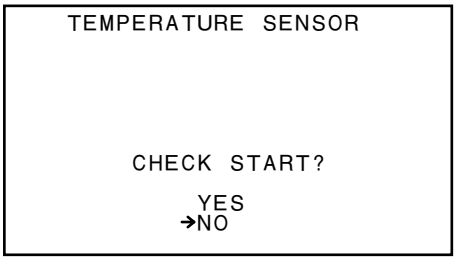


4-6-2. TEMPERATURE SENSOR

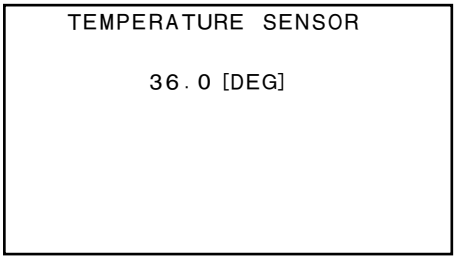
Checks the temperature sensor on the drive block.

Menu hierarchy:
[DRIVE MAINTE]
→ [CHECK]
→ [DEVICE]
→ [TEMPERATURE SENSOR]

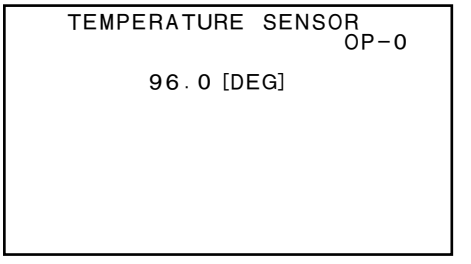
1. Select "TEMPERATURE SENSOR" by turning the MENU knob, and press the MENU knob.



2. Select "YES" by turning the MENU knob, and press the MENU knob.



3. The temperature is displayed.
   When the result is NG;
   An abnormal value will be displayed as follows.



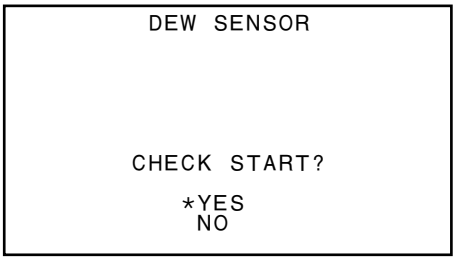
4-6-3. DEW SENSOR

Checks the dew sensor on the optical block assembly.

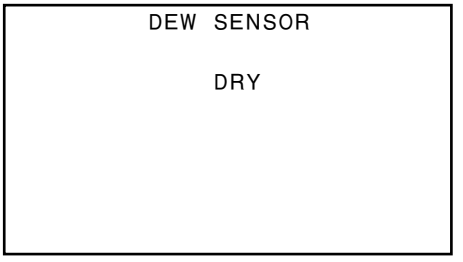
Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [DEVICE]
→ [DEW SENSOR]

1. Select “DEW SENSOR” by turning the MENU knob, and press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.



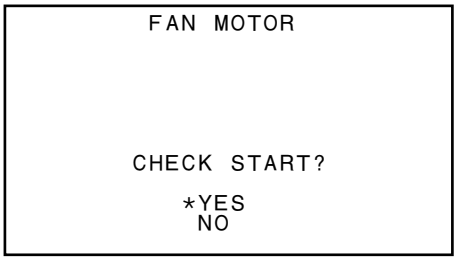
4-6-4. FAN MOTOR

Checks the fan motor connected to the drive block.

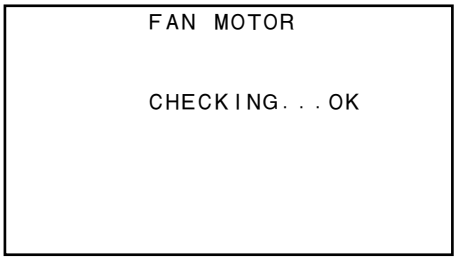
Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [DEVICE]
→ [FAN MOTOR]

1. Select “FAN MOTOR” by turning the MENU knob, and press the MENU knob.

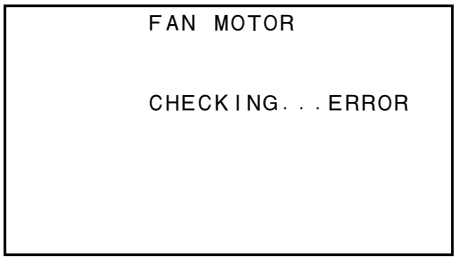


2. Select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.



When the result is NG;

Following indication will be displayed.



4-6-5. ACCELERATION SENSOR

Checks the acceleration sensor.

Preparation

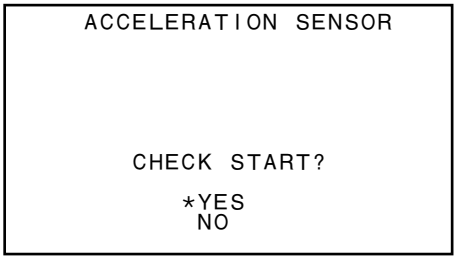
Place the unit in a way that the drive assembly becomes level to the ground.

Note

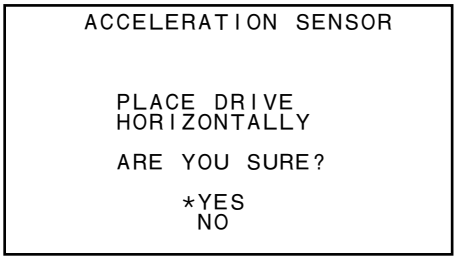
Be sure that the drive assembly is level to the ground instead of the unit itself being level.
If the adjustment is performed in a wrong posture, the servo performance is not guaranteed.

Menu hierarchy:
[DRIVE MAINTE]
→ [CHECK]
→ [DEVICE]
→ [ACCELERATION SENSOR]

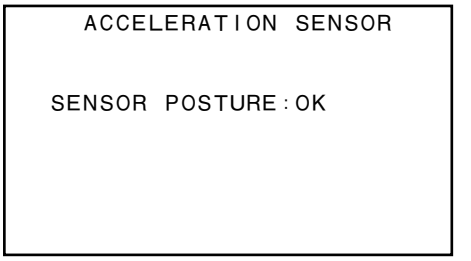
1. Select “ACCELERATION SENSOR” by turning the MENU knob, and press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob.

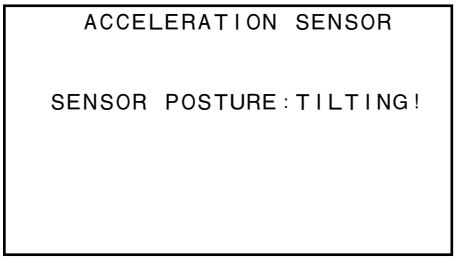


3. After confirming that the drive assembly is level to the ground, select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.
If the posture of the unit is level to the ground when YES is selected, “OK” is displayed.



When the result is NG;

Following indication will be displayed.
Check the posture of the unit and attachment of the sensor.



Note

SENSOR POSTURE: The result of the sensor posture check

4-6-6. LOADER

Checks the loader performance.

Note

Start checking after confirming that the loader is installed properly to the drive block main unit.

Preparation

Be sure to eject the disc beforehand.

Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [LOADER]

Procedure 1 (operations till the disc down completion state)

1. Select “LOADER” by turning the MENU knob, and press the MENU knob.

```
          LOADER


       INSERT DISC


      POSITION:EJECT
      REC INHI:INHI
  DOWN SENSOR:NOT DOWN
```

2. Insert the disc according to the screen instruction.
3. Confirm that POSITION shows the following path.

```
          LOADER


       CHECKING...OK


      POSITION:DOWN
      REC INHI:NOT INHI
  DOWN SENSOR:DOWN
```

When the result is NG;

Following indication will be displayed.

```
          LOADER


       CHECKING...ERROR


      POSITION:DOWN
      REC INHI:NOT INHI
  DOWN SENSOR:DOWN
```

Procedure 2 (operations from the position other than EJECT)

In this example, the movement from the DOWN position to the STBY position is described.

```
          LOADER


       CHECKING...OK


      POSITION:DOWN
      REC INHI:NOT INHI
  DOWN SENSOR:DOWN
```

1. Press the MENU knob.

```
          LOADER


     MOVE TO EJECT POS
    *MOVE TO STBY POS

      POSITION:DOWN
      REC INHI:NOT INHI
  DOWN SENSOR:DOWN
```

2. Select “MOVE TO STBY POS” by turning the MENU knob, and Press the MENU knob.

```
          LOADER


    MOVE TO STBY POS


       CHECK START?

           YES
          *NO
```

3. Select “YES” by turning the MENU knob, and press the MENU knob.
   Confirm that POSITION displays the following path.

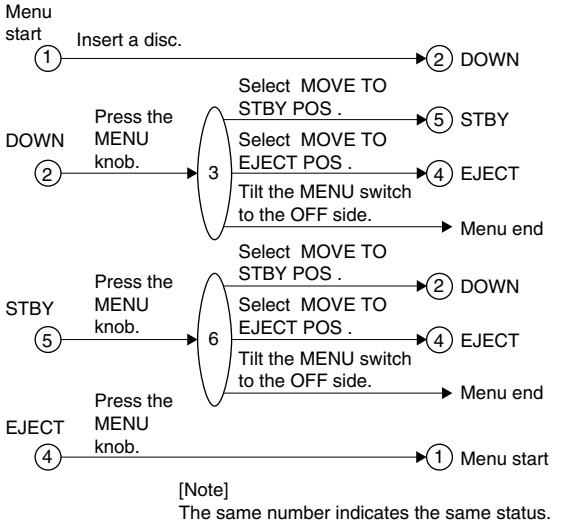
```
          LOADER


       CHECKING...OK


      POSITION:STBY
      REC INHI:INHI
  DOWN SENSOR:NOT DOWN
```

When the result is NG;

Following indication will be displayed.

```
LOADER

CHECKING...ERROR

POSITION:STBY
REC INHI:INHI
DOWN SENSOR:NOT DOWN
```

Status Transition Diagram



[Note]
The same number indicates the same status.

4-6-7. AUTO TEST

Checks the slider performance and the limit sensor.

Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [SLIDER]
→ [AUTO TEST]

1. Select "AUTO TEST" by turning the MENU knob, and press the MENU knob.

```
AUTO TEST

CHECK START?
*YES
 NO
```

2. Select "YES" by turning the MENU knob, and press the MENU knob. The result is displayed.

Note

If the disc is inside, the execution starts after it is ejected.

```
AUTO TEST

CHECKING...OK
```

When the result is NG;

Following indication will be displayed.

```
AUTO TEST

                OP-0
CHECKING...ERROR
```

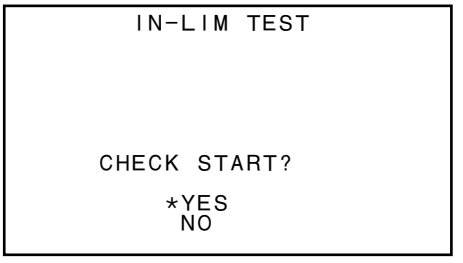
4-6-8. IN-LIM TEST

Moves the slider to the IN LIMIT position.

Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [SLIDER]
→ [IN-LIM TEST]

1. Select “IN-LIM TEST” by turning the MENU knob, and press the MENU knob.



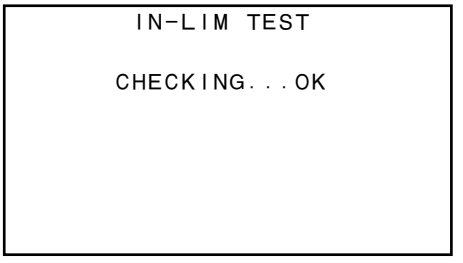
2. Select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.

Note

Be sure to check visually that the slider has moved to the innermost circumference.

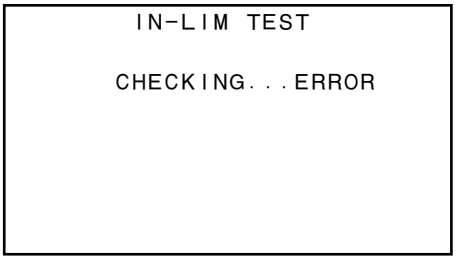
Note

If the disc is inside, the execution starts after it is ejected.



When the result is NG;

Following indication will be displayed.



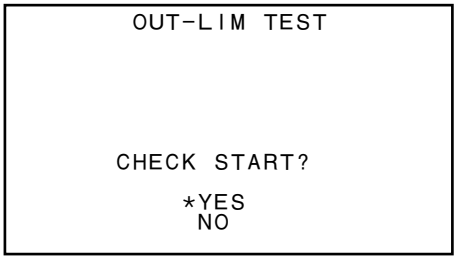
4-6-9. OUT-LIM TEST

Move the slider to the OUT LIMIT position.

Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [SLIDER]
→ [OUT-LIM TEST]

1. Select “OUT-LIM TEST” by turning the MENU knob, and press the MENU knob.



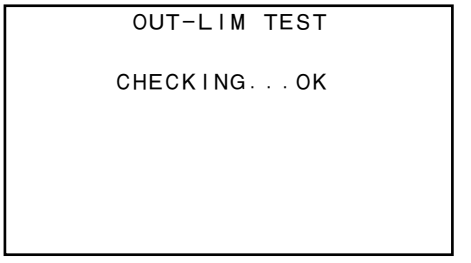
2. Select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.

Note

If the disc is inside, the execution starts after it is ejected.

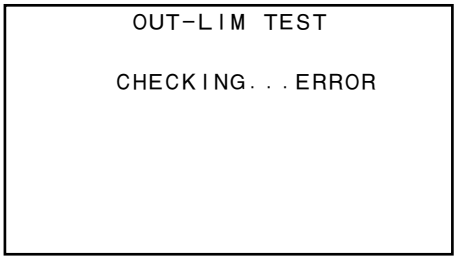
Note

Be sure to check visually that the slider has moved to the outermost circumference.



When the result is NG;

Following indication will be displayed.



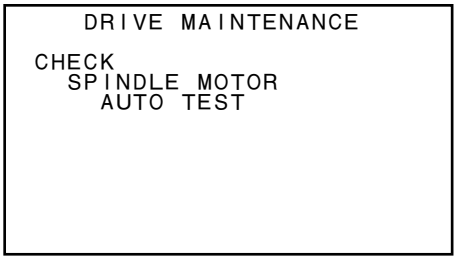
4-6-10. SPINDLE MOTOR

Checks the spindle motor performance.

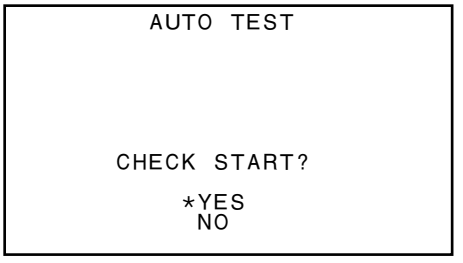
Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [SPINDLE MOTOR]

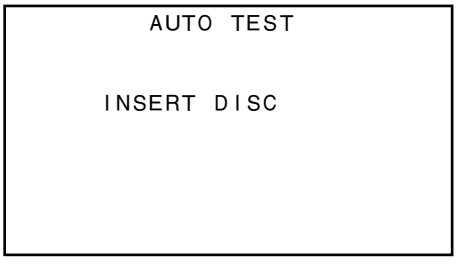
1. Select “SPINDLE MOTOR” by turning the MENU knob, and press the MENU knob.



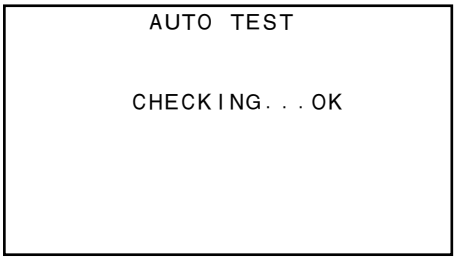
2. Confirm that AUTO TEST is selected, and press the MENU knob.



3. Select “YES” by turning the MENU knob, and press the MENU knob.

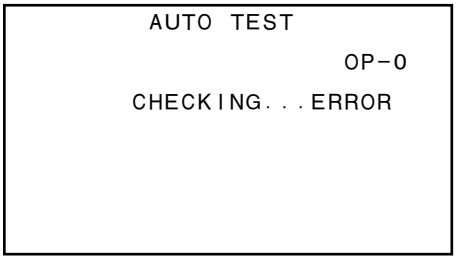


4. Insert the disc if it is not inside.
The result is displayed.



When the result is NG;

Following indication will be displayed.



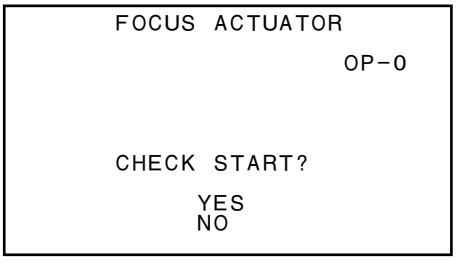
4-6-11. FOCUS ACTUATOR

Checks the focus directions of the two shafts.

Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [OPTICAL BLOCK]
→ [FOCUS ACTUATOR]

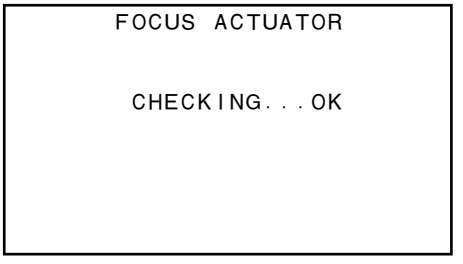
1. Select “FOCUS ACTUATOR” by turning the MENU knob, and press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.

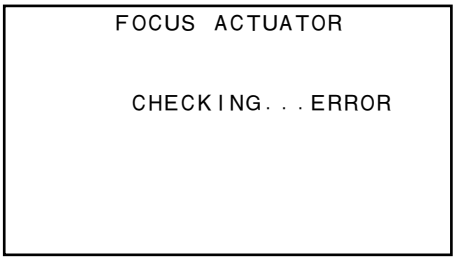
Note

Check for several times that the two shafts move up and down.
If they do not move, or the movement is rough, the harness connection may be incomplete, or the drive assembly may be defective.



When the result is NG;

Following indication will be displayed.



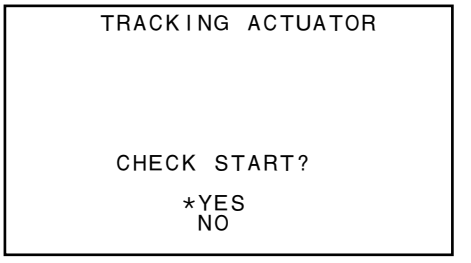
4-6-12. TRACKING ACTUATOR

Checks the tracking directions of the two shafts.

Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [OPTICAL BLOCK]
→ [TRACKING ACTUATOR]

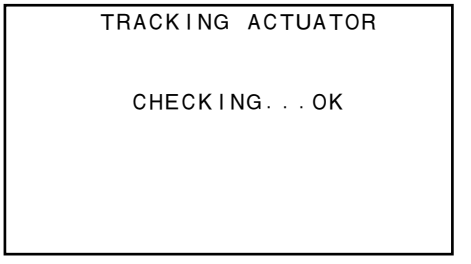
1. Select “TRACKING ACTUATOR” by turning the MENU knob, and press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.

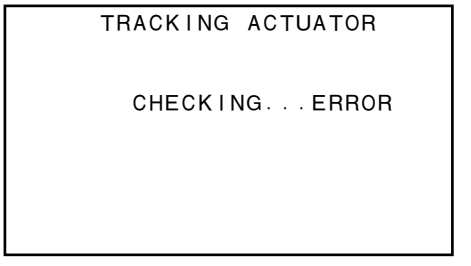
Note

Check for several times that the two shafts move up and down.
If they do not move, or the movement is rough, the harness connection may be incomplete, or the drive assembly may be defective.



When the result is NG;

Following indication will be displayed.



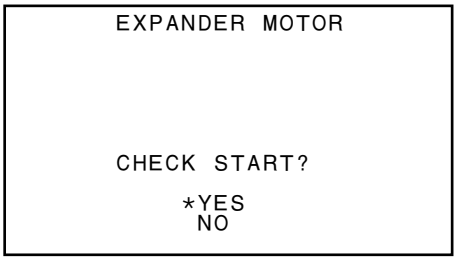
4-6-13. EXPANDER MOTOR

Checks the expander motor.

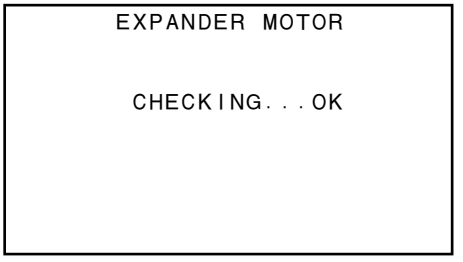
Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [OPTICAL BLOCK]
→ [EXPANDER MOTOR]

1. Select “EXPANDER MOTOR” by turning the MENU knob, and press the MENU knob.

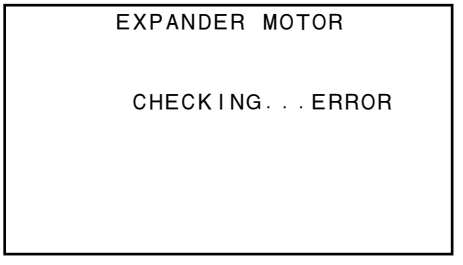


2. Select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.



When the result is NG;

Following indication will be displayed.
The harness connection may be incomplete, or the drive assembly may be defective.



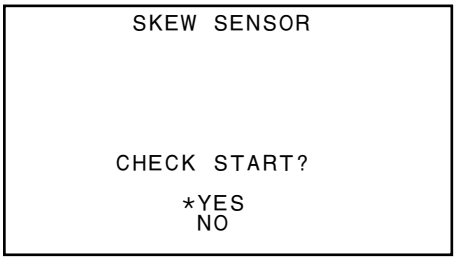
4-6-14. SKEW SENSOR

Checks the skew sensor.

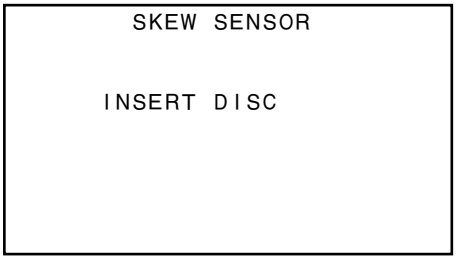
Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [OPTICAL BLOCK]
→ [SKEW SENSOR]

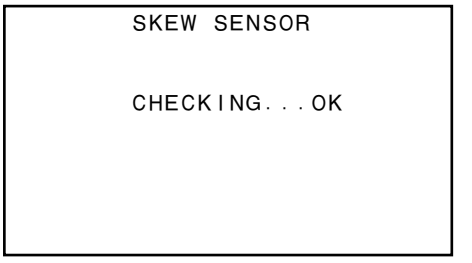
1. Select “SKEW SENSOR” by turning the MENU knob, and press the MENU knob.



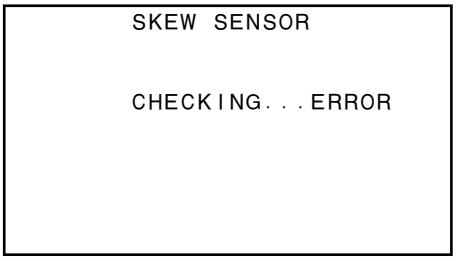
2. Select “YES” by turning the MENU knob, and press the MENU knob.



3. Insert the disc if it is not inside.
The result is displayed.



When the result is NG;
Following indication will be displayed.

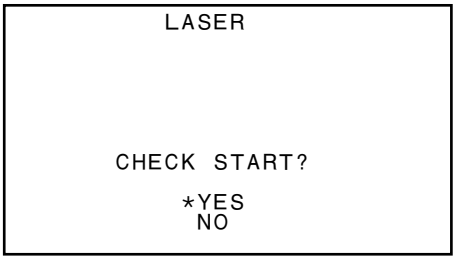


4-6-15. LASER

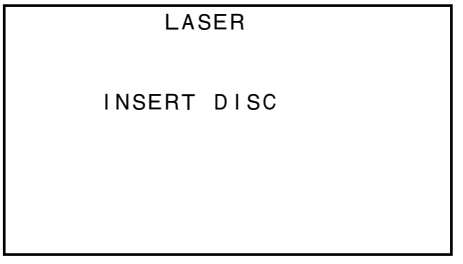
Checks the laser.

Menu hierarchy:
[DRIVE MAINTE]
→ [CHECK]
→ [OPTICAL BLOCK]
→ [LASER]

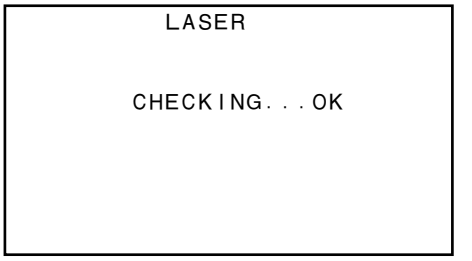
1. Select “LASER” by turning the MENU knob, and press the MENU knob.



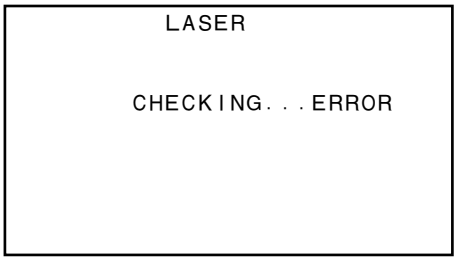
2. Select “YES” by turning the MENU knob, and press the MENU knob.



3. Insert the disc if it is not inside.
The result is displayed.



When the result is NG;
Following indication will be displayed.



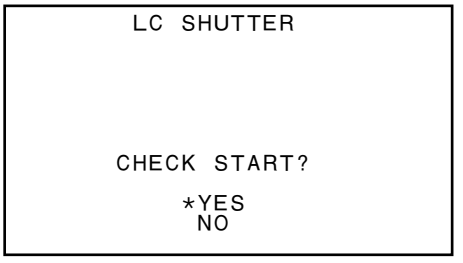
4-6-16. LC SHUTTER

Checks the LC shutter.

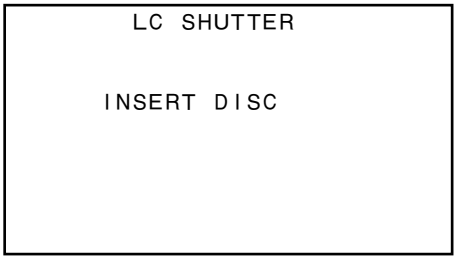
Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [OPTICAL BLOCK]
→ [LC SHUTTER]

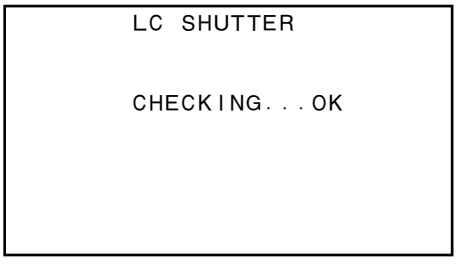
1. Select “LC SHUTTER” by turning the MENU knob, and press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob.

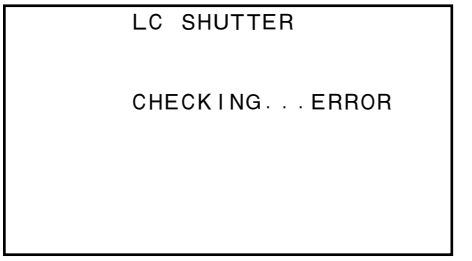


3. Insert the disc if it is not inside.
The result is displayed.



When the result is NG;

Following indication will be displayed.



4-6-17. LENS CLEANING

Performs lens cleaning.

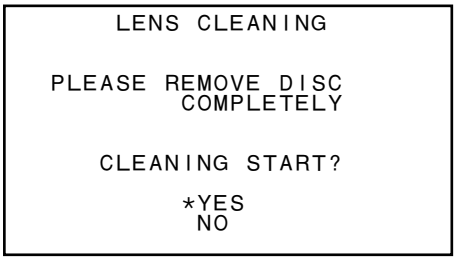
Note

Remove the disc from the unit.

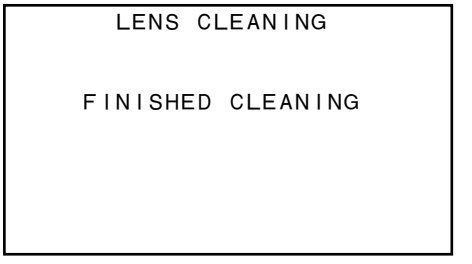
Menu hierarchy:

[DRIVE MAINTE]
→ [CHECK]
→ [LENS CLEANING]

1. Select “LENS CLEANING” by turning the MENU knob, and press the MENU knob.



2. After confirming that the disc has been removed, select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.



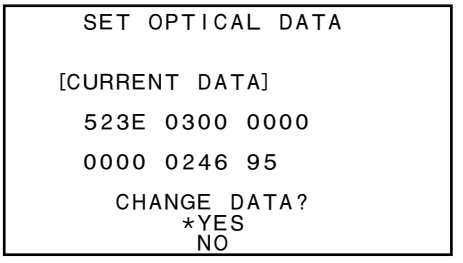
4-6-18. SET OPTICAL DATA

Before starting the adjustment, be sure to take necessary steps referring to "8-1-3. Adjustments After Replacing Optical Block Assembly".
This section describes how to store the barcode information that is written in the optical block assembly into the main unit.

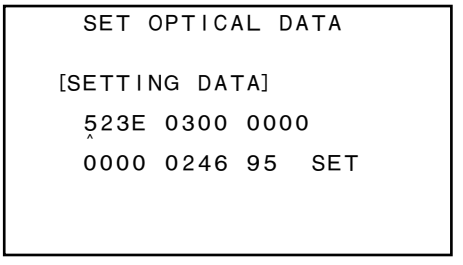
Menu hierarchy:

[DRIVE MAINTE]
→ [ADJUST]
→ [OPTICAL BLOCK]
→ [SET OPTICAL DATA]

1. Select "SET OPTICAL DATA" by turning the MENU knob, and press the MENU knob.



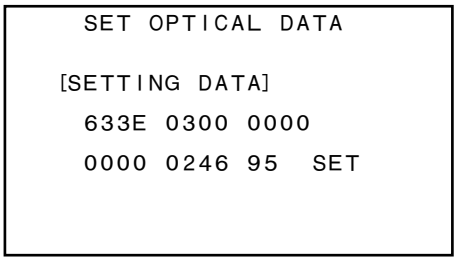
2. Select "YES" by turning the MENU knob, and press the MENU knob.



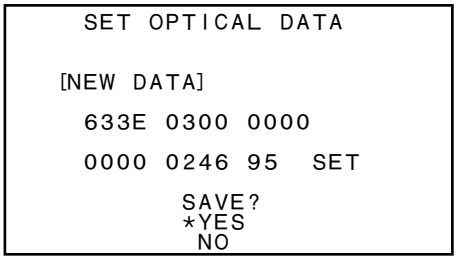
3. Input the value of the barcode information that is shown on the optical block assembly.
Move the pointer by turning the MENU knob, and press the MENU knob.
The numerical indication starts flashing. Change the value by turning the MENU knob, and press the MENU knob.

Note

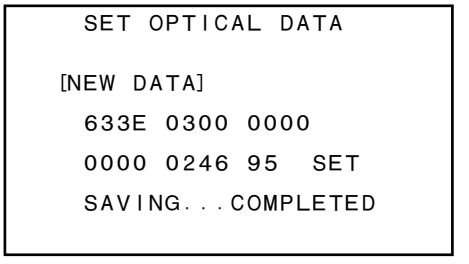
The first to sixth digits and 14th to 20th digits are imported as the actual adjustment value.
The other digits are used as the additional data to detect input mistakes.
Therefore, when reconfirming the input value afterward, the additional data section may be different from the value actually input.



4. After setting all the values, move the pointer to the SET position by turning the MENU knob. Press the MENU knob.

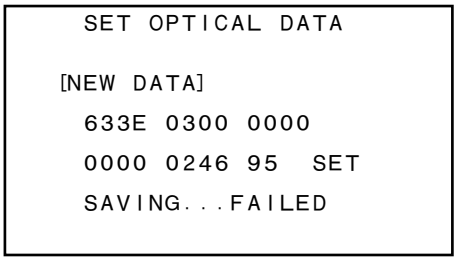


5. Confirm the entered value, and select "YES" by turning the MENU knob again. Press the MENU knob. The result is displayed.



When the result is NG;

Following indication will be displayed.
Check if the entered value is correct.



4-6-19. INITIALIZE SE

Before starting the adjustment, be sure to take necessary steps referring to “8-1-3. Adjustments After Replacing Optical Block Assembly”.
This section describes how to initialize the laser data for calculating the lifetime left to the laser.

Note

Execute this operation only once after the optical block assembly is replaced.
Do not execute this for multiple times, or in any case other than the optical block assembly is replaced.

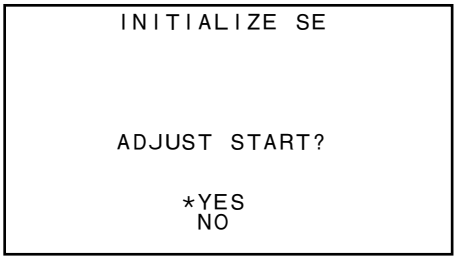
Preparation

Place the drive assembly in the horizontal position.

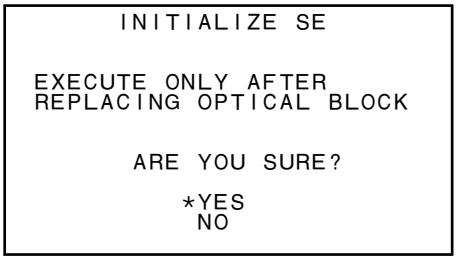
Menu hierarchy:

[DRIVE MAINTE]
→ [ADJUST]
→ [OPTICAL BLOCK]
→ [INITIALIZE SE]

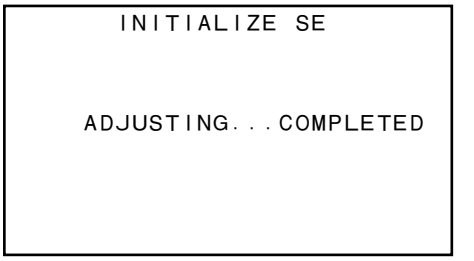
1. Select “INITIALIZE SE” by turning the MENU knob, and press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob.

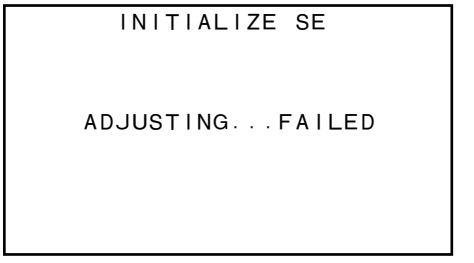


3. Insert the disc if it is not inside.
4. Confirm that the optical block assembly is installed horizontally. Select “YES” by turning the MENU knob, and press the MENU knob.
The result is displayed.



When the result is NG;

Following indication will be displayed.
Check the connection with the drive assembly.



4-6-20. SERVO_1

Before starting the adjustment, be sure to take necessary steps referring to “8-1-3. Adjustments After Replacing Optical Block Assembly”.
This section describes the auto adjustment of the servo 1 system (MTX BLOCK, PI/FE BLOCK, FE AGC).

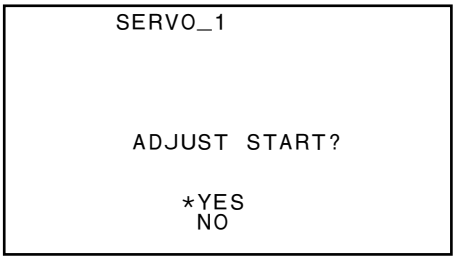
Fixtures and Equipment

- Alignment disc PFD23-RS
  (Refer to “2-10-1. Service Tools”.)

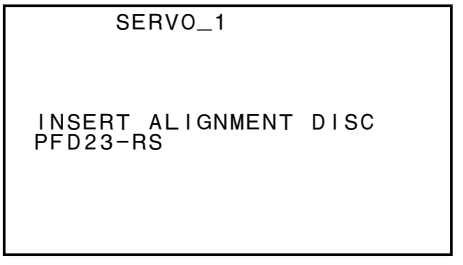
Menu hierarchy:

[DRIVE MAINTE]
→ [ADJUST]
→ [SERVO_1]

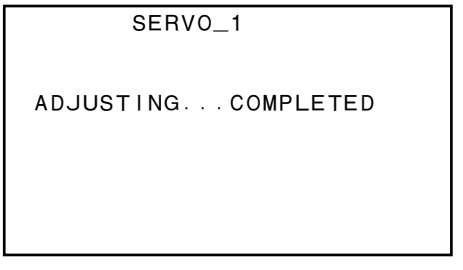
1. Select “SERVO_1” by turning the MENU knob, and press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob.

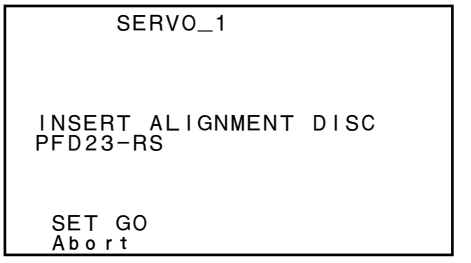


3. Insert the alignment disc. Adjustment is started.
   The result is displayed.



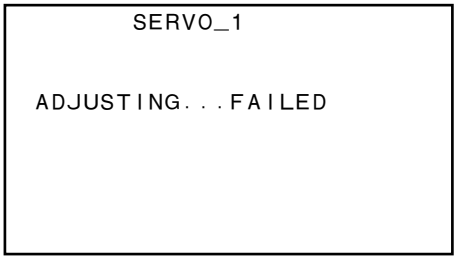
Notes

- When the loader is not installed, open the shutter of the cartridge and set the disc in the drive.
- When the loader is not installed, the following is displayed. Select “SET GO” by turning the MENU knob, and press the MENU knob. Adjustment is started.



When the result is NG;

Following indication will be displayed.
Check the connection with the drive assembly.



4-6-21. MECHA RD

Before starting the adjustment, be sure to take necessary steps referring to "8-1-3. Adjustments After Replacing Optical Block Assembly".
Change the slider position when performing the mechanical RD adjustment.

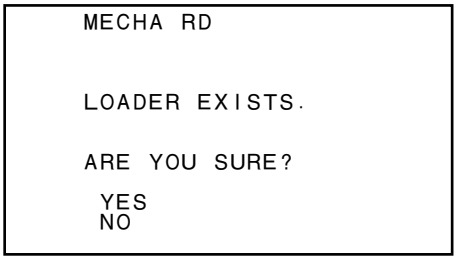
Fixtures and Equipment

- Alignment disc PFD23-RS
  (Refer to "2-10-1. Service Tools".)

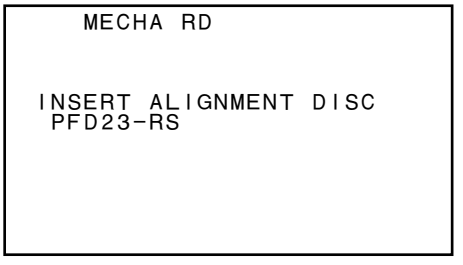
Menu hierarchy:

[DRIVE MAINTE]
→ [ADJUST]
→ [MECHA RD]

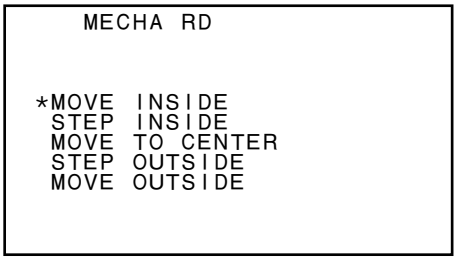
1. Select "MECHA RD" by turning the MENU knob, and press the MENU knob.



2. Select "YES" by turning the MENU knob, and press the MENU knob.

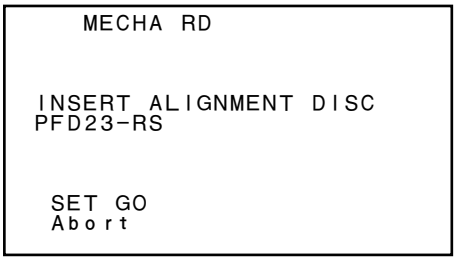


3. Insert the alignment disc. Adjustment is started.

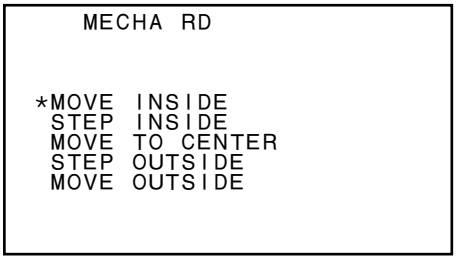


Notes

- When the loader is not installed, open the shutter of the cartridge and set the disc in the drive.
- When the loader is not installed, the following is displayed. Select "SET GO" by turning the MENU knob, and press the MENU knob. Adjustment is started.



4. Select the desired position toward which to move the slider, and press the MENU knob.
   The slider starts to move.
   MOVE INSIDE : Slider moves to the inner most circumference.
   STEP INSIDE : Slider moves slightly toward the inner circumference.
   MOVE CENTER : Slider moves to the middle circumference.
   STEP OUTSIDE : Slider moves slightly toward the outer circumference.
   MOVE OUTSIDE : Slider moves to the outer most circumference.



4-6-22. SERVO_2

Before starting the adjustment, be sure to take necessary steps referring to “8-1-3. Adjustments After Replacing Optical Block Assembly”.
This section describes the auto adjustment of the servo 2 system (SKEW OFFSET, TE/CE BLOCK, SV LOOP GAIN).

Notes

- This adjustment cannot be executed when the loader is not installed. Be sure to install the loader before starting this adjustment.
- Be sure to perform the “8-1-5. RD Adjustment” before starting this adjustment.

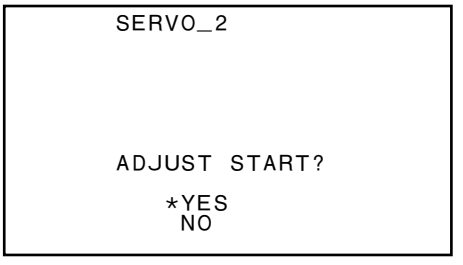
Fixtures and Equipment

- Alignment disc PFD23-RS
  (Refer to “2-10-1. Service Tools”.)

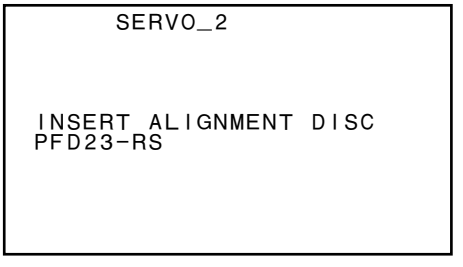
Menu hierarchy:

[DRIVE MAINTE]
→ [ADJUST]
→ [SERVO_2]

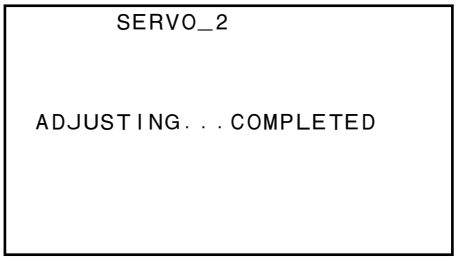
1. Select the “SERVO_2” by turning the MENU knob, press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob.

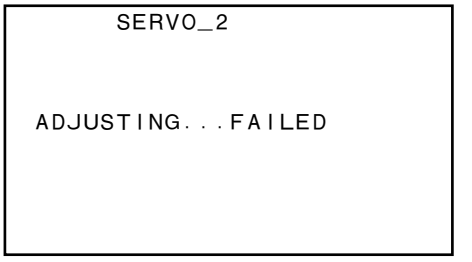


3. Insert the alignment disc. Adjustment is started. The result is displayed.



When the result is NG;

Following indication will be displayed.
Check the connection with the drive assembly.



4-6-23. ACCELERATION OFFSET

Adjusts the offset of the acceleration sensor.

Preparation

Place the unit in a way that the drive assembly becomes level to the ground.

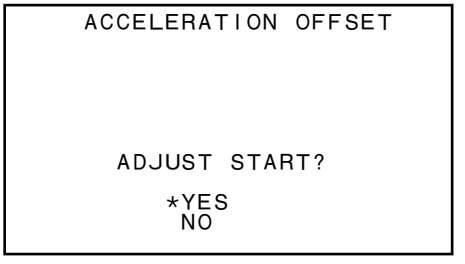
Note

Be sure that the drive assembly is level to the ground instead of the unit itself being level. If the adjustment is performed in a wrong posture, the servo performance is not guaranteed.

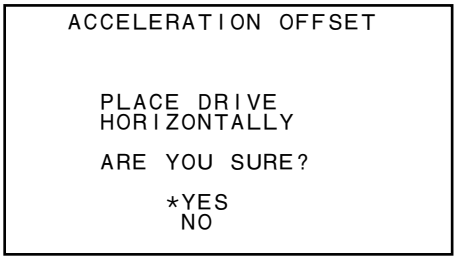
Menu hierarchy:

[DRIVE MAINTE]
→ [ADJUST]
→ [OTHER ADJUST]
→ [ACCELERATION OFFSET]

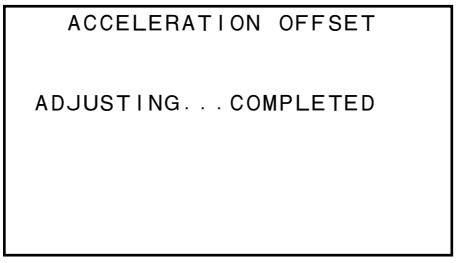
1. Select “ACCELERATION OFFSET” by turning the MENU knob, and press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob.

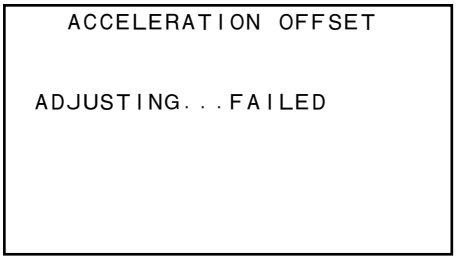


3. After confirming that the drive assembly is level to the ground, select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.



When the result is NG;

Following indication will be displayed.



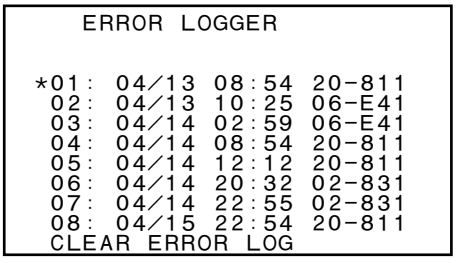
4-6-24. ERROR LOGGER

Displays the logs of the errors that occurred in the drive.

Menu hierarchy:

[DRIVE MAINTE]
→ [ERROR LOGGER]

1. Select “ERROR LOGGER” by turning the MENU knob, and press the MENU knob.



2. Error logs are displayed.

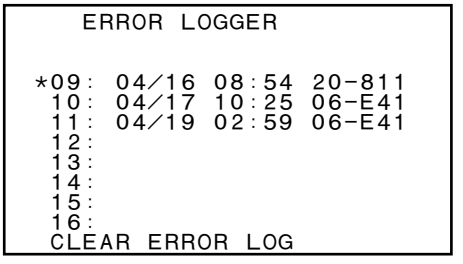
Notes

- DRIVE ERROR and DRIVE WARNING are recorded.
- The maximum number of logs to display is 16. Once the number exceeds 16, the older logs are overwritten.

