

作成承認印	配布許可印
	

D200 VBA13001

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

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Specifications

Type	Single-lens reflex digital camera with interchangeable lenses
Effective pixels	10.2 million
LBCAST image sensor	23.6×15.8 mm; total pixels: 10.92 million
Image size (pixels)	3872×2592 (L), 2896×1944 (M), 1936×1296 (S)
Lens mount	Nikon F mount (with AF coupling and AF contacts)
Compatible lenses	
Type G or D AF Nikkor	All functions supported (except IX Nikkor)
Micro Nikkor 85 mm F2.8D	All functions supported except autofocus and some exposure modes
Other AF Nikkor	All functions supported except 3D color matrix metering II and 3D multi-sensor balanced fill-flash for digital SLR
AI-P Nikkor	All functions supported except 3D color matrix metering II, 3D multi-sensor balanced fill-flash for digital SLR, and autofocus
Non-CPU	Can be used in exposure modes A and M; electronic range finder can be used if maximum aperture is f/5.6 or faster; color matrix metering, multi-sensor balanced fill-flash for digital SLR, and aperture value display supported if user provides lens data (Non-Ai lens cannot be used.)
Picture angle	Equivalent in 35-mm format is approximately 1.5 times lens focal length
Viewfinder	Fixed eyelevel pentaprism
Diopter adjustment	-2 ~ +1 m ⁻¹
Eyepoint	19.5 mm (-1.0 m ⁻¹)
Focusing screen	Type B BrightView clear matte screen Mark II provided (Focus frame; grid line display for composition)
Frame coverage	Approximately 95% of lens (vertical and horizontal)
Magnification	Approximately 0.94× (50-mm F1.4 lens at infinity; -1.0 m ⁻¹)
Reflex mirror	Quick return
Lens aperture	Instant return with depth-of-field preview

Focus-area selection	Normal frame (11 focus areas): Single area or group can be selected from 11 focus areas Wide frame (7 focus areas): Single area can be selected from 7 focus areas
Lens servo	Instant single-servo AF (S); continuous-servo AF (C); manual (M); predictive focus tracking automatically activated according to subject status in continuous-servo AF (C)
Autofocus	TTL phase detection by Nikon Multi-CAM2000 autofocus module
Detection range	-1- +19 EV (ISO 100, room temperature 20 °C/68 °F)
AF-area mode	Single-area AF, dynamic-area AF, group dynamic-AF, dynamic-area AF with closest subject priority
Focus lock	Focus can be locked by pressing shutter-release button half-way (single-servo AF) or by pressing AE-L/AF-L button
Exposure	
Metering	Three-mode through-the-lens (TTL) exposure metering
Matrix	3D color matrix metering II supported with type G and D lenses; color matrix metering II available with other CPU lenses; and color matrix metering available with non-CPU lenses if user provides lens data
Center-weighted	Weight of 75% given to 6, 8, 10, or 13-mm circle in center of frame, or weighting based on average of entire frame
Spot	Meters 3-mm circle (about 2% of frame); metered area linked to selected focus area (with non-CPU lens, fixed in center)
Range	EV0 ~ 20 (3D color matrix or center weighted metering) EV2 ~ 20 (spot metering) (ISO 100 equivalent, f/1.4 lens, 20°C /68°F)
Exposure meter coupling	Combined CPU and AI
Exposure modes	Programmed auto with flexible program; shutter-priority auto; aperture priority auto; manual
Exposure compensation	±5EV in increments of 1/3, 1/2, or 1 EV
Bracketing	Exposure and/or flash bracketing (2-9 exposures in increments of 1/3, 1/2, 2/3, or 1EV) WB (2-9 exposures in increments of 1- 3EV)
Exposure lock	Luminosity locked at detected value with AE-L/AF-L button
Shutter	Electronically-controlled vertical-travel focal-plane shutter
Speed	30- 1/8000 in steps of 1/3, 1/2, or 1EV, bulb
Sensitivity	100 -1600 (in steps of 1/3, 1/2, or 1EV), auto gain to ISO 1600 equivalent
White balance	Auto (TTL white-balance control with 1,005 pixels RGB sensor), six manual modes with fine-tuning, color temperature setting, preset, white balance bracketing
Built-in Speedlight	Pop-up Speedlight with button release
Guide number (at 20° C/68°F)	ISO 100: approximately 12 (Manual full-flash: approx. 13)

Flash	
Sync contact	X-contact only; flash synchronization at up to 1/250 s
Flash control	<p>TTL flash control by 1005-segment RGB sensor:</p> <ul style="list-style-type: none"> - i-TTL balanced fill-flash for digital SLR (built in Speedlight or SB-800/SB-600 with other meterings than spot metering) - Standard i-TTL balanced fill-flash for digital SLR (built in Speedlight or SB-800/SB-600 with spot metering) <p>(Can be set on speedlight when SB-800/SB-600 is used)</p> <p>Auto aperture is available with CPU lenses and SB-800</p> <p>Non-TTL auto is available with SB-800, SB-80DX, SB-28DX, SB-27, SB-22S, etc</p> <p>Range-priority manual is available with SB-800</p>
Sync modes	Front curtain sync (normal), slow sync, rear-curtain sync, red-eye reduction, red-eye reduction with slow sync
Flash-ready indicator	Lights when B-800, SB-600, SB-80DX, SB-28DX, SB-50DX, SB-28, SB-27, B-22S, etc, is fully charged; blinks for 3 sec. after flash is fired at full output
Accessory shoe	Standard ISO hot-she contact with safety lock
Creative Lighting System	<ul style="list-style-type: none"> - with SB-800, SB-600, or SB-R200, supports Advanced Wireless Lighting (with SB-600 and SB-R200, remote only) Setting Command mode can control built-in Speedlight as Master flash - Supports Auto FP High-Speed Sync, Flash Color Information Communication, modeling illumination, and FV lock

Storage	
Media	Type I and II CompactFlash memory cards; Microdrives
File system	Compliant with DCF2.0 (Design Rule for Camera File Systems) and DPOF (Digital Print Order Format)
Compression	- Compressed NEF (RAW): 12-bit (about 50% ~ 60%) compression - JPEG baseline-compliant (size priority, image priority can be selected)
Self-timer	Electronically controlled timer with 2, 5, 10, and 20 sec. duration
Depth-of-field preview	Lens aperture stopped down when depth-of-field preview button is pressed. Stopped down up to set aperture value with A • M mode; up to control aperture value with P • S mode.
Monitor	2.5", 230,000-dot, low-temperature polysilicon TFT LCD with brightness adjustment
Video output	Can be selected from NTSC and PAL
External interface	USB 2.0 Hi-Speed
Tripod socket	1/4 (ISO 1222)
Firmware updates	Can be updated by users
Language	German, English, Spanish, French, Korean, Italian, Dutch, Portuguese, Russian, Swedish, simplified Chinese, and Japanese
Power source	- One rechargeable Nikon EN-EL3e lithium-ion battery Voltage 7.4V DC [Quick charger MH-18a] is used - MB-D200 multi-power battery pack (available separately) with one or two rechargeable Nikon EN-EL3e lithium-ion batteries or six (LR6 (AA) alkaline, ZR6 nickel-manganese, or HR6 nickel-metal-hydride) batteries - EH-6 AC adapter (available separately)
Dimensions (W × H × D)	Approximately 147×113× 74 mm
Weight	Approximately 830g without battery, memory card, body cap, or LCD monitor cover
Operating environment	
Temperature	0 ~ 40°C
Humidity	Less than 85% (no condensation)

- Unless otherwise stated, all figures are for a camera with a fully-charged battery operating at an ambient temperature of 20°C (68°F).
- Nikon reserves the right to change the specifications of the hardware and software described this manual at any time without prior notice. Nikon will not be held liable for damages that may result from any mistakes that this manual may contain.

Points to notice for Disassembly and Assembly

 WARNING	
	<ul style="list-style-type: none"> ● Take extra care not to get an electric shock when detaching covers. ● After removing covers, be sure to discharge the main condenser according to the instructions of repair manuals.

Caution:

- ① In disassembly/(re)assembly, be sure to use conductive mat (J5033) and wrist strap (J5033-5), in order to protect electric parts from static electricity.
- ② Before disassembling, be sure to remove batteries or AC power cord.
- ③ In disassembling, be sure to memorize the processing state of wires and FPC, screws to be fixed and their types, etc.
- ④ The low-pass filter of the image PCB is easily damaged. Handle it very carefully.

Points to notice for Lead-free solder products
<ul style="list-style-type: none"> ▪ Lead-free solder is used for this product. ▪ For soldering work, the special solder and soldering iron are required. ▪ Do NOT mix up lead-free solder with traditional solder.

Caution:

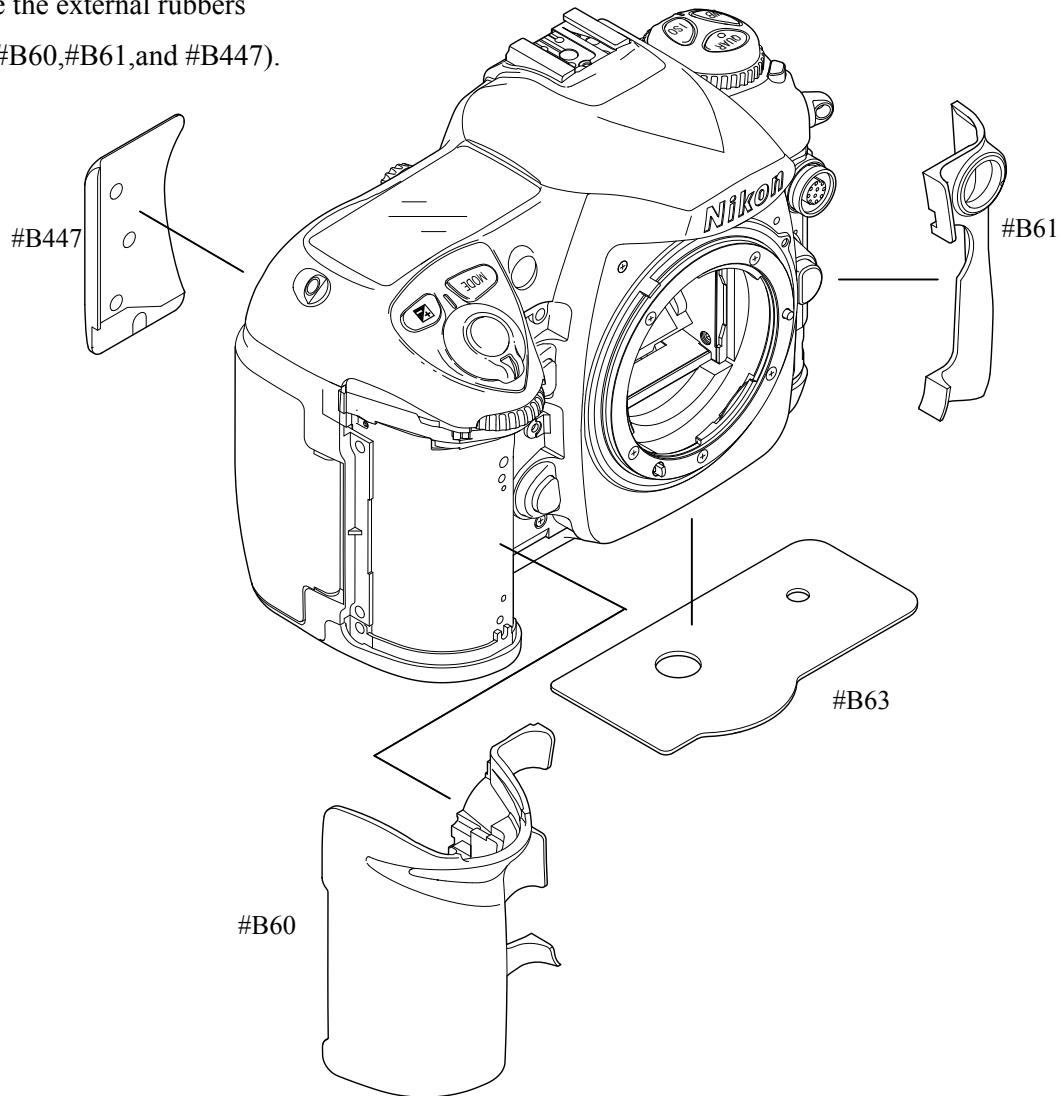
When "Separation of Front body from Rear body", "Disassembly of CCD/FPC unit" and "Disassembly of Bayonet" are performed, be sure to carry out "RESET AF-DEFOCUS COMPENSATION" of the D200 adjustment software after assembly.

Disassembly

1. Separate Front and Rear bodies

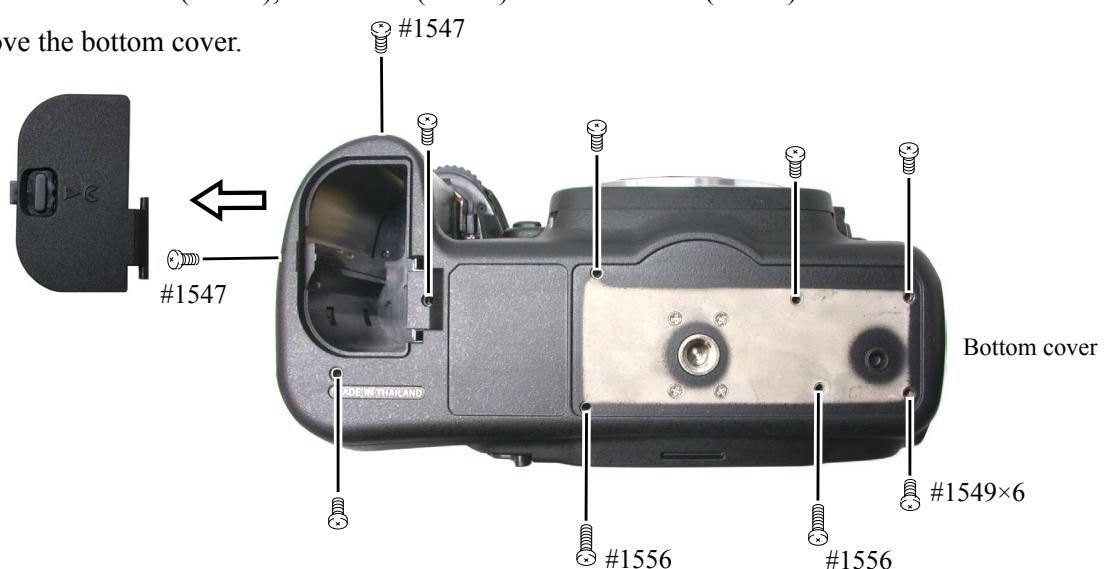
External rubber

- Remove the external rubbers (#B63,#B60,#B61, and #B447).



Bottom cover

- Remove the battery lid (by tilting and pulling it).
- Take out two screws (#1556), six screws (#1549) and two screws (#1547).
- Remove the bottom cover.



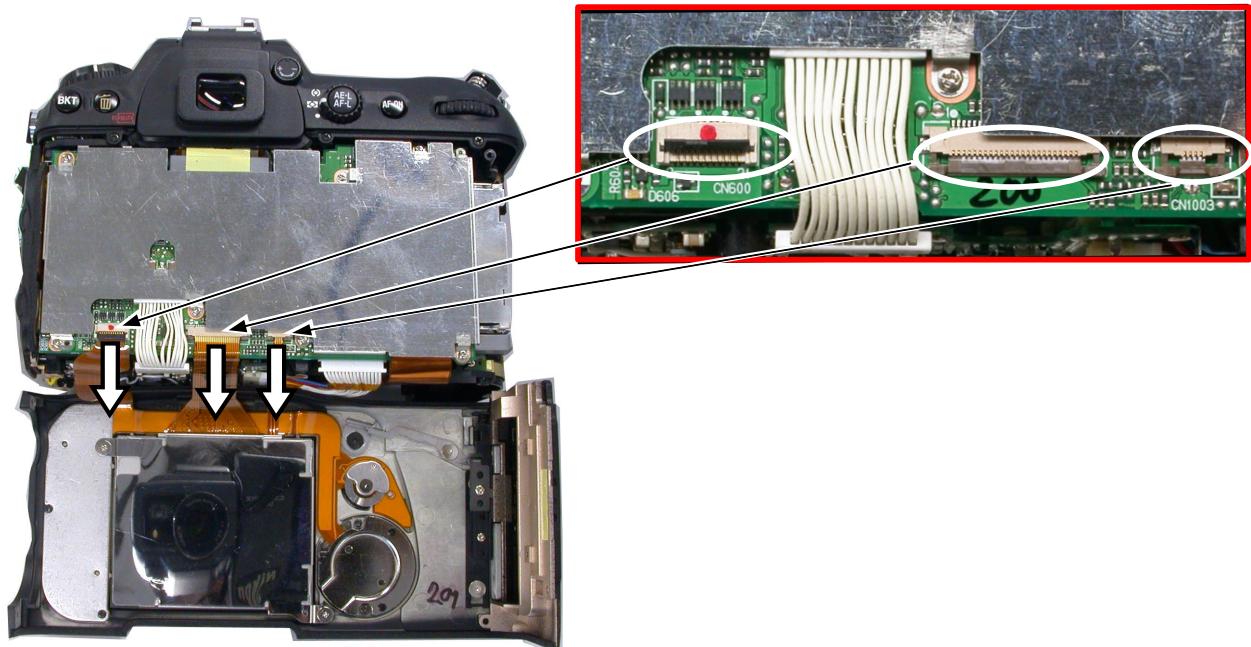
Rear cover

- Take out two screws (#1552), two screws (#1547) and one screw (#1549).
- Remove the rear cover.



- Be careful NOT to cut the TFT-PCB connection FPC that is at the lower side of the rear cover.

- Remove the three TFT-PCB connection FPCs from the connector.



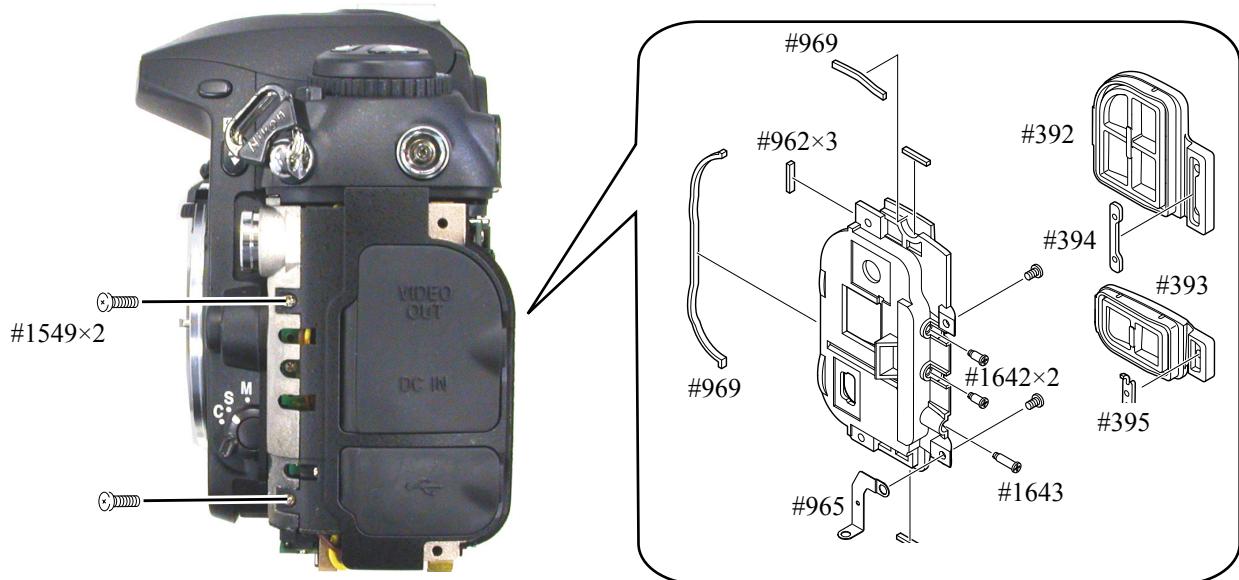
! WARNING



- Take extra care not to get an electric shock when detaching covers.
- After removing covers, be sure to discharge the main condenser according to the instructions of repair manuals.

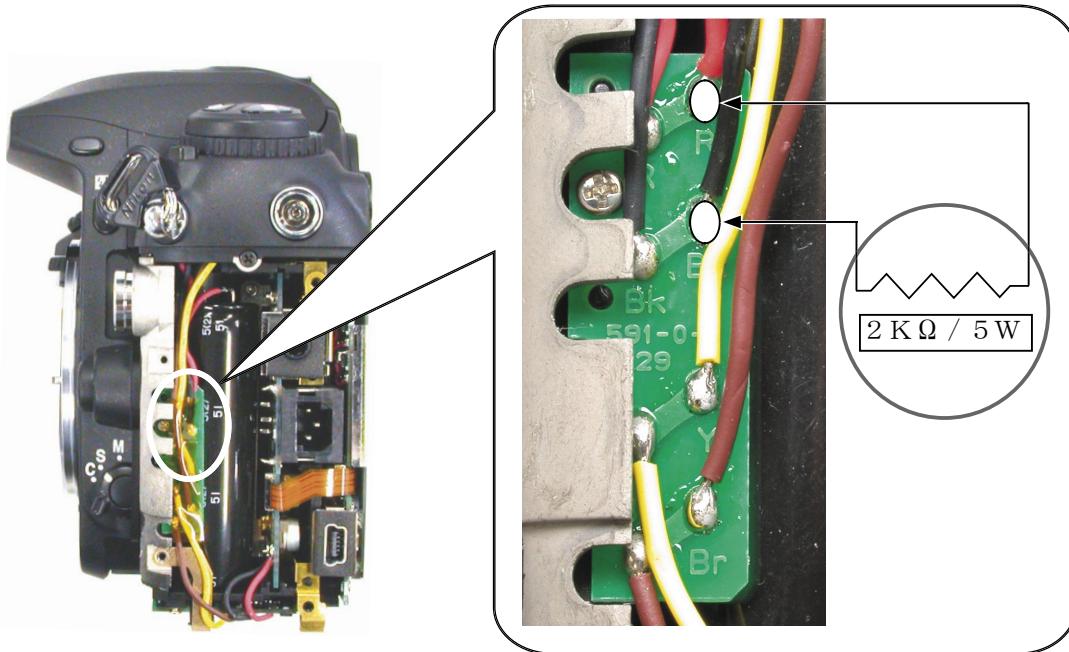
I/F cover

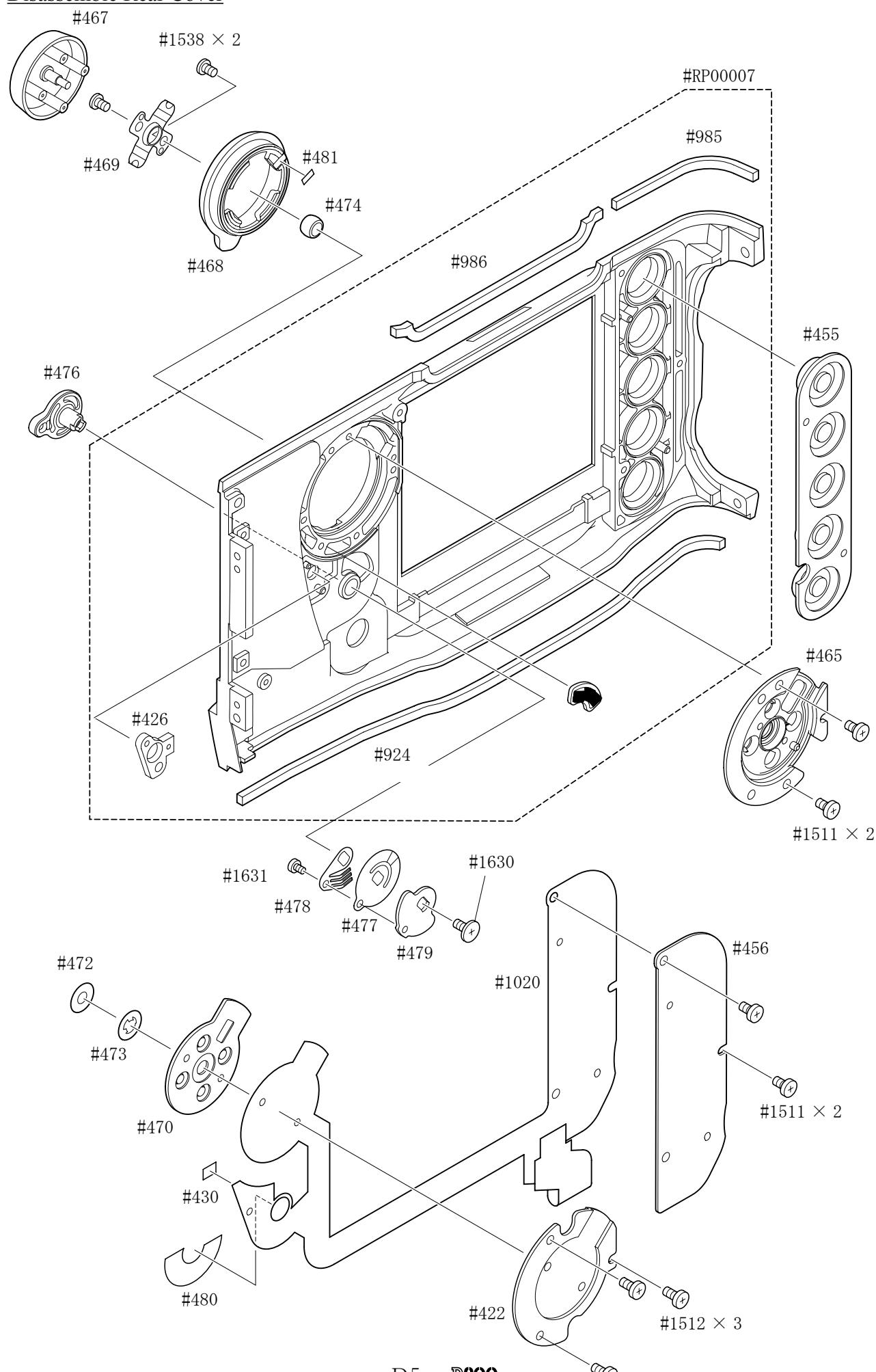
- Take out two screws (#1549).
- Remove the I/F cover unit.

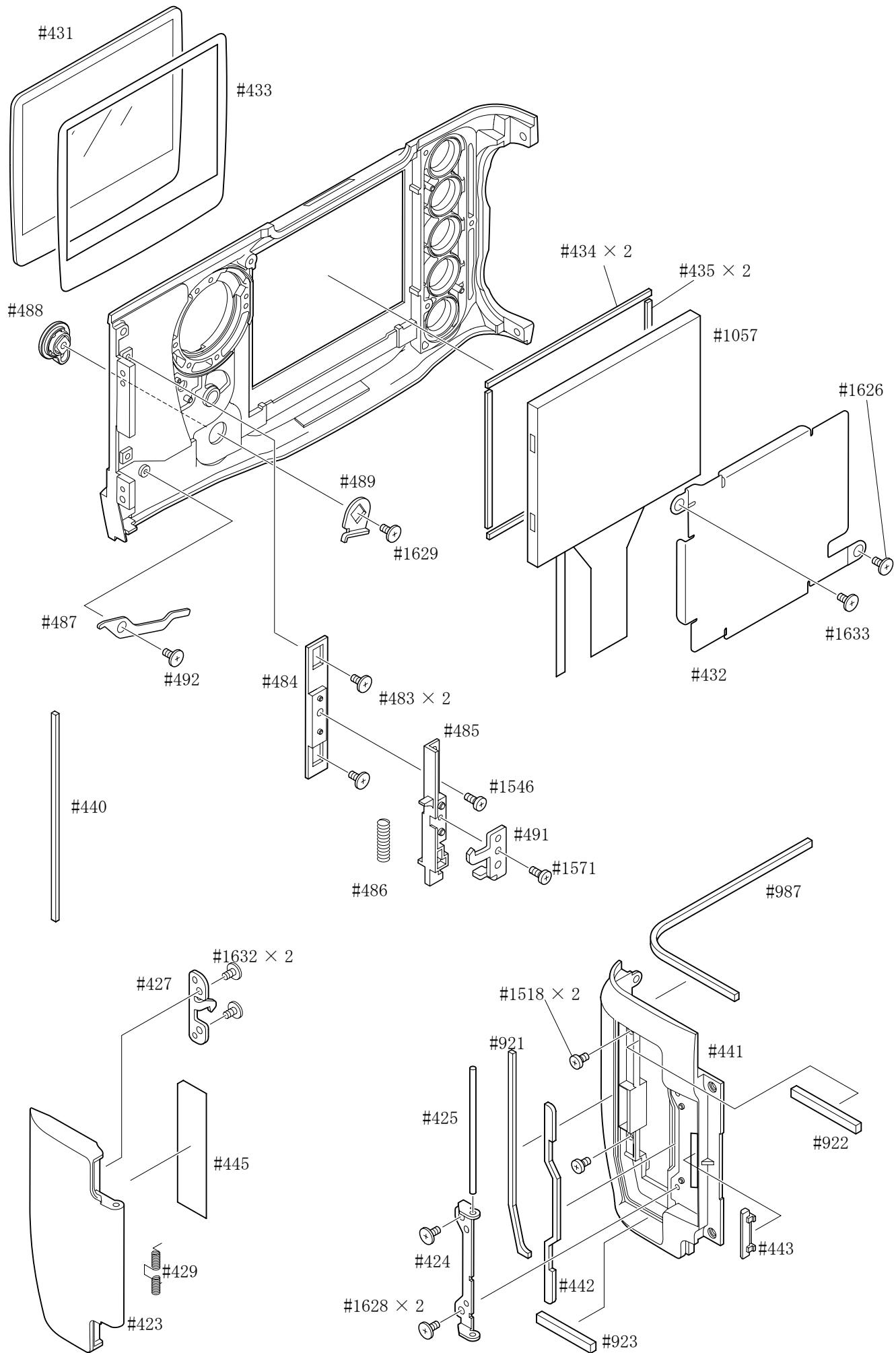


Discharge of Main condenser

- Discharge the main condenser .

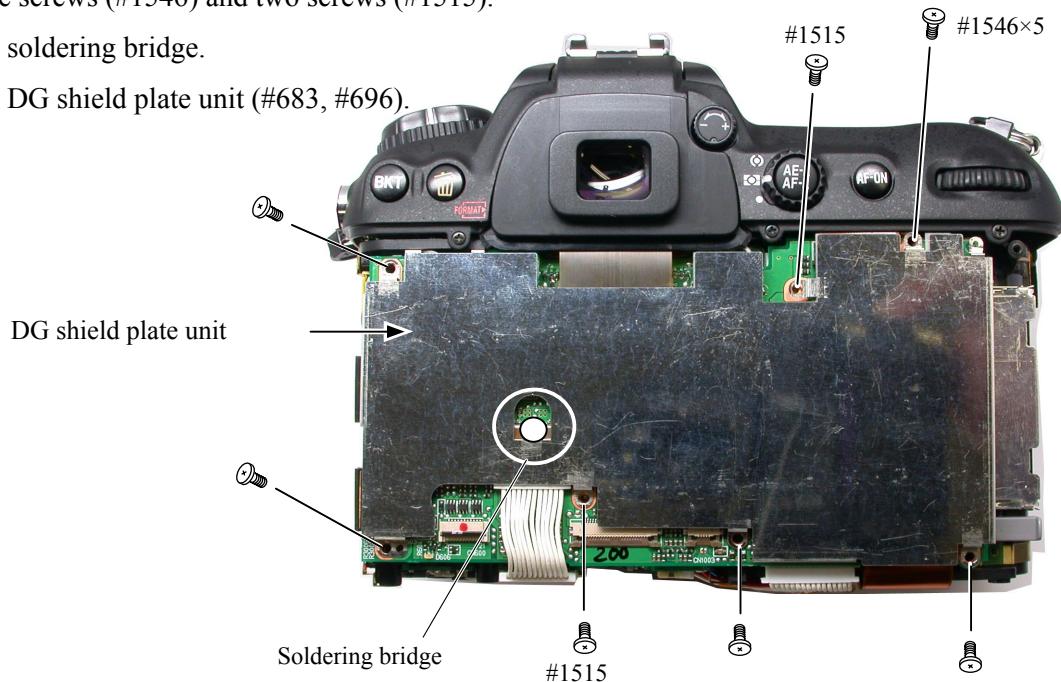


Disassemble Rear Cover



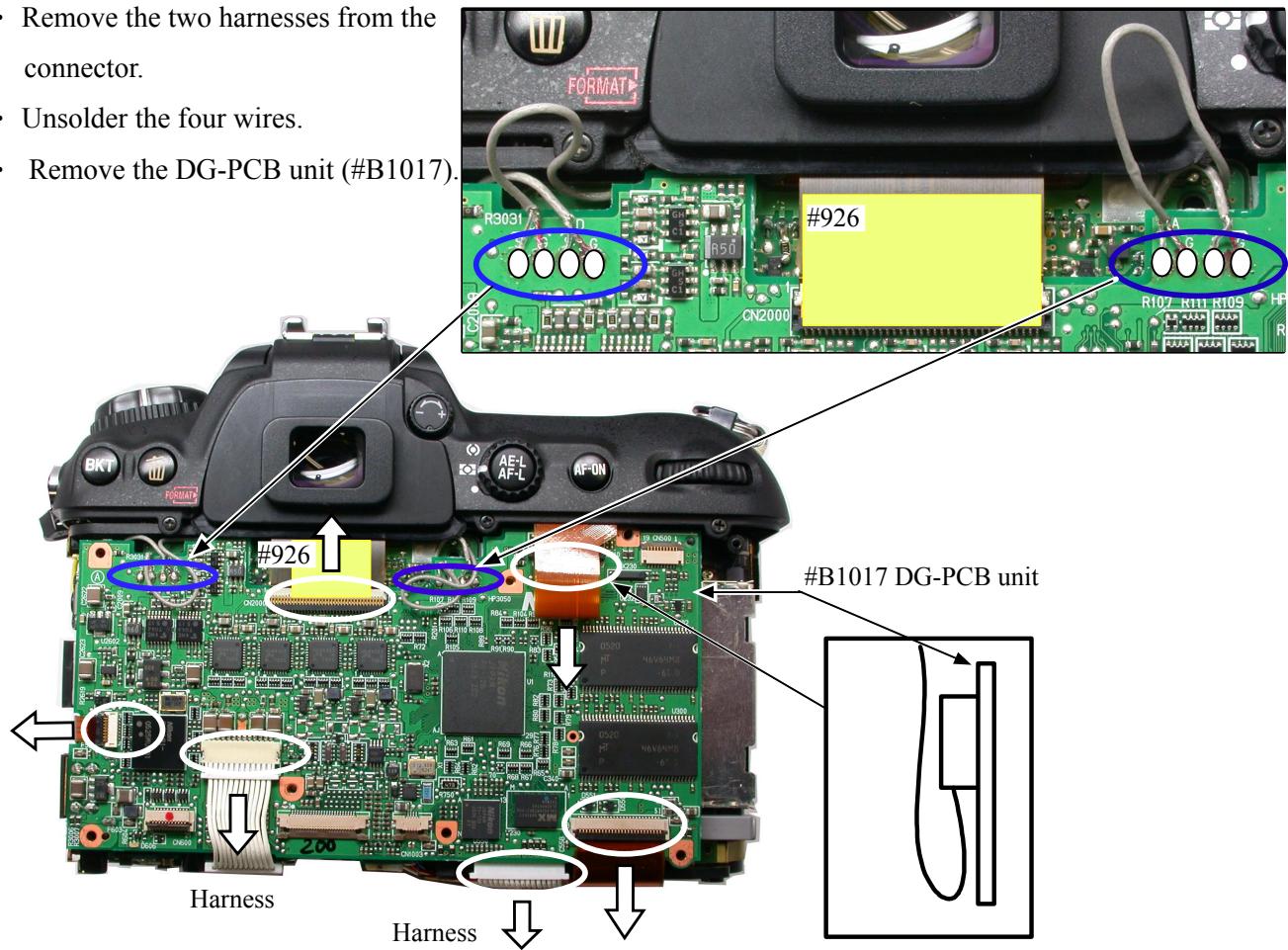
DG shield plate

- Take out five screws (#1546) and two screws (#1515).
- Remove the soldering bridge.
- Remove the DG shield plate unit (#683, #696).



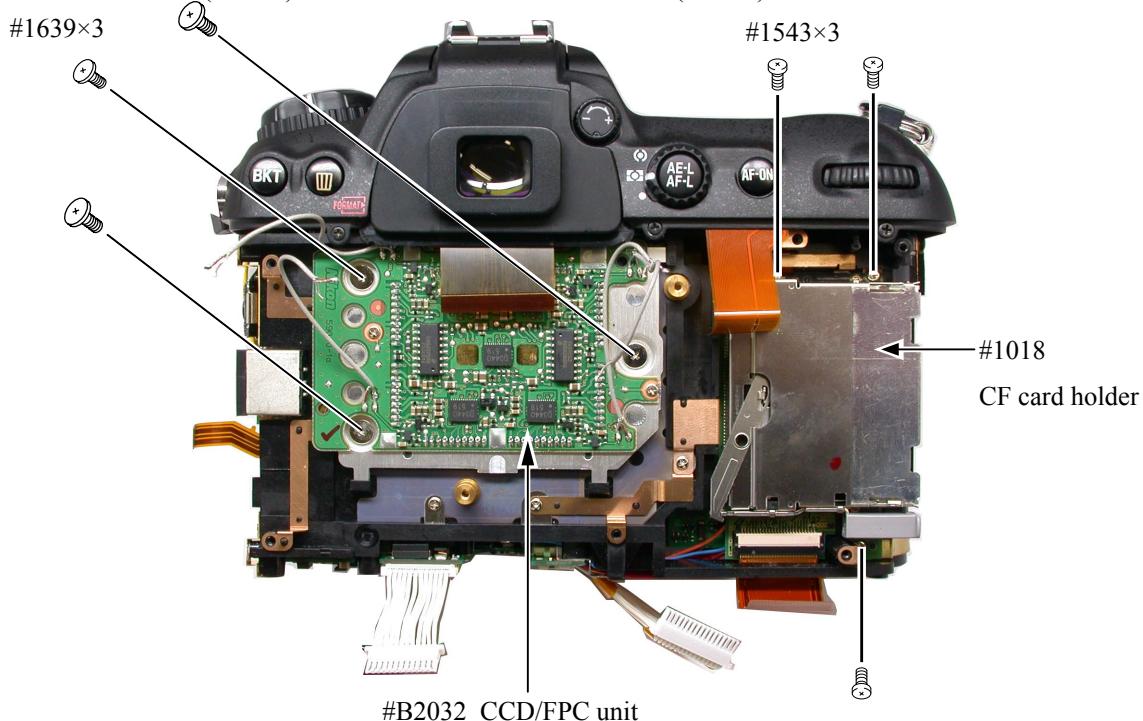
DG-PCB unit

- Remove the tape (#926).
- Remove five FPCs from the connector.
- Remove the two harnesses from the connector.
- Unsolder the four wires.
- Remove the DG-PCB unit (#B1017).

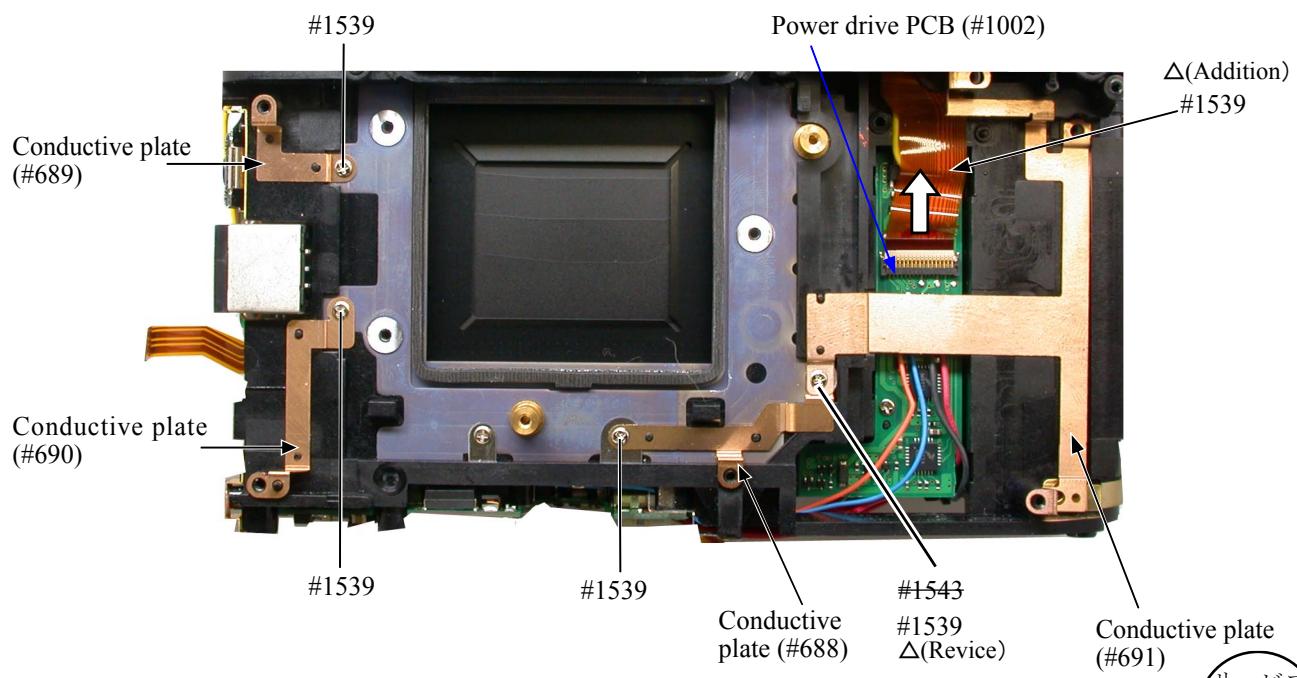


CCD/FPC unit
CF card holder

- Take out three screws (#1639) and remove the CCD/FPC unit (#B2032).
- Take out three screws (#1543) and remove the CF card holder (#1018).

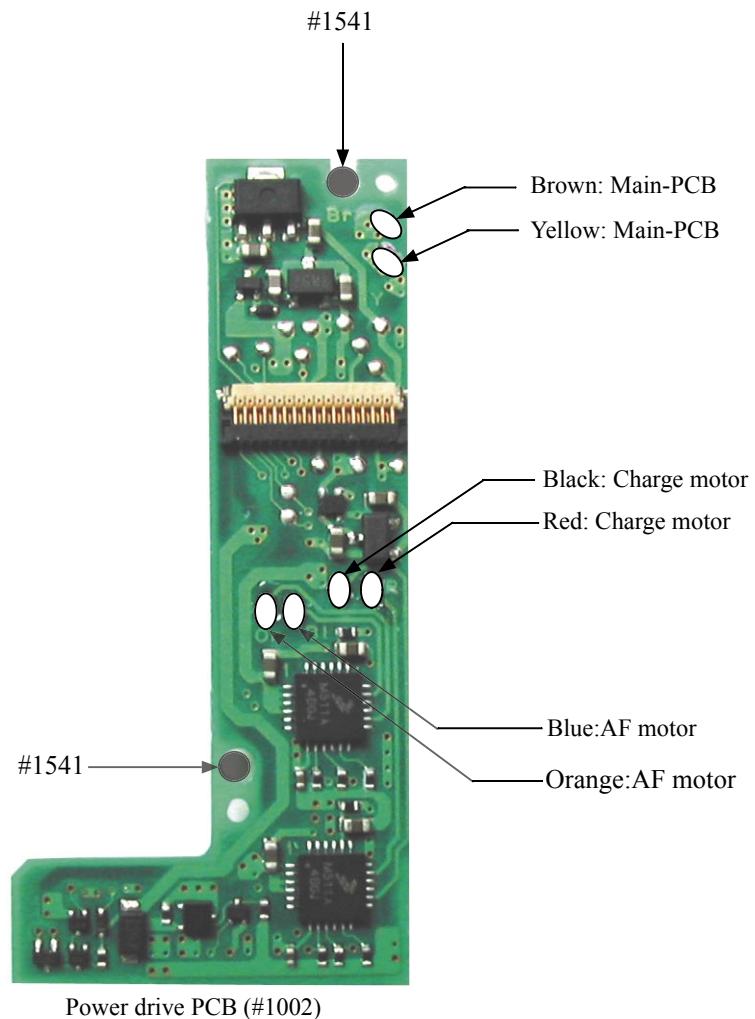


- Take out the screw (#1539) and remove the conductive plate (#691).
- Take out four screws (#1539) and remove the conductive plates (#689, #690, and #688).
- Remove the main connection FPC (#1035) from the connector of the power drive PCB (#1002).

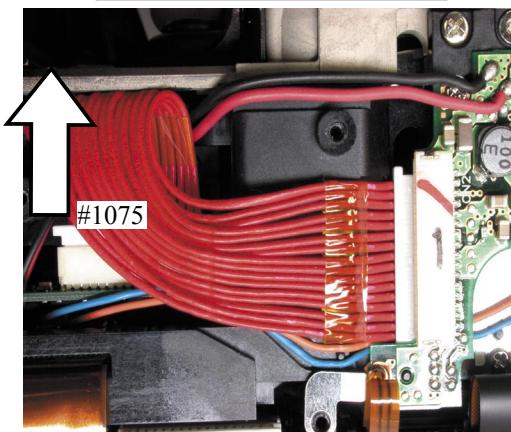


Power drive PCB

- Unsolder six wires.
- Remove the harness of the back of the power drive PCB.
- Take out two screws (#1541) and remove the power drive PCB.

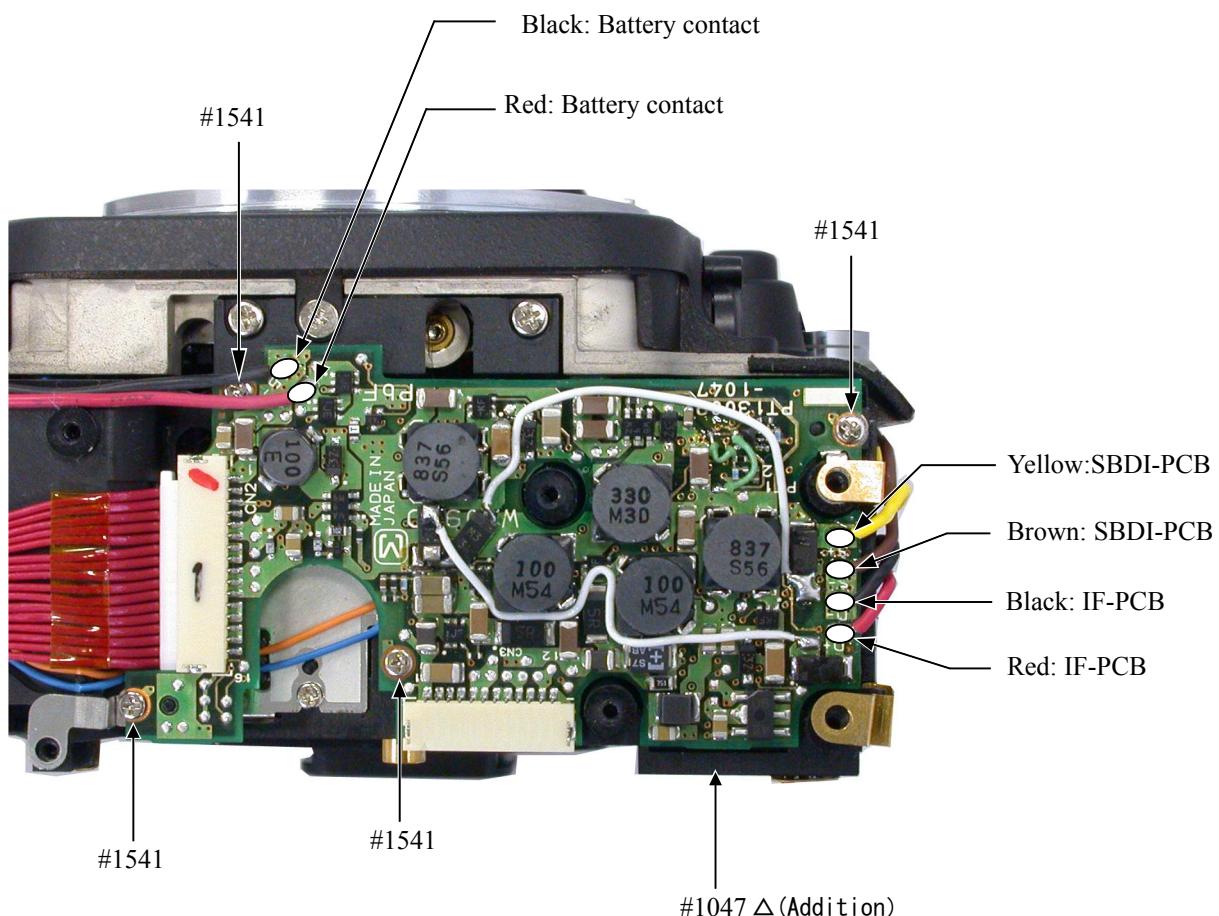


Power drive PCB (#1002)

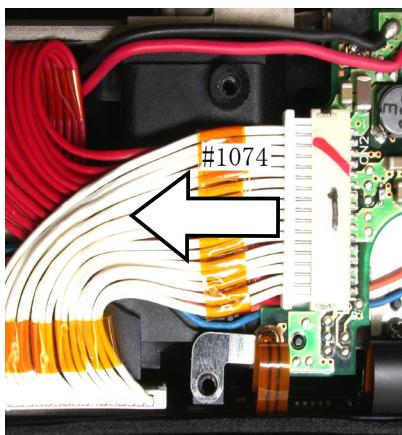
Harness: DC/DC PCB

DC/DC PCB unit

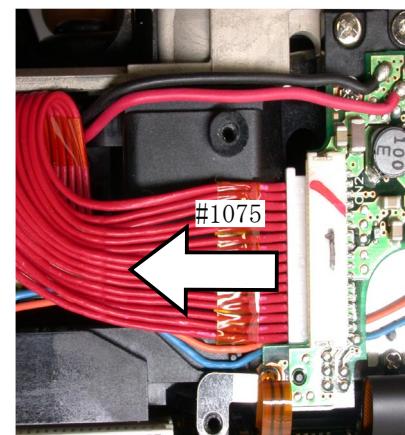
- Unsolder six wires.
- Take out four screws (#1541) of the DC/DC-PCB (#1047).
- Remove the harness (#1074) from the DC/DC-PCB (#1047).
- Remove the harness (#1075) from the DC/DC-PCB (#1047) and from the connector of the power drive PCB (#1002).



