PENTAX™

Service Manual

ENGLISH

PENTAX *ist Ds

PRODUCT No. 76450

Overseas Support Section
Imaging System Business Headquarters
05-01 HH

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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 76450 (For Digital adjustment, contained CD-R)

Computer (for Digital adjustment)

SD card 6 pieces (8MB or above)

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

1. Prepare SD card (6 pcs) for confirming adjustment

Prepare SD card (6pcs).

(1) For product FW (Firmware) of *istDS (2 pcs) : use for service and updating FW for customer.

(2) For switch test.

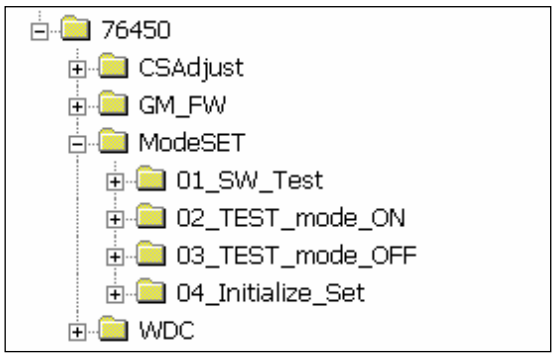
(3) For test mode ON.

(4) For test mode OFF.

(5) For Default setting. (Initialize)

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

(1) Copy the [76450] folder from the Programmed software contained in the CD-ROM to [C: drive] as shown in the picture below.



(2) 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.

(3) Copy the each file of [kb375b.bin] and [fwdc131b.bin] from [GM_FW] holder to two SD cards individually.

*[kb375b.bin] should be used for repairing the camera.

*[fwdc131b.bin] should be used for updating FW of customer's camera.

[CAUTION] You should use latest firmware whenever creating the SD cards for updating.

DISASSEMBLY AND ASSEMBLY

Outline of Disassembly and Assembly

1. Caution

(1) Be sure to use the conductive mat and wrist strap to prevent static failure of circuits.

(2) This product is used free lead 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 400º and exclusive use for free lead solder.
Also it is desirable to use antistatic soldering iron.

The temperature for tip of soldering iron must set between 330º ~ 350º for free lead 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

DISASSEMBLY AND ASSEMBLY PROCEDURES

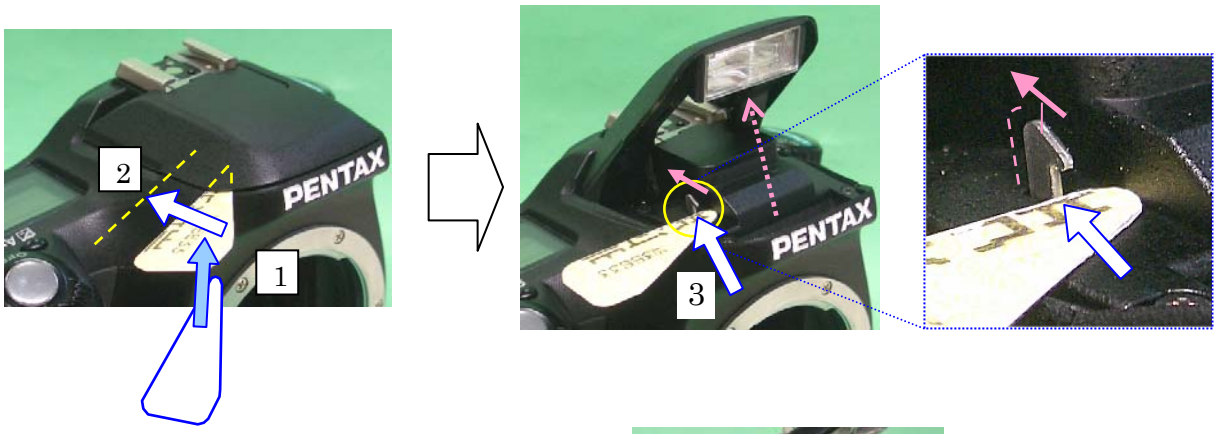
1. Disassembly procedure of main body

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

1. Pop-up the built- in flash

(1) 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.

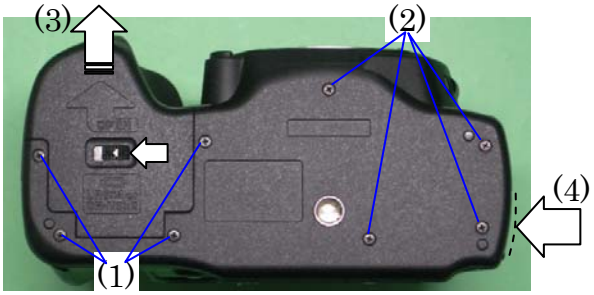
* If the camera does not pop-up the flash: Use flash pop-up tool as shown in figure bellow.
(The same tool as MZ-7)

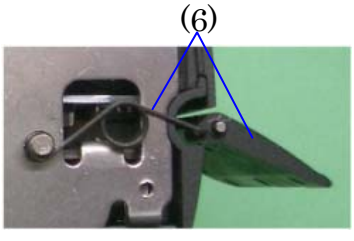


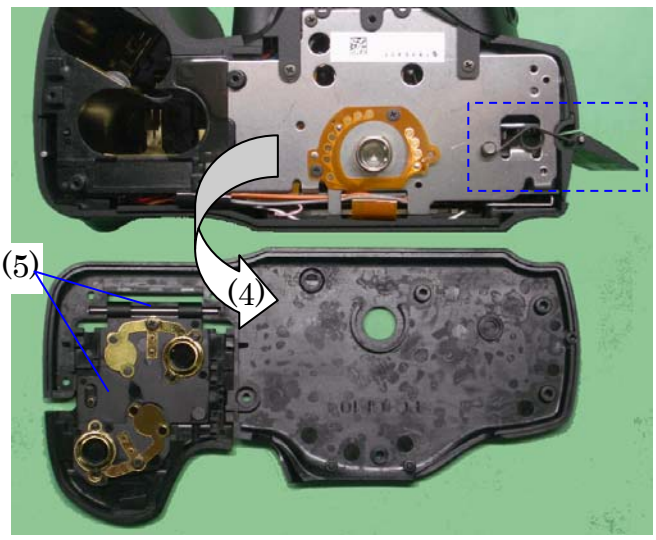
(2) Remove A73 (TY screw x2 4.5mm)

2. A401 (Bottom cover)

(1) A73 (TY screw x4 4.5mm)
(2) A67 (Screw x4 5mm) --- Hold the bottom cover.
(3) Open the battery cover while holding bottom cover.
(4) Remove bottom cover while holding terminal cover.
(5) Battery cover and shaft
(6) A167 (spring) and 0-A165 (cover).

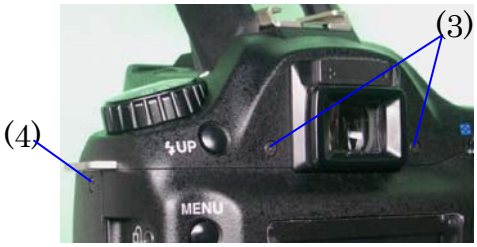


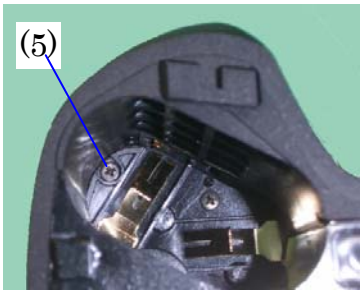




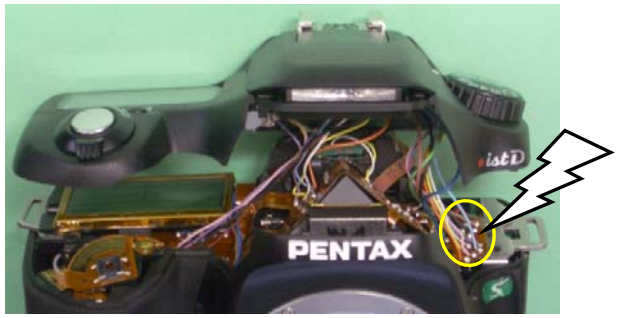
3. 0-A301 (Top cover)

(1) A73 (TY screw x2　4.5mm) --- Removed at section 1.- (2)
(2) A69 (TY screw　3.5mm)
(3) A72 (Screw x2　12mm)
(4) A73 (TY screw)
(5) TY-CNL-D 1.7x6.5
　　(Inside of Battery chamber)

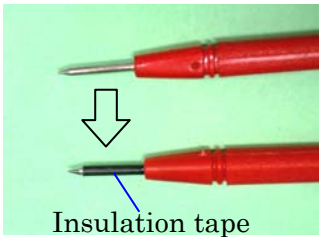




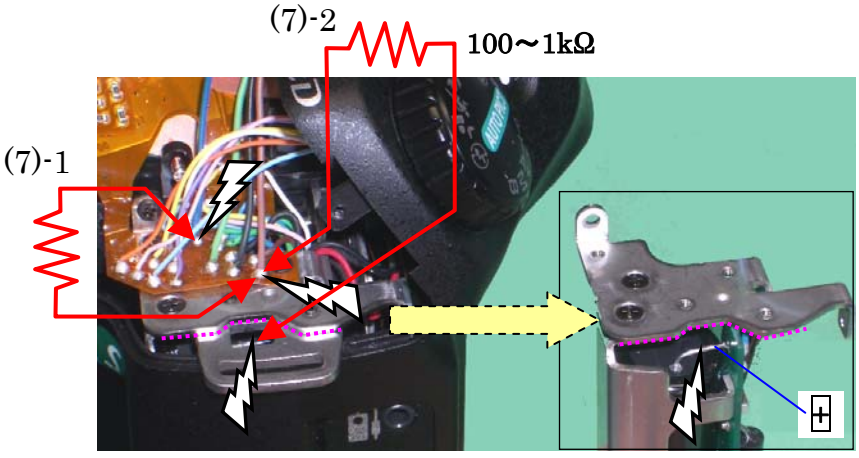
(6) Lift up top cover
[Caution]
Be careful short and electric shock when handling the camera

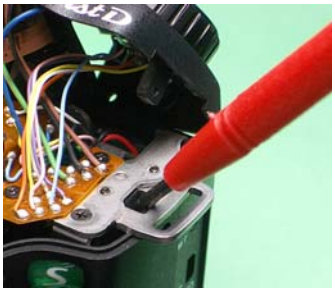


(7) Discharge the main capacitor
[Caution] To prevent short circuit with strap lug, isolate discharger or resister by insulation tape (except tip) as shown figure right. →

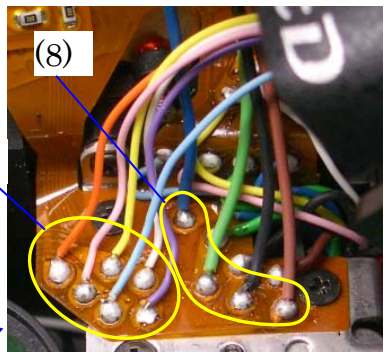


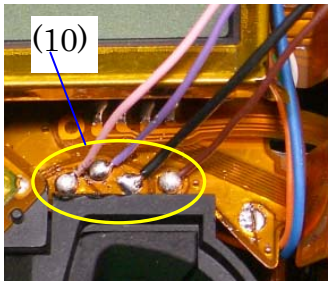
Discharge the main capacitor by using 100Ω-1kΩ resistor.(Two position)
(7)-1. Discharge between Blue and Brown lead wire land on T200.
(7)-2, Discharge between Brown lead wire land on T200 and (+) terminal of the main capacitor.

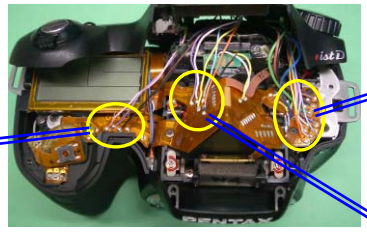


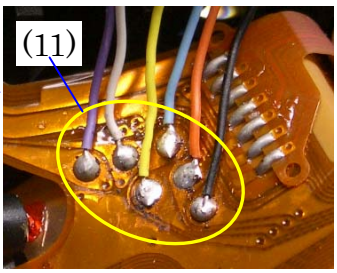


(8) Unsolder 4 lead wires (Blue, Green, Block, Brown/Q100)
(9) Unsolder 6 lead wires. (T21)
(10) Unsolder 4 lead wires (Pink, purple, Black, Brown))
[Caution] Do not melt the front cover by solder iron.
(11) Unsolder 6 lead wires (Purple, white, yellow, and sky blue Orange, Black)

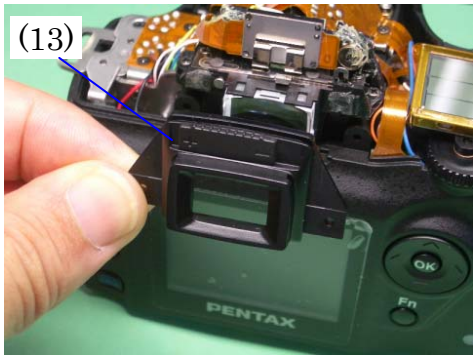






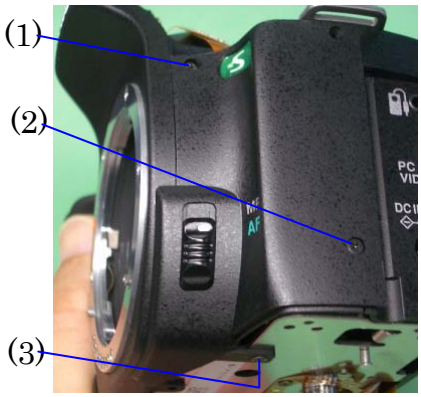


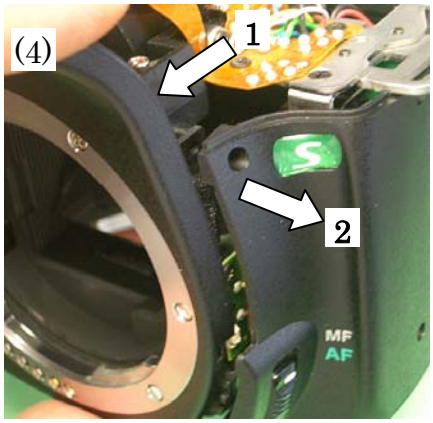
(12) 0-A301
(13) M311 (DT (5x5) x2)

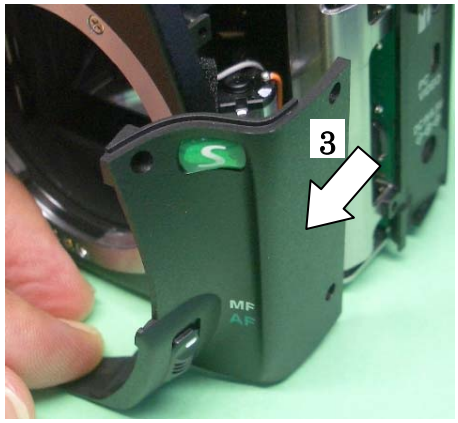


4. A161 (Forward right cover)

(1) A74 (TY screw 5.5mm)
(2) A62 (Screw 3.5mm)
(3) CNL-D 1.7x2.5
(4) Remove A161 as shown figure below.
(1→2→3)



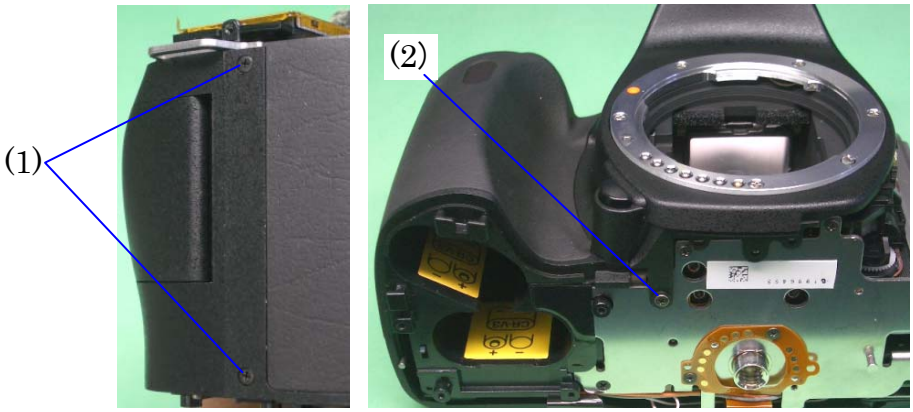




5. A150 (Front cover)

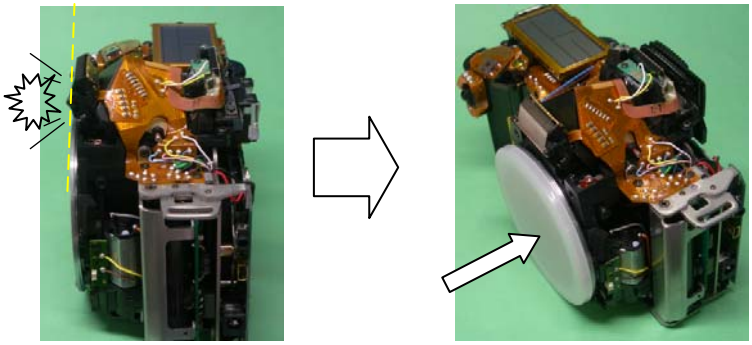
(1) A73 (TY screw x2 4.5mm)

(2) CNL-D 1.7x2.5



[Note]

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

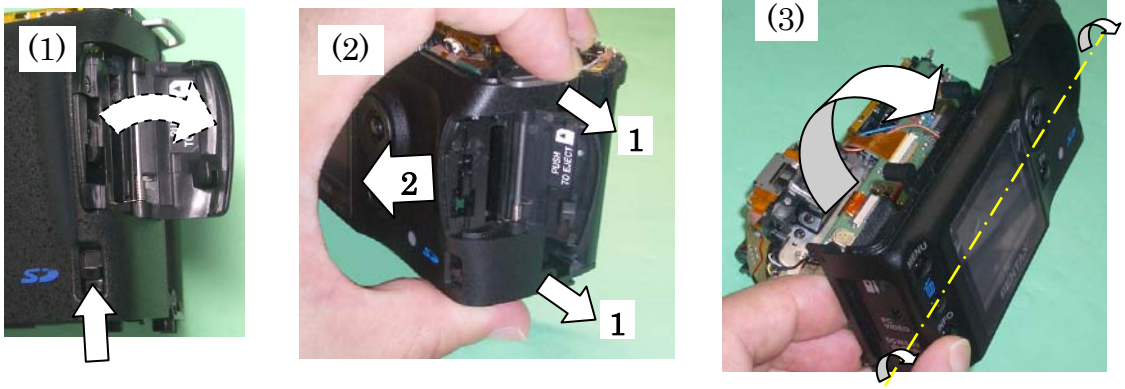


6. A201 (Back cover)

(1) Open the SD card cover.

(2) Pull to outside and release hook part then remove to backside while holding the camera as shown figure below.

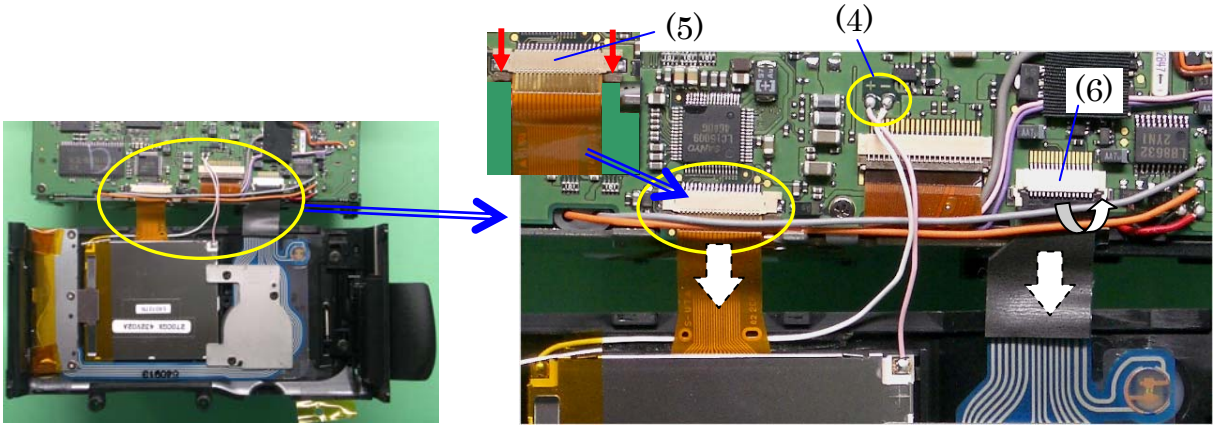
(3) Remove the terminal and lift up whole back cover.



(4) Unsolder 2 lead wires at PC board side. (Pink, White)

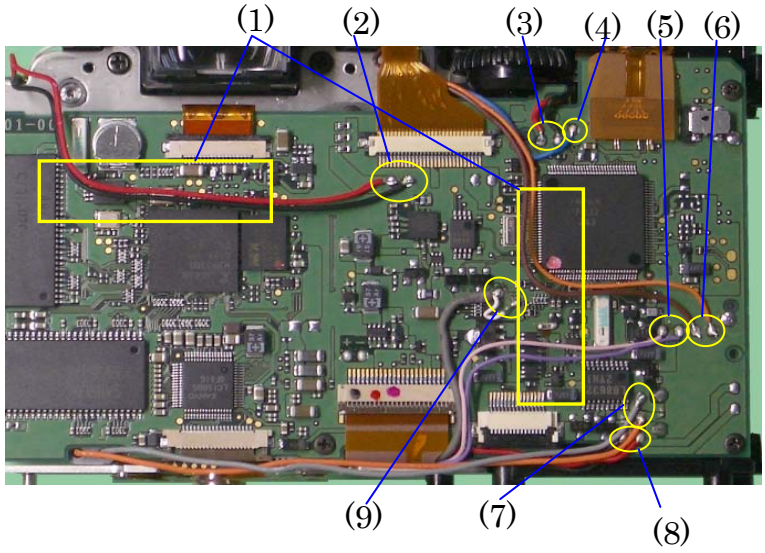
(5) Disconnect O301 flex from connector.(Slide lock connector)

(6) Disconnect A231 flex from connector. (Flip lock connector)



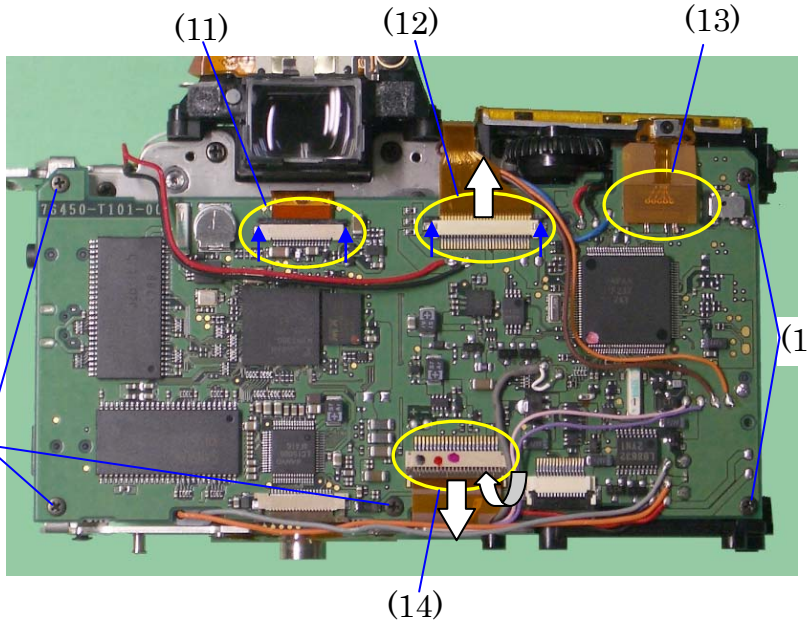
7. 0-T100 (Main PC board)

(1) BT (10x30) x2
(2) Lead wire x2 (Red, Black / Q200)
(3) Lead wire x2 (Red, Black / A14)
(4) Lead wire x1 (Blue / T200)
(5) Lead wire x2 (Pink, Purple / G100)
(6) Lead wire x2 (Brown, Orange / T200)
(7) Lead wire x2 (Gray, Orange / S300)
(8) Lead wire x2 (Red, Black / S250)
(9) Shield wire x2 (J200)
(10) Lead wire x2 (Yellow, Black / T10)
--- Reverse side of PC board on grip side

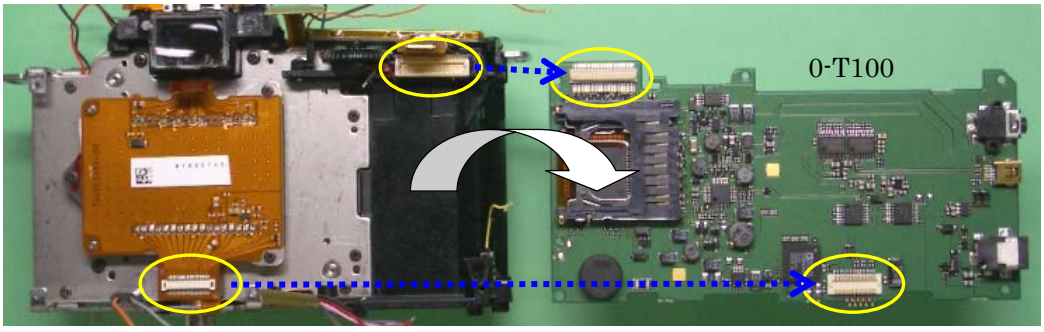


↓
(10)

(11) Disconnect T600 flex from connector.
(Slide lock connector)
(12) Disconnect O100 flex from connector.
(Slide lock connector)
(13) Disconnect T200 flex from connector.
(Plug-in type)
(14) Disconnect T901 flex from connector.
(Flip lock connector)
(15) TY-CNL-D1.7x3.5 x2
(16) CNL-D1.7x2.0 x3



(17) Remove 0-T100 while disconnecting T200 connector and T600 connector. (Plug-in type)

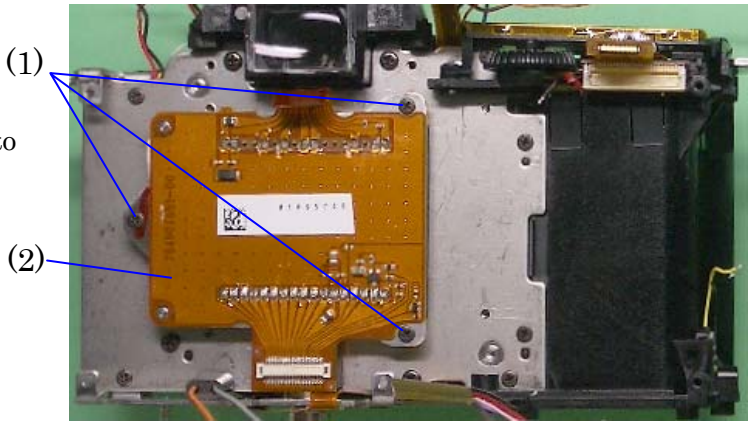


8. 0-T600 (CCD block)

(1) CNL-D1.7x2.5 x3

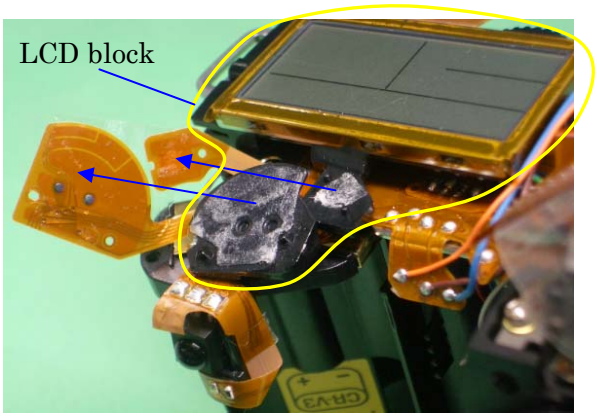
(2) 0-T600

[Note] After removing 0-T600, attention to shutter curtain for handling

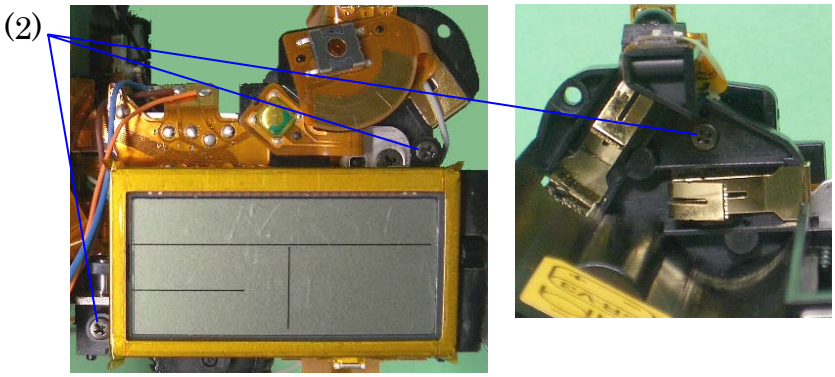


9. LCD block (LCD Panel)

(1) Peel off release SW flex and Av SW flex from double stick tape.



