English Edition

# SERVICE MANUAL

By Portable Document Format

EOS D60

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To Japanese Edition

CY8-1201-256

**Canon**

# Canon

**EOS D60**                                      **C12-6011**

# SERVICE MANUAL

## Technical Documents

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# PREFACE

This manual contains information for servicing the product, and has the following sections:

## Part 1  General Information

Provides the basic information needed to understand the product.
(Operating instructions are not included.  Refer to the products instruction book if necessary.)

## Part 2  Technical Information

Provides technical information about the mechanism and electronics of the product.

## Part 3  Repair Information

Provides information about ths tools and expendables required for disassembly, reassembly, adjustment and measurement of the product, and their locations and method of use.

## Part 4  Electrical Adjustments

No electrical adjustments for this product.

## Part 5  Parts Catalog

## Part 6  Circuit Diagrams

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# Part 1

## General Information

# 1. FEATURES

## 1.1 Ultra-fine, high-image quality about 6.30 megapixel CMOS sensor

- Newly developed, large, single-plate CMOS sensor of 22.7 x 15.1 mm effective size
- Effective pixels: Approx. 6.30 megapixels (6.52 megapixels total)
- Effective angle of view: Equivalent to 1.6x normal EF lens focal length

## 1.2 Retains EOS D30's Outstanding Features

- Continuous shooting speed of approx. 3 fps and maximum burst of 8 shots
- Same features, performance, operation ease, and shooting-priority concept as the EOS D30
  - Completely compatible with all Canon EF lenses
  - Compatible with EOS D30 system accessories
  - Three AF points and three AF modes (ONE SHOT, AI SERVO, AI FOCUS)
  - 35-zone AE sensor, three metering modes (evaluative metering, partial, centerweighted average)
  - Eleven shooting modes (8 programmed AE modes, Tv, Av, M)
  - 1/4000 sec. - 30 sec., bulb, X-sync at 1/200 sec.
  - ISO speed: 100, 200, 400, 800, 1000
  - E-TTL autoflash (with built-in flash and EX-series Speedlites)
  - Built-in flash: Guide No. 12 (at ISO 100 in meters)
  - Single/continuous shooting, self-timer
  - Dioptric adjustment from -3 dpt. to +1 dpt.
  - Compatible with CF card Type I/II
  - Seven white balance modes
  - Menu settings, Custom Functions
  - Noise reduction during long exposures
  - 1.8-in. TFT liquid-crystal monitor
  - USB interface, video output
  - Dimensions: 149.5×106.5×75 mm / 5.9×4.2×3.0 in, weight 780 g /27.5 ounce
  - Bundled software for image manipulation, etc.

## 1.3 User Suggestions Incorporated for Better Basic Performance

- Superimposed display for AF points
- LCD panel (EL) illumination
- Better AF performance in low light (EOS D30: EV2 - EV18 → EOS D60: EV0.5 - EV18)
- Shorter and more stable shutter release time lag
- Improved metering table for stable exposure control
- Additional viewfinder information (Flash exposure compensation icon, maximum burst indicator, and remaining shots counter added.)
- Processing parameters settable with the on-screen menu
- More menu functions and Custom Functions
- Shorter startup time from power-off

# 2. OVERVIEW

## 2.1 EOS D60 body

While retaining the best features of the EOS D30, the EOS D60 has many more pixels and new and improved specifications desired by users. The EOS D60's improvements over the EOS D30 are outlined below. (All specifications not mentioned below are the same as the EOS D30.)

### 1) Imaging element

• Newly developed, large CMOS sensor with about 6.30 megapixels
  The large CMOS sensor has 6.30 effective megapixels (out of a total of about 6.52 megapixels), an effective sensor size of 22.7×15.1 mm (same as the EOS D30's), aspect ratio (2:3), large single CMOS sensor and separate filters for the three primary RGB colors. It boosts the camera to the top of its class for fine image detail and image quality.


Fig. 1-1 CMOS sensor

• Red ghost countermeasures
  With the EOS D30, red ghost outline sometimes appeared near a bright light source or at a symmetrical point in the field. As a countermeasure, the EOS D60's low-pass filter configuration has been modified. The IR filter is a hybrid with a coating and absorption function to suppress red ghost.

### 2) Viewfinder

• Superimposed (SI) display
  The same SI optics found in the EOS 55/ELAN II/50 has been incorporated in front of the pentaprism so that the AF points can be illuminated.
• Easier manual focusing
  The New Laser Matte focusing screen has improved diffusion characteristics to make it easier to distinguish peak focus.

### 3) AF

• Improved AF operation in low light
  With the EOS D30, AF operation was possible in the EV 2 - EV 18 range. This has been improved to EV 0.5 - EV 18 (normal temperature with ISO 100) with the EOS D60. The algorithm for the AF-assist beam has also been modified to improve AF operation in low light.

### 4) Metering and exposure control

• Shorter and more stable shutter release time lag
  With improved firmware, the shutter release time lag is much shorter and more stable than the EOS D30's.

- Improved metering algorithm
  Some users complained about how the meter reading changed even after the picture was slightly recomposed. To address this problem, the α compensation steps has been made finer (1/4f instead of 1/2f).

## 5) Drive

- Continuous shooting speed: Approx. 3 fps, Maximum burst: 8 frames
  The EOS D30's maximum burst during continuous shooting in the Large/Fine mode is approx. 8 shots. With other recording/compression modes, this maximum burst increases or decreases.
  The EOS D60 has a larger buffer memory to better handle the image's larger data resulting from the high pixel count. The maximum burst of 8 shots can be attained regardless of the image-recording format and ISO speed. The maximum burst countdown is also displayed at the bottom of the viewfinder. With the EOS D30, the maximum burst was 3 shots in the RAW mode.
  With the EOS D60, it is now 8 shots. Thus, during continuous shooting, the RAW mode has become more practical.

## 6) Image-recording format

- Middle/Fine and Middle/Normal added

| Recording Format | | Recording Resolution | File Size (Approx. MB) | Compression System |
|---|---|---|---|---|
| Large | Fine | 3072×2048 | 2.5 | JPEG |
| | Normal | (Approx. 6.29 megapixels) | 1.3 | |
| Middle | Fine | 2048×1360 | 1.4 | |
| | Normal | (Approx. 2.78 megapixels) | 0.7 | |
| Small | Fine | 1536×1024 | 0.9 | |
| | Normal | (Approx. 1.57 megapixels) | 0.5 | |
| RAW | | 3072×2048 (Approx. 6.29 megapixels) | 7.4 | Lossless compression RAW |

- Extracting JPEG-Middle/Fine files from RAW files
  During RAW mode shooting, a JPEG-Middle/Fine file is also simultaneously recorded within the .crw file. The JPEG-Middle/Fine file can be extracted from the RAW file and saved (.jpg) with the dedicated driver (provided).
- File size and compression rate settable in Programmed Image Control modes

## 7) Information display

- More viewfinder information provided
  At the bottom of the viewfinder, the following information has been added: 1. Flash exposure compensation, 2. Maximum burst during continuous shooting, 3. Shots remaining. (Since SI display is provided, there is no AF point icons.)

EOS D60

EOS D30

Fig. 1-2 Comparison of viewfinder information.

- LCD panel illumination provided
  The LCD panel now has EL backlight illumination (bluish-green). When it is turned on with the on-screen menu (off by default), the illumination turns on when you press the SET button.
- LCD monitor easier to read
  The TFT monitor's sheet material has been changed so that the visibility at higher angles (over 40 deg. vertically and horizontally) is brighter.

## 8) Menu functions

- Processing parameters settable with the camera
  With the camera's on-screen menus, you can set processing parameters (contrast, sharpness, color saturation, and the newly added color tone). You can set each parameter to one of three settings (-, 0, +). Up to three sets of parameter settings can be set and registered. (The parameters cannot be saved with the bundled software.)
- New menu items added
  - Image-recording quality/Compression rate: Middle/Fine, Middle/Normal
  - LCD panel illumination: 0: Off, 1: On
  - C.Fn setting cancel: Cancel/OK
  - Firmware Ver. 1.0.0

## 9) Custom Functions

- New Custom Functions and modified settings
  New Custom Functions

| C.Fn No. | Custom Function | Setting | Description |
|---|---|---|---|
| C.Fn-14 | Superimposed display | 0 | On |
| | | 1 | Off |
| C.Fn-15 | Shutter release w/o CF card | 0 | Possible without CF card |
| | | 1 | Not possible |

Modified Settings

| C.Fn No. | Custom Function | Setting | Description |
|---|---|---|---|
| C.Fn-5 | AF-assist beam/Flash firing | 0 | Emits/Fires |
| | | 1 | Does not emit/Fires |
| | | 2 | Only ext. flash emits/Fires |
| | | 3 | Emits/Does not fire |

* C.Fn-5: The flash firing can be set in addition to the AF-assist light setting.
Canceled item
C.Fn-1: Noise reduction during long exposures, 0: Off, 1: On

## 10) Design

The EOS D60's exterior design differs from the EOS D30 as follows:
- The main switch has a different shape (for easier operation).
- The color on the top of the mode dial is metallic titanium instead of black.
- The PC terminal and remote control terminal now share a joint rubber cap instead of a separate cap for each terminal.
- The shape of the interface-terminal cover (DIGITAL terminal, VIDEO terminal) is different.

• A "DIGITAL" nameplate is added on the lower right of the camera front.

### 11) Power source

• Shorter startup time from power off
  During the camera's auto power off, information about the recording medium's usable area is saved in the camera's memory. Therefore, when you turn on the camera again, the startup time is faster. This feature is especially effective for MicroDrive storage devices.
• Excellent shooting performance
  About 490 shots can be captured under the following conditions: fully charged batteries, 2-sec. image playback, Large/Fine recording format, and 50% flash use.

### 12) Dimensions and weight

Dimensions: 149.5 (W)× 106.5 (H)×75 (D) mm/5.9 (W)×4.2 (H)×3.0 (D) in (identical to EOS D30), Weight: 780 g/27.5 ounce

## 2.2 EOS D60 software

Besides Adobe Photoshop 5.0 LE, the following software for Windows and Macintosh will be bundled with the camera.
The software will be compatible with Windows 98 SE/Me/2000/XP and Mac OS 8.6 to 9.2.

### 1) Windows software

• TWAIN Driver
  • This TWAIN-standard driver operates under Windows 98SE or 2000. It enables you to view and download images and process RAW images stored in the camera's CF card while the camera is connected to a personal computer with the interface cable (provided).
  • The major specifications are the same as the EOS-1D's TWAIN Driver for Camera.
  * This driver can start up only within a TWAIN-compatible program (such as Photoshop LE).
• WIA Driver
  • Compatible with Microsoft's WIA (Windows Image Acquisition) standard, this driver works with Windows Me and XP.
  • When connected to a personal computer with the interface cable (provided), the camera can be mounted on the computer's Explorer desktop as if it were a removable disk. Explorer can then be used to download images without using any other driver.
• RAW Image Converter
  • Utility program that enables you to process RAW images saved on any drive.
  • Compatible with RAW images captured by the EOS D60, EOS-1D, and EOS D30.

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- Zoom Browser EX
  - Image management utility program bundled with the latest PowerShot-series cameras. It has the added feature of processing EOS D60 RAW images. Only the Japanese version enables CIG (Canon Image Gateway) access.
- Photo Record
  - Layout printing utility program. It works with ZoomBrowser EX for printing with an automatic layout, printing on borderless perforated paper with Canon BJ printers, borderless (on all four sides) printing, etc.
- Remote Capture
  - Utility program that enables the camera to be controlled with a personal computer. The captured image can be received directly by the personal computer. Besides single-frame shooting, timer and interval timer operations are possible.
- PhotoStitch
  - Utility program for compositing multiple images into a single image. Images can be stitched together very precisely to create panorama photos, etc.

## 2) Macintosh software

- Photoshop Plug-in Module
  - This has the same features as the TWAIN Driver for Windows.
- USB Mounter
  - Utility program that enables the camera to be mounted on the Macintosh desktop as if it were a removable disk while the EOS D60 is connected to the Mac with the interface cable (provided). Images captured by the EOS D60 can then be easily copied to the Mac.
- RAW Image Converter
  - Macintosh version of RAW Image Converter for Windows.
- Image Browser
  - This image management utility program has the same features as Zoom Browser EX for Windows.
  - Regarding the printing function, it has the same features as PhotoRecord for Windows which is a printing layout program.
- Remote Capture
  - Macintosh version of Remote Capture for Windows.
- PhotoStitch
  - Macintosh version of PhotoStitch for Windows.

# 3. SPECIFICATIONS

1. Type
   1-1  Type:           Digital AF/AE single-lens reflex camera with focal-plane shutter (vertical travel) and built-in flash.
                                  CMOS sensor for direct imaging
   1-2  Image size:       22.7×15.1 mm
   1-3  Compatible lenses: Canon EF lenses (Due to max. aperture metering, stopped-down shooting not possible.)
   1-4  Lens mount:      Canon EF mount
   1-5  Lens restrictions:  None
   1-6  Lens focal length:  Equivalent to 1.6x the normal lens focal length

2. Imaging Element
   2-1  Type:           High-sensitivity, high-resolution, single-plate, color CMOS
   2-2  Image size:       22.7 mm×15.1 mm (APS C size)
   2-3  Total pixels:      About 6.52 megapixels: 3152 (H)×2068 (V) pixels
   2-4  Effective pixels:   About 6.30 megapixels: 3072 (H)×2048 (V) pixels
   2-5  Pixel unit:       7.4 μm square
   2-6  Aspect ratio:     2:3 (Vertical:Horizontal)
   2-7  Color filter type:  Three separate RGB primary color filters
   2-8  Low-pass filter:   Fixed in front of the imaging element
   2-9  Cleaning mode:   Provided with C.Fn-13-1

3. Recording System
   3-1  Recording medium: Compact Flash (CF) card
   3-2  Recording format: In accordance with the CF card standard
                              * Formatting possible with the EOS D60.
                              * The formatted CF card's volume name will be "EOS-Digital."

   3-3  Image recording format:

| Recording Format | | Recording Resolution | Compression System | Compression System |
|---|---|---|---|---|
| Large | Fine | 3072 × 2048 | JPEG | Low Compression |
| | Normal | | | High Compression |
| Middle | Fine | 2048 × 1360 | | Low Compression |
| | Normal | | | High Compression |
| Small | Fine | 1536 × 1024 | | Low Compression |
| | Normal | | | High Compression |
| RAW | | 3072 × 2048 | Lossless RAW | – |

   3-4  RAW+JPEG simultaneous recording:  A JPEG-Middle/Fine file is also simultaneously recorded within the .crw file. The JPEG-Middle/Fine file can be extracted from the RAW file and saved (.jpg) with the dedicated driver (provided).

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3-5  File size and recording capacity:

| Recording Format | | File Size (Approx.) | Recording Capacity (Approx.) |
|---|---|---|---|
| Large | Fine | 2.5 MB | 48 shots |
| | Normal | 1.3 MB | 92 shots |
| Middle | Fine | 1.4 MB | 89 shots |
| | Normal | 0.7 MB | 172 shots |
| Small | Fine | 0.9 MB | 138 shots |
| | Normal | 0.5 MB | 255 shots |
| RAW | | 7.4 MB | 15 shots |

* The above specifications are based on ISO 100 and Canon's testing standards.
* Figures for the recording capacity apply to a 128 MB Compact Flash card.
* The actual file size and recording capacity depend on the subject, shooting mode, and ISO speed.

4. Information Recorded

(1) Shutter speed (2) Aperture (3) Exposure compensation amount (4) ISO speed (5) Image-recording format (6) Shooting mode (7) White balance (8) Metering mode (9) AEB (10) Flash mode (11) Flash exposure compensation (12) AF mode (13) Focal length used (14) Erase protection (15) Date (16) Time (17) Folder name (18) File name/number (19) Active AF point (20) Selected AF points (21) Camera owner (22) Body No. (23) Drive mode (24) Flash sync timing (25) Custom Functions (26) Processing parameters (27) Red-eye reduction

4-1  Image recording format:  Complies with the Design rule for Camera File (DCF) standards.

4-2  Folder setting:  Automatic

4-3  Image file name:  The file name consists of file name, file number, and extension:

(Example) Img_0001.JPG

File name ─── File No. ─── Extension

* The file number setting set with the on-screen menu will apply to the number.
* The file name and extension for RAW images will be CRW_ and CRW respectively.
* The extension for thumbnail images in the index display will be THM.
* Conforms with DCF File standards.

4-4  File No.:  The following two types of file numbers can be set: The captured images are automatically assigned a file number from 0001 to 9900. And each folder is assigned a number from 100 to 998.
(1) Serial numbering
* The serial numbering of captured images will continue even after you replace the camera's CF card.

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(2) Auto reset
* When you replace the camera's CF card, the numbering will be reset, starting with 100-0001. If the new CF card already contains images, the numbering will continue from the last recorded image in the CF card.

4-5  Processing parameters: Besides the standard processing parameters applied by the camera automatically during image recording, the user can create and register up to three sets of parameters (contrast, sharpness, color saturation, color tone).
* The parameters can be set with the EOS D60's on-screen menu (not with the dedicated software).

## 5. Disk Drive
5-1  Type:                      Accepts CF card Types I and II; has cover
5-2  Slots:                     One
5-3  CF card access indicator:  Blinking access lamp
5-4  Read error warning:        The respective error warning is displayed on the LCD panel and in the viewfinder.
                                * Shutter release also locks.
5-5  CF card format:            Enabled with the on-screen menu.
5-6  Misloading prevention      Provided
     mechanism:

## 6. White Balance
6-1  Type:    Auto white balance using the imaging element.
6-2  Modes:   The LCD panel indicates the white balance mode.

| WB Mode | | Color Temperature (Kelvin) |
|---|---|---|
| Auto | ①Auto | Approx. 3000-7000 K |
| | ②Daylight | Approx. 5200 K |
| | ③Cloudy | Approx. 6000 K |
| | ④Tungsten light | Approx. 3200 K |
| | ⑤Fluorescent light | Approx. 4000 K |
| | ⑥Flash | Approx. 6000 K |
| Manual | ⑦Manual* | Approx. 2000-1000 K |

* Manual: First take a picture of a white subject serving as the white balance datum. Then set the manual WB mode with the on-screen menu and to specify that image.

6-3  White balance bracketing: Not provided

## 7. Viewfinder
7-1  Type:                 SLR-type, eye-level viewfinder (with fixed pentaprism but no condenser lens)
7-2  Focusing screen:      Fixed, New Laser Matte screen
7-3  Dioptric adjustment:  Adjustable from -3.0 dpt to +1.0 dpt.

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7-4  Eyepoint:              20 mm
7-5  Coverage:              95% vertically and horizontally (For the effective pixels)
7-6  Magnification:         0.88X. (with 50mm lens at infinity, -1 dpt)
7-7  Viewfinder information: (1) On the screen
          1)  AF points
          2)  Partial metering circle (6.1 mm dia., approx. 9.5%)
      (2) Below the screen
      • Numerals and letters displayed by 7-segment LCD (yellowish-green)
          3)  Shutter speed (If there is a camera shake or the shutter speed is unsuitable, it blinks at 2 Hz as a warning.), bulb, FEL indicator
          4)  Aperture (If unsuitable, it blinks at 2 Hz as a warning.)
          5)  Max. burst during continuous shooting: Max. 8
          6)  Shots remaining (Displayed when the CF card has room for 8 or fewer images)
          7)  Busy (buSY)
          8)  CF card full warning (FuLL CF)
          9)  CF card error warning (Err CF)
          10) No CF card warning (with C.Fn-15-1/CF)
      • LCD mask (yellowish-green) display
          11) AE lock/FE lock icon, AEB in-progress indicator (blinks at 2 Hz)
          12) Exposure level (+/-2 stops in 1/3- or 1/2-stop increments)
             12)-1: AE exposure compensation amount, 12)-2: Manual exposure level,
             12)-3: AEB level, 12)-4: Red-eye reduction lamp on time display,
             12)-5: Flash exposure compensation amount
          13) Flash exposure compensation icon
          14) Flash icon on: Flash ready
             Flash icon blinking: Flash exposure beyond range warning during FE lock (2 Hz)
          15) High-speed sync (FP flash)
          16) AF focus confirmation light (blinks at 2 Hz when focus cannot be achieved), MF focus confirmation light
      * The viewfinder information display cannot be turned off.
7-8  Mirror:                Quick-return half mirror (Transmittance:reflectance ratio of 40:60)
7-9  Viewfinder blackout time: Approx. 300 ms at 1/60 sec. or faster shutter speeds.

7-10 Mirror lockup:     Enabled with C.Fn-3-1
                        * Mirror locks up when the shutter button is pressed
                          completely (SW-2). The picture is taken when the
                          shutter button is let go and pressed completely again.
                          Mirror lockup duration: Max. 30 sec. after which the
                          mirror returns.
7-11 Mirror cut-off:    No cut-off with lenses up to EF 600mm f/4
7-12 Depth-of-field preview: Enabled with depth-of-field preview button
                        * Enabled in the Creative Zone modes (disabled in Full
                          Auto and Programmed Image Control modes).
                        * With Speedlite 550EX, 420EX, MR-14EX, or MT-
                          24EX, pressing the depth-of-field preview button fires
                          a modeling flash.
7-13 Eyepiece shutter:  None (Eyepiece cover provided on strap)
7-14 Misc.:             Eyecup Eb provided
                        *Angle Finder C, Angle Finder B, Magnifier S, Eyepiece
                         Extender EP-EX15 attachable to eyepiece.

8. Autofocus
   8-1  Type:           Multi-BASIS, TTL-CT-SIR (TTL secondary phase
                        difference detection)
   8-2  AF points:      Three
   8-3  Focusing modes: (1) Autofocus
                           Switchable between the following three modes:
                        1) One-Shot AF
                           When focus is achieved, the autofocus operation
                           stops and locks (AF lock).
                           * AF-priority (The shutter can be released only when
                             focus is achieved.)
                           * During evaluative metering, AE lock is set when
                             focus is achieved.
                           * In the partial metering and centerweighted average
                             metering modes, exposure metering continues in
                             real-time until the shutter is released.
                           * With applicable USM lenses, electronic ring manual
                             focusing can be used after focus is achieved with
                             One-Shot AF or if focus is cannot be achieved with
                             One-Shot AF.
                           * Set automatically in the Portrait, Landscape, Close-
                             up, and Night Scene modes.
                        2) Predictive AI Servo AF
                           Tracks subject movement and focuses continuously
                           until the start of exposure.
                           * Single shot or 1st shot during continuous shooting:
                             Shutter-priority (in Creative Zone modes)
                             Single shot or 1st shot during continuous shooting:
                             AF-priority (in Full Auto and Sports modes)

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> From 2nd shot onward during continuous shooting:
> AF-priority
> * Focus confirmation light provided. No focus confirmation beeper.
> * If focusing is impossible, the • indicator blinks at 2 Hz.
> 3) One-Shot/Predictive AI Servo AF switching
> For still subjects: When focus is achieved, AF operation stops (AF lock).
> For moving subjects: Subject tracking and focusing continues until the start of exposure.
> * With applicable USM lenses, electronic ring manual focusing can be used after focus is achieved with One-Shot AF or if focus is cannot be achieved with One-Shot AF.
> (2) Manual focusing
> After the lens focus mode is set to MF (or M), manual focusing is enabled with the focusing ring.
> * During automatic AF point selection, focus aid is provided for the three AF points. During manual AF point selection, focus aid is provided for the selected AF point.
> * An focus confirmation light is provided. No focus confirmation beeper.

8-4  AF point display:  The selected AF point is indicated by: (1) Superimposed display in the viewfinder, (2) Current selected AF point indicated on the LCD panel.

8-5  AF point selection method:  (1) Automatic selection or (2) Manual selection

8-6  AF point switching: P, Tv, Av, M: Manual and automatic AF point selection enabled.
Other shooting modes: Automatic AF point selection is set automatically.

8-7 AF point selection: Selectable with the Main Dial or Quick Control Dial.
(1) Automatic AF point selection
• In the One-Shot AF mode: Based on the subject information obtained by the three AF points, the AF point focusing the optimum (closest) subject is selected automatically.
• In the AI Servo AF mode: At the start of focusing, one of the three AF points must focus the subject. That AF point then will continue to focus-track the subject. If the subject moves away from the AF point, focusing is attempted again by all three AF points. (The focus-tracking cannot jump to another AF point.)
• In the AI FOCUS AF/ONE-SHOT AF mode: Based on the subject information obtained by the three AF

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points, the AF point focusing the optimum subject is selected automatically. If a moving subject is detected, all three AF points are used to focus. When one of the AF points detect a moving subject, it switches to AI SERVO AF. Then the AF point tracking the subject focuses the subject. If the tracked subject moves away from the AF point, focusing is attempted again by all three AF points. (The focus-tracking cannot jump to another AF point.)

(2) Manual AF point selection
  One or three AF points can be selected for focusing.

8-8  AF activation:   AF is activated by pressing the shutter button halfway (SW-1)

8-9  AF operation speed:  Same as EOS D30

8-10 Focus confirmation indication:  Superimposed AF point displayed in viewfinder and focus confirmation beeper
  * The focus confirmation beeper can be enabled or disabled in all the shooting modes.
  * With automatic AF point selection and the ONE-SHOT AF mode, the active AF point lights in red.
  * With automatic AF point selection and the AI SERVO AF mode, there is no superimposed AF point displayed.

8-11 AF precision:   Same as the EOS 650's

8-12 AF working range:  EV 0.5-18 (at normal temperature and ISO 100, with the standard chart)

8-13 AF-assist beam:  (1) Beam emission: Lamp
    Effective range: Approx. 3.8 m (at center), beam coverage: 28mm (135 equivalent) lens angle covered
  (2) Conditions for emission: Emitted automatically under low light (EV 4 or lower at ISO 100)
  * Emitted in shooting modes except Landscape and Sports.
  * Emission can be disabled with C.Fn-5 (including external Speedlite).
  (3) Emissions: 6 times in three bursts
  * Emission stops when focus is achieved.
  (4) Light source: Halogen krypton lamp
  (5) With EX-, EZ-, and E-series Speedlites
    • With 550EX, 540EZ, and ST-E2: The external Speedlite's AF-assist light will be emitted regardless of AF point selection mode (automatic or manual).
    • With other EOS-dedicated Speedlites: When the center AF point has been selected, the external Speedlite's AF-assist light will be emitted. If a peripheral AF point is selected, the camera's AF-assist light will be emitted.

**1-13**

9. Exposure Control

| | | |
|---|---|---|
| 9-1 | Type: | TTL full aperture metering with 35-zone SPC. Three metering modes provided: |

9-1  Type:          TTL full aperture metering with 35-zone SPC. Three
                    metering modes provided:
                    1) Evaluative metering
                    2) Partial metering at center (approx. 9.5% of
                       viewfinder)
                    3) Centerweighted average metering
                    * In Full Auto and Programmed Image Control modes: 1)
                      is set automatically.
                      (2) and 3) cannot be set.)
                    * In the Creative Zone modes, 1), 2), or 3) can be set.

9-2  Shooting modes:  The following AE modes and manual can be set:
                    1) Intelligent Program AE (shiftable)
                    2) Shutter-priority AE (No safety shift)
                    3) Aperture-priority AE (No safety shift)
                    4) Depth-of-field AE (A-DEP, shiftable)
                    5) Full Auto (Intelligent Program AE/non-shiftable)
                    6) Programmed Image Control modes (5)
                       Portrait, Landscape, Close-up, Sports, Night Scene
                    7) Manual
                    8) E-TTL autoflash program AE
                       High-speed flash (FP flash), FE lock
                        * No A-TTL/TTL autoflash program AE

9-3  Metering range:  EV 2-20 (at normal temperature with 50mm f/1.4 lens
                    at ISO 100)

9-4  Exposure beyond  LCD digital display blinks at 2 Hz on the LCD panel and
     range warning:  in the viewfinder.

9-5  Exposure metering:  Activated when shutter button is pressed halfway (SW-1
                    ON)
                    * Metering remains active for 4 sec. after the halfway-
                      depressed shutter button is let go.

9-6  ISO Speeds:    The following ISO speeds are selectable with the on-
                    screen menu:
                    1) 100 (Default), 2) 200, 3) 400, 4) 800, 5) 1000

9-7  Exposure Compensation:  (1) AEB (Auto Exposure Bracketing)
                    1) Compatible shooting modes: See the table below (at
                       4) ) for the shooting modes which enable AEB with the
                       on-screen menu.
                    * During AEB: The AEB icon on the LCD panel blinks,
                      and the *mark and AEB level blinks in the viewfinder.
                    2) Bracketing range: Up to +/- 2 stops in 1/2- or 1/3-
                       stop increments
                    3) Bracketing sequence: Standard exposure, decreased
                       exposure, and increased exposure
                       * Taken in accordance with the drive mode (single or
                         continuous).

**1-14**

   \* If the self-timer is used, the three bracketed shots
     will be exposed successively after the 10-sec. self-
     timer delay.

   \* With C.Fn-7, the bracketing sequence can be
     changed or AEB can be set to continue even after
     the three bracketed shots are taken.

4) Bracketing factor: See the bracketing factor used for
   the respective shooting mode below.

| Shooting Mode | Shutter Speed | Aperture |
|---|---|---|
| Program AE | ● | ● |
| Shutter-priority AE | — | ● |
| Aperture-priority AE | ● | — |
| Depth-of-field AE | ● | — |
| Manual | ● | — |

5) AEB cancellation: Set the AEB amount to 0.

6) AEB automatic cancellation: Canceled by any of the
   following operations: Main switch off, lens changed,
   flash ready, battery replaced, or CF card replaced.

\* AEB cannot be set in the Full Auto and Programmed
  Image Control modes.

(2) Manual exposure compensation

1) Compatible shooting modes: See the table below for
   the shooting modes which enable manual exposure
   compensation.

2) Bracketing range: Up to +/- 2 stops in 1/2- or 1/3-
   stop increments

3) Bracketing factor: See the bracketing factor used for
   the respective shooting mode below.

| Shooting Mode | Shutter Speed | Aperture |
|---|---|---|
| Program AE | ● | ● |
| Shutter-priority AE | — | ● |
| Aperture-priority AE | ● | — |
| Depth-of-field AE | ● | — |

4) Exposure compensation cancellation: Set the
   exposure compensation amount to 0.

   \* Exposure compensation cannot be set in the Full
     Auto and Programmed Image Control modes.

   \* If both AEB and manual exposure compensation are
     set, the AEB amount will be shifted by the exposure
     compensation amount.

(3) Flash exposure compensation

1) Compatible flash: Built-in flash and EX-series
   Speedlites

2) Method: Flash exposure compensation button

3) Exposure compensation: Up to +/- 2 stops in 1/2- or
   1/3-stop increments

**1-15**

4) Flash exposure compensation cancellation: Set the
flash exposure compensation amount to 0.
* If flash exposure compensation has been set with
the external Speedlite, the external Speedlite's flash
exposure compensation will override the camera's
flash exposure compensation setting.
* Flash exposure compensation cannot be set in the
Full Auto and Programmed Image Control modes.
* The flash exposure compensation icon in the
viewfinder lights.

9-8 AE Lock:     (1) Auto AE lock
* In the One-Shot AF mode with evaluative metering, AE
lock takes effect when focus is achieved.
(2) AE lock button
* Sets AE lock at any time.
* AE lock button does not work in the Full Auto and
Programmed Image Control modes.
* Regardless of the metering mode, center partial
metering will be used.
* During AE lock, pressing the AE lock button again
renews the AE lock.
* When the built-in flash or an external Speedlite is
used, the AE lock button works as an FE lock button.

9-9 Multiple exposures:     Not possible

## 10. Shutter

10-1 Type:     Vertical-travel, mechanical, focal-plane shutter with all
speeds electronically-controlled
* Mechanical shutter: Both curtains have dedicated
magnet control. (Curtain speed: 2.9 ms/15.0mm)

10-2 Shutter speeds:     1/4000 to 30 sec. (1/3- and 1/2-stop increments),
bulb, X-sync at 1/200 sec.
* For bulb exposures, the elapsed exposure time is
displayed on the LCD panel.

10-3 Shutter release:     Soft-touch electromagnetic release (No cable-release
socket)

10-4 Shutter-release time lag:     Stop-down by up to 4.5 stops from maximum aperture
and excluding AF operation time:
(1) During SW-1 ON, time lag between SW-2 ON and
start of exposure: 100 ms
(2) Time lag between simultaneous SW-1/SW-2 ON and
start of exposure: 240 ms

10-5 Long exposure     None
noise reduction:

10-6 Self-timer:     Electronically-controlled 10-sec. delay
* Operates in all shooting modes.

**1-16**

    \* After starting, the self-timer is cancelable by pressing the drive button, turning the mode dial, pressing the flash button, or changing the lens.

    \* After focus is achieved, self-timer starts when the shutter button is pressed fully (SW-2). (In the AI SERVO AF/MF mode, self-timer starts immediately at SW-2.)

    \* With C.Fn-3-1, the self-timer delay can be set to 2 sec. instead.

10-7 Self-timer indicator:  Red-eye reduction lamp (blinks at 2 Hz for the first 8 sec., then lights for the remaining 2 sec.)

    LCD panel (Frame counter counts down from 10 to 1 sec.)

    Beeper (beeps at 2 Hz for the first 8 sec., then beeps at 8 Hz for the remaining 2 sec.)

    \* The beeper sounds only if it has been enabled with the on-screen menu.

10-8 Camera shake warning:  Provided in Full Auto and Programmed Image Control modes.

    \* If the shutter speed (Tv-auto) is 0 to 0.5 stops slower than the reciprocal of the lens focal length ×1.25, the shutter speed display blinks at 2 Hz.

## 11. Drive

11-1 Drive modes:  (1) Single frame (2) Continuous (3) Self-timer (10 sec.)

    \* Creative Zone modes: Settable with the drive mode button.

    \* Full Auto and Programmed Image Control modes: Single frame or continuous set automatically depending on the shooting mode.

11-2 Continuous shooting:  Continuous shooting with images recorded in the built-in buffer memory.

    \* When the buffer memory becomes full, further shooting is disabled until one image is completely transferred to the Compact Flash card.

    \* While no pictures are taken (SW-1 OFF), images stored in the buffer memory are constantly transferred to the Compact Flash card to free up the buffer memory.

11-3 Continuous shooting speed:  Approx. 3 fps (at 1/250 sec. or faster shutter speeds)

11-4 Maximum burst during continuous shooting:  8 shots

11-5 Battery life:  With Battery Pack BP-511 (Approx. shots)

| Battery | Temperature | Shooting Conditions | |
|---------|-------------|---------------------|---------------------|
| | | AE 100%, FA 0% | AE 50%, FA 50% |
| EOS D60 | At 20℃ | 620 | 490 |
| | At 0℃ | 480 | 400 |
| BG-ED3 (BP-511×2) | At 20℃ | 1240 | 980 |
| | At 0℃ | 960 | 800 |

* Applicable conditions: Fully charged battery pack, EF 50mm f/1.4
  USM, image review ON, image review time of 2 sec., and Large/Fine

11-6 Image review:        Settable to OFF, ON, or ON (Info).
11-7 Image review time:   Settable to 2, 4, or 8 sec. or Hold.

12. Built-in Flash
    12-1 Type:              Auto pop-up, retractable, built-in flash in the
                            pentaprism with serial control, E-TTL autoflash
    12-2 Guide No.:         Guide No. 12 (at ISO 100 in meters)
    12-3 Recycling time:    Approx. 3 sec.
    12-4 Flash ready indicator: Flash-ready icon lights on in viewfinder
                            * When the flash is not ready, the flash-ready icon is off
                              and the shutter release is locked.
    12-5 Flash coverage:    Up to 18mm lens angle (equivalent to 28mm in 135
                            format)
    12-6 Flash button:      Provided
                            * For pop-up only. Manual retraction.
                            * Works only in Creative Zone modes.
                            * In the Full Auto and Programmed Image Control
                              modes, it pops up automatically when flash is
                              required.
    12-7 Firing conditions: (1) In P, Tv, Av, A-DEP, M modes:
                                Press the flash button to pop-up and fire the flash
                                for all shots.
                            (2) In Full Auto, Portrait, Close-up, and Night Scene
                                modes:
                                Pops up and fires automatically in low light or
                                backlit conditions.
    12-8 Flash sync speed:  Max. X-sync speed 1/200 sec.
                            1) In Full Auto, Program AE, A-DEP, Portrait, and
                               Close-up modes: Set automatically to 1/200 sec. to
                               1/60 sec.
                            2) In the Night Scene mode: Set automatically to 1/200
                               sec. to 2 sec. (in 1/2-and 1/3-stop increments)
                            3) In Tv and M modes: Set manually to 1/200 sec. or
                               slower.
                            4) In Av mode: Set automatically to 1/200 sec. to 30
                               sec. depending on the aperture setting.

**1-18**

12-9 Flash aperture:    The flash aperture is set as shown below.

| Shooting Mode | Av-Set | Av-Auto | | Remarks |
|---|---|---|---|---|
| | | E-TTL P | Tv-AE | |
| ①Program AE | | ● | | |
| ②Shutter-priority AE | | | ● | |
| ③Aperture-priority AE | ● | | | |
| ④Depth-of-field AE | | ● | | The result is the same as ① |
| ⑤Full Auto | | ● | | |
| ⑥Portrait | | ● | | |
| ⑦Close-up | | ● | | PL restriction aperture. |
| ⑧Night Portrait | | ● | | f/2.8 restriction for max. aperture. |
| ⑨Manual | ● | | | |

    * In the Landscape and Sports modes, the built-in flash will not fire.
      Only an external Speedlite can be fired (same result as ①).

12-10 Flash metering system: E-TTL autoflash (preflash metering and linked to AF points)

12-11 Flash level control:  Automatic flash output reduction when backlit or daylight conditions are detected.

12-12 Flash exposure
      compensation:  Up to +/-2 stops in 1/3- or 1/2-stop increments.
      * Flash exposure compensation can be set with the camera for built-in and external Speedlite.

12-13 Effective flash range:

| ISO | EF 24-85mm f/3.5-4.5 USM | |
|---|---|---|
| | Wide: 24mm f/3.5 | Tele: 85mm f/4.5 |
| 100 | 1-3.4 m | 1-2.6 m |
| 200 | 1-4.8 m | 1-3.7 m |
| 400 | 1-6.8 m | 1-5.3 m |
| 800 | 1-9.6 m | 1-7.5 m |
| 1000 | 1-10.8 m | 1-8.4 m |

    * If the focusing distance is shorter than 1 meter / 3.3 ft, the flash coverage will be partially obstructed by the lens.
    * The maximum range is calculated by dividing the respective ISO speed's nominal Guide No. by the f/number.

12-14 Flash exposure beyond  During FE lock, the flash icon blinks for 2 Hz.
      range warning:

12-15 Flash confirmation  None
      indicator:

12-16 Flash-sync timing:  1st-curtain sync
      * With C.Fn-8, 2nd-curtain sync is possible.

12-17 Flash duration:  1 ms or shorter

12-18 Color temperature:  Equivalent to daylight

12-19 Optical axis offset:  Flash center to lens axis: 73.8 mm

12-20 Power source:  Supplied by camera's power source.

12-21 Red-eye reduction:  With the built-in flash, the flash is fired after the red-eye reduction lamp lights.

**1-19**

1) Type: Illumination by lamp (lamp also used for AF-assist light)
2) Shooting modes: Operates in all modes except Landscape and Sports.
3) Operation setting: On-screen menu
4) Conditions for illumination: Lights after focus is achieved when the shutter button is pressed halfway (SW-1) in the One-Shot AF or MF mode. (In the AI SERVO AF mode, shutter-release priority takes effect and red-eye reduction lamp lights immediately at SW-1.)
5) Illumination duration: Under the conditions of 4, lamp lights during SW-1 (with the self-timer, it lights 2 sec. before shutter release). Light level decreases after 1.5 sec.
6) Lamp ON indicator: Exposure level display in viewfinder (dot display sequence for the first 1.5 sec.)
7) Shutter-release lock: None (Shutter-release priority)
   * The control condition above also apply when an external Speedlite is used.

13. External Speedlite
   13-1 Flash sync contacts:  (1) Hot shoe: X-sync contacts
   * Locking pin hole provided to prevent Speedlite slippage.
   (2) Lower side terminal: PC terminal (JIS B-type socket)
   * Screw lock and shock protection feature provided on the hot shoe.

   13-2 Flash auto:  Enabled with the camera's Program AE mode.
   (1) With EX-series Speedlites: E-TTL autoflash
   1) Normal flash
      When the flash is ready, the flash sync speed (1/60 sec. - 1/200 sec.) is set automatically. The camera's E-TTL program automatically sets the flash aperture. When the shutter button is pressed fully (SW-2), a fixed-output preflash is fired right before the mirror goes up. The AE sensor takes an available light reading (before the preflash is fired) and a reflected-light reading when the preflash is fired. The suitable output of the main flash is then calculated, and the main flash is fired. If an EX-series Speedlite is set for high-speed sync (FP flash) and the light level exceeds the lens' minimum aperture, high-speed sync takes effect automatically. When highspeed sync is set, the ⚡H icon lights in the viewfinder. Daylight sync (fill flash) can also be controlled automatically.
   2) FE lock
      When an EX-series Speedlite is used and the flash is

**1-20**

ready, the AE lock button functions as an FE lock button. Pressing this button fires a preflash and the AE sensor meters (by partial metering) the light reflected off the main subject. The suitable flash output is then calculated and stored in memory. When the shutter button is pressed fully, the flash is fired at the output stored in memory. If an EX-series Speedlite is set for high-speed sync (FP flash) and the light level exceeds the lens' minimum aperture, high-speed sync takes effect automatically. When high-speed sync is set, the ⚡H icon lights in the viewfinder. After the FE lock button is pressed and the flash is ready, a preflash is fired and FE lock takes effect. If the flash will be beyond the range (the flash output is 0.5 or more stops insufficient for obtaining a proper flash exposure) the ⚡ icon blinks at 2 Hz. Daylight sync (fill flash) can also be controlled automatically.

* With the 550EX, MR-14EX, MT-24EX: Enables 3-group (A, B, C) wireless control, flash ratio control (A:B), FEB, and modeling flash (with flash ratio).

(2) With built-in flash: E-TTL autoflash
   Specifications are the same as (1) above, except high-speed sync is not possible.

(3) With EZ-, E-, EG-, ML-, and TL-series Speedlites: Autoflash not possible.

1) With the 540EZ, 430EZ, and 420EZ:
   Compatible only in the manual (Multi) mode (A-TTL/TTL autoflash modes will not work.).
   • Set the camera to the manual (M) mode (recommended).
   • Set sync speed manually to 1/200 sec. or slower.
   • Set the flash aperture manually to suit the subject distance and brightness.
   * Since the 300EZ does not have a manual flash mode, it will be the same as 2) in (3).

2) With other EOS Speedlites:
   Incompatible since they do not have a manual flash mode. (Flash cannot be fired.)

* The 480EG can be fired by using the sync contacts.

(4) With other Speedlites:

1) With M-, T-, A-series Speedlites
   Compatible in the manual flash mode or with external flash metering.
   • Set the camera to the manual (M) mode (recommended).
   • Set sync speed manually to 1/200 sec. or slower.
   • Set the flash aperture manually to suit the subject distance and brightness.

**1-21**

2) With non-Canon flash units:
   On-camera unit can synchronize at 1/200 sec. or slower.
   Studio flash can synchronize at 1/60 sec. or slower (testing recommended).

13-3 Wireless flash: Enabled with the 550EX, 420EX, MR-14EX, MT-24EX, or ST-E2.
* Three-group (A, B, C) slave control, a flash ratio (A:B) setting, FEB, and modeling flash (with flash ratio) are enabled.
* The 420EX can function as a slave, while the MR-14EX or MT-24EX serves as the master unit.

13-4 Flash exposure compensation: Settable with the camera or external Speedlite.
* Up to +/-2 stops in 1/3- or 1/2-stop increments.
* If flash exposure compensation is set with both the camera and Speedlite, the Speedlite's setting will override the camera's setting.

13-5 Flash Exposure Bracketing (FEB): Settable with the 550EX, MR-14EX, or MT-24EX.
* Not settable with the camera.
* When the flash fails to recycle fast enough during continuous shooting with FEB, the shutter release locks. After the shutter button is released from the fully depressed position, AE metering takes effect before the flash is ready.

13-6 Modeling flash: With the 550EX, 420EX, MR-14EX, or MT-24EX, press the depth-of-field preview button (fires at 70 Hz for 1 sec.).

## 14. LCD Monitor

14-1 Type: TFT color, liquid-crystal monitor
14-2 Monitor size: 1.8 in.
14-3 Pixels: Approx. 114,000 pixels
14-4 Coverage: Approx. 100% (with effective pixels)
14-5 Brightness adjustment: 2-level (standard/brighter) adjustment provided.
14-6 Refresh rate: Approx. 1/60 sec.
14-7 Angle adjustment: None
14-8 Protective cover: None

## 15. Playback

15-1 Image display format: (1) Single image, (2) Single image (Info.), (3) 9-image index (4) Magnified, (5) Auto play
15-2 Display conditions: Images saved in DCF system.
* If the image is not in the DCF system, [?] is displayed on the LCD monitor.
   Also applicable to thumbnail images (index display).
15-3 Highlight alert: In the single image (Info.) display mode, the highlight portions which do not contain image information will blink.

**1-22**

16. Information display
   16-1 Display format:   (1) Standby mode
                                   1) Auto power-off setting time, 2)Image review,
                                   3) Image review time, 4) Processing parameters (when set),
                                   5) Custom Function setting No.,
                                   6) Flash exposure compensation amount, 7) AEB increments,
                                   8) Shots remaining, 9) CF card space remaining, 10) ISO speed
                                   (2) Playback/Single (INFO.)
                                   1) File No., 2) Shooting mode, 3) Shutter speed, 4) Aperture,
                                   5) Exposure compensation amount,
                                   6) Flash exposure compensation amount (only when flash is used),
                                   7) White balance, 8) Metering mode, 9) ISO speed,
                                   10) Image No./Total images captured,
                                   11) Image erase protection (when set),
                                   12) File size/Compression rate, 13) Date, 14) Time, 15) Histogram
                                   * If an image not in the DCF system is selected, [?] is displayed on the LCD monitor.
                                   * If an image that cannot be displayed is selected, [!] is displayed on the LCD monitor.
                                   * Information display does not work in the index display mode and magnified display mode.

17. Protection/Deletion of Recorded Images
   17-1 Protection:   A single image can be protected or unprotected.
   17-2 Erase:   A single image or all images stored in a Compact Flash card can be erased if they are unprotected.
                                   * Protected images cannot be erased with the camera.

18. Menus
   18-1 Description:   24 menus (8 shooting menus, 4 playback menus, 12 setup menus)
                                   * See the list of menu items on page 33.
   18-2 LCD monitor display language:   Japanese, English, French, or German can be selected.
   18-3 Firmware updating:   Updating by the user is not possible.
   18-4 Print setting feature (DPOF):   For Version 1.1

19. Sound recording:   Not provided

20. Customization
   20-1 Custom Functions:   14 Custom Functions with 38 settings settable with the camera.
                                   * See the list of Custom Functions on page 34.
   20-2 Personal Functions:   None

21. External Interface
   21-1 Digital terminal:   USB Ver. 1.1
   21-2 Video output terminal:   NTSC/PAL

21-3 Remote control terminal:   N3-type terminal

22. Power Source
    22-1 Battery:             One Battery Pack BP-511 (lithium ion rechargeable battery)
                              * With Battery Grip BG-ED3, two BP-511 packs can be used.
    22-2 Main switch:     OFF turns off the power.
    22-3 Battery check:    Automatic battery check when the main switch is turned on. The battery level is indicated by one of three levels on the LCD panel.
    22-4 Power-saving feature: With the menu, settable to 1, 2, 4, 8, 15, or 30 min.
        (Auto power off)   Power turns off automatically after the set time of non-operation elapses.
    22-5 Back-up battery:  One CR2025 lithium battery
    22-6 Backup battery warning: 7-segment, 4-digit display on LCD panel
                              * During backup battery replacement, the backup function is maintained if the attached battery pack has power.
    22-7 Backup function: Menu settings (including the current date and time) are maintained.

23. Body (Chassis) Material:
                              Stainless steel and polycarbonate with glass fiber

24. Exterior
    24-1 Exterior material: Polycarbonate resin
    24-2 Exterior color:   Black paint finish and dark blue grain leather
    24-3 Tripod socket:    CU 1/4
    24-4 Interchangeable grip: None
    24-5 LCD panel illumination: Provided (Bluish-green, When it is turned on with the on-screen menu, the illumination turns on when you press the SET button.)

25. Dimensions:        149.5 (W)×106.5 (H)×75 (D) mm
                              5.9 (W)×4.2 (H)×3.0 (D) in.
26. Weight:              780 g/27.5 oz.
                              (Excluding the Battery Pack, Compact Flash card and back-up battery.)

27. Operating Environment
    27-1 Guaranteed
         temperature range:  0°C to 40°C

    27-2 Operating
         humidity range:   85% or less

28. Major Accessories:    (1) Battery Pack BP-511
                          (2) Compact Power Adapter CA-PS400
                          (3) DC Coupler DR-400
                          (4) Interface Cable IFC-200PCU
                          (5) Video Cable VC-100
                          (6) Battery Grip BG-ED3
                          (7) Dedicated strap
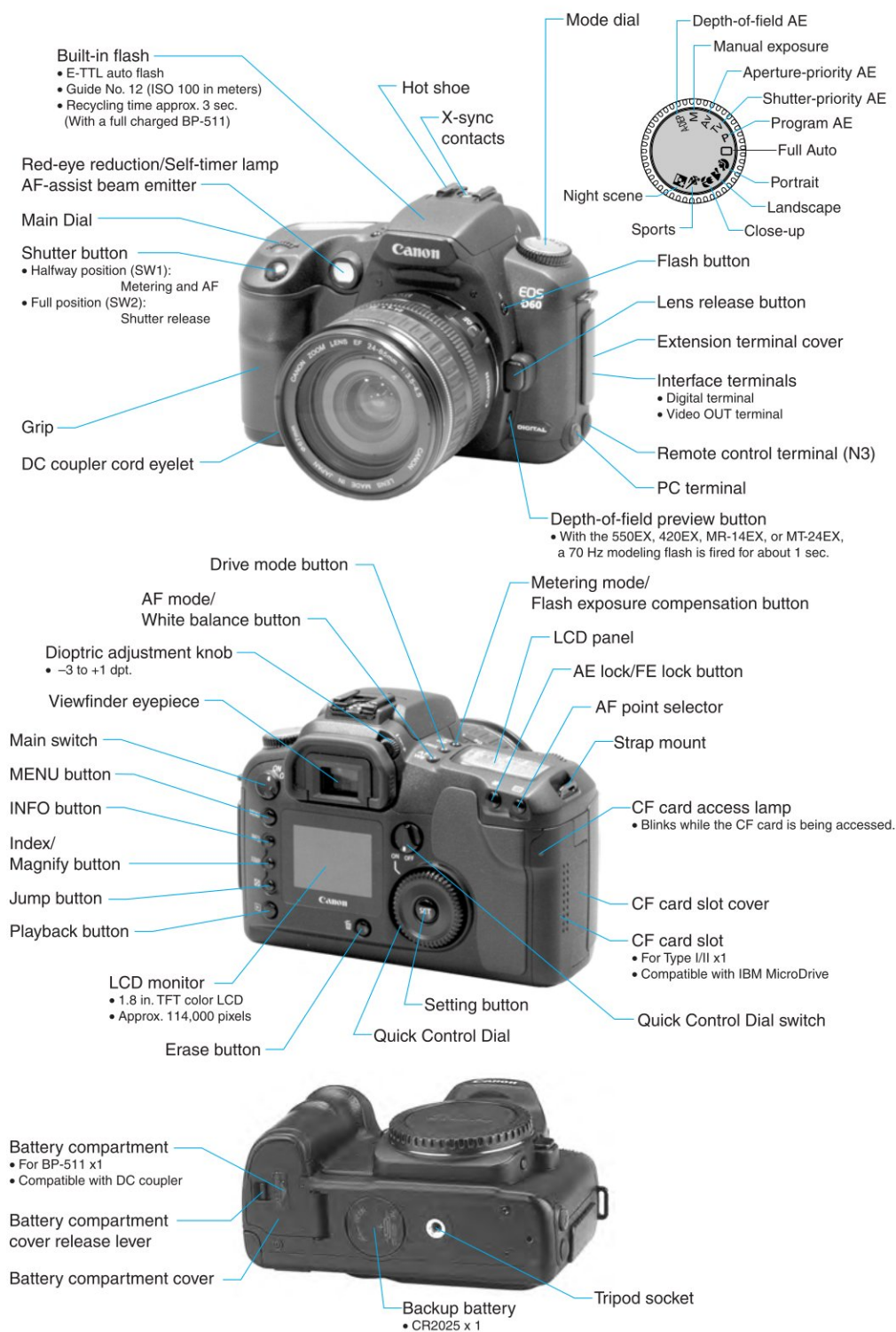                          * Also see page 39 for system accessories.

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# 4. NOMENCLATURE

Built-in flash
• E-TTL auto flash
• Guide No. 12 (ISO 100 in meters)
• Recycling time approx. 3 sec.
  (With a full charged BP-511)

Red-eye reduction/Self-timer lamp
AF-assist beam emitter

Main Dial

Shutter button
• Halfway position (SW1):
          Metering and AF
• Full position (SW2):
          Shutter release

Grip

DC coupler cord eyelet

Hot shoe

X-sync
contacts

Mode dial
Depth-of-field AE
Manual exposure
Aperture-priority AE
Shutter-priority AE
Program AE
Full Auto
Portrait
Landscape
Close-up
Sports
Night scene

Flash button

Lens release button

Extension terminal cover

Interface terminals
• Digital terminal
• Video OUT terminal

Remote control terminal (N3)

PC terminal

Depth-of-field preview button
• With the 550EX, 420EX, MR-14EX, or MT-24EX,
  a 70 Hz modeling flash is fired for about 1 sec.

Drive mode button

AF mode/
White balance button

Dioptric adjustment knob
• −3 to +1 dpt.

Viewfinder eyepiece

Main switch

MENU button

INFO button

Index/
Magnify button

Jump button

Playback button

LCD monitor
• 1.8 in. TFT color LCD
• Approx. 114,000 pixels

Erase button

Metering mode/
Flash exposure compensation button

LCD panel

AE lock/FE lock button

AF point selector

Strap mount

CF card access lamp
• Blinks while the CF card is being accessed.

CF card slot cover

CF card slot
• For Type I/II x1
• Compatible with IBM MicroDrive

Quick Control Dial switch

Quick Control Dial

Setting button

Battery compartment
• For BP-511 x1
• Compatible with DC coupler

Battery compartment
cover release lever

Battery compartment cover

Backup battery
• CR2025 x 1

Tripod socket

Fig. 1-3 Nomenclature and camera controls.