Harness: DG-PCB



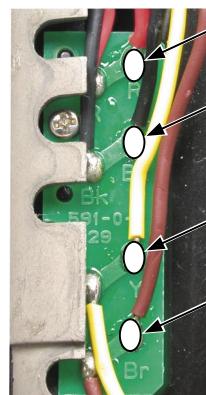
Harness: Power drive PCB



Top cover

- Remove the tape (#930).
- Unsolder four wires.

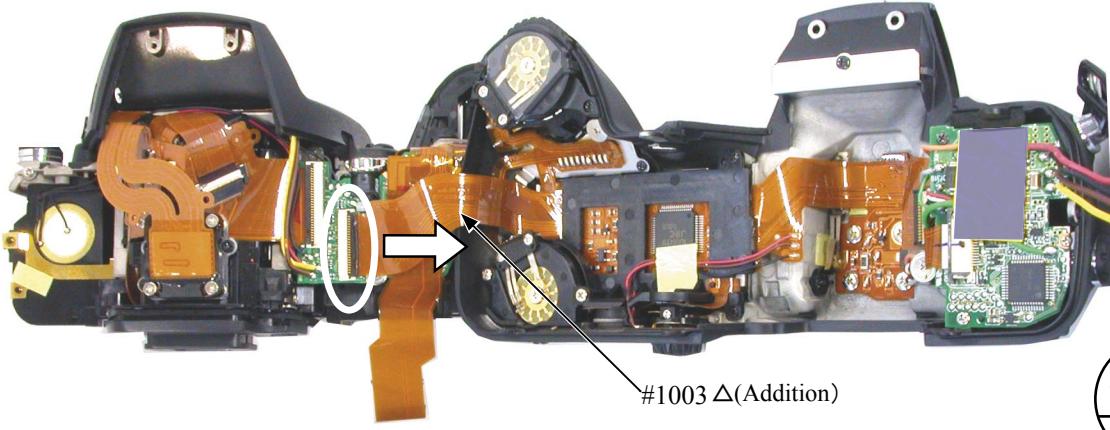
Tape (#930)



- Remove the cover (#850). Take out the screw (#1622), and remove the diopter adjustment knob unit (#852, #857, #851).
- Pop the SB up, and take out two screws (#1548).
- Take out two screws (#1511), two screws (#1547) and two screws (#1555).
- Lift the top cover unit slowly not to cut the FPC.

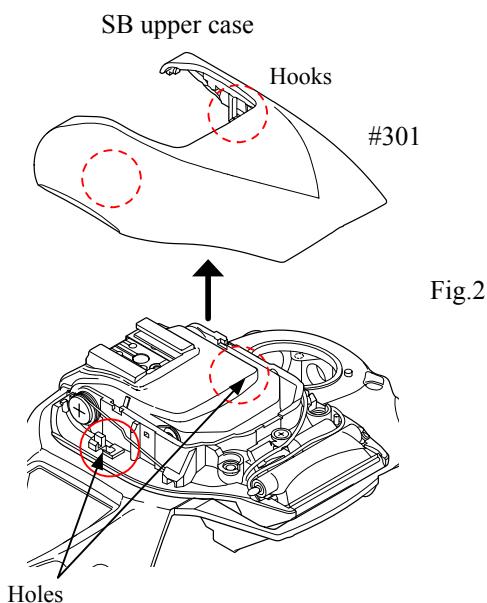
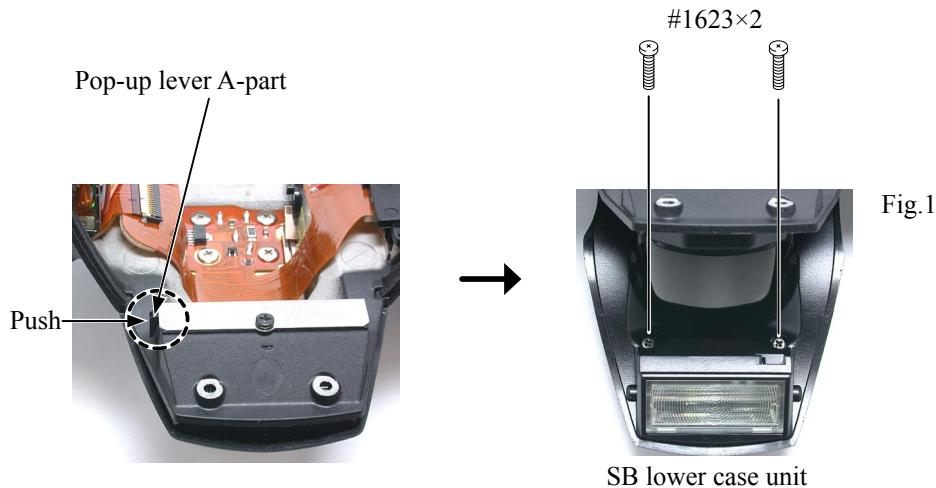


- Remove the top cover FPC (#1003) from the connector.

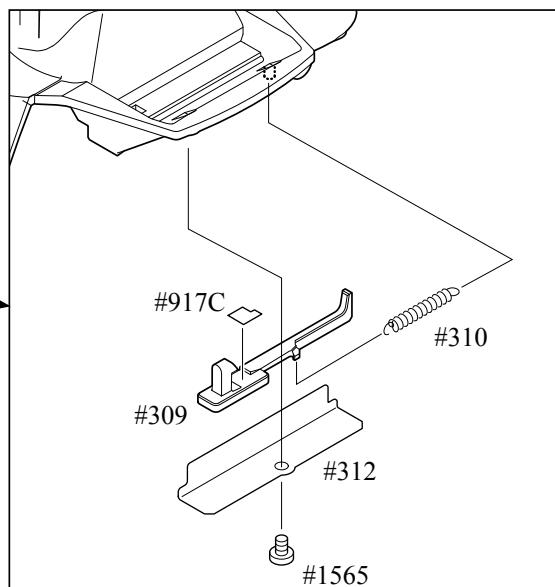


Disassembly of Top cover unit**SB upper case**

- Push the pop-up lever A-part of the top cover unit, and lift the built-in SB.
- Take out two screws (#1623). (Fig.1)
- Fold down #301 of the SB lower case on the top cover. Then while holding the hooks of the SB upper case from both sides by hand, release them from the two holes by sliding/tilting, then remove #301. (Fig.2)

**SB lock cover**

- Remove the spring (#310).
- #309 comes off.



Removal of Top cover FPC / Wires / SB-PCB

- Unsolder the three metering mode FPC lead wires.
- Unsolder the accessory shoe contact at four locations.

Metering mode FPC lead wire

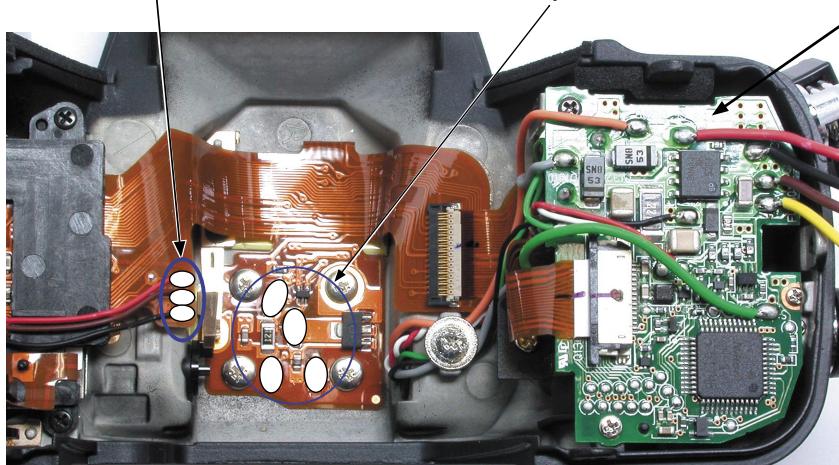
~~Red×1, Brown×1, Black×1~~

Red, Brown, Black Δ (Revice)

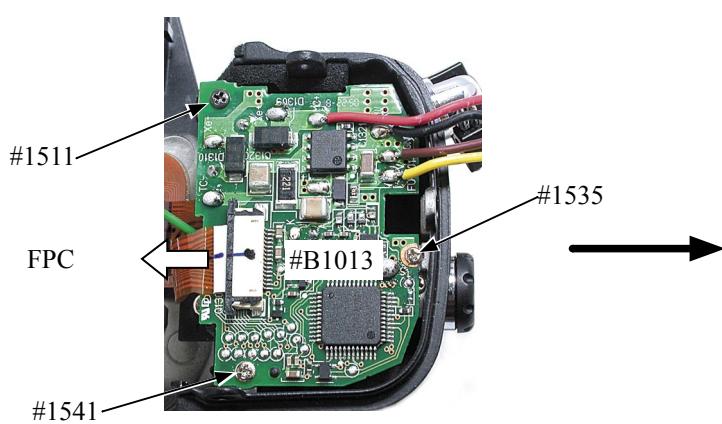
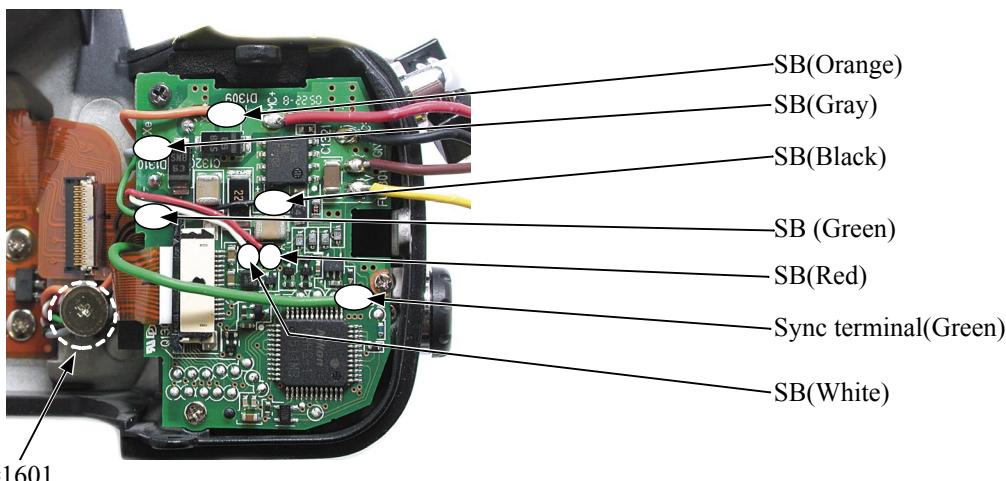
Accessory shoe contact×4

Δ (Addition)

• It demounts tapes.

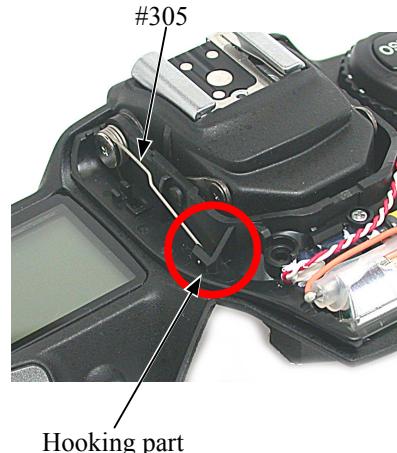
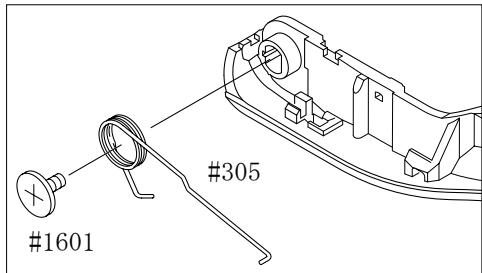


- Unsolder the seven lead wires of the SB-PCB.
- Take out the screw (#1601).
- Remove the FPC of SB-PCB (#B1013).
- Take out the screw (#1511).
- Take out the screw (#1535).
- Take out the screw (#1541).

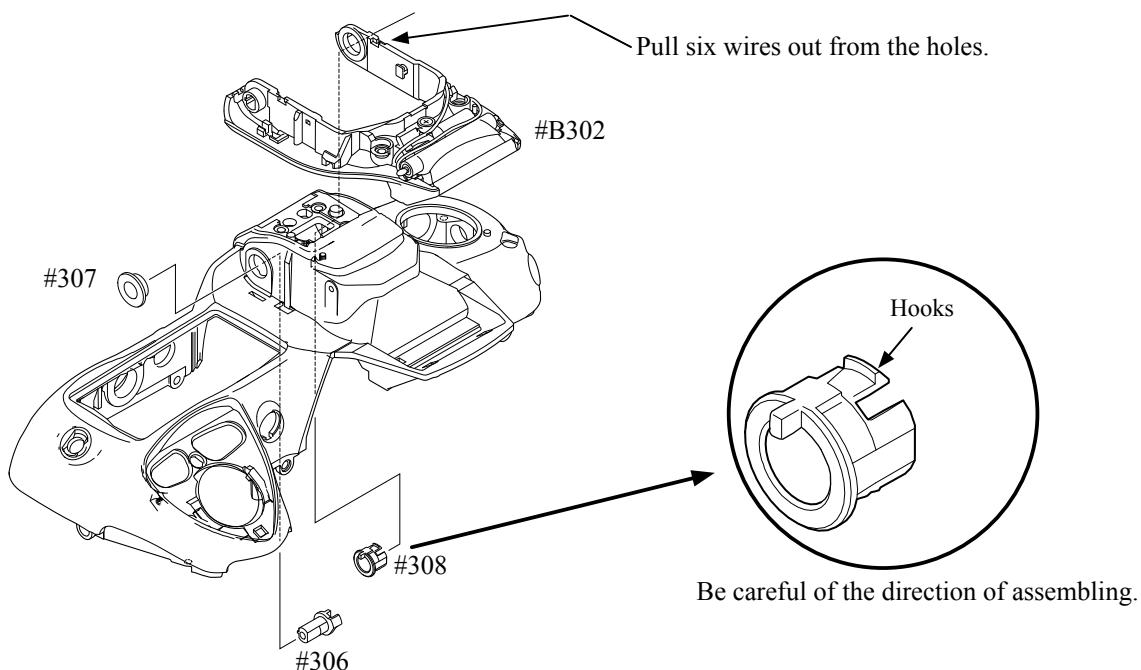


SB-up spring

- Remove the SB-up spring (#305) from the hooking part.
- Take out the screw (#1601) and remove the SB-up spring (#305).

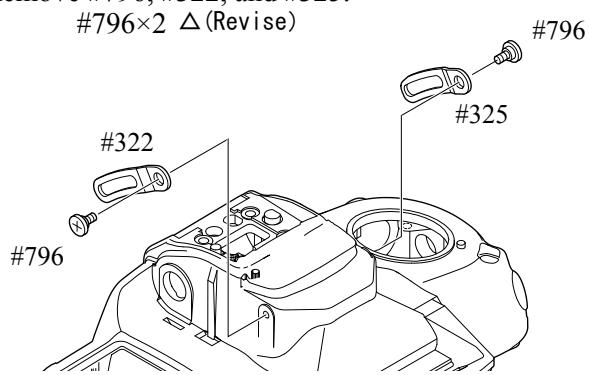
**SB lower case unit**

- Pull each wire from the holes.
- While releasing the two hooks of the collar (#308), remove #308.
- Remove the rotation axes (#306 and #307).
- Remove the SB lower case unit (#B302) from the top cover.



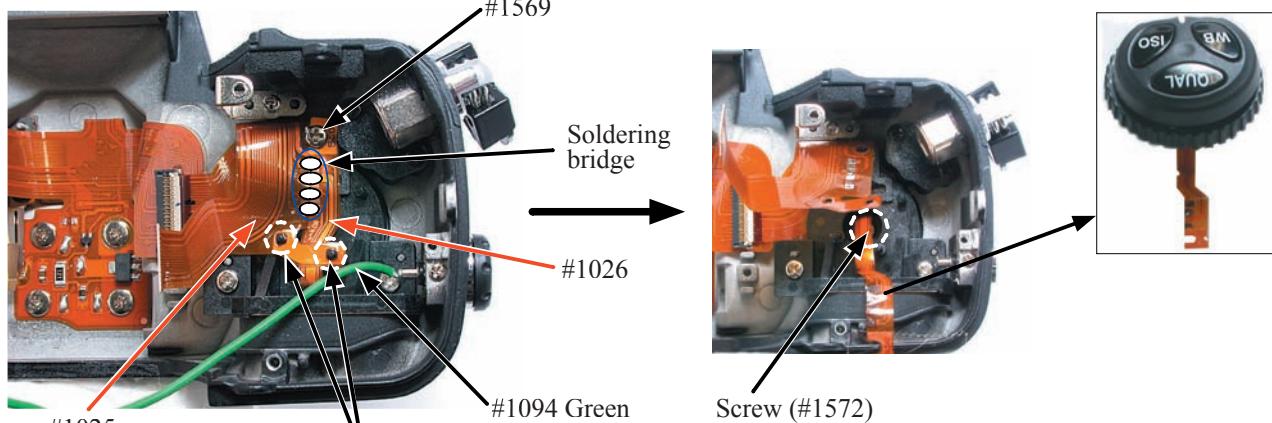
- Remove #796, #322, and #325.

#796×2 △(Revise)

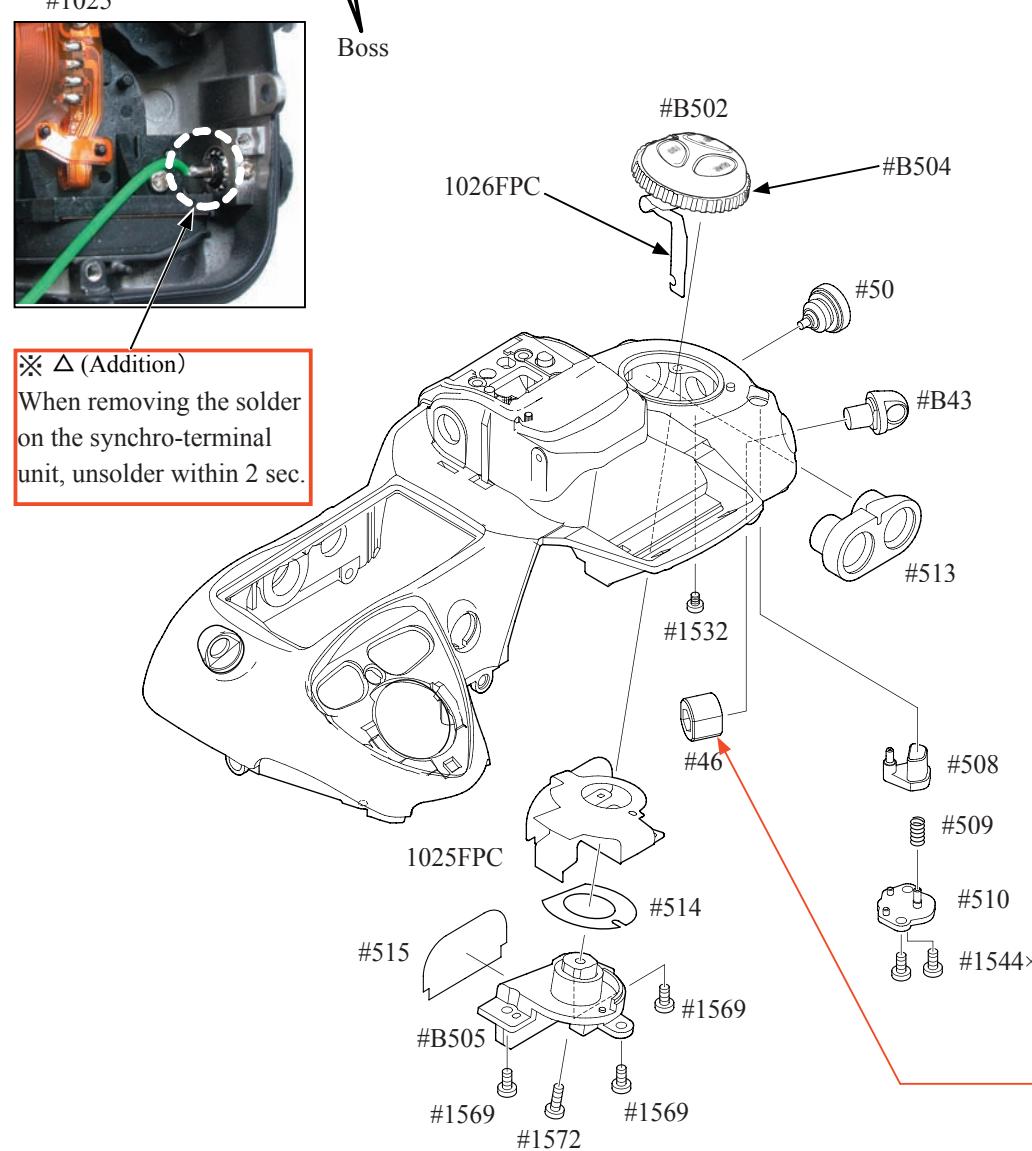


M/DFPC unit

- Remove the FPC soldering bridges of #1025 and #1026.
- Take out the screw (#1569).
- Detach #1025 from the bosses.
- Unsolder the lead wire (#1094).
- Remove the solder of the lead wire (#1094). Δ (Addition)
- Lift the FPC, and take out the screw (#1572).
- Remove B502 and B504 (Trefoil button unit).



Trefoil button unit

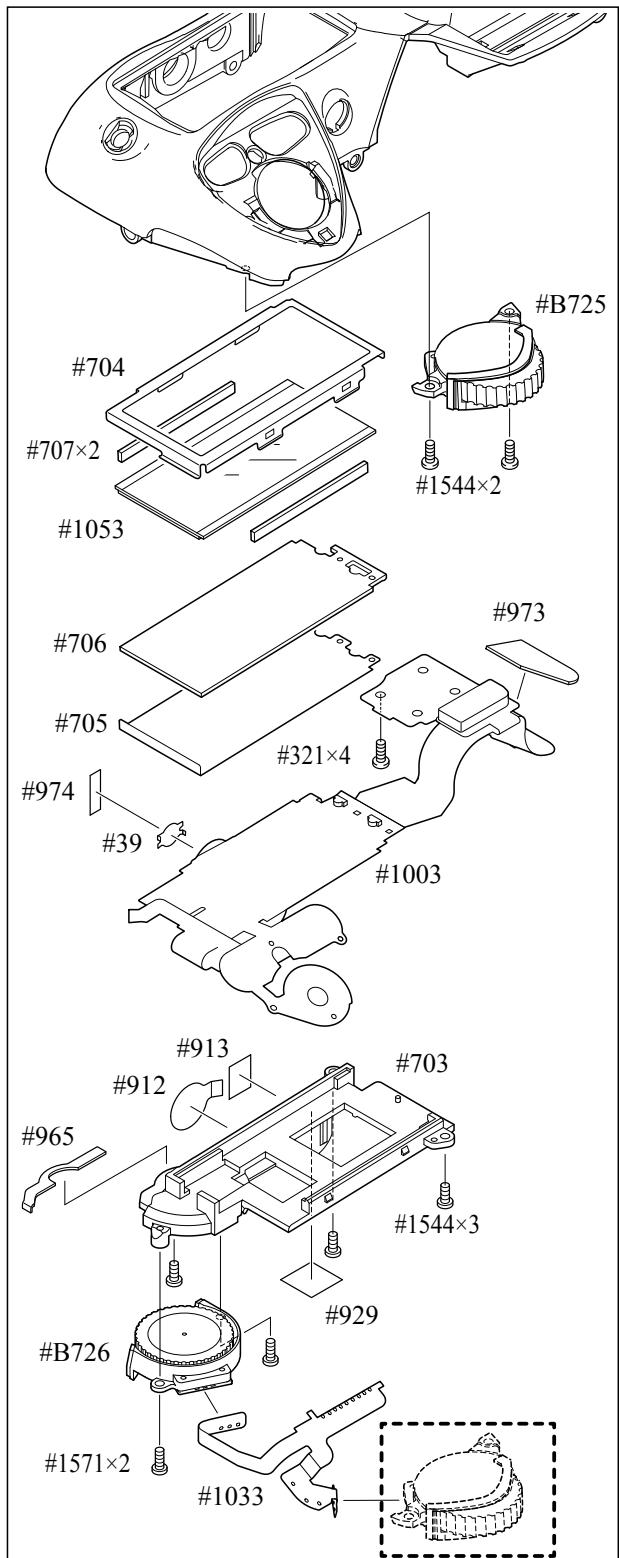
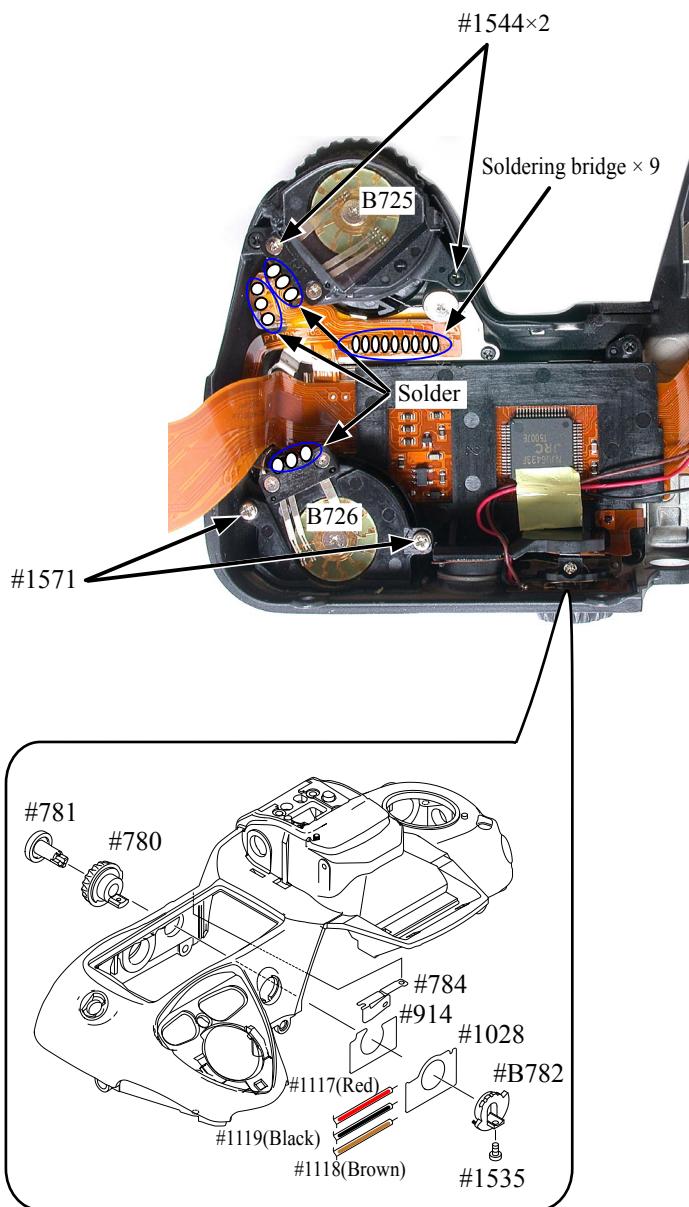


Use the Hexagonal wrench
of 5-mm diameter

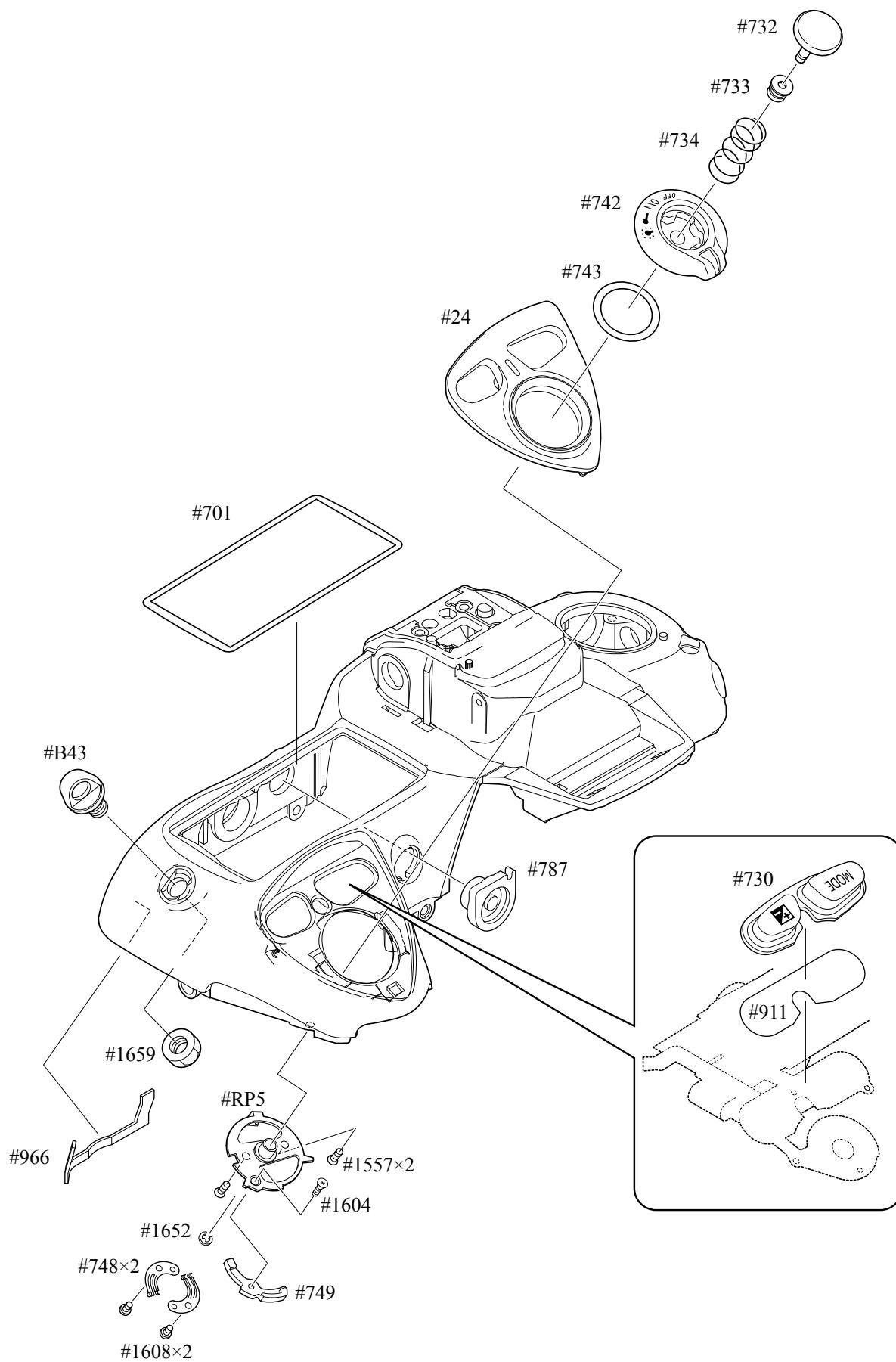


Top cover FPC unit

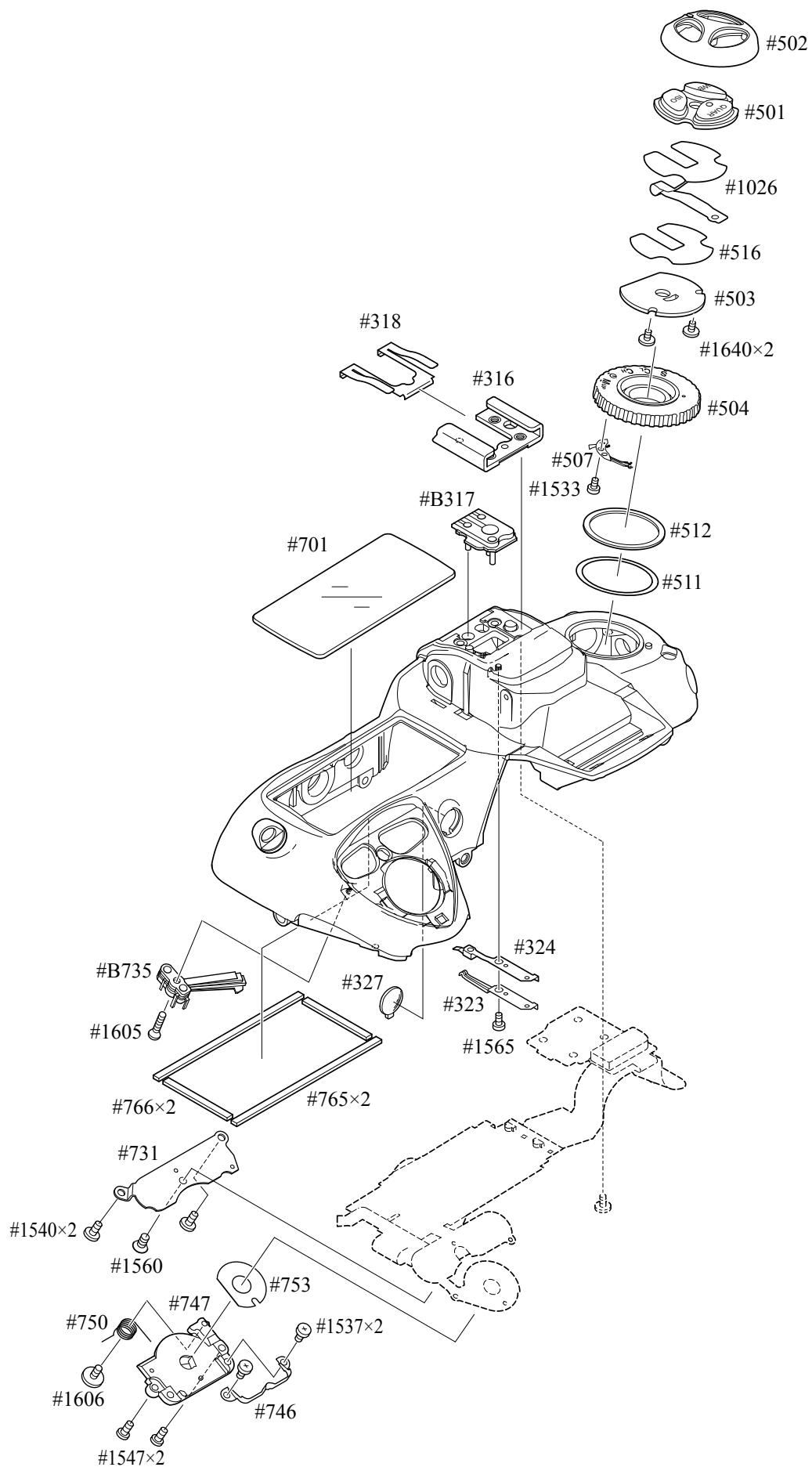
- Remove the soldering bridges .
- Unsolder the SUB dial command unit (B725) .
- Take out two screws (#1544).
- Remove the SUB command dial unit (B725).
- Unsolder the MAIN command dial unit (B726) .
- Take out two screws (#1571).
- Remove the MAIN command dial unit (B726).
- Remove the relies SW unit .



Release button / Other small parts

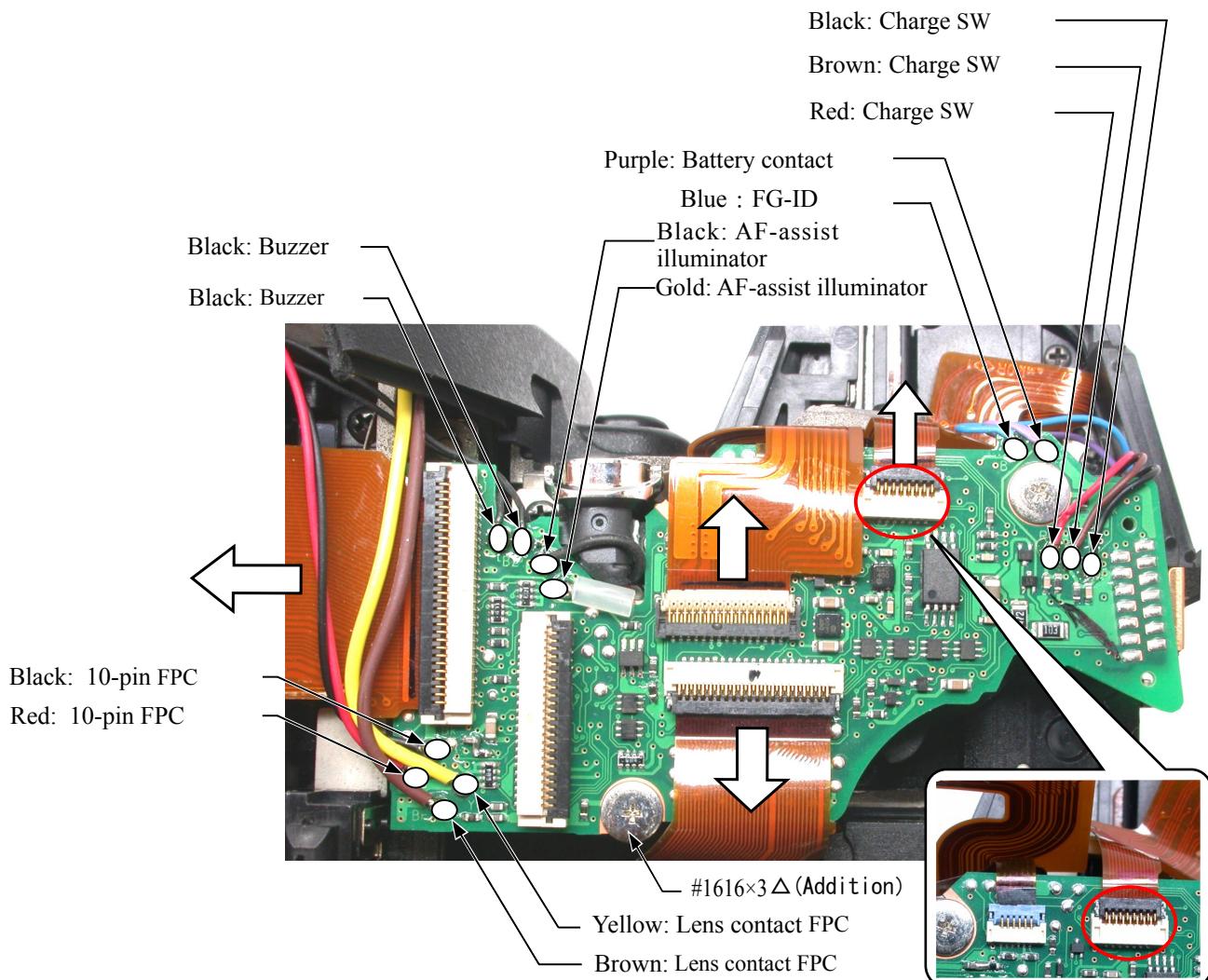


Outer LCD window / Shoe mold unit / Accessory shoe / Other small parts

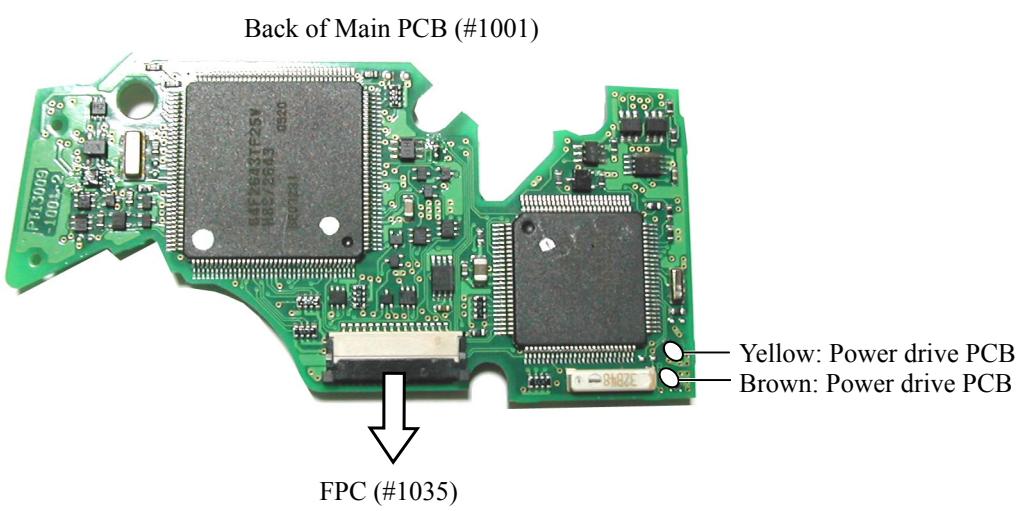


Main PCB unit

- Unsolder thirteen wires.
- Remove five FPCs from the connector.
- Take out three screws (#1616) and remove the main PCB unit (#B1001).

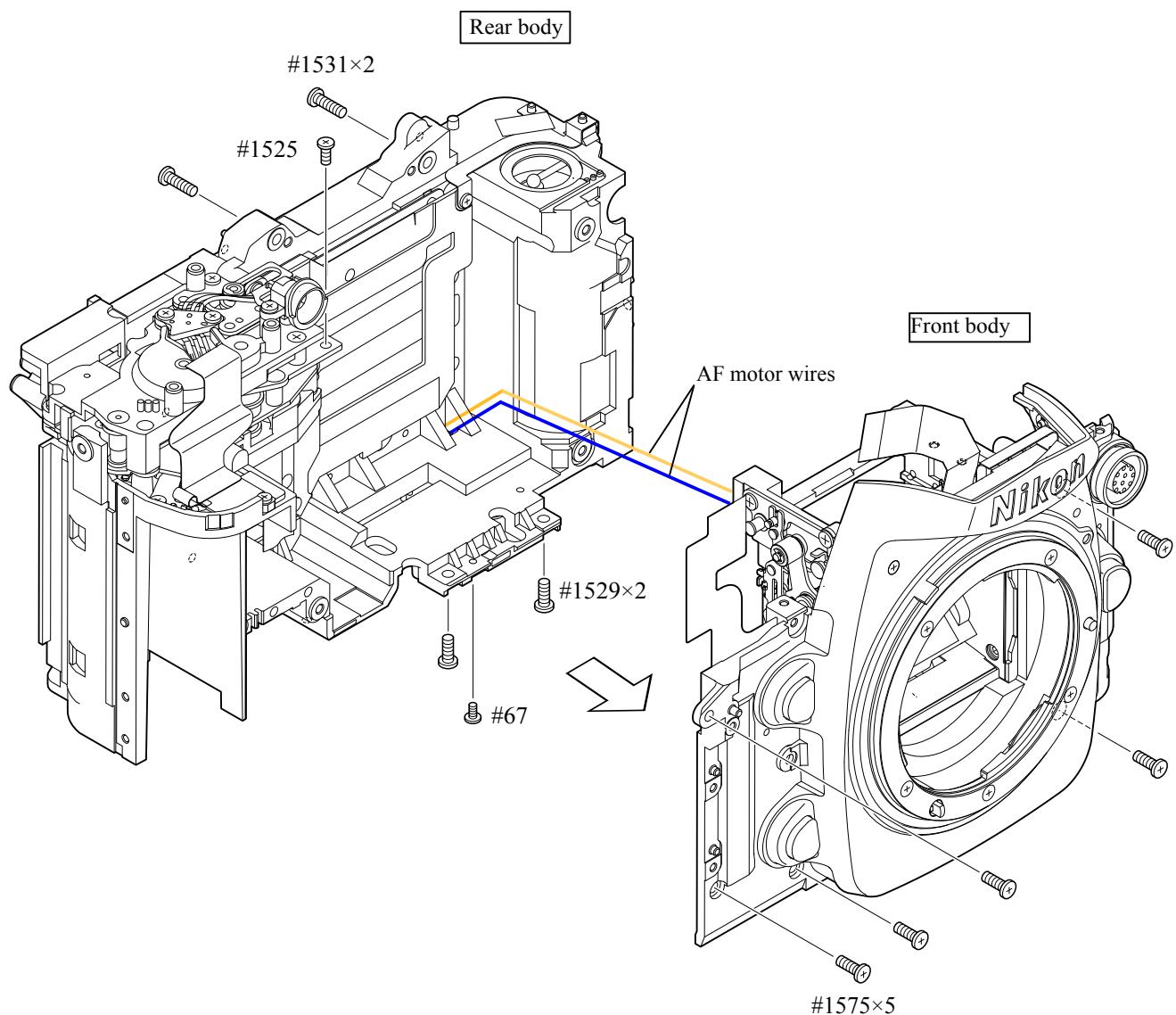
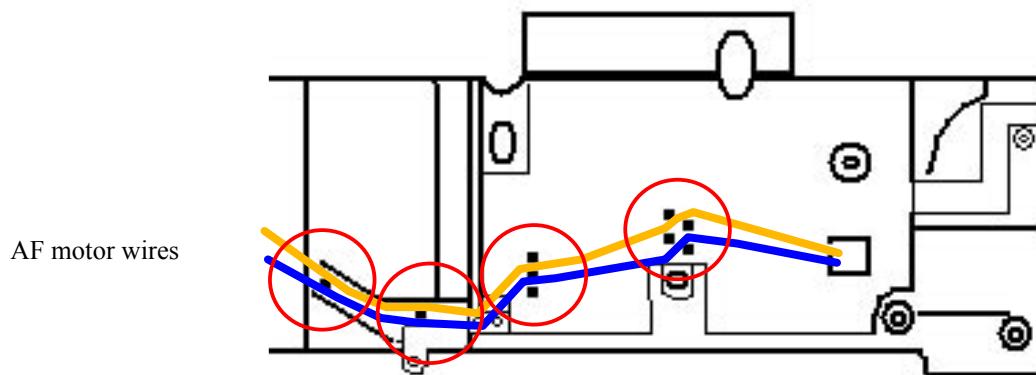


- Unsolder the two wires of the back of the main PCB unit (#1001).
- Remove the main connection FPC (#1035) from the connector of the back of the main PCB unit (#1001).



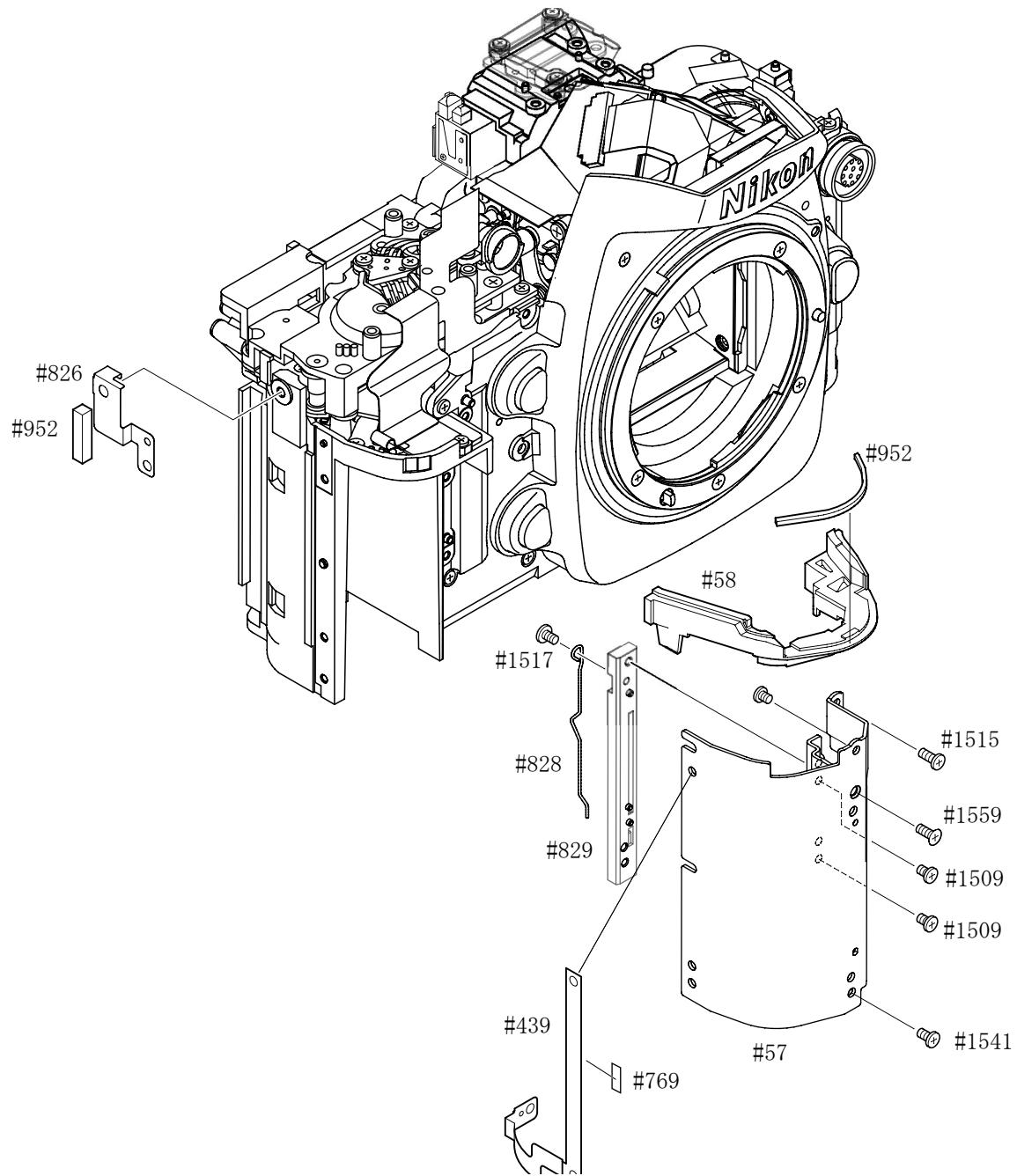
Separation of Front body from Rear body

- Take out two screws (#1529), one screw (#67), two screws (#1531), one screw (#1525) and five screws (#1575).
- Release the AF motor wires from the bosses, and while pulling them slowly from the holes of the rear body, remove the front body.



Grip unit

- Remove the grip (#57) with the screw (#1515) and two screws (#1509).



