作成承認印	配布許可印
ニコン 映像カンパニー 品質保証部 GM	サービス 計画課 M

Nikon

COOLPIX L100

VMA43007(BLACK)

REPAIR MANUAL

Nikon | **NIKON CORPORATION**
Tokyo, Japan

Contents

Disassembly

Assembly

Disassembly

⚠ WARNING	
⚠ (high voltage symbol)	● There are high voltage parts inside. Be careful of this electric shock, when you remove the cover. ● You must discharge the main condenser according to the instruction of this repair manual after you remove the cover.

Points to notice for Lead-free solder products
・Lead-free solder is used for this product.
・For soldering work, the special solder and soldering iron are required.
・Do not mix the lead-free solder with the conventional solder.
・Use the special soldering iron respectively for lead-free solder and lead solder. They cannot be used in common.

Note : ① Before disassembling, remove the SD card and battery.

② When disassembling, make sure to memorize the processing state of wires, screws to be fixed and their types, etc.

③ Because electrical parts are easily damaged by static electricity, make sure that you are well earthed/grounded.

Rear cover

・Raise the flash unit (pop-up), and take out the two screws (#203).

#203

・Take out the screw (#203).

・Open the USB cover (#103), and take out the screw (#202).

#103

#202

#203

・Take out the four screws (#201) and two screws (#202)

#201

#202

#201

・Take out the two screws (#203) and two screws (#204).

#203

#204

・Remove the rear cover.

・Remove the double-stick tape (#127) and then the monitor cover (#128) from the rear cover (#126).

#126

#127

#128
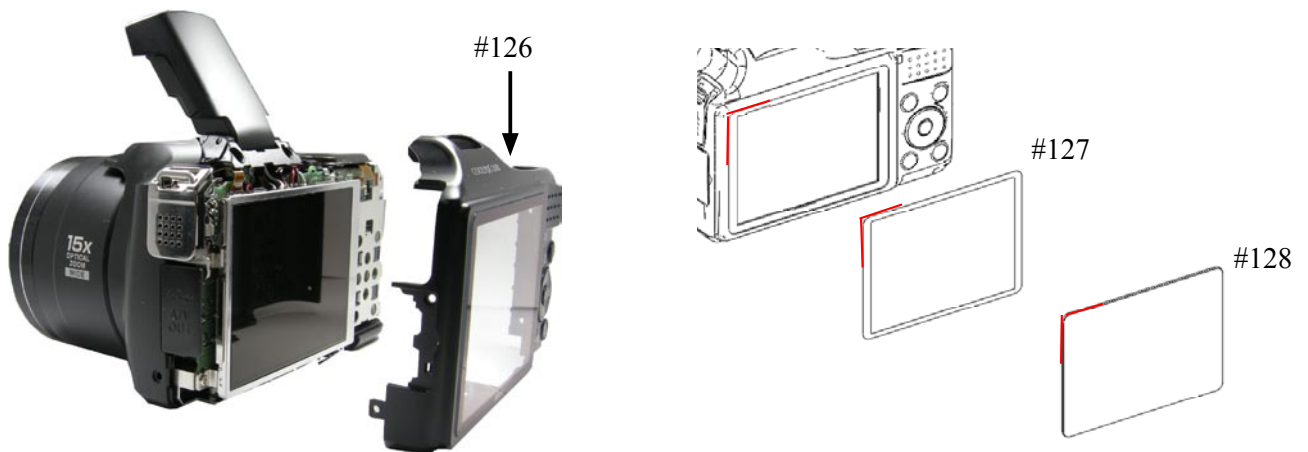
Battery cover

・Pull out the shaft (#102) upward.

・Remove the battery cover (#101).

#102

#101

- D3 ・ L100 -
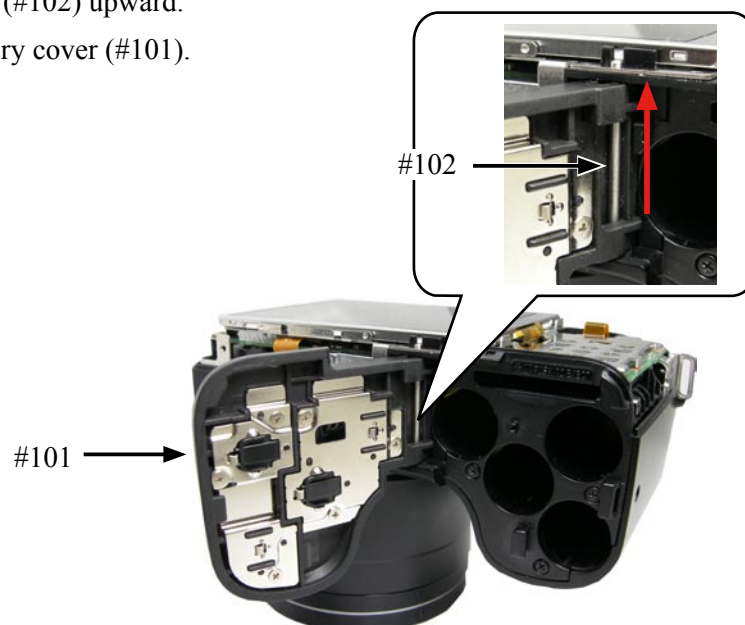
LCD unit

・Remove the LCD unit (#125). (When removing this, be careful NOT to touch the condenser wire.)

Condenser wire

#125
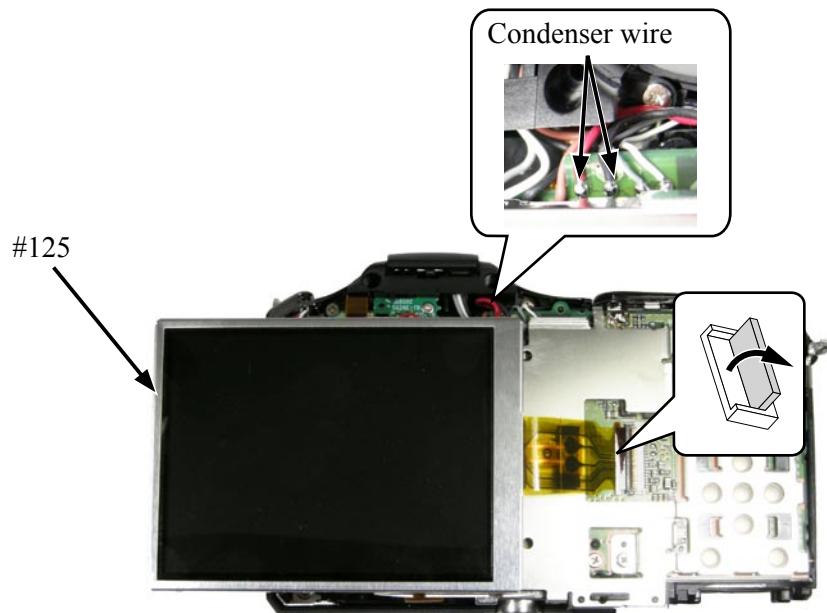
Discharge of main condenser

⚠ WARNING

● There are high voltage parts inside. Be careful of this electric shock, when you remove the cover.

● You must discharge the main condenser according to the instruction of this repair manual after you remove the cover.

・Place the terminals of the discharger on the solders of the wires [Red and Black] and discharge the main condenser.

2K Ω /5W

RD BK
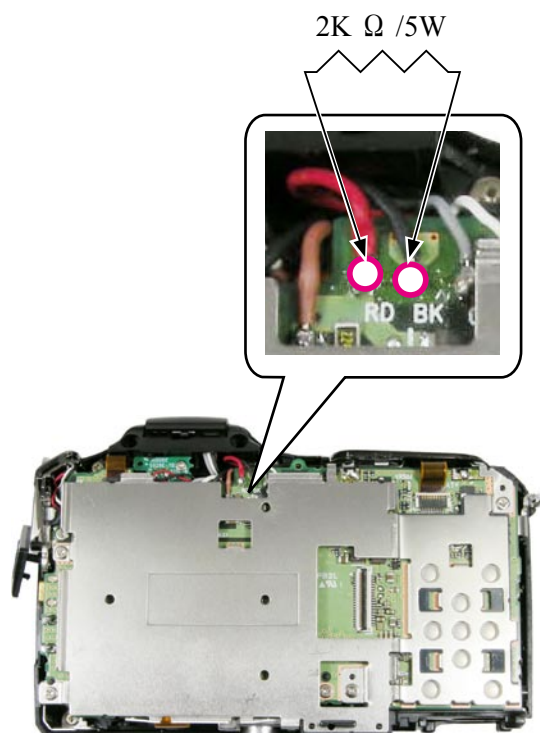
LCD holder

・Take out the screw (#206).

・Remove the GND plate (#106).

・Take out the two screws (#203) and screw (#207).

・Remove the LCD holder (#105).
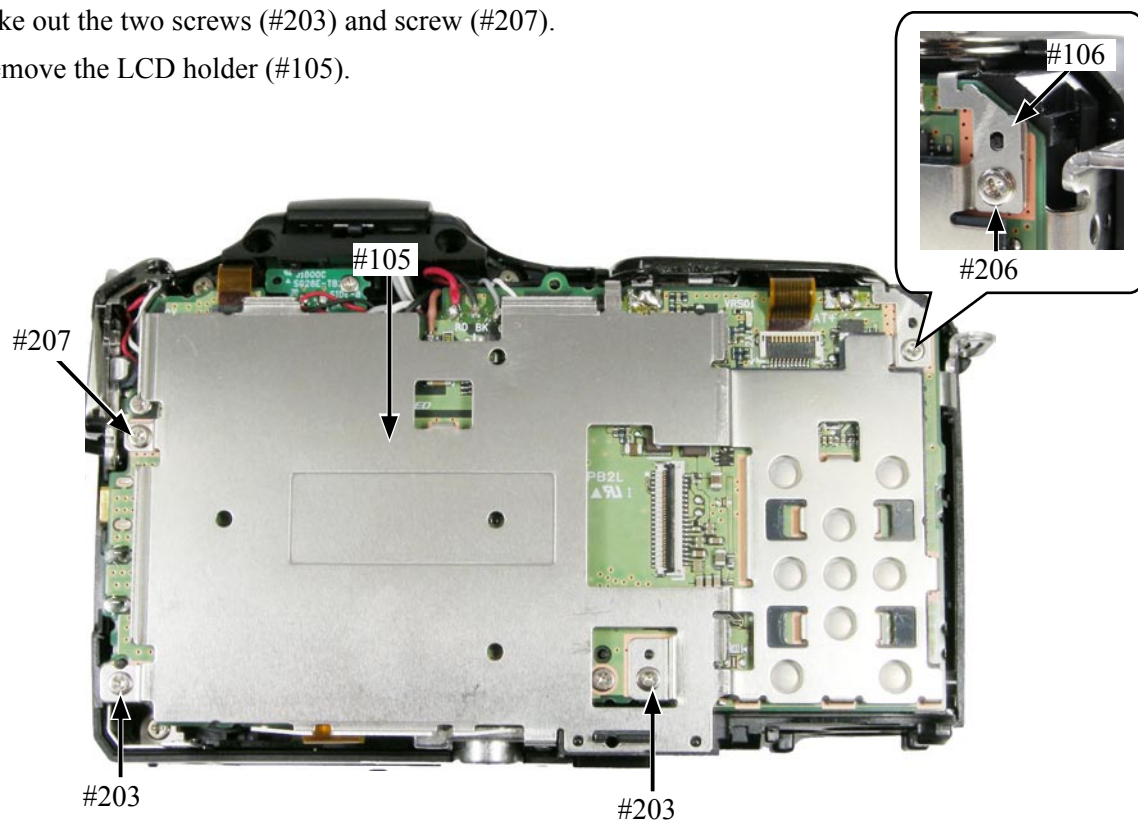
Tripod base

・Remove the tripod base (#104).
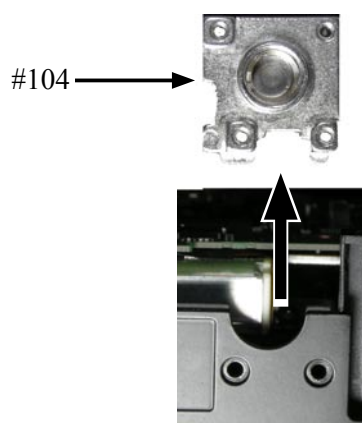
Front cover

・Disconnect the FPC from the release button unit (#132).

・Remove the two soldering bridges.

・Unsolder the wires ([Red], [Black], [Gray], and [White]).

・Remove the adhesive (C-8008B) from the wires ([Gray], [White], [Black], and [Brown]).

・Unsolder the wires ([Gray], [White], [Black], and [Brown]).

・Unsolder the wires ([Red] and [Black]).

・Unsolder the wires ([Gray], [Black], [White], and [Red]).

・Take out the two screws (#205).

[Red/Black/Gray/White]

Soldering bridges

[Gray/Black/White/Red]

[Red/Black]

Adhesive : C-8008B

[Gray/White/Black/Brown]

#205

#205
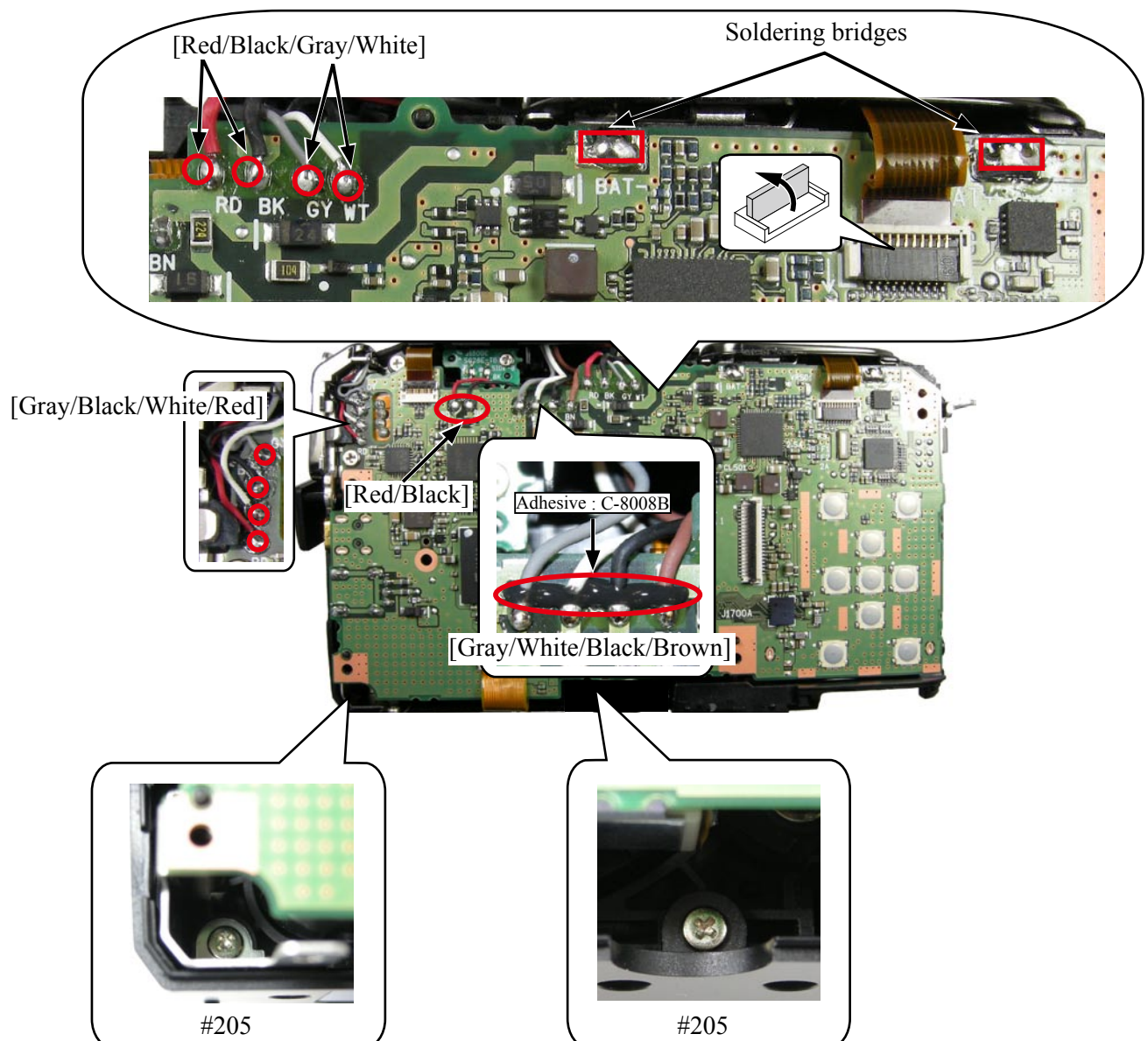
・Take out the two screws (#205).

・Raise the flash unit (pop-up), and remove it upward.

#205
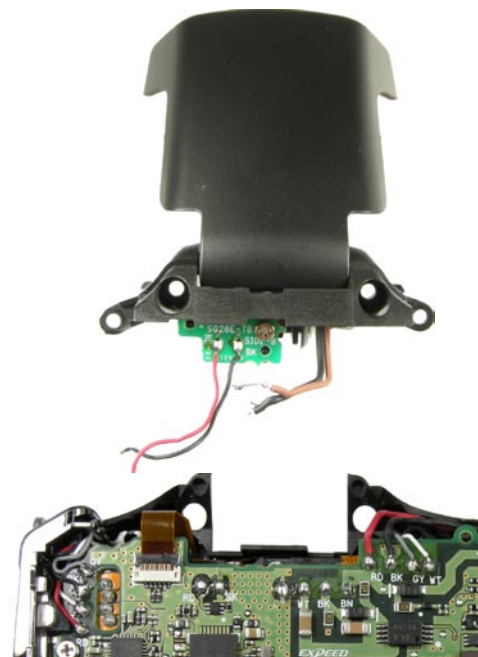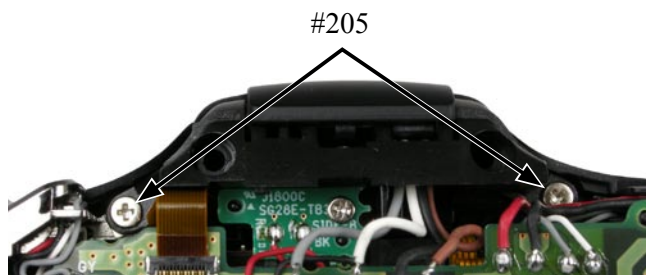
・Remove the microphone (#131) wires ([Gray] and [Black]) from the guide.

[Gray/Black]
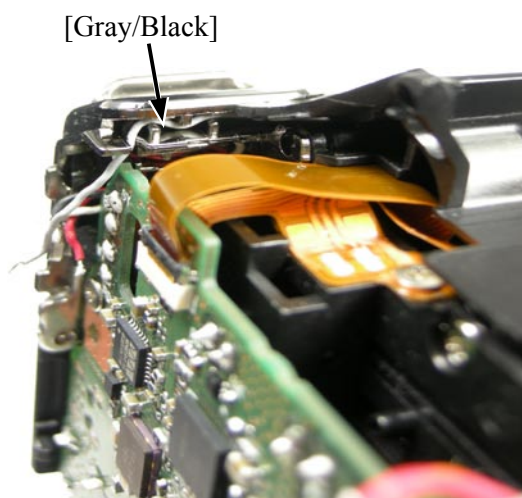
・Separate the front cover and the lens unit a little, and remove the USB cover (#103).

#103
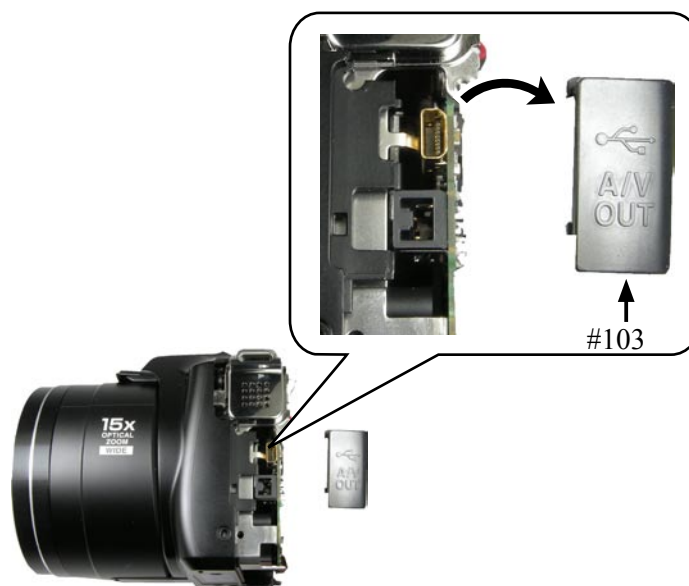
・Remove the front cover as below.

Microphone

・Remove the microphone (#131).

#131

Battery holder

・Take out the screw (#203).
・Remove the wires ([Red] and [Black]) from the
  guide.

[Red/Black]

Guide →

#203

・Remove the battery holder.

15x
OPTICAL
ZOOM
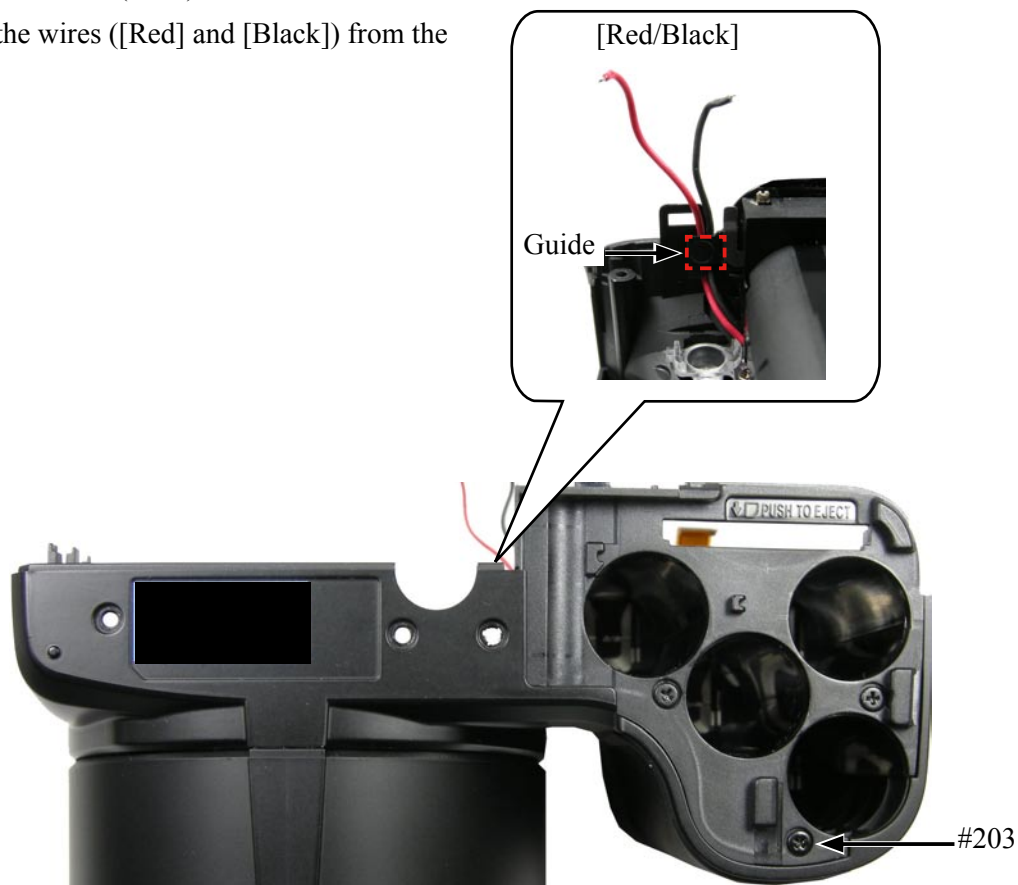
・Remove the condenser unit (#144).

・Peel off the double stick tape (#145).

#145

#144
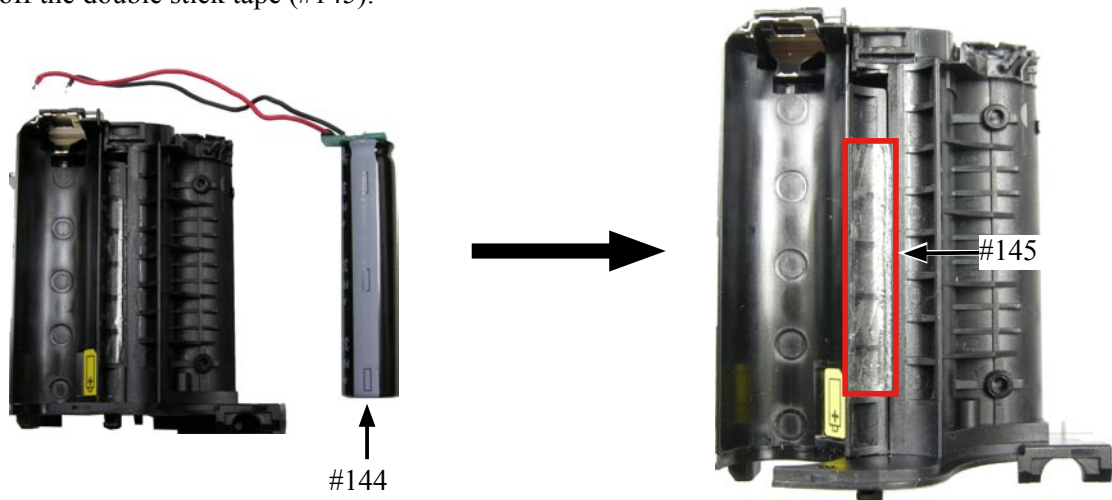
・Unsolder the battery contact PCB (#153).

・Take out the three screws (#206).

・Remove the battery contact PCB (#153). (When removing this, be careful of the below hook.)

・Take out the two screws (#203).

Unsolder here.

#206   #153

Hook

#206

#203
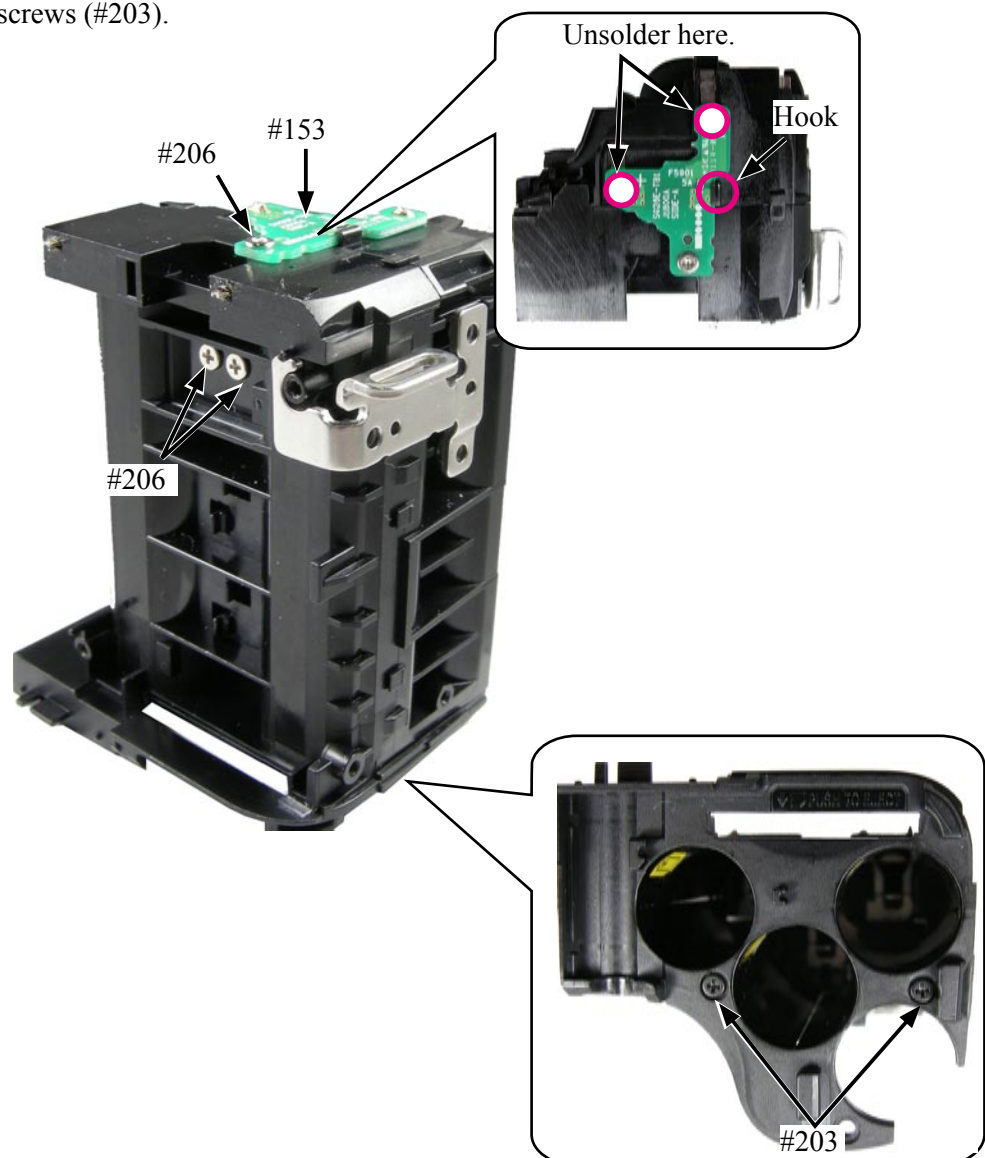
・Remove the holder strap (#150).

#150

・Unhook at two places.

Unhook here.
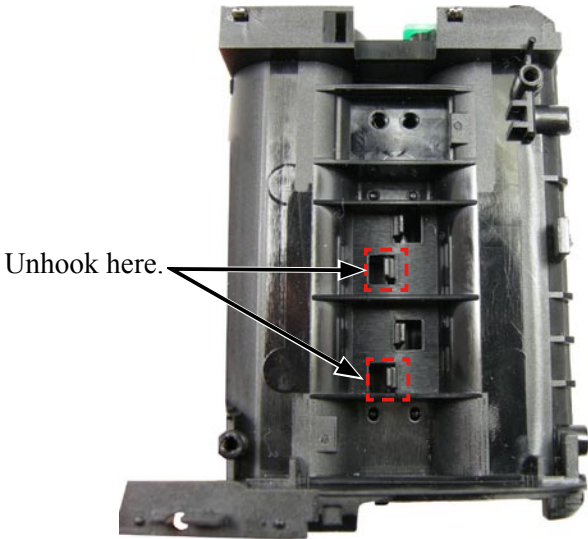
・Remove the battery holder C (#146) from the battery holder A (#154).

・Unhook the battery holder B (#151), and remove it in the same way.

#154 #146 #151
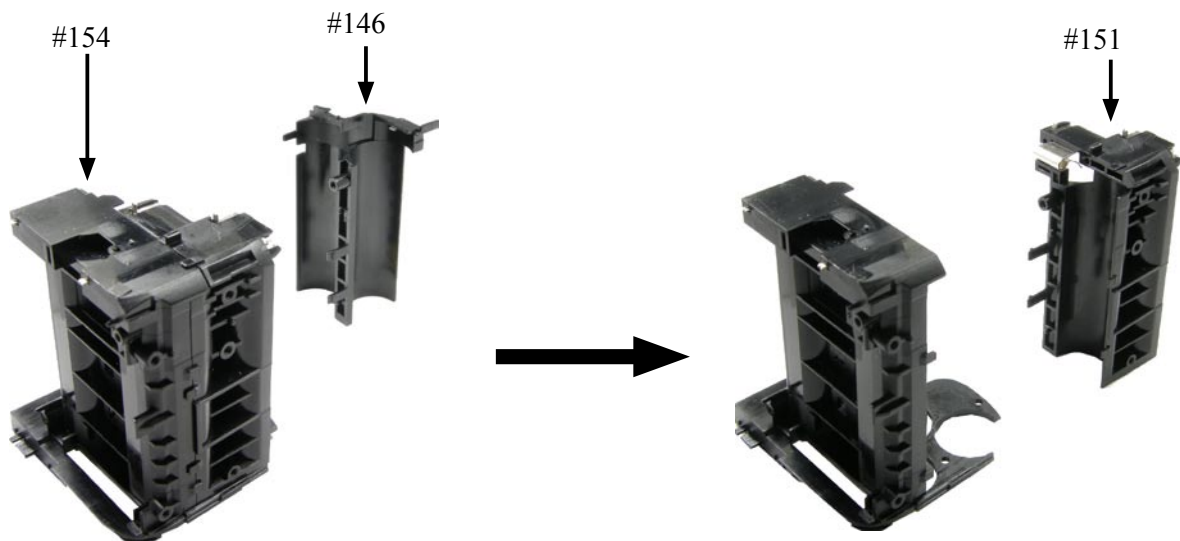
・Remove the two battery contacts A (#152) from the battery holder A (#154).

・Remove the two battery contacts B (#149) from the battery holder B (#151).

#154

#152

#151

#149
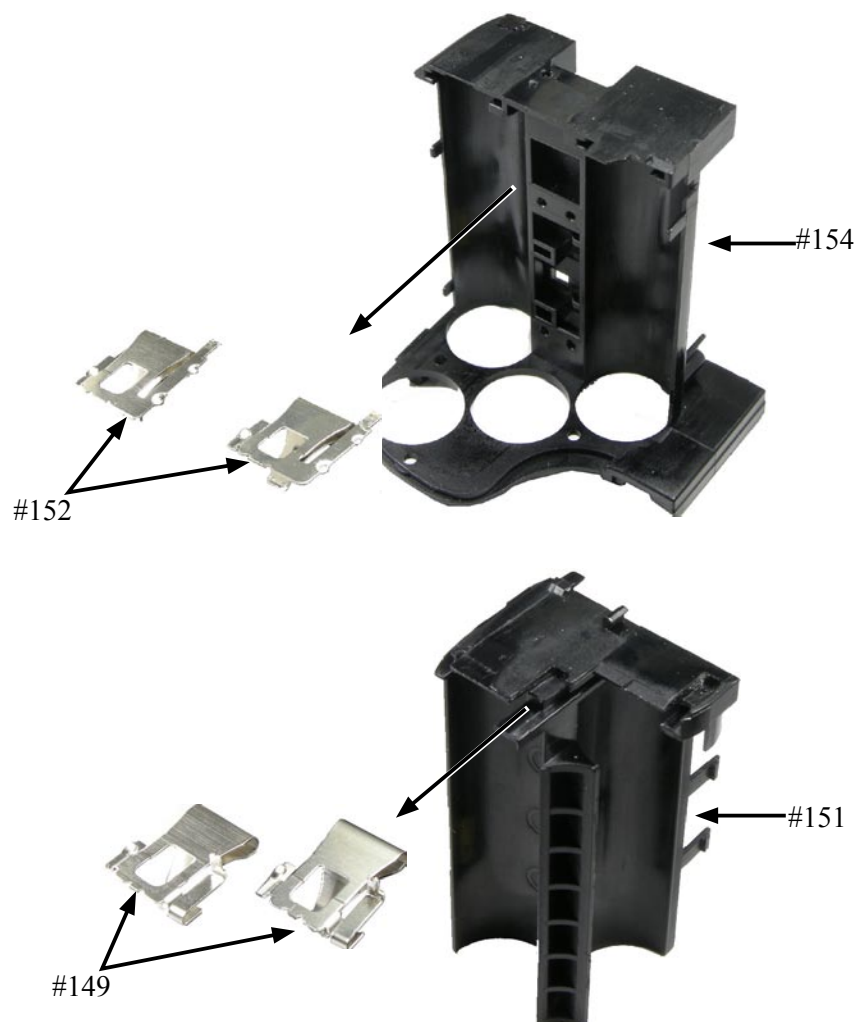
Release button unit

・Take out the screw (#209).