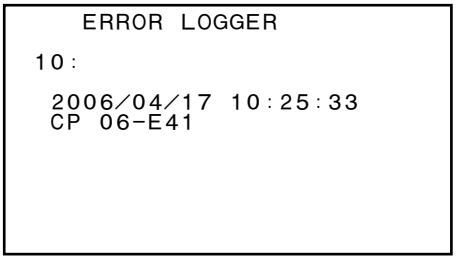
3. Select an error number by turning the MENU knob.

Note

Further turning the MENU knob displays the next screen.



4. Pressing the MENU knob displays the details of the selected error.



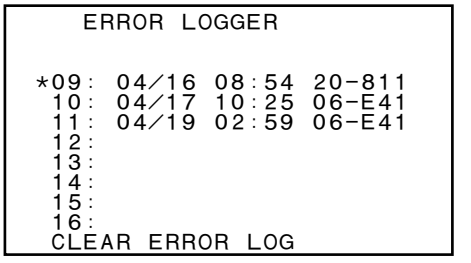
How to clear the error logs

Note

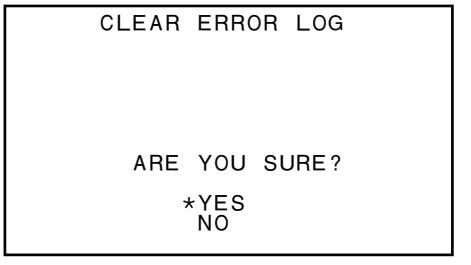
Normally, do not clear the error logs. The error logs can be used for troubleshooting. Important information may be contained in the error logs.

Procedure

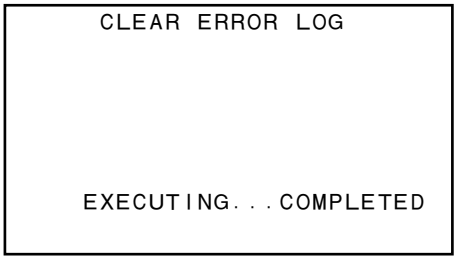
1. Display the ERROR LOGGER page.



2. Select “CLEAR ERROR LOG” by turning the MENU knob, and press the MENU knob.

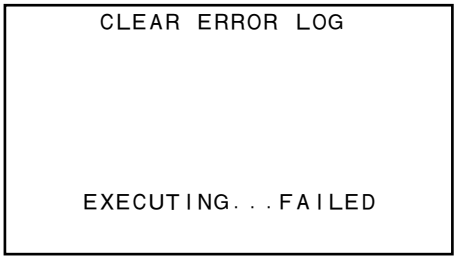


3. Select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.



When the result is NG;

An error code will be displayed as follows.

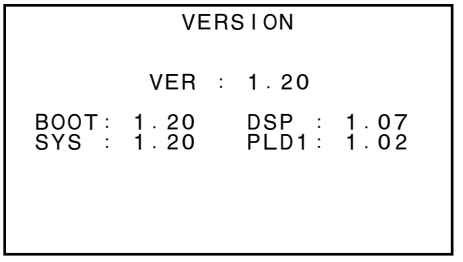


4-6-25. VERSION

Displays the version of the drive block.

Menu hierarchy:
[DRIVE MAINTE]
→ [OTHERS]
→ [VERSION]

1. Select “VERSION” by turning the MENU knob, and press the MENU knob.



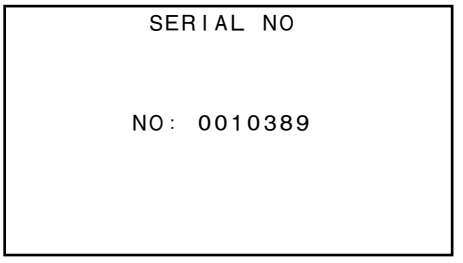
2. The version of the drive block is displayed.

4-6-26. SERIAL NO

Displays the serial number of the drive block.

Menu hierarchy:
[DRIVE MAINTE]
→ [OTHERS]
→ [SERIAL NO]

1. Select “SERIAL NO” by turning the MENU knob, and press the MENU knob.



2. The serial number of the drive block is displayed.

4-6-27. CLEAR MEDIA LOG

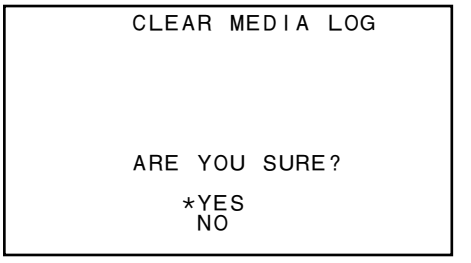
Clears the acquired media information.

Note

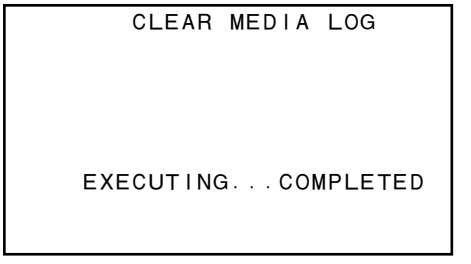
No undoing is available once it is executed.

Menu hierarchy:
[DRIVE MAINTE]
→ [OTHERS]
→ [CLEAR MEDIA LOG]

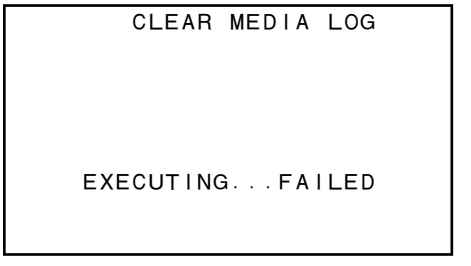
1. Select “CLEAR MEDIA LOG” by turning the MENU knob, and press the MENU knob.



2. Select “YES” by turning the MENU knob, and press the MENU knob. The result is displayed.



When the result is NG;
Following indication will be displayed.
The EEPROM (IC603/DR-550G board) may be defective.



4-6-28. UPLOAD TO EEPROM

Uploads the data backed up in the DR-550G board back to the EEPROM (IC603).

Note

When replacing the DR-550G board, mount the EEPROM (IC603) of the older board onto the newer board. In such a case, this menu should not be executed.

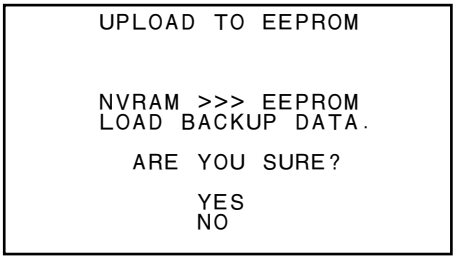
Execute this menu only in the following cases:

- The DR-550G board has been replaced, but IC603 has not.
- IC603 only has been replaced.

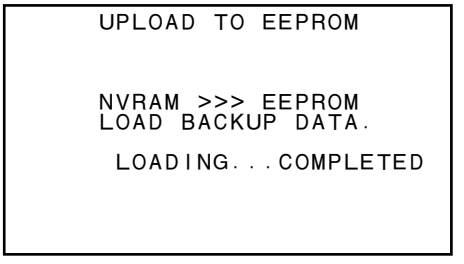
Menu hierarchy:

[DRIVE MAINTE]
→ [OTHERS]
→ [MEMORY SUPPORT]
→ [UPLOAD TO EEPROM]

1. Confirm that "UPLOAD TO EEPROM" is selected, and press the MENU knob.

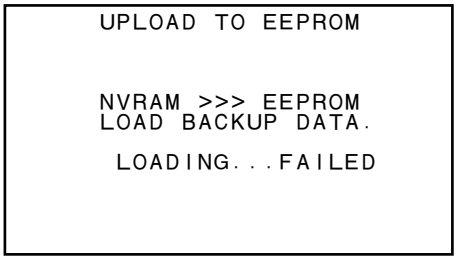


2. Select "YES" by turning the MENU knob, and press the MENU knob. The result is displayed.



When the result is NG;

Following indication will be displayed.



4-7. File List

The data that is set by the Setup menu can be saved in files. (Refer to Section 5 for the details of the file system.)
This section shows the list covering all the items of the setup menu. The following list shows the respective default settings when the unit was shipped from the factory and the destination files to which the respective menu items can be saved.

Explanation of the list below:

ALL: ALL FILE items
SCN: SCENE FILE items
LENS: LENS FILE items
STD: STANDARD target items
SVC: SERVICE FILE items
FACT: FACTORY FILE items
Power OFF : Indicates the items that return to the default setting when the unit was shipped from the factory at power-off.

Symbols:

◎ : Can be saved. (The menu display value remains as it is even after saving.)
○ : Can be saved. (The menu display value becomes 0 when it is saved.)
× : Cannot be saved.
☆ : Special saving items.

1. USER MENU

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
PAINT	A.IRIS	0	×	×	×	×	×	×	0
	DETAIL LEVEL	0	◎	◎	×	○	◎	×	–
	MASTER BLACK	0	◎	◎	×	○	◎	×	–
	GAMMA SELECT	STD	◎	◎	×	○	◎	×	–
	MASTER GAMMA	0	◎	◎	×	○	◎	×	–
	BLACK GAMMA	0	◎	◎	×	○	◎	×	–
	PRESET MTX SEL	STD	◎	◎	×	○	◎	×	–
SCENE FILE	□1	STANDARD	–	–	–	–	–	–	–
	□2	STANDARD	–	–	–	–	–	–	–
	□3	STANDARD	–	–	–	–	–	–	–
	□4	STANDARD	–	–	–	–	–	–	–
	□5	STANDARD	–	–	–	–	–	–	–
	□STANDARD	–	–	–	–	–	–	–	–
	SCENE RECALL	EXEC	–	–	–	–	–	–	–
	SCENE STORE	EXEC	–	–	–	–	–	–	–
	F.ID	Blank	×	◎	×	×	×	×	–
FORMAT	SYSTEM	60I(50I)	×	×	×	×	×	×	–
	REC FORMAT	MPEG HD	×	×	×	×	×	×	–
	HD BIT RATE	SP	◎	×	×	×	◎	×	–
	AUDIO CH	4CH	◎	×	×	×	◎	×	–
	ASPECT RATIO(DV)	16:9	◎	×	×	×	◎	×	–
	COUNTRY	–	×	×	×	×	×	×	–
SPECIAL EFFECTS	SLOW & QUICK	OFF	◎	×	×	×	◎	×	–
	FRAME RATE	30P	◎	×	×	×	◎	×	–
	INTVAL REC	OFF	◎	×	×	×	◎	×	–
	INTERVAL TIME	1SEC	◎	×	×	×	◎	×	–
	NUMBER OF FRAME	1F	◎	×	×	×	◎	×	–
	NUMBER OF TIMES	CONT	◎	×	×	×	◎	×	–
	PRE-LIGHTING	OFF	◎	×	×	×	◎	×	–
ASSIGNABLE	ASSIGN SW<1>	EZMOD	◎	×	×	×	◎	×	–
	ASSIGN SW<2>	IRRCN	◎	×	×	×	◎	×	–
	ASSIGN SW<3>	OFF	◎	×	×	×	◎	×	–
	ASSIGN SW<4>	OFF	◎	×	×	×	◎	×	–
DISC	DELETE LAST CLIP	EXEC	–	–	–	–	–	–	–
	DELETE ALL CLIPS	EXEC	–	–	–	–	–	–	–
	QUICK FORMAT	EXEC	–	–	–	–	–	–	–
OUTPUT	COMPONENT OUT	AUTO	◎	×	×	×	◎	×	–
	VIDEO OUT	AUTO	◎	×	×	×	◎	×	–
	HD → SD(PLAY BACK)	16:9	◎	×	×	×	◎	×	–
	VIDEO OUT SEL	VBS	◎	×	×	×	◎	×	–
	i.LINK MODE	AV/C	◎	×	×	×	◎	×	–

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
VF SETTING	ZEBRA	OFF	×	×	×	×	×	×	Depends on the SW of VF
	ZEBRA SELECT	1	◎	×	×	×	◎	×	–
	ZEBRA1 DET.LEVEL	70	◎	×	×	×	◎	×	–
	DETAIL FREQ	NORM	◎	×	×	×	◎	×	–
	VF ASPECT	AUTO	◎	×	×	×	◎	×	–
MARKER	MARKER	OFF	◎	×	×	×	◎	×	–
	CENTER	ON	◎	×	×	×	◎	×	–
	SAFETY ZONE	ON	◎	×	×	×	◎	×	–
	SAFETY AREA	90%	◎	×	×	×	◎	×	–
	ASPECT	OFF	◎	×	×	×	◎	×	–
	ASPECT SELECT	4:3	◎	×	×	×	◎	×	–
SKIN DETAIL	SKIN DETAIL	OFF	◎	◎	×	○	◎	×	–
	SKIN DETAIL LVL	0	◎	◎	×	○	◎	×	–
	SKIN DETECT	EXEC	–	–	–	–	–	–	–
	SKIN AREA IND	OFF	×	×	×	×	×	×	OFF
	SKIN DTL SAT	0	◎	◎	×	○	◎	×	–
	SKIN DTL HUE	0	◎	◎	×	○	◎	×	–
	SKIN DTL WIDTH	40	◎	◎	×	○	◎	×	–
RESET	ALL PRESET	EXEC	–	–	–	–	–	–	–

2. OPERATION MENU

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
FORMAT	SYSTEM	60I(50I)	×	×	×	×	×	×	–
	REC FORMAT	MPEG HD	×	×	×	×	×	×	–
	HD BIT RATE	SP	◎	×	×	×	◎	×	–
	AUDIO CH	4CH	◎	×	×	×	◎	×	–
	ASPECT RATIO(DV)	16:9	◎	×	×	×	◎	×	–
	COUNTRY	–	×	×	×	×	×	×	–
SPECIAL EFFECTS	SLOW & QUICK	OFF	◎	×	×	×	◎	×	–
	FRAME RATE	30P	◎	×	×	×	◎	×	–
	INTVAL REC	OFF	◎	×	×	×	◎	×	–
	INTERVAL TIME	1SEC	◎	×	×	×	◎	×	–
	NUMBER OF FRAME	1F	◎	×	×	×	◎	×	–
	NUMBER OF TIMES	CONT	◎	×	×	×	◎	×	–
	PRE-LIGHTING	OFF	◎	×	×	×	◎	×	–
ASSIGNABLE	ASSIGN SW<1>	EZMOD	◎	×	×	×	◎	×	–
	ASSIGN SW<2>	IRRCN	◎	×	×	×	◎	×	–
	ASSIGN SW<3>	OFF	◎	×	×	×	◎	×	–
	ASSIGN SW<4>	OFF	◎	×	×	×	◎	×	–
DISC	DELETE LAST CLIP	EXEC	–	–	–	–	–	–	–
	DELETE ALL CLIPS	EXEC	–	–	–	–	–	–	–
	QUICK FORMAT	EXEC	–	–	–	–	–	–	–
CLIP TITLE	TITLE	DSABL	◎	×	×	×	◎	×	–
	SELECT PREFIX	EXEC	–	–	–	–	–	–	–
	CLEAR NUMERIC	EXEC	–	–	–	–	–	–	–
	LOAD PREFIX DATA	EXEC	–	–	–	–	–	–	–
	PREFIX	TITLE	◎	×	×	×	×	×	–
	NUMERIC	00001	×	×	×	×	×	×	–
GAIN SW	GAIN LOW	0dB	◎	×	×	×	◎	×	–
	GAIN MID	9dB	◎	×	×	×	◎	×	–
	GAIN HIGH	18dB	◎	×	×	×	◎	×	–
	GAIN TURBO	42dB	◎	×	×	×	◎	×	–
EZ MODE/TLCS	TLCS MODE	AGC&AE	◎	×	×	×	◎	×	–
	AGC LIMIT	18dB	◎	×	×	×	◎	×	–
	AGC CHANGE POINT	F2.8	◎	×	×	×	◎	×	–
	AE LIMIT	1/250	◎	×	×	×	◎	×	–
	AE CHANGE POINT	F16	◎	×	×	×	◎	×	–
OFFSET WHITE	OFFSET WHITE <A>	OFF	◎	×	×	×	◎	×	–
	WARM COOL <A>	3200	◎	×	×	×	◎	×	–
	COLOR FINE <A>	0	◎	×	×	×	◎	×	–
	OFFSET WHITE <B>	OFF	◎	×	×	×	◎	×	–
	WARM COOL <B>	3200	◎	×	×	×	◎	×	–
	COLOR FINE <B>	0	◎	×	×	×	◎	×	–

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
OUTPUT	COMPONENT OUT	AUTO	◎	×	×	×	◎	×	–
	VIDEO OUT	AUTO	◎	×	×	×	◎	×	–
	HD → SD(PLAY BACK)	16:9	◎	×	×	×	◎	×	–
	VIDEO OUT SEL	VBS	◎	×	×	×	◎	×	–
	i.LINK MODE	AV/C	◎	×	×	×	◎	×	–
VIDEO OUT	VIDEO OUT VFDISP	ON	◎	×	×	×	◎	×	–
	VIDEO OUT MENU	ON	◎	×	×	×	◎	×	–
	VIDEO OUT TC	ON	◎	×	×	×	◎	×	–
	VIDEO OUT ZEBRA	OFF	◎	×	×	×	◎	×	–
	VIDEO OUT MARKER	OFF	◎	×	×	×	◎	×	–
VF SETTING	ZEBRA	OFF	×	×	×	×	×	×	Depends on the SW of VF
	ZEBRA SELECT	1	◎	×	×	×	◎	×	–
	ZEBRA1 DET.LEVEL	70	◎	×	×	×	◎	×	–
	DETAIL FREQ	NORM	◎	×	×	×	◎	×	–
	VF ASPECT	AUTO	◎	×	×	×	◎	×	–
MARKER	MARKER	OFF	◎	×	×	×	◎	×	–
	CENTER	ON	◎	×	×	×	◎	×	–
	SAFETY ZONE	ON	◎	×	×	×	◎	×	–
	SAFETY AREA	90%	◎	×	×	×	◎	×	–
	ASPECT	OFF	◎	×	×	×	◎	×	–
	ASPECT SELECT	4:3	◎	×	×	×	◎	×	–
VF DISP 1	DISP REC FORMAT	ON	◎	×	×	×	◎	×	–
	DISP BIT RATE	ON	◎	×	×	×	◎	×	–
	DISP SYSTEM	ON	◎	×	×	×	◎	×	–
	DISP FRAME RATE	ON	◎	×	×	×	◎	×	–
	DISP 16:9	ON	◎	×	×	×	◎	×	–
	DISP ZOOM	ON	◎	×	×	×	◎	×	–
	DISP FOCUS	ON	◎	×	×	×	◎	×	–
	DISP BATT REMAIN	AUTO	◎	×	×	×	◎	×	–
	DISP REC/PLAY	ON	◎	×	×	×	◎	×	–
	DISP TIME CODE	OFF	◎	×	×	×	◎	×	–
VF DISP 2	DISP 5600K	ON	◎	×	×	×	◎	×	–
	DISP FILTER	ON	◎	×	×	×	◎	×	–
	DISP WHITE	ON	◎	×	×	×	◎	×	–
	DISP GAIN	ON	◎	×	×	×	◎	×	–
	DISP SHUTTER	ON	◎	×	×	×	◎	×	–
	DISP AUDIO	ON	◎	×	×	×	◎	×	–
	DISP DISC	ON	◎	×	×	×	◎	×	–
	DISP IRIS	ON	◎	×	×	×	◎	×	–
	DISP LOW LIGHT	ON	◎	×	×	×	◎	×	–
	DISP INTERVAL	ON	◎	×	×	×	◎	×	–

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
LCD	LCD COLOR	0	◎	×	×	×	◎	×	–
	LCD MARKER&ZEBRA	ON	◎	×	×	×	◎	×	–
SHOT ID	ID-1	Blank	◎	×	×	×	×	×	–
	ID-2	Blank	◎	×	×	×	×	×	–
	ID-3	Blank	◎	×	×	×	×	×	–
	ID-4	Blank	◎	×	×	×	×	×	–
SHOT DISP	SHOT DATE	OFF	◎	×	×	×	◎	×	–
	DATA MODE	Y/M/D	◎	×	×	×	◎	×	–
	SHOT TIME	OFF	◎	×	×	×	◎	×	–
	TIME MODE	24H	◎	×	×	×	◎	×	–
	SHOT ID SEL	OFF	◎	×	×	×	◎	×	–
LENS FILE SEL	LENS FILE SELECT	–	×	×	◎	×	×	×	–
	F.ID	–	×	×	◎	×	×	×	–
	L.ID	–	×	×	◎	×	×	×	–
	L.MF	–	×	×	◎	×	×	×	–
TIME/DATE	ADJUST	EXEC	–	–	–	–	–	–	–
UMID SET	COUNTRY CODE	Blank	◎	×	×	×	×	×	–
	ORGANIZATION	Blank	◎	×	×	×	×	×	–
	USER CODE	Blank	◎	×	×	×	×	×	–
	TIME ZONE	00 : +00:00	◎	×	×	×	◎	×	–
RESET	ALL PRESET	EXEC	–	–	–	–	–	–	–

3. PAINT MENU

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
PAINT	A.IRIS	0	×	×	×	×	×	×	0
	DETAIL LEVEL	0	◎	◎	×	○	◎	×	–
	MASTER BLACK	0	◎	◎	×	○	◎	×	–
	GAMMA SELECT	STD	◎	◎	×	○	◎	×	–
	MASTER GAMMA	0	◎	◎	×	○	◎	×	–
	BLACK GAMMA	0	◎	◎	×	○	◎	×	–
	PRESET MTX SEL	STD	◎	◎	×	○	◎	×	–
SW STATUS	GAMMA	ON	◎	◎	×	○	◎	×	–
	MATRIX	ON	◎	◎	×	○	◎	×	–
	KNEE	ON	◎	◎	×	○	◎	×	–
	WHITE CLIP	ON	◎	◎	×	○	◎	×	–
	DETAIL	ON	◎	◎	×	○	◎	×	–
WHITE	COLOR TEMP <A>	3200	☆	×	×	☆	×	×	–
	C TEMP BAL <A>	0	☆	×	×	☆	×	×	–
	R GAIN <A>	0	☆	×	×	☆	×	×	–
	B GAIN <A>	0	☆	×	×	☆	×	×	–
	COLOR TEMP <B>	3200	☆	×	×	☆	×	×	–
	C TEMP BAL <B>	0	☆	×	×	☆	×	×	–
	R GAIN <B>	0	☆	×	×	☆	×	×	–
	B GAIN <B>	0	☆	×	×	☆	×	×	–
KNEE	KNEE POINT	100.0	◎	◎	×	○	◎	×	–
	KNEE SLOPE	0	◎	◎	×	○	◎	×	–
	KNEE SAT LEVEL	0	◎	◎	×	○	◎	×	–
	WHITE CLIP LEVEL	108.0%	◎	◎	×	○	◎	×	–
DETAIL	DETAIL LEVEL	0	◎	◎	×	○	◎	×	–
	DTL H/V RATIO	0	◎	◎	×	○	◎	×	–
	DETAIL FREQUENCY	0	◎	◎	×	○	◎	×	–
	APERTURE LEVEL	0	◎	◎	×	○	◎	×	–
	KNEE APT LEVEL	0	◎	◎	×	○	◎	×	–
	SD DETAIL	MID	◎	◎	×	○	◎	×	–
	CROSS COLOR	ON	◎	◎	×	○	◎	×	–
SKIN DETAIL	SKIN DETAIL	OFF	◎	◎	×	○	◎	×	–
	SKIN DETAIL LVL	0	◎	◎	×	○	◎	×	–
	SKIN DETECT	EXEC	–	–	–	–	–	–	–
	SKIN AREA IND	OFF	×	×	×	×	×	×	OFF
	SKIN DTL SAT	0	◎	◎	×	○	◎	×	–
	SKIN DTL HUE	0	◎	◎	×	○	◎	×	–
	SKIN DTL WIDTH	40	◎	◎	×	○	◎	×	–

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
MATRIX 1	MATRIX	ON	◎	◎	×	○	◎	×	–
	USER MATRIX	OFF	◎	◎	×	○	◎	×	–
	USER MATRIX SAT	0	◎	◎	×	○	◎	×	–
	USER MATRIX HUE	0	◎	◎	×	○	◎	×	–
	PRESET MTX	ON	◎	◎	×	○	◎	×	–
	PRESET MTX SEL	STD	◎	◎	×	○	◎	×	–
MATRIX 2	USER MATRIX R-G	0	◎	◎	×	○	◎	×	–
	USER MATRIX R-B	0	◎	◎	×	○	◎	×	–
	USER MATRIX G-R	0	◎	◎	×	○	◎	×	–
	USER MATRIX G-B	0	◎	◎	×	○	◎	×	–
	USER MATRIX B-R	0	◎	◎	×	○	◎	×	–
	USER MATRIX B-G	0	◎	◎	×	○	◎	×	–
LOW KEY SAT.	L.KEY SAT LEVEL	0	◎	◎	×	○	◎	×	–
SCENE FILE	□1	STANDARD	–	–	–	–	–	–	–
	□2	STANDARD	–	–	–	–	–	–	–
	□3	STANDARD	–	–	–	–	–	–	–
	□4	STANDARD	–	–	–	–	–	–	–
	□5	STANDARD	–	–	–	–	–	–	–
	□STANDARD	–	–	–	–	–	–	–	–
	SCENE RECALL	EXEC	–	–	–	–	–	–	–
	SCENE STORE	EXEC	–	–	–	–	–	–	–
	F.ID	Blank	×	◎	×	×	×	×	–

4. MAINTENANCE MENU

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
AUDIO-1	AU REF LEVEL	–20dB	◎	×	×	×	◎	×	–
	AU AGC SPEC	–6dB	◎	×	×	×	◎	×	–
	AU LIMITER MODE	OFF	◎	×	×	×	◎	×	–
	REAR MIC REF	–60dB	◎	×	×	×	◎	×	–
	FRONT MIC SELECT	STEREO	◎	×	×	×	◎	×	–
	AU CH12 AGC MODE	MONO	◎	×	×	×	◎	×	–
	AU CH34 AGC MODE	MONO	◎	×	×	×	◎	×	–
	AUDIO CH1 LEVEL	FRONT	◎	×	×	×	◎	×	–
	AUDIO CH2 LEVEL	FRONT	◎	×	×	×	◎	×	–
	AU SG (1KHz)	OFF	◎	×	×	×	◎	×	–
AUDIO-2	AU OUT LIMITER	ON	◎	×	×	×	◎	×	–
	HEADPHONE OUT	MONO	◎	×	×	×	◎	×	–
	i.LINK AUDIO OUT	2CH	◎	×	×	×	◎	×	–
TIMECODE	TC OUT	AUTO	◎	×	×	×	◎	×	–
	DF/NDF	DF	◎	×	×	×	◎	×	–
	UBIT	FIX	◎	×	×	×	◎	×	–
ESSENCE MARK	SHOTMARK 1	ON	◎	×	×	×	◎	×	–
	SHOTMARK 2	ON	◎	×	×	×	◎	×	–
	INDEX PIC. POS	0SEC	◎	×	×	×	◎	×	–
WHITE SETTING	COLOR TEMP <P>	3200	◎	×	×	×	◎	×	–
	C TEMP BAL <P>	0	◎	×	×	×	◎	×	–
	WHITE SWITCH <B>	MEM	◎	×	×	×	◎	×	–
	ATW SPEED	4	◎	×	×	×	◎	×	–
	SHOCKLESS WHITE	1	◎	×	×	×	◎	×	–
	AWB FIXED AREA	OFF	◎	×	×	×	◎	×	–
	WHT FILTER INH	ON	◎	×	×	×	◎	×	–
CAM CONFIG	COLOR BAR SEL	MULTI	◎	×	×	×	◎	×	–
	REC TALLY	UPPER	◎	×	×	×	◎	×	–
	SLOW MOTION	NORMAL	◎	×	×	×	◎	×	–
	SHT DISP MODE	SEC	◎	×	×	×	◎	×	–
BATTERY 1	Info BEFORE END	5%	◎	×	×	×	◎	×	–
	Info END	0%	◎	×	×	×	◎	×	–
	Sony BEFORE END	11.5V	◎	×	×	×	◎	×	–
	Sony END	11.0V	◎	×	×	×	◎	×	–
	Other BEFORE END	11.8V	◎	×	×	×	◎	×	–
	Other END	11.0V	◎	×	×	×	◎	×	–
	DC IN BEFORE END	11.8V	◎	×	×	×	◎	×	–
	DC IN END	11.0V	◎	×	×	×	◎	×	–
	DETECTED BATTERY	–	–	–	–	–	–	–	–

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
BATTERY 2	TYPE DETECTION	AUTO	◎	×	×	×	◎	×	–
	SEGMENT No.7	17.0V	◎	×	×	×	◎	×	–
	SEGMENT No.6	16.0V	◎	×	×	×	◎	×	–
	SEGMENT No.5	15.0V	◎	×	×	×	◎	×	–
	SEGMENT No.4	14.0V	◎	×	×	×	◎	×	–
	SEGMENT No.3	13.0V	◎	×	×	×	◎	×	–
	SEGMENT No.2	12.0V	◎	×	×	×	◎	×	–
	SEGMENT No.1	11.0V	◎	×	×	×	◎	×	–
GENLOCK	GL H PHASE	0	◎	×	×	×	◎	×	–
	H ADVANCE	0H	◎	×	×	×	◎	×	–
LENS	ZOOM SELECT	1	◎	×	×	×	◎	×	–
	ZOOM SPEED	20	◎	×	×	×	◎	×	–
	AF DETECT AREA	CENTER	◎	×	×	×	◎	×	–

5. FILE MENU

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
USER FILE	USER FILE LOAD	EXEC	–	–	–	–	–	–	–
	USER FILE SAVE	EXEC	–	–	–	–	–	–	–
	F.ID	Blank	×	×	×	×	–	–	–
	USER PRESET	EXEC	–	–	–	–	–	–	–
	CUSTOMIZE RESET	EXEC	–	–	–	–	–	–	–
ALL FILE	ALL FILE LOAD	EXEC	–	–	–	–	–	–	–
	ALL FILE SAVE	EXEC	–	–	–	–	–	–	–
	F.ID	Blank	◎	×	×	×	×	×	–
	ALL PRESET	EXEC	–	–	–	–	–	–	–
SCENE FILE	□1	STANDARD	–	–	–	–	–	–	–
	□2	STANDARD	–	–	–	–	–	–	–
	□3	STANDARD	–	–	–	–	–	–	–
	□4	STANDARD	–	–	–	–	–	–	–
	□5	STANDARD	–	–	–	–	–	–	–
	□STANDARD	–	–	–	–	–	–	–	–
	SCENE RECALL	EXEC	–	–	–	–	–	–	–
	SCENE STORE	EXEC	–	–	–	–	–	–	–
	F.ID	Blank	–	◎	–	–	–	×	–
LENS FILE 1	LENS FILE RECALL	EXEC	–	–	–	–	–	–	–
	LENS FILE STORE	EXEC	–	–	–	–	–	–	–
	F.ID	No Offset	×	×	◎	×	×	×	–
	SOURCE	–	–	–	–	–	–	–	–
	LENS NO OFFSET	EXEC	–	–	–	–	–	–	–
	IRIS GAIN	0	×	×	◎	×	×	×	–
	LENS AUTO RECALL	OFF	◎	×	×	×	◎	×	–
	L.ID	–	–	–	–	–	–	–	–
	L.MF	–	–	–	–	–	–	–	–
LENS FILE 2	LENS M VMOD	0	×	×	◎	×	×	×	–
	LENS R FLARE	0	×	×	◎	×	×	×	–
	LENS G FLARE	0	×	×	◎	×	×	×	–
	LENS B FLARE	0	×	×	◎	×	×	×	–
	LENS W-R OFST	0	×	×	◎	×	×	×	–
	LENS W-B OFST	0	×	×	◎	×	×	×	–
LENS FILE 3	SHADING CH SEL	R	×	×	×	×	×	×	R
	LENS R H SAW	0	×	×	◎	×	×	×	–
	LENS R H PARA	0	×	×	◎	×	×	×	–
	LENS R V SAW	0	×	×	◎	×	×	×	–
	LENS R V PARA	0	×	×	◎	×	×	×	–
MEMORY STICK	MS FORMAT	EXEC	–	–	–	–	–	–	–

6. DIAGNOSIS MENU

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
HOURS METER	OPERATION	–	–	–	–	–	–	–	–
	OPERATION (rst)	–	–	–	–	–	–	–	–
	SPONDLE (rst)	–	–	–	–	–	–	–	–
	LASER (rst)	–	–	–	–	–	–	–	–
	LOADING (rst)	–	–	–	–	–	–	–	–
	SEEK (rst)	–	–	–	–	–	–	–	–
DISC STATUS	USER ID	–	–	–	–	–	–	–	–
	TITLE	–	–	–	–	–	–	–	–
	REMAIN	–	–	–	–	–	–	–	–
	REWRITE	–	–	–	–	–	–	–	–
	SALVAGE	–	–	–	–	–	–	–	–
	FILE SYSTEM	–	–	–	–	–	–	–	–
CLIP STATUS	CURREST ID	–	–	–	–	–	–	–	–
	TITLE	–	–	–	–	–	–	–	–
	RECORD DEVICE	–	–	–	–	–	–	–	–
	SERIAL	–	–	–	–	–	–	–	–
	DATE	–	–	–	–	–	–	–	–
	TIME	–	–	–	–	–	–	–	–

7. SERVICE1 MENU

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
MENU SET	RE ROTATION REV	OFF	×	×	×	×	◎	×	–
	RE SPEED	2	×	×	×	×	◎	×	–
	DIRECT VALUE	OFF	×	×	×	×	◎	×	–
	ABSOLUTE VALUE	OFF	×	×	×	×	◎	×	–
	SERVICE RESET	EXEC	–	–	–	–	–	–	–
	FACTORY PRESET	EXEC	–	–	–	–	–	–	–
ROM VERSION 1	AT	–	–	–	–	–	–	–	–
	PACKAGE	–	–	–	–	–	–	–	–
	GEOS	–	–	–	–	–	–	–	–
	NOVA	–	–	–	–	–	–	–	–
	FRESH	–	–	–	–	–	–	–	–
	COPRO	–	–	–	–	–	–	–	–
ROM VERSION 2	SYS	–	–	–	–	–	–	–	–
	DRV	–	–	–	–	–	–	–	–
	FP	–	–	–	–	–	–	–	–
	PRXV	–	–	–	–	–	–	–	–
	PRXA	–	–	–	–	–	–	–	–
	DSPA	–	–	–	–	–	–	–	–
ROM VERSION 3	NIOS	–	–	–	–	–	–	–	–
	OSD	–	–	–	–	–	–	–	–
	TSYS	–	–	–	–	–	–	–	–
	TMBP	–	–	–	–	–	–	–	–
DEV STATUS	IFA	–	–	–	–	–	–	–	–
	FP	–	–	–	–	–	–	–	–
	DCP	–	–	–	–	–	–	–	–
	PA	–	–	–	–	–	–	–	–
	HEART	–	–	–	–	–	–	–	–
	BCS	–	–	–	–	–	–	–	–
	AT	–	–	–	–	–	–	–	–
	SS	–	–	–	–	–	–	–	–
	RM	–	–	–	–	–	–	–	–
HOURS METERS 2	RESET METER	EXEC	–	–	–	–	–	–	–
	OPERATION	000000H	–	–	–	–	–	–	–
	OPERATION (rst)	000000H	–	–	–	–	–	–	–
	SPONDLE (rst)	000000H	–	–	–	–	–	–	–
	LASER (rst)	000000	–	–	–	–	–	–	–
	LOADING (rst)	000000	–	–	–	–	–	–	–
	SEEK (rst)	000000H	–	–	–	–	–	–	–

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
BATTERY INFO	TYPE	–	–	–	–	–	–	–	–
	MFD DATE D/M/Y	–	–	–	–	–	–	–	–
	CYCLE COUNT	–	–	–	–	–	–	–	–
	CAPACITY	–	–	–	–	–	–	–	–
	VOLTAGE	–	–	–	–	–	–	–	–
	CURRENT	–	–	–	–	–	–	–	–
	REMAINING(%)	–	–	–	–	–	–	–	–
	REMAINING(MIN)	–	–	–	–	–	–	–	–
	MODE	–	–	–	–	–	–	–	–
	STATUS	–	–	–	–	–	–	–	–
OUTPUT/	COMPONENT SEL	AUTO	×	×	×	–	×	×	–
VCO CONT	VIDEO OUT SEL	VBS	×	×	×	–	×	×	VBS
	CLK OUT SEL	OFF	×	×	×	–	×	×	OFF
	HDCK(NTSC AREA)	–	×	×	×	–	◎	○	–
	HDCK(PAL AREA)	–	×	×	×	–	◎	○	–
	SDCK	–	×	×	×	–	◎	○	–
LOW LIGHT	LOW LIGHT	OFF	×	×	×	–	◎	×	–
	LOW LIGHT LEVEL	0	×	×	×	–	◎	×	–
	BATTERY WARNING	0.1	×	×	×	–	◎	×	–
AUTO IRIS	IRIS OVERRIDE	OFF?	×	×	×	–	◎	×	–
	IRIS SPEED	0	×	×	×	–	◎	×	–
	CLIP HIGH LIGHT	OFF	×	×	×	–	◎	×	–
	IRIS LEVEL	0	×	×	×	–	◎	×	–
	IRIS APL RATIO	0	×	×	×	–	◎	×	–
SW STATUS	GAMMA	ON	×	×	×	×	◎	×	–
	MATRIX	ON	×	×	×	×	◎	×	–
	KNEE	ON	×	×	×	×	◎	×	–
	WHITE CLIP	ON	×	×	×	×	◎	×	–
	DETAIL	ON	×	×	×	×	◎	×	–
	APERTURE	ON	×	×	×	×	◎	×	–
	FLARE	ON	×	×	×	×	◎	×	–
	TEST SAW	OFF	×	×	×	×	×	×	OFF
	TEST SAW ANALOG	OFF	×	×	×	×	◎	×	–
BLACK/FLARE	MASTER BLACK	0	×	×	×	×	◎	×	–
	R BLACK	0	×	×	×	×	◎	×	–
	B BLACK	0	×	×	×	×	◎	×	–
	MASTER FLARE	0	×	×	×	×	◎	×	–
	R FLARE	0	×	×	○	×	◎	×	–
	G FLARE	0	×	×	○	×	◎	×	–
	B FLARE	0	×	×	○	×	◎	×	–
	FLARE	ON	×	×	×	×	◎	×	–
	VIDEO OUT SEL	VBS	×	×	×	×	×	×	VBS

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
GAMMA	GAMMA	ON	×	×	×	×	◎	×	–
	STEP GAMMA	0.45	×	×	×	×	◎	×	–
	MASTER GAMMA	0	×	×	×	×	◎	×	–
	R GAMMA	0	×	×	×	×	◎	×	–
	G GAMMA	0	×	×	×	×	◎	×	–
	B GAMMA	0	×	×	×	×	◎	×	–
	GAMMA SELECT	STD	×	×	×	×	◎	×	–
	GAMMA SEL(STD)	3	×	×	×	×	◎	×	–
	GAMMA SEL(FILM)	1	×	×	×	×	◎	×	–
WHITE CLIP	WHITE CLIP	ON	×	×	×	×	◎	×	–
	WHITE CLIP LEVEL	108.0	×	×	×	×	◎	×	–
DETAIL	DETAIL	ON	×	×	×	×	◎	×	–
	CRISPENING	0	×	×	×	×	◎	×	–
	LEVEL DEPEND	ON	×	×	×	×	◎	×	–
	DETAIL FREQUENCY	0	×	×	×	×	◎	×	–
	APERTURE	ON	×	×	×	×	◎	×	–
	APERTURE LEVEL	0	×	×	×	×	◎	×	–
	KNEE APT LEVEL	0	×	×	×	×	◎	×	–
	DETAIL LIMIT	0	×	×	×	×	◎	×	–
PRE DETAIL	DETAIL	ON	×	×	×	×	◎	×	–
	DETAIL LEVEL	0	×	×	×	×	◎	×	–
	DETAIL FREQUENCY	0	×	×	×	×	◎	×	–
	CRISPENING	0	×	×	×	×	◎	×	–
	DTL H/V RATIO	0	×	×	×	×	◎	×	–
	LEVEL DEPEND	ON	×	×	×	×	◎	×	–
	LVL DEPEND LVL	0	×	×	×	×	◎	×	–
	APERTURE	ON	×	×	×	×	◎	×	–
	APERTURE LEVEL	0	×	×	×	×	◎	×	–
PRE DETAIL 2	KNEE APT LEVEL	0	×	×	×	×	◎	×	–
	DETAIL LIMIT	0	×	×	×	×	◎	×	–
	DTL WHT LIMIT	0	×	×	×	×	◎	×	–
	DTL BLK LIMIT	0	×	×	×	×	◎	×	–
	DTL V-BLK LIMIT	0	×	×	×	×	◎	×	–
	V DTL CREATION	R+G	×	×	×	×	◎	×	–
	H/V CONTROL MODE	V	×	×	×	×	◎	×	–
LOW KEY SAT	LOW KEY SAT	ON	×	×	×	×	◎	×	–
	L.KEY SAT LEVEL	0	×	×	×	×	◎	×	–
	L.KEY SAT RANGE	HIGH	×	×	×	×	◎	×	–
	Y BLACK GAMMA	ON	×	×	×	×	◎	×	–
	Y BLK GAM LEVEL	0	×	×	×	×	◎	×	–
	Y BLK GAM RANGE	HIGH	×	×	×	×	◎	×	–

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
WHITE SHADING	WHT SHAD CH SEL	R	×	×	×	×	×	×	R
	VIDEO OUT SEL	VBS	×	×	×	×	×	×	VBS
	WHT H SAW	0	×	×	×	×	◎	◎	–
	WHT H PARA	0	×	×	×	×	◎	◎	–
	WHT V SAW	0	×	×	×	×	◎	◎	–
	WHT V PARA	0	×	×	×	×	◎	◎	–
	WHITE SAW/PARA	ON	×	×	×	×	◎	×	–
BLACK SHADING	BLACK SHAD DH SEL	R	×	×	×	×	×	×	R
	VIDEO OUT SEL	VBS	×	×	×	×	×	×	VBS
	BLK H SAW	0	×	×	×	×	◎	◎	–
	BLK H PARA	0	×	×	×	×	◎	◎	–
	BLK V SAW	0	×	×	×	×	◎	◎	–
	BLK V PARA	0	×	×	×	×	◎	◎	–
	BLACK SAW/PARA	ON	×	×	×	×	◎	×	–
	MASER BLACK	0	×	×	×	×	◎	×	–
	MASTER GAIN(TMP)	0dB	×	×	×	×	×	×	Depends on the GAIN SW
AUTO SHADING	AUTO WHT SHADING	EXEC	–	–	–	–	–	–	–
	RESET WHT SHD	EXEC	–	–	–	–	–	–	–
	AUTO BLK SHADING	EXEC	–	–	–	–	–	–	–
	RESET BLK SHD	EXEC	–	–	–	–	–	–	–
DCC	DCC D RANGE	4.6	×	×	×	×	◎	×	–
	DCC POINT	0	×	×	×	×	◎	×	–
	DCC GAIN	0	×	×	×	×	◎	×	–
	DCC DELAY TIME	0	×	×	×	×	◎	×	–
ND COMP	ND OFFSET ADJUST	OFF	×	×	×	×	×	×	OFF
	CLEAR ND OFFSET	EXEC	–	–	–	–	–	–	–
SP FUNC	D5600	OFF	×	×	×	×	◎	×	–
	WIDE AWB	ON	×	×	×	×	◎	×	–
CCD ADJUST	R VSUB	–	×	×	×	×	◎	◎	–
	G VSUB	–	×	×	×	×	◎	◎	–
	B VSUB	–	×	×	×	×	◎	◎	–
	R GAIN	–	×	×	×	×	◎	◎	–
	G GAIN	–	×	×	×	×	◎	◎	–
	B GAIN	–	×	×	×	×	◎	◎	–
	R S/H DC	–	×	×	×	×	◎	◎	–
	G S/H DC	–	×	×	×	×	◎	◎	–
	B S/H DC	–	×	×	×	×	◎	◎	–
FAN	FAN MODE	AUTO	×	×	×	×	×	×	AUTO
MEASURE	MEASUREMENT MODE	OFF	×	×	×	×	×	×	OFF
	MASTER BLACK	0	×	×	×	×	◎	×	MODE
	MASTER GAIN(TMP)	0dB	×	×	×	×	×	×	Depends on the GAIN SW

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
MANUAL RPN	VIDEO OUT SEL	VBS	×	×	×	×	×	×	VBS
	RPN CURSOR	OFF	×	×	×	×	×	×	OFF
	VIDEO OUT MENU	ON	×	×	×	×	×	×	–
	CURSOR H POS.	0	×	×	×	×	×	×	–
	CURSOR V POS.	0	×	×	×	×	×	×	–
	RECORD RPN	EXEC	–	–	–	–	–	–	–
	DELETE RPN	EXEC	–	–	–	–	–	–	–
	FIELD/FRAME	FIELD	×	×	×	×	×	×	–
MANUAL RPN(SLS)	VIDEO OUT SEL	VBS	×	×	×	×	×	×	VBS
	RPN CURSOR	OFF	×	×	×	×	×	×	OFF
	VIDEO OUT MENU	ON	×	×	×	×	×	×	–
	CURSOR H POS.	0	×	×	×	×	×	×	–
	CURSOR V POS.	0	×	×	×	×	×	×	–
	RECORD RPN	EXEC	–	–	–	–	–	–	–
	DELETE RPN	EXEC	–	–	–	–	–	–	–
	FIELD/FRAME	FIELD	×	×	×	×	×	×	–
VDR MAINTENANCE	POWER A/D ADJUST	EXEC	–	–	–	–	–	–	–
	DRIVE MAINTE	EXEC	–	–	–	–	–	–	–
	SERVICE SUPPORT	EXEC	–	–	–	–	–	–	–
GYRO SET	GYRO SET	EXEC	–	–	–	–	–	–	–
SERVICE FILE	SVC FILE LOAD	EXEC	–	–	–	–	–	–	–
	SVC FILE SAVE	EXEC	–	–	–	–	–	–	–
	F.ID	Blank	×	×	×	×	◎	×	–

8. SERVICE2 MENU

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
CONCEALMENT	RPN CH SELECT	R	×	×	×	×	×	×	ENC
	RPN CURSOR	OFF	×	×	×	×	×	×	–
	CURSOR H POS.	0	×	×	×	×	×	×	–
	CURSOR V POS.	0	×	×	×	×	×	×	–
	CURSOR JUMP	CURR	×	×	×	×	–	–	CURR
	RPN WIDTH	1	×	×	×	–	×	×	–
	RECORD RPN	EXEC	–	–	–	–	–	–	–
	DELETE RPN	EXEC	–	–	–	–	–	–	–
	FIELD/FRAME	FIELD	×	×	×	×	×	×	–
	CONCEALMENT	ON	×	×	×	×	×	×	ON
CONCEALMENT2	RPN CH SELECT	R	×	×	×	×	×	×	ENC
	RPN CURSOR	OFF	×	×	×	×	×	×	–
	CURSOR H POS.	0	×	×	×	×	×	×	–
	CURSOR V POS.	0	×	×	×	×	×	×	–
	CURSOR JUMP	CURR	×	×	×	×	–	–	CURR
	RECORD RPN	EXEC	–	–	–	–	–	–	–
	DELETE RPN	EXEC	–	–	–	–	–	–	–
	FIELD/FRAME	FIELD	×	×	×	×	×	×	–
	CONCEALMENT	ON	×	×	×	×	×	×	ON
COMPENSATION	RPN CH SELECT	R	×	×	×	×	×	×	ENC
	RPN CURSOR	OFF	×	×	×	×	×	×	–
	CURSOR H POS.	0	×	×	×	×	×	×	–
	CURSOR V POS.	0	×	×	×	×	×	×	–
	CURSOR JUMP	CURR	×	×	×	×	–	–	CURR
	COMPENSATION LVL	–	×	×	×	–	–	–	–
	RECORD RPN	EXEC	–	–	–	–	–	–	–
	DELETE RPN	EXEC	–	–	–	–	×	×	–
	FIELD/FRAME	FIELD	×	×	×	×	×	×	–
	COMPENSATION	ON	×	×	×	×	×	×	ON
V.LINE	RPN CH SELECT	R	×	×	×	×	×	×	ENC
	RPN CURSOR	OFF	×	×	×	×	×	×	–
	CURSOR H POS.	0	×	×	×	×	×	×	–
	CURSOR V POS.	0	×	×	×	×	×	×	–
	CURSOR JUMP	CURR	×	×	×	×	–	–	CURR
	V.LINE LEVEL	–	×	×	×	–	×	×	–
	RECORD V.LINE	EXEC	–	–	–	–	–	–	–
	DELETE V.LINE	EXEC	–	–	–	–	–	–	–
	FIELD/FRAME	FIELD	×	×	×	×	×	×	–
	VERTICAL LINE	ON	×	×	×	×	×	×	ON

Page	Item	Default	ALL	SCN	LENS	STD	SVC	FACT	Power OFF
RPN MANAGE	CONC (APR) RESET	EXEC	–	–	–	–	–	–	–
	COMP (APR) RESET	EXEC	–	–	–	–	–	–	–
	CONC2(APR) RESET	EXEC	–	–	–	–	–	–	–
	RPN ALL PRESET	EXEC	–	–	–	–	–	–	–
	AUTO CONCEAL	EXEC	–	–	–	–	–	–	–
	AUTO COMPENSATE	EXEC	–	–	–	–	–	–	–
	AUTO CONCEAL2	EXEC	–	–	–	–	–	–	–
	AUTO ALL	EXEC	–	–	–	–	–	–	–
RPN STATUS									
EEPROM									
BACKUP FILE	BACKUP FILE LOAD	EXEC	–	–	–	–	–	–	–
	BACKUP FILE SAVE	EXEC	–	–	–	–	–	–	–
	F.ID	Blank	×	×	×	×	×	×	–
FACTORY FILE	FCT FILE LOAD	EXEC	×	×	×	×	–	–	–
	FCT FILE SAVE	EXEC	×	×	×	×	–	–	–
	F.ID	Blank	×	×	×	×	×	◎	–
	FCT FILE STORE	EXEC	–	–	–	–	–	–	–

Section 5
File System

5-1. Structure of File System

The PDW-F330/F350 can save data modifications made in the setup menu, as files in the main unit itself and in a memory stick. The file system consists of the USER file, ALL file, SCENE file and LENS file. For details of each file, refer to Section 4 “Setting Menu”.