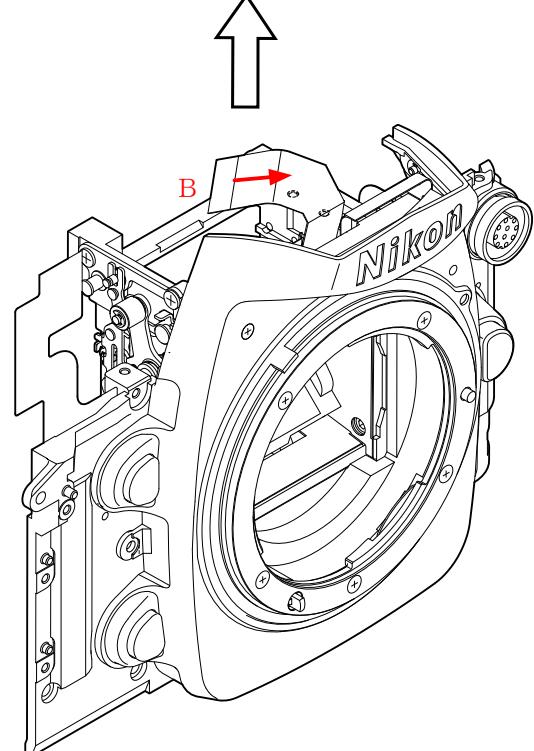
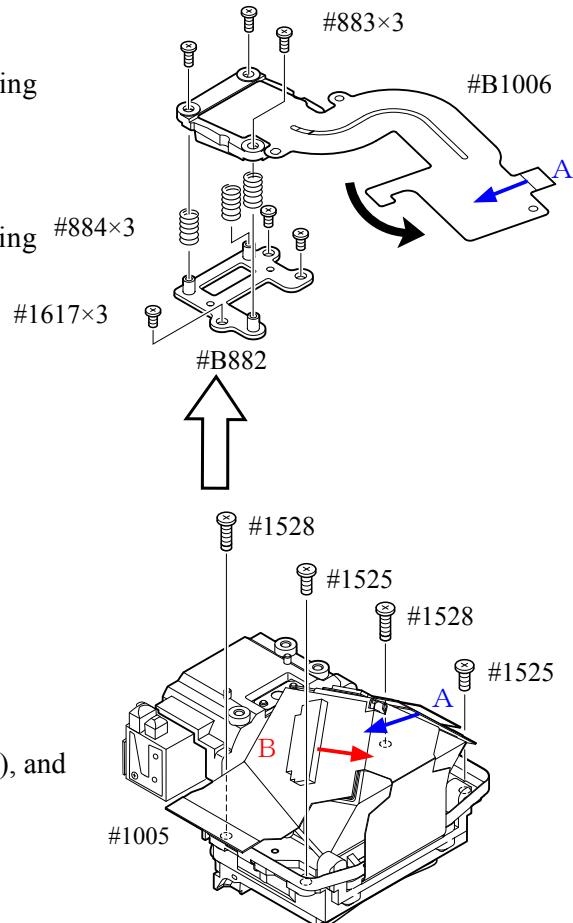
2. Front body

Metering FPC unit
Prism box unit
(with prism and eyepiece)

- Remove the metering FPC from the connector of the SI-FPC (#1005).
- Take out three screws (#883), and remove the metering FPC unit (#B1006).
- Three springs (#884) come off.
- Take out two screws (#1617) and remove the metering FPC unit pedestal (#B882).

Caution:
The screw (#883) is attached with the adhesive.
In case the screw (#883) is moved, the AECCD positioning adjustment (ref. Assembly) becomes necessary.

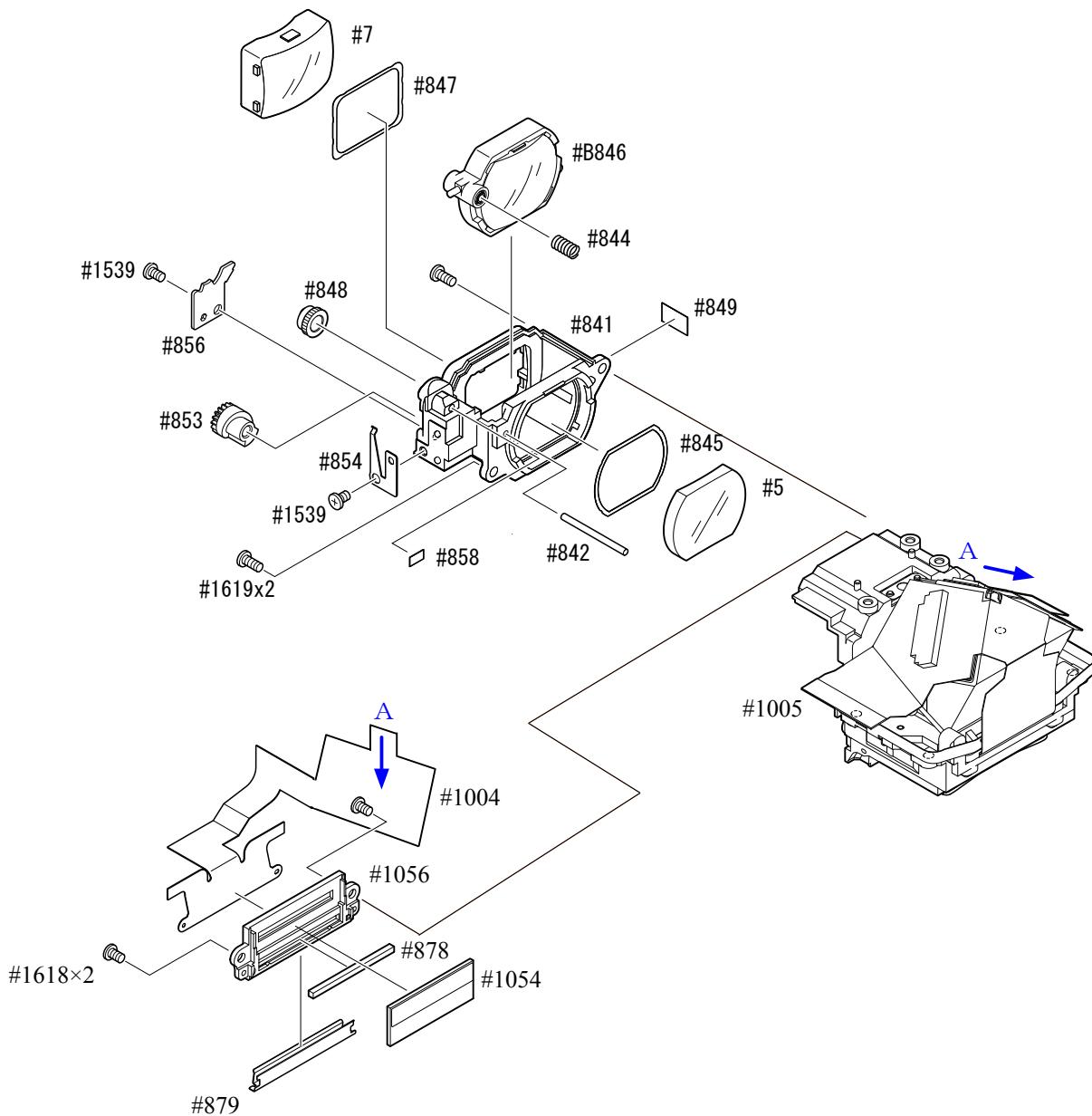
- Remove the lens contact FPC unit (#B1008) from the connector of the SI-FPC (#1005).
- Take out two screws (#1525) and two screws (#1528), and remove the prism box unit from the front body.



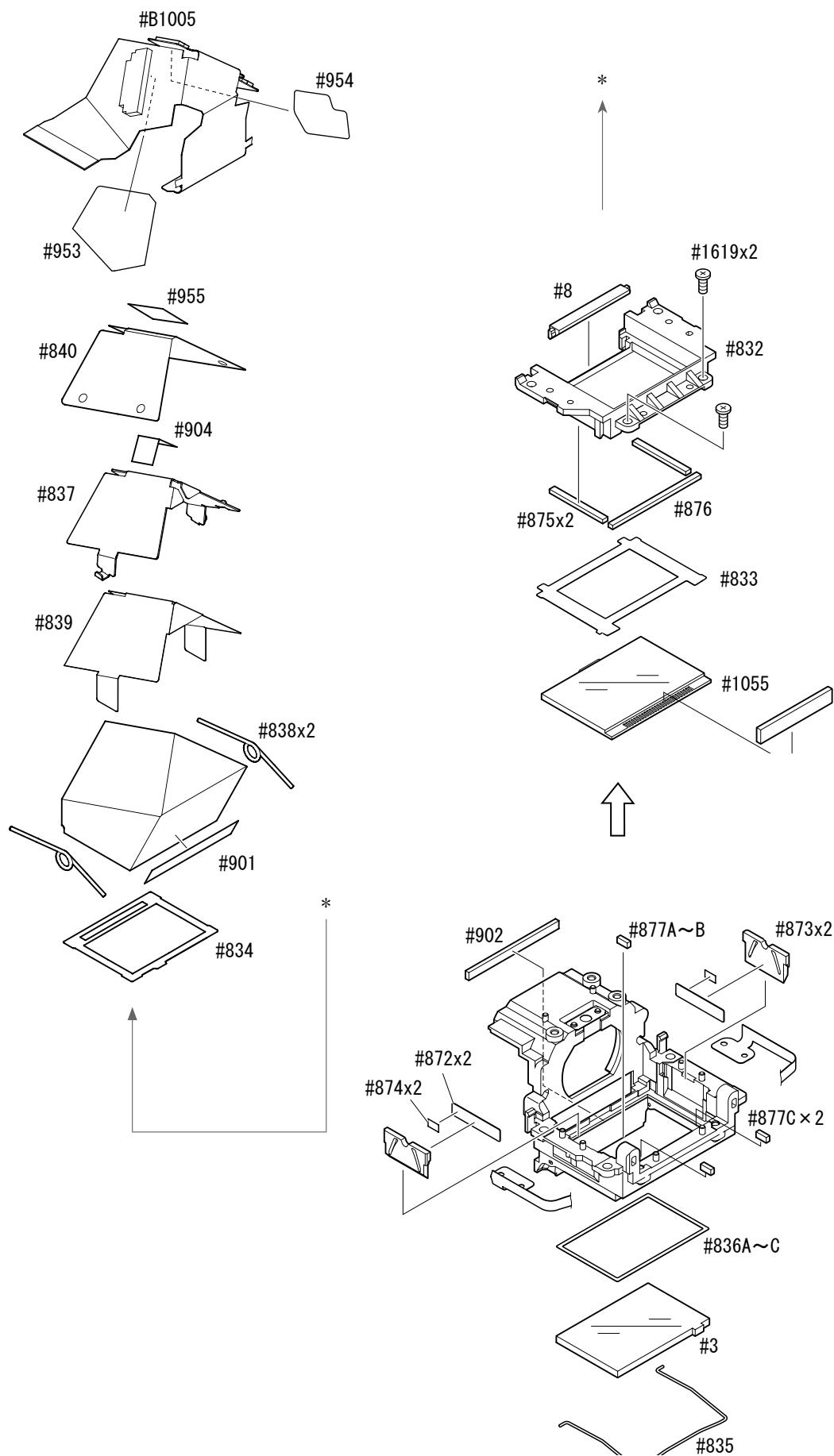
Eyepiece lens-barrel unit
Inner LCD unit

- Take out two screws (#1619), and remove the eyepiece lens-barrel unit.

- Remove the finder-display FPC (#1004) from the connector of the SI-FPC.
- Take out two screws (#1618), and remove the finder-display LCD unit.

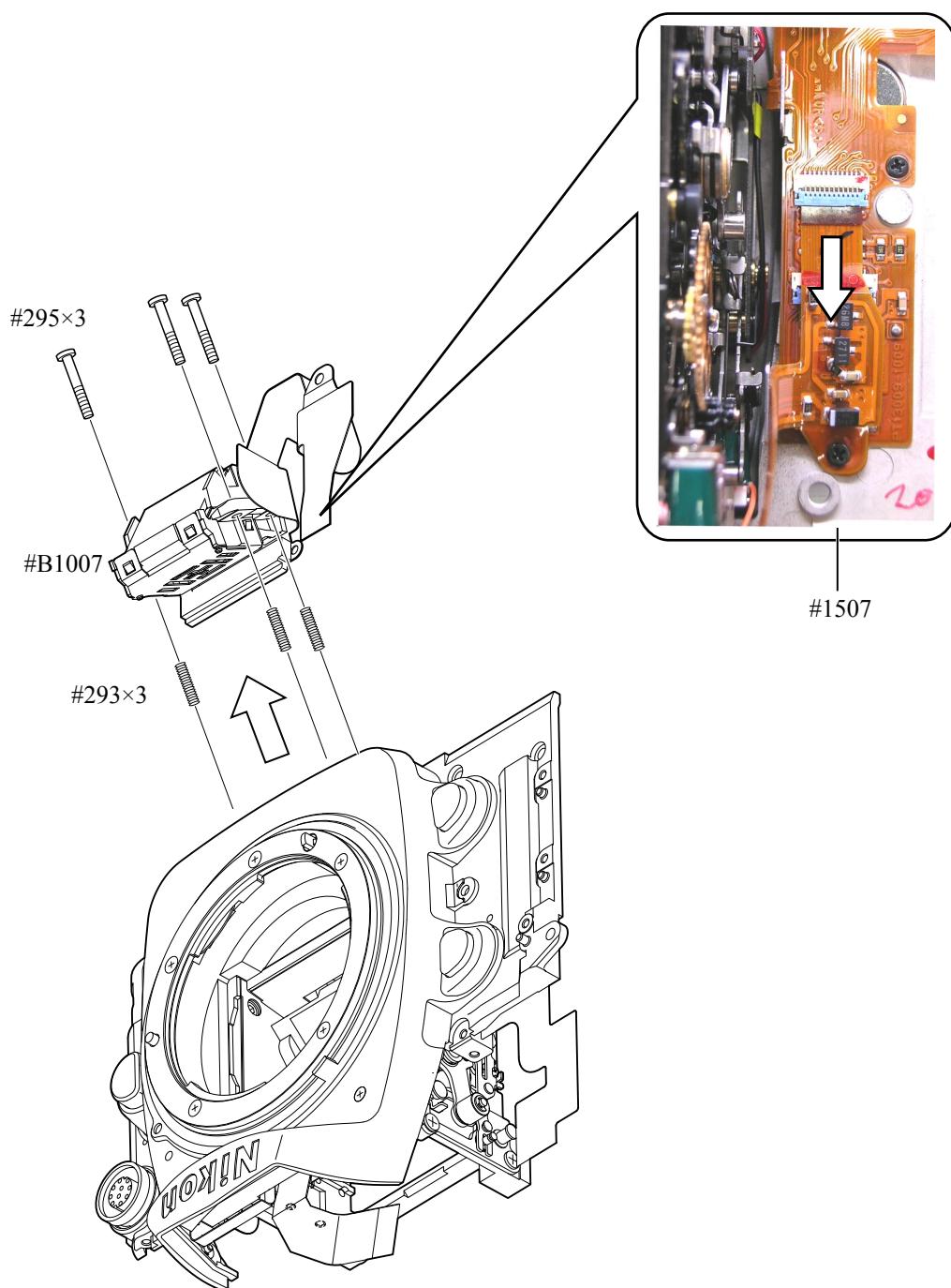


Penta unit



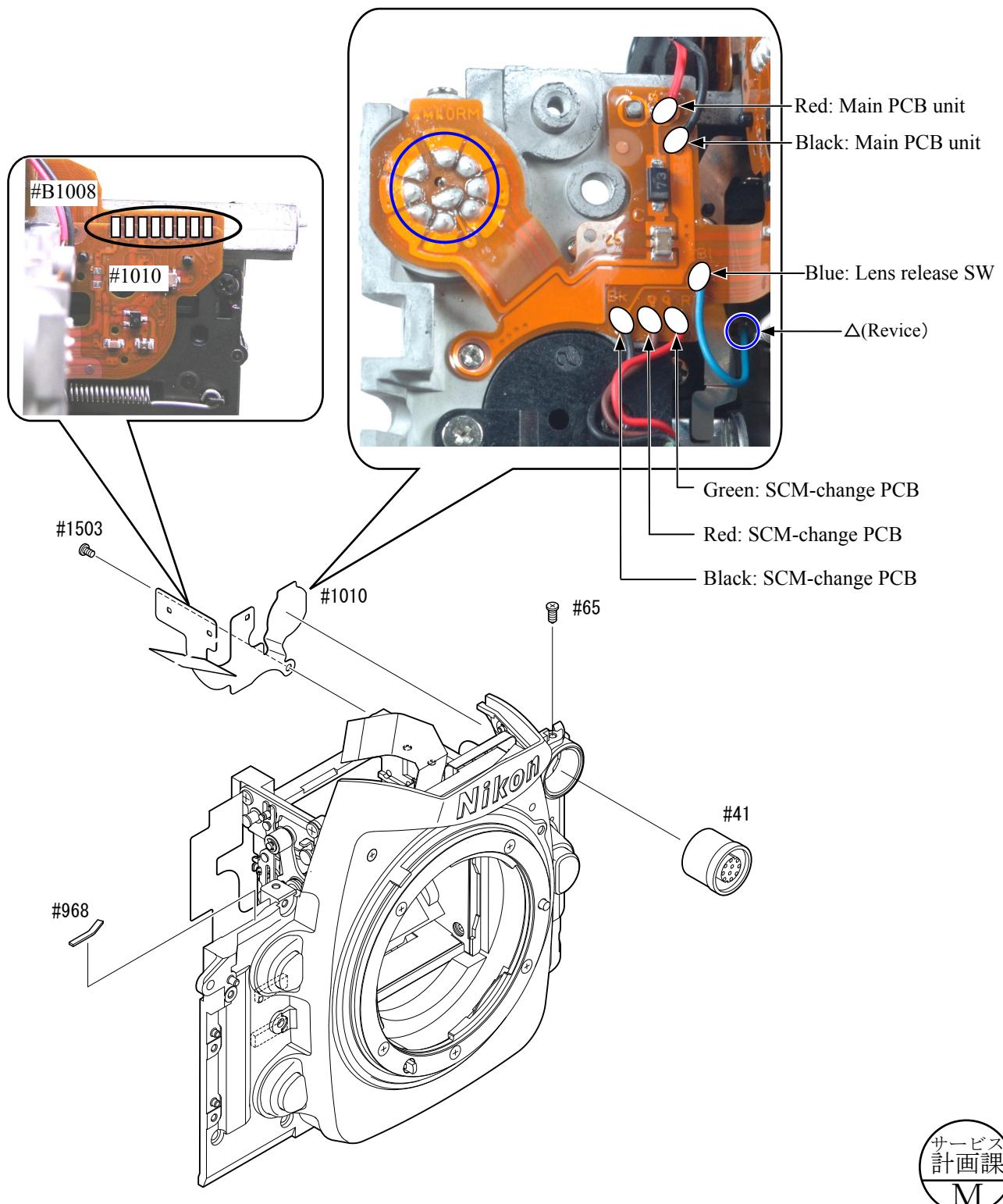
AF-PCB unit

- Take out the screw (#1507).
- Remove the AF-PCB FPC from the connector.
- Take out the three screws (#295) with the Hexagonal wrench, and remove the AF-PCB unit (#B1007).
- Three springs (#293) come off.



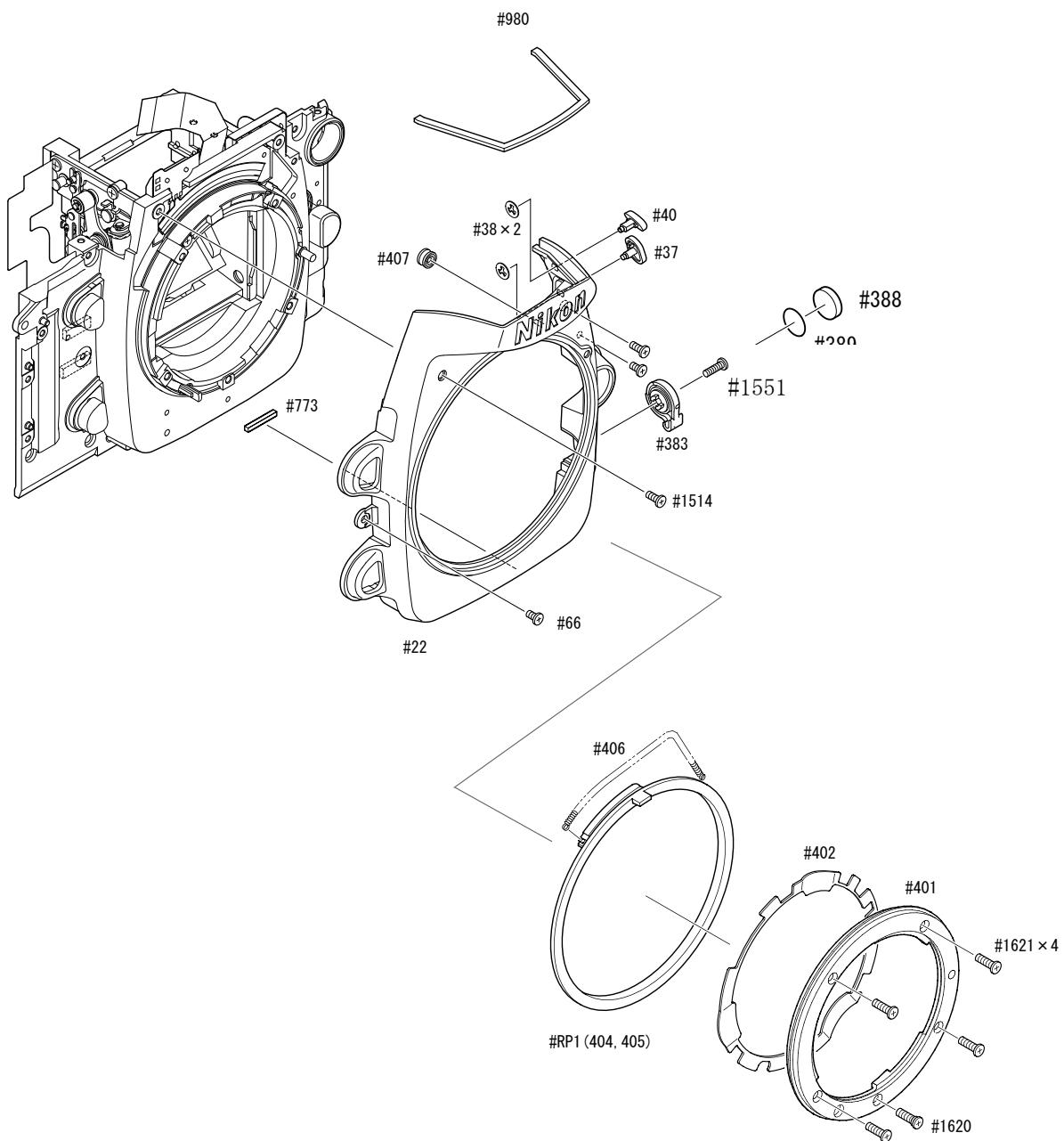
10-pin plug
10-pin FPC unit

- Unsolder six wires.
- Remove the soldering bridge at nine locations of the 10-pin terminal (#41) and 10-pin FPC.
- Remove the soldering bridges at eight locations of the 10-pin FPC (#1010) and the lens contact FPC.
- Take out the screw (#1503) and remove the 10-pin FPC (#1010).
- Take out the screw (#65) and remove the 10-pin terminal.



Bayonet unit
Aperture coupling-ring unit
SCM-change lever unit
Front cover unit

- Remove the SCM screw cover plate (both-sided adhesive tape: #389). Take out the screw (#1551) and remove the SCM-change lever (#383).
- Take out four screws (#1621) and the screw (#1620), and remove the bayonet (#401) and the bayonet spring (#402).
- Remove the front cover (#22) and the aperture coupling ring. (The aperture coupling-ring roller comes off, too.)

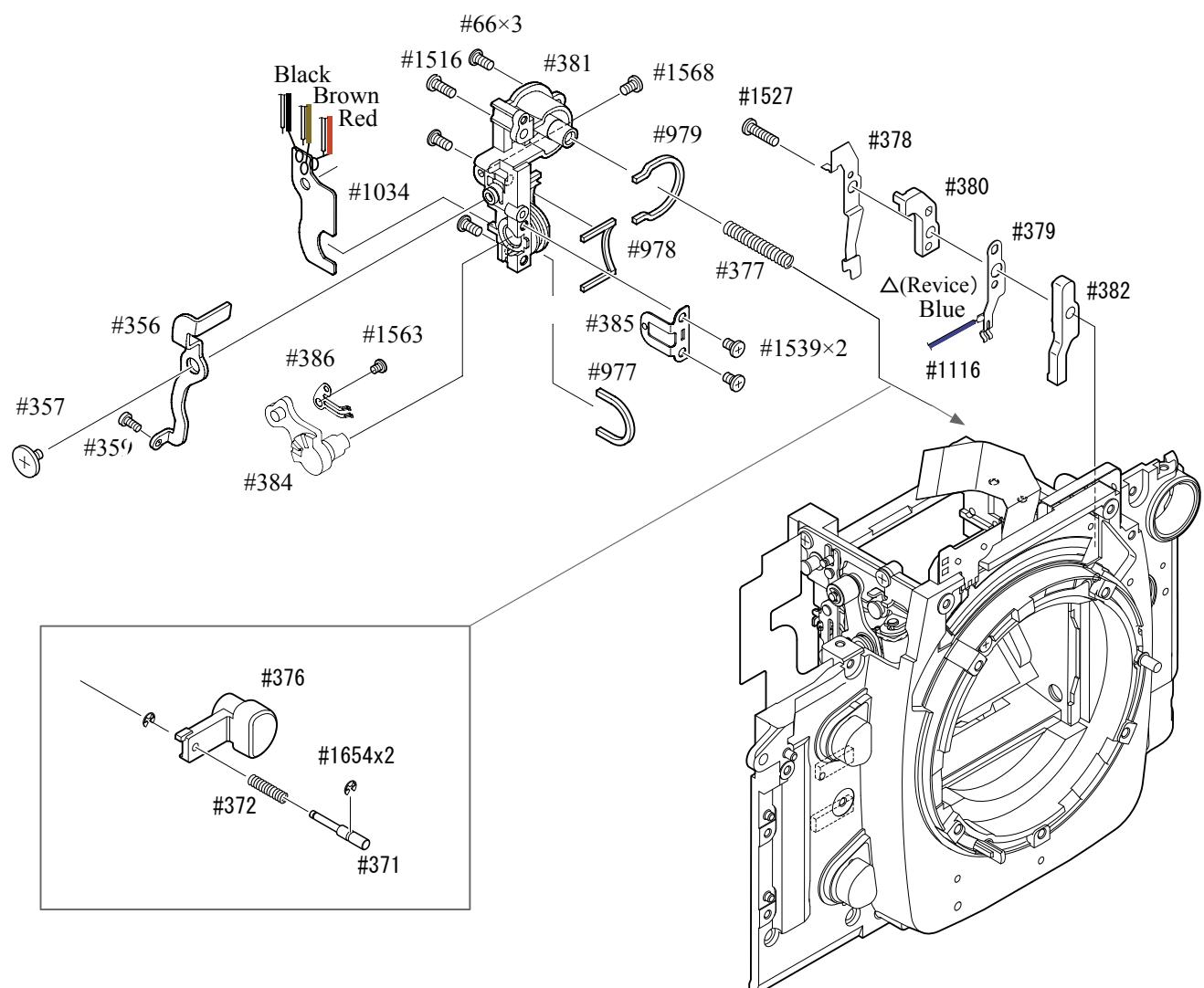


Lens release SW

Lens release PCB unit

Vertical-shooting lever

SCM-change PCB

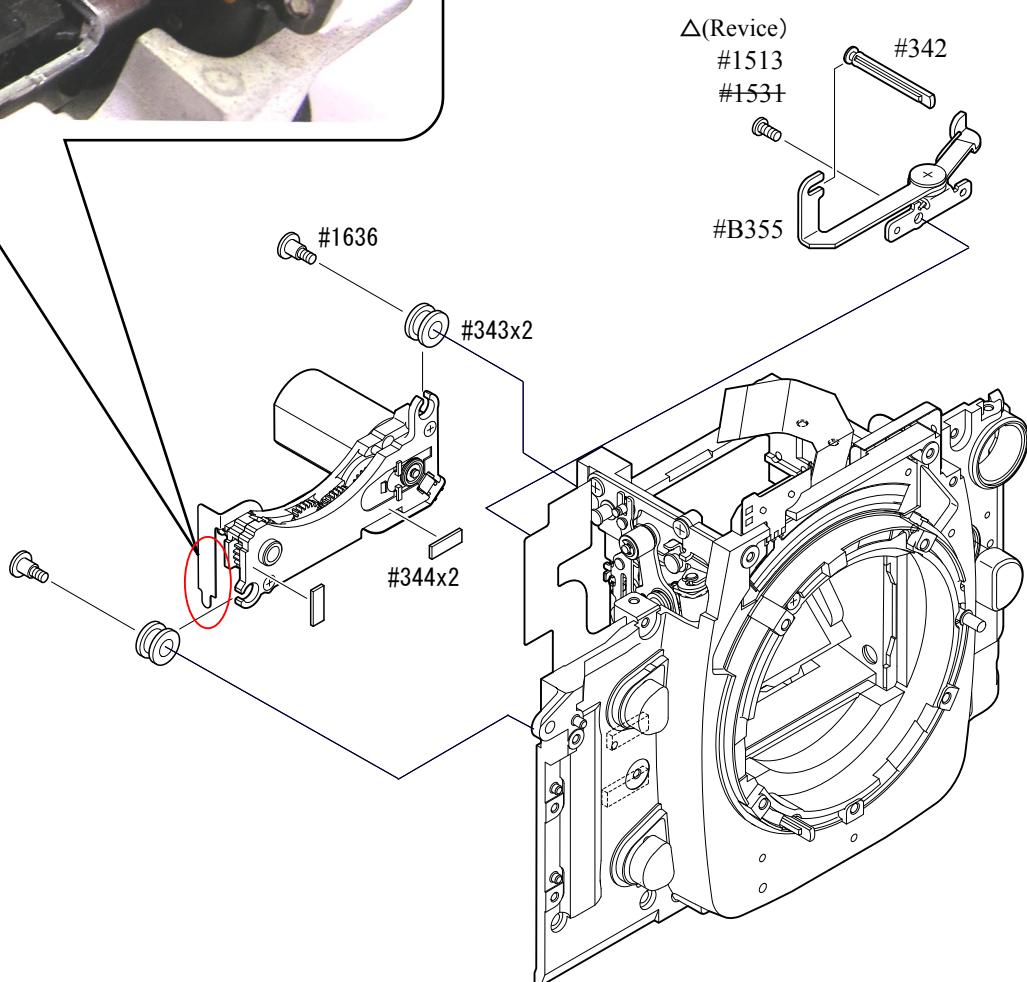
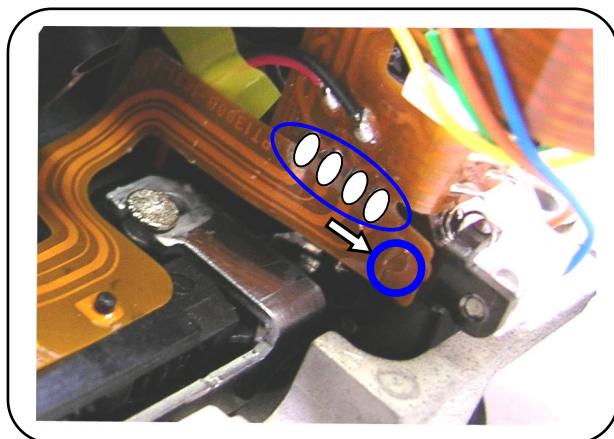


サービス
計画課
NA

AF drive-PCB unit

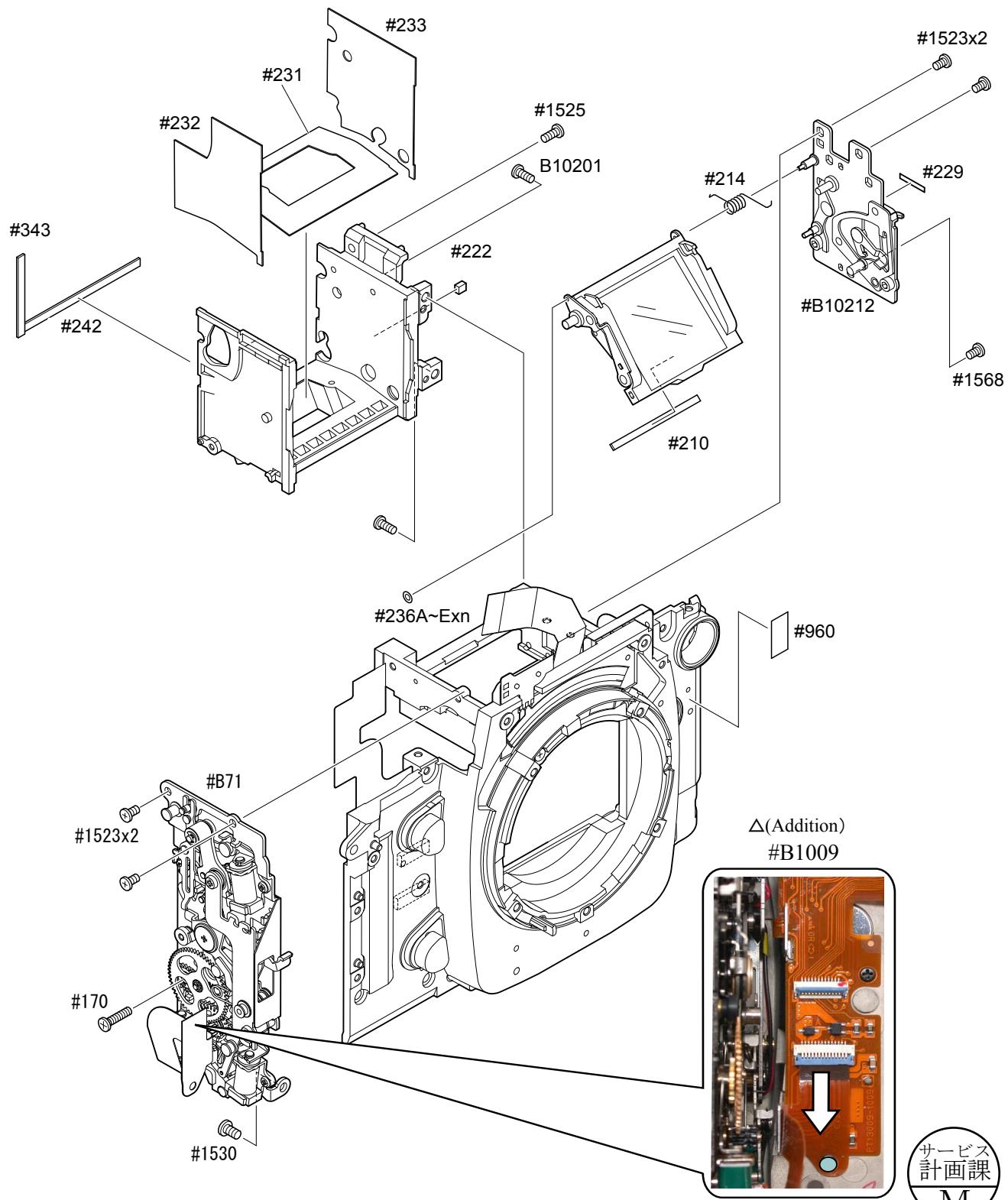
Horizontal-shooting lever unit

- Take out the screw (#1513) and remove the horizontal-shooting lever unit (#B355) and the coupling shaft (#342).
- Remove the soldering bridges at four locations of the AF drive FPC.
- Take out two screws (#1636) and remove the AF drive-PCB unit (#B328).



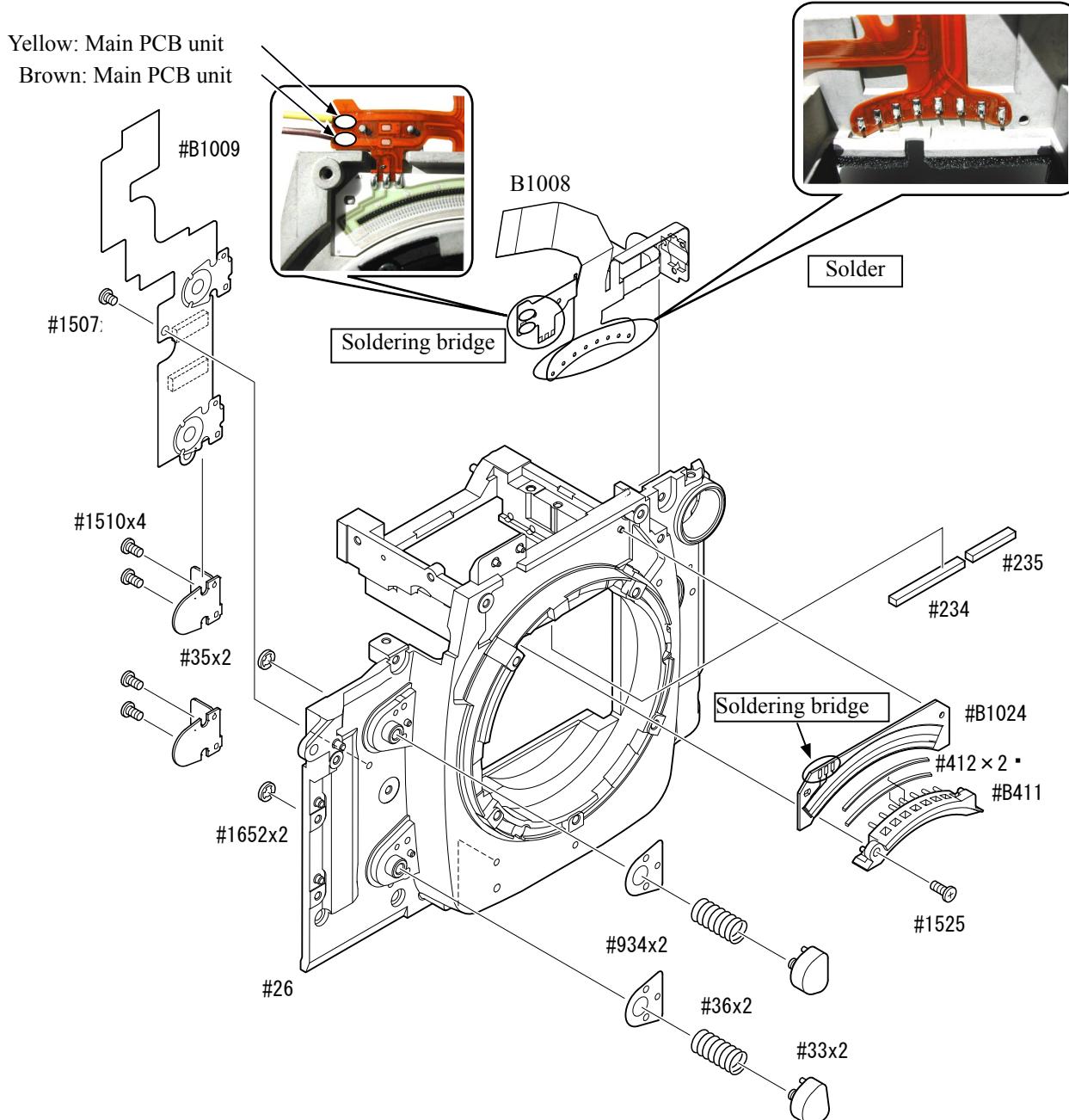
Mirror BOX unit
I-base plate unit
45°-support base plate
Mirror unit

- Remove the FPC of the I-base plate unit (#B71) from the connector of #B1009.
- Be careful NOT to lose the washers (#236A - E).



Lens-contact unit
 F-F0 PCB unit
 Mirror-support sponge
 Front plate-FPC unit
 Preview button
 Function button
 Lens contact FPC unit

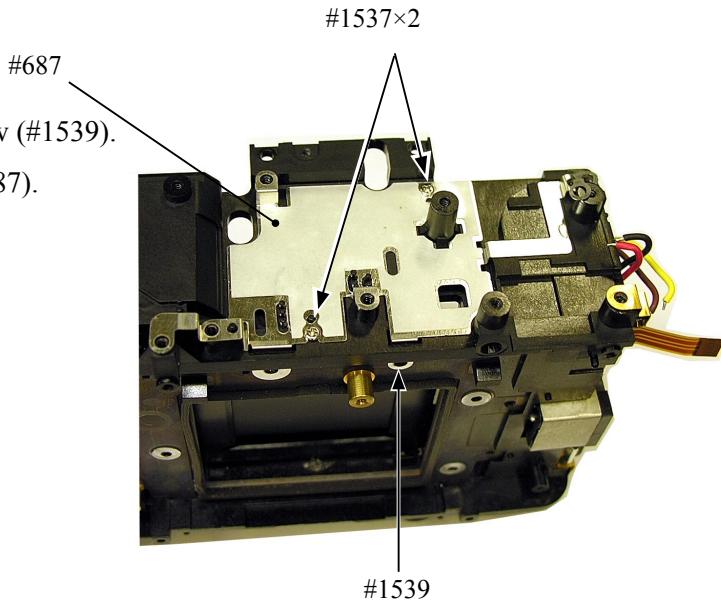
- Remove the soldering bridges at three locations of #B1024 and #B1008.
- Remove #1024 from #26.
- Unsolder #B411 and #B1008 at eight locations.
- Take out the screw (#1525) and remove the lens-contact unit (#B411).



2. Rear body

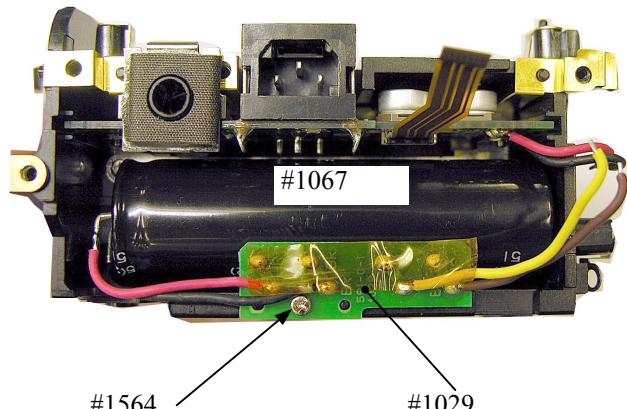
DC/DC-PCB shield plate

- Take out two screws (#1537) and the screw (#1539).
- Remove the DC/DC-PCB shield plate (#687).



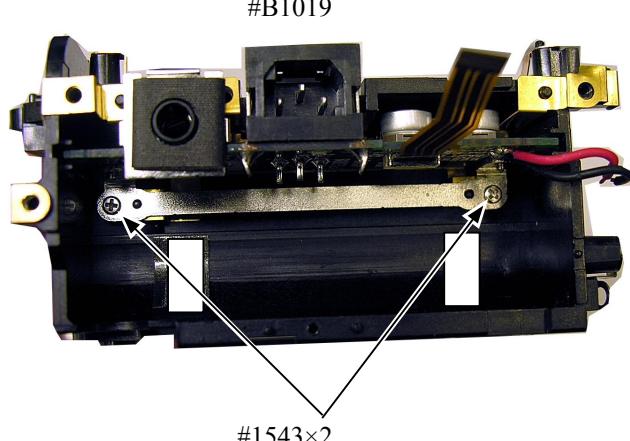
Main condenser/DI-PCB

- Take out the screw (#1564), and remove the DI-PCB (#1029).
- Remove the condenser (#1067).

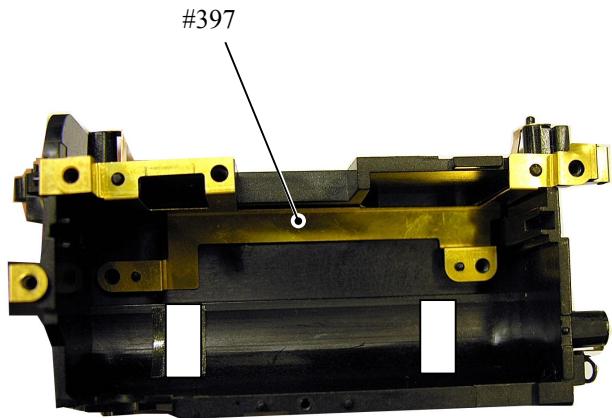


I/F-board unit

- Take out two screws (#1543).
- Remove the I/F-board unit (#B1019).

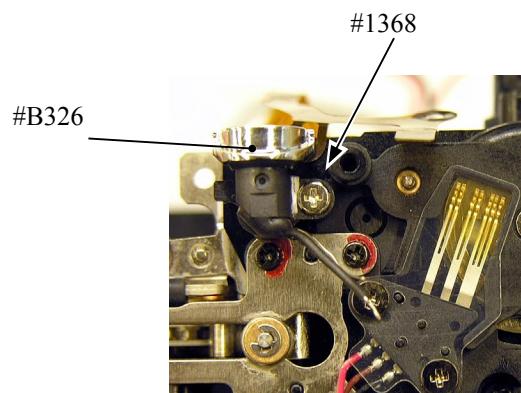


- Remove the IF GND steel plate (#397).



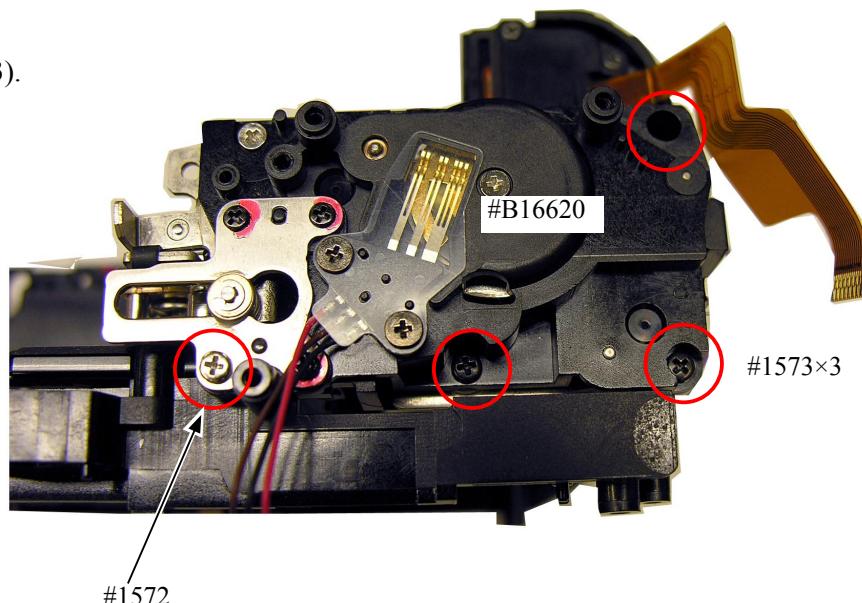
AF-assist lamp

- Take out the screw (#1368).
- Remove the AF-assist lamp (#B326).



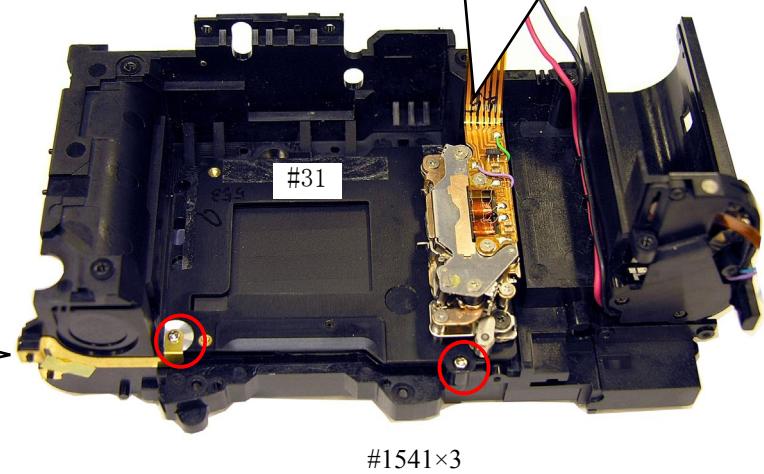
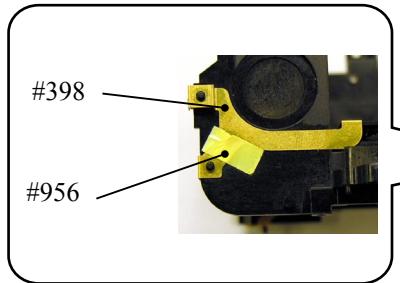
U/D base plate

- Take out the screw (#1572).
- Take out three screws (#1573).



Shutter unit

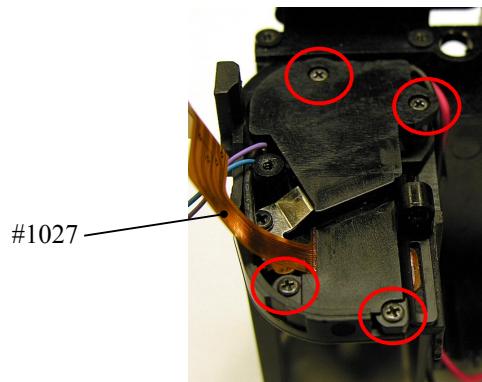
- Remove the retaining tape (#956).
- Take out three screws (#1541).
- Remove the GND steel plate (#398).
- Remove the shutter unit (#31).



#1541×3

Option pack FPC

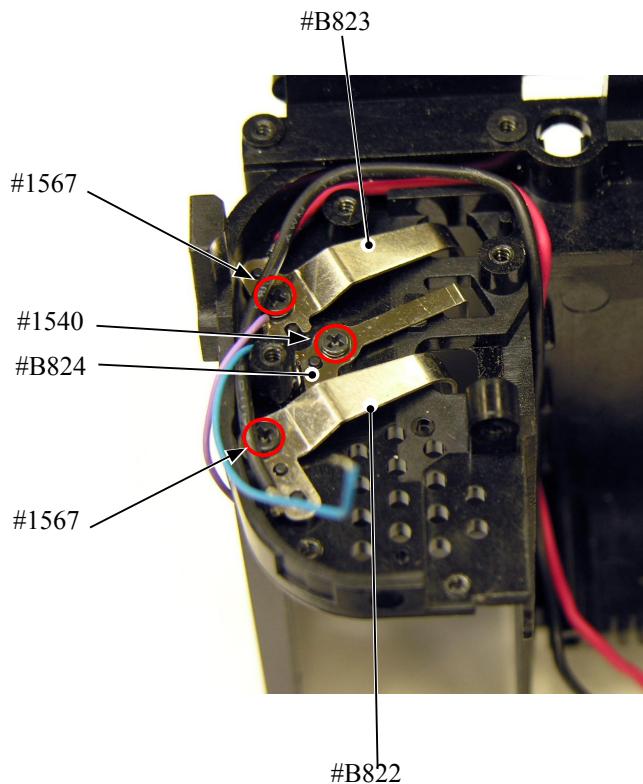
- Take out four screws (#1542).
- Remove the option pack FPC (#1027).