・Remove the release button unit (#132) from the front cover (#129).
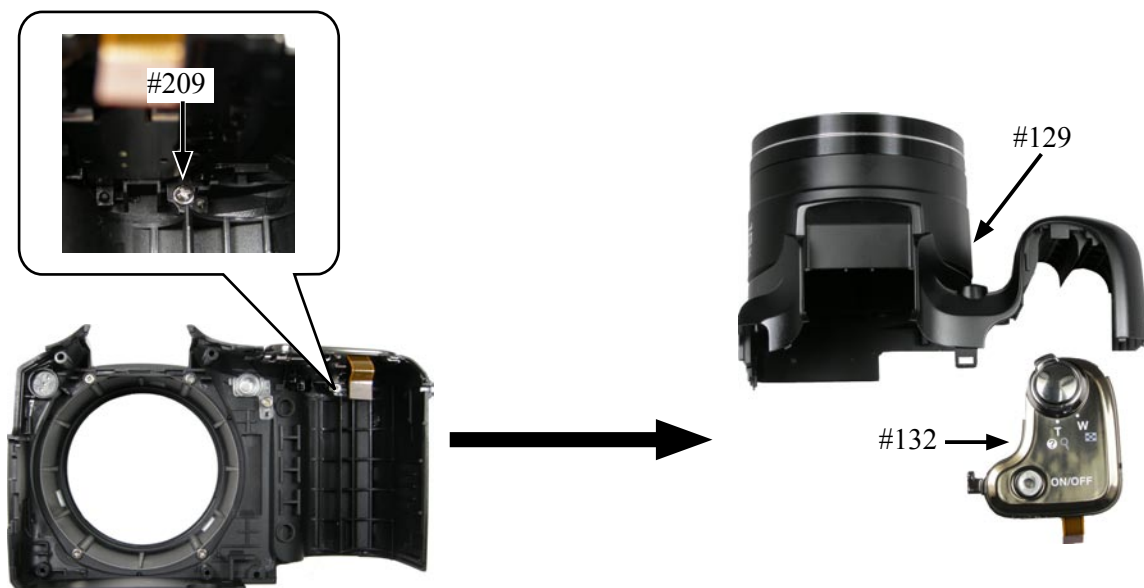
Main PCB

・Disconnect the FPC from the lens barrel side.
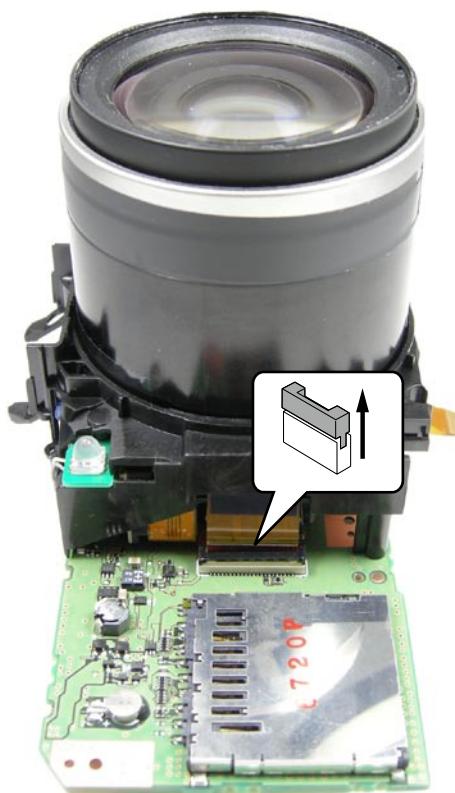
・Disconnect the three FPCs.
・Take out the two screws (#206) and (#207).
・Remove the main PCB (#142).
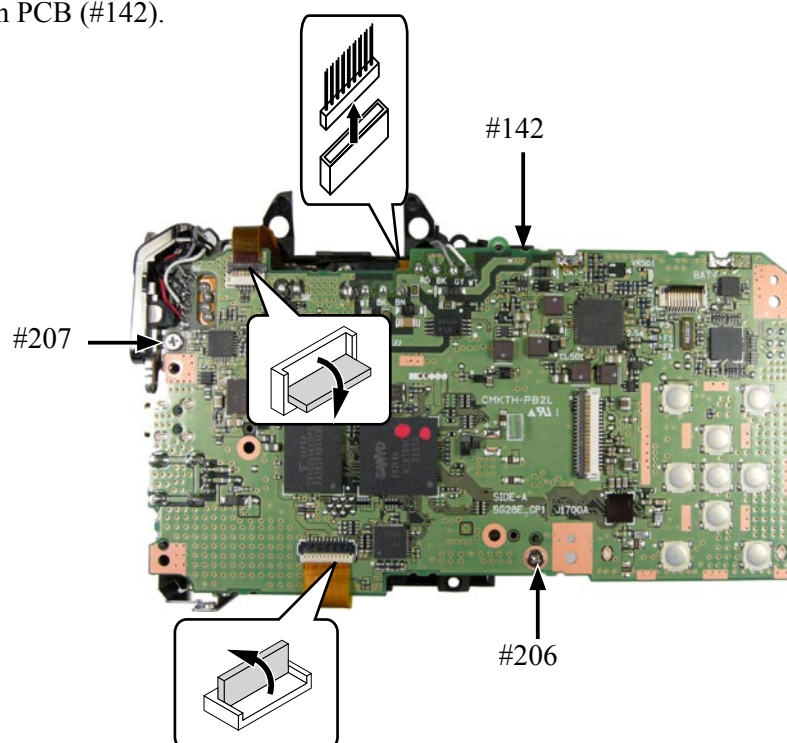
#142

#207

#206

Lens unit

Caution: Be careful NEITHER to touch the whole area of the back (see below left picture) because there is the CCD stage on it, NOR to touch the extension area of the lens (see below right picture).
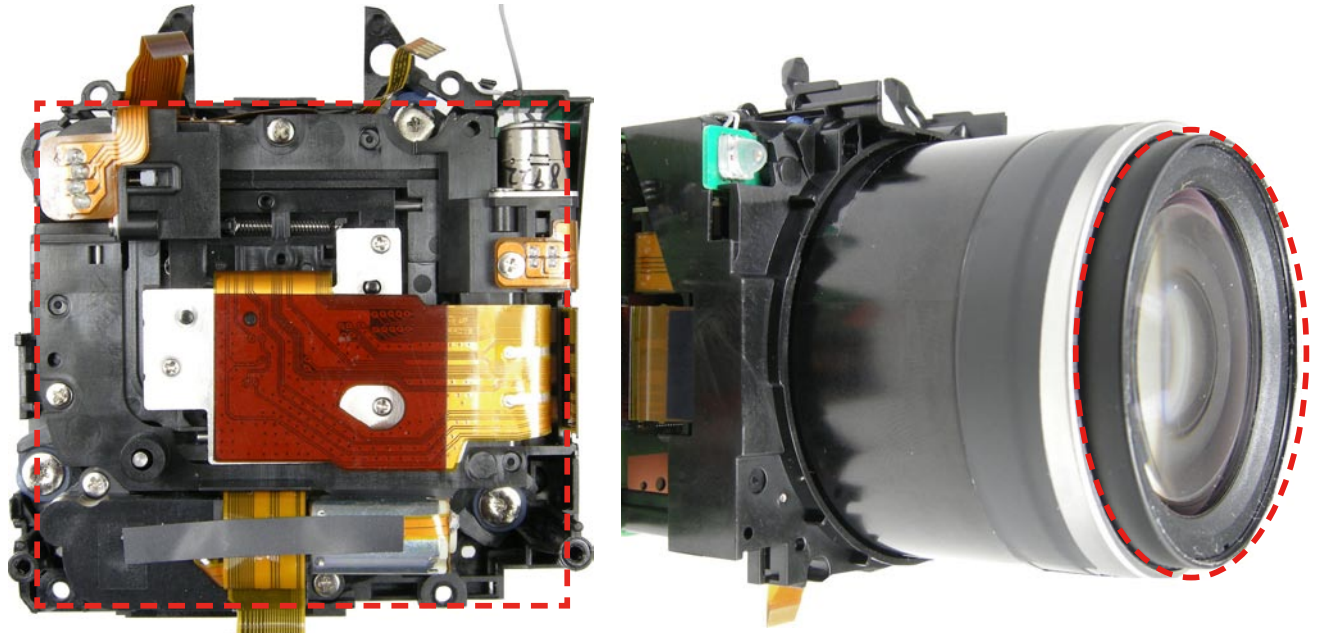
Speaker

・Unhook at two places.
・Remove the speaker unit.

Speaker unit

Unhook here.
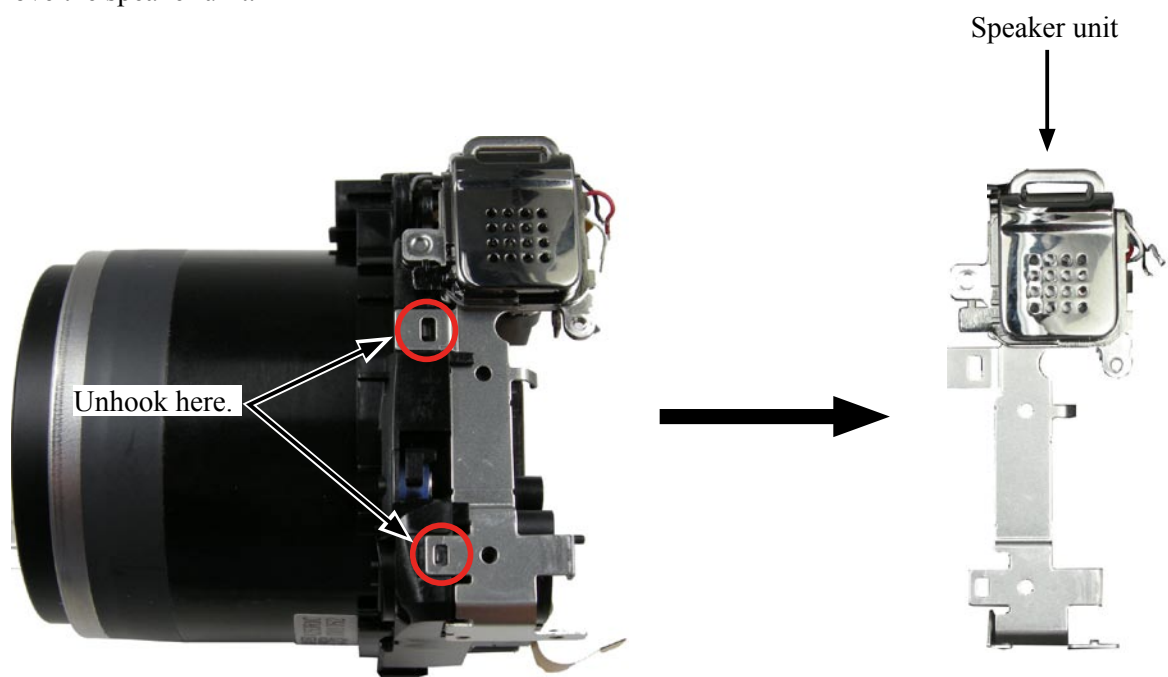
・Take out the two screws (#211).

・Remove the speaker unit from the speaker holder (#139) .

#211

#139
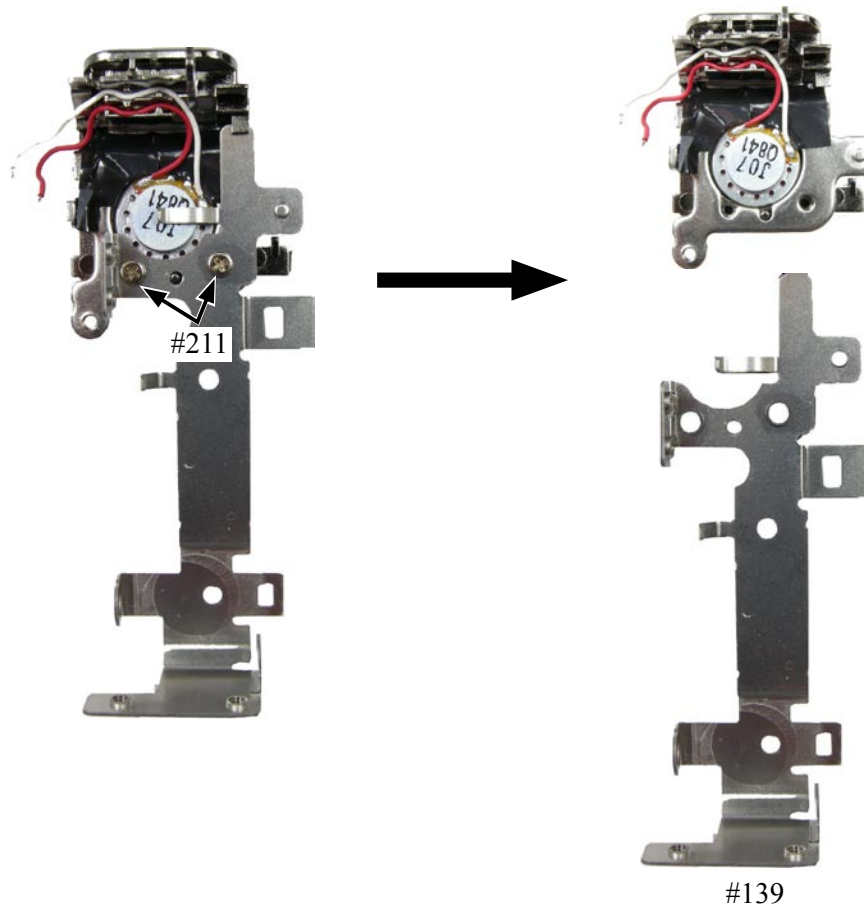
・Peel off the spacer (#138).

・Remove the speaker (#137) and holder strap (#136) from the speaker cover (#135).

#138

#137

#135

#136
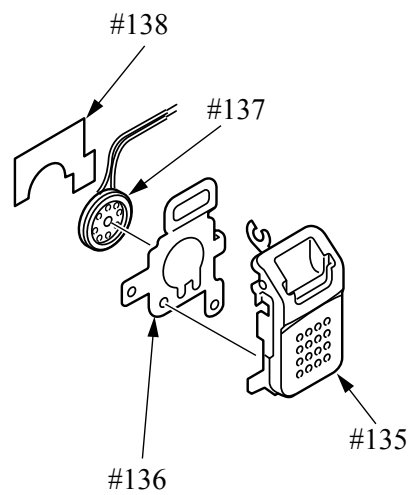
Inner holder

・While holding the inner holder (#133), take out the three
    screws (#212).

#212

#133

#212

#212
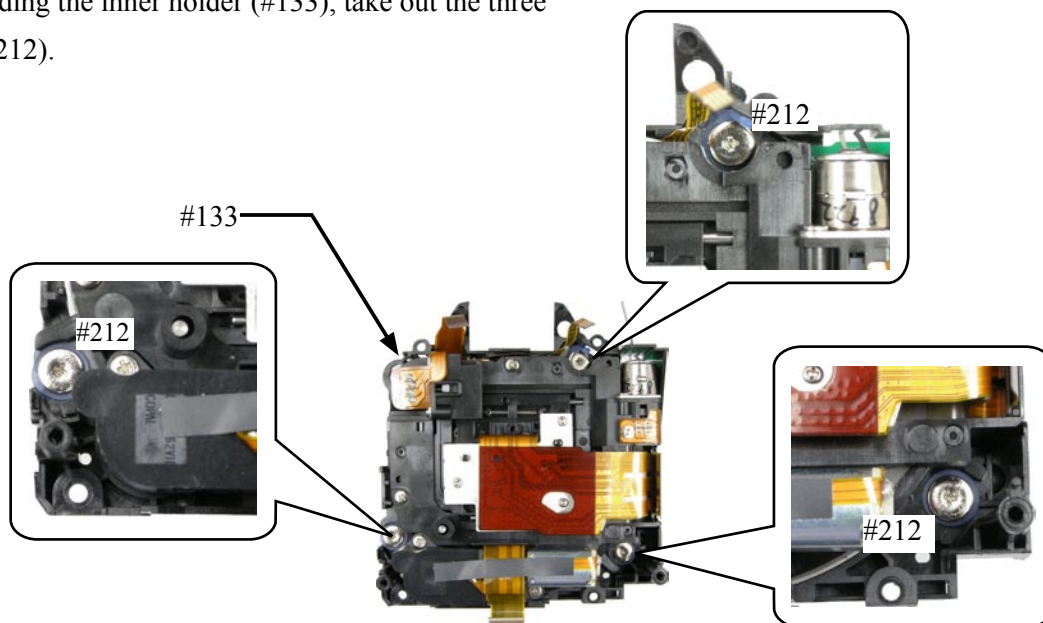
・Remove the inner holder (#133) from the lens unit (#140).
・Remove the three washers (#141).

#141

#133

#141

#141

#141

#140
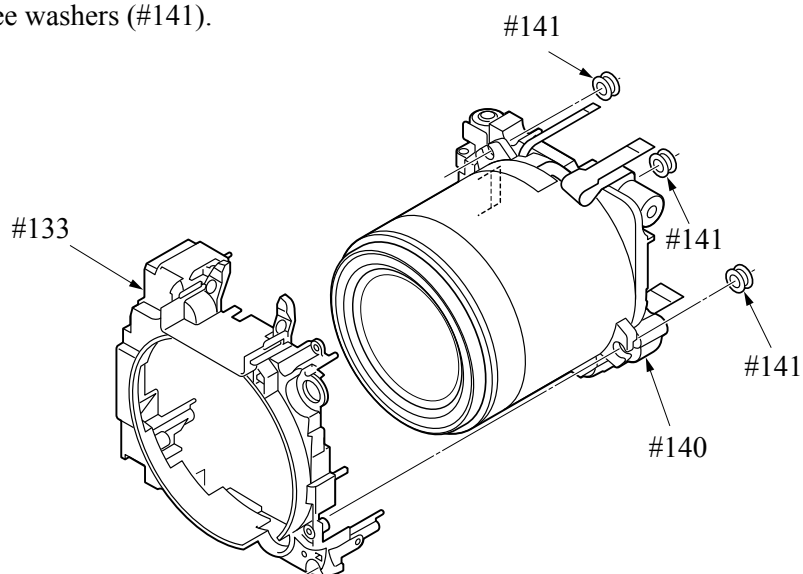
LED PCB

・Take out the screw (#210).
・Remove the LED PCB (#134).

#210

#134
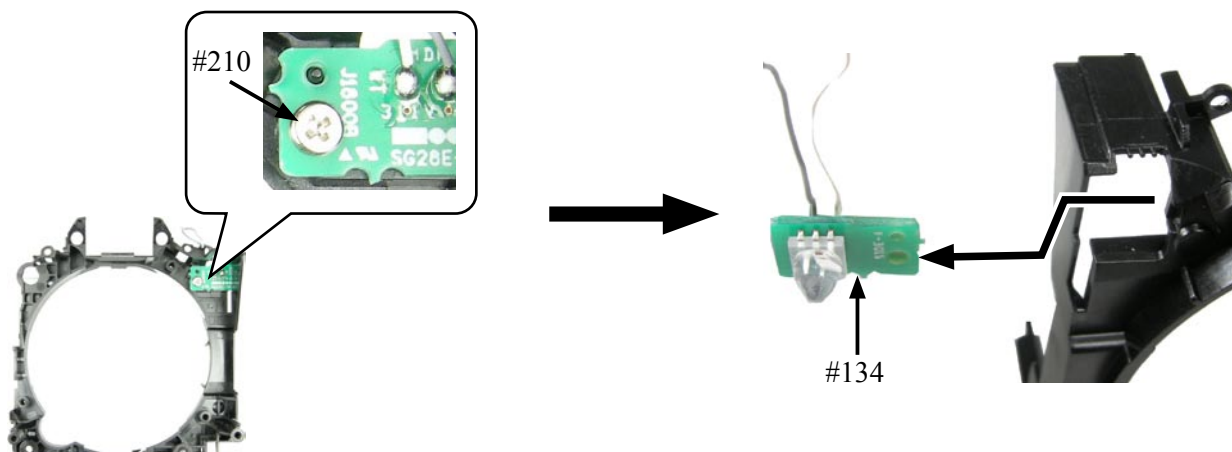
Flash unit

・Take out the screw (#208).
・Remove the pop up SW PCB (#112).

#208

#112
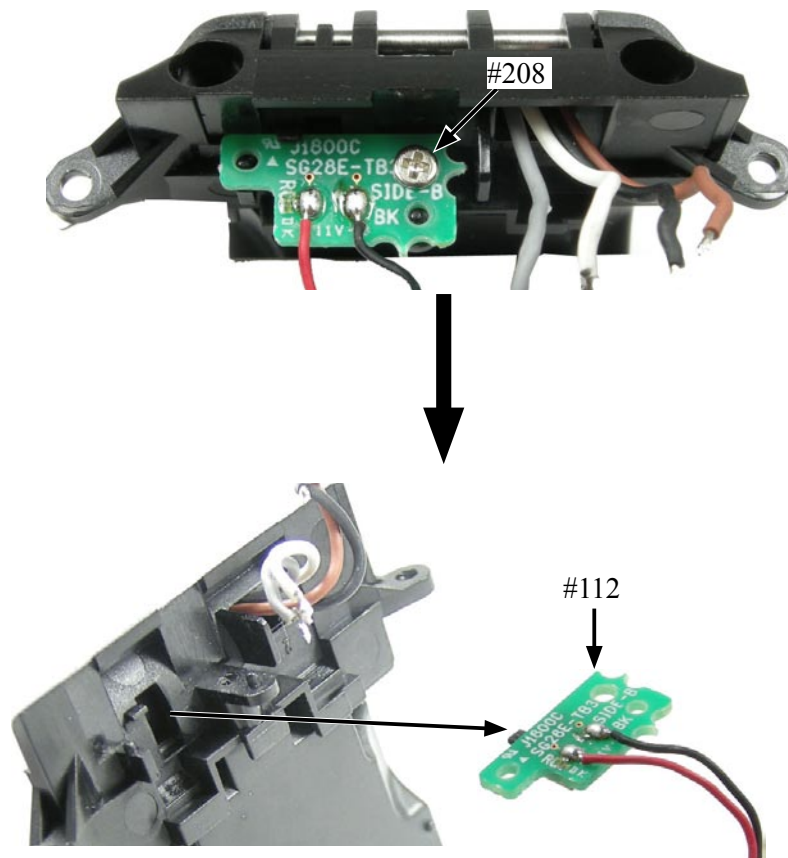
・Take out the two screws (#204).
・Push down the flash unit , and remove the flash top cover (#124).

#204

#124
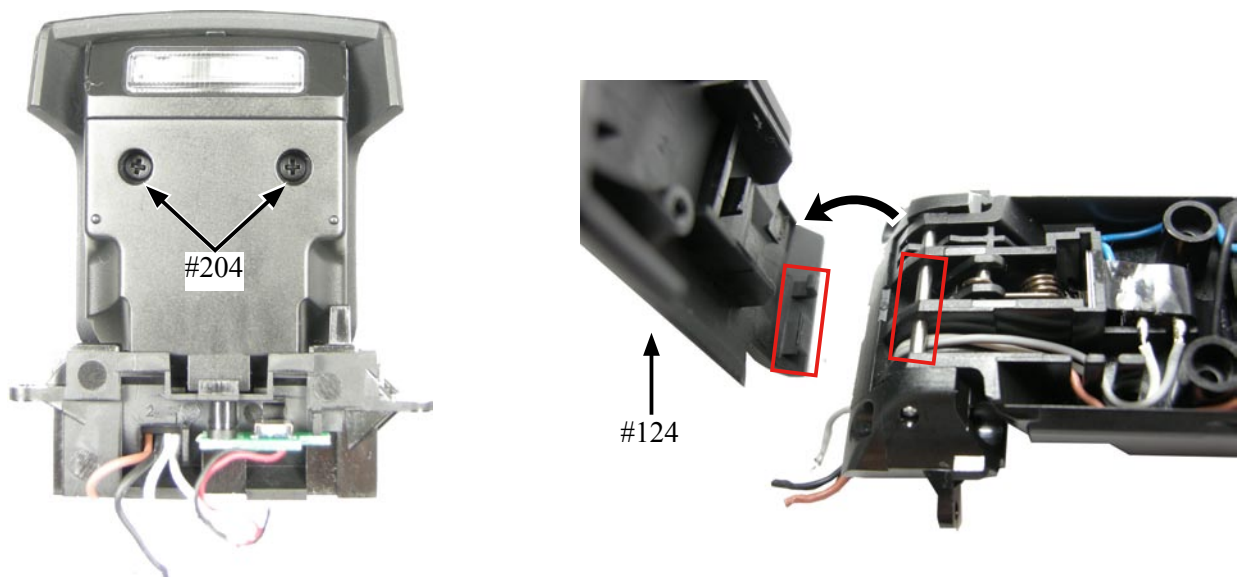
・Peel off the spacer (#122).

・With the flash unit being raised (popped-up), pull out the wires ([Brown], [Black], [Gray] and [White]) from the hole of the flash base (#113).

・Remove the trigger coil (#119) and flash unit together.

・Remove the trigger coil (#119).

#122

#119
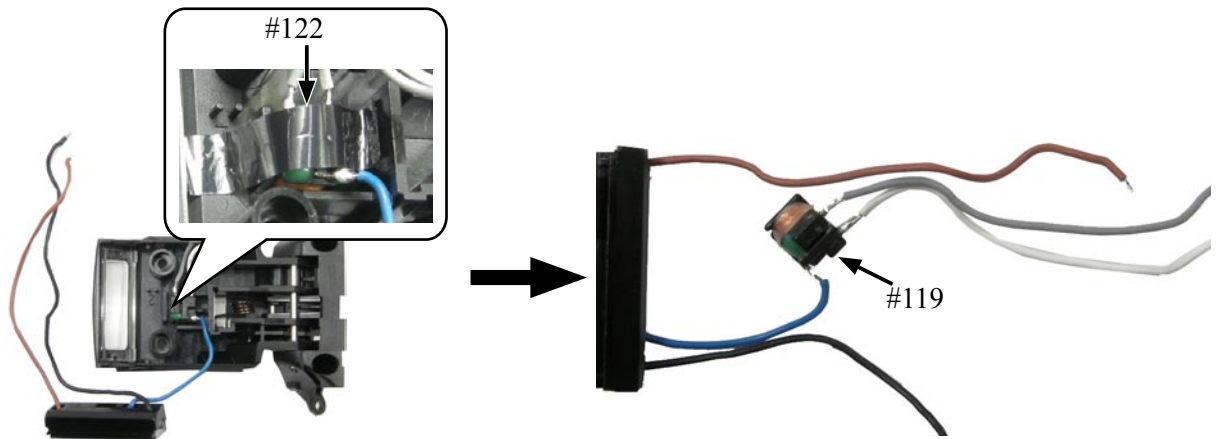
・Unhook at three places, and remove the flash unit (#117) and flash holder (#118).

#117

#118
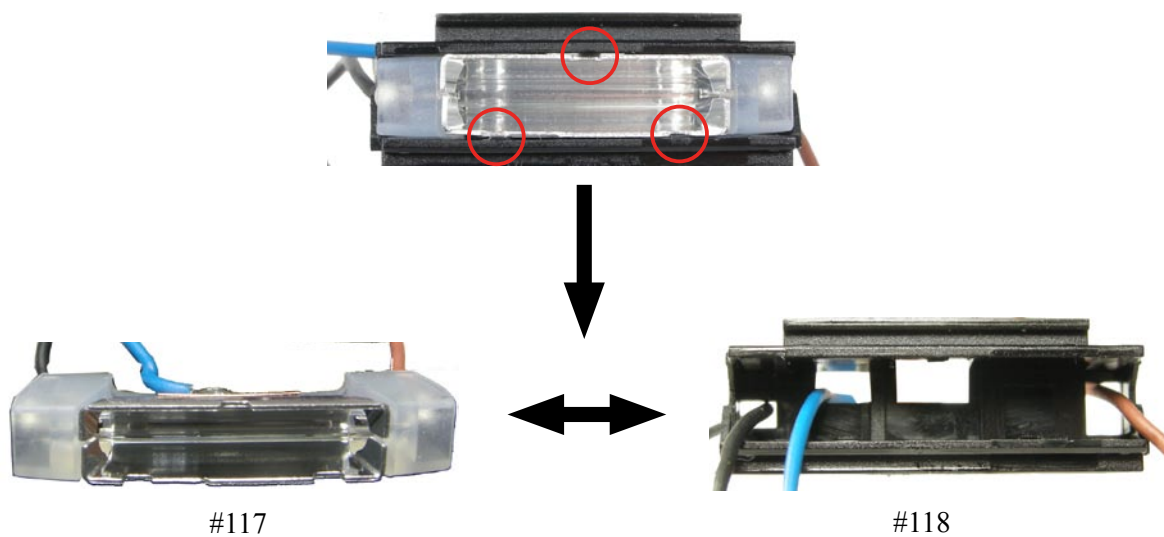
・Pull out the shaft (#115).

・Remove the flash base (#113).

#115

#113
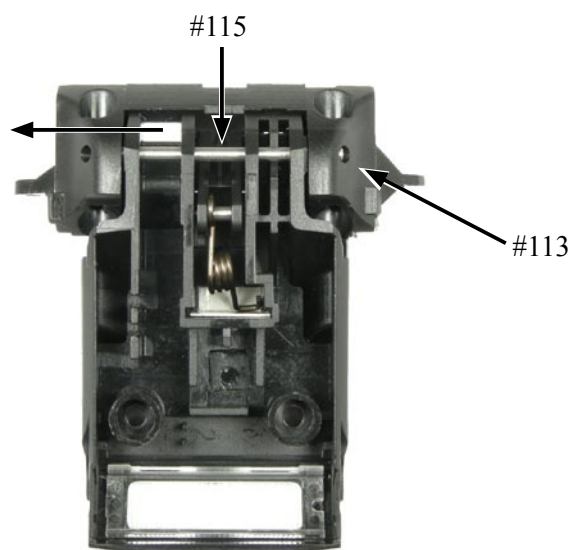
・Pull out the shaft (#114).

・Remove the spring (#110).

#114

#110
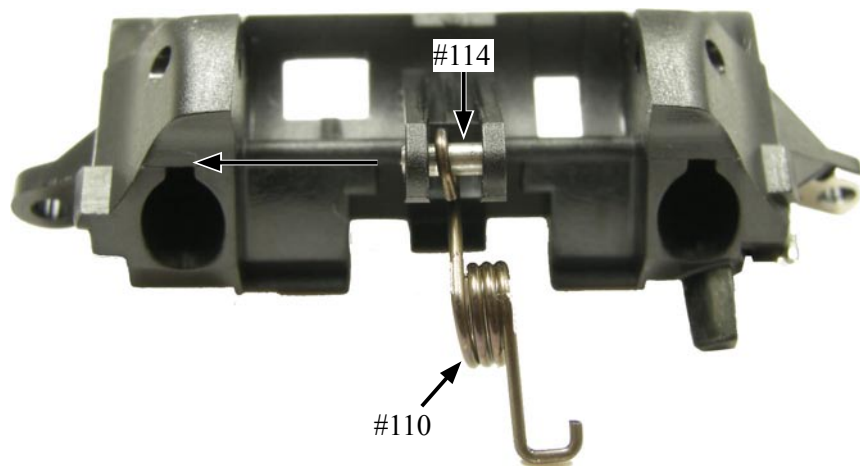
・Remove the holder (#111).

#111
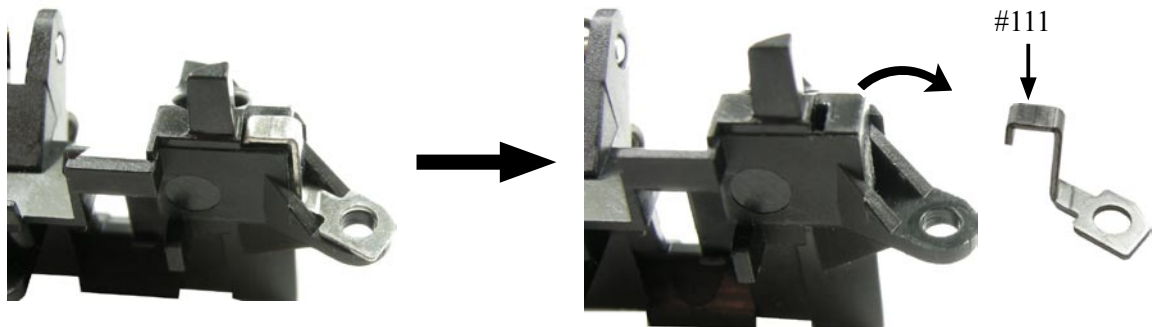
・Remove the spring holder (#109).

#109
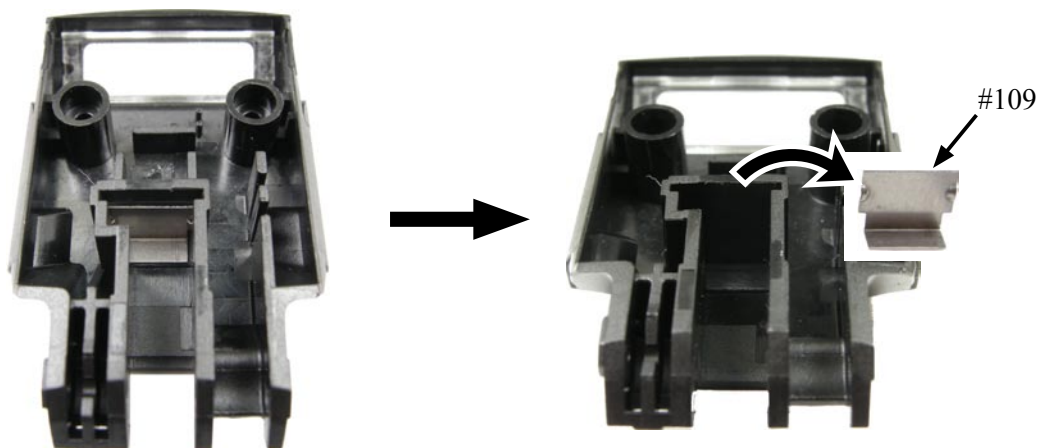
・Peel off the double stick tape (#108).

#108
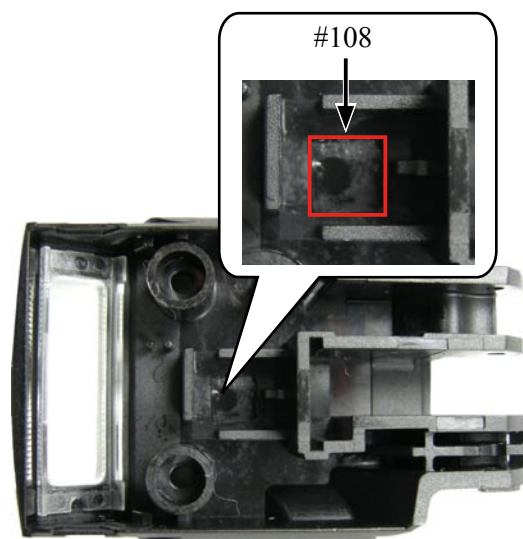
・Remove the flash window (#116) from the flash bottom cover (#107).

#116

#107
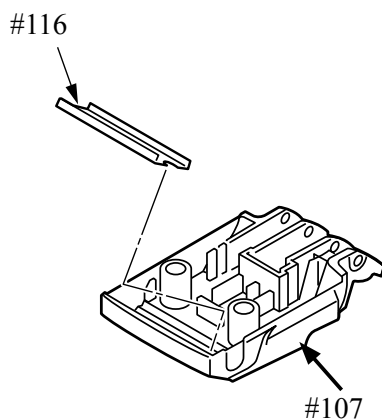
Assembly

Flash unit

・Assemble the flash window (#116) into the flash-bottom-cover (#107), (with attention to the assembling direction).

#116

#107
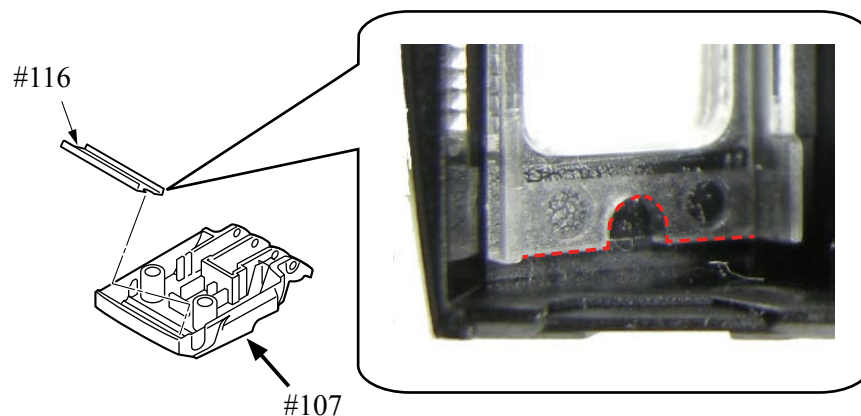
・Attach the double-stick tape (#108).

#108
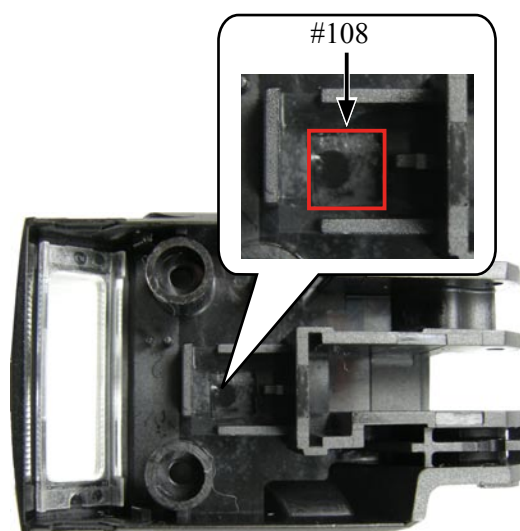
・Attach the spring holder (#109).

#109
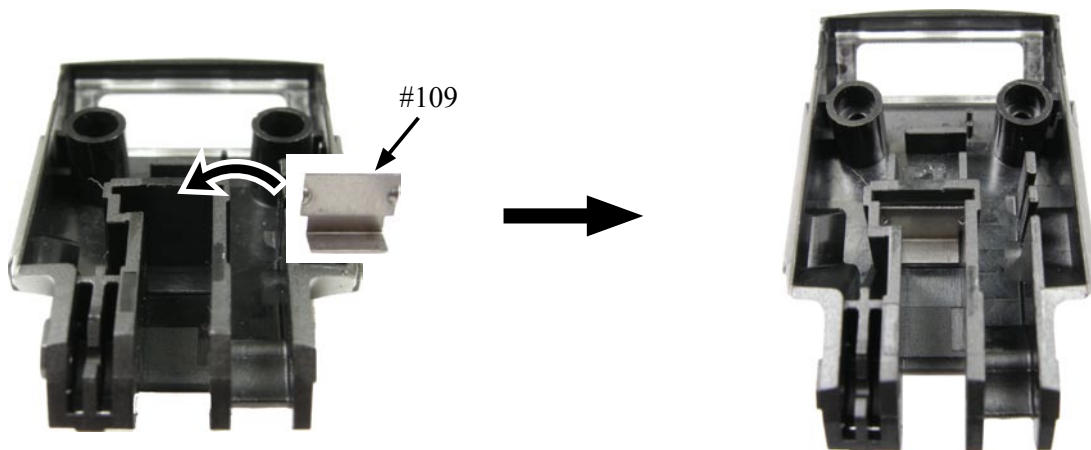
・Put the spring (#110) in the groove of the flash base (#113) (with attention to the hook's direction).
・Insert the shaft (#114).

#114

#110
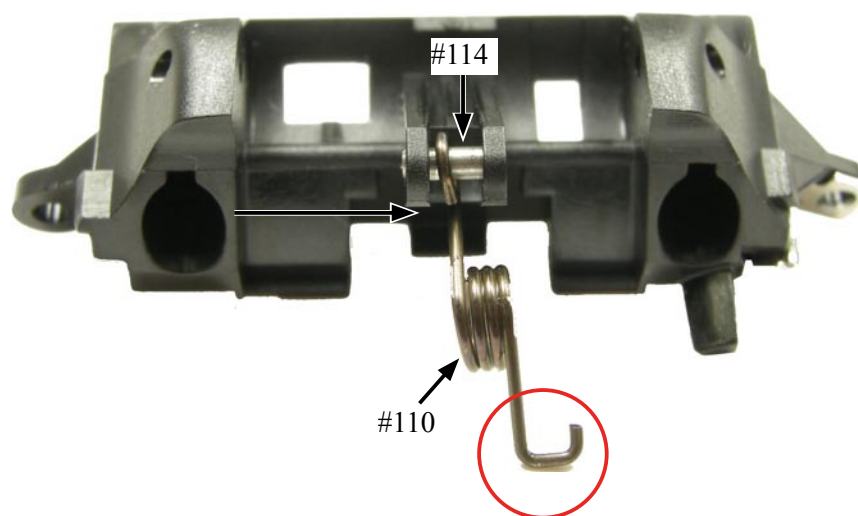
Be careful of the hook's direction.

・Attach the holder (#111) by putting its head into the hole.

#111
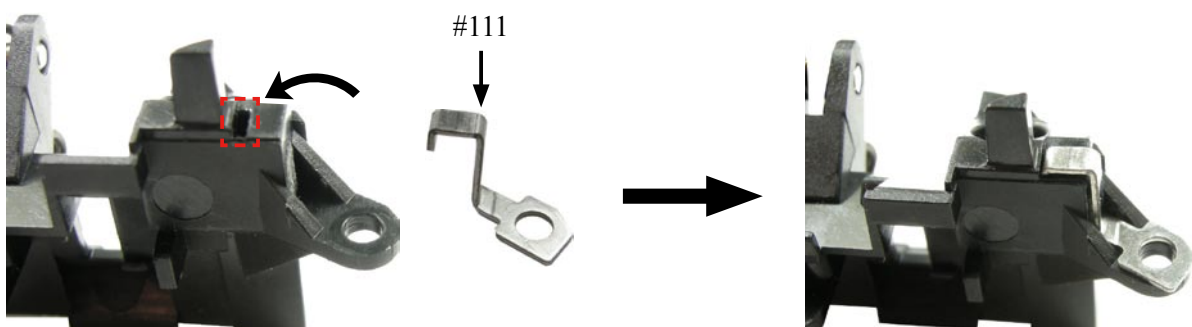
・Hook the spring (#110) as shown in the below " □ ", and mount the flash base (#113).

