作成承認印	配布許可印
ニコン映像カンパニー CS推進部 GM	サービス計画課 M

SB-600

FSA03601

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

Printed in Japan November 2004

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Specifications

Electronic construction	Automatic Insulated Gate Bipolar Transistor(IGBT) and series circuitry
Guide number (at 35mm zoom-head position, 20° C/68° F)	30/98 (ISO 100.m/ft). 42/138(ISO 200.m/ft)
Flash shooting distance (in TTL auto flash)	0.6m to 20m(2 to 66ft.) (varies depending on the ISO sensitivity, zoom-head position and lens aperture in use)

Flash exposure control

Indicator	Available flash mode	Usable camera
TTL	i-TTL mode	Cameras compatible with CLS
TTL	D-TTL MODE	Digital SLRs not compatible with CLS, D2H
TTL	TTL(film based) mode	Cameras in Groups Ⅰ to Ⅵ(film based cameras)
BL (appears with TTL)	Balanced Fill-Flash	Cameras compatible witn CLS, cameras in Group Ⅰ to Ⅵ(No BL appears with cameras in Group Ⅲ to Ⅳ)
M	Manual flash	No limitation

Creative Lighting System	A variety flash operations are available with compatible cameras: i-TTL mode, Advanced Wireless Lighting, FV Lock flash, Flash color information communication, Auto FP High-Speed sync, and Wide-area AF-Assist Illuminator

Multiple flash operation

Available multiple flash	Usable camera
Advanced Wireless Lighting	Cameras compatible with CLS
Multiple flash shooting using cords	No limitation

Flash exposure control set on the camera	Slow-sync, Red-eye reduction, Red-eye reduction in slow-sync, Rear-curtain sync flash, Auto FP High-Speed sync, FV Lock flash

Angle of coverage

Variable in six steps, plus one step with wide-flash adapter

Zoom-head position	Angle of coverage		
		Vertical	Horizontal
14mm(WP)	14mm	110	120
24mm	24mm	60	78
28mm	28mm	53	70
35mm	35mm	45	60
50mm	50mm	34	46

WP:With the built-in wide-flash adapter set

Group	Cameras name
Cameras compatible with CLS	D2H, D70
Digital SLRs not compatible with CLS	D1-Series, D100
Ⅰ	F5, F100, F90X/N90S, F90-Series/N90, F80-Series/N80-Series, F75-Series/N75-Series F70-Series/N70
Ⅱ	F4-Series, F65-Series/N65-Series, F-801S/N8008S, F-801/N8008, Pronea 600i/6i
Ⅲ	F-601/N6006, F-601M/N6000
Ⅳ	F60-Series/N60, F50-Series/N50, F-401X/N5005
Ⅴ	F-501/N2020, F-401S/N4004S, F-401/N4004, F-301/N2000
Ⅵ	FM3A, FA, FE2, FG, Nikonos V, F3-Series(with the AS-17)
Ⅶ	New FM2, FM10, FE10, F3-Series, F55-Series

