English Edition

SERVICE MANUAL

By Portable Document Format

EOS 20D

CY8-1201-280

Canon

Canon

EOS 20D

SERVICE
MANUAL

PREFACE

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

General Information

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

Technical Information

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

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.

Adjustments

No electrical adjustments for this product.

Parts Catalog

Circuit Diagrams

Software Information

Appendix

General Information

CONTENTS

1. FEATURES

1.1 High precision and high image quality

- Newly-developed, large, single-plate CMOS sensor 22.5 × 15.0 mm
  Effective angle of view: Equivalent to 1.60 normal EF lens focal length
- Effective pixels: Approx. 8.20 megapixels for high precision and high image quality
- DIGIC II imaging engine for high-precision and natural color reproduction at high speed
- Accurate auto white balance
- Noise reduction for long exposures

1.2 High performance, high speed, and easy shooting

- 5 shots/sec. max. continuous shooting speed
- Max. burst of approx. 23 shots* for Large/Fine and 6 shots for RAW
  * When Canon 512MB CF card is used
- High-speed shutter and X-sync with 1/8000 sec. shutter speed and 1/250 sec. X-sync
  Shutter durability improved over the EOS 10D
- Startup time approx. 0.2 sec.
  When Power Switch is set from Off to On, and startup is completed as SW-1 is On (ready to shoot).
- USB 2.0 Hi-Speed

1.3 High-precision and high-speed 9-point AF

- Wide-area, 9-point AF with center AF point sensitive to f/2.8 lenses
  AF points positioned near golden section points, and nine AF points for better subject coverage.
- Metering range EV -0.5 to 18
- High-speed AF, faster than the EOS 10D's

1.4 Optimum image creation

- Six JPEG recording quality modes, RAW, and RAW+JPEG
- White balance correction for fine tuning WB
  (1) Blue/amber bias and magenta/green bias correction (±9 levels) enabled
  (2) Obtains the same filter effects as with LB and CC filters
- Improved white balance bracketing
  Besides blue/amber bias bracketing, magenta/green bias bracketing also possible
- Parameter 1 for vivid and crisp images set automatically in Basic Zone modes
  In Creative Zone modes, Parameter 1 or 2 (standard setting for EOS 10D) can be set.
- Choice of three processing parameters

■ New monochrome mode added to processing parameters
   Besides contrast and sharpness, filter effects and toning newly added.
■ Complies to DCF 2.0 and Exif 2.21 which supports Adobe RGB
   Color space (sRGB/Adobe RGB) added to menu.

1.5 Compatible with all EF-S and EF lenses

■ Optimum lens is the EF-S 17-85mm f/4-5.6 IS USM (equivalent to 27-136mm)
■ Compatible with all EF lenses with no restrictions

1.6 Metallic exterior for high-grade design

■ Exterior design conveys an aura of luxury, strong presence, and reliability
   (1) Canon logo in relief with white coloring
   (2) Optimum body size and holding comfort for advanced amateurs

1.7 EOS 10D user suggestions incorporated for enhanced performance

■ Shooting features
   (1) E-TTL II autoflash algorithm for high-precision and stable flash exposures
      • Both the built-in flash and external, EOS-dedicated Speedlite are controlled
        by E-TTL II autoflash
      • C.Fn-14-1 enables E-TTL II's averaged flash exposures
   (2) Built-in flash covers 17mm lens focal length and flash head at higher
        position
   (3) Precision Matte focusing screen for easier focusing
   (4) ISO auto in Basic Zone modes improved
   (5) Viewfinder magnification of 0.90
■ Recording quality
   (1) Faster writing to CF card
   (2) Power-saving design enables more shots to be taken
   (3) RAW+JPEG enables the RAW and JPEG images to be saved as separate files
   (4) Original image verification data can be appended
■ Operation ease and body
   (1) Multi-controller enables quick AF point selection
   (2) Smaller and lighter than the EOS 10D
      • The width, height, and depth are respectively 5.7 mm, 2 mm, and 3.5 mm
        shorter than the EOS 10D. And the weight is 105 g lighter.
   (3) Power switch now integrated with Quick Control Dial ON switch
■ Menu and playback features
   Improved menu display and playback screen
      • Current menu category (Shooting, Playback, Setup) indicated by color-
        coded icon
      • During playback, a single image without information can be displayed
■ Accessories
   Battery grip for size-AA batteries attachable

1.8 EOS 10D's superior basic features and operation ease retained

■ Excellent basic shooting and playback features
  (1) Compatible with CF card Type I/II with 2GB or larger capacity
  (2) Twelve shooting modes (seven Basic Zone modes and five Creative Zone modes)
  (3) Three AF modes (One-Shot AF, AI SERVO AF, AI Focus AF)
  (4) 35-zone metering sensor and three metering modes (evaluative, partial, centerweighted averaged)
  (5) Three drive modes (Single, continuous, self-timer)
  (6) ISO 100, 200, 400, 800, 1600, H: 3200, ISO auto
  (7) Nine white balance modes (Auto, six preset modes, manual, color temperature)
  (8) AE lock, exposure compensation, AEB, and flash exposure compensation provided. Also compatible with all features of EX-series Speedlites.
  (9) Dioptric adjustment from -3 dpt to +1 dpt, depth-of-field preview, and LCD panel illumination provided
  (10) Single image display, 9-image index display, magnified view, and auto play possible
  (11) Jump display, image rotation, auto rotation of vertical images, and image protect/erase provided
  (12) LCD monitor brightness adjustable to 5 levels (gray chart displayed during adjustment)
  (13) Compatible with NTSC/PAL video OUT
■ Superb basic operation ease and shooting priority retained
  (1) Easy operation with Mode Dial, Main Dial, and Quick Control Dial
  (2) Camera instantly becomes ready to shoot when you press the shutter button halfway even during menu display or image playback
  (3) Shooting-related controls (LCD panel, buttons) are concentrated on the camera top and upper right on the camera back
  (4) Menu display and playback-related controls are concentrated on the left of the camera back
  (5) Icons for playback-related buttons are printed in blue
■ Eighteen Custom Functions with 50 settings

1.9 Camera Direct Printing and DPOF

■ Compatible with PictBridge, CP Direct, and Bubble Jet Direct
  (1) PTP connection with a personal computer easily enables image viewing, downloading, and deletion
  (2) Faster printing enabled with Canon BJ printers using PictBridge direct print function
■ Compatible with DPOF printing specification

2. OVERVIEW

2.1 EOS 20D body

While retaining the best features of the EOS 10D, the EOS 20D is a high-end, digital AF SLR for advanced users. New technologies have boosted the basic performance and user suggestions have also been incorporated.

Table 1 compares the EOS 20D and EOS 10D. (Shaded EOS 20D specifications are superior to EOS 10D's.)

The EOS 20D's improvements over the EOS 10D are outlined below.

Table 001 Specifications Comparison of EOS 20D and EOS 10D (1/2)

Specification			EOS 20D	EOS 10D
Image sensor	Image sensor		CMOS	
	Effective Pixels (Approx. megapixels)		820	635
	Size (mm)		22.5 × 15.0	22.7 × 15.1
	Focal Length Conversion Factor		1.6	
	Pixel unit (µm square)		6.4	7.4
	Color Filter Type		Primary colors	
Recording System	Recording Media		Compact Flash	
	Slot Type/Qty		CF TypeI, II/1	
	Recording Quality	JPEG	1. Large/Fine, 2. Large/Normal, 3. Middle/Fine, 4. Middle/Normal, 5. Small/Fine, 6. Small/Normal	
		RAW	7. RAW+L/F, 8. RAW+L/N, 9. RAW+M/F, 10. RAW+M/N, 11. RAW+S/F, 12. RAW+S/N, 13. RAW ("RAW only" not available with 10D)	
	RAW+JPEG	Save Format	Separate RAW & JPEG files	JPEG embedded in RAW file
		Selection Method	Menu	C.Fn
	Recorded pixels (Approx. megapixels)	Large	8.20	6.30
		Middle	4.30	2.80
		Small	2.0	1.60
		RAW	8.20	6.30
	Color Space	sRGB	Yes	
		Adobe RGB	Yes (Exif2.21)	Yes
	Processing Parameters	Setting	Parameter 1, 2; Set 1 to 3, monochrome	Standard, Set 1 to 3
		Items	Color: Contrast, sharpness, color saturation, color tone Monochrome: Contrast, sharpness, filter effect, toning	Contrast, sharpness, color saturation, color tone
	Compatible Card Capacity		2 GB and higher	
Imaging processor			DIGIC II	DIGIC
White Balance	System		Image sensor	
	Settings		1. Auto, 2. Daylight, 3. Shade, 4. Cloudy, 5. Tungsten light, 6. White Fluorescent light, 7. Flash, 8. Custom, 9. Color temperature	
	WB Correction (Levels)		Blue/amber bias: ±9 levels Magenta/green bias: ±9 levels	–
	WB Bracketing	Amount	±3 levels in 1-level increments	
		Direction	Blue/amber bias Magenta/green bias	Blue/amber bias
		Shutter Release	3 images with one shot	
	Color Temp. Spec. (Range/Increments)		2800 - 10000 K/100 K	
Viewfinder	Coverage (Approx.)		95% vertical, 95% horizontal	
	Magnification		0.9	0.88
	Eyepoint		20mm	
	Dioptric Adjustment		−3 to +1 dpt.	
	Focusing Screen		Precision Matte	New Laser Matte
	Depth-of-field Preview		Yes	
Autofocus	AF Points		9	7
	AF Point Selection		Multi-controller	Main Dial + Quick Control Dial
	Brightness		EV −0.5 - 18	EV 0.5 - 18
	AF Mode		One-Shot/AI SERVO/AI FOCUS	
	Superimposed Display		Yes (LED+LTC reflector)	Yes (LED)
	50 kph predictive AF (EF 300mm f/2.8L IS USM, approx. m)		8	
	AF-assist Type	Method	Stroboscopic flash	
		Effective Range (m)	Center: 4, Periphery: 3.5	

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Table 001 Specifications Comparison of EOS 20D and EOS 10D (2/2)

	Specification		EOS 20D	EOS 10D
Exposure Control	Sensor Zones		35	
	Metering range (EV)		EV 1 - 20	
	Metering Modes		Evaluative, partial at center, centerweighted averaged	
	Shooting Modes		1. Full Auto, 2. Portrait, 3. Landscape, 4. Close-up, 5. Sports, 6. Night Portrait, 7. No Flash, 8. Program AE, 9. Shutter speed-priority AE, 10. Aperture-priority AE, 11. Manual, 12. Depth-of-field AE	
	ISO Speed	Basic Zone	Auto	
		Creative Zone	100 - 1600 (whole-stop increments), H: 3200	
	E-TTL II Autoflash	Evaluative metering	Yes	
		Averaged metering	Yes (C.Fn14-1)	–
	Exposure Compensation		±2 in 1/3- or 1/2-stop inc.	±2 in 1/2- or 1/3-stop inc.
	AEB (increments and range)		±2 in 1/3- or 1/2-stop inc.	±2 in 1/2- or 1/3-stop inc.
	AE Lock		Yes	
Shutter	Speeds		1/8000 sec. - 30 sec., bulb	1/4000 sec. - 30 sec., bulb
	X-sync		1/250	1/200
	Durability		Yes	Yes
Drive	Drive Modes		Single/Continuous/Self-timer	
	Continuous shooting (fps)	One-Shot	5	3
		AI SERVO	5 (full-charged battery, USM lens)	3
	Max. Burst	JPEG	23* (Large/Fine)	9
		RAW	6	9
Built-in Flash	Flash Exposure Control		E-TTL II	E-TTL
	Guide No. (ISO 100, m)		13	
	Coverage		17	18
	Recycling Time		3	
	Red-eye Reduction		Lamp	
	Flash Exposure Compensation		±2 in 1/3- or 1/2-stop inc.	±2 in 1/2- or 1/3-stop inc.
	FE Lock		Yes	
External Flash	Auto flash system		E-TTL II	E-TTL
	FP flash, flash exposure compensation,		Yes	
	Wireless, multi-Speedlite Control		Yes (up to 3 slave groups)	
LCD Monitor	Screen Size		1.8	
	Pixels (Approx.)		11.8	
	Brightness (Levels)		5 (gray chart display)	5
Playback	Display Modes		Single, Single image with Info, 9-image index	
	Histogram		Yes	
	Highlight alert		Yes	
	Magnified Zoom Display	Mag. (Approx.)	1.5 - 10	
		Steps	15	
	Image Rotation		90°, 270°	
	Image Protection		Single	
	Video OUT		NTSC/PAL	
Menu Interface Language			12	
Direct Printing	PictBridge (PTP) Compatiblity		Yes	
	CP/BJ Direct Compatibility		Yes	
Printing	DCF (Ver.)		2.0	1.0
	Exif (Ver.)		2.21	2.2
	DPOF		1.1	
Custom Functions (Qty/settings)			18/50	17/61
Data Verification Data			Yes	–
External Interface	USB (Ver.)		2.0 Hi-Speed	1.1
	Video OUT		Yes	
	Remote Control Terminal		Yes (N3-type)	
	PC Terminal		Yes	
Power Source	Possible Shots (20°, FA50%)		700 (BP-511A)	500 (BP-511)
	Batteries		BP-511A/BP-511/BP-512	
	AC Power		Yes	
	Date/time backup battery		CR2016	CR2025
	Battery Grip		BG-E2 (size-AA batteries compatible)	BG-ED3
Exterior	Material		Magnesium	
	Exterior Color		Black	
	LCD Panel Illumination		Yes	
	EF-S Lens Compatibility		Yes	–
Chassis Material			Stainless steel	
Startup Time (Approx. sec.)			0.2	2
Dimensions (W×H×D)			144 × 105.5 × 71.5mm	149.7 × 107.5 × 75.0mm
Weight			685 g	790 g
Operating Temperature (°C)			0 - 40	
Operating Humidity			85% R.H. or less	

1) Image recording

(1) Large, single-plate CMOS sensor with approx. 8.20 megapixels

The newly-developed CMOS sensor has approx. 8.20 effective megapixels and an picture size of 22.5 mm × 15.0 mm. (The focal length conversion factor is 1.6×.)
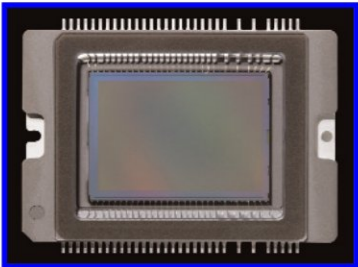
(2) DIGIC II imaging engine

DIGIC II imaging engine for high-precision and high-speed natural color reproduction.

Fig. 001 CMOS sensor (actual size)

(3) Better RAW+JPEG file handling

With the EOS 10D, dedicated software was required to extract the JPEG file embedded in the RAW file. But with the EOS 20D, the RAW and JPEG images are saved as separate files in the CF card as with the EOS-1D.

Also, as shown in Fig. 002, you can use the menu's [Recording quality] to select the RAW+JPEG option directly.

As with the EOS-1D Mark II, RAW files use a new format indicated by the CR2 file extension.

Table 002 Recording Quality and Pixels

Recording Quality	Recorded Pixels (Approx.)
Large	8.20 megapixels
Medium	4.3 megapixels
Small	2.0 megapixels
RAW	8.20 megapixels

Fig. 002 Recording quality selection screen

(4) Complies to DCF 2.0 and Exif 2.21 supporting Adobe RGB

The camera complies to DCF 2.0 and Exif 2.21, updated to support Adobe RGB. When you use software compatible with Exif 2.21, images captured with the EOS 20D will open automatically in the Adobe RGB color space. Also, when you use a printer which complies to Exif 2.21, the printer will suitably adjust the color saturation of the print.

(5) Faster writing to CF card

With DIGIC II and an improved CF card writing process, data writing is about 3.5 times faster* than with the EOS 10D.

* With a Canon 512 MB (Super High-speed) CF card

2) Image Processing

(1) White balance feature
• White balance correction

This is a digital color filter that works like an LB (light balancing) filter or cc (color compensating) filter.

Both 1. Blue/amber bias and 2. Magenta/green bias can be set up to ±9 levels.
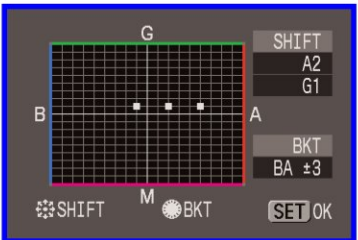

Fig. 003 WB correction/BKT screen

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- White balance bracketing (WB-BKT)

   In addition to the EOS 10D's blue/amber bias correction, the EOS 20D provides the magenta/green bias adjustment that works like a cc (color compensating) filter. As with the EOS 10D, three images are generated with one shot. WB-BKT can also be used in combination with white balance correction.

- Auto/Preset white balance

   With DIGIC II, AWB is more stable at high ISO speeds and the color temperature information is sent when the built-in flash or SL580EX is fired. As a result, the flash white balance and AWB performance with flash in dark environments are improved.

(2) Processing parameters

- Parameter 1 for vivid and sharp images

   In addition to the EOS DIGITAL REBEL/EOS 300D DIGITAL's Parameter 1, the EOS 20D also has the Parameter 2 which is the EOS 10D's standard setting. Parameter 1 is set automatically in Basic Zone modes. In Creative Zone modes, Parameter 1 or 2 can be selected.
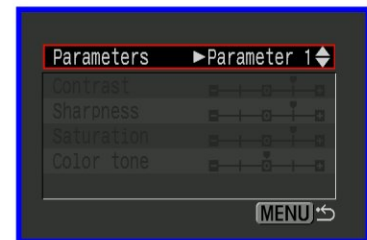
Fig. 004 Parameter 1 settings

- Monochrome mode

   In addition to Parameter 1 and 2 and Set 1, 2, and 3, there is a new Monochrome mode. You can set the contrast and sharpness up to 5 levels, filter effects (none, yellow, orange, red, green), and toning (none, sepia, blue, purple, green).

<Filter effects>

   This obtains almost the same result as filters for conventional black-and-white photos. The colors in the image that are the same or similar to the filter's color will look brighter. And secondary colors in the hue circle will look darker.

<Toning>

   This is like toning conventional black-and-white prints with chemicals to apply a certain color tinge. This is done digitally to obtain a similar effect.

Table 003 Sample Filter Effects

Filter	Effect
Ye: Yellow	The blue sky looks more natural, white clouds look more real.
Or: Orange	The blue sky looks darker, and the sunset looks more brilliant.
R: Red	The sky looks quite dark, and fall leaves look crisp.
G: Green	Skin tones and lips will look more subdued. Tree leaves look crisp.

No filter effects and no toning   Filter effect: Red   Toning: Sepia

Fig. 005 Filter effects and toning sample

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Note that one positive (+) level of the Sharpness setting is equal to twice the sharpness level of the EOS 10D. This produces more crisp and clear images.

(3) ISO Speed

• ISO speed setting range

Like the EOS 10D, the EOS 20D's ISO speed range is ISO 100, 200, 400, 800, 1600, and H: 3200. Note that the ISO speed extension is now set with a Custom Function (C.Fn-08) instead of with the menu.

• ISO auto

The basic ISO auto setting has been changed to ISO 400. This obtains good image quality and avoids camera shake. The background scene behind the subject in a flash photo will also look brighter.

(4) Noise reduction

The EOS 20D already obtains better image quality than with the EOS 10D. To improve image quality of long exposures even more, a Custom Function for long exposure noise reduction is provided. When C.Fn-02-1 is set, noise reduction processing will be executed for exposures 1 sec. or longer. Note that the noise reduction processing will take the same time as the exposure time.

3) Shooting Functions

(1) Autofocus

• AF sensor

The camera has a newly-developed, 9-point AF sensor (CMOS). The center AF point is a high-precision, cross-type sensor sensitive to f/2.8 lenses (vertical line-sensitive at f/2.8, vertical line-sensitive at f/5.6, and horizontal line-sensitive at f/2.8). The eight other AF points are sensitive to f/5.6.

Since each AF point is optimized for the imaging element size, the AF point layout is more inward than the EOS 10D's. However, the nine AF points make the subject coverage larger. Also, as shown in Fig. 007, there are four AF points which are near a golden section point.* They help to improve the composing of the shot.

Fig. 006 AF sensor

* Golden section: Picture composition deemed to have the most aesthetic and stable aspect ratio (1:1.1618). When the picture is divided into nine sections, the four intersections all have a vertical : horizontal aspect ratio of 1:1.5. If you use one of the four AF points close to a golden section point to cover the subject, the composition will look more balanced.

Fig. 007 point positions

Thanks to the new AF sensor, focusing in low light has improved by 1 stop compared to the EOS 10D. The brightness range required for focusing is now EV -0.5 to 18.

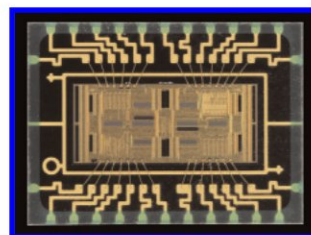The AF speed is faster than the EOS 10D's. The predictive AF

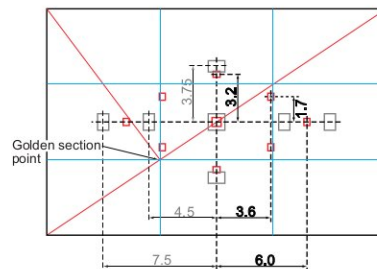performance is about the same as the EOS 10D's. With an EF 300mm f/2.8L IS USM lens, it can focus track a subject approaching at a speed of up to 50 kph up to about 8 meters away.

• AF point selection

The AF point is manually selected with the Multi-controller on the back of the camera as shown in Fig. 008. The Multi-controller can be pushed in eight directions as well as down at the center. First press the AF point selector, then operate the Multi-controller as shown in Fig. 009. If you push the Multi-controller in the direction of the current AF point, it will switch to automatic AF point selection. You can also use the Main Dial/Quick Control Dial to select the AF point (the looping sequence is different from previous EOS D-SLRs).

Fig. 008 Multi-controller

Also, C.Fn-13-1/2 enables you to select the AF point directly with the Multi-controller or dial without having to first press the AF point selector.

Since the Multi-controller enables a quick and direct way to select the AF point, the Assist button has been eliminated.

Multi-controller   Main Dial/Quick Control Dial
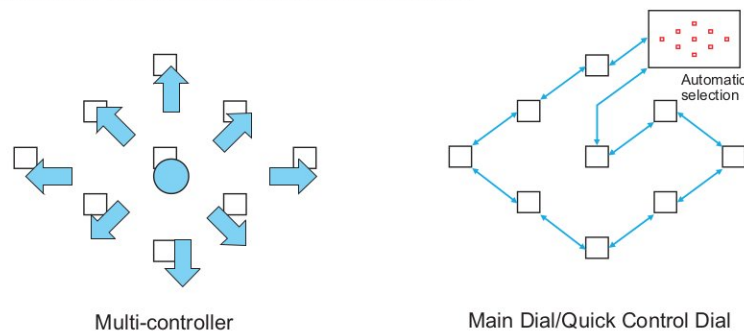
Fig. 009 AF point selection method

(2) Drive

• Continuous shooting speed

Thanks to the CMOS sensor's faster reading of signals, a high-speed mirror driving system, and DIGIC II, the maximum continuous shooting speed is 5 shots/sec. despite having more megapixels than the EOS 10D.

Table 004 Continuous Shooting Speed (Max. shots/sec.)

ONE SHOT / MF		5.0
AI SERVO	USM	5.0
	Non-USM	3.5

• Max. burst

Recording quality Large/Fine: Approx. 23 shots*, RAW: 6 shots

* When Canon 512MB CF card (Super High-speed) is used

Note: Due to the shooting condition, development condition and the CF card type, the number of JPEG image max. burst may vary.

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(3) Shutter

The camera has a newly-developed, APS-C-dedicated, compact, high-speed shutter. With shorter shutter blade edges, the shutter curtain speed is faster. This enables a top shutter speed of 1/8000 sec. and X-sync at 1/250 sec. The shutter durability also surpasses that of the EOS 10D (about 20).
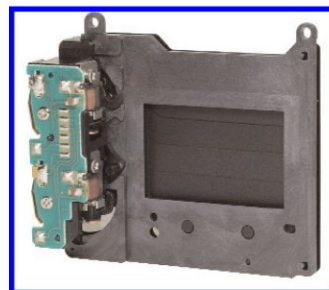

Fig. 010 Shutter unit

(4) Exposure control

The shooting modes, basic features, and metering sensor are the same as the EOS 10D's. The default increment for the exposure setting has been changed to 1/3 stop. (This can be changed to 1/2 stop with C.Fn-06-1.)

Fig. 011 Mode Dial
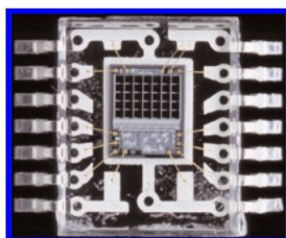
Fig. 012 Metering sensor
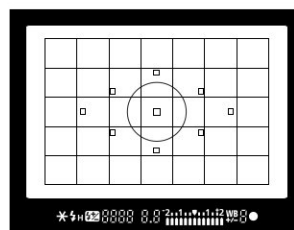
Fig. 013 Metering zones

(5) Viewfinder

Improved eyepiece optics enable a viewfinder magnification of 0.9x. The focusing screen is a Precision Matte screen developed to make manual focusing easier. The differences between the Precision Matte screen, the New Laser Matte screen found in the EOS 10D, and the Laser Matte screen found in the EOS-1D are shown below.

[Focusing ease]: New Laser Matte < EOS 20D < Laser Matte

[Viewfinder brightness]: New Laser Matte > EOS 20D > Laser Matte

The white balance correction indicator has been added to the viewfinder information display.

(6) Built-in flash

When the built-in flash or an EX-series Speedlite is used, E-TTL II autoflash takes effect for high-precision and stable flash exposures.

Thanks to an improved fresnel lens, the flash coverage matches the 17mm focal length even when the Guide No. (GNo. 13, ISO 100 in meters) remains the same as before.

Fig. 014 Built-in flash

Also, the built-in flash now uses a pop-up arm. The distance between the optical axis and the center of the built-in flash is 18.6 mm longer than with the EOS 10D. This reduces the incidence of red eye and reduces the chances of the lens obstructing the flash coverage.

(7) Compatibility with EF-S lenses

Since the camera has the same mechanism as the EOS DIGITAL REBEL/EOS 300D DIGITAL, it is compatible with EF-S lenses.

4) Image playback

• Single image

While a single image is displayed, pressing the Info button will now display the image without the information as shown in Fig. 015.

Fig. 015 Single image playback
(no image information)

5) Design

(1) Awesome-looking for an aura of high performance

Even though the EOS 20D boasts better image quality and more high-end features than the EOS 10D, it is smaller and lighter. The width, height, and depth are respectively 5.7 mm, 2 mm, and 3.5 mm shorter than the EOS 10D. And the weight is 105g lighter. If you look at the front of the camera, the built-in flash looks more compact. Also, the front cover surrounding the lens mount has gentle curves to give a compact and high-performance image as well as a strong, high-end look.

Despite the smaller size, the grip surface is still ample to provide excellent grip and holding comfort. The camera also retains the EOS 10D's "finger cut" shape around the shutter button to make pressing the shutter button comfortable.
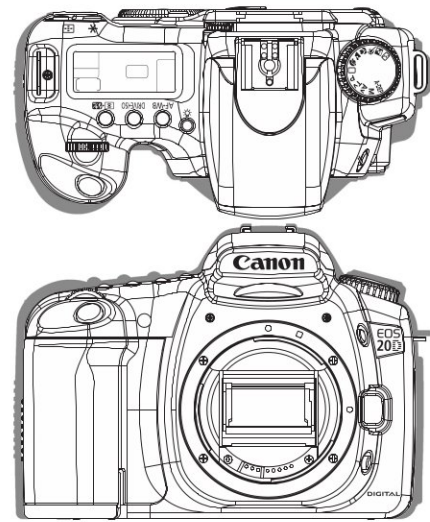
Fig. 016 Size comparison

(2) Refined interface--Multi-controller provided

The operation ease of EOS is retained. The Multi-controller is a new camera control that can be pushed in 8 directions and at the center. It is for selecting the AF point, magnifying the image during playback, and moving the trimming outline for direct printing. It is a great improvement for operation ease.

(3) Highly rigid magnesium-alloy body

Being well-received on the EOS 10D, the magnesium-alloy body has been retained. The refined look and feel, high image quality, and many features convey a high level of assurance to the user. The Canon logo relief with a white filling adds to the camera's fine detail, making it very apt for a high-end digital AF SLR. It spreads and promotes the high quality of the Canon brand.

6) Startup time

Thanks to the DIGIC II, an improved CMOS sensor, a revamped startup sequence, etc., the startup time has been shortened to approx. 0.2 sec. (EOS 10D's startup time: Approx. 2.2 sec.)

When Power Switch is set from Off to On, and startup is completed as SW-1 is On (ready to shoot).

7) Operation ease

The camera retains the basic operation ease of the EOS 10D and the priority on shooting. The major differences in the operation ease are as follows:

(1) Multi-controller provided

    Note: Used for selecting the AF point, setting the WB correction/BKT, and moving the outline box for image trimming during direct printing.

(2) Power switch integrated with Quick Control Dial ON switch

    Note: Three positions: 1. Power OFF, 2. Power ON and Quick Control Dial OFF, 3. Power ON and Quick Control Dial ON.

(3) Assist button eliminated.

(4) Scroll orientation switch button eliminated
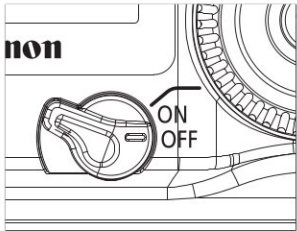
Fig. 017 Power switch

8) Menu functions

The basic operation method (Quick Control Dial and Main Dial) is the same as the EOS 10D's scrolling system.

The EOS 20D has the tab (icon + color) of the current menu displayed on the upper left of the screen. Also, the upper right indicates what happens when you press the JUMP button. This is newly added.

The function that prevents shutter release when there is no CF card installed is now a menu setting instead of a Custom Function setting. This will prevent you from forgetting to install a CF card even when you use a Basic Zone mode.

After continuous shooting, you can still use the menu even while the data is being written to the CF card.

Fig. 018 Menu screen (Shooting)

Table 005 Menu Functions

Shooting	Playback	Setup
Quality	Protect	Auto power off
Red-eye on/off	Rotate	Auto rotate
Beep	Print Order	LCD Brightness
Shoot w/o card	Auto Order	Date/Time
AEB	Review time	File numbering
WB SHIFT/BKT		Language
Custom WB		Video system
Color temp.		Communication
Color space		Format
Parameters		Custom Functions(C.Fn)
		Clear settings
		Sensor clean.
		Firmware Ver.*

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9) Customization

Table 006 shows the EOS 20D's new Custom Functions added to the EOS 10D's. Note that page 54 lists all the Custom Functions.

Table 006 New Custom Functions

C.Fn-02 Noise reduction of long exposures	Works with shutter speeds 1 sec. or longer. Noise reduction requires the same time as the exposure time.
C.Fn-08 ISO speed extension	Moved from EOS 10D's menu setting.
C.Fn-13 AF point selection method	Enables the AF point to be selected directly with the Multi-controller or Quick Control Dial/Main Dial.
C.Fn-14 E-TTL II autoflash system	When set to 1: Averaged flash exposure, the entire image will be averaged for autoflash.
C.Fn-18 Append original image verification data	When set to 1: Yes, the original image verification data will be appended automatically.

10) Camera direct printing

As with the EOS 10D, the EOS 20D is compatible with PictBridge, CP Direct, and Bubble Jet Direct. It also enables DPOF direct printing. The basic specifications of direct printing are the same as the EOS-1D Mark II's. And with the EOS 20D, improved data transmission architecture enabled faster printing with Canon BJ printers using PictBridge direct print function.

11) Interface

Since DIGIC II has been incorporated, the camera has USB 2.0 Hi-Speed to enable high-speed image transfers from the camera to a personal computer.

12) Power source and shooting capacity

The camera can be powered by Battery Pack BP-511A/514/511/512. The EOS 20D's battery grip can use BP-511A/514/511/512 or size-AA batteries.

With a fully-charged BP-511A, the EOS 20D can take approx. 1,000 shots at 20℃ or 750 shots at 0℃ with no flash.

The date/clock backup battery has been switched to CR2016. The backup battery is placed in the battery chamber like with the EOS DIGITAL REBEL/EOS 300D DIGITAL.

13) Dimensions and weight

Dimensions: 144 (W) × 105.5 (H) × 71.5 (D) mm
Weight: 685 g

2.2 Accessories

1) Battery Pack BP-511A

Battery pack with a 1390mAh capacity (approx. 26% larger than the BP-511). The exterior color has been changed from brown to gray. And as shown in Fig. 020, the battery cover has a little hole whose orientation can be used to remind you whether the battery has been recharged or not.

Fig. 019 BP-511A

Fig. 020 Battery cover

2) BATTERY GRIP BG-E2

EOS 20D-dedicated, L-shaped battery grip with vertical camera controls. It can accommodate two BP-511A (BP-511/512) battery packs or six size-AA batteries fitted in the battery magazine. Besides alkaline batteries, Ni-MH batteries can also be used.

Fig. 021 BATTERY GRIP BG-E2

3) EF-S 17-85mm f/4-5.6 IS USM

To be marketed at the same time as the EOS 20D, this newly-developed lens best suits the EOS 20D. Featuring an Image Stabilizer and a short back focal distance, it can also be attached to the EOS DIGITAL REBEL/EOS 300D DIGITAL. Its focal length is equivalent to 27-136mm in 135 format. Only the USM type will be available.
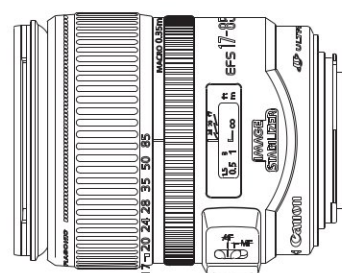
Fig. 022 EF-S 17-85mm

4) SL580EX

Successor to Speedlite 550EX. It features a high output with Guide No. 58 (at ISO 100 in meters). It is greatly improved with color temperature information transmission, zooming to match the imaging element size, faster recycling time, flash coverage for 14mm, improved firing control, AF-assist beam compatible with all AF systems, easier operation, and a new external power source.

Fig. 023 SL580EX

5) Semi-Hard Case EH17-L

Can accommodate the camera even when an EF-S 17-85mm f/4-5.6 IS USM or EF 24-85mm f/3.5-4.5 USM is attached. Semi-hard case enabling quick shooting.
Page 63 lists the lenses that can also fit in the case.

Fig. 024 Semi-Hard Case

6) Wide Strap EW-100DGR

Wide neck strap that comes with the EOS 20D (eyepiece cover included).

Fig. 025 Wide Strap

2.3 Software for EOS 20D

The same software bundled with the EOS-1D Mark II will be provided.

3. SPECIFICATIONS

1. Type

1-1 Type:	Digital AF/AE single-lens reflex camera with built-in flash
1-2 Compatible lenses:	Canon EF and EF-S lenses
1-3 Lens mount:	Canon EF mount
1-4 Lens restrictions:	None
1-5 Lens focal length:	Equivalent to 1.60 the normal lens focal length

2. Image Sensor

2-1 Type:	High-sensitivity, high-resolution, single-plate, CMOS sensor
2-2 Image size:	22.5 mm × 15.0 mm (JPEG Large size)
2-3 Effective pixels:	Approx. 8.20 megapixels: 3520 (H) × 2342 (V) pixels
2.4 Total pixels:	Approx. 8.50 megapixels: 3600 (H) × 2360 (V) pixels
2.5 Pixel unit:	6.4 μm square
2.6 Aspect ratio:	2:3 (Vertical : Horizontal)
2.7 Color filter type:	RGB primary color filters
2.8 Low-pass filter:	Fixed position in front of the image sensor
2.9 Cleaning mode:	Provided

        (1) With menu's "Sensor clean."
        (2) With battery pack or AC power.
        (3) When the battery pack's level becomes exhausted, cleaning is not possible with the BATTERY GRIP BG-E2 size-AA batteries.
        (4) During cleaning (mirror lockup), "CLEAn" blinks on the LCD panel.
        (5) When the battery level becomes low, the following warnings continue until the prohibit voltage: 1. Electronic beeper (Sounds even when disabled), 2. Battery level low icon blinks on LCD panel.

3. Recording System

3-1 Recording media:	Compact Flash (CF) card
3-2 Recording format:	In accordance with the CF card

        (1) Formatted with the menu's "Format"
        (2) Compatible with 2 GB and higher CF cards. Automatic file format switching.
        (3) The formatted CF card's volume name will be "EOS_DIGITAL."

3-3 Image recording format:

Recording Quality		Recording Resolution	Compression System
Large	Fine	3504 × 2336 (Approx. 8.20 megapixels)	JPEG
	Normal		
Medium	Fine	2544 × 1696 (Approx. 4.30 megapixels)	
	Normal		
Small	Fine	1728 × 1152 (Approx. 2.0 megapixels)	
	Normal		
RAW		3504 × 2336 (Approx. 8.20 megapixels)	Lossless RAW

* Original image verification data can be appended (C.Fn-18-1) in all recording modes.

3-4 RAW+JPEG simultaneous Enabled in all JPEG recording modes.
  • The RAW and JPEG images are saved as separate files in the CF card.

3-5 File size and recording capacity:

Recording Quality			Single Shot Size (Approx.)	Recording Capacity (Approx.)
JPEG	Large	Fine	3.6	66
		Normal	1.8	133
	Medium	Fine	2.2	112
		Normal	1.1	221
	Small	Fine	1.2	195
		Normal	0.6	380
RAW	+Large	Fine		18
		Normal		22
	+Medium	Fine		21
		Normal		23
	+Small	Fine		23
		Normal		25
RAW			8.7	27

* The above specifications are based on ISO 100 and Canon's testing standards.
* Figures for the recording capacity apply to a 256 MB Compact Flash card.
* The actual single shot size and recording capacity depend on the subject, shooting mode, ISO speed, and processing parameters.

3-6 Information recorded:
Complies to Design rule for Camera File structure.
  • The following is recorded when the image is captured: main, secondary (Exif information), manufacturer's, thumbnails information.

3-7 Image recording format: Complies with DCF 2.0 and Exif 2.21

3-8 Folder setting: Created automatically by the camera.
  • The captured images are automatically assigned a file number from 0001 to 9999 and a folder number from 100 to 999. Up 100 images can be stored in each folder (except folders with 99 in last two digits of folder No. which stores up to 99 images).

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3-9 Image file name: The file name, file number, and extension are attached as follows:

1. For JPEG: sRGB   (Example) IMG_0001.JPG
                    File name ⌐   ⌐ ⌐Extension
                               File No.

2. For JPEG: Adobe RGB   (Example) _MG_0001.JPG

3. For RAW: sRGB   (Example) IMG_0001.CR2

4. For RAW: Adobe RGB   (Example) _MG_0001.CR2

* When Adobe RGB is set, the file name will start with an underbar (_).
* The file extension for RAW images will be CR2 (Canon RAW 2nd Edition).

3-10 File No.:   The following two types of file numbers can be set:

Note: If file No. 9999 in folder No. 999 is captured, [Err CF] will be displayed even if the card still has room. If this happens, replace the CF card to restart from file No. 0001 in folder No. 100.

(1) Continuous numbering
   The continuous numbering of captured images will continue even after you replace the camera's CF card.

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

3-11 Processing parameters   Besides the standard processing parameters 1 and 2 applied by the camera automatically during the image recording, the user can register up to three sets of parameters. Black-and-white images can be captured with the monochrome setting.

	Item	Remarks
Preset	Parameter 1	Automatic setting for Basic Zone modes.
	Parameter 2	Default settings for Creative Zone modes. Equivalent to EOS 10D (Normal setting)
User Settings	Set 1	Contrast, sharpness, color saturation, color tone (5 levels each)
	Set 2	
	Set 3	
	Monochrome	Contrast (5 levels), sharpness (5 levels), filter effects, color tone

* Filter effects: N: None, Ye: Yellow, Or: Orange, R: Red, G: Green
* Color tone: N: None, S: Sepia, B: Blue, P: Purple, G: Green
* A file for the color space will also be created for monochrome shooting.
* During monochrome shooting, "B/W" will be displayed on the LCD panel.
* With C.Fn-01-12 (SET button function for shooting: Parameter selection), pressing the SET button will display "PA-P1, P2, 1, 2, 3, B/W."

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3-12 Color space: Selectable between sRGB and Adobe RGB.
                       • Settable with the menu's "Color space."

4. Recording Media Drive

4-1 Type: Accepts CF card Types I and II
4-2 Slots: One slot with cover
4-3 CF card access indicator: Blinking access lamp
4-4 Read error warning: The respective error warning is displayed on the LCD panel, in the viewfinder, and on the LCD monitor, and the shutter release locks.
4-5 CF card initialization: Enabled (with menu's "Format").
4-6 No CF card warning: Provided
          (1) [No CF card] is displayed on LCD monitor.
          (2) With the menu's "Shoot w/o card" the shutter release can be locked ([no CF] displayed in the viewfinder and LCD panel).

5. White Balance

5-1 Type: Auto white balance with the image sensor.
5-2 Modes: The LCD panel displays the selected white balance mode

	WB Mode	Color Temperature (Kelvin)
Auto	1) Auto (AWB)	Approx. 3000 - 7000
	2) Daylight	Approx. 5200
	3) Shade	Approx. 7000
Preset	4) Cloudy, twilight, sunset	Approx. 6000
	5) Tungsten light	Approx. 3200
	6) White fluorescent light	Approx. 4000
	7) Flash	Approx. 6000
Manual	8) Custom (MWB) *1	Approx. 2000 - 10000
	9) Color Temperature *2	Approx. 2800 - 10000

*1: Custom: First take a picture of a white subject serving as the white balance standard. Then set the custom WB mode on the on-screen menu and to specify that image.
*2: Color temperature specified directly with the "Color temperature" menu.

5-3 White balance correction: The color temperature of the WB modes (all listed in 5-2) can be corrected as follows:
                       • Blue/amber bias: ±9 levels
                       • Magenta/green bias: ±9 levels
          (1) Set with the Multi-controller (Pushable in all directions)
         (2) White balance correction cannot be applied outside 2000K - 10000K.
              (Although it is settable, the effect is not guaranteed.)

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5-4 White balance bracketing: Based on the color temperature of the current WB mode (among those listed in 5-2), WB bracketing for the "Setting/blue bias/amber bias" or "Setting/magenta bias/green bias" is executed up to ±3 stops in whole-stop increments with a single shutter release.

    (1) The blue/amber bias and magenta/green bias cannot be set together.

    (2) One level of the blue/amber bias is equivalent to 5 Mireds of a color conversion filter.

    (3) For the magenta/green bias, there is no equivalent in Mireds.

    (4) White balance correction cannot be applied outside 2000K - 10000K.
    (Although it is settable, the effect is not guaranteed.)

    (5) When set together with white balance correction, WB bracketing cannot be set to more than ±9 levels.

    (6) White balance correction and AEB can also be set in combination with WB-BKT. (With AEB, 9 images will be saved to the CF card.)

    (7) WB-BKT is not possible in RAW mode.

    (8) Since three images are recorded automatically with a single shot, the writing time to the CF card will take longer.

    (9) With C.Fn-09 (Bracketing sequence/Auto cancel), the bracketing sequence can be changed and the bracketing can be canceled automatically or not.

6. Viewfinder

6-1 Type: Eye-level SLR (with fixed pentaprism)

6-2 Focusing screen: Fixed
    • Precision Matte

6-3 Dioptric adjustment: Adjustable from -3.0 dpt to +1.0 dpt.

6-4 Eye point: 20 mm (Optical eyepoint 22 mm)

6-5 Coverage: Approx. 95% vertically and horizontally (Coverage against JPEG Large)

6-6 Magnification: 0.90 (with 50mm lens at infinity, -1 dpt)

6-7 Viewfinder information:
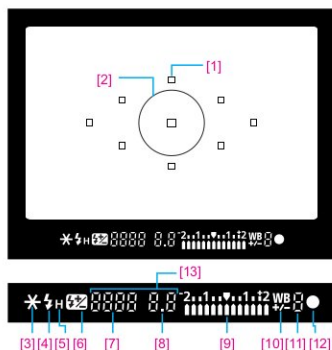
1) On the screen
    [1] AF points (9)
    [2] Partial metering circle
2) Below the screen (Major information)
    [3] AE lock, FE lock, AEB in progress (blinks)
    [4] Flash ready, insufficient flash warning during FE lock (blinks)
    [5] High-speed sync (FP flash)
    [6] Flash exposure compensation
    [7] Shutter speed (if camera shake will occur, it blinks), bulb, FE lock (FEL), Processing data (buSY)
    [8] Aperture (if unsuitable, it blinks)
    [9] Exposure level display: Exposure compensation, Manual exposure level, AEB level, Flash exposure compensation, Red-eye reduction lamp on time display
    [10] White balance correction
    [11] Max. burst
    [12] AF focus confirmation (blinks when focus cannot be achieved), MF focus confirmation
    [13] CF card full warning (FuLL CF), CF card error warning (Err CF), No CF card warning (no CF)

6-8 Mirror: Quick-return half mirror (Transmittance : reflectance ratio of 40:60)

6-9 Viewfinder blackout time: Approx. 115 ms at 1/60 sec. or faster speeds.

6-10 Mirror lockup: Enabled with C.Fn-12-1.
    (1) Mirror locks up when the shutter button is pressed completely (SW-2). The shot is taken when the shutter button is let go and pressed completely again.
    (2) Mirror lockup duration: Max. 30 sec. after which the mirror returns. No exposure occurs.

6-11 Mirror cut-off: No mirror cut-off with lenses up to EF 600mm f/4

6-12 Depth-of-field preview: Enabled with depth-of-field preview button
    (1) Enabled in Creative Zone modes only.
    (2) With Speedlite SL580EX, 550EX, 420EX, MR-14EX, or MT-24EX, pressing the depth-of-field preview button fires a modeling flash.

6-13 Eyepiece shutter: None (Eyepiece cover provided on strap)

6-14 Misc.: Eyecup Eb provided

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7. Autofocus

7-1 Type:	TTL-CT-SIR CMOS sensor (TTL Cross Type secondary image Registration)
7-2 AF points:	9

> • Center AF point sensitive to f/2.8, focuses on two vertical lines.

7-3 Focusing modes:

1) Autofocus

In the Creative Zone modes, the following three modes can be selected:

[One-Shot AF]

When focus is achieved, the AF operation stops and locks (AF lock).

(1) AF-priority (The shutter can be released only when focus is achieved.)

(2) During evaluative metering, AE lock is set when focus is achieved.

(3) In metering modes other than evaluative metering, exposure metering continues in real-time until the shutter is released.

(4) With applicable USM lenses, electronic ring manual focusing can be used after focus is achieved with One-Shot AF or if focus cannot be achieved with One-Shot AF.

(5) Automatically set in the Portrait, Landscape, Close-up, and Night Portrait modes.

[Predictive AI Servo AF]

Tracks subject movement and focuses continuously until the start of exposure.

(1) First shot during halfway pressing (SW-1):

> • Creative Zone modes: Shutter-release priority (shutter releases after the lens drive stops during focusing).

> • Sports, Full Auto, No Flash modes (AI Servo AF): AF priority

(2) 2nd shot onward during continuous shooting: Shutter releases after the lens drive stops during subject tracking.

(3) Automatically set in the Sports mode.

(4) Sports mode: Beeper provided, no focus confirmation indicator

(5) Creative Zone modes: No beeper, no focus confirmation indicator

(6) If focusing is impossible, the focus confirmation icon blinks.

(7) With applicable USM lenses, electronic ring manual focusing can be used if focus cannot be achieved.

[AI Focus AF (Automatic switching between One-Shot/Predictive AI Servo AF)]

When the AF point which achieved focus in the One-Shot AF mode detects subject movement, the AI Servo AF mode takes over.

(1) Automatically set in the Full Auto and No Flash modes.

(2) In the Basic Zone and Creative Zone modes, the beeper will sound when AI SERVO AF operates during the AI Focus AF mode.

2) Manual focus (MF)

After the lens focus mode is switched to MF (or M), manual focusing is enabled with the focusing ring.

(1) When focus is achieved, the focus confirmation icon and superimposed display lights up.

(2) During automatic AF point selection, focus aid is provided for the nine AF points. During manual AF point selection, focus aid is provided for the selected AF point.

(3) During continuous shooting, electronic ring manual focusing is enabled during the exposure.

7-4 Focusing point selection:

1) Automatic selection

The camera selects the AF point automatically and focuses the subject.

(1) In the One-Shot AF mode

One of the nine AF points is selected automatically to focus the optimum subject.

(2) In the AI Servo AF mode

At the start of focusing, the center AF point focuses the subject. AI Servo AF continues even if the subject later moves away from the center AF point to another AF point.

(3) Normally, it focuses the closest subject.

(4) During automatic AF point selection, all AF points which achieve focus will flash via superimposed display.

(5) Automatically set in the Basic Zone modes and A-DEP.

2) Manual AF point selection

The AF point selected manually is used to focus.

• Settable in the Creative Zone modes (except A-DEP).

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7-5 AF point selection: operation	Press the AF point selector, then use the Multi-controller (8 directions + center press) or turn the Main Dial or Quick Control Dial to select the AF point.

(1) If you press the AF point selector and then press the center of the Multi-controller, the center AF point will be selected. If you press the Multi-controller in one of the 8 directions, the respective AF point (left, upper left, lower left, top, bottom, lower right, upper right, right) will be selected.

(2) In the manual AF point selection mode, if you push the Multi-controller in the direction of the current AF point, it will switch to automatic AF point selection.

(3) If you press the AF point selector and then turn the Main Dial/Quick Control Dial clockwise, the AF point selection will proceed in the following looping sequence: top, automatic selection, center, upper right, right, lower right, bottom, lower left, left, upper left, top, automatic selection? (If you turn the dial counterclockwise, the selection sequence will be in the reverse order.)

(4) With C.Fn-13-1, the Multi-controller can select the AF point directly. With C.Fn-13-2, the Quick Control Dial can select the AF point directly (without needing to press the AF point selector).

7-6 AF point display:	Indicated by superimposed display in the viewfinder and on the LCD panel.
7-7 AF activation:	AF is activated by pressing the shutter button halfway (SW-1)
7-8 AF operation speed:	Equal or faster than EOS 10D.
7-9 Focus confirmation:	Superimposed AF point displayed in viewfinder, focus confirmation lamp, and focus confirmation beeper.

(1) In the Basic Zone and Creative Zone modes, the beeper will sound when AI SERVO AF operates during the AI Focus AF mode. Also, the beeper will sound in the Sports mode.

(2) In Creative Zone modes, the beeper will not sound in the AI SERVO AF mode.

(3) No focus confirmation indicator in the AI SERVO AF mode.

               (4) The focus confirmation beeper can be enabled or disabled with the menu's [Beep].

               (5) The superimposed display can be enabled/disabled with C.Fn-10.

7-10 AF precision:	Same as the EOS 10D
7-11 AF working range:	EV -0.5 -18 (at 20°C and ISO 100, under Canon's testing standards)
7-12 AF-assist beam:	Intermittent firing of built-in flash.

               (1) Effective range: Approx. 4 m/13.1 ft. at center, approx. 3.5 m/11.5 ft. at periphery

               (2) Conditions for emission: Emitted automatically if necessary under low light (EV 4 or lower at ISO 100).

                  • Not emitted in the Landscape, Sports, and Flash OFF modes.

                  • In a Creative Zone mode, emitted automatically when the built-in flash has been popped up manually.

                  • Emission can be disabled/enabled with C.Fn-05.

               (3) Emission time (1 burst), frequency, times (stops when the focus confirmation signal is detected)
Approx. 280 ms or less, approx. 28 Hz, Max. 8 times

               (4) With external EOS Speedlite
The external Speedlite's AF-assist beam is used.

                  Note: With AF-assist-equipped EOS Speedlites except SL580EX, 550EX, 420EX, ST-E2, and 540EZ: Emitted only during AF point automatic selection or when the center AF point has been selected manually. (With a Speedlite other than the SL580EX, the AF-assist might not be emitted depending on the AF point selection. Or focus might not be achieved even if AF-assist is emitted. If this happens, use the center AF point to focus.)

8. Exposure Control

8-1 Type:	Max. aperture TTL metering with 35-zone SPC with the following selectable modes:

               (1) Evaluative metering (linked to all AF points)

               (2) Partial metering at center (approx. 9% of viewfinder)

               (3) Centerweighted average metering

	• In the Basic Zone modes, (1) is set automatically. In the Creative Zone modes, (1) to (3) are selectable.
	• AF point-linked partial metering is not possible.
8-2 Exposure modes:	1) Program AE (shiftable)
	2) Shutter-priority AE
	3) Aperture-priority AE
	• With C.Fn-16-1, safety shift is applied to (2) or (3).
	4) Depth-of-field AE (A-DEP, non-shiftable)
	5) Full Auto (Program AE/non-shiftable)
	6) Programmed Image Control modes (6)
	• Portrait, Landscape, Close-up, Sports, Night Portrait, Flash OFF
	7) Manual exposure (including bulb)
	8) E-TTL II autoflash program AE
	• C.Fn-14-0: Evaluative metering, C.Fn-14-1: Averaged metering
8-3 Metering range:	EV 1-20 (at 20ºC with 50mm f/1.4 lens at ISO 100, under Canon's testing standards)
8-4 Exposure beyond range warning:	Shutter speed and aperture displays blink on the LCD panel and in the viewfinder.
8-5 Exposure metering:	Activated when shutter button is pressed halfway (SW-1 ON).
	• Metering time: Approx. 4 sec. before exposure and approx. 2 sec. after exposure.
8-6 ISO Speed:	1) Basic Zone modes: Automatically set by the camera

(ISO)

Shooting Mode	AE Shooting		With Built-in Flash	With External Speedlite
	Slower than 1/500 sec.	1/500 sec. or faster		
Full Auto	400	100 - 400	400	400
Portrait	100		400	400
Landscape	100 - 400		-	400
Close-up	400	100 - 400	400	400
Sports	400		-	400
Night Portrait	400	100 - 400	400	400
Flash Off	400	100 - 400	-	-

(1) In the Basic Zone modes, the ISO speed cannot be set manually.

(2) During continuous shooting, the ISO speed does not change.

(3) In the Landscape mode, if the shutter speed (Tv-auto) is faster than 1.25 times the reciprocal of lens focal length, ISO 100 is set.

2) Creative Zone modes: 100/200/400/800/
1600/H (3200)

(1) In Creative Zone modes, the ISO speed
cannot be set automatically.

(2) H can be set only when C.Fn-08-1 (ISO
speed extension) has been set.

8-7 Exposure Compensation: 1) Manual exposure compensation

(1) Setting method: Settable in Creative Zone
modes (except Manual).

(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	Yes	Yes
Shutter-priority AE	-	Yes
Aperture-priority AE	Yes	-
Depth-of-field AE	Yes	Yes
Manual	Yes	-

(4) AEB cancellation: Set the AEB amount to
0.

2) AEB (Auto Exposure Bracketing)

Note: If 1) and 2) are set in combination, the AEB amount
will be shifted by the exposure compensation
amount.

(1) Setting method: In the Creative Zone
modes, set with the on-screen menu.

• During AEB: The AEB icon and AEB level
on the LCD panel blinks, and the AE lock
icon 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.

• If the self-timer is used, the three
bracketed shots will be exposed
successively after the self-timer delay.

• May be used in combination with WB-
BKT. (In this case, nine images will be
generated.)

• With C.Fn-09 (Bracketing sequence/Auto
cancel), the bracketing sequence can be
changed.

(4) Bracketing factor: Same as for 1).

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(5) AEB cancellation: Set the AEB amount to 0.
   • With C.Fn-09 (Bracketing sequence/Auto cancel), AEB can be canceled afterward automatically or not. (If the flash is ready or the flash button is ON, AEB will be canceled afterward automatically regardless of the C.Fn-09 setting.)

8-8 AE Lock:
1) Auto AE lock
   • In the One-Shot AF mode with evaluative metering, AE lock takes effect when focus is achieved.
2) Manual AE lock
   (1) Enabled with AE lock button. (Pressing the button again renews AE lock.)
   (2) No AE lock in Basic Zone modes.
   (3) During evaluative metering, AE lock centers on the selected AF point. During partial metering at the center or centerweighted averaged metering, AE lock centers on the center AF point.
   (4) When the built-in flash or an EX-series Speedlite is used, the AE lock button works as an FE lock button.

8-9 Multiple exposures:
Not possible

9. Shutter

9-1 Type:
Vertical-travel, mechanical, focal-plane shutter with all speeds electronically-controlled
   • Mechanical shutter: 1st and 2nd shutter curtains both have dedicated magnet control. (Curtain speed: 2.4 ms)

9-2 Shutter speeds:
1/8000 sec. to 30 sec. X-sync at 1/250 sec.
   (1) Settable in 1/3- and 1/2-stop increments in shutter speed-priority AE and manual modes.
   (2) For bulb exposures, the elapsed exposure time is displayed on the LCD panel.
   (3) Max. continuous bulb exposure is approx. 2.5 hours.

9-3 Shutter release:
Soft-touch electromagnetic release

9-4 Shutter-release time lag:
1) During SW-1 ON, time lag between SW-2 ON and start of exposure: Approx. 65 ms
2) Time lag between simultaneous SW-1/SW-2 ON and start of exposure: Approx. 85 ms
Note: Excludes the aperture stop-down time (up to 3.5 stops) and AF operation time.

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9-5 Noise reduction: Settable with C.Fn-02 (Noise reduction for long exposures)
- (1) Works with shutter speeds from 1 sec. to bulb.
- (2) After the exposure ends, the same amount of time as the exposure is required for the noise reduction.

9-6 Self-timer: 10-sec. delay
- (1) After starting, the self-timer is cancelable by pressing the drive button again.
- (2) With C.Fn-12-1 (Mirror lockup), the self-timer delay is 2 sec.

9-7 Self-timer operation: indicator
- 1) Red-eye reduction lamp (blinks for the first 8 sec., then lights for the remaining 2 sec.)
- 2) LCD panel (Frame counter counts down from 10 to 1 sec.)
- 3) Beeper (beeps at 2 Hz for the first 8 sec., then at 8 Hz for last 2 sec.)

9-8 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 0 1.25, the shutter speed display blinks.

10. Drive

10-1 Drive modes: [1] Single [2] Continuous [3] Self-timer
- (1) Creative Zone modes: [1], [2], and [3] are settable.
- (2) Basic Zone modes: [1] or [2] set automatically depending on the shooting mode and [3] is settable.

10-2 Continuous shooting: Continuous shooting with the internal buffer memory recording.
- The image-processing method switches automatically to the suit the shooting conditions.

Note 1: With the EOS 20D's recording quality set to JPEG, image processing is executed even during continuous shooting.

Note 2: In the RAW, RAW+JPEG, and WB-BKT modes, image processing is not executed during continuous shooting.

10-3 Continuous shooting speed:

1) With Battery Pack BP-511A

(Approx. max. shots/sec.)

ONE SHOT AF / MF		5.0
AI SERVO AF	USM lens	5.0
	Non-USM lens	3.5

2) With BATTERY GRIP BG-E2 Size-AA Batteries

(Approx. max. shots/sec.)

ONE SHOT AF / MF		5.0
AI SERVO AF	USM lens	3.5
	Non-USM lens	

* All recording qualities if Tv=1/250 sec.

10-4 Maximum burst:

When Canon 512MB CF card is used;

Recording Quality	Maximum Burst
Large/Fine	23
Large/Normal	43
Medium/Fine	36
Medium/Normal	83
Small/Fine	67
Small/Normal	138
RAW	6
RAW+JPEG	6

(1) Canon 512MB CF card = Super Hi-speed type CF card

(2) Depending on the shooting condition, development condition and CF card type, max. burst of JPEG images may vary.

(3) When the recording quality is set to JPEG, the max. burst during continuous shooting may be less than 6 shots in the following cases:
- During continuous shooting in the Portrait mode, the built-in flash was turned off or on automatically.
- During continuous shooting, the external Speedlite's recycling is not fast enough.

Note 1: The following operations during continuous shooting may decrease the max. burst to 6 or less shots. Therefore, these operations should be avoided during continuous shooting.
- You press the shutter button repeatedly at short intervals.
- Right after shooting, you change the shooting mode and take another shot.
- During continuous shooting, you pop-up or retract the built-in flash or turn the external Speedlite on or off.

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Note 2: The maximum burst is displayed on the viewfinder bottom ("9" displayed if it is 9 shots or higher or "8" to "0" is displayed when it is less than 9). The max. burst is displayed even when the drive mode is Single or Self-timer. Also, note that the max. burst will be displayed even if there is no CF card installed.

(4) In the B/W mode, the max. burst will be higher than when you shoot in color.

(5) When the buffer memory becomes full, shooting will not be possible until at least one image in the internal memory is recorded onto the CF card.

(6) Menu operations are possible during image processing.

10-5 Battery life:

1) With Battery Pack BP-511A

Battery	Temperature	Shooting Conditions	
		AE100%	AE50%, FA50%
BP-511A × 1	At 20℃	Approx. 1000	Approx. 700
	At 0℃	Approx. 750	Approx. 550

2) With BATTERY GRIP BG-E2 Battery Pack BP-511A

Battery	Temperature	Shooting Conditions	
		AE100%	AE50%, FA50%
BP-511A × 1	Same as 1)		
BP-511A × 2	At 20℃	Approx. 2000	Approx. 1400
	At 0℃	Approx. 1500	Approx. 1100

3) With BATTERY GRIP BG-E2 Size-AA Batteries

Battery	Temperature	Shooting Conditions	
		AE100%	AE50%, FA50%
Size-AA alkaline batteries × 6	At 20℃	Approx. 80	Approx. 60
	At 0℃	Approx. 0	Approx. 0

(1) The battery capacity for BP-511/512 is 1100mAh or -26% compared with the BP-511A (1390mAh).

(2) Shooting conditions: Fully charged battery pack, EF 50mm f/1.8 II, image review time 2 sec., and Large/Fine image quality.

(3) Complies to CIPA testing standards.

10-6 Image review: Image review time right after image capture is settable with the menu's [Review time].

(1) Settable to 2 sec., 4 sec., 8 sec., or Hold.

(2) If you press the Info button during image review, you can switch the Info display on or off.

(3) The hold setting turns off the LCD monitor at half the auto power off time.

11. Built-in Flash

11-1 Type:	Auto pop-up, retractable, built-in flash in the pentaprism
11-2 Guide No.:	Guide No. 13 (at ISO 100 in meters)
11-3 Recycling time:	Approx. 3 sec.
11-4 Flash-ready indicator:	Flash-ready indicator lights on in viewfinder

       • When the flash recycles, the flash icon and "buSy" are displayed and the shutter release locks.

11-5 Flash coverage:	Up to 17mm focal length (equivalent to 27mm in 135 format)
11-6 Flash button:	In Creative Zone modes, the button pops up the flash.
11-7 Firing conditions:	1) Creative Zone modes: After pop-up, fires at all times.

    2) Basic Zone modes (except Landscape, Sports, Flash off):
      Auto pop-up and firing under low-light and backlit conditions.

11-8 Flash sync speed: Max. X-sync speed 1/250 sec.

      (1) In Full Auto, Program, A-DEP, Portrait, and Close-up modes: Set automatically to 1/250 sec. to 1/60 sec.

      (2) In the Night Portrait mode: Set automatically to 1/250 sec. to 2 sec.

      (3) In Tv and M modes: Set manually to 1/250 sec. or slower.

      (4) In Av mode: Set automatically to 1/250 sec. to 30 sec. depending on the aperture setting.

11-9 Flash aperture: The flash aperture is set as shown below

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

* In the Landscape, Sports, and Flash OFF modes, the built-in flash will not fire. With an external Speedlite, it will fire in the Landscape and Sports modes (same result as 1).

11-10 Autoflash system:	E-TTL II autoflash
11-11 Flash level control:	Automatic flash output reduction for backlit conditions and daylight flash.

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11-12 Flash exposure Compensation:

1) Setting precondition: In Creative Zone modes
2) Compensation amount: Up to ±2 stops in 1/3- or 1/2-stop increments
3) Cancellation: Set exposure level to 0
4) Up to ±2 stops in 1/3- or 1/2-stop increments.
   • Flash exposure compensation for built-in flash and Speedlite can be set with the camera.

11-13 Effective flash range:

(m)

ISO	EF-S 17-85mm f/4-5.6 USM	
	WIDE : 17mm	TELE : 85mm
100	1 - 3.3	1 - 2.3
200	1 - 4.6	1 - 3.3
400	1 - 6.5	1 - 4.6
800	1 - 9.2	1 - 6.5
1600	1 - 13.0	1 - 9.2
H:3200	1 - 18.4	1 - 13.0

* If the focusing distance is shorter than 1 meter and no hood is attached to the lens, the flash will be partially obstructed by the lens barrel.
* If you use a high ISO speed and the maximum aperture, overexposure may result.
* The maximum range is calculated by dividing the respective ISO speed's nominal Guide No. by the f/number.

11-14 Improper FE lock warning:

During FE lock, the flash icon blinks.

11-15 Sufficient flash indicator:

None

11-16 Flash-sync timing:

1st-curtain sync
   • With C.Fn-15-1 (Flash sync timing), 2nd-curtain sync is possible.

11-17 Flash duration:

1 ms or shorter

11-18 Color temperature:

Equivalent to daylight

11-19 Optical axis space:

Flash center to lens axis: 91.93 mm

11-20 Power source:

Supplied by camera's power source.

11-21 Red-eye reduction:

When the built-in flash pops up, the red-eye reduction lamp lights and then the flash fires.
  (1) Type: Illumination by lamp
  (2) Compatible modes: Operates in all modes except Landscape, Sports, and Flash OFF.
  (3) Setting method: With the menu's [Red-eye On/Off].
  (4) Conditions for illumination: Lights after focus is achieved when the shutter button is pressed halfway (SW-1) in the One-Shot AF mode.
    (In the AI SERVO AF or MF mode, the red-eye reduction lamp lights immediately at SW-1.)

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(5) Illumination duration: Lamp lights during SW-1 ON. Light level decreases after 1.5 sec. (With the self-timer, it lights 2 sec. before shutter release.)

(6) Lamp ON indicator: Exposure level display in viewfinder (dot display disappears for the first 1.5 sec.)

(7) Shutter-release lock: None (Shutter-release priority)

Note: With an external EOS-dedicated Speedlite, the red-eye reduction lamp does not light.

12. External Speedlite

12-1 Flash sync contacts:
1) Hot shoe: X-sync contacts
  • Locking pin hole provided to prevent Speedlite slippage.
2) Lower side of the body: PC terminal
  (1) No polarity.
  (2) Both 1) and 2) can be used for simultaneous firing.

12-2 Flash auto:
Enabled with the camera's Program AE mode.
  (1) With EX-series Speedlites
      Works in all shooting modes.
  (2) With Canon A-TTL/TTL autoflash external Speedlites
      • Works in manual and stroboscopic modes and with external flash.
      • Does not fire in A-TTL/TTL autoflash modes.
      • Does not work with Speedlites not having manual and stroboscopic modes.
      • Cannot be used with TTL Hot Shoe Adapter (flash does not fire even in the Manual/Stroboscopic flash mode).
  (3) With non-Canon flash units:
      • On-camera unit can synchronize at 1/250 sec. or slower.
      • Studio flash can synchronize at 1/60 sec. or slower (testing recommended).

12-3 Flash exposure: compensation
1) Manual setting
  (1) Up to ±2 stops in 1/3- or 1/2-stop increments.
  (2) If flash exposure compensation is set with both the camera and Speedlite, the Speedlite's setting will override the camera's setting.
2) FEB (Flash Exposure Bracketing)

(1) Settable with the SL580EX, 550EX, MR-14EX, or MT-24EX.

(2) In the continuous drive mode, shooting stops automatically after the three bracketed shots are taken.

(3) When the flash fails to recharge fast enough during continuous shooting with FEB, AE shooting takes effect. FEB resumes when the flash is ready.

12-4 Modeling flash:	Enabled with the SL580EX, 550EX, 420EX, MR-14EX, and MT-24EX

- In Creative Zone modes, press the depth-of-field preview button to fire at 70 Hz for 1 sec.

12-5 Wireless flash:	Enabled with the SL580EX, 550EX, 420EX, MR-14EX, MT-24EX, or ST-E2.

(1) Three-group (A, B, C) slave control, a flash output ratio (A:B) control, FEB, and modeling flash (with flash output ratio) are enabled.

(2) The 420EX can function as a slave only, while the MR-14EX or MT-24EX serves as the master unit only.

13. LCD Monitor

13-1 Type:	TFT color, liquid-crystal monitor
13-2 Screen size:	1.8 in.
13-3 Pixels:	Approx. 118,000 pixels (Displayed pixels)
13-4 Coverage:	Approx. 100% (for JPEG images)
13-5 Brightness adjustment:	5 levels

- Settable with menu's "LCD brightness"

13-6 Angle adjustment:	None
13-7 Protective cover:	None

14. Playback

14-1 Image display format:	1) Single image

(1) During the image display, press the Info button to switch to normal (image + basic info), image only (no info), image info display (information + reduced image)

(2) Turn the Quick Control Dial or Main Dial to view the previous or next image.

2) 9-image index

- During the image display, press the Info button to switch to normal (9 images + basic info), 9 images only (no info)

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3) Magnified zoom
  • During the image display, press the Info button to switch to normal (magnified image + basic info), magnified image only (no info)
4) Auto play
5) Auto play right after shooting
  • Except when the menu's [Review time: Off] is set, the last image captured is displayed.

14-2 Display conditions: Images saved in DCF format.
  (1) If the image is not in the DCF format, [?] is displayed on the LCD monitor.
  (2) Also applicable to the index's thumbnail images.

14-3 Info display: 1) Shooting information display (Camera Information)
  • When the camera is ready to shoot and you press the Info button, the following information will be displayed:
    1. Date/time 2. WB correction amount 3. WB-BKT setting 4. Color space 5. Processing parameters 6. Image review time 7. Flash exposure compensation amount 8. Auto power-off 9. Auto rotated image 10. Color temperature 11. CF card space remaining 12. ISO speed 13. AEB
    Note: Items which cannot be set in the Basic Zone modes are not displayed (ISO Auto is displayed).
  2) Image info display (Playback Info)
  • When an image is displayed and you press the Info button, the following information will be displayed together with a reduced image:
    1. File No. 2. Reduced image 3. Histogram 4. Color space 5. Shooting date/time 6. ISO speed 7. Metering mode 8. Shooting mode 9. Shutter speed 10. Aperture 11. Exposure compensation amount 12. Flash exposure compensation amount 13. White balance correction amount 14. Images recorded/Total images recorded 15. Protect 16. Recording quality 17. Original image verification data appended 18. White balance 19. Color temperature (displayed only when WB setting is K) 20. Monochrome

Note 1: If a JPEG image not in the DCF format is
selected, [!] is displayed.

Note 2: If an image that cannot be displayed is
selected, [?] is displayed.

14-4 Highlight alert: In the single image (Info) display mode, the highlight portions containing no image information will blink.

14-5 Magnify zoom display With the Magnify button, the image can be magnified from the single image display from approx. 1.50 to 100 in 15 steps.

Magnify	Magnify button
Reduce	Reduce button
Scroll vertically	Multi-controller (Diagonal scrolling also possible.
Scroll horizontally	Center button does not function.)
View next image	Quick Control Dial, Main Dial (The previous or next image can be viewed while the magnified position remains the same.)

* The image magnification will start at the center.

14-6 Index display Single image display or press the Reduce button for 9-image display
•View the previous/next image with the Quick Control Dial or Main Dial.

14-7 Rotated display: 1) Manual
(1) With the menu's "Image rotation," the image can be rotated clockwise in 90°, 270° and 0°.
(2) Images appended with original image verification data can also be rotated.
2) Auto image rotation
(1) Settable with the menu's "Auto image rotation."
(2) When a vertical image is played back in the horizontal orientation, the camera rotates the image automatically to the vertical orientation.
(3) Image rotation is applied during playback and video OUT (not during image review after image capture).

14-8 Jump: 1) With the Jump button, browse through images during playback or switch the menu category (Shooting, Playback, Setup)
2) Browsing the previous/next image during playback works with (1) Single image, (2) 9-image index, and (3) Magnified view as listed in 14-1.
(1) For 1), turn the Main Dial or Quick Control Dial to jump 10 images forward or back.

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(2) For 2), turn the Main Dial or Quick Control Dial to jump (by 9 images) to the previous or next page.

(3) For 3), turn the Main Dial to jump 10 images forward or back.

(4) With the menu displayed, press the JUMP button to jump to the top of the respective menu.

14-9 Video output: Compatible with NTSC/PAL video output terminals.
- Select the type with the menu's "Video output type." Use Video Cable VC-100.

15. Protection/Deletion of Recorded Images

15-1 Protection: A single image can be protected or unprotected.
- With the menu's [Protect].

15-2 Erase: A single image or all images stored in a Compact Flash card can be erased if they are unprotected.

(1) During playback, press the Erase button ([Erase] [All images?] will be displayed).

(2) Images erase-protected with the camera cannot be erased (except during formatting).

16. Menus

16-1 Description: 1) Shooting 2) Playback 3) Setup
- Each menu category is color-coded on the LCD monitor: 1) Red, 2) Blue, 3) Yellow

16-2 LCD monitor language: Any of the following 12 languages can be selected:
English, German, French, Dutch, Danish, Finnish, Italian, Norwegian, Swedish, Spanish, Chinese (simplified), and Japanese.

16-3 Firmware updating: Enabled by the user.

17. Bubble Jet Direct/CP Direct

Note: Hereinafter Bubble Jet Direct abbreviated as BJD and CP Direct as CPD.

17-1 Configuration: Camera, CPD/BJD-compatible printer, dedicated cable

17-2 Operation method: By operating the camera, the image is printed directly by the CPD/BJD-compatible printer.

17-3 Compatible printers: CP-series and BJD-series printers

17-4 Paper sizes: CPD: Card, L, postcard
BJD: A4, L, 2L, card, postcard (when Japanese is selected)

17-5 Transmission protocol: Canon-developed protocol.

17-6 Data transfer system:

Data transfer from camera to printer.
CPD: YMC, BJ: JPEG

Note: With CPD, image processing is executed by the camera, and with BJ, it is executed by the printer.

17-7 Printable images:

JPEG (Fine/Middle/Small) images

Note: JPEG images in RAW+JPEG images can be printed, but not RAW images.

17-8 Printing system:

1) Single image printing 2) DPOF batch printing
   (1) Both CPD/BJD compatible with 1) and 2).
   (2) Printing cancellation: Enabled with 1) and 2). Resumable after cancellation: Enabled with (2).
   (3) When CP is connected, image printing in progress cannot be canceled. The printing of all the remaining images will be canceled. When BJD is connected, the printing is canceled and the paper will be discharged.
   (4) If an error occurs, [Stop] or [Resume] may appear or only [Stop] may appear depending on the error type.

17-9 Style settings:

1) CPD: On-screen settings (single or split screen)
   BJD: Paper (L, 2L, postcard, A4, card)

Note: BJ: If Japanese is not selected as the language, the choices will be Card#1, Card#2, Card#3, LTR, and A4 instead.

2) Borders (Borders or borderless)
3) Date (ON/OFF)

17-10 Trimming

Trim horizontally up to 8 steps, vertically up to 5 steps.

Reduce outline	Magnify button
Enlarge outline	Reduce button
Move outline horizontally	Multi-controller (Diagonal scrolling also
Move outline vertically	possible. Center button does not function.)
Rotate outline	Info button

(1) Trimming is not possible with DPOF-specified images printed directly.
(2) The image to be trimmed is initially displayed at the center.
(3) The trimming aspect ratio will depend on the style setting.
(4) If the trimming has been set and then the style is changed, the "Readjust trimming" message will appear.

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(5) If CP/BJ is connected and the image to be trimmed looks rough due to excessive magnification, the trimming outline color (normally green) will be red.

(6) The guidance icon will appear on the initial trimming screen or when no operation is done for 5 sec. During an operation, the guidance icon will disappear and only the trimming outline is displayed.

(7) When operation is done with a TV set via the video output, the trimming outline might not be displayed properly.

18. PictBridge

18-1 Configuration: Camera, PictBridge-compatible printer, dedicated cable

  (1) The dedicated USB cable comes with the camera.

  (2) Even while the PictBridge printing screen is displayed, the camera can instantly switch to shooting when you press the shutter button halfway (SW-1 ON).

18-2 Operation method: By operating the camera, the image is printed directly by the PictBridge-compatible printer.

18-3 Compatible printers: PictBridge-compatible printers

18-4 Paper sizes: L, 2L, postcard, card (5.408.6 cm), 10015 cm, 5"07", A4, 8.5"011", roll paper (9, 10, 13, 21 cm), 8.9025.4 cm (panorama), A3, 11"017", A3 wide

  • Selectable paper sizes may differ depending on the printer.

18-5 Paper types: Plain, photo (Super Photo Paper), high-grade photo (Pro Photo Paper), normal (Super Photo Paper)

  (1) Canon paper names are in parentheses above.

  (2) Selectable paper types may differ depending on the printer.

18-6 Printing effects:
(Image optimization)   1) With Canon printers:
ON (Exif print), OFF (No printing effects), VIVID/NR (Noise reduction), VIVID+NR, Normal (Exif print)

2) With non-Canon printers:
ON, OFF, Normal

  (1) The settings for ON/Normal are set by the printer manufacturer.

  (2) Selectable printer effects may differ depending on the printer.

18-7 Trimming: Trim horizontally up to 8 steps, vertically up to 5 steps.
- The trimming method will depend on the CPD/BJD printer.

18-8 Layout: Borders, borderless, 8/2/4/9/16/20-image print (An X number of the same image is printed on a sheet.), Normal ("Borderless" with Canon printers)
- Selectable layouts may differ depending on the printer.

18-9 Date imprinting: ON, OFF, Normal ("ON" with Canon printers)
- If the printer does not have the date-imprinting feature, the date will not be imprinted even if the "ON" is set.

18-10 DPOP printing: DPOF-specified printing is possible
(1) If both Standard and Index are set, only Standard printing will be executed.
(2) The file No. will not be imprinted even if it is set to "ON" (BJ printers are not geared to imprint the file No.).

18-11 Transmission protocol: PTP
- Set with the menu's [Communication].

18-12 Data transfer system: JPEG
- Image processing is executed by the printer.

18-13 Printable images: JPEG (Fine/Middle/Small) images
- JPEG images in RAW+JPEG images can be printed, but not RAW images.

19. Print specification (DPOF)

19-1 System: Complies to DPOF Version 1.1

19-2 Specification with print: 1) Individual images
2) All images in CF card
- Print specification is not possible for RAW images.

19-3 Print type: 1) Standard
2) Index
3) Both

19-4 Date/File No. print

Print type		CPD		BJD		PictBridge	
		Date	File No.	Date	File No.	Date	File No.
Standard		Yes	Yes	Yes	No	△	△
Index		Yes	Yes	No	No	△	△
Both	Standard	Yes	Yes	Yes	No	△	△
	Index	Yes	Yes	No	No	△	△

* For index prints, both the date and file No. cannot be set to [ON].
* For index prints with BJD, the date or file No. will not be imprinted even if it is set to [ON].
* Whether using PictBridge is possible or not depends on the printer.

19-5 Camera direct: With a CPD/BJD printer or PictBridge printer connected, batch printing of specified images is possible.
•Printed after the paper size and borders on/off are specified.

20. Customization
20-1 Custom Functions: 18 Custom Functions with 50 settings settable with the camera.

21. External Interface
21-1 Digital terminal: USB 2.0 (Hi-speed); small, dedicated port
21-2 Video output terminal: Provided (NTSC/PAL)
21-3 Remote control terminal: N3-type terminal

22. Power Source
22-1 Battery: Battery Pack BP-511A/BP-514/BP-511/BP-512 01
(1) With the AC Adapter Kit ACK-E2, AC power is possible.
(2) With BATTERY GRIP BG-E2, two battery packs can be used. Or six size-AA batteries can be used.
22-2 Main switch: OFF/ON/ON (Quick Control Dial ON), 3 settings
•Power turns off if the CF card slot cover or battery chamber cover is opened.
22-3 Start-up time: Approx. 0.2 sec.
•When Power Switch is set from Off to On, and startup is completed as SW-1 is On (ready to shoot).
22-4 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 (or four levels if non-display is counted).
22-5 Power-saving feature (Auto power off) : Power turns off after the set time of non-operation elapses.
•Select from the menu's [Auto power off] the

	time: 1, 2, 4, 8, 15, or 30 min.
22-6 Date/time back-up battery:	Lithium CR2016 button battery 01
	Battery life approx. 5 years
	(1) No backup battery warning.
	(2) Date/time is reset when the battery is replaced.

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

24. Exterior

24-1 Exterior material: Magnesium alloy (top, front, rear cover), polycarbonate resin, and special conductive, fiber-mixed polycarbonate resin

24-2 Exterior color: Paint: Black, Grain leather: Gray

24-3 Tripod socket: CU 1/4

24-4 LCD panel illumination: LCD panel illumination button provided

(1) Press the button for 6-sec. illumination. Press again to turn it off. Turns off automatically 2 sec. after image capture.

(2) Illumination is prolonged if any shooting-related button or dial is used.

25. Dimensions: 144 (W) × 105.5 (H) × 71.5 (D) mm
5.7 (W) × 4.2 (H) × 2.8 (D) in.

26. Weight: 685g /24.2oz

(1) Excluding the battery pack, Compact Flash card and body cap.

(2) Excluding the backup battery and eyecup.

27. Operating Environment

27-1 Operating temperature: 0℃ to 40℃ / 32 to 104℉

27-2 Operating humidity: 85% or less

28. Accessories

28-1 Grip: Battery Grip BATTERY GRIP BG-E2

28-2 Battery Pack: Battery Pack BP-511A

Battery: Lithium-ion

Voltage: 7.4 VDC

Capacity: 1390 mAh

Recharging time: 90 min. (with CB-5L)

Ambient temperature: 0℃ to 40℃ / 32 to 104℉

Dimensions: 38 (W) 0 21 (H) 0 55 (D) mm
1.5 (W) × 0.8 (H) × 21.7 (D) in.

Weight: 82 g/2.9 oz.

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28-3 Interface Cable:	Interface Cable IFC-400PCU
	Characteristics: Cable contains no toxic materials (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl, polybrominated diphenyl ether).
	Operation method: Same as with IFC-300PCU
28-4 Video cable:	Video Cable VC-100
28-5 Case:	Semi-Hard Case EH17-L
28-6 Strap:	Wide Strap EW-100DGR
28-7 EOS System Accessories:	See the System Accessory Compatibility Table.

4. NOMENCLATURE AND DIMENSIONS

4.1 Nomenclature

Built-in flash
AF-assist Beam
LCD panel
Main Dial
Shutter button
Red-eye reduction
/Self-timer lamp
Grip
(Battery compartment)

Hot shoe
X-sync contacts
Mode dial
Strap mount
Flash button
Lens release button
Depth-of-field preview button

AF mode/White balance button
Drive mode button/ISO speed button
Metering mode
/Flash exposure compensation button
AE lock/FE lock button/
Index/Reduce button
AF point selector/Enlarge button
Strap mount
Multi-controller
CF card slot cover
Quick Control Dial

LCD panel illumination button
Dioptric adjustment knob
Viewfinder eyepiece
LCD monitor
MENU button
INFO button/
Trimming
orientation button
Jump button
Playback button
Erase button

Power switch
•OFF
•ON (Quick Control Dial OFF)
•ON (Quick Control Dial ON)

Access lamp

Setting button

DC coupler cordhole
Battery compartment
Battery compartment
cover release lever
Battery
compartment cover

Extension terminal cover
Digital terminal
Video OUT terminal
Remote control
terminal (N3)
PC terminal

Tripod socket

Fig. 026 Nomenclature

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4.2 Dimensions

18.0

53.5

44.0

Built-in flash pop-up height

Flash center axis

59.0

101.81

91.93

65.5

40.0

90.0

54.0

Fig. 027 Six Exterior Views

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5. VISUAL INDICATORS

5.1 Viewfinder Information

- AE lock / FE lock
- AEB in-progress
- Flash-ready
- Improper FE lock warning
- High-speed sync (FP flash)
- Flash exposure compensation
- Shutter speed (8000 - 30", bulb)
- FE lock (FEL)
- Busy (buSY)
- Built-in flash recycling (⚡buSY)
- Aperture (00 - 91)

Focusing screen

●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.

●Maximum burst (9 - 0)

● White balance correction

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. 028 Viewfinder Information

5.2 LCD Panel Information and Model Dial

AF point selection (`C-:I-J`)
CF card full warning (`FuLL CF`)
CF card error warning (`Err CF`)
No CF card warning (`no CF`)
Error code (`Err 01-99`)
Cleaning image sensor (`CLEA n`)
Processing parameters (`PA- P1/P2/1/2/3/ B/W`)

Shutter speed (`8000 - 30'', buLb`)
Busy (`buSY`)
Built-in flash recycling (`buSY`)
ISO speed (`Auto, 100 - 1600, H`)

Aperture (`00 - 91`)
Shots remaining (`999 - 0`)
Shots remaining during WB-BKT (`- 0`)
Self-timer countdown (`10 - 1`)
Bulb exposure time (`0 - 999`)

ISO ISO speed
WB +/- WB Correction

White balance
AWB Auto
☀ Daylight
⛰ Shade
☁ Cloudy
💡 Tungsten light
▦ White fluorescent light
⚡ Flash
▵ Custom
K Color temperature

Battery check

■))) Beeper

C.Fn Custom Function

◉ Red-eye reduction

⚡ Flash exposure compensation

Recording quality
◢L Large/Fine
◢L Large/Normal
◢M Middle/Fine
◢M Middle/Normal
◢S Small/Fine
◢S Small/Normal
RAW◢L RAW+Large/Fine
RAW◢L RAW+Large/Normal
RAW◢M RAW+Middle/Fine
RAW◢M RAW+Middle/Normal
RAW◢S RAW+Small/Fine
RAW◢S RAW+Small/Normal
RAW RAW

Drive mode
□ Single
▣ Continuous
⟳ Self-timer

AF mode
ONE SHOT ONE-SHOT AF
AI FOCUS AI FOCUS AF
AI SERVO AI SERVO AF
* Manual focus when none is displayed.