・Push the flash base (#113) toward the ~~under-cover~~, and insert the shaft (#115).

flash bottom cover (#107)
△(Revision)

#113

#110
#115 △(Revision)

#115

#107 △(Addition)

サービス
計画課
M
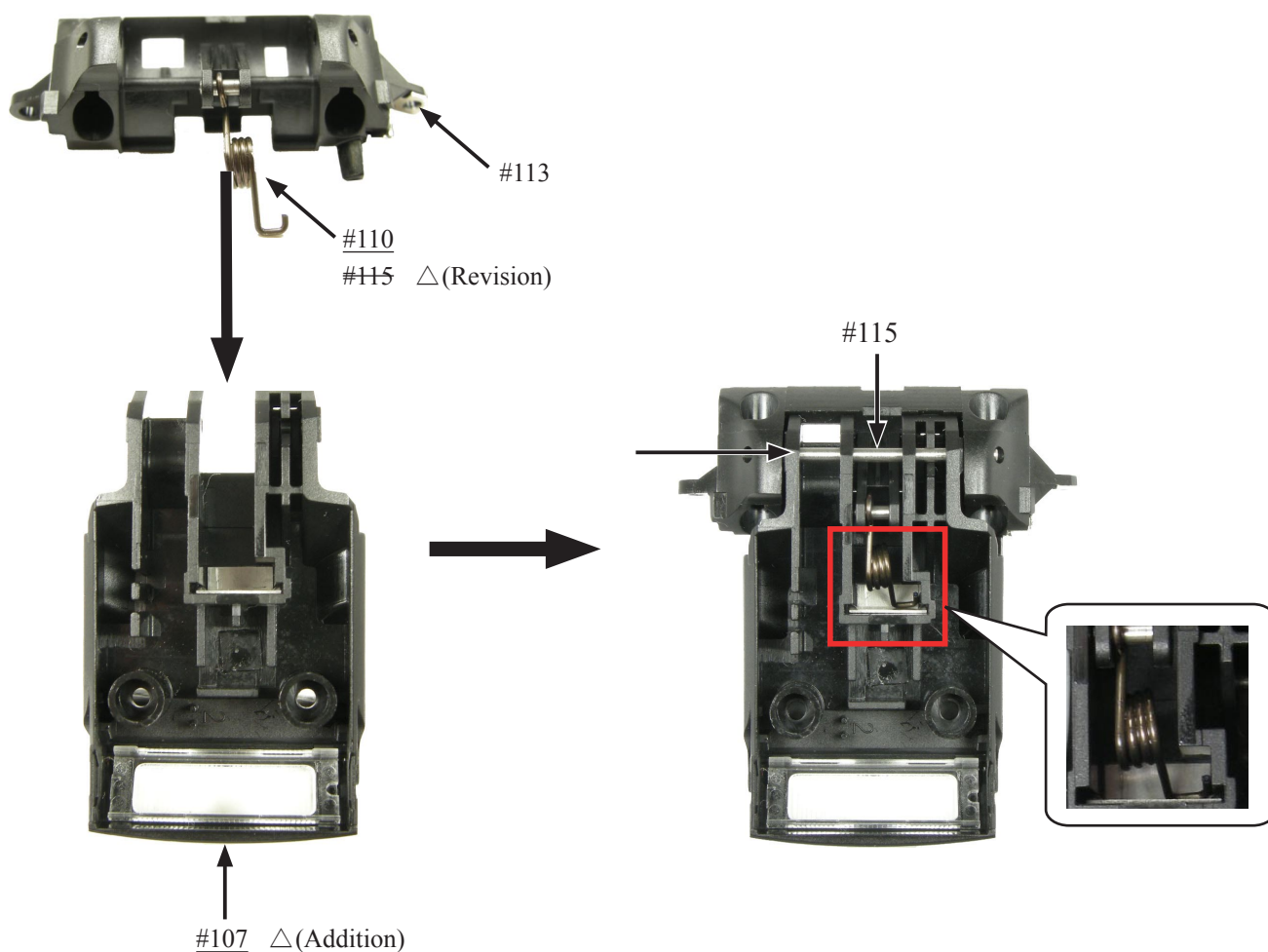
・Mount the flash unit (#117) on the flash holder (#118) by fitting the three hooks as below.

#117

#118
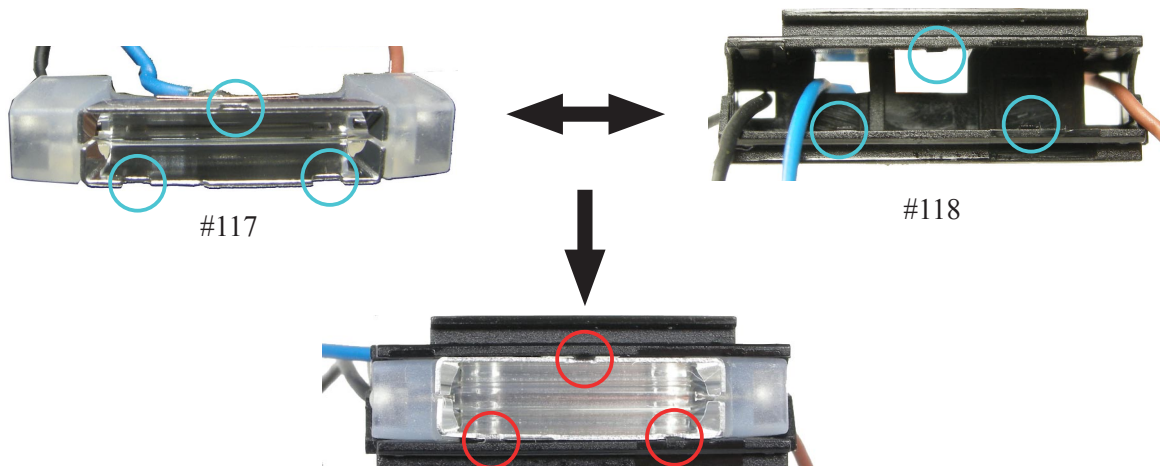
・Solder the trigger coil (#119).

・Mount the trigger coil (#119) on the flash bottom cover (#113).

(#107) △(Revision)

△(Addition)

(#107)

#119

#113
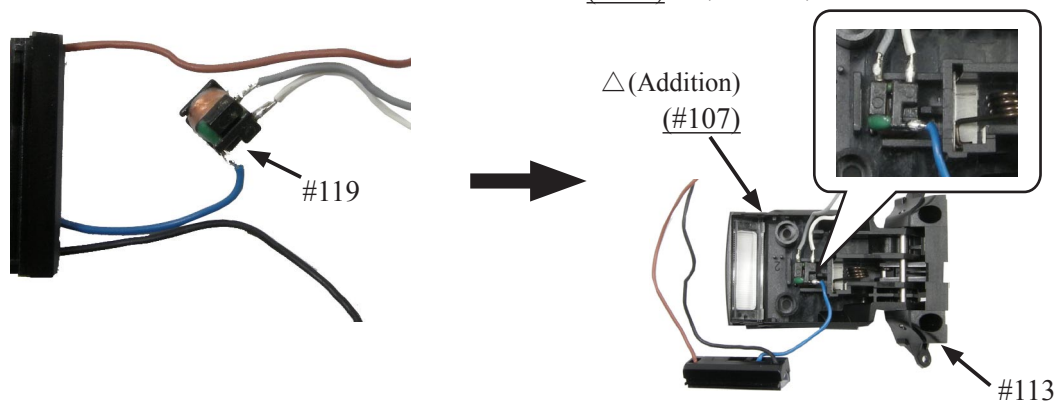
・Mount the flash unit on the flash bottom cover (#107).

・Attach the spacer (#122) based on the reference position.

・Arrange the wires as below.

・With the flash unit being raised (popped up), pass the wires ([Brown], [Black], [Gray], and [White]) through the hole of the flash arm.

flash base (#113) △(Revision)

(Place the wires in the below order.)

[Brown]

[Black]

[Gray]

[White]

#113

Reference position

#122
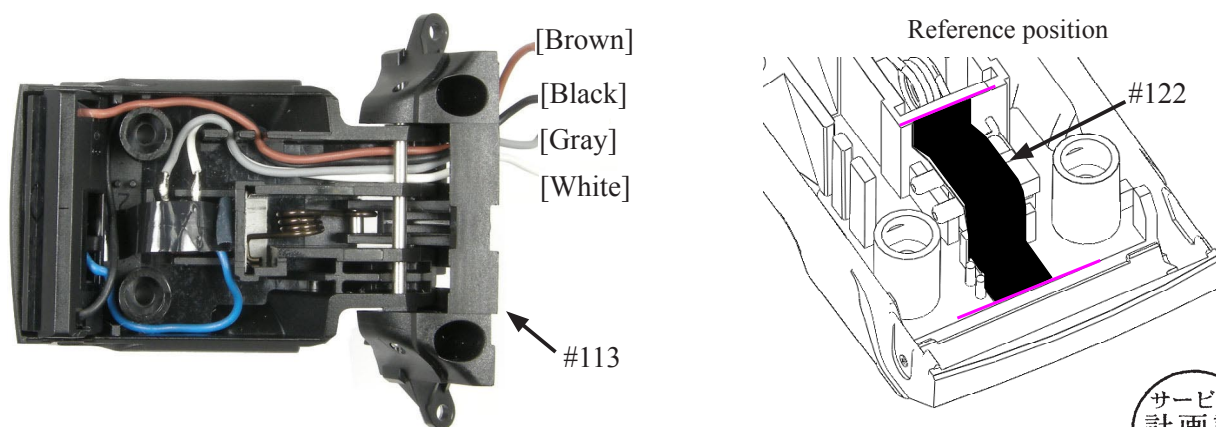
・Push down the flash unit, and mount the flash top cover (#124) by engaging the hooks.

・Tighten the two screws (#204).

#124

#204
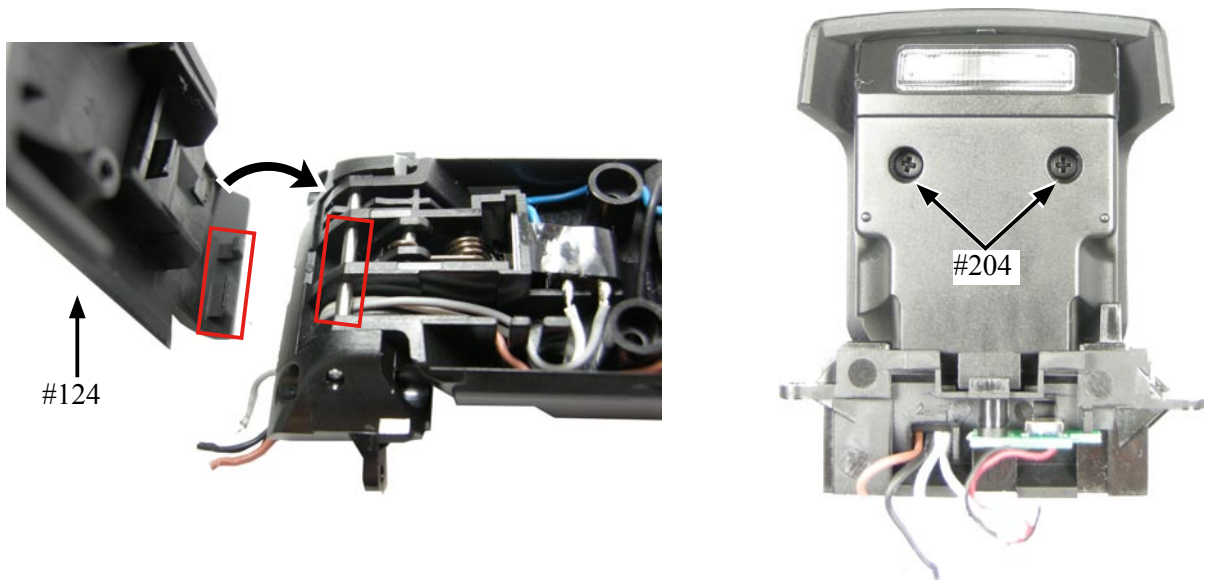
・Mount the pop-up SW PCB (#112) by fitting with the boss.

 (When mounting this, put edge under " □ " part as below.)

・Tighten the screw (#208).

#112

#208

Boss

Boss
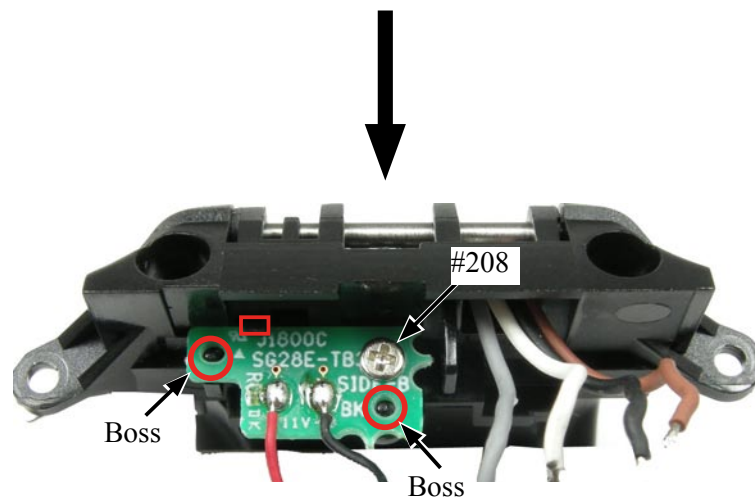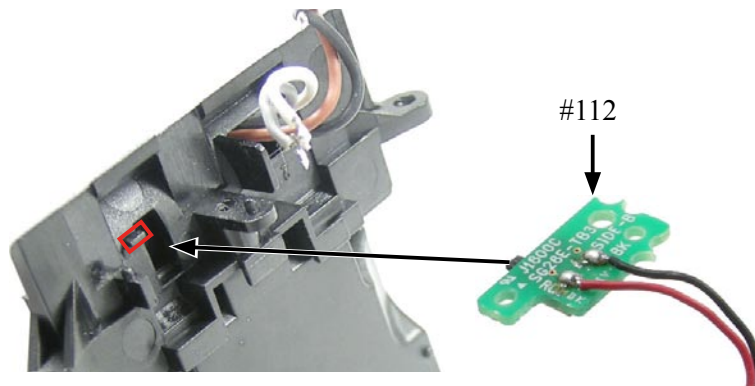
LED PCB

・Mount the LED PCB (#134) in the direction of the arrow.

・Tighten the screw (#210) from the opposite direction.

・Place the wires ([Gray] and [White]) among the guides (as shown the below left picture).

・Hook the other side of the wires (to direct as shown in the below right picture).
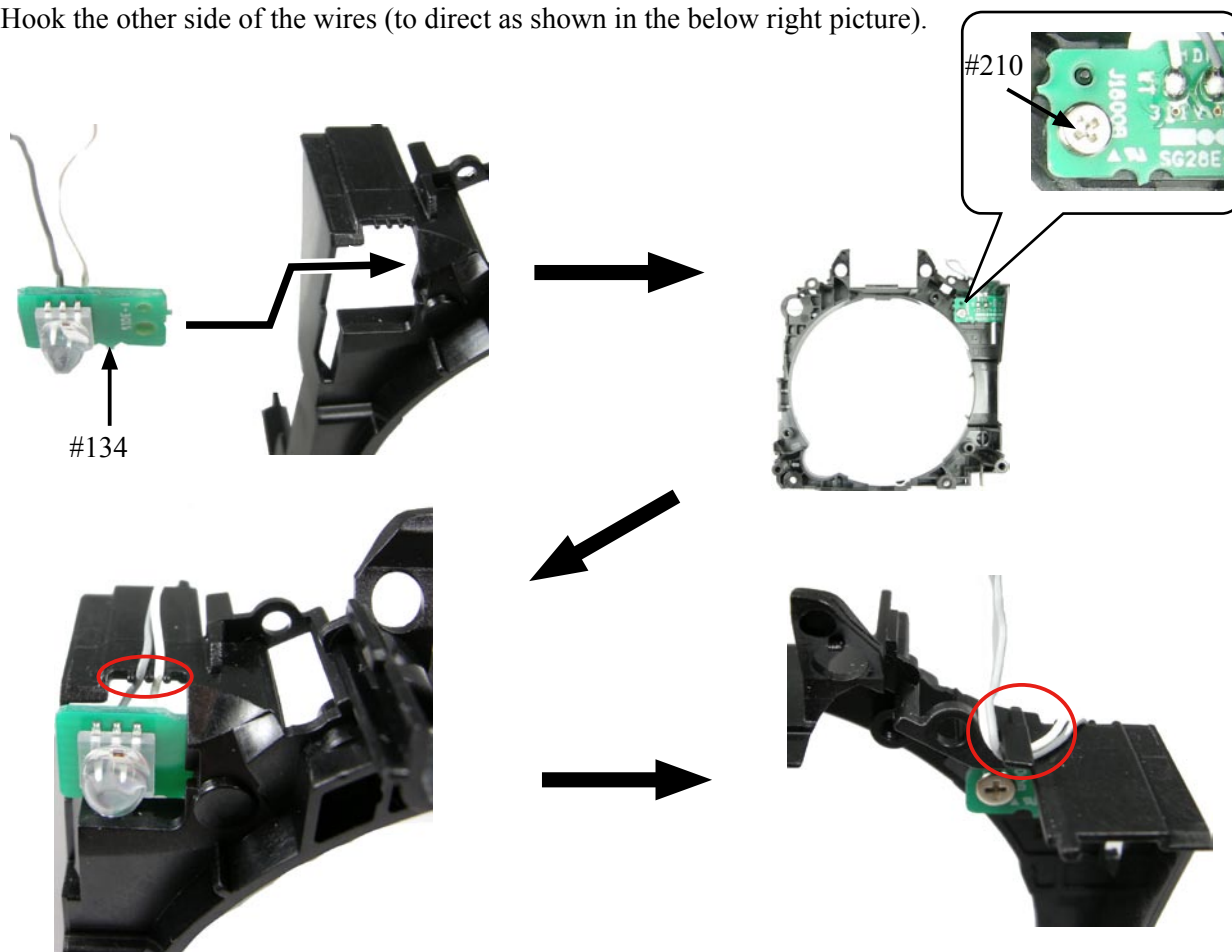
#210

#134

Lens unit

Caution: Be careful NEITHER to touch the whole area of the back (see below left picture) because there is the CCD stage on it, NOR to touch the extension area of the lens (see below right picture).
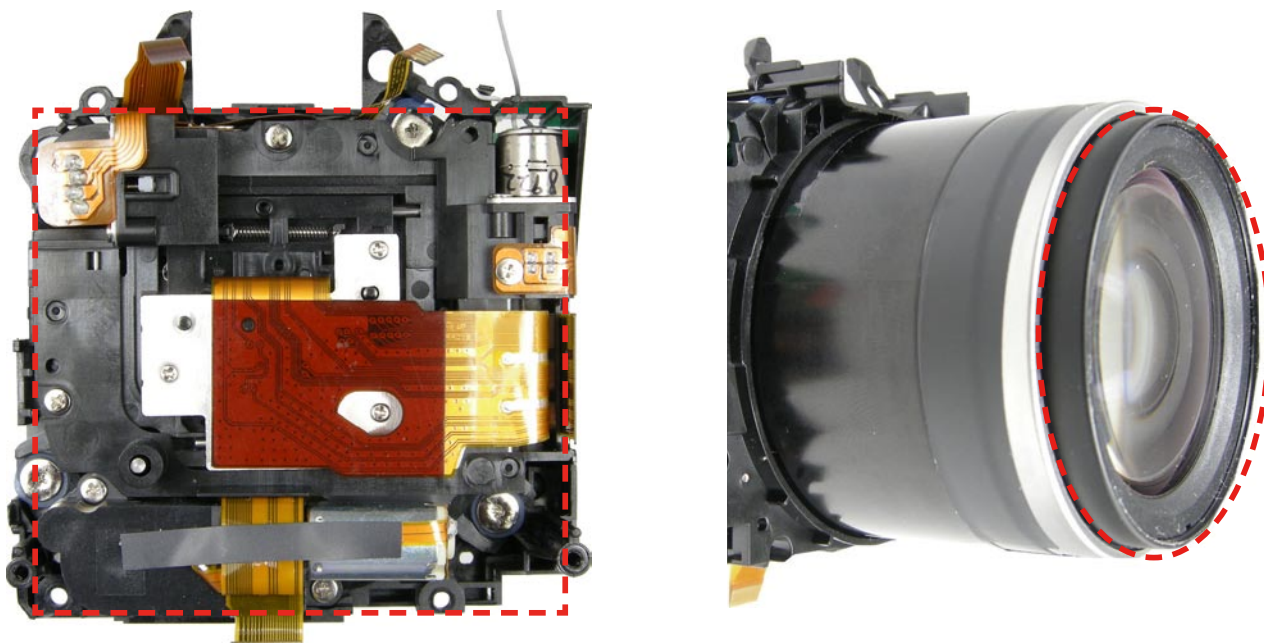
・Attach the two spacers (#157) based on the reference position.

・Attach the three washers (#141).

・Mount the inner holder (#133) on the lens unit (#140).

Reference position

#157

Reference position

#157

#133

#141

#141

#141

#140

[#141] attaching position
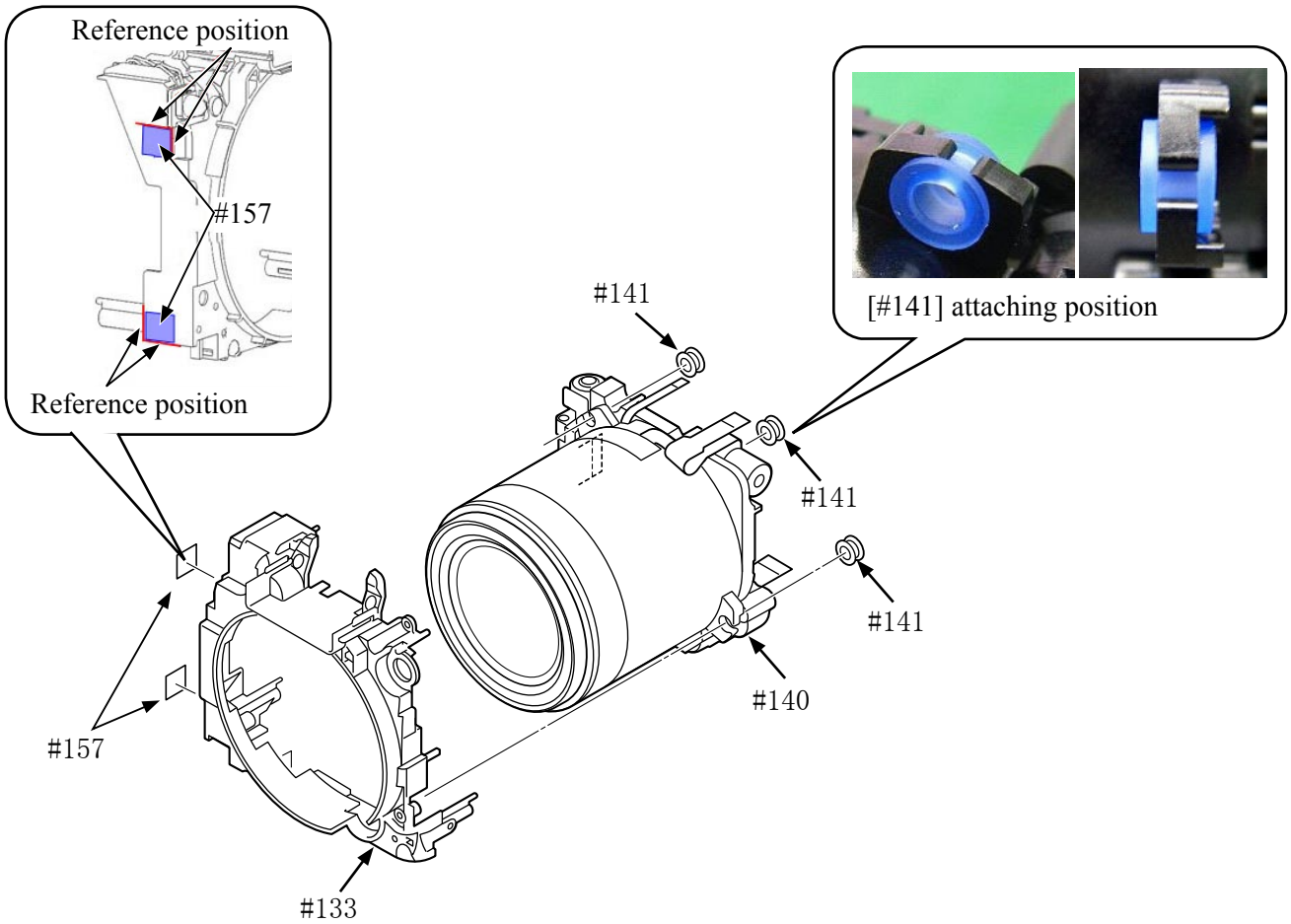
・Caution must be exercised that the FPCs are not pinched in.
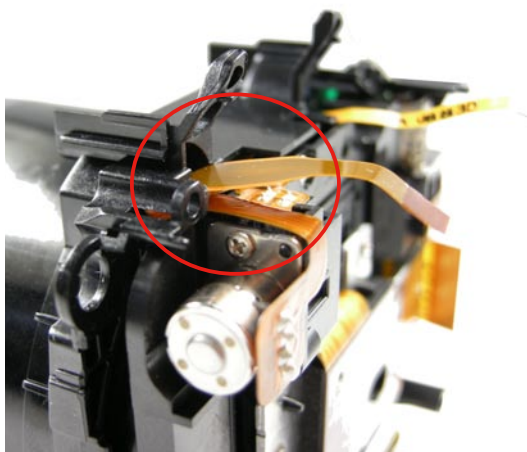
OK
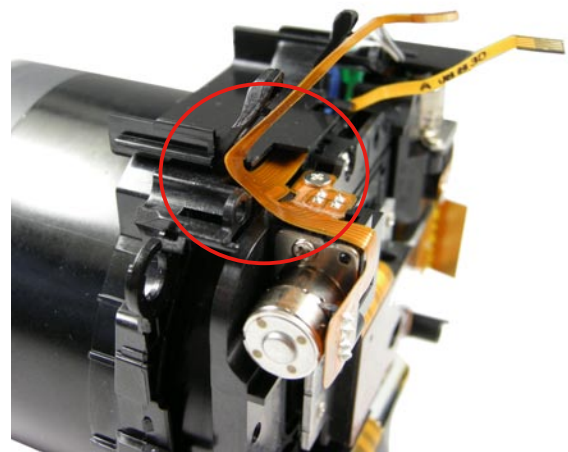
NG: Not Good

Inner holder

・While holding the inner holder (#133), tighten the three screws (#212) in the numeric order from ① to ③ .

① #212

② #212

#133

#212

③
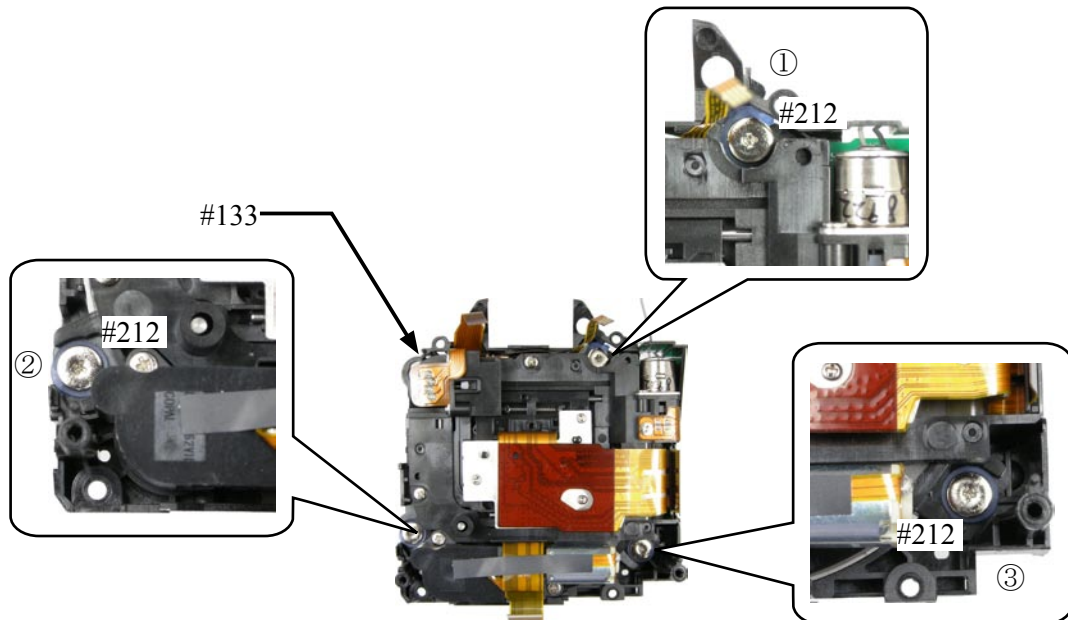
Speaker

・Mount the speaker (#137) and holder strap (#136) on the speaker cover (#135).

・Attach the spacer (#138) based on the reference position.

・Arrange the wires ([White] and [Red]) as below.

#138

#137

Reference position

#136

#135
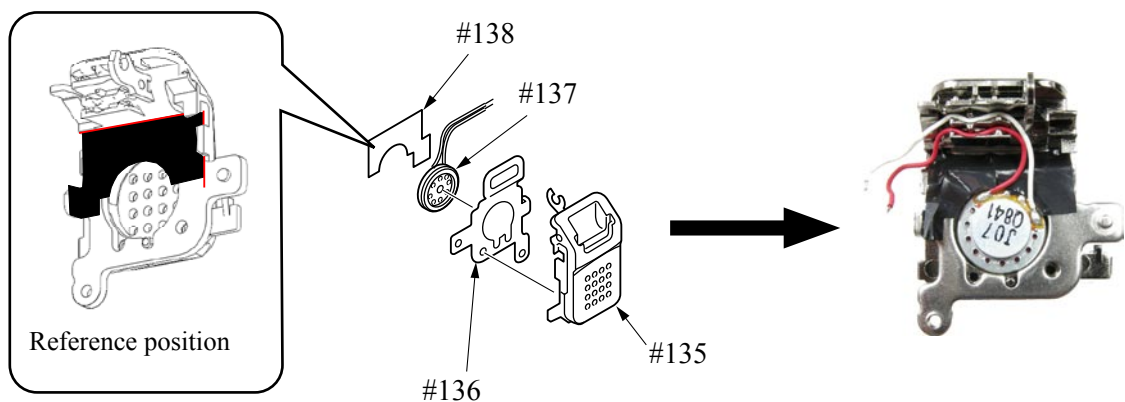
・Mount the speaker holder (#139) on the speaker unit by fitting with the boss.

・Tighten the two screws (#211).

Boss

Be careful of the fit-in area.

#211

#139
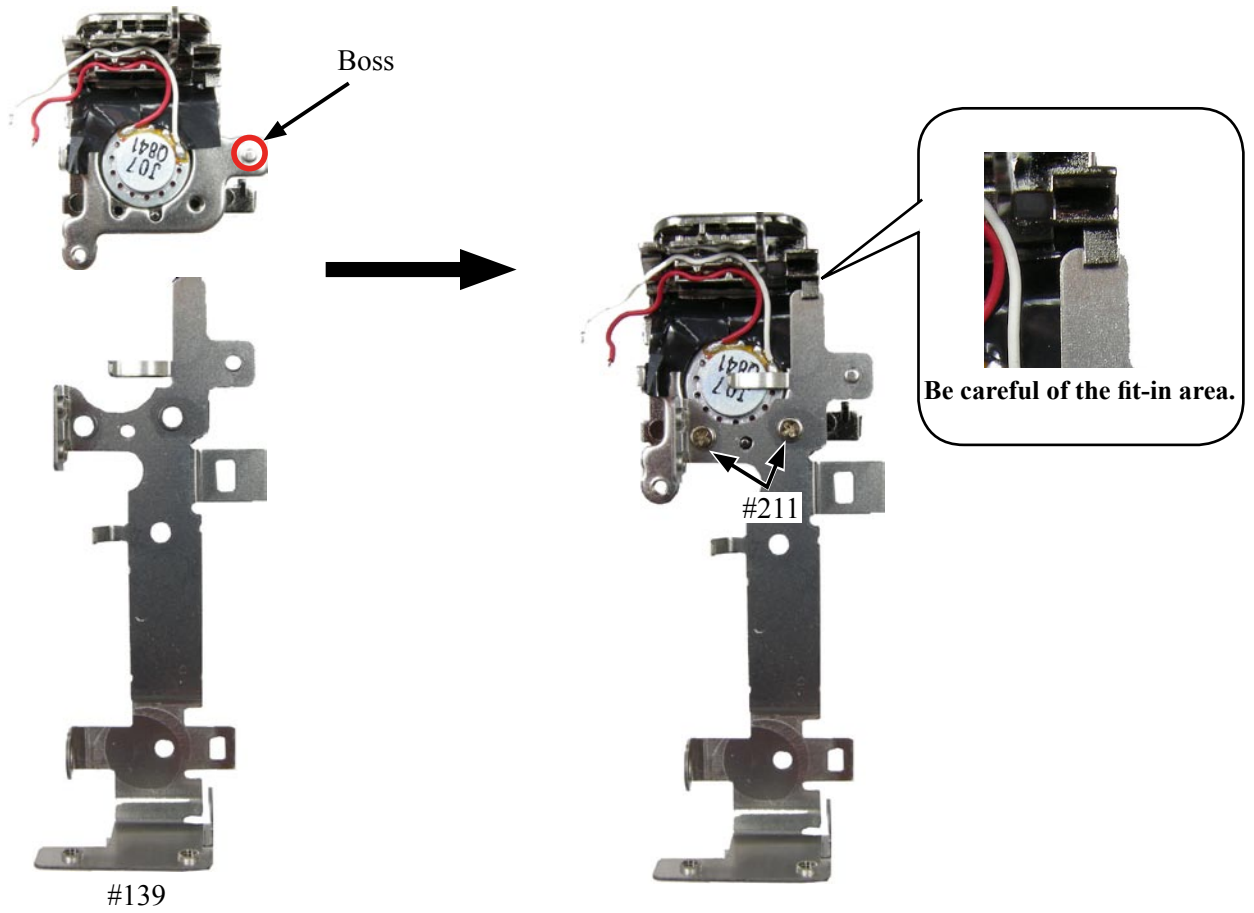
・Mount the speaker unit by engaging the two hooks.

Speaker unit

Main PCB

・Mount the main PCB (#142) on the lens unit (#140) by fitting with the bosses.

・Tighten the two screws (#206) and (#207).

・Connect the three FPCs to the connectors.

・Attach the spacer (#143) based on the reference position.

#140   #142   #143

Boss   #207   Boss

Reference position

#206
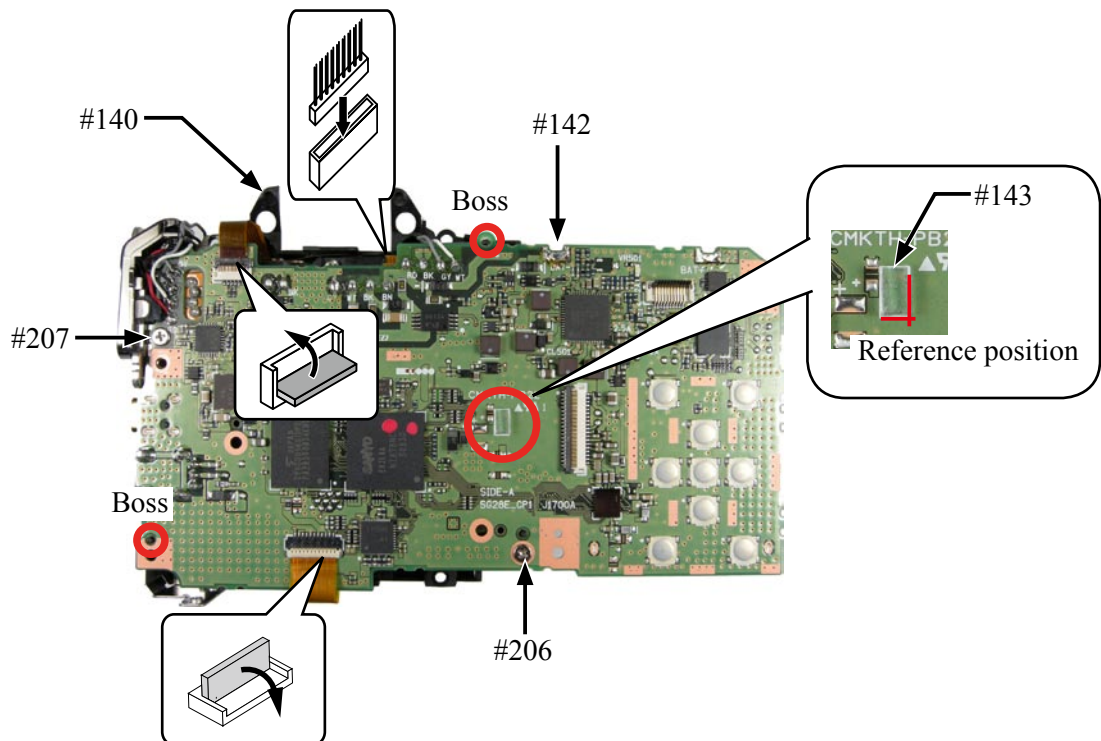
・Connect the FPC of the lens-barrel side.
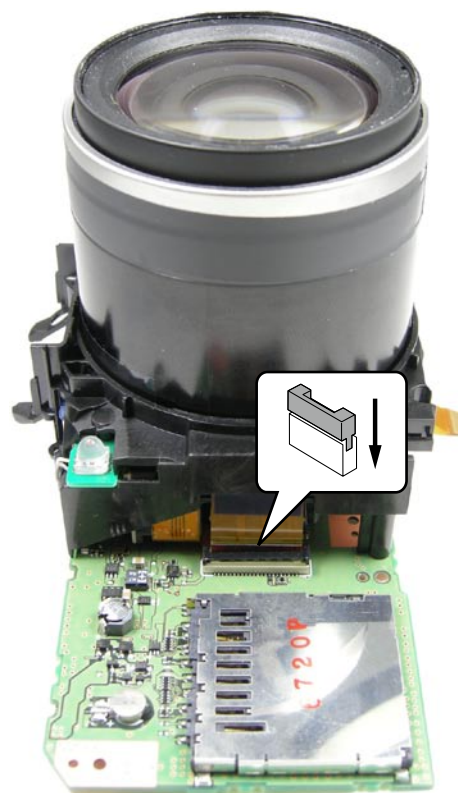
Release button unit

・Mount the release button unit (#132) on the front cover (#129).

・Tighten the screw (#209).

#129

#209

#132
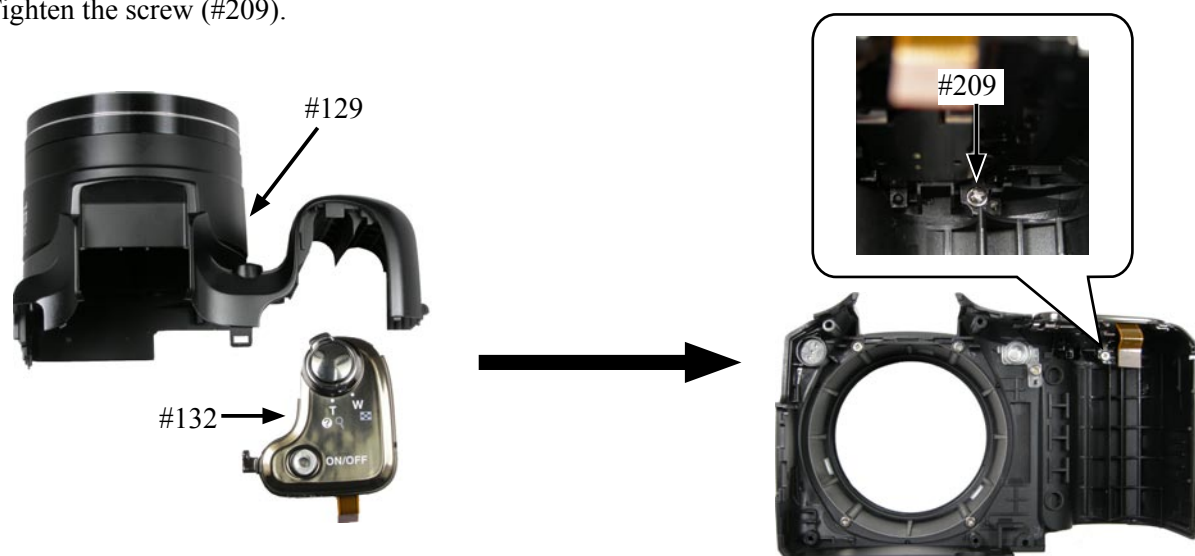
Battery holder

・Mount the two battery A contacts (#152) on the battery holder A (#154).