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# 5. VISUAL INDICATORS

## 5.1 Viewfinder Information

New Laser Matte screen

Partial metering circle
(6.1 mm dia., 9.5%)

● AF points
  (with superimposed display)

☐ Focus confirmation light
  \* During autofocus
    : Lights when focus is achieved.
    : Blinks at 2 Hz when autofocus
      cannot be achieved.
  \* During manual focus
    : Lights when focus is achieved.

● AE lock / FE lock
■ AEB in-progress

● Flash-ready
☐ Insufficient flash warning during FE lock

● High-speed sync (FP flash)

● Flash exposure compensation

☐ Shutter speed ( *4000* - *30"* , *bulb* )
● FE lock ( *FEL* )
● Busy ( *busy* )

☐ Aperture ( *00* - *91* )

● Maximum burst ( *8* - *0* )
● Remaining shots ( [*8*] - [*0*] )

Exposure level
  ● Exposure compensation amount
  ● Flash exposure compensation amount
  ☐ AEB level
  ● Red-eye reduction lamp on

■ CF card full warning ( *FuLL CF* )
■ CF card error warning ( *Err CF* )
■ No CF card warning ( *no CF* )

● : Lights.    ■ : Blinks.    ☐ : Lights or blinks.

Fig. 1-4 Viewfinder Information

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## 5.2 LCD Panel Information

CF card full warning ( *FuLL CF* )
CF card error warning ( *Err CF* )
No CF card warning ( *no CF* )
AF points ( *o o o* )
Error code ( *Err 01-99* )
Cleaning ( *CLEA n* )

Shutter speed ( *4000 - 30'', buLb* )
Busy ( *buSY* )
Backup battery warning ( *C bC* )
Cleaning alarm ( *AC* )
Processing parameters ( *PA- 1 - PA-3* )
ISO speed ( *100 - 1000* ) **TD**

Aperture ( *00 - 91* )

Shots remaining ( *999 - 0* )
Self-timer countdown ( *10 - 1* )
Bulb exposure time ( *0 - 999* )
ISO speed ( *,50* )

Recording image quality
L◤  Large/Fine
L◣  Large/Normal
M◤  Middle/Fine
M◣  Middle/Normal
S◤  Small/Fine
S◣  Small/Normal
**RAW** RAW

White balance
**AWB**  Auto
☀  Daylight
☁  Cloudy
☀  Tungsten light
▒  Fluorescent light
⚡  Flash
◣  Manual

Drive mode
▢  Single
▣  Continuous
⟳  Self-timer

AF mode
ONE SHOT
AI FOCUS
AI SERVO

Metering mode
◉  Evaluative
◎  Partial
▢  Centerweighted average

Exposure level scale

**C.Fn** Custom Function

▪))) Beeper

Battery check

◼▬  ◼▭  ▯

AEB

**MF** Manual focus

⚡ Flash exposure compensation

◉ Red-eye reduction

Exposure level
Exposure compensation amount
AEB level
Flash exposure compensation amount
CF card writing progress

Manual exposure
Depth-of-field AE

Aperture-priority AE
Shutter-priority AE
Program AE
Full Auto
Portrait
Landscape
Close-up
Sports
Night Scene

Fig. 1-5 LCD Panel Information

**1-28**

## 5.3 LCD Monitor Display

■ New menu commands not found in the EOS D30.

**Shooting Commands (Red)**

| Quality | ⇒ | Large/Fine |
| | | Large/Normal |
| | | Medium/Fine |
| | | Medium/Normal |
| | | Small/Fine |
| | | Small/Normal |
| | | RAW |
| Red-eye on/off | ⇒ | on |
| | | off |
| AEB | ⇒ | 0/±0.5/±1/±1.5/±2 |
| ISO speed | ⇒ | 100 |
| | | 200 |
| | | 400 |
| | | 800 |
| | | 1000 |
| LCD illumi | ⇒ | On |
| | | Off |
| Beep | ⇒ | on |
| | | off |
| Custom WB | ⇒ | Select an image. |
| Parameters | ⇒ | Standard |
| | | Set 1 |
| | | Set 2 |
| | | Set 3 |
| | | Set up |

Set up ⇒ Set 1 / Set 2 / Set 3 ⇒ Contrast / Sharpness / Saturation / Color tone ⇒ −, 0, +

**Playback Commands (Blue)**

| Protect | ⇒ | Select an image. |
| Rotate | ⇒ | 90℃→ 270℃→ 0℃ |
| Print Order | ⇒ | Image selection |
| | | Set up |

Image selection ⇒ Image selection ⇒ Order
Set up ⇒ Print Type ⇒ Standard / Index / Both
⇒ Date ⇒ on / off
⇒ File No. ⇒ on / off
⇒ All ⇒ ancel / rmal / e/Time

**Setup Commands (Yellow)**

| Auto playback | ⇒ | (→Image changes after 3 sec.) |
| Auto power off | ⇒ | 1 min. |
| | | 2 min. |
| | | 4 min. |
| | | 8 min. |
| | | 15 min. |
| | | 30 min. |
| | | off |
| Review | ⇒ | off |
| | | on |
| | | on (Info) |
| Review time | ⇒ | 2 sec. |
| | | 4 sec. |
| | | 8 sec. |
| | | Hold |
| LCD Brightness | ⇒ | Standard |
| | | Bright |
| Date/Time | ⇒ | year - month - day - hour - min |
| File numbering | ⇒ | Continuous |
| | | Auto reset |
| Language | ⇒ | English |
| | | Deutsch |
| | | Français |
| | | 日本語 |
| Video system | ⇒ | NTSC |
| | | PAL |
| Format | ⇒ | Cancel |
| | | OK |
| C.Fn | ⇒ | (→To setting menu for C.Fn-1 to 15) |
| C.Fn default setting | ⇒ | Cancel |
| | | OK |
| Firmware Ver. 1.0.0 | | |

Date/Time → year - month - day - hour - min ⇒ yy/mm/dd→mm/dd/yy→dd/mm/yy

*Fig. 1-6 Menu Commands*

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# 6. CUSTOM FUNCTION

| C.Fn No. | Custom Function | Setting | Description | Remarks |
|---|---|---|---|---|
| C.Fn-01 | Unused | | | |
| C.Fn-02 | Shutter button/AE lock button | 0 | AF/AE lock | This changes the function of the shutter button and AE lock button. |
| | | 1 | AE lock/AF | |
| | | 2 | AF/AF lock | |
| | | 3 | AE+release/AE+AF | |
| C.Fn-03 | Mirror lockup | 0 | Disable | 1: During close-ups and with super telephoto lenses, this setting prevents camera shake caused by the mirror. |
| | | 1 | Enable | |
| C.Fn-04 | Tv/Av and exposure level | 0 | 1/2stop | 1: Effective when a finer exposure setting is required. |
| | | 1 | 1/3stop | |
| C.Fn-05 | AF-assist beam/Flash firing | 0 | Emits/Fires | Convenient in situations when the AF-assist light and flash firing are not desirable. |
| | | 1 | Does not emit/Fires | |
| | | 2 | Only ext. flash emits/Fires | |
| | | 3 | Emits/Does not fire | |
| C.Fn-06 | Shutter speed in Av mode | 0 | Auto | 1: Effective in dark conditions with flash, giving priority to the subject's exposure. |
| | | 1 | 1/200 (fixed) | |
| C.Fn-07 | AEB sequence/auto cancellation | 0 | 0→−→ +/Enable | 1 and 3: Convenient when you want to repeat AEB shooting. |
| | | 1 | 0→−→+/Disable | |
| | | 2 | −→0→ +/Enable | |
| | | 3 | −→0→ +/ Disable | |
| C.Fn-08 | Shutter curtain sync | 0 | 1st-curtain sync | 1: With slow-speed sync, you can capture the subject's light trail. |
| | | 1 | 2nd-curtain sync | |
| C.Fn-09 | Lens AF stop button Fn. Switch | 0 | AF stop | This changes the AF stop button's function. |
| | | 1 | AF start | |
| | | 2 | AE lock while metering | |
| C.Fn-10 | Auto reduction of fill flash | 0 | Enable | 1: This prevents underexposure of a backlit subject. |
| | | 1 | Disable | |
| C.Fn-11 | Menu button return position | 0 | Top | The most frequently-used menu can be set to come up quickly. |
| | | 1 | Previous(top if powered off) | |
| | | 2 | Previous | |
| C.Fn-12 | SET button func. when shooting | 0 | Default (no function) | By assigning a frequently-used function, you can use the function quickly. |
| | | 1 | Change quality | |
| | | 2 | Change ISO speed | |
| | | 3 | Change parameters | |
| C.Fn-13 | Sensor cleaning | 0 | Disable | 1: For when you want to clean the sensor. |
| | | 1 | Enable | |
| C.Fn-14 | Superimposed display | 0 | On | 1: Prevents the AF point from lighting up in red in the viewfinder. |
| | | 1 | Off | |
| C.Fn-15 | Shutter release w/o CF card | 0 | Possible without CF card | 1: Prevents you from forgetting to insert a CF card in the camera. |
| | | 1 | Not possible | |

▣ New menu commands not found in the EOS D30.

Fig. 1-7 Custom Functions

**1-30**

# 7. DIMENSIONS & PROGRAM DIAGRAMS

## 7.1 Dimensions
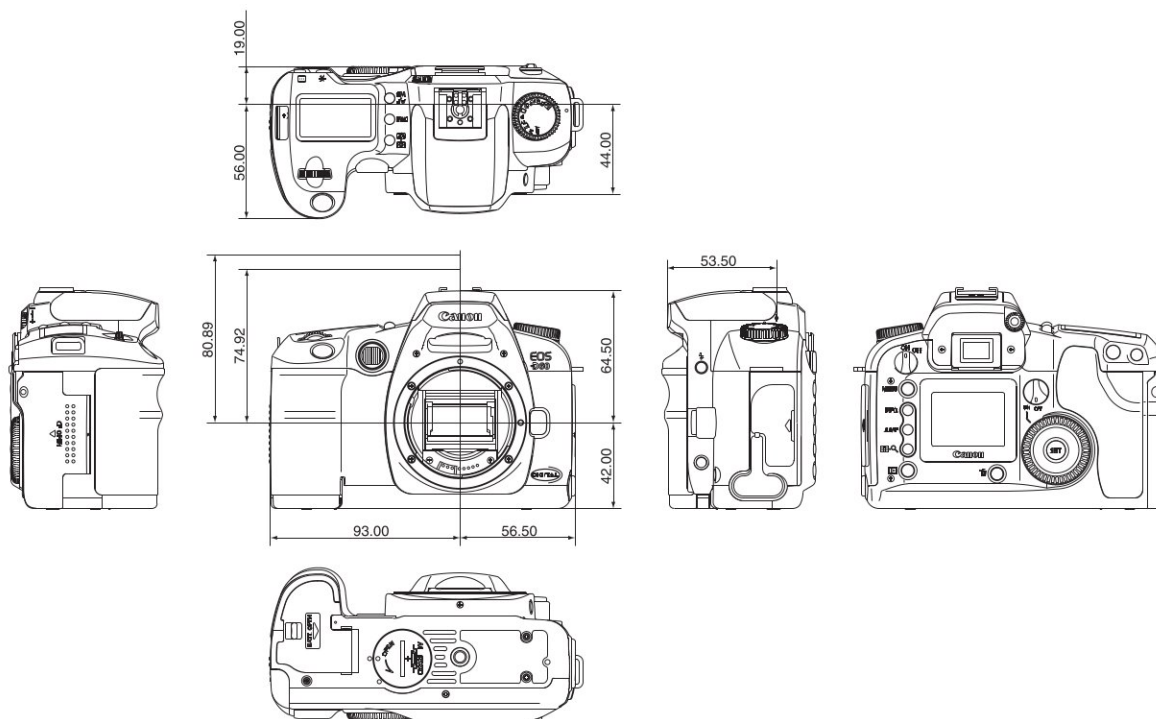


Fig. 1-8 Six Exterior Views

## 7.2 Program Diagrams



With EF 50mm f/1.4 USM
With EF 24-85mm f/3.5-4.5 USM at 24mm
With EF 24-85mm f/3.5-4.5 USM at 85mm

① Standard Program AE

② Portrait

③ Landscape

④ Close-up

⑤ Sports

Fig. 1-9 AE Programs

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With EF 50mm f/1.4 USM
With EF 24-85mm f/3.5-4.5 USM at 24mm
With EF 24-85mm f/3.5-4.5 USM at 85mm

⑥ Night Scene
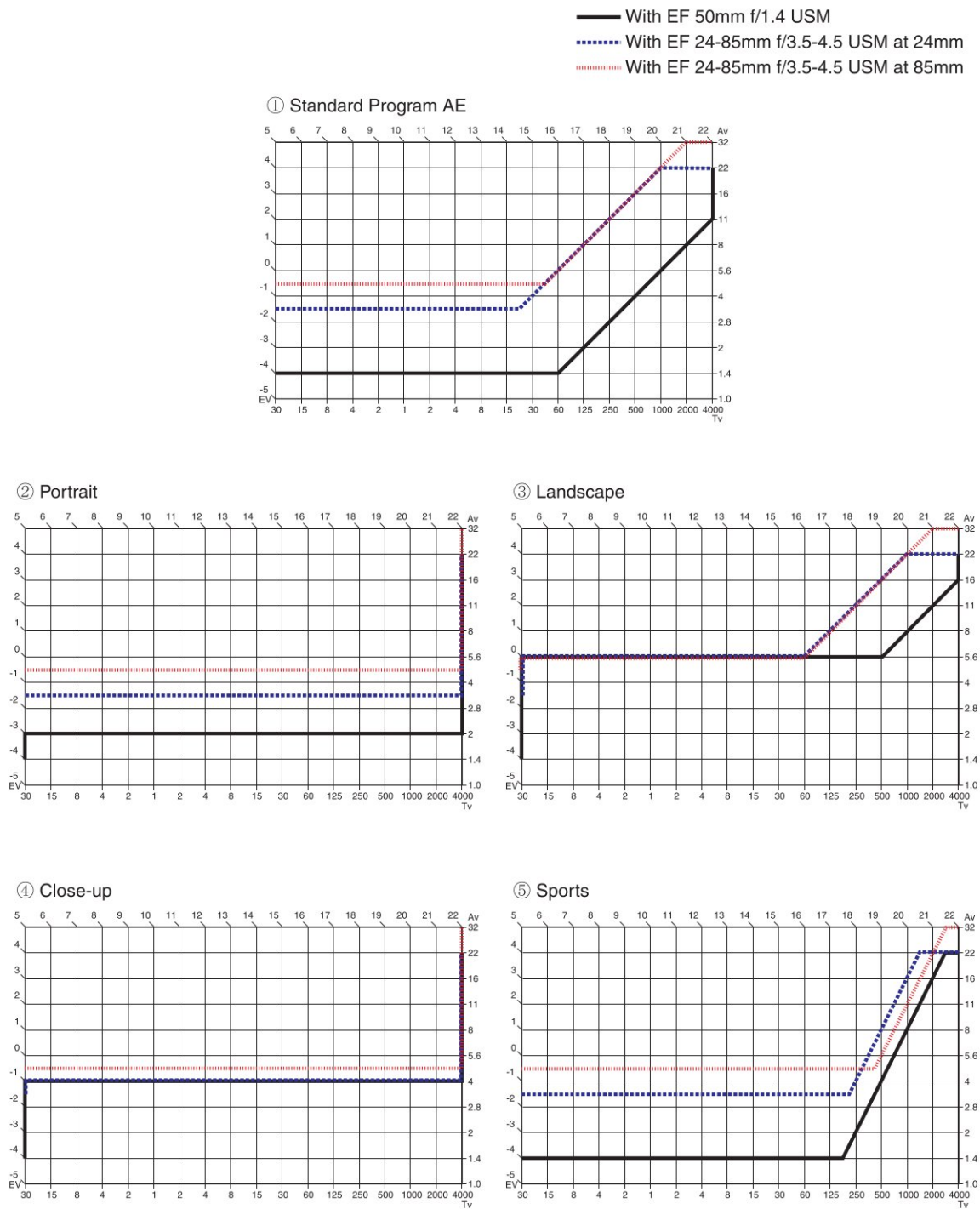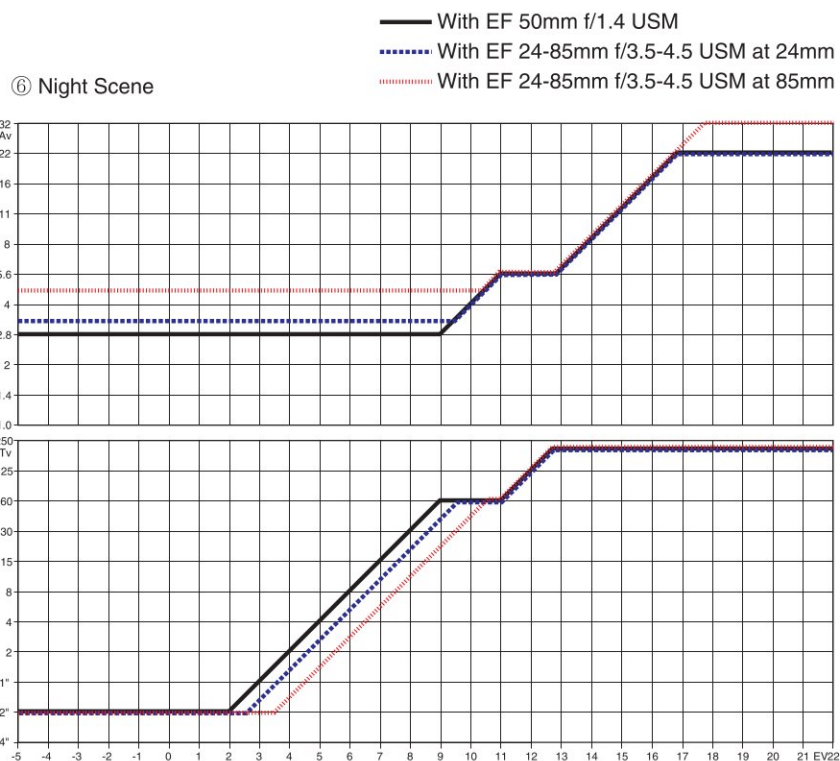
⑦ E-TTL Autoflash Program Line

Fig. 1-10

**1-33**
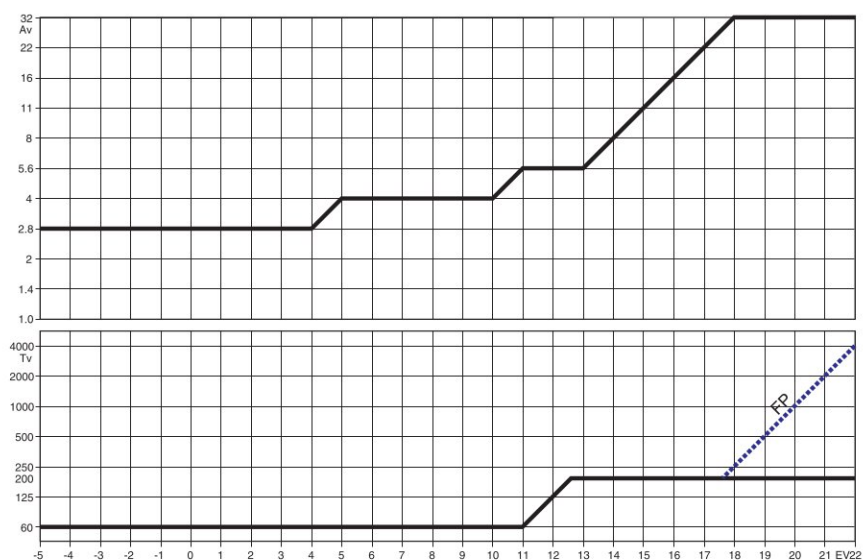
# 8. SYSTEM ACCESSORIES COMBATIBILLITY TABLES

## 8.1 System Accessories
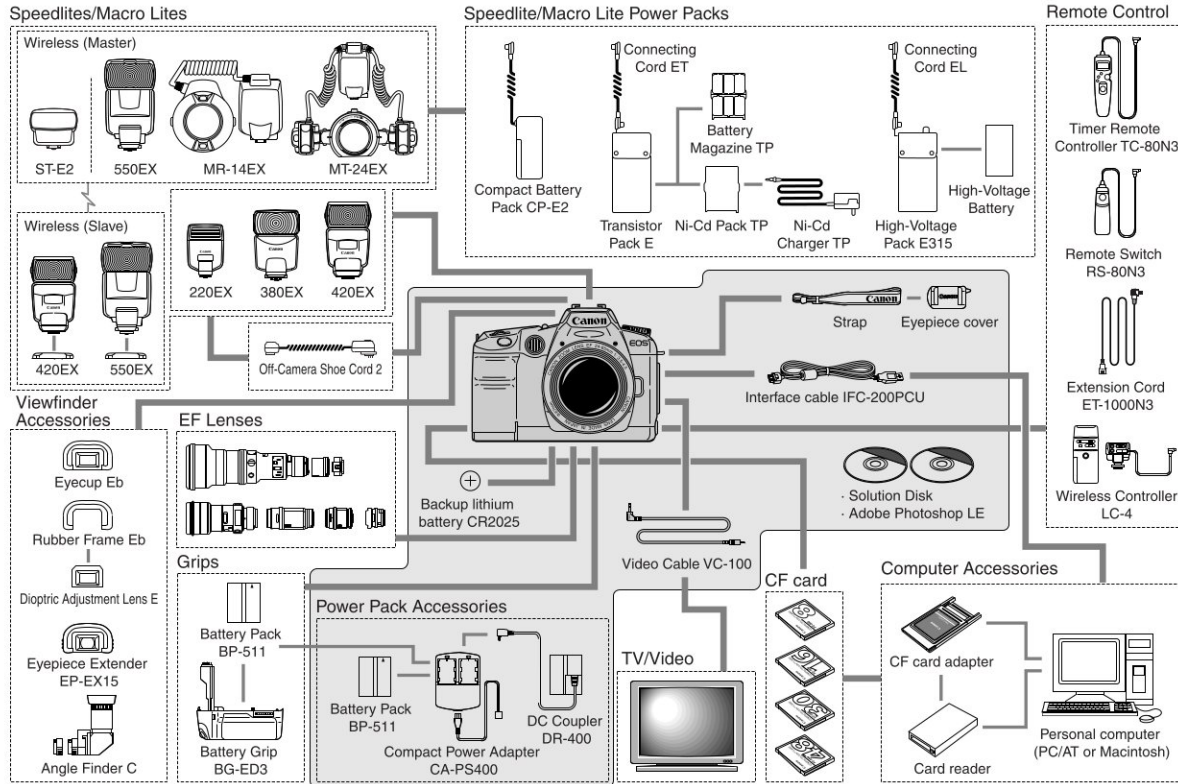


Fig. 1-11 System Accessories

# 8.2 EOS System Accessories

## 1. Interchangeable Lenses

◎ : Compatible.● : Compatible with restrictions.× : Not compatible.

| No. | Item | Status | Note |
|-----|------|--------|------|
| 001 | EF14mm f/2.8 L | ◎ | |
| 002 | EF15mm f/2.8 FE | ◎ | |
| 003 | EF20mm f/2.8 USM | ◎ | |
| 004 | EF24mm f/1.4 L USM | ◎ | |
| 005 | EF24mm f/2.8 | ◎ | |
| 006 | EF28mm f/1.8 USM | ◎ | |
| 007 | EF28mm f/2.8 | ◎ | |
| 008 | EF35mm f/1.4 L USM | ◎ | |
| 009 | EF35mm f/2 | ◎ | |
| 010 | EF50mm f/1.0 L USM | ◎ | |
| 011 | EF50mm f/1.4 USM | ◎ | |
| 012 | EF50mm f/1.8 | ◎ | |
| 013 | EF50mm f/1.8 II | ◎ | |
| 014 | EF50mm f/2.5 MACRO | ◎ | |
| 015 | MP-E 65mm f/2.8 1-5× | ◎ | |
| 016 | EF85mm f/1.2 L USM | ◎ | |
| 017 | EF85mm f/1.8 USM | ◎ | |
| 018 | EF100mm f/2 USM | ◎ | |
| 019 | EF100mm f/2.8 MACRO USM | ◎ | |
| 020 | EF100mm f/2.8 MACRO | ◎ | |
| 021 | EF135mm f/2 L USM | ◎ | |
| 022 | EF135mm 2.8 SF | ◎ | |
| 023 | EF180mm f/3.5L MACRO USM | ◎ | |
| 024 | EF200mm f/1.8 L USM | ◎ | |
| 025 | EF200mm f/2.8 L USM | ◎ | |
| 026 | EF200mm f/2.8 L II USM | ◎ | |
| 027 | EF300mm f/2.8 L IS USM | ◎ | |
| 028 | EF300mm f/2.8 L USM | ◎ | |
| 029 | EF300mm f/2.8 L II USM | ◎ | |
| 030 | EF300mm f/2.8 L III USM | ◎ | |
| 031 | EF300mm f/4 L IS USM | ◎ | |
| 032 | EF300mm f/4 L USM | ◎ | |
| 033 | EF400mm f/2.8 L IS USM | ◎ | |
| 034 | EF400mm f/2.8 L USM | ◎ | |
| 035 | EF400mm f/2.8 L II USM | ◎ | |
| 036 | EF400mm f/4 DO IS USM | ◎ | |
| 037 | EF400mm f/5.6 L USM | ◎ | |
| 038 | EF500mm f/4 L IS USM | ◎ | |
| 039 | EF500mm f/4.5 L USM | ◎ | |
| 040 | EF500mm f/4.5 L II USM | ◎ | |
| 041 | EF600mm f/4 L IS USM | ◎ | |
| 042 | EF600mm f/4 L USM | ◎ | |
| 043 | EF600mm f/4 L II USM | ◎ | |
| 044 | EF1200mm f/5.6 USM | ◎ | |
| 045 | EF17-35mm f/2.8 L USM | ◎ | |
| 046 | EF20-35mm f/2.8 L | ◎ | |
| 047 | EF20-35mm f/3.5-4.5 USM | ◎ | |
| 048 | EF22-55mm f/4-5.6 USM | ◎ | |
| 049 | EF24-85mm f/3.5-4.5 USM | ◎ | |
| 050 | EF28-70mm f/2.8 L USM | ◎ | |
| 051 | EF28-70mm f/3.5-4.5 | ◎ | |
| 052 | EF28-70mm f/3.5-4.5 II | ◎ | |
| 053 | EF28-80mm f/2.8-4 L USM | ◎ | |
| 054 | EF28-80mm f/3.5-5.6 | ◎ | |
| 055 | EF28-80mm f/3.5-5.6 II | ◎ | |
| 056 | EF28-80mm f/3.5-5.6 USM | ◎ | |
| 057 | EF28-80mm f/3.5-5.6 II USM | ◎ | |
| 058 | EF28-80mm f/3.5-5.6 III USM | ◎ | |
| 059 | EF28-80mm f/3.5-5.6 IV USM | ◎ | |
| 060 | EF28-80mm f/3.5-5.6 V USM | ◎ | |

| No. | Item | Status | Note |
|-----|------|--------|------|
| 061 | EF28-90mm f/4-5.6 | ◎ | |
| 062 | EF28-90mm f/4-5.6 USM | ◎ | |
| 063 | EF28-105mm f/3.5-4.5 USM | ◎ | |
| 064 | EF28-105mm f/3.5-4.5II USM | ◎ | |
| 065 | EF28-135mm f/3.5-5.6 IS USM | ◎ | |
| 066 | EF28-200mm f/3.5-5.6 | ◎ | |
| 067 | EF28-200mm f/3.5-5.6 USM | ◎ | |
| 068 | EF35-70mm f/3.5-4.5 | ◎ | |
| 069 | EF35-70mm f/3.5-4.5 A | ◎ | |
| 070 | EF35-80mm f/4-5.6 PZ | ◎ | |
| 071 | EF35-80mm f/4-5.6 | ◎ | |
| 072 | EF35-80mm f/4-5.6 II | ◎ | |
| 073 | EF35-80mm f/4-5.6 III | ◎ | |
| 074 | EF35-80mm f/4-5.6 USM | ◎ | |
| 075 | EF35-105mm f/3.5-4.5 | ◎ | |
| 076 | EF35-105mm f/4.5-5.6 | ◎ | |
| 077 | EF35-105mm f/4.5-5.6 USM | ◎ | |
| 078 | EF35-135mm f/3.5-4.5 | ◎ | |
| 079 | EF35-135mm f/4-5.6 USM | ◎ | |
| 080 | EF35-350mm f/3.5-5.6 L USM | ◎ | |
| 081 | EF38-76mm f/4.5-5.6 | ◎ | |
| 082 | EF50-200mm f/3.5-4.5 | ◎ | |
| 083 | EF50-200mm f/3.5-4.5 L | ◎ | |
| 084 | EF55-200mm f/4.5-5.6 USM | ◎ | |
| 085 | EF70-200mm f/2.8 L IS USM | ◎ | |
| 086 | EF70-200mm f/2.8 L USM | ◎ | |
| 087 | EF70-200mm f/4 L USM | ◎ | |
| 088 | EF70-210mm f/4 | ◎ | |
| 089 | EF70-210mm f/3.5-4.5 USM | ◎ | |
| 090 | EF75-300mm f/4-5.6 | ◎ | |
| 091 | EF75-300mm f/4-5.6 II | ◎ | |
| 092 | EF75-300mm f/4-5.6 III | ◎ | |
| 093 | EF75-300mm f/4-5.6 USM | ◎ | |
| 094 | EF75-300mm f/4-5.6 II USM | ◎ | |
| 095 | EF75-300mm f/4-5.6 III USM | ◎ | |
| 096 | EF75-300mm f/4-5.6 IS USM | ◎ | |
| 097 | EF80-200mm f/2.8 L USM | ◎ | |
| 098 | EF80-200mm f/4.5-5.6 | ◎ | |
| 099 | EF80-200mm f/4.5-5.6 II | ◎ | |
| 100 | EF80-200mm f/4.5-5.6 USM | ◎ | |
| 101 | EF100-200mm f/4.5 A | ◎ | |
| 102 | EF100-300mm f/5.6 | ◎ | |
| 103 | EF100-300mm f/5.6 L | ◎ | |
| 104 | EF100-300mm f/4.5-5.6 USM | ◎ | |
| 105 | EF100-400mm f/4.5-5.6 IS USM | ◎ | |
| 106 | TS-E24mm f/3.5 L | ◎ | |
| 107 | TS-E45mm f/2.8 | ◎ | |
| 108 | TS-E90mm f/2.8 | ◎ | |
| 109 | Extender EF 1.4×, 1.4× II | ◎ | |
| 110 | Extender EF 2×, 2× II | ◎ | |
| 111 | Extension Tube EF12 | ◎ | |
| 112 | Extension Tube EF25 | ◎ | |
| 113 | Life-size Converter E | ◎ | |
| 114 | Lens Mount Converter FD-EOS | ● | *1 |
| 115 | Macro Lens Mount Converter FD-EOS | ● | *1 |
| 116 | Close-up Lens 250D | ◎ | |
| 117 | Close-up Lens 500D | ◎ | |
| 118 | Close-up Lens 500 | ◎ | |

## 2. Speedlites

| No. | Accessory | Status | Note |
|---|---|---|---|
| 001 | 220EX | ◎ | |
| 002 | 380EX | ◎ | |
| 003 | 420EX | ◎ | |
| 004 | 550EX | ◎ | |
| 005 | ST-E2 | ◎ | |
| 006 | 480EG | ● | *2 |
| 007 | 540EZ | ● | *2 |
| 008 | 430EZ | ● | *2 |
| 009 | 420EZ | ● | *2 |
| 010 | 300EZ | × | |
| 011 | 200E | × | |
| 012 | MR-14EX | ◎ | |
| 013 | MT-24EX | ◎ | |
| 014 | ML-3 | × | |
| 015 | Multi-Speedlite system (wired) | × | |
| 016 | Off-Camera Shoe Cord 2 | ◎ | |

## 3. EOS Camera Cases

| No. | Accessory | Status | Note |
|---|---|---|---|
| 001 | EOS-1V/EOS-3 cases | × | |
| 002 | EOS Elan 7/Elan 7E/30case | × | |
| 003 | EOS A2/A2E/5 case | × | |
| 004 | EOS Elan II/Elan IIE/50/50E case | × | |
| 005 | EOS 300/Rebel 2000 case | × | |
| 006 | EOS-1N case | × | |
| 007 | EOS-1 case | × | |
| 008 | EOS 10S/10 case | × | |
| 009 | EOS 100/Elan cases | × | |
| 010 | EOS Rebel G/500 N/Rebel X/Rebel XS/500 cases | × | |
| 011 | EOS 650/620/630/600 cases | × | |
| 012 | EOS IX case | × | |
| 013 | EOS IX 7/IX Lite case | × | |

## 4. Remote Control

| No. | Accessory | Status | Note |
|---|---|---|---|
| 001 | Remote Switch 60T3 | ● | *3 |
| 002 | Remote Switch RS-60E3 | × | |
| 003 | Remote Switch RS-80N3 | ◎ | |
| 004 | Timer Remote Controller TC-80N3 | ● | *4 |
| 005 | Remote Controller RC-1 | × | |
| 006 | Wireless Remote Controller LC-3 | ● | *3,5 |
| 007 | Wireless Remote Controller LC-4 | ● | *5 |

## 5. Grips and Motor Drives

| No. | Accessory | Status | Note |
|---|---|---|---|
| 001 | GR10 | × | |
| 002 | GR20 | × | |
| 003 | GR50 | × | |
| 004 | GR60 | × | |
| 005 | GR70 | × | |
| 006 | VG10 | × | |
| 007 | GR-100TP | × | |
| 008 | GR-80TP | × | |
| 009 | GR-E1 | × | |
| 010 | PB-E1 | × | |
| 011 | PB-E2 | × | |
| 012 | BP-E1 | × | |
| 013 | BP-5/B | × | |
| 014 | BP-50 | × | |
| 015 | BP-200 | × | |
| 016 | BP-300 | × | |
| 017 | BP-8 | × | |
| 018 | BG-ED3 | ◎ | |

## 6. Viewfinder Accessories

| No. | Accessory | Status | Note |
|---|---|---|---|
| 001 | Eyecup E | × | |
| 002 | Eyecup Eb | ◎ | |
| 003 | Eyecup Ec | × | |
| 004 | Eyecup Ec-II | × | |
| 005 | Eyecup Ed | × | |
| 006 | Eyecup Ed-E | × | |
| 007 | Eyecup Ee | × | |
| 008 | Antifog Eyepiece Ec | × | |
| 009 | Antifog Eyepiece Ed | × | |
| 010 | Dioptric Adjustment Lens E | ◎ | |
| 011 | Dioptric Adjustment Lens Ed | × | |
| 012 | Dioptric Adjustment Lens Ee | × | |
| 013 | Rubber Frame Ec | × | |
| 014 | Rubber Frame Eb | ◎ | |
| 015 | Focusing Screen E | × | |
| 016 | Focusing Screen Ec | × | |
| 017 | Focusing Screen Ed | × | |
| 018 | Magnifier S | ◎ | |
| 019 | Angle Finder B | ◎ | |
| 020 | Angle Finder C | ◎ | |
| 021 | Angle Finder Adapter Ed | × | |
| 022 | Angle Finder Adapter EdII | × | |
| 023 | Eyepiece Extender EP-EX15 | ◎ | |

## 7. Databacks

| No. | Accessory | Status | Note |
|---|---|---|---|
| 001 | Quartz Dateback E | × | |
| 002 | Quartz Dateback DB-E2 | × | |
| 003 | Technical Back E | × | |
| 004 | Keyboard Unit TB | × | |
| 005 | Interface Unit TB | × | |
| 006 | Command Back E1 | × | |

## 8. Miscellaneous

| No. | Accessory | Status | Note |
|---|---|---|---|
| 001 | Panorama Adapter PA-1000 | × | |
| 002 | EOS LINK SOFTWARE ES-E1 | × | |

*1: Compatible only during manual exposure.
   (Officially, it will be stated as incompatible because an
   exposure error will occur.)
*2: Compatible only during manual flash exposure.
   (With the 480EG, external autoflash is also possible.)
*3: Compatible with the use of RA-N3.
*4: In the case of long exposures, add 2 sec. to the target
   exposure time.
*5: With the remote controlled-camera's main switch set to ON
   (1SR incompatible), use a shutter speed faster than 1 sec.
   and disable the auto power-off.

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# 9. COMPARISON WITH OTHER MODELS

## 9.1 Comparison with Competing Models

| Manufacturer | | Canon | Nikon | Fuji Film | SIGMA |
|---|---|---|---|---|---|
| | | EOS D60 | D100 | FinePix S2 Pro | SD9 |
| Specification | | | | | |
| Imaging element | Imaging element/Imaging format | Single-plate CMOS/Direct imaging | Single plate CCD/Direct imaging | Single-plate Super CCD honeycomb /Direct imaging | FOVEON X3 CMOS/Direct imaging |
| | Picxel count (megapixels) | Total 652/Effective 630 | Total 631/Effective 615 | Effective 617 | Total 354/Effective 343 |
| | Effective sensor size (mm) | 22.7×15.1 | 23.7×15.6 | 23.0×15.5 | 20.7×13.8 |
| | Aspect ratio | 2:3 | 3:2 | 2:3 | 3:2 |
| | Color filter type | Primary color | Primary color | Primary color | *** |
| | Low-pass filter | Built-in | *** | *** | *** |
| Lens | Lens/Lens mount | EF lenses/EF mount | Nikkor lenses/F mount | Nikkor lenses/F mount | SIGMA SA lenses/SA mount |
| | 35mm equivalent focal length | Approx. 1.6× | Approx. 1.5× | Approx. 1.5× | Approx. 1.7× |
| | Restrictions | None | Yes | Yes | *** |
| Viewfinder | Interchangeable Focus. Screen | N/A | *** | N/A | *** |
| | Coverage | 95% | 95% | 92% | 97% vertically/98% horizontally |
| | Magnification (-1 dpt, 50mm lens at infinity) | 0.88× | 0.8 | *** | 0.77 |
| | Eyepoint | 20 | 20 | ** | 18 |
| | Dioptric adjustment (dptr) | -3 - +1 | -2 - + 1 | -1.8 - +0.8 | -3 - +1 |
| | Depth-of-field preview | Yes | Yes | Yes | N/A |
| AF system | AF point | 3 | 5 | 5 | *** |
| | Modes | 3 | 3 | 3 | 3 |
| Metering | System | TTL full aperture metering with 35-zone SPC | TTL full aperture with 3D 10- zone SPC | TTL full aperture metering with 10-zone SPC | *** |
| | Modes | 3 | 3 | 3 | 3 |
| Exposure control | Shooting modes | 11 | 4 | 4 | 4 |
| | ISO speed range | 100,200,400,800,1000 | 200,400,800,1600 (+push process mode) | 100,160,200,400,800,1600 | 100,200,400 |
| | Exp. comp.(Increments;Range) | 1/3, 1/2 ; +/- 2 stops | 1/3, 1/2; +/- 5F | 1/2 ; +/- 3 stops | 1/2; +/- 3F |
| | ISO bracket | N/A | Yes | N/A | N/A |
| Shutter | Type | Mechanical | *** | Mechanical | Mechanical |
| | Speed range | 1/4000 -30sec, bulb | 1/4000 -30, bulb | 1/4000 - 30sec, bulb | 1/6000 - 30, bulb |
| | X-sync | 1/200sec | 1/180 | 1/125sec | 1/180 |
| Flash | Built-in flash Cno. (ISO 100,m) | 12 | 11 | 12 | — |
| | Control system | E-TTL | 3D-MultiBL/MultiBL/D-TTL | TTL-BL | — |
| | Wireless multi speedlites | Yes | *** | N/A | 1/2; +/-3 stops |
| | Flash exp. comp.(Step; Range) | 1/3, 1/2; 2 stops | Yes | *** | — |
| White balance | Sensor | Imaging element | Imaging element | Imaging element | *** |
| | Modes | 7 | 8 | 8 | 8 |
| | Manual WB | Yes | Yes | Yes | *** |
| | WB bracket | N/A | Yes | N/A | N/A |
| Drive | Continuous shooting speed (fps) | 3 | *** | 2 | *** |
| | Max. burst | 8 | *** | 7 | *** |
| Image processing parameter | | Yes | Yes | N/A | — |
| Noise reduction during log exposure | | Yes | *** | N/A | *** |
| Image recording | Recording medium | CF (Compact Flash) card | CF (Compact Flash) card | Smart Media or CF card | CF (Compact Flash) Card |
| | Slot type/Qty | CF Type I, II/1 slot | CF TYPE I, II/1 slot | SM + CF Type II/2 slots | CF TYPE I, II/1 slot |
| | Compatible HD | Micro Drive | Micro Drive | Micro Drive | Micro Drive |
| | Recording format | ①Large/Fine (JPEG) ②Large/Normal (JPEG) ③Middle/Fine (JPEG) ④Middle/Normal (JPEG) ⑤Small/Fine (JPEG) ⑥Small/Normal (JPEG) ⑦RAW (No compression) | ①JPEG/Fine (JPEG, 1/4) ②JPEG/Normal (JPEG, 1/8) ③JPEG/Basic (JPEG, 1/16) ④RGB-TIFF (8bit) ⑤RAW (12bit) | ①TIFF-RGB (8bit/No compression) ②TIFF-YC (8bit/No compression) ③JPEG/Fine (JPEG) ④JPEG/Normal (JPEG) ⑤RAW (12bit) | ①RAW/HI (No compression) ②RAW/MED (No compression) ③RAW/LOW (No compression) ①R/H 2268×1512/**MB ②R/M 1134×756/**MB ③R/L 756×504/**MB |
| | File size (Approx.) | ①3072×2048/2.5MB ②3072×2048/1.3MB ③2048×1360/1.4MB ④2048×1360/0.7MB ⑤1536×1024/0.9MB ⑥1536×1024/0.5MB ⑦3072×2048/7.4MB | ①3008×2000/**MB ②2240×1488/**MB ③1504×1000/**MB | ①4256×2848/**MB ②3024×2016/**MB ③2304×1536/**MB ④1440×960/**MB | |
| | Simultaneous .jpeg recording within .crw | Yes (Extracted with dedicated driver software) | — | N/A | — |
| | DCF/DPOF compatible | Yes/Yes | *** | Yes/Yes | —/— |
| LCD monitor | Type | TFT | TFT | TFT | TFT |
| | Size | 1.8 | 1.8 | 1.8 | 1.8 |
| | Pixels | 11.4 | 11.8 | 11.7 | 13 |
| Custom Functions | | 38 | Yes | 18 | * |
| External interface | | ①USB ②Video output | ①USB ②Video output | ①USB ②IEEE 1394 ③Video output | ①USB ②IEEE1394 ③Video output |
| Control via computer | | Yes | Yes | Yes | *** |
| Power source | Battery | BP-511 (Lithium ion) | One Li-ion EN-EL3 | 4 size-AA or 2 CR123A | 2 CR123A + 2 CR-V3 or 4 size-AA |
| | AC power | Yes | Yes | Yes | Yes |
| Battery life (Normal temp./No of shots) | | 620 (AE100%) | *** | *** | *** |
| Moisture/Dust resistance | | N/A | — | N/A | Yes (no dust to imager) |
| Chassis material | | Plastic/Stainless steel | *** | *** | *** |
| Exterior | Material | Plastic | *** | Plastic | *** |
| | Color | Black | Black | Black | Black |
| Guranted temperature range (degree C) | | 0 - +40 | *** | 0 - +40 | *** - + *** |
| Dimensions (W×H×D) | | 149.5×106.5×75 | 144×116×80.5 | 141.5×131.0×79.5 | 152×120×79 |
| Weight (body only/g) | | 780 | 700 | 790/760 | 803 |
| Marketing date | | 2002 | *** | 2002/Jun | 2002/Jun |
| Retail price (Yen) | | *** | *** | *** | ($3,000) |
| Remarks | | | | Multiple exposure | |

Table 7 Comparison with Competing Models

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## 9.2 Comparison with EOS Cameras

(Shaded EOS D60 specifications are superior to EOS D30's)

| | Item | | | EOS D60 | EOS D30 | EOS-1D |
|---|---|---|---|---|---|---|
| Imaging | Imaging Element/Effective Pixels | | | CMOS/6.30 megapixels | CMOS / 311 | CCD/4.16 megapixels |
| | Effective Sensor Size | | | → | 22.7 × 15.1mm | 28.7 × 19.1mm |
| | Color Filter Type | | | → | Primary colors | Primary colors |
| | Low-Pass Filter | | | → | Built-in/Fixed | Built-in/Fixed |
| | 35mm Focal Length Equivalent | | | → | Approx. 1.6 . | Approx. 1.3× |
| Image Recording | Recording Medium | | | → | Compact Flash card | Compact Flash card |
| | Slot Type/Qty | | | → | CF Type I, II / 1 slot | CF Type I, II / 1 slot |
| | Recording Format/ Image Size | Large | Fine | 3072×2048 2.5 MB | 2160×1440 1.3 MB | 2464×1648 2.4 MB |
| | | | Normal | 3072×2048 1.3 MB | 2160×1440 0.7 MB | 2464×1648 1.3 MB |
| | | Middle | Fine | 2048×1360 1.4 MB | — | — |
| | | | Normal | 2048×1360 0.7 MB | — | — |
| | | Small | Fine | 1536×1024 0.9 MB | 1440×960 0.7 MB | 1232×824 1.1 MB |
| | | | Normal | 1536×1024 0.5 MB | 1440×960 0.4 MB | — |
| | | RAW | | 3072×2048 7.4 MB | 2160×1440 3.4 MB | 2496×1662 4.8 MB |
| | RAW & JPEG Simultaneous Recording | | | △ | — | Provided |
| Viewfinder | Superimposed Display | | | Provided | — | Provided |
| | Coverage (Vertical/Horizontal) | | | → | 95% | 100% |
| | Magnification (at -1 dpt with 50mm lens set to ∞) | | | → | 0.88× | 0.72× |
| | Eyepoint | | | → | 20mm | 20mm |
| | Dioptric Adjustment | | | → | -3 to +1 dpt. | -3 to +1 dpt. |
| | Interchangeable Focusing Screens | | | → | — | Provided |
| | Eyepiece Shutter | | | → | — | Provided |
| AF | AF Points | | | → | 3 | 45 |
| | AF Modes | | | → | AI FOCUS/ONE SHOT/ AI SERVO | ONE SHOT/AI SERVO |
| | Predictive AF at 50 kph w/300mm f/2.8L IS | | | → | 12m | 8m |
| | AF Point Registration/Shift | | | → | — | Provided |
| Exposure Control | Shooting Modes | | | → | 11 | 4 |
| | Metering Segments | | | → | 35 | 21 |
| | Metering Modes | | | → | Evaluative, partial, centerweighted | Evaluative, partial, spot, multi-spot, centerweighted |
| | ISO Speed | Range | | 100,200,400,800,1000 | ISO 100-1600 in whole stops | ISO 200-1600 in 1/3 stops |
| | | Push Setting | | → | — | Provided |
| | | ISO Speed Shifting | | → | — | Provided |
| | Exposure Compensation | Increments and Range | | → | 1/2,1/3-stop increments,+/-2 | 1,1/2,1/3-stop increments, +/-3 |
| | | Type | | → | Manual, AEB | Manual, AEB, ISO |
| Shutter | Type | | | → | Mechanical | Mechanical + Electronic |
| | Speeds, X-sync | | | → | 1/4000 sec.- 30 sec.,1/200 sec. | 1/16000 sec.- 30sec.,1/500 sec. |

Table 1 Comparison of EOS D60, EOS D30, and EOS-1D Specifications

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| Item | | EOS D60 | EOS D30 | EOS-1D |
|---|---|---|---|---|
| Flash Control | E-TTL Autoflash, FP Flash | → | Provided | Provided |
| | FE Lock, FEB | → | Provided | Provided |
| | Wireless Multi-Speedlite Flash | → | Provided | Provided |
| | Built-in Flash/G. No. | → | Provided/12 | — |
| | Metered Manual | → | — | Provided |
| Drive | Continuous Shooting Speed | → | 3 fps | 8 fps |
| | Max. Burst | 8 | 30 (Small/Normal) | 21 |
| | Self-timer | → | 10 sec. | 10 sec. or 2 sec. |
| White Balance | Type | → | Imaging element | Imaging element & dedicated sensor |
| | Settings | → | 7 | 9 |
| | WB Bracketing | → | — | — |
| LCD Monitor | Type | → | TFT | TFT |
| | Screen Size | → | 1.8 in. | 2.0 in. |
| | Pixels (Approx.) | → | 114,000 | 120,000 |
| Playback/ Tags | Display Formats | → | 4 | 4 |
| | Highlight/Magnified Display | → | Provided/Provided | Provided/ — |
| | Image Erase Protection | | 1 image | 1 image / ■ / all in CF |
| | Image Erase | → | 1 image / all in CF | 1 image / ■ / all in CF |
| | IPTC Tag | → | — | Provided |
| | DCF/DPOF | Provided/1.1 | Provided/1.0 | Provided/ — |
| | Sound Recording | → | — | Provided |
| Custom Functions/Settings | | 14/38 | 13/34 | 21/64 |
| Personal Functions/Settings | | → | — | 25 |
| External Interface | | → | USB/Video | IEEE 1394 |
| Remote control/PC terminal | | → | Provided | Provided |
| Battery | | → | Lithium ion | Ni-MH |
| Battery life (at 20℃) | AE 100% | 620 | 680 | *** |
| | AE 50%,FA 50% | 490 | 540 | — |
| LCD Panel (EL) Illumination | | Provided | — | Provided |
| Water/Dust Resistance | | → | Provided | Provided |
| Top/Front/Rear Cover Material | | → | Plastic | Magnesium alloy |
| Chassis Material | | → | Plastic & stainless steel | Magnesium alloy |
| Working Temperature Range | | → | 0℃ to 40℃ | 0℃ to 45℃ |
| Dimensions (W×H×D) | | 149.5×106.5×75 mm 5.9×4.2×3.0 in | 149.5×106.5×75 mm 5.9×4.2×3.0 in | 156×157.6×79.9 mm 6.1×6.2×3.1 in |
| Weight (excluding battery and accessories) | | 780 g / 27.5 oz. | 780 g / 27.5 oz. | 1250 g / 44 oz. |
| Remarks | | | | |

# 10. OPERATION CAUTIONS

## 10.1 Operaton Cautions

□ : New cautions which apply to the EOS D30 and EOS D60. (Other EOS D30 operation cautions not mentioned here also apply to the EOS D60)

| Cautions | Remarks |
|---|---|
| □ 1. When cleaning the CMOS sensor, use only a hand blower to blow off dust, etc. Never touch the CMOS surface with any brush, cloth, or cleaning agent. Also do not use pressurized (canned) air or gas to clean the CMOS sensor. | This is to prevent damage to the CMOS. |
| □ 2. If the 550EX, MR-14EX, or MT-24EX fails to recycle fast enough during continuous shooting with FEB, the shutter release locks. After the shutter button is released from the fully depressed position, AE metering takes effect before the flash is ready. | Normally, AE metering takes effect if the Speedlite is not ready. If during FEB continuous shooting the flash fails to recycle and AE takes immediate effect, the AE-metered picture in the shooting sequence would look unnatural. The shutterrelease lock prevents this. |
| □ 3. With the EF 70-200mm f/2.8L USM attached with an Extender, use the center AF point to focus. | Focusing precision cannot be assured with the peripheral AF points. |
| □ 4. If you use the AI SERVO AF mode with flash, the built-in flash's AF-assist beam will not be emitted. (If the AF mode is set to ONE SHOT AF, AF-assist beam will be emitted automatically if necessary.) | Since it does not match predictive AF very well, this has been incorporated in the design. ONE-SHOT AF is recommended for flash photography. |
| □ 5. Before displaying captured images on a TV monitor, check whether it uses the NTSC or PAL system. | If the TV monitor uses a different system, the images will not be displayed properly. (The default setting : JPN, USA = NTSC / other areas = PAL) |
| □ 6. If there is a strong light source within the image area, ghosting might occur at a point symmetrical to position or near the light source. | As per the design. |
| □ 7. If a high ISO speed is set, fewer images can be captured. | As per the design. The LCD panel can show how many remaining shots can be captured for the ISO speed you set. |
| 8. If a picture is taken under a high temperature, with a high ISO speed, or with a long exposure, the color in the picture might look irregular. | As per the design. |
| 9. If the CF card's remaining space is enough for less than 8 shots, continuous shooting might not be possible. | This is because the CF card's remaining space is checked. |
| 10. During continuous shooting, a folder may store 101 or more images. However, the last continuous shot taken will be stored in the next folder. | As per the design. |

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## 10.2 Built-in Flash and EF Lens Compatibility

◎ : No cut-off even with a dedicated hood attached.
△ : Cut-off will occur with a hood attached, but there is no cut-off without a hood.
× : Incompatible--cut-off occurs even without a hood attached.
— : Not applicable. The lens is outside the effective flash coverage or application.