⚞ AEB

B/W Monochrome shooting

Metering mode
◉ Evaluative
○ Partial
□ Centerweighted average

-2..1..•..1.:2 Exposure level
Exposure compensation amount
AEB level
Flash exposure compensation amount
CF card writing status

Fig. 029 LCD Panel Information

Manual exposure
Depth-of-field AE
Aperture-priority AE
Shutter-priority AE
Program AE
Full Auto
Portrait
Landscape
Close-up
Sports
Night portrait
Flash Off

Fig. 030 Mode Dial

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Table 007 Shooting Mode Feature Availability

Shooting mode	AF						Drive			Metering			Program AE								Flash				External Flash
	ONE SHOT	AI SERVO	AI FOCUS	Auto	Manual	AF-assist	Single	Continuous	Self-timer	Evalua-tive	Partial	Center weighted	Standard	Auto	Portrait	Land-scape	Close-up	Sports	Night	P Shift	Auto	Manual	Flash OFF	Red-eye	
1. Full Auto			●	●		●	●		○	●				●							●			○	○
2. Portrait	●			●		●		●	○	●					●						●			○	○
3. Landscape	●			●			●		○	●						●							●		○
4. Close-up	●			●		●	●		○	●							●				●			○	○
5. Sports		●		●				●	○	●								●					●		○
6. Night Portrait	●			●		●	●		○	●									●		●			○	○
7. Flash OFF			●	●			●		○	●				●									●		
8. Standard Program AE	○	○	○	○	○	○	○	○	○	○	○	○	●							○		○		○	○
9. Shutter-priority AE	○	○	○	○	○	○	○	○	○	○	○	○										○		○	○
10. Aperture-priority AE	○	○	○	○	○	○	○	○	○	○	○	○										○		○	○
11. Manual	○	○	○	○	○	○	○	○	○	○	○	○										○		○	○
12. Depth-of-field AE	●	—	—	●		○	○	○	○	○	○	○										○		○	○

Shooting mode	Recording Quality					Color Space		Processing Parameters				White Balance						ISO Speed		AE Lock	Exp. Comp.	AEB	FE Lock	Flash Exp. Comp.	Beeper	Custom Function (C.Fn)
	Large F/N	Medium F/N	Small F/N	RAW+ JPEG	RAW	sRGB	Adobe RGB	Parame-ter 1	Parame-ter 2	Manual Setting	Mono-chrome	AWB	Preset	MWB	Color Temp. Set	WB Correc-tion	WB-BKT	Auto	Manual							
1. Full Auto	○	○	○			●		●				●						●							○	
2. Portrait	○	○	○			●		●				●						●							○	
3. Landscape	○	○	○			●		●				●						●							○	
4. Close-up	○	○	○			●		●				●						●							○	
5. Sports	○	○	○			●		●				●						●							○	
6. Night Portrait	○	○	○			●		●				●						●							○	
7. Flash OFF	○	○	○			●		●				●						●							○	
8. Standard Program AE	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○
9. Shutter-priority AE	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○
10. Aperture-priority AE	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○
11. Manual	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		○			○	○	○	○	○
12. Depth-of-field AE	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○

● : Automatically set.

○ : Selectable, settable, or functional.

— : Selectable but not functional.

*When AI SERVO AF is set in a Creative Zone mode, the beeper will not sound.

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5.3 Functional display screens

	EOS 20D	EOS 10D
Shooting		
Playback		
Setup		
Custom Functions		

Fig. 031 EOS 20D and EOS 10D Menu Comparison

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5.4 LCD Monitor Menus

1) Shooting Men

Color	Creative	Basic	Item	Description
○	△		Quality	Recording quality setting screen → L / L / M / M / S / S → Basic shooting → RAW+L / RAW+L / RAW+M / RAW+M / RAW+S / RAW+S / RAW
○	○		Red-eye on/off	Off / On
○	○		Beep	On / Off
○	○		Shoot w/o card	On / Off
○	×		AEB	0, ±/3, ±2/3, ±1, ±1_1/3, ±1_2/3, ±2 (With C.Fn-06-0) / 0, ±1/2, ±1, ±1_1/2, ±2 (With C.Fn-06-0)
○	×		WB SHIFT/BKT	WB correction/BKT setting screen → WB correction: B: 9-0-A: 9, M: 9-0-G: 9 / WB-BKT setting: B/A or M/G bias. 0, ±1, ±2, ±3
○	×		Custom WB	Image selection screen/SET button: Set
○	×		Color temp.	2800K - 10000K (5200K)
○	×		Color space	sRGB / Adobe RGB
○	×		Parameters	Processing parameter setting screen → Parameter 1 / Parameter 2 / Set1 / Set2 / Set3 / B/W

*Parameter 1 set for Basic Zone modes.

Set1/Set2/Set3:
Contrast	-2, -1, 0, +1, +2
Sharpness	-2, -1, 0, +1, +2
Saturation	-2, -1, 0, +1, +2
Color tone	-2, -1, 0, +1, +2

B/W:
Contrast	-2, -1, 0, +1, +2
Sharpness	-2, -1, 0, +1, +2
Filter effects	N:None/Ye:Yellow/Or:Orange/R:Red/G:Green
Toning Effect	N:None/S:Sepia/B:Blue/P:Purple/G:Green

(Left vertical label: Shooting Commands)

Fig. 032 Menu Functions (Shooting)

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2) Playback Men

Color	Creative	Basic	Item	Description			
	○	○	Protect	Image selection screen/SET button: Protect, cancel			
	○	○	Rotate	Image selection screen/SET button: 90° → 270° → 0°			
	○	○	Print Order	Print specification screen	Order	Image selection screen, quantity setting	
					Set up	Print Type	Standard/Index/Both
						Date	On/Off
						File No.	On/Off
					All	Mark all	
						Clear all	
					Print	Cancel/OK/Style/Resume	
	○	○	Auto Play	Autoplay screen/SET button: Playback, Pause			
	○	○	Review time	Off			
				2 sec.			
				4 sec.			
				8 sec.			
				Hold			

(Playback Commands)

Fig. 033 Menu Functions (Playback)

3) Set-up Menu

Color	Creative	Basic	Item	Description
	○	○	Auto power off	1 min. / 2 min. / 4 min. / 8 min. / 15 min. / 30 min. / Off
	○	○	Auto rotate	On / Off
	○	○	LCD Brightness	Brightness setting screen/5 levels with Quick Control Dial, image and gray chart also displayed
	○	○	Date/Time	Date/time setting screen → yy/mm/dd, mm/dd/yy. dd/mm/yy
	○	○	File numbering	Continuous / Auto reset
	○	○	Language	Language setting screen → English, Deutsch, Français, Nederlands, Dansk, Suomi, Italiano, Norsk, Svenska, Español, 汉语 (Simplified Chainese), Japanese, 한국어 (Korean), 繁体中文 (Traditional Chinese), Русский (Russian)
	○	○	Video system	NTSC / PAL
	○	○	Communication	Normal / PTP
	○	○	Format	CF card formatting screen/Cancel/OK
	○	×	Custom Functions(C.Fn)	Custom Function setting screen/C.Fn-01 to 18
	○	×	Clear settings	Reset screen → Clear all camera settings → Cancel/OK; Clear all Custom Functions → Cancel/OK
	○	×	Sensor clean	Sensor cleaning screen/Cancel/OK
	○	×	Firmware Ver. *	To firmware update screen with SET button/Cancel/OK

(Setup Commands)

*Factory defaults:
For Japan: Japanese/NTSC/Year, month, day
For N. America: English/NTSC/Month, day, year
Other regions: English/PAL/Day, month, year

Fig. 034 Menu Functions (Setup)

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6. CUSTOM FUNCTION

6.1 Custom Function List

Table 008 Custom Functions

C.Fn	Custom Function	No.	Setting
01	SET function when shooting	0	Default (no function)
		1	Change quality
		2	Change parameters
		3	Menu display
		4	Image replay
02	Long exposure noise reduction	0	Off
		1	On
03	Flash sync speed in Av mode	0	Auto
		1	1/250 sec. (Fixed)
04	Shutter button/AE lock button	0	AF/AE lock
		1	AE lock/AF
		2	AF/AF lock, no AE lock
		3	AE/AF, no AE lock
05	AF-assist beam	0	Emits
		1	Does not emit
		2	Only ext. flash emits
06	Exposure level increments	0	1/3-stop
		1	1/2-stop
07	Flash firing	0	Fires
		1	Does not fire
08	ISO expansion	0	Off
		1	On
09	Bracket sequence/Auto cancel	0	0,-,+/Enable
		1	0,-,+/Disable
		2	-,0,+/Enable
		3	-,0,+/Disable
10	Superimposed display	0	On
		1	Off
11	Menu button display position	0	Previous(top if power off)
		1	Previous
		2	Top
12	Mirror lockup	0	Disable
		1	Enable
13	AF point selection method	0	Normal
		1	Multi-controller direct
		2	Quick Control Dial direct
14	E-TTL II	0	Evaluative
		1	Average
15	Shutter curtain sync	0	1st-curtain sync
		1	2nd-curtain sync
16	Safety shift in Av or Tv	0	Disable
		1	Enable
17	Lens AF stop button function	0	AF stop
		1	AF start
		2	AE lock while metering
		3	AF point:M->Auto/Auto->ctr.
		4	ONE SHOT <-> AI SERVO
		5	IS start
18	Add original decision data	0	Off
		1	On

7. PROGRAM DIAGRAMS

7.1 Program Diagrams
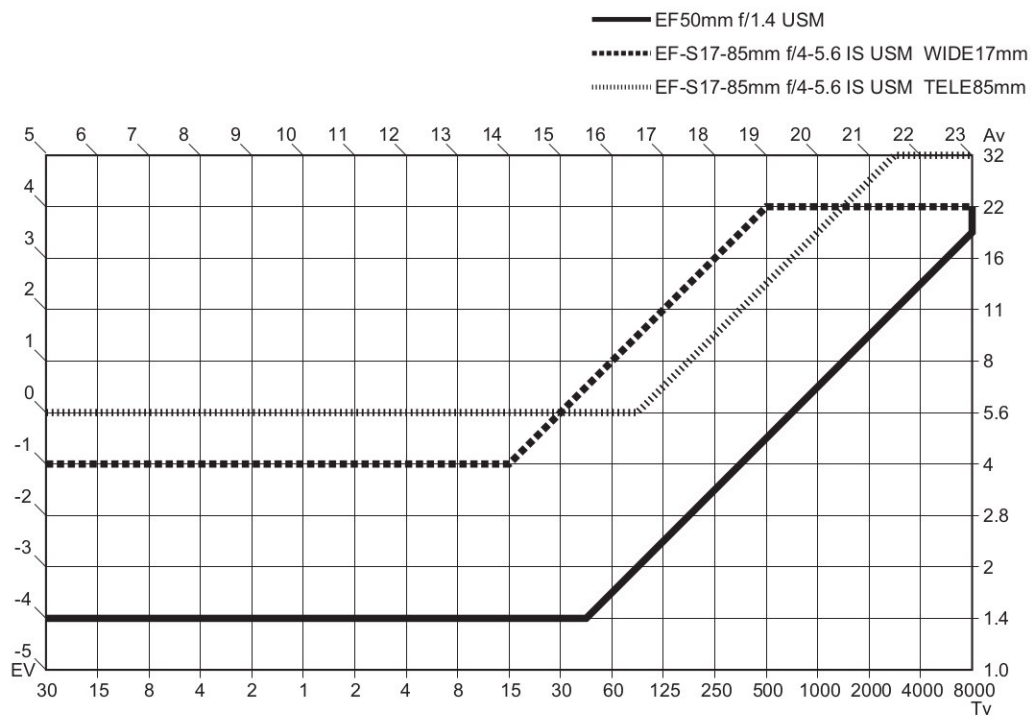
Fig. 035 Normal Program AE Lines

7.2 E-TTL Program Diagrams
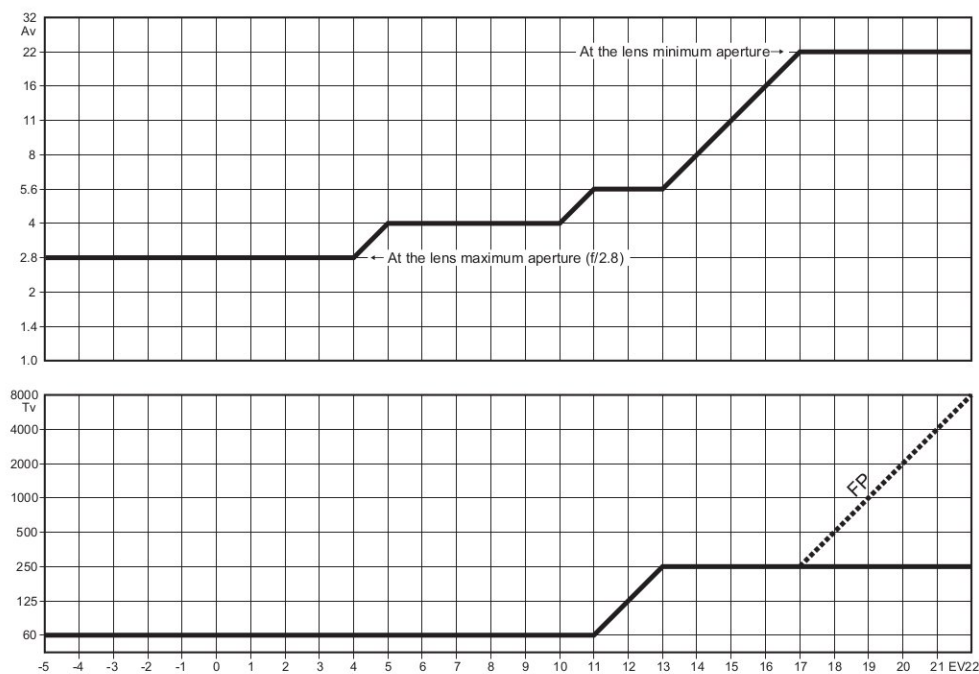
Fig. 036 E-TTL autoflash program line (EF 50mm f/1.4 USM, at ISO 100)

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8. SYSTEM ACCESSORIES COMPATIBILITY TABLES

8.1 System Accessories
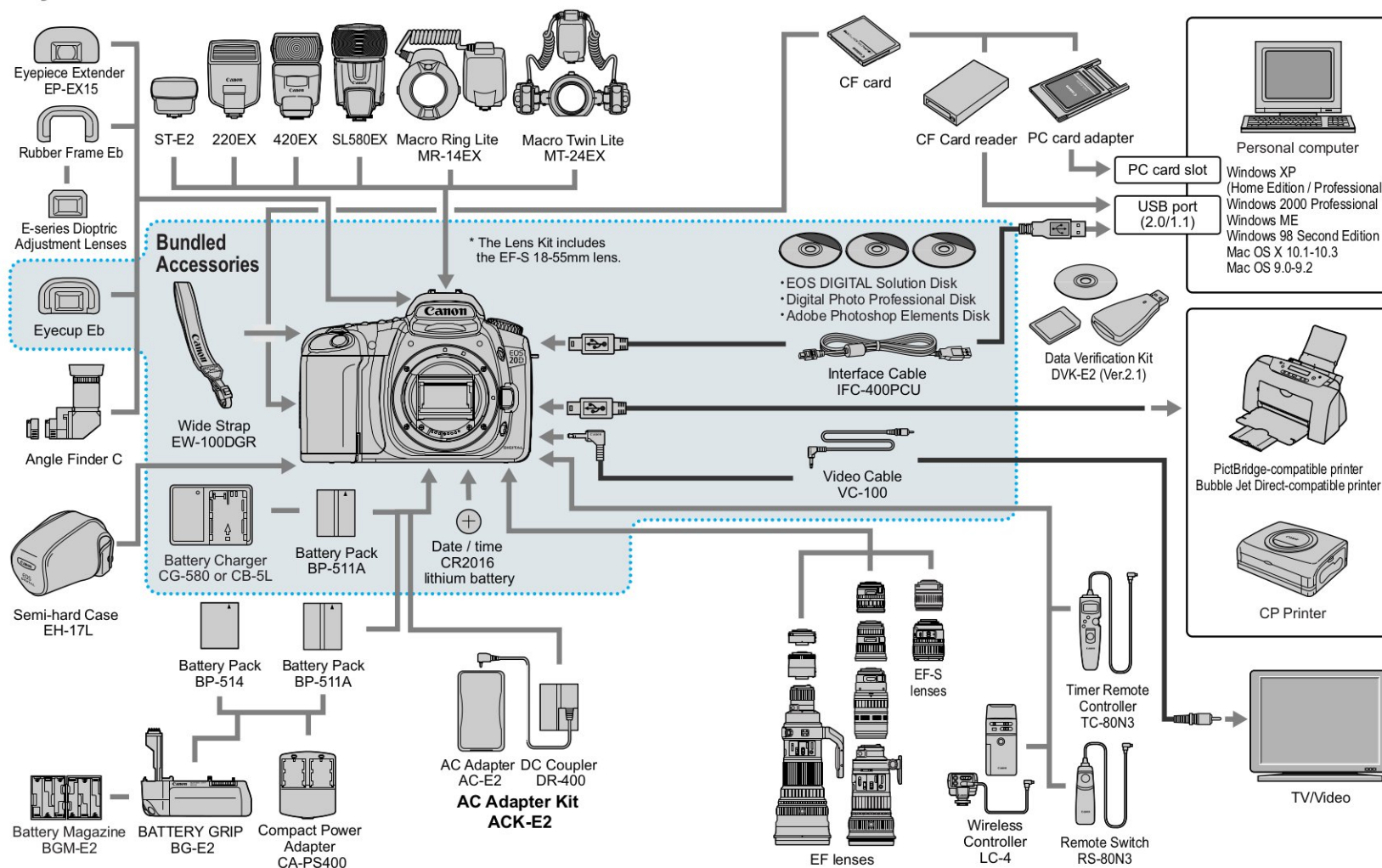
Fig. 037 System Accessories

8.2 System Accessory Compatibility

Note that the following system accessories have some restrictions when used with the EOS 20D.

Table 009 Accessories with Restrictions

Interchangeable Lenses	
Lens Converter FD-EOS	Although it can be used with manual exposure, exposure error occurs. Therefore, these items will be officially listed as incompatible.
Macro Lens Mount Converter FD-EOS	
Speedlites	
480EG	Compatible with external flash metering and manual flash (TTL autoflash not possible).
540EZ	Compatible with manual flash (does not fire in A-TTL/TTL autoflash modes).
430EZ	
420EZ	
ML-3	Not compatible (since it only has autoflash modes, it cannot fire).
300EZ	
200E	
Wired multi-Speedlite accessories	Not compatible (since it cannot fire in Manual flash mode when used with TTL hot shoe adapter).
Remote Control	
Remote Switch 60T3	Compatible when used with RA-N3.
Wireless Remote Controller LC-3	

System accessories not listed above are completely compatible with EOS 20D.

9. AGREED ITEMS

9.1 Agreed Answers for User Support

☐ :Also applies to the EOS 10D.

Cautions	Remarks
[Imaging sensor]	
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 sensor
2. If there is a strong light source within the image area, ghosting might occur at a symmetrical position or near the light source.	As per the design of low-pass filter.
[Image Recording and Playback]	
3. While the access lamp is blinking, do not shake or subject the camera to any physical shock and do not open the Compact Flash card slot cover or remove the battery.	Doing so may damage the stored images, Compact Flash card, or even the camera itself.
4. Do not leave or use the camera near a strong magnetic field such as a television, audio speaker, or magnet.	A magnetic or electromagnetic field can adversely affect the image on the LCD monitor. It may also prevent proper shooting and image recording and damage images in the Compact Flash card.
5. Do not leave or use the camera near an electronic transmission tower, etc., which emits a strong magnetic field.	The electric wave can adversely affect the image on the LCD monitor. It may also prevent proper shooting and image recording and damage images in the Compact Flash card.

☐ 6. If you change the image processing method during continuous shooting, the maximum burst will greatly decrease.

As per the design.
(The maximum burst displayed on the viewfinder bottom will be 6 or less.)

7. If a high ISO speed is set, fewer images can be captured.

As per the design.
The LCD panel can show how many shots remaining can be captured for the ISO speed you set.

8. When an image captured with Adobe RGB is displayed on the LCD monitor or TV set, displayed in an sRGB environment, or printed by an sRGB printer, the image will have low color saturation.

This occurs because the color space is not suitable. (Compared to sRGB, Adobe RGB's color reproduction range is wider. If the image is displayed via sRGB without profile conversion, the color reproduction range becomes narrow.)
(To obtain accurate reproduction of Adobe RGB in an sRGB environment, use image-editing software like Adobe Photoshop to convert the profile to sRGB.)

[white balance]
9. When WB-BKT is set, the shots remaining will decrease to about one-third of the normal quantity.

With WB-BKT, each shot yields three images. The number of shooting times remaining is displayed when WB-BKT is set.

10. When using the specified color temperature in ambient light having an adverse color cast, set the white balance correction by adjusting the green or amber bias.

Since the color temperature is based on a blackbody locus, if the bad ambient light does not conform to the blackbody locus, the correct white balance will not be obtained.

11. If you enter in the camera the color temperature reading (to specify the color temperature) taken with a commercially-available color temperature meter, you might not obtain the correct white balance.

The color temperature standard may differ between the camera and color temperature meter. The color temperature meter's reading might also include a margin of error.

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[AF]

12. With the EF 70-200mm f/2.8L USM attached with an Extender, use the center AF point to focus.

Although focusing is possible with all 9 AF points, the focusing precision can be guaranteed only with the center AF point.

13. If you use the AI SERVO AF mode with flash, the AF-assist beam will not be emitted by the camera or external Speedlite.

Since AF-assist beam does not match predictive AF very well.
ONE-SHOT AF is recommended for flash photography.

[Flash]

14. Regardless of the C.Fn-09 setting, the FEB sequence will follow the Speedlite's setting.

The C.Fn-09 setting applies only to AEB and WB-BKT. (During flash exposure compensation, the external Speedlite's setting overrides the camera's setting. To avoid confusion, this rule has also been applied to FEB.)

15. With EOS-dedicated Speedlites other than the EX-series, autoflash is not possible.

The camera does not have a flash exposure sensor compatible with A-TTL/TTL. (The flash will not fire in the A-TTL/TTL autoflash mode. Use the manual flash mode instead. EOS-dedicated Speedlites not having a manual flash mode and wired, multi-Speedlite accessories cannot be used.

16. When using the Landscape or Sports mode, do not use an EOS-dedicated, external Speedlite.

The flash would fire at all times and the photo might not come out as you desire.

17. When using the built-in flash, detach any lens hood from the lens.

This is to prevent flash coverage cut-off.

18. Do not connect a 250V or higher high-voltage flash unit to the PC terminal.

A voltage of 250V or higher will damage the PC terminal's internal circuitry.

19. Do not connect a high-voltage flash unit to the hot shoe.

It may not fire.

[Custom Functions]

20. When C.Fn-12-1 is set and mirror lockup is in progress, do not point the camera toward the sun or any other bright light.

This is to prevent burn-in of the shutter curtains, stray light from entering, and sensor damage.

[Camera Direct]

21. If the BJ Direct is set to print with borders and the date, the date will be imprinted on the border.

This is due to a problem with the BJ printer. It is not a problem with CP Direct. (In the case of photos taken by a Canon PowerShot camera, the aspect ratio is 4:3 so the date imprinted by BJ Direct appears slightly above the bottom border. However, since the aspect ratio of photos taken by EOS DIGITAL cameras is 3:2 with a shorter vertical length, the imprinted date appears on the border. The result is the same with DPOF direct printing.)

22. If the CP Direct is set to print the date, the date may look light if the background is light or if the date is imprinted on the border.

This is due to a problem with CP Direct.

[Interface]

23. Do not excessively bend or disassemble the interfaceable.

Malfunction may result due to cable disconnection or short-circuiting.

24. 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 is NTSC for the Japan and N. America, and PAL for other countries.)

[LCD Monitor]

25. When the LCD monitor is on, there might be black, red, or green dots that are always visible.

These are dead pixels which number 0.02% or less of the LCD monitor's total number of effective pixels. The recorded images are not affected.

26. Do not press on the LCD monitor with your fingers or subject it to strong vibration or physical shock.

Doing so may result uneven color or break of the LCD monitor.

[Camera & Misc.]	
27. There is a small noise when the camera is shaken.	This is the sound of the ball in the camera orientation detection unit.

9.2 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.

Table 009 Lens List (1/3)

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 II	—	◎	◎	◎	◎	◎	◎	◎
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 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 IIUSM	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 IIUSM	ET-118 II	—	—	—	◎	◎	◎	◎	◎
030	EF300mm f/2.8 L IIIUSM	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 IIUSM	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 IIUSM	ET-123B	—	—	—	—	—	◎	◎	◎
041	EF600mm f/4 L IS USM	ET-160	—	—	—	—	—	—	×	×
042	EF600mm f/4 L USM	ET-161 II	—	—	—	—	—	—	×	×
043	EF600mm f/4 IIUSM	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.

Table 009 Lens List (2/3)

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	EF-S10-22mm f/3.5-4.5 USM	EW-83E	—	—	Will be confirmed later													
049	EF16-35mm f/2.8 L USM	EW-83E	—	—	×	△	×	△	×	△	×	◎	×	◎	×	◎	×	◎
050	EF17-35mm f/2.8 L USM	EW-83C II	—	—	×	△	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
051	EF17-40mm f/4L USM	EW-83E	—	—	×	△	×	◎	×	◎	×	◎	×	◎	×	◎	×	◎
052	EF-S17-85mm f/4-5.6 IS USM	EW-73B	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
053	EF-S18-55mm f/3.5-5.6	EW-60C	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
054	EF-S18-55mm f/3.5-5.6 USM	EW-60C	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
055	EF20-35mm f/2.8 L	EW-75	—	—	×	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
056	EF20-35mm f/3.5-4.5 USM	EW-83 II	—	—	×	◎	×	◎	△	◎	△	◎	△	◎	△	◎	△	◎
057	EF22-55mm f/4-5.6 USM	EW-60D	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
058	EF24-70mm f/2.8L USM	EW-83F	—	—	×	◎	×	◎	×	◎	×	◎	×	◎	×	◎	×	◎
059	EF24-85mm f/3.5-4.5 USM	EW-73 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
060	EF28-70mm f/2.8 L USM	EW-83B II	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
061	EF28-70mm f/3.5-4.5	EW-68A	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
062	EF28-70mm f/3.5-4.5 II	EW-68A	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
063	EF28-80mm f/2.8-4 L USM	EW-79	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
064	EF28-80mm f/3.5-5.6	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
065	EF28-80mm f/3.5-5.6 II	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
066	EF28-80mm f/3.5-5.6 USM	EW-68A	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
067	EF28-80mm f/3.5-5.6 II USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
068	EF28-80mm f/3.5-5.6 III USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
069	EF28-80mm f/3.5-5.6 IV USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
070	EF28-80mm f/3.5-5.6 V USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
071	EF28-90mm f/4-5.6	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
072	EF28-90mm f/4-5.6 USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
073	EF28-90mm f/4-5.6 II	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
074	EF28-90mm f/4-5.6 II USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
075	EF28-90mm f/4-5.6 III	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
076	EF28-105mm f/3.5-4.5 USM	EW-63 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
077	EF28-105mm f/3.5-4.5 II USM	EW-63 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
078	EF28-105mm f/4-5.6	EW-63B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
079	EF28-105mm f/4-5.6 USM	EW-63B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
080	EF28-135mm f/3.5-5.6 IS USM	EW-78B II	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
081	EF28-200mm f/3.5-5.6	EW-78D	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
082	EF28-200mm f/3.5-5.6 USM	EW-78D	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
083	EF28-300mm f/3.5-5.6L IS USM	EW-83G	×	△	×	△	×	◎	×	◎	×	◎	×	◎	×	◎	×	◎
084	EF35-70mm f/3.5-4.5	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
085	EF35-70mm f/3.5-4.5 A	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
086	EF35-80mm f/4-5.6 PZ	None	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
087	EF35-80mm f/4-5.6	EW-62	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
088	EF35-80mm f/4-5.6 II	EW-54 II	—	—	◎	◎	◎	◎	×	◎	×	◎	×	◎	×	◎	×	◎
089	EF35-80mm f/4-5.6 III	EW-54 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
090	EF35-80mm f/4-5.6 USM	EW-54 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
091	EF35-105mm f/3.5-4.5	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
092	EF35-105mm f/4.5-5.6	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
093	EF35-105mm f/4.5-5.6 USM	EW-60B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
094	EF35-135mm f/3.5-4.5	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

◎ : 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.

Table 009 Lens List (3/3)

No.	Lens	Hood	Subject Distance (m)															
			0.5		1		2		3		4		5		6		7	
			W	T	W	T	W	T	W	T	W	T	W	T	W	T	W	T
095	EF35-135mm f/4-5.6 USM	EW-62	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
096	EF35-350mm f/3.5-5.6	EW-78 II	—	—	△	△	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
097	EF38-76mm f/4.5-5.6	EW-54 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
098	EF50-200mm f/3.5-4.5	ET-62 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
099	EF50-200mm f/3.5-4.5 L	ET-62 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
100	EF55-200mm f/4.5-5.6 USM	ET-54	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
101	EF55-200mm f/4.5-5.6 II USM	ET-54	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
102	EF70-200mm f/2.8 L IS USM	ET-86	—	—	△	◎	△	◎	△	◎	◎	◎	◎	◎	◎	◎	◎	◎
103	EF70-200mm f/2.8 L USM	ET-83 II	—	—	△	◎	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
104	EF70-200mm f/4 L USM	ET-74	—	—	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
105	EF70-210mm f/4	ET-62 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
106	EF70-210mm f/3.5-4.5 USM	ET-65 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
107	EF70-300mm f/4.5-5.6 DO IS USM	ET-65B	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
108	EF75-300mm f/4.5-5.6	ET-65 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
109	EF75-300mm f/4.5-5.6 II	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
110	EF75-300mm f/4.5-5.6 III	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
111	EF75-300mm f/4.5-5.6 USM	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
112	EF75-300mm f/4.5-5.6 II USM	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
113	EF75-300mm f/4.5-5.6 III USM	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
114	EF75-300mm f/4.5-5.6 IS USM	ET-64 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
115	EF80-200mm f/2.8 L USM	ES-79	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
116	EF80-200mm f/4.5-5.6	ET-62 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
117	EF80-200mm f/4.5-5.6 II	ET-54	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
118	EF80-200mm f/4.5-5.6 USM	ET-54	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
119	EF90-300mm f/4.5-5.6	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
120	EF90-300mm f/4.5-5.6 USM	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
121	EF100-200mm f/4.5 A	ET-62 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
122	EF100-300mm f/5.6	ET-62 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
123	EF100-300mm f/5.6 L	ET-62 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
124	EF100-300mm f/4.5-5.6 USM	ET-65 III	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
125	EF100-400mm f/4.5-5.6 IS USM	ET-83C	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

Technical Information

CONTENTS

1. TECHNICAL INFORMATION

1.1 Image sensor - CMOS sensor

1) Overview

The large CMOS sensor developed and manufactured by Canon has enabled the camera to attain the top overall performance in its class. It leads in all the major performance categories such as high resolution (8.20 effective megapixels), wide ISO speed range (ISO 100-1600, plus 3200), low noise (less than the EOS 10D), and high-speed signal reading (5 shots/sec.).

Table 001 CMOS sensor specifications

Effective pixels (approx.)	8.20 million: 352002342
Total pixels (approx.)	8.50 million: 360002360
Effective sensor size (mm)	22.5 × 15.0
Pixel size (μm)	6.4 × 6.4
Color filter	RGB primary color filter
Aspect ratio	3:2
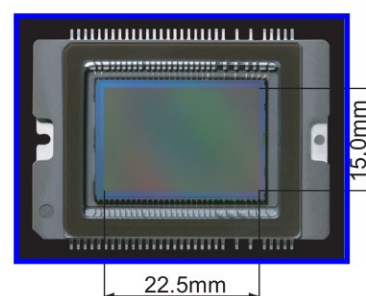
Fig. 001 CMOS sensor (actual size)

2) Wide ISO speed range

With the new technologies explained below, the camera has the same ISO speed range as the EOS 10D's even though the pixel size is 6.4 × 6.4 μm.

(1) High ISO speeds

A Canon-developed color filter and on-chip microlens are incorporated. By using a large microlens (the gap between microlenses is about half that of the EOS 10D), the light-gathering efficiency is enhanced. Also, the photodiode construction is newly developed and optimized for the CMOS sensor to increase the sensitivity. Moreover, with the noise-reduction technology explained in 3), an excellent S/N performance is obtained to provide ISO 1600.
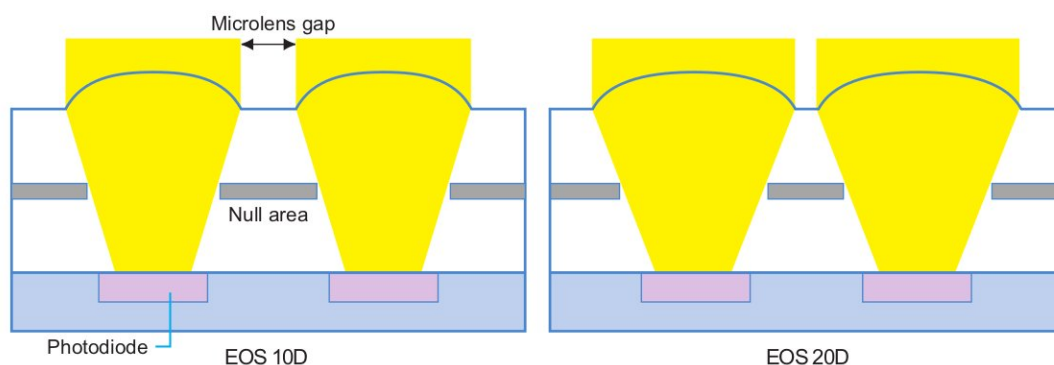
Fig. 002 Microlens comparison

1

(2) Low ISO speeds

More minute processing, the elimination of transistors in the pixels, and optimized photo diode construction enable the photo diode to accumulate enough light. The dynamic range at low ISO speeds is therefore improved. Thus, even though the camera's pixel size of 6.4. × 6.4 mm is smaller than the EOS 10D's pixel size, the same ISO 100 speed as the EOS 10D can be attained.

Table 002 CMOS Sensor Specifications

Camera	Pixel Size	ISO Speed
EOS 20D	6.4 × 6.4µm	100 - 1600 • 3200
EOS 10D	7.4 × 7.4µm	100 - 1600 • 3200
EOS-1D Mark II	8.2 × 8.2µm	50 • 100 - 1600 • 3200
EOS-1Ds	8.8 × 8.8µm	50 • 100 - 1250
EOS-1D	11.5 × 11.5µm	100 • 200 - 1600 • 3200

3) Low noise

Fixed-pattern noise and random noise which used to be a problem with CMOS sensors have been effectively suppressed as EOS digital technology advanced. Today, Canon's ultra low-noise CMOS sensor can even photograph the heavens in the night sky with very low noise.

The EOS 20D suppresses noise even further with its CMOS sensor. The random noise generated by the pixel's amp is reduced thanks to the improved device. And the second-generation, on-chip, noise-filtering circuit effectively eliminates random noise and fixed-pattern noise.

4) High-speed, 4-channel reading

While based on the EOS 10D's 2-channel reading, more channels and faster speed have been incorporated in the EOS 20D. With one-line and 4-channel reading and a low-noise, high-speed output amp, high-speed signal reading enabling a continuous shooting speed of 5 shots/sec. is attained.
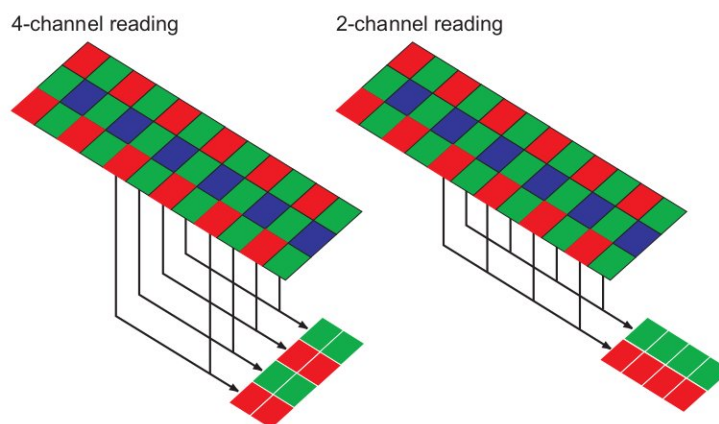
Fig. 003 Four-channel reading

5) Saving power

To minimize the increase in power consumption due to the high-speed, 4-channel reading, the output amp's power consumption is kept to an absolute minimum.

Also, as with the EOS 10D and EOS-1Ds during long exposures, power to the output amp is cut off. And as with the EOS-1D Mark II, the circuit-driving standard current is also cut off. Less power is thereby consumed.

6) Infrared-blocking, low-pass filter

The EOS 20D's infrared-blocking, low-pass filter has the same construction as the EOS 10D's filter with infrared-absorbing glass and three crystal plates having a different optical axis.

The infrared-blocking, low-pass filter has a dichroic mirror made of a dielectric, multi-layer coating (in front of the low-pass filter) that deflects light which has a wide infrared wavelength. It also has an infrared-absorbing glass layer to absorb near-infrared wavelengths in the visible spectrum. This hybrid construction consisting of deflecting and absorbing layers reduces the red ghosting caused by sensor reflections and image fogging.

The low-pass filter consists of two crystal monocrystal plates that separate the subject image into four horizontal and vertical directions. In-between these two plates is a phase plate (crystal monocrystal plate) that converts the linear polarized light into circular polarized light. The first crystalline plate separates the image into two images horizontally. The light flux that becomes the orthogonal linear polarized light is converted into circular polarized light by the phase plate. The second crystal plate separates the images vertically, resulting in four images square. The image separation in the horizontal and vertical directions is optimized for the sensor pitch so that false colors caused by minute horizontal and vertical lines are reduced.

Dichroic mirror
(Reflects infrared rays)

Infrared-absorbing glass

CMOS sensor

Low-pass filter
(Separates image in vertical direction)

Phaser layer
(Converts linear polarized light into circular polarized light)

Low-pass filter
(Separates image in horizontal direction)
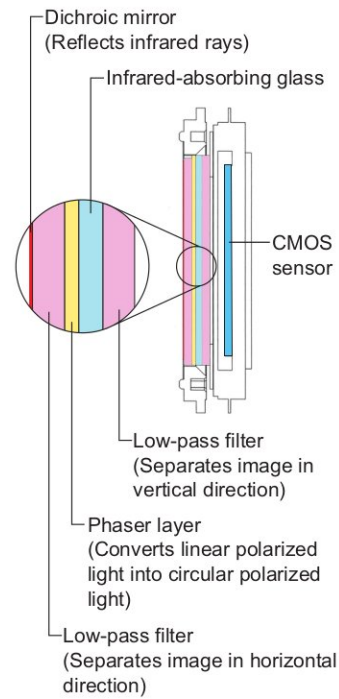
Fig. 004 Cross section of infrared cut, low-pass filter

3

1.2 Image recording and processing

1) Image processing by DIGIC II

(1) Improvements over EOS 10D's DIGIC
- Newly-developed, signal-processing algorithm
- 4-channel, high-speed signal reading
- Faster image data signal processing
- Lower power consumption

(2) Improved image quality with DIGIC II, new algorithm, and improved CMOS sensor
- Improved color reproduction of high-saturation, bright subjects
- Improved auto white balance precision
- Wider dynamic range in highlight areas

SDR SDRAM×4   DIGIC II

Front side   Back side
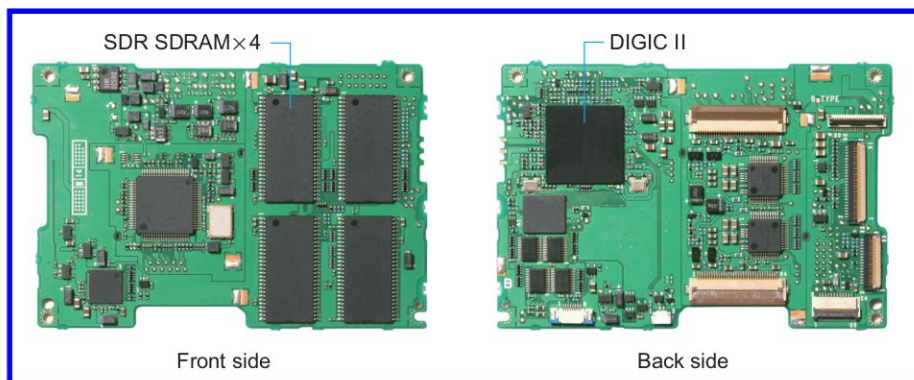
Fig. 005 Digital control circuit board

2) Recording quality

(1) Recording quality selection
    The RAW+JPEG recording quality option (6 choices) can now be selected with the menu.

(2) RAW+JPEG simultaneous recording
    As with the EOS-1D, the RAW and JPEG images can now be saved as separate image files in the CF card. The file No. is also the same and recorded in the same folder.
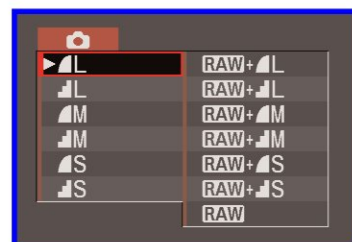
Fig. 006 Recording quality selection screen

Table 003 Recording Quality and File Size

Recording Quality		Pixels recorded (Approx.)	Recording Format	Compression Rate	Single Image Size (Approx. MB)	Max. Capacity (Approx.)	Printing Size
Large	Fine	3504 × 2336 (8.20 megapixels)	JPEG	Low compression	3.6	66	A3 or larger
Large	Normal	3504 × 2336 (8.20 megapixels)	JPEG	High compression	1.8	133	A3 or larger
Middle	Fine	2544 × 1696 (4.3 megapixels)	JPEG	Low compression	2.2	112	A5 - A4
Middle	Normal	2544 × 1696 (4.3 megapixels)	JPEG	High compression	1.1	221	A5 - A4
Small	Fine	1728 × 1152 (2.0 megapixels)	JPEG	Low compression	1.2	195	A5 or smaller
Small	Normal	1728 × 1152 (2.0 megapixels)	JPEG	High compression	0.6	380	A5 or smaller
RAW			RAW		8.7	27	A3 or larger
RAW+Large/Fine		RAW: 3504 × 2336 (8.20 megapixels)	RAW + JPEG	RAW: Lossless Compression	—	18	—
RAW+Large/Normal		RAW: 3504 × 2336 (8.20 megapixels)	RAW + JPEG	RAW: Lossless Compression	—	22	—
RAW+Middle/Fine		RAW: 3504 × 2336 (8.20 megapixels)	RAW + JPEG	RAW: Lossless Compression	—	21	—
RAW+Middle/Normal		RAW: 3504 × 2336 (8.20 megapixels)	RAW + JPEG	RAW: Lossless Compression	—	23	—
RAW+Small/Fine		RAW: 3504 × 2336 (8.20 megapixels)	RAW + JPEG	RAW: Lossless Compression	—	23	—
RAW+Small/Normal		RAW: 3504 × 2336 (8.20 megapixels)	RAW + JPEG	RAW: Lossless Compression	—	25	—

* "Max. capacity" applies to a 256 MB CF card.
* The file size and maximum capacity varies depending on the subject, shooting mode, ISO speed, processing parameters, etc.

(3) New RAW format

The EOS 20D incorporates the same new RAW format featured in Canon digital cameras from the EOS-1D Mark II onward. The file extension is .CR2 (Canon Raw 2nd edition). The RAW data records the white balance (preset, correction, bracketing information), processing parameters, and other settings. When you use a personal computer to edit the image, all these settings will take effect. (Since it is raw data, you can edit the image freely with image-editing software.)

(4) DCF Version 2.0 / Exif Version 2.21

The camera complies to DCF 2.0 (revised to support Adobe RGB) and Exif 2.21. Images taken in Adobe RGB will have the Adobe RGB color space information (not ICC profile) appended to the Exif information. Therefore, applications and devices compatible with DCF 2.0 and Exif 2.21 will be able to handle Adobe RGB in the same way as sRGB. You need not worry about the color space anymore.

Note that the file name of images taken with Adobe RGB will start with an underbar (_) as required by DCF 2.0 and Exif 2.21.

Note: Although RAW does not comply to DCF, the file name will start with an underbar as with JPEG images. When you use the provided software to edit the RAW image and save it as a JPEG or TIFF file, the Adobe RGB profile will be appended to the image.

3) Color space

With the [Color space] menu, you can select [sRGB] or [Adobe RGB]. With the EOS 10D, if you selected Adobe RGB, the processing parameter would be set automatically to Standard (all items set to 0). But with the EOS 20D, even if you select Adobe RGB, you can still shoot with any processing parameter.

4) Processing parameters

(1) Color shooting

The EOS 20D now has the same "Parameter 1" as the EOS DIGITAL REBEL/EOS 300D DIGITAL to obtain vivid and sharp images. "Parameter 2" is the same as the EOS 10D's "Standard" setting.

In the Basic Zone modes, "Parameter 1" is set automatically. In the Creative Zone modes, you can select "Parameter 1 or 2", "Set 1 to 3", or "B/W".

Compared with the EOS 10D, the "Saturation" is "+1" to obtain slightly higher saturation. Also, the "Sharpness" settings of "+1" and "+2" are now twice as strong as the EOS 10D's.

(2) Monochrome

The camera's internal digital processing enables black-and-white images to be produced. When "B/W" is selected, you can freely set the "Contrast," "Sharpness," "Filter effects," and "Toning Effect" parameters.

The "Contrast" and "Sharpness" provides five settings as with color shooting.

"Filter effects" is the equivalent of using color filters to adjust the contrast of B/W photos shot

Fig. 007 Monochrome setting screen

with film. Through digital processing, the colors in the image matching the selected filter's color (yellow, orange, red, or green) will look brighter, and the complementary colors in the hue circle will look darker.

"Toning Effect" adds a color cast (sepia, blue, purple, or green) to the black-and-white image. It is akin to using chemicals to tone a black-and-white, silver-halide print. "Toning Effect" is the digital version of this process.

Note 1: When "Filter effects" is set and "Contrast" is set to the plus side, the effect will be more pronounced.

Note 2: Due to slight differences in the spectral characteristics between the EOS 20D's CMOS sensor and B/W film covered with a color filter, "Filter effects" might not give the same result as when you use B/W film with a color filter.

[Filter effects]

| N: None | Ye: Yellow | Or: Orange | R: Red | R: Red (Contrast +2) |

[Toning]

| N: None | S: Sepia | B: Blue | P: Purple | G: Green |

Fig. 008 Filter effects

5) White balance

(1) Auto white balance

The auto white balance has been improved from that of the EOS 10D and EOS DIGITAL REBEL/EOS 300D DIGITAL to make color reproduction more accurate and natural. Moreover, with DIGIC II and an improved algorithm, the white balance is now more stable. Also, color reproduction (natural reds) under low color temperatures such as tungsten has been improved along with improved skin tone reproduction.

The EOS 20D incorporates a new system that incorporates the flash's color temperature information (when fired) in the image processing. When the built-in flash or SL580EX is used and the white balance is set to "AWB" or "Flash," the white balance will be more accurate for low-light shots.

(2) White balance correction

As with the EOS-1D Mark II, you can correct the color temperature for the white balance mode currently set. You can thereby obtain the same effects as using a color temperature conversion filter or color correction filter. Each color can be corrected up to nine levels in single-level increments. The blue/amber bias and magenta/green bias corrections (diagonal coordinates) can also be set in combination.

On the CIE xy color graph, the correction direction will be as shown in Fig. 009. The preset white balance color temperature (approx. 2800K - 10000K) is based on the

Fig. 009 WB correction conceptual diagram

blackbody radial locus. The EOS 10D could not obtain the proper white balance for types of lighting that had bad color rendition. But now, since the magenta/green bias can also be corrected in addition to the blue/amber bias (with WB-BKT), the camera can match various types of lighting.

With the EOS 20D, the WB correction and WB bracketing can both be set together on the LCD monitor. While looking at the point coordinates, use the Multi-controller to move the point to the desired coordinates. Then turn the Quick Control Dial to set the bracketing. On the right of the screen, "SHIFT" shows the correction information and "BKT" shows the bracketing information.

Fig. 011 shows samples of WB correction.

Fig. 010 WB correction/BKT setting screen

| None | B: +5 levels | A: +5 levels | M: +5 levels | G: +5 levels |

Fig. 011 WB correction samples

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(3) White balance bracketing (WB-BKT)

As with the EOS 10D, a single shot results in three bracketed images each having a different white balance. You can bracket up to ±3 levels in 1-level increments. The bracketing direction is the same as with white balance correction. It can be parallel to the blackbody radial locus in the blue/Standard color temperature/amber direction or intersecting with the blackbody radial locus in the magenta/standard color temperature/green direction.

6) Noise reduction

With the EOS 10D, fixed-pattern noise was minimal in long exposures so there was no noise-reduction feature. But if the exposure was extremely long, noise spots and a red tinge at the image corners occurred. With the EOS 20D, such fixed-pattern noise is further reduced by the noise reduction feature (C.Fn-02) so that the image has less noise.

The noise reduction feature starts working when the exposure is 1 sec. or longer. The noise-reduction processing takes the same amount of time as the exposure time. You cannot take another picture until after the noise-reduction processing is completed.

7) Image recording to CF card

(1) Writing to CF card

Thanks to DIGIC II and an improved card-writing process, the data-writing speed is approx. 3.5 times faster* than with the EOS 10D.

   * With a Canon 512 MB (Super High-speed) CF card

(2) Folder No. and file No.

The idea behind the automatically-generated folder No. and the file No. assigned to the captured image is the same as the EOS 10D's. The file name extension is as shown in Table 20.

Regarding RAW+JPEG images, they are saved under the same file No. in the same folder, as with the EOS-1D. The file name starts with "IMG_" for both JPEG and RAW images.

Table 004 File name and extension

Recording Quality	Color space	File name	extension
JPEG	sRGB	IMG_	.JPG
	Adobe RGB	_MG_	
RAW	sRGB	IMG_	.CR2
	Adobe RGB	_MG_	

8) Startup time

The startup time has been shortened to approx. 0.2 sec.* thanks to the camera's microcomputer serving as the master (direct switch detection by the MPU), DIGIC II, an improved system process sequence during startup, a revamped CF card access method, and shorter startup processing.

* EOS 10D startup time was approx. 2.2 sec.

Note: When Power Switch is set from Off to On, and startup is completed as SW-1 is On (ready to shoot).

1.3 Compatibility with EF-S lenses

Like the EOS DIGITAL REBEL/EOS 300D DIGITAL, the camera is compatible with EF-S lenses. EF-S lens compatibility is enabled by the mirror swing-up mechanism that moves the mirror to the back as the mirror goes up. The lens mount periphery is also lower.

The lens mount index (white) for EF-S lenses has been moved to the stainless steel mount surface to make it easier to be seen.

EF-S lens mount index
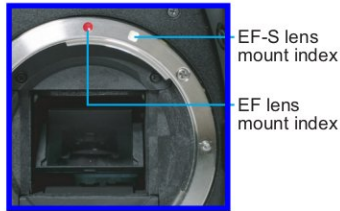
EF lens mount index

Fig. 012 Lens mount index

EOS 10D
EOS 20D
Lens rear edge
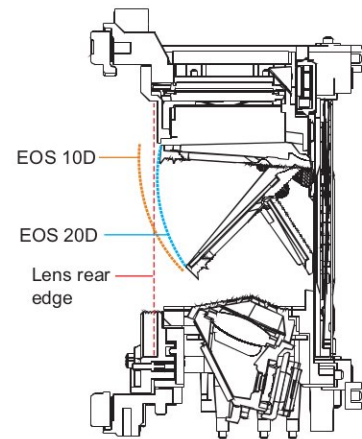
Fig. 013 Swing-up mechanism

1.4 AF system

A newly-developed, 9-point, CMOS sensor serves as the AF sensor. It is the first time that an f/2.8-compatible sensor is incorporated in a camera other than the EOS-1 and EOS-3 series of cameras. It enables higher AF precision.

The AF circuitry and AF algorithm are based on the EOS 10D's, and they improve the overall AF performance.

1) AF system objectives

● AF detection precision
  (1) f/2.8-compatible center AF point
      When you use a lens brighter than f/2.8, focusing is detected with the f/2.8 light flux. The base line length of the f/2.8-compatible, horizontal AF point at the center is about twice as long as the f/5.6-compatible sensor's for higher focusing precision. (except with EF50mm f/2.5 MACRO and EF28-80mm f/2.8-4L USM)
  (2) Two-line focusing with f/5.6-compatible center vertical sensor
      With two lines in a zigzag pattern for focusing, the focus detection becomes more consistent.
  (3) Higher precision of f/5.6-compatible peripheral vertical sensor
      For better focusing precision, the base line length of the diagonal and left and right AF points is 30% longer than the EOS 10D's.
● Improved focusing performance in low light
  Compared with the EOS 10D, the performance is better by EV 1 (EV -0.5 to 18).
● Larger area of focus
  (1) AF points are at the diagonal position (golden section).
  (2) Nine AF points provide a better chance of covering the subject.

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2) AF sensor

A newly-developed CMOS sensor serves as the AF sensor. It has a total of 8.84 megapixels. The 0.2x image magnification is the same as the EOS 10D's. The sensor pitch has been changed from 18 μm to 16 μm. The focus detection performance is on par or better than the EOS 10D's. The sensor features COB (Chip on Board), and the approx. 7.0 × 9.6 mm package size is smaller than the EOS 10D's approx. 8.3 × 9.8 mm.
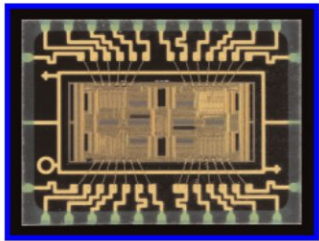
Fig. 014 AF sensor
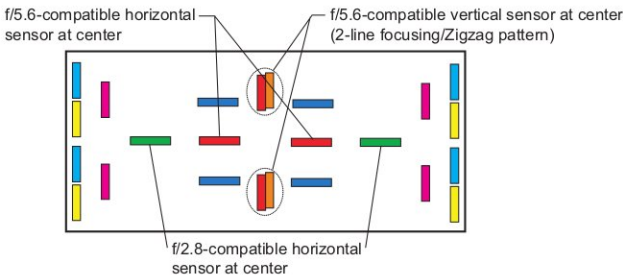
Fig. 015 AF sensor layout
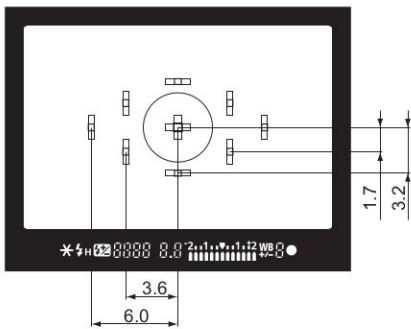
Fig. 016 Focusing area

Table 005 AF sensor configuration

		Pixel Size	Effective Pixels
Center	f/2.8 horizontal	16 μm × 140 μm	38 × 2
	f/5.6 horizontal		42 × 2
	f/5.6 vertical (2-line zigzag pattern)		36 × 4
Top/Bottom	f/5.6 horizontal		34 × 4
Diagonal	f/5.6 vertical		38 × 8
Left/Right	f/5.6 vertical		35 × 4

(1) Configuration of AF optics

As shown in Fig. 33, the AF optics have the image reproduced on the AF sensor. First, 22 light flux rays for 11 points (7 vertical, 4 horizontal) pass through the camera lens and are sampled independently. Then the image first forms in midair (focus plane) and the secondary image-formation lens reproduces the image on the AF sensor for each focusing area. The light flux for focusing is set to f/2.8 for the two light flux at the center horizontal, while it is f/5.6 for the other 20 light flux (same as with previous EOS cameras).
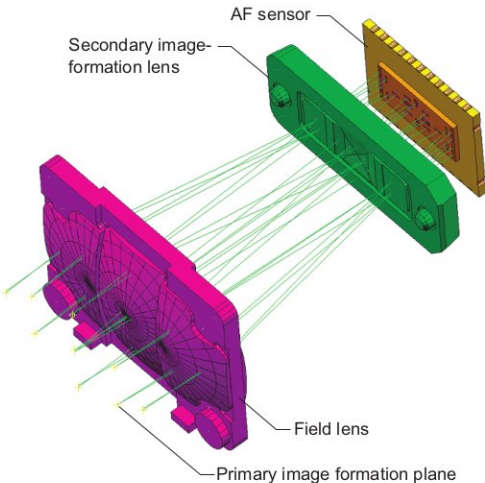
Fig. 017 AF optics

(2) Focusing principle

As with previous EOS cameras, TTL-SIR (Through-The-Lens Secondary Image Registration) is incorporated.

(3) Actual AF optics

Fig. 018 shows how the actual AF optics work. The light flux goes through the camera lens, then the focusing light flux that passes through the half mirror (40%) reaches the secondary mirror (flat and fully reflective) where it is bent downward by 66

Fig. 019 shows the AF unit's basic configuration. While based on the EOS 10D's AF unit, it has the following improvements:

[1] Configured to minimize ghosting

Unwanted light is blocked by narrowing the field of view. The separator uses a low-reflectance material.

[2] Highly resistant to temperature and humidity changes

The AF optics and framework have a low-line expansion coefficient and low moisture absorption coefficient.
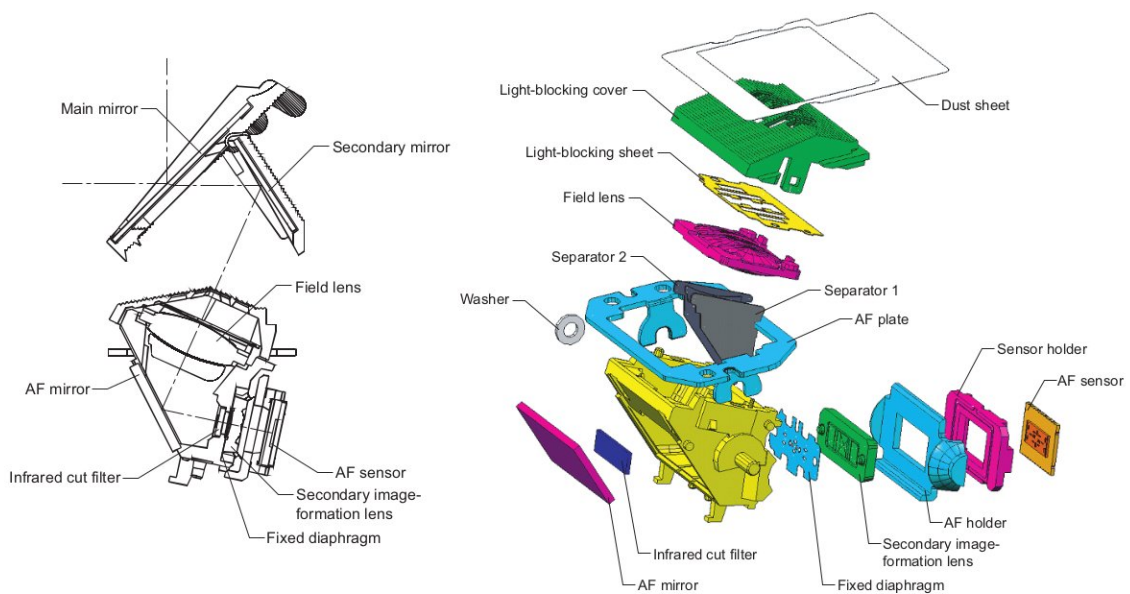
Fig. 018 Actual AF optics

Fig. 019 AF unit configuration

3) AF mode

Like the EOS 10D, the EOS 20D has three AF modes: One-Shot AF, AI SERVO AF, and AI Focus AF. In the Basic Zone modes, the optimum AF mode is set automatically. In the Creative Zone modes, you can select any AF mode.

In the Sports mode (AI Servo AF set automatically) and modes where AI Focus AF is set automatically, a low-volume beep sounds when focus is achieved in the AI SERVO AF mode (beeper enabled).

Note: In the Creative Zone modes when AI SERVO AF is set, the beeper will not sound even when focus is achieved.

4) Focusing computation

The AF speed is on par with the EOS 10D thanks to the high-performance, 32-bit RISC microcomputer (main clock 32 MHz, A/D conversion 4 μs, minimum command execution of 0.03 μs) and an improved AF sequence (AF processing front loading, SI illumination, metering executed in parallel with the lens drive and mirror swing-up) to match.

5) One-Shot AF

The high-speed computing and lens drive processing and the latest high-speed AF algorithm employed since the EOS REBEL Ti/300V enable a faster One-Shot AF speed than the EOS 10D despite having nine AF points.

6) AI SERVO AF

(1) Predictive AF computation
Predictive AF can focus track a subject approaching at 50 kph up to 8 meters away with an EF 300mm f/2.8L IS USM.
As with the EOS 10D, the EOS 20D's predictive AF computation uses statistical prediction that incorporates the focusing data of past focusing operations. Since it can repeat more focusing operations in a short length of time, the predictive AF control can effectively operate from the first shot even for a subject moving erratically. Also, even if the subject movement changes right before the shot is taken, the predictive AF control will have a good chance of catching it.
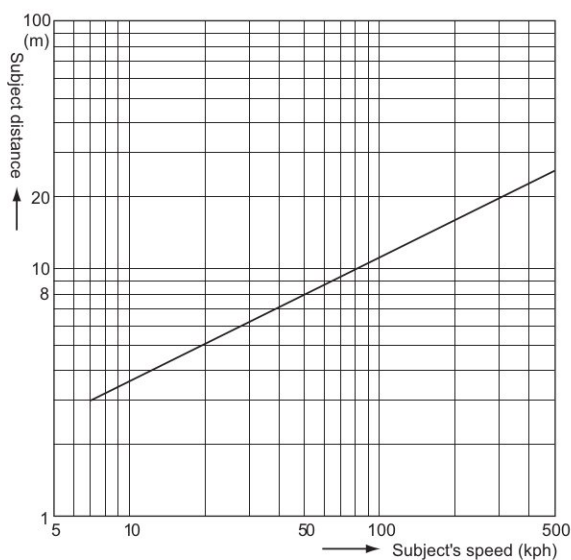
Fig. 020 Predictive AF performance

(2) For still subjects
Even when AI SERVO AF is used to focus a still subject, the focus control is stable enough so that the lens drive does not move minutely. If the subject moves suddenly, the camera will be able to track it immediately.

(3) Complete pressing of shutter button
As with the EOS-1D Mark II, when focusing is possible, the lens drive is executed based on the focusing result right before the shutter release. The shot is then taken.

7) Automatic AF point selection

The automatic selection of the AF point in both the One-Shot AF and AI SERVO AF modes is based on the same algorithm used by the EOS 10D. The automatic AF point selection speed and AF point selection accuracy (matching the user's intended subject) are also about the same as the EOS 10D's.

8) AF point selection

The AF point is manually selected with the Multi-controller on the camera back.

The Multi-controller can be pressed in 8 directions as well as at the center. After you press the AF point selection button, press the Multi-controller in the direction of the AF point you want to select. Pressing the Multi-controller at the center will select the center AF point. And if you press the Multi-controller in the direction of the currently-selected AF point, automatic AF point selection will be set (all the AF points will light).

You can also press the AF point selection button and then turn the Main Dial or Quick Control Dial to select a AF point.

Also, if C.Fn-13-1/2 (AF point selection method) is set, you can skip pressing the AF point selection button and just use the Multi-controller or Quick Control Dial to select the AF point directly.

Multi-controller operation   Main Dial/Quick Control Dial operation
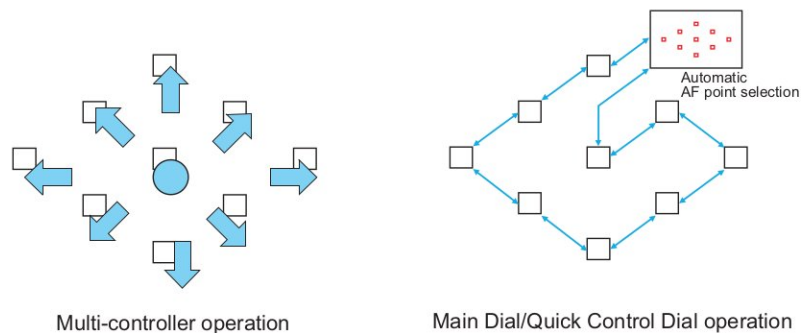
Fig. 021 AF point selection sequence

9) AF-assist light

As with the EOS 10D, the AF-assist light is a series of stroboscopic flashes. The working range is approx. 4 meters at the center and approx. 3.5 meters at the other 8 AF points. In the case of an EOS-dedicated, external Speedlite, see Table 006.

Table 006 AF-assist with External Speedlites

Speedlite	Automatic Selection	Manual Selection			
		Center	Top/ Bottom	Left/ Right	Diagonal
SL580EX	○	○	○	○	○
550EX	○	○	×	○	○
420EX	○	○	○	○	×
380EX	○*	○	×	×	×
220EX	○*	○	×	×	×
540EZ	○	○	×	○	×
430EZ	○*	○	×	×	×
ST-E2	○	○	×	○	○

* Focus can be achieved only with the center AF point.

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1.5 Viewfinder

1) Viewfinder optics

The basic configuration of the viewfinder optics is the same as the EOS 10D's. Only the pentaprism and eyepiece optics have been optimized so that the viewfinder magnification is slightly better (from 0.880 to 0.90).

The other specifications (95% coverage, 20mm eye point, dioptric adjustment range from -3.0 to +1.0 dpt) are the same as the EOS 10D.

The dioptric adjustment mechanism is based on the EOS 10D's. However, since the movement of the lens during dioptric adjustment is larger, the -3.0 to +1.0 dpt range is retained even while the effects of the moving lens' inclination and eccentricity are reduced. Thus, even when there is dioptric adjustment, the eyepiece optics still make it easy to see.
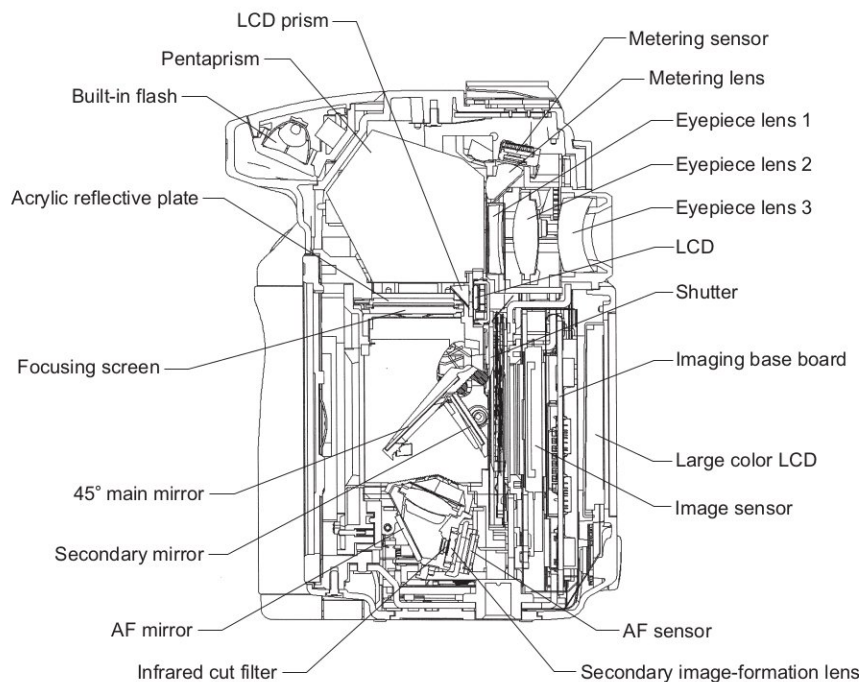
Fig. 022 Cross section at center.

2) Superimposition display

The newly-developed superimposition display optics have been incorporated. The light from the superimposition LED positioned on the upper rear of the pentaprism goes through the SI prism and pentaprism. Then it is projected in the configuration of the AF points on the fine reflective surface of the acrylic reflective plate between the pentaprism and focusing screen. This is how the SI illumination is produced.

Fig. 023 SI optics

14
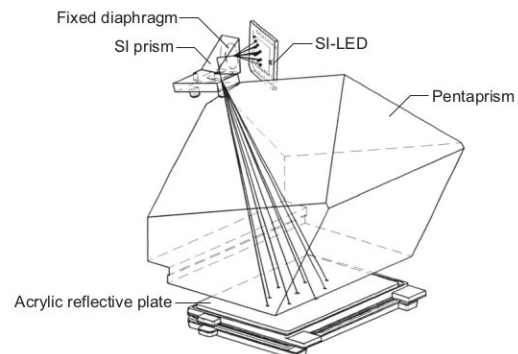
3) Focusing screen

The newly-developed Precision Matte focusing screen is a dispersion plate with an excellent light distribution angle afforded by controlling the microlens curvature and optimizing the arrangement.

By controlling the microlens curvature, the overall light distribution angle is determined. And by optimizing the microlens arrangement, the wide light distribution angle's characteristic is controlled as necessary when a fast lens is attached. Since the blurriness of the defocus area near the focus confirmation light point is steep, it is easy to distinguish the point of focus during manual focusing. Especially with f/2.8 or faster lenses, you can get the feel of the focus. Also, the viewfinder's colorings are slightly fewer than the EOS 10D's.

Precision Matte	New Laser Matte	Laser Matte
EOS 20D	EOS 10D	EOS-1D series
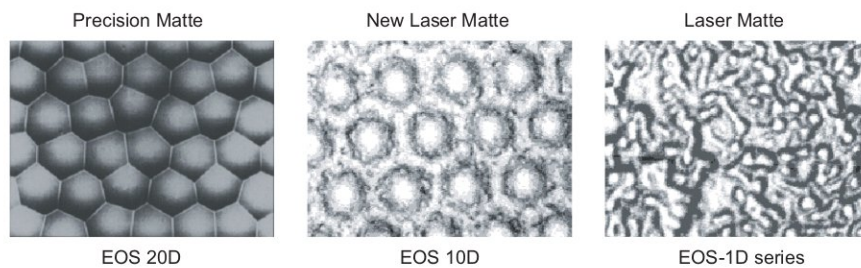
Fig. 024 Focusing screen enlargement

1.6 Exposure control

1) Metering

(1) Metering optics and metering sensor

The metering optics have the same configuration as the EOS 10D with the metering sensor positioned behind the pentaprism. The metering lens magnification is optimized so that the nine AF points match the metering sensor's metering zones. The metering sensor is the same as the EOS 10D's 35-zone sensor.
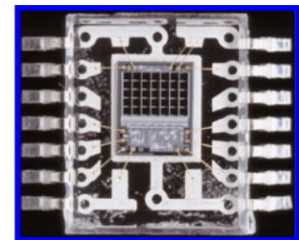
Fig. 025 Metering sensor

(2) Metering modes

As with the EOS 10D, the EOS 20D has evaluative metering, partial metering at center, and centerweighted averaged metering. For partial metering at the center, about 9% of the viewfinder area is used.

(3) Evaluative metering algorithm

The 35 metering zones are divided into three areas (metering area around AF point, weighted area, and peripheral metering area). Each area is weighted differently and the final metering is thereby calculated. This is the same method as with the EOS 10D. However, the algorithm has been optimized for the nine AF points.
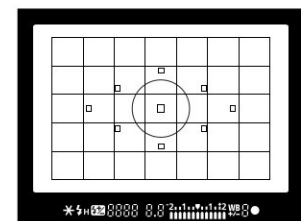
Fig. 026 Metering zones

The basic idea for maintaining a consistent and stable exposure even after the shot is recomposed remains the same as before. Also, the camera's accurate decision to fire the built-in flash based on the orientation sensor reading also comes from the same, previous idea.

(4) E-TTL II algorithm

E-TTL II autoflash control takes effect when the built-in flash or an EX-series Speedlite is used. The EOS 20D also uses the EOS-1D Mark II's E-TTL autoflash algorithm which is more advanced than the EOS 10D's E-TTL autoflash algorithm.

AF point-linked evaluative metering control abolished:

In past EOS cameras, evaluative metering was based on the assumption that the AF point covered the main subject. However, with the automatically-selected AF point or the manually-selected center AF point, the spot where you want the flash exposure reading sometimes was not the same as the point of focus. Therefore, the desired flash exposure was not obtained. The EOS 20D's evaluative flash metering control uses an algorithm that keeps the flash exposure area separate from the AF point.

Subject-specific, weighted, averaged flash metering:

With the control process below, the subject area to be metered for flash is specified, added, and averaged to determine the main flash output. Unlike the EOS 10D, evaluative metering of ambient light is executed regardless of the metering mode currently set.

1. Press the shutter button completely, then the ambient light is metered right before the preflash is fired.
2. A preflash is fired and the metering sensor meters the entire scene.
3. For each metering zone, the ambient light reading taken in step 1 is compared with the preflash meter reading. The area having a large difference between the ambient light reading and preflash meter reading is selected. (If there are more than one such area, the adjacent areas are also selected as the flash metering area.)
4. The selected area's preflash meter reading is added and averaged. It is compared with the ambient light reading taken in step 1, and the output of the main flash is calculated and recorded in memory.

Since the main subject and all other objects at the same distance will be added and averaged for the flash metering, the flash meter reading will not change radically even if there is a big change in the position, reflectance, and size of the main subject. The flash metering remains highly accurate and stable.

If the difference between the ambient light reading and preflash reading is extremely large, it is likely that there is a highly reflective object. This reflective area is eliminated and the preflash reading is adjusted to a lower reading to prevent underexposure.

Incorporating lens distance information:

When a lens having distance information is used, the flash exposure will be even more stable for flash pictures which have a highly reflective object or white clothing worn by the subject.

If there is a highly reflective object in the scene, there will be an extremely big difference between the ambient light reading and preflash reading in only one area. If the lens provides distance information, the distance information is also incorporated to determine whether there is a highly reflective object. This further ensures that the highly reflective object is eliminated from the final exposure. (If the lens does not provide distance information, the highly reflective object's adverse effect on the exposure is reduced based on the available information.)

Also, since a highly reflective object tends to result in an underexposed shot, the distance information is also incorporated to reduce the degree of underexposure.

Since the distance information is zone information for *** to *** meters, it is used as a supplemental method to stabilize flash exposures for such atypical scenes.

Note: For macrophotography, the distance information is not used.

2) Exposure control system

As with the EOS 10D, the EOS 20D has eleven AE modes and a manual mode. When A-DEP (automatic depth-of-field AE) is used, AF is executed with nine AF points, the optimum aperture is set, and the shutter speed is set automatically.

3) Shutter

A newly-developed shutter dedicated to the APS-C size is employed. By making the shutter dedicated to this size, compactness, high speed, and high durability are attained.

Table 007 shows the shutter design specifications.

(1) APS-C-size design

Since the shutter opening is the same size as the APS-C size, the shutter blades are smaller. This minimizes the inertial mass so that high-speed shutter speeds can be obtained with a little force.

Also, having smaller shutter blades makes the shutter unit smaller.
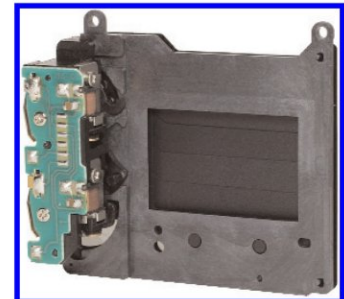
Fig. 027 Shutter unit

17

(2) Faster speed

Besides the smaller size, the stronger drive spring affords a maximum shutter speed of 1/8000 sec. and X-sync at 1/250 sec. (curtain speed: 2.4 ms/15 mm).

Note: For non-EOS external flash, check whether it can sync at 1/250 sec.

(3) Better control

To control fast shutter speeds, a stronger magnet is used. The shutter control is thereby better.

Electrical X contacts are used for the sync contacts. Through the electrical X contacts (semiconductor switch), the mechanical X contacts are switched ON/OFF by a low voltage. Therefore, there is no contact scorching or frictional wear. The contacts are thus highly reliable. The PC terminal has no polarity.

Also, the battery life during bulb exposures is about 2.5 hours with a fully-charged BP-511A.

Table 007 Shutter Design Specifications

Item	Specification
1. Type	Vertical-travel, focal-plane shutter
2. Shutter curtain type	Parallelogram link type
3. Shutter curtain blades	1st curtain: 4 blades 2nd curtain: 4 blades, total 8
4. Shutter curtain material	1st curtain: 4 blades made of KN Mylar 2nd curtain: 4 blades made of KN Mylar
5. Drive system	1st curtain: Dedicated torsion spring 2nd curtain: Dedicated torsion spring
6. Speed control method	All speeds electronically controlled with the electrical conduction interval of the 1st curtain's dedicated magnet and the 2nd curtain's dedi-cated magnet. (The magnet attracts the curtain when turned on, and releases when turned off.)
7. Curtain speed	Approx. 2.4 ms/15 mm
8. Shutter speed range	1/8000 sec. - 30 sec., bulb
9. Max. flash sync	1/250 sec.
10. Signals	1. X-sync (electronic X), 2. 2nd curtain travel-completed signal

4) ISO speed

(1) ISO speed range

ISO 100 - 1600 can be set in 1-stop increments. When C.Fn-08-1 (ISO speed extension) is set, an ISO speed equivalent of ISO 3200 (H) can be set.

(2) ISO auto

The ISO auto feature that sets the ISO speed automatically in Basic Zone modes was first incorporated in the EOS 10D. However, due to user suggestions, this feature has been revamped.

As shown in Table 008, ISO 400 (except in Portrait mode) is the basic ISO speed. This results in good image quality while reducing the chances of camera shake more than before. When flash is used, the main subject's background will also look bright.

Table 008 Automatic ISO Speed Settings

	No Flash	W/built-in flash	W/external Speedlite
Full Auto	100 - 400 (100 for speeds slower than 1/500 sec.)	400	400
Portrait	100	400	400
Landscape	100 - 400 (100 for 1/1.25f* and faster speeds)	-	400
Close-up	100 - 400 (100 for speeds slower than 1/500 sec.)	400	400
Sports	400	-	400
Night Portrait	100 - 400 (100 for speeds slower than 1/500 sec.)	400	400
Flash Off	100 - 400 (100 for speeds slower than 1/500 sec.)	-	400

* Focusing distance 0 1/1.25 sec.

1.7 Drive

1) Continuous shooting

A maximum continuous shooting speed of 5 shots/sec. can be attained in both the One-Shot AF and AI SERVO AF modes. This is made possible by the new drive mechanism (mirror up/down, shutter cocking/release mechanism), the CMOS sensor (4-channel x 16 MHz reading) enabling high-speed signal reading, and the DIGIC II (parallel processing for each sensor output channel) enabling high-speed image processing.

2) Maximum burst during continuous shooting

The EOS 10D's maximum burst during continuous shooting was nine shots regardless of the recording quality setting. With the EOS 20D, the maximum burst depends on the image's process-ing method. As shown in Table 25, the max. burst is approx. 23 shots in the Large/Fine mode when Canon 512MB CF card is used.

Table 009 Maximum burst during continuous shooting

Recording Quality	L/F	L/N	M/F	M/N	S/F	S/N	RAW	RAW+JPEG
Max. Burst [Approx.]	23	43	36	83	67	138	6	6

Note 1: Canon 512MB CF card = Super High-speed type CF card

Note 2: Depending on the shooting condition, development condition and CF card type, max. burst of JPEG images may vary.

Note 3: With the EOS 10D, no image processing is executed during continuous shooting. The image is processed after the shooting stops. However, with the EOS 20D, image processing is executed even during continuous shooting. Therefore, the maximum burst during continuous shooting is much higher when the recording quality is JPEG.

Note 4: If the recording quality is RAW or RAW+JPEG or if white balance bracketing is used, the image processing method will be the same as the EOS 10D's (because the buffer memory capacity is the same as the EOS 10D's and there are more recorded pixels). Therefore, the maximum burst during continuous shooting will be lower than the EOS 10D's.

If any of the following occurs, the image-processing method will change during the continuous shooting and the maximum burst displayed on the lower right of the viewfinder will decrease sharply (less than 6 shots).

Note: Depending on the number of shots already taken, the camera may become "buSy" and no more shots can be taken (in the worst case) when the image-processing method changes.
(1) During continuous shooting in the Portrait mode (built-in flash firing automatically), you switched the built-in flash on/off.
(2) During continuous shooting, the external flash could not recycle in time and the shooting continued.
(3) You pressed the shutter button fully repeatedly at short intervals.
(4) Right after shooting, you changed the shooting mode and started shooting again immediately.
(5) During continuous shooting, the built-in flash was popped up or down (to turn the flash on/off).
(6) During continuous shooting, the external flash was turned on/off and you started shooting again.

Once the camera finishes processing the images in the buffer memory, the camera goes back to the normal image-processing method.

3) Number of possible shots

With the DIGIC II featuring a power-saving circuit design and low power consumption and a CMOS sensor consuming less power than before, the number of possible shots is about 1,000 at 20℃ and 750 at 0℃.
Note: With a fully-charged BP-511A and AE 100%. Based on CIPA testing standards.

1.8 Built-in flash

Fig. 028 Comparison of built-in flash height

The built-in flash employs the EOS IX-E's arm and the EOS DIGITAL REBEL/EOS 300D DIGITAL's pop-up system. The distance between the optical axis and built-in flash center is 18.6 mm longer than with the EOS 10D. This reduces the chances of red eye occurring and makes it less likely for the lens barrel to obstruct the flash coverage. With the EF-S 17-85mm f/4-5.6 IS USM, the built-in flash can be used for subjects as close as 1 meter.

Also, the relative positions of the reflector and Xenon tube are optimized and the flash panel's transparency has been improved. As a result, the built-in flash has the same Guide No. 13 as the EOS 10D's built-in flash. Since the vertical flash coverage angle is wider by 2

The built-in flash's retraction and pop-up have been improved with rubber fitted for the stopper to cushion the pop-up. Also, a new latch mechanism is incorporated to close the gap better.

The EOS 20D is also compatible with the SL580EX's "Picture size auto zoom" feature. (The SL580EX automatically detects the EOS 20D's sensor size and automatically sets the optimum flash coverage.)

Also, with C.Fn-07-1 (flash on/off), flash firing by the built-in flash, external Speedlite, or non-Canon flash connected to the PC terminal can be disabled.

1.9 Basic operation concept and LCD monitor

1) Basic operation concept

The basic operation for selecting and setting various functions with the Main Dial, Quick Control Dial, and buttons are the same as with the EOS 10D.

As with previous EOS digital cameras, no matter what state the camera is currently in (except during direct printing), all you do is press the shutter button to instantly return to standby for shooting.

2) Multi-controller

The new Multi-controller is used for AF point selection, white balance correction, scrolling around a magnified image, and moving the trimming frame for direct printing.

You can press the Multi-controller in eight directions and at the center. By doing so, you can quickly select the desired AF point. The Assist button found on the EOS 10D has been discontinued.

No Assist button

Multi-controller added

No Quick Control Dial switch

No vertical/horizontal movement switch

</⁄> (Quick Control Dial ON) position added
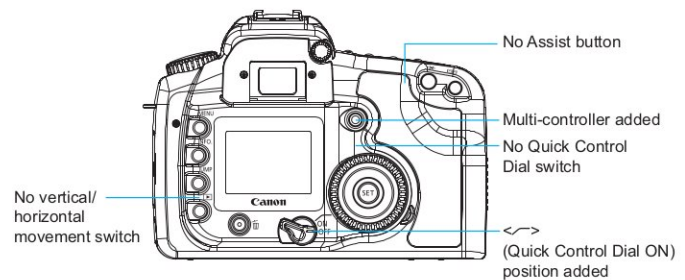
Fig. 029 Changes in the camera controls

3) LCD monitor

The EOS 20D's LCD monitor is a 1.8-inch, polysilicon, TFT liquid-crystal, color monitor with 118,000 pixels. It has a high transparence, high contrast, and wide angle of view. For the backlight, there are three LED modules that consume little power.

With the EOS 10D, there were a few complaints about the brightness of the image displayed on the LCD monitor being slightly different from the actual brightness (as viewed on a personal computer). This problem has been resolved by changing the LCD monitor's gamma correction. This has also enhanced the gradation of highlight areas.

4) Image playback

As with the EOS 10D, the camera can display a single image, shooting information, 9-image index, magnified zoom display, jump display, and auto play. It can also erase-protect images and rotate images.

The EOS 20D can now display a single image without shooting information. Each time you press the Info button, the display format will change as follows: image and basic information, shooting information, and image only. When you finish the playback, the last display format will be remembered so when you playback images again, the same display format as the last time will be used.

As for the shooting information, the following information not provided by the EOS 10D is now provided: color space, original image verification data appended, WB correction, and monochrome display. Also, for the camera setting display, the WB correction and color space have been added.

Single image (with basic information)   Shooting information   Single image (no shooting information)   Camera settings

Fig. 030 Single image display/Shooting information/Camera settings

5) Menu functions

The scrolling system is the same as the EOS 10D's. The current menu category is displayed as a tab (icon + color code) on the upper left of the screen. When you press the JUMP button (moves to the first item in the next menu category), a guide is added to the upper right of the screen. This enables faster menu operations. Table 26 shows the menu items. (New items are in green.)

Note: Although the JUMP button was provided on the EOS 10D, it was obscure and not used much.

Table 010 Menu items

Shooting	Playback	Setup
Quality	Protect	Auto power off
Red-eye on/off	Rotate	Auto rotate
Beep	Print Order	LCD Brightness *5
Shoot w/o card *1	Auto play	Date/Time
AEB	Review time *4	File numbering
WB SHIFT/BKT *2		Language *6
Custom WB		Video system
Color temp.		Communication
Color space *3		Format
Parameters		Custom Functions(C.Fn)
		Clear settings
		Sensor clean.
		Firmware Ver.*7

[Major Changes Compared to EOS 10D]
*1: The EOS 10D's C.Fn-02 [Shutter release without CF card] function has been moved to a menu setting. Shutter release can now be disabled even in the Basic Zone modes if there is no CF card.
*2: The WB correction feature has been added, and both the WB correction and WB bracketing can be set on the same screen.
*3: [Adobe RGB], which was within the EOS 10D's [Processing parameters], is now a separate setting that can be selected along with sRGB. Adobe RGB can also reflect any parameter setting.
*4: The EOS 10D's [Image preview] and [Image preview time] have been combined.
If you press the Info button while an image is displayed, you can change the display format of single-image playback.
*5: The image and gray chart are displayed together on the screen.
*6: In addition to the EOS 10D's 12 languages, three new ones have been added (provided by firmware update).
*7: If a CF card containing the firmware update is installed in the camera, the firmware update will start when this item is selected.

6) Custom Functions

Custom Functions different from the EOS 10D's are listed below.