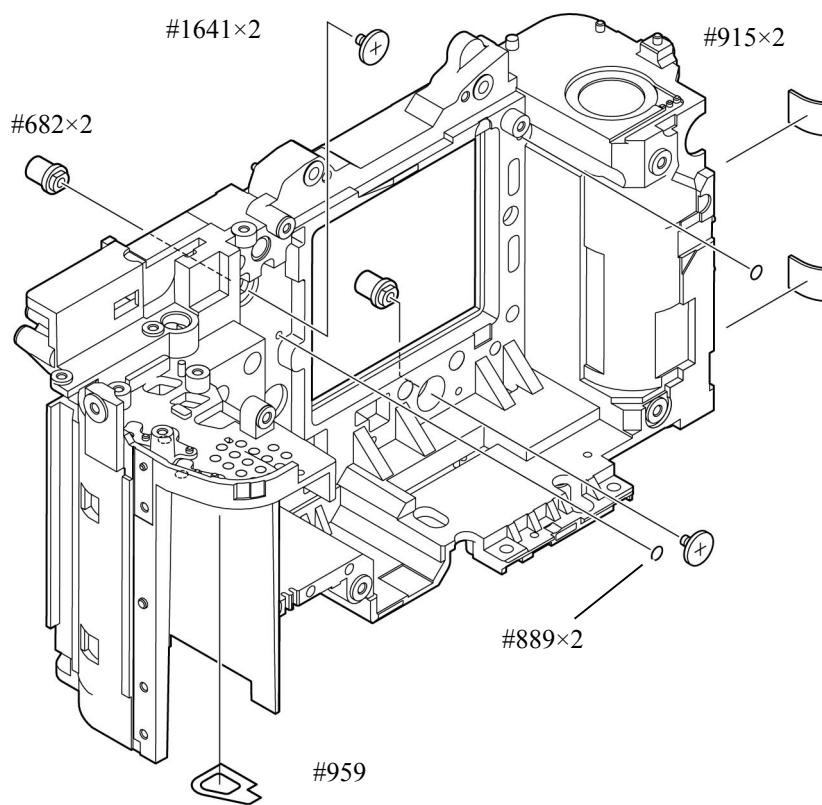
#1542×4

Battery contact spring

- Take out the screw (#1567), and remove #B822.
- Take out the screw (#1567), and remove #B823.
- Take out the screw (#1540), and remove #B824.

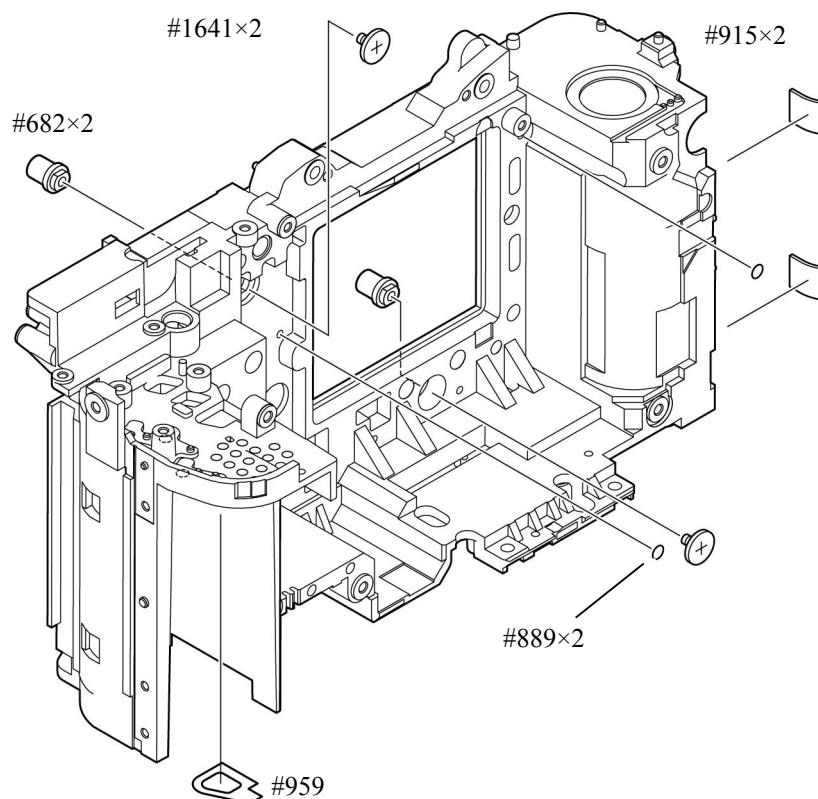


Rear body small parts

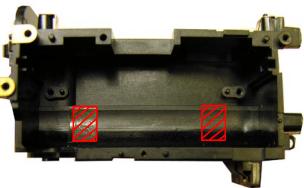


Rear body small parts

- Attach two #682 on the body and fix them with two screws (#1641).
- Attach two #889 to cover the screw holes without fail.
- Attach the 2 pieces of the both-sided adhesive tape (#915).

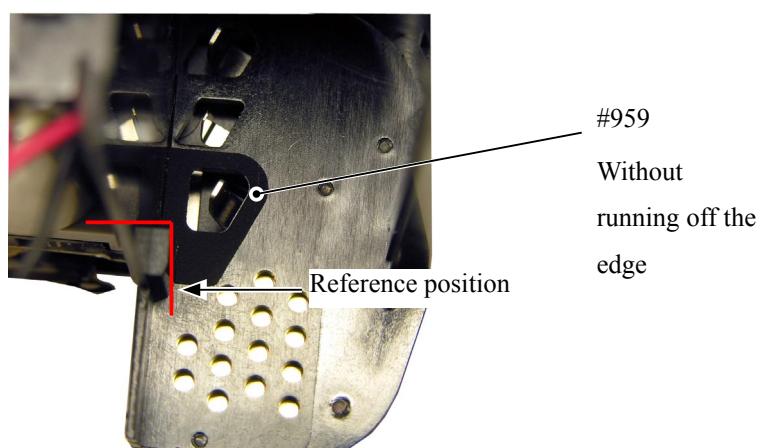


Position for attaching #915
(at 2 locations)



Battery chamber cover tape

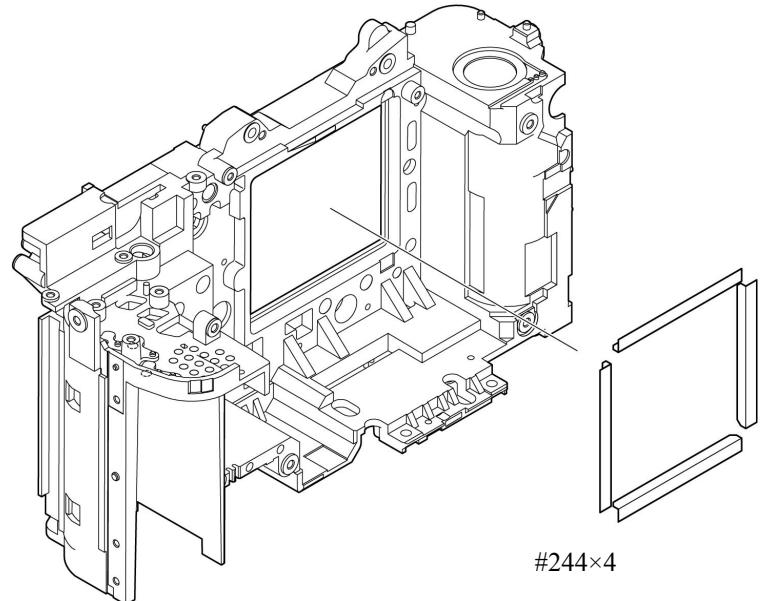
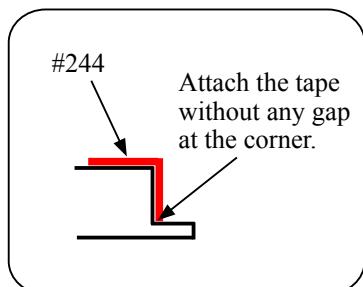
- Attach the tape (#959) by aligning with the reference position.



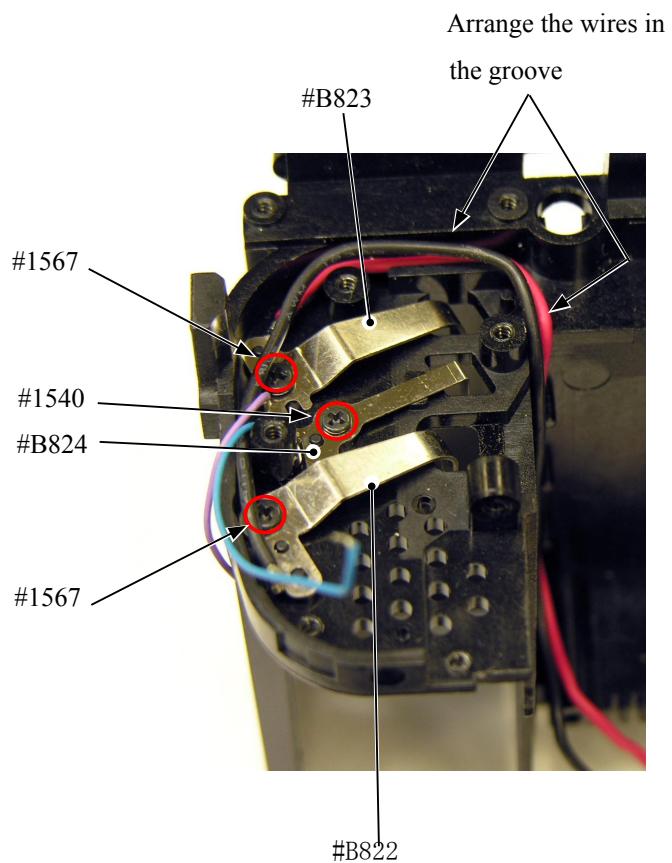
Both-sided adhesive tape (to collect dust around aperture)

- Attach 4 pieces of #244 on the body.

※ Attach the tape from the inside without any slackness, then fold it down to conform to the shape of the corner.

**Battery contact spring**

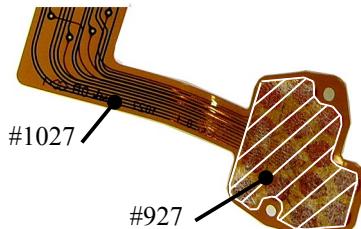
- Assemble #B824 into the body by fitting in the boss of the body.
- Tighten the screw (#1540).
- Assemble #B822 into the body.
- Tighten the screw (#1567).
- Assemble #B823 into the body.
- Tighten the screw (#1567).
- Arrange the wires (red and black) in the groove.



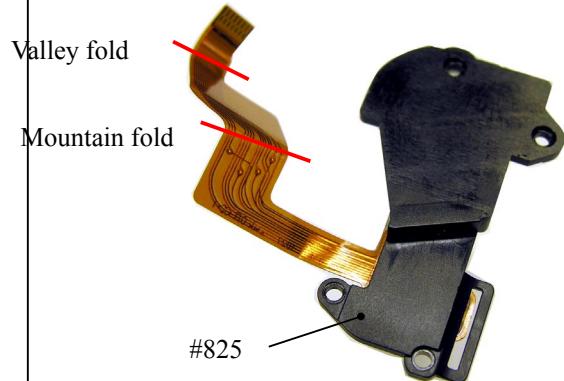
Optional pack

- Attach the both-sided adhesive tape (#927) on #1027.
- ※ Do NOT cover the positioning hole of #1027.
- Attach #1027 on #825.
 - Attach #994 on #1027.
 - Make a crease on #1027.
 - Assemble #825 in the body, and tighten four screws (#1542) in order.

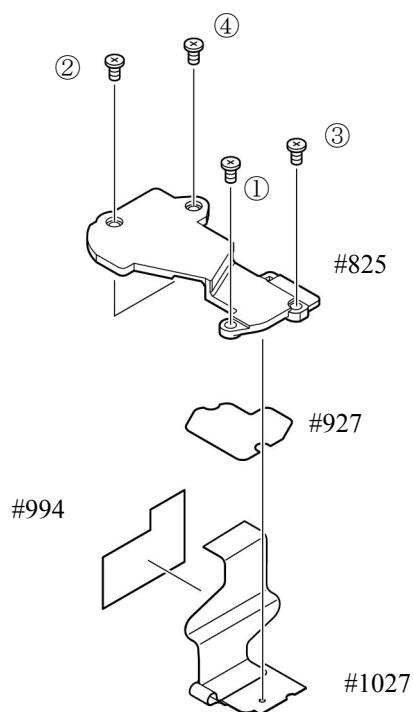
Position for attaching the both-sided adhesive tape



Positions for folding FPC



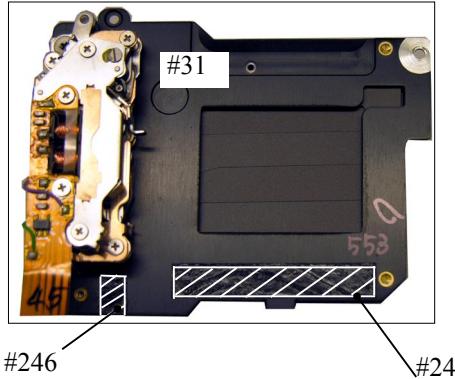
#1542×4



Shutter unit

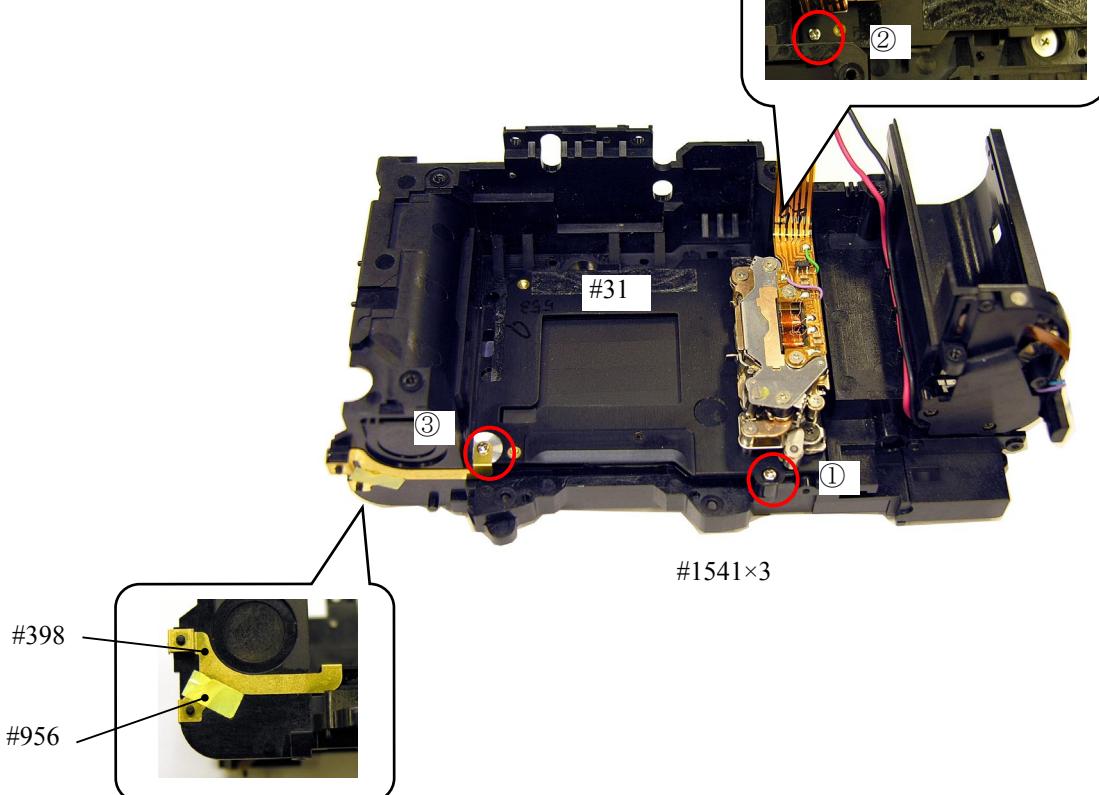
- Attach the both-sided adhesive tape (#245 and #246) on #31 to collect dust.
- ※ When attaching, be careful NOT to give pressure on the shutter side.

Position for attaching the both-sided adhesive tape



Installment of Shutter unit

- Peel off the four pieces of the backing paper (#244) that were attached on the rear body. (ref. Page A2)
- Assemble the shutter unit (#31) into the body.
- Assemble the GND steel plate (#398).
- Tighten three screws (#1541) in order.
- Attach the retaining tape (#956) as shown below.



U/D PCB unit

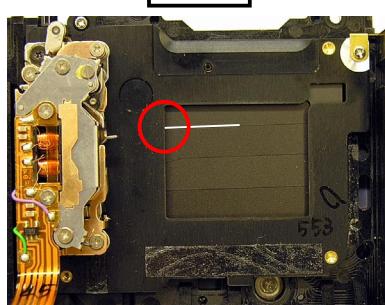
- Assemble the U/D PCB unit (#B16620) in the body.

① The shutter must be in state of charging (being about to be released).
(Check this by the shutter curtain.)

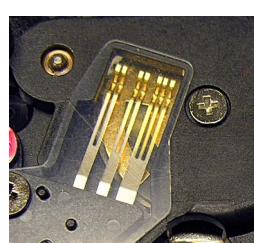
② The charging SW must be at the initial position.
(All the brushes are on the gold pattern.)

③ The mirror charge lever and shutter charge lever must be at the initial position.

① In state of charging

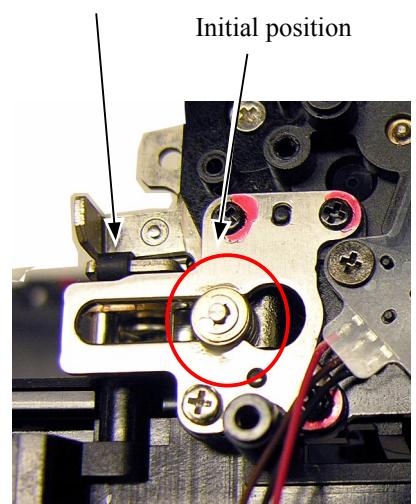


② Charge SW:
Initial position

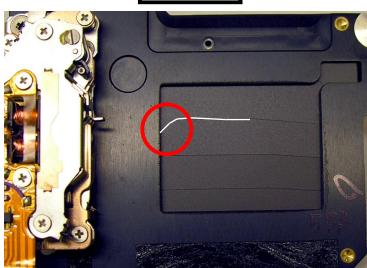


③ Charge lever (Mirror):
No gap

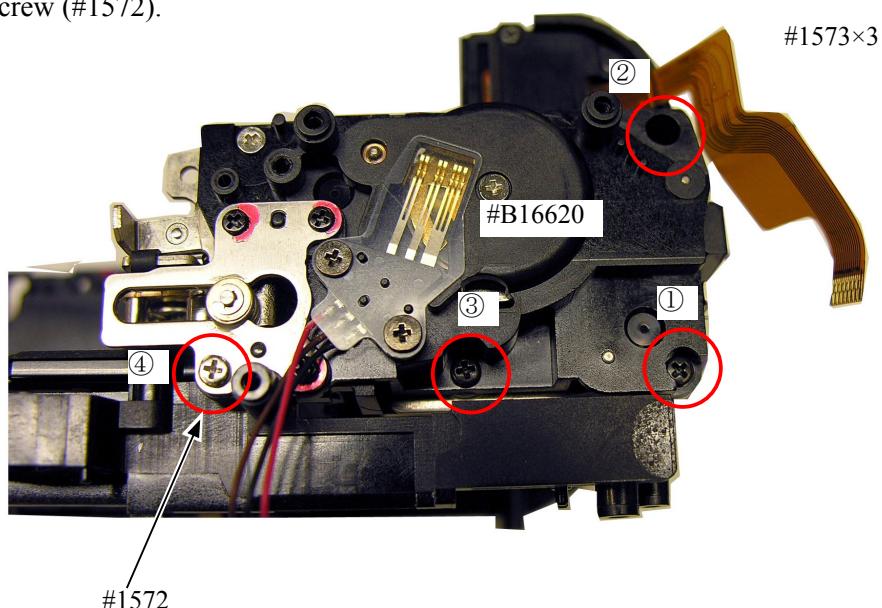
③ Charge lever(shettur):
Initial position



NG

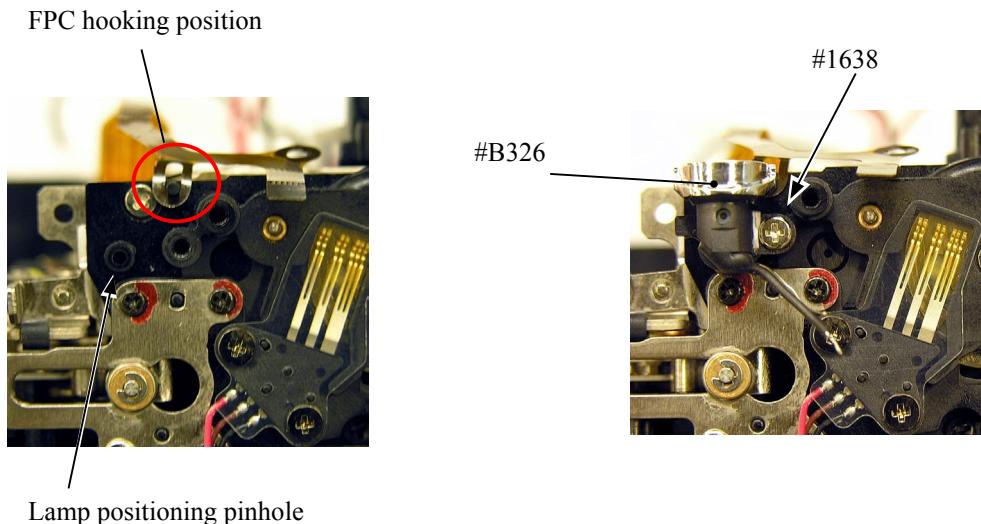


- Tighten three screws (#1573) in order.
- Tighten the screw (#1572).

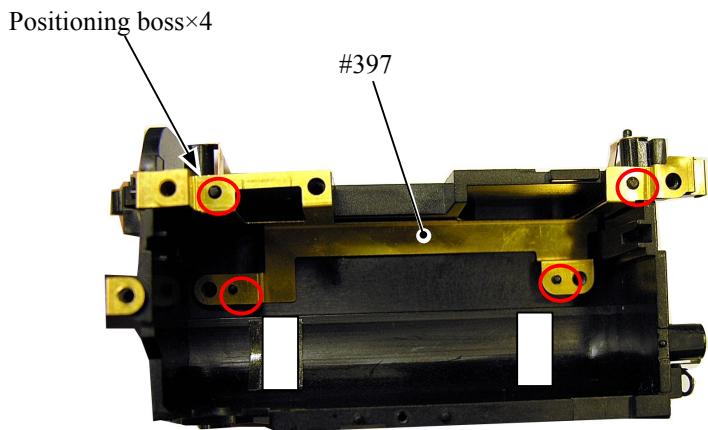


AF-assist lamp

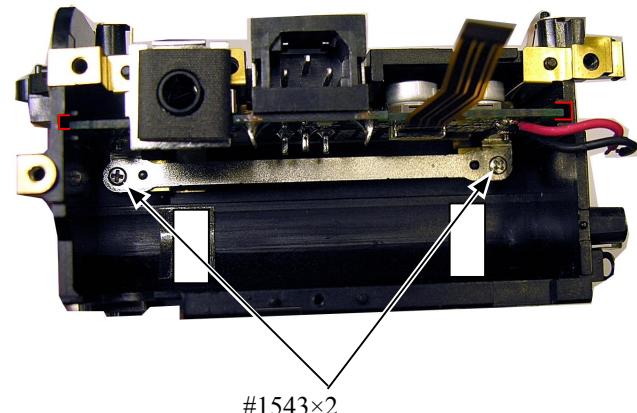
- Hook the shutter FPC to the boss.
- (See below)
- Put the AF-assist lamp (#B326), and tighten the screw (#1638).

I/F board unit

- Fit the I/F GND steel plate (#397) in the positioning bosses.
- Put and fix the I/F-board unit (#B1019) with two screws (#1543).



#B1019

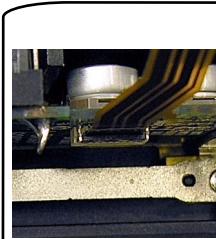


Main condenser/DI-PCB

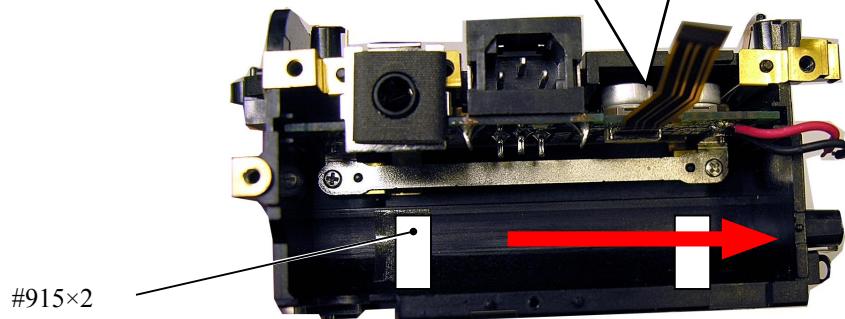
- Assemble the main condenser (#1067) in the body, and attach two pieces of the both-sided adhesive tape (#915).

※ Refer to the below for the lead direction of the main condenser.

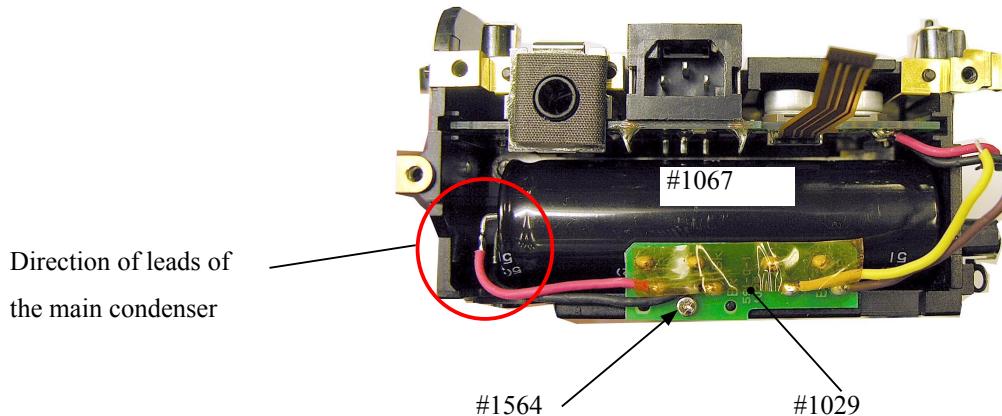
- Mount the DI-PCB (#1029), and tighten the screw (#1564).



When the main condenser is mounted, the connector must be closed.

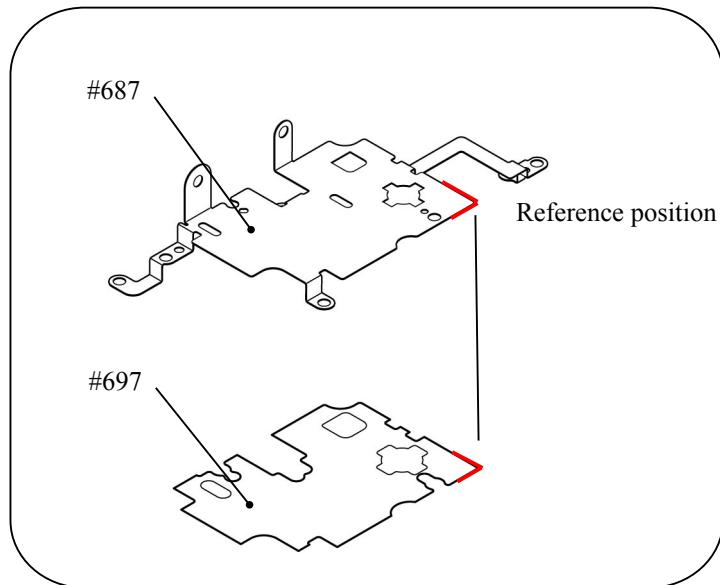


Position by following the direction of the arrow

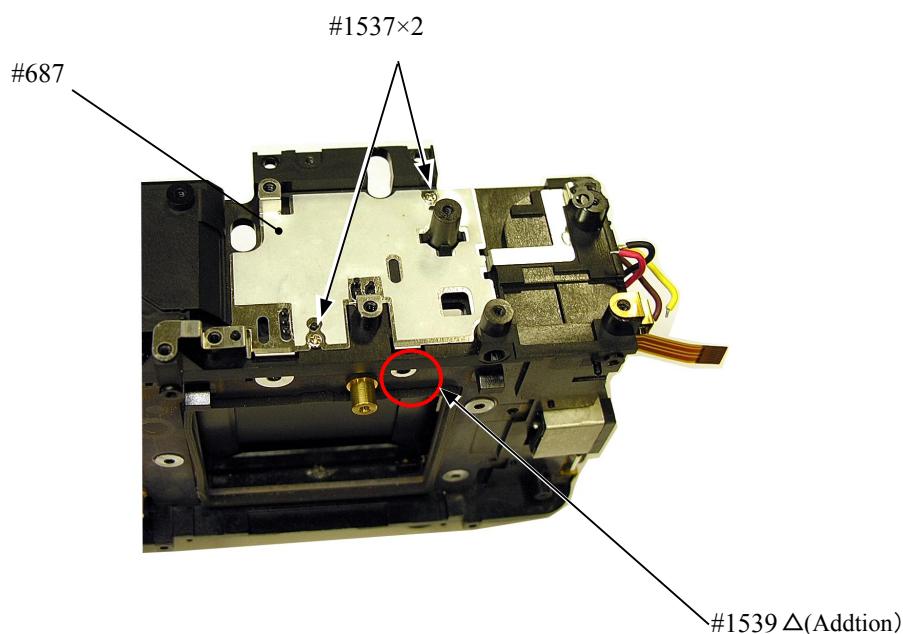


DC/DC shield plate

- Attach the DC/DC-PCB insulating sheet (#697) on the DC/DC-PCB shield plate (#687).



- Assemble the DC/DC-PCB shield plate (#687) in the body.
(Put the bending portions of #687 into the square holes of the body.)
- Tighten two screws (#1537).
- Tighten screws (#1539). Δ (Addtion)

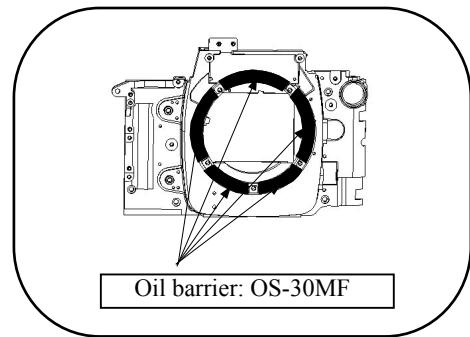


Assembly / Adjustment

- NOTE: For undescribed tapes and sponges here in "Assembly", refer to PARTS LIST.

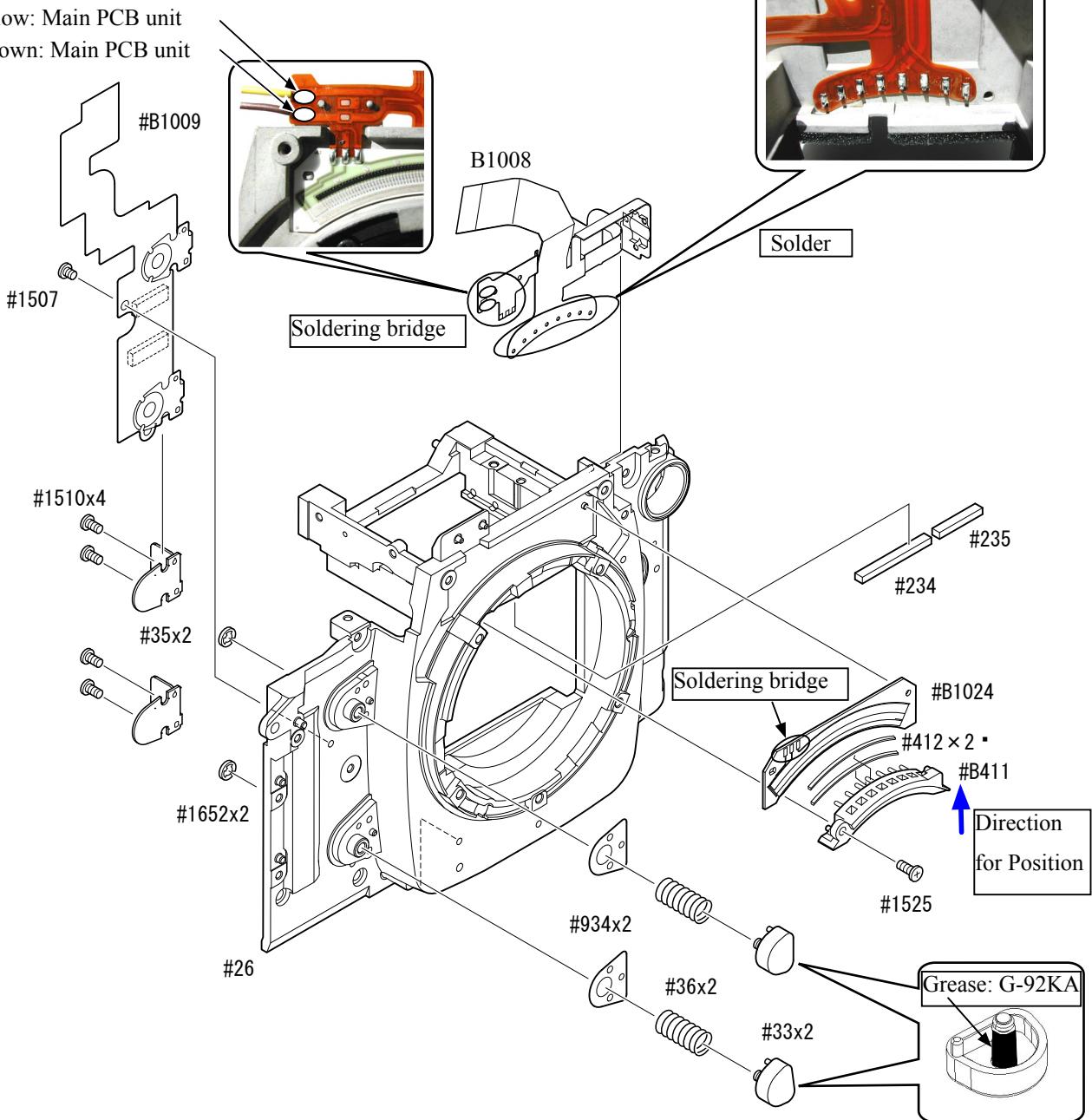
1. Front body

Lens-contact unit
F-F0 PCB unit
Mirror-support sponge
Front plate-FPC unit
Preview button
Function button
Lens contact FPC unit



- Position #B411 upwards, and fix it with the screw (#1525).
- Attach #B1024 by aligning with the positioning boss of #26.
- Solder #B411 and #B1008 at eight locations.
- Make soldering bridges of #B1024 and #B1008 at three locations.

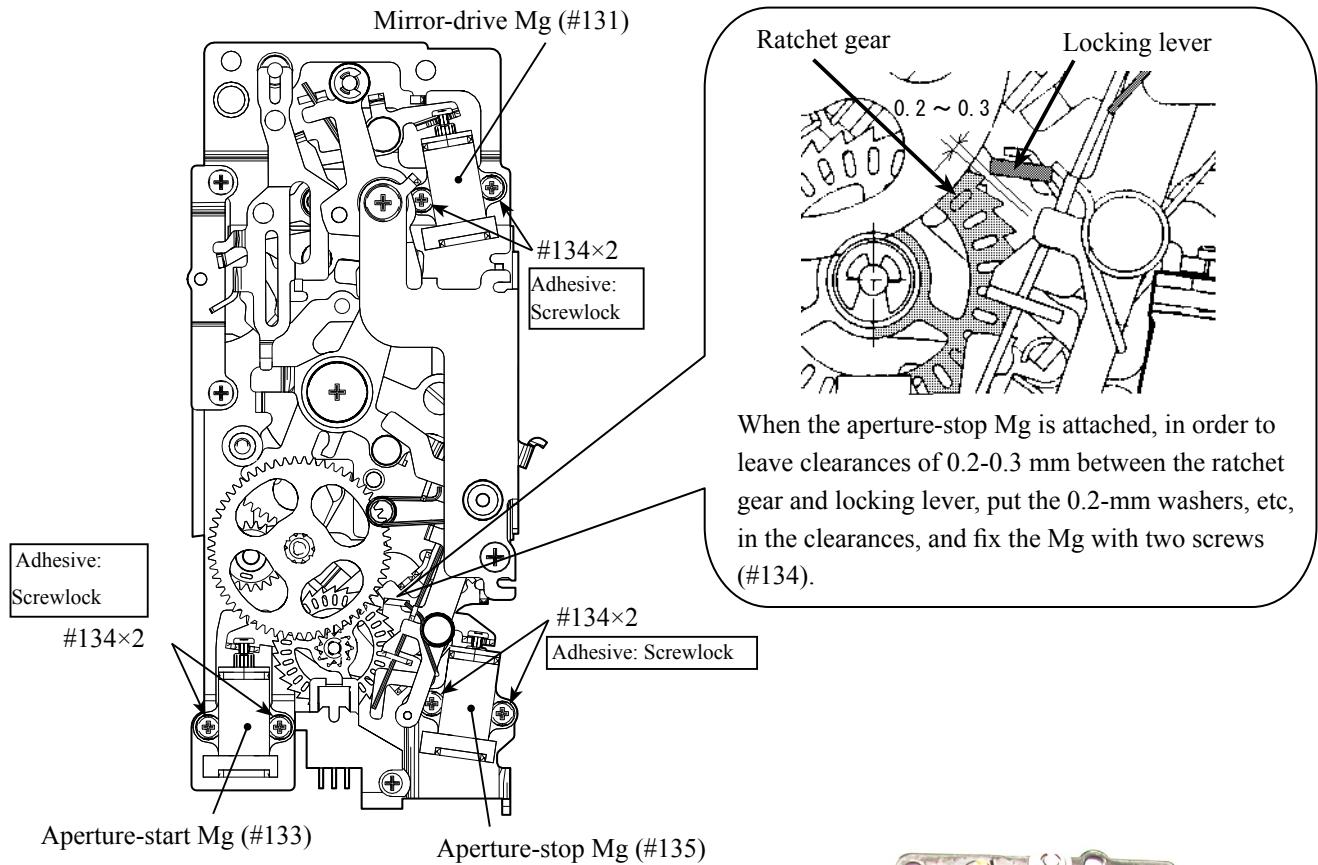
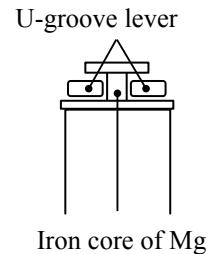
Yellow: Main PCB unit
Brown: Main PCB unit



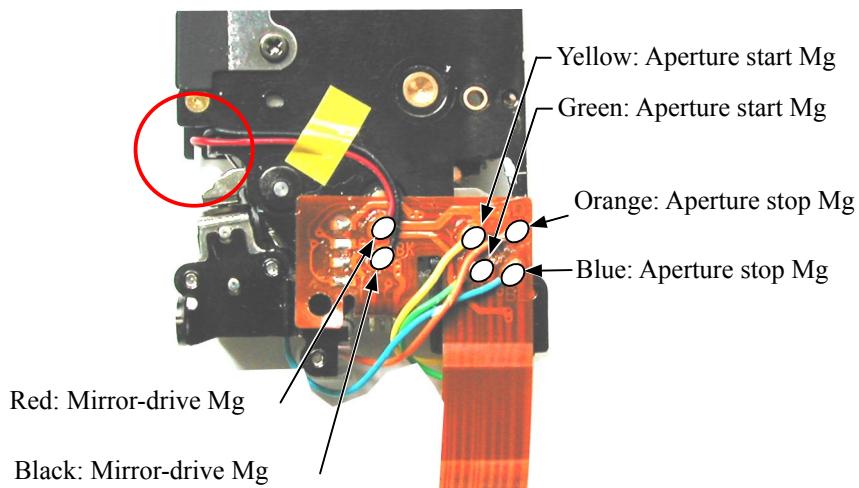
Installment of Mg

- When mount each Mg, arrange clearances between the U-groove lever and the iron core.

Check the clearances when the iron core of Mg is attached.



Wire arrangement of each Mg and Soldering

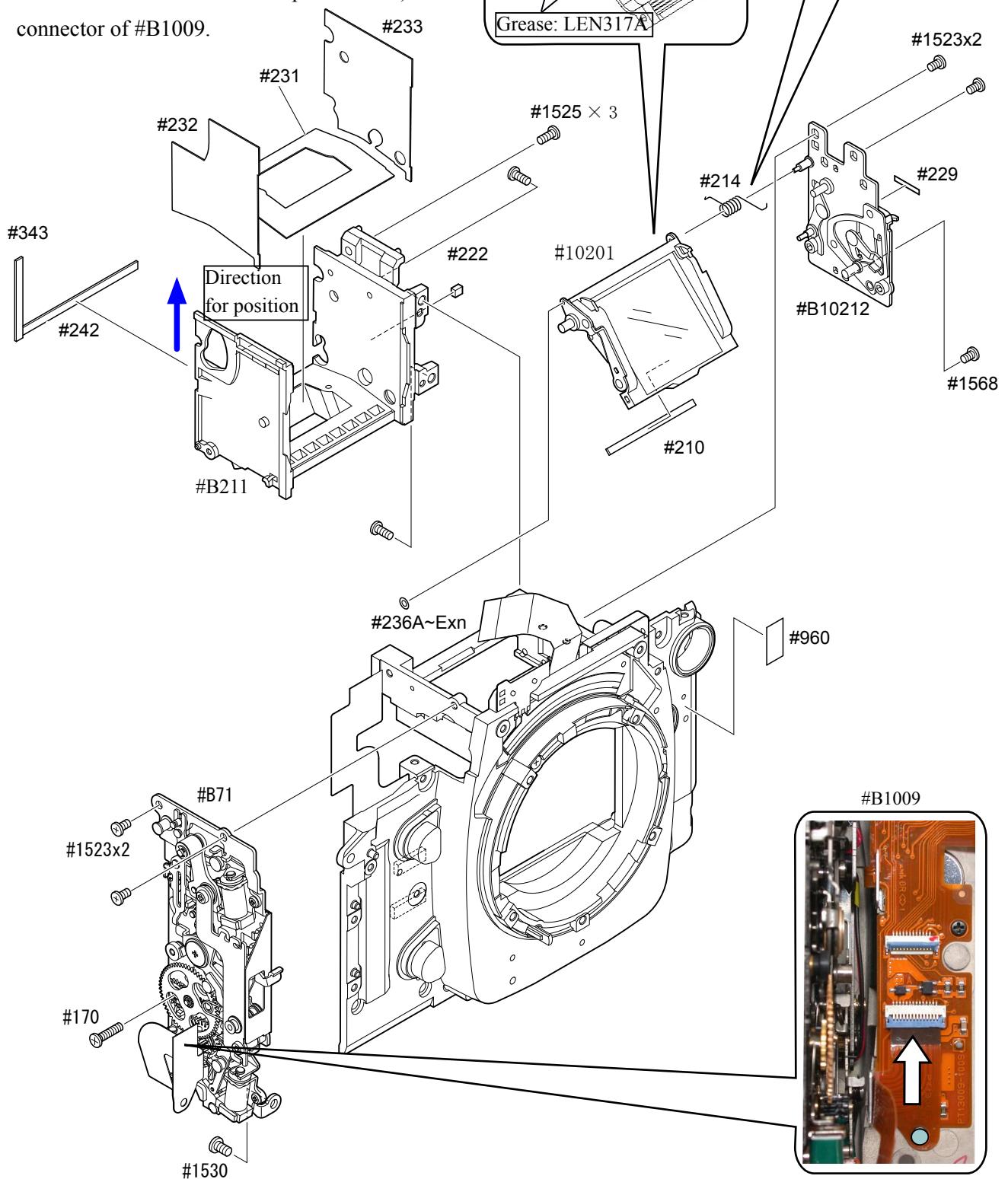


Mirror BOX unit

Mirror unit

I-base plate unit

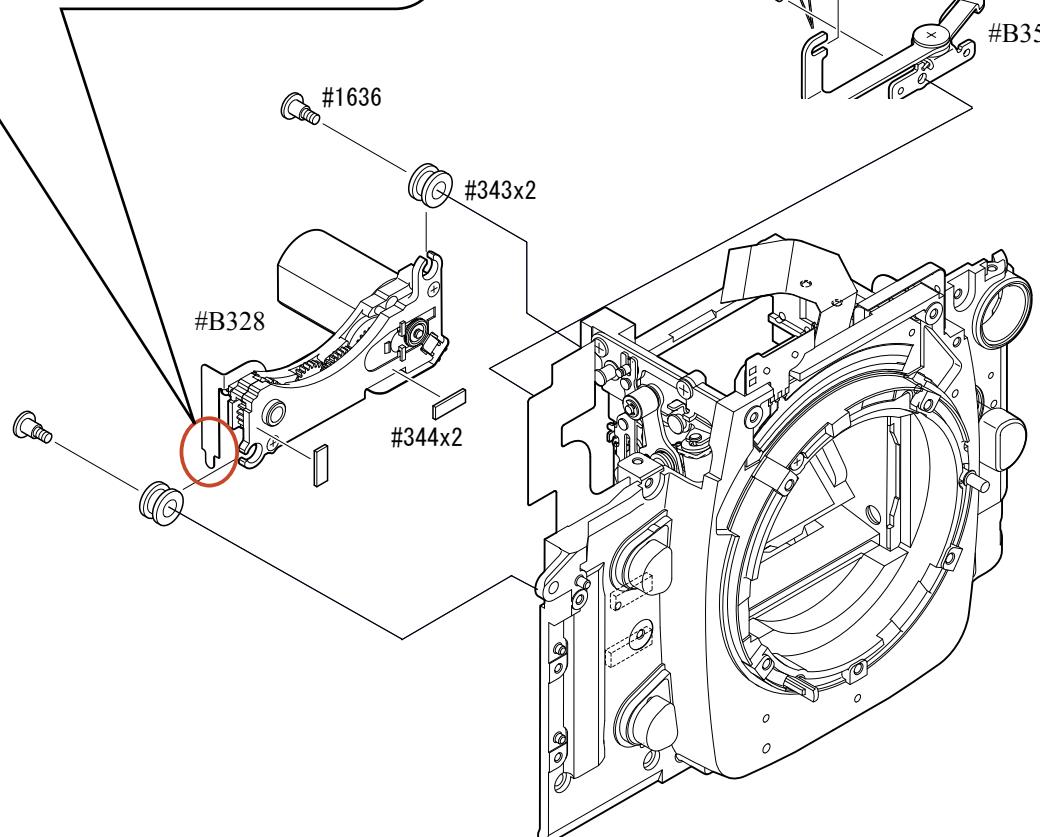
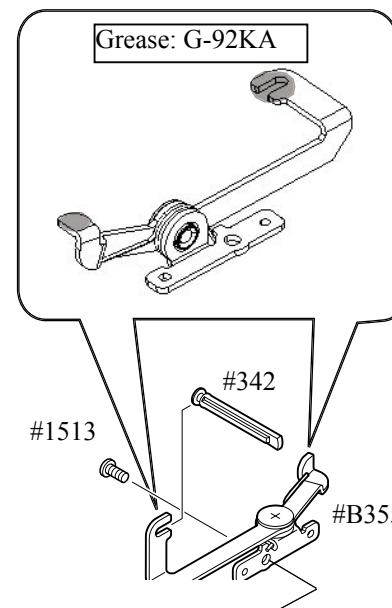
- Position #B211 in the direction of the arrow, and fix it with three screws (#1525).
- When the mirror unit (#10201) is mounted, adjust the horizontal clearance , if any, by washers (#236A-E).
- Connect the FPC of the I-base plate (#B71) to the connector of #B1009.



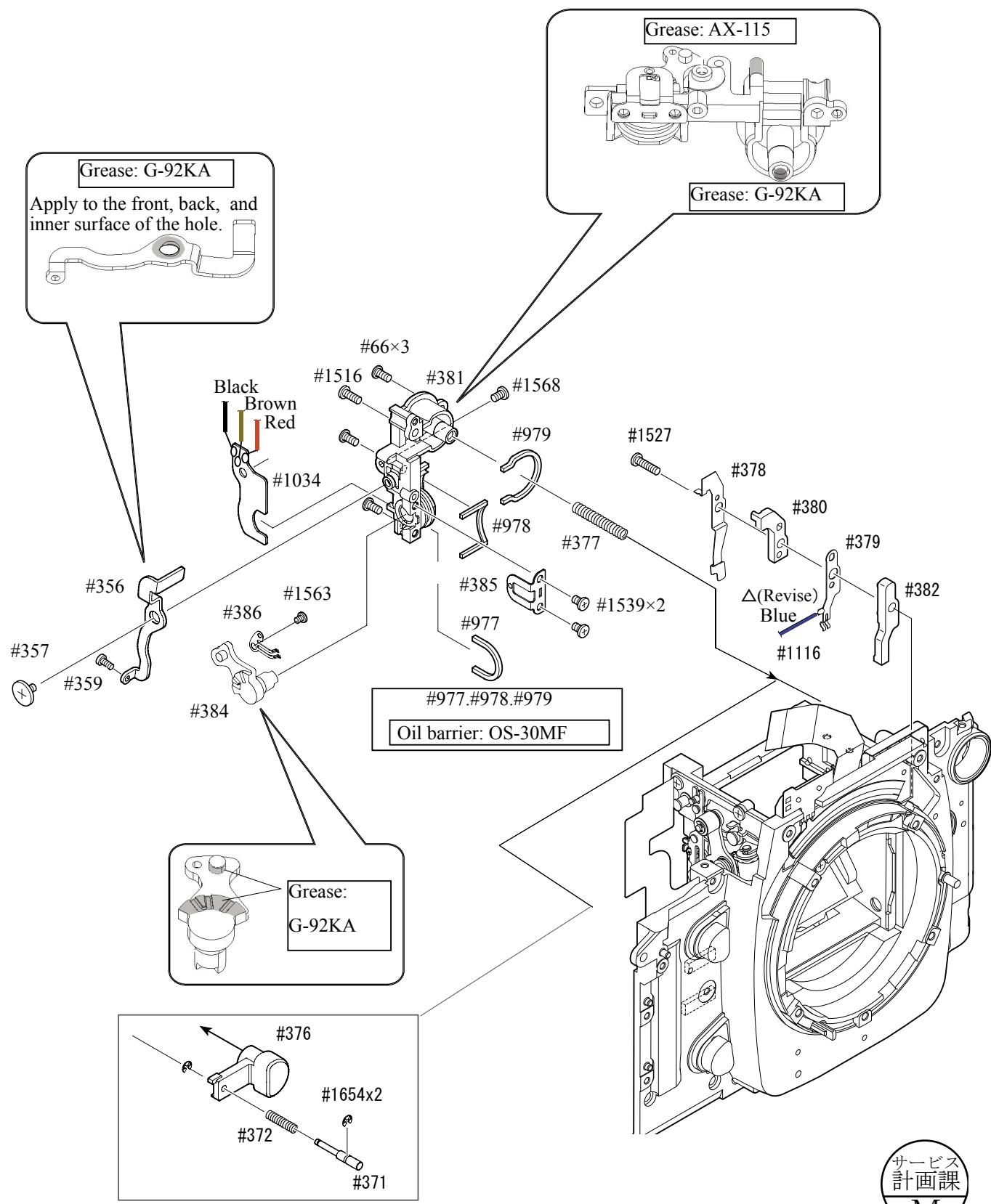
AF drive unit

Horizontal-shooting lever unit

- Fix the AF drive-PCB unit (#328) with two screws (#1636).
Be careful NOT to pinch the AFFPC.
- While holding the pedestal of the horizontal-shooting lever unit (#B355), turn the lever unit clockwise to apply compression to the spring.
- Fit the groove part of the coupling shaft (#342) in the U-part of the horizontal-shooting lever unit (#B355), and tighten the screw (#1513).
- Put the edge of the AF drive unit FPC into the hole of the I-base plate FPC, and make soldering bridges at four locations.