| No. | Lens | Hood | Subject Distance (m) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 001 | EF14mm f/2.8 L | Built-in | — | — | — | — | — | — | — | — |
| 002 | EF15mm f/2.8 FE | Built-in | — | — | — | — | — | — | — | — |
| 003 | EF20mm f/2.8 USM | EW-75 II | — | △ | △ | △ | △ | △ | △ | △ |
| 004 | EF24mm f/1.4 L USM | EW-83D II | — | △ | △ | △ | △ | △ | △ | △ |
| 005 | EF24mm f/2.8 | EW-60 II | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 006 | EF28mm f/1.8 USM | EW-63 II | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 007 | EF28mm f/2.8 | EW-65 II | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 008 | EF35mm f/1.4 L USM | EW-78C | — | △ | △ | △ | △ | △ | △ | △ |
| 009 | EF35mm f/2 | EW-65 II | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 010 | EF50mm f/1.0 L USM | ES-79 II | — | △ | △ | △ | △ | △ | △ | △ |
| 011 | EF50mm f/1.4 USM | ES-71 II | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 012 | EF50mm f/1.8 | ES-65 | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 013 | EF50mm f/1.8 II | ES-62 | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 014 | EF50mm f/2.5 MACRO | None | — | △ | △ | △ | △ | △ | △ | △ |
| | (EF50mm f/2.5 MACRO+LSC) | — | — | — | — | — | — | — | — | — |
| 015 | MP-E 65mm f/2.8 1-5× | None | — | — | — | — | — | — | — | — |
| 016 | EF85mm f/1.2 L USM | ES-79 II | — | △ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 017 | EF85mm f/1.8 USM | ET-65 III | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 018 | EF100mm f/2 USM | ET-65 III | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 019 | EF100mm f/2.8 MACRO USM | ET-67 | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 020 | EF100mm f/2.8 MACRO | None | — | △ | △ | △ | △ | △ | △ | △ |
| 021 | EF135mm f/2 L USM | ET-78 II | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 022 | EF135mm f/2.8 SF | ET-65 III | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 023 | EF180mm f/3.5L MACRO USM | ET-78 II | — | △ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 024 | EF200mm f/1.8 L USM | ET-123 | — | — | — | × | × | × | × | × |
| 025 | EF200mm f/2.8 L USM | Built-in | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 026 | EF200mm f/2.8 L II USM | ET-83B II | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 027 | EF300mm f/2.8 L IS USM | ET-120 | — | — | × | × | × | × | × | × |
| 028 | EF300mm f/2.8 L USM | ET-118 II | — | — | × | × | × | × | × | × |
| 029 | EF300mm f/2.8 L II USM | ET-118 II | — | — | × | × | × | × | × | × |
| 030 | EF300mm f/2.8 L III USM | ET-118 II | — | — | × | × | × | × | × | × |
| 031 | EF300mm f/4 L IS USM | Built-in | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 032 | EF300mm f/4 L USM | Built-in | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ |
| 033 | EF400mm f/2.8 L IS USM | ET-155 | — | — | — | — | × | × | × | × |
| 034 | EF400mm f/2.8 L USM | ET-161B II | — | — | — | — | × | × | × | × |
| 035 | EF400mm f/2.8 L II USM | ET-161B II | — | — | — | — | × | × | × | × |
| 036 | EF400mm f/4 DO IS USM | ET-120 | — | — | — | — | × | × | × | × |
| 037 | EF400mm f/5.6 L USM | Built-in | — | — | — | — | ◎ | ◎ | ◎ | ◎ |
| 038 | EF500mm f/4 L IS USM | ET-138 | — | — | — | — | — | × | × | × |
| 039 | EF500mm f/4.5 L USM | ET-123B | — | — | — | — | — | × | × | × |
| 040 | EF500mm f/4.5 L II USM | ET-123B | — | — | — | — | — | × | × | × |
| 041 | EF600mm f/4 L IS USM | ET-160 | — | — | — | — | — | — | × | × |
| 042 | EF600mm f/4 L USM | ET-161 II | — | — | — | — | — | — | × | × |
| 043 | EF600mm f/4 L II USM | ET-161 II | — | — | — | — | — | — | × | × |
| 044 | EF1200mm f/5.6 USM | Built-in | — | — | — | — | — | — | — | — |
| 045 | TS-E24mm f/3.5L | EW-75B II | — | △ | △ | △ | △ | △ | △ | △ |
| 046 | TS-E45mm f/2.8 | EW-79B II | — | △ | △ | △ | △ | △ | △ | △ |
| 047 | TS-E90mm f/2.8 | ES-65 III | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |

◎ : No cut-off even with a dedicated hood attached.
△ : Cut-off will occur with a hood attached, but there is no cut-off without a hood.
× : Incompatible--cut-off occurs even without a hood attached.
— : Not applicable. The lens is outside the effective flash coverage or application.

| No. | Lens | Hood | 0.5 W | 0.5 T | 1 W | 1 T | 2 W | 2 T | 3 W | 3 T | 4 W | 4 T | 5 W | 5 T | 6 W | 6 T | 7 W | 7 T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 048 | EF16-35mm f/2.8 L USM | EW-83E | — | — | × | △ | × | △ | × | △ | × | △ | × | △ | × | △ | × | △ |
| 049 | EF17-35mm f/2.8 L USM | EW-83C II | — | — | × | △ | × | △ | × | △ | × | △ | × | △ | × | △ | × | △ |
| 050 | EF20-35mm f/2.8 L | EW-75 | — | — | × | △ | × | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| 051 | EF20-35mm f/3.5-4.5 USM | EW-83 II | — | — | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| 052 | EF22-55mm f/4-5.6 USM | EW-60D | — | — | △ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 053 | EF24-85mm f/3.5-4.5 USM | EW-73 II | — | — | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ |
| 054 | EF28-70mm f/2.8 L USM | EW-83B II | — | — | × | △ | × | △ | × | △ | × | △ | × | △ | × | ◎ | × | ◎ |
| 055 | EF28-70mm f/3.5-4.5 | EW-68A | — | — | △ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 056 | EF28-70mm f/3.5-4.5 II | EW-68A | — | — | △ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 057 | EF28-80mm f/2.8-4 L USM | EW-79 | — | — | △ | △ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ |
| 058 | EF28-80mm f/3.5-5.6 | EW-60C | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 059 | EF28-80mm f/3.5-5.6 II | EW-60C | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 060 | EF28-80mm f/3.5-5.6 USM | EW-68A | — | — | △ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 061 | EF28-80mm f/3.5-5.6 II USM | EW-60C | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 062 | EF28-80mm f/3.5-5.6 III USM | EW-60C | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 063 | EF28-80mm f/3.5-5.6 IV USM | EW-60C | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 064 | EF28-80mm f/3.5-5.6 V USM | EW-60C | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 065 | EF28-90mm f/3.5-5.6 | EW-60C | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 066 | EF28-90mm f/3.5-5.6 USM | EW-60C | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 067 | EF28-105mm f/3.5-4.5 USM | EW-63 II | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 068 | EF28-135mm f/3.5-5.6 IS USM | EW-78B II | — | — | △ | △ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ |
| 069 | EF28-200mm f/3.5-5.6 | EW-78D | — | — | △ | △ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ |
| 070 | EF28-200mm f/3.5-5.6 USM | EW-78D | — | — | △ | △ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ |
| 071 | EF35-70mm f/3.5-4.5 | EW-68B | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 072 | EF35-70mm f/3.5-4.5 A | EW-68B | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 073 | EF35-80mm f/4-5.6 PZ | None | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 074 | EF35-80mm f/4-5.6 | EW-62 | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 075 | EF35-80mm f/4-5.6 II | EW-54 II | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 076 | EF35-80mm f/4-5.6 III | EW-54 II | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 077 | EF35-80mm f/4-5.6 USM | EW-54 II | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 078 | EF35-105mm f/3.5-4.5 | EW-68B | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 079 | EF35-105mm f/4.5-5.6 | EW-68B | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 080 | EF35-105mm f/4.5-5.6 USM | EW-60B | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 081 | EF35-135mm f/3.5-4.5 | EW-68B | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 082 | EF35-135mm f/4-5.6 USM | EW-62 | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 083 | EF35-350mm f/3.5-5.6 L USM | EW-78 II | — | — | × | — | × | — | × | △ | △ | × | ◎ | × | ◎ | × | ◎ | × |
| 084 | EF38-76mm f/4.5-5.6 | EW-54 II | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 085 | EF50-200mm f/3.5-4.5 | ET-62 II | — | — | △ | △ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 086 | EF50-200mm f/3.5-4.5 L | ET-62 II | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 087 | EF55-200mm f/4.5-5.6 USM | ET-54 | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 088 | EF70-200mm f/2.8 L IS USM | ET-86 | — | — | △ | △ | △ | △ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ |
| 089 | EF70-200mm f/2.8 L USM | ET-83 II | — | — | △ | △ | △ | △ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ |
| 090 | EF70-200mm f/4 L USM | ET-74 | — | — | — | — | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ |
| 091 | EF70-210mm f/4 | ET-62 II | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 092 | EF70-210mm f/3.5-4.5 USM | ET-65 II | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 093 | EF75-300mm f/4-5.6 | ET-65 II | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 094 | EF75-300mm f/4-5.6 II | ET-60 | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 095 | EF75-300mm f/4-5.6 III | ET-60 | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 096 | EF75-300mm f/4-5.6 USM | ET-60 | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 097 | EF75-300mm f/4-5.6 II USM | ET-60 | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 098 | EF75-300mm f/4-5.6 III USM | ET-60 | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 099 | EF75-300mm f/4-5.6 IS USM | ET-64 II | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 100 | EF80-200mm f/2.8 L USM | ES-79 | — | — | — | — | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ | △ | ◎ |
| 101 | EF80-200mm f/4.5-5.6 | ET-62 II | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 102 | EF80-200mm f/4.5-5.6 II | ET-54 | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 103 | EF80-200mm f/4.5-5.6 USM | ET-54 | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 104 | EF100-200mm f/4.5 A | ET-62 II | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 105 | EF100-300mm f/5.6 | ET-62 II | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 106 | EF100-300mm f/5.6 L | ET-62 II | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 107 | EF100-300mm f/4.5-5.6 USM | ET-65 III | — | — | — | — | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ |
| 108 | EF100-400mm f/4.5-5.6 IS USM | ET-83C | — | — | — | — | △ | △ | △ | △ | △ | △ | △ | ◎ | △ | ◎ | △ | ◎ |

**1-42**

# *Part 2*

# *Technical Information*

# 1.TECHNICAL DESCRIPTION

## 1.1 CMOS sensor imaging element

### 1) Major features

The camera has a Canon-developed, ultra-large, single-piece CMOS (complementary metal oxide semiconductor) sensor to give the camera the best resolution in its class. Primary-color filters are used to obtain accurate and vibrant color reproduction. Except for the smaller pixel size, the CMOS sensor's size is the same as the EOS D30's. The major specifications are shown in Table.

The imaging element now has more pixels. The area of each pixel is about half that of the pixels on the EOS D30's imaging element. This smaller size makes the imaging element less sensitive. To compensate, the design and process have been revamped so that the aperture is larger and the micro lenses have more efficient convergence. Thus, ISO speeds of 100, 200, 400, 800, and 1000 are possible.

### 2) Picture coverage

As with the EOS D30, the effective picture coverage (angle of view) will be equivalent to a lens with 1.6 times the EF lens' marked focal length.

### 3) Noise reduction of imaging element

With the CMOS sensor's dark current reduction and the image-reading circuit's noise reduction, the image recording is clear even for long exposures. As shown by Fig.2-4, it even looks better than the EOS D30's image taken in the noise reduction mode. Thanks to this major improvement, the EOS D60 does not require noise reduction for long exposures as the EOS D30 did, so C.Fn-1 has been eliminated.

This improvement also has helped enhance the normal photographic sequence. As a result, the shutter-release time lag is also more stable.

Fig.2-4 compares images taken at the 30-sec. shutter speed.



Fig. 2-1 CMOS sensor (actual size)

| Effective pixels | Approx. 6.30 megapixels: 3088×2056 |
|---|---|
| Total pixels | Approx. 6.52 megapixels: 3152×2068 |
| Sensor size (mm) | 24.9×18.1 |
| Effective sensor size (mm) | 22.7×15.1 |
| Pixel size ($\mu$ m) | 7.4×7.4 |
| Color filter | Primary-color filter |
| Aspect ratio | 2:3 |

CMOS Sensor Specifications



EOS D60 picture coverage
(22.7 × 15.1 mm)

35mm film picture
coverage (36 × 24 mm)
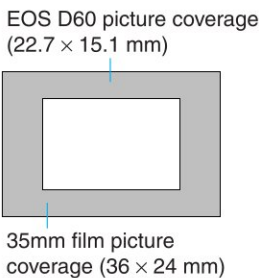
Fig. 2-2 Picture coverage comparison (actual size).

2-1

## 4) Countermeasures for red ghosting

    With the EOS D30, when there was a strong light source within the picture, red ghosting would appear symmetrically or near the light source depending on the shooting conditions. In the EOS D60's Low Pass Filter (LPF) assembly, by switching to a hybrid construction consisting of the optical low-pass/IR cut filter, the dichroic mirror with a new coating that changes the spectral transmittance in front of the LPF and the IR absorption glass with new absorption characteristic behind the LPF, the red ghosting problem has been almost completely resolved.

Liquid crystal
IR-absorption glass

CMOS sensor

Low-pass filter
Dichroic mirror
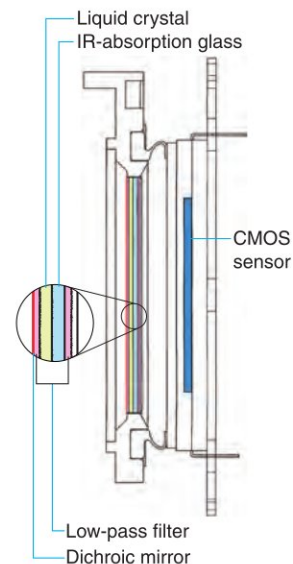
Fig. 2-3 LPF construction.
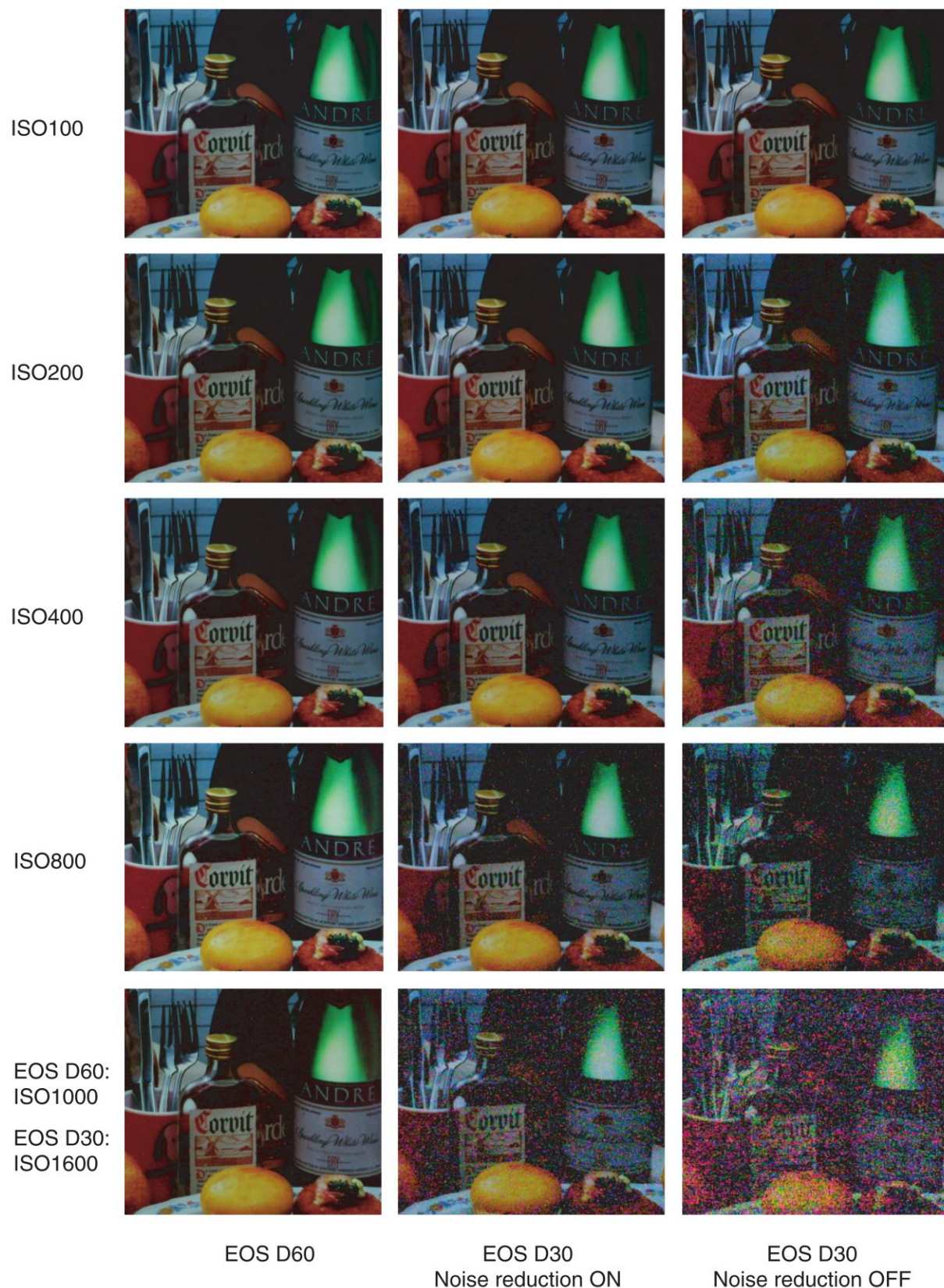
Fig. 2-4 Comparison of images taken at 30 sec. (cropped portions)

**2-3**

## 1.2 Image recording and processing

### 1) Imaging engine

The EOS D60's imaging engine (system LSI) is an improved version of the EOS D30's imaging engine that was designed to incorporate primary-color filters. The major features are as follows:

- Newly-developed signal-processing algorithm
- Faster signal processing
- Faster JPEG compression and decompression
- Thumbnail image-generating circuit produces better image quality

### 2) Image quality

Images can be recorded in one of six JPEG settings (lossy compression) and RAW (lossless compression)/12 bit). The EOS D60 has two more image quality settings (Middle/Fine and Middle/Normal) than the EOS D30 for a total of seven image quality settings. You can select the image quality setting according to the pixel count or compression rate.

Also, the EOS D60's RAW images have a JPEG-Middle/Fine image in the thumbnail-recording area within the .crw file. By using the dedicated driver (provided), you can now extract the JPEG file from the RAW image.

With the EOS D30, the image quality was fixed at Large/Fine in the Easy Shooting Zone modes. However, with the EOS D60, you can set any image quality.

| Image Quality | Pixels Recorded | Recording Format | Compression Rate | File Size (Approx. MB) | Recordable Images with 128 MB CF card (Approx. MB) |
|---|---|---|---|---|---|
| Large/Fine | 3072×2048 | JPEG | Low | 2.5 | 48 |
| Large/Normal | 3072×2048 | | High | 1.3 | 92 |
| Middle/Fine | 2048×1360 | | Low | 1.4 | 89 |
| Middle/Normal | 2048×1360 | | High | 0.7 | 172 |
| Small/Fine | 1536×1024 | | Low | 0.9 | 138 |
| Small/Normal | 1536×1024 | | High | 0.5 | 255 |
| RAW | 3072×2048 | Lossless RAW | — | 7.4 | 15 |

Image Quality

### 3) ISO speed setting

The ISO speed can be set to 100, 200, 400, 800, or 1000. All the ISO speeds are equivalent to the respective film speeds.

Although ISO 1600 is provided by the EOS D30, the EOS D60 does not. Since the EOS D60's imaging element has more pixels, the smaller pixel size results in lower sensitivity and S/N ratio. Since the EOS D30's image quality at ISO 1600 would be difficult to obtain with the EOS D60, ISO 1600 was not included.

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### 4) Processing parameters (image-processing settings)

Besides the three processing parameters (contrast, sharpness, color saturation) provided by the EOS D30, the EOS D60 also has color balance for a total of four processing parameters. Besides the "Standard (all set to 0)" setting, up to three sets of parameter settings can be set with the camera.

"Color balance" is mainly used to adjust flesh tones for portraits. Adjustment toward the minus side makes it redder, and the plus side makes it yellower. To set the processing parameters with the EOS D30, the camera must be connected to a personal computer and a driver is necessary. However, with the EOS D60, the processing parameters can be set with the menu functions displayed on the rear LCD monitor.
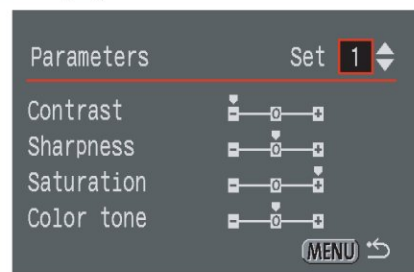


Fig. 2-5 Processing parameters.

### 5) White balance

With a TTL system that uses the imaging element, optimum white balance can always be attained under various shooting conditions. The selectable settings are the same as the EOS D30's white balance settings.

The only difference is that the color temperature for the "Daylight" setting has been changed from 5500 K to 5200 K for better image quality.

| Setting | Color Temperature (Approx. Kelvin) |
|---|---|
| Auto | 3000−7000 |
| Daylight | 5200 |
| Cloudy | 6000 |
| Light bulb | 3200 |
| Fluorescent light | 4000 |
| Flash | 6000 |
| Manual | 2000−10000 |

White Balance Settings

### 6) File numbering system for recorded images

It is the same as with the EOS D30.

## 1.3 AF system

### 1) Configuration of focusing optics

It is the same as the EOS D30.

### 2) High-speed AF and focusing computation

(1) Brightness range for AF

With improved maximum accumulation time for the AF and improved AF algorithm, AF performance limit in low light has been improved by 1.5 stops (EV 2 to EV 0.5).

(2) AF speed, AF point automatic selection algorithm, and predictive AF control

These are all the same as the EOS D30.

### 3) AF-assist light

As with the EOS D30, the EOS D60 has a built-in krypton lamp for the AF-assist light. The AF-assist light is linked to the three AF points.

The AF-assist light turns on automatically when the ambient light level is EV 4 or lower or when the AF has difficulty achieving focus. With the EOS D30, the AF-assist light can light up to three consecutive times. With the EOS D60, it can light up to six consecutive times (current point of focus → near point → far point: twice each). This improves the chances of obtaining accurate focus in low light. The AF-assist light's effective range is about 3.8 m at the viewfinder's center, the same as the EOS D30's AF-assist light.

When an EX-series Speedlite is used with the camera, the AF-assist light is emitted in the same way as with the EOS D30. With the 550EX and 420EX, AF-assist is emitted by the external Speedlite. With the 220EX and 380EX, the external Speedlite's AF-assist beam is emitted only when the center AF point has been selected. If an off-center AF point has been selected, the camera's AF-assist light will be emitted instead.

With C.Fn-5 (AF-assist/flash), you can now disable the camera's built-in AF-assist light or the Speedlite's AF-assist beam.
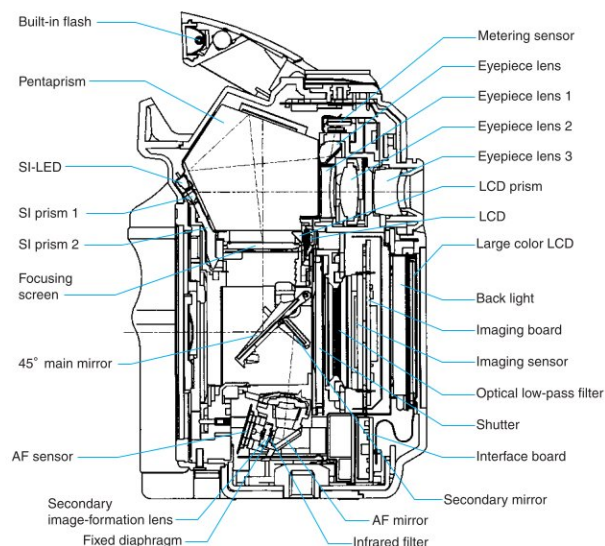
Fig. 2-6 Cross section at center.

## 1.4 Viewfinder

### 1) Viewfinder optics

The configuration and specifications (0.88×
viewfinder magnification, 95% picture coverage,
20mm eye relief) are the same as the EOS D30's
viewfinder. Note that although the focusing screen is
the same New Laser Matte type, the dispersion
characteristics have been improved to make it easier
to discern the focus point during manual focusing.

### 2) SI (Superimpose) display optics

The SI display optics for the AF points include
three small SI-LEDs (1.9 dia) in front of the
pentaprism. The light from the SI-LEDs passes
through SI prisms 1 and 2 and the main mirror
before reaching the AF points on the focusing
screen. The SI display brightness is about the same
as the EOS ELAN 7/7E, 30/33's.
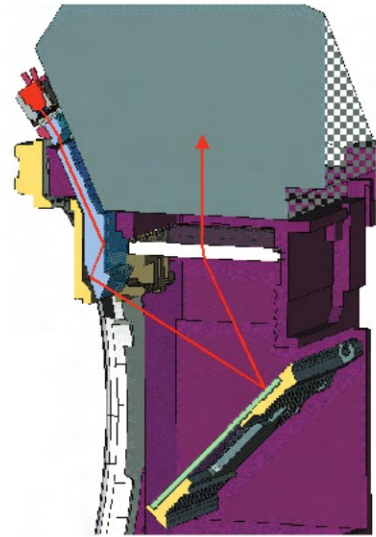


Fig. 2-7 SI display optics.

### 3) Dioptric correction mechanism

It is the same as the EOS D30.

### 4) Viewfinder information display

Compared to the EOS D30's information display,
the EOS D60 provides more information with the
following four new information displays at the
bottom of the viewfinder:

(1) SI display

   The display and AF point selection method are
   the same as with the EOS ELAN II/ELAN II E,
   50/50E.

(2) Flash exposure compensation icon

   Lights when flash exposure compensation has
   been set with the built-in flash or external
   Speedlite.

(3) Maximum burst during continuous shooting

   During continuous shooting, the current
   maximum burst is displayed from 0 to 8
   according to the amount of available buffer
   memory. Regardless of the drive mode, the
   maximum burst decreases with each shot taken.
   (As with the EOS D30, while the shutter button
   is fully depressed during continuous shooting,
   the viewfinder information is not displayed. The
   maximum burst thus cannot be known.) When
   the captured images are saved on the CF card
   and more buffer memory becomes available, the
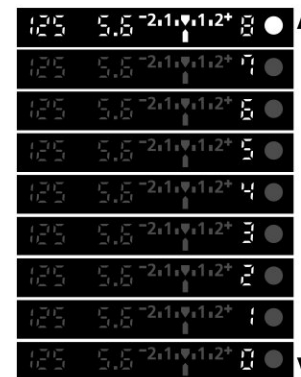


Fig. 2-8 Maximum burst display
during continuous shooting.
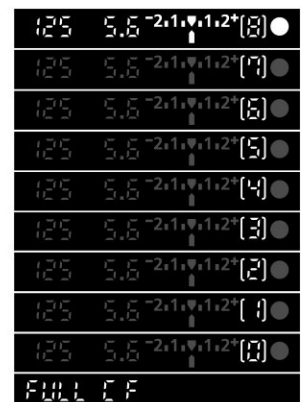


Fig. 2-9 Remaining shots
display.

**2-7**

maximum burst increases. Normally, "8" is displayed for the maximum burst.

(4) Shots remaining

When the CF card has room for less than 8 shots taken in the current image quality mode, the shots remaining will be displayed automatically in place of the maximum burst. The shots remaining decreases from [8] to [0] with each shot taken. When the CF card becomes full, "FULL CF" is displayed.

## 1.5 Exposure control mechanism

### 1) Metering

The metering optics, 35-zone AE sensor, and metering modes (evaluative, partial, center weighted average) are the same as the EOS D30's. The metering algorithm is based on the EOS D30's, but since there were a few user complaints about the exposure shifting when the picture was slightly recomposed, the metering algorithm's $\alpha$ compensation increment has been made finer, from 1/2 to 1/4, to obtain more stable exposure control.

### 2) Exposure control

It is the same as with the EOS D30.

## 1.6 Drive

### 1) Continuous shooting speed

It is the same as with the EOS D30.

### 2) Maximum burst during continuous shooting

With the EOS D30, the maximum burst for Large/Fine is about 8 as shown in Table 11. In the other image quality settings, the maximum burst varies. However, with the EOS D60, the maximum burst is always 8 regardless of the image quality and ISO speed.

* Despite the EOS D60's higher number of pixels (more data per shot), the maximum continuous shooting speed of 3 fps is maintained and the maximum burst during continuous shooting is also maintained at the same level as the EOS D30's. To achieve this, the buffer memory was increased and the image processing that the EOS D30 executed during continuous shooting was eliminated (as shown by Fig. 2-10's red arrows, the image is processed in accordance with the stipulated image quality and parameters from the 1st to 2nd buffers). As a result, the maximum burst is always 8, limited only by the 1st buffer memory's capacity.

* During RAW shooting with the EOS D30, the maximum burst during continuous shooting was 3 shots due to the 2nd buffer's capacity

| Image Quality | Max. Burst During Continuous Shooting | |
| --- | --- | --- |
| | EOS D30 | EOS D60 |
| Large/Fine | Approx. 8 | |
| Large/Normal | Approx. 17 | |
| Middle/Fine | — | |
| Middle/Normal | — | 8 |
| Small/Fine | Approx. 17 | |
| Small/Normal | Approx. 30 | |
| RAW | Approx. 3 | |

Maximum Burst
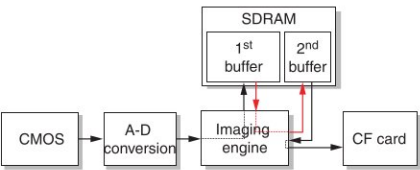


Fig. 2-10 Image-processing flow.

**2-8**

limit. With the EOS D60, a maximum burst of 8 is possible in the RAW mode. Continuous shooting in the RAW mode is therefore now more practical with the EOS D60.

## 1.7 LCD panel

Except for the addition of Middle/Fine and Middle/Normal, the information displayed is the same as the EOS D30's LCD panel.

EOS D60 now has LCD panel illumination (EL backlight).

When "LCD panel illumination" is enabled with the on-screen menu, pressing the SET button turns the LCD panel illumination on or off. The illumination time is about 4 sec, but it will stay on if you operate any buttons or dials to take a picture.



Fig. 2-11 LCD panel illumination

* If C.Fn-12-1/2/3 (SET button function during shooting) has been set, pressing SET will not turn off the LCD panel illumination (it will turn off automatically).

## 1.8 Built-in flash

It is the same as the EOS D30's built-in flash.

## 1.9 Basic operation concept and LCD panel display

### 1) Operation concept

The EOS D60's operation concept is based on the EOS D30. Regardless of what mode the camera is currently in, the camera will immediately be able to take a picture when you press the shutter button or any of the shooting-related buttons (metering mode/flash exposure compensation button, drive mode button, AF mode/WB button, AE/FE lock button, AF point selector).

### 2) LCD monitor

(1) LCD monitor

The 1.8-in. TFT color monitor on the back of the camera is the same size as the EOS D30's. You can check the images you shot and view on-screen menus to set various options.

The TFT color monitor has a sheet of material which increases the screen brightness. The brightness at a viewing angle from 0ºC to about +/-40ºC is the same as the EOS D30's TFT monitor. The brightness at viewing angles greater than 40ºC is now much higher as shown in Fig. 2-13.
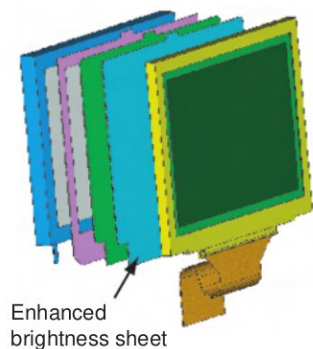
Fig. 2-12 TFT monitor construction.
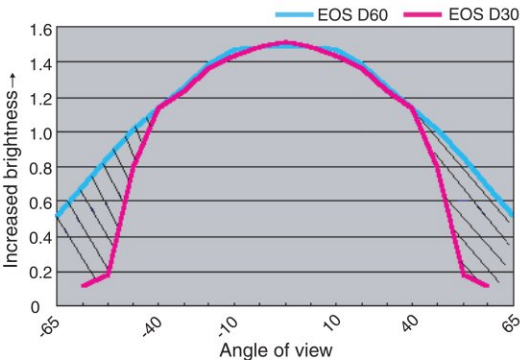


Fig. 2-13 TFT monitor brightness comparison.

(2) Menu configuration

The menu's basic configuration is the same as the EOS D30's with three menu groups: Shooting, playback, and setup. They are looping menus. Three new menu options have been added: "LCD panel illumination," "C.Fn cancel," and "Firmware ver." The menu options are displayed in Table.

Regarding CF card initialization, the name has been changed from "CF card initialize" to "Card initialize." This is to prevent confusion with C.Fn.

|  | Shooting | Playback | Setup |
|---|---|---|---|
| Menu Items | Image quality | Image protect | LCD brightness |
|  | Red-eye reduction | Image rotation | Date/time |
|  | AEB | Print specification | File No. |
|  | ISO speed | Auto play | Language |
|  | LCD panel illumination | Auto power off | Video OUT format |
|  | Beeper | Image review | Card initialize |
|  | M-WB image selection | Image review time | C.Fn |
|  | Processing parameters |  | C.Fn cancel |
|  |  |  | Firmware ver. |

Menu Options

## 3) Playback/Erase protection

It is the same as the EOS D30.

## 4) Information display

The method for displaying the shooting/playback information is the same as the EOS D30. The information displayed is the same as the EOS D30 except for the following two changes:

Camera Info.: The processing parameter information has been changed to "-/0/+" to match the displayed setting.

Single-frame display Info.: The "F" indicating the aperture has been eliminated.

**2-10**
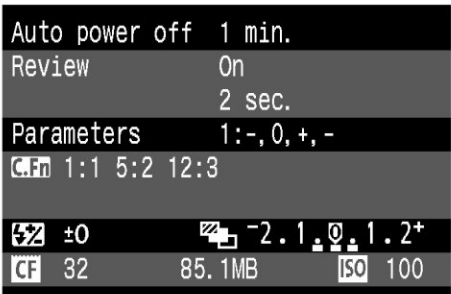
Fig. 2-14 Camera Info.
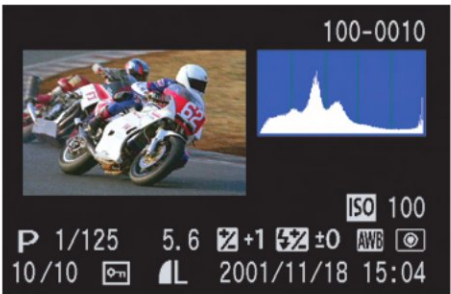


Fig. 2-15 Single-frame display Info.

### 5) Jump feature

It is the same as the EOS D30's.

## 1.10 Improved firmware

### 1) Shorter shutter-release time lag and better stability

The firmware has been revamped for the EOS D60. As a result, the shutter-release time lag is now shorter and more stable.

Regardless of the shutter speed, the shutter-release time lag (stop-down by up to 4.5 stops from maximum aperture and excluding AF operation time) will be as follows:
With SW-1 ON, the time between SW-2 ON and the start of exposure:
Approx. 100 ms.

The time from simultaneous SW-1 and SW-2 ON to the start of exposure:
Approx. 240 ms.

Also, the viewfinder blackout time is about 300 ms. This is about the same as film-based EOS cameras.

### 2) Shorter startup time from power off

With the EOS D30, each time the camera started up from power off (main switch off or auto power off), it accessed the recording media and read the occupied-area information. For the EOS D60, the firmware has been modified so that the recording media's occupied-area information remains in the camera's memory when the power is turned off. Therefore, there is no need to read the occupied-area information during startup. This makes the startup time shorter.

Since the CF card is a semiconductor integrated circuit, there is little startup time difference compared with the EOS D30. However, with a MicroDrive storage device, there is a big difference in the startup time.

When the power is turned off, the camera still detects whether the CF card slot cover has been opened or closed. If the slot cover has been opened or closed, the occupied-area information will be read during startup as with the EOS D30.

| Camera | MicroDrive 1GB (Approx. 50% used) |
|---|---|
| EOS D60 | Approx. 2.2 sec. |
| EOS D30 | Approx. 3.5 sec. |

Comparison of Startup Time

**2-11**

## 1.11 Internal construction

### 1) Internal construction

It is based on the EOS D30. The chassis is made of stainless steel and engineering plastic. The external cover's inner side has a high-frequency, ion plating finish for better protection against electromagnetic fields, static charge, etc.

Fig. 2-15 shows a cross-section diagram. Fig. 2-16 shows the location of the major mechanical components, and Fig. 2-17 shows the location of the major circuit boards.

### 2) Parts count

The EOS D60's parts count is shown below.

| | |
|---|---|
| Optics | 43 |
| Mechanical parts | 334 |
| Electrical parts | 719 |
| Circuit boards | 26 |
| Lead wires | 34 |
| Screws and washers | 157 |
| Total | 1313 |
| Official total | 1156 |

- The shutter unit is counted as 1 part.
- The DC/DC converter is counted as 1 part.
- When there are multiple units of the same part, they are all individually counted.
- The official total excludes the screws and washers.

Parts Count

### 3) Shutter-release mechanism

It is the same as the EOS D30's.

## 1.12 Custom Functions

The Custom Functions different from those of the EOS D30 are listed in the tables below.

The EOS D30's C.Fn-1 (noise reduction for long exposures) is not provided in the EOS D60 because, as mentioned in 1.1 3), the improved CMOS sensor has eliminated the need for noise reduction. The image quality is now better than the EOS D30's even without noise reduction. C.Fn-1 is left unused, and the camera does not display the C.Fn-1 number.

New Custom Functions

| C.Fn No. | Custom Function | Setting | Description |
|---|---|---|---|
| C.Fn-14 | Superimposed display | 0 | On |
| | | 1 | Off |
| C.Fn-15 | Shutter release w/o CF card | 0 | Possible without CF card |
| | | 1 | Not possible |

Modified Settings

| C.Fn No. | Custom Function | Setting | Description |
|---|---|---|---|
| C.Fn-5 | AF-assist beam/Flash firing | 0 | Emits/Fires |
| | | 1 | Does not emit/Fires |
| | | 2 | Only ext. flash emits/Fires |
| | | 3 | Emits/Does not fire |

\* C.Fn-5: The flash firing can be set in addition to the AF-assist light setting .

## 1.13 Compatibility with accessories

Compatible with all EOS D30 accessories.
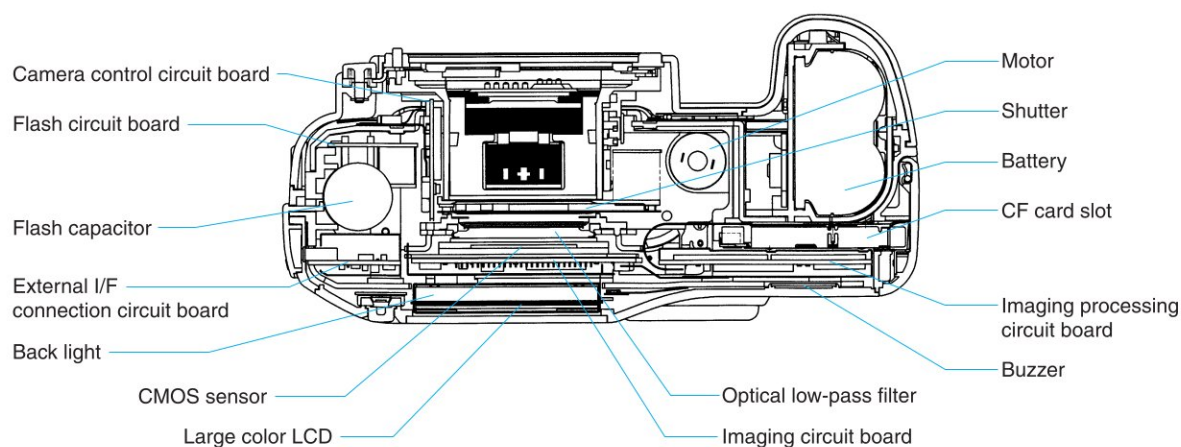


Fig. 2-16 Cross section at center.
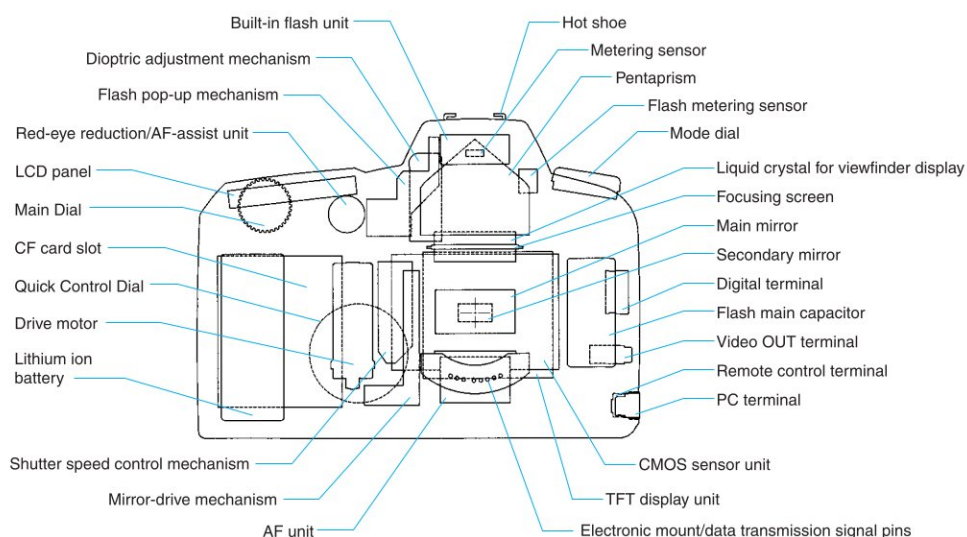


Fig. 2-17 Location of major mechanical components.

**2-13**
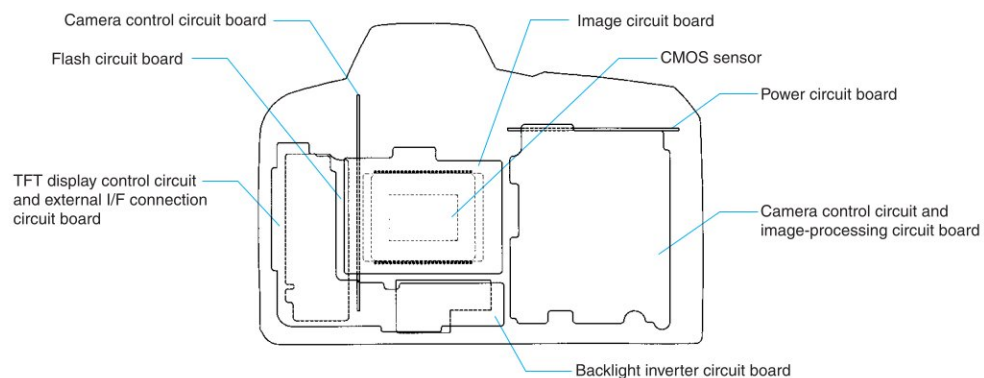
Fig. 2-18 Location of major circuit boards.

# 2. FUNCTION OF MAJOR CIRCUIT BOARDS

## 2.1 Description of Major Circuit Boards

EOS 60 is composed with four major circuit boards. The following are descriptions of the four major circuit boards.
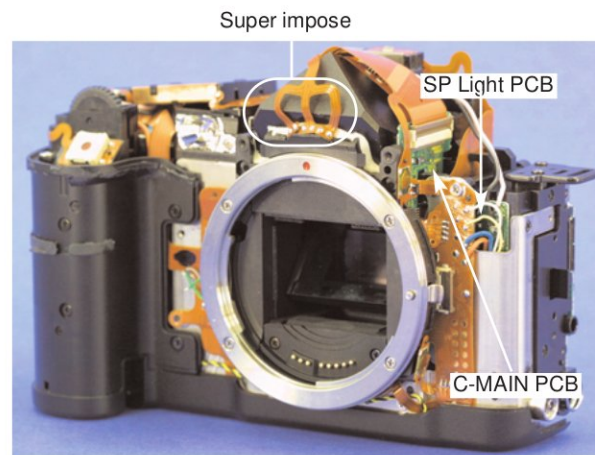


Fig. 2-19 Front Boards
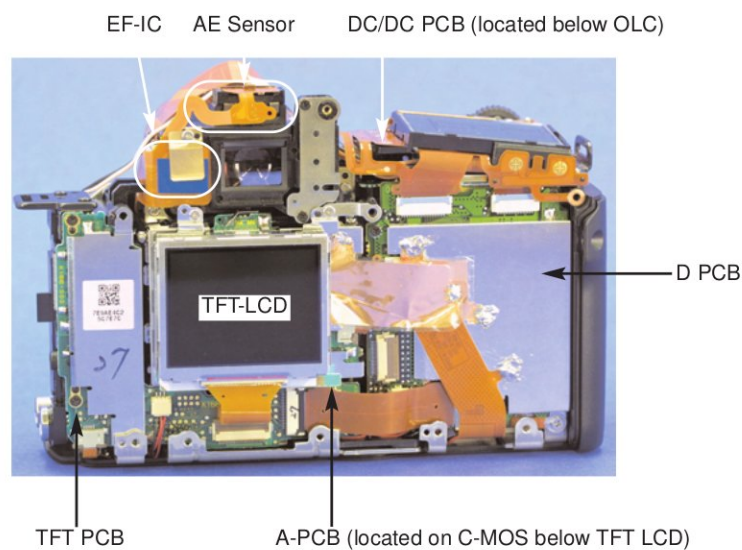


Fig. 2-20 Back Boards

**2-15**

## 1. D Board

   This board process the signals of main section, and it includes the digital section's microcomputer which controls the entire sequence and performs the image processing.

| Major Components | Function |
|---|---|
| IC3(CPU) | Reads all operation and status switches, and controls USB communication, video output, camera section's imaging and power source. |
| IC4(RTC) | Real-time clock |
| IC11 | Flash memory (stores firmware) |
| IC12(DSP) | Graphic engine. After fixing the malfunction of the images such as C-MOS scratch data update and shading, processes and readouts to CF card. |
| IC14~17 | Memory with a storage capacity of 128 Mbytes with the SDRAM and 256 Mbits × 4. Serves as a temporary storage for the data after image processing |
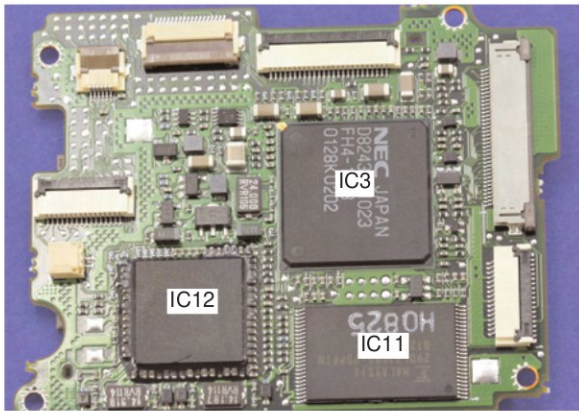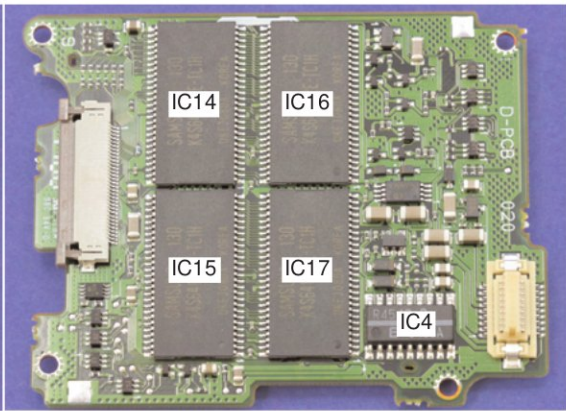


Fig. 2-21 D1 Board                    Fig. 2-22 D2 Board

## 2. A (analog) Board

   Generates the CMOS-driving pulse and converts the C-MOS output from analog to digital.

| Major Components | Function |
|---|---|
| IC5004(A/D converter) | Converts the analog signal to the 12 bit C-MOS signal. |
| IC5006(D/A converter) | Sets the C-MOS peripheral bias voltage. |
| IC5008(EEPROM) | Records the C-MOS initial information |
| IC5010(TG) | Sends driving pulse for C-MOS and does dark current processing. |

**2-16**
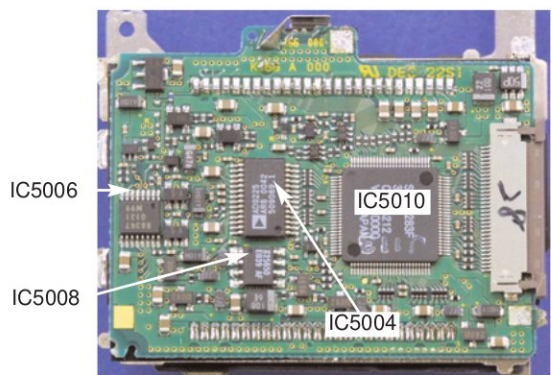
Fig. 2-23 A Board

## 3. TFT Board

The TFT board interfaces the display system with other systems.

| Major Components | Function |
| --- | --- |
| IC7(LCD driver) | Controls TFT-LCD display. |
| IC15, IC6 (Video amp) | Video signal amp |
| Interface part | Cable release part and USB communication part. |
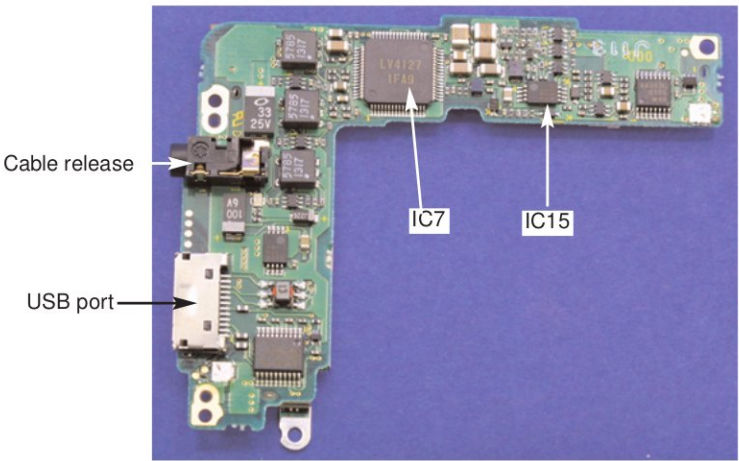


Fig. 2-24 TFT Borad

## 4. C-MAIN Board

Controls light metering,focusing, flash, and communicate with EF lens.

| Major Components | Function |
| --- | --- |
| MPU | Camera microcomputer |

# 3. SWITCHES AND THEIR FUNCTIONS

The following switches are found on the EOS D60.

(1) Operation Switches

| No. Code | Name | Function |
|---|---|---|
| 1 SW1 | Focusing/metering | Starts autofocusing and metering. |
| 2 SW2 | Release | Starts the exposure. |
| 3 MAIN SW | Main | When ON, turns on camera. |
| 4 AEL SW | AE lock | When ON, AE lock applied. (AE lock also applied while metering is active.) |
| 5 FPSEL SW | Focusing point selector | When ON, enables manual focusing point selection with the electronic dial. (Sub electrical dial can also be used.) |
| 6 DRIVE MODE SW | Drive mode selector | ON+ electronic dial operation enables drive mode selection. |
| 7 AF/WB SW | AF/WB selector | ON+ electronic dial operation enables AF mode selection. ON+ sub electronic dial operation enables WB mode selection. |
| 8 MES SW | Metering mode selector | ON+ electronic dial operation enables metering mode selection. ON+ back cover Quick Control dial operation enables flash exposure compensation. |
| 9 POP UP SW | POP UP | When ON, the flash pops up. |
| 10 SPDN SW | Depth-of-field preview | When ON, metering starts and the diaphragm stops down at the set aperture value. |
| 11 MENU | Menu button | When ON, the back cover Quick Control dial selects the tag. |
| 12 INFO. | Info. button | When ON, enables checking the settings. When PLAY, displays the image infomation. |
| 13 JUMP | Jump Button | When ON, jumps to next/former 10th frame. |
| 14 MG SW | Enlarge button | ON+ the Quick Control dial enlarges the image. |
| 18 PLAY SW | Play button | When ON, the image is displayed, Serial play with the sub electric dial operation. |
| 19 ERASE | Erase button | Erases captured images. When ON, erase selection menu is displayed. |
| 20 SET | Setting button | When ON, enables setting functions. |

**2-18**

Mode dial button

Built-in flash button

Main Dial button

POP UP SW button

SPDN SW button

Drive mode SW button

MES SW button

AF /WB SW button

AEL SW button

FPSEL SW button

MAIN SW button

MENU button

INFO button

MG button

Jump button

PLAY SW button

Setting button

Quick Control Dial button

Erase button
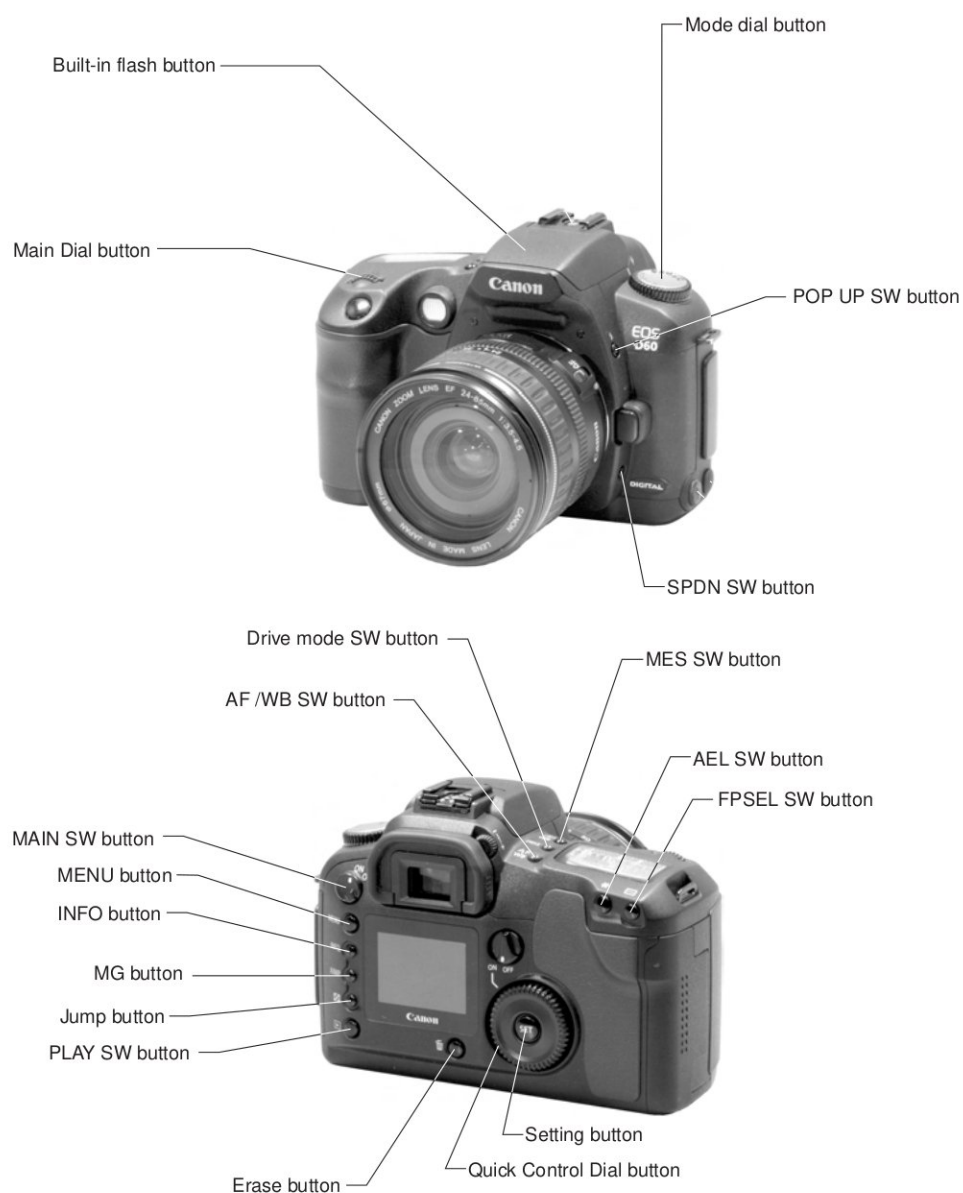
Fig. 2-25 Switch Names

**2-19**

(2) Status & Mechanical Switches

| No. Code | Name | Function |
|----------|------|----------|
| 1 MIF SW | Lens SW | Detects whether a lens is attached or not. |
| 2 BATSEL SW | Battery detection SW | Detection switch for Lithium-ion battery |
| 3 BAT SW | Battery cover detection SW | Open when a battery is installed, and battery cover open / close status is detected. |
| 4 SWBIRI SW | Shock prevention SW | Prevents electrical shock. |
| 5 CHG1,2 SW | Shutter-cocking phase SW | Detects shutter cocking, etc. |
| 6 SWX SW | X SW | Flash synchronization detection |
| 7 CN2 SW | 2nd-curtain SW | Detects the end of the 2nd shutter curtain's movement. |
| 8 CFCVR SW | CF card cover detection SW | Detects the opening/closing of the CF card cover. |



Fig. 2-26 CF Cover



Fig. 2-27 Battery cover
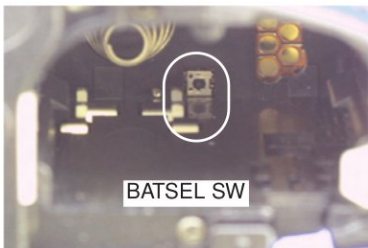


Fig. 2-28 Battery Chamber
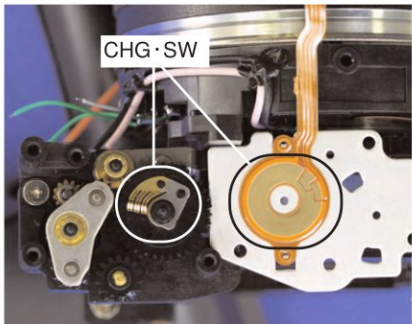


Fig. 2-29 CHG·SW
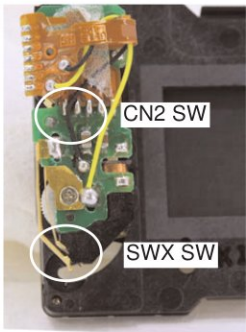


Fig. 2-30 Shutter lead wires

2-20

# 4. CIRCUIT OUTLINES

## 4.1 Power Supply Control

The power is supplied from the battery terminal and is input to the DC/DC PCB. The input power takes two signal paths. One power supply path is directly connected to the MD PCB where the input power is called VBAT. It is not fused. The other power path is connected to the DC/DC converter circuit through the fuse.
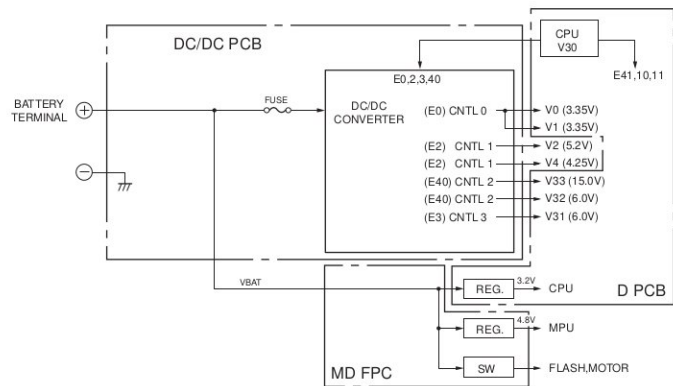


Fig. 2-31

### 4.1.1 Output Power from the DC/DC Converter

#### 1) E0 (CNTL0) (Regulated)

The E0 (CNTL0) control signal is always turned ON while the main power is turned ON. This signal is temporarily ON when the lens is attached, the CF door is opened/closed and the CF is attached even if the main power is turned OFF.