<table>
<tr><td>Baunce capability</td><td>Flash head tilts from 0° to 90° with click-stops at 0° ,45° ,60° ,75° ,90° ; flash head rotates horizontally 180° to the left or 90° to the right with click-stops at 0° ,30° ,60° ,90° ,120° ,150° ,180</td></tr>
<tr><td>ON/OFF button</td><td>・Press the ⏻ button for approx. 0.3 sec. to turn the SB-600 on or off.
・Standby function can be set.</td></tr>
<tr><td>Power source/min. recycling time/ no. of flashs(at M1/1 output)</td><td>Four AA-type penlight batteries(1.5V or lower) of any of these types:
Alkaline-manganese(1.5V), Lithium(1.5V), Nickel(1.5V), NiCd(rechargeble, 1.2V), or Ni-MH(rechargeble, 1.2V)
<table>
<tr><th>Battery type</th><th>Min. recycling time(approx.)*</th><th>MIn. number of flashes/ recycling time(approx.)*</th></tr>
<tr><td>Alkaline-manganese</td><td>3.5 sec.</td><td>200/6～30 sec.</td></tr>
<tr><td>Lithium</td><td>4 sec.</td><td>400/7.5～30 sec.</td></tr>
<tr><td>Nickel</td><td>2.5 sec.</td><td>180/6～30 sec.</td></tr>
<tr><td>NiCd (1000mAh)(rechargeble)</td><td>2.9 sec.</td><td>90/4～30 sec.</td></tr>
<tr><td>Ni-MH (2000mAh)(rechargeble)</td><td>2.5 sec.</td><td>220/4～30 sec.</td></tr>
</table>
*With fresh batteries.
・M1/1 output without use of AF-assist illuminator, zoom operation, and LCD panel illuminator.</td></tr>
<tr><td>Readdy-light</td><td>・Lights up when the SB-600 is recycled and ready to fire.
・Blinks for 3 sec. when flash fires at its maxinum output, indicating light may have been insufficient (in TTL auto flash mode)</td></tr>
<tr><td>Flash duration (approx.)</td><td>1/900 sec. at M1/1(FULL) output
1/1600 sec. at M1/2 output
1/3400 sec at M1/4 output
1/6600 sec at M1/8 output
1/11100 sec. at M1/16 output
1/20000 sec at M1/32 output
1/25000 sec at 1/64 output</td></tr>
<tr><td>Mounting foot lock lever</td><td>Provides secure attachment of SB-600 to casmera's accessory shoe using locking plate and mount pin to prevent accidental detachment.</td></tr>
<tr><td>Flash output-level compensation</td><td>-3.0 to +3.0 EV in increments of 1/3 steps in the TTL auto flash mode.</td></tr>
<tr><td>Custom Settings</td><td>The following Custom Settings are possible:Wireless remote flash, Auxiliary ready-light, Sound monitor in the wireless remote flash mode, Standby function, Power zoom function, Zoom function, Zoom-head position setting if the built-in wide-flash adapter is broken off accidentally, LCD panel illuminator, and AF-assist illuminator.</td></tr>
<tr><td>Othe function</td><td>Recalling the underexposure value in the TTL auto flash mode, Resetting the settings, Botton lock</td></tr>
<tr><td>Built-in wide-flash adapter</td><td>Allows SB-600 to be used with a 14mm lens.</td></tr>
<tr><td>Dimensions (W × H × D)</td><td>Approx. 68.0 × 123.5 × 90.0 mm (2.7 × 4.9 × 3.5 In.)</td></tr>
<tr><td>Weight (without batteries)</td><td>Approx. 300g (10.6 oz.)</td></tr>
</table>

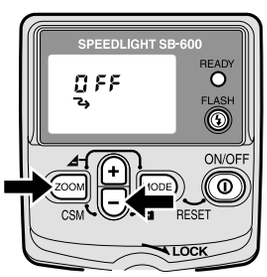
・These performance specifications are applicable when fresh batteries are used at normal temperatures (20° C/68° F).

Custom Functions

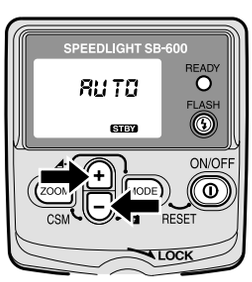
Details on Custom settings

	Details on Custom settings	Default setting
①	Wireless remote flash mode	ＯＦＦ
②	Sound monitor in the wireless remote flash mode	ＯＮ
③	Auxiliary ready-light	ＯＮ
④	Wide-Area AF-Assist Illuminator	ＯＮ
⑤	Standby function	ＡＵＴＯ
⑥	Power zoom function	ＯＦＦ
⑦	Zoom-head position setting if the built-in wide-flash adapter is broken off accidentally	ＯＦＦ
⑧	LCD panel illuminator	ＯＮ

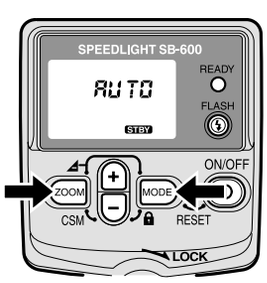
Seting Custom Settings



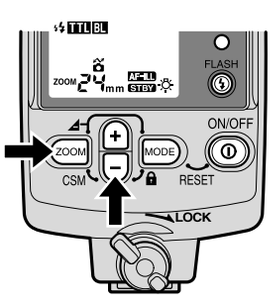
1. Press the [ZOOM] and [－] buttons simultaneously for approx. 2 seconds to display the custom Settings mode.