USER file

The USER file contains the customized USER menu items and its setups. The data can be saved in a memory stick. When this file is saved in a memory stick, the USER menu can be set instantly to the users’ preferred setup by reading the USER file data from the memory stick.

ALL file

The ALL file contains the setups of all menus. The ALL file can be saved in a memory stick. By saving the ALL file in a memory stick after adjusting the first camera, the user can instantly set the same adjustment setup as the first camera to the second and subsequent cameras by reading the ALL file data from the memory stick.

SCENE file

The SCENE file contains the setup value of the paint items adjusted in accordance with the shooting scene. Up to 5 SCENE files can be set in the built-in memory, and up to 100 SCENE files in a memory stick. When an operator saves the setup data optimized for a specific scene during rehearsal, the operator can establish exactly the same setup for the actual take as in the rehearsal by calling the saved setup data.

LENS file

The LENS file contains setup data that corrects the characteristics unique to each lens (flare, white shading, auto iris gain, center marker position, extender white correction values). Up to 16 LENS files can be saved in the built-in memory, and up to 100 files can be saved in a memory stick.

5-2. Data Structure

The menu is classified into USER, OPERATION, PAINT, and MAINTENANCE menus, and each menu has data of USER layer (not USER menu), SERVICE layer (not SERVICE menu), and FACTORY layer.

USER layer: Data layer that varies with menu operation

SERVICE layer: Data layer to be changed in SERVICE mode*1. Same as the factory preset setting for users.

FACTORY layer: Data layer with factory adjustment data and fixed values

*1: Refer to "4-1. Displaying the SERVICE Menu" to enter the SERVICE mode.

Menu / Data structure	USER	OPERATION	PAINT	MAINTENANCE	FILE	SERVICE
USER layer						
SERVICE layer						
FACTORY layer						

Each of USER layer, SERVICE layer, and FACTORY layer saves absolute value data, and the data in the uppermost USER layer becomes actual setting values.

Since the menu displays the difference with lower layers, relative value-based operation is possible. However, change in lower layer is not reflected in the upper layer, which needs care in operation.

Where to save layer data:

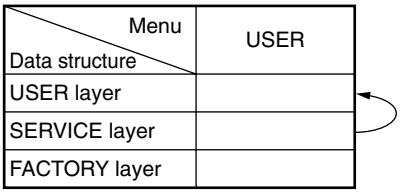
USER/SERVICE layers: FRAM (DCP-37 board)

FACTORY layer: EEPROM (DCP-37, and PA-330 boards) and ROM (fixed values)

5-3. File Operation and Data Flow

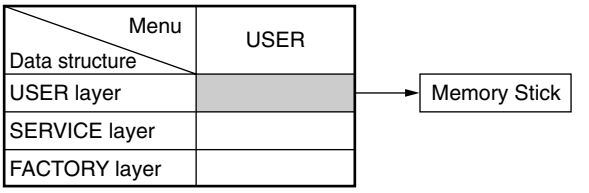
5-3-1. USER FILE

1. Re-set all items of the USER menu to default settings. (USER PRESET)
   Execute USER PRESET on the USER FILE page (FILE menu 01). All items of the USER menu are re-set to their default settings.



Executing USER PRESET:
Copies the SERVICE layer data of a USER menu item to the USER layer.

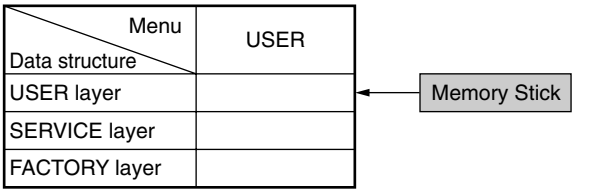
2. Save the USER menu setting in a Memory Stick. (USER FILE SAVE)
   Execute USER FILE SAVE on the USER FILE page (FILE menu 01). All items of the USER menu are saved in a Memory Stick as USER FILE.



Executing USER FILE SAVE:
Saves the USER layer data of a USER menu item in a Memory Stick.

∗ Memory Stick saves USER CUSTOMIZE MENU data and WHITE BALANCE data as well.

3. Load the USER FILE saved in the Memory Stick. (USER FILE LOAD)
   Execute USER FILE LOAD on the USER FILE page (FILE menu 01). The USER FILE saved in the Memory Stick is loaded to the USER layer.



Executing USER FILE LOAD:
Loads the USER FILE of a USER menu item stored in the Memory Stick to the USER layer.

5-3-2. ALL FILE

∗ Refer to “4-7. File List” for ALL FILE items.

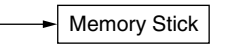
1. Re-set items in the ALL FILE to preset values. (ALL PRESET)
   Execute ALL PRESET on the ALL FILE page (FILE menu 03). ALL FILE items (applicable items of OPERATION, PAINT, MAINTENANCE, and FILE) are re-set to their default settings.

Menu / Data structure	OPERATION	PAINT	MAINTENANCE	FILE
USER layer				
SERVICE layer				
FACTORY layer				

   Executing ALL PRESET:
   Copies the SERVICE layer data of an ALL FILE item to the USER layer.

2. Save settings of ALL FILE items in a Memory Stick. (ALL FILE SAVE)
   Execute ALL FILE SAVE on the ALL FILE page (FILE menu 03).The USER layer data of an ALL FILE item (applicable item of OPERATION, PAINT, MAINTENANCE, and FILE) is saved in a Memory Stick as ALL FILE.

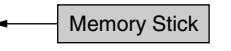
Menu / Data structure	OPERATION	PAINT	MAINTENANCE	FILE
USER layer				
SERVICE layer				
FACTORY layer				



   Executing ALL FILE SAVE:
   Saves the USER layer data of an ALL FILE item in a Memory Stick.

3. Load the ALL FILE saved in the Memory Stick. (ALL FILE LOAD)
   Execute ALL FILE LOAD on the ALL FILE page (FILE menu 03). The ALL FILE saved in the Memory Stick is loaded to the USER layer of an ALL FILE item (applicable item of OPERATION, PAINT, MAINTENANCE, and FILE).

Menu / Data structure	OPERATION	PAINT	MAINTENANCE	FILE
USER layer				
SERVICE layer				
FACTORY layer				

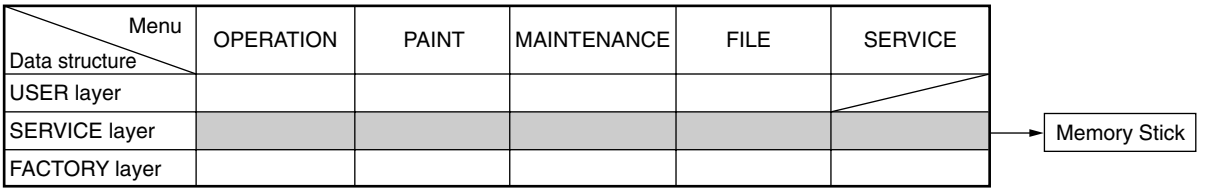


   Executing ALL FILE LOAD:
   Loads the ALL FILE stored in the Memory Stick to the USER layer of an ALL FILE item.

5-3-3. SERVICE FILE

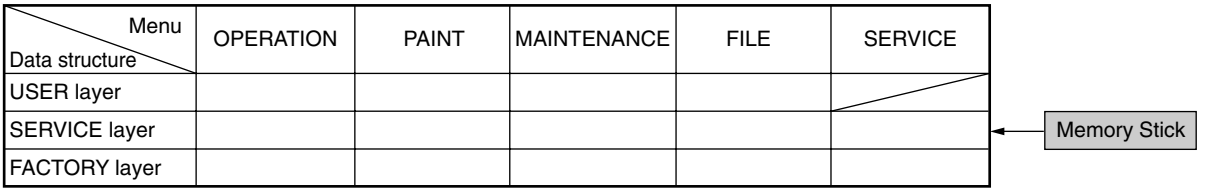
In the SERVICE mode, almost all items of all menus are SERVICE layer data, and the updated data is saved as the SERVICE layer data.

1. Save the settings of the SERVICE FILE items to a Memory Stick. (SERVICE FILE SAVE)
   Execute SVC FILE SAVE on the SERVICE FILE page (SERVICE menu 32). The SERVICE layer data of a SERVICE FILE item (applicable item of OPERATION, PAINT, MAINTENANCE, FILE, and SERVICE) is saved in a Memory Stick as SERVICE FILE.



   Executing SVC FILE SAVE:
   Saves the SERVICE layer data of a SERVICE FILE item in a Memory Stick.

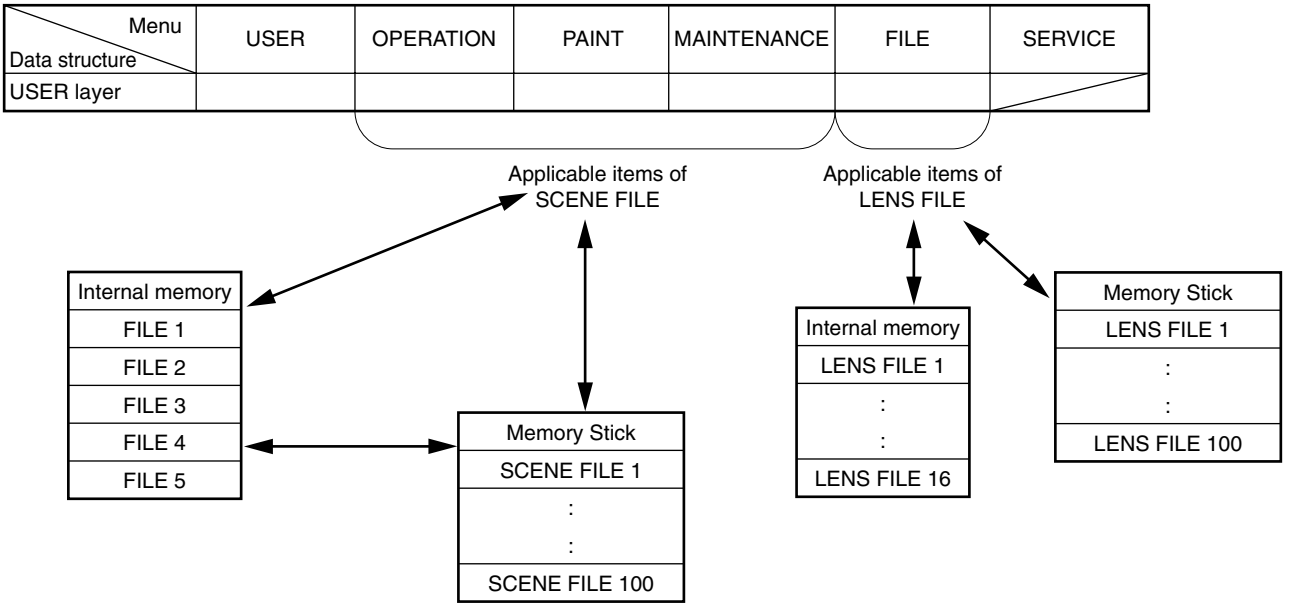
2. Load the SERVICE FILE saved in the Memory Stick. (SERVICE FILE LOAD)
   Execute SVC FILE LOAD on the SERVICE FILE page (SERVICE menu 32). The SERVICE FILE saved in the Memory Stick is loaded to the SERVICE layer of a SERVICE FILE item (applicable item of OPERATION, PAINT, MAINTENANCE, FILE, and SERVICE).



   Executing SERVICE LOAD:
   Loads the SERVICE FILE stored in the Memory Stick to the SERVICE layer of a SERVICE FILE item.

5-3-4. Other FILE

Each data of SCENE FILE and LENS FILE has no layers, and data is entirely handled by the USER layer and the memory field of each FILE.

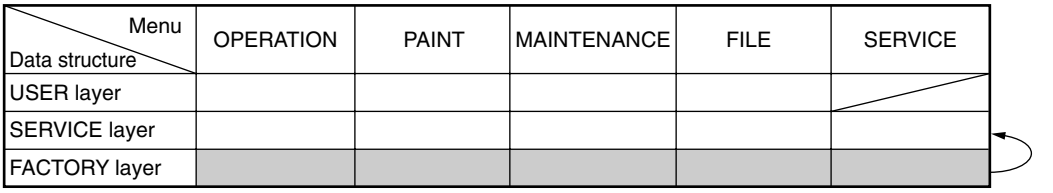


∗ Refer to “4-7. File List” for applicable items of SCENE FILE/LENS FILE and target STANDARD items.

5-3-5. Other RESET

This section describes SERVICE RESET and FACTORY PRESET in the SERVICE menu.

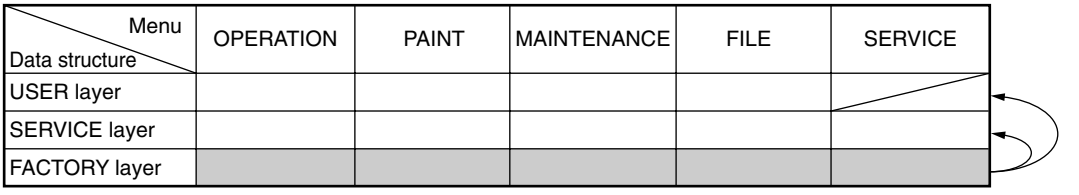
1. Reset the data updated in the service mode. (SERVICE RESET)
   Execute SERVICE RESET on the MENU SET page (SERVICE menu 01). The setting changed in the service mode returns to the factory preset values.



Menu / Data structure	OPERATION	PAINT	MAINTENANCE	FILE	SERVICE
USER layer					
SERVICE layer					
FACTORY layer					

   Executing SERVICE RESET:
   Copies the FACTORY layer data to the SERVICE layer.

2. Reset all settings to the factory preset values. (FACTORY PRESET)
   Execute FACTORY PRESET on the MENU SET page (SERVICE menu 01). All settings return to the factory preset values.



Menu / Data structure	OPERATION	PAINT	MAINTENANCE	FILE	SERVICE
USER layer					
SERVICE layer					
FACTORY layer					

   Executing FACTORY PRESET:
   Copies the FACTORY layer data to the SERVICE and USER layers.

5-4. Specific Saving Items

5-4-1. White Gain

ALL FILE

Items executed	Status after execution
ALL FILE SAVE (FILE menu/ALL FILE page)	All White Gain values are saved in ALL FILE. (Filter A/B/C/D, WHITE BAL A/B)
ALL FILE LOAD (FILE menu/ALL FILE page)	All White Gain values are replaced with the ALL FILE values. (Filter A/B/C/D, WHITE BAL A/B)
ALL PRESET (FILE menu/ALL FILE page)	All White Gain values are replaced with the values of SERVICE layer.

SCENE FILE

The White Gain values are not saved in SCENE FILE. The White Gain values do not change even if SCENE FILE is read.

5-4-2. Master Gain

Master Gain value can be saved in SCENE FILE.

Since the hardware switches take precedence during single unit operation, the saved data cannot be read.

When Remote Control Unit is connected, the unit can read Master Gain value from each FILE, and retains the value until it is updated even after power-off.

5-4-3. Shutter

The SHUTTER ON/OFF, ECS frequency, and SHUTTER SEL data can be saved in SCENE FILE.

The unit can read the ESC frequency and SHUTTER SEL data during single unit operation, and retains the data until they are updated even after power-off of the unit.
(Since the hardware switches take precedence for SHUTTER ON/OFF, the saved data cannot be read.)

When Remote Control Unit is connected, the unit can read the SHUTTER ON/OFF, ECS frequency, and SHUTTER SEL data, and retains them until they are updated even after power-off.

Section 6
Periodic Maintenance and Inspection

6-1. Periodic Check/Replacement Parts List

This table does not describe the guarantee period of each part.
The replacement period of each part is changed according to the environment and condition.

Part to Be Replaced	Hours Meter (Menu Item)	Check/Replacement Period	Parts Number and Name
LCD Back Light	Current-carrying hours (OPERATION)	Replace every 5000 H.	1-478-568-22 BLOCK, LIGHT GUIDE PLATE (3.5)
LCD Hinge Assembly (∗1)	–	Replace around the same time as LCD back light. (∗2)	X-3950-938-4 Hinge assembly, LCD
Cleaner (P1) Assembly	Laser-illuminated hours (LASER)	Check every 4000 H. Replace when bristles of brush become sparse or damaged remarkably.	A-8347-266-B Cleaner (P1) Assembly
Optical Block Assembly	Laser-illuminated hours (LASER)	Replace every 4000 H.	⚠ A-1139-275-A KES-110A (RP)
Double Layers Capacitor	Laser-illuminated hours (LASER)	Replace around the same time as optical block assembly.	A-1164-283-A PS-708 MOUNT
Cushion	Laser-illuminated hours (LASER)	Check every 4000 H. Replace when cushion is deteriorated in shape.	3-796-308-02 Cushion
Lithium battery	–	About one year	⚠ 1-528-174-31 Lithium battery (CR2032)

∗1: It has the durability at about five years, the five complete rotating operations and the five times of open-close operation per day.
∗2: Inspect this when servicing other blocks.

6-2. Cleaning

6-2-1. Cleaning Loader (P1) Assembly

1. Precautions

The loader (P1) assembly consists of precision parts.
Be careful not to damage and give excessive force to the parts.

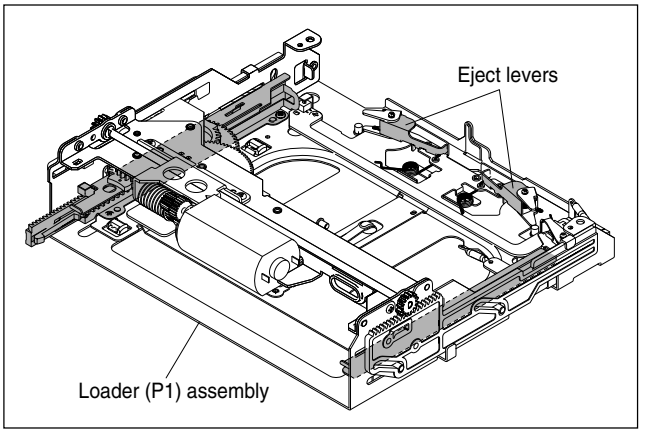
2. Cleaning Procedure

Tools

- Cleaning cloth (or cotton swab)
- Cleaning fluid (alcohol)

Procedure

1. Clean both sides and the eject levers in the loader (P1) assembly using the cleaning cloth (or cotton swab) with the cleaning fluid soaked.



6-2-2. Cleaning Drive (P10) Sub Assembly

1. Precautions

- To prevent the possibility of damage to the optical block assembly in the drive by static electricity charged in a human body or clothes, be sure to establish a ground before cleaning the drive assembly. (Refer to “Notes on Handling Optical Block Assembly : Refer to Section 2-15-1”.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver and so on hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.
- The drive assembly consists of precision parts.
  Be careful not to damage and give excessive force to the parts.
- While cleaning, be careful not to touch the portion where oil were applied (slide shafts).
  If the oil is attached to the cleaning cloth, replace it with a new one.
  Otherwise, it may attach to an unnecessary part.

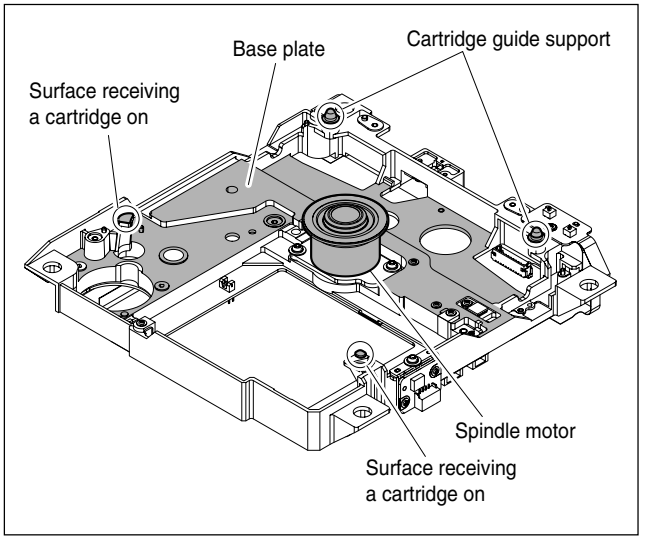
2. Cleaning Procedure

Tools

- Cleaning cloth (or cotton swab)
- Cleaning fluid (alcohol)

Procedure

1. Remove dust and dirt attached on the following parts shown in the figure, using the cleaning cloth (or cotton swab) with the cleaning fluid soaked.



Where to clean

- Cartridge guide supports (two points)
- Surfaces receiving a cartridge on (two points)
- Spindle motor
- Base plate

Note

After the cleaning, ensure that fibers of the cleaning cloth (or cotton swab) are not attached on the spindle motor.

6-3. Cares after Using under Special Environment

Checking the followings is recommended when returned from the news gathering at seaside, at the dusty locations, at hot spring, or if the unit is heavily splashed with water or water leaks in the unit in the rough weather or the like.

1. Carefully clean off sand and dust that entered the unit with airbrush or the like.
2. If salt contained in seawater or sulfur contained in hot spring attaches to the non-painted surface of outer cabinet, the cabinet may corrode in white.
   If it attaches, wipe it off immediately with alcohol.
3. If water leaks inside the unit, turn off the power and dry the unit with hair-dryer and so on. Check especially that water does not remain in the CCD block or the power supply block.
   Note
   If the unit is not taken care of appropriately, corrosion may occur inside that may cause fire and electric shock.

4. Clean out the contacting surface of connectors.
5. Perform the general operational check and confirm that no abnormal sound is heard from inside the unit or the unit operates correctly without any abnormality.

6-4. Cleaning Pickup Lens

Error codes “02-020” may be displayed due to smudged optical pickup lens. (Refer to Section 3-2-1.)
If “02-020” is displayed, be sure to clean the pickup lens referring to “LENS CLEANING Menu”.
(Refer to Section 4-6-17.)

Note

Before cleaning, be sure to unload the disc from the unit.

6-5. Digital Hours Meter

The hours meter has six types of display mode. The elapsed time or number of times of operation of the PDW-F330/F350 can be accumulated for each mode and displayed on the viewfinder.
The hours meter can be reset as desired.
Use the hours meter as a reference for periodic inspection.
The display can also be checked on the HOURS METER page of the DIAGNOSIS menu (Cannot be reset in the DIAGNOSIS menu). Display and reset are carried out by using the HOURS METER 2 page in the SERVICE menu.

Description of HOURS METER 2 page (SERVICE menu)

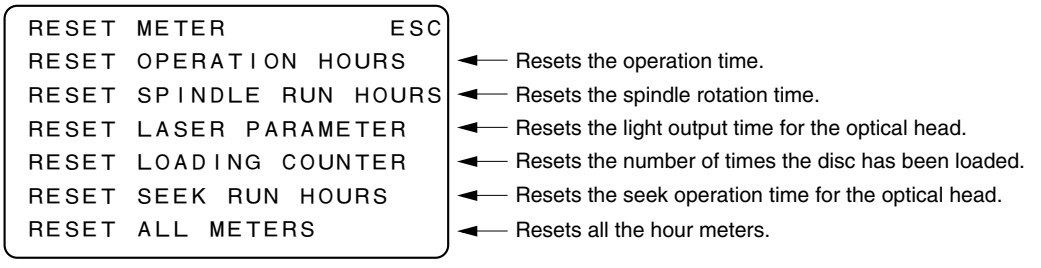
For the description of the HOURS METER 2 page of the SERVICE menu, refer to Section 4 “4-2. Service Menu”.

6-5-1. Display Method and Reset Methods

Refer to “4-1. Displaying the SERVICE Menu” for the display of the SERVICE menu.

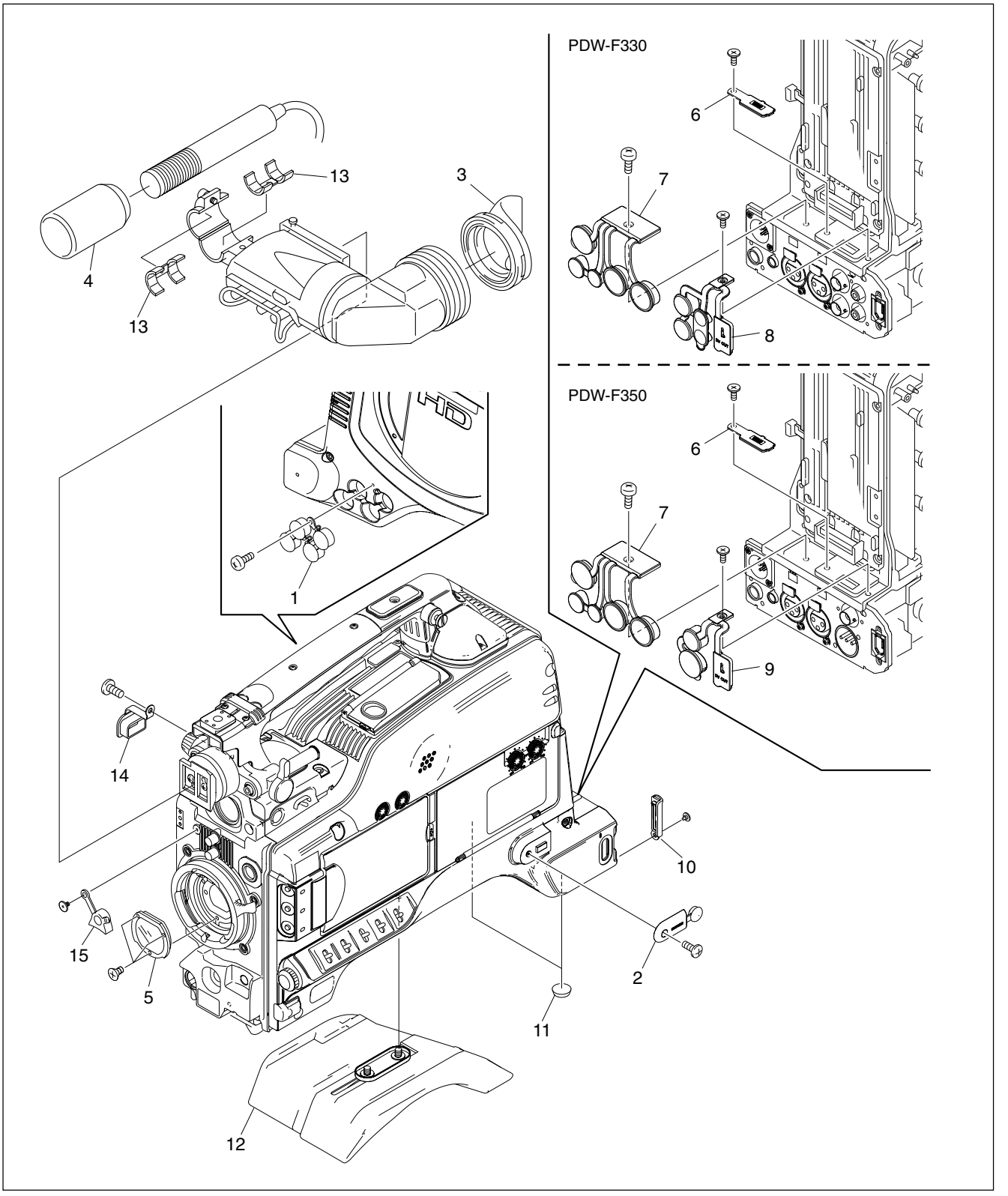
Reset Methods

1. Display the SERVICE menu. (Refer to “4-1. Displaying the SERVICE Menu” .)
   (TOP MENU is displayed on the viewfinder screen.)
2. Select “SERVICE” from the TOP MENU and press the MENU knob.
3. Rotate the MENU knob to scroll the screen up to HOURS METER 2, and press the knob.
4. Rotate the MENU knob to move the cursor onto RESET METER , and press the knob. Move to the RESET METER screen.
5. Rotate the MENU knob to move the cursor to the desired hours meter.
6. Press the MENU knob. The accumulated time of the selected hours meter is reset.



6-6. Recommended Replacement Parts

This section describes the recommended replacement parts and recommended replacement time.



Recommended replacement parts

ID	Part name	Sony part No.	Recommended replacement timing
1	Cover BNC	3-808-879-04	Check for deformation and deterioration from time to time. Replace it as necessary.
2	Cover earphone jack	3-868-990-02	
3	Eye cup kit (RP) (∗1)	A-8319-943-B	
4	Wind screen	3-991-419-01	
5	Filter unit, optical	1-479-899-11	It can become nebulous (intransparent and whitened) with elapse of time. Then it will not meet the required characteristics. Replace it as needed.
6	Cover, connector (Wireless)	3-612-698-03	Check for deformation and deterioration from time to time. Replace it as necessary.
7	Cap (L), connector	3-868-762-11	
8	Cap (R2), connector (∗2)	3-991-422-01	
9	Cap (R3), connector (∗3)	3-991-424-01	
10	Cover, MS	3-868-988-03	
11	Foot, rubber	3-723-097-01	
12	Pad assembly, shoulder	A-8279-878-F	
13	GEL, MIC	3-854-132-01	
14	Light connector cover	3-796-978-01	
15	Holder lens mount	3-796-982-02	

∗1 : For PDW-F350 (DXF-20W)
∗2 : For PDW-F330
∗3 : For PDW-F350

Section 7
Replacement of Main Parts

This section explains the replacement procedures of periodic replacement parts, main mechanical parts, and circuit boards.

7-1. Optical Drive Assembly

7-1-1. Removing/Reinstalling Loader (P1) Assembly

Notes

- When a cartridge is already being inserted in the unit, be sure to take it out beforehand. If you cannot take out the cartridge with normal operation, refer to “2-6. How to Take Out a Cartridge Manually”.
- The loader (P1) assembly require periodic replacement, Refer to “6-1. Periodic Check/Replacement Parts List” for details.
- The optical block assembly in the drive may be damaged by static electricity charged in a human body or clothes.
  Therefore, be sure to establish a ground before starting an operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

Removal

1. Remove the outside panel assembly.
   (Refer to Section 2-7-1.)
2. Remove the SW guard assembly.
   (Refer to Section 2-7-9.)
3. Remove the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
4. Fully loosen the two screws fixing the loader (P1) assembly and remove it in the direction of the arrow “A”.

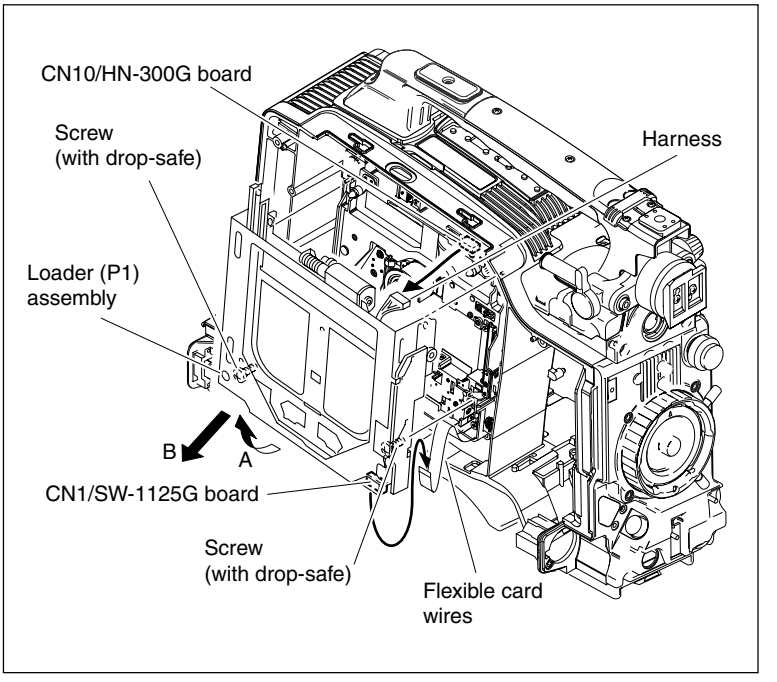
   Note

   These screws have a drop-safe so that the screws cannot be removed from the loader (P1) assembly.

5. Disconnect the flexible card wire from the connector (CN1) on the SW-1125G board and disconnect the harness from the connector (CN10) on the HN-300G board, and remove the loader (P1) assembly in the direction of the arrow “B”.

   Note

   Life of flexible card wire will be significantly shortened if it is folded. Be very careful not to fold the flexible card wire.

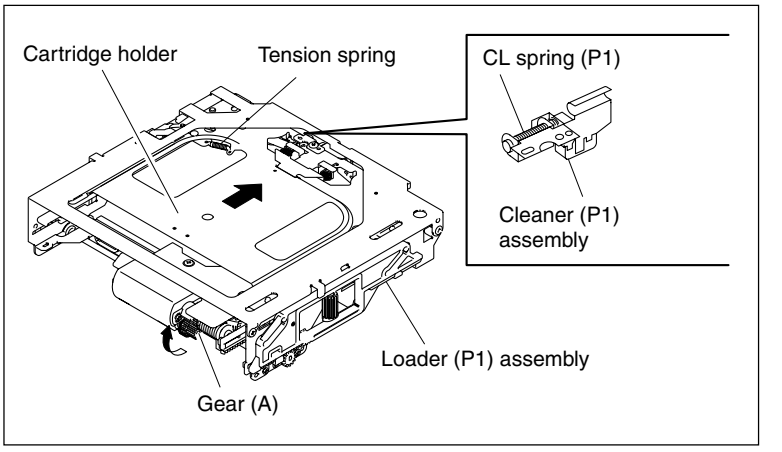


Reinstallation

Note

When installing, take care so that the torsion spring and CL spring (P1) do not come off.

1. Rotate the gear (A) to move the cartridge holder in the direction of the arrow until it will stop.



2. Connect the flexible card wire to the connector (CN1) on the SW-1125G board and connect the harness to the connector (CN10) on the HN-300G board.

   Note

   Life of flexible card wire will be significantly shortened if it is folded. Be very careful not to fold the flexible card wire.

3. Insert the upper part of the loader (P1) assembly underneath the portion "A" of the base plate assembly, and align the four positioning pins of the base plate assembly with the four holes of the loader (P1) assembly as shown in Fig.1.
4. Reinstall the loader (P1) assembly in the base plate assembly, and fix it using the two screws with drop-safe stoppers.
   Tightening torque:
   $20 \times 10^{-2} \pm 0.01$ N•m (2.0 ±0.1 kgf•cm)
5. Reinstall the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
6. Reinstall the SW guard assembly.
   (Refer to Section 2-7-9.)
7. Reinstall the outside panel assembly.
   (Refer to Section 2-7-2.)

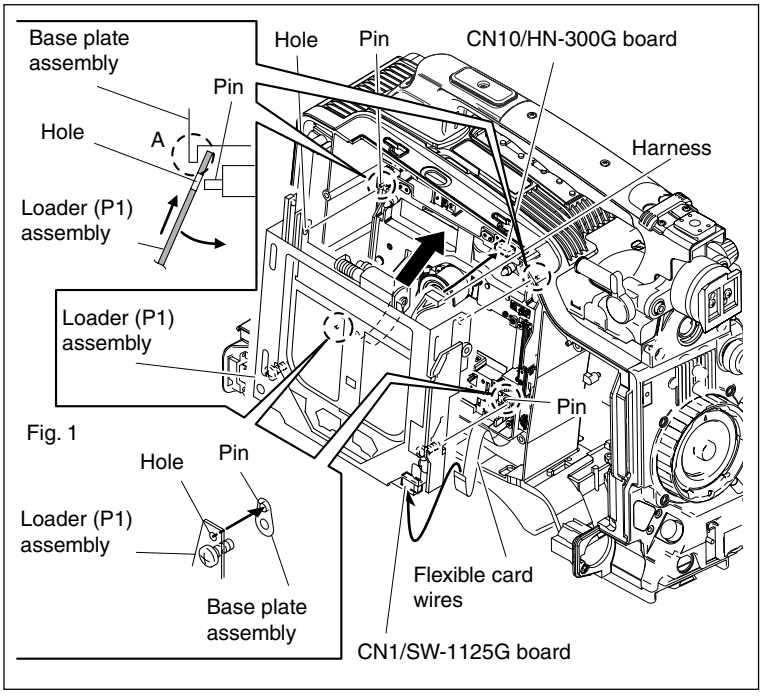


Fig. 1

7-1-2. Removing/Reinstalling Drive Assembly

Notes

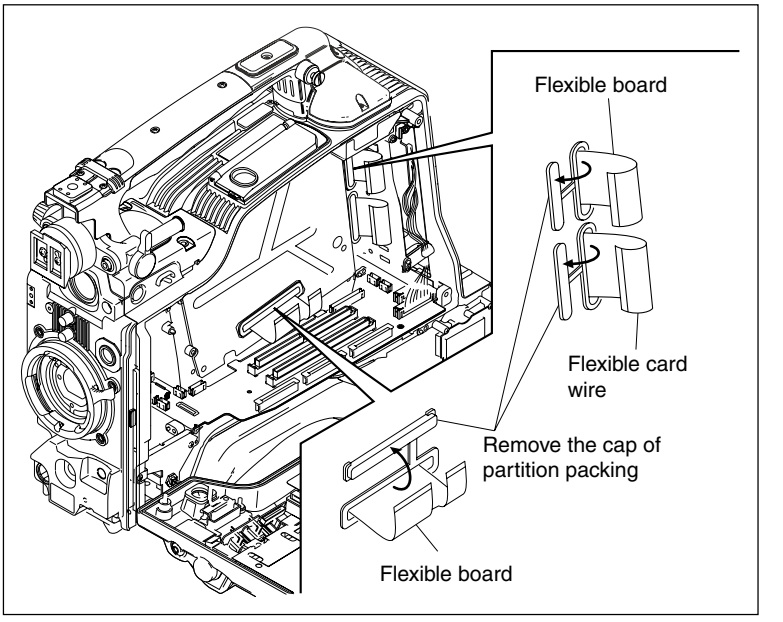
- The optical block assembly in the drive may be damaged by static electricity charged in a human body or clothes.
  Therefore, be sure to establish a ground before starting an operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

Removal

1. Open the inside panel.
   (Refer to Section 2-7-3.)
2. Remove the DCP-37 board assembly.
   (Refer to Section 7-7-4.)
3. Remove the DVP-29 board assembly.
   (Refer to Section 7-7-6.)
4. Remove the DR-550G board.
   (Refer to Section 7-7-8.)
5. Remove the caps of partition packings that secure the flexible boards and the flexible card wire.

   Notes

   - Be very careful to treat the partition packings, since they are easy to be ripped.
   - Life of flexible card wire and flexible board will be significantly shortened if they are folded. Flexible board is easily cut. Be very careful not to fold them.

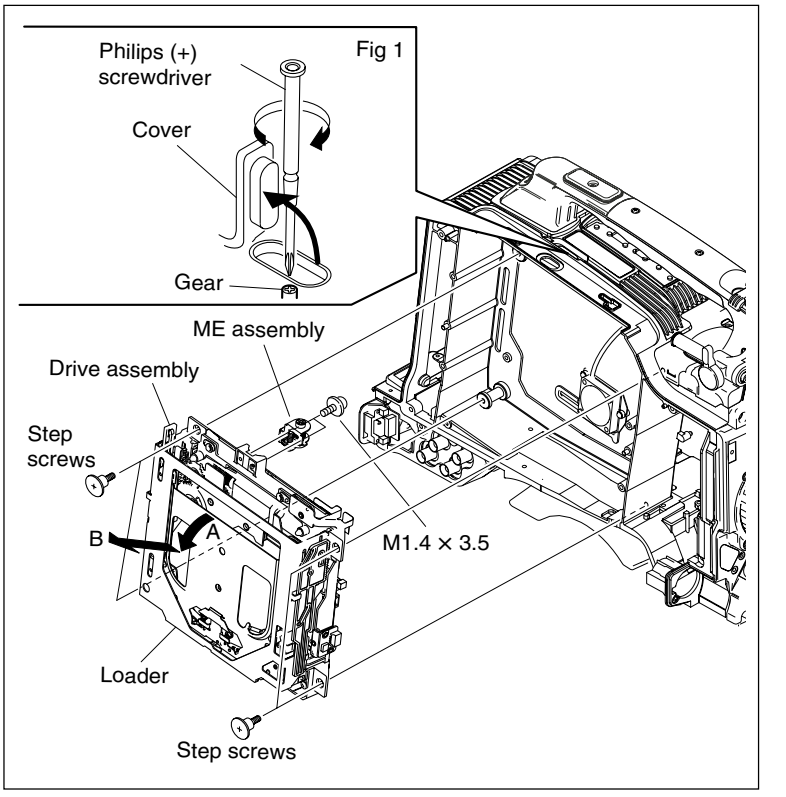


6. Remove the outside panel.
   (Refer to Section 2-7-1.)
7. Remove the SW guard assembly.
   (Refer to Section 2-7-9.)
8. Remove the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
9. Remove the four step screws, and draw out the drive assembly in the direction of the arrow “A” and then of the arrow “B”.

   Note

   The step screw cannot be removed if the loader is up.
   In this case, open the cover as shown in Fig.1 and lower the loader by rotating the gear clockwise with a philips screwdriver.

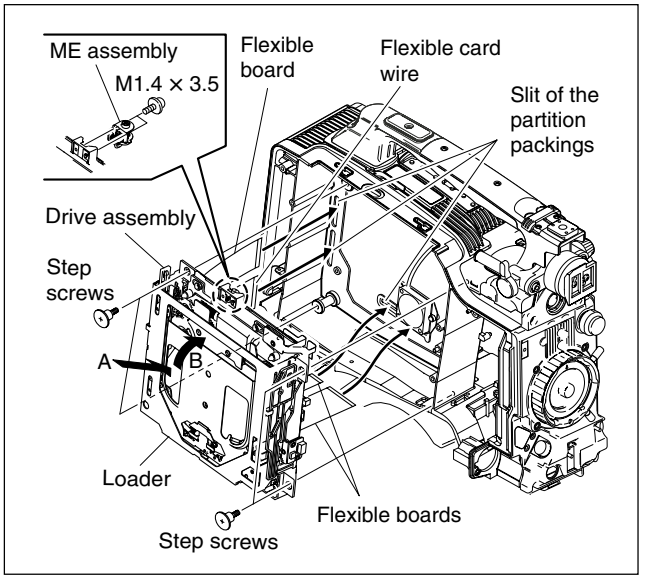
10. Remove the two screws and remove the ME assembly. (Required only when replacing the drive assembly.)



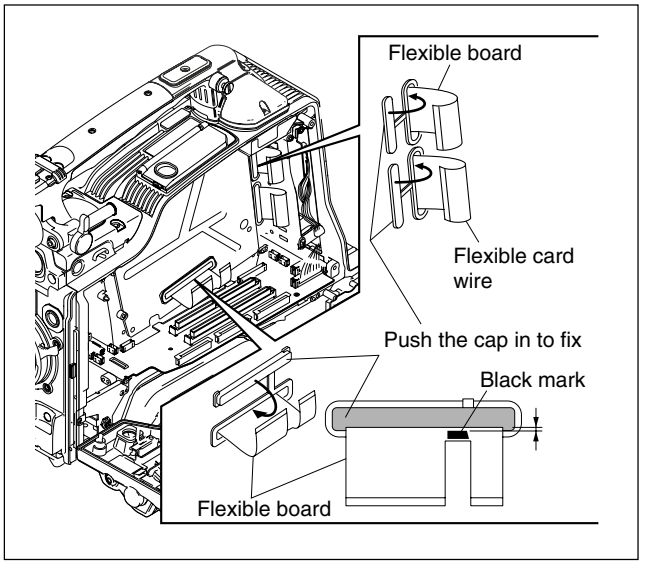
Reinstallation

1. Install the ME assembly and secure it with the two screws. (Required only when replacing the drive assembly.)
   Tightening torque:
   $10 \times 10^{-2} \pm 0.015$ N•m (1.0 ±0.15 kgf•cm)

2. Insert the flexible boards and the flexible card wire into the hole of the partition packing, and the drive assembly in the direction of the arrow "A".
   Notes
   - Be sure to insert the flexible boards and the flexible card wire securely into the hole of the partition packing.
   - Life of flexible card wire and flexible board will be significantly shortened if they are folded. Flexible board is easily cut. Be very careful not to fold them.