Lens release SW
Lens release unit
Vertical lever
SCM-change PCB

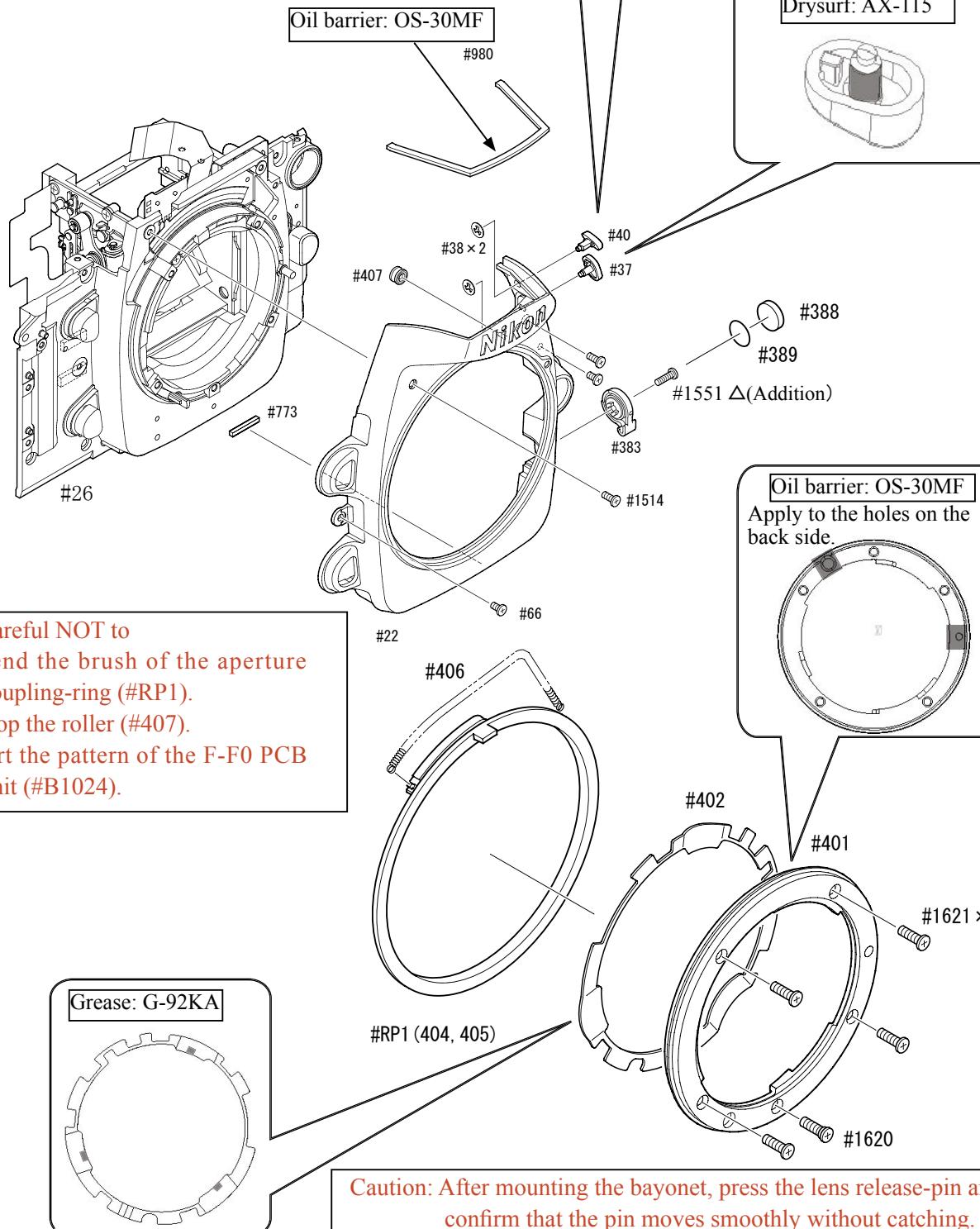


Front cover unit

Aperture coupling-ring unit

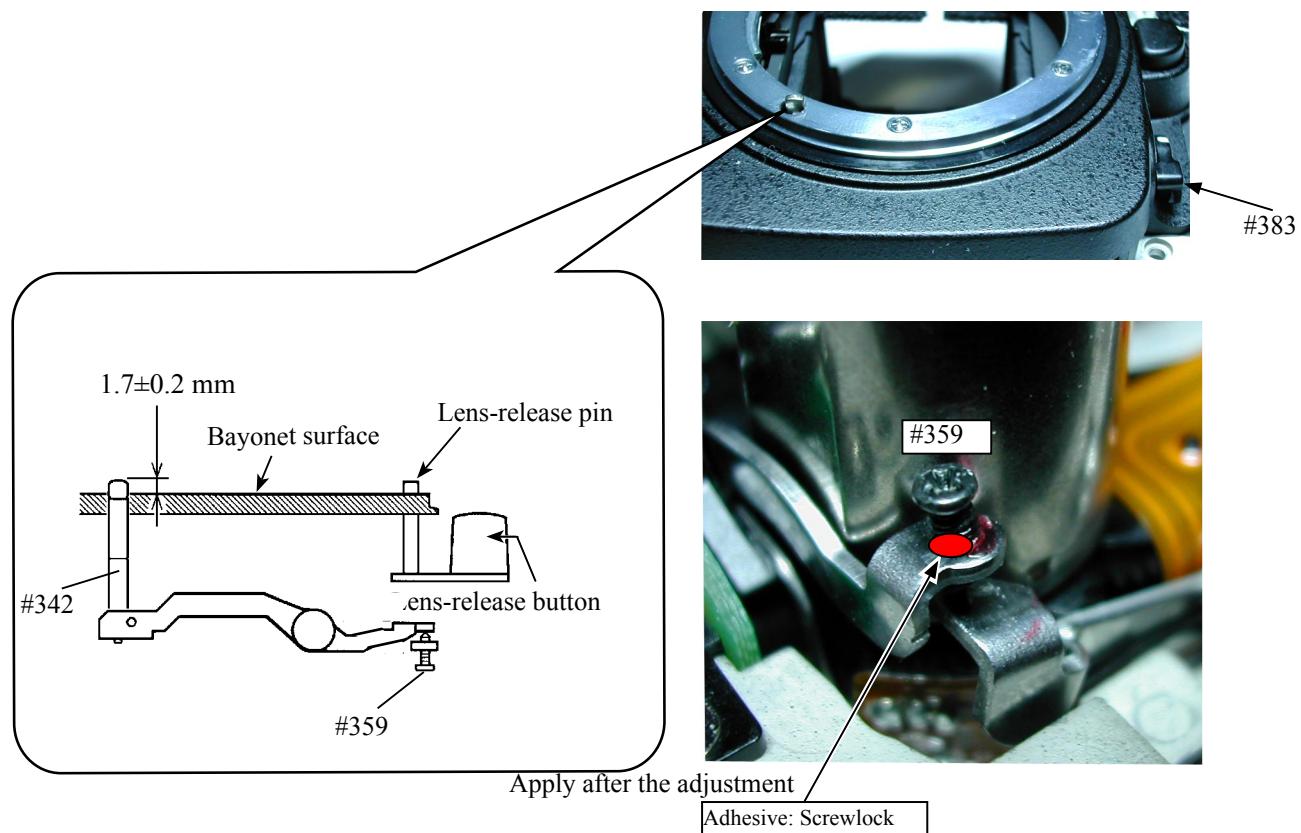
Bayonet

- Assemble the aperture coupling-ring (#RP1) into the apron (#22), and attach the spring (#406) and roller (#407). Then mount this assembled unit on the front body by turning slightly clockwise, and fix it with two screws (#1514) and two screws (#66).



Height adjustment of AF coupling shaft

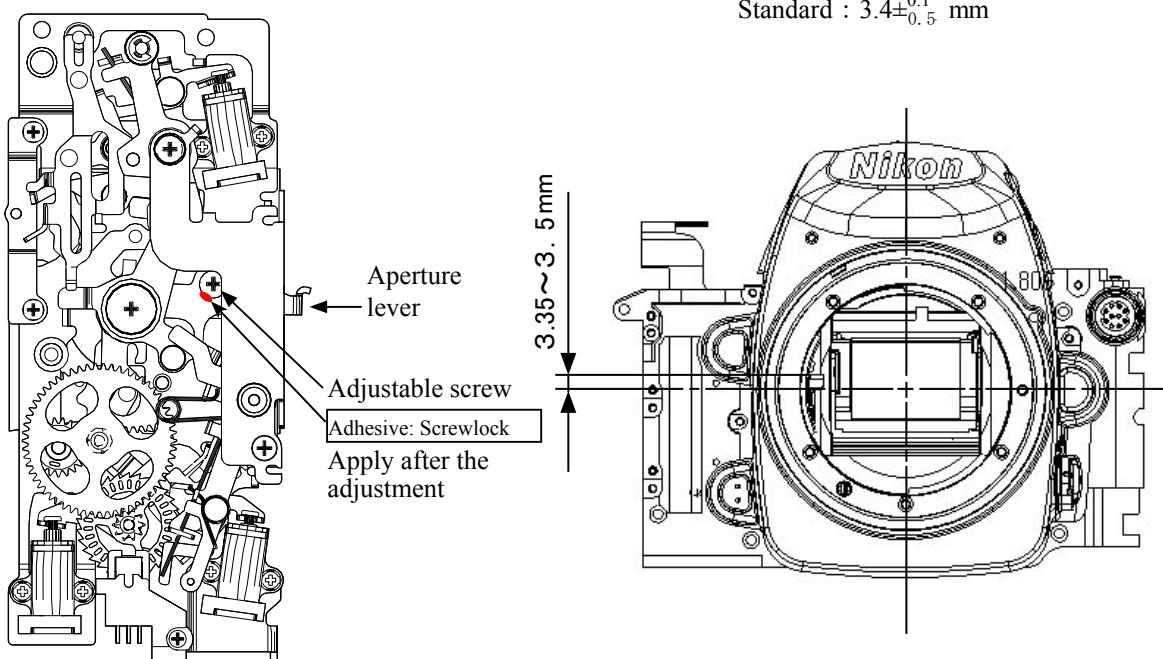
- ① Set the SCM-change lever (#383) to "S mode".
(AF coupling shaft (#342) protrudes from the bayonet face.)
- ② Adjust the height of the AF coupling shaft (#342) by using the screw (#359) to "1.7±0.2 mm".
- ③ After the adjustment, fix the screw (#359) with Screwlock.



Height adjustment of Aperture lever

- Measure the height of the aperture lever by using the tool (J18004).

Standard : 3.4 ± 0.1 mm



Angle adjustment of Main mirror and sub-mirror

- Main mirror 45° adjustment

Caution: • Before and after the adjustment, check the accuracy by moving the main mirror up- and downwards a few times.

- ① Check for the right-left deviation.

In case the deviation is out of standard, loose three screws (#1523) and make an adjustment by moving the main mirror shaft PCB (#B10212).

- ② Check for the up-down deviation. In case the deviation is out of standard, make an adjustment by turning the eccentric pin with Hexagonal wrench.

- Sub-mirror 59° adjustment

Caution: Before and after the adjustment, check the accuracy by moving the main mirror up- and downwards a few times. Confirm if the two-pronged part of the sub-mirror firmly fits in the eccentric pin.

- Check for the up-down deviation.

In case the deviation is out of standard, make an adjustment by turning the sub-mirror eccentric pin.

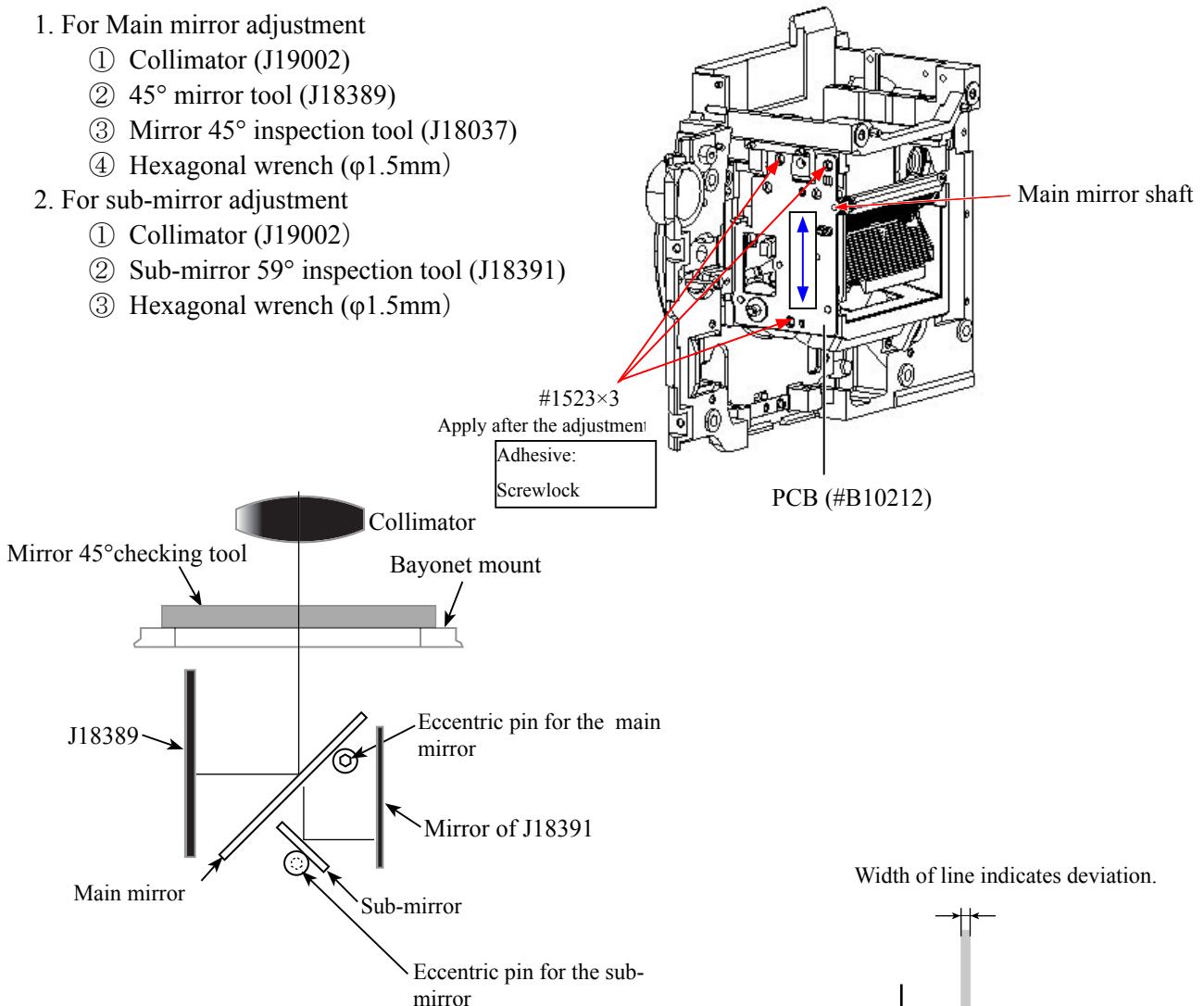
* Device

1. For Main mirror adjustment

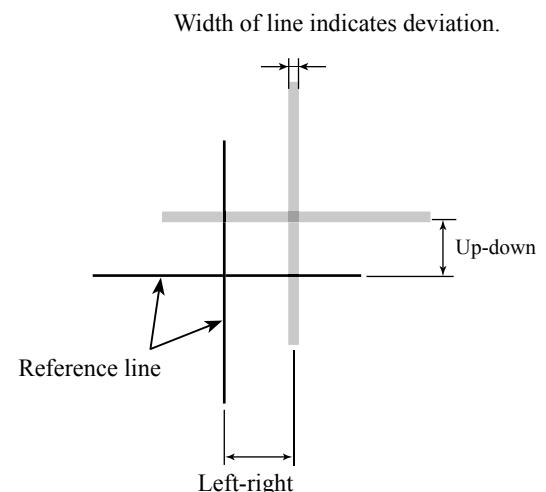
- ① Collimator (J19002)
- ② 45° mirror tool (J18389)
- ③ Mirror 45° inspection tool (J18037)
- ④ Hexagonal wrench ($\varphi 1.5\text{mm}$)

2. For sub-mirror adjustment

- ① Collimator (J19002)
- ② Sub-mirror 59° inspection tool (J18391)
- ③ Hexagonal wrench ($\varphi 1.5\text{mm}$)

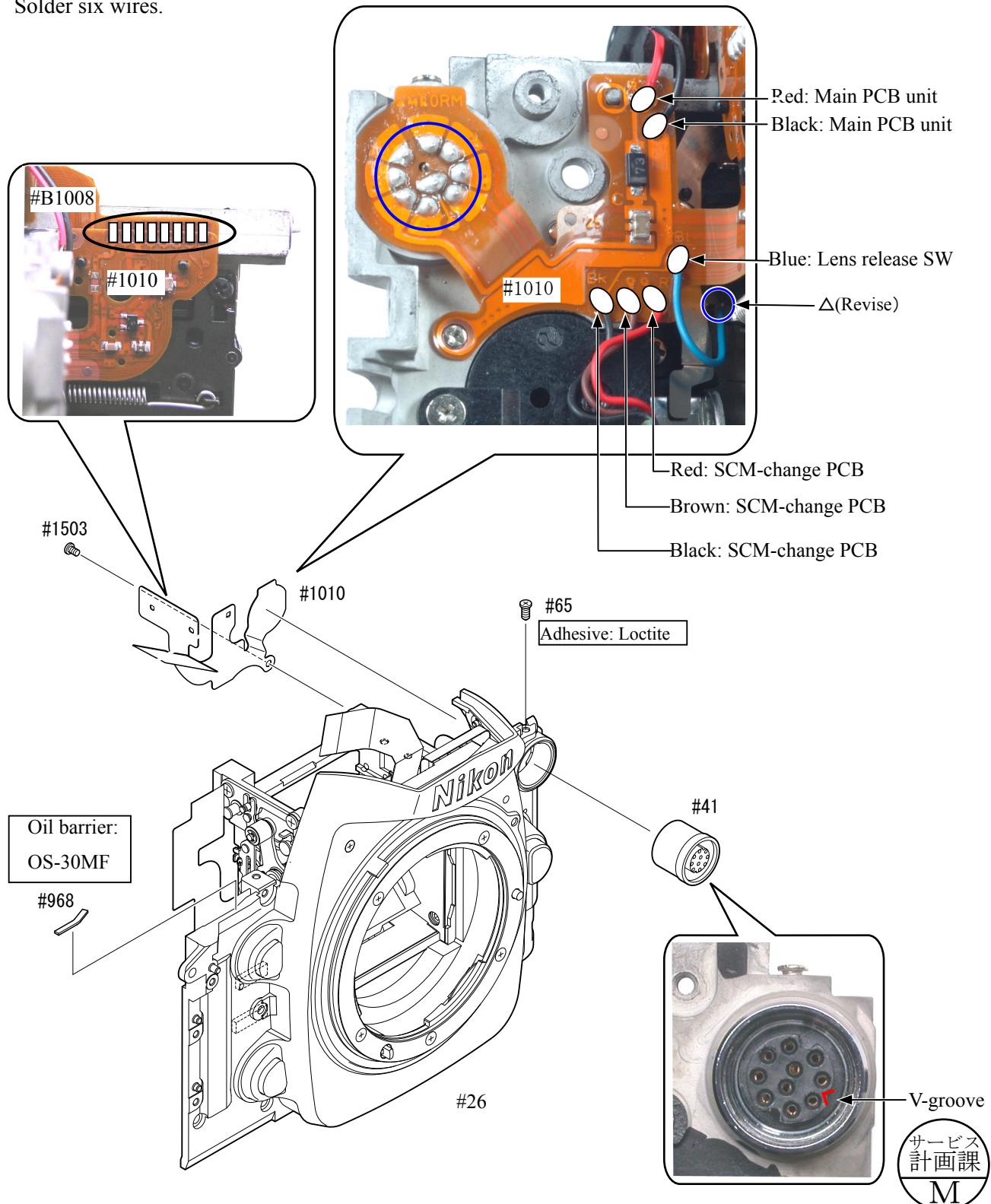


	Main mirror	Sub-mirror
Left-right deviation	$\pm 15'$	$\pm 15'$
Up-down deviation	$\pm 5'$	$\pm 15'$
Distortion	6' or less	6' or less



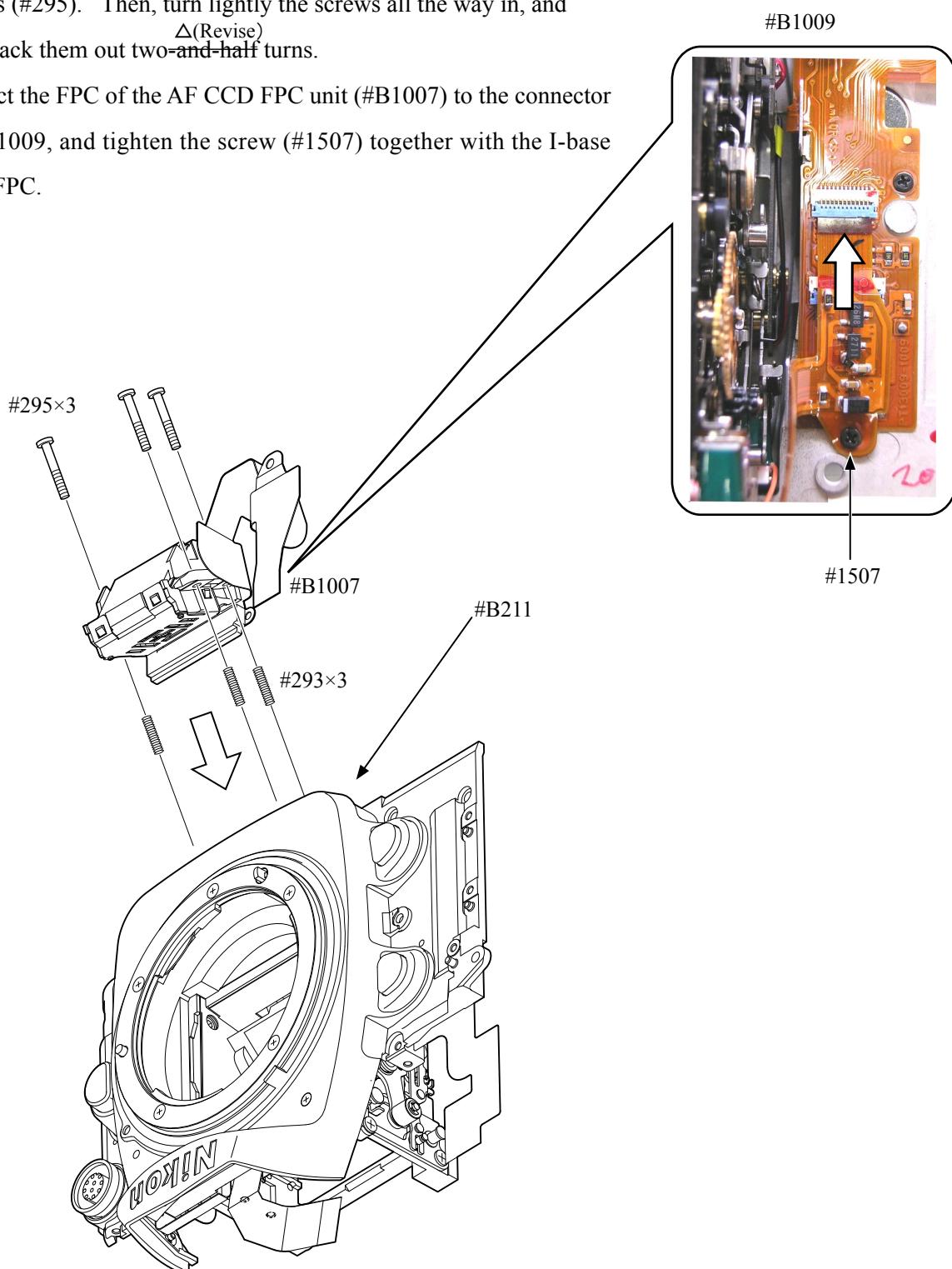
10-pin plug
10-pin FPC unit

- Position the 10-pin plug (#41) so that the V-groove comes in the lower right-hand corner (viewed from the front), then fit it in the holes of the back side of the 10-pin FPC (#1010), and assemble them into #26.
- Apply Locktite to the screw (#65) and tighten it.
- Fix the 10-pin FPC (#1010) with the screw (#1503).
- Make soldering bridges of the 10-pin plug (#41) and 10-pin FPC at nine locations.
- Make soldering bridges of 10-pin FPC (#1010) and lens contact-FPC at eight locations.
- Solder six wires.



AF CCD FPC unit

- Assemble the adjustment springs (#293) in the bottom of the mirror BOX unit (#B211).
- Attach the AF CCD FPC unit (#B1007) with three Hexagonal-Key screws (#295). Then, turn lightly the screws all the way in, and then back them out two-and-a-half turns.
- Connect the FPC of the AF CCD FPC unit (#B1007) to the connector of #B1009, and tighten the screw (#1507) together with the I-base plate FPC.



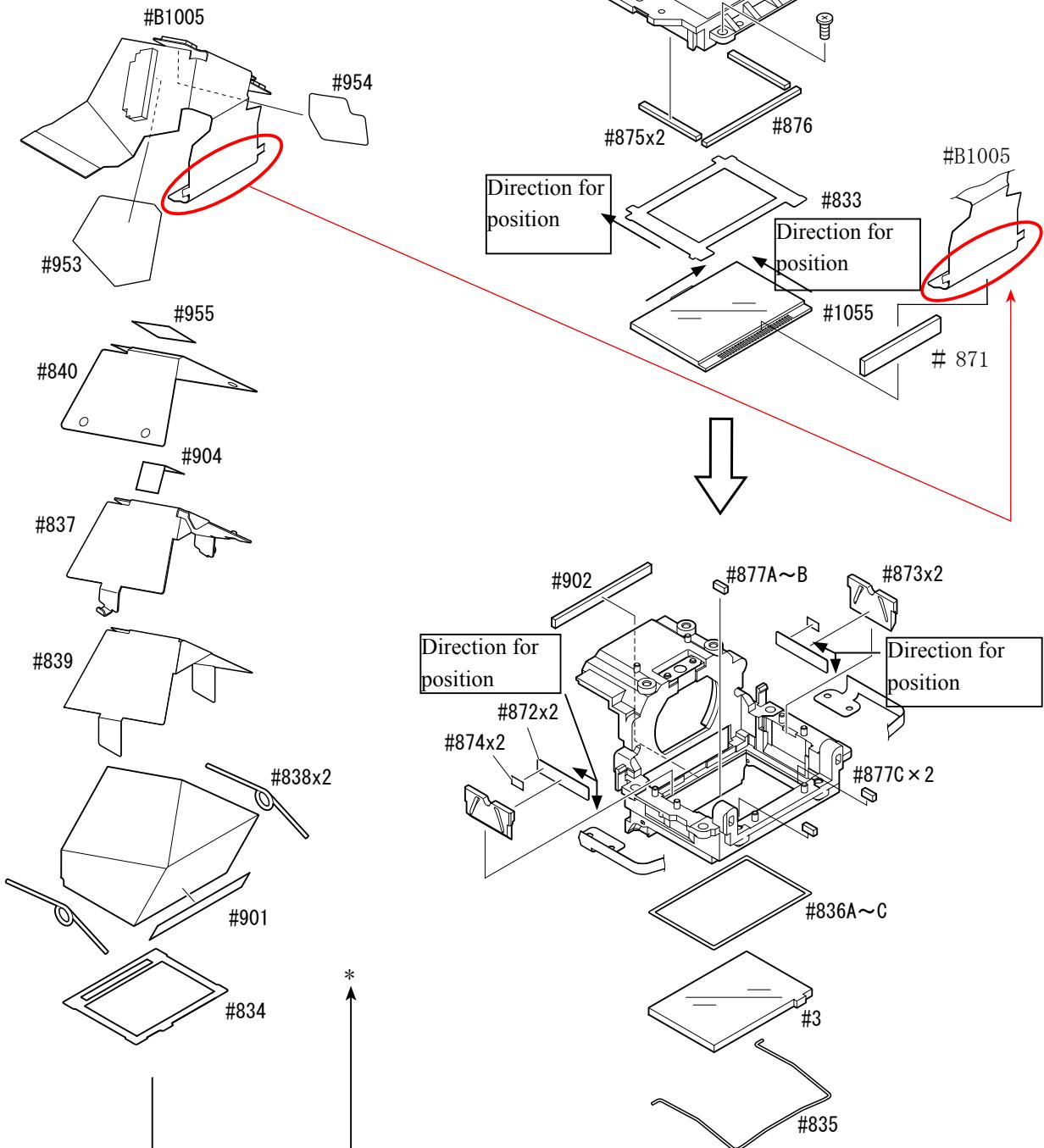
Penta unit
Prism box unit

- Press #8 into #832.
- Attach #1055, #833, and two #872 by positioning them.
- If a gap is found in #1055, replace #877A by #877B.
- Taking careful of up/down/front/back direction, assemble #1055 and #833.

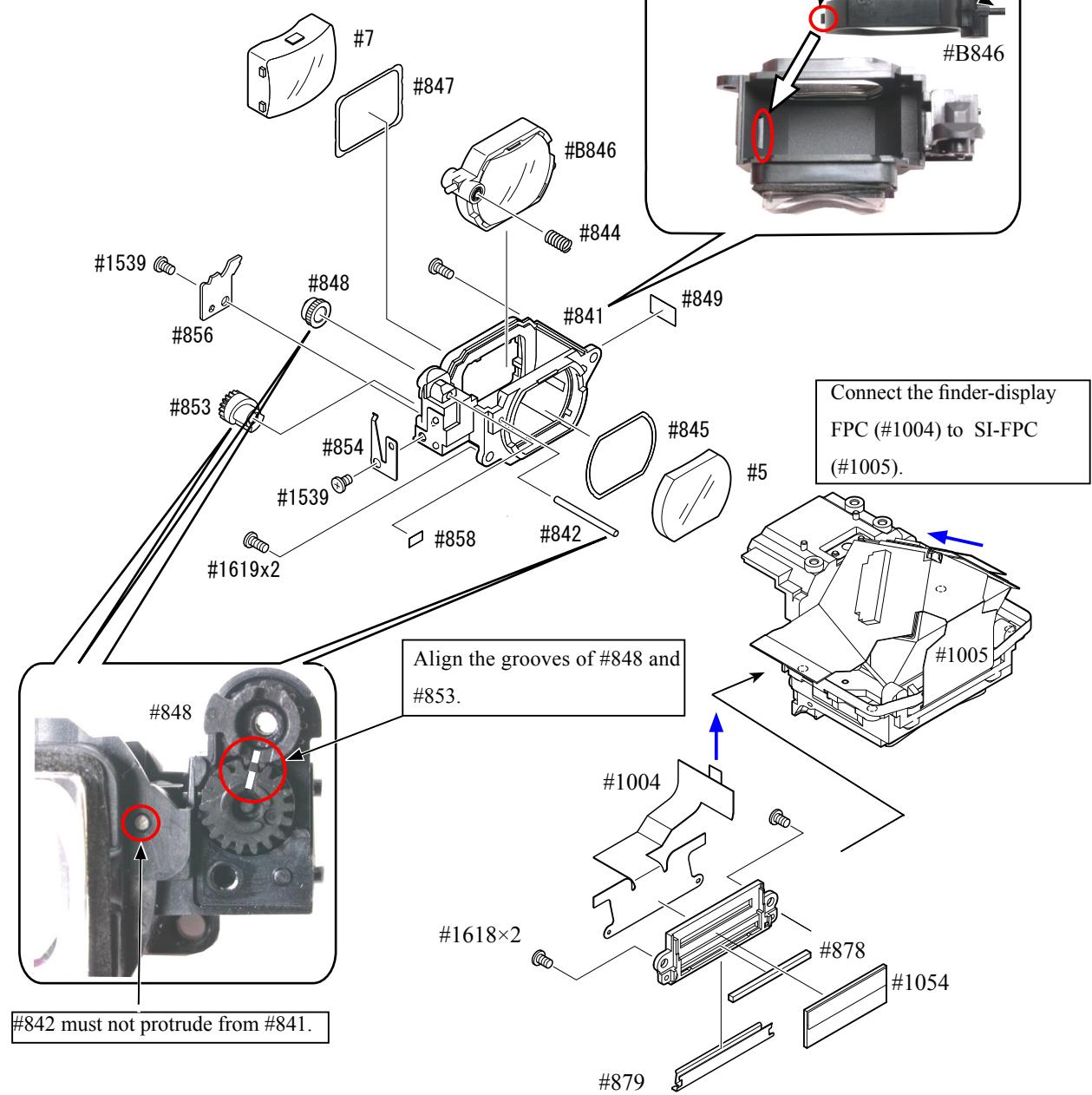
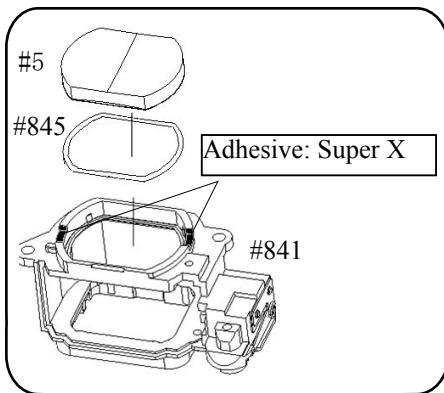
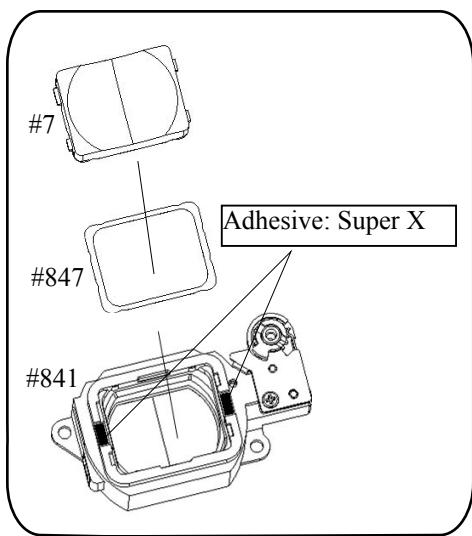
Caution:

Press #8 all the way into #832 until the one step lower position.

Do NOT let the two #875 and #832 run off the edge of the frame.

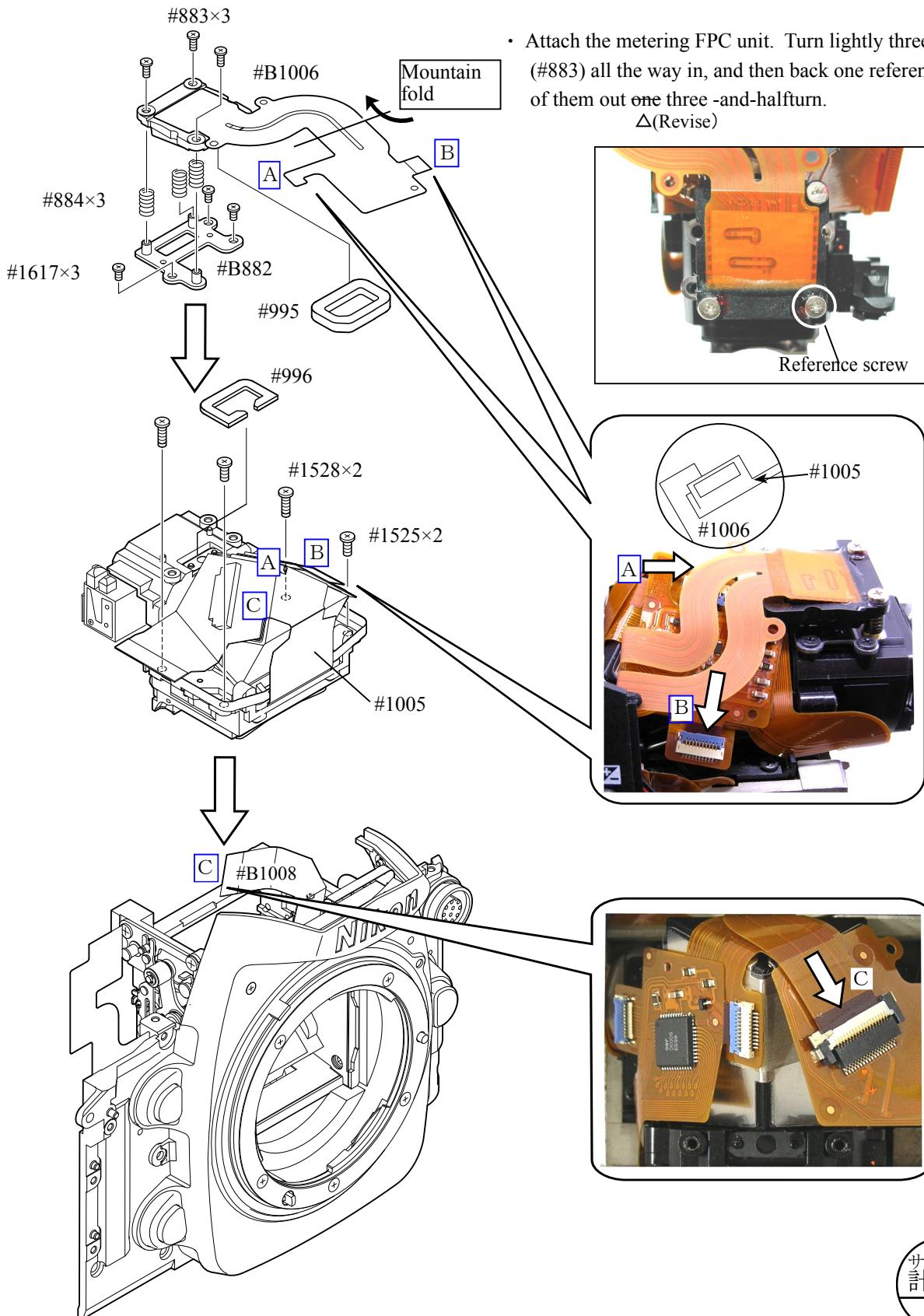


Eyepiece lens-barrel unit



Metering FPC unit

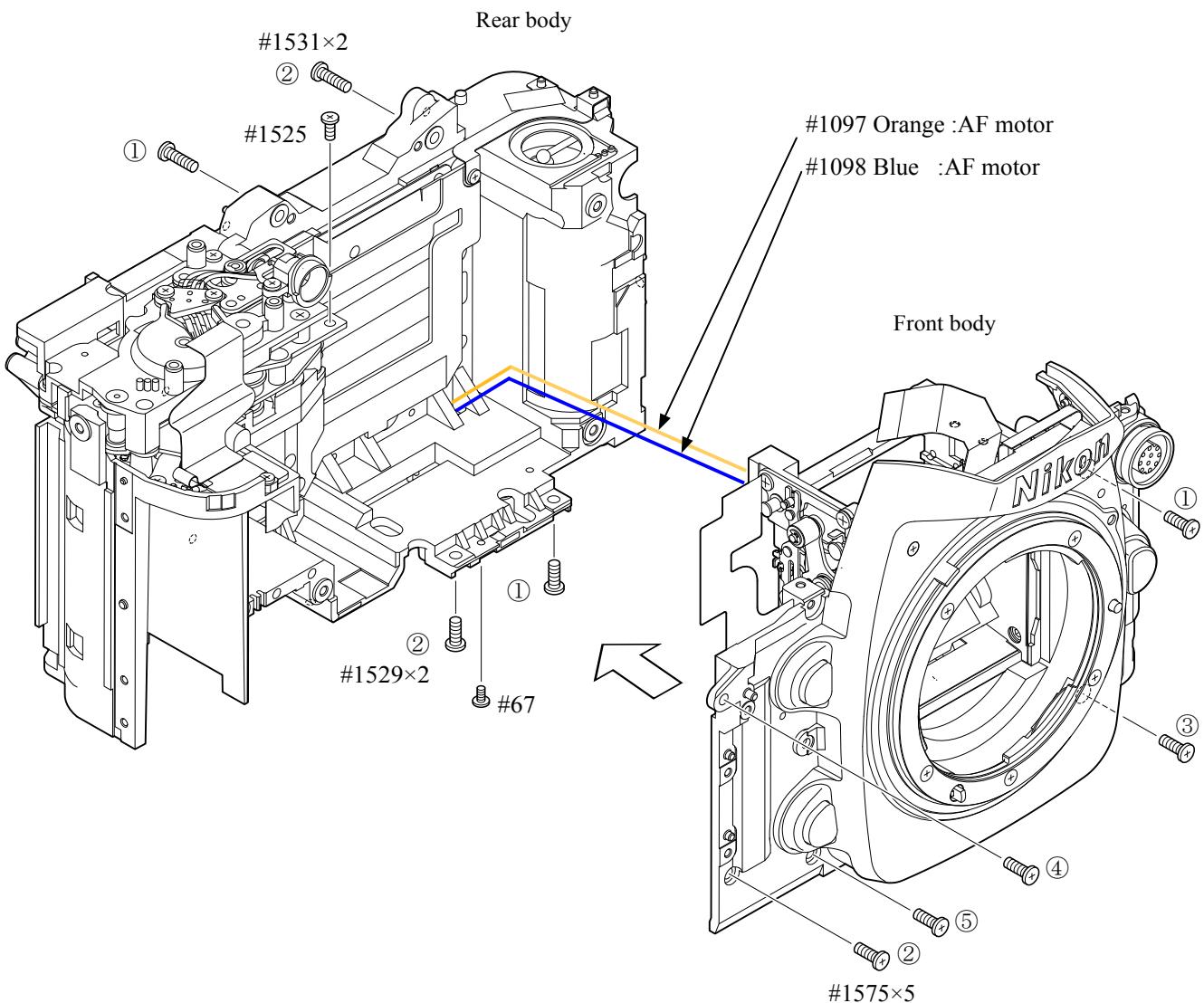
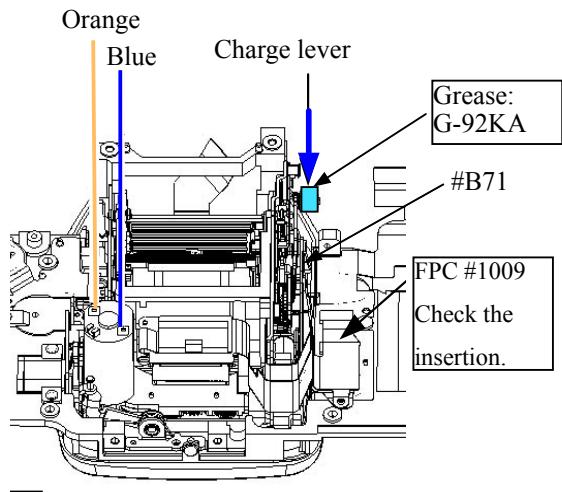
- Fix the metering adjusting plate (#B882) with three screws (#1617).
- Fix the metering FPC unit (#B1006) and three springs (#884) temporarily with three screws (#883).
- Make a mountain fold of FPC, and hook **A**-part to the SI-FPC (#1005), while **B**-part to the connector.
- Fix the prism BOX unit with two screws (#1525) and two screws (#1528).
- Connect the lens contact-FPC (#B1008) to the connector **C**-part of the SI-FPC (#1006).



3. Mount Front body on Rear body

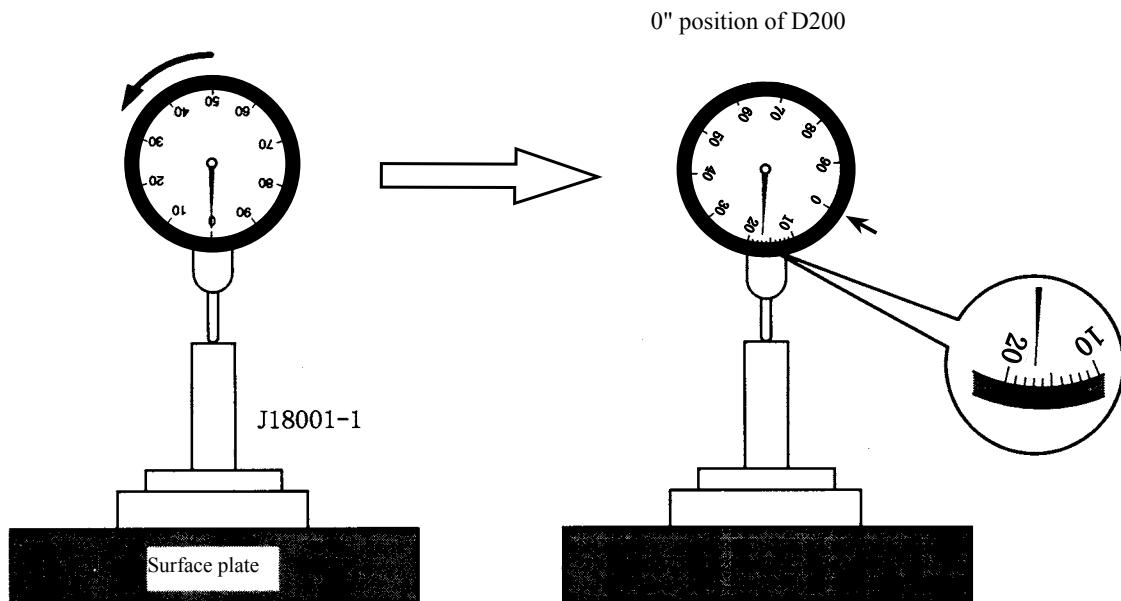
Mount the front body on the rear body

- ① Operate the charge-lever of the I-base plate unit (#B71) for mechanical reset.
- ② Check the connection status of the FPC (#1009).
- ③ While passing the two lead wires of the AF motor (#B26) into the hole of the rear body, assmeble the front body (by taking care NOT to pinch the wires but to pull them.)
- ④ Tighten the five screws (#1575) in the order from ① to ⑤ .
- ⑤ Tighten two screws (#1531) in the order of ① and ② .
- ⑥ Tighten the screw (#1525).
- ⑦ Tighten two screws (#1529) in the order of ① and ② .
- ⑧ Tighten the screw (#67).



Inspection and Adjustment of Body back
--

* "0" positioning of the dial gauge

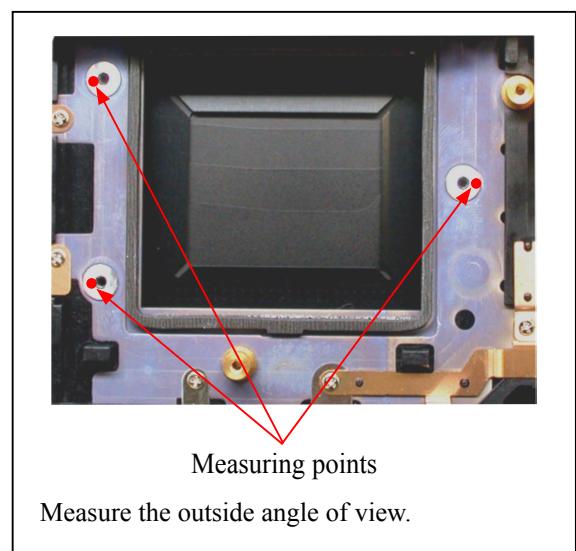


- ① Put the tool (J18001-1) on the surface plate, and set the dial gauge to "0".
- ② Turn the index ring in the direction of the arrow, and shift the position by "0.17 mm" from 0 that was set in ① . (This is "0"-position of D200.)
- ③ Measure the body back based on "0" reference position of the index ring.

- Measure 4 parts from the bayonet face to the CCD-PCB attaching face.

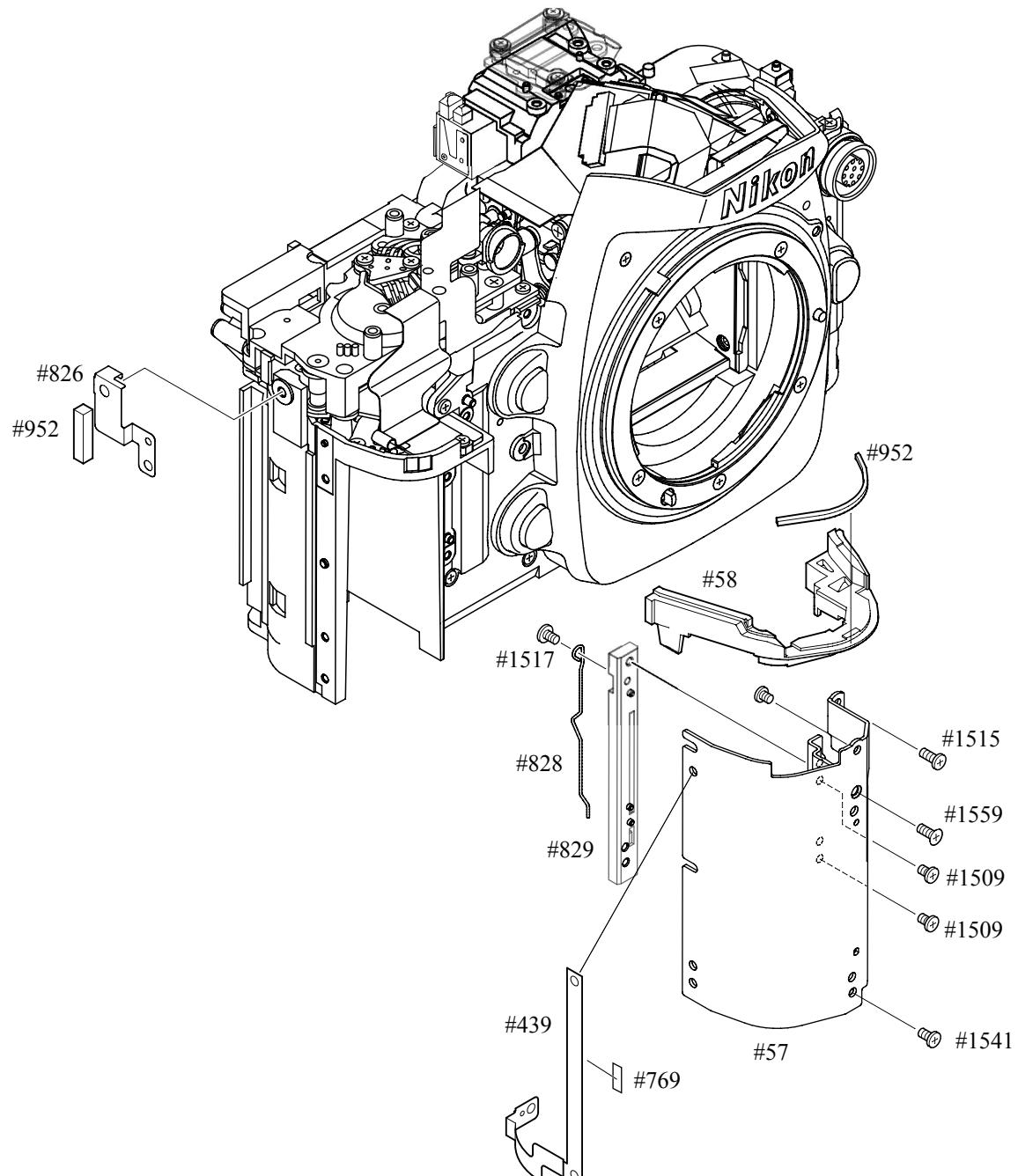
Standard: $48.5 \pm 0.015\text{mm}$ / Parallelism: within 0.015mm

- In case it is out of standard, make an adjustment by loosening screws that attach the front and rear bodies, or by putting the washer(s) on the contact surface between the front body and rear body.