・Mount the two battery B contacts (#149) on the battery holder B (#151).

#154

#152

#151

#149
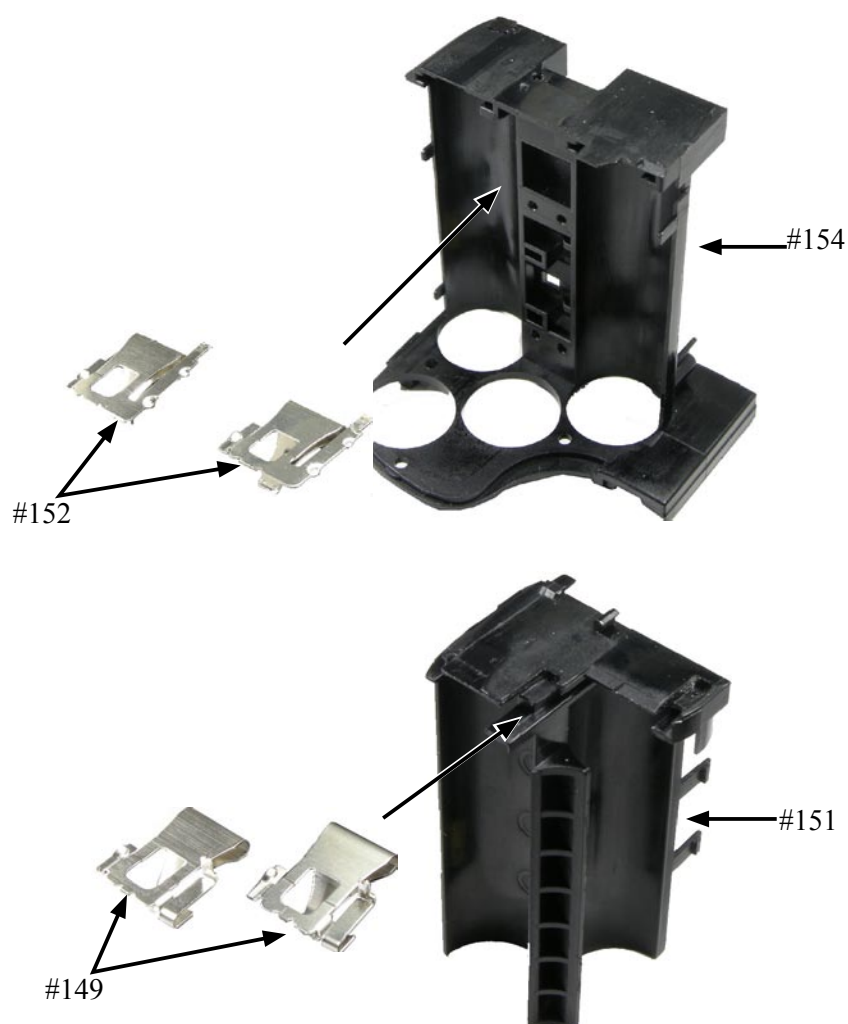
・Assemble the battery holder B (#151) and C (#146) into the battery holder A (#154).

#154   #151   #146
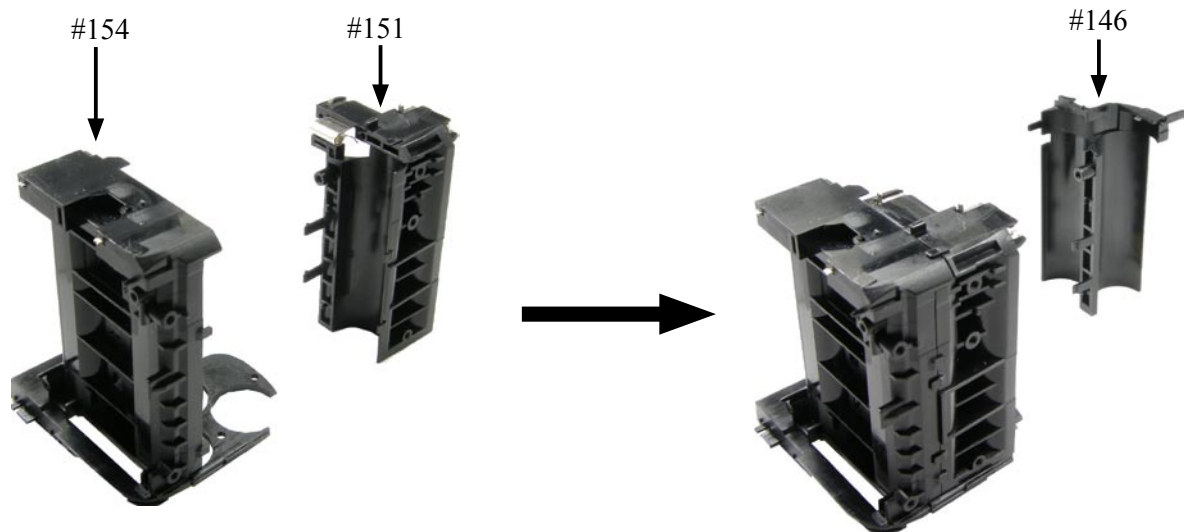
・Attach the holder strap (#150) by fitting with the bosses.

#150
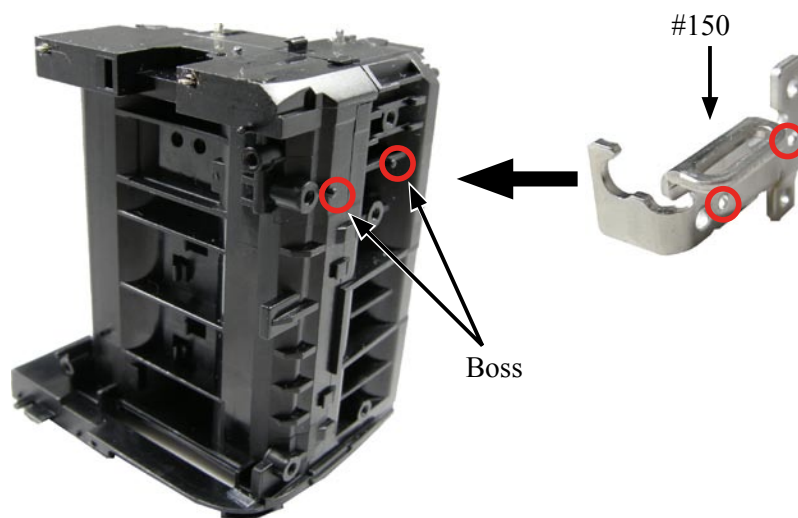
Boss

・Attach the battery contact PCB (#153) by fitting with the boss.

・Tighten the three screws (#206).

Boss

#153

#206

#206
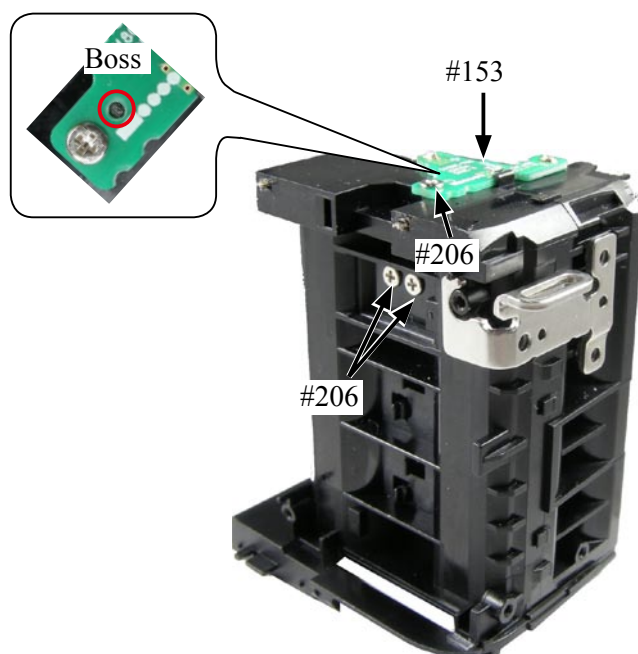
・Tighten the two screws (#203). (the battery holes must be complete round as below.)

#203
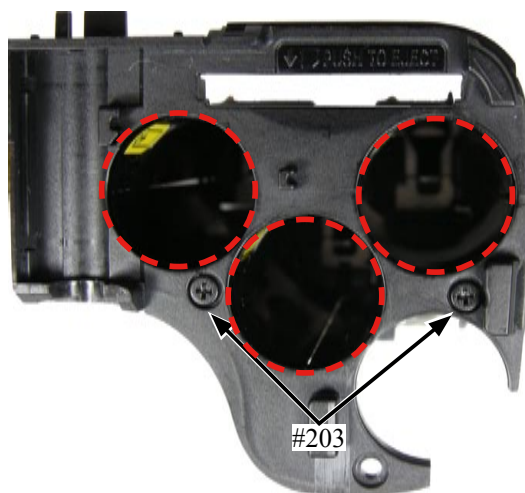
・Solder the battery contact PCB (#153).
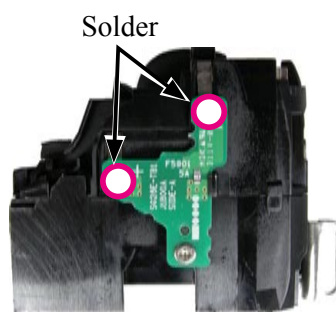
Solder

・Attach the double-stick tape (#145) based on the reference position.
・Place the condenser unit (#144) by fitting its PCB in the groove (see the below "□ ").

Reference position

#145

Place condenser here to

be attached.

#144
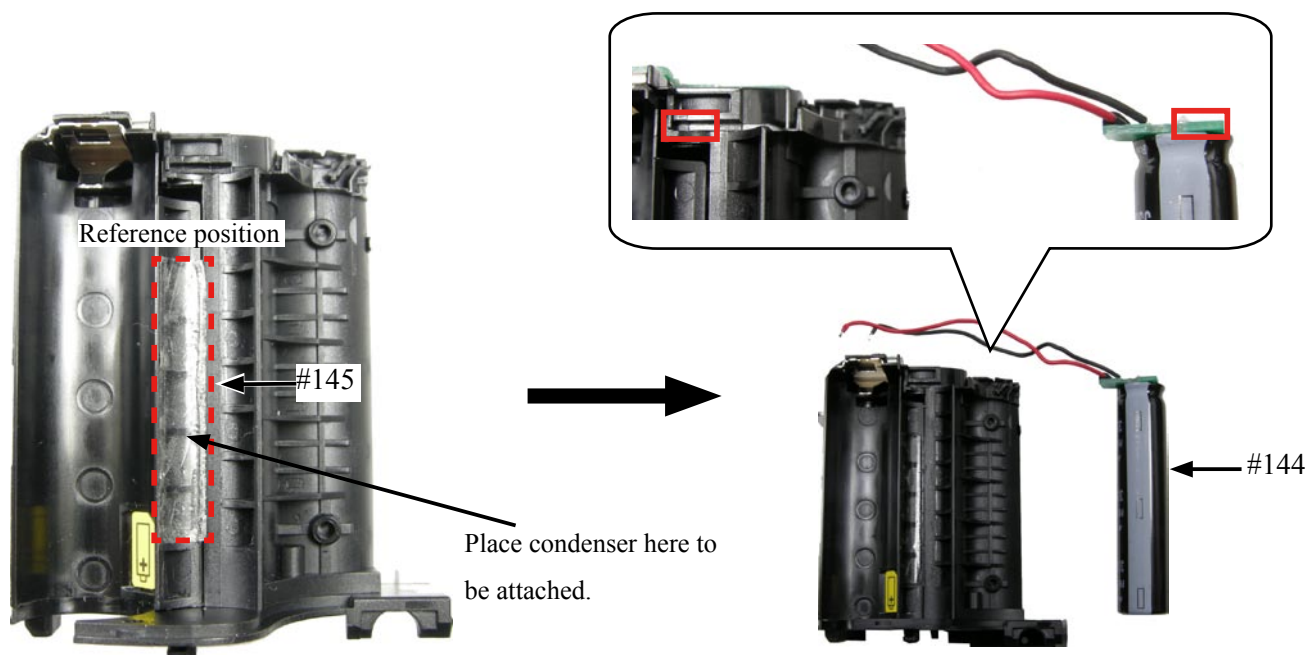
・Arrange the wires as below.
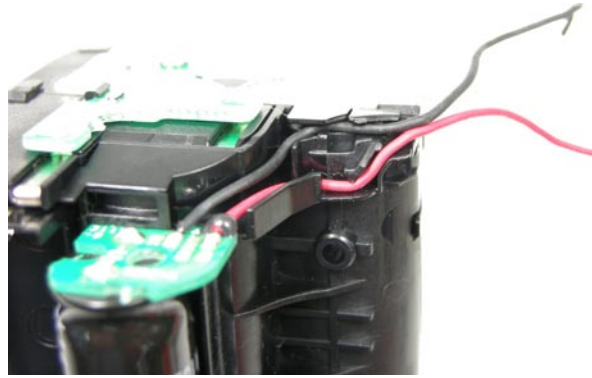
・Mount the battery holder on the front cover.　(Caution must be exercised that the FPCs are not pinched in.)
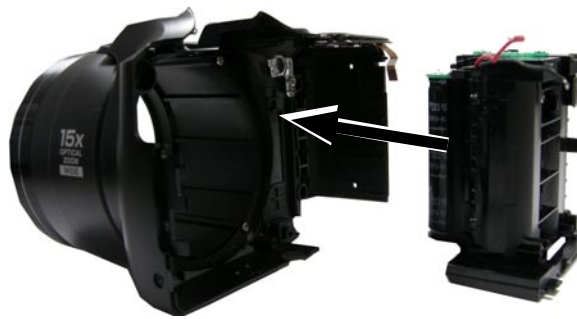
・Place the wires ([Red] and [Black]) behind the guide.

・Tighten the screw (#203).

[Red/Black]

Guide

#203
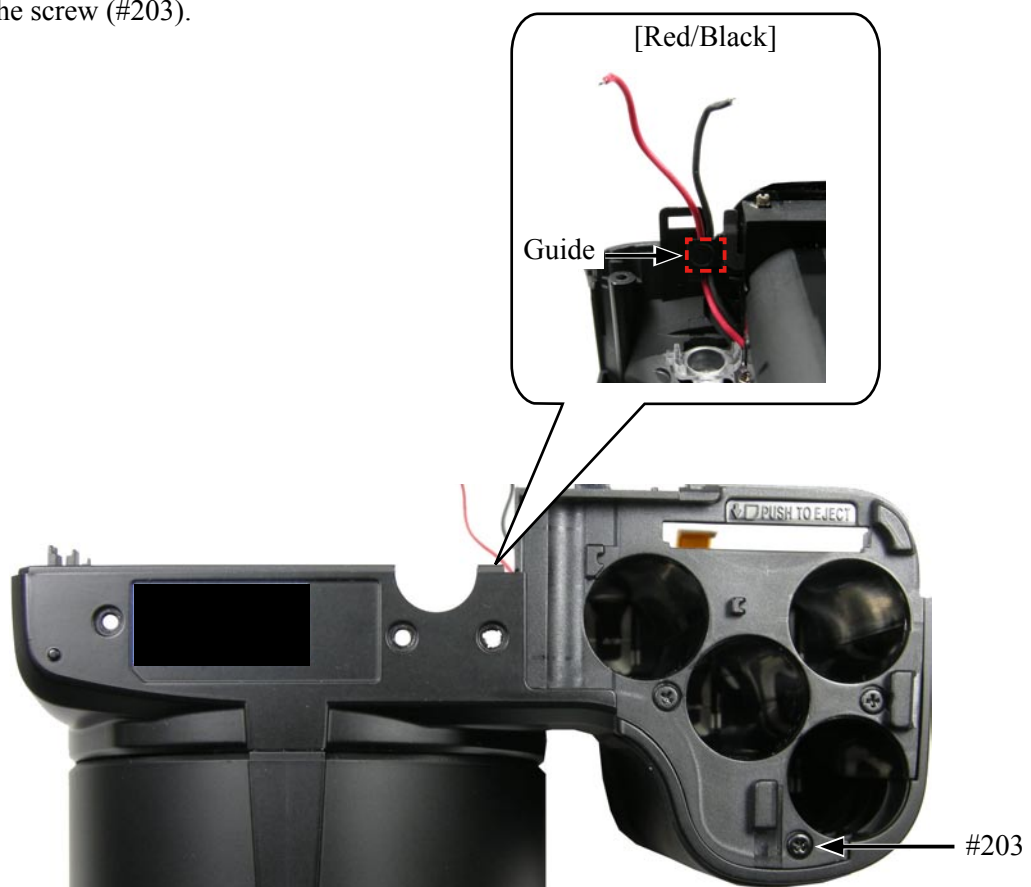
Microphone

・Attach the microphone (#131).

・Arrange the wires ([Gray] and [Black]) as below.

[Gray/Black]

#131
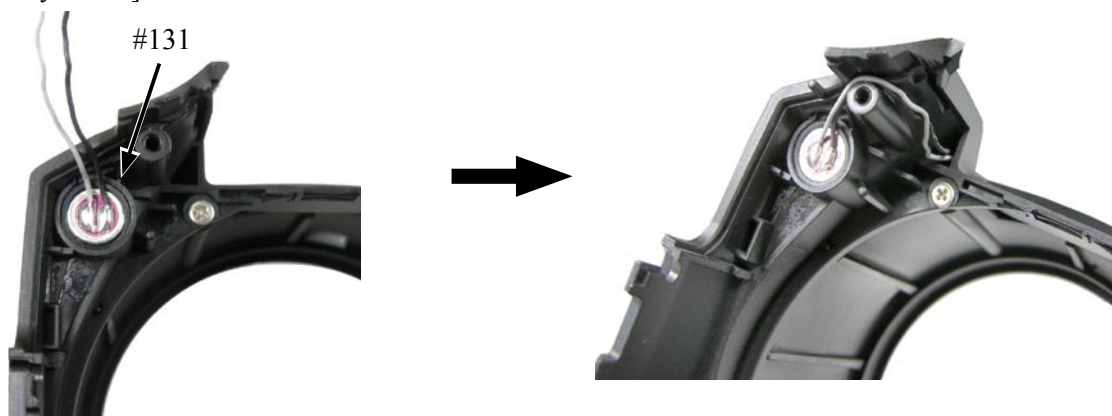
Front cover

・Mount the front cover.

・Before mounting the above completely, attach the USB cover (#103).

#103

・Tighten the two screws (#205).

・Connect the FPC of the release button unit (#132).

#205

#205
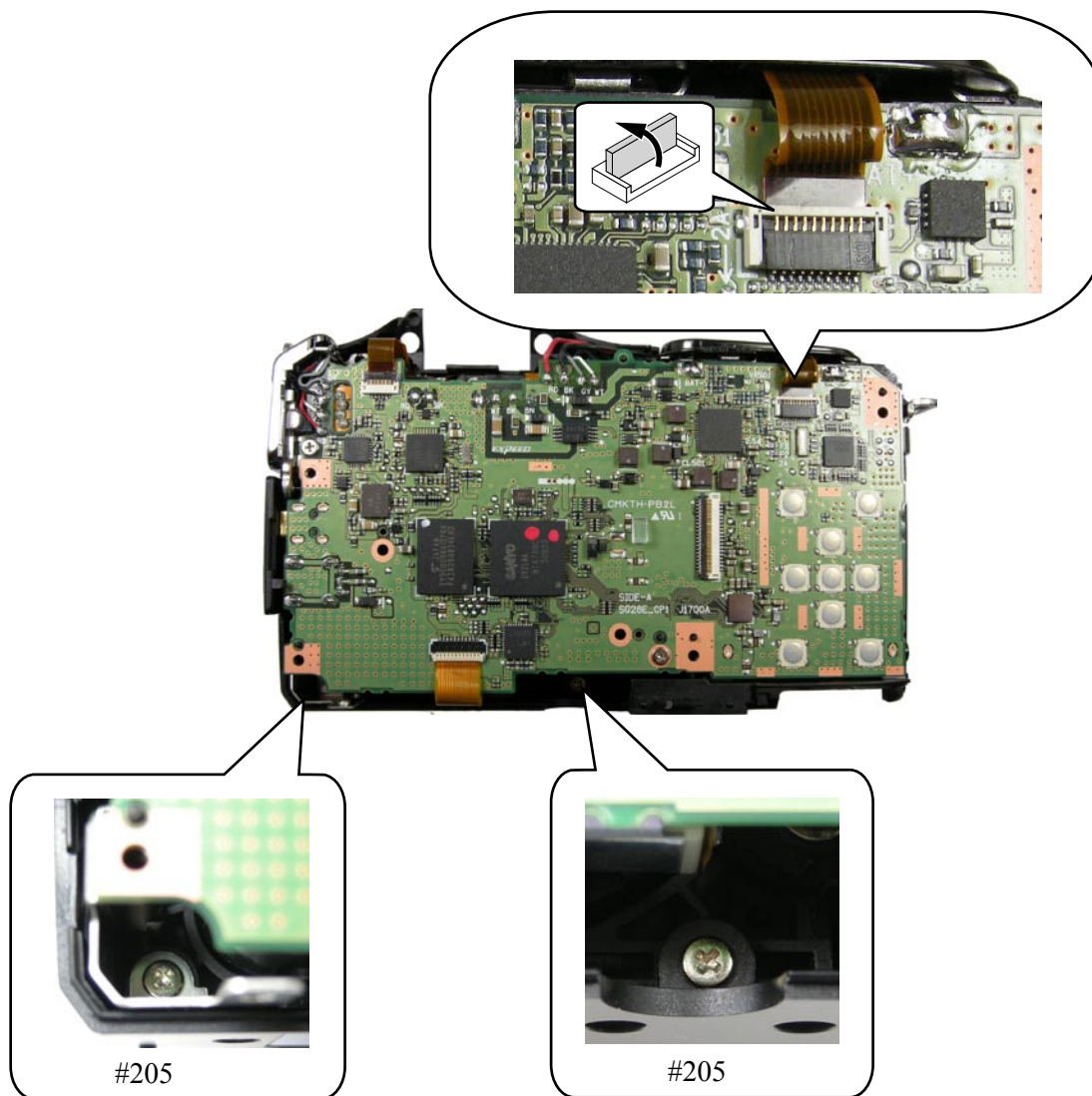
・Arrange the microphone (#131) wires ([Gray] and [Black]) as below.

[Gray/Black]
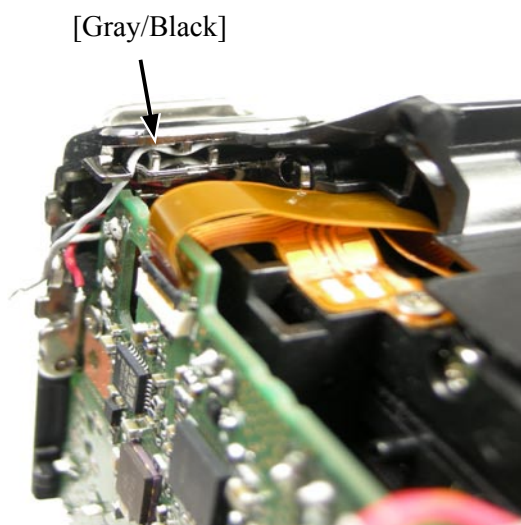
・Attach the two spacers (#114) based on the reference position (front cover side).

・Mount the flash unit by raising it (pop-up).

・Push down the flash unit, and tighten the two screws (#205).

Reference position

#114 Front cover side

#205
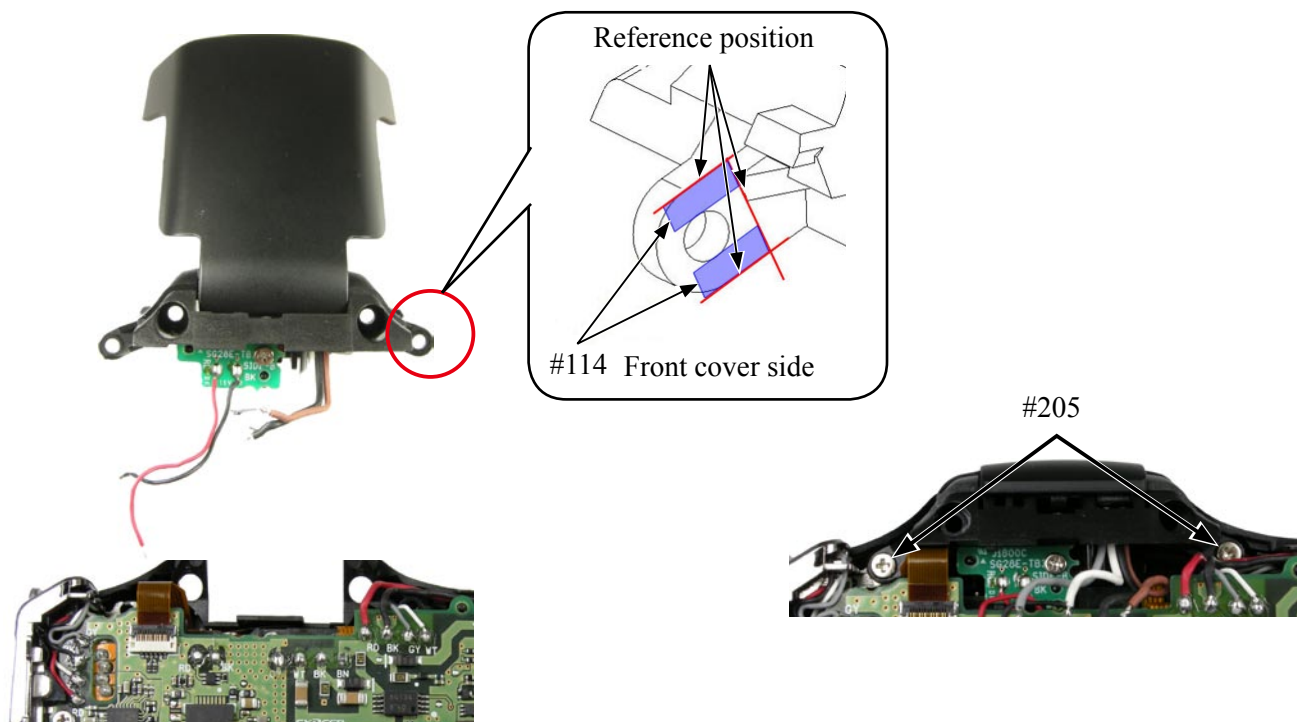
・Solder the four wires ([Gray], [White], and [Black], [Brown]).

・Apply the adhesive (C-8008B) to the wires ([Gray], [White], [Black], and [Brown]).

・Solder the four wires ([Red], [Black], and [Gray], [White].

・Solder the two wires ([Red], and [Black]).

・Solder the four wires ([Gray], [Black], and [White], [Red]).

[Red/Black/Gray/White]

[Gray/Black/White/Red]

[Red/Black]

Adhesive : C-8008B

[Gray/White/Black/Brown]
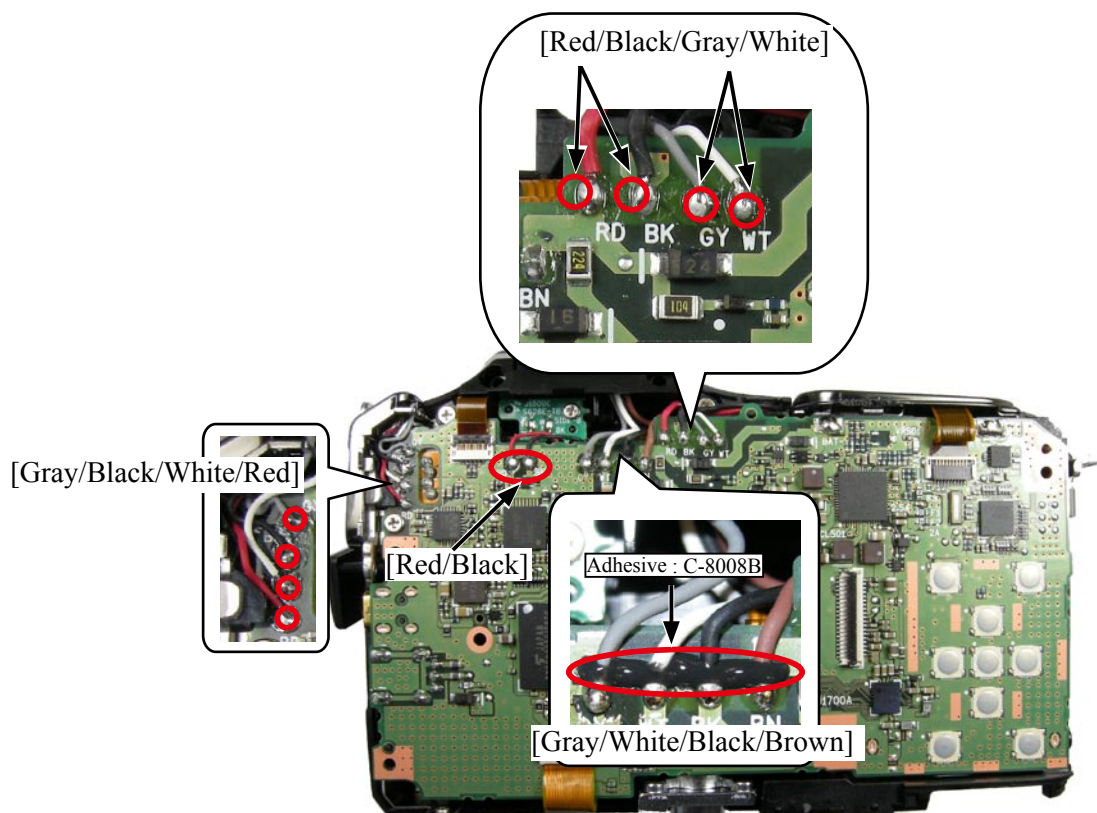
Tripod base

・Attach the Tripod base (#104).

#104 ⟶
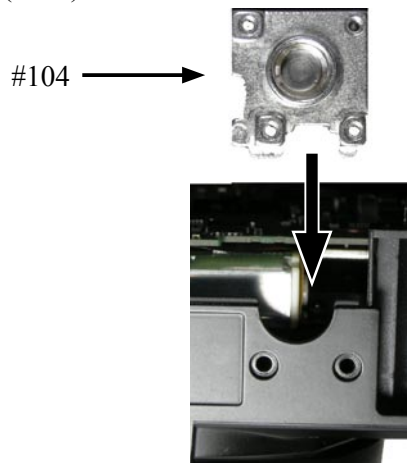
LCD holder

・Mount the LCD holder (#105).

・Mount the GND plate (#106).

・In the numeric order from ① to ④, tighten the screw (#206), two screws (#203) and the screw (#207).

・Make two soldering bridges.

・Attach the two spacers (#155) based on the reference position.

Make soldering bridges.

#105

#207
④

#155

Reference position

#106

#203
②

#155

#203
③

#203

Reference position

#206 ①
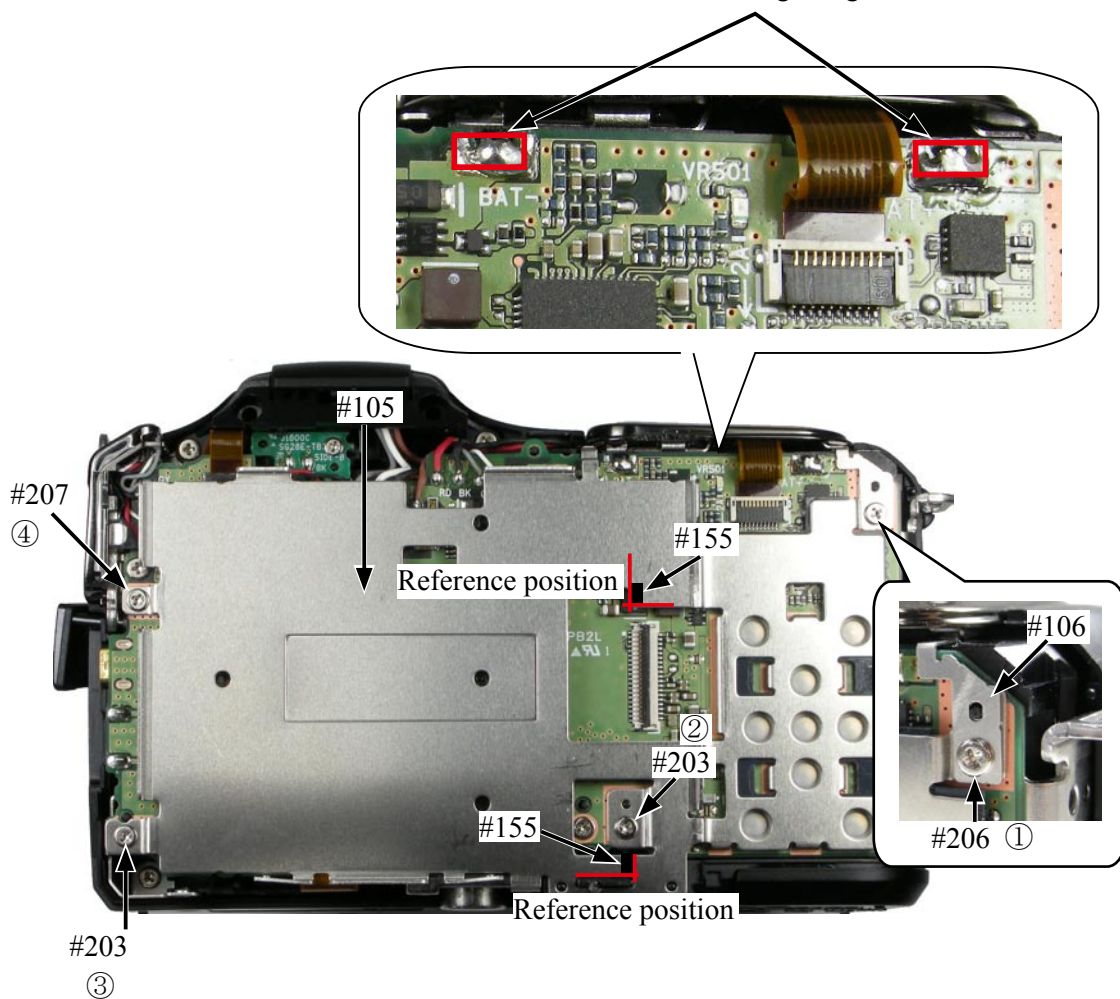
LCD unit

・Connect the FPC to the connectors.

・Mount the LCD unit (#125).

#125
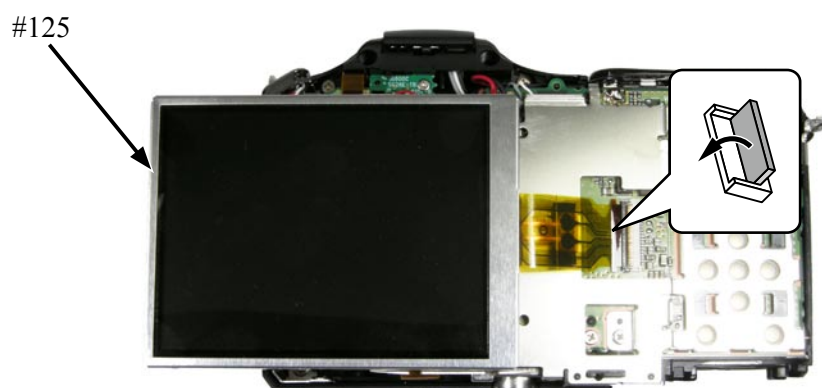
Battery cover

・Mount the battery cover (#101).

・Insert the shaft (#102).

#102

#101
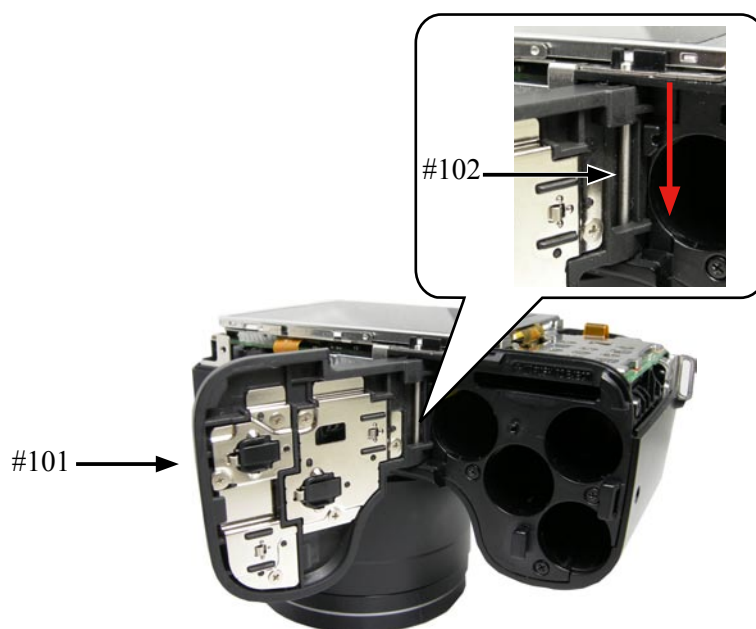
Rear cover

・Attach the double-stick tape (#127) and the monitor cover (#128) to the rear cover (#126) by aligning the
below red lines.

#127

#128
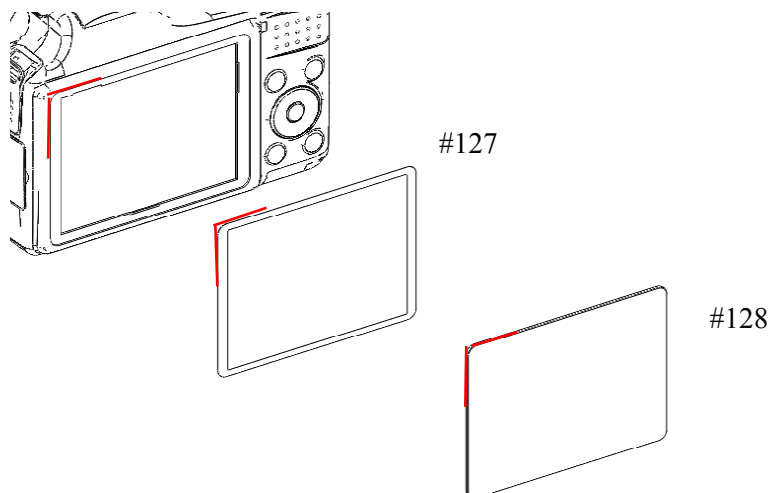
・Attach the two spacers (#156) and (#155) based on the reference position.
・Attach the rear cover.