3. Reinstall the drive assembly in the direction of the arrow "B" and secure it with the four step screws.
   Tightening torque:
   $53 \times 10^{-2} \pm 0.01$ N•m (5.3 × 0.1 kgf•cm)
4. Reinstall the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
5. Reinstall the SW guard assembly.
   (Refer to Section 2-7-9.)
6. Reinstall the outside panel. (Refer to Section 2-7-1.)
7. Close the cap of the partition packing to secure the flexible boards and the flexible card wire.
   Notes
   - Secure the flexible board with reference to the distance from the black mark. Be sure to set the flexible board to fit into the notch on the cap of partition packing.
   - Life of flexible card wire and flexible board will be significantly shortened if they are folded. Flexible board is easily cut. Be very careful not to fold them.



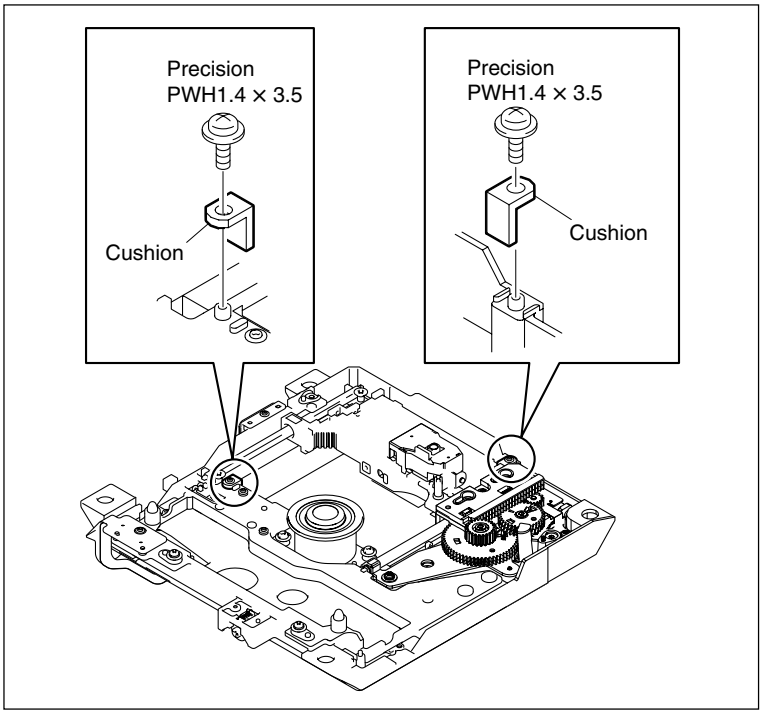
8. Reinstall the DR-550G board. (Refer to Section 7-7-8.)
9. Reinstall the DVP-29 board assembly.
   (Refer to Section 7-7-6.)
10. Reinstall the DCP-37 board assembly.
    (Refer to Section 7-7-4.)
11. Close the inside panel. (Refer to Section 2-7-3.)

7-1-3. Replacing Cushion

Notes

- The Cushions require periodic check. Refer to "6-1. Periodic Check/Replacement Parts List" for details.
- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

1. Remove the outside panel assembly.
   (Refer to Section 2-7-1.)
2. Remove the SW guard assembly.
   (Refer to Section 2-7-9.)
3. Remove the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
4. Remove the loader (P1) assembly.
   (Refer to Section 7-1-1.)
5. Remove the screw, and remove the cushion.



6. Attach a new cushion with the screw.
7. Reinstall the removed parts by reversing steps 1 to 4.

7-1-4. Replacing Cleaner (P1) Assembly

Notes

- The Cleaner (P1) assembly requires periodic check. Refer to "6-1. Periodic Check/Replacement Parts List" for details.
- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

1. Remove the outside panel assembly.
   (Refer to Section 2-7-1.)
2. Remove the SW guard assembly.
   (Refer to Section 2-7-9.)
3. Remove the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
4. Remove the loader (P1) assembly.
   (Refer to Section 7-7-1.)
5. Remove the screw, and remove the cleaner (P1) assembly.

   Note

   Be careful not to deform the loader (P1) assembly.

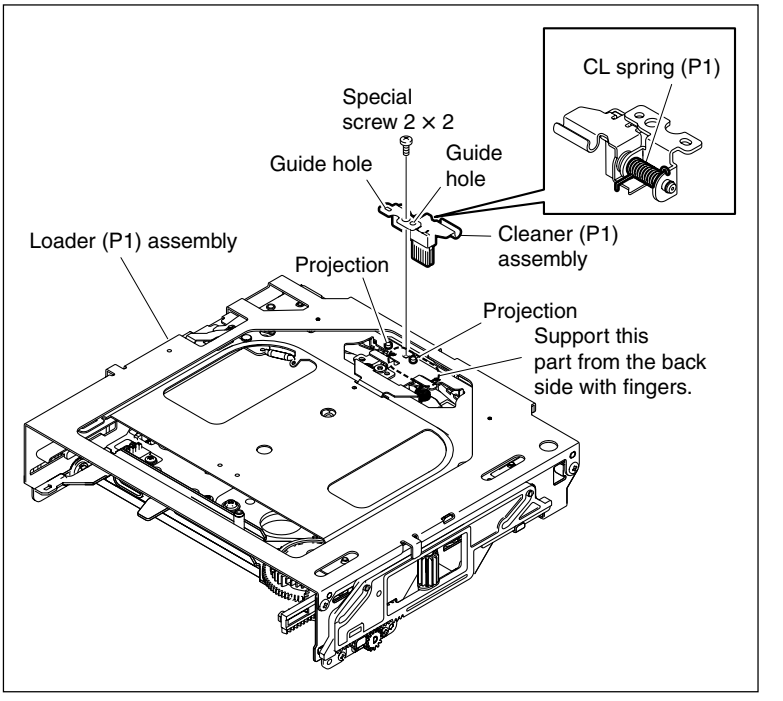
6. Slide the two guide holes in a new cleaner (P1) assembly onto the two projections on the loader (P1) assembly, and secure the cleaner (P1) assembly using one screw.

   Notes

   - When installing, take care so that the CL spring (P1) does not come off.
   - When tightening the screw, support the loader (P1) assembly with fingers not to deform it.

   Tightening torque:
   $20 \times 10^{-2} \pm 0.01$ N•m {2.0 ±0.1 kgf•cm}

7. Reinstall the removed parts by reversing steps 1 to 4.



7-1-5. Replacing Seek Motor (P10) Assembly

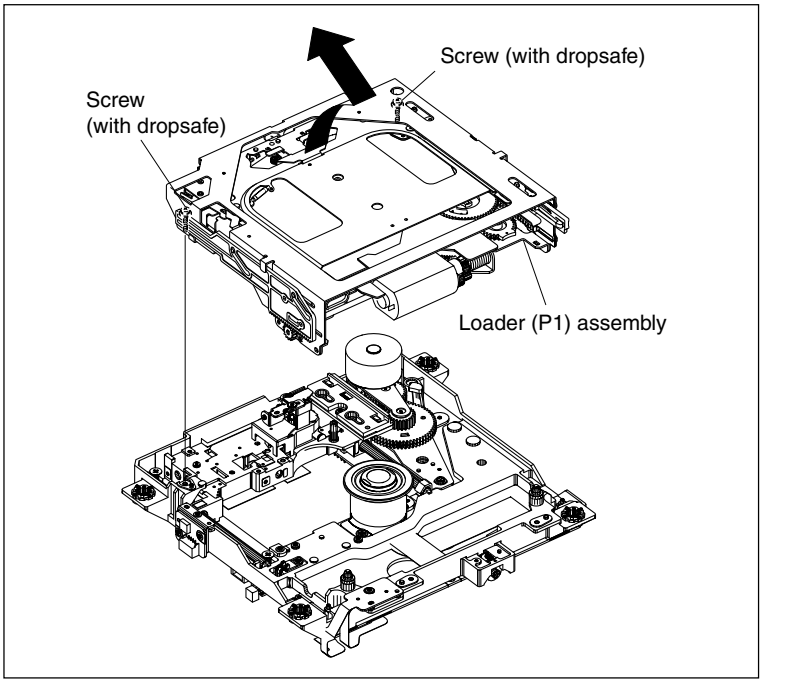
Notes

- The seek motor (P10) assembly requires periodic replacement. Refer to "6-1. Periodic Check/Replacement Parts List" for details.
- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

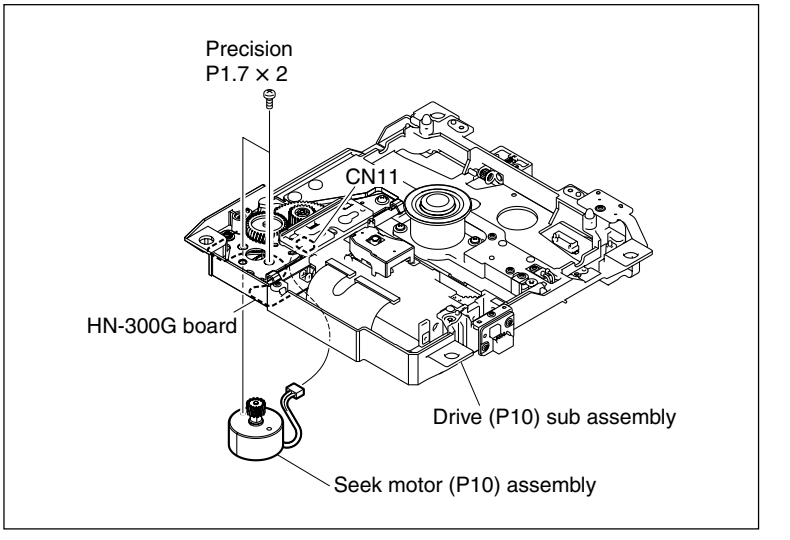
1. Remove the drive assembly.
   (Refer to Section 7-1-2.)
2. Fully loosen the two screws fixing the loader (P1) assembly and remove it in the direction of the arrow.

   Note

   These screws have a drop-safe so that the screws cannot be removed from the loader (P1) assembly.



3. Disconnect the harness from the connector CN11 on the HN-300G board.
4. Remove the two screws, and remove the seek motor (P10) assembly.



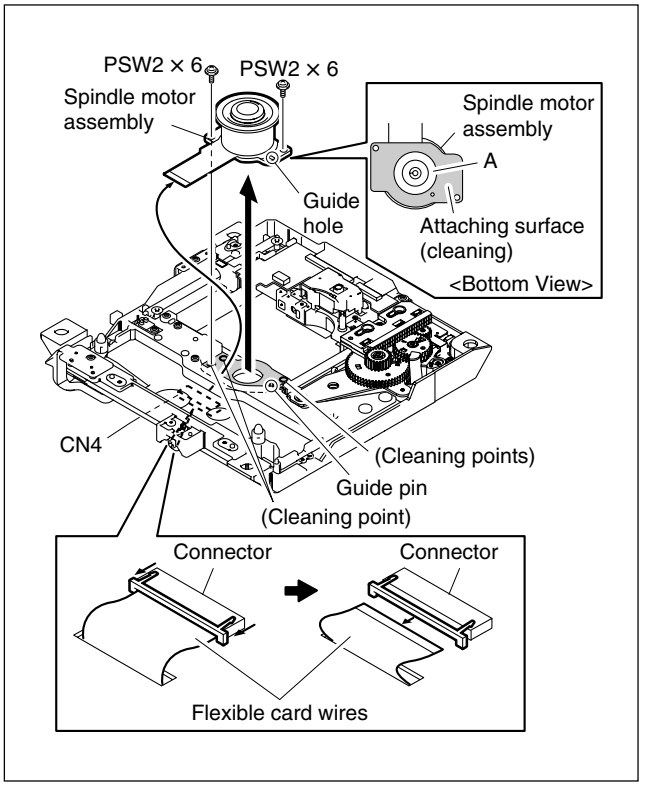
5. Attach a new seek motor (P10) assembly onto the adjustment plate using two screws so as to align the two holes with the shafts of the adjustment plate.
6. Reinstall the removed parts by reversing steps 1 to 3.

7-1-6. Replacing Spindle Motor

Notes

- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 1-20.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

1. Remove the drive assembly. (Refer to Section 7-1-2.)
2. Remove the loader (P1) assembly.
   (Refer to Section 7-1-5 step 2.)
3. Unlock the connector CN4 on the HN-300G board, and disconnect the flexible card wire.
   Note
   Be very careful not to fold the flexible card wire. The life of the flexible card wire will be significantly shortened if it is folded.
4. Remove the two screws, and remove the spindle motor assembly.
5. Clean the attaching surfaces of a new spindle motor and of the base plate using a cleaning cloth with cleaning liquid soaked.
6. Put the flexible card wire of the spindle motor through the rectangular hole of the base plate.
   Note
   Be very careful not to fold the flexible card wire. The life of the flexible card wire will be significantly shortened if it is folded.
7. Slide the guide pin of the base plate into the hole in the spindle motor, and slide the portion "A" of the spindle motor into the center hole in the base plate.
8. Secure the spindle motor with two screws.
   Tightening torque:
   $20 \times 10^{-2} \pm 0.01$ N•m {2.0 ±0.1 kgf•cm}
9. Reinstall the removed parts by reversing steps 1 to 3.



Adjustment After Replacement

1. After replacing the spindle motor, check the skew to check whether the specification is met.
   (Refer to Section 8-1-4.)
   If not, adjust the skew. (Refer to Section 8-1-4.)
2. Check the RD to check whether the specification is met. (Refer to Section 8-1-5.)
   If not, adjust the RD. (Refer to Section 8-1-5.)

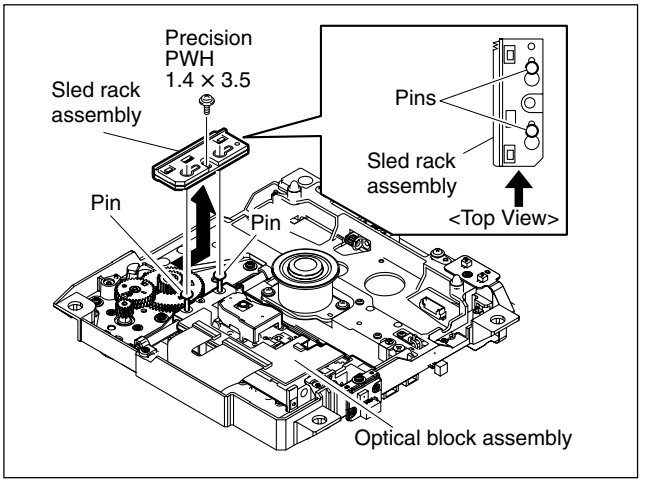
7-1-7. Removing/Reattaching Sled Rack Assembly

Notes

- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

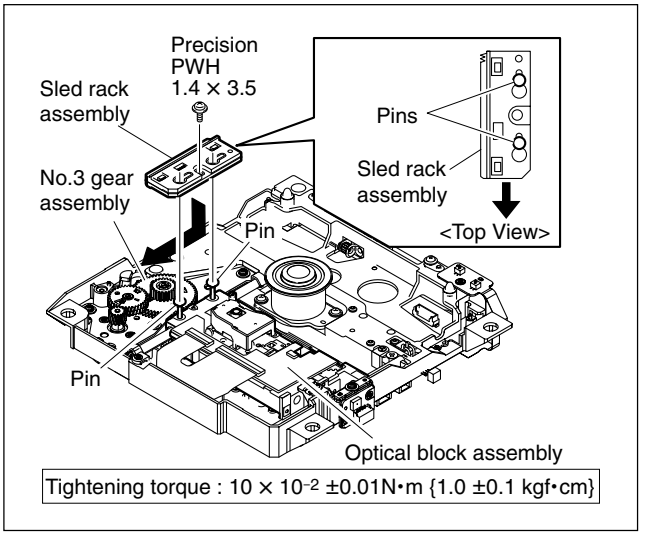
Removal

1. Remove the outside panel assembly. (Refer to Section 2-7-1.)
2 Remove the SW guard assembly. (Refer to Section 2-7-9.)
3. Remove the laser caution sheet. (Refer to Section 2-6-2 step 2)
4. Remove the loader (P1) assembly. (Refer to Section 7-1-1.)
5. Move the optical block assembly to the spindle motor side.
6. Remove the screw from the sled rack assembly.
7. Move the sled rack assembly in the direction of the arrow to release it from the two pins of the optical block assembly, and remove it.



Reinstallation

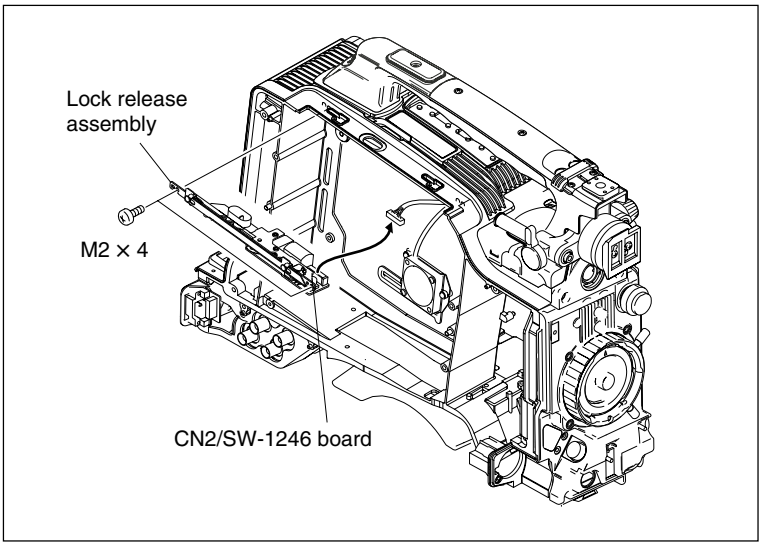
1. Holding the optical block assembly by hand, slide the sled rack assembly onto the two pins of the optical block assembly, and fit the upper and lower gears to engage the sled rack assembly with the No.3 gear assembly in the gear block.
2. Holding the sled rack assembly by hand, move the optical block assembly to align its screw hole to the hole of in the sled rack assembly.
3. Reinstall the sled rack assembly by reversing steps 1 to 6 of removal.



7-1-8. Removing/Reinstalling Lock Release Assembly

Removal

1. Remove the drive assembly.
   (Refer to Section 7-1-2.)
2. Remove the two screws and remove the lock release assembly.
3. Disconnect the harness from the connector (CN2) on the SW-1246 board.



Reinstallation

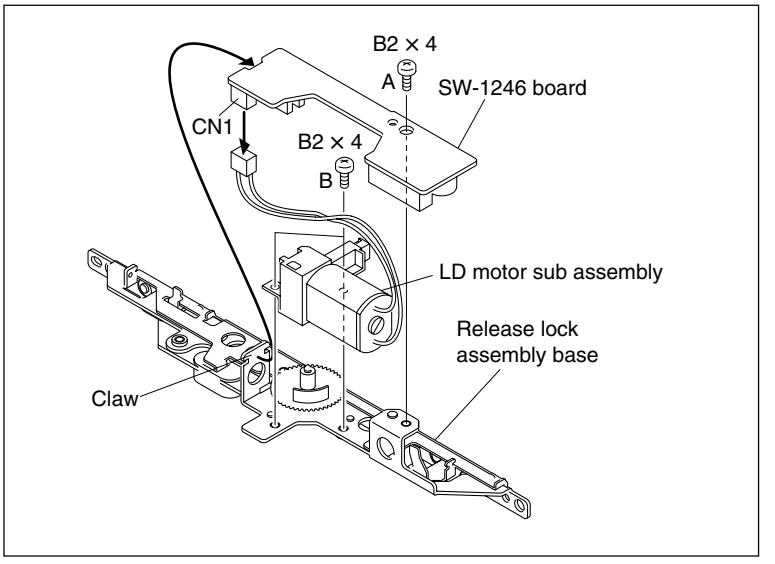
Reinstall the lock release assembly by reversing the steps of removal.

Tightening torque:
Removal step 2, Lock release assembly :
$20 \times 10^{-2} \pm 0.01$ N•m (2.0 ±0.1 kgf•cm)

7-1-9. Removing/Reinstalling LD Motor

Removal

1. Remove the drive assembly.
   (Refer to Section 7-1-2.)
2. Remove the lock release assembly.
   (Refer to Section 7-1-8.)
3. Disconnect the connector (CN1) on the SW-1246 board.
4. Remove the screw “A” and disengage the SW-1246 board from the claws of the release lock assembly base.
5. Remove the two screws “B” and remove the LD motor sub assembly.



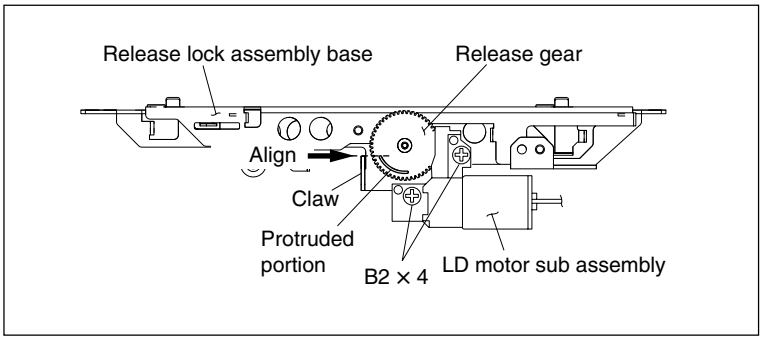
Reinstallation

Reinstall the LD motor by reversing the steps of removal.

Notes

- Align the protruded portion of the release gear with the claw on the release lock assembly base to install the LD motor sub assembly.

- Tightening torque:
  Removal step 4, SW-1246 board:
  $15 \times 10^{-2} \pm 0.01$ N•m (1.5 ±0.1 kgf•cm)
  Removal step 5, LD motor sub assembly:
  $15 \times 10^{-2} \pm 0.01$ N•m (1.5 ±0.1 kgf•cm)



7-1-10. Replacing Loading Motor (P1) Assembly

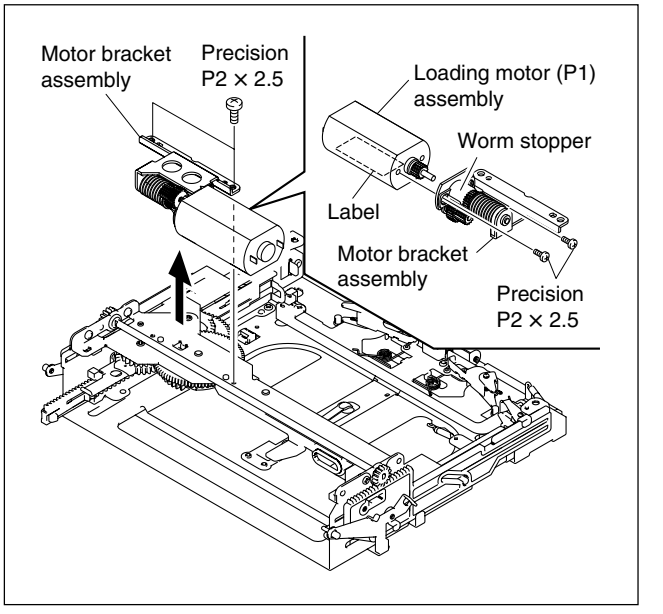
Notes

- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the SW guard assembly. (Refer to Section 2-7-9.)
3. Remove the laser caution sheet. (Refer to Section 2-6-2 step 2)
4. Remove the loader (P1) assembly. (Refer to Section 7-1-1.)
5. Remove the SE-709 board. (Refer to Section 7-2-2.)
6. Remove the two screws securing the motor bracket assembly from the loader (P1) assembly.
7. Remove the two screws, and remove the loading motor (P1) assembly from the motor bracket assembly.

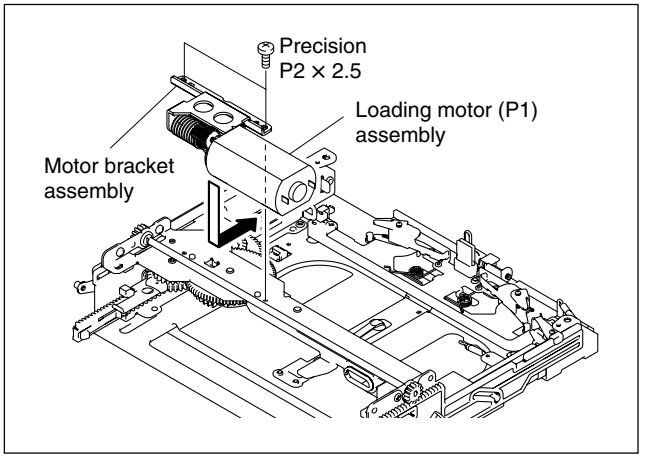
   Note

   Be careful for the worm stopper not to come off.



Reinstallation

1. Reattach the loading motor (P1) assembly in the motor bracket assembly using two screws.
   Tightening torgue :
   $10 \times 10^{-2} \pm 0.01$ N•m {1.0 ± 0.1 kgf•cm}
2. Reattach the motor bracket assembly in the direction of the arrow using two screws. The motor bracket assembly should have no play.
3. Reinstall the removed parts by reversing steps 1 to 5. of removal.



7-1-11. Replacing Optical Block Assembly

Notes

- The optical block assembly requires periodic replacement. Refer to “6-1. Periodic Check/Replacement Parts List” for details.
- To prevent the possibility of damage to the optical block assembly in the drive by static electricity charged in a human body or clothes, be sure to establish a ground before cleaning the drive assembly. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a metallic material such as a screwdriver, reflection block and so on hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

Fixtures

- Cleaning liquid
- Cleaning cloth
- Oil (LX-206)

Removal

1. Remove the outside panel.
   (Refer to Section 2-7-1.)
2. Remove the SW guard assembly.
   (Refer to Section 2-7-9.)
3. Remove the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
4. Remove the loader (P1) assembly.
   (Refer to Section 7-1-1.)
5. Remove the sled rack assembly.
   (Refer to Section 7-1-7.)
6. Unlock the two connectors on the optical block assembly to disconnect the flexible card wires.

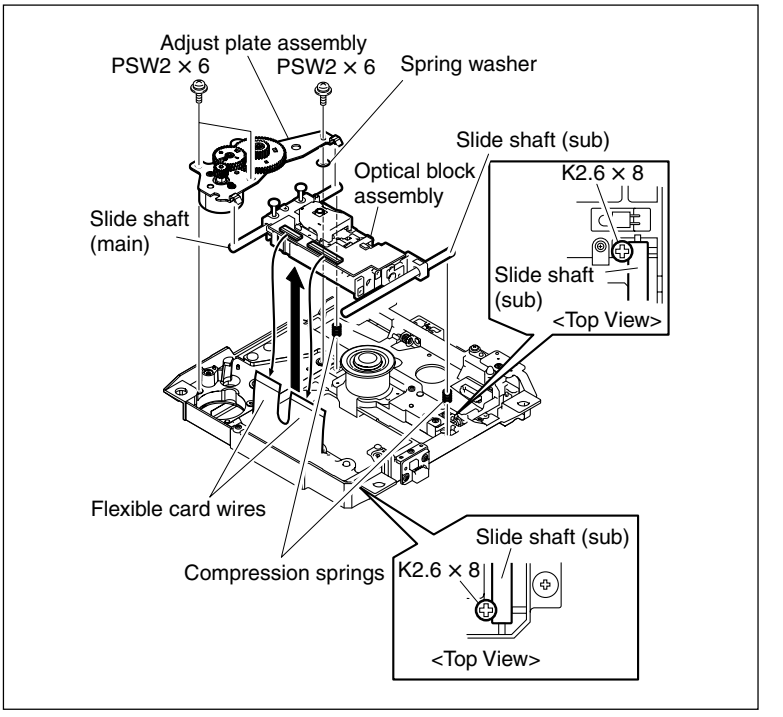
   Note

   Be very careful not to fold the flexible card wire. The life of the flexible card wire will be significantly shortened if it is folded.

7. Remove the three screws (PSW2 × 6) from the adjust plate assembly, and release the retainer of the slide shaft (main) on the optical block assembly.
8. Remove the two screws (K2.6 × 8) from the slide shaft (sub).
9. Remove the optical block assembly together with the slide shaft from the unit.

   Note

   When removing the optical block assembly, confirm that the two compression springs and the spring washer are attached to the positions shown in the figure on the base plate. Be careful not to lose any or drop any in the unit.



Cleaning

1. Clean the drive (P10) sub assembly.
   (Refer to Section 6-2-2.)

Replacement

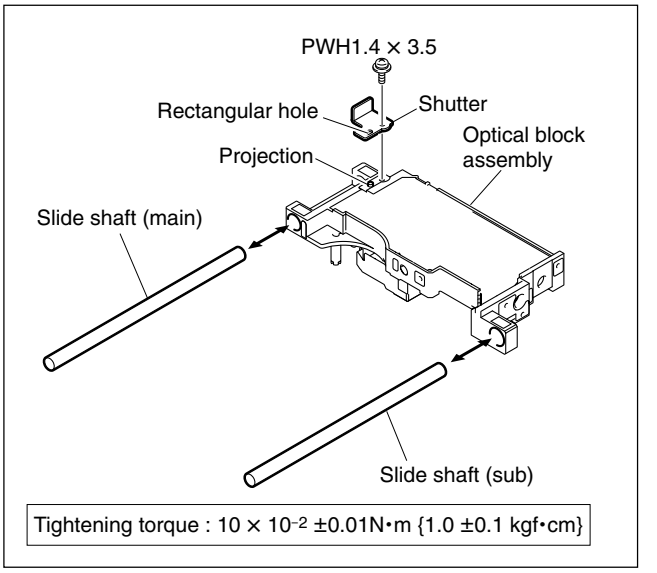
1. Turn down the removed optical block assembly. Remove the screw to remove the shutter shown in the figure.
2. Attach the shutter removed in step 1 to a new optical block assembly using one screw.

   Notes

   - Attach the shutter to the new optical block assembly without unpacking the assembly from the packing material, following the installation guide supplied with the assembly.
   - Slide the projection of the optical block assembly into the rectangular hole of the shutter.

   Tightening torque:
   $10 \times 10^{-2} \pm 0.01$ N•m {1.0 ±0.1 kgf•cm}

3. Remove the two slide shafts from the removed optical block assembly, and clean them using the cleaning cloth with the cleaning liquid soaked.
4. Put the two slide shafts through the new optical block assembly.



Reinstallation

1. Attach the optical block assembly on the base plate, being careful about the following:
   - Place the slide shaft (main) and the slide shaft (sub) onto the two compression springs.
   - Align the edges of the shaft (sub) with the two projections of the base plate shown in the figure.
   - Press the slide shaft (main) and the slide shaft (sub) in the direction shown in the figure.
2. Tighten the screws (a), until just before the following tightening torque is applied, and then loosen the screw (a) 3/4 turns.

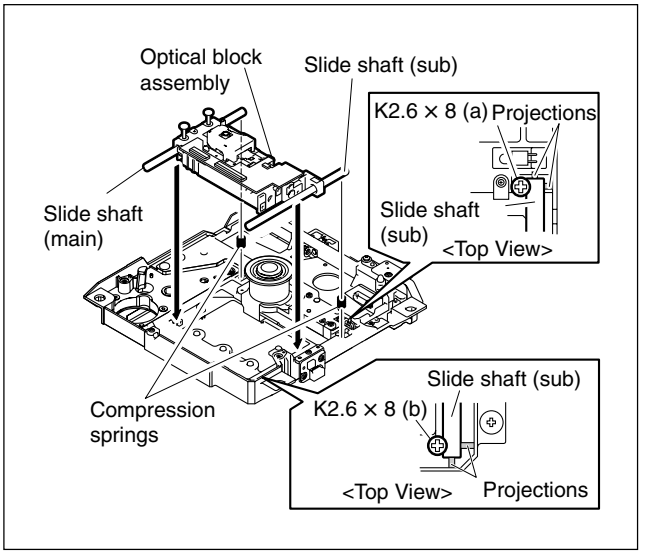
   Tightening torque:
   $30 \times 10^{-2} \pm 0.03$ N•m {3 ±0.3 kgf•cm}

   Note

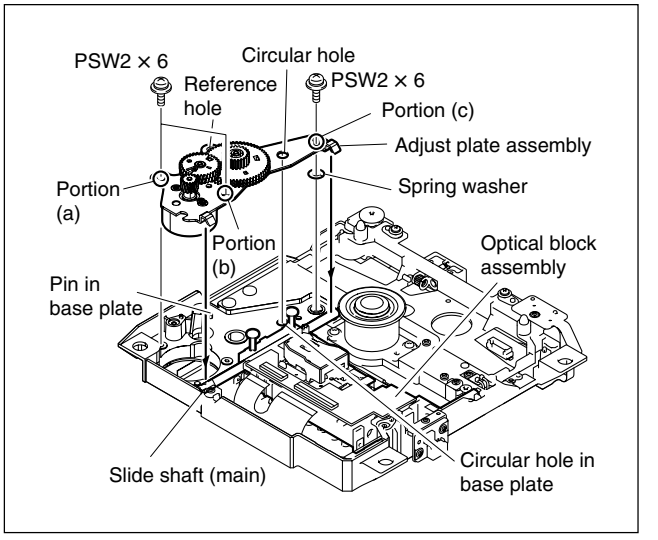
   "Just before the torque is applied" means the state in which the compression springs are compressed.

3. Tighten further the screw (b) with the following specified torque.

   Tightening torque:
   $30 \times 10^{-2} \pm 0.03$ N•m {3 ±0.3 kgf•cm}



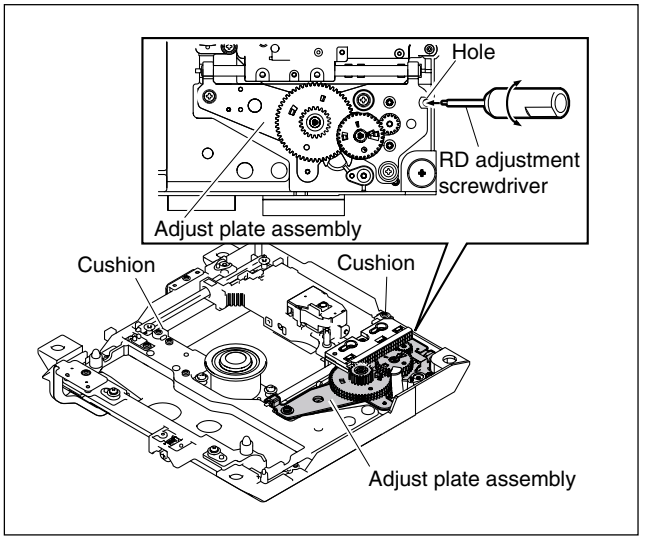
4. Place the adjust plate assembly onto the slide shaft (main).
5. Fit the reference hole of the adjust plate assembly to the pin on the base plate, and adjust the position of the plate assembly so that its circular hole fits the circular hole of the base plate.
6. Secure the adjust plate assembly by tightening two screws through the portion (a) and (b) of the assembly until the spring washer is compressed a little.
7. Tighten a screw through the portion (c) until just before the following tightening torque is applied, and then loosen it one and a half turns.
   Tightening torque:
   $1 \times 10^{-2} \pm 0.001$ N•m {100 ± 10 gf•cm}



8. Install the sled rack assembly.
   (Refer to Section 7-1-7.)
9. Slide the sled rack assembly with fingers and check the following.
   Do not hold any part other than the sled rack.
   - The sled rack assembly moves smoothly until it reaches the cushion.
   - The gears turn smoothly.

   Note

   If the assembly does not move smoothly, adjust the position of the adjust plate assembly using an RD adjustment screwdriver.

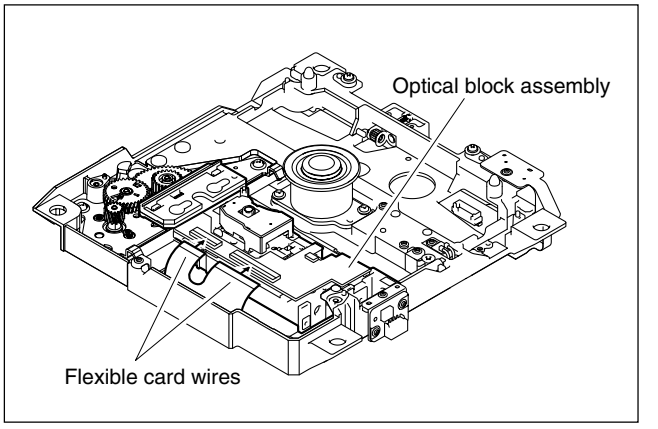


10. Insert fully the flexible card wires to the two connectors on the optical block assembly, and securely lock them.

    Notes

    - If the connections are not sufficient, the unit will not function correctly.
    - Be careful not to overstress the optical block assembly.

11. Reinstall the removed parts by reversing steps 1 to 4 of removal.
12. Perform “Adjustments After Replacing Optical Block Assembly”. (Refer to Section 8-1-3.)



7-1-12. Replacing No.2/No.3 Gear Assemblies

Notes

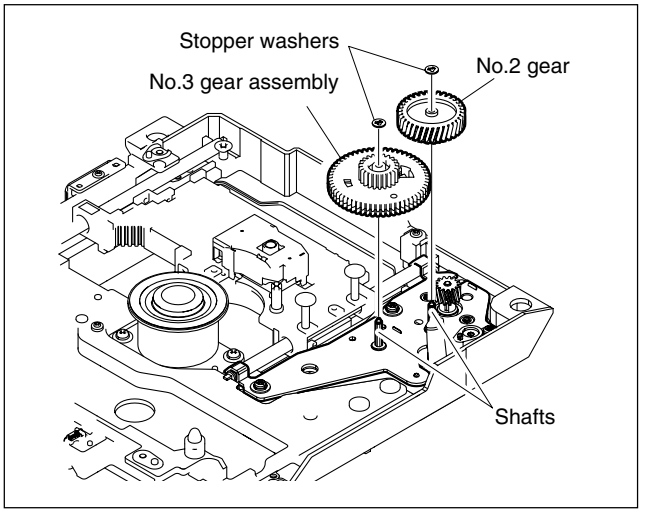
- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

Fixtures

Parallel pin (2 × 20) : 1

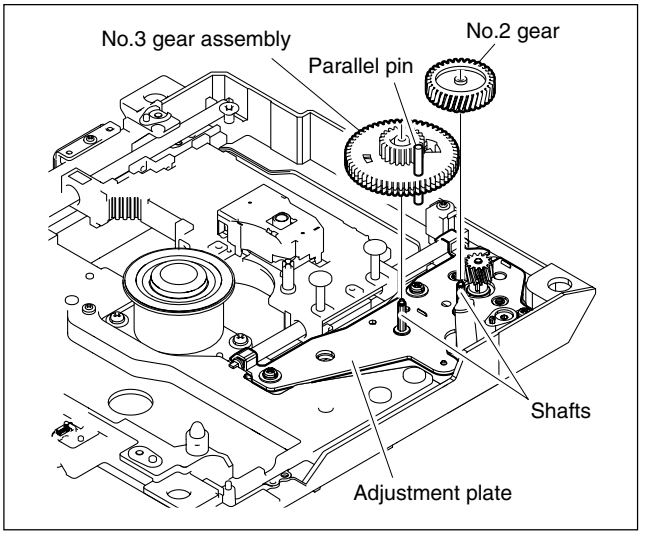
Removal

1. Remove the outside panel.
   (Refer to Section 2-7-1.)
2. Remove the SW guard assembly.
   (Refer to Section 2-7-9.)
3. Remove the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
4. Remove the loader (P1) assembly.
   (Refer to Section 7-1-1.)
5. Remove the sled rack assembly.
   (Refer to Section 7-1-7.)
6. Remove the stopper washer, and remove the No.2 gear.
7. Remove the stopper washer, and remove the No.3 gear assembly.

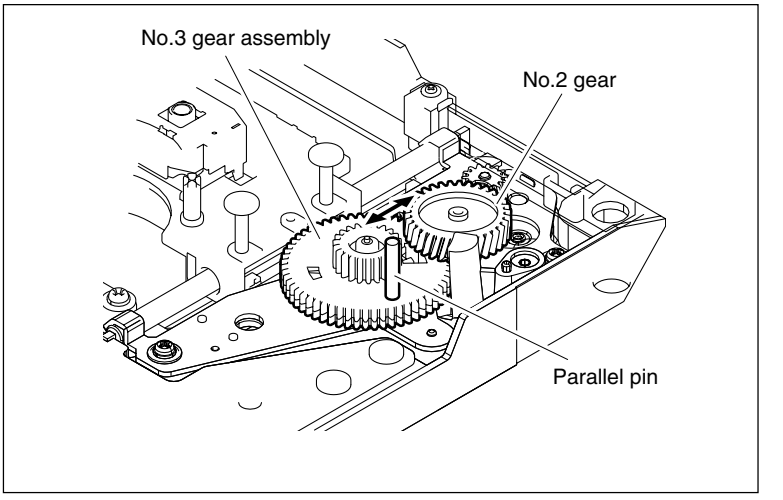


Phase Adjustment of Gears

1. Put the parallel pin through the holes in the two gears of a new No.3 gear assembly.
2. Attach the No.3 gear assembly to the shaft on the adjustment plate.

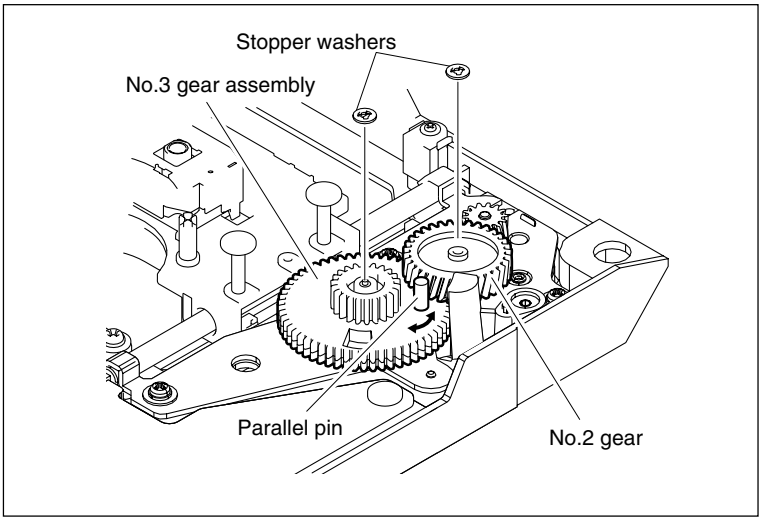


3. If the gears are not smoothly engaged, move the parallel pin putting through the No.3 gear assembly in the direction of the arrow. This engages the No.2 gear with the No.3 gear assembly.



4. Reattach the two stopper washers to the shafts of the No.2 gear and No.3 gear assembly.

5. Remove the parallel pin.



Reinstallation

1. Reinstall the removed parts by reversing steps 1 to 5 of removal.

7-2. Removing/Reinstalling Mounted Circuit Board of the Optical Drive

7-2-1. HN-300G Board

Notes

- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.
- Be careful so that the optical block assembly does not touch your workbench in removing/reattaching the HN-300G board to avoid scratches on the lens or damage to the actuator.

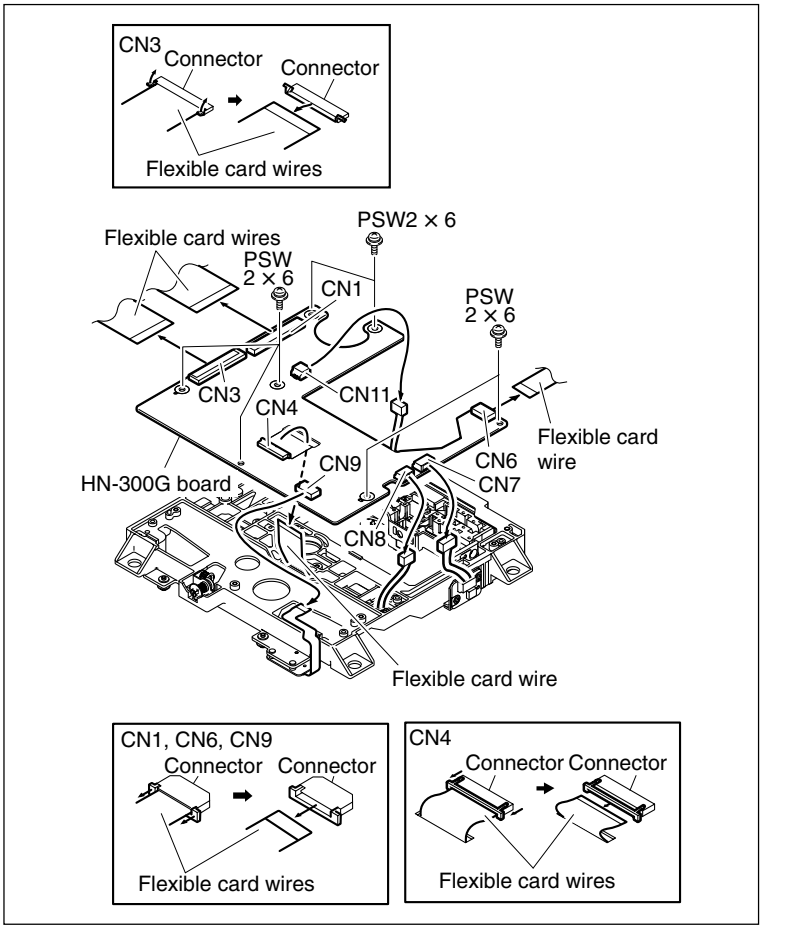
Removal

1. Remove the drive assembly.
   (Refer to Section 7-1-2.)
2. Remove the loader (P1) assembly.
   (Refer to Section 7-1-5 step 2.)
3. Unlock the connectors CN6, CN9, CN4, CN3, and CN1 on the HN-300G board, and disconnect the flexible card wires from them. Also, disconnect the harnesses from the connectors CN11, CN7, and CN8.

   Note

   Be very careful not to fold the flexible card wire. The life of the flexible card wire will be significantly shortened if it is folded.

4. Remove the seven screws, and remove the HN-300G board.



Reinstallation

1. Reinstall the HN-300G board by reversing steps 1 to 4 of removal.
   Tightening torque:
   $20 \times 10^{-2} \pm 0.01$ N•m {2.0 ± 0.1 kgf•cm}

7-2-2. SE-709 Board

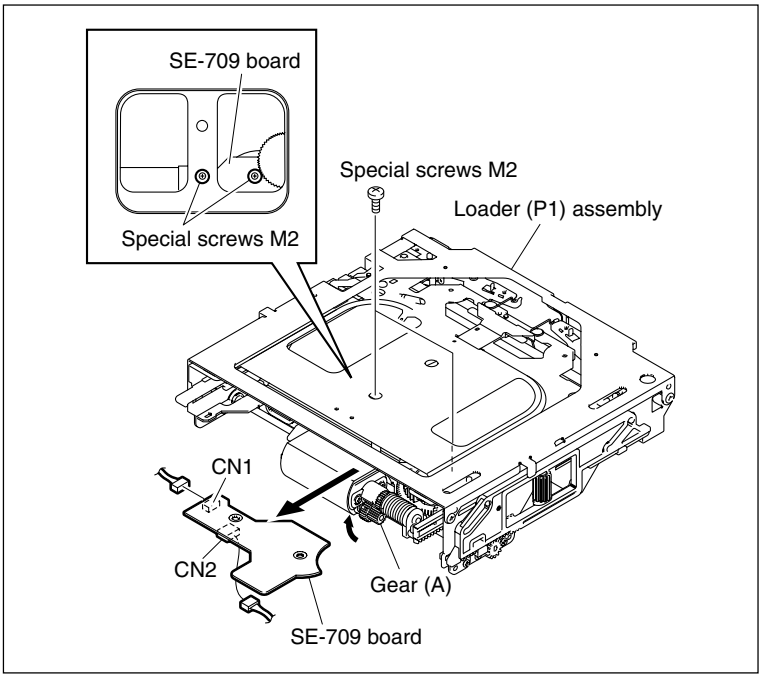
Removal

1. Remove the outside panel.
   (Refer to Section 2-7-1.)
2. Remove the SW guard assembly.
   (Refer to Section 2-7-9.)
3. Remove the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
4. Remove the loader (P1) assembly.
   (Refer to Section 7-1-1.)
5. If the cartridge has not been ejected normally, turn the gear (A) in the direction of the arrow to move the screw of the SE-709 board under the hole in the loader (P1) assembly.