Grip unit

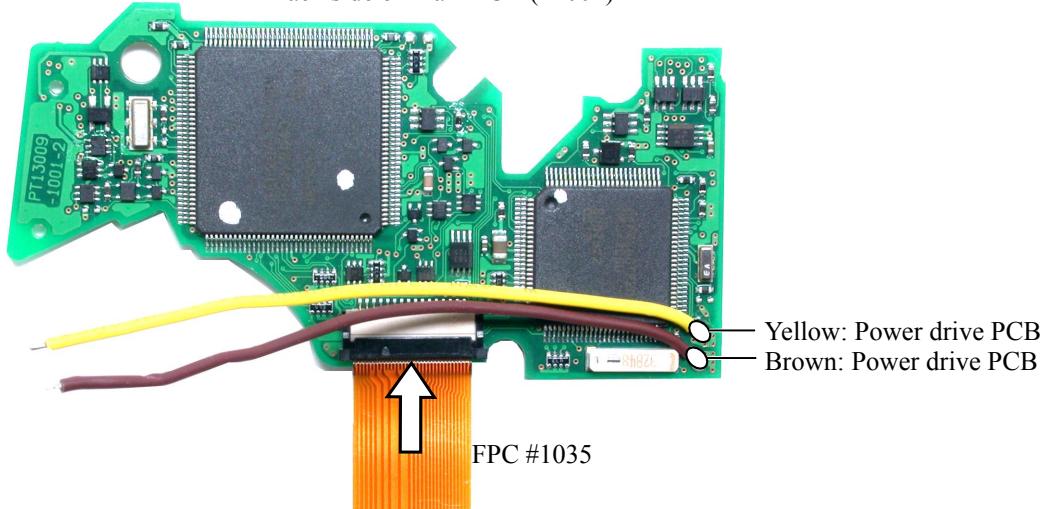
- Fix the grip (#57) with the screw (#1515) and two screws (#1509).



Main PCB unit

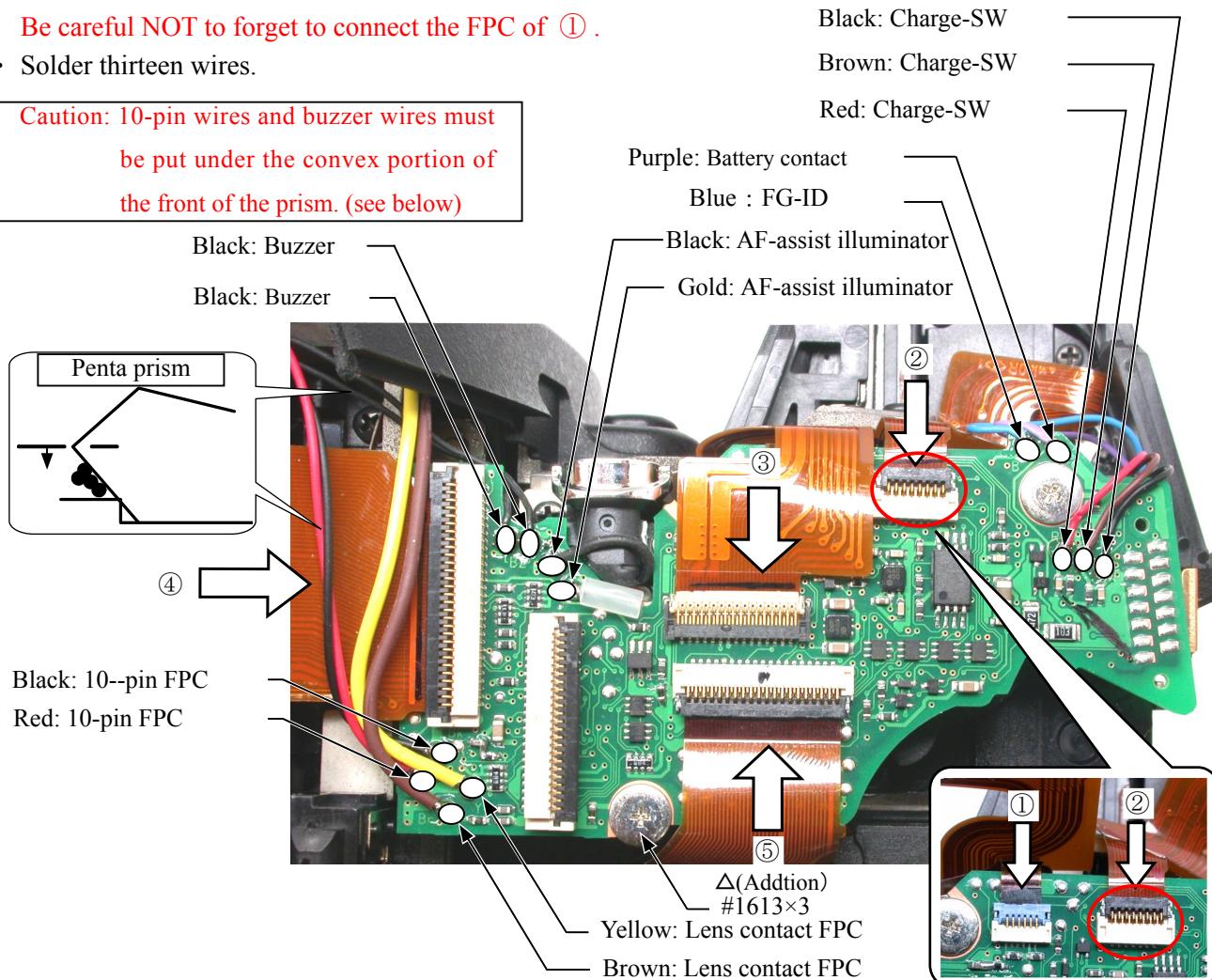
- Solder two wires on the back side of the main PCB unit (#1001).
- Connect the main connection-FPC (#1035) to the connector of the back side of (#1001).

Back side of Main PCB (#1001)



- Pass the FPC (#1035) through the hole of the rear body, and fix the main PCB unit (#1001) with three screws (#1616).
- Connect the five FPCs to the connectors in the order of ① - ⑤ .
Be careful NOT to forget to connect the FPC of ① .
- Solder thirteen wires.

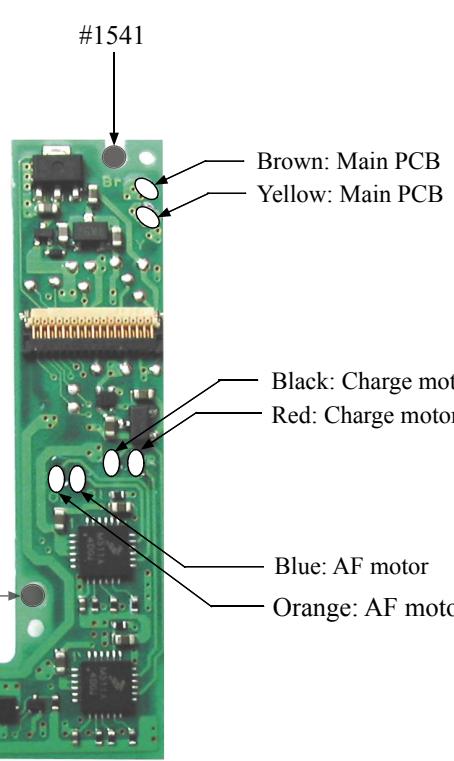
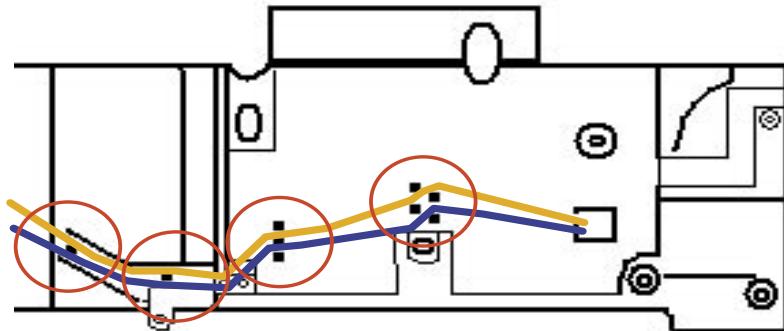
**Caution: 10-pin wires and buzzer wires must
be put under the convex portion of
the front of the prism. (see below)**



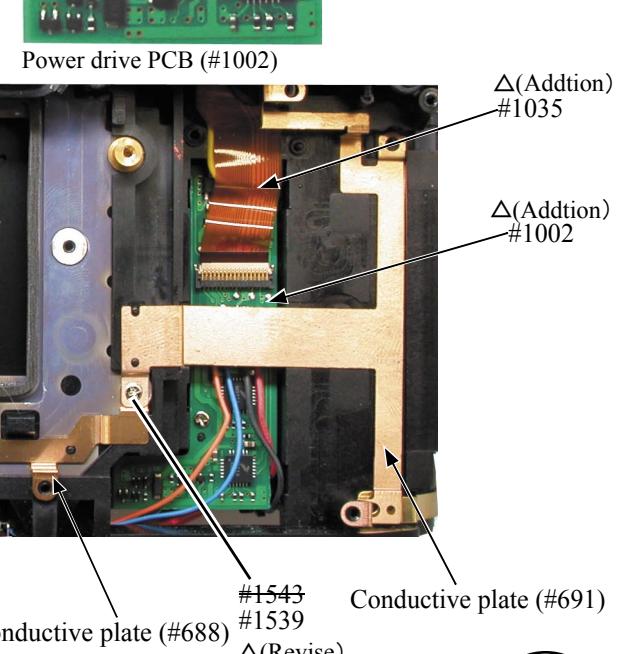
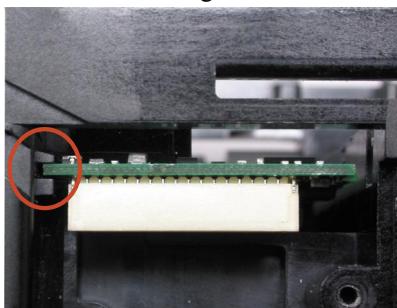
サービス
計画課
M

AF motor wire arrangement

- Arrange the AF motor wires by placing them properly among bosses at four locations.
- Put the power drive-PCB (#1002) into the rear body groove, and fix it with two screws (#1541).
- Solder six wires.
- Fix the conductive plate (#688, #689, and #690) with three screws (#1539).
- Fix the conductive plate (#691) with the screw (#1543).



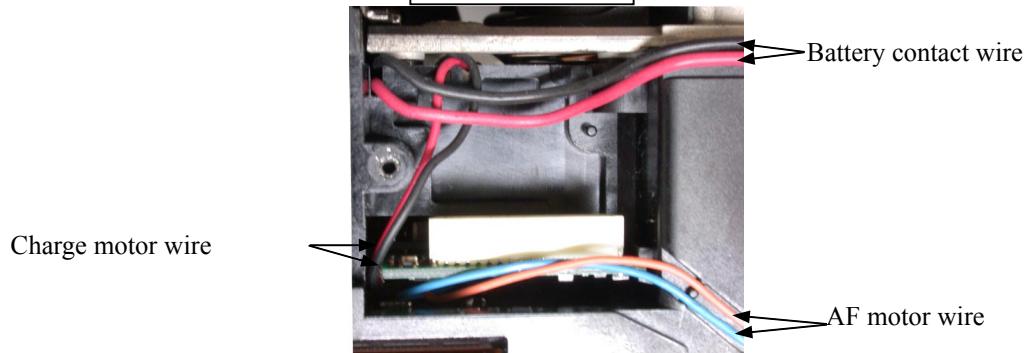
Put #1002 in the groove.



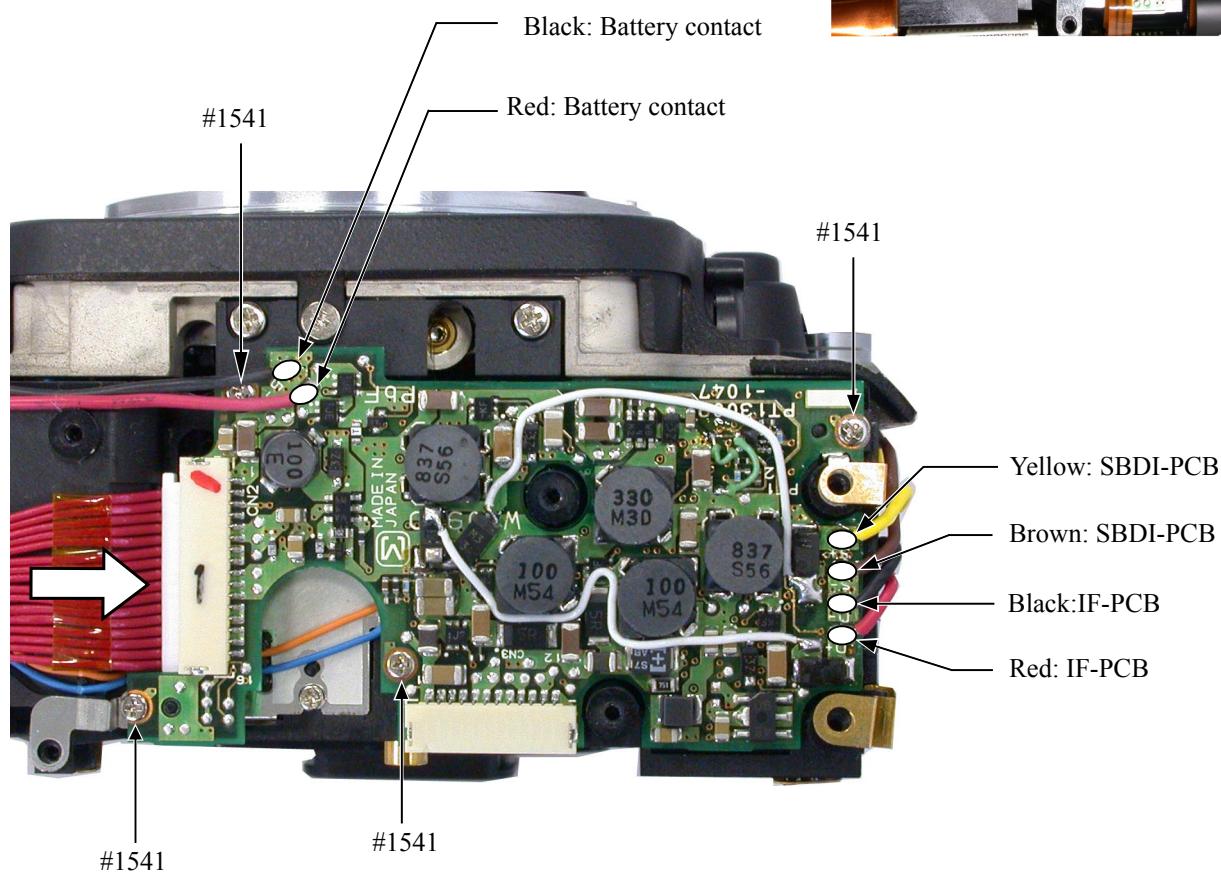
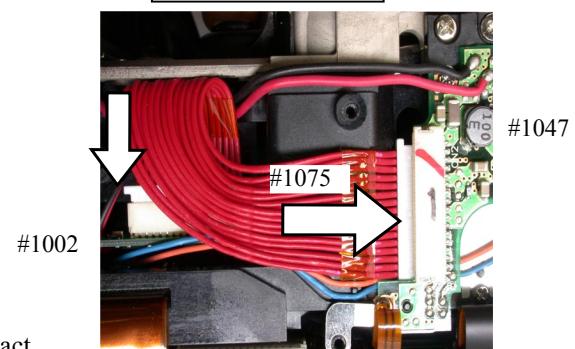
DC/DC PCB unit

- Connect the harness (#1075) to the DC/DC PCB (#1047) and the connector of the power drive PCB (#1002).
- Fix the DC/DC PCB (#1047) with four screws (#1541).
- Solder six wires.

Wire arrangement



Harness connection



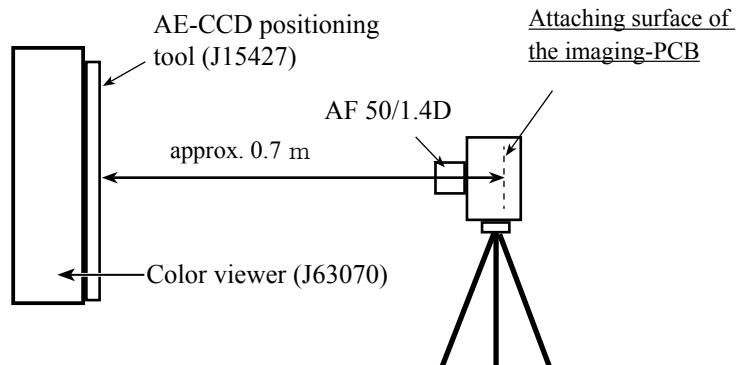
Inspection and adjustment of AE CCD Alignment

- * Under the environment where the AE-CCD positioning is adjusted, use the reference body (and change the environment depending on measured results).
- In case the measured value is out of standard, check if there is no misalignment of the grid lines.
- In case the measured value is out of standard, change the environment of measurements. (e.g. setting place/direction, room brightness, etc)

Procedure

- ① Fix the bottom cover with four screws.
- ② Mount "AF50/1.4D" on the camera, and fix them on the tripod horizontally.
- ③ Connect the camera and PC via the cable (MC-31).
- ④ Provide power to camera by the AC adapter (EH-6).
 - * Be careful NOT to cause a short-circuit at uncovered portions.
- ⑤ Attach the AE-CCD positioning tool (J15427) in the color viewer (J63070), and turn power ON.
- ⑥ Keep the 0.7-m distance between the front face of the AE-CCD positioning tool and the reference surface of the camera. Set the camera AF to manual, and the focus ring to "0.7 m" by rotating it.
- ⑦ Start up the inspection and adjustment software for D200 (J18397), and select "INSPECTION AND ADJUSTMENT FOR AECCD POSITION" then "Set Camera for AE CCD POSITION".
Looking through the viewfinder, and move the camera so that the grid lines of the camera coincide with the extension lines of the AE-CCD positioning tool. (Turn "d2: Grid Display" of Custom menu to ON.)
* Set the camera and AE-CCD positioning tool horizontally.
- ⑧ Select "CCD ALIGNMENT INSPECTION AND ADJUSTMENT".
* Cover the camera with a black cloth, etc, when measured.
- ⑨ By following instructions on PC, make the position adjustment of AECCD by the screws (a:#883,b:#883).
- ⑩ Select “CCD SLANT INSPECTION” of the adjustment software and make an inspection. Then, fix the three screws with Screwlock slightly. The adjustment is completed.

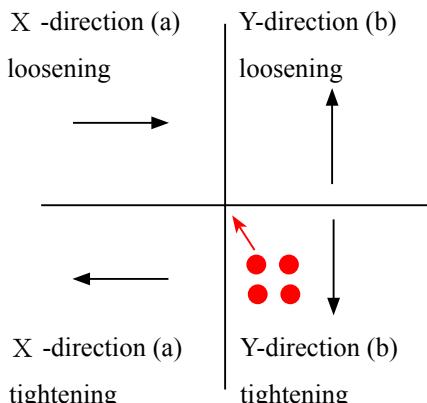
- Attach the metering FPC unit.
Turn lightly three screws (#883) all the way in, and then back one reference screw of them out one Δ(Revise) three-and-a-half turn, and adjust by the screw (a. and b.).



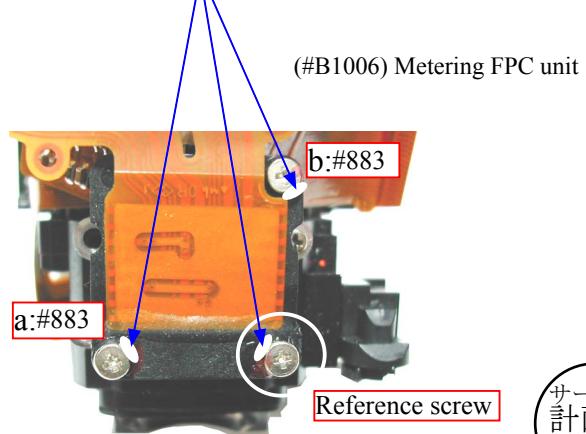
Standard → Reference screw

X-direction → a: Screw

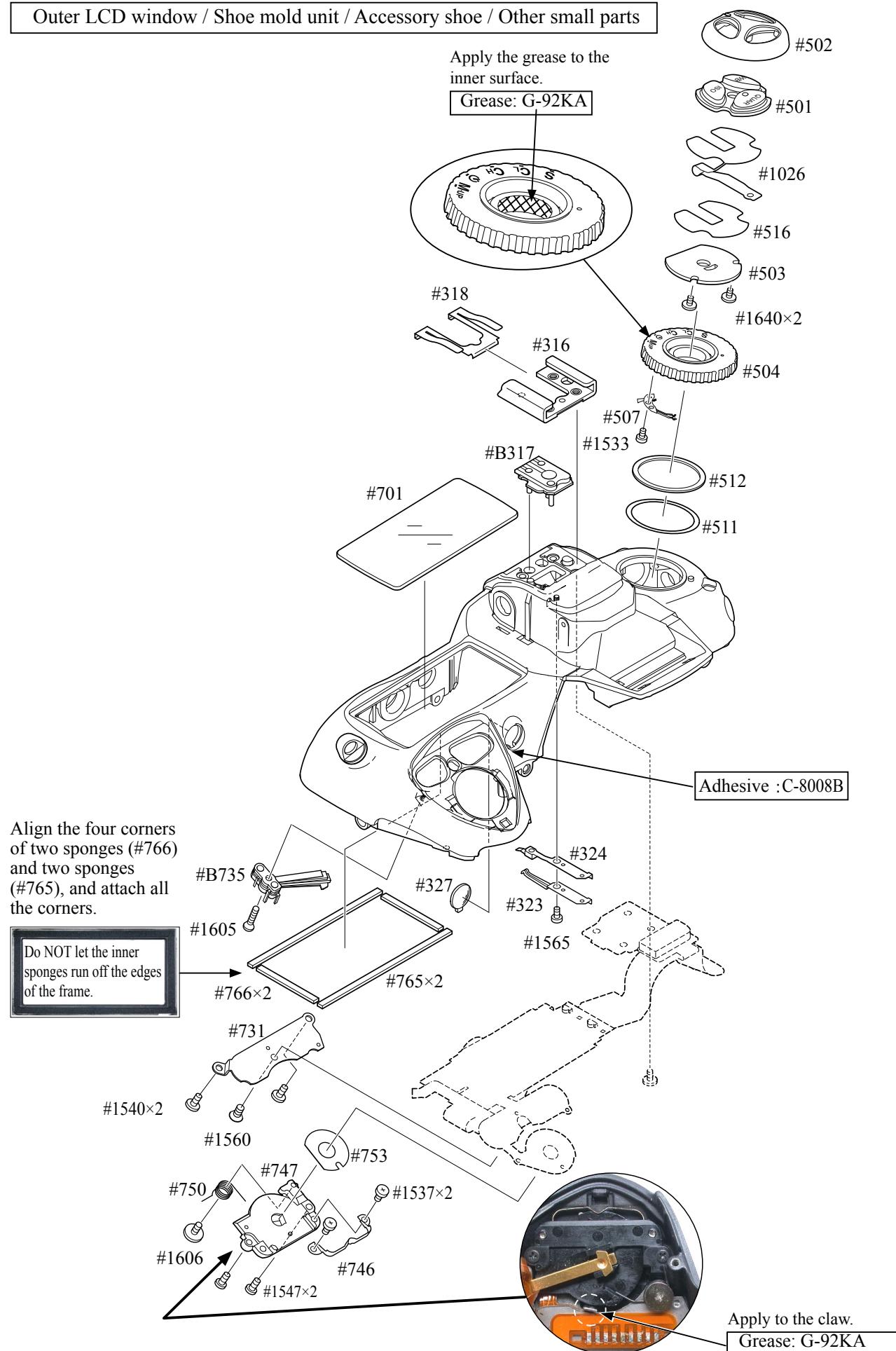
Y-direction → b: Screw



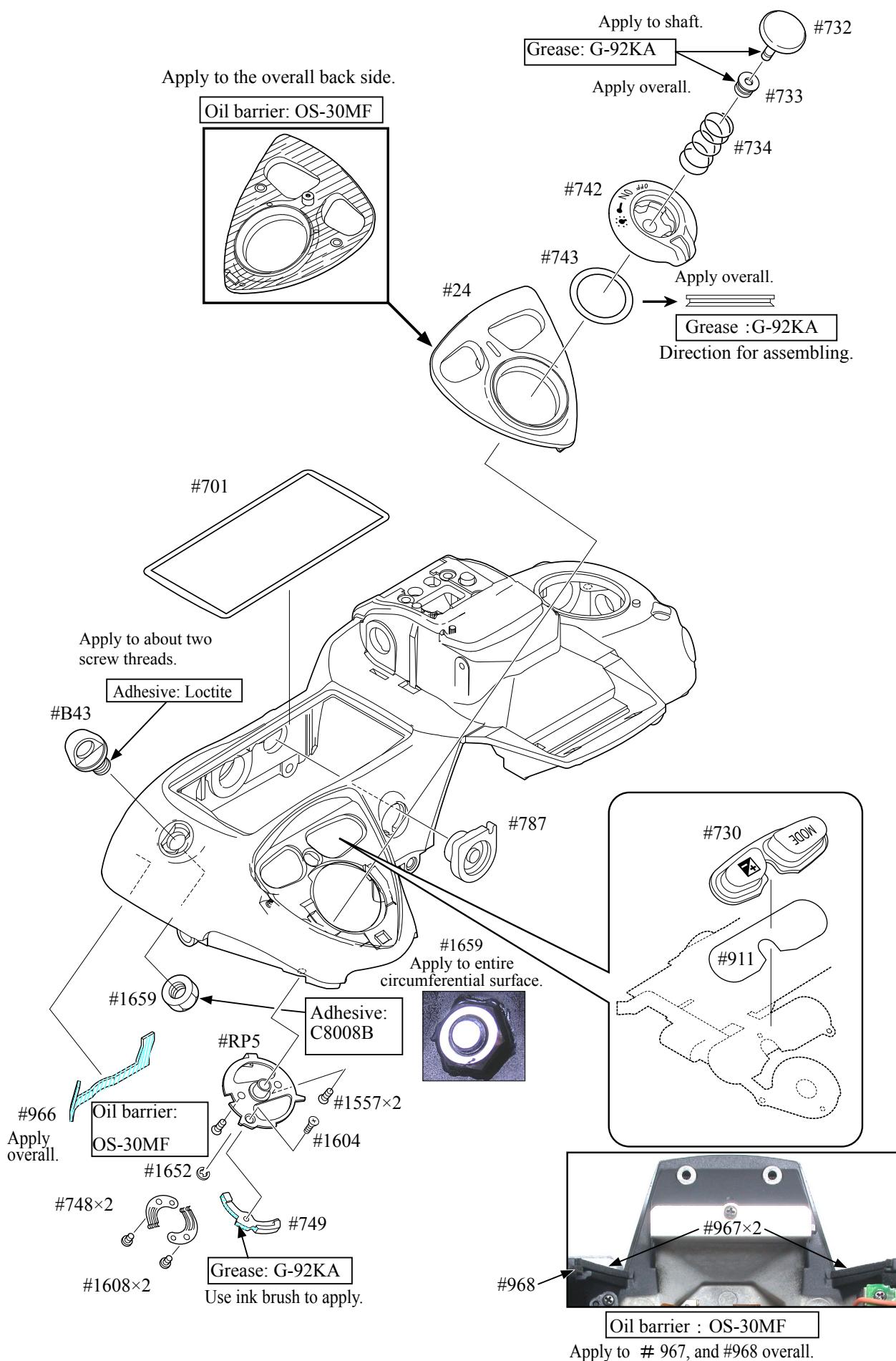
Adhesive: Screwlock



Outer LCD window / Shoe mold unit / Accessory shoe / Other small parts

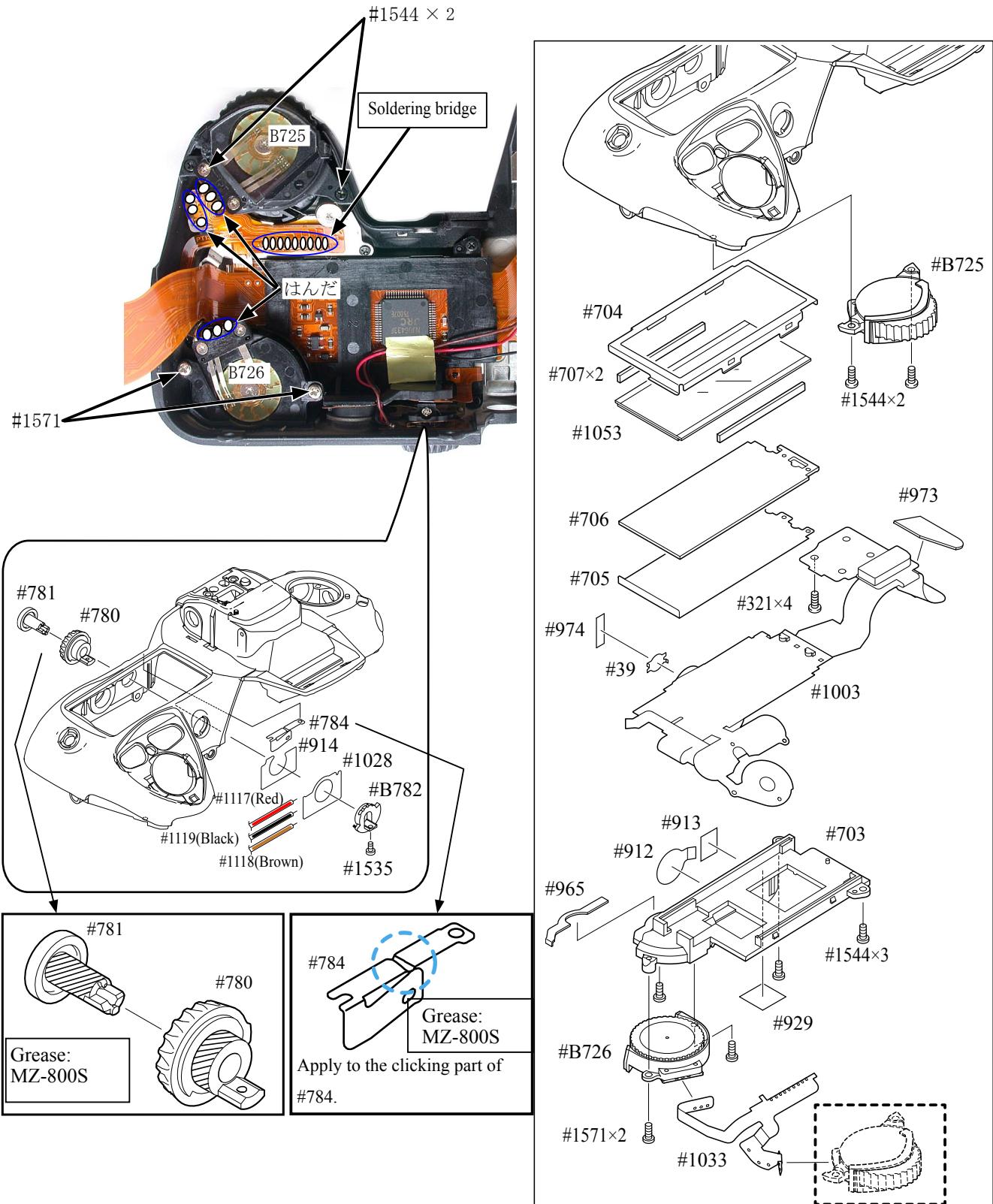


Release button / Other small parts



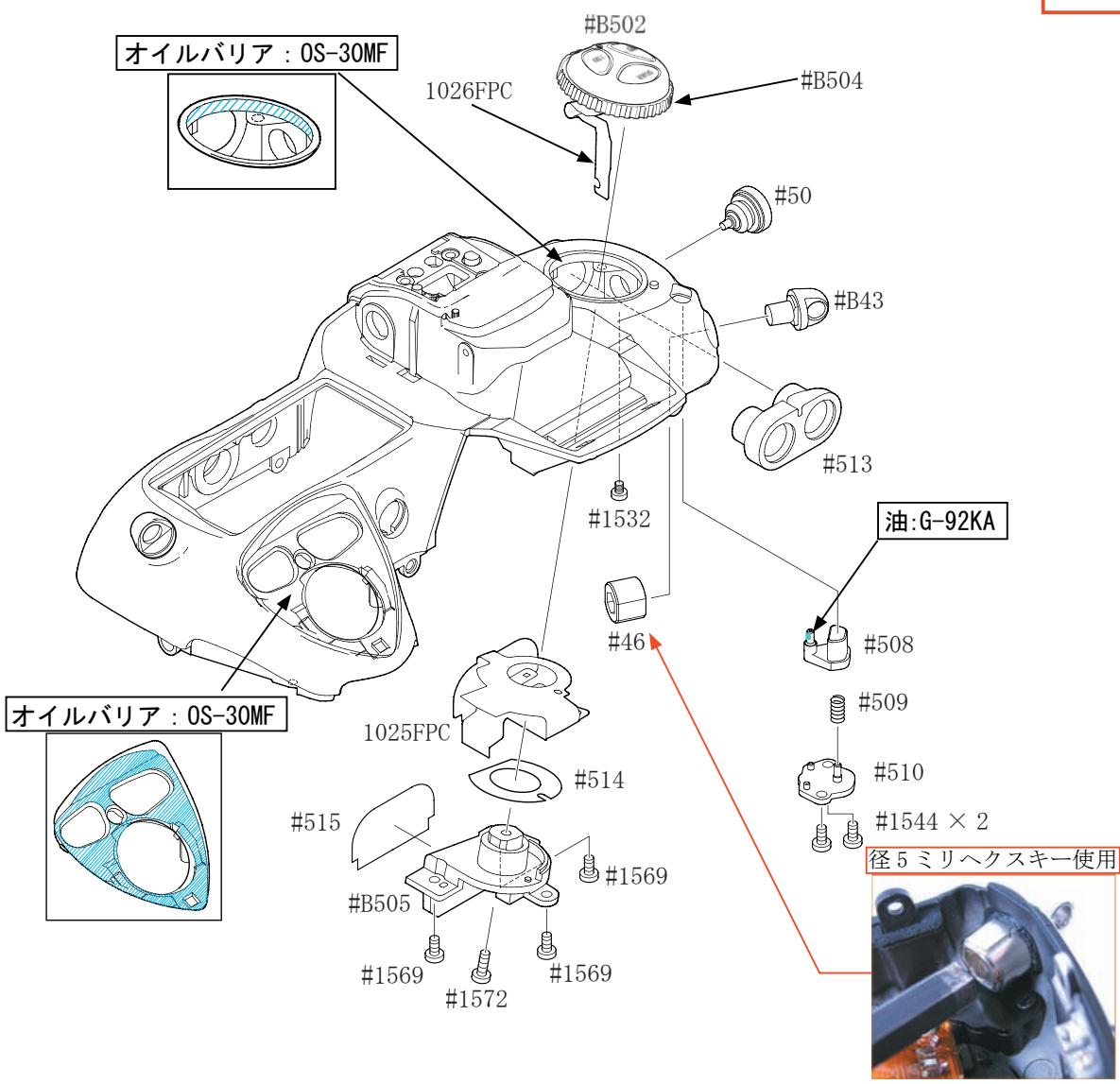
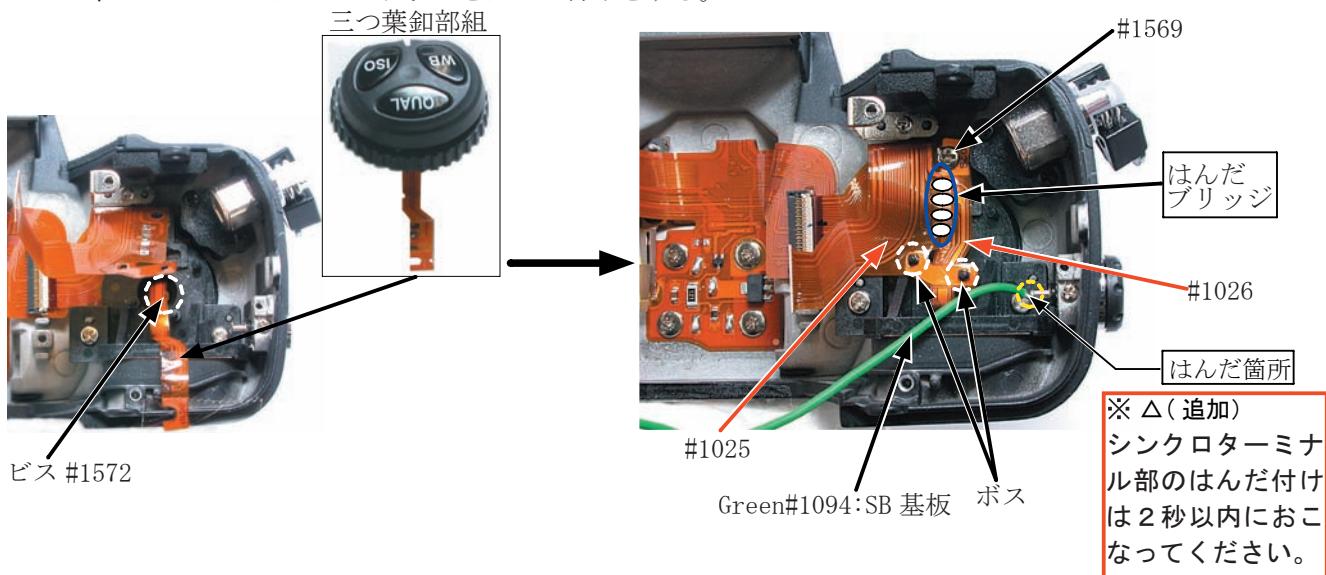
Top cover FPC unit

- Mount the rear command dial unit (B726).
- Tighten two screws (#1571).
- Solder the rear command dial unit (B726) at three locations.
- Mount the front command dial unit (B725).
- Tighten two screws (#1544).
- Solder the front command dial unit (B725) at three locations.
- Make soldering bridges at nine locations.



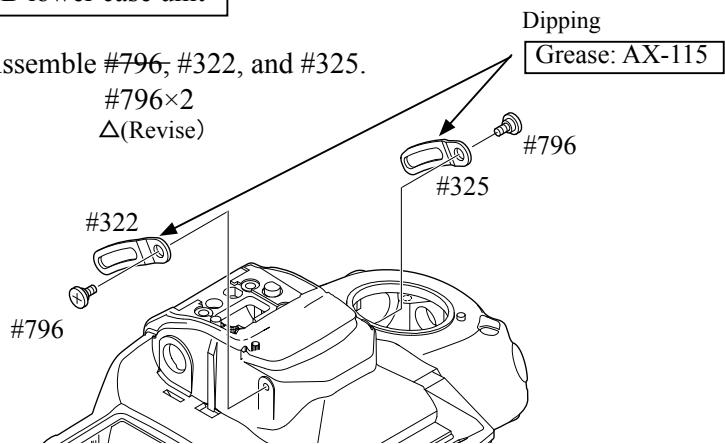
M/D F P C部組

- ・B502, B504(三つ葉鉗部組)を取り付ける。
- ・FPCを持ち上げビス#1572を締める。
- ・#1094シンクロターミナルコードのはんだ付けをする。※△(追加)
- ・#1025をボスに差し込む。
- ・ビス#1569を締める。
- ・#1025、#1026のFPCはんだブリッジをはんだ付けをする。

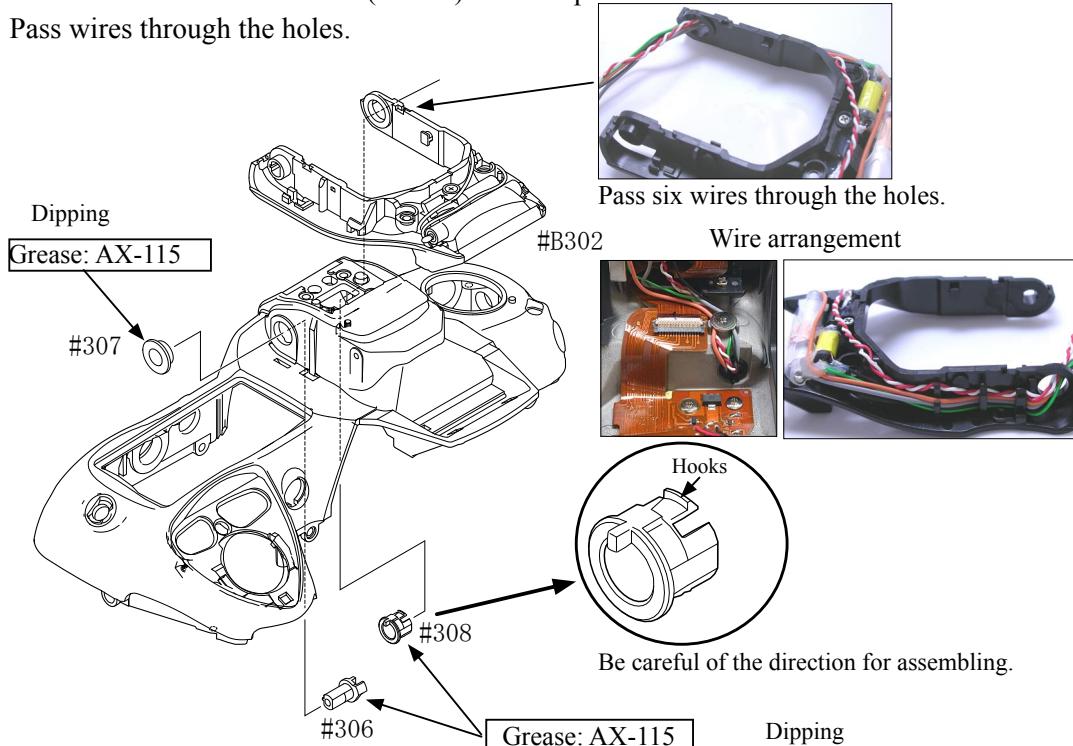


SB lower case unit

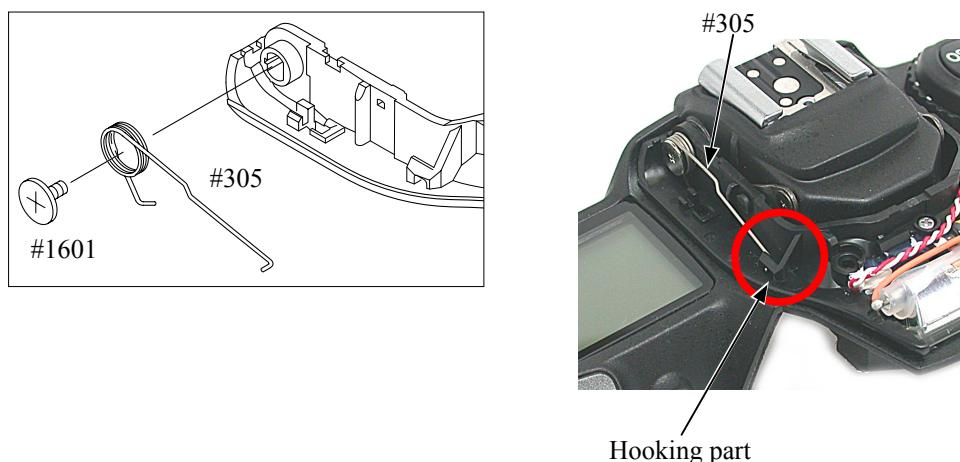
- Assemble #796, #322, and #325.



- Insert the collar (#308).
- Insert the rotation axes (#306 and #307).
- Mount the SB lower case unit (#B302) on the top cover.
- Pass wires through the holes.

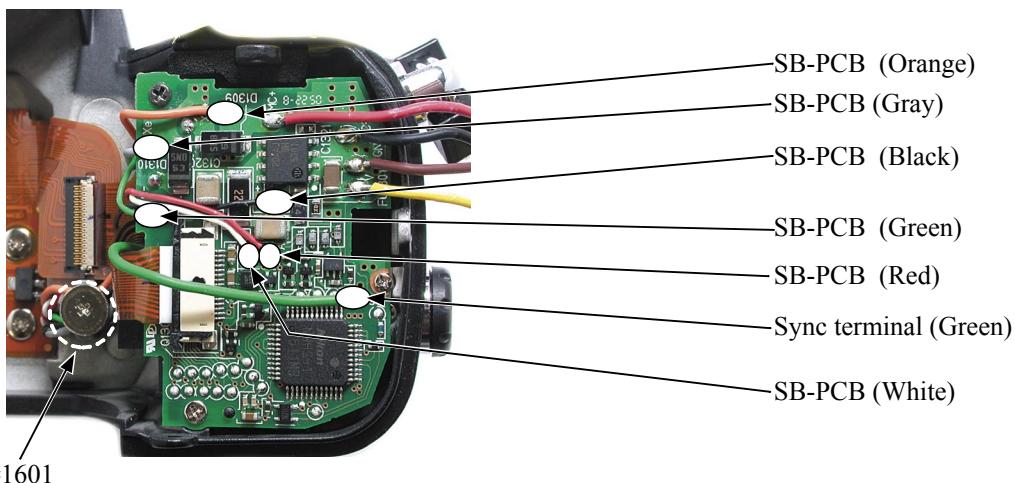
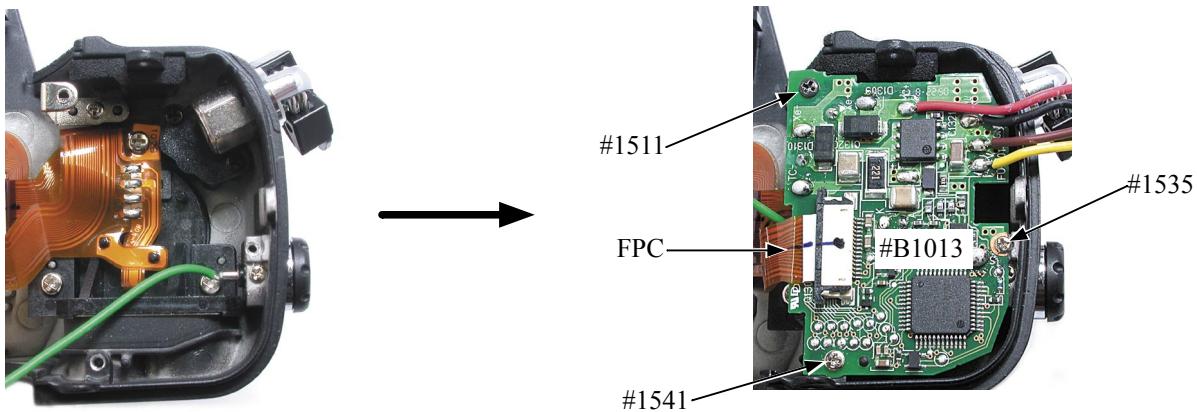
**SB-up spring**

- Attach the SB-up spring (#305) to the hooking part.
- Fix the SB-up spring (#305) with the screw (#1601).



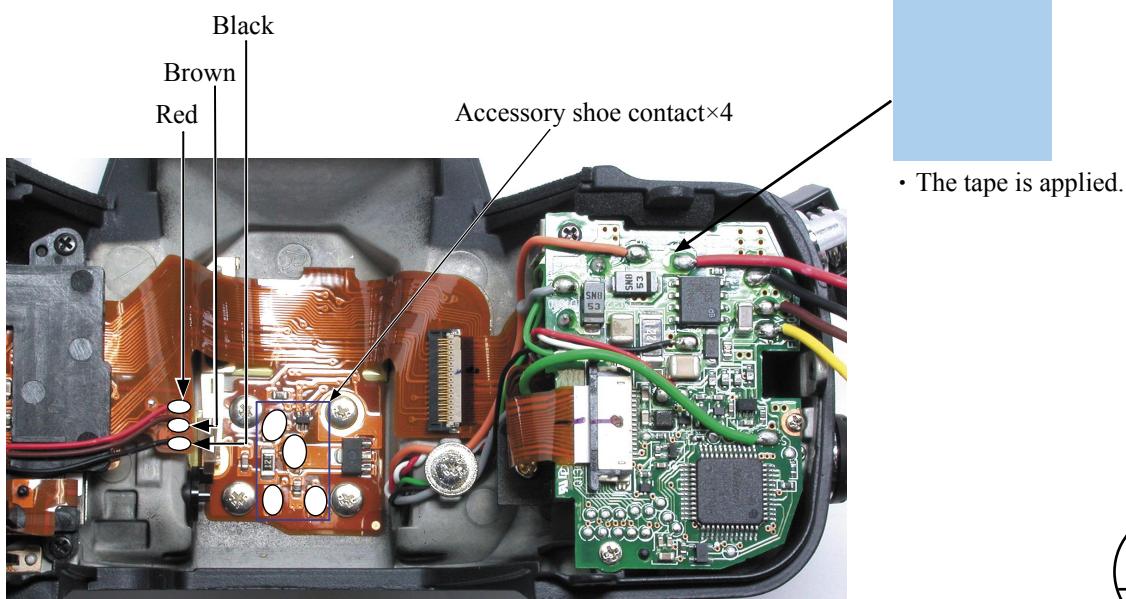
Installment of Top cover FPC / Wires / SB-PCB

- Tighten the screw (#1541).
- Tighten the screw (#1535).
- Tighten the screw (#1511).
- Attach the FPC of the SB-PCB (#B1013).
- Tighten the screw (#1601).
- Solder seven lead wires of the SB-PCB.



