VBA10401-R.3623.A

社外秘

作成承認印	配布許可印

D70 VBA10401

REPAIR MANUAL
修　理　指　針

Nikon | NIKON CORPORATION
Tokyo, Japan

Printed in Japan February 2004

Specifications

Type	Single-lens reflex digital camera with interchangeable lenses
Effective pixels	6.1 million
CCD	23.7 × 15.6 mm; total pixels: 6.31 million
Image size (pixels)	・3008 × 2000 (Large)　・2240 × 1448 (Medium) ・1504 × 1000 (Small)
Lens mount	Nikon F mount (with AF coupling and AF contacts)
Compatible lenses*	
Type G or D AF Nikkor	All functions supported
Micro Nikkor 85mm f/2.8D	All functions supported except autofocus and some exposure modes
Other AF Nikkor†	All functions supported except 3D color matrix metering and i-TTL Balanced Fill-Flash for Digital SLR
AI-P Nikkor	All functions supported except 3D color matrix metering, i-TTL Balanced Fill-Flash for Digital SLR, and autofocus
Non-CPU	Can be used in mode M, but exposure meter does not function; electronic range finder can be used if maximum aperture is f/5.6 or faster

* IX Nikkor lenses can not be used　† Excluding lenses for F3AF

Picture angle	Equivalent in 35-mm format is approximately 1.5 times lens focal length
Viewfinder	Optical fixed pentaprism
Diopter adjustment	-1.6 - +0.5m^{-1}
Eyepoint	18mm (-1.0m^{-1})
Focusing screen	Type B BriteView clear matte screen Mark V with superimposed focus brackets and On-Demand grid lines
Frame coverage	Approximately 95% of lens (vertical and horizontal)
Magnification	Approximately 0.75 × (50-mm lens at infinity; -1.0m^{-1})
Reflex mirror	Quick return
Lens aperture	Instant return with depth-of-field preview
Focus-area selection	Can be selected from 5 focus areas
Lens servo	・Autofocus (AF): Instant single-servo AF (AF-S); continuous-servo AF (AF-C); predictive focus tracking automatically activated according to subject status ・Manual focus (M)

Autofocus	TTL phase detection by Nikon Multi-CAM900 autofocus module with AF-assist illuminator (range approximately 0.5-3.0m/1′8″-9′10″)
Detection range	-1-+19EV (ISO 100 at 20° C/68° F)
AF-area mode	Single-area AF, dynamic-area AF, dynamic-area AF with closest subject priority
Focus lock	Focus can be locked by pressing shutter-release button halfway (single-servo AF) or by pressing AE-L/AF-L button

Metering	Three-mode through-the-lens (TTL) exposure metering
Matrix	3D color matrix metering (type G and D lenses); color matrix metering (other CPU lenses); metering performed by 1,005-pixel RGB sensor
Center-weighted	Weight of 75% given to 6, 8, 10, or 12-mm circle in center of frame
Spot	Meters 2.3-mm circle (about 1% of frame) centered on active focus area
Range (ISO 100 equivalent, f/1.4 lens, 20° C/68° F)	0-20EV (3D color matrix or center-weighted metering) 3-20EV (spot metering)
Exposure meter coupling	CPU coupling
Exposure control	
Operating mode	Digital Vari-Program (auto, portrait, landscape, close up, sports, night landscape, night portrait), programmed auto (P) with flexible program; shutter-priority auto (S); aperture priority auto (A); manual (M)
Exposure compensation	-5-+5EV in increments of 1/3 or 1/2EV
Bracketing	Exposure and/or flash bracketing (2-3 exposures in increments of 1/3 or 1/2EV)
Exposure lock	Luminosity locked at detected value with AE-L/AF-L button

Shutter	Combined mechanical and CCD electronic shutter
Speed	30-1/8000s in steps of 1/3 or 1/2EV, bulb, remote

Sensitivity	200-1600 (ISO equivalent) in steps of 1/3EV

White balance	Auto (TTL white-balance with 1,005 pixels RGB sensor), six manual modes with fine-tuning, preset white balance
Bracketing	2-3 exposures in increments of 1

Built-in Speedlight	·AUTO, , , : auto flash with auto pop-up ·P, S, A, M: manual pop-up with button release
Guide number (m/ft at 20° C/68° F)	· ISO 200: approximately 15/49 (manual 17/56) · ISO 100: approximately 11/36 (manual 12/39)

Flash	
Sync contact	X-contact only; flash synchronization at up to 1/500 s
Flash control	
TTL	TTL flash control by 1,005-pixel RGB sensor (CPU lenses only) · Built-in Speedlight: i-TTL balanced fill-flash for digital SLR, or standard i-TTL flash for digital SLR (spot metering or mode dial set to M) · SB-800 or 600: i-TTL balanced fill-flash for digital SLR, or standard i-TTL flash for digital SLR (spot metering)
Auto aperture	Available with SB-800 with CPU lens
Non-TTL auto	Available with such Speedlights as SB-800, 80DX, 28DX, 28, 27, and 22s
Range-priority manual	Available with SB-800
Sync modes	·AUTO, , front curtain sync, red-eye reduction · : slow sync, slow sync with red-eye reduction · , , : front curtain sync and red-eye reduction available with optional Speedlights ·P, S, A, M: front curtain sync, slow sync, rear-curtain sync, red-eye reduction, slow sync with red-eye reduction
Flash compensation	-3 - +1EV in increments of 1/3 or 1/2EV
Flash-ready indicator	Lights when SB-series Speedlight such as 800, 600, 80DX, 28DX, 50DX, 28, 27, or 22s is fully charged; blinks for 3s after flash is fired at full output
Accessory shoe	Standard ISO hot-shoe contact with safety lock
Creative Lighting System	Supports Flash Color Information Communication and FV lock with built-in Speedlight, SB-800, and SB-600. SB-800 and 600 also support Advanced Wireless Lighting.

Storage	
Media	Type I and II CompactFlash memory cards; Microdrives
File system	Compliant with Design Rule for Camera File System (DCF) 2.0 and Digital Print Order Format (DPOF)
Compression	· NEF (RAW): compressed 12-bit · JPEG: JPEG baseline-compliant

Self-timer	Electronically controlled timer with 2–20s duration
Depth-of-field preview	When CPU lens is attached, lens aperture can be stopped down to value selected by user (A and M modes) or value selected by camera (Digital Vari-Program, P, and S modes)
Monitor	1.8″, 130,000-dot, low-temperature polysilicon TFT LCD with brightness adjustment
Video output	Can be selected from NTSC and PAL
External interface	USB
Tripod socket	¼″ (ISO)
Firmware upgrades	Firmware can be upgraded by user
Power source	・One rechargeable Nikon EN-EL3 Li-ion battery; charging voltage (MH-18 quick charger or optional MH-19 multi charger): 7.4V DC ・Three CR2 lithium batteries (with MS-D70 battery holder) ・EH-5 AC adapter (available separately)
Dimensions (W × H × D)	Approximately 140 × 111 × 78mm (5.5″ × 4.4″ × 3.1″)
Weight	Approximately 595g (1lb 5oz) without battery, memory card, body cap, or monitor cover
Operating environment	
Temperature	0–40° C (32–104° F)
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).

Disassembly

⚠ WARNING	
	● Due to an internal high voltage area, 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 the repair manuals.

Note : ① When disassembling/(re)assembling, be sure to use the conductive mat (J5033) and wrist strap (J5033-5) for static protection of electrical parts.

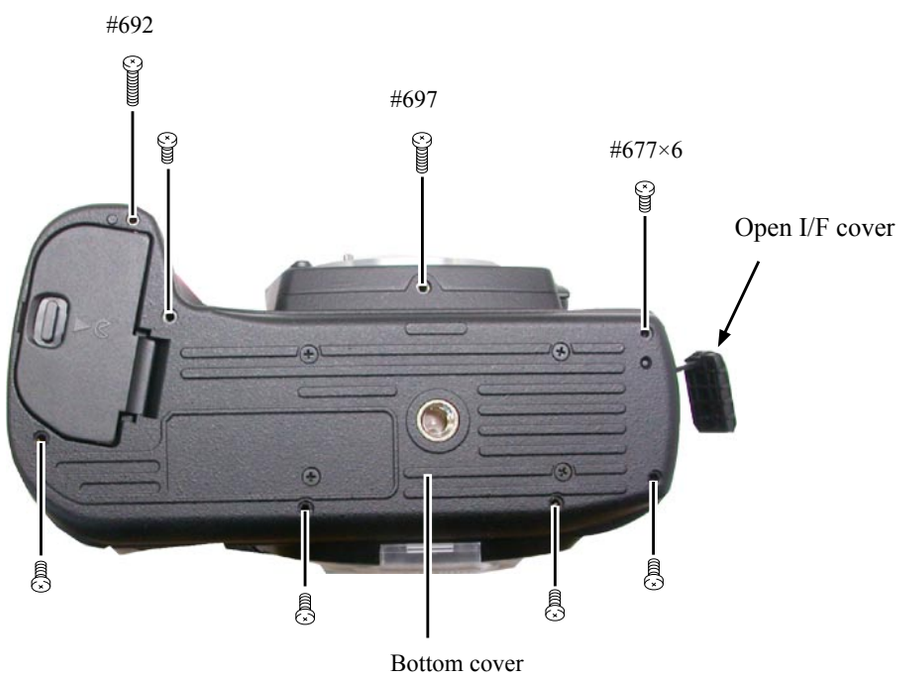
② Before disassembling, be sure to remove batteries or AC power wires.

③ When disassembling, make sure to memorize the processing state of wires and FPC, screws to be fixed and their types, etc.

④ Because the low pass filter of the imaging CCD PCB is easily damaged, handle it with enough care.

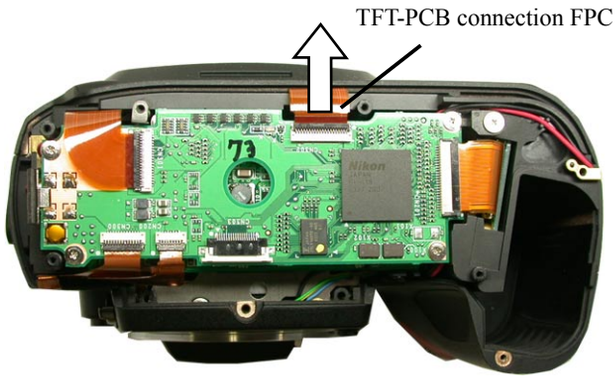
1. Separate Front and Rear bodies

Bottom Cover



Rear cover

・Remove the TFT-PCB connection FPC from the connector.



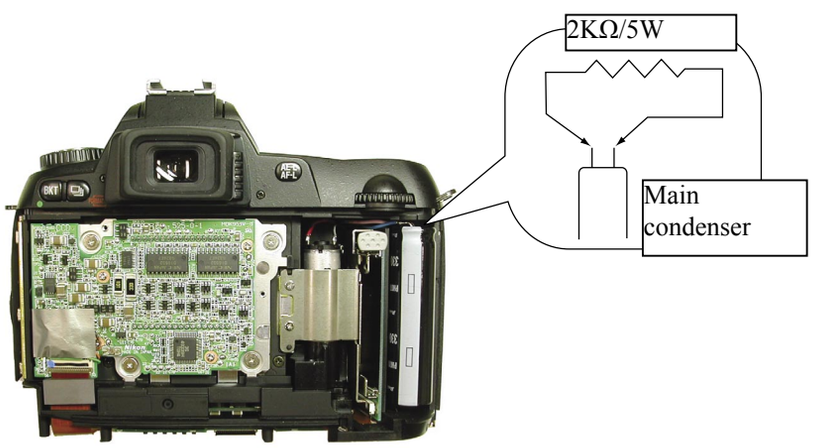
・Take out 4 screws (#612).
・Remove the rear cover.

⚠WARNING

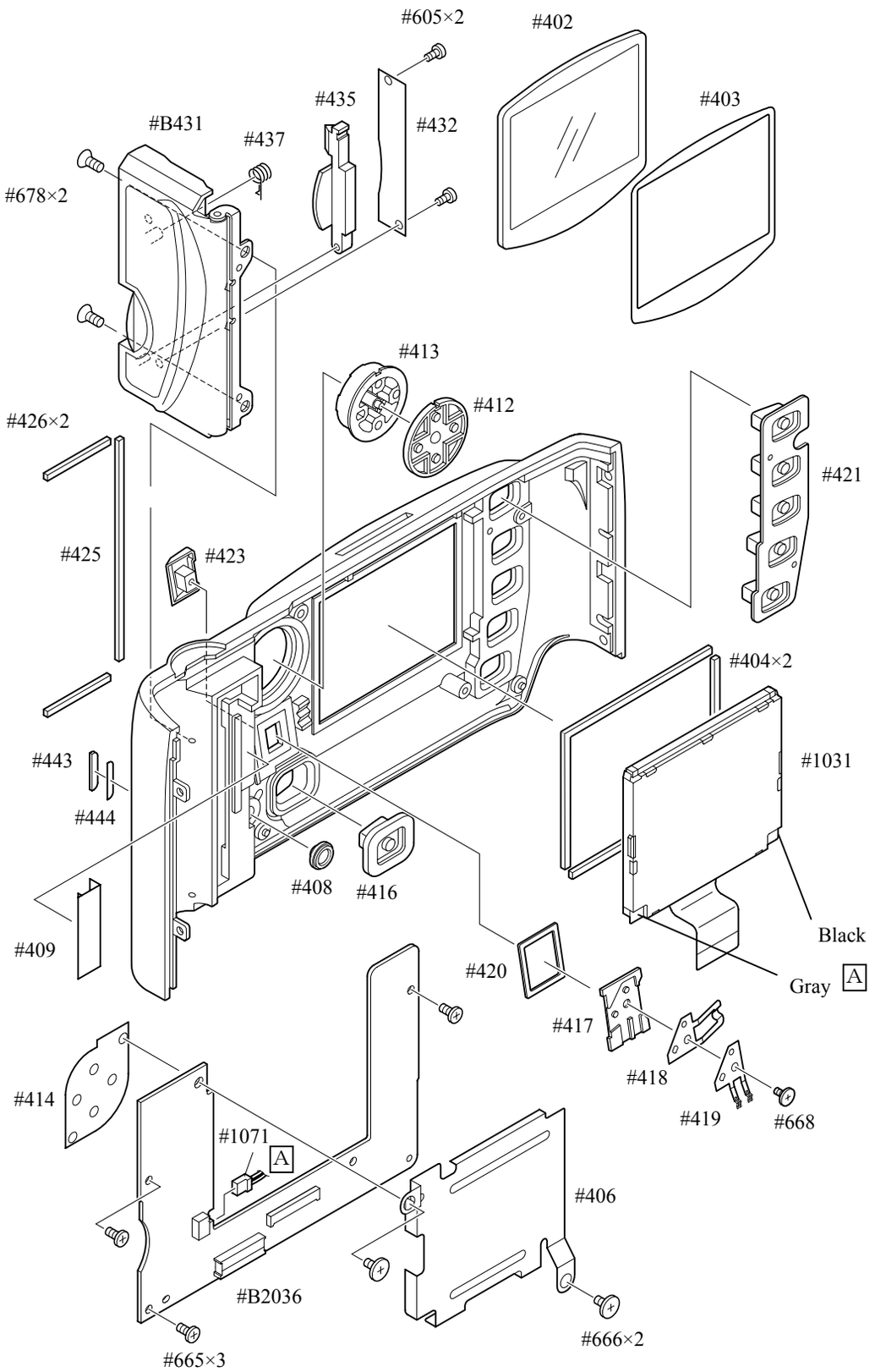
- Due to an internal high voltage area, take extra care not to get an electric shock when detaching the covers.
- After removing the covers, be sure to discharge the main condenser according to the instructions of the repar manuals.

Discharge Main condenser

・Discharge the main condenser from its both ends.

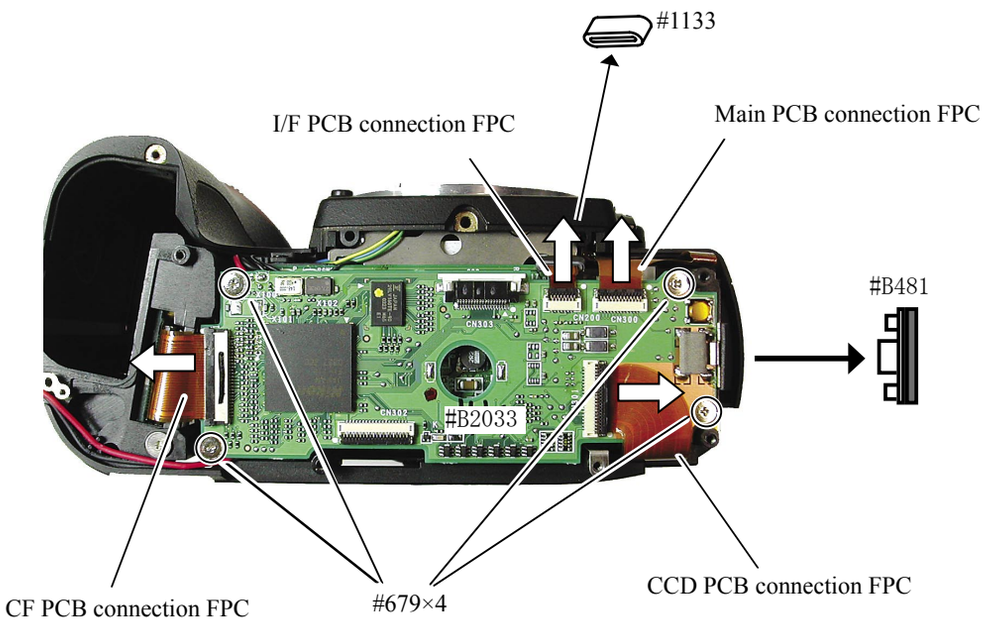


Disassemble Rear cover



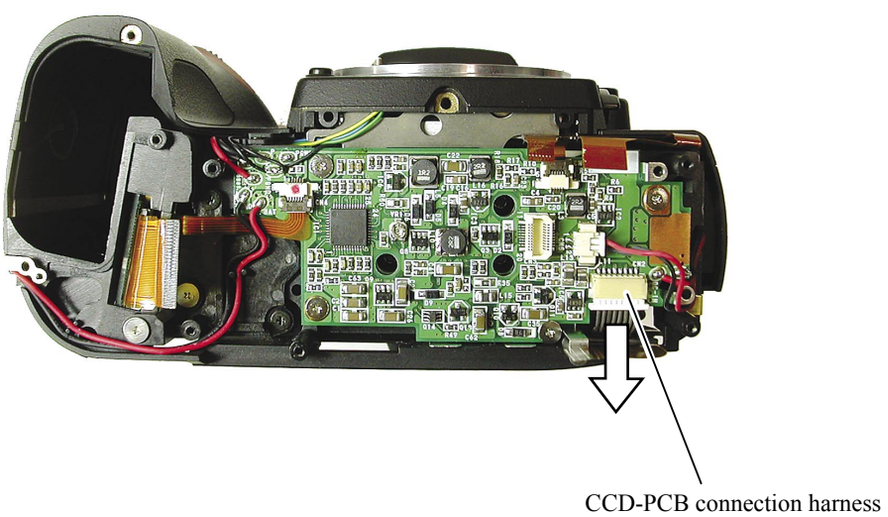
Memory compression PCB

・Remove the USB gasket (#B481) from the memory compression PCB (#B2033).
・Remove the connection FPCs from each connector which are connected from the CF PCB, I/F PCB, main PCB, and CCD PCB.
・Remove the ferrite core (#1133) from I/F PCB connection FPC.
・Take out 4 screws (#679) to detach the memory compression PCB (#B2033).

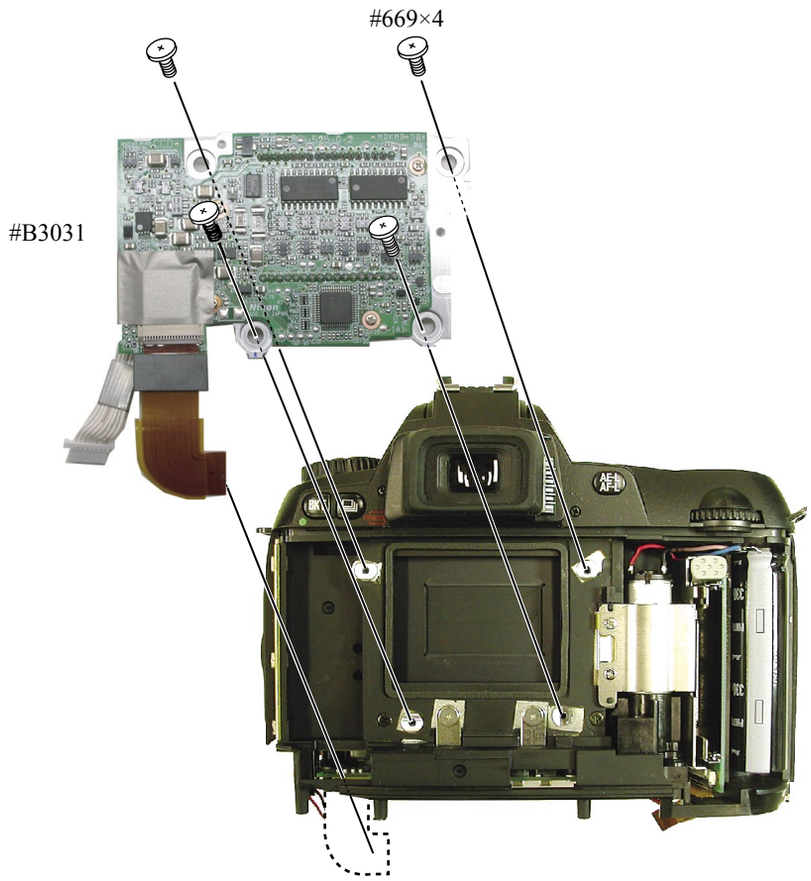


CCD-PCB unit

・Remove the CCD-PCB connection harness.

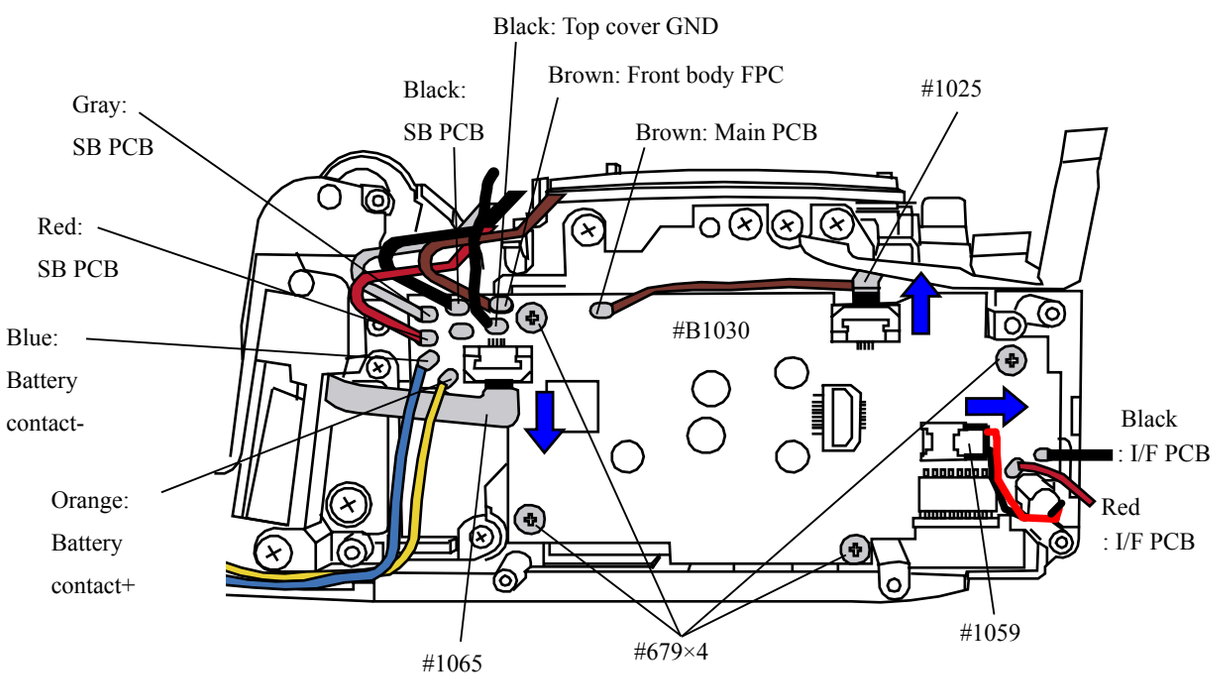


・Take out 4 screws (#669) to detach the CCD PCB unit (#B3031).



DC/DC PCB

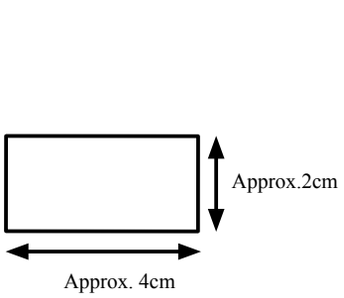
・Remove the solders of 10 wires.
・Disconnect 3 connectors.
・Take out 4 screws (#679) to detach DC/DC PCB (#B1030).



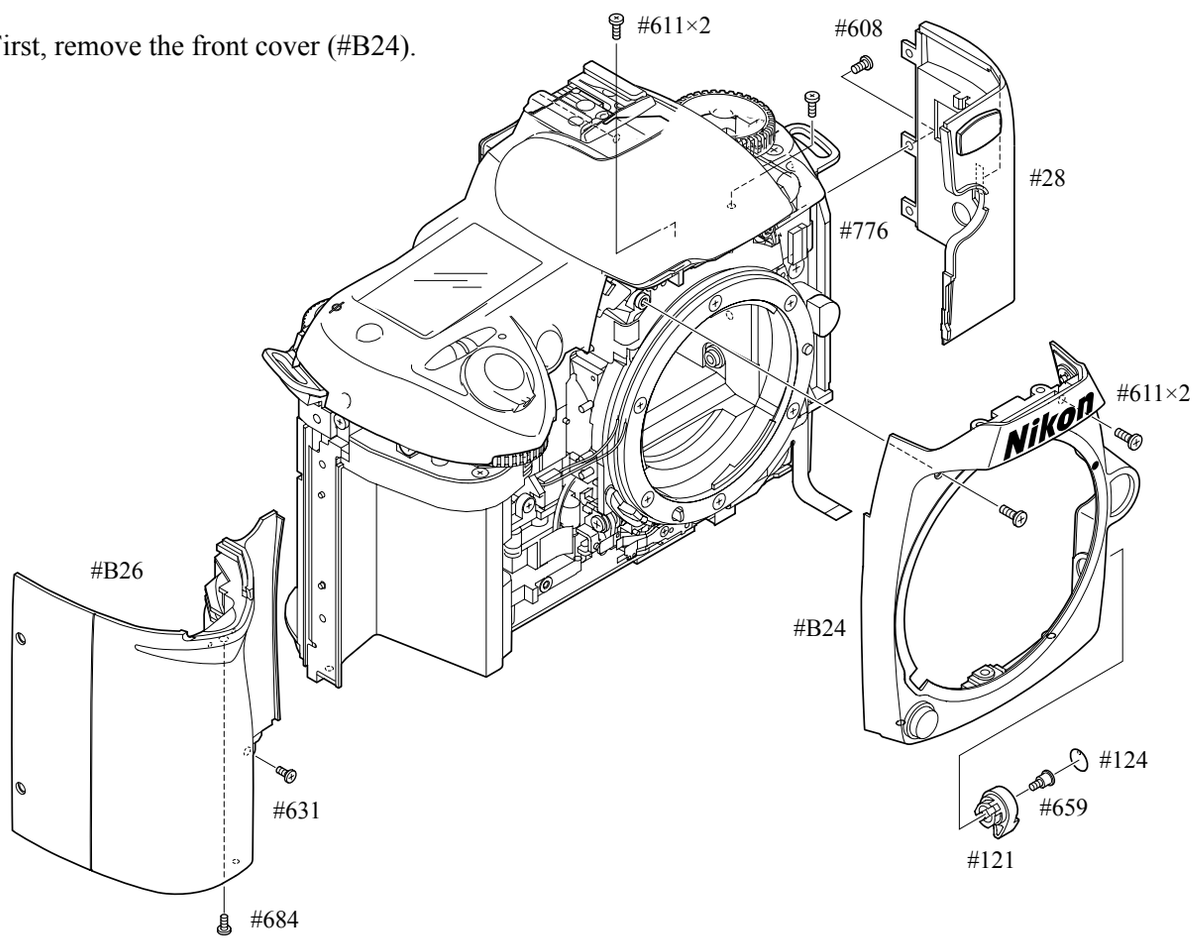
Covers

SB pop-up

・Cut the tracing film sheet, etc into the below size of piece. Then insert it into the clearance of the top cover pop-up part as shown right, and pop it up by sliding the sheet in the direction of the arrow.

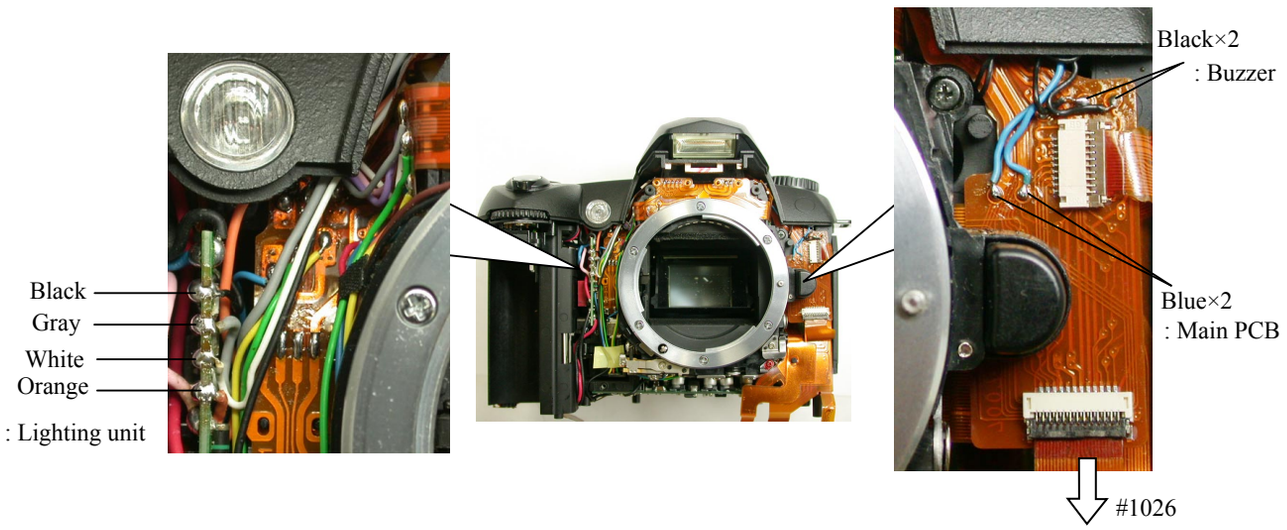


・First, remove the front cover (#B24).

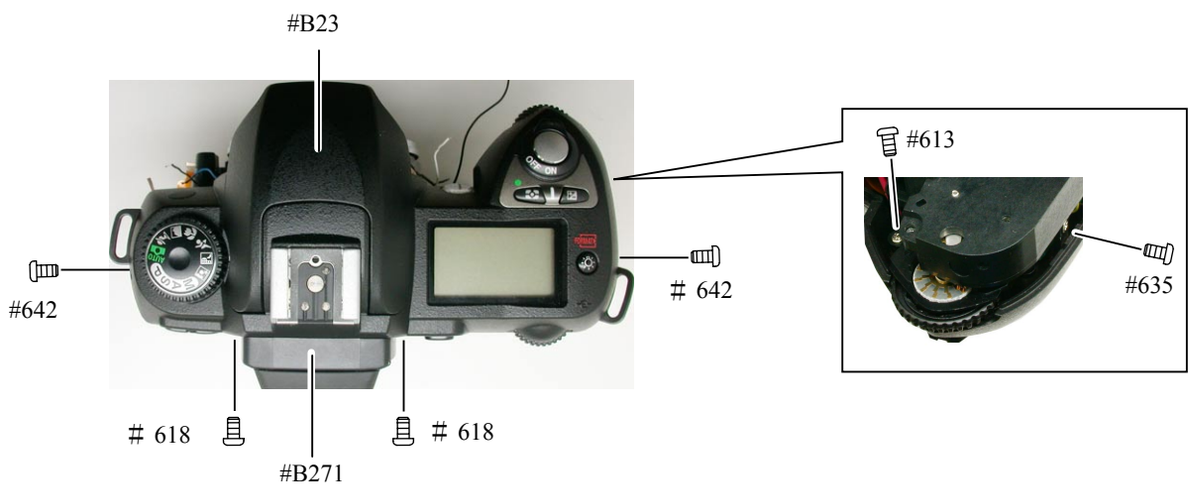


Top Cover

・Remove the solders of 8 wires.
・Remove FPC#1026 from the connector.

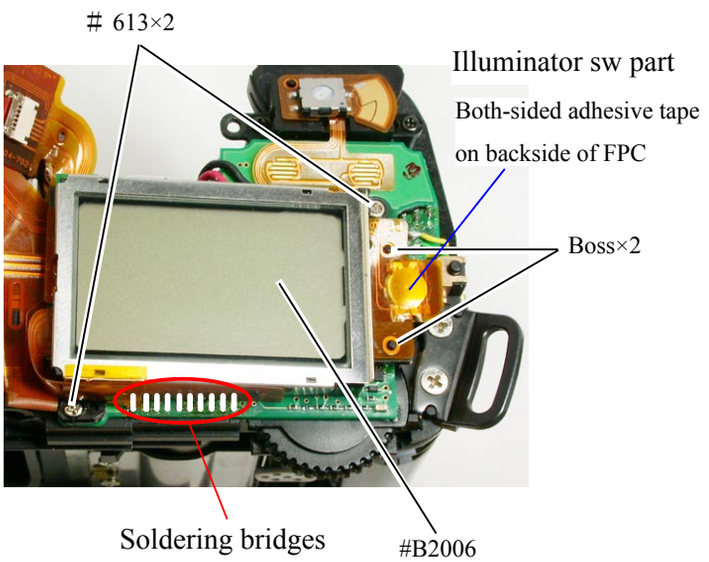


・Take out 6 screws to detach the top cover (#B23). The eyepiece frame (#B271) comes off, too.



External LCD unit

・Remove soldering bridges.
・Lift up the illuminator sw part from the bosses(hub).
・Take out 2 screws(#613) to detach the External LCD (#B2006).



Disassembly of Top cover unit

SB upper case

- Press the pop-up lever A part of the top cover unit so that the built-in SB pops up.
- Take out 2 screws (#631).
- Push from beneath the hooking lever of the SB upper case as shown in Fig.1 . Then slide 2 hooks in the direction of the arrow to remove the lever.
- Deactivate pop-up of the SB lower case unit, and remove the SB upper case.（Fig.2)

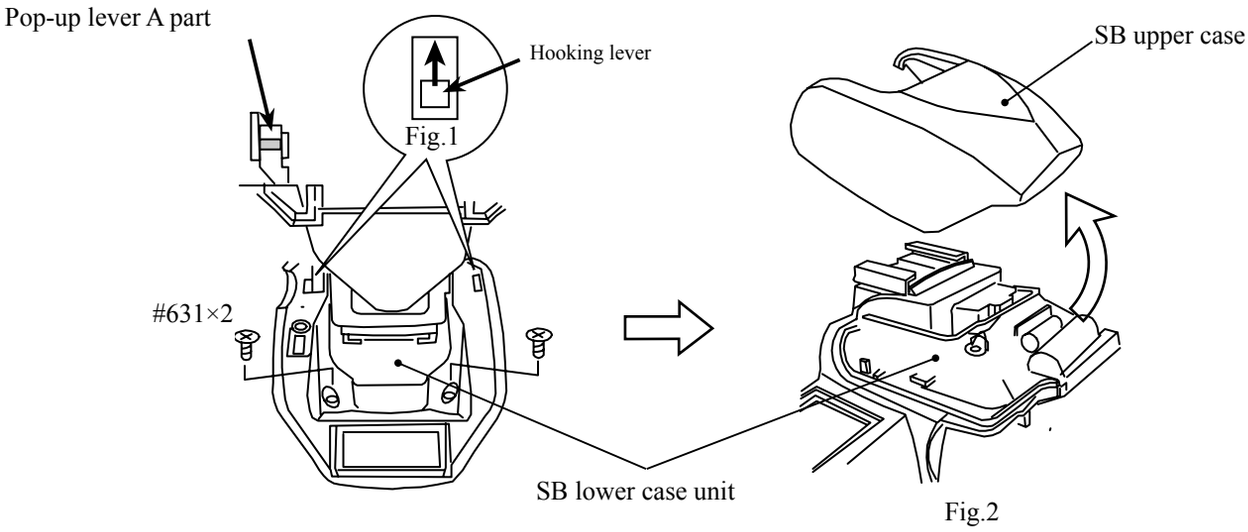
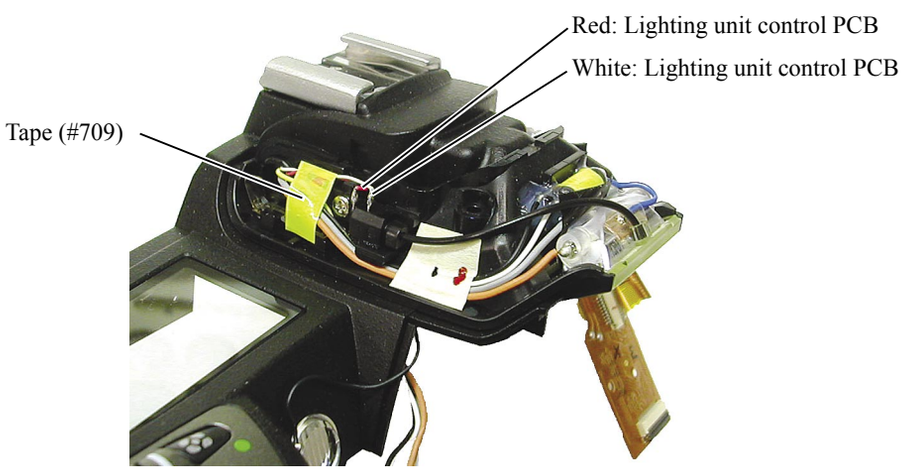


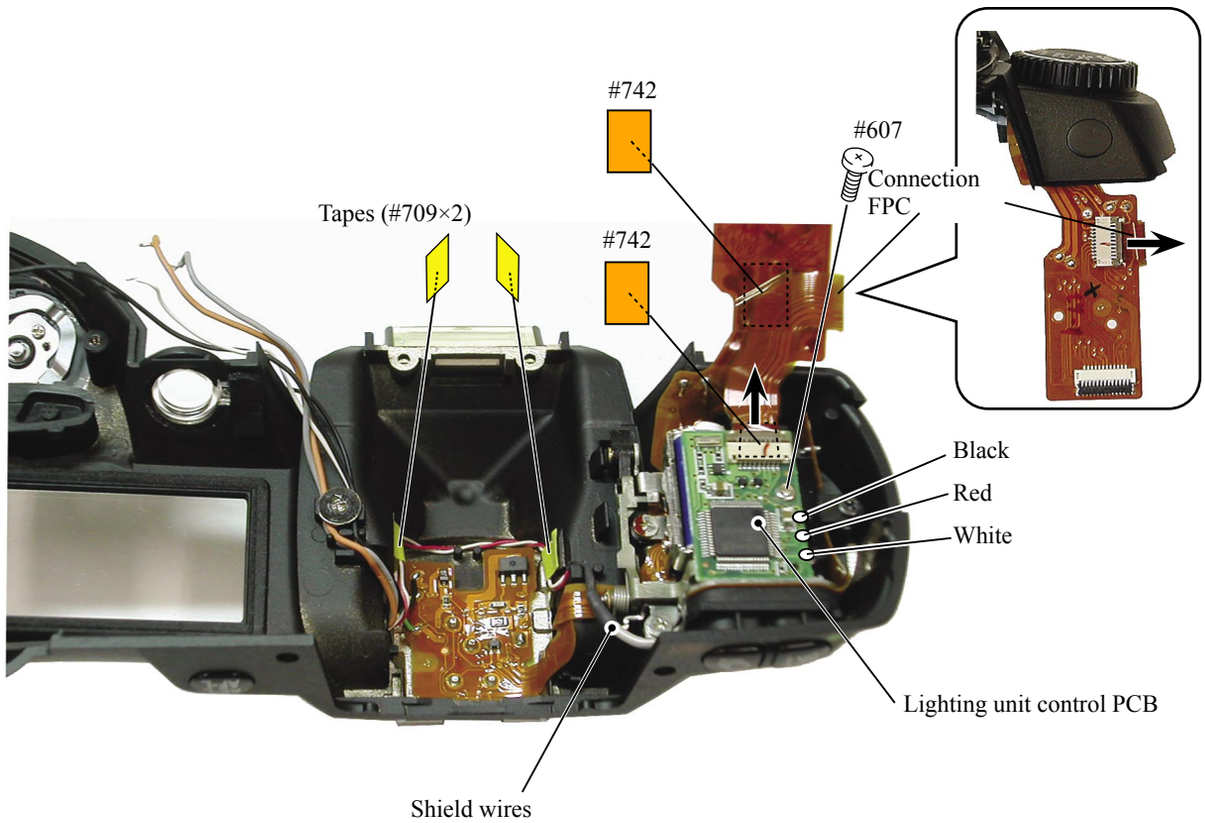
Fig.2

Lighting unit PCB

Unsolder Shield wires

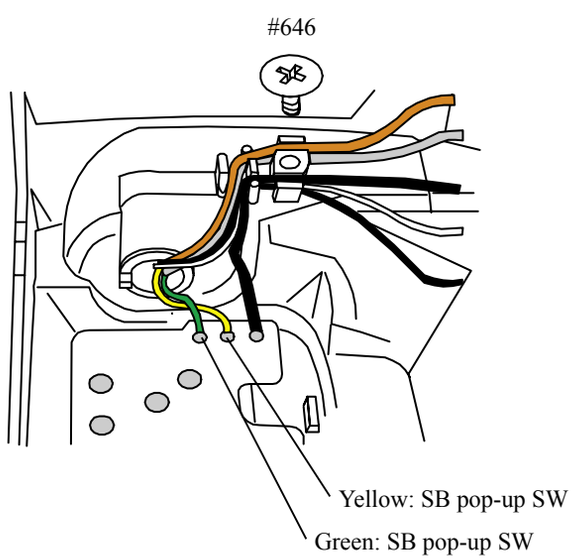


Remove Lighting unit control PCB, connection FPC, and Shield wires



SB lower case unit

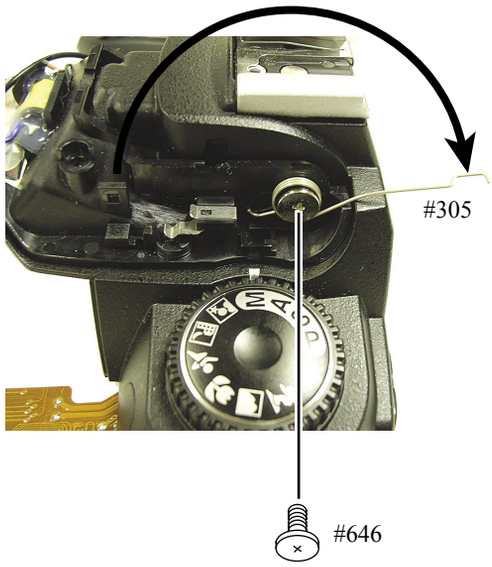
Remove wire-holding screw/Unsolder wires



Remove Flash-up spring

・Unhook the Flash-up spring (#305).