   Note

   Skip this step when the cartridge has been ejected normally.

6. Remove the two screws, disconnect the harness from the connector CN2, and remove the SE-709 board from the loader (P1) assembly.
7. Disconnect the harness from the connector CN1 on the SE-709 board.



Reinstallation

1. Reinstall the SE-709 board by reversing steps 1 to 7 of removal.
   Tightening torque:
   $20 \times 10^{-2} \pm 0.01$ N•m {2.0 ±0.1 kgf•cm}

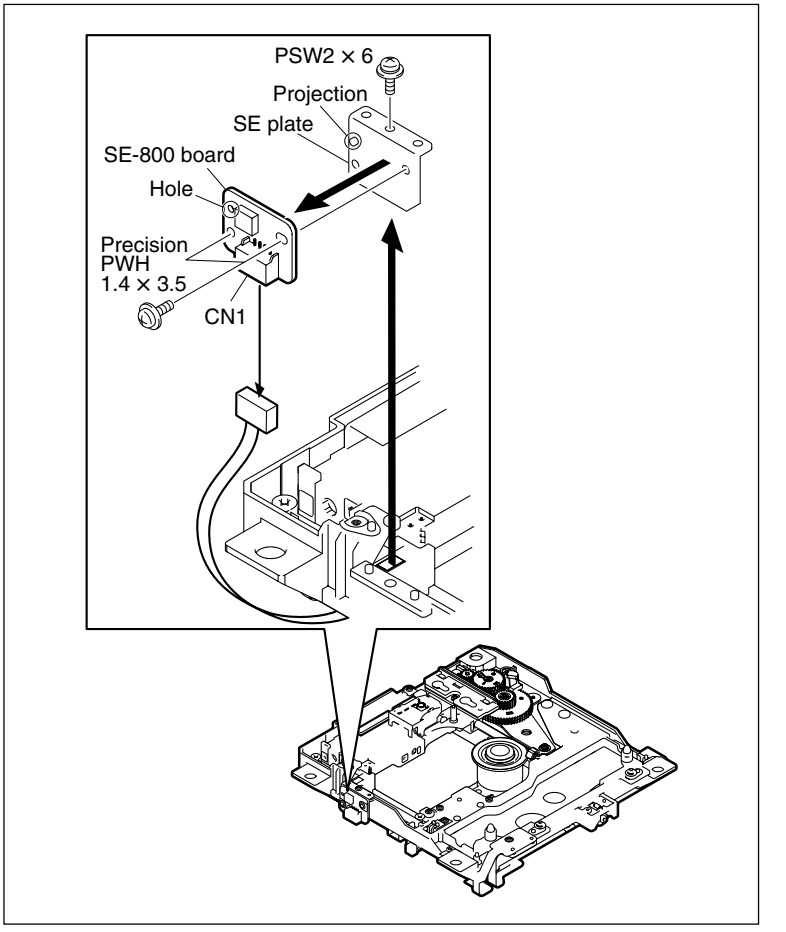
7-2-3. SE-800 Board

Notes

- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

Removal

1. Remove the outside panel.
   (Refer to Section 2-7-1.)
2. Remove the SW guard assembly.
   (Refer to Section 2-7-9.)
3. Remove the laser caution sheet.
   (Refer to Section 2-6-2 step 2)
4. Remove the loader (P1) assembly.
   (Refer to Section 7-1-1.)
5. Remove the upper screw (PSW2 × 6), and remove the SE plate together with the SE-800 board.
6. Disconnect the harness from the connector CN1 on the SE-800 board.
7. Remove the two screws (PWH1.4 × 3.5), and remove the SE-800 board from the SE plate.



Reinstallation

1. Reinstall the SE-800 board by reversing steps 1 to 7 of removal.

   Note

   - Slide the projection on the SE plate into the hole of the SE-800 board.

   Tightening torques :
   PWH1.4 × 3.5:
   $10 \times 10^{-2} \pm 0.01$ N•m {1.0 ±0.1 kgf•cm}
   PSW2 × 6:
   $20 \times 10^{-2} \pm 0.01$ N•m {2.0 ±0.1 kgf•cm}

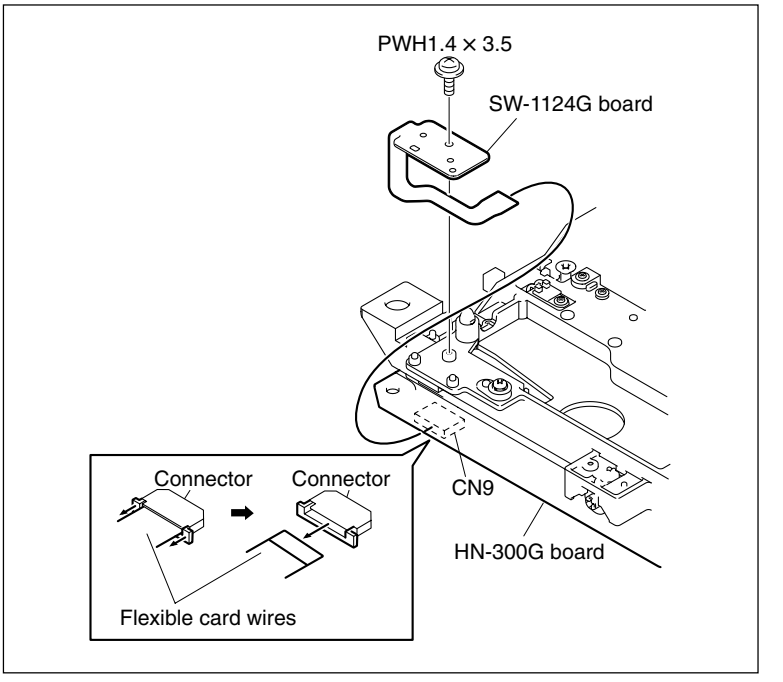
7-2-4. SW-1124G Board

Notes

- To prevent the possibility of damage to the optical block assembly in the drive assembly by static electricity charged in a human body or clothes, be sure to establish a ground before starting the service operation. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a screwdriver hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

Removal

1. Remove the drive assembly.
   (Refer to Section 7-1-2.)
2. Remove the loader (P1) assembly.
   (Refer to Section 7-1-5 step 2.)
3. Unlock the connector CN9 on the HN-300G board, and disconnect the flexible card wire.
   Note
   Be very careful not to fold the flexible card wire. The life of the flexible card wire will be significantly shortened if it is folded.
4. Remove the screw, and remove the SW-1124G board.

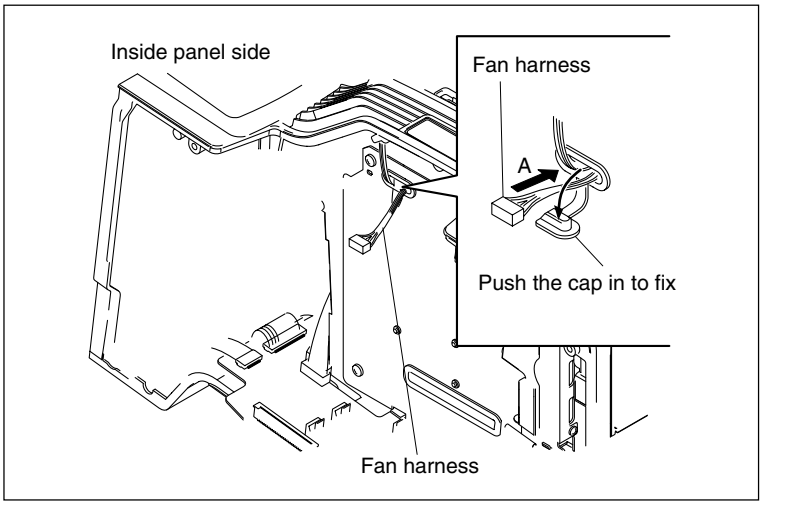


Reattaching

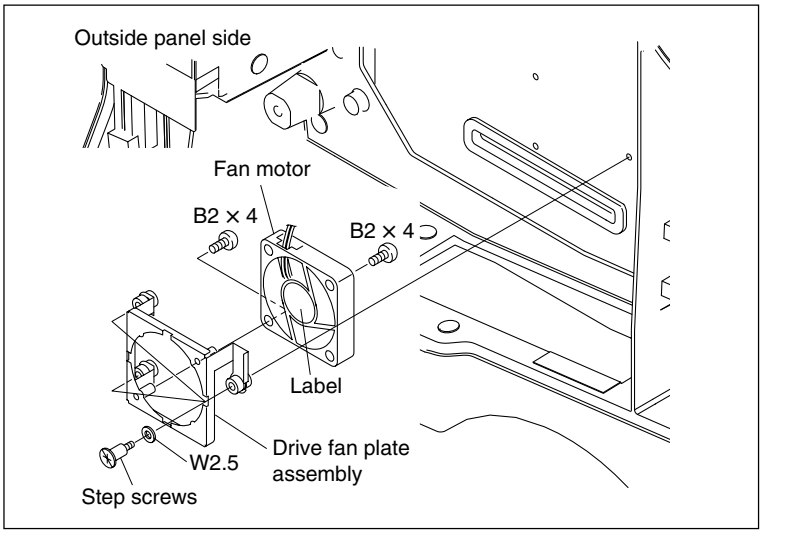
1. Reinstall the SW-1124G board by reversing steps 1 to 4 of removal.
   Tightening torque:
   $10 \times 10^{-2} \pm 0.01$ N•m {1.0 ±0.1 kgf•cm}

7-3. Removing/Reinstalling Fan Motor (for Drive)

1. Open the inside panel assembly.
   (Refer to Section 2-7-3.)
2. Remove the DCP-37 board assembly.
   (Refer to Section 7-7-4.)
3. Remove the DVP-29 board assembly.
   (Refer to Section 7-7-6.)
4. Remove the DR-550G board.
   (Refer to Section 7-7-8.)
5. Remove the outside panel assembly.
   (Refer to Section 2-7-1.)
6. Remove the SW guard assembly.
   (Refer to Section 2-7-8.)
7. Remove the drive assembly.
   (Refer to Section 7-1-2.)
8. Open the cap of partition packing that secures the harness of the fan motor.
9. Push out the fan harness in the direction of the arrow "A" (to the outside panel side).



10. Remove the three step screws and three washers, and remove the drive fan plate assembly.
11. Remove the two screws and remove the fan motor.



Notes on installation

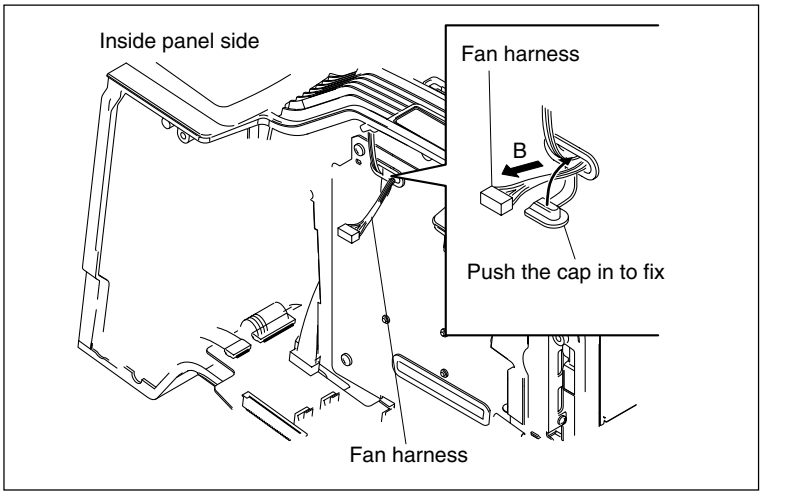
- Reinstall the fan motor with its label facing outward.
- Draw the slack of the fan harness in the direction of the arrow "B" and firmly close the cap of the partition packing.

Note

Tightening torque:

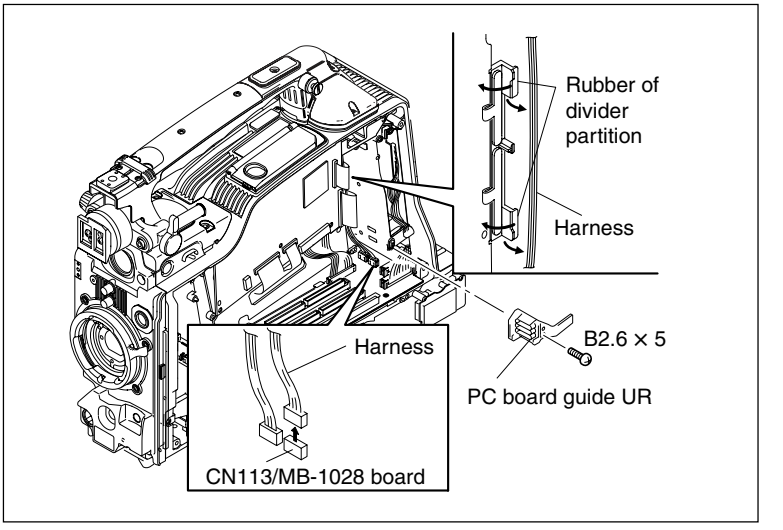
Removal step 10, Drive fan plate assembly (step screw): $20 \times 10^{-2} \pm 0.01$ N•m (2.0 ±0.1 kgf•cm)

Removal step 11, Fan motor (B2 screw): $20 \times 10^{-2} \pm 0.01$ N•m (2.0 ±0.1 kgf•cm)



7-4. Removing/Reinstalling Fan Motor (Top)

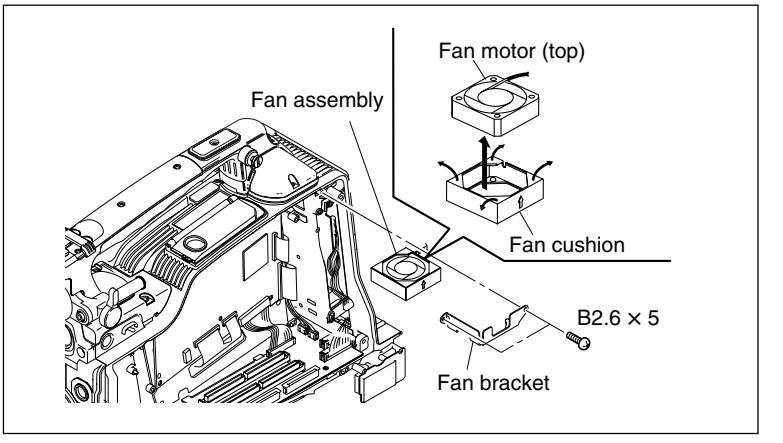
1. Open the inside panel.
   (Refer to Section 2-7-1.)
2. Remove the DCP-37 board assembly.
   (Refer to Section 7-7-4.)
3. Remove the DVP-29 board assembly.
   (Refer to Section 7-7-6.)
4. Remove the screw and remove the PC board guide UR.
5. Disconnect the harness from the connector (CN113) on the MB-1028 board and remove the harness from the divider partition.



6. Remove the two screws and remove the fan bracket and the fan assembly.
7. Tilt the four corners of the cushion outward to remove the fan motor (top).

Note

The cushion (FAN) is made of rubber and soft enough to remove the fan motor easily.

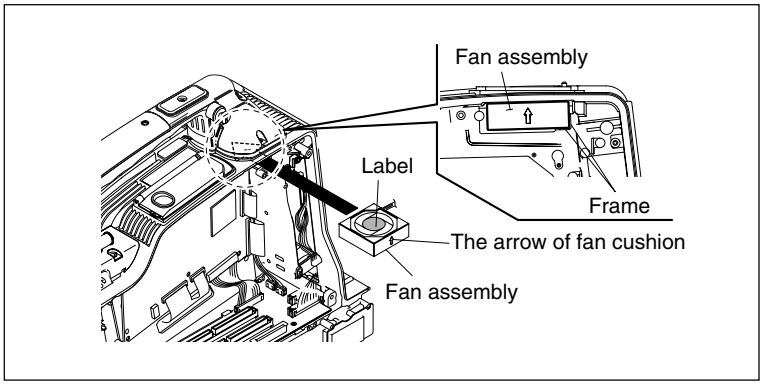


Notes on installation:

- Reinstall the fan motor with its label facing upward to the cushion (FAN).
- Insert the fan assembly with the upward arrow on the cushion (FAN) facing outward into the frame to its very end.

Note

When reinstalling, be sure that the cushion (FAN) is not flipped over or sagged.



Note

Tightening torque:

Removal step 4, PC board guide UR (B2.6 screw): $53 \times 10^{-2} \pm 0.01$ N•m (5.3 ±0.1 kgf•cm)

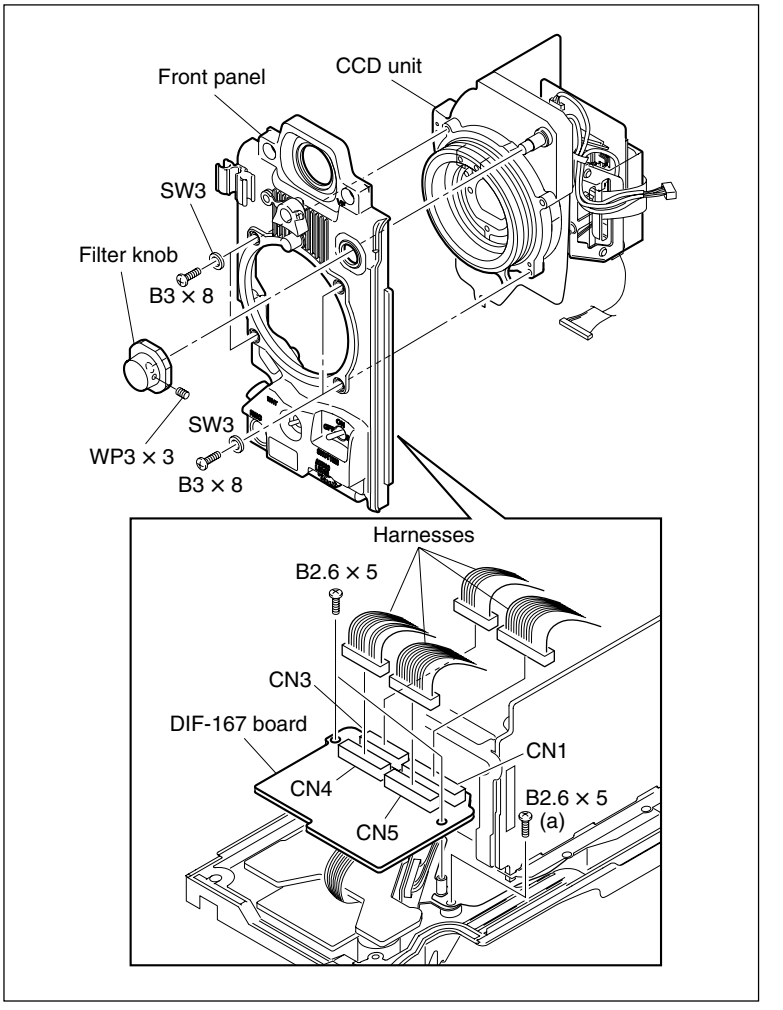
Removal step 6, Fan bracket, fan assembly (B2.6 screw): $53 \times 10^{-2} \pm 0.01$ N•m (5.3 ±0.1 kgf•cm)

7-5. Removal/Installation of CCD Unit

• Tool: L-wrench (across flat: 1.5 mm)

7-5-1. Removing CCD Unit

1. Remove the outside panel assembly. (Refer to Section 2-7-1.)
2. Remove the inside panel assembly. (Refer to Section 2-7-3.)
3. Remove the DCP-37 board assembly. (Reter to Section 7-7-4.)
4. Disconnect the harnesses from the connector (CN127) of the MB-1028 board. (Refer to Section 2-7-8 step 4.)
5. Disconnect the flexible card wire from the connector (CN2) of the DIF-167 board. (Refer to Section 2-7-8 step 5.)
6. Remove the front panel assembly. (Refer to Section 2-7-8.)
7. Disconnect the harness from the connector (CN1, CN3, CN4, CN5) of the DIF-167 board, and remove the two screws and remove the DIF-167 board.
8. Remove the screw (a) .
9. Loosen the filter knob setscrew to detach the filter knob.
10. Remove the four screws and the four spring washer and remove the CCD unit from the front panel.



7-5-2. Installing CCD Unit

1. Peel the protection sheet of the new shield finger A, B and attac it to the front panel.

   Notes

   - Do not directly touch shield finger A or B. Be careful not to get hurt with the edges when handling them.
   - Confirm that shield fingers A and B are in position.

2. Install the CCD unit to the front panel with four screws and four spring washer.

   Notes

   - When installing the CCD block, be careful so that the optical axis does not tilt (misaligned) due to a play.
     If a picture on the monitor screen tilts, loosen the screws of the CCD block and adjust the installation so that the picture becomes horizontal.
   - Tightening torque: $80 \times 10^{-2} \pm 0.1$ N•m (8 ± 1 kgf•cm)
   - Clamp the three harnesses coming from the PA board to the OHB bracket protruded portion with the harness clamp.

3. Attach the filter knob with the setscrew, while adjusting the knob using the following steps.
   (1) Shift the lens mount holder to the position shown in the figure.
   (2) Move the lever in the arrow direction and remove the mount cap.

   Note

   Do not touch the filter while the mount cap is removed.

   (3) Turn the knob shaft and stop it at the position where the palest color filter is visible from the front.
   (4) Coincide the number "1" on the filter knob with the mark on the inside panel, and then secure the knob with the setscrew.

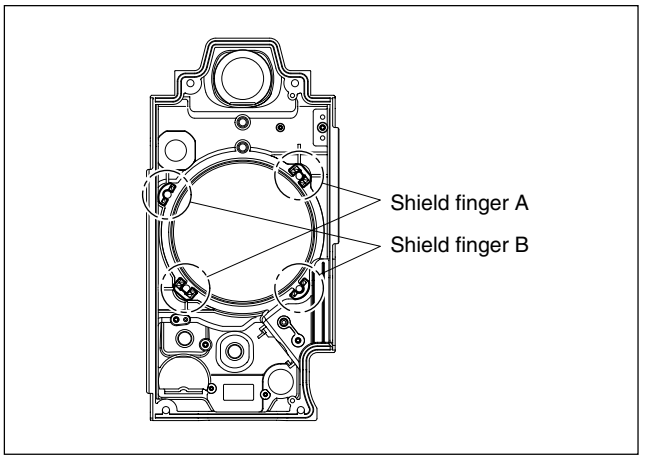
   Note

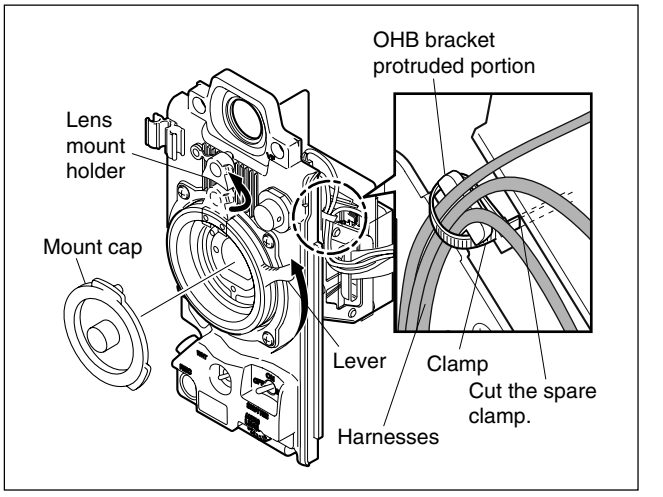
   Tightening torque: 45 to $60 \times 10^{-2} \pm 0.1$ N•m (4.5 to 6 kgf•cm)

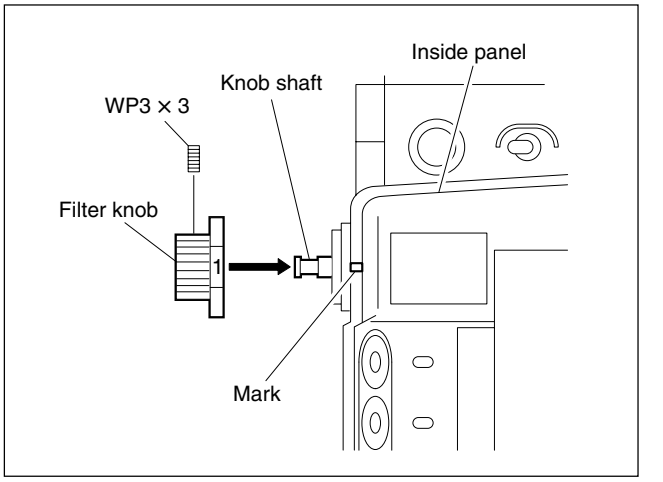
4. Install the front panel assembly to the unit. (Refer to Section 2-7-8.)
5. Attach the inside panel. (Refer to Section 2-7-3.)
6. Attach the outside panel. (Refer to Section 2-7-1.)

   Note

   When a new CCD unit is installed, camera adjustment is required. (Refer to Section 2-15-1.)







7-6. Service Action After Replacing the CCD Unit

This section describes the required actions for replacing the CCD unit.

Note

Save the settings of the menu contents in the Memory Stick before performing the actions after replacement.

Saving menu settings

Save the menu settings in a Memory Stick

Menu / USER layer	USER	OPERATION	PAINT	MAINTENANCE	FILE
USER layer					
SERVICE layer					
FACTORY layer					

Memory stick

ALL FILE SAVE

1. Insert a memory stick.
2. Set the MENU ON/OFF switch to the ON position.
3. Let the ALL FILE page of the FILE menu appear on the screen and press the MENU knob.

```
? 03○ALL FILE

 ALL FILE LOAD    :  EXEC
 ALL FILE SAVE    :  EXEC

 F.ID : □□□□□□□□□□□□□□□□

 ALL PRESET       :  EXEC
```

4. Select F.ID and set the file ID.
5. Select ALL FILE SAVE and execute it by pressing the MENU knob.
6. When the cursor is moved to the file selection display, select the destination file where the file is going to be saved and press the MENU knob. (When saving a new file, select NEW FILE.)

```
P00 ALL SAVE          ESC
  MEMORY STICK ACCESS
DISPLAY MODE       :  ALL

001.□□□□□□□□□□  00/00/00
002.□□□□□□□□□□  00/00/00
003.□□□□□□□□□□  00/00/00
004.□□□□□□□□□□  00/00/00
005.NEW FILE
```

7. Confirm that the screen returns to the ALL FILE display and the message “COMPLETE!” appears indicating that the saving is complete.

Note

When you want to set multiple number of cameras, you can register (by executing the procedures up to STORE ALL PRESET) the setup contents of the ALL menu of the first camera as the standard setting, and save (by executing ALL FILE SAVE) the setup contents (i.e. standard setting) in a memory stick. You can complete all the settings of the second and the subsequent cameras simply by loading the standard setting from the memory stick and by setting it to each camera.

Service Action after replacement

1. Reset FRAMs (IC442, IC443) on the DCP-37 board to the factory default settings.
   Reset them using the SERVICE menu.
   Refer to “4-1. Displaying the SERVICE Menu” for the details on SERVICE menus.

(1) Open the switch cover with the power of the main unit turned on, and turn on the MENU ON/OFF switch. The menu appears on the viewfinder screen regardless of the ON/OFF state of the DISPLAY switch on the viewfinder.
(2) Select “SERVICE” from the TOP menu, and press the MENU knob.
(3) Scroll the screen to MENU SET by rotating the MENU knob, and press the MENU knob.
(4) Point the cursor on FACTORY PRESET by rotating the MENU knob, and press the MENU knob.
(5) Press the MENU knob, and execute FACTORY PRESET.

2. Perform the following adjustments.

- Black shading adjustment
- VCO CONT frequency adjustment
- Black shading adjustment
- White shading adjustment
- Black set adjustment
- Flare adjustment
- VA gain adjustment

7-7. Removing/Installing Boards

7-7-1. FP-144 Board

Note on removing FP-144 board:

This unit is always energized to retain data, even while the POWER switch is off. The data is also retained by the lithium battery on the FP-144 board. For this reason, if the board is repaired with power supplied, ICs on the board may be broken. Be sure to remove the lithium battery from inside the switch door before removing the FP-144 board.

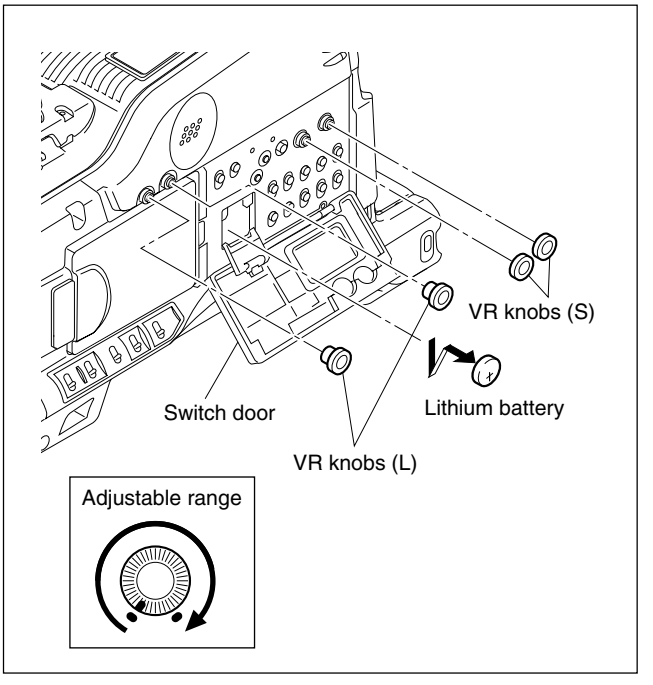
Note

Removing the lithium battery with a screwdriver or a similar tool may cause short-circuiting. Remove the battery with a bamboo stick or a similar insulator.

1. Remove the lithium battery from inside the switch door.
2. Remove the two VR knobs (S) and two VR knobs (L).
3. Remove the inside panel. (Refer to Section 2-7-3.)

Note on reattaching knobs:

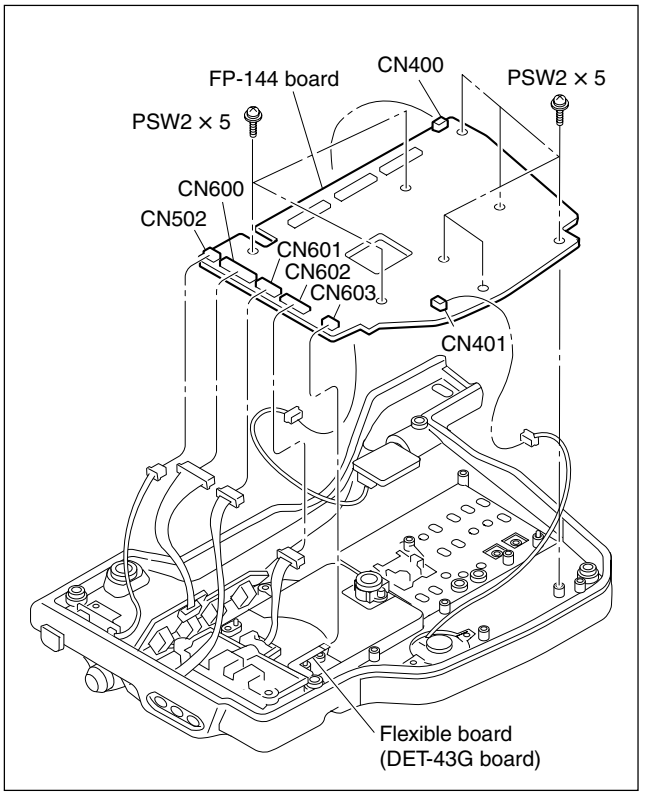
Match the knob mark with the mark on the unit as shown in the figure.



4. Disconnect the six harnesses form the connectors (CN400, CN401, CN502, CN600, CN601, CN602), and disconnect the flexible board (DET-43G board) from the connector (CN603) of the FP-144 board.
5. Remove the eight screws, and remove the FP-144 board.

Note on removing FP-144 board:

Be careful not to damage the flexible board (DET-43G board).



7-7-2. KSW-51 Board, HP-124 Board

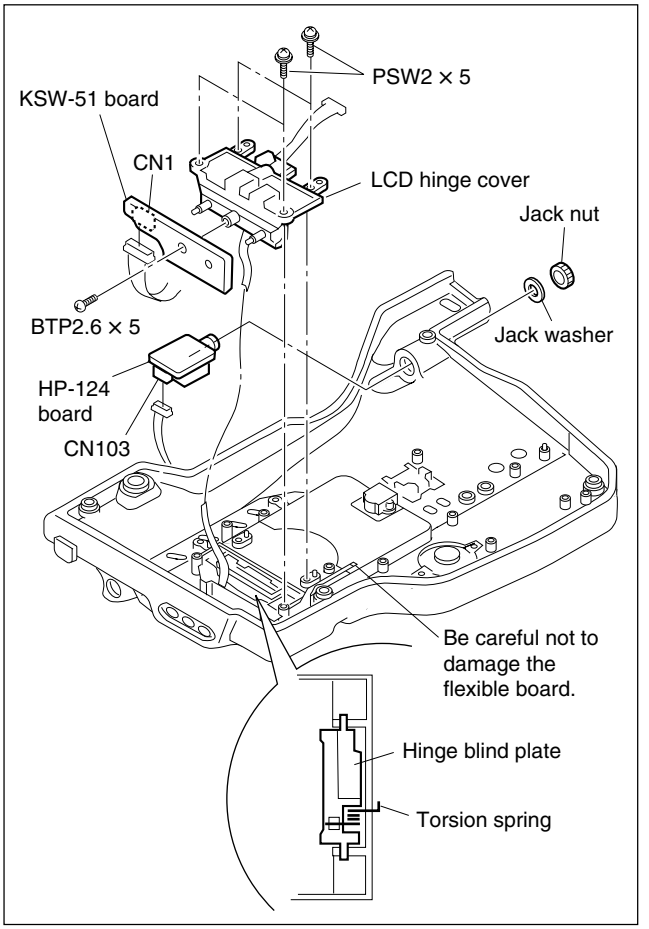
1. Remove the inside panel. (Refer to Section 2-7-3.)
2. Remove the FP-144 board. (Refer to Section 7-7-1.)
3. Remove the four screws (PSW2 × 5) to detach the LCD hinge cover.
4. Disconnect the harness from the connector (CN1) and remove the screw (BTP2.6 × 5), and remove the KSW-51 board.
5. Remove the jack nut and jack washer and disconnect the harness from the connector (CN103), and remove the HP-124 board.

Note on reattaching LCD hinge cover:

Install the torsion spring and the hinge blind plate correctly as they are not fixed without the LCD hinge cover.
Attach the LCD hinge cover with the LCD panel open to hold the torsion spring and the hinge blind plate at correct positions.

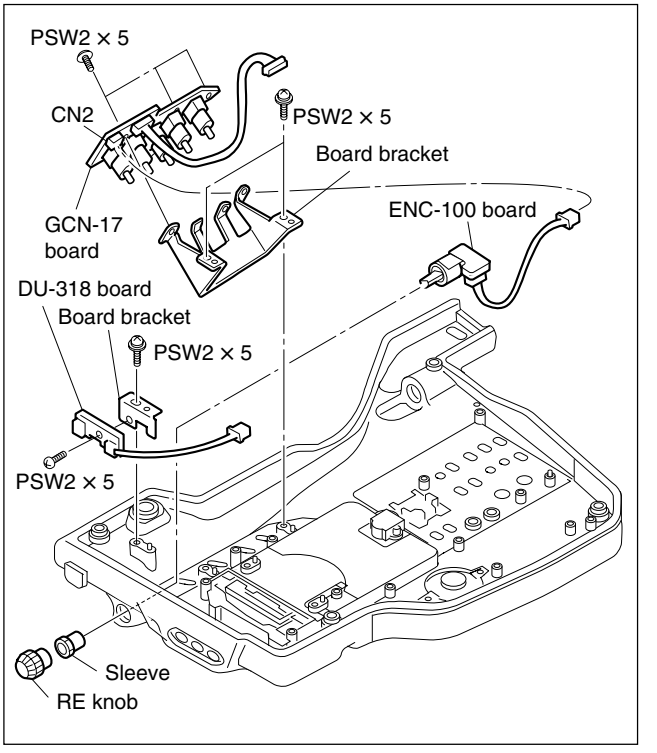
Note

After installing these parts, check that the hinge blind plate moves smoothly.



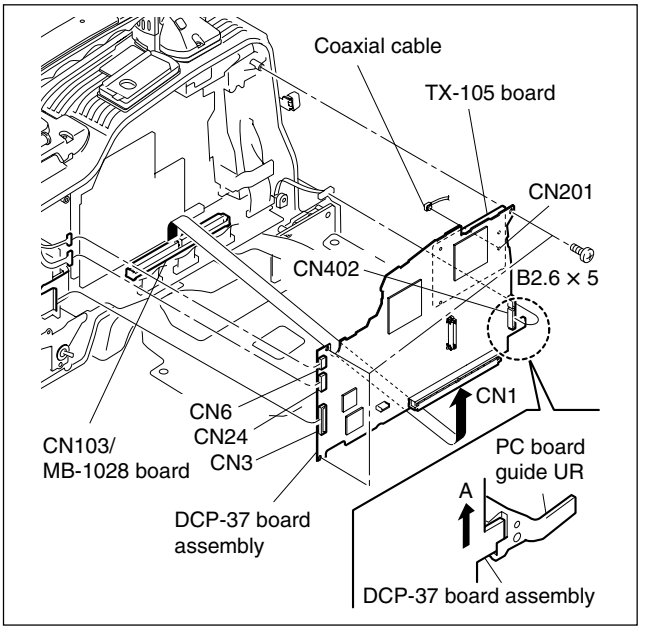
7-7-3. GCN-17 Board, ENC-100 Board, DU-318 Board

1. Remove the inside panel. (Refer to Section 2-7-3.)
2. Remove the FP-144 board. (Refer to Section 7-7-1.)
3. Remove the two screws to detach the board bracket.
4. Remove the three screws and disconect the harness from the connector (CN2), and remove the GCN-17 board.
5. Remove the RE knob and the sleeve to remove the ENC-100 board.
6. Remove the screw, and remove the board bracket.
7. Remove the screw, and remove the DU-318 board.



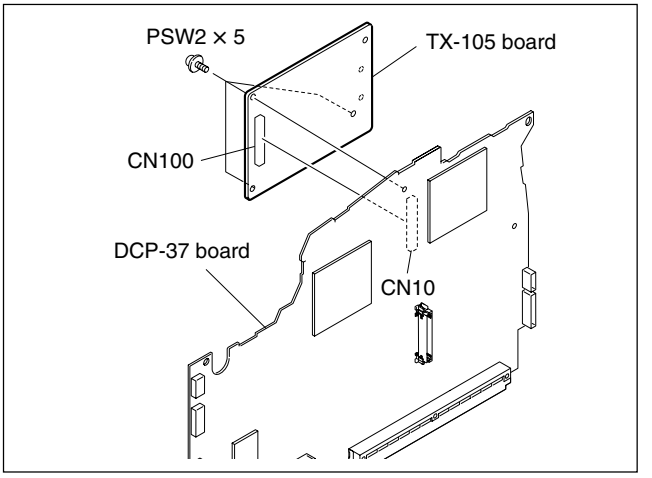
7-7-4. DVP-37 Board

1. Remove the inside panel. (Refer to Section 2-7-3.)
2. Disconnect the harnesses from the three connectors (CN6, CN24 and CN402), and disconnect the flexible card wire (CN3) of the DCP-37 board.
3. Disconnect the coaxial cable from the connector (CN201) of the TX-105 board.
4. Remove the three screws, and remove the DCP-37 board in the direction of the arrow.



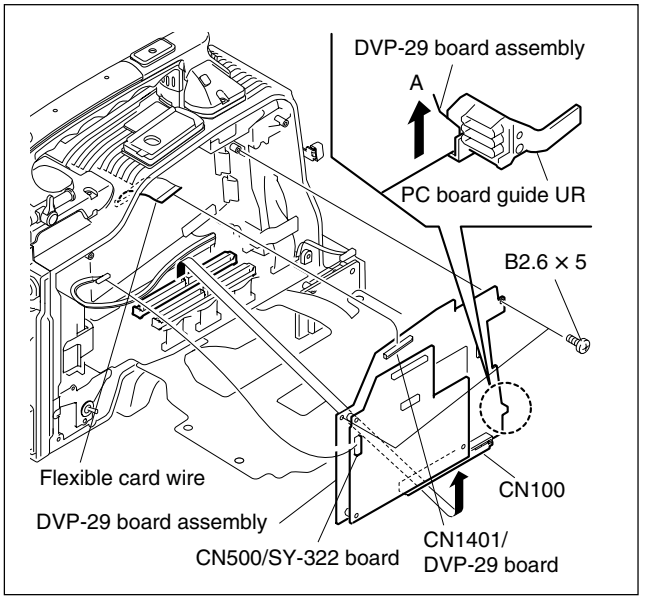
7-7-5. TX-105 Board (for PDW-F350)

1. Remove the inside panel. (Refer to Section 2-7-3.)
2. Remove the DCP-37 board assembly. (Refer to Section 7-7-4.)
3. Remove the three screws, and remove the TX-105 board.



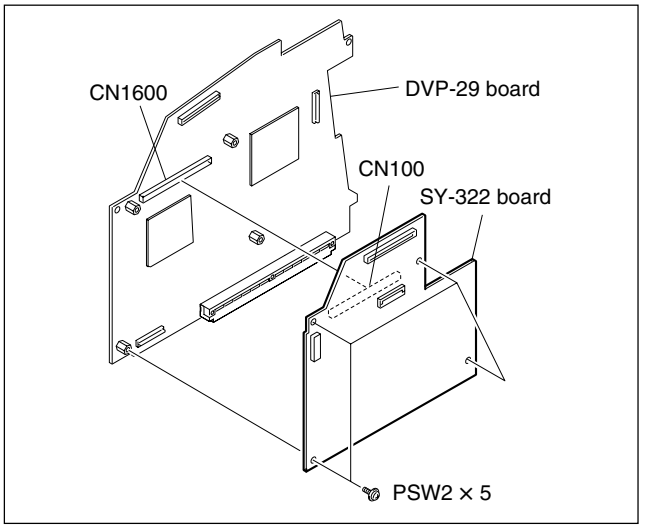
7-7-6. DVP-29 Board

1. Remove the inside panel. (Refer to Section 2-7-3.)
2. Remove the DCP-37 board assembly. (Refer to Section 7-7-4.)
3. Disconnect the harness from the connector (CN500) of the SY-322 board, and disconnect the flexible card wire from the connector (CN1401) of the DVP-29 board.
4. Remove the two screws, and remove the DVP-29 board in the direction of the arrow “A”.



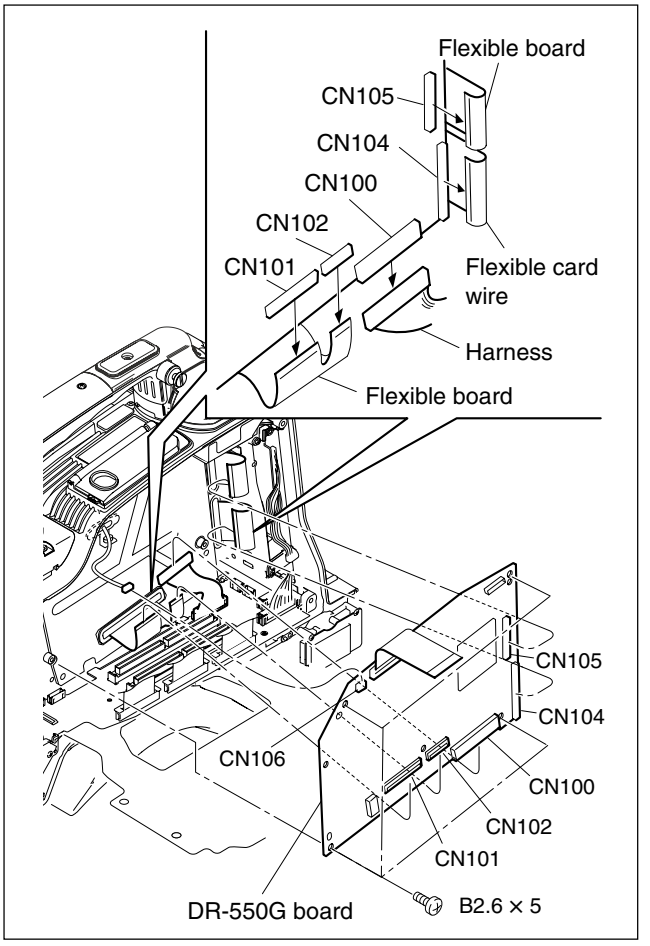
7-7-7. SY-322 Board

1. Remove the inside panel. (Refer to Section 2-7-3.)
2. Remove the DCP-37 board assembly. (Refer to Section 7-7-4.)
3. Remove the DVP-29 board assembly. (Refer to Section 7-7-6.)
4. Remove the four screws, and remove the SY-322 board.



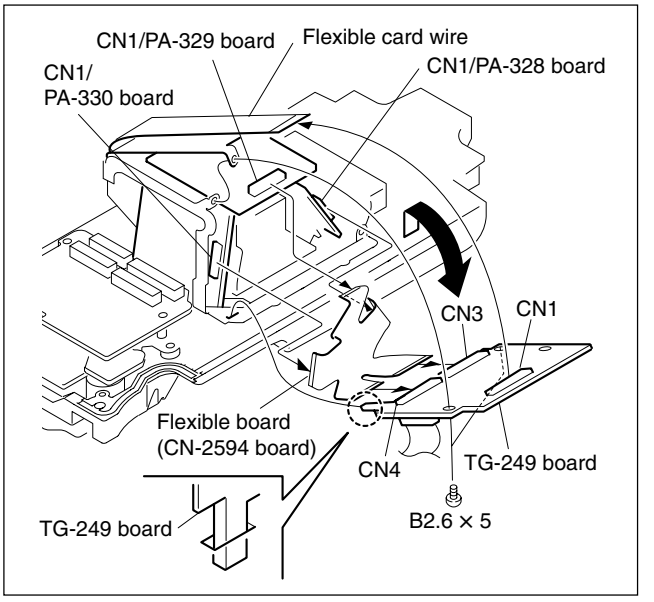
7-7-8. DR-550G Board

1. Remove the inside panel. (Refer to Section 2-7-3.)
2. Remove the DCP-37 board assembly. (Refer to Section 7-7-4.)
3. Remove the DVP-29 board assembly. (Refer to Section 7-7-6.)
4. Disconnect the harnesses from the two connectors (CN100 and CN106) of the DR-550G board.
5. Disconnect the flexible boards from the connectors (CN101, CN102 and CN105), and disconnect the flexible card wire from the connector (CN104) of the DR-550G board.
6. Remove the four screws, and remove the DR-550G board.