- Solder the three metering lead FPC lead wires.
- Solder the four accessory shoe-contacts.

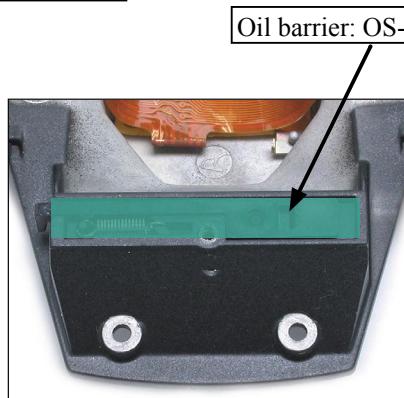
△(Addtion)



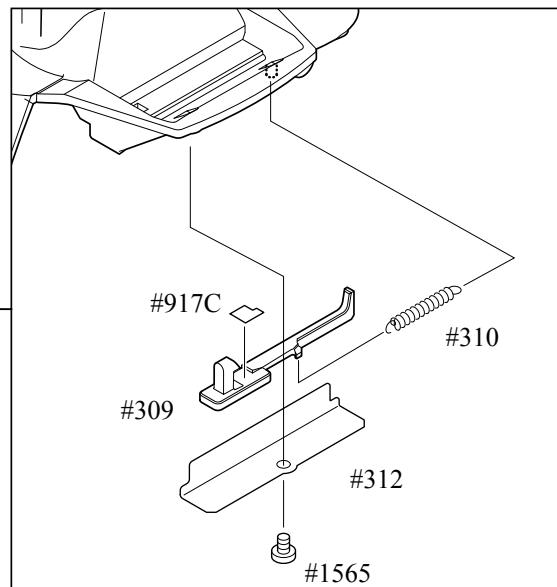
サービス
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Assembly of Top cover unit

SB lock cover



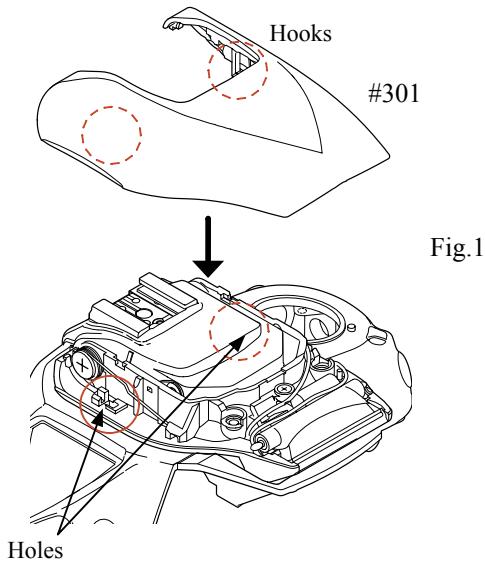
- Attach #309.
- Attach the spring (#310).



SB upper case

- While sliding the SB lower case (#301) downwards, attach its two hooks to the holes. (Fig.1)
- Tighten two screws (#1623). (Fig.2)

SB upper case



#1623×2

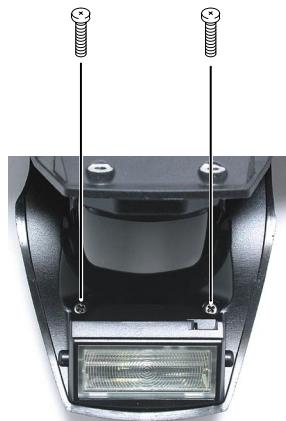
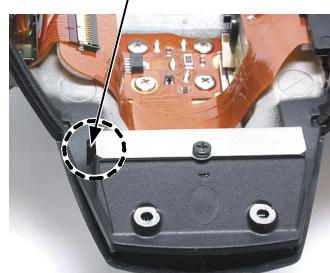


Fig.2

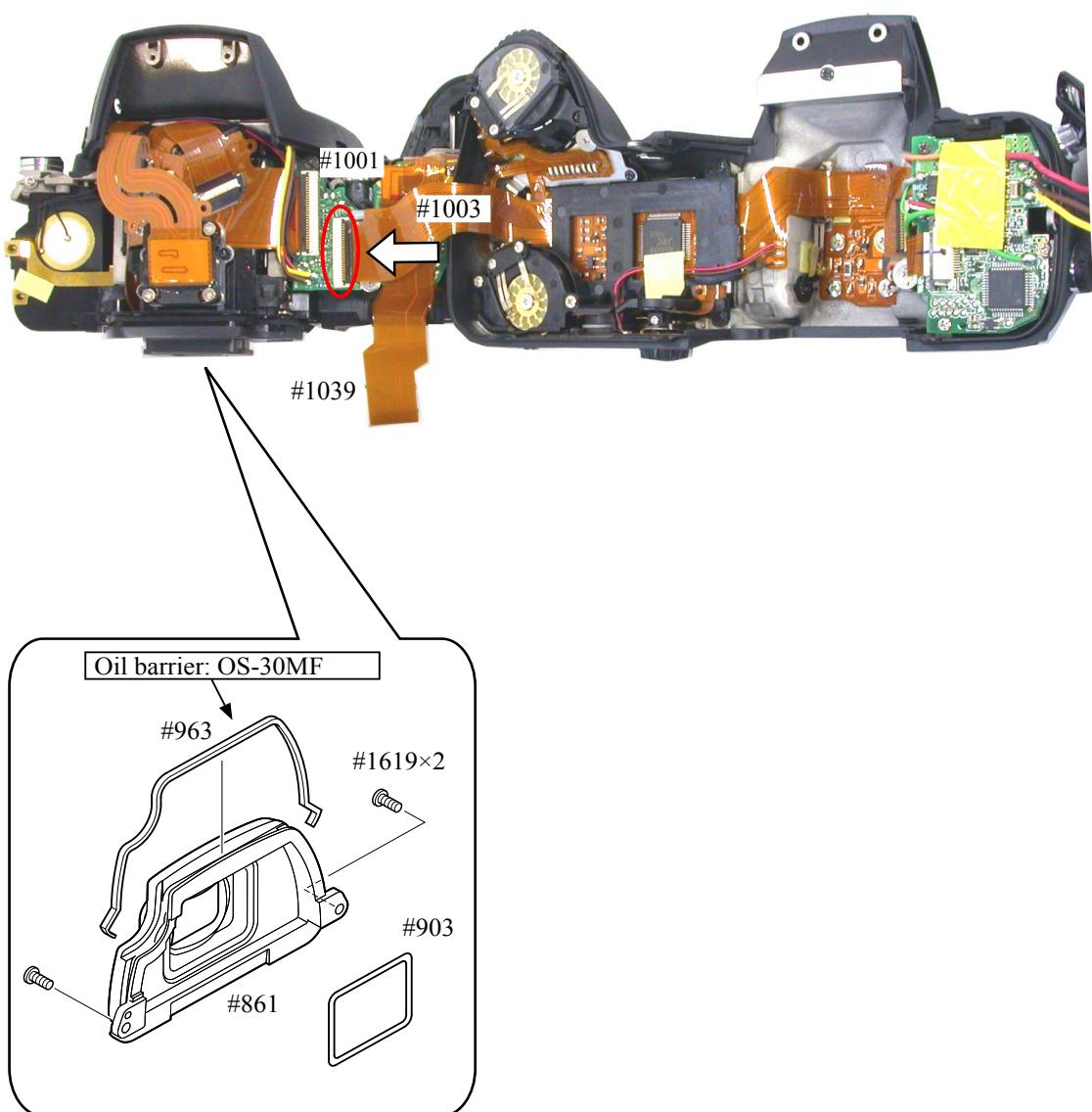
Pop-up lever unit



SB lower case unit

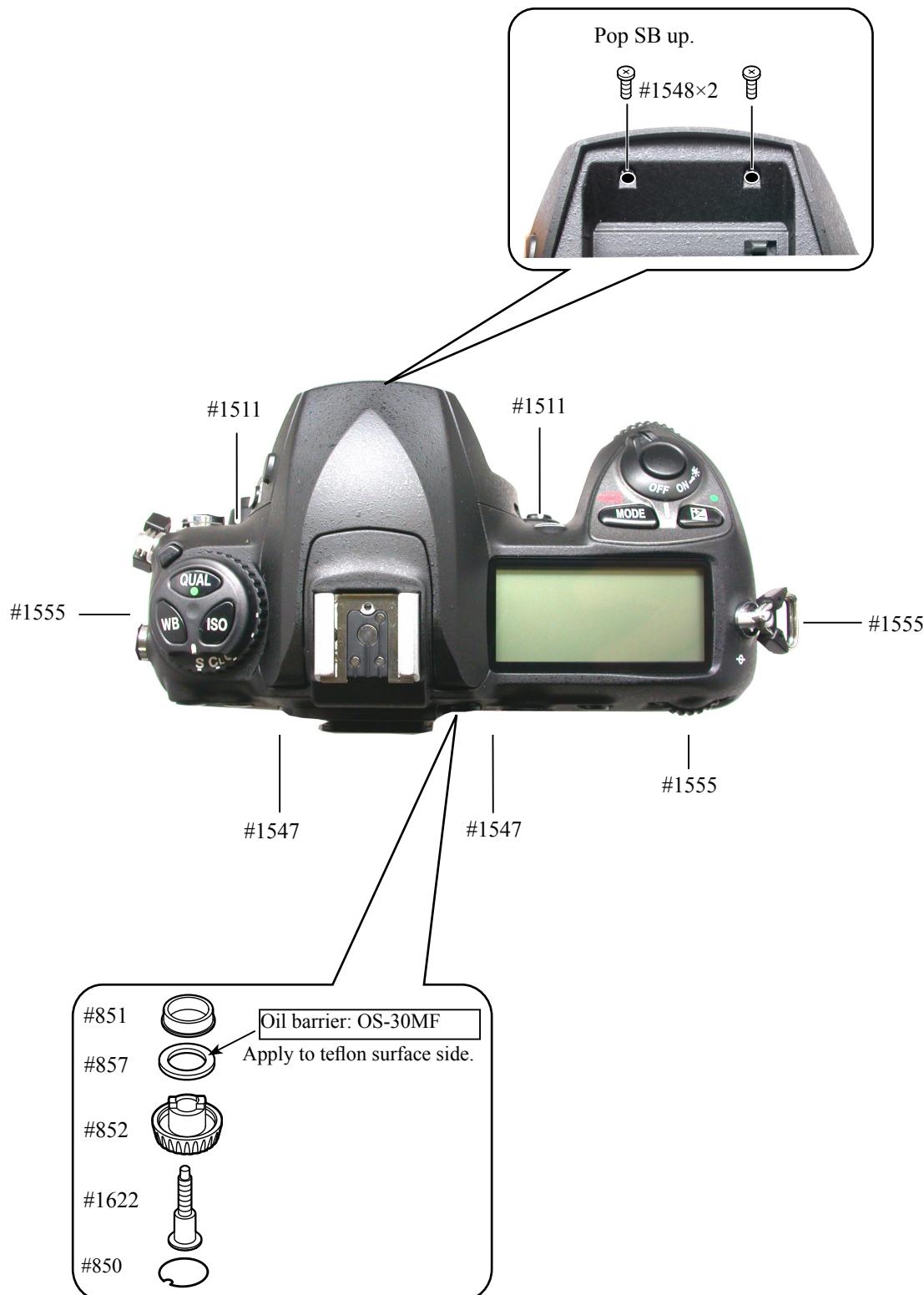
Top cover
Eyepiece frame

- Fix the eyepiece frame unit (#861, #963, and #903) with two screws (#1619).
- Connect the top cover FPC (#1003) to the connector of the main PCB unit (#1001).



Top cover
Diopter adjustment knob

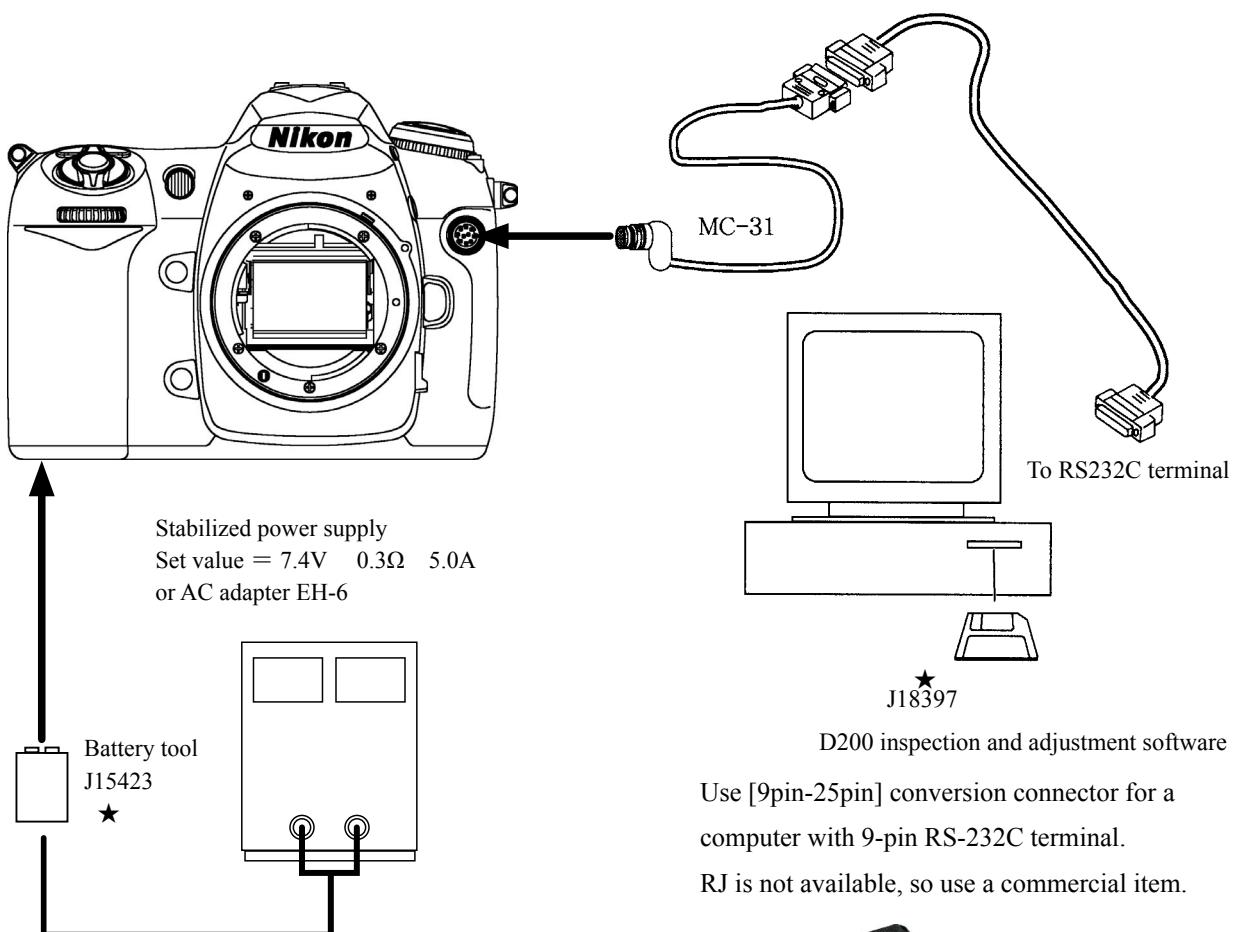
- Fix the top cover with two screws (#1511), three screws (#1555), two screws (#1547), the two screws (#1548).
 - Fix the diopter adjustment knob unit (#851, #857, and #852) with the screw (#1622). Then attach the cover (#850).
- * After attaching the top cover, turn the diopter adjustment knob to check the operations of the diopter adjustment lens.



Accuracy inspection and adjustment (Camera body)

★ : Newly prepared RJ

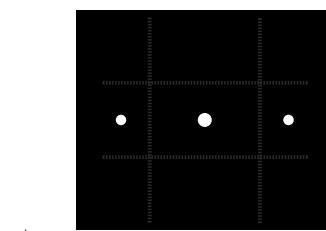
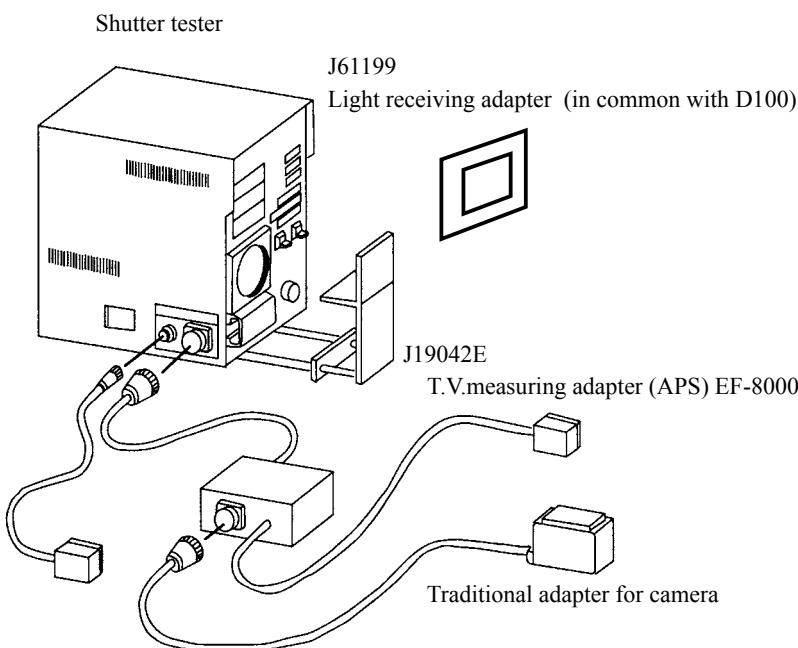
Commercially available straight cable



* Note:

When checking “battery check”, be sure to use the battery tool (J15423).
When this tool is used, LCD indications of camera disappear.

Flash meter
Not prepared as RJ



Set up in front of color viewer (J63070)



When M 1/8000 is adjusted, use the T.V.measuring adapter (APS) EF-8000(J19042E) and the light receiving adapter (J61199).

Caution: When the inspection and adjustment are made with the shutter tester, turn the tester ON to light a lamp, and carry out the aging for 3-5 minutes.

D200 Inspection and Adjustment Software (J18397)

This inspection and adjustment software runs on Windows.

Install the software by following the below procedure.

<Operating environment>

Check the following operating environment which is required for installing this program on PC.

PC	IBM PC/AT compatible
OS	Windows XP Professional Edition, Windows XP Home Edition, Windows2000, Windows 98 Second Edition (SE)
CPU	80486 100MHz ~ Pentium 4 2.2GHz
RAM (memory)	32MB or more
HD	6MB-or-more free disk space is required when installing
Monitor resolution	800×600 pixels or more
Interface	Serial interface (switchable from COM1 to COM9) ※ USB interface is not available.

As long as the above hardware requirements are met, any PC such as desktop or laptop, etc is available.

< Cautions in starting program >

When starting this program, close all the other applications.

If some other applications are running, this program may not be activated.

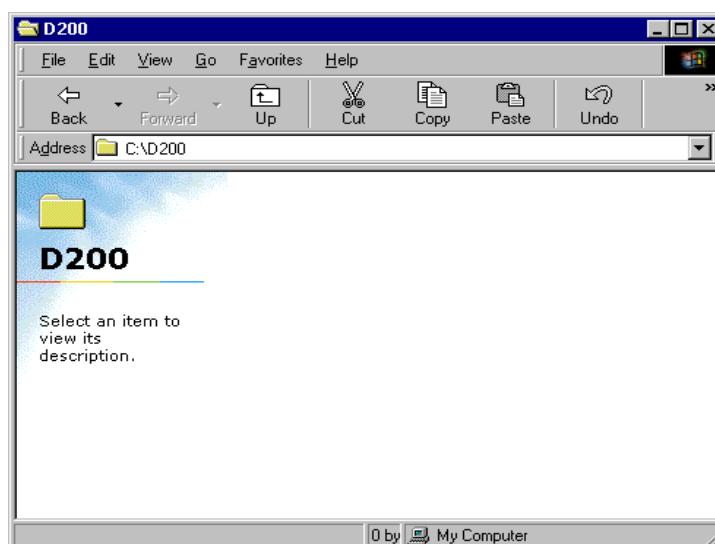
<Procedure for installation>

The file (D200SOFT.EXE) of this program is provided via FD or e-mail.

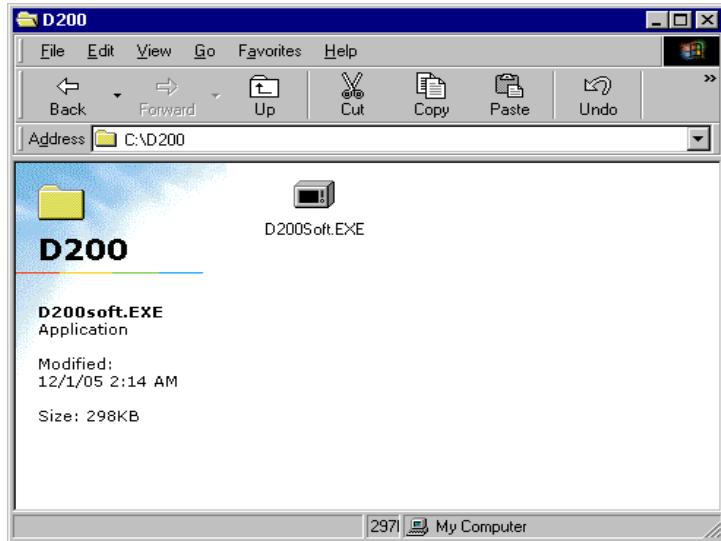
Because this is the self-extracting file, decompress the file before installing, following the next procedure.

1. Create a folder for installation under a name you like and PC drive.

(e.g.) C:\D200

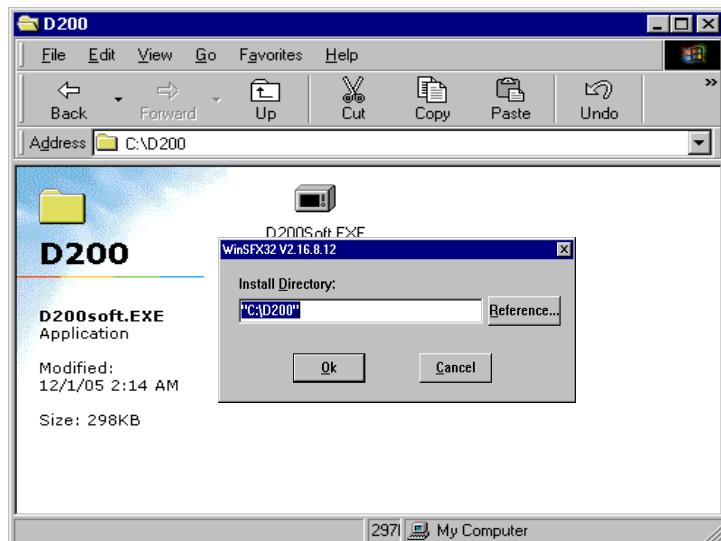


2. Paste the file (D200SOFT.EXE) in the created folder.

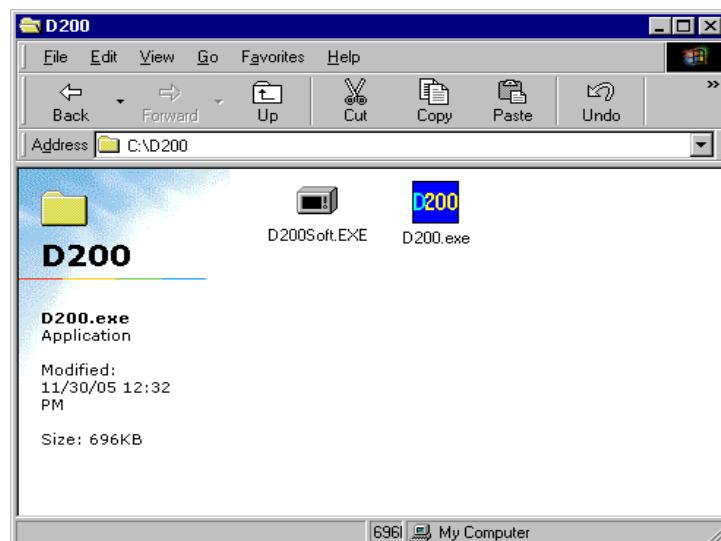


3. Double-click on the pasted file to display the following screen.

Press the OK button, then decompression starts.



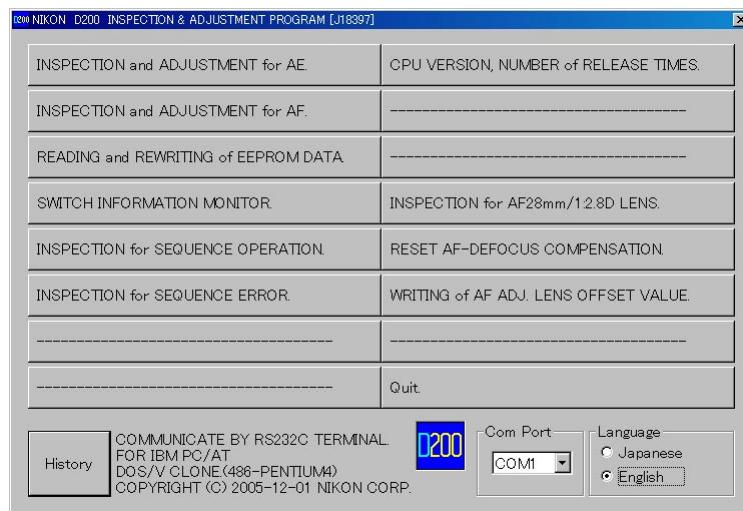
4. When the decompression of file is finished, the file (D200.EXE) is created.



5. The installation is completed.

<Start-up of Program>

- Double-click the file (D200.EXE), then Inspection and adjustment program for D200 starts.



- To display in Japanese, select the radio button "JAPANESE" in "LANGUAGE" in the lower right-hand corner of the screen.

However, this is not properly viewed in the English OS.



- For "COM PORT" (communication port), the selection from "COM1" to "COM9" is available.

- When the "HISTORY" button at the lower-left is pressed, the program version will be displayed.



- Select each item button according to operation.

Follow the instructions on the next screen that will be shown after pressing the item button.

- To finish the program, press the "Close (x)" button in the right-hand corner of the screen or "QUIT".

AE inspection and adjustment

- ① AE CCD alignment inspection and adjustment (ref. Page A28for details)
- ② AE accuracy inspection and adjustment
- ③ Aperture accuracy inspection
- ④ M1/8000 Accuracy inspection and adjustment
- ⑤ Adjustment for battery check level (Use the battery tool (J15423) and stabilized power supply.)

* Check & Adjust an out put of Built-in Speed light,after assembling until Rear cover.

- ⑥ Built-in SB flash inspection and adjustment

[Tools required] ref. Page A38.

- AE accuracy inspection and adjustment

For this camera, the AE shift amount, which is fundamental for other lenses, is adjusted by using the AF28/2.8D lens.

Check in advance, by "INSPECTION for AF28mm/1:2.8D LENS." on the main menu, whether the adjustment AF28/2.8 D lens is available.

When checking the lens, measure by using the reference body (used for the shooting image adjustment, too), using the adjustment AF50/1.4D lens, and using the adjustment AF28/2.8D lens.

When inspecting and adjusting the AE accuracy, make an adjustment by combining the adjustment AF50/1.4D lens, which was confirmed by "INSPECTION for AF28mm/1:2.8D LENS." and the adjustment AF28/2.8D lens.

- "Battery check" inspection

When the battery tool (J15423) is connected, the indications of the outer LCD of this camera disappear. After adjusting "Battery check", inspect by the software by powering to camera at 7.8V.

- Built-in SB flash inspection and adjustment

Set the distance between camera and flash meter to 1 m, and inspect and adjust the light volume of the built-in SB. (ref. adjustment software for details)

AF inspection and adjustment

Note: When using the adjustment software for the first time, prepare 3 cameras of D200 and measure by "WRITING OF AF ADJ. LENS OFFSET VALUE" on the main menu.

- ① AF accuracy inspection and adjustment (Make all the following adjustments.)
- ② YAW, PITCH inspection and adjustment
- ③ LARK adjustment (inc. CCD output adjustment)
- ④ AF shift adjustment

[Tools required]

1. When adjusting for all adjustment items

ref. Page A38.

2. When inspecting AF accuracy

- ① AF adjustment lens (J18266)
- ② AF adjusting tool (J15259)
- ③ Lens holder for F4 (J15280)
- ④ AF chart (J18344)
- ⑤ Chart illuminator for AF (J15264)

3. When adjusting YAW, PITCH

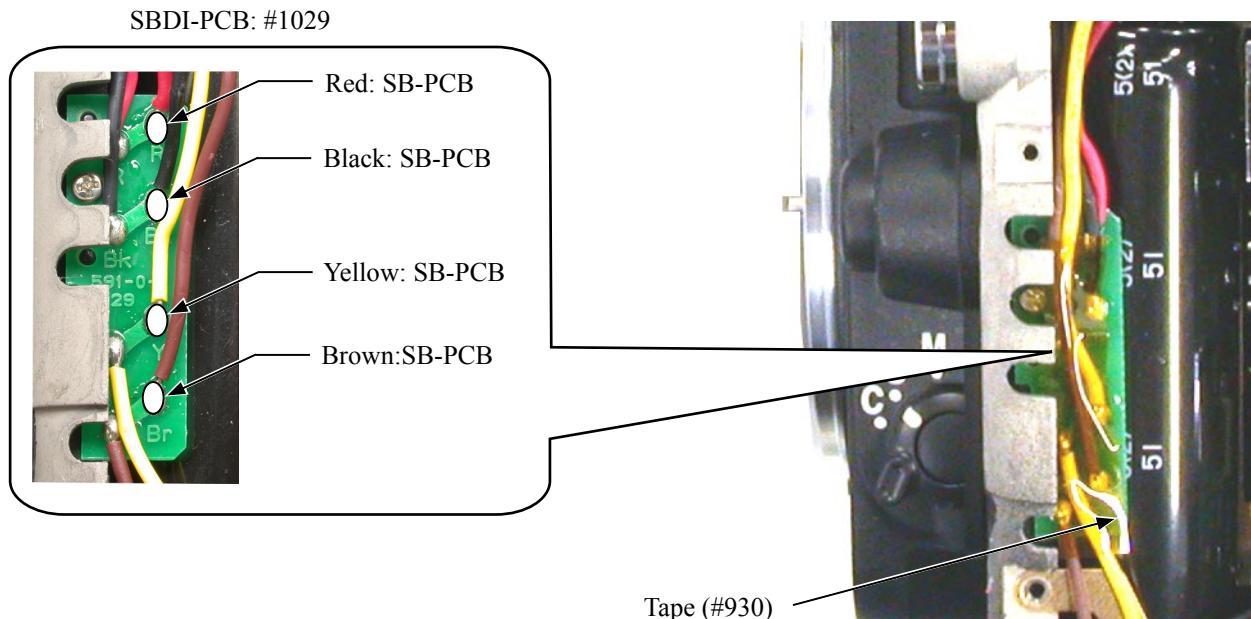
YAW, PITCH tool (J18230)

4. When adjusting LARK

The above tool when inspecting AF accuracy

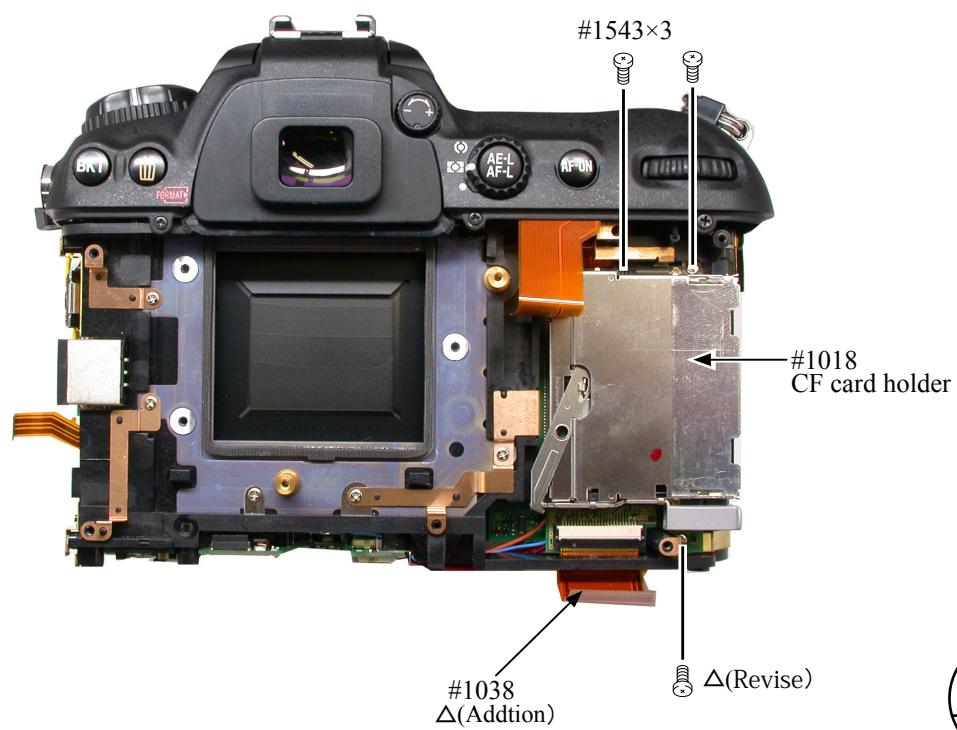
In "AF shift adjustment", the distance from the bayonet reference plane to the imaging area (CCD) is calculated by the actual shot photo, and its error is recorded in EEPROM as compensation amount, and adjusted.

- Solder four wires that are connected from the SB-PCB.
- Arrange four wires by positioning them towards the front body, and attach the tape (#930).



CF card holder

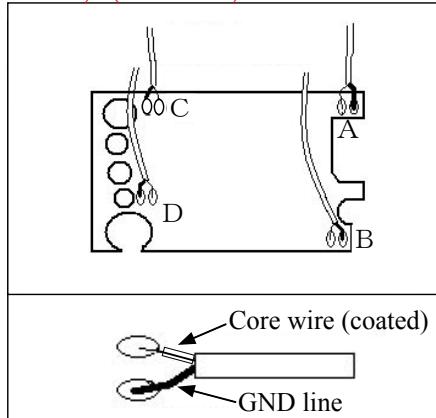
- Connect the CF-DG connection-FPC (#1038) to the CF card holder (#1018).
- Pass the CF-DG connection-FPC (#1038) through the hole of the body, and fix it with three screws (#1543).



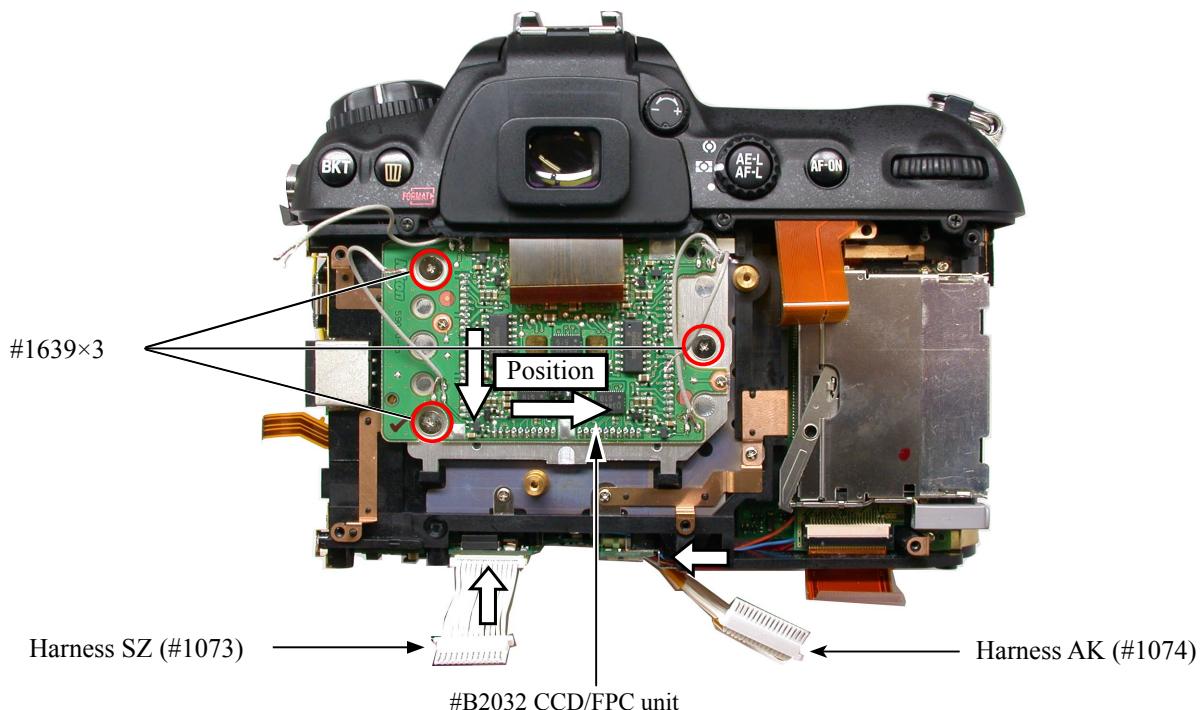
CCD/FPC unit

- Position the CCD/FPC unit (#B2032) towards the direction of the arrow, and fix it with three screws (#1639).
- Connect the harness SZ (#1073) and harness AK (#1074) to the DC/DC-PCB (#1047).
- Solder the four shielding wires. (ref. Fig)

- Solder the GND line of the shielding wire on the outer soldering lands of the CCD-PCB (#B2032). (See below)



Fig



Note: For some bodies, washer(s) are already put on the attaching face of the CCD-bracket.

There are 2 cases as follows.

1. Purpose : To adjust the height of the camera body

There are indications by color marker (washer thickness) on the camera body side of the CCD-PCB attaching face.

{One red marking = 0.02mm (#534), Two red markings = 0.04mm (#534×2)}

* The position, number, etc of washers are not the same at 3 locations.

* By adding the measured value to the thickness of washers, check if it is within the standard (48.5 ± 0.015 mm).

2. Purpose : To adjust the height of the CCD bracket

There are indications by blue marker (doughnut shaped) of the CCD-bracket attaching face

{One marking at upper right corner = 3 locations = 0.01mm}* Washers are equally put on the 3 locations.

* When the CCD PCB is replaced, remove the washers.

DG-PCB unit

- Solder the GND line on G-side of the DG-PCB (#B1017). (There are "S" and "G" letters on the DG-PCB)
- Solder each shield wire on A, B, C, and D. (ref. Fig.)

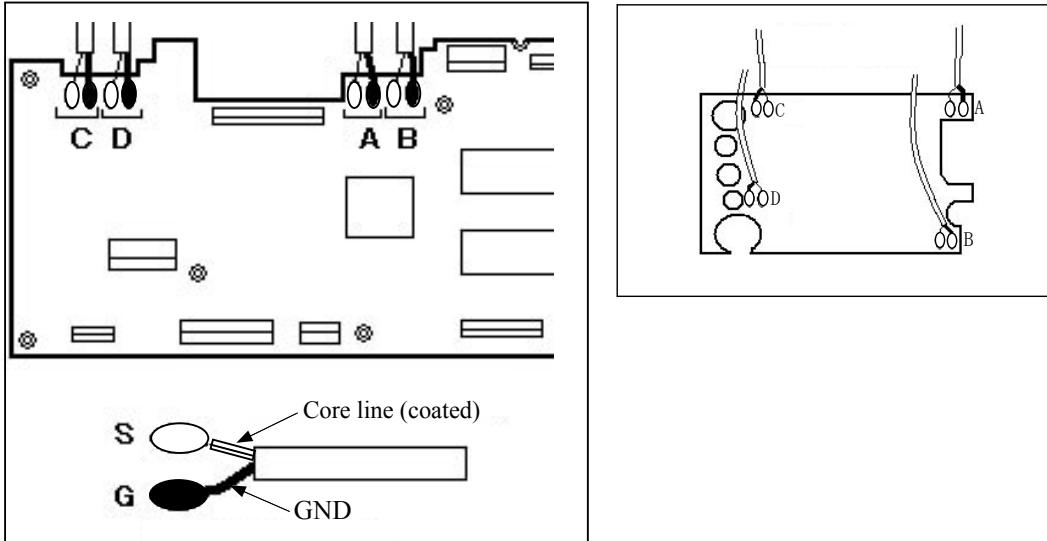
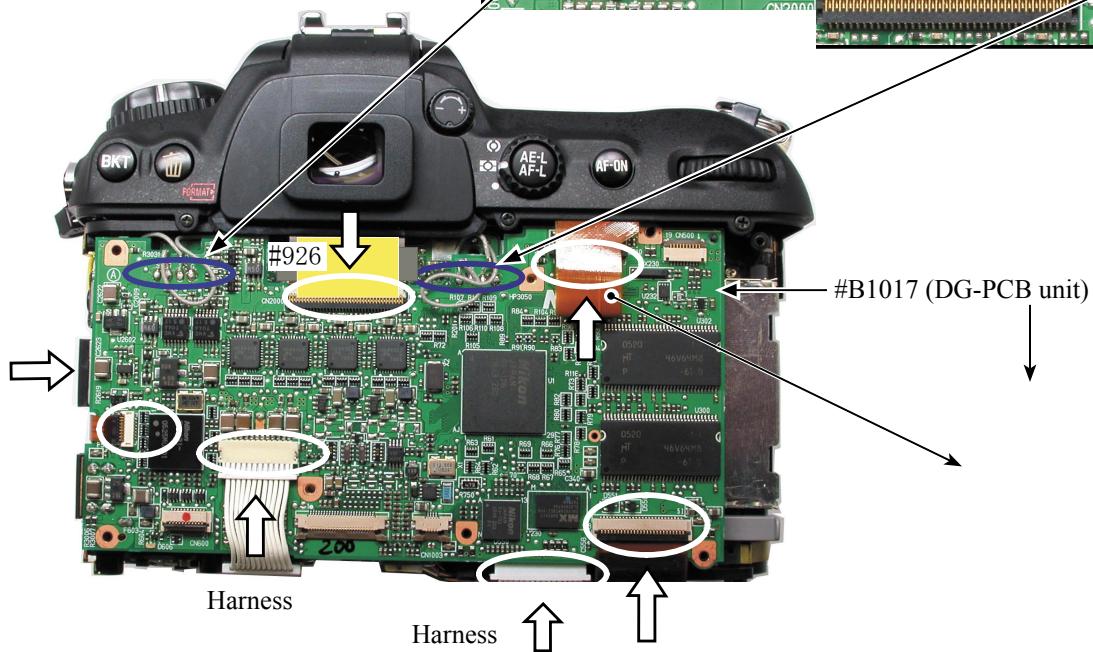
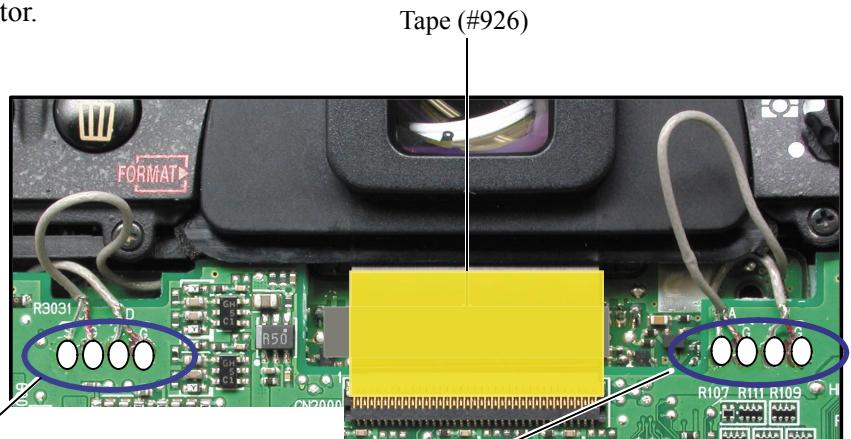


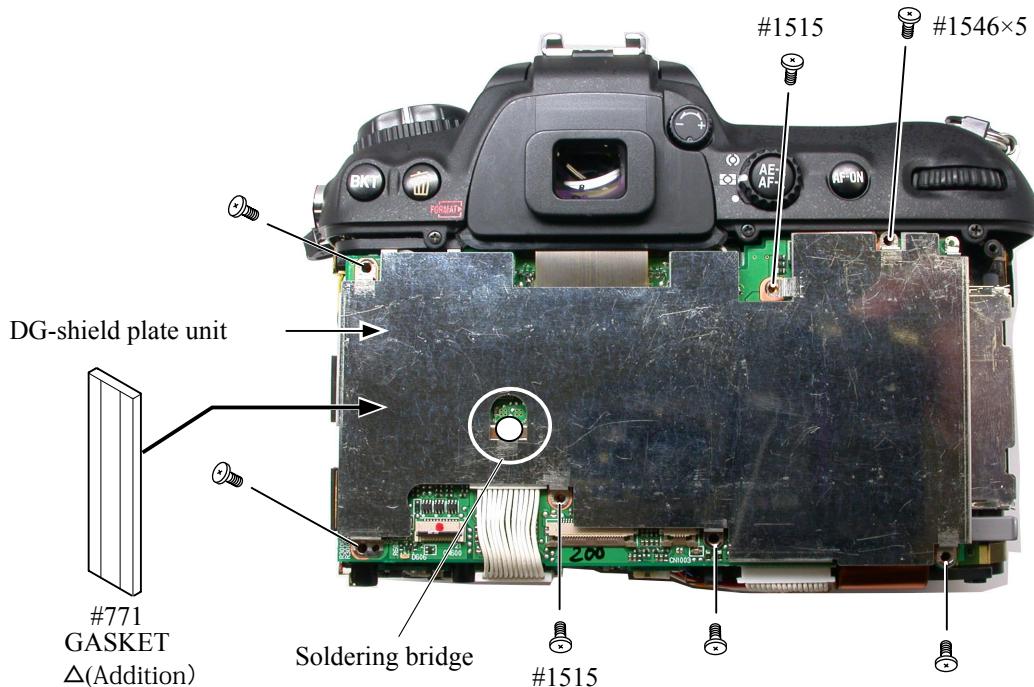
Fig.

- Mount the DG-PCB unit (#B1017).
- Solder the four shield wires. (ref. Fig.)
- Connect two harnesses to the connector.
- Put the ferrite core in the CCD FPC.
- Connect the four FPCs to the connectors.
- Attach the tape (#926).
- Put the shield wires under the viewfinder for arrangement.



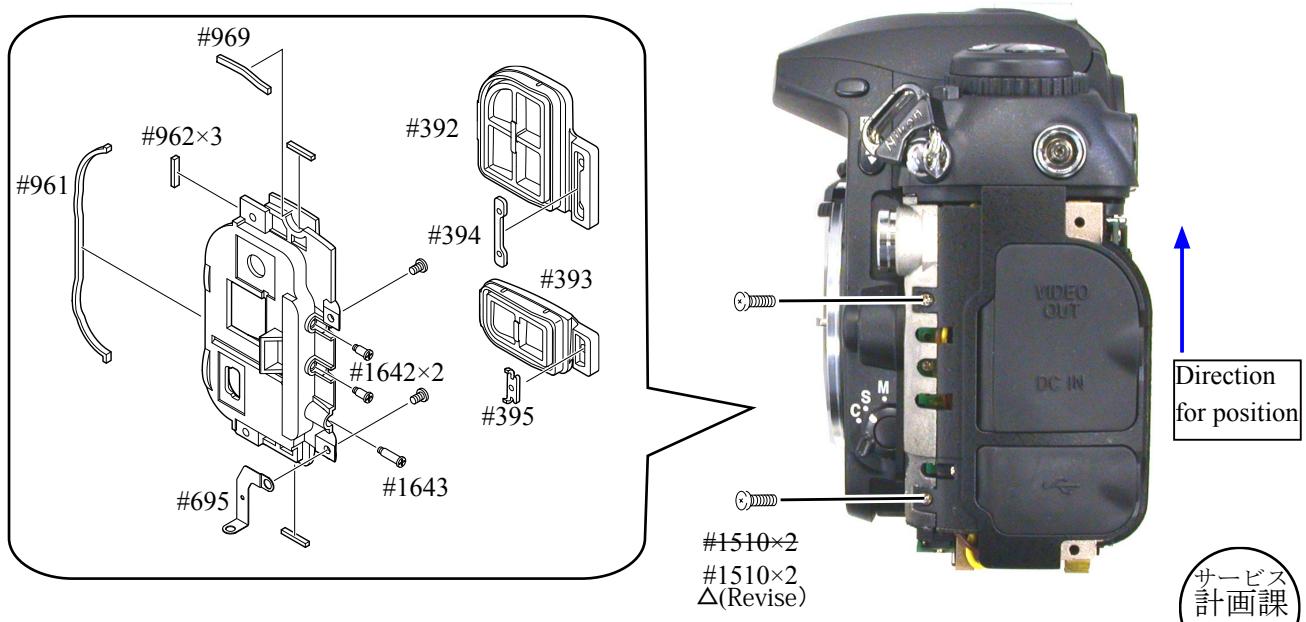
DG shield plate

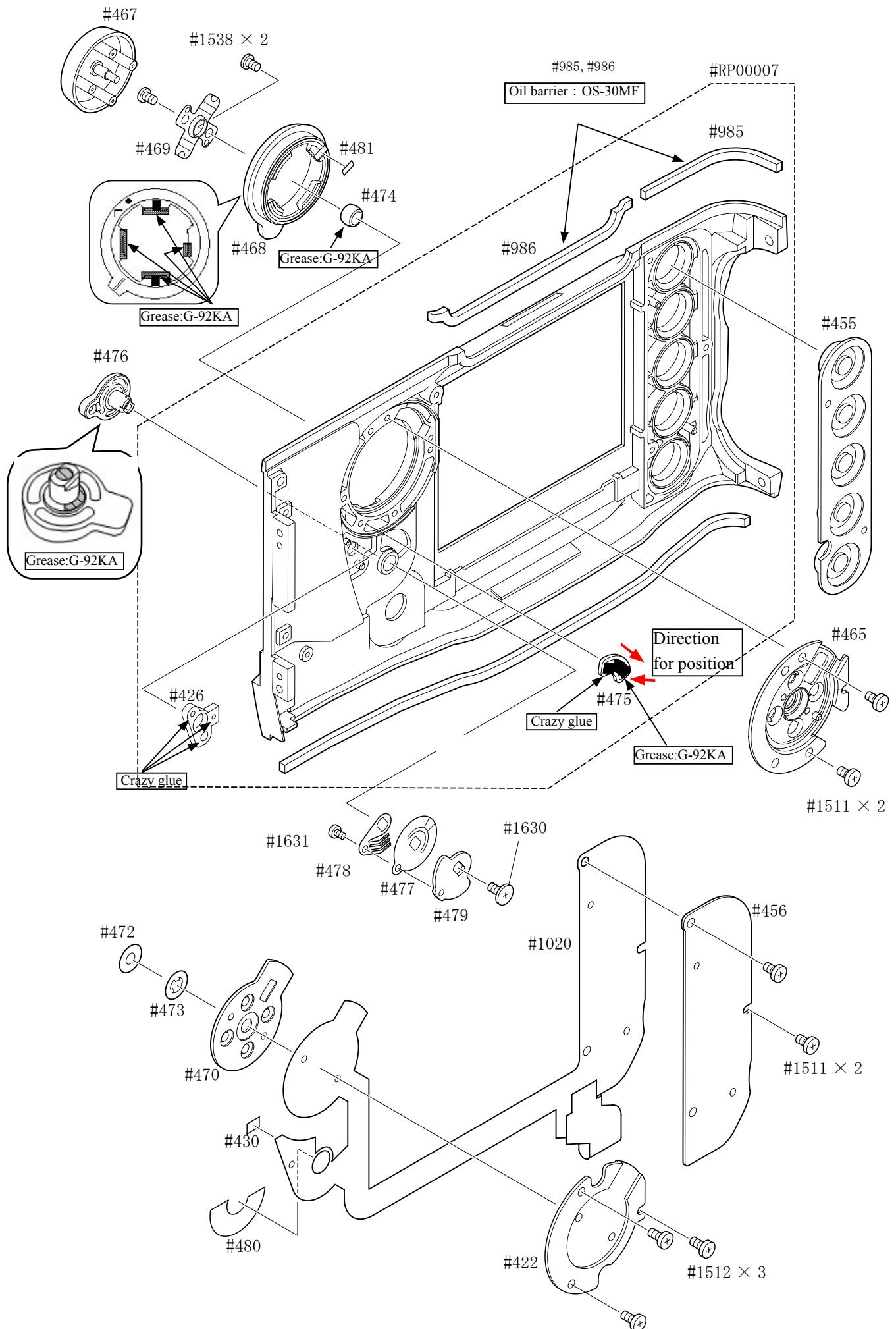
- Fix the DG-shield plate with five screws (#1546) and two screws (#1515).
- Make soldering bridge.