- V0 (3.35 V): Power for the D PCB, TFT PCB circuit and A PCB TG
- V1 (3.35 V): Power for the CF card

#### 2) E2 (CNTL1) (Regulated)

The E2 (CNTL1) control signal is turned ON while the camera is operating. This signal is temporarily ON when the lens is attached and the flash unit is popped up.

- V4 (4.25 V): Power for the camera (mechanism system)
- V2 (5.2 V): Power for the camera (microprocessor system)

#### 3) E40 (CNTL2) (Regulated)

The E40 (CNTL2) control signal is ON when the TFT LCD is ON.

- V32 (6 V), V33 (15 V): Power supply for TFT PCB.

#### 4) E3 (CNTL3) (Regulated)

The E3 (CNTL3) control signal is ON when driving the C MOS sensor.

- V31 (6.0 V): Power for the A PCB.

#### 5) E10, E11: E41 (Regulated)

These E10, E11 control signals turn ON/OFF the output power of the DC/DC converter as described below.

- E41: This control signal turns ON/OFF the power supplied to the video output amplifier. The signal is turned ON when insertion of the video jack is detected by the video jack insertion detection.

### 4.1.2 VBAT Power

The following power supplies are generated from the VBAT power that is supplied from the battery terminal.

1) Power to the CPU
2) Power to the MPU
3) Power to the flash and motor circuits

**2-21**

## 4.2 Main System

The CPU (V30) on the D PCB is the main system control IC. It performs the controls such as receiving the operation switch data, power supply control, USB communication and OLC display and performs the following IC controls also.

- TG : Creation of the C MOS drive pulse • RTC: Clock count for clock
- LCD DRIVER: Driving the TFT LCD • FLASH: Firmware memory
- MPU (H12): Camera system control • DSP: Image processing
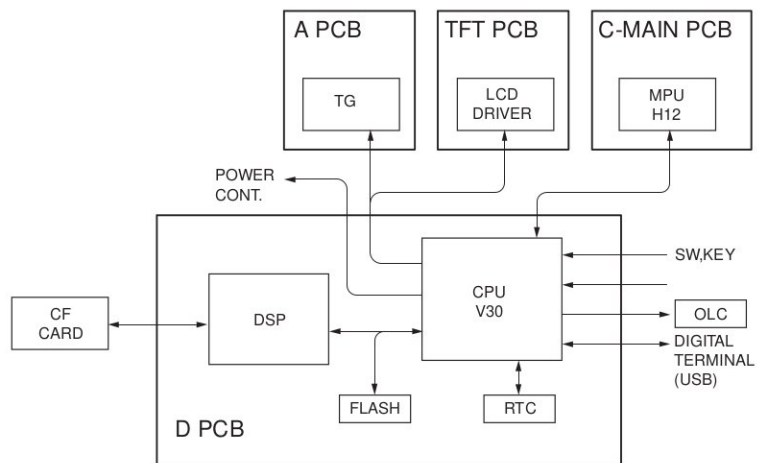
Fig. 2-32

## 4.3 Camera System

The MPU (HC12) on the C-MAIN PCB performs the following controls.
- AE/EF/AF sensor
- Shutter, AF auxiliary lamp
- Motor (for shutter, mirror and pop-up the flash)
- ILC (finder LCD) display
- EF lens
- Flash charging circuit

Fig. 2-33

**2-22**
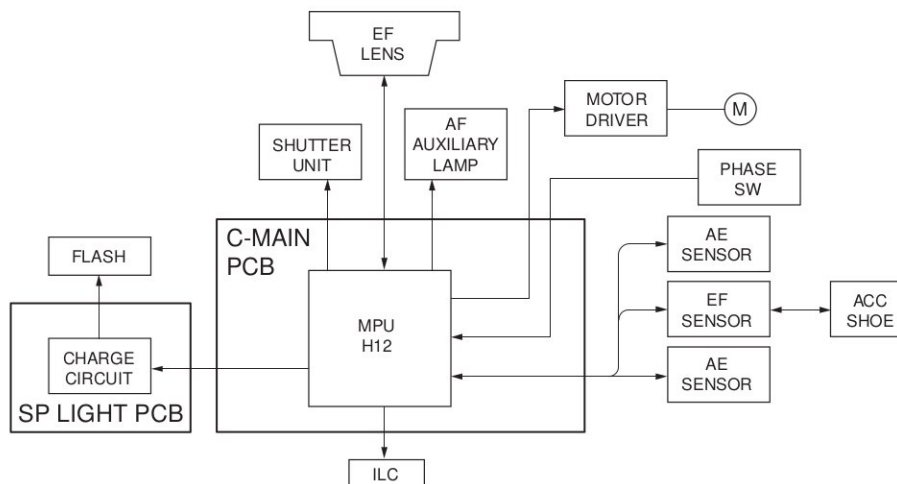
## 4.4 Video Signal

### 1) A PCB

The C-MOS sensor drive pulses are generated by the TG circuit that is operated by the clock signal from the DSP and by the sync signal.

The video signal is output from the C MOS sensor when it is driven by the drive pulse. The output video signal from C MOS is converted to the digital data by the A/D converter, passes through the TG circuit and is sent to DSP of the D PCB.

### 2) D PCB

The DSP circuit performs the following signal processing.

- Processes the video data. (Using the SDRAM)
- Writes and reads the video data to and from the CF card.
- Outputs the video data to the CPU.
- Outputs analog video signal to the LCD and VIDEO OUT.

### 3) TFT PCB

The video signal that is supplied form the DSP is controlled by the LCD driver and is displayed on the LCD. The video amplifier is activated when a jack is inserted into the video jack and drives the 75 ohm video signal.

### 4) Selecting the ISO sensitivity

The C-MOS sensor gain is switched by changing the amplifier gain (supporting ISO100 to 400) on the A PCB and the DSP amplifier gain (supporting ISO800 to 1600).
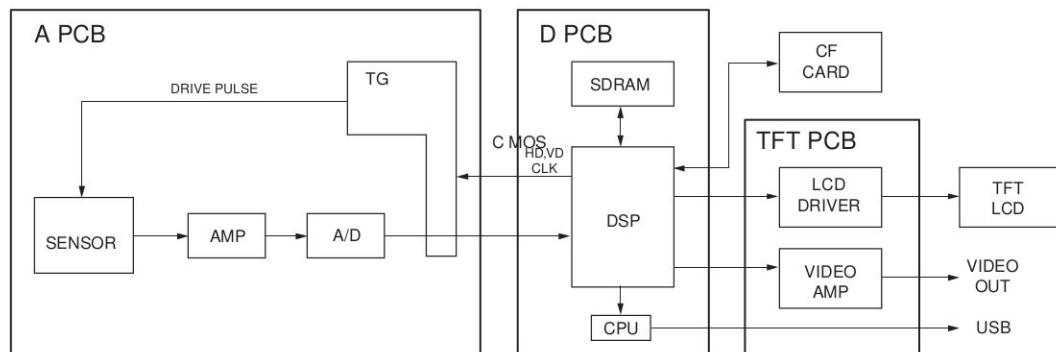


Fig. 2-34

# 5. ERROR CODE DISPLAY

As with other cameras, you can check the camera's condition in the inhibit mode. In the camera's inhibit mode, Err XXX is displayed. The user can see five types of error codes. Using the service adjustment software, you can check the detailed error codes and also erase error codes.

<User-viewable Errors>

| Display XX | Description | Probable Cause and Countermeasures |
|---|---|---|
| 01 | Lens faulty | • Lens communication error at shutter release.<br>• Lens diaphragm does not stop down at shutter release.<br>• Lens detection SW does not change. |
| 02 | CF card faulty | • CF card connector pin faulty.<br>• CF card faulty. |
| 04 | Folder limit / CF card has inadequate storage space. | • The number of folders created exceeded the limit.<br>Delete unnecessary folders. |
| 05 | Flash pop up error | • Pop-up switch error |
| 99 | Other defects | • Faulty system, DC/DC fuse blown. |

<Detailed Error Codes> (Viewable with the adjustment software.)

| Error code | | Contents | The part that is suspected as the cause of the error | OLC |
|---|---|---|---|---|
| 1 | 2 | | | |
| 10000000 | 00000000 | Lens aperture blades does not operate | Lens | |
| 01000000 | 00000000 | Lens aperture blades is not set in the full open state | Lens | |
| 00100000 | 00000000 | Lens communication error | Lens | |
| 00010000 | 00000000 | Mirror up cannot be implemented | Mirror box unit | |
| 00001000 | 00000000 | Mirror down cannot be implemented | Mirror box unit | |
| 00000100 | 00000000 | Shutter charge cannot be implemented after mirror is raised up | Mirror box unit | |
| 00000010 | 00000000 | Rear screen switch is not turned off after release | Shutter unit | 99 |
| 00000001 | 00000000 | Completion of charging is not output after the pre-illumination | Shutter unit | |
| 00000000 | 01000000 | X-contact does not turn on | Shutter unit | |
| 00000000 | 00010000 | X-contact is turned on at mirror up | Shutter unit | |
| 00000000 | 00001000 | Flash cannot be popped up | Top cover unit | |
| 00000000 | 00000100 | * CGE is open during standby | Mirror box unit | |
| 00000000 | 00000010 | * Mirror up is short-circuited at standby | Mirror box unit | |
| 00000000 | 00000001 | * CN2 is open at standby | Shutter unit | |

* When any digit other than the specified digit goes "1", the specific trouble may be caused by the other error.

In such a case, clear the error once and check the operation again in order to specify the error.

# Part 3

## Repair Information

# 1. PREPARATION FOR REPAIR

Be sure to read the following before starting the repair work

## 1.1 Flash High Voltage Circuit Precaution

- As soon as the front cover is removed, be sure to bleed the main capacitor. (Bleeder resistor: 500 ohms, approx. 10 W.)
- The bleeding contacts are the XE (+) side and GND onthe STR PCB. Contact the bleeder resistor with GND first, then with the XE (+) side.

---

**CAUTION**  HIGH VOLTAGE! Be careful of electric shock !

---

TOP FPC, lower

TOP FPC



Fig. 3-1 Flash Capacitor Bleeding Points

## 1.2 Power Consumption
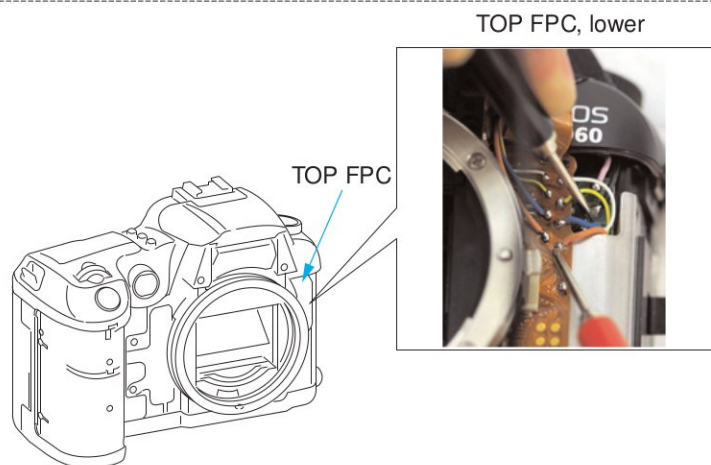
Power Consumption Standard

Lens : EF 50mm f/1.8
Power Supply : Regulated     Power
              Supply:7.5V, 0.4Ω
Ambient conditions: Room temperature, normal
                    humidity (below 60%)

Regulated Power Supply

Digital Multimeter
(Amp range)

Tool Battery

To camera under test
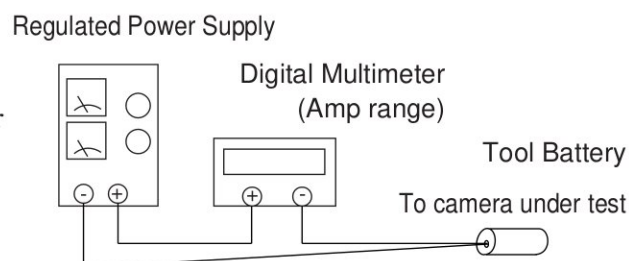


Fig. 3-2 Power Consumption Measurement Method

| Camera Setting | Product Standard | Actual Measured Value* |
|---|---|---|
| Stand-by | Less than 150μA | Approx.45μA |
| SW-1 On | Less than 300mA | Approx.280mA |

* : Values measured from early production cameras. Values may vary somewhat with later lots.

**3-1**

## 1.3 Tools and Expendables List

The following tools, test equipment and expendables are necessary during repair. Have them on hand.

### 1) Tools and Test Equipment

| New | Name | Part No. | Areas where used |
|---|---|---|---|
| | EF-8000 Multi-camera Tester | CY9-7073-000 | Light Source ("A" Light Source) |
| | EF-5000 | CY9-7086-000 | Light Source ("A" Light Source) |
| | Color Viewer (5600K) | DY9-2039-100 | Electrical Adjustments |
| | Color Bar Chart | DY9-2002-000 | Electrical Adjustments (Color Adjustment) |
| | Regulated DC Power Supply | | Electrical Adjustments |
| | Mount Fastening Tool | CY9-1547-000 | FFD adjustment |
| | Digital Micrometer | Local Purchase | FFD Adjustment |
| | AF Standard Tool Lens | CY9-1072-001 | AF Accuracy Adjustment |
| | Video Light | Local Purchase | AF Focus Adjustment, etc. |
| | Flash meter | Local Purchase | Flash Exposure Adjustment |
| | Penlight | Local Purchase | SPC Positioning |
| | Tripod | Local Purchase | |
| | Dark Bag | Local Purchase | |
| | Multimeter | Local Purchase | |
| | AF Standard Chart | CY9-1124-000 | AF Adjustment |
| | C12 Filter (2 each) | CY9-1546-000 | White Balance Adjustment |
| | Luminance Meter BM-300 | NPN | Light Source Calibration |
| | Luminance Meter BM-3000 | CY9-7052-000 | Light Source Calibration |

### 2) Charts and Locally Fabricated Tools

| New | Name | Part No. | Areas where used |
|---|---|---|---|
| | 18% Gray Standard Panel | | Flash Exposure Adjustment |
| | 3D chart | | See EF 300mm f/4.0L IS Service Manual |
| | SPC Positioning Mask | Local Fabrication | As necessary |
| | X-sync Time-lag Tool | Local Fabrication | X-sync time lag |
| | Tool Battery | Local Fabrication | Inhibit Voltage adjustment |

\* : Refer to Locally Fabricated Tools for details.

### 3) Products necessary for Testing

| New | Name | Part No. | Areas where used |
|---|---|---|---|
| | EF 50mm f/1.8 Lens | | Various Operational Checks and Adjustments |
| | EF Speedlite (A-TTL type) 300EZ, 540EZ | | Flash Exposure Adjustment |
| | EF Speedlite (E-TTL type) 380EX, 550EX | | Flash Exposure Adjustment |

## 4) Expendables List

| New | Name | Part No. | Areas where used |
|---|---|---|---|
| | Light-shield Tape | CY9-4026-000 | Motor |
| | Scotch tape | CY9-4031-000 | Pentaprism assembly |
| | Double-sided tape | CY9-4034-000 | Fixing lens mount contact ass'y leads |
| | Aron-Alpha 201 | CY9-8007-000 | Fixing the SPD and SI |
| | Arontite L | CY9-8008-000 | Staking screw heads |
| | Three bond 1401C | CY9-8011-000 | Staking screws |
| | UTLM-10 | CY9-8031-000 | Mirror Mechanism |
| | Silicon KE347B | CY9-8064-000 | Protecting high voltage and other cables |
| | Grease H-26 | CY9-8079-000 | Dial Unit, etc. |
| | IF10 | CY9-8088-000 | Mount spring |
| | Barrierta SJF-102 Grease | CY9-8100-000 | Release contacts |
| | Oil Retardent | CY9-8101-001 | Prevent oil smear around mount |
| | Logenest Lambda A-74 | CY1-8102-000 | M2 gear shafts |
| | Dia-bond 1663G | CY9-8129-000 | Attaching parts together |
| | Logenest Lambda NK-74C | CY1-8117-000 | Shafts, other friction surfaces |
| | Cemidine Super XNo8008 | CY9-8118-000 | Fixing Mount Ring, etc. |
| | NoxGuard ST-420 | CY9-8123-000 | Parts assembly |
| | Logenest Lambda NFH-743C | CY1-8125-000 | Front Panel friction surfaces |
| | PL015JG | CY9-8073-000 | Sliding part of back cover dial |

# 1.4 Locally Fabricated Tools

## 1) SPD Positioning Mask

Open holes in flat black paper as shown
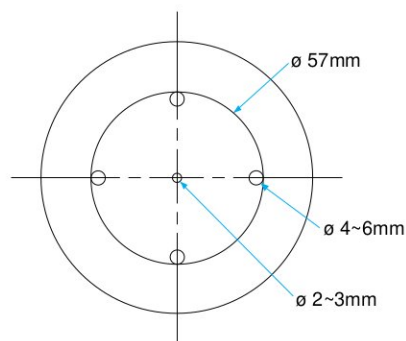


Fig. 3-3 SPD Positioning Mask

## 2) X-sync Time-lag Tool

Assemble a 4.7kΩ resistor from CCC to GND.
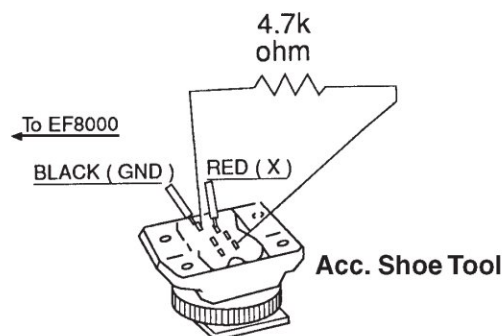


Fig. 3-4 X-sync Time-lag Tool

## 1.5 Body Serial Number Position

This is a serial number for after-service information.

Products for sale start from No. 0110100001.

X X X X X X X X X X
- Serial No. (00001~99999)
- Classification No. (01~99)
- Type of model (1. NTSC (DOM), 2. NTSC (USA, CAN), 3. PAL)
- Date of production (2002, JAN.=00~2003, oct.=21)
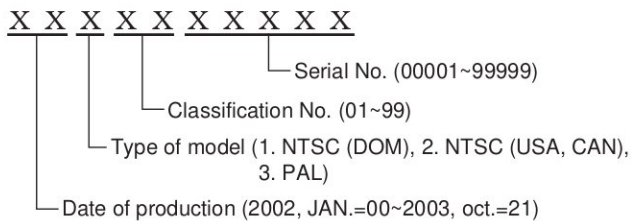
## 1.6 Flexible Connectors

The product uses three kinds of the locking connector.

**[1] Type A**

UNLOCK
The connector should face downwards
**Unlocked**

**[2] Type B**

UNLOCK
The connector should face downwards
**Unlocked**

**[3] Type C**

UNLOCK
The connector should face upwards
**Unlocked**
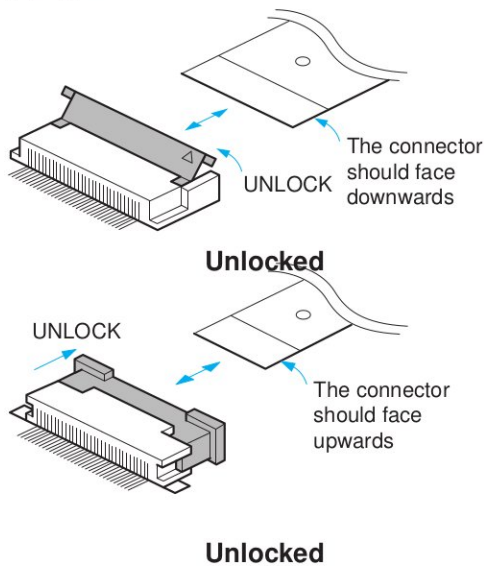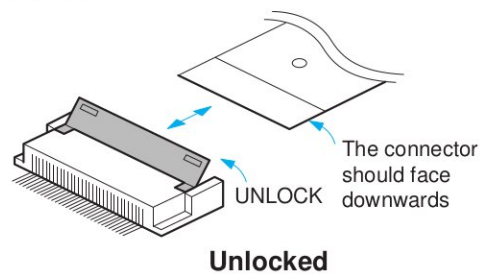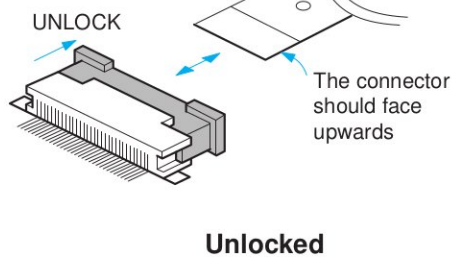
Fig. 3-5 Flexible connectors

**CAUTION**

1. Before inserting or removing the flexible cable, be sure to unlock the connector. After insertion, be sure to lock it.
2. The Type B has a two-stage connection structure. Insert it to the deep end to avoid short-circuiting the terminals. Insert it so that the clearance between the cut-out of the flexible cable reinforcement plate and the connector is about 0.3 mm.
3. The flexible cable has holes for insertion and removal. Use them for removal and insertion by inserting the tweezers into the holes as required. (Fig. 3-7)
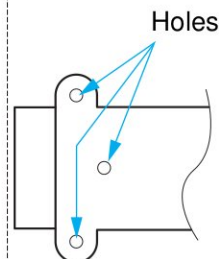
Holes

Fig. 3-6 Holes for removal
Flex holes

# 2. DISASSEMBLY/ASSEMBLY



**CAUTION** Be Carefull!! High-voltage Circuit may cause an electric shock.

TOP FPC, lower

Black

Orange

Dowel

The switch (SW) on the flexible board must be inside the dowel.

Dowel

**NOTE** : Assembling

(2)-3

(2)-1

**NOTE** : Assembling

Route the leads so that they do not overlap in the shaded area during assembly.

★ Attach with DB1663B

5.5mm

ⓥ 3.5mm

ⓜ 4.5mm

(2)-2
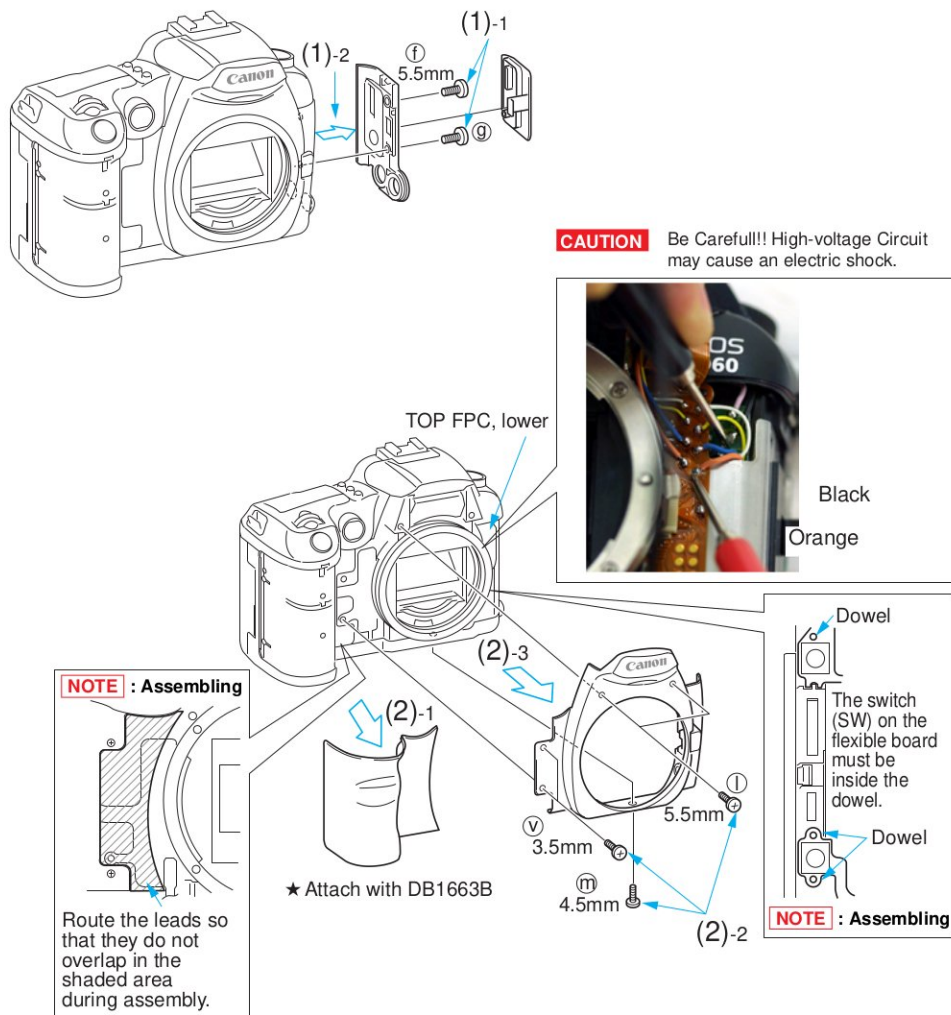
Fig. 3-7 Terminal cover and front cover

---

**CAUTION** Discharging the main capacitor.
When the front cover is removed, be sure to discharge the main capacitor before proceeding to the next step.

---

## 2.1 Terminal Cover and Front Cover

(1) Terminal cover
  1. Remove two screws.
  2. Open and pull the extension terminal cover, then remove it together with the terminal cover.
(2) Front cover
  1. Remove the grip rubber.
  2. Remove five screws.
  3. Remove the front cover.

**NOTE** : Assembling

When attaching the front cover, confirm that the cables and other wires are not pinched.
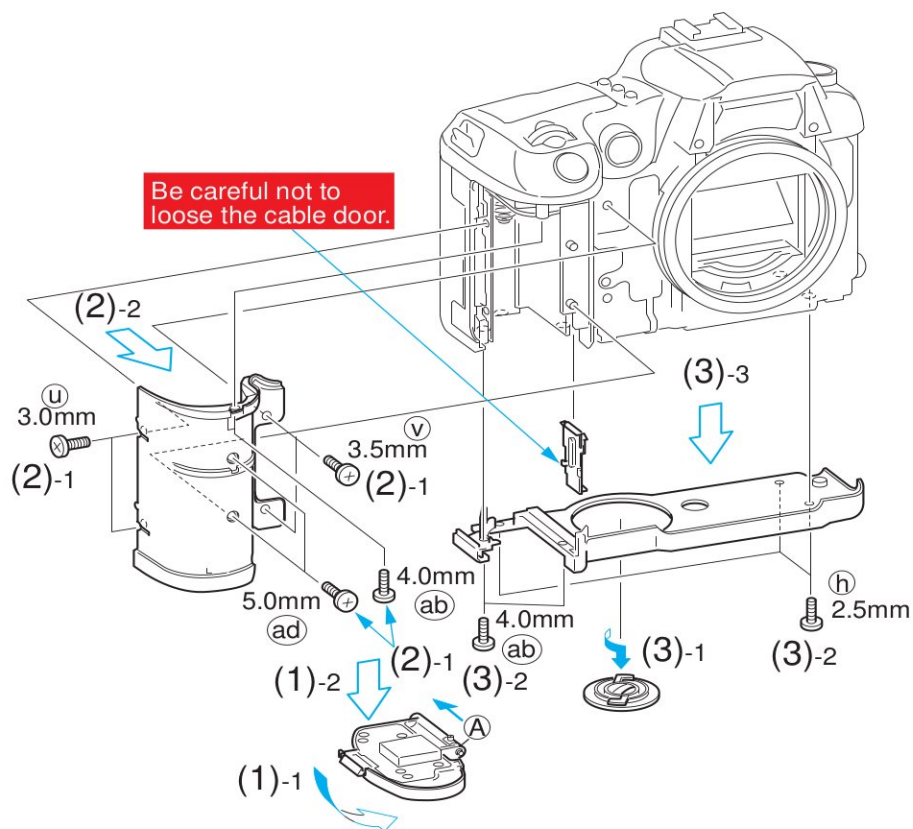
Fig. 3-8 Main battery cover, grip and bottom cover

## 2.2 Main Battery Cover, Grip and Bottom Cover

(1) Main battery cover
   1. Open the main battery cover.
   2. Slide portion A of the hinge in the direction of the arrow and remove the main battery cover.
(2) Grip
   1. Remove seven screws.
   2. Remove the grip.
(3) Bottom cover
   1. Rotate the date battery lid counterclockwise to remove it.
   2. Remove five screws.
   3. Remove the bottom cover.

Fig. 3-9 Rear cover

## 2.3 Rear Cover

(1) Rear cover
1. Remove the eye-cup.
2. Remove the back rubber.
3. Remove six screws.
4. Lift the rear cover from the main unit and remove the flexible cable from CN4 on the D PCB.

NOTE : **Assembling CN4**

Insert the flexible cable until the flexible cable reinforcing plate is completely covered by the connector when the connector is locked. Then lock the connector.

NOTE : Assembling

(1)-1

(1)-2

5.0mm

Be careful not to loose the buttons.

Cushion

(1)-2

6.5mm

Be careful not to loose the buttons.

Fix by tape

NOTE : Assembling

Hole

Dowel

The SW on the FPC should be attached to the dowels and holes.

(1)-4

Black

Yellow

A

(1)-5

(1)-3

FRONT FPC CN TOP

(1)-4

White

Yellow

Blue

Orange

B

Fig. 3-10 Top cover, flash cover and OLC window
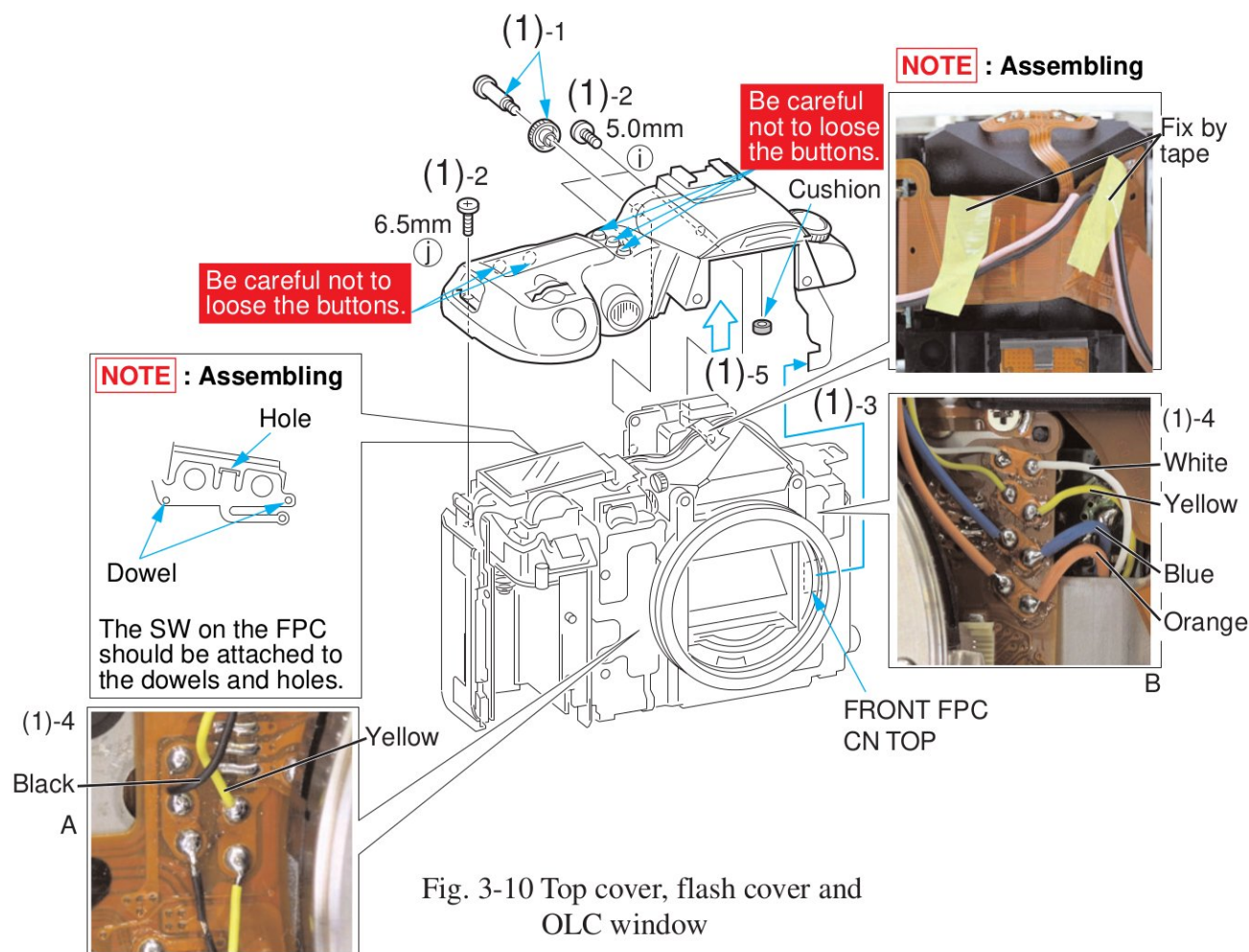
## 2.4 Top Cover, Flash Cover and OLC Window

(1) Top cover
   1. Remove the screw and remove the diopter adjustment knob.
   2. Remove three screws.
   3. Remove the flexible cable from the FRONT FPC CN TOP.
   4. Remove the six lead wires on portions A and B.
   5. Remove the top cover while being careful not to loose the operation buttons.
(2) Flash cover
   1. Raise the flash unit.
   2. Remove two screws.
   3. Press down the flash unit and remove the flash cover.
(3) OLC window
   Push the flash side of the OLC window from the bottom of the top cover to remove it.

(2)-3

(2)-1

(3)-1

(2)-3

Claw

Double-sided tape

4.0mm

(2)-2

**3-8**
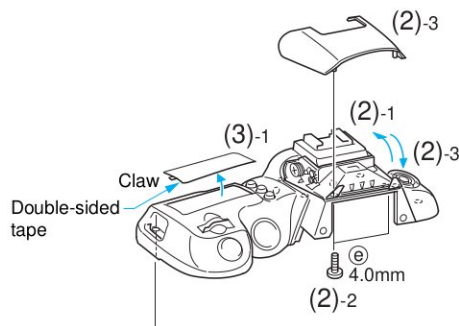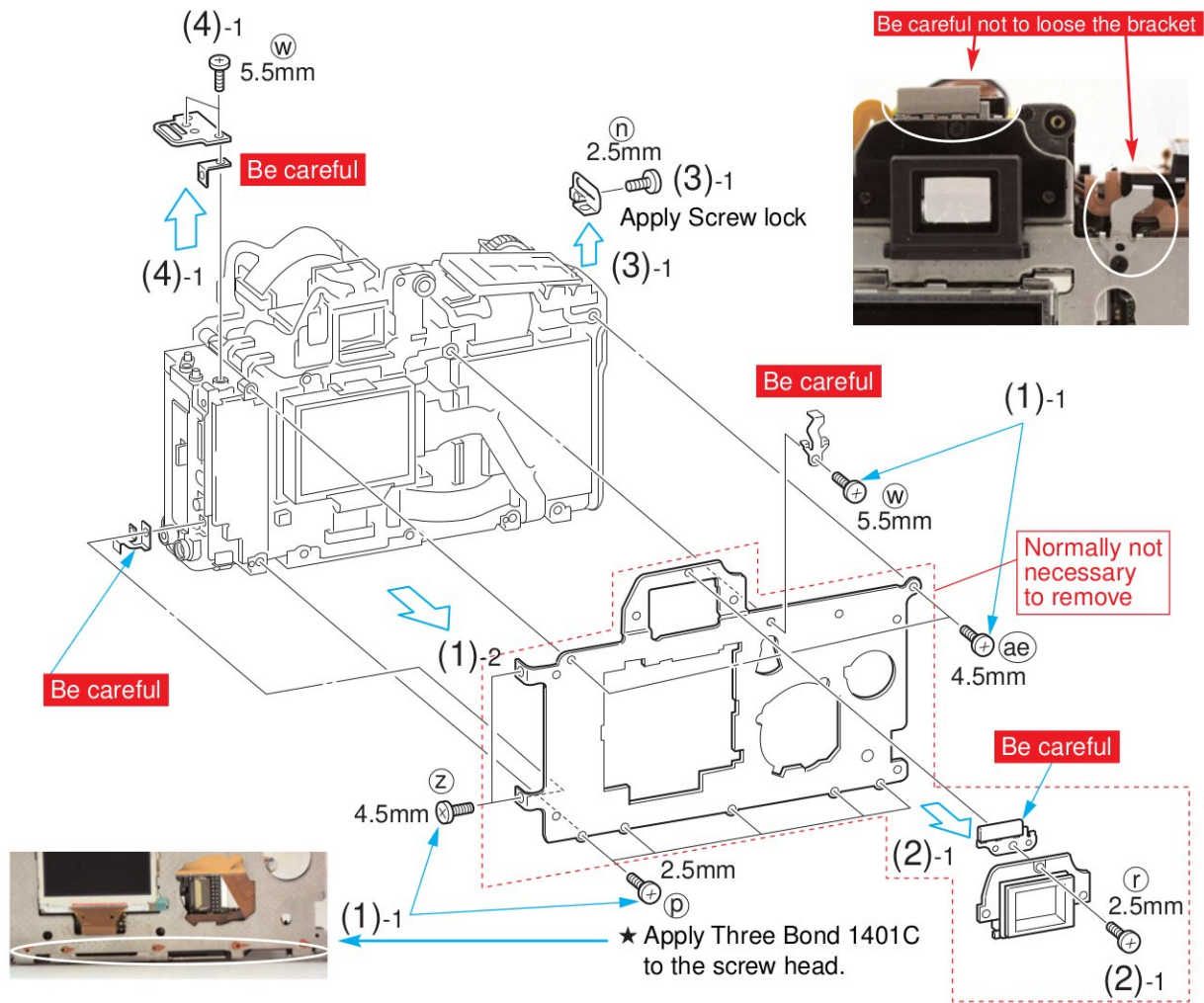
Fig. 3-11 Rear frame, eyepiece cover and strap holder

## 2.5 Rear Frame, Eyepiece Cover and Strap Holder

(1) Rear frame
   1. Remove ten screws.
   2. Remove the rear frame.
(2) Eyepiece cover
   1. Remove the screw and eyepiece cover.
(3) Strap holder (right)
   1. Remove the screw and remove the strap holder (right).
(4) Strap holder (left)
   1. Remove two screws and remove the strap holder (left).

Fig. 3-12 OLC, TFT PCB and TFT LCD

## 2.6 OLC, TFT PCB and TFT LCD

(1) OLC unit
  1. Remove two lead wires for EL.
  2. Remove two screws.
  3. Remove the OLC unit from CN3 on D PCB.
(2) TFT PCB
  1. Remove the flexible cable and cables from the connectors CN2, 1, 3, 4 and 7 on the TFT PCB.
  2. Remove three screws.
  3. While removing the two dowels "A", pull up the TFT PCB from the above to remove it.
(3) TFT LCD unit
  1. Remove four screws.
  2. Remove the TFT LCD, lifting it from its top.
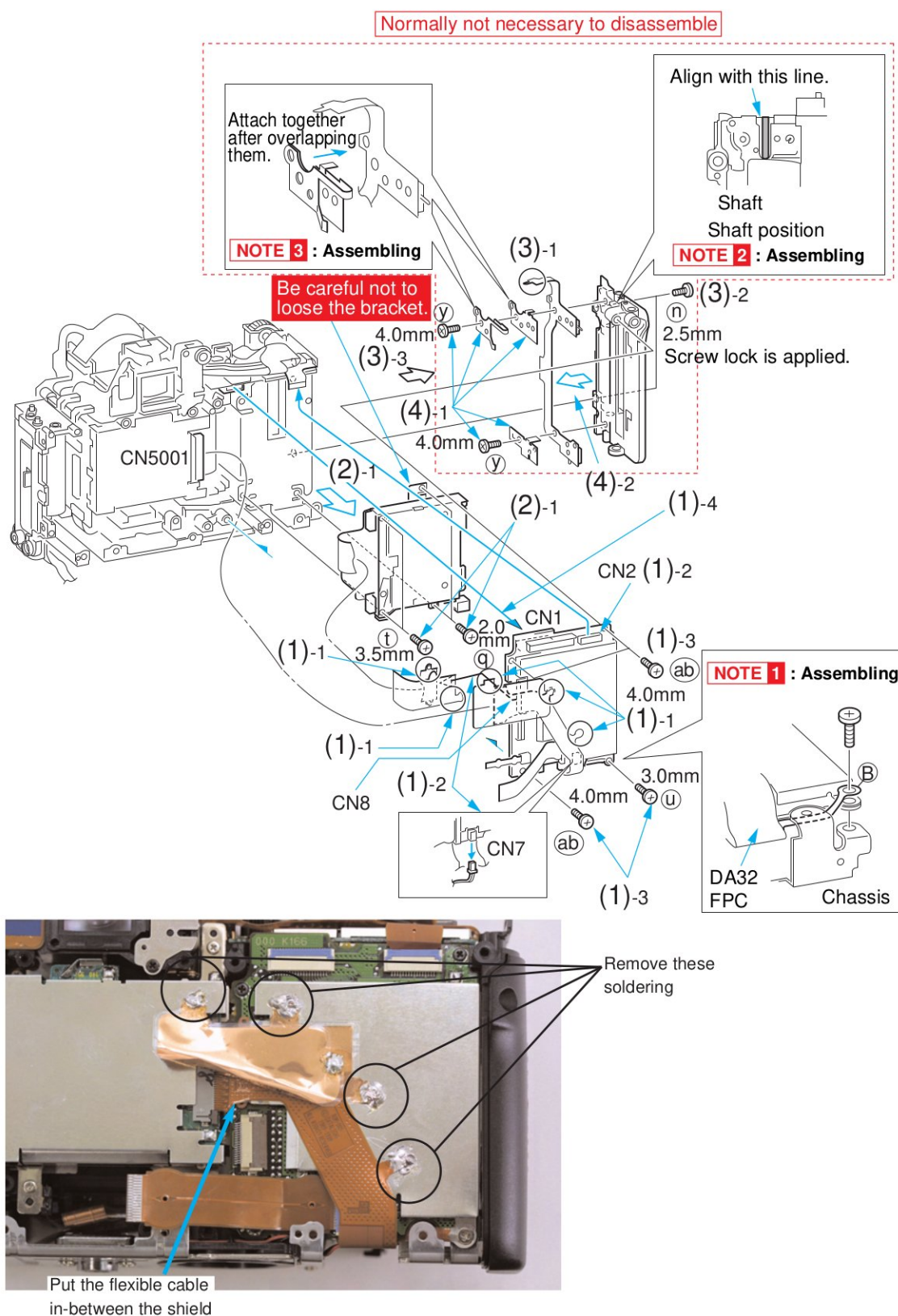
Fig. 3-13 D PCB, CF FPC and right cover

## 2.7 D PCB, CF FPC and Right Cover

(1) D PCB

   1. Remove the soldering from the flexible connector and shield plate.

   2. Remove the flexible board from the connectors CN5001 on the A PCB and the connectors CN2, 7 and 8 on the D PCB.

   3. Remove four screws.

   4. Remove the connector CN1 (B to B) and remove the D PCB.

   **NOTE 1** **: Assembling**

1. The connector "B" of DA32 FPC must be inserted between the screw and the D PCB.

(2) CF FPC unit

   1. Remove four screws and remove the CF FPC unit.

(3) Right cover

   1. Unsolder three points on the flexible connector.

   2. Remove two screws.

   3. Remove the right cover.

   **NOTE 2,3** **: Assembling**

3. Align the position of the shaft of the CF cover with the line and attach the CF cover from the lower flexible connector retainer. Then, fasten the screw.

4. Overlap the two upper flexible connectors, then attach them.

**Normally not necessary to disassemble**

Sensor focus washers
attach here
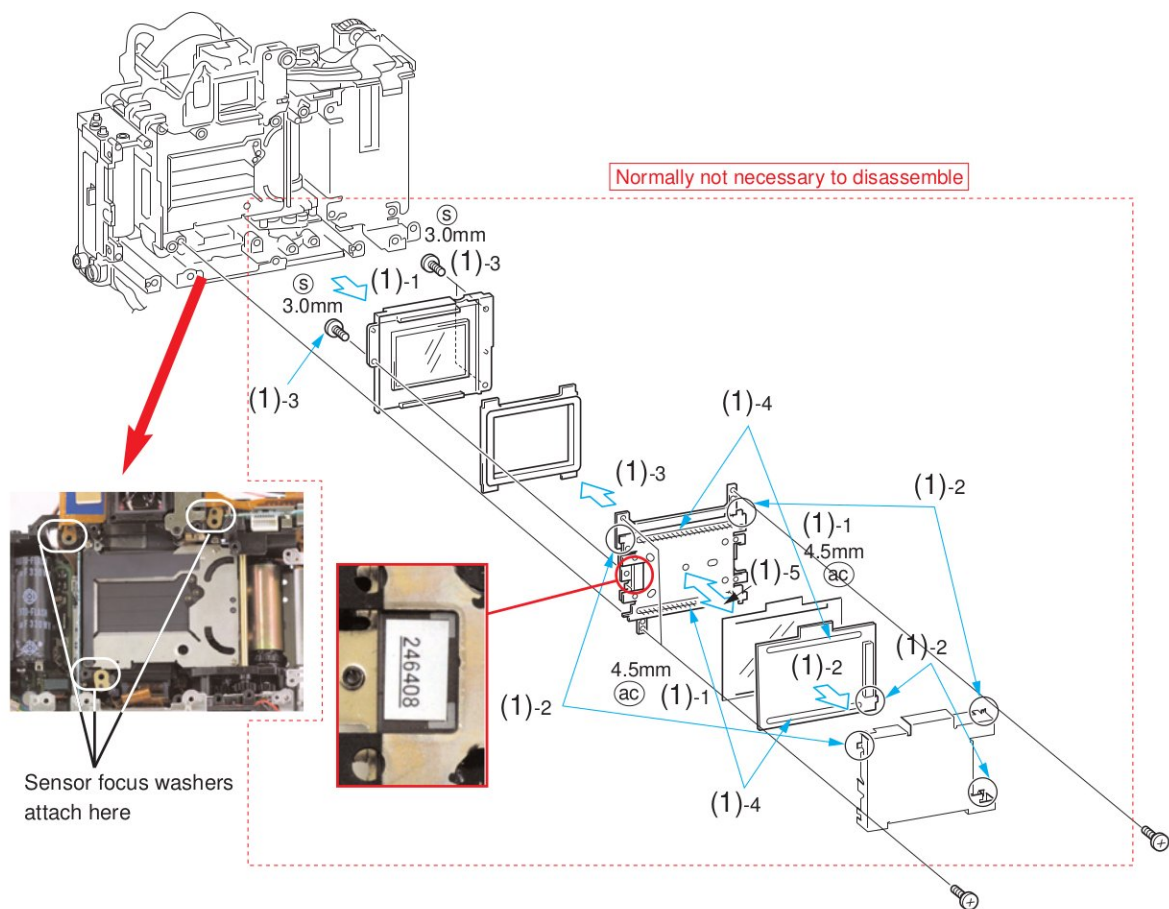
**CAUTION**

The CMOS sensor is fragile and can be easily damaged by
the static electricity.  Therefore, when handling the CMOS
sensor, use the antistatic strap, or other static electricity
protective devices

Fig. 3-14 CMOS sensor and A PCB

## 2.8 CMOS Sensor and A PCB

(1) CMOS sensor
  1. Remove three screws and remove the CMOS sensor unit.
(2) Disassemble CMOS sensor and A PCB
  1. Unsolder at three points and remove the shield case.
  2. Remove three screws, then remove the LPF and LPF rubbers.
  3. Unsolder the foot of the CMOS sensor from the A PCB.
  4. Separate the A PCB from the CMOS sensor.

**3-13**
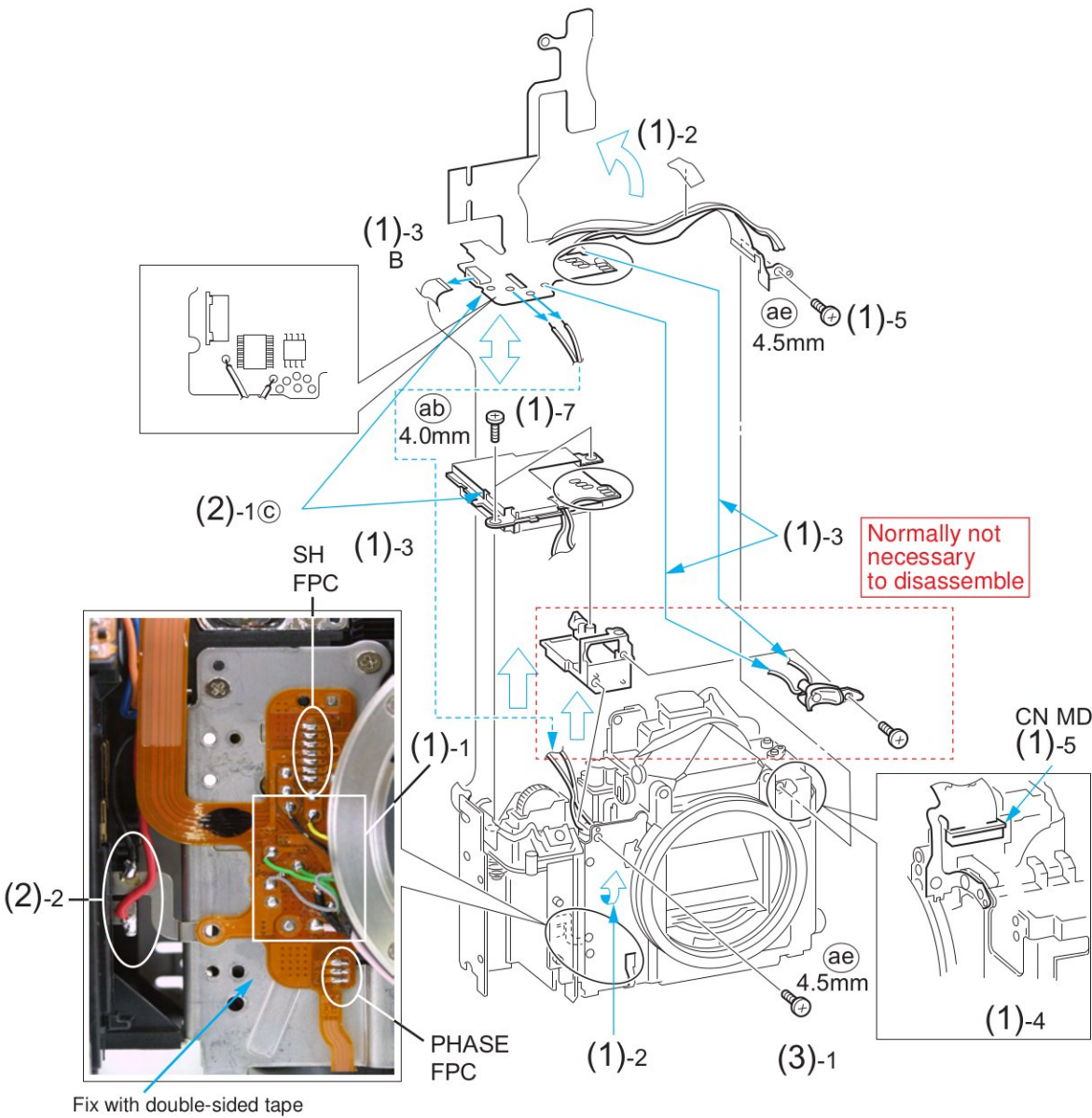
Fig. 3-15 DC/DC PCB, MD FPC, AF auxiliary indicator
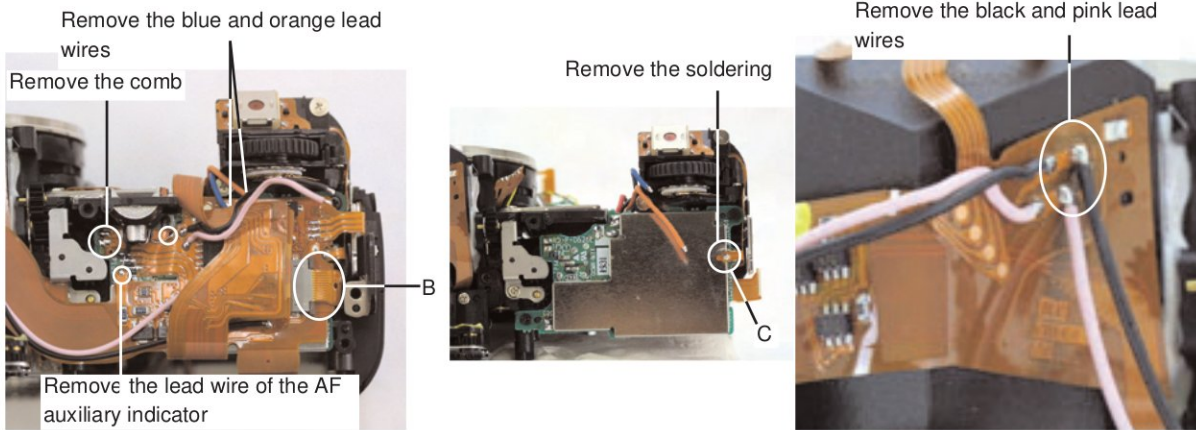
## 2.9 DC/DC PCB, MD FPC, AF Auxiliary Indicator part

(1)Remove MD FPC
1. Unsolder the seven lead wires near the lens mount on the MD FPC and the SH FPC and PHASE FPC connectors.
2. Peel off the MD FPC beside the lens mount from the chassis (fixed with double-sided tape) and open the unit so that the top of the MD FPC becomes visible.
3. Remove the four lead wires(the motor and the lead wire of AF auxiliary indicator part), from MD FPC and also remove the comb of the portion "A".
4. Unsolder the two lead wires from the ILC FPC.
5. Remove the flexible boards from the CN MD of the C-MAIN PCB, remove the screw.
6. Remove the MD FPC.