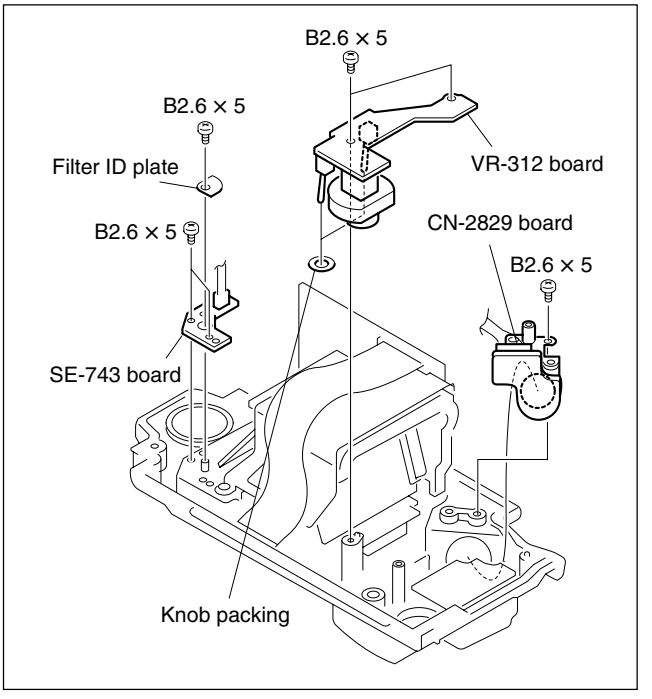
7-7-9. TG-249 Board, CN-2594 Board

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the front panel assembly. (Refer to Section 2-7-8.)
4. Disconnect the flexible card wire from the connector (CN1) of the TG-249 board.
5. Remove the two screws, tilt to the TG-249 board in the direction of the arrow.
   Disconnect the flexible board (CN-2597) from the two connectors (CN3 and CN4), and remove the TG-249 board.
6. Disconnect the flexible board (CN-2597) from the connector (CN1) of the PA-328/329/330 boards.



7-7-10. CN-2829 Board, SE-743 Board, VR-312 Board

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the front panel assembly.
   (Refer to Section 2-7-8.)
4. Remove the DIF-167 board. (Refer to Section 7-5.)
5. Remove the two screws, and remove the VR-312 board. (Be careful not to lose the two knob packing.)
6. Remove the two screws, and remove the CN-2829 board.
7. Remove the screw, and remove the filter ID plate.
8. Remove the two screws, and remove the SE-743 board.

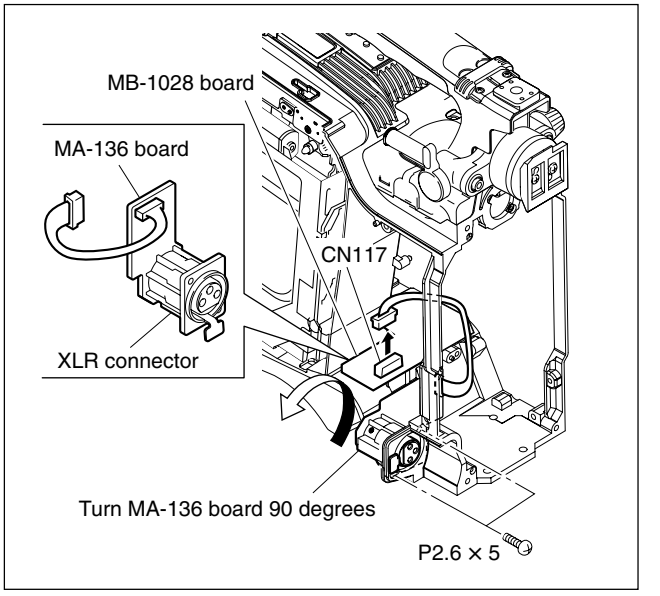


7-7-11. MA-136 Board

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the front panel assembly.
   (Refer to Section 2-7-8.)
4. Remove the two screws (P2.6 × 5), disconnect the connector (CN117) on the MB-1028 board, and then remove the MA-136 board by turning it in the arrow direction.

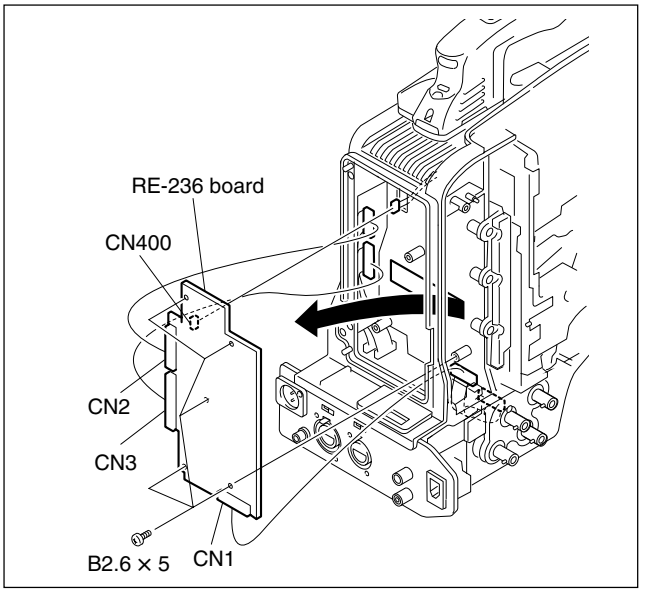
Note

Turn the MA-136 board 90 degrees to remove it because the XLR connector knob hinders the removal of the MA-136 board.
Also turn the board 90 degrees when reinstalling it.



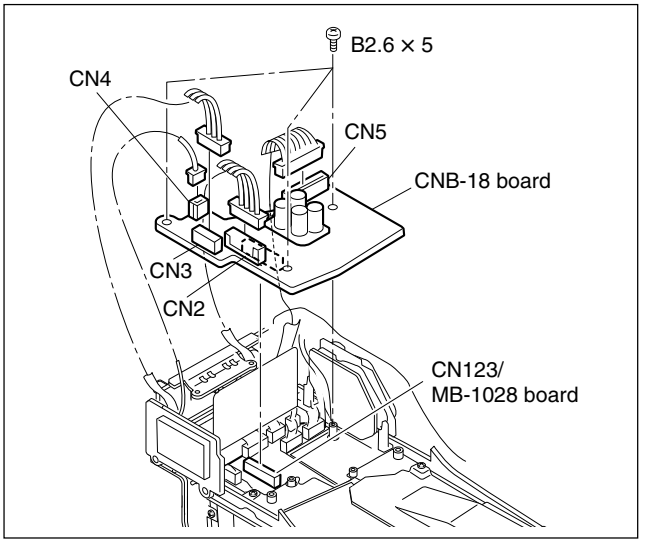
7-7-12. RE-236 Board

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the rear panel assembly. (Refer to Section 2-7-6.)
4. Disconnect the harnesses from the four connectors (CN2, CN3, CN1 and CN400), remove the five screws of the RE-236 board, and remove the RE-236 board in the direction of the arrow.



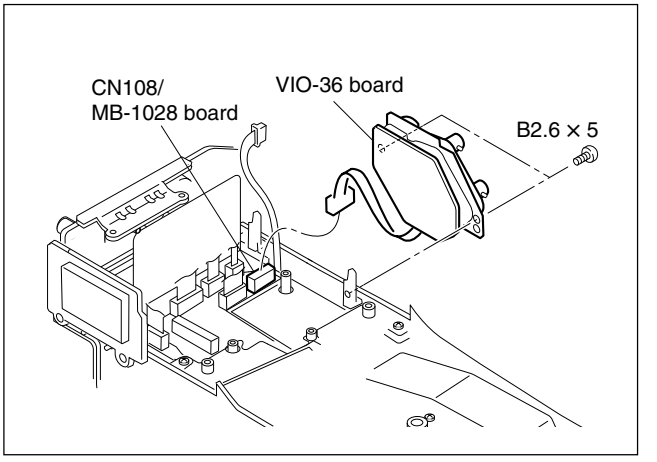
7-7-13. CNB-18 Board

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the connector cover. (Refer to Section 2-7-4.)
4. Disconnect the harnesses from the four connectors (CN2, CN3, CN4 and CN5), remove the three screws of the CNB-18 board, and remove the CNB-18 board.



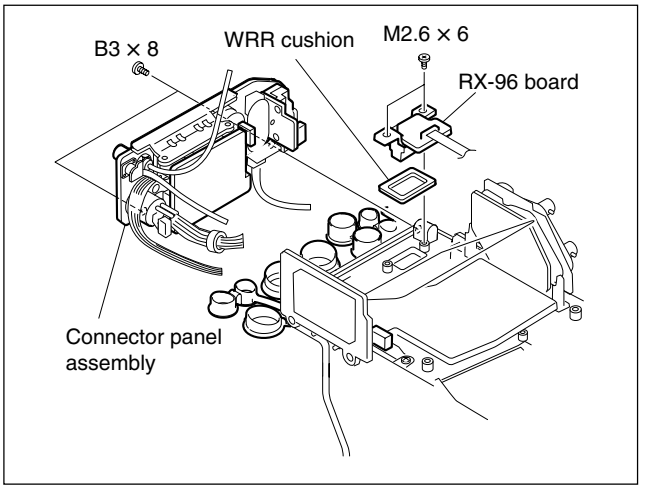
7-7-14. VIO-36 Board

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the connector cover. (Refer to Section 2-7-4.)
4. Remove the CNB-18 board. (Refer to Section 7-7-13.)
5. Disconnect the harness from the connector (CN108), remove the two screws of the VIO-36 board, and remove the VIO-36 board.



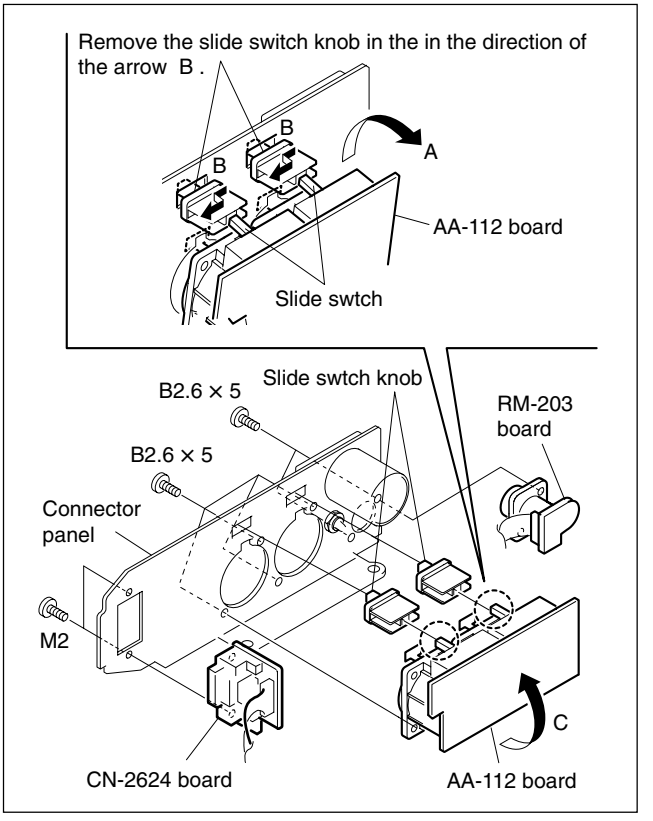
7-7-15. RX-96 Board

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the connector cover. (Refer to Section 2-7-4.)
4. Remove the connector panel assembly. (Refer to Section 2-7-5.)
5. Remove the two screws, and remove the RX-96 board.



7-7-16. AA-112 Board, RM-203 Board, CN-2624 Board

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the connector cover. (Refer to Section 2-7-4.)
4. Remove the connector panel assembly. (Refer to Section 2-7-5.)
5. Remove the four screws (B2.6 × 5), tilt to the AA-112 board in the direction of the arrow "A". Remove the two slide switch knob in the direction of the arrow "B".
6. Remove the AA-112 board from the connector panel in the direction of the arrow "C".
7. Remove the two screws (B2.6 × 5), and remove the RM-203 board.
8. Remove the two screws (M2), and remove the CN-2624 board.

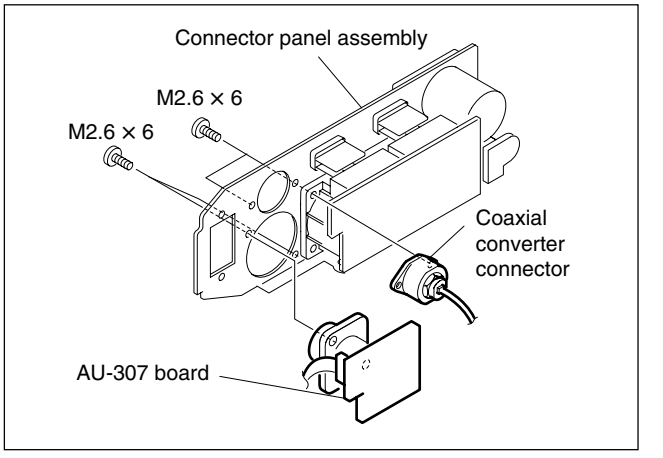


7-7-17. AU-307 Board (PDW-F350) / IO-228 Board, JK-73 Board, TC-110 Board (PDW-F330)

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the connector cover. (Refer to Section 2-7-4.)
4. Remove the connector panel assembly. (Refer to Section 2-7-5.)

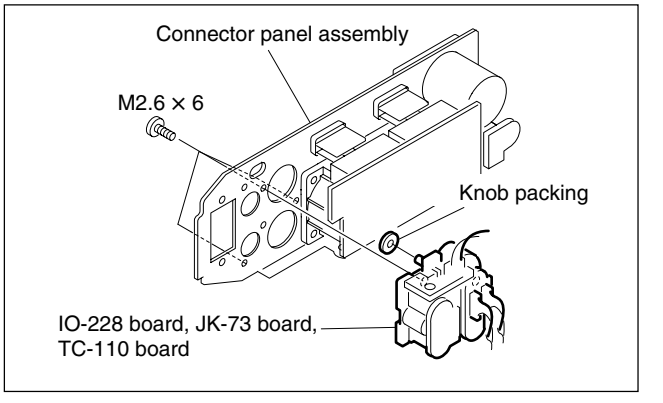
PDW-F350

5. Remove the two screws, and remove the AU-307 board.
6. Remove the two screws, and remove the coaxial converter connector.



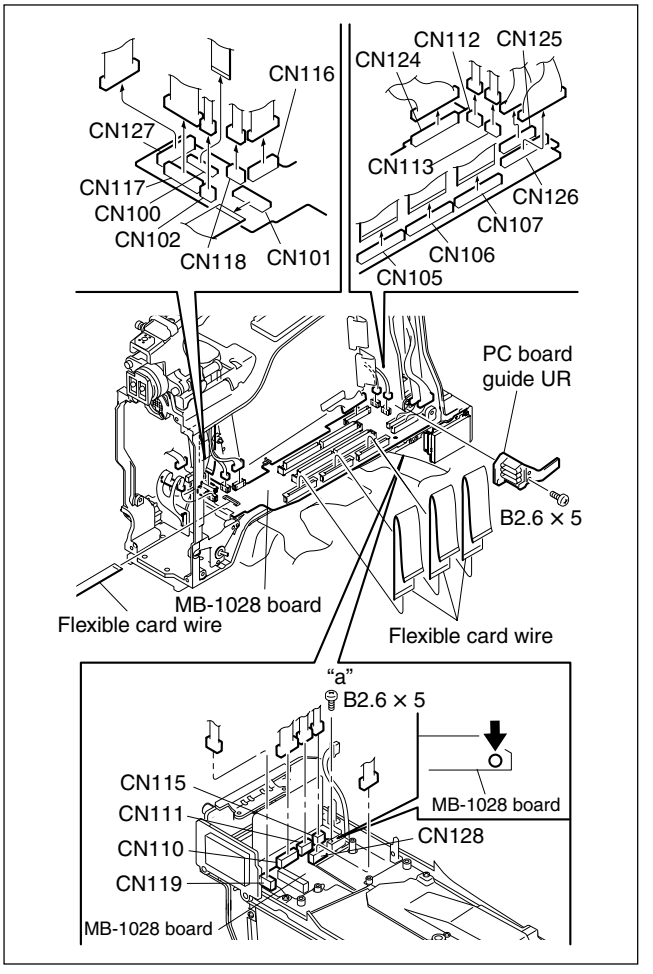
PDW-F330

7. Remove the three screws, and remove the IO-228 board, JK-73 board and TC-110 board. (Be careful not to lose the knob packing.)

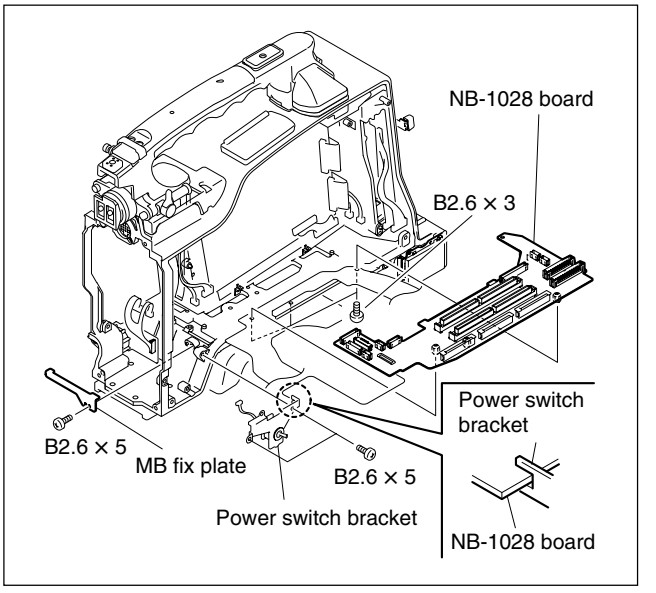


7-7-18. MB-1028 Board

1. Remove the outside panel. (Refer to Section 2-7-1.)
2. Remove the inside panel. (Refer to Section 2-7-3.)
3. Remove the front panel assembly. (Refer to Section 2-7-8.)
4. Remove the DCP-37 board assembly. (Refer to Section 7-7-4.)
5. Remove the DVP-29 board assembly. (Refer to Section 7-7-6.)
6. Remove the connector cover. (Refer to Section 2-7-4.)
7. Remove the CNB-18 board. (Refer to Section 7-7-13.)
8. Remove the VIO-36 board. (Refer to Section 7-7-14.)
9. Disconnect the harnesses from the five connectors (CN102, CN116, CN117, CN118 and CN127), and disconnect the flexible card wire from the two connectors (CN100 and CN101) of the MB-1028 board.
10. Disconnect the harnesses from the five connectors (CN112, CN113, CN124, CN125 and CN126), and disconnect the flexible card wire from the three connectors (CN105, CN106 and CN107) of the MB-1028 board.
11. Disconnect the harnesses from the five connectors (CN110, CN111, CN115, CN119 and CN128) of the MB-1028 board, and remove the screw "a".
12. Remove the screw, and remove the PC board guide UR.



13. Remove the screw, and remove the MB fix plate.
14. Remove the two screws, and remove the power switch bracket.
15. Remove the three screws (B2.6 × 3) from the bottom, and remove the MB-1028 board.



7-8. Service Action After Replacing or Repairing the Board

7-8-1. DR-550G Board

This board includes EEPROM (IC603) that stores adjustment data, hours meter data, and other data.
Replace IC603 after the DR-550G board is replaced.

Execute the drive maintenance menu in the following order after replacing or repairing the DR-550G board.

1. SET OPTICAL DATA (Refer to Section 4-6-18.)
2. INITIALIZE SE (Refer to Section 4-6-19.)
3. ACCELERATION OFFSET (Refer to Section 4-6-23.)
4. SERVO_1 (Refer to Section 4-6-20.)
5. SERVO_2 (Refer to Section 4-6-22.)
6. CLEAR MEDIA LOG (Refer to Section 4-6-27.)

7-8-2. DCP-37 Board, DVP-29 Board, SY-322 Board, FP-144 Board, TX-105 Board

Note

The TX-105 board is in the PDW-F350.

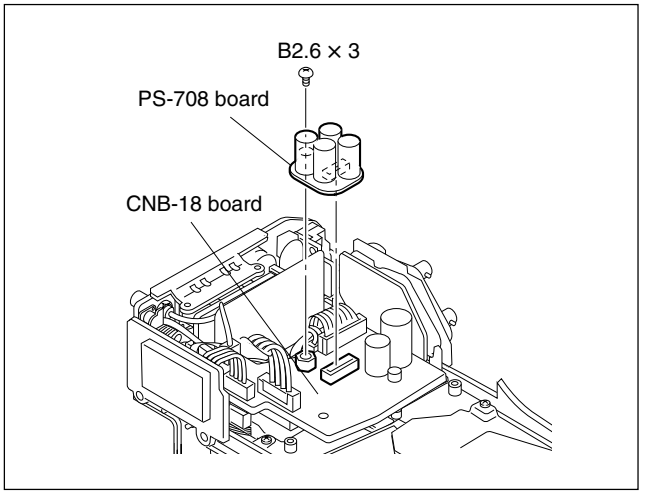
The ROMs on the boards above contain firmware. Upgrade the firmware to the latest version after replacing any of the boards.

7-9. Replacing PS-708 Board (Double-Layer Capacitor)

Note

The PS-708 board (Electric double-layer capacitoars) on the CNB-18 board. requires periodic replacement. Refer to "6-1. Periodic Check/Replacement Parts List" for details.

1. Remove the outside panel assembly.
   (Refer to Section 2-7-1.)
2. Open the inside panel assembly.
   (Refer to Section 2-7-3.)
3. Remove the connector cover.
   (Refer to Section 2-7-5.)
4. Remove the screw, remove the PS-708 board, and replace it.



Section 8
Optical Drive Alignment

8-1. Optical Block Mechanical Alignment

8-1-1. How to Move Optical Block Assembly

This section describes how to move the optical block assembly during the RD checking or RD adjustment.
Refer to Operating Instructions “Section 5. Basic Menu Operations” for the details on the menu operation.
The on-board switch should be set in order to display the SERVICE menu. Refer to “4-1. Dysplays the SERVICE menu” for details.

1. Open the switch cover of the menu operation block while the power of the unit is on, and turn on the MENU ON/OFF switch.
   A menu appears on the viewfinder screen regardless of whether the Display switch of the viewfinder is turned on or off.
2. Select “SERVICE” from the TOP menu, and press the MENU knob.
3. Turn the MENU knob to scroll the screen up to VDR MAINTENANCE, and press the MENU knob.

```
  S30●VDR MAINTENANCE TOP

  POWER A/D ADJUST:  EXEC
  DRIVE MAINTE    :  EXEC
  SERVICE SUPPORT :  EXEC
```

4. Turn the MENU knob to move the cursor onto DRIVE MAINTE, and press the MENU knob. Move to the DRIVE MAINTE screen.

```
  S30●VDR MAINTENANCE TOP

  POWER A/D ADJUST:  EXEC
→DRIVE MAINTE    :  EXEC
  SERVICE SUPPORT :  EXEC
```

5. Turn the MENU knob to move the cursor onto YES, and press the MENU knob.

```
DRIVE MAINTENANCE

   MAINTENANCE START?
      →YES   NO
```

6. Turn the MENU knob to move the cursor onto ADJUST, and press the MENU knob. Move to the ADJUST screen.

```
    DRIVE MAINTENANCE

 CHECK
*ADJUST
 ERROR LOGGER
 OTHERS
```

7. Turn the MENU knob to move the cursor onto MECHA RD, and press the MENU knob. Move to the MECHA RD screen.

```
    DRIVE MAINTENANCE

ADJUST
  OPTICAL BLOCK
  SERVO_1
 *MECHA RD
  SERVO_2
  OTHER ADJUST
```

8. Turn the MENU knob to move the cursor onto YES, and press the MENU knob.

```
          MECHA RD




       ARE YOU SURE?
          *YES
           NO
```

9. Turn the MENU knob to select MOVE INSIDE or MOVE OUTSIDE, and press the MENU knob.
   - MOVE INSIDE: The optical block assembly moves to the IN side.
   - MOVE OUTSIDE: The optical block assembly moves to the OUT side.

```
          MECHA RD

 *MOVE INSIDE
  STEP INSIDE
  MOVE TO CENTER
  STEP OUTSIDE
  MOVE OUTSIDE
```

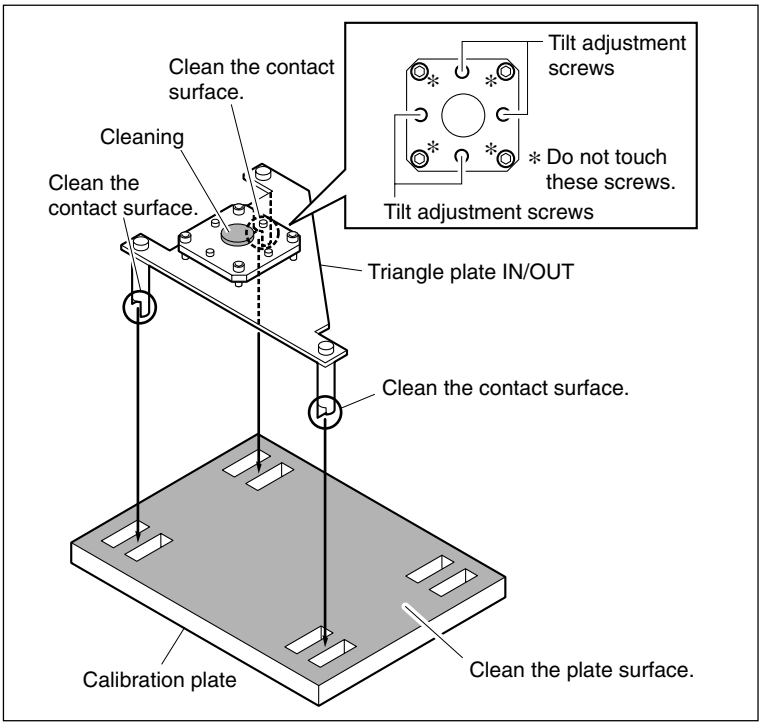
10. Turn the MENU knob to move the cursor onto YES, and press the MENU knob.
11. “SLIDER MOVING...” appears and the optical block assembly moves.
12. When the RD checking or RD adjustment finishes, press the ESC button several times to change the display to the ADJUST screen in step 6.
13. Turn off the MENU ON/OFF switch to end the menu.

8-1-2. Calibrating Triangle Plates

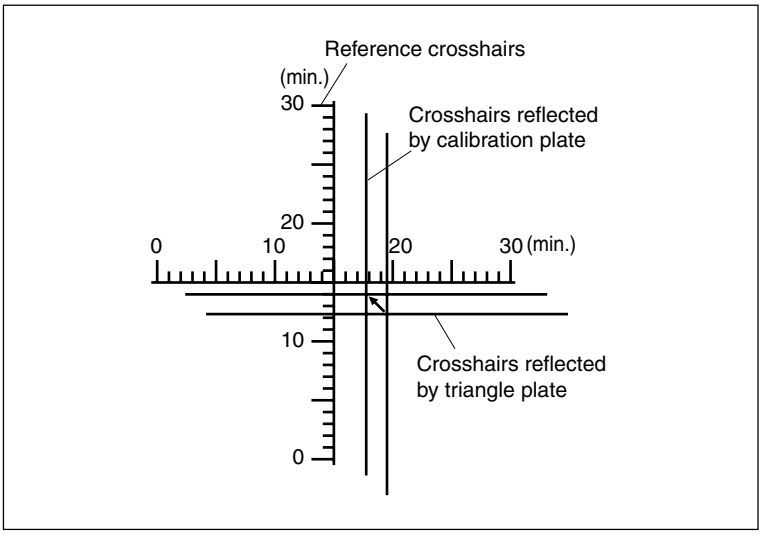
Calibrate the skew of the reference surface of each triangle plate with the calibration plate using the following procedure:

1. Clean the surface of the calibration plate, the reference surfaces of the triangle plates IN/OUT, and their legs to be touched to the calibration plate, using the cleaning cloth with the cleaning liquid soaked.
   Note
   Be careful not to sit fibers of the cleaning cloth on the cleaning surface of each part.

2. Insert the legs of the triangle plate into the holes of the calibration plate to place the triangle plate on the calibration plate.
3. Confirm that the two reflected crosshairs are visible through the eyepiece of the auto-collimator.



4. Confirm that the two reflected crosshairs are overlapped. If not, perform the following adjustment.
5. Slightly turn the tilt adjustment screws on the triangle plate so that the crosshairs reflected by the triangle plate matches with the crosshairs reflected by the calibration plate.
   Notes
   - Before this adjustment, apply a drop of alcohol to the locking compound on the tilt adjustment screws to melt the locking compound a little.
   - When fine adjusting the crosshairs, turn the adjustment screws clockwise. Be sure not to turn the screws counterclockwise to loose it. If the two crosshairs does not match even after the screws are fully turned clockwise, turn them counterclockwise once, and turn them clockwise again to fine adjust it.
   - Fine adjust the crosshairs by turning the adjustment screws equally, not by turning only one screw.
   - After the adjustment, apply the locking compound to each adjustment screw.



8-1-3. Adjustments After Replacing Optical Block Assembly

After replacing the optical block assembly, perform the following adjustments in descending order:

- Skew adjustment
- Optical Block Assembly Data Setting
- Laser Initial Data Setting
- Servo1 Automatic Adjustment
- RD adjustment
- Servo2 Automatic Adjustment
- Clear media log

This section describes the adjustments to be performed after the optical block assembly replacement.

Fixtures

• BRD-P1/P2 reflection block for auto-collimator (PW-003):	For skew adjustment
• Triangle plates IN/OUT (PW-001):	For skew adjustment
• Calibration plate:	For skew adjustment
• Auto-collimator (Nikon 6D):	For skew adjustment
• Torque driver (For 3 kg):	For skew adjustment
• Bit for torque driver (M2):	For skew adjustment
• Hexagonal wrench driver:	For skew adjustment
• RD adjustment screwdriver (PW-005):	For RD adjustment
• KES-110A E&F LPF box:	For RD adjustment
• 2-channel oscilloscope:	For RD adjustment
• Alignment Disc (PFD23-RS):	For RD adjustment
• Regulated power supply:	For RD adjustment

- Cleaning liquid
- Cleaning cloth
- Oil (LX-206)
- Locking compound

Skew Adjustment

Preparations Before Adjustment:

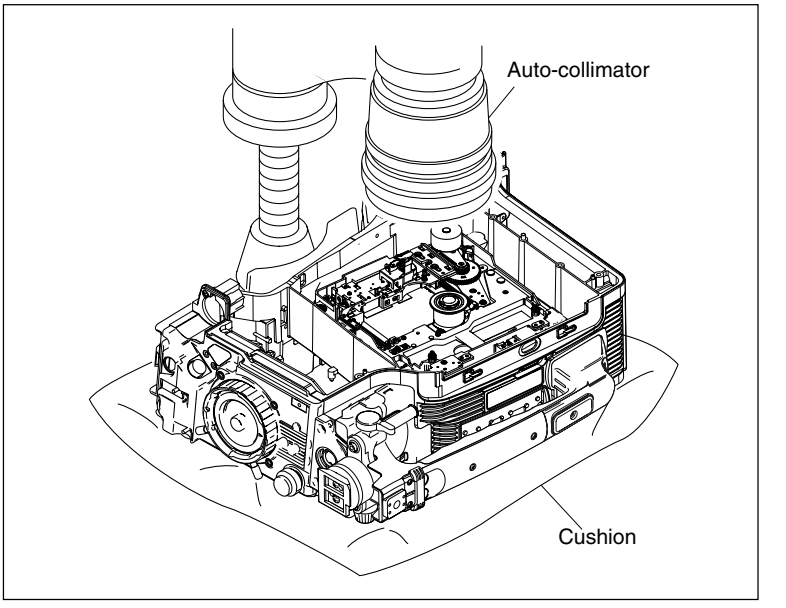
- Perform the dioptric adjustment and the crosshairs focus adjustment for the auto-collimator. Refer to the operation manual of the auto-collimator for details.
- Remove the loader (P1) assembly from the optical block assembly.
- Secure the flexible card wire connected to the loader (P1) assembly onto the chassis with tape so that its terminal does not short-circuit by touching metal, such as the frame.
- Calibrate the triangle plates.
  (Refer to Section 8-1-2.)

Adjustment Procedure

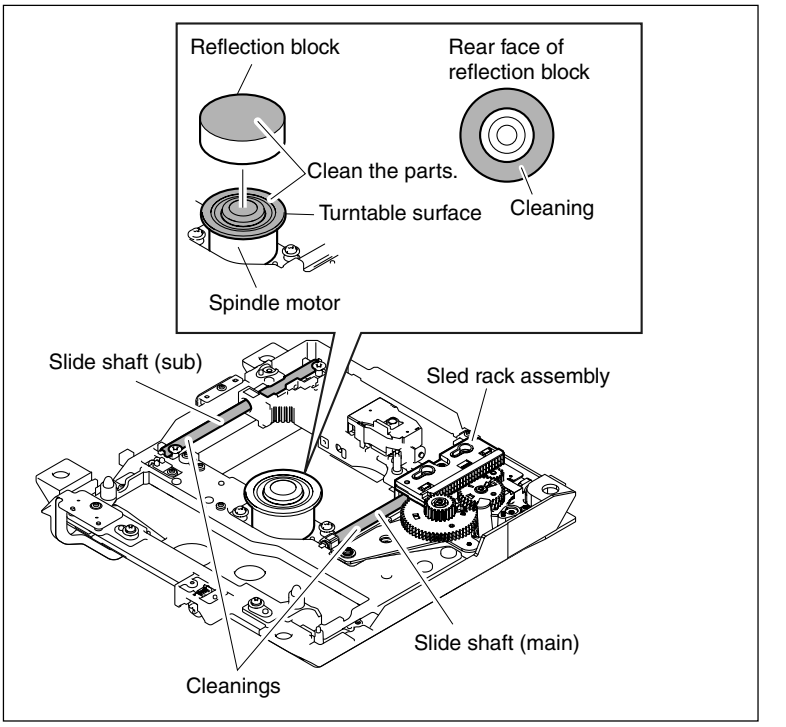
1. Put the unit on the measuring level block of the auto-collimator in the orientation shown in the figure.

   Note

   The specifications (α and β) described in the following are the values when the unit is placed on the measuring level as shown in the figure.



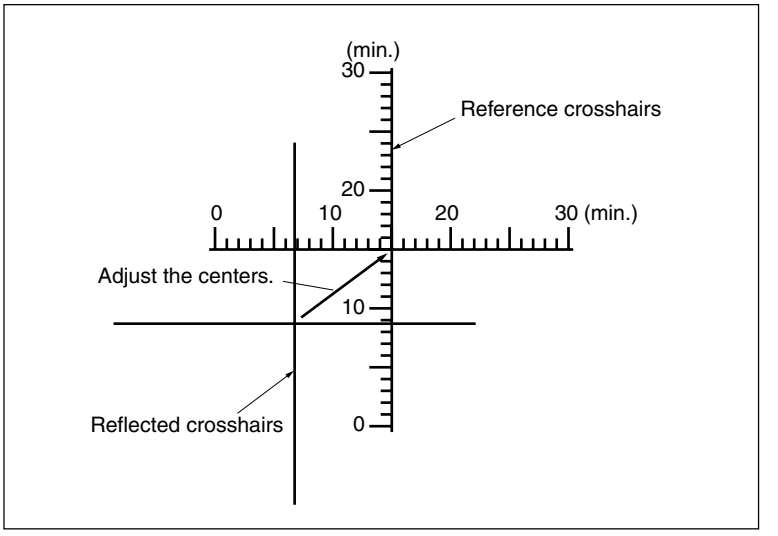
2. Clean the turntable of the spindle motor of the unit using the cleaning cloth with the cleaning liquid soaked.
3. While holding the sled rack assembly and moving the optical block assembly inward and outward, clean the slide shaft.
4. Put the cleaned reflection block on the turn table of the spindle motor.



5. Adjust the position and skew of the unit so that the reflected crosshairs (crosshairs reflected by the reflection block) become visible through the eyepiece of the auto-collimator.

   Note

   Put several pieces of paper (or a similar item) between the unit and the measuring level block. Adjust the skew of the unit so that the paper is not slipped.



6. When the reflected crosshairs become visible, turn the X-Y direction adjustment handle of the auto-collimator to match the center of the reflected crosshairs and the center of the reference crosshairs (crosshairs on the eyepiece).

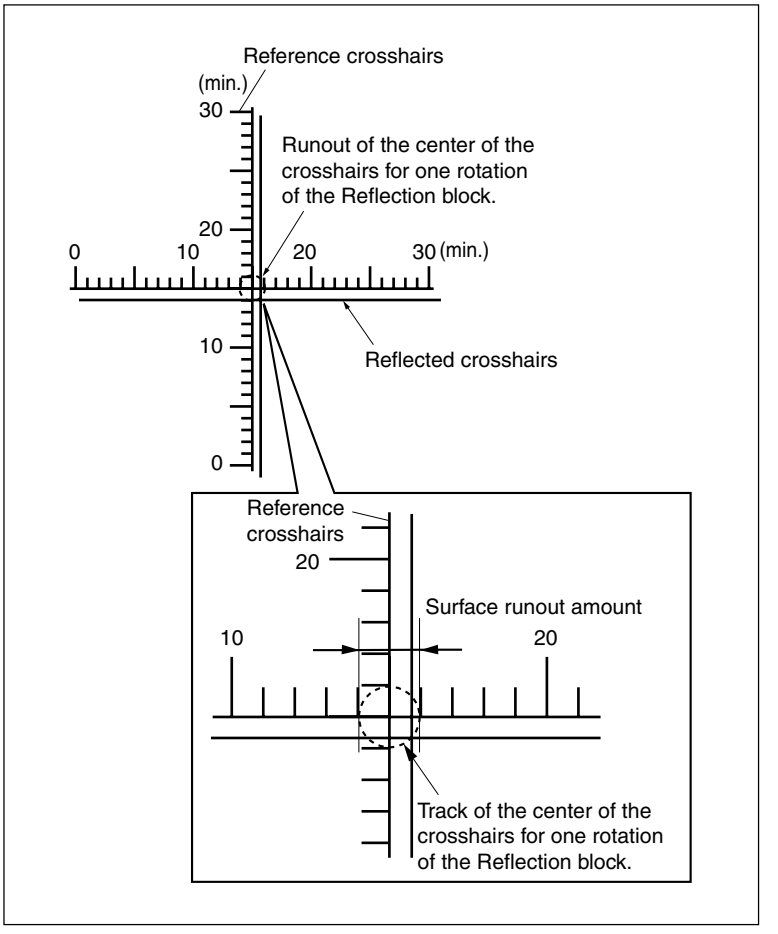
7. Turn slowly the reflection block on the spindle motor 360 degrees with fingers to check through the eyepiece that the surface runout amount at the center of the reflected crosshairs meets the specification.

   Specification

   Surface runout amount:
   3.5 minutes or less (3.5 tick marks or less on the reference crosshairs of the eyepiece)

   Note

   When the specification is not met, clean the turntable of the spindle motor again and recheck the value.

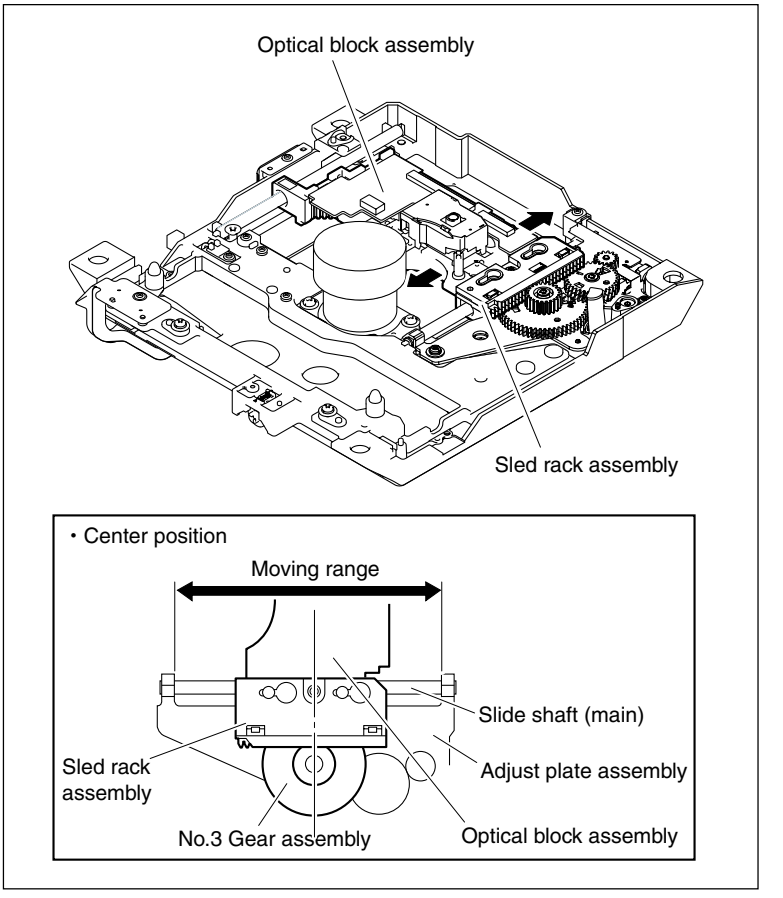


8. Align the center of the runout width of the reflected crosshairs with the center of the reference crosshairs again, using the X-Y direction adjustment handle.

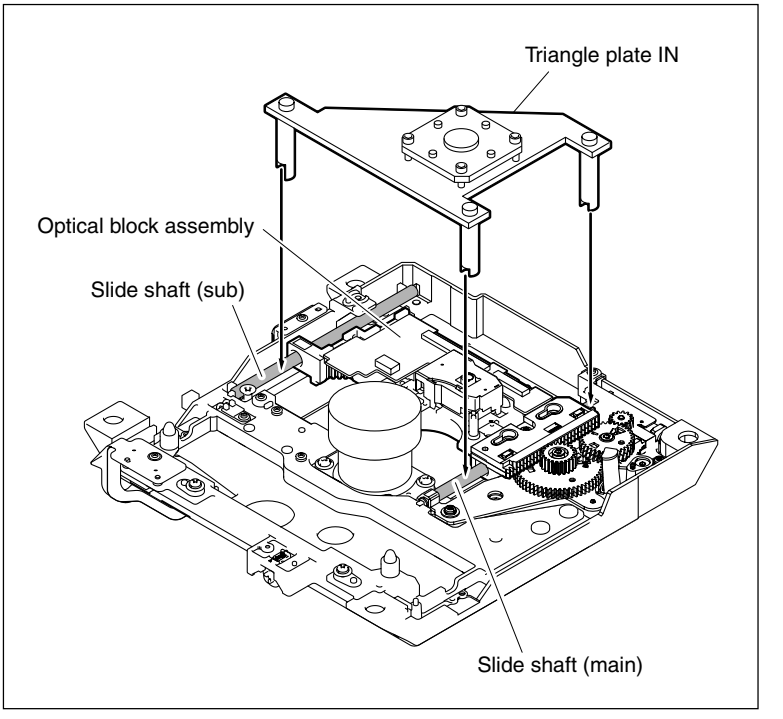
Note

Be sure not to change the position and the skew of the unit and not to touch the X-Y direction adjustment handle of the auto-collimator until the skew adjustment is completed.

9. Hold the sled rack assembly to move the optical block assembly to the center of the moving range.



10. Set the triangle plate IN, whose legs have been cleaned, in the orientation shown in the figure.



11. Turn the tangential and radial skew adjustment screws shown in the figure to adjust the center of the crosshairs reflected by the triangle plate IN to the center of the surface runout of the crosshairs reflected by the reflection block using the auto-collimator. The radial skew adjustment screw is mainly used for the adjustment of the direction of the arrow A. The tangential skew adjustment screw is mainly used for the adjustment of the direction of the arrow B.

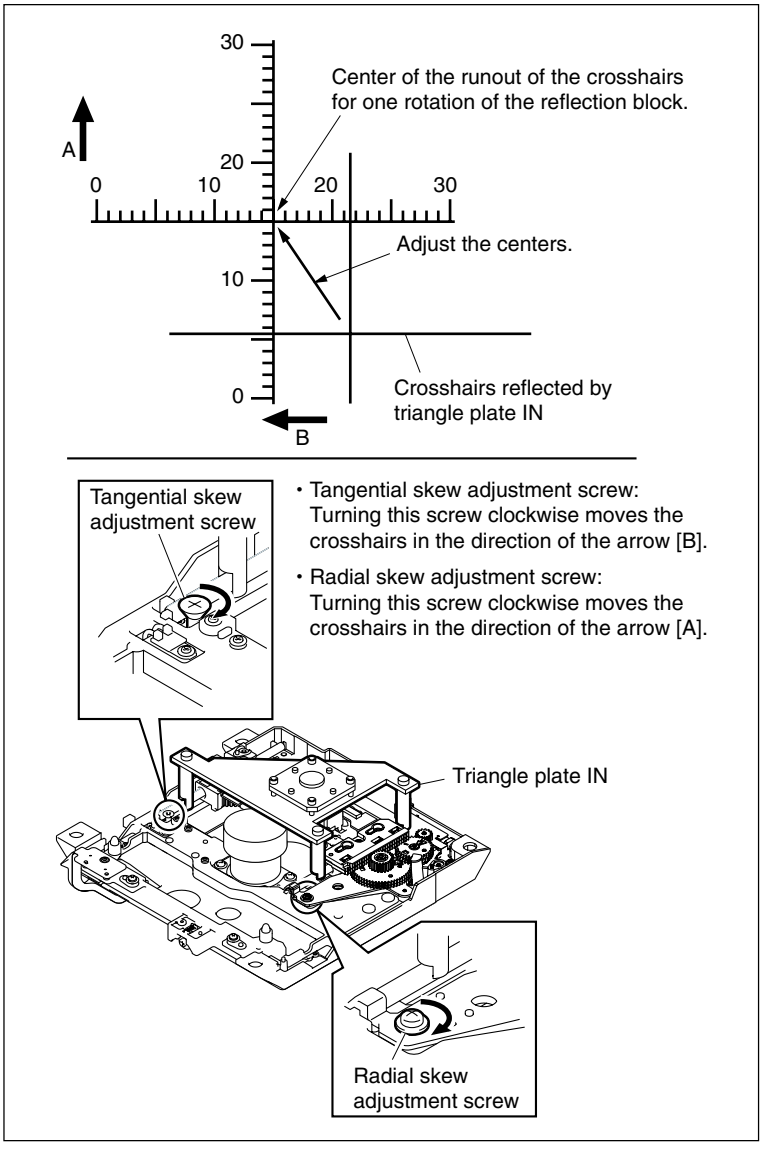
Notes

- Adjust both the adjustment screws equally.
- The adjustment screws should be turned clockwise for this adjustment. If they are turned too much, turn them back sufficiently, and turn them clockwise again.

