

PENTAX™

Service Manual

ENGLISH

PENTAX | ***K100D***



Product No. 76700

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PREPARATION

The following preparations are required before disassembling and assembling the camera.

1. Prepare the Jigs, tools and testers. (Refer to the Table of Jigs, tools and testers.)
2. Make the preparation for the digital adjustment. (Refer to the Preparation of digital adj.)

Preparation of Digital Adjustment

[Required equipment]

Programmed software 76700 (C ontained CD-R)

Computer (PC)

SD card 7 pieces (8MB or above)

SD card reader or USB cable (I-USB17) ... For connecting with PC

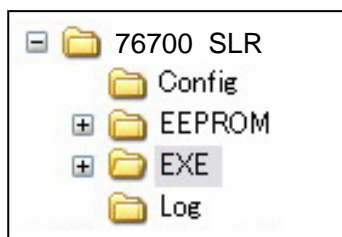
1. Prepare SD card (7 pcs) for confirming adjustment

Prepare SD card (7pcs).

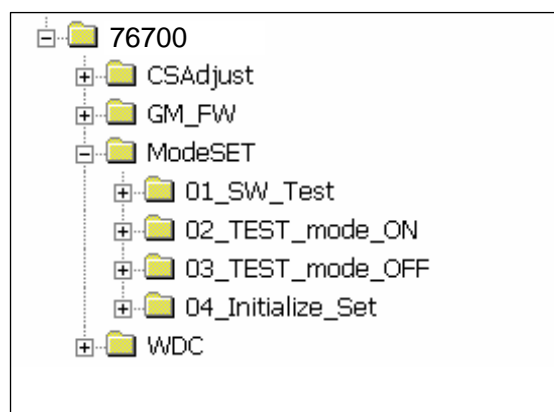
- (1) For product FW (Firmware) of K100D (2 pcs) : use for service and updating FW for customer.
- (2) For switch test.
- (3) For test mode ON
- (4) For test mode OFF.
- (5) ↻ nitialize)
- (6) For data initialize

2. Installing procedure of the Adjustment Software (Setting of the Computer)

- (1) Copy the [76700_SLR] folder from the Programmed software contained in the CD-ROM to [C: drive] as shown in the picture below. (Adjustment Software for SLR operation)
- (2) Copy the [76700] folder from the Programmed software contained in the CD-ROM to [C: drive] as shown in the picture below. (Adjustment Software for digital operation)
- (3) Copy the [76700_SR] folder from the Programmed software contained in the CD-ROM to [C: drive] as shown in the picture below. (Adjustment Software for SR operation)



Initialize Data



- (4) Copy the file from each folder (01~04) of [ModeSET] to each SD card.

[CAUTION] Since the name of all files is same, you should distinguish them by name label etc.

Commone with 76450 (*istDS)

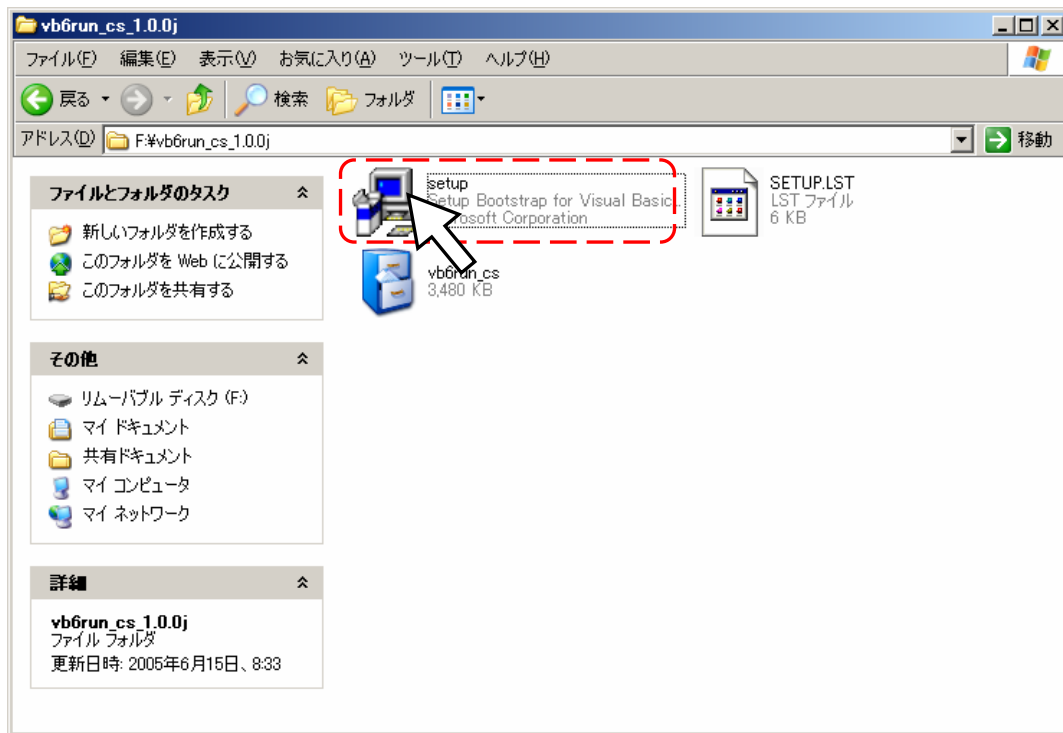
- (5) Copy the file of [kb393.bin] from [GM_FW] holder (For service) to SD cards.
 [CAUTION] You should use latest firmware whenever creating the SD cards for updating.
 * You should distinguish SD card by name label etc.
- (6) Copy the file of [fwdc156b.bin] from [D L_FW] holder (For update) to SD cards
- (7) Excute [Set up the VB run time] on next section

3. Set up the VB run time

If your computer is not installed “VisualBasic” software, set up the VB run time is required as follow.
 It is not required if the VisualBasic is already installed before (*istDL2)

[Procedure]

- ① Set the 76700 adjustment program soft into the computer
- ② Execute the setup.exe in the folder of [vb6run_csx.x.x]



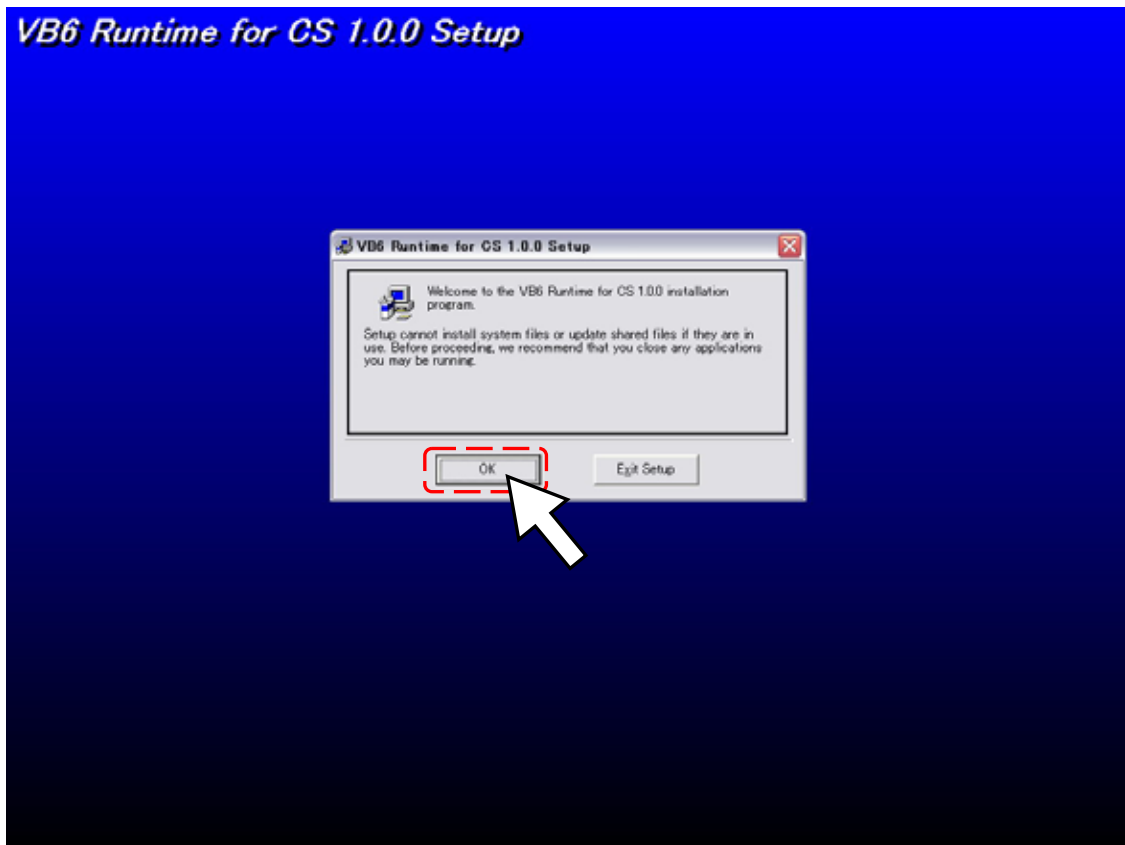
Install will start

* The Execute file and uninstall setting file will be generated

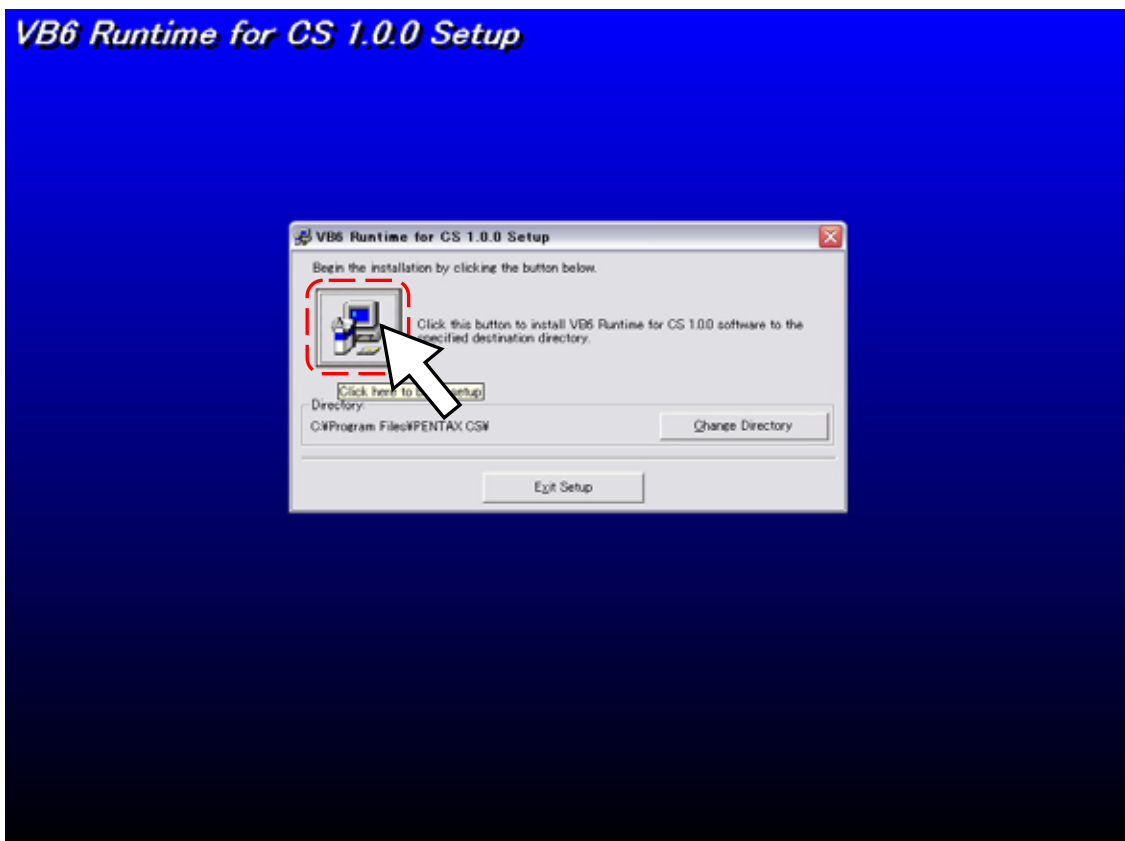
[Caution] The Execute file and setting file is needed when uninstall, therefore please do not delete it.

(To be continued next page)

③ Click OK



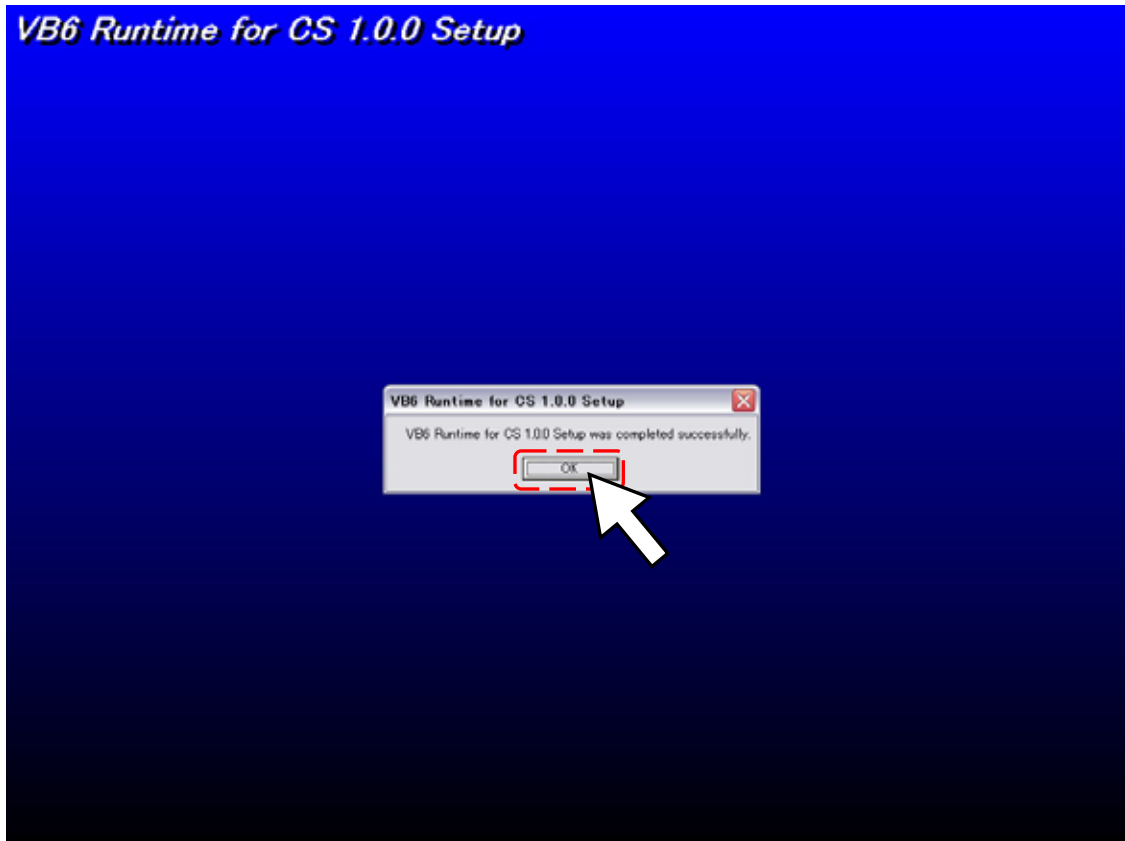
④ Do not click Directory, Click installation button



⑤ Set up will be started



⑥ Click OK to end the installation



DISASSEMBLY AND ASSEMBLY

Outline of Disassembly and Assembly

1. Caution

(1) Be sure to use the anti-static mat and wrist strap to prevent static failure of circuits.
 (2) This product is used lead free solder.
 surface of solder will be white-tinged color. Solder quickly, because melting temperature is high and so if heat to much, it is possible to damage to PC board.
 Soldering iron requirement: The temperature can be adjusted up to 400° and exclusive use for lead free solder.
 Also it is desirable to use antistatic soldering iron.

The temperature for tip of soldering iron must set between 340° ~ 360° for lead free solder.

(3) Do not stress to the connector terminals and flexible boards because they are very delicate parts.
 Pay careful attention to the connector terminals and flexible boards and, we recommend marking to the flexible board before disconnecting them. This will be helpful to reconnect the flexible board to the connector terminal properly.

2. Flowchart for Assemble, Adjustment and Confirmation

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DISASSEMBLY AND ASSEMBLY PROCEDURES

Disassembly procedure of main body

[Preparation] Remove the Hot shoe cover FK, Eye cap FL and Battery from the main body.

1. POP-up the built-in flash

For removing top cover, install the batteries to the camera and turn on the camera then pop-up the flash by pressing pop-up button.

*If the camera does not pop-up the flash: Use flash pop-up tool as shown in figure 1.

(The same tool as MZ-7) --- Use telephone card and processes it as follow

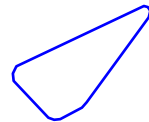
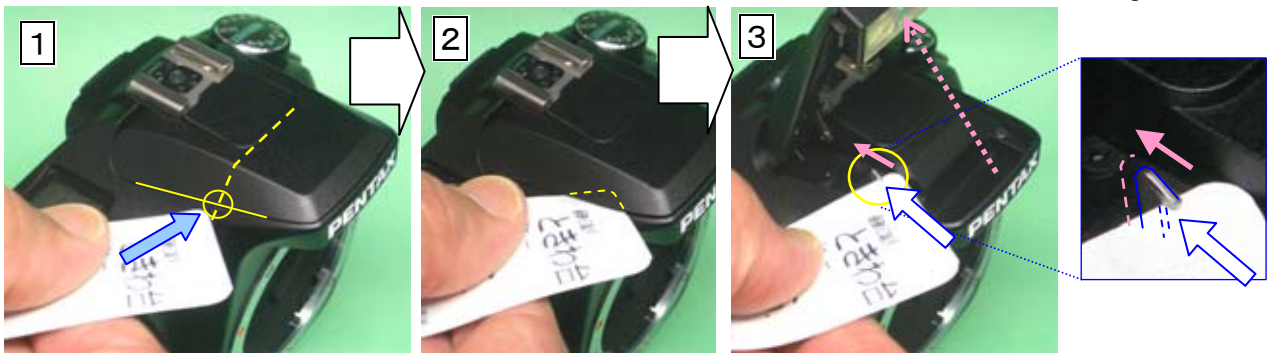
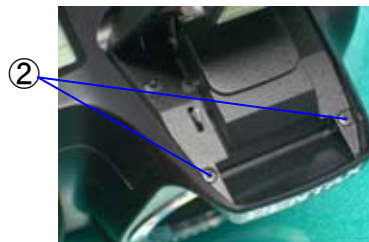


Fig. 1



② Remove A73 (TY screw x2 4.5mm)



2. A401 (Bottom cover)

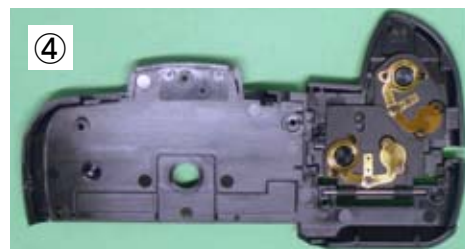
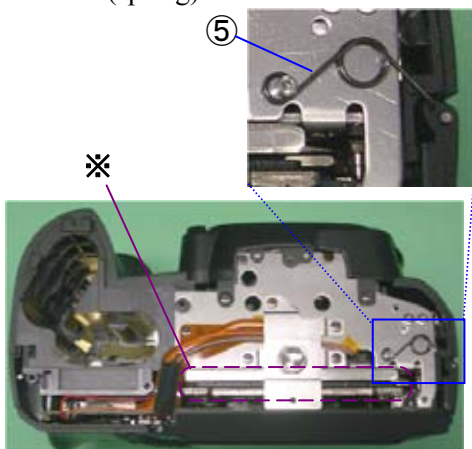
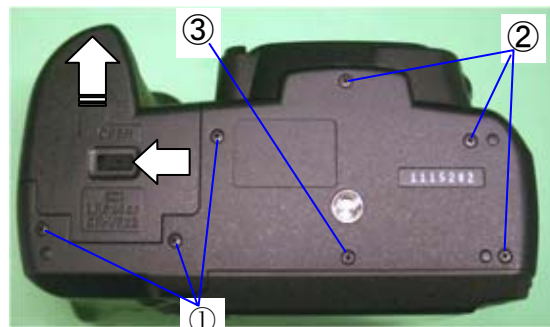
① Unscrew A73 (TY screw x3 4.5mm)

② Unscrew A67 (screw x3 5mm)

③ Unscrew A75 (screw 1.7x1.8)

④ Open the battery cover and then remove the battery cover and bottom cover.

⑤ Unhook A167 (spring)



[Caution]

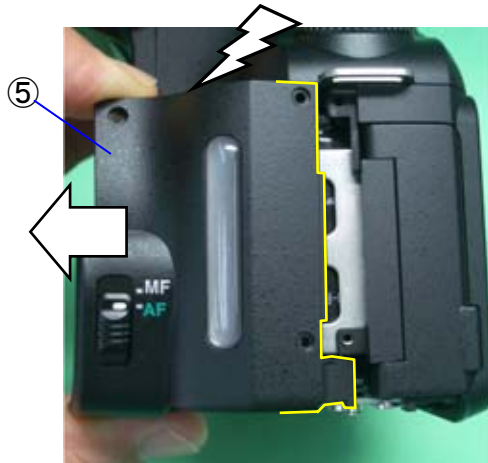
There is strong magnet in the CCD/SR blocks therefore please do not place a screw or magnetic card near the camera after the outside cover is removed.

3. A161 (Side cover)

- ① Unscrew A74 (TY screw 5.5mm)
- ② Unscrew A73 (TY screw 4.5mm)
- ③ Unscrew A67 (screw 5mm)
- ④ Remove a screw (CNL-D 1.7x2.5)

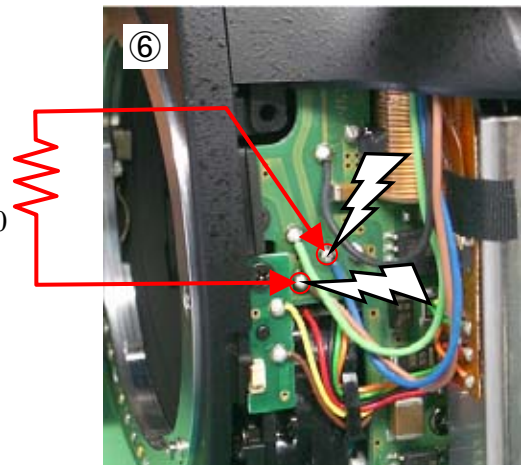
【Caution】 Be careful the electric shock where flash circuit board is inside the cover.

- ⑤ Remove A161 as shown figure bellow.



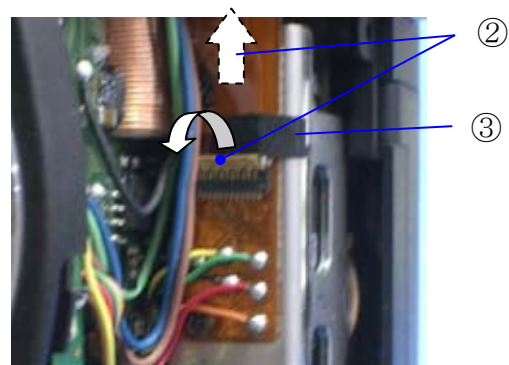
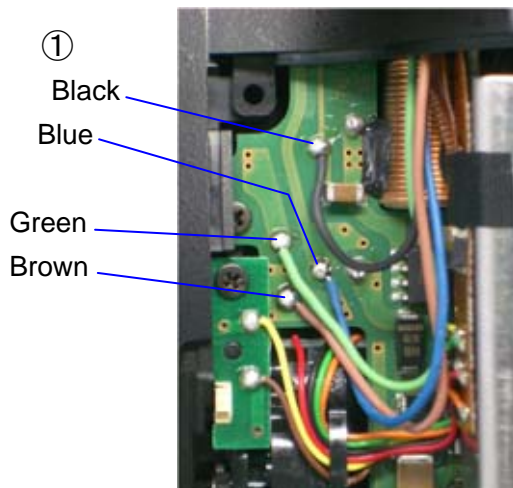
- ⑥ Discharge the main capacitor
Discharge the main capacitor by using
100Ω-1kΩ resistor.
(Discharge between Blue and Brown soldering land on Q200)

100~1kΩ

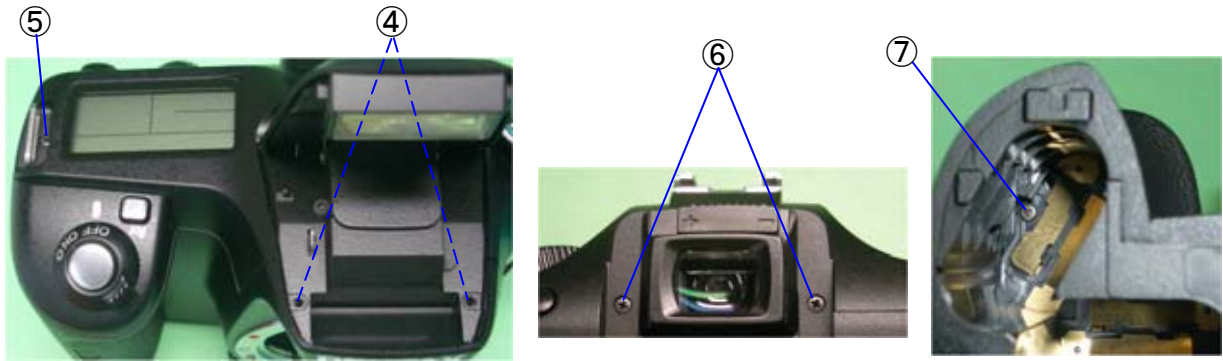


4. 0-A301 (Top cover)

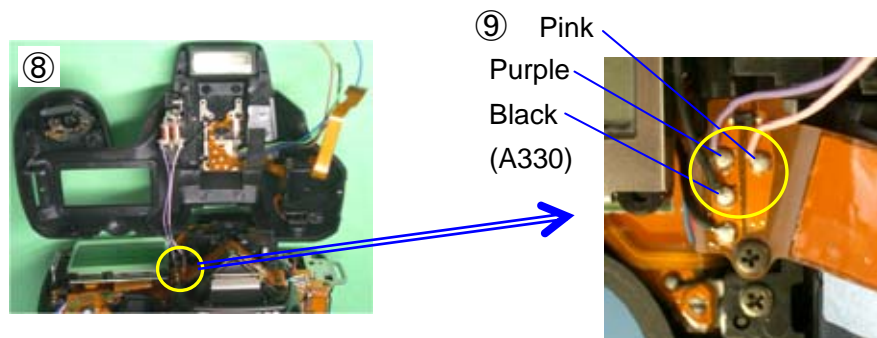
- ① Unsolder 4 lead wires (Blue, Green, Black, Brown/Q100)
- ② Peel off the BT(6x10) while holding flex board.
- ③ Disconnect T51 flex board from connector. (Frip lock connector)



- ④ Unscrew A73 (TY screw x2 4.5mm) --- It is already done at 1-②
- ⑤ Unscrew A73 (TY screw)
- ⑥ Unscrew A74 (TY screw x2 5.5mm)
- ⑦ Unscrew TY-CNL-D 1.7x8.0 (Inside of battery chamber)

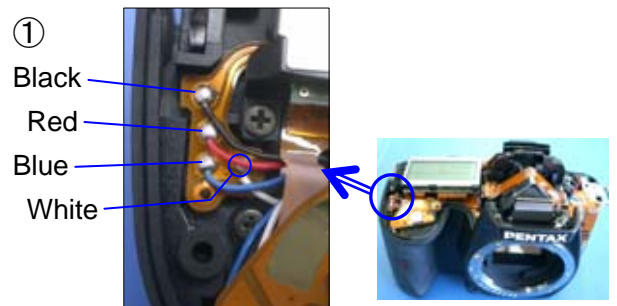
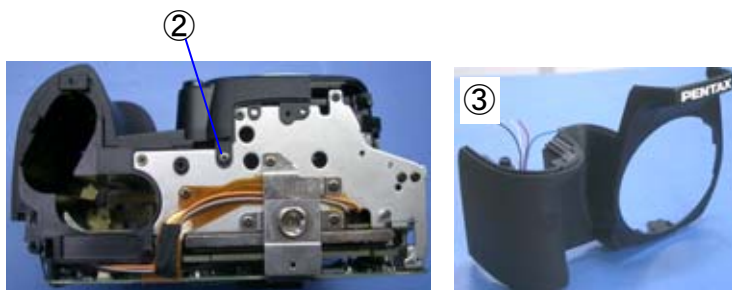


- ⑧ Lift up top cover.
- ⑨ Unsolder 3 lead wires. (Pink, Purple, Black/ G119, A330)
- ⑩ Remove the top cover.

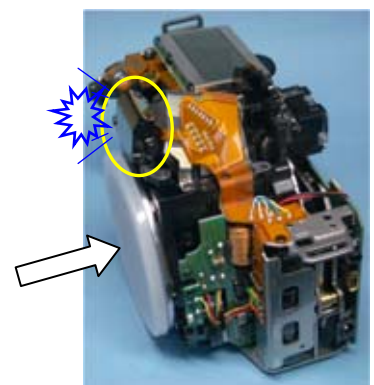


5. A150(Front cover)

- ① Unsolder 4 lead wires. (Black, Red, Blue, White /0-T950)
- ② Unscrew CNL-D1.7x2.5
- ③ Take off front cover (A150)

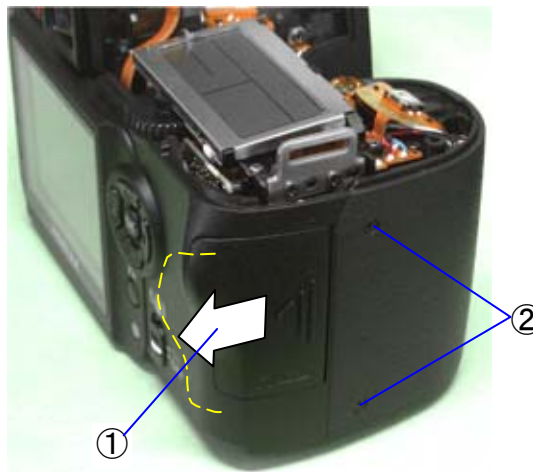


* When working on the camera, put the mount cover to protect SI-LED part.

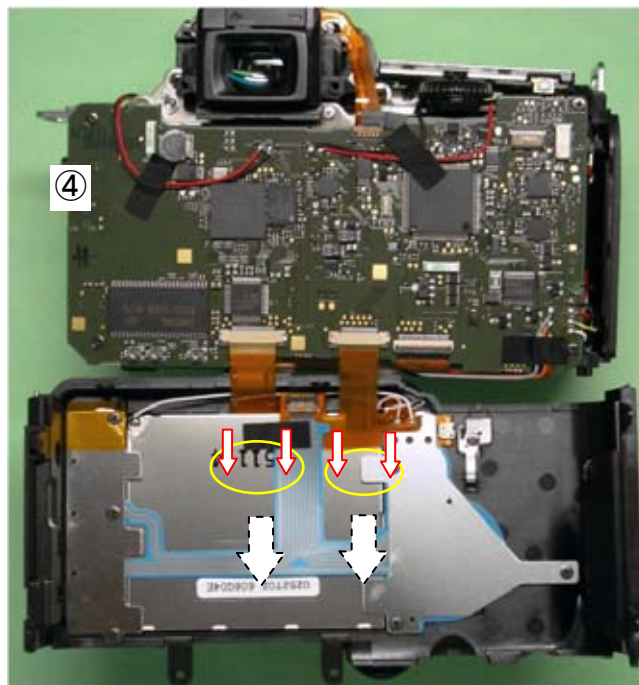
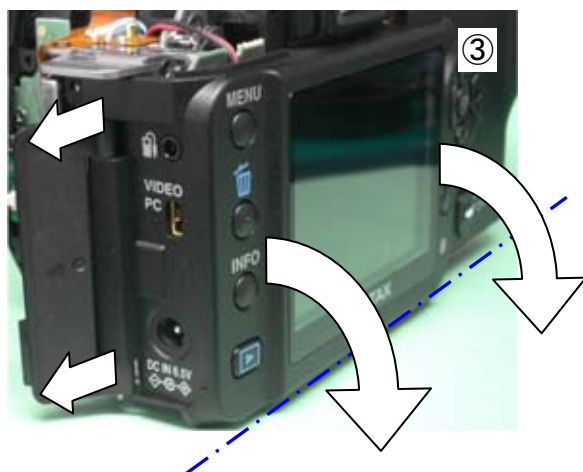


6. 0-A201 (Back cover)

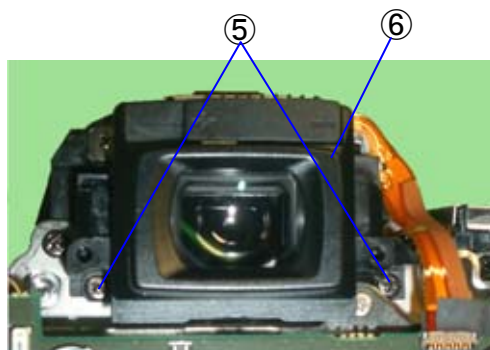
- ① Open the SD card cover.
- ② Unscrew A74 (TY screw x2 5.5mm)



- ③ Remove the terminal and lift up the back cover.
- ④ Disconnect 2 flex board from connector.



- ⑤ Unscrew CNL-D 1.7x3.0 (x2)
- ⑥ Take off M311

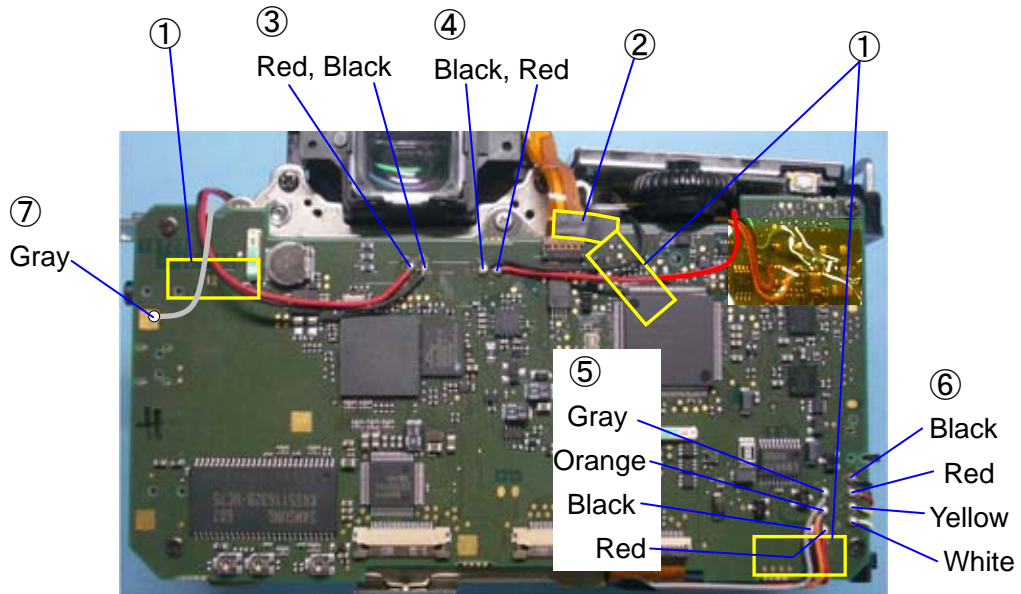


7. 0-T100 (Main PC board)

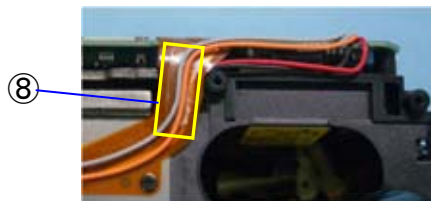
- ① Peel off BT(6x15) --- 3 points
- ② Peel off A38(PT3.8x10) while holding flex board.

Unsolder lead wires.

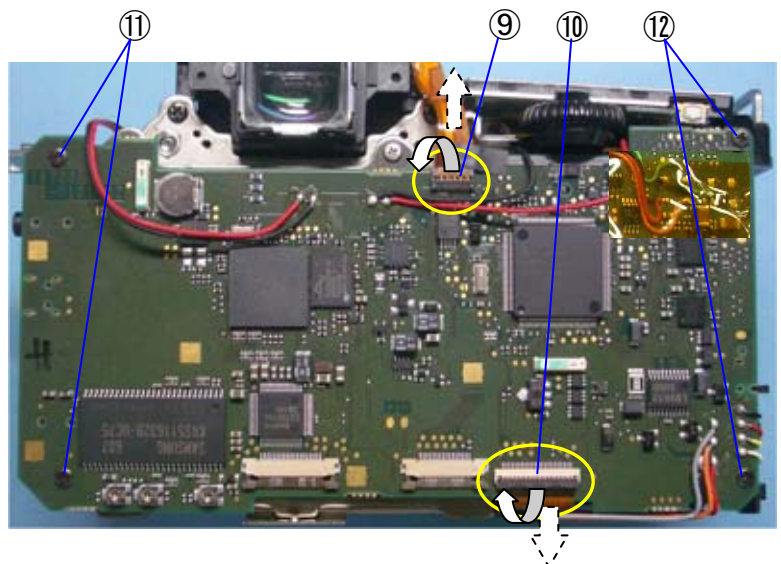
- ③ Unsolder 2 lead wires. (Red, Black / Q200)
- ④ Unsolder 2 lead wires. (Black, Red / T200, A14)
- ⑤ Unsolder 4 lead wires. (Gray, Orange, Black, Red / S300, S250)
- ⑥ Unsolder 4 lead wires. (Black, Red, Yellow, White / T10, N300)
- ⑦ Unsolder 1 lead wire. (Gray / I17)



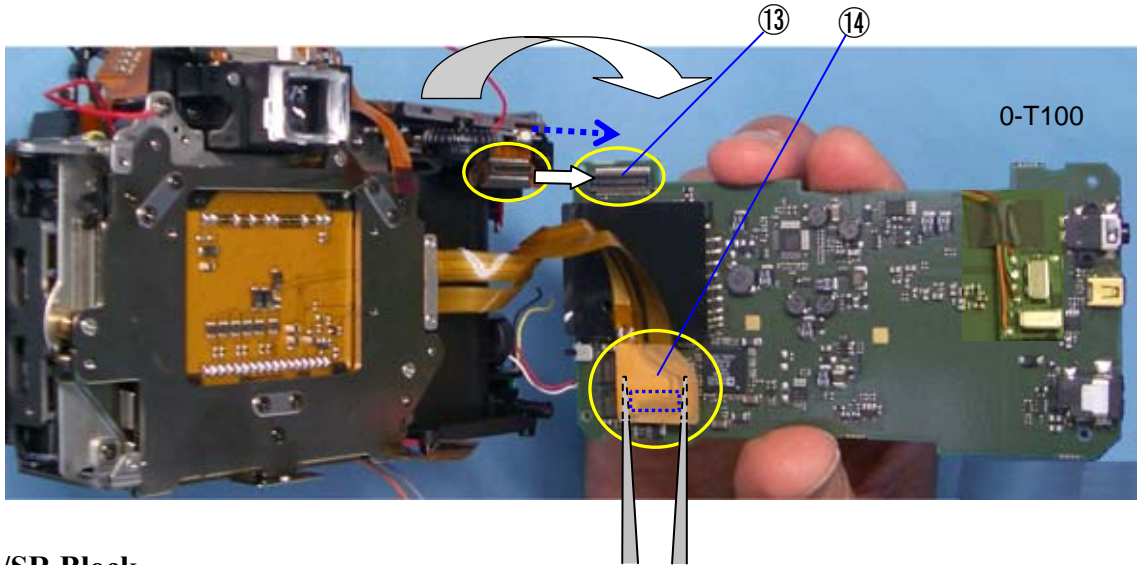
- ⑧ Peel off BT(6x15) from bottom side.



- ⑨ Disconnect J100 flex from connector (Flip lock connector)
- ⑩ Disconnect T901 flex from connector (Frip lock connector)
- ⑪ Unscrew CNL-D 1.7x2.5 (x2)
- ⑫ Unscrew TY-CNL-D 1.7x3.5 (x2)



- ⑬ Remove 0-T100 while disconnecting T200 connector as shown in figure bellow.
- ⑭ Disconnect the flex from CCD/SR on 0-T100

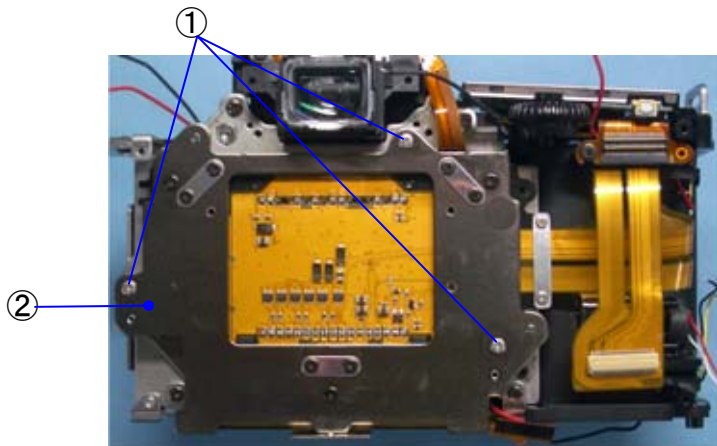


8. CCD/SR Block

【Caution】 Pay attention, there is powerful magnet is carried in the inside of a CCD/SR block.

【Caution】 Since performance can be damaged, a CCD/SR block cannot be disassembled and also don't apply the external pressure to a movable part.

- ① Unscrew C45 (Stainless steel screw x3)
- ② Remove CCD/SR block(0-C000) ---- Since it is sticking to a tripod seat, it removes carefully.



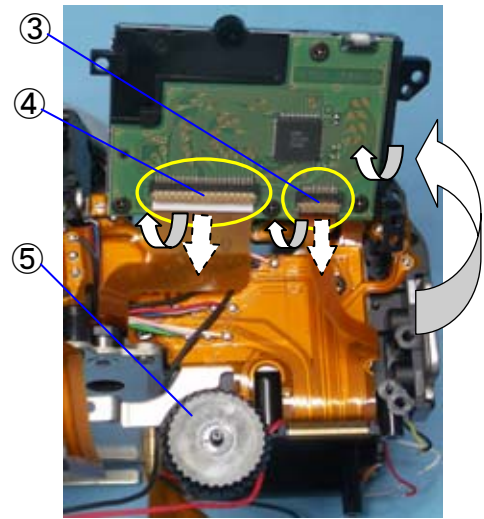
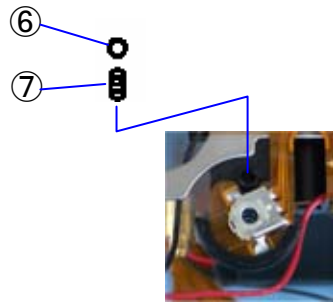
9. Exterior LCD block

- ① Unscrew CNL-D 1.7x2.5
- ② Unscrew TY-CNL-D 1.7x3.5 (x2)



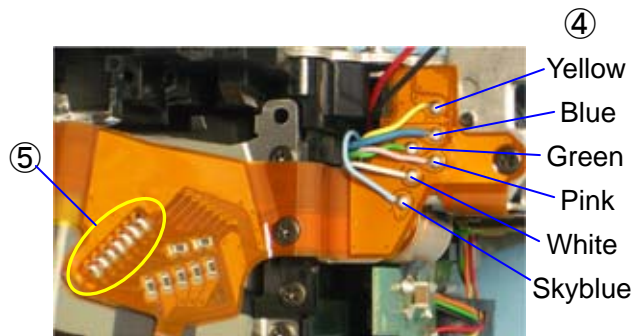
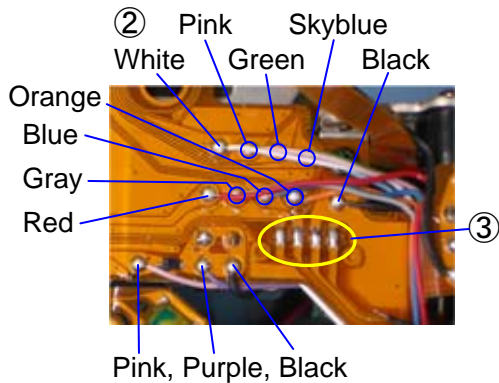
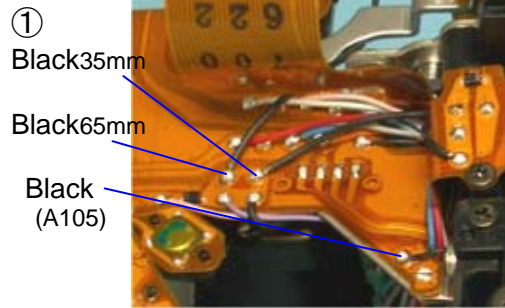
* Lift up LCD block as shown figure below.

- ③ Disconnect T200 flex from connector. (Flip lock type)
- ④ Disconnect O100 flex from connector. (Flip lock type)
- ⑤ Remove A335.
- ⑥ Remove BO2.0.
- ⑦ Remove A17 (spring)

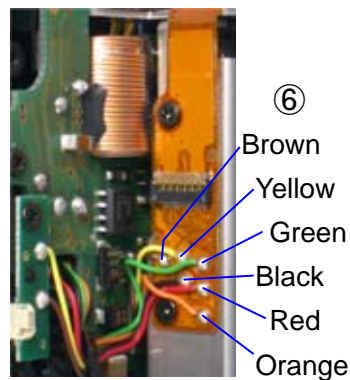
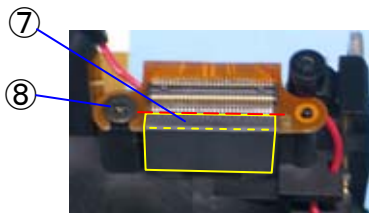


10. 0-T200 (Upper flex block)

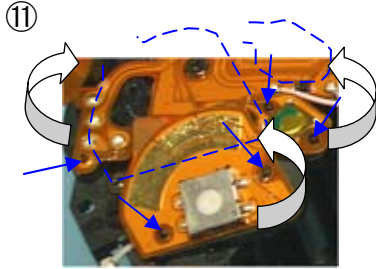
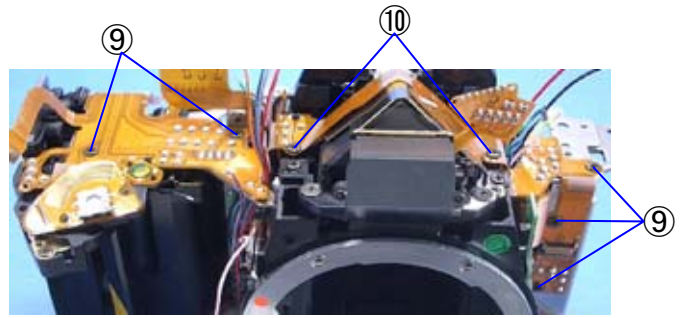
- ① Unsolder lead 3 wires (Black)
- ② Unsolder 13 lead wires.(E000, G100)
- ③ Unsolder 4 soldering lands. (T71)
- ④ Unsolder 6 lead wires. (Q200)
- ⑤ Unsolder 7 lands. (O170)



- ⑥ Unsolder 6 lead wires. (T940, S300)
- ⑦ Peel off A40(tape) while holding flex board.
- ⑧ Unscrew TY-CNL-E 1.7x3.5.

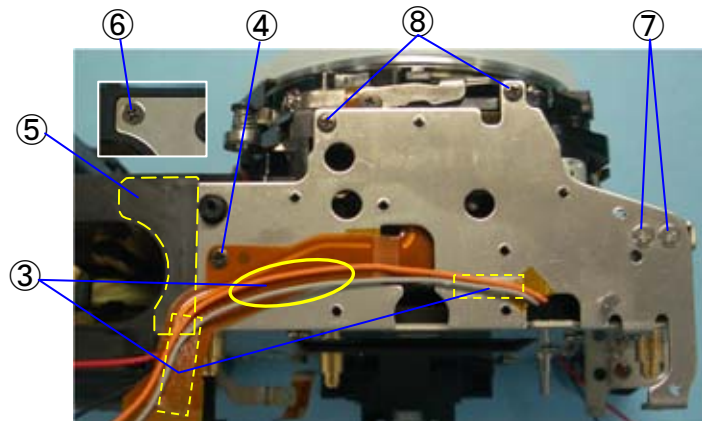
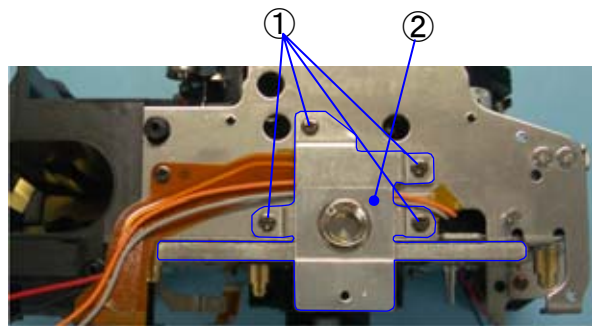


- ⑨ Unscrew CNL-D 1.7x1.8 (x5)
- ⑩ Unscrew TY-CNL-D 1.4x2.5 (x2)
- ⑪ Peel off main SW flex and Av-SW flex from double stick tape. (T200 separates.)

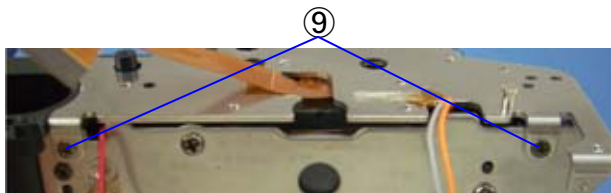


11. 0-A3 (Bottom plate assy.)

- ① Unscrew CNL-D 1.7x2.5 (x4)
- ② Remove 0-A51
- ③ Peel off 2 lead wires from DT.
- ④ Unscrew CNL-D 1.7x1.8.
- ⑤ Peel off A53.
- ⑥ Unscrew TY-CSM 1.7x4.0.
- ⑦ Unscrew CNL-E 1.7x2.2 (x2)
- ⑧ Unscrew TY-CNL-D 1.7x4.0 (x2)

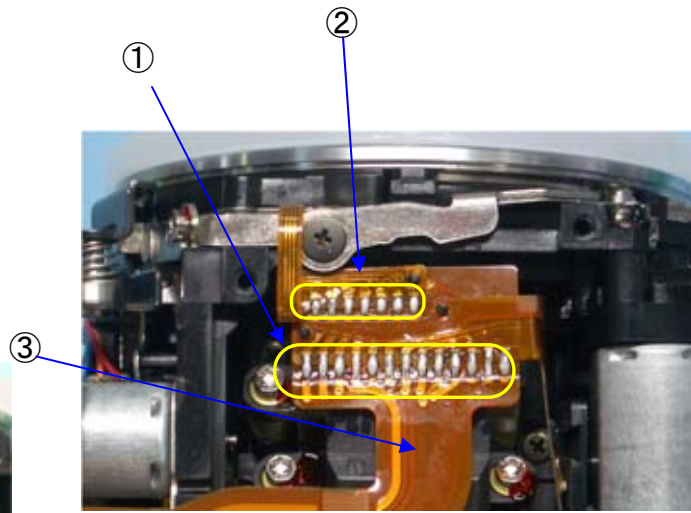
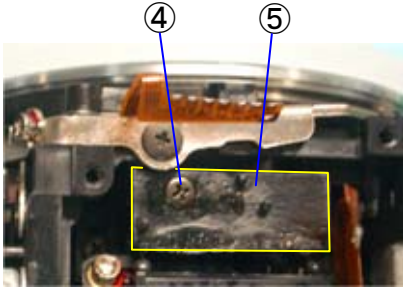


- ⑨ Unscrew CNL-D 1.7x2.5 (x2)
- ⑩ Remove 0-A3.



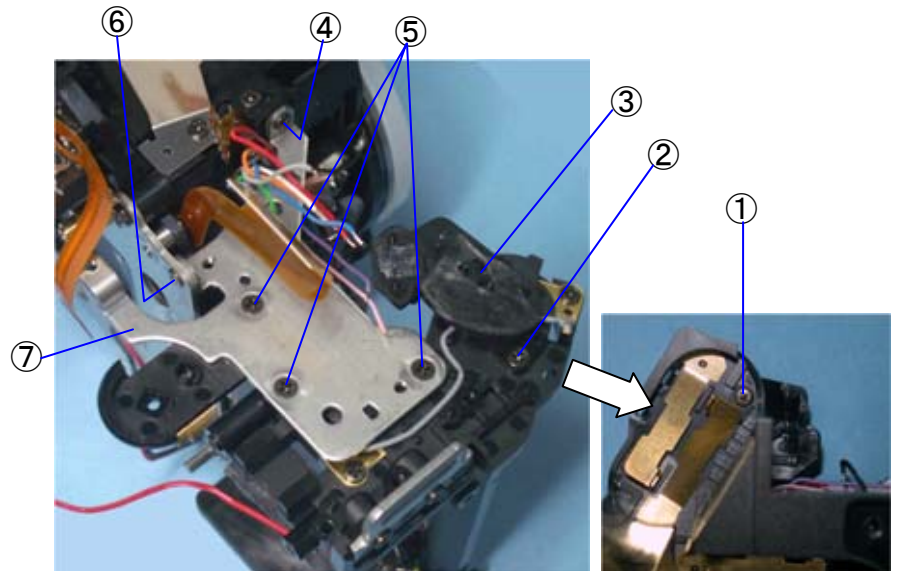
12. T901 (Lower flex board)

- ① Unsolder 13 lands. (M100)
- ② Unsolder 7 lands. (T301)
- ③ Remove T901.
- ④ Unscrew TY-CNL-D1.7x3.5
- ⑤ Remove A141.



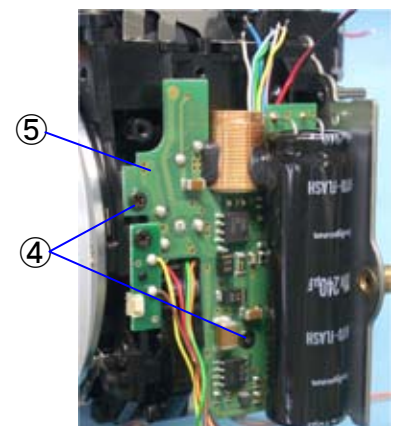
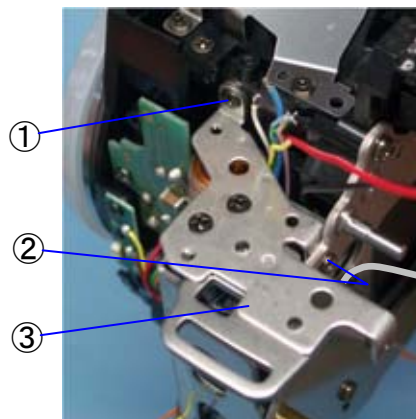
13. A6 (Left shoulder plate)

- ① Unscrew TY-CNL-D 1.7x3.5
(Inside battery box)
- ② Unscrew TY-CNL-D 1.7x3.0.
- ③ Remove A19.
- ④ Unscrew TY-CNL-D 1.7x4.0.
- ⑤ Unscrew TY-CSM 1.7x4.0 (x3)
- ⑥ Unscrew CNL-D 1.7x2.5.
- ⑦ Remove A6.



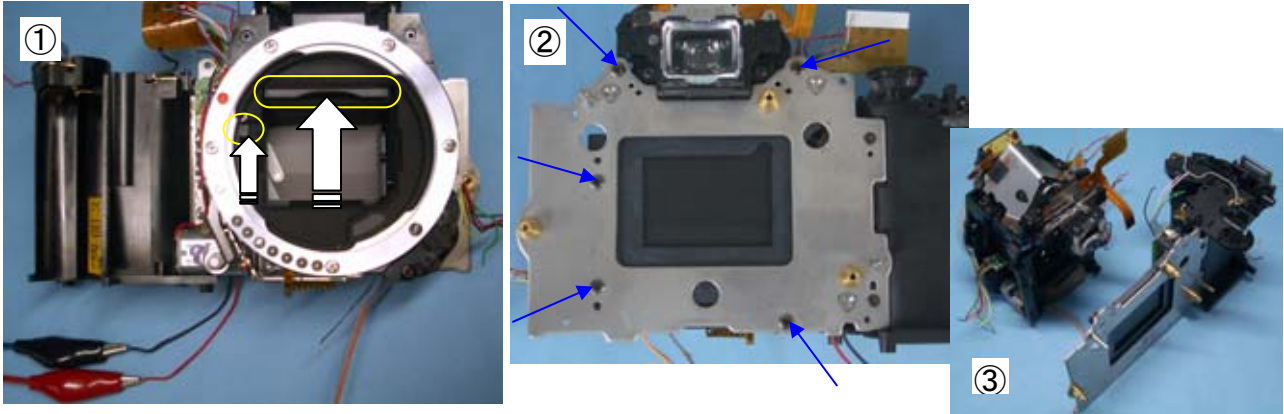
14. 0-Q200 (Flash PC board)

- ① Unscrew TY-CNL-D 1.7x4.0.
- ② Unscrew CNL-D 1.7x2.5.
- ③ Remove A5 (with A4,A15)
- ④ Unscrew TY-CNL-D 1.7x4.0 (x2)
- ⑤ Remove 0-Q200.



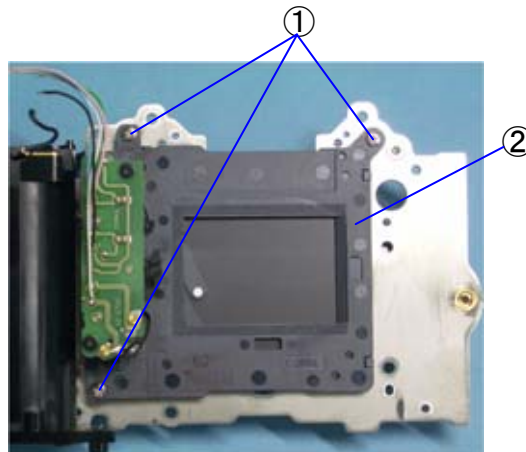
15. Front housing block

- ① Supply DC2V to 0-S250 (Mirror motor).
(Positive (+) on Red wire) Set the front housing block to mirror up position.
- ② Unscrew TY-CNM 2.0x5.0 (x5)
- ③ Remove main plate and battery chamber from front housing block.



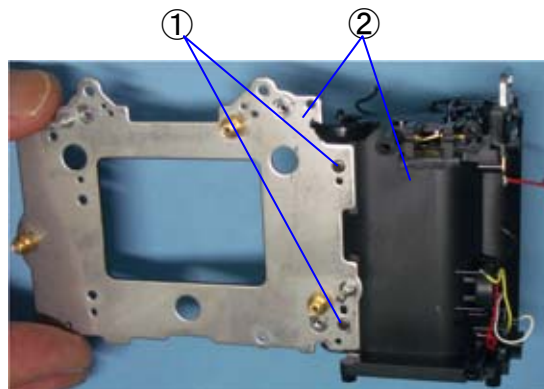
16. 0-E000 (Shutter block)

- ① Unscrew A70 (shoulder screw x3)
- ② Remove 0-E000.



17. Main plate and battery chamber

- ① Unscrew TY-CNL-D 1.7x4.0 (x2)
- ② Separate Main plate and battery chamber.



II. Assembly and Disassembly procedure of front housing block

* Disassemble the front housing block in reverse order of assembly procedures

【Assembly procedures】

1. Front Housing Block

A102, B41, M120, (DT(4x15)),

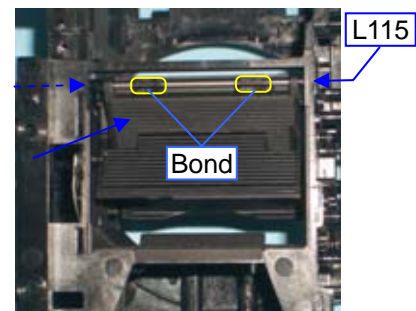
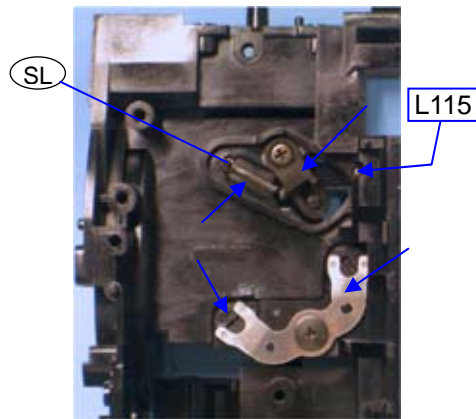
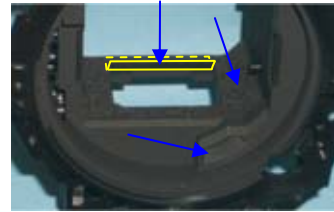
B58 x2, B59, TY-CNL-G 1.7x2.0,

0-B52 (mirror sheet),

B66 (shaft) ----A screw lock (SL) and L115 are applied.

B63, B57

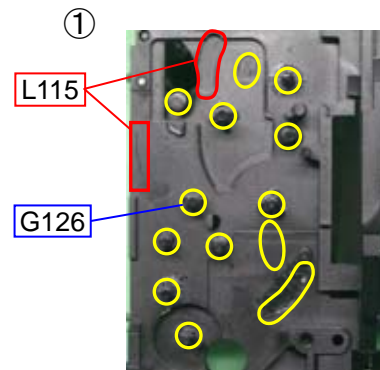
B62 (spring) ---- Apply screw lock



2.0-G100

① Apply G126 at 13 positions and apply L115 at one position.

② Install B20 to B11.



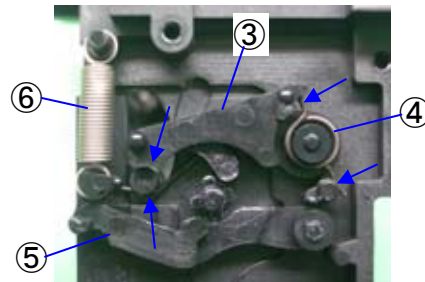
③ B11 ----Hook the spring to shaft of mirror sheet.

【Note】 Caution for come off spring.

④ B19

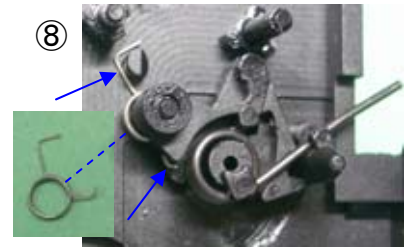
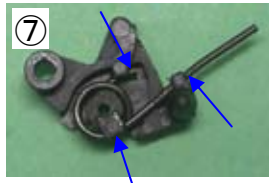
⑤ B10

⑥ B21



⑦ Install B17 to B9.

⑧ Install B18 to B9.



⑨ 0-B8

----Apply G126 to surface of cam.

⑩ B7

----Apply G126 to surface of cam on both side.

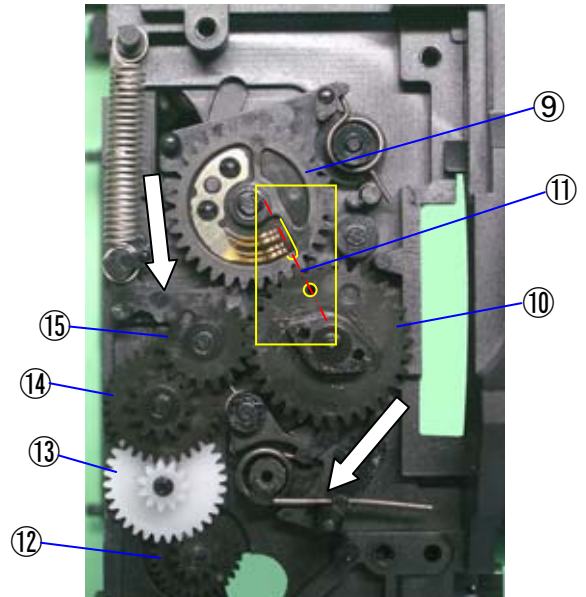
⑪ Align the both hole of 0-B8 and B7.

⑫ B3

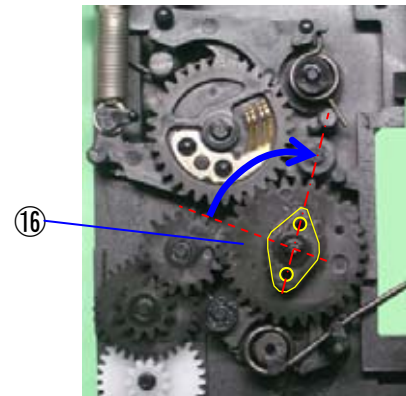
⑬ B4

⑭ B5

⑮ B6

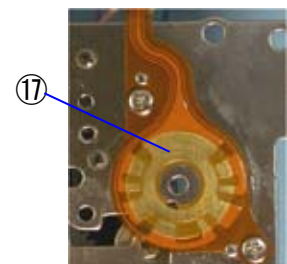
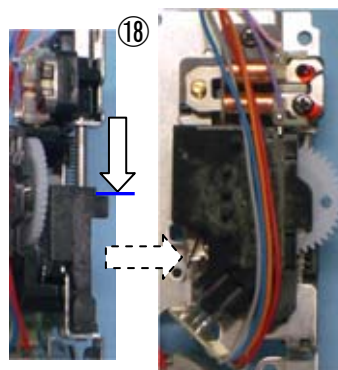


⑯ Turn B7 clockwise until the arrow indicated in figure right.



⑰ Clean code plate by solvent and apply G151.

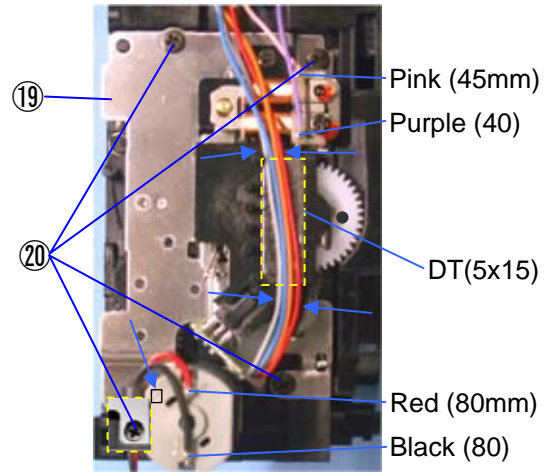
⑱ Latch the lever of G100 while pushing down the sliding plate.



⑱ 0-G100

----Surely install G100 without any gap between plate.

⑳ TY-CNL-D1.7x3.0 (x4)



【Arrangement when replace G100】

1. Arrange the lead wires with DT(5x15) as shown in figure
2. Solder 4 lead wires.
3. Two lead lines are passed through S364

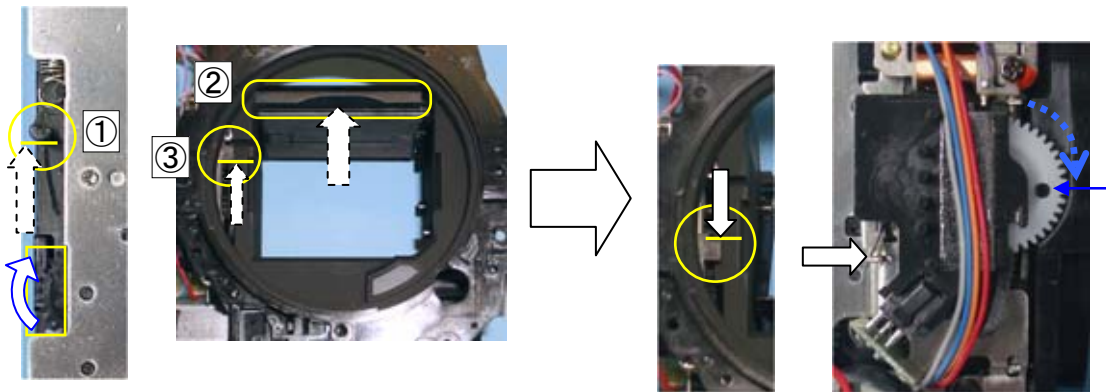
[Notice for Disassembly] Set the mirror seat at top position before removing 0-G100.

1. As shown in a figure, a gear is turned, and it sets to a mirror up position.

[Caution] Since there is no stopper B65 of a mirror, don't carry out by turning on electricity to a mirror motor absolutely.

Mirror up: (Shutter charge lever(1) and mirror seat(2) and sliding plate(3) must be top end position.)

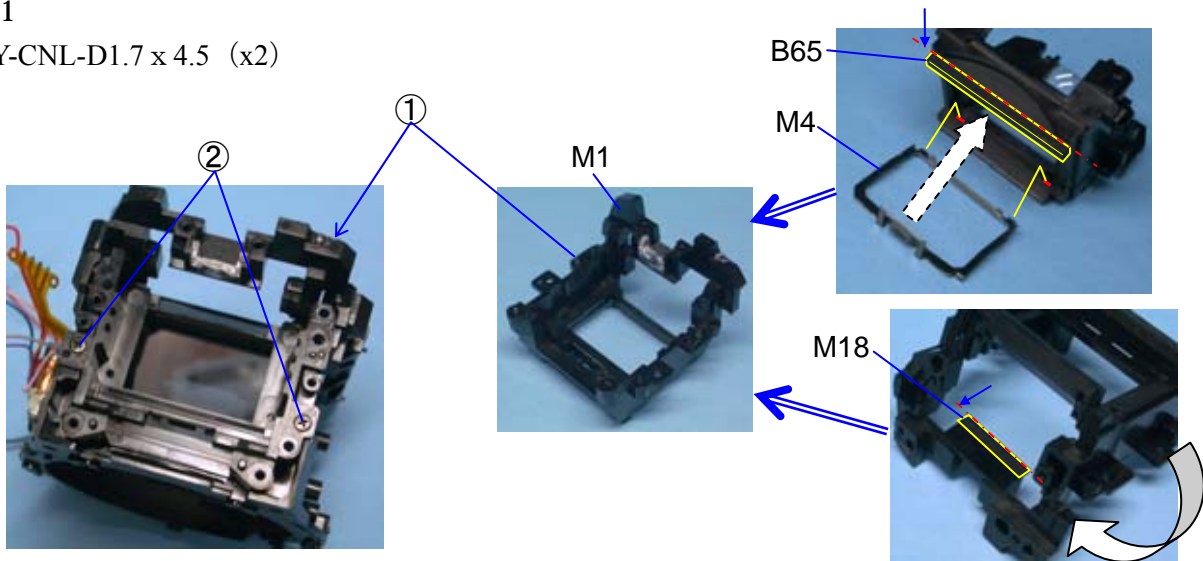
2. Latch the lever of G100 while pushing down the sliding plate.



3. M1

* B65, M4, and M18 should be attached with M1

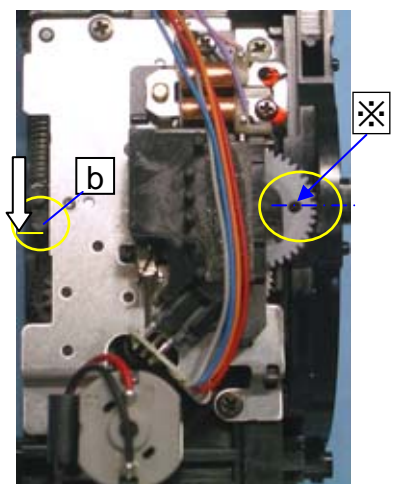
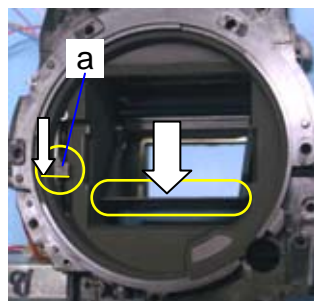
- ① M1
- ② TY-CNL-D1.7 x 4.5 (x2)



4. 【CONFIRMATION】 Checking the mirror function

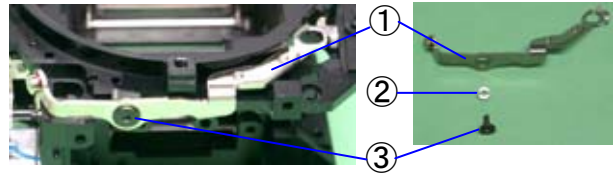
[Required equipment] Power supply

- ① Confirm the following points while applying DC2V to the mirror motor. (Red wire: Positive)
 - 1) The mirror seat must be moved smoothly without noise.
 - 2) The shutter charge lever(b) and sliding plate(a) must be moved smoothly and surely go up and down.
- ② Set the mirror seat to the down position while applying DC1.5V.
(Fine adjustment is possible when turn white gear at behind of G100)
Mirror down: mirror, sliding lever, shutter charge lever at down position.
White gear must be positioned as shown in figure.---- (⊗)
- ③ Both mirror seats 1st and 2nd must be returned smoothly to the original position when both mirror seats are prssed inward about 3mm by finger pressure.
- ④ Set the mirror seat to the down position.

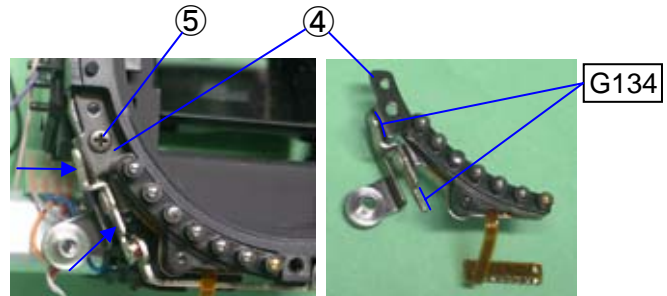


5. A104

- ① 0-A121
- ② A133
- ③ TY-CNL-F1.4x4.0

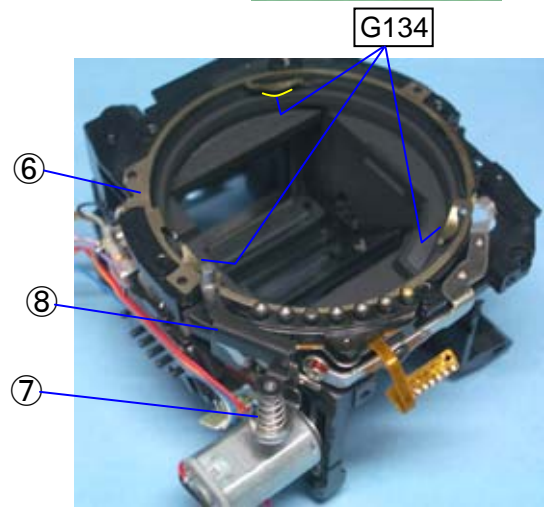


- ④ 0-A126 ----and related parts.
Apply G134 as shown figure

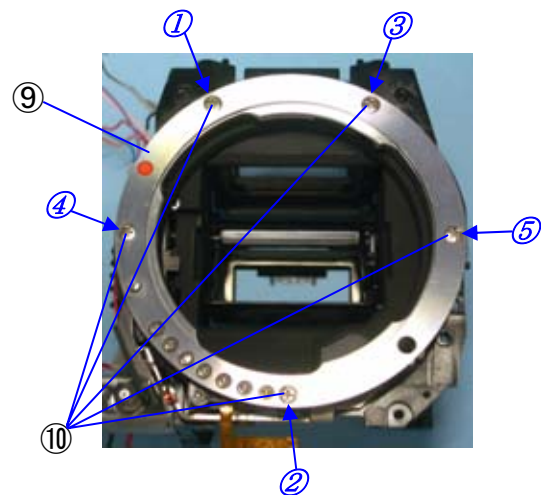


- ⑤ TY-CNL-D1.7x3.0

- ⑥ A105 ---- Apply G134 as shown figure
- ⑦ A110
- ⑧ 0-A108



- ⑨ A104
- ⑩ TY-CNS 2.0x4.5 (Ni-screw x5)
Screw is bolted in the shape of a diagonal line.



6. 【ADJ】 Positioning 1st and 2nd Mirror

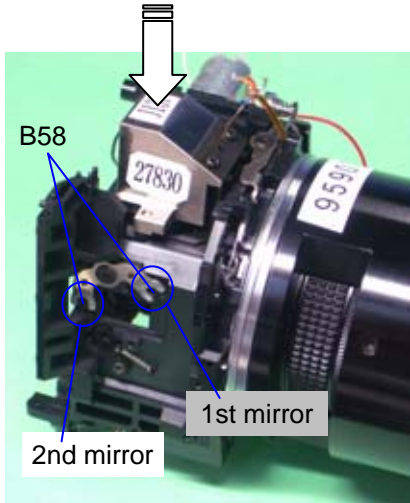
[Required equipment] 1st mirror angle (45°) adjusting jig, Mirror angle adjusting jig for 27830, Mirror positioning scope.

* Adjustment is performed by turning B58 (2 pcs). The Y-axis (the vertical direction) is adjusted to a 0 target.

* Front housing must set mirror down position.

- ① Positioning 1st mirror : Put the 1st mirror angle (45°) adjusting jig on the camera, and then adjust the mirror seat so that the adjusting jig touches the mirror without gap.

Tolerance ---- X-axis : $\pm 15'$
Y-axis : $\pm 10'$



- ② Positioning 2nd mirror : Attach the mirror positioning scope and the 2nd mirror angle adjusting jig to the camera, and then adjust the mirror angle while looking through the eyepiece lens.

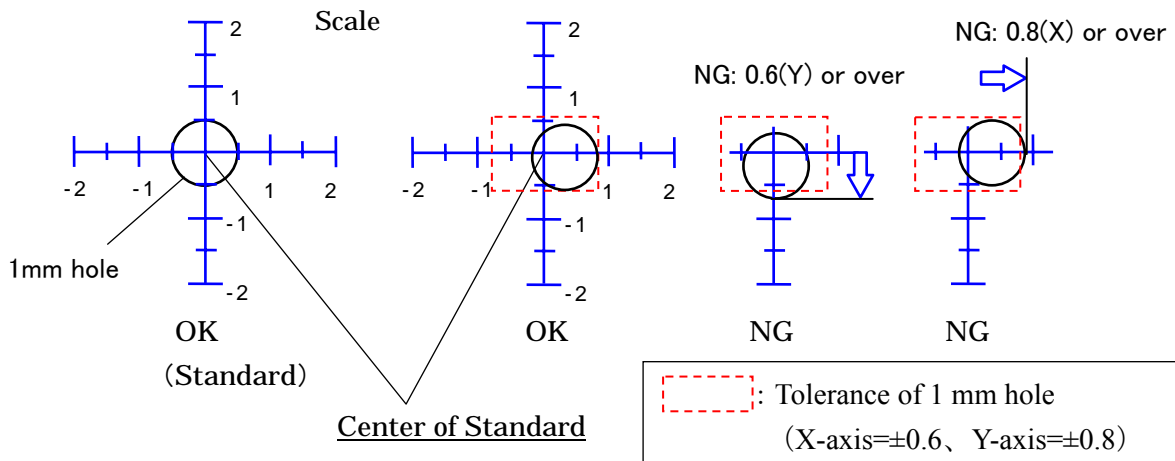
Tolerance ---- X-axis : $\pm 0.3\text{mm}$
Y-axis : $\pm 0.1\text{mm}$

(Refer to below tolerance for positioning scope)

- ③ After adjustment is done, apply the super-glue to both B58.

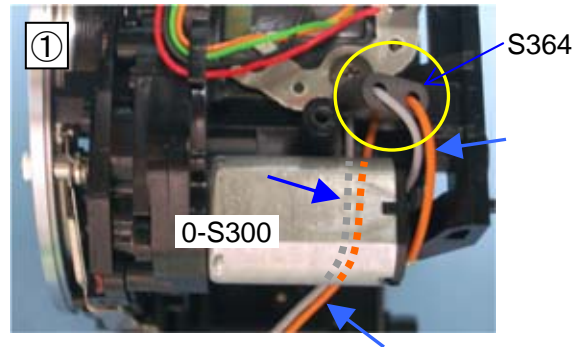
■ Tolerance for 2nd mirror position

(Using with the mirror positioning scope)



7. 0-S300

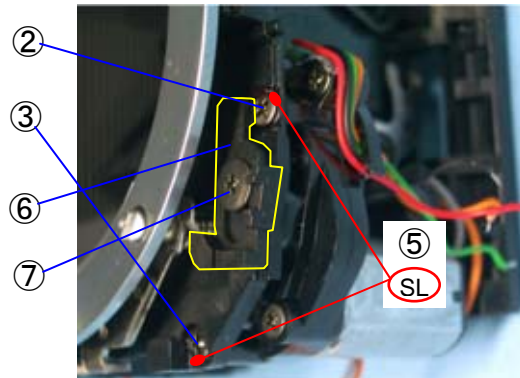
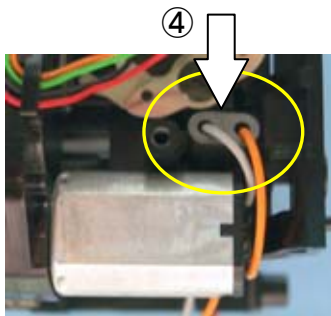
① Arrange the lead wires from motor as shown Figure and then attach 0-S300



② TY-CNL-D1.7x3.5

③ TY-CNL-D1.7x5.5

④ Install S364 as shown in a figure.



⑤ Apply screw lock

⑥ A115

⑦ TY-CNL-G1.7x2.5

8. **[ADJ] AF Joint stroke**

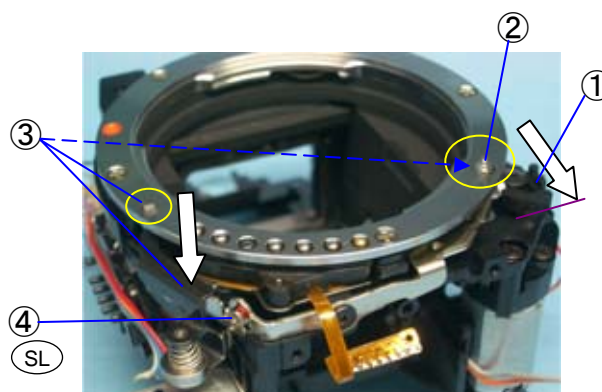
[Required equipment] Vernier calipers

① Set the AF lever to the AF position

② AF coupler(0-S300) must be projected from the mount surface by 1.2mm or more.

③ When the mount lock pin comes to the mount surface with depressing the mount lock lever, the AF coupler must not be projected out of the mount surface.

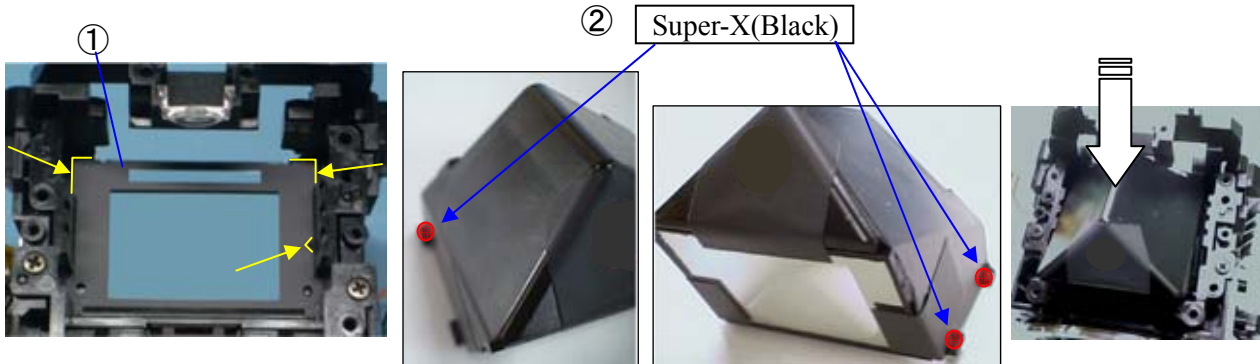
④ Adjustment- 0-A121 by turning an eccentric screw, and apply the screw lock



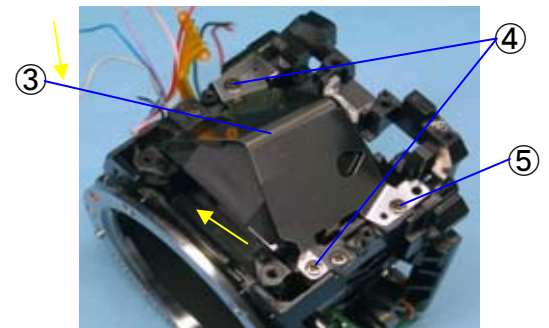
9. L2, 0-L101

【Caution】 Confirm there is neither dust nor scratch on L2 and 0-L101.

- ① M3
- ② 0-L101---- Apply Super X (black) to three places

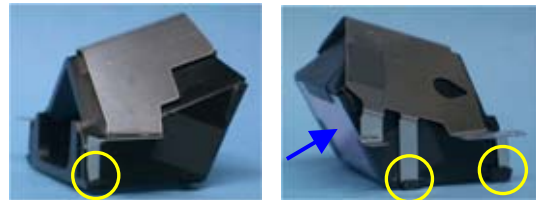


- ③ M9 (M8 · M12 x2)
- ④ TY-CNL-D1.7x3.0 (x 2)
- ⑤ TY-CNL-D1.7x4.5



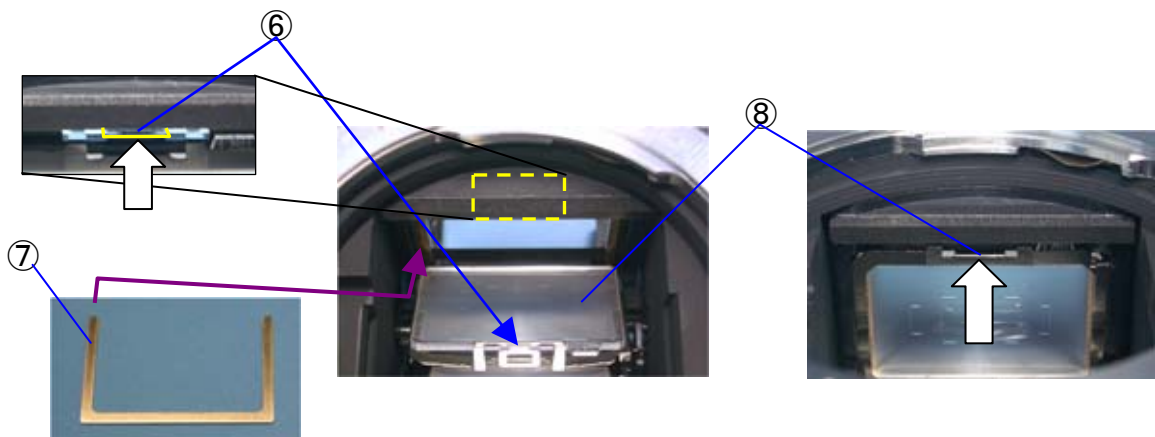
【Note of Disassembly】

1. Three screws which hold M9(Penta cover) are removed.
2. The bond between M9, and three leg tips and penta sheets is removed, and is removed together with penta mirror.



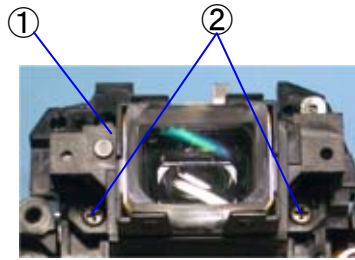
【Caution】 Confirm there is neither scratch on front of pentamirror.

- ⑥ Drop the focusing screen frame(0-M4) by releasing the hook portion.
- ⑦ M22---- In the case of temporary adjustment, Using with the M22-00G(0.45).
- ⑧ Put the focusing screen(L2) on the frame(M4) and then push it back until it locks in place.



10. M301

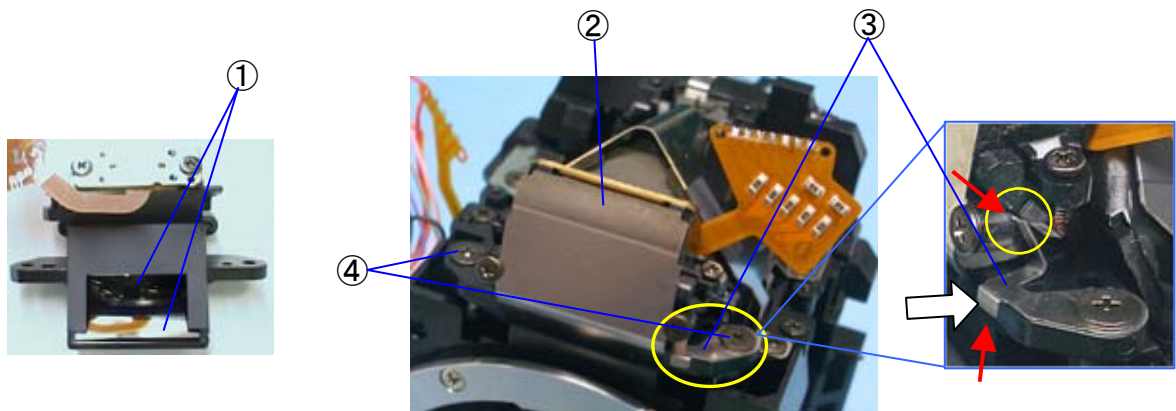
- ① Eyepiece (M301,L7 and other)
- ② TY-CNL-D1.7x4.0 (x2)



11.SI block

- ① Confirm that there is neither dust nor scratch on inside prism and mirror.
- ② SI block (0-M51, 0-M52, M53, L11, L12, 0-O170 and other)
- ③ Attach M55 (SI spring) as shown figure
- ④ TY-CNL-F1.7x4.5 (x2)

--- Install SI block and M55(spring) to the pentamirror side as shown figure



12. 【ADJ】 Viewfinder focus and parallax

【Required equipment】 50mm lens, Collimator, Focus master lens

【Preparation】

1. Adjust the diopter by the diopter adjustment lever.
2. Set the AF mode switch to to MF position.(upper position)

12-1. Parallax

【Caution】 Confirm that the Pentaprism must be installed securely.+

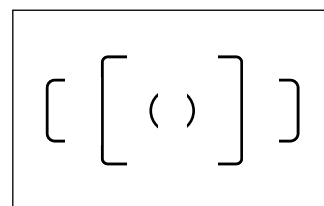
- ① 【Check】 Confirm there is neither gap nor an inclination at an upper and lower, Right and left position.

Standard: Right/Left Less than 1°
Upside down Less than 1°50'

12-2. Viewfinder focus

- ① 【Check】 Check a viewfinder focus.
- * One scale for focus master lens is 0.03mm.

Standard : 0±0.07 mm



- ② **【Adjust】** Exchanges for M22 of other thickness.
 The tolerance level at the time of adjustment is 0 ± 0.04 mm.

M22-00A	-00B	-00C	-00D	-00E	-00F	-00G	-00H	-00I	-00J
t=0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60

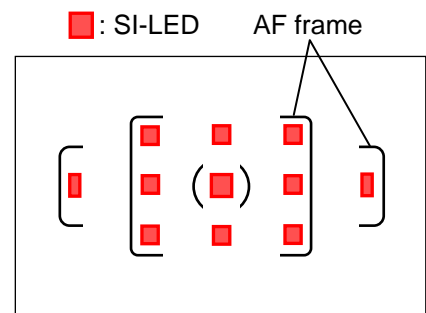
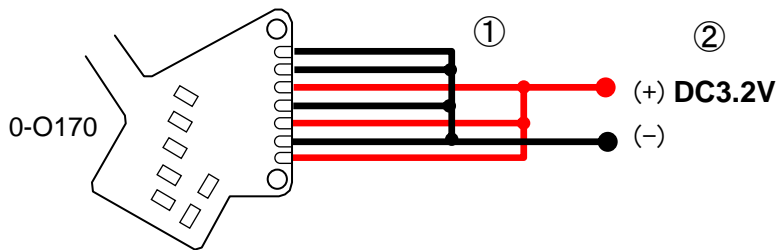
13. **【ADJ】** Positining 0-O170(SI-LED)

【Required equipment】 Power supply, lead wires

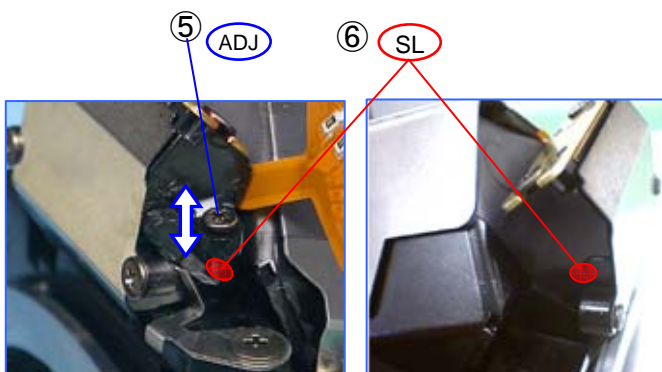
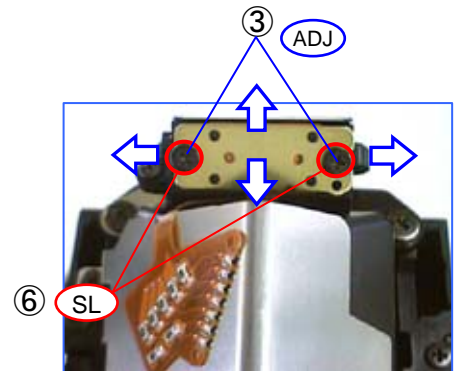
- ① Solder and arrange the lead wires on 0-O170 as shown in the figure below.

【Caution】 Do not stress to the lands of 0-O170.

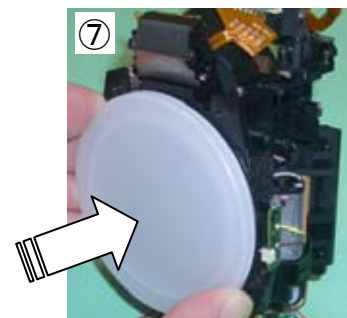
- ② Apply DC3.5V to 0-O170, and confirm the positioning
 And lighting of SI-LED 11points.



- ③ **【ADJ1】** Loosen 2 screws, and then adjust the position of 0-O170.
 ④ Tighten 2 screws, and then confirm the position again.
 ⑤ **【ADJ2】** Turn adjusting screw to adjust fine adjustment for up and down position then confirm the position again.
 ⑥ After adjustment is done, apply the screw-lock to 4 points and remove the lead wires from 0-O170.



- ⑦ A mount cover is attached in order to protect a SI-LED part hitting during work.



14. 0-O100

- ① Apply small quantity of diabond (black) to the shown in figure
- ② M2 prism --- There should be no dust
- ③ 0-O100
- ④ Fix it with TY-CNL-F1.7x3.0 (x 2)

* Install screws while pressing the plate of 0-O100



【Caution】

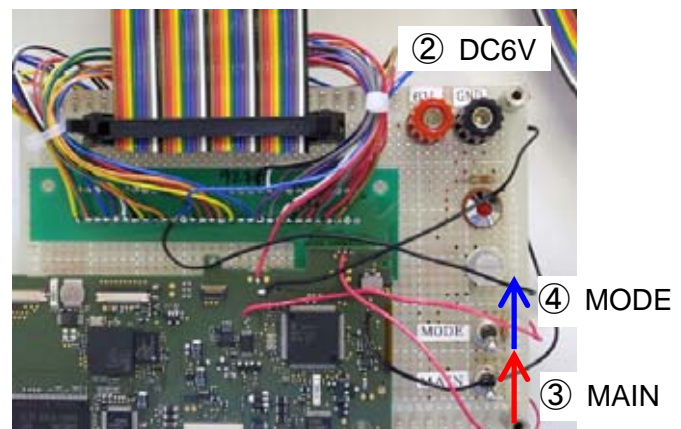
1. Remove the screw lock which is stick to the screw
2. Unscrew (x2) while pressing the plate of 0-O100

15. [Adjustment] Adjustment of the position of viewfinder indication (0-O100)

Preparation: Power supply (8V, 3A), DC cord

15-1 Preparation:

- ① Connect the flex borad of 0-O100 to the jig
- As shown figure
- ② Apply 6.0 V to the jig
 - ③ Turn the main SW ON
 - ④ Turn the mode SW ON
- * Indication of O100 display



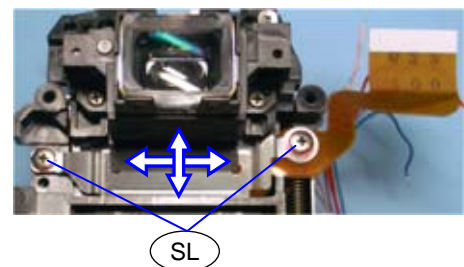
15-2 Adjustment

- ① [Confirmation] Check whether the position of the display is straight.
 - ② [Adjustment] Loosen the screw and change the position.
- After adjustment is done, apply screw lock.

①



②



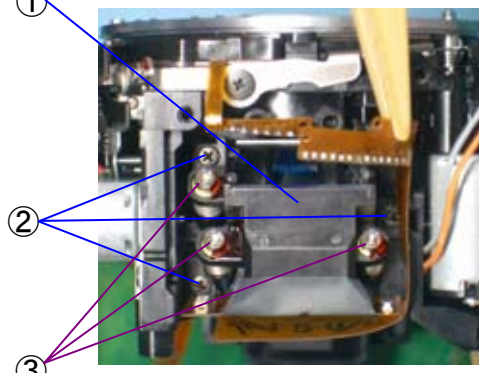
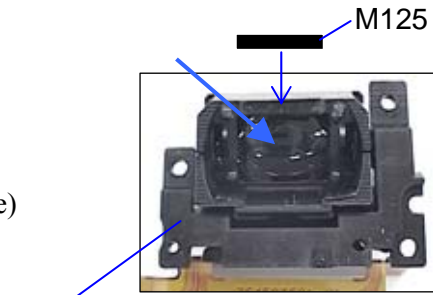
16. 0-M100

Preparation: Hexagonal screwdriver 1.5mm

- ① 0-M100 (when replacing 0-M100 put M125 at sensor side)
- ② TY-CNL-D1.7x4.0 (x3)

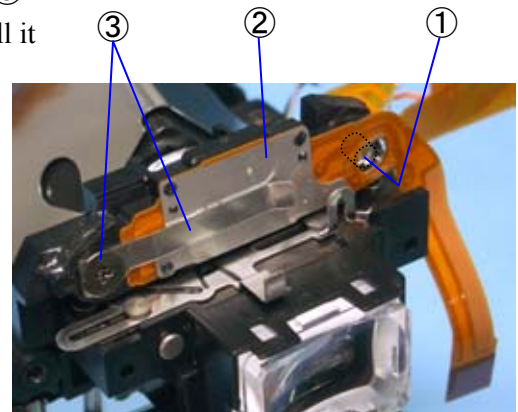
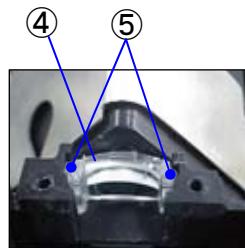
[ADJ] Temporary adjustment of AF block --- Screw in 3 adjusting screws until they stops, then screw back two turns.

[NOTE] After CCD position adjustment with programmed software is done, Apply screw-lock agent to between the head of adjustment screws and washers.



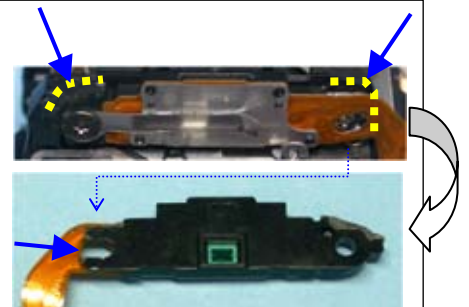
17. 0-J100

- ① M10 -- Set the diopter lever at end of left side and then install it
- ② 0-J100
- ③ M5 · TY-CNL-G1.7x5.0 (Temporary)
- ④ M7 · There should be no dust
- ⑤ Apply small amount of bond



【Caution】 --- Disassembly

1. Set the Diopter lever to the left side
 2. Unscrew TY-CNL-G1.7x5.0 · M5
 3. Remove the bonds which is around the 0-J100
- * Not to damage 0-J100
4. 0-J100, M10, M7

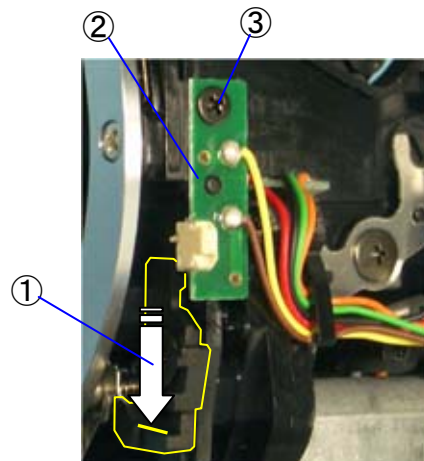


18. 0-T940

- ① Set AF mode lever to AF (Bottom side)
- ② 0-T940
- ③ TY-CNL-D1.7x3.0

* Caution

Set AF SW to AF(Bottom side) when remove 0-T940

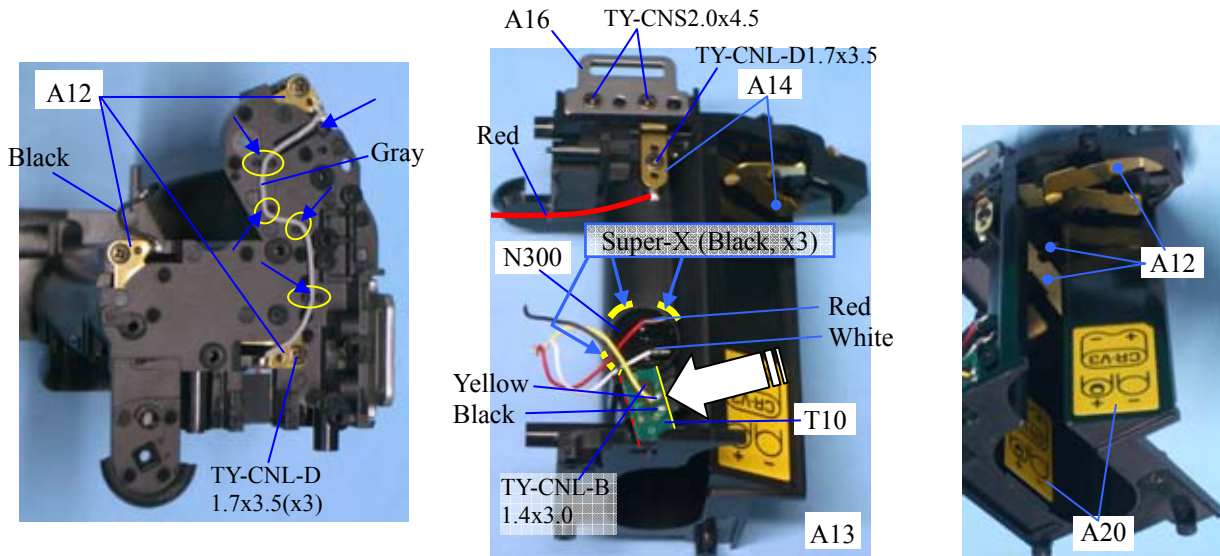


3. Assembly procedure of main body

1. Main body + Battery chamber

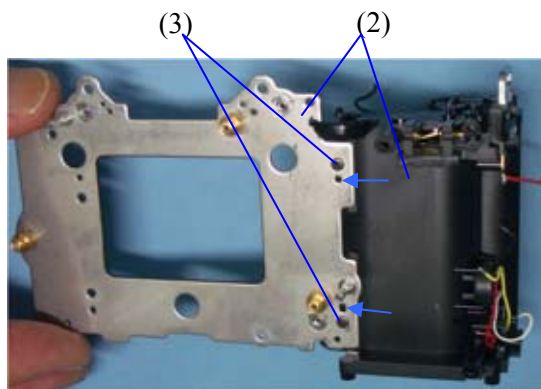
(1) A13 Battery chamber and relating parts.

[Caution]Check the position of lead wires and battery seal.



(2) Attach Main body to the A13.

(3) TY-CNL-D1.7x4.0 x 2

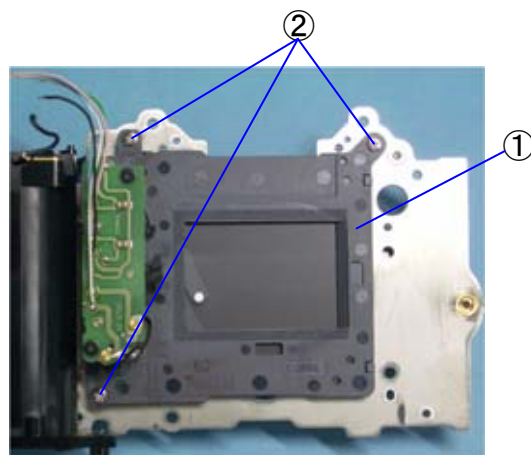


2. 0-E000 (Shutter block)

(1) 0-E000 - Check there is no dust and scratch.

(2) A70- x3 (sholder screw)

*After install, 0-E000 has a little movement.

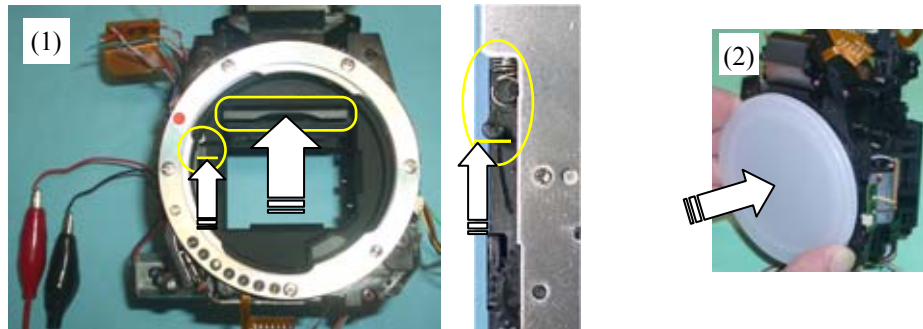


3. Front housing

(1) Apply DC 2V to the mirror motor, and set mirror up position.

(Red --- +)

(2) To prevent the damage of SI-LED, attach mount cover. Then put downward.



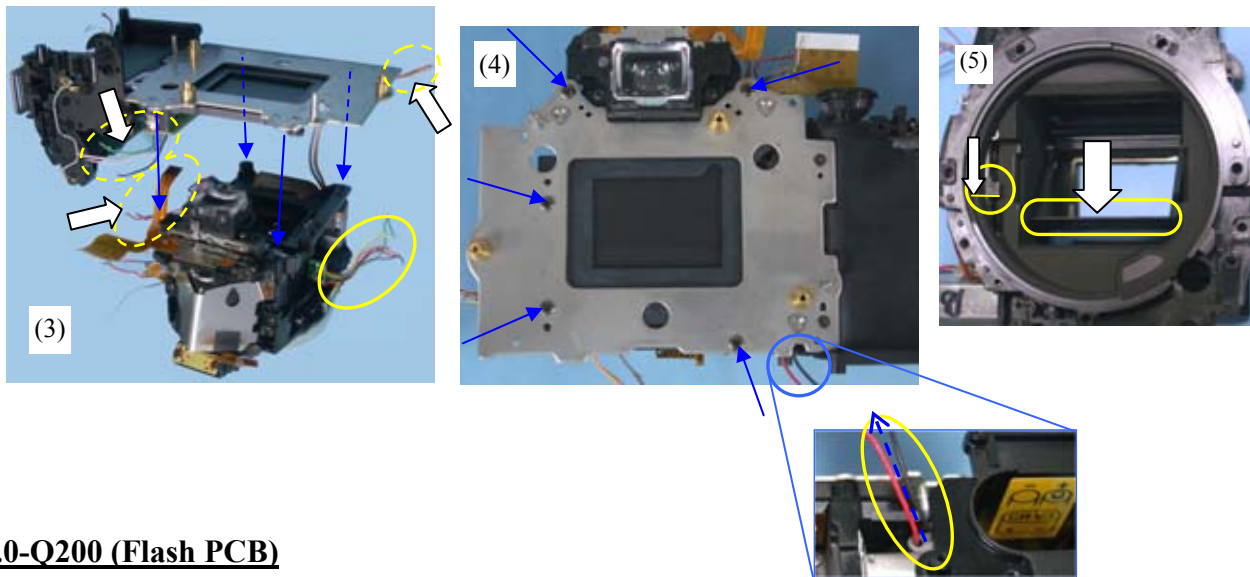
(3) Attach body plate to the mirror housing.

* Pay attention the lead wires and flex.

(4) TY-CNM2.0x5.0 (x5)

(5) Apply DC2V to the mirror motor, and set mirror down position.

[Caution] Do not make scratch on the eyepiece lens while working.



4.0-Q200 (Flash PCB)

(1) 0-Q200 Arrange the lead wires as shown figure.

*Avoid pinching lead wire.

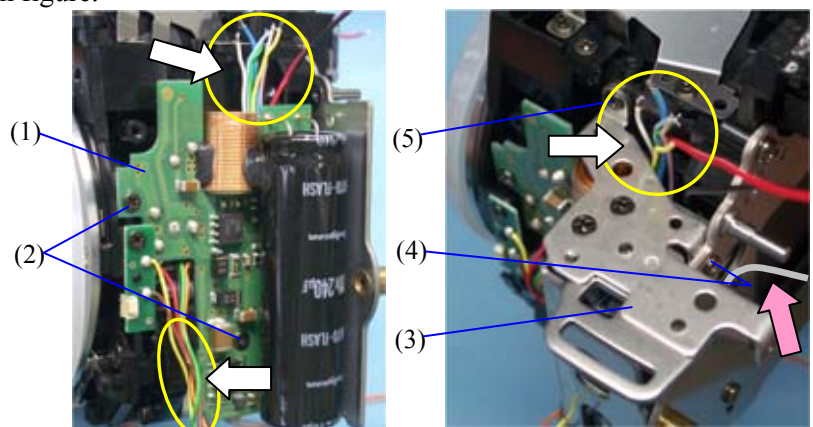
(2) TY-CNL-D1.7x4.0 (x2)

(3) A5 (A4/A15)

*Arrange Gray lead wire at the back

(4) CNL-D1.7x2.5

(5) TY-CNL-D1.7x4.0



5. A6(Left shoulder plate)

(1) A6 --- Arrange the lead wires and flex as shown figure.

(2) CNL-D1.7x2.5

(3) TY-CSM1.7x4.0 (x3)

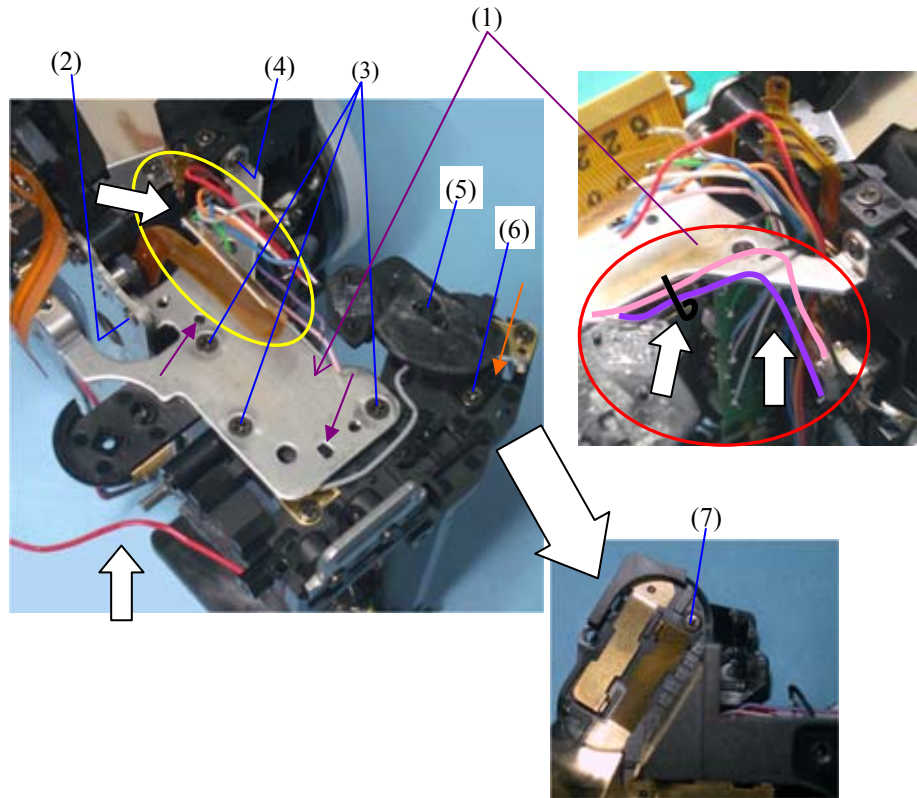
(4) TY-CNL-D1.7x4.0

(5) A19

(6) TY- CNL-D1.7x3.0

(7) TY-CNL-D1.7x3.5

(In battery chamber)



6. T901 (Lower flex board)

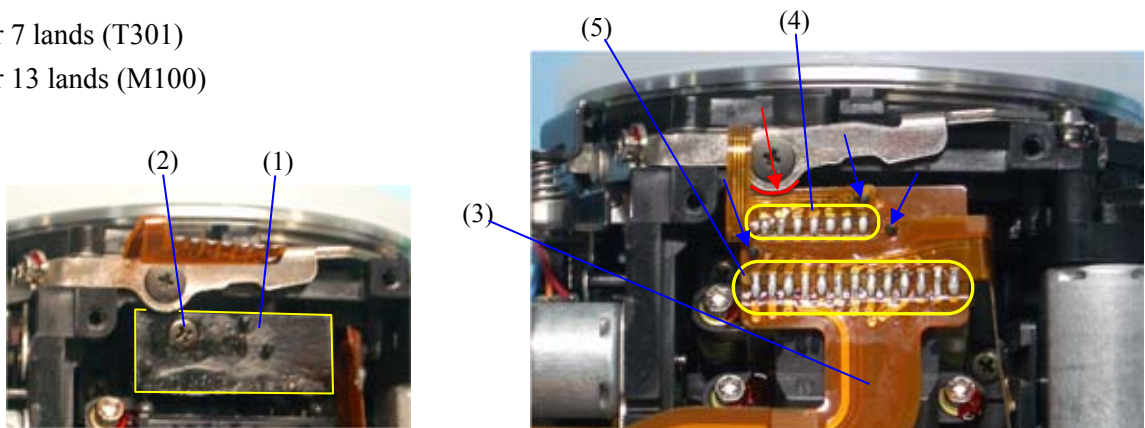
(1) A141

(2) TY-CNL-D1.7x3.5

(3) T901

(4) Solder 7 lands (T301)

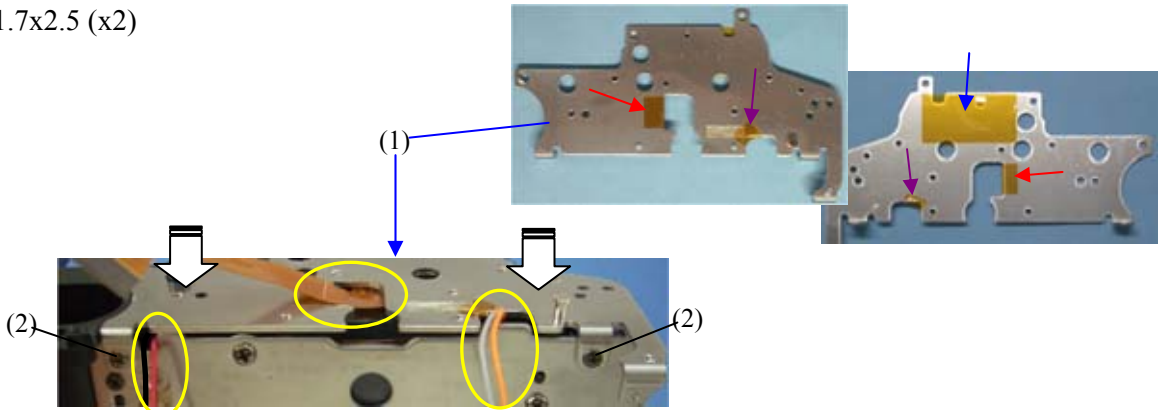
(5) Solder 13 lands (M100)



7.0-A3 (Bottom plate assy)

(1) When installing 0-A3, arrange the flex and lead wires as shown figure.

(2) CNL-D1.7x2.5 (x2)



(3) TY-CNL-D1.7x4.0 (x2)

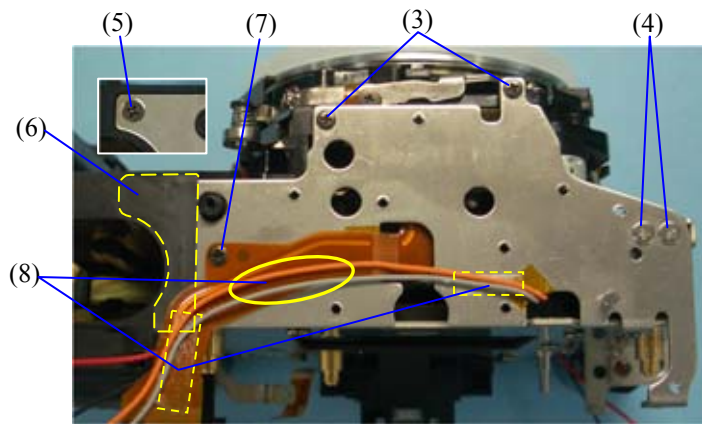
(4) CNL-E1.7x2.2 (Ni, x2)

(5) TY-CSM1.7x4.0

(6) Attach A53 on plate

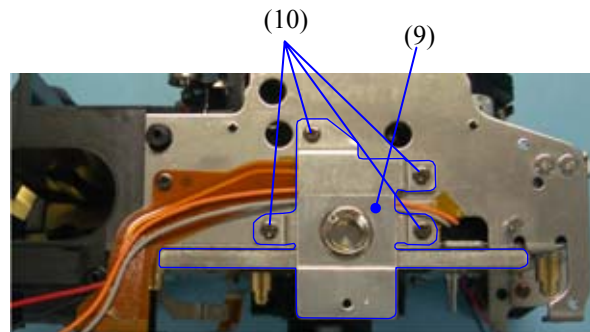
(7) CNL-D1.7x1.8

(8) Attach two lead wires by DT as shown figure.



(9) 0-A51 *Avoid pinching lead wire.

(10) CNL-D1.7x2.5 (x4)



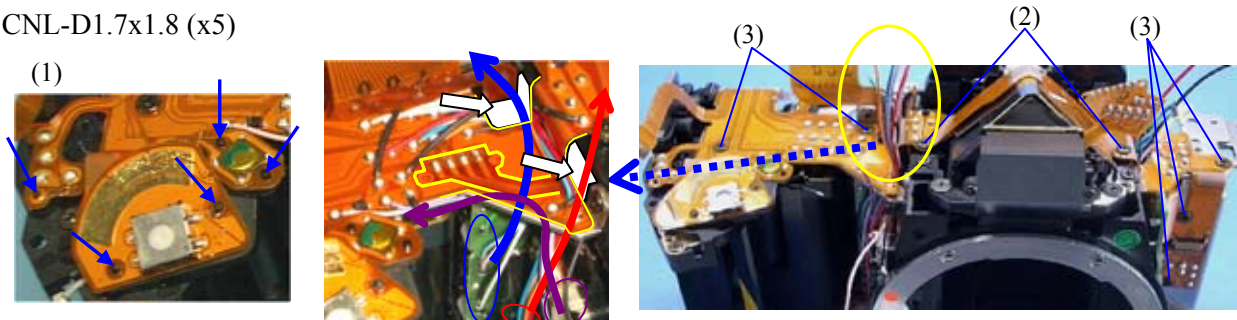
8.T200 (Upper flex block)

*Put T200 on body while arrange the lead wires.

(1) Attach T200 main SW land/ Av-SW flex by DT.

(2)TY-CNL-D1.4x2.5 (x2)

(3) CNL-D1.7x1.8 (x5)



(4) Arrange lead wire (A14) as shown figure.

(Through the groove of battery chamber)

(5) Install flex by TY-CNL-E1.7x3.5

(6) Fix flex by A40 (tape)

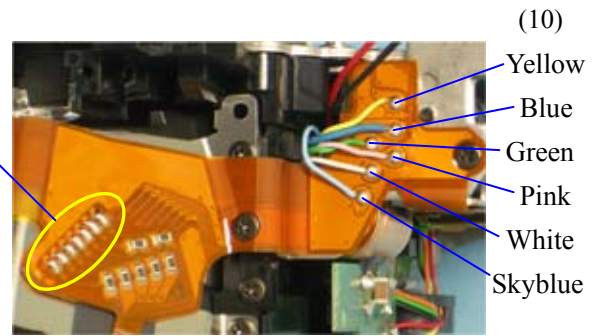
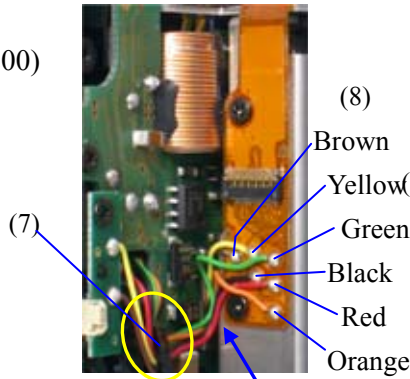
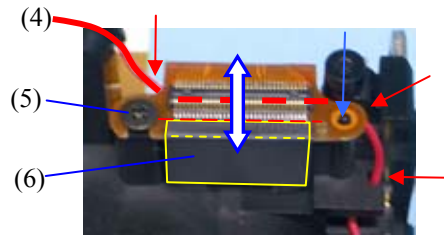
*Flex should move up and down a little.

(7) Arrange lead wires. (Flash PC board side)

(8) Solder 6 lead wires (T940, S300)

(9) Solder 7 lands (O170)

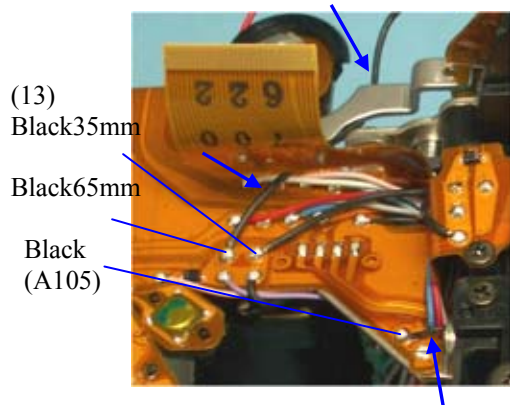
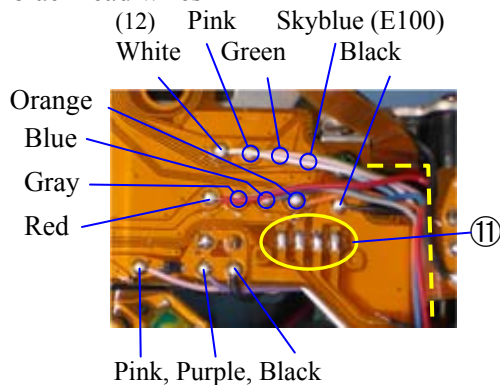
(10) Solder 6 lead wires (Q200)



(11) Solder 4 lands (T71)

(12) Solder 13 lead wires (E000, G100) – Arrange as shown figure

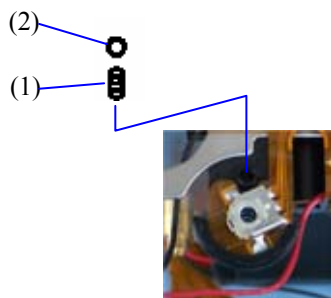
(13) Solder 3 black lead wires



9. O201 and other (External LCD block)

(1) A17

(2) BO2.0 --- Apply G134

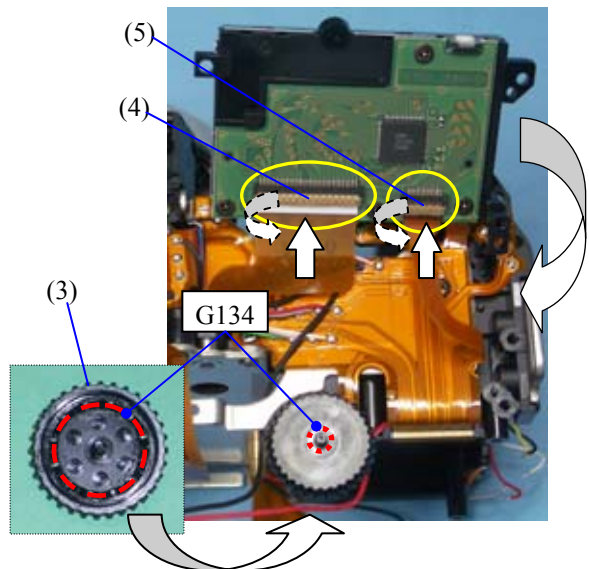


(3) A335 --- Apply G134

*Connect LCD block

(4) Connect O100 flex to connector (flip lock)

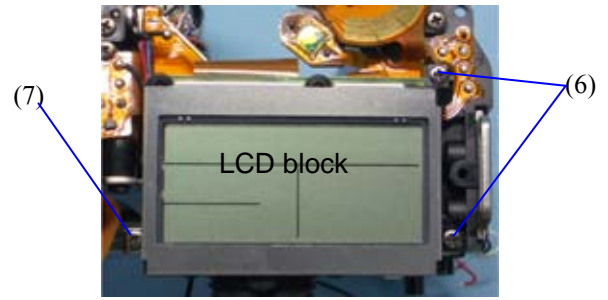
(5) Connect T200 flex to connector (flip lock)



*Install LCD block

(6) TY-CNL-D1.7x3.5 (x2)

(7) CNL-D1.7x2.5



(8) [Confirm] You must feel click when turning electronic dial.

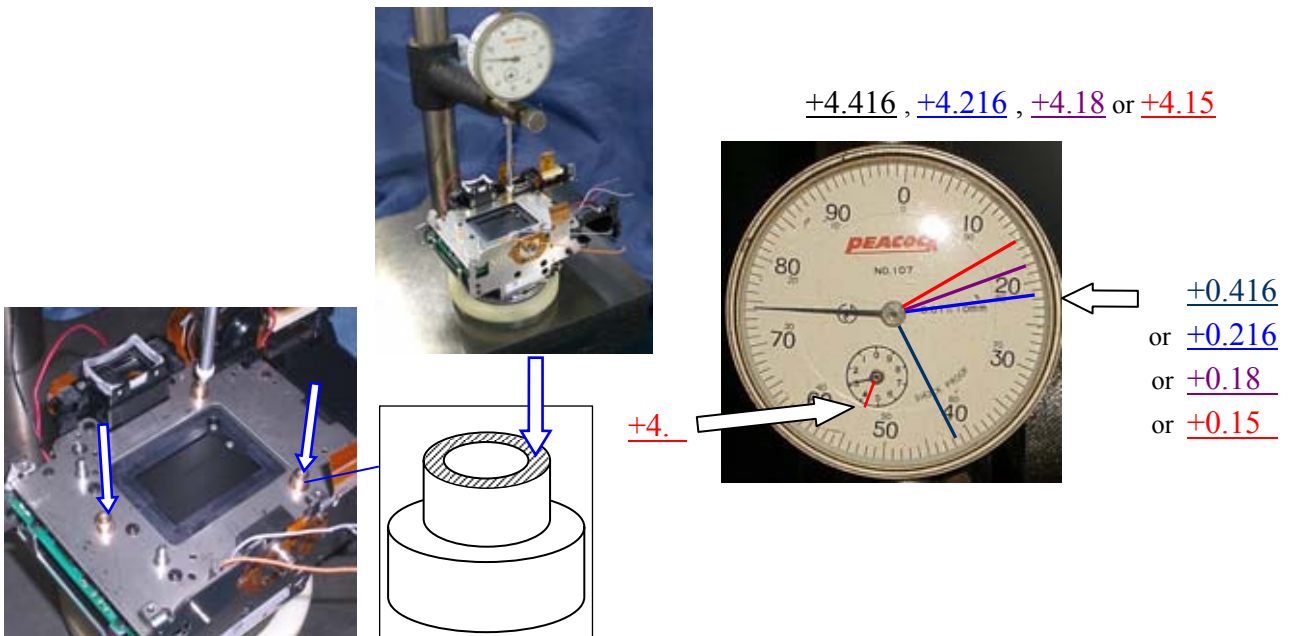
10. [CONF] CCD Base Plate Support Pillar

[Required equipment] Block gauge for 35mm, Dial gauge comparator, etc. (same as MZ series)

(1) Measure height of the CCD base support pillar (3 places) from the mount surface as shown in the figure.

(There are four kind of height)

Distinction Last two digit of lot number	[-00]	From [-01] to [-03]	[-04] and later	[-13] and later
Tolerance: (Only fot 76700)	<u>49.876±0.02 mm</u>	<u>49.676±0.02</u>	<u>49.640±0.02</u>	<u>49.610±0.02</u>
Using Block gauge for 35mm (45.46mm)	<u>+4.416 ±0.02 mm</u> (+4.396~4.436 mm)	<u>+4.216 ±0.02</u> (+4.196~4.236)	<u>+4.18 ±0.02</u> (+4.16~4.20)	<u>+4.15 ±0.02</u> (+4.13~4.17)
Height of Pillar	Previous parts (±0)	New parts (-0.2)	New Parts (-0.236)	New parts (-0.266)
Shape of plate for 0-C000	Previous oarts : counterbore (-0.2)	New parts: No counterbore (±0)	New parts: No counterbore (±0) Borad thickness Tolerance : t=1.6 (+0.01 ~-0.03)	New parts: No counterbore (±0) Modified Borad thickness Tolerance : t=1.6 (+0.03 ~-0.01)



11. 0-C000 (CCD/SR block)

***To prevent the damage of SI-LED, attach mount cover. Then put downward.**

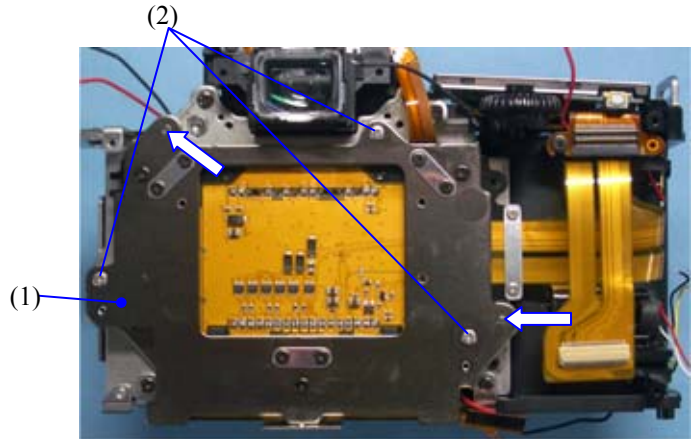
[Caution] CCD/SR block has strong magnet inside therefore, caution for adsorption of parts.

[Caution] There is no dust, no scratch on surface of CCD

(1) [Confirm] Center plate must move up and down and right and left by own weight.

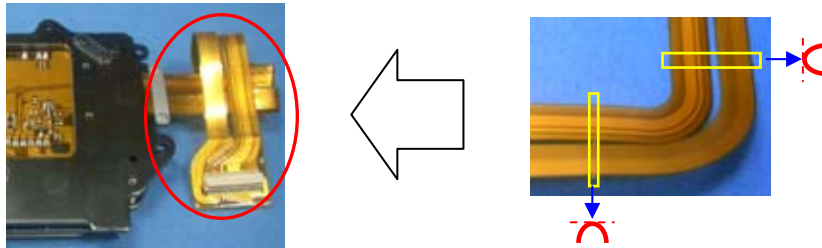
(2) Install CCD/SR block according to the guide pin of the plate

(3) C45 Screw (Stainless-steel, x3)



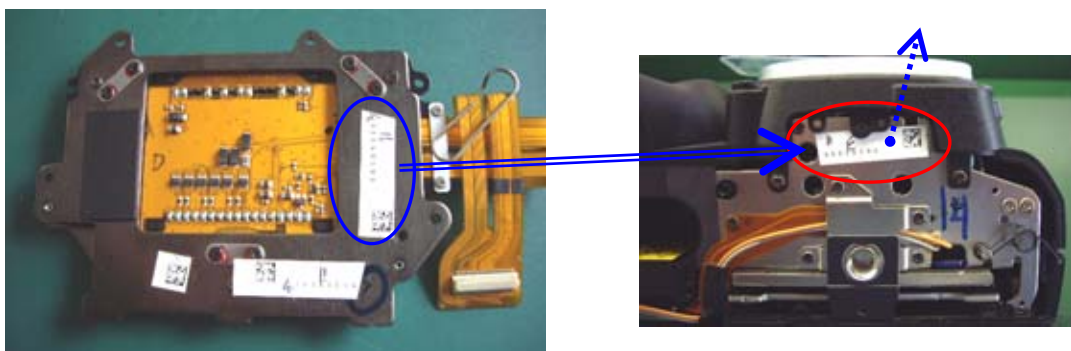
[Caution] When replacing 0-C000:

1. Arrange the flex as shown figure. Do not bend the flex



2. Peel off the tape attached on the bottom plate and replace new CCD ID No. seal of C000.

*** Number must readable.**

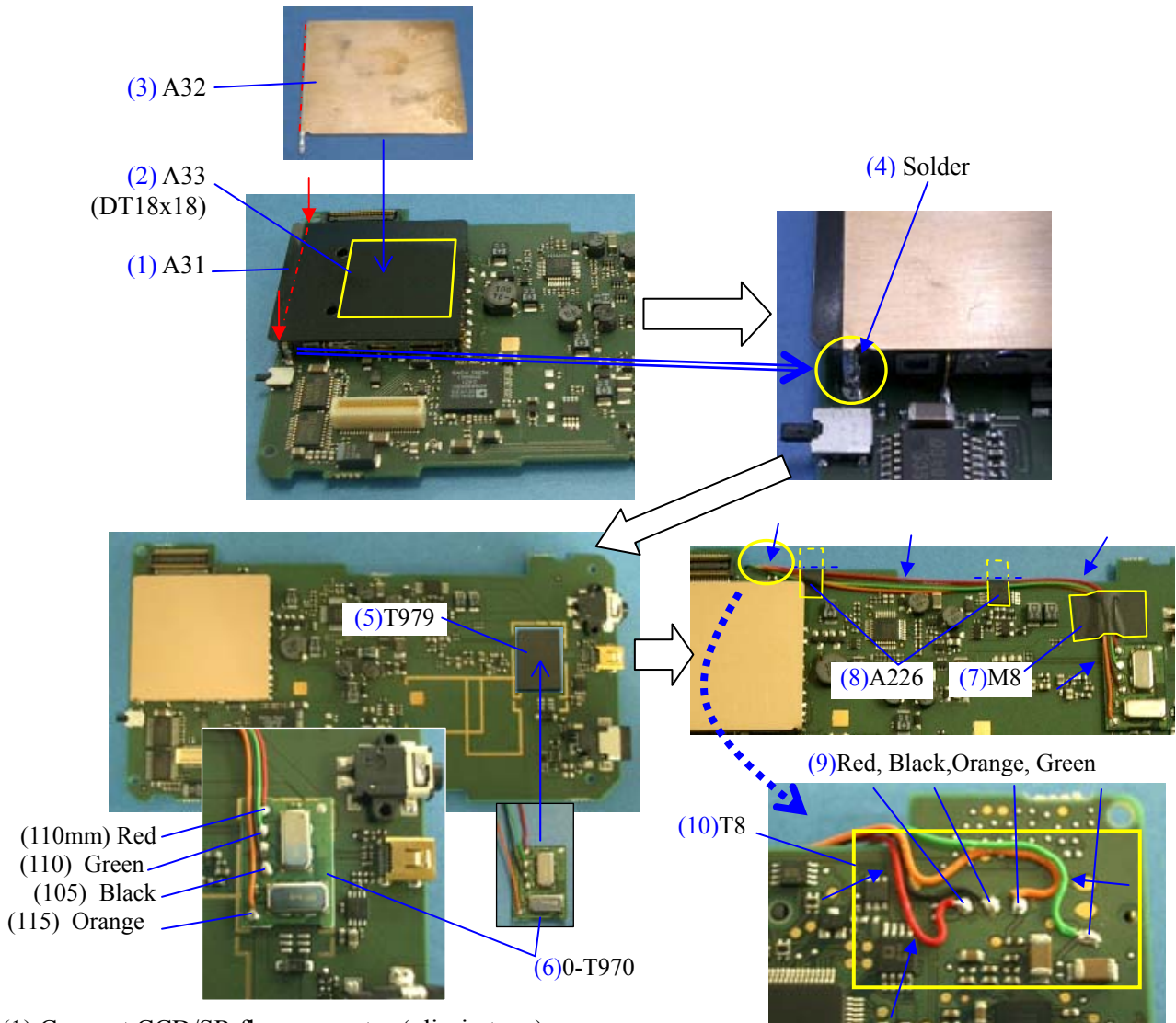


12. 0-T100 (Main PC board)

*When replacing T100, transfer the related parts as shown figure.

[Caution] Be careful when handling 0-T970. Inside of 0-T970 might be broke by impact or drop.

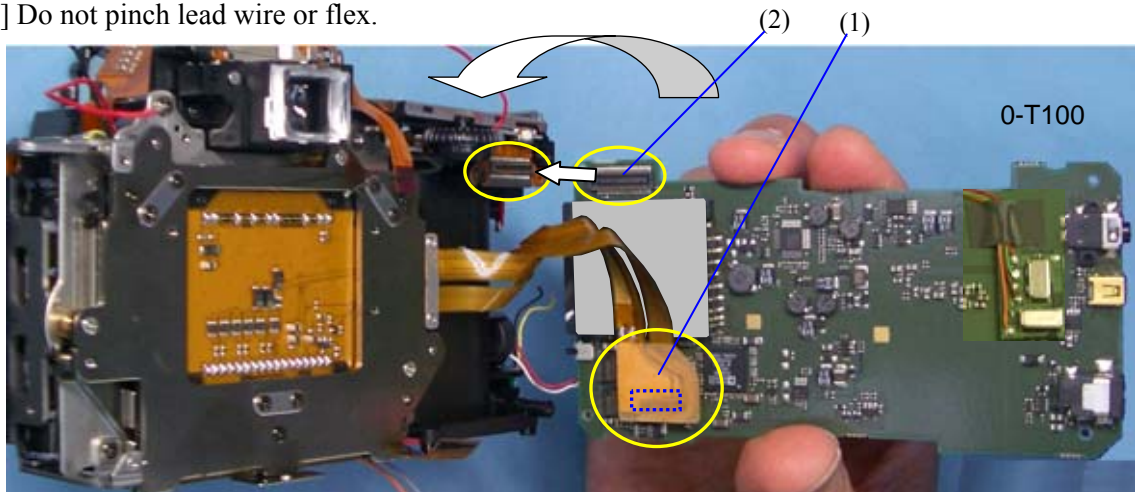
[Caution] Solder 4 lead wires at T100 side and arrange read wires.



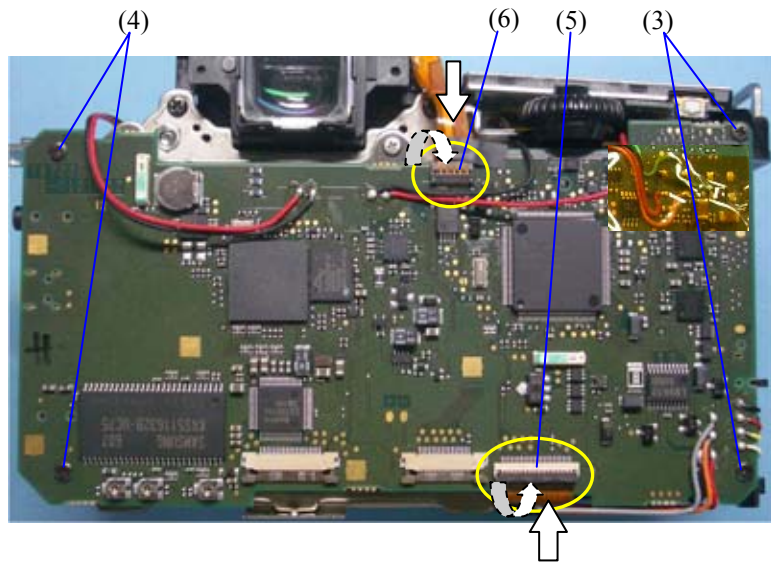
(1) Connect CCD/SR flex connector (plig-in type)

(2) Install 0-T100 while connecting T200 connector (plig-in type) vertically.

[Caution] Do not pinch lead wire or flex.

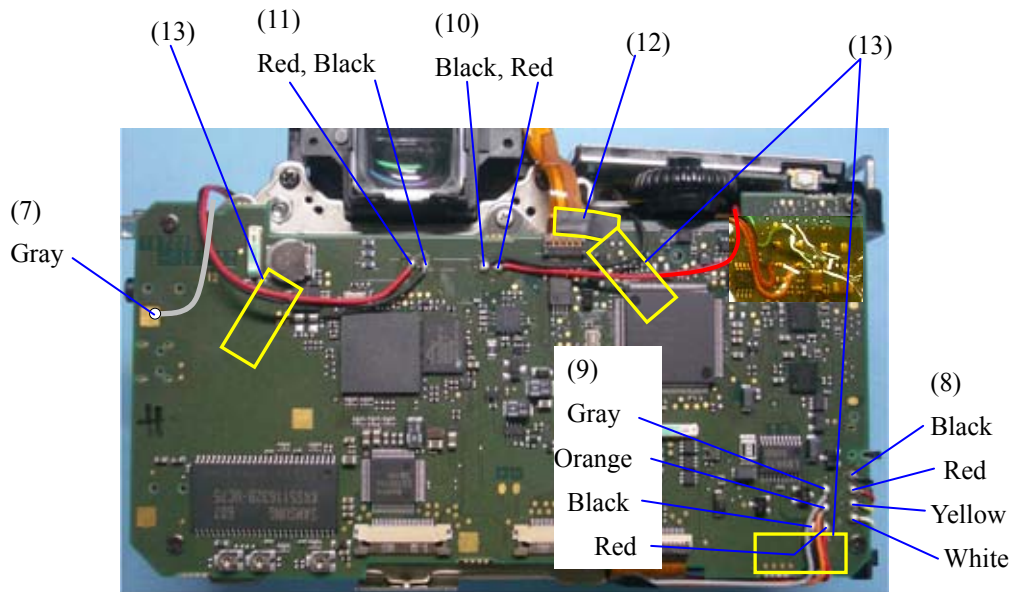


- (3) TY-CNL-D1.7x3.5 (x2)
- (4) CNL-D1.7x2.5 (x2)
- (5) Connect T901flex
(Flip lock)
- (6) Connect J100flex
(Flip lock)

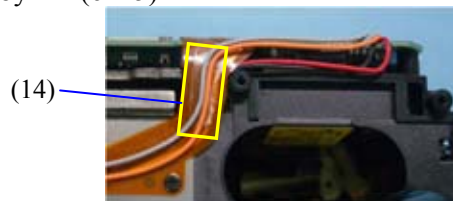


Solder lead wires

- (7) 1 lead wire (Gray, I17)
- (8) 4 lead wires (Black/Red/Yellow/White, T10/N300)
- (9) 4 lead wires (Gray/Orange/Black/Red, S300/ S250)
- (10) 2 lead wires (Black/Red, GND/BATT+)
- (11) 2 lead wires (Red/Black, Q200)
- (12) Fix J100 flex by A38 (PT3.8x10)
- (13) Arrange all read wires as shown figure then fix three positions by BT (6x15)



- (14) Arrange read wires as shown figure and fix by BT (6x15)



13. [Confirm] Function check 1

[Required equipment]

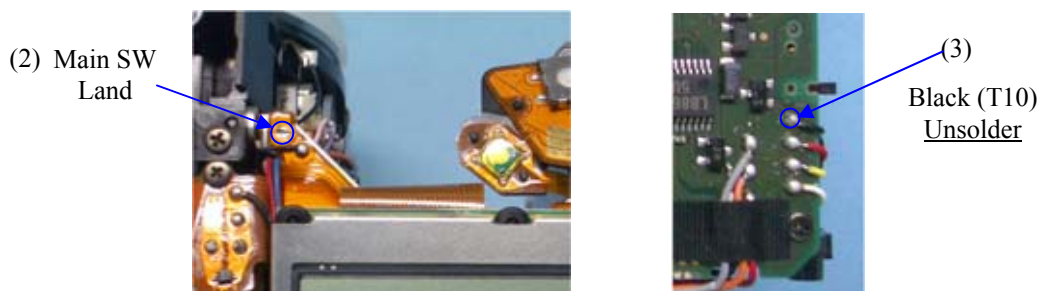
SD card for adjustment 4pcs (FW for service, Data initialize, Test mode ON, Test mode OFF)

Regulated DC power supply (8V/3A), Circuit tester, DC code, AC adaptor, TV color monitor, Video cable, Top cover (0-A301), Bottom cover (A401), Lens for confirmation (FA 50mm F1.4),

13-1. Preparation

* Prepare the following procedure for function check

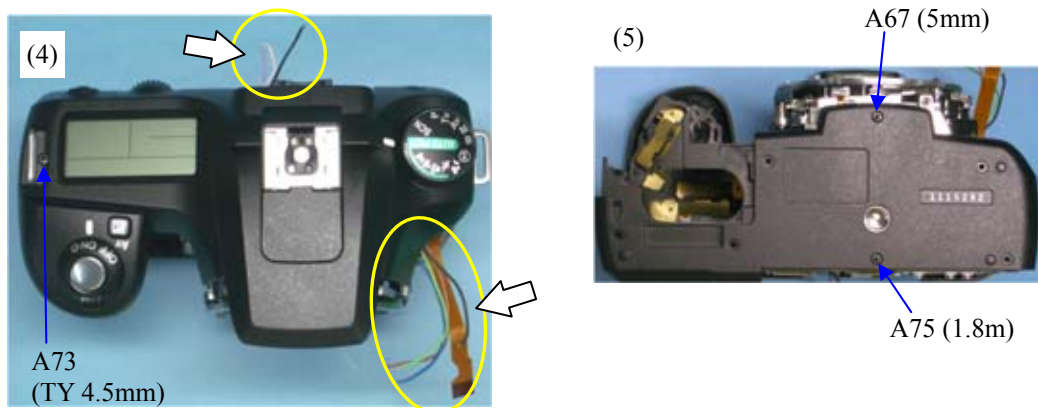
- (1) Connect video cable to the TV monitor
- (2) Solder the Main SW land as shown figure.
- (3) Unsolder black lead wire (T10) on T100.



- (4) Arrange lead wires (3+4) and flex from Top cover to outside of body as shown figure and temporary install Top cover by one screw.

[Caution] Do not give too much force to the top cover. Because Top cover hold by only one screw.

- (5) Temporary install bottom cover by two screws.



13-2. power check

- (1) Connect DC cord to the Regulated DC power supply, set DC 6.5V (3A)
- (2) Connect DC cord to the camera

With this condition, make sure there is a no short circuit or no battery leak

[Caution] If there is overcurrent, disconnect the power immediately.

With this condition battery current is:

Momentary maximum battery current is approximately 120mA.

Stable battery current battery current is approximately 4.5mA.

- (3) Disconnect DC cord from camera.

13-3. Writing FW

* In this step, the connection of each circuit board and the output of a video signal are confirmed by writing FW.

* When the FW writing (for service) is done, all settings are initialized.

[Caution 1] Writing the FW is necessary whenever 0-T100 is replaced.

[Caution 2] Always use the latest version FW whenever writing the FW.

(1) Surely insert the SD card (FW for service) into the 0-T100.

(2) Connect the video cable and AC adapter to the camera.

(3) The version of CPU/DSP will be displayed on the TV monitor

[NOTE] If you want to cancel writing firmware, disconnect AC adapter and eject the SD card.

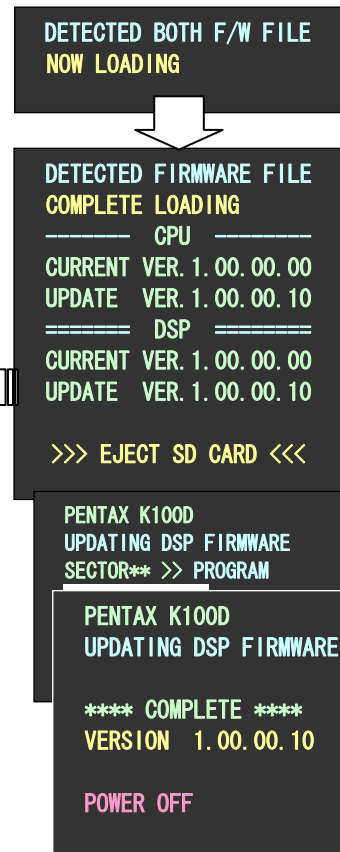
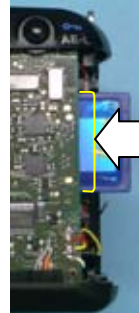
(4) Remove the SD card when the message as

`>>> EJECT SD CARD <<<` is displayed, and then the loading of firmware will be started.

It takes approx 90 sec. until the loading is finished. (UPDATING...)

[CAUTION] Do not turn OFF the camera while loading firmware.

(5) When `POWER OFF` is displayed, disconnect the AC adapter from the camera. (Leave the Video cable)



13.4 Data initialization

*If execute this initialization, all EEPROM data will be initialized (Cleared)

[Caution] When replacing 0-T100, you must execute this initialization.

In other case, it is not necessary to execute Data initialization.

(1) Install SD card (For data initialization) to the camera.

(2) Connect the AC adaptor. (Initialization will be started.)

It takes approx 20 sec.)

[Caution] Do not turn OFF the power

(3) When monitor display is turn off, (“WAIT...” → “COMPLETE...” →) disconnect the AC adaptor.



13-5. Setting test mode

*With this setting, camera can operate even without SD card cover.

(1) Insert SD card for Test mode ON to the camera.

(2) Connect AC adaptor to the camera. (LCD will be displayed moment)

(3) Display the LCD monitor then disconnect the AC adaptor.

(4) Remove SD card from the camera.

(5) When connect AC adaptor again, LCD monitor will be displayed.

Also when press shutter button half way, display will be appeared on the LCD

13-6. Shutter release, exposure

- (1) Shutter release function works properly.
- (2) Diaphragm setting lever move up and down when set the Main SW change to Preview mode
(Default setting: Digital Preview)
- (3) The information of Tv must be changed when the e- dial is turned.
- (4) Set TV [1/8], and then check if shutter open fully.
- (5) Attach a lens to the camera and set the AF_SW to MF position (up position) and set aperture to A position.
- (6) The information of Tv and Av must be displayed in the viewfinder and on the LCD panel when the release button is depressed halfway.
- (7) The information of AV must be changed when turn the e- dial while pressing the AV button
- (8) The aperture of lens must change similarly when the aperture value (Av) is set in opening, the middle, and the minimum with the Av dial.

13-7. AF function

- (1) Set lens (A position) to the camera and set the AF_SW to AF (down position).
- (2) The distance ring of the lens must turn between infinity (∞) and shortest distance end when the shutter button is depressed halfway while covering the front of lens with the palm.
- (3) Confirm the operation of AF while depressing the shutter button halfway.
- (4) Disconnect AC adaptor, AV cable and lens from the camera

13-8. Reset Test mode

[Caution] You must execute reset test mode.

- (1) Insert SD card for Test mode OFF into the camera.
- (2) Connect AC adaptor to the camera. (LCD will be displayed moment)
- (3) Remove SD card from the camera.
- (4) LCD display should not light up when press release button half way.
- (5) Remove AC adaptor.

*Main SW land and black lead wire (T10) will arrange after completed SR adjustment- 1 (next step).

14. [Adjustment] SR adjustment- 1

[Caution 1] When replacing T100 or C000 block, you must execute this adjustment.

[Caution 2] Execute the adjustment on the stable table and do not give vibration to the camera while adjusting

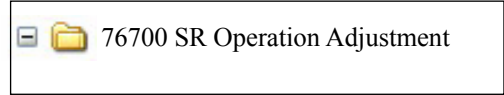
[Required equipment] Programmed software for 76700 (for SR unit adjustment), SR adjustment stand

Computer (Windows 2000 or Xp, USB port as standard equipment), USB cable, AC adaptor,

Lens (FA 50mm), SD card for confirmation (For test mode OFF)

14-1. Setting for computer

Copy the folder [76700 SR Operation Adjustment] to the PC



14-2. Preparation

- (1) Set the AF mode lever to [MF].
- (2) Attach SR adjustment stand to the camera
- (3) Put the camera on the stable table with lens downward.

SR adjustment stand



14-3. Content of Adjustment

SR0: [Coil direction check] Driving direction check

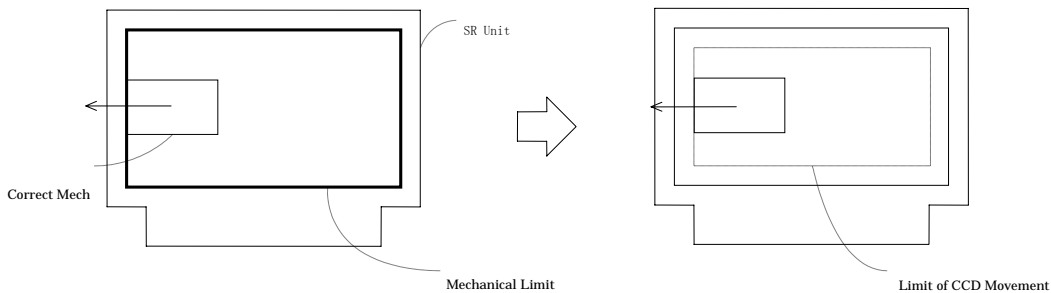
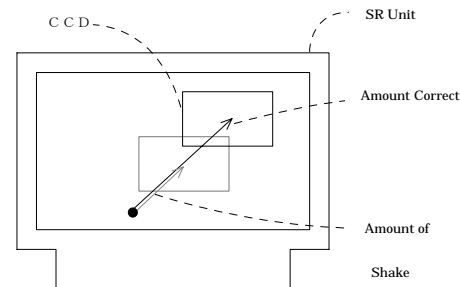
The direction of the drive when the coil's passing an electric current is checked.

SR1: [す sensor sensitivity adjustment]: Positional detection gain adjustment

To secure the resolution of the amount of the shaking correction, the positional detection resolution of the hole sensor is adjusted in the maximum.

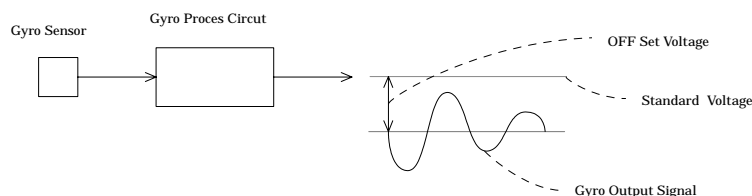
SR2 : [Movement range adjustment] : Correction range limit adjustment

す The current greatly flows to the coil when the correction mechanism controls and attaching to the mechanical limit and it influences to the camera. Therefore, the limit within the electric range of the correction is decided



SR3 : [Gyro offset adjustment] : Gyro off sett adjustment

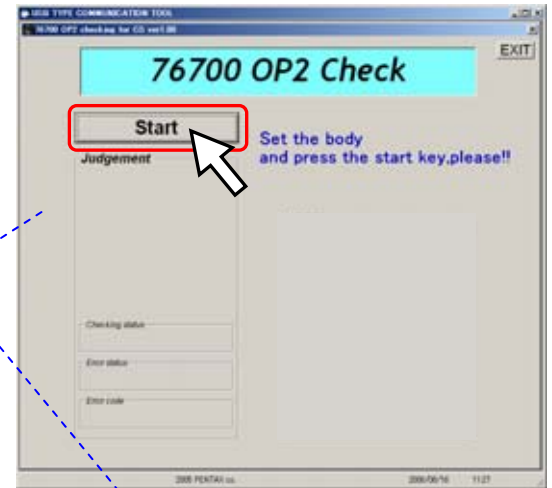
The offset voltage of the giro signal processing circuit is added to the giro output signal and the correction performance is ruined. Then, the offset voltage of the giro signal processing circuit output is adjusted to a standard voltage.



14-4. Procedure for adjustment

- (1) Connect the camera to the computer via USB cable.
- (2) Start up the computer and connect the AC adapter (Power ON).
- (3) Confirm that the camera is recognized by computer. (hot plug icon).
- (4) Click [76700 SR Operation Adjustment] in the adjustment software folder
- (5) Adjustment screen will be displayed.
- (6) Click [Start] to execute the program

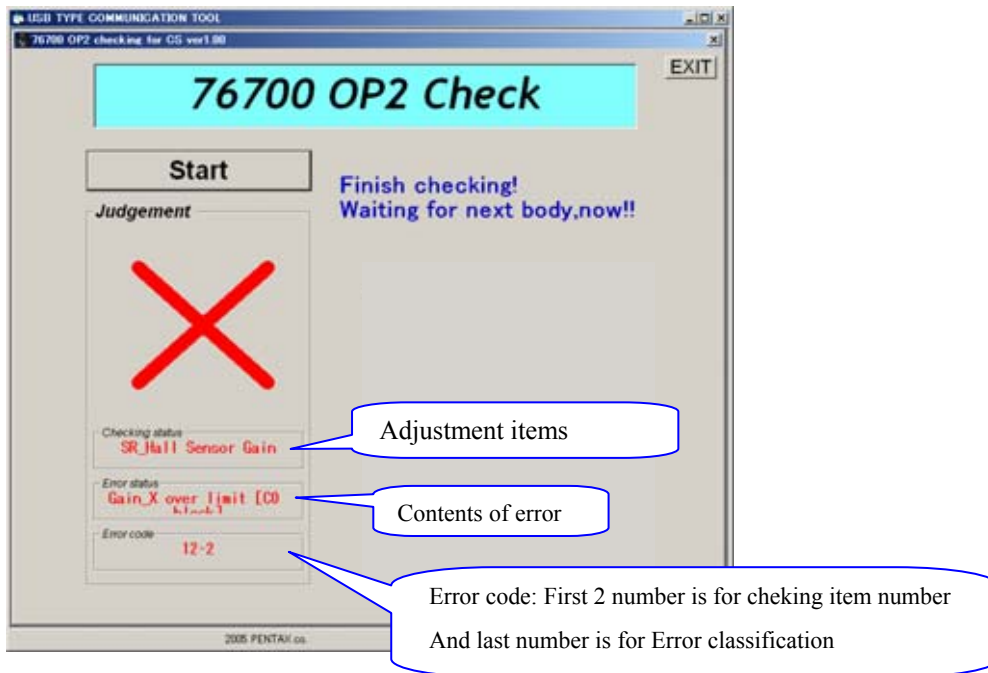
Do not give vibration to the camera while adjusting, also do not even walk around the camera also.



- (7) It is completed when the following screen display



(8) If the adjustment result was NG, the following screen display



■ SR unit adjustment, List of error code

Items	Error code	Contens
Coil direction check	11 - 0	USB communication error
	11 - 1	Coil reverse
Hole gain adjustment	12 - 0	USB communication error
	12 - 1	Gain over limit [T100]
	12 - 2	Gain_X over limit [C0 block]
	12 - 3	Gain_YL over limit [C0 block]
	12 - 4	Gain_YR over limit [C0 block] :
Movement range adjustment	13 - 0	USB communication error
	13 - 1	Range is too narrow
	13 - 2	Center is over limit
Gyro offset adjustment	14 - 0	Communication Error
	14 - 1	Offset value is over limit
	14 - 2	Gyro is unstable

14-5. Procedure for Ending the program soft

Finish the program soft with following procedure

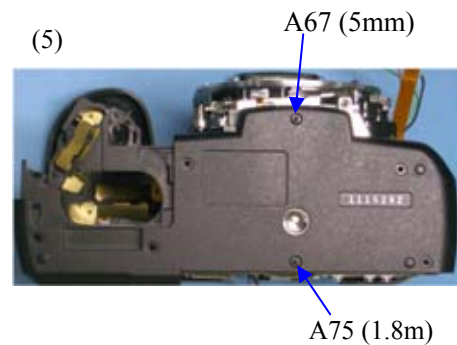
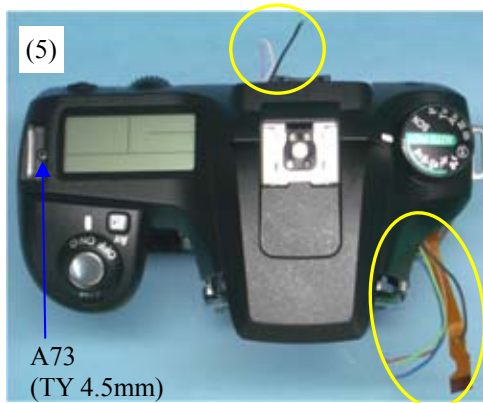
- (1) When the following screen displayed, turn the power of the camera OFF and click OK button on the screen



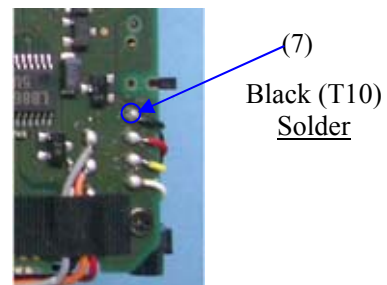
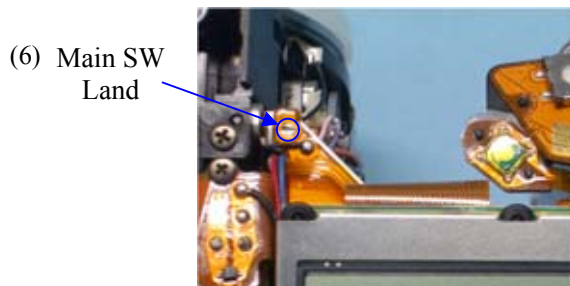
- (2) Click Exit button and finish the program soft.
- (3) Disconnect AC adaptor, USB cable.

14-6. Removing Tempoarty installed part

- (1) Remove Tempoarty installed top cover and bottom cover.



- (2) Unsolder main SW land (T200)
- (3) Solder black lead wire (T10)

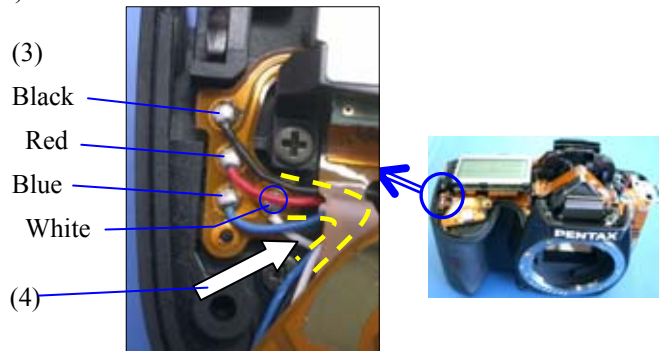


15. A150 (Front cover)

- (1) Install A150 while noticing direction of 4 lead wires.
- (2) CNL-D1.7x2.5



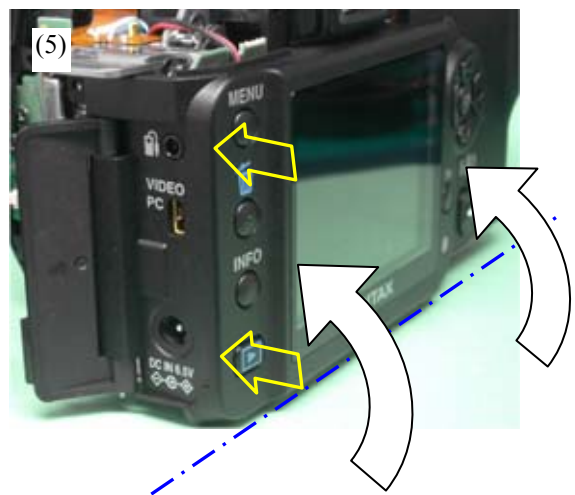
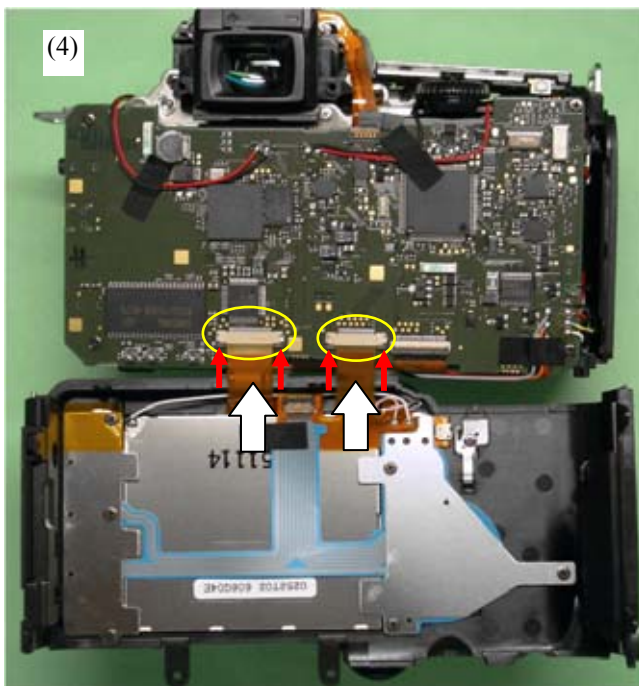
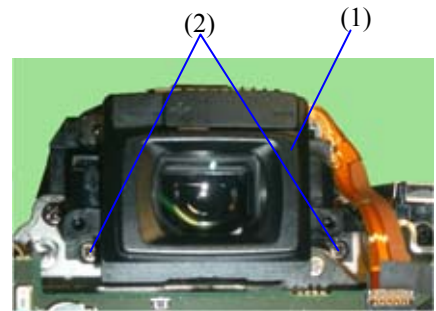
- (3) Solder 4 lead wires (Black, Red, Blue and White)
- (4) Arrange lead wires as shown figure.



16. A201 (Back cover)

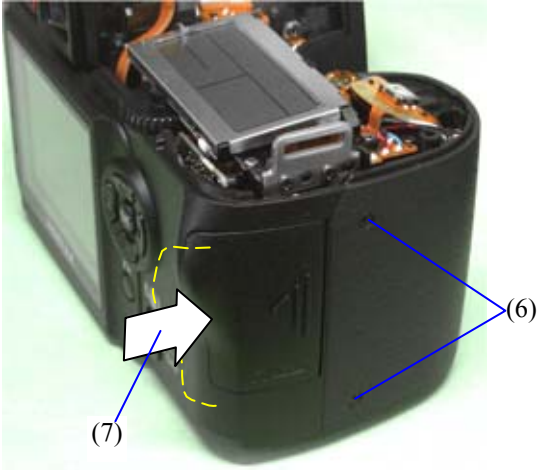
*Before installing A201, confirm installed condition for parts.

- (1) Install M311 with engaging the Diopter adjustment lever.
- (2) CNL-D1.7x3.0 (x2)
- (3) Before installing A201, open the SD card cover.
- (4) Connect two flex from back cover. (Slide lock)
- (5) Install from terminal side of back cover.



(6) A74 (TYscrew x2, 5.5mm)

(7) Close SD card cover

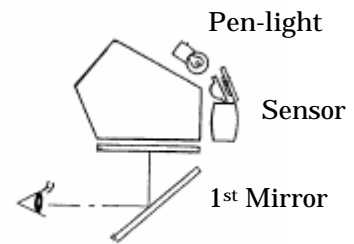


17. [Adjustment] Positioning 0-J100

[Required equipment] Penlight or equivalent

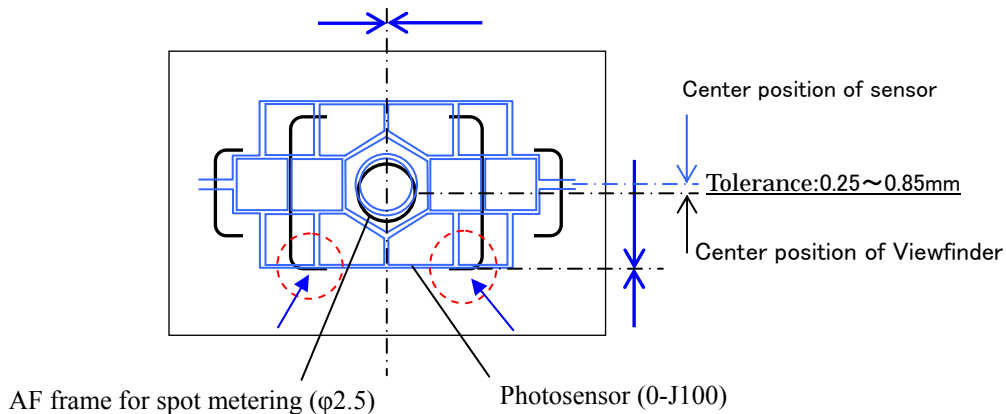
*Confirm that the mirror seat is downed condition.

- (1) Cover the eyepiece with a hand or black tape.
- (2) Positioning the penlight to the photo sensor as shown in the figure right, and search the position where the pattern of the photo sensor can be seen on the 1st mirror from the mount ring side.

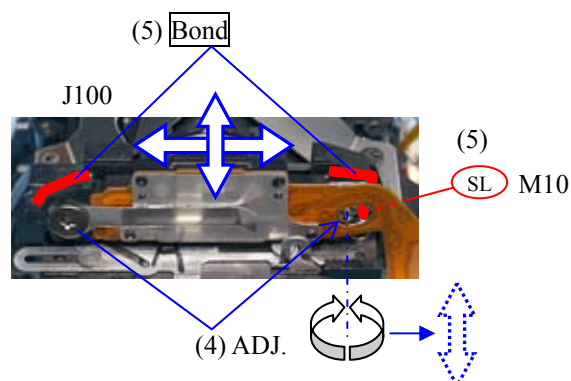


[Ref.] Attaching brighter lens is advisable to assist better visibility. (Ex.: FA 50mm f/1.4 Lens)

- (3) The photo sensor must be positioned at the center of AF frame and there is no inclination as shown in the figure below.



- (4) [Adjustment] Loosen the screw a little, move M10 (eccentric screw) to left side. Turn M10 to adjust height of left side, move 0-J100 to adjust whole position (height and inclination). Tighten screw and ensure position is not changed.
- (5) After adjustment is completed, apply the dia bond to 0-J100 (2 places) and M10 as shown in the figure.

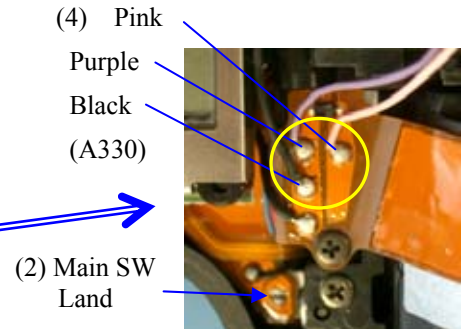
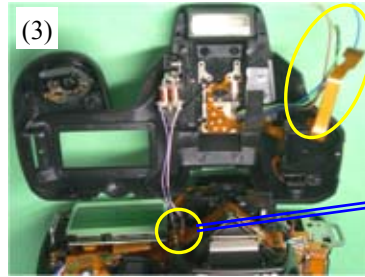
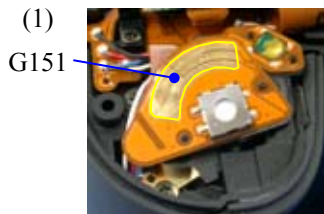


18.0-A301 (Top cover)

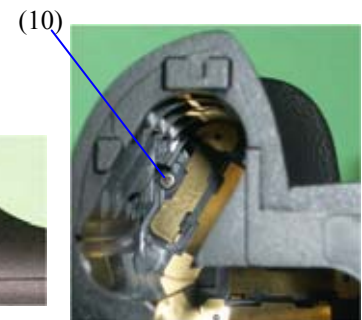
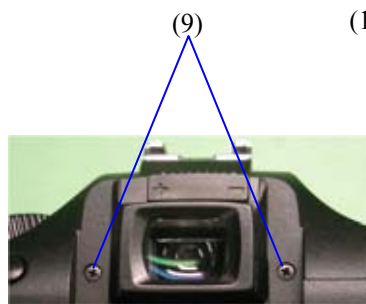
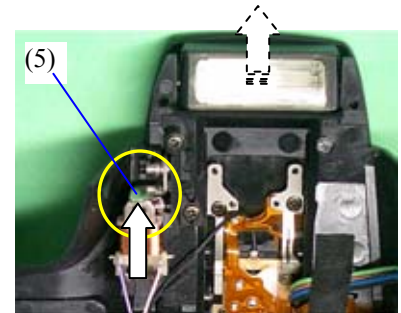
*Before installing 0-A301, confirm installed condition for parts.

*There is no bent for Main SW contact and confirm that the contact is the same height.

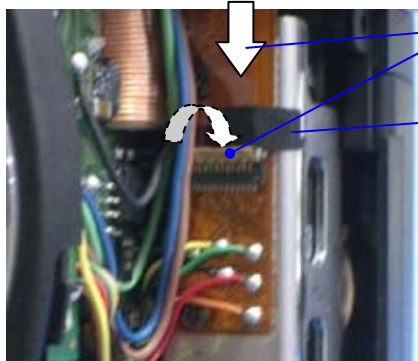
- (1) Apply G151 to land of Main SW contact.
- (2) Confirm that the land for Main SW on T200 is not shorted by solder.
- (3) Put top cover to body.
- (4) Solder 3 lead wires. (Pink, Purple, Black)



- (5) Pop-up Flash for installing screw.
- (6) Arrange 3 lead wires between body and top cover, then attach top cover to the body without pinching lead wires.
- (7) Connect T51 Flex + Fold Excess Flex under Top cover
- (8) A73 (TY screw x2, 4.5mm)
- (9) A73 (TY screw)
- (10) A74 (TY screw x2, 5.5mm)
- (11) TY-CNL-D1.7x8.0 (Battery chamber)



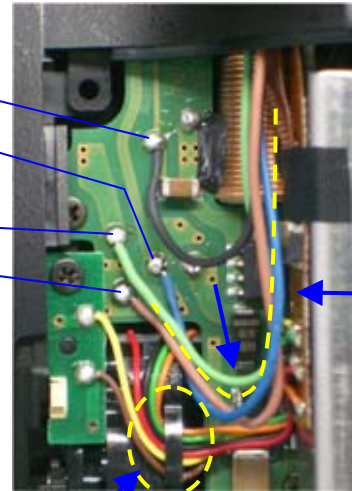
- (11) Connect T51flex. (flip lock) part of bent into top cover.
- (12) Fix the flex by A39 (BT 6x10).
- (13) Solder 4 lead wires (Blue, Green, Black, Brown- Q100)
- (14) Arrange lead wires as shown figure.



(11)
(12)
A39 (BT6x10)

(13)

Black
Blue
Green
Brown

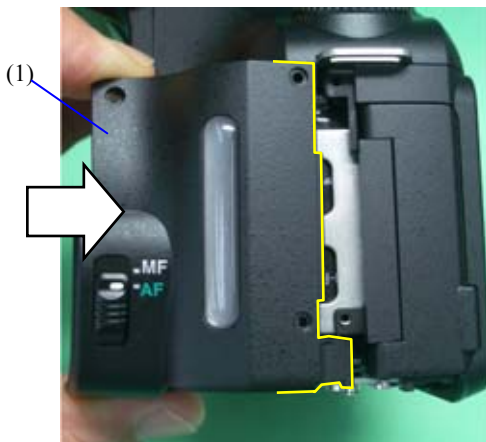


- (15) After install, check the function of AE-L button and Av button.



19. A161 (side cover)

- (1) Set AF_SW to AF both of body and A161. Install from front as shown figure.
- (2) A74 (TY screw, 5.5mm)
- (3) A73 (TY screw, 4.5mm)
- (4) A67 (screw, 5mm)
- (5) CNL-D1.7x2.5



(1)



(2)

(3)

(4)

(5)

20. [Confirm] Function check 2

[Required equipment] CF card 2pcs (for SW testing and Taking picture), Battery adaptor, Regulated DC power supply (8V/3A), DC cord, Circuit tester, Lens for checking (FA50mmF1.4), Cable switch CS-205, remote control F, Flash for checking (AF360FGZ etc)

20-1. Preparation

- (1) Temporarily install the bottom cover and battery cover for battery adaptor by 2 screws.

20-2. Battery consumption

[Caution]If there is overcurrent, disconnect the power immediately.

- (1) Connect battery adaptor to the power supply and then set DC 5.6V (3A).
- (2) Set the battery adaptor to the camera and confirm the battery consumption current.
There must be neither short nor leakage.
*Refer to [Information of Jigs, tools.....] for usage battery adaptor.
- (3) Remove battery adaptor and put battery cover again.
- (4) Connect the DC code to the power supply and set DC5.6V.
- (5) Connect the DC code to the camera, confirm the battery consumption current.
There must be neither short nor leakage.

<u>Consumption current</u> (Average)	Battery power	AC power (DC6.5V)
Main SW/OFF	50 μ A	10mA
Main SW/ON --- Light metering OFF	180mA	240mA
Light metering ON	370mA	420mA
Auto power off condition	250 μ A	10mA

20-3. AF and SI Check

- (1) Attach the lens to the camera and set the AF_SW to AF.
- (2) Check auto focus function while pressing the release button halfway.
- (3) Confirm the display of SI (Superimpose) in the viewfinder.

20-4. Exposure mode, release function

- (1) Attach the lens to the camera and set the AF_SW to MF
- (2) Set the mode dial to P
- (3) TV, AV data should be display on the LCD and viewfinder when press shutter button halfway
- (4) Confirm the display on the LCD and viewfinder while changing the mode dial.
- (5) Attach cable switch to the camera, and then check the shutter release function.
- (6) Set remote control mode by Fn button, and check the release function using remote control.

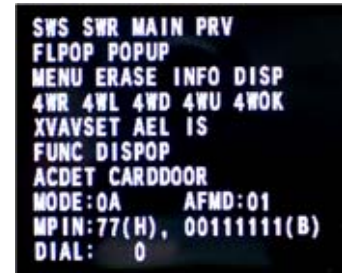
At the same time, you will hear the beep.

(With default setting. If selected beep off on the main menu, camera won't beep)



20-5. [Confirm] Switch and dial Function

- (1) Turn the main SW to OFF and insert the SD card for Testing into the camera.
- (2) Turn the main SW to ON while opening the SD card cover, and the screen for SW testing will be displayed on the LCD monitor.
- (3) Operate each SW and the dial according to the LCD monitor.
The color of the display changes according to the operation when normally working. (See the table below)
- (4) Press release button and confirm that all indication of LCD monitor and viewfinder LCD will be displayed.
- (5) Press Av[+/-] button and confirm that all SI-LED will be displayed.
- (6) When confirmation is completed, turn the main SW to OFF and remove the SD card from the camera.



Symbol	Description	Color display	Symbol	Description	Color display
SWS	Measure SW	Change	<u>MODE</u>	<u>Mode dial</u>	Code
SWR	Release SW	"	AUTO PICT	Auto picture (AP)	0A
MAIN	Main SW	Not in use	SCN	Scene mode	02
PRV	Preview SW	Change	P	Program mode	04
FLPOP	Pop-up SW	"	TV	TV mode	0C
POPUP	Flash button	"	AV	AV mode	08
MENU	Menu button	"	M	Manual mode	00
ERASE	Delete button	"	B	Bulb mode	01
INFO	INFO button	"	Flash offAP	Flash off mode	05
DISP	Playback button	"	Night PICT	Night-Scene mode	09
4WR	4 way button light	"	PICT	Action mode	0B
4WL	4 way button left	"	Macro		
4WD	4 way button bottom	"	PICT	Macro mode	03
4WU	4 way button Top	"	Landscape		
4WOK	4 way button OK button	"	PICT	Landscape mode	07
XVAVSET	Exposure compensation button	"	Portrait PICT	Portrait mode	0F
AEL	AE-L button	"	<u>AFMD</u>	<u>Focus mode SW</u>	Code
IS	Shake reduction SW	"		Autofocus	00
FUNC	Function button	"		Manual focus	01
DISPOP	Hot-shoe SW (external)	"	<u>MPIN</u>	Mount pin	-
ACDET	AC Code IN	Not in use	<u>DIAL</u>	<u>Electronic dial</u>	--←0→+
CARDDOOR	SD card cover SW	Change			

20-6. Shooting, Playback check

- (1) Turn the main SW to OFF and insert the SD card (for Taking picture) into the camera.
- (2) Turn the main SW ON
- (3) Press the MENU button and format the SD card according to indication of LCD monitor.
- (4) Set the Quality level and Recorded pixels to the default setting and take three pictures. (Quality Level: ☆☆☆, Recorded Pixels: 6M)
- (5) Press the Playback button and confirm the image quality.
- (6) When the INFO button is pressed during playback, the camera must switch from Normal Playback Screen to Histogram Display.
- (7) When the INFO button is pressed again, the camera must switch from Histogram Display to Detailed Information display.
- (8) Press the Delete button twice, and then delete all images by the four-way controller key and OK button.
- (9) Turn the main SW to OFF and remove the SD card from the camera.



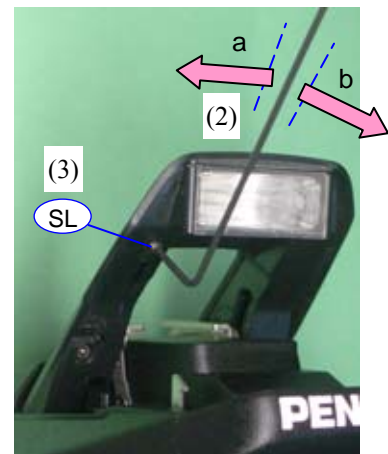
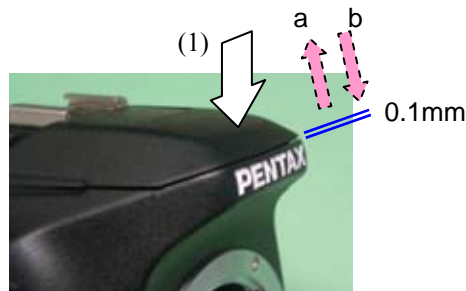
20-7. Flash Check

- (1) The built-in flash pops up when the flash button is pressed. And, ⚡ must be appeared in the viewfinder and on the LCD panel when flash is fully charged.
 - (2) The flash must be discharged when taking a picture in low light condition.
 - (3) The built-in flash must be retracted firmly when flush is pushed down by finger.
- * If flash does not retract properly or too much gap (more than 0.2mm), follow the [Adjustment of flash retract position].
- (4) Confirm that ⚡ must be appeared and discharged when an external flash is attached.

20-8 Adjustment of flash retract position

Preparation: Hexagonal driver 0.9mm (HD-M0.9)

- (1) There should be approx 0.1mm between a and b when push down the flash.
- (2) It can be adjusted by turning the adjusting screw, refer to the picture.
- (3) Apply screw lock to the adjusting screw



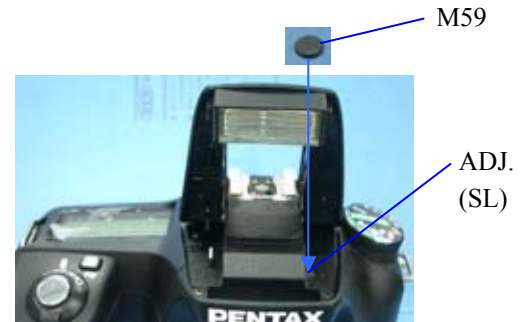
20-9. [Adjustment] vertical position of SI-LED

* If position of SI-LED is moved vertical direction by condition of installing top cover,

Adjust with next procedure.

- (1) Pop-up the flash and remove M5.
- (2) Turn internal adjusting screw
- (3) Confirm the LED position and apply screw lock to foot of screw.
- (4) Fix M59.

[Caution] When replace top cover, do not forget to fix M59.



20-10. Check aperture Control and CCD

- (1) Attaching the lens to the camera. Set the focus mode and Capture mode to MF and B.
- (2) The aperture of lens must change similarly when the aperture value (Av) is set in opening, the middle, and the minimum with the Av dial.
- (3) Detach the lens from camera, and depress the release button, and make the camera long exposure condition. Confirm there is neither dust nor scratch on the CCD.

20-11. Check SD card cover SW

- (1) The camera will turn OFF when the SD card cover is opened during the camera is turned ON.
- (2) When close the SD card cover and press release button half way, the power must be turned ON

21. [ADJ] Adjustment with Programmed Software (SLR operation)

*The adjustment method is same as *istDL2 (76670)

[CAUTION] When the T100 is replaced, should be follow this adjustment

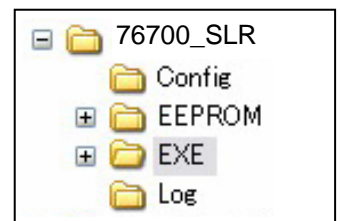
[Required equipments]

Programmed software for 76700 (for SLR operation), Regulated DC power supply (8V · 3A), Battery adaptor, AC adaptor (D-AC10), PC (Windows2000/XP with USB port equipped)
Temporary bottom cover (Hand made/exclusive item), USB cable (I-USB17), HD driver (HD-M1.5)
AF positioning jig (Square) for 27830, AF positioning jig (Cross) for 27250,
AF chart for 2m x2 (Exclusive item), AF master lens for 2m, FA Macro 50mmF2.8,
Light source (Shutter tester), Diaphragm set ring F8 (KA-0-1A), FA (F) 35-80mm F4-5.6,
I/F buffer cable for 27250 for the other items, refer to the table of “Jigs, Tools and Testers”.

* If you do not have the Reflection type of shutter tester, the shutter speed will check after the digital adjustment is completed.

21-1. Setting the computer

* Setting the computer (Page 2) and Set up theVB run time should be completed



21-2. Preparation

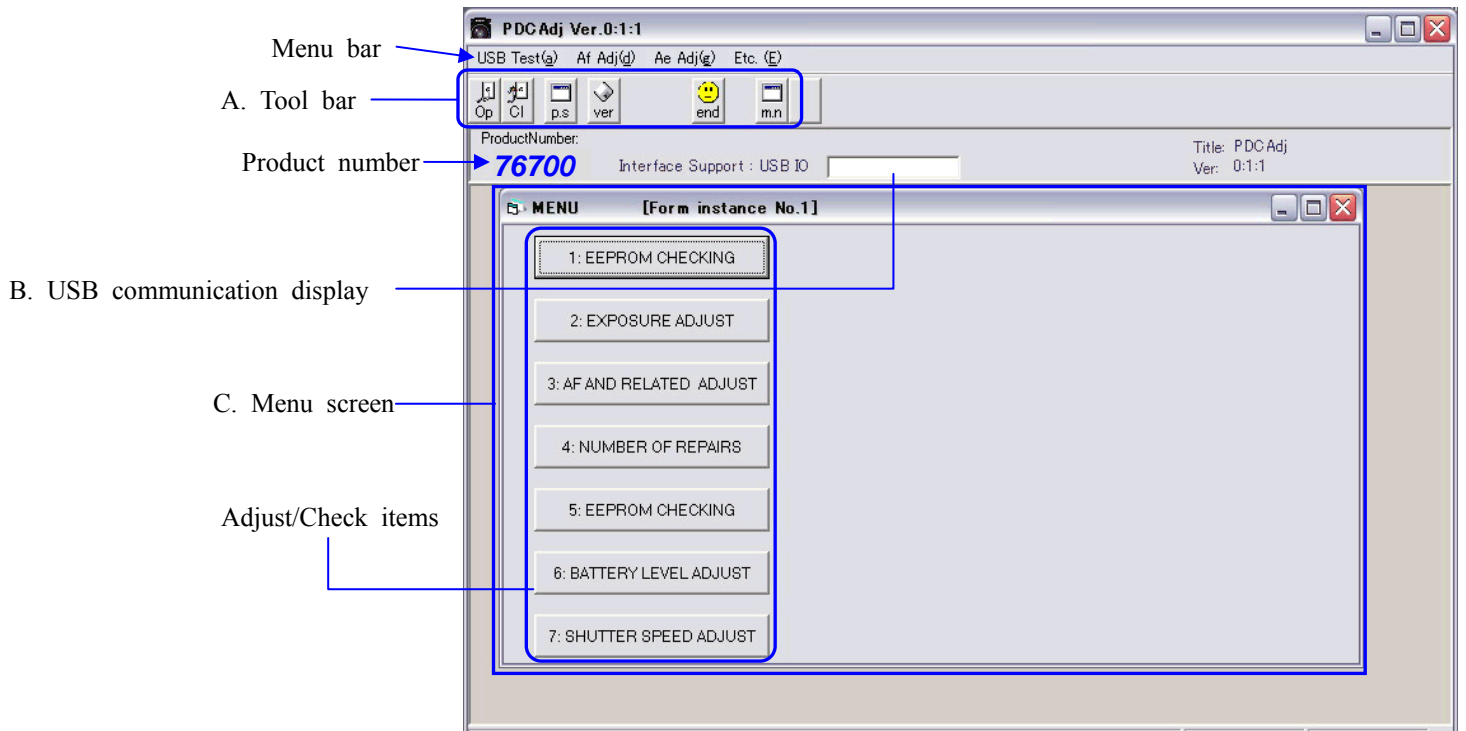
* When T100 or CCD is replaced, confirm the CCD ID No.

- ① Attach battery cover for battery adaptor and bottom cover
- ② Set focus mode to [MF]



21-3. Adjustment screen

When click the adjustment software, the following screen will be displayed



A. Tool bar



Op	USB open: start the communication with camera (Same as [USB Test] in the menu bar)
Cl	USB close : Close the communication with camera (same as [USB Test] in the menu bar)
p.s	Print screen (Same function as key board)
ver	Display F/W Version
end	End of adjustment software
m.n	Display menu screen

B. USB communication display

Display the status of USB open/Close

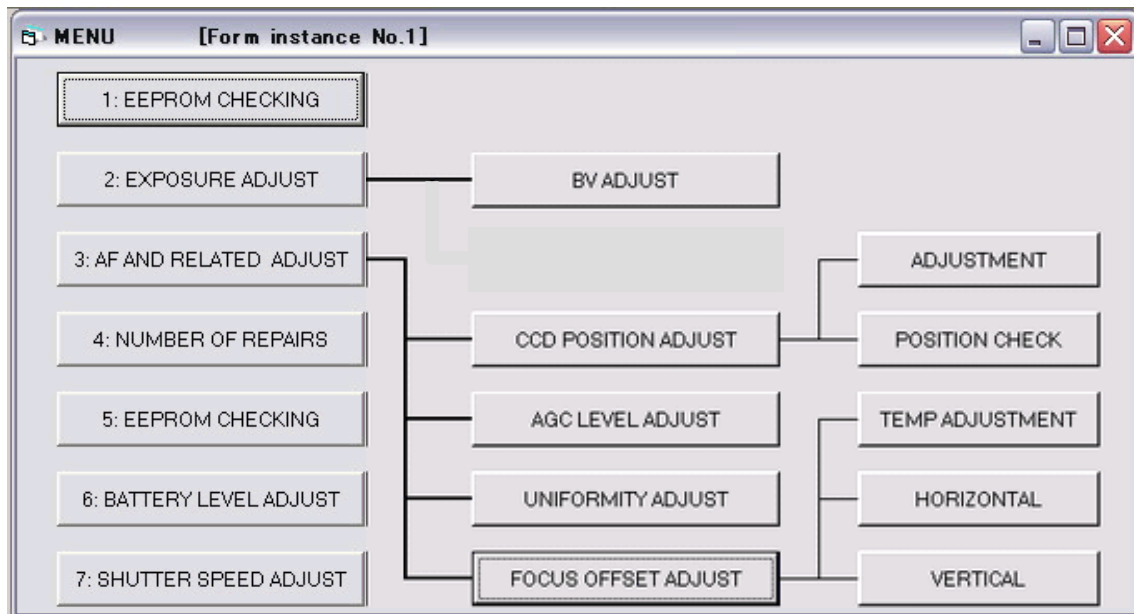
USB open : Connect

USB closed : Unconnect



C . Menu screen

When click the each items, the detail will be displayed as follow.



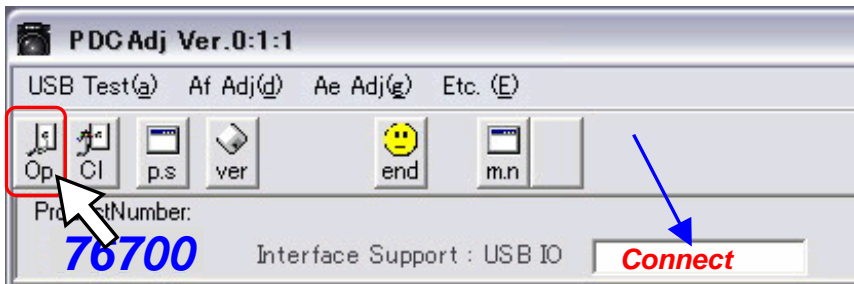
21-4. Items for adjustment/Check

- 1 : [Eeprom checking] Check the data
- 2 : [Exposure adjust] Adjustment the exposure
 - [BV adjust] (brightness value) Adjustment of brightness value
- 3 : [AF and related adjust] Adjustment of AF
 - [CCD position adjust] AF sensor position
 - [AGC level adjust] AGC level adjustment
 - [Uniformity adjust] Adjustment that equalizes output of AF sensor
 - [Focus offset adjust] Adjustment of AF focus
- 4 : [Number of repairs] Recording the number of repair
- 5 : Same as above 1
- 6 : [Battery level adjust] Adjustment of battery level
- 7 : [Shutter speed adjust] Adjustment of high shutter speed

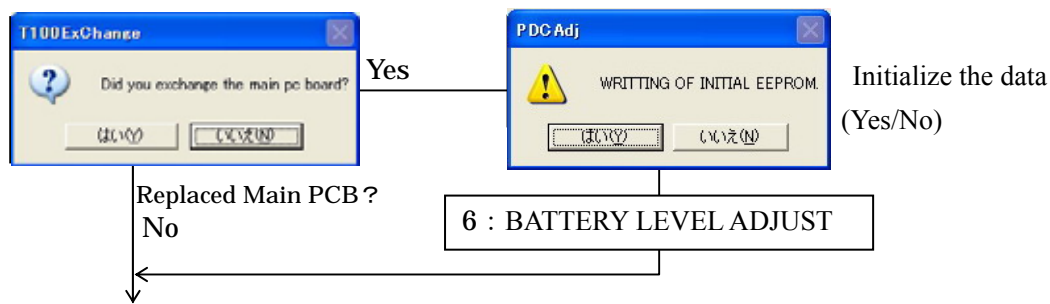
21-5. Adjustment procedure

- ① Turn the power of the camera Off and then install AC adaptor
 - * Suggest installing battery to avoid the Power supply interception
- ② Connect the camera to the computer via USB cable
- ③ Turn the power of the camera ON and confirm that the camera is recognized by computer
- ④ Click [PDCAdj01.exe] in the EXE folder
- ⑤ Adjustment screen will be displayed
- ⑥ Click [Op] to start correspond

*Confirmation: [Connect] should display as follow



⑦ Execute the check/adjustment following the display screen as follows



1 : EEPROM CHECKING

↓

2 : EXPOSURE ADJUST

[BV ADJUST]

↓ Tools : Focus master lens for 35mm (KML-01), Diaphragm set ring F8 (KA-0-1A)

↓ Light source (LV6,LV8,LV12,LV15) or (LV6,LV9,LV12,LV16)

↓

3 : AF AND RELATED ADJUST

↓ Tools: AF positioning jig (Square) for 27830, AF positioning jig (Cross) for 27250, Light source LV12

↓ Driver1.5mm (HD-M1.5), AF master lens for 2m, FA (F) 35-80mm F4-5.6,

↓ AF chart for 2m x2 (Exclusive item), FA Macro 50mmF2.8,

※ 2m AF chart have to be set as follows

1) Distance between chart and mount of camera --- 1,954.5mm (=1.9545m)

2) Chart should be set at perpendicularly against light axis of the lens

↓

[CCD POSITION ADJUST]

ADJUSTMENT

1) Alpha-CROSS -- . - -- . Adjustment -- .

2) Focus --- - . - . .

* When replaced M100, Click button and then start adjustment

↓

POSITION CHECK

[AGC LEVEL ADJUST]

[UNIFORMITY ADJUST]

[FOCUS OFFSET ADJUST]

TEMP ADJUSTMENT (Select . /F . Input temperature . Temp Adjust . Close)

HORIZONTAL · VERTICAL*

(START . Adjust position of chart . STOP . ADJUST . Close)

5 : EEPROM CHECKING

When finished all adjustment, click 5 : EEPROM CHECKING

*** When replaced T100, the following adjustment should be done additionally**

6 : BATTERY LEVEL ADJUST

Tools: Battery adaptor, Power supply (8V, 3A)

① Follow the screen

When open and close the battery cover, [Pc] will be displayed in the LCD panel of the camera

② Click Op and then start the correspond with camera. Display will change to 「 - - - 」

③ Press BC Adjust and execute the adjustment

④ After finished the adjustment, press Close button

※ If the power turned ON again, execute above ②

7 : SHUTTER SPEED ADJUST

Tools: Reflection type of Shutter tester

① Select the shutter tester (1/4000)

② Press RELEASE button and release the shutter several times, also measure the data

③ Input Measurements data and press Input Data

④ After finished the adjustment, press Close button

Finish the [5 : EEPROM CHECKING] and execute [End procedure]

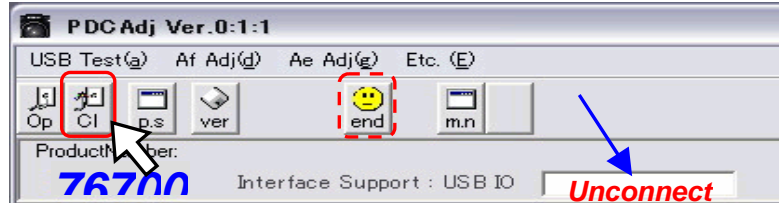
21-6. Procedure for Ending the program soft

Finish the program soft with following procedure

① USB Close

Click "CI" icon and disconnect the correspond with camera

Confirmation: 「Unconnect」 should be display as follow



② Click "end" icon and finish the adjustment program soft

③ Double-click hot plug icon of the taskbar at the lower right of a desktop, and then follow "safe removal of hardware." -> "PENTAX USB DISK Device"

④ Turn the power of the camera OFF and remove AC adaptor, USB cable

(Battery cover and temporally bottom cover can stay for the next adjustment)

22. 【Adj】 SR adjustment II (Gain adjustment)

【Caution1】 Execute this adjustment when replaced T100 or C000 block

【Caution2】 Do not give the camera the vibration when you adjust it.

Preparation: Adjustment software for 76700 (SR gain adjustment), USB cable, AC adaptor,

Personal computer (Windows 2000 or XP which equipped USB port), DA 50-200mm

SR gain adjustment set (Controller, stage, cable x2), Chart(Attached in service manual), RS232C cable

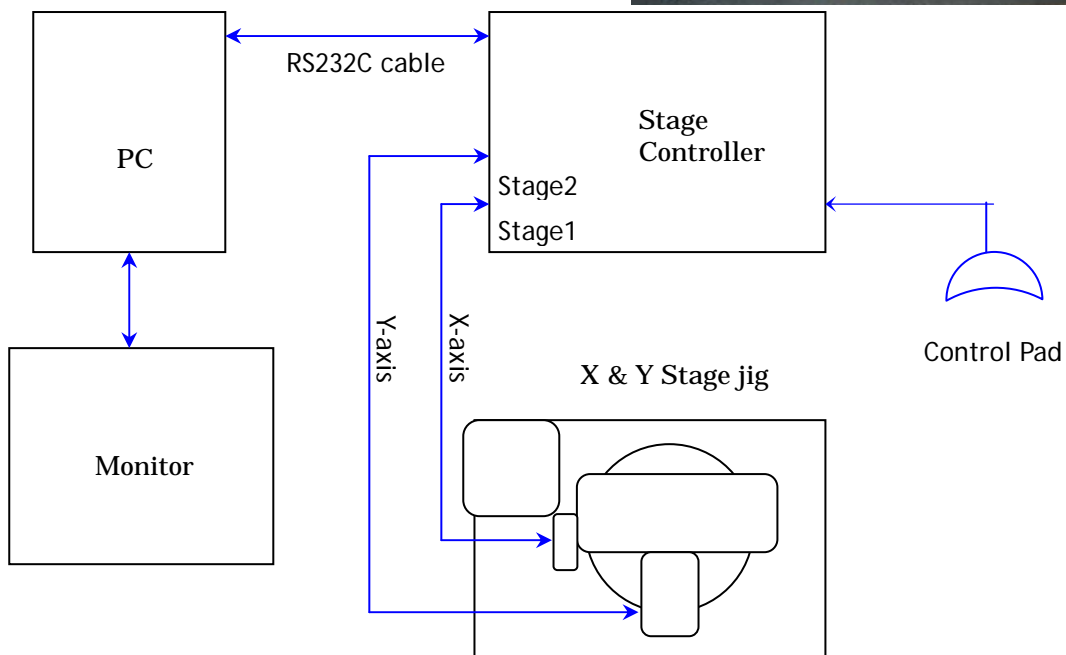
22-1. Setting the computer

Copy [SLR_SR_Gain] folder to computer

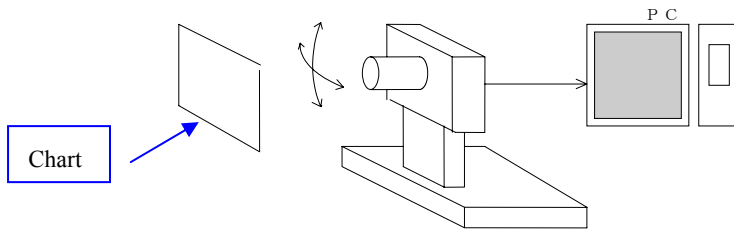


22-2. Setting the SR adjustment tester

① Set the tester and PC as following.



◆ Gain adjustment



22-3. Preparation

1) Set the zooming position at 200mm and distance ring set at 2m and then fix each setting with tape

2) Attach lens to the camera

3) Set the camera to the following condition

Mode dial: M

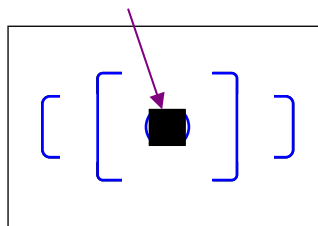
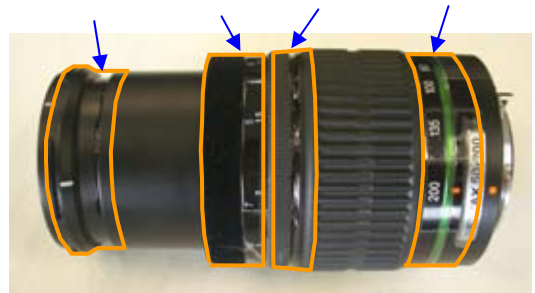
AF switch: MF

SR switch: ON

4) Attach camera to the driving stage

* Driving stage must be the horizontal position.

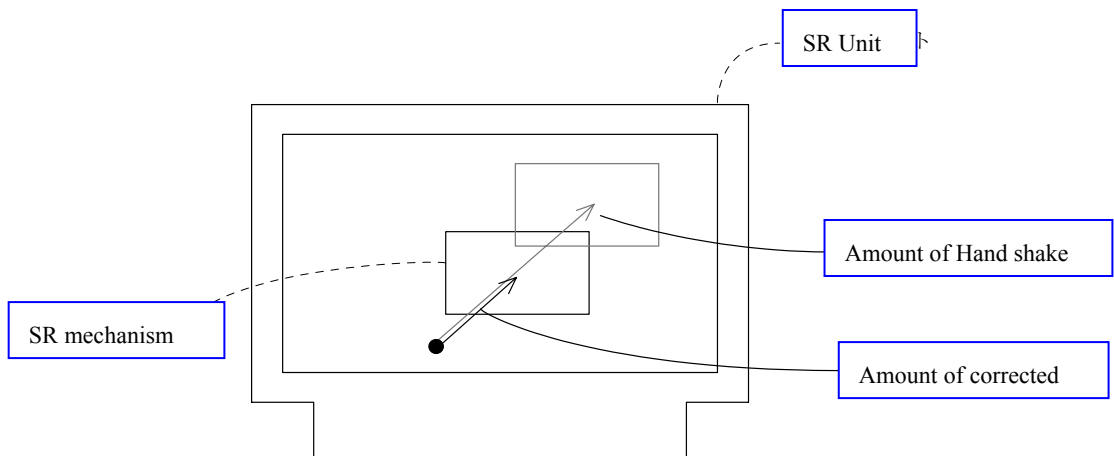
5) Set the camera 1.9545m from the chart and match the chart with frame of spot measurement in the view finder



22-4. Adjustment items

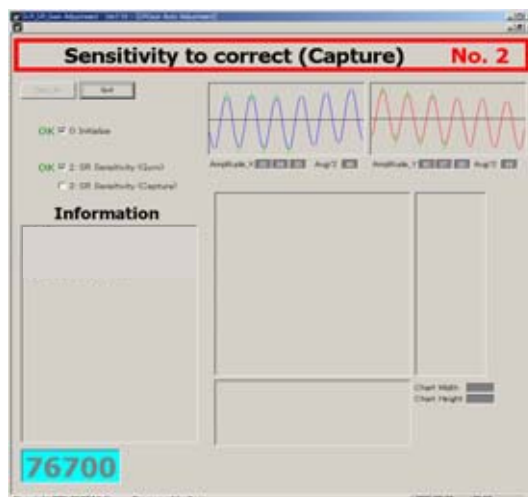
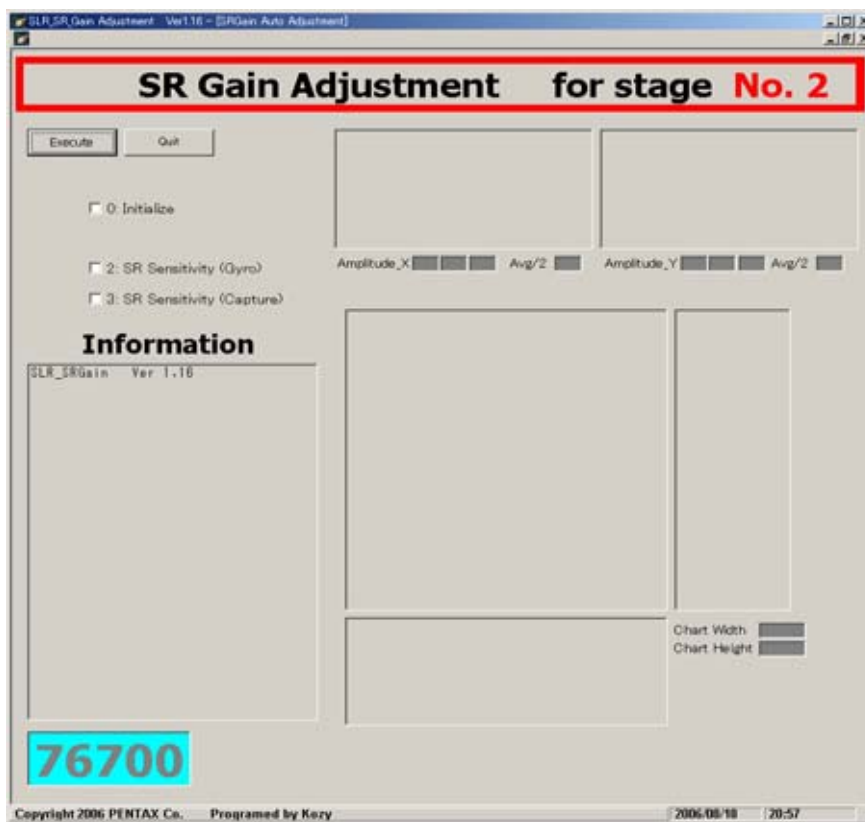
SR4: Gain adjustment

The adjustment that the amount of the correction becomes the best for an actual amount of the gap

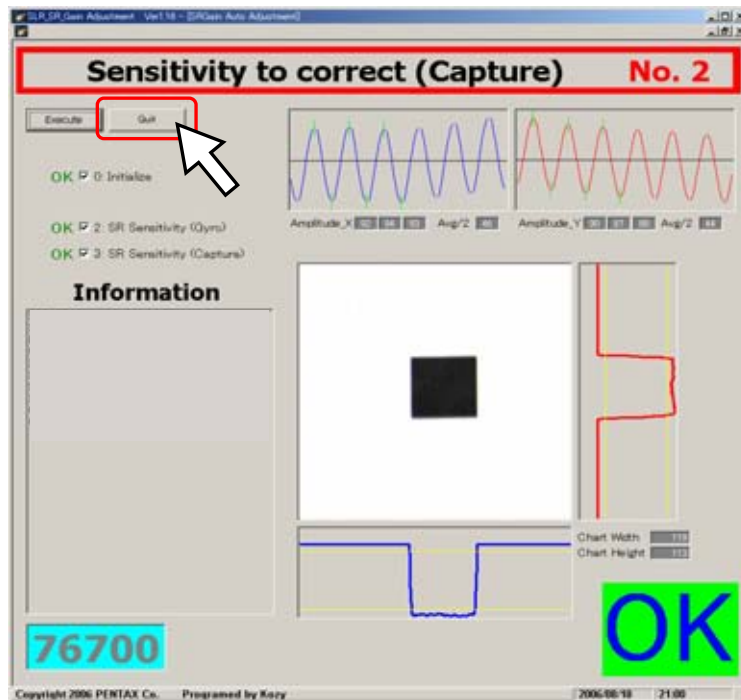


22-5 Adjustment procedure

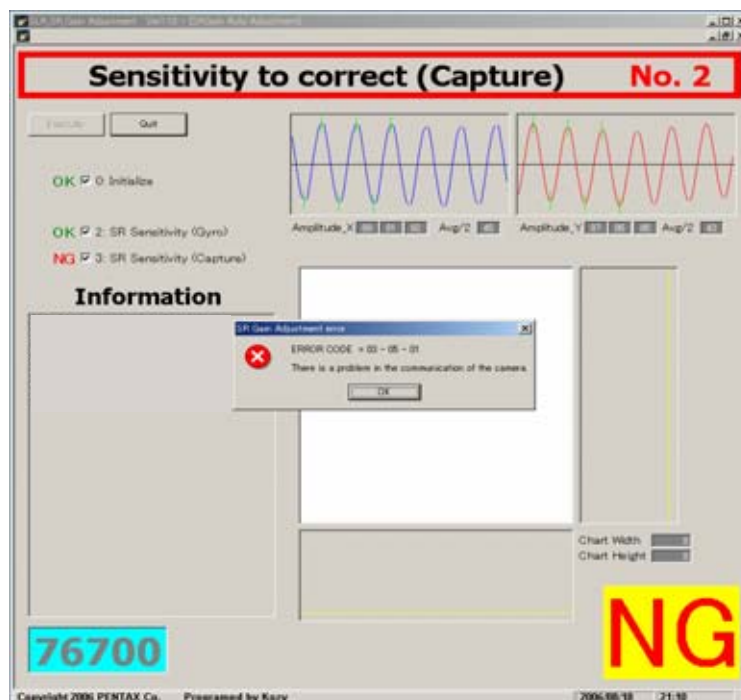
- ① Connect the camera to the computer via USB cable
 - ② Turn the power of the computer and attach AC adaptor to the camera
 - ③ Turn the power of the camera ON and confirm that computer is recognized the USB connection
 - ④ Turn the power of the controller ON
 - ⑤ Click (SLR_SR_Gain116.exe) in the folder of SLR_SR_Gain
 - ⑥ Adjustment screen display
 - ⑦ Match the chart with frame of spot measurement in the view finder
 - ⑧ Click [Execute] button and start the adjustment
- **Do not give the camera the vibration when you adjust it.**



- ⑨ When display OK, the adjustment is completed
- ⑩ Click [Quit] and finish the adjustment



- ⑪ Click [Removing the hardware] on the screen of PC
- ⑫ Turn the power of the camera OFF and disconnect the AC adaptor, USB cable from the camera
- ⑬ If the adjustment is NG, the following message display, this case please check all the setting and execute the adjustment again.



23 [ADJ] Adjustment with Programmed Software (Digital)

The adjustment method is the same as *istD series

[Required equipment]

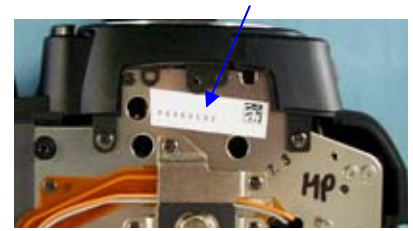
Programmed software for 76700(Digital), Computer (Windows 2000 or XP with USB port equipped)

Light source (LB-3300: A light 2850 K \pm 10, LV11.00), Master lens for 76180 (95901 D20), Diaphragm set ring F8 (KA-0-1A), AC adaptor (D-AC10), USB cable (I-USB17), Dark curtain,

Color temperature tester (for calibration), LV meter (for calibration)

[CAUTION] The adjustment software is created based on the data of individual master lens. Therefore, use the same master lens as the ID number printed on CD to adjust it accurately.

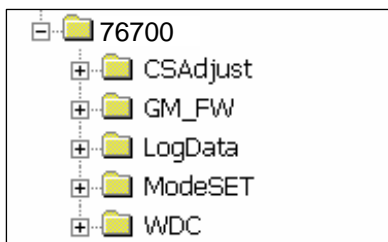
* Confirm CCD ID No when replace T100 or C000.



23-1. Setting the computer

(1) Copy the folder 『76700』 from the CD-ROM into the Computer.

*Log data will be created automatically whenever the camera is adjusted.



23-2. Setting of K100D

(1) Attach the master lens 76180 and Diaphragm set ring F8 to the camera.

(2) Set mode dial to [M].

23-3. Item of adjustment

0: [Initialization]

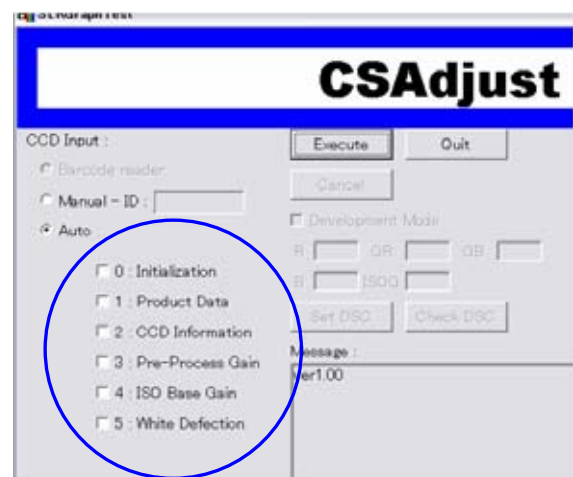
1: [Product Data] Setting product information

2: [CCD Information] Setting CCD information

3: [Pre-Process Gain] Pre-process gain adjustment

4: [ISO Base Gain] ISO base Gain adjustment

5: [White Defection] Compensate dead pixels on CCD (White), refer to the 22-5



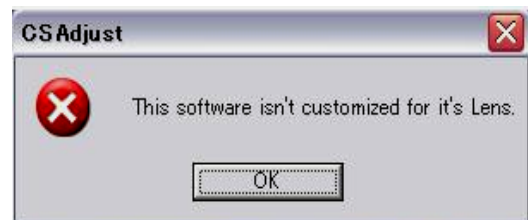
23-4. Procedure of adjustment

- (1) Connect the AC adaptor to the camera.
- (2) Connect the camera to the computer by the USB cable
- (3) Attach the Master lens to camera while confirming the aperture of Master lens is set to F8.
- (4) Turn the main switch ON, and then confirm that the camera is recognized as a [Removable Disk] under [My Computer]
- (5) Set the camera and master lens toward center of light window of LB3300, and then cover the whole camera by using a dark curtain and so on.
- (6) Start the adjustment software (CSAdjust.exe). Input ID number of master lens and then click **OK** button.

[CAUTION] The adjustment software ends compulsorily while indicating the following error message if ID number which is not correct is input and OK button is clicked. In that case, restart the adjustment software and then input correct ID.

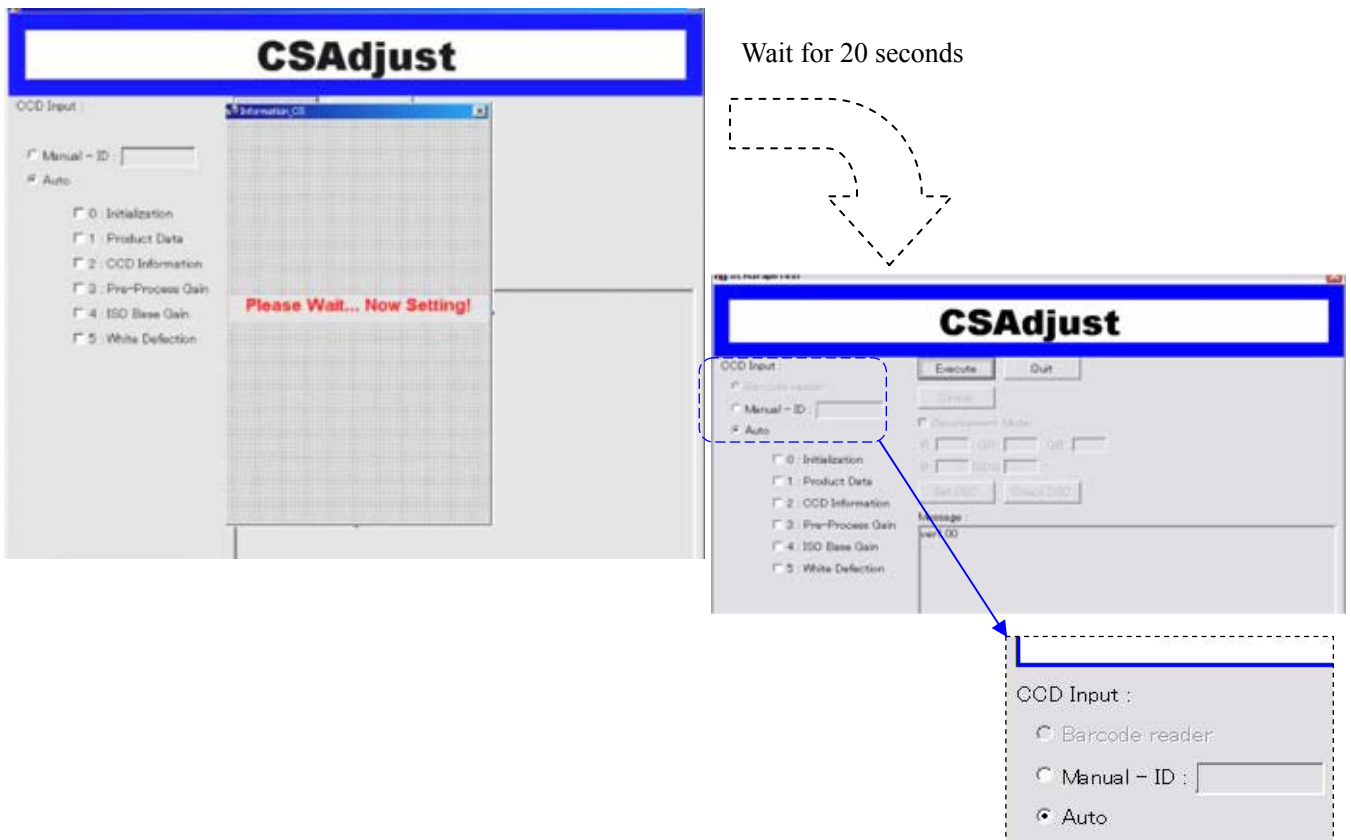


■ Lens ID No. Input display



■ Error display

- (7) The following window will be displayed when the adjustment software is started.



(8) Select 「CCD Input」

* When replaced T100 or CCD ----- Select “Manual-ID”

* Other than above ----- Select “Auto”

(9) When select [Manual-ID]

Input CCD ID No 2 times

Input ID No.



Press “Execute” button or
“Enter” key



Input ID No



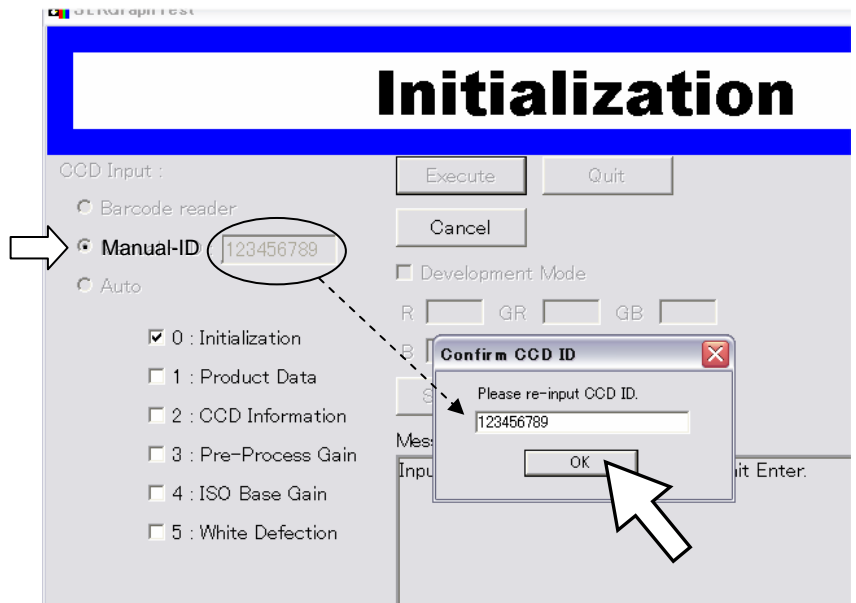
Press “OK” button or Enter key



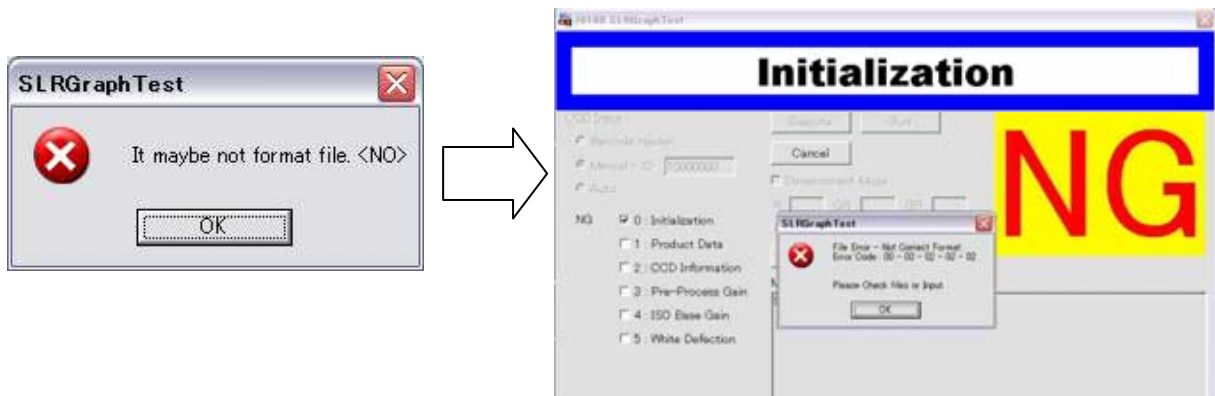
Adjustment process start

(10) When select [Auto]

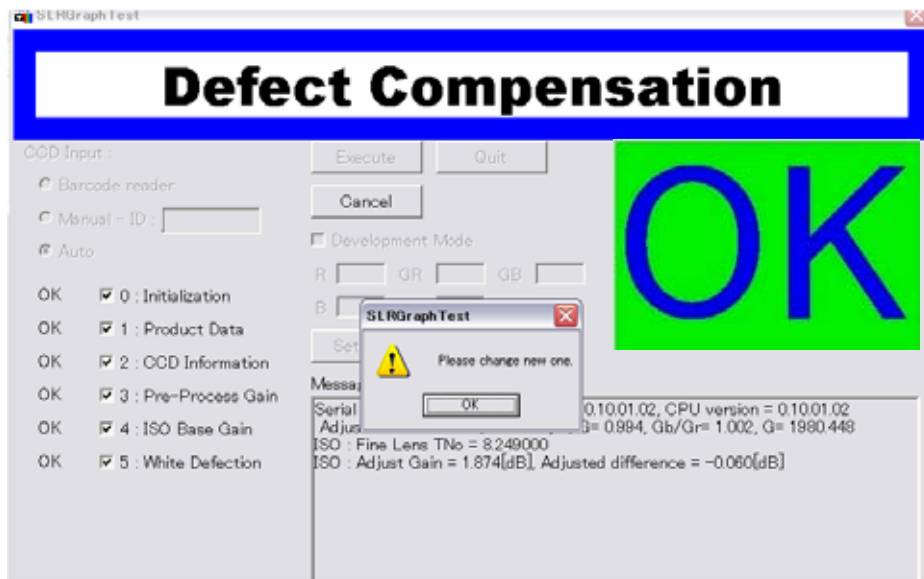
Press “Execute” button or Enter key → Adjustment process start




*When the following error window is displayed, select “Manual-ID” and input correct CCD ID No.



(11) When the screen display as follows, the adjustment is completed.



(12) Double-click hot plug icon  of the taskbar at the lower right of a desktop, and then follow "safe removal of hardware. Turn off the camera and disconnect the camera.

[Error message]

* The following display appear when the mode dial of the camera is not set on [M].



If the error code display on the monitor, check the list of error code in the technical information of this service manual.

Example error code:

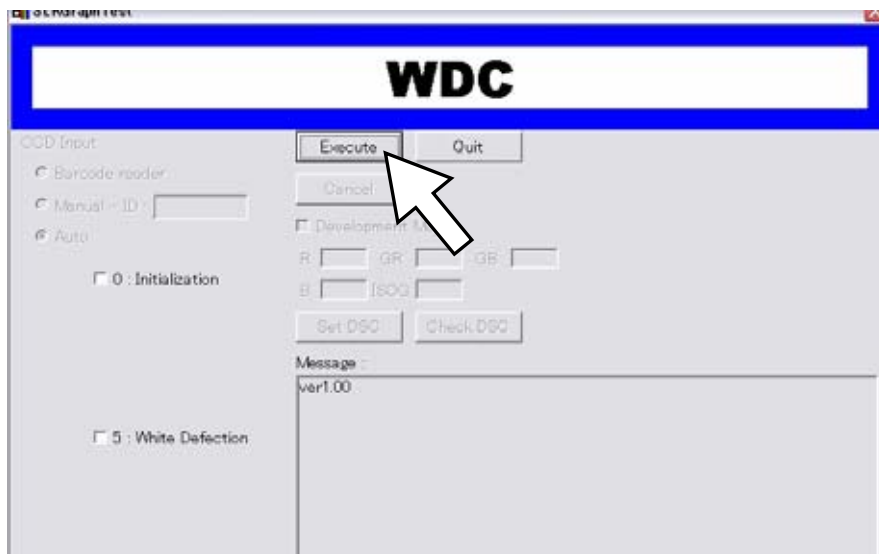
[03-08-01-07-00] ----- [Pre-Process Gain --- xx --- xx --- DSC Result --- Strange Data]



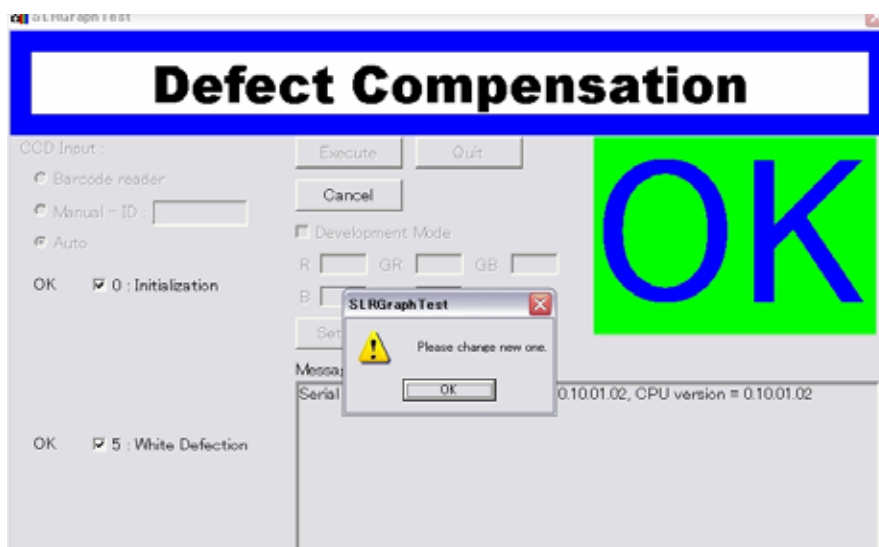
23-5 WDC Adjustment procedure

[NOTE] CCD white pixel defect compensation item only can be adjustable by this procedure.

- (1) Connect the AC adaptor to the camera.
- (2) Connect the camera to the computer by the USB cable (I-USB17).
- (3) Turn the main switch ON, and then confirm that the camera is recognized as a [Removable Disk] under [My Computer].
- (4) Start the adjustment software (WDC.exe). [NOTE] Lens ID number is not necessary.
- (5) The following window will be displayed when the adjustment software is started.
- (6) Execute the adjustment by clicking **Execute** button in the dialog box or push **Enter** key on the keyboard.



- (7) When the screen changes as follows, the adjustment is completed.



i

24. Shutter speed adjustment by histogram (1/4000 sec)

[Caution]

- * Adjustment (SLR function and Digital function) should be completed before
- * Shutter speed adjustment required when replaced T100 or 0-E000.
- * When check the shutter speed by the reflection type of the shutter tester, follow the SLR function adjustment in the service manual.

[Required equipment]

Programmed software (for SLR operation), Computer(Windows 2000, XP with equipped USB port)
Memory card (For test), AC adaptor, Diaphragm set ring F8 (KA-0-1A) and AE master lens (ML-240) or FA50mm F1.4, Light box which has LV8 or LV9, Scale, USB cable (I-USB17)

24-1 Preparation

Preparation of Program soft adjustment I (SLR Operation) and setting should be completed

24-2 Setting the camera

Setting the camera as follows

Mode dial: Manual exposure mode

Focus lever: MF

WB: Tungsten light

ISO: 200

[Menu]:

Capture: Setting the Image Tone --- Natural (Except istD)

Quality level / Recorded Pixels -- *** Best, 6M (L)

Saturation, Sharpness, Contrast --- Standard

Playback: Quick view --- 5 Seconds

Playback display --- Setting the Histogram display

Custom: Using aperture ring --- Set to disable shutter release when lens aperture ring is set at other than A

Relation of setting on TV and ISO

Light value	LV8		LV9	
Shutter speed (ms)	1/250	1/4000	1/500	1/4000
ISO sensitivity	ISO200	ISO3200	ISO200	ISO1600

24-3 Checking procedure

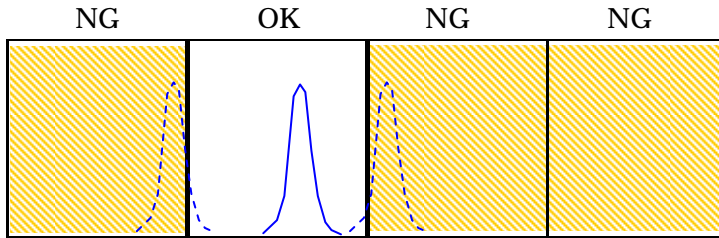
- 1) Set the light value at LV8 (or LV9)
- 2) Set TV at 250 and ISO 200 (When set LV9: Set TV at 500 and ISO 200)
- 3) Attach F8 setting ring and AE master lens
- 4) Set aperture at F1.4 (Open position)
- 5) Set the camera to the light box
- * To avoid the light from outside, shield the light source
- 6) Capture 3 images --- Standard data

[Caution]

Position of histogram must be the following fig 2.

If the position of histogram is Fig1, Fig3 or Fig4 (NG), check the setting the camera again.

Also, re-adjust BV and digital adjustment.



* Set same light value (LV8 or LV9) and Set aperture at F1.4 (Open position)

7) Set TV at 4000 and ISO 3200 (When set LV9: TV 4000 and ISO 1600)

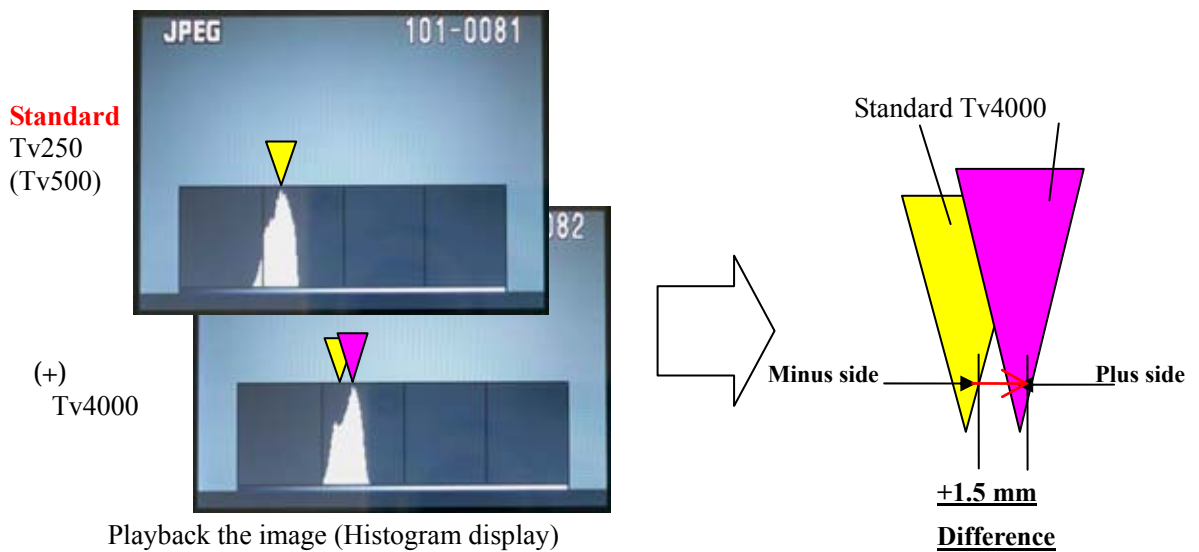
8) Set the camera to the light box and capture 5 images

9) Playback the image by histogram display and compare the peak position with standard data.

and then measure the difference (mm) on the monitor.

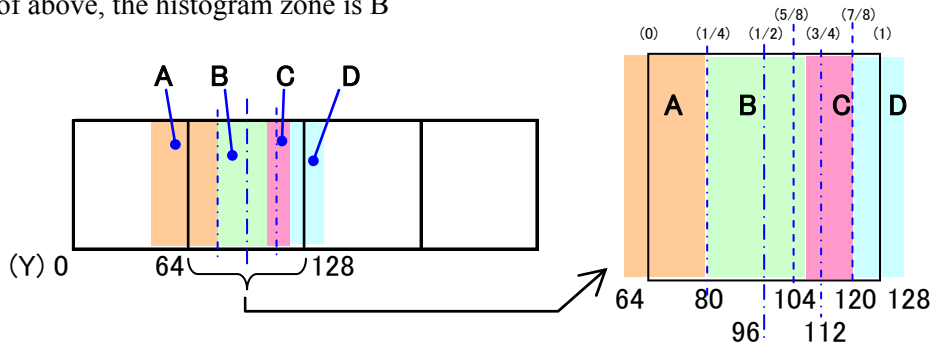
[Caution] Confirms it from the position of the front to the LCD monitor and do not make scratch on LCD monitor

< Example >



10) Select the histogram zone (A~D) of the peak position of Tv 4000 from the below.

* In the case of above, the histogram zone is B



11) Obtain the shutter speed (mS) referring the conversion table (next page)

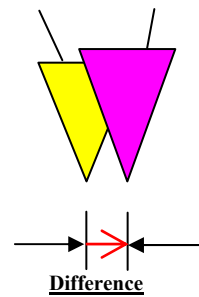
* In the case of above, difference of peak position is + **1.5mm** (Right side of the standard) and histogram zone is **B**

Object camera: istDL / DL2 / DS2 (Size of monitor is 2.5inch) ---- Shutter speed is [**0.273ms**]

Conversion table of shutter speed

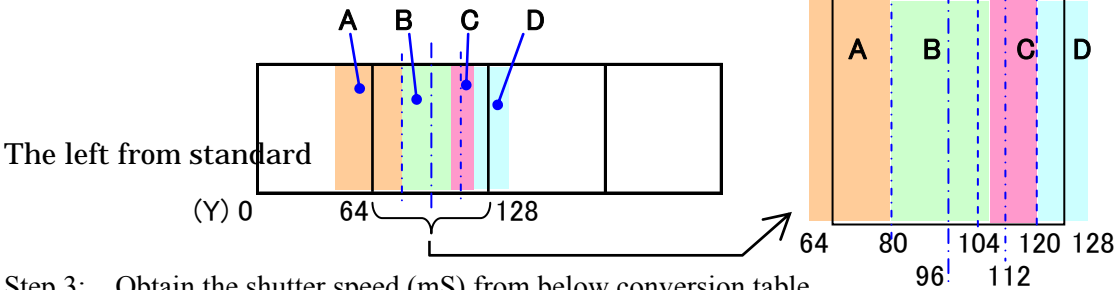
Step 1: compare the peak position with standard data.
and then measure the difference (mm) on the monitor.

Standard Tv4000



Step 2: Select the histogram zone (A~D) of the peak position of Tv 4000 from the below.

* Histogram zone



Step 3: Obtain the shutter speed (mS) from below conversion table

- Use the conversion table depending on the size of monitor

Differ mm		The left from standard										
		-10.0	-9.5	-9.0	-8.5	-8.0	-7.5	-7.0	-6.5	-6.0	-5.5	-5.0
Zone	A	0.116	0.122	0.129	0.135	0.142	0.148	0.154	0.161	0.167	0.174	0.180
	B	0.054	0.064	0.073	0.083	0.092	0.102	0.111	0.121	0.130	0.140	0.149
	C	(0.001)	0.001	0.014	0.026	0.039	0.052	0.065	0.078	0.090	0.103	0.116
	D	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	0.004	0.020	0.036	0.052	0.068	0.084

(m S)

Differ mm		The left from standard										右側	
		-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0	0.5	
Zone	A	0.186	0.193	0.199	0.206	0.212	0.218	0.225	0.231	0.238	0.244	0.250	
	B	0.159	0.168	0.178	0.187	0.197	0.206	0.216	0.225	0.235	0.244	0.254	
	C	0.129	0.142	0.154	0.167	0.180	0.193	0.206	0.218	0.231	0.244	0.257	
	D	0.100	0.116	0.132	0.148	0.164	0.180	0.196	0.212	0.228	0.244	0.260	

(m S)

Differ mm		The right from standard										
		1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
Zone	A	0.257	0.263	0.270	0.276	0.282	0.289	0.295	0.302	0.308	0.314	0.321
	B	0.263	0.273	0.282	0.292	0.301	0.311	0.320	0.330	0.339	0.349	0.358
	C	0.270	0.282	0.295	0.308	0.321	0.334	0.346	0.359	0.372	0.385	0.398
	D	0.276	0.292	0.308	0.324	0.340	0.356	0.372	0.388	0.404	0.420	0.436

(m S)

Differ mm		The right from standard										
		6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0			
Zone	A	0.327	0.334	0.340	0.346	0.353	0.359	0.366	0.372			
	B	0.368	0.377	0.387	0.396	0.406	0.415	0.425	0.434			
	C	0.410	0.423	0.436	0.449	0.462	0.474	0.487	0.500			
	D	0.452	0.468	0.484	0.500	0.516	0.532	0.548	0.564			

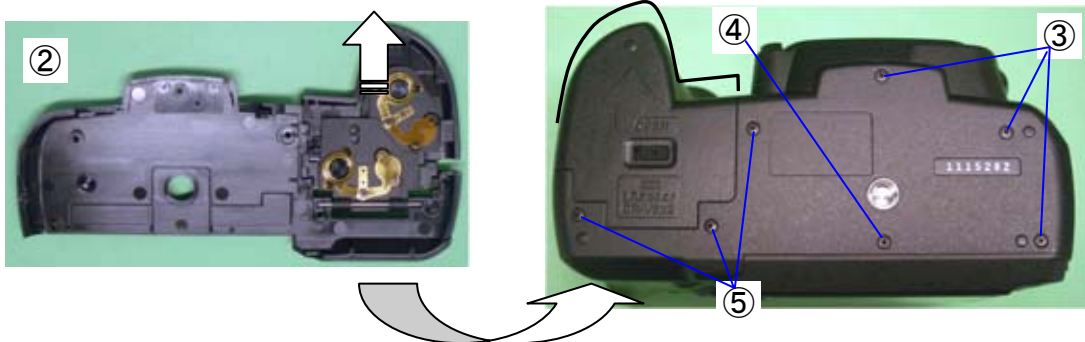
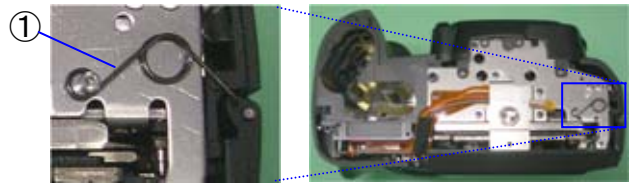
(m S)

24-4 Adjustment procedure

- 1) Start the adjustment software and connect the camera to the computer
- 2) Select **SHUTTER SPEED ADJUSTMENT**
- 3) Select the 1/4000 shutter tester and go to data input screen.
- 4) Input conversion data (mS). If the data is NG, back to the data input screen and input [0.25] and finish the adjustment
- 5) After finish the adjustment, execute the software adjustment and then disconnect the connection.
- 6) [Confirmation] follow the above procedure 3 and 4, the shutter speed should be within 0.227mS ~ 0.30 mS (1/4000)

25. A401 Bottom cover

- ① A167 Spring
- ② Keep open the battery cover and then install Bottom cover
- ③ A67 Screws x 3 (5mm)
- ④ A75 Screw (1.7x1.8)
- ⑤ A73 Screw x 3 (4.5mm)
- ⑥ Confirm that battery cover open/close smoothly



26. 【CONF】 Final function check 3

* Excute [Function check 2] if necessary.

26-1. Confirmation of the metering function

* The checking method is the same as *istD series.

【Required equipment】 Light source (Shutter tester), FA50mm F1.4

- ① Attach the lens (FA50mm) to the camera and set the aperture to the A position.
- ② Set the camera as follows.
Capture mode : AV (Aperture-priority) mode, aperture value : Av8 (FNo.8), Sensitivity : ISO200,
Focus mode SW : Manual focus, Exposure setting step : 1/2 (Default setting of custom function)
- ③ Set the focusing ring to the infinity (∞).
- ④ Set the camera to the light source (shutter tester).
- ⑤ Change the light value of light source and confirm that the TV value is displayed as follows while depressing the release button halfway.
(FNo.8 · ISO200)

	LV6	LV8	LV9	LV10	LV12	LV15	LV15 (Multi-segment)
Tv display	Tv0.5"	Tv8	Tv15	Tv30	Tv125	Tv1000	Tv750

26-2. Confirmation of the Exposure value (for reference)

【Required equipment】 Computer (for Digital adjustment), AC adaptor, USB cable (I-USB17), SD Card (for taking picture), FA50mm F1.4, Light source (LB-3300 : color temperature must be calibrated $2850K^{\circ}\pm 10$), Image viewing software (Adobe Photo shop)

- ① Attach the lens (FA50mm) to the camera and set the aperture to the A position.
- ② Set the camera as follows.
Image : Natural, Capture mode : Program mode, Metering Method : Multi-Segment metering,
Focus mode SW : Manual focus, White Balance : Tungsten Light, Color Saturation : Normal, Image Sharpness : Normal, Contrast : Nomal, Recorded pixels : 6M (Default setting), Quality level : Best (Default setting)
- ③ Set the focusing ring to the infinity (∞).
- ④ Set the camera to the light source.
- ⑤ Take a picture while changing the light value of light source.
- ⑥ Open the recorded image by using the Image viewing software (Adobe Photo shop)
- ⑦ Select the histogram as shown in the figure below.
(In the case of Adobe Photoshop EL \Rightarrow)
- ⑧ Confirm that the level of brightness must not vary remarkably from the stander (Y=110).
【Caution】 A standard applies only the bottom of above-mentioned setting condition.



■K100D Standard of Exposure value

P, Tv, Av-AE mode Light value / Lens	Tolerance (EV)	
	AE Master Lens (P)	F · FA 50mm F1.4 (∞)
LV6~14	+0.25~-1.00	+0.70~-0.50
LV15 (Multi-segment)	+0.75~-0.50	+1.20~±0.00

■K100D, Correlation table of EV with Y:

EV	-1.0	-0.5	±0	+0.5	+1.0
Y=	67	87	110	132	155

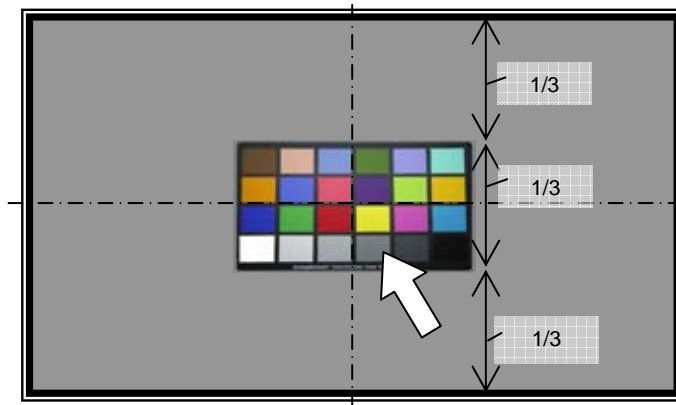
[Note] The standard is applied only when the camera is set to the condition as mentioned above.

26-3. WB (Confirmation of White Balance)

[Required equipment] Computer (for Digital adjustment), AC adaptor (D-AC10), USB cable (I-USB17), SD card (for taking picture), FA50mm F1.4, A light (2856 K°), Color checker (Macbeth™ Chart or equivalent), Fluorescent lamp (White 4244K°), Fluorescent lamp (Neutral white 5111K°), Image viewing software (e.g. Adobe Photo shop or ACDSec™), Gray chart (90x60cm or above)

[CAUTION] Both fluorescent lamps for checking should be used the Inverter (high-frequency converter) lighting.

- (1) Attach the lens to the camera and insert the SD card to the camera.
- (2) Set the camera as follows.
Image: Natural, Capture mode: AV (Aperture-priority) mode, Metering Method: Multi-Segment Metering, Sensitivity: ISO200, Focus mode SW: AF.S, Recorded pixels: 6M (Default setting), Quality Level: Best (Default setting), Color Saturation: Normal, Image Sharpness: Normal, Contrast: Normal, Color Space: sRGB (Default setting)
- (3) Put the Color checker on the Gray chart as shown in the figure below.
- (4) Light up the Color checker by the A light.
- (5) Set the WB (White Balance) mode to “Tungsten Light”.
- (6) Position the camera so that the Color-Checker and Gray-Chart are framed in the viewfinder as shown in the figure below while looking through the viewfinder.
- (7) Take a picture of them while changing the aperture value (F2.8~F8) so that the TV value becomes between from 1/30 to 1/250.
- (8) Take a picture of them similarly by setting the WB to “Fluorescent Light W white” while using the Fluorescent lamp (white 4244K°) for lighting.
- (9) Take a picture of them similarly by setting the WB to “AWB” while using the Fluorescent lamp (Neutral white 5111K°) for lighting.
- (10) View the three pictures which have been taken above by the Image viewing software, and confirm whether the true color of Neutral 5 indicated by arrow in the figure below is reproduced or not while comparing with Color chart. And, confirm that other colors also have not been changed.



26-4. BC (Battery check)

Preparation: Battery adaptor, Power supply, Cercuit tester

DC5.6V →		Lighting
DC5.4V →		Lighting
DC4.6V →		Blinking

26-5. Confirmation of AF focus by taking a picture

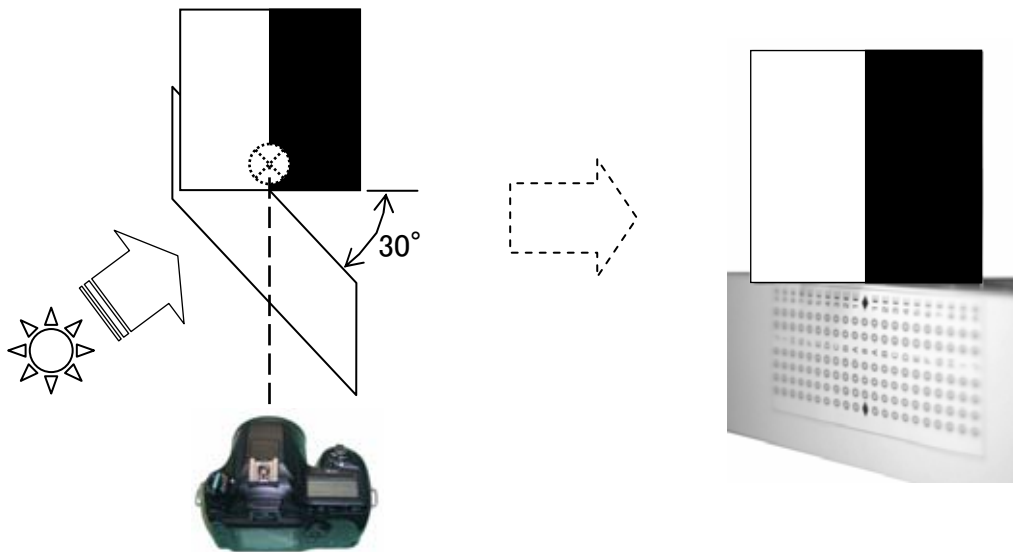
Confirmation is the same as *istD (76180).

This section describes the method of checking the AF focus for your reference. It will enable you to do the overall confirmation of the position of the AF focus, and also will be useful in the service.

[Required equipment] Computer (for Digital adjustment), AC adaptor, USB cable, SD card (for taking picture), FA50mm F1.4, AF chart for confirmation, Scale for confirmation (attached the end of manual), Lighting (If the fluorescent lamp is used for lighting, the Inverter lighting (Flicker-less) must be used.), Image viewing software (For Example :ACDSee™, Adobe Photo shop or other)

- (1) Attach the lens (FA 50mm) to the camera, and set the lens aperture to A position.
- (2) Set the camera as follows.
Capture mode: AV (Aperture-priority) mode, Focus mode SW: AF.S, Focus point: Spot, White Balance: AWB, Recorded pixels: 6M (Default setting), Quality Level: Best, Color Saturation: Normal, Image Sharpness: Normal, Contrast: Normal
- (3) Set the aperture to open position by Av dial of camera.
- (4) Set the chart and scale as follows. Lighten the chart so that the white portion of chart becomes EV12 or more. If necessary, settle the camera on a tripod.
- (5) Set the camera so that the distance from the chart to camera becomes 1m
- (6) Turn the distance ring of the lens to infinity (∞) by depressing the shutter button halfway while covering the front of lens with the palm.
- (7) Take two pictures of chart while aiming the focus point of center (for Spot) to the border line between white and black chart.
- (8) The same manner with above. Turn the distance ring of the lens to minimum focus distance and repeat above (7) for confirming vertical sensor, set the camera at vertical position.
- (9) Display the images on the computer with image viewing software.

(10) Confirm the camera in focus on chart.



[Supplement] If focus is NG, There is possibility with following factors.

AF focus position error or adjusting error. (Confirm AF focus position (FI) : NG)

→ Adjust positioning of 1st and 2nd Mirror, AF adjustment by programmed software (Part of SLR mechanism)

Height of the CCD Base Plate Support Pillar is NG

→ Confirm with disassembly, Adjust with washer and re-assemble.

Related parts: Mount ring, Front, Front Housing Block, body main plate (pillar installing parts), and other frame (0-A3, A4, A5, A6)

If camera is OK, There is possibility for trouble with the lens.

26-6. Confirmation of SR mechanism

Preparation: Personal computer, AC adaptor, USB cable, FA50mm lens, SD card(For test), Application software

(PENTAX PHTO Browser™、ACDSee™、Adobe Photoshop)

① Attach FA50mm lens to the camera and set aperture ring at A position.

② Set the camera as follow

Exposure Tv mode, AF focus mode, AF measurement --- Center, AF.S mode

Drive mode --- Single, AWB (Fn menu), Recording size --- 6M ***

③ Set Tv15 (1/15sec) --- It is equal to approx 2.5 step

④ The distance of the camera is set from subject to 2m.

⑤ Set the SR switch to OFF and capture 10 images. (Camera is set on Horizontal position)

⑥ Set the SR switch to ON and capture 10 images. (Camera is set on Horizontal position)

[Caution] Release the shutter about 1 second later after hand shake indication is ON in the view finder

⑦ Open the image with application soft

⑧ Compare the images (SR ON/ SR OFF) and confirm that whether SR function is effective

Confirmation of SR mechanism (When use different type of focal length)

The shutter speed of prevention for shaking is calculate with [1 / focal length of the lens]

For instance, if the focal length is 200mm: $1 / (200 \times 1.5) = 1/300$

* Size of picture for digital camera is 23.5 x 15.7mm and it is about 1.5 times when converting it into the focal length of 35milli-size camera.

① Calculate the shutter speed of prevention for shaking as above.

For instance, if the focal length is 200mm: $1 / (200 \times 1.5) = \underline{1/300}$

② Converts above shutter speed to two step down

$1/300 \rightarrow 1/150 \rightarrow \underline{1/75}$ It is equal to approx $1/80$

③ Set Tv 80 (or TV 90 and 1/2 EV step)

④ Follow the procedure of 27-6, ④~⑧

[Caution] The effect of the shake reduction is influenced by the focal length of the lens and the object distance

and effect might not become visible in the short distance (D-FA50mm Macro 0.4m), also an enough effect might not become visible at the low temperature.

26-7. CCD Cleaning

*This method of confirmation is assumption for CCD cleaning in service.

[Required equipment]

Computer, AC adaptor, USB cable, AF 50mm F1.4 (or F1.7), Light box, Cleaning paper for CCD (Clean wipe-P), solvent for cleaning (EE6310 or C600), Tweezers (recommend to use flat tip), SD card for test, Image viewing software (e.g. Photo shop, ACDsee, etc.)

[Confirmation]

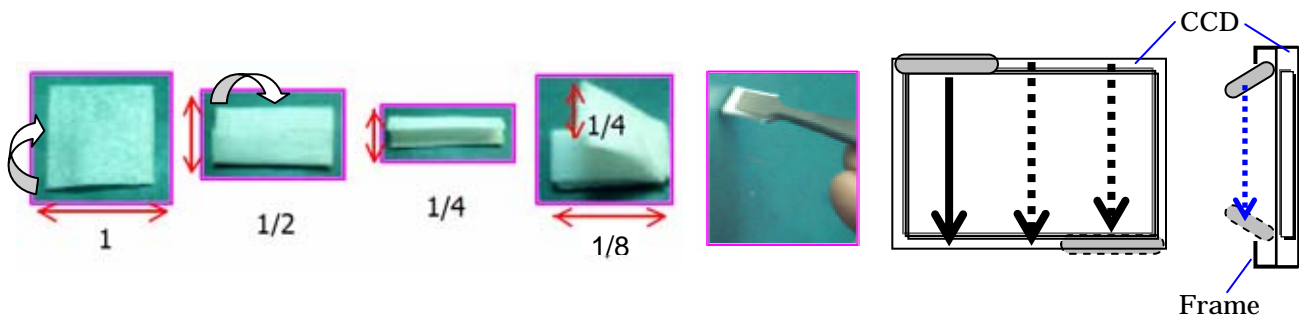
- (1) Attach the FA50mm lens to the camera and set the lens aperture to A position.
- (2) Set the camera as follows.
Capture mode: AV (Aperture-priority) mode and Set AV 22 (FNo.22), ISO speed: 200, Focus mode SW : MF, Exposure compensation:+1/2EV, Recorded pixels: 6M (Default setting), Quality Level: Best.
- (3) Turn the distance ring of the lens to infinity (∞).
- (4) Take the pictures of the light box from on 3cm.
- (5) Display the images on the computer with image viewing software.
- (6) Set the image to life size (1:1) and confirm dust. (Better to make clear the position of dust with such as coordinate)

If you see dust clearly on image, there is possibility that the dust enters into the inside of CCD. (Disassembly and cleaning or replace T600)

[Cleaning method of dust]

- [CAUTION] 1, For safety, use two type of power source for cleaning (AC adaptor and full capacity of battery)
- 2, Do not use a brush-less blower and a spray type blower to clean the CCD because there is a possibility that dust enters into the inside of CCD.

- (1)Cut the Clean wipe-P about 1/4 (50x105mm) and hold the Clean wipe-P 7-8mm width.



- (2) Turn the main SW to ON and remove the lens.
- (3) Set [Sensor Cleaning] on the Main menu to ON.
- (4) Select [Mirror up] on the [Sensor Cleaning] screen by the four-way controller.
- (5) Press the OK button. The mirror is locked in the up position.
- (6) Dip Clean wipe-P: 95901 A15 in the Solvent.
- (7) Wipe the surface of CCD from upper left to bottom and repeat 3-4 times until lower right.
You can confirm dust or trace of wipe by cleaning at under the bright light source.
- (8) Turn off the power and return to step (1) of the confirmation then confirm dust.

[Supplement] Dust on the CCD

Cause of dust into the camera. → Dust enters from outside of the camera when changing the lens. Dust stick by moving mirror or shutter.

According to CCD characteristic the static electricity occurs when taking a picture and so the condition is dust stick easily. Besides customer can find dust easily by viewing image by the computer.

It is very difficult to remove dust completely therefore, before cleaning the camera, explain to customer for cleaning as much as possible.

26-8. Default setting

*This setting is initialized camera as condition of product shipment.

[Required equipment] SD card (for Default setting), AC adaptor

- (1) Turn the main SW to OFF and then connect the AC adaptor to the camera.
- (2) Insert the SD card (for Default setting) into the camera.
- (3) Turn the main SW to ON while the SD card cover is opened. The Default setting will start with blinking the access lamp.
- (4) After **COMPLETE...** is appeared, turn the main switch to OFF and remove the SD card from the camera.
- (5) [Initial Setting] will be displayed on the LCD monitor when the main SW is turned ON.

26-9. FW version up

Version up latest FW if necessary, Refer to [FW Firmware]

FW Firmware

Checking Firmware Version

1. Checking FW version for customer

- (1) Turn the main switch to ON while pressing **MENU** button. The firmware version for customer **VER: x. x x** will be displayed on the LCD monitor for 5 seconds.

1-2. Checking FW version for Service

[Required equipment] SD card x2 (FW version check for [ON] and [OFF])

- (1) Turn the main switch to OFF.
 - (2) Insert the SD card for **FW version check [ON]** into the camera.
 - (3) Turn the main switch to ON while SD card cover is opened. Access lamp will blink for about 3 seconds.
 - (4) After the access lamp is disappeared, turn the main switch to OFF and remove the SD card from the camera.
 - (5) Turn the main switch to ON while pressing **MENU** button. The detailed firmware version (full version of CPU, DSP) **VER: x. xx. xx. xx** will be displayed on the LCD monitor for 5 seconds.
- [CAUTION] Cancel the “FW version check” according to the following after confirming the version of FW.

- (6) Turn the main switch to OFF.
- (7) Insert the SD card for FW version-check [OFF] into the camera.
- (8) Turn the main switch to ON while SD card cover is opened. Access lamp will blink for about 3 seconds.
- (9) After the access lamp is disappeared, turn the main switch to OFF and remove the SD card from the camera.
- (10) Turn the main switch to ON while pressing MENU button. Confirm that the firmware version is displayed on the LCD monitor as VER: x. x x If not, repeat a cancellation.

2. Updating Firmware Version (1)

[Required equipment]

Latest product Firmware for service (SD Card),
AC adaptor, fully charged battery.

[CAUTION] 1. If power is shut down during updating firmware,
electric part in the camera will be damaged.
2. When executing this updating, the camera will be
set default setting. (Menu, Custom function,
Language, Date / Time)

- (1) Install the battery and connect the AC adaptor to the camera.
Then turn the main switch to OFF.
- (2) Insert the SD card into the camera.
- (3) The SD card cover must open until installation is completed.
- (4) Turn the main switch to ON.

(5) FW version (CPU, DSP) will be appeared on the LCD monitor as shown in the figure.

If you cancel the updating, disconnect the all power at this point.

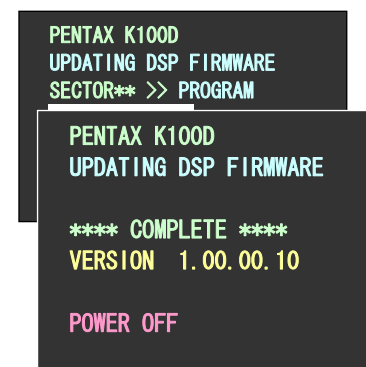
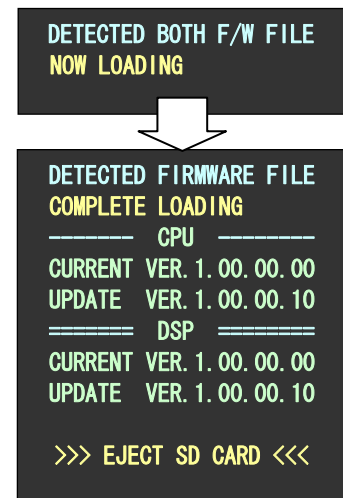
(6) Remove the SD card when the message [>>> EJECT SD CARD <<<] is appeared then starting updating. (It takes approx 60sec for loading firmware)

[CAUTION] Do not turn OFF the camera while loading.

(7) Turn the main switch to OFF when the following message [POWER OFF] is appeared.

(Updating is completed)

- (8) Insert the SD card into the camera again then
turn on the power condition with opening SD
card cover.
- (9) Confirm that the latest version is displayed on
CURRENT version. (Example: VER.1.00.00.15)
- (10) Remove battery and disconnect AC adapter
without removing the SD card.
- (11) At the last remove the SD card.



3. Updating Firmware Version (2)

[Required equipment] Latest product Firmware for customer update (SD card), AC adaptor, fully charged battery.

[CAUTION]

1. If power is shut down during updating firmware, electric part in the camera will be damaged.
2. When executing this updating, the camera will not be set default setting.

- (1) Install the battery and connect the AC adaptor to the camera.
- (2) Insert the SD card into the camera.
- (3) Closes the SD card cover.
- (4) Turn the main switch to ON while pressing [MENU] button.
- (5) When program update screen is displayed as shown in figure.

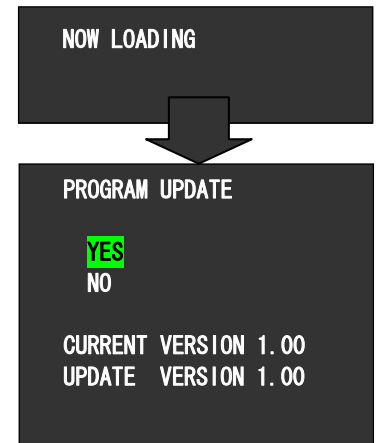
Select [YES] by pressing the four-way key then press OK.

Update will be started. (It takes approx. 60sec for loading firmware)

[CAUTION] Do not turn OFF the camera while loading.

* FW version for customer is displayed at this point.

- (6) When [COMPLETE] is displayed, turn the camera OFF.
(Updating is completed)



TECHNICAL INFORMATION

Battery consumption current

Condition : Lens [FA lens, A position], each mode and setting is default setting.

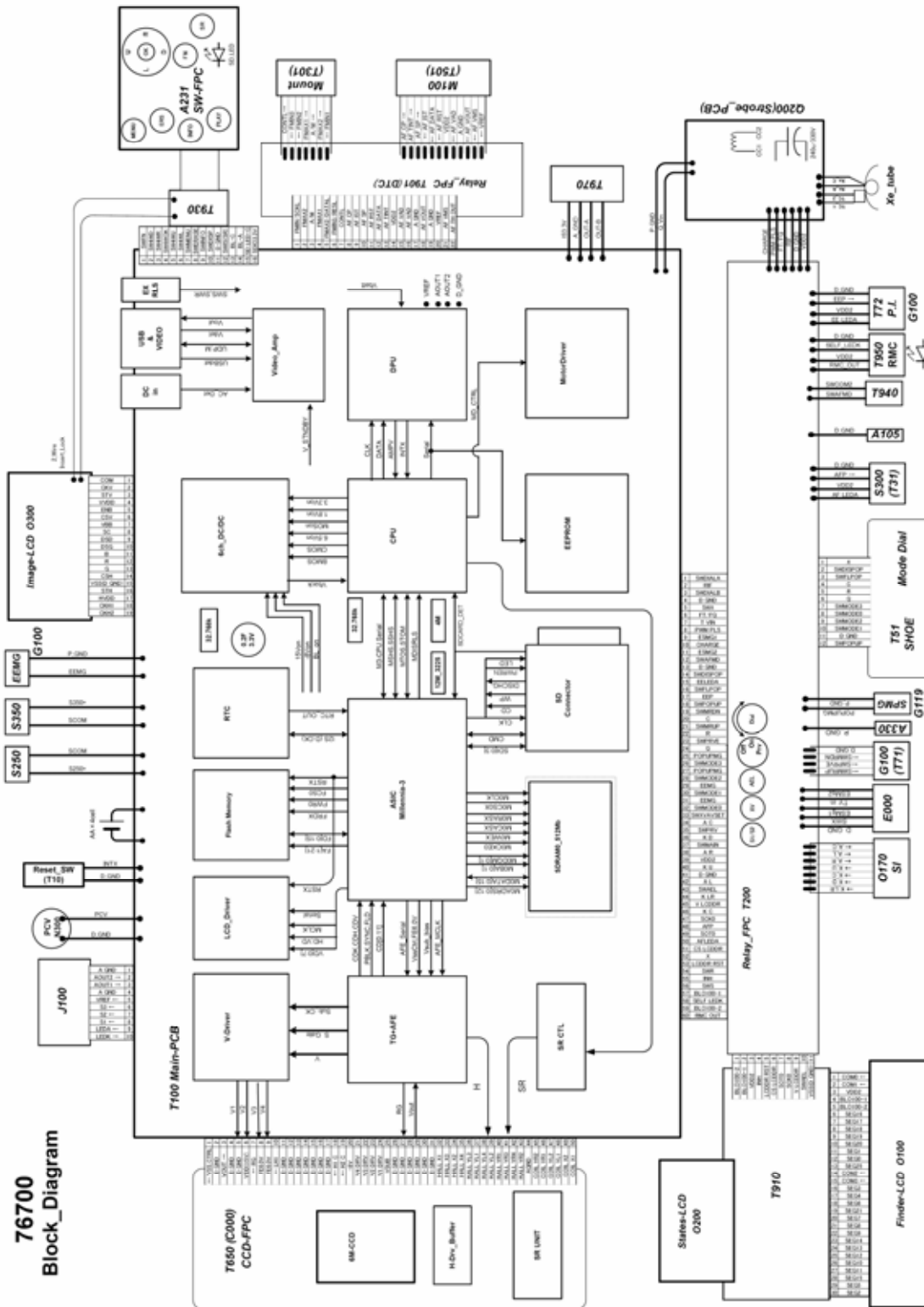
Lens---- ○ : With × : Without

SD card---- ○ : With × : Without

* 5,6 and 7 are peak value averages

	Condition of camera	Lens	SD card	Battery DC5.5V	AC Power supply DC6.5V
1	Main SW/OFF	○	×	50μA	10mA
		○	○	50μA	10mA
		×	×	50μA	10mA
2	After auto power OFF	○	×	250μA	10mA
		×	×	250μA	10mA
3	Main SW/ON (Meter OFF)	○	×	180mA	240mA
		○	○	180mA	240mA
		×	×	180mA	240mA
4	Main SW/ON (Meter ON)	○	×	370mA	420mA
		○	○	370mA	420mA
5	Charging Flash (Meter ON) *	○	×	2,100mA	2,200mA
6	Driving AF motor *	○	×	2,200mA	2,300mA
7	Releasing shutter *	○	×	3,000mA	3,200mA
		○	○	3,000mA	3,200mA
8	Recording image after release the shutter	○	○	350mA	350mA
9	Bulb	○	×	1,200mA	1,200mA
		○	○	1,200mA	1,200mA
10	Displaying menu (LCD)	○	×	500mA	450mA
11	Displaying menu (Video output)	○	×	400mA	350mA
12	Displaying playback image	○	○	500mA	450mA
13	Recording playback image in the card	○	○	500mA	450mA
14	Stand by for USB communication	○	○	300mA	300mA
15	Reading playback image in the card with USB communication	○	○	350mA	300mA

Block diagram



76700
Block_Diagram

Table of Error Code (Digital adjustment)

* It is the same as istD series.

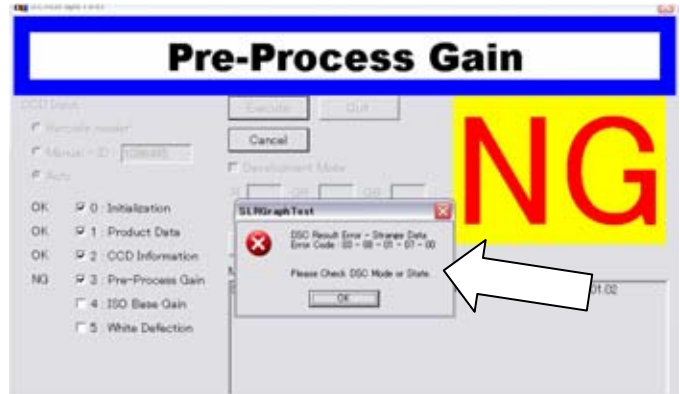
The error code is displayed as “aa-xx-xx-yy—zz” (example : 03-07-01-07-00) to explain the detailed error.

aa : Adjustment item when error is happened

xx : Not use in service

yy : Type of error

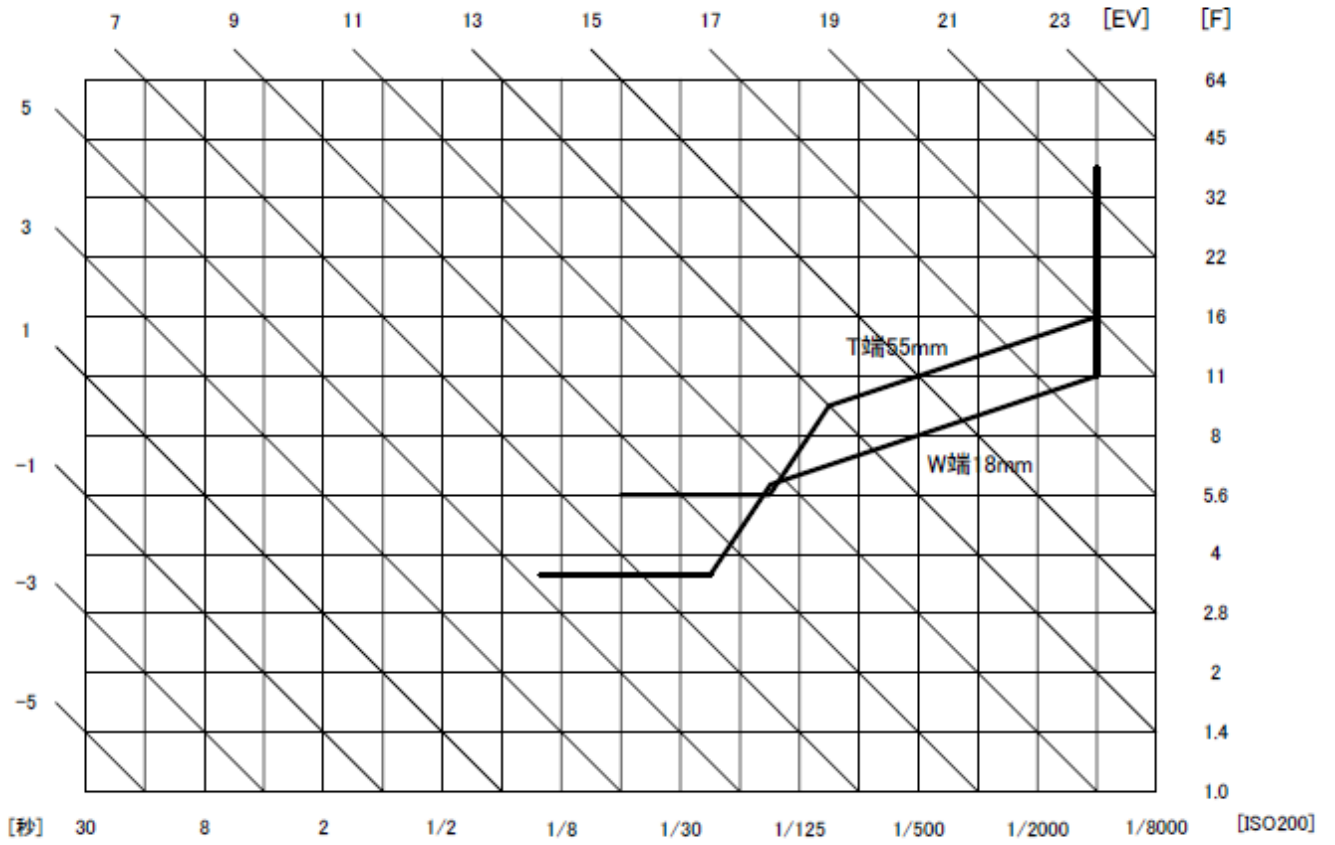
zz : Contents of error



(aa)		(xx)		(xx)		(yy)		(zz)	
00	Initialization	-	NA	-	NA	00	Success	-	-
01	Product Information					01	USB/RS-232C	00	Not found
02	CCD Information							01	Wrong communication
03	Pre-Process Gain							02	Not communicate
04	ISO Base Gain					02	File	00	Not found file
05	W Defect Compensation							01	Not accessed
		02	Not correct format						
		03	Out of range						
				04	Out of range number				
		03	AP Parameter	00	Out of range value				
				01	Not correct format				
		04	AP Execution	00	Not supported				
		05	DSC	00	Not executed				
				01	Not correct				
		06	DSC Execution	00	Not supported				
				01	Rejected				
				02	Strange parameter				
		07	DSC Result	00	Strange data				
				01	Not correct mode				
				02	Wrong CPU state				
		08	Adjustment	00	Too small				
				01	Too large				
		09	DSC State	00	Wrong version				
				01	Wrong adjustment order				

AE Program line (normal) and APEX chart (ISO200)

* Standard program exposure mode (DA F 3.5-5.6 / 18-55mm)



K100D SR Features

1. The PENTAX Shake Reduction (SR) feature is an electromagnetically controlled system built into the body to detect handheld camera shake and compensates by moving a free floating image sensor. Unlike other DSLR optical anti-shake systems, this SR system delivers shake reduction with *all* PENTAX lenses ever manufactured without requiring a special series of bulky, expensive optics.

Over 30 patents have been filed for this SR system, which uses a ball-bearing-mounted oscillator unit with four electromagnets that hold the free-floating image sensor. Angular velocity sensors detect camera movement and relay the amount of compensation necessary to the electromagnets that move the sensor to compensate for any shake.

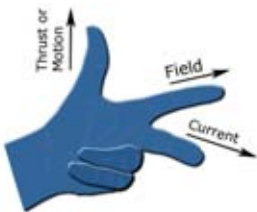
Power is generated in the direction decided passing an electric current between the coil installed in a central plate according to rule of Fleming's left hand.

Fleming's left hand rule

The **Thumb** represents F - **Thrust** (or resulting **Motion**).

The **First finger** represents B - **Field**.

The **Second finger** represents I or V - **Current** (in the classical direction, from [positive](#) to [negative](#)).



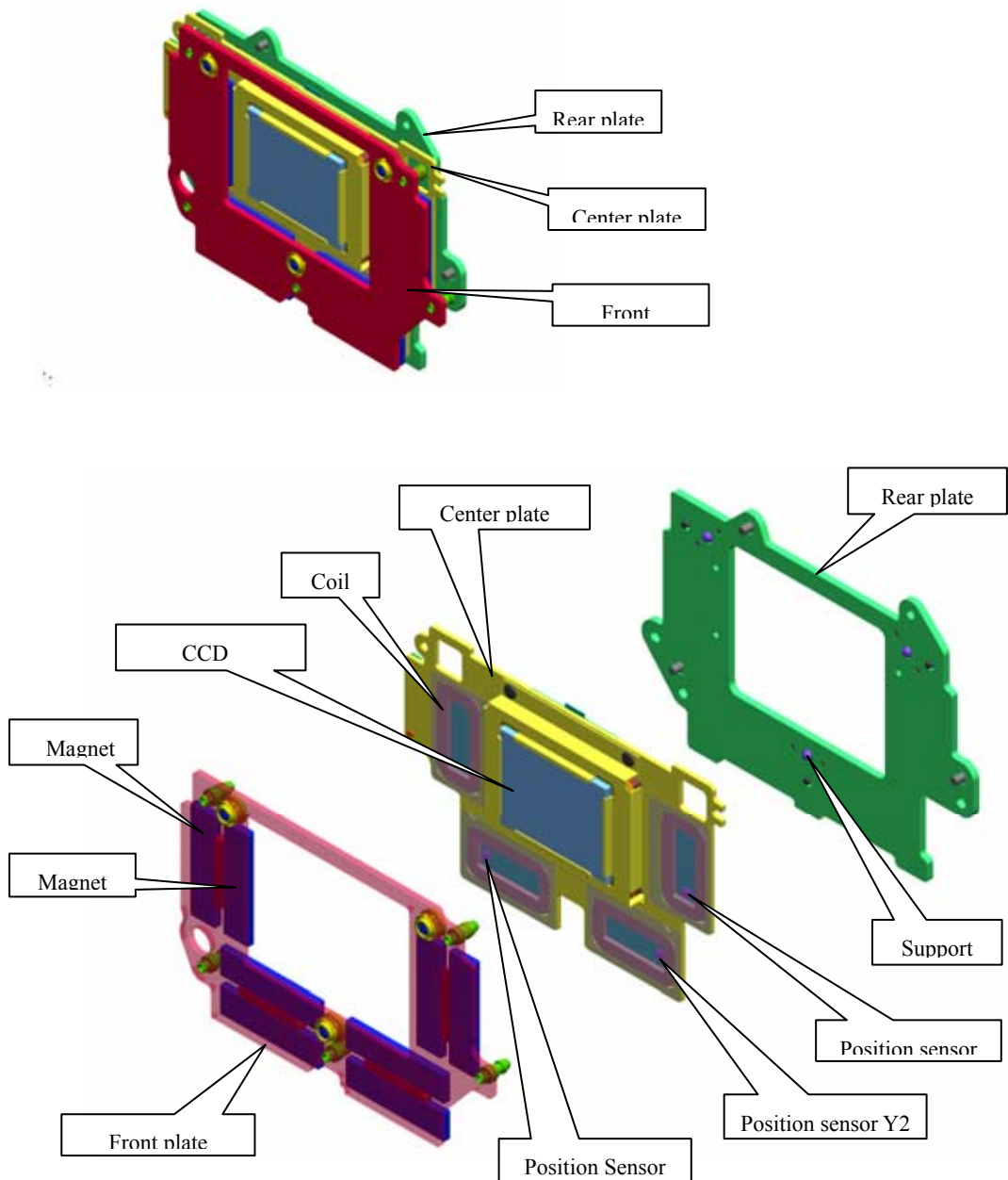
As a result, photographers can capture sharp images at a shutter speed that is two stops slower (e.g. 1/15 sec instead of 1/60 sec with a standard lens) than would otherwise be possible. The SR system provides a crucial advantage when shooting handheld with telephoto or tele-zoom lenses, at macro distances, or any other situation that magnifies the effects of camera shake. The SR system also helps considerably when taking non-flash pictures indoors or at dusk or other low light situations without using a tripod.

Additional Advantages of the PENTAX SR System

- Since the SR system is activated only when you press the shutter release, any effect on battery consumption is negligible.
- PENTAX SR is optional. You can leave SR on permanently, turning it off only when using a tripod or panning (deliberately moving the camera in the direction of subject motion to blur the background).

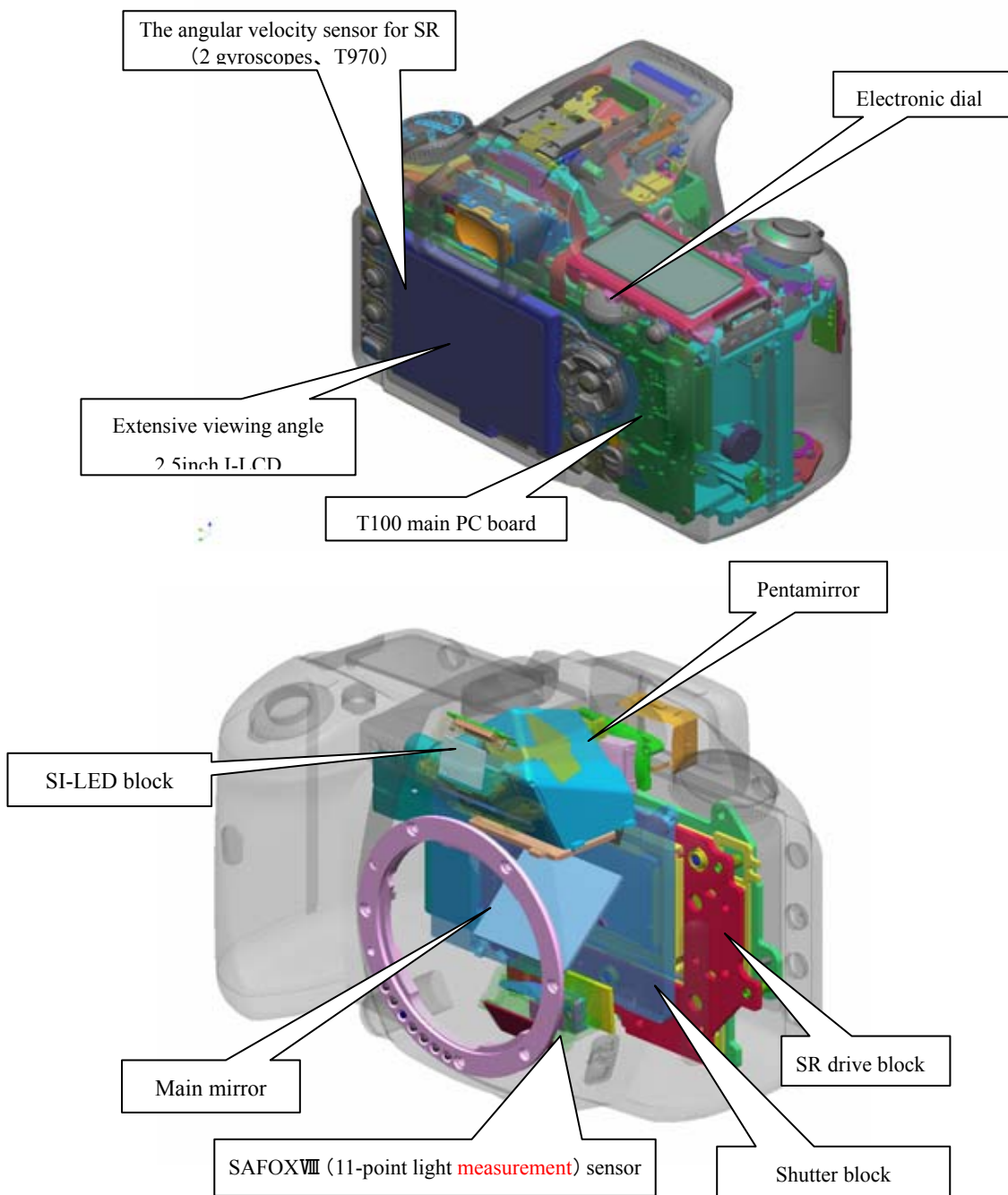
- Performance capabilities such as auto-focus speed, shutter lag time and continuous shooting rate are unaffected by the SR system because its operation is instantaneous, occurring within the normal exposure interval.
- By building the Shake Reduction system into the body, the PENTAX SR system provides maximum flexibility and requires no compromises in optical quality.
- To provide optimal Shake Reduction, the camera must “know” the focal length of the lens in use. PENTAX F, FA, D-FA, and DA series lenses automatically relay focal length information to the camera. With older lenses, the PENTAX K100D allows users to manually input focal length information via the Shake Reduction menu which allows focal lengths all the way from 8mm to 800mm

K100D, SR(Shake Reduction)



2. This new digital SLR camera combines 6.1 effective megapixels with a host of advanced technologies — including a PENTAX-original Shake Reduction (SR) system — to deliver high-quality digital SLR photography and user-friendly operations to all levels of photographers.

The K100D incorporates a large 2.5-inch color LCD monitor on its back panel. Its wide-view design allows the photographer to check the monitor image over 140 degrees vertically and horizontally, ensuring effortless image viewing even from a diagonal position. With a total of approximately 210,000 pixels, it also offers digital zooming of playback images up to 12 times for easy confirmation of the image's focusing status and details. The large monitor size allows for large letters, digits and icons on the menu screens to facilitate menu confirmation and camera operations. In addition, the color scheme between the menu listings and the background is optimized for each menu screen to assure at-a-glance confirmation, even under varying shooting conditions.



3. 11-point wide-frame AF to capture off-center subjects in crisp focus

The K100D's sophisticated SAFOX VIII autofocus system features 11 sensor points (with nine cross-type sensors in the middle) to automatically focus on the subject with utmost precision, even when it is positioned off center. The in-focus sensor point is automatically superimposed in red in the viewfinder for at-a-glance confirmation. This high-precision AF system offers a choice of two AF modes: the conventional single AF, and the continuous AF,** which maintains focus on the moving subject as long as the shutter release button is pressed halfway down.

4. Auto sensitivity control up to 3200 standard output sensitivity

The K100D features an auto sensitivity control function, which automatically sets the optimum standard output sensitivity — up to 3200, which is the highest automatic setting in its class — based on such data as the subject's brightness level and the lens' focal length. Since this function allows the use of higher shutter speeds in poor lighting situations (such as indoor sports events and night scenes), it helps the photographer to effectively reduce camera shake and prevent blurred images.

5. Upgraded standard software package

The *K100D's* standard software package consists of the **PENTAX PHOTO Laboratory 3** that features the reliable SILKYPIX image-processing engine (developed by ICHIKAWA SOFT LABORATORY) for RAW data processing, and the **PENTAX PHOTO Browser 3** that offers faster data processing speed and better operability than the previous version.

Information of Jigs, Tools and Testers for K100D

Order No.

* Exclusive use for *K100D(76700)

Program soft for 76700 (For SRL/digital, supply with CD-ROM)

No.95901-P408

Program soft for 76700 (SR function, supply with CD-ROM)

No. 95901

Temporary bottom cover (Hand made) --- Refer to the Method for making temporarily bottom cover

Temporary battery cover (For battery adaptor, Hand made) --- Refer to the Method for making temporarily battery cover

● Soldering for leaded free

Slodering iron, controller (No. 937-2 Static electricity measure article)

No.95901-K284

Lead free solder

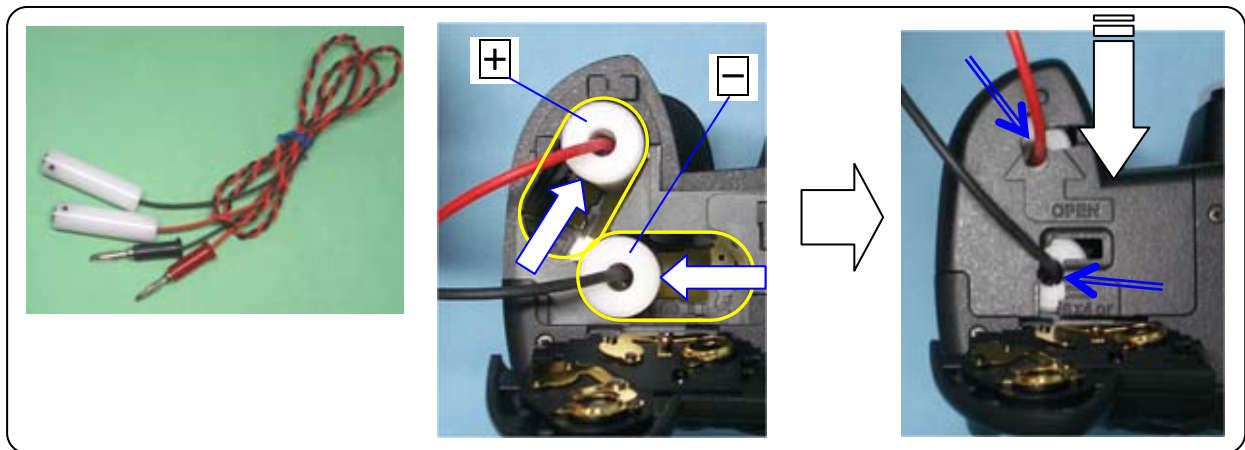
No.95901-K286

*Common in use with *istDS(76450) / *istDL(76570)

Battery adaptor for 76450

No.95901-D23

- How to use a battery adaptor and a temporary battery cover



SD card 8 pcs (For adjustment 7 pcs : 8MB or more, For test 1pcs : 32MB or more) --- 16MB : No.95901-M99

Personal computer(Windows 2000 or XP, support USB)

Light source (LB3300)

No.95901-M86

(A light color temperature : 2,850K \pm 10,brightness : LV11.00)

Master lens for 76180 (For digital adjustment)

No.95901-D20

Diaphragm set ring F8 (KA-0-1A)

No.95901-N26


Color temperature tester (For correction of light source)

LV checker (For correction of light source LV 11.00)

Dark curtain (For digital adjustment)

DC code for 76180 (For connection of power supply, battery level adjustment)

No.95901-D21

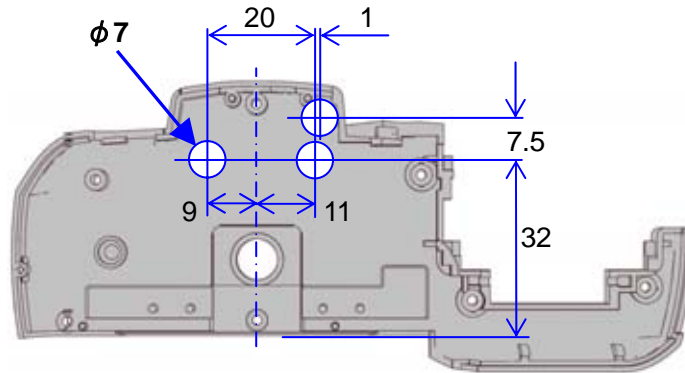
AC adaptor (D-AC10)	
USB cable (I-USB17)	
Video cable (I-VC28)	
Color video monitor (With a video input terminal)	
Clean wipe-P (For CCD cleaning paper)	60boxes: No.95901-A14 1 boxes : No.95901-A15
Light source for AE adjustment	
* Light value should equipped [LV6 · 8 · 10 · 12 · 16] or [LV6 · 9 · 12 · 15].	
AE master lens for LX (LML-240, 95901-D20 can be used)	No.95901-N27
AF positioning jig (Square) for 27830	No.95901-M521
AF positioning jig (Cross) for 27250	No.95901-M514
2m AF 2 charts for 27830 (Attached in the service manual for 27830)	
Focus master lens for 2m (ML-259)	No.95901-N24
1 st mirror angle adjusting jig for 45°	No.95901-J104
2 nd mirror angle adjusting jig for 27830	No.95901-J137
(Additional processing is required, refer to the additional processing)	
Mirror positioning scope	No.95901-N49
Hexagonal driver 1.5mm (HD-M1.5)	No.95901-K72
FA(F) 35-80mm F4-5.6 (For AF adj)	
D-FA Macro 50mm F2.8 (For AF adj)	
FA 50mm F1.4 (For checking)	
Remote control F (For checking)	
Cable release swich CS-205 (For checking)	
Jig for flash pop-up (Hand made, same as 27550 MZ-7)	
Hexagonal driver 0.9mm (HD-M0.9) For flash positioning adj	No.95901-K283
	
Collimator chart with 3 lines (OCRC-259, For checking AF focus)	No.95901-M21
Focus master lens for 35mm (KMK-01)	No.95901-N17
Dial gauge comparator (PH-2)	No.95901-N1
Block gauge for 35mm (229N-A01-A2)	No.95901-N4
Mount block (1620-A) / mount block spacer	No.95901-N47
Mount block spacer (23600N-A01, A104-A-A)	
Mount spacer holder (23600N-A01, A104-A-B)	No.95901
1000mm Collimator	
Pen light (For checking photo sensor)	
Regulated DC power supply (capable current at least 3A and 8V)	
Circuit tester	

Method for making the hand made jig

1. Method for making temporarily bottom cover

Preparation: A401 bottom cover

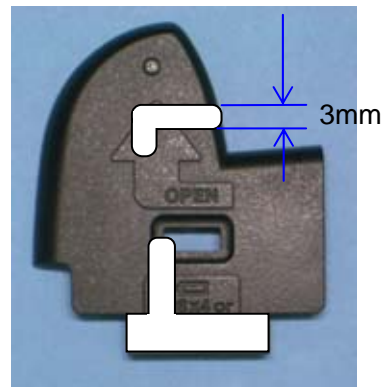
- ① Cut off part of bottom cover as shown in figure.



2. Method for making temporarily battery cover (For battery adaptor)

Preparation: A412 battery cover

- ① Cut off part of battery cover as shown in figure.



3. Processing is added to mirror angle adjusting jig for 27830 (No.95901-J137)

- ① Cut off part of mirror angle adjusting jig for 27830 as shown in figure.

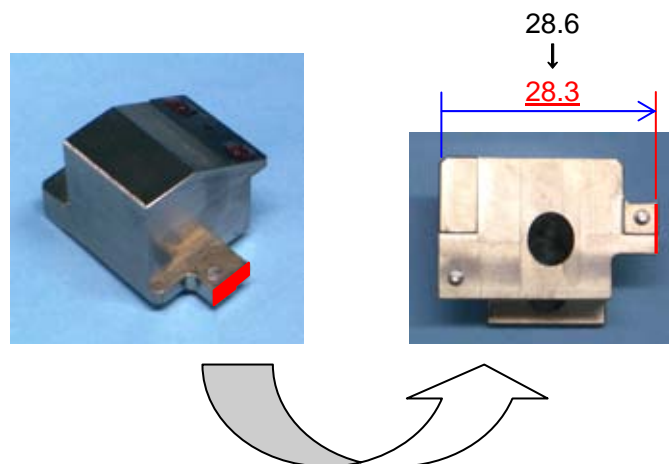
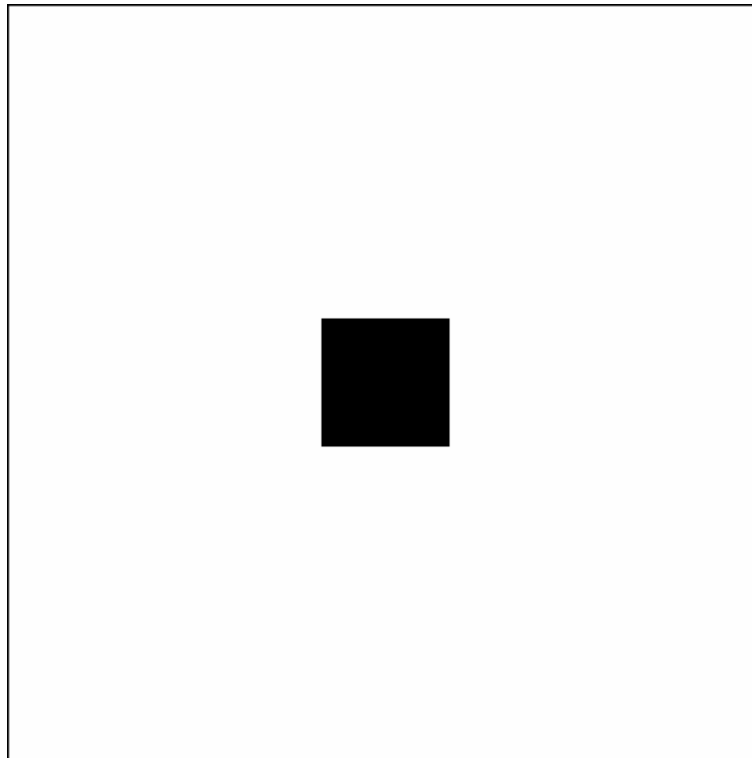


Chart for SR Gain adjustment

- (1) When print this chart, print out the page with high quality setting.
- (2) Size of the center of the chart ■ should be 17 x 17mm



AF confirmation chart and scale

* This conformation is apply for service

■ Scale for focus confirmation →

■ AF chart for confirmation ↓