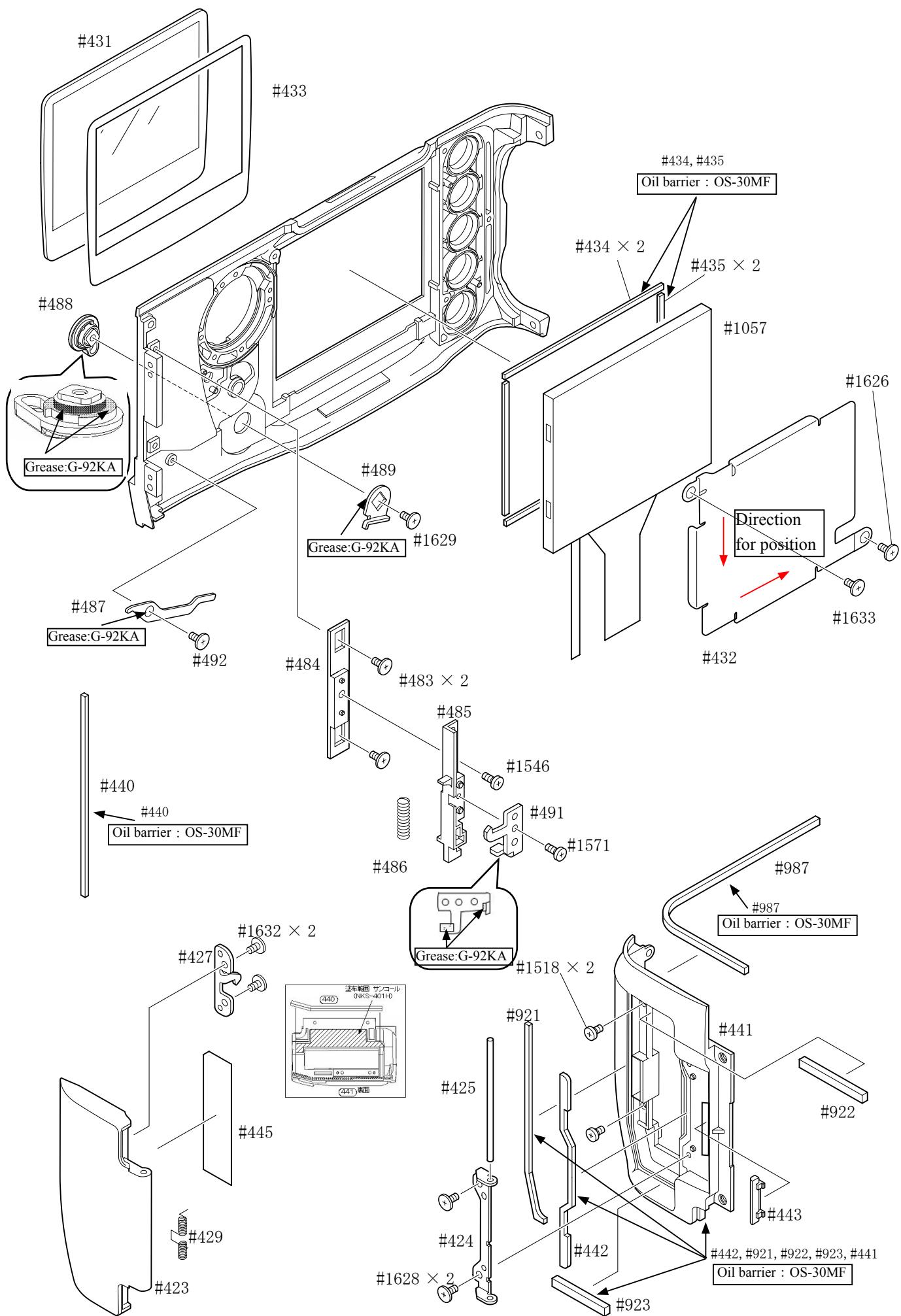


I/F cover

- Assemble the conductive plate (#695) by aligning with the boss.
- Position the I/F cover towards the top cover, and fix it with two screws (#1510).
(#1549)
Δ(Revise)

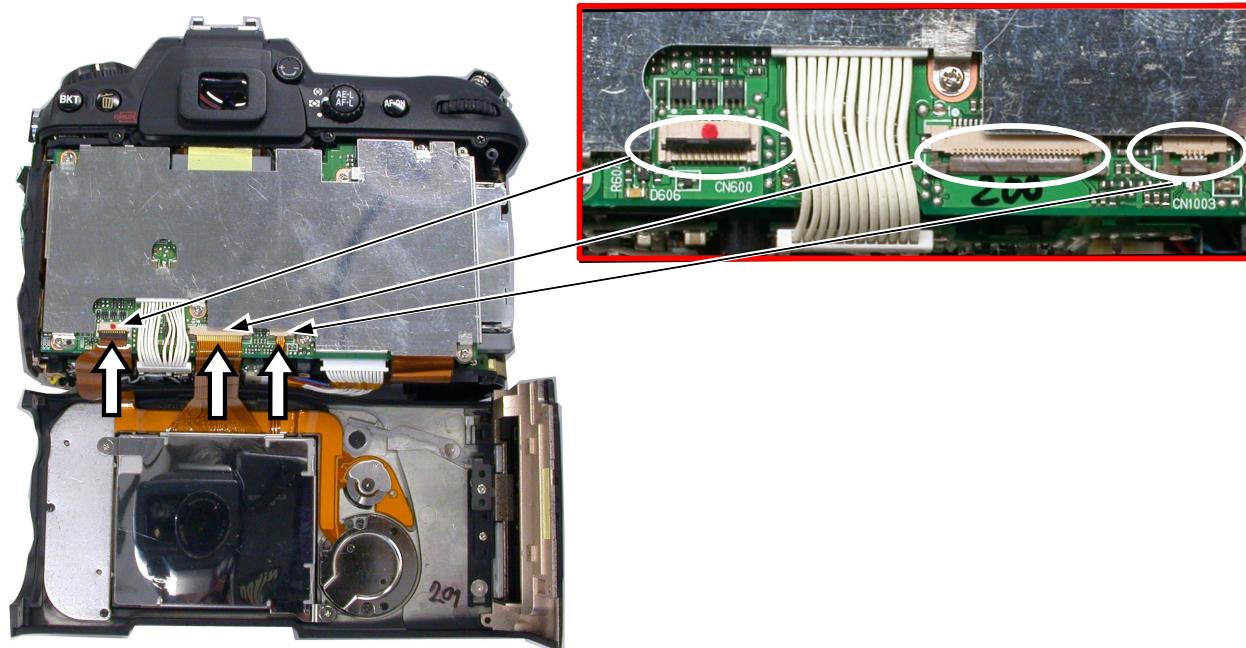






Rear cover

- Connect the three TFT-PCB connection PCBs to the DG-PCB connectors.

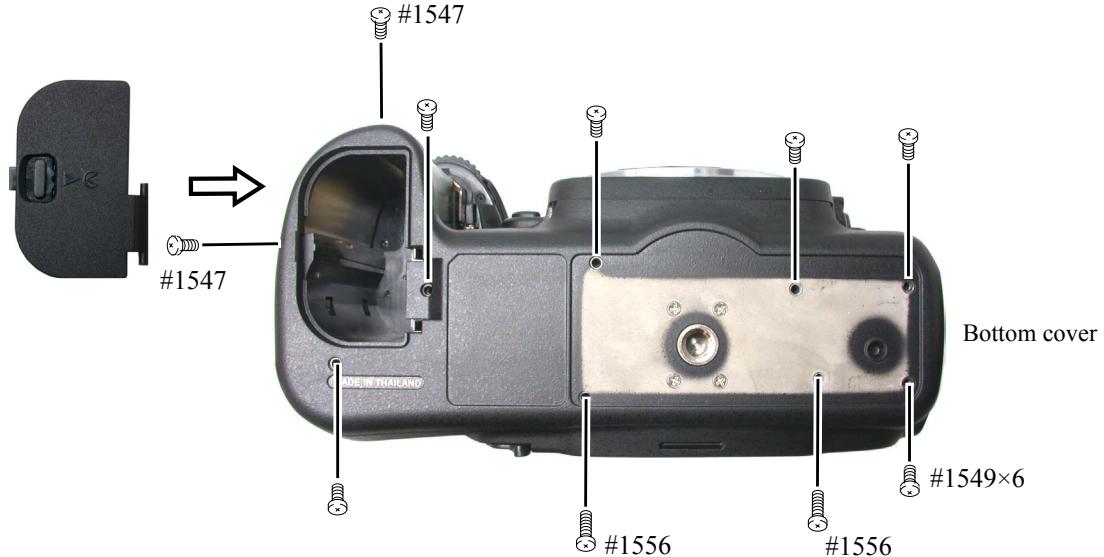


- Fix the rear cover with two screws (#1547), two screws (#1552), and one screw (#1549).



Bottom cover

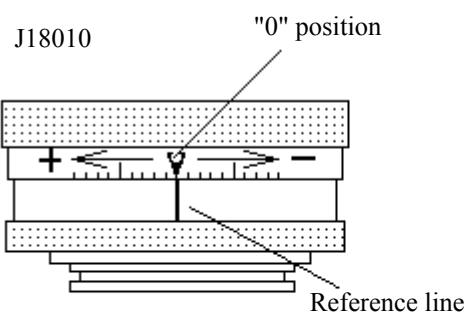
- Mount the bottom cover.
- Tighten two screws (#1556), six screws (#1549), and two screws (#1547).
- Attach the battery lid.

 **∞ Infinity focus inspection & adjustment**

- Replace the finder screen with the infinity focus check screen (J18394), and use the reference lens (J18010) and read the value. In case it is out of standard, increase or decrease washers (#836A, #836B, or #836C) for adjustments. * Supply the power (Battery or EH-6) for checking.

Caution: When (J18394) is put in to replace the finder screen, put it with the silver spacers upward, which are attached on both sides.

Standard: $\pm 0.04\text{mm}$ 1 scale = 0.01mm)

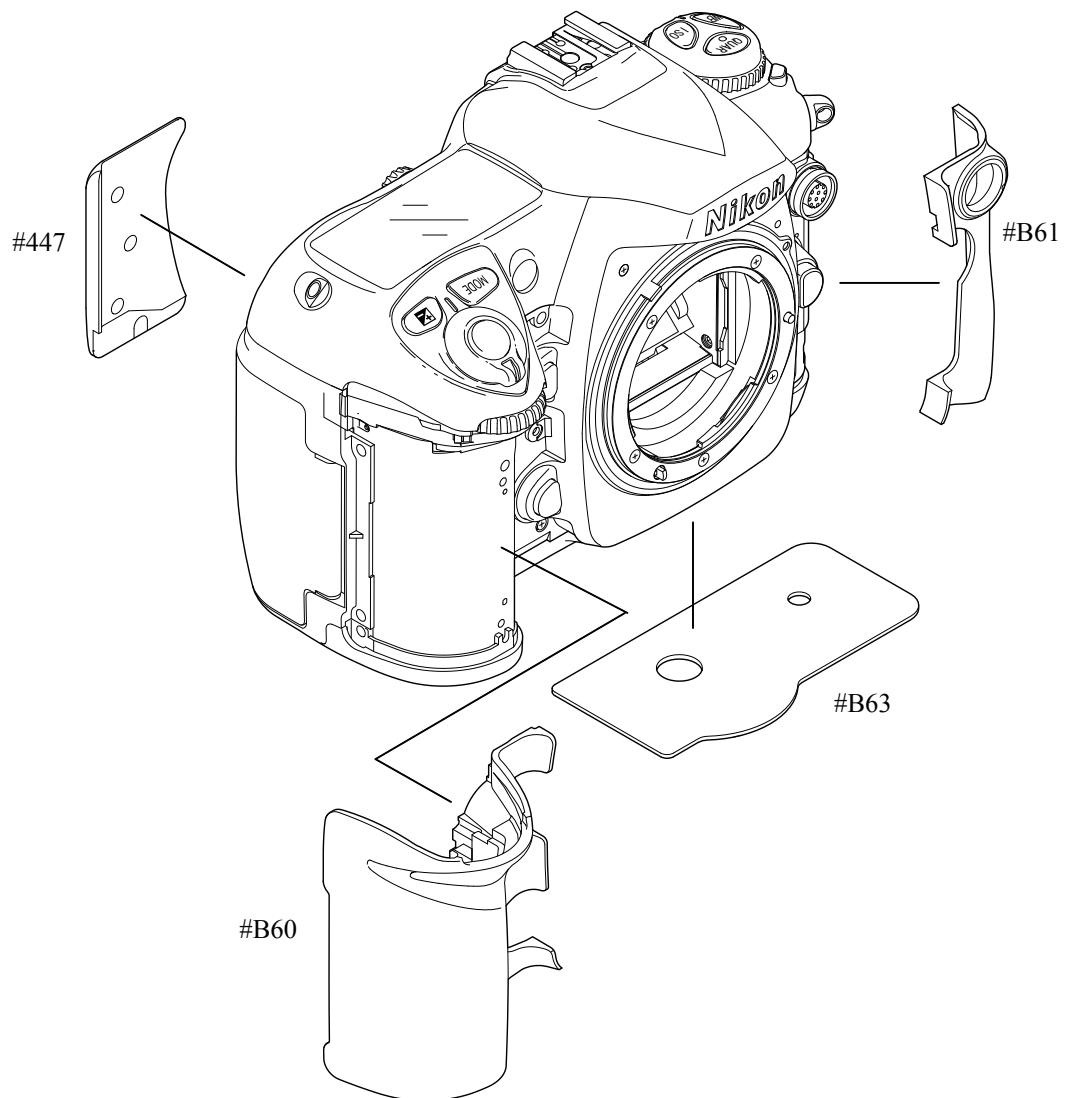


Value of J18010	Adjustment
+0.04 ~ -0.04	Within standard, adjustment unnecessary
+0.05 ~ +0.07	Replace with #836C
+0.08 ~ +0.14	Replace with #836A
+0.15 ~	Remove the washer.
-0.05 ~ -0.07	Replace with #836A, #836C
-0.08 ~ -0.14	Add #836A
-0.15 ~ -0.17	Add #836C
-0.18 ~	Add #836B

#836A	1K602-832	Screen washer A 0.10mm
#836B	1K602-833	Screen washer B 0.20mm
#836C	1K602-840	Screen washer C 0.15mm

External rubber

- Attach the external rubbers (#B63, #B60, #B61, and #B447).



Necessary adjustments when parts are replaced

1. D200 adjustment software and updates

Parts to be replaced	Adjustments	EEPROM fixed values	AE CCD positioning adjustment	AE accuracy inspection & adjustment	M1/8000 inspection & adjustment	Aperture accuracy inspection	Battery check level adjustment	Built-in SB light volume inspection & adjustment	AF accuracy inspection & adjustment
Shutter unit					○				
Main FPC * 1	○	* 2 △		○	○	○	○	○	○
Sub-PCB									
AF sensor unit									○
Top cover or SB lower case unit								○	
DC/DC PCB unit							○	○	
Metering FPC unit			○	○					
Aperture control PCB unit						○			

* 1. When the main PCB unit is replaced, be sure to update the version before writing the fixed values.

* 2. Make an inspection.

2. Shooting image adjustment software and updates

Adjustments Parts to be replaced	Writing of fixed values	Gr/Gb difference compensation ADJ (G filter)	Sensitivity	Shading	Gr/Gb compensation adj. (R/B filter)	Sensitivity ratio	Pixel defect compensation - Black point	Pixel defect compensation - White point	Rewriting of TFT fixed data	Initial (factory default) setting
Shutter unit										
Main PCB unit										
AF sensor unit										
DC/DC PCB unit										
Metering FPC unit										
* 1 DG PCB unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
CCD/FPC PCB unit		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
TFT monitor									<input type="radio"/>	

* 1 . When the DG-PCB unit is replaced, be sure to update the firmware before writing the fixed value.

Shooting Image Adjustment

1. Summary

A53 Δ(Revise)

When D200 shooting image-related and listed parts on Page A51 are replaced, be sure to make an adjustment by the shooting image adjustment software for D200 (J65084). The details of its function and how to use this software are as follows:

2. Adjustment software function

- (1) Writing of fixed values
- (2) Gr/Gb difference compensation adjustment (G filter)
- (3) "Sensitivity" adjustment
- (4) Shading adjustment
- (5) Gr/Gb compensation adjustment (R/B filter) / Line crawl adjustment
- (6) "Sensitivity ratio" adjustment
- (7) Pixel defect compensation - black point
- (8) Pixel defect compensation - white point
- (9) Rewriting of TFT fixed data
- (10) Initial (factory default) setting
- (11) Getting reference values
- (12) Reading of RISC version
- (13) Checking of the adjustment value

※ When the adjustments from (2) to (6) are made, get in advance the reference values of (10) by using the reference body, then perform the adjustments.

3. Hardware requirements

OS : Widows98SE, Windows2000, WindowsME, WindowsXP
Japanese or English OS

PC : CPU Pentium II or more
Memory 128MB or more
USB1.1

Screen size: 1024×768 pixels or more

4. How to set up

Create any directory in the harddisc (except desk top) of PC, and copy the following files.

- D200IMG.exe Application file
- STD.DAT Standard file
- NkdPTP.dll USB-communication application extension file for WinXP
- NkdPTPDi.dll USB-communication application extension file for Win98SE and Win2000
- MPLP.dll For system
- MSVCP60.dll For system (Win2000)
- CCDFLG.DAT Fixed value data (writing of fixed values)
- CCDINIT.DAT Initial value data (factory default setting)
- Q0220IMAGEADJUSTMENT67.dll For pixel defect compensation
- LineCrawlFittingQ220DLL.dll For line crawl, shading
- LineCrawlFittingQ220.ini System initialization file for line crawl
- LineCrawlFittingQ220G.ini System initialization file for G-line crawl
- LineCrawlFittingQ220SD.ini System initialization file for shading
- preserdata.jpg Default setting WB image file

※ Be sure to copy the above file in the same directory.



Procedure for installing USB driver

If this program is used by the USB interface, installing the USB driver is necessary.

But if the OS is "Windows XP", the driver is already preloaded so it is not necessary to install it.

- (1) Set the USB of camera to "PTP".

(SETUP menu → USB setting → PTP)

- (2) Connect the camera and PC by USB cable.

Turn camera ON.

- (3) When "Add New Hardware Wizard" is displayed, click "Next".



- (4) Select "Search for a better drive than the one your device is using now. (Recommended)", and click "Next".



- (5) Click "Reference" of "Specify a location" and select the directory where the driver was copied, such as "C:\D200\PTP". Then click "Next".



(6) Confirm that the driver is located at the right place, and click "Next".



(7) Click "Finish".



(8) Reboot the PC to complete the installation.

6. Basic usage

- (1) Perform the D200IMG.exe to start up the main screen. (ref. Fig.1)
- (2) Select ENGLISH / JAPANESE in Language to display the expected menu. (ref. Fig.2)
- (3) Click the button to start adjustments.
- ※ When the adjustments from 2. to 6. are made, calculate to get the "Sensitivity" and "Sensitivity ratio" reference values of (7) by using the reference body beforehand, then perform the adjustments.
- (4) Follow the instructions on screen.
- (5) To complete the procedure, click "QUIT" button or "Close" button at the upper-right corner of the menu.

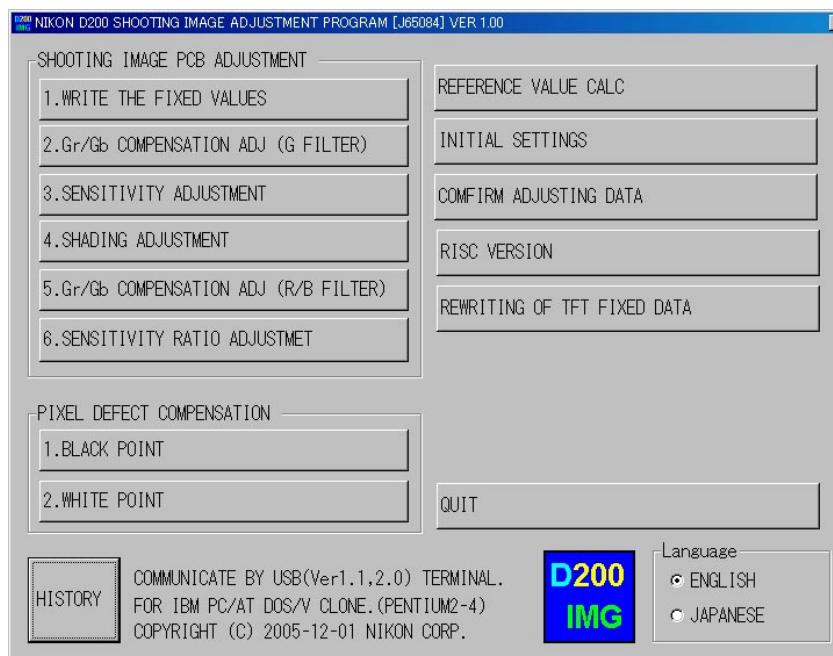


Fig.1

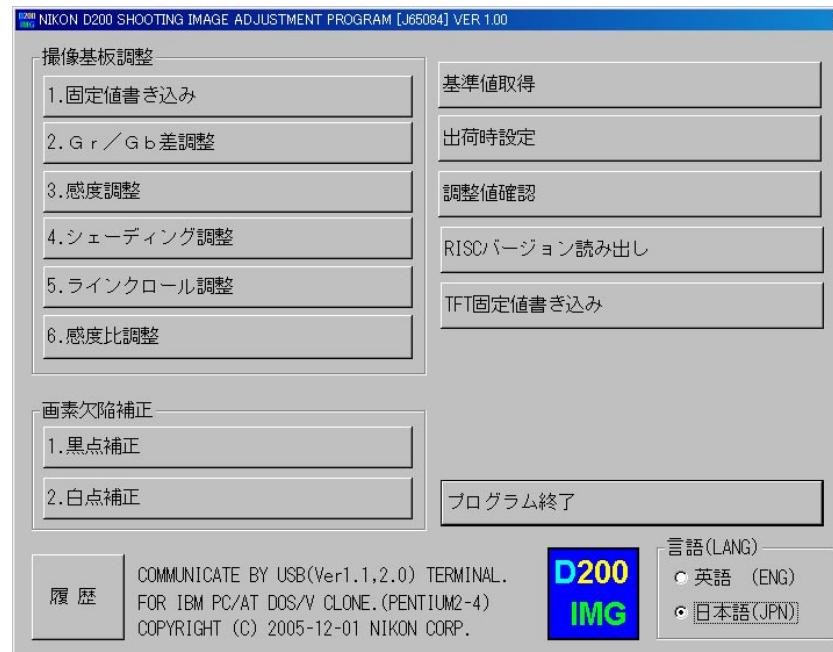


Fig.2

7. Required equipment and conditions

※ AC adapter EH-5 and USB cable (mini B type) UC-E4 are used for all adjustments so they are not specified in the list.

★ New established tool

	Item	Required device	Setting/Remarks
1	Writing of fixed value	None	
2	Gr/Gb difference compensation adjustment (G filter)	<ul style="list-style-type: none"> • 5100K color viewer J63070 (ex-model viewer J63049 is also available.) • Luminance meter BM-3000 J63068 • Tool lens (to fix aperture) J61185 • SP2 (G filter) J63086 	Equivalent to luminance LV13 Aperture F8
3	Sensitivity adjustment	<ul style="list-style-type: none"> • 5100K color viewer J63070 (ex-model viewer J63049 is also available.) • Luminance meter BM-3000 J63068 • Tool lens (to fix aperture) J61185 • ND filter (ND8×1+ND4×1) 	Equivalent to luminance LV13 Aperture F8 52 mm, Use the packaged product; 5-step light reduction
4	Shading adjustment	<ul style="list-style-type: none"> • 5100K color viewer J63070 (ex-model viewer J63049 is also available.) • Luminance meter BM-3000 J63068 • Tool lens (to fix aperture) J61185 • ND filter (ND8×1) 	Equivalent to luminance LV13 Aperture F5.6 Use the packaged product; 3-step light reduction
5	Gr/Gb compensation adjustment (R/B filter) / Line crawl adjustment	<ul style="list-style-type: none"> • 5100K color viewer J63070 (ex-model viewer J63049 is also available.) • Luminance meter BM-3000 J63068 • Tool lens (Fixed aperture) J61185 • SP3 (R filter) J63087 • SP1 (B filter) J63085 	Equivalent to luminance LV13 Aperture F8
6	Sensitivity ratio adjustment	<ul style="list-style-type: none"> • 5100K color viewer J63070 (ex-model viewer J63049 is also available.) • Luminance meter BM-3000 J63068 • Tool lens (to fix aperture) J61185 	Equivalent to luminance LV13 Aperture F8; No filter
7	Pixel defect compensation - black point	<ul style="list-style-type: none"> • 5100K color viewer J63070 (ex-model viewer J63049 is also available.) • Luminance meter BM-3000 J63068 • Tool lens (to fix aperture) J61185 	Equivalent to luminance LV13 Aperture F5.6
8	Pixel defect compensation - white point	Body cap or lens cap	Environmental temperature approx. 20 - 25°C
9	Rewriting of TFT fixed data	None	
10	Getting of reference values	Same as "Sensitivity adjustment"	No filter when sensitivity ratio reference value is calculated.
11	Initial (default) setting	None	
12	Checking of adjustment value	None	
13	Reading of RISC version	None	

8. Summary

The summary on each adjustment is as follows:

(1) Writing of fixed values

Because the fixed value that is written in Repair Parts is blank, write the fixed value when the DG-PCB is replaced.

(2) Gr/Gb difference compensation adjustment (G filter)

Camera is faced to the light-emitting box (color viewer) of LV13 equiv. with SP2 (G filter) being put between them, and the adjustment is made so that the difference between Gr and Gb output of the center (425×425 pixels) can fall in the standard range.

G-line crawl (3895×2610 pixels) is divided into (29×25) blocks, and the difference between Gr and Gb output can fall in the standard range.

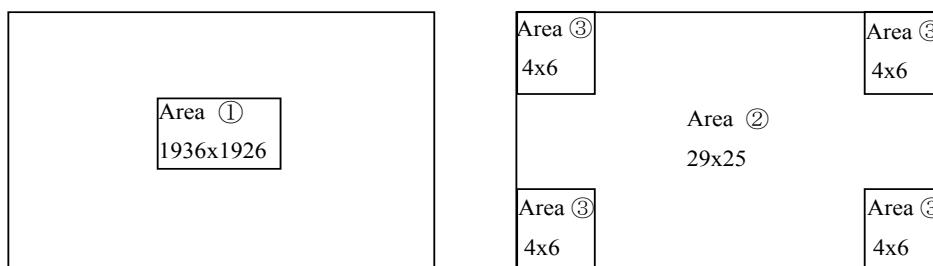
(3) Sensitivity adjustment

Camera is faced to the color viewer of LV13 equiv. with ND filter (-5 steps) being put between them, and the adjustment is made by changing the ampgain so that G output can fall in the standard range. The gain value is adjusted so that the G output average value (Average of Gr/Gb) in the center (425×425 pixels) can reach the target output level (approx. 1040LSB). The actual adjustment of the gain value is made only under the condition of ISO100 and ISO1600, and the medium sensitivity is calculated by the adjustment values of these 2 conditions.

For target output level, G output average of sensitivity reference value (ISO100) is used, which was calculated by the reference body.

(4) Shading adjustment (5100K color viewer is shot by this camera, and adjustment is made.)

Camera is faced to the color viewer of LV13 equiv. with ND filter (-3 steps) being put between them, and the adjustment of white balance distribution is made for 3 areas [Area ① : Central 1936×1926 -pixel area; Area ② : All the divided areas except ③ -areas after dividing (3890×2606 -pixels) into $(29 \times 25$ -pixels); Area ③ ; 4 corners of (4×6 -pixels) after dividing (3890×2606 -pixel) into $(29 \times 25$ -pixels)]



(5) Gr/Gb compensation adjustment (R/B filter) / Line crawl adjustment

Camera is faced to the light-emitting box (color viewer) of LV13 equiv. with SP3 (R filter) or SP1 (B filter) being put between them, and the adjustment is made so that the difference in G output average between B-G line and G-R line, when the whole screen is divided in areas, can fall in the standard range.

(6) Sensitivity ratio adjustment

Camera is faced to the color viewer of LV13 equiv., and the adjustment is made so that the R/G, B/G output becomes the same as the output ratio of the sensitivity ratio reference value that was calculated by the reference body. The adjustment is made only under the condition of ISO100, and the average value of the center (425 pixels \times 425 pixels) is used.

(7) Pixel defect compensation - black point

When pixels of which the output level is under specified value with LV13 equiv., are detected, the coordinates of the detected pixels are rewritten as pixel defect compensation data.

(8) Pixel defect compensation - white point

Shots are taken on the dark surface. In case the pixel output is found to be beyond the standard value, the detected pixel coordinate is additionally written as the pixel defect compensation data.

(9) Rewriting of TFT fixed data

When TFT moniter is replaced, be sure to perform "REWRITING OF TFT FIXED DATA".

(10) Getting of reference values

- Sensitivity reference value calculation

The reference body is faced to the color viewer of LV13 equiv. with the ND filter (-5 step) being put between them. Then, store the G output average value of the center (425 pixels × 425 pixels) is stored in the STD.DAT file as the sensitivity reference value.

- Sensitivity ratio reference value calculation

The reference body is faced to the color viewer of LV 13 equiv. (without filter). Then, the sensitivity ratio reference value GR and GB is calculated, based on the G/R/B output average of the center (425 pixels × 425 pixels), and they are stored in the STD.DAT file.

It is necessary to calculate the reference values of "Sensitivity" and "Sensitivity ratio" in order to prevent the color temperature fluctuation caused by color viewer's changes over time from affecting the results of the shooting image adjustment. By using the reference body, calculate the reference values once in about every 3 months, when the fluorescent of the color viewer is replaced.

(11) Initial (factory default) setting

By reset the settings of camera, factory default settings are restored.

Select the language and video mode to perform.

Because this setting of RP DG-PCB is blank, be sure to set the initial setting when the DG-PCB is replaced.

When this setting is used, the USB mode is set to "Mass Storage" mode.

(12) Checking of adjustment value

The adjustment value is confirmed, functioning as substitute for the traditional "READING AND REWRITING OF EEPROM DATA.".

(13) Reading of RISC version

The RISC firmware version is displayed.

9. Procedure

9-1. Shooting image adjustment

- Calculate the "Sensitivity" and "Sensitivity ratio" reference values by using D200 reference body beforehand, then perform the adjustments. (ref. 9-5.)
- When the DG-PCB is replaced, perform all the shooting image adjustments from (1) to (6), and in other cases, perform those from (2) to (6) in this order. The adjustments from (1) through (3) are all programmed to be executed in serial order. When (1) is completed, the software automatically goes on to the next adjustment.
- In case adjustments are interrupted by NG, the adjustments can be continued again after NG. As for adjustments that were ended with OK, the flashram-up of the adjustment value is completed.

* Note: Adjustments are not possible without resetting "Custom setting" of this camera.

Before the adjustments, record the details of "Custom setting" set by customers if necessary.

Start adjustments

- Provide the power for the camera via AC adapter.
- Reset "Custom setting".
- Set "PTP" mode by Setup menu.
- Set the focus mode to M, exposure mode to M, and the exposure compensation to "0" of the camera.
- Connect the camera and PC via USB cable.
- Set the color viewer luminance to LV13 equiv.

(1) Writing of fixed values

- Click "1. WRITE FIXED VALUE TO EEPROM" on the menu.
- The adjustment starts. When it is completed, "OK" is displayed.
- The software automatically goes on to the next adjustment item.

(2) Gr/Gb difference compensation adjustment (G filter)

- Click "2. Gr/Gb COMPENSATION ADJ (G FILTER)" of the main menu on screen.
- Attach the tool lens (Aperture F8) and SP2 (G filter) to the camera.
- Get the camera closest to the center of the illuminated surface of the color viewer.
- The adjustment starts. When it is completed, "OK" is displayed.
- The software automatically goes on to the next adjustment item.

(3) Sensitivity adjustment

- Click "3. SENSITIVITY ADJUSTMENT" of the main menu on screen.
- Attach the tool lens (Aperture F8) and ND filter (ND 8× 1+ ND 4 ×1) to the camera.
- Get the camera closest to the center of the illuminated surface of the color viewer.
- The adjustment starts. When it is completed, "OK" is displayed.
- The software automatically goes on to the next adjustment item.

(4) Shading adjustment

- Click "4. SHADING ADJUSTMENT" on the menu.
- Attach the tool lens (Aperture F5.6) and ND filter (ND 8× 1) to the camera.
- Get the camera closest to the center of the illuminated surface of the color viewer.
- The adjustment starts. When it is completed, "OK" is displayed.
- The software automatically goes on to the next adjustment.

(5) Gr/Gb compensation adjustment (R/B filter)

- Click "5. Gr/Gb COMPENSATION ADJ (R/B FILTER)" on the menu.
- Attach the tool lens (Aperture F8) and SP3 (R filter) to the camera.
- Get the camera closest to the center of the illuminated surface of the color viewer.
- The adjustment starts. When it is completed, the next instructions are displayed.
- Attach the tool lens (Aperture F8) and SP1 (B filter) to the camera.
- Get the camera closest to the center of the illuminated surface of the color viewer.
- The adjustment starts. When it is completed, "OK" is displayed.
- The software automatically goes on to the next adjustment.

(6) Sensitivity ratio adjustment

- Click "6. SENSITIVITY RATIO ADJUSTMENT" of the main menu on screen.
- Attach the tool lens (Aperture F8) to the camera (without filter).
- Get the camera closest to the center of the illuminated surface of the color viewer.
- The adjustment starts. When it is completed, "OK" is displayed.

9-2. Pixel defect compensation - black point

- Set the color viewer luminance to LV13 equiv.
- Provide the power for the camera via AC adapter.
- Reset "Custom setting".
- Set "PTP" mode by Setup menu.
- Set the focus mode to M, exposure mode to M, and the exposure compensation to "0" of the camera.
- Connect the camera and PC via USB cable.
- Click "BLACK POINT" of "PIXEL DEFECT COMPENSATION" of the menu.
- Attach the tool lens (Aperture F5.6) to the camera (without filter).
- Get the camera closest to the center of the illuminated surface of the color viewer.
- When the adjustment starts, pixel defects are detected, displaying the number of pixels and addresses.
- After confirming the above, click "X" button.
- When it is completed, "OK" is displayed.
- The software automatically goes on to the next "WHITE POINT" of "PIXEL DEFECT COMPENSATION".
(After the black point compensation, be sure to perform the white point compensation, too.)

* Note: In some cases, NG occurs due to dusts on the CCD.

Be sure to clean the CCD surface before adjustments.

9-3. Pixel defect compensation - white point

- Check the environmental temperature (approx. 20-25°C.).
- Provide the power for the camera via AC adapter.
- Reset "Custom setting".
- Set "PTP" mode by Setup menu.
- Set the focus mode to M, exposure mode to M, and the exposure compensation to "0" of the camera.
- Connect the camera and PC via USB cable.
- Click "WHITE POINT" of "PIXEL DEFECT COMPENSATION" of the menu.
- Cap the camera with the body cap or lens cap to shield light from the mount.
- When the adjustment starts, pixel defects are detected, displaying the number of pixels and addresses.
- After confirming the above, click "X" button.
- When it is completed, "OK" is displayed.

9-4. Getting of reference values

- Set the color viewer luminance to LV13 equiv.
 - Provide the power for the camera via AC adapter.
 - Reset "Custom setting".
 - Set "PTP" mode by Setup menu.
 - Set the focus mode to M, exposure mode to M, and the exposure compensation to "0" of the camera.
 - Connect the camera and PC via USB cable.
 - Select "SENSITIVITY, RATIO REFERENCE VALUE CALC" of the menu on screen.
 - The current reference value is displayed on screen.
 - Click "SENSITIVITY, RATIO REFERENCE VALUE CALC".
 - The calculation of the sensitivity reference value starts. The message to set conditions is displayed.
 - Attach the tool lens (Aperture F8) and ND filter (ND 8× 1 + ND 4× 1) to the camera.
 - Get the camera closest to the center of the illuminated surface of the color viewer.
 - The adjustment starts. When it is completed, the software goes on to the sensitivity ratio reference value.
 - Attach the tool lens (Aperture F8)(Remove ND filter).
 - The adjustment starts. When it is completed, the sensitivity and sensitivity reference values are stored in the standard setting file (STD, DAT).
 - After this procedure, when the shooting image adjustment is made, the sensitivity and sensitivity ratio that were calculated this time are used.
- ※ Calculate the sensitivity and sensitivity ratio reference values once in about every 3 months, and when the fluorescent of the color viewer is replaced.

9-5. Reading of RISC version

- Provide the power for the camera via AC adapter.
- Set "PTP" mode by Setup menu.
- Connect the camera and PC via USB cable.
- Click "READING OF RISC VERSION" of the menu on screen.
- RISC version is displayed.

9-6. Procedure for upgrading RISC firmware:

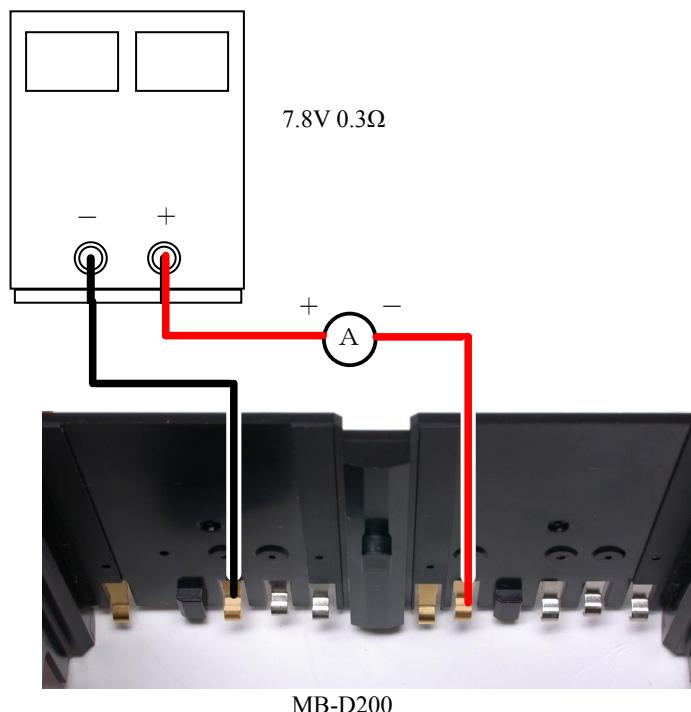
- After preparing the CF card, copy the latest version (XXXX. BIN) into the root directory.
- Insert the CF card, and select "FIRMWARE VERSION" from the SETUP menu.
- Follow the instructions on screen for version upgrading. It takes approx. 3-4 minutes.
- Check the version of firmware by "RISC VERSION" of the image adjustment software.

Note:

In case incorrect files are included in the CF card, the details for upgrading are not displayed even after selecting "FIRMWARE VERSION" from the SETUP menu.

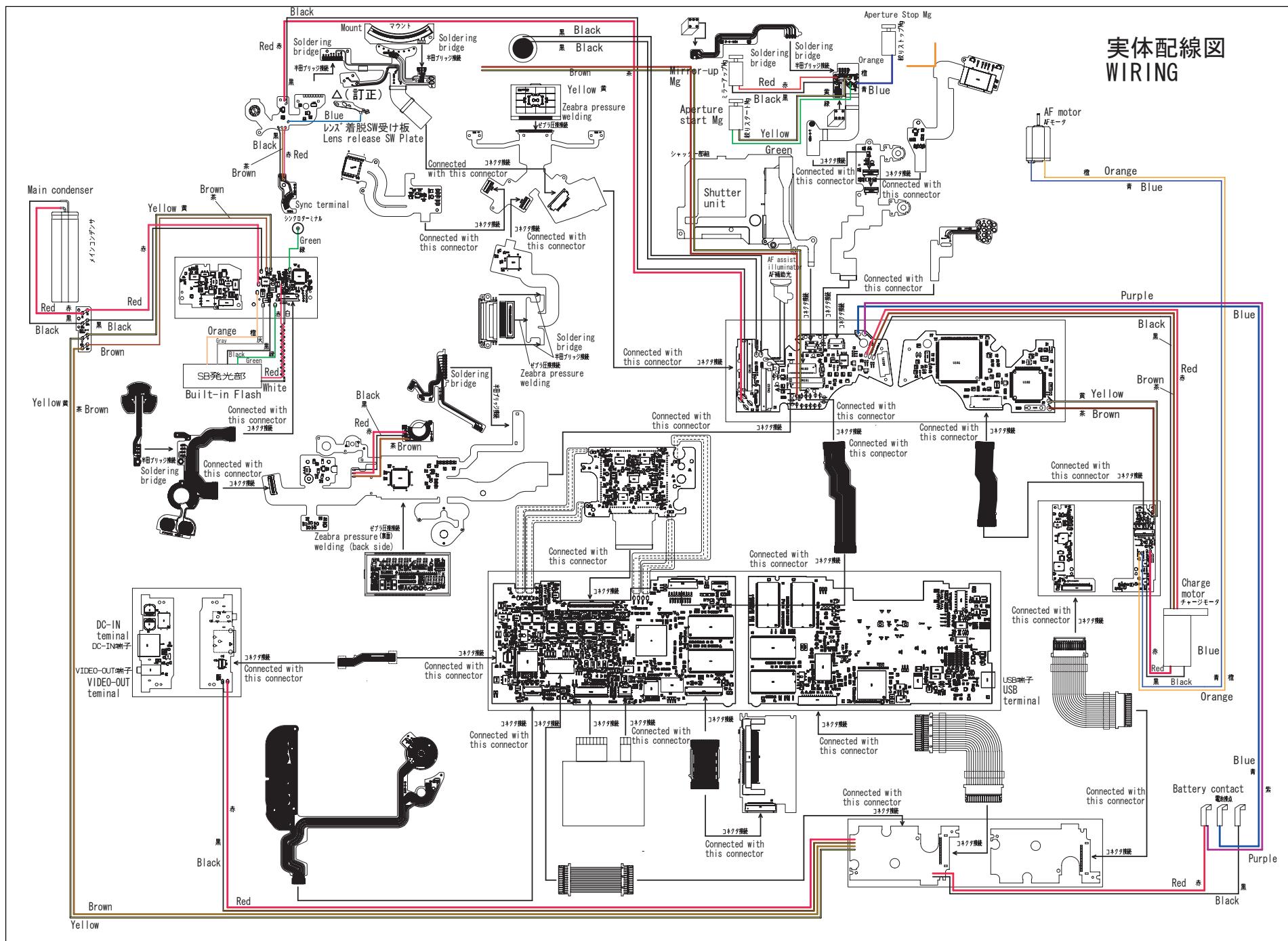
< Measurement of Consumption current value >

When this camera is used for measuring the consumption current value, set the MB-D200 and wire as follows:



Test item	Standard	Test condition
Main SW • OFF All operational buttons are NOT pushed.	200 μ A or less	ref. above.
Main SW • ON (Half-release timer OFF)	200 μ A or less	AF50/1.4D、EV12
Main SW • ON (Half-release timer ON)	380 mA or less	
Main SW • ON (Illumination ON)	400 mA or less	
Main SW • ON (TFT ON)	500 mA or less	

実体配線図
WIRING



サービス
計画課
M

工 具・TOOLS

★ : 新規設定工具・NEW TOOL

工具番号 Tool No.	名 称 Name of tool	備 考 Others
J15427 ★	AE CCD 位置出し工具 AE CCD positioning tool	
J18394 ★	無限合致調整用スクリーン Infinity focus adjustment screen	
J18389 ★	反射ミラー Reflection mirror	
J18397 ★	カメラ部点検、調整ソフト Inspection and adjustment software for CAMERA	
J65084 ★	撮像部点検、調整ソフト Inspection and adjustment software for IMAGING	
J18230	YAW、PITCH工具 Yaw, Pitch adjustment tool	FOR F5, F100, F90, F90X, D70, D70s, D50
J15259	AF調整工具台 AF adjusting tool	
J15280	Zレンズ用支持ホルダー Lens holder	
J15264	高周波タイプ蛍光灯器具 Illumination box for AF adjustment	
J18266	AF調整用Zレンズ（1m用） Z adjustment lens (For 1m)	FOR F5, F100, D70, D70s, D50
J15274	J15264用チャートボード Chart board for J15264	
J18344	AFチャート AF adjusting chart	FOR D100, D70, D70s, D50

★ : 新規設定工具・NEW TOOL

工具番号 Tool No.	名 称 Name of tool	備 考 Others
J19002	縦型焦点面検査機 LT-500S Back focus collimator LT-500S	J 19110 usable J 19110 でも代用可
J18391 ★	サブミラー59°出し工具 Sub mirror angle adjustment tool	
J18037	オプチカルパラレル Optical parallel	
J18004	絞りレバー高さ点検工具 Aperture lever positioning gauge	
J19004-1	インジケータ及びスタンド (ボディバック台、ゲージ) Dial indicator and Stand	
J18001-1	ボディバック出し工具 Body back focus gauge	
J19001	無限合致コリメーター F=600mm Collimator F=600mm	
J18010	無限大合致基準レンズ 50/1.8 Infinity Standard Lens 50/1.8	
J19042E	T秒時測定アダプター(APS)-(EF8000用) T.V. MEASURING ADAPTER (APS) (For EF8000)-(APS) (EF8000用)	
J61199	D100 AE受光部アダプター D100 LIGHT RECEIVE ADAPTER	FOR D100, D2H, D2X
J19123	シャッター試験機 EF-1 (CE) Shutter Tester EF-1 (CE)	共立電機製 KYORITSU ELECTRIC EF-8000 usable

★ : 新規設定工具・NEW TOOL

工具番号 Tool No.	名 称 Name of tool	備 考 Others
J18267 	A F 5 0 / 1 . 4 D Lens AF50/1.4D	
J61185 	撮像関係調整用レンズ D1 Standard lens	FOR D1, D2H, D70, D70s, D50
J18191 	N D フィルター 8 X ND filter 8X	FOR D2H, D70, D70s, D50
J18358 	N D フィルター 4 X ND filter 4X	1 枚使用 It uses by one pieces
J63070 	カラービュワー Color Viewer	
J63068 	輝度計 (BM-3000) Luminance Meter BM-3000	
J63085 	フィルター SP1 (75X75MM) Filter SP1 (75X75MM)	FOR D2H, D70, D70s, D50
J63086 	フィルター SP2 (75X75MM) Filter SP2 (75X75MM)	FOR D2H
J63087 	フィルター SP3 (75X75MM) Filter SP3 (75X75MM)	FOR D2H, D70, D70s, D50
J15423 	電池工具 Battery tool	
J19109 	M C - 3 1 (接続コード) MC - 3 1 (CONNECTING CORD)	



★ : 新規設定工具・NEW TOOL

工具番号 Tool No.	名 称 Name of tool	備 考 Others
OS-30MF 	ドライサーフ OS-30MF DRY SURF OS-30MF (OIL BARRIER)	
LEN317A 	グリース LEN317A Grease LEN317A	
EDB0011 	ネジ ロック (赤) 1401C Screw lock 1401C	
C-8008B 	セメダイン 8008 (黒) Cemedain 8008 (BLACK)	
MZ-800S 	ドライサーフ MZ-800S DRY SURF MZ-800S	
	アロンアルファ Crazy glue	汎用品 RJ is Not available
	フラッシュメーター Flash Meter	汎用品 RJ is Not available
	デジタルマルチメータ Digital meter	汎用品 RJ is Not available
	AC アダプター EH-6 AC adapter EH-6	製品転用 RJ is Not available
	USBケーブル UC-E4 USB cable UC-E4	製品転用 RJ is Not available
	パーソナルコンピュータ Personal computer	汎用品 RJ is Not available
	安定化電源 (10V 5A) Power supply (10V 5A)	汎用品 RJ is Not available
	ヘクスキー (φ 1.5mm) HEX. KEY WRENCH (φ 1.5mm)	汎用品 RJ is Not available
★ 	ヘクスキー (φ 5.0mm) HEX. KEY WRENCH (φ 5.0mm)	汎用品 RJ is Not available
★ 	A F 28 / 2.8 D Lens AF28/2.8D	製品転用 RJ is Not available