Table 011 Custom Function Changes (1/2)

New Custom Functions

C.Fn-02 Long exposure noise reduction	Works with shutter speeds 1 sec. or longer. Noise reduction requires the same time as the exposure time.
C.Fn-08 ISO expansion	Moved from EOS 10D's menu setting.
C.Fn-13 AF point selection method	Enables the AF point to be selected directly with the Multi-controller or Quick Control Dial/Main Dial.
C.Fn-14 E-TTL ll	When set to 1: Averaged flash exposure, the entire image will be averaged for autoflash.
C.Fn-18 Add original decision data	When set to 1: Yes, the original image verification data will be appended automatically.

Modified Custom Functions

C.Fn-03 Flash sync speed in Av mode	Flash sync speed changed to 1/250 sec. fixed.
C.Fn-05 AF-assist beam	The EOS 10D's C.Fn-05 "AF-assist beam/Flash firing" has been split into two: C.Fn-05 and C.Fn-07.
C.Fn-06 Exposure level increments	Changed to 0: 1/3 stop 1: 1/2 stop
C.Fn-07 Flash firing	Same as C.Fn-05. When set to 1: Off, all flash units will not fire.

Table 011 Custom Function Changes (2/2)

Deleted Custom Functions

Shutter release without CF card	Moved to the menu's [Shoot w/o card] setting.
AF point registration	The Assist button has been discontinued.
RAW+JPEG simultaneous recording	Thirteen [Quality] settings can be selected directly with the menu.
Assist button function	The Assist button has been discontinued.
Daylight fill-flash and auto reduction control of flash exposure	Replaced C.Fn-14's function.

1.10 Direct printing from camera and Print ordering (DPOF)

As with all EOS digital cameras from the EOS 10D onward, the EOS 20D is compatible with PictBridge, CP Direct, Bubble Jet Direct, and DPOF Print Ordering (Version 1.1). The direct printing features and DPOF features are the same as the EOS-1D Mark II's. Printer communications can be set to [Normal] or [PTP] with the menu's [Communication] setting.

When the camera is connected to a CP printer, CP direct will be set regardless of the PictBridge/CP Direct and Communications settings.

When the camera is connected to a BJ printer compatible with both PictBridge and Bubble Jet Direct, Bubble Jet Direct will take effect if the Communications setting is [Normal]. If the Communications setting is [PTP], PictBridge will take effect. Or, if the BJ printer is compatible with only Bubble Jet Direct, Bubble Jet Direct will be set regardless of the Communications setting. If the camera is connected to a non-Canon printer compatible with PictBridge, set the Communications setting to [PTP] to enable direct printing with PictBridge.

And with the EOS 20D, improved data transmission architecture enabled faster printing with Canon BJ printers using PictBridge. Especially for image recording modes whose file size is large, such as Large/Fine, the printing time is drastically shortened, compared to the conventional data transmission system.

Note 1: Apart from the file size, the printing time varies depending on the size of the paper or the type of the printer. Therefore, there may be a case that the printing time is not shortened although the image is Large. With the Middle image and its file size is large, the printing time may be shortened depending on the printing conditions. For Small image, the printing time is almost the same with the previous model.

Note 2: This fast data transmission is only effective with the Canon BJ printer compatible with PictBridge. When printing with Bubble Jet Direct, CP printer or non-Canon printer, the conventional data transmission system is used.

Note 3: Examples of printing time : When Canon BJ 860i type printer is used, image quality is set to Large/Fine, and the file size is 1) 5.6 MB or 2) 3.0MB;
L-size borderless print : Fast transmission 1) 76 sec., 2) 77 sec. / conventional trans. 1) 191 sec., 2) 77 sec.
A4-size borderless print : Fast transmission 1) 218 sec., 2) 218 sec. / Conventional trans. 1) 372 sec., 2) 331 sec.

1.11 Interface

1) USB 2.0 Hi-speed

The actual transfer speed is about 10 times faster than with the EOS 10D thanks to the DIGIC II and a faster digital circuit. (EOS 20D: Approx. 50 Mbps, EOS 10D: Approx. 5 Mbps)

2) Video OUT port/Remote control terminal

The specifications of the video OUT port and remote control terminal (N3 type) are the same as the EOS 10D's.

1.12 Power source

The EOS 20D's power source can be Battery Pack BP-511A and BP-514 (both with 26% higher capacity) and BP-511 and BP-512.

In BATTERY GRIP BG-E2, two battery packs or a battery magazine containing six size-AA batteries can be accommodated. The size-AA batteries can be alkaline or Ni-MH. If two battery packs are inserted, the one with the higher voltage will be used first. Then when the voltage of the two battery packs become equal, both battery packs will be consumed together.

Also, Battery Charger CG-580, which will be bundled with the camera for Japan and North America, will have the power plug built-in inside the charger. The basic specifications are the same as the CB-5L. The CG-580 and CB-5L takes about 100 min. to recharge the BP-511A/BP-514 and about 90 min. to recharge the BP-511/512.

1.13 Internal construction

1) Exterior covers and internal construction

As with the EOS 10D, the EOS 20D's top, front, and rear covers are made of magnesium alloy known for light weight and excellent strength. Also, the left cover, where the USB port, video port, and other external interface connectors are located, is made of special engineering plastic that serves as an excellent electromagnetic shield.

The body consists of a chassis made of stainless steel, and a mirror box made of high-strength engineering plastic. The mirror box, to which the

Fig. 031 Magnesium-alloy exterior

lens mount and image sensor are attached, is fixed very securely on the chassis to obtain the same body strength as the EOS 10D. This is to prevent the flange focal distance from changing due to the static pressure of the attached lens.

As with the EOS 10D, the exterior paint is a high-grade, black satin, leathery finish. The satin and leathery pattern is finer than before, and it feels nice and smooth in the hands.

Fig. 032 Exterior covers and internal construction

2) Internal construction and location of major components

While the EOS 20D's basic performance is the same or better than the EOS 10D's, the design and production know-how gained from the EOS DIGITAL REBEL/EOS 300D DIGITAL have made the camera smaller and cheaper.
The parts count is shown in Table 012.

(1) Smaller and lighter
- The following components have been optimized for the APS-C-size image sensor: Compact shutter unit, mirror box, main mirror, pentaprism, focusing screen, and viewfinder optical unit.
- Smaller and lighter due to the changed configuration of the stainless steel chassis.

(2) Cost reduction measures

Despite much better performance specifications (approx. 8.20-megapixel CMOS sensor, 5 shots/sec. continuous shooting speed, high-speed shutter, and nine AF points), the cost was reduced thanks to the following:

- DIGIC II and the newly-developed, dedicated ADIC* and TG* (shrinking the electrical circuits).
- Fewer mechanical and electrical parts.

Table 012 Parts Count

Item	EOS 20D	EOS 10D
Optics	20	21
Mechanical parts	301	320
Electrical parts	826	878
Circuit boards	27	28
Lead wires	19	25
Total (Official)	1193	1272
Screws and washers	167	186
Total	1360	1458

* The shutter unit is counted as 1 part.
* The DC/DC converter is counted as one part.
* The E-ring is counted as a washer.
* The official total excludes the screws and washers.

- CMOS sensor with a high pixel count developed and manufactured by Canon.
- Higher integration of circuit boards.
- Streamlined assembly and adjustment process.

3) Shutter release mechanism

The shutter release mechanism is the same as the EOS 10D's. The time lag from SW-1 ON to shutter release is approx. 65 ms (within 3.5 stops of maximum aperture). The viewfinder blackout time is approx. 115 ms. Both figures are much shorter than the EOS 10D.

Table 013 Shutter-release stroke and pressure

State	Stroke	Pressure
Shutter button protrusion	1.3mm	-
Standby position to SW-1 ON	0.55mm	140g
SW-1 ON to SW-2 ON	0.3mm	330g

4) Electrical components

The EOS 20D's basic circuit board configuration consists of five hard circuit boards centering on the digital control circuit board and camera control circuit board. These boards are connected to 22 flexible circuit boards.

The EOS DIGITAL REBEL/EOS 300D DIGITAL has the digital control circuit board and camera control circuit board on one large hard board. However, the EOS 20D has split these two boards to afford more a compact size and flexibility in the exterior design. It also makes assembly adjustments more efficient.

Although separating the two boards normally increases the cost, the cost was reduced by using a suitable layout of parts and a streamlined board shape.

Fig. 034 on page 30 shows the location of major mechanical components, and Fig. 035 shows the location of major circuit boards. Fig. 036 shows the cross section at the center.

The main features of the major circuit boards are as follows:

(1) Digital control circuit board

This board uses a high-density, 10-layer board (3-4-3). It consists of the following circuits: ADIC that converts the output from the CMOS sensor into digital signals, an image signal-processing circuit that has an IC called TG which generates the CMOS sensor's drive pulse, a digital image-processing circuit that includes DIGIC II, a memory circuit that includes an SDRAM for storing images, and a TFT control circuit that includes the TFT liquid-crystal control IC.

Also, the board's second and ninth layers are basically GND layers. They prevent signal interference between the top- and bottom-side patterns and inner pattern. Misoperation due to noise is thereby prevented.

(2) Camera control circuit board

This board has six layers which include the following: The main microcomputer which is an IC for camera operation control such as sensor and mechanical control, the display microcomputer which is an IC for the LCD panel and viewfinder display drive control and control of various switches, an EEPROM which is memory for storing adjustment data (AE, AF, etc.).

(3) External interface connection circuit board

To make the camera smaller, this board has been separated from the digital control circuit board. It is located in the dead space between the camera body and digital control circuit board.

The board is equipped with a USB port (MINI B) and video OUT terminal. It provides USB 2.0 Hi-speed. Although this faster communication speed is more prone to be affected by noise, the noise problem has been given adequate consideration in the board's configuration.

(4) Flash circuit board

The electronic X circuit and camera orientation detection circuit have been added to the flash circuit board. Also, the orientation detection circuit in previous EOS cameras had two direction detection switches to detect the two directions. In the EOS 20D, the orientation detection circuit has a 4-way direction detection switch that can detect the horizontal and vertical directions. By having only one switch, less space is necessary.
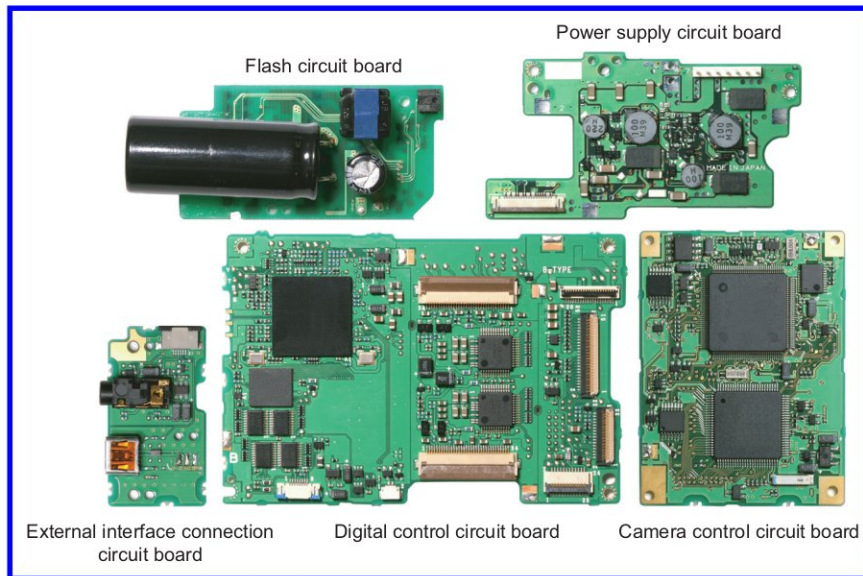
Fig. 033 Major circuit boards

5) Compliance to RoHS directive (Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment)

The RoHS directive will ban the use of the following six toxic substances in any electrical and electronic equipment: Lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl, and polybrominated diphenyl ether. It will take effect from July 1, 2006 and be applied to products sold in the EU. The EOS 20D meets this directive.

Note: RoHS directive: Restriction of the use of certain Hazardous Substances in electrical and electronic equipment.

Metering sensor

Hot shoe

Built-in flash unit

Dioptric adjustment mechanism

Flash pop-up mechanism

Red-eye reduction lamp

LCD panel

Main Dial

CF card slot

Drive motor

Quick Control Dial

Lithium ion battery

Shutter speed control
mechanism

Mirror-driving mechanism

Beeper

Horizontal 9-point SI unit

Pentaprism

IR sensor

Flash exposure sensor

Mode Dial

Viewfinder information LCD

Acrylic reflective plate

Focusing screen

Orientation detection sensor

PR sensor

Main mirror

Secondary mirror

Digital terminal

Flash main capacitor

Video OUT terminal

Remote control terminal

PC terminal

TFT display unit

Imaging element

Electronic mount contact pins

AF unit

Fig. 034 Location of major mechanical components

Flash circuit board

External I/F
connection
circuit board

Imaging element

Power supply circuit board

Camera control
circuit board

Digital control circuit board
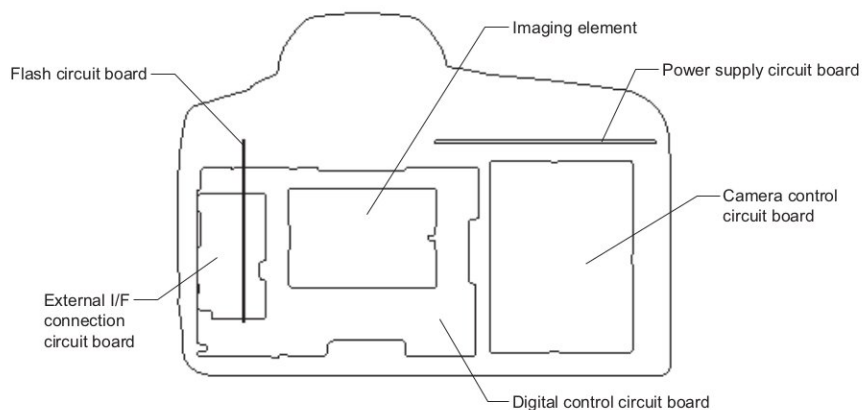
Fig. 035 Location of major circuit boards

Flash circuit board

Flash capacitor

External I/F
connection
circuit board

Image sensor

Large color LCD

Motor

Battery

CF card slot

Optical low-pass filter/Infrared cut filter

Digital board
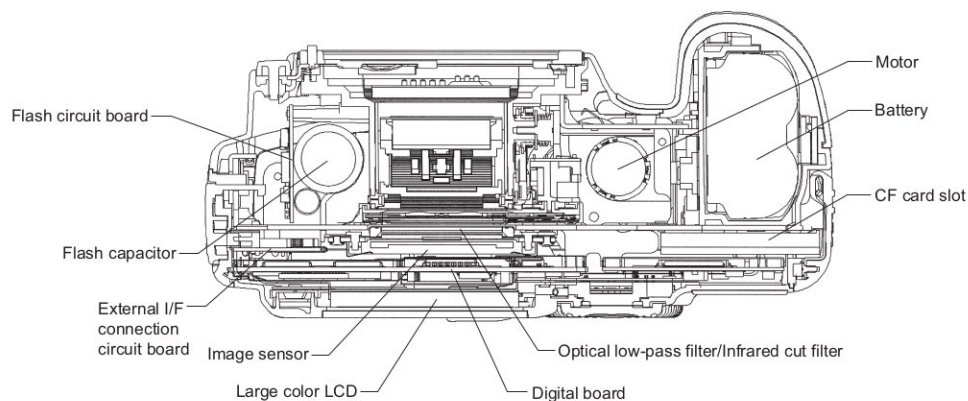
Fig. 036 Cross section at center

30

1.14 Camera Case Compatibility with Lenses

Items Accommodated: ① Camera body, ② Lens, ③ Front lens cap, ④ Hood, ⑤ Filter

Symbols: ○: Compatible △: Compatible on condition (A: Little loose, B: Little tight)

▼: Compatible without hood and filter (①+②+③) ×: Incompatible.

Table 014 Lens Compatibility with EOS 20D + Semi-Hard Case EH17-L (1/3)

No.	Lens	Hood	Compatibility with All (①~⑤)	Items ①②③	Items ①②③④	Items ①②③⑤	Remarks
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	△ A	△ A	△ A	△ A	
004	EF24mm f/1.4 L USM	EW-83D II	○	△ A	○	○	
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	△ B	○	△ B	○	
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	▼	△ A	—	△ A	
014	(EF50mm f/2.5 MACRO+LSC)	—	×	△ B	—	×	
015	MP-E 65mm f/2.8 1-5×	None	×	△ B	—	×	
016	EF85mm f/1.2 L USM	ES-79 II	×	○	×	○	
017	EF85mm f/1.8 USM	ET-65 II	○	○	○	○	
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	▼	△ A	×	×	
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 IIUSM	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 IIUSM	ET-118 II	×	×	×	×	
030	EF300mm f/2.8 L IIIUSM	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 IIUSM	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 IIUSM	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 IIUSM	ET-161 II	×	×	×	×	
044	EF1200mm f/5.6 USM	Built-in	×	×	×	×	
045	TS-E24mm f/3.5L	EW-75B II	×	△ A	×	○	
046	TS-E45mm f/2.8	EW-79B II	×	○	×	△ A	
047	TS-E90mm f/2.8	ES-65 III	○	○	○	○	

Items Accommodated: ① Camera body, ② Lens, ③ Front lens cap, ④ Hood, ⑤ Filter
Symbols: ○: Compatible △: Compatible on condition (A: Little loose, B: Little tight)
▼: Compatible without hood and filter (①＋②＋③) ×: Incompatible.

Table 014 Lens Compatibility with EOS 20D + Semi-Hard Case EH17-L (2/3)

No.	Lens	Hood	Compatibility with All (①〜⑤)	Items ①②③	①②③④	①②③⑤	Remarks
048	EF-S10-22mm f/3.5-4.5 USM	EW-83E	Will be confirmed later				
049	EF16-35mm f/2.8 L USM	EW-83E	×	×	×	×	
050	EF17-35mm f/2.8 L USM	EW-83C II	×	×	×	×	
051	EF17-40mm f/4L USM	EW-83E	×	×	×	×	
052	EF-S17-85mm f/4-5.6 IS USM	EW-73B	×	○	○	○	
053	EF-S18-55mm f/3.5-5.6	EW-60C	×	×	×	×	
054	EF-S18-55mm f/3.5-5.6 USM	EW-60C	×	×	×	×	
055	EF20-35mm f/2.8 L	EW-75	△ B	○	○	○	
056	EF20-35mm f/3.5-4.5 USM	EW-83 II	×	○	×	○	
057	EF22-55mm f/4-5.6 USM	EW-60D	×	×	×	×	
058	EF24-70mm f/2.8L USM	EW-83F	×	×	×	×	
059	EF24-85mm f/3.5-4.5 USM	EW-73 II	△ A	×	△ A	△ A	
060	EF28-70mm f/2.8 L USM	EW-83B II	×	×	×	×	
061	EF28-70mm f/3.5-4.5	EW-68A	×	×	×	×	
062	EF28-70mm f/3.5-4.5 II	EW-68A	×	×	×	×	
063	EF28-80mm f/2.8-4 L USM	EW-79	×	×	×	×	
064	EF28-80mm f/3.5-5.6	EW-60C	△ A	×	×	×	
065	EF28-80mm f/3.5-5.6 II	EW-60C	△ A	×	×	×	
066	EF28-80mm f/3.5-5.6 USM	EW-68A	△ A	×	×	×	
067	EF28-80mm f/3.5-5.6 II USM	EW-60C	△ A	×	△ A	△ A	
068	EF28-80mm f/3.5-5.6 III USM	EW-60C	△ A	×	△ A	△ A	
069	EF28-80mm f/3.5-5.6 IV USM	EW-60C	△ A	×	△ A	△ A	
070	EF28-80mm f/3.5-5.6 V USM	EW-60C	△ A	×	△ A	△ A	
071	EF28-90mm f/4-5.6	EW-60C	×	×	×	×	
072	EF28-90mm f/4-5.6 USM	EW-60C	×	×	×	×	
073	EF28-90mm f/4-5.6 II	EW-60C	×	×	×	×	
074	EF28-90mm f/4-5.6 II USM	EW-60C	×	×	×	×	
075	EF28-90mm f/4-5.6 III	EW-60C	×	×	×	×	
076	EF28-105mm f/3.5-4.5 USM	EW-63 II	△ A	×	△ A	△ A	
077	EF28-105mm f/3.5-4.5 II USM	EW-63 II	△ A	×	△ A	△ A	
078	EF28-105mm f/4-5.6	EW-63B	△ A	×	×	×	
079	EF28-105mm f/4-5.6 USM	EW-63B	△ A	×	×	×	
080	EF28-135mm f/3.5-5.6 IS USM	EW-78B II	×	△ B	×	×	
081	EF28-200mm f/3.5-5.6	EW-78D	×	○	△ B	○	
082	EF28-200mm f/3.5-5.6 USM	EW-78D	×	○	△ B	○	
083	EF28-300mm f/3.5-5.6L IS USM	EW-83G	×	×	×	×	
084	EF35-70mm f/3.5-4.5	EW-68B	×	×	×	×	
085	EF35-70mm f/3.5-4.5 A	EW-68B	×	×	×	×	
086	EF35-80mm f/4-5.6 PZ	None	×	×	—	×	
087	EF35-80mm f/4-5.6	EW-62	△ A	×	△ A	△ A	
088	EF35-80mm f/4-5.6 II	EW-54 II	×	×	×	×	
089	EF35-80mm f/4-5.6 III	EW-54 II	×	×	×	×	
090	EF35-80mm f/4-5.6 USM	EW-54 II	×	×	×	×	
091	EF35-105mm f/3.5-4.5	EW-68B	○	△ A	△ A	△ A	
092	EF35-105mm f/4.5-5.6	EW-68B	×	×	×	×	
093	EF35-105mm f/4.5-5.6 USM	EW-60B	×	×	×	×	
094	EF35-135mm f/3.5-4.5	EW-68B	△ B	○	○	△ B	
095	EF35-135mm f/4-5.6 USM	EW-62	○	△ A	○	△ A	

Items Accommodated: ① Camera body, ② Lens, ③ Front lens cap, ④ Hood, ⑤ Filter

Symbols: ○: Compatible △: Compatible on condition (A: Little loose, B: Little tight)

▼: Compatible without hood and filter (①+②+③) ×: Incompatible.

Table 014 Lens Compatibility with EOS 20D + Semi-Hard Case EH17-L (3/3)

No.	Lens	Hood	Compatibility with All (①～⑤)	Items			Remarks
				①②③	①②③④	①②③⑤	
096	EF35-350mm f/3.5-5.6	EW-78 II	×	×	×	×	
097	EF38-76mm f/4.5-5.6	EW-54 II	×	×	×	×	
098	EF50-200mm f/3.5-4.5	ET-62 II	×	×	×	×	
099	EF50-200mm f/3.5-4.5 L	ET-62 II	×	×	×	×	
100	EF55-200mm f/4.5-5.6 USM	ET-54	×	○	○	×	
101	EF55-200mm f/4.5-5.6 II USM	ET-54	×	○	○	×	
102	EF70-200mm f/2.8 L IS USM	ET-86	×	×	×	×	
103	EF70-200mm f/2.8 L USM	ET-83 II	×	×	×	×	
104	EF70-200mm f/4 L USM	ET-74	×	×	×	×	
105	EF70-210mm f/4	ET-62 II	×	×	×	×	
106	EF70-210mm f/3.5-4.5 USM	ET-65 II	×	×	×	×	
107	EF70-300mm f/4.5-5.6 DO IS USM	ET-65B	×	×	×	×	
108	EF75-300mm f/4-5.6	ET-65 II	×	×	×	×	
109	EF75-300mm f/4-5.6 II	ET-60	×	×	×	×	
110	EF75-300mm f/4-5.6 III	ET-60	×	×	×	×	
111	EF75-300mm f/4-5.6 USM	ET-60	×	×	×	×	
112	EF75-300mm f/4-5.6 II USM	ET-60	×	×	×	×	
113	EF75-300mm f/4-5.6 III USM	ET-60	×	×	×	×	
114	EF75-300mm f/4-5.6 IS USM	ET-64 II	×	×	×	×	
115	EF80-200mm f/2.8 L USM	ES-79	×	×	×	×	
116	EF80-200mm f/4.5-5.6	ET-62 II	○	△ A	○	△ A	
117	EF80-200mm f/4.5-5.6 II	ET-54	○	△ A	△ A	△ A	
118	EF80-200mm f/4.5-5.6 USM	ET-54	○	△ A	△ A	△ A	
119	EF90-300mm f/4.5-5.6	ET-60	×	×	×	×	
120	EF90-300mm f/4.5-5.6 USM	ET-60	×	×	×	×	
121	EF100-200mm f/4.5 A	ET-62 II	×	×	×	×	
122	EF100-300mm f/5.6	ET-62 II	×	×	×	×	
123	EF100-300mm f/5.6 L	ET-62 II	×	×	×	×	
124	EF100-300mm f/4.5-5.6 USM	ET-65 III	×	×	×	×	
125	EF100-400mm f/4.5-5.6 IS USM	ET-83C	×	×	×	×	

Repair
Information

CONTENTS

1. REPAIR PREPARATIONS

1.1 Initial Check List

Assembly and Disassembly:
1) Antistatic measure

Be sure to use an antistatic wrist strap when assembling or disassembling.

2) Measuring environment

Before using major measuring tools (Light Source, AF Chart Stand, or Standard Tool Lens), be sure to make an inspection and keep a record of the result routinely.

3) Discharge positions

After replacing the front cover, be sure to discharge from the main capacitor.

Discharge from the lands located on the PCB.
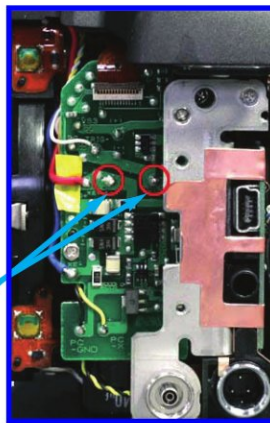
Fig. 001

4) Charge prevention

By removing the solders shown below, charging during an interim operation check can be inhibited.

Remove solder on the lands.

Fig. 002

1
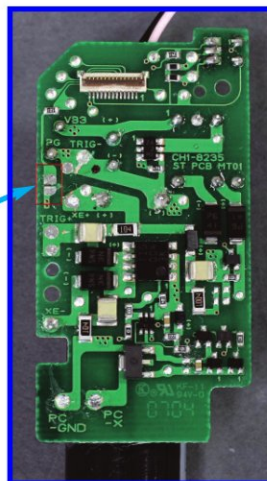
5) Parts for product reliability

Make sure that the following parts are attached.
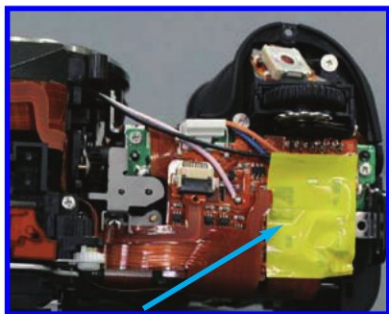
Prevents short-circuit between devices.

Fig. 003
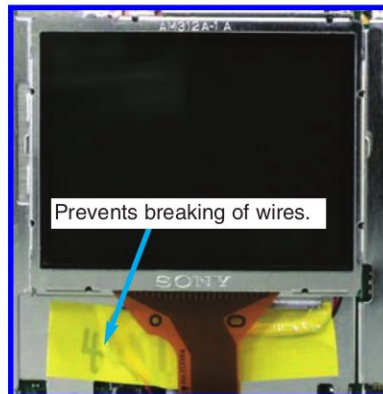
Prevents breaking of wires.

Fig. 004
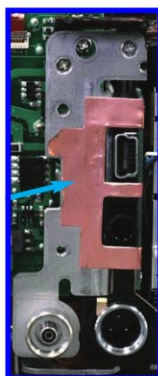
Conductive tape for noise prevention

Fig. 005

6) Dust cleaning of the imageing surface (LPF surface)

Make sure that DIA (Digital Image Analyzer) displays "PASS" in the dust check when returning repaired products to users.

(1) DIA Software Guide:

Detects dust elements on designated image and counts the number. Based on the location, size and number of dust specs, DIA judges "PASS" or "FAIL".

Fig. 006

1. Take a picture
   - Shooting condition:
   - EF 50/1.8 lens
   - Av Priority AE (F22)
   - ISO 100, AEB
   - JPEG Large/Fine
   - Light Source (EF-1,8000 or Light Box)
2. Download an image to PC.
3. Open the JPEG file on DIA.
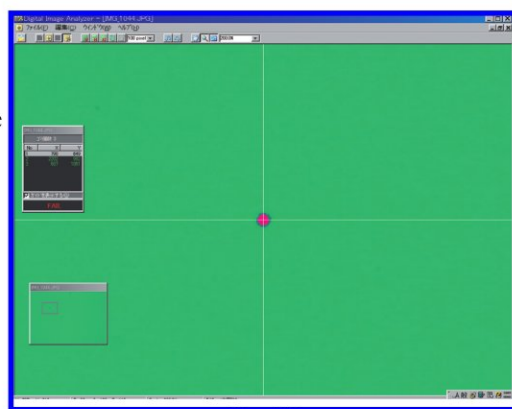
4. The result of the judgement
   In case of "FAIL", click the No. and check where the dust is located if necessary. Then, clean the dust.

(2) Dust Loupe (CY9-1132):
   Use the dust loupe set as a service tool to check dust. The imaging surface of which all dust viewable with the loupe has been cleaned should meet the cleaning standard.
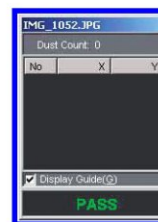
Fig. 007   Fig. 008
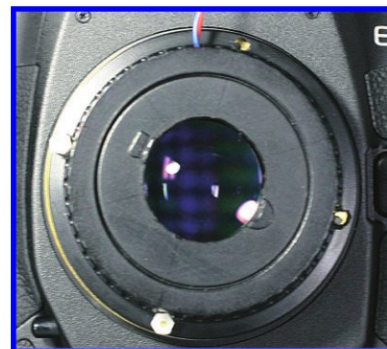
Fig. 009

1.2 Power Current Consumption

Current Consumption Standards

Lens: EF 50mm f/1.8
Power source: Constant voltage 8.0 V, 0.40 Ω (No CF card installed)
Ambient conditions: Room temperature, normal humidity (below 60%)

Camera Status	Standard	Actual Measurement
Standby	150 mA or lower	Approx. 44.6 mA
Lock	150 μA or lower	Approx. 17.6 μA
SW1-ON	350 mA or lower	Approx. 120 mA

Note1: The Actual Measurement data is taken from the initial lot of mass production cameras. It may differ slightly with subsequent lots.

Note 2: Standby means the condition where the camera stands by while Main SW is on.

Constant-Voltage
Power Source

Digital tester or
other ammeter

Tools battery

To camera

Fig. 010

3
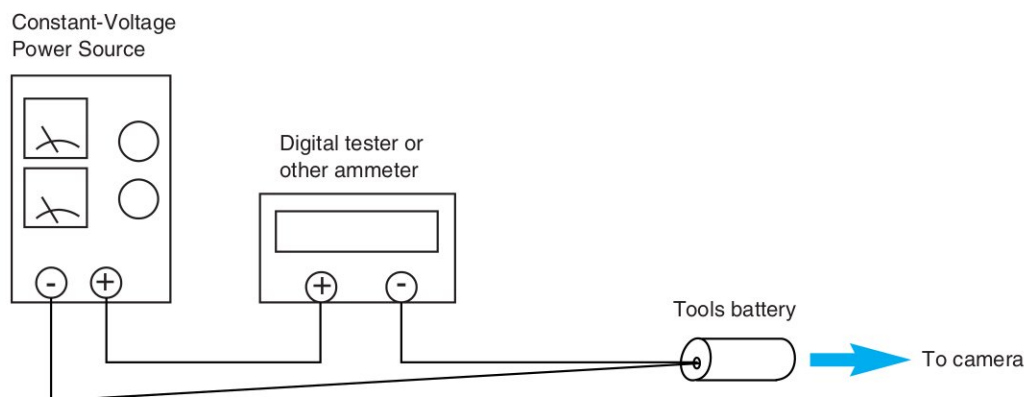
1.3 Residual Battery Display

Tool: Use a tools battery.

Power: Set the constant voltage 8.0[V].

(1) Insert the tools battery into the camera.

(2) Turn on the main SW.

(3) Raise supply voltage gradually so that the display switches from one to another.

7.40±0.10 V

6.50±0.10 V

Fig. 011
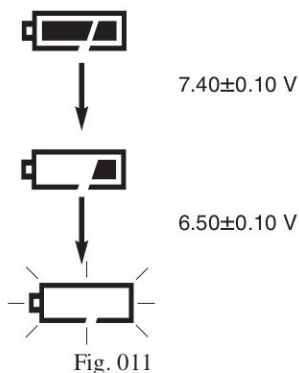
1.4 Serial No. Location

This number is used in various information such as service manual reports after the product release. In particular, when a part is replaced with the service part, the serial number is not reflected. Therfore, be sure to copy the forth and fifth digit of the serial number on the surface of TFT holder unit base inside the camera.

Fig. 012

Fig. 013

4
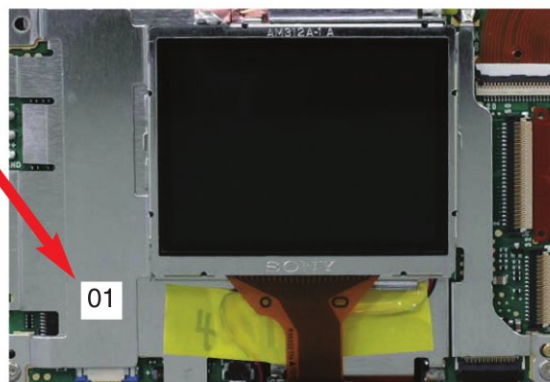
1.5 Repair Tools and Materials List

The following tools and materials are required for camera reassembly and adjustment.

1) Tools List

New	Name	Part No.
*	Lead-free solder	CY9-4045-000
	Wrist Strap (Earth)	CY9-6158-000
	Conductive Sheet	CY9-1061-000
	Liquid Dispenser	CY9-4017-000
	Tweezers(AA type/GG type)	CY9-4018-001/002
	Blower	CY9-4020-000
	Lens Tissue (K-1 thick/K-3 thin)	CY9-4023-001/003
	Multiple Tool II	CY9-7099-000
	Screw Driver Handle	CY9-7014-001
	Hi-Torque Screwdriver	CY9-7015-000
	CROSS-RECESS BIT TB35-5(ϕ3mm,l=50mm)	CY9-7014-002
	CROSS-RECESS BIT TB35-6(ϕ2.5mm,l=115mm)	CY9-7014-003
	CROSS-RECESS BIT TB35-7(ϕ2.5mm,l=50mm)	CY9-7014-004
	CROSS-RECESS BIT TB35-8(ϕ2mm,l=50mm)	CY9-7014-005
	ELECTRIC SCREW DRIVER	CY9-7061-000
	POWER SUPPLY(100,120,220,240)	CY9-7062-000(xxx)
	SOLDERING STATION(AC100V)	CY9-7096-000
	SOLDERING IRON	CY9-7096-001
	SOLDERING TIP (Standard)	CY9-7096-002
	SOLDERING TIP(45° Cut type)	CY9-7096-003
	SPONGE	CY9-7096-004

2) Charts and Locally-Made Tools

New	Name	Part No.	Purpose/Subject
	SPC positioning mask	Locally-made	
	X-sync time-lag check shoe	Locally-made	X-sync time lag check
	Back cover flex	Locally-made	Operates camera without back cover
	Tools battery	Locally-made	Inhibits voltage

* For details, see "About Locally-Made Tools."

3) Other Products for Testing

New	Name	Part No.	Purpose
	EF 50mm f/1.8 production lens		Camera operations, adjustments, checking
	Speedlite (300EZ, 540EZ, or other E-TTL)		Flash metering adjustment
	Speedlite (380EX, 550EX, or other E-TTL model)		Flash metering adjustment

4) Expendables List

New	Name	Part No.	Purpose
	Aron Alpha 201	CY9-8007-000	Securing SPD and SI in place
	Arontite L	CY9-8008-000	Screw heads
	Silicon KE347B	CY9-8064-000	Water resistance
	Silicon KE471W	CY9-8072-000	Adhesive
	Three Bond 1401C	CY9-8011-000	Screw lock
	Cemedine Super X8008B	CY9-8118-000	Mount ring adhesion, etc.
	Humi-Seal 1B-66	CY9-8069-000	Moisture-proof insulation
	Logenest Lambda NFH-743C	CY9-8125-000	Front cover's friction surfaces
	Logenest Lambda NK-74C	CY9-8117-000	Lubricating material
	UTLM-10	CY9-8031-000	Mirror parts
	Variator SJF-102	CY9-8100-000	Parts assembly
	Nox Guard ST-420	CY9-8123-000	Parts assembly
	Logenest Lambda A-74	CY9-8102-000	M2 gear shafts
	Light-shield tape	CY9-4026-000	M2 motor
	Scotch tape (No. 315)	CY9-4031-000	
	Double-sided tape	CY9-4034-000	Adhesive for body
	Diabond 1663G	CY9-8129-000	Adhesive for parts

1.6 Locally-Made Parts

1) SPD Positioning Mask

On a black low-reflectance paper, make holes as arranged below.

ø57mm
ø4~6mm
ø2~3mm
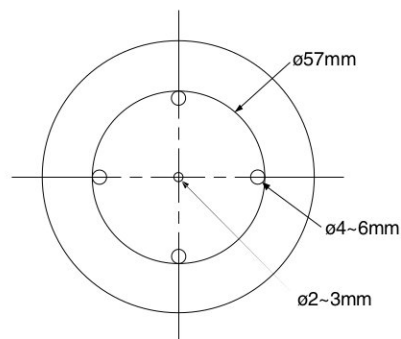
Fig. 014

2) Tools Battery

Preparation:
  • DY9-1374   • 1.2mm dia. lead wires (red and black)   • Two terminals
Procedure:
  (1) Prepare 3 aformentioned products.
  (2) Solder the lead wires to the battery contacts, and let the wires through the hole of the battery cover.
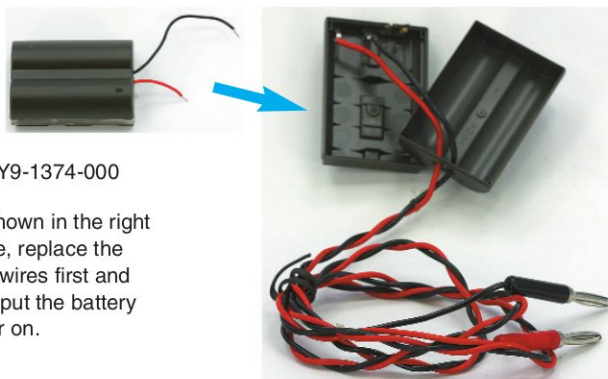
DY9-1374-000

As shown in the right figure, replace the lead wires first and then put the battery cover on.

Fig. 015

3) Back cover tool flex

Purpose: To make the camera releasable without back cover.

Preparation: A flex end within back cover ass'y, a lead wire

Procedure:

(1) Cut approx. 5 cm of the flex end.

(2) Short-circuit No.1, No.6 and No.11 of the contact part with lead wire.

CAUTION   Be sure to use a wrist strap when starting the camera with the tool flex attached.

Cut the end of the flex.

Fig. 016

[1]
[6]
[11]
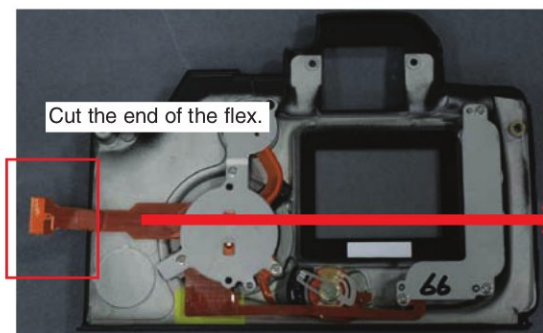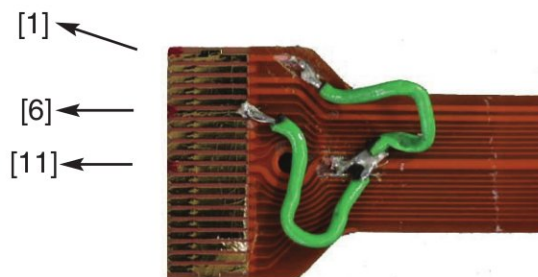
Fig. 017

Back cover tool flex is attached.
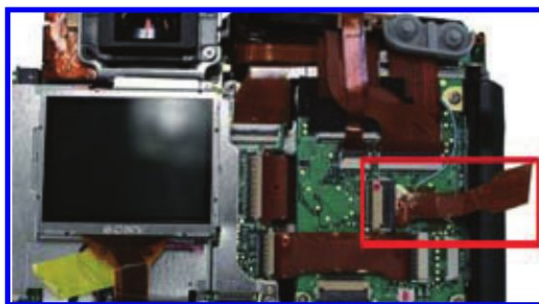
Fig. 018

8

<MEMO>

2. DISASSEMBLY AND ASSEMBLY

2.1 Disassembly of Back Cover Ass'y

3) Back Cover Ass'y

×1

2) Back Rubber

×2

CAUTION

×1

1) Terminal Cover

×2

×2
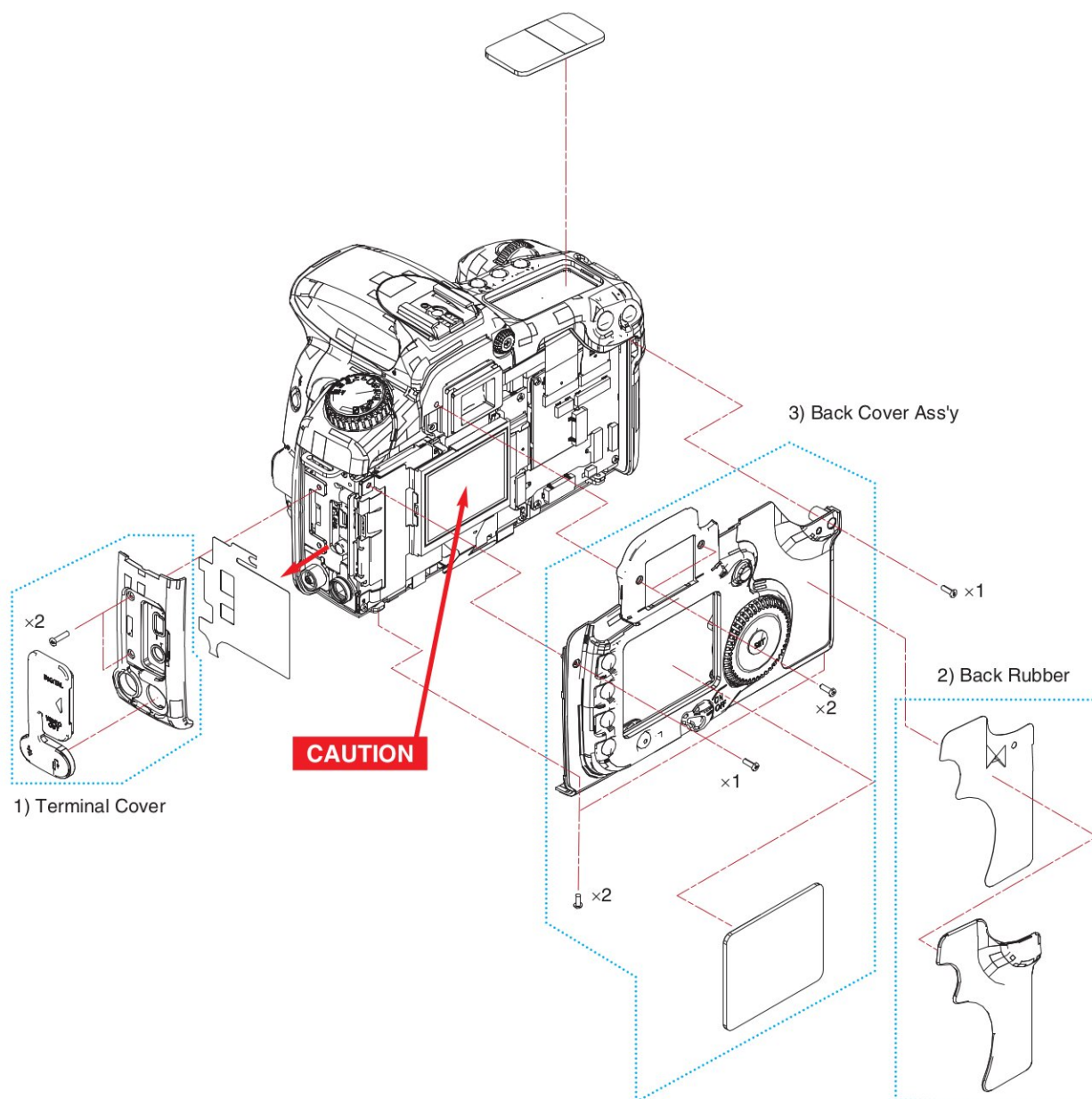
Fig. 019

<Disassembly Procedure>

1) Terminal cover removal

Remove the 2 screws. Then, remove the terminal cover while lifting the direction indicated by the red arrow.

2) Back rubber removal

Peel off the back rubber.
Be careful, the back rubber is reused.

Fig. 020

3) Back cover ass'y removal
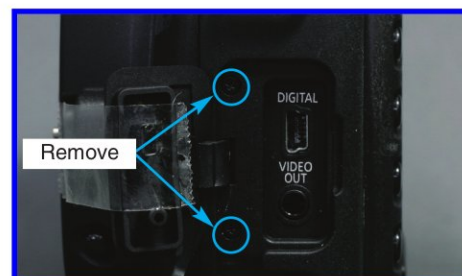
CAUTION After removing the back cover ass'y, be sure to protect the TFT monitor from being scratched or getting dirty.

(1) Remove the 3 black screws, the silver screw and the 2 screws on the bottom.
   Then lift the back cover.
(2) Disconnect the flex cable and remove the back cover.
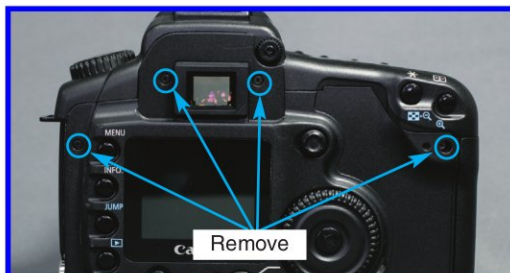
Fig. 021

Fig. 022
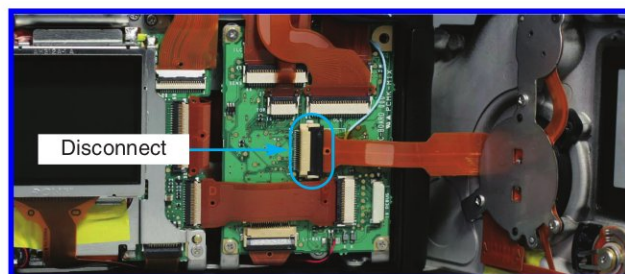
Fig. 023

<Reassembly Cautions>

Back rubber attachment (Description)

11

2.2 Front Cover Removal

×2

2) Front Cover

×2

×1

×2

3) Main Battery Cover

1) Grip Rubber

Fig. 024

12
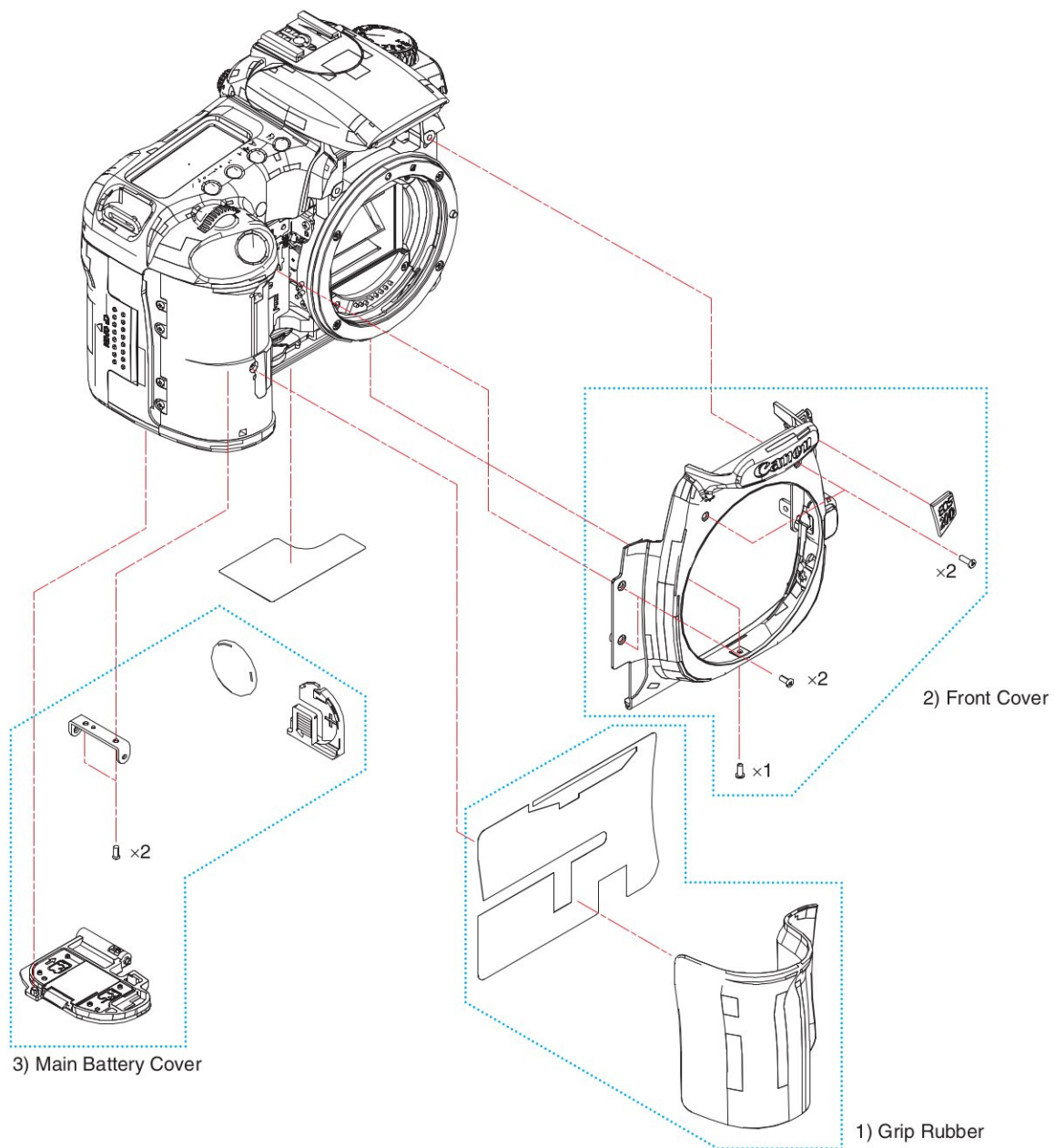
<Disassembly Procedure>
1) Grip rubber removal
Note that the grip rubber is reused.

2) Front cover removal
(1) Remove the 2 black screws and the 2 silver screws from the front and the black screw from the bottom.
(2) Lift and remove the front cover.
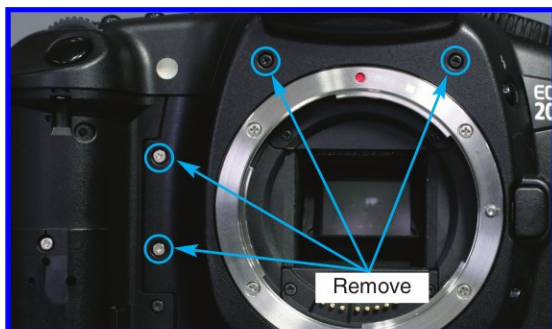
Fig. 025

Fig. 026

3) Main battery cover removal
(1) Slide the battery cover knob and remove the battery cover.

(2) Slide the lithium battery hold to remove.

(3) Remove the 2 screws and remove the hinge plate.

<Reassembly Cautions>
1) Nameplate attachment

Apply Super X as shown below.

Attach the nameplate.

Fig. 027

Fig. 028

2) Grip tape attachment (Description)

3) Grip rubber attachment (Description)

2.3 Top Cover Removal

1) Top Cover Ass'y

CAUTION

×1

4) TFT LCD Ass'y

5) Superimposed LED Ass'y

×1

×1

×1

×2

×1

×1

3) Grip Ass'y

×2

2) Bottom Cover
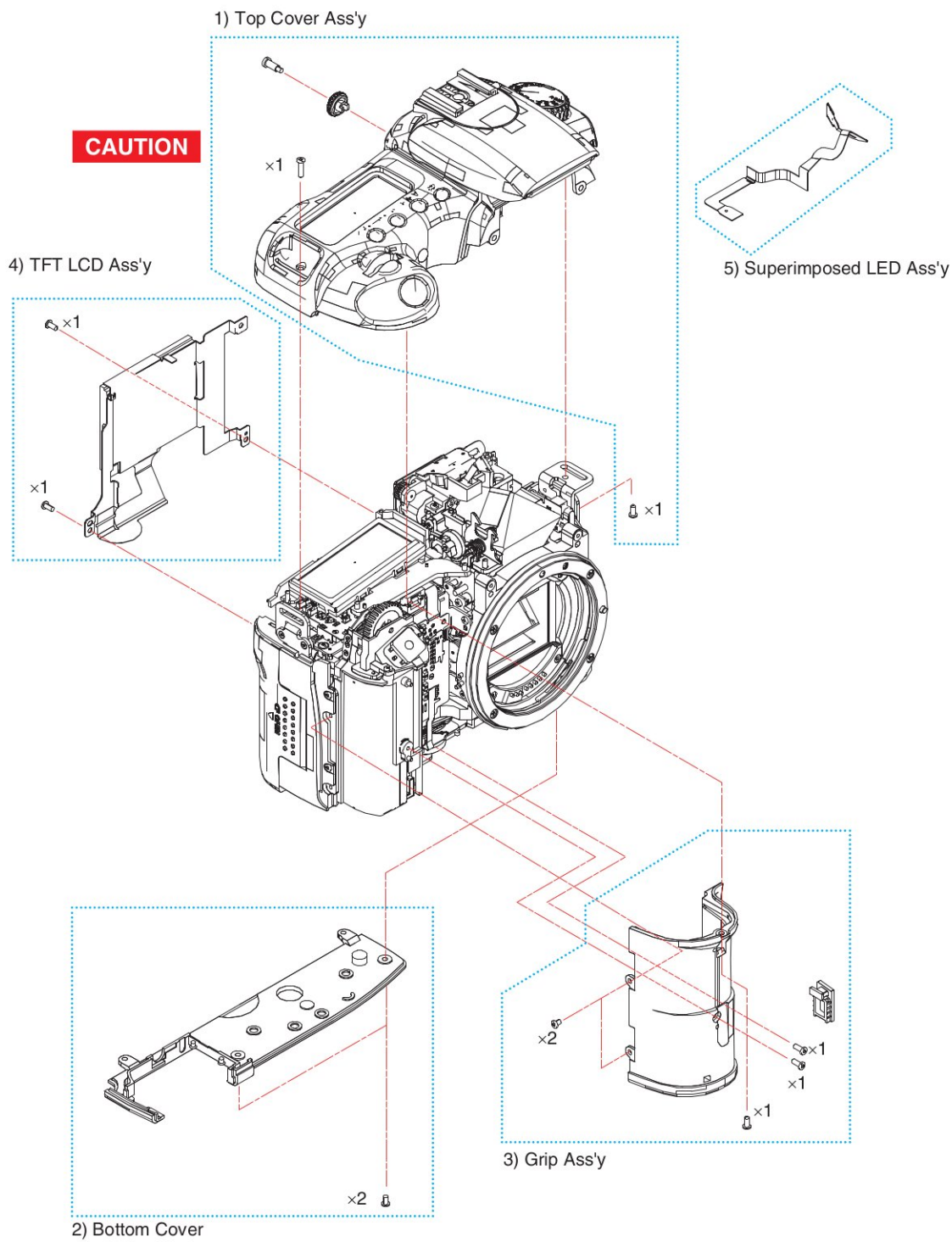
Fig. 029

<Disassembly Procedure>
1) Top cover ass'y removal

(1) Flash discharge

Attach the terminals of the discharge buzzer to the 2 lands on the PCB and discharge the capacitor completely.

Discharge positions
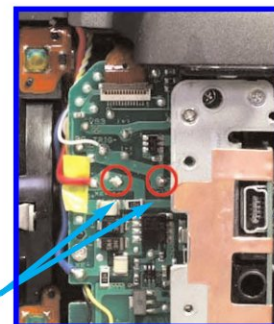
Fig. 030

(2) Lead wire removal

Unsolder the 4 lead wires including the white and yellow twisted wire, red and blue lead wires.

White
Red
Yellow
Blue
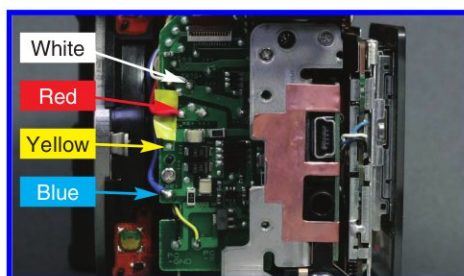
Fig. 031

(3) Flex cable removal

Disconnect the 2 flex cable connectors.

Fig. 032

(4) Top cover removal

• Remove the 4 screws including the 1 on the front, the 1 on the top and the 2 on the back.
• Remove the top cover.

Fig. 033

Fig. 034

Fig. 035

Fig. 036

15
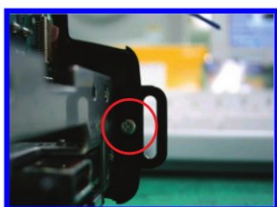
2) Bottom cover removal

Remove the 2 screws, and lift and remove the bottom cover.
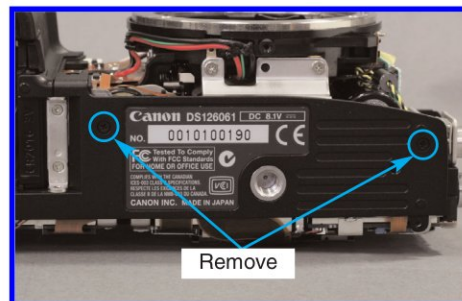
Fig. 037

3) Grip ass'y removal

Remove the 2 screws from the front and the 2 screws from the side to remove the grip unit.
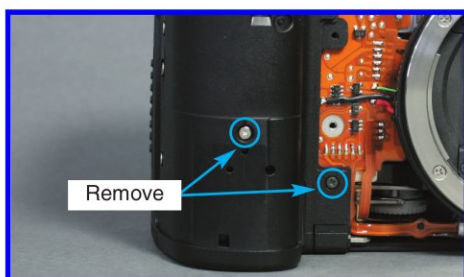
Fig. 038
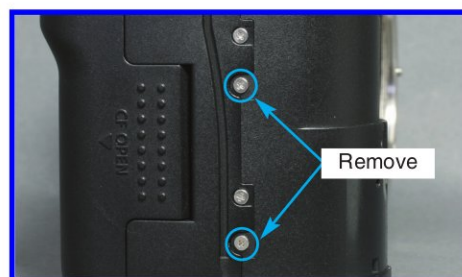
Fig. 039

4) TFT LCD ass'y removal

(1) Remove the 2 screws.

(2) Disconnect the flex cable connector.

(3) Remove the insulating tape once and remove the lead wire connector. Then, put the insulating tape back in place.

(4) Unsolder the earth part of the TFT unit.

(5) It will be reused, so be careful not to twist or wrinkle it.
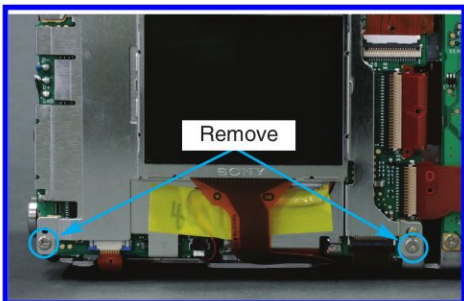
Fig. 040
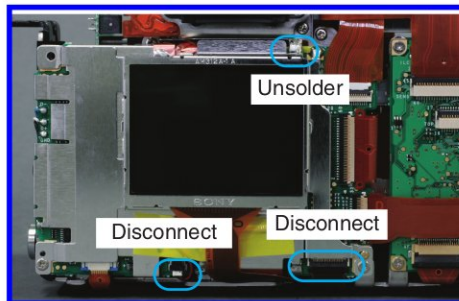
Fig. 041

Fig. 042

Fig. 043

16
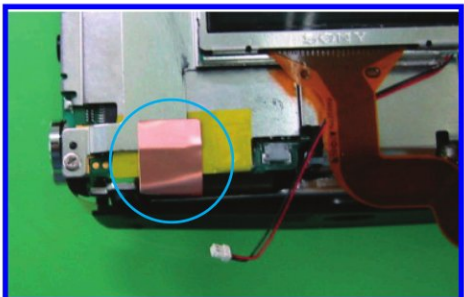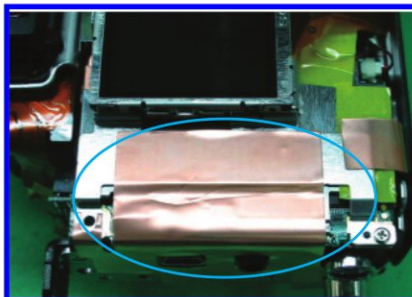
5) Superimposed LED ass'y removal (Only when required.)

(1) Remove the flex cable connector.

(2) Remove the superimposed LED unit with tweezers.

Note: Even without replacement touching the flex part improperly may cause incomplete insertion of the flex. Be careful.

Disconnect
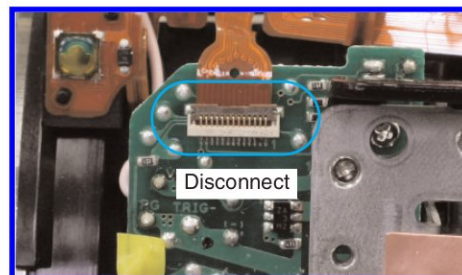
Fig. 044

<Reassembly Cautions>
1) Top cover ass'y

(1) Handling of each lead wire
Be sure to keep the lead wire away from the SW and route it behind PCB.
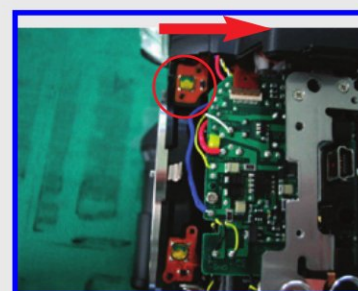
Fig. 045

(2) Screwing order

| CAUTION | Screwing in wrong order could cause malfunctions or diopter adjustment dial operation problems. |

Be sure to screw in order as follows.

Fig. 046   Fig. 047   Fig. 048   Fig. 049

(3) Application of charging short pad insulating tape
Apply the insulating tape and protect the land from touching the lead wire.
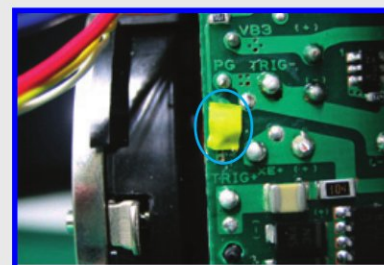
Fig. 050

2) TFT LCD lead wire handling

(1) TFT LCD lead wire handling
Apply the insulating tape to prevent the lead wire from shock damage.
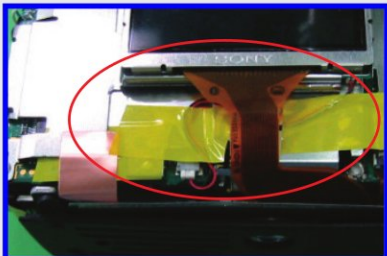
Fig. 051

(2) Flex storing
Store the flex in the gap in the bottom cover.
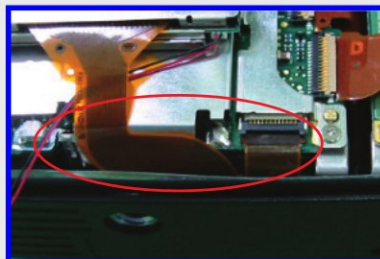
Fig. 052

3) Positions to apply conductive and insulating tape.

(1) I/F PCB
Apply insulating tape (10 × 20mm) to cover up the lead wire from I/F PCB ass'y.
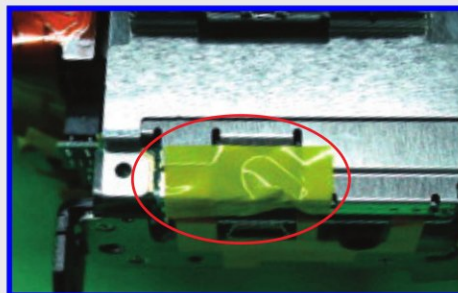
Fig. 053

(2) Between TFT Holder and Body
Apply conductive tape to prevent static electricity.

Reference position
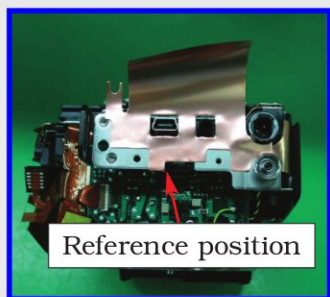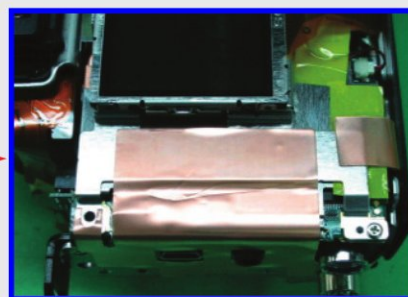
Fig. 054

Fig. 055

Apply insulating tape (4 × 55mm) as follows.

Reference position

Fig. 056

18
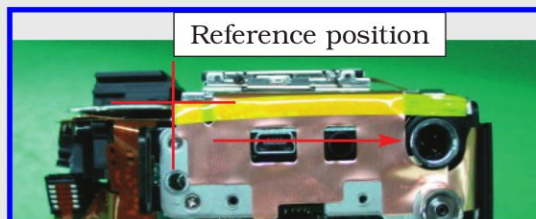
(3) Screw hole

Apply insulating tape over the screw hole as follows.
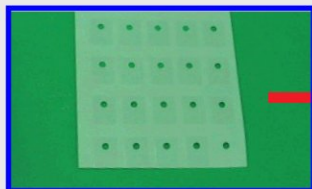
Fig. 057
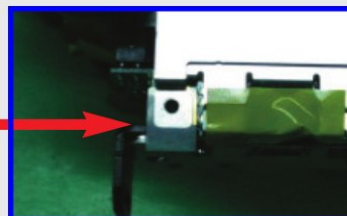
Fig. 058

4) Superimposed LED ass'y assembly

Be sure to route the flex under the metalic part.
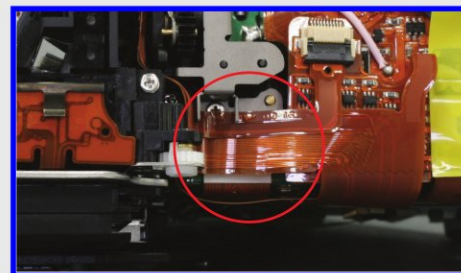
Fig. 059

2.4 D PCB Ass'y / C PCB Ass'y / IMG Ass'y Removal

3) C PCB Ass'y

×3

4) IMG Ass'y

Washers
attached
temporarily

×3

×1

CAUTION

No need to
disassembly

No need to
disassembly

×1

No need to
disassembly

1) Shield Plate

2) D PCB Ass'y

Fig. 060

20

<Disassembly Procedure>
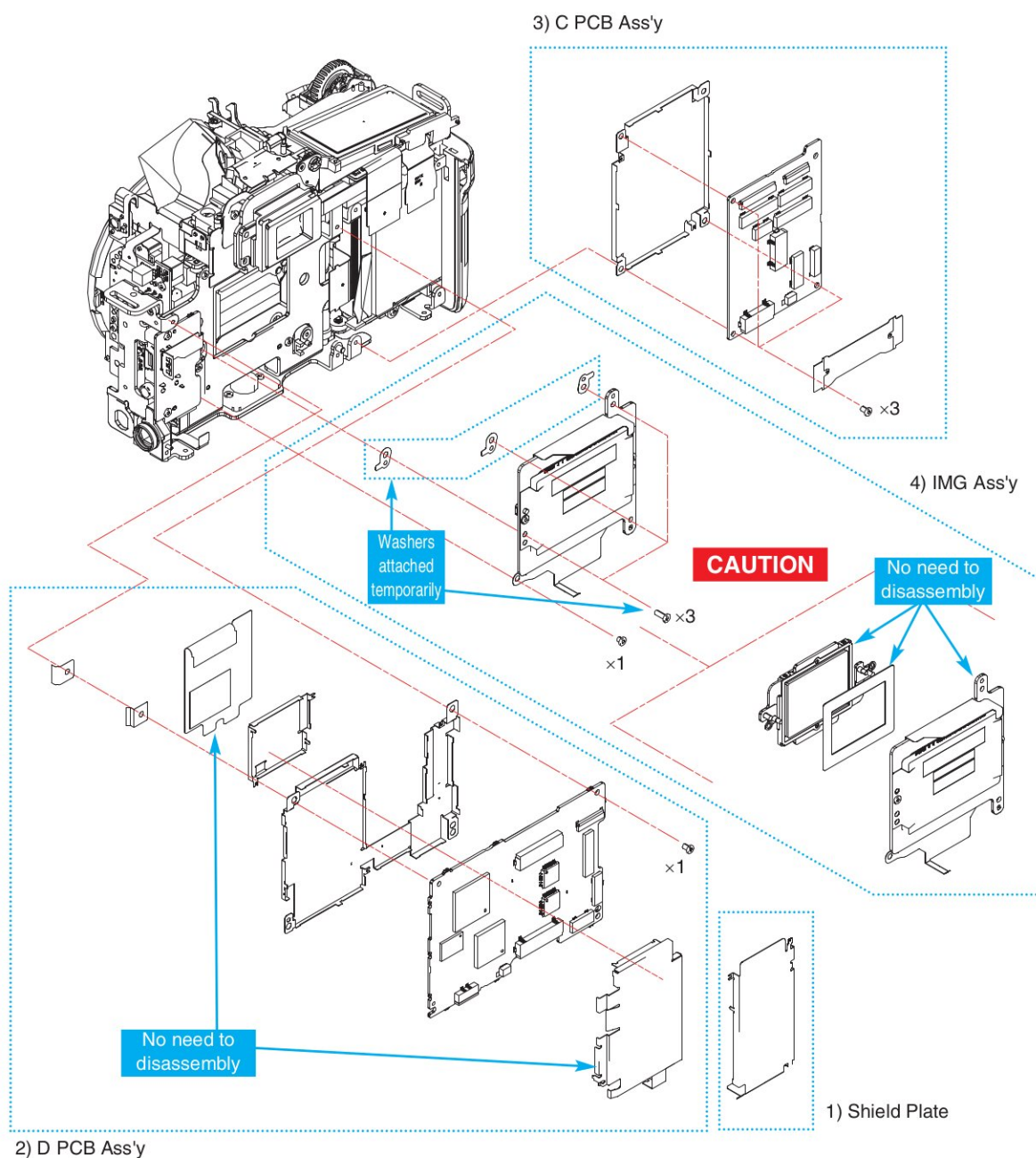
1) Shield plate removal

Unsolder the shield plate at the 4 points shown in Fig. 061.
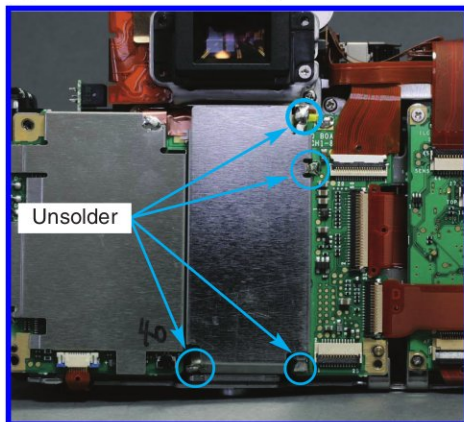
Fig. 061

2) D PCB ass'y removal

(1) Disconnect the 6 flex cable connectors.
(2) Remove the screw.
(3) Unsolder blue, white, and black lead wires from I/F PCB.
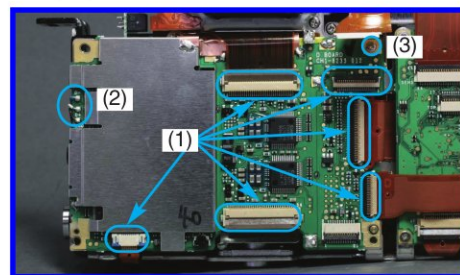
Fig. 062

3) C PCB ass'y removal

(1) Disconnect the 5 flex cable connectors.
(2) Disconnect the lead wire connector.
(3) Remove the 3 bolts and remove the C PCB.
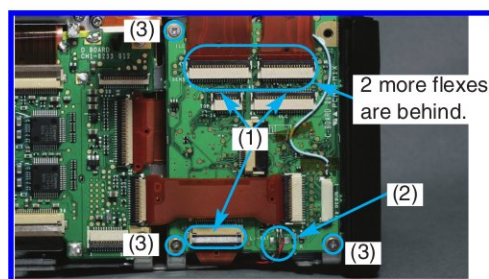
Fig. 063

4) IMG ass'y removal

CAUTION
• Be sure to use an antistatic wrist strap when removing the IMG ass'y.
• Be sure to protect the IMG ass'y from being scratched or getting dirty.

(1) Remove the 4 screws and remove the IMG ass'y. Be careful, the washers may come off.
(2) Fix the IMG ass'y temporarily with 3 screws while the washers are set in.

Fig. 064

<Reassembly Cautions>
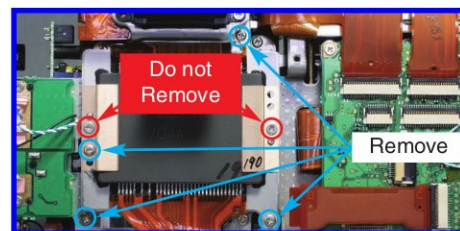
1) IMG ass'y replacement

IMG ass'y supplied by Service dept. has washer compensation amounts written. When replacing the IMG ass'y, be sure to add or subtract the amounts.

Fig. 065

21
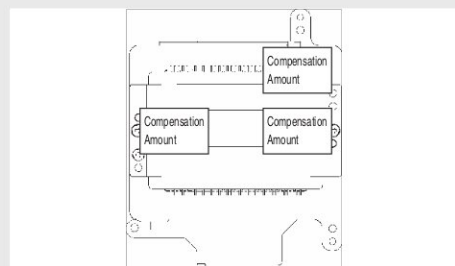
2.5 MD Flex / DC DC Ass'y Removal

4) MD Flex

CAUTION

5) DC DC Ass'y

×1

×1

1) CF Slot Cover

×2

6) Eyepiece Ass'y

×1

×2

×1

2) CF Slot Ass'y

3) Base Plate

×2

×2
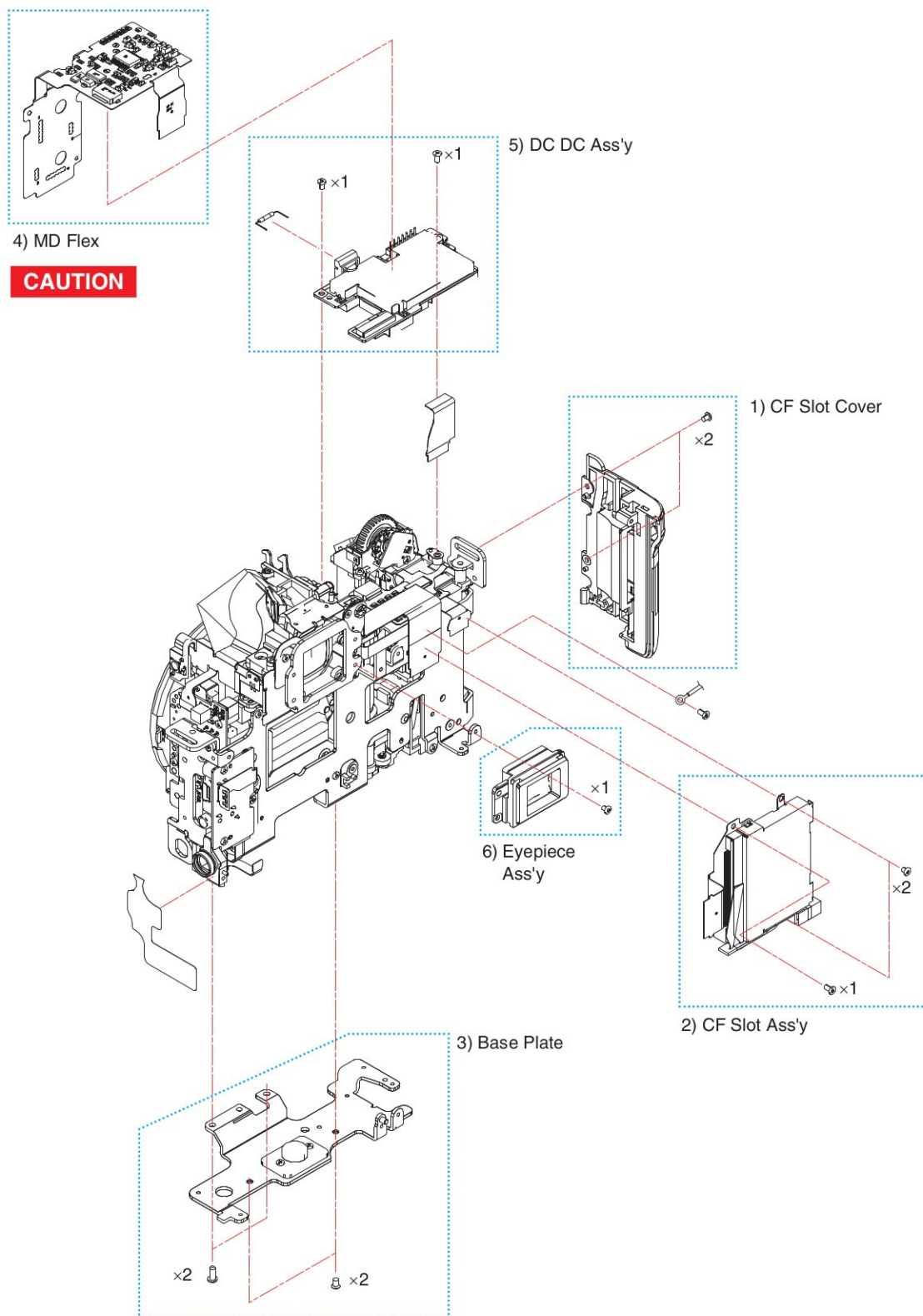
Fig. 066

<Disassembly Procedure>

1) CF slot cover removal

Remove the 2 screws and remove the CF slot cover.
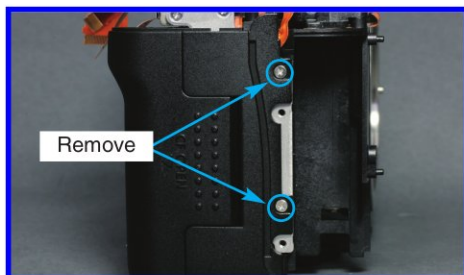
Remove

Fig. 067

2) CF slot ass'y removal

Remove the 3 screws and remove the CF slot ass'y.
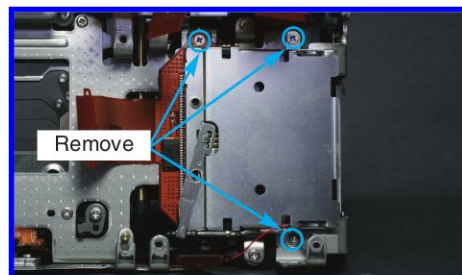
Remove

Fig. 068

3) Base plate removal

Remove the 4 screws and remove the base plate.
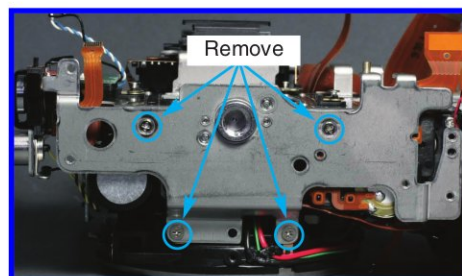
Remove

Fig. 069

4) MD flex removal

(1) Remove the insulating tape and unsolder the comb.
(2) Unsolder the 4 lead wires.
(3) Unsolder the lamp ass'y at the 2 points and remove.
(4) Unstick the bonded part with a back of tweezers without making it scratched.
(5) Unsolder the MD flex at the 4 points on the front and remove the 3 lead wires.

Comb

Unsolder (2)

Fig. 070

(3)

Fig. 071

(5)
(5)
(5)
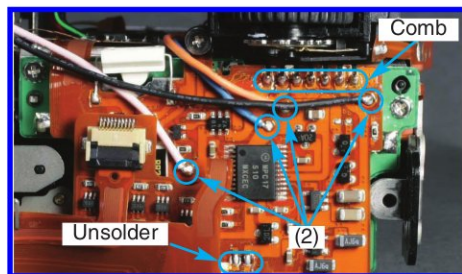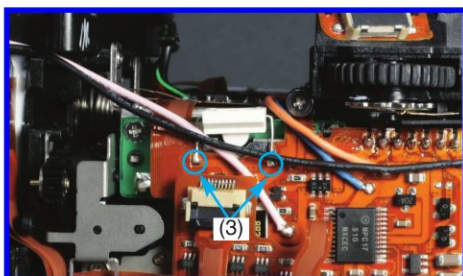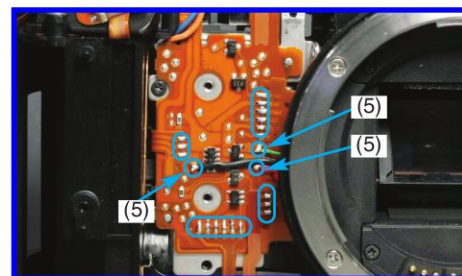
Fig. 072

5) DC DC ass'y removal

(1) Remove the 2 screws.

(2) Unsolder the 2 through-holes.

(3) Remove the DC DC ass'y.
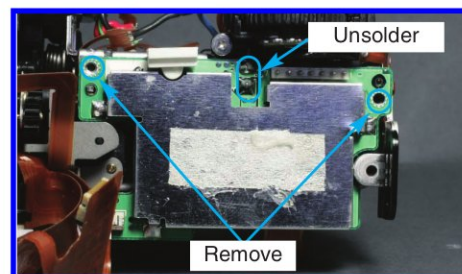
Unsolder

Remove

Fig. 073

6) Viewfinder ass'y removal

Remove the screw and remove the finder ass'y.

Remove

Fig. 074

<Reassembly Cautions>

1) CF slot cover reassembly

Fit the screw holes of the flex cable and the plate in place and attach the CF slot cover.
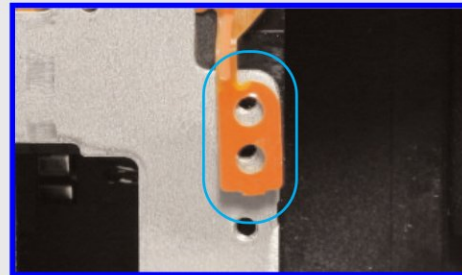
Fig. 075

2) MD flex comb soldering

The comb part of the MD flex and the electronic dial contact are close together, so cover up the electronic dial before soldering the comb part.
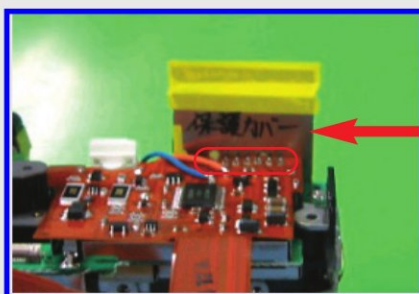
Fig. 076
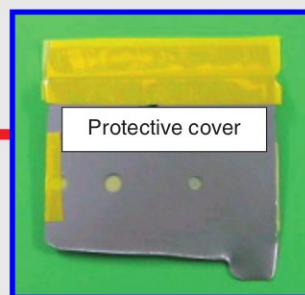
Protective cover
Fig. 077

3) MD flex insulating tape application

CAUTION Be sure to apply insulating tape to cover up the lead wire on the MD flex.