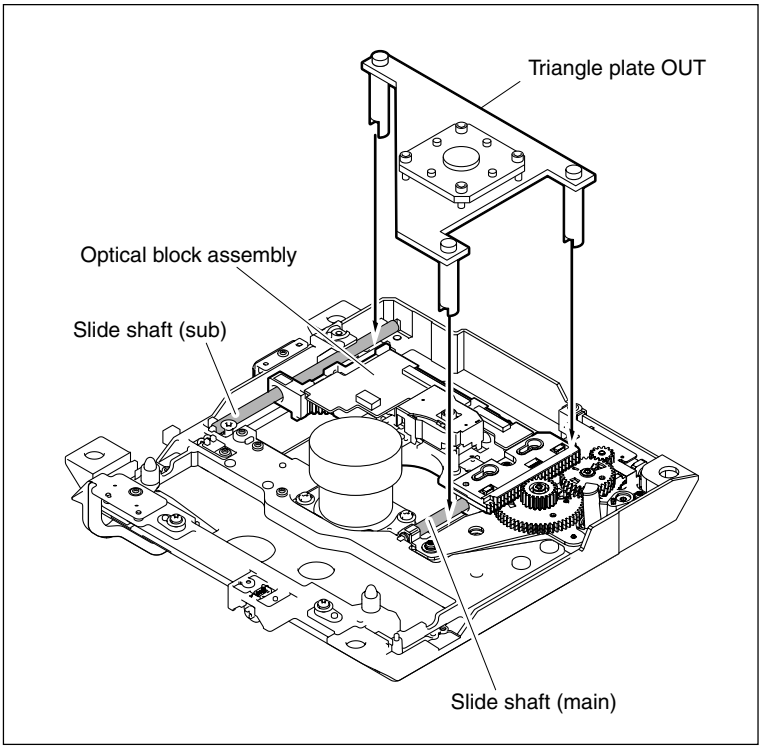
Note

Radial skew: Skew in the direction of movement of the optical block assembly

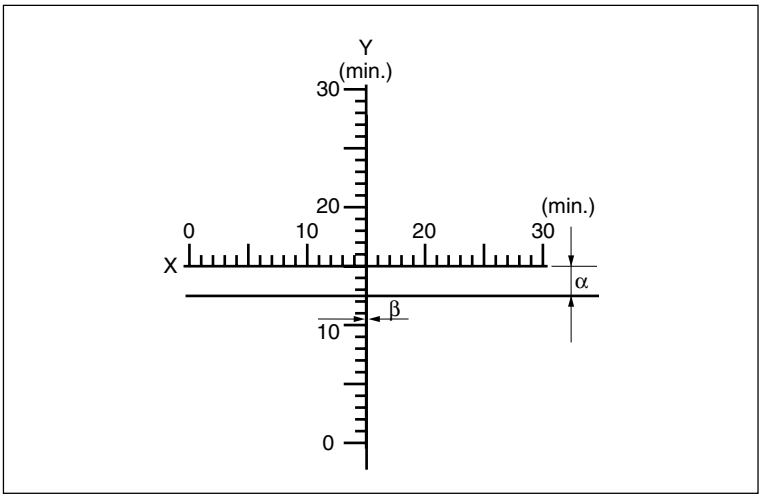
Tangential skew: Skew perpendicular to the radial skew



12. Remove the triangle plate IN, and attach the triangle plate OUT whose legs are cleaned to the position shown in the figure.

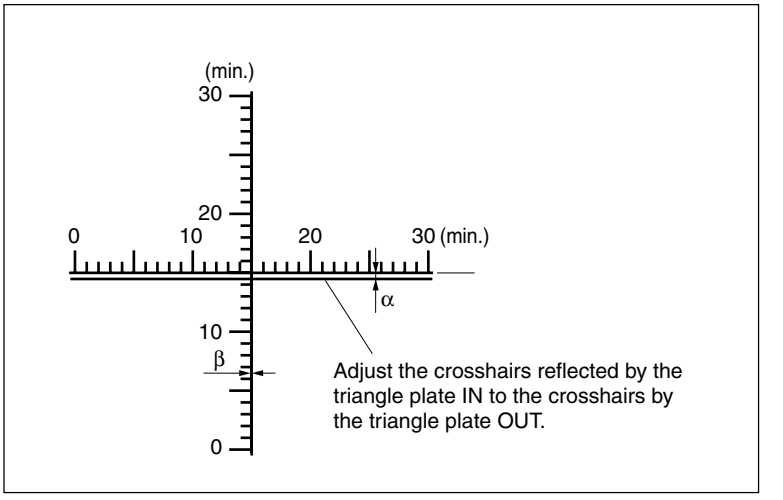


13. Adjust the radial skew (α) of the crosshairs reflected by the triangle OUT by turning the radial skew adjustment screw so that it overlaps the Y axis that is the center of the surface runout of the crosshairs reflected by the reflection block.
Measure the deviation amount (β) of the tangential skew and take a note of it.

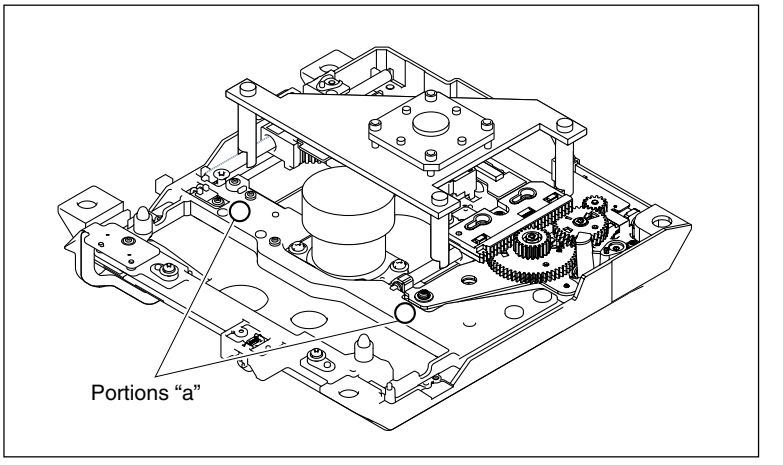


14. Remove the triangle plate OUT, and place the triangle plate IN again.
15. Adjust the tangential skew adjustment screw through the auto-collimator so that the center of the crosshairs reflected by the triangle plate IN and the center of the surface runout of the crosshairs reflected by the reflection block become the same direction and amount as the deviation (β) measured in step 13.
    If the center is deviated in the X-axis direction, fine adjust it with the radial skew adjustment screw, and check that the radial skew (α) and tangential skew (β) meet the specifications.
    Specifications:
    α = ±1.00 min. or less (±1 tick mark or less of the reference crosshairs on the eyepiece)
    β = ±5.00 min. or less (±5 tick marks or less of the reference crosshairs on the eyepiece)

    Notes
    - Adjust by turning both the adjustment screws equally.
    - The adjustment screws should be turned clockwise for this adjustment. If they are turned too much, turn them back sufficiently, and turn them clockwise again.
    - Match the deviation direction between IN and OUT.



16. Tap around portions “a” of the base plate with the tip of a screwdriver, to check that the radial skew (α) and tangential skew (β) meet the specifications.
    If they do not meet the specifications, return to step 11 to perform the adjustments again.
    Specifications:
    α = ±1.00 min. or less (±1 tick mark or less of the reference crosshairs on the eyepiece)
    β = ±5.00 min. or less (±5 tick marks or less of the reference crosshairs on the eyepiece)



17. Remove the triangle plate IN, and place the triangle plate OUT again. Then confirm that the deviation of the centers meets the specification.

    Note

    Match the deviation direction between IN and OUT.

Optical Block Assembly Data Setting/ Laser Initial Data Setting

1. Turn on the power.
2. Select SET OPTICAL DATA of the drive maintenance menu, and set data for the optical block assembly.
   (Refer to Section 4-6-18.)
3. Select INITIALIZE SE of the drive maintenance menu, and set initial values for the laser. (Refer to Section 4-6-19.)
4. Turn off the power.

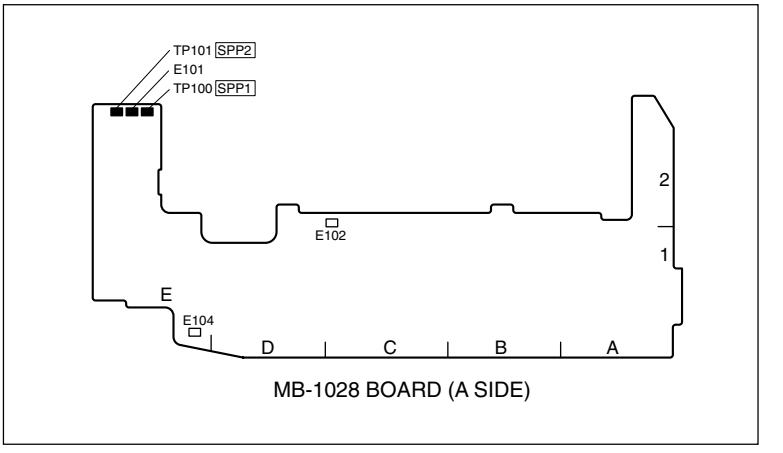
Servo1 Automatic Adjustment

1. Turn on the power.
2. Select SERVO_1 of the drive maintenance menu, and perform the servo 1 auto-adjustment. (Refer to Section 4-6-20.)
3. Turn off the power.

RD Adjustment

Preparations Before Adjustment:

- Input the voltages from the regulated power supply to the connector of the power cable supplied with the KES-110A E&F LPF box as follows.
  1pin: +12 V
  2pin: GND
  3pin: −12 V
- Connect the KES-110A E&F LPF box to the following connectors on the unit.
  TP100/MB-1028 board
  TP101/MB-1028 board
  E101/MB-1028 board



MB-1028 BOARD (A SIDE)

- Connect CH-1 and CH-2 on the oscilloscope to the following connectors.
  CH-1: SPP1/KES-110A E&F LPF box
  CH-2: SPP2/KES-110A E&F LPF box
- Open the shutter of the cartridge of the alignment disc using the following procedure.
  Be sure to close it after the adjustment.

Note

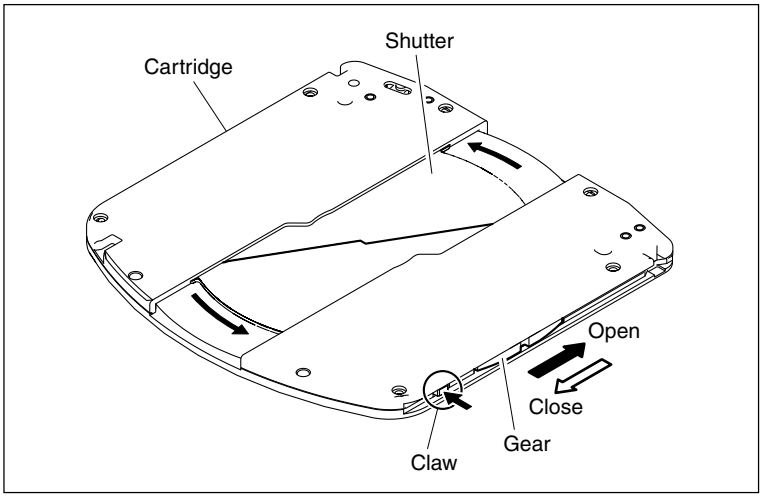
Opening the shutter of the cartridge by hand is limited to the RD check and adjustment.
Be sure not to open it for any other purpose. Do not touch the disc in the cartridge.

How to Open

Move the cover in the direction of the arrow while pressing the claw. Then move the gear by hand until the shutter is completely opened.

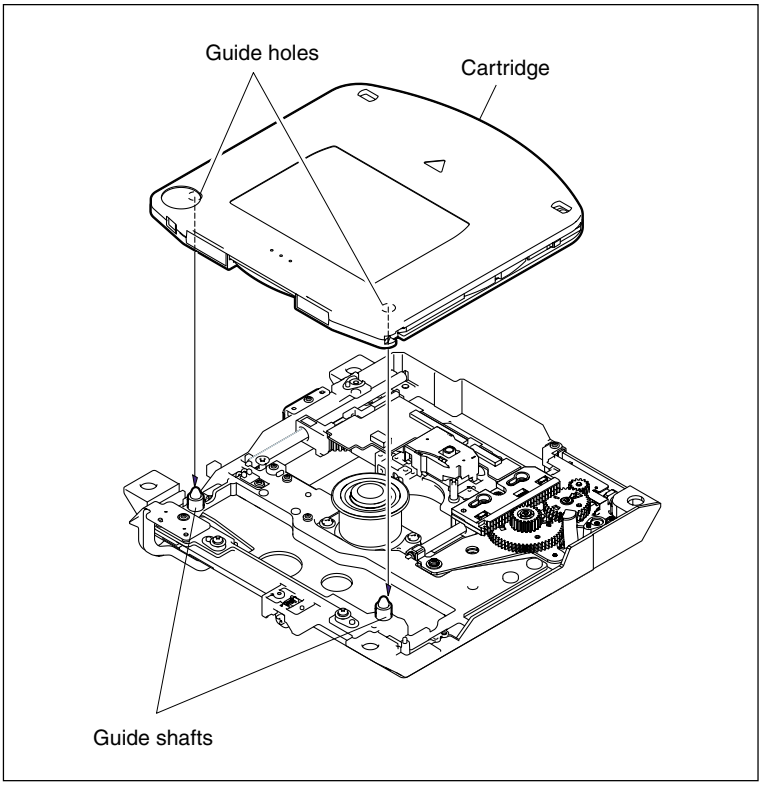
How to Close

Move the gear and the cover in the direction of the arrow until the shutter is closed and the claw snaps.

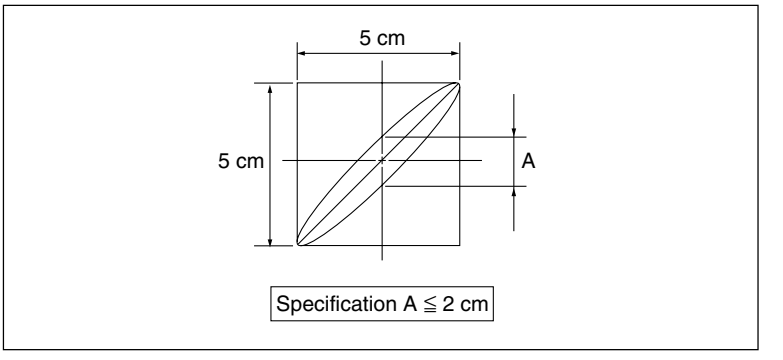


Adjustment Procedure

1. Set the cartridge with its shutter opened on the base plate so that its guide holes are aligned with the two guide shafts of the base plate.



2. Turn on the power.
3. Select MECHA RD of the drive maintenance menu, and move the optical block assembly toward “IN” using the menu.
   (Refer to Section 8-1-1.)
4. Display a lissajous waveform to make the amplitude of the horizontal and vertical directions 5 cm each.
5. Confirm that the lissajous waveform is upward.
6. Confirm that the vertical amplitude at the center of the horizontal amplitude meets the specification.
   If the specification is not met, perform step 9.

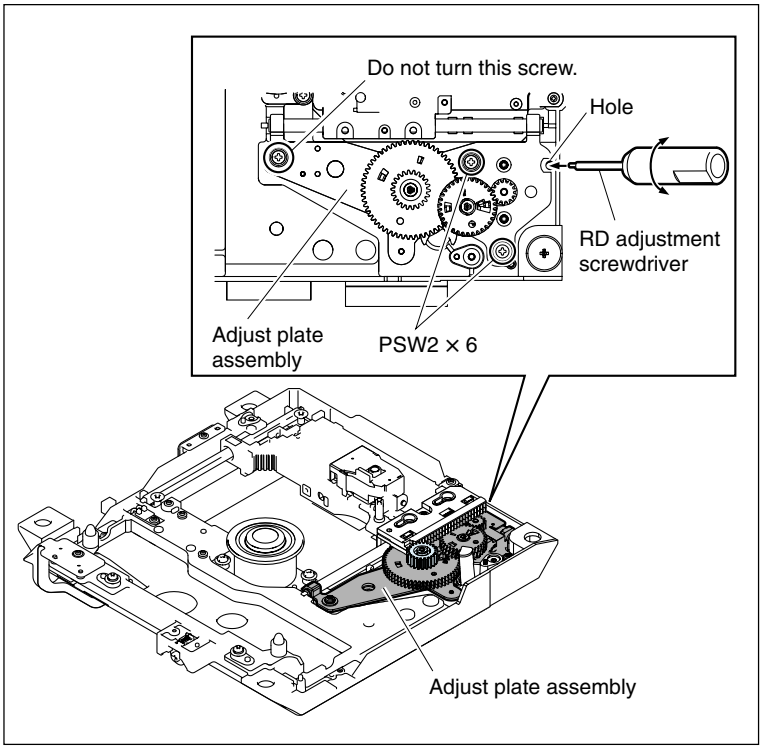


7. Select MECHA RD of the drive maintenance menu, and move the optical block assembly toward “OUT” using the menu.
   (Refer to Section 8-1-1.)
8. Confirm that the vertical amplitude at the center of the horizontal amplitude meets the specification.
   If the specification is not met, perform step 9.
9. Insert the RD adjustment screwdriver into the hole of the adjust plate assembly shown in the figure to adjust the position so that the lissajous waveforms of “IN” and “OUT” meet the specifications.
10. Turn off the power and confirm that the disc in the cartridge stops completely.
11. Tighten the two screws securing the adjust plate assembly shown in the figure with the following tightening torque, and apply the locking compound to them.
    Tightening torque: $20 \times 10^{-2} \pm 0.01$ N•m
    {2.0 ±0.1 kgf•cm}

    Note

    Do not tighten the screws shown in the figure.

12. Perform the skew adjustment to confirm that the specification is met.
    (Refer to Section 8-1-4.)
    If not, fine adjust the skew.
    (Refer to Section 8-1-4.)

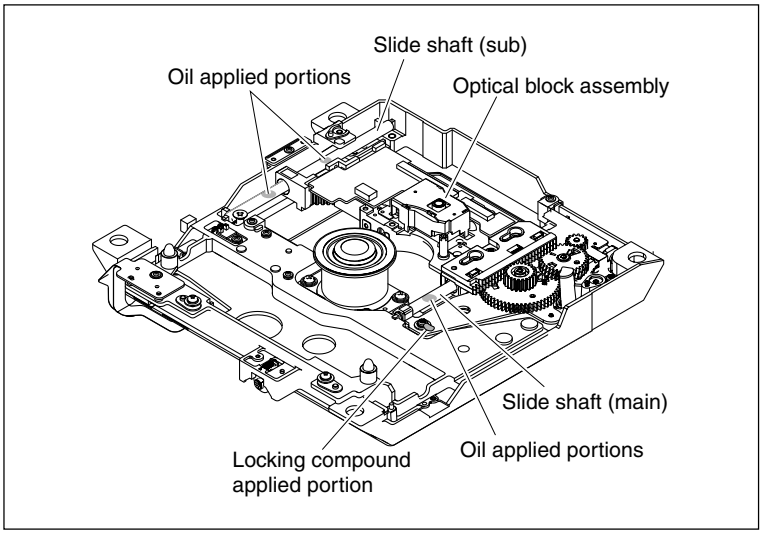


Apply locking compound and oil

1. Apply the locking compound to the screws shown in the figure. Also apply the oil to the three portions of the two slide shafts shown in the figure.

   Note

   Apply the locking compound to the screw as shown in the figure, being careful not to put it over the head of the screw.



Cleaning

1. Clean the loader (P1) assembly.
   (Refer to Section 6-2-1.)

Servo2 Automatic Adjustment

1. Attach the loader (P1) assembly.
   (Refer to Section 7-1-2.)
2. Turn on the power.
3. Select SERVO_2 of the drive maintenance menu, and perform the servo 2 auto-adjustment. (Refer to Section 4-6-22.)

Clear media log

1. Select CLEAR MEDIA LOG of the drive maintenance menu to clear media log.
   (Refer to Section 4-6-27.)
2. Turn off the power.

After Adjustment

1. Reinstall the SW guard assembly.
   (Refer to Section 2-7-9.)
2. Reinstall the outside panel.
   (Refer to Section 2-7-2.)

8-1-4. Skew Adjustment

Notes

- To prevent the possibility of damage to the optical block assembly in the drive by static electricity charged in a human body or clothes, be sure to establish a ground before cleaning the drive assembly. (Refer to Section 2-15-1.)
- The spindle motor and the actuator around the objective lens have intense magnetic circuits. Keep magnetic substance away from these parts. If the magnetic force makes a metallic material such as a screwdriver, reflection block and so on hit the actuator, the objective lens will be damaged. If the magnetic substance is moved close to these parts, their characteristics may be changed.

The skew adjustment has the following two items:

- Skew check
- Skew adjustment

This section describes the skew check/adjustment procedures to be performed individually when the error rate becomes high.

Fixtures

- BRD-P1/P2 reflection block for auto-collimator (PW-003)
- Triangle plates IN/OUT (PW-001)
- Calibration plate
- Auto-collimator (Nikon 6D)
- Torque driver (For 3 kg)
- Bit for torque driver (M2)
- Hexagonal wrench driver
- Cleaning liquid
- Cleaning cloth
- Oil (LX-206)
- Locking compound

Skew Check

Preparations Before Check:

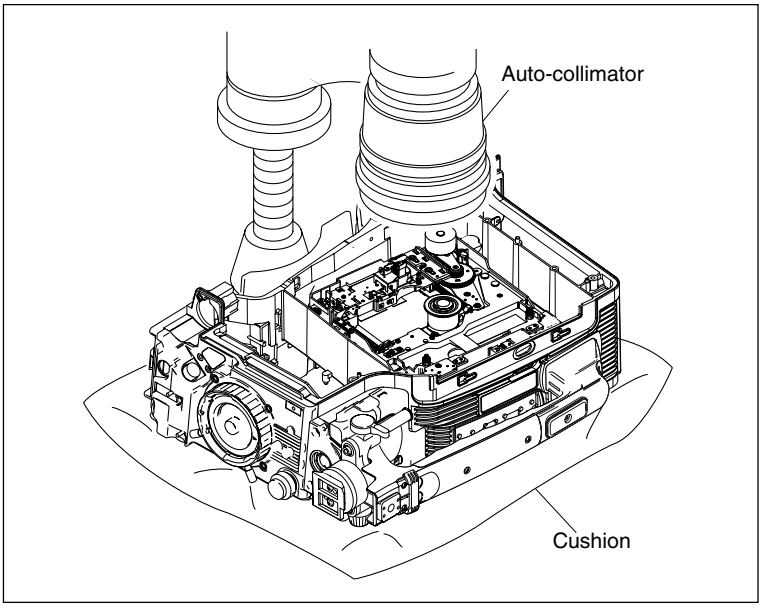
- Perform the dioptric adjustment and the crosshairs focus adjustment for the auto-collimator. Refer to the operation manual of the auto-collimator for details.
- Prepare the optical block assembly with the loader (P1) assembly unattached.
- Calibrate the triangle plates. (Refer to Section 8-1-2.)

Check Procedure

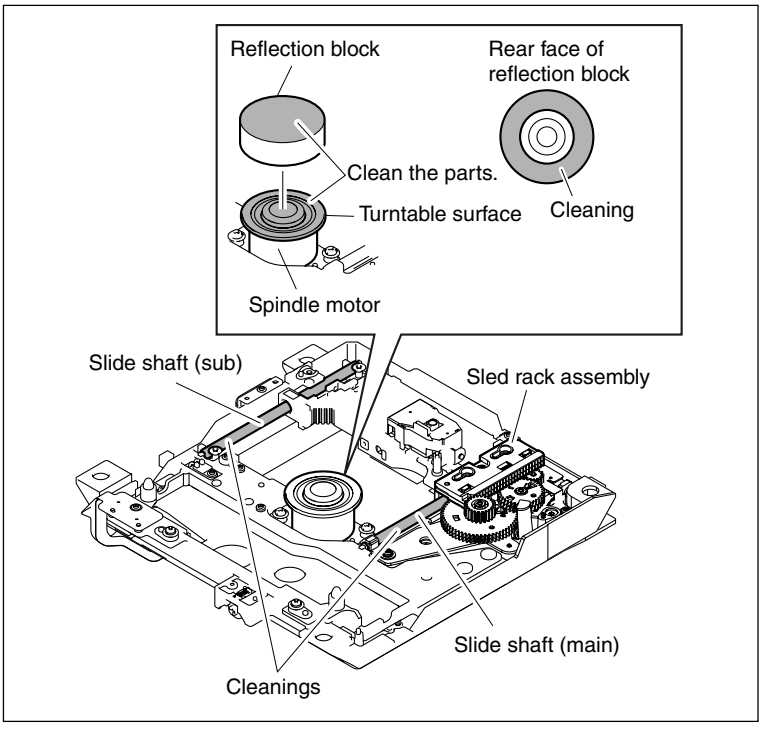
1. Put the unit on the measuring level block of the auto-collimator in the orientation shown in the figure.

   Note

   The specifications (α and β) described in the following are the values when the unit is placed on the measuring level as shown in the figure.



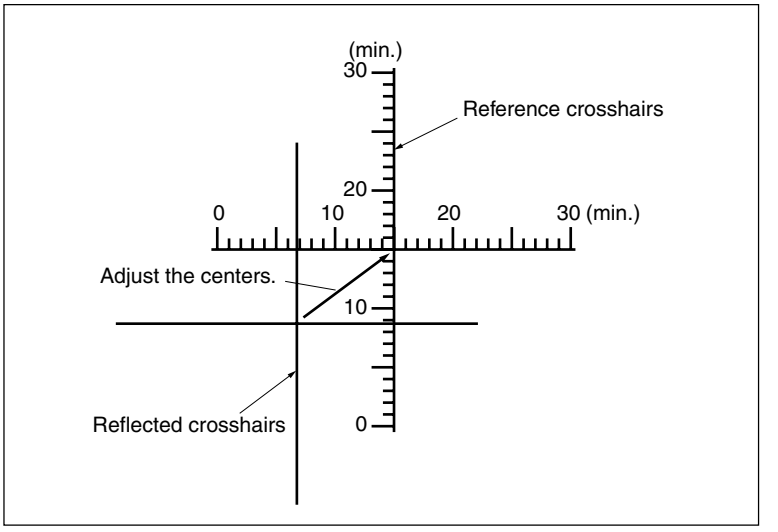
2. Clean the turn table of the spindle motor of the unit using the cleaning cloth with the cleaning liquid soaked.
3. While holding the sled rack assembly and moving the optical block assembly inward and outward, clean the slide shaft.
4. Put the cleaned reflection block on the turn table of the spindle motor.



5. Adjust the position and skew of the unit so that the reflected crosshairs (crosshairs reflected by the reflection block) becomes visible through the eyepiece of the auto-collimator.

   Note

   Put several pieces of paper between the unit and the measuring level block. Adjust the skew of the unit so that the paper is not slipped.



6. When the reflected crosshairs become visible, turn the X-Y direction adjustment handle of the auto-collimator to match the center of the reflected crosshairs and the center of the reference crosshairs (crosshairs on the eyepiece).

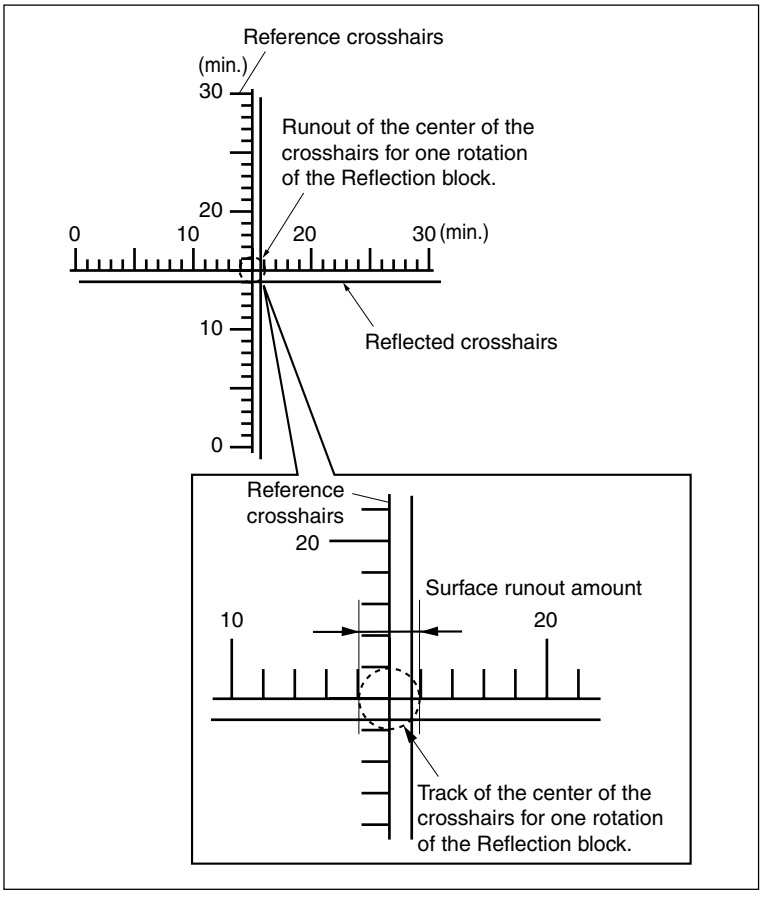
7. Turn slowly the reflection block on the spindle motor 360 degrees with fingers to check through the eyepiece that the surface runout amount of the center of the reflected crosshairs meets the specification.

   Specification

   Surface runout amount:
   3.5 minutes or less (3.5 tick marks or less on the reference crosshairs of the eyepiece)

   Note

   If the specification is not met, clean the turn table of the spindle motor again and recheck the value.

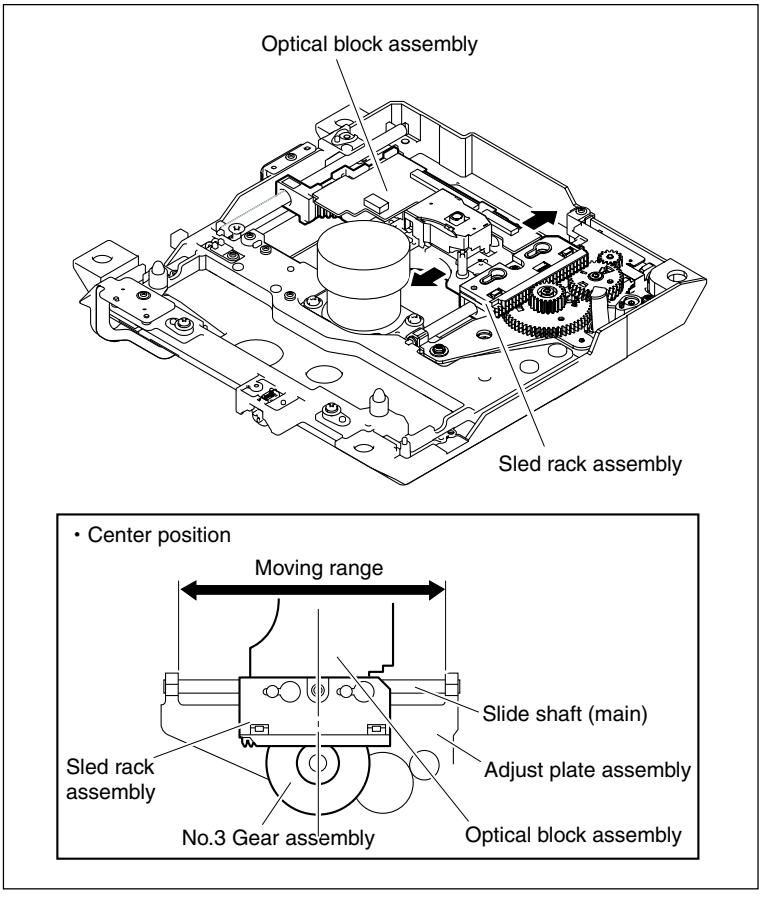


8. Adjust the center of the runout width of the reflected crosshairs and the center of the reference crosshairs again, using the X-Y direction adjustment handle.

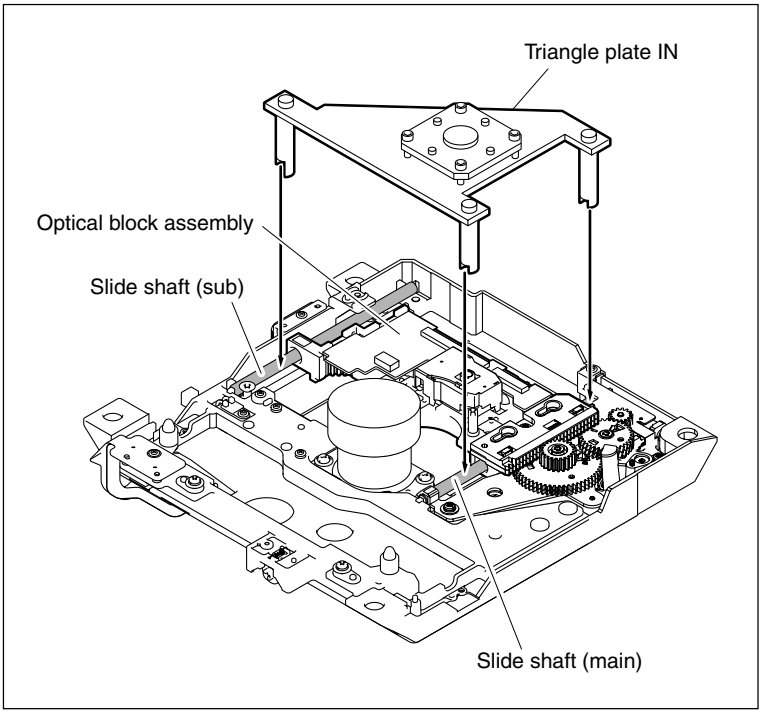
Note

Be sure not to change the position and the skew of the unit and not to touch the X-Y direction adjustment handle of the auto-collimator until the skew adjustment is completed.

9. Hold the sled rack assembly to move the optical block assembly to the center of the moving range.



10. Set the triangle plate IN, whose legs have been cleaned, in the orientation shown in the figure.

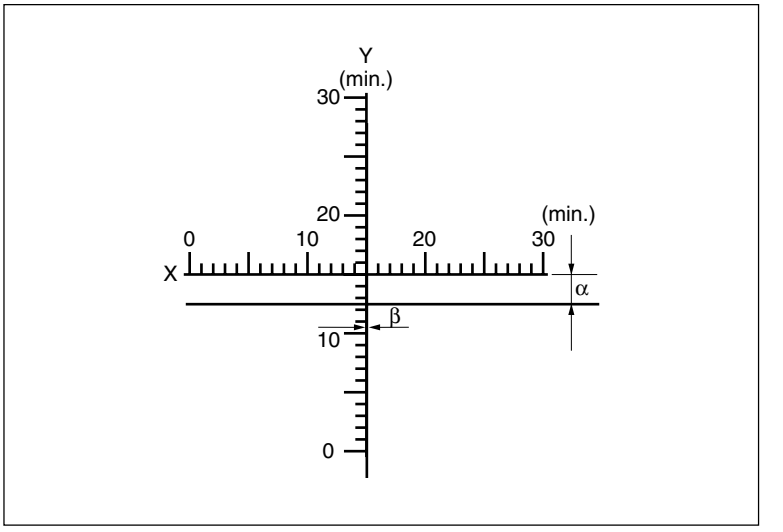


11. Confirm that the deviation amounts (α and β in the figure) between the center of the crosshairs reflected by the triangle plate IN and the center of the surface runout of the crosshairs reflected by the reflection block meet the specifications. Also measure the deviation direction and amount, and take notes of them.

    Specifications:

    α = ±1.00 min. or less (±1 tick mark or less on the reference crosshairs of the eyepiece)

    β = ±5.00 min. or less (±5 tick marks or less on the reference crosshairs of the eyepiece)



12. Remove the triangle plate IN, and place the triangle plate OUT whose legs are cleaned to the position shown in the figure.
13. Confirm that the deviation amounts (α and β in the figure) between the center of the crosshairs reflected by the triangle plate OUT and the center of the surface runout of the crosshairs reflected by the reflection block meet the specifications. Also measure the deviation direction and amount, and take notes of them.

    Specifications:

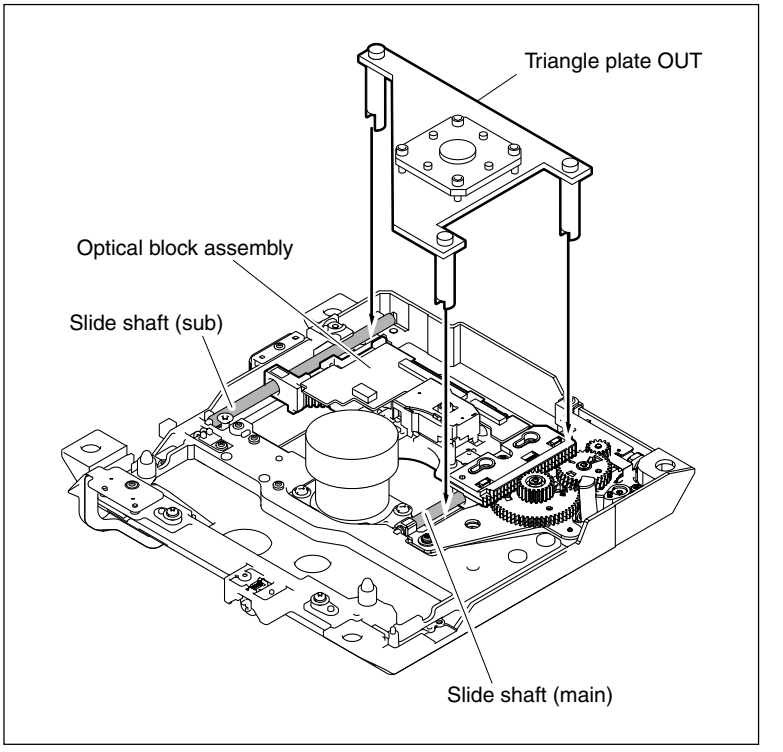
    α = ±1.00 min. or less (±1 tick mark or less on the reference crosshairs of the eyepiece)

    β = ±5.00 min. or less (±5 tick marks or less on the reference crosshairs of the eyepiece)

    If the specifications are not met, perform the following skew adjustment.

    Note

    The deviations of IN and OUT should be in the same direction.



14. Perform the After Check/Adjustment. (Refer to page 8-22.)

Skew Adjustment

Preparations Before Adjustment:

Refer to “Preparations Before Checks” in “Skew Adjustment”.

Adjustment Procedure:

1. Perform steps 1 to 10 of the skew check.
2. Adjust by turning the radial skew adjustment screw and the tangential skew adjustment screw through the auto-collimator so that the center of the crosshairs reflected by the triangle plate IN and the center of the surface runout of the crosshairs reflected by the reflection block meet the specifications.

   Specifications:

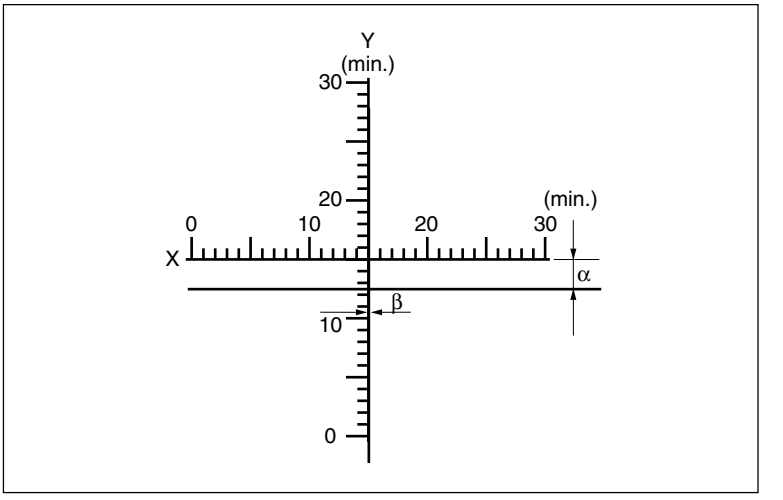
   α = ±1.00 min or less (±1 tick mark or less of the reference crosshairs on the eye-piece)

   β = ±1.00 min or less (±1 tick mark or less of the reference crosshairs on the eye-piece)

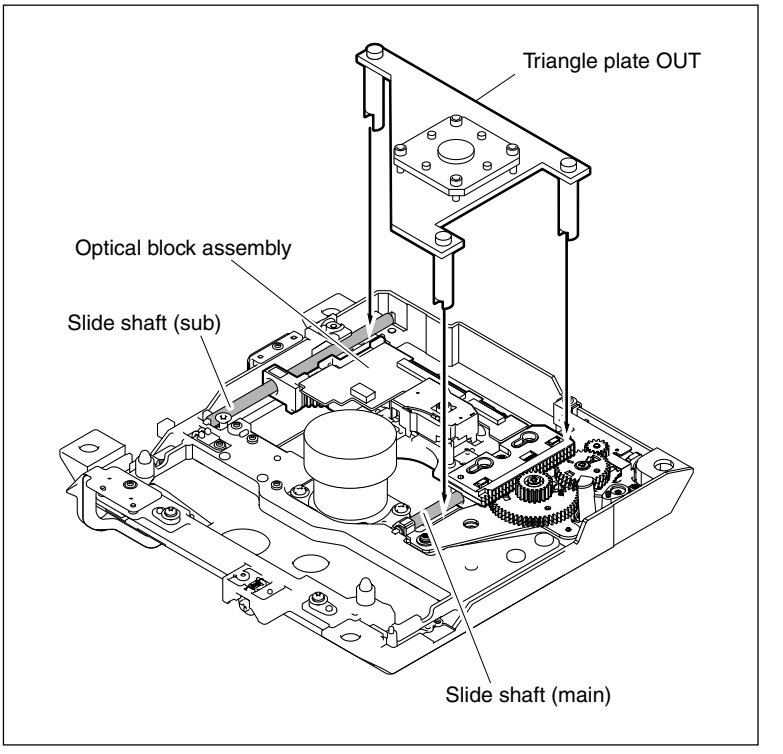
   Note

   Radial skew: Skew in the direction of movement of the optical block assembly

   Tangential skew: Skew perpendicular to the radial skew



3. Remove the triangle plate IN. Place the triangle plate OUT whose legs are cleaned to the position shown in the figure.



4. Adjust by turning the radial skew adjustment screw through the auto-collimator so that the radial skew (α) of the crosshairs reflected by the triangle plate OUT overlaps the Y axis that is the center of the surface runout of the crosshairs reflected by the reflection block. Measure the deviation amount (β) and the direction of the tangential skew, and take notes of them.
5. Remove the triangle plate OUT, and place the triangle plate IN whose legs are cleaned to the position shown in the figure.
6. Adjust by turning the tangential skew adjustment screw through the auto-collimator so that the center of the crosshairs reflected by the triangle plate IN and the center of the surface runout of the crosshairs reflected by the reflection block becomes the same deviation (β) direction and amount as those measured in step 4. If the crosshairs is deviated in the X-axis direction, fine adjust it using the radial skew adjustment screw so that the radial skew (α) and the tangential skew (β) meet the specifications.

   Specifications:

   α = ±1.00 min or less (±1 tick mark or less of the reference crosshairs on the eyepiece)

   β = ±5.00 min or less (±5 tick marks or less of the reference crosshairs on the eyepiece)

   Notes

   - Adjust both the adjustment screws equally.
   - The adjustment screws should be turned clockwise for this adjustment. If they are turned excessively, turn them back sufficiently, and turn them clockwise again.
   - The deviations of IN and OUT should be in the same direction.

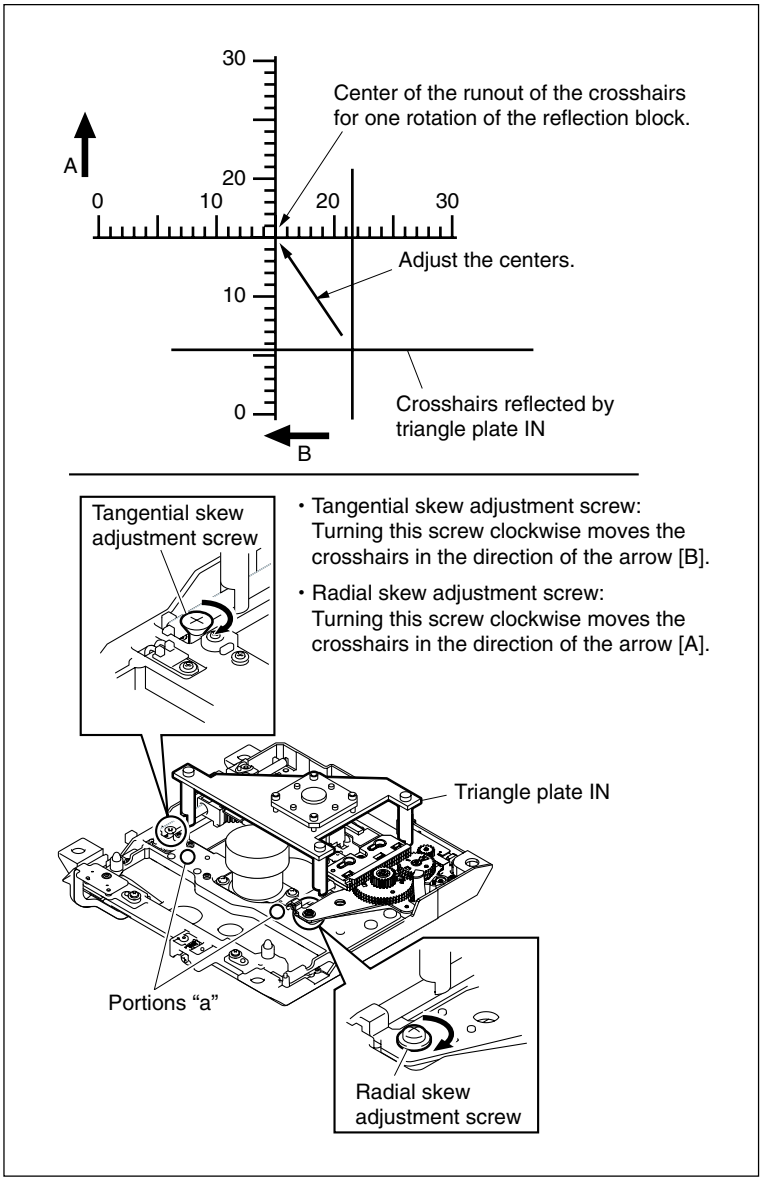
7. Tap around portions “a” of the base plate with the tip of a screwdriver, to check that the radial skew (α) and tangential skew (β) meet the specifications.

   If they do not meet the specifications, return to step 2 to perform the adjustments again.

   Specifications:

   α = ±1.00 min or less (±1 tick mark or less of the reference crosshairs on the eyepiece)

   β = ±5.00 min or less (±5 tick marks or less of the reference crosshairs on the eyepiece)



8. Remove the triangle plate IN. Place the triangle plate OUT again to confirm that the specification is met.

   Note

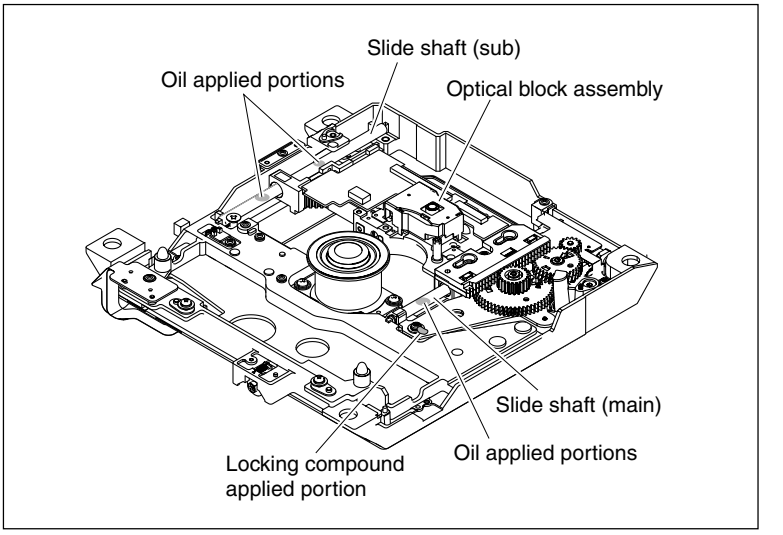
   The deviations of IN and OUT should be in the same direction.