・Take out the screw (#646) and remove the Flash-up spring (#305).



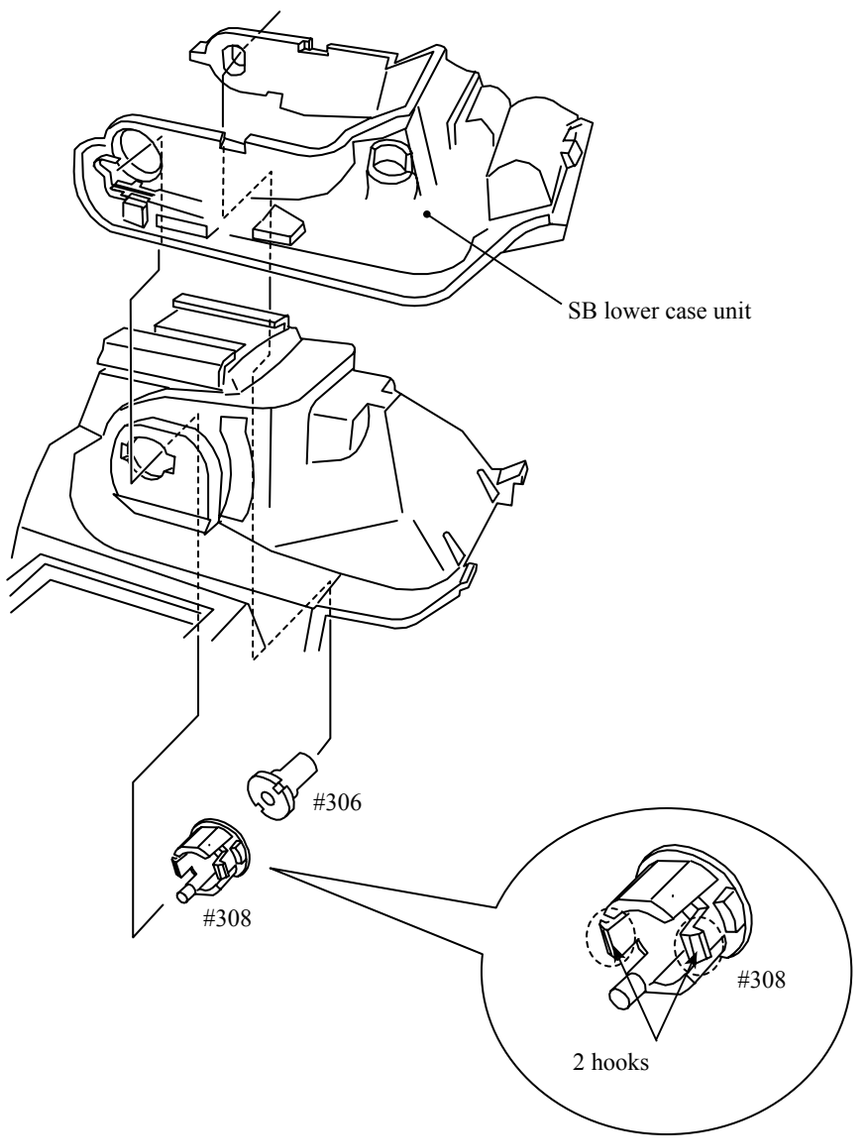
Remove SB lower case unit

・Pull each wire out of holes.

・Losen 2 hooks of the collar (#308) to remove it.

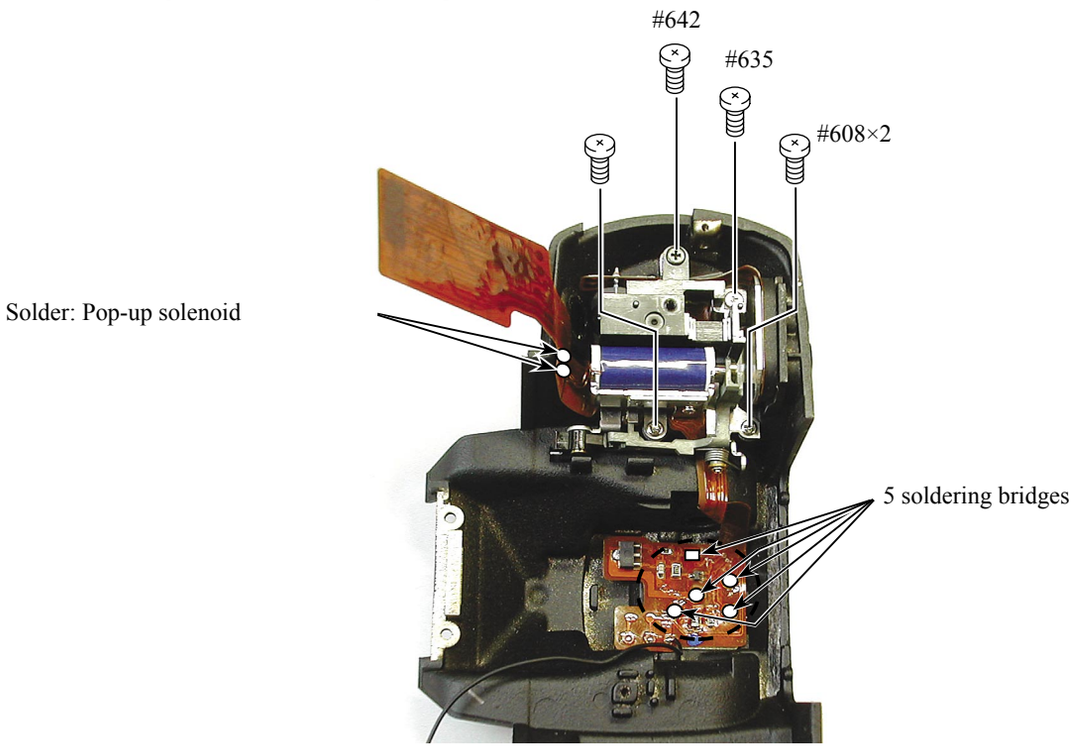
・Remove the SB case axle (#306).

・Detach the SB lower case unit from the top cover.

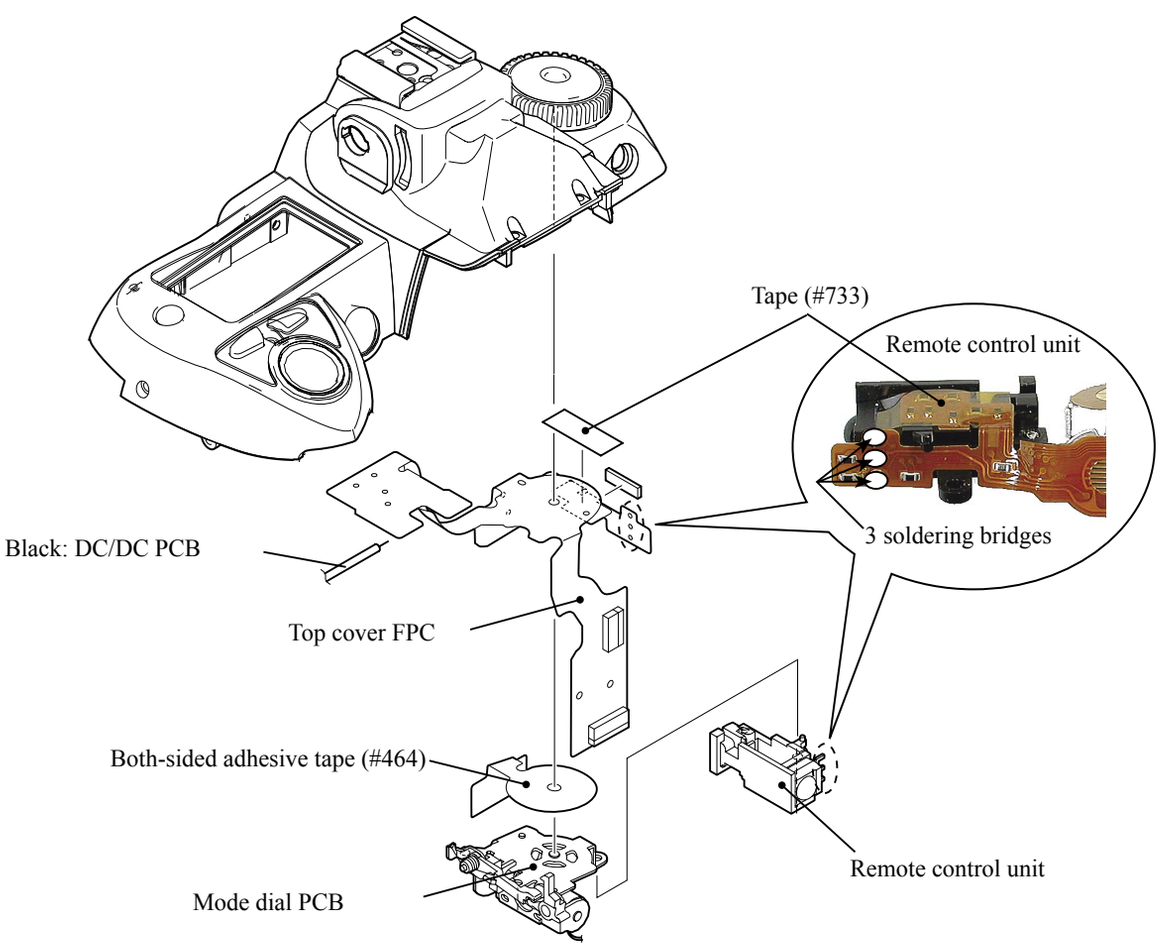


Mode dial PCB unit, Remote control unit, Top cover FPC

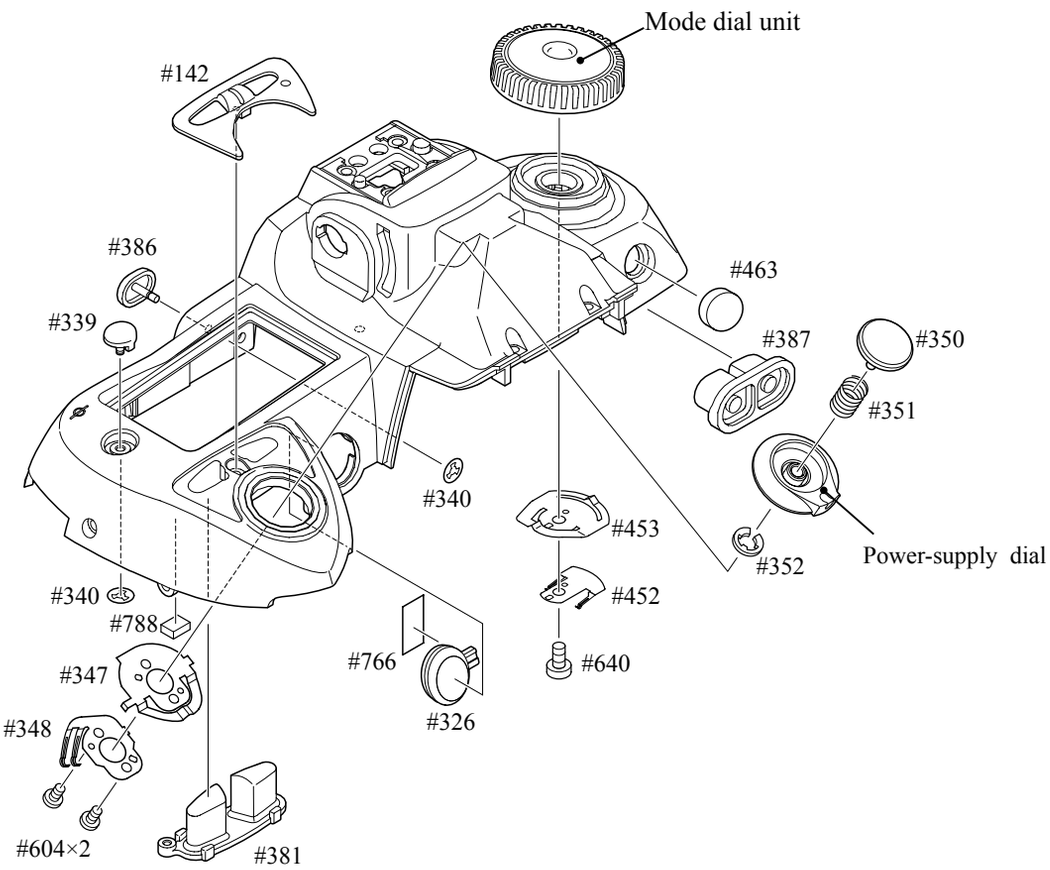
Remove attaching screws, soldering bridges



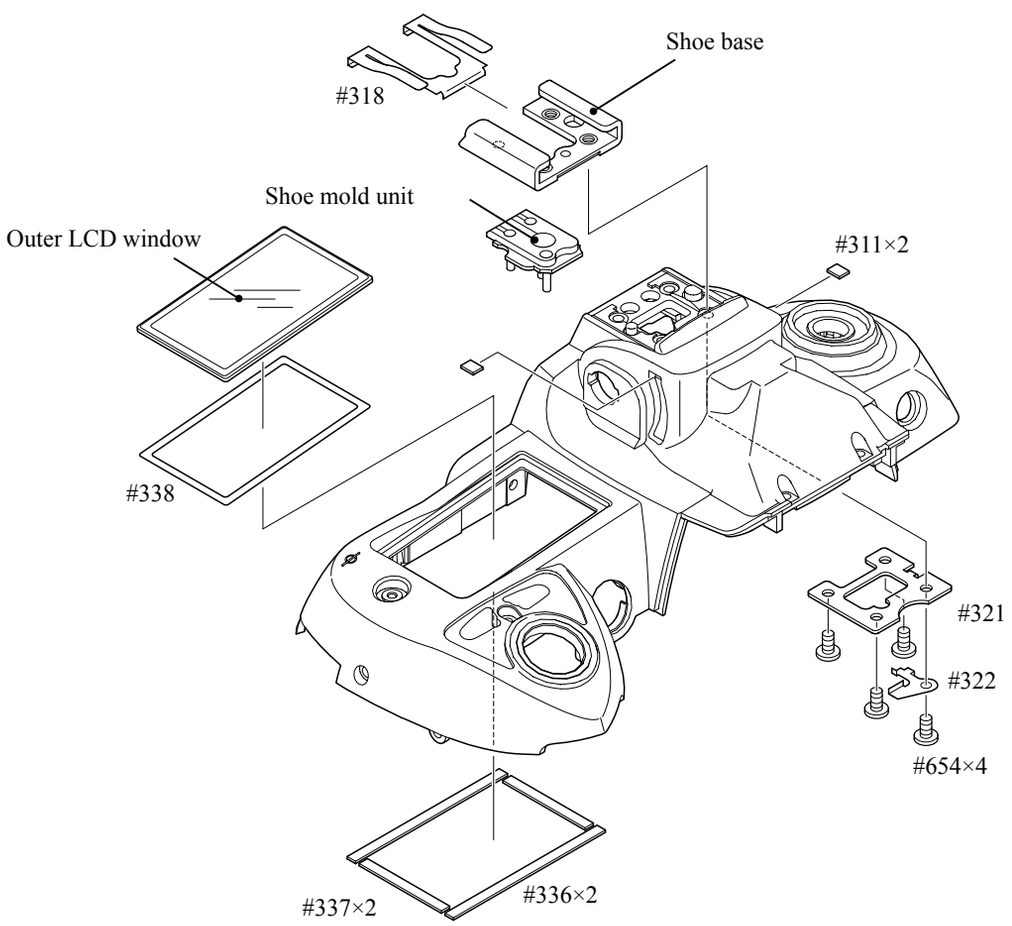
Detach Mode dial PCB and Remote control unit from Top cover FPC



Mode dial unit, Release button, Power-supply dial, other small parts

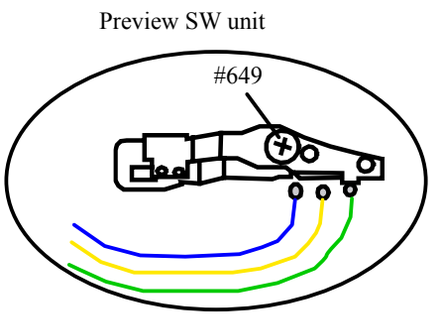


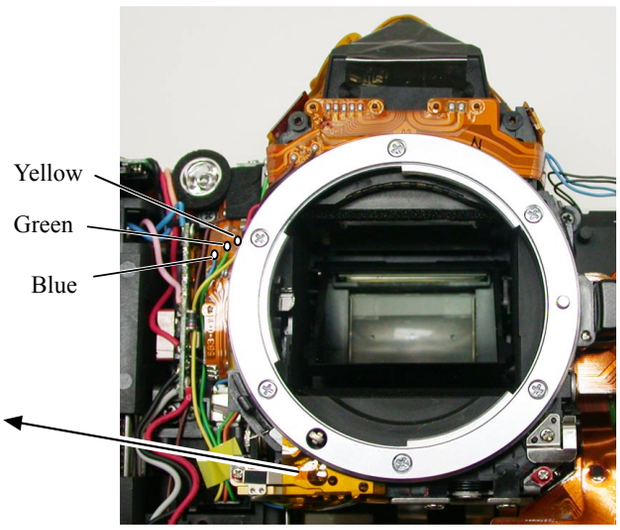
Accessory shoe, Shoe mold unit, Outer LCD window, other small parts



Preview SW unit

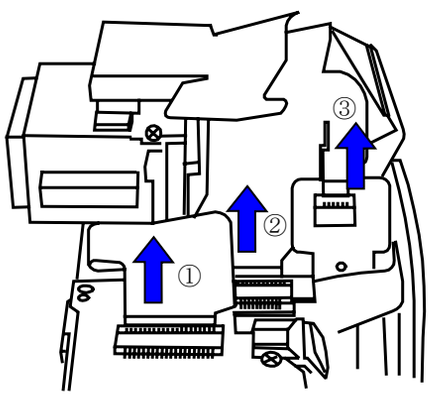
・Remove the solders of 3 wires as shown right, and take out the screw (#649) to detach the preview SW unit.



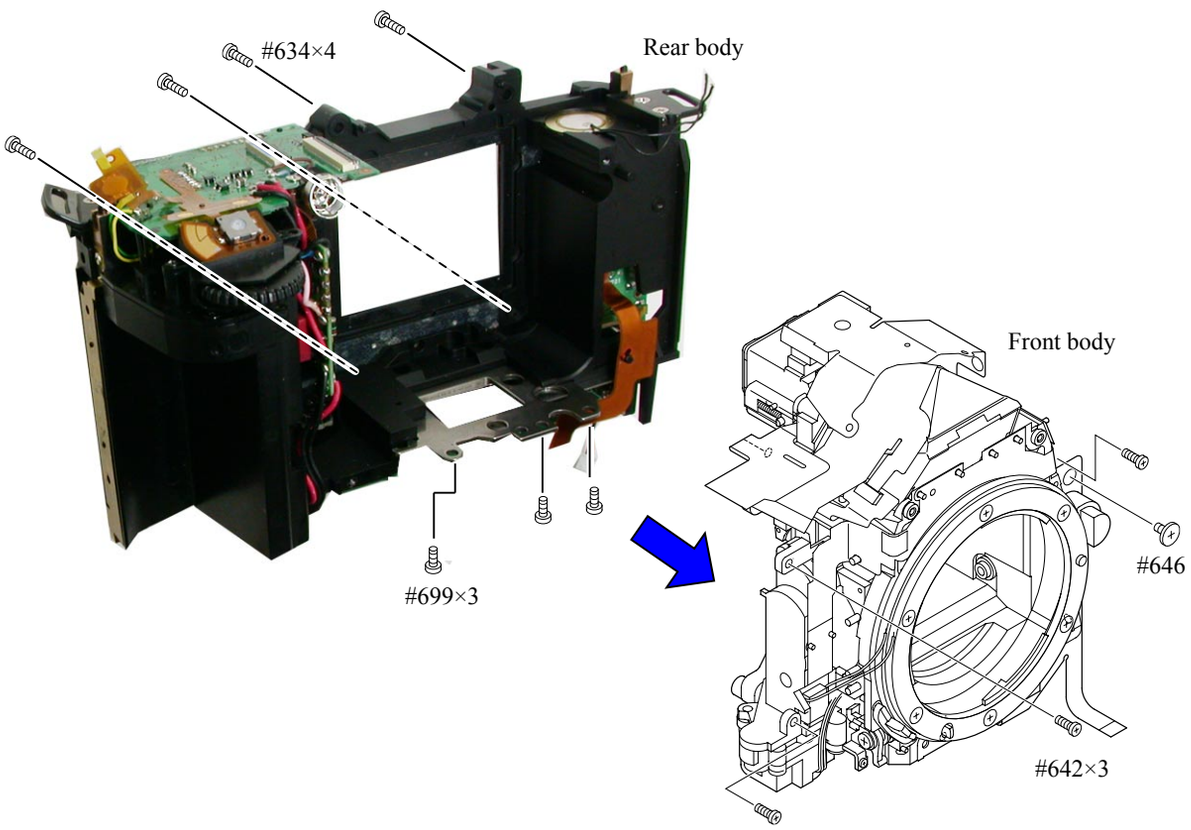


Disconnect from Connectors

・Remove the FPC ① , ② , and ③ from each connector in order.



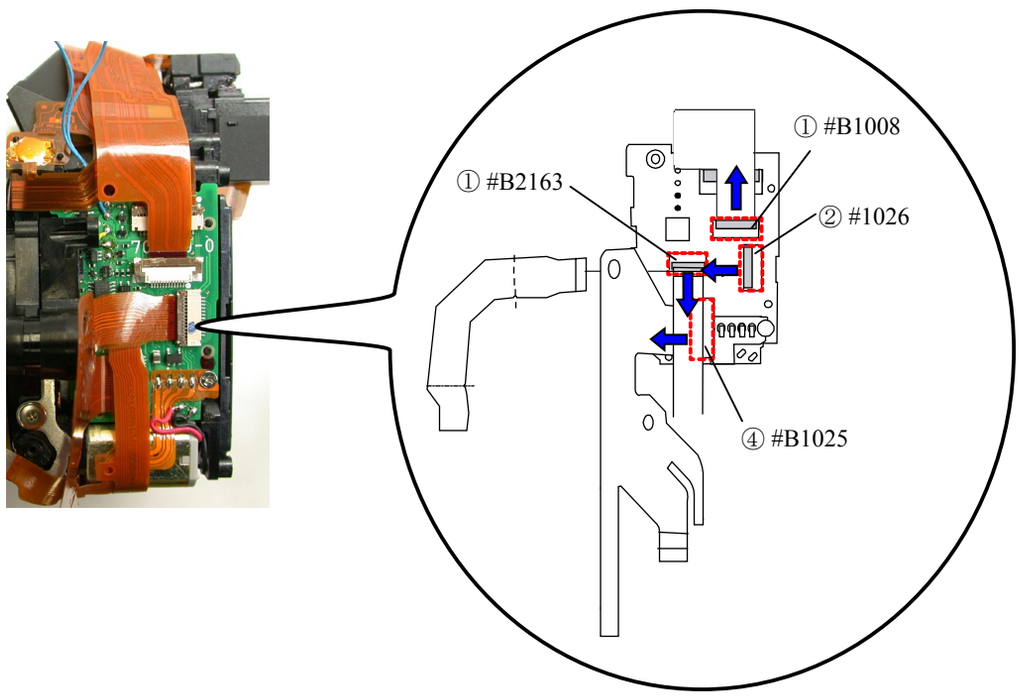
Separate Front and Rear bodies



2. Front Body

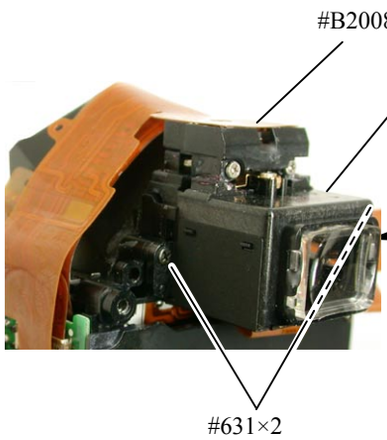
Disconnect Connectors

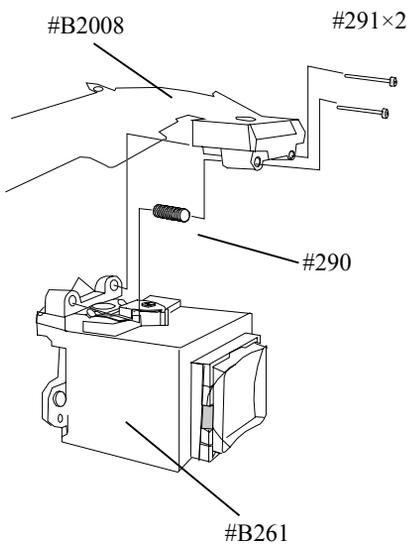
・Disconnect the FPC ① , ② , ③ , and ④ from each connector in order.



Eyepiece unit
Metering FPC unit

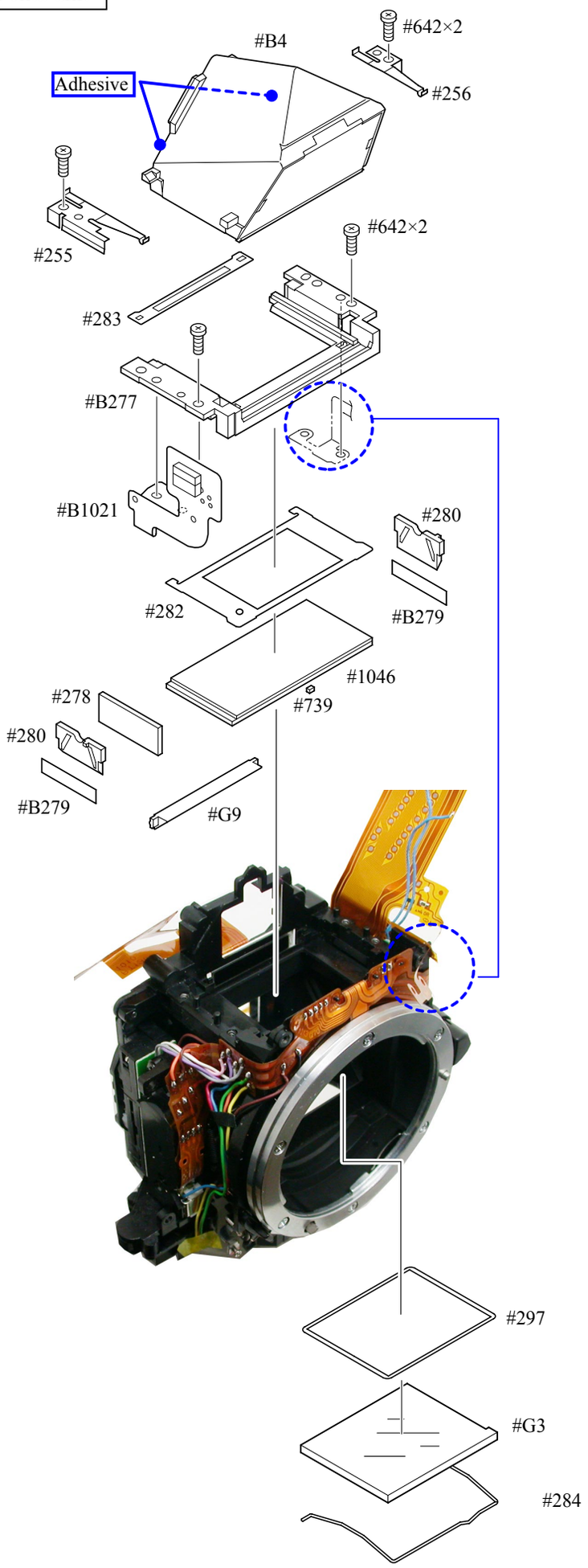
・Take out 2 screws (#631) so that the eyepiece unit (#B261) with the Metering FPC unit(#B2008) attached can be removed.

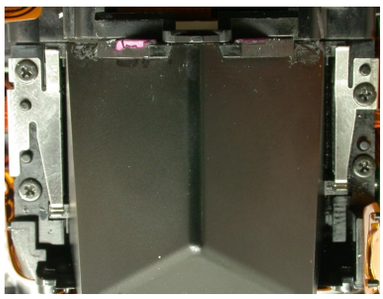


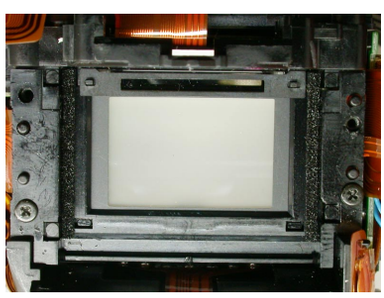


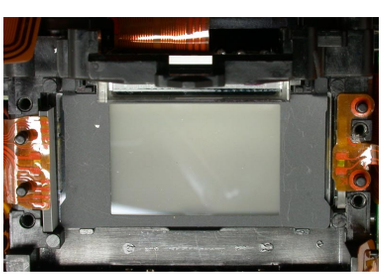
Note: The eyepiece unit (#B261) and Metering FPC unit (#B2008) is attached with the adhesive. Unless replacement is necessary, do NOT disassemble them. In case of disassembling them or turning the screws (#291), AE CCD position adjustment (ref. Assembly Chapter) is necessary.

Penta unit


#B4
#642×2
#256
Adhesive
#255
#642×2
#283
#B277
#B1021
#280
#282
#B279
#1046
#739
#278
#280
#B279
#G9
#297
#G3
#284

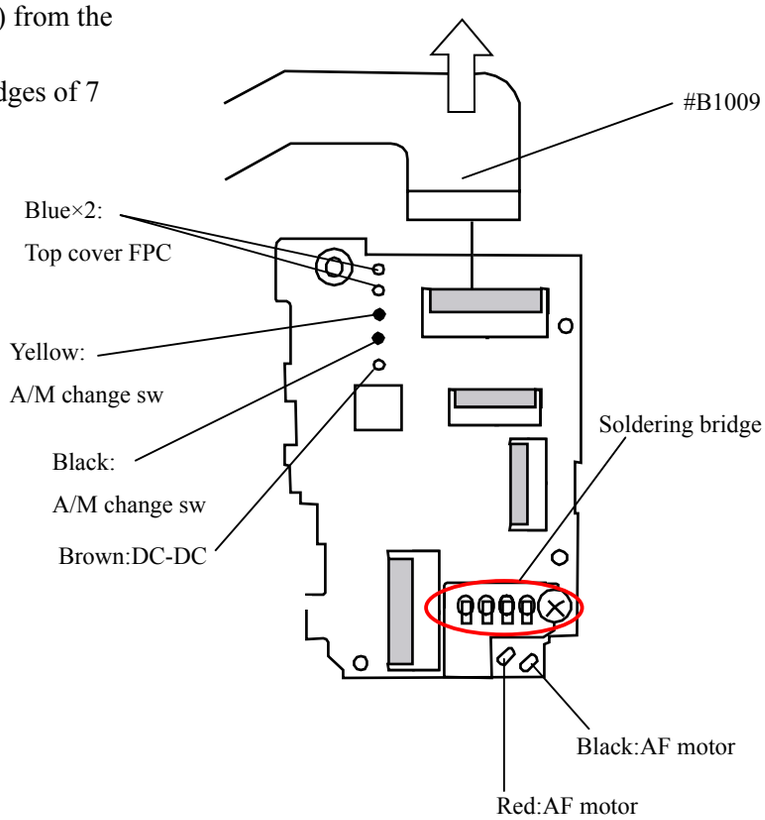




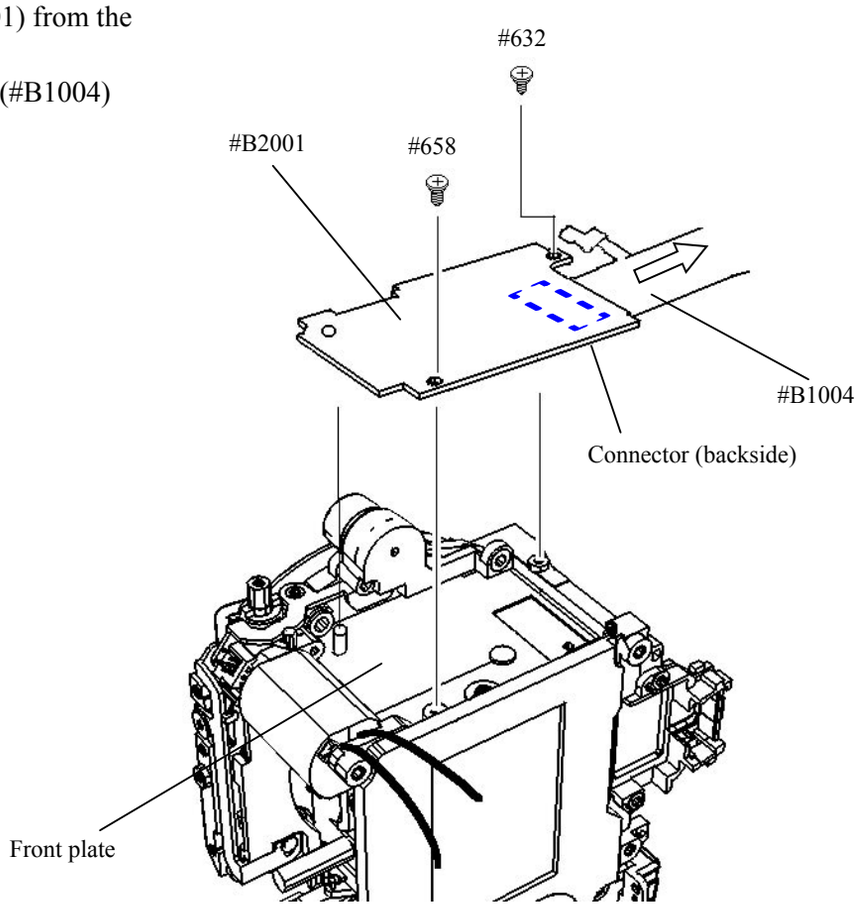


Main PCB

- Remove the front body FPC (#B1009) from the connector.
- Remove the solders and soldering bridges of 7 wires.

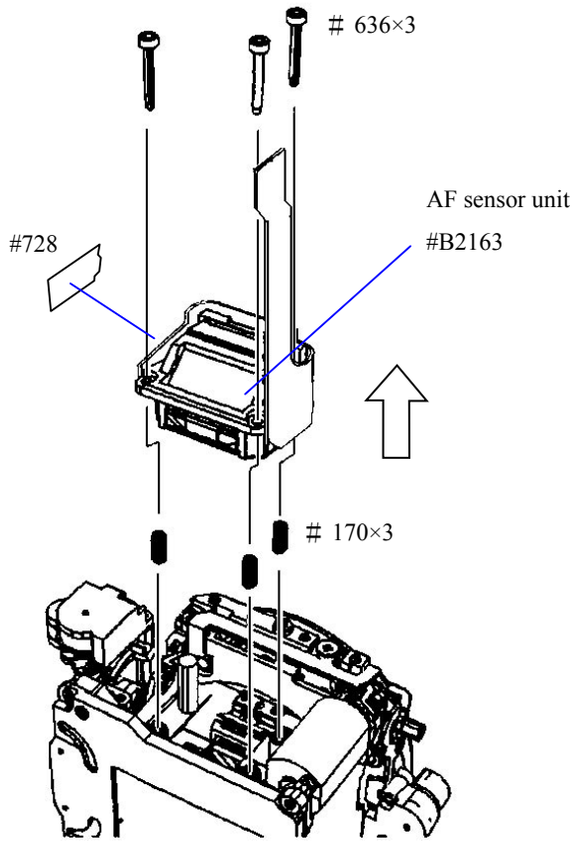


- Take out the screws (#658 and #632) to detach the main PCB (#B2001) from the front plate.
- Remove the connection FPC (#B1004) from the connector.



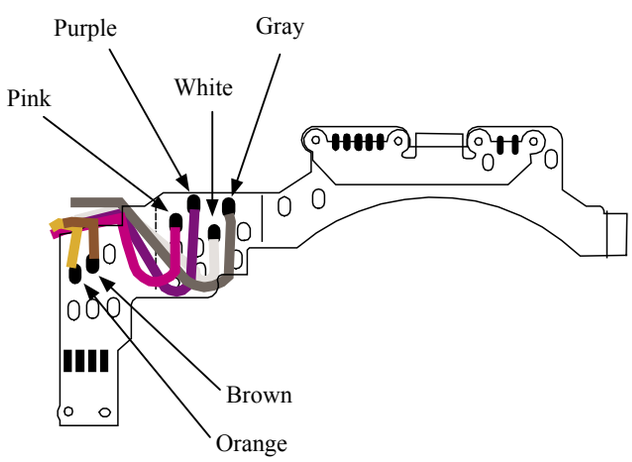
AF sensor unit

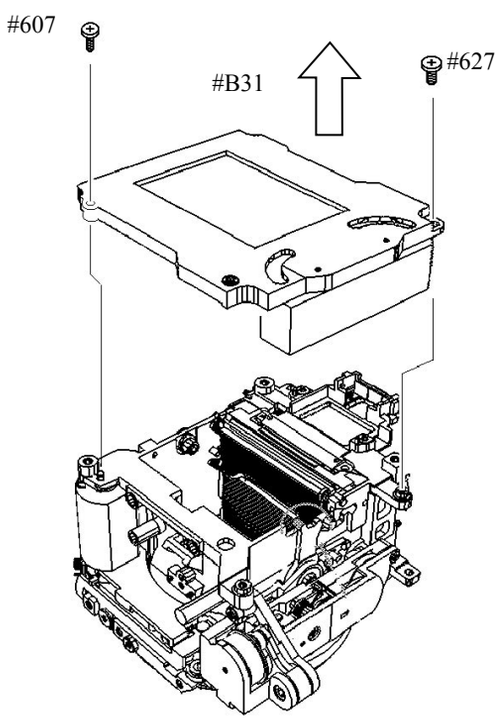
・Take out 3 screws (#636) with Hexagonal wrench, and remove the AF sensor unit (#B2163).
・3 springs (#170) come off, too.



Shutter unit

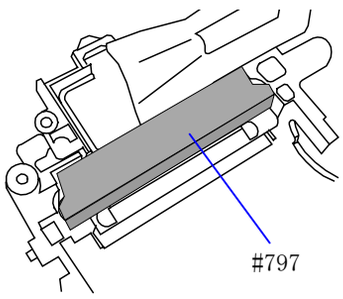
・Remove the solders of 6 wires.
・Take out the screws (#607 and #627) to detach the shutter unit (#B31).

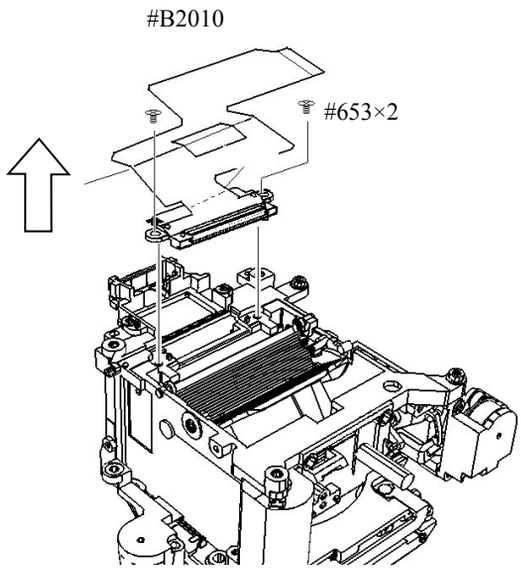




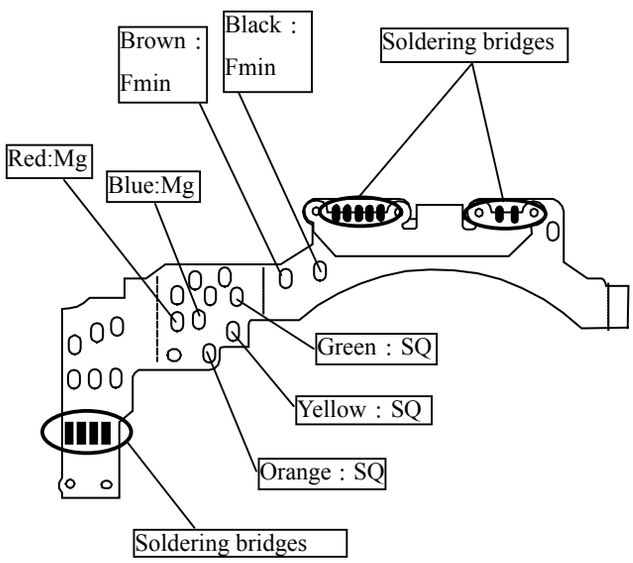
Inner LCD unit

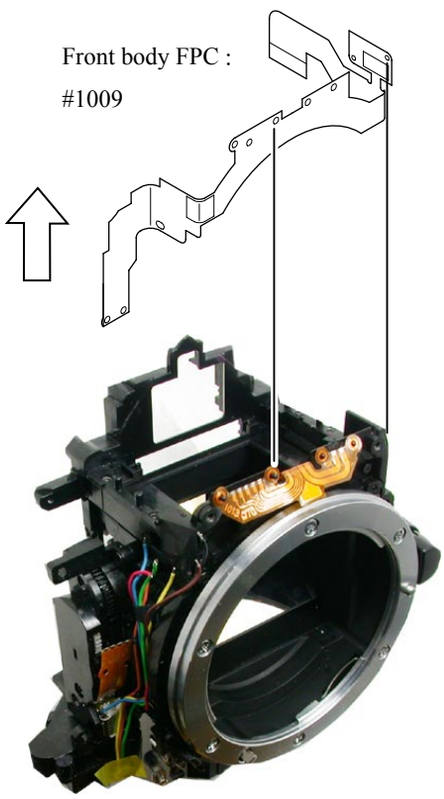
・Remove the tape (#797).
・Take out 2 screws (#653) to remove the inner LCD unit (#B2010).





Front body FPC





Aperture control unit

Procedure

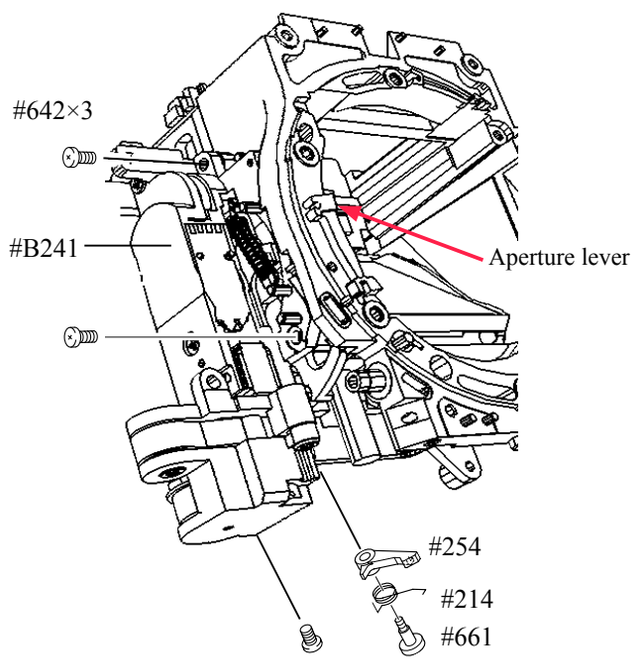
1. Take out 3 screws (#642).

2. Remove the screw (#661), spring (#214) and lever (#254).

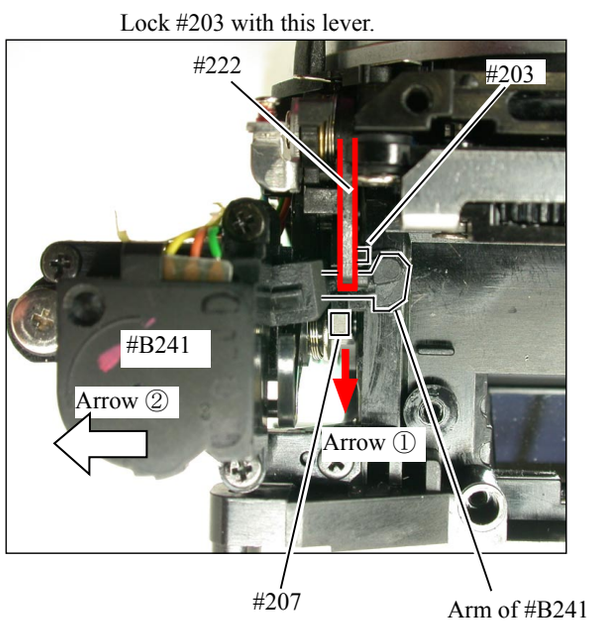
3. Lock the mirror-up lever (#203) with the preview locking lever (#222).

4. When the aperture lever is pressed down with finger, the aperture coupling lever (#207) moves in the direction of arrow (①).

5. In state of 4. , remove the aperture control unit (#B241) by pulling it in the direction indicated by arrow (②) while letting the arm (#B241) escape.

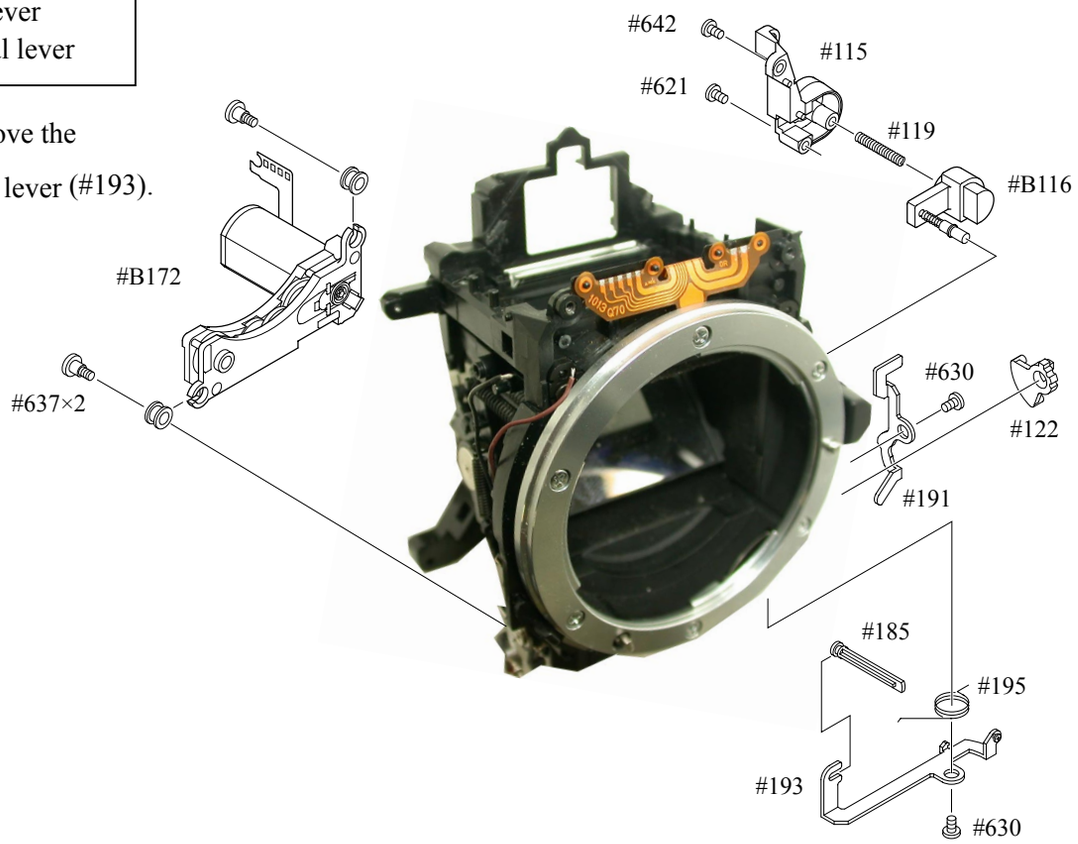


Front body viewed from the bottom

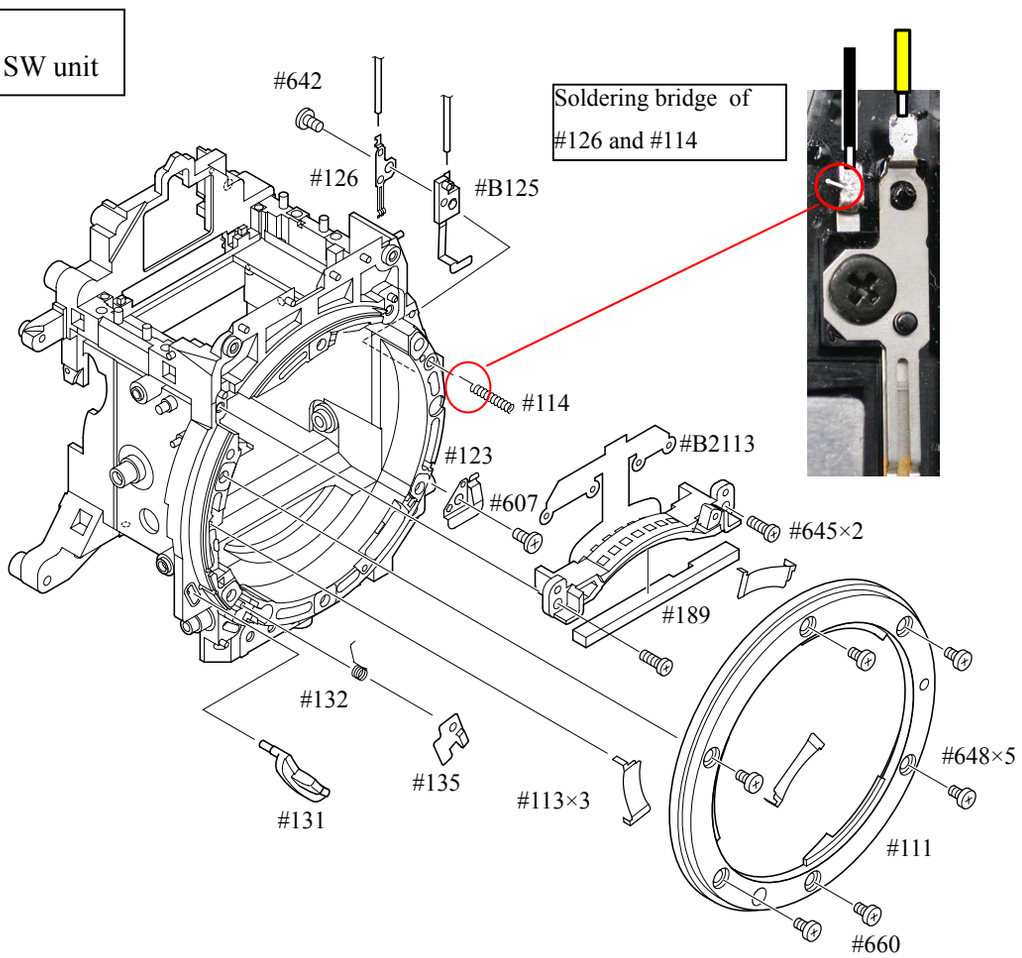


AF driving unit
Lens release button
Vertical lever
Horizontal lever

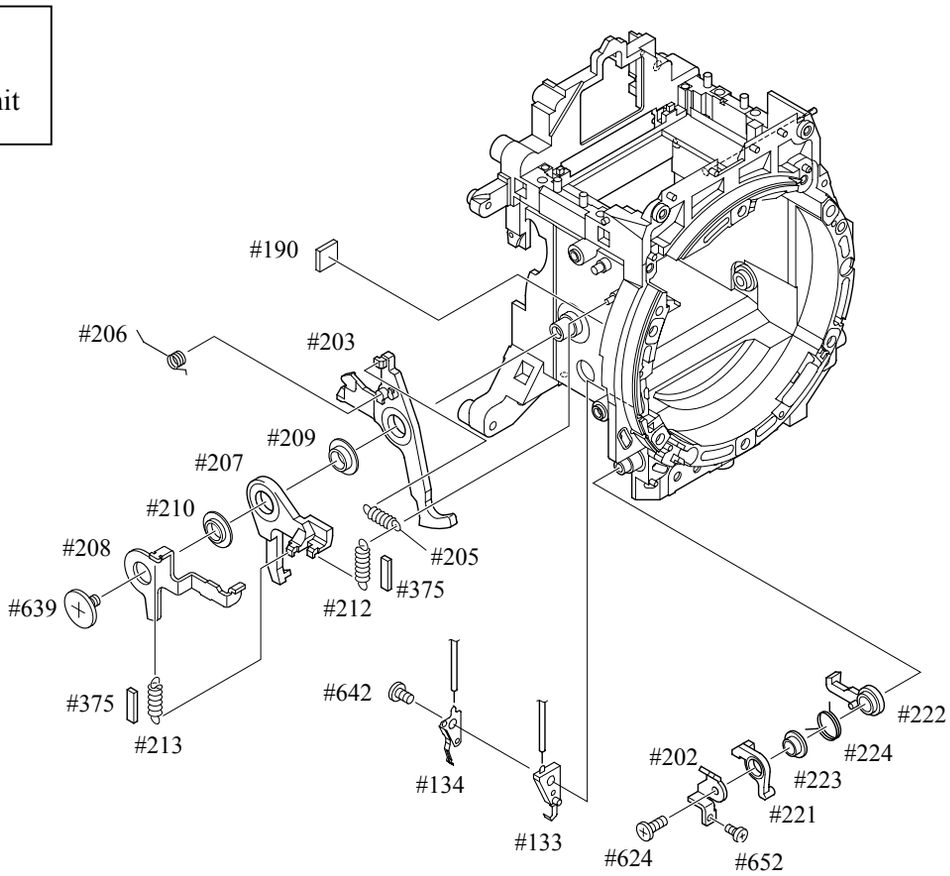
・First, remove the horizontal lever (#193).



Bayonet unit
A/M-change SW unit

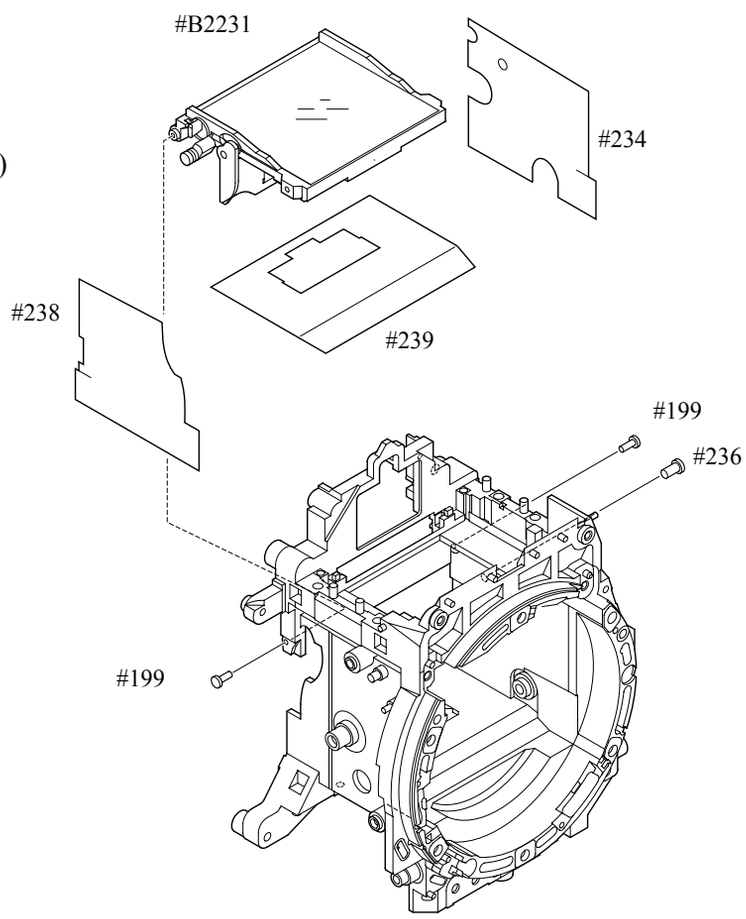


Aperture lever unit
F-min Switch unit
Preview locking lever unit



Mirror unit

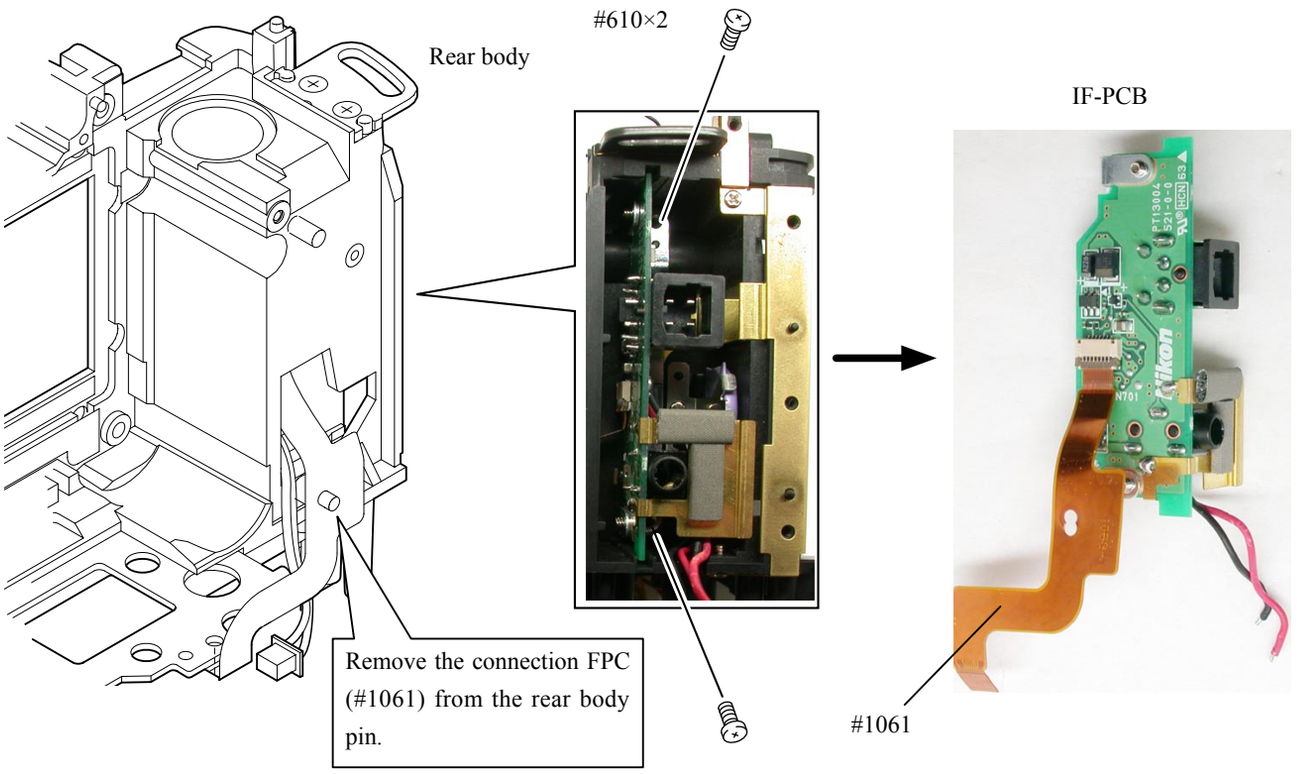
・Note that 2 pins (#199) and the pin (#236) are attached with the Super X.(C-8008B)



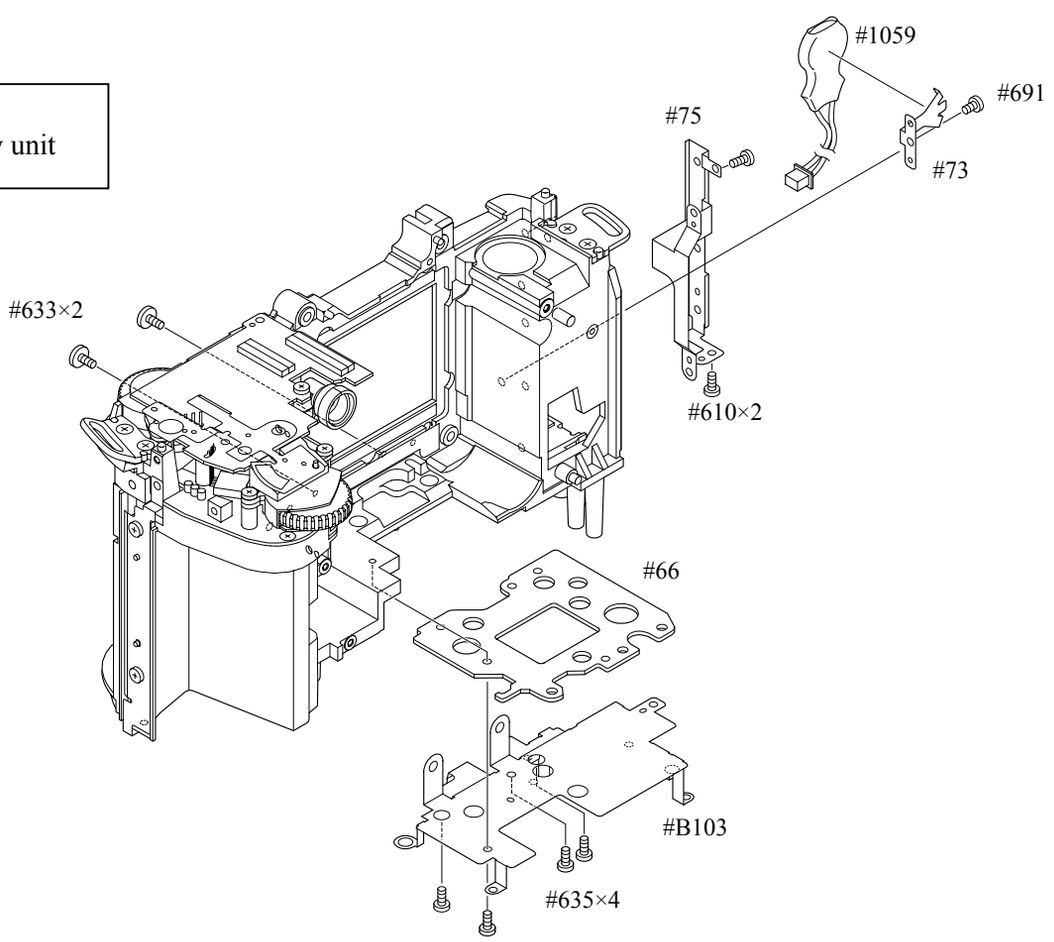
3. Rear body

IF-PCB

・Take out 2 screws (#610) to remove the IF-PCB from the rear body.

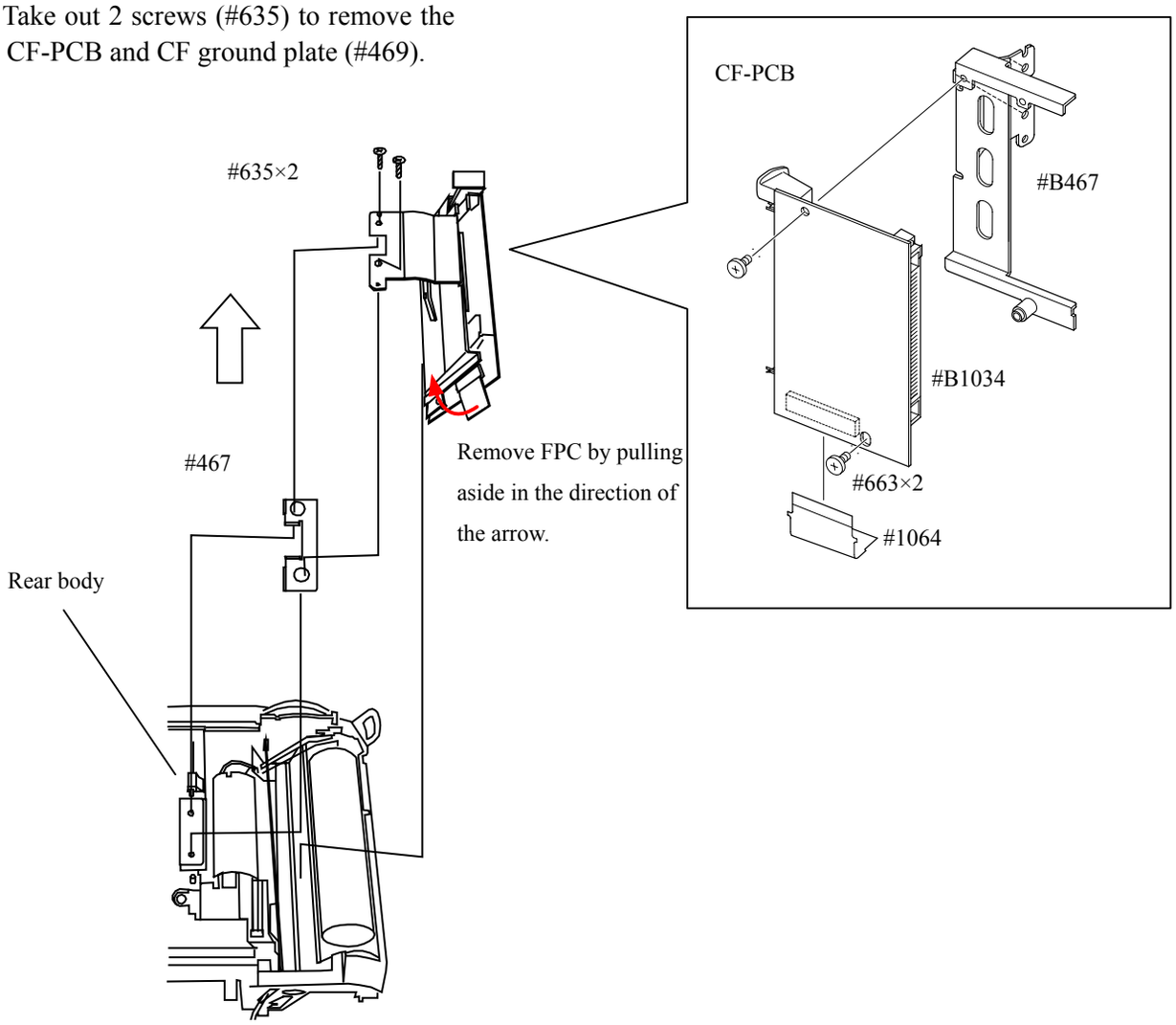


Bottom Base unit
Secondary battery unit



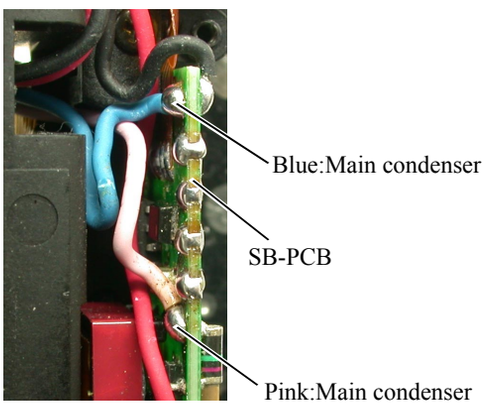
CF-PCB

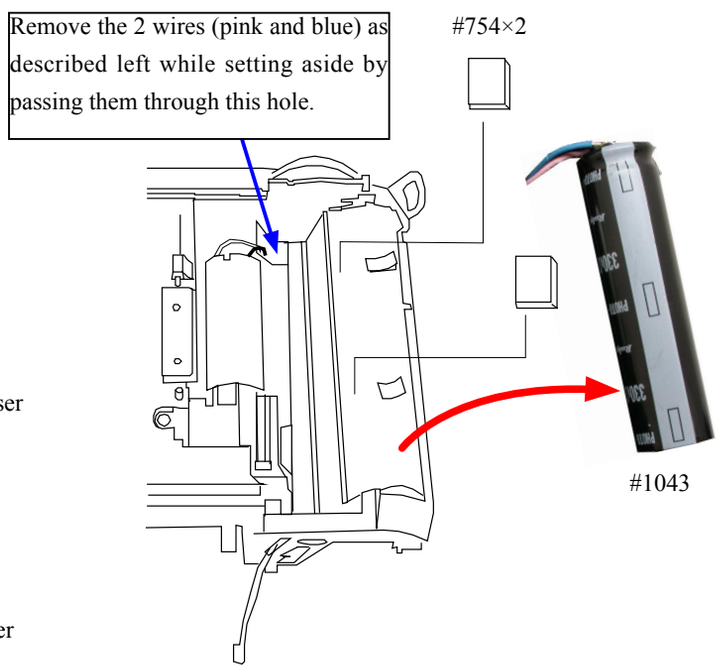
・Take out 2 screws (#635) to remove the CF-PCB and CF ground plate (#469).



Main condenser

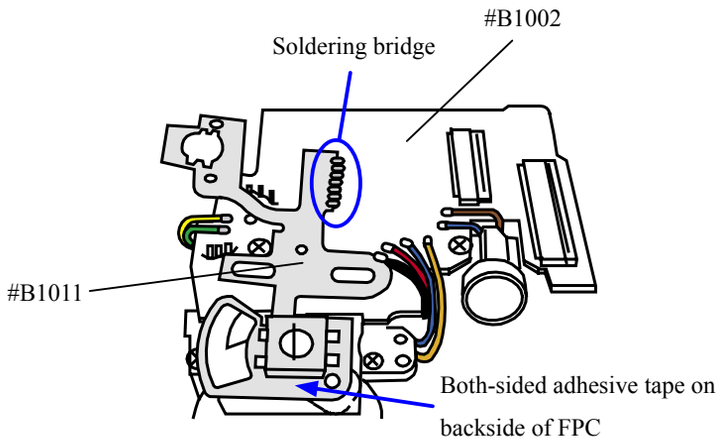
Remove the solders of 2 wires (pink and blue) on the SB-PCB of the front of the rear body.





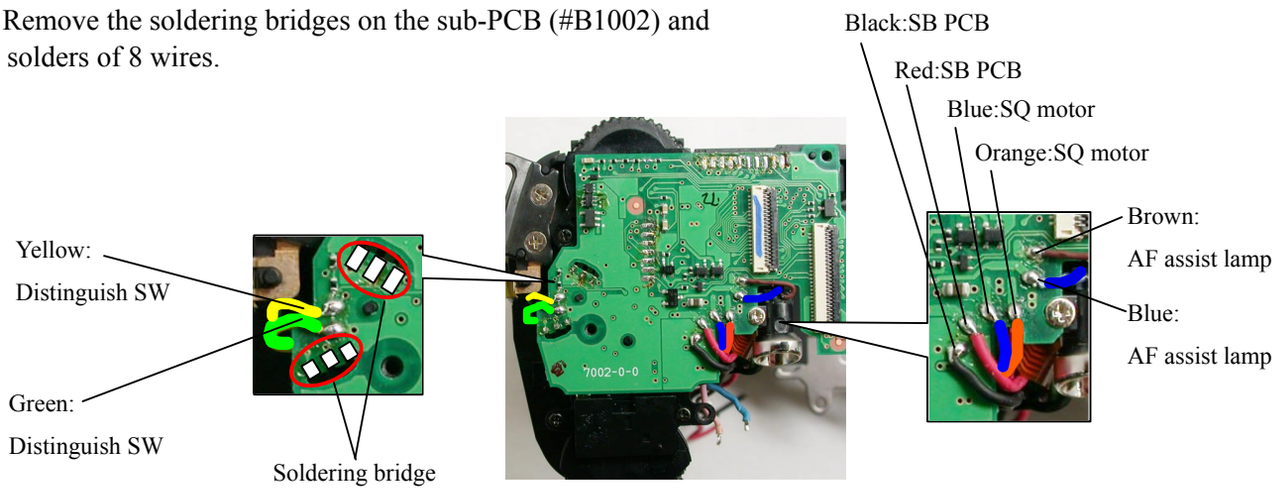
Main-SW FPC

・Remove the soldering bridges on the sub-PCB (#B1002) to detach the main-SW FPC (#B1011).

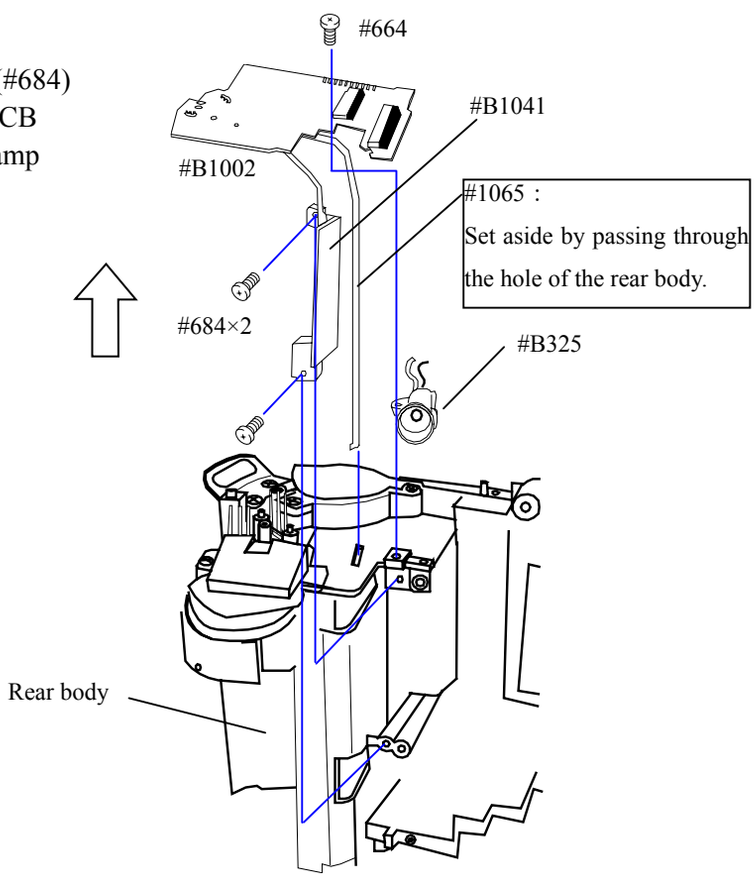


SB-PCB / Sub-PCB

・Remove the soldering bridges on the sub-PCB (#B1002) and solders of 8 wires.

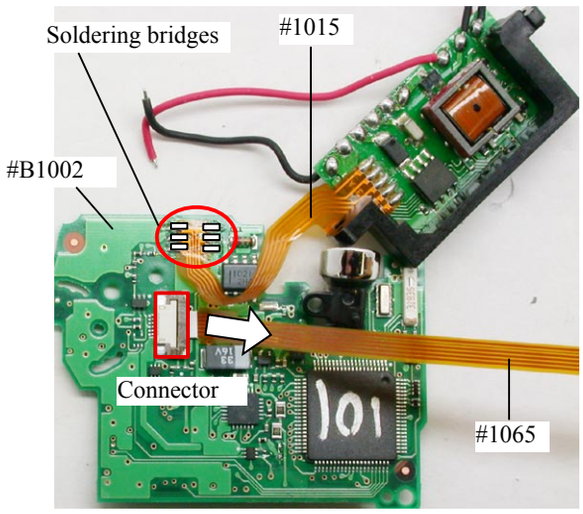


・Take out the screw (#664) and 2 screws (#684) so that the sub-PCB (#B1002) and SB-PCB (#B1041) are detached. The AF assist lamp (#B325) comes off, too.

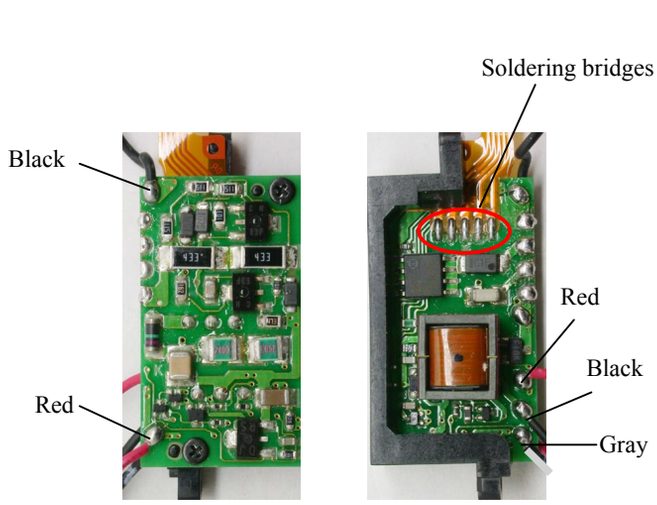


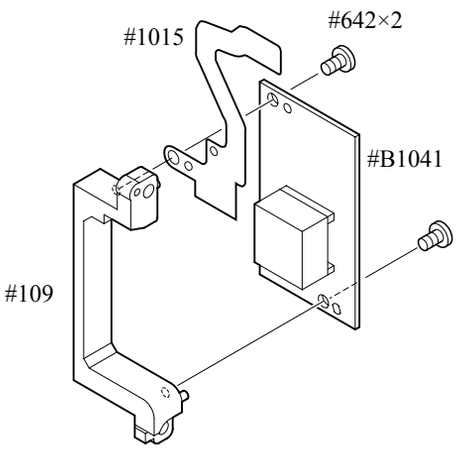
Separate SB-PCB from Sub-PCB

- Remove the soldering bridges of Sub-SB connection FPC (#1015).
- Remove the connection FPC (#1065) from the connector.

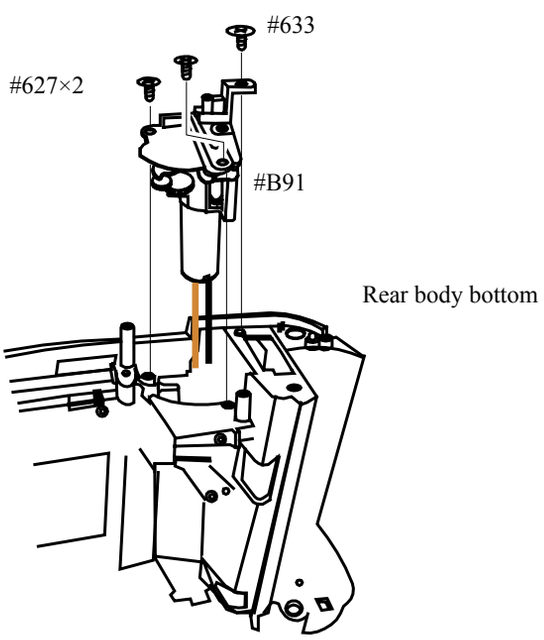


SB PCB

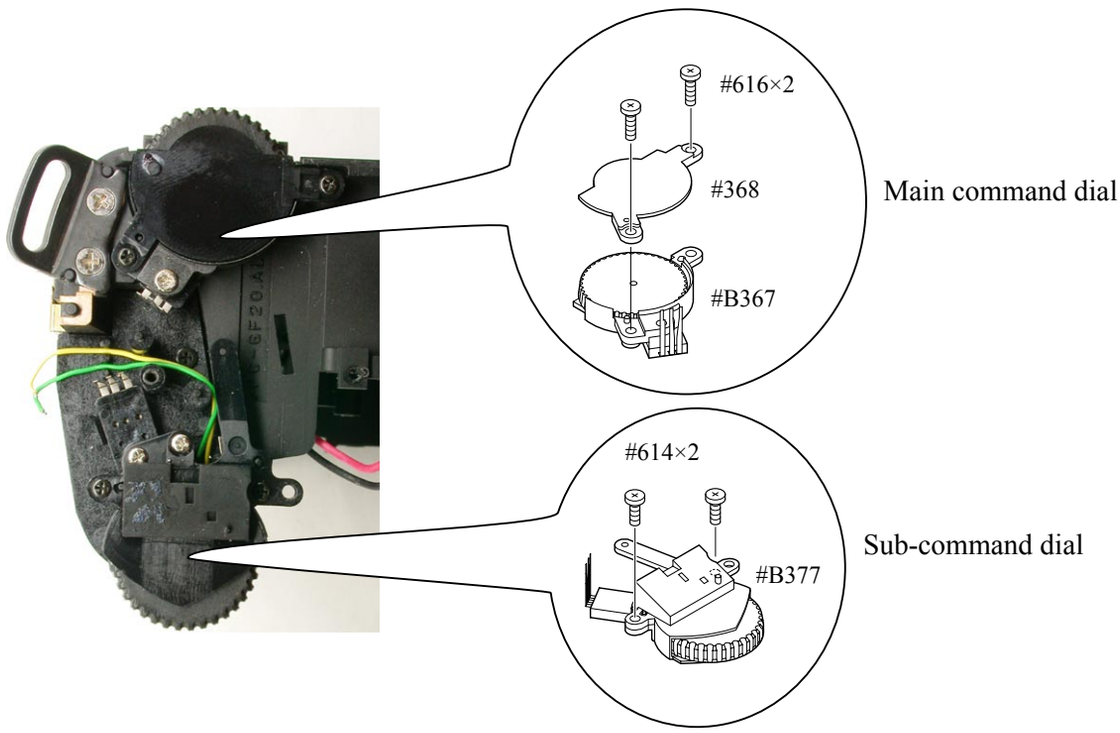




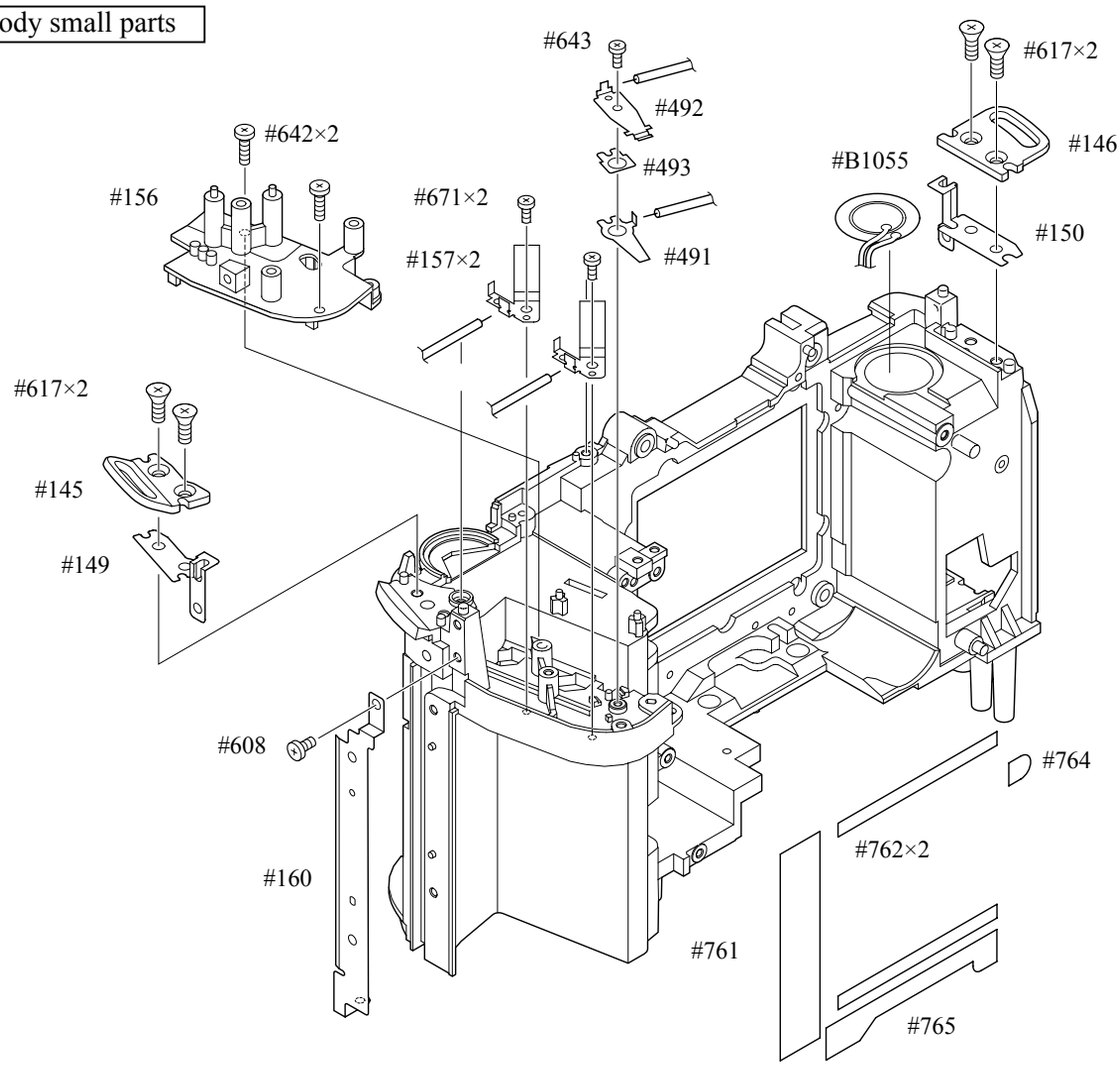
SQ unit



Main-/Sub- command dial unt



Rear body small parts

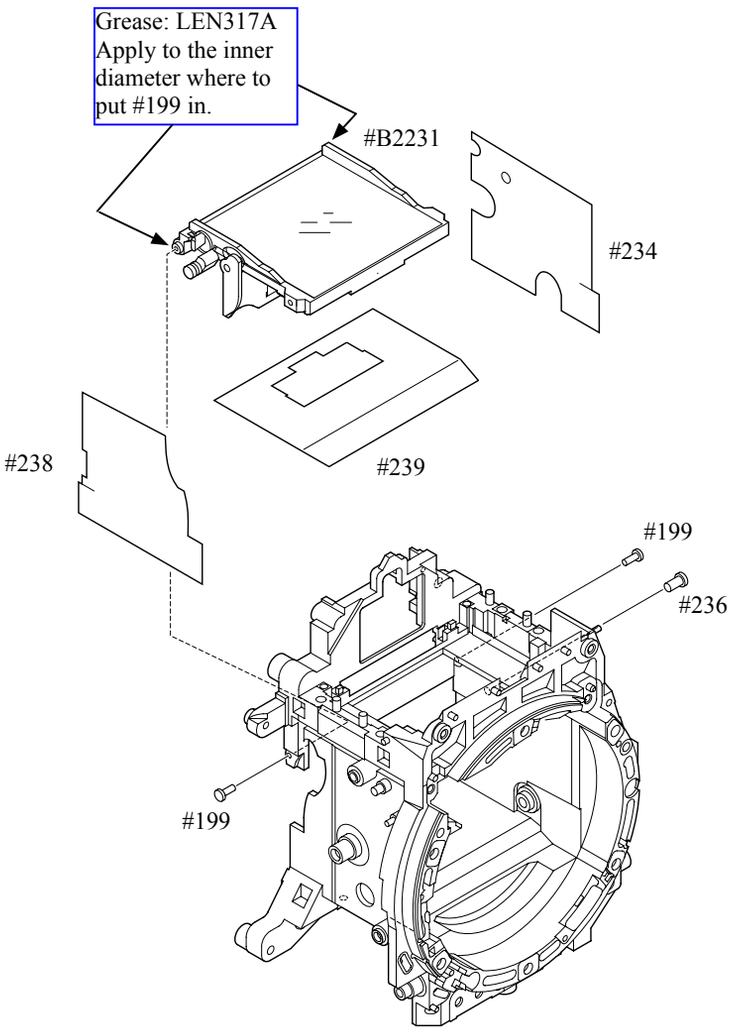


Assembly/Adjustment

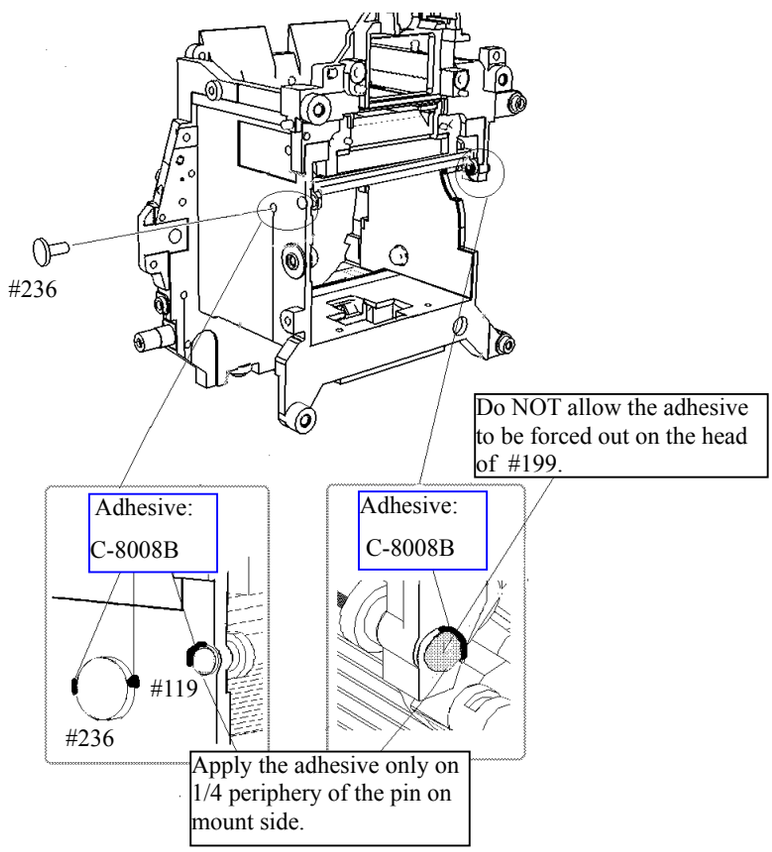
・NOTE: For undescribed tapes and sponges in"Assembly" section, refer to"other tapes/sponges" on page A44-45 and PARTS LIST.

1. Front body

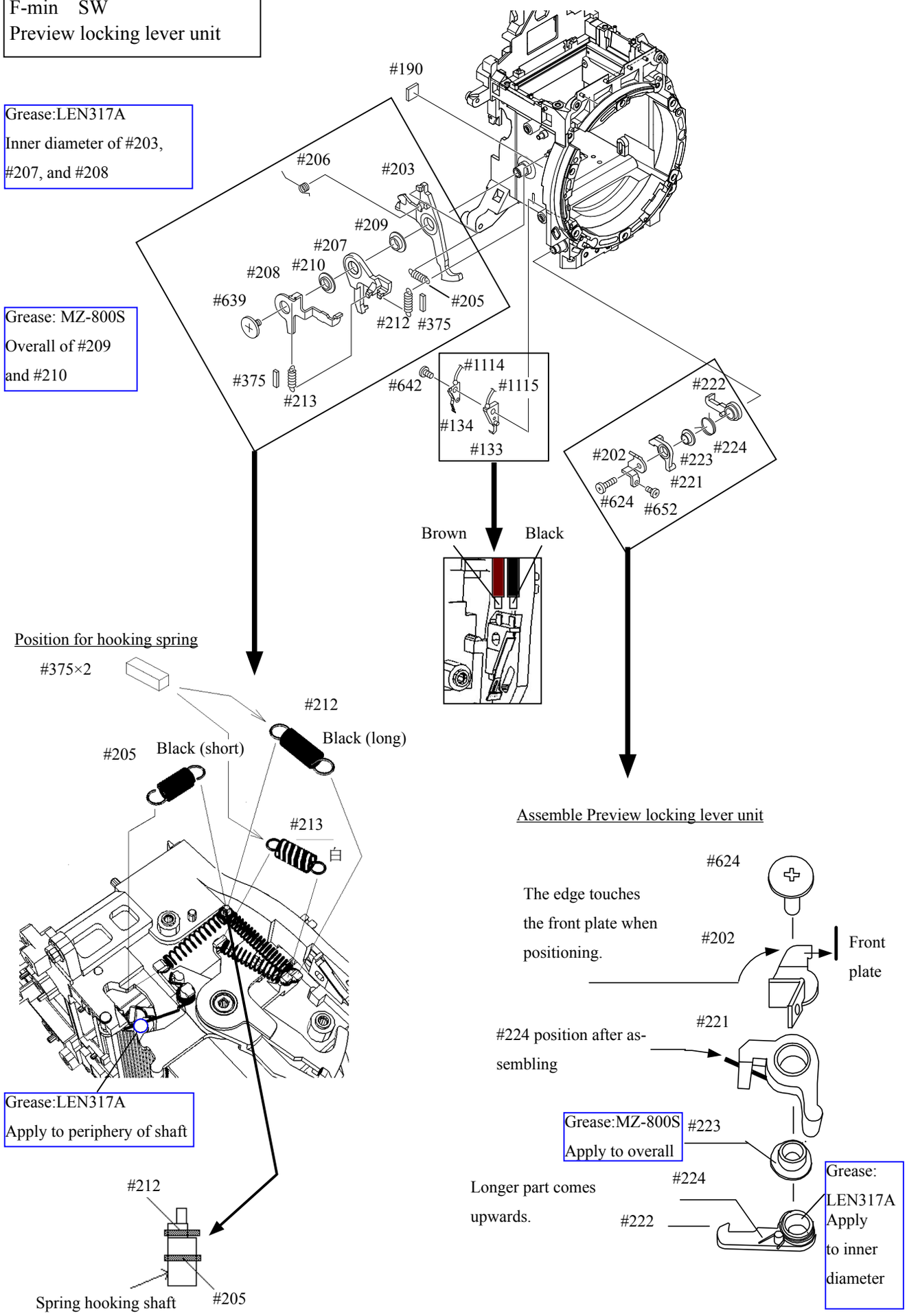
Mirror unit



・With being mirror-up as shown right, assemble the pins and apply C-8008B (Adhesive: Super X) on each pin.



Aperture lever unit
F-min SW
Preview locking lever unit



Aperture control unit

1. Turn the sequence white gear of the aperture control unit in the direction indicated by the arrow, and position the arm as shown in Fig. ① .
2. Place #248 in center of movement of range, and lock it with #249. (ref. Fig. ①)
3. Lock the lever (#203) with #222. (ref. Fig. ②)
4. While holding the aperture lever down with finger, insert the arm between #207 and #203, then take finger off the lever. (ref. Fig. ②)
5. Attach 3 screws (#642). (ref. Fig. ③ and ④)
6. Release the locked lever (#222).

Fig. ①

Aperture control unit

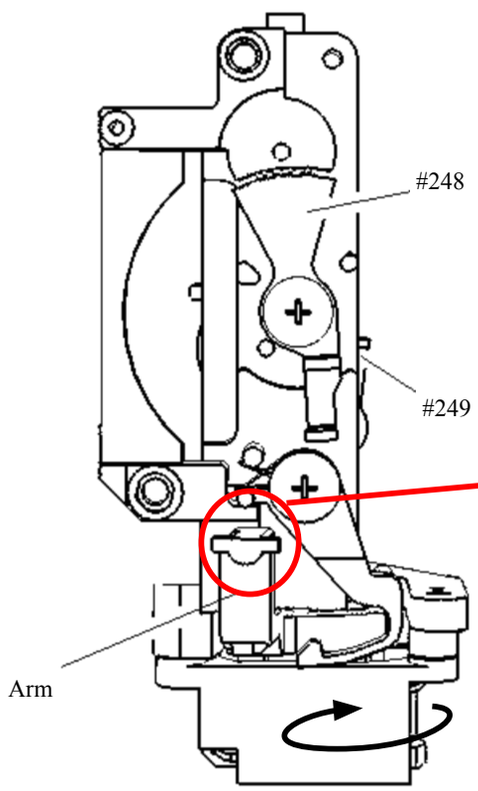


Fig. ②

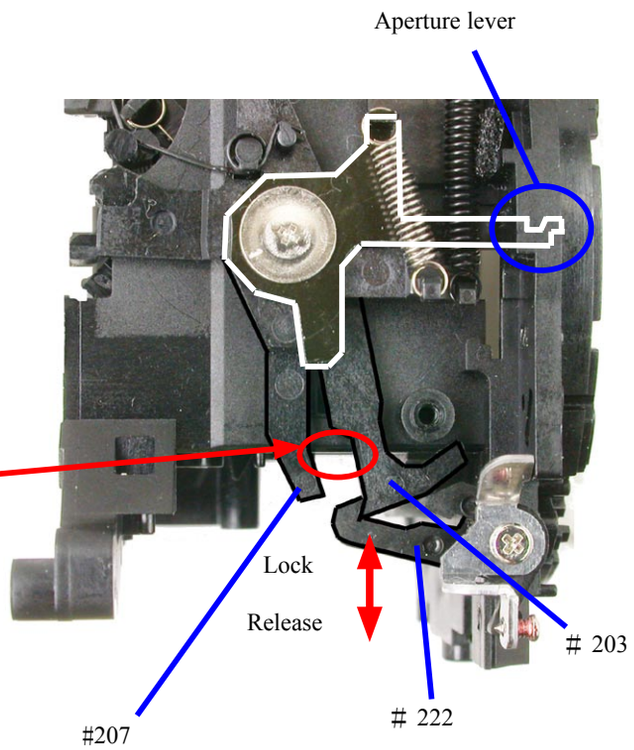


Fig. ③

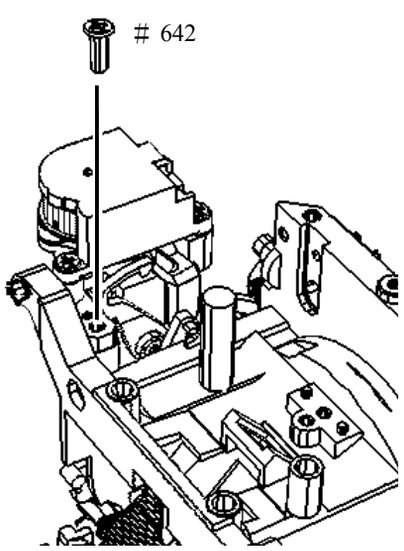
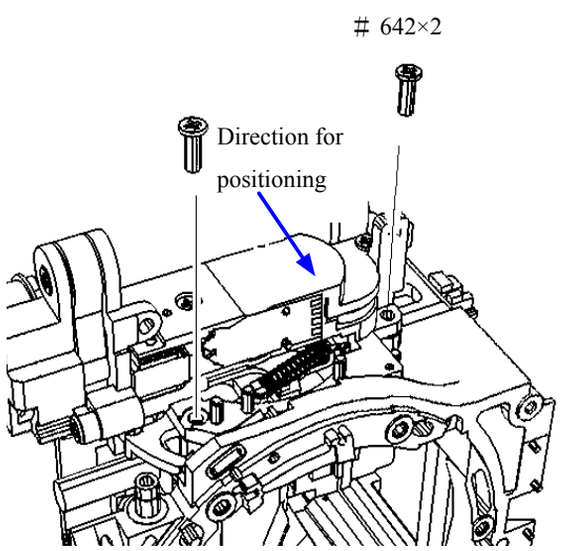


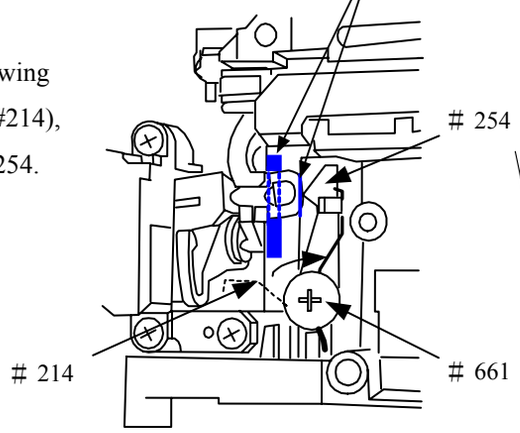
Fig. ④

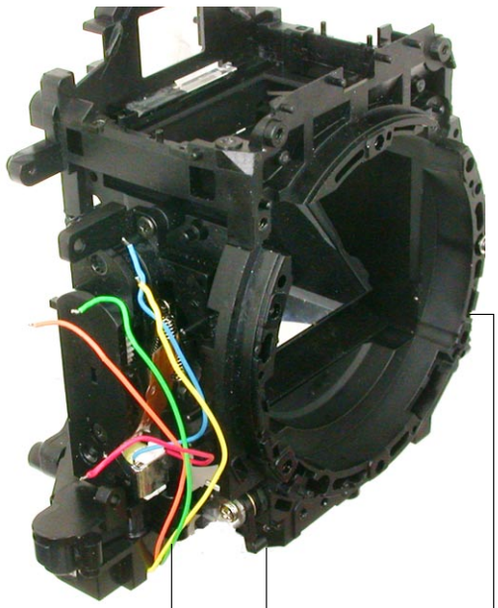


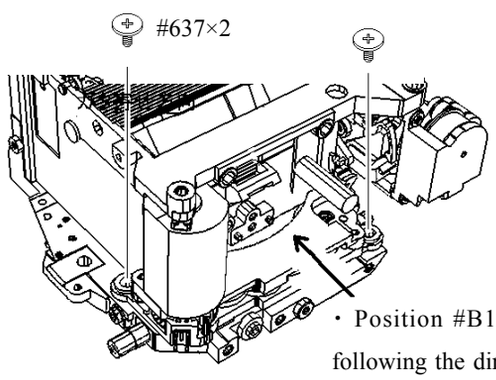
AF driving unit
Preview lever brake

Grease: LEN317A
Apply a little
on sliding surface

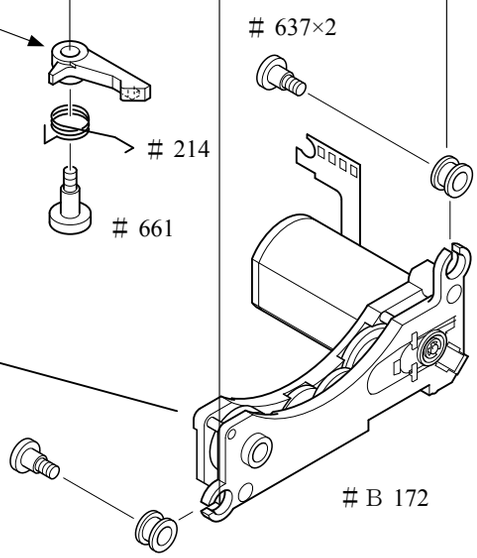
・After screwing the spring (#214), hook it to #254.



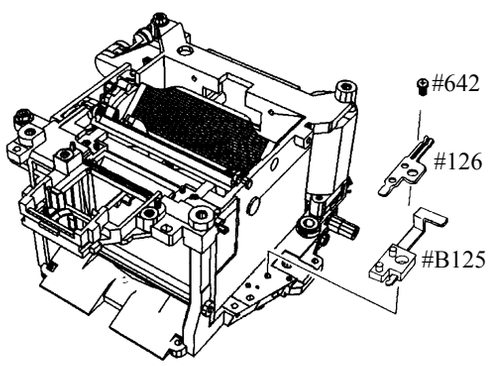


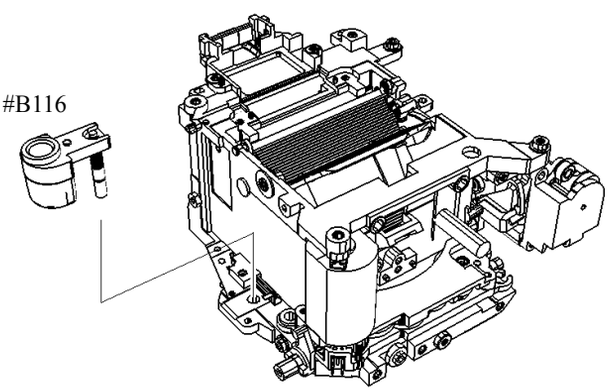


・Position #B172 by following the direction and screw it.



A/M change SW
Lens release button





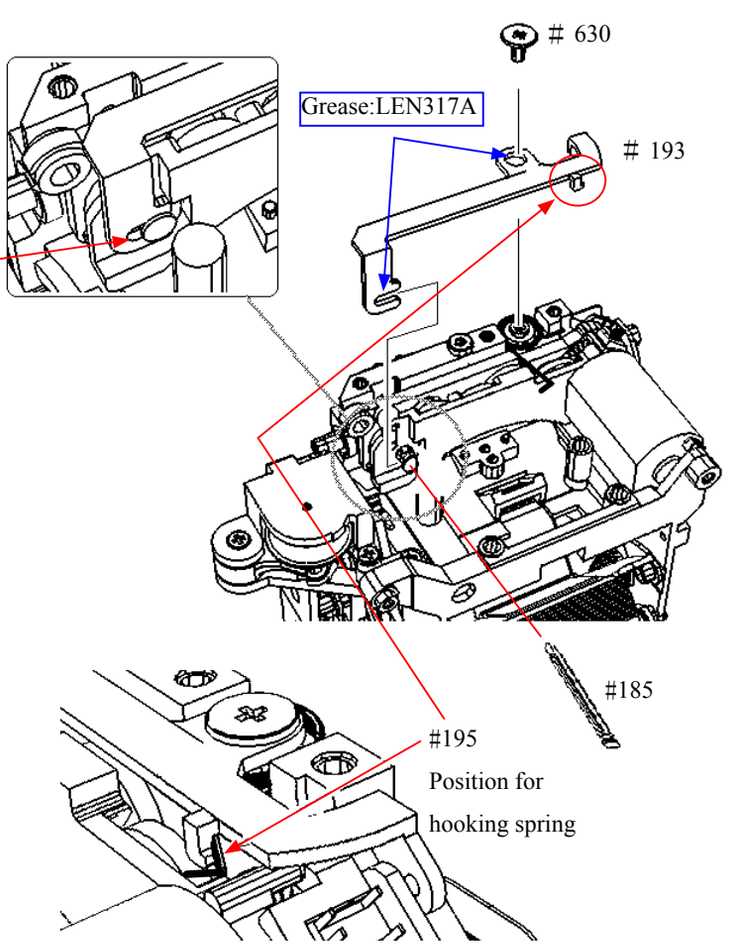
Vertical lever

・Assemble by the following order.
#122→#191→#630

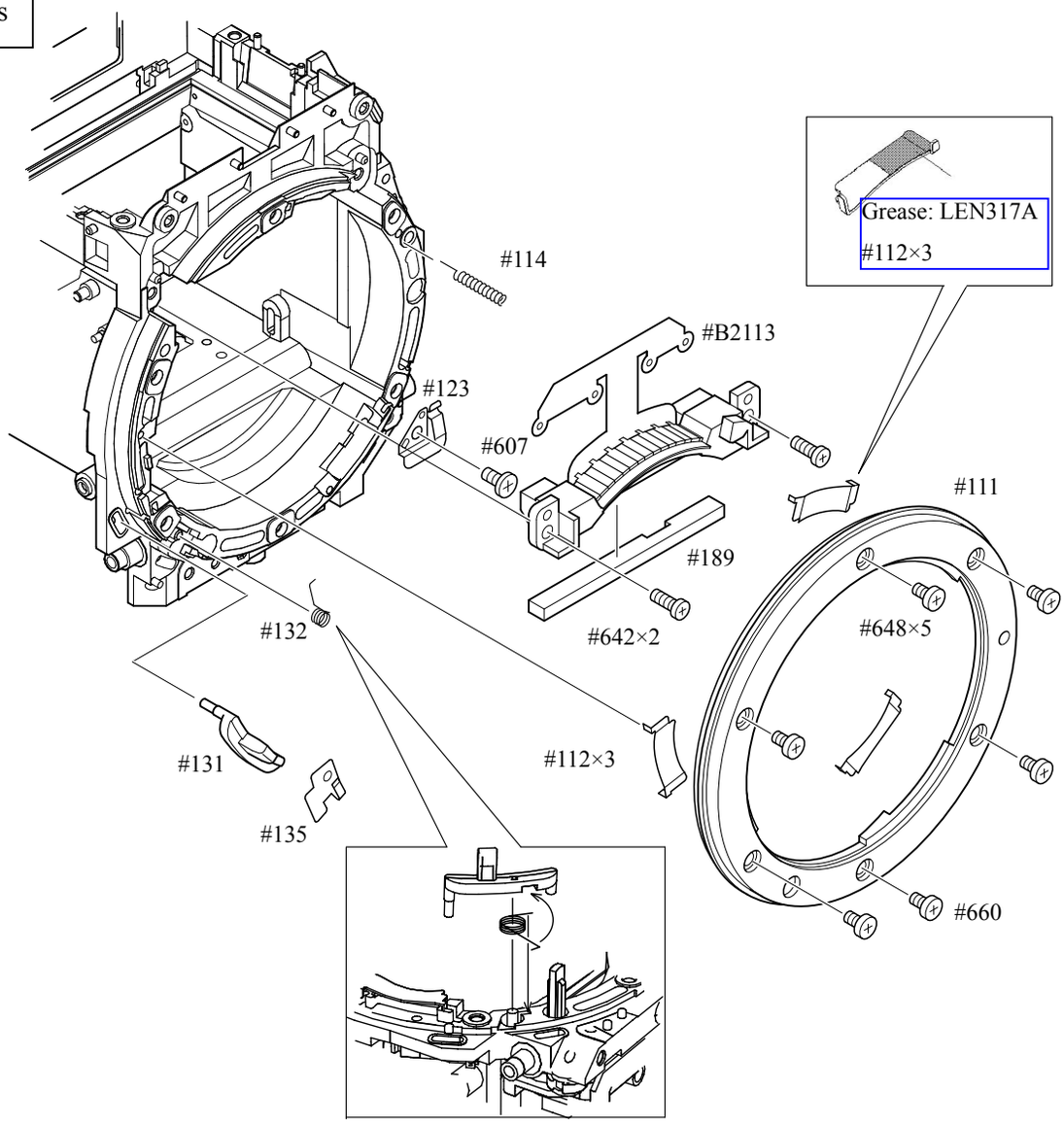
＊ Note: Be careful NOT to bend the contact blade of the lens release SW.

Horizontal lever

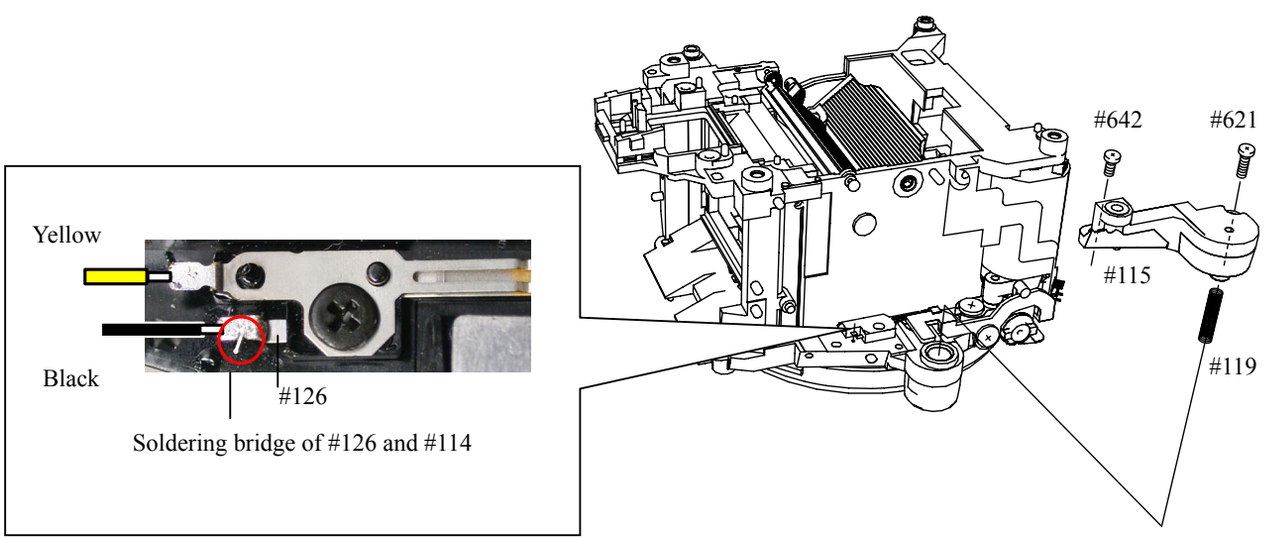
・Insert the U-shaped part of #193 into the groove of the AF driving shaft (#185).



Bayonet unit
AF lens contacts



A/M change SW cover unit

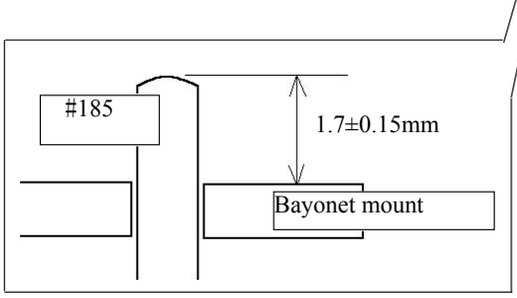


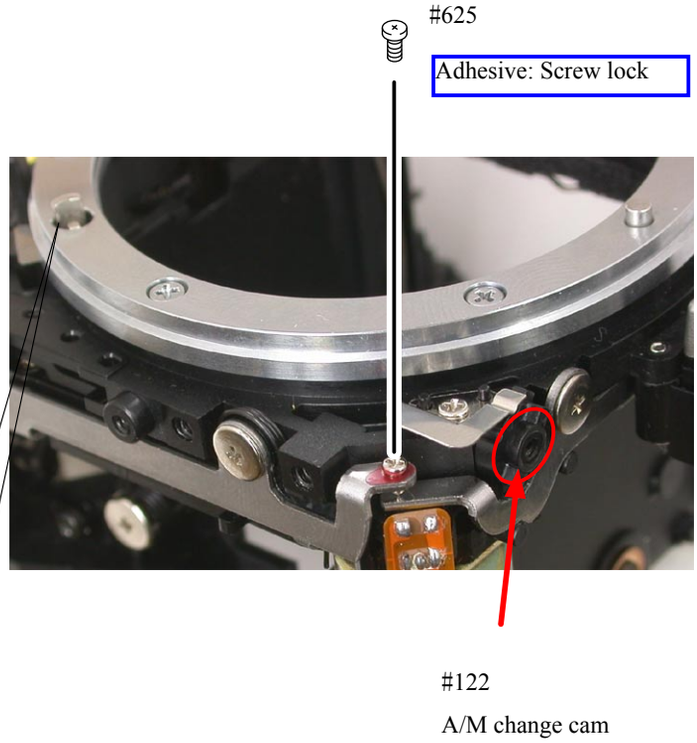
Height adjustment of AF coupling shaft

① Set the A/M change cam (#122) to AF side. (i.e. The AF coupling shaft (#185) sticks out of the bayonet.)

② Adjust the height of the AF coupling shaft (#185) with the screw (#625) so that it becomes 1.7±0.15mm.

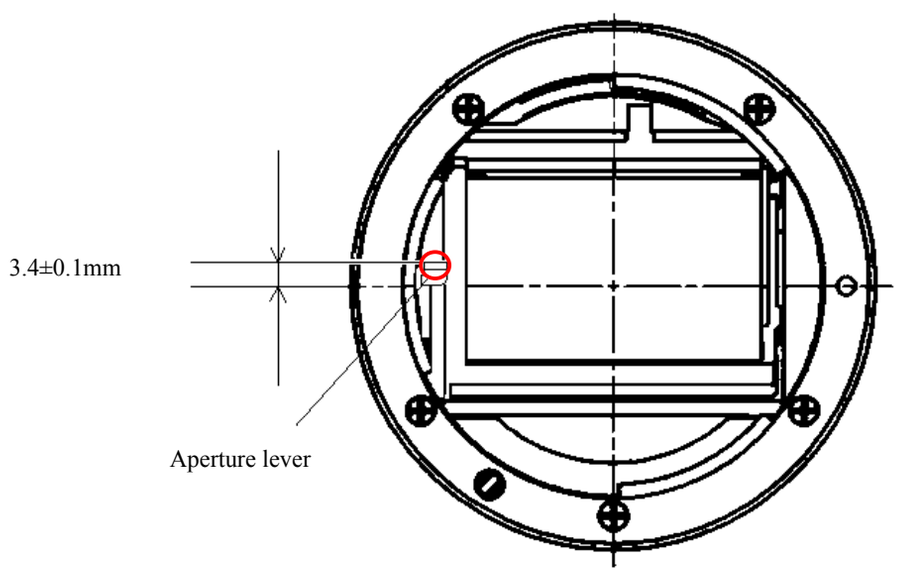
③ After the adjustment, fix the screw (#625) with screw lock.



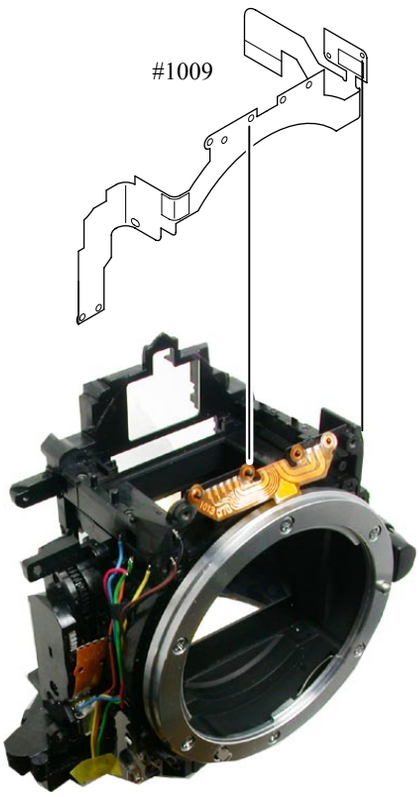


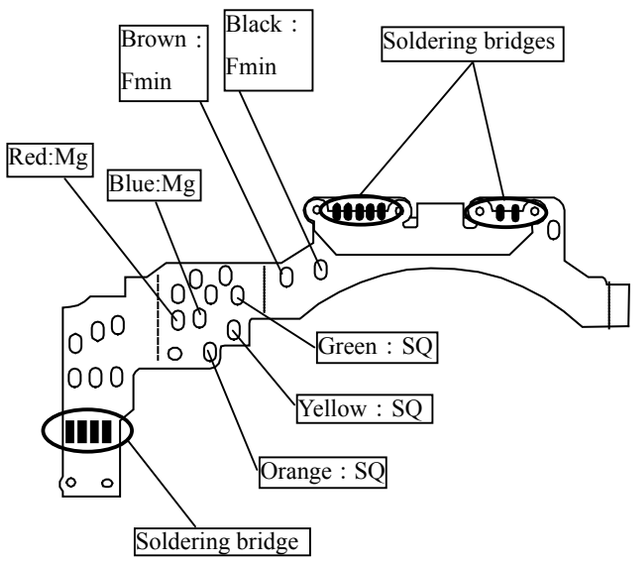
Height adjustment of Aperture lever

・Measure the height of the aperture lever by using the tool (J18004).
Standard: 3.4±0.1mm
In case the value is out of standard, make an adjustment by bending the circled part.
Be careful NOT to bend the inner part of the lever when adjusting!



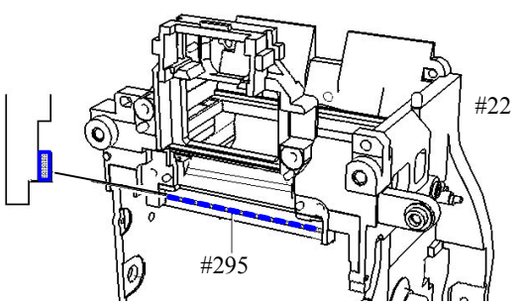
Front body FPC



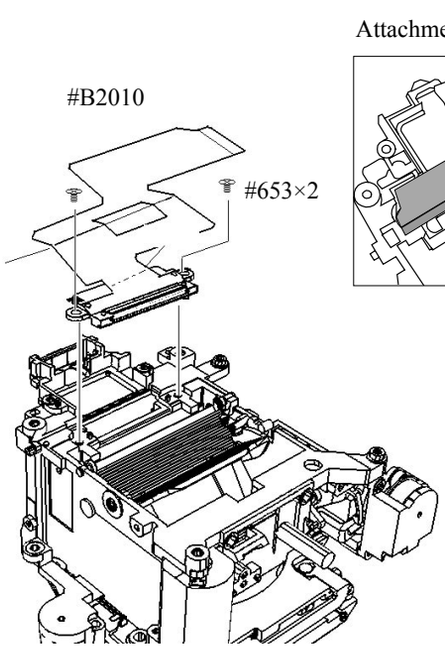


Inner LCD unit

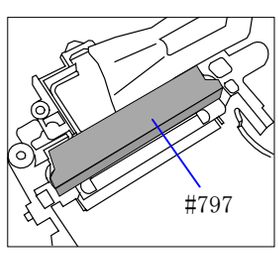
・Attach the sponge (#295) on the front plate (#22).



・Attach the inner LCD unit (#B2010) with 2 screws (#653).
・Attach the tape (#797)

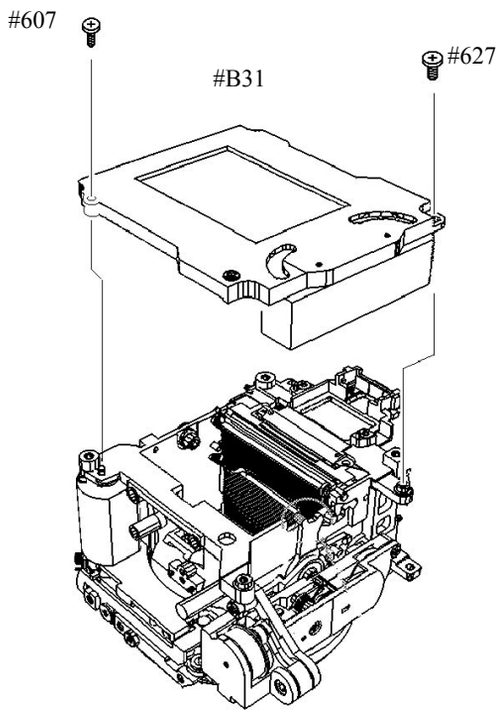


Attachment of #797

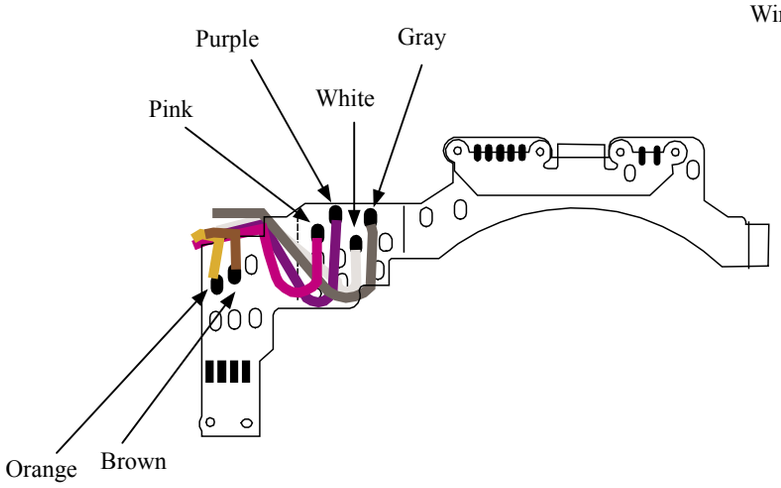


Shutter unit

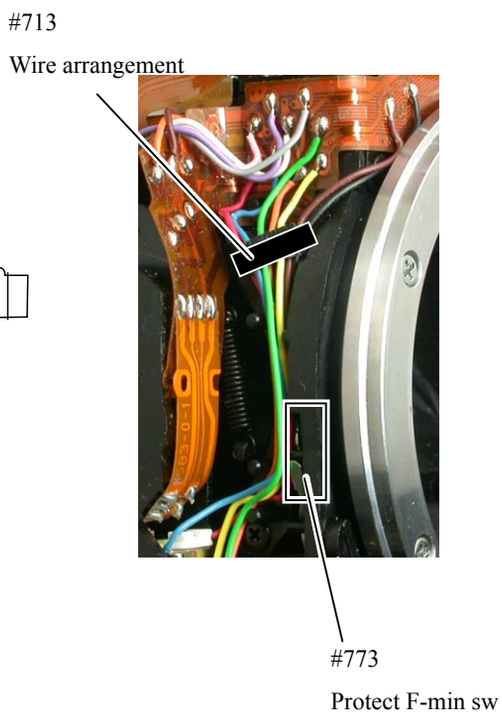
・Attach the shutter unit (#B31) with the screws (#607 and #627).



・Make soldering bridges and solder wires.

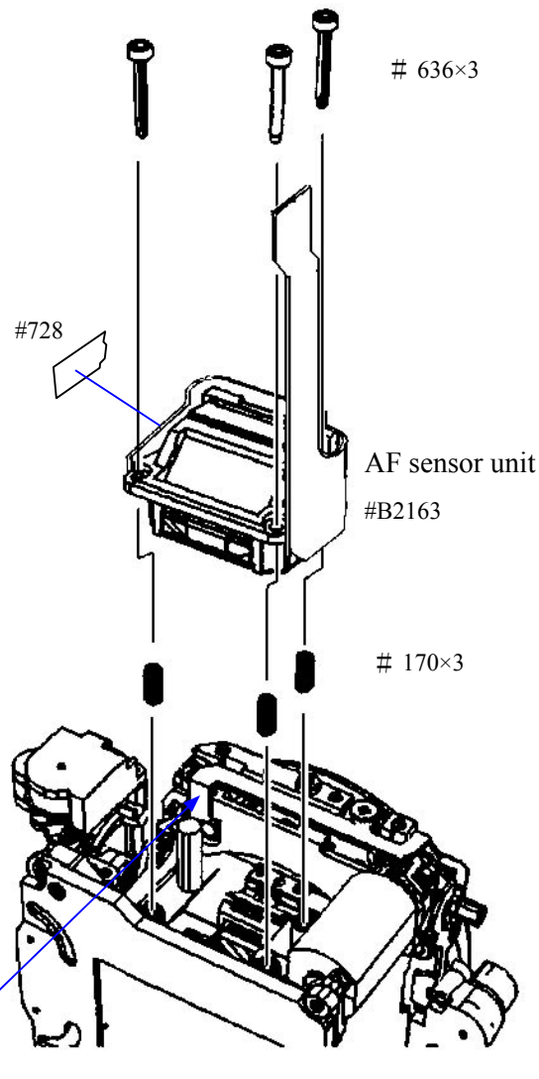


・Make an arrangement of wires and attach 2 pieces of tapes.



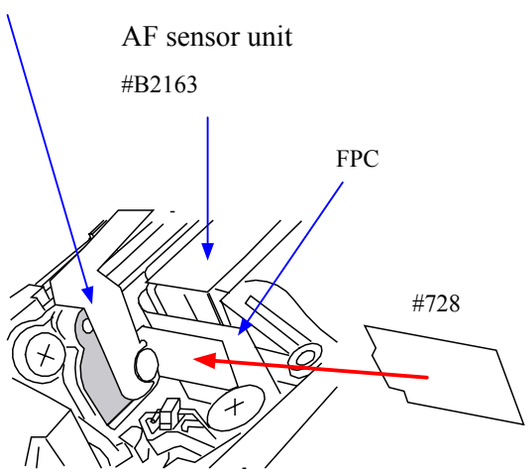
AF sensor unit

・Attach 3 screws (#636) with Hexagonal wrench to screw up but not tight, then give about 1 turn counterclockwise.



Horizontal lever (#193)

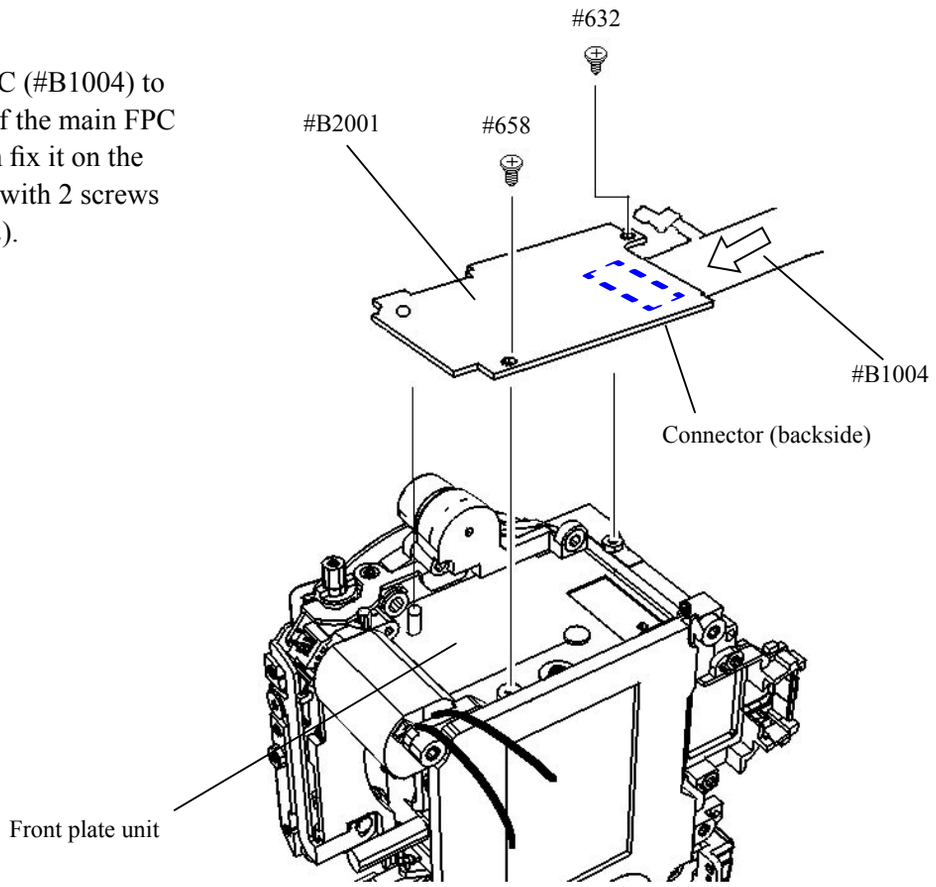
・Attach #728 so that the FPC of AF sensor unit can be protected.



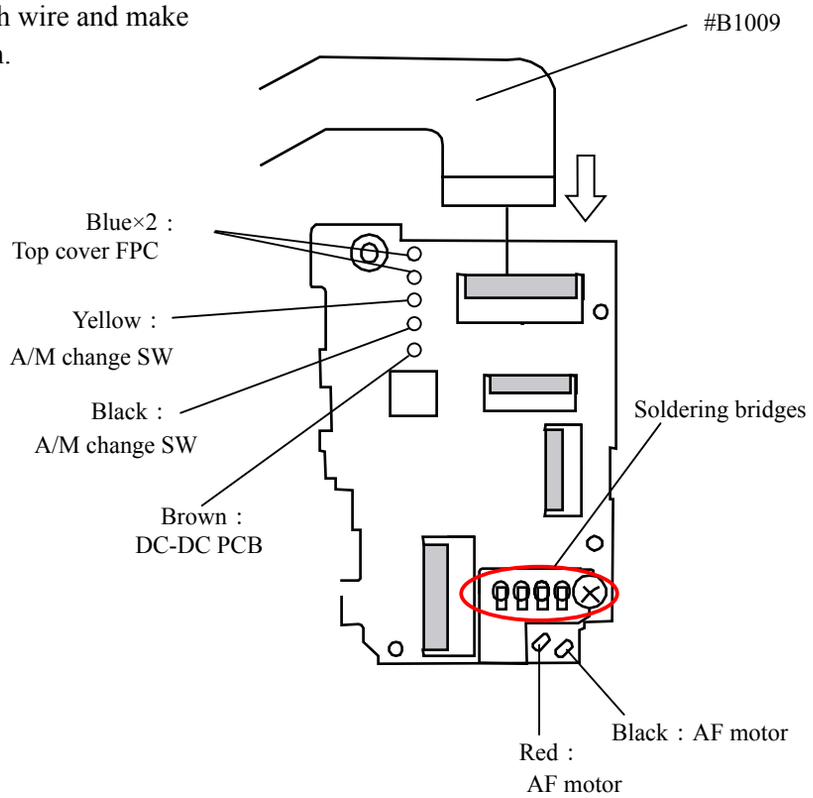
Position for attaching #728

Main PCB

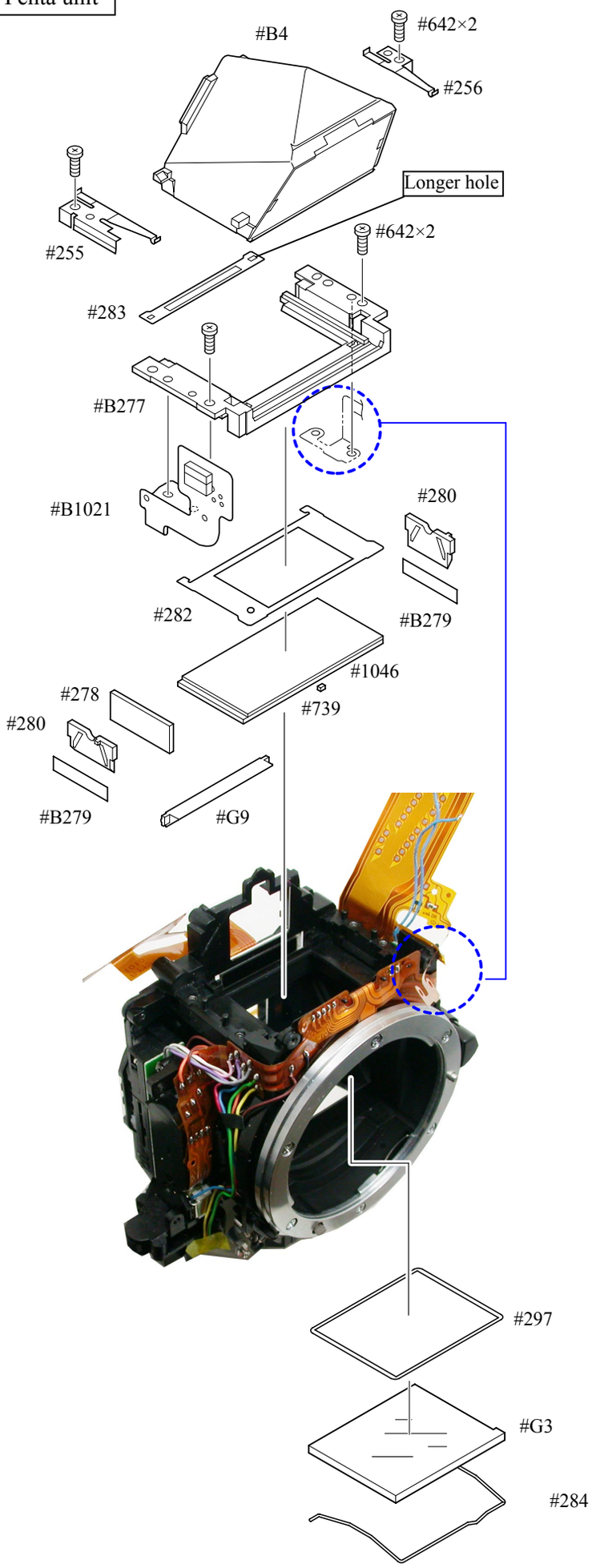
・Connect the FPC (#B1004) to the connector of the main FPC (#B2001), then fix it on the front plate unit with 2 screws (#658 and #632).

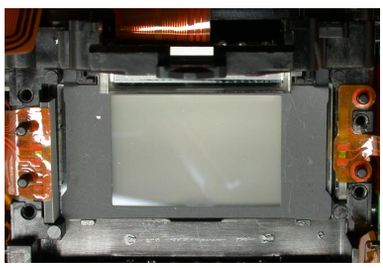


・Connect the front body FPC (#B1009) to the connector. Solder each wire and make solderign bridges for them.

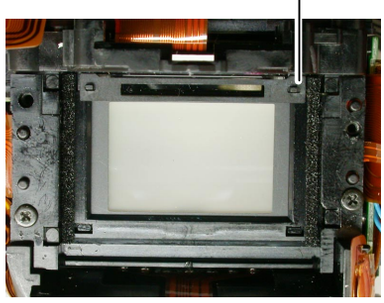


Penta unit

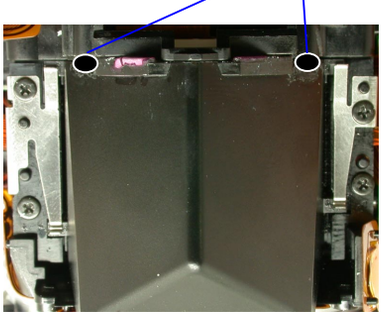




Longer hole of #283



Adhesive: C-8008B

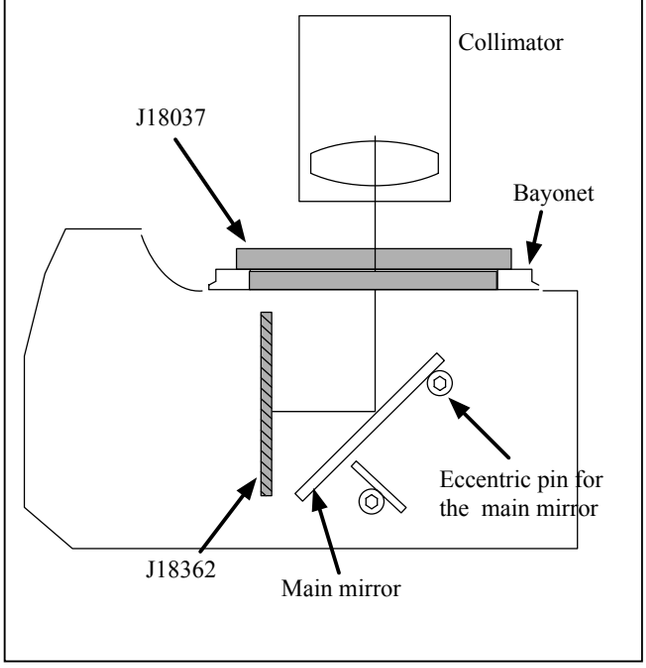


Angle adjustment of Main mirror and sub-mirror

*Tools required:

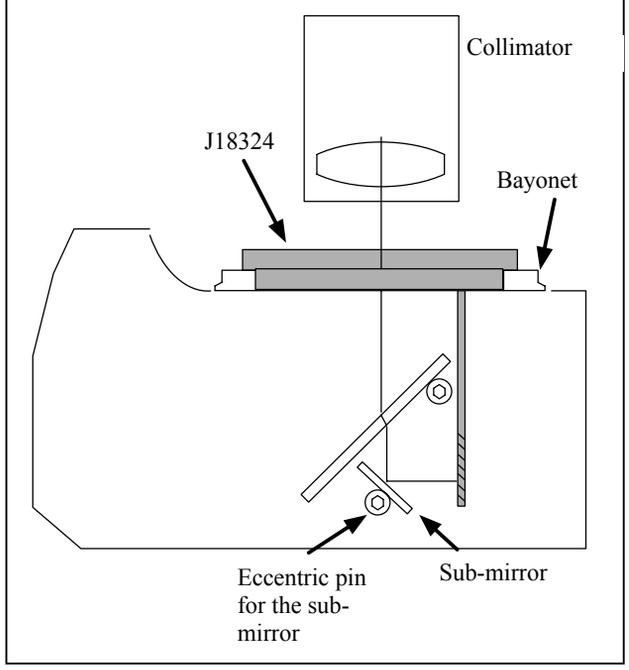
1.Main mirror 45°Inspection and Adjustment

① Collimator (J19002)
② Reflection mirror (J18362)
③ Optical parallel (J18037)
④ Hexagonal wrench



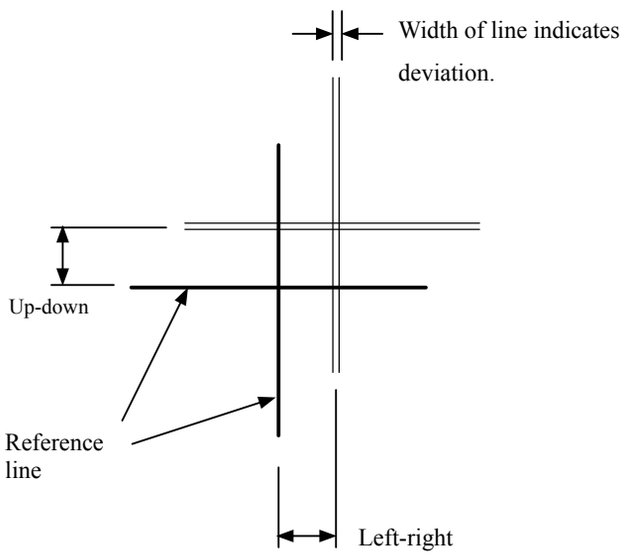
2. Sub-mirror 47.75° Inspection and Adjustment

① Collimator (J19002)
② Sub-Mirror 45 deg. inspection tool (J18324)
③ Hexagonal wrench



* Standard:

	Main mirror	Sub-mirror
Left-right deviation	±30’ or less	――
Up-down deviation	±10’	+15’ ～ -50'
Distortion	8’or less	8’or less

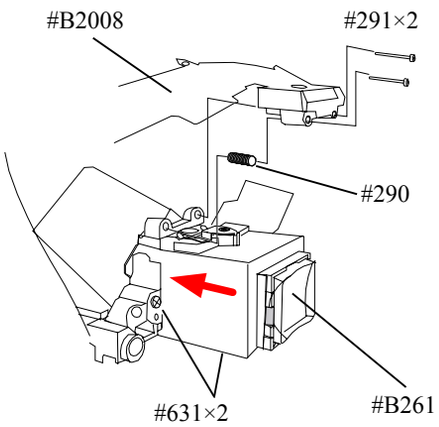


* Note:

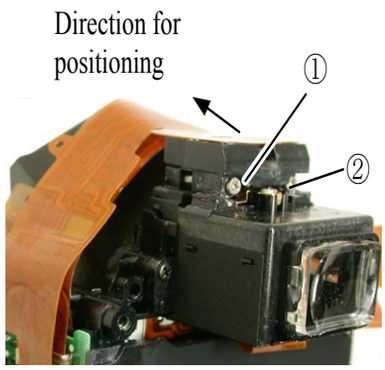
- Before and after the adjustment, check the accuracy by moving the main mirror up- and downwards a few times.
- Check for the up-down deviation. In case the deviation is out of standard, make an adjustment by turning the eccentric pin for the sub-mirror with Hexagonal wrench.
- In case the deviations of up-down and left-right are out of standard, the front plate unit or mirror unit is regarded as malfunctioning.
- In case check or adjust only front body, check again after attach the front body to the rear body.

Eyepiece unit
Metering FPC unit

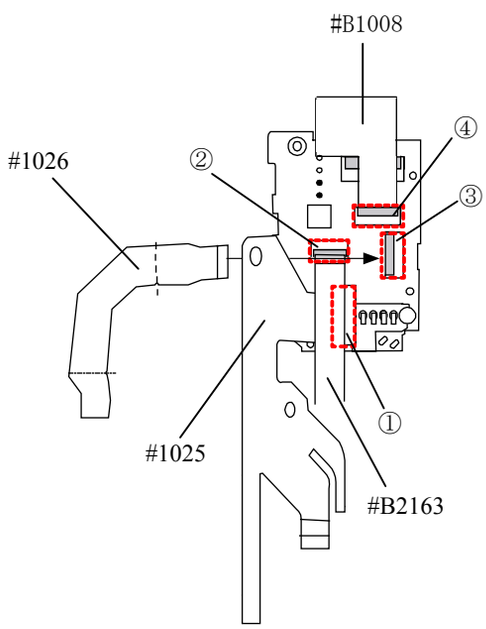
・Attach the eyepiece unit (#B261) with 2 screws (#631).
Attach the metering FPC unit (#B2008) and the spring (#290) temporarily with 2 screws (#291).

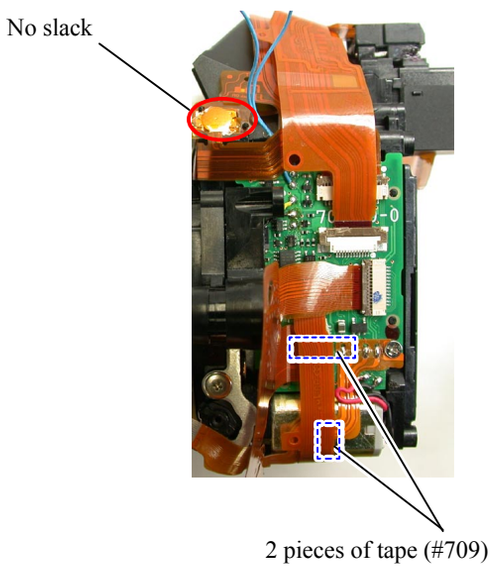


・Position the metering FPC unit by following the direction, then attach it lightly with screws (first ① , then ②).
Give the screws (① and ②) about 3.5 turns counterclockwise.



FPC connections

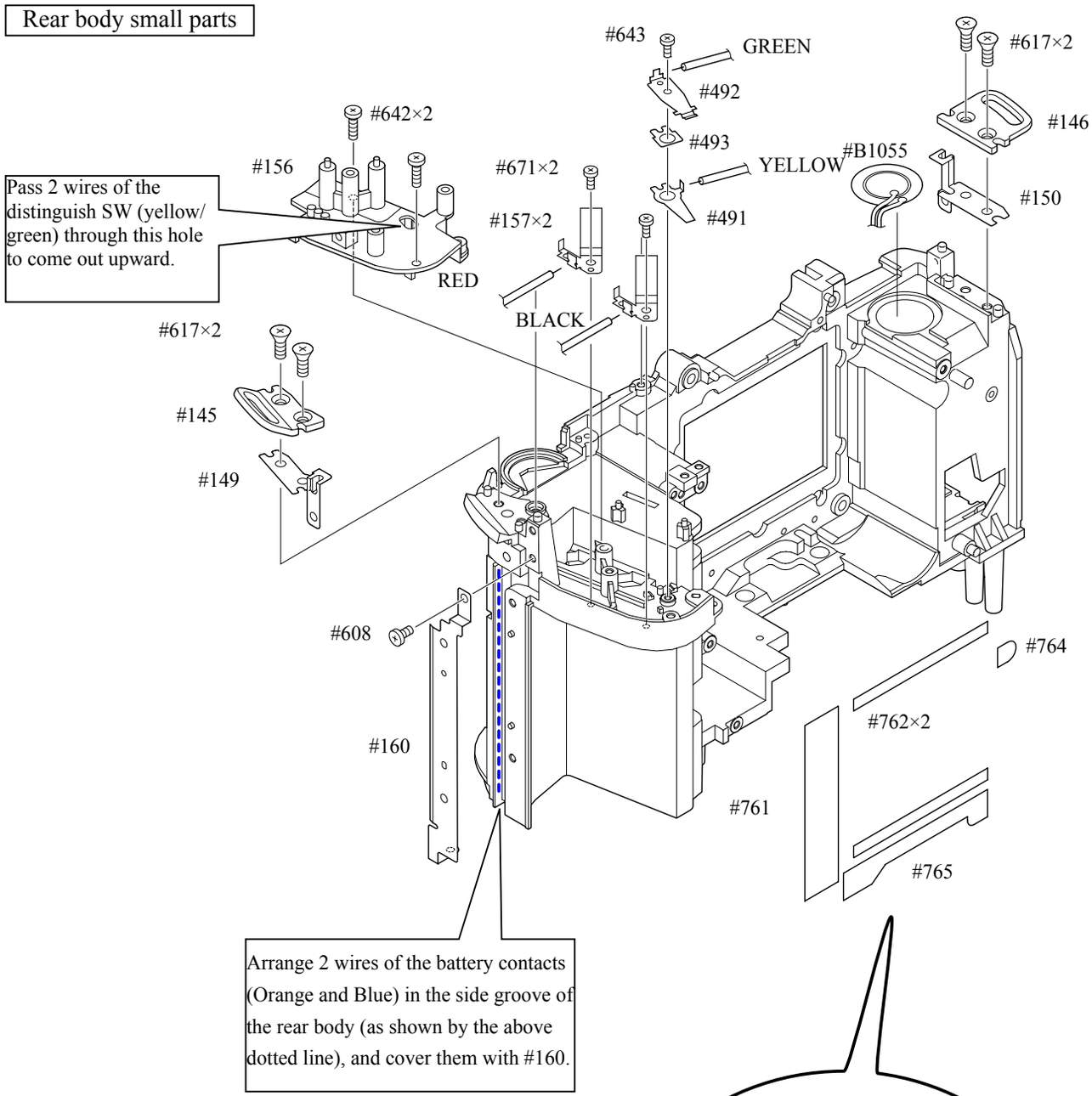




Note: Slack here catches the rear body when it is attached.

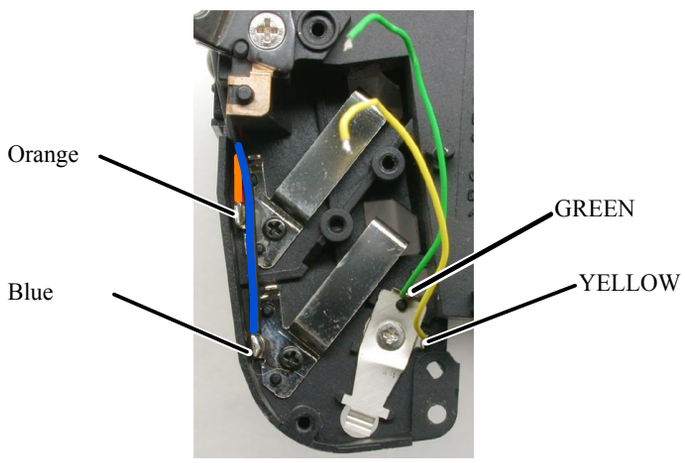
2. Rear body

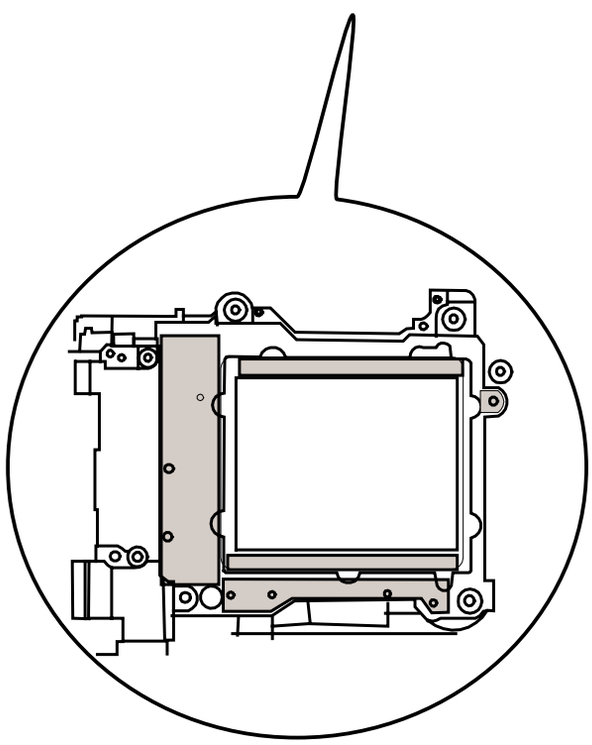
Rear body small parts



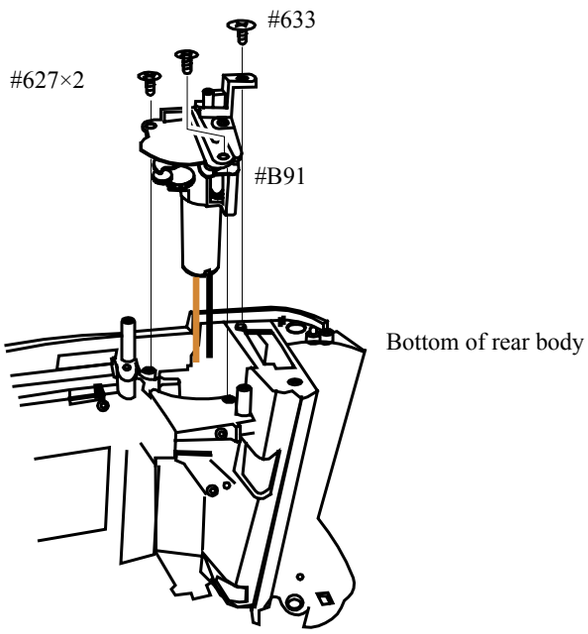
Pass 2 wires of the distinguish SW (yellow/ green) through this hole to come out upward.

Arrange 2 wires of the battery contacts (Orange and Blue) in the side groove of the rear body (as shown by the above dotted line), and cover them with #160.



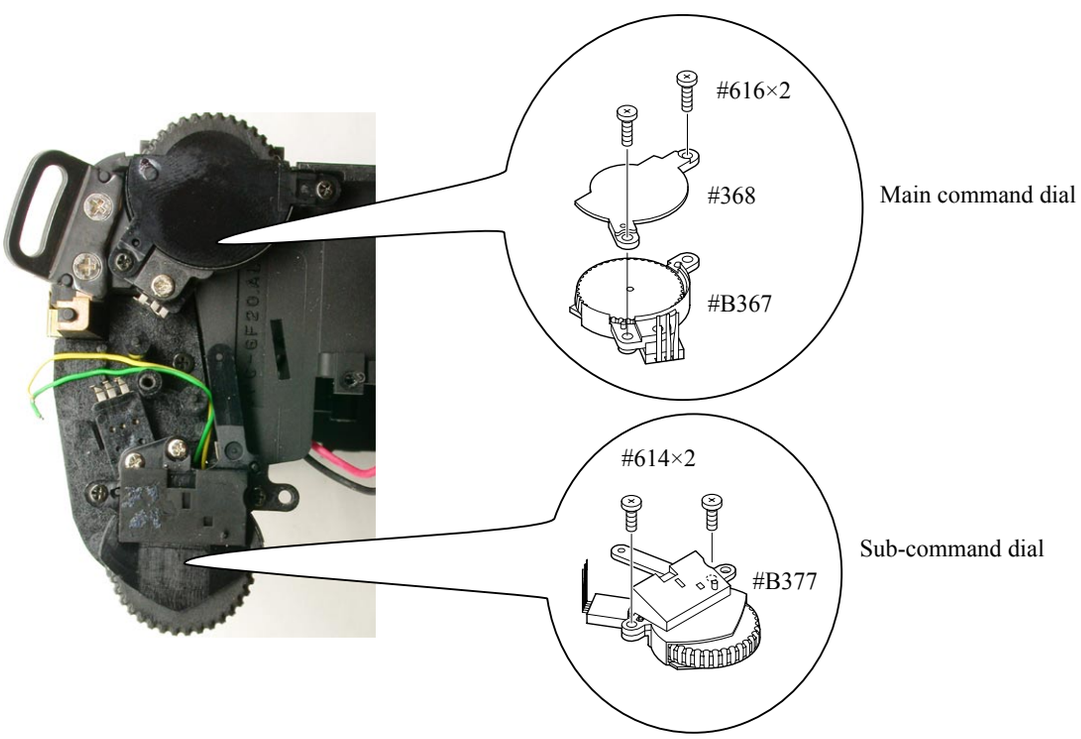


SQ unit



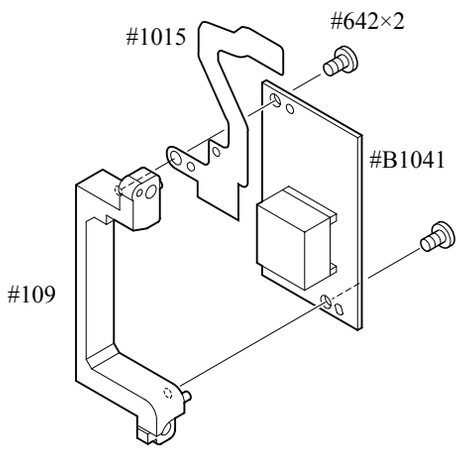
Main-/Sub- Command Dial unit

・Arrange 2 wires of the distinguish SW (yellow and green) as follows.

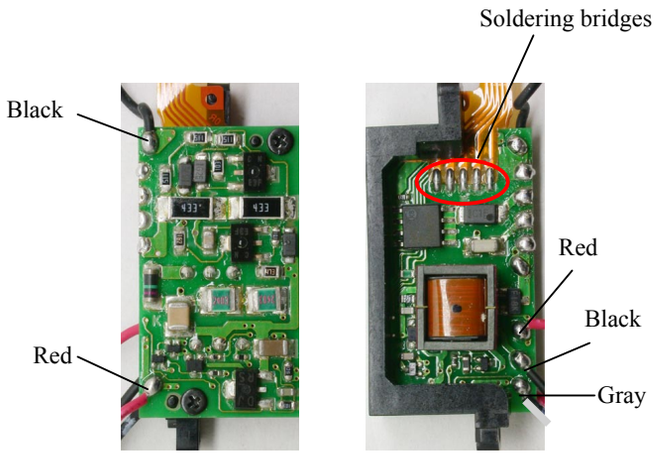


SB PCB / Sub-PCB

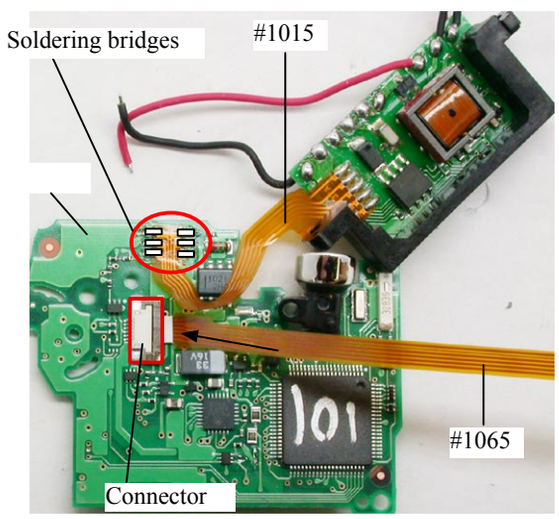
・Assemble the SB PCB (#B1041), sub-SB connection FPC (#1015), and SB-PCB holder (#109) with 2 screws (#642).



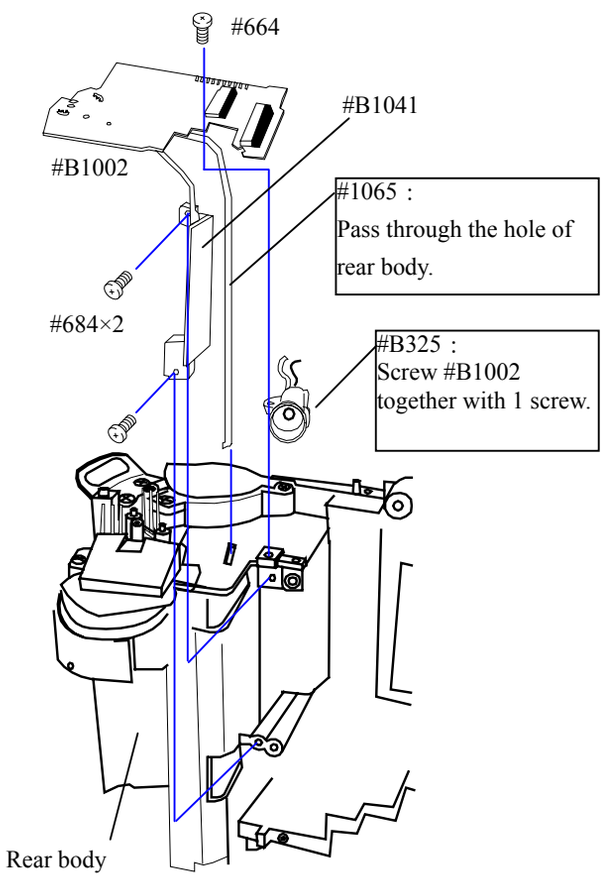
・Make soldering bridges and solder 5 wires.



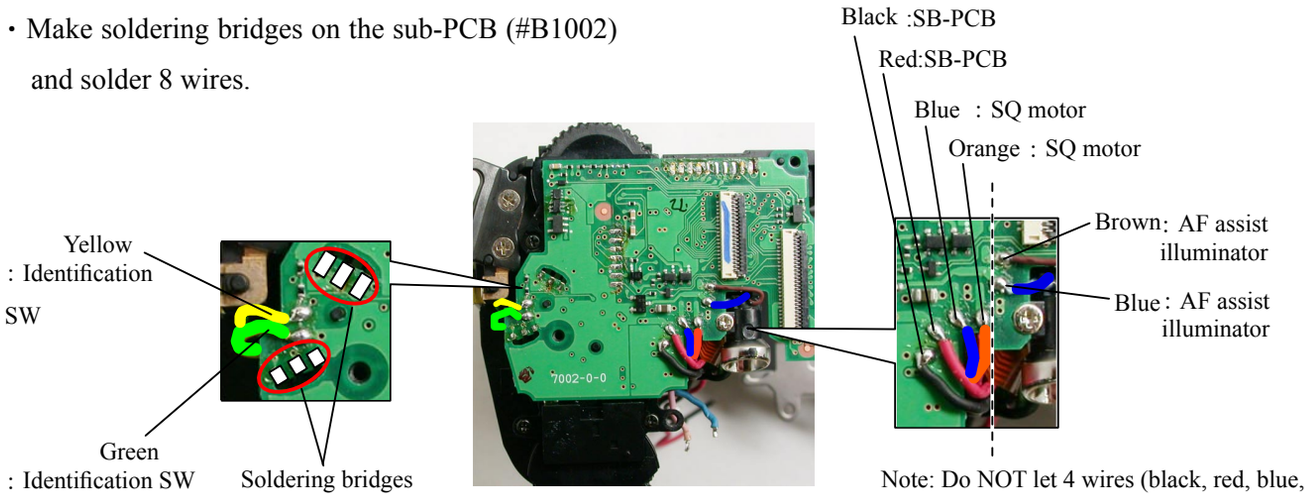
・Connect the connection FPC (#1065) to the connector of the sub-PCB (#B1002). Make soldering bridges of the sub-SB connection FPC (#1015).



・Assemble the sub-PCB (#B1002) and the SB-PCB (#B1041) with 2 screws (#664 and #684) into the rear body.



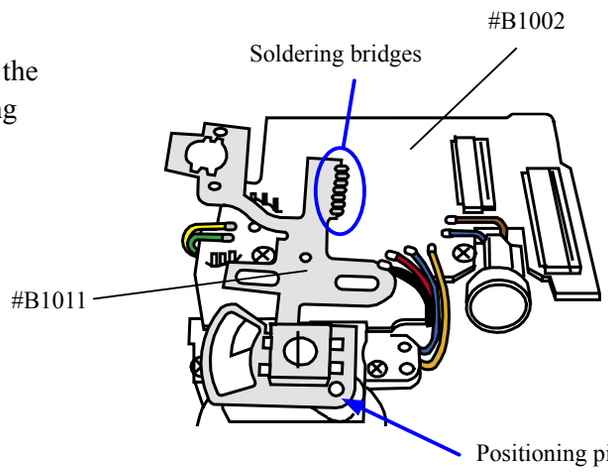
・Make soldering bridges on the sub-PCB (#B1002) and solder 8 wires.



Note: Do NOT let 4 wires (black, red, blue, and orange) be on the right side of the dotted line by exceeding it.

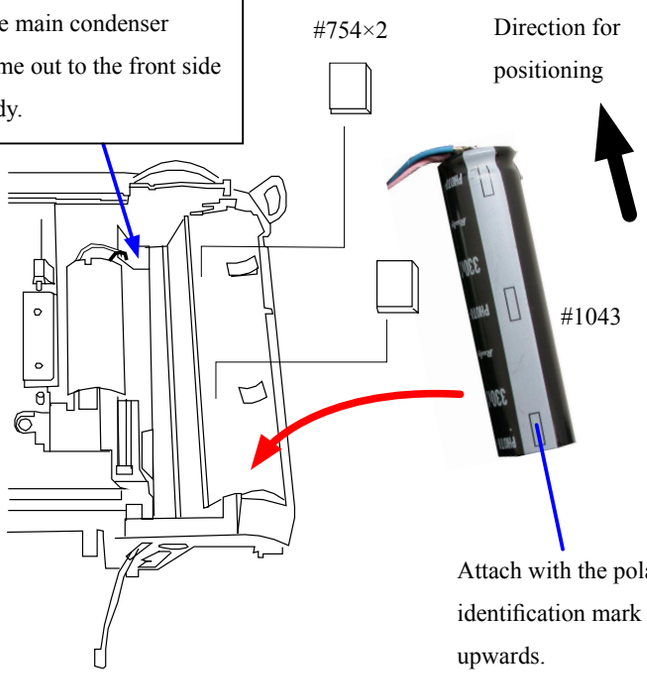
Main SW FPC

・Attach the main SW FPC (#B1011) on the sub-PCB (#B1002), and make soldering bridges of them.

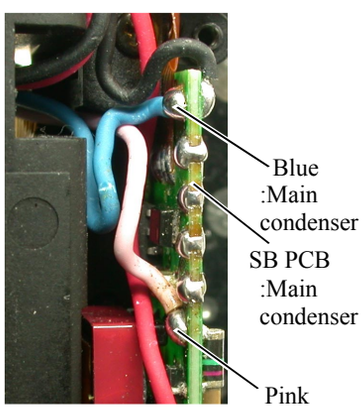


Main condenser

Pass 2 wires (pink and blue) through this hole of the main condenser (#1043) to come out to the front side of the rear body.



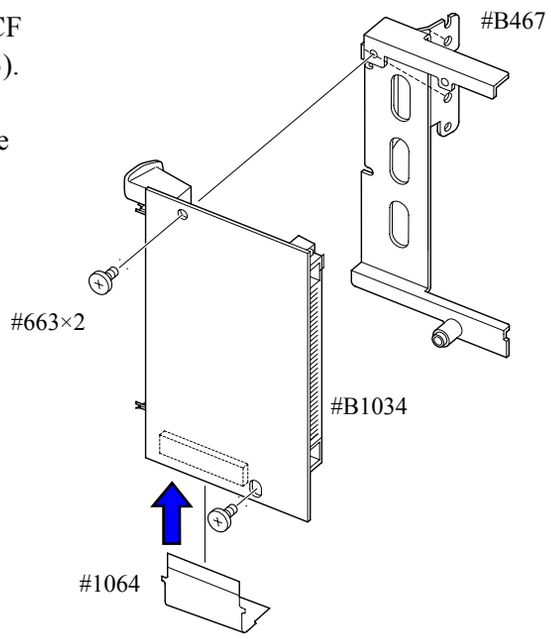
Solder 2 wires (pink and blue) on the front SB PCB of the rear body.



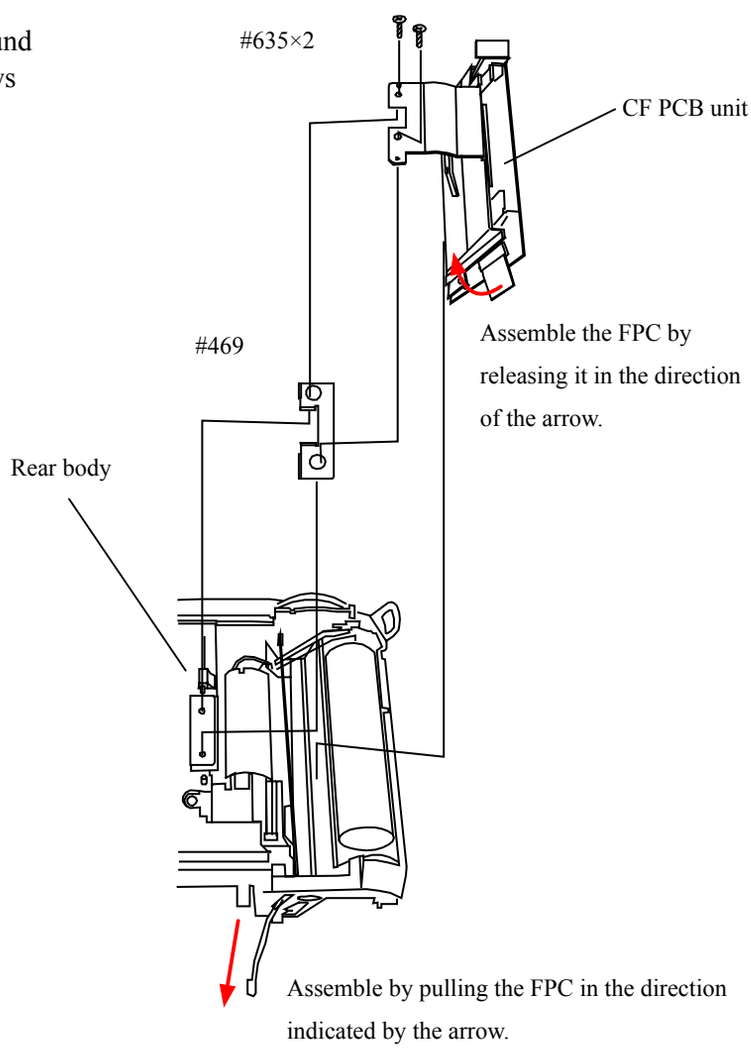
CF PCB unit

・Attach the CF PCB unit (#B1034) on the CF PCB retainer (#B467) with 2 screws (#663).

・Connect the connection FPC (#1064) to the connector of #B1034.

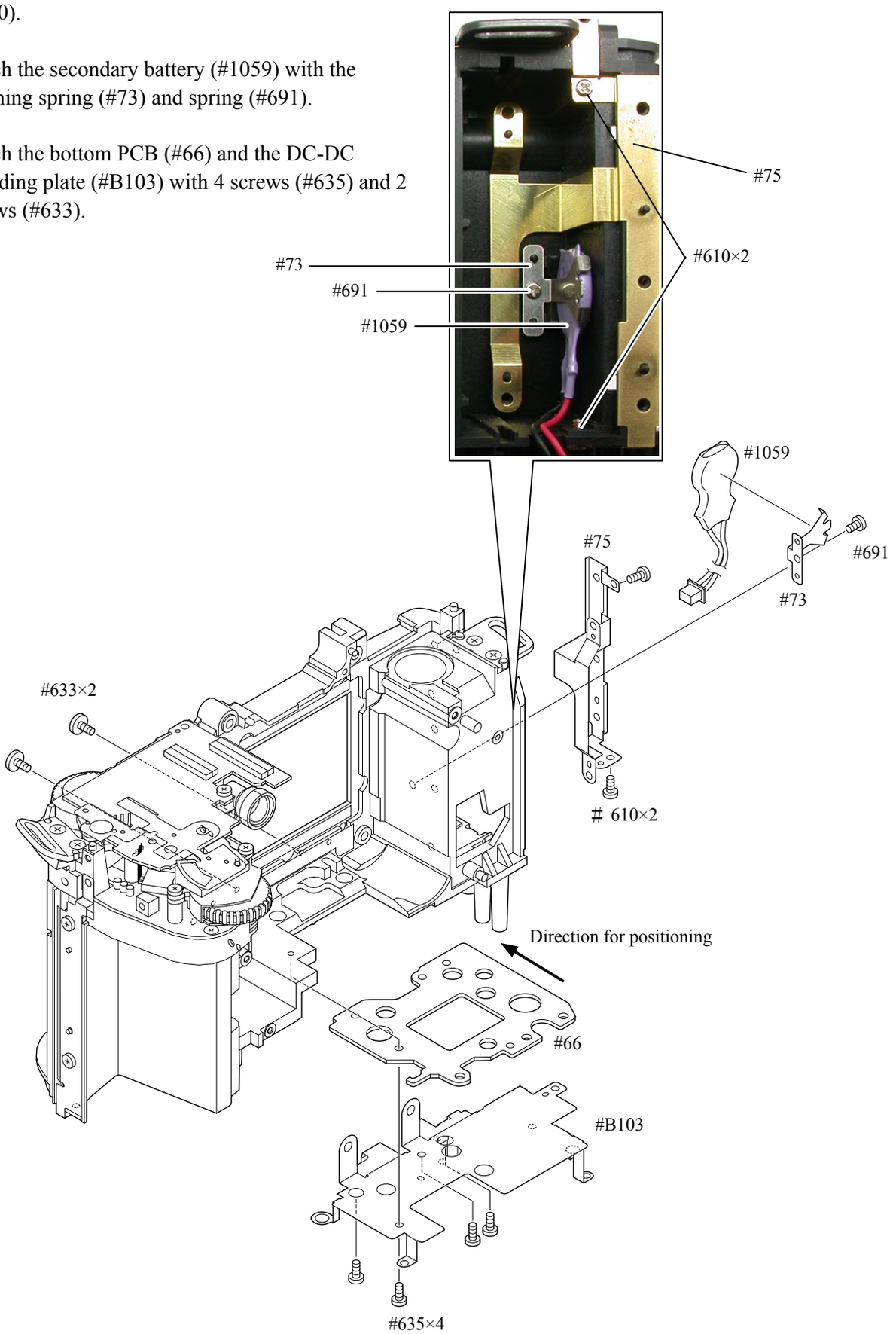


・Assemble the CF PCB unit and CF ground plate (#469) into rear body with 2 screws (#635).



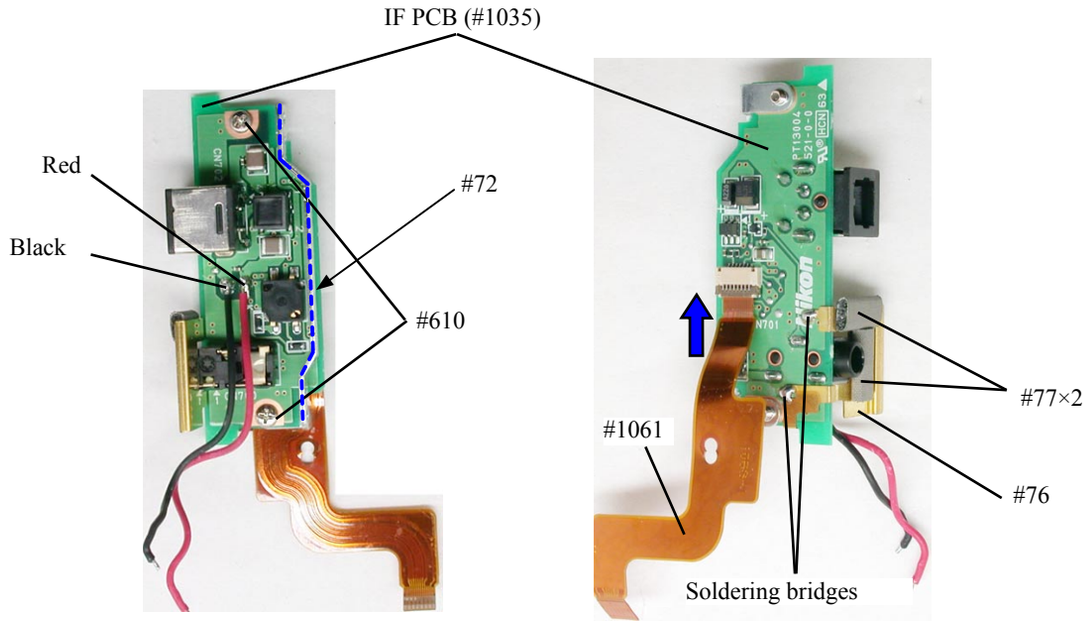
Bottom base plate
Secondly battery

- Attach the IF PCB GND plate (#75) with 2 screws (#610).
- Attach the secondary battery (#1059) with the retaining spring (#73) and spring (#691).
- Attach the bottom PCB (#66) and the DC-DC shielding plate (#B103) with 4 screws (#635) and 2 screws (#633).

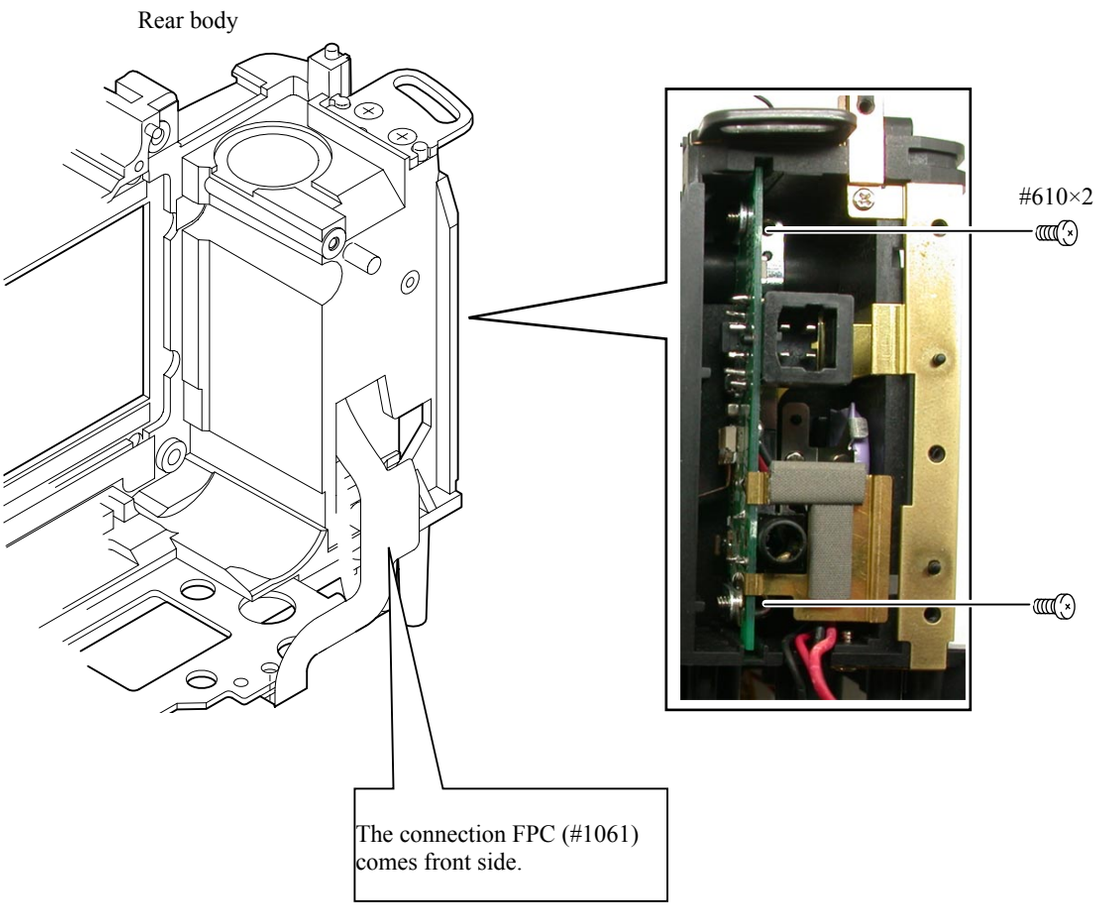


IF PCB unit

- Attach the IF PCB retaining plate (#72) on the IF PCB (#1035) with 2 screws (#610).
- Solder 2 wires (red and black).
- Attach the IF PCB shielding plate (#76) by making soldering bridges.
- Adhere 2 IF gaskets (#77) to #76.
- Atatch the connection FPC (#1061) to the connector.



- Attach the IF PCB unit to rear body with 2 screws (#610).

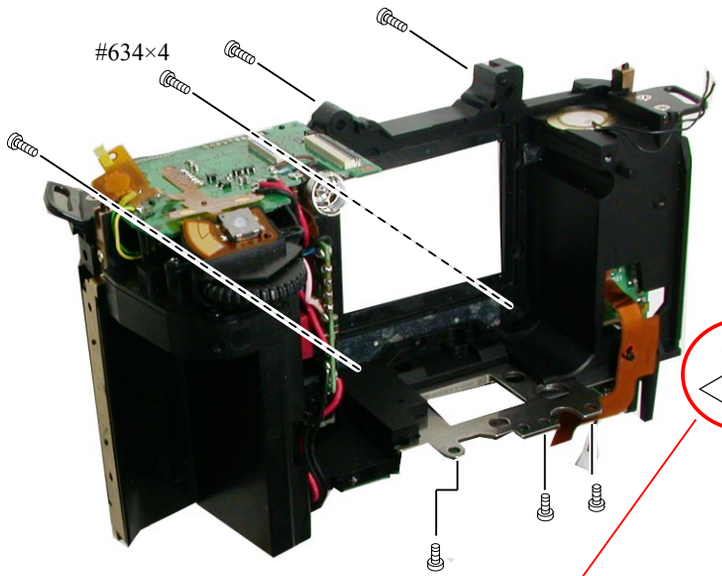


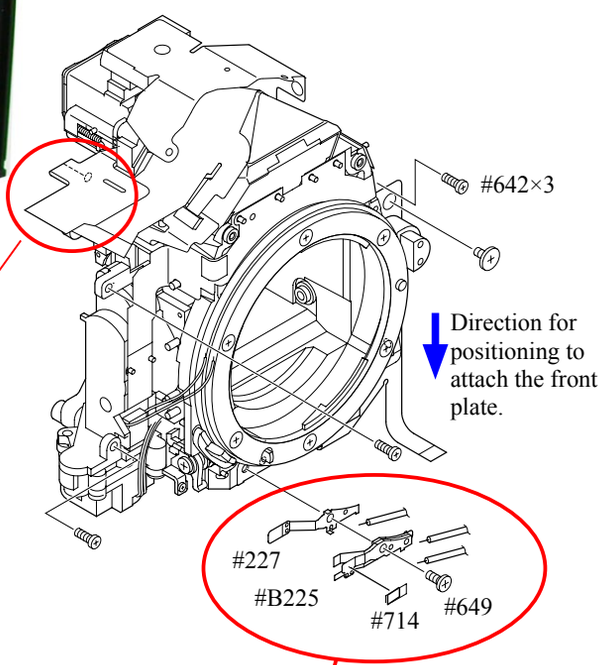
3. Mount Front body on Rear body

Mount the front body on the rear body

・Do NOT pinch wires and FPCs.

・Attach screws by the following order. #642×3 → #634×4 → #699×3





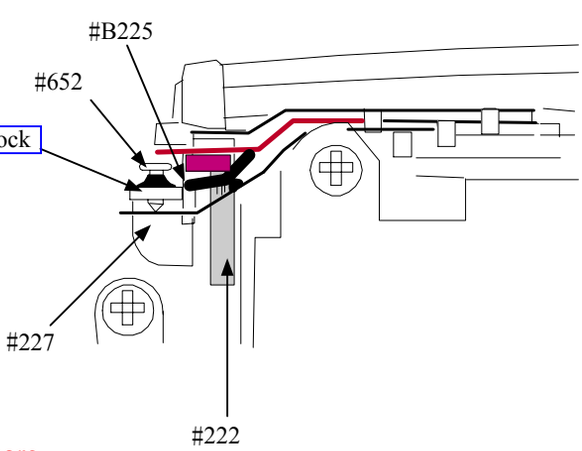
Arrange FPCs of the inner LCD by putting them into the clearance between rear body and eyepiece.

Preview SW Adjustment

① Press the lever (#224) with screw driver, etc from the bottom of the body so that it touches the uppermost part.

② In the state of ① , make an adjustment by turning the screw #652 so that #227 and #B225 slightly touch with each other.

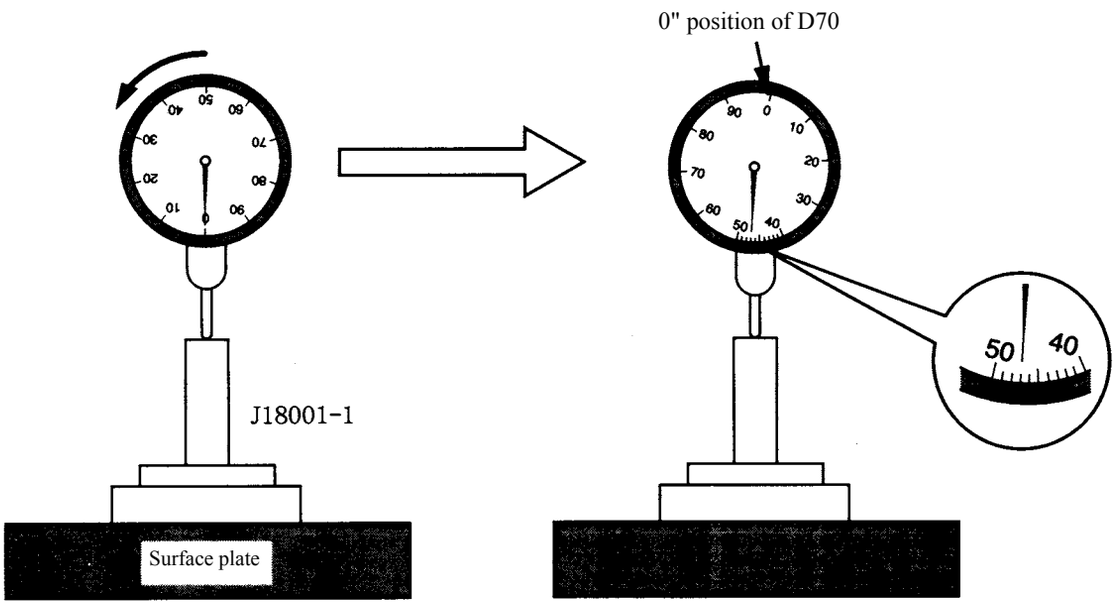
③ Adhere the screw (#652) with screw lock.



＊ Note:
Preview switch blade is easily bent, so handle it with care.

Inspection and Adjustment of Body back

＊ "0" positioning of the dial gauge

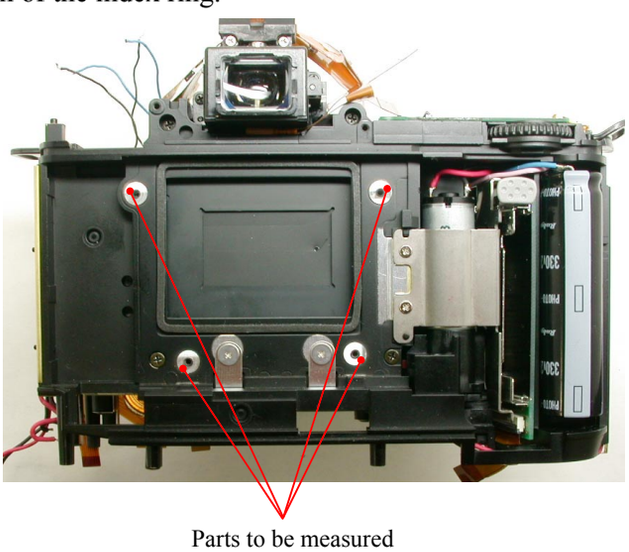


① Put the tool (J18001-1) on the surface plate, and set the dial gauge to "0".
② Turn the index ring to shift the position by "0.47 mm" from "0" that was set in ① .
(This position is "0" of D70.)
③ Measure the body back based on "0" reference position of the index ring.

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

Standard:48.2±0.015mm/ 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.

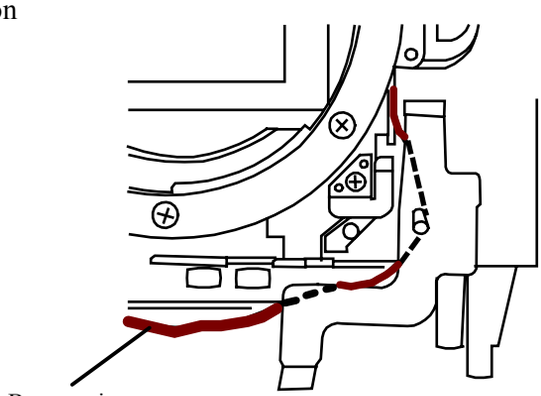


Parts to be measured

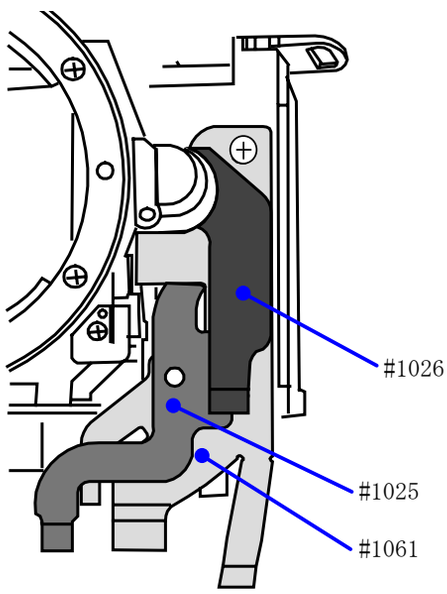
Note: For some bodies, washer(s) are already put on the attaching face of the CCD-PCB.
There is an indication of the mark in red at the following 2 positions.

1. Indication: on the camera body side of the CCD-PCB attaching face
Purpose : To adjust the height of the camera body
＊ By adding the measured value to the thickness of washers, check if it is within the standard (48.2±0.015mm).
2. Indication: on the CCD-PCB attaching face
Purpose : To adjust the height of the CCD-PCB
＊ When the CCD PCB is replaced, remove the washers.

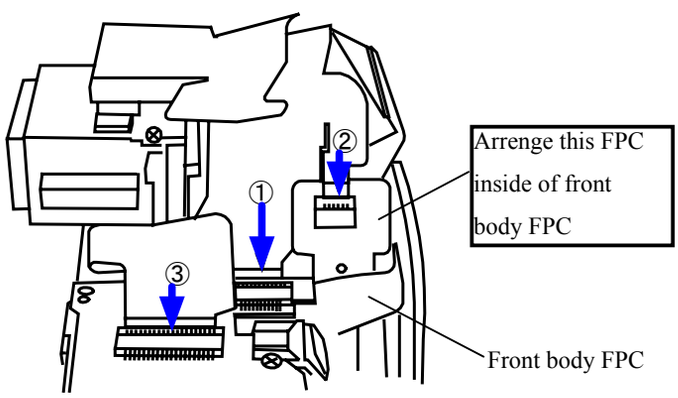
・Arrange the brown wire that was soldered on the main PCB (ref. Page A11).



・Arrange each FPC.

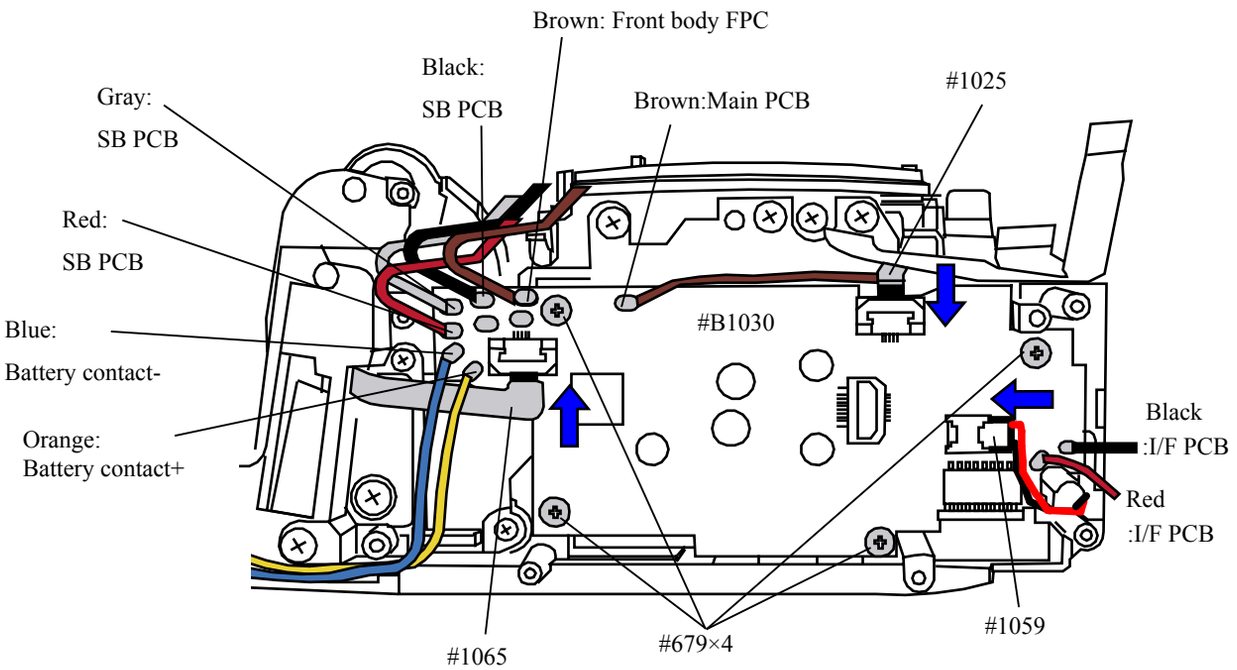


・Connect each FPC to the connectors in the order of ① , ② , and ③ .

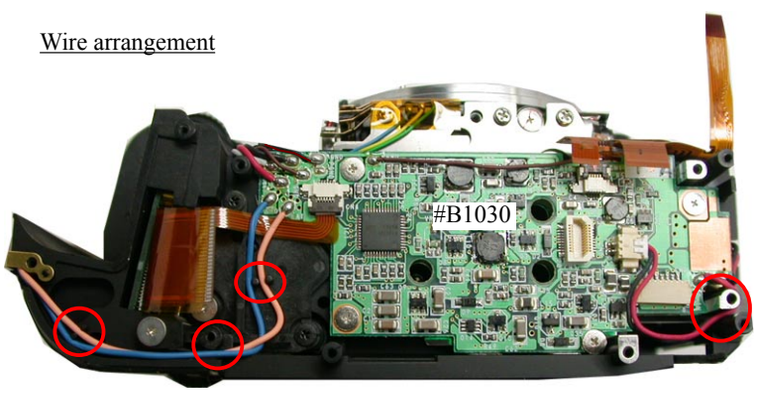


DC-DC PCB

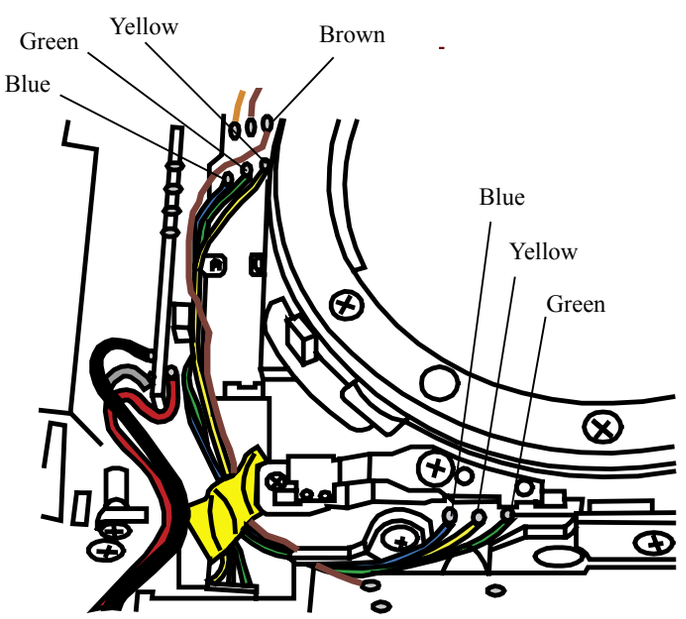
- Attach the DC-DC PCB (#B1030) with 4 screws (#679).
- Solder 9 wires.
- Connect the connection FPC (#1065), connection FPC (#1025), and secondary battery (#1059) to each connector of #B1030.



Wire arrangement



- Solder 7 wires.

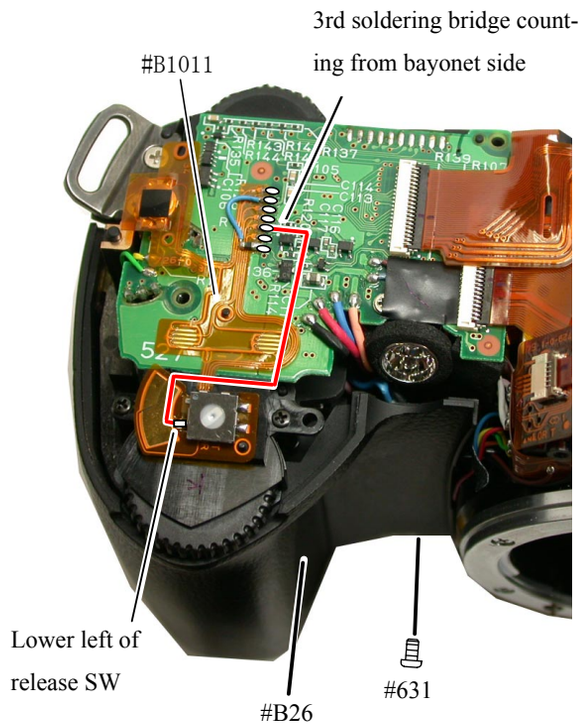


Inspection and adjustment of AE CCD Alignment

・Procedure

① To prevent short circuit, attach the grip (#B26) with the screw (#631).

② Connect 2 parts of the main SW FPC unit (#B1011) with jumpers. ＊ 2 parts = Red line as shown right
i.e. at lower left of the release SW and the 3rd soldering bridge counting from the bayonet side.

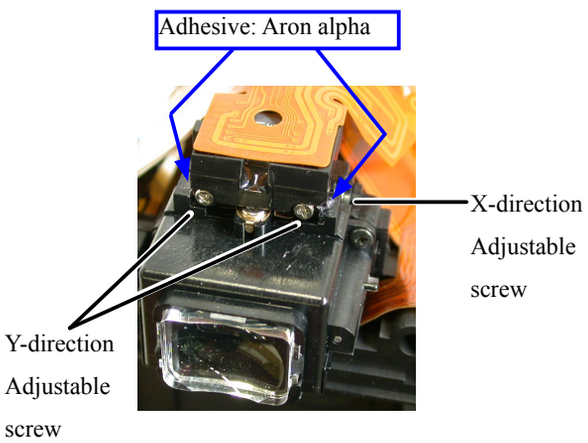


③ Connect the camera and PC with the communication tool (J61205) and MC-31 (J19109).
(ref. Page A35-A36)

④ Provide power to camera via AC adapter EH-5.
＊ Note: Be careful of short circuit where there is no cover.

⑤ Start up the inspection and adjustment software for D70 (J18361), and select "INSPECTION AND ADJUSTMENT FOR AECCD POSITION" then "CCD ALIGNMENT INSPECTION AND ADJUSTMENT".

⑥ By following instructions on PC, make the position adjustment of AECCD by 3 screws.



⑦ Select “CCD SLANT INSPECTION” of the adjustment software and make an inspection.

⑧ After the adjustment, fix the AECCD by applying Aron alpha (super glue) slightly.

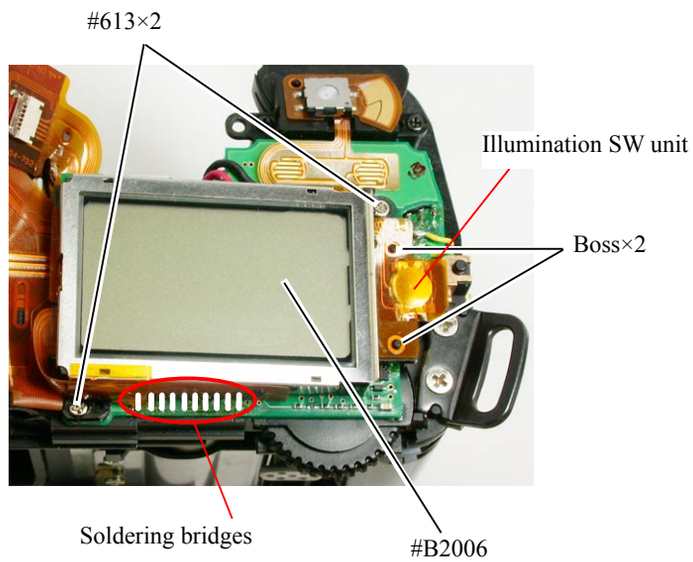
⑨ Remove the communication tool (J61205).

⑩ Remove the jumper wire of ② .

⑪ Take out the screw (#631) and grip (#B26).

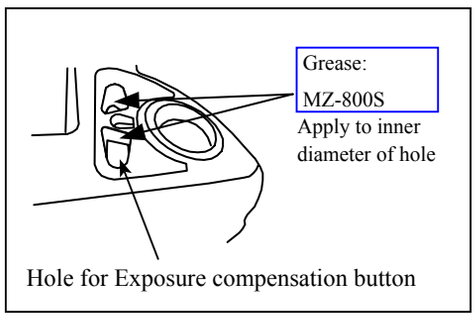
Outer LCD

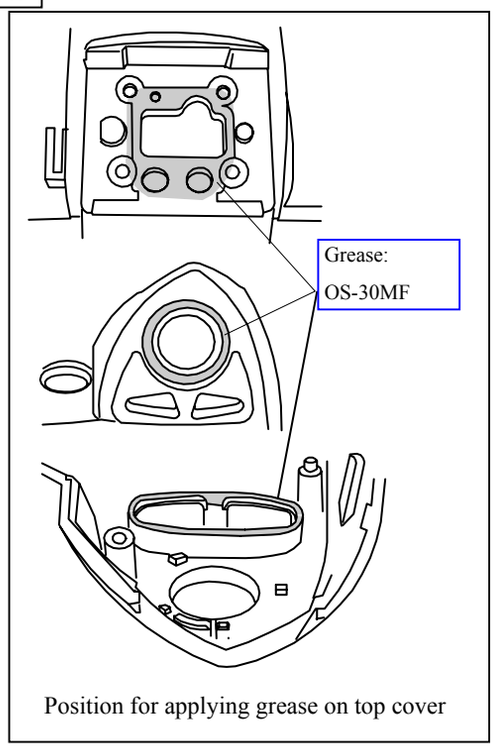
- Attach the outer LCD (#B2006) with 2 screws (#613).
- Assemble the illumination SW unit by aligning 2 bosses.
- Make soldering bridges.

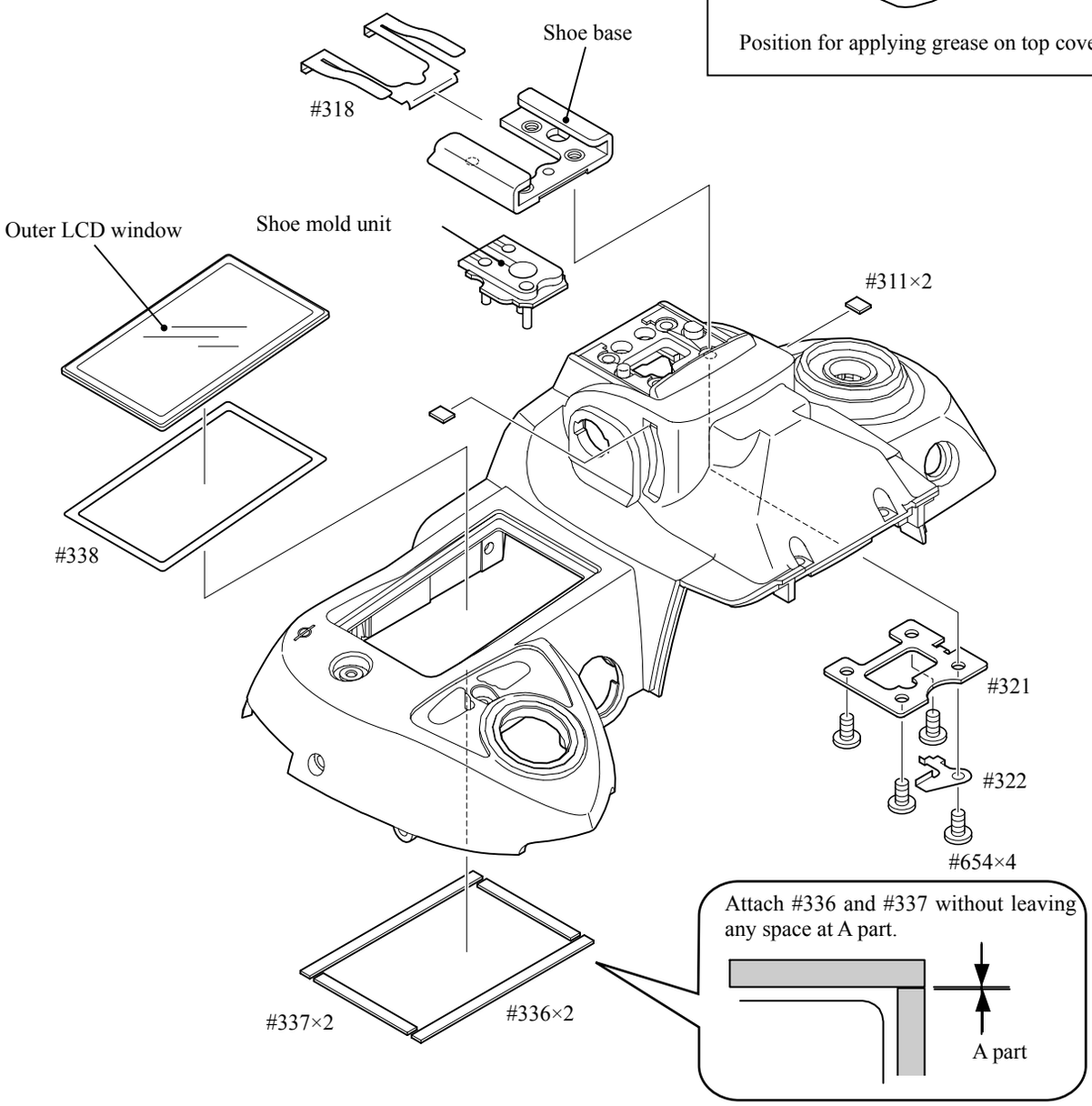


Assembly of Top cover unit

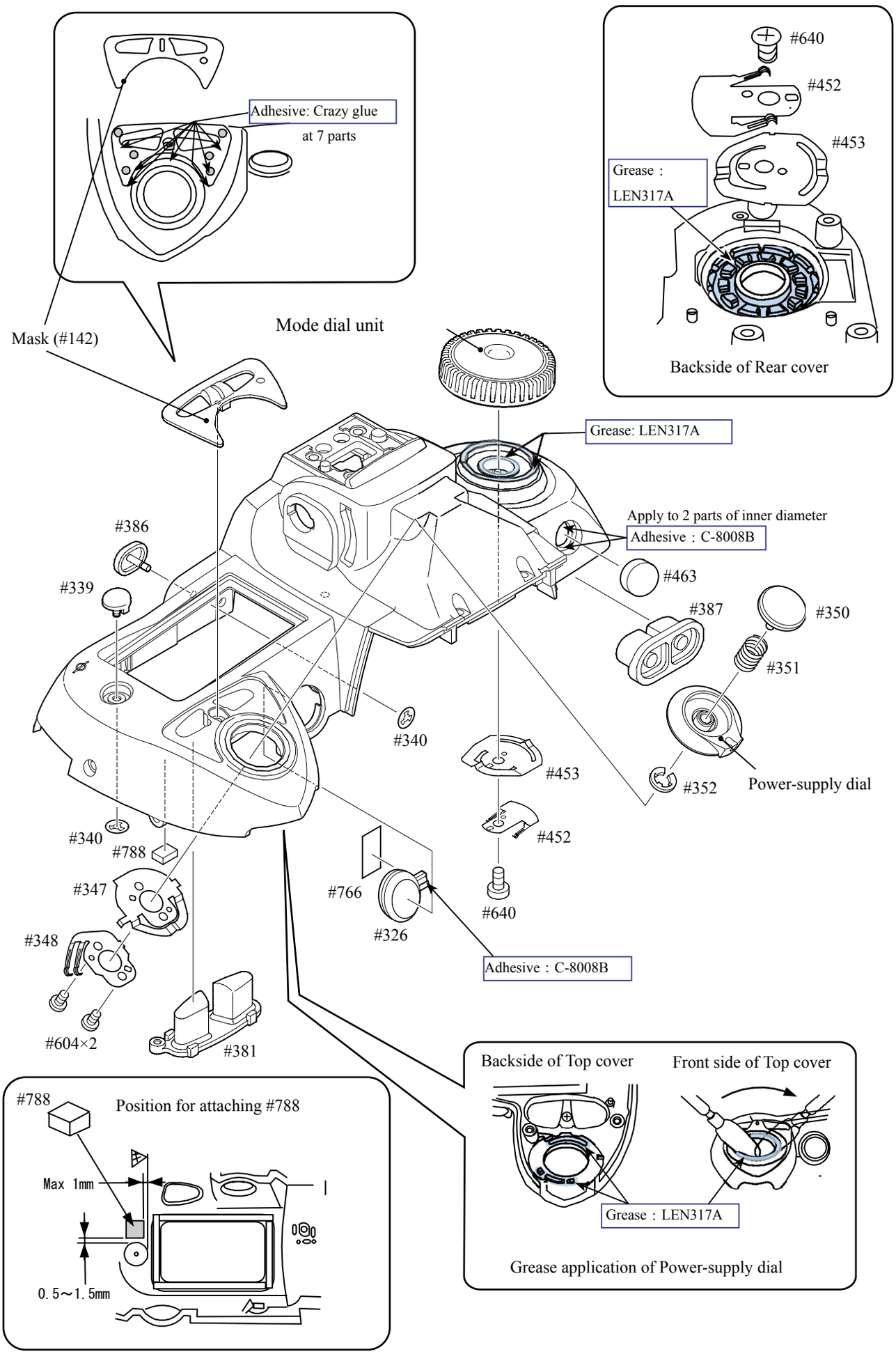
Outer LCD window, Shoe mold unit, Accessory shoe, other small parts





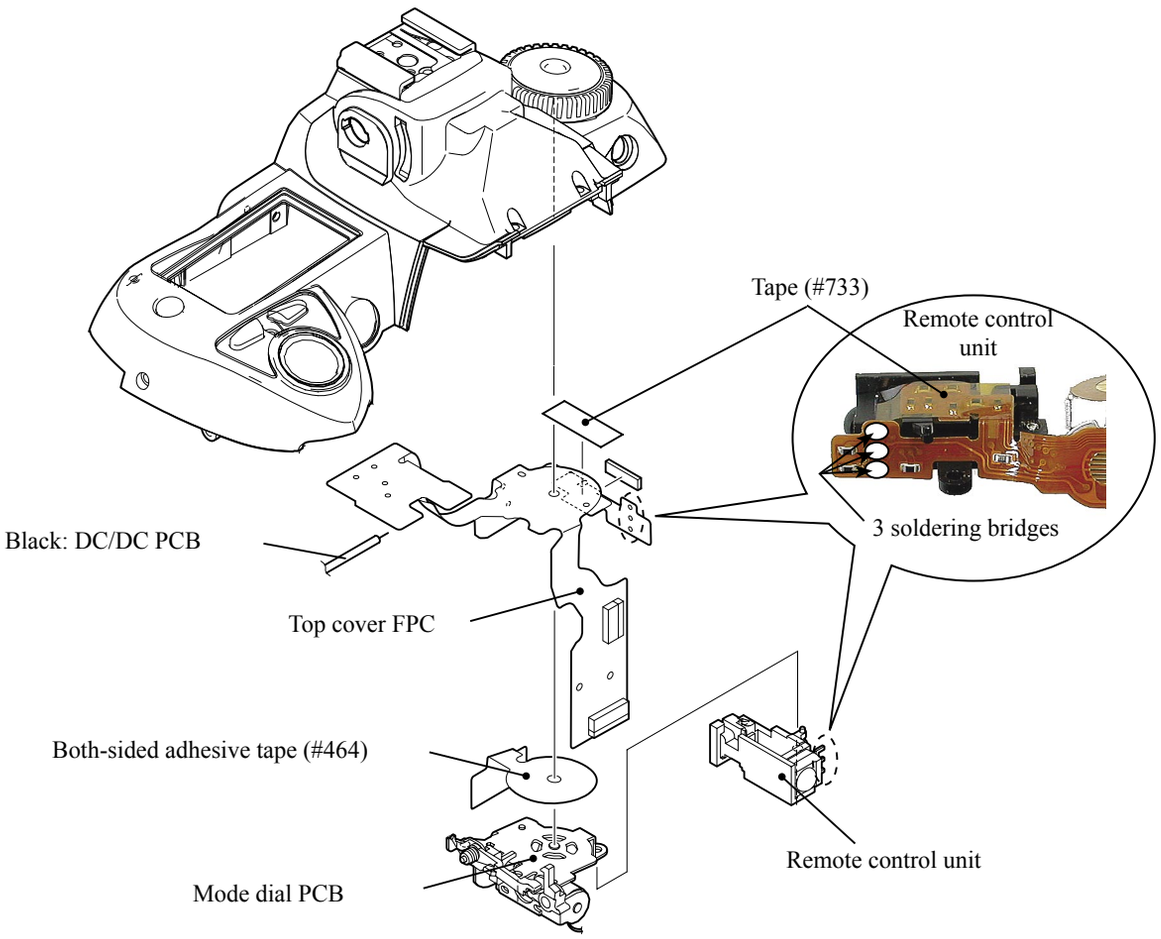


Power-supply dial, Release button, Mode dial unit, other small parts

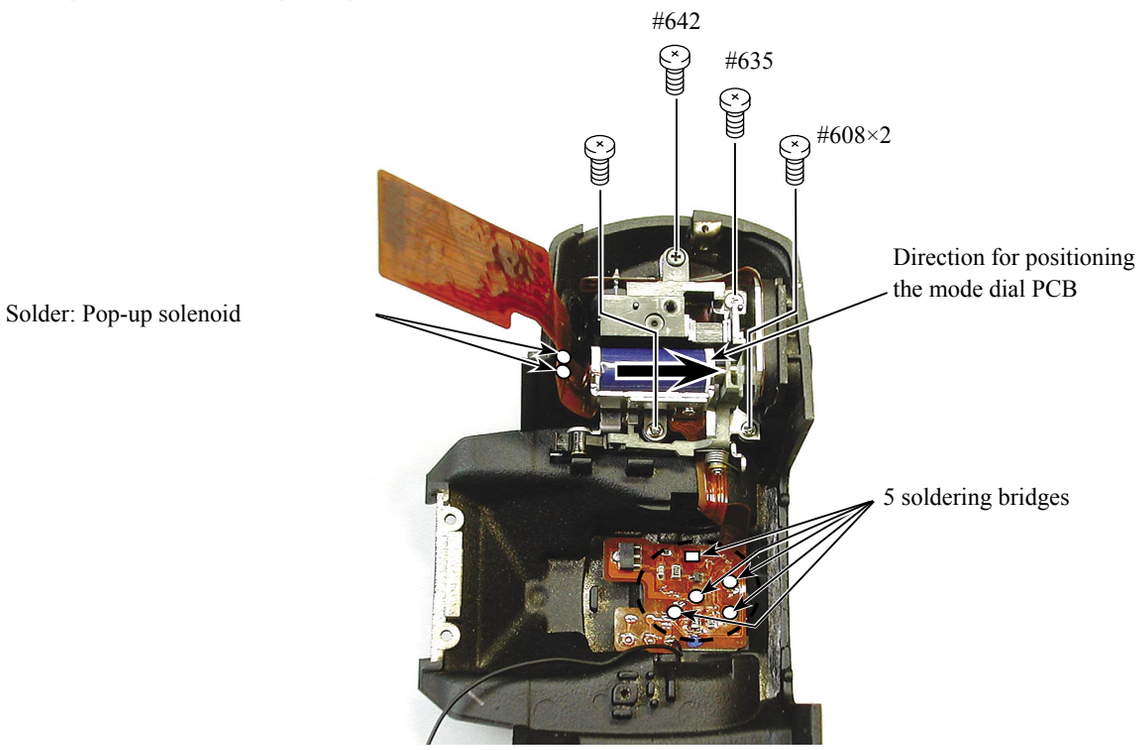


Top cover FPC, Remote control unit, Mode dial PCB

Attach Mode dial PCB and Remote control unit to Top cover FPC



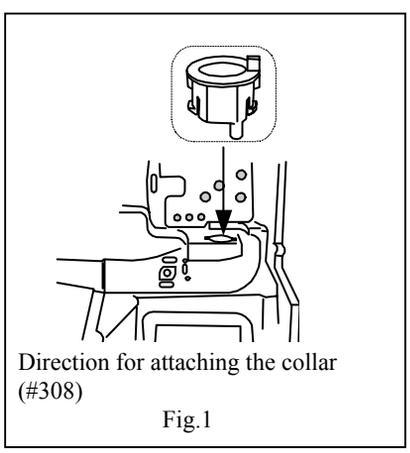
Attaching screws, soldering bridges



SB lower case unit

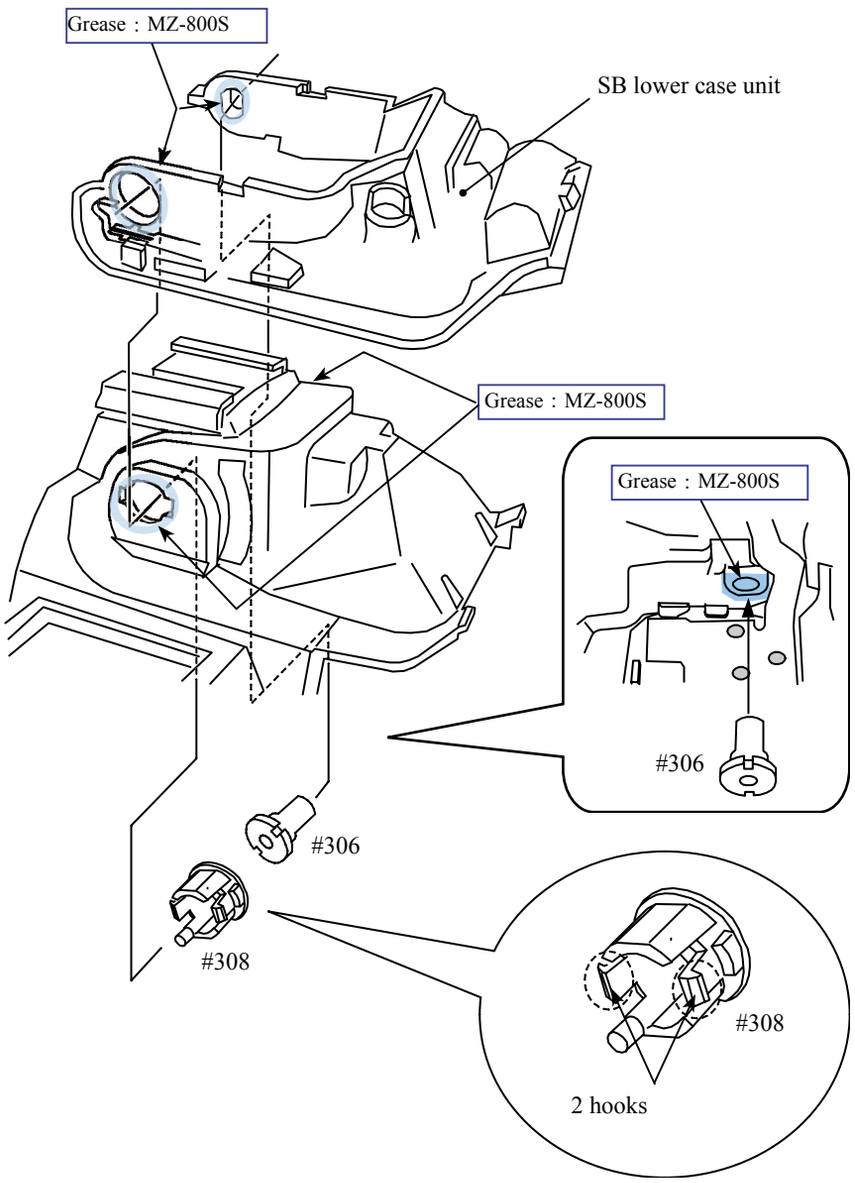
Attach SB lower case unit

- Mount the SB lower case unit on the top cover.
- Insert the collar (#308) by following the direction as shown in Fig.1, and fix it with 2 hooks.
- Insert the SB case axle (#306) in the top cover.
- Pass each wire throuth the hole of the collar (#308).



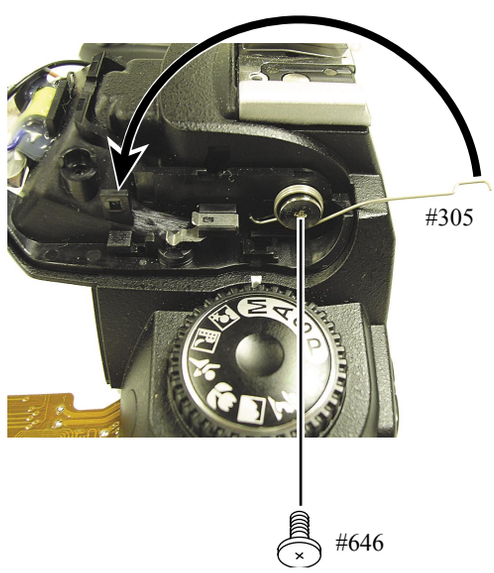
Direction for attaching the collar (#308)

Fig.1

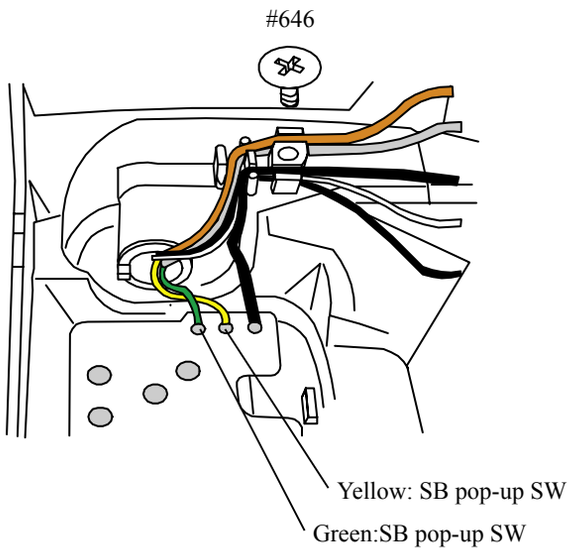


Attach Flash-up spring

- Attach the Flash-up spring (#305) and fix it with the screw (#646).
- Hook the Flash-up spring (#305) by following the direction of the arrow.

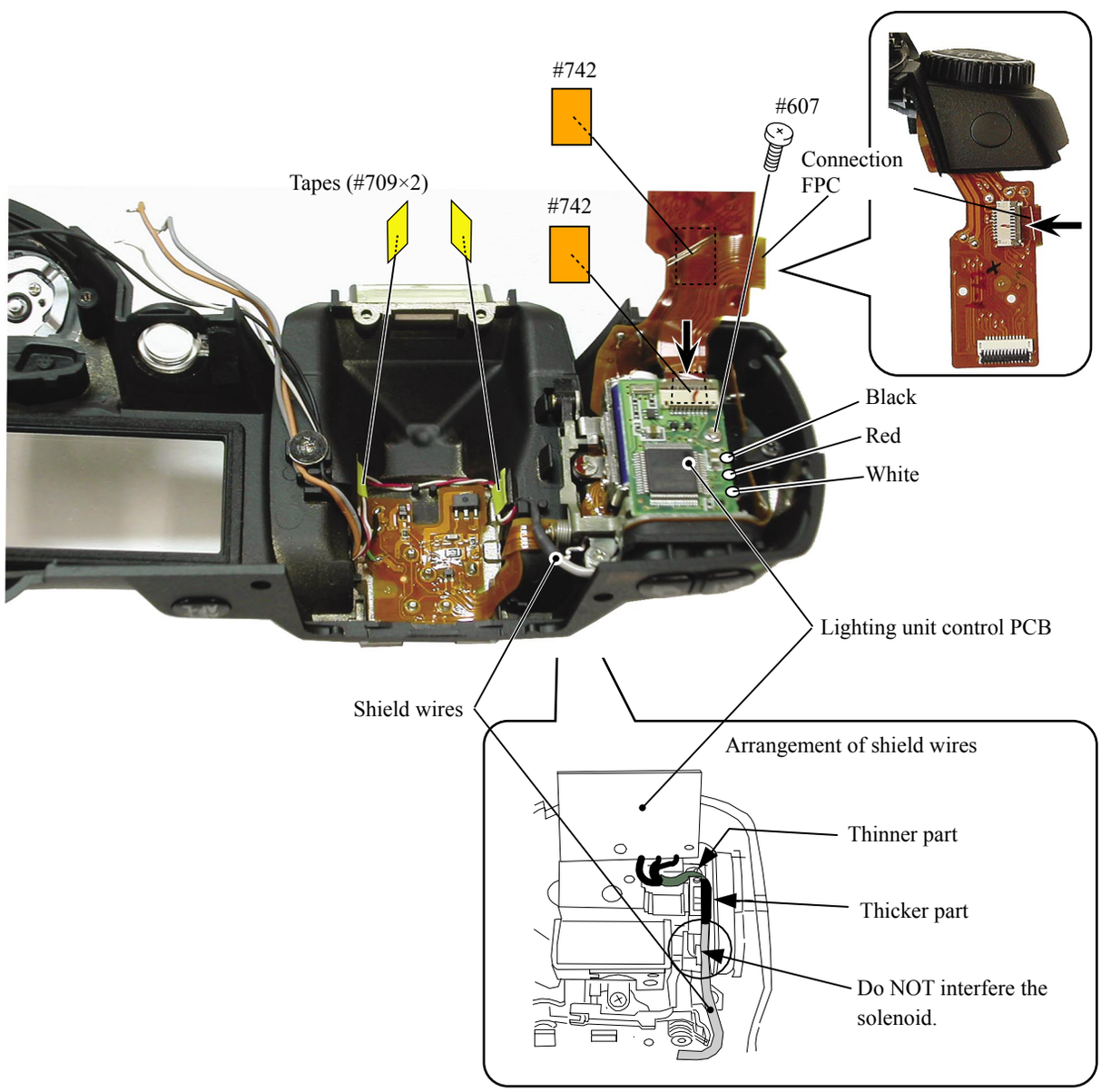


Solder wires, wire-atatching screws

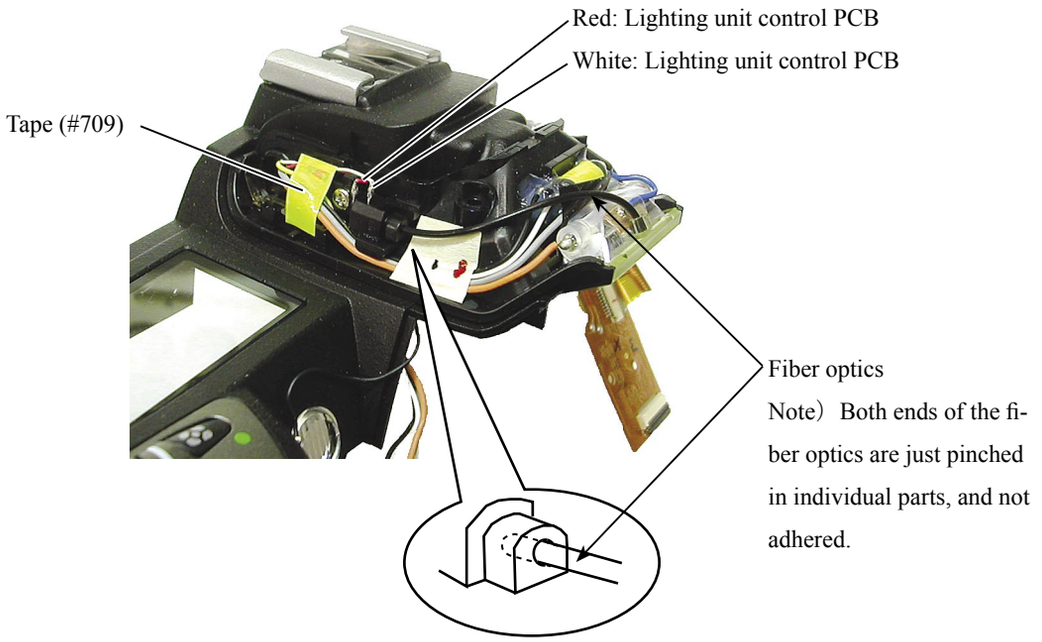


Lighting unit PCB

Arrange shield wires, Attach lighting unit control PCB



Solder Shield wires



SB upper case

- Attach the SB uper case on the SB lower case. (Fig.1)
- By pushing the pop-up lever A part of the top cover unit, activate pop-up of the built-in SB.
- Confirm that the hooking lever of the SB upper case is hooked to 2 holes. (Fig.2)
- Attach 2 screws (#631).

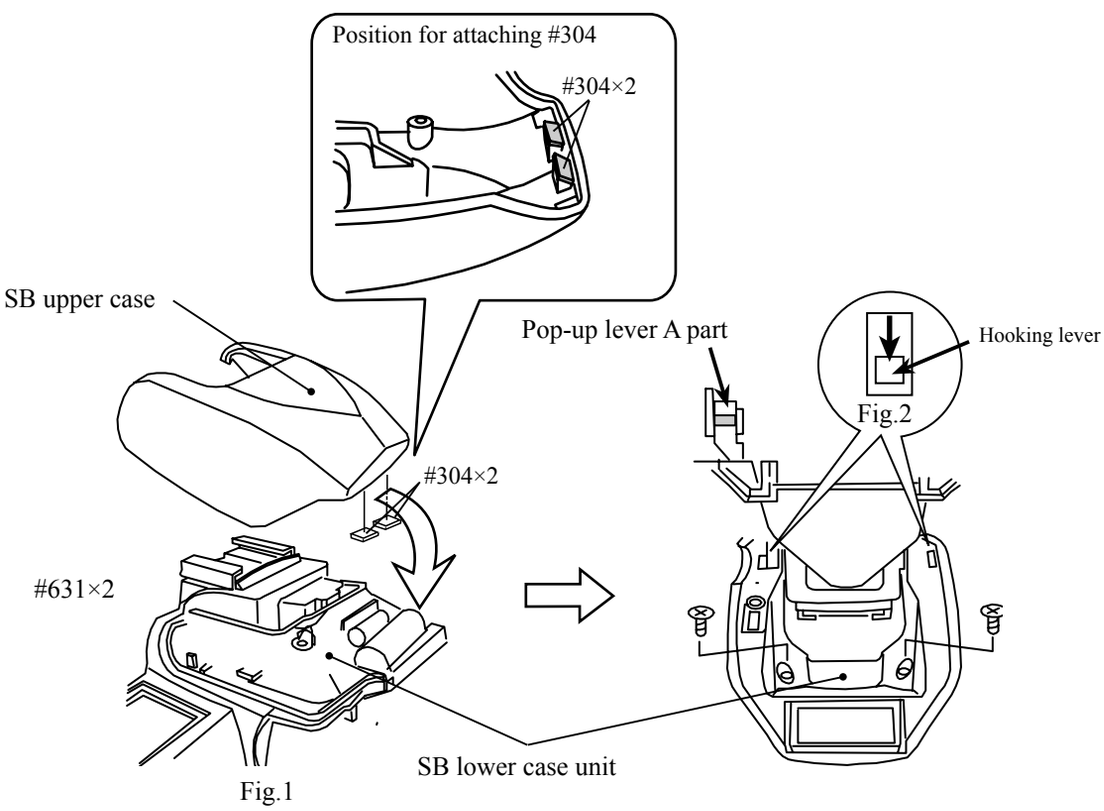
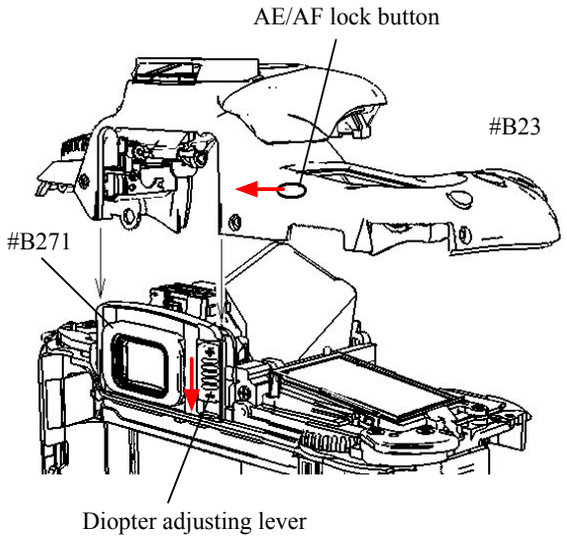


Fig.2

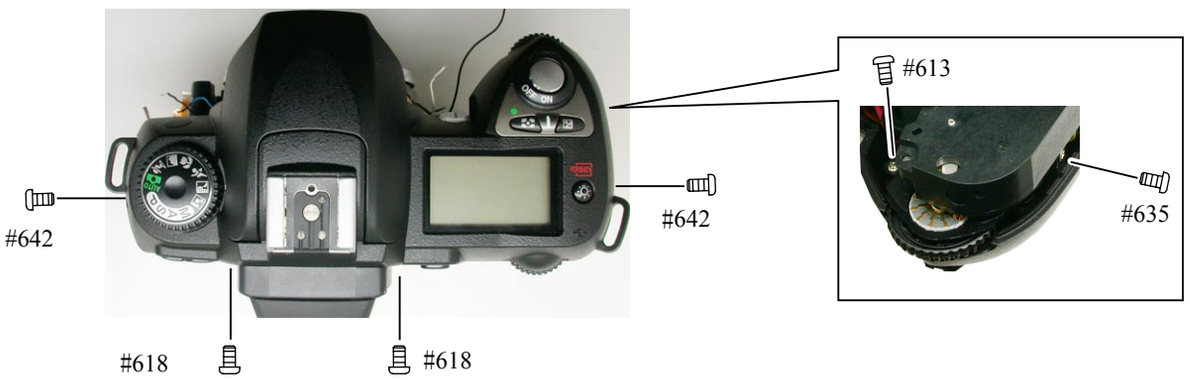
Fig.1

Top cover

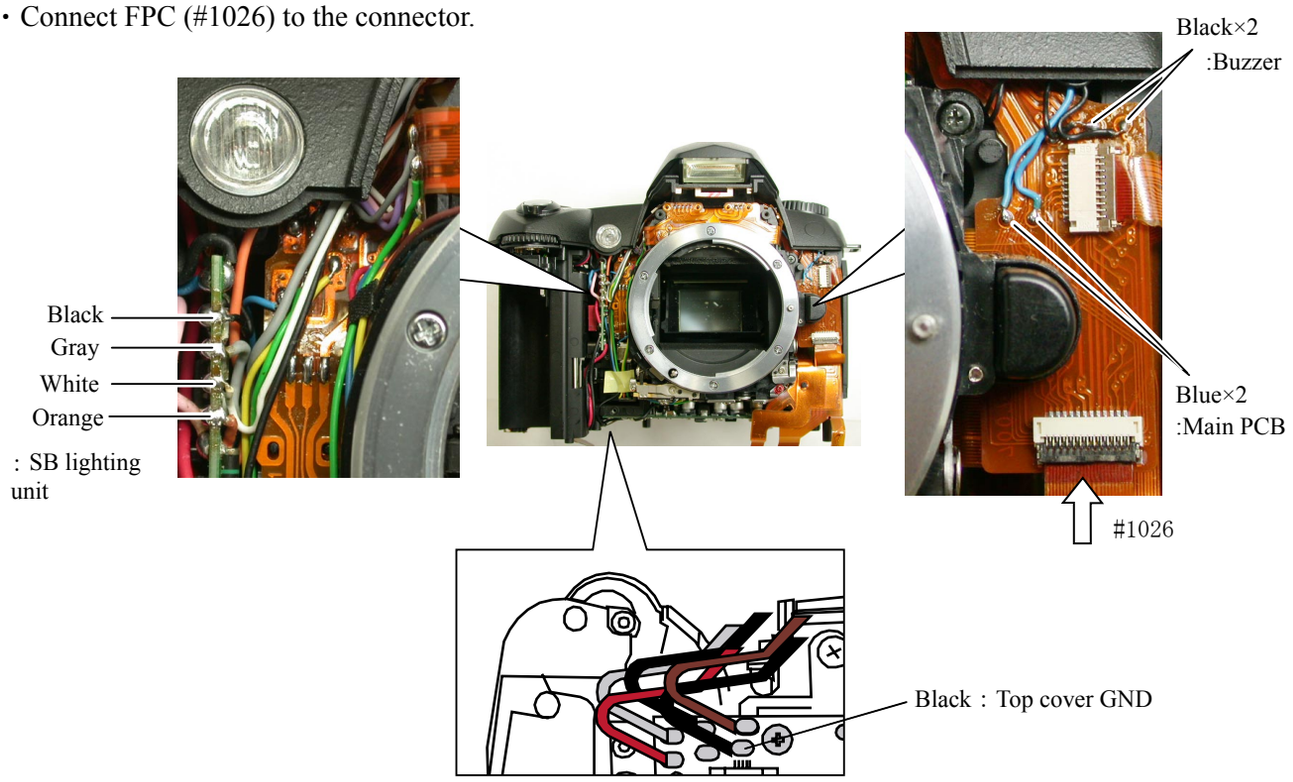


- Assemble the eyepiece frame (#B271) by putting the diopter adjusting lever at the lowermost position.
- After pushing outside the AE/AF lock button from the inside of the top cover, assemble the top cover (#B23).
- After assembling the top cover, slide the diopter adjusting lever to check the movement of the diopter adjustment lens.
  Also, check the clicking feeling of the AE/AF lock button, too.

- Attach 6 screws.



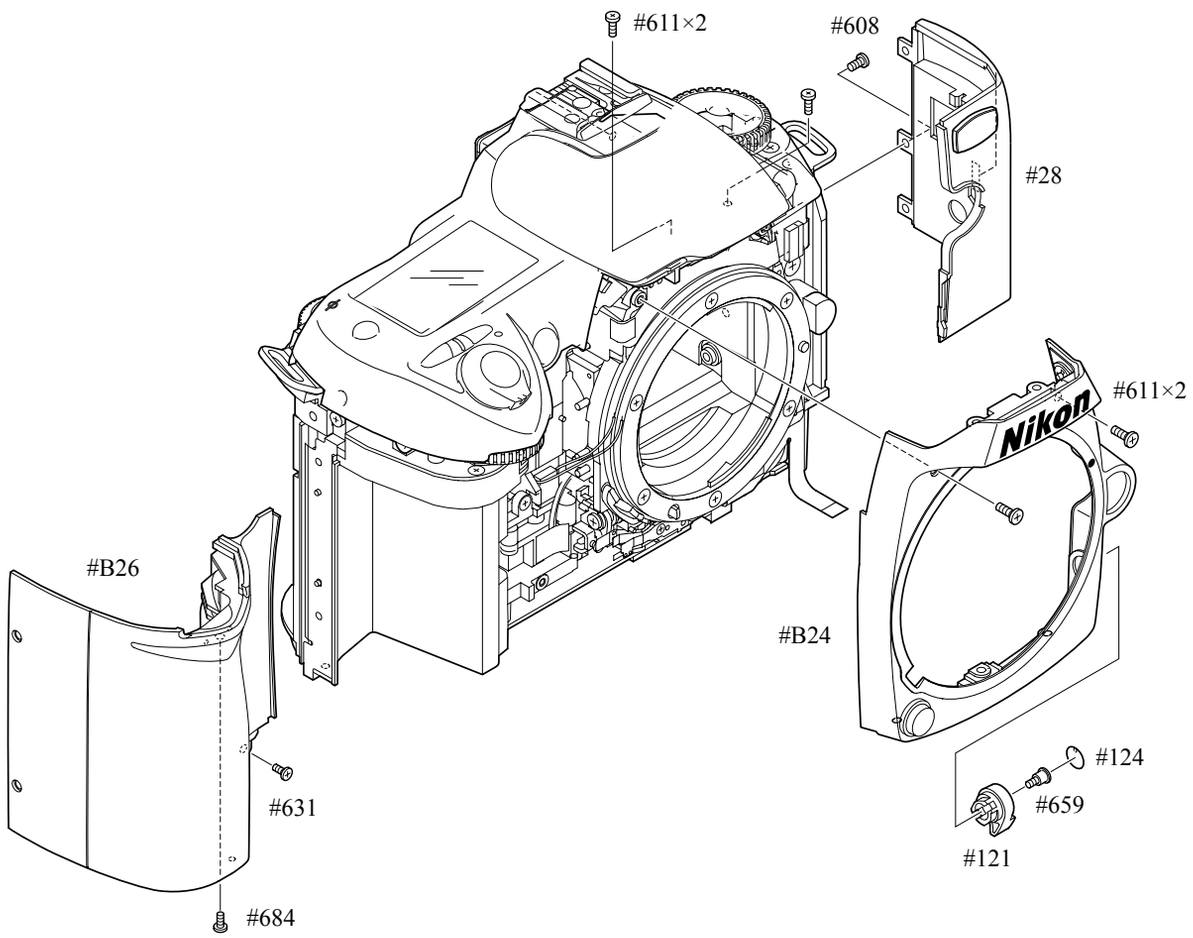
- Solder 9 wires.
- Connect FPC (#1026) to the connector.



Covers

・Assemble the front cover (#B24) at the last stage.

・Pop the SB lighting unit up and attach it with 2 screws (#611).



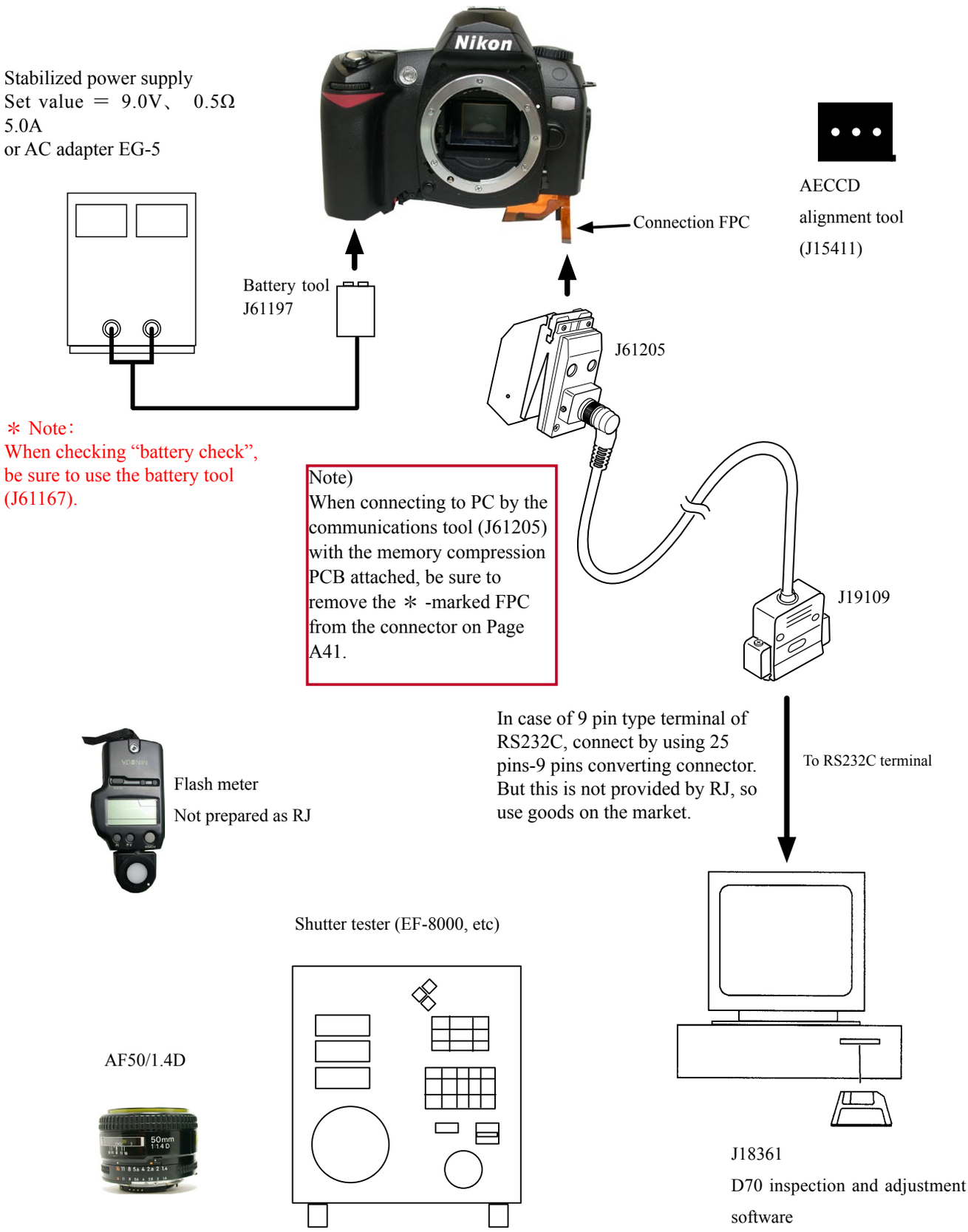
Gap adjustment of SB lighting unit

・In case it is out of standard, pop the SB unit up and make an adjustment by turning the adjusting dial with Hexagonal wrench.

Standard : 0 ～ 0.5mm

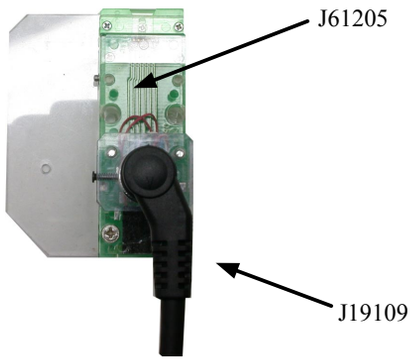
Accuracy inspection and adjustment (Camera body)

・To connect to PC, as shown below, connect MC-31 (J19109) to the connector of RS232 on PC, then attach the communications tool (newly prepared as RP) (J61205) to the connection FPC of camera.
(Refer to next page for how to connect J61205)



How to connect communications tool (J61205)

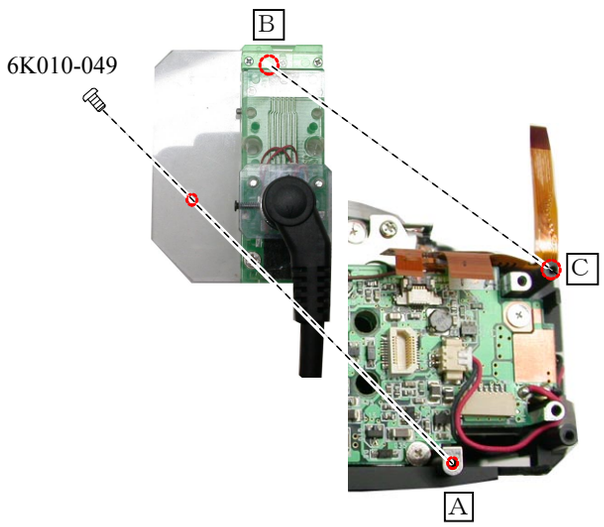
① Connect the communications tool (J61205) to MC-31 (J19109).



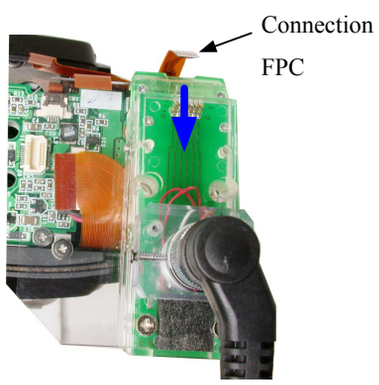
② Attach the communications tool temporarily to the body A with the screw (6K010-049) which is included in package.

③ Loosen the screw (6K010-049) and screw it lightly again at the position where the shaft C of the body can enter in the hole B of the communications tool.

Note: Do NOT tighten screw completely.



④ Pinch the contact part of the connection FPC with the communications tool to make a connection.



⑤ Connection is completed.

＊ Note:
This tool is fixed with just a one screw, so handle the camera very carefully when the tool is attached.

D70 Inspection and Adjustment Software (J18354)

This inspection and adjustment software runs on Windows.

Install the software by following the below procedure.

The following operating environment is required for installing this program on PC.

PC	IBM PC/AT compatible
OS	Windows XP Home Edition, Windows Millennium Edition (Me), Windows 98 Second Edition (SE), Windows 98, Windows 95
CPU	80486 100MHz ～ Pentium Ⅲ 1.2GHz
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 ※ USB Interface is not available.

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

<Notice on start-up>

When starting this program, close all the other applications.

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

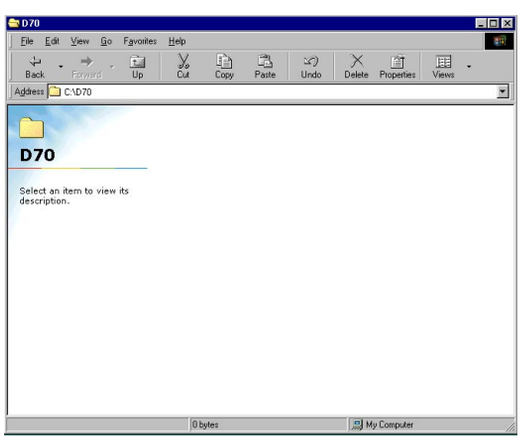
<Procedure for installation>

The file (D70SOFT.EXE) of this program is provided via FD or e-mail.

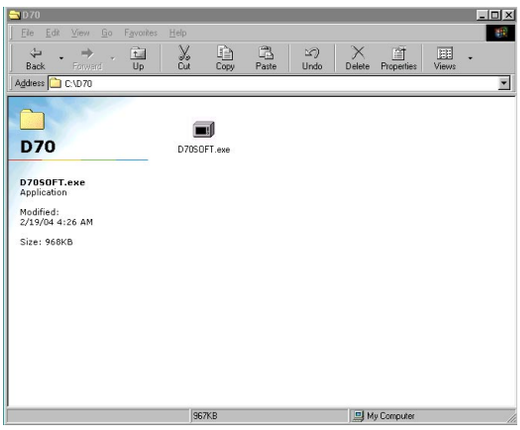
Because this is the self-extracting file, decompress the file before installing, following the next procedure.

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

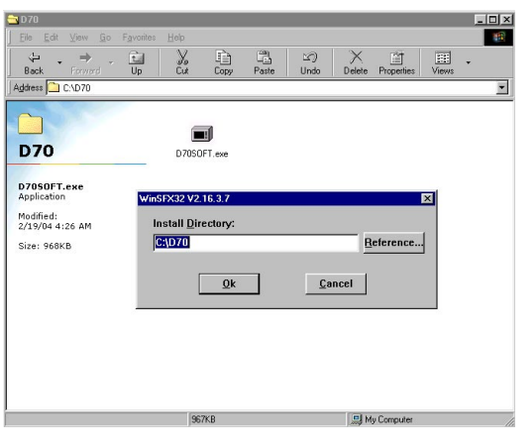
   (e.g.) C:\D70



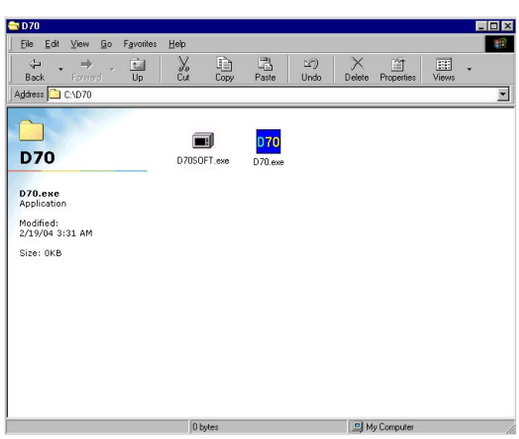
2. Paste the file (D70SOFT.EXE) in the created folder.



3. Double-click on the pasted file to display the following screen.
   Press the OK button, then decompression starts.



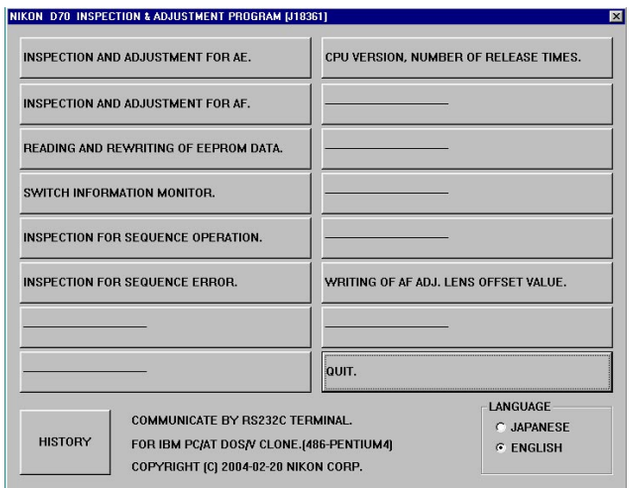
4. When the decompression of file is finished, the file (D70.EXE) is created.



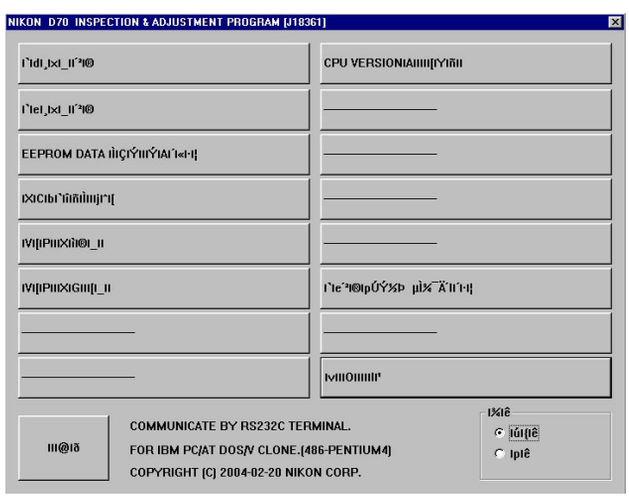
5. The installation is completed.

<Start-up of Program>

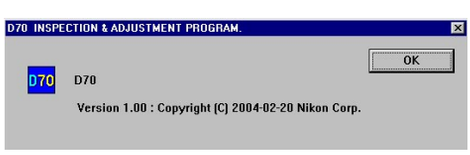
1. Double-click the file (D70.EXE), then the Inspection & Adjustment program for D70 starts.



2. 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 OS in English version



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



4. Select each item button according to operation.
   Follow the instructions on the next screen that will be shown after pressing the item button.

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

AE inspection and adjustment

① AE CCD alignment inspection and adjustment（ref. Page A26 for details）
② AE accuracy inspection and adjustment
③ Aperture accuracy inspection
④ Adjustment for battery check level (Use the battery tool (J61197) and stabilized power supply.）
⑤ Built-in SB flash inspection and adjustment

〔Tools required〕 ref. Page A35.

・Inspection on Battery check indications

After the battery check adjustment, input each voltage of the below into camera, and check the indications of the outer LCD.

Note: Make an inspection by switching the voltage in the order of ① - ⑦ .

Outer LCD indication	Set voltage of Stabilized power supply	
	① 9.00V	⑦ 8.23V±0.1V
	② 7.98V±0.1V	⑥ 8.15V±0.1V
	③ 7.85V±0.1V	⑤ 8.05V±0.1V
 Blink	④ 7.80V±0.1V	

・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)

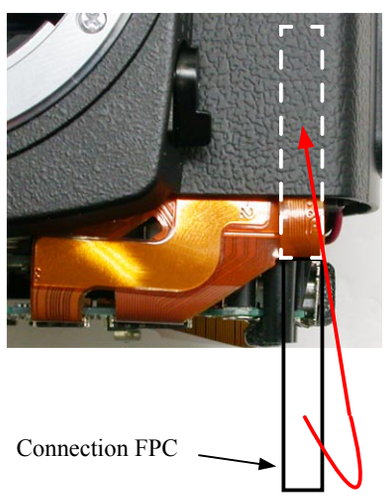
AF inspection and adjustment

Note: When using the adjustment software for the first time, prepare 5 camera of D70 and input the average value of the 5 cameras, which was measured when checking the AF accuracy, in "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)

〔Tools required〕

1. When adjusting for all adjustment items
   ref. Page A35.
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



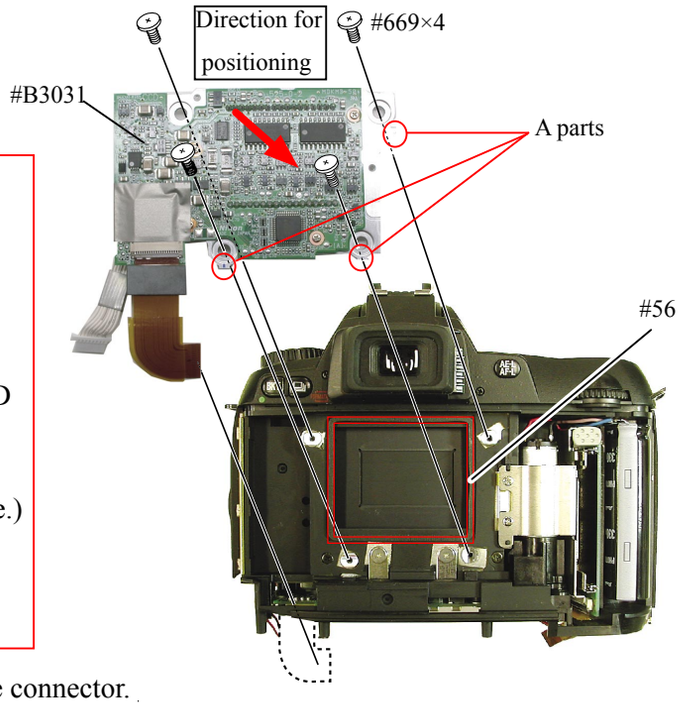
＊ Note: After the adjustment ends, arrange the connection FPC inside the cover.

CCD PCB unit

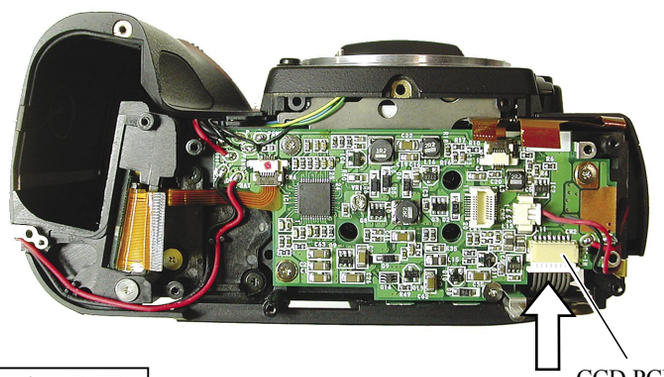
・Attach the CCD dust-proof seal (#56).
・Assemble the CCD PCB unit (#B3031) with 4 screws (#669).

＊ Note ① :
In case there are washers inserted between the rear body and the CCD PCB unit, follow the instructions of Page A23.

＊ Note ② :
In case spacers are attached at A parts of the CCD PCB unit, mount the CCD PCB unit without removing them.
(Red mark is indicated on the attachment surface.)
If there are no indications at A parts, spacers are unnecessary.

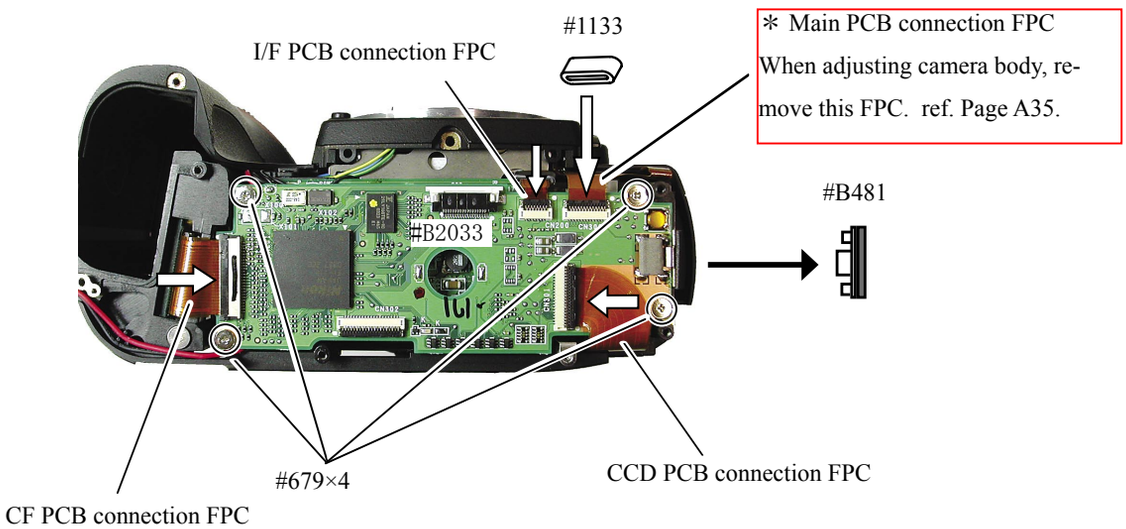


・Attach the CCD PCB connection harness to the connector.

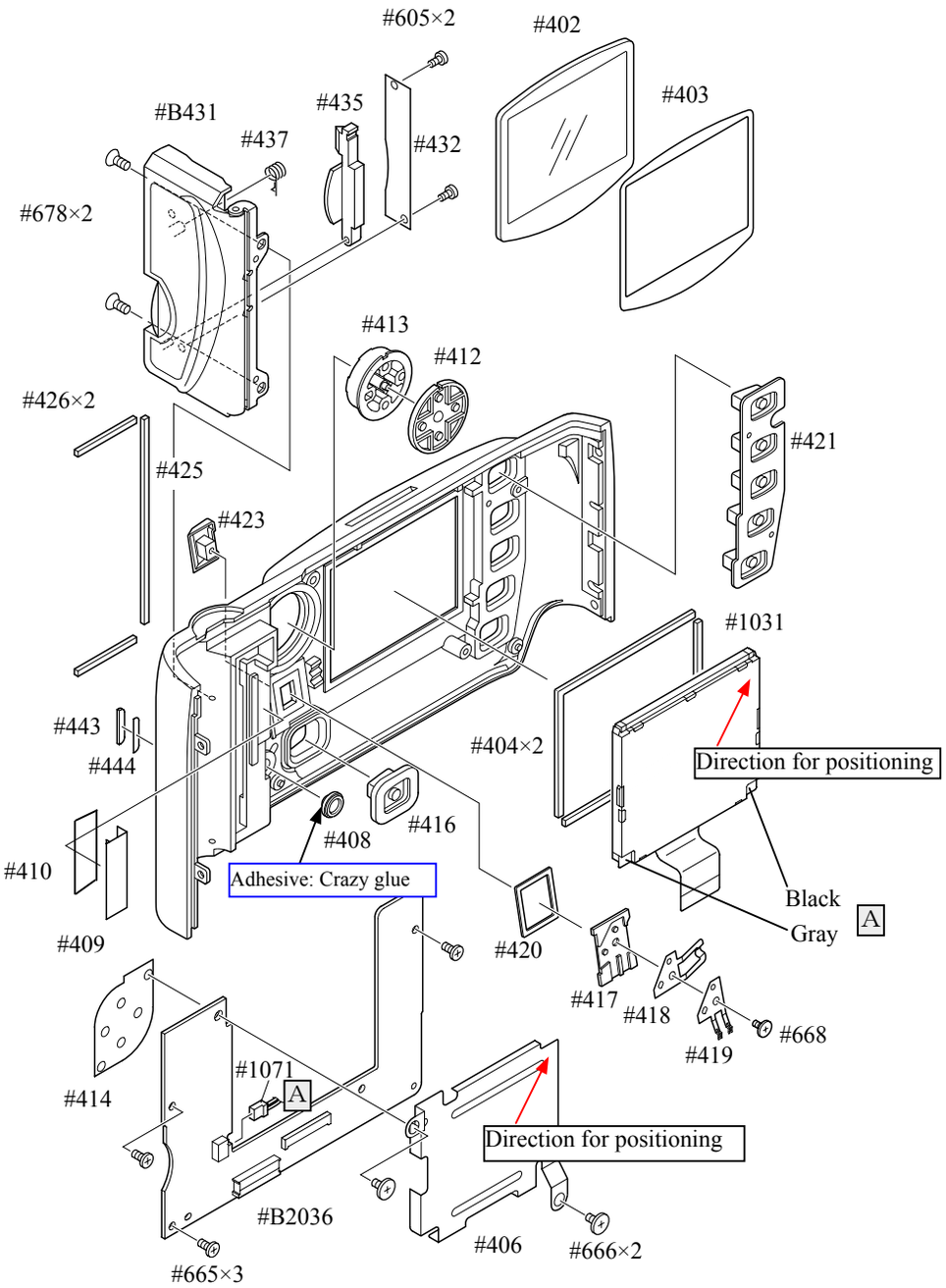


Memory compression PCB

・Assemble the memory compression PCB (#B2033) and attach it with 4 screws (#679).
・Attach the USB gasket (#B481) on the memory compression PCB.
・Put the ferrite core (#1133) on I/F PCB connection FPC.
・Connect the connection FPCs, which are connected from CF PCB, I/F PCB, main PCB, and CCD PCB to each connector.

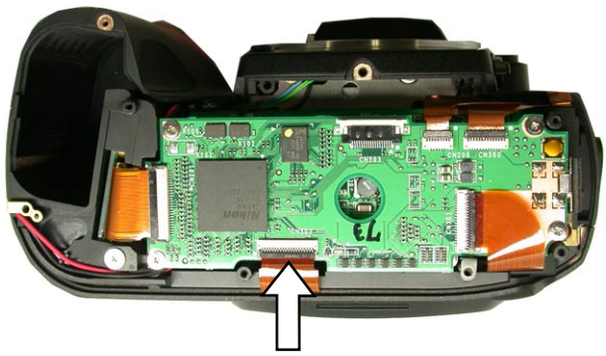


Rear cover



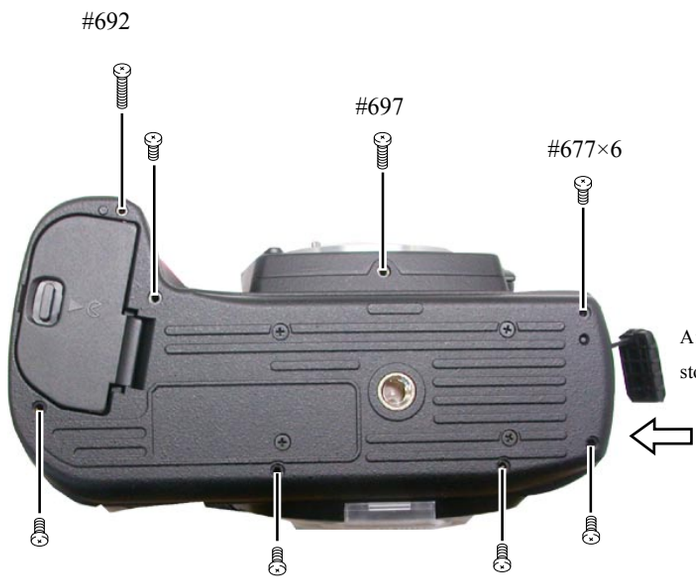
・Attach the rear cover with 4 screws (#612).

・Attach the TFT-PCB connection FPC to the connector.



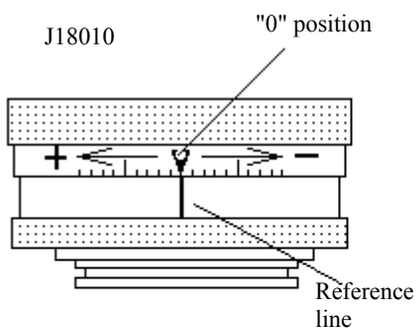
TFT-PCB connection FPC

Bottom cover



∞ Infinity alignment & adjustment

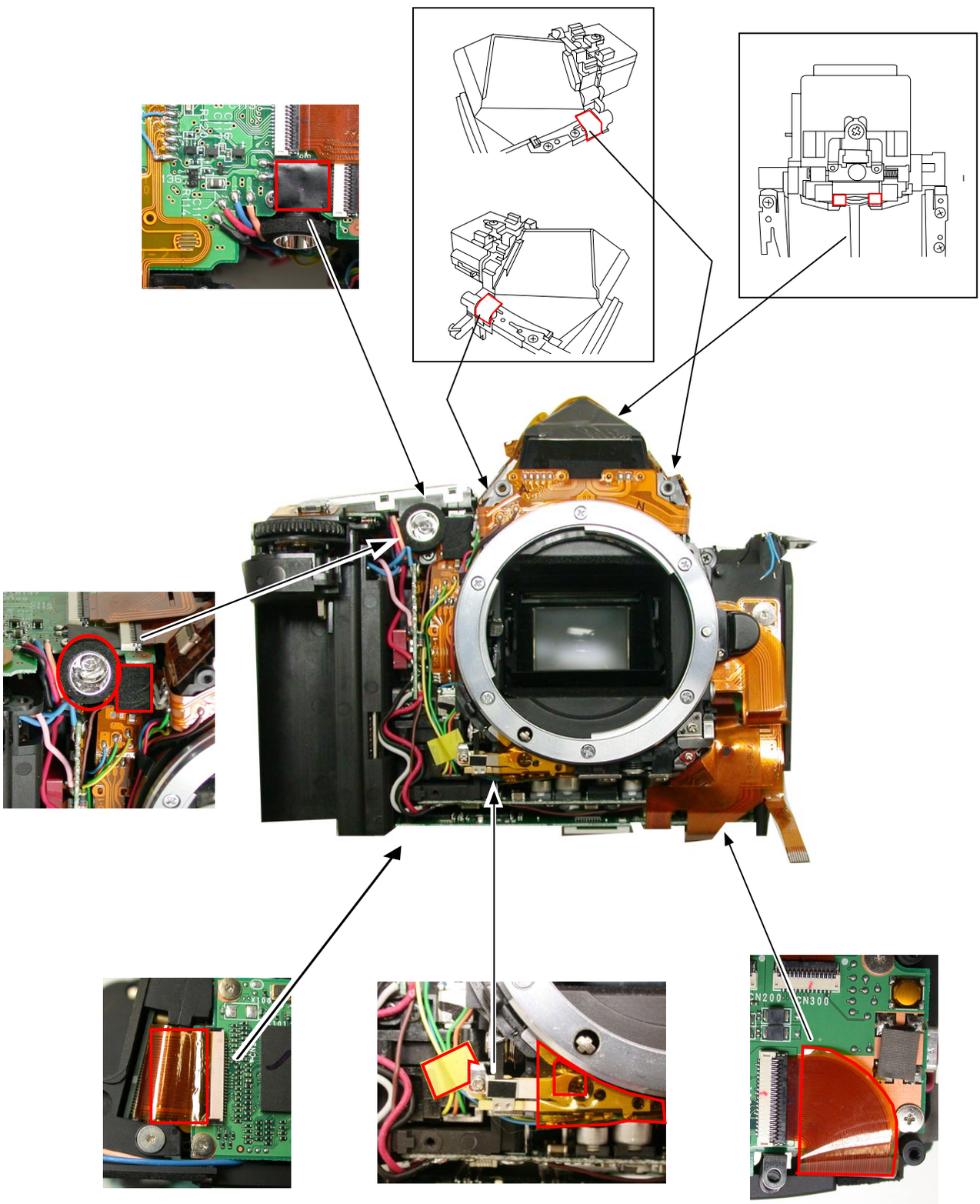
・Replace the finder screen with the infinity focus check screen (J15410), and use the reference lens (J18010) and read the value. In case it is out of standard, increase or decrease washers (#297A or#297B) for adjustments.



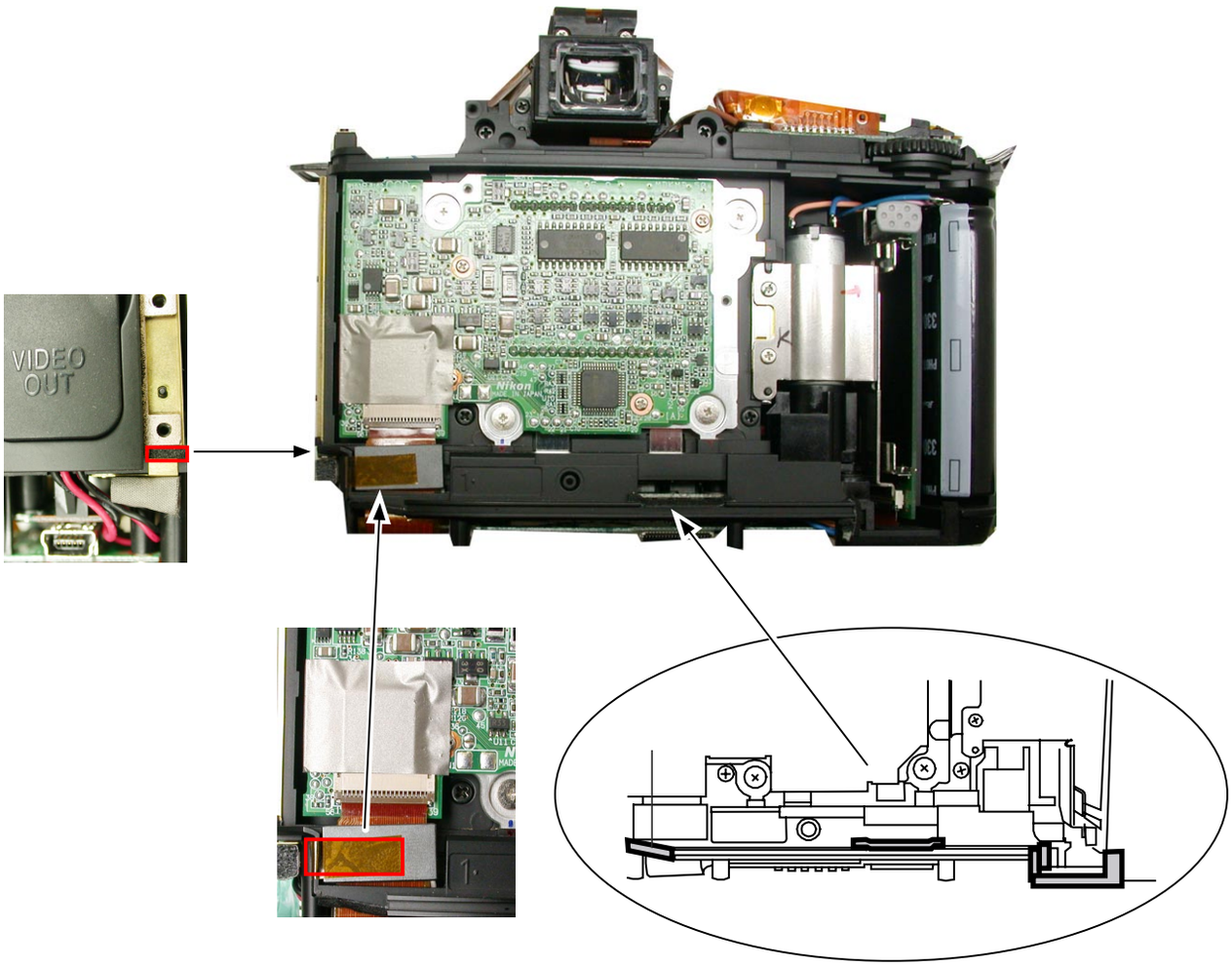
Standard: ±0.07mm (1 scale = 0.01mm)

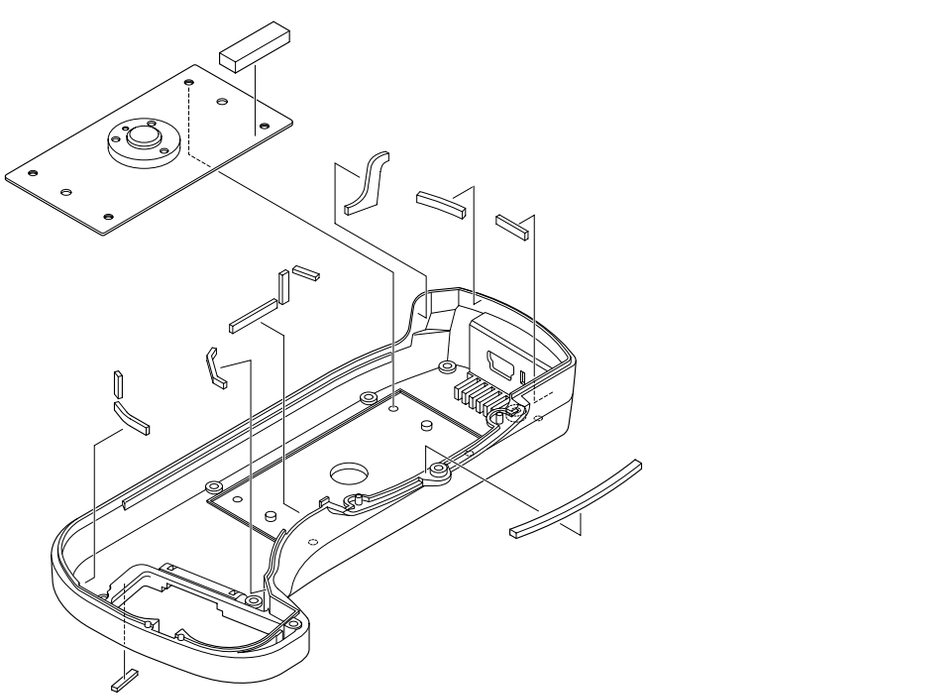
Value of J18010	Adjustment
+0.07 ～ -0.07	Adjustment unnecessary if within standard
+0.08 ～ +0.15	Decrease washers (#297) (for thinning)
-0.08 ～ -0.15	Increase washers (#297) (for thickening)
+0.15 or more; -0.15 or less	Check if Front body or Penta box is not deformed.

Other tapes/ sponges ①



Other tapes/ sponges ②





Necessary adjustments on PC when parts are replaced

1. Adjustment software

Adjustments of / Parts to be replaced	AE CCD position	AE accuracy	Aperture accuracy inspection	Adjustment for battery check level	Inspection and adjustment for built-in SB light volume	AF accuracy	EEPROM fixed values
Shutter unit							
Main FPC		○	○	○	○	○	○
AF sensor unit						○	
Top cover or SB lower case unit					○		
DC/DC PCB unit							
Metering FPC unit	○	○					
Aperture control PCB unit			○				

2. Shooting image adjustment software

Adjustments of / Parts to be replaced	Sensitivity	Gr/Gb compensation ADJ (R/B filter)	Sensitivity ratio	CCD black point defect compensation	CCD white point defect compensation	TFT view angle	CCD-PCB EEPROM Flash up	TFT EEPROM Flashram up	Upgrade RISC firmware
Shutter unit									
Main PCB unit									
AF sensor unit									
DC/DC PCB unit									
Metering FPC unit									
Memory compression PCB							○	○	○ *1.
CF PCB									
I/F PCB									
CCD PCB unit	○	○	○	○	○				
TFT PCB or TFT monitor						○		○ *2.	

*1. Check the type of TFT monitor (NEW or OLD) befor execute " TFT EEPROM Flash up".
The type is mentioned on the label of TFT monitor. (NEW=262CGX405**** or later)

*2. Execute " TFT EEPROM Flash up" first, then adjust "TFT view angle".
Check the type of TFT monitor (NEW or OLD) befor execute " TFT EEPROM Flash up".
The type is mentioned on the label of TFT monitor. (NEW=262CGX405**** or later)

Shooting Image Adjustment

1. Summary

When D70 shooting image-related, TFT display-related and listed parts on Page A36 are replaced, be sure to make an adjustment by the shooting image adjustment software for D70 (J65048). The details of its function and how to use this software are as follows:

2. Adjustment software function

(1) "Sensitivity" adjustment
(2) Gr/Gb compensation adjustment (R/B filter)
(3) "Sensitivity ratio" adjustment
(4) CCD black point defect compensation
(5) CCD white point defect compensation
(6) "Sensitivity" and "Sensitivity ratio" reference values calculation
(7) "TFT view angle" adjustment
(8) CCD-PCB EEPROM flashram up
(9) TFT-PCB EEPROM flashram up
(10) Reading of RISC version

※ When the memory compression PCB is replaced, perform the followings: Flashram up of EEPROM value of the CCD-PCB, Flashram up of EEPROM value of the TFT-PCB, and Pixel defect (black and white spots) compensation.

※ When the adjustments from (1) to (3) are made, calculate the sensitivity and sensitivity ratio reference values of (6) by using the reference body in advance, 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 of PC, and copy the following files.

・D2HIMG.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, Win2K, WinME

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

5. Install USB driver

When this software is used, connect the camera via *USB connection and install the USB driver.
As for Windows2000, WindowsME, Windows98SE, install the USB driver by using NikonCapture.
However, it is NOT necessary to install it in WindowsXP because the OS incorporates the driver.

*Before connecting the camera and PC, set USB to "PTP". (Setup menu → USB → PTP)

6. How to use

(1) Perform the D70IMG.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 desired button to start adjustments.
※ When the adjustments from 1. to 3. 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 to be displayed on screen.
(5) To complete the procedure, click "QUIT" button or "Close" button at the upper-right corner of the menu.

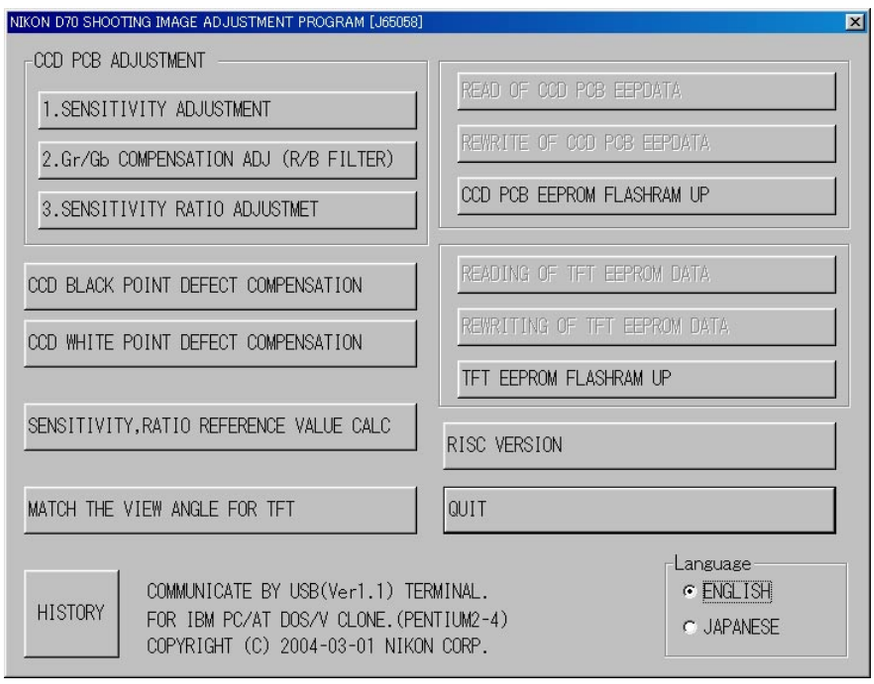


Fig.1

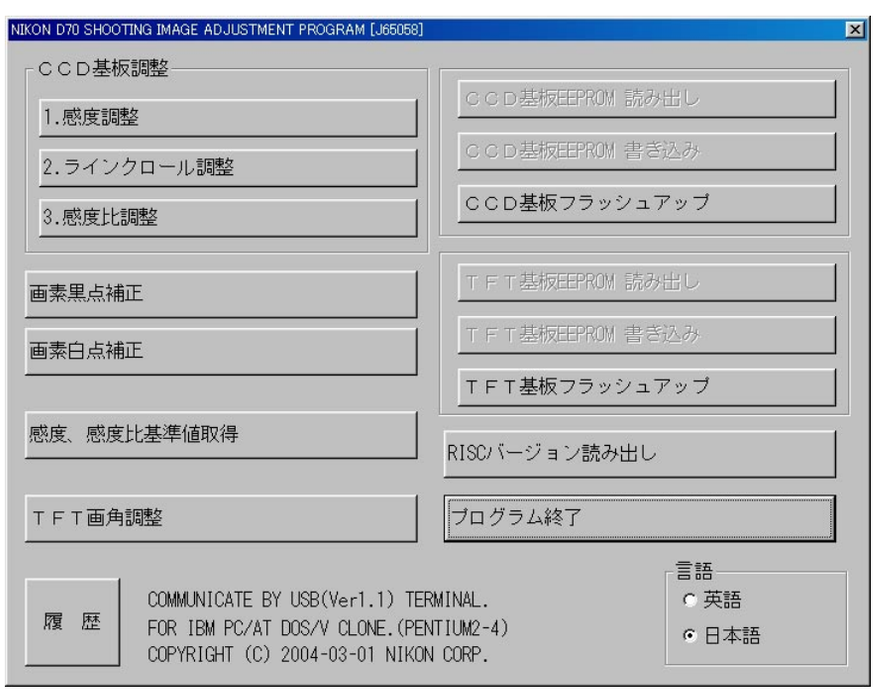


Fig.2

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 equipment	Setting/Remarks
1	Sensitivity adjustment	・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+ND4×2)	Equivalent to luminance LV13 Aperture F8 52 mm,7-step light reduction; Use the packaged product
2	Gr/Gb compensation adjustment (R/B filter)	・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
3	Sensitivity ratio adjustment	・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
4	CCD black point defect compensation	・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
5	CCD white point defect compensation	Body cap or lens cap	Environmental temperature approx. 20 - 25℃
6	Sensitivity, sensitivity ratio reference value calculation	Same as "Sensitivity adjustment"	No filter when sensitivity ratio reference value is calculated.
7	TFT view angle adjustment	None	Only for NTSC (unnecessary for PAL)
8	CCD PCB EEPROM flashram up	None	
9	TFT PCB EEPROM flashram up	None	
10	Reading of RISC version	None	

8. Summary

The summary on each adjustment is as follows:

(1) Sensitivity adjustment

Face the camera to the color viewer of LV13 equiv. putting the ND filter (-7 step) between them, and make an adjustment by changing the ampgain so that G output can fall in the standard range. Adjust the gain value so that the G output average value (Average of Gr/Gb) in the center (300×300 pixels) can reach the target output level (approx. 600LSB). The actual adjustment of the gain value is made only under the condition of ISO200 and ISO1600, and the medium sensitivity is calculated by the adjustment values of these 2 conditions.

For target output level, use the G output average of sensitivity reference value (ISO200) that was calculated by the reference body.

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

Face the camera to the light-emitting box (color viewer) of LV13 equiv. putting the SP3 (R filter)/SP1 (B filter) between them, and make an adjustment so that the output difference in G output average between G-B line and G-R line when the whole screen is divided into areas can fall in the standard range.

(3) Sensitivity ratio adjustment

Face the camera to the color viewer of LV13 equiv., and make an adjustment 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. Adjust only under the condition of ISO200, and use the average value of the center (300 pixels × 300 pixels).

(4) CCD black point defect compensation

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

(5) CCD white point defect compensation

Take a shot on the dark surface. In case the pixel output is found to be beyond the standard value, store the detected pixel coordinate as the pixel defect compensation data.

(6) "Sensitivity" and "Sensitivity ratio" reference values calculation

・Sensitivity reference value calculation

By using the reference body, face the camera to the color viewer of LV13 equiv. putting the ND filter (-7 step) between them. Then, store the G output average value of the center (300 pixels × 300 pixels) in the STD.DAT file as the sensitivity reference value.

・Sensitivity ratio reference value calculation

By using the reference body, face the camera to the color viewer of LV 13 equiv. (without filter). Then, calculate the sensitivity ratio reference value GR and GB based on the G/R/B output average of the center (300 pixels × 300 pixels), and store them 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.

(7) TFT view angle adjustment

This is for adjusting the display position of TFT. Make an adjustment only for NTSC. (Unnecessary for PAL)

(8) CCD-PCB EEPROM flashram up

Copy the EEPROM value of the CCD-PCB into the flash memory of the memory compression PCB (AK PCB).

The flashram up is necessary when the memory compression PCB (AK PCB) is replaced.

The shooting image-related adjustment values are stored in EEPROM of the CCD-PCB, but the camera does not directly access the CCD-PCB EEPROM. It does read out the value, which is stored in the flash memory of the AK PCB of the memory compression PCB, and go to RAM to operate. Therefore, to reflect the adjustment value, it is necessary to copy the stored value of the CCD-PCB EEPROM into the flash memory.

※ When the shooting image adjustments of each (1) - (3) are completed, the software automatically performs the flashram-up.

(9) TFT PCB EEPROM flashram up

Copy the EEPROM value of the TFT PCB, as performed in the above CCD-PCB, into the flash memory.

It is necessary to flashram up when the TFT PCB is replaced.

※ When the TFT view angle adjustment is completed, the software automatically performs the flashram-up.

(10) Reading of RISC version

Display the RISC firmware version.

9. Procedure

9-1. Shooting image adjustment

- Calculate the "Sensitivity" and "Sensitivity ratio" reference values by using the reference body beforehand, then perform the adjustments. (ref. 9-4.)
- For the shooting image adjustment from (1) to (3), perform all of them 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, it is possible to continue the adjustments again after NG. As for adjustments that were ended with OK, the storage of adjustment values into EEPROM and the flashram-up are 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) Sensitivity adjustment
・Click "SENSITIVITY ADJUSTMENT" of the main menu on screen.
・Attach the tool lens (Aperture F8) and ND filter (ND 8× 1+ ND 4 ×2） 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.

(2) CCD Gr/Gb compensation adjustment (R/B filter)
・Click "Gr/Gb COMPENSATION ADJ (G 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.

(3) Sensitivity ratio adjustment
・Click "SENSITIVITY 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 (black spots) compensation

- 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 "CCD BLACK POINT DEFECT COMPENSATION" of the menu on screen.
- 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.

＊ 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 (white spots) compensation

- 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 "CCD WHITE POINT DEFECT COMPENSATION" of the menu on screen.
- 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. Sensitivity ratio reference value calculation

- 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 ×2） 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.

9-4. "TFT view angle" adjustment (only for NTSC; unnecessary for PAL)

- Provide the power for the camera via AC adapter.
- Set "PTP" mode by Setup menu.
- Connect the camera and PC via USB cable.
- Click "TFT VIEW ANGLE ADJUSTMENT" of the menu on screen.
- When the adjustment starts, a frame appears in the LCD area of camera.
- By clicking the "Left", or "Right", or "Up" or "Down" buttons on the window, move the frame from right to left or up and down to prevent the frame from running off the edge of the TFT monitor of the camera.

9-5. CCD-PCB EEPROM flashram up

- Provide the power for the camera via AC adapter.
- Set "PTP" mode by Setup menu.
- Connect the camera and PC via USB cable.
- Click "CCD PCB EEPROM FLASHRAM UP" of the menu on screen.
- The adjustment starts. When it is completed, "OK" is displayed.

9-6. TFT-PCB EEPROM flashram up

- Provide the power for the camera via AC adapter.
- Set "PTP" mode by Setup menu.
- Connect the camera and PC via USB cable.
- Click "TFT PCB EEPROM FLASHRAM UP" of the menu on screen.
- The adjustment starts. When it is completed, "OK" is displayed.

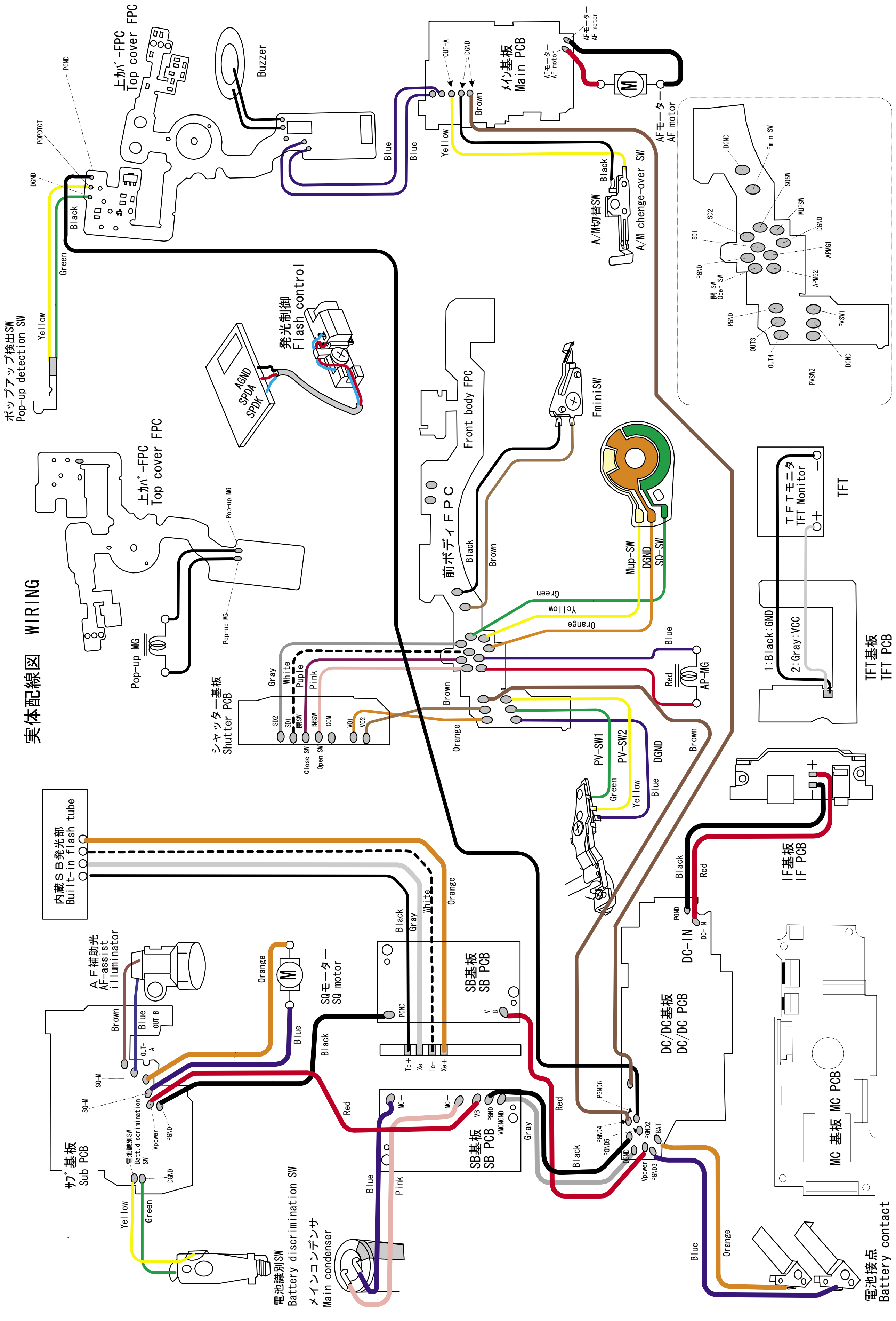
9-7. Reading of RISC version

- 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.

10. 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.

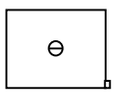
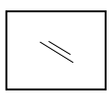
Note:

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.

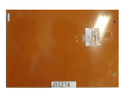

実体配線図 WIRING
上カバ゛-FPC
Top cover FPC
Buzzer
メイン基板
Main PCB
AFモーター
AF motor
A/M切替SW
A/M chenge-over SW
ポップアップ検出SW
Pop-up detection SW
発光制御
Flash control
AGND
SPDA
SPDK
Front body FPC
前ボディFPC
FminiSW
Mup-SW
DGND
SQ-SW
TFTモニタ
TFT Monitor
TFT
Pop-up MG
シャッター基板
Shutter PCB
AP-MG
1:Black:GND
2:Gray:VCC
TFT基板
TFT PCB
PV-SW1
PV-SW2
IF基板
IF PCB
内蔵SB発光部
Built-in flash tube
AF補助光
AF-assist illuminator
SQモーター
SQ motor
SB基板
SB PCB
DC-IN
DC/DC基板
DC/DC PCB
MC 基板 MC PCB
サブ基板
Sub PCB
電池識別SW
Battery discrimination SW
メインコンデンサ
Main condenser
電池接点
Battery contact

工　具・TOOLS

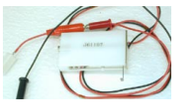
★：新規設定工具・NEW　TOOL

	工具番号 Tool No.	名　称 Name of tool	備　考 Others
★	J61205 	カメラ通信工具 Camera communication tool	
★	J15411 	AE CCD 位置出し工具 AE CCD positioning tool	
★	J15410 	無限合致調整用スクリーン Infinity focus adjustment screen	
★	J18362 	反射ミラー Reflection mirror	
★	J18361 	カメラ部点検、調整ソフト Inspection and adjustment software for CAMERA	
★	J65058 	撮像部点検、調整ソフト Inspection and adjustment software for IMAGING	
	J18344 	ＡＦチャート AF adjusting chart	FOR　D100
	J18230 	ＹＡＷ、ＰＩＴＣＨ工具 Yaw,Pitch adjustment tool	FOR　F5,F100,F90,F90X
	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

★：新規設定工具・NEW TOOL

工具番号 Tool No.	名　称 Name of tool	備　考 Others
J19109 	ＭＣ－３１ MC-31	
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
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
J18324 	サブミラー４５°出し工具 Sub mirror angle adjustment tool	FOR F5,F100,F80,F65
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 Standeard Lens 50/1.8	
J18267 	ＡＦ５０／１．４Ｄ Lens AF50/1.4D	
J15274 	J15264 用チャートボード Chart board for J15264	

★：新規設定工具・NEW TOOL

工具番号 Tool No.	名　称 Name of tool	備　考 Others
J61197 	電池工具 Battery tool	FOR D100
J61185 	撮像関係調整用レンズ D1 Standard lens	FOR D1,D2H
J18191 	ＮＤフィルター８Ｘ ND filter 8X	FOR D2H
J18358 	ＮＤフィルター４Ｘ ND filter 4X	２枚使用 It uses by two pieces
J63070 	カラービュワー Color Viewer	J63049 でも代用可 J63049 usable
J63068 	輝度計（BM-3000） Luminance Meter BM-3000	
J63085 	ﾌｨﾙﾀｰ SP1（75X75MM） Filter SP1（75X75MM）	FOR D2H
J63087 	ﾌｨﾙﾀｰ SP3（75X75MM） Filter SP3（75X75MM）	FOR D2H

★：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－５ AC adapter EH-5	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（φ1.5mm） HEX.KEY WRENCH（φ1.5mm)	汎用品 RJ is Not available