Insulating tape
Fig. 078

4) Fuse positions within DC/DC

Check conductivity on both ends with a tester. Replace any non-conductive fuses.
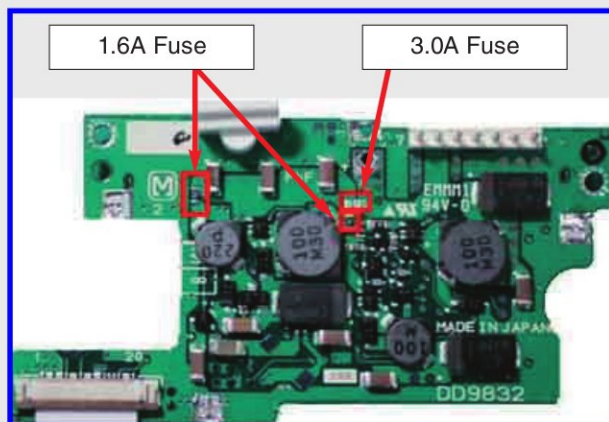
1.6A Fuse   3.0A Fuse
Fig. 079

2.6 Front panel removal/ body ass'y disassembly

1) Front Panel Ass'y

×1

CAUTION 1

×2

×2

×2

×2

×2

×2

×2

2) Boddy Ass'y

CAUTION 2

×1

Fig. 080

26
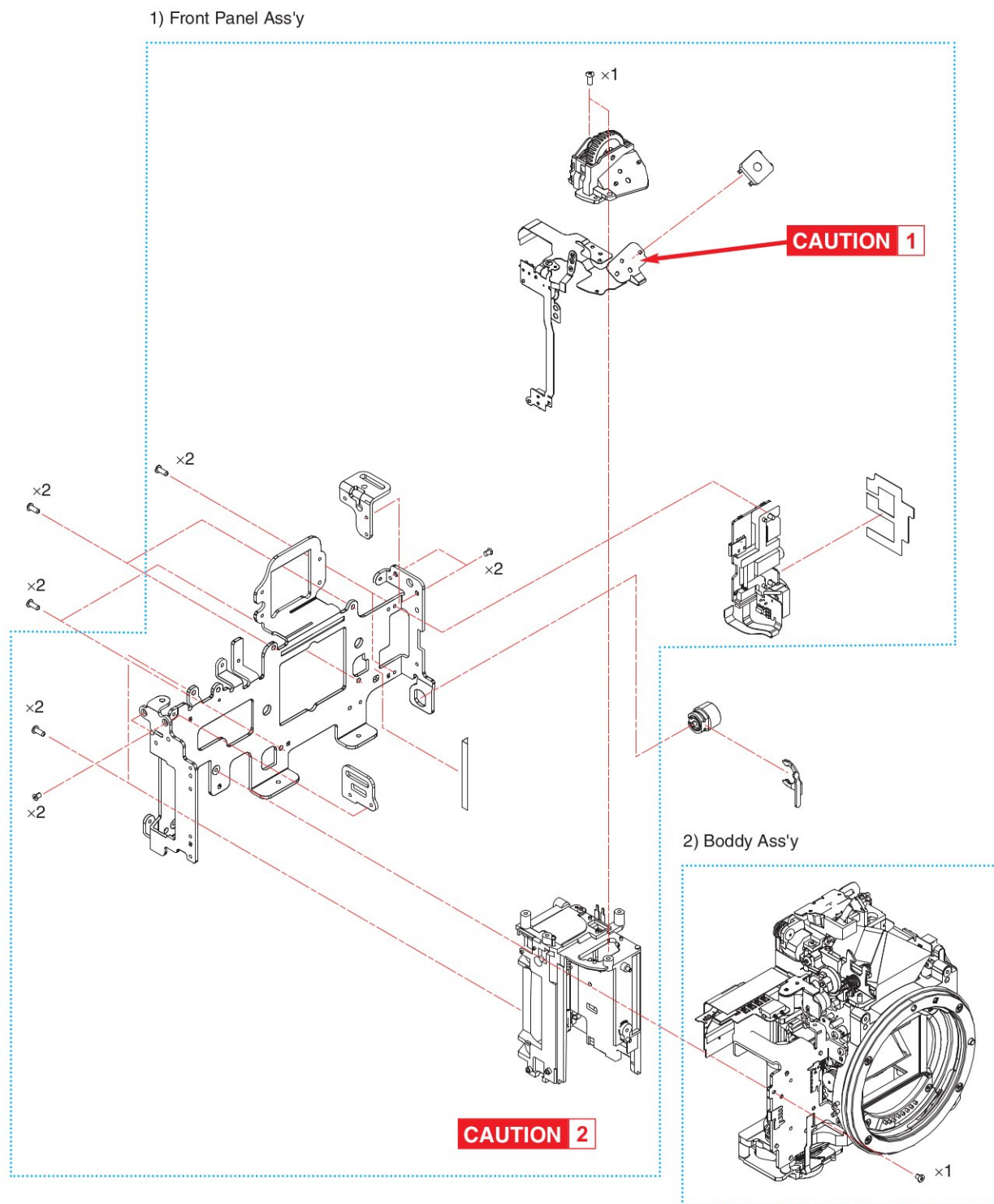
<Disassembly Procedure>
1) Front panel ass'y removal

After unsoldering two lead wires, remove the 4 double-fastening screws (back side) and the screw on the front side. Then, remove the front panel ass'y.
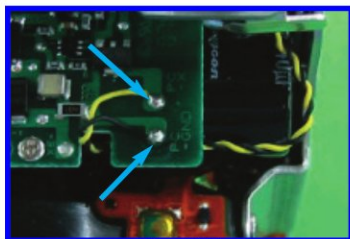
Fig. 081
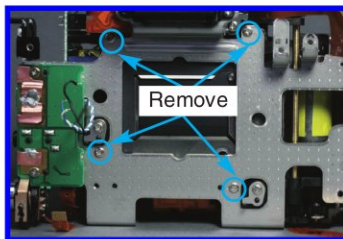
Remove
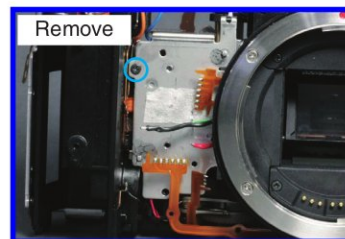
Fig. 082

Remove

Fig. 083

2) Body ass'y disassembly

(1) I/F PCB ass'y removal
Remove the 2 screws and remove the I/F PCB ass'y. Be careful not to cut the shield tape.
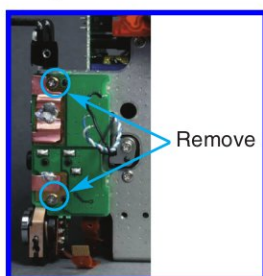
Remove

Fig. 084

(2) Electronic dial removal
Unsolder the comb part and remove the 2 screws.
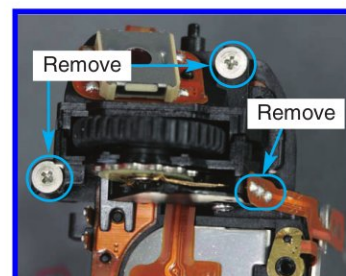
Remove

Remove

Fig. 085

(3) Battery box/release flex ass'y removal
Remove the front screw and the 2 screws on the back. Then, remove the battery box and the release flex.
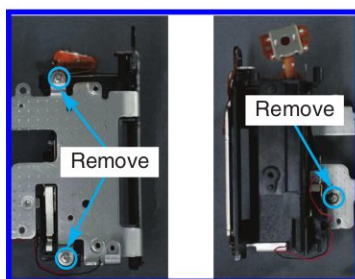
Remove
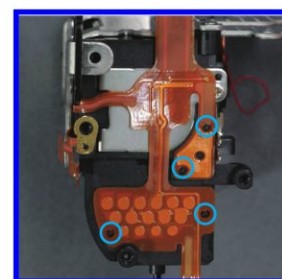
Remove

Fig. 086

Fig. 087

<Reassembly Cautions>
1) Front panel ass'y reassembly

CAUTION 2   During reassembly, be sure to put the lead wire through the magnet coil.
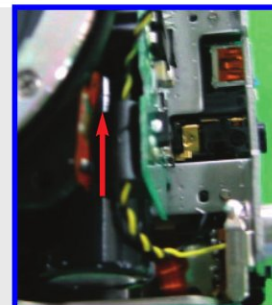
Fig. 088

2.7 Front Panel Ass'y Disassembly 1

5) Sensor Flex Ass'y

1) Shutter Ass'y

×2

×1

CAUTION 1

5) Viewfinder Ass'y

×2

CAUTION 2

4) Flash PCB Ass'y

×2

CAUTION 3

3) Wing

×2
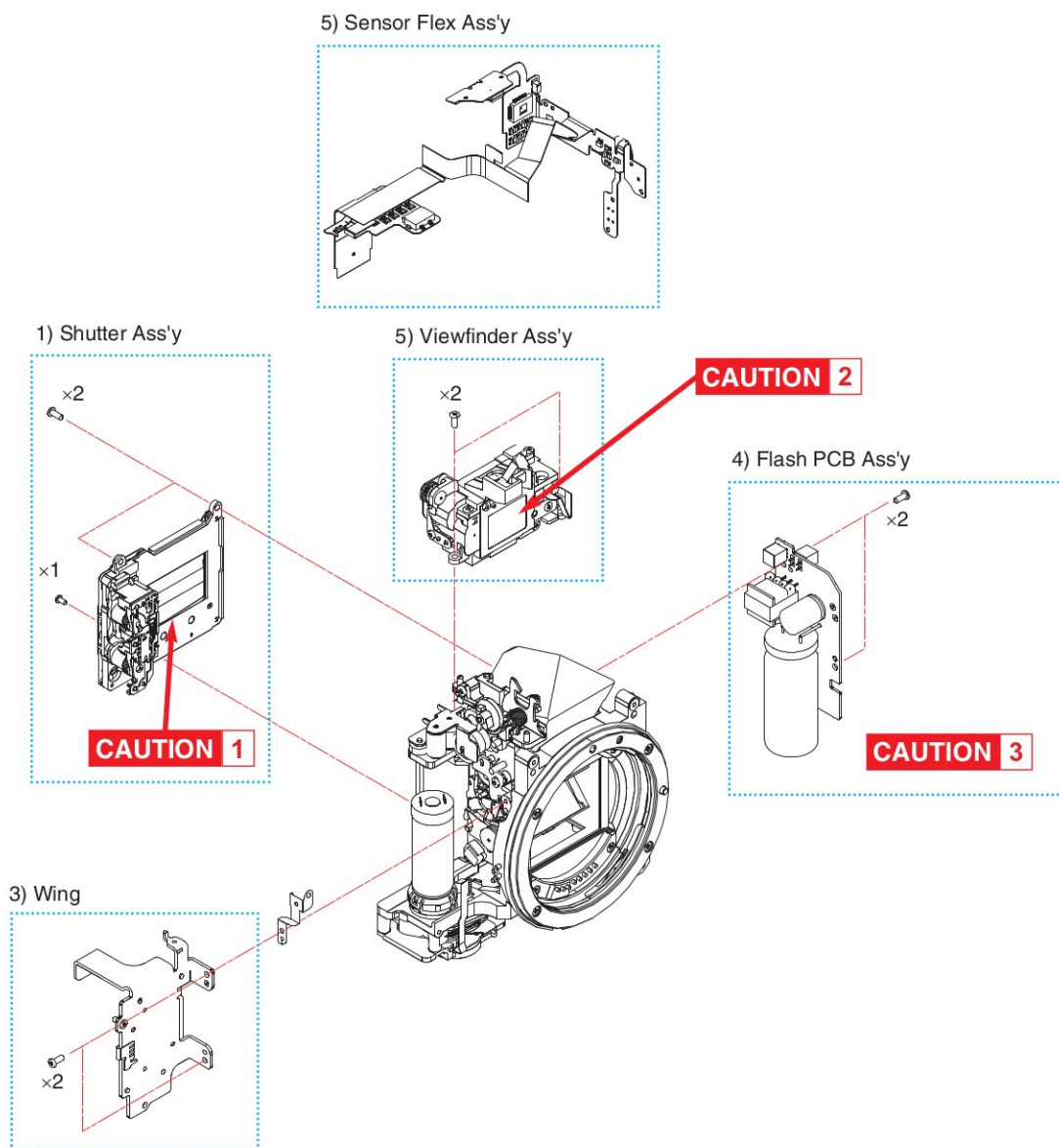
Fig. 089

\<Disassembly Procedure\>
1) Shutter ass'y removal

Remove the 3 screws and remove the shutter ass'y.

> **CAUTION 1** Be careful not to touch the shutter blade.
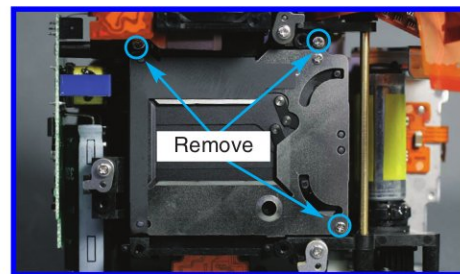
Fig. 090

2) Viewfinder ass'y removal

Remove the 2 screws and remove the viewfinder ass'y.

> **CAUTION 2** Be sure to protect the lens of the viewfinder ass'y from being scratched or getting dirty.
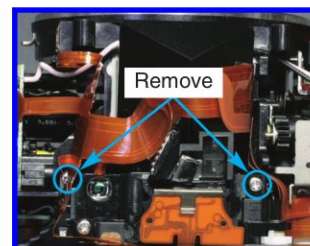
Fig. 091

3) Wing removal

Remove the 2 screws and remove the wing.
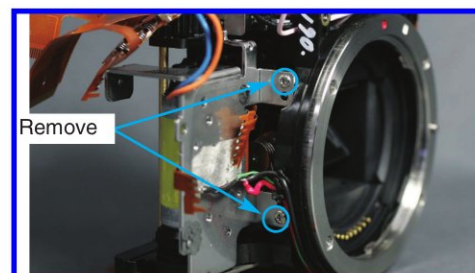
Fig. 092

4) Flash PCB ass'y removal

Remove the 2 screws and disconnect 1 flex connector. Then, remove the finder ass'y.
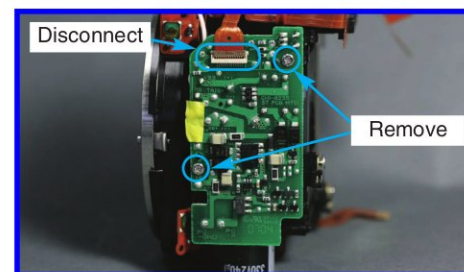
Fig. 093

> **CAUTION 3** Replacement flash PCBs do not contain a magnet coil, so take the magnet coil from the old one.

5) Sensor flex ass'y removal

(1) Unsolder the comb part.

(2) Remove the screw for the TTL sensor.

(3) Remove the sensor flex carefully without cutting the flex attached with double-sided tape.

Unsolder

Fig. 094

Remove
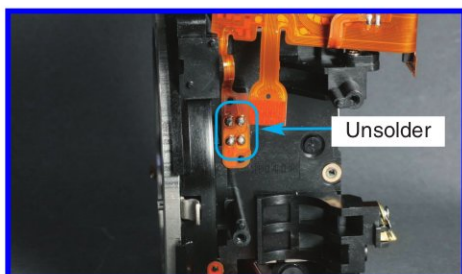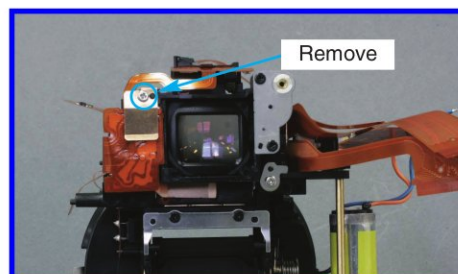
Fig. 095

<Reassembly Cautions>
1) Lead wire handling

Attach the 2 lead wires with Diabond.

Fix temporarily

Fit into the groove.

Fig. 096

Apply Diabond.
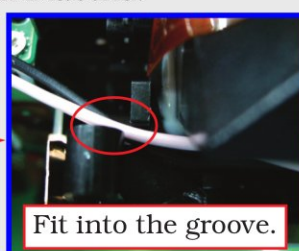
2) Assembly of shutter ass'y

(1) Turn the gear to locate the mirror lever at the center of the mirror box.

Positioned center

Fig. 097

As shown below, when the gear is not centrally located, turn the part of the gear that is not intermeshed using a tip of tweezers.

Fig. 098

Fig. 099

30
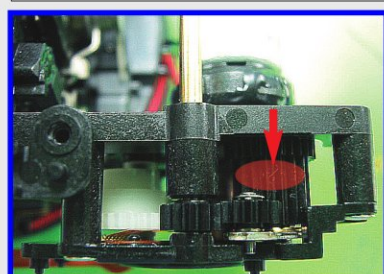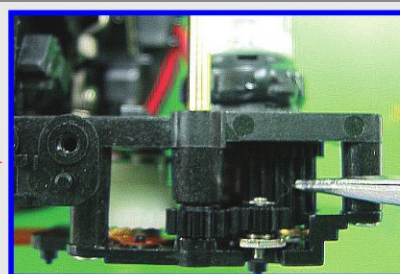
2) Keep the shutter ass'y in charge state. Then put the shutter charge lever into the groove of the mirror lever and screw the shutter ass'y in place.

Charge state
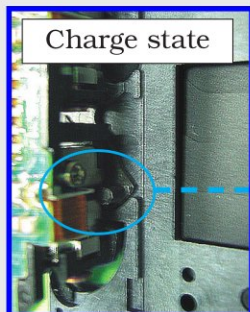
Fig. 100

Put the lever into the groove.
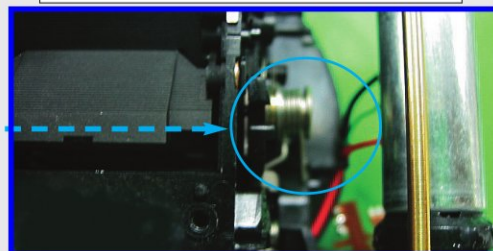
Fig. 101

3) Sensor flex attachment

(1) Applying the insulating tape

Apply the insulating tape to protect the flex from touching the front panel ass'y. (Without this, shutter system errors will occur.)

Back side

Fig. 102

Back side
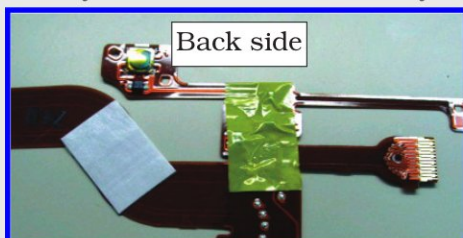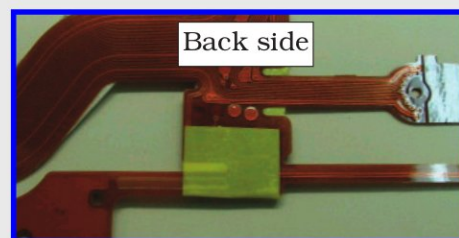
Fig. 103

(2) Apply double-sided tape

Apply double-sided tape to fix the sensor flex in place.
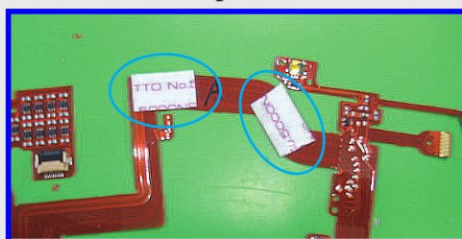
Fig. 104

(3) Soldering of the mirror-up detection switch

Defective soldering can cause shutter system errors, so be sure to solder securely.

Fig. 105

(4) Sensor flex attachment

Be sure to fix the sensor flex in place with double-sided tape.

Attachment position

Fig. 106

Loosen the flex

Fig. 107

Put the flex into the space between the shaft and the pentaprism.
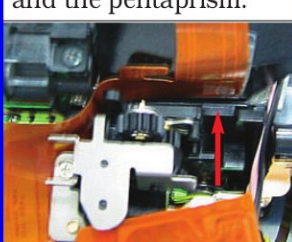
Fig. 108

Attachment position

Fig. 109

31
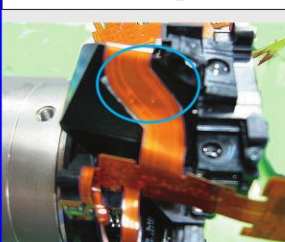
2.8 Front Panel Ass'y Disassembly 2

<Disassembly Procedure>
1) Focusing screen removal

Take the projecting part of the screen frame and pull it to remove the focusing screen and AF focusing frame.

<Reassembly Cautions>
1) Screen frame attachment

Attach the screen securely as follows.
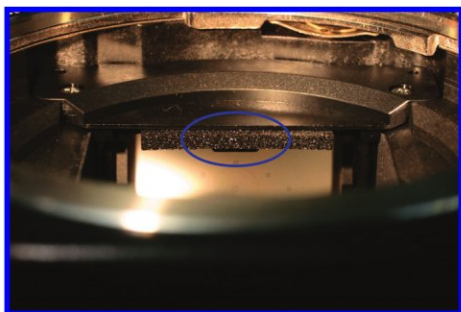
OK	NG
Projection is slightly visible.	Projection is fully visible.
	The hook end breaks over the cushion. (incomplete).
Claw ends are fully inserted.	Claw ends are not fully inserted in place.
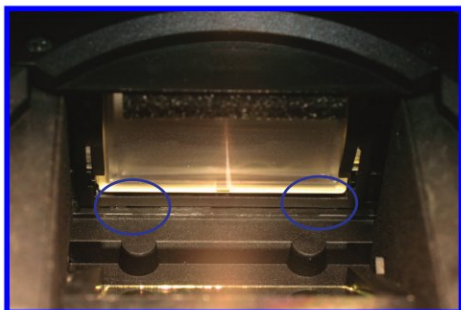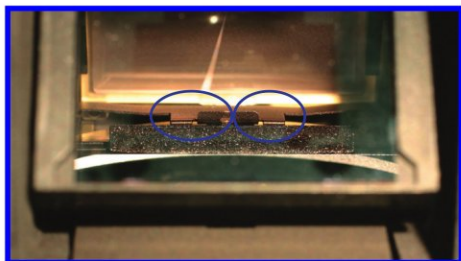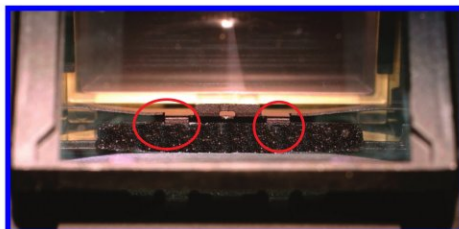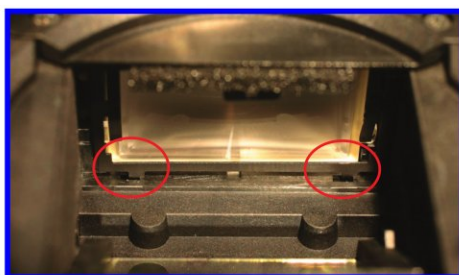
Fig. 110

32

<MEMO>

2.9 Top Cover Ass'y Disassembly

×4

×3

×1

×1

×1

×1

×1

×2

×1

×3

Fig. 111

34

Adjustments

CONTENTS

1. REPAIR PREPARATIONS

1.1 Pre-Adjustment Cautions

1) Firmware Upgrade

When the firmware version is upgraded, be sure to download a new version from Canon site and make sure it is copied to CF card without fail. Then, perform upgrade.

2) Before Starting the Adjustment

Before starting the adjustment, check the luminance of the EF-1 Multi Camera Tester or EF8000 with BM-3000. Also, check the angle of 3D chart with the angle gauge.

1.2 Tools List

Prepare the following tools required for the adjustment.

1) Tools list

New	Name	Part No.	Purpose
	CHART, AF STANDARD, 9 POINT	CY9-7119-006	AF adjustment
	AF Lamp Box Unit	CY9-7122-000	To illuminate the AF chart
	Halogen Lamp (AC100V/250W)	CY9-7122-001	For replacement
	Heat Absorbing Filter	CY9-7122-002	Absorb heat wave of the lamp (replacement)
	Stand, AF Chart	CY9-7123-000	Chart stand for AF charts
	AF Chart, 3D	CY9-7119-000	3D Chart
	AF Chart, Single-Point	CY9-7119-001	AF Chart for 3D Chart
	EF-1 Multi Camera Tester (100V)	CY9-7116-100	Light source A & shutter speed measurement
	EF-1 Multi Camera Tester (200V)	CY9-7116-200	Light source A & shutter speed measurement
	Color viewer (5600K)	DY9-2039-100	Electrical adjustment
	Color-bar chart	DY9-2002-000	Electrical adjustment (color adjustment)
	Stable DC power source		Measure power current consumption
	Mount Fastening Block	CY9-1547-000	Flange focal distance adjustment
	Digital micrometer	Commercially available	Flange focal distance adjustment
	EF50/1.8 Tool lens	CY9-1072-001	AF precision adjustment
	Video light	Commercially available	AF adjustment
	Flash meter	Commercially available	Metering adjustment
	Pen light	Commercially available	SPC positioning
	Tripod	Commercially available	
	Dark bag	Commercially available	
	Tester	Commercially available	Voltage reading
	C12 filters (2 p'ces)	CY9-1546-000	White balance adjustment

2) Charts and Locally-Made Tools

New	Name	Part No.	Purpose
	SPC positioning mask	Locally-made	
	Tools battery	Locally-made	Measure power current consumption

3) Other Products for Testing

New	Name	Part No.	Purpose
	EF 50mm f/1.8		Camera operations, adjustments, production lens checking
	Speedlite (380EX, 550EX, or other E-TTL model)		Flash metering adjustment
	Ni-MH Battery Product		

1.3 Locally-Made Tools

1) SI Adjustment Chart

Print out the chart attached at the end of this manual.
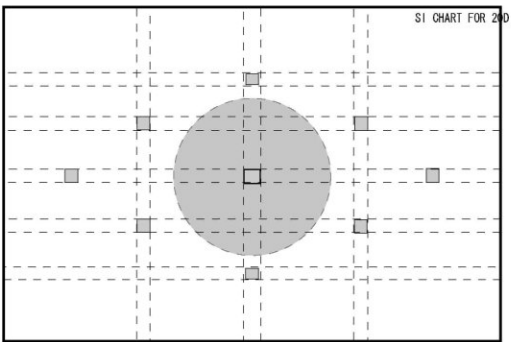
Fig. 001

2) AE Sensor Positioning Mask

On a black low-reflectance paper, make holes as arranged in the Fig. 002.
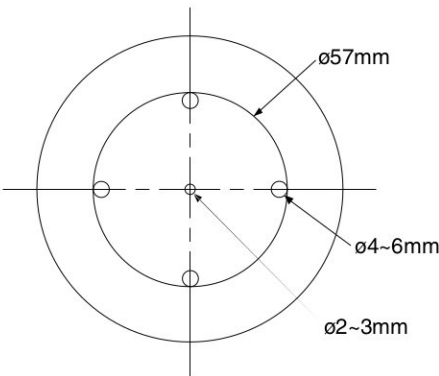
Fig. 002

2

2. MECHANICAL ADJUSTMENTS

2.1 Flange to Focal Plane Distance (FFD) Adjustment

> **CAUTION**
> - The adjustment procedure is same as that of EOS-1D series.
> - FFD adjustment is required when replacing the front panel ass'y or the mount.
> - It is also required when tilted images occur due to some impact caused by dropping etc.

<Purpose>

FFD implies the distance between a reference plane of the lens mount and the CMOS sensor plane. It cannot be measured at service; therefore, measure the distance from the mount plane to CMOS mounting washer plane (washer included) to adjust FFD to be within the spec.

<Service Parts>

Front panel unit: Compensation washers are not attached as before.
IMG unit: Offset values based on the specification are written.

<Specifications>

Front panel unit replacement: Set the distance from the lens mount to the image unit installation surface to same distance as before front panel unit replacement.

IMG unit: Add or subtract the IMG unit compensation amount to/from the difference calculated by subtracting the original distance between the lens mount and the image unit installation surface (washer included) from the specified distance. Select the washer that meets calculated value to make FFD be within the specification.

Reference)
FFD: The dimension from the lens mount surface to the FFD (Flange to imaging plane) is 44.00 +/- 0.02mm.

<Tools>

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

<Preparation>

- Place the mount fastening block on the digital micrometer, and place the measuring point on the mount reference plane. Reset the meter so that "0" is displayed.

Fig. 003

3

<Adjustment Procedure>
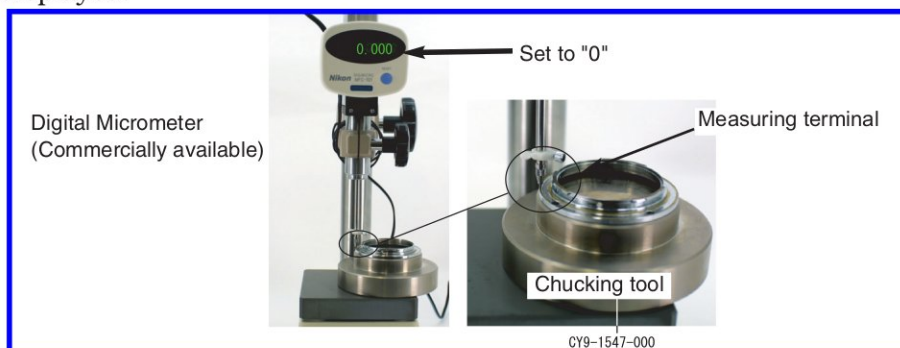
1) When replacing IMG Unit (Same front panel unit is used continuously)

Note: Service parts are set to 43.10mm at the factory, and their image units are adjusted. Each offset data is attached to the parts. Therefore, based on the 43.10mm standard, the offset needs to be added or subtracted to calculate the final distance. Then, finally select washer that meet calculated distance.

Washer Calculation Procedure:
    (1) Ex: Offset values of the replacement parts
        Upper Left: -0.069
        Upper Right: 0.02
        Bottom: 0.051
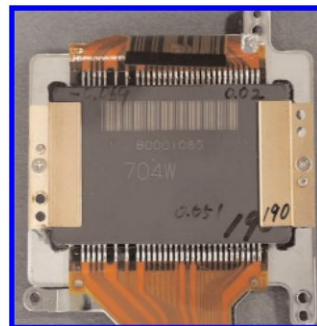
Fig. 004

    (2) Measure the distance between the mount plane and the CMOS mounting washer planes.
        Upper Left: 42.97mm
        Upper Right: 42.96mm
        Bottom: 42.93mm
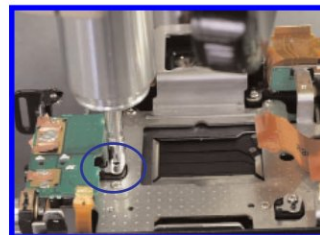
Fig. 005

    (3) Calculate the washer offset values.
        Upper Left: 43.10-0.069-42.97=0.06mm (LW)
        Upper Right: 43.10+0.020-42.96=0.16mm (RW)
        Bottom: 43.10+0.051-42.93=0.22mm (BW)
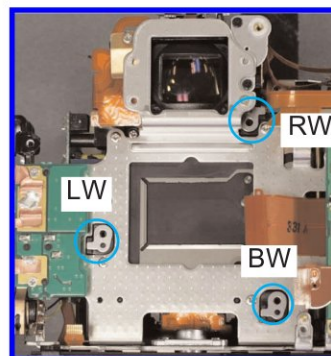
Fig. 006

    (4) Attach the washer. (Do not glue)

CB3-0060-000 (XXX)

A ± 0.015 SIZE

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)

Fig. 007

2) When replacing IMG Unit (Same front panel unit is used continuously)

Note: As the washer offsets for the IMG unit are unknown, select washer offsets and insert the washer to make the distance same as the approximate distance from mount surface of front cover unit to image sensor installation surface (washer included) on the camera that was replaced.

(1) Before replacing the front panel unit, remove the image sensor unit, and measure the existing dimension from the mount surface to the image sensor installation surface (with washer) (three points).

(2) After replacing the front panel unit, measure the distance from the mount surface to the image sensor installation surface (three points). Select and attach the washers to make the distance same as the one before replacement.

3) When replacing the front panel ass'y and CMOS ass'y at the same time

Note: When the existing measured value (distance from the mount surface to the image sensor installation surface) is 44.75mm, 0.1mm washer is attached, and the measured value after replacement is 44.85. As the measured value after replacement is 44.85 (44.75 + 0.1 = 44.85), washers are not necessary.

(1) Ex: Offset values of the replacement parts
Upper Left: -0.069
Upper Right: 0.02
Bottom: 0.051
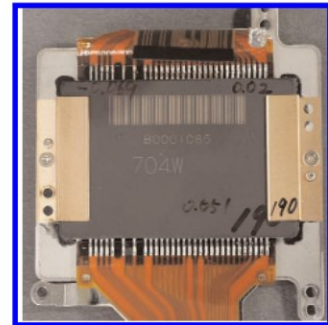
Fig. 008

(2) Measure the distance between the mount plane and the CMOS mounting washer planes.
Upper Left: 42.97mm
Upper Right: 42.96mm
Bottom: 42.93mm
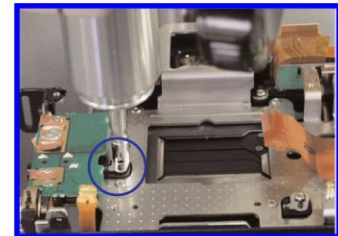
Fig. 009

(3) Calculate the washer offset values.
Upper Left: 43.10-0.069-42.97=0.06mm (LW)
Upper Right: 43.10+0.020-42.96=0.16mm (RW)
Bottom: 43.10+0.051-42.93=0.22mm (BW)

(4) Attach the washer. (Do not glue)

2.2 Finder Focus Adjustment

CAUTION • Be sure to perform the Finder Focus Adjustment after the FFD Adjustment is completed.

<Purpose>

To fit the position of CMOS sensor plane and the viewfinder focus point.

<Specifications>

The center of the infinity mark must be positioned within the 1.5 index line widths of the index line as shown below.
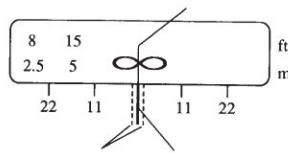
Fig. 010

<Tools>

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

<Preparation>

1) Without the lens attached to the camera, turn the diopter adjustment dial of the camera to adjust the AF frame to be at the center of the viewfinder.
2) Attach the magnifier to the camera eyepiece and adjust the diopter of the magnifier. (Perform without the lens attached.)

<Adjustment Procedure>

1) Look through an object that is located at least 250m away (such as lightening rod or chimney) and turn the manual ring to find the position that gives the clearest view of the object.
2) Check if the center of the infinity mark is positioned within the 1.5 index lineequivalent widths. If not, replace the focus washer and try again.
   Note: When a collimator is used, select the focus washer that gives the clearest view of the collimator scale.

Fig. 011

6
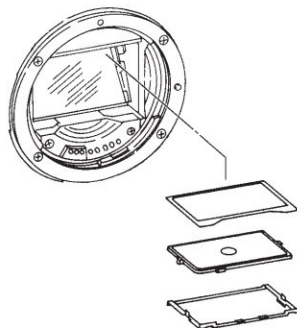
3. ELECTRICAL ADJUSTMENTS

3.1 Adjustment Software Operation

1) Service Parts

OS: Windows 2000, Windows XP
CPU: Pentium II, 233MHz or better
RAM: 128 MB or more required
Display: 800 × 600 dots required, 1024 × 768 dots recommended
Hard disk space: Approx. 20 MB required

2) Operation

Basically, the adjustment software can be operated with the mouse, cursor keys, space bar, and enter key.
Follow the instructions appeared in the message area to operate.
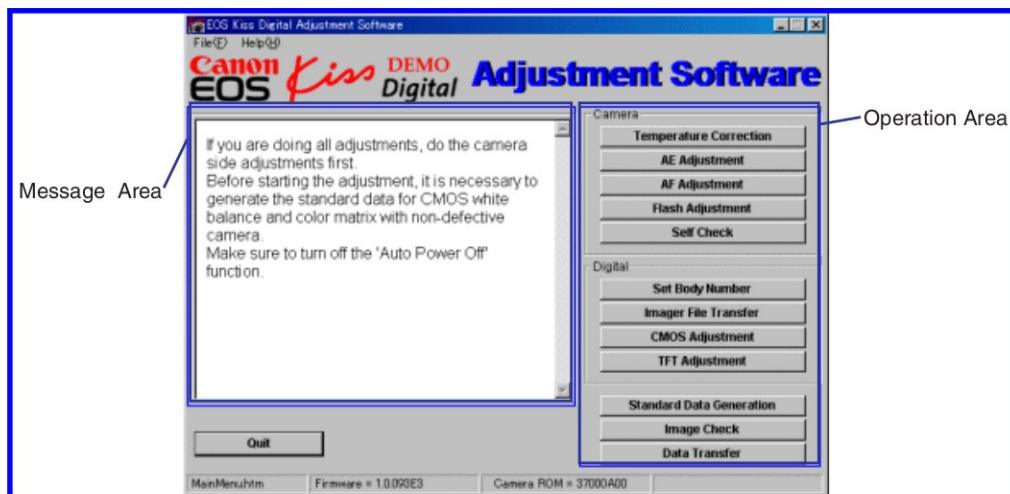
Fig. 012

Respective area name of the adjustment software is shown below.

3) Demonstration Mode

The adjustment software operations can be checked without connecting the camera. When starting up the adjustment software, it will ask "Do you want to connect the camera?", then choose "No".

Fig. 013

4) Log Management
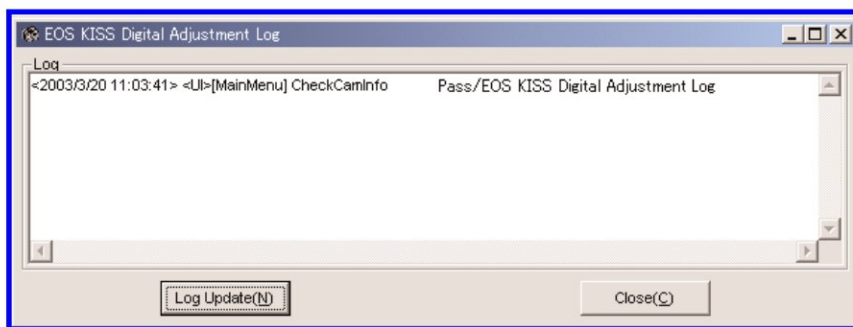
Fig. 014

This adjustment software has a log management function. You can check the record of adjustment.

5) HTML Help

When starting up the adjustment software, the help window will be displayed automatically.

If you do not need it, you may close it by clicking the close button of the help window.

The help window is interlocked with the adjustment software. If you choose the AE adjustment, the AE adjustment help window will be displayed.

Even if the help window is closed, you can open it by clicking the help button on the menu bar in the adjustment software.

6) How to use HTML Help

On left side of the help window, topic (table of contents) is displayed. Each topic book can be opened or closed. Also, you may move to linked topic in the help window, then the topic (table of contents) will also be selected. If you wish to go back to the previous topic, click the "Back" button.
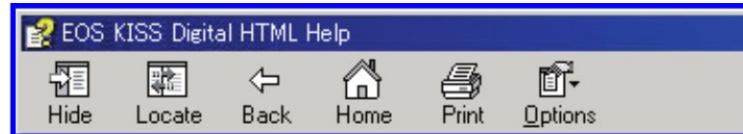
Fig. 015

(1) Show/Hide
  Shows or hides the topic (table of contents).
(2) Locate
  Locate the corresponding topic for the help.
(3) Back
  Goes back to the previous help.
(4) Home
  Shows the first screen.
(5) Print
  Prints out the help.

7) How to print HTML Help

You can select the topic and click the "Print" button to print out the help. If book icon topic is selected, the following message will appear.
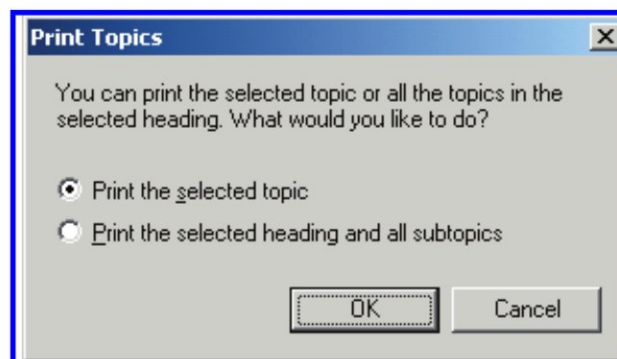
Fig. 016

3.2 Install/uninstall

1) Installation

(1) Before installing the adjustment software

It is necessary to install the TWAIN driver from EOS DIGITAL SOLUTION DISK first, then install the adjustment software from the service manual. Also, Internet explorer 4 or later is required to view the HTML help.

(2) Supplied software
- Camera adjustment software: EOS 20D.exe
- Imager File Update program: Imager Update2.exe
- This software sets the camera to the adjustment mode: Canon camera DCP Connect.exe

(3) Required software:
- Internet explorer 4 or later
- A driver for EOS 20D (EOS DIGITAL SOLUTION DISK Ver. 8.0)

2) Installation procedure

(1) Install Internet explorer 4 or later
(2) Install TWAIN driver (EOS DIGITAL SOLUTION DISK)
(3) Make sure it operates before installing the adjustment software.
(4) Install the camera adjustment software.
(5) Install the image file update program.

3) Uninstallation procedure

(1) Move the folder of the imager file update program (Imager Update2.exe) to the trash bin.
(2) Move the folder of the adjustment software (EOS 20D.exe) to the trash bin.
(3) Uninstall the TWAIN driver. (Refer to the instruction book)

4) Installation procedure of the camera adjustment procedure

(1) Double-click the EOS 20D.exe.
(2) You will be asked the storage location, then choose appropriate location. If you click "Reference", you can choose the storage location.
(3) The name of the camera adjustment software is "EOS 20D.exe".If you double-click this file, you can start the adjustment software.

5) Installation procedure of the imager file update program

(1) Double-click the Imager Update.
(2) You will be asked the storage location, then choose appropriate location.
(3) The name of the imager file update program is "ImagerFileUpdate2.exe". If you double-click this file, you can start the CMOS imager file update program.

6) Installation procedure of the Canon Camera DCP connect

Please refer to "Help" in the adjustment software for the detail.

Parts
Catalog

Canon

EOS 20D   REF.No. C12-6061

PARTS
CATALOG

CANON DIGITAL CAMERA EOS 20D

CB3-1651

XA1-7170-709
×2

CB3-1770

CB3-1769

CB3-1827

CG2-1378

XA4-9170-557

CB2-0722×2

XA1-7170-609

CB3-1741

XA1-7170-409×2

CB3-1831
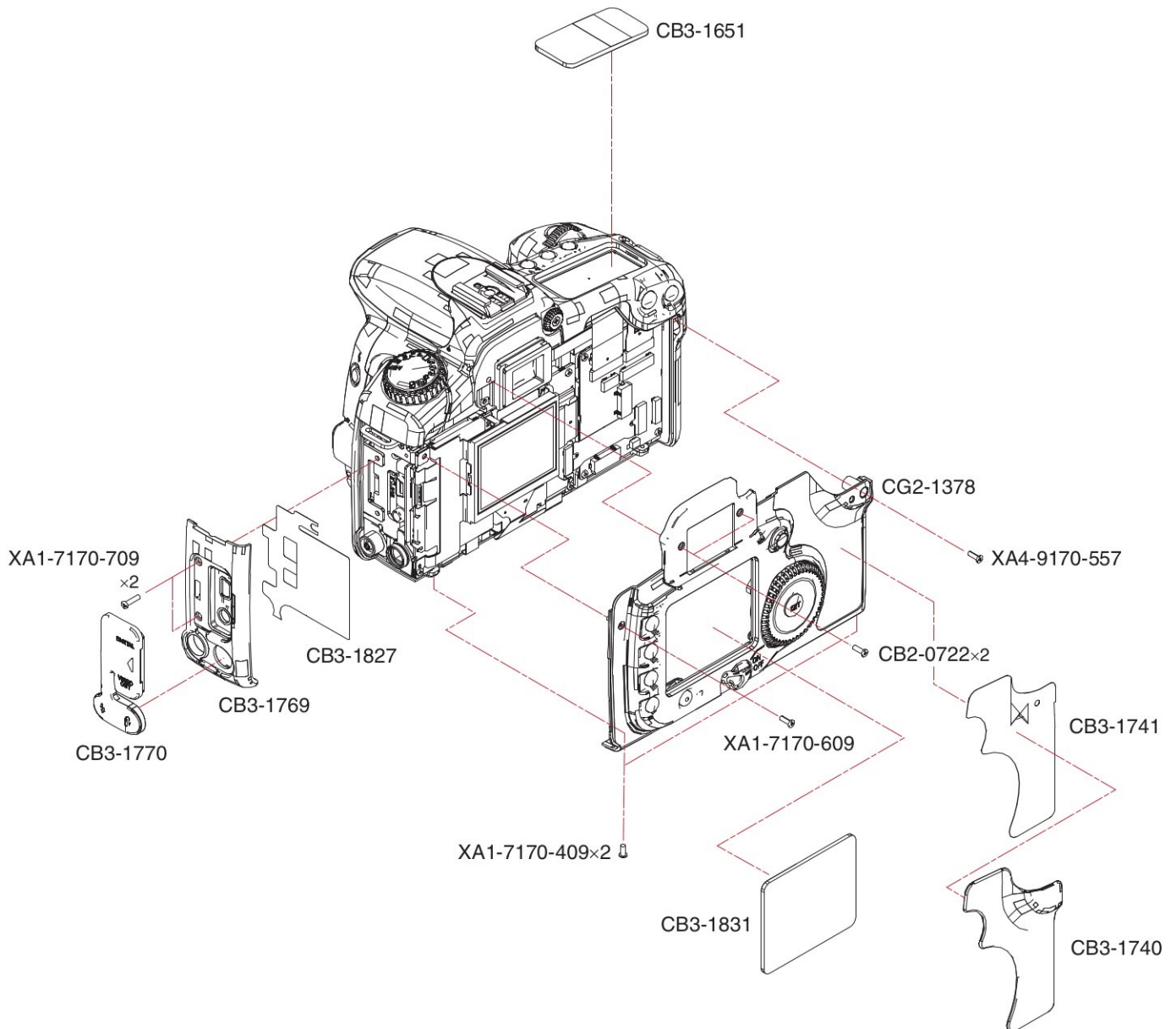
CB3-1740

NEW	PARTS No.		CLASS	QTY	DESCRIPTION
	CB2-0722-000	000	F	2	SCREW
*	CB3-1651-000	000	A	1	WINDOW, DISPLAY
*	CB3-1740-000	000	B	1	COVER, HOLDING
*	CB3-1741-000	000	B	1	TAPE, DOUBLE SIDE
*	CB3-1769-000	000	B	1	COVER, INTERFACE
*	CB3-1770-000	000	B	1	CAP, INTERFACE
*	CB3-1827-000	000	C	1	TAPE, D PCB CONDUCTIVE
*	CB3-1831-000	000	A	1	WINDOW, TFT DISPLAY
*	CG2-1378-000	000	B	1	COVER ASS'Y, BACK
	XA1-7170-409	000		2	SCREW
	XA1-7170-609	000		1	SCREW
	XA1-7170-709	000		2	SCREW
	XA4-9170-557	000		1	SCREW

CANON DIGITAL CAMERA EOS 20D

(See Pg. 3)

CB3-1711

CB2-0726×2

CY3-1469

CG2-1377

XA1-7170-409×2

N.S

CB3-1147

CB2-0727

CB2-0686

CB3-1773

XA1-3170-207×2

CG2-1379
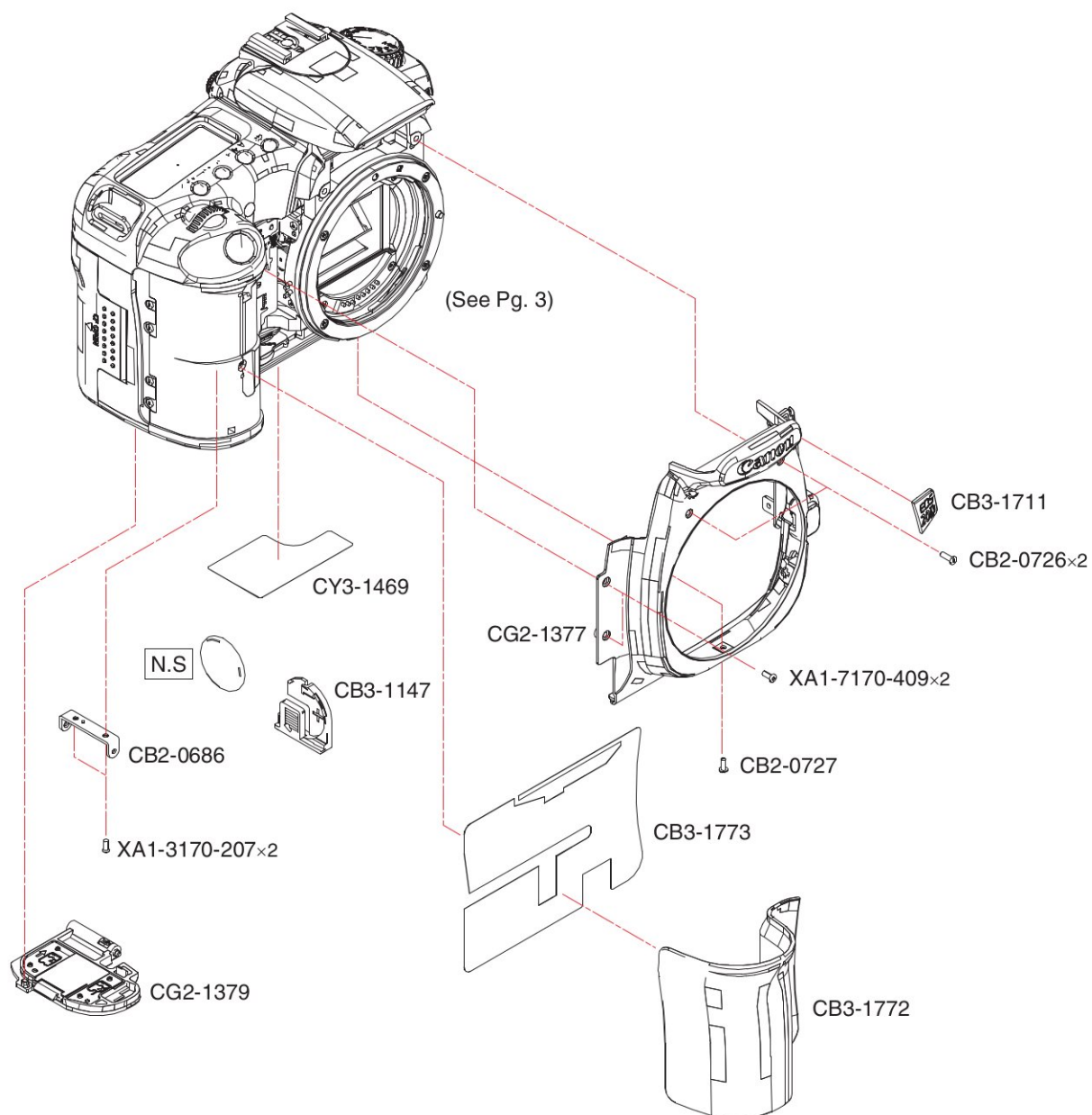
CB3-1772

NEW	PARTS No.		CLASS	QTY	DESCRIPTION
	CB2-0686-000	000	C	1	HINGE, B-DOOR
	CB2-0726-000	000		2	SCREW
	CB2-0727-000	000		1	SCREW
	CB3-1147-000	000	C	1	CASE, BATTERY
*	CB3-1711-000	000	B	1	PLATE, NAME
*	CB3-1772-000	000	B	1	COVER, GRIP HOLDING
*	CB3-1773-000	000	B	1	TAPE, DOUBLE SIDE
*	CG2-1377-000	000	B	1	COVER ASS'Y, FRONT
*	CG2-1379-000	000	B	1	COVER ASS'Y, BATTERY
*	CY3-1469-000	000	C	1	LABEL, BODY NUMBER
	XA1-3170-207	000		2	SCREW
	XA1-7170-409	000		2	SCREW

CANON DIGITAL CAMERA EOS 20D

CB3-1666

CB3-1650

XA4-9170-709

CG2-1331
(See Pg. 9)

CG2-1330

XA4-9170-407

CG2-1329

XA4-9170-457

XA1-7170-357

(See Pg. 4)

CG2-1326

CB3-1143

XA1-7170-227
×2

XA4-9170-459

XA1-7170-407

CB3-1767

XA4-9170-407

XA1-7170-309×2
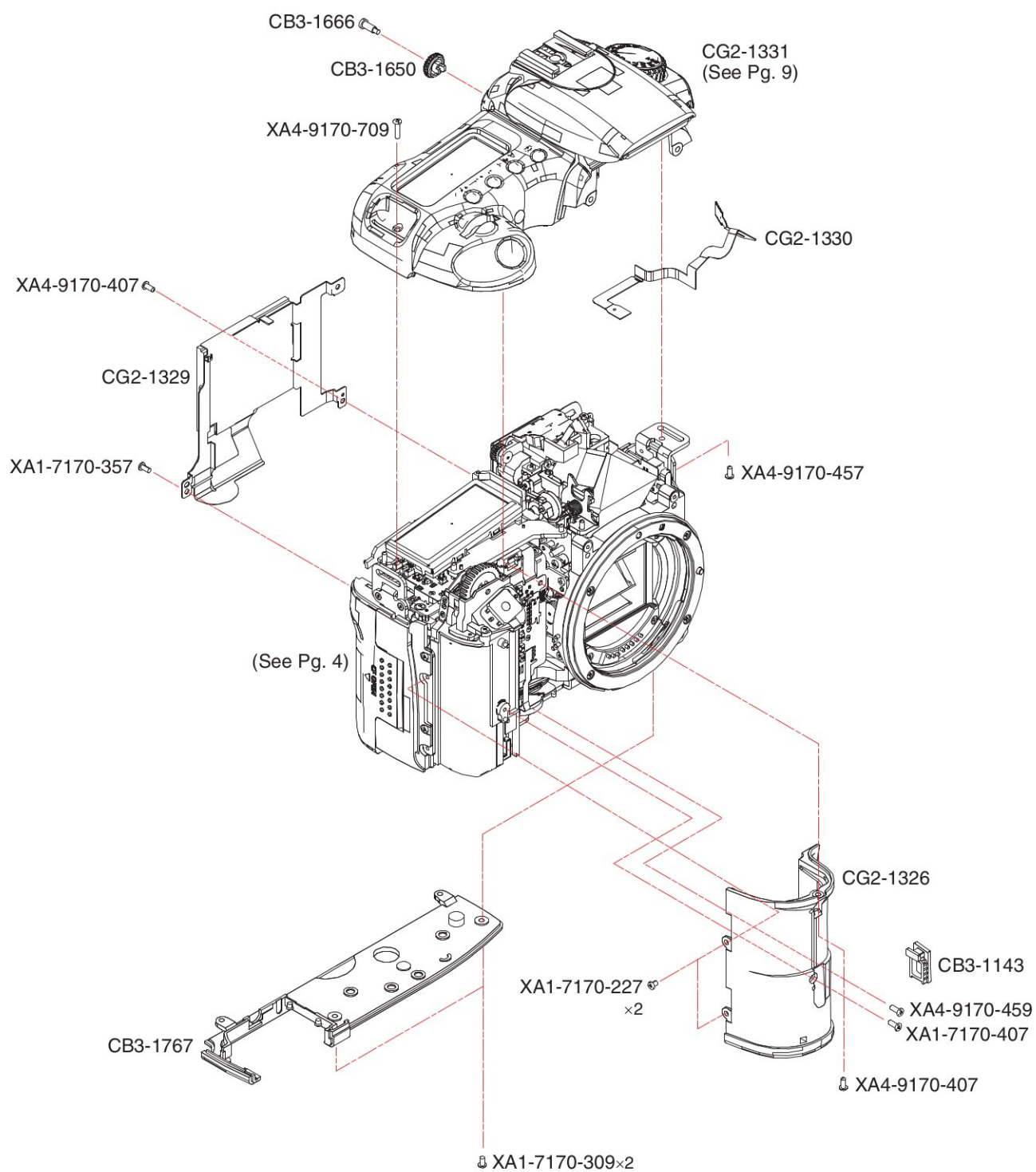
NEW	PARTS No.	CLASS	QTY	DESCRIPTION
	CB3-1143-000 000	C	1	DOOR, CABLE
*	CB3-1650-000 000	B	1	DIAL, DIOPTER CORRECTION
	CB3-1666-000 000		1	SCREW
*	CB3-1767-000 000	B	1	COVER, BOTTOM
*	CG2-1326-000 000	B	1	GRIP ASS'Y
*	CG2-1329-000 000	B	1	LCD ASS'Y, TFT
*	CG2-1330-000 000	C	1	FPC ASS'Y, SUPER IMPOSE
*	CG2-1331-000 000	A	1	COVER, ASS'Y, TOP
	XA1-7170-227 000		2	SCREW
	XA1-7170-309 000		2	SCREW
	XA1-7170-357 000		1	SCREW
	XA1-7170-407 000		1	SCREW
	XA4-9170-407 000		2	SCREW
	XA4-9170-457 000		1	SCREW
	XA4-9170-459 000		1	SCREW
	XA4-9170-709 000		1	SCREW

CANON DIGITAL CAMERA EOS 20D

(See Pg. 5)

CB3-1795

CG2-1290

CB2-0682×3
(See Detail)

CH1-8237

XA1-7170-257×3

CY3-1472

XA1-7170-457
×3

XA1-7170-167

CB3-1828

CB3-1819

CY3-1470

CB3-1785

XA1-7170-307

N.S

N.S

N.S

N.S

N.S

N.S

CB3-1793

CG2-1381

CB2-0682-000 (XXX) Detail

	A	SIZE
A (XXX)	0.03mm	(003)
	0.05mm	(005)
	0.08mm	(008)
	0.10mm	(010)
	0.12mm	(012)
	0.15mm	(015)
	0.18mm	(018)
	0.20mm	(020)
	0.25mm	(025)
	0.30mm	(030)
	0.35mm	(035)
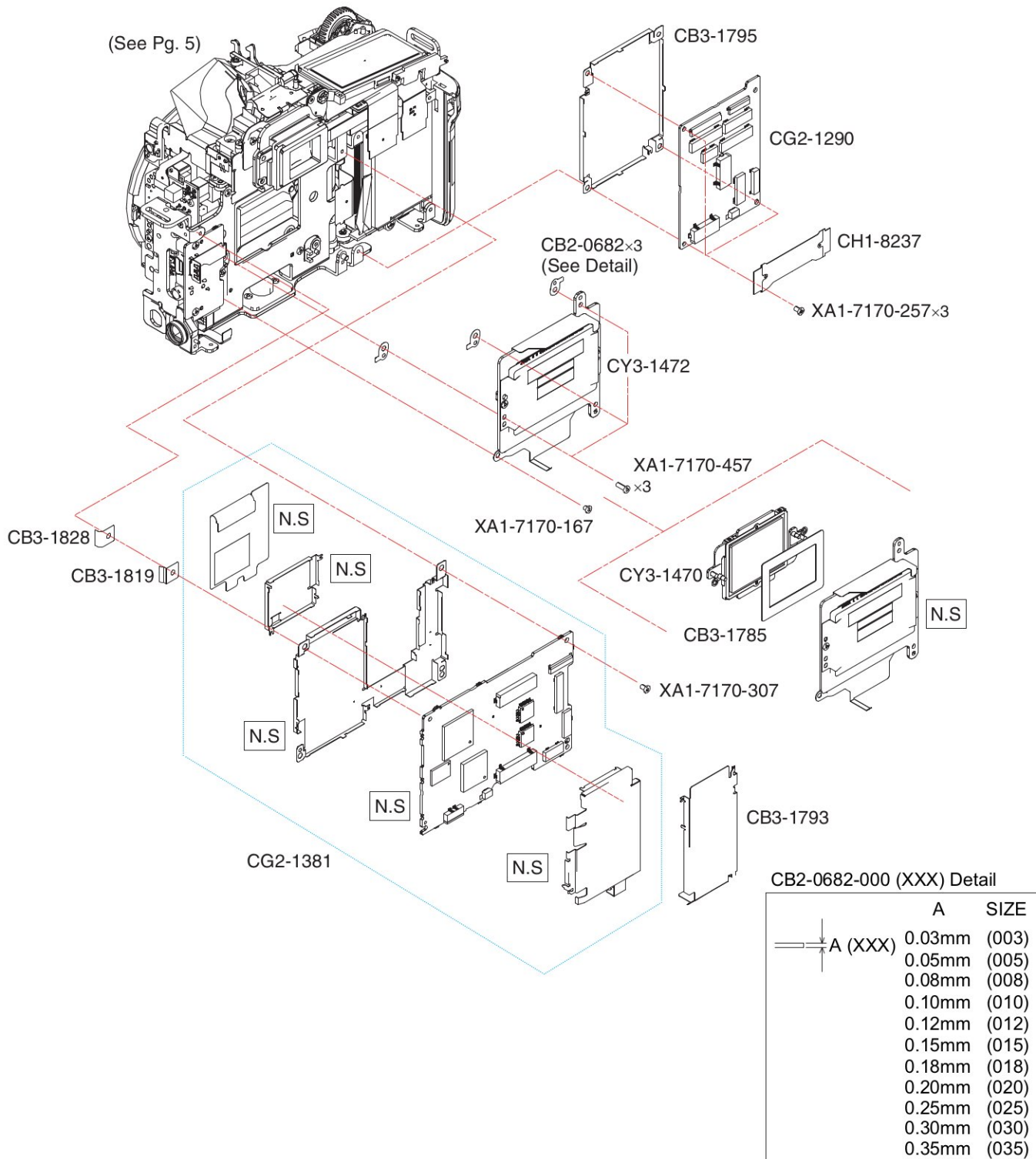
NEW	PARTS No.	CLASS	QTY	DESCRIPTION
	CB2-0682-000 (XXX)	C	3	WASHER, FLANGE BACK
*	CB3-1785-000 000	C	1	TAPE, LOW PASS FILTER
*	CB3-1793-000 000	N	1	COVER, DIGITAL PCB SHIELD
*	CB3-1795-000 000	C	1	COVER, C PCB SHIELD
*	CB3-1819-000 000	C	1	TAPE, DIGITAL PCB SHIELD
*	CB3-1828-000 000	C	1	TAPE, DIGITAL PCB SHIELD
*	CG2-1290-000 000	B	1	PCB ASS'Y, C
*	CG2-1381-000 000	A	1	PCB ASS'Y, DIGITAL
*	CH1-8237-000 000	C	1	FPC, CD CONNECT
*	CY3-1470-000 000	B	1	FILTER ASS'Y, LOW PASS
*	CY3-1472-000 000	A	1	PCB ASS'Y, IMAGING PROCESSING
	XA1-7170-167 000		1	SCREW
	XA1-7170-257 000		3	SCREW
	XA1-7170-307 000		1	SCREW
	XA1-7170-457 000		3	SCREW

CANON DIGITAL CAMERA EOS 20D

CG2-1293

XA1-7170-257

XA4-9170-357

CH6-3221

CG2-1324

CH1-8239

XA1-7170-227×2

CG2-1325

N.S

N.S

(See Pg. 6)

CG2-1323

XA1-7170-207

XA1-7170-187×2

CB3-2201

CG2-1292

XA1-7170-307

CG2-1376

XA4-9200-507×2

XA1-3200-307×2
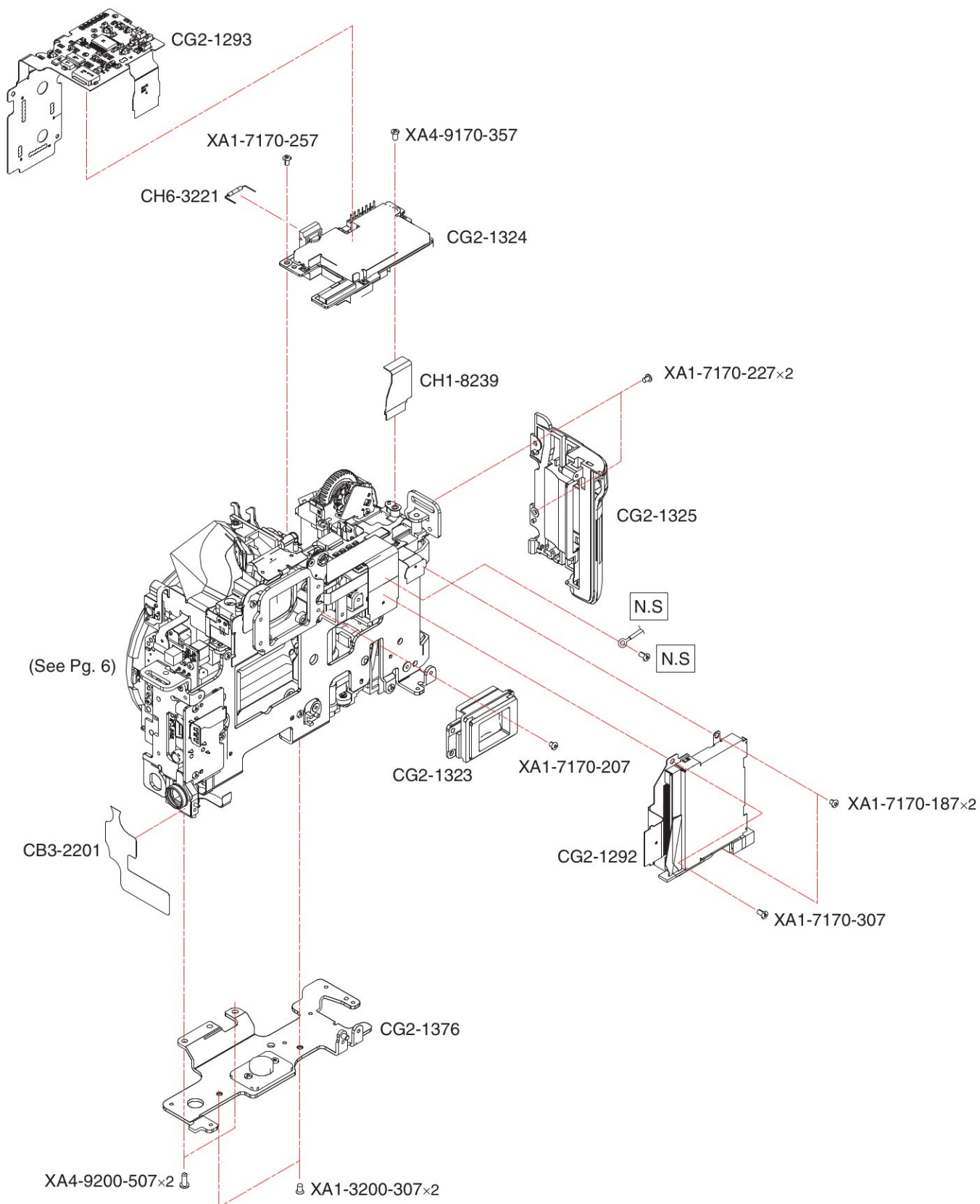
NEW	PARTS No.	CLASS	QTY	DESCRIPTION
*	CB3-2201-000 000	C	1	TAPE, BOTTOM CONDUCTIVE
*	CG2-1292-000 000	B	1	PIN ASS'Y, CF SLOT
*	CG2-1293-000 000	B	1	FPC ASS'Y, MOTOR DRIVE
*	CG2-1323-000 000	B	1	COVER ASS'Y, EYEPIECE
*	CG2-1324-000 000	A	1	PCB ASS'Y, DC/DC
*	CG2-1325-000 000	C	1	COVER ASS'Y, CF SLOT
*	CG2-1376-000 000	C	1	PLATE ASS'Y, BASE
*	CH1-8239-000 000	C	1	FPC, DCDC D CONNECT
	CH6-3221-000 000	C	1	LAMP, HALOGEN
	XA1-3200-307 000		2	SCREW
	XA1-7170-187 000		2	SCREW
	XA1-7170-207 000		1	SCREW
	XA1-7170-227 000		2	SCREW
	XA1-7170-257 000		1	SCREW
	XA1-7170-307 000		1	SCREW
	XA4-9170-357 000		1	SCREW
	XA4-9200-507 000		2	SCREW

CANON DIGITAL CAMERA EOS 20D

CG2-1319

CB1-0279×2

CG2-1322

CH9-0233

CG2-1297

N.S
×2

XA4-9170-457
×2

CB3-1720

XA1-3170-259
×2

CB3-1821

XA4-9170-457
×2

CG2-1328

CB3-1744

CG2-1320

XA4-9170-457
×2

XA1-3170-259
×2

CB3-1721

CA1-9007

N.S

CG2-1321

XA1-7170-207

(See Pg. 7)
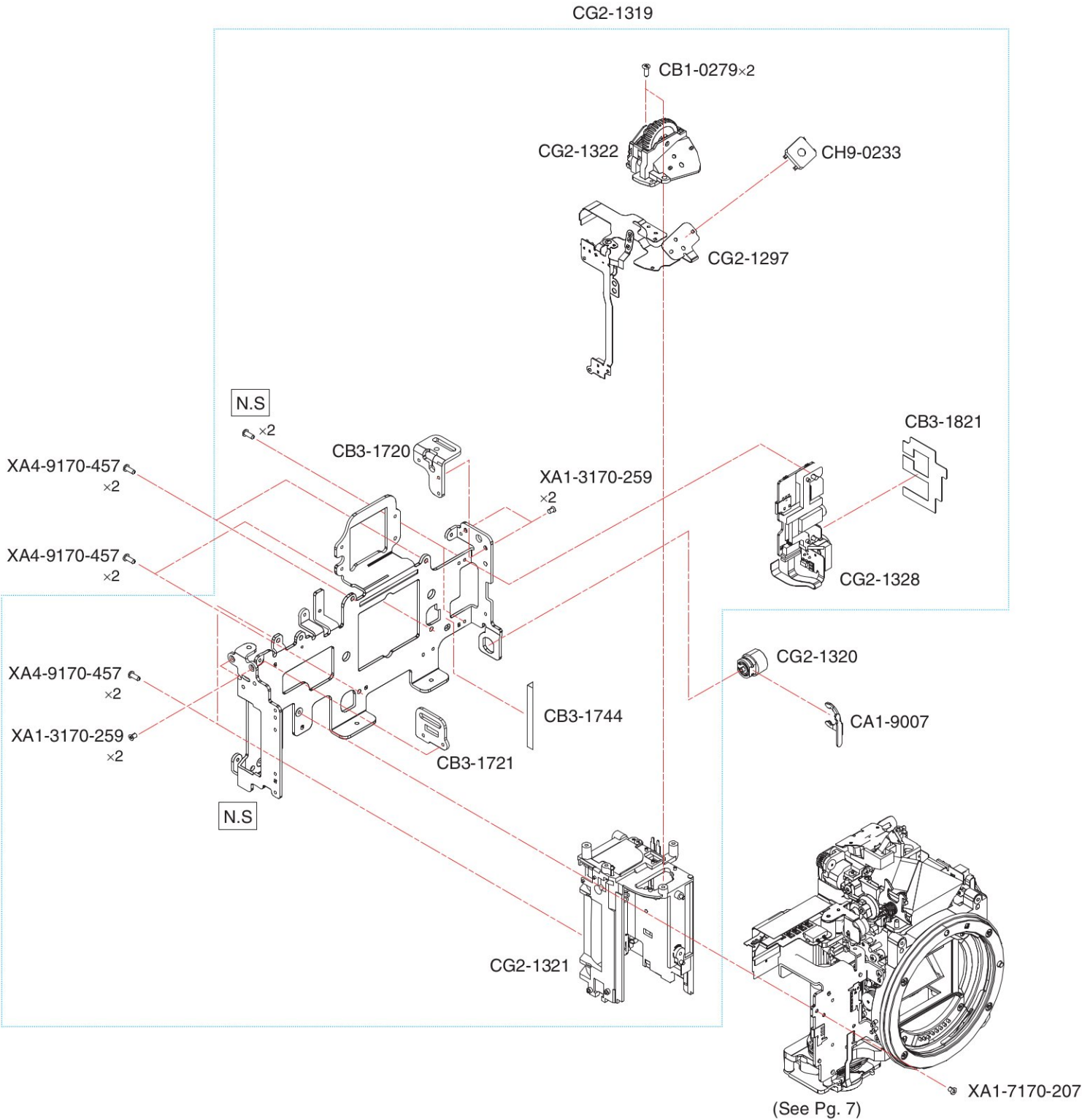
NEW	PARTS No.	CLASS	QTY	DESCRIPTION
	CA1-9007-000 000		1	
	CB1-0279-000 000		2	SCREW
*	CB3-1720-000 000	C	1	HOLDER, STRAP, LEFT
*	CB3-1721-000 000	C	1	HOLDER, STRAP, RIGHT
*	CB3-1744-000 000	C	1	PLATE, LIGHT SHIELD
*	CB3-1821-000 000	B	1	TAPE, INTERFACE SHIELD
*	CG2-1297-000 000	B	1	FLEX ASS'Y, RELEASE
*	CG2-1319-000 000	C	1	PLATE ASS'Y, MAIN BASE
*	CG2-1320-000 000	B	1	TERMINAL ASS'Y, PC
*	CG2-1321-000 000	C	1	BOX ASS'Y, BATTERY
*	CG2-1322-000 000	C	1	DIAL ASS'Y
*	CG2-1328-000 000	B	1	PCB ASS'Y, INTERFACE
	CH9-0233-000 000	C	1	SWITCH, RELEASE
	XA1-3170-259 000		4	SCREW
	XA1-7170-207 000		1	SCREW
	XA4-9170-457 000		6	SCREW

CANON DIGITAL CAMERA EOS 20D
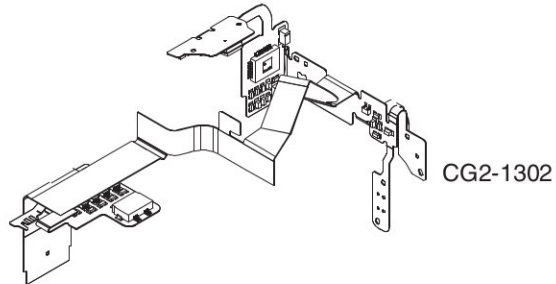
CG2-1302

XA4-9170-457
×2

XA4-9170-459
×2

CG2-1316

XA4-9170-457
×2

XA4-9170-309

CG2-1317

CH9-1071

(See Pg. 8)
CY3-1473

CB3-2139

CB3-1719

XA4-9170-457
×2
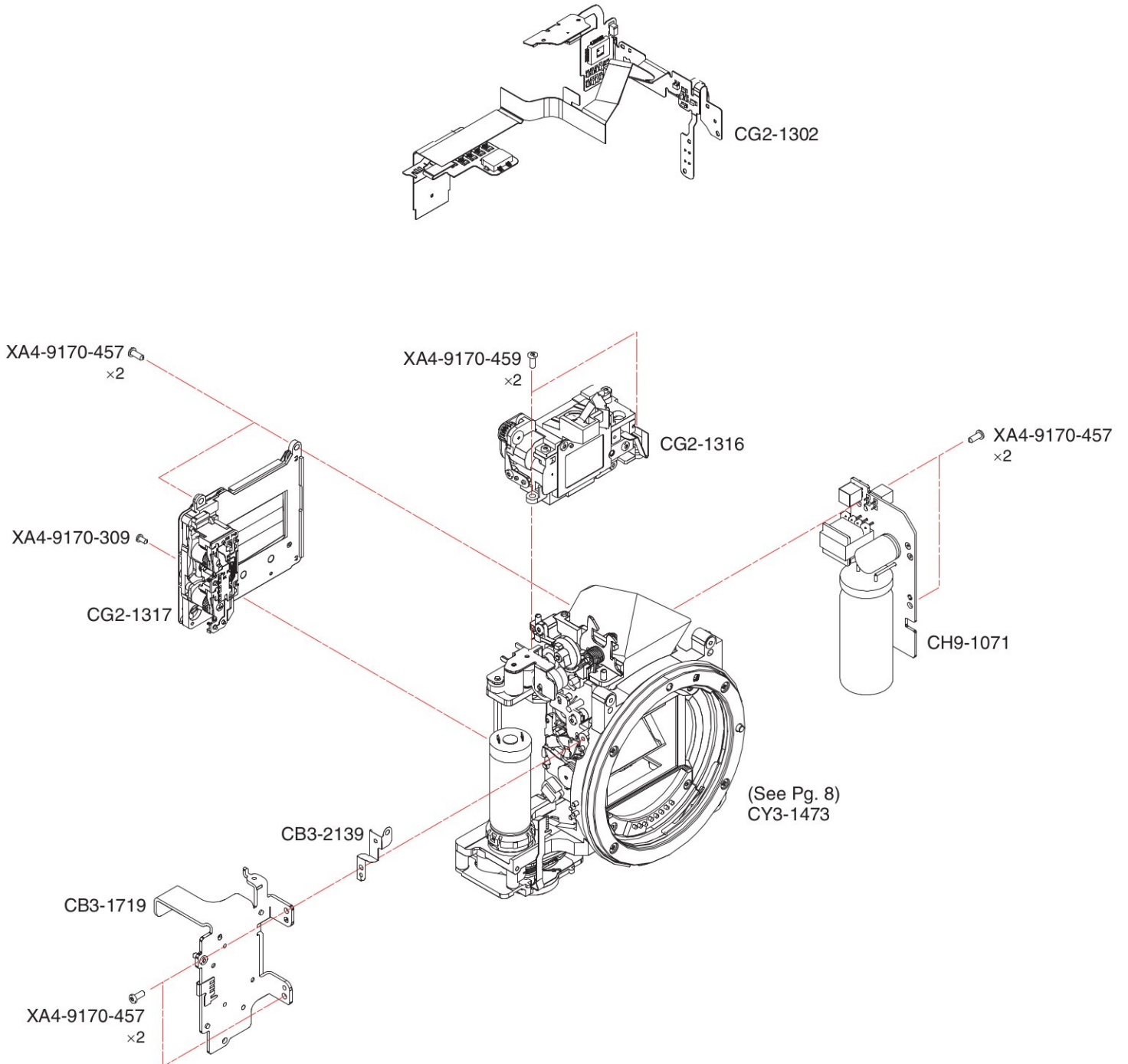
NEW	PARTS No.		CLASS	QTY	DESCRIPTION
*	CB3-1719-000	000	C	1	PLATE, WING
	CB3-2139-000	000		1	
*	CG2-1302-000	000	B	1	FPC ASS'Y, EXPOSURE PROCESSING
*	CG2-1316-000	000	B	1	EYEPIECE ASS'Y
*	CG2-1317-000	000	A	1	SHUTTER ASS'Y
*	CH9-1071-000	000	B	1	PCB ASS'Y, FLASH
*	CY3-1473-000	000	B	1	MIRROR BOX ASS'Y
	XA4-9170-309	000		1	SCREW
	XA4-9170-457	000		6	SCREW
	XA4-9170-459	000		2	SCREW

CANON DIGITAL CAMERA EOS 20D

CB3-1803

CG2-1315

CG2-1314

N.S

XA4-6170-459×2

(CB3-1706)

N.S

CF1-1948

CS2-5020

CB3-1700

CG2-1306

CS2-7205

CB3-1134

CB1-4085×4

XA4-9170-459×2

YN2-3356

CB3-1664
(See Detail)

YN2-3353
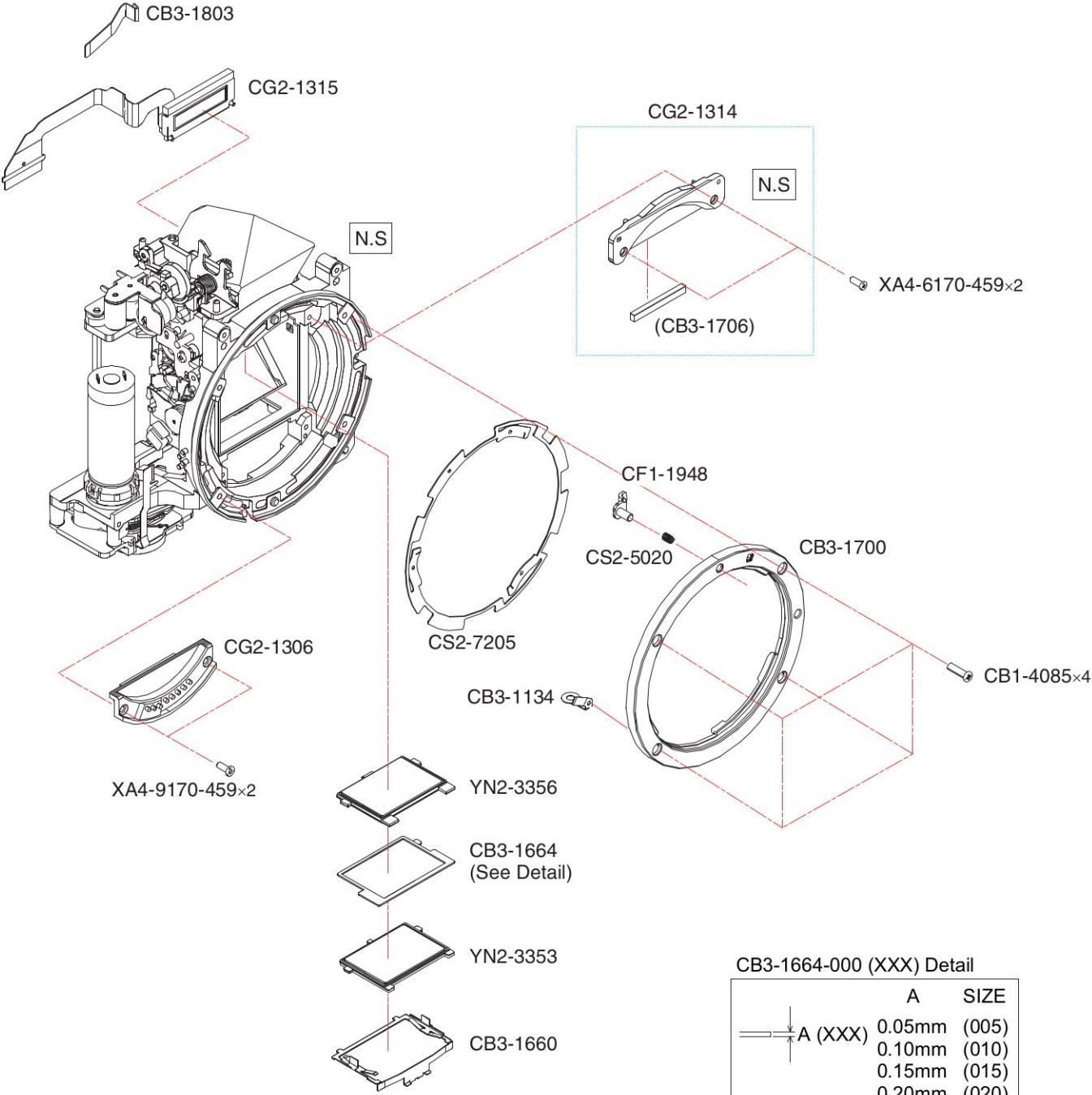
CB3-1660

CB3-1664-000 (XXX) Detail		
A (XXX)	A	SIZE
	0.05mm	(005)
	0.10mm	(010)
	0.15mm	(015)
	0.20mm	(020)
	0.25mm	(025)
	0.30mm	(030)
	0.35mm	(035)
	0.40mm	(040)
	0.45mm	(045)
	0.50mm	(050)

NEW	PARTS No.	CLASS	QTY	DESCRIPTION
	CB1-4085-000 000		4	SCREW
*	CB3-1134-000 000	C	1	PLATE, GRAND
*	CB3-1660-000 000	C	1	FRAME, SCREEN MOUNTING
*	CB3-1664-000 (XXX)	C	1	WASHER, FINDER BACK ADJUST
*	CB3-1700-000 000	C	1	MOUNT
*	CB3-1706-000 000	C	1	CUSHION, MIRROR
*	CB3-1803-000 000	C	1	COVER, INNER LCD RETAINER
	CF1-1948-000 000	C	1	LEVER, LENS LOCK
*	CG2-1306-000 000	C	1	CONTACT ASS'Y, LENS
*	CG2-1314-000 000	C	1	COVER ASS'Y, SCREEN RETAINER
*	CG2-1315-000 000	C	1	FPC ASS'Y, INNER LCD
	CS2-5020-000 000	C	1	SPRING, COIL
	CS2-7205-000 000	C	1	SPRING, MOUNT
	XA4-6170-459 000		2	SCREW
	XA4-9170-459 000		2	SCREW
*	YN2-3353-000 000	B	1	PLATE, FOCUSING SCREEN
*	YN2-3356-000 000	B	1	PLATE, SUPER IMPOSE INDICATE

CANON DIGITAL CAMERA EOS 20D

CA1-9328

CB1-8049×4

CB3-1418

CB1-8484

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

N.S

CG2-1374

XA4-9170-457×3

NEW	PARTS No.		CLASS	QTY	DESCRIPTION
	CA1-9328-000	000	C	1	PLATE, SPRING, BL
	CB1-8049-000	000	F	4	SCREW
	CB1-8484-000	000	E	1	BASE , ACCESSORY, SHOE
	CB3-1418-000	000	C	1	SHOE, ACCESSORY
*	CG2-1374-000	000	C	1	LCD ASS'Y, OUTER
	XA4-9170-457	000	F	3	SCREW

Accessories

Wide Strap EW-100DGR
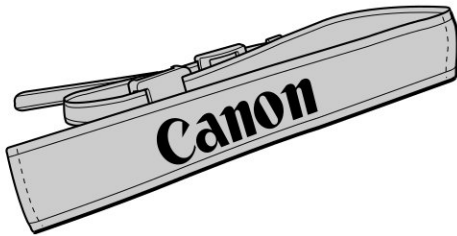
N.S (Product Available)

Battery Pack BP-511/511A BP-512
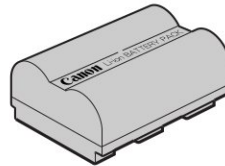
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DC Coupler DR-400
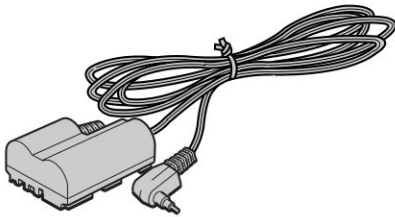
N.S (Product Available)

Interface Cable IFC-400 PCU(USB)
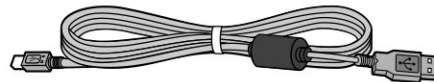
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Battery Charger CG-580
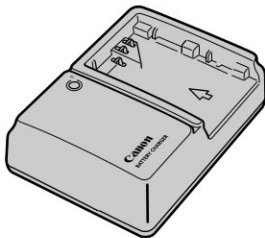
N.S (Product Available)

Video Cable   VC-100
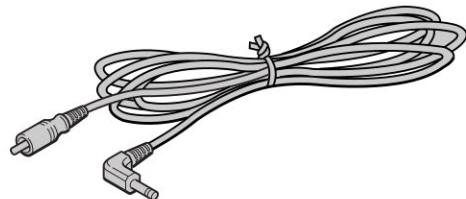
FH6-3922

VIDEO CABLE VC-100

REF.NO. FH-3922

NEW	PARTS No.		CLASS	QTY	DESCRIPTION
	FH6-3922-000	000	C	1	VIDEO CABLE VC-100

NEW	PARTS No.		CLASS	QTY	DESCRIPTION
	Y11-3901-000	000	F	1	WIRE, LEAD
	Y11-3902-000	000	F	1	WIRE, LEAD
	Y11-3907-000	000	F	1	WIRE, LEAD
	Y11-3909-000	000	F	1	WIRE, LEAD
	Y11-3911-000	000	F	1	WIRE, LEAD
	Y11-4402-000	000	F	1	WIRE, LEAD
	Y11-4404-000	000	F	1	WIRE, LEAD
	Y11-4406-000	000	F	1	WIRE, LEAD
	Y11-4411-000	000	F	1	WIRE, LEAD
	Y11-5002-000	000	F	1	WIRE, LEAD
	Y11-5003-000	000	F	1	WIRE, LEAD
	Y11-5011-000	000	F	1	WIRE, LEAD
*	CH2-8148-000	000	F	1	WIRE, LEAD
*	CH2-8247-000	000	F	1	WIRE, LEAD

REF.NO. C12-6061

Circuit Diagrams

CONTENTS

FLASH

I/F PCB

① WHT
② BLK
⑤ BLU

MOUNT INTERFACE

③ Y

① WHT

⑨ RED

TRIG

D PCB

C PCB

⑧ BLK ④ GRN ⑨ RED

MD FPC

MOTOR

⑦ BLU

⑥ ORG

⑪ BLK

⑫ PNK

⑩ BLU

FLASH PCB

③ Y

PC TERMINAL

② BLK

TFT LCD

CH2-8248

CH2-8247

BAT CONTACT

No.	PARTS NO.	REMARK	SIZE
①	Y11-3901	WHITE : WHT	0.6
②	Y11-3902	BLACK : BLK	0.6
③	Y11-3907	YELLOW : Y	0.6
④	Y11-3909	GREEN:GRN	0.6
⑤	Y11-3911	BLUE : BLU	0.6
⑥	Y11-4406	ORANGE:ORG	1.0
⑦	Y11-4411	BLUE : BLU	1.0
⑧	Y11-5002	BLACK : BLK	1.2
⑨	Y11-5003	RED : RED	1.2
⑩	Y11-5011	BLUE : BLU	1.2
-	CH2-8247	RED&BLACK	-
-	CH2-8148	RED&BLACK	-
⑪	Y11-4402	BLACK : BLK	1.0
⑫	Y11-4404	PINK : PNK	1.0

2. BLOCK DIAGRAM
2-1 GENERAL

FLASH

MG3-1
MG3-2

X CN2
SWMUP SWCGE
POPEND POPCTL
SH_BUSY MRPUE

M

MD-IC

MDIAL0/1
SDIAL0/1
SW1 SW2
AEL SPDN
LIGHT STUP
LOCK SDLOCK

MODE SW
DRIVE AF MODE AE MODE
AFP SEL MENU INFO
PLAY SET
CROSS 0/1/2/3/4

CFDOOR
BATDOOR

ACC-SH

FET
500V

MON/WRITER

EFIC

EEPROM

FLED

ILC

LPU

OLC

3

START

PC

TRIACS
600V

AEIC
LC502R

MPU

LAMP

BZ

BLLED

SI

NEW-AFIC

HV

LGSEL
BATSEL0
BATSEL1

LGRIP
(K203)
LR6×6

MIF

DCDC

VIDEO_DET
JUMP ERASE
USB_DET

RTC

BACK
UP

Li-ion
BP-511/512

BL(3灯)

TG

DIGIC II

LCD·DR

TFT
1.8"/118k

8M·CMOS

ADIC

DFE

AMP

VIDEO

ADIC

USB2.0

CF

SDRAM
256M

SDRAM
256M

SDRAM
256M

SDRAM
256M

FROM

2-2 POWER SUPPLY

DC-DC

- V32 — 14V±1V
- V3 — 5.5V±0.2V
- V1 — 3.35V±0.1V
- V Core — 1.2V±0.05V
- V0 — 3.35V±0.1V
- V4 — 4.75V±0.25V
- V2 — 5.2V±0.1V

VBAT

5.6～11.5V

Mecha-Block

Reg — 4.8V CVCC

Reg — 3.2V VRH
EEP
Reg — 3.3V VDD
VDD3
3V Lit
Tr.
RTC
AE/EF/AF etc. E3 / E1 E2
Reg — 4.8V
MIF
TMOS
TX
LPU

VDD2 / VBAT2
LENS CPU | USM | EMD
EF Lens

FET VBAT3
PWR 6.0V
FLASH | MOTOR
CVBAT
Tr. | Tr. | Tr. | FET
SI-LED | OLC BLED | FLED | LAMP | SHUTTER

VBAT

Li-ion
BGM-E2
TYPE AA
Li-ion

System-Block

VCore
V0
V1
V3_A
FET
FET
V6
CF
CF-LED

SDRAM | I/O | C/E Domain Core

DIGIC II

FROM
SDRAM
256Mbit x 4 = 128MByte

Display-Block

V32 / V3 / V3_A

Reg — 3.3V
Reg — 5.0V
Tr.
Reg — 8.5V

VIDEO AMP
Logic TFT DRIVER Analog
20mA Max. BACK LIGHT
TFT PANEL

Image-Block

V3_A

Reg — 5.0V
Reg — 3.3V
Reg — 2.0V
Reg — 3.1V
Reg — 4.8V
Reg — 2.6V

AVDD | DVDD1 | DRVDD | DLVDD

AFE 1&2

AVDD, DVDD | SVDD | VCLIP | VREF | VC2R | VCHR | VTXL
2.0V | 1.5V | 1.5V | 1.5V | -1.3V
LVDD | HVDD

CMOS | **TG** | **OSC**

3. PCB DIAGRAM
3-1 AF FPC

SIDE A

SIDE B

3. PCB DIAGRAM
3-2 BACK FPC
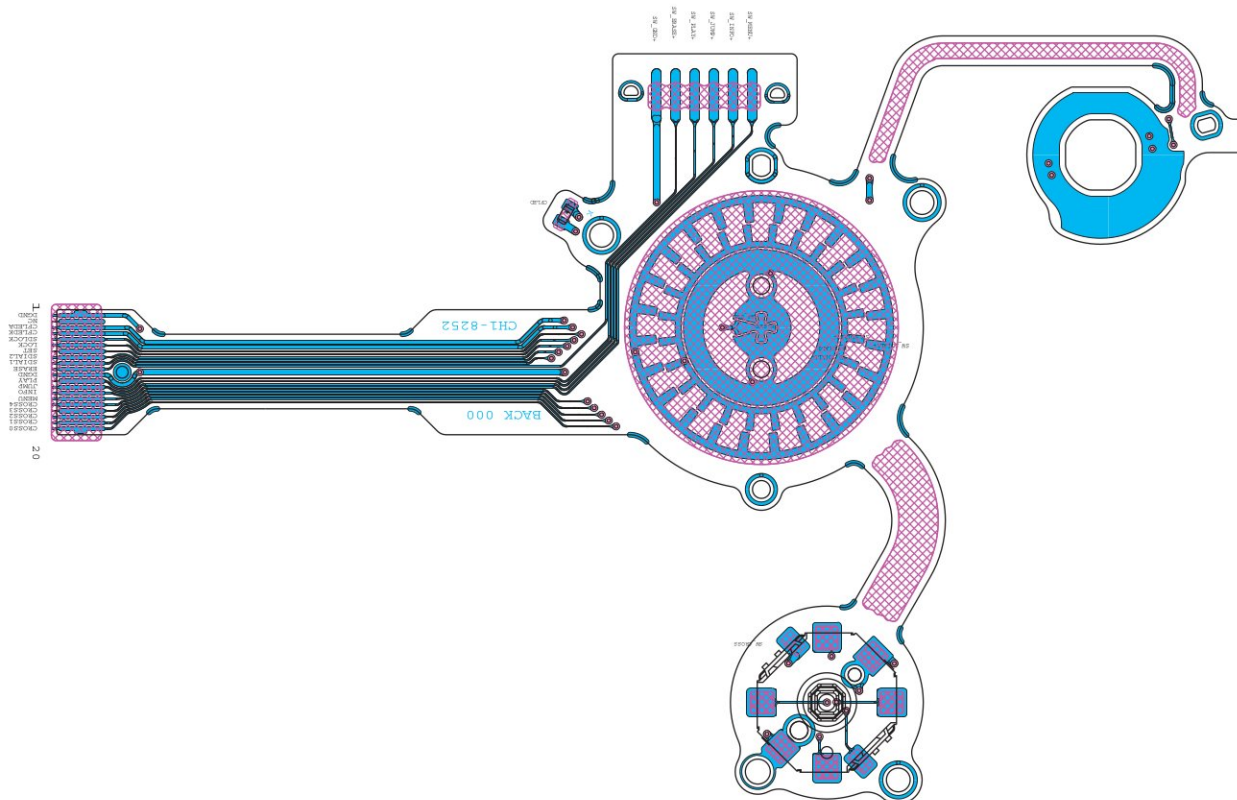
SIDE A

SIDE B

SIDE A

SIDE B

3. PCB DIAGRAM
3-4 C-D FPC

REF. NO. C12-6061

SIDE A

SIDE B

SIDE A

SIDE B

SIDE A

SIDE B

SIDE A

SIDE B

SIDE A

fuse
1.6A

fuse
1.6A

fuse
3.0A

SIDE B

SIDE A

SIDE B

SIDE A

SIDE B

SIDE A

SIDE B

3. PCB DIAGRAM
3-12 IMG B FPC

SIDE A

SIDE B

SIDE A

SIDE B

SIDE A

CH1-
8250
IR

000

SPDX   AGND

1   2

SIDE B

3-15 MDR FPC

SIDE A

SIDE B

SIDE A

SIDE B

SIDE A

OLC FPC 000
CH1-8255

SIDE B

SIDE A

SIDE B

SIDE A

RLS-SW

@@TXD_ICU @@RXD_ICU
@@TXD_MPU @@RXD_MPU
@@LGSEL1 @@DIAL2
@@BATSEL1 @@AFSEL
@@BATSEL0 @@AELOCK

@GND_RLS

SWBATSEL0

BATDOOR

ZD_RLS

CFDOOR

1CFDOOR
2DIAL1
3DGND
4DIAL2
5LGSEL
6BATSEL1
7BATSEL0
8SW2
9BATDOOR
10SW1
11AELOCK
12AFSEL
13RXD_MPU
14RXD_ICU
15TXD_ICU
16TXD_MPU
17DGND

SIDE B

DIAL2

DGND

@@GND_DCDC   DIAL1

SIDE A

CH1-8244 000
RMCN FPC

SIDE B

SIDE A

TO MDR FPC

PGND
CVBAT

TO SI FPC

CN 21

CH1-6247
SENSE FPC
000

TO C MAIN PCB

SM-STUP

ZDSTUP

RMRUPE2
QMRUPE

RMRUPE3

AEV
AEH
AEC0
AEC1

BCLK

AVEF
IFAD
AGND
VBAT

CC

TO XT PCB

CEP2

RSPDX

CVRH

CERFVC

CEF3

RSENSE

CSENSE

STPLS
XOUT
SYNC

CLK_EF

EFIC

AEAD

AEIC

MOD

CAE
CAEVC1
CAEVCC

SIDE B

TO IR SENSE FPC

SPDX

AGND

MRSW-2

MRSW-1

MRSW-4

MRSW-3

SIDE A

000
SH

1MG32
2SH-BAT
3MG31
4CN2
5DGND
6X

CH1-8248

SH FPC

1MG32
2SH-BAT
3MG31
4CN2
5DGND
6X

SIDE B

SIDE A

SIDE B

SIDE A

SIDE B

HVSW

VBAT3
@VBAT3

@PGND
PGND

CS1

THV

CSM1

13VG_SENSE
12DGND
11HV1
10HV2
9 HV-A
8 HVON
7 OSC
6 SENSE
5 STPLS2ST
4 IGBT
3 E1
2 Reserved
1 Reserved

@@IGBT
CN_SENSE
@@STPLS2ST
@@SENSE
@@OSC
ROSC1
VB3
PG
@TRIG(-)
SP_OSC
@XE(+)
@TRIG(
@@TRIG(+)
@@XE(-)
@XE(-)

@@HV_A
HV1
HV2
@@HV2
@@DGND
@@VG_SENSE
(+)
TRIG-
(-)
@@TRIG(-)
@@XE(+)
XE+ (+)
(-)
CS4
RS6
D5S
D4S
IGBT
CS5
IGBT
CS15RS10
RS15RS1
RS8

@@HV1
@@HV
HV

@@E1

@@TRS1_D
TR1S
CH1-8235
ST PCB 010
TR1S
@@ST_GND
D2S D1S
D3S
TR2S
CS3
RS3
RS1
RS4
@@IGBT_G
@@IGBT_C
CS2
@@TRS2_E
ZD1
RSYNC3
TRIAC1
@@TRAC_G
RSYNC1
CSYNC1
DSYNC2
DSYNC1

@PC-GND
PC
-GND

@PC-X
PC
-X

SIDE A


```
1 VG_TOP
2 NC
3 NC
4 NC
5 POPEND
6 PGND
7 AVEF
8 STSP
9 EFID
10 CCC
11 POPCTL
12 SHBUSY
13 DGND
14 MODE0
15 MODE1
16 MODE2
17 MODE3
```

SIDE B


```
1 VG_TOP
2 NC
3 NC
4 NC
5 POPEND
6 PGND
7 AVEF
8 STSP
9 EFID
10 CCC
11 POPCTL
12 SHBUSY
13 DGND
14 MODE0
15 MODE1
16 MODE2
17 MODE3
```

SIDE A

SIDE B

Software Information

CONTENTS

Page

Software Information

1. EOS DIGITAL SOLUTION DISK Ver. 8

1.1 Overview

EOS DIGITAL Solution Disk version 8 is a CD-ROM containing the compatible / bundled software for the EOS 20D.