#156

Reference position

#155

Reference position
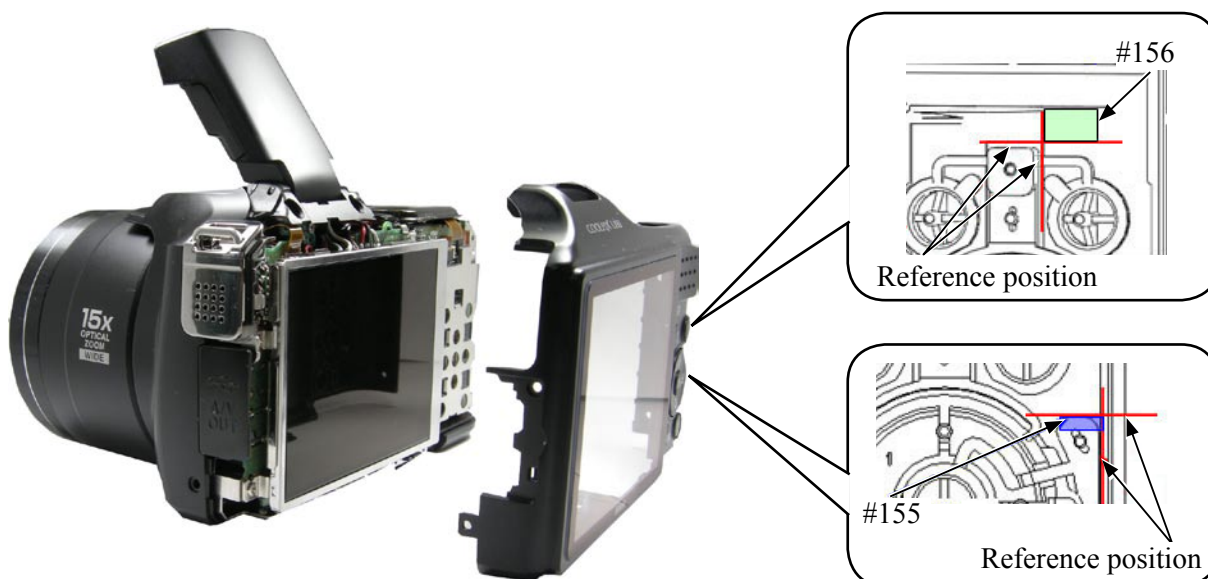
・In the numeric order from ① to ④, tighten the two screws (#203), and two screws (#204).
(After tightening these, there must be no step/level difference between the front and rear covers.)

#203

①
②

④
③

#204

OK

NG
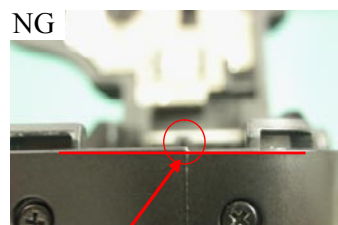
・In the numeric order from ① to ⑥, tighten the four screws (#201), and two screws (#202).

#201

#202

#201

・Tighten the screw (#203).

・Open the USB cover (#103) and tighten the screw (#202).

#103

#202

#203

・Raise the flash unit (pop-up), and tighten the two screws (#203).

#203

ADJUSTMENT

1. Equipment

PC, AC adapter (~~EH-62E~~) or AA-size battery (LR6 or FR6), USB cable (UC-E6), SD card
<u>(EH-67)</u> △(Revision)

2. Servicing tools

Pattern box (J63080), Color meter (J63095), Luminance meter (J63068),

Adjustment collimator (J63090), Color viewer (J63070),

DSC Calibration software Ver1.62b (J65098), SSIS calibration software Ver1.016 (J65123)

3. How to install Inspection & adjustment software

This inspection & adjustment software runs on Windows.

Install the software by following the below procedure.

< Operating environment >

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

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

Computer	IBM compatible PC/AT
OS	Windows XP Professional Edition, Windows XP Home Edition, Windows2000
CPU	Pentium Ⅱ 300MHz
RAM (Memory)	256MB or more
Hard disk	6MB-or-more free disk space is required when installing
Monitor's resolution	1024×768 pixels or more
Interface	USB interface (V1.1,2.0)

< Procedure for installation >

・Because this software is the self-extracting file, decompress the file before installing, and follow the next procedure.

< Procedure for installing DSC calibration software >

1. Executing SetFolder.EXE" will create "C:¥DeskTopLauncher\C-DSC\DscCal" folder automatically.

2. Paste the file (DscCal.EXE) in the created folder.
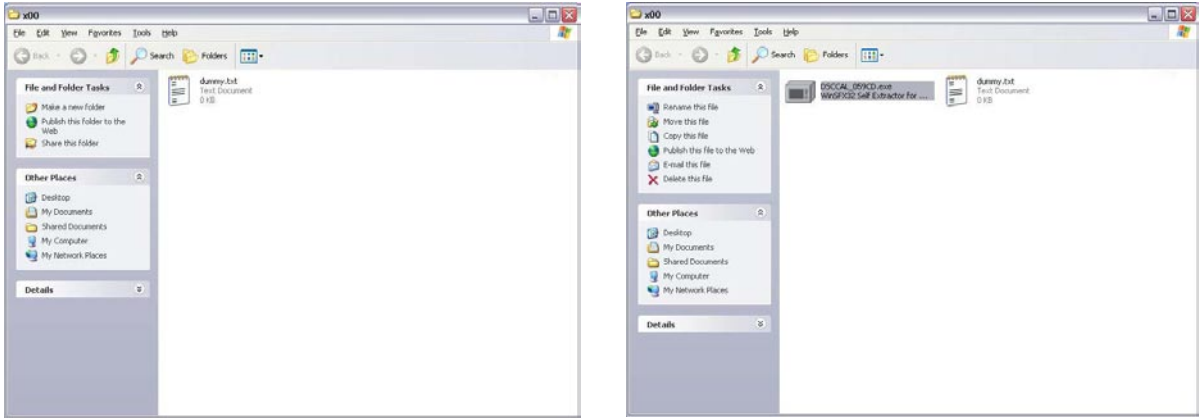
3. Double-click on the pasted file to display the following screen. Click OK.

4. The decompression starts. DscCal folder will be created.

> DscCal" folder
> ├───── "DscCalDi.EXE" ⋯ Execution file for "DSC Calibration software
> └───── "INF" folder   ⋯ USB driver for "Windows2000"
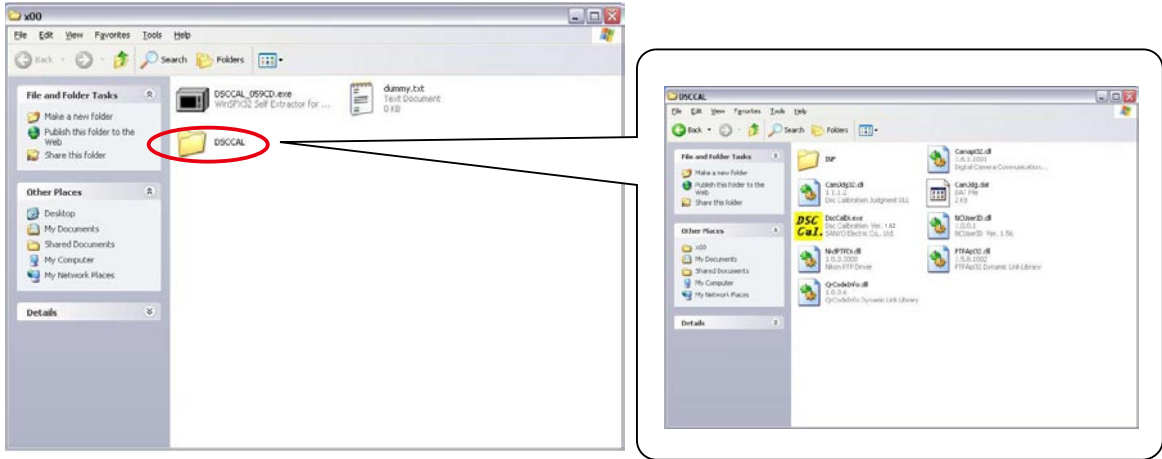
5. Take the same installing procedure for the other adjustment software which is used for this model.

< Caution for starting program >

・Before starting this program, close all the other running applications. Otherwise, the program may not run
 properly.

When the inspection & adjustment software is started for the first time, the below window will be displayed on
the monitor for typing in the user key. (ref. TIE-07023-1)
If the user key is input correctly, the adjustment screen will appear.
Caution: Once the user key has been input, the below screen will not be displayed from the next time.
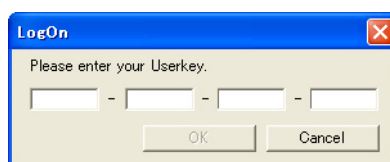
< Caution for starting DSC calibration software >

ONLY "PTP" is available for the USB connection.
Only in case of "Windows2000" operating system, it may require the install of the USB driver. In this case,
use the file of INF folder, where the DSC calibration software exists, then perform the installation.

4. Pattern box

Before using the pattern box, turn its power on to carry out "aging" approx. 30 minutes: the color temperature must be adjusted to 3100 ± 20K by the color meter. When the pattern box is used and for a while even after the power turns off, the lamp and its surroundings are subject to high temperatures, so handle them with care.

< Procedure for correcting Pattern Box >
   Note) Be sure to perform "aging".
1) Measure the measuring point (center of diffusion plate) with the color meter .
2) Adjust the pattern box so that the color temperature is 3100 ± 20K by using "VR for adjustment of the color temperature".
3) Measure the center of the diffusion plate with the luminance meter (BM-3000).
4) Adjust by the knob for luminance adjustment so that luminance becomes "Y±20cd/m^2" shown in the calculating formula on the next page.
5) Repeat from 1) to 4) for calibration.
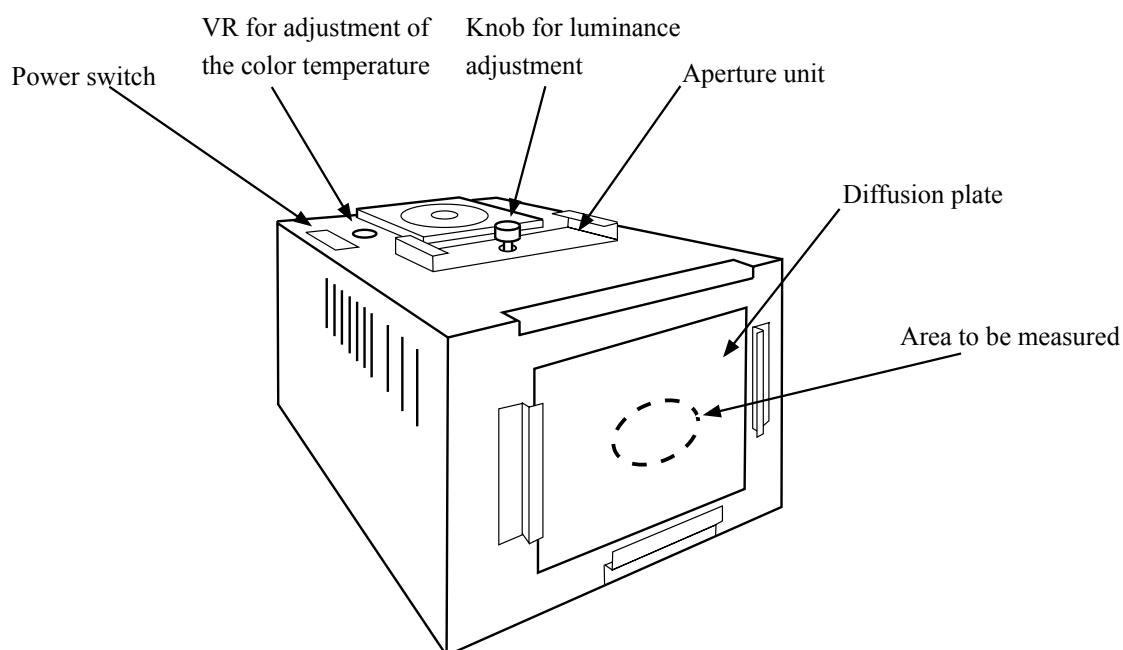
Calculating formula

$$\frac{^{\text{Coefficient}}\ 168.89 \times X}{_{\text{Coefficient}}\ 256} = \boxed{Y cd/ m^2}$$

X: Corresponding value by crossing K-1.3 and EV13 in the "Inspection report", which is an accessory of BM-3000

Y: Luminance

e.g)

計測器検査成績表

２００６年　２月　３日発行

映像カンパニー　生産統括部　品質保証部　第四品証課

品　　名	形　　式	型　番	登録Ｎｏ.
輝　度　計	ＢＭ－３０００	０３６００４	

検　定器具	6M測光ベンチ (F12196) 標準電球500W／200W (P0025/P0024) デジタルマルチメータ (F11067) 拡散板 (F12191)	検定実地日	'０６年　２月　２日
		使用職場	映像・品質保証部 サービス計画課

前回指示値からの変化

	規格：±０.０５EV以内	判　　定	
ＥＶ１１の時の変化	－ EV	初回により判定せず	

規定輝度面の指示値

ＥＶ値	指示値 (1.16)	指示値 (1.3)
１５	４９７６.５ cd/㎡	５５７３.６ cd/㎡
１４	２４２４.９ cd/㎡	２７５０.６ cd/㎡
１３	１２１８.９ cd/㎡	１３６５.２ cd/㎡
１２	６０４.６６ cd/㎡	６７９.０４ cd/㎡
１１	２９９.９３ cd/㎡	３３５.９２ cd/㎡
１０	１４９.７７ cd/㎡	１６８.３８ cd/㎡
９.５	── cd/㎡	１１８.７５ cd/㎡
９	７４.４４５ cd/㎡	８３.６０３ cd/㎡
８	３７.１７２ cd/㎡	４１.３５８ cd/㎡
７	１８.５２７ cd/㎡	２０.７９９ cd/㎡
６	９.２０５ cd/㎡	１０.３０２ cd/㎡
５	４.６２２ cd/㎡	５.２１０ cd/㎡
４	２.３６５ cd/㎡	２.６５２ cd/㎡

次回検定　　２００７年　　２月

株式会社　ニコン

$$\frac{168.89 \times \boxed{1365.2 cd/ m^2}}{256} = \boxed{900 cd/ m^2}$$

ref. The calculated result corresponds to "EV12.4"
of the inspection report.

5. Adjustments required when parts are replaced

○ Adjustment is necessary. × Adjustment is not necessary.

Adjustment item / Replacement part	Firmware update *	Backlash calibration	Shading central calibration	Zoom adjust-ment	Lens adjust-ment (1.5m & Infinity)	AWB adjust-ment	CCD black / white pixel defect adjustment	USB storage info registration
Lens unit	×	○	○	○	○	○	○	×
LCD unit	×	×	×	×	×	×	×	×
MAIN PCB	○	○	○	○	○	○	○	○
Other PCBs	×	×	×	×	×	×	×	×

* Including the firmware for VR MCU.

Battery contact PCB

LED PCB

Condenser unit

Pop up SW PCB

Main PCB
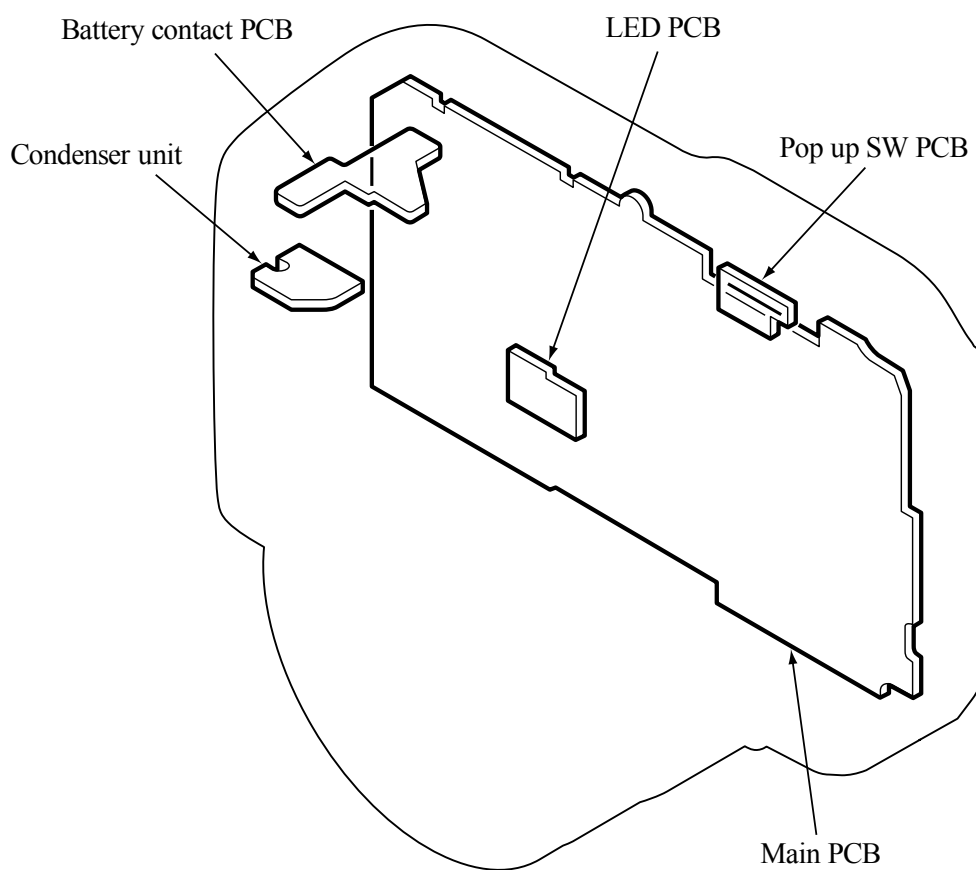
6. Connecting camera to PC

Connect the camera and PC through the USB cable.

To the USB port

USB Cable (UC-E6)

Supply the power through

AC adapter (EH-67) or

AA - size battery (LR6 or FR6).
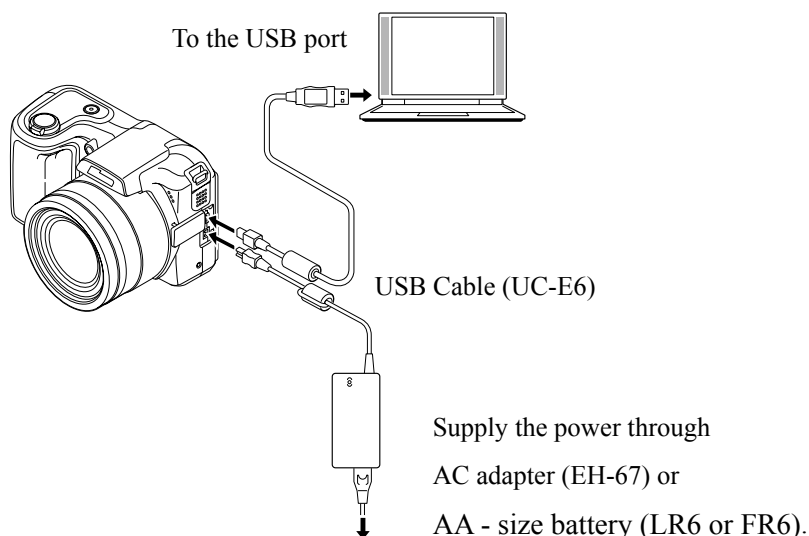
7. Adjustment item / order

1. Firmware update

2. Backlash calibration

3. Shading central calibration

4. Zoom adjustment

5. Lens adjustment (1.5m)

6. Lens adjustment (Infinity)

7. AWB adjustment

8. CCD defective white (hot) pixel compensation against dark background

9. CCD defective black/white (dead) pixel compensation against bright background

10. USB storage information registration

11. Language setting

12. Factory default setting

Caution:

**The adjustment method differs depending on each adjustment item. So before making the adjustments,
it is necessary to cycle the power of the camera or re-connect the USB cable.**

Therefore, before using the inspection and adjustment software, confirm the following:

・ The power of the camera is ON.

・ PC and camera is connected through USB cable.

7-1. Firmware update

When the main PCB is replaced, be sure to perform the firmware update to the latest (see 7-1-1) and the VR MCU firmware update (see 7-1-2) to the latest versions .

7-1-1.【Firmware update】

・Format the SD card on PC. Copy the latest firmware "firmware.bin" into the "firmware" folder.

・Insert the SD card, in which the firmware was copied, into the camera.

・Turn the camera ON.

・Press the "MENU" [*] button of the camera, and select "Set up".

・Select "Firmware version".

Set up		Set up
Menus	→	Battery type
Welcome screen		Protect
Date		Rotate image
Monitor settings		Copy
Date imprint		**Firmware version** ▶
MENU Exit		MENU Exit
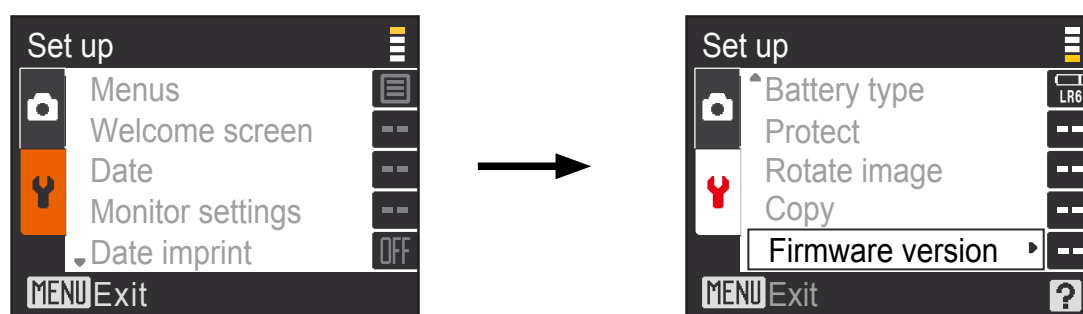
・Click "Yes" to perform the updating.

Note) Do NOT turn the camera OFF during updating.

```
Current  :L100 Ver.X.X          ⓘ
New      :L100 Ver.X.X
  Update to new firmware?             Updating・・・
                          →           Warning
                                      Do not turn camera off
              No                      during update!
              Yes

MENU Exit
```
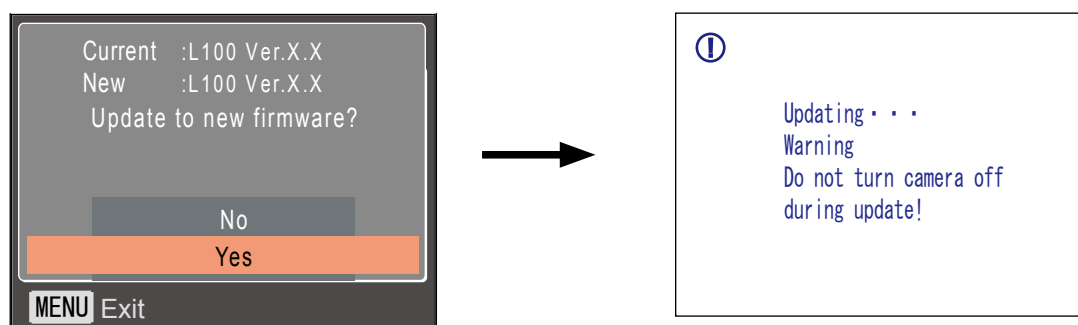
・The message that indicates the completion "Done" appears, then turn the camera OFF and remove the SD card.

・Turn the camera ON to check "Firmware version".

・Turn the camera OFF to end the procedure.

```
ⓘ

    Done                   →      COOLPIX L100 Ver . X.X
    Turn camera off to
    complete upgrade.


                                 ◀ Back        Nikon
```
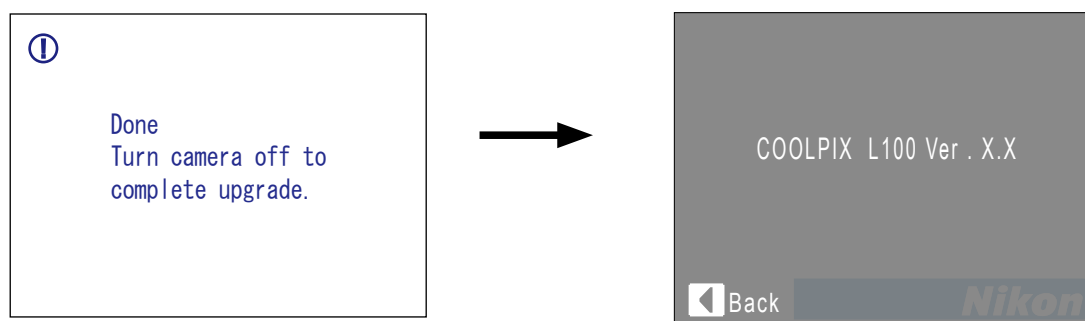
Caution:

After finishing the firmware update, be sure to perform the VR-MCU firmware update on the next page, too.

7-1-2.【VR-MCU firmware update】

・Insert the SD card, in which the firmware was copied, into the camera.

・Turn the camera ON.

・Set the mode dial to "AUTO" and turn the camera OFF.

・While pressing the "MENU" button and setting the zoom lever to "W", turn the camera ON.

・Turn the camera OFF.

・Turn the camera ON again.

・Only when the VR-MCU firmware update is necessary, the updating will start automatically.
　If it is not necessary, the camera will start as normal.

```
①

        Updating・・・
        Warning
        Do not turn camera off
        during update!
```
→
```
        Done
        PLEASE WAIT.
```
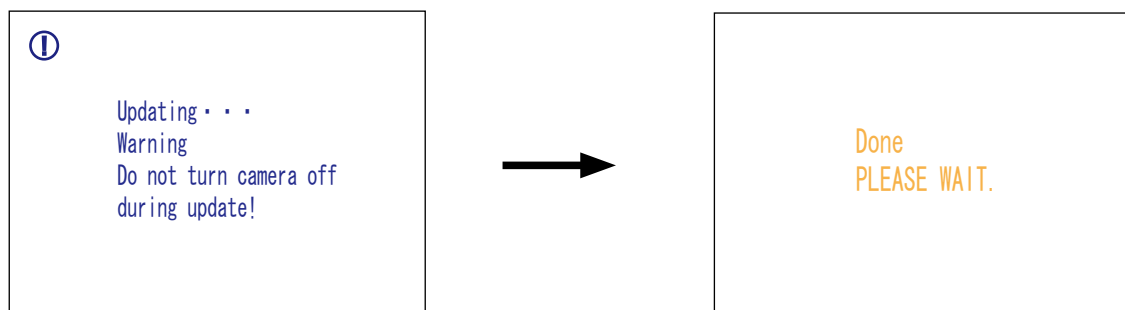
・"Done" (completion of updating) will be displayed and the camera will be turned OFF automatically.

・Remove the SD card.

7-2.Backlash calibration

Caution : "Gyro Gain Calibration" is not necessary △(Addition)

・Connect the camera and PC through USB cable.

・Turn the camera ON.

・Place the camera in a regular position on a flat and steady board.

・Start the SSIS calibration software.

・Select "01.Backlash Calibration", and click "Exe".

・After the adjustment is completed, the result will appear.
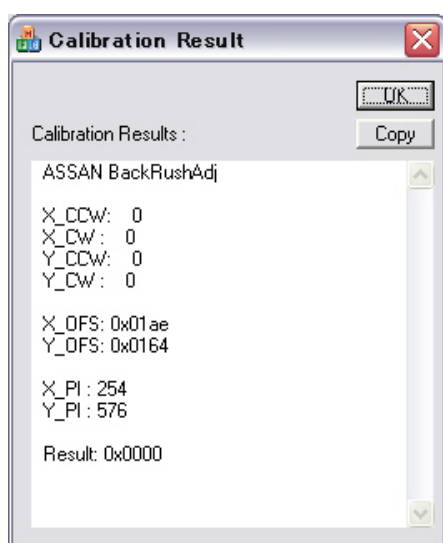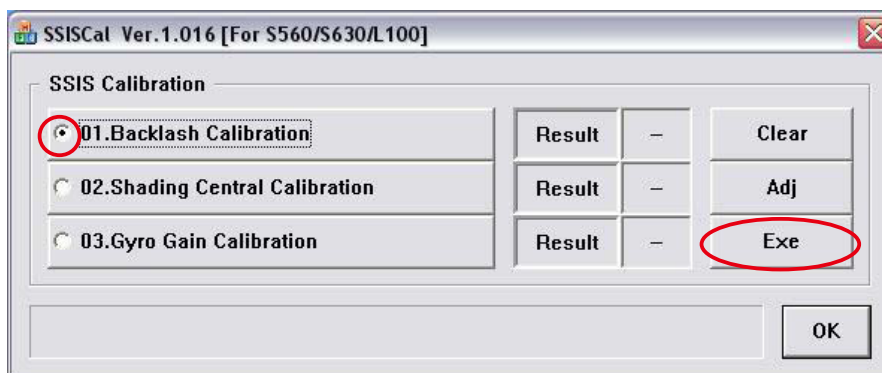
Backlash calibration standard value

X_CCW 0 - 8

X_CW 0 - 8

Y_CCW 0 - 8

Y_CW 0 - 8

<u>Result of adjustment</u>

・If the result is in the range of the above standard values, "Result" shows "OK", and the next "02. Shading Central Calibration" will be selected.

・The camera will be turned OFF automatically.

・If "Result" shows "NG", make readjustment.

The cause of "NG" will be displayed in the below green frame.
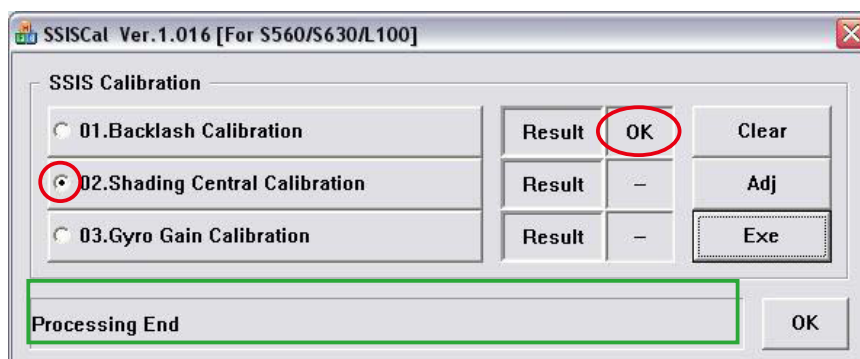
7-3. Shading central calibration

Caution: Set the luminance of the color viewer to "LV13" or equivalent.

・Turn the camera ON.

・~~At TELE-end zoom position, connect the camera and PC through USB cable.~~

・At TELE-end zoom position, place the camera (front surface of lens) to the closest to the color viewer.

・Connect the camera and PC through USB cable. △(Revision)

・~~Place the camera to face the center of the color viewer in a regular position.~~ △(Deletion)

・Start the SSIS calibration software.

・Select "02.Shading Central Calibration", and click "Exe".

・After the adjustment is completed, the result will appear.

・If the result is in the range of the below standard values, "Result" shows "OK",

・If "Result" shows "NG", make readjustment.

・Turn the camera OFF.

Camera
Set to "Tele-end".

△(Revision)

Color viewer (J63070)

Calibration Result

OK

Calibration Results :   Copy

ASSAN CenterPosAdj

X_CENT_POS.: -282
Y_CENT_POS.: 36

Result: 0x0000
MS=4989,5022
MS_Z=4962,4995
MS_Z2=4936,4969
AGC: 229, 397, 564, 732, 900, 745, 913
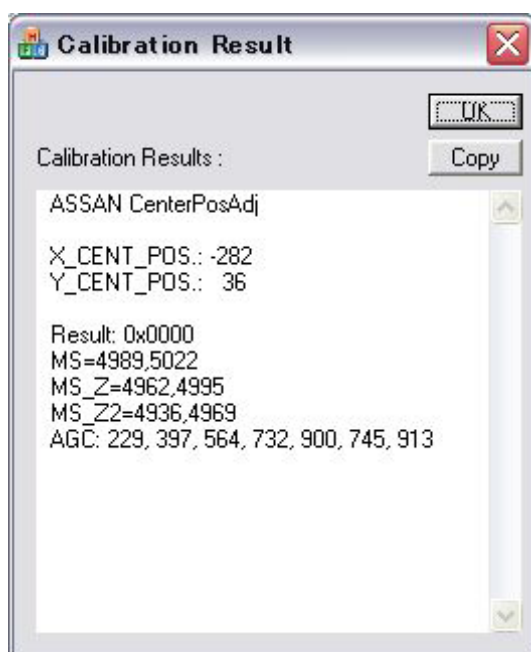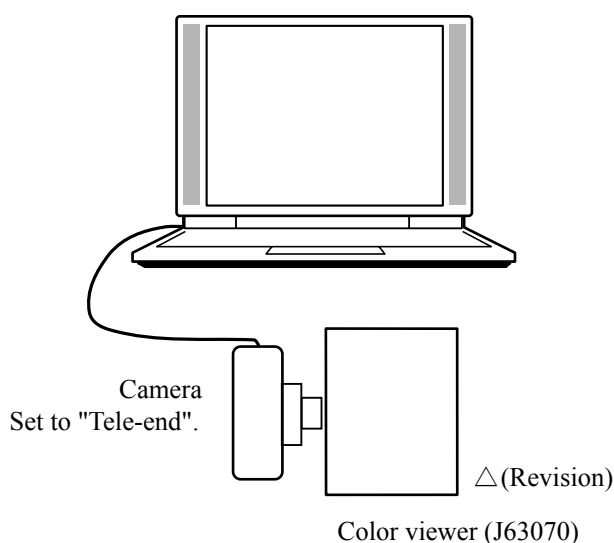
Shading central calibration standard

X_CENT_POS "-325" - "-45"
Y_CENT_POS "-64" - "-246"
Result 0x0000

MS=MS1, MS2
MS_Z=MS3, MS4
MS_Z2=MS1, MS2
MS1-6 3950 - 5350

AGC AS1, AS2, AS3, AS4, AS5, AS6, AS7
AS1-7 Less than 1023

Result of adjustment

サービス
計画課
M

7-4. Zoom adjustment

・Connect the camera and PC through USB cable.

・Turn the camera ON.

・Start the DSC calibration software.

・Select "Zoom Cal" from "Test" pulldown menu.

・After the adjustment is completed, the result will appear. If the result is NOT in the range of the below standard values, make readjustment.

・Turn the camera OFF.

Camera
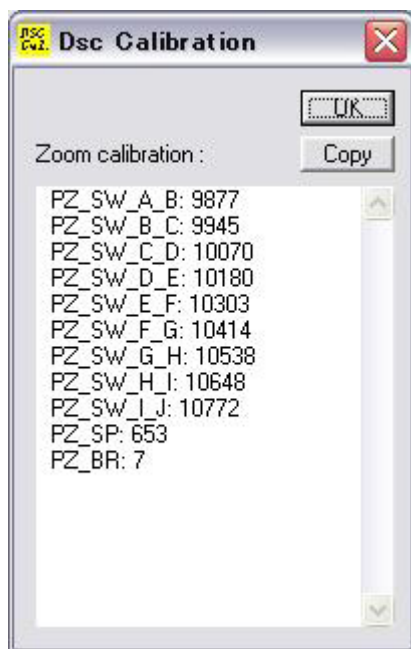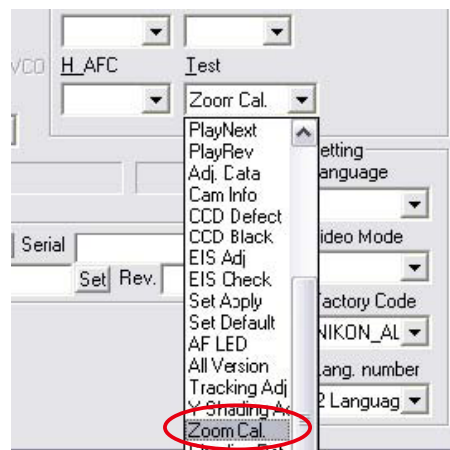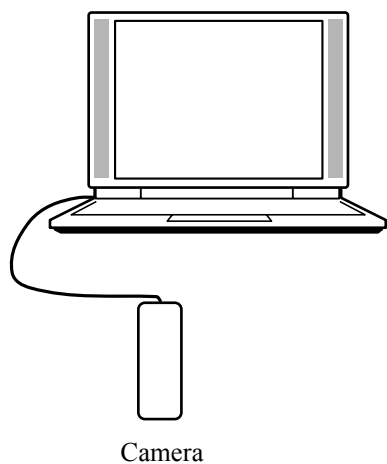
Zoom adjustment standard value

PZ_SW_A_B: 9848 - 9918
PZ_SW_B_C: 9922 - 9992
PZ_SW_C_D: 10039 - 10109
PZ_SW_D_E: 10157 - 10227
PZ_SW_E_F: 10274 - 10344
PZ_SW_F_G: 10391 - 10461
PZ_SW_G_H: 10508 - 10578
PZ_SW_H_I: 10625 - 10695
PZ_SW_I_J: 10742 - 10812
PZ_SP: 609 - 679
PZ_BR: 0 - 100

Result of adjustment

7-5. Lens adjustment (1.5m)

・Turn the camera on.

・Set the mode dial to "AUTO" and "VR" to "OFF".

・Prepare A3 or more size "Siemens star chart". [Enlarge the attached A4 size chart (of the last page of this adjustment chapter) with a copier and use it.]

・Illumination above the subject should be 700 lux ±10%. △(Addition)

Caution: Use a tripod to set up the camera.
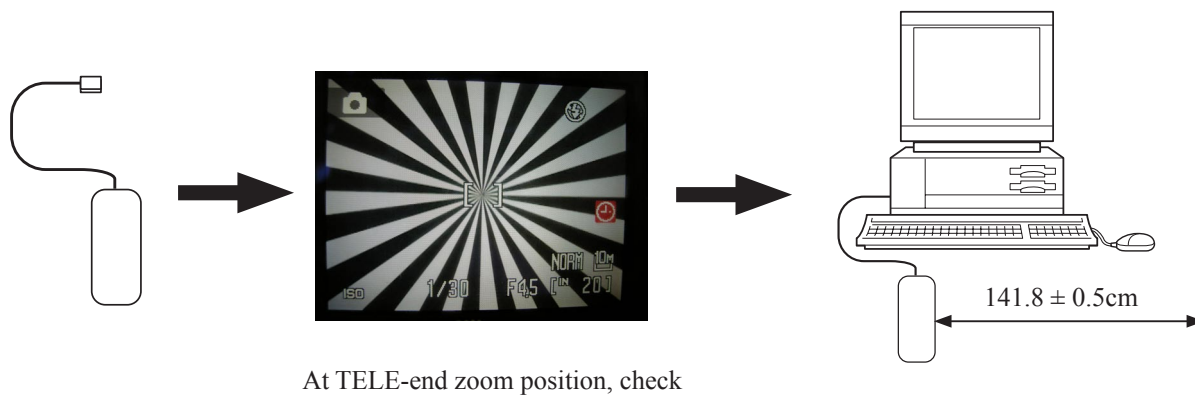
141.8 ± 0.5cm

Connect the one side of the USB cable to the camera (without connecting the other side to the PC).

At TELE-end zoom position, check on the LCD monitor so that the center of the Siemens star chart coincides with the center of the camera screen.

・Set the camera to WIDE-end.
・Set the distance between the camera and siemens star chart to "141.8± 0.5cm".

・With the power of the camera being ON, connect the USB cable to the PC.

・Start the DSC calibration software.

・Click "Focus", then "Yes".