After Check/Adjustment

1. After the specifications for the skew check are met, apply oil to the three portions, shown in the figure, on the two slide shafts of the optical block.
2. When the adjustment are performed, apply locking compound to the screw shown in the figure, and also apply oil to the three portions shown in the figure on the two slide shafts.

   Notes

   - Apply the locking compound as shown in the figure. Be careful not to apply it over the screw.
   - Be careful about the amount of the oil not to be dropped from the slide shafts.



3. Reinstall the loader (P1) assembly. (Refer to Section 7-1-1.)
4. Reinstall the SW guard assembly. (Refer to Section 2-7-9.)
5. Reinstall the outside panel. (Refer to Section 2-7-2.)

8-1-5. RD Adjustment

The RD adjustment has the following two items:
- RD check
- RD adjustment

This section describes the RD check/adjustment procedures to be performed individually when the error rate becomes high.

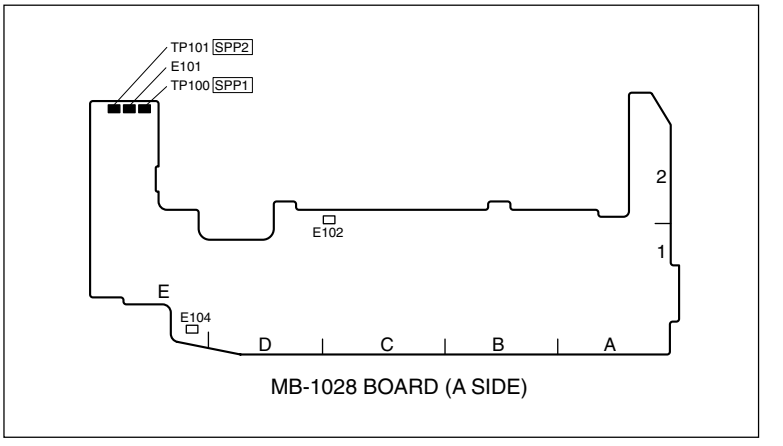
Fixtures

- RD adjustment screwdriver (PW-005)
- KES-110A E&F LPF box
- 2-channel oscilloscope
- Alignment disc (PFD23-RS)
- Regulated power supply
- Locking compound

RD Check

Preparations Before Check

- Input the voltages from the regulated power supply to the connector of the power cable supplied with the KES-110A E&F LPF box as follows.
  1pin: +12 V
  2pin: GND
  3pin: −12 V
- Connect the KES-110A E&F LPF box to the following connectors on the unit.
  TP100/MB-1028 board
  TP101/MB-1028 board
  E101/MB-1028 board



MB-1028 BOARD (A SIDE)

- Connect CH-1 and CH-2 on the oscilloscope to the following connectors.
  CH-1: SPP1/KES-110A E&F LPF box
  CH-2: SPP2/KES-110A E&F LPF box
- Remove the loader (P1) assembly.
  (Refer to Sectin 7-1-1.)
- Secure the flexible card wire connected to the loader (P1) assembly onto the chassis with tape so that its terminal does not short-circuit by touching metal, such as the frame.
- Open the cartridge shutter of the alignment disc using the following procedure.
  Be sure to close it after the check/adjustment.

Note

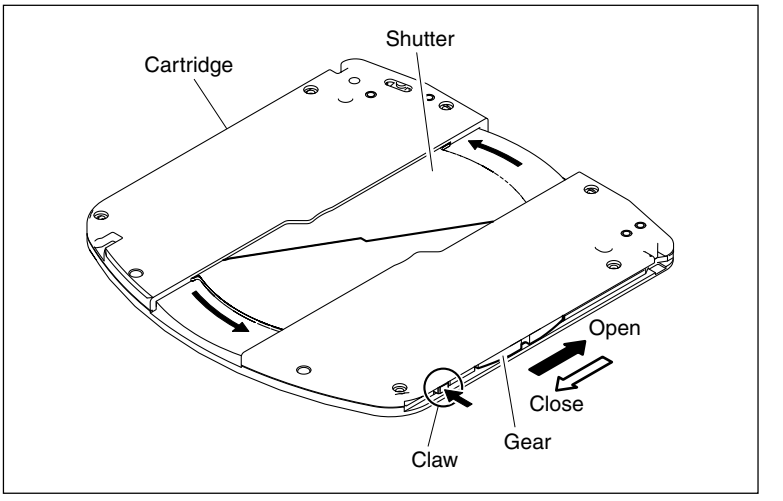
Opening the shutter of the cartridge by hand is limited to the RD check and adjustment.
Be sure not to open it for any other purpose. Do not touch the disc in the cartridge.

How to Open

Move the cover in the direction of the arrow while pressing the claw. Then move the gear by hand until the shutter is completely opened.

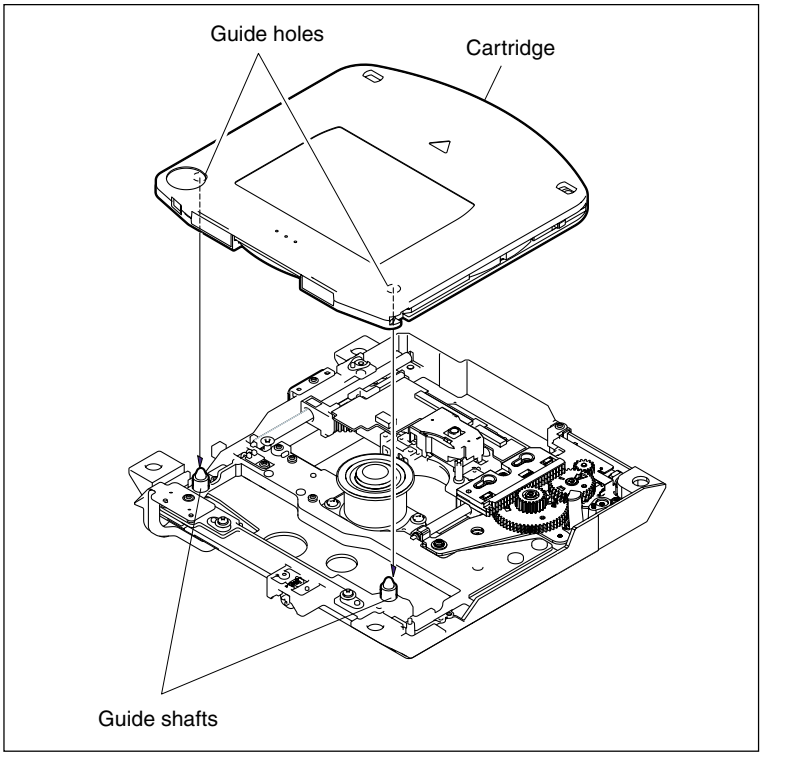
How to Close

Move the gear and the cover in the direction of the arrow until the shutter is closed and the claw snaps.

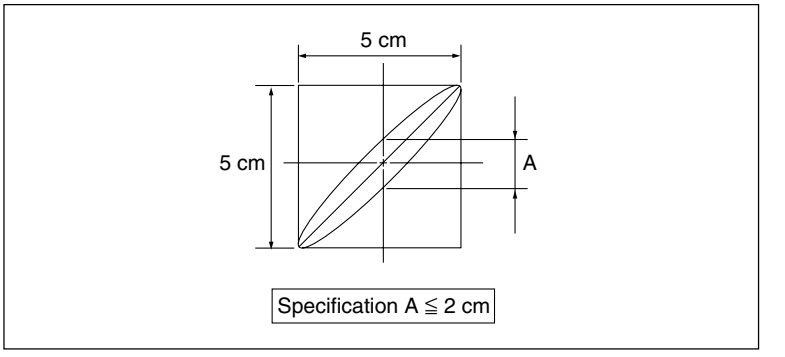


Check Procedure

1. Set the cartridge with its shutter opened on the base plate so that its guide holes are aligned with the two guide shafts of the base plate.



2. Turn on the power.
3. Select MECHA RD of the drive maintenance menu, and move the optical block assembly toward “IN” using the menu.
   (Refer to Section 8-1-1.)
4. Display a lissajous waveform to make the amplitude of the horizontal and vertical directions 5 cm each.
5. Confirm that the lissajous waveform is upward.
6. Confirm that the vertical amplitude at the center of the horizontal amplitude meets the specification.
   If the specification is not met, perform the following RD adjustment.
7. Select MECHA RD of the drive maintenance menu, and move the optical block assembly toward “OUT” using the menu.
   (Refer to Section 8-1-1.)
8. Confirm that the vertical amplitude at the center of the horizontal amplitude meets the specification.
   If the specification is not met, perform the following RD adjustment.
9. Turn off the power, and check the skew to confirm that the specification is met.
   (Refer to Section 8-1-4.)
   If not, perform the skew adjustment.
   (Refer to Section 8-1-4.)



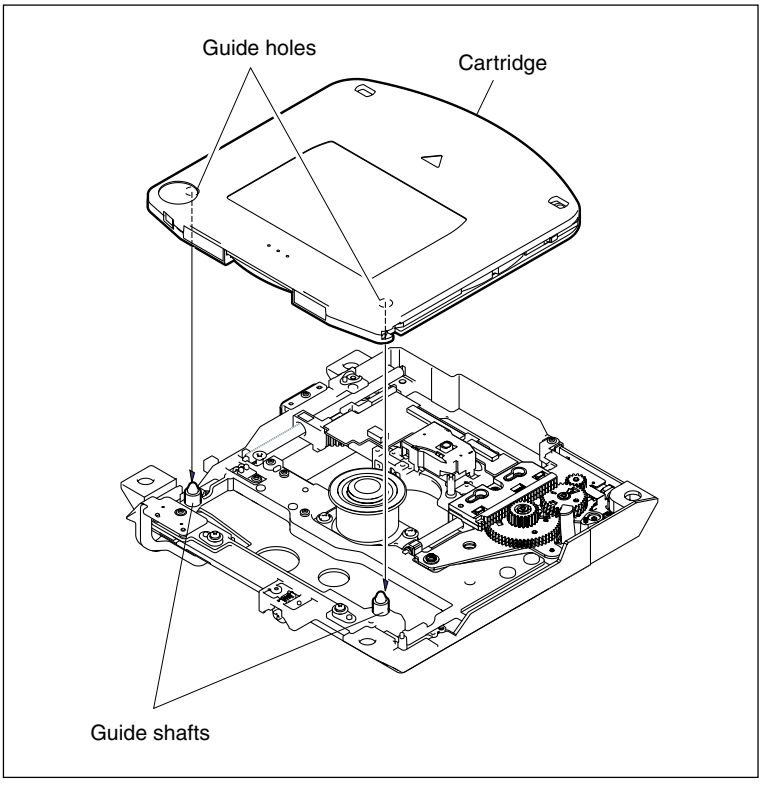
RD Adjustment

Preparations Before Adjustment:

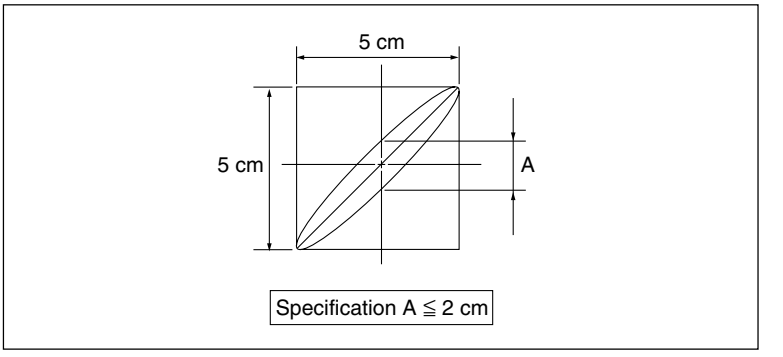
Perform “Preparations Before Check” of “RD Check”.

Adjustment Procedure

1. Melt locking compound for the screw shown in the figure.
2. Set the cartridge with its shutter opened on the base plate so that its guide holes are aligned with the two guide shafts of the base plate.



3. Turn on the power.
4. Select MECHA RD of the drive maintenance menu, and move the optical block assembly toward “IN” using the menu.
   (Refer to Section 8-1-1.)
5. Display a lissajous waveform to make the amplitude of the horizontal and vertical directions 5 cm each.
6. Confirm that the lissajous waveform is upward.
7. Confirm that the vertical amplitude at the center of the horizontal amplitude meets the specification.
   If the specification is not met, perform steps 10 to 12.



8. Select MECHA RD of the drive maintenance menu, and move the optical block assembly toward “OUT” using the menu.
   (Refer to Section 8-1-1.)
9. Confirm that the vertical amplitude at the center of the horizontal amplitude meets the specification.
   If the specification is not met, perform steps 10 to 12.
10. Turn off the power and confirm that the disc in the cartridge stops completely.
11. Remove the cartridge, and then loosen the two screws on the adjust plate assembly, and tighten temporarily the screws until the spring washers on the adjust plate assembly crushed lightly.
12. Turn on the power.
13. Set the cartridge with its shutter opened on the base plate so that its guide holes are aligned with the two guide shafts of the base plate.
14. Insert the RD adjustment screwdriver into the hole of the adjust plate assembly shown in the figure to adjust the position so that the lissajous waveforms of “IN” and “OUT” meet the specifications.

    Note

    Do not turn the RD adjustment screwdriver 360 degrees or more, or the optical block assembly may not move due to misalignment.

15. Turn off the power and confirm that the disc in the cartridge stops completely.
16. Remove the cartridge, and tighten the two screws securing the adjust plate assembly shown in the figure with the following tightening torque.

    Tightening torque: $20 \times 10^{-2} \pm 0.01$ N•m
    {2.0 ±0.1 kgf•cm}

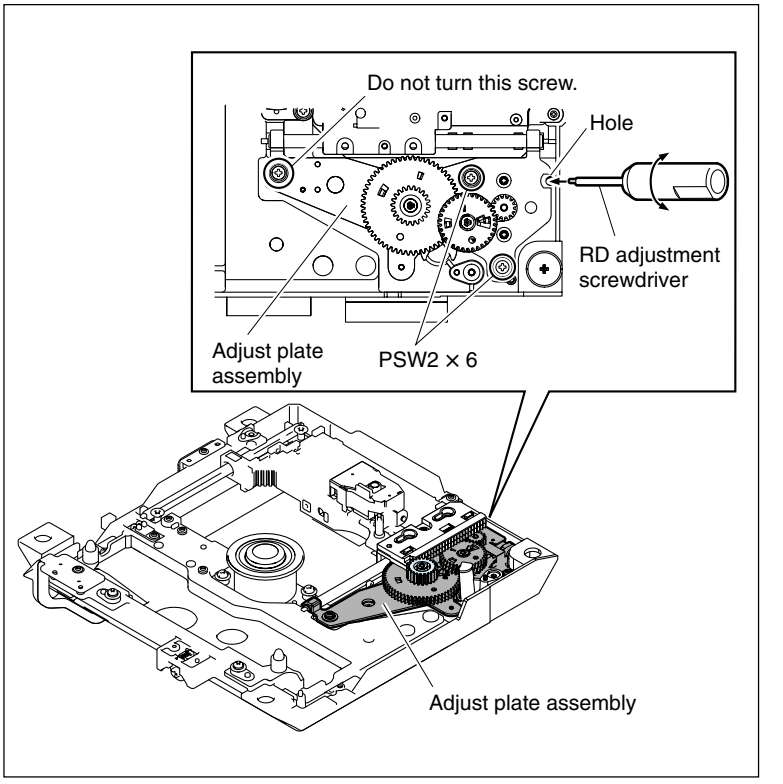
    Note

    Do not tighten the screws shown in the figure.

17. Apply locking compound to the screw shown in the figure.

    Note

    Be careful not to apply it over the screw.



After Adjustment

1. Reinstall the loader (P1) assembly.
   (Refer to Section 7-1-1.)
2. Reinstall the SW guard assembly.
   (Refer to Section 2-7-9.)
3. Reinstall the outside panel.
   (Refer to Section 2-7-2.)

Section 9
Electrical Alignment

9-1. Preparation

9-1-1. Fixtures and Equipment

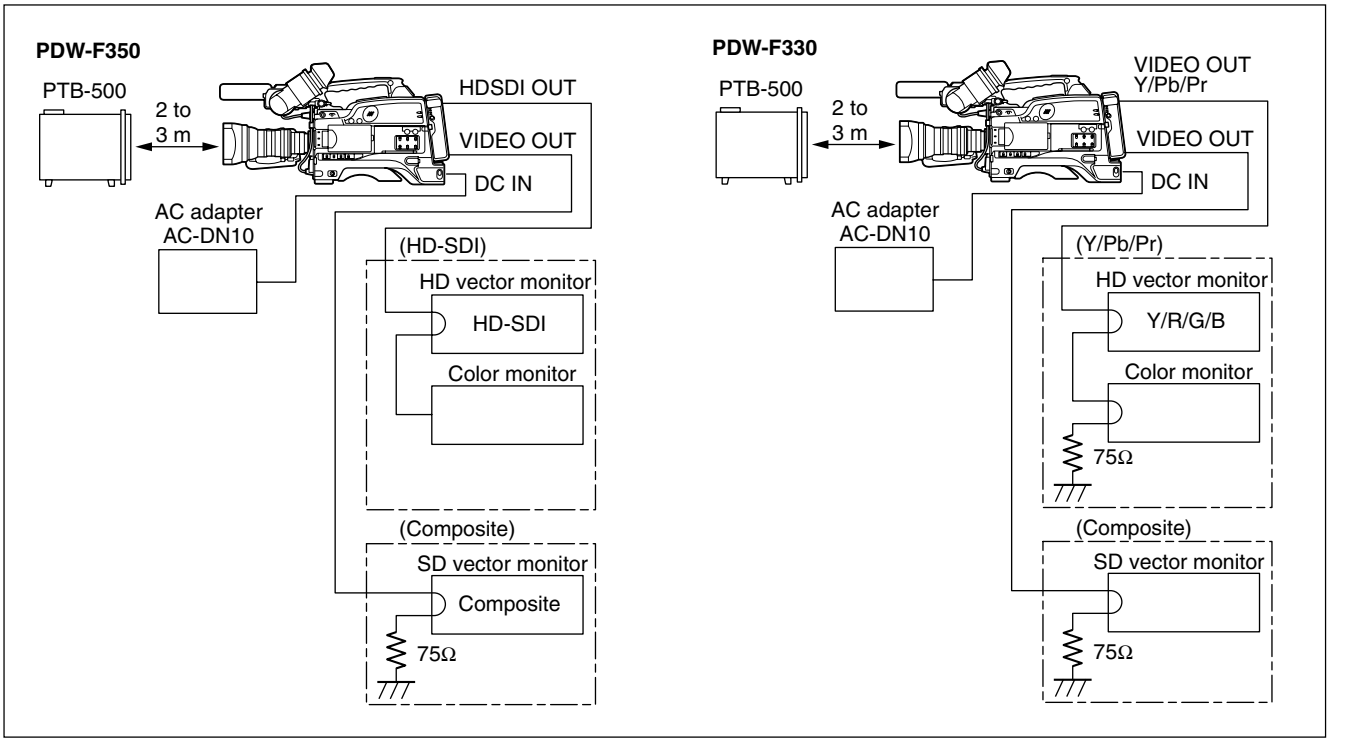
[Fixtures]

- Pattern box PTB-500
  Part No.: J-6029-140-B
- Multi burst chart
  Part No.: J-6026-110-A
- Grayscale chart
  Commercially available on the market Reflective type (16:9)
  Part No.: J-6394-080-A Transparent type
- White window chart

[Equipment]

- Oscilloscope: Tektronix TDS3054 or equivalent (150 MHz or more)
- HD waveform monitor: LEADER ELECTRONICS CORP.LV5152DA or equivalent
- SD waveform monitor: Tektronix 1755A or equivalent
- Frequency counter: Advantest TR5821AK or equivalent
- HD color monitor: Sony HDM-20E1U/14E1U/14E5U or equivalent
- Signal generator: Tektronix SG-5010/TG-2000 or equivalent
- AC adapter: Sony AC-DN10
- Luminance meter: Minolta LS-110 or equivalent

9-1-2. Connection



9-1-3. Switch Setting before Adjustment

Before performing adjustment, set switches and menu as follows.

Inside panel:
GAIN switch → L (0 dB)
OUTPUT/DCC switch → CAM/OFF
WHITE BAL switch → PRST
5600K button → OFF
ZEBRA button → OFF

Front panel:
SHUTTER switch → OFF
Filter knob → 1

Lens:
LENS → MANU
IRIS → C (CLOSE)

Menu:
MENU: OPERATION
PAGE: GAIN SW
ITEM: GAIN LOW → 0 dB
ITEM: GAIN MID → 9 dB
ITEM: GAIN HIGH → 18 dB

MENU: OPERATION
PAGE: FORMAT
ITEM: REC FORMAT → MPEG HD

When using PDW-F330, perform the following four items.
- MENU: OPERATION
- PAGE: OUTPUT
- ITEM: COMPONENT OUT → AUTO
- ITEM: HD → SD (PLAY BACK) → 16:9

MENU: PAINT
PAGE: SW STATUS
ITEM: GAMMA → ON
ITEM: MATRIX → ON
ITEM: KNEE → ON
ITEM: WHITE CLIP → ON
ITEM: DETAIL → ON

9-1-4. Notes on Adjustment

- Some adjustments of the Electrical Alignment require menu to be used.
  Put the unit into the SERVICE mode to display the SERVICE menu.
  (Refer to "4-1. Displaying the SERVICE Menu".)
- Be sure to turn off the power before extending the plug-in board using the extension board.
- Before starting adjustment, set the main POWER switch of Camcorder to ON, then be sure to allow for about 10-minute warm-up time.

9-1-5. Maintaining the Grayscale Chart

For the CCD output level adjustment, using an 89.9 %-reflective grayscale chart is preferable.
If a reflective chart is not available, use a well-maintained pattern box and a transparent grayscale chart for adjustment.
Before beginning adjustment, set the illumination of the light source (or the luminous intensity on the chart surface) properly proceeding as follows and set the color temperature to 3200 K exactly by adjusting light.

Information on the reflective grayscale chart

Recommended chart

The reflective grayscale chart is commercially available.

Recommended chart: Reflective grayscale chart (with a special case)
MURAKAMI COLOR RESEARCH LABORATORY GS-3 or equivalent

Supplier: MURAKAMI COLOR RESEARCH LABORATORY
Address: 3-11-3, Kachidoki, Chuo-ku, Tokyo, JAPAN
Postcode 104-0054
Phone: 81-3-3532-3011
Fax: 81-3-3532-2056

Handling precautions

- Do not touch the chart's surface.
- Do not subject the surface to dirt, scratches or prolonged exposure to sunlight.
- Protect the chart from excess moisture and harmful gas.
- Avoid resting articles against the case.
- Open the case and dry the chart more an hour for a month in no use long period.

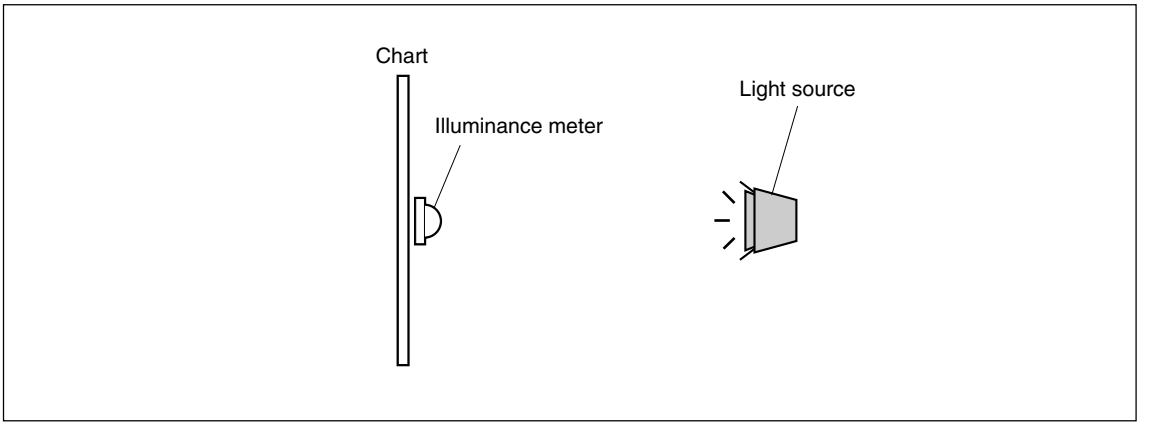
Replacement period when the chart is used as the reference

The reflective grayscale chart should be replaced every two years if it used as the reference. Because the chart deteriorates with time and proper adjustment cannot be achieved.
Replacement period varies according to storage conditions of the chart.

Setting illumination (when the reflective chart is used)

Equipment: Illuminance meter (Calibrated)

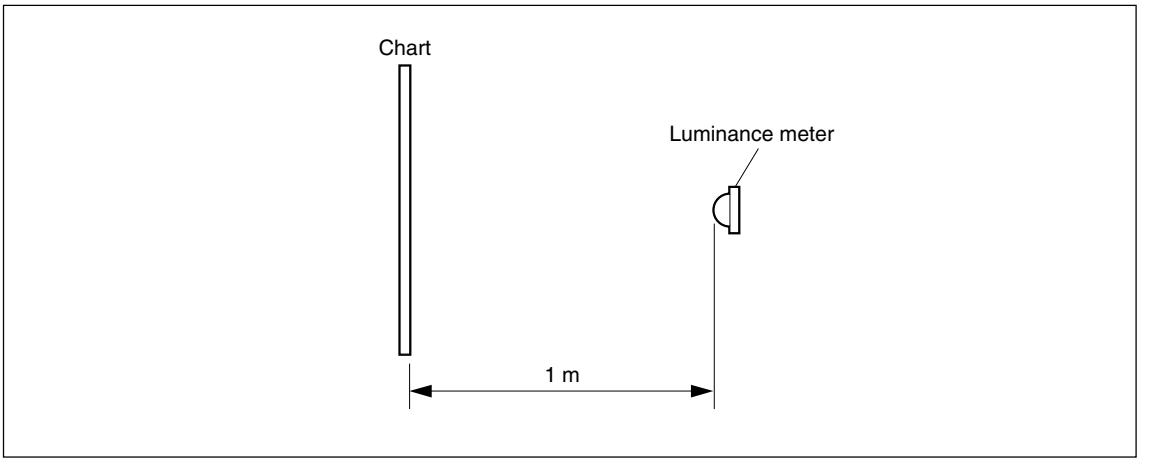
1. Turn on the light source and warm up for about 30 minutes.
2. Place the illuminance meter on the chart surface.
   Adjust the position and angle of the light source so that the whole surface of the chart is evenly 2000 lx.
   Note
   Light the chart from almost the same direction and height as the camera to shoot the chart.



Setting luminous intensity (when the transparent chart is used)

Equipment: Luminance meter (Minolta LS-110 or equivalent. Calibrated.)

1. Light the pattern box and warm up for about 30 minutes.
2. Place the pattern box where the chart is not exposed to light, such as a darkroom.
   (Or cover the pattern box with a cover whose inside is painted in black.)
3. Place the luminance meter facing straight to the chart at a distance of 1 m from it.
4. Adjust the luminance control of the pattern box so that the white portion in the center of the chart is 573 ± 6 cd/m^2.
   Note
   This corresponds to the luminous intensity on the 89.9 %-reflective chart at 2000 lx.



9-2. Adjustment

9-2-1. Confirming VCO CONT Frequency

Notes

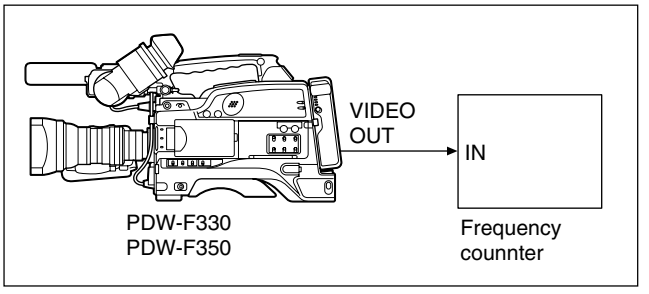
- Perform this check only when the DCP-37/DCP-37A board is replaced.
- Before measurement, set main POWER switch of Camcorder to ON, and be sure to allow for about 10-minute warm up time.
- Images may deteriorate during adjustment.

Fixtures and Equipment

- Frequency counter

Preparation

- Connect as follows.



- On the menu, set as follows.
  MENU: SERVICE
  PAGE: OUTPUT VCO CONT

Adjustment Procedure

Adjust the following thee types of VCO:

- HDCK(N)
- HDCK(P)
- SDCK

1. HDCK (N) adjustment
   Set CLK OUT SEL to HDCK (N).
   The signal of the following specification is output from the VIDEO OUT terminal.
   Specification: 37,087,912 ±70 Hz
   When the signal is outside the specification, perform the following adjustment:
   Change the setting value of HDCK (NTSC AREA) so that the signal meets within the specification.
   When the specification is met, press the rotary encoder, and fix the value.

2. HDCK (P) adjustment
   Set CLK OUT SEL to HDCK (P).
   The signal of the following specification is output from the VIDEO OUT terminal.
   Specification: 37,125,000 ±70 Hz
   When the signal is outside the specification, perform the following adjustment:
   Change the setting value of HDCK (PAL AREA) so that the signal meets within the specification.
   When the specification is met, press the rotary encoder, and fix the value.

3. SDCK adjustment
   Set CLK OUT SEL to SDCK.
   The signal of the following specification is output from the VIDEO OUT terminal.
   Specification: 27,000,000 ±50 Hz
   When the signal is outside the specification, perform the following adjustment:
   Change the setting value of SDCK so that the signal meets within the specification.
   When the specification is met, press the rotary encoder, and fix the value.

4. Completing adjustment
   After adjusting 1 through 3, set CLK OUT SEL to OFF.

9-2-2. Modulator Balance Adjustment

Preparation:

- Put the unit into the SERVICE mode.
  (Refer to “4-1. Displaying the SERVICE Menu”.)
- WHITE BAL switch (inside panel) → PRST
- OUTPUT/DCC switch (inside panel) → CAM/ON
- MENU → VF DISP display

Adjustment Procedure:

1. AUTO W/B BAL switch (front panel) → BLK
   Hold this switch in BLK state until the message “BLACK SET” on the viewfinder is displayed twice.
2. A few seconds later after releasing the switch, check that the message “ABB OK” is displayed on the viewfinder.

9-2-3. VA Gain Adjustment

Notes

- Use an 89.9%-reflective chart in this adjustment as possible. For details, refer to “Maintaining the Grayscale Chart When Gain is Adjusted”.
- If the “16:9” chart is not available, shoot a “4:3” chart so that the chart width is aligned with the underscanned monitor frame.

Fixtures and Equipment:

- Oscilloscope, Waveform monitor
- Grayscale chart (16:9)

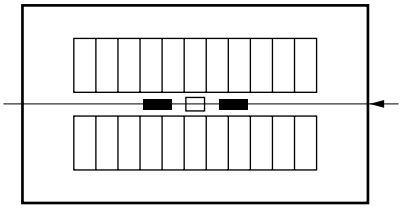
Preparation:

- Connect an SD waveform monitor to the VIDEO OUT connector.
- OUTPUT/DCC switch (inside panel) → CAM/ON
- WHITE BAL switch (inside panel) → PRST
- Shoot a grayscale chart (16:9) in the full underscanned monitor frame.
- Open the inside panel.

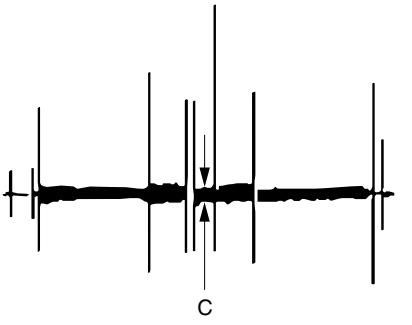
Adjustment Procedure:

1. AUTO W/B BAL switch (front panel) → BLK
   (Perform the automatic black balance adjustment.)
2. On the menu, set as follows.
   MENU: MAINTENANCE
   PAGE: WHITE SETTING
   ITEM: COLOR TEMP. <P> : 3200
   ITEM: C TEMP BAL <P> : 0

   MENU: PAINT
   PAGE: SW STATUS
   ITEM: GAMMA → OFF
   ITEM: DETAIL → OFF
3. Select the center portion by using the waveform monitor.



4. Set the waveform monitor to the CHROMA mode.
5. Equipment: Waveform monitor
   Test point: VIDEO OUT connector
   Adj. point: MENU: SERVICE
   PAGE: CCD ADJUST
   ITEM: R GAIN
   ITEM: B GAIN
   Spec.: Minimize carrier leakage C by using the variable resistors alternately.



Setting after Adjustment:

- On the menu, set as follows.
  MENU: PAINT
  PAGE: SW STATUS
  ITEM : GAMMA → ON
  ITEM : DETAIL → ON

9-2-4. Black Shading Adjustment

Fixtures and Equipment:

Waveform monitor

Preparation:

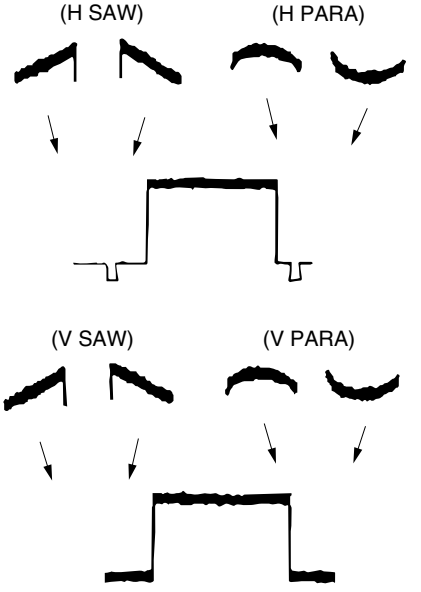
- Connect an HD waveform monitor to the VIDEO OUT connector.
- Lens IRIS → CLOSE
- Waveform monitor setting
  LUM mode
  VOLT FULL SCALE range → 0.5

Adjustment Procedure:

Perform either step 1 or step 2 for the black shading adjustment.

1. Auto black shading adjustment
   (1) On the menu, set as follows.
   MENU: SERVICE
   PAGE: AUTO SHADING
   ITEM: AUTO BLK SHADING → EXEC
   (2) Push the MENU knob.
   (3) When adjustment ends successfully, the message "COMPLETE" appears.
   Note
   The auto adjustment takes about 30 seconds.

2. Manual black shading adjustment
   When performing fine adjustment after executing the black shading auto adjustment, or when performing manual adjustment without executing the auto adjustment, proceed as follows.
   (1) On the menu, set as follows.
   MENU: SERVICE
   PAGE: BLACK SHADING
   ITEM: SHADING CH SEL → G
   ITEM: VIDEO OUT SELECT → G
   Note
   The HD signal is output when VIDEO OUT SELECT is set to a signal other than VBS.
   (2) On the menu, perform the G-channel adjustment as follows.
   MENU: SERVICE
   PAGE: BLACK SHADING
   ITEM: G BLK H SAW
   ITEM: G BLK V SAW
   ITEM: G BLK H PARA
   ITEM: G BLK V PARA
   Spec.: Make the waveform of the G-channel flat.



   (3) On the menu, set as follows.
   MENU: SERVICE
   PAGE: BLACK SHADING
   ITEM: SHADING CH SEL → R
   ITEM: VIDEO OUT SELECT → R
   (4) Adjust the shading for the R-channel in the same procedure as the G-channel adjustment.
   (5) On the menu, set as follows.
   MENU: SERVICE
   PAGE: BLACK SHADING
   ITEM: SHADING CH SEL → B
   ITEM: VIDEO OUT SELECT → B
   (6) Adjust the shading for the B-channel in the same procedure as the G-channel adjustment.

Setting after Adjustment:

- On the menu, set as follows.
  MENU: SERVICE
  PAGE: BLACK SHADING
  ITEM: VIDEO OUT SELECT → VBS

9-2-5. White Shading Adjustment

Note

This adjustment could not be correctly performed if the uneven white pattern is used, luminance is not correct, or lens iris and lens zoom are not in good conditions.

Fixtures and Equipment:

- Waveform monitor
- Full white pattern

Preparation:

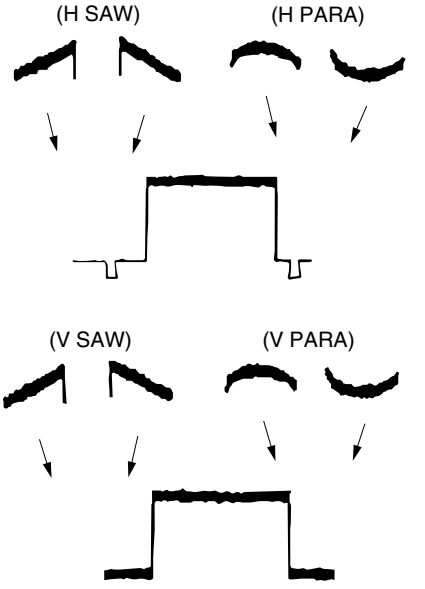
- Connect an HD waveform monitor to the VIDEO OUT connector.
- Lens IRIS → AUTO
- Waveform monitor setting
  LUM mode
  VOLT FULL SCALE range → 0.5
- Shoot a fully occupied full white pattern in the under-scanned monitor frame.

Adjustment Procedure:

Perform either step 1 or step 2 for the white shading adjustment.

1. Auto white shading adjustment
   (1) On the menu, set as follows.
   MENU: SERVICE
   PAGE: AUTO SHADING
   ITEM: AUTO WHT SHADING → EXEC
   (2) Push the MENU knob.
   (3) When adjustment ends successfully, the message "COMPLETE" appears.
   Note
   The auto adjustment takes about 30 seconds.

2. Manual white shading adjustment
   When performing fine adjustment after executing the black shading auto adjustment, or when performing manual adjustment without executing the auto adjustment, proceed as follows.
   (1) On the menu, set as follows.
   MENU: SERVICE
   PAGE: WHITE SHADING
   ITEM: WHT SHAD CH SEL → G
   ITEM: VIDEO OUT SELECT → G
   Note
   The HD signal is output when VIDEO OUT SELECT is set to a signal other than VBS.
   (2) On the menu, perform the G-channel adjustment as follows.
   MENU: SERVICE
   PAGE: WHITE SHADING
   ITEM: G WHT H SAW
   ITEM: G WHT V SAW
   ITEM: G WHT H PARA
   ITEM: G WHT V PARA
   Spec.: Make the waveform of the G-channel flat.



   (3) On the menu, set as follows.
   MENU: SERVICE
   PAGE: WHITE SHADING
   ITEM : SHADING CH SEL → R
   ITEM : MONI OUT SELECT → R
   (4) Adjust the shading for the R-channel in the same procedure as the G-channel adjustment.
   (5) On the menu, set as follows.
   MENU: SERVICE
   PAGE: WHITE SHADING
   ITEM: SHADING CH SEL → B
   ITEM: MONI OUT SELECT → B
   (6) Adjust the shading for the B-channel in the same procedure as the G-channel adjustment.

Setting after Adjustment:

- On the menu, set as follows.
  MENU: SERVICE
  PAGE: WHITE SHADING
  ITEM: VIDEO OUT SELECT → VBS

9-2-6. Black Set Adjustment

Fixtures and Equipment:

Waveform monitor

Preparation:

When using PDW-F330

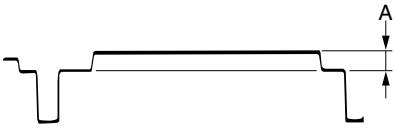
- Connect an HD waveform monitor to the VIDEO OUT (Y) connector.

When using PDW-F350

- Connect an HD waveform monitor of the HD-SDI to the HD-SDI OUT connector.
- Lens IRIS → CLOSE
- AUTO W/B BAL switch (front panel) → BLK
  (Perform the automatic black balance adjustment.)

Adjustment Procedure:

1. On the menu, adjust as follows.
   MENU: PAINT
   PAGE: PAINT
   ITEM: MASTER BLACK
   Spec.: A = 3 ±1 IRE (NTSC)
   A = 20 ±7 mV (PAL)



9-2-7. Flare Adjustment

Fixtures and Equipment:

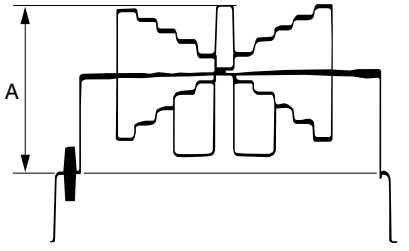
- Waveform monitor
- Grayscale chart (16:9)

Preparation:

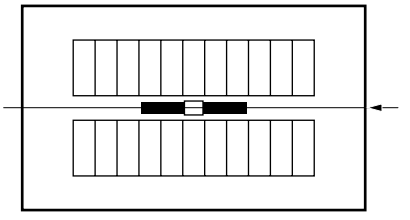
- Connect an SD waveform monitor to the VIDEO OUT connector.
- OUTPUT/DCC switch (inside panel) → CAM/ON
- On the menu, set as follows.
  MENU: SERVICE
  PAGE: BLACK/FLARE
  ITEM: VIDEO OUT SELECT → VBS
- Shoot a grayscale chart in the full underscanned monitor frame.

Adjustment Procedure:

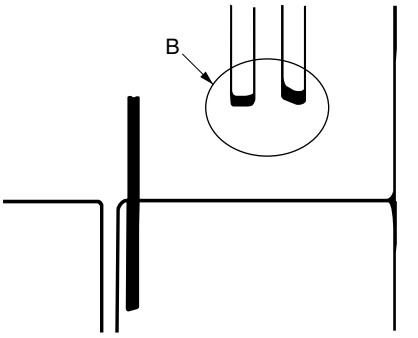
1. Lens IRIS: Open the lens iris by one step from the reference setting A.
   Spec.: A = 100 ±2 IRE (NTSC)
   700 ±14 mV (PAL)



2. On the menu, set as follows.
   MENU: SERVICE
   PAGE: BLACK/FLARE
   ITEM: G FLARE → 0
3. Select center portion by using the waveform monitor.



4. On the menu, adjust as follows.
   MENU: SERVICE
   PAGE: BLACK/FLARE
   ITEM: R FLARE
   Spec.: Minimize the carrier leakage at portion B.



5. On the menu, adjust as follows.
   MENU: SERVICE
   PAGE: BLACK/FLARE
   ITEM: B FLARE
   Spec.: Minimize the carrier leakage at portion B.
6. Repeat steps 4 and 5 several times and minimize the carrier leakage at portion B.

9-2-8. Auto Iris Adjustment

Fixtures and Equipment:

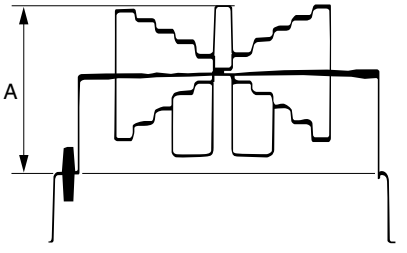
- Waveform monitor
- Black and white monitor
- Grayscale chart

Preparation:

- Connect an SD waveform monitor to the VIDEO OUT connector.
- Lens IRIS → AUTO
- OUTPUT/DCC switch (inside panel) → CAM/ON
- Shoot a grayscale chart in the full underscanned monitor frame.

Adjustment Procedure:

1. On the menu, adjust as follows.
   MENU: SERVICE
   PAGE: AUTO IRIS
   ITEM: IRIS APL RATIO
   Spec.: Set AUTO iris operation depending on the application.
   (Automatic iris operation mode setting can be set in the range of the average level operation to peak-to-peak level operation of the video signal.)
   IRIS APL RATIO = MIN → peak-to-peak level only
   IRIS APL RATIO = MAX → average level only
2. On the menu, adjust as follows.
   MENU: SERVICE
   PAGE: AUTO IRIS
   ITEM: IRIS LEVEL
   Spec.: A = 100 ± 2 IRE (NTSC)
   A = 700 ± 14 mV (PAL)



3. On the menu, adjust as follows.
   MENU: SERVICE
   PAGE: AUTO IRIS
   ITEM: IRIS SPEED
   Spec.: Adjust to the desired operation speed of auto iris.
4. On the menu, set as follows.
   MENU: SERVICE
   PAGE: AUTO IRIS
   ITEM: CLIP HIGH LIGHT → ON or OFF
   Spec.: Set the level to the desired AUTO iris.

9-2-9. RPN Adjustment

Notes

- RPN (Residual Point Noise) of CCD is usually corrected automatically (APR) during automatic black balance adjustment (ABB). When there exists RPN that is not corrected by APR, perform this adjustment.
- This adjustment is performed on the MANUAL RPN screen or the MANUAL RPN (SLS) page in the SERVICE menu.
  Adjustment is performed using the MANUAL RPN page usually, but perform the RPN adjustment using the MANUAL RPN (SLS) page for the RPN that appears only in slow shutter mode (when "SLS: 2 FRAME" or more is selected.). Procedure is the same as that when using the MANUAL RPN page.

Fixtures and Equipment:

Color monitor

Preparation:

- Connect an HD color monitor to the VIDEO OUT connector.
- This is the setting for the RPN adjustment that appears only in slow shutter mode.
  SHUTTER switch (Front panel) → SLS:2 FRAME or more
- On the menu, set as follows
  MENU: SERVICE
  PAGE: MANUAL RPN (Standard adjustment)
  or
  PAGE: MANUAL RPN (SLS) (For the RPN adjustment that appears only in slow shutter mode.)

  ITEM: FIELD/FRAME → FRAME

Adjustment Procedure:

Note

- All the adjustments are to be performed using the MANUAL RPN page or the MANUAL RPN (SLS) page on the SERVICE menu.

1. AUTO W/B BAL switch (Front panel) → BLK
   (Perform the automatic black balance adjustment.)
2. Choose the channel (R, G or B) to be corrected.
   ITEM: RPN CH SELECT → R, G, B
   This sets VIDEO OUT to output R, G, or B in HD.
3. Adjust the values of H and V. Then move the center of the cross cursor to RPN.
   ITEM: RPN CURSOR → ON
   ITEM: CURSOR H POS
   ITEM: CURSOR V POS
4. Push the MENU knob and save the RPN data (corrected value).
   ITEM: RECORD RPN → EXEC
5. The message "EXEC OK?" appears.
   After confirming the RPN is removed, push the MENU knob. The message "COMPLETE!" appears and the correction is performed.

   To cancel the RPN correction after the correction is completed, perform the Cancel without moving the position of the cross cursor.
   ITEM: DELETE RPN → EXEC
6. To correct another RPN, repeat steps 2 to 5.

Setting after Adjustment:

ITEM: RPN CURSOR → OFF
ITEM: FIELD/FRAME → FIELD

PDW-F330 (SY)
PDW-F350 (SY) E
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