1.2 Software Configuration

Table 001 shows the software configuration for version 8 and the versions of each software.

Table 001 Software configuration and version

Software	Version 8			Version 7		
	Windows	Mac OS		Windows	Mac OS	
		OS X	OS 9		OS X	OS 9
EOS Viewer Utility	Yes Ver. 1.1			Yes Ver.1.0		
EOS Capture	Yes Ver.1.1		No	Yes Ver.1.0		
PhotoStitch	Yes Ver.3.1					
WIA Driver	Yes			Yes		
TWAIN Driver	Yes			Yes		

The EOS 20D interface is USB 2.0 Hi-Speed, which is not supported on Mac OS 9. Consequently, the Mac OS 9 software cannot communicate with the camera and EOS Capture is no longer bundled. In addition, EOS Viewer Utility for Mac OS 9 cannot be used for downloading images or specifying camera settings.

* Drivers will be included for the EOS 20D and EOS-1D Mark II.

1.3 EOS Viewer Utility

1) Overview of EOS Viewer Utility version 1.1

In version 1.1, the EOS 20D is added to the list of supported cameras and the changes in 2) are made to the main functions.

1

2) Main function additions/changes in EOS Viewer Utility version 1.1

(1) JPEG preview function

In version 1.0, there was no function for displaying the JPEG image included in a RAW+JPEG image, and this prompted user requests regarding JPEG image display.

To address these requests, a preference setting (Fig. 001) has been added in version 1.1 that allows users to specify whether the processed RAW image or the JPEG image recorded concurrently is displayed in the preview window for RAW+JPEG images. A new "JPEG Preview" button with the same function has also been added to the preview window, allowing users to switch between the RAW and JPEG images.
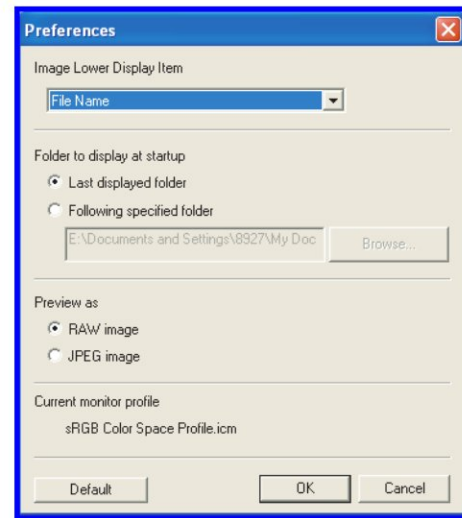
Fig. 001 Preferences dialog box

(2) Monitor profile display

A monitor profile display has been added to the Preferences. (Fig. 001)

* The profile is set or modified in the operating system.

(3) Addition of an EOS Capture button in the main window toolbar

A reappraisal of the "Camera Settings" button in the main window toolbar determined that EOS Capture is used more frequently than the camera settings. Accordingly, the "Camera Settings" button has been replaced by an EOS Capture button. (Fig. 002)
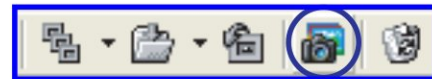
Fig. 002 EOS Capture button

(4) Number display for thumbnail images

An image number display has been added in the top-left corner of thumbnail images in the main window. (Fig. 003)

Fig. 003 Image number display

3) EOS 20D RAW image adjustment

As with previous models, all the processing parameters set on the camera can also be set for RAW images on the EOS 20D. (Figure 4)

The following functions have also been added to those provided for the previous model (EOS 10D):

(1) White balance compensation added to the white balance adjustments
(2) A "Monochrome" function added to the processing parameters.

The "Monochrome" function allows the "Filter Effect" and "Toning Effect" to be specified.
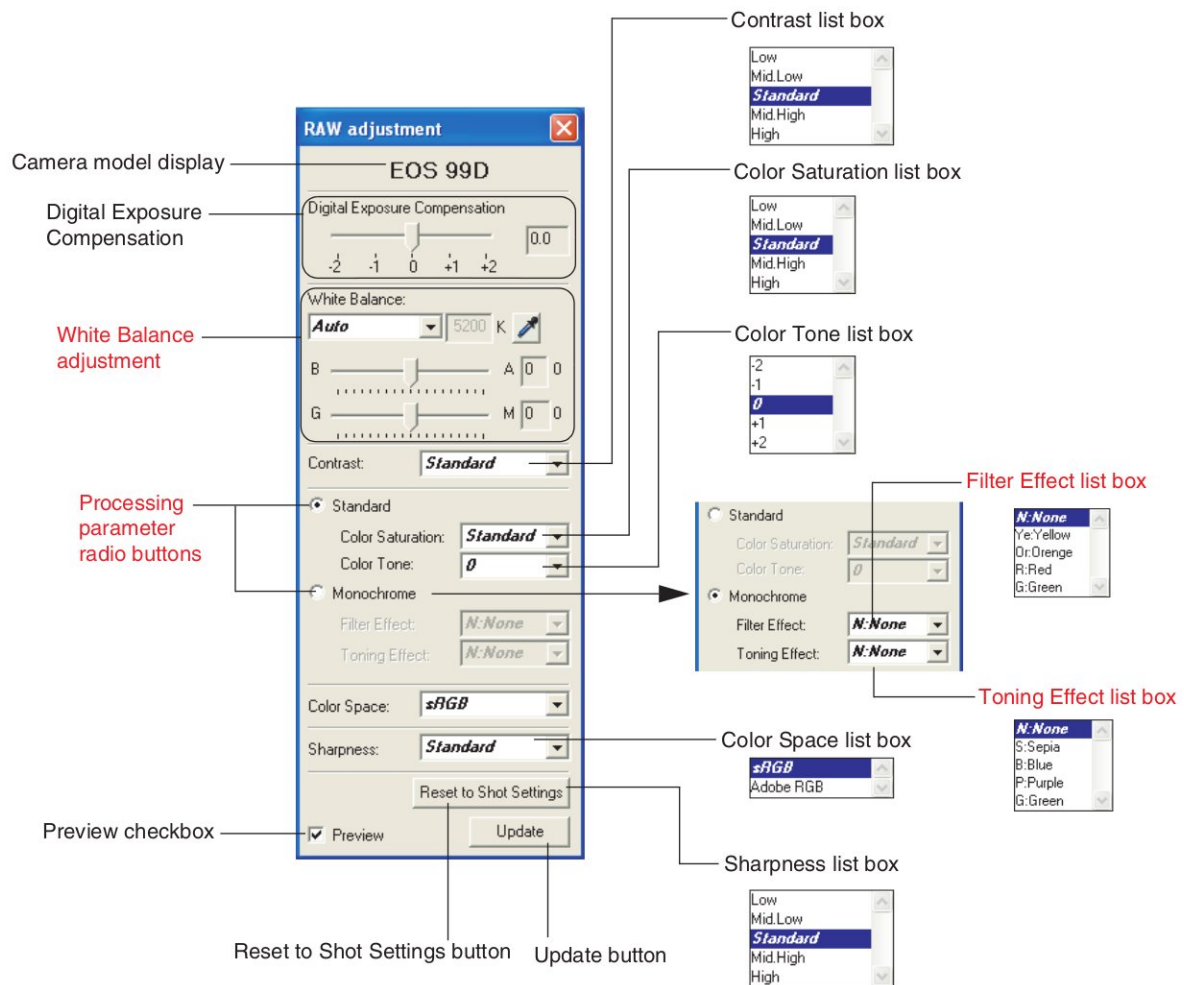
* Functions added with the EOS 20D are shown in red.

Fig. 004 RAW image adjustment tool palette

3

4) Supported cameras and camera settings functions

EOS Viewer Utility is compatible with all the EOS digital cameras, including the EOS 20D. It can be used to specify supported settings for each camera and to download images to a computer. (Table 002)

Table 002 Supported cameras and camera settings functions

Model	Basic settings	Personal functions	Shooting settings
EOS 20D	Yes	No	No
EOS 10	Yes	No	No
EOS Kiss Digital/REBEL/300D	Yes	No	No
EOS D60	Yes	No	No
EOS D30	Yes	No	No
EOS-1D Mark II	Yes	Yes	Yes
EOS-1Ds	Yes	Yes	Yes
EOS-1D	Yes	Yes	Yes

* Due to limitations on disk capacity, WIA/TWAIN drivers are only provided for the EOS 20D and EOS-1D Mark II on Solution Disk Version 8. In order for cameras other than the EOS 20D or EOS-1D Mark II to communicate with EOS Viewer Utility, the driver for the camera used (the driver bundled with the camera or a driver downloaded from the Web) must be installed separately.

* Canon compact cameras are not supported.

5) Supported image formats

EOS Viewer Utility supports images from all the EOS digital cameras, including the EOS 20D. (Table 003)

Table 003 Supported image formats

Image format/Model		File extension
RAW images	EOS 20D, EOS-1D Mark II	.CR2
	EOS-1Ds, EOS-1D	.TIF
	EOS Kiss Digital/REBEL/300D, EOS 10D, EOS D60, EOS D30	.CRW
DCF-compliant JPEG images		.JPEG
Exif-JPEG images *		
Exif TIFF images (8-bit, 16-bit) *		.TIF

* Includes images converted and saved from RAW images in EOS Viewer Utility.

* RAW images from Canon compact cameras are not supported.

4

1.4 EOS Capture

1) Overview of version 1.1

The 3 main differences between versions 1.0 and 1.1 are the addition of the EOS 20D to the supported cameras, the addition of image rotation functions (rotate 90 degrees right, rotate 90 degrees left and rotate 180 degrees), and the modifications to the white balance compensation display.

Fig. 005 shows the main window and its main functions when the EOS 20D is connected.
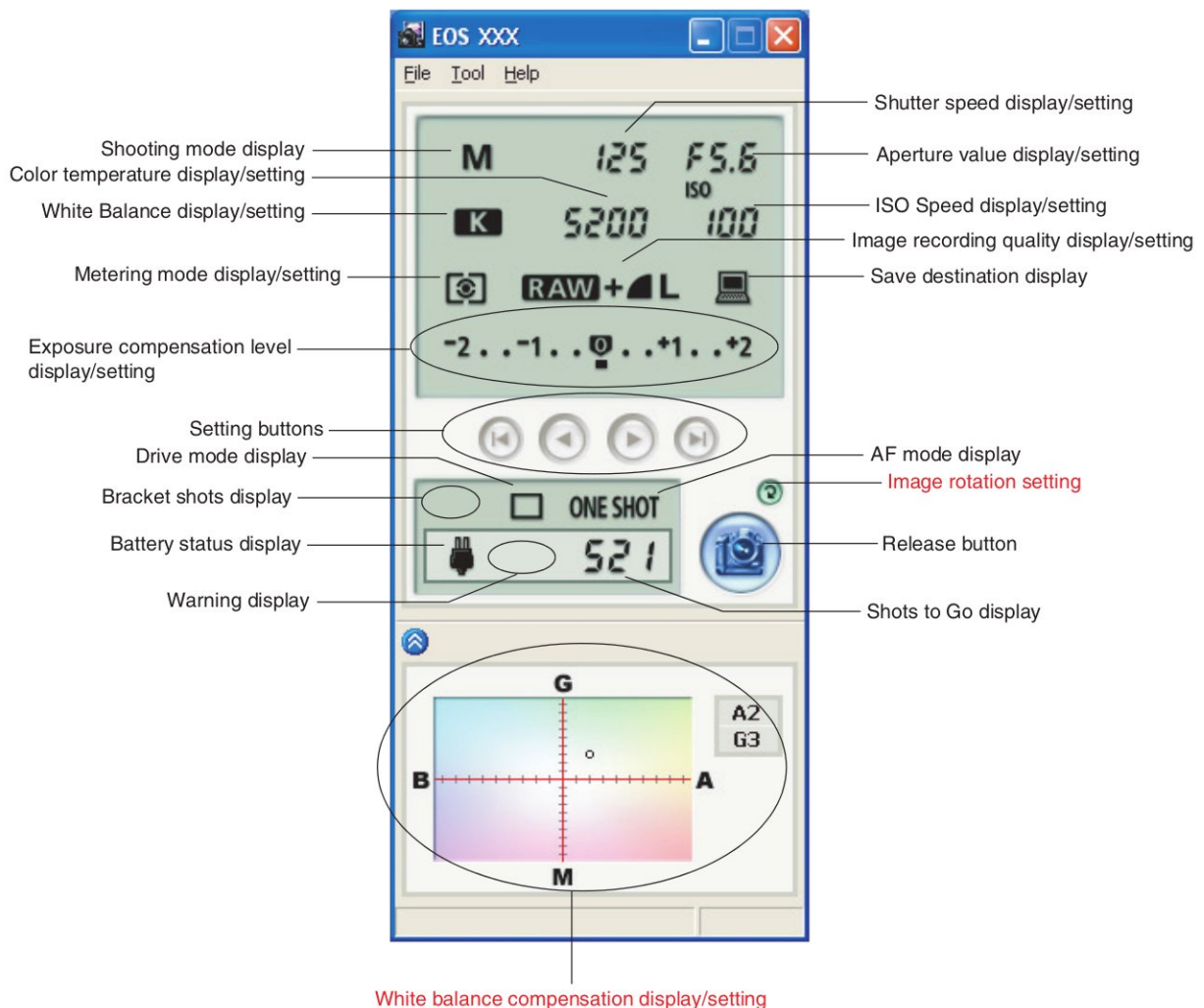
* Functions added or modified in version 1.1 are shown in red.

Fig. 005 EOS Capture main window when a EOS 20D is connected

In version 1.0, EOS Capture was installed in conjunction with EOS Viewer Utility and could not be installed independently. Consequently, users wishing to use only Digital Photo Professional and EOS Capture were forced to install EOS Viewer Utility also. To remedy this problem, EOS Capture has been upgraded in version 1.1 so that it can be installed as a standalone application.

2) Supported cameras

Four models are supported: the EOS 20D, EOS-1D Mark II, EOS-1Ds and EOS-1D.

1.5 Other Software Applications

1) PhotoStitch

This application merges multiple photographed images into a single image. It allows the user to create composite images such as panorama shots with great precision. The specifications are the same as those for PhotoStitch on Solution Disk version 7.

2) WIA Driver

This driver software is compatible with the Microsoft WIA (Windows Image Acquisition) standard and is used for controlling communication between the camera and EOS Viewer Utility or EOS Capture.

WIA Driver runs on Windows XP or Me. This driver runs as a standalone application or in combination with TWAIN-compatible software and is used for downloading JPEG images. (RAW images not supported) The specifications are the same as those for WIA Driver on Solution Disk version 7.

3) TWAIN Driver

This driver software is compatible with the TWAIN standard and is used for controlling communication between the camera and EOS Viewer Utility or EOS Capture. TWAIN Driver runs on Windows 2000 or 98SE. This driver runs in combination with TWAIN-compatible software and is used for downloading JPEG images. (RAW images not supported) The specifications are the same as those for TWAIN Driver on Solution Disk version 7.

1.6 System Requirements

The USB 2.0 Hi-Speed interface for the EOS 20D has been added to the list of supported interfaces. Otherwise, there are no changes to the system requirements for Solution Disk version 7. Table 4 shows the system requirements for version 8.

Table 004 System Requirements

OS		Windows		Macintosh	
		Windows XP, Me, 2000, 98SE		OS X 10.1 to 10.3, OS 9.0 to 9.2	
Computer		PC with one of the above OS preinstalled and equipped with an OHCI-compliant IEEE1394 port or USB port as a standard feature. Upgraded machines not supported.*1		Macintosh computer with one of the above OS installed and equipped with a Fire Wire (IEEE1394) port or USB port as a standard feature.*2	
CPU		Windows XP	300 MHz Pentium or better	Power PC	
		Windows Me, 2000, 98SE	150 MHz Pentium or better		
RAM		Windows XP	256 MB or better	OS X 10.1 to 10.3	256MB or better
		Windows Me, 2000, 98SE	128 MB or better	OS 9.0 to 9.2	128MB or better
Interface		IEEE1394 (FireWire) or USB 1.1 to 2.0 Hi-Speed			
Available hard disk space (MB/or more)		EOS Viewer Utility	100	EOS Viewer Utility	100
		EOS Capture	300	EOS Capture	300
		PhotoStitch	40	PhotoStitch	30
		WIA Driver	25		
		TWAIN Driver	25		
Display	Resolution	1024 × 768 pixels or more		1024 × 768 or more	
	Screen colors	Medium (16 bit) or more		Thousands or more	
Remarks		A CD-ROM drive is required for installation.			

*1 Only the EOS 20D is compatible with USB 2.0 Hi-Speed.

*2 Mac OS 9 does not support the USB 2.0 interface used by the EOS 20D. Consequently, EOS Viewer Utility for Mac OS 9 cannot communicate with the camera and so cannot be used for downloading images or specifying camera settings. For the same reason, there is no version of EOS Capture for Mac OS 9.

1.7 Supported Languages

This software supports 7 languages: Japanese, English, French, German, Italian, Spanish and Chinese (simplified).
The Solution Disk (CD-ROM) is available in 3 versions according to region. Table 005 shows the supported languages.

Table 005 Region-specific versions of Solution Disk

Solution Disk region-specific version	English	Japanese	Chinese	French	Spanish	German	Italian
For Japan/China	Yes	Yes	Yes	No	No	No	No
For North/South America and Europe	Yes	No	No	Yes	Yes	No	No
For Europe	Yes	No	No	No	No	Yes	Yes

2. DIGITAL PHOTO PROFESSIONAL

2.1 Overview

GENZO is software dedicated for EOS DIGITAL images that has high-speed processing/editing functions,which meet the needs of professional and high-end amateur users who mainly shoot RAW images.

The current release (version 1.1) adds support for RAW images shot on a EOS 20D, EOS 10D or EOS KissDigital/DIGITAL REBEL/300D DIGITAL. Details of the new functions added are discussed in section 2.

GENZO version 1.1 is bundled with the EOS 20D as a hybrid Windows/Macintosh CD-ROM and will also beavailable as a download to users of EOS Kiss Digital/DIGITAL REBEL/300D DIGITAL, EOS 10D andEOS-1D series cameras.

2.2 Main Added Functions

1) Printer profile setting function

Printer profile setting has been added to thepreferences setting used in printing (Fig. 006).

Either "Perceptual" or "Colorimetric" can be selected as the color matching mode.

• The profile specified in this function is not applied when Easy-Photo Print is used for printing.

Fig. 006 Printer profile setting

2) Resize setting function when images are saved

Resize setting (Fig. 007) has been added as a function that can be used when images are saved (including in batch saves). The available image size settings are "Width", "Height", "Unit" and "Lock aspect ratio".

• The larger of the "Width" and "Height" parameters specified in this function is applied to the longer edge of the image. In this way, even when images with portrait and landscape orientations are mixed, images can be resized without disrupting the respective image orientations.

3) PDF Manual Linking Function

To make the PDF manual more accessible, a "Help" option has been added to the Help menu.

When selected, this option launches Acrobat and opens the PDF manual.

Fig. 007 Resize setting

8

4) Addition of ICC Profiles to JPEG Images

In version 1.0, ICC profiles could not be added to JPEG images. In version 1.1, ICC profiles can be added when JPEG images are saved, in the same way as for TIFF images.

2.3 Supported Image Formats

RAW images from the EOS 20D, EOS 10D and EOS Kiss Digital/DIGITAL REBEL/300D DIGITAL have been added to the supported image formats in version 1.1, as shown in Table 001.

Table 006 Supported image formats

Image format/Model		File Extension
RAW images	EOS-1D Mark II, EOS 20D	.CR2
	EOS-1Ds, EOS-1D	.TIF
	EOS 10D, EOS Kiss Digital/REBEL/300D	.CRW
Exif 2.2 or 2.21-compatible JPEG* or JFIF images		.JPG, .JPEG
Exif-compatible TIFF images*		.TIF, .TIFF

* Includes images converted and saved from RAW images in GENZO.

2.4 System Requirements

As shown in Table 007, the system requirements for version 1.1 are unchanged from version 1.0.

Table 007 System Requirements

OS		Windows XP, 2000	Mac OS 10.2 to 10.3
Computer		PC with one of the above operating systems preinstalled.	Macintosh with one of the above operating systems preinstalled.
CPU		750 MHz Pentium III or better (2 GHz Pentium 4 or better recommended)	400 MHz G3 Power PC or better (1 GHz G4 Power PC or better recommended)
RAM		256 MB or better (1 GB or more recommended)	
Hard disk space		At installation: 20 MB or more	
		During operation: 256 MB or more	
Display	Resolution	1024 x 768 pixels or better	
	Screen colors	Medium (16 bit) or more	Thousands or more
Remarks		A CD-ROM drive is required for installation	

* Windows Me, Windows 98SE and Mac OS 9 are not supported.

2.5 Supported Languages

Version 1.1 supports 7 languages (Japanese, English, French, German, Italian, Spanish and Chinese*) all of which are supplied on 1 CD-ROM. As in version 1.0, the CD-ROM also includes an electronic manual as a PDF file (7 languages).

∗ Simplified Chinese

Appendix
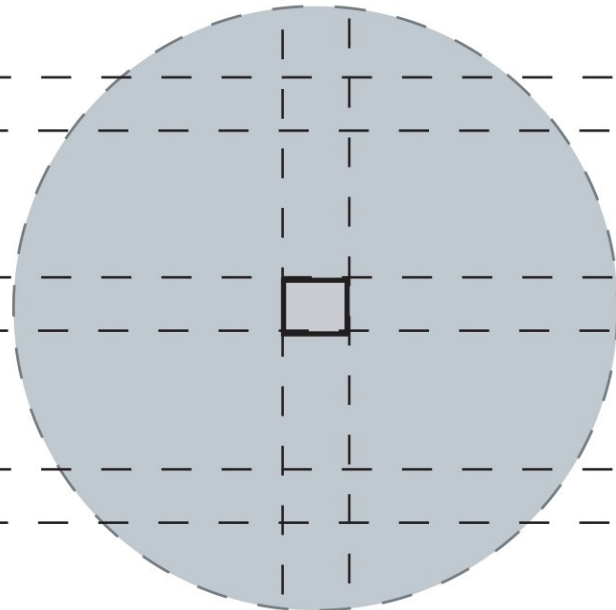
ORDER NO.   CY9-7119-006   INST.NO.

NAME   (E)   English Name   CHART, AF STANDARD, 9-POINT
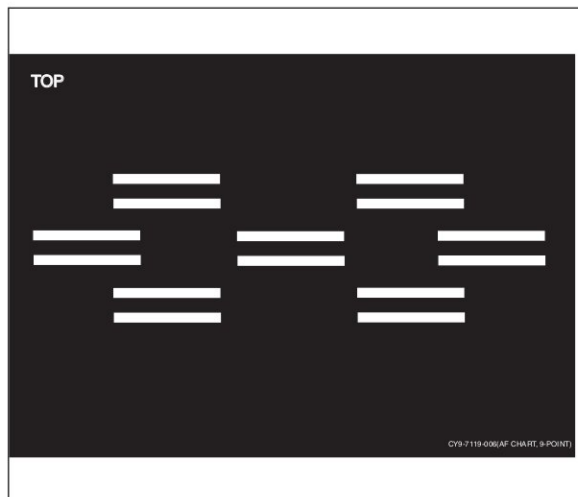
● Weight

    Approx. 1.1 kg

● Size (W x H x D)

    861mm x 614mm x 8mm
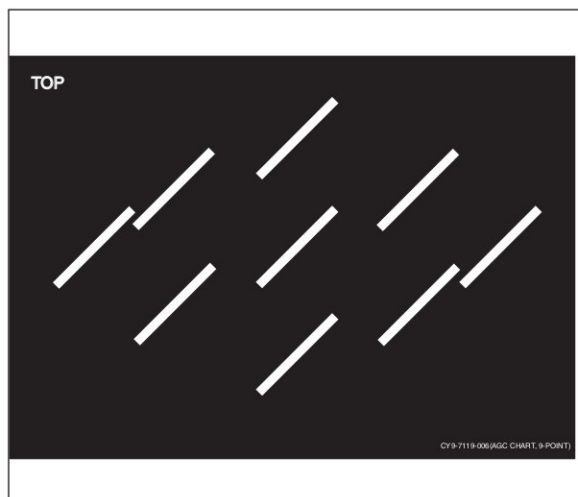
● Subject Products

    EOS D-SLR cameras with 9-point AF sensor.

● Purpose

    The chart (for distance of 2.5m) can be set on the AF Chart Stand

    (CY9-7123-000) and used for AGC adjustment.

    There is no change in the adjustment procedure.

Model:	Ref No.:
CAMERA SERVICE TOOLS	STR-320

Date:

September, 2004

Approved by:

K.Nishimura

Revised:

Location:

Service Tools

Subject:

AF Standard Chart, AG Chart, New Tool Setting

1. Details of Change

Order No.	Name	Purpose
CY9-7119-006	AGC Chart (9-point AF)	Set on the AF Chart Stand (CY9-7123-000) to perform AF and AGC adjustments at distance of 2.5m.

2. Subject Product

   EOS D-SLR cameras with 9-point AF sensor.

3. How to Use

   Same as the existing AF chart such as CY9-7119-004. Set on the AF Chart Stand (CY9-7123-000) and perform AGC adjustment at distance of 2.5m. The procedure is same as before.

▶ ◢ L	RAW+ ◢ L
◢ L	RAW+ ◢ L
◢ M	RAW+ ◢ M
◢ M	RAW+ ◢ M
◢ S	RAW+ ◢ S
◢ S	RAW+ ◢ S
	RAW
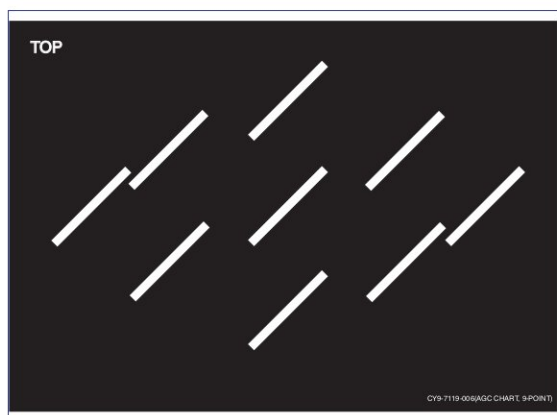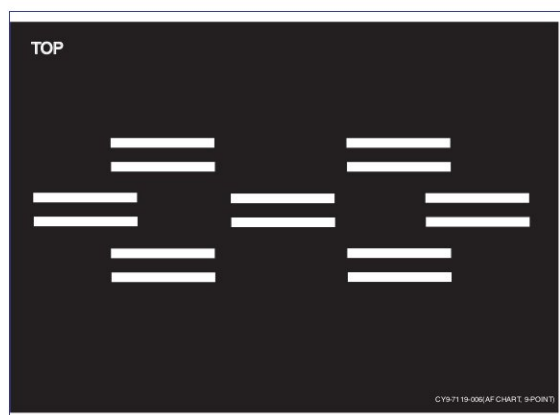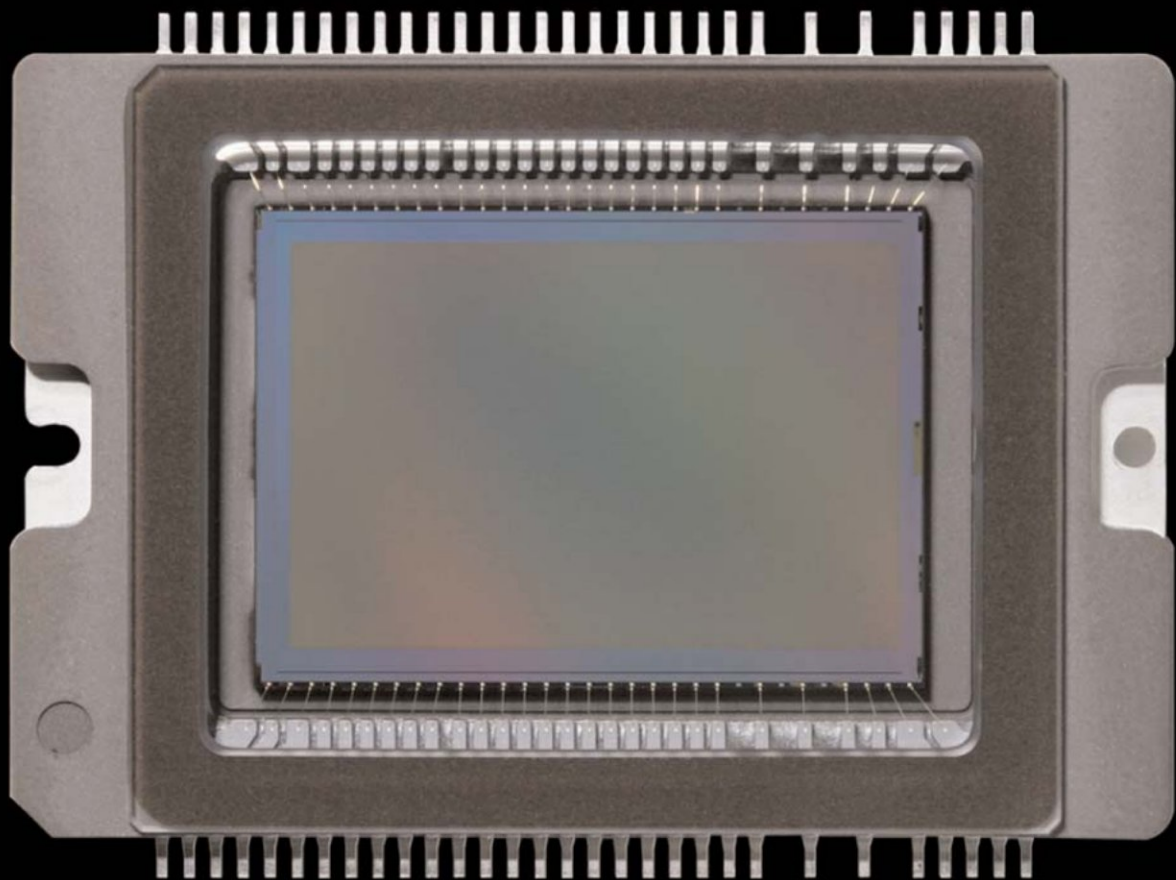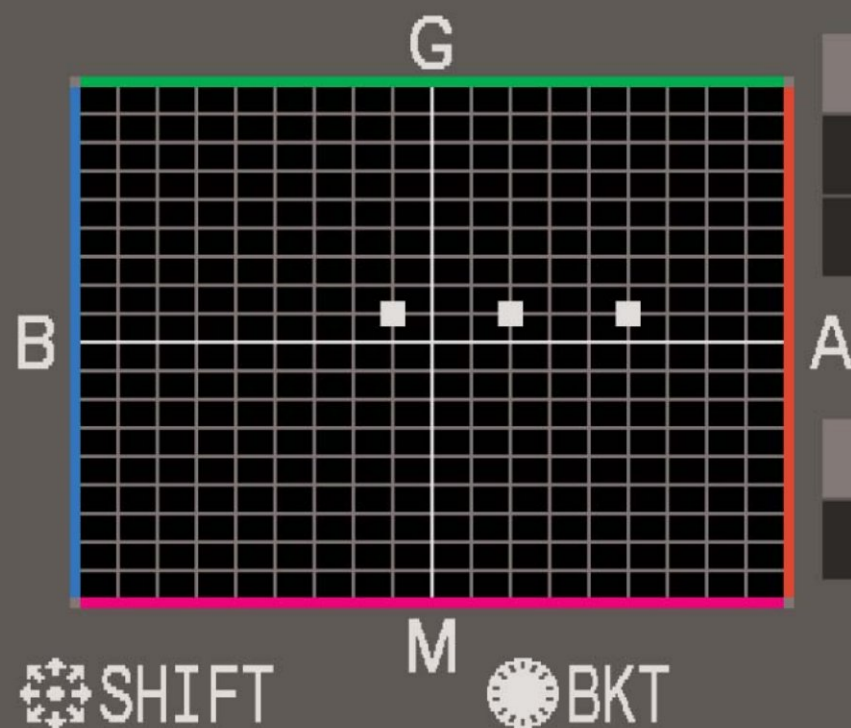
← Back

Parameters ►Parameter 1 ⬍

Contrast	⊟—+—0—▼—⊞
Sharpness	⊟—+—0—▼—⊞
Saturation	⊟—+—0—▼—⊞
Color tone	⊟—+—▼—0—+—⊞

MENU ↰
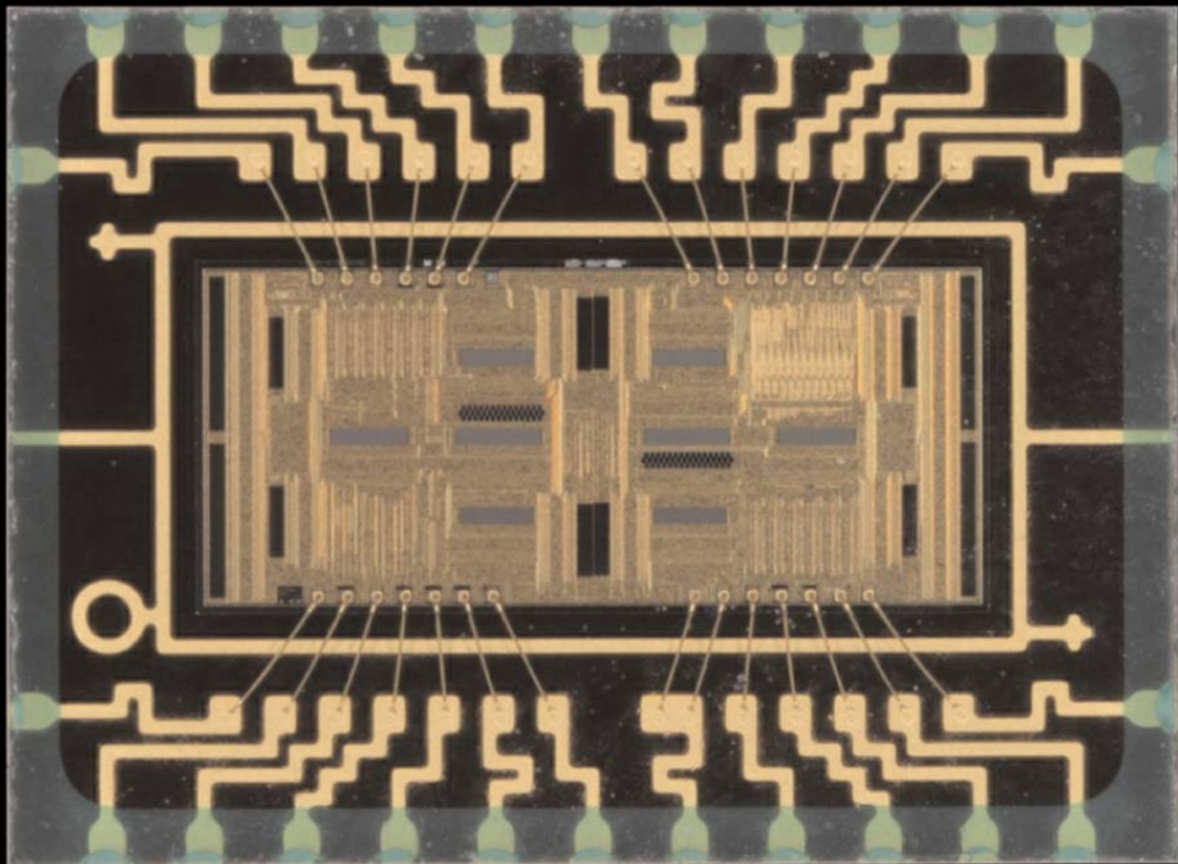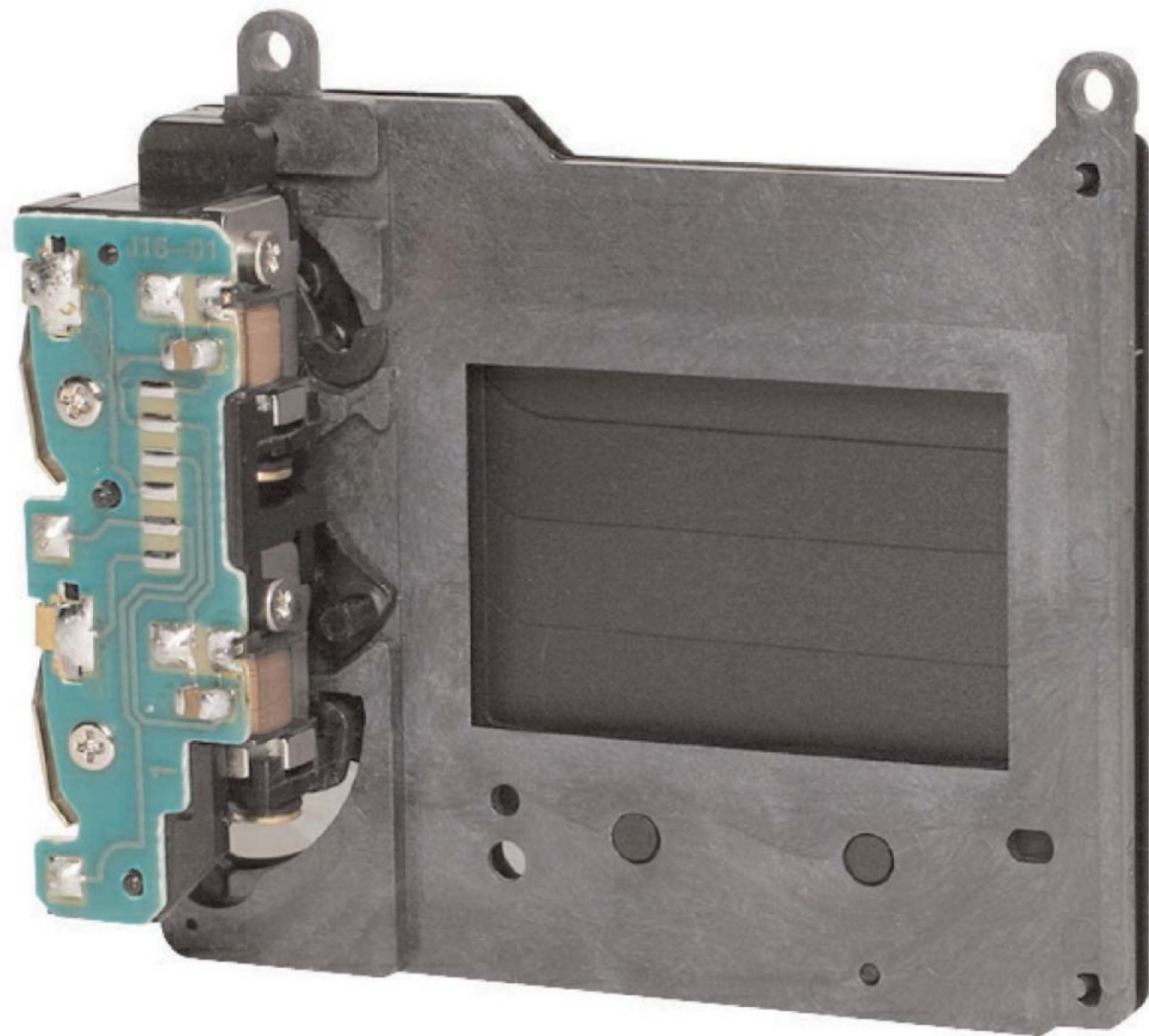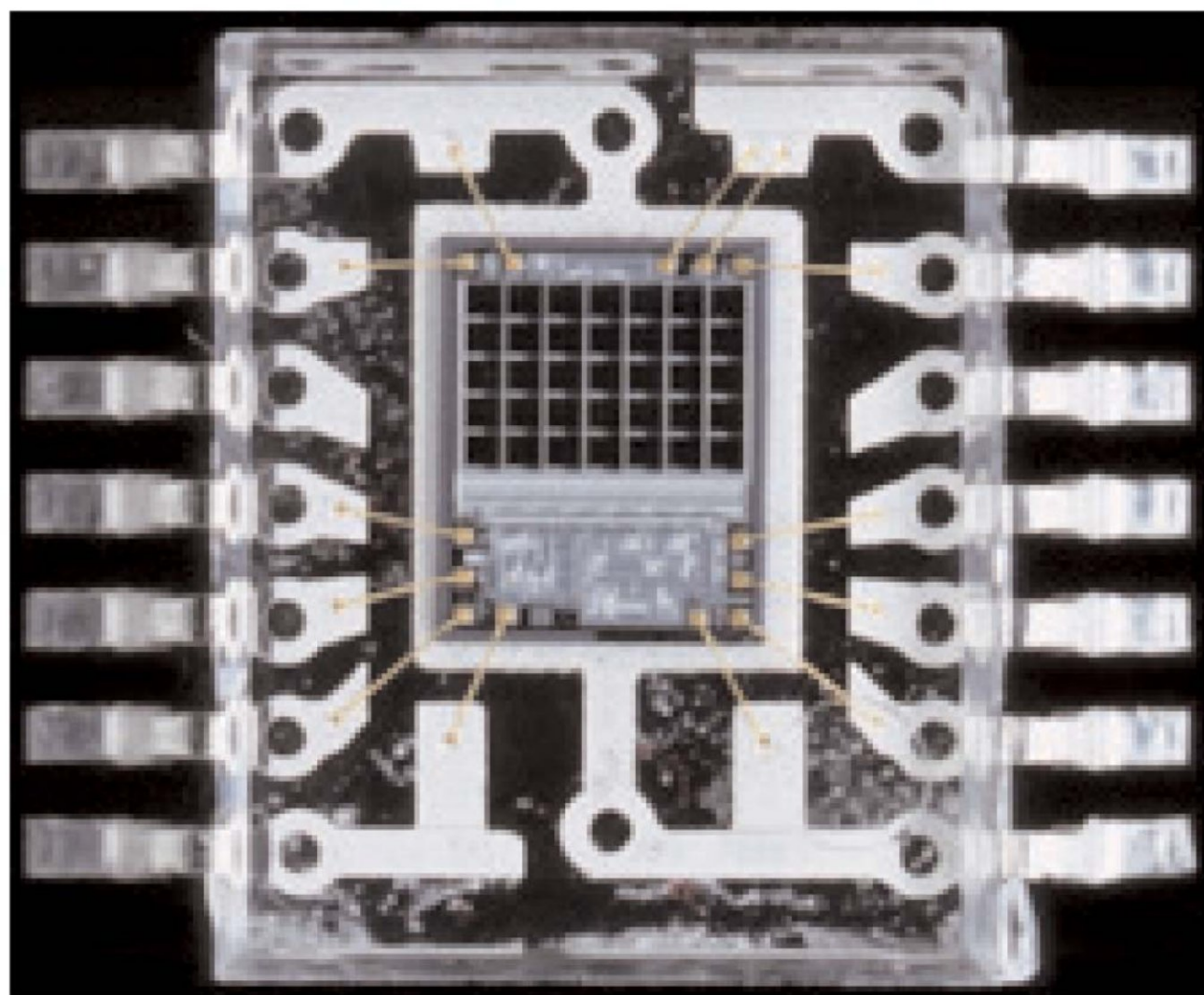
Quality	◗ L
Red-eye On/Off	Off
Beep	Off
Shoot w/o card	Off
AEB	‾2..1..0..1..2⁺
WB SHIFT/BKT	· · · ▾ · · ·
Custom WB	

JUMP ▶

← **Back**

Canon

15.0mm

22.5mm

Back

SDR SDRAM×4

DIGIC II

Front side

Back side

Back

📷

▶ ◢L   RAW + ◢L

◢L   RAW + ◢L

◢M   RAW + ◢M

◢M   RAW + ◢M

◢S   RAW + ◢S

◢S   RAW + ◢S

           RAW
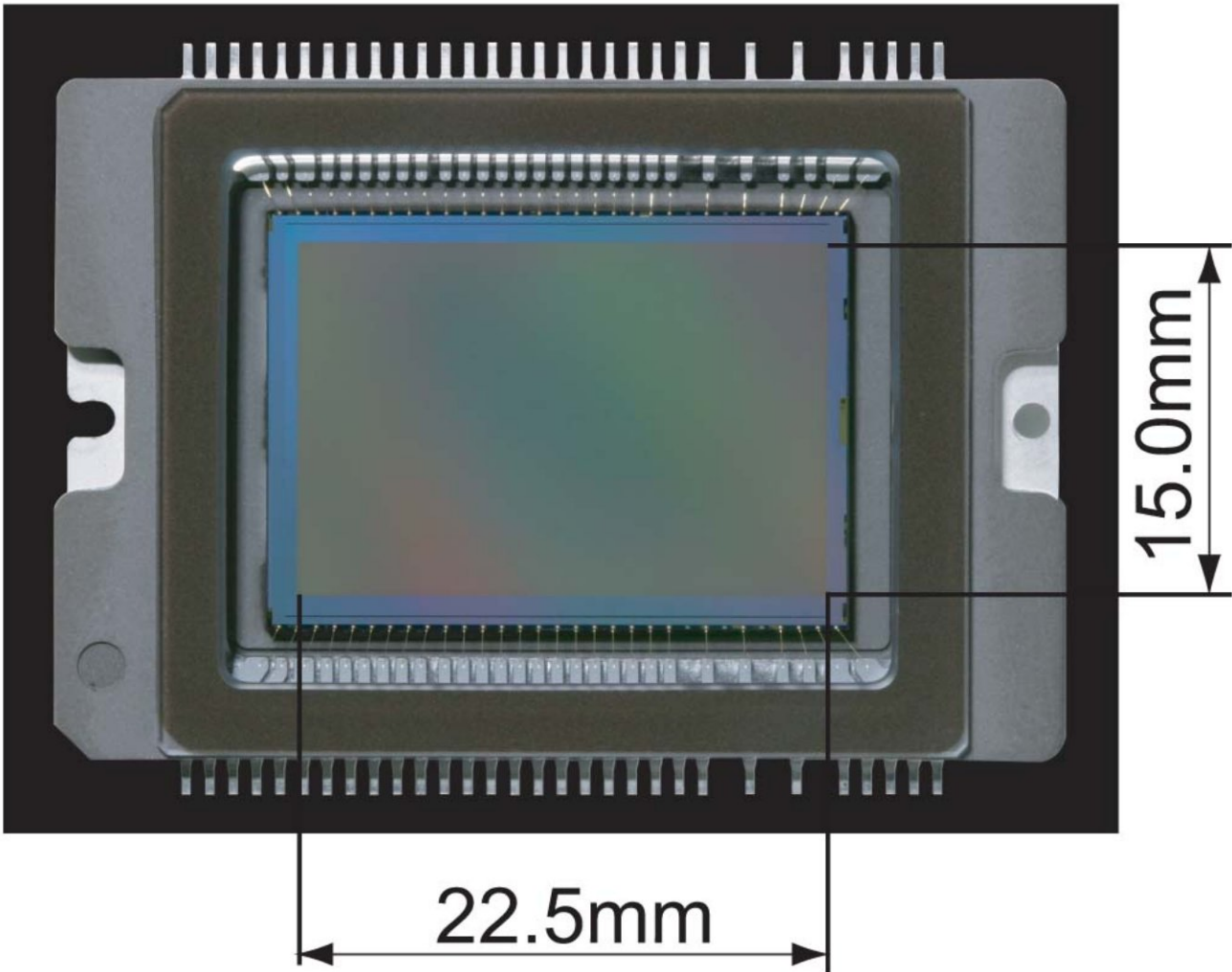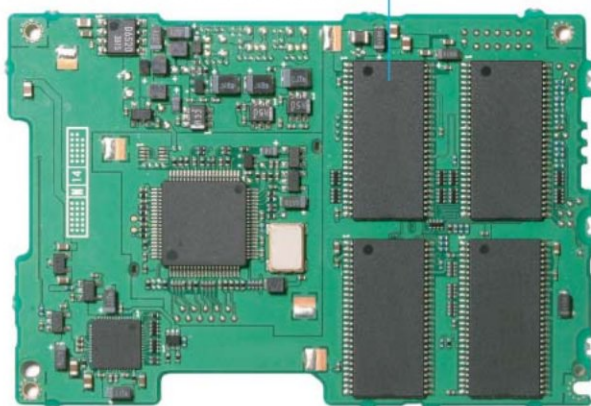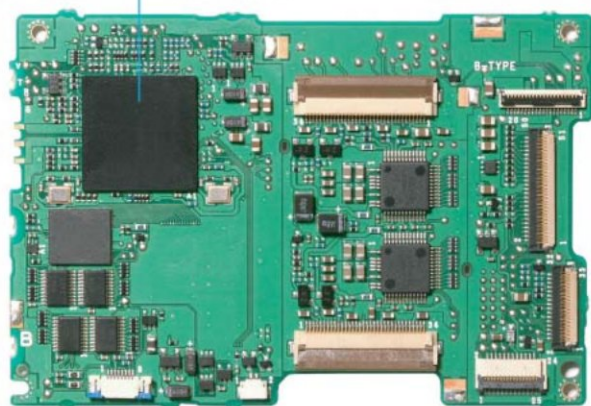
← Back

Parameters	►B/W	⬍
Contrast	▬━┼━о━┼━⊞	
Sharpness	▬━┼━о━┼━⊞	
Filter effect	N:None	
Toning effect	N:None	

MENU ↩

← Back

G

SHIFT
A2
G1

B

A

BKT
BA ±3

M

�֍ SHIFT   ◉ BKT
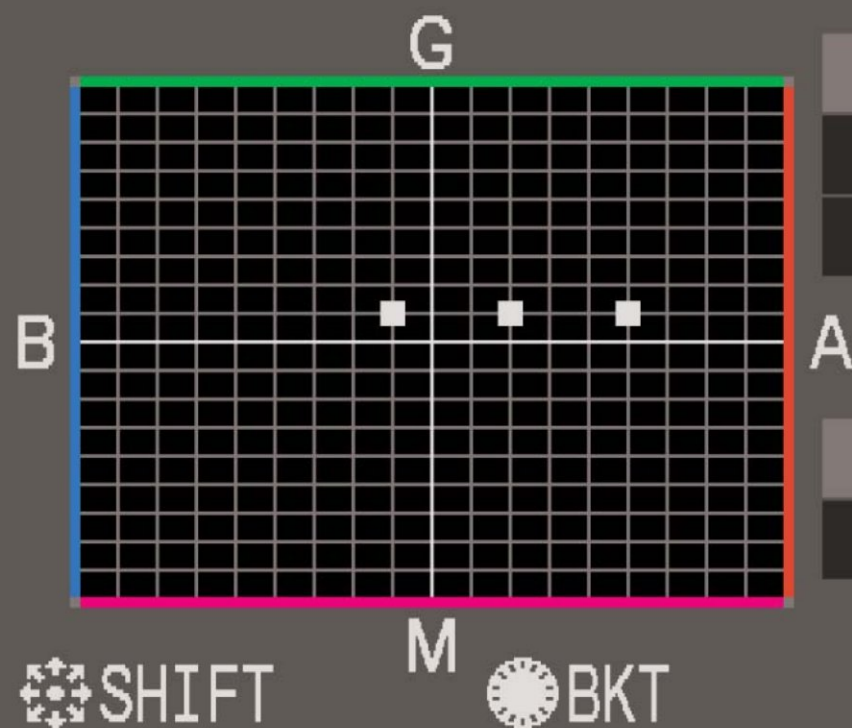
SET OK

← Back

EF-S lens
mount index

EF lens
mount index
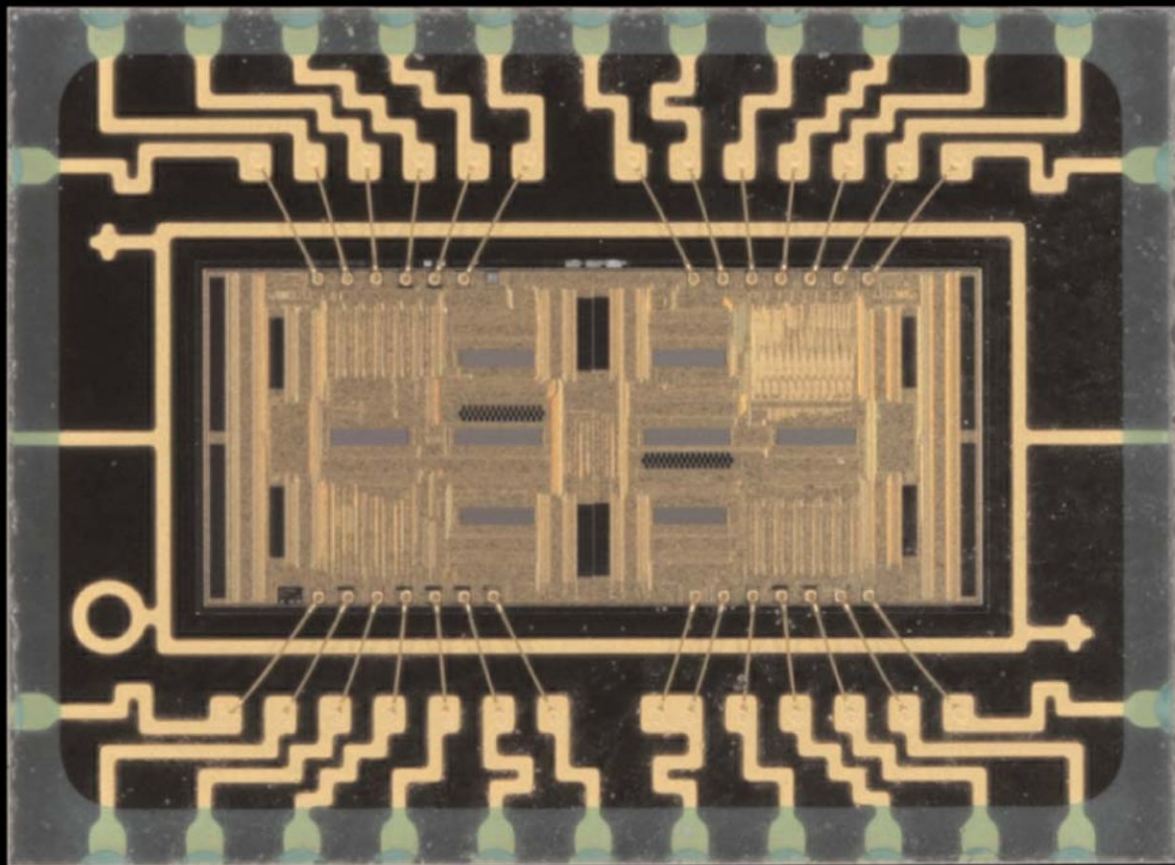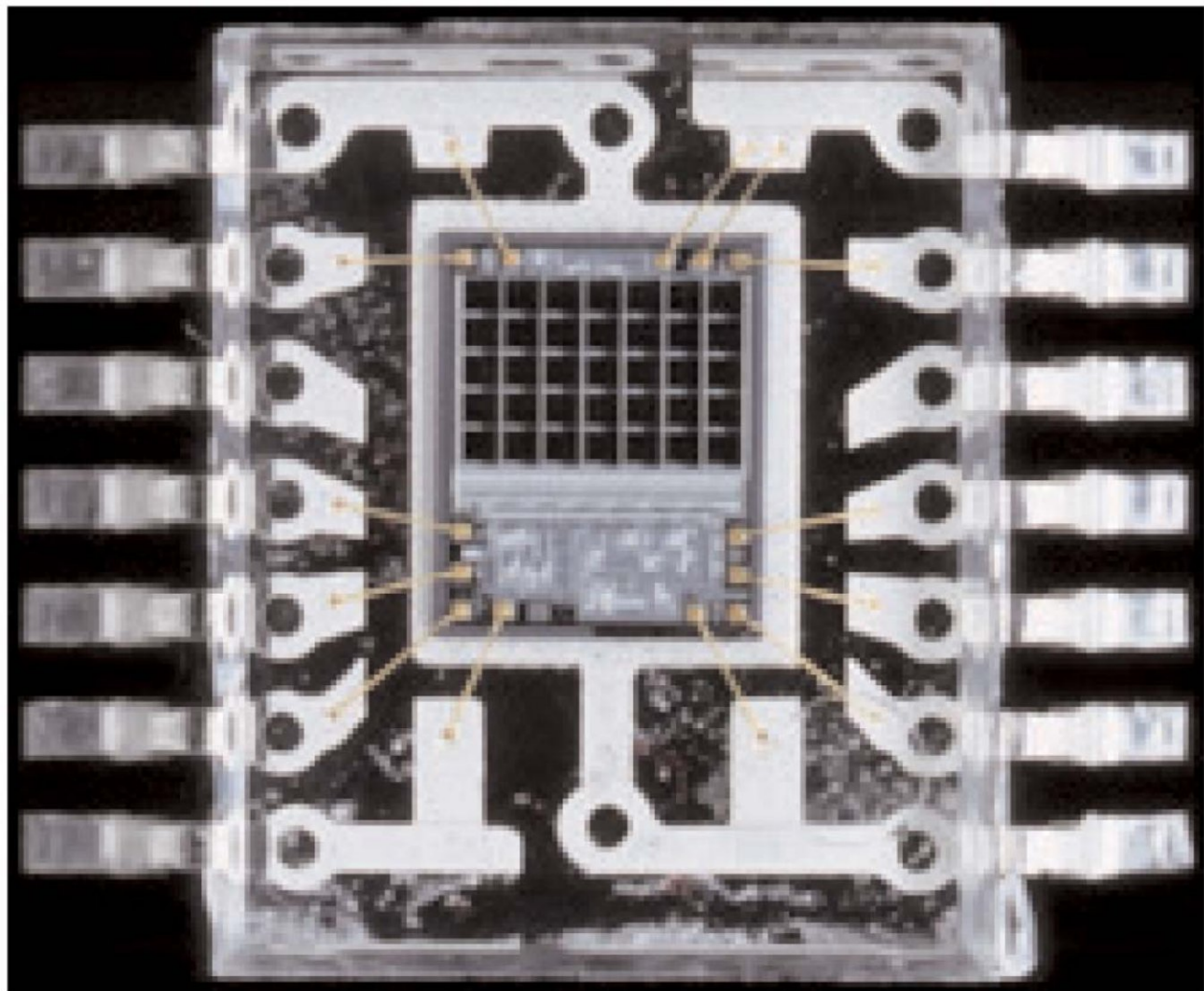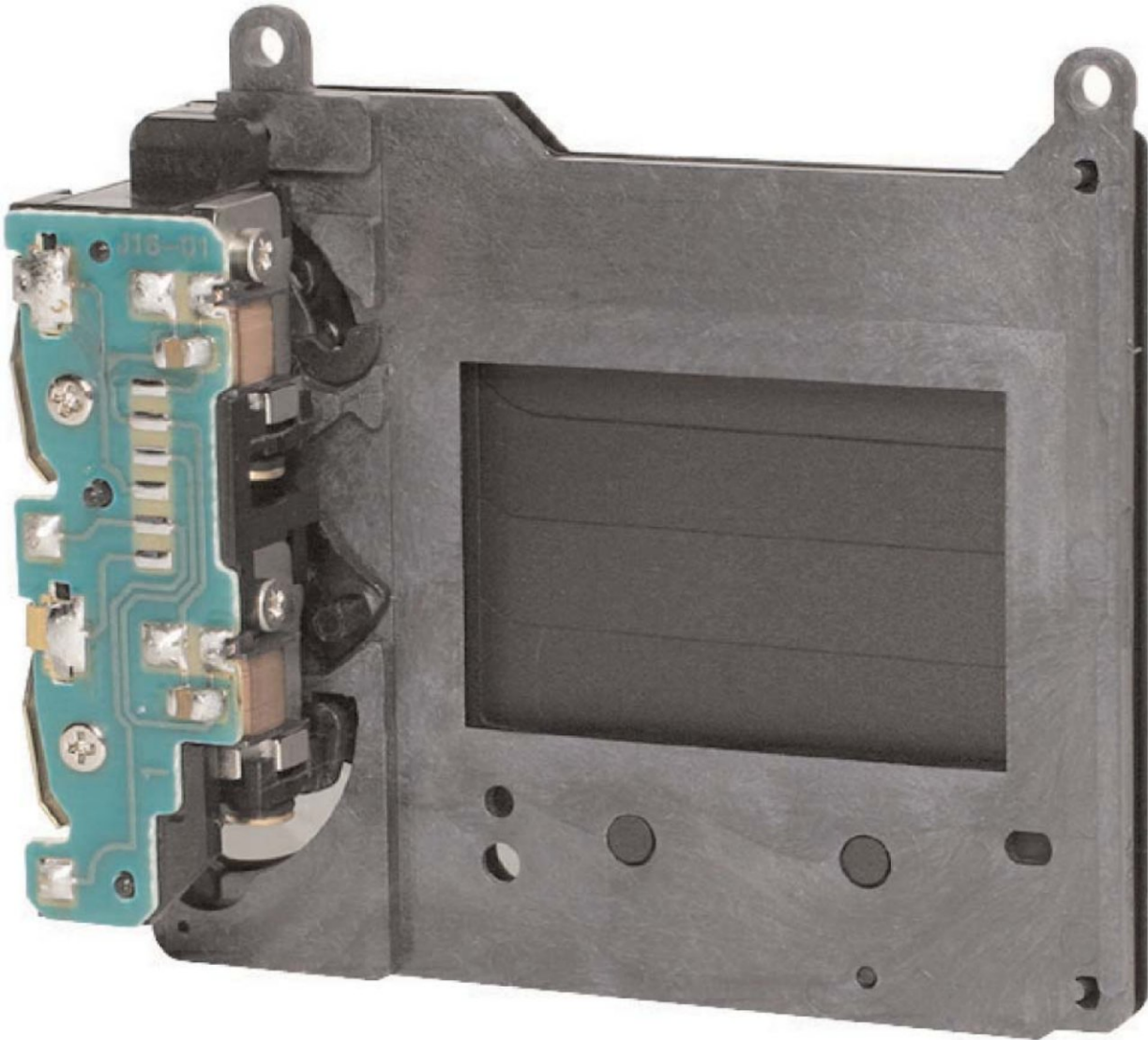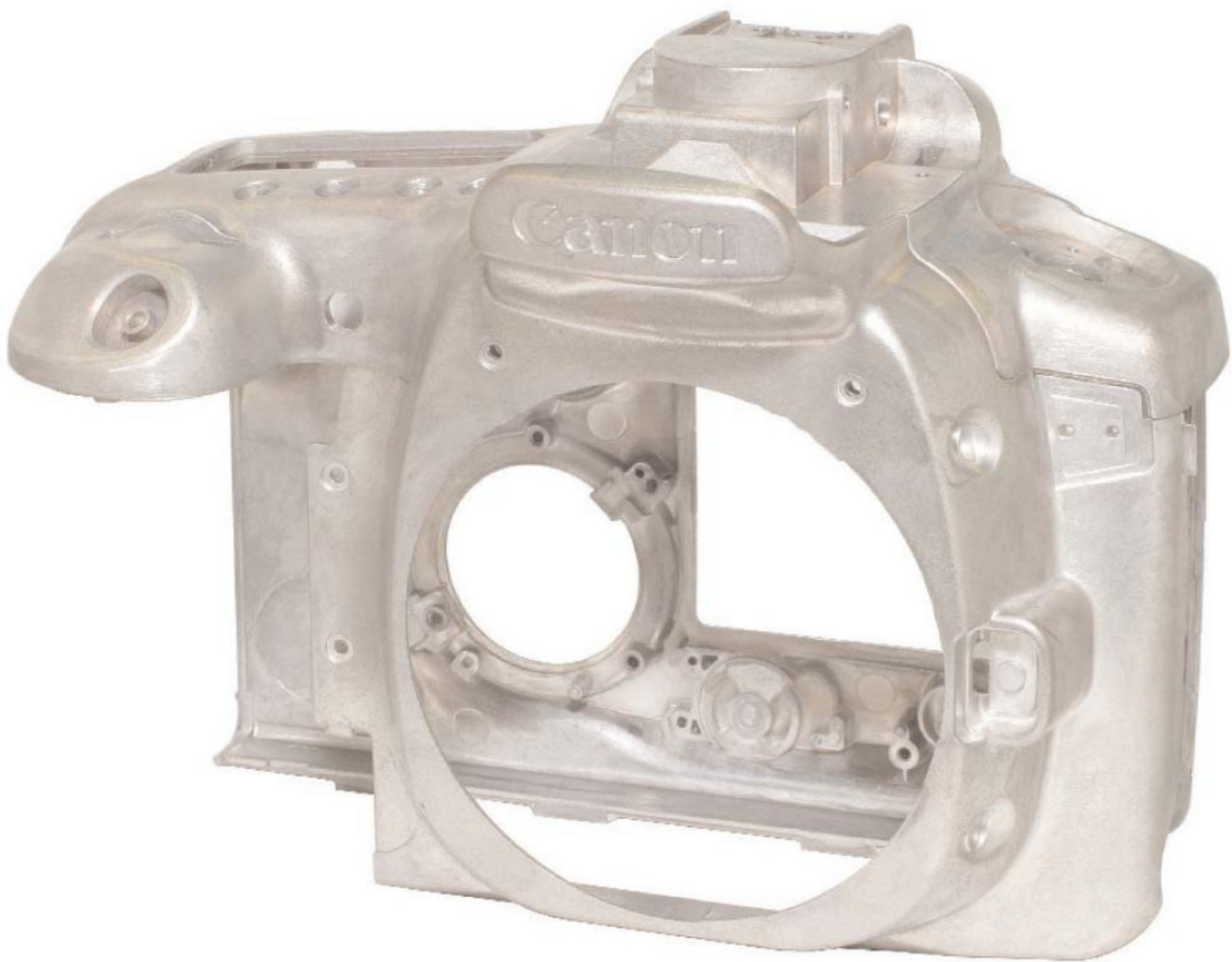
Flash circuit board
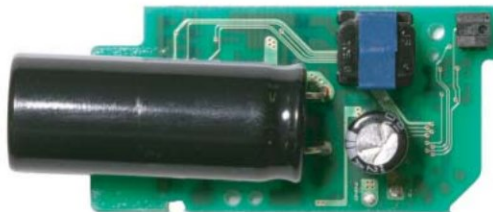
Power supply circuit board
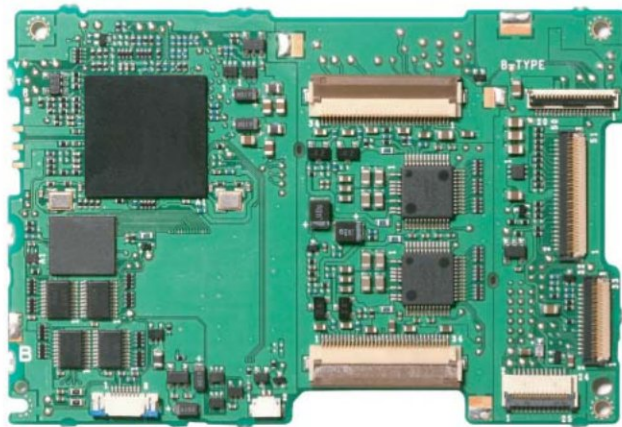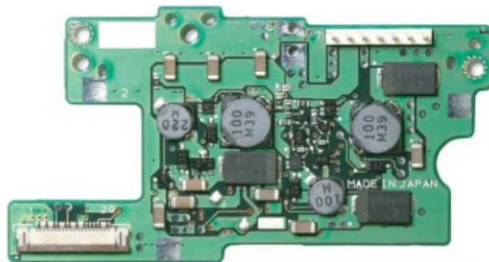
External interface connection circuit board

Digital control circuit board

Camera control circuit board
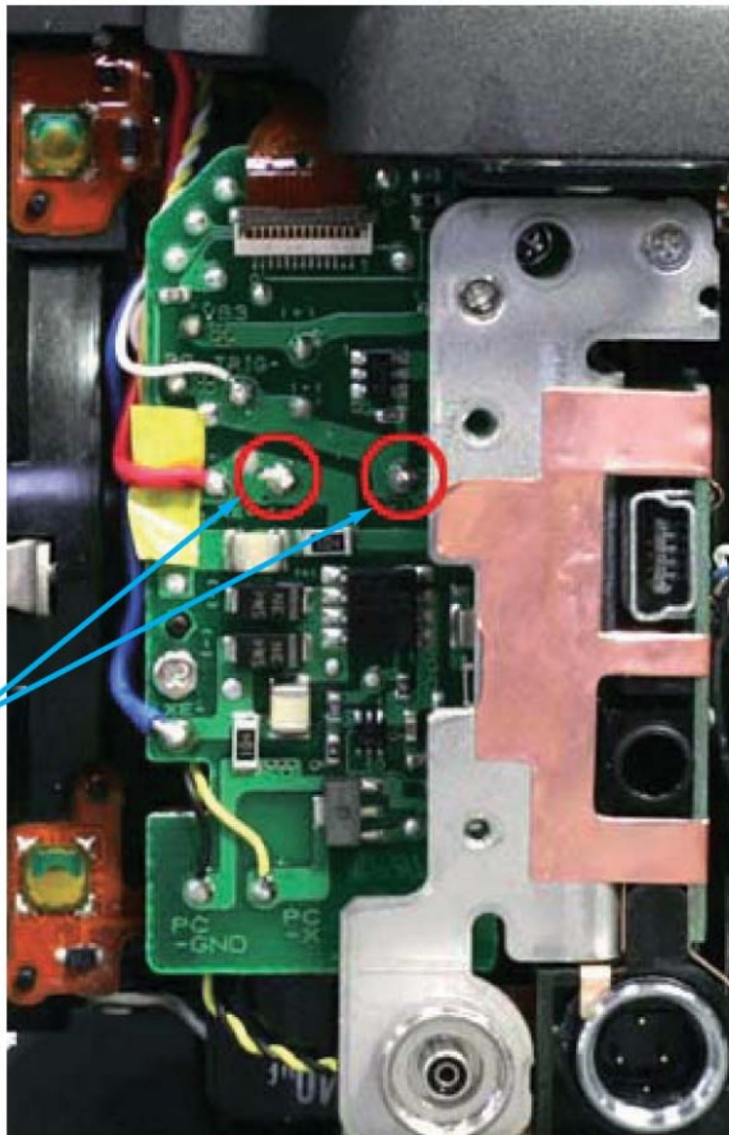
Discharge from the lands located on the PCB.

Remove solder on the lands.
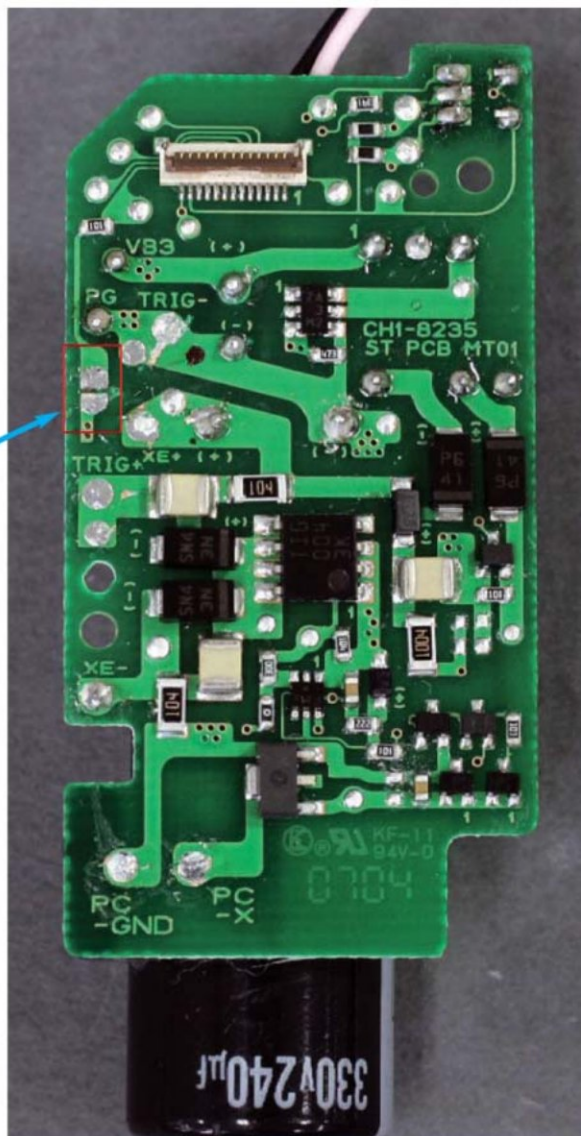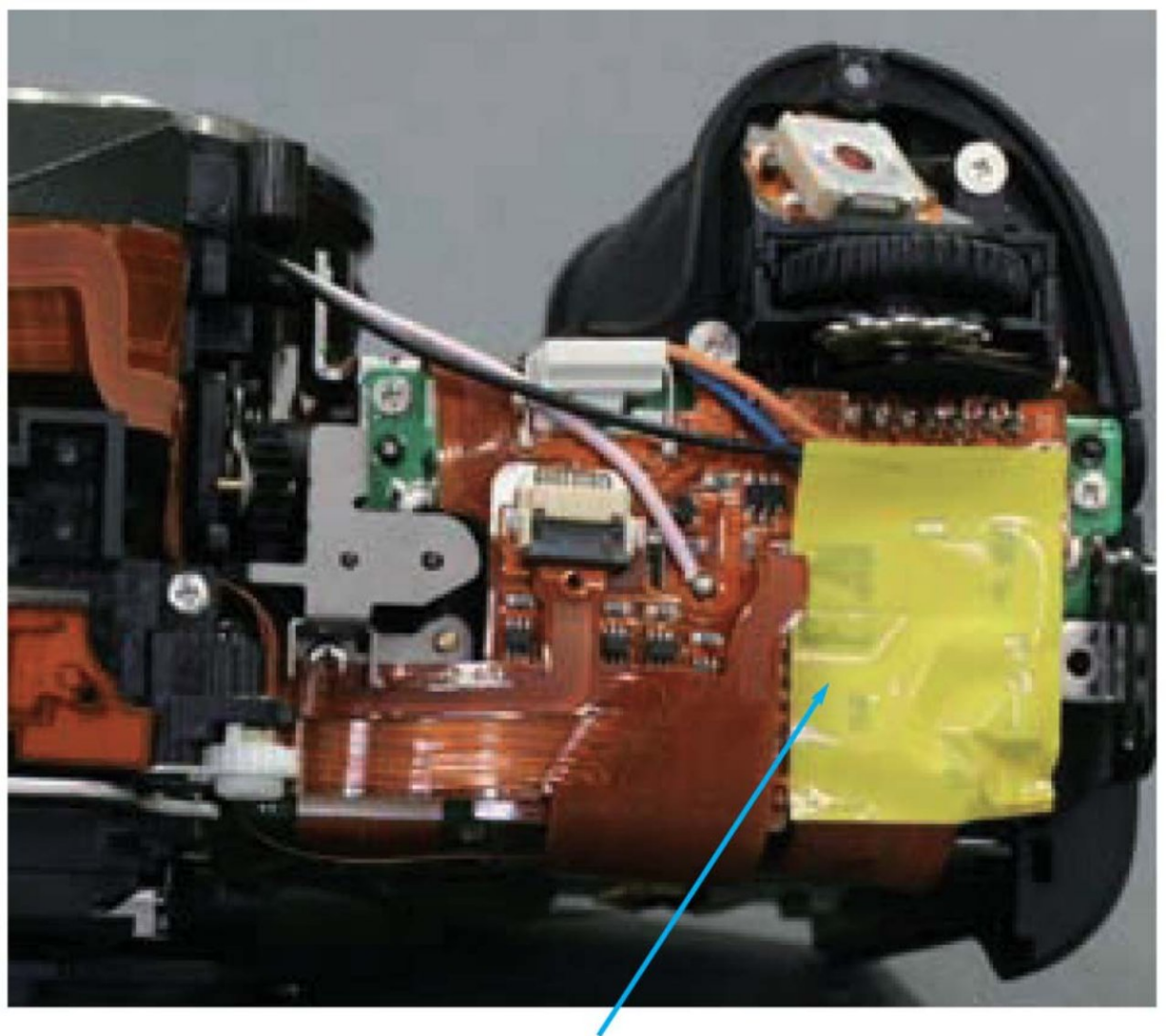
Prevents short-circuit between devices.