・After the adjustment is completed, the result will appear. If "NG" is displayed in the next line after "Focus Result", make readjustment.
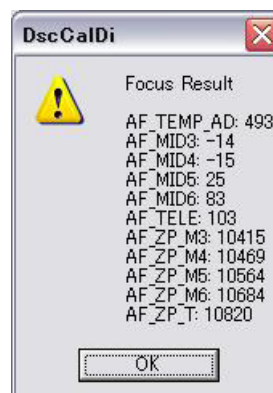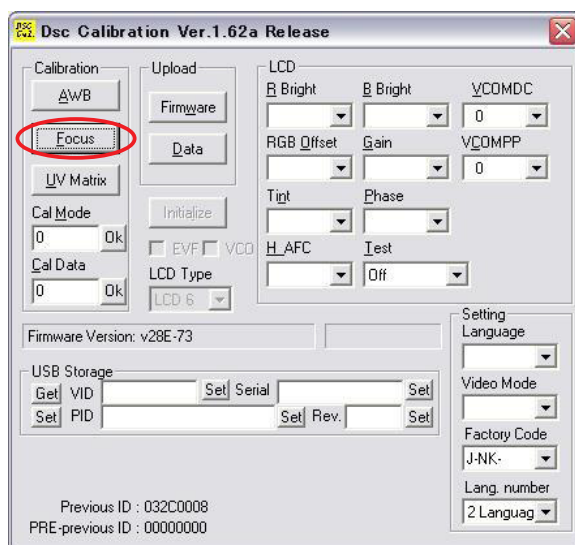
・Turn the camera OFF.

Result of adjustment

[Siemens star chart]
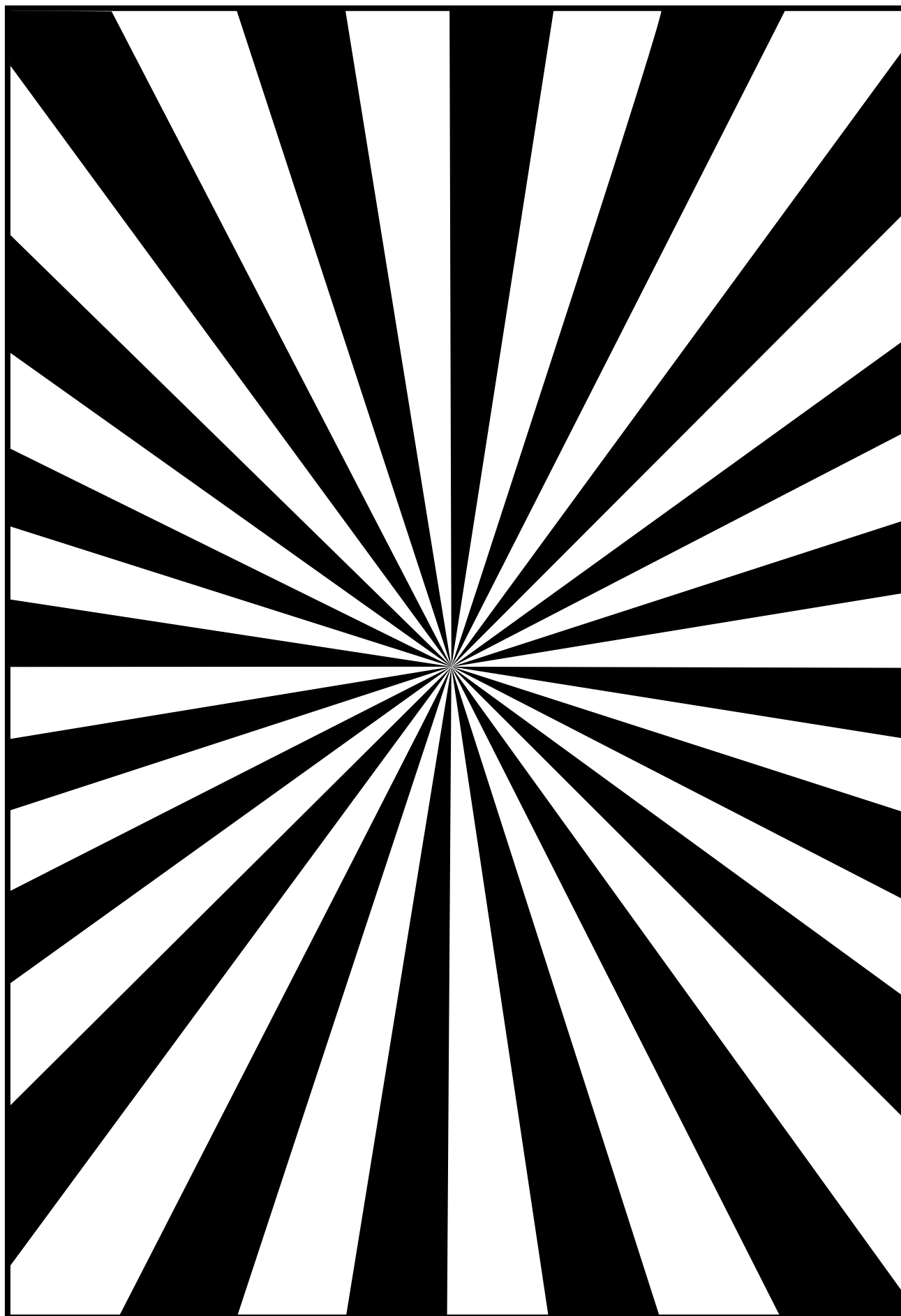
7-6. Lens adjustment (Infinity)

Caution: Be sure to finish the procedure of the lens adjustment (1.5m) before this adjustment.

Use a tripod to set up the camera.

・Turn the camera on.
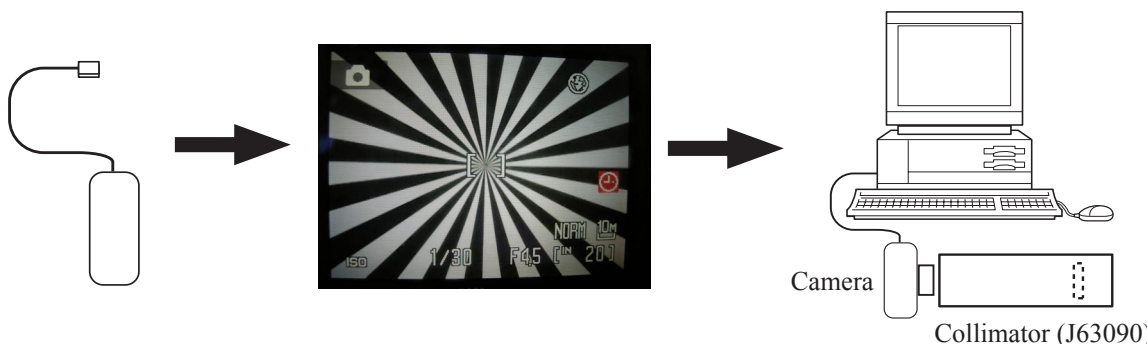
・Set the mode dial to "AUTO" and "VR" to "OFF".

Camera

Collimator (J63090)

Connect the one side of the USB cable to the camera (without connecting the other side to the PC).

At TELE-end zoom position, check on the LCD monitor so that the center of the Siemens star chart (inside the collimator) coincides with the center of the camera screen.

At TELE-end zoom position, place the camera and ~~cllimator~~ to the closest to the collimator. collimator
△(Revision)

・With the power of the camera being ON, connect the USB cable to the PC.

・Start the DSC calibration software.

・Select "Infinity Cal" from "Test" pull-down menu. The adjustment will start automatically.

・After the adjustment is completed, the result will appear. If "NG" is displayed in the next line after "Infinity calibration", make readjustment.
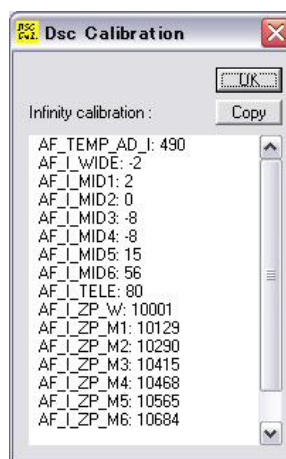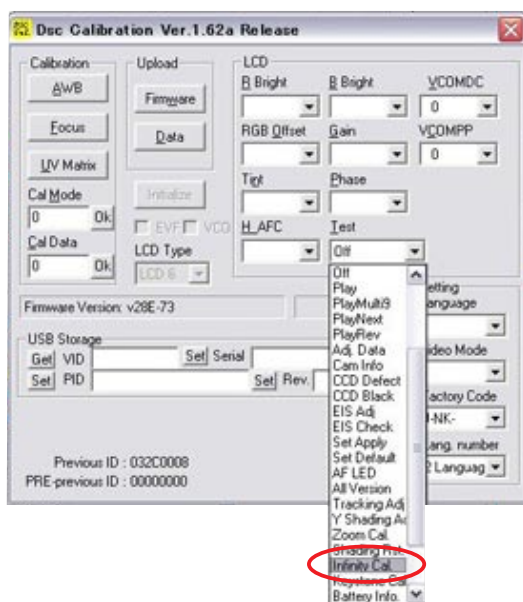
・Turn the camera OFF.

Result of adjustment

7-7. AWB adjustment

・Turn the camera on.

・At TELE-end zoom position, place the camera (front surface of lens) to the closest to the pattern box.

Note) Do not allow outside light to enter in.

・Connect the camera and PC through USB cable.

・Start the DSC calibration software.

・Click "AWB", then "Yes".

・After the adjustment is completed, the result will appear. If the result is NOT in the range of the below standard values, make readjustment.

    Adjustment value   CHECK=128 $\pm$ 2, 128 $\pm$ 2, 130 $\pm$ 40

・Turn the camera OFF.

Camera

Set to TELE-end.

Pattern Box (J63080)

Result of adjustment

Adjustment value
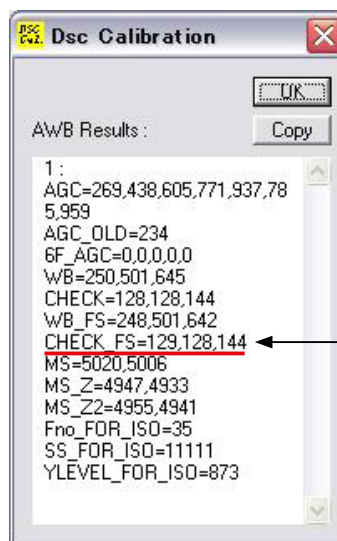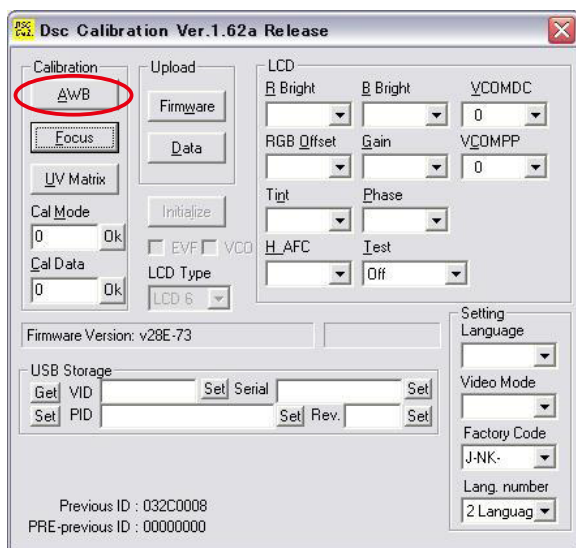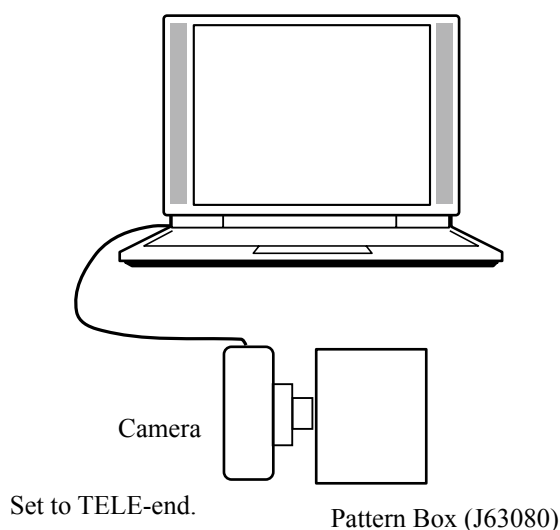
7-8. CCD defective white (hot) pixel compensation against dark background

・Connect the camera and PC through USB cable.

・Turn the camera ON.

・Start the DSC calibration software.

・Select "CCD Defect" from "Test" pull-down menu. Click "Yes".

・After the adjustment is completed, the result will appear. If "defect_ng" is displayed, make readjustment.

・Turn the camera OFF.
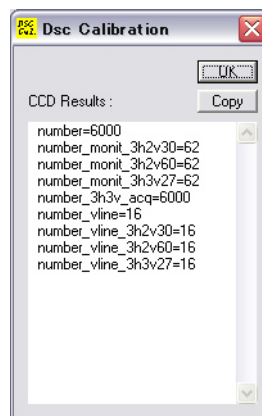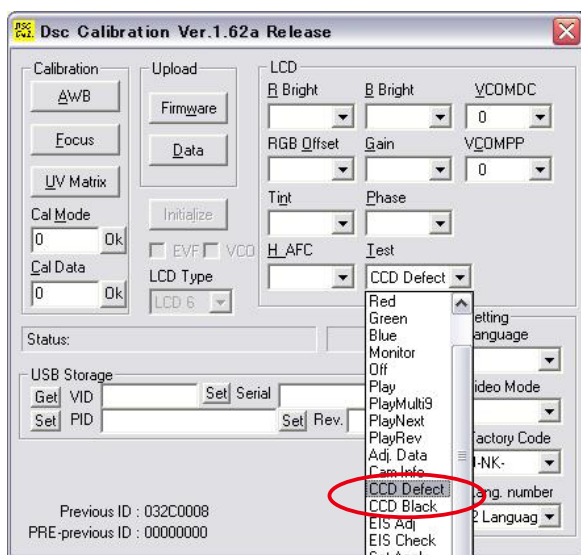
Result of adjustment

7-9. CCD defective black/white (dead) pixel compensation against bright background

・Fix the camera so that only the white part of the pattern box is displayed on the screen. (Prevent the outside light from entering as far as circumstances allow.)

・Connect the camera and PC through USB cable.

・Turn the camera ON.

・Start the DSC calibration software.

・Select "CCD black" from "Test" pull-down menu. Click "Yes".

・After the adjustment is completed, the result will appear. If "defect_ng BLACK" is displayed, make readjustment.

・Turn the camera OFF.

Camera

Pattern Box (J63080)
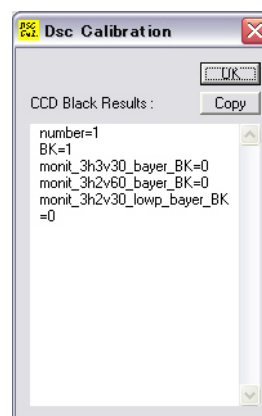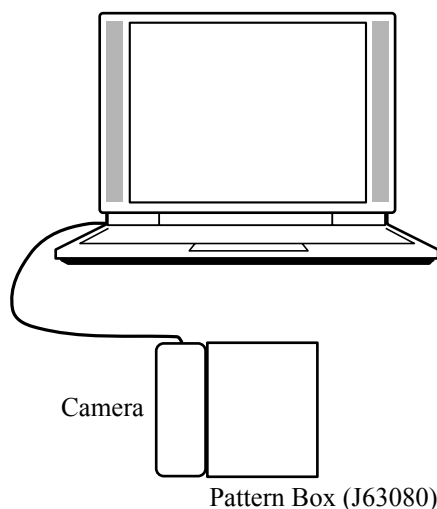
Result of adjustment

7-10. USB storage information registration

"USB storage information" is an important information at the time of connecting to the PC through the USB cable. Therefore, if there is some error or absence of registration in "USB storage information", the USB connection becomes impossible. So be sure to check the USB storage information.

・Connect the camera and PC through USB cable.

・Turn the camera ON.

・Start the DSC calibration software.

・Click on the "Get" button in the USB storage window and check the USB storage data.

    VID:NIKON

    PID: DSC COOLPIX L100

    Serial:XXXXXXXXXXXX

・If the "Serial" in the USB storage data is different from the serial number of the camera bottom, enter the number of the camera's bottom, and click "Set".

・If the other details of the USB storage data are different from the above, enter the above details and click "Set".

・Turn the camera OFF.
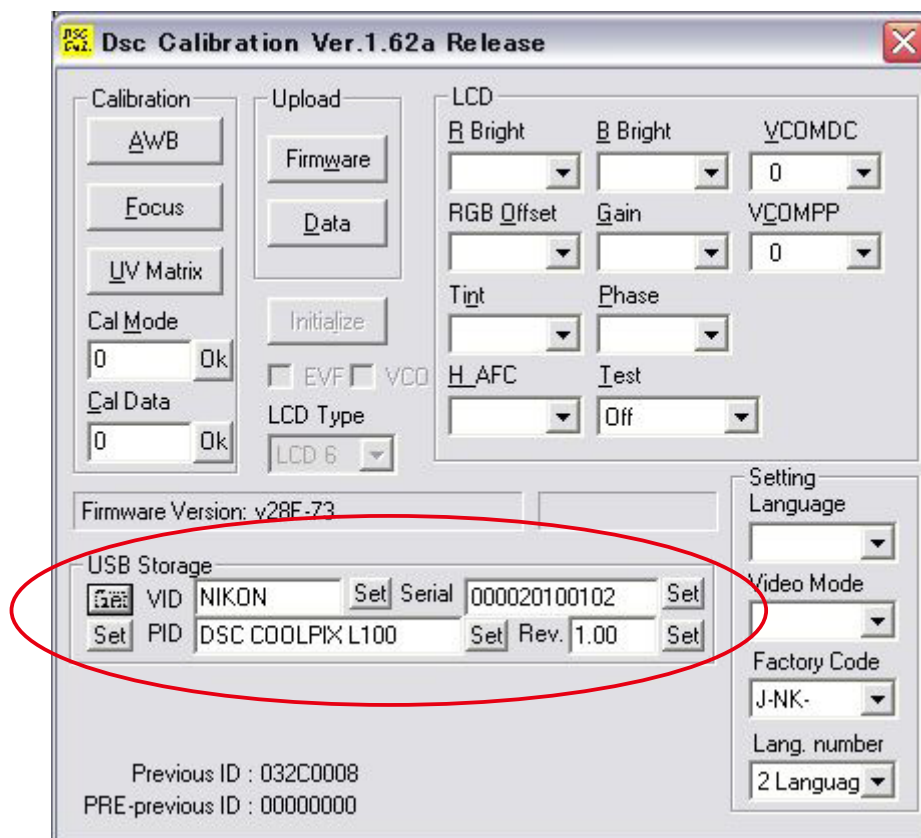
7-11. Language setting

・Connect the camera and PC through USB cable.

・Turn the camera ON.

・Start the DSC calibration software.

・Set Lang number" which enables to select either 2 Languages or 24 Languages" (Multilanguage).

Caution) Select "2 Languages" for Japanese models.

・Turn the camera OFF.
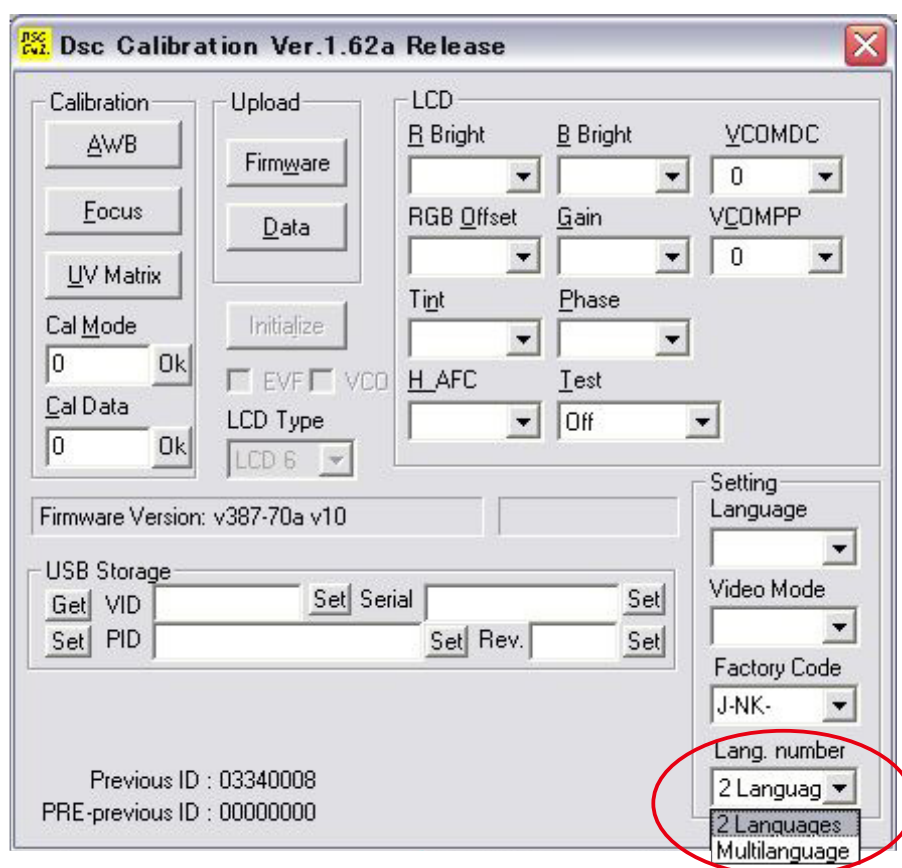
< Language setting screen >

2 Languages

Multilanguage

7-12. Factory default setting

・Turn the camera ON.

・Set the shooting mode to "AUTO".

・Turn the camera OFF.

・While pressing "MENU" button and setting the zoom lever to "T" or "W", turn the camera ON.

・Turn the camera OFF.

・When the power is turned to ON next time, the screen for setting language will appear.

1. OUTLINE OF CIRCUIT DESCRIPTION

1-1. CCD CIRCUIT DESCRIPTION

1. IC Configuration

The CCD peripheral circuit block basically consists of the following ICs.

IC932 (MN34510PLJ-A)   CCD imager
IC901 (AN20118A)   V driver
IC905 (AD9971BCPZRL)   CDS, AGC, A/D converter,
                         H driver, vertical TG

2. IC932 (CCD)

[Structure]

1/2.33 inch 10.48 million picture element

Effective pixels	3776 (H) X 2776 (V)
Pixels in total	3828 (H) X 2794 (V)
Optical black	
Horizontal (H) direction:	Front 12 pixels, Rear 40 pixels
Vertical (V) direction:	Below 9 pixels, Above 9 pixels
Dummy bit number	Horizontal : 28 Vertical :7
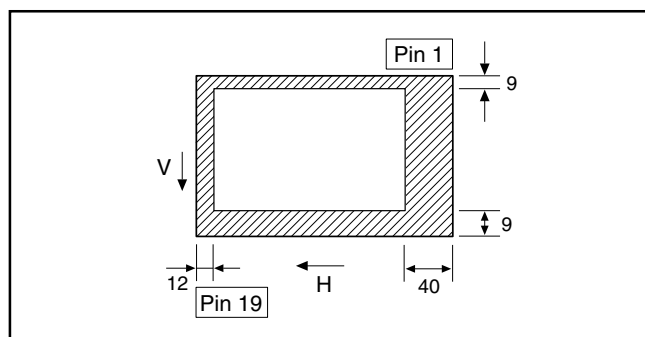
Fig. 1-1.Optical Black Location (Top View)
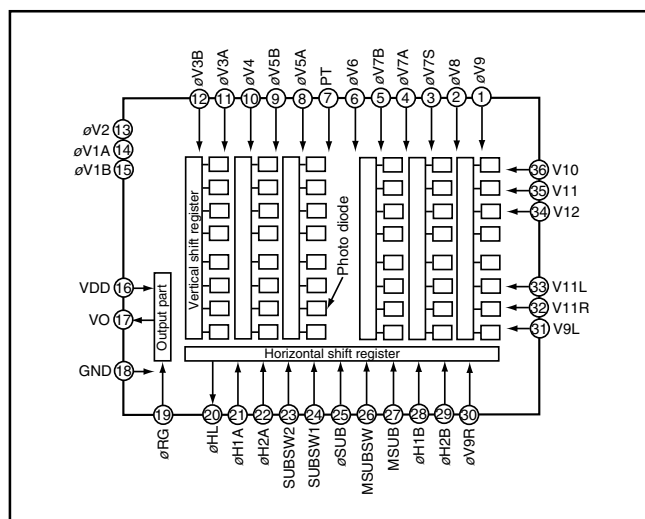
Fig. 1-2. CCD Block Diagram

Pin No.	Symbol	Pin Description	Waveform	Voltage
2, 3, 30, 31, 32, 33, 34, 36	V8, V7S, V9R, V9L, V11R, V11L, V12, V10	Vertical shift register clock pulse		-6.0 V, 0 V
1, 4, 5, 35	V9, V7A, V7B, V11	Vertical shift register clock pulse		-6.0 V, 0 V, 12 V
6, 10, 13	V6, V4, V2	Vertical shift register clock pulse		-6.0 V, 0 V
8, 9, 11, 12, 14, 15	V5A, V5B, V3A, V3B, V1A, V1B	Vertical shift register clock pulse		-6.0 V, 0 V, 12 V
18	GND	GND	GND	0 V
25	SUB	Substrate clock	DC	Aprox. 7 V (Different from every CCD)
16	VDD	Power	DC	12 V
17	VO	CCD output	DC	Aprox. 7.3 V
23, 24	SUB SW2, 1	Substrate control		0, 3.4 V (When importing all picture element: 3.4 V)
21, 22, 28, 29	H1A, H2A, H1B, H2B	Horizontal shift register clock pulse		0 V, 3.6 V
20	HL	Horizontal shift register clock pulse		0 V, 3.6 V
19	RG	Reset pulse		4 V, 8 V
7	PT	Protection P well	DC	-6 V
27	MSUB	Pixel addition video substrate voltage output	DC	6 V
26	MSUBSW	Pixel addition video substrate voltage modulation		0 V, 3.4 V

Table 1-1. CCD Pin Description

---- When sensor read-out

3. IC901 (V Driver)

A V driver (IC901) is necessary in order to generate the clocks (vertical transfer clock and electronic shutter clock) which driver the CCD.

The XV1-XV17 signals which are output from IC101 are the vertical transfer clocks, and the XSG1 - XSG10 signals which are output is superimposed onto XV1, XV3, XV5, XSG7, XSG9 and XSG11 at IC901 in order to generate a ternary pulse. In addition, the XSUB signal which is output from IC101 is used as the sweep pulse for the electronic shutter.
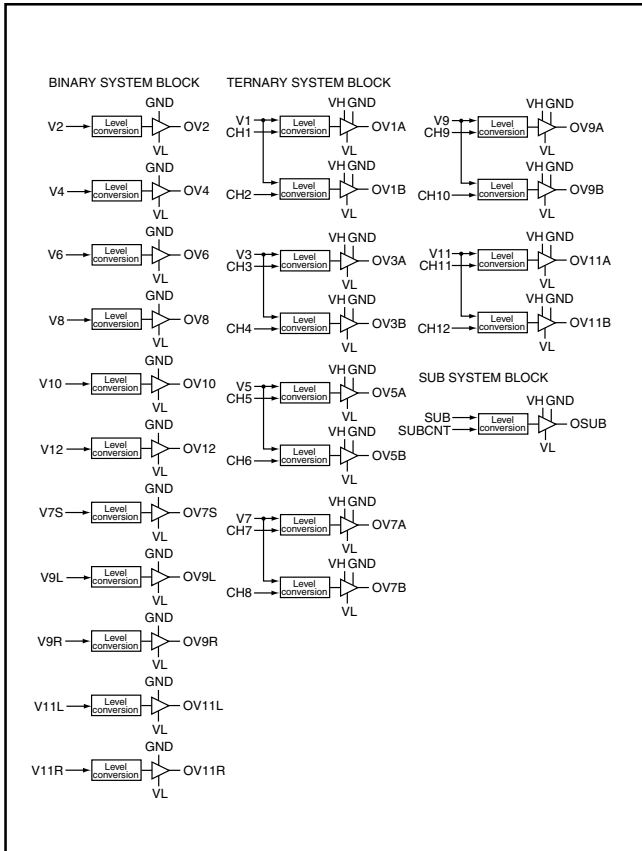
Fig. 1-3. IC901 Block Diagram

4. IC905 (H Driver, CDS, AGC and A/D converter)

IC905 contains the functions of H driver, CDS, AGC and A/D converter. As horizontal clock driver and reset pulse for CCD image sensor are generated inside H1, H2, H3, H4 and RG, and output to CCD.

The video signal which is output from the CCD is input to pin (25) of IC905. There are sampling hold blocks generated from the SHP and SHD pulses, and it is here that CDS (correlated double sampling) is carried out.

After passing through the CDS circuit, the signal passes through the VGA (VGA: Variable Gain Amplifier). It is converted internally into a small-amplitude actuating signal (LVDS), and is then input to IC101. The gain of the VGA amplifier is controlled by pins (32), (33) and (34) using serial signals which is output from IC101.
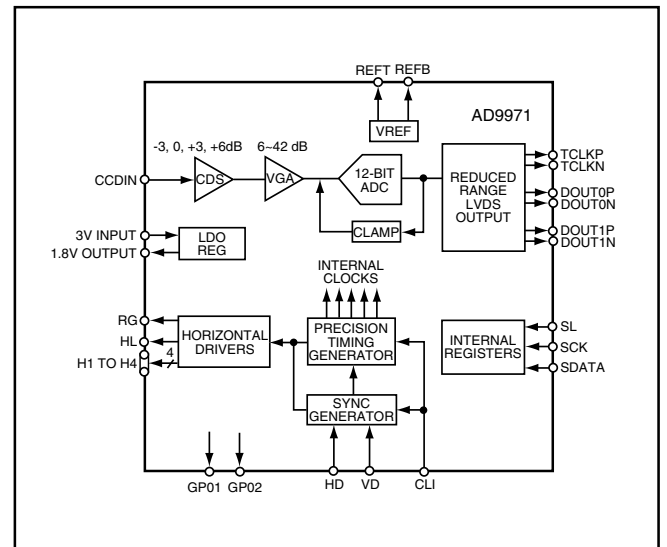
Fig. 1-4. IC905 Block Diagram

1-2. CP1 CIRCUIT DESCRIPTION
1. Circuit Description
1-1. Signal processor (SIG)
1. Signal preprocessing block
This block processes the raw data for the CCD.

2. Color synchronization block
This block color synchronizes the raw data and converts it to YUV.

3. YUV processing block
This block carries out luminance correction and generates the Y, Cu and Cv signals.

4. Zoom processing block
This block carries out processes such as zoom processing for the Y, Cu and Cv signals.

1-2. BUF-A
After the data is received from signal processing (SIG), it is converted into data arrays for each mode, and then a write request to the SDRAM is output to the SDRAM control. The BUF-A is further divided into the BUF-A1 block, BUF-A2 block and BUF-A3 block.

1-3. BUF-D
The data is read from the SDRAM and converted to data arrays for each mode and is then output to signal processing.

1-4. AE/AWB and AF calculation circuit (AEAF)
When the data is received from signal processing (SIG), evaluation values are calculated for AF and for AE/AWB, and then it is written to each of the 16 horizontal areas in the SDRAM via the SDRAM control.

1-5. BUF-BC
The image data and the character data for the OSD (On Screen Displays) are read from the SDRAM and displayed on the monitor and the LCD.

1-6. SDRAM Ctrl
This controls the SDRAM access requests.

1-7. BUF-E/BUF-F and JPEG controller
This carries out compression and expansion of JPEG data and outputs write and read requests to the SDRAM.

1-8. TGSG
The TG is the signal generator which drives the CCD (10 million pixels) and carries out drive mode control.
The SG is the signal generator which creates the reference for the video sync signals.

2. Outline of Operation
When the shutter opens, the serial signals ("take a picture" commands) from the 8-bit microprocessor is input to ASIC (IC101) and operation starts. When the TG/SG drives the CCD, picture data passes through the A/D and CDS, and is then input to the ASIC as 12-bit digital signal. The AF, AE, AWB, shutter, and AGC value are computed from this data, and three exposures are made to obtain the optimum picture. The data which has already been stored in the SDRAM is read by the CPU and color generation is carried out. Each pixel is interpolated from the surrounding data as being either R, G and B primary color data to produce R, G and B data. At this time, correction of the lens distortion which is a characteristic of wide-angle lenses is carried out. After AWB and γ processing are carried out, a matrix is generated and aperture correction is carried out for the Y, V and U signals, and the data is then compressed by the JPEG method by (JPEG) and is then written to card memory (SD card).
When the data is to be output to an external device, it is taken data from the memory and output via the USB. When played back on the LCD and monitor, data is transferred from memery to the SDRAM, and the data elongated by JPEG decorder is displayed over the SDRAM display area.

3. LCD Block
The LCD display circuit is located on the CP1 board, and consists of components such as a power circuit.
The signals from the ASIC are 8-bit digital signals, that is input to the LCD directly. The 8-bit digital signals are converted to RGB signals inside the LCD driver circuit . This LCD has a 3-wire serial, and functions such as the brightness and image quality are controlled.
Because the LCD closes more as the difference in potential between the VCOM (common polar voltage: AC) and the R, G and B signals becomes greater, the display becomes darker; if the difference in potential is smaller, the element opens and the LCD become brighter.
In addition, the timing pulses for signals other than the video signals are also input from the ASIC directory to the LCD.

4. Lens drive block
4-1. Shutter drive
The serial data signals (L_DATA) and (L_LATCH, SHUTTER, LENS_ST and L_SCLK) which are output from the ASIC (IC101) are used to drive regular current (SOUT1 and SOUT2) by the motor driver (IC951), and then mecha shutter is opened and closed.

4-2. ND filter drive
The serial data signals (L_DATA) and (L_LATCH, IRIS, LENS_ST and L_SCLK) which are output from the ASIC (IC101) are used to drive regular current (IOUT1 and IOUT2) by the motor driver (IC951), and then the ND filter is inserted into and removed from the beam path.

4-3. Focus drive
The serial data signals (L_DATA) and (L_LATCH, FCLK, LENS_ST and L_SCLK) which are output from the ASIC (IC101) are used to drive (FOUT_A+, FOUT_A-, FOUT_B+ and FOUT_B-) by the motor driver (IC951), and then used to drive the focus stepping motor. Detection of the standard focusing positions is carried out by means of the photointerruptor (F_HP) inside the lens block.

4-4. Zoom drive
The serial data signals (L_DATA) and (L_LATCH, ZPWM, LENS_ST and L_SCLK) which are output from the ASIC (IC101) are used to drive (ZOUT1 and ZOUT2) by the motor driver (IC951), and then used to drive the zoom DC motor. Detection of the standard zooming positions is carried out by means of photointerruptor (Z_HP) inside the lens block. Also, detection of the zooming relative positions is carried out by the ASIC (IC101) counting the photointerruptor (Z_ENC).

1-3. PWA POWER CIRCUIT DESCRIPTION

1. Outline

This is the main power circuit, and is comprised of the following blocks.

Switching controller (IC501)
Analog +12 V (A) power output (L5061)
Analog -6 V (A) power output (L5051, Q5051)
Analog +3.4 V (A) power output (IC503)
VDD 3 power output (L5021)
VDD 1.2 power output (L5031)
VDD 1.8_ASIC power output (IC501 REG ch)
VDD 1.8_DDR power output (IC502)
LCD backlight system power output (L5071)
Motor system power BOOST 5.2 V output (L5301, Q5301)
VR microprocessor power V5.0P output (supply from BOOST 5.2 V)

2. Switching Controller (IC501)

This is the basic circuit which is necessary for controlling the power supply for a PWM-type switching regulator, and is provided with seven built-in channels and linear regulator is provided with two channels (REG ch and LED ch). This model is used six channels for switching regulator and 1 channel (REG ch) for linear regulator.

Only CH1 (BOOST 5.2 V), CH2 (VDD 3), CH3 (VDD 1.2), CH5 (-6 V (A)), CH6 (+12 V (A)), CH7 (LCD backlight) and REG ch (VDD1.8_ASIC) are used.

Feedback from CH1 (BOOST 5.2 V), CH2 (VDD 3), CH3 (VDD 1.2), CH5 (-6 V (A)) and CH6 (+12 V (A)) power supply outputs are received, and the PWM duty is varied so that each one is maintained at the correct voltage setting level.

Feedback for the CH7 (LCD backlight power) is provided to the both ends voltage of registance so that regular current can be controlled to be current that was setting.

Feedback for the REG ch (VDD1.8_ASIC) so that regulator output can be adjusted.

2-1. Short-circuit protection circuit

If output is short-circuited for the length of time determined by the condenser which is connected to Pin (1) of IC501, all output is turned off. The control signal (P ON) are recontrolled to restore output.

3. Analog +12 V (A) Power Output

+12 V (A) is output. Feedback for the +12 V (A) is provided to the switching controller (Pin (40) of IC501) so that PWM control can be carried out.

4. Analog -6 V Power Output

-6 V (A) is output. Feedback for the -6 V (A) is provided to the switching controller (Pin (42) of IC501) so that PWM control can be carried out.

5 Analog +3.4 V Power Output

+3.4 V (A) is output. +3.4 V (A) output is so that voltage control can be carried out at the internal circuit of linear regulator IC (IC503).

6. VDD 3 Power Output

VDD 3 (3.25 V) is output. Feedback for the VDD 3 output is provided to the swiching controller (Pin (30) of IC501) so that PWM control can be carried out.

7. VDD 1.2 Power Output

VDD 1.2 (1.26 V) is output. Feedback for the VDD 1.2 output is provided to the swiching controller (Pin (31) of IC501) so that PWM control can be carried out.

8. VDD 1.8_ASIC Power Output

VDD1.8_ASIC (1.8 V) is output. Feedback for the VDD 1.8_ASIC (1.8 V) output is provided to the switching controller (Pin (2) of IC501) so that voltage control can be carried out.

9. VDD 1.8_DDR Power Output

VDD 1.8_DDR (1.8 V) is output. VDD 1.8_DDR (1.8 V) output is so that voltage control can be carried out at the internal circuit of linear regulator IC (IC502).

10. LCD Backlight Power Output

Regular current (approximately 21 mA) is being transmitted to LED for LCD backlight. Feedback for the both ends voltage of registance that is being positioned to in series LED are provided to the switching controller (Pin (39) of IC501) so that PWM control to be carried out.

11. Motor System Power Output

BOOST 5.2 V is output. Feedback for the BOOST 5.2 V output is provided to the switching controller (Pin (29) of IC501) so that PWM control can be carried out.

12. VR Microprocessor Power V5.0P Output

V5.0P (5.2 V) is output. V5.0P (5.2 V) output is supplied from BOOST 5.2 V to control output (ON/OFF) by using Q5081.

1-4. SYA CIRCUIT DESCRIPTION

1. Configuration and Functions

For the overall configuration of the SYA block diagram, refer to the block diagram. The SYA block centers around a 8-bit microprocessor (IC301), and controls camera system condition (mode). The 8-bit microprocessor handles the following functions.
1. Operation key input, 2. backup and clock control in case of no battery, 3. Power ON/OFF control, 4. Storobe condensor charge control, 5. Card, USB and AV jack detection, 6. LED lighting control.

Pin	Signal	I/O	Outline
1	SCK	O	Serial clock output
2	AV JACK	I	AV JACK insertion detection
3	SCAN OUT0	O	Keymatrix output
4	SCAN OUT1	O	Keymatrix output
5	SCAN OUT2	O	Keymatrix output
6	BEEP	O	Buzzer
7	LCD PWM	O	LCD backlight brightness adjustment
8	CHGSEL	O	Strobo charge electric current control
9	VDD2	-	Power 2
10	VSS2	-	GND 2
11	TON1	O	Image stabilization power control
12	BACK_LED	O	Back (strobo charge) LED lighting control
13	PW_LED	O	Power LED lighting control
14	NOT USED	O	-
15	USB_CNT	I	USB insertion detection
16	MENU	I	Menu key detection
17	PW_ON	I	POWER ON key detection (interrupt from HALT)
18	PLAY	I	PLAY key detection (interrupt from HALT)
19	UTX	O	Debugger UART sending
20	SCAN IN0	I	Keymatrix input
21	WIDE1	I	Wide key detection
22	TELE2	I	Tele key detection
23	SCAN IN1	I	Keymatrix input
24	SCAN IN2	I	Keymatrix input
25	DC IN	I	DC jack detection
26	SHUTTER 1st	I	Shutter 1st key detection
27	P_ON	O	Digital power control
28	PLLEN	O	ASIC PLL circuit enable signal
29	MAIN_RESET	O	System reset (MRST)
30	NOT USED	-	-
31	P_ON2	O	VDD 1.8 ASIC control signal
32	STB_DDR	O	VDD 1.8 DDR control signal
33	REFE_CTL	O	Self refresh information signal → ASIC
34	CHG_ON	O	Strobo charge control
35	VSS3	-	GND 3
36	VDD3	-	Power 3
37	(DBGP2)	-	System reservation terminal (CCD select terminal)
38	(DBGP1/CLK)	-	System reservation terminal (CCD)
39	(DBGP0/DATA0)	-	System reservation terminal (CCD)
40	BC_MASK	I	ASIC directly
41	SCAN IN3	I	Keymatrix input
42	CARD	I	SD CARD insertion detection
43	SW3.2VON	O	Card pull-up power

44	NOT USED	-	-
45	COMREQ/ZBOOT	I	Command request (BOOT output)
46	BACKUP_CTL	O	Backup battery charge control
47	NOT USED	-	-
48	NOT USED	-	-
49	BAT_OFF	I	Battery OFF (removal) detection
50	SREQ	I	Serial communication request signal
51	SHUTTER 2nd	I	Shutter 2nd key detection
52	HOTLINE	I	ASIC directly
53	RESET	I	Backup reset detection
54	XCIN	I	Clock oscillation terminal for clock (32.768 kHz)
55	XCOUT	O	Clock oscillation terminal for clock (32.768 kHz)
56	VSS1	-	GND1
57	XIN	I	Not used for using built-in oscillation circuit
58	XOUT	O	Not used for using built-in oscillation circuit
59	VDD1	-	Power 1
60	BATTERY	I	Battery voltage monitoring
61	VMONIT	I	Strobo condensor charging voltage monitoring
62	TEMP	I	Camera (SD) temperature monitoring
63	SO	O	Serial data output
64	SI	I	Serial data input

Table 4-1. 8-bit Microprocessor Port Specification

2. Setting of external port and communication

The SYA block carries out overall control of camera operation by detecting the input from the keyboard and the condition of the camera circuits. The 8-bit microprocessor reads the signals from each sensor element as input data and outputs this data to the camera circuits (ASIC) as operation mode setting data. Fig. 4-1 shows the internal communication between the 8-bit microprocessor and ASIC.
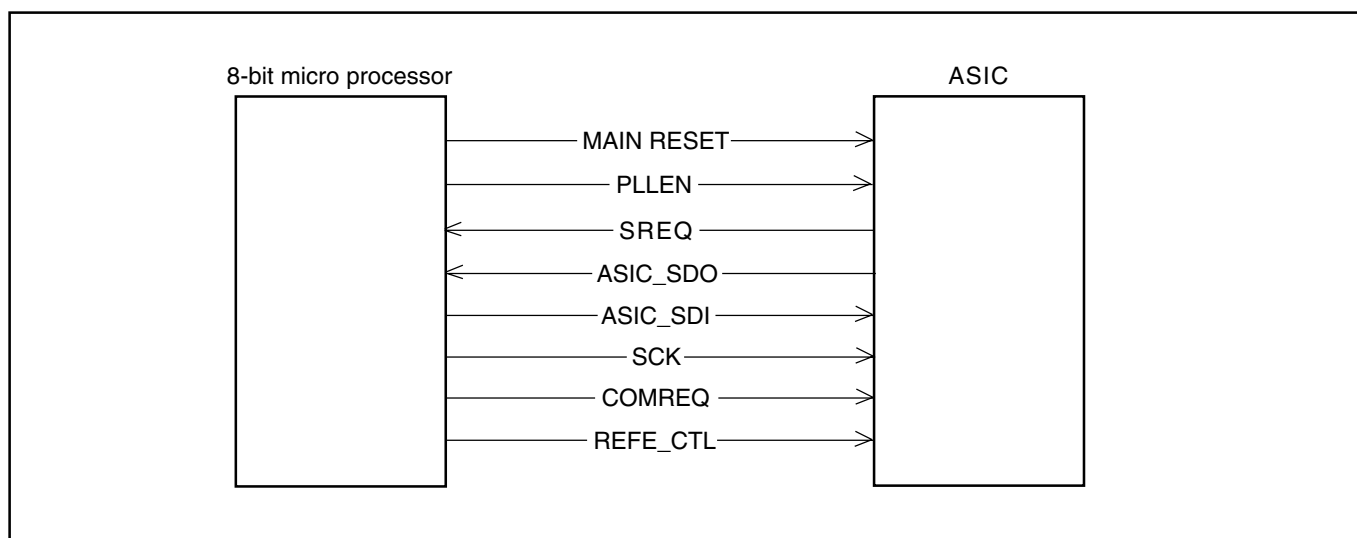
Fig. 4-1 Internal Bus Communication System

3. Key Operaiton

For details of the key operation, refer to the instruction manual.

SCAN OUT \ SCAN IN	0	1	2	3
0	DETELE	RIGHT	MODE	TEST
1	DOWN	OK	UP	PW_TEST
2	-	-	LEFT	-

Table 4-2. Key Operation

4. Power Supply Control

The 8-bit microprocessor controls the power supply for the overall system.

The following is a description of how the power supply is turned on and off. When the battery is attached, IC302 is operating, and a regulated 3.2 V voltage is normally input to the 8-bit microprocessor (IC301), clock counting and key scanning is carried out even when the power switch is turned off, so that the camera can start up again.

When the power switch is off, the 8-bit microprocessor halts 4 MHz of the built-in main clock, and operates 32.768 kHz of subclock.

When the battery is removed, the 8-bit microprocessor halts 4 MHz of the built-in main clock, and operates clock counting by 32.768 kHz of sub clock.

Also, the battery for backup is charged 10 hours from it to be attached.

When the power switch is on, the 8-bit microprocessor starts processing. The 8-bit microprocessor first sets the PON signal to High, and then turn on the power circuit. After PON signal is to High, sets external port of ASIC after approximately 40 ms. According to setting of this external port, carry out setting of the operating frequency and oscillation control in the ASIC.

Also, it starts communication with ASIC, and confirms the system is operative.

When the through image is operating, set the PAON signal and PAON4 signal to High and then turn on the CCD.

When the through image is playing, set the PAON signal and PAON4 signal to Low and then turn off the CCD.

When LCD panel turns on, set BL ON signal (ASIC) to High, and turn on the backlight power.

When the power switch is off, PON, PAON, PAON4 and BLON signals to all Low and the power supply to the whole system is halted. The 8-bit microprocessor halts oscillation of the built-in main clock, and set operation mode of clock ocillation.

	ASIC, memory	CCD	8bit CPU	LCD MONITOR
Power supply voltage	1.2 V, 1.8 V 3.25 V	12.0 V, 3.4 V -6 V	3.2 V	3.25 V
Power OFF	OFF	OFF	32.768 KHz	OFF
Through image	ON	ON	4MHz	ON
Playback mode	ON	OFF	4MHz	ON

Table 4-3. Power supply control

総合結線図
OVERALL WIRING

LENS	SHUTTER	SD CARD	AV & USB	AS FPC

CA1

CN901
GND	1
GND	2
VDD	3
GND	4
VOUT	5
GND	6
RG	7
GND	8
HL	9
GND	10
SUBSW2	11
SUBSW1	12
SUB	13
GND	14
GND	15
MSUBSW	16
MSUB	17
PT	18
GND	19
H1	20
H2	21
GND	22
V5A	23
V5B	24
V4	25
V3A	26
GND	27
V3B	28
V2	29
V1A	30
V1B	31
V6	32
V7B	33
V7A	34
V7S	35
V8	36
V9	37
V10	38
V9R	39
V9L	40
V11R	41
V11L	42
V12	43
V11	44
GND	45

CN901
GND	1
GND	2
VDD	3
GND	4
VOUT	5
GND	6
RG	7
GND	8
HL	9
GND	10
SUBSW2	11
SUBSW1	12
SUB	13
GND	14
GND	15
MSUBSW	16
MSUB	17
PT	18
GND	19
H1	20
H2	21
GND	22
V5A	23
V5B	24
V4	25
V3A	26
GND	27
V3B	28
V2	29
V1A	30
V1B	31
V6	32
V7B	33
V7A	34
V7S	35
V8	36
V9	37
V10	38
V9R	39
V9L	40
V11R	41
V11L	42
V12	43
V11	44
GND	45

CAA

CN552 (LENS) — DMA
ZOOM +, ZOOM +, ZOOM -, ZOOM -, Focus A-, Focus B+, Focus A+, Focus B-, Zoom HP AC, Thermistor -, Zoom HP E, Zoom HP K, Termistor +, Focus HP AC, Focus Dir K, Zoom Dir A, Zoom Enc AC, Zoom Enc E, Zoom Dir C, Zoom Dir E, Zoom HP E, Focus HP K

CN951 (SHUTTER) — DMA
Shutter +, Shutter -, ND -, ND +

CN143 (SD CARD) — DMA
DATA3, COMMAND, VSS, VDD, CLOCK, VSS, DATA0, DATA1, DATA2, CARD, CARDWP, WP

CN110 (AV & USB) — DMA
GND, VIDEO OUT, AUDIO OUT, ZAV JACK, USB D(+), GND, USB D(-), USB VDD

CN701 (AS FPC) — TCA
AS_Y_A-, AS_Y_B+, AS_Y_A+, AS_Y_B-, AS_Y_HP_K, AS_Y_HP_E, AS_XY_HP_AC, AS_X_HP_K, AS_X_HP_E, AS_X_A-, AS_X_B+, AS_X_A+, AS_X_B-

CP1
(DMA)
(TCA)
(CAA)
(PWA)
(STA)
(SYA)

CN171 (LCD) — DMA
CP3	39
CP4	38
CP5	37
CP6	36
CP7	35
CP8	34
DUMMY	33
DUMMY	32
PCD	31
VCOML	30
VCOMH	29
AGND	28
DUMMY	27
AVDD	26
CP1	25
CP2	24
PWM	23
FB	22
LED-	21
LED+	20
DUMMY	19
GND	18
VCC	17
VD	16
HD	15
DCLK	14
DIN0	13
DIN1	12
DIN2	11
DIN3	10
DIN4	9
DIN5	8
DIN6	7
DIN7	6
SDA	5
SCL	4
SCEN	3
SHDB	2
GREST	1

LCD

ST1
JW552 BLACK CE-
JW551 RED CE+
STA
JW546 BLACK CE-
JW545 RED CE+

TB1
CL592 BAT+
CL591 BAT-
PWA
CL503 BAT-
CL502 BAT+
BATTERY

TB2
JW602 WT AFLEDCA
JW601 GY AFLEDAN
JW302 WT AFLEDCA
JW301 AFLEDAN GY
SYA

TB3
JW652 BK GND
JW651 RD POP UP
JW304 GND BK
JW303 POPUP RD

STA
XAN BROWN JW541
TRG IN WHITE JW543
TRG GND GRAY JW544
XKT BLACK JW542

TRANS TRIGGER (1 2 3)

FLASH REFLECTOR
XAN TRG XKT

PWA
JK501
DC JACK

DMA
JW181 MIC/GY
JW182 GND/BK
JW183 SP+/RD
JW184 SP-/WT
MIC
SPEAKER

SYA
CN301
GND	1
PW_LED	2
AL3.2V	3
PW_ON	4
SHUTTER1st	5
TELE	6
WIDE	7
SHUTTER2nd	8
GND	9
GND	10

TOP SW UNIT

W1-18400/SG28E-JNK

CP1（DMA）回路図
CP1（DMA）CIRCUIT DIAGRAM

DMA (MAIN)

DMA (LENS)

DMA (LCD)

IC101
EV2LAA
QEV2LAA-----N

SYSTEM ASIC

LENS DRIVER

IC121
TY90009801DPGG
QXXAGB063---N

H=1.2
0.650000
12.0X9.0

PROGRAM FLASH 64Mbyte
SDRAM 64Mbyte

IC181
WM8414SFL_RV
QWM8414SFL-C
AUDIO CODEC
VIDEO AMP

CP1(CAA) 回路図
CP1(CAA) CIRCUIT DIAGRAM

CAA
C1-18400/SG28E-JNK
VOLTAGE: VIEW MODE, LCD ON

V. DRIVER

IC901
AN2010-A-V5
GN42010-A-P

TO DMA

CDS, AGC, A/D C
H. DRIVER

IC905
QAD9971BCPZ-J
AD9971BCPZRL

REG

IC904
NJM3877F3-03
CNJM3877F300P

TO CA1 CN901

CN901
45

1	GND
2	GND
3	VDD
4	GND
5	VOUT
6	GND
7	RG
8	GND
9	HL
10	GND
11	SUBSW2
12	SUBSW1
13	SUB
14	GND
15	GND
16	MSUBSW
17	MSUB
18	PT
19	GND
20	H1
21	H2
22	GND
23	V5A
24	V5B
25	V4
26	V3A
27	GND
28	V3B
29	V2
30	V1A
31	V1B
32	V6
33	V7B
34	V7A
35	V7S
36	V8
37	V9
38	V10
39	V9R
40	V9L
41	V11R
42	V11L
43	V12
44	V11
45	GND

CCD_OUT

CCD_H2
CCD_H1

CP1(PWA) 回路図
CP1(PWA) CIRCUIT DIAGRAM

PWA

P1-18400/SG28E-JNK

VOLTAGE: VIEW MODE, LCD ON
(USE ALKALINE BATTERY)

SWITCHING CONTROL

IC501
QBD9759MWV-P
BCW759MWV

REG
IC502
XC6221S03XG-R
GXC6221S03XGP

REG

REG

CP1(STA) 回路図
CP1(STA) CIRCUIT DIAGRAM

STA
S1-18400/SG28E-JNK

FLASH REFLECTOR

XKT

TRG

XAN

JW541 · AWG30 · XAN · BROWN · 2.0X1.25 · 1

JW543 · AWG30 · TRG_IN · WHITE · 2.0X1.25 · 1

JW542 · AWG30 · XKT · BLACK · 2.0X1.25 · 1

TO ST1 JW551 · JW545 · AWG30 · CE+ · RED · 2.0X1.25 · 1

TO ST1 JW552 · JW546 · AWG30 · CE- · BLACK · 2.0X1.25 · 1

JW544 · AWG30 · TRG_GND · GRAY · 2.0X1.25 · 1

D5403
RR2684M-400TR

D5402
RE0208DA

TTRN-060S-035-T
T5401
1AV4L17B0630G

R5414
22K;1/8J-X
2125

C5410
0.018;350B
3216

R5434
100K;1/8J-X
2125

FJ2034D
D5405

R6XAVB10FFDMP
R5412
10M;1/4F-X
2125

3216
0.01;350B
C5411

2125
R5402
100K;1/8J-X
RR256M-400TR
D5401

C5402
GTB6194

R5435
7.5K;1/16D

C5415
0.1B

R5423
82K;1/16D

C5414
1000PB

C5401
22.B   10
2125
H=1.4

R5424
10K;1/16J

IGBT_GND

R5425
33;1/16J

R5401
68;1/16J

RB521S-30FJ
D5404

IC541
A8428EESTR
QA8428EES-T-P

SW
TRIGGER1
DONE
TLIM

TRIGGER2
NC
NC
CHARGE

GND
VIN
GSINK
GSOURCE
VDRV
GND

NC
ISET

STROBE
CHARGE

RB541
1K

C5417
1000PB

C5416
1000PB

RB542
10K

R5409
82K;1/16J

R5410
75K;1/16D
100S

C5402
0.022B

R5408
100;1/16J

C5404
;1B
6.3

R5411
56K;1/16J

EUNREGST
POPUP_FL
FLCTL
CHG

EAL3.2V

CHGSEL

+12V(A)

R5405
1K;1/16J

VMONIT

TO DMA

TO SYA

TO DMA

TO SYA

CP1(SYA) 回路図
CP1(SYA) CIRCUIT DIAGRAM

SYA
Y1-18400/SG28E-JNK

SCAN IN / SCAN OUT	0	1	2	3
0	DELETE	RIGHT	MODE	TEST
1		DOWN	OK	UP	PW_TEST
2	—	—	LEFT	—

CP1(TCA) 回路図
CP1(TCA) CIRCUIT DIAGRAM

TCA
F1-18400/SG28E-JNK
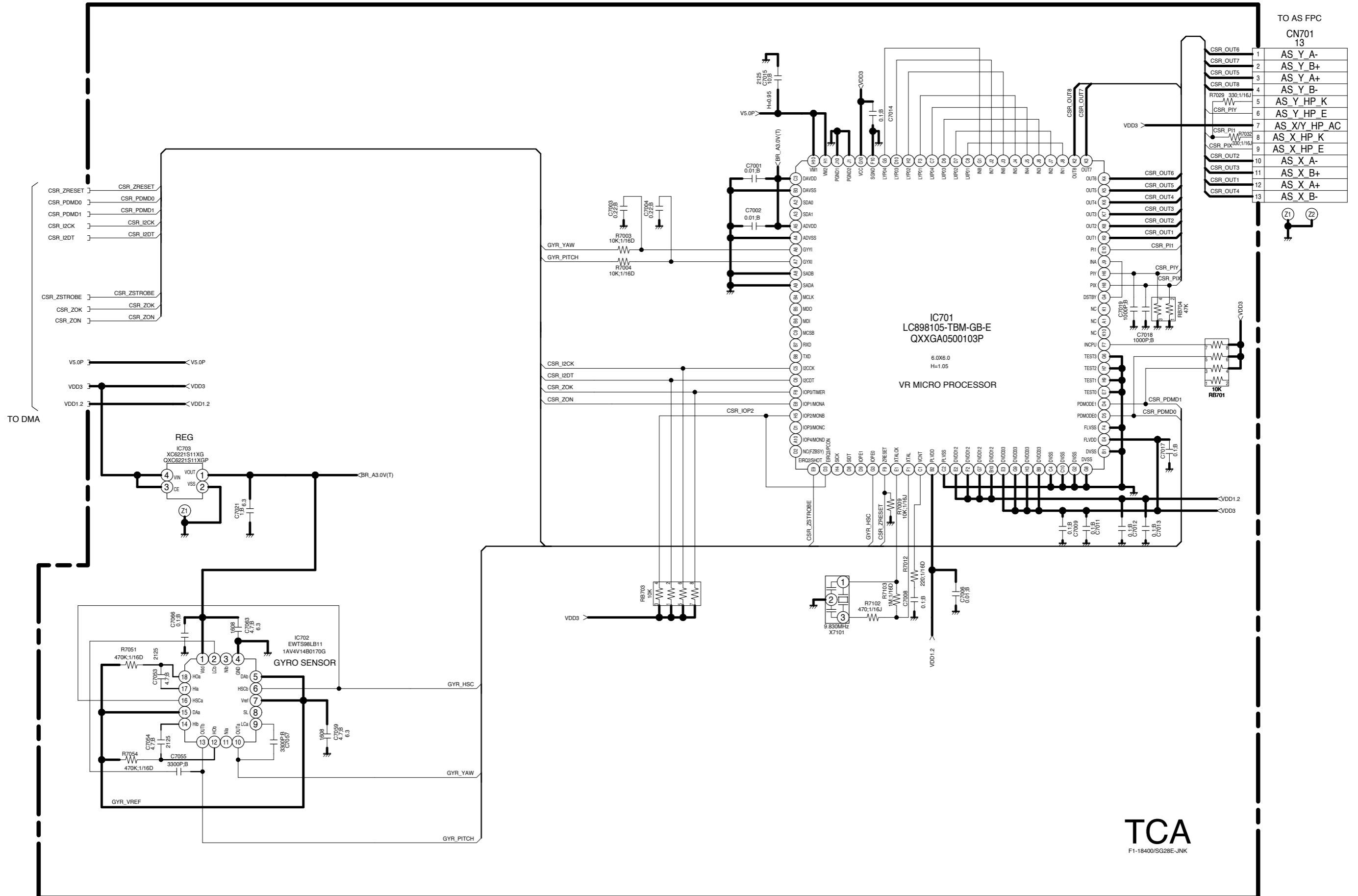
ST1 回路図
ST1 CIRCUIT DIAGRAM

ST1

S2-18400/SG28E-JNK

TO CP1 (STA)
JW545

JW551 AWG30
1 CE+
RED

C5412
132;300-E

CEXAG694131AN

JW552 AWG30
1 CE-
BLACK

TO CP1 (STA)
JW546
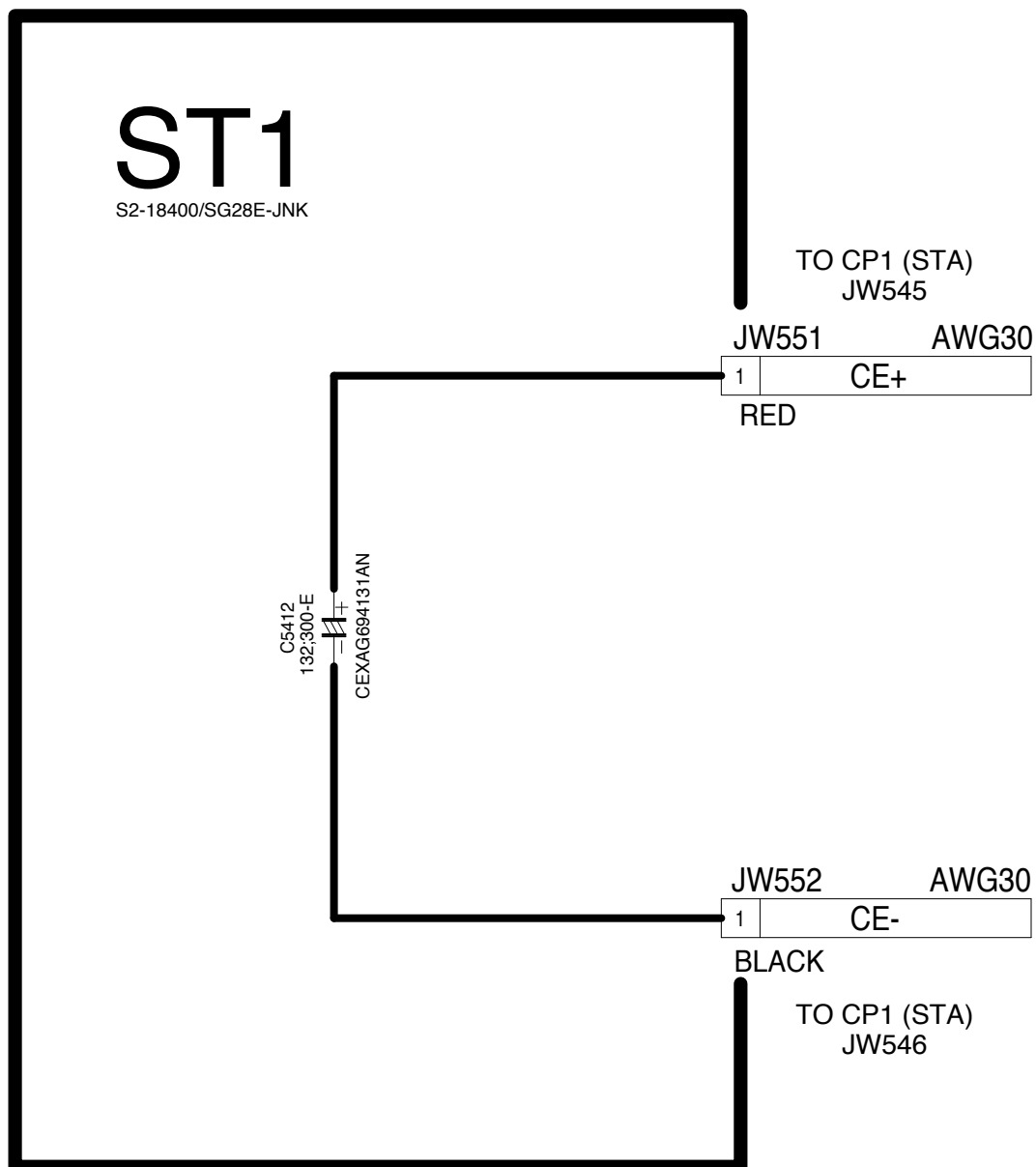
TB1 回路図
TB1 CIRCUIT DIAGRAM

TB1
T1-18400/SG28E-JNK

⚠

CL591

F5901
5A32V
1 ○〰○ 2
1608

CL592

TO BATTERY

TB2 回路図
TB2 CIRCUIT DIAGRAM

TB2

T2-18400/SG28E-JNK

D6001
QSMT-FJ15-ADH00

TO CP1 (SYA)
JW301

JW601
AWG32
AFLEDAN | 1

GY   2.0X1.25

JW602
AWG32
AFLEDCA | 1

WT   2.0X1.25

TO CP1 (SYA)
JW302

1	6
2	5
3	4
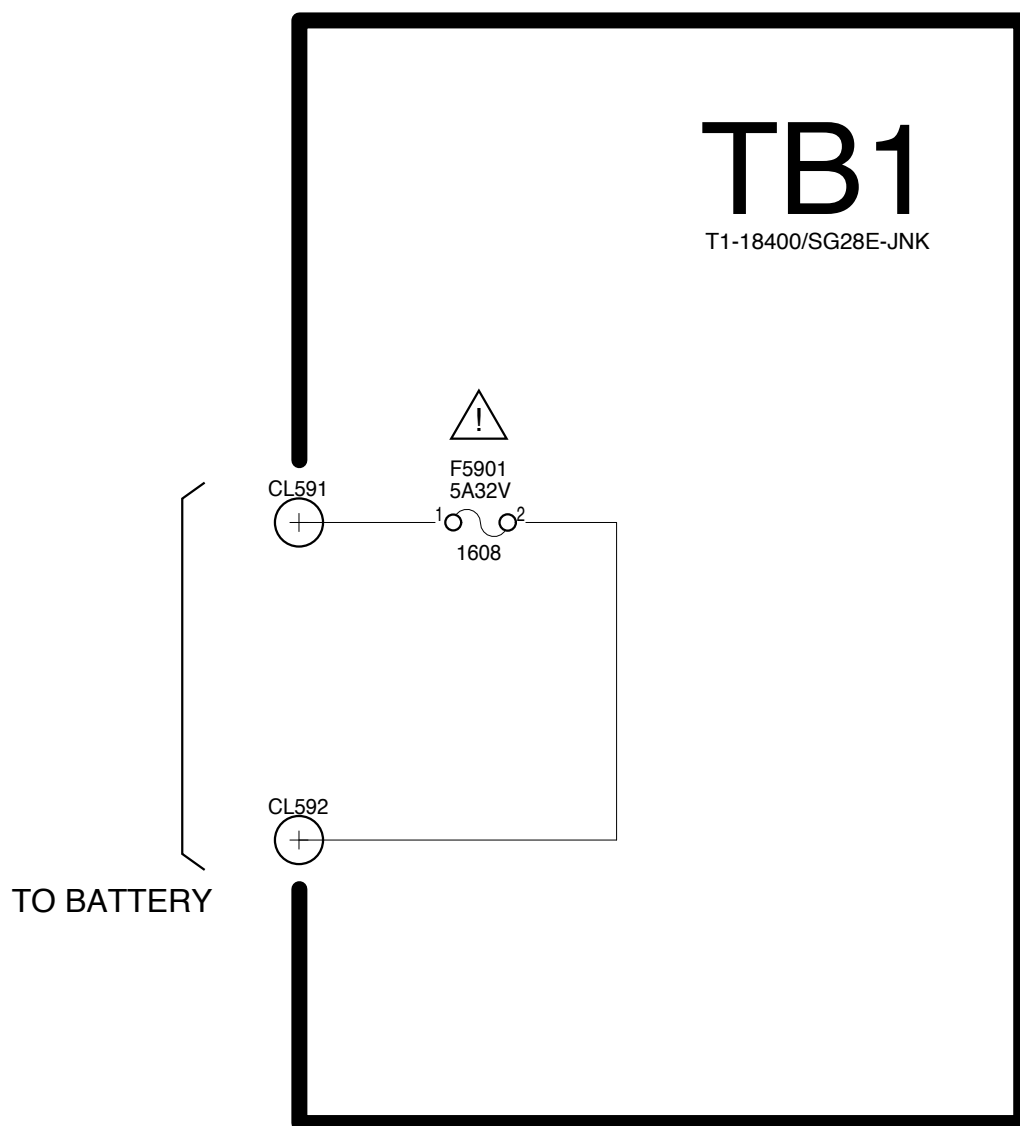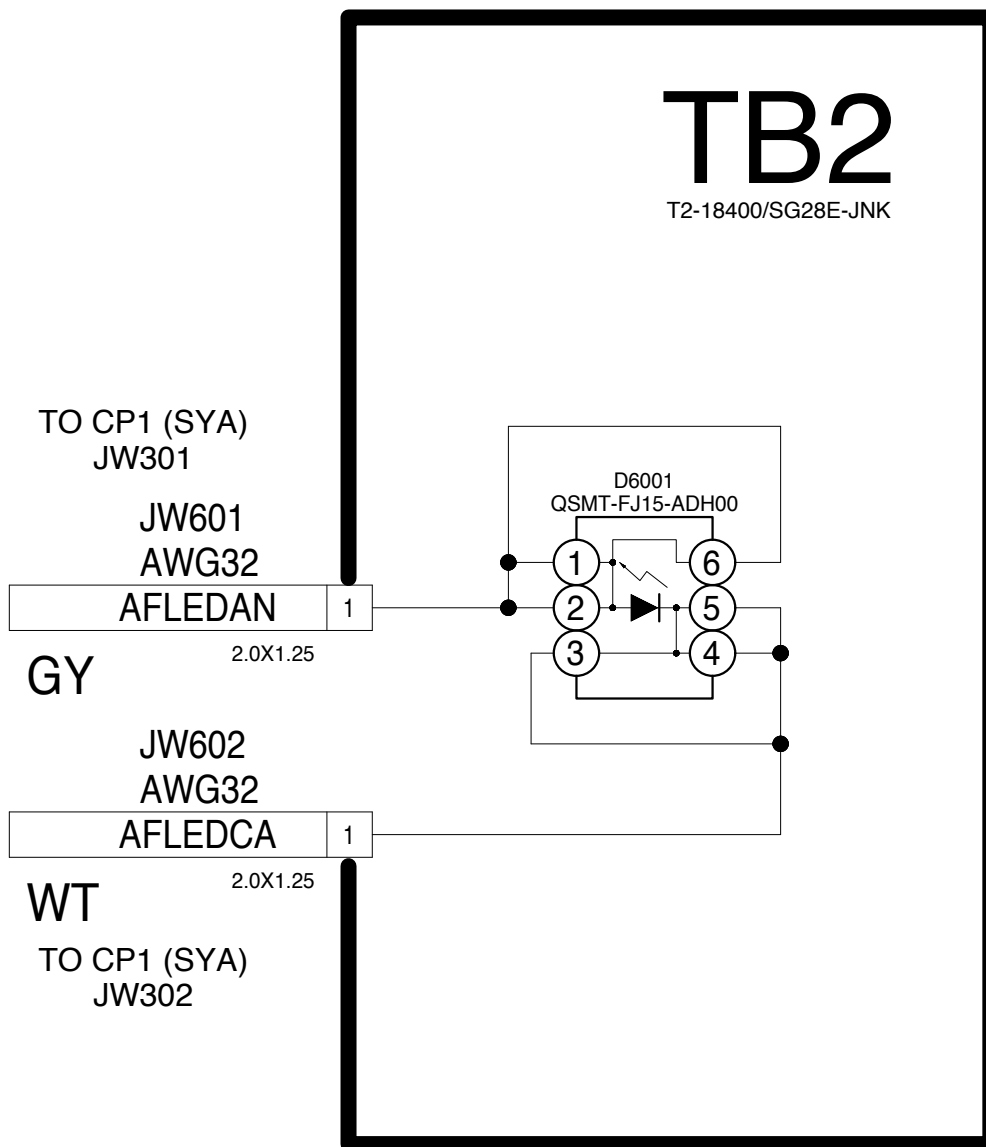
~~TB2~~ TB3 回路図
~~TB2~~ TB3 CIRCUIT DIAGRAM

△ (訂正／ Revision)

TB3

T3-18400/SG28E-JNK

JW651
AWG32

TO CP1 (SYA)　POP UP　| 1
JW303

2.0X1.25

JW652
AWG32

TO CP1 (SYA)　GND　| 1
JW304

2.0X1.25

Z1　Z2

1　2

COMMON

S6501
ESE13H01C
1AV4S10B7660G

サービス
計画課
M
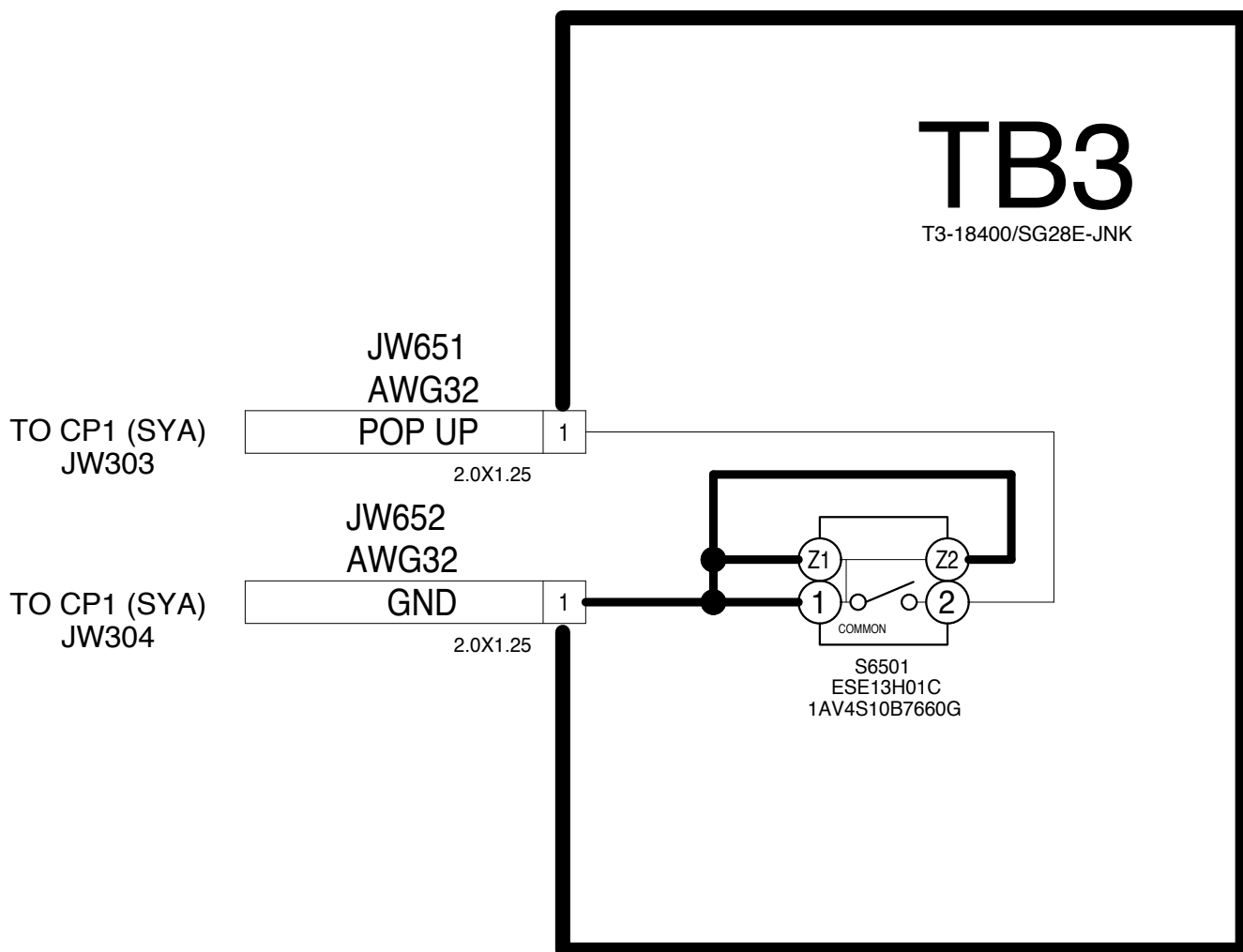
CA1 回路図
CA1 CIRCUIT DIAGRAM

CA1
C2-18400/SG28E-JNK

VOLTAGE: VIEW MODE, LCD ON

TO CP1 (CAA)
CN901

CN901
FPC_LOWER

GND	1
GND	2
VDD	3
GND	4
VOUT	5
GND	6
RG	7
GND	8
HL	9
GND	10
SUBSW2	11
SUBSW1	12
SUB	13
GND	14
GND	15
MSUBSW	16
MSUB	17
PT	18
GND	19
H1	20
H2	21
GND	22
V5A	23
V5B	24
V4	25
V3A	26
GND	27
V3B	28
V2	29
V1A	30
V1B	31
V6	32
V7B	33
V7A	34
V7S	35
V8	36
V9	37
V10	38
V9R	39
V9L	40
V11R	41
V11L	42
V12	43
V11	44
GND	45

10M CCD
QMN34510PLJAN
MN34510PLJ-A(LCC)
IC932

R9302
470;1/16J

R9301
47;1/16J

C9302
1.B
1608
H=0.9

EM6F34
Q9301

R9303
2K;1/16J
1608

R9304
2K;1/16J
1608

C9301
1.B

C9303
0.1.B

OVERALL BLOCK DIAGRAM

(Block diagram — text labels)

VMA43007-R. 3780. A

総合ブロック図
OVERALL BLOCK DIAGRAM

- E21・L100 -
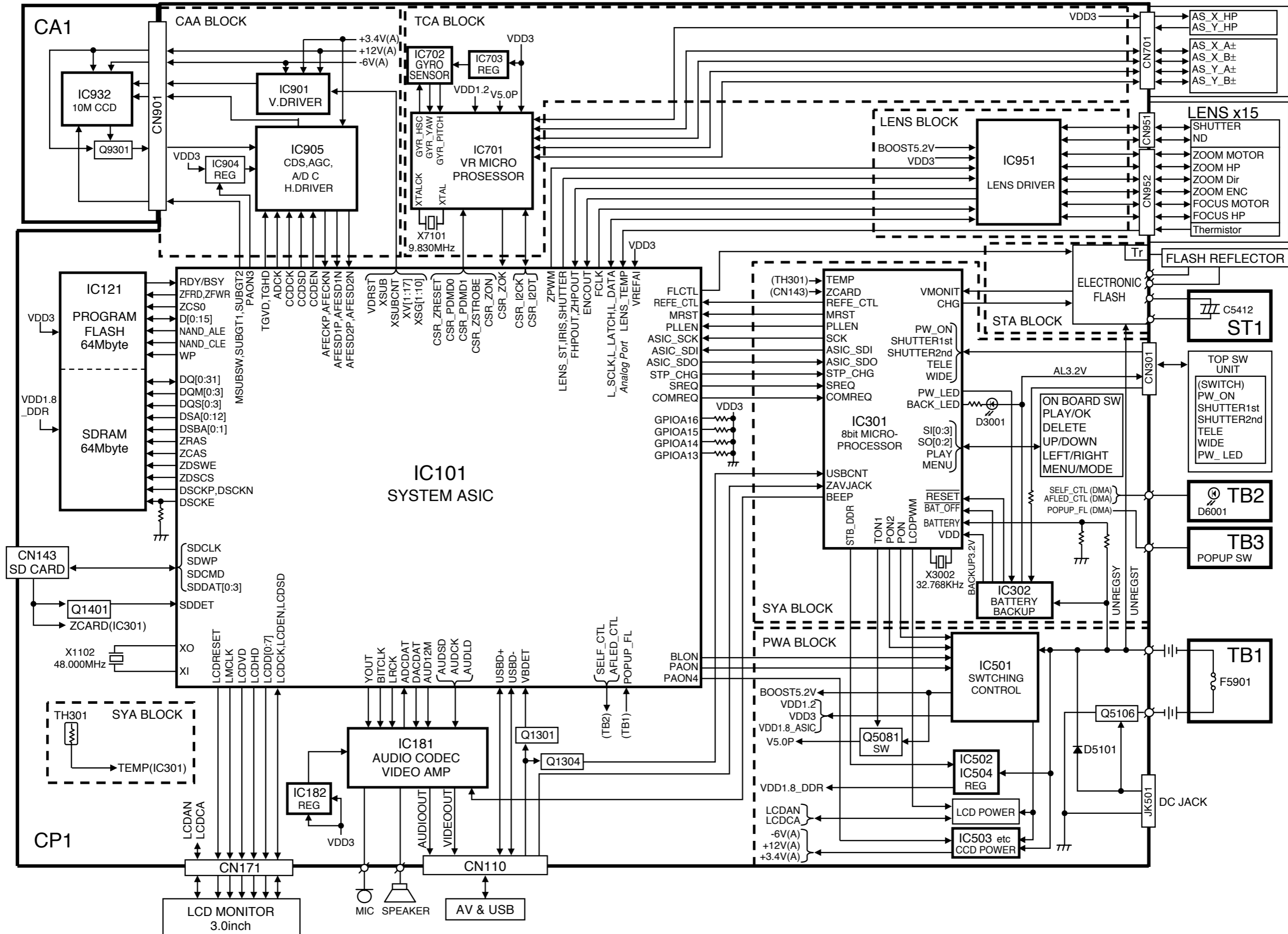
CCD ブロック図
CCD BLOCK DIAGRAM
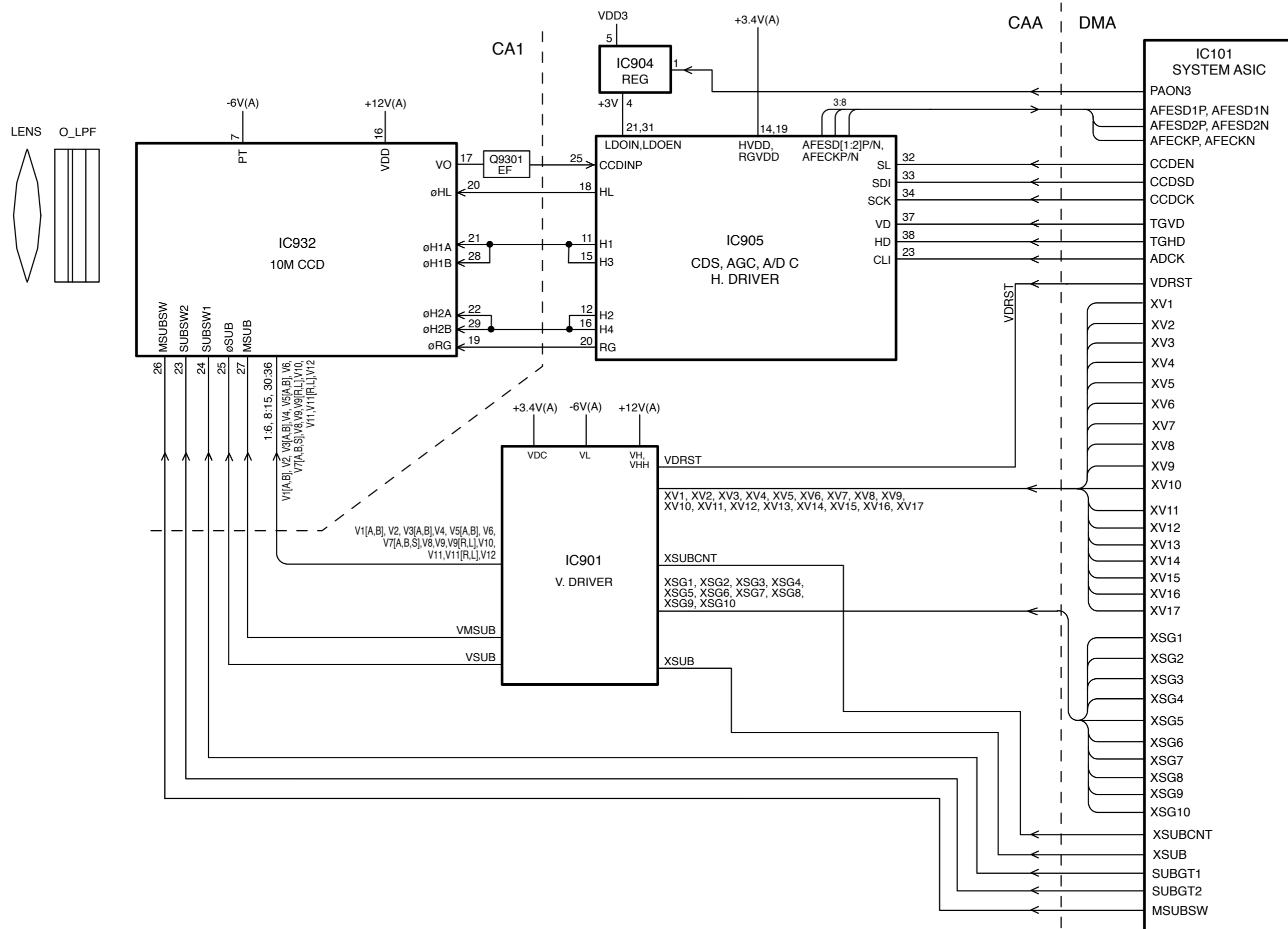
LENS ブロック図
LENS BLOCK DIAGRAM
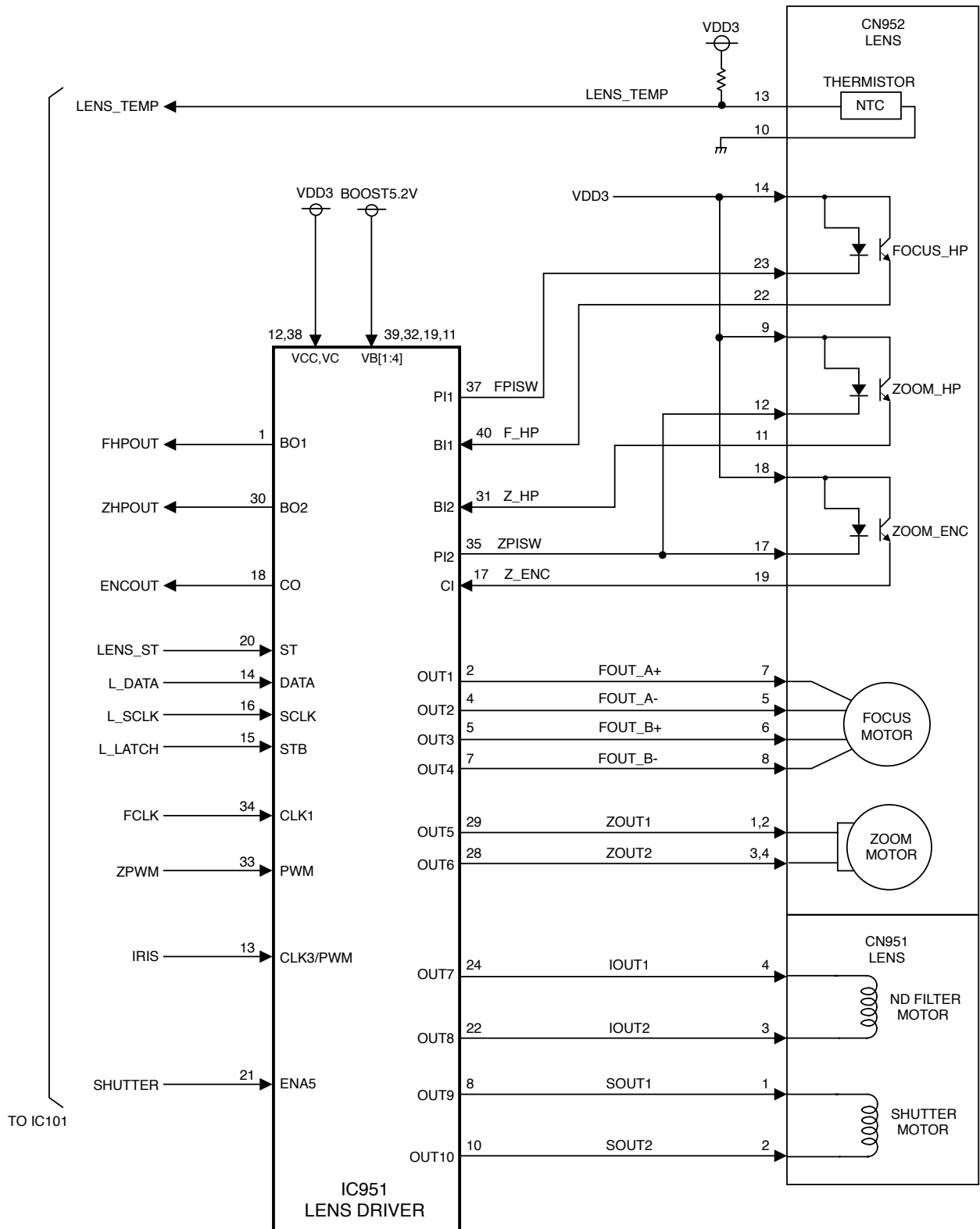
ASIC ブロック図
ASIC BLOCK DIAGRAM

IC101 SYSTEM ASIC
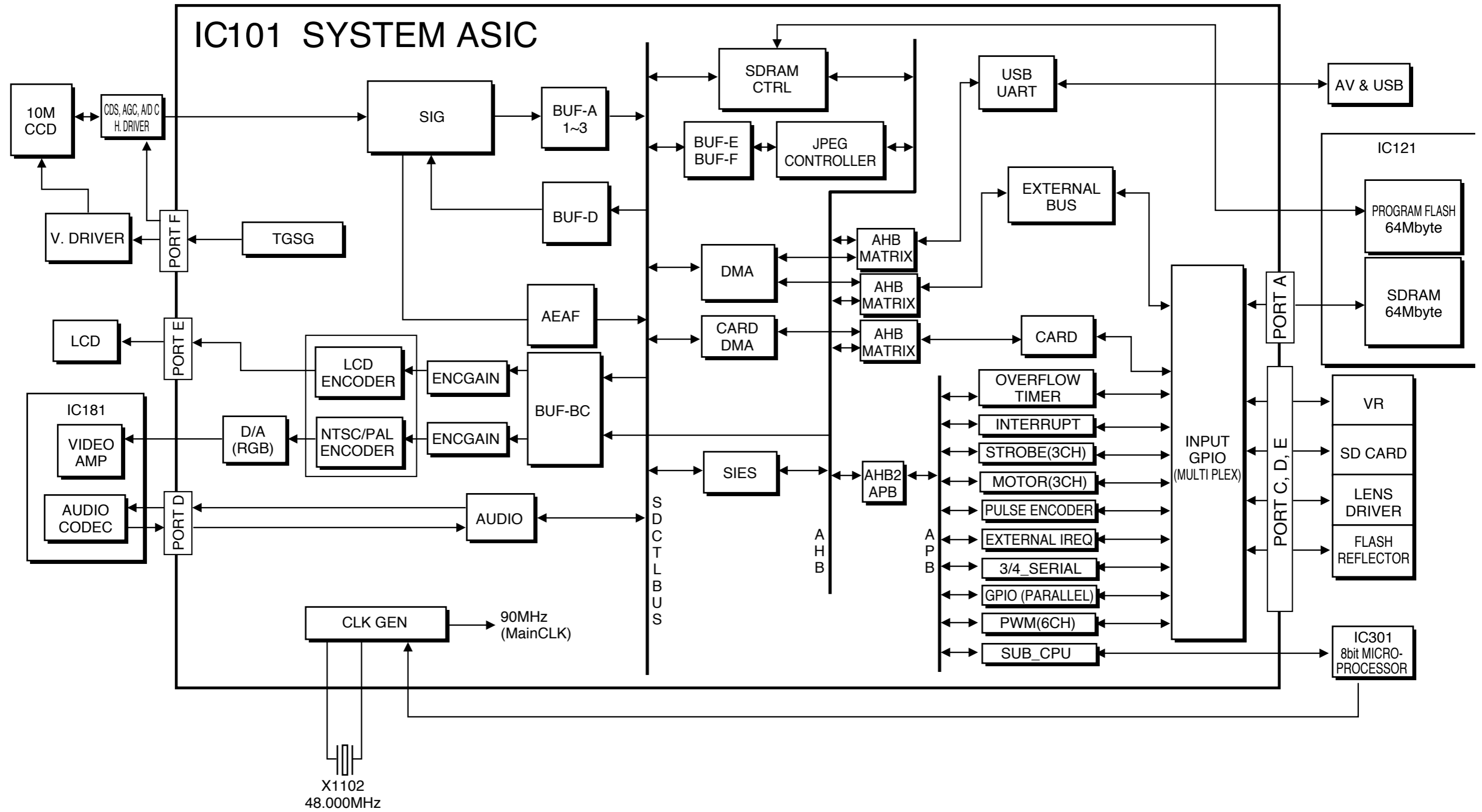
SYSTEM CONTROL ブロック図
SYSTEM CONTROL BLOCK DIAGRAM

TO DMA
UNREGSY

IC302
BATTERY
BACKUP

4 | VIN
5 | VRO → AL3.2
16 | SW3.2V → SW3.2
2 | BACKUP_BATT
7 | BACKUP_CHG
BACKUP
Z3001
14 | LED_CA → PW_LED
UNREGSY

VOUT 3
59 | VDD1
9 | VDD2
36 | VDD3

IC301
8bit MICROPROCESSOR

SW3.2V_ON 1 ← 43 | SW3.2VON
LED_CNT 13 ← 13 | PW_LED
RESETB 15 ← 53 | RESET
BAT_OFFB 11 ← 49 | BAT_OFF
BACKUP_CNT 6 ← 46 | BACKUPCTL
60 | BATTERY

AL3.2 →▶◀ D3001 → 12 | BACK_LED

20 | SCAN IN0
23 | SCAN IN1
24 | SCAN IN2
41 | SCAN IN3

DELETE	RIGHT	MODE	TEST
DOWN	OK	UP	PW_TEST
—	—	LEFT	—

3 | SCAN OUT0
4 | SCAN OUT1
5 | SCAN OUT2

CN301
PW_LED
26 | SHUTTER1st
51 | SHUTTER2nd
17 | PW_ON
21 | WIDE1
22 | TELE1

18 | PLAY
16 | MENU

TON1 11 | TON1
DC_IN 25 | DC_IN
P ON 27 | PON
PON2 31 | PON2
LCD PWM 7 | LCDPWM
STB_DDR 32 | STB_DDR   } TO PWA

XCIN 54
XCOUT 55
X3002
32.768KHz

VMONIT 61 | VMONIT
CHG_ON 34 | CHG
CHGSEL 8 | CHGSEL   } TO STA

USB_CNT 15 | USBCNT
COMREQ/ZBOOT 45 | COMREQ
CARD 42 | ZCARD
MAIN_RESET 29 | MRST
BEEP 6 | BEEP
AVJACK 2 | ZAVJACK
SCK 1 | ASIC_SCK
SI 64 | ASIC_SDO
SO 63 | ASIC_SDI
REFE_CTL 33 | REFE_CTL
PLLEN 28 | PLLEN
SREQ 50 | SREQ
TEMP 62 | VDD3   } TO DMA

TH301

- E25・L100 -

POWER ブロック図
POWER BLOCK DIAGRAM

BATTERY

F5001

F5002

IC501
SWITCHING
CONTROL

1 IC504
   REG 3

4 IC502
   REG 1

→ VDD1.8_DDR TO DMA

6

3

STB_DDR TO SYA

15 PVCCH
16 CMINUS

D5001
CHAGE PUMP
STEP UP CIRCUIT

L5301,Q5301
STEP UP & DOWN
CIRCUIT

→ BOOST5.2V

4 REGIN
5 PVCCL

Q5081
SWITCH

→ V5.0P

TO DMA

TON1 TO SYA

27 OUT1H
25,26 LX11
21,22 LX12
20 VOUT1

1 IC503
   REG 3

→ +3.4V(A)

6

PAON4

TO DMA

3 REGOUT

→ VDD1.8_ASIC

11 STBREG

PON2

14 SHDNB123

PON

TO SYA

9 LX2

L5021
STEP DOWN CIRCUIT

→ VDD3

7 LX3

L5031
STEP DOWN CIRCUIT

→ VDD1.2

46 OUT5

L5051,Q5051
INVERTER CIRCUIT

→ -6V(A)

48 LX6
49 SWIN6

L5061
STEP UP CIRCUIT

50 SWOUT6

→ +12V(A)

45 STB5

44 STB6

PAON

53 LX7
52 SWIN7

L5071
STEP UP CIRCUIT

51 SWOUT7

→ LCDAN

43 STB7

BLON

39 INV7I

CURRENT
DETECTOR
CIRCUIT

LCDCA

LCDPWM TO SYA

TO DMA

FUSE ARRANGEMENT

(CP1 PCB / 4 pcs. are used. / All of them are positioned on SIDE-A.)
(TB1 PCB / 1 pcs. are used. / All of them are positioned on SIDE-A.)
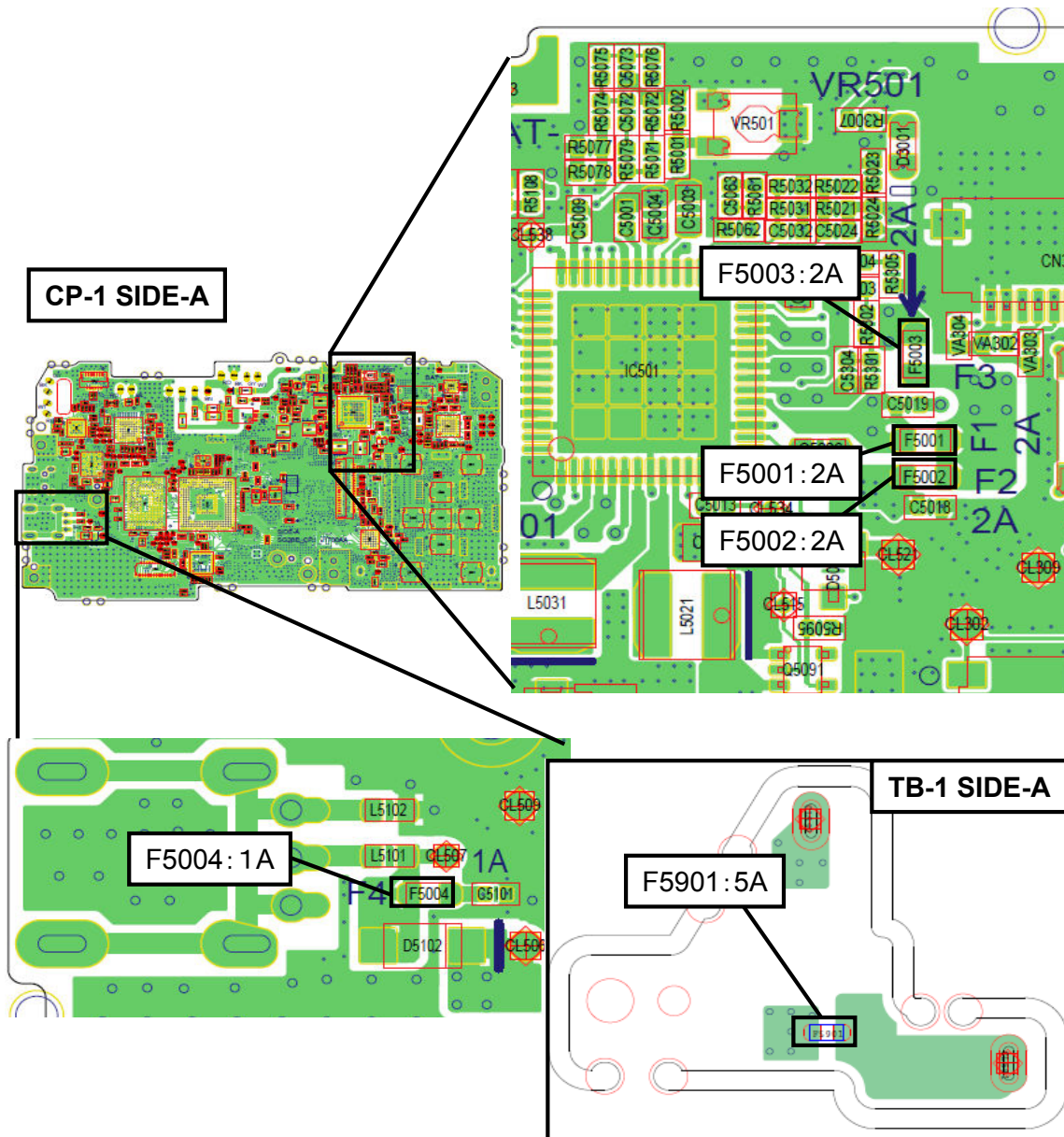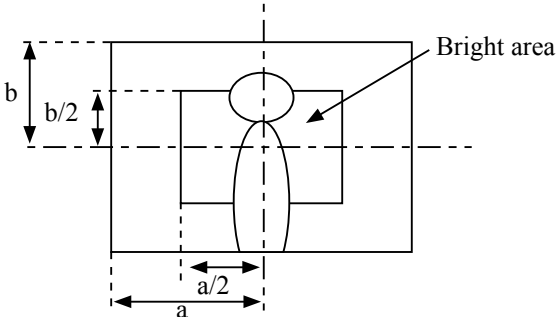

CP-1 SIDE-A

F5003 : 2A

F5001 : 2A

F5002 : 2A

F5004 : 1A

TB-1 SIDE-A

F5901 : 5A

FUSE	Function of FUSE	Phenomenon when FUSE has blown out	Rating
F5001	Protection when the power circuit malfunctions.	The power is not turned on.	32V/2A
F5002	Protection when the power circuit malfunctions.	The power is not turned on.	32V/2A
F5003	Protects when the speed light charging circuit malfunctions.	The speed light is not charged.	32V/2A
F5004	Protection when the adapter detection circuit malfunctions.	Adapter is not detected.	32V/1A
F5901	Protection when the inside of battery box malfunctions.	The power is not turned on.	32V/5A

Inspection standards

Items	Judgment standard	Remarks
External view		

Gap/Difference in height/level	・General components
	  Gap: 0.2mm or less
	  Difference in height: 0.15mm or less
	・Bottom
	  Gap: 0.2mm or less (except 0.3mm-gap designed)
	  Difference in height: 0.3mm or less
	・Gap of the right/left sections of pop-up flash: 0.4mm or less
	・The built-in flash can be opened/closed without feeling rasping touch.
	・Grip rubber
	  Surrounding gap: 0.3mm or less (Gate area: 0.5mm or less)
	  No peeling off.
	・When the battery cover is closed
	  Side-face gap: 0.3mm or less
	  Gap at the bottom: 0.3mm or less
	  Note) Difference between right & left: 0.2mm or less
	      Level difference: 0.5mm or less
	・When the battery is pushed (with 1.0N: 100g) with battery being inserted, it must not work loose.
	・Gap btwn TOP cover & front/back covers: 0.3mm or less
		Visual check

Lens performance		
Peripheral light reduction	・Against the center of the screen, the luminance of the nearest periphery must be: 35% or more. ・Against the picture center, the luminance at 70% of the image height must be 70% or more.	Photoshop 5100K Viewer
Ghost/Flare		
Point light source	・No outstanding ghost/flare in the entire range of operations of zooming/focusing.	Visual check
Surface light source	・No outstanding ghost/flare at the center in the entire range of operations of zooming/focusing.	
TV Distortion	・Design value Shooting distance "∞": From"−0.94% (WIDE)" to "+0.63% (TELE)" Shooting "whole" distance: From "−1.69% (WIDE)" to "+0.99% (TELE)"	

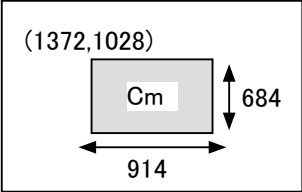| Items	Judgment standard	Remarks
AF		
Distance measurement operation	・ In the case of normal AF : Focus must be gained at the picture center. ・ In the case of the out-of-focus status :Focus must be gained at the following distance: 2m (Z00 − Z07), 5m (Z08 − Z10), 10m (Z11 − Z13)	Visual check
Shortest shooting distance Normal Macro	Focus must be gained at the following distance: ・ 50cm (Z00 − Z05), 70cm (Z06 − Z07), 1.0m (Z08), 1.5m (Z09 − Z13) ・ 15cm (Z00 − Z04, Z07 − Z09), 1cm (Z05 − Z06)	Tape measure
Metering-capable limit of luminance (max.)	・ Metering must be possible under the sunshine (80000 lux. or more)	A chart Luminance meter
Metering-capable limit of luminance (min.)	・ Metering must be possible with BV-1 or more.	Low contrast chart (Difference btwn black and gray: 2.0 − 2.3Ev) Spot meter
Distance metering (ranging)/Focusing time	・ Wide end: 600 or less ・ Tele end: 900 or less	A chart Oscilloscope Stopwatch Spot meter
Focusing accuracy when AF assist illuminator lights up.	・ The "min." value in darkness when shooting an object 10 times 　WIDE center / horizontal: 1050TV lines or more 　TELE center / horizontal: 1050TV lines or more （[Resolution must be measured at WIDE (1.5m) and TELE (1.1m).] ・ Focus must be obtained at the distance WIDE (1.9m) / TELE (1.5m).	Siemens chart EIAJ chart Photoshop

Items	Judgment standard	Remarks
Shooting with Flash unit		
Light adjustment accuracy	・Tele 0.5 - 4.5m ・Wide 0.5 - 6.5m In the above range, +0.2± 0.5 EV or less (Shooting mode: AUTO, Speed light: Anytime flash)	Standard reflector
"Slow sync"	・Background brightness (intense black; EV3 - EV9); Brightness of subject (± 0.5 EV or less) ・Shooting mode: Auto, Night portrait ・Speedlight (in Auto mode): Auto (flash), Slow syncro ・Distance from camera: to background (5m), to subject (1m) ・Background: Illuminate so that the central area (half of the upper/ lower half area and half of the right/left half area) becomes bright. Measure the brightness of the background with standard reflector. ・Subject: Place the standard reflector so that a subject (person) can avoid light coming from above. They must be positioned in the center of the screen. Then, measure the brightness of the subject.	

Items	Judgment standard	Remarks
Color temperature	・No problem with shooting actual photos. ・6300K ± 500K (reference value)	SB color temperature New secondary battery （fully-charged）
Guide No. FULL (ISO100 &1m)	・7.0 ±0.4 EV (Charge for 10 seconds with the new secondary battery and measure within 1 second.)	Flash meter Battery Measurement firmware
Flash luminance of Flash unit	・The flash must fire when the zoom position is WIDE-end and the subject has luminance which is calculated by the following shutter speed (TV=1/30sec ± 0.5TV or less).	Luminance box Visual check

Items	Judgment standard	Remarks
Shooting with Flash unit		
Light distribution features	・Full angle from right to left: 　To left- 34° or more; to right- 34° or more; 　Relative to the central light quantity: -1.0Ev or less ・Full angle from top to bottom: 　To top- 28° or more; to bottom- 28° or more; 　Relative to the central light quantity: -1.0Ev or less ・Whole screen area, relative to the central light quantity: +1.0EV/ -1.5EV ・No outstanding unevenness of light distribution.	Light distribution measuring equipment Flash meter Protractor Photoshop Standard reflector
Recycle time	・Within 8 seconds ・Charge a new rechargeable battery for 10 seconds and carry out full flashing within 1 second. Then, measure the time taken until the speed light LED finishes blinking while pressing lightly the shutter release button.	Stop watch Secondary battery
Charging time-out	・Time taken until charging the speed light stops (time-out). 30±1 sec.	Stop watch Secondary battery

Items	Judgment standard	Remarks
Image quality		
Resolution in AF （Shoot EIAJ chart）	・Shooting conditions 　Mode: AUTO 　Image quality: FINE 　Image size: 10M (3648×2736) 　White balance: AUTO 　ISO sensitivity setting : 64 　Distortion control: OFF 　Exposure compensation: None 　Flash: Cancel 　VR (vibration reduction): OFF ・Chart 　EIAJ chart　WIDE, MIDDLE: H 400 　　　　　　　　　　TELE: H 229 ・Light source Inverter fluorescent light: 10 ± 0.5Ev (chart illumination intensity） ・Shoot the reflective EIAJ chart by the whole zooming range with full angle of view. ・Take pictures at each WIDE (Z00), MIDDLE (Z08), and TELE (Z13) zoom position. 　The resolution must correspond to the following values at all the camera positions based on the evaluation of EIAJ chart. ・WIDE, MIDDLE 　Center horizontal/vertical: 1200 TV lines or more 　Periphery horizontal/vertical: 800 TV lines or more ・TELE 　Center horizontal/vertical: 1200 TV lines or more 　Periphery horizontal/vertical: 700 TV lines or more	EIAJ chart Photoshop Siemens chart
Resolution in "Macro"	・Center horizontal/vertical: 700 TV lines 　Under the conditions of "Resolution in AF", confirm at WIDE by "Macro" shooting. 　Shooting distance: 15cm	

Items	Judgment standard	Remarks
Image quality		
AF (15cm - 10m)	・The values must conform to the following in the entire zooming. Center horizontal/vertical: 900 TV lines ・Measure the TV resolution lines at center. ・Check each posture and the difference of zoom reciprocation. ・Take pictures at each WIDE (Z00), MIDDLE (Z08), and TELE (Z13). ・In the following order (WIDE→MIDDLE→TELE→MIDDLE→WIDE), check by reciprocating movement.	Photoshop Siemens chart
Out of focus	・The values must conform to the following in the entire zooming. Center horizontal/vertical: 1200 TV lines ・Measure the TV resolution lines at center. ・Check each posture and the difference of zoom reciprocation. ・Put a chart at the distance of 2m, set it in the out of focus condition and shoot it. ・Take pictures at each WIDE (Z00), MIDDLE (Z08), and TELE (Z13).	Photoshop Siemens chart

Gradation/luminance level	[Histogram's gray average value]
	  ・Black: 12 ± 5
	   Gray: 125 ± 10
	   White: 220 ± 15
		5100K viewer
		ITEγ0.45
		Gray scale standard
		Photoshop

Noise	[Histogram's gray average value]
	・ISO80
	   Gray noise : 3.5 or less
	   Black noise: 3.5 or less
	・ISO 400
	   Gray noise: 5.5 or less
	   Black noise: 5.5 or less
	・In AUTO mode and the image quality priority mode, set the scale to 5100K viewer with a full range of angle of view, then set AF lock and shoot an object by defocusing.
	・Open the recorded image data file through Photoshop and pick up a measurement section with the each color (its central area 64×64 pixels) with the rectangle selector tool.
	・Read the RGB value of histogram and the standard deviation of RGB.
	・Measurement section
	  Luminance level:
	  Upper left 1 step (black), upper left 6 steps (gray), Center (white), lower left 6 steps (gray), lower left 11 steps (black)
	  Noise: Upper left 2 step (black), 6 steps (gray), Lower left	

Items	Judgment standard	Remarks
Image quality		
Color reproduction		Macbeth chart

Color	R	G	B
White	200 ± 20	210 ± 20	205 ± 20
Yellow	200 ± 20	210 ± 20	45 ± 15
Red	190 ± 20	0 - 25	0 - 20

・In AUTO mode and the image quality priority mode, set the scale to 5100K viewer with a full range of horizontal angle of view, and take a picture of the chart.

・Open the recorded image data file through Photoshop and pick up a measurement section with the each color (its central area 64 × 64 pixels) with the rectangle selector tool.

・Read the RGB value of histogram.

Items	Judgment standard	Remarks
"High sensitivity"		3100K viewer
Magenta-color intensity		

・Based on the below calculation, maximum value: 6.3 or less

$[(Red)\_Cm / Green\_Cm) -1] \times 100$

$[(Blue)\_Cm / Green \_ Cm) -1] \times 100$

※ In the area of the below figure, each RGB components should be "Red_Cm", "Green_Cm", and "Blue_Cm".

・Follow the below procedure and make measurements.

1. Set to "ISO64".

2. Face the camera to the halogen viewer, and obtain "Preset WB".

3. Take pictures under the following conditions: Image size [10M (3648×2736)], Image quality (Fine), TELE-end, Aperture (F7.3), ISO sensitivity (800), Exposure compensation (-1.0EV).
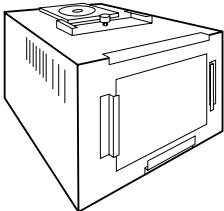
(0.0)

(1372,1028)

Cm   684

914
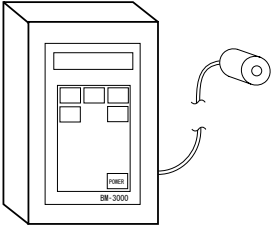
Items	Judgment standard	Remarks
Image quality		
Dust in photo	・There must not be an outstanding dust in a picture. ・When the picture center (within the circle whose diameter is 80% of the short side) is Zone I and its outside is Zone II, light reduction against the periphery must be as below:	Photoshop CRT monitor

	a	b
Zone Ⅰ	4 dusts or less	0
Zone Ⅱ	10 dusts or less	2 dusts or less

a : 1.5% or less

b : More than 1.5% and less than 3.0%

・Shoot the 5100K viewer at "TELE"-end by minimum aperture. Then, check the image.

Items	Judgment standard	Remarks
LCD and others		
Visual field ratio	・The inclination of the image and the monitor frame must be 0.5° or less. ・The vertical difference and horizontal difference of the black belt width in the image periphery must be within 0.3mm. （Measuring point: Center of each side.） ・Video/live picture on the monitor: 97−100% ・Playback image: 97−100%	Visual check AC power source Photoshop Scanner
Defective pixel	・Linear defects: None ・Defective pixels must be the followings or less.	

	Bright (hot) pixel	Dead pixel
A zone	G:0 Others than G:1	3
B zone	3	
Total	Max. 3	

・Bright (hot) pixel : Visible through the 5% ND filter

・Dead pixel : This pixel looks dark.

・Reproduce each self-color of R, G, B and white, and check them visually.

1	2	1
		1
	A zone	2
	B zone	1

B: Valid display range
A: Area of 4/16 when measured from the center of B

Items	Judgment standard	Remarks
Electric characteristics		
Consumption current	・When card is not used: 0.2mA or less (when the power switch is OFF)	Constant voltage power supply
Stand-by (idle) current		
	・When card is used: 0.2mA or less (when the power switch is OFF)	Ammeter
		Dummy battery pack
Start (Shooting)	・12mA or less (at "Sleep")	
	・100mW or less (when the power switch is OFF.)	
	・1.0A or less (AUTO start monitor is ON.)	
B. C voltage		
(alkali) Level 1	・4.64 ± 0.1V	
Level 2	・4.12 ± 0.1V (Battery indicator blinks.)	
Level 3	・3.87 ± 0.1V （Power OFF）	
(lithium) Level 1	・5.11 ± 0.1V	
Level 2	・4.12 ± 0.1V (Battery indicator blinks.)	
Level 3	・3.82 ± 0.1V （Power OFF）	
	Value that is compensated by loss [0.1V (Level 1, 2), 0.05V (Level 3)] caused by wiring resistance, when measuring device is used.	
When voltage increases		
(alkali) Level 1	・5.97 ± 0.1V	
Level 2	・5.55 ± 0.1V	
(lithium) Level 1	・6.97 ± 0.1V	
Level 2	・6.00 ± 0.1V	
		Bundled battery
Regulation of battery indicator ("half"-mark)	・Alkali：85 ± 10 % (25℃)	
	・Lithium：85 ± 10 % (25℃)	
	・Alkali：── (10℃)	
	・Lithium：75 ± 15 % (10℃)	

工具一覧表　Tool List

工具番号 Tool No.	名　称 Name	備　考 Remarks
J63080	パターンボックス　LV-1450DC Pattern Box　LV-1450DC	共通工具 Common Tool
J63080A	交換用ハロゲンランプ（LV-1450DC 用） Spare Halogen Lamp（For LV-1450DC）	LV-1450DC 専用 Exclusively for LV-1450DC
J63081	カラーメータ（ミノルタカラーメータⅢ F） Color Meter(Minolta Color meter Ⅲ F)	共通工具 Common Tool
J63068	輝度計 BM-3000 Luminance Meter BM-3000	共通工具 Common Tool

工具番号 Tool No.	名　称 Name	備　考 Remarks
J65098	DSC キャリブレーションソフト (Ver.1.62b) DSC Calibration Software (Ver.1.62b)	共通工具 Common Tool
J65123	SSIS キャリブレーションソフト (Ver.1.016) SSIS Calibration Software (Ver.1.016)	共通工具 Common Tool
J63090	コリメータ (C-DSC) Collimator (C-DSC)	共通工具 Common Tool
RJ 設定なし No. RJ available	USB ケーブル (UC-E6) USB Cable (UC-E6)	商品転用 To use Product
RJ 設定なし No. RJ available	AC アダプター (~~EH-62A~~) (EH-67) △ (訂正) AC Adapter~~(EH-62A)~~ (EH-67) △ (Revision)	商品転用 To use Product

- T3・L100 -

工具番号 Tool No.	名　称 Name	備　考 Remarks
J63070	カラービューア Color Viewer	
C-8008B	セメダイン　8008（黒） Cemedain 8008 (Black)	

PARTS NAME	Rear Cover				LCD Holder			Front Cover	Battery Holder		Release Button Unit
DISASSEMBLY	D2, D3	D2		D3	D5			D6, D7	D9, 10	D10	D13
TYPE OF SCREW	#203	#202	#201	#204	#206	#203	#207	#205	#203	#206	#209
QUANTITY	5	3	4	2	1	2	1	4	3	3	1
					#106						
ASSEMBLY	A21, A20	A21		A20	A18			A17, 16	A14, 13	A12	A11

PARTS NAME	Main PCB		Speaker	Inner Holder	LED PCB	Flash Unit							
DISASSEMBLY	D14		D16	D17	D17	D18							
TYPE OF SCREW	#206	#207	#211	#212	#210	#208	#204						
QUANTITY	1	1	2	3	1	1	2						
ASSEMBLY	A10		A9	A8	A6	A5							

PARTS NAME													
DISASSEMBLY													
TYPE OF SCREW													
QUANTITY													
ASSEMBLY													

PARTS NAME													
DISASSEMBLY													
TYPE OF SCREW													
QUANTITY													
ASSEMBLY													

サービス
計画課
M

差し替えページ（全面改訂）
Changed Page (overall revision)

March.6.2009