(2) Remove DC/DC PCB
1. Remove the soldering from the portion "C".
2. Unsolder the two lead wires from the battery terminal.
3.Remove two screws from DC/DC PCB and remove DC/DC PCB.

(3) AF auxiliary indicator part
1. Remove the screw and AF auxiliary indicator part.

**(4)-1**

STR FPC

SP LIGHT
PCB

**(1)-1**
Remove the 6 lead wires
and STR FPC

STR
FPC

Ⓩ
4.5
mm

**(1)-2**

FRONT FPC

**(1)-2**

ⓐⓐ
3.5mm

**(2)-1**

**(4)-1**

Normally not
necessary
to disassemble

3.5
ⓐⓐ mm

**(2)-1**

**(3)-1**

Ⓐ

RMC
FPC

**(3)-2**

**(3)-1**

Double-sided tape
(for main capacitor)
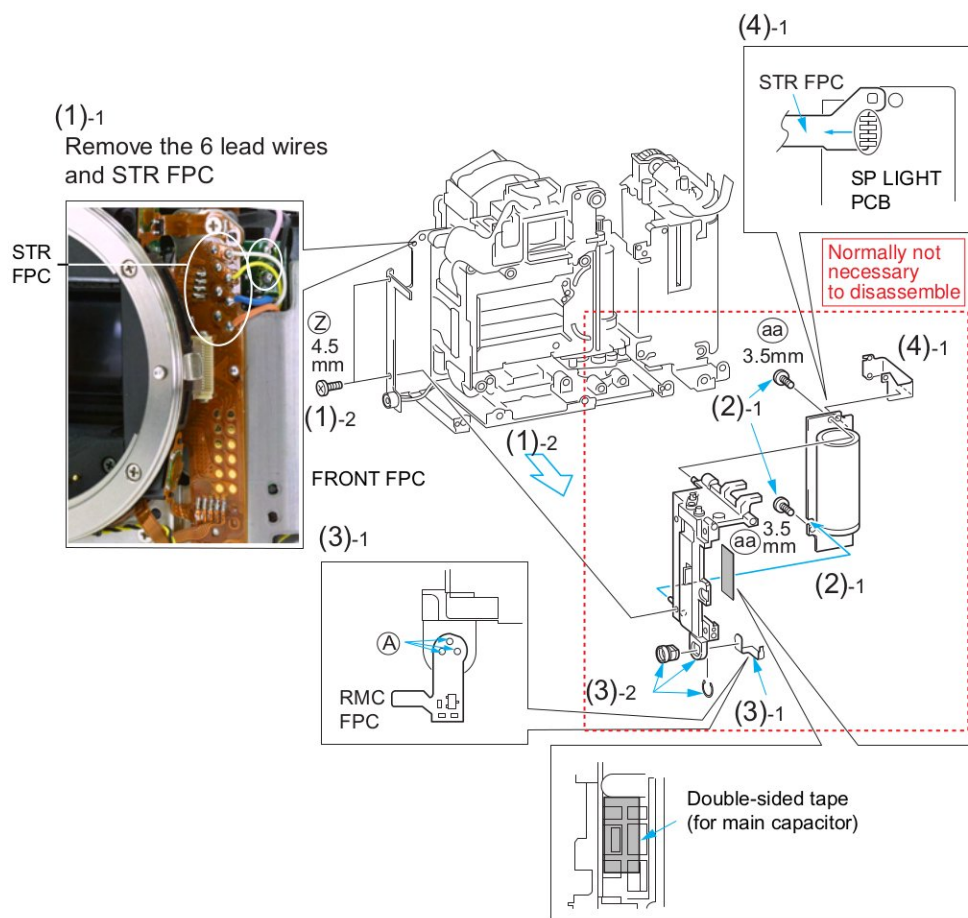
Fig. 3-16 Left body unit

## 2.10 Left Body Unit

(1) Left Body Unit
  1. Remove the four lead wires from the front FPC, the two wires from STR PCB
     and unsolder the comb of STR FPC.
  2. Remove two screws and remove the left body unit.
(2) SP LIGHT PCB
  1. Remove two screws and remove the SP LIGHT PCB. (Be careful, the capacitor
     is fixed with double-sided tape.)
(3) RMC terminal/FPC, left body
  1. Unsolder at A and remove the RMC FPC.
  2. Remove the stopper and separate the RMC terminal from the left body.
(4) STR FPC
  1. Remove the STR FPC connector from the SP LIGHT PCB.

**3-16**

**NOTE** : **Assembling**     [1] [2] [3] [4] [5]
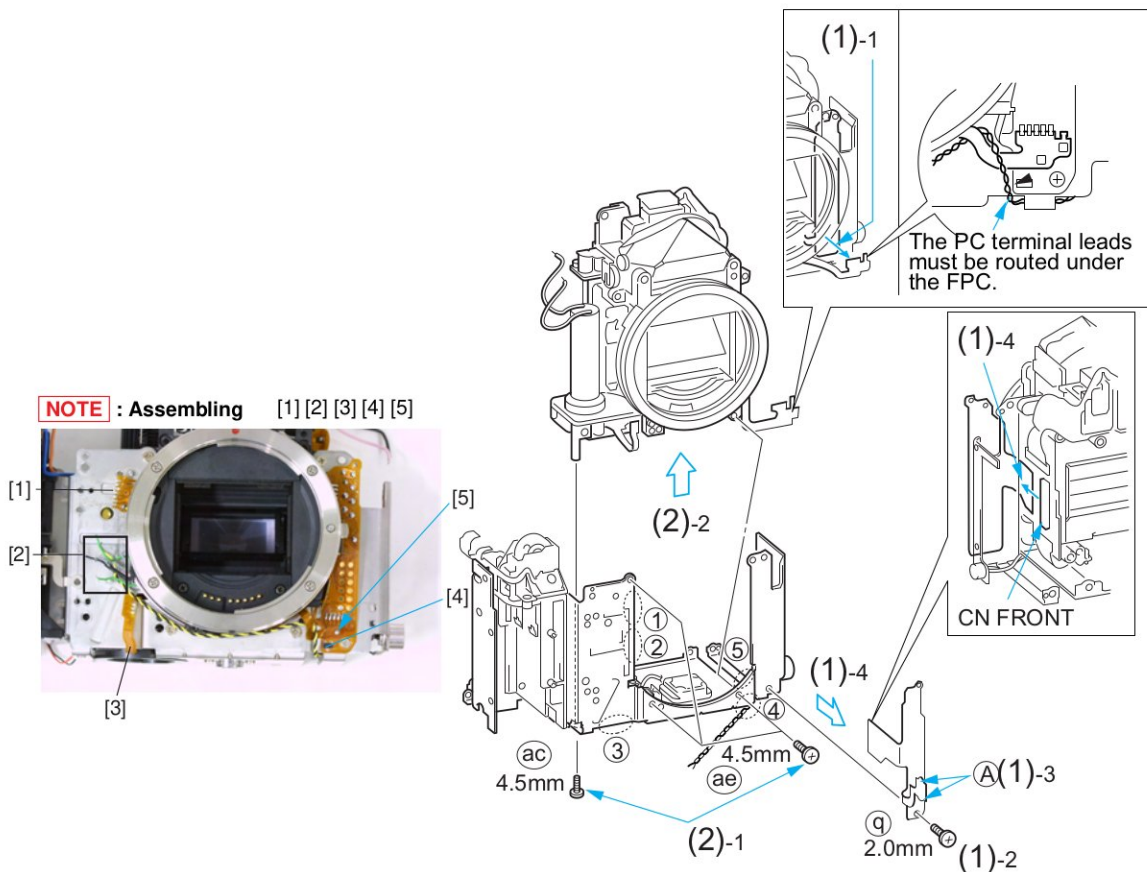
Fig. 3-17 FRONT FPC and front panel unit

## 2.11 FRONT FPC and Front Panel Unit

(1) FRONT FPC
  1. Remove the comb of the MIF FPC from the FRONT FPC.
  2. Remove the screw.
  3. Remove the FRONT FPC at "A" from the dowel of the front panel unit.
  4. Release the lock of connector CN FRONT on the C-MAIN PCB and remove the FRONT FPC toward the front.

(2) Front Panel Unit
  1. Remove five screws.
  2. Remove the front panel unit upwards while taking care that it does not catch on the flexible connector.

  **NOTE** : **Assembling**

Before starting to install the front panel unit, be sure to pull these lead wires of the front panel unit to the front through the clearance with the FRONT body.
  [1] SH FPC
  [2] Lead wires of the front panel unit (5 pcs.)
  [3] PHASE FPC
  [4] Synchro terminal lead wires (2 pcs.)
  [5] MIF FPC

Fig. 3-18 Front body

## 2.12 Front Body

(1) Main dial
1. Remove three screws, and remove the main dial and the RELEASE FPC.
2. Unsolder at "A" and separate the main dial from the RELEASE FPC.

(2) Main battery case
1. Remove three screws and remove the main battery case.
2. Remove the screw and remove the battery terminal.
3. Push thru the hole of the portion "B" with tweezers and remove the battery spring holder.
4. Remove the battery spring.

(3) Front body
1. Remove three screws and remove date battery case.
2. Remove four screws and remove the tripod socket.
3. Remove two screws and remove the battery door hinge.
4. Remove the black lead wires of the synchro terminal.
5. Rotate the stopper 90 degrees to remove the stopper. Then remove the synchro terminal.
6. Remove the front body insulation sheet.

If the SPC unit is removed, the AE sensor position adjustment becomes necessary.

**CAUTION**

Flat head ( – ) screwdriver

(1)-2

5.0mm (ad)

(2)-2

Normally not necessary to disassemble

(2)-3

Connect by adhesive (such as Aron-Alpha 201 or equivalent)

**NOTE** : **Assembling**

After adjusting the AE sensor position, attach with adhesive agent.

(2)-1

(1)-2

(aa)
3.5mm

(1)-1

CN SENS

Fig. 3-19 Eyepiece lens and SPC unit

## 2.13 Eyepiece Lens and SPC Unit

(1) Eyepiece lens unit
 1. Remove the FPC from the CN SENS of the C-MAIN PCB.
 2. Remove two screws and remove the eyepiece lens unit along with the SPC Unit.
(2) SPC unit
 1. Remove the screw.
 2. Insert a flat head (-) screwdriver under the SPC holder and peel it off. It is attached by adhesive.
 3. Move the holder to the rear and remove it.

**3-19**

Fig. 3-20 Shutter unit and C-MAIN PCB
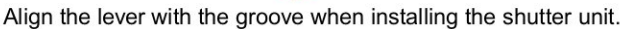
## 2.14 Shutter Unit and C-MAIN PCB.

(1) Shutter unit
   1. Apply about 0.7 volts to the shutter motor and stop the shutter at the position "A".
   2. Remove three screws and remove the shutter unit.
   **NOTE** : **Assembling**
(1) Attach the light-shield, the flexible cable, and the lead wire to the shutter unit.
(2) Set the shutter unit in the charged state, and the mirror in the mirror-down position.
   **CAUTION**
Install the shutter unit.
(2) C-MAIN PCB
   1. Remove the flexible connector from the connectors CN ILD and CN BA.
   2. Remove two screws and remove C-MAIN PCB.

**3-20**
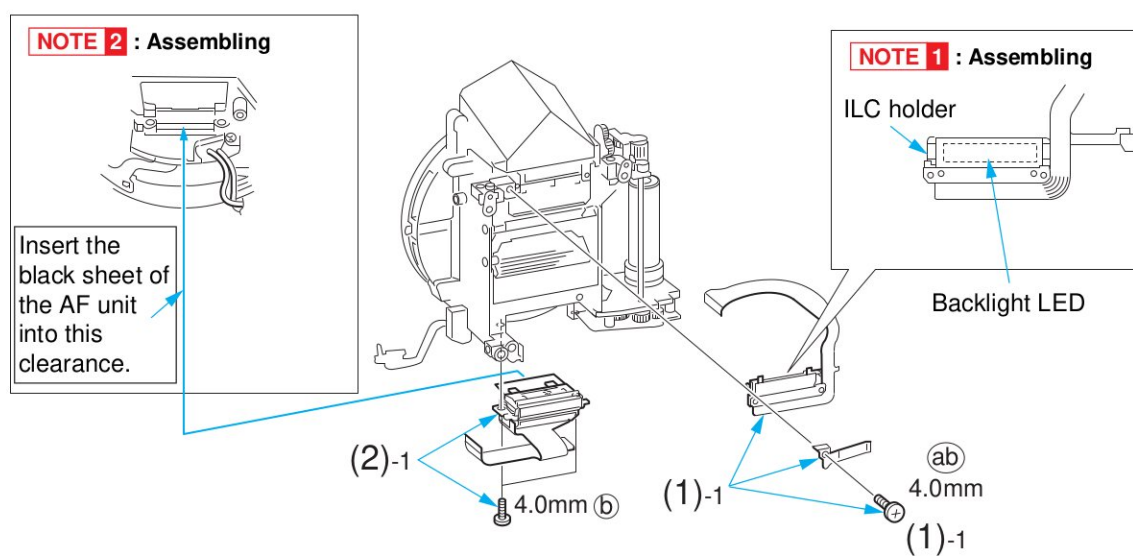
Fig. 3-21 ILC and AF unit

## 2.15 ILC and AF Unit

(1) ILC unit
    1. Remove the screw and remove the ILC unit.
  **NOTE 1 : Assembling**
Confirm that the backlight LED is correctly inserted in the ILC holder.
(2) AF unit
  **CAUTION**
When AF unit is removed, the AF sensor position adjustment becomes necessary. After adjusting the AF sensor position, fix the head of the fixing screw with the adhesive.
    1. Remove two screws and remove the AF unit.
  **NOTE 2 : Assembling**
Insert the black sheet of the AF unit into the position shown in the illustration.

Adjustment required. (Finder's focus adjustment)

NOTE **1** : Assembling
Inside the mirror box

Be careful
Loose parts.

(4)-1

ab
4.0mm

★ Coat IF10
(On the rear of the spring)

Adjustment required.
(FFD adjustment)

Ⓐ

Claws

(1)-2

Matte surface

Fresnel lens

Ⓐ (1)-1

d
6.5 mm

(2)-1

NOTE **2** : Assembling

Apply adhesive.
Black
Pink
Double-sided tape

(3)-2
(3)-1

4.0mm ab

d
6.5mm

(2)-1

Apply screw lock
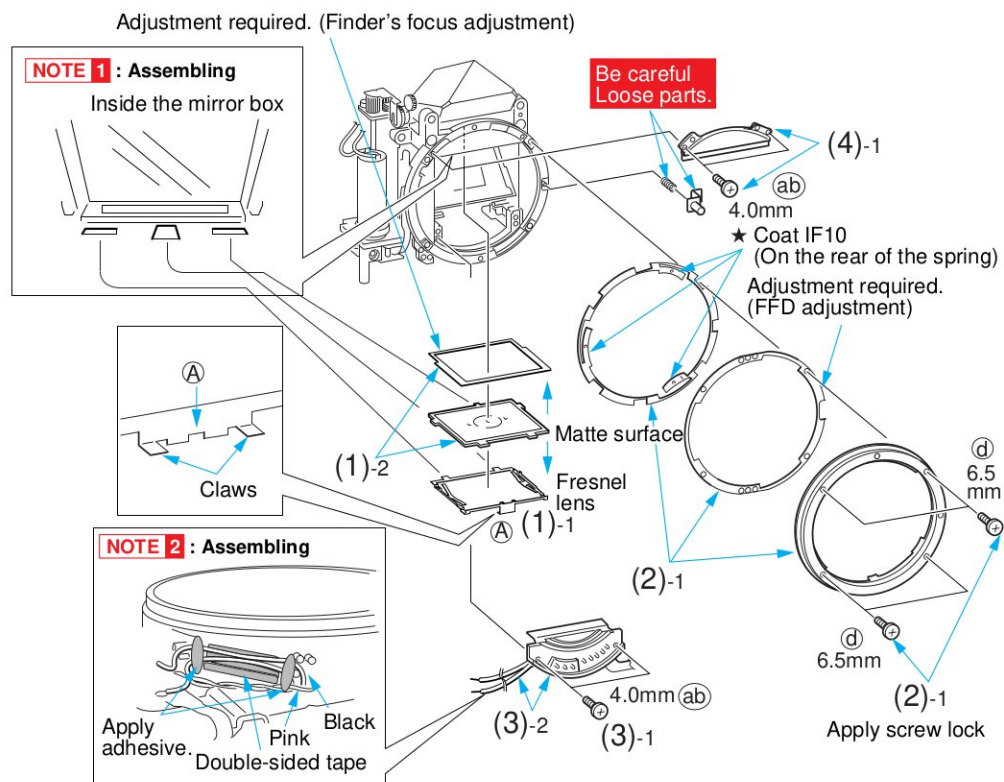
Fig. 3-22 Focusing screen, lens mount and lens mount contact assembly

## 2.16 Focusing Screen, Lens Mount and Lens Mount Contact Assembly

(1) Focusing Screen
   1. Place the tweezers' in the hole at "A", and push to the rear until the claws are unlocked, then press down to remove.
   2. Remove the focusing screen and focusing adjustment washer.
   NOTE **1** : Assembling
Insert the focusing screen and focusing washer into the respective specified positioning holes.
(2) Lens mount
   1. Remove four screws and remove the lens mount.
(3) Lens mount contact assembly
   1. Remove two screws.
   2. Remove the two lead wires from the front panel unit and remove the lens mount contact assembly.
   NOTE **2** : Assembling
Fix the lead wire to the position shown in the figure 3-23.
(4) Mirror box cover
   1. Remove two screws and remove the mirror box cover.

3-22
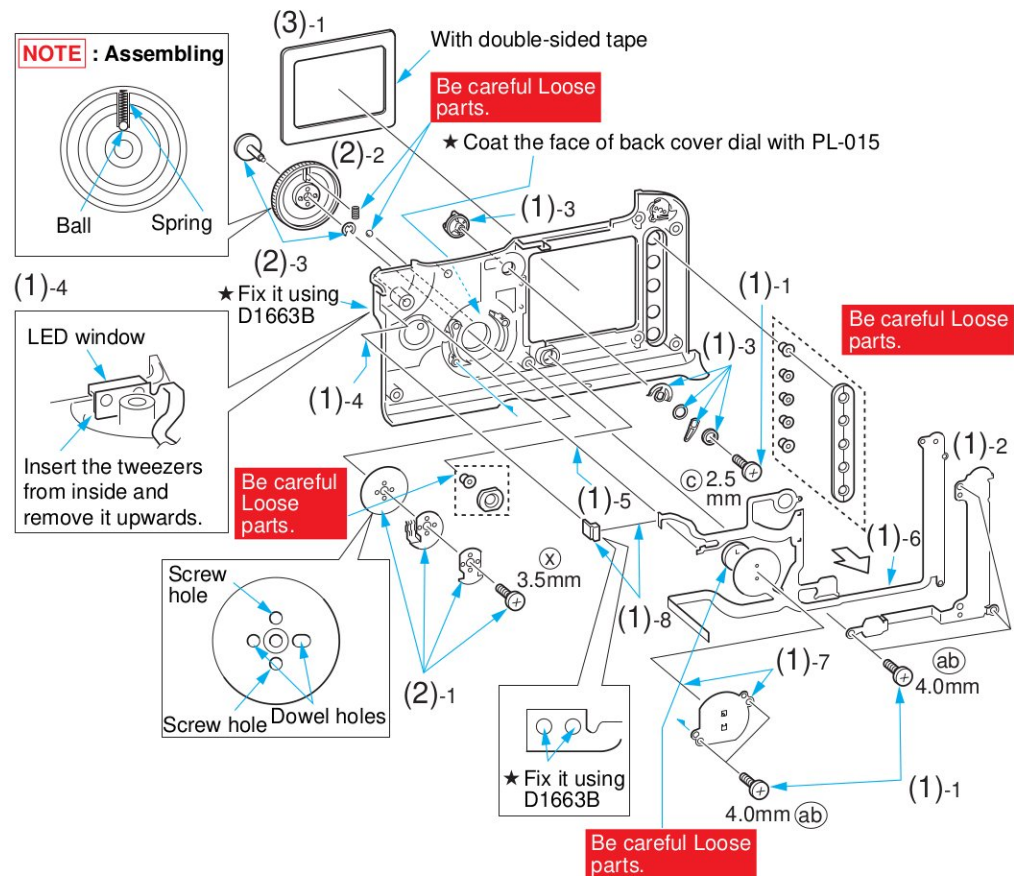
Fig. 3-23 Rear cover block

## 2.17 Rear Cover Block

(1) BUZZER FPC
1. Remove six screws.
2. Remove the FPC holder plate.
3. Remove the washer, connector, and switch from the back cover (quick-control) dial switch block.
4. Remove the access lamp block from the rear cover with the FPC attached to the LED window.
5. Unsolder the FPC from the buzzer.
6. Remove the BUZZER FPC from the rear cover.
7. Peel off the main dial FPC from the BUZZER FPC.
8. Peel off the adhesive and remove the LED window.

(2) Back cover dial
1. Remove two screws. Remove the washer and connector from the back cover dial block.
2. Remove the back cover dial while taking care not to drop the click spring and ball.
3. Remove the E-ring and remove the SET button.
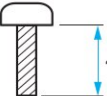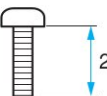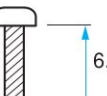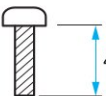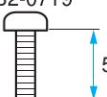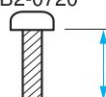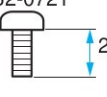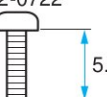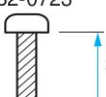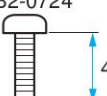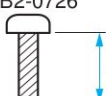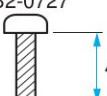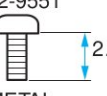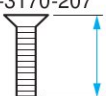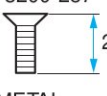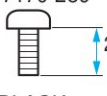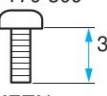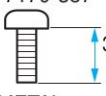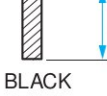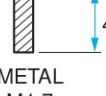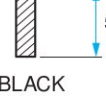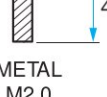
NOTE : Assembling
When assembling the back cover dial, insert the spring and ball into the dial first. After assembling, check the click stops as you rotate the dial.

(3) TFT LCD window
1. Remove the TFT LCD window by pushing on it from inside the rear cover.

## 2.18 Screw List

ⓐ
CB1-0279
4.5mm
METAL
M1.7
(SELF TAPPING)

ⓑ
CB1-1902
4.0mm
BLACK
M1.7
(SELF TAPPING)

ⓒ
CB1-2678
2.5mm
METAL
M1.7

ⓓ
CB1-4085
6.5mm
METAL
M2.0
(SELF TAPPING)

ⓔ
XA4-6170-409
4.0mm
BLACK
M1.7
(SELF TAPPING)

ⓕ
CB2-0719
5.5mm
FLAT BLACK
M1.7

ⓖ
CB2-0720
6.0mm
FLAT BLACK
M1.7
(SELF TAPPING)

ⓗ
CB2-0721
2.5mm
FLAT BLACK
M1.7

ⓘ
CB2-0722
5.0mm
FLAT BLACK
M1.7

ⓙ
CB2-0723
6.5mm
FLAT BLACK
M2.0
(SELF TAPPING)

ⓚ
CB2-0724
4.5mm
FLAT BLACK
M1.7

ⓛ
CB2-0726
5.5mm
FLAT BLACK
M1.7
(SELF TAPPING)

ⓜ
CB2-0727
4.5mm
FLAT BLACK
M1.7
(SELF TAPPING)

ⓝ
FC2-9551
2.5mm
METAL
M2.0
with adhesive

ⓞ
XA1-3170-207
2.0mm
METAL
M1.7

ⓟ
XA1-3200-257
2.5mm
METAL
M2.0

ⓠ
XA1-7170-207
2.0mm
METAL
M1.7

ⓡ
XA1-7170-259
2.5mm
BLACK
M1.7

ⓢ
XA1-7170-309
3.0mm
METAL
M1.7

ⓣ
XA1-7170-357
3.5mm
METAL
M1.7

ⓤ
XA1-7200-307
3.0mm
METAL
M2.0

ⓥ
XA1-7200-359
3.5mm
BLACK
M2.0

ⓦ
XA4-9200-559
5.5mm
BLACK
M2.0
(SELF TAPPING)

ⓧ
XA4-5140-357
3.5mm
METAL
M1.4
(SELF TAPPING)

ⓨ
XA4-5170-407
4.0mm
METAL
M1.7
(SELF TAPPING)

ⓩ
XA4-8200-459
4.5mm
BLACK
M2.0

ⓐⓐ
XA4-9170-357
3.5mm
METAL
M1.7
(SELF TAPPING)

ⓐⓑ
XA4-9170-409
4.0mm
BLACK
M1.7
(SELF TAPPING)

ⓐⓒ
XA4-9170-457
4.5mm
METAL
M1.7
(SELF TAPPING)

ⓐⓓ
XA4-9170-509
5.0mm
BLACK
M1.7
(SELF TAPPING)

ⓐⓔ
XA4-9200-457
4.5mm
METAL
M2.0
(SELF TAPPING)

# 3. MECHANICAL ADJUSTMENT

## 3.1 Main Mirror and Sub Mirror Adjustment

> **CAUTION**  No adjustment is required. (pre-adjusted service parts provided)

## 3.2 AF Sensor Position Setting

> **CAUTION**  Perform the AF Sensor Position Setting when the AF sensor is replaced.

### \<Purpose>
The center of the middle AF sensor must be aligned with the optical axis.

### \<Specifications>
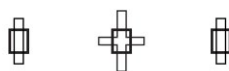The center of the middle sensor must be located inside the AF frame.

Fig. 3-24 AF frame and BASIS

### \<Tools>
• EF 50mm f/1.8 (product)       • Penlight or illuminator

### \<Preparation>
1) Close the lens diaphragm to f/8 using the product body of EOS-D60.
* Set the EOS-D60 to MANUAL mode and set the aperture to f/8. Then remove the lens while depressing the rear depth-of-field button.
2) Set the distance scale of the lens to the ∞ (infinity) end.
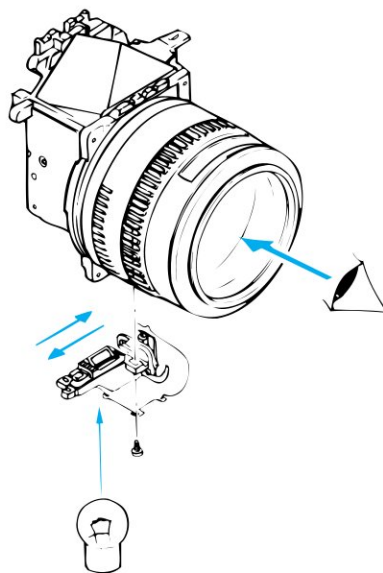   (The AF frame can be viewed more easily.)

### \<Adjustment>
1) Attach the EF 50mm f/1.8 to the front panel unit with the mirror unit, focusing screen and the AF sensor unit (tentatively fixed) installed.
2) While directing the output light of the penlight toward the AF sensor unit, look into the lens. Then the AF frame and the BASIS image can be seen as shown in Figure 3-26.
3) Move the AF sensor unit right and left until the center is located in the center of the AF frame.
4) Tighten the screw fixing the AF sensor unit gently, and apply Three Bond 1401B to the screw head (If over-tightened, the sensor position may change.)

Fig. 3-25

**3-25**

## 3.3 Flange to Focal Plane Distance (FFD) Adjustment

> **CAUTION**
>
> Perform the FFD Adjustment when the mirror box unit or mount is replaced.
>
> No adjustment is required for the CMOS sensor service parts (pre-adjusted at the factory).
>
> Perform the FFD Adjustment when tilt focus error occurs when the EOS-D60 receives shock such as being dropped.

### <Purpose>

The distance between the lens mount and surface of the CMOS must be adjusted to the specified FFD for the EOS camera / EF lens system. The surface of the CMOS is not accessible, so the "washer plane" where the CMOS unit mounts to the body is used instead.

\* The distance between the washer plane and the CMOS sensor plane cannot be adjusted by service. Service parts are pre-adjusted at the factory.

### <Specifications>

The distance between mount plane and the washer plane is measured using the dedicated tool, and must be 41.30 ± 0.02 mm.

Parallelism: 0.04 mm or less

### <Tools>

- Digital micrometer
- Mount Fastening Tool (CY9-1547-000)

### <Preparation>

1) Set the mount fastening tool to the digital micrometer and reset the meter so that the reference plane of the mount becomes "0".
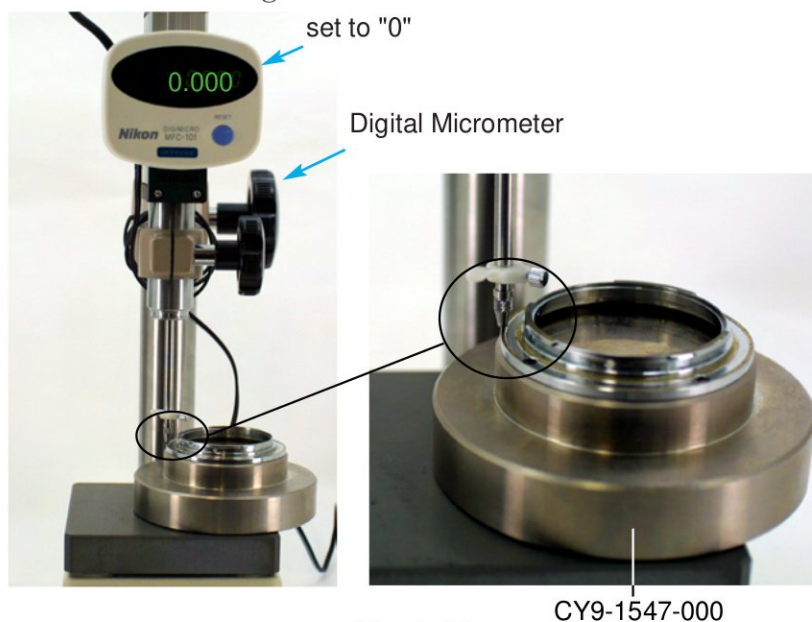2) Attach the mount fastening tool to the lens mount.



set to "0"

0.000

Nikon

Digital Micrometer

CY9-1547-000

Fig. 3-26

## **&lt;Adjustment&gt;**

1) Remove the CMOS censor unit.

2) Measure the distances to the respective CMOS mounting washer planes.

3) If the measured distance does not satisfy the specifications, adjust the distance by replacing the mount with the service mount (CY1-1280) and by selecting the appropriate adjustment washer (CB2-0682-000-XXX) until the specification value is satisfied.

\* Refer to the Part List for details of the adjustment washers.

4) After the adjustment, take a picture of the 3-D chart and check the best focal point. If an adjustment is required, perform AF shift at same position.

CB2-0682 x3 *(See Detail)*

Service mount (The service mount is thinner than the normal mount that is used in the product)

$\begin{bmatrix} \text{XD1-1102-120} \\ \text{XD1-1102-121} \\ \text{XD1-1102-122} \end{bmatrix}$ (Service Only)

Adjustment washer

CB1-2659
(Service Only)
*(See Detail)*

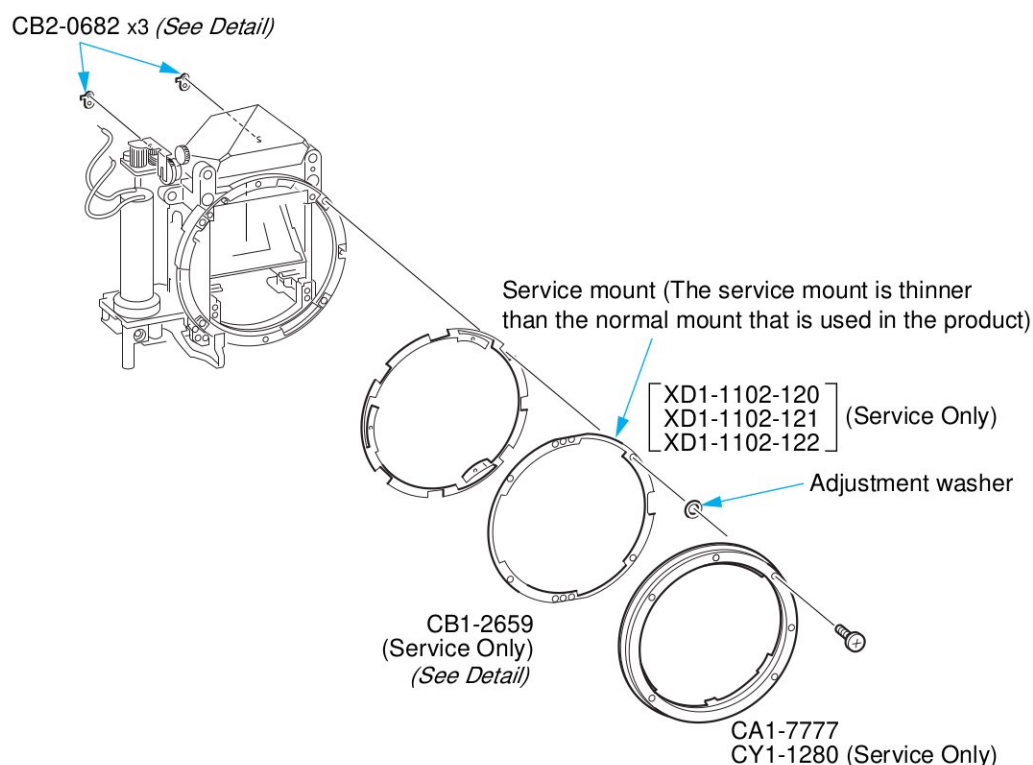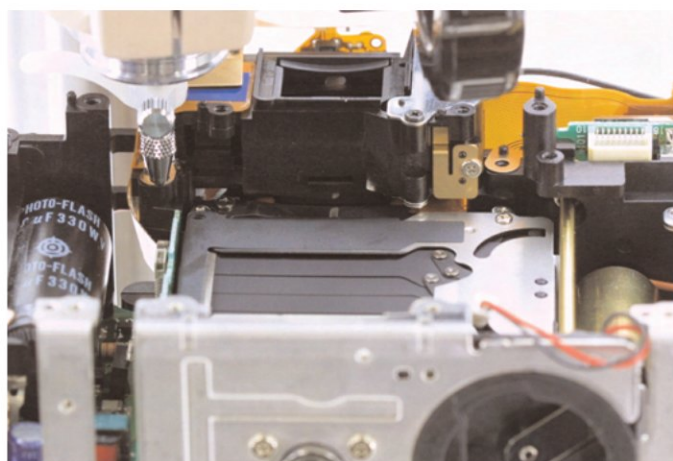CA1-7777
CY1-1280 (Service Only)

Fig. 3-27 FFD adjustment

**3-27**

## 3.4 Finder Focus Adjustment

> **CAUTION**    Perform the Finder Focus Adjustment only after the FFD Adjustment is completed.

### <Purpose>

The sensor focus point and the finder focus point must be the same.

### <Specifications>

The center of the × (infinity) mark must be positioned within the 1.5 index line widths of the index line as shown below.
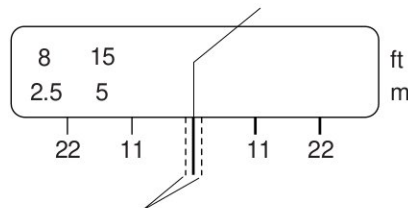


Fig. 3-28 Focusing scale window of lens

### <Tools>

- Magnifier AD-S
- Lens with focusing scale. Lens of 100 mm focal length or less is desirable.
- General purpose 500mm collimator

### <Adjustment>

1) Without the lens attached to the EOS-D60, adjust so the AF frame in the center of the finder is using the diopter adjustment dial of the camera.
2) Attach the magnifier to the camera eyepiece and adjust the diopter of the magnifier. (Adjust the diopter without the lens attached.)

**- Dioptor adjustment method -**

With the camera pointed at a wall having the high brightness and high reflectance (such as white wall having EV12 or the light source of the shutter testing equipment), adjust the diopter adjustment ring of the magnifier until the AF frame is sharpest.

3) Attach the lens, and set the distance scale to × (infinity). (If the center of the × (infinity) mark is positioned within the 1.5 lines widths of the index line, it is satisfactory.)
4) Shoot an object that is located at least 250m away (such as lightening rod or chimney) and select the finder focus washer that gives the clearest view of the object.
* When a collimator is used, select the focus washer that gives the clearest view of the collimator scale.

**- Replacement of focus washer -**

Push in the two round holes of the focusing screen retainer with tweezers, then the focus washer can be removed together with the focusing screen.
When doing so, take care not to push too strongly. If you do, the spring pressure of the focusing screen retainer becomes weak.

> | **CAUTION** | Take care not to scar the focusing screen and print-type mask during the above adjustment work.
> When re-assembling the parts back to the original product, check to see that the focusing screen and the focusing screen retainer are surely set in place. |
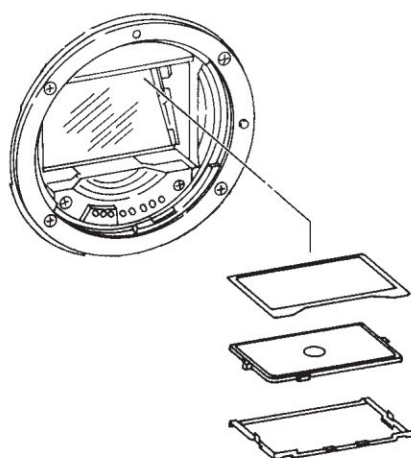


Fig. 3-29

# 4. SIMPLIFIED MEASUREMENT METHOD OF EXPOSURE AND SHUTTER

The histogram display function provides a simple but effective method of checking exposure and the shutter operation.

Removing the DIGITAL block takes time and using the histogram display function enables judgment of exposure and shutter without removing it.

## <Preparation>

1) Press the <AF/WB> button in the left of the display panel.
   Turn ON the back cover dial and let the display show the white balance selection mode.
2) Turn the back cover dial to select the desired option name by highlighting it.
3) Set the white balance to the incandescent lamp marking.

## <Confirmation of Shutter Speed>

1) Set the shutter speed of the camera to 1/4000, aperture to f/2.8, luminance LV15 and K value to 12.5. Let the camera close the shutter.
2) Check to see that the normal histogram as shown in the figure below appears. If the center of the histogram is either in the right or in the left, the histogram indicates that the amount of incident light on the CMOS sensor is either excessive or short. It is suspected that the shutter speed of 1/4000 is actually not realized.

---

**CAUTION**   If luminance of EV15 is not correct, center of a picture is not positioned in the center as shown in the figure below. Luminance at EV15 and K value 12.5 is 4096 cd/m².

---

When the histogram has a symmetrical shape, it indicates that the correct shutter speed is obtained. Refer to the figure in the right.

Normal

The shutter closes early

The shutter closes late

**3-30**

## <Confirmation of Exposure>
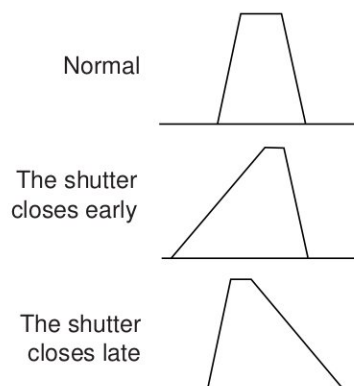
1) Be sure to set the white balance in tungsten.
2) Set the camera to the program mode (select either TV or AV mode).
   Let the camera close the shutter at each luminance level.
3) When the exposure is correct, the correct histogram as shown in the right appears.



The histogram graphs when exposure is changed, are shown as follows.
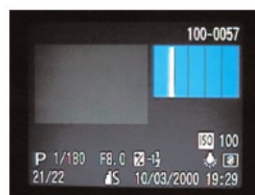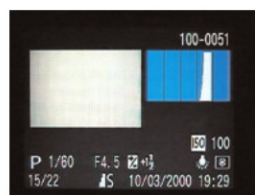
| 0.5 stop under | 1 stop under | 1.5 stop over | 2 stop under |
|---|---|---|---|



| 0.5 stop over | 1 stop over | 1.5 stop over | 2 stop over |
|---|---|---|---|



**3-31**

# Part 4

## Electrical Adjustments

# 1. ELECTRICAL ADJUSTMENTS

## 1.1 Cautions

- The adjustment software is compatible with Windows 98 SE, Windows ME, and Windows 2000. The computer must have a Pentium II 233 MHz or higher processor, 128 MB of RAM, and a 800×600 (1024×768 recommended) or larger monitor. To install all the adjustment software, about 20 MB of hard disk space is required.
- The manuals for the adjustment software are bundled together with the respective adjustment software program. On the initial screen, you can select "no camera" so that you can use the software without connecting a camera.
- Before servicing, jot down the user's settings, such as Custom Function (C.Fn) settings, owner's name, and the serial number. All of the data of the camera section and the digital section can be saved with the adjustment software by doing "data save".
- Since the color chart or light source (EF8000, 5000) will have slight idiosyncrasies, first use a known-good (non-defective) camera to check the characteristics. For details, see "1.8 Digital Adjustment and Standard Data Creation."
- Before doing the adjustment, be sure to turn off the "Auto Power Off."  If the power turns off during the adjustment, an error may occur.
- Perform maintenance of the light source (EF-8000, 5000) at regular intervals. See "1.7 Light Source Maintenance."
- Imager file data is appended in a floppy disk with the replacement parts. If the imager file data has been lost due to the replacement of the D board, etc., you can obtain it from the Canon FTP site. To access the Canon FTP site, contact your local HQ. (FTP site is planned to open up in early 2002.)
- The imager file can be updated (Pixcel dot update added). See "1.10 Updating the Imager File."
- When exporting the image to an image-editing program such as Photoshop, make sure the "processing parameters" are set to the standard settings.
- A replacement digital board unit (CG2-0710) from stock may have the old firmware. Before doing the adjustment, check the firmware version. If it is an old version, update the firmware before doing the adjustment.
- For the AF adjustment, there is no need to input the flange focal distance. After the AF adjustment, photograph a 3-D chart and check the focus. If fine adjustment is necessary, adjust by shifting the AF focus. See "1.9 AF Adjustment."
- If the user says that focusing is faulty, avoid shifting the focus at first. Instead, try and obtain the user's lens and check it.
- When adjusting the camera's exposure, check the "SPC Positioning Adjustment." After the digital section adjustments, do a final check.
- New main board units (CG2-0770) already have the initial data written within. Therefore, initialization is not necessary.
- When adjusting the digital section, defragmentation of the adjusting area may be required. (Especially when you are transfering the imager file.) See"1.14 Defragmenting the Adjusting Area."

## 1.2 Installation Procedure

The TWAIN driver from EOS DIGITAL SOLUTION DISK must be installed.

**Supplied software:**
- Adjustment software: EOS_D60.exe
- Defragmentation program: EOSD60_Defrag.exe
- CMOS scratch data update program: EOSD60_Compiler.exe

**Software to be procured locally:**
- Internet Explorer 4 or higher
- EOS D60, TWAIN driver (EOS DIGITAL SOLUTION DISK )

**Installation procedure:**
**Adjustment software installation**
1) Install Internet Explorer 4 or higher.
2) Install TWAIN driver (EOS DIGITAL SOLUTION DISK).
   * Before installing the adjustment software, make sure it works.
3) Install the adjustment software.
4) Install the CMOS scratch data update program.
5) Re compression the defragmentation program.

**Uninstall procedure:**
**Adjustment software uninstall procedure**
1) Move the holder containing the CMOS scratch data update program (EOSD60_Compiler.exe) to the trash bin.
2) Move the holder containing the adjustment software (EOS_D60.exe) to the trash bin.
3) Uninstall the TWAIN driver. (See manual.)

## Adjustment Software Installation Procedure

1) Double-click EOSD60.exe.
2) From the list that appears, select the desired location to install the software. If you click "Reference," you can choose where to install.
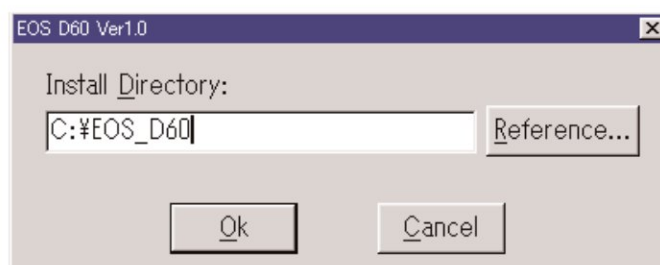


3) The name of the adjustment software is "EOS_D60. exe" Double-click this file to start up the adjustment software.



**4-3**

## CMOS Scratch Data Update Program Installation Procedure

1) Double-click EOSD60Compiler.exe.

2) From the list that appears, select the desired location to install the software.
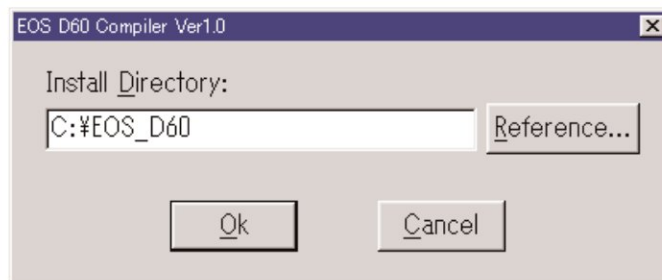


3) The name of the adjustment software is EOSD60_Compiler. exe" Double-click this file to start up the adjustment software.

## 1.3 Description of Camera's Electrical Adjustments

> **CAUTION**
>
> For AF adjustment, there is no flange focal distance to be input.
> After the AF adjustment, photograph a 3-D chart. If fine
> adjustment is necessary, adjust by shifting the AF focus.
> Before doing the adjustment, be sure to turn off "Auto Power Off." If
> the power turns off during the adjustment, an error may occur.

The electrical adjustments consist of the following:

| | |
|---|---|
| Temperature adjustment | Adjustment of the camera's temperature sensor. |
| Serial number resetting | Set the serial number. |
| Imager file transfer | Transfers the imager file. |
| AE adjustment menu | |
| • Shutter adjustment | Adjust the shutter speed at 1/4000 sec. |
| • SPC positioning | Adjustment and check of the AE sensor's position |
| • AE basic adjustment | Adjustment of AE sensor's output. |
| • AE shift | The exposure level can be shifted in 1/8-stop increments to suit user preferences. |
| CMOS Exposure adjustment | Adjustment for the CMOS to obtain the correct exposure level. |
| • Black level  • ISO Exposure  • Shading | |
| White balance adjustment | Adjustment of white balance sensor. |
| Color matrix adjustment | Adjustment of the color matrix. |
| AF adjustment menu | |
| • Basic adjustment | Optimum adjustment of the AF sensor's output. |
| • AF focus adjustment | Adjustment for optimum focus position. |
| • Image/Focus data | The AF sensor's output data is used for waveform and chart setting and for AF precision checking, and displays the focus data. |
| • AF shift | AF compensation shift |
| Flash adustment | Adjust EFIC's gain and level |
| TFT adjustment | Adjust the TFT-LCD's display position. |
| Self-check | All the camera's LCDs are turned on, error codes are erased, and the error No.is displayed. |
| Data transfer | The camera's data can be initialized and the data can be transferred to be saved. |

## 1.4 Required Electrical Adjustment Chart Upon Camera Disassembly

| Adjustment Items | Digital Board (CG2-0773) (Data illegible) | Digital Board (CG2-0773) (Data legible) | Main Board (CG2-0770) (Data illegible) | Main Board (CG2-0770) (Data legible) | Shutter Unit (CG2-0761) | AE Unit (CG1-3798) | AF Unit (CG1-37951) | C-MOS, Analog Board (CY3-1393 CG1-0771) | TFT Board Unit (CG1-0772) |
|---|---|---|---|---|---|---|---|---|---|
| Shutter speed adjustment | | | 3 | | 2 | | | | |
| SPC positioning | | | | | | 1 | | | |
| AE accuracy adjustemt | | | 2 | | | 2 | | | |
| AE shift adjustment | | | * | | | * | | | |
| Basic AF adjustment | | | 4 | | | | 1 | | |
| AF focus adjustment | | | 5 | | | | 2 | | |
| Image data/focus data output | | | | | | | * | | |
| Gain adjustment | | | 6 | | | | | | |
| Level adjustment | | | 7 | | | | | | |
| LCD full-lighting | | | | | | | | | |
| Error code deletion | | | | | | | | | |
| SI luminance adjustment | | | * | | | | | | |
| Error codes | | | | | | | | | |
| Shutter counter reset | | | | | 1 | | | | |
| Temperature compensation | | None | 1 | None | | | | | |
| Initialization | | | | | | | | | |
| Data storage | | | | | | | | | |
| Data transfer | | | | | | | | | |
| Imager file transfer | 1 | | | | | | | 1 | |
| Writing camera ID | 2 | | | | | | | | |
| C-MOS exposure level adjustment | 3 | | | | | | | 2 | |
| White balance adjustment | 4 | | | | | | | 3 | |
| Color matrix adjustment | 5 | | | | | | | 4 | |
| Writing TFT data | 6 | | | | | | | | 1 |
| TFT position adjustment | * | | | | | | | | * |
| TFT luminance adjustment | * | | | | | | | | * |
| Initialization | | | | | | | | | |
| Data storage | | | | | | | | | |
| Data transfer | | | | | | | | | |

* Perform as necessary

# 1.5 Checking and Adjusting the AE, E-TTL, and Exposure

> **CAUTION**
>
> The light source (EF8000, 5000) must be maintained as indicated in "Light Source Maintenance." It must produce the correct brightness (LV 9 = 64cd/m2) especially if you will check the exposure level.
> The user may request that the exposure level be increased or decreased. In such a case, first check the exposure level and do the adjustment with the camera.

## Checking the Exposure Level

If the EOS D60's camera metering sensor (SPC) output and the shutter adjustment are correct, the camera will obtain correct exposure. And if the digital section's ISO setting is adjusted correctly, the digital section should obtain the correct exposure. If the user wants the exposure level to be increased or decreased, check the total exposure level, then refer to it when making the exposure level adjustment with the camera.

To check the total exposure level, you will need the adjustment software or an image-editing program like Photoshop. The procedure using the adjustment software is explained below.

* This procedure is for checking if the exposure level is correct as it would be with film in a film-based camera.

## Total Check

1) Connect the camera and start up the digital adjustment software.
2) Select "Test shooting"
3) Set the camera settings as follows. Take pictures while changing the ISO speed and shutter speed.
   Camera settings
   - Camera mode: Aperture-priority AE
   - Aperture: f/8.0 (f/5.6 is acceptable)
   - Shutter speed: Auto
   - ISO: All ISO speeds
   - White balance: Tungsten
   - Image size: JPEG, L size
4) Press the shutter button.
5) The image will be captured. Drag (select) the mouse at the center of the image.
6) The image's RGB and YCrCb will be displayed. Check that the RGB's G value is 120 count +/-10 count. This 120 ount is the same at all ISO speeds. If you use an image-editing program like Photoshop, do the same as above by selecting the image center to display the RGB outputs. If the G value is the same, it is okay.

**4-7**

If it does not meet the standard:

| Reference | With exposure, each count is equivalent to 0.020EV, so the exposure becomes 0.20EV at 10 counts. For this reason, you can judge overexposure and underexposure taking about 120 counts (dependent on white balance) as the reference when a surface of uniform brightness is photographed. |

Check the CMOS brightness level adjustment and SPC sensor positioning. If it is not the correct value, correct it. Also, if the user requests an increase or decrease of the exposure, do the AE shift adjustment with the camera.

## Checking the CMOS Sensor Output

1) Connect the camera and start up the adjustment software.
2) Select "Check the Image"
3) Set the camera settings as follows. Take pictures while changing the ISO speed and shutter speed.
   Camera settings
   • Camera mode: Manual
   • Aperture: f/8.0
   • Shutter speed: 1/125 sec. (ISO: 100), 1/250 sec. (ISO: 200), 1/500 sec. (ISO: 400), 1/1000 sec. (ISO: 800)
   • ISO: See above "Shutter speed"
   • White balance: Tungsten
   • Image size: JPEG, L size
4) Press the shutter button.
5) The image will be captured. Drag (select) the mouse at the center of the image.
6) The image's RGB and YCrCb will be displayed. Check that the RGB's G value is 120 count +/-10 count. This 120 count is the same at all ISO speeds. If you use an image-editing program like Photoshop, do the same as above by selecting the image center to display the RGB outputs. If the G value is the same, it is okay.