2. Press the [＋] or [－] buttonto choose the desired custom settings.



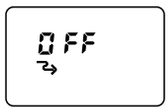
3. Press the [ZOOM] or [MODE] a button to display the preferred setting.



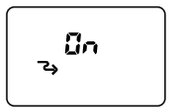
4. Press the [ZOOM] and [－] buttons simultaneously for approx. 2 seconds or press the (⏻) button to return to the normal setting mode.

Details on Custom Settings

Wireless remote flash mode
Activating or canceling the wireless remote flash function in wireless multiple flash photography.

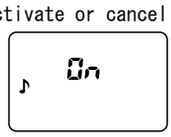


OFF:Remote flash function canceled.

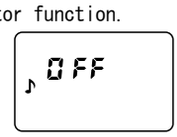


ON:Remote flash function activated

Sound monitor in the wireless remote flash mode
When the SB-600 is used as a wireless remote flash unit in wireless multiple flash photography. you can activate or cancel the sound monitor function.

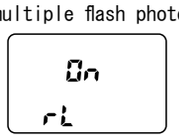


ON:Sound on

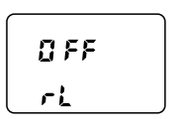


OFF:Sound off

Auxiliary ready-light
The auxiliary ready-right can be activate or canceled when the SB-600 is used as a remote flash unit in wireless multiple flash photography.

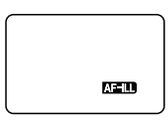


ON:Ready-light is on

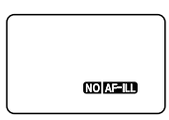


OFF:Ready-light is off

Wide-Area AF-Assist Illuminator
Setting to activate or cancel the Wide-Area AF-Assist Illuminator.

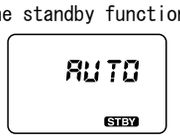


AF-ILL:Activated

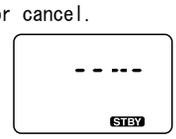


NO AF-ILL:Canceled

Standby function
Setting the standby function to activate or cancel.

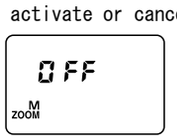


AUTO:Standby function activated

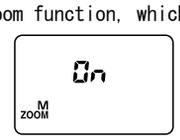


-- -- -:Standby function canceled

Power zoom function
Setting to activate or cancel the power zoom function, which adjusts the zoom-head position automatically.

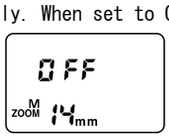


OFF:Activated

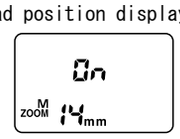


ON:Canceled

Zoom-head position setting if the built-in wide-flash adapter is broken off accidentally
Setting to activate or cancel the zoom-head position setting if the built-in wide-flash adapter is broken off accidentally. When set to ON, the zoom-head position display blinks.

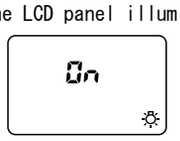


OFF:Manual setting canceled

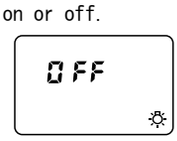


ON:Manual setting activated

LCD panel illuminator
Setting the LCD panel illuminator to turn on or off.



ON:Turn on



OFF:Turn off

Disassembly

WARNING

- Due to an internal high voltage area, be sure to discharge the main condenser before removing covers according to the instructions of the repair manuals.

Note) Lead-free solder is used all for this product.

Side rubber

・Remove right-and-left side rubbers.
・Set the bounce angle to 90°and discharge the main condenser at the 2 holes of Fig.1.

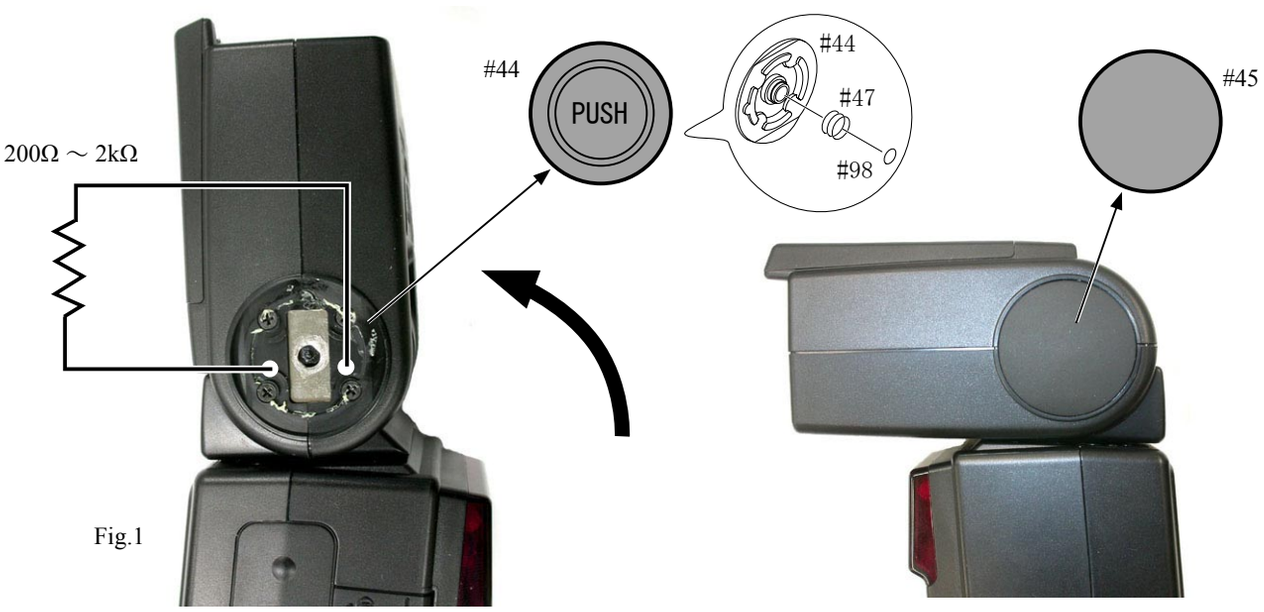
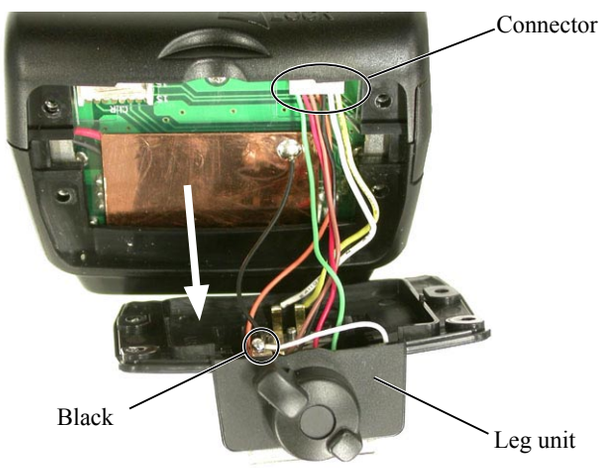


Fig.1

Leg unit

・Take out 4 screws (#234) to remove the leg unit.
・Unsolder the foot side of the black wire and remove the connector. Then remove the leg unit from the body.



F case unit

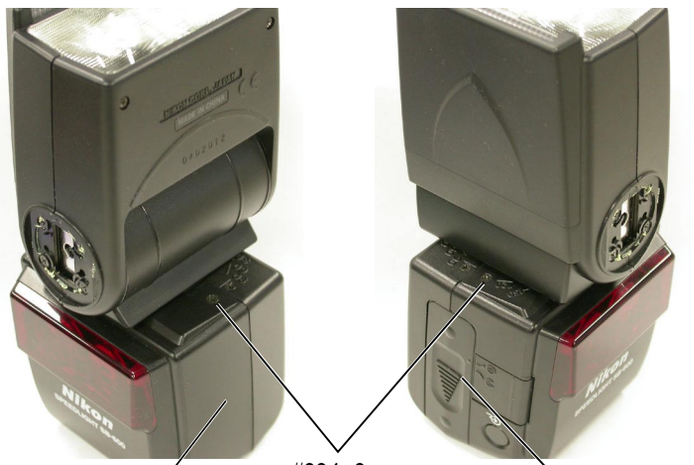


Fig.1

- Take out 2 screws (#224). (ref. Fig.1)
- Open the battery lid.
- Remove the F case unit, then the battery lid comes off, too.
- Disconnect 2 connectors to detach the F case unit. (ref. Fig.2)

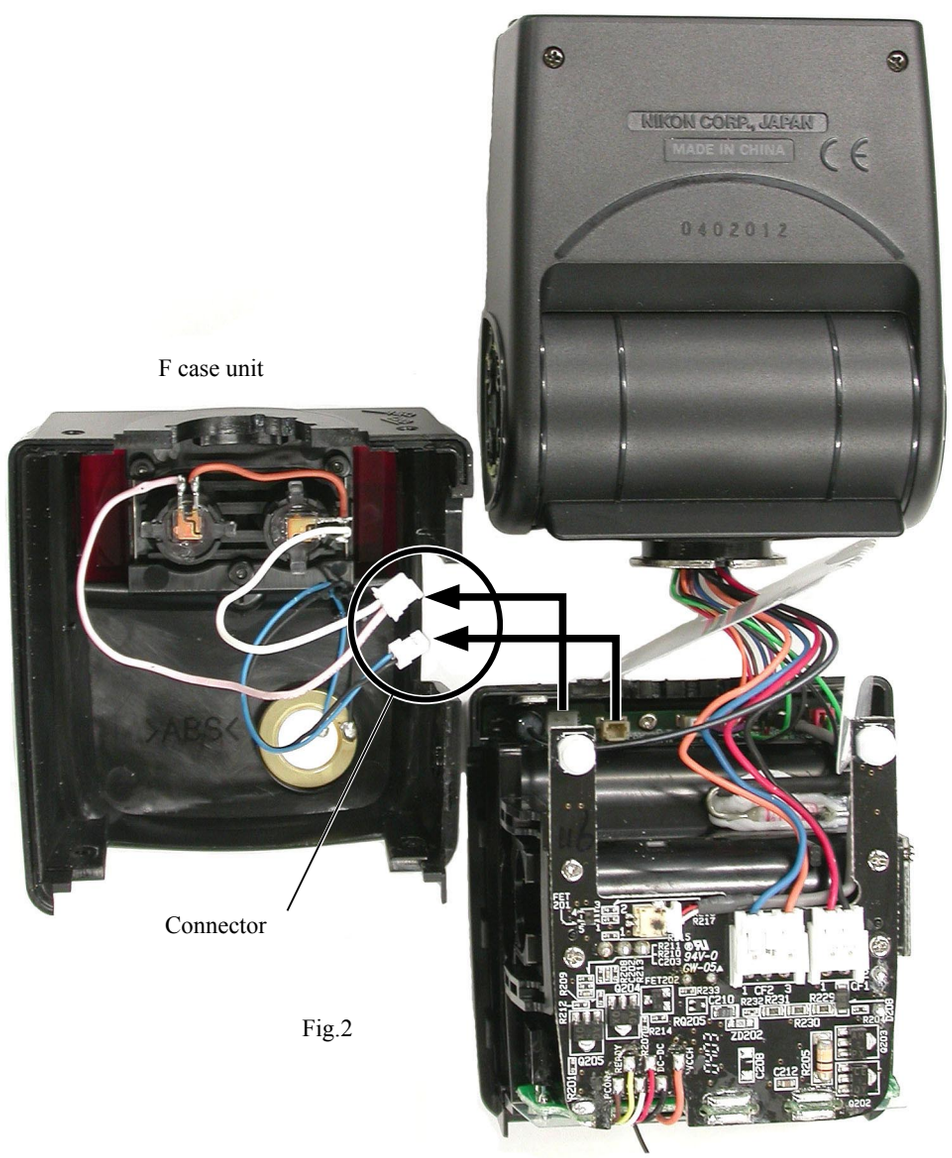


Fig.2

Separate Head unit

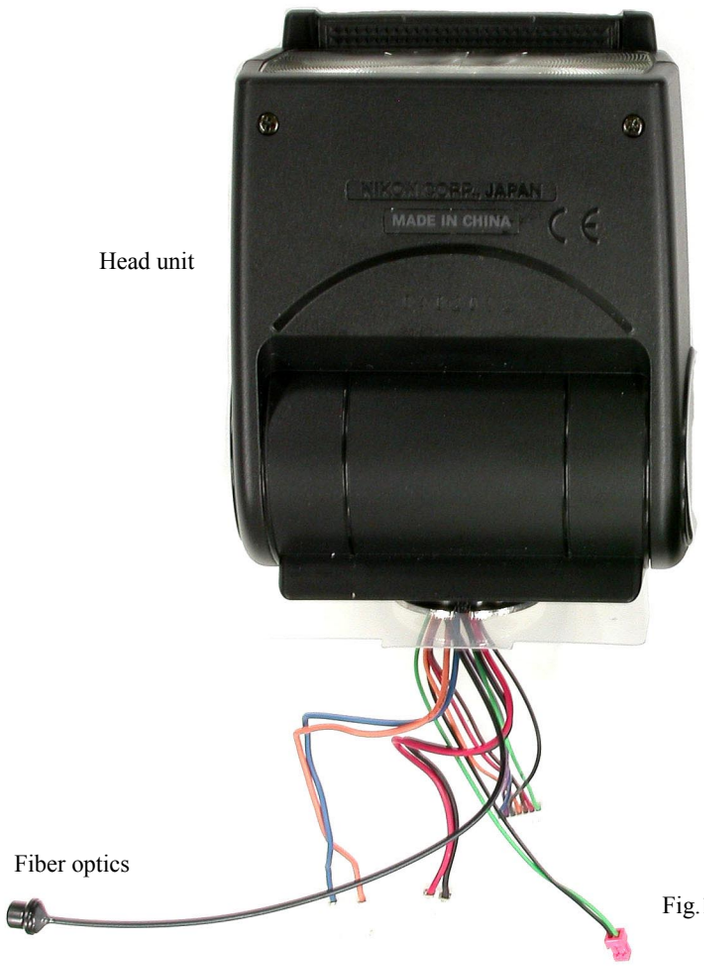
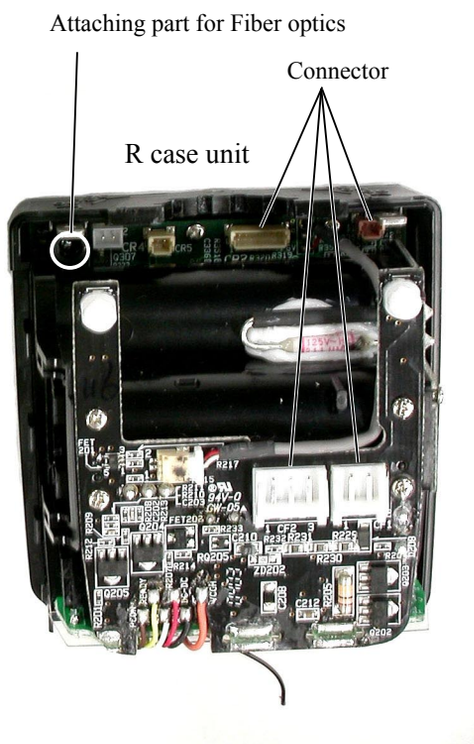


Fig.1



- Remove 4 connectors that are connected from the head unit. (ref. Fig.1)
- Remove the fiber optics. (ref. Fig. 2)
- Separate the head unit from the R case unit.

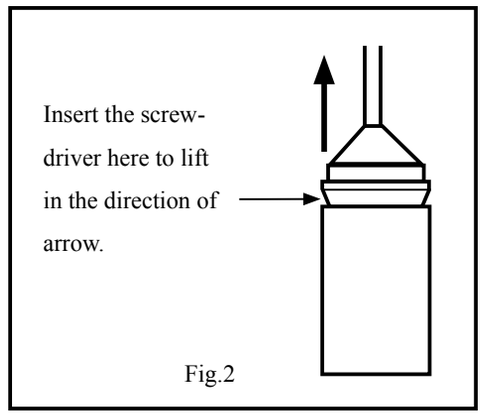