Prevents breaking of wires.

Conductive tape for noise prevention

ファイル(F)　編集(C)　ウィンドウ(W)　ヘルプ(H)

100 pixel ▼　200.0% ▼

IMG_1044.JPG

ゴミ個数 3

No	X	Y
1	790	649
2	2202	962
3	507	1051

☑ ガイドを表示する(G)

FAIL
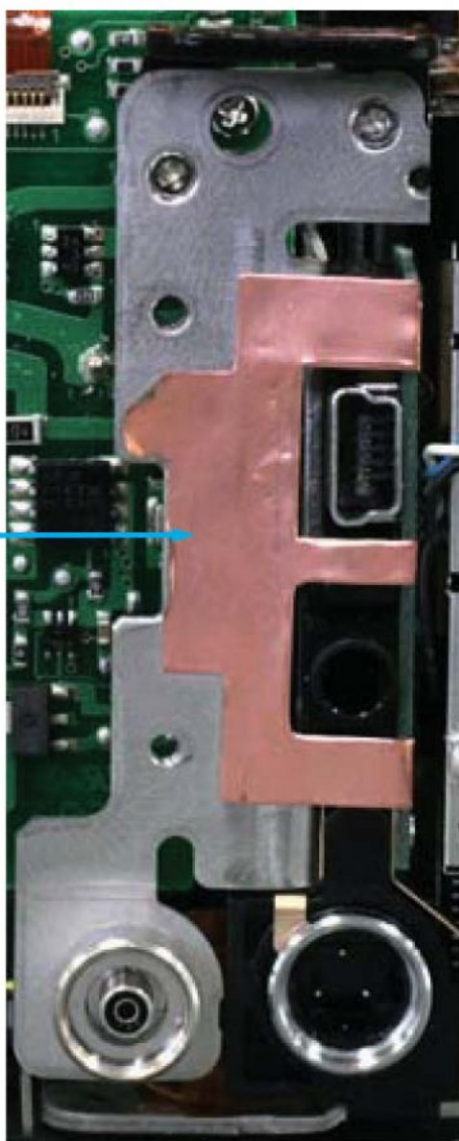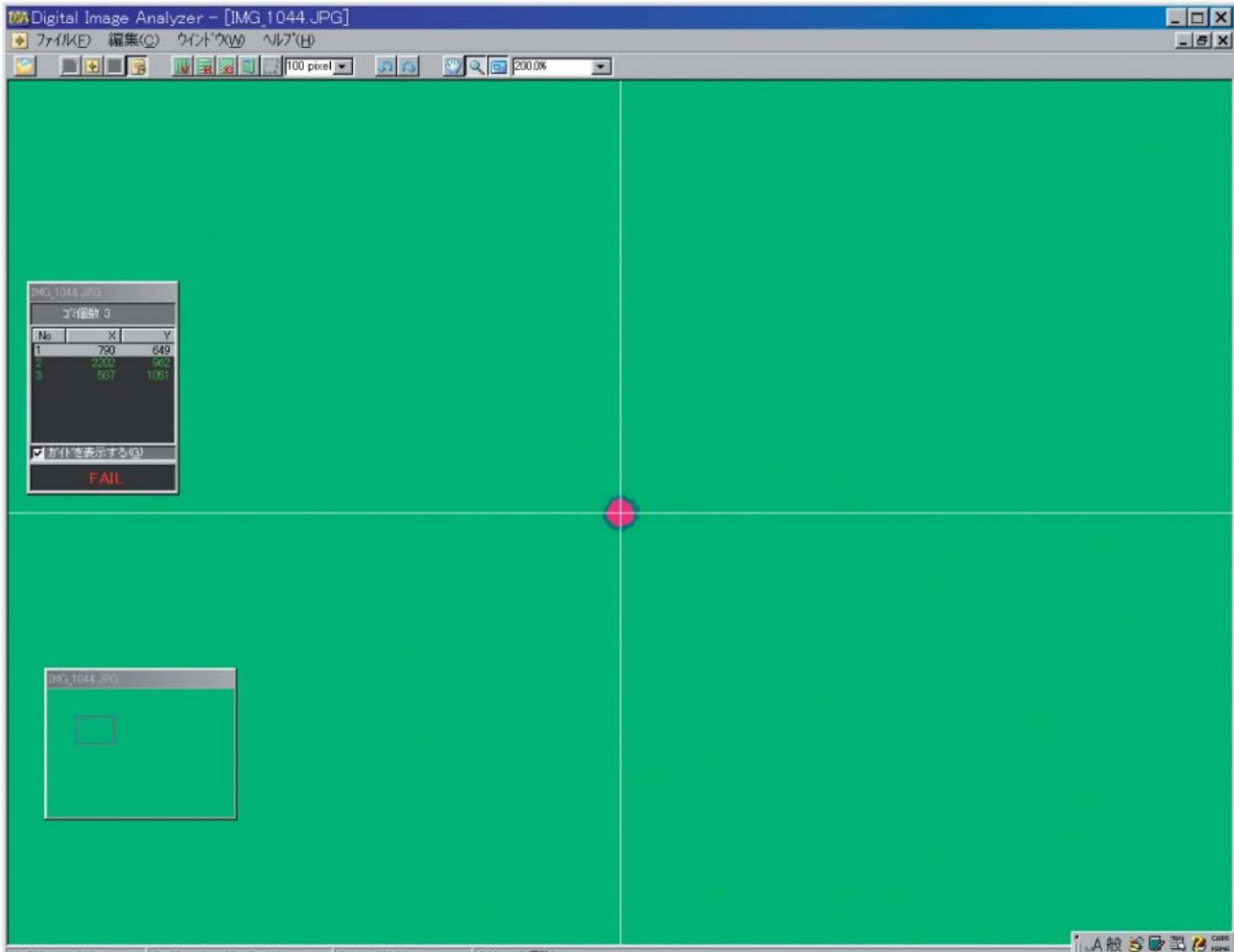
IMG_1044.JPG

←Back

IMG_1052.JPG

Dust Count 0

No	X	Y

☑ Display Guide(G)

PASS

← Back

IMG_1044.JPG

Dust Count: 3

No	X	Y
1	790	649
2	2202	962
3	507	1051

☑ Display Guide(G)

FAIL

← Back

Back cover tool flex is attached.

Remove

DIGITAL

VIDEO
OUT

Remove

MENU

INFO.

JUMP

Canon

ON
OFF

Back

Remove

Disconnect
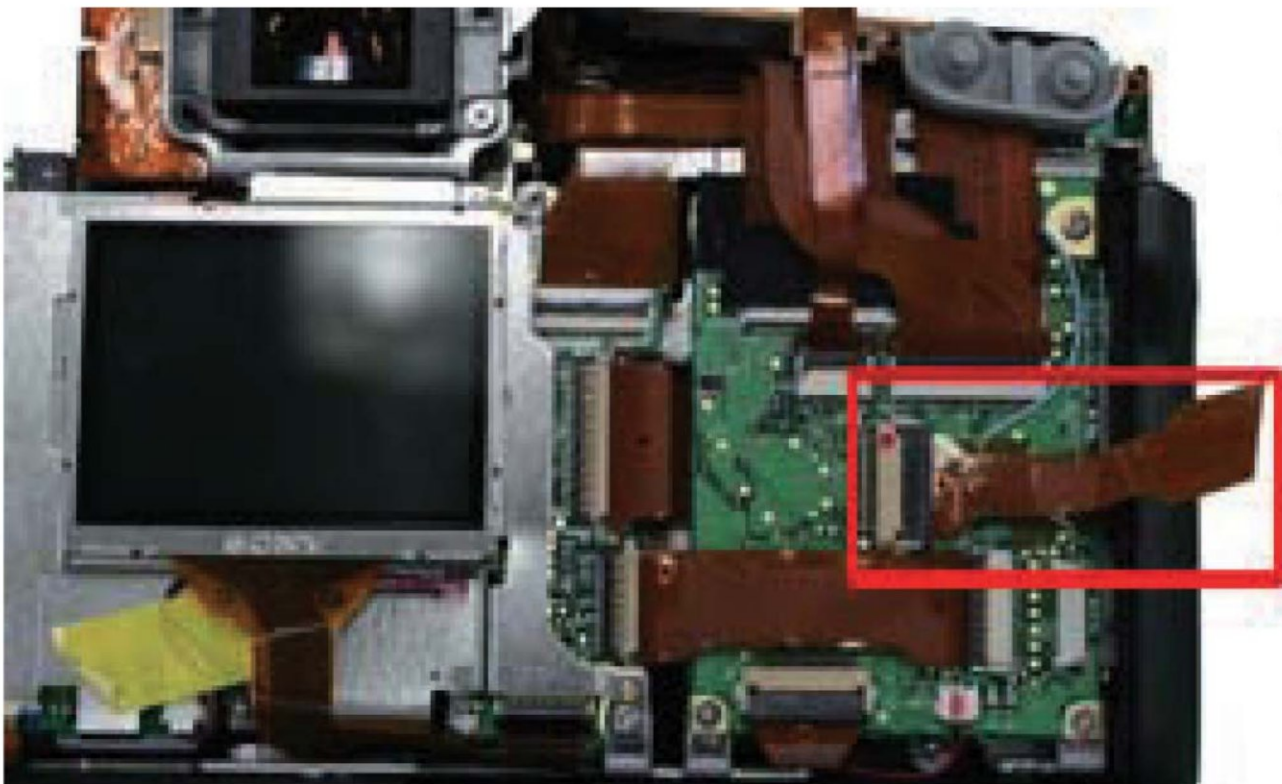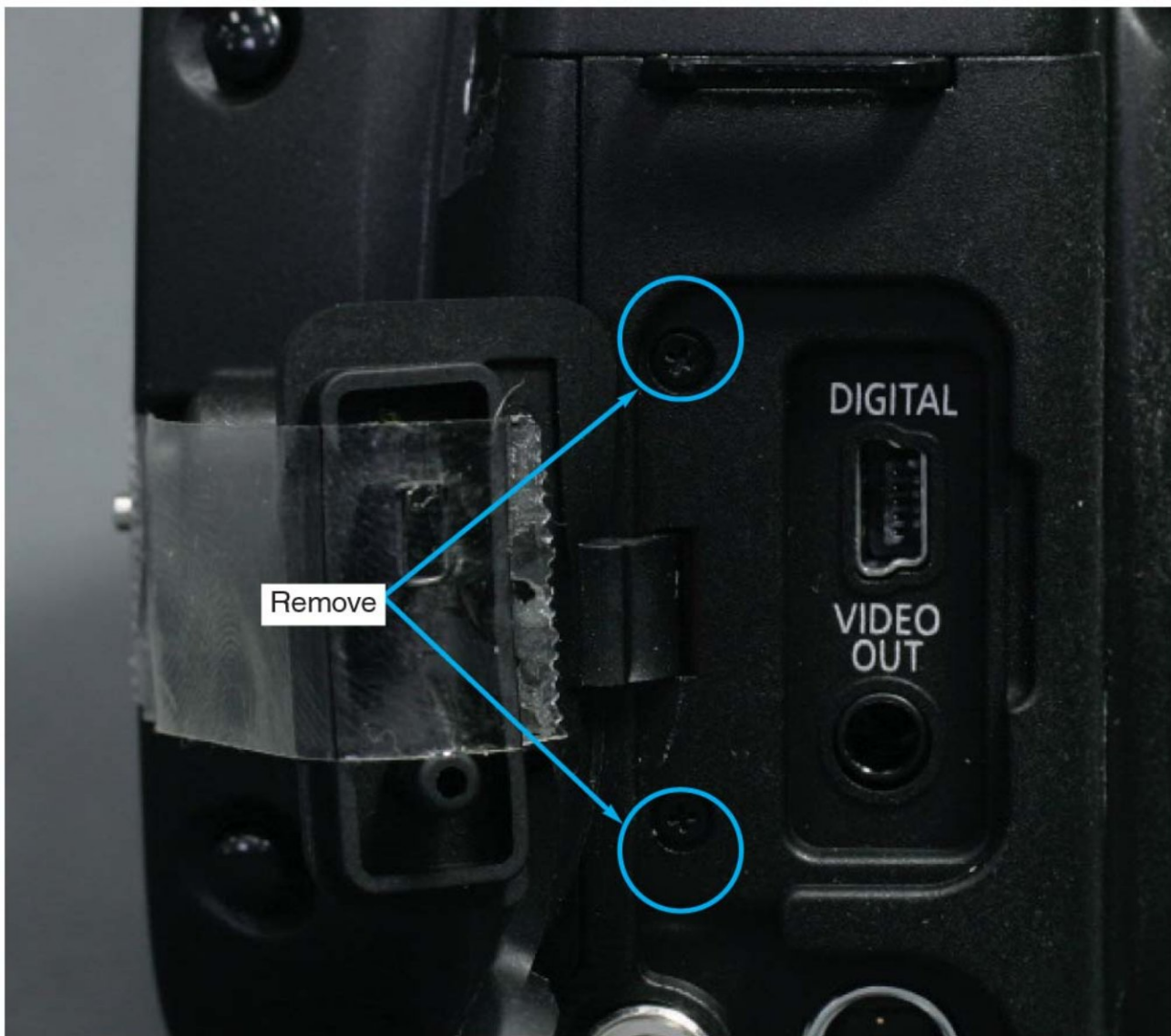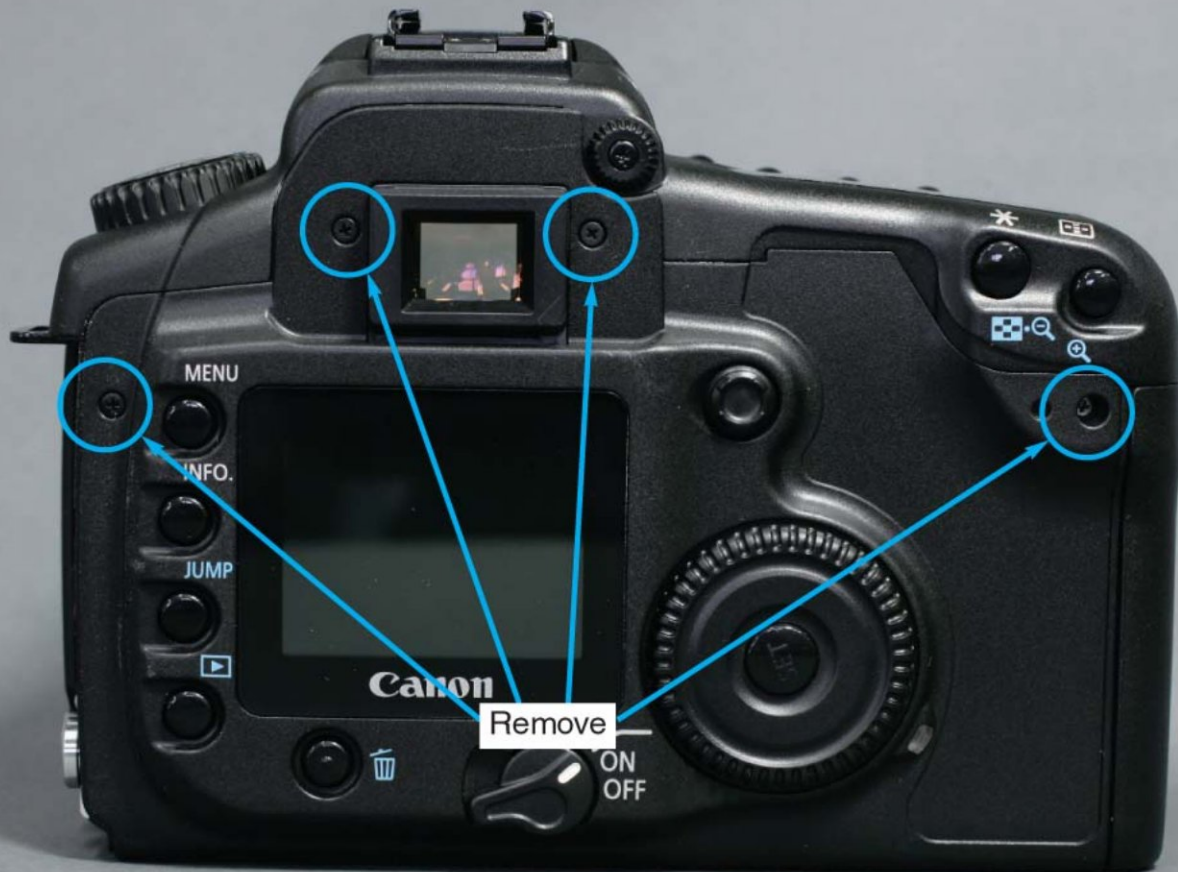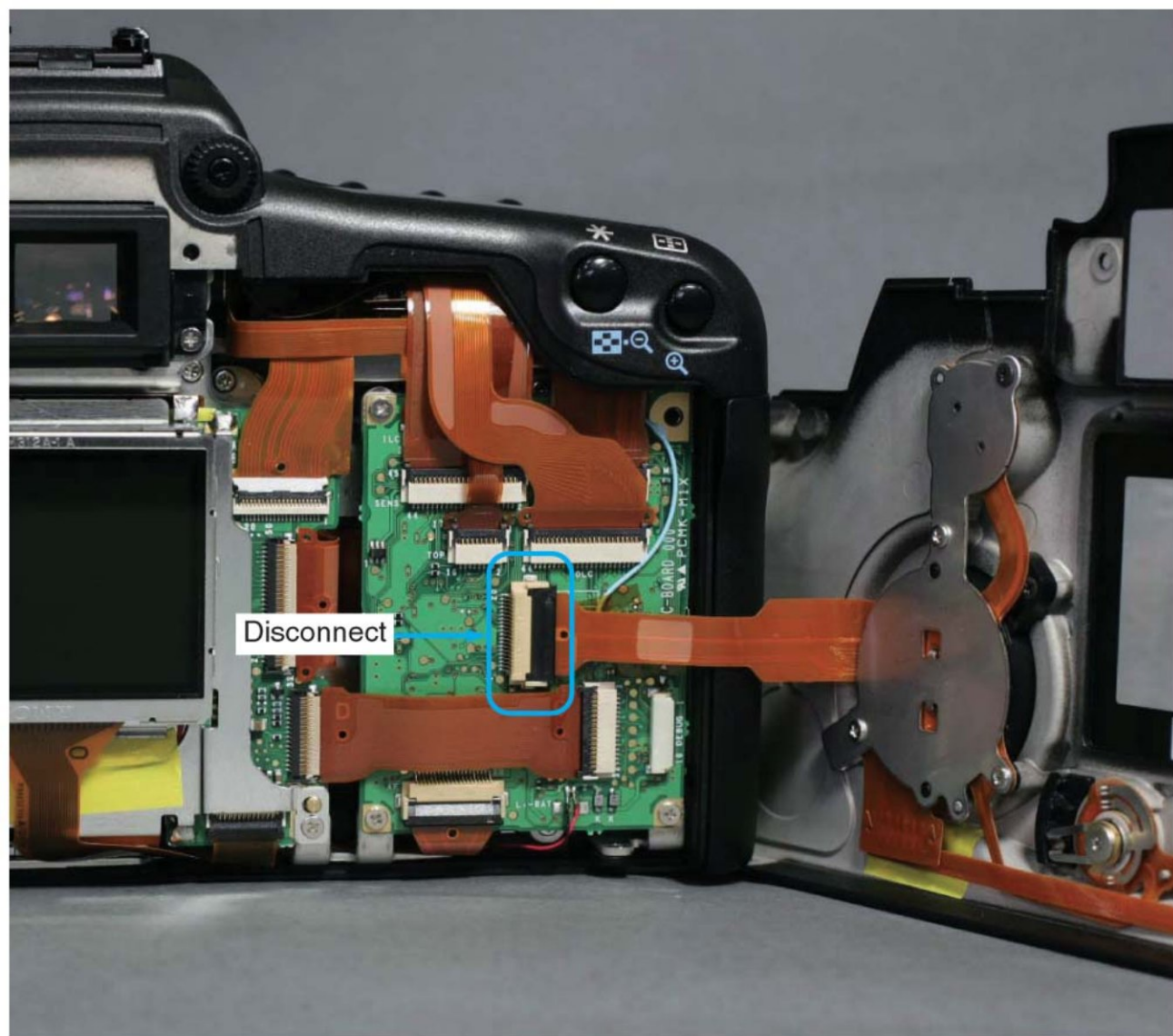
Back Rubber Tape Attachment

1) BACK RUBBER TAPE - Backing sheet removal
(1) Peel off the backing sheet shown inside the blue frame.

2) BACK RUBBER TAPE - Attachment
1) Apply the sticky side of the tape along the reference line.
2) Peel off the other backing sheet and apply the tape along the red frame carefully without slack.

Back Rubber Tape Attachment

1) BACK RUBBER - Attachment
1) Put the concavity part of the back rubber and convexity part of the body together based on the reference line.

2) Apply it without making any gaps or protrusions.
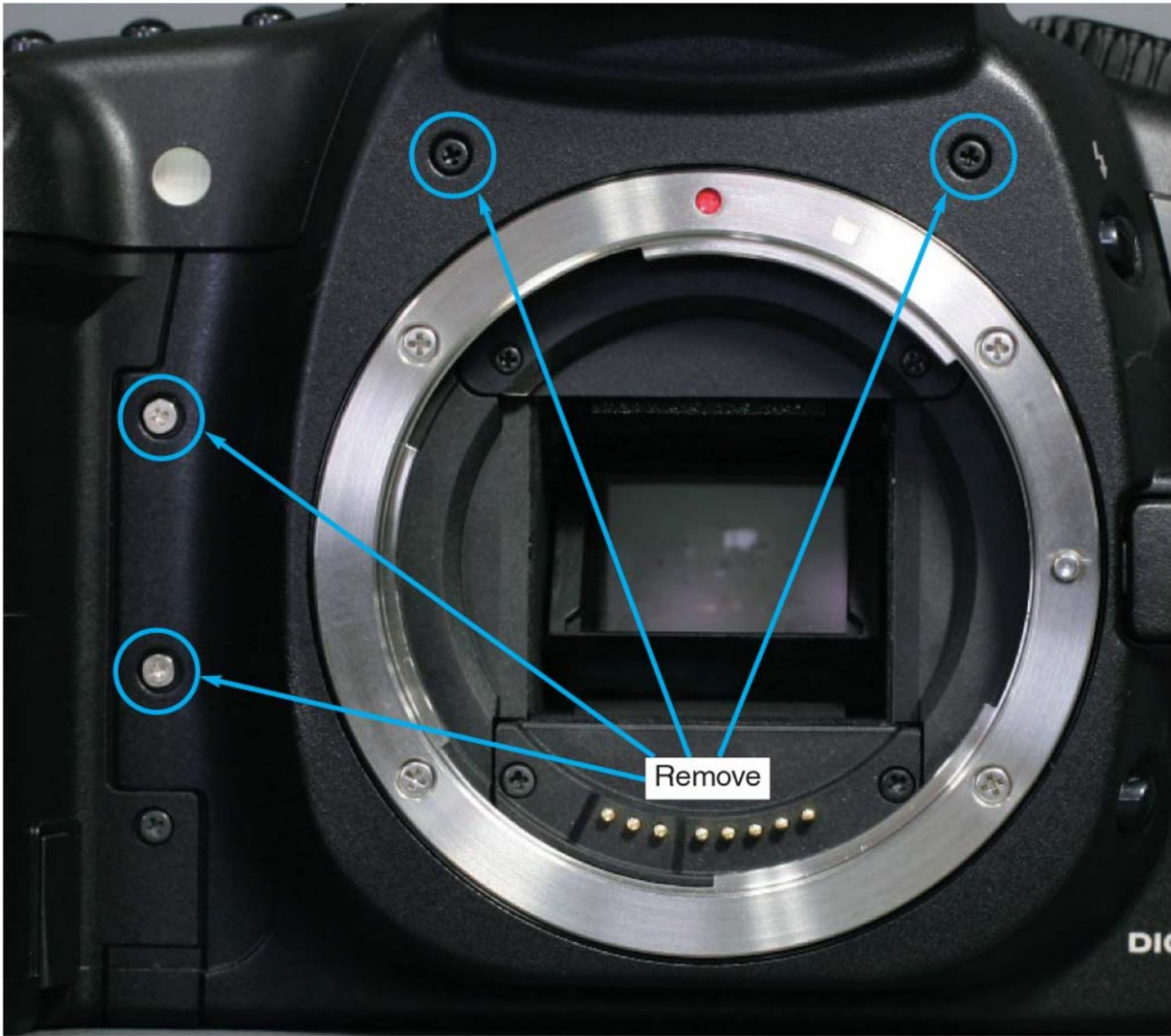
Remove

Remove

GRIP TAPE ATTACHMENT

1) GRIP TAPE - Backing sheet removal
(1) Peel off the backing sheet shown in the blue frame.

2) GRIP TAPE - Attachement
1) Put the sticky side of the tape along the reference line.
2) Fit the tape along the shape of the grip toward the curved part of the grip.

3) Peel off the narrow part of the grip tape.
4) Put the narrow part of the grip tape over the gap of the top cover.

5) Peel off the rest of the backing sheets (x2) carefully without letting them off the edge of the TOP COVER.

6) Be sure to apply the tape carefully without slack within the red frame.

Mount

Reference line

Fit the tape toward the curved part

Peel off the backing sheets of the narrow part

Do not let the tape off the edge

Peel off the rest of the backing sheets carefully without letting them off the edge

Do not let the tape off the red frame
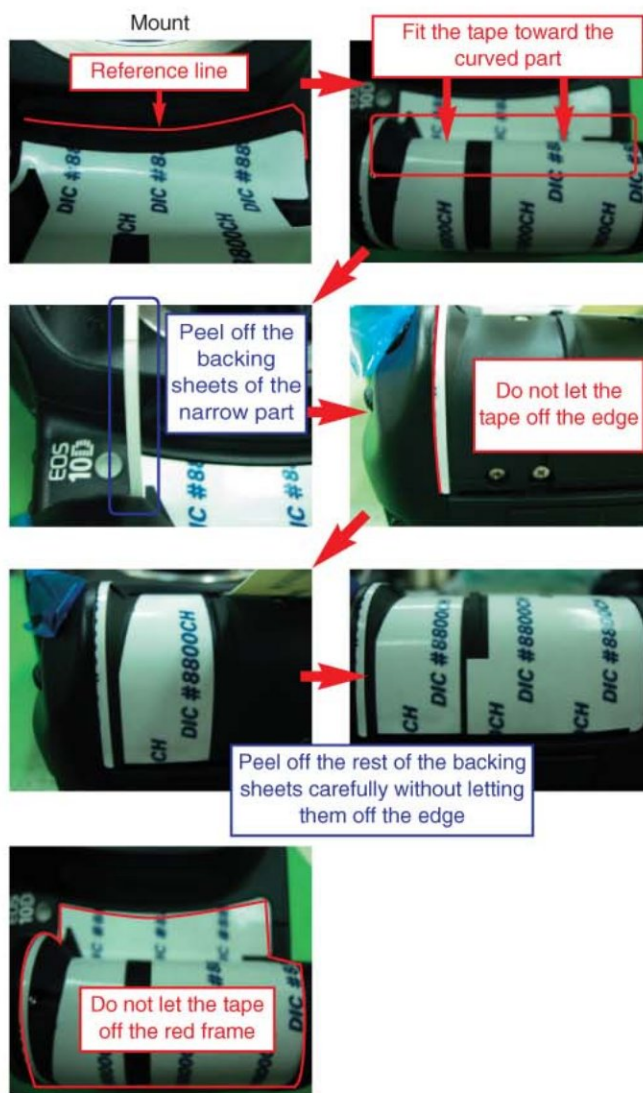
← Back

GRIP RUBBER ATTACHMENT

1) GRIP TAPE - Backing sheet removal

(1) Peel off the cover sheet attached to the grip with twizers.
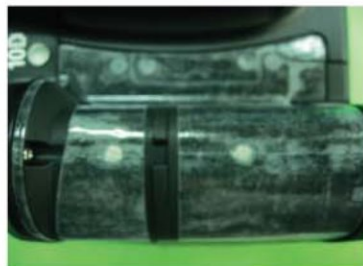
2) GRIP RUBBER - Attachment

(1) Put the concavity part of the grip rubber back and convexity part of the body together.

Concavity part

Convexity part

Put together

GRIP RUBBER
Back side
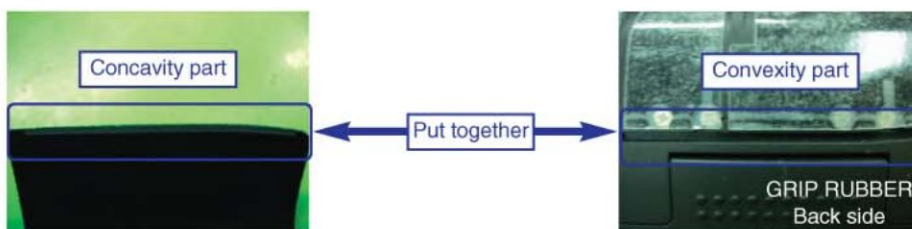
(2) Apply the tape in the direction indicated with arrows below from RS COVER side.

RS COVER

(3) Be careful not to let the tape off the edge.

Do not let the tape off the edge!
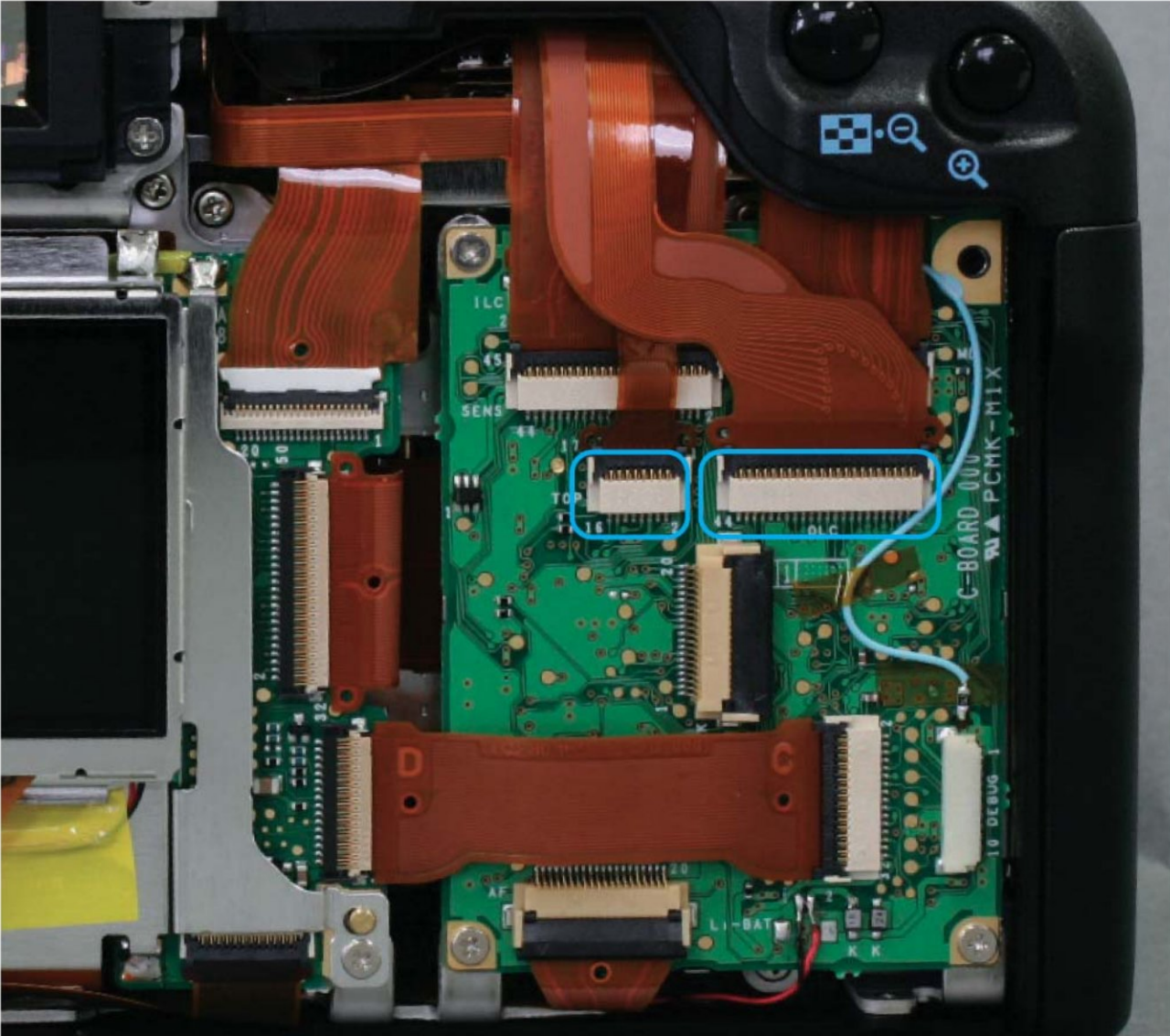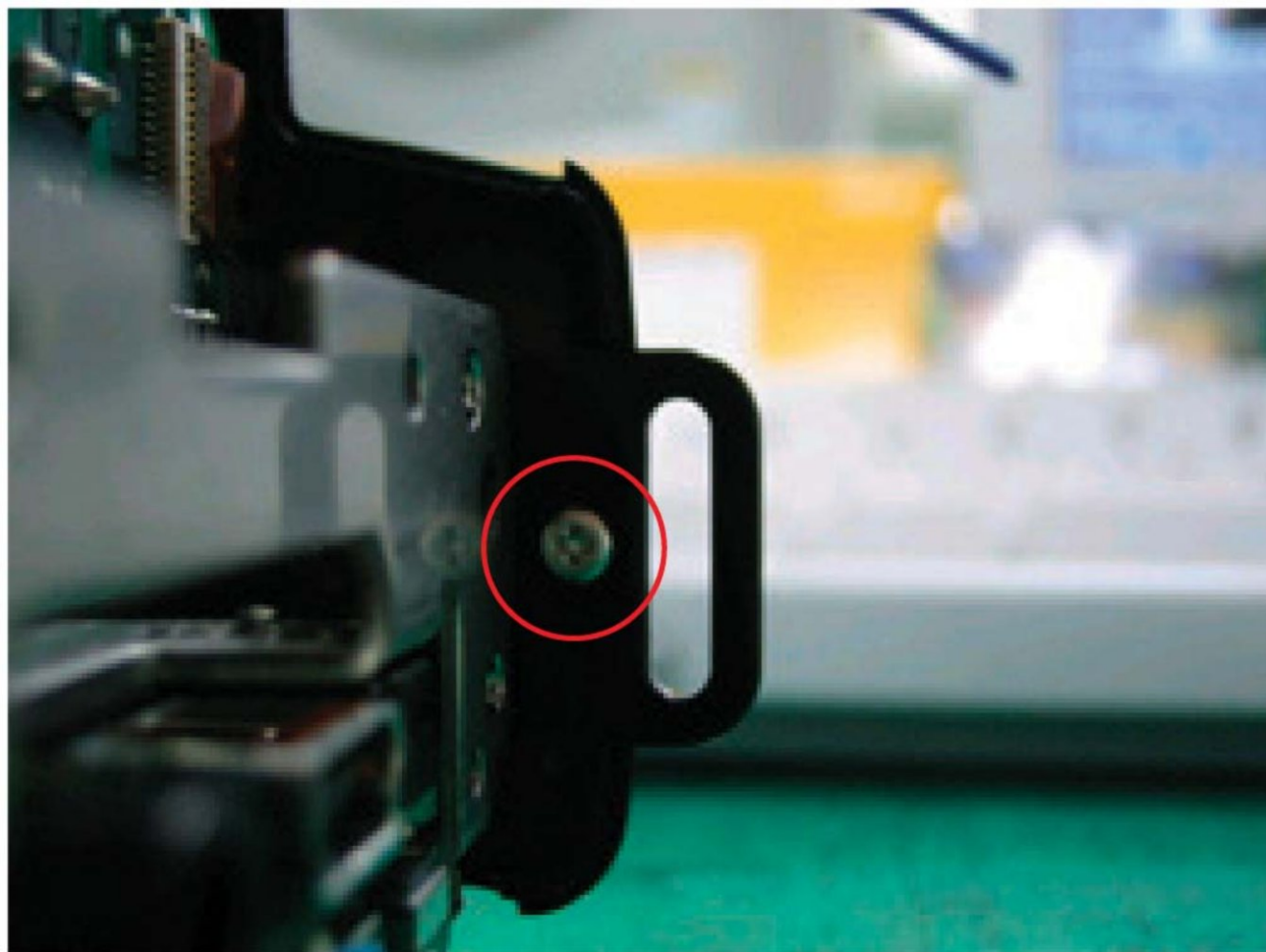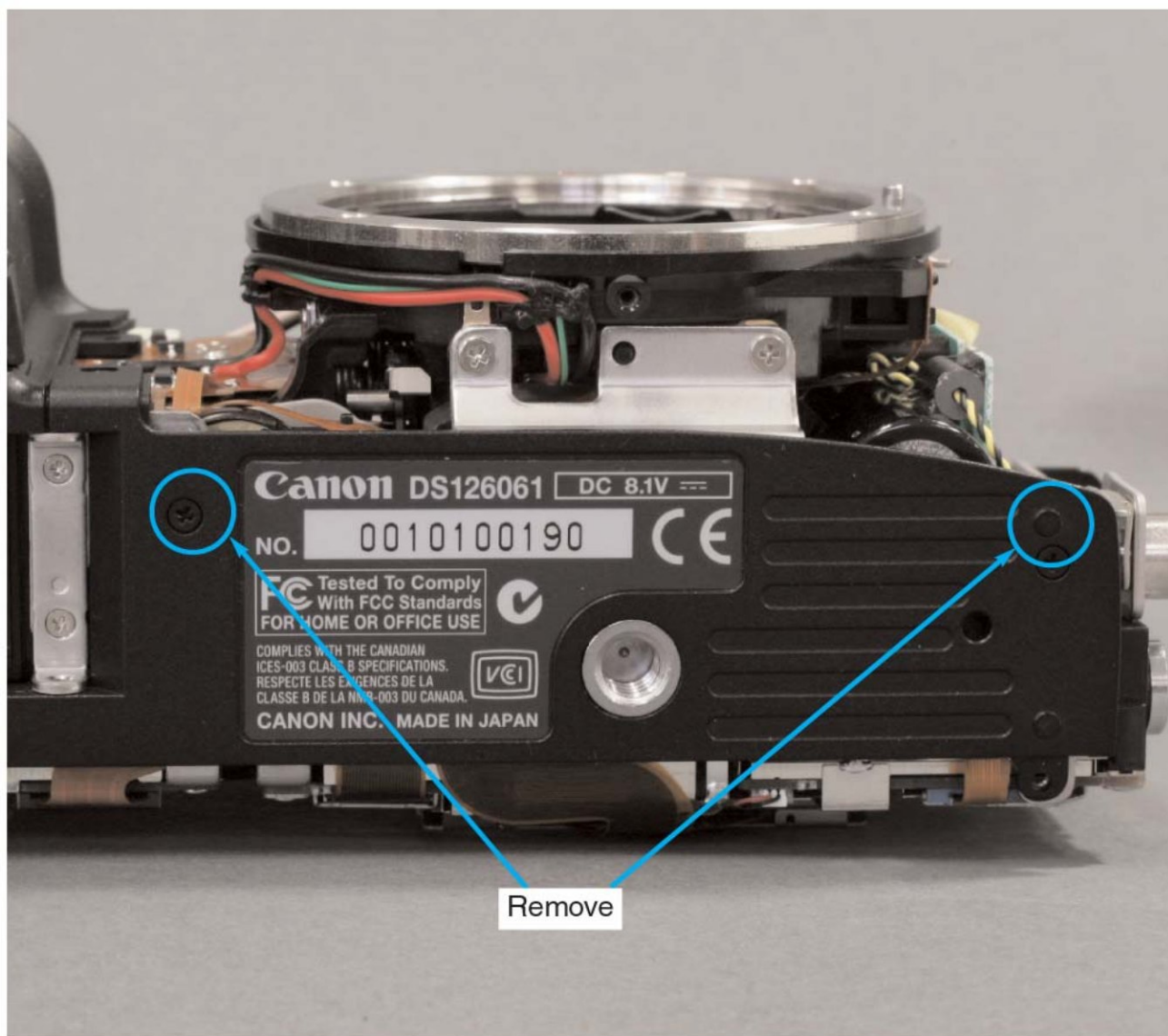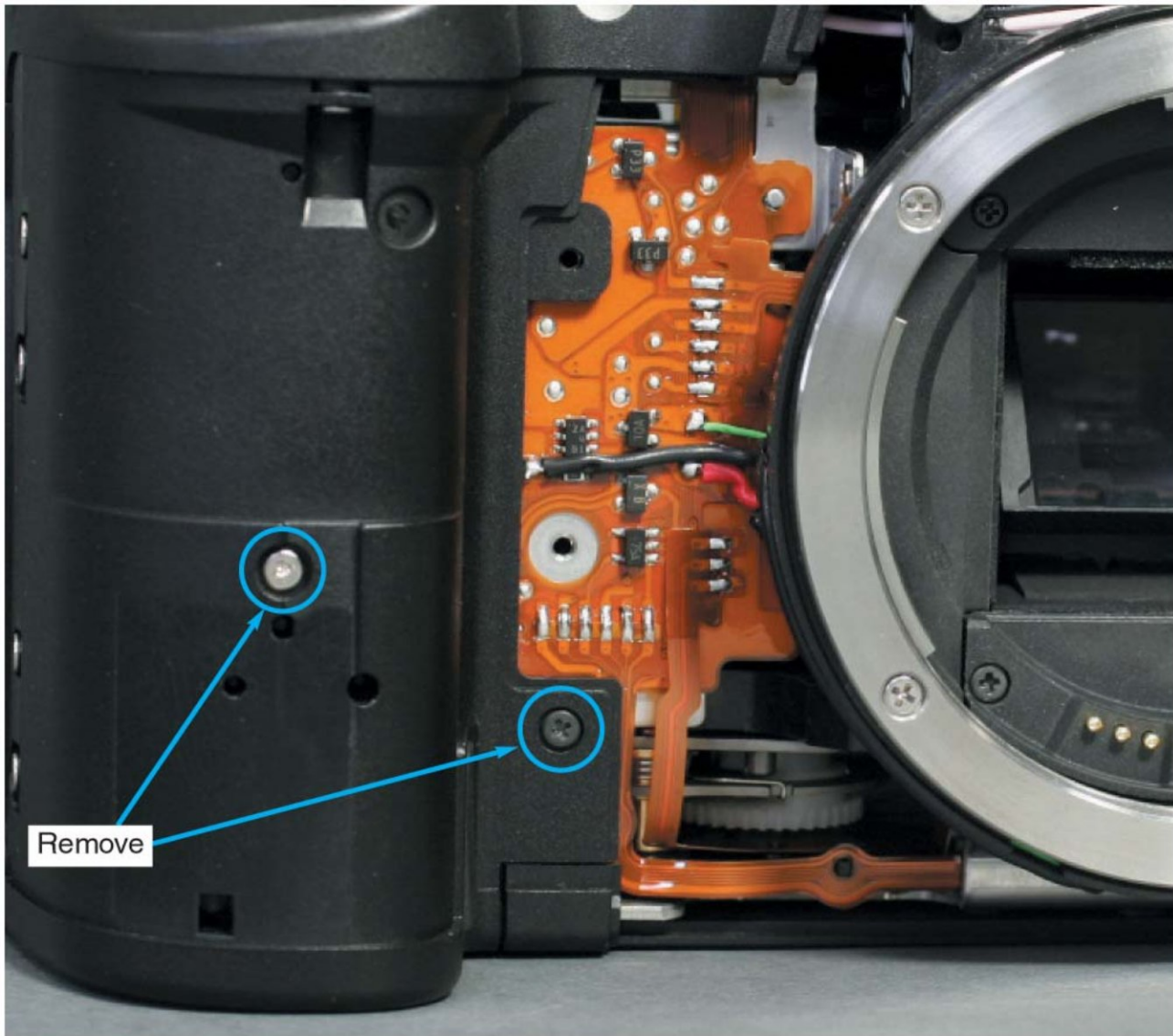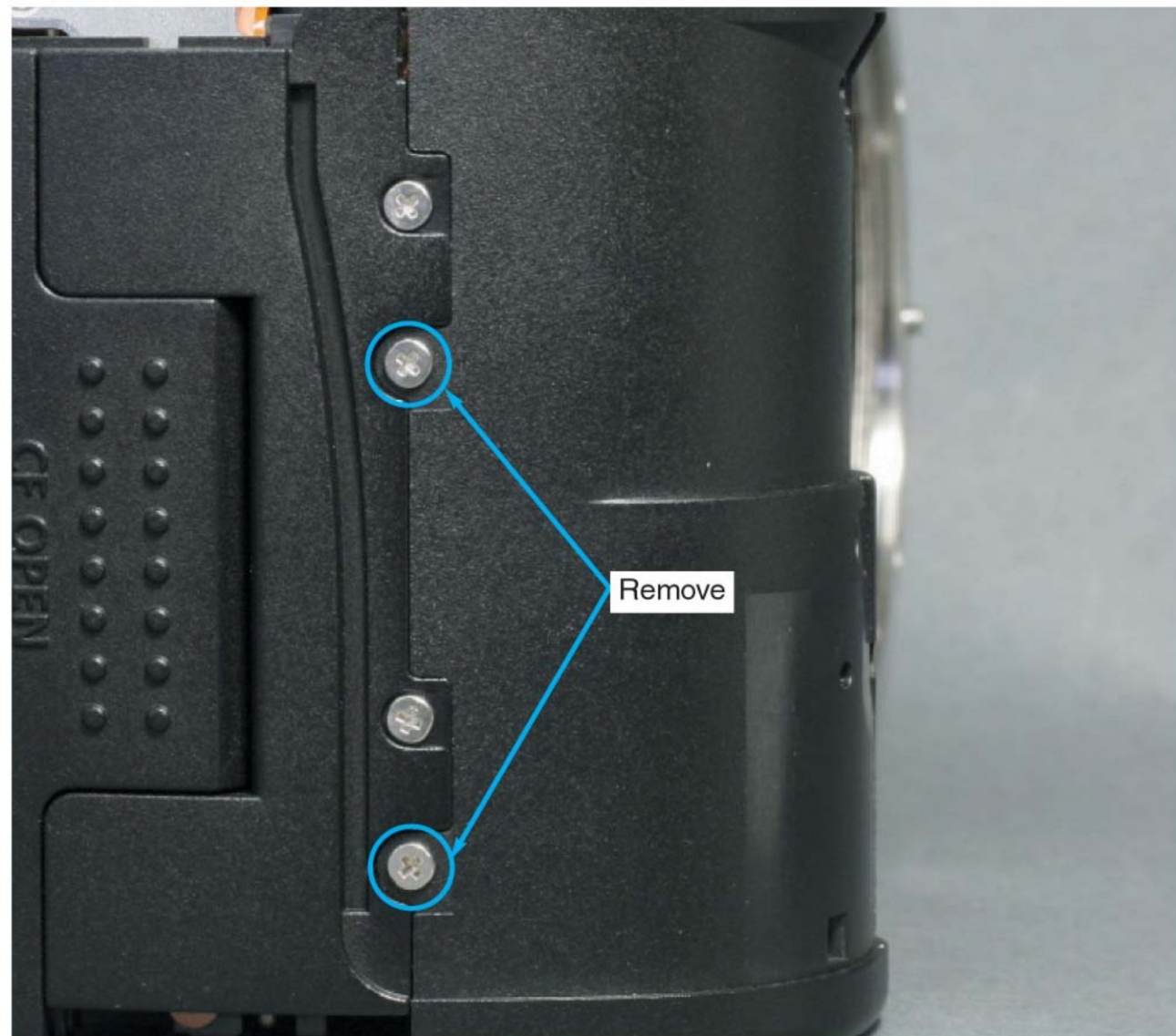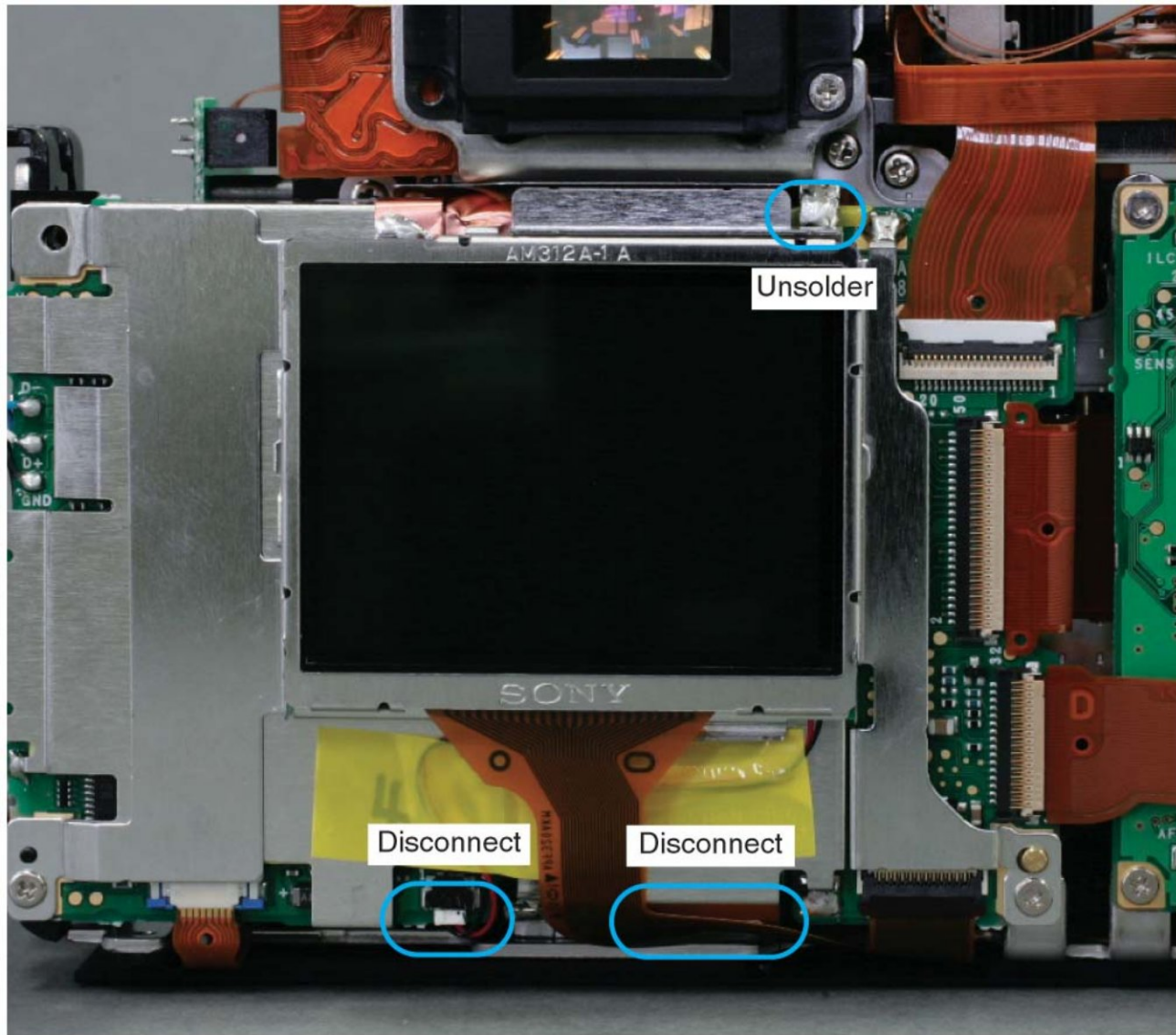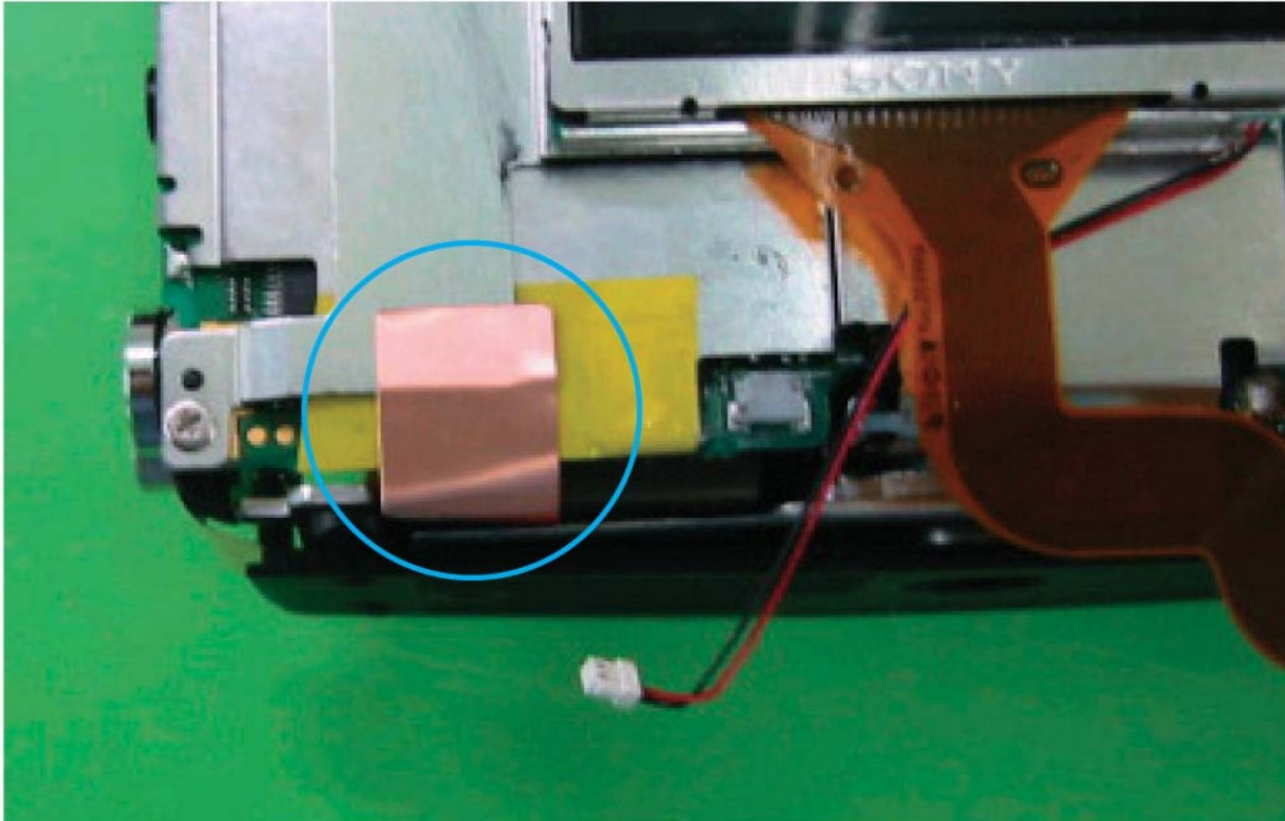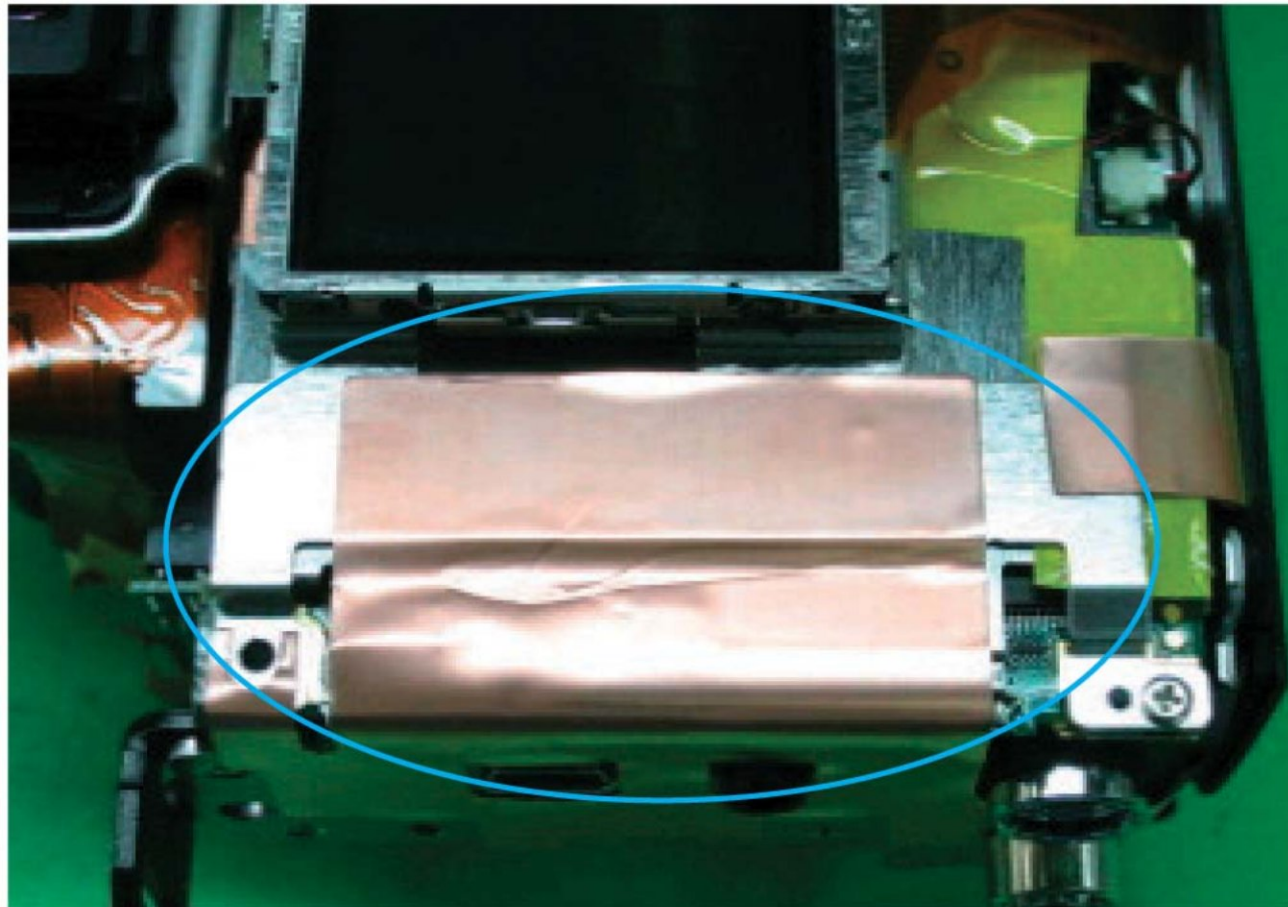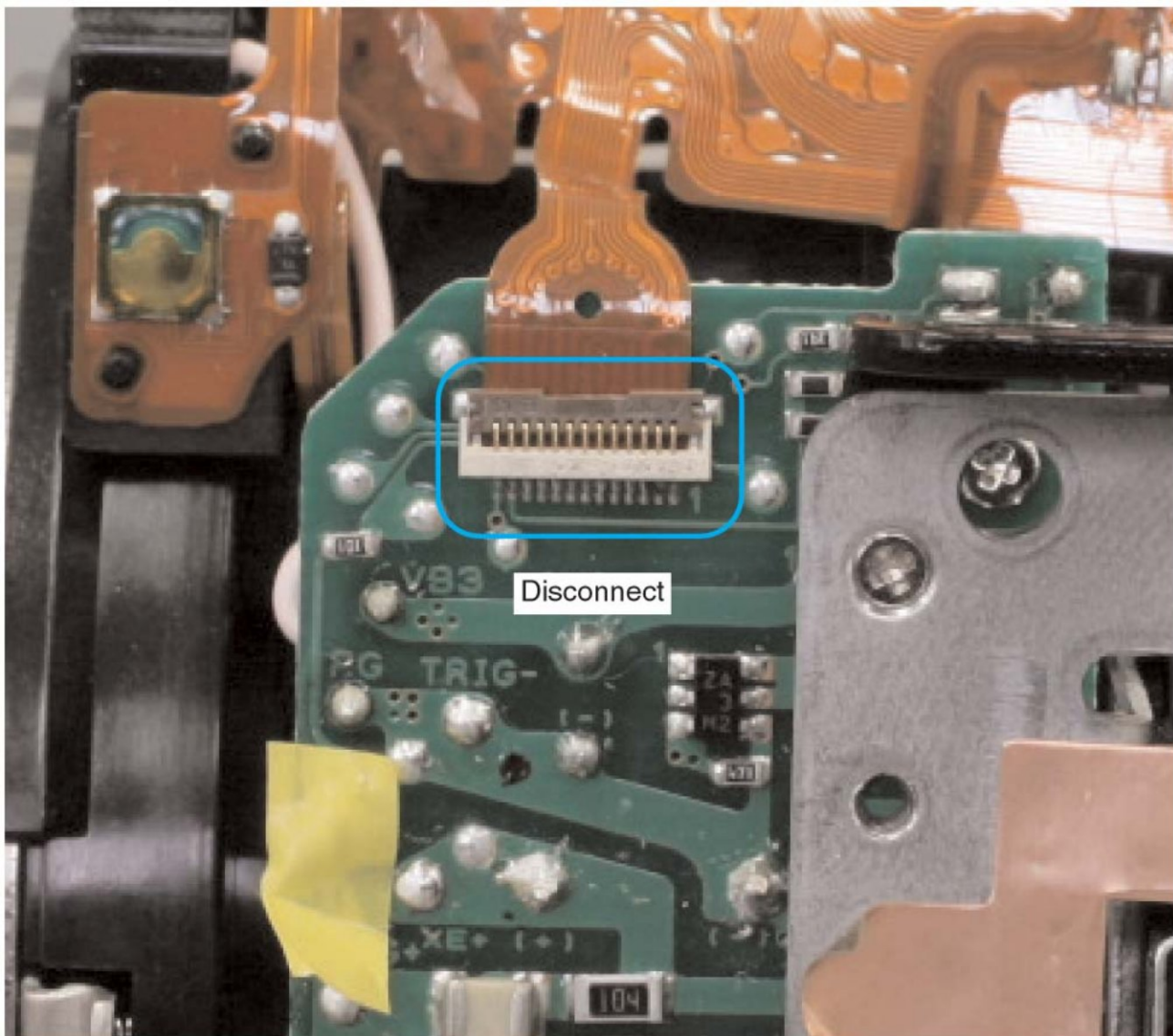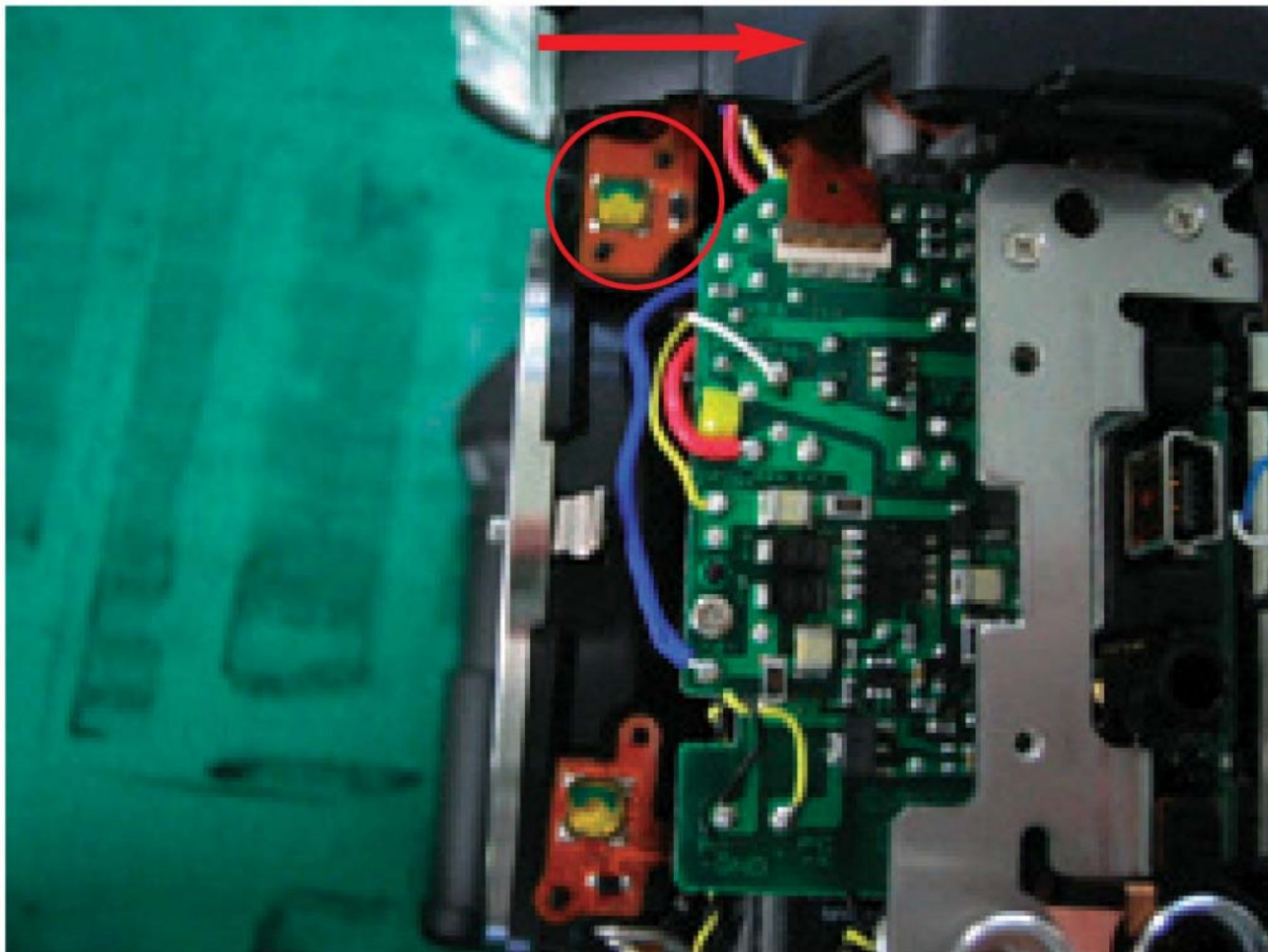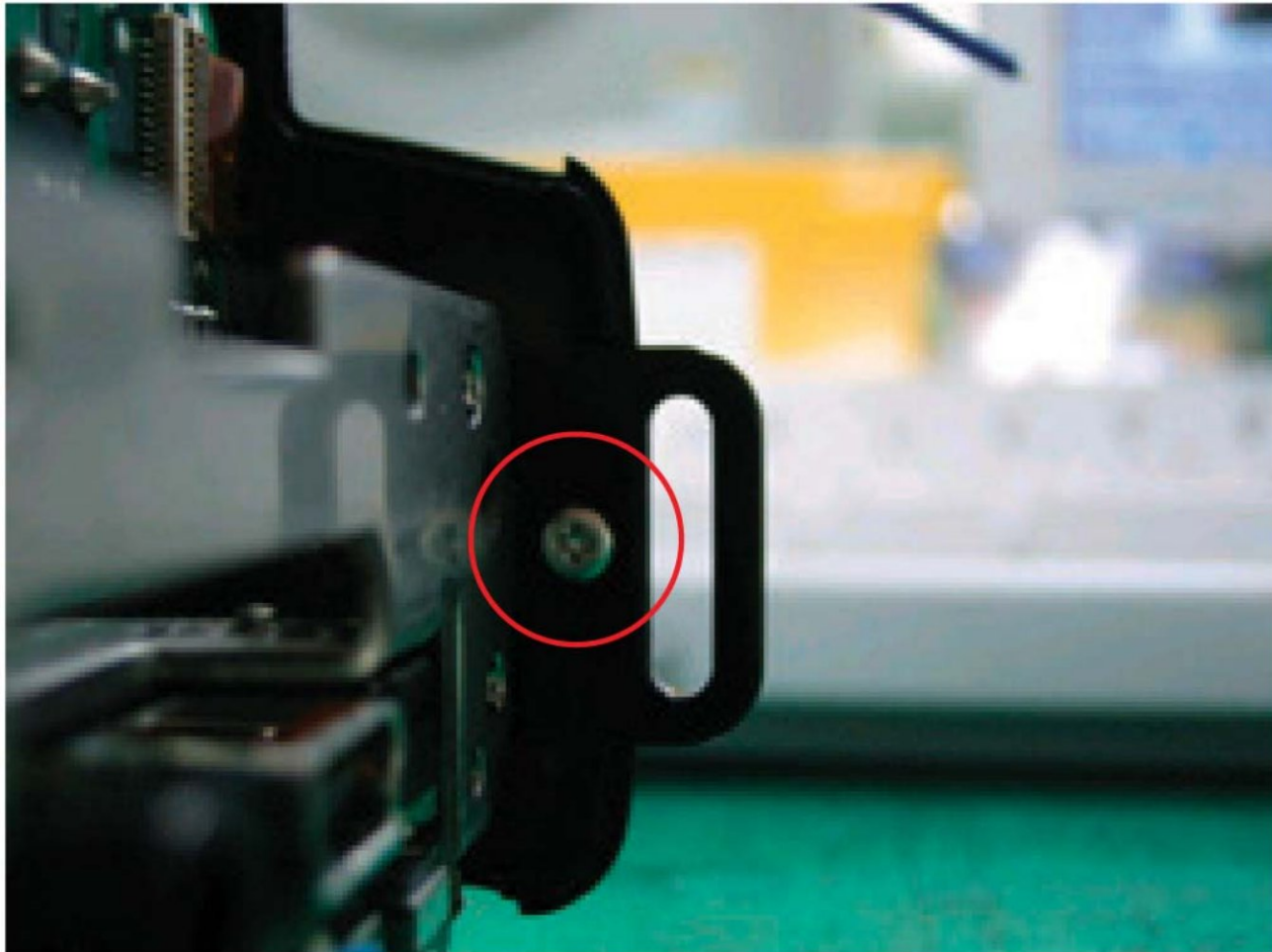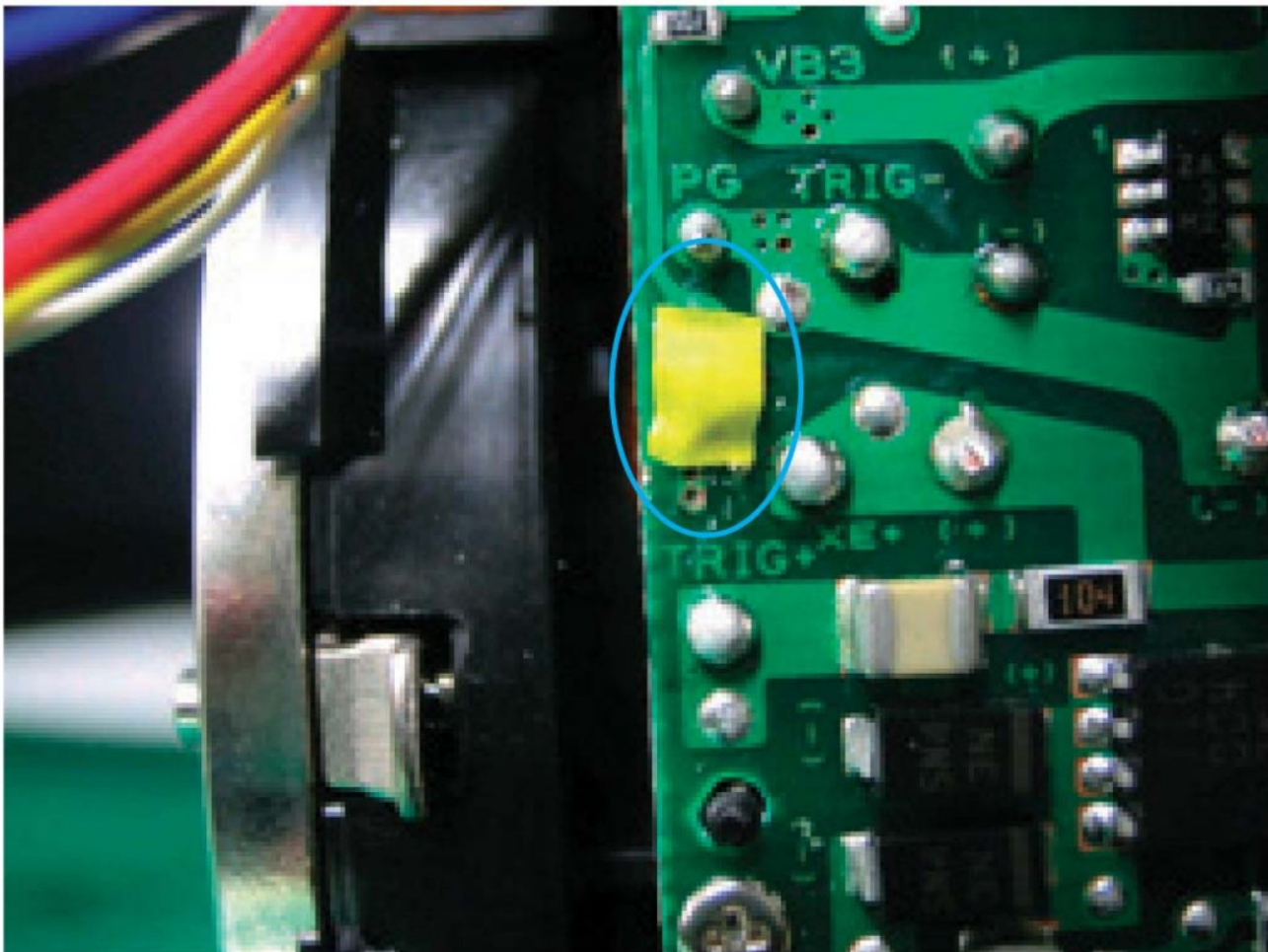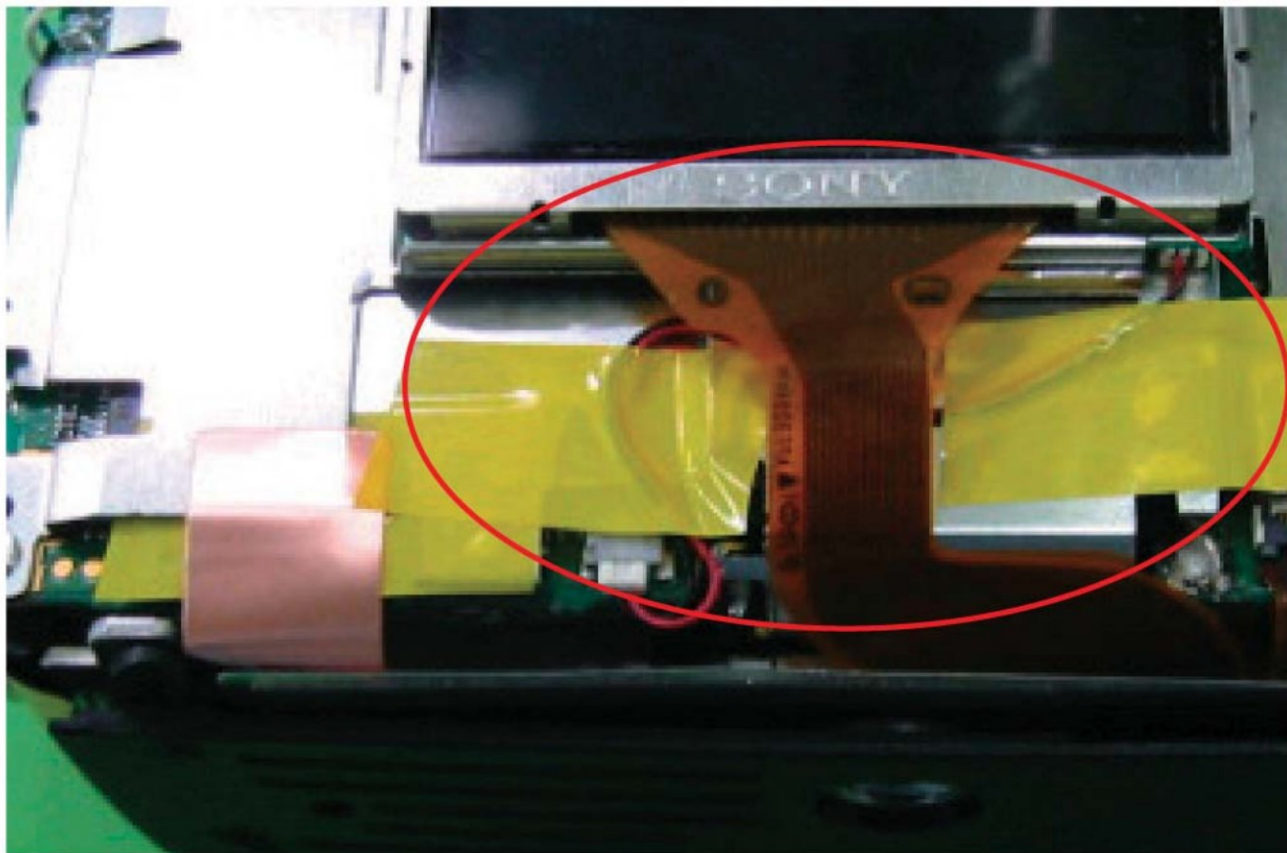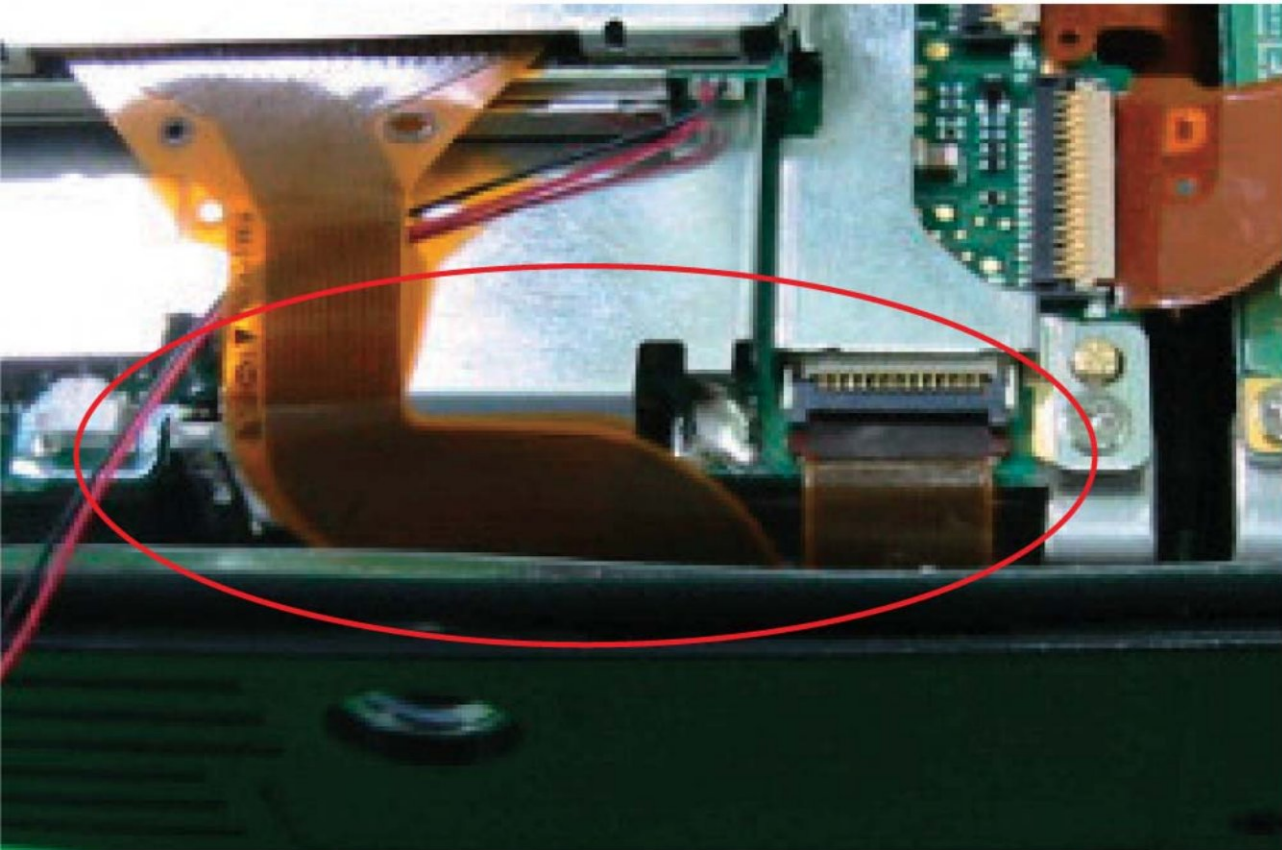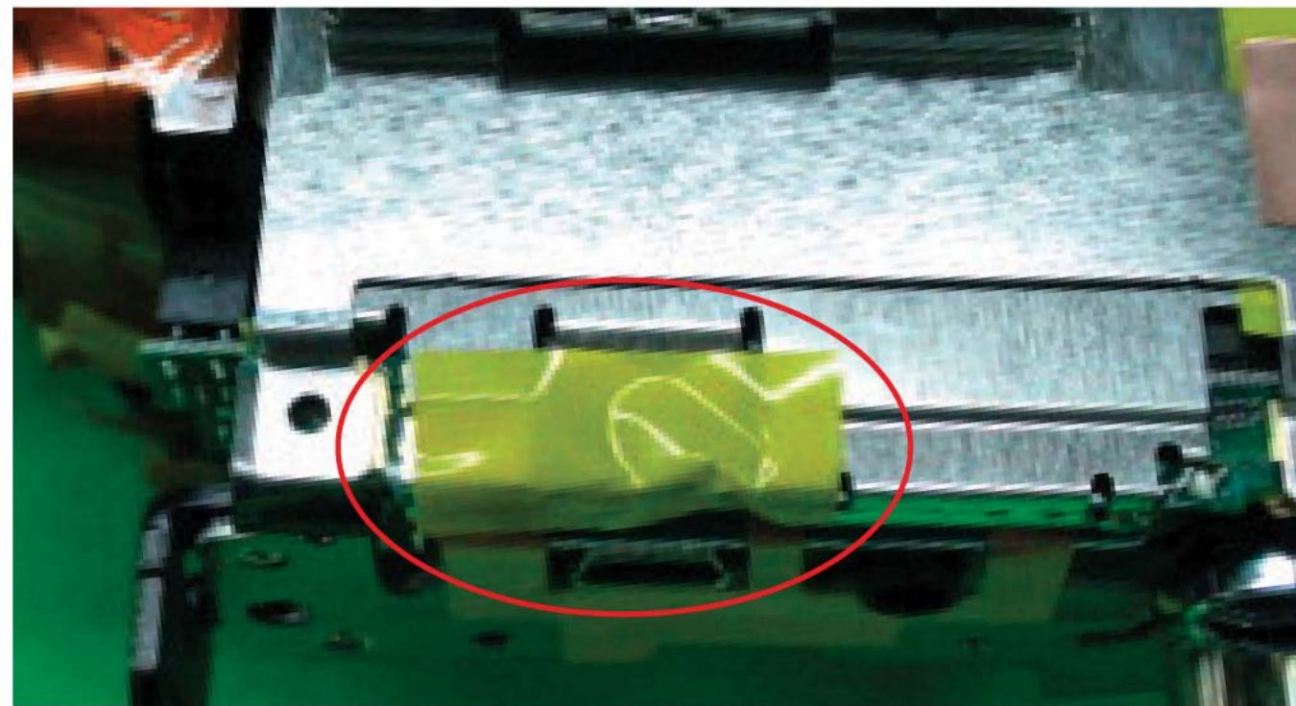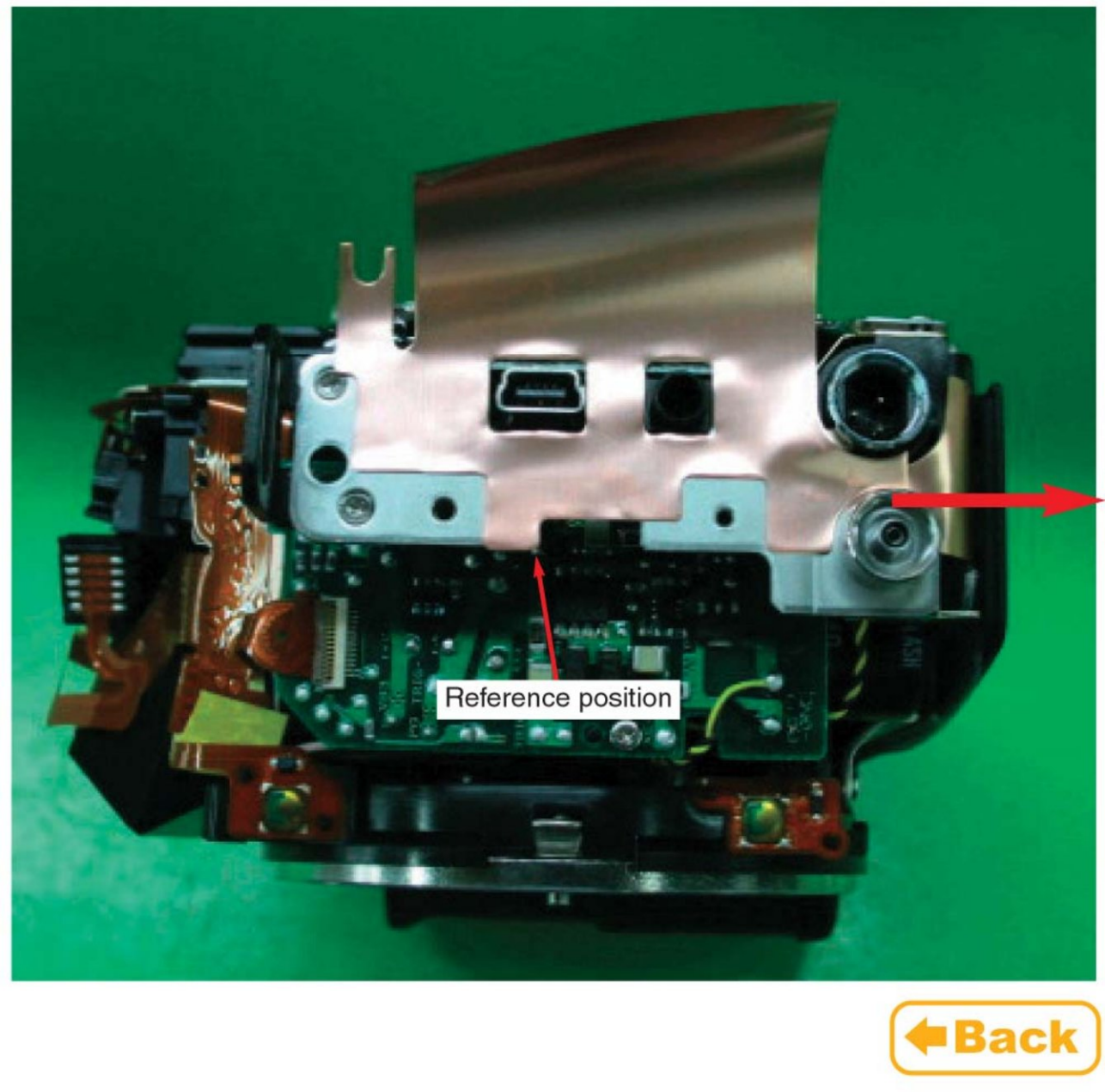
← Back

Discharge positions

White

Red

Yellow

Blue

Canon DS126061 DC 8.1V

NO. 0010100190

CE

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

COMPLIES WITH THE CANADIAN
ICES-003 CLASS B SPECIFICATIONS.
RESPECTE LES EXIGENCES DE LA
CLASSE B DE LA NMB-003 DU CANADA.

VCI

CANON INC. MADE IN JAPAN

Remove

Remove

Remove

CF OPEN

← Back

Remove

SONY

AM312A-1 A

Unsoldered, Disconnect, Disconnect labels with circled callouts

AM312A-1 A

SONY

Unsolder

D−
D+
GND

Disconnect

Disconnect

← Back

Disconnect

Reference position

Reference position
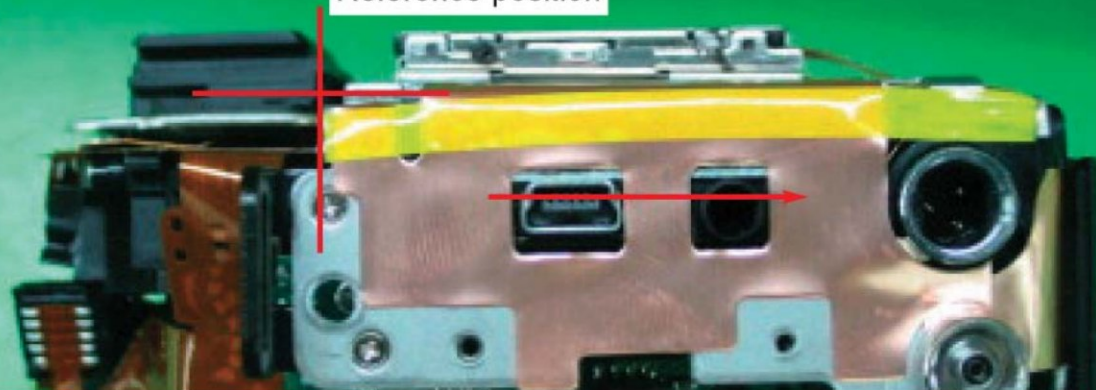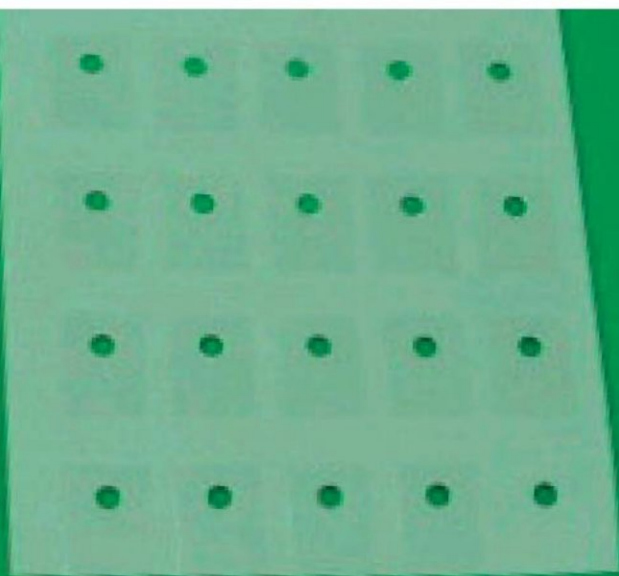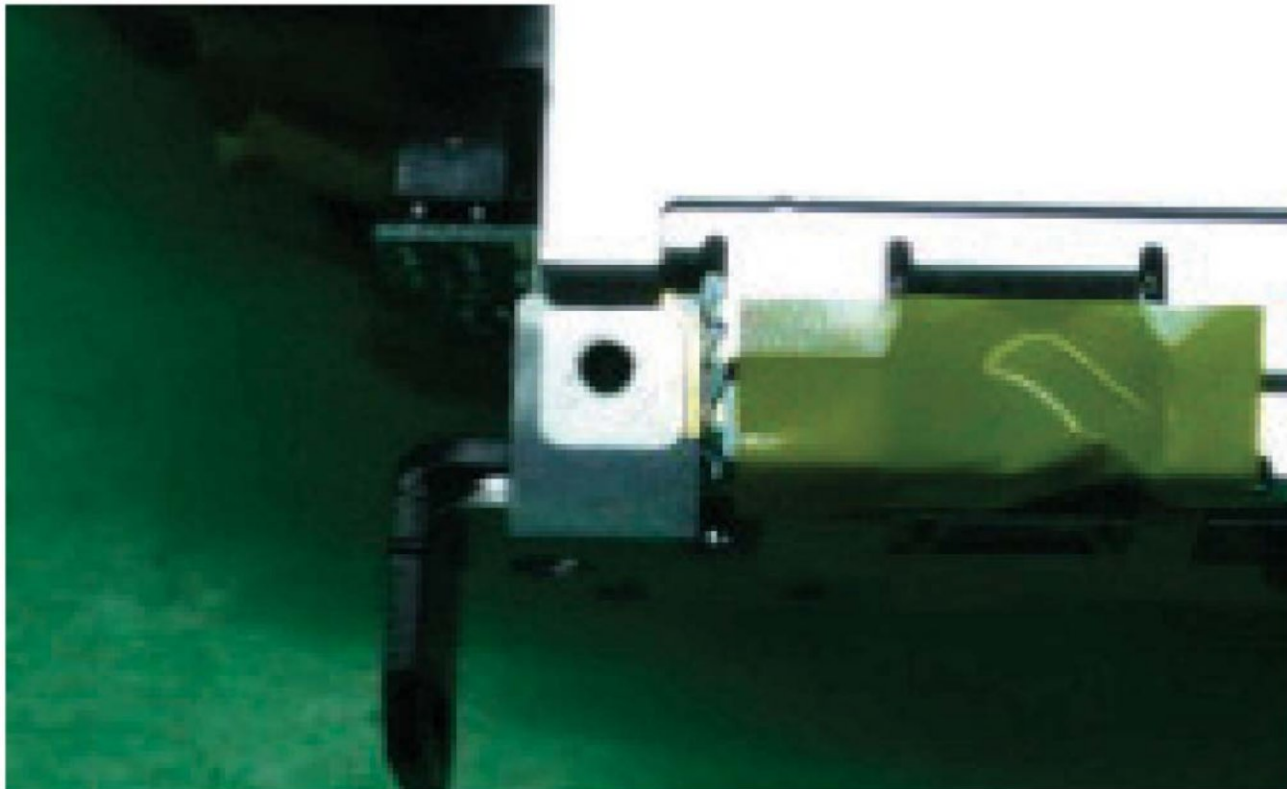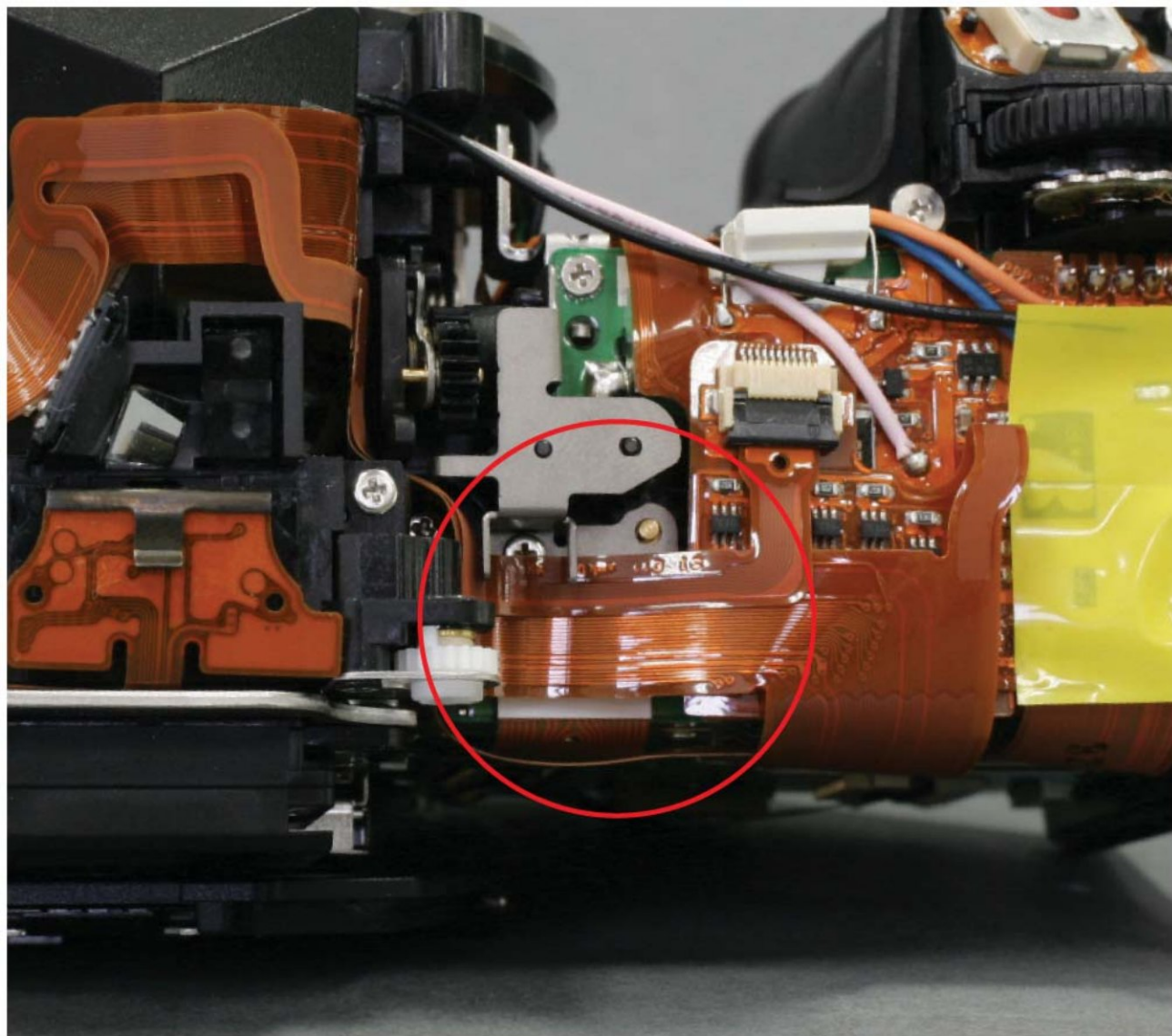
Unsolder
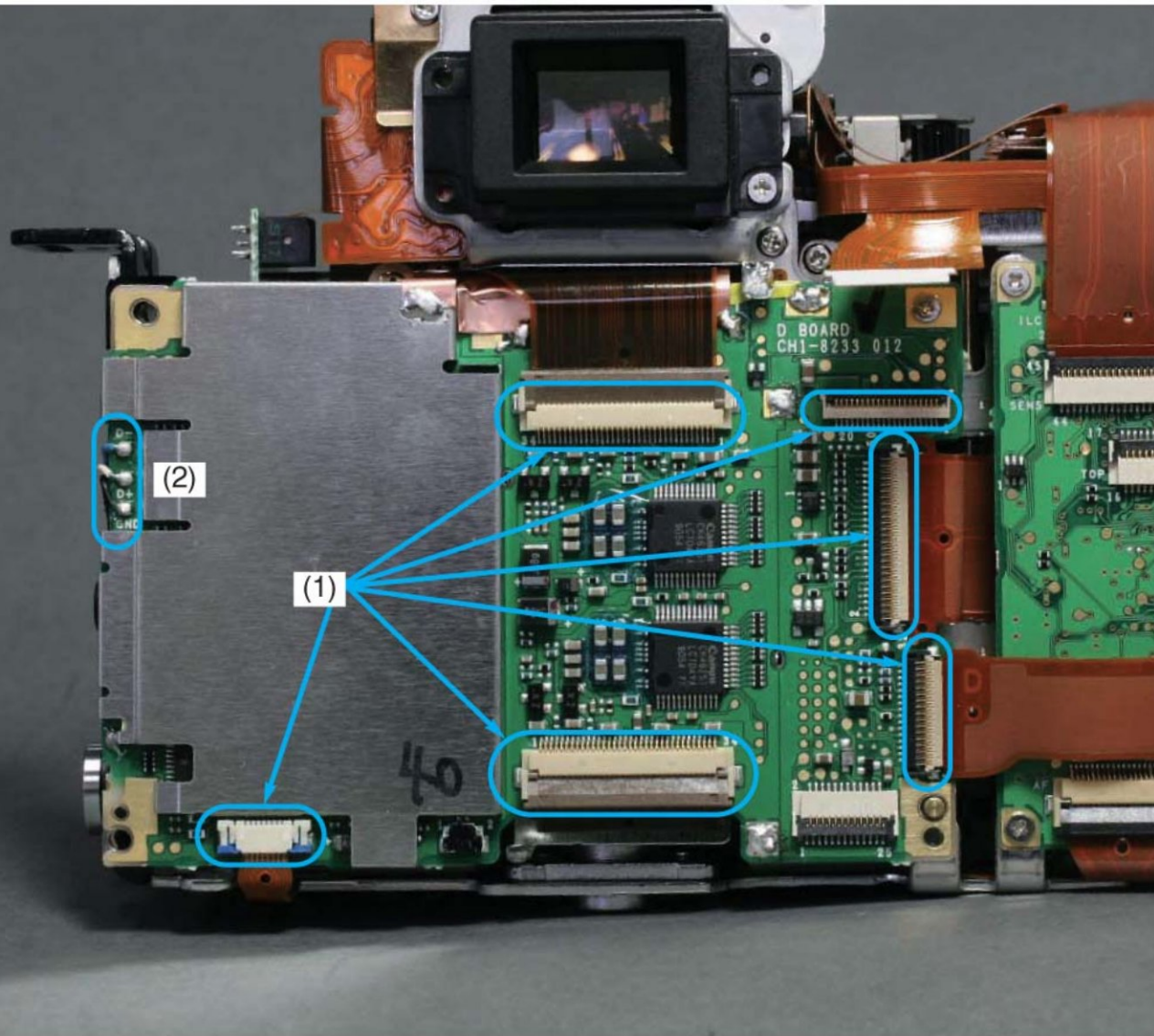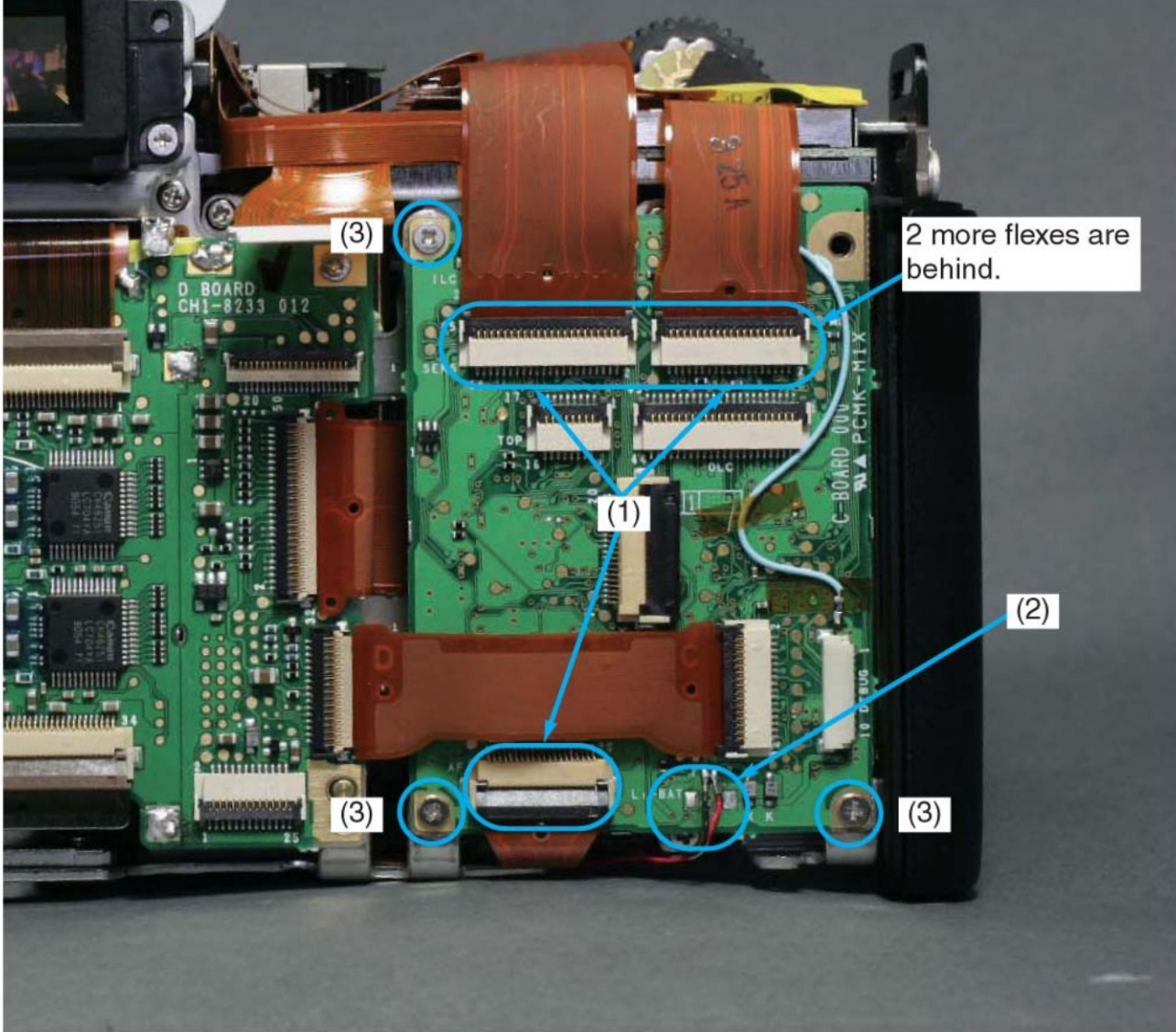
2 more flexes are behind.

(3)
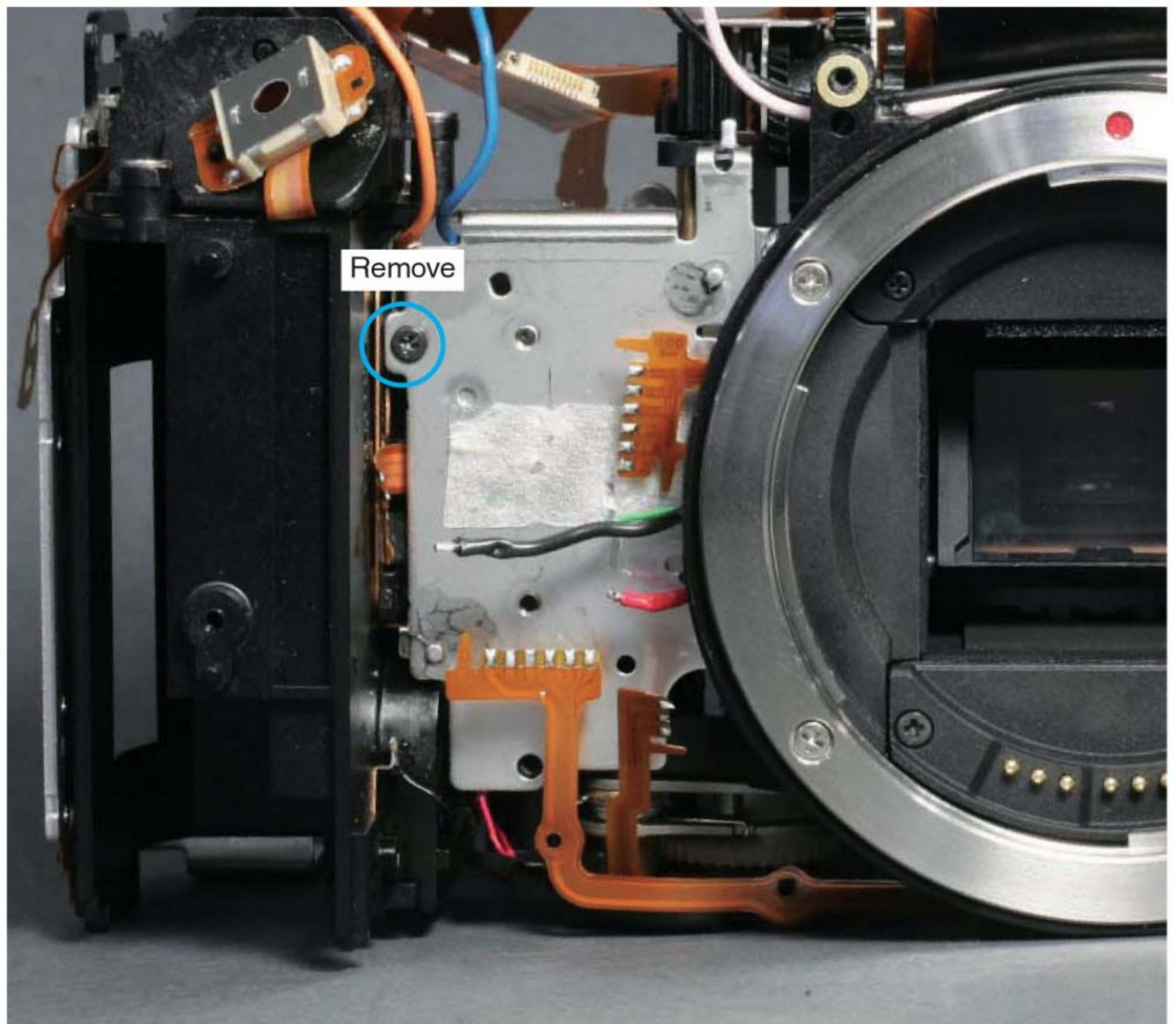
D BOARD
CH1-8233 012

(1)

(2)

(3)

(3)

←Back

Do not Remove

Remove

Remove

Remove

Remove

Comb

Unsolder

(2)

(3)

(5)

(5)

(5)

Unsolder

Remove

Remove
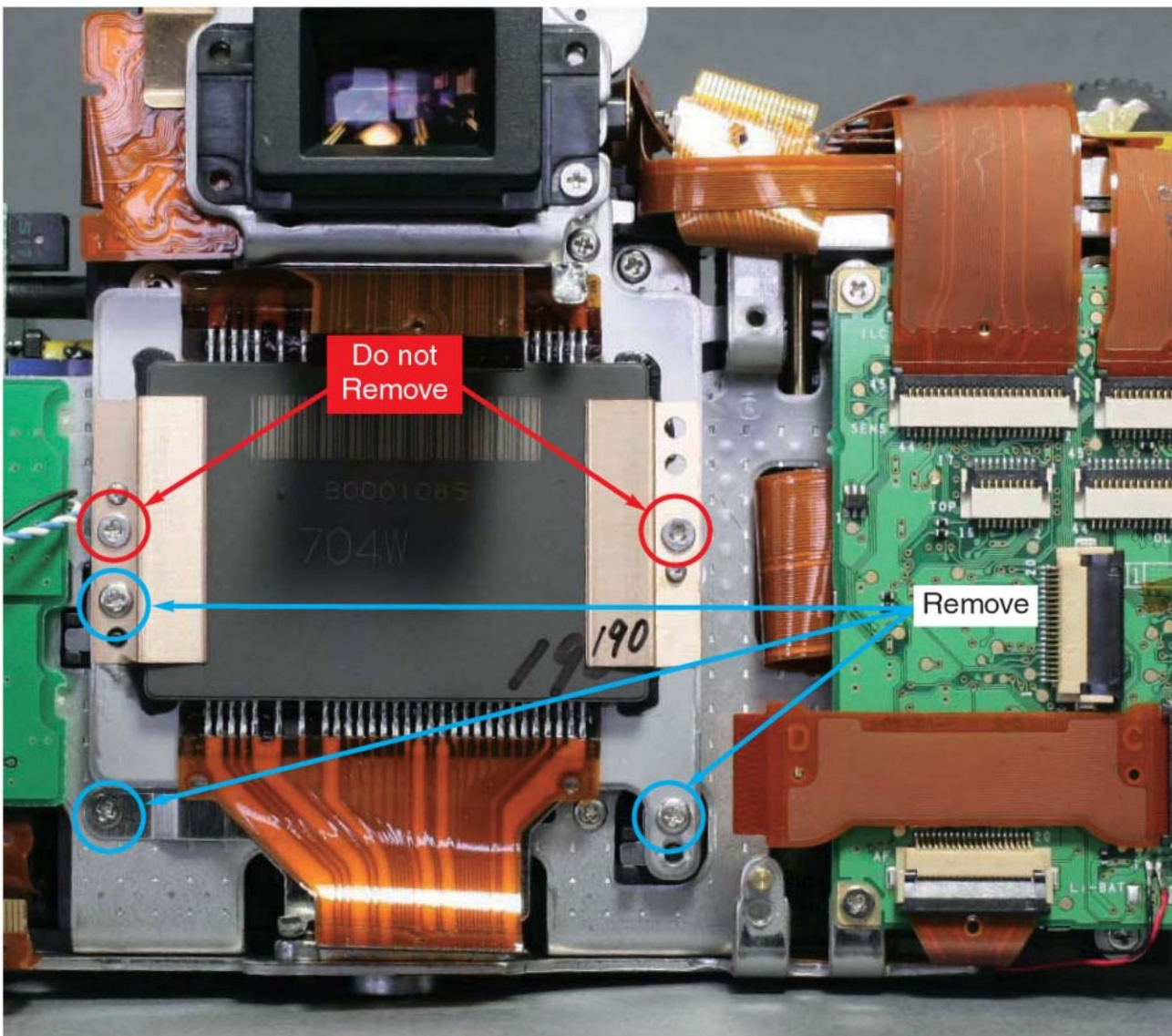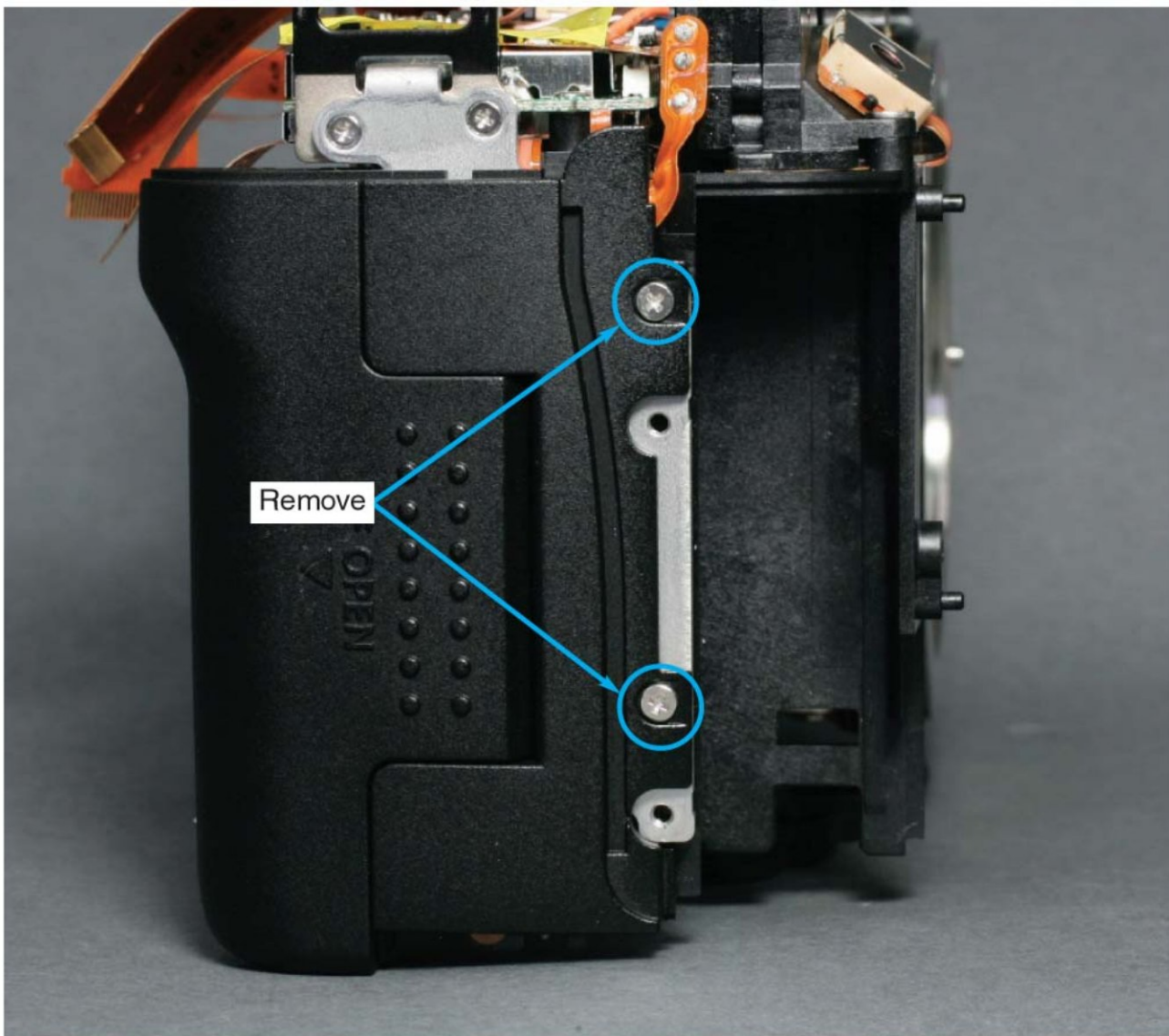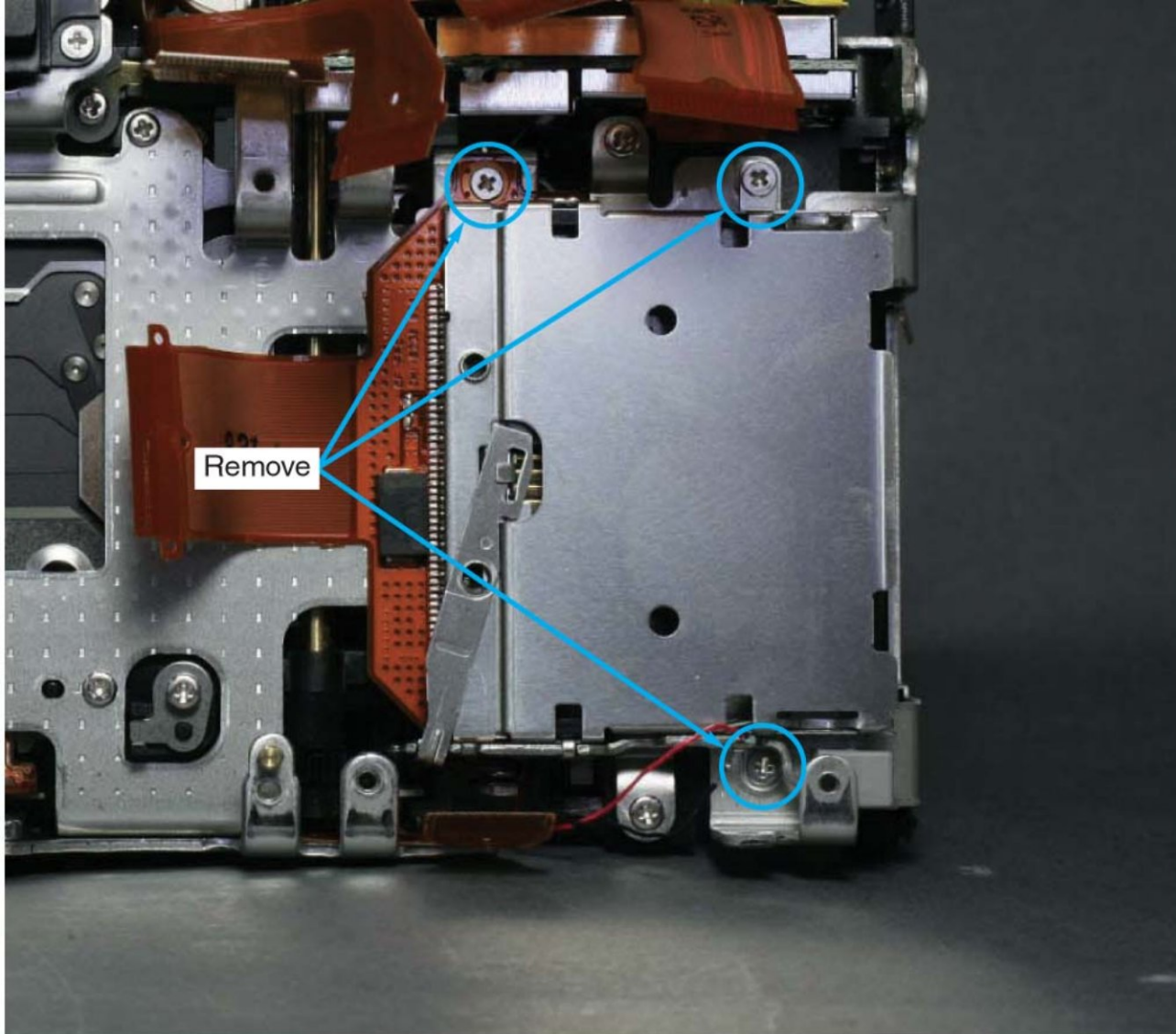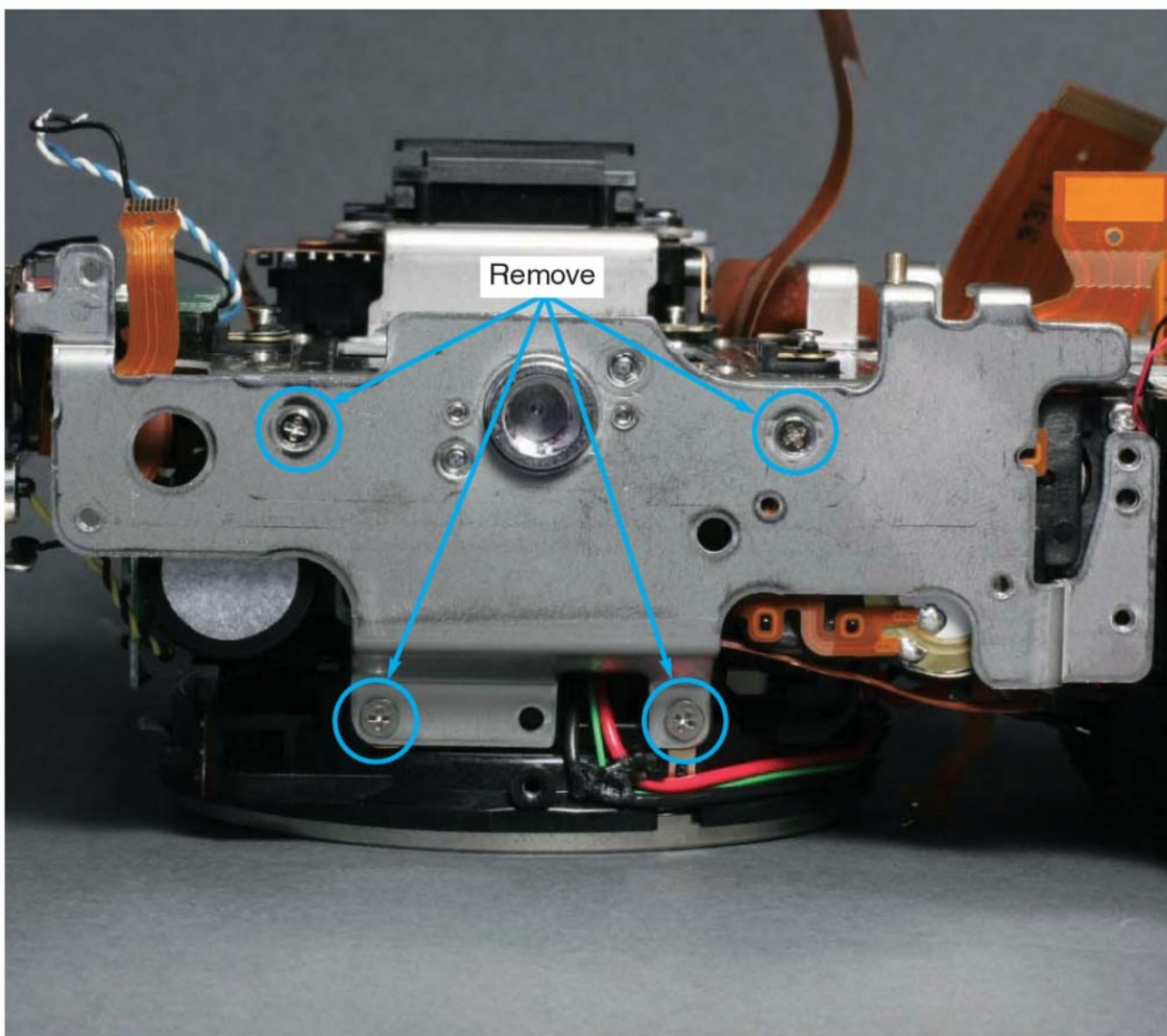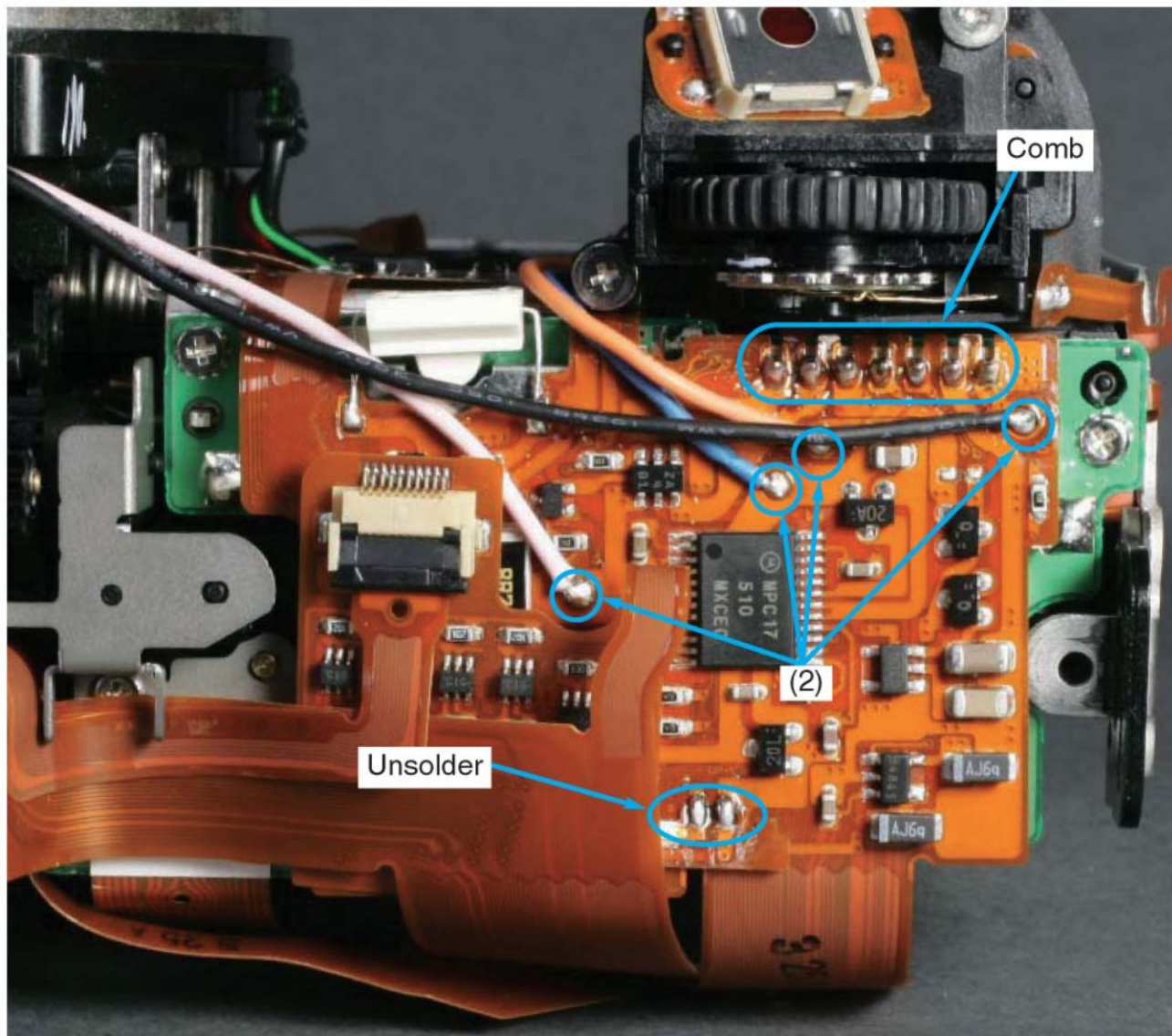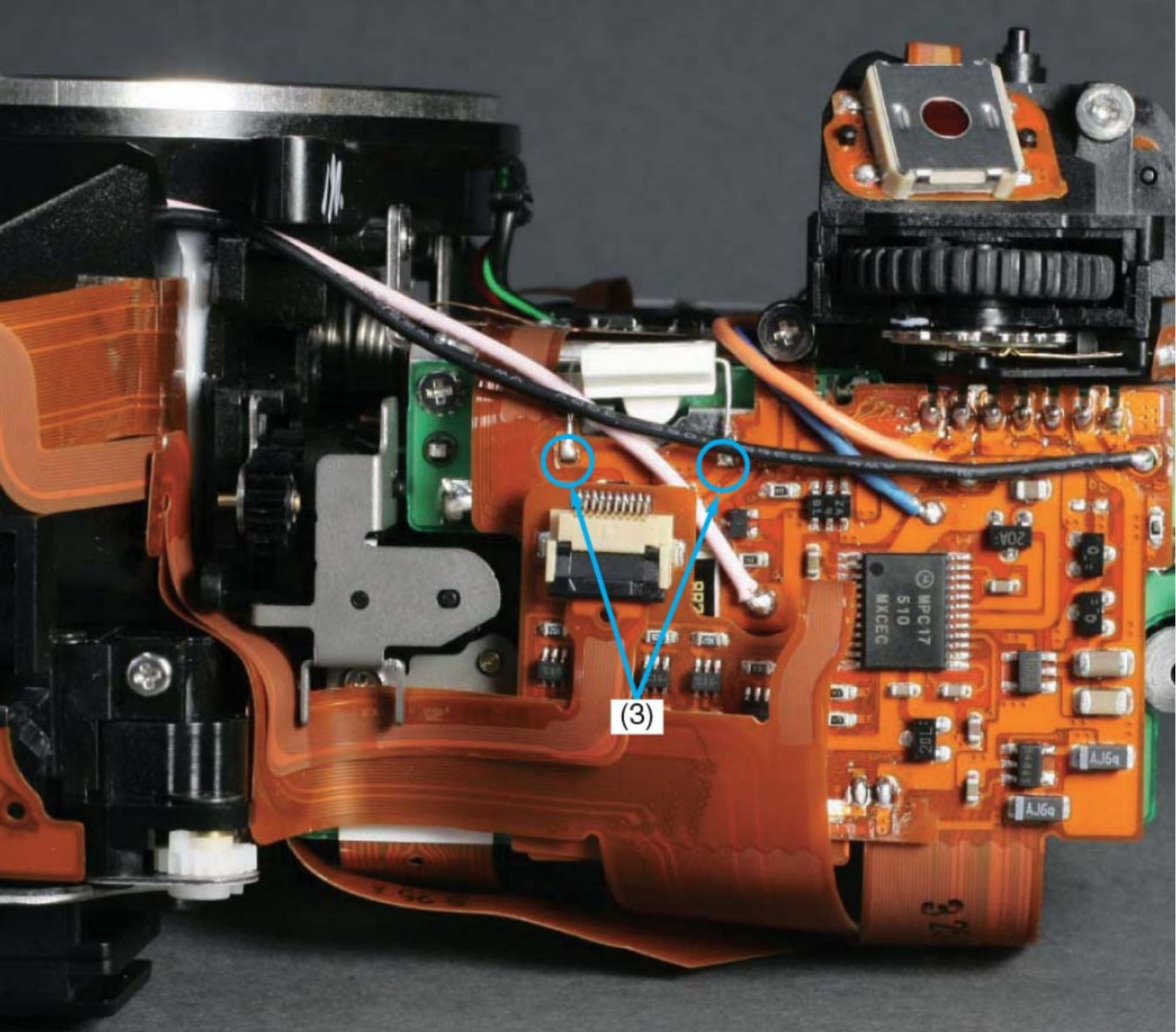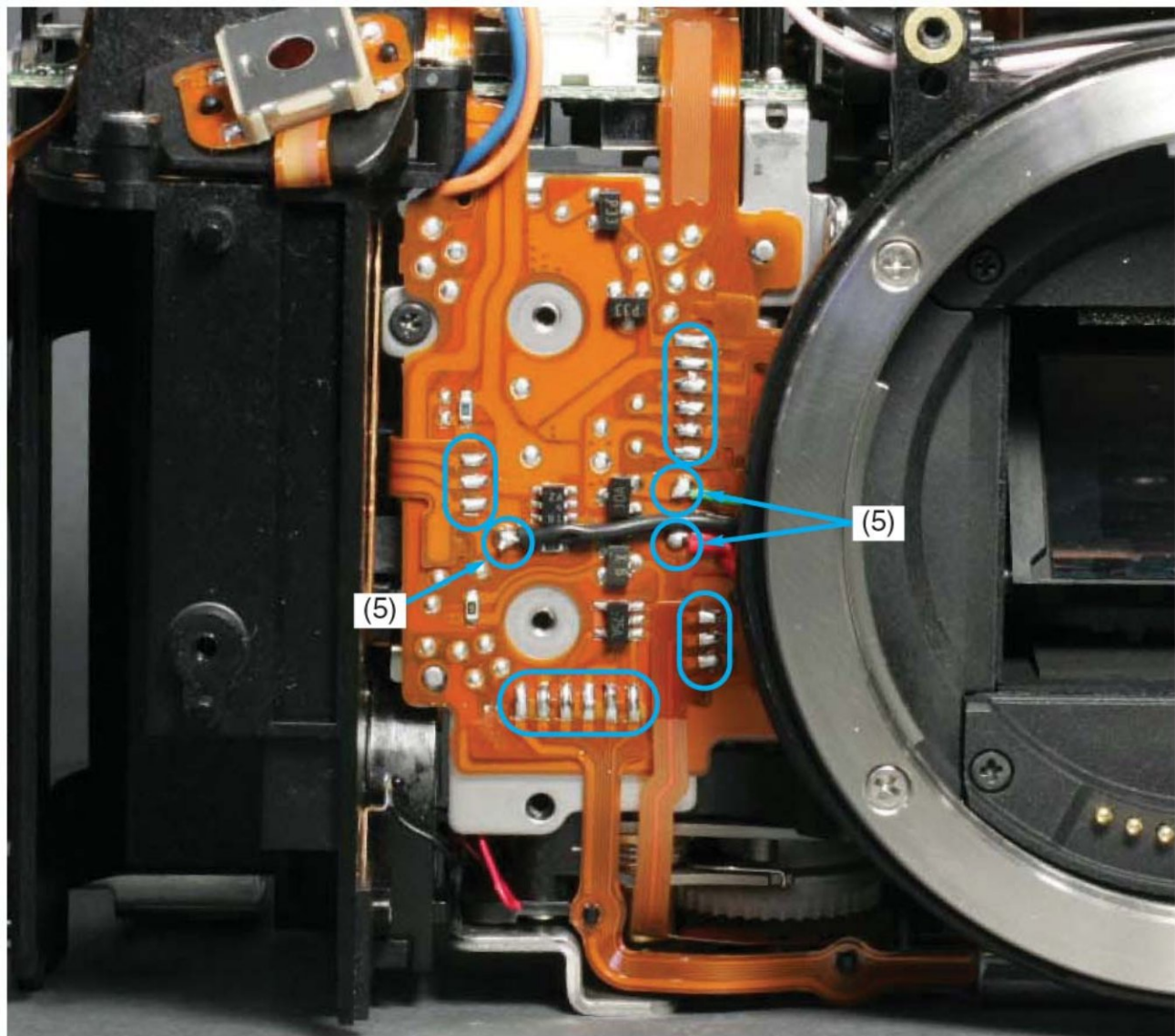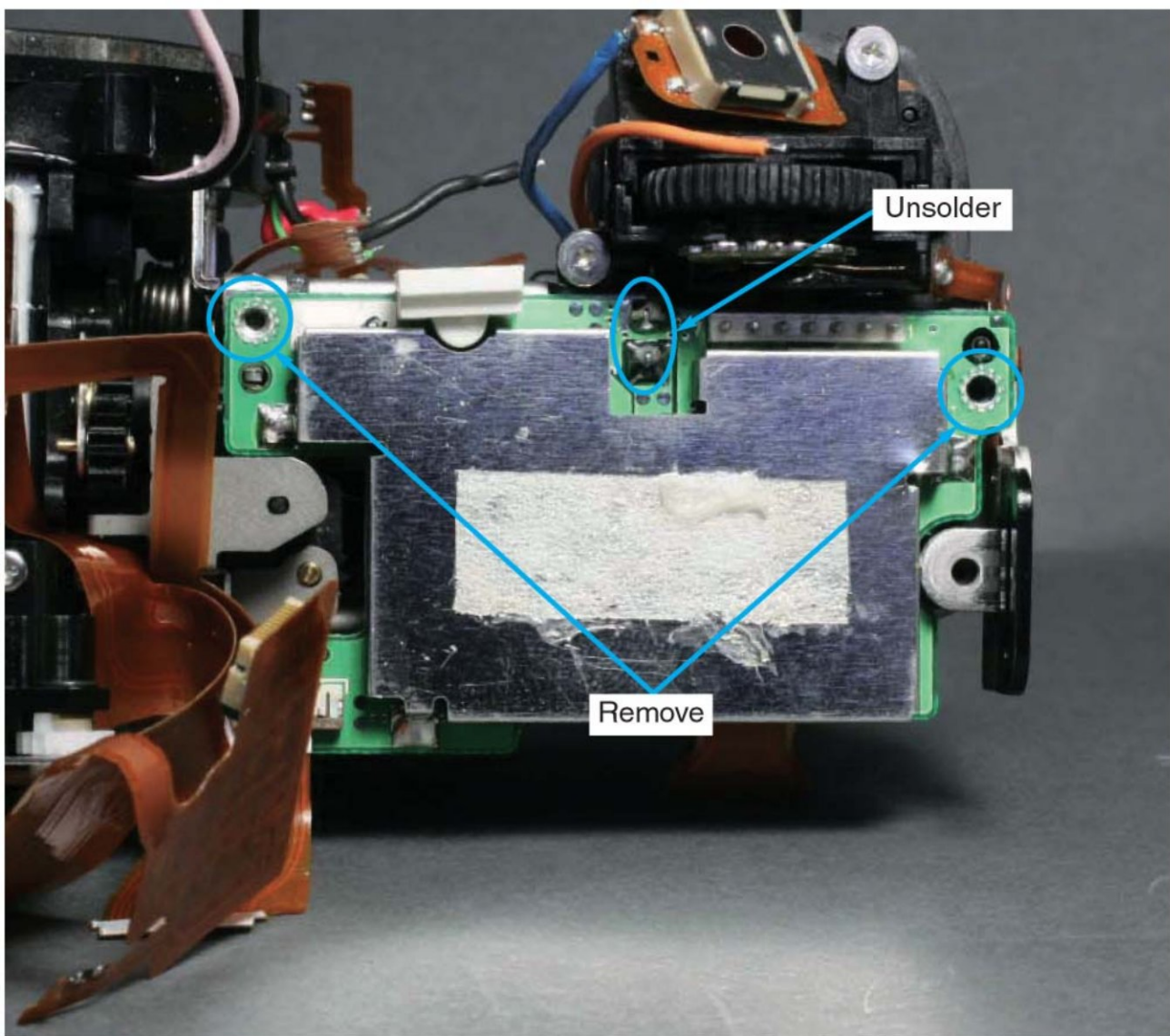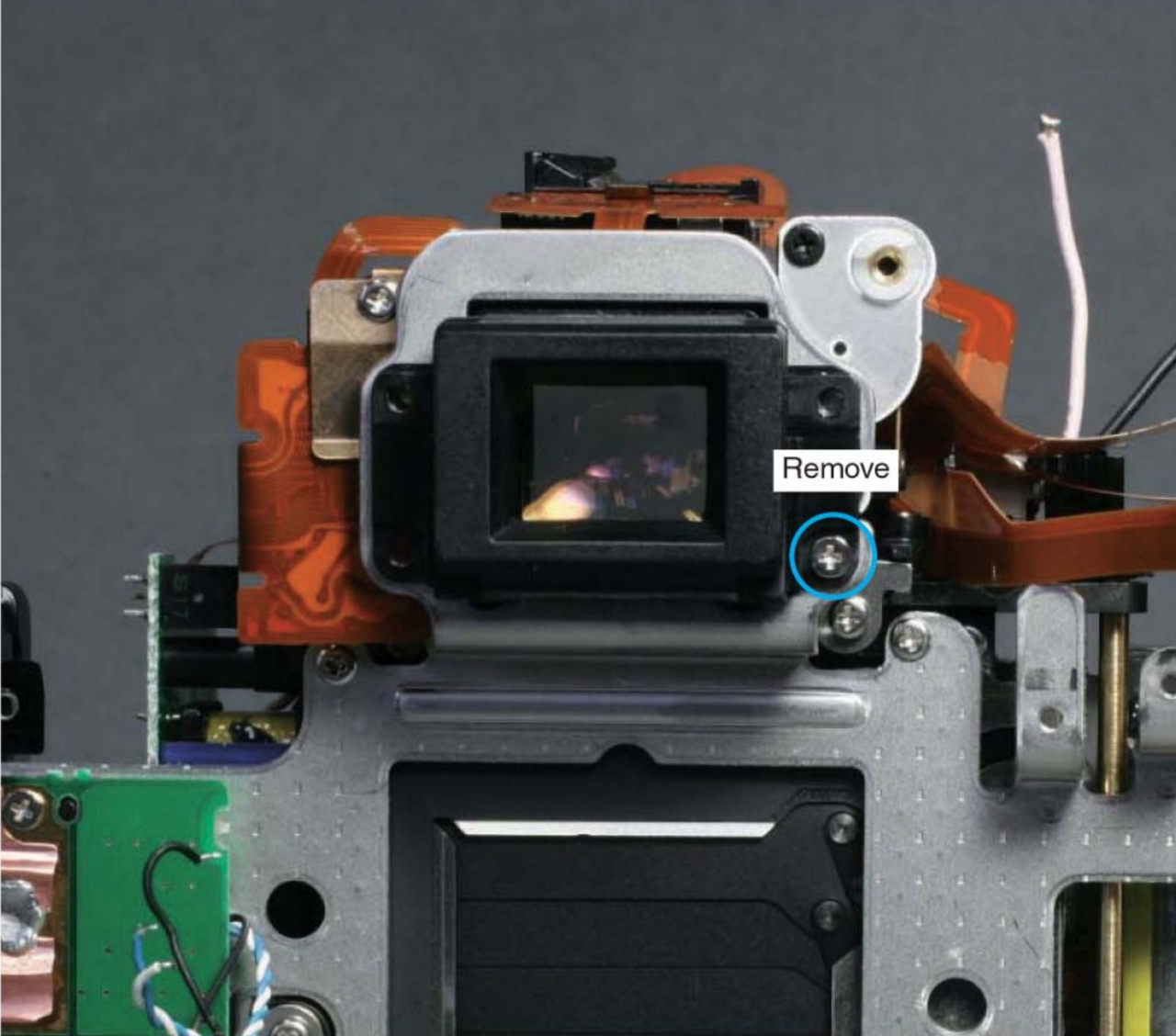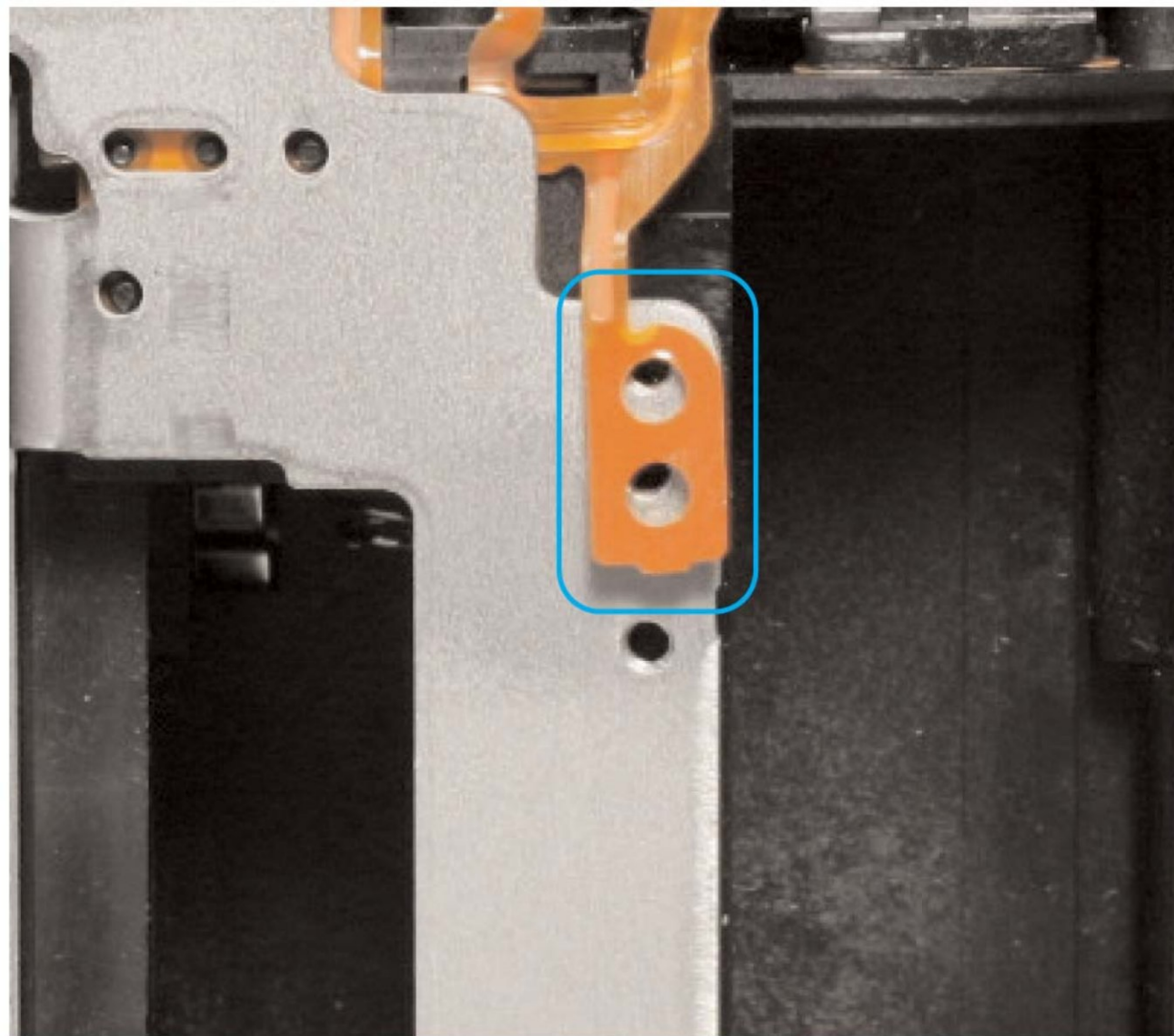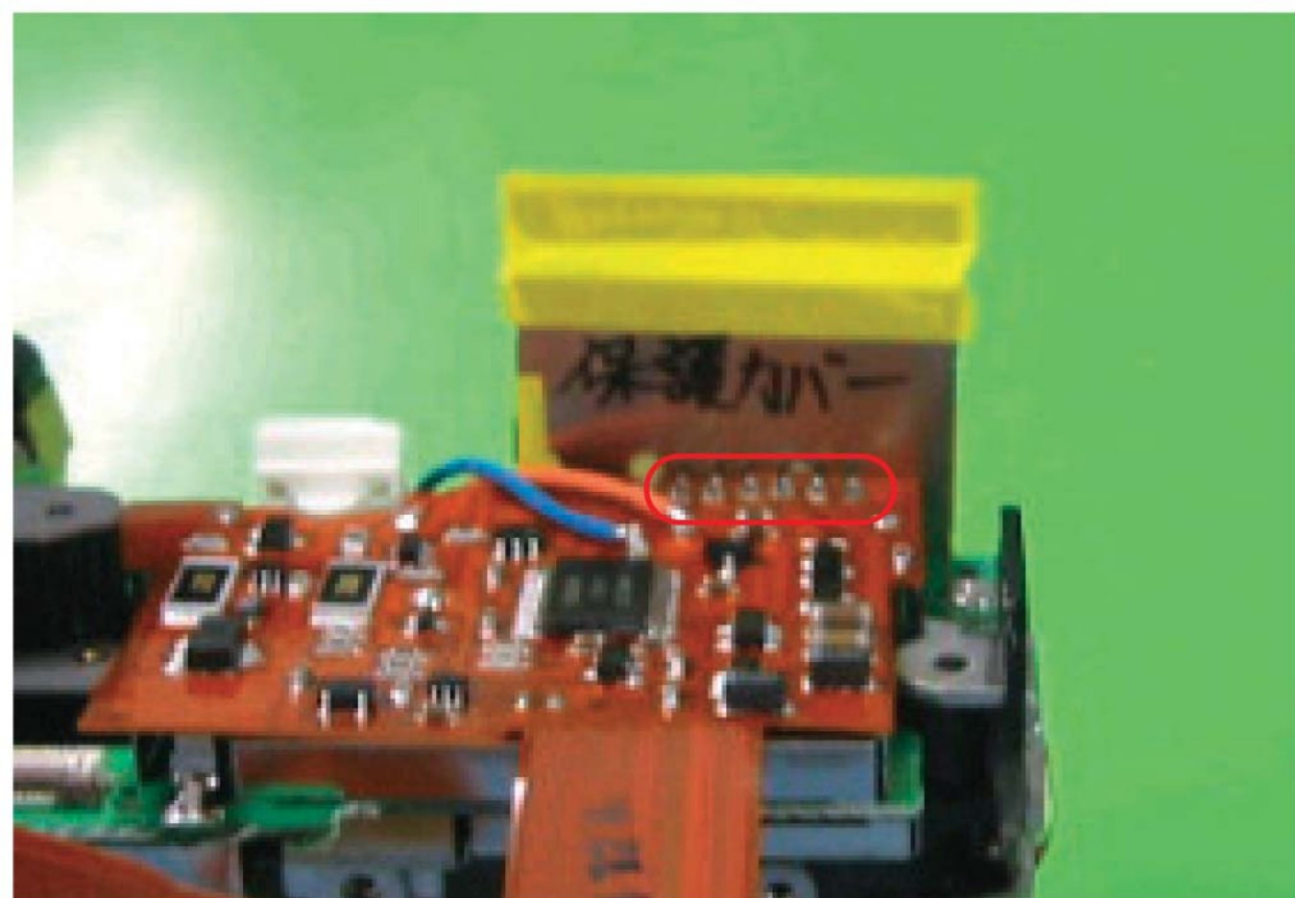
保護カバー

保護カバー

Protective cover
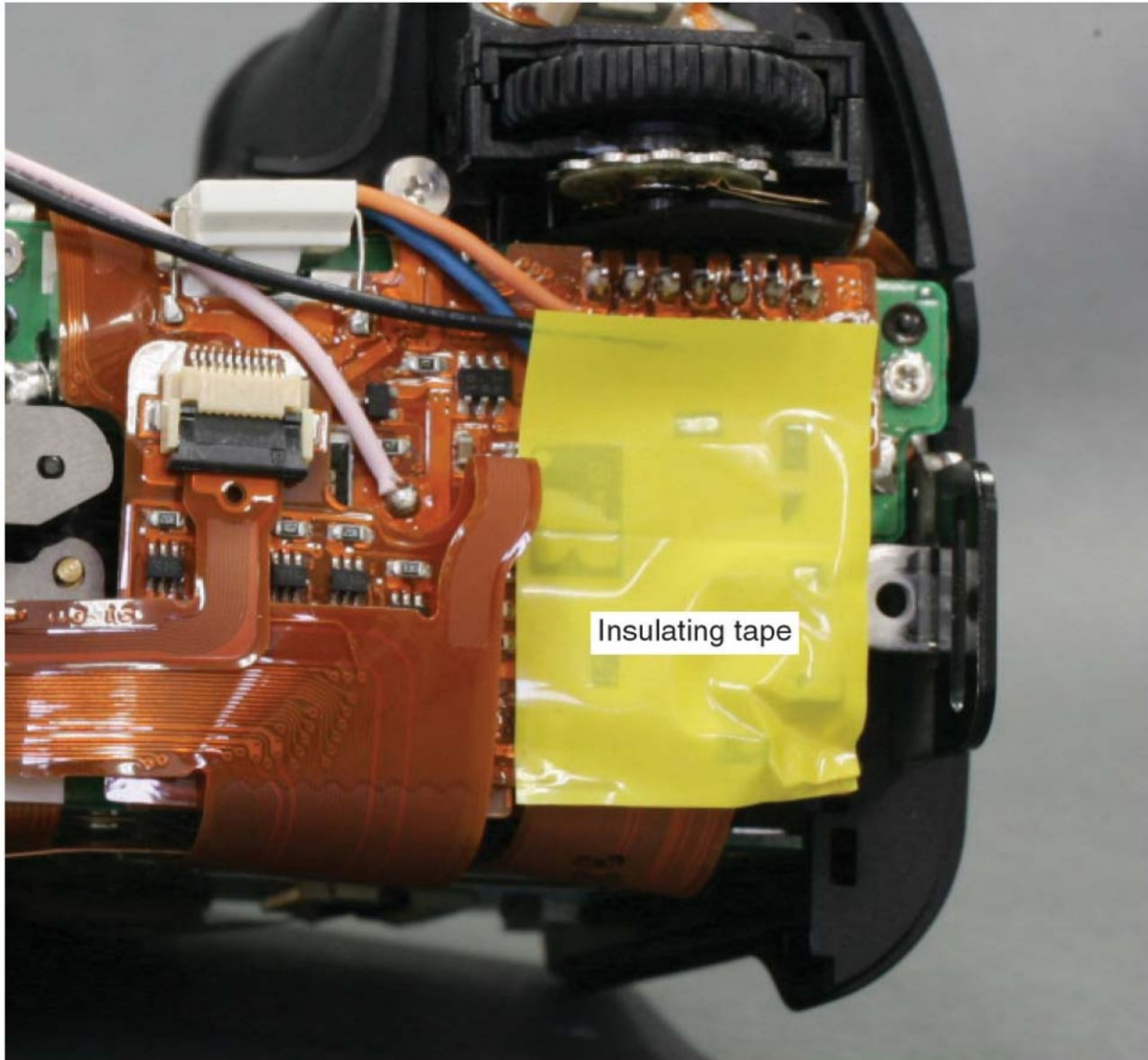
Insulating tape

1.6A Fuse

3.0A Fuse
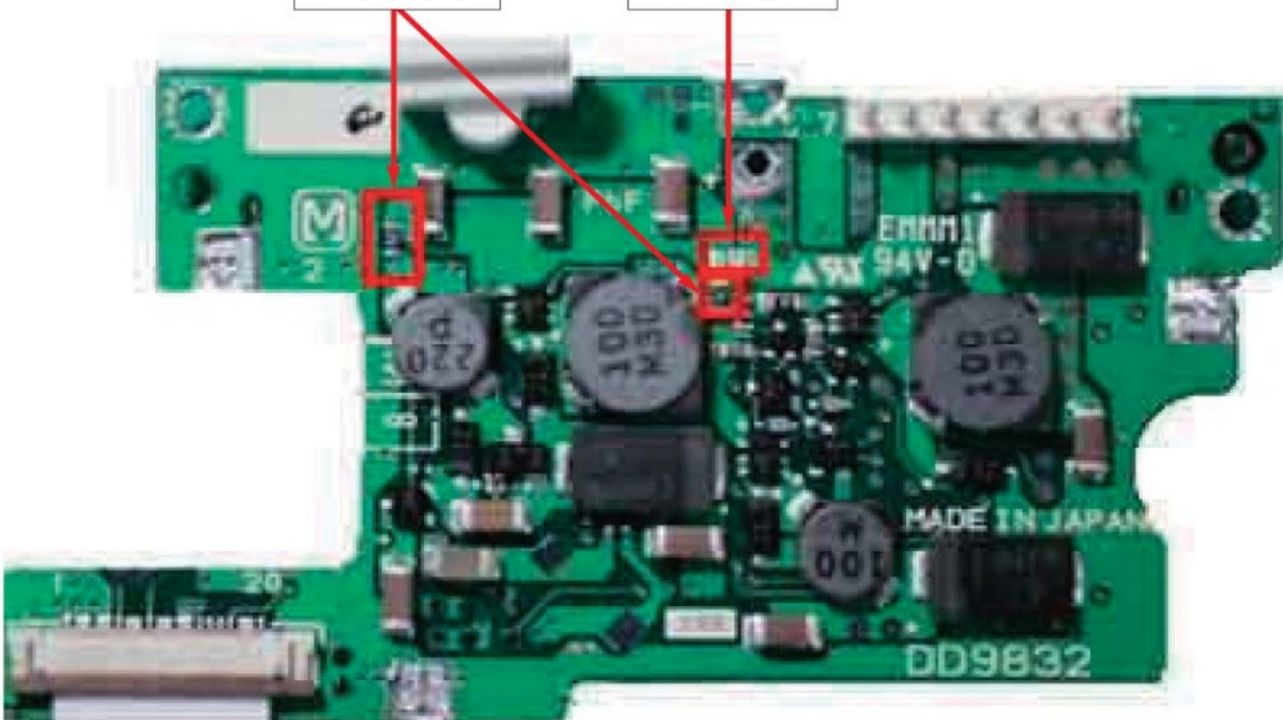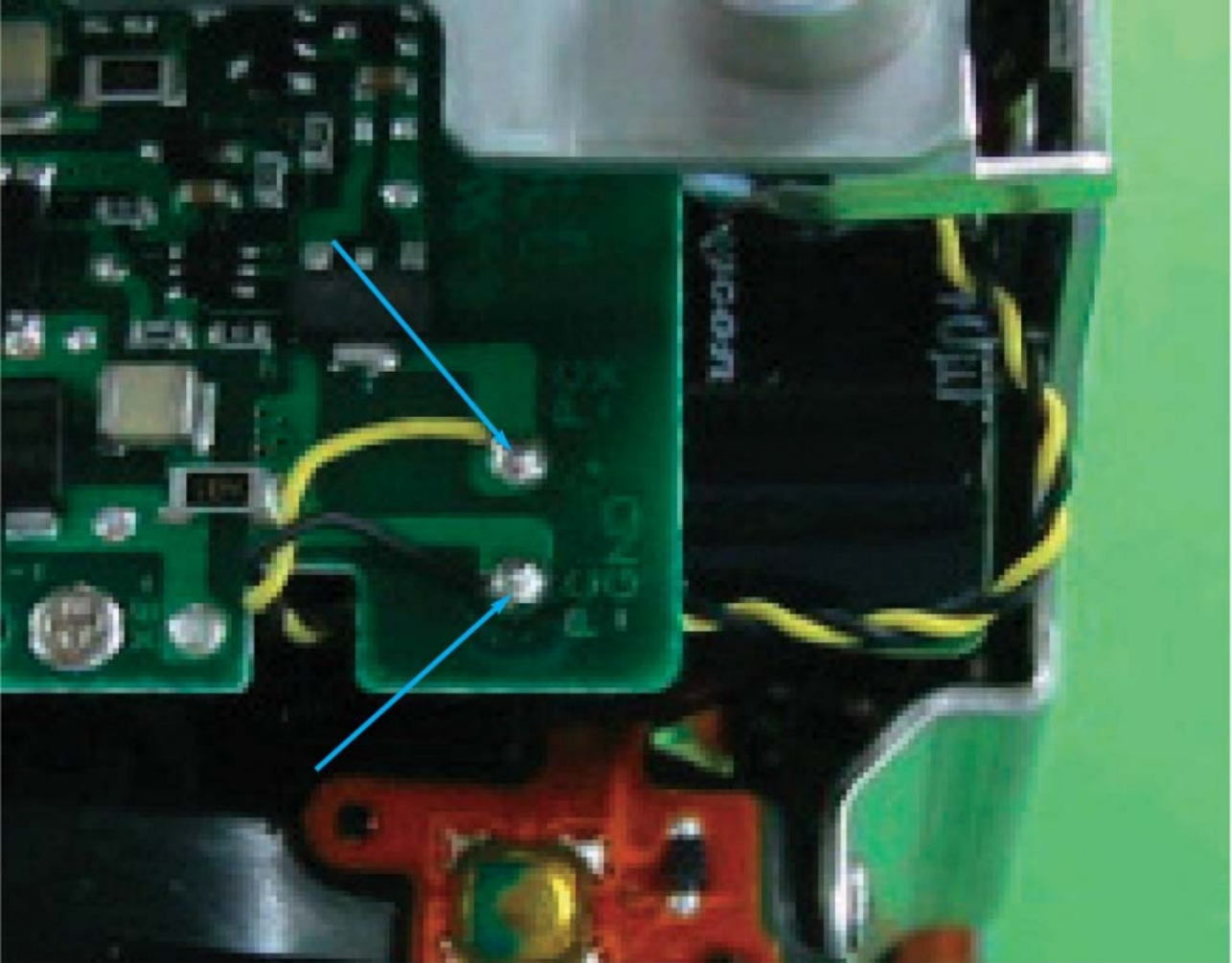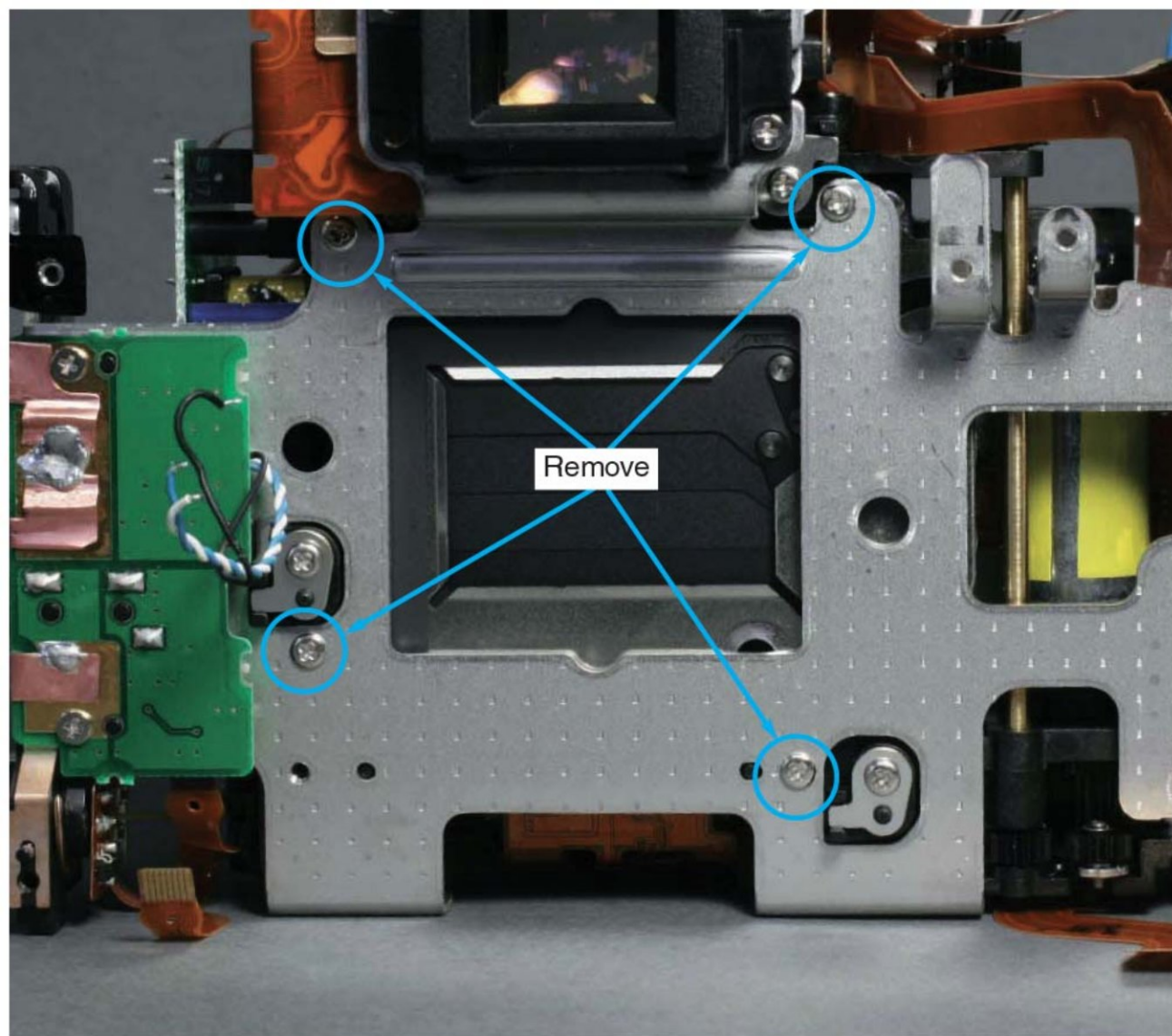
Remove