   If it is not 120 count +/-10 count:
   • The light source's brightness is in error. --> See "1.6 Light Source Maintenance."
   • The camera's ISO speed adjustment is wrong. --> Adjust the ISO speed. (When the ISO speed is adjusted, you will also have to do all the CMOS-related digital adjustments.)

## Checking the Camera and AE Sensor Output

| CAUTION | Be sure to use a normal EF 50mm f/1.8 lens. |

Check the amount of light that the camera's AE sensor receives.
1) Attach an EF 50mm f/1.8 lens to the camera and start up the adjustment software.
2) Select "AE adjustment" and then "SPC positioning"

**4-8**

3) Face the camera toward the light source (EF8000, 5000).

4) Change the light source to LV 9, LV 12, and LV 15, and check the SPC output value. If "12.5" is displayed for the output value when the light source is set to LV 12, the camera is receiving too much light. Control the exposure by decreasing it by 0.5 EV.

Required standard: Within +/-0.25 EV at every brightness

If it does not meet the required standard, shift the AE or do the AE basic adjustment. With AE shift, increase or decrease the overall exposure level. If the required standard is met at LV 9, but not at LV 15, the exposure's gain must be adjusted. In such a case, do the AE basic adjustment.

## 1.6 Digital Section Adjustment and Standard Data Generation

<table>
<tr><td>CAUTION</td><td>This procedure must be done before the digital section adjustment. (Especially, generating this standard data is very important. If it is not generated, the correct color reproduction will not occur.)<br>Do the regular maintenance (data generation). (This is not necessary each time you do the adjustment. However, be sure to do it when the light source bulb has been replaced or the location has been changed.<br>A known-good camera is required for a data generation.<br>A standard data will be stored in the Reference folder where the adjustment software has been installed. It is recommended to back up the data, because it will be deleted when the adjustment software is deleted or updated.</td></tr>
</table>

Before doing the digital section adjustments, the light source and color chart characteristics must be measured and saved in the personal computer.

Required standard data:
- CMOS white balance data (WhiteBalanceRef.wb)
- Color matrix chart data (MatrixChart.pos)
- Color matrix adjustment data (ColorMatrixRef.mat)

\* The name of the file in the Reference folder is in parentheses.

These data are saved within Reference in the folder where the adjustment software is installed. Be sure to make a back-up copy of these data.

### CMOS White Balance Basic Data

The CMOS white balance adjustment is for fixing the irregular output caused by the CMOS's color. As explained below, use a known-good camera to measure the light source's characteristics and filter characteristics.

- Required tools
- Light source (EF8000, 5000)
- C12 filter × 2

Adjustment procedure:
1) Attach an EF 50mm f/1.8 lens to the known-good camera and connect the camera to the computer. Start up the digital section adjustment software.
2) Select "CMOS white balance adjustment."
3) Select "Basic data generation."
4) Set the light source (EF8000, 5000) to LV 12. Set the lens to manual focus and infinity.
5) After everything is set, click "Set completed."
6) Attach a C12 filter to the lens, and click "Set completed."
7) Attach another C12 filter (total 2 filters) to the lens, and click "Set completed."

The CMOS white balance data's basic data can now be generated. Click "Check standard data" to check the data. Jot down this data on a piece of paper.

## Color Matrix Basic Data

> **CAUTION**
>
> "Colors" drawn in the graph change according to the overall exposure level. For this reason, adjust the exposure so that the "Y" level of the white on the color bar is 178±10 counts during measurement.

The color matrix basic data is used as the index for judging colors.

Required tools
- Color viewer
- Color bar chart

Measurement procedure
1) Attach a normal EF 50mm f/1.8 lens to the known-good camera and connect the camera to the computer. Start up the digital section adjustment software.
2) Select "Color matrix adjustment."
3) Select "White balance setting", adjust the white balance to the color viewer. Put the camera close to the color viewer and press "Release." By releasing, the white balance            will be memorized.
4) Select "Color setting"
5) Set the camera as follows(It will be set automatically):
   - Shooting mode:     Aperture-priority AE
   - Aperture:          f/5.6
   - ISO:               100
   - White Balance:     Auto
   - Image size:        JPEG, L-size
5) Place the color bar chart on the color viewer, and adjust so that the chart is correctly            positioned. For details, see the adjustment screen. After everything is set, click "Cancel."
6) Select "Image evaluation," and click "Release." When you click "Release," the image will appear. Select the center of each color.
7) Put the cursor over the graph's point, and right-click the mouse to select "Set." That point will then be saved. Repeat this step for all seven color bars.

*If the "Y" level is not 178±10 counts, adjust the exposure setting.

If you selected "Set" by mistake, right-click the mouse and select "Clear."

The points you set will become the color bar chart's characteristics. This point-matching adjustment will be done later.

## 1.7 Maintenance of Light Source

**CAUTION** Do regular maintenance (data generation). (This is not necessary each time you do the adjustment. However, be sure to do it when the light bulb has been replaced or the location has been changed.) The maintenance procedure is presented in a video called "Repair Technique Basic 1, 2" (CY8-1310-007, 008 for Japanese and CY8-1320-007, 008 for English).

For digital cameras, maintaining the light source is very important for adjusting the ISO sensitivity. With the EOS D60, the standard amount of light for each ISO speed is set based on the LV12 light source.

* According to the ISO standard, ISO 100's standard exposure amount is stipulated as 0.1 lux/sec. where the exposure amount (lux/sec.) is expressed in lux (the light's brightness) and sec. (time of light radiation). Therefore, if you use ISO 100 film, you can obtain the same result with the same amount of light regardless of the film's manufacturer.

Required tools
- Light source (EF8000, 5000)
- Luminance meter BM-300, 3000

Procedure
1) Turn on the light source. Wait at least 10 minutes before starting the measurement. While you wait, thoroughly clean the surface of the light source.
2) Use the luminance meter to measure the light source.
   Required standard:
   LV 9:      64 cd/m² (59.7 - 68.6 cd/m²)
   LV 12:   512 cd/m² (477 - 548 cd/m²)
   LV 15: 4096 cd/m² (3821 - 4389 cd/m²)

* The K value is 12.5, correctable within +/-0.1 EV.

3) If adjustment is necessary, adjust with the variable resistor. (see the manual of EF8000, 5000)

## 1.8 Imager File Update

| | |
|---|---|
| **CAUTION** | To find the correct location of CMOS defects, a RAW image must be used instead of JPEG which blurs the defect. The defect location coordinates to be input are also based on the RAW image. EOSD60_complier.exe will calculate the location with the full size pixel of CMOS.That causes the number of pixels' differece from the full size pixel images(3152 × 2068) to the JPEG (Large-Fine : 3072 × 2048). The "defect" found could also be a piece of dust, etc. Before starting, be sure to clean the CMOS. |

The CMOS's defect data can be updated.

* CMOS is susceptible to ultraviolet rays and cosmic rays. Therefore, avoid leaving a bare CMOS in the open. Store it in a dark place. Also, beware of static charge. When handling the CMOS with bare hands, be sure to wear grounded wrist bands.

### 1. Procedure
**<Obtain the imager data of the camera. (Contact Head quarters in your region or access the FTP site.)>**

**<Find the defect location specified by the user.>**

1) Start up EOSD60Compiler.exe, and open the problem file specified by the user. Compiler.exe can handle only RAW images. If the image file is JPEG format, handle the file as a RAW image referring to "Confirmation Method." The figure on the right shows the differences between a RAW image (2496 × 1662) and JPEG (Large-Fine: 2646 × 1648) image. With image processing software such as Photoshop, the top left coordinate is expressed as (0,0), whereas on Compiler.exe, it is expressed as (1,1). For this reason, in the case of positions pointed out by the user, the defect location at (1234, 321) on a JPEG (Large-Fine) image is expressed differently as follows:

X=1234+72+1=1307
Y=321+16+1=338
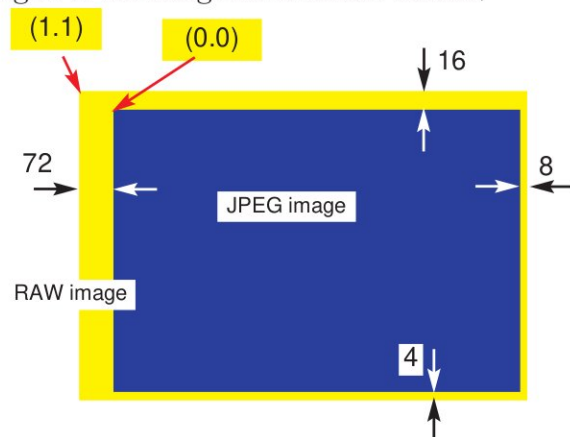
2) Find the defect. Select the RAW file by "OPEN" from "FILE" in the figure on the right.
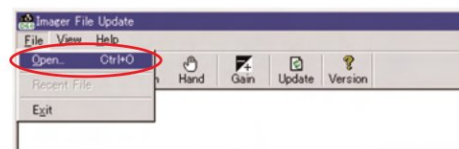
3) PClick the button in the figure on the right. Image enlargement /reduction and the currently displayed gain can be changed. Set the image so that defects can be distinguished. To do this, set gain to about 1.0.
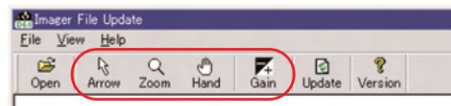
4) Click the "Update" button.

5) When you click the "Update" button, choice of the files will displayed. Then choose "xxxxxx_1def." "xxxxxx" is the CMOS imager file number.
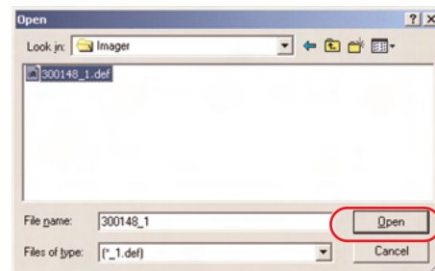
6) Click the defects desired to add. The coordinates will be added to the Defect List. If wrong position is set, choose it and click "DELETE." Click "SAVE" to add the coordinates to the file.

7) For the "OUTPUT FILE," AjDef00.imag, AjDef01.img, AjDef02.img, AjDef04.img, AjDef05.img, AjDef06.img, AjObSkip.img will be created.

**4-14**
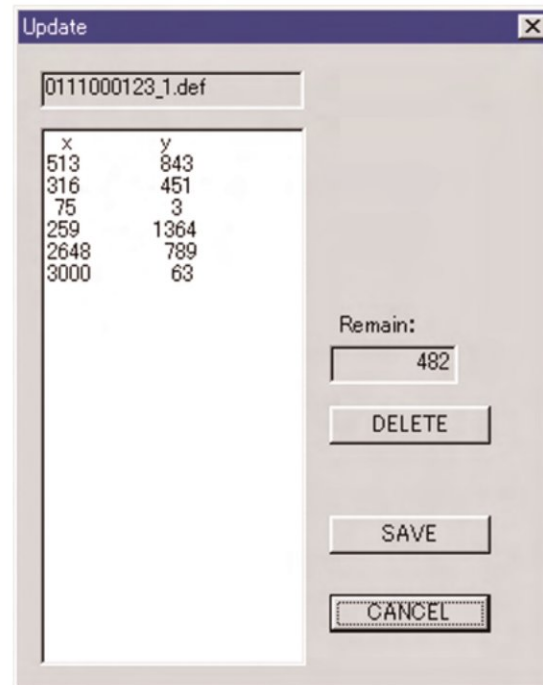
**<Rewrite the data>**
1) Connect the camera to the computer, and start up the adjustment software.
2) Select "Transfer imager file."
3) In the text box, type the imager number and click "Update."
4) A dialog box for selecting the imager file will appear. Select the AjDef0?. img, and AjObSkio. img, files that were created before. The files will then be written to the camera.
5) After the writing is completed, quit the adjustment software program and turn on the camera. (If the camera is not turned on, the files will not be updated.)

\* When you update the imager file, the CMOS brightness level adjustment need not be done again.

## 2. Check Procedure

There are two types of CMOS defects: "White defects" which light up in low light, and "black defects" which do not light up in bright light. Therefore, depending on the shooting conditions, there will be defects you can and cannot see. To see the defects, use the methods described below.
If you cannot obtain a RAW image, also follow the methods below.

**<Settings for finding white defects>**
1) Attach the body cap to the camera and close the eyepiece shutter. Set the camera as follows:

| | |
|---|---|
| Shooting mode: | Shutter-priority AE |
| Shutter speed: | 1 sec. |
| ISO: | 1000 |
| White balance: | Auto |
| Image size: | RAW |

**<Settings for finding black defects>**
1) Attach an EF 50mm f/1.8 lens to the camera, and set the camera as follows:

| | |
|---|---|
| Shooting mode: | Aperture-priority AE |
| Aperture: | f/8 |
| ISO: | 100 |
| White balance: | Auto |
| Image size: | RAW |

2) Photograph.
3) Open the captured image with EOSD60 Compiler.exe.
4) Check if the image has been corrected.

**4-15**

## 1.9 AF Focus Adjustment Procedure

**CAUTION**
For the AF adjustment, there is no need to input the flange focal distance. After the AF adjustment, photograph a 3-D chart and check the focus. If fine adjustment is necessary, adjust by shifting the AF focus.

With film-based SLR cameras, the flange focal distance was input during AF focus adjustment and then the adjustment was made. Since it is difficult to measure the distance to the CMOS surface, follow the procedure below. Note that as with mechanical adjustments, the flange focal distance must be adjusted. (Since it also affects the CMOS's tilt and viewfinder focus.)

**<Adjustment Procedure>**
1) Attach the tool lens and connect the camera to the HS-I/F or Multiple Tool II. Then start up the camera adjustment software.
2) Select "AF adjustment" and "AF focus adjustment."
3) Follow the on-screen instructions and do the adjustment with aging and three charts.
4) Obtain a 3-D chart and place the camera 2.5 meters away from the center of the 3-D chart.
   (Be sure to illuminate the chart with a video light or other light source.)

5) Photograph.
   * Shooting conditions
     Shooting mode      : Aperture-priority AE
     Aperture      : f/1.8
     ISO   : 100
     White balance      : Auto
     Image size     : JPEG (Fine)
     AF point      : Center only
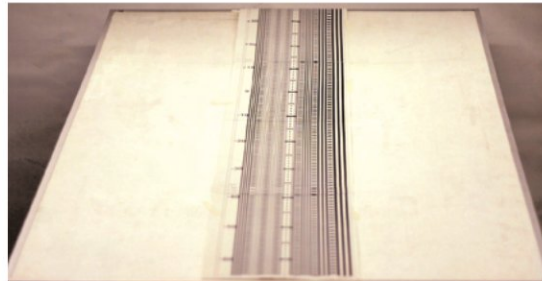
6) Import the image to an image-editing program such as Photoshop. Check the image to see how much it is off from the chart. (Good only at the center)
7) If there is no error, the adjustment is completed. If the focus is shifted, correct the focus with AF focus shift. Calculate the shift amount as shown below. The AF focus shift can be adjusted in 0.005 mm increments. After completing the AF shift, repeat from step 5 above to check the adjustment.

$$\text{CCD off-position amount} = \frac{\text{Off-position amount relative to subject} \times 1}{(\text{magnification})^2}$$

$$= \frac{\text{Off-position amount relative to subject} \times 1}{2500 \text{ (EF 50mm f/1.8, at 2.5 m)}}$$

\*
* The defocus amount relative to the subject is the 3-D chart's off-position amount expressed in mm.
* Positive correction (+) will result in a front focus, and negative correction (-) will result in a rear focus.

4-16

\* Reference (Correction amount with an EF 50mm f/1.8, at 2.5 m.)

| Distance to Subject | | | Correction Amount | Distance to Subject | | | Correction Amount |
|---|---|---|---|---|---|---|---|
| mm | cm | m | mm | mm | cm | m | mm |
| 12.5 | 1.3 | 0.013 | 0.005 | 262.5 | 26.3 | 0.263 | 0.105 |
| 25.0 | 2.5 | 0.025 | 0.010 | 275.0 | 27.5 | 0.275 | 0.110 |
| 37.5 | 3.8 | 0.038 | 0.015 | 287.5 | 28.8 | 0.288 | 0.115 |
| 50.0 | 5.0 | 0.050 | 0.020 | 300.0 | 30.0 | 0.300 | 0.120 |
| 62.5 | 6.3 | 0.063 | 0.025 | 312.5 | 31.3 | 0.313 | 0.125 |
| 75.0 | 7.5 | 0.075 | 0.030 | 325.0 | 32.5 | 0.325 | 0.130 |
| 87.5 | 8.8 | 0.088 | 0.035 | 337.5 | 33.8 | 0.338 | 0.135 |
| 100.0 | 10.0 | 0.100 | 0.040 | 350.0 | 35.0 | 0.350 | 0.140 |
| 112.5 | 11.3 | 0.113 | 0.045 | 362.5 | 36.3 | 0.363 | 0.145 |
| 125.0 | 12.5 | 0.125 | 0.050 | 375.0 | 37.5 | 0.375 | 0.150 |
| 137.5 | 13.8 | 0.138 | 0.055 | 387.5 | 38.8 | 0.388 | 0.155 |
| 150.0 | 15.0 | 0.150 | 0.060 | 400.0 | 40.0 | 0.400 | 0.160 |
| 162.5 | 16.3 | 0.163 | 0.065 | 412.5 | 41.3 | 0.413 | 0.165 |
| 175.0 | 17.5 | 0.175 | 0.070 | 425.0 | 42.5 | 0.425 | 0.170 |
| 187.5 | 18.8 | 0.188 | 0.075 | 437.5 | 43.8 | 0.438 | 0.175 |
| 200.0 | 20.0 | 0.200 | 0.080 | 450.0 | 45.0 | 0.450 | 0.180 |
| 212.5 | 21.3 | 0.213 | 0.085 | 462.5 | 46.3 | 0.463 | 0.185 |
| 225.0 | 22.5 | 0.225 | 0.090 | 475.0 | 47.5 | 0.475 | 0.190 |
| 237.5 | 23.8 | 0.238 | 0.095 | 487.5 | 48.8 | 0.488 | 0.195 |
| 250.0 | 25.0 | 0.250 | 0.100 | 500.0 | 50.0 | 0.500 | 0.200 |

## 1.10 Checking the Version

The EOS D60 has version numbers for two software programs.
**<Camera section>**(Main board unit)      ROM Version(1603)
**<Digital back section>**(Digital board unit)      Firmware (1.0.0.)

* The version number in parentheses applies to the initial production lot.

The digital back version can be checked with the TFT monitor. However, minor versions cannot. (They are uploaded without informing the user due to manufacturing or servicing circumstances.) To check the minor versions, the digital back adjustment software is necessary. They will appear at the bottom of the main menu.



**4-18**
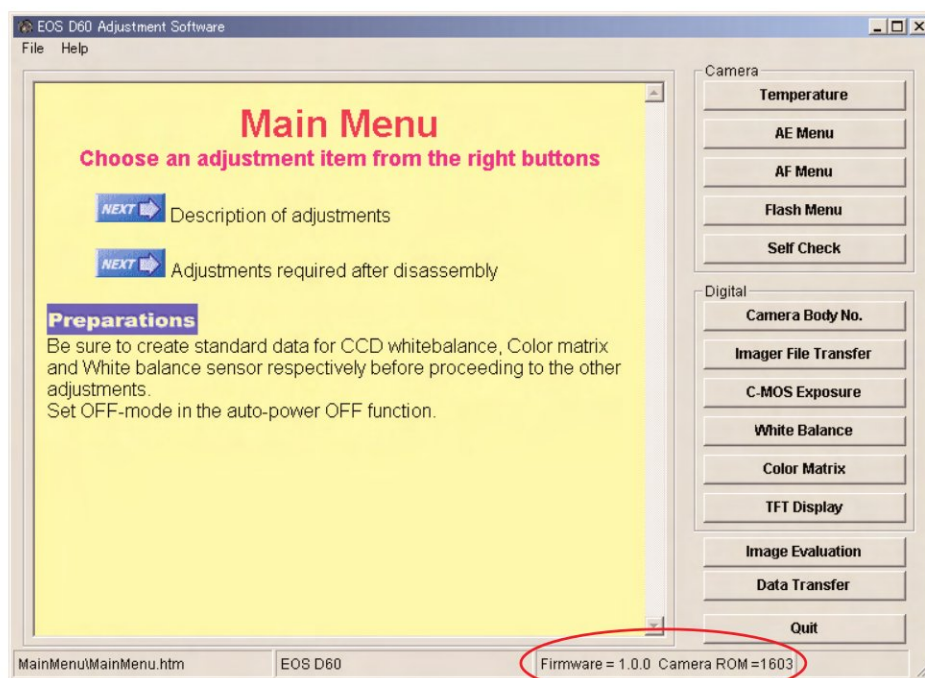
## 1.11 SPC Positioning Adjustment

The SPC positioning adjustment can be done with or without the adjustment software. If you do not use the software, you will need a small flashlight and very refined servicing skills. The procedure without the adjustment software is explained below.

### <Required tools>
Bright penlight
Normal EF 50mm f/1.8 lens
Aron Alpha

### <Preparation>
1) Attach the EF 50mm f/1.8 lens to the camera.
2) Cover the viewfinder with your hand matching the AF centering range. Illuminate the side (the clear portion) of the SPC with the flashlight.
3) Look through the lens, and move the flashlight so that you can see the SPC's S0 and the border lines. It would be best if you cover the viewfinder so that the AF point at the center looks dim. Also, if the flashlight is fixed in place, it will be easier to move the SPC.

### <Adjustment Procedure>
1) Move the SPC so that the SPC's S0 is aligned with the AF point at the center of the viewfinder.
2) Do fine adjustments so that the left and right AF points are centered as well.



Center of the viewfinder        S0

**4-19**
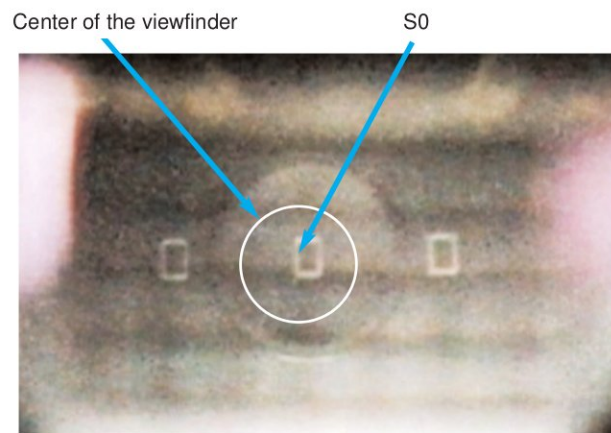
## 1.12 Color Matrix Adjustment

   Color matrix adjustment is a very important adjustment in determining "color" on EOS D60.

   However, as unevenness in the "color" of the color chart used at adjustment is reflected on the camera as it is, color matrix basic data and reference data must be made by "1.5 Description of Digital Section Electrical Adjustments, preparing basic data."

**<Description>**

   The following is displayed by evaluating the image during image checking and color matrix adjustment.
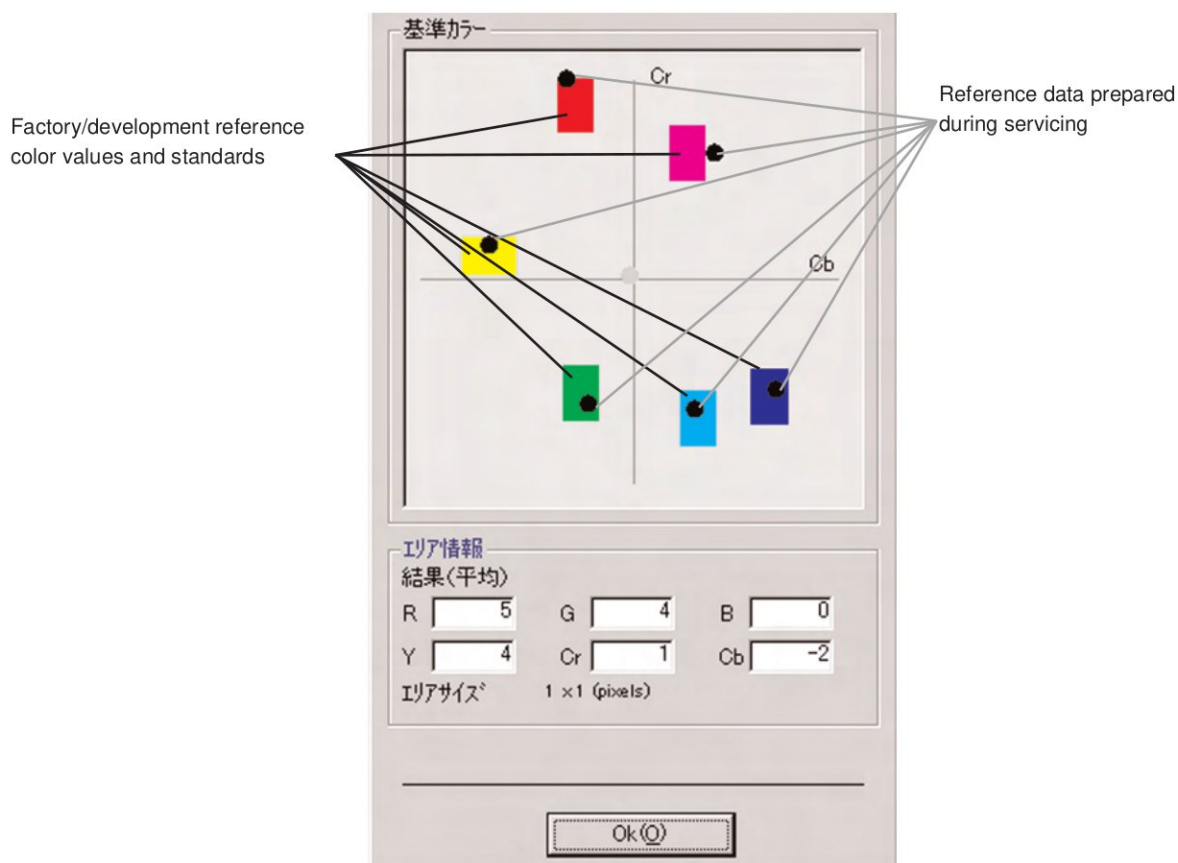


When color matrix reference data is prepared, some points may not coincide with the factory reference color values and standards. This is because a difference occurs between the factory color bar charts and individual color bar charts. For this reason, the color may differ from the actual color when adjustments are performed matched to the factory reference color values and standards.

   During color matrix adjustment, the color is matched to the reference data prepared during servicing. As a guideline for the standard values, the factory reference color values and standard ranges are shifted centrally to the reference data prepared during servicing for judgment.

**4-20**

## <Adjustment Method>

If reference data is already made, the adjustment itself is completed by "Setting" -> "Start adjustment". Note, however, that to respond to user preferences (e.g. stronger red, blue is too predominant), reference data must be changed, re-adjusted, and checked.

---

**CAUTION**

Before changing the reference data, be sure to record the original values. Once reference data is changed, the original values are overwritten.
"Color" drawn in the graph changes according to the overall exposure level. For this reason, offset exposure during measurement so that the "Y" level of white on the color bar becomes 225±10 counts. (This is the same as color matrix basic data and reference data made by "1.3 Description of Camera's Electrical Adjustments".)

---
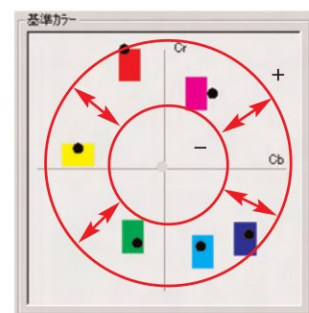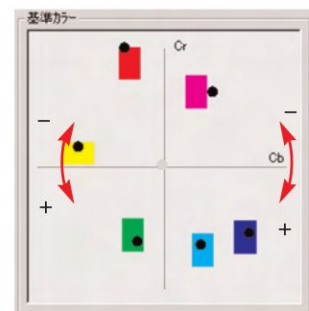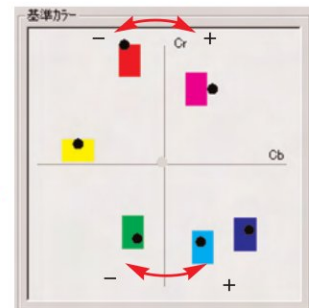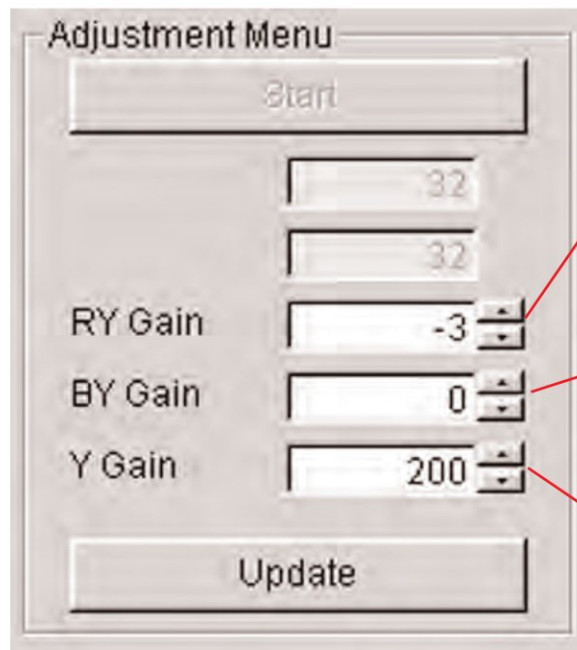
## 1.13 Storing Settings and Adjustment Data

The following tables summarize where the various setup data and adjustment data are saved, and how to save the data. Refer to these tables when saving data.

* Setup Data

| Setup Data | Storage Location | Save Method |
|---|---|---|
| C.Fn (custom function) | Camera (MPU) | Camera section or TWAIN driver |
| Image review time | Digital section (RAM) | Not possible |
| Red-eye reduction function time | Camera | Camera section |
| AEB setting | Camera | Camera section |
| ISO sensitivity | Camera | Camera section |
| LCD panel illumination | Digital section (RAM) | Not possible |
| Beep | Camera | Camera section |
| LCD monitor brightness | Digital section (RAM) | Not possible |
| Video system | Digital section (flash ROM) | Digital section |
| Time | Camera (RTC) | Not possible |
| Owner name | Digital section (RAM) | Not possible |
| Development parameters | Digital section (RAM) | Not possible |
| Image-recording quality | Digital section (RAM) | Not possible |
| Auto-power OFF | Digital section (RAM) | Not possible |
| Language | Digital section (flash ROM) | Digital section |
| Date Format | Digital section (flash ROM) | Digital section |

* Camera section

| Adjustment Item | Storage Location | Save Method |
|---|---|---|
| SPC positioning | None | Camera section |
| AE adjustment | MPU | Camera section |
| AE shift | MPU | Camera section |
| Change exposure program | MPU | Camera section |
| AF basic adjustment | | Camera section |
| AF focus adjustment | MPU | Camera section |
| Image data output | None | Camera section |
| Focus data output | None | Camera section |
| E-TTL gain shift | MPU | Camera section |
| E-TTL level shift | MPU | Camera section |
| SI brightness adjustment | MPU | Camera section |
| Light all LCDs | None | Camera section |
| Erase error code | MPU | Camera section |
| Temperature adjustment | MPU | Camera section |
| Shot counter reset | MPU | Camera section |
| Version/Error code | MPU | Camera section |

**4-22**

Digital Section

| Adjustment Item | Storage Location | Save Method |
|---|---|---|
| Imager file transfer | Digital section (flash ROM) | Digital section |
| Camera ID writing | Digital section (flash ROM) | Digital section |
| CMOS sensitivity adjustment | Digital section (flash ROM) | Digital section |
| White balance adjustment | Digital section (flash ROM) | Digital section |
| Color matrix adjustment | Digital section (flash ROM) | Digital section |
| White balance sensor adjustment | Digital section (flash ROM) | Digital section |
| TFT board data transfer | Digital section (flash ROM) | Digital section |
| TFT position adjustment | Digital section (flash ROM) | Digital section |
| TFT brightness adjustment | Digital section (flash ROM) | Digital section |

**4-23**

## 1.14 Defragmenting the Adjustment Area

| | |
|---|---|
| **CAUTION** | The procedure is same as updating the firmware. Be sure to turn off "Auto Power Off." If the power turns off during the adjustment, an error may occur.<br>When the defragmentation of the adjustment of adjustment area is done, the data will not to be deleted. |

The adjustment data of the digital back section is memorized to the flash ROM of the digital board. Since the memory will be written into a blank area accordingly, after number of adjustments, there will be no space left to write. It is necessary to change the arrangements of the adjustment data and make space to write. The "D60dfrg0.fir" program does this job.

Defragmentation of the adjustment area is necessary under these conditions:
- The adjustment software recommends to do so. (initializing the digital back, transfering data, transferring an imager file)
- The Error message comes up during the adjustment.

**<Procedure>**
1) Copy the "D60dfrg0.fir" file to CF card.
   Follow the procedure as same as updating the firmware.
2) Insert the CF card.
3) When close the CF card cover, the screen shown on the right will appear.
4) Choose OK and press "SET".
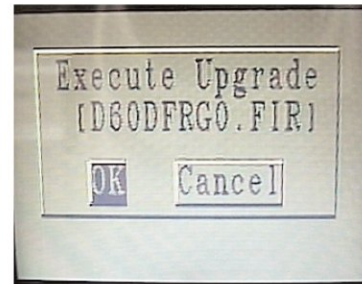


5) Choose OK and press "SET" again. Wait until the percentage displayed becomes 100%.
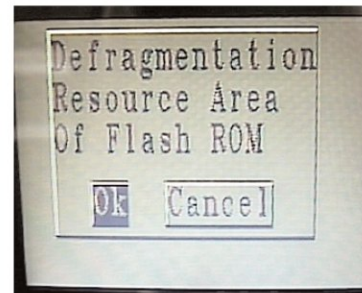


6) When it is done, the power will be turned off.

**4-24**

# Part 5

## Parts Catalog

# Canon

**EOS D60**                    **REF.NO.C12-6011**

# PARTS
# CATALOG

# CANON DIGITAL CAMERA EOS D60

1

CF1-3855

N.S

CB2-0568

CB2-0719

CB3-0329

CB2-0720

(See Pg 2)

CB2-0686

N.S

XA1-3170-207
x2

CB2-0666

CY3-1390

(CB2-0589)

CB2-0680

N.S

CG1-3786
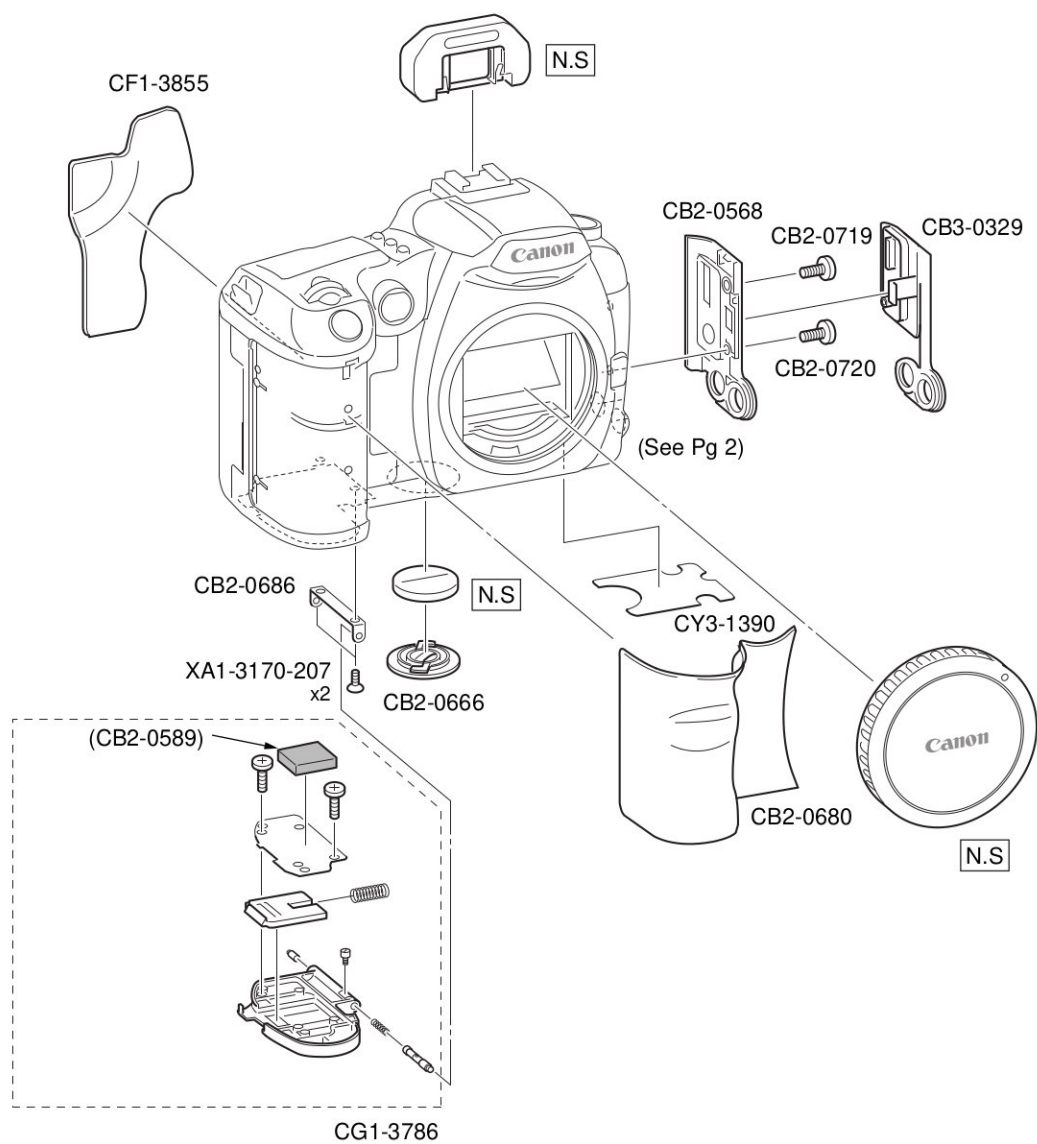
# P A R T S L I S T

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|-----|----------|-------|-----|-------------|
| | CB2-0568-000 | C | 1 | COVER, DIGITAL TERMINAL |
| | CB2-0589-000 | C | 1 | CUSHION |
| | CB2-0666-000 | C | 1 | COVER, DATE BATTERY |
| | CB2-0680-000 | B | 1 | RUBBER, GRIP |
| | CB2-0686-000 | C | 1 | HINGE, B-DOOR |
| | CB2-0719-000 | C | 1 | SCREW M17X5.5 |
| | CB2-0720-000 | C | 1 | SCREW M17X6 |
| * | CB3-0329-000 | B | 1 | CAP, DIGITAL TERMINAL |
| | CF1-3855-000 | B | 1 | RUBBER, BACK |
| | CG1-3786-000 | B | 1 | DOOR ASS'Y, MAIN BATTERY |
| * | CY3-1390-000 | B | 1 | PLATE, NAME |
| | XA1-3170-207 | F | 2 | SCREW M17X2 |

# CANON DIGITAL CAMERA EOS D60

(See Pg 3)

CG2-0778

N.S

N.S

CS2-5855

CB2-0726
x2

CB1-6578

XA1-7200-359
x2

(XD2-1100-172)
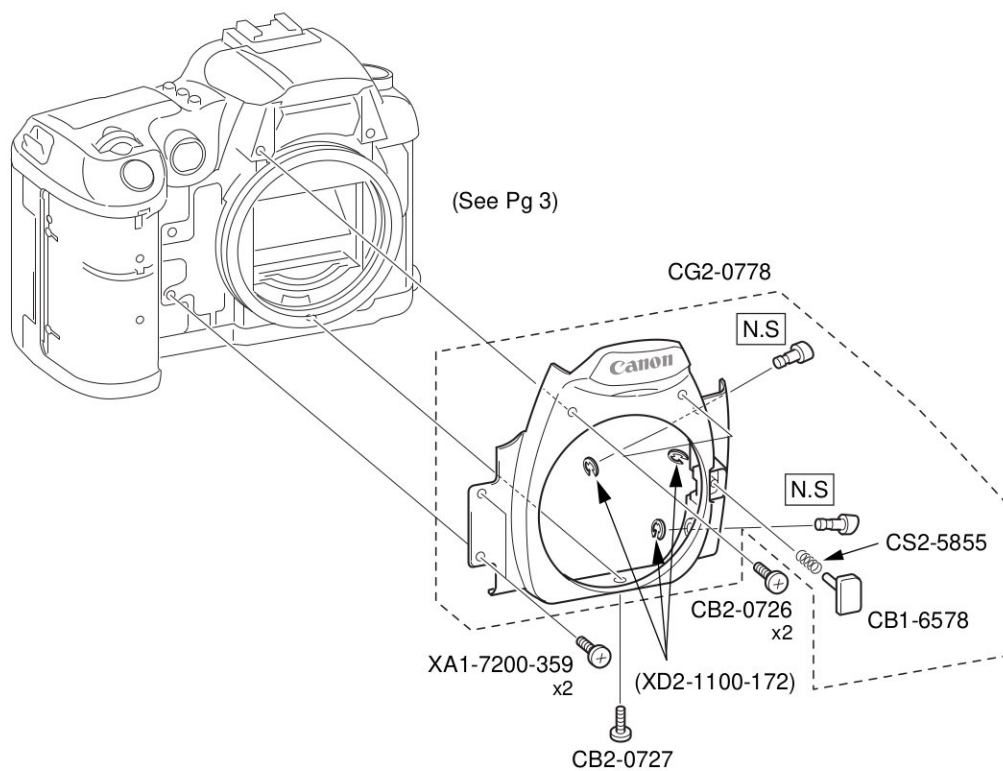
CB2-0727

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|---|---|---|---|---|
| | CB1-6578-000 | C | 1 | BUTTON, UNLOCK |
| | CB2-0726-000 | C | 2 | SCREW M17X5.5 |
| | CB2-0727-000 | C | 1 | SCREW M17X4.5 |
| * | CG2-0778-000 | B | 1 | COVER ASS'Y, FRONT |
| | CS2-5855-000 | E | 1 | SPRING, UNLOCK BUTTON |
| | XA1-7200-359 | F | 2 | SCREW M2X3.5 |
| | XD2-1100-172 | F | 2 | E RING |

# CANON  DIGITAL  CAMERA  EOS D60

(See Pg 5)

(See Pg 4)
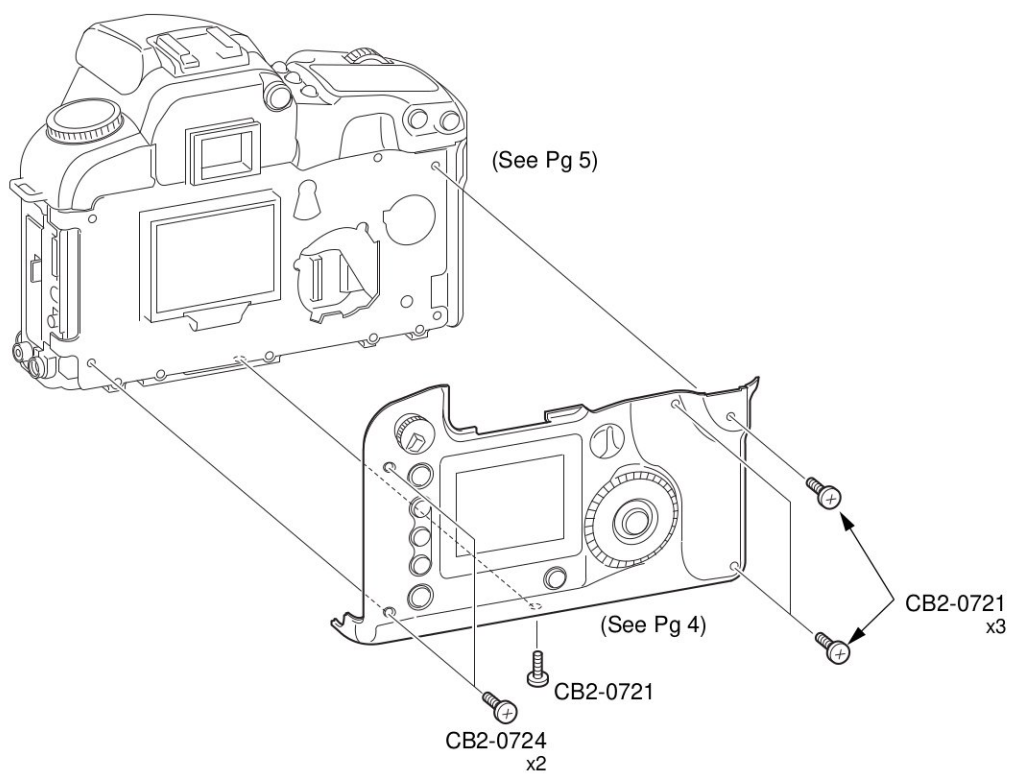
CB2-0721
x3

CB2-0721

CB2-0724
x2

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|---|---|---|---|---|
| | CB2-0721-000 | C | 4 | SCREW M17X2.5 |
| | CB2-0724-000 | C | 2 | SCREW M17X4.5 |

4

# CANON  DIGITAL  CAMERA  EOS D60

CB2-0637

(CB2-0629)     (CS3-5071)
               (XG8-1100-591)

N.S

(CB2-0630)          N.S

(XD2-1100-132)

N.S

N.S

(XA1-7140-307)

N.S

N.S

CG2-0783

N.S

(CB2-0639)     N.S

(CG1-1963)

(XA4-5140-357 x2)

(CG1-1969)

N.S

N.S

N.S

(XA4-9170-409 x3)

N.S

(XA4-9170-409 x2)     N.S
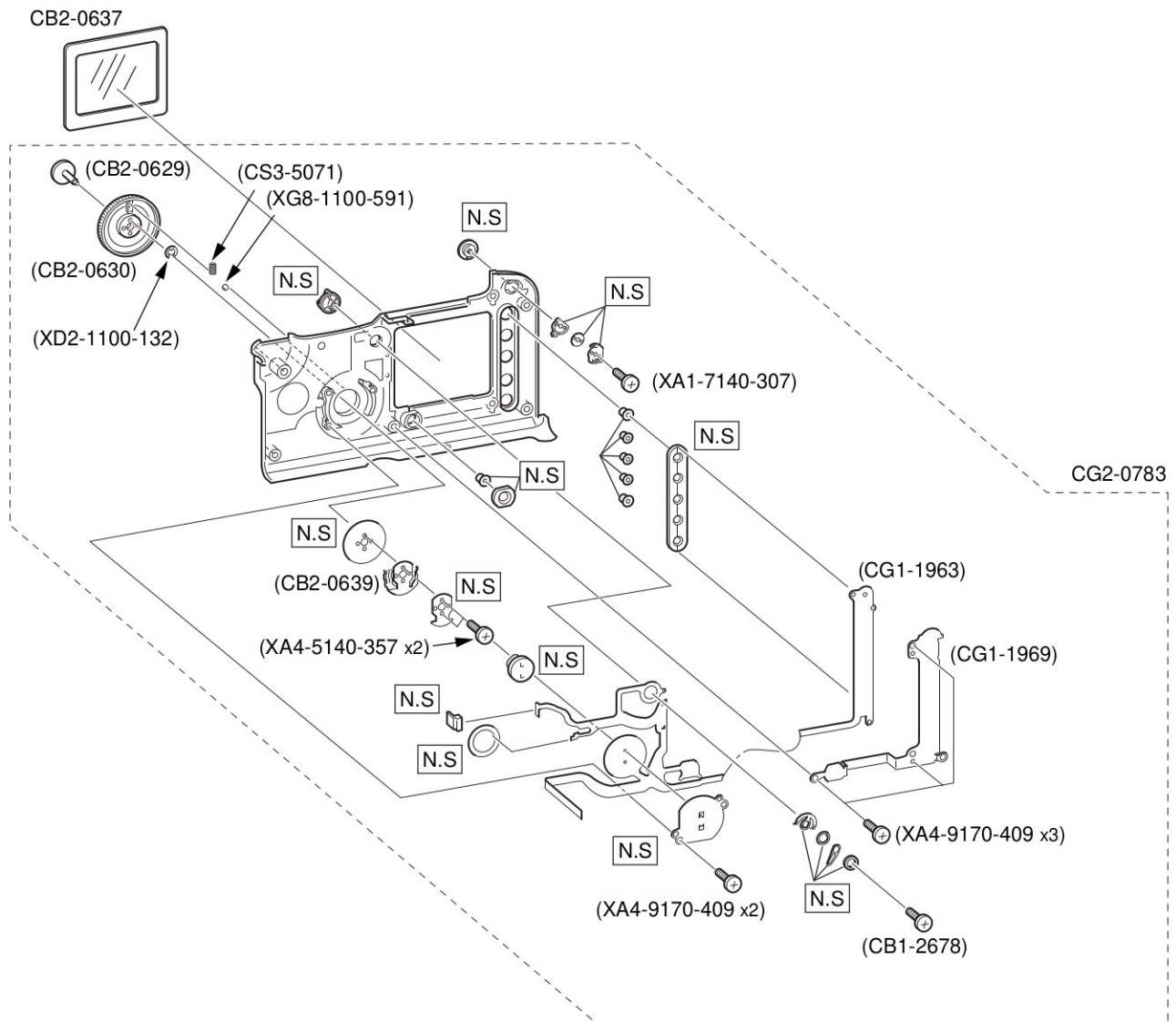
(CB1-2678)

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|---|---|---|---|---|
| | CB1-2678-000 | C | 1 | SCREW M17X2.5 |
| | CB2-0629-000 | C | 1 | BUTTON, BC DIAL |
| | CB2-0630-000 | C | 1 | DIAL, BACK COVER |
| | CB2-0637-000 | B | 1 | WINDOW, TFT LCD |
| | CB2-0639-000 | C | 1 | CONTACT, BC DIAL |
| | | | | |
| | CG1-1963-000 | C | 1 | FPC ASS'Y, BUZZER |
| | CG1-1969-000 | C | 1 | FPC ASS'Y, BACK COVER |
| * | CG2-0783-000 | B | 1 | COVER ASS'Y, BACK |
| | CS3-5071-000 | C | 1 | SPRING, COIL |
| | XA1-7140-307 | F | 1 | SCREW M14X3 |
| | | | | |
| | XA4-5140-357 | F | 2 | SCREW M14X3.5 |
| | XA4-9170-409 | F | 5 | SCREW M17x4 |
| | XD2-1100-132 | F | 1 | E RING |
| | XG8-1100-591 | F | 1 | BALL, STEEL |

# CANON DIGITAL CAMERA EOS D60

CB2-0614

CB2-0722 x2

CB2-0615

CB2-0723

(See Pg 6)

(See Pg 7)

XA1-7200-359
x2

XA1-7200-307
x2

XA4-9170-409

CB2-0661

CB2-0687

CB2-0654

CS3-6164

CB2-0681

CB2-0684

XA4-9170-509 x2

XA4-9170-509    XA4-9170-409

XA4-9170-409

CB2-0721 x3
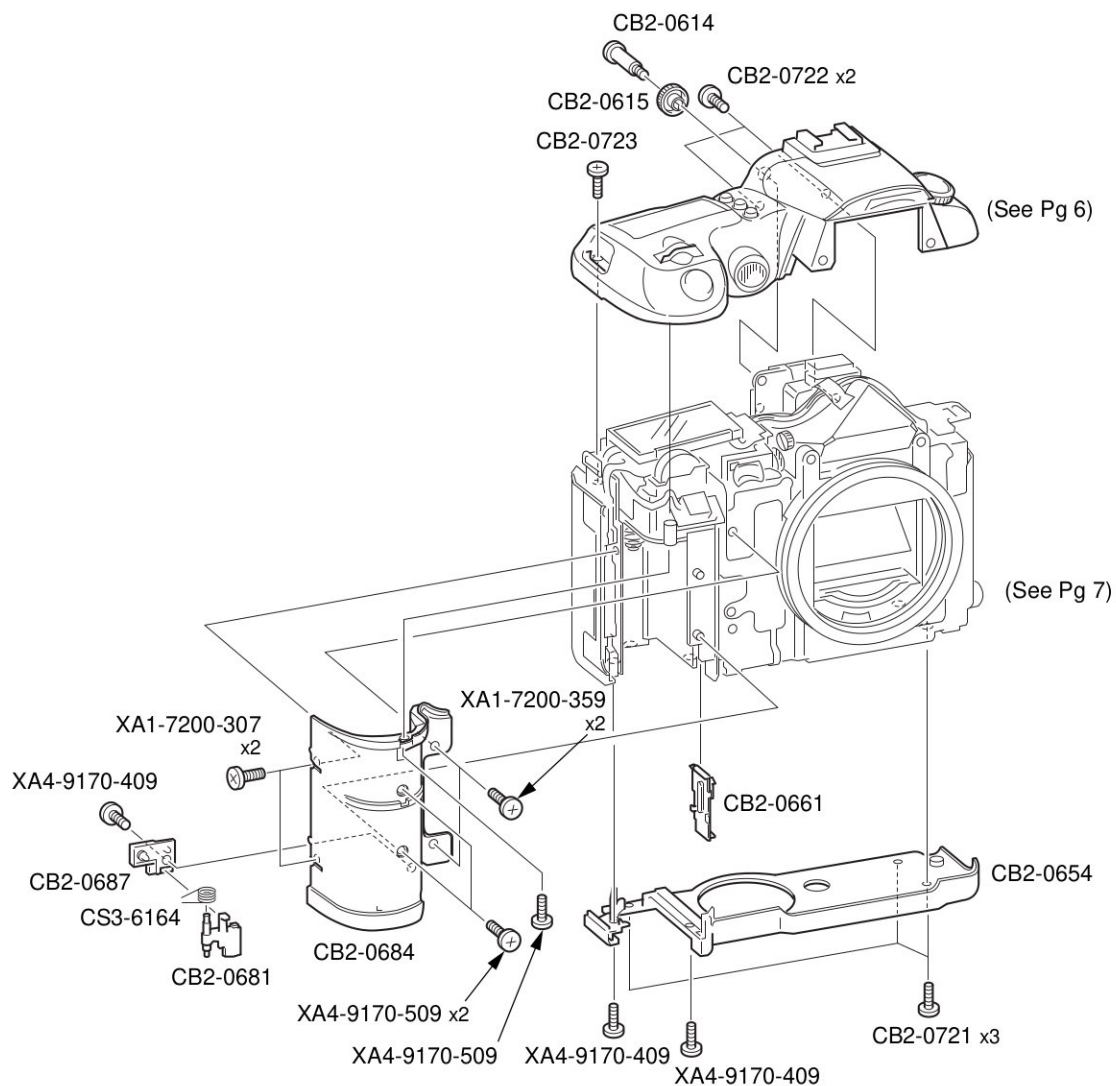
REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|-----|----------|-------|-----|-------------|
| | CB2-0614-000 | C | 1 | SCREW, STEP |
| | CB2-0615-000 | C | 1 | KNOB, DIOPTOR ADJ. |
| | CB2-0654-000 | B | 1 | COVER, BOTTOM |
| | CB2-0661-000 | C | 1 | DOOR, CABLE |
| | CB2-0681-000 | C | 1 | LEVER, B-LOCK |
| | CB2-0684-000 | C | 1 | GRIP |
| | CB2-0687-000 | C | 1 | PLATE, B-LOCK |
| | CB2-0721-000 | C | 3 | SCREW M17X2.5 |
| | CB2-0722-000 | C | 2 | SCREW M17X5 |
| | CB2-0723-000 | C | 1 | SCREW M2X6.5 |
| | CS3-6164-000 | C | 1 | SPRING, B-LOCK |
| | XA1-7200-307 | F | 2 | SCREW M2X3 |
| | XA1-7200-359 | F | 2 | SCREW M2X3.5 |
| | XA4-9170-409 | F | 3 | SCREW M17x4 |
| | XA4-9170-509 | F | 3 | SCREW M17X5 |