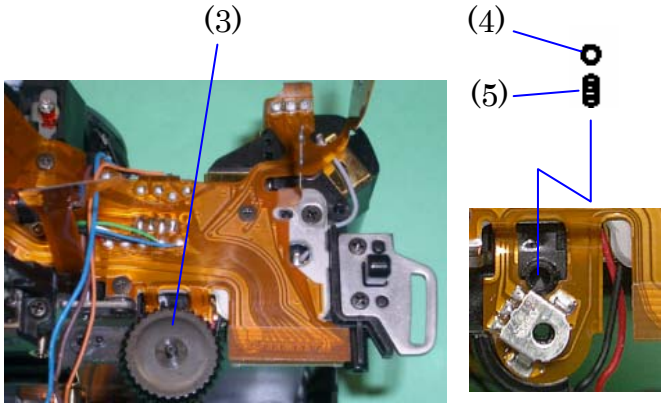
(2) TY-CNL-D1.7x4.5 x3



(3) A335

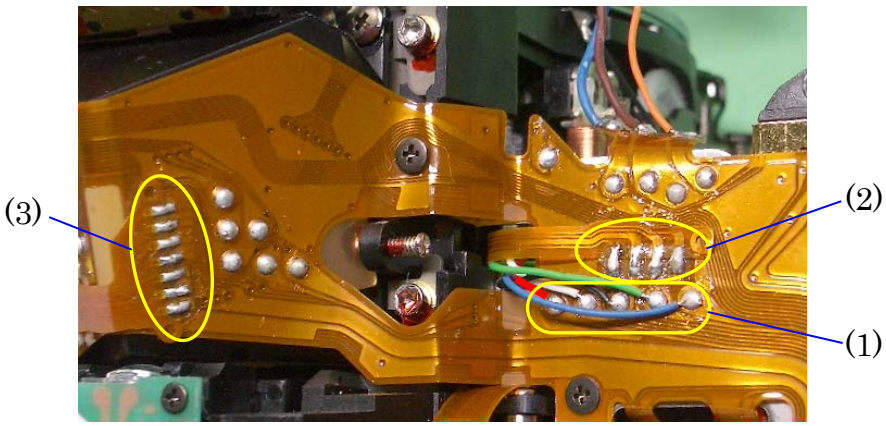
(4) BO2.0

(5) A17

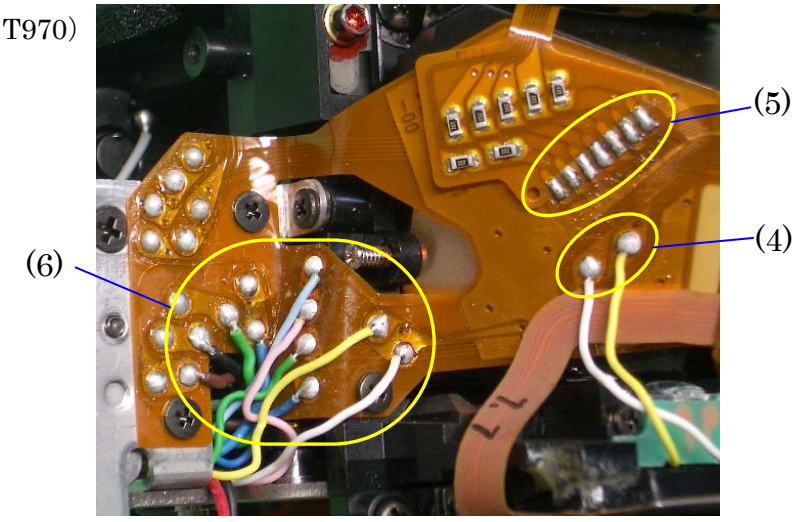


10. T200 (Upper flex block)

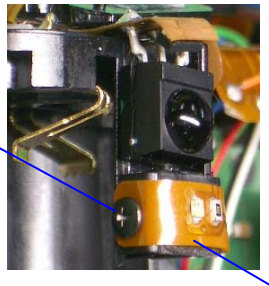
(1) Lead wire x5 (Red, White, Black, Green, Blue / E000)
(2) Unsolder land x4 (T71)
(3) Unsolder land x7(J 100)



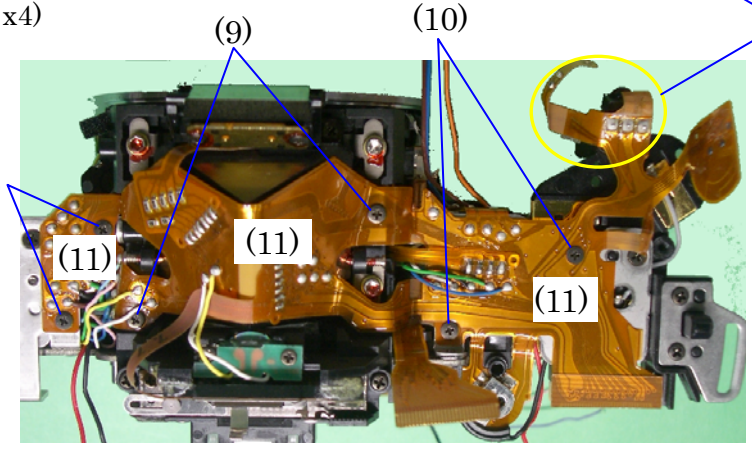
(4) Lead wire x2 (White, Yellow / T970)
(5) Land x7 (O173)
(6) Lead wire x10 (Q200)



(7) TY-CNL-D1.4x2.0
(8) Peel off flex from DT (5x5) around remote control receiver.

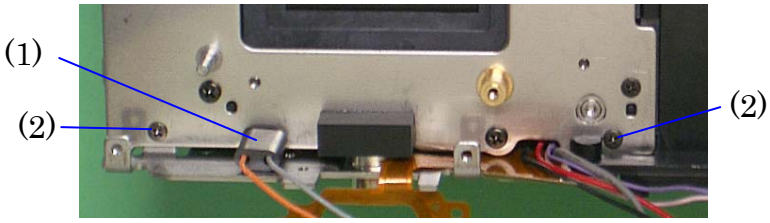


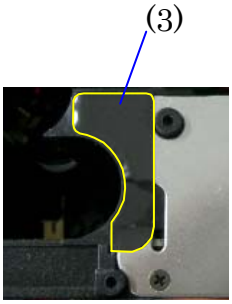
(9) TY-CNL-D1.4x2.5 x2
(10) A65 (Screw 1.4x1.6 x4)
(11) T200

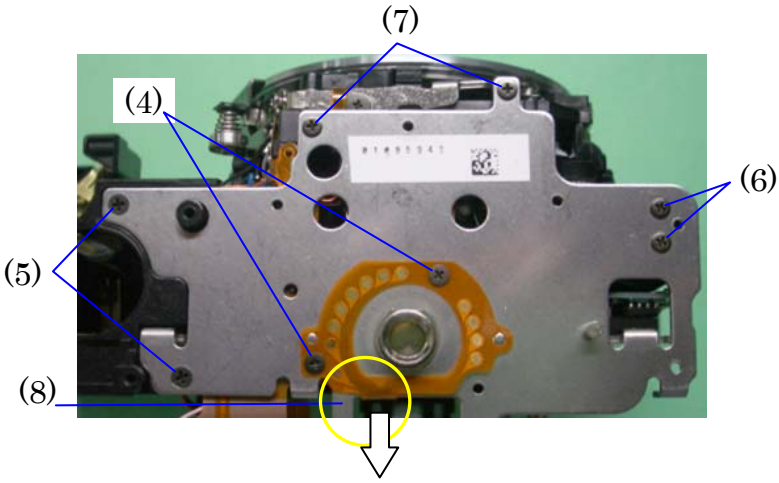


11. 0-A3 (Bottom plate assy)

(1) Remove S364 from DT (5x5)
(2) CNL-D1.7x2.5 x2
(3) Peel off A53
(4) A65 (Screw 1.4x1.6 x2)
(5) TY-CSM1.7x4.0 x2
(6) CNL-D1.7x2.5 x2
(7) TY-CNL-D1.7x4.0 x2
(8) Remove 0-A3 while arranging T901 to outside.





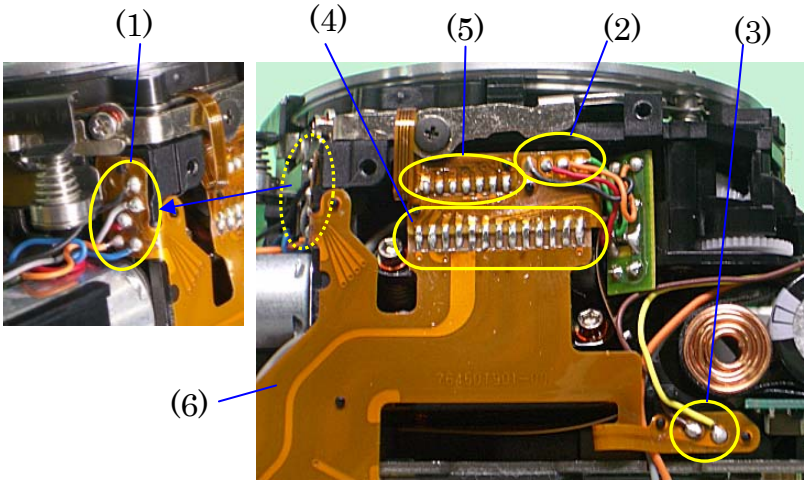


12. T901 (Lower flex board)

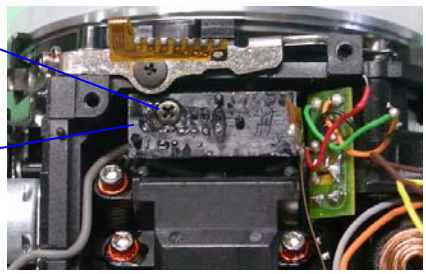
(1) Lead wire x5
(Black, Gray, Red, Orange, Blue)
(2) Lead wire x4
(Black, Red, Orange, Green)
(3) Lead wire x2 (Brawn, Yellow)

(4) Land x13 (M100)
(5) Land x7 (T301)

(6) T901

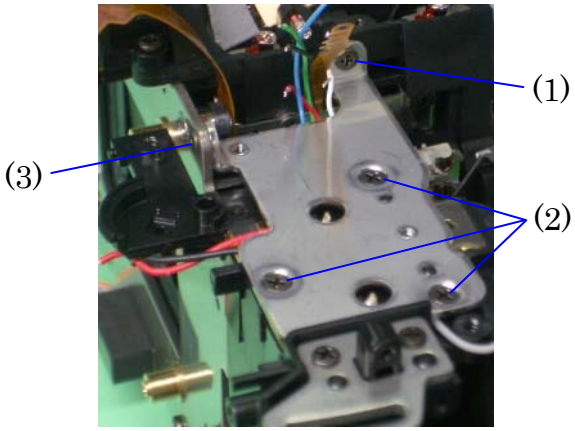


(7) TY-CNL-D1.7x3.5
(8) A141



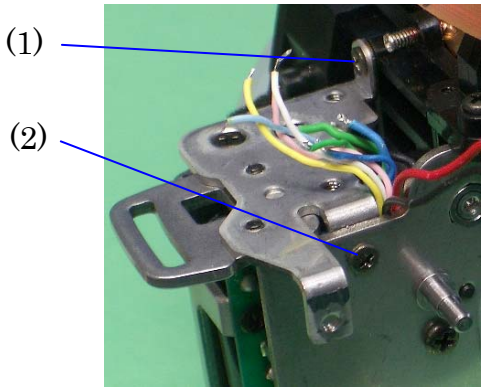
13. A6 (Left shoulder plate)

(1) TY-CNL-D1.7x4.0
(2) TY-CSM1.7x4.0 x3
(3) CNL-D1.7x2.5



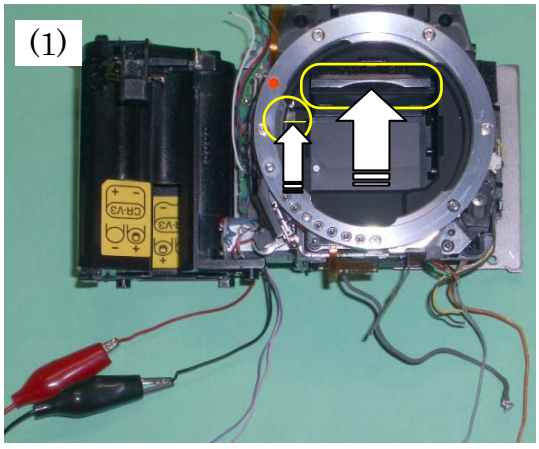
14. 0-Q200 (Flash PC board)/A5/A15

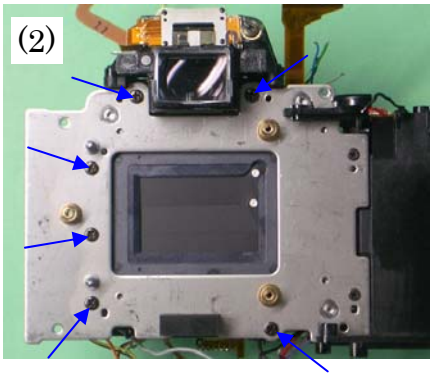
(1) TY-CNL-D1.7x4.0
(2) CNL-D1.7x2.5
(3) 0-Q200 /A5/A15



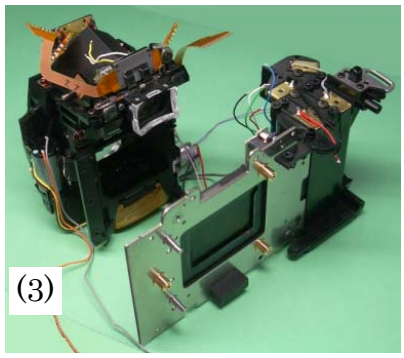
15. Front housing block

(1) Supply DC2-3V to 0-S250 (Mirror motor).
(Positive (+) on Red wire)
Set the front housing block to mirror up position.
(2) TY-CNM2.0x4.5 x6





(3) Remove main plate and battery chamber from front housing block.



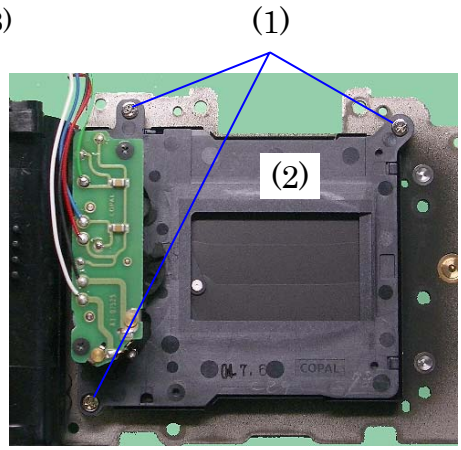
16. 0-E000 (Shutter block)

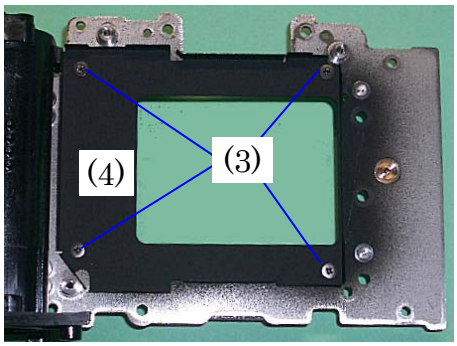
(1) A70 (shoulder screw x3)

(2) 0-E000

(3) A65 (Screw x4)

(4) A2

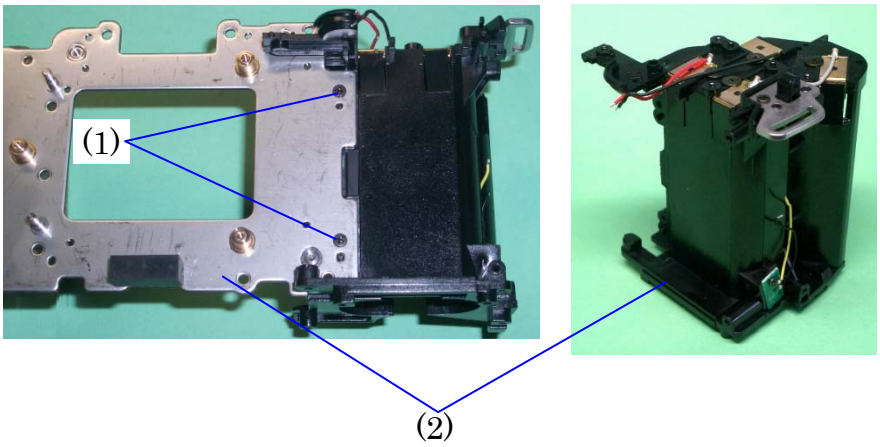




17. Main plate and battery chamber

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

(2) Main plate and battery chamber



2. Assembly and Disassembly procedure of front housing block

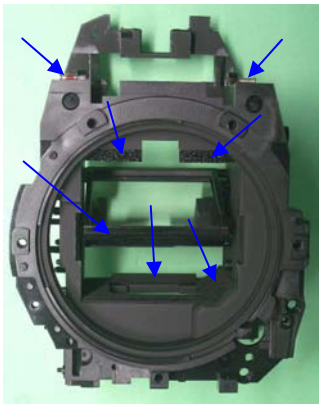
Disassemble the front housing block in reverse order of assembly procedures according to “Note of disassembly”.

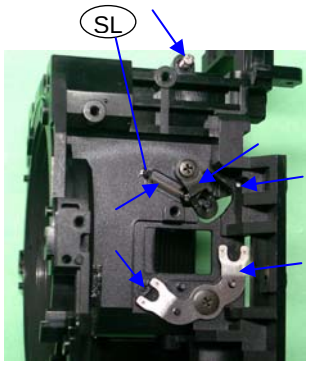
Assembly procedures

1. Front Housing Block

B65 x2, B41, M120, M16 x2
B58 x2, B59, TY-CNL-G1.7x2.0
0-B52、B66 (shaft)
--- Apply Dia bond 1663 at center of shaft about 1cm wide for fix B52.

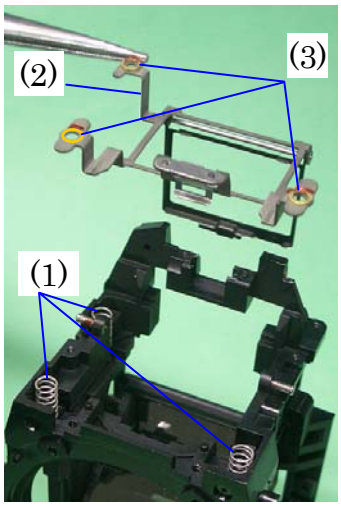
B63, B57, B62 (spring) --- Apply screw lock at shaft side.

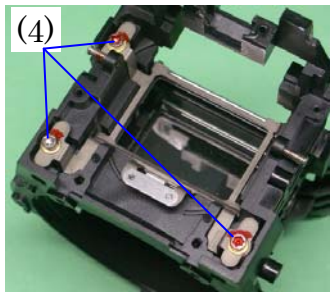




2. 0-M22

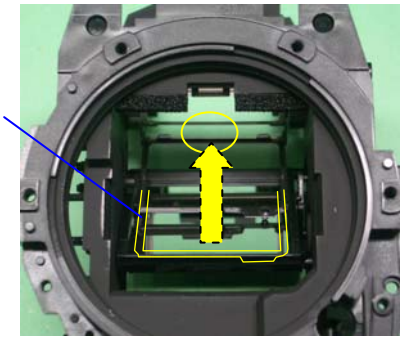
[Required equipment]
Hexagonal screwdriver 1.5mm
(1) M104 x3
(2) 0-M22 (0-M4, M23)
Install with unhook the hook of 0-M4
(3) W65 (t=0.5) x3
(4) M103 (adjusting screw x3)
(5) [Adj] Pre-adjusting the finder focus. Screw-in M103 (x3) until they stops, and then screw back two turns.

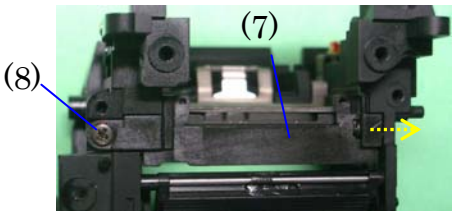




(6) Hook 0-M4

(7) Install M21 while positioning the boss.
(8) TY-CNL-D1.7x3.5

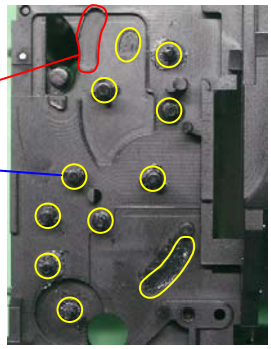




[Note of Disassembly]
Unhook 0-M4 (6) then remove 0-M22 (2)

3. 0-G100

(1) Apply G126 at 11 positions and apply L115 at one position.



(2) Install B20 to B11.

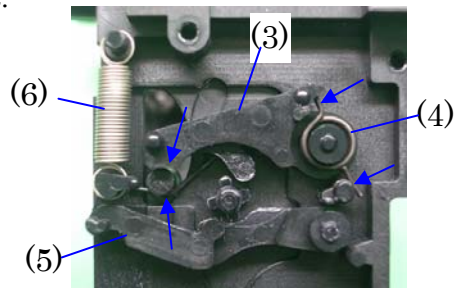
(3) B11--- Hook spring to shaft of mirror sheet.

[Note] Caution for come off spring.

(4) B19

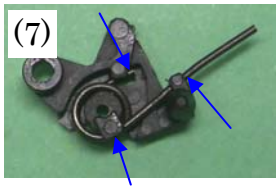
(5) B10

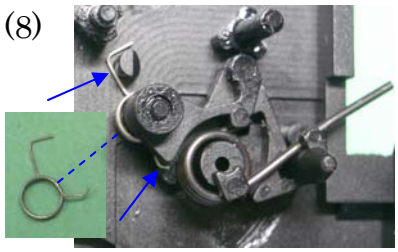
(6) B21



(7) Install B17 to B9.

(8) Install B18 and B9.





(9) 0-B8

--- Apply G126 to surface of cam.

(10) B7

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

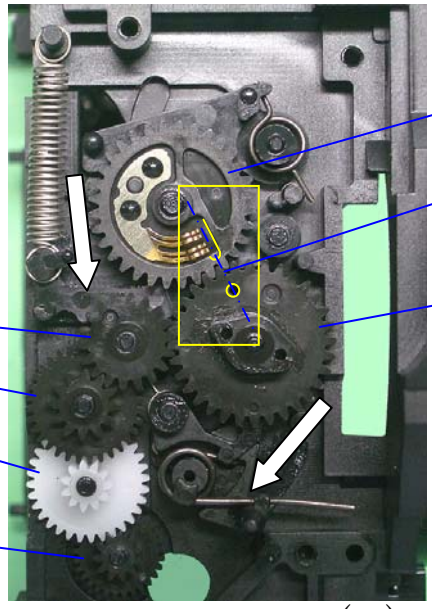
(11) Align the both hole of 0-B8 and B7.

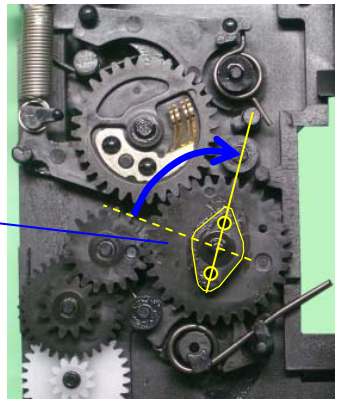
(12) B3

(13) B4

(14) B5

(15) B6

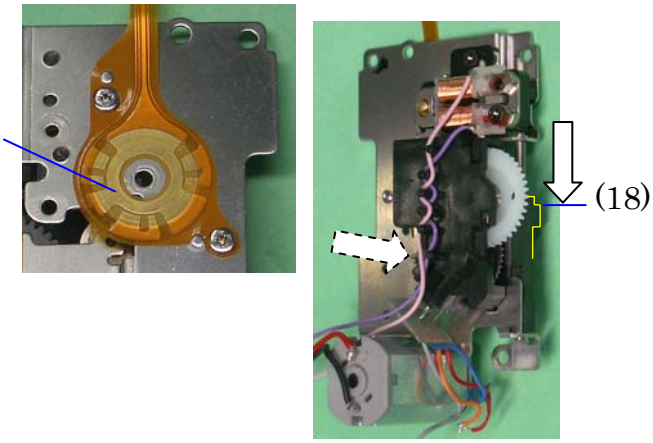




(16) Turn B7 clockwise until the arrow indicated in figure right.

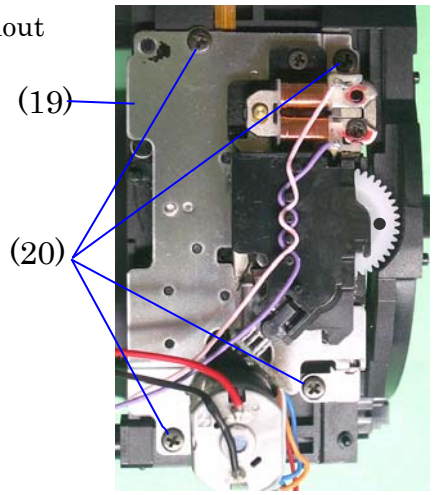
(17) Clean code plate by solvent and apply G151.

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



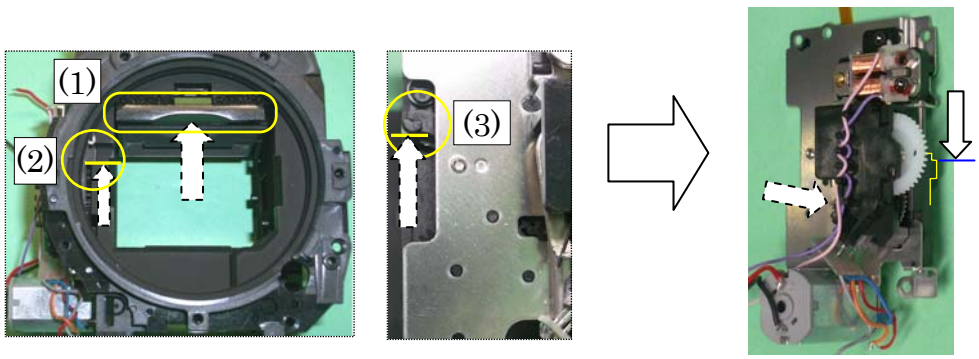
(19) G100 --- Surely install G100 without any gap between plate.

(20) TY-CNL-D1.7x3.0 x4



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

1. Supply DC1~2V to 0-S250 (Red lead wire: Positive) and set the mirror seat at top end position. (Mirror seat (1) and Sliding plate (2) must be top end position, Shutter charge lever must be top end position (3))
2. Latch the lever of G100 while pushing down the sliding plate.



4. [CONF] Checking the mirror function

[Required equipment] Power supply

(1) Confirm the following items while applying DC3V 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.

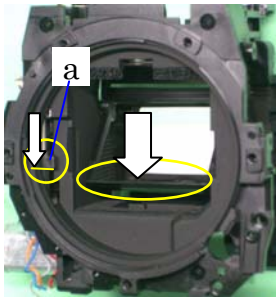
(2) Set the mirror seat to the down position while applying DC1.5V.

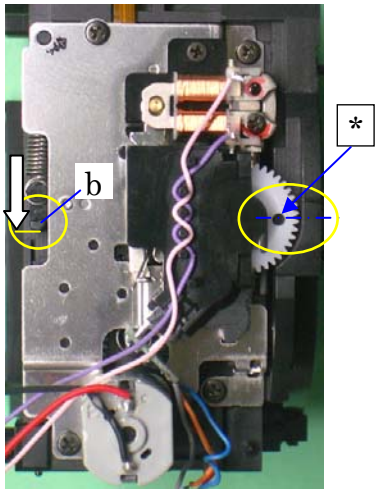
(Fine adjustment is possible when turn white gear at behind of G100)

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 pressed inward about 3mm by finger pressure.



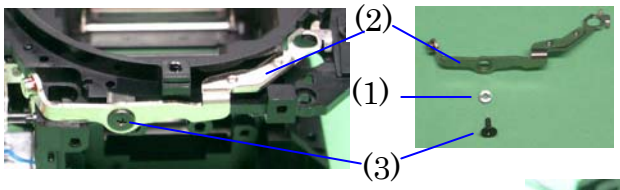


5. A104

(1) A133

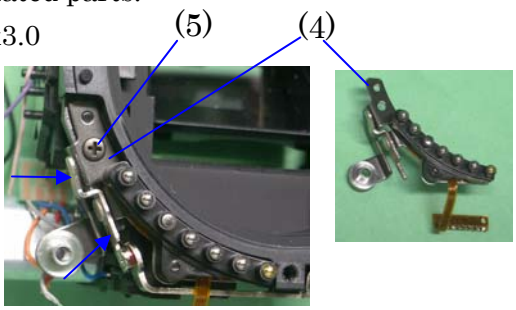
(2) 0-A121

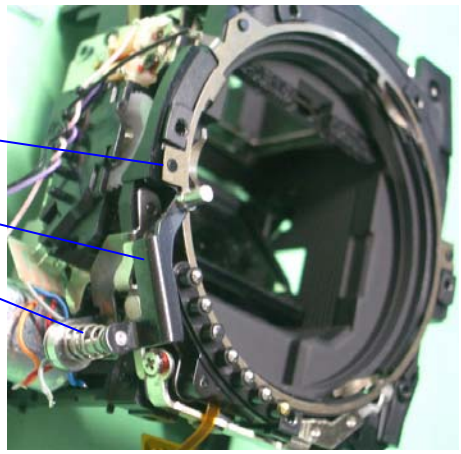
(3) TY-CNL-F1.4x4.0



(4) 0-A126 and related parts.

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





(6) A105

(7) A110

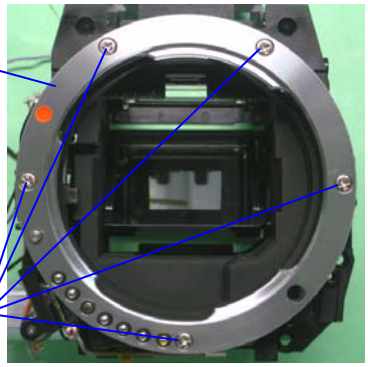
(8) 0-A108

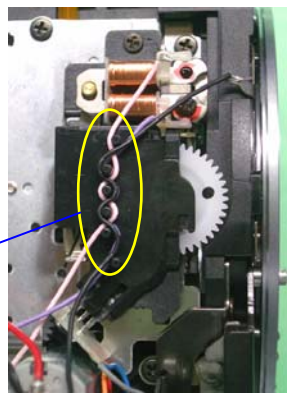
(9) A104

(10) TY-CNS2.0x4.5Ni

Tighten 5 screws diagonally.

(11) Arrange lead wires on G100.





6. [ADJ] Positioning 1st and 2nd Mirror

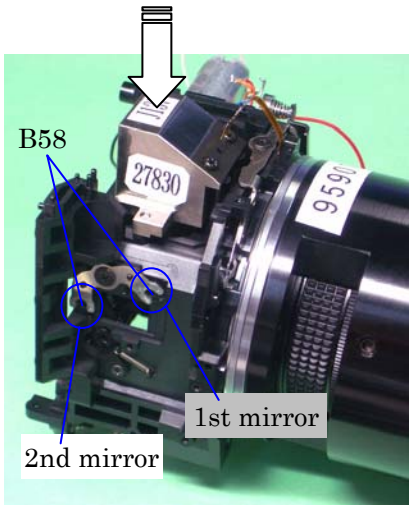
[Required equipment] 1st Mirror angle (45°) adjusting jig, Mirror angle adjusting jig for 27830, Mirror positioning scope

*The manner of adjusting is the same as the other MZ-cameras. Adjust the desired value of Y axis to ±0.

* 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 : ±15′
Y-axis : ±10′



(2) Positioning 2nd mirror:

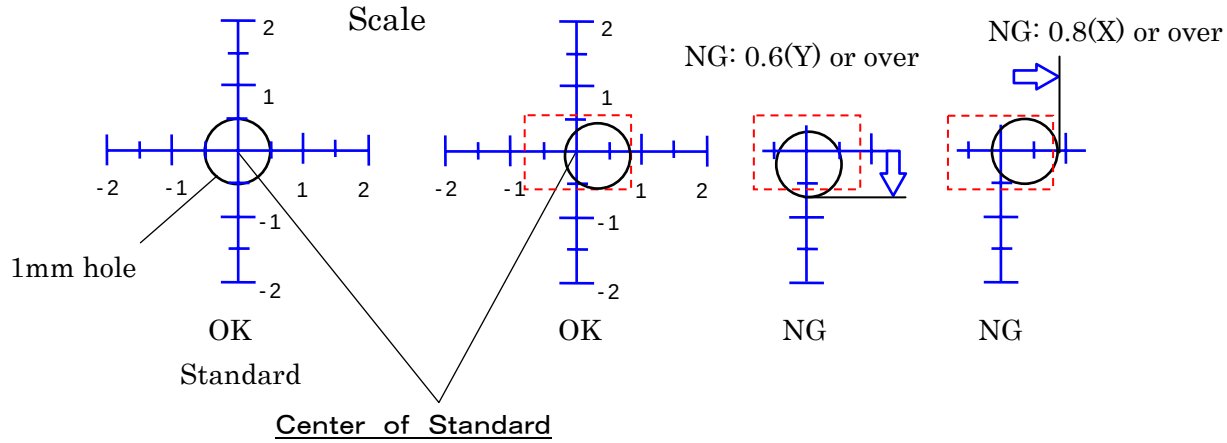
Attach the mirror positioning scope and the 2nd mirror angle adjusting jig to the camera, and then adjust the mirror angle while looking through the eyepiece lens.

Tolerance --- X-axis : ±0.3mm
Y-axis : ±0.1mm

(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)



: Tolerance of 1mm hole : X-axis = ±0.6, Y-axis = ±0.8

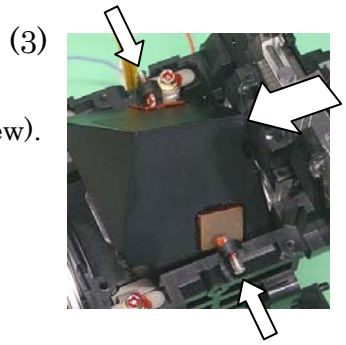
7. 0-L3 and L2

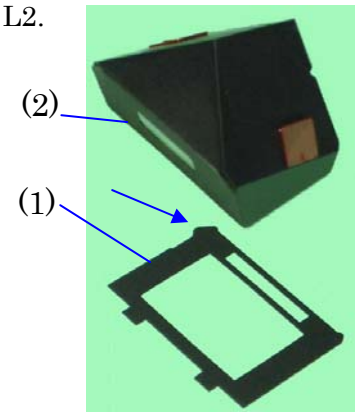
[CAUTION] Confirm there is neither dust nor scratch on 0-L3 and L2.

(1) M3

(2) 0-L3

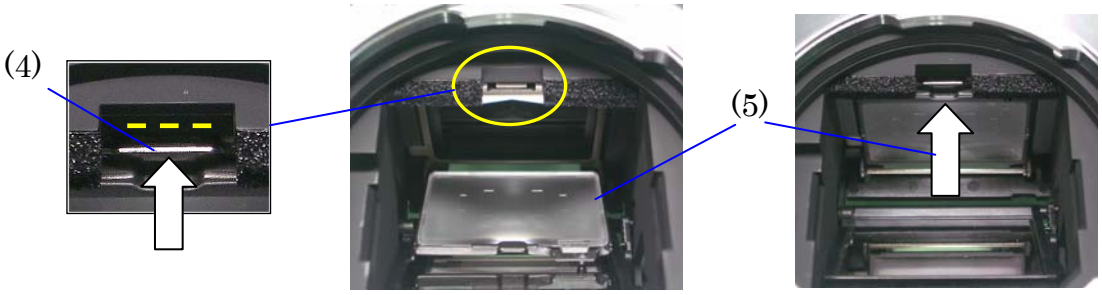
(3) Push 0-L3to front and
Temporarily tighten M16 x2 (Screw).





(4) Down the focusing screen frame (0-M4) by releasing the hook portion.

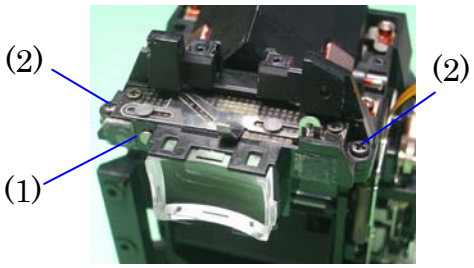
(5) Put the focusing screen (L2) on the frame and then push it back until it locks in place.



8. M301

(1) Eyepiece part (M301, L7 and other)

(2) TY-CNM1.7x4.5 x2



9. [ADJ] Viewfinder focus and parallax

[Required equipment] 50mm lens, Collimator, Focus master lens

[Preparation] Adjust the diopter by the diopter adjustment lever.

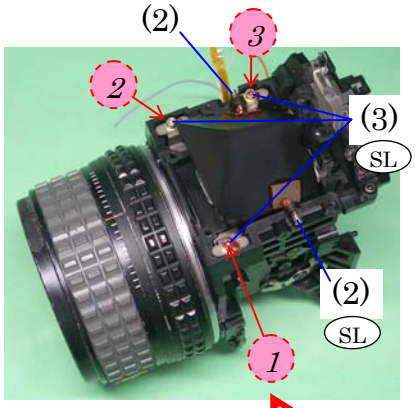
*If AF motor is installed (0-S300), set the AF mode switch to MF position. (upper position)

9-1. Parallax

[CAUTION] Confirm that the Pentaprism must be installed securely.

(1) Confirm there is neither gap nor an inclination at an upper and lower, right and left position.

(2) Adjust the parallax of right and left direction by the prism retainer screws. (M16 x2)



Standard: Right/Left 1° or less Top/Bottom 1° 50′ or less

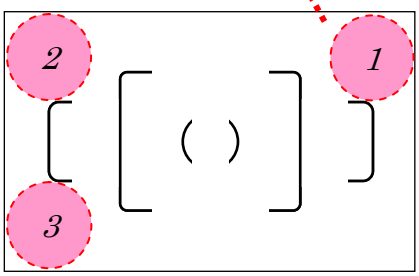
9-2. Viewfinder focus

[CAUTION] The focus must be adjusted at the center and corners in the viewfinder.

(3) Adjust the focus to within ±0.02mm by turning the adjusting screws (M103 x3)

* One scale for focus master lens is 0.03mm.

*Each adjusting screw affects the focus in the viewfinder as shown in the figure right.



Standard: 0±0.07mm

(4) After adjustment is done, apply the screw lock agent to M16 and M103.

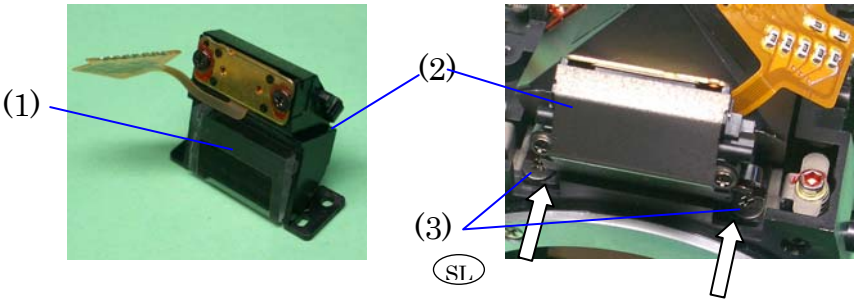
10. M51

(1) L 12 - Confirm there is neither dust nor scratches on L12 and then install it to M51.

(2) M51 (L11, 0-M52, 0-O170 and other)

[CAUTION] Install M51 without gap between the pentaprism (0-L3).

(3) TY-CNL-F1.7x3.5 x2 - Apply screw lock.

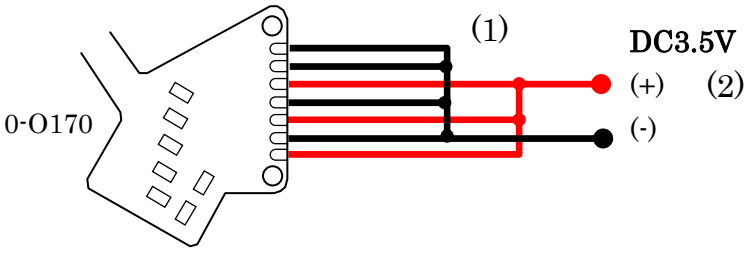


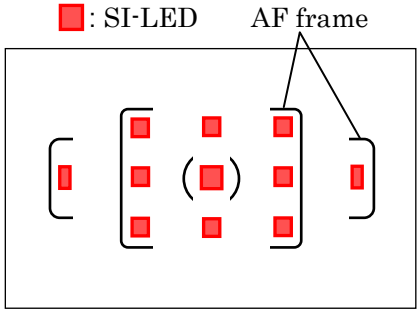
11. [ADJ] Positioning 0-O170 (SI-LED)

[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.



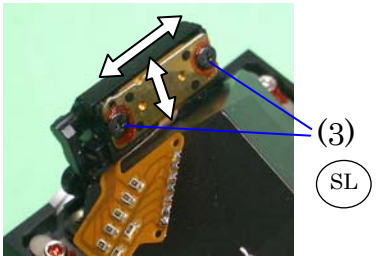


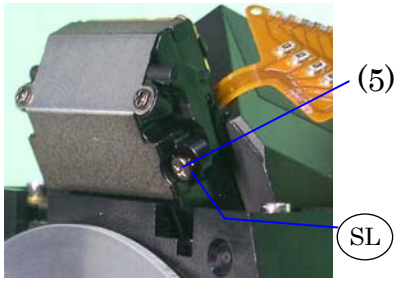
(3) Loosen 2 screws, and then adjust the position of 0-O170.

(4) Tighten 2 screws, and then confirm the position again.

(5) 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 agent to both screws and remove the lead wires from 0-O170.





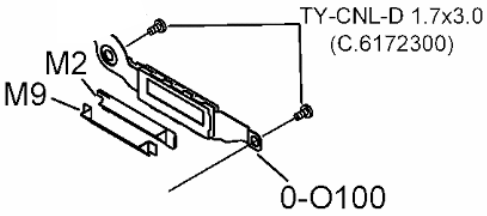
12. 0-O100

(1) M9

(2) M2

(3) 0-O100

(4) Temporarily tighten TY-CNL-D1.7x3.0 x2

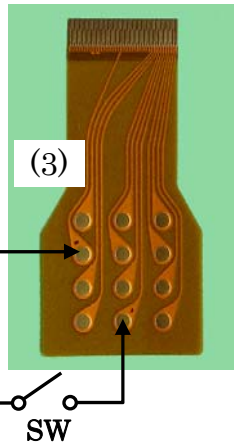


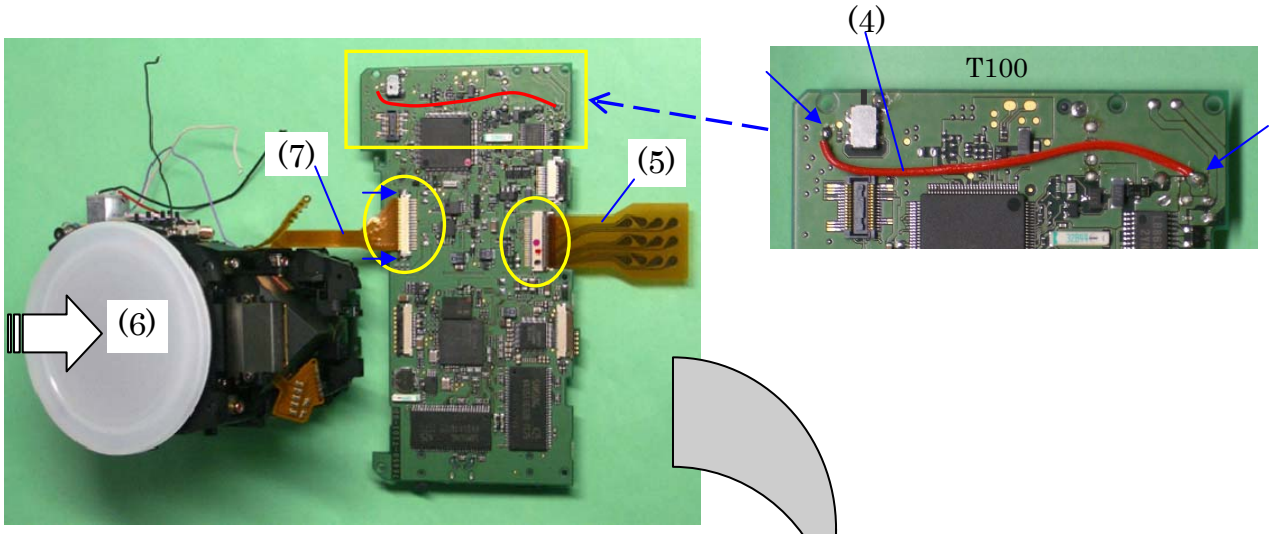
13. [ADJ] Viewfinder Indications

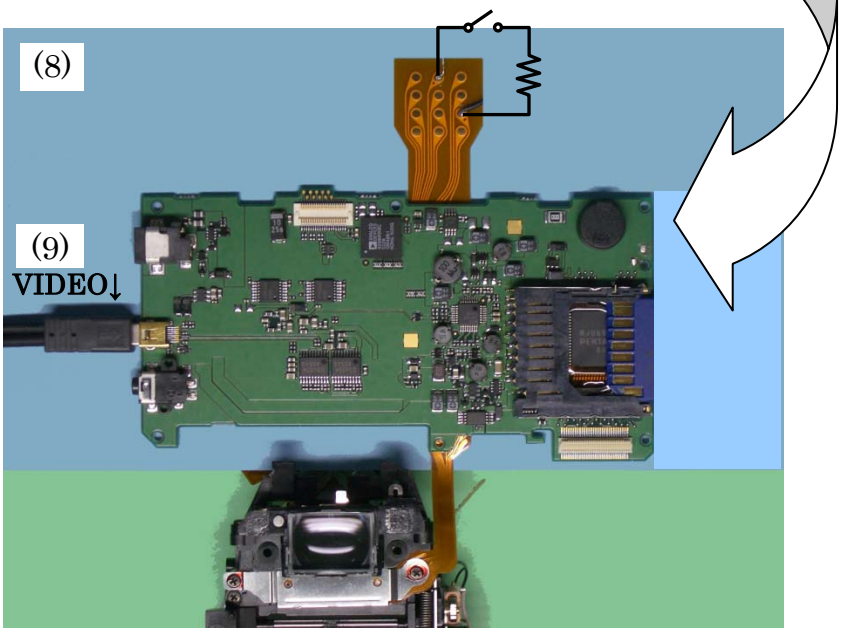
[Required equipment] SD card for confirmation x2 (For setting test mode ON and OFF),
resistor x1 (Approx.200Ω) ,Power Supply (8V/3A), ampere meter,
DC cord (Jig), 0-T100, connecting flex (connect cable side),
Video cables, TV monitor.

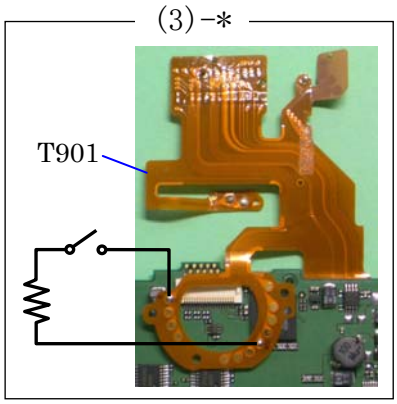
13-1.Preparation

(1) Connect the DC cord to the DC power supply and set voltage to DC6.5V (3A).
(2) Connect the video cable to the TV monitor.
(3) Solder the resistor and switch function to connecting flex as shown in figure.
If you substitute T901 flex, refer to below figure (3)-
(4) Temporary solder one lead wire (L=55mm) on T100. (For input power)
(5) Connect the connecting flex. (Flip lock connector)
(6) Put the white body mount cover to front housing block.
(7) Connect O100 flex to T100. (Slide lock connector)
(8) Set the camera for confirming viewfinder while avoiding stress to the flex.
(9) Connect the video cable to T100.









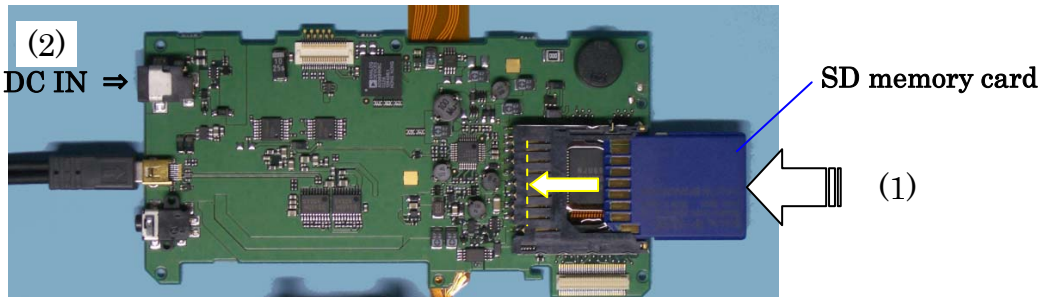
13-2. Adjustment

Set the test mode to disable SD card cover switch on T100.

(1) Insert SD card for test mode ON to T100. (Set write protect switch to unlock position)

(2) Connect DC code to T100. Make sure there is no short circuit.

(Consumption current: 100~200mA)



(3) Connect the resistor within seven second from section (2).Viewfinder indication will be all ON.

If indication is not all ON: 1. Disconnect DC code and remove SD card then disconnect resistor.

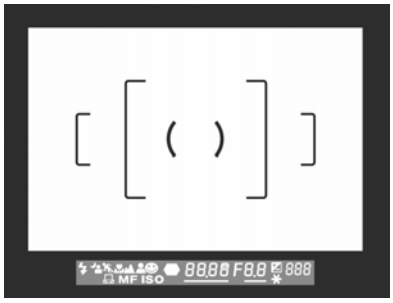
2. Again, connect DC code to T100 and connect the resistor within five second.

* If viewfinder indication dose not display and guide screen or menu (Fn) screen is displayed, execute above 1. and 2. again.

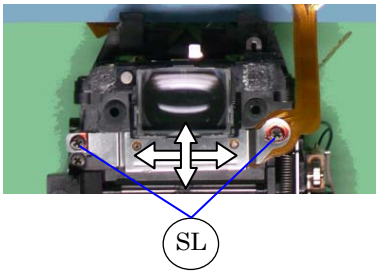
(4) [CONF] Confirm position of the viewfinder display as shown figure below.

(5) [ADJ] Loosen screws and adjust the position. After adjust, apply screw lock.

(4)



(5)



(6) Disconnect DC code and resistor.

*Cancel the test mode with below method.

(7) Insert SD card for test mode OFF to T100.

(8) Connect DC code to T100. (If Consumption current is zero, cancellation is completed. It takes 9 second).

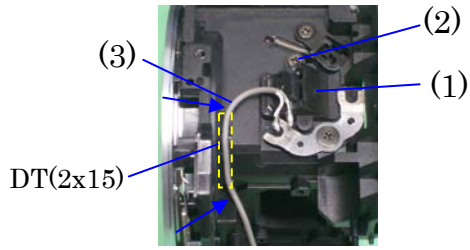
(9) Disconnect all connection and temporary soldered one lead wire.

14. 0-J201

(1) 0-J201

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

(3) Arrange J206 shield wire with DT (2x15)



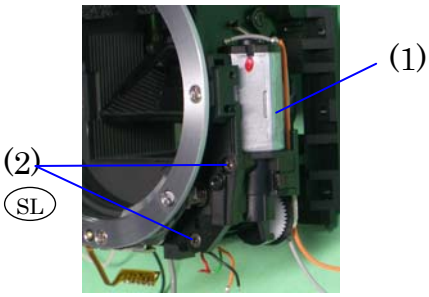
15. 0-S300

(1) 0-S300

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

Apply screw lock

[Note of Disassembly]
When removing 0-S300, while pressing mount lock lever and remove from upper side of motor.



16. [ADJ] AF Joint stroke

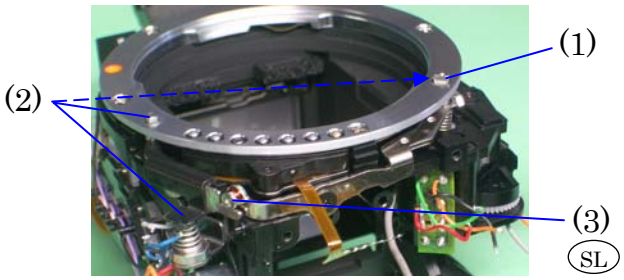
[Required equipment] Vernier calipers

*If AF mode SW lever (A115) is installed, set the AF mode SW lever to AF position.

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

(2) 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.

(3) Adjust 0-A121 by turning an eccentric screw, and apply the screw lock agent to the screw.



17. 0-M100

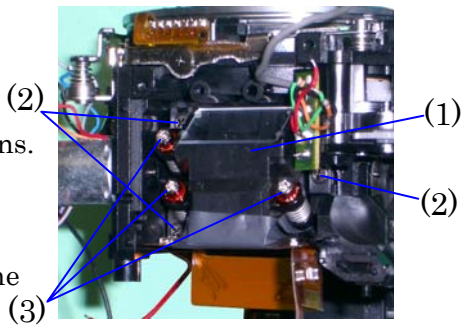
[Required equipment] Hexagonal screwdriver 1.5mm

(1) 0-M100 (when replacing 0-M100 put M125 at sensor side)

(2) TY-CNL-D1.7x4.0 x3

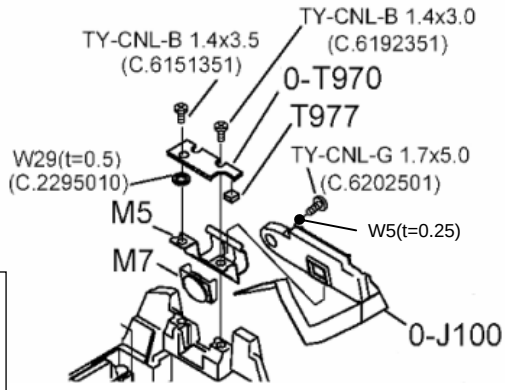
(3) [ADJ] Temporary adjustment of AF block --- Screw in 3 adjusting screws until they stops, then screw back two turns.

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



18. 0-J100

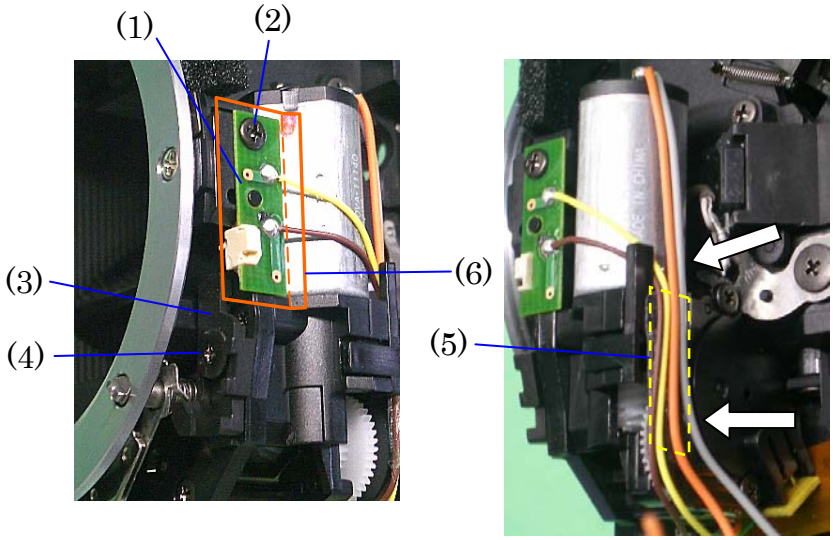
(1) M7--- Apply small amount of bond.
(2) M5
(3) TY-CNL-B1.4x3.0 (left side)
(4) 0-J100
(5) W5(t=0.25), TY-CNL-G1.7x5.0
* Install 0-T970 after adjusting position of J100.



[Note of Disassembly]
(1) Set the diopter lever at end of left side then remove 0-J100.
(2) Remove 0-T970, W29

19. 0-T940

(1) 0-T940
(2) TY-CNL-D1.7x3.0
(3) A115
(4) TY-CNL-G1.7x2.5
(5) Arrange four lead wires with DT (4x15).
(6) T64 (PT 11x20)



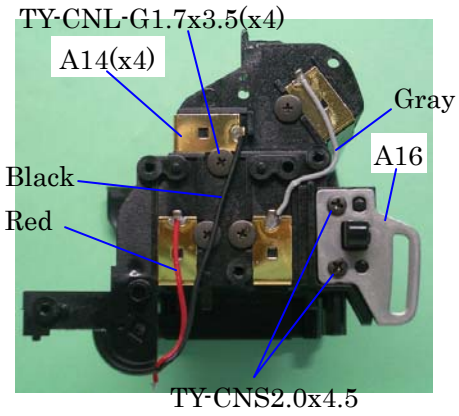
[Note of Disassembly]
When removing A115 and T940, Set AF-SW at AF position.

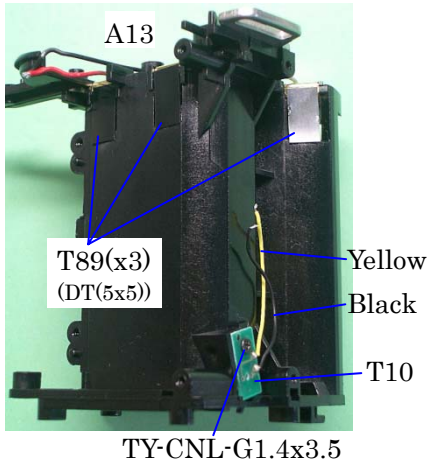
3. Assembly procedure

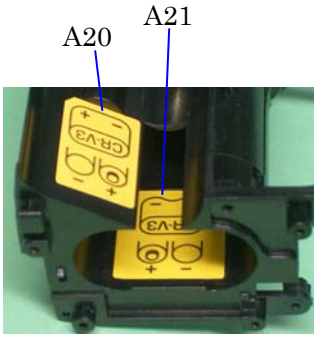
1. Main body + Battery housing

(1) A13 Battery housing and relating parts.

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

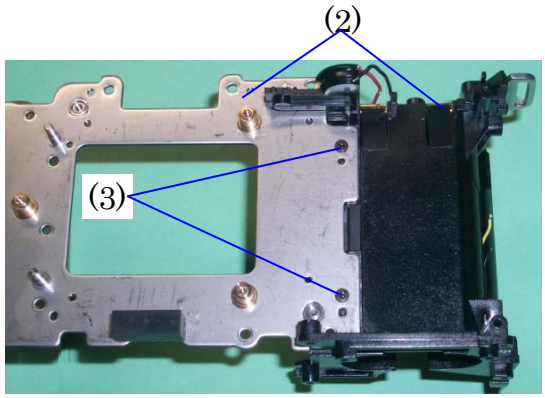






(2) Attach Main body to the A13.

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



2. 0-E000（Shutter block）

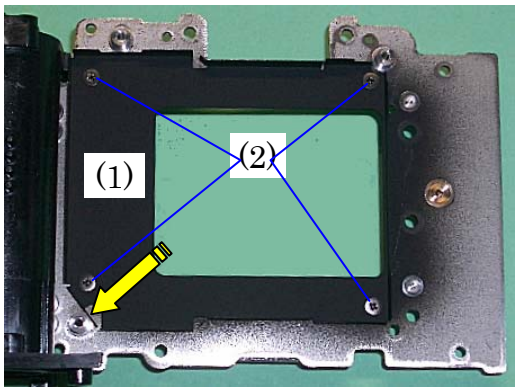
(1) Attach A2 to the main body.

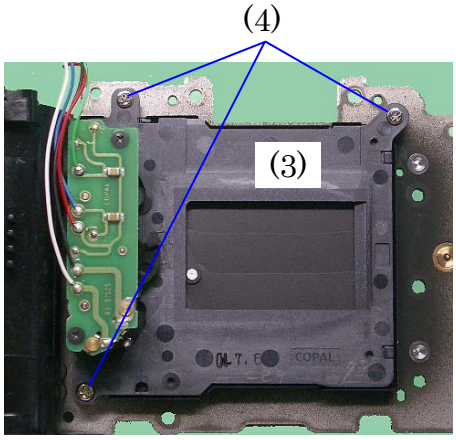
(2) A65 (4 screws) – Push A2 in direction of arrow indicate in figure right to touch the lower left post. While keeping the position, tighten 4 screws.

[Caution] Be sure to install A2 flat against the main body.

(3) 0-E000--- Check there is no dust, scratch.

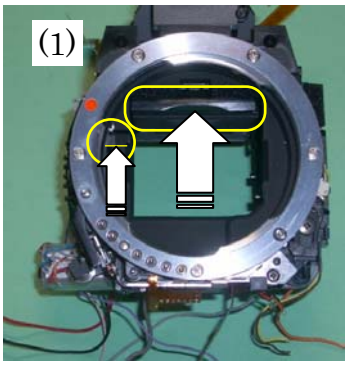
(4) A70 – x3



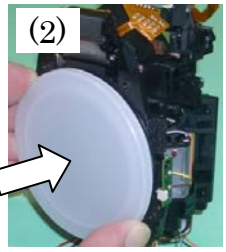


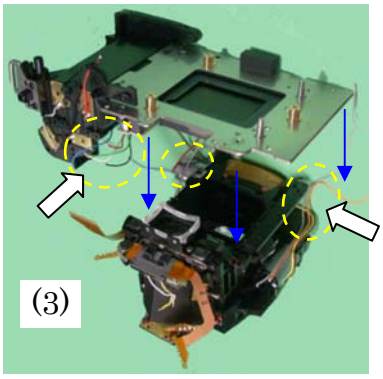
3. Front housing

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

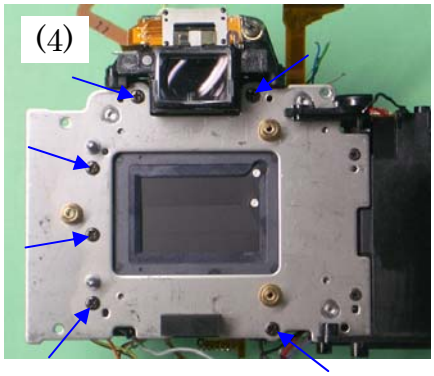


(2) To prevent the damage of SI-LED, attach mount cover.
(3) Attach body plate to the mirror housing.
* Pay attention the lead wires.





(4) TY-CNM2.0x4.5 x 6
(5) Apply DC 1~2V to the mirror motor, and set mirror down position.

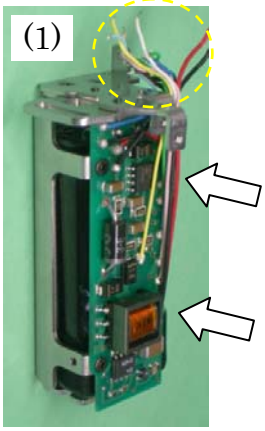


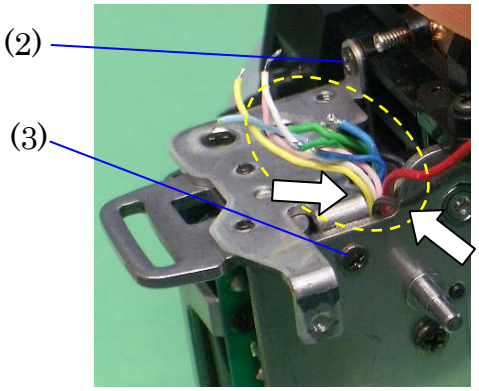
*To prevent the scratch of the eyepiece lens, attach M311.

4. 0-Q200 (Flash PCB)/A5/A15

(1) 0-Q200/A5/A15
* Arrange the lead wire as shown figure right.

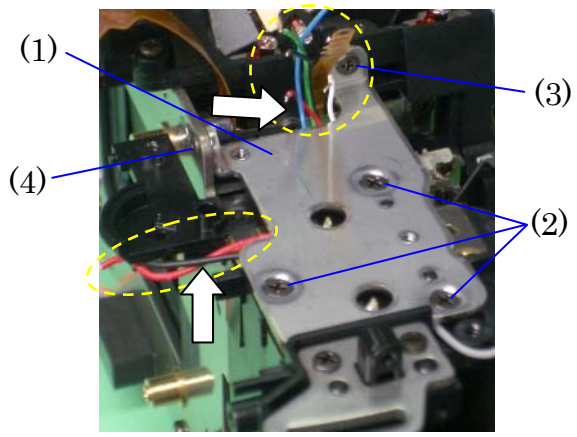
(2) TY-CNL-D1.7x4.0
(3) CNL-D1.7x2.5





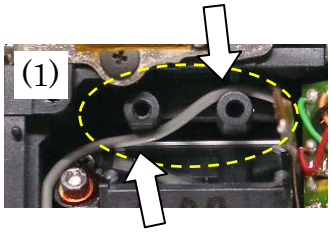
5. A6（Left shoulder plate）

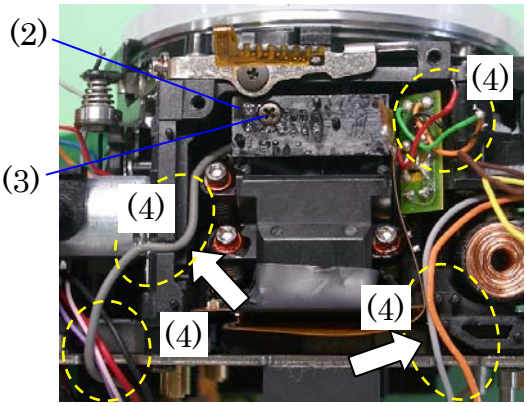
(1) A6 --- Pay attention the position of lead wires.
(2) TY-CSM1.7x4.0 x 3
(3) TY-CNL-D1.7x4.0
(4) CNL-D1.7x2.5



6. T901（Lower flex board）

(1) Arrange the wires

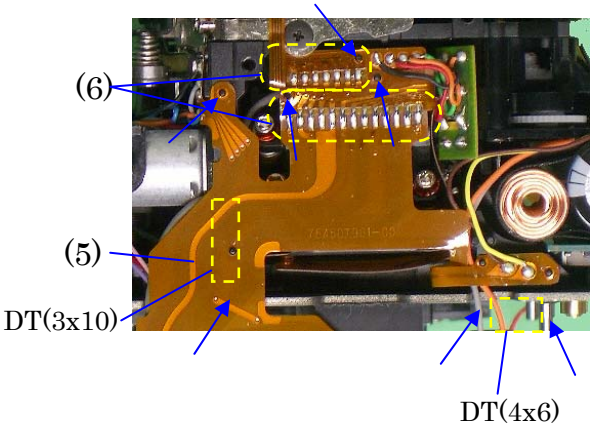




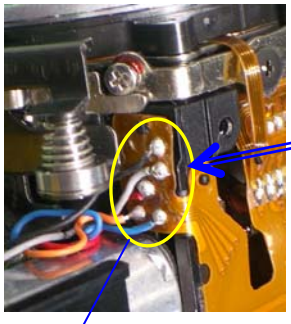
(2) A141
(3) TY-CNL-D1.7x3.5

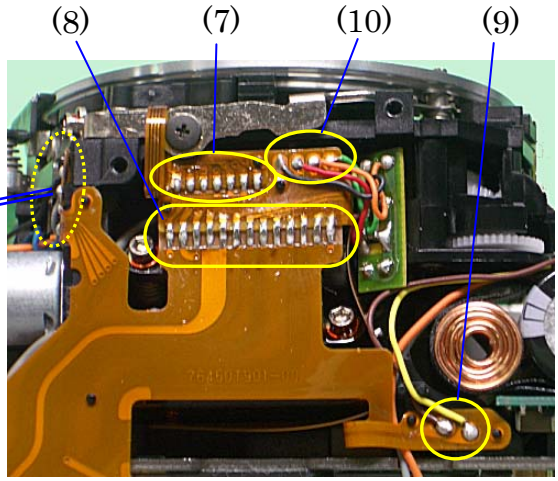
(4) Arrange the lead wires, see picture.

(5) Install T901（DT(4x6), DT(3x10)）
(6) Positioning the flexible board of 0-M100 and T301 to T901.



Solder lead wire and lands
(7) 7 lands -- (T301)
(8) 13 lands -- （M100）
(9) Brown, Yellow -- (T40)
(10) Black, Red, Orange, Green -- (T31)
(11) Black -- A105
Gray, Red, Orange, Blue -- T72



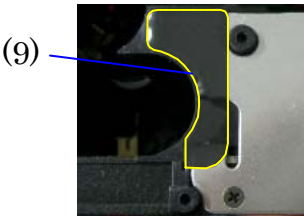


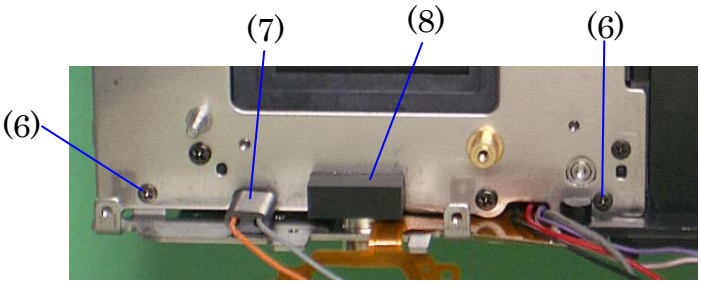
7. 0-A3 (Bottom plate assy)

(1) When installing 0-A3, arrange the flex of T901 and lead wires to outside.
(2) TY-CSM1.7x4.0 x 2
(3) CNL-D1.7x2.5 x 2
(4) TY-CNL-D1.7x4.0 x 2
(5) Fix T901 with A65 x 2

(6) CNL-D1.7x2.5 x 2
(7) Orange and Gray -- through S364, fix with DT (5x5).
(8) T81 --- Attached to bottom plate.

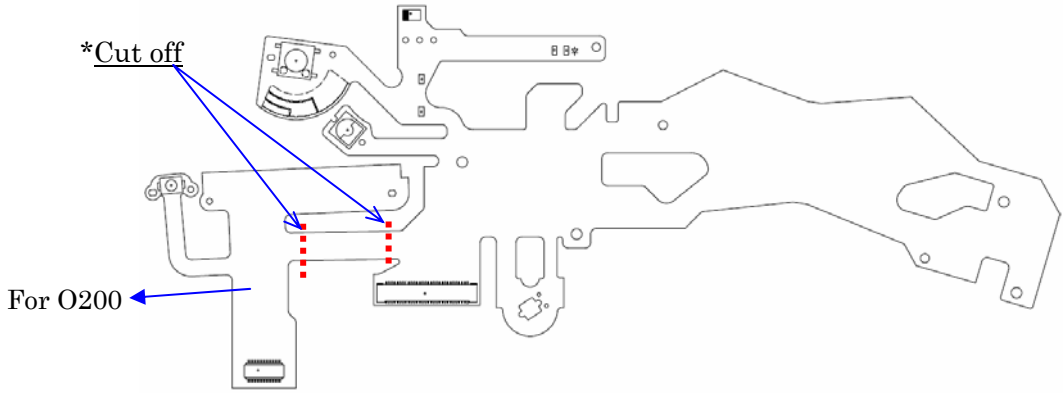
(9) Attach A53.





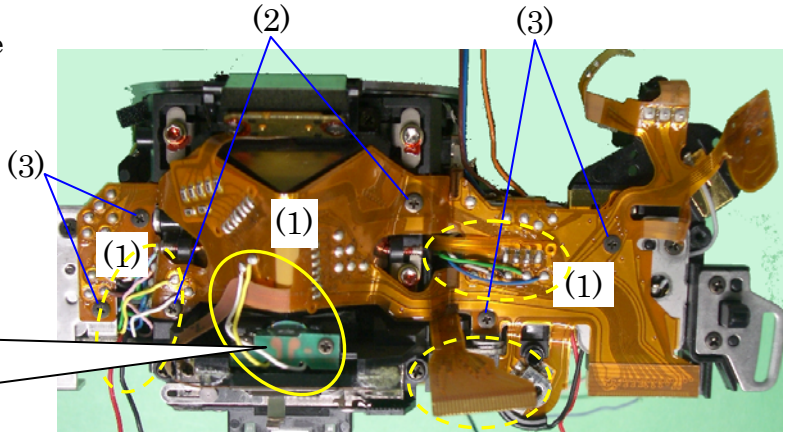
8. T200 (Upper flex block)

*When use new T200, cut off the following place.



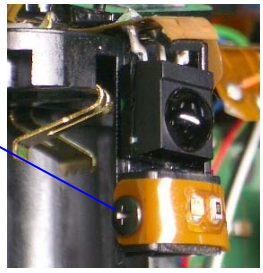
(1) Attach T200 on body while arrange the lead wires.
(2) TY-CNL-D1.4x2.5 x 2
(3) A65 (1.7x1.4 x 4)

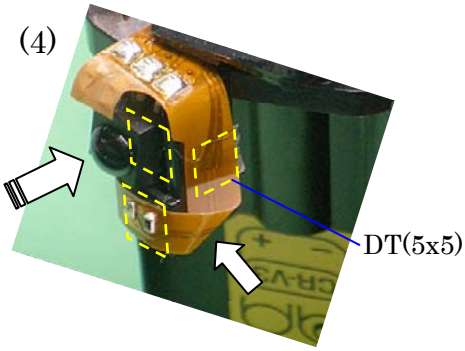
[Caution]
Install 0-T970 later
(Adjustment of position)



(4) Attach the remote control censor, see picture.

(5) TY-CNL-D1.4x2.0





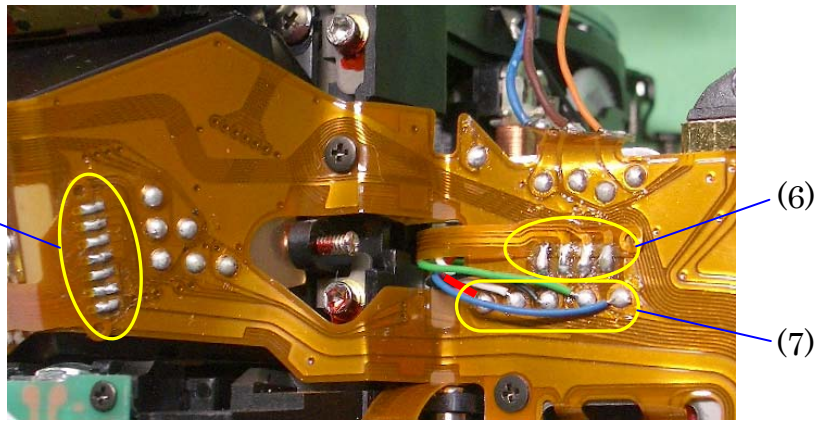
Solder lead wires and lands.

(6) 4 lands -- (T71)

(7) 5 lead wires -- (E000)

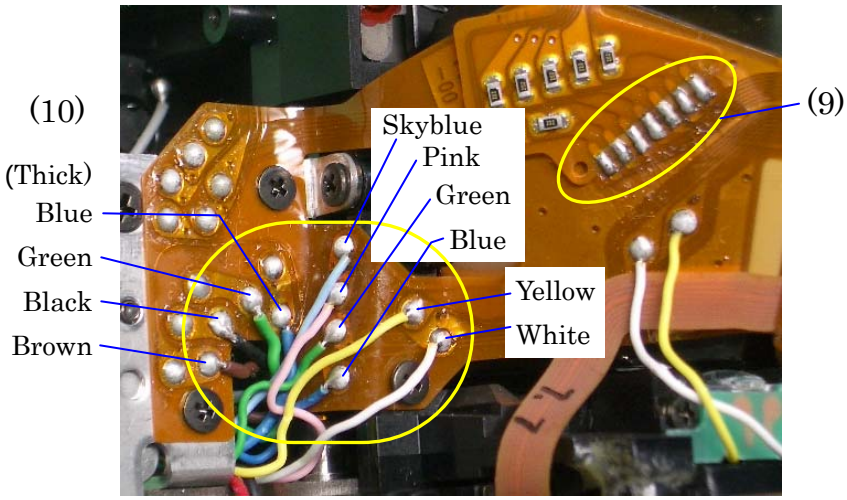
(Red, White, Black, Green, Blue)

(8) 7 lands -- (J100)



(9) 7 lands -- (O173)

(10) 10 lead wires -- (Q200)

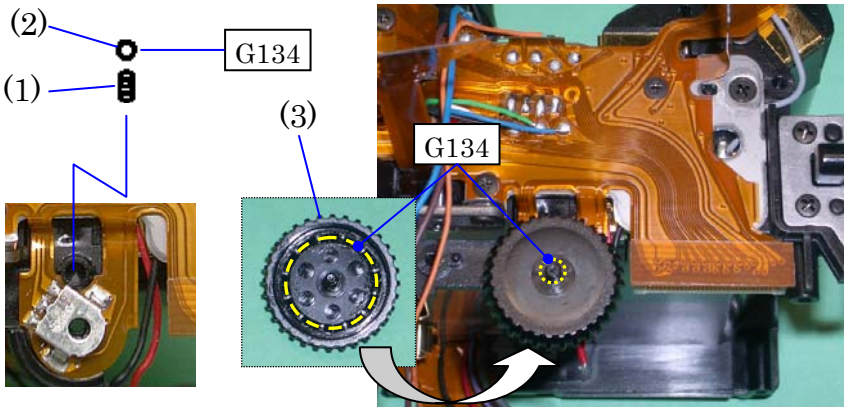


9. External LCD block

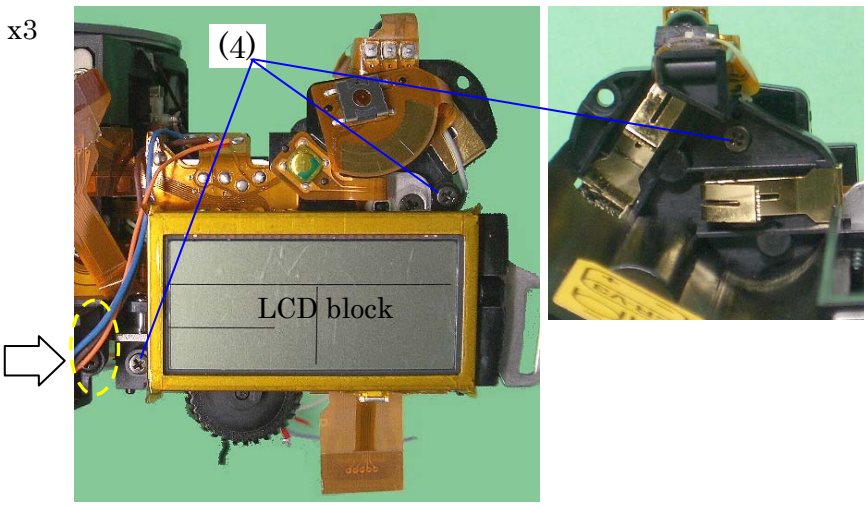
(1) A17

(2) BO2.0 --- Apply G134

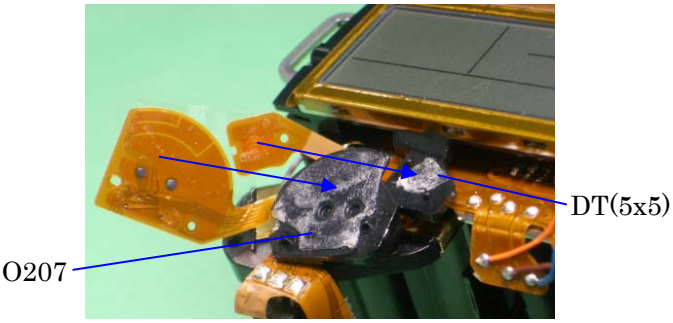
(3) A335 --- Apply G134



(4) Install LCD block ---1.7x4.5 x3



(5) Attach the flex of release SW, Av SW with O207(DT) and DT(5x5).

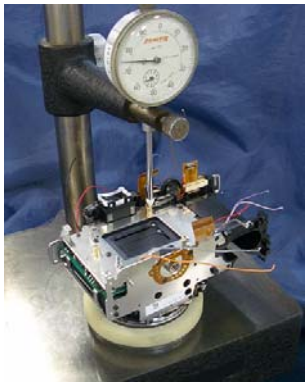


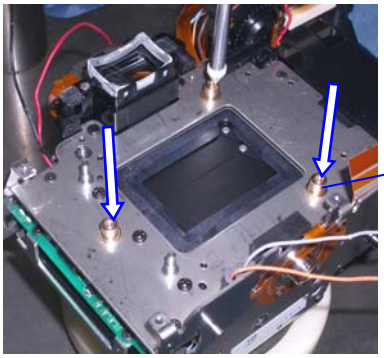
10. [CONF] CCD Base Plate Support Pillar (T600)

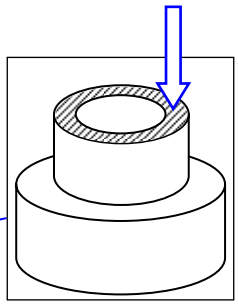
[Required equipment] Block gauge for 35mm, Dial gauge comparator, etc. (same as MZ series)

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

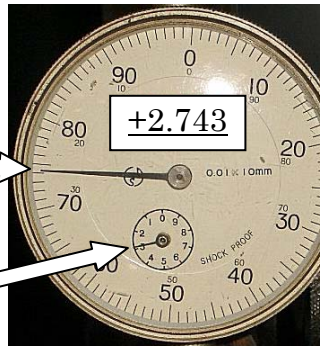
Distinction	Last two digit of lot number [00 or 01] and [02] and after with[X] stamp	[12] mark with red marker on 0-A3 or except lot number listed on left.
Tolerance: (It is difference from 76180)	**48.203 ±0.02 mm**	**48.233 ±0.02 mm**
Using Block gauge for 35mm (45.46mm)	**+2.743 ±0.02 mm (+2.723 - 2.763 mm)**	**+2.773 ±0.02 mm (+2.753 - 2.793 mm)**







+0.743
OR +0.773



+2.

11. [ADJ.] Shutter Speed (1/4000sec.)

*Measure the shutter speed according to the following points whenever 0-E000 or 0-T100 is replaced.

*If using reflection type of shutter tester, skip this adjustment and adjust at [21.ADJUSTMENT with Programmed Software (SLR operation)] section.

[Required equipment] Programmed software 76450 (for SLR operation), Computer and related items, I/F buffer cable for 27250 (MZ-5),SD card (For test mode ON), Shutter tester (measurable 1/4000), AC adaptor, Flexible board for 76450 (Two kind of flex), Two lead wires (130mm), Shutter attachment 76180, refer to the Information of Jigs, Tools and Testers for *istDS DC code, Regulated DC power supply (8V/3A), Circuit tester, TV monitor Video cable.

[Caution] Do not touch the shutter curtain from this point.

11-1. Preparation 1

(1) Install temporally test bottom cover.

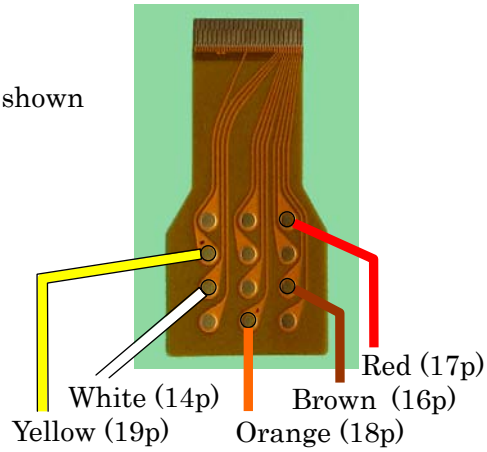
(2) Solder the lead wires from I/F buffer cable for 27250 (MZ-5) as shown figure right.

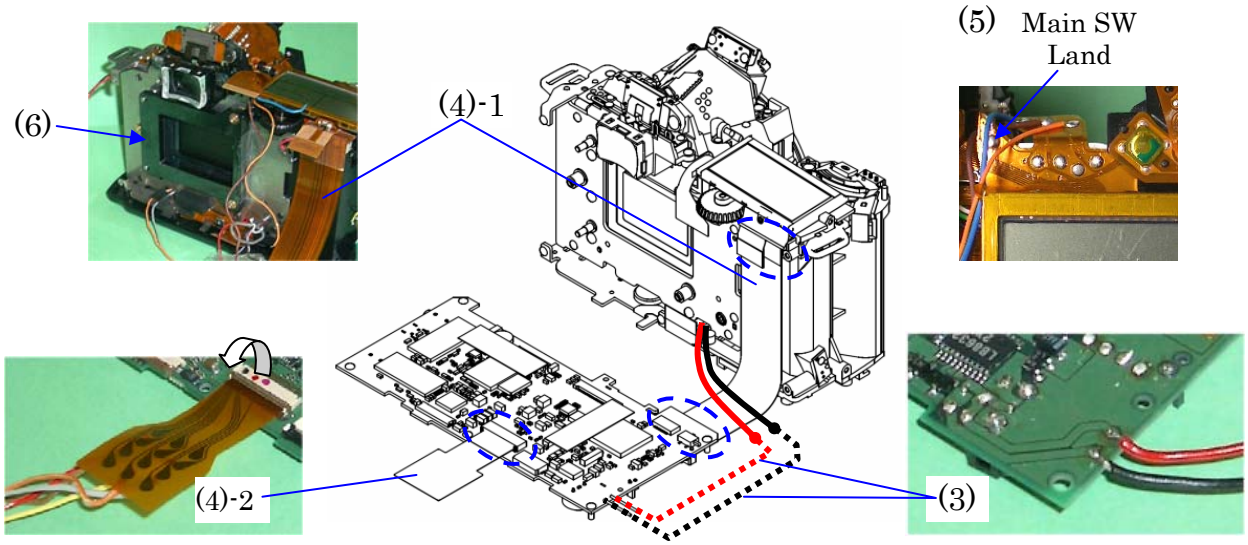
(3) Solder the two lead wires to T100 and mirror motor lead wires (Black and red) as shown figure below.

(4) Connect two flexible boards to T100 and T200.
[Caution] Do not stress to the flexible boards.

(5) Solder Main SW land on T200.

(6) If using sensor head type tester, put shutter attachment to the body (Rear side) align with post.





11-2. Preparation 2 (Consumption current, Function check)

(1) Connect DC code to the power supply and set DC 6.5V. (3A)

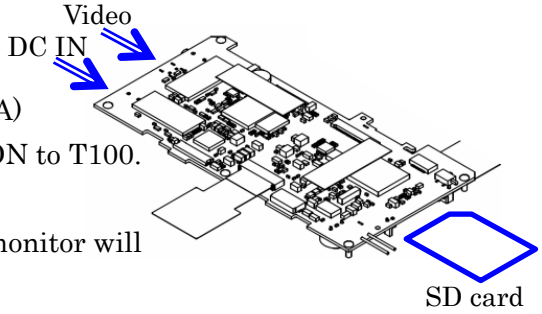
(2) Connect Video cable to TV monitor and T100.

(3) Connect DC code to T100.

[Caution] Make sure that there is no short circuit. (~150mA)

(4) Disconnect DC cable and insert SD card for test mode ON to T100.

(5) Connect DC code to T100 again.
(Consumption current aprox: 100mA. 5 second later, TV monitor will



be displayed. Test mode ON will be completed)

(6) Disconnect DC code and Video cable then remove SD card.

(7) Connect DC code to T100 again.

(8) When connecting two terminals for grip side of release SW, diaphragm control lever moves up and down and shutter will be released.

*When replacing T100, confirm the lot number, [X] stamp with or without, [12] and after mark with red marker on 0-A3 with or without.

11-3. Adjustment

[Caution] Do not stress to the camera.

(1) Connect the camera to the PC and adjust the shutter speed by the programmed software.

[The flow of adjustment is as follows]

↓ Product select menu (Select *istDS)

↓76450 test program (If you replace T100, Select 2)

↓Main menu (Select 7)

↓Shutter speed adjustment

2→Writing of standard eeprom. Y
↓ (Initialize T100)
Battery level adjustment. N
↓
Product confirmation for AF. 1 or 2
↓ (Confirm lot No and select)
←Main menu

(2) Adjust the camera according to the instructed on the screen.
(Measure the shutter speed at center of aperture)

(3) Return to the MAIN MENU when the adjustment is completed.

(4) Execute EPROM checking (END) (select 5)
If standard data is NG, re-write by pressing 3.

*Other adjustment will adjust at [21.ADJUSTMENT with Programmed Software (SLR operation)] section.

(5) Return to the MAIN MENU to finish the adjustment.

11-4. Remove temporally installed for camera.

(1) Remove temporally installed parts. (DC cord, Flexible board, lead wires, T100, bottom cover)

12. 0-T600 (CCD Block)

[Preparation] Attach the body mount cap to the camera to prevent damage of SI-LED.

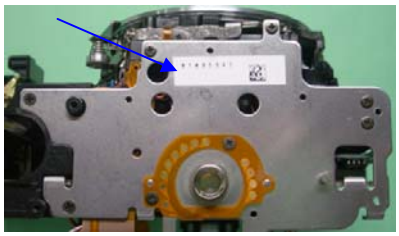
[CAUTION] Confirm there is neither dust nor scratches in the surface of CCD of T600.

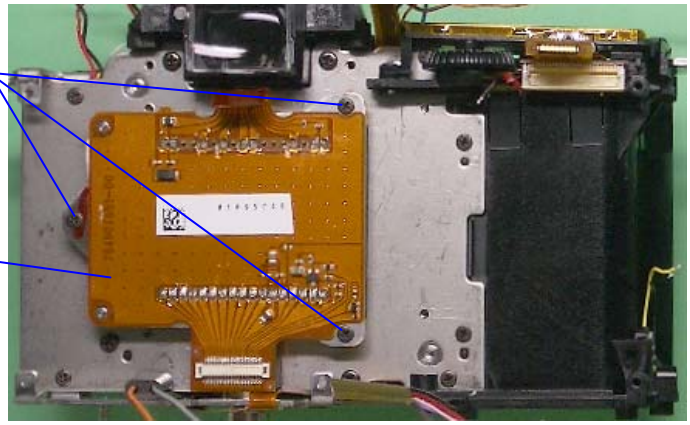
(1) Install 0-T600 to the main body while matching it to two positioning guide pin so that there is no space between them.

(2) CNL-D1.7x2.5 x3

[Caution] When replace T600:
Change the CCD ID seal.

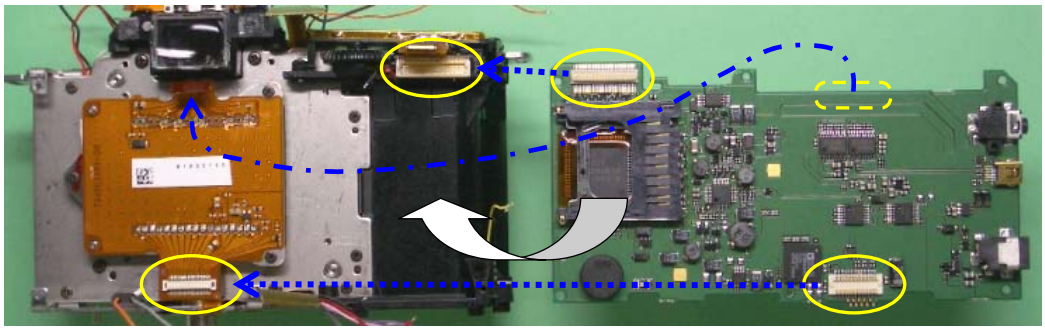
* Pell off the CCD ID seal from provided T600.



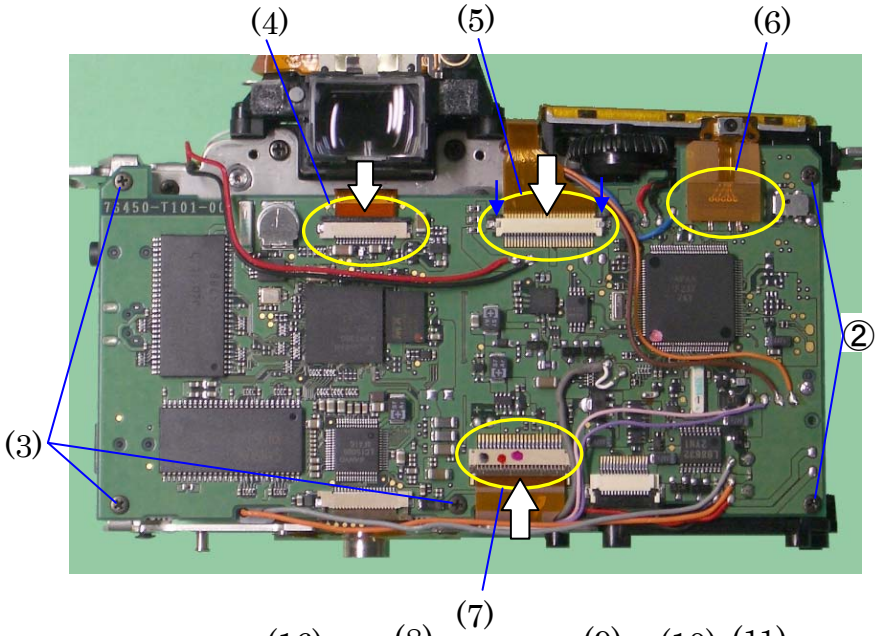


13. 0-T100 (Main PCB)

(1) Install T100 to the body while connecting 2 connectors (T200, T600)

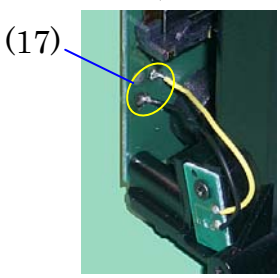


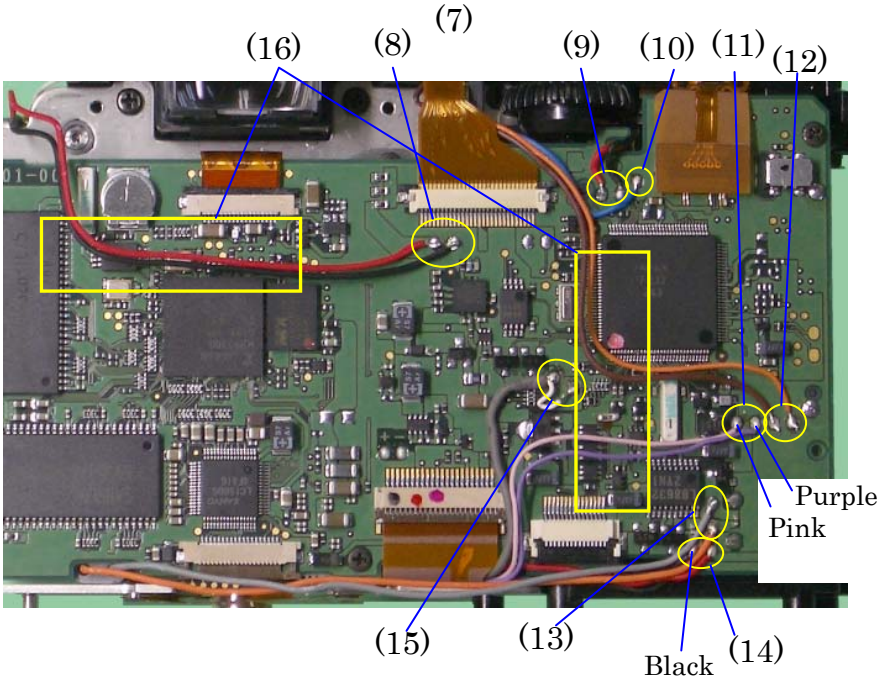
(2) TY-CNL-D1.7x3.5 x2
(3) CNL-D1.7x2.0 x 3
(4) Connection -- T600
(Pop-up)
(5) Connection -- O100
(Slide)
(6) Connection -- T200
(Attachment)
(7) Connection -- T901
(Pop-up)



Solder lead wires
(8) Red, black -- Q200
(9) Red, Black -- A14
(10) Blue -- T200
(11) Pink, Purple -- G100
(12) Brown, Orange -- T200
(13) Gray, Orange -- S300
(14) Red, Black -- S250
(15) Gray, White -- J200
(16)Arrange the position.
Fix with BT (10x30)
(17) Yellow, Black -- T10

↓



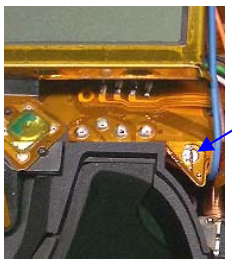


14. [CONF] Function check 1

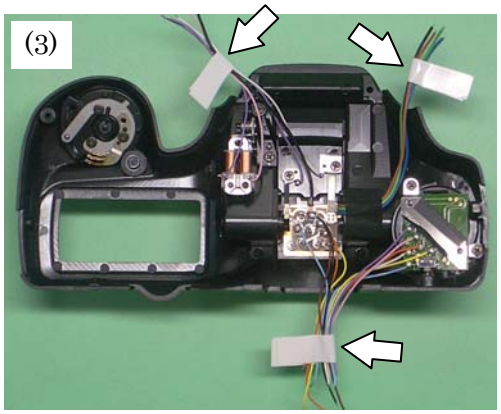
Preparation: SD card x 3 (FW for service, Test mode ON, Test mode OF)
Regulated DC power supply (8V・3A), Circuit tester, DC code, TV color monitor, Video cable,
AC adaptor, Lens (FA 50mm F1.4), Top cover (0-A301), Bottom cover (A401), Battery cover (A412)

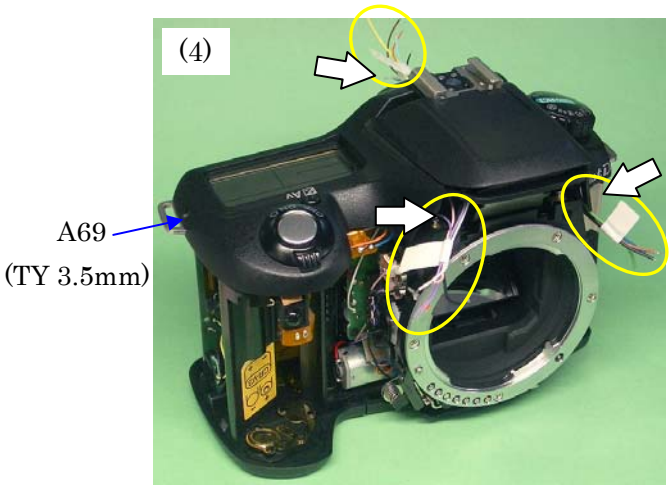
14-1. Preparation

* Prepare the following procedure for function check
(1) Connect video cable to the TV monitor
(2) Solder the Main SW land as shown figure right.



(3) Arrange the lead wires on the Top cover as shown figure below.
(4) Install top cover to the body ---- A69 (TY 3.5mm)
(Do not pinch the lead wires)





(5) Install bottom cover and battery cover --- A73(TY 4.5mm), A67(5mm)

14-2. Power check

(1) Connect DC code to the Regulated DC power supply, set DC 6.5V (3A)
(2) Connect DC code to the camera
(With this condition, the consumption current should be 40~50mA)
(3) Disconnect the DC code from camera

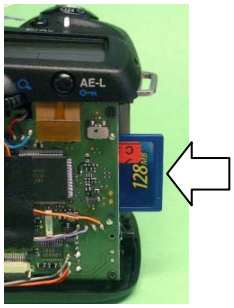
14-3. Writing FW

* 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 is done, the menu setting, the custom function setting, the language setting, and the date setting are initialized.

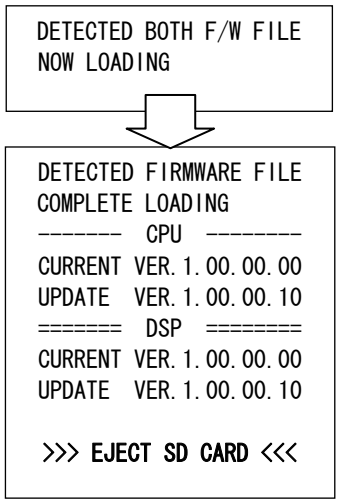
[CAUTION]

1. Rewriting the FW (Firmware) is necessary whenever 0-T100 is replaced.
2. Always use the latest version FW whenever writing the FW.
3. Never install or remove the SD card while turning the camera's power ON as this may cause the SD card or camera to be damaged and become unusable.

(1) Insert the SD card (for writing FW) into the camera
(2) Connect the video cable and AC adapter to the camera.
(3) The version of CPU/DSP will be displayed on the TV monitor



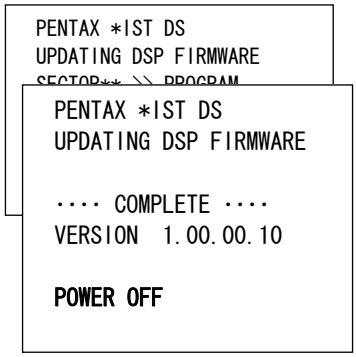
[NOTE] If you want to cancel writing firmware, disconnect AC adapter and eject the SD card.



(4) Remove the SD card when the message as >>> EJECT SD CARD <<< is displayed, and then the loading of firmware will be started. Wait 90 sec. until the loading is finished.

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

(5) Disconnect the video cable and the AC adapter from the camera when POWER OFF is displayed.



14-4. Setting Test mode

*With this setting, camera can operate even without SD card cover.
(If [11.Shutter speed adjustment] was executed, you can skip this section)

(1) Insert SD card for Test mode ON to the camera.
(2) Connect AC adaptor to the camera. (LCD will be displayed moment)
(3) Remove SD card from the camera.
(4) Display will be appeared on the LCD when press shutter button half way.

14-5. Shutter release, exposure

Please check the following function

(1) Shutter release function works properly.

(2) Diaphragm setting lever move up-side down when set the Main SW change to Preview mode

(3) The information of Tv and must be changed when the e- dial is turned

(4) Set TV [1], 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.

*When replacing T100, the aperture of middle will not control until adjusting with Programmed Software. (SLR operation)

14-6. 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 and lens from the camera

14-7. Reset Test mode

[Caution] When the function check is finished, reset the test mode as following.

(1) Insert SD card for Test mode OFF into the camera.

(2) Connect AC adaptor to the camera.

(3) Remove SD card from the camera.

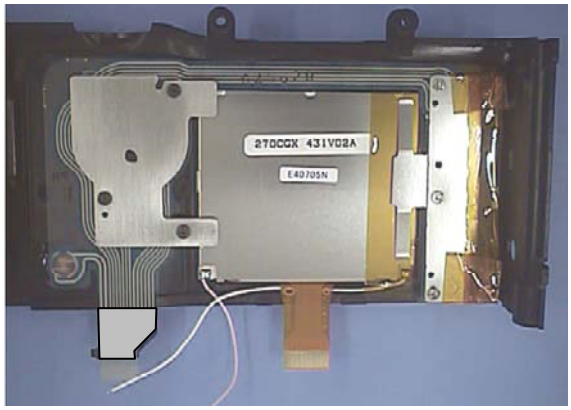
(4) LCD display should not light up when press release button half way.

(5) Remove AC adaptor, Top cover, Bottom cover and battery cover from the camera.

(6) Unsolder the Main SW land on T200.

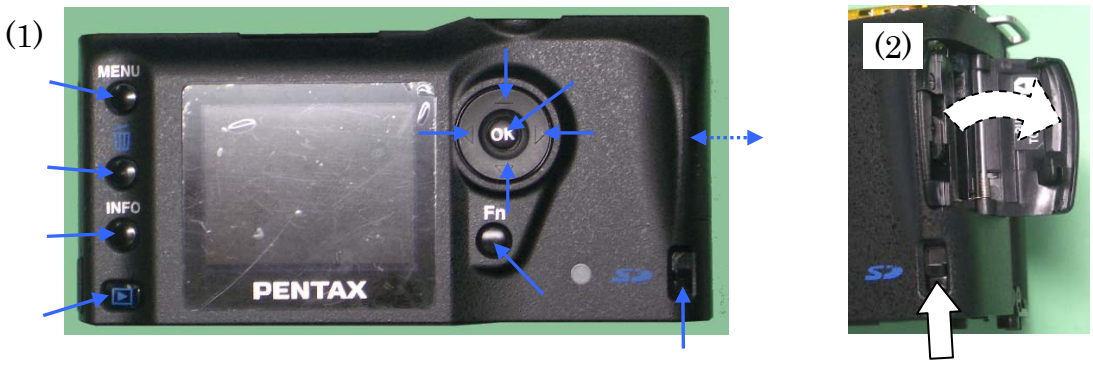
15. A201 (Rear cover)

*Confirm the installation of parts before installing A201.



(1) Check the function of SD card cover (opening and closing) and each switch on the rear cover

(2) Keep open the SD card cover before installing, otherwise card cover SW(T100) will be broken

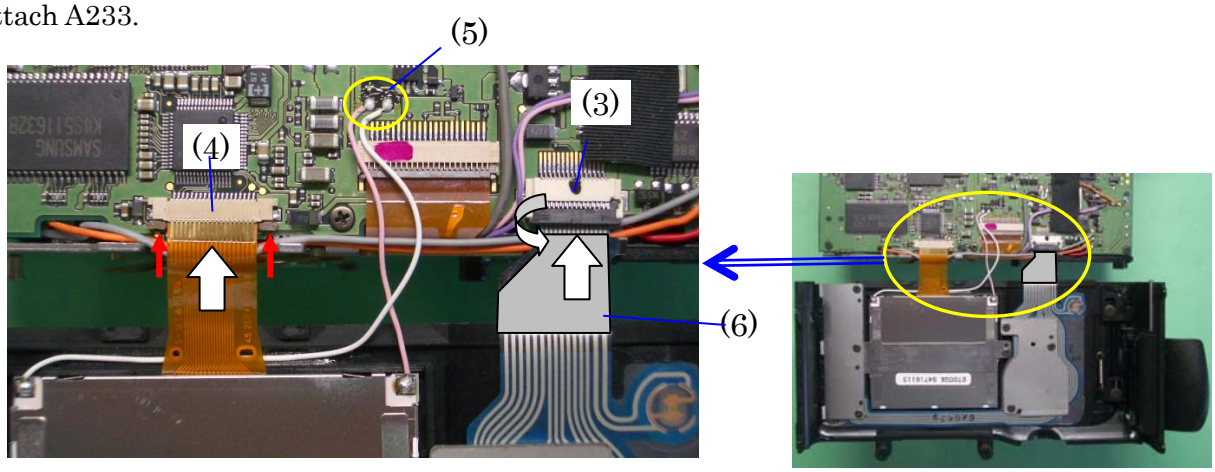


(3) Connect A231(Flexible) to the connector. (Flip lock)

(4) Connect O301(Flexible) to the connector. (Slide lock)

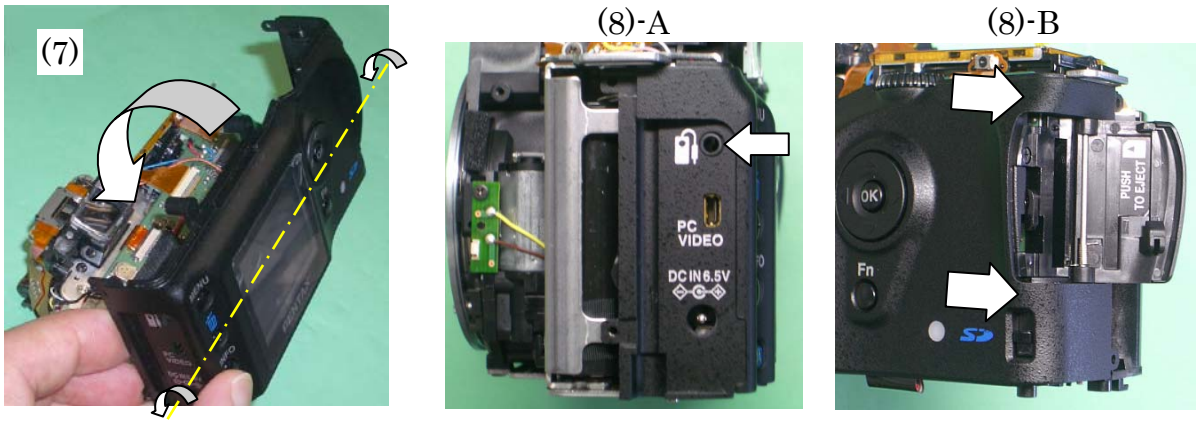
(5) Solder 2 lead wires (Pink, White)

(6) Attach A233.



(7) Attach rear cover to the body.

(8) Fix rear cover from (A) side, then fix (B) side

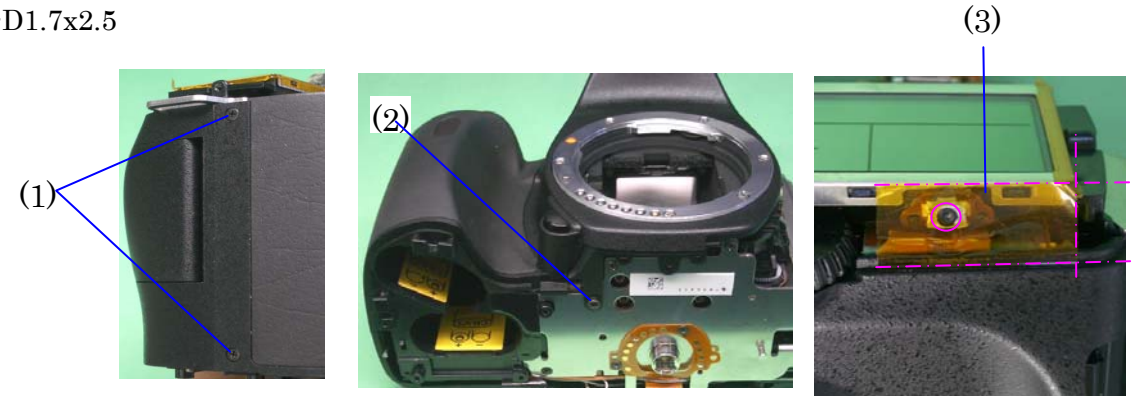


16. A150 (Front cover)

(1) A73 (TY screws 4.5mm x 2)

(2) CNL-D1.7x2.5

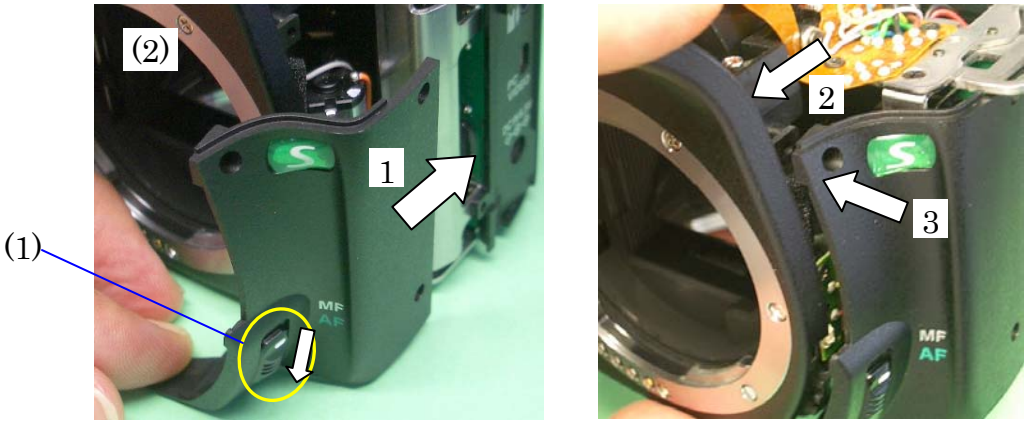
(3) T63



17. A161 Side cover (Front)

(1) Set the AF_SW to AF (down position) and the attach to the body.

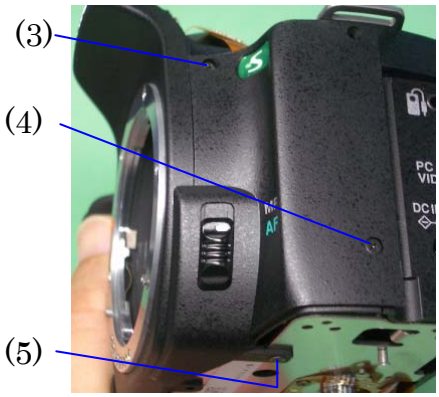
(2) Install A161 as shown figure below.



(3) A74 (TY screw 5.5mm)

(4) A62 (Screw3.5mm)

(5) CNL-D1.7x2.5

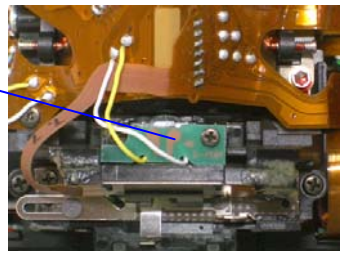


18. [ADJ] Positioning 0-J100

[Required equipment] Penlight or equivalent

(1) Confirm that the mirror seat is downed condition.

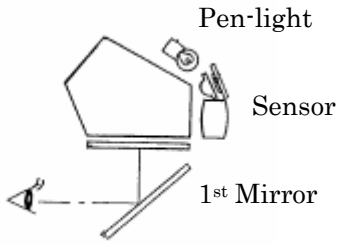
(2) Remove 0-T970 --- There is a washer underneath 0-T970. Removing the lead wire is not necessary.



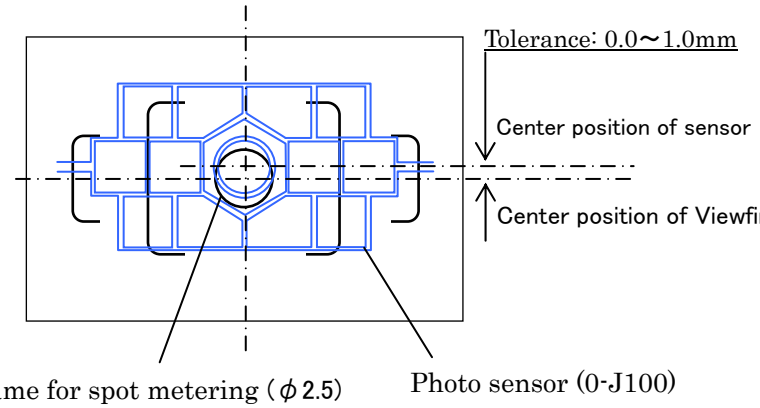
(3) Cover the eyepiece with a black tape.

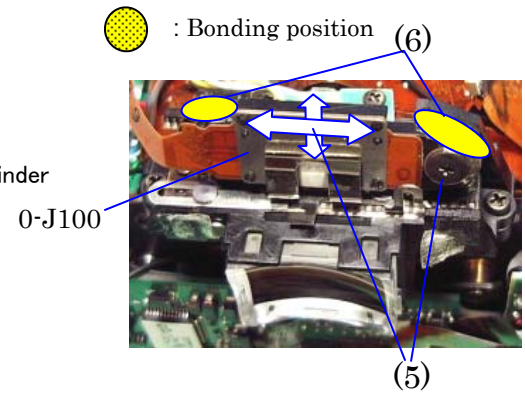
(4) Strike light by a penlight to the photo sensor as shown in the figure right, and search the position where the pattern of the photo sensor can be seen on the 1st mirror from the mount ring side.

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



(5) [CONF] The photo sensor must be positioned at the center of AF frame as shown in the figure below.



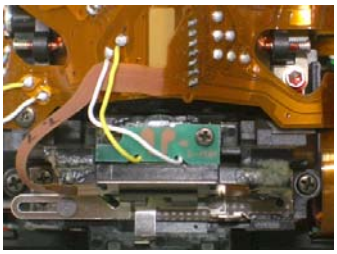


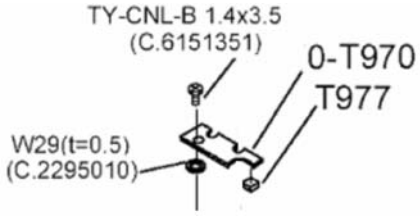
(6) [ADJ] Loosen the screw, and then adjust the position of sensor. Tighten screw and ensure position is not changed. If required, repeat adjustment procedures.

(7) After adjustment is completed, apply the screw lock agent or Super-X to 0-J100 (2 places) as shown in the figure above right.

(8) Install W29 and 0-T970.

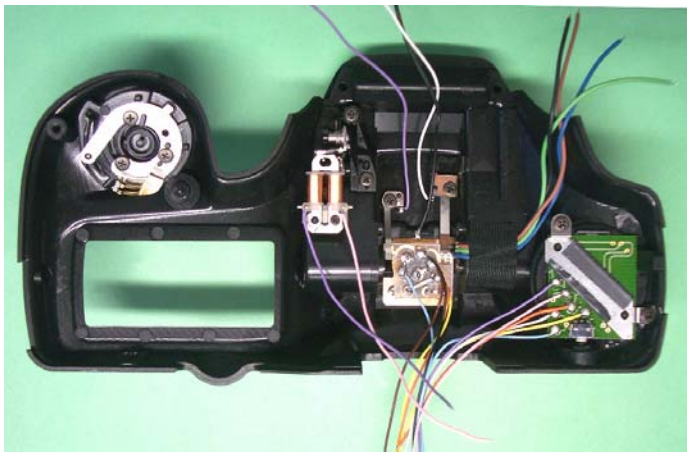
(9) Solder two lead wires. (Yellow and White)





19. 0-A301 Top cover

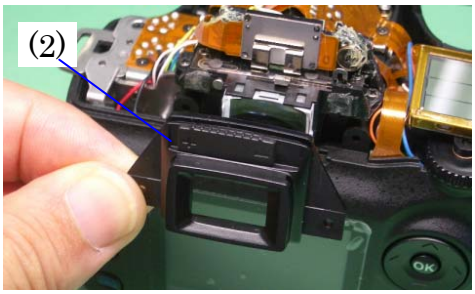
Confirm the instillation of parts before installing 0-A301.

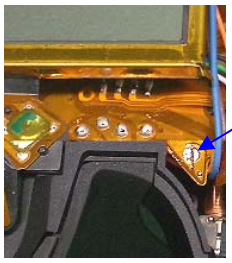


(1) Confirm that soldering on the main SW land is not connected

(2) Install M311 with engaging the Diopter adjustment lever. --- DT (5x5)

(3) Put 0-A301 on the main body.



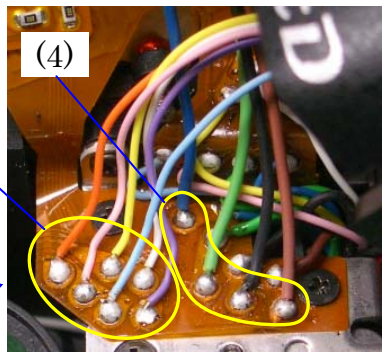


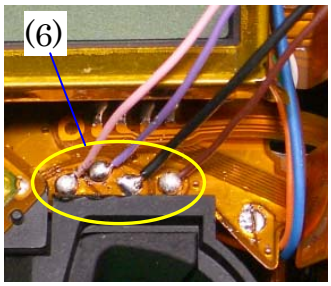
(4) Solder 4 lead wires (Blue, Green, Black, and Brown)

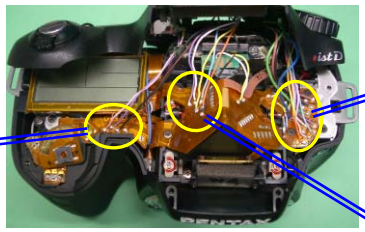
(5) Solder 6 lead wires (Orange, Pink, Yellow, Sky blue, White, Purple)

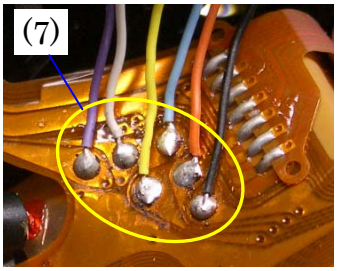
(6) Solder 4 lead wires (Pink, Purple, Black, Brown)

(7) Solder 6 lead wires (Purple, White, Yellow, Sky blue, Orange, Black)

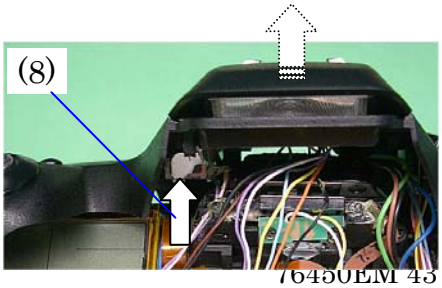




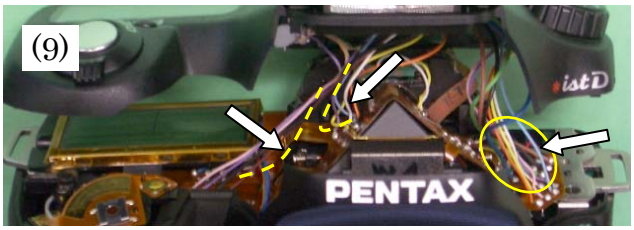




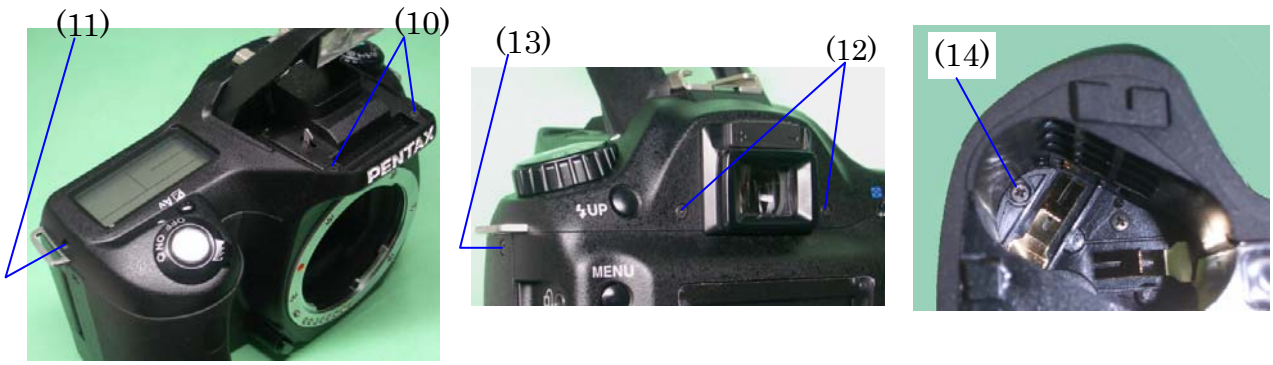
(8) Pop-up Flash



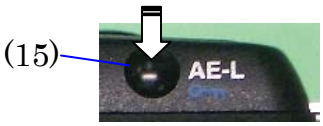
(9) Arrange the lead wires between body and top cover, then attach top cover to the body.



(10) A73（TY Screw、4.5mm x 2）
(11) A69（TY Screws, 3.5mm）
(12) A72（Screws 12mm x 2）
(13) A73（TY Screw）
(14) TY-CNL-D1.7x6.5（Battery chamber）



(15) Check the function of AE-L button

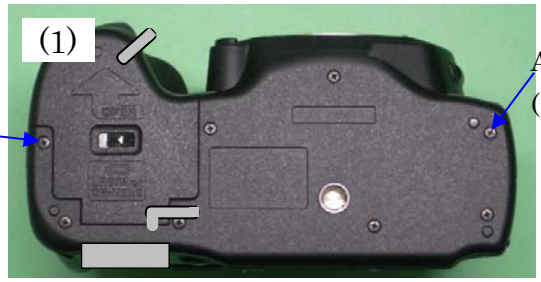


20. [CONF] Function check 2

[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, 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

(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.

Consumption current (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	120 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. (Set [selecting the focus point] to [select] from menu screen)

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. [CONF] Switch Function

(1) Turn the main SW to OFF and insert the CF card for Testing into the camera.
(2) Turn the main SW to ON while opening the CF 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) Turn the main SW to OFF and remove the CF card from the camera.

Symbol	Description	Color display	Symbol	Description	Color display
SWS	Measure SW	Change	MODE	Mode dial	Code
SWR	Release SW	〃	AUTO PICT	Auto picture(AP)	06
MAIN	Main SW	〃	P	Program mode	04
PRV	Preview SW	〃	TV	TV mode	0C
FLPOP	Pop-up SW	〃	AV	AV mode	08
POPUP	Flash button	〃	M	Manual mode	00
MENU	Menu button	〃	B	Bulb mode	01
ERASE	Delete button	〃	Flash off AP	Flash off mode	05/0D
INFO	INFO button	〃	Night PICT	Night-Scene mode	0B
DISP	Playback button	〃	PICT	Action mode	03
4WR	4 way button light	〃	Macro PICT	Macro mode	07
4WL	4 way button left	〃	Landscape PICT	Landscape mode	0F
4WD	4 way button bottom	〃	Portrait PICT	Portrait mode	0E
4WU	4 way button Top	〃	Standard PICT	Standard mode	0A
4WOK	4 way button OK button	〃			
XVAVSET	Exposure compensation button	〃	AFMD	Focus mode SW	Code display
AEL	AE-L button	〃	AF	Autofocus	00
FUNC	Function button	〃	MF	Manual focus	01
DISPOP	Hot-shoe	〃	DIAL	Electronic dial	−←0→+
ACDET	AC Code IN	Not in use			
CARDDOOR	SD card cover SW	Change			

20-6. Shooting, Playback Function

Never install or remove the CF card while turning the camera's power ON as this may cause the CF card or camera to be damaged and become unusable.

*When replacing T100, confirm this section after adjusting [ADJUSTMENT WITH PROGRAMMED SOFTWARE (SLR OPERATION)]

(1) Turn the main SW to OFF and insert the CF 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 CF card from the camera.

20-7. Flash function

(1) The built-in flash pops up when the flash button is pressed. And, ϟ 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, also the built-in flash must be retracted firmly when flush is pushed down by finger.

* If flash does not retract properly, follow the [Adjustment of flash retract position].

(3) Confirm that ϟ must be appeared and discharged when an external flash is attached.

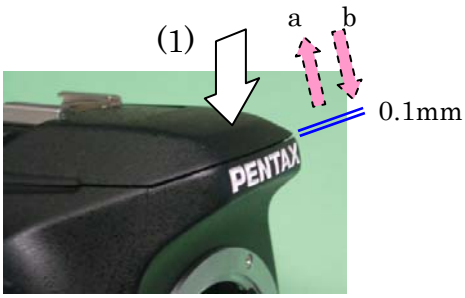
20-8. Adjustment of flash retract position

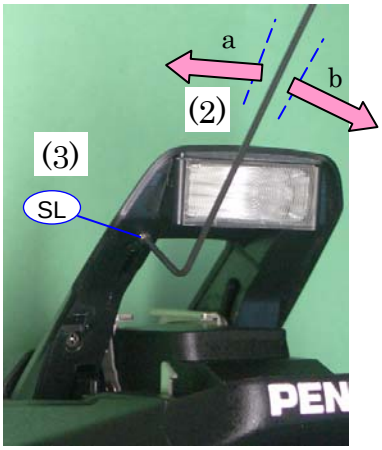
Preparation: Hexagonal driver 0.9mm (HD-M0.9)

(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. Aperture Control, 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.

*When replacing T100, the aperture of middle will not control. Confirm after adjusting with Programmed Software. (SLR operation)

(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.

20-10. SD card cover SW

(1) The camera turns OFF when the SD card cover is opened during the camera is turned ON.

(2) Close the CF card cover and turn the main SW to OFF. When the main SW is turned ON again, the camera must be turned ON.

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

*The adjustment method is same as ＊istD（76180）

[CAUTION] When the following parts are replaced, do the adjustment as follows.

0-T100 ----- All adjustment. 0-J100, 0-J201 ----- AE adjustment (A)

0-M100, 0-B52 ----- AF adjustment (B)

[Required equipment]

Programmed software for 76450 (for SLR operation), Battery adaptor (use D-BG1),

Regulated DC power supply (8V・3A), AC adaptor (D-AC10),

Temporary bottom cover (Hand made/exclusive item),

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”.

SD card 2pcs (For setting test mode ON and OFF)

21-1. Preparation

(1) Pass the cable through into the strap lug to prevent damage of the soldered lands for T901.

(2) Solder I/F buffer cable on the main board as shown figure.

*When replacing T100, confirm the lot number, [X] stamp with or without, [12] and after mark with red marker on 0-A3 with or without.

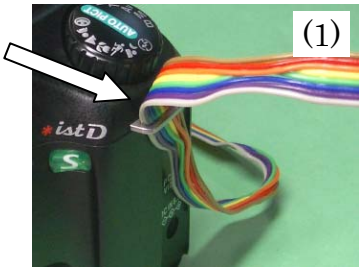
* Confirm CCD ID No when replace T100 or T600 for next adjustment of digital parts.

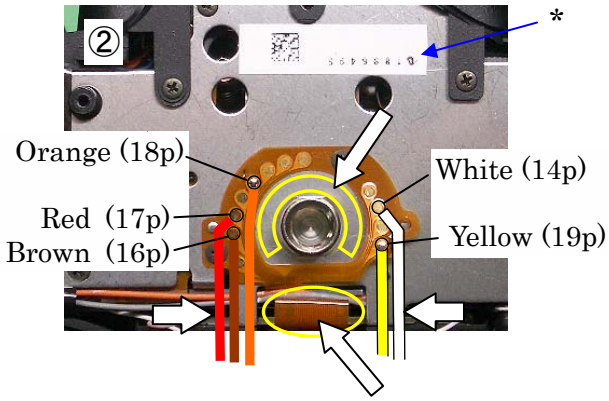
(3) Install battery cover and temporary bottom cover, and then connect camera to computer.

(4) Insert SD card for test mode ON and open the SD card cover.

(5) Connect the AC adaptor and turn ON the camera. (LCD monitor will be displayed test screen)

(6) Turn OFF the camera and remove SD card.





21-2. Adjustment

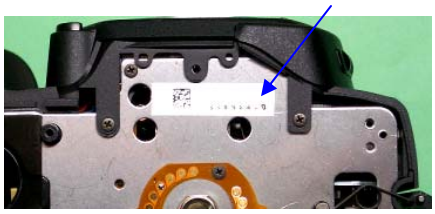
(1) Run the programmed software (for 76450), and then adjust the camera according to the instructed on the screen. About the flow of adjusting, refer to the programmed software flow chart.

Product select menu（Select *istDS）→ 76450 test program*→ Main menu** →
EPROM checking（START）→ Exposure adjustments（A）→AF adjustments（B）*** →
EPROM checking（END）→ Main menu（END）
*When replacing T100, select [2]: (1) When [Writing of standard eeprom] is indicated, press [Y] key. (Initialize T100) (2) Execute [Battery level adjustment] (3) [Product confirmation for AF] Select [1] or [2] by lot number.　If already execute, select Main menu [3].
** If using reflection type of shutter tester, execute [shutter speed adjustment] from main menu.
***[Reference] Distance between 2m AF chart and camera (Mount) ：1.9545m
(2) After adjusting camera, cancel the test mode.
-Insert SD card for test mode OFF and open the SD card cover
- Turn ON the camera (The LCD will be on for moment and go out)
-Turn OFF the camera and remove SD card.
(3) When adjustment is completed, disconnect cable and AC adaptor.
(Leave battery cover and temporary bottom cover for next adjustment)

22. [ADJ] Adjustment with Programmed Software II (Digital)

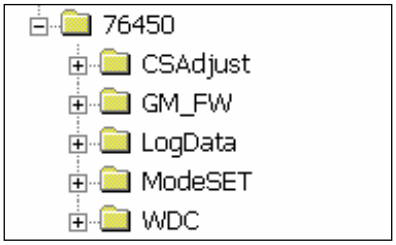
The adjustment method is the same as *istD adjustment software Ver 1.01
[Required equipment]
Programmed software for 76450, Computer (Windows 2000 or XP with USB port equipped)
Light source (LB-3300: A light 2850 K°±10, LV11.00), Master lens for 76180 (95901 D20), Diaphragm set ring F8 (KA-0-1A), AC 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 T600.



22-1. Setting the computer

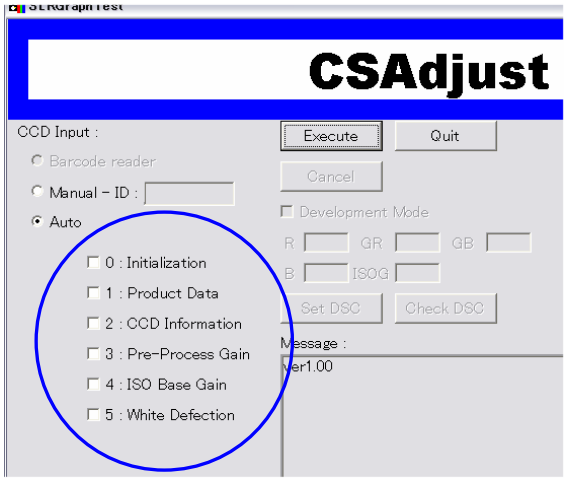
(1) Copy the folder『76450』from the CD-ROM into the Computer.
*Log data will be created automatically whenever the camera is adjusted.



22-2. Setting of *istDS

(1) Attach the master lens 76180 and Diaphragm set ring F8 to the camera.
(2) Set mode dial to [M].

22-3. Item of adjustment

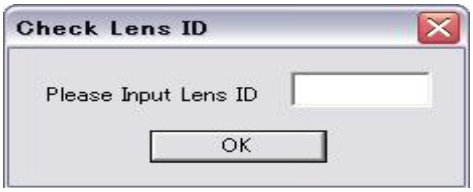


0: [Initialization]
1: [Product Data] Setting product information
2: [CCD Information] Setting CCD information
3: [Pre-Process Gain] Pre-process gain adjustment
4: [ISO Base Gain] ISO base Gain adjustment
5: [White Defection] Compensate dead pixels on CCD (White), refer to the 22-5)

22-4. 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.

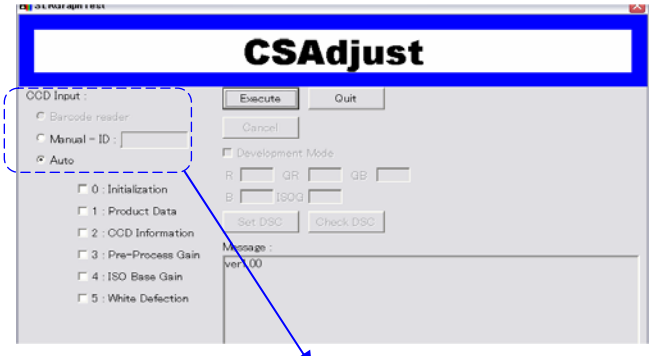
[CAUTION] The adjustment software ends compulsorily while indicating the following error message if ID number which is not correct is input and OK button is clicked. In that case, restart the adjustment software and then input correct ID.

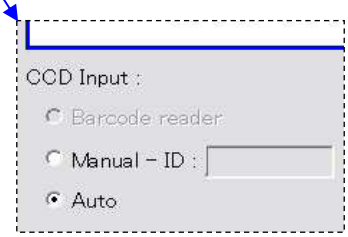


■Lens ID No. Input display

■ Error display

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





(8) Select「CCD Input」
*When replaced T100 or T600 ----- 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

↓

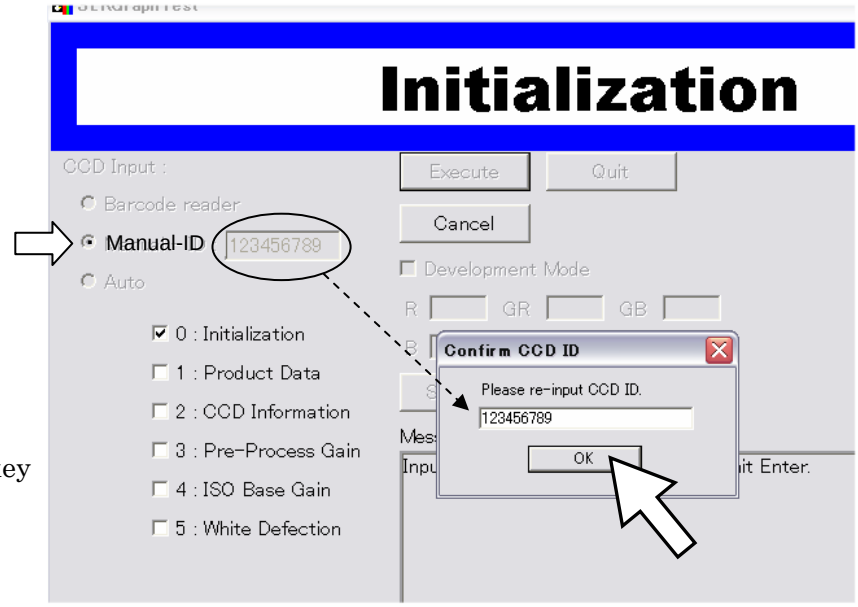
Input ID No

↓

Press “OK” button or Enter key

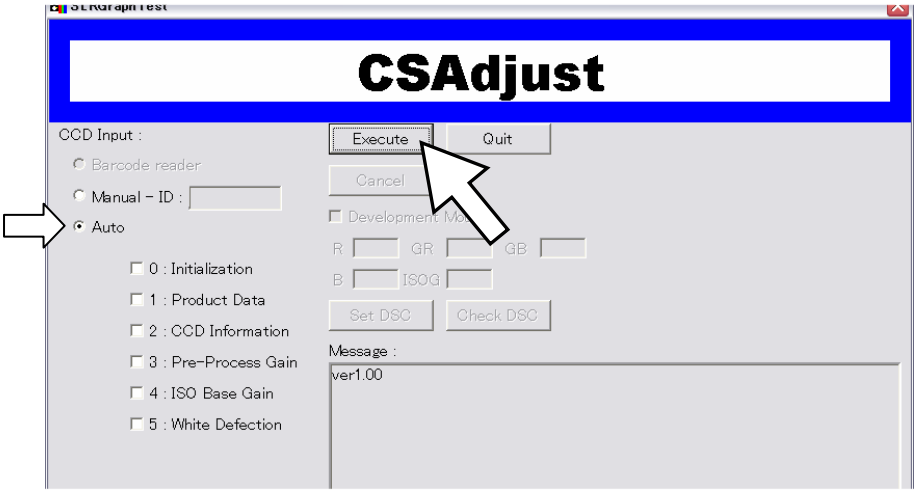
↓

Adjustment process start

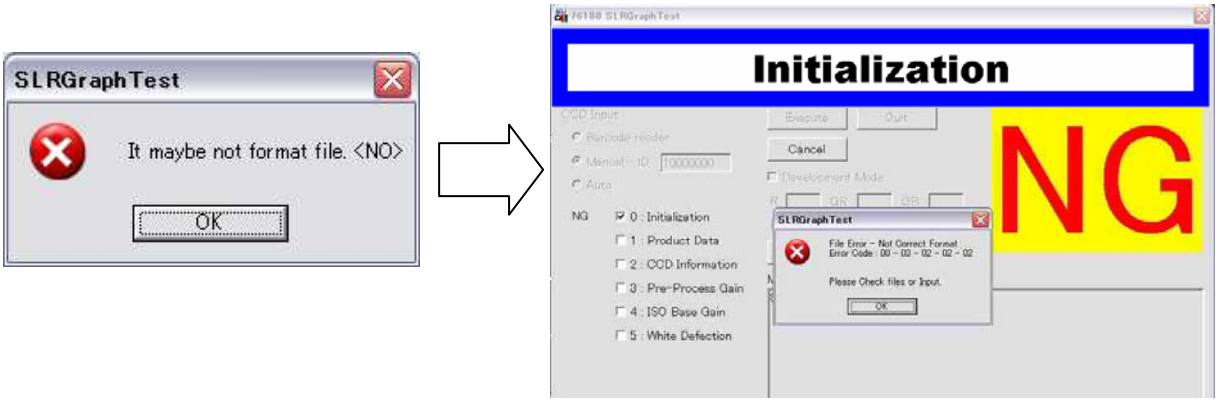


(10) When select [Auto]

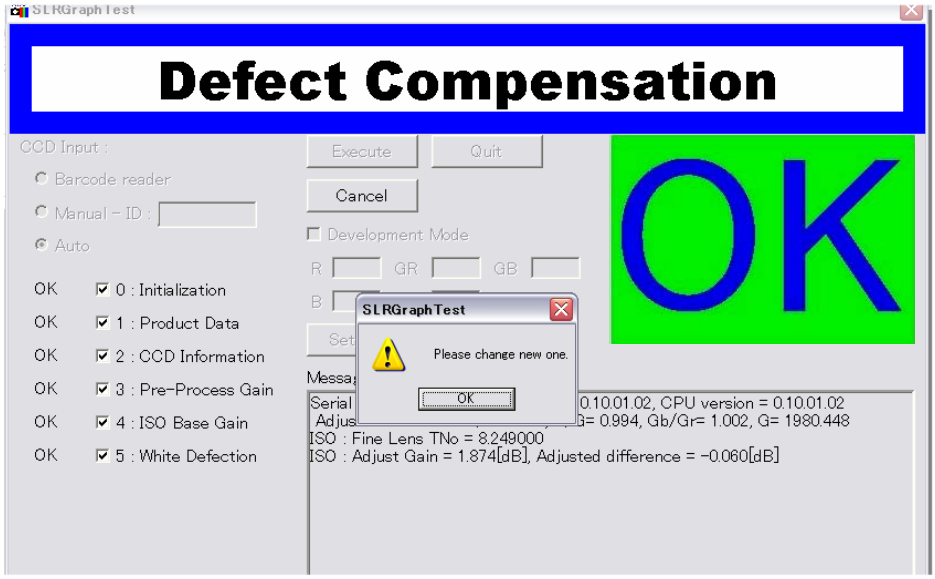
Press “Execute” button or Enter key →Adjustment process start



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



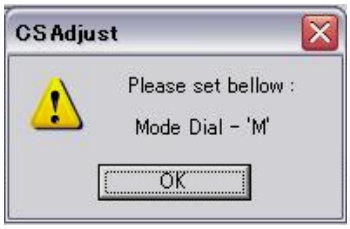
(11) When the screen display as follows, the adjustment is completed.



(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 massage]

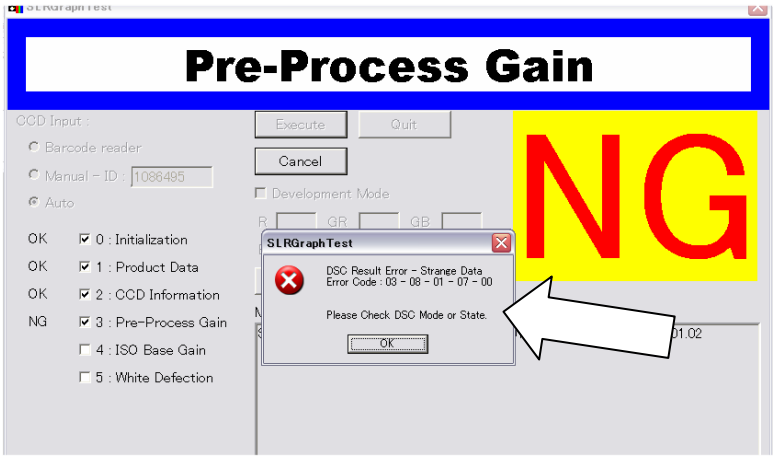
* The following display appear when the mode dial of the camera is not set on [M].



* 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]



22-5. 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.

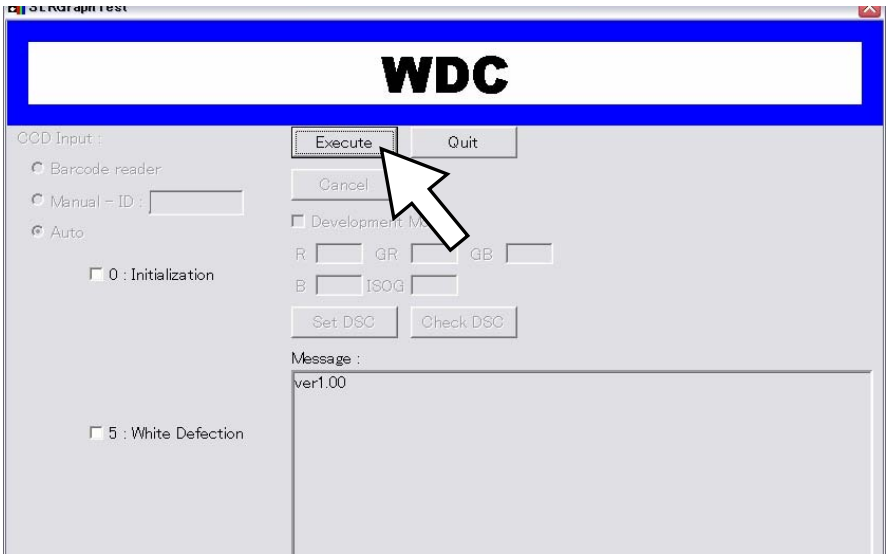
(2) Connect the camera to the computer by the USB cable (I-USB17).

(3) Turn the main switch ON, and then confirm that the camera is recognized as a [Removable Disk] under [My Computer].

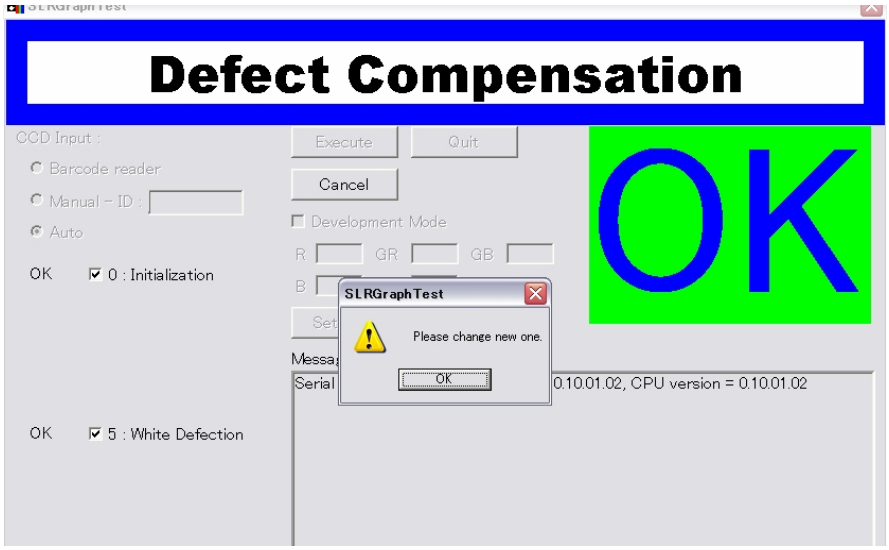
(4) Start the adjustment software (WDC.exe). [NOTE] Lens ID number is not necessary.

(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.

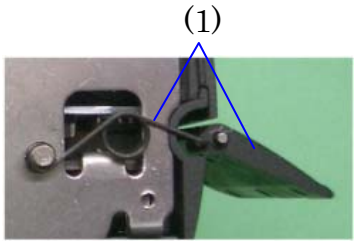


(7) When the screen changes as follows, the adjustment is completed.



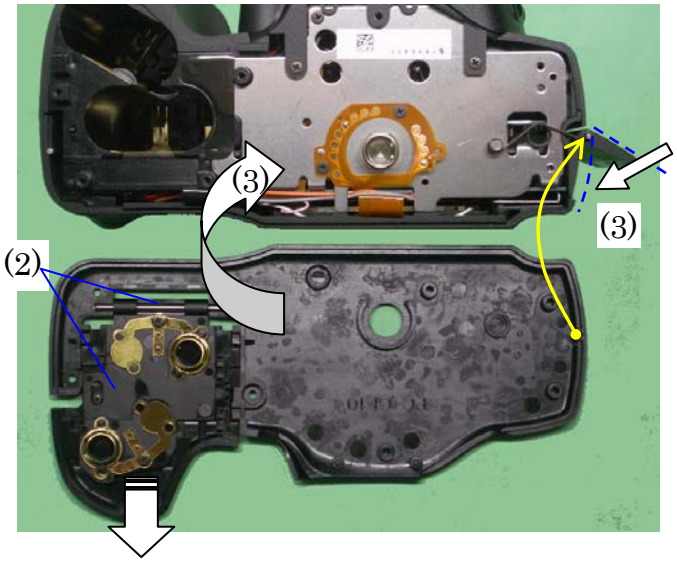
23. A401　(Bottom cover)

(1) Attach A167 (Spring), 0-A165 (Cover).

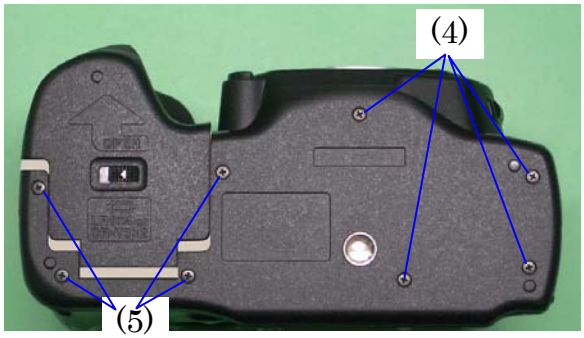


(2) Attach battery cover to the bottom cover.
* Keep battery cover open.

(3) Install bottom cover to the body while Jointing the shaft and bottom cover and holding terminal cover.



(4) A67（Screws　5mm x4）
Tighten screw while holding bottom cover.
(5) A73（Screws TY 4.5mmx4）



24. [CONF] Final function check

*Execute [20. Function check 2] if necessary.

24-1. Confirmation of the Metering function

[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.

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

24-2. 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 2850 K°±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: Normal, Recorded pixels: 6M (Default setting setting), Quality Level: Best(Default setting)

(3) Set the focusing ring to the infinity (∞).

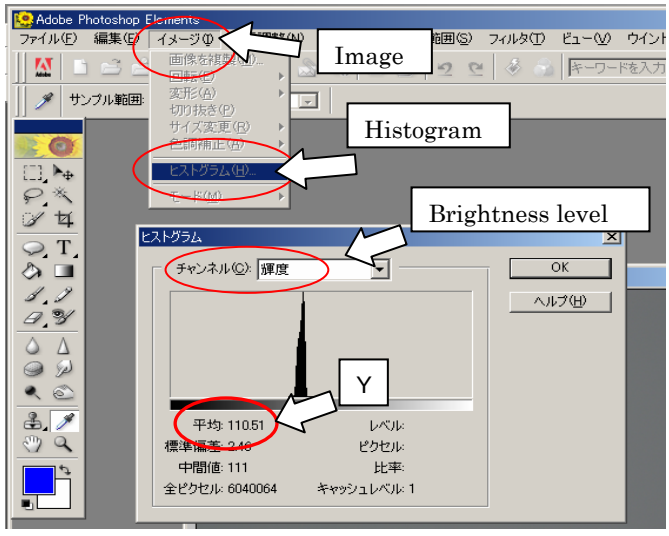
(4) Set the camera to the light source.

(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.

(8) Confirm that the level of brightness must not vary remarkably from the standard (Y=110).



Standard of Exposure value:

P, Tv, Av-AE mode Light value/Lens	Tolerance (EV)	
	AE Master Lens (P)	F/FA 50mm F1.4 (∞)
LV6~15	+0.95 ~ -0.25	+0.70 ~ -0.50
LV15 (Multi-segment)	+1.45 ~ +0.25	+1.20 ~ ±0.00

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.

24-3. WB (Confirmation of White Balance)

[Required equipment] Computer (for Digital adjustment), AC adaptor (D-AC10), USB cable (I-USB17), CF 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 ACDSee™), 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 CF 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”.

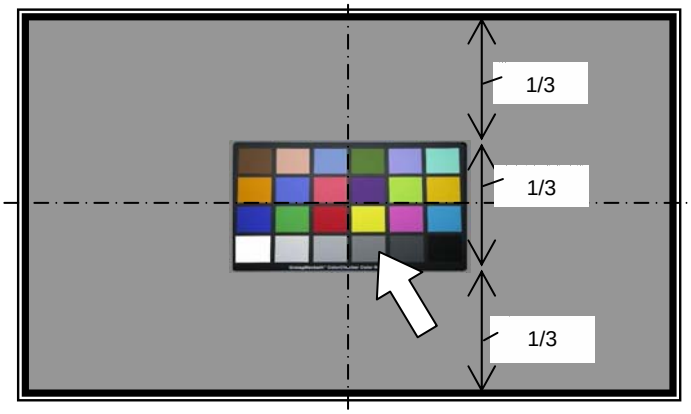
(6) Position the camera so that the Color-Checker and Gray-Chart are framed in the viewfinder as shown in the figure below while looking through the viewfinder.

(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.



24-4. Confirmation of the Battery Exhaustion Warning

[Required equipment] Battery adaptor, Regulated DC power supply

(1) Connect the battery adaptor to the DC power supply, and set the voltage to DC 5.68V (3A).

(2) Attach the battery adaptor to the camera.

(3) Turn the main SW to ON. When depressing the release button halfway, confirm that the following battery exhaustion warning must be displayed.

(4) Set the voltage to 4.66 and confirm.

DC 5.68V → 

DC 4.66V → 

24-5. Confirmation of AF Focus Position by FI (Focus Indicator)

[Caution] There are two kind of height of the CCD base support pillar for *istDS and for optimum AF focus position, compensate the AF focus position at manufacture. Therefore, We cannot evaluate with existing confirmation of AF focus position by using FI.
From that purpose, confirmation of AF Focus Position should check by taking a picture. Confirm at [24-6. Confirmation of AF focus by taking a picture] section.

24-6. 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 between 1m and 2m.

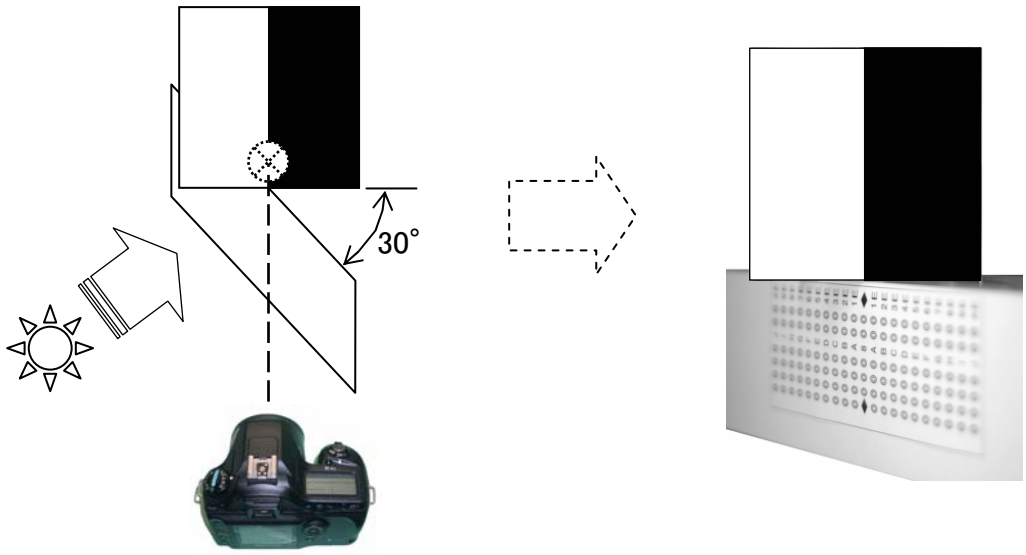
(6) Turn the distance ring of the lens to infinity (∞) by depressing the shutter button halfway while covering the front of lens with the palm.

(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.

24-7. 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)

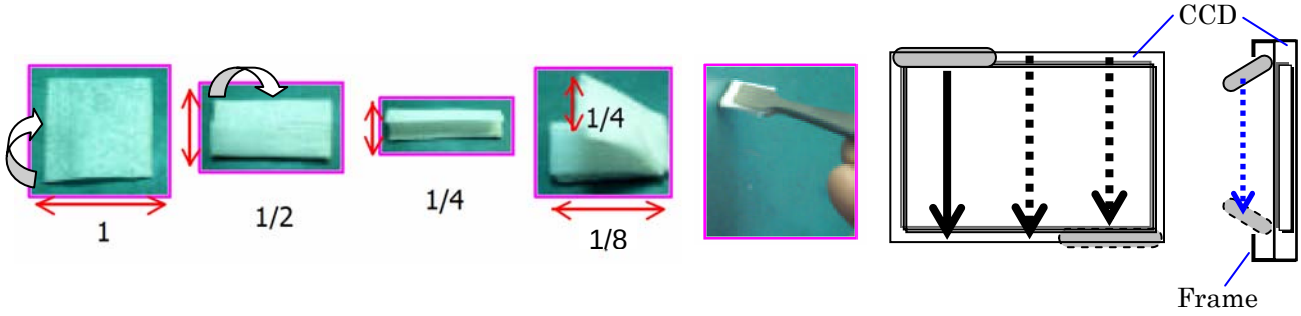
If you see dust clearly on image, there is possibility that the dust enters into the inside of CCD. (Disassembly and cleaning or replace T600)

[Cleaning method of dust]

[CAUTION] 1, For safety, use two type of power source for cleaning (AC adapter 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.

24-8. 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.

24-9. 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 vrsion 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.

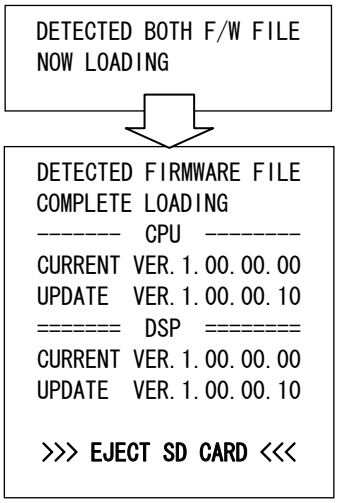
2. When executing this updating, the camera will be set default setting. (Menu, Custom function, Language, Date / Time)

(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.

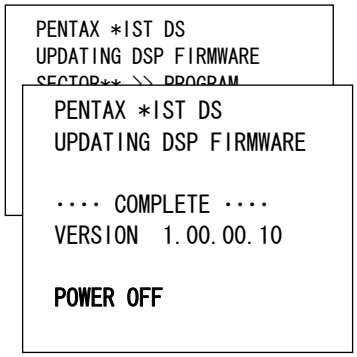
(7) Turn the main switch to OFF when the following message [POWER OFF] is appeared. (Updating is completed)

(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.

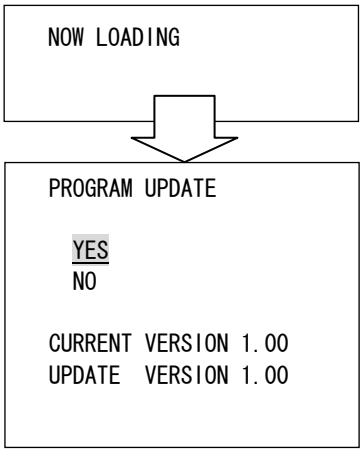
(2) Insert the SD card into the camera.

(3) Closes the SD card cover.

(4) Turn the main switch to ON while pressing [MENU] button.

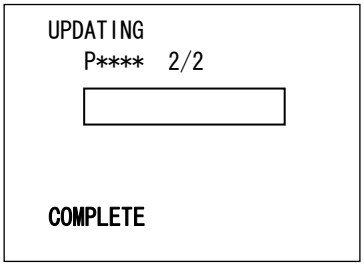
(5) When program update screen is displayed as shown in figure. Select [YES] by pressing the four-way key then press OK. Update will be started. (It takes approx. 60sec for loading firmware)

[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.

Meaning of table: Lens --- O: With X: Without

SD card --- O: With X: Without

*Column of Battery DC5.5V - The value is measured with used battery adaptor.

*5, 6 and 7 are peak value. Other values are average.

	Condition of camera	Lens	SD card	Battery DC5.5V	AC Power supply DC6.5V
1	Main SW/OFF	○	×	50 μA	10mA
		○	○	50 μA	10mA
		×	×	50 μA	10mA
2	After auto power OFF	○	×	120 μA	10mA
		×	×	120 μA	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	○	×	2,700mA	2,900mA
		○	○	2,700mA	2,900mA
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

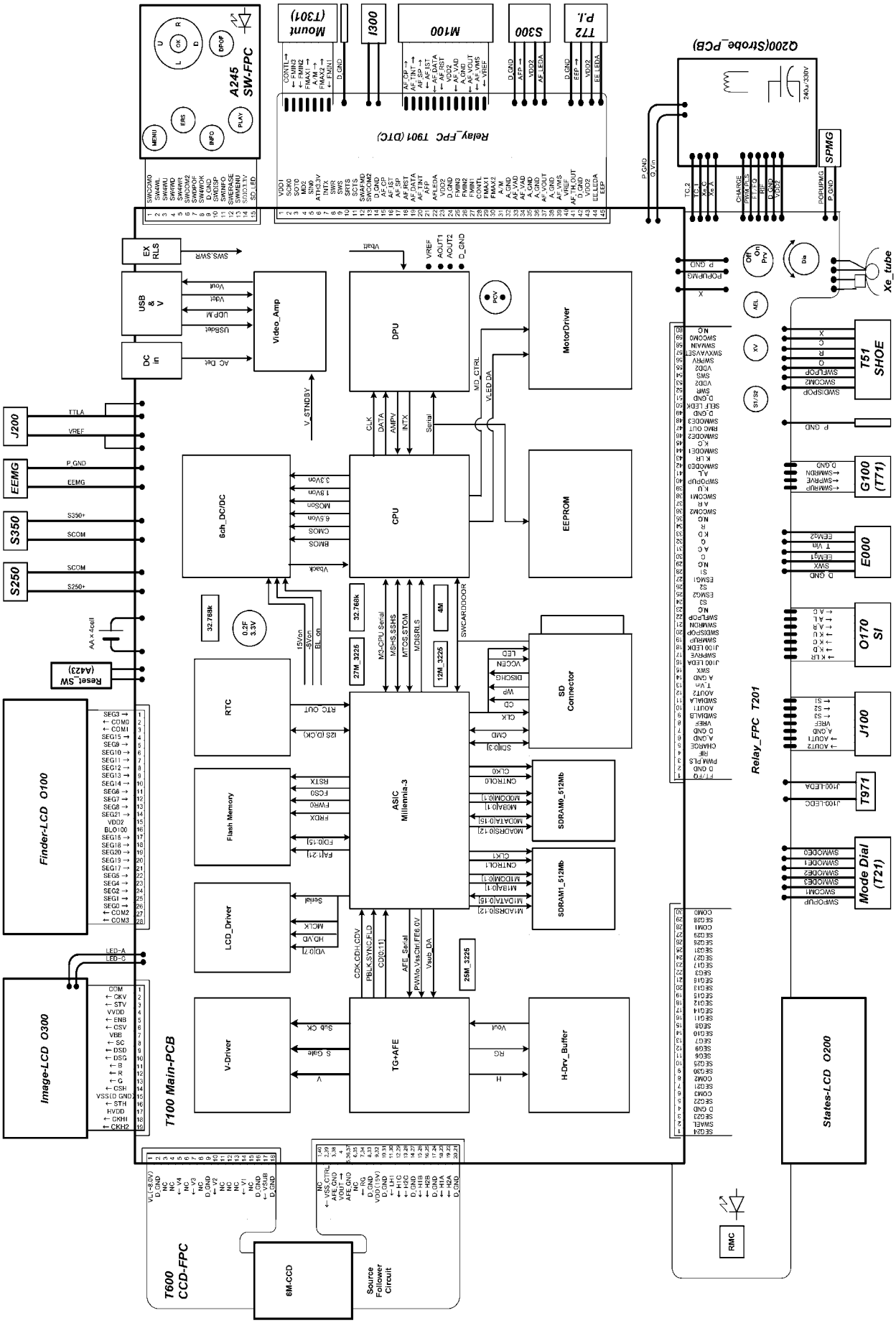
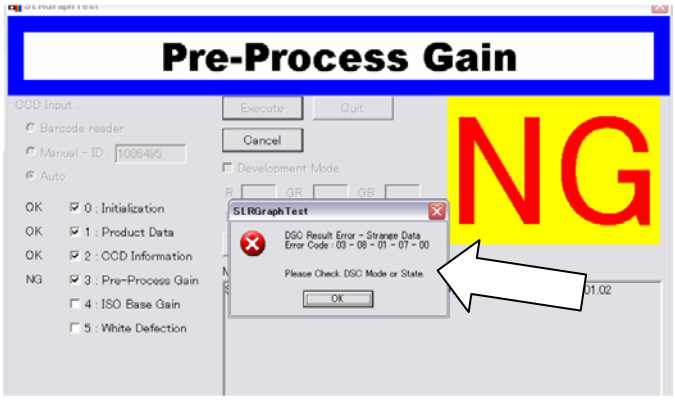


Table of Error Code (Digital adjustment)

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

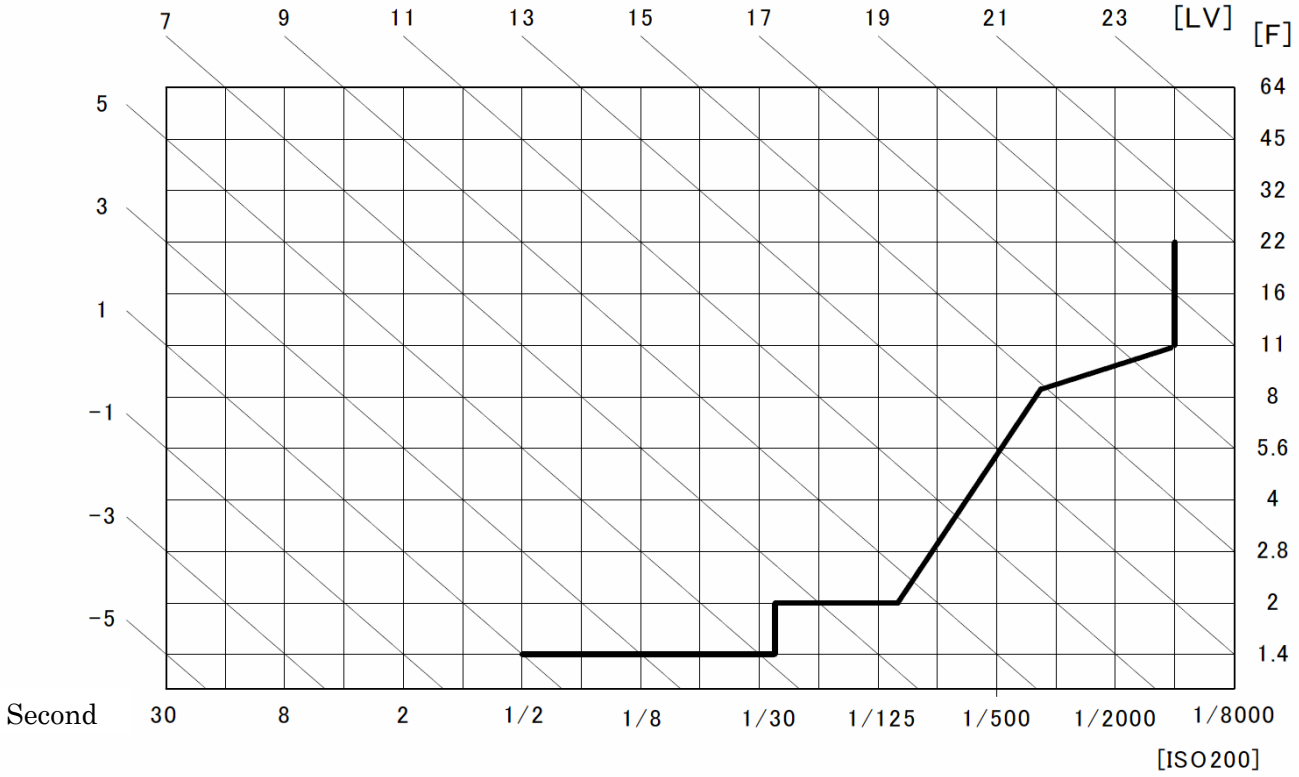
aa : Adjustment item when error is happened
xx : Not use in service
yy : Type of error
zz : Contents of error



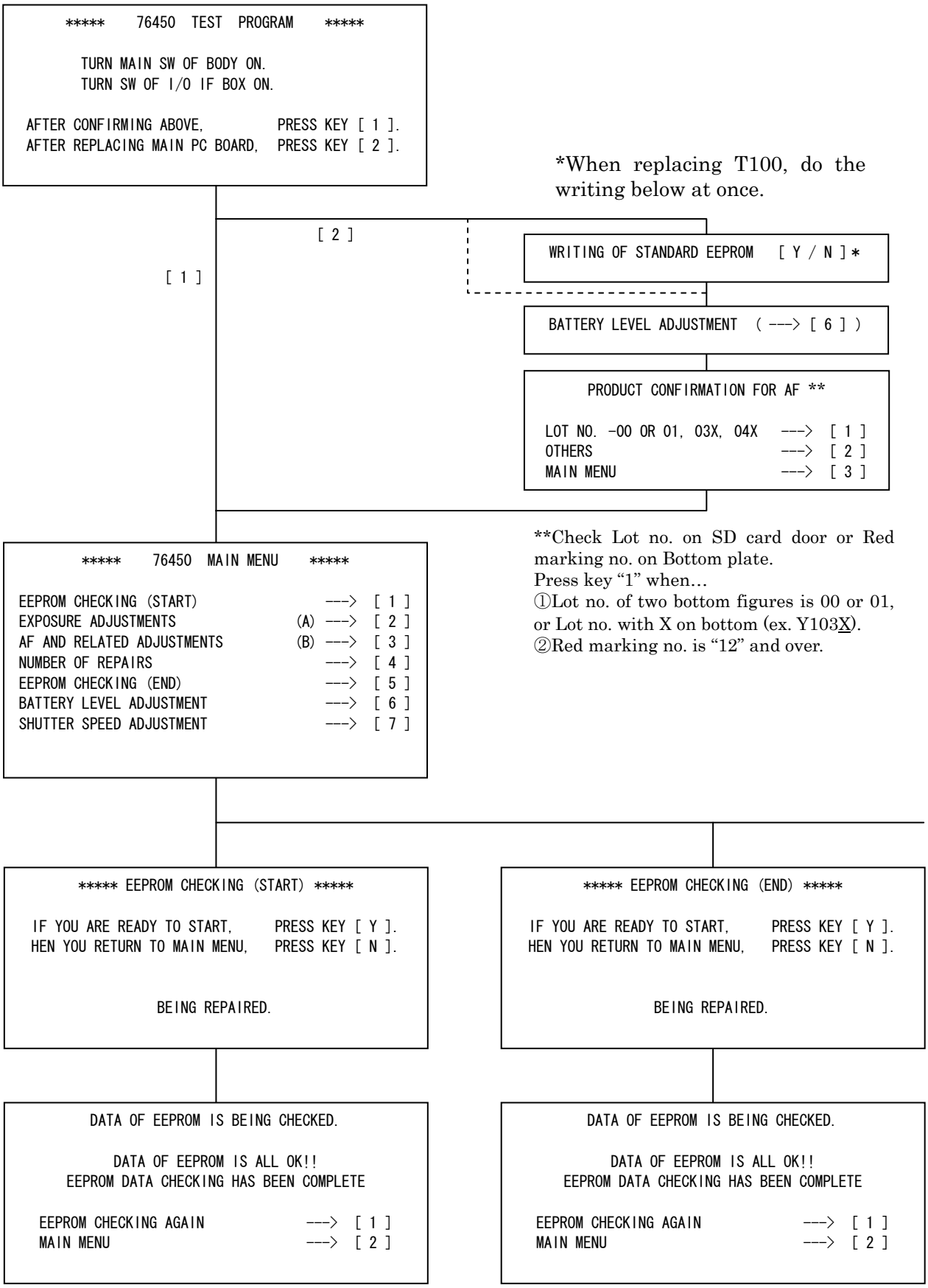
(aa)		(bb)		(xx)		(yy)		(zz)	
00	Initialization	-	NA	-	NA	00	Success	-	-
01	Product Information					01	USB/RS-232C	00	Not found
02	CCD Information							01	Wrong communication
03	Pre-Process Gain							02	Not communicate
04	ISO Base Gain					02	File	00	Not found file
05	W Defect Compensation							01	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

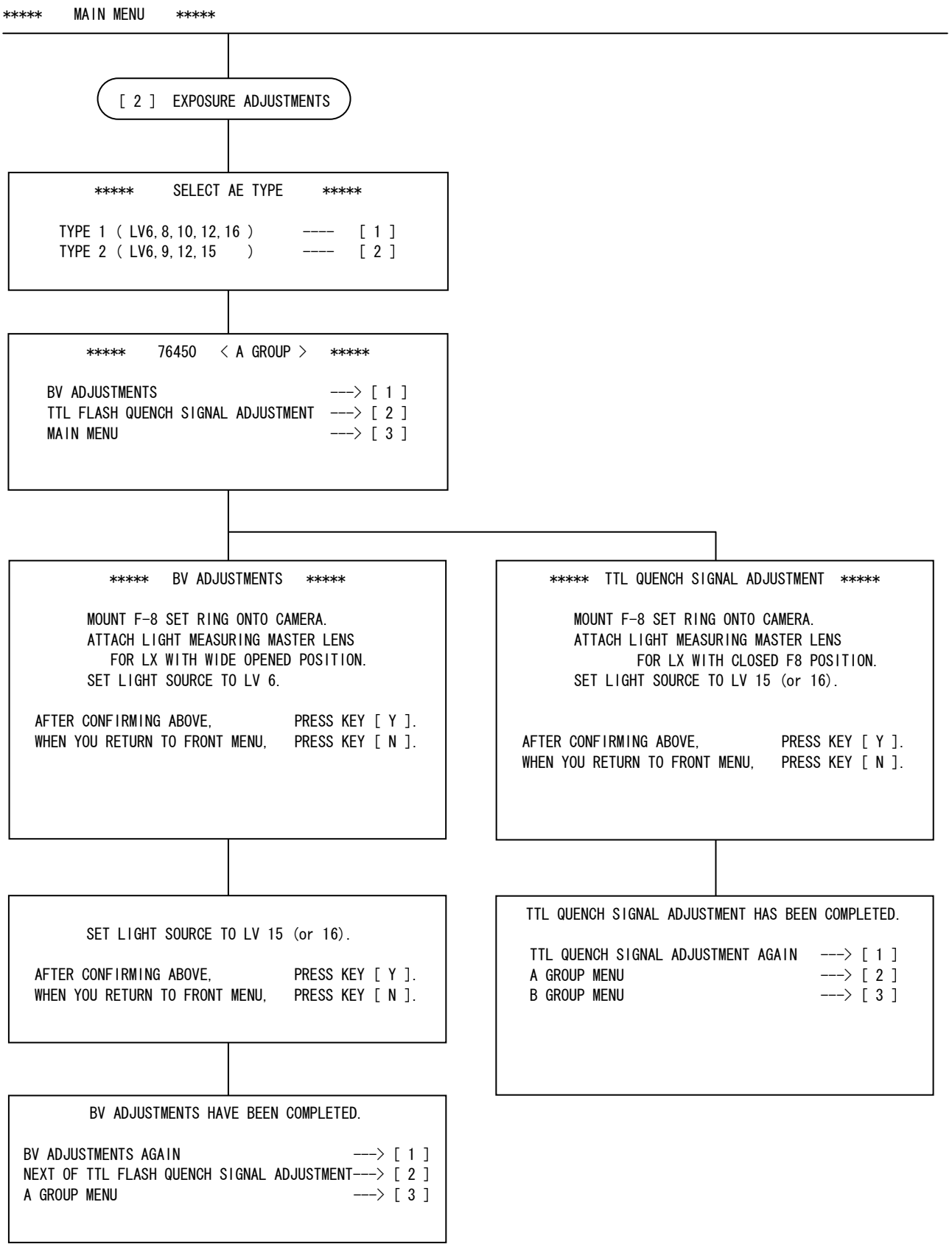
AE Program line (normal) and APEX chart (ISO200)

* Standard program exposure mode (FA 50mm F1.4)



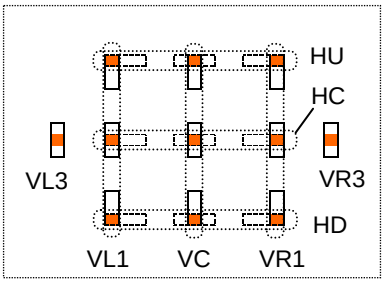
【76450 PROGRAM SOFTWARE FLOW CHART】



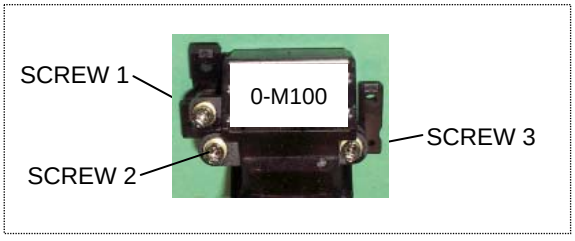

***** MAIN MENU *****
[2] EXPOSURE ADJUSTMENTS
***** SELECT AE TYPE *****
TYPE 1 (LV6,8,10,12,16) ---- [1]
TYPE 2 (LV6,9,12,15) ---- [2]
***** 76450 < A GROUP > *****
BV ADJUSTMENTS ---> [1]
TTL FLASH QUENCH SIGNAL ADJUSTMENT ---> [2]
MAIN MENU ---> [3]
***** BV ADJUSTMENTS *****
MOUNT F-8 SET RING ONTO CAMERA.
ATTACH LIGHT MEASURING MASTER LENS
FOR LX WITH WIDE OPENED POSITION.
SET LIGHT SOURCE TO LV 6.
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
SET LIGHT SOURCE TO LV 15 (or 16).
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
BV ADJUSTMENTS HAVE BEEN COMPLETED.
BV ADJUSTMENTS AGAIN ---> [1]
NEXT OF TTL FLASH QUENCH SIGNAL ADJUSTMENT---> [2]
A GROUP MENU ---> [3]
***** TTL QUENCH SIGNAL ADJUSTMENT *****
MOUNT F-8 SET RING ONTO CAMERA.
ATTACH LIGHT MEASURING MASTER LENS
FOR LX WITH CLOSED F8 POSITION.
SET LIGHT SOURCE TO LV 15 (or 16).
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
TTL QUENCH SIGNAL ADJUSTMENT HAS BEEN COMPLETED.
TTL QUENCH SIGNAL ADJUSTMENT AGAIN ---> [1]
A GROUP MENU ---> [2]
B GROUP MENU ---> [3]

```
*****    MAIN MENU    *****

        [ 3 ]  AF AND RELATED ADJUSTMENTS

      *****  AF ADJUSTMENT MAIN MENU  *****

  CCD POSITION ADJUSTMENT                    ---> [ 1 ]
  AGC LEVEL ADJUSTMENTS                      ---> [ 2 ]
  MONITOR OFFSET ADJUSTMENT                  ---> [ 3 ]
  UNIFORMITY ADJUSTMENT                      ---> [ 4 ]
  SATURATED OUTPUT AND TEMP ADJUSTMENT       ---> [ 5 ]
  FOCUS ADJUSTMENT                           ---> [ 6 ]
  MAIN MENU                                  ---> [ 0 ]

    *****  CCD POSITION ADJUSTMENT MENU  *****

  CCD POSITION SQUARE ADJUSTMENTS      ---> [ 1 ]
  CCD POSITION CROSS ADJUSTMENTS       ---> [ 2 ]
  CCD POSITION CHECK                   ---> [ 3 ]
  CCD FOCUS ADJUSTMENT                 ---> [ 4 ]
  TO AF-MAIN-MENU                      ---> [ 0 ]

[1] CCD POSITION SQUARE ADJUSTMENTS          [2] CCD POSITION CROSS ADJUSTMENTS

  *****   CCD POSITION SQUARE ADJUSTMENTS   *****

  MOUNT CCD ADJUSTING TUBE (SQUARE) ONTO CAMERA.
  SET LIGHT SOURCE TO LV 12.
  SET FOCUS-MODE SW OF CAMERA TO MF.

 AFTER CONFIRMING ABOVE,          PRESS KEY [ Y ].
 WHEN YOU RETURN TO FRONT MENU,   PRESS KEY [ N ].

  *****   CCD POSITION CROSS ADJUSTMENTS   *****

  MOUNT CCD ADJUSTING TUBE (CROSS) ONTO CAMERA.
  SET LIGHT SOURCE TO LV 12.
  SET FOCUS-MODE SW OF CAMERA TO MF.

 AFTER CONFIRMING ABOVE,          PRESS KEY [ Y ].
 WHEN YOU RETURN TO FRONT MENU,   PRESS KEY [ N ].

     *****   CCD POSITION ADJUSTMENTS   *****
                          ** SQUARE **

     HD    -----:     *      :-----  (SCREW 3)
     HC    -----:     *      :-----  (SCREW 3)
     HU    -----:        *   :-----  (SCREW 3)
     VR1   -----:    *       :-----  (SCREW 1)
     VC    -----:      *     :-----  (SCREW 1)
     VR1   -----:    *       :-----  (SCREW 1)

     *****   CCD POSITION ADJUSTMENTS   *****
                          ** CROSS **

     HC    -----:     *      :-----  (SCREW 1)
     VC    -----:        *   :-----  (SCREW 1)

                  JUST A MOMENT
```

■Symbols of CCD position



■Position of Adjusting screws



***** MAIN MENU *****

***** < B GROUP > *****

***** CCD POSITION *****

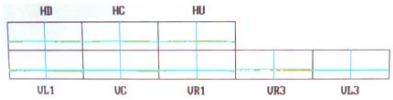
[3] CCD POSITION check

***** CCD POSITION ADJUSTMENT *****
** POSITION CHECK **

MOUNT F ZOOM LENS 35-80 ONTO CAMERA.
SET THE LENS TO MIN. DISTANCE (0.4M)
AND TELE END (80MM).
SET LIGHT SOURCE TO LV 12.
SET FOCUS-MODE SW OF CAMERA TO MF.

AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].

***** CCD POSITION ADJUSTMENT *****
** POSITION CHECK **



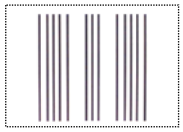
[4] CCD FOCUS ADJUSTMENT

***** CCD POSITION ADJUSTMENT *****
** CCD FOCUS ADJUSTMENT **

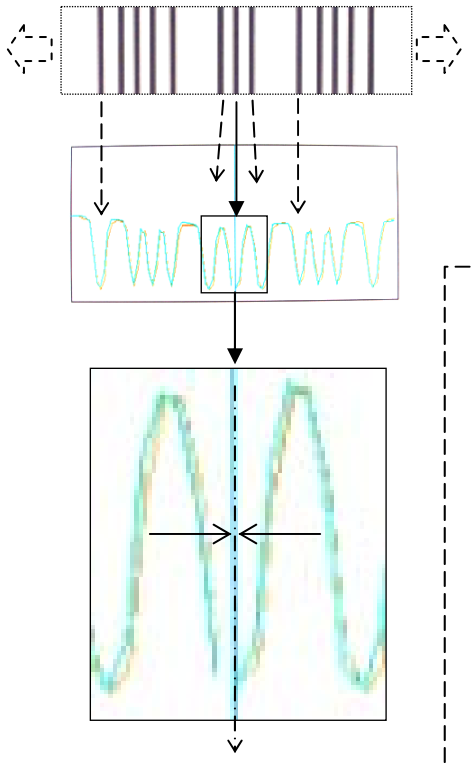
SET 2M CHART NO1.*
SET 2M MASTER LENS.
SET FOCUS-MODE SW OF CAMERA TO MF.

AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].

*: AF CHART NO1

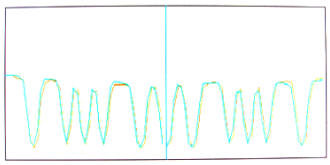


Position Chart No.1.



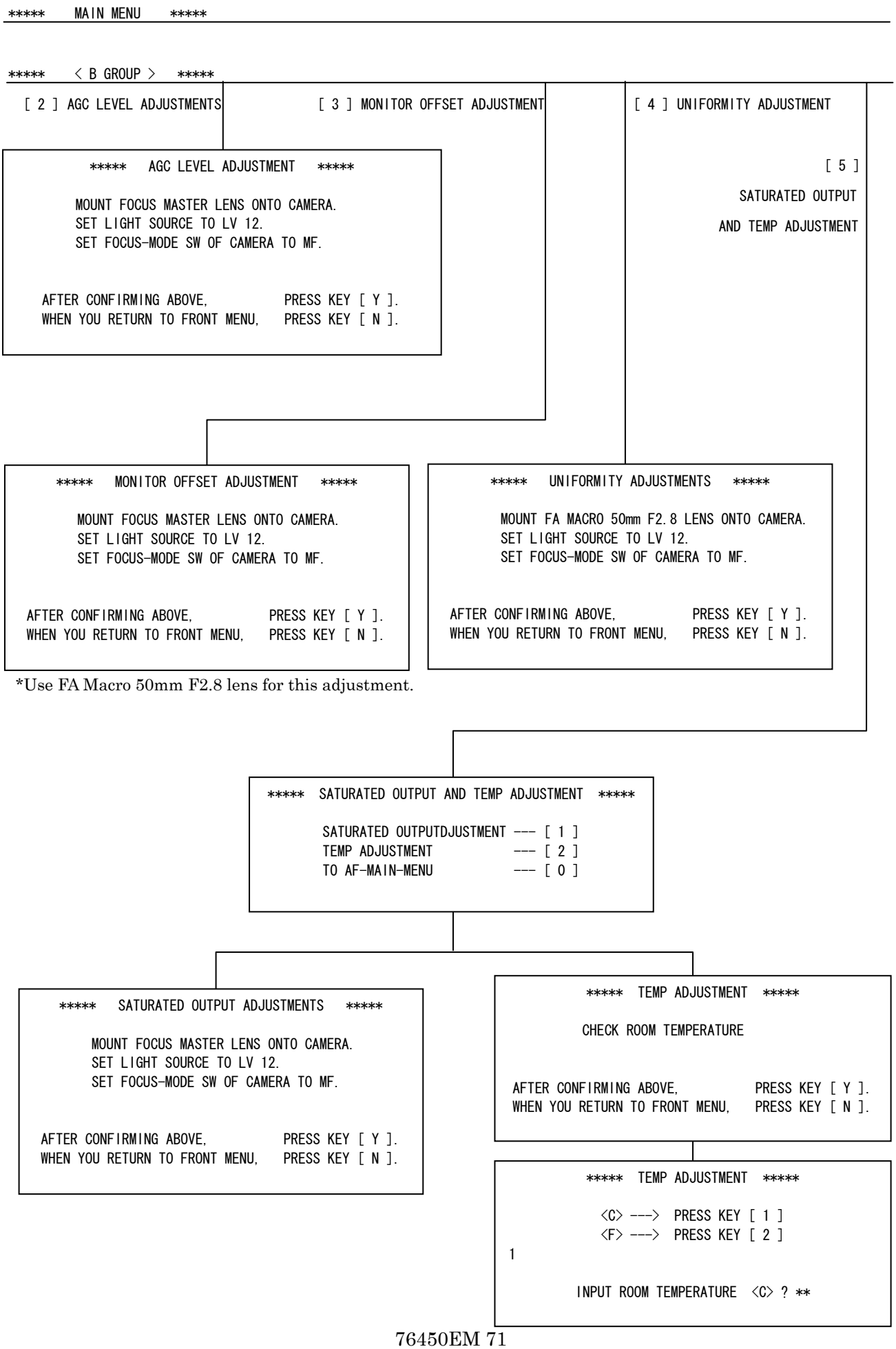
OK

SET A WAVE-LINE CENTER TO A GREEN LINE.



***** CCD FOCUS ADJUSTMENTS *****

ADJUSTED WITHIN TOLERANCE.
FOCUS DATA= **



*Use FA Macro 50mm F2.8 lens for this adjustment.

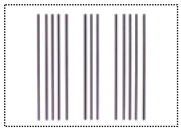
***** < B GROUP > *****

[6] FOCUS ADJUSTMENT

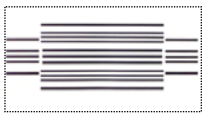
***** FOCUS ADJUSTMENT *****

HORIZONTAL POSITION AND ADJUSTMENT --- [1]
HORIZONTAL ADJUSTMENT --- [2]
VERTICAL POSITION AND ADJUSTMENT --- [3]
VERTICAL ADJUSTMENT --- [4]
AF-MAIN-MENU --- [0]

AF CHART NO1



AF CHART NO2



[1]
[2]

[3]
[4]

***** FOCUS ADJUSTMENT *****

SET 2M AF CHART NO1.
SET 2M MASTER LENS.
SET FOCUS-MODE SW OF CAMERA TO MF.

AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].

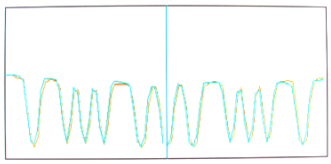
***** FOCUS ADJUSTMENT *****

SET 2M AF CHART NO2.
SET 2M MASTER LENS.
SET FOCUS-MODE SW OF CAMERA TO MF.

AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].

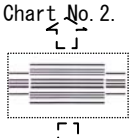
SET A WAVE-LINE CENTER TO A GREEN LINE.

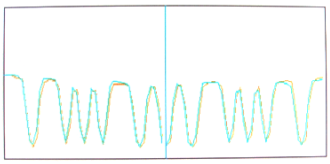
Positioning
Chart No.1.



SET A WAVE-LINE CENTER TO A GREEN LINE.

Positioning
Chart No.2.





***** FOCUS ADJUSTMENT *****

JUST A MOMENT

COUNTER ->9

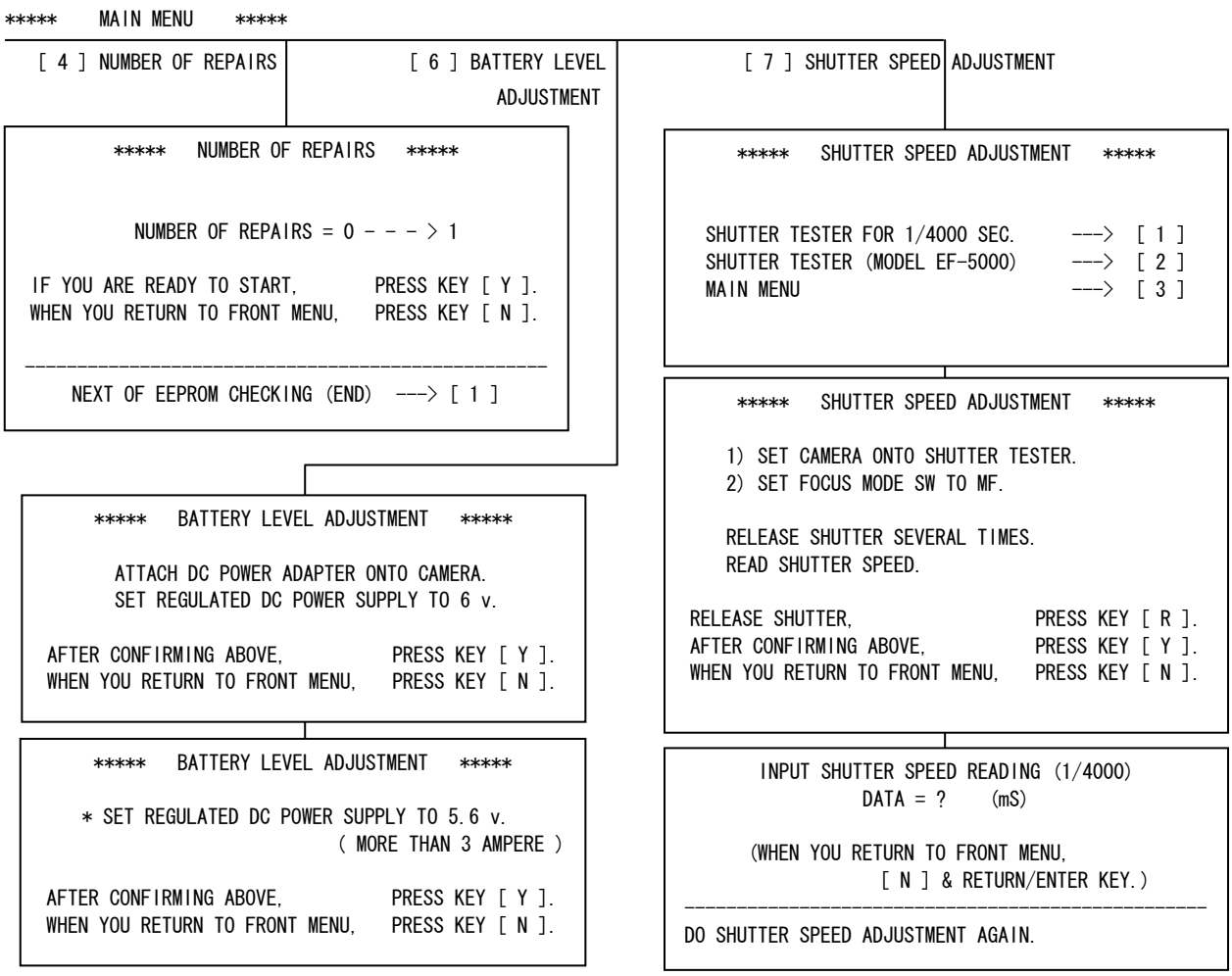
OK : FOCUS ADJUSTMENT

***** FOCUS ADJUSTMENT *****

JUST A MOMENT

COUNTER ->9

OK : FOCUS ADJUSTMENT


***** MAIN MENU *****
[4] NUMBER OF REPAIRS
[6] BATTERY LEVEL ADJUSTMENT
[7] SHUTTER SPEED ADJUSTMENT
***** NUMBER OF REPAIRS *****
NUMBER OF REPAIRS = 0 - - - > 1
IF YOU ARE READY TO START, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
NEXT OF EEPROM CHECKING (END) ---> [1]
***** BATTERY LEVEL ADJUSTMENT *****
ATTACH DC POWER ADAPTER ONTO CAMERA.
SET REGULATED DC POWER SUPPLY TO 6 v.
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
***** BATTERY LEVEL ADJUSTMENT *****
* SET REGULATED DC POWER SUPPLY TO 5.6 v.
(MORE THAN 3 AMPERE)
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
***** SHUTTER SPEED ADJUSTMENT *****
SHUTTER TESTER FOR 1/4000 SEC. ---> [1]
SHUTTER TESTER (MODEL EF-5000) ---> [2]
MAIN MENU ---> [3]
***** SHUTTER SPEED ADJUSTMENT *****
1) SET CAMERA ONTO SHUTTER TESTER.
2) SET FOCUS MODE SW TO MF.
RELEASE SHUTTER SEVERAL TIMES.
READ SHUTTER SPEED.
RELEASE SHUTTER, PRESS KEY [R].
AFTER CONFIRMING ABOVE, PRESS KEY [Y].
WHEN YOU RETURN TO FRONT MENU, PRESS KEY [N].
INPUT SHUTTER SPEED READING (1/4000)
DATA = ? (mS)
(WHEN YOU RETURN TO FRONT MENU,
[N] & RETURN/ENTER KEY.)
DO SHUTTER SPEED ADJUSTMENT AGAIN.

Information of Jigs, Tools and Testers for *istDS

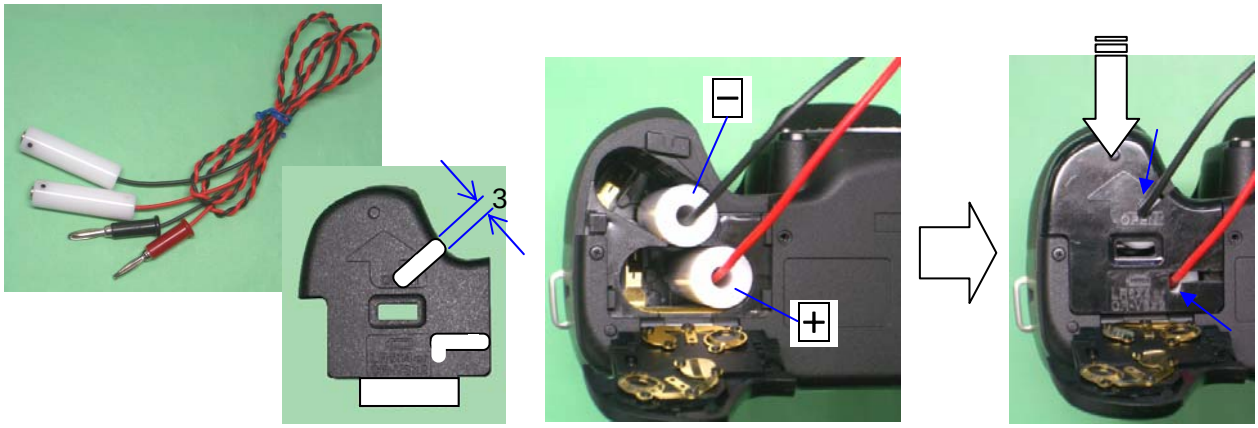
Order No.

＊ Exclusive use for *istDS (76450)

Program soft for 76450 (For SLR, supply with floppy disk) No.95901- P402-00A

Program soft for 76450 (For digital, supply with CD-ROM) - P402-00B

Battery adaptor for 76450 - D23



Hexagonal driver 0.9mm (HD-M0.9) For Flash positioning adj  - K283

USB cable (I-USB17, provided with *istDS)

AV-Video cable (I-VC28, provided with *istDS)

Temporary bottom cover (Hand made)

SD memory card (8MB x 7, 32MB x 1) – Provide locally

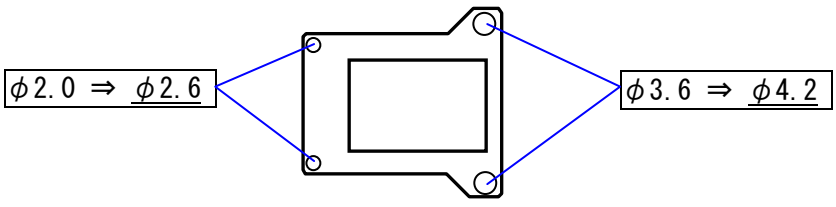
Flexible board for 76450 (2 different type, provide with service program soft (CD-ROM))

Common in use with *istD (76180)

76180 Shutter attachment (for shutter tester) - J138

* If you have this tool already, Re-processing will be required, refer to the following.

We will supply new type from now on.



Master lens for 76180 (For digital adjustment) -D20
*If you do not have D20, you must order with P402-00B
DC code for 76180 -D21
Clean wipe-P -A14 (60 boxes) - A15 (1 box)
AC adaptor (D-AC10)
Resistor x1 (150-250Ω: for viewfinder indication adjustment)
Personal computer (Windows 2000 or XP, support USB)
Light source (LB3300 or equivalent, A light color temperature:2,850k°±10, brightness: LV11.00)
Color temperature tester (for correction of light source)
LV checker (for correction of light source LV11.00)
Dark Curtain
Color video monitor

<u>Others</u>

1st mirror angle adjusting jig for 45° -J104
Mirror angle adjusting jig for 27830 -J137
AF positioning jig (Square) for 27830 -M521
AF positioning jig (Cross) for 27250 -M514
2m AF chart for 27830 (Attached in the service manual for 27830)
Camera connection cable for 27250 -M515
FA(F) 35-80mm F4-5.6（AF Adj）
FA Macro 50mmF2.8（AF Adj）
Remote control F
Jig for flash pop-up (Hand made, same as 27550 MZ-7)
Camera multi adapter II (or Multi adapter A) -X100
Hexagonal driver 1.5mm (HD-M1.5) -K72
Shutter tester (measurable 1/4000ms)
Collimator chart with 3 lines
Focus master lens for 35mm (KML-01)
Diaphragm set ring F8 (KA-0-1A) -N26
AE master lens (ML-245) -N27
Dial gauge comparator (PH-2) -N1
Block gauge for 35mm (229N-A01-A2) -N4
Mount block (1620-A) -N47
Mount spacer holder (23600N-A01,A104-A-B)
Mount block spacer (23600N-A01,A104-A-A)
1000mm Collimator
Mirror positioning scope -N4
Focus master lens for （2m (ML-259) -N24
Pen light
Regulated DC power supply (capable current at least 3A)
Circuit tester

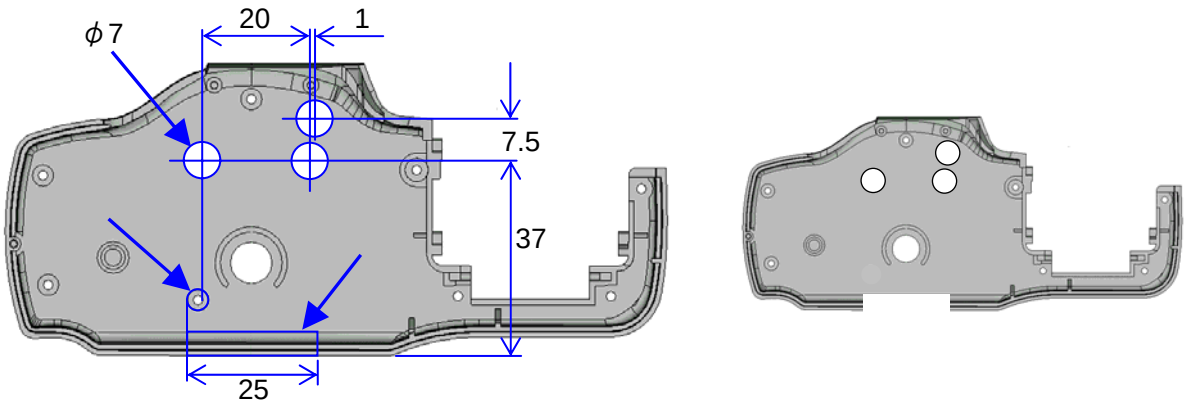
Method for making temporally bottom cover

Preparation: A401 bottom cover

(1) Cut off part of bottom cover as shown in fig

*3 places marked with ○

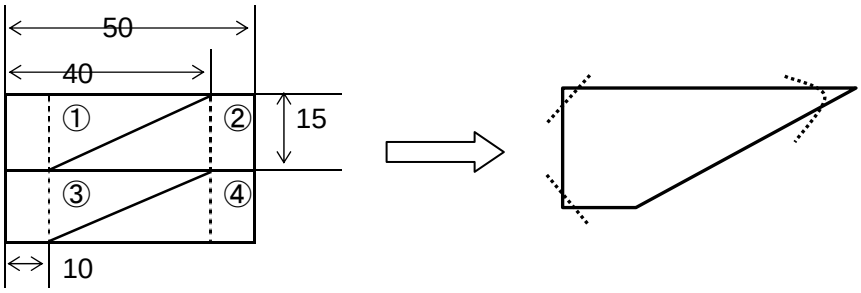
*1 place marked with ▭



Method for making flash pop-up jig

This is the same jig as MZ-7

Material of Jig --- Recommend to use magnetic card such as telephone card.



AF confirmation chart and scale

These charts are for “confirmation of AF focus by taking picture”.

Scale for focus confirmation →

AF chart for confirmation ↓