Remove

Remove

Remove

Remove

Remove
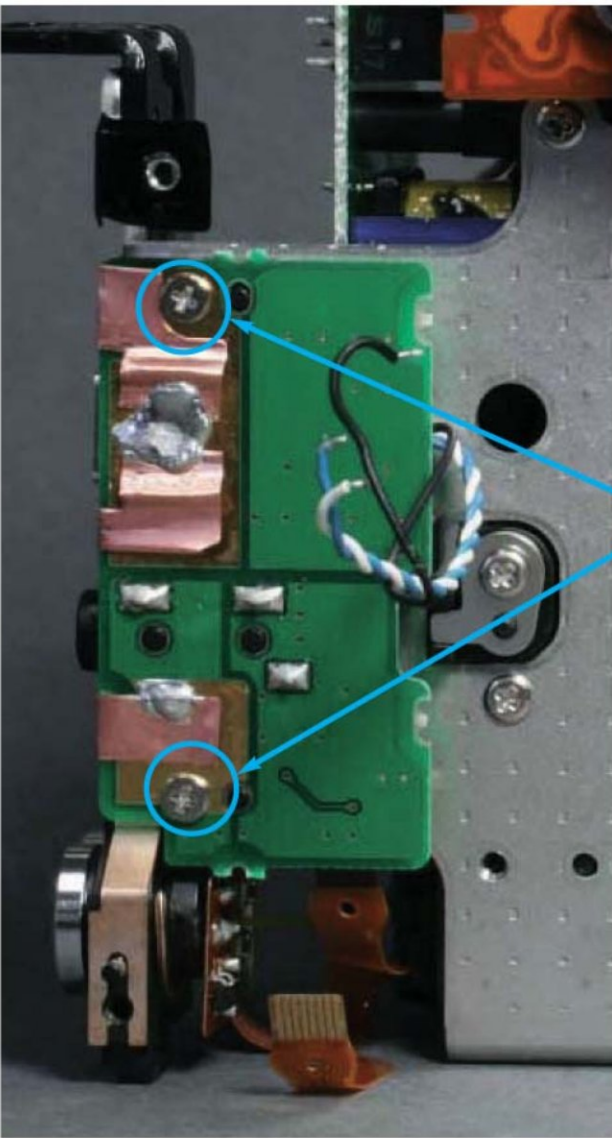
← Back

Remove

Remove

Remove
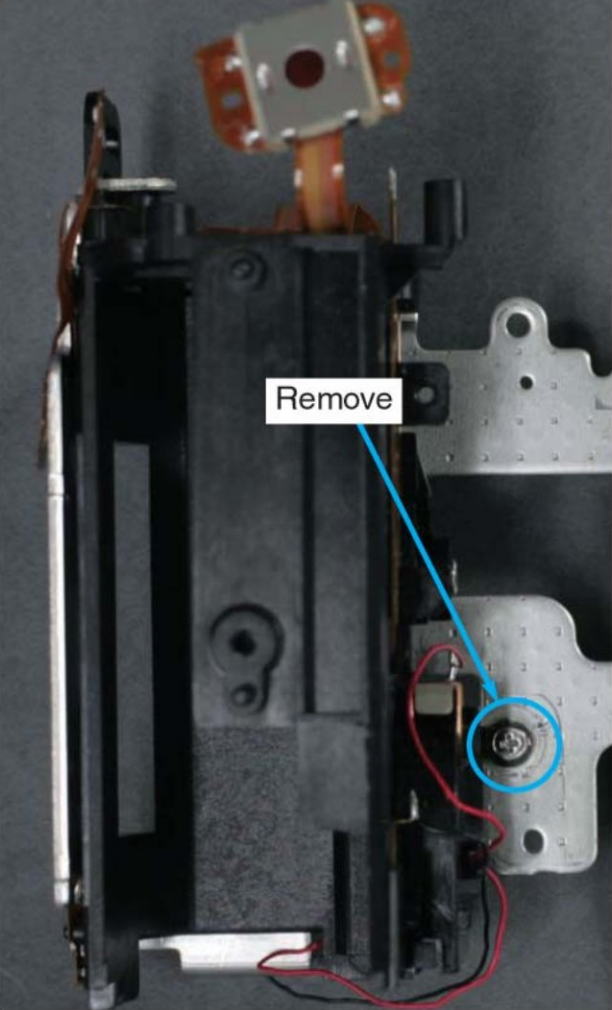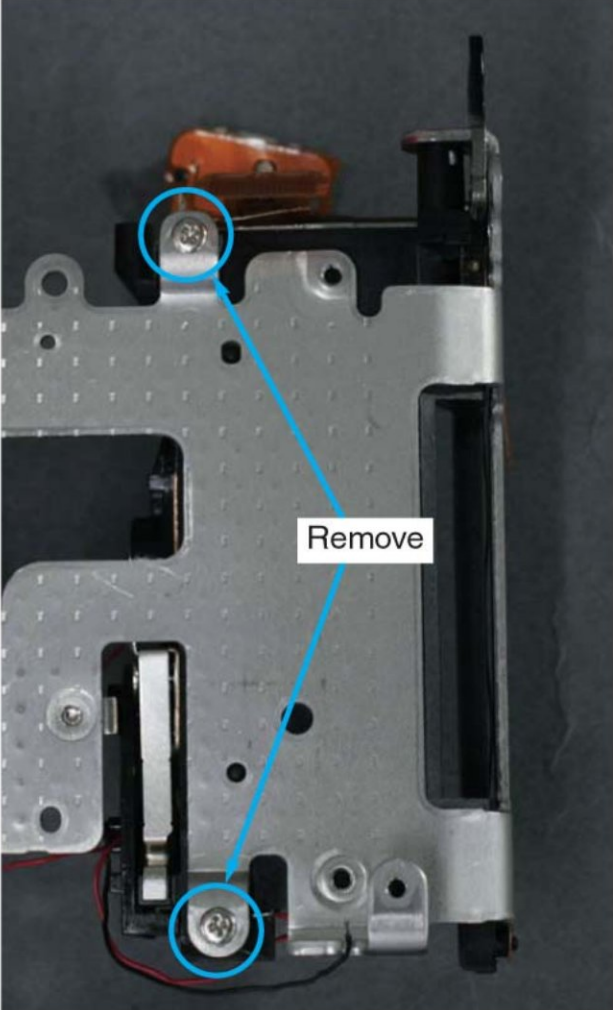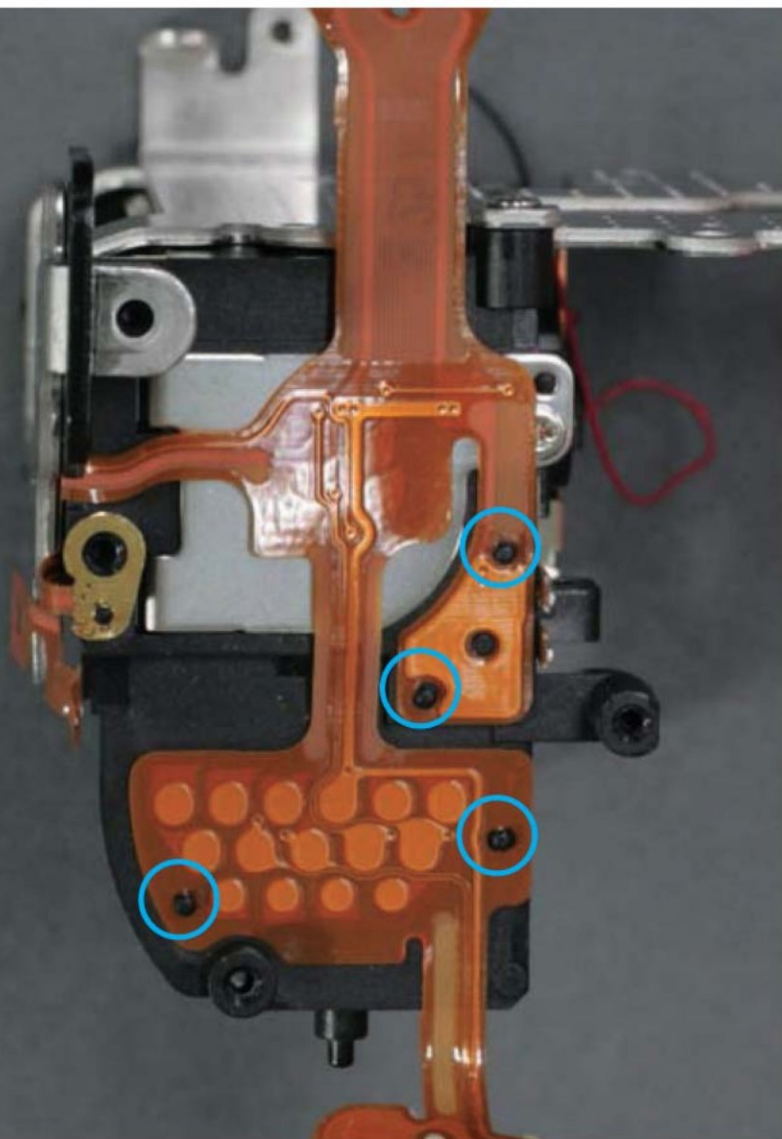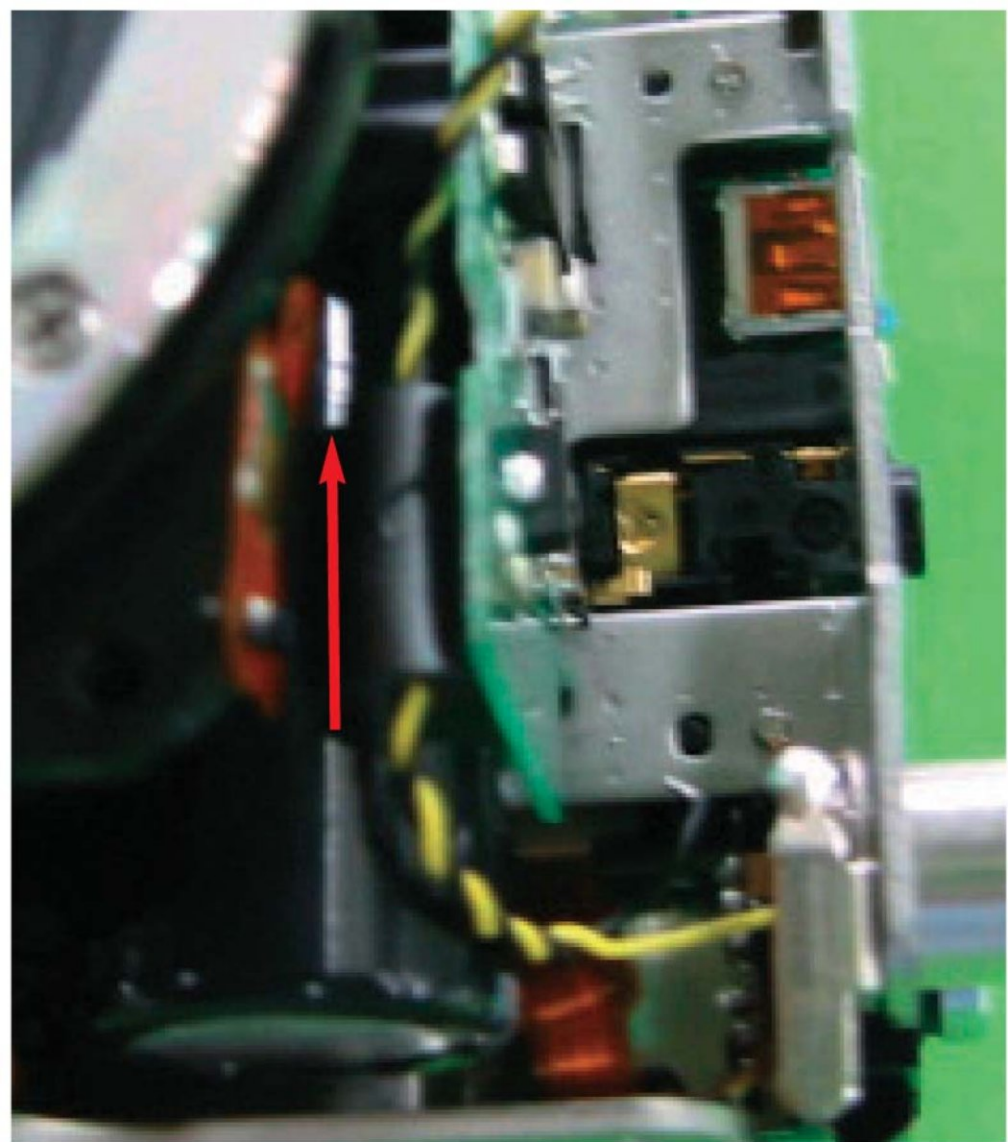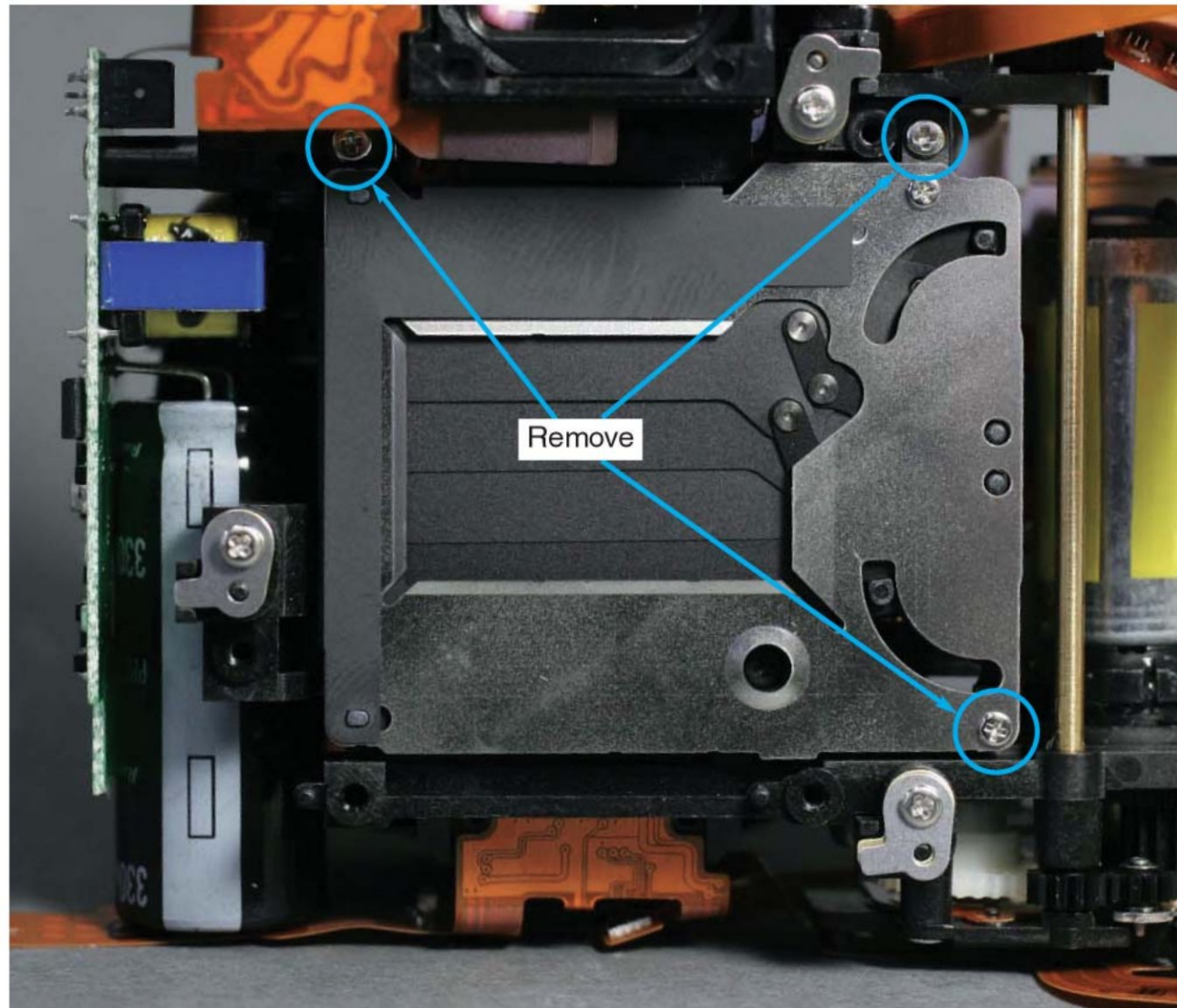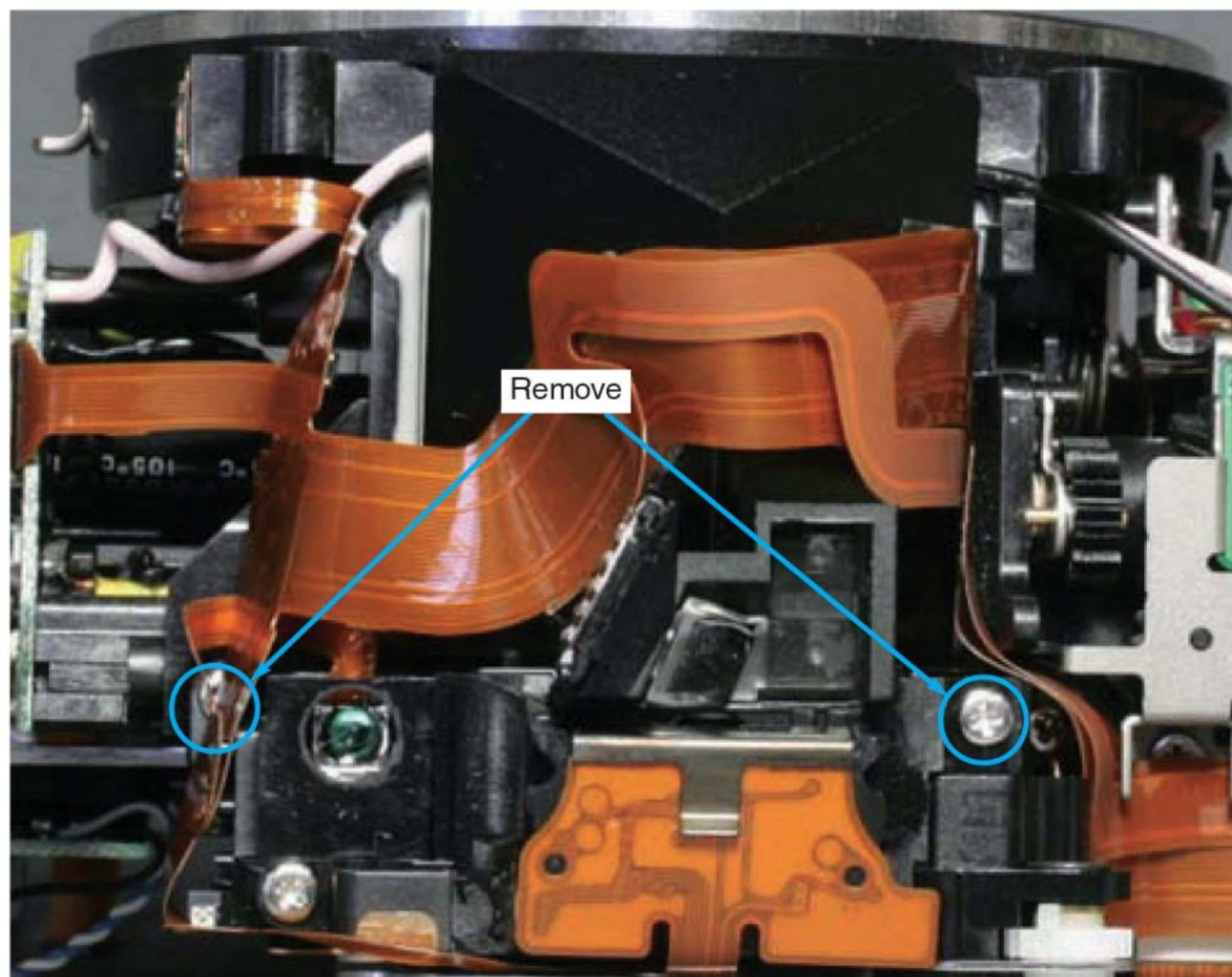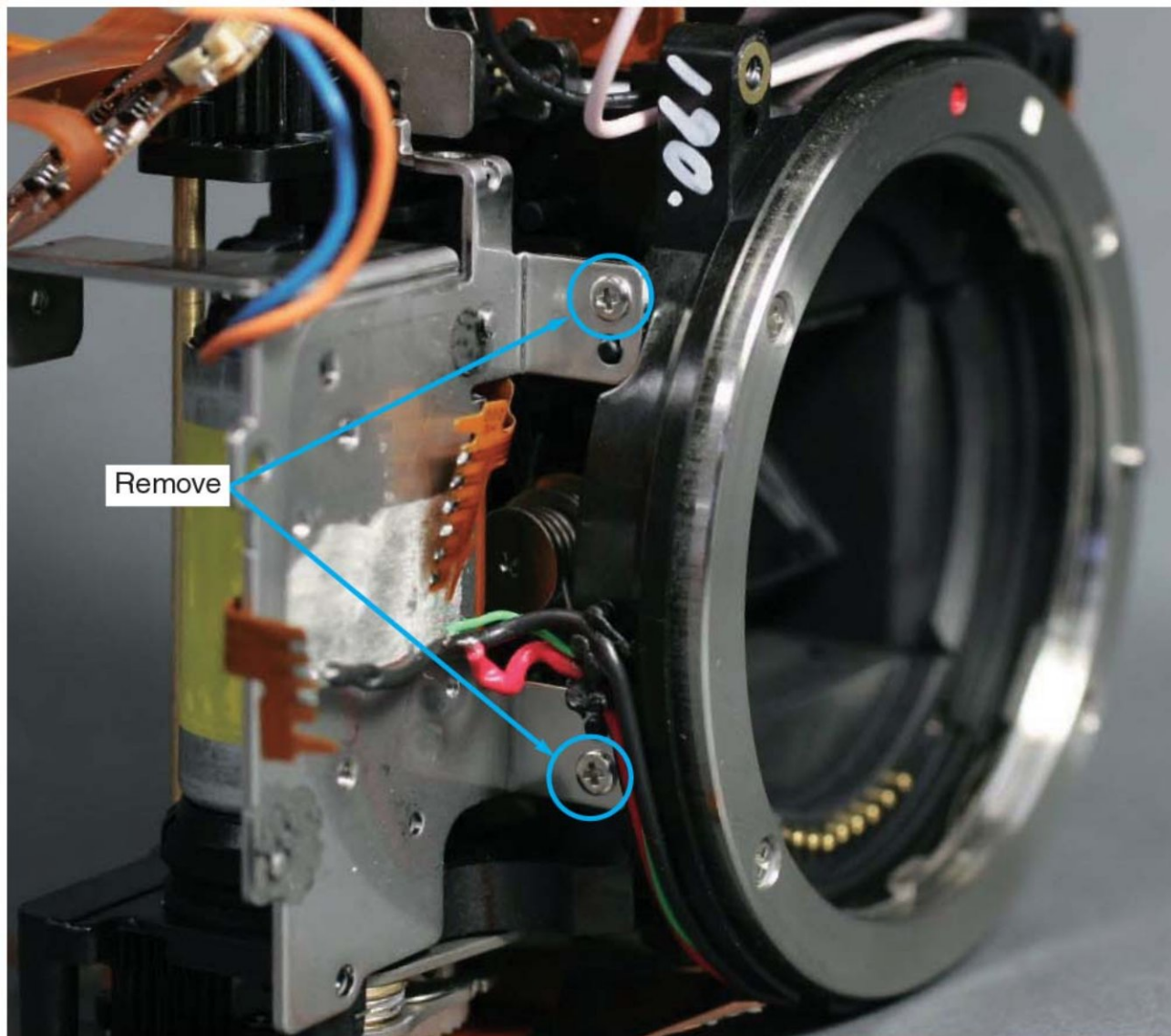
Remove

Back

Remove

Disconnect

Remove

Back
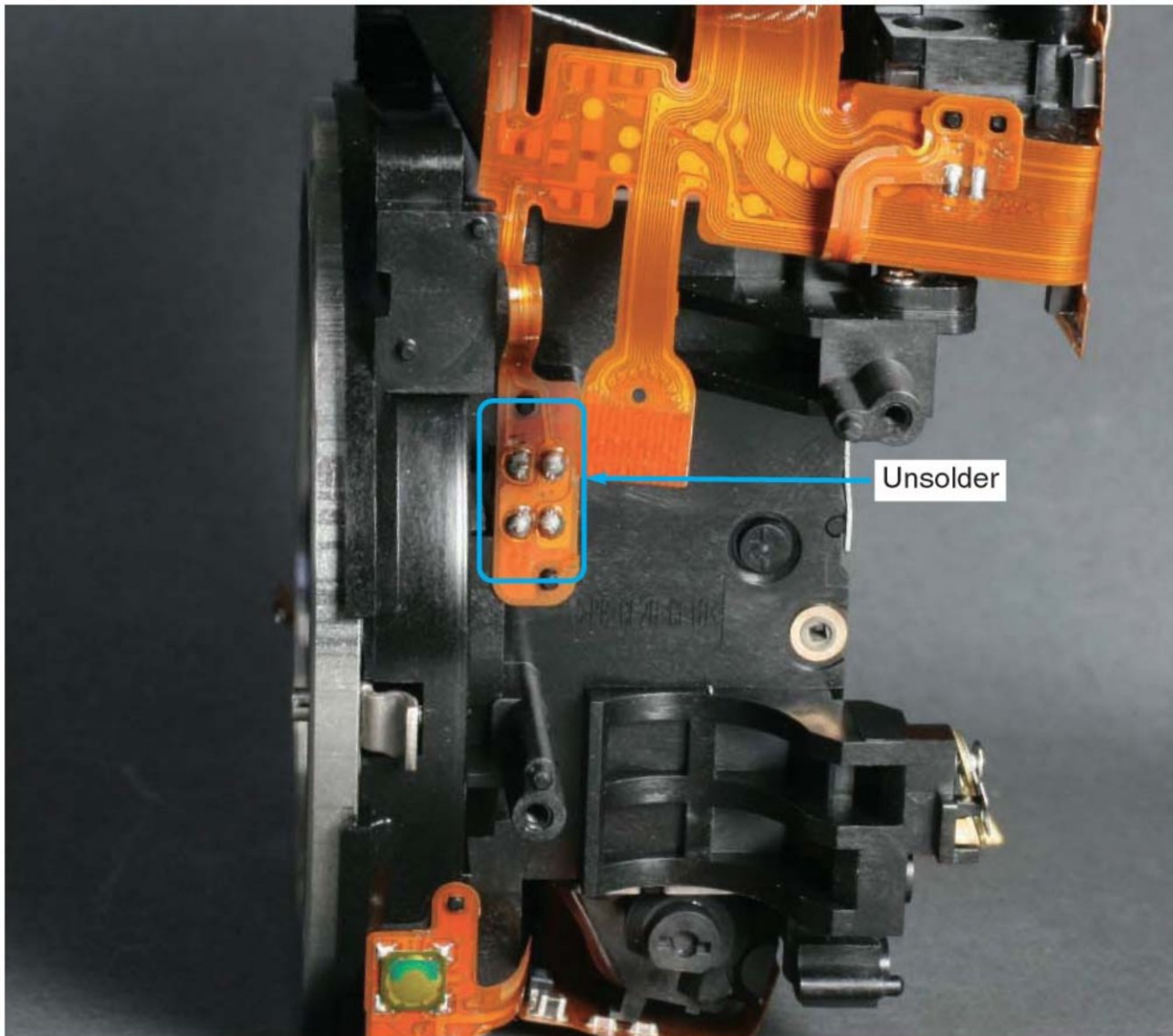
Unsolder

Remove
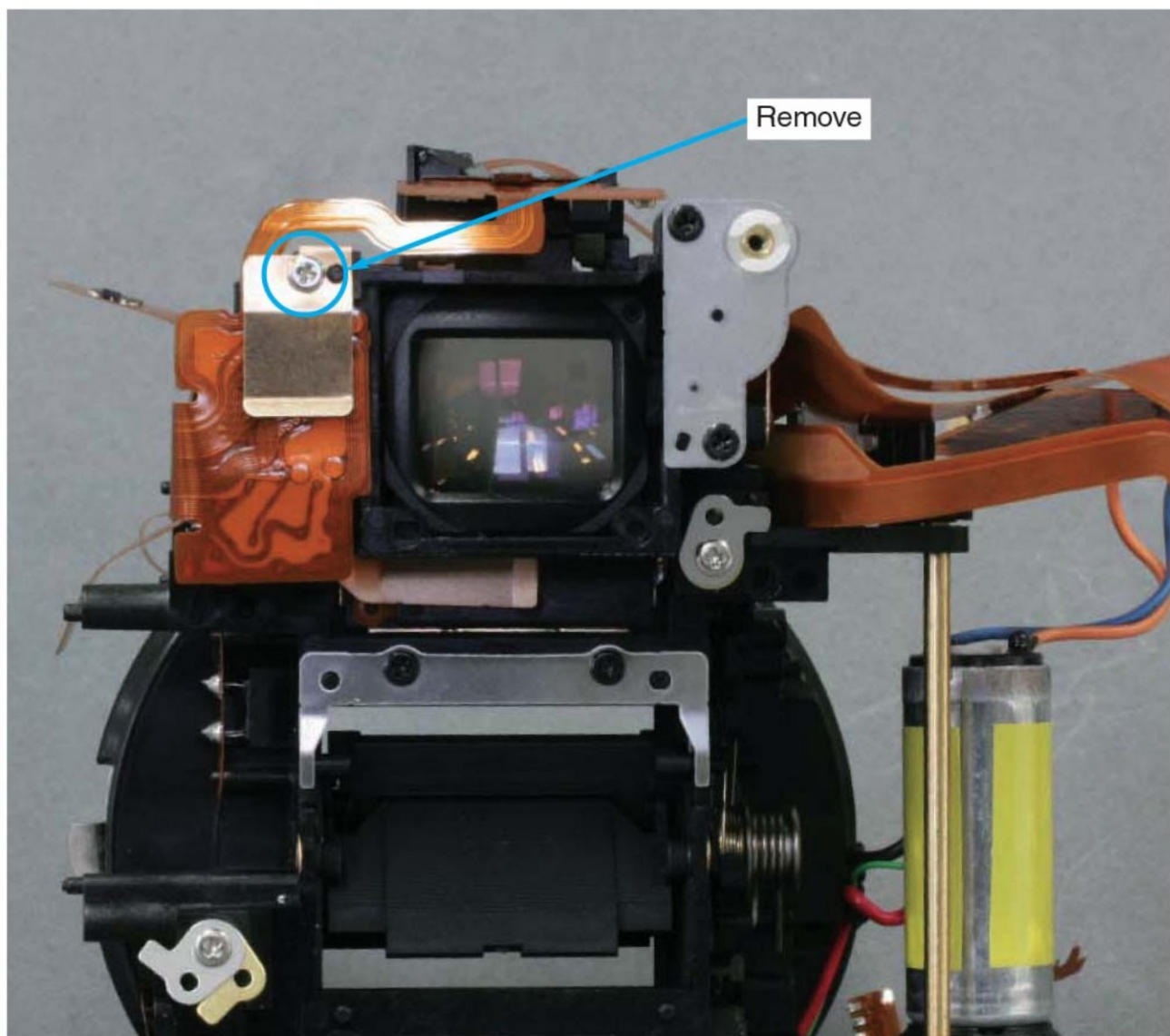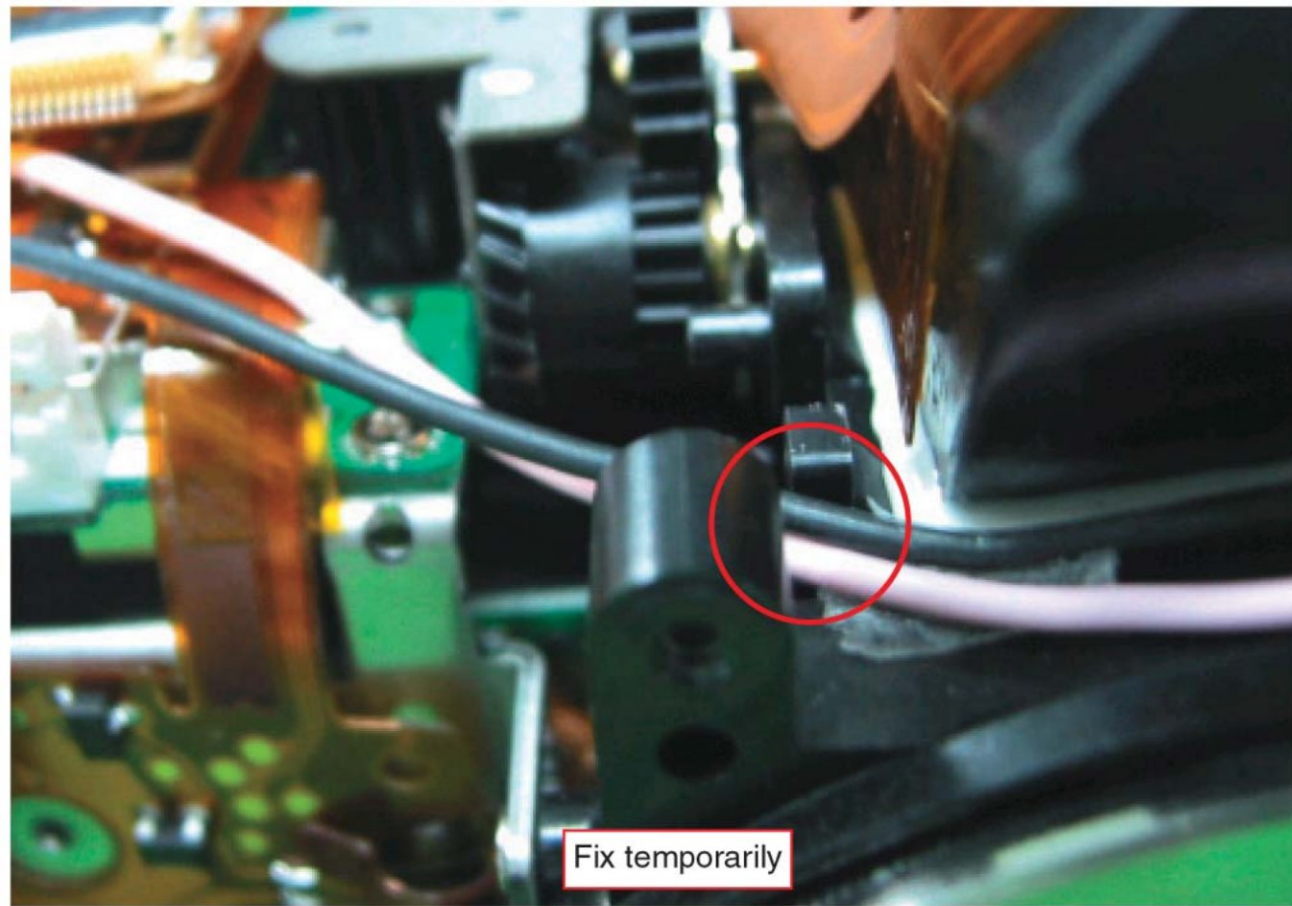
Back

Fix temporarily
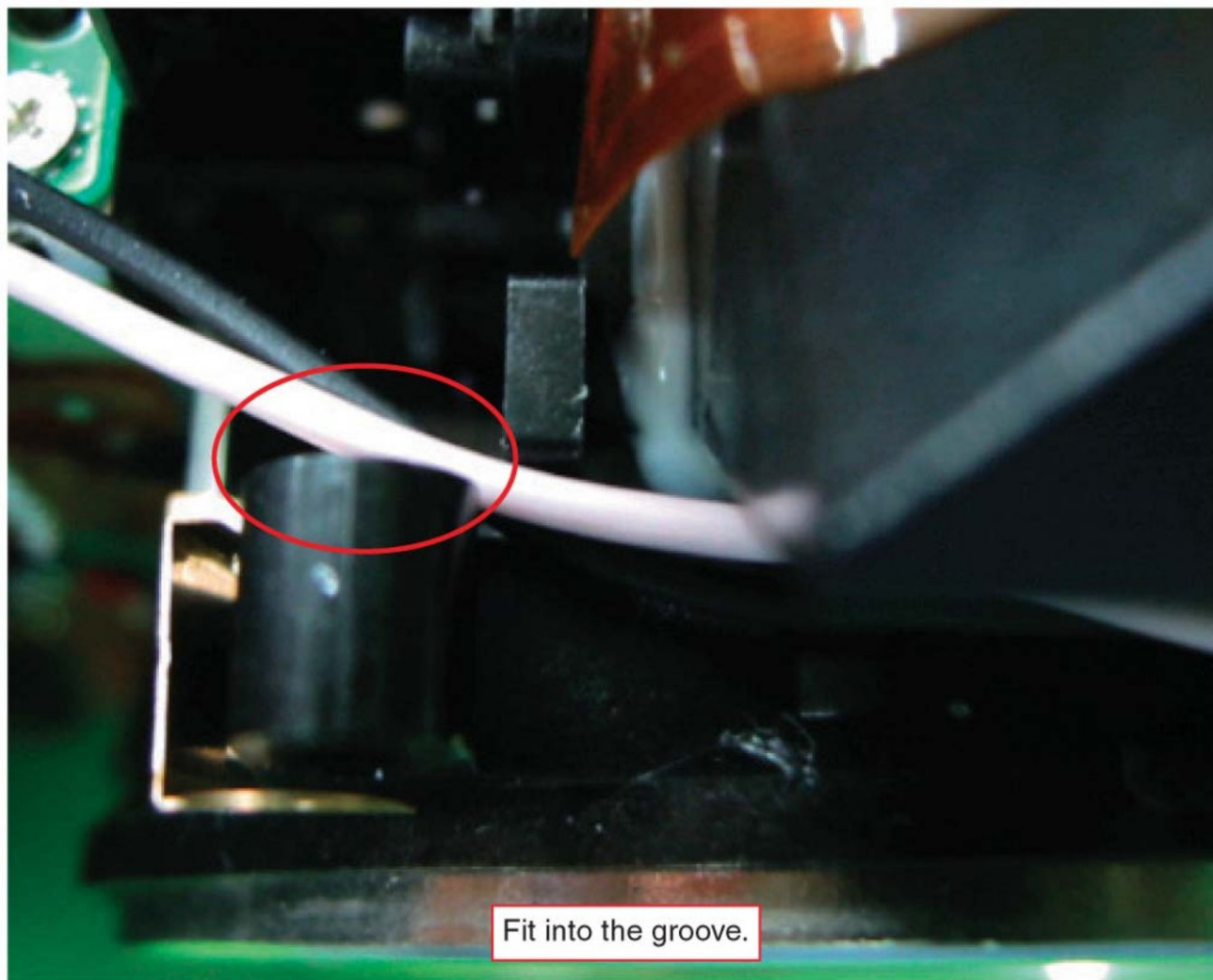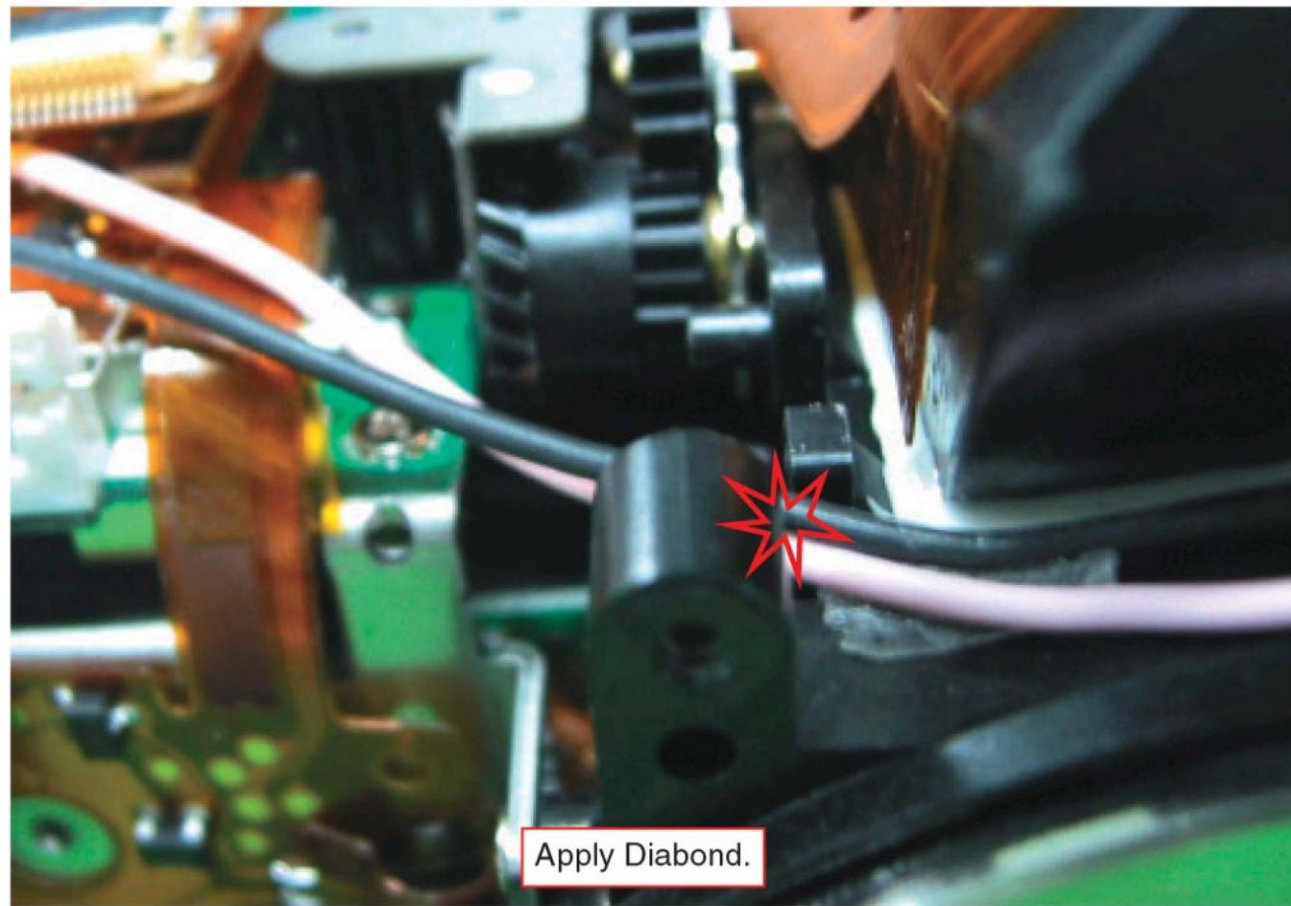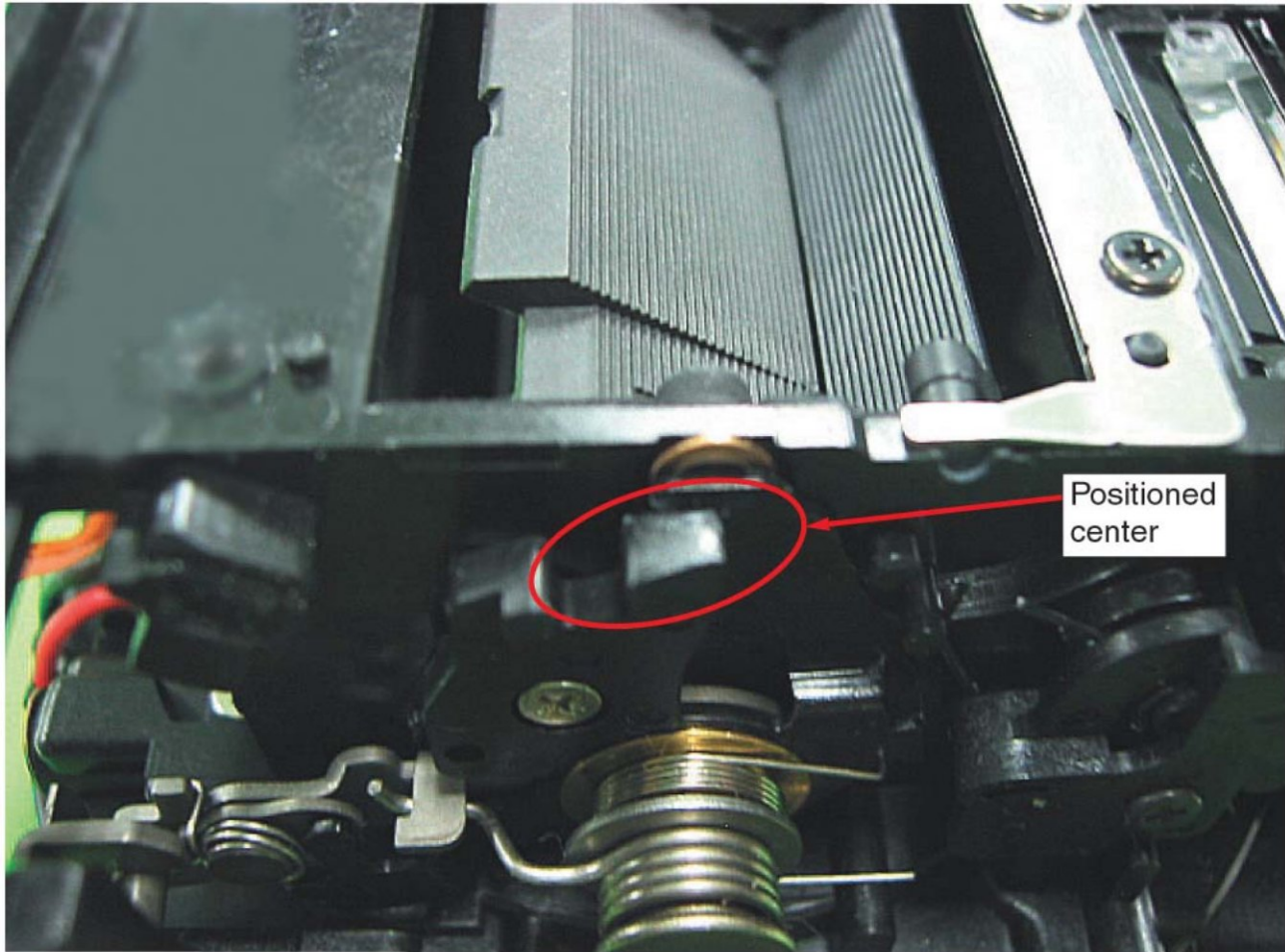
Fit into the groove.

Apply Diabond.

Positioned center
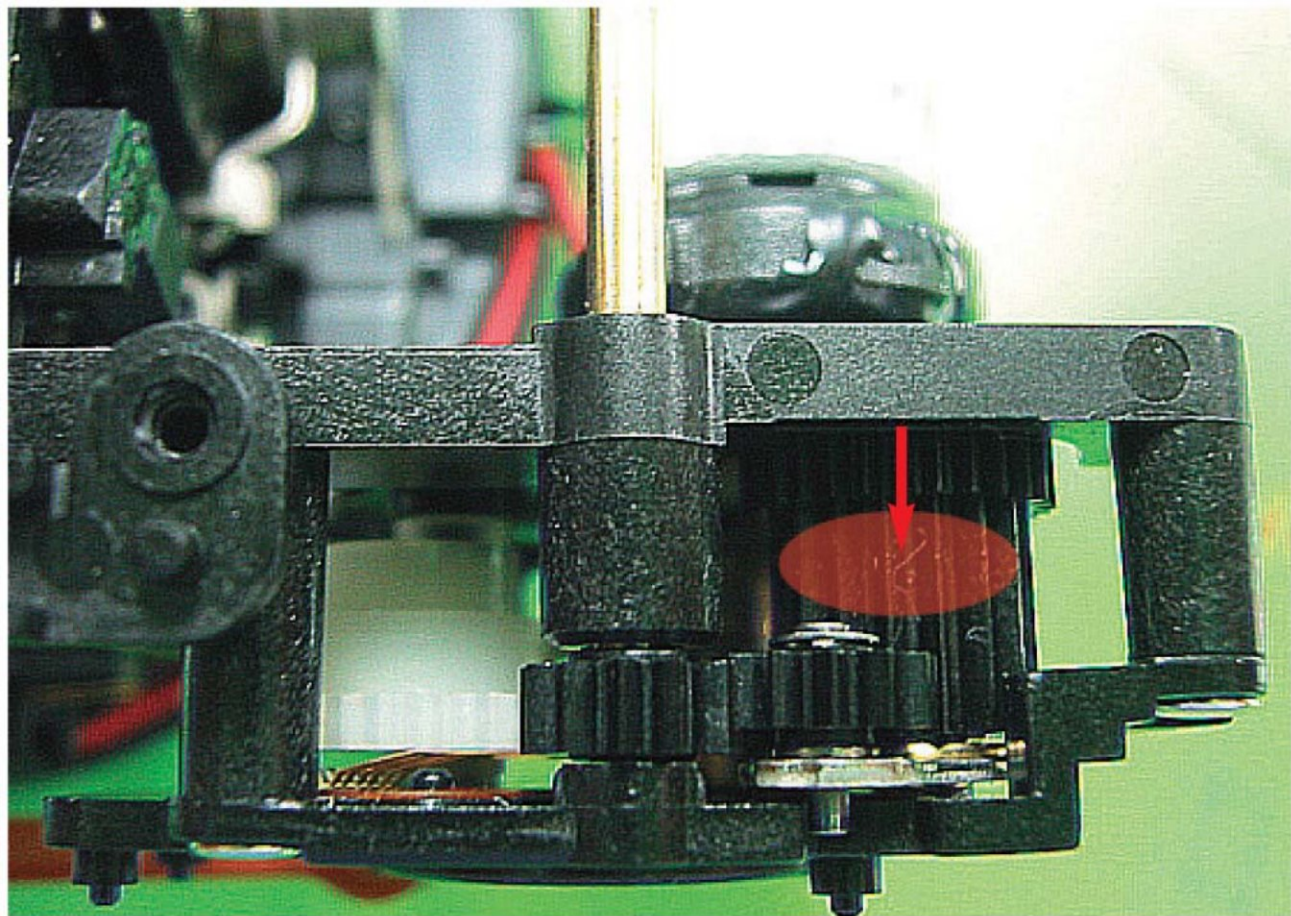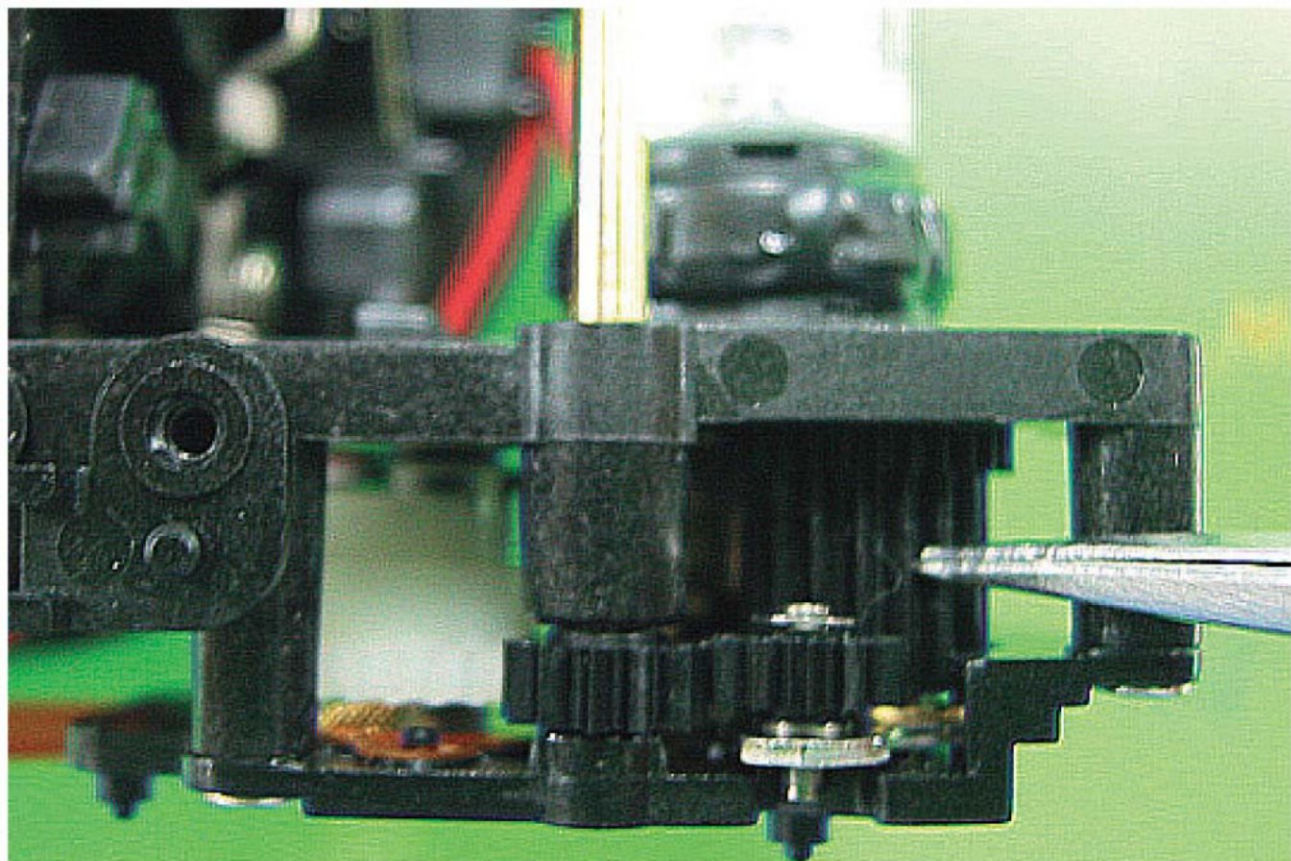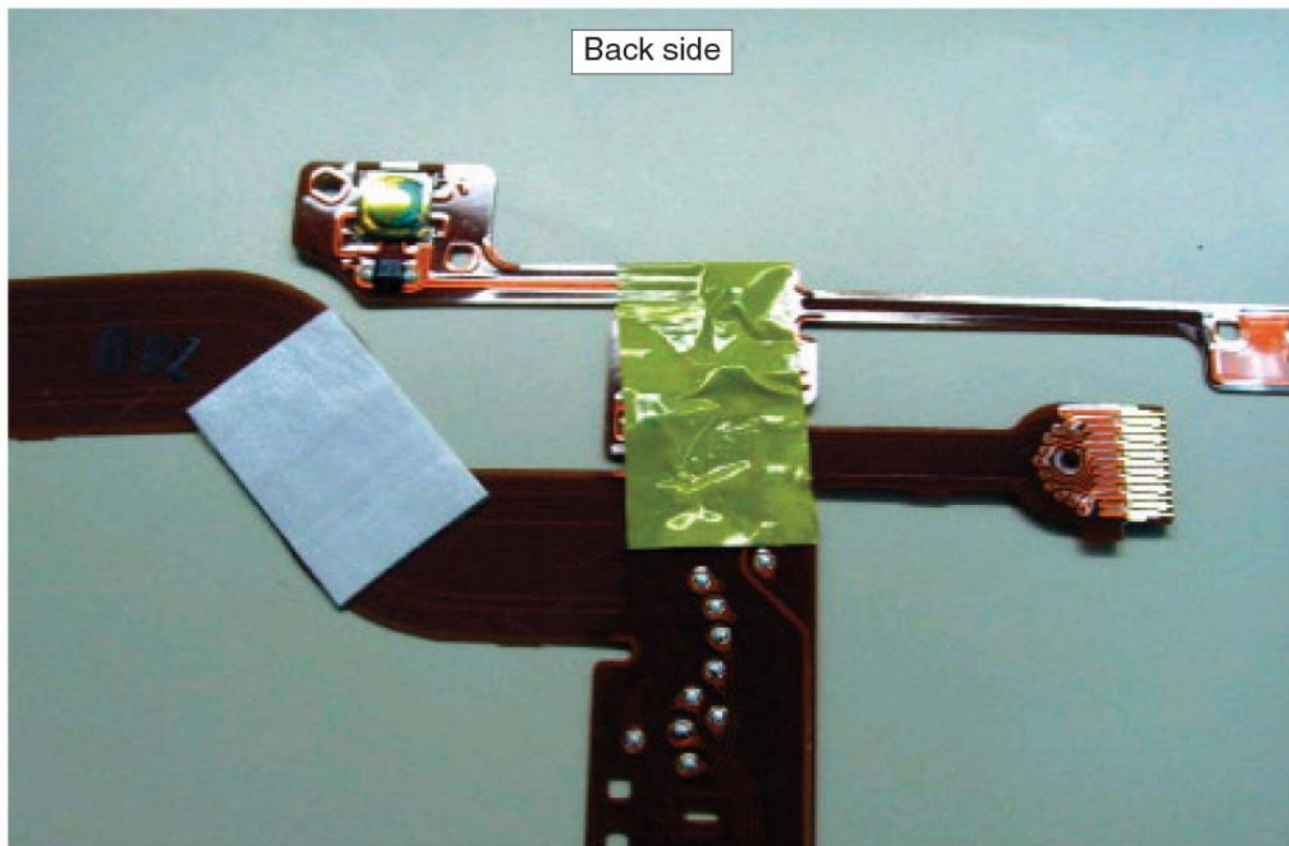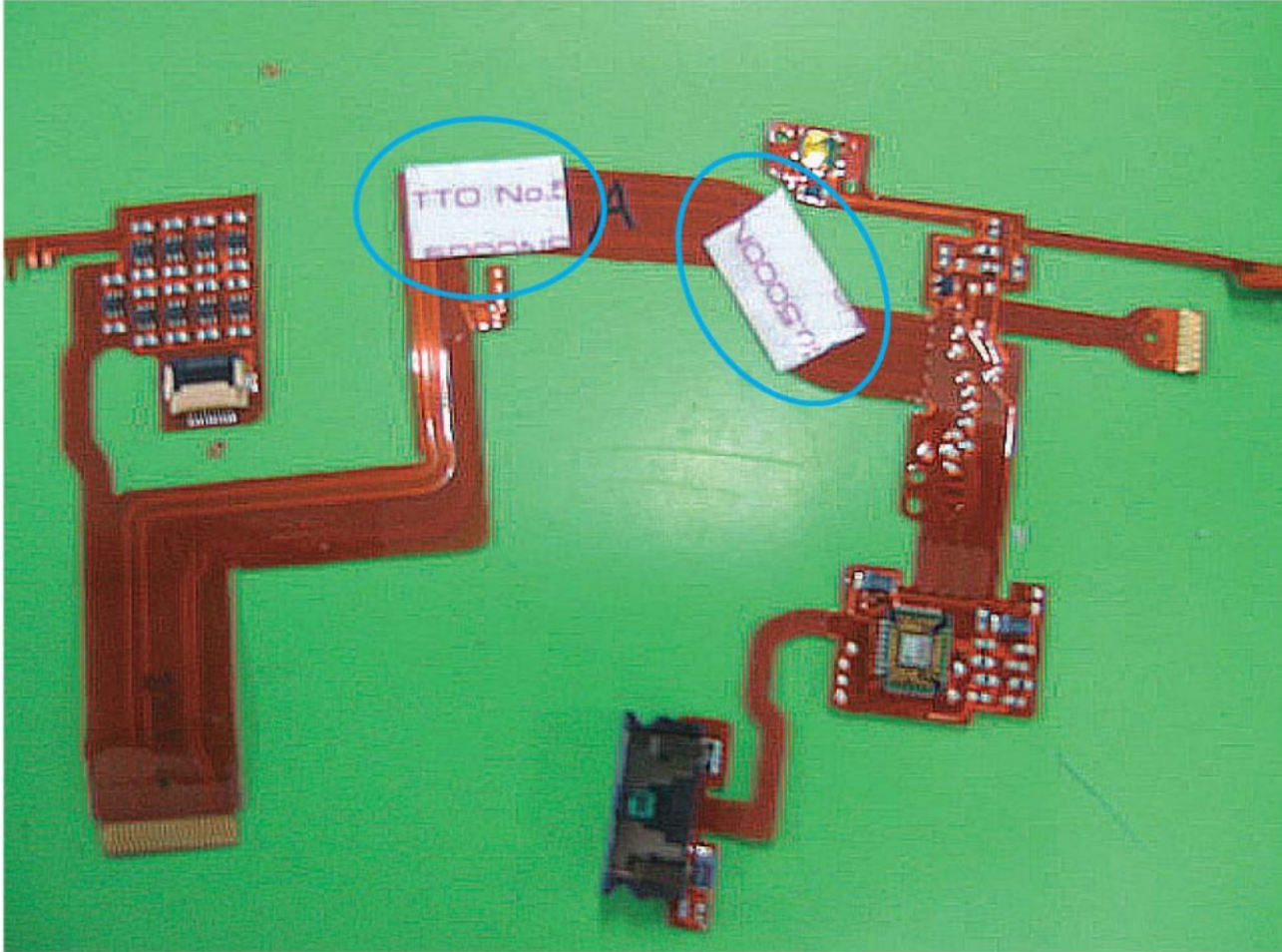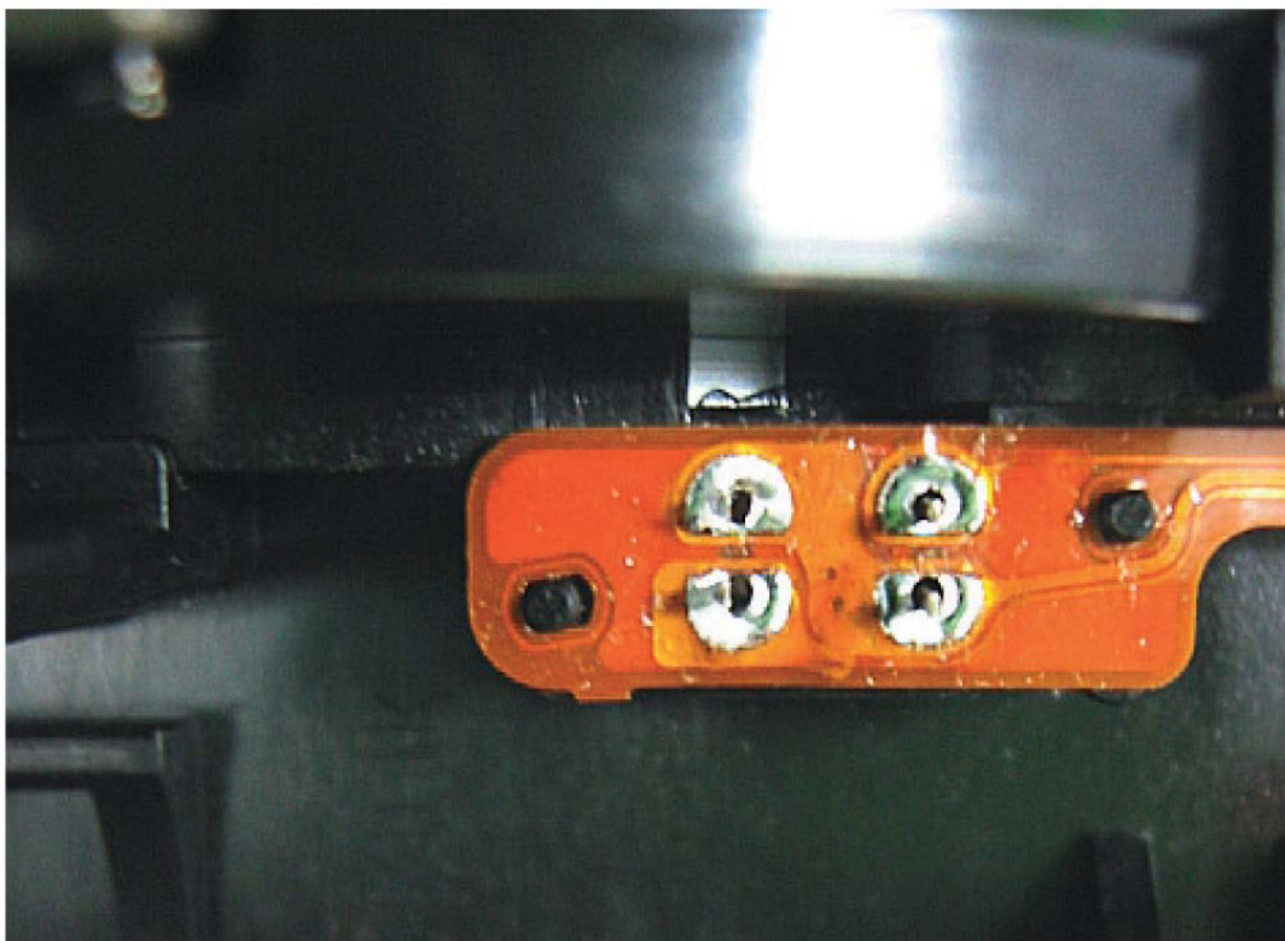
Charge state

Put the lever into the groove.
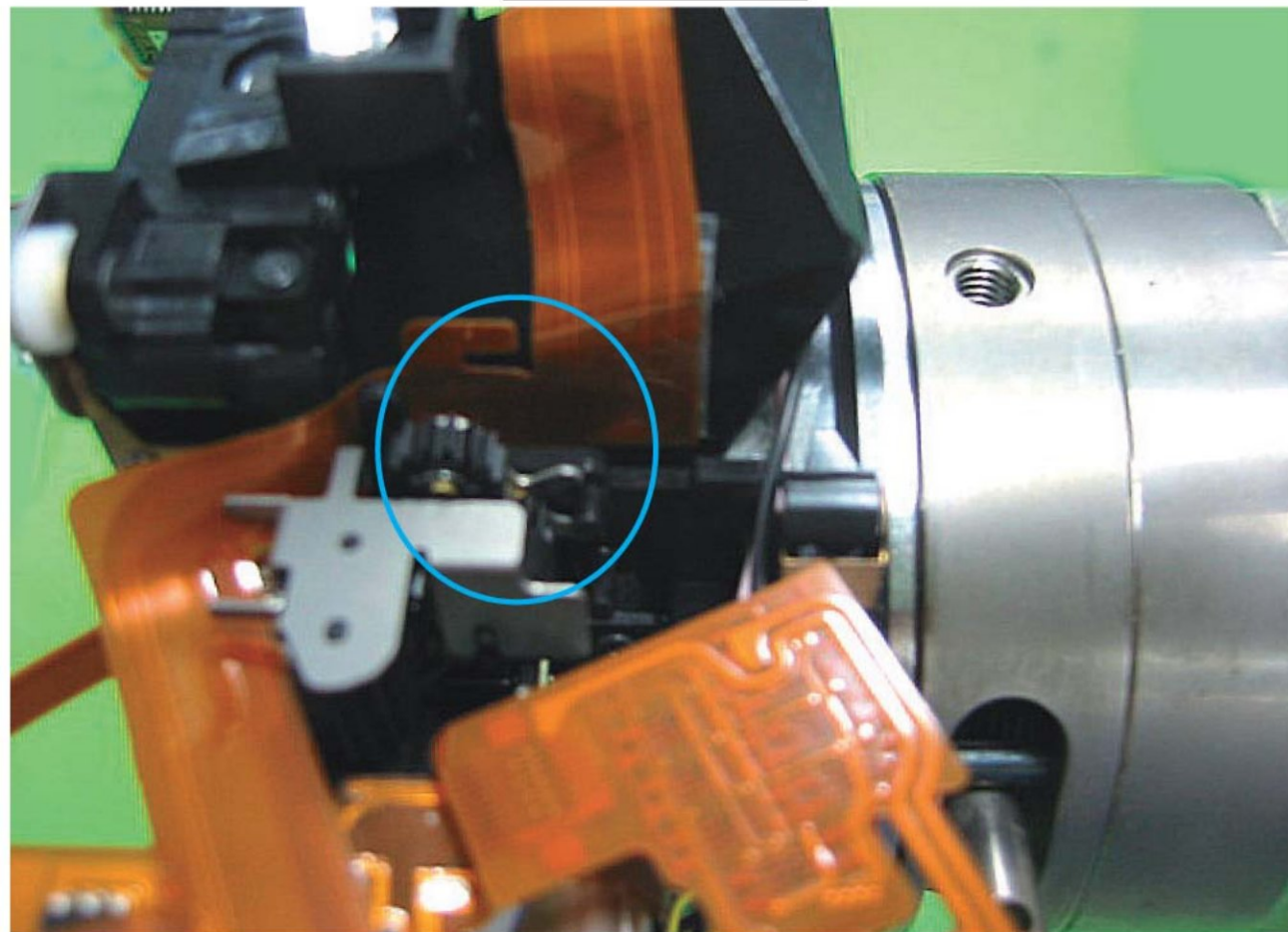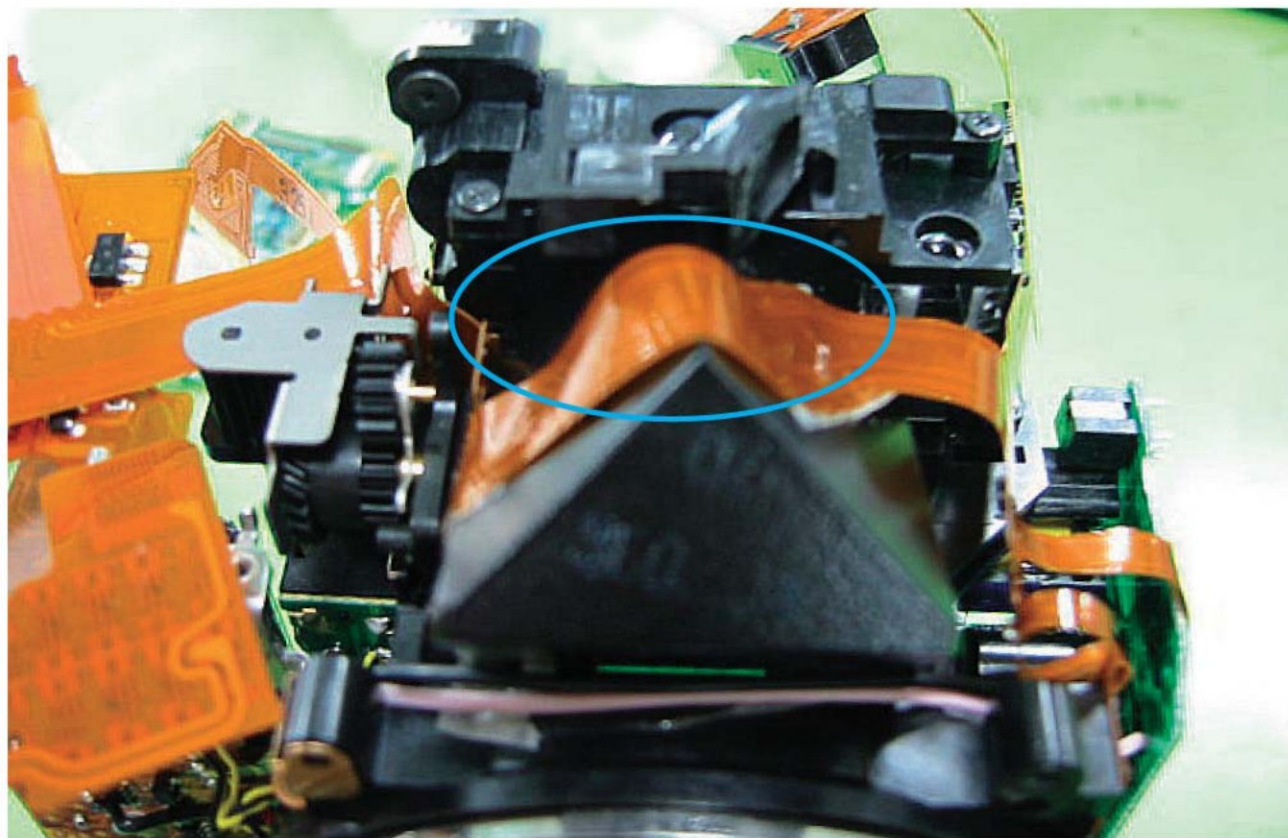
Loosen the flex

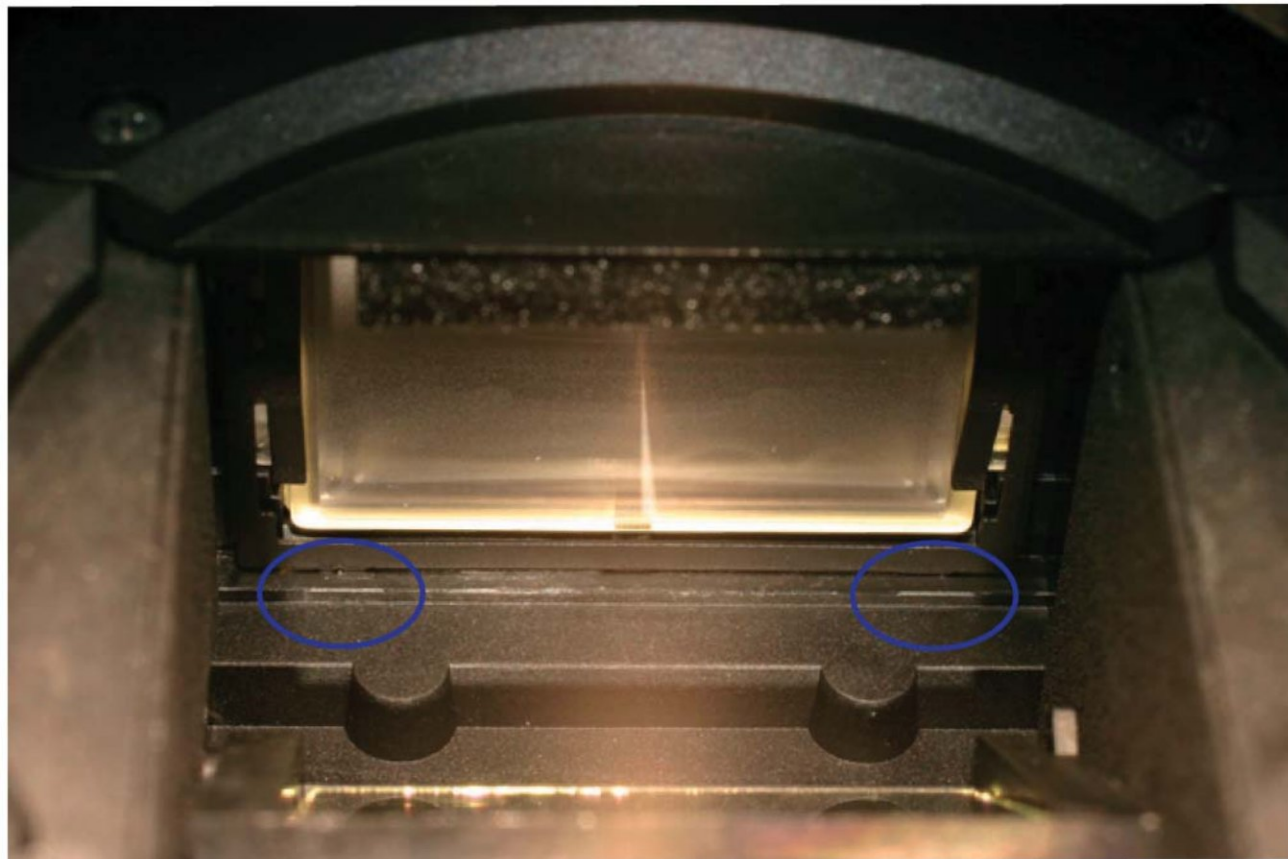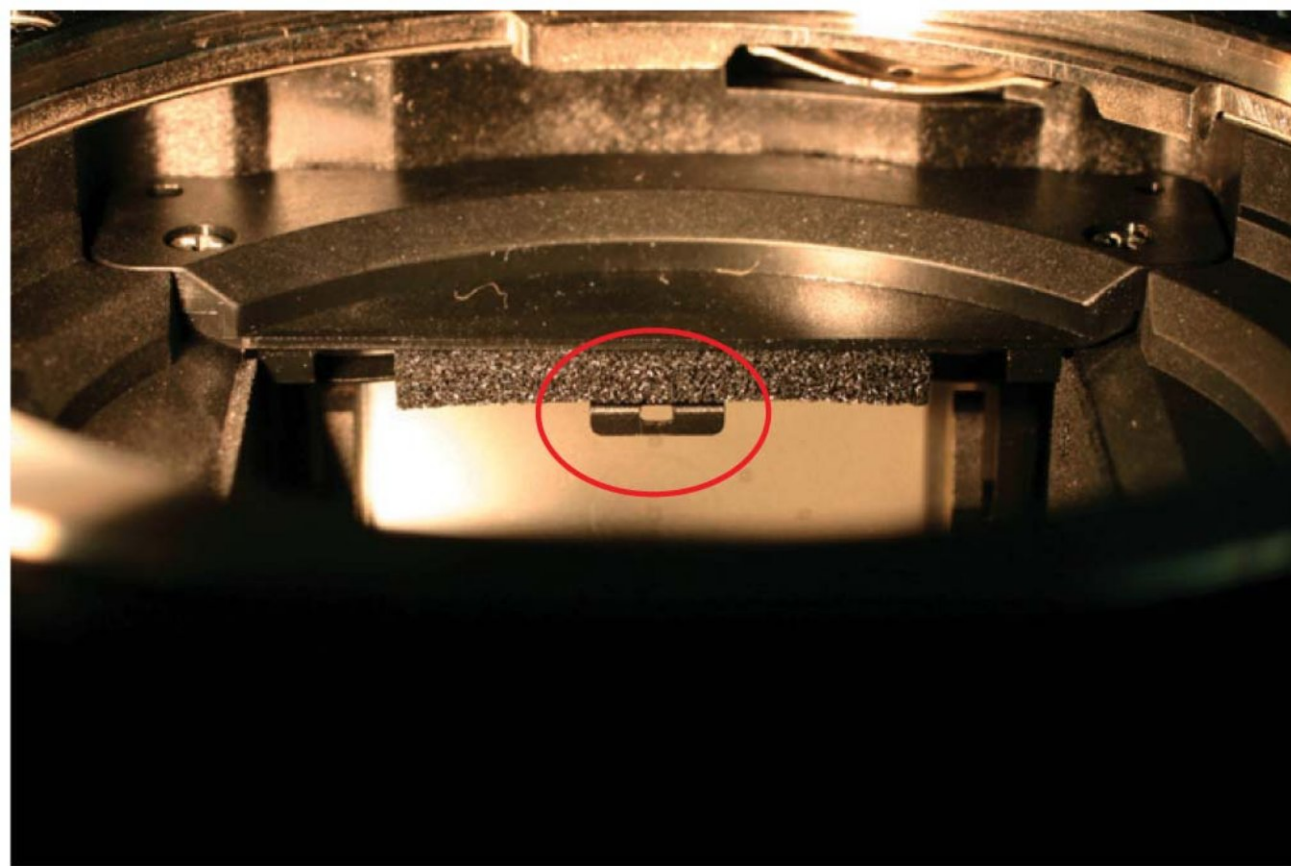Put the flex into the space between the shaft and the pentaprism.

Attachment position

Set to "0"
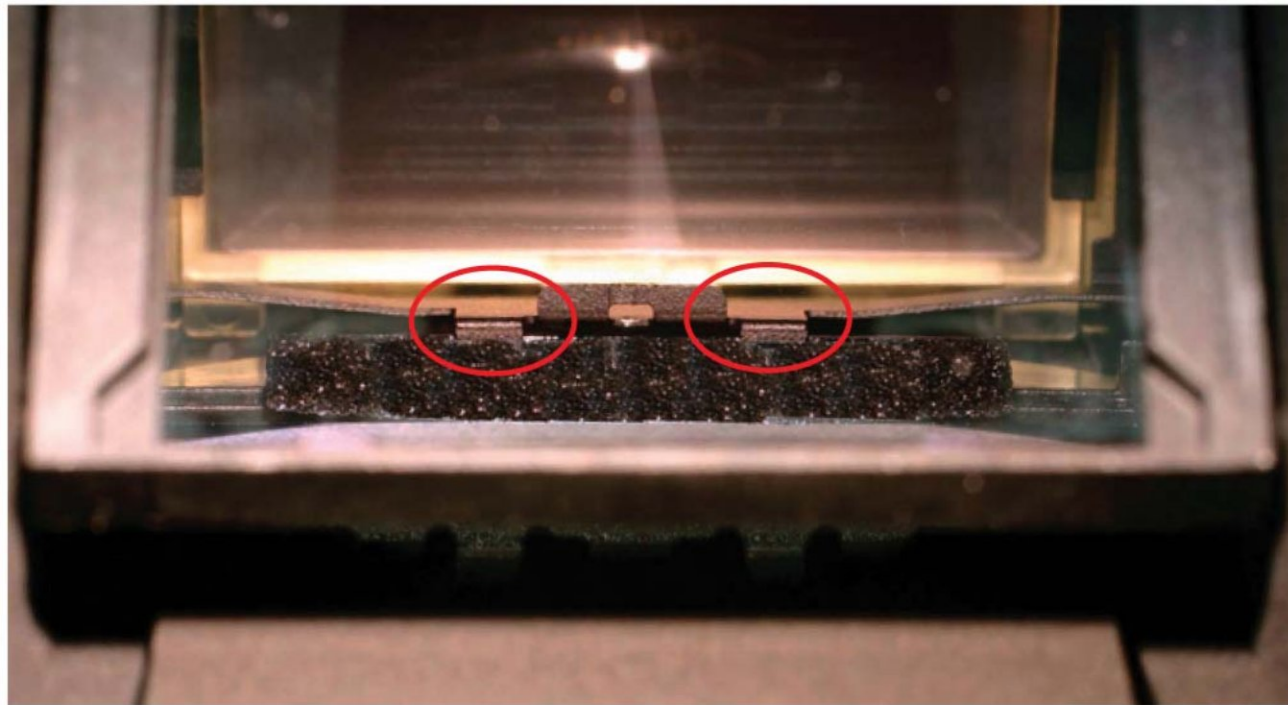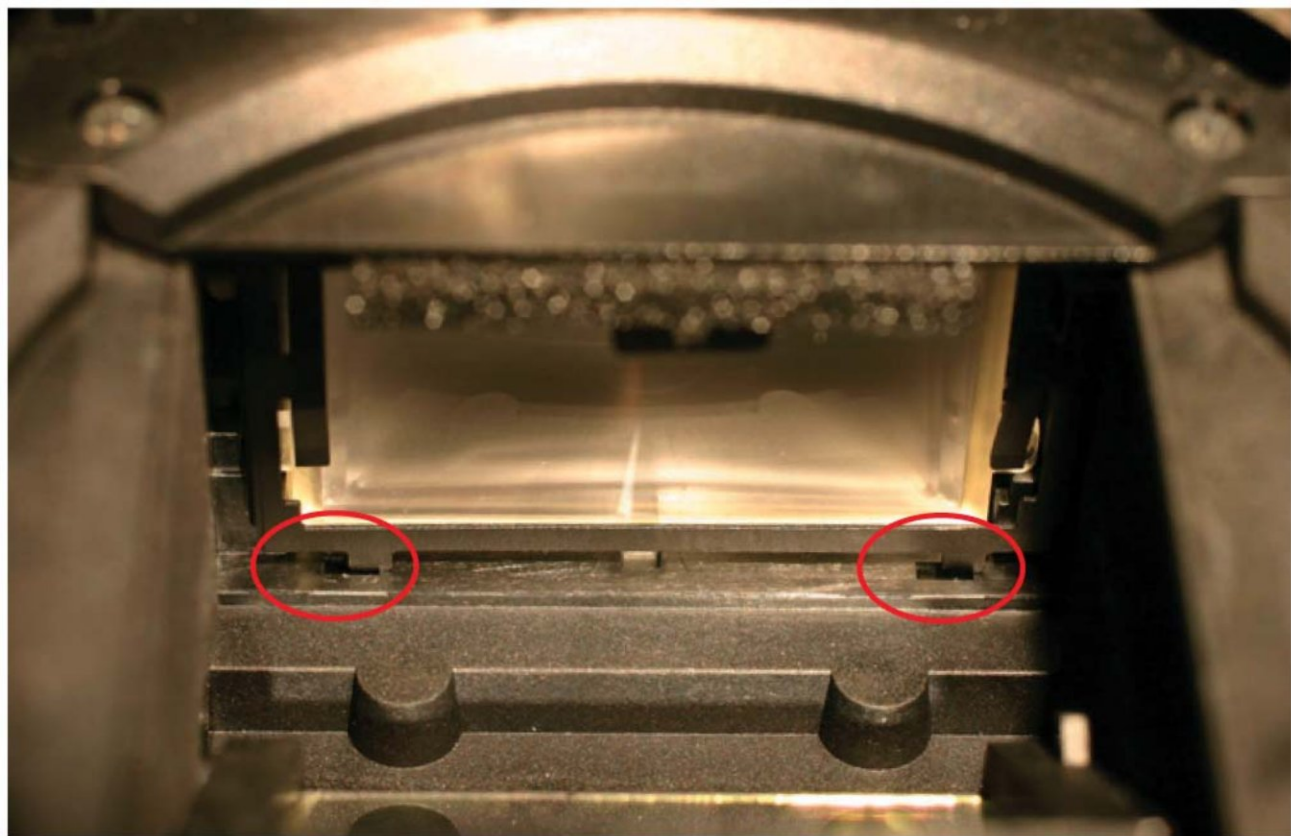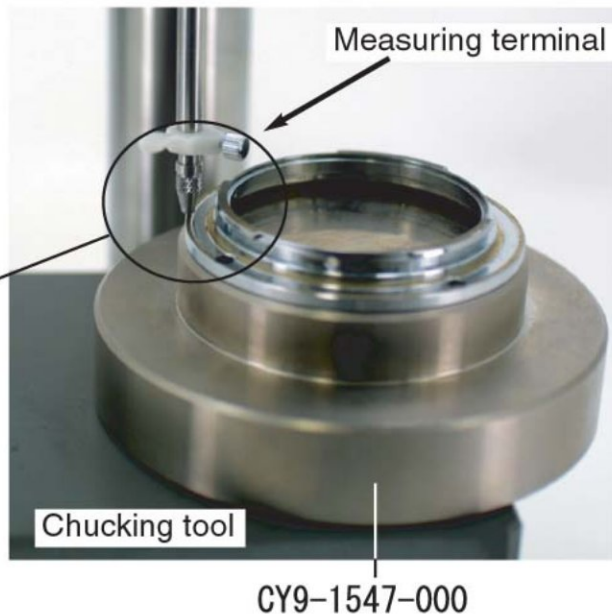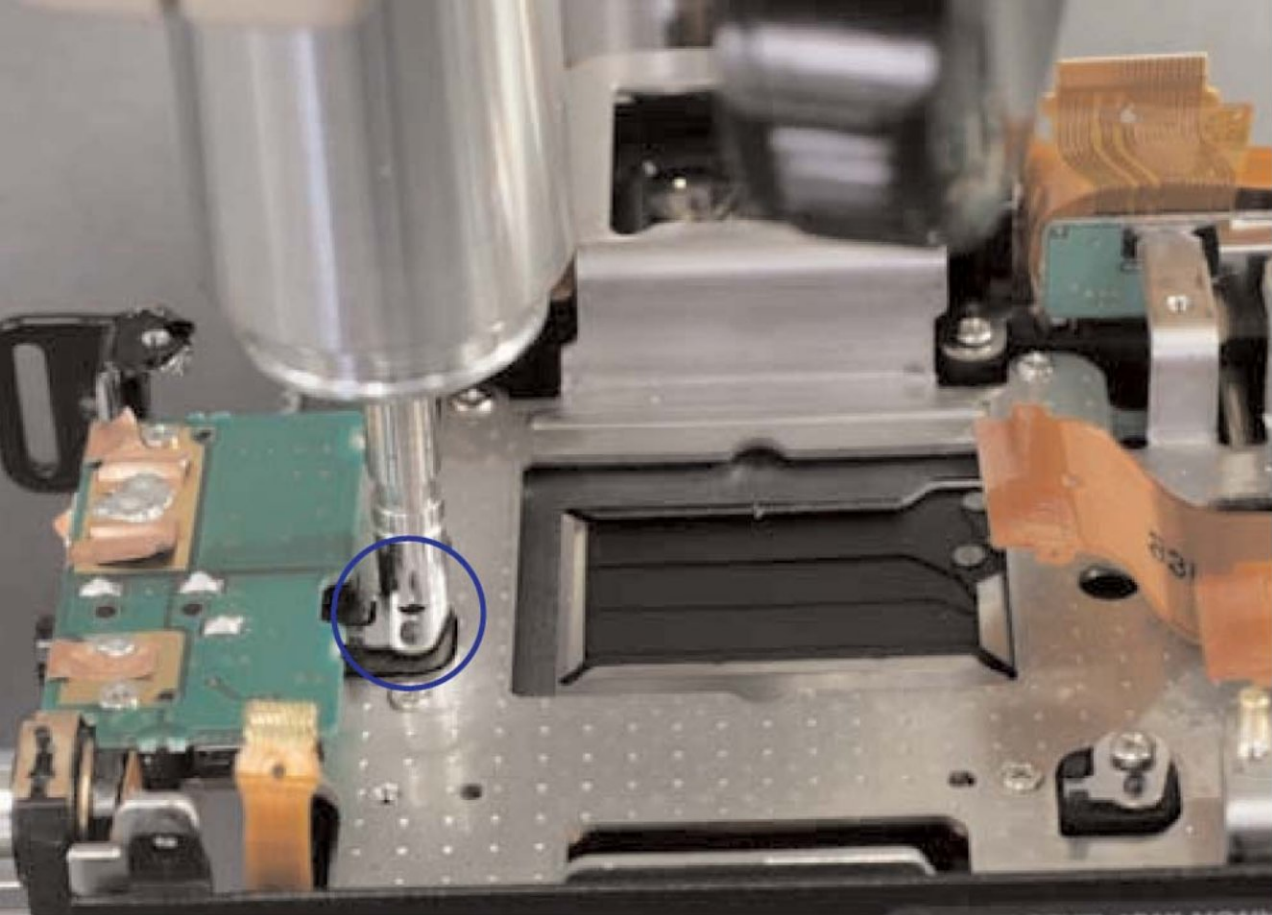
Digital Micrometer
(Commercially available)

Measuring terminal

Chucking tool

CY9-1547-000

RW

LW

331 A

BW

Back

EOS Kiss Digital Adjustment Software

File(F) Help(H)

Canon **Kiss** DEMO **Adjustment Software**
EOS Digital

If you are doing all adjustments, do the camera
side adjustments first.
Before starting the adjustment, it is necessary to
generate the standard data for CMOS white
balance and color matrix with non-defective
camera.
Make sure to turn off the 'Auto Power Off'
function.

Camera

Temperature Correction

AE Adjustment

AF Adjustment

Flash Adjustment

Self Check

Digital

Set Body Number

Imager File Transfer

CMOS Adjustment

TFT Adjustment

Standard Data Generation

Image Check

Data Transfer

Quit

MainMenu.htm   Firmware = 1.0.093E3   Camera ROM = 37000A00

Message Area

← Back

Adjustment Software

EOS
Kiss **Digital**

EOS **DIGITAL REBEL**

EOS 300D **DIGITAL**

Do you want to connect the camera?

Version 1.0.0   2003.07.30

| Yse(Y) | No(N) |

← **Back**

EOS KISS Digital Adjustment Log

Log

<2003/3/20 11:03:41> <UI>[MainMenu] CheckCamInfo   Pass/EOS KISS Digital Adjustment Log

[Log Update(N)]   [Close(C)]

←Back

Print Topics

You can print the selected topic or all the topics in the selected heading. What would you like to do?

- (•) Print the selected topic
- ( ) Print the selected heading and all subtopics

[OK]   [Cancel]

Preferences

Image Lower Display Item

| File Name ▼ |

Folder to display at startup

⦿ Last displayed folder

◯ Following specified folder

| E:\Documents and Settings\8927\My Doc | Browse... |

Preview as

⦿ RAW image

◯ JPEG image

Current monitor profile
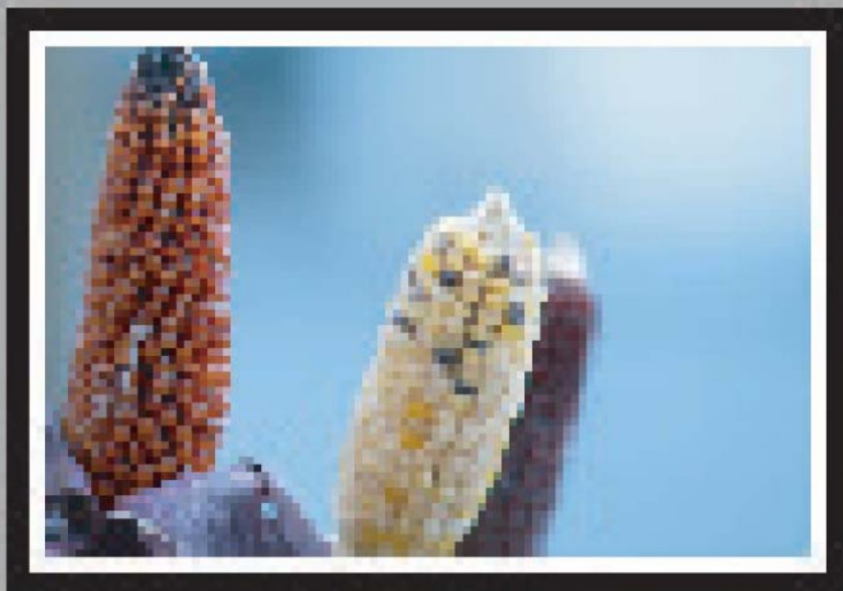
sRGB Color Space Profile.icm

| Default | | OK | Cancel |

RAW
+
JPEG

735C0027.TIF

Back

Preferences

| General settings | View settings | Tool palette | **Color management** |

For display

- ● sRGB
- ○ Monitor profile
  - Browse...

Default settings of Work color space

- ● sRGB
- ○ Adobe RGB
- ○ Wide Gamut RGB

CMM settings for print

Printing profile

--- None ---

Rendering intents
- ○ Perceptual
- ● Colorimetric

Rendering intents when using Easy-PhotoPrint

- ○ Perceptual
- ● Colorimetric

OK   Cancel

← **Back**

Save As

Save in: 📁 Photo

File name: IMG_0001.JPG   **Save**

Save as type: Exif-JPEG*.JPG,*.JPEG)   **Cancel**

Quality setting

Image quality   10

Sharpness   0

Output setting

Output resolution 350 dpi   ☐ Embed ICC profile in image

Resize setting

☑ Resize

Width		Height	Unit
3504	x	2336	pixel
(3504 pixel)		(2336 pixel)	

☑ Lock aspect ratio

← Back