# CANON DIGITAL CAMERA EOS D60

CG2-0786

(CB2-0640)

N.S

N.S

N.S

N.S

N.S

(XA4-6170-409 x2)

CB2-0566

N.S

CB2-0566

N.S

(CS2-5656)

(CB2-0587)

N.S

N.S

N.S

(XD2-1100-132)

N.S

(XA4-9170-357)

(CB1-6588)

(CB2-0554)

(CB1-6589)

(CB2-0552)

N.S

(CH2-5298)

(CB2-0560)

(CH2-5299)

(CB2-0551)

(XA4-9170-509)

CB2-0601

N.S

(XA4-9200-457)

N.S

N.S

N.S

(XA4-9170-509 x2)
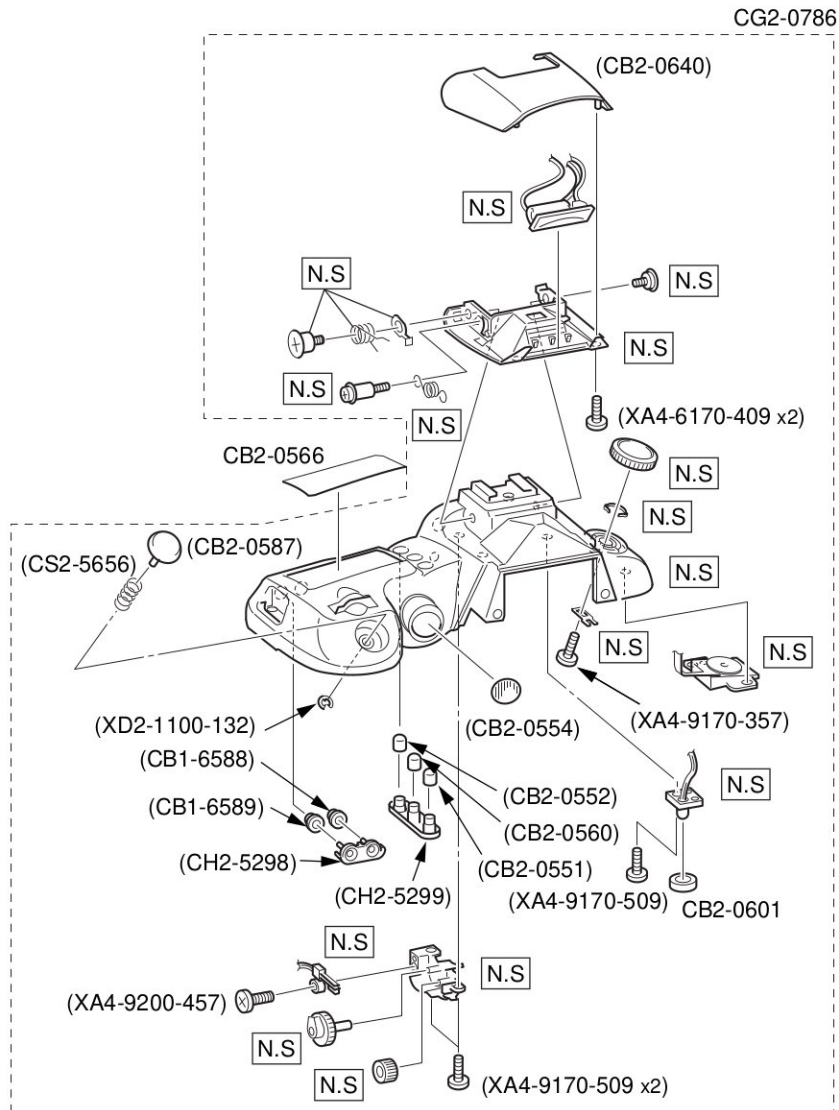
| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|---|---|---|---|---|
| | CB1-6588-000 | C | 1 | BUTTON, AE-LOCK |
| | CB1-6589-000 | C | 1 | BUTTON, AF-SELECT |
| | CB2-0551-000 | C | 1 | BUTTON, AE MODE |
| | CB2-0552-000 | C | 1 | BUTTON, AF MODE |
| | CB2-0554-000 | C | 1 | WINDOW, SUPPORT LIGHT |
| | | | | |
| | CB2-0560-000 | C | 1 | BUTTON, DRIVE |
| | CB2-0566-000 | B | 1 | WINDOW, LCD DISPLAY |
| | CB2-0587-000 | C | 1 | BUTTON, RELEASE |
| | CB2-0601-000 | C | 1 | CUSHION, FIBER |
| | CB2-0640-000 | B | 1 | COVER, SP LIGHT |
| | | | | |
| * | CG2-0786-000 | C | 1 | COVER ASS'Y, TOP |
| | CH2-5298-000 | C | 1 | CONTACT, AE/AF SWITCH |
| | CH2-5299-000 | C | 1 | CONTACT, TOP SWITCH |
| | CS2-5656-000 | C | 1 | SPRING, COIL |
| | XA4-6170-409 | F | 2 | SCREW M17X4 |
| | | | | |
| | XA4-9170-357 | F | 1 | SCREW M17X3.5 |
| | XA4-9170-509 | F | 3 | SCREW M17X5 |
| | XA4-9200-457 | F | 1 | SCREW M2X4.5 |
| | XD2-1100-132 | F | 1 | E RING |

# CANON DIGITAL CAMERA EOS D60

XA4-9200-559 x2

CB2-0565

CB2-0564

CB2-0570

FC2-9551

CB2-0576

(See Pg 8)

CB2-0573

XA4-9200-559

XA4-9200-457

CB2-0555

XA4-9200-457

CB2-0578

CB2-0577

XA4-8200-459
x2

CB2-0578

CF1-3851

XA1-3200-257
x5

XA1-7170-259
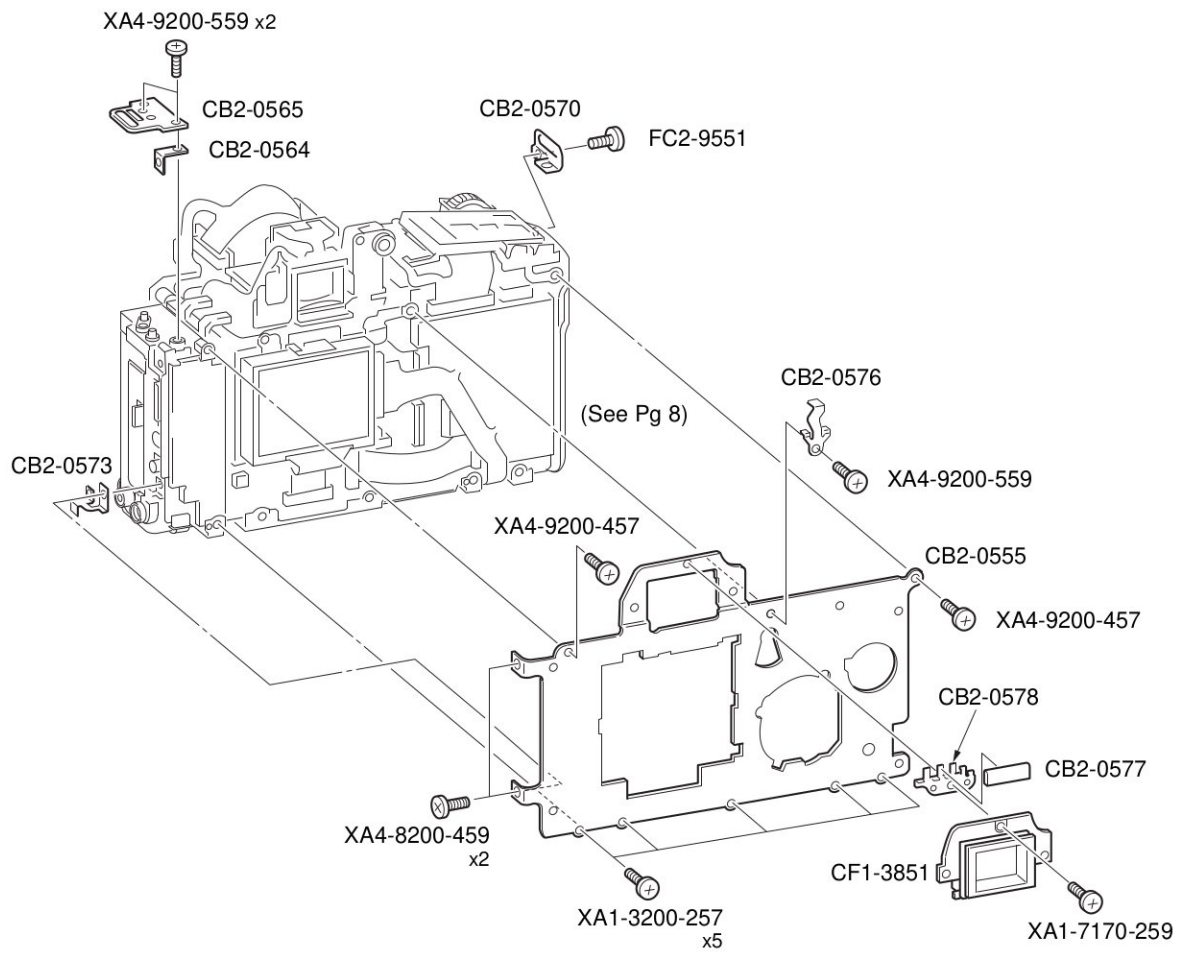
REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|-----|----------|-------|-----|-------------|
| | CB2-0555-000 | C | 1 | FRAME, REAR |
| | CB2-0564-000 | C | 1 | RAG, NECK |
| | CB2-0565-000 | C | 1 | HOLDER, STRAP L |
| | CB2-0570-000 | C | 1 | HOLDER, STRAP R |
| | CB2-0573-000 | C | 1 | RAG, REMOTE |
| | | | | |
| | CB2-0576-000 | C | 1 | RAG, DISPLAY SUPPORT |
| | CB2-0577-000 | C | 1 | SHEET, SHIELD |
| | CB2-0578-000 | C | 1 | HOLDER, SHIELD SHEET |
| | CF1-3851-000 | C | 1 | COVER ASS'Y, EYEPIECE |
| | FC2-9551-000 | C | 1 | SCREW M2X2.5 |
| | | | | |
| | XA1-3200-257 | F | 5 | SCREW M2X2.5 |
| | XA1-7170-259 | F | 1 | SCREW M17X2.5 |
| | XA4-8200-459 | F | 2 | SCREW M2X4.5 |
| | XA4-9200-457 | F | 2 | SCREW M2X4.5 |
| | XA4-9200-559 | F | 3 | SCREW M2X5.5 |

# CANON DIGITAL CAMERA EOS D60

XA4-9170-457
x2

CG2-0774

(See Pg 9)

CG2-0782

CG2-0772        XA4-9170-409

XA4-9170-409
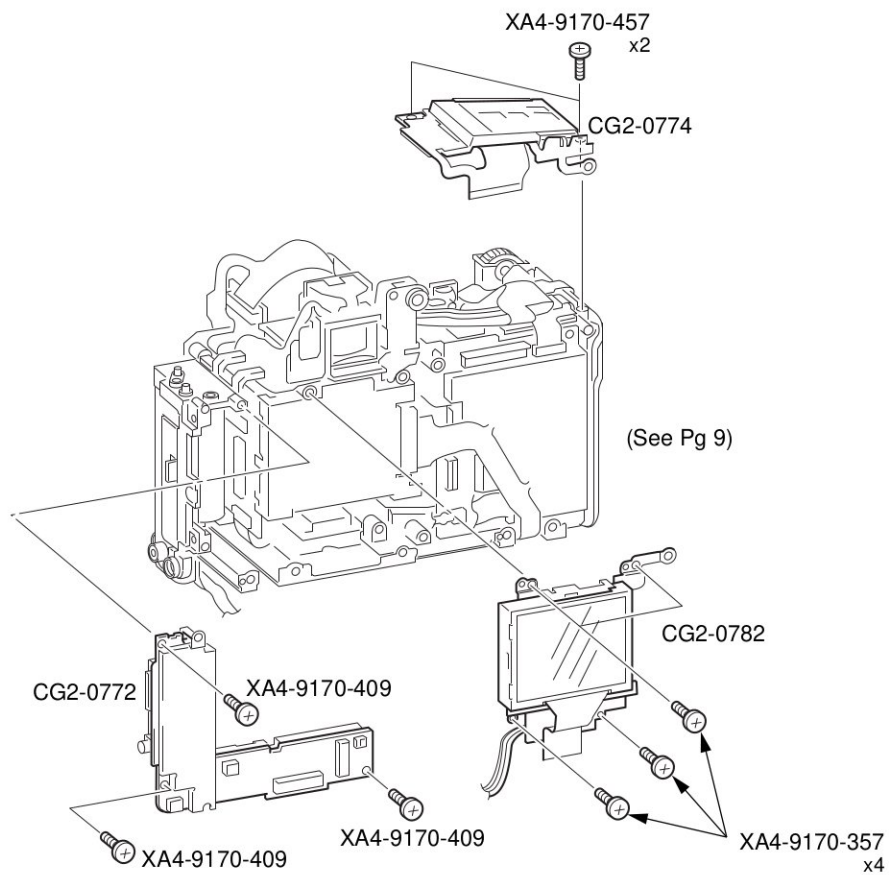
XA4-9170-409

XA4-9170-357
x4

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|-----|----------|-------|-----|-------------|
| * | CG2-0772-000 | C | 1 | PCB ASS'Y, TFT |
| * | CG2-0774-000 | C | 1 | OLC DISPLAY ASS'Y |
| * | CG2-0782-000 | C | 1 | TFT LCD ASS'Y (STN) |
|   | XA4-9170-357 | F | 4 | SCREW M17X3.5 |
|   | XA4-9170-409 | F | 3 | SCREW M17x4 |
|   | XA4-9170-457 | F | 2 | SCREW M17X4.5 |

# CANON DIGITAL CAMERA EOS D60



FC2-9551 x2

CG1-3782

XA4-5170-407

(CG1-1967)

(XA4-5170-407 x2)

N.S

N.S

N.S

XA4-5170
-407

N.S

N.S

N.S

N.S

N.S

CB2-1371

(See Pg 10)

CG1-1968

(CB2-1372)

N.S

N.S

XA1-7170-357 x2

XA4-9170-409

XA1-7170-207 x2

CG2-0773

CH1-6864

XA4-9170-409

CH1-6865

XA4-9170-409

CH1-6863

N.S

CB2-1373

XA1-7200-307
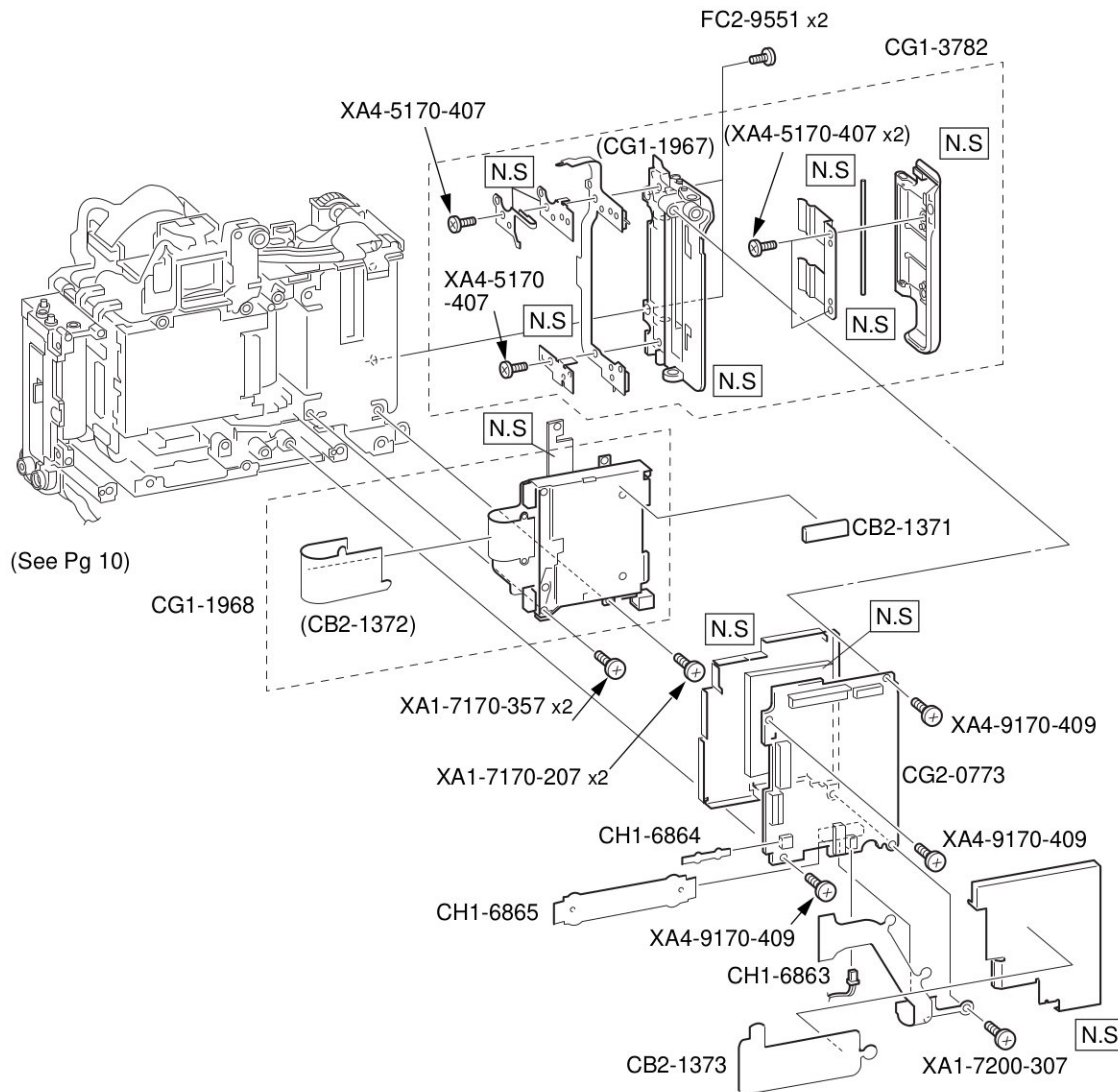
REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|---|---|---|---|---|
| | CB2-1371-000 | C | 1 | CUSHION |
| | CB2-1372-000 | C | 1 | SHEET, SHIELD |
| | CB2-1373-000 | C | 1 | SHEET, SHIELD |
| | CG1-1967-000 | C | 1 | FPC ASS'Y, DOOR DET.SWITCHES |
| | CG1-1968-000 | C | 1 | FPC ASS'Y CF |
| | | | | |
| | CG1-3782-000 | B | 1 | COVER ASS'Y, RIGHT SIDE |
| * | CG2-0773-000 | C | 1 | PCB ASS'Y, DIGITAL |
| | CH1-6863-000 | C | 1 | FPC (ANALOG-DIGITAL) |
| | CH1-6864-000 | C | 1 | FPC (DIGITAL-TFT) |
| | CH1-6865-000 | C | 1 | FPC (DIGITAL-CAMERA MAIN) |
| | | | | |
| | FC2-9551-000 | C | 2 | SCREW M2X2.5 |
| | XA1-7170-207 | F | 2 | SCREW M17X2 |
| | XA1-7170-357 | F | 2 | SCREW M17X3.5 |
| | XA1-7200-307 | F | 1 | SCREW M2X3 |
| | XA4-5170-407 | F | 4 | SCREW M17X4 |
| | | | | |
| | XA4-9170-409 | F | 3 | SCREW M17x4 |

# CANON DIGITAL CAMERA EOS D60

(See Pg 11)

(XA1-7170-309 x2)

CY3-1393

(XA1-7170-309)

(CY3-1392)

(CB2-0670)

XA4-9170-457

CB3-0331

CG2-0771

N.S

XA4-9170-457
x2
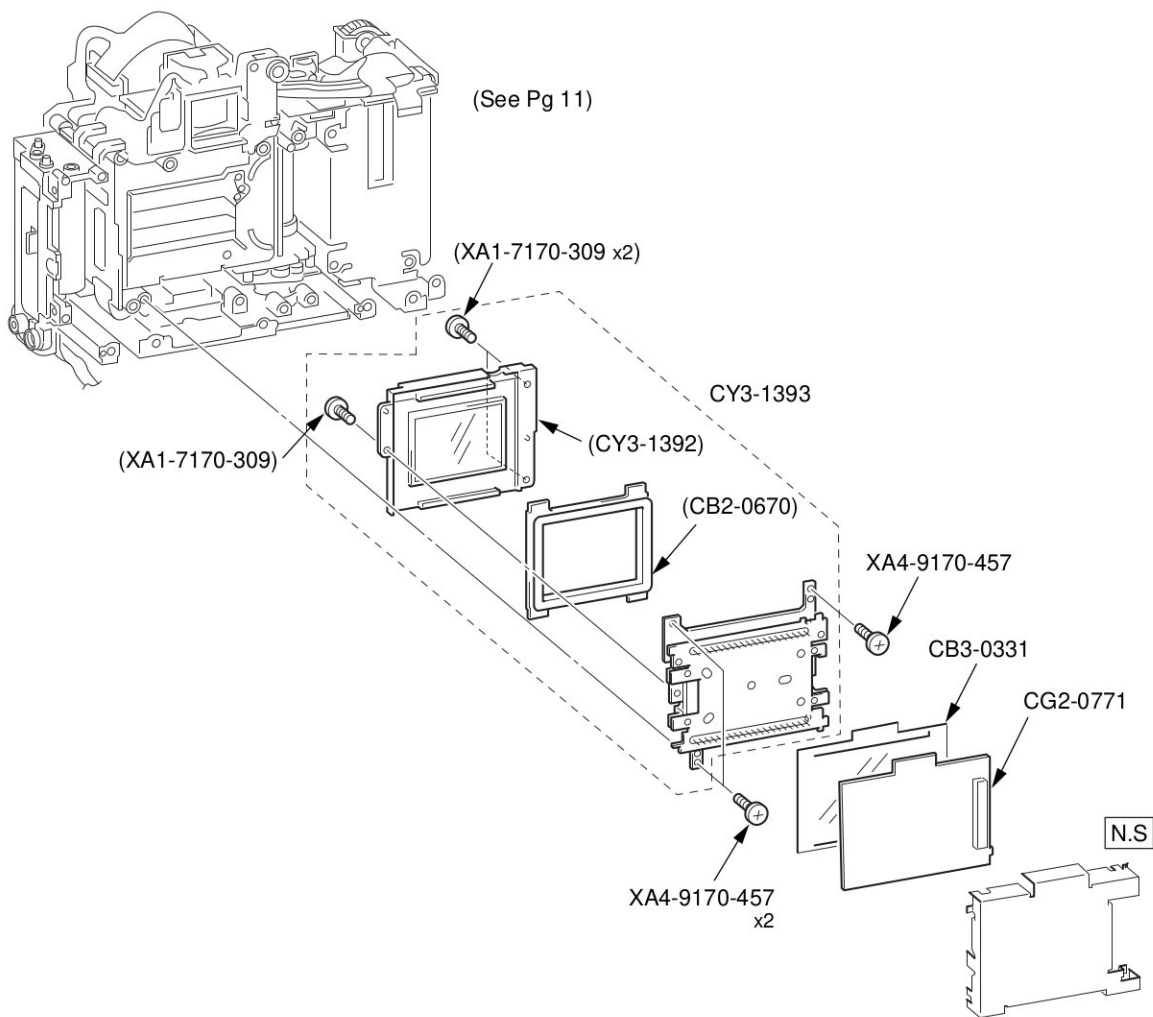
REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|-----|----------|-------|-----|-------------|
|     | CB2-0670-000 | C | 1 | SHIELD, C-MOS RUBBER |
| *   | CB3-0331-000 | C | 1 | SHEET, ANALOG PCB |
| *   | CG2-0771-000 | C | 1 | PCB ASS'Y, ANALOG |
| *   | CY3-1392-000 | C | 1 | FILTER, IR/LPF |
| *   | CY3-1393-000 | C | 1 | C-MOS ASS'Y |
|     |          |   |   |             |
|     | XA1-7170-309 | F | 3 | SCREW M17X3 |
|     | XA4-9170-457 | F | 3 | SCREW M17x4 |

# CANON DIGITAL CAMERA EOS D60

CG1-1964

XA4-9200-457

N.S
XA4-9170-409 x2

CH9-0322

N.S
CB2-0558

CF1-3856

XA4-9170-357

(See Pg 12)

XA4-9200-457
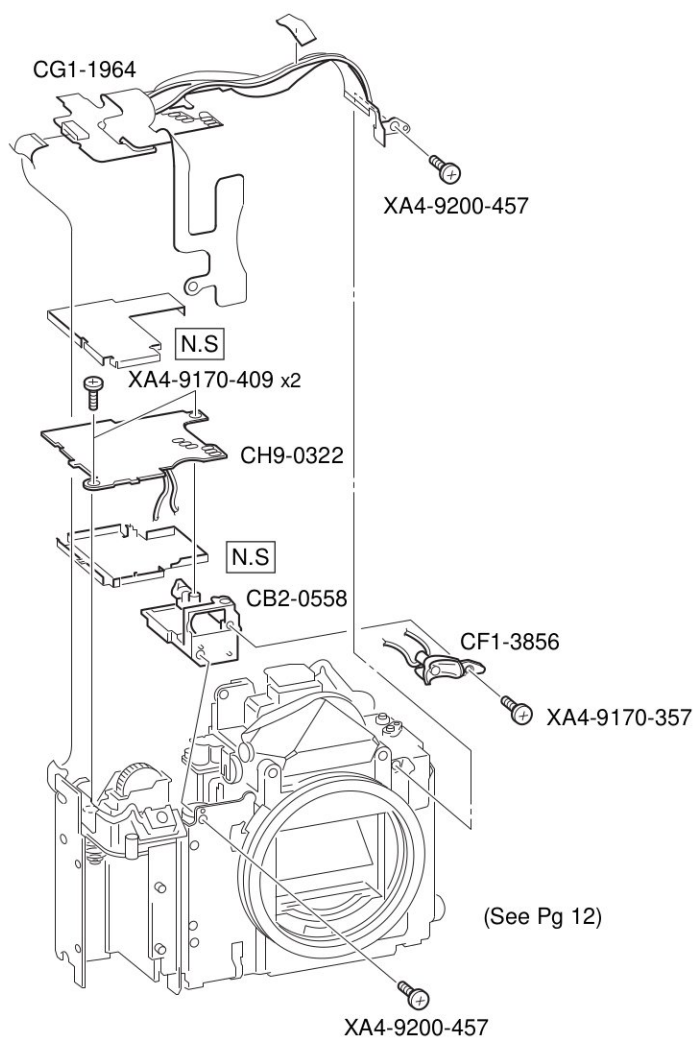
REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|-----|----------|-------|-----|-------------|
| | CB2-0558-000 | C | 1 | BODY, RIGHT |
| | CF1-3856-000 | C | 1 | LAMP ASS'Y, AF SUPPORT |
| | CG1-1964-000 | C | 1 | FPC ASS'Y, MD |
| | CH9-0322-000 | C | 1 | PCB ASS'Y, DC/DC |
| | XA4-9170-357 | F | 1 | SCREW M17X3.5 |
| | XA4-9170-409 | F | 2 | SCREW M17x4 |
| | XA4-9200-457 | F | 2 | SCREW M2X4.5 |

# CANON DIGITAL CAMERA EOS D60

(See Pg 13)

XA4-8200-459
x2

CH1-6870

XA4-9170-357
x2

CB2-0557

CH9-0321

CG1-1970
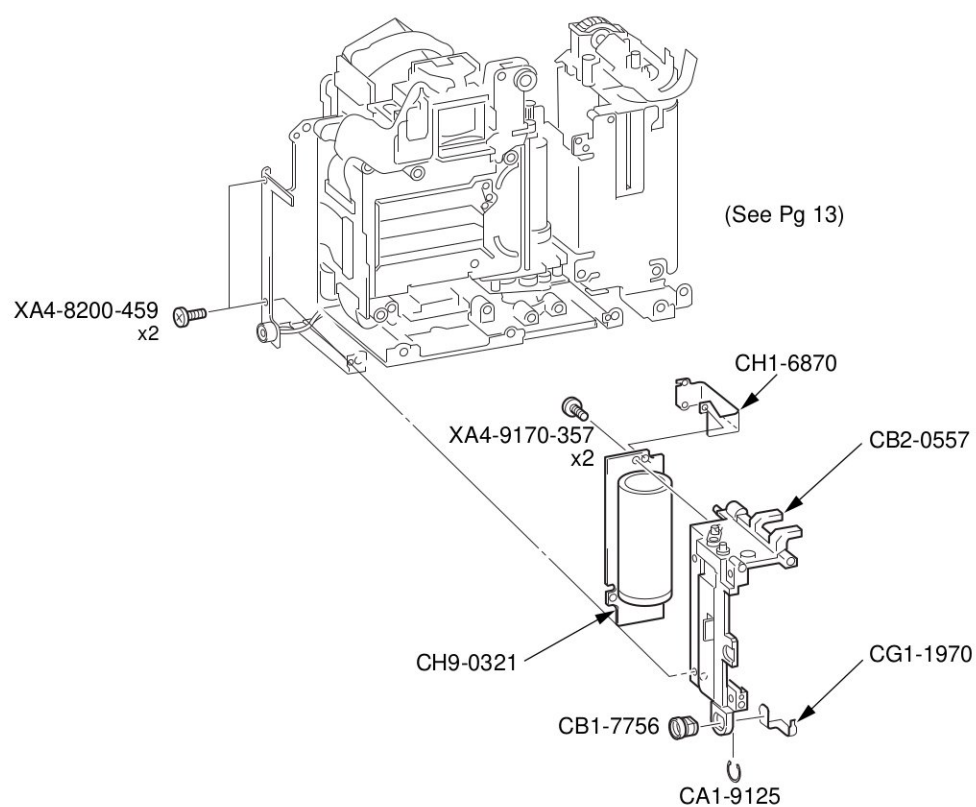
CB1-7756

CA1-9125

# PARTSLIST

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|-----|----------|-------|-----|-------------|
| | CA1-9125-000 | C | 1 | STOPPER, RT CONNECTOR |
| | CB1-7756-000 | C | 1 | CONNECTOR, REMOTE |
| | CB2-0557-000 | C | 1 | BODY, LEFT |
| | CG1-1970-000 | C | 1 | FPC ASS'Y, REMOTE |
| | CH1-6870-000 | C | 1 | FPC (DE-SP LIGHT) |
| | | | | |
| | CH9-0321-000 | C | 1 | PCB ASS'Y, SP LIGHT |
| | XA4-8200-459 | F | 2 | SCREW M2X4.5 |
| | XA4-9170-357 | F | 2 | SCREW M17X3.5 |

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# CANON DIGITAL CAMERA EOS D60

XA1-7170-259 x3

CG1-3779

(XA4-9170-357 x2)

(See Pg 14)

CB2-0571

XA4-9170-457 x3

CB2-0556

XA4-9200-457 x2

CG1-3773

XA4-9170-357

CA1-9007

CB2-0660

CG1-1966

CG1-1965

CB1-0279

CB1-0279

XA4-9200-457 x2

XA4-9170-457

CG1-3781

XA4-9200-457 x4

XA1-7170-207

CB2-0662

CB2-0659

XA4-9170-457

CS3-5064
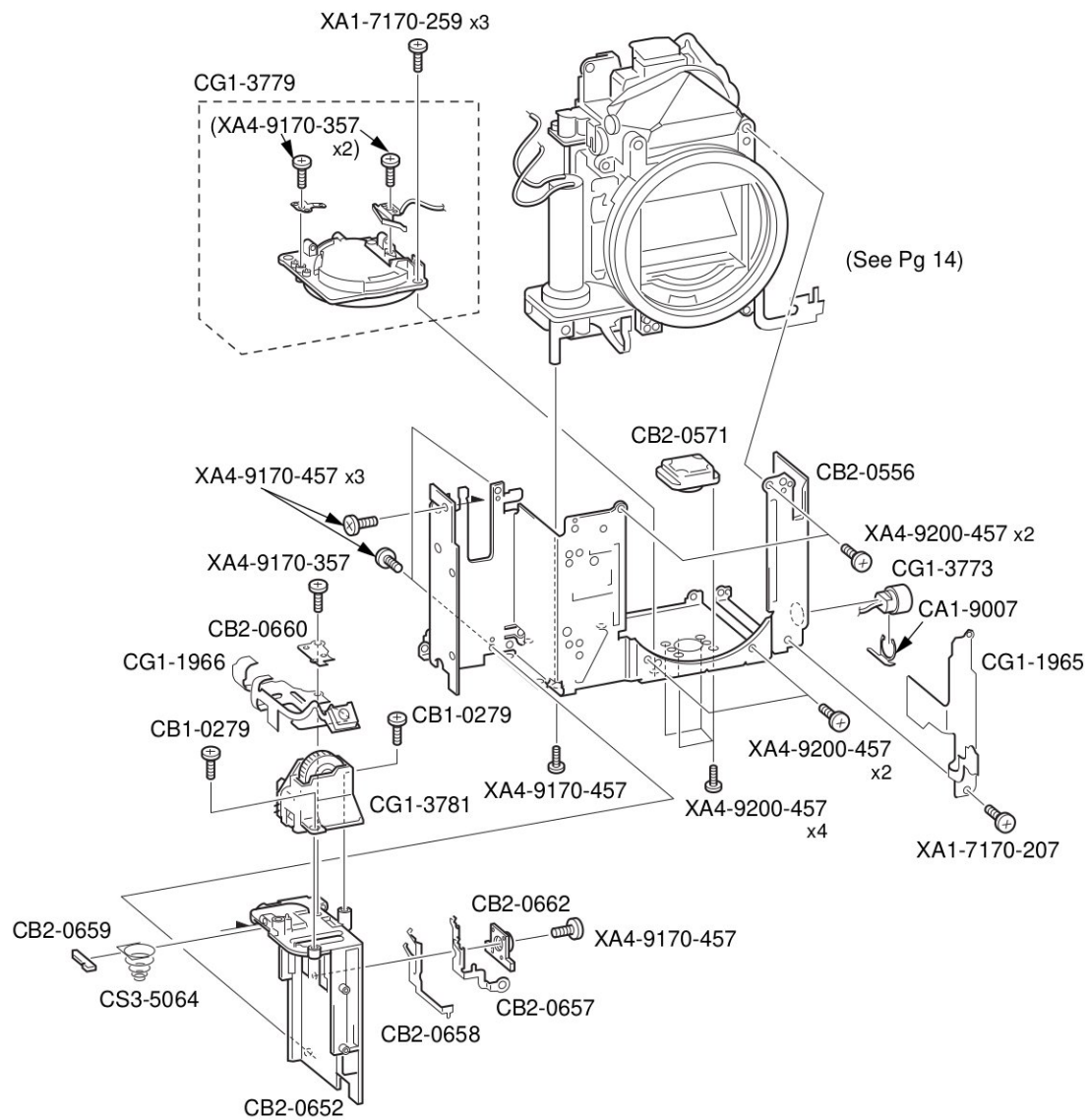
CB2-0657

CB2-0658

CB2-0652

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|-----|----------|-------|-----|-------------|
| | CA1-9007-000 | C | 1 | STOPPER, PC TERMINAL |
| | CB1-0279-000 | C | 2 | SCREW M17X4.5 |
| | CB2-0556-000 | C | 1 | BODY, FRONT |
| | CB2-0571-000 | C | 1 | SOCKET, TRIPOD |
| | CB2-0652-000 | C | 1 | CASE, MAIN BATTERY |
| | | | | |
| | CB2-0657-000 | C | 1 | CONTACT, BATTERY 1 |
| | CB2-0658-000 | C | 1 | CONTACT, BATTERY 2 |
| | CB2-0659-000 | C | 1 | HOLDER, BATTERY SPRING |
| | CB2-0660-000 | C | 1 | PLATE, SW HOLDER |
| | CB2-0662-000 | C | 1 | HOLDER, CONTACT |
| | | | | |
| | CG1-1965-000 | C | 1 | FPC ASS'Y, FRONT |
| | CG1-1966-000 | C | 1 | FPC ASS'Y, RELEASE |
| | CG1-3773-000 | C | 1 | TERMINAL ASS'Y, PC |
| | CG1-3779-000 | C | 1 | CASE ASS'Y, DATE BATTERY |
| | CG1-3781-000 | C | 1 | MAIN DIAL ASS'Y |
| | | | | |
| | CS3-5064-000 | C | 1 | SPRING, COIL |
| | XA1-7170-207 | F | 1 | SCREW M17X2 |
| | XA1-7170-259 | F | 3 | SCREW M17X2.5 |
| | XA4-9170-357 | F | 3 | SCREW M17X3.5 |
| | XA4-9170-457 | F | 5 | SCREW M17X4.5 |
| | | | | |
| | XA4-9200-457 | F | 8 | SCREW M2X4.5 |

# CANON DIGITAL CAMERA EOS D60

CB1-6315

XA4-9170-457 x2

XA4-9170-359

CG2-0761

CH1-6869

CB2-0604

XA4-9170-357

CG1-3798

XA4-9170-509
x2

CG1-3797

XA4-9170-409

CB2-0599

CG2-0776

CG2-0770

XA4-9170-409
x2

(See Pg 15)
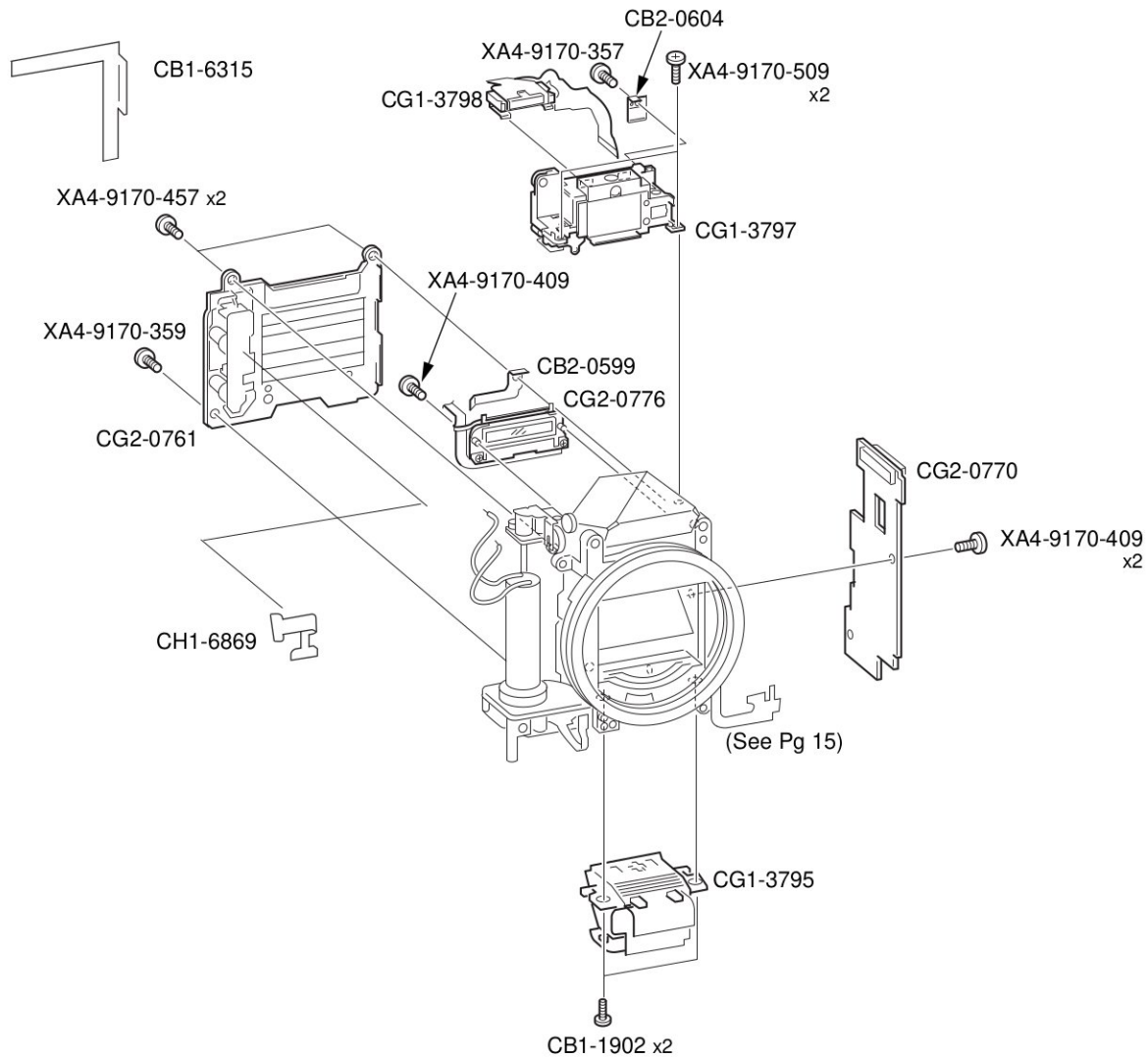
CG1-3795

CB1-1902 x2

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|---|---|---|---|---|
| | CB1-1902-000 | C | 2 | SCREW M17X4 |
| * | CB1-6315-000 | C | 1 | SHEET, SHUTTER SHADE |
| | CB2-0599-000 | C | 1 | SPRING, PLATE |
| | CB2-0604-000 | C | 1 | SPRING, PLATE |
| | CG1-3795-000 | C | 1 | AUTO FOCUS ASS'Y |
| | CG1-3797-000 | C | 1 | EYEPIECE LENS ASS'Y |
| | CG1-3798-000 | C | 1 | SPC SENSOR ASS'Y |
| * | CG2-0761-000 | C | 1 | SHUTTER ASS'Y |
| * | CG2-0770-000 | C | 1 | PCB ASS'Y, CAMERA MAIN |
| * | CG2-0776-000 | C | 1 | VF LCD ASS'Y |
| | CH1-6869-000 | C | 1 | FPC, SHUTTER |
| | XA4-9170-357 | F | 1 | SCREW M17X3.5 |
| | XA4-9170-359 | F | 1 | SCREW M17X3.5 |
| | XA4-9170-409 | F | 3 | SCREW M17x4 |
| | XA4-9170-457 | F | 2 | SCREW M17X4.5 |
| | XA4-9170-509 | F | 2 | SCREW M17X5 |

# CANON DIGITAL CAMERA EOS D60

CY3-1394

CB2-0682 x3 *(See Detail)*

CS2-5020

CF1-1948

CB2-0606

XA4-9170-409 x2

CB2-0715

CS2-7205

CG1-3791

XA4-9170-409 x2

XD1-1102-120
XD1-1102-121
XD1-1102-122
(Service Only)

CB2-0714
*(See Detail)*

YN2-3018

CB1-2659
(Service Only)
*(See Detail)*

CB1-4085
x4

CB2-0622

CA1-7777
CY1-1280 (Service Only)
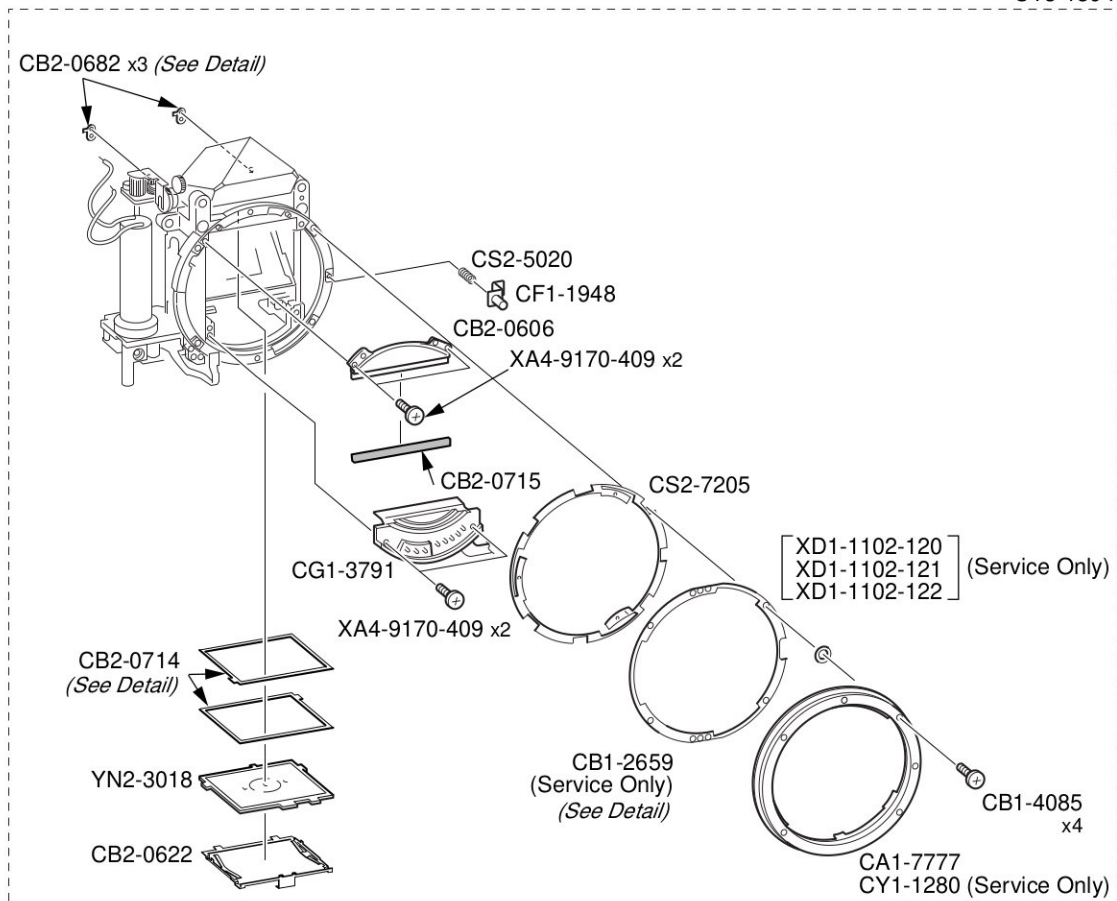
**CB2-0682-000 (XXX) detail**

| | A | SIZE |
|---|---|---|
| A (XXX) | 0.03 mm | (003) |
| | 0.05 mm | (005) |
| | 0.08 mm | (008) |
| | 0.10 mm | (010) |
| | 0.12 mm | (012) |
| | 0.15 mm | (015) |
| | 0.18 mm | (018) |
| | 0.20 mm | (020) |

**CB1-2659-000 (XXX) detail**

| | B | SIZE |
|---|---|---|
| B (XXX) | 0.05 mm | (005) |
| | 0.08 mm | (008) |
| | 0.10 mm | (010) |
| | 0.12 mm | (012) |
| | 0.15 mm | (015) |
| | 0.18 mm | (018) |

**CB2-0714-000 (XXX) detail**

| | C | SIZE |
|---|---|---|
| C (XXX) | 0.05 mm | (005) |
| | 0.10 mm | (010) |
| | 0.15 mm | (015) |
| | 0.20 mm | (020) |
| | 0.25 mm | (025) |
| | 0.30 mm | (030) |
| | 0.35 mm | (035) |
| | 0.40 mm | (040) |
| | 0.45 mm | (045) |
| | 0.50 mm | (050) |

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|-----|----------|-------|-----|-------------|
| | CA1-7777-000 | C | 1 | MOUNT, BODY |
| | CB1-2659-000 (XXX) | C | 1 | SPACER, MOUNT |
| | CB1-4085-000 | C | 4 | SCREW M2X6.5 |
| | CB2-0606-000 | C | 1 | COVER, MIRROR BOX |
| | CB2-0622-000 | C | 1 | SPRING, SCREEN |
| | CB2-0682-000 (XXX) | C | 3 | WASHER, FB ADJ. |
| | CB2-0714-000 (XXX) | C | 1 | WASHER, SCREEN ADJ. |
| | CB2-0715-000 | C | 1 | CUSHION |
| | CF1-1948-000 | C | 1 | LEVER, LENS LOCK |
| * | CG1-3791-000 | C | 1 | CONTACT ASS'Y, LENS MOUNT |
| | CS2-5020-000 | C | 1 | SPRING, COIL |
| | CS2-7205-000 | C | 1 | SPRING, MOUNT |
| | CY1-1280-000 | C | 1 | MOUNT, BODY (0.1mm under) |
| * | CY3-1394-000 | C | 1 | MIRROR BOX ASS'Y |
| | XA4-9170-409 | F | 4 | SCREW M17x4 |
| | XD1-1102-120 | F | 1 | WASHER (0.05mm) |
| | XD1-1102-121 | F | 1 | WASHER (0.1mm) |
| | XD1-1102-122 | F | 1 | WASHER (0.2mm) |
| * | YN2-3018-000 | C | 1 | SCREEN, FOCUSING |

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|---|---|---|---|---|
| * | CH2-7211-000 | C | 1 | LEAD |
| * | CH2-7212-000 | C | 1 | LEAD |
| * | CH2-7213-000 | C | 1 | LEAD |
| * | CH2-7235-000 | C | 1 | LEAD |
|  | Y11-3706-000 | C | 1 | LEAD (ORANGE) |
|  | Y11-3711-000 | C | 1 | LEAD (BLUE) |
|  | Y11-3901-000 | C | 1 | LEAD (WHITE) |
|  | Y11-3902-000 | C | 1 | LEAD (BLACK) |
|  | Y11-3903-000 | C | 1 | LEAD (RED) |
|  | Y11-3906-000 | C | 1 | LEAD (ORANGE) |
|  | Y11-3907-000 | C | 1 | LEAD (YELLOW) |
|  | Y11-3909-000 | C | 1 | LEAD (GREEN) |
|  | Y11-3911-000 | C | 1 | LEAD (BLUE) |
|  | Y11-5002-000 | C | 1 | LEAD (BLACK) |
|  | Y11-5003-000 | C | 1 | LEAD (RED) |
|  | Y11-5004-000 | C | 1 | LEAD (PINK) |

# Accessories Section

**Neck Strap EW-100DB (with eyepiece cover)**
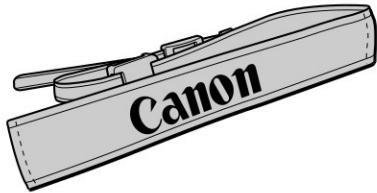
N.S (Product Available)

**Battery Pack BP-511**

N.S (Product Available)

**Compact Power Adapter CA-PS400**
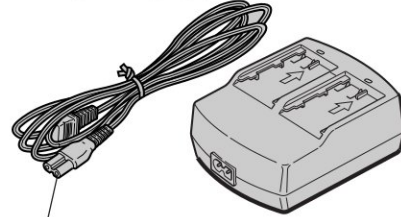
WT3-5062
WT3-5063
WT3-5064
WT3-5115
WT3-5066

N.S (Product Available)

**DC Coupler DR-400**
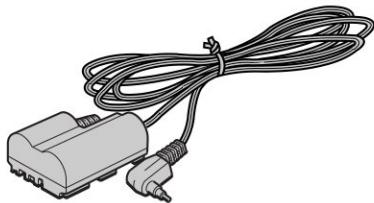
N.S (Product Available)

**CompactFlash Card FC-16M**

N.S (Product Available)

**Interface Cable IFC-200 PCU**
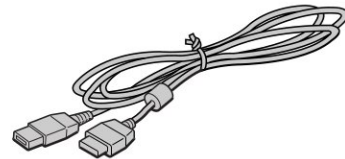
FH6-0775

**Video Cable VC-100**
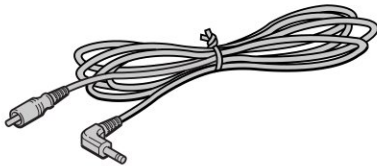
FH6-3922

REF.NO. C12-6011

| NEW | PARTS No | CLASS | QTY | DESCRIPTION |
|---|---|---|---|---|
| | FH6-0775-000 | C | | INTERFACE CABLE IFC-200 PCU |
| | FH6-3922-010 | C | | VIDEO CABLE VC-100 |
| | WT3-5062-000 | C | | CABLE, AC (JPN) |
| | WT3-5063-000 | C | | CABLE, AC (USA) |
| | WT3-5064-000 | C | | CABLE, AC (EUR) |
| | WT3-5066-000 | C | | CABLE, AC (AUSTRALIA) |
| | WT3-5115-000 | C | | CABLE, AC (UK) |

REF.NO. C12-6011

| NEW | PARTS No | PAGE | NEW | PARTS No | PAGE |
|---|---|---|---|---|---|
| | CA1-7777-000 | 15 | | CB2-0629-000 | 4 |
| | CA1-9007-000 | 13 | | CB2-0630-000 | 4 |
| | CA1-9125-000 | 12 | | CB2-0637-000 | 4 |
| | CB1-0279-000 | 13 | | CB2-0639-000 | 4 |
| | CB1-1902-000 | 14 | | CB2-0640-000 | 6 |
| | CB1-2659-000 (XXX) | 15 | | CB2-0652-000 | 13 |
| | CB1-2678-000 | 4 | | CB2-0654-000 | 5 |
| | CB1-4085-000 | 15 | | CB2-0657-000 | 13 |
| * | CB1-6315-000 | 14 | | CB2-0658-000 | 13 |
| | CB1-6578-000 | 2 | | CB2-0659-000 | 13 |
| | CB1-6588-000 | 6 | | CB2-0660-000 | 13 |
| | CB1-6589-000 | 6 | | CB2-0661-000 | 5 |
| | CB1-7756-000 | 12 | | CB2-0662-000 | 13 |
| | CB2-0551-000 | 6 | | CB2-0666-000 | 1 |
| | CB2-0552-000 | 6 | | CB2-0670-000 | 10 |
| | CB2-0554-000 | 6 | | CB2-0680-000 | 1 |
| | CB2-0555-000 | 7 | | CB2-0681-000 | 5 |
| | CB2-0556-000 | 13 | | CB2-0682-000 (XXX) | 15 |
| | CB2-0557-000 | 12 | | CB2-0684-000 | 5 |
| | CB2-0558-000 | 11 | | CB2-0686-000 | 1 |
| | CB2-0560-000 | 6 | | CB2-0687-000 | 5 |
| | CB2-0564-000 | 7 | | CB2-0714-000 (XXX) | 15 |
| | CB2-0565-000 | 7 | | CB2-0715-000 | 15 |
| | CB2-0566-000 | 6 | | CB2-0719-000 | 1 |
| | CB2-0568-000 | 1 | | CB2-0720-000 | 1 |
| | CB2-0570-000 | 7 | | CB2-0721-000 | 3,5 |
| | CB2-0571-000 | 13 | | CB2-0722-000 | 5 |
| | CB2-0573-000 | 7 | | CB2-0723-000 | 5 |
| | CB2-0576-000 | 7 | | CB2-0724-000 | 3 |
| | CB2-0577-000 | 7 | | CB2-0726-000 | 2 |
| | CB2-0578-000 | 7 | | CB2-0727-000 | 2 |
| | CB2-0587-000 | 6 | | CB2-1371-000 | 9 |
| | CB2-0589-000 | 1 | | CB2-1372-000 | 9 |
| | CB2-0599-000 | 14 | | CB2-1373-000 | 9 |
| | CB2-0601-000 | 6 | * | CB3-0329-000 | 1 |
| | CB2-0604-000 | 14 | * | CB3-0331-000 | 10 |
| | CB2-0606-000 | 15 | | CF1-1948-000 | 15 |
| | CB2-0614-000 | 5 | | CF1-3851-000 | 7 |
| | CB2-0615-000 | 5 | | CF1-3855-000 | 1 |
| | CB2-0622-000 | 15 | | CF1-3856-000 | 11 |

REF.NO. C12-6011

| NEW | PARTS No | PAGE | NEW | PARTS No | PAGE |
|---|---|---|---|---|---|
| | CG1-1963-000 | 4 | | CH9-0322-000 | 11 |
| | CG1-1964-000 | 11 | | CS2-5020-000 | 15 |
| | CG1-1965-000 | 13 | | CS2-5656-000 | 6 |
| | CG1-1966-000 | 13 | | CS2-5855-000 | 2 |
| | CG1-1967-000 | 9 | | CS2-7205-000 | 15 |
| | CG1-1968-000 | 9 | | CS3-5064-000 | 13 |
| | CG1-1969-000 | 4 | | CS3-5071-000 | 4 |
| | CG1-1970-000 | 12 | | CS3-6164-000 | 5 |
| | CG1-3773-000 | 13 | | CY1-1280-000 | 15 |
| | CG1-3779-000 | 13 | * | CY3-1390-000 | 1 |
| | CG1-3781-000 | 13 | * | CY3-1392-000 | 10 |
| | CG1-3782-000 | 9 | * | CY3-1393-000 | 10 |
| | CG1-3786-000 | 1 | * | CY3-1394-000 | 15 |
| * | CG1-3791-000 | 15 | | FC2-9551-000 | 7,9 |
| | CG1-3795-000 | 14 | | FH6-0775-000 | 17 |
| | CG1-3797-000 | 14 | | FH6-3922-010 | 17 |
| | CG1-3798-000 | 14 | | WT3-5062-000 | 17 |
| * | CG2-0761-000 | 14 | | WT3-5063-000 | 17 |
| * | CG2-0770-000 | 14 | | WT3-5064-000 | 17 |
| * | CG2-0771-000 | 10 | | WT3-5066-000 | 17 |
| * | CG2-0772-000 | 8 | | WT3-5115-000 | 17 |
| * | CG2-0773-000 | 9 | | XA1-3170-207 | 1 |
| * | CG2-0774-000 | 8 | | XA1-3200-257 | 7 |
| * | CG2-0776-000 | 14 | | XA1-7140-307 | 4 |
| * | CG2-0778-000 | 2 | | XA1-7170-207 | 9,13 |
| * | CG2-0782-000 | 8 | | XA1-7170-259 | 7,13 |
| * | CG2-0783-000 | 4 | | XA1-7170-309 | 10 |
| * | CG2-0786-000 | 6 | | XA1-7170-357 | 9 |
| | CH1-6863-000 | 9 | | XA1-7200-307 | 5,9 |
| | CH1-6864-000 | 9 | | XA1-7200-359 | 2,5 |
| | CH1-6865-000 | 9 | | XA4-5140-357 | 4 |
| | CH1-6869-000 | 14 | | XA4-5170-407 | 9 |
| | CH1-6870-000 | 12 | | XA4-6170-409 | 6 |
| | CH2-5298-000 | 6 | | XA4-8200-459 | 7,12 |
| | CH2-5299-000 | 6 | | XA4-9170-357 | 6,8,11,12,13,14 |
| * | CH2-7211-000 | 16 | | XA4-9170-359 | 14 |
| * | CH2-7212-000 | 16 | | XA4-9170-409 | 4,5,8,9,11,14,15 |
| * | CH2-7213-000 | 16 | | XA4-9170-457 | 8,10,13,14 |
| * | CH2-7235-000 | 16 | | XA4-9170-509 | 5,6,14 |
| | CH9-0321-000 | 12 | | XA4-9200-457 | 6,7,11,13 |

REF.NO. C12-6011

| NEW | PARTS No | PAGE | NEW | PARTS No | PAGE |
|---|---|---|---|---|---|
| | XA4-9200-559 | 7 | | | |
| | XD1-1102-120 | 15 | | | |
| | XD1-1102-121 | 15 | | | |
| | XD1-1102-122 | 15 | | | |
| | XD2-1100-132 | 4,6 | | | |
| | XD2-1100-172 | 2 | | | |
| | XG8-1100-591 | 4 | | | |
| | Y11-3706-000 | 16 | | | |
| | Y11-3711-000 | 16 | | | |
| | Y11-3901-000 | 16 | | | |
| | Y11-3902-000 | 16 | | | |
| | Y11-3903-000 | 16 | | | |
| | Y11-3906-000 | 16 | | | |
| | Y11-3907-000 | 16 | | | |
| | Y11-3909-000 | 16 | | | |
| | Y11-3911-000 | 16 | | | |
| | Y11-5002-000 | 16 | | | |
| | Y11-5003-000 | 16 | | | |
| | Y11-5004-000 | 16 | | | |
| * | YN2-3018-000 | 15 | | | |

# Part 6

# Circuit Diagrams

# 1. WIRING DIAGRAM

REF.NO. C 12-6011

| No. | PARTS NO. | REMARK | SIZE |
|---|---|---|---|
| ① | Y11-3706 | ORANGE : ORG | φ0.8 |
| ② | Y11-3711 | BLUE : BLU | φ0.8 |
| ③ | Y11-3901 | WHITE : WHT | φ0.6 |
| ④ | Y11-3902 | BLACK : BLK | φ0.6 |
| ⑤ | Y11-3903 | RED : RED | φ0.6 |
| ⑥ | Y11-3906 | ORANGE : ORG | φ0.6 |
| ⑦ | Y11-3907 | YELLOW : Y | φ0.6 |
| ⑧ | Y11-3911 | BLUE : BLU | φ0.6 |
| ⑨ | Y11-3914 | GRAY : GRY | φ0.6 |
| ⑩ | Y11-5002 | BLACK : BLK | φ1.2 |
| ⑪ | Y11-5004 | PINK : PNK | φ1.2 |
| ⑫ | CH2-7211 | RED&BLACK | - |
| ⑬ | CH2-7212 | 2RED&BLACK | - |
| ⑭ | CH2-7213 | YELLOW &BLACK | TWIST |
| ⑮ | CH2-7235 | YELLOW &BLACK | TWIST |
| ⑯ | Y11-3909 | GREEN:GRN | φ0.6 |
| ⑰ | Y11-5003 | RED:RED | φ1.2 |

FLASH
MODE DIAL
SPDNSW
FRONT FPC
TOP FPC
MIF FPC
CONTACT
MIF SW
LUG PLATE
POPCTR SW
POPUP SW
ST-END FPC
STR FPC
AF SUPPORT LAMP
STUPSW
MD FPC
AF SUPPORT LAMP
CNBRM
PHASE FPC
MOTOR
MAIN DIAL
RLS SW
RLS FPC
COUPLER SW
SP LIGHT P.C.B.
ILC
ILC FPC
CN ILC
CN ILC
AE SENSOR
EF IC
SENS FPC
CN SENS
CN FRONT
C-MAIN P.C.B.
CN BA
AF SENSOR
WIRING DIAGRAM
SHUTTER ASS'Y
SH FPC
OLC ASS'Y
DRIVE
WB
AF
OLC
CN1
DRIVER
TP5 TP6
TP4
CN101
DC/DC P.C.B.
MAIN BATTERY TERMINAL
CF FPC CN1
CF SLOT
CF DOOR
DRSW FPC
BAT DOOR
TFT LCD ASS'Y
A P.C.B.
CN5001
C MOS SENSOR
CN3
CN2
CN8
CN4
CN6
CN7
CN9
D P.C.B.
CN5
CN6
TFT P.C.B.
CN4
CN2
CN7
CN1
CN3
D-T06 FPC
D-T33 FPC
D-A32 FPC
DATE BATTERY
ACCESS LAMP
BUZZER
OFF ON
BZ FPC
OFF ON
BACK FPC
MENU
INFO.
JUMP
PC TERMINAL
S1
S2
RMCN FPC

01  APR., 2002

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## GENERAL BLOCK

⇨ : DATA COMMUNICATION
— : ANALOG IMAGE SIGNAL
— : DIGITAL IMAGE SIGNAL



**TOP FPC**
- ACC. SHOE
- SW

FLASH

**MD FPC**

AF SUPPORT LAMP

**RLS FPC**
- SW

**FRONT FPC**
- SW

**DRSW FPC**
- SW

MIF / MIF SW

DRIVER

PHASE FPC
- PHASE SW

SHUTTER UNIT

**SENS FPC**
- AE SENSOR
- EF SENSOR
- AF SENSOR

POWER

**DC/DC P.C.B.**
- DC/DC CONVERTER
- FUSE

BATTERY TERMINAL

**SP LIGHT P.C.B.**
- CHARGE CIRCUIT
- SPI

**C-MAIN P.C.B.**
- MPU H12

**ILC FPC**
- ILC

**A P.C.B.**
- C.MOS SENSOR
- AMP
- A/D
- EF LENS
- DRIVER
- TG

**BA FPC**

POWER

**D P.C.B.**
- SDRAM
- DSP
- CPU V30
- FLASH MEMORY
- RTC

**CF FPC**
- CF SLOT
- CF CARD

**BZ FPC**
- BUZZER
- SW
- ACCESS LAMP

**TFT P.C.B.**
- DIGITAL TERMINAL
- VIDEO TERMINAL
- VIDEO AMP

**LCD UNIT**
- BACK LIGHT
- LCD DRIVER

USB

VIDEO OUT

PC TERMINAL

**RMC FPC**
- RMC TERMINAL

DATE BATT.

EL

**OLC UNIT**
- SW
- OLC

**BACK FPC**
- SW

# POWER SUPPLY BLOCK

# 3. P.C.B DIAGRAM

A P.C.B. _SIDE A

A P.C.B. _SIDE B

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C-MAIN P.C.B. _SIDE A

C-MAIN P.C.B. _SIDE B

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REF.NO. C12-6011

D P.C.B. _SIDE A

D P.C.B. _SIDE B

01  APR., 2002

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REF.NO. C12-6011

TFT P.C.B. _SIDE A

TFT P.C.B._SIDE B

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EL F.P.C.

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ILC F.P.C.

SI_L_A
SI_L_K
SI_C_A
SI_C_K
SI_R_A
SI_R_K

RS13
RS12
RS11

PGND2
PGND
VBAT3

CVBAT

FLEDK

ILC
CH1687
02

COM0
COM1
COM2
COM3
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
SEG16
SEG17
ILC SEG

APR., 2002

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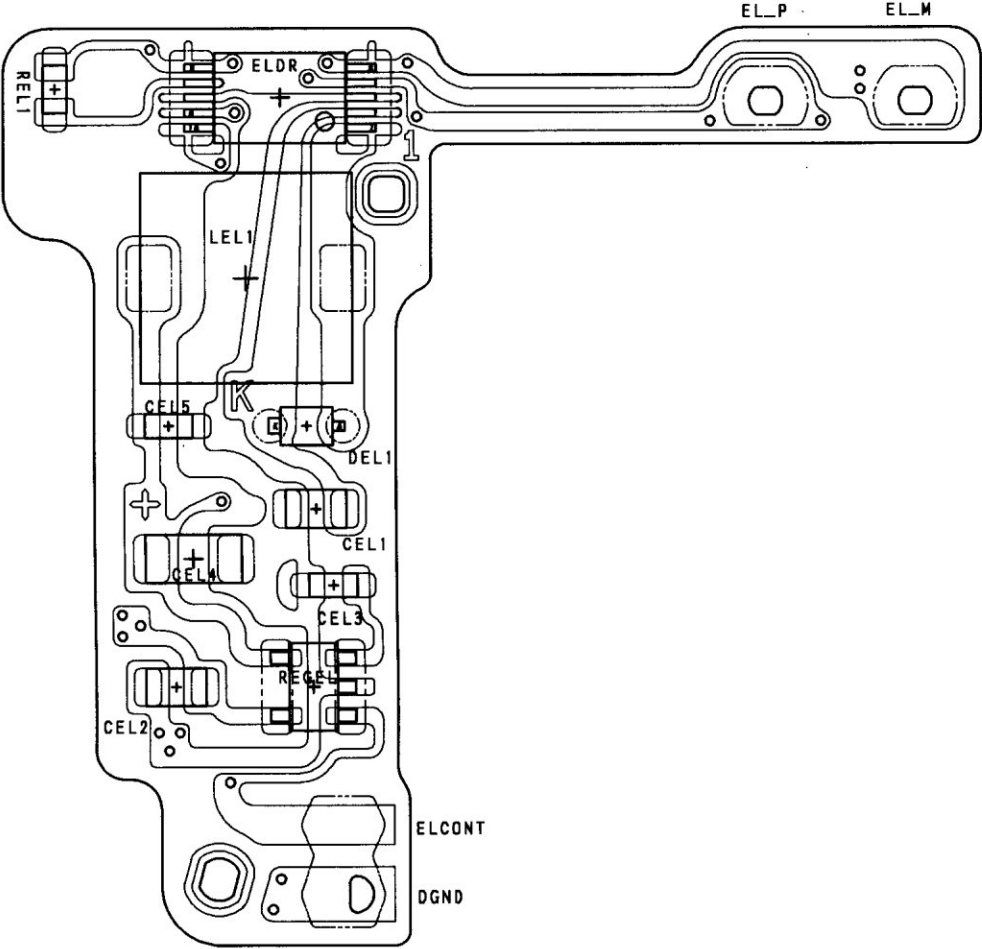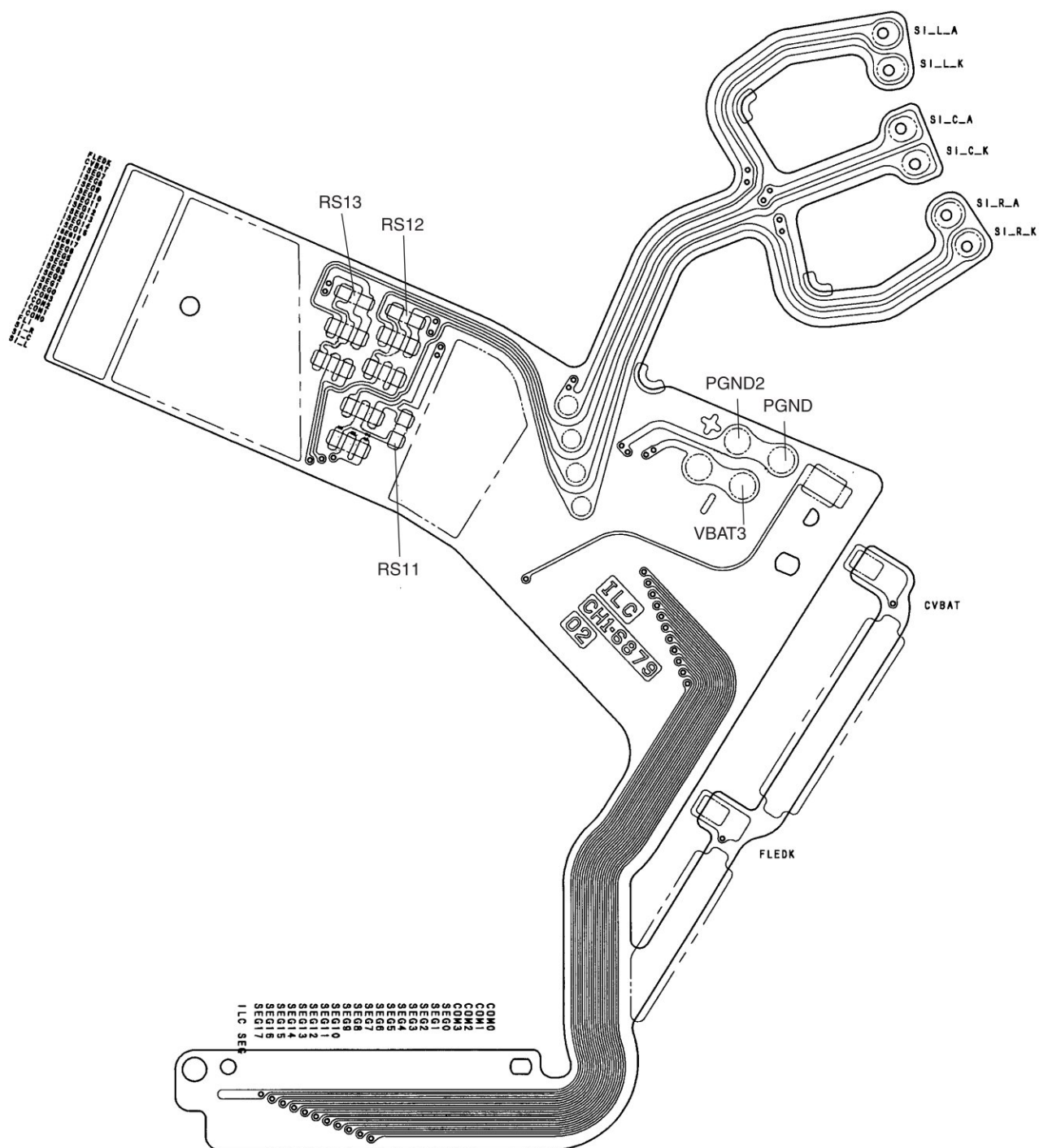
# Part 7

## Software Information

# 1. GENERAL INFORMATION

## 1.1 Product Overview

The software for the EOS D60 consists of the applications listed below (Table 1) and is provided on the enclosed Windows/Macintosh hybrid CD-ROM.

Adobe Photoshop 5.0 LE CD-ROM (in 9 languages) is also enclosed as image retouching software that is compatible with the TWAIN Driver/Plug-In Module.

These software applications are compatible with the EOS D60, EOS-1D and EOS D30 cameras.

However, note that only the EOS D60 supports Windows XP. Windows XP support on the EOS-1D and EOS D30 is under consideration.

Support for Mac OS X will be provided as an after-sales upgrade.

| Operating System | Windows version | Mac OS version |
|---|---|---|
| | TWAIN Driver | Plug-In Module |
| | WIA Driver | USB Mounter |
| | RAW Image Converter | RAW Image Converter |
| Software type | RemoteCapture | RemoteCapture |
| | ZoomBrowser EX | ImageBrowser |
| | PhotoRecord | |
| | PhotoStitch | PhotoStitch |

Table 7-1 EOS D60 Software Configuration

## 1.2 Compatible Operating Systems and Computer Environments

Table 7-2 shows the compatible operating systems and computer environments. The EOS D60 software will support 6 languages (Japanese, English, French, German, Italian and Spanish) and will be provided in 3 versions on separate CD-ROMs (Japanese-English, English-French-Spanish, and English-German-Italian).

| Platform | Windows | | Macintosh | |
|---|---|---|---|---|
| Computer | IBM PC/AT-compatible machine with OHCI-compliant USB port | | Macintosh computer with USB port as standard | |
| CPU | Windows 98 SE/Me/2000: 150 MHz Pentium or better<br>Windows XP: 300 MHz Pentium or better | | Power PC | |
| Operating system | Windows 98 SE/Me/2000/XP<br>* Pre-installed systems only | | Mac OS 8.6 to 9.2<br>(9.0 or later recommended)<br>* USB Mounter requires Mac OS 9.0 or later | |
| RAM | Windows 98 SE/Me/2000: 64 MB or better<br>Windows XP: 128 MB or better | | Minimum 64 MB assigned as program memory (128 MB or better recommended) | |
| Interface | USB | | | |
| Available hard disk space (MB/or better) | TWAIN Driver | 30 | Plug-In Module | 20 |
| | WIA Driver | 30 | USB Mounter | 5 |
| | RAW Image Converter | 30 | RAW Image Converter | 20 |
| | RemoteCapture | 20 | RemoteCapture | 15 |
| | ZoomBrowser EX<br>PhotoRecord | 120 | ImageBrowser | 20 |
| | PhotoStitch | 40 | PhotoStitch | 30 |
| Display | Min. 800 × 600 dots, 256 (8-bit) colors,<br>1024 × 768 dots, High Color (16-bit) recommended | | Min. 800 × 600 dots, 256 colors,<br>1024 × 768 dots, 32,000 colors recommended | |
| Other | CD-ROM drive required for installation. | | | |

Table 7-2 Compatible Operating Systems and Computer Environments

## 1.3 Connecting the EOS D60 to the Computer

The EOS D60 connects to the computer by means of a USB connection (ver. 1.1, transfer speed: 10 Mbps) using the dedicated interface cable provided. Images can also be downloaded to the computer by a card reader.
*  At present, images captured with the EOS-1D and EOS D30 can only be downloaded to the computer by a card reader.

## 1.4 EOS D60 Software Overview

### 1) For Windows

• TWAIN Driver

This driver complies with the TWAIN standard and runs on Windows 98 SE and Windows 2000. This driver allows the user to connect the EOS D60 to a computer using the interface cable provided and then display and download images saved on a CF card in the EOS D60 and process the RAW images. The main driver functions are listed in the table below.

\* This driver can only be launched from a software application that supports TWAIN functions (such as Photoshop LE).

| Function | Compatible Cameras | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | EOS D60 | | EOS D30 | | EOS-1D | |
| | JPEG | RAW | JPEG | RAW | JPEG | RAW |
| Rotate image | ○ | ○ | ○ | ○ | ○ | ○ |
| Protect image | ○ | ○ | ○ | ○ | ○ | ○ |
| Erase image | ○ | ○ | ○ | ○ | ○ | ○ |
| Set checkmarks | ○ | ○ | ○ | ○ | ○ | ○ |
| Transfer image | ○ | ○ | ○ | ○ | ○ | ○ |
| Save image | ○ | ○ | ○ | ○ | ○ | ○ |
| Input comment | ○ | ○ | ○ | ○ | ○ | ○ |
| Show image information | ○ | ○ | ○ | ○ | ○ | ○ |
| Set IPTC information | — | — | — | — | ○ | ○ |
| Show AF frame | — | — | — | — | ○ | ○ |
| Play back sound | — | — | — | — | ○ | ○ |
| Extract JPEG | — | ○ | — | — | — | — |
| Digital exposure compensation | — | ○ | — | — | — | ○ |
| Set white balance | — | ○ | — | ○ | — | ○ |
| Set color temperature | | — | — | — | — | ○ |
| Click white balance | — | ○ | — | ○ | — | ○ |
| Save white balance data | — | — | — | — | — | ○ |
| Contrast | — | ○ | — | ○ | — | — |
| Color density | — | ○ | — | ○ | — | — |
| Color balance | — | ○ | — | — | — | — |
| Adjust tone curve | — | — | — | — | — | ○ |
| Color matrix | — | — | — | — | — | ○ |
| Camera setting functions — Basic settings | ○ | | ○ | | ○ | |
| Camera setting functions — Personal functions | — | | — | | ○ | |
| Camera setting functions — Processing parameters | \*— | | ○ | | ○ | |
| Camera setting functions — Custom white balance | — | | — | | ○ | |

\* With the EOS D60, the processing parameters can be set on the camera itself.

Table 7-3 Main TWAIN Driver Functions

- WIA Driver

  This driver complies with the Microsoft WIA (Windows Image Acquisition) standard and runs on Windows Me and Windows XP. This driver allows the user to connect the EOS D60 to a computer using the interface cable provided and then access the camera in the same way as a removable disk. The "Scanners and Cameras Wizard" or the Microsoft Explorer can then be used to quickly and easily display the images on a CF card and download the images to the computer.

  RAW images can be processed by selecting the RAW images from the window and launching RAW Image Converter.

- RAW Image Converter

  This is a standalone utility that allows you to display images copied from any disk drive and process RAW images.

  However, because RAW Image Converter is a standalone utility, it provides no camera settings functions or image transfer functions. In all other respects, it offers the same functionality and window design as the TWAIN Driver.

- ZoomBrowser EX

  This is an image displaying and image management utility. Its main functions conform to the products supplied with the latest PowerShot series cameras.

  RAW images can be processed by selecting the RAW images from the window and launching RAW Image Converter.

  The Japanese version of ZoomBrowser EX includes a CIG (Canon Image Gateway) access function.

- PhotoRecord

  This is a layout and printing utility. Used in conjunction with ZoomBrowser EX, PhotoRecord provides functions such as automatic layout printing and index printing. Its main functions conform to the products supplied with the latest PowerShot series cameras.

- RemoteCapture

  This utility allows users to control the camera from a computer and to download images directly from the camera to a computer. As well as shooting single images, RemoteCapture can take pictures using a timer or interval timer. Its main functions conform to the products supplied with the EOS-1D.

- PhotoStitch

  This is a utility for merging images. It can be used to merge multiple images into a single image with great precision and is ideal for creating panorama shots. Its main functions conform to the products supplied with the latest PowerShot series cameras.

## 2) For Macintosh

- Photoshop Plug-In Module
  - This plug-in module provides the same functionality as the Windows TWAIN Driver for Camera.
  - \* This driver can only be launched from software application that supports plug-in functions (such as Photoshop LE).
- USB Mounter
  - This is a utility that mounts a EOS D60 camera connected using the enclosed interface cable as a read-only removable disk on the desktop. Images shot
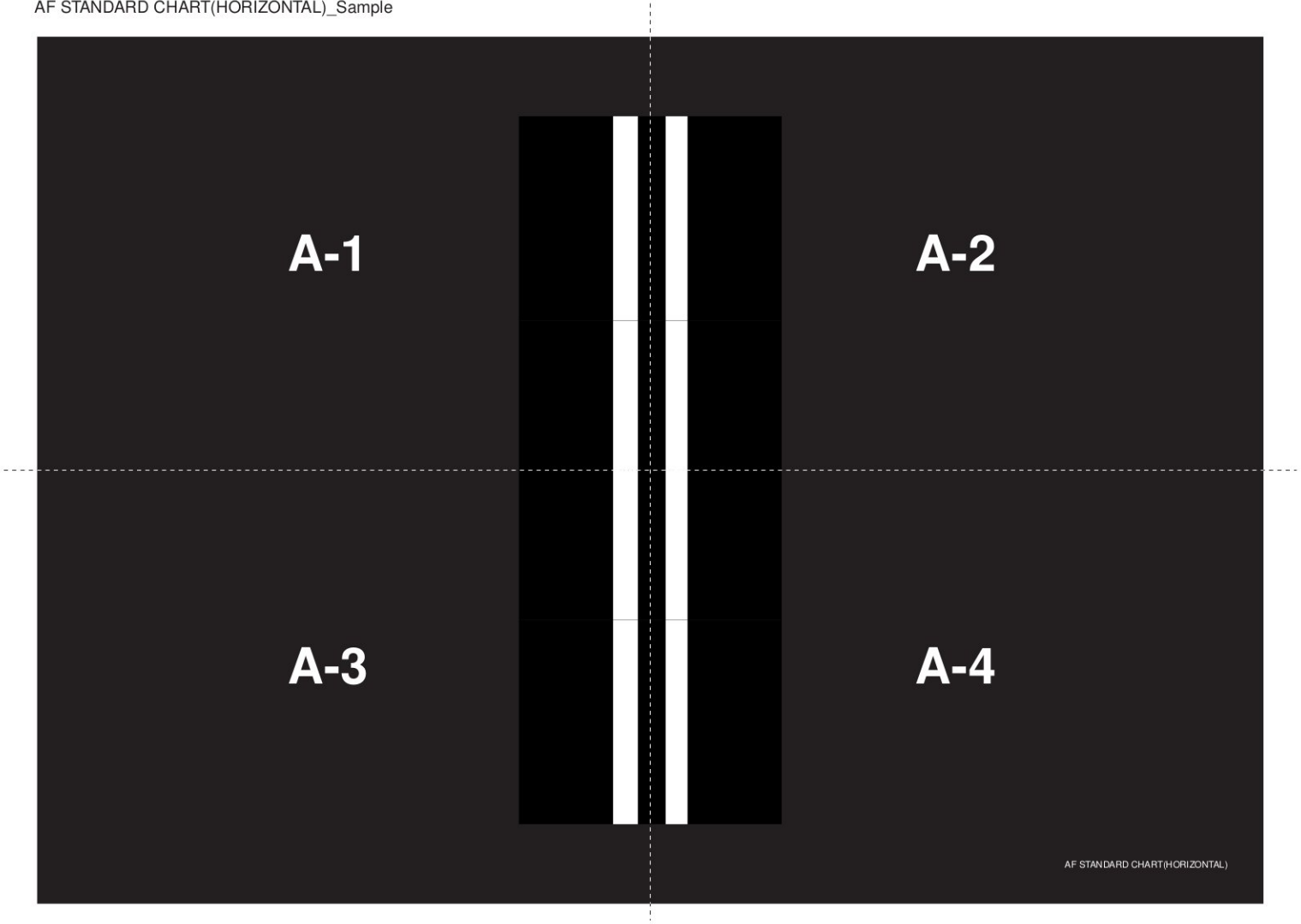
using the EOS D60 can then be easily copied to the Macintosh's hard disk.
- RAW Image Converter
  - Macintosh version of RAW Image Converter for Windows.
- Image Browser
  - This is an image displaying and image management utility that provides the same functions as ZoomBrowser EX for Windows.
  - This software also provides the same functions as the PhotoRecord layout and printing utility for Windows.
- RemoteCapture
  - Macintosh version of RemoteCapture for Windows.
- PhotoStitch
  - Macintosh version of PhotoStitch for Windows.

# *Appendix*

AF STANDARD CHART(HORIZONTAL)_Sample

**A-1**

**A-2**

**A-3**

**A-4**

AF STANDARD CHART(HORIZONTAL)

A-1

AF STANDARD CHART(HORIZONTAL)

(Print size : A3)

Cutting line

Cutting
line

Cutting
line

AF STANDARD CHART(HORIZONTAL)

(Print size : A3)

(Print size : A3)

Cutting
line

Cutting
line

Cutting
line

A-3

AF STANDARD CHART(HORIZONTAL)

(Print size : A3)

AF STANDARD CHART(HORIZONTAL)

A-4

AF STANDARD CHART(VERTICAL)_Sample

**A-1**

**A-2**

**A-3**

**A-4**

AF STANDARD CHART(VERTICAL)

A-1

AF STANDARD CHART(VERTICAL)

(Print size : A3)

A-2

AF STANDARD CHART(VERTICAL)

(Printsize : A3)

AF STANDARD CHART(VERTICAL)    (Print size : A3)

A-3

AF STANDARD CHART(VERTICAL)

(Print size : A3)

AF STANDARD CHART(VERTICAL)

A-4
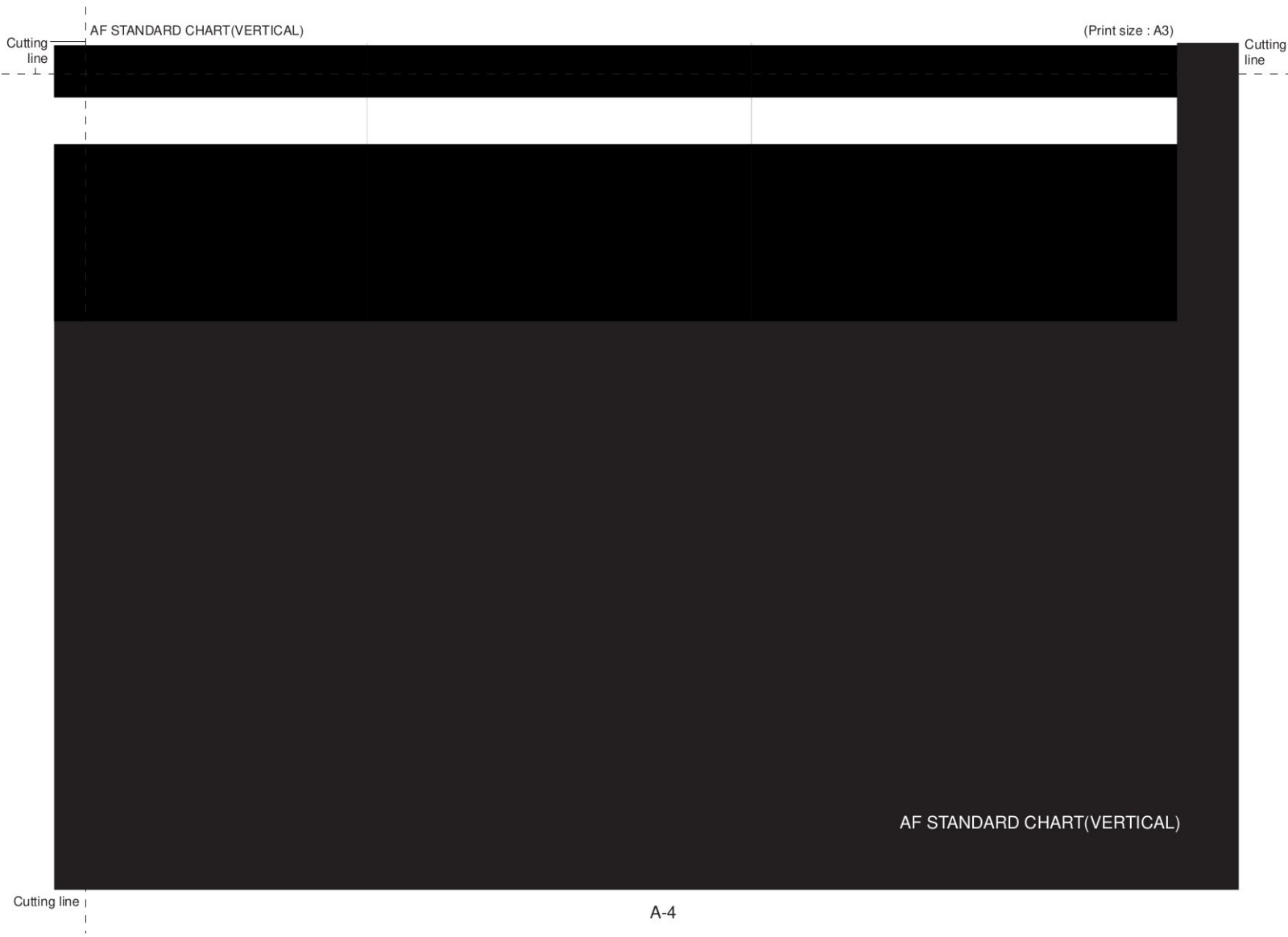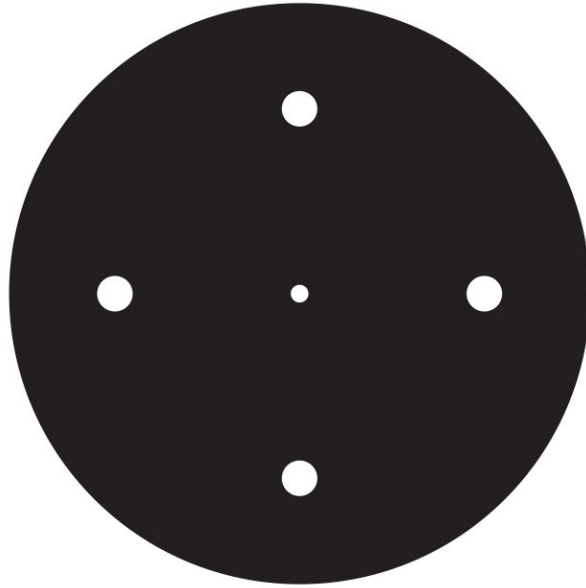
SPC position setting mask



ø 57mm

ø 4-6mm

ø 2-3mm
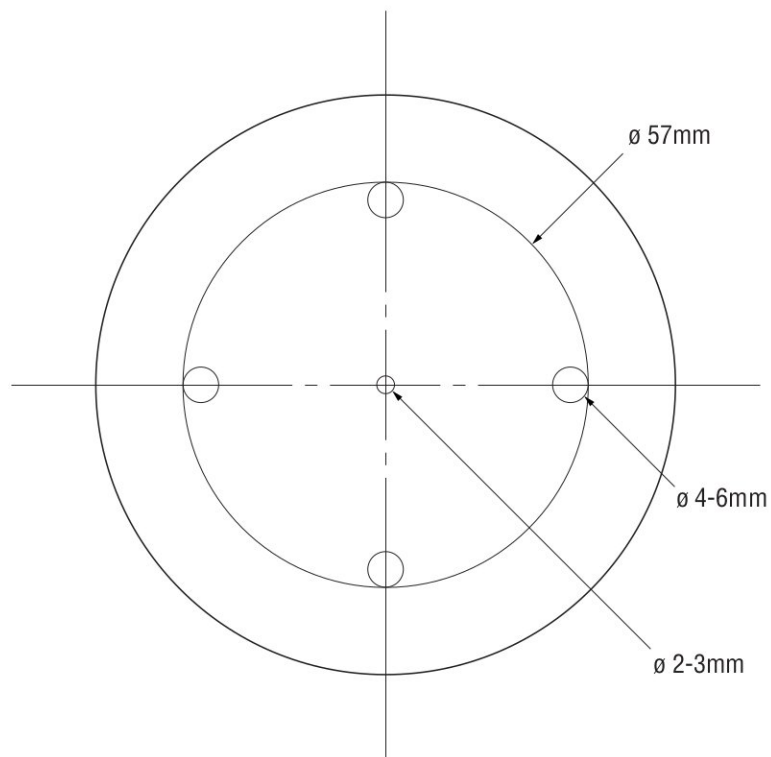
Print size checker

CUT

-40

-50
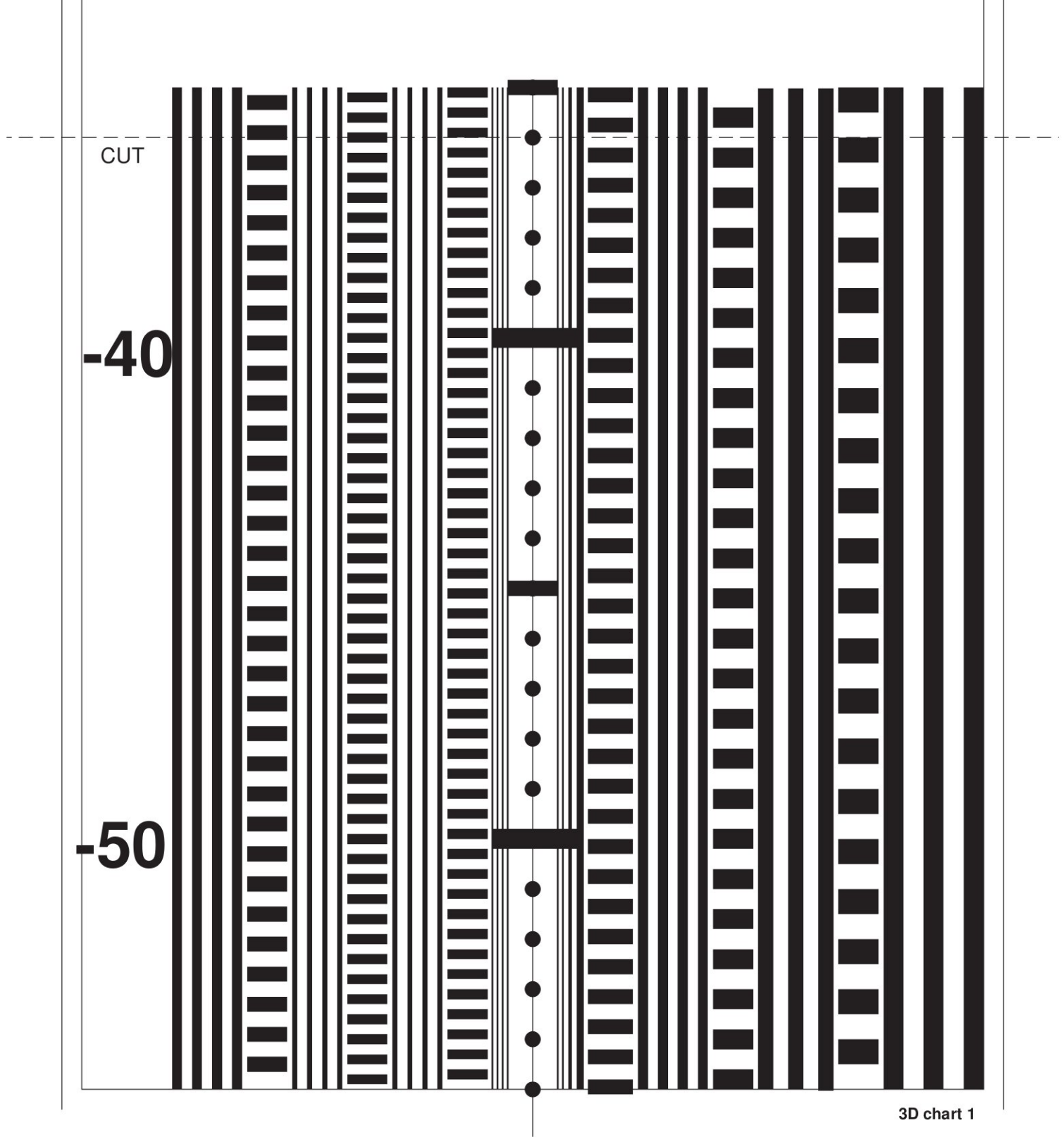
3D chart 1

**-20**

**-30**

CUT

**3D chart 2**

+10

0

-10

CUT

**3D chart 3**

+30

+20

**3D chart 4**

**+60**

**+50**

**+40**

CUT
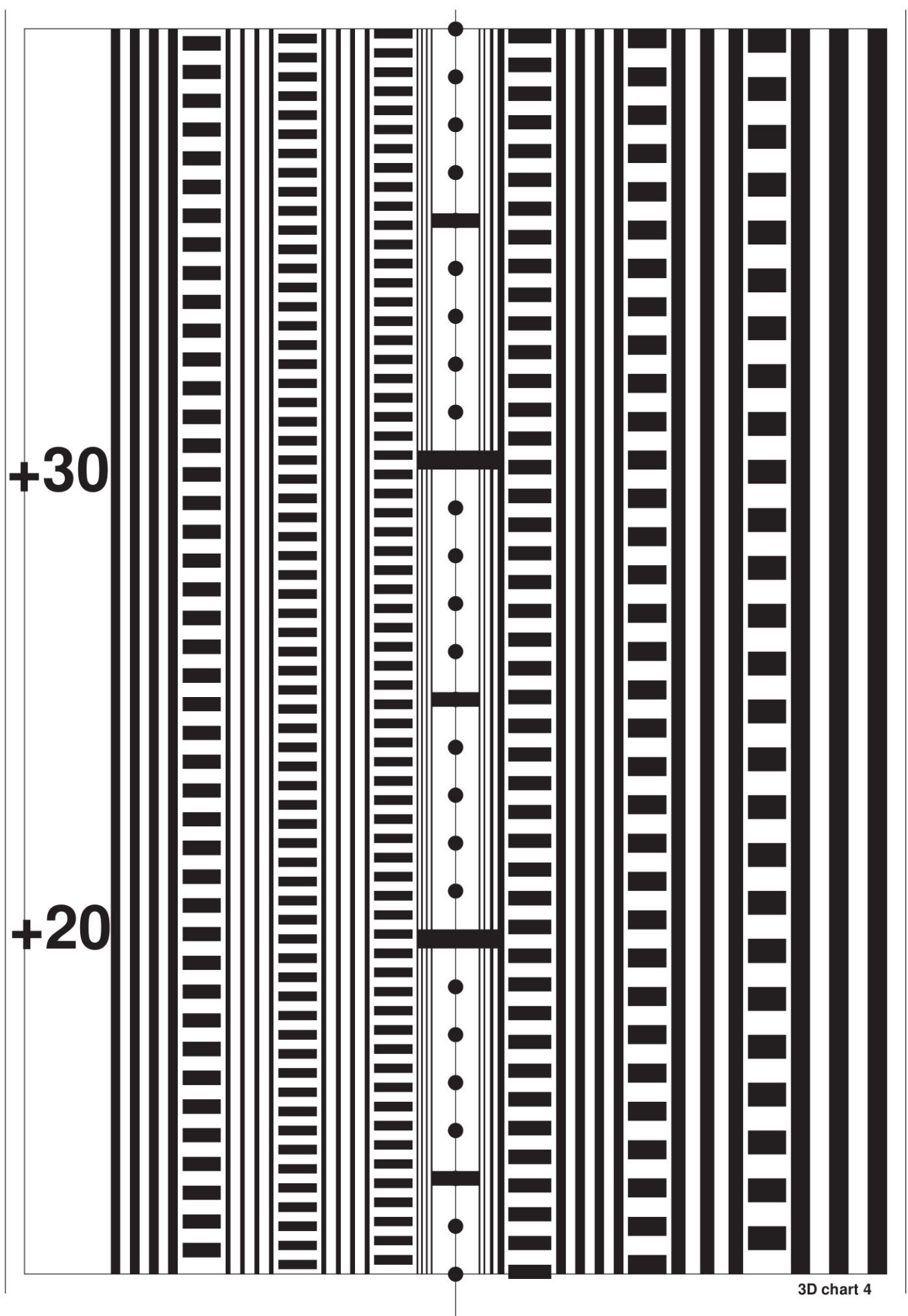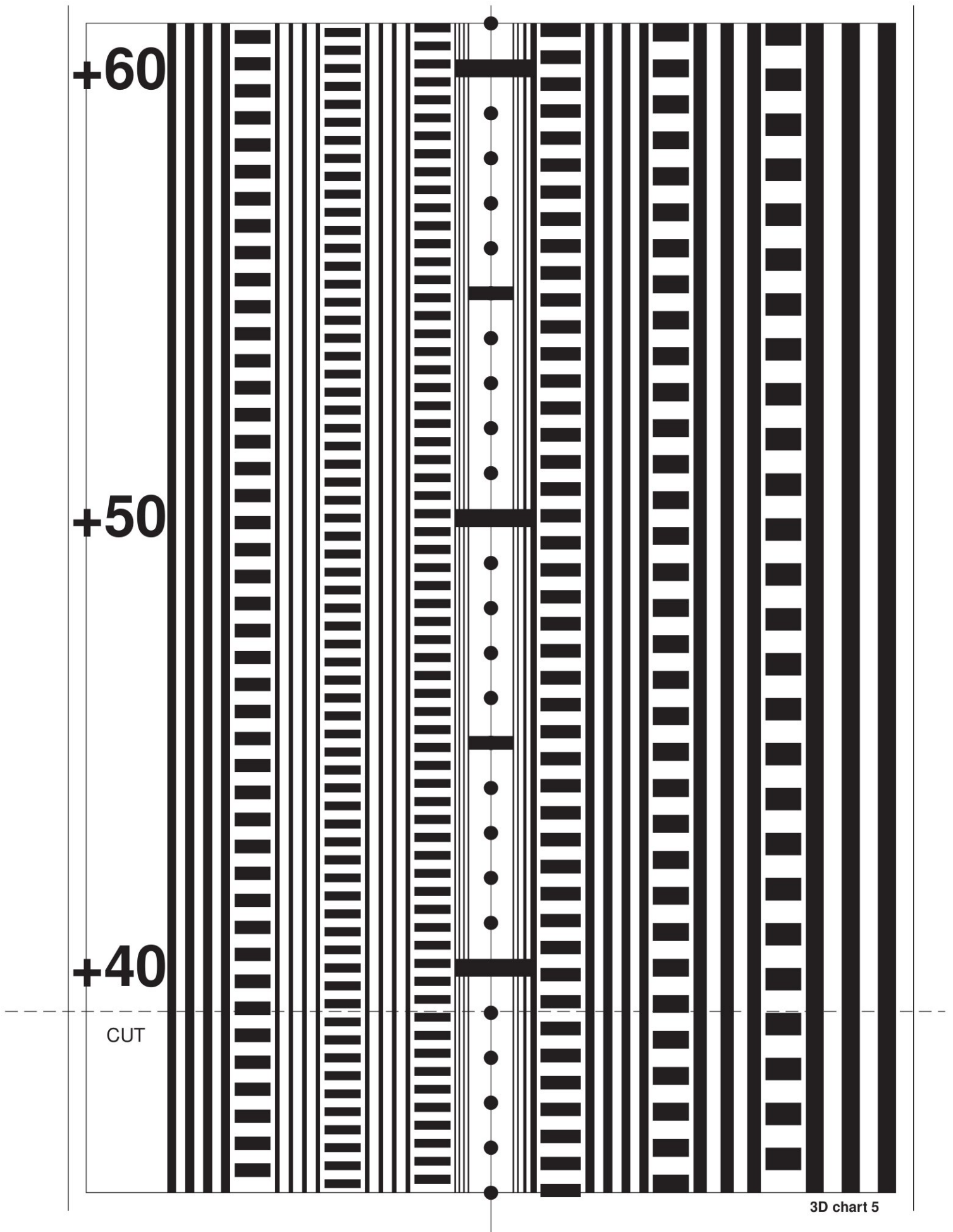
**3D chart 5**

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CANON           EOS D60

## Service Adjustment Software Upgrade (1.1 ━━▶ 1.2)

1. Reason for Change

     Reliability enhancement

2. Details of Change

     Service adjustment software (File name: EOS_D60.exe) has been changed as follows.

     1) The error code in the service manual is written differently compared to the adjustment software.
        This has been unified.

     2) With firmware ver. 1.0.1 or later, digital error codes are indicated in detail.
        Please refer to the attachment for the detail.  However, in ver. 1.0.1 or later error codes may not
        be properly indicated unless the error really occurs.

     3) When the LCD monitor is ON at the time of shutter release from the adjustment software, a
        communication error would occur. This has been corrected.

     4) Errors in descriptions have been corrected.

| User Notice | Internal Error | Contents | Probable Cause and Countermeasure |
|---|---|---|---|
| 99 | 6 | This error occurs when the ISO setting is not correct. | ・Digital circuit board (CG2-0773-000) |
| 99 | 8 | This error occurs when Image Processor IC (DSP) operates abnormal. | ・Digital circuit board (CG2-0773-000) |
| 99 | 9 | This error occurs when the processing time of D60's self-checking system exceeds a specified limit.  This could occur when more than one switch is pressed at the same time. | ・Digital circuit board (CG2-0773-000) |
| 99 | 10 | This error occurs when "Accumulation → Readout" in the sensor is being processed again before the first completion. | ・Rewrite the firmware. |
| 2 | 21 | CF card writing error. | ・Use the DC Coupler or recharge the battery. Check if the CF card is properly inserted.<br>・Format the CF card<br>・Replace CF card connecter (CG1-1968). |
| 2 | 22 | This error occurs when image data cannot be written to the CF card in the following conditions:<br>1) If the CF card is not fully seated in the camera, the D60 cannot detect a "card ready" signal within a specified time limit.<br><br>2) When the CF card is not usable because it has been destroyed or physically damaged.<br>3) When the camera's battery level is insufficient to completely write the file to the CF card. | ・Use the DC Coupler or recharge the battery.<br>・Check if the CF card is properly inserted.<br>・Format the CF card. Replace the CF card connecter (CG1-1968). |
| 4 | 23 | This error occurs when the free space of the CF card is insufficient for the image file that has been created. | ・Use a CF card with sufficient free space. |
| 99 | 25 | This error occurs due to a defect in the buffer memory during image processing. | ・Digital circuit board (CG2-0773-000) |
| 99 | 50 | This error occurs when the CF card cannot be formatted in the camera. | ・Format the CF card (first on the PC and then in the camera).<br>・Replace the CF card. |
| 99 | 51 | This error occurs when the images stored on the CF card cannot be played back in the camera. | ・Format the CF card (in the camera)<br>・Replace the CF card. |
| 99 | 70 | This error occurs when the image is not proper. (Does not occur to the cameras for mass production.) | ・Digital circuit board (CG2-0773-000) |
| 99 | 71 | This error occurs when renewal of internal processing data does not succeed. | ・Digital circuit board (CG2-0773-000) |

| User Notice | Internal Error | Contents | Probable Cause and Countermeasure |
|---|---|---|---|
| 99 | 80 | This error occurs in the following conditions:<br>1) When initial position of X contact and CN2 are not detected.<br>2) When the shutter operation sequence was not completed correctly.<br>3) When the built-in flash cannot be recharged after the E-TTL pre-flash but before the main exposure. | ・Shutter Defect<br>・Replace the shutter unit (CG2-0761-000). |
| 99 | 81 | This error occurs in the following conditions:<br>1) When the mirror-down status with SW1 ON cannot be verified.<br>2) When the condition of the phase switch is not changed during shutter release. | ・Clean and check the phase switch<br>・Replace the mirror box unit （CY3-1394-000）. |
| 99 | 82 | This error occurs when the built-in flash cannot be charged. | ・Charging circuit base or main capacitor defect.<br>・Charging defect could occur even with X-contact short circuit. |
| 99 | 83 | This error occurs when the built-in flash's pop-up signal cannot be detected even after requested three times. | ・Top cover |
| 1 | 84 | This error occurs in the following conditions:<br>1) When electronic communication with the lens in main SW ON or SW1-ON condition cannot be established.<br>2) When the lens diaphragm cannot be controlled during shutter release. | ・Clean the electronic contacts on the lens mount.<br>・Lens defect (main circuit base, EMD etc.) |
| 99 | 85 | In case of communication error between digital board and camera's MPU. | ・Digital board<br>・Camera main board |
| 99 | 86 | In case of communication error between digital board and camera's MPU. | ・Digital board<br>・Camera main board |
| 99 | 87 | In case of damage or abnormality in the digital firmware. (Does not occur to the cameras for mass production.) | ・Rewrite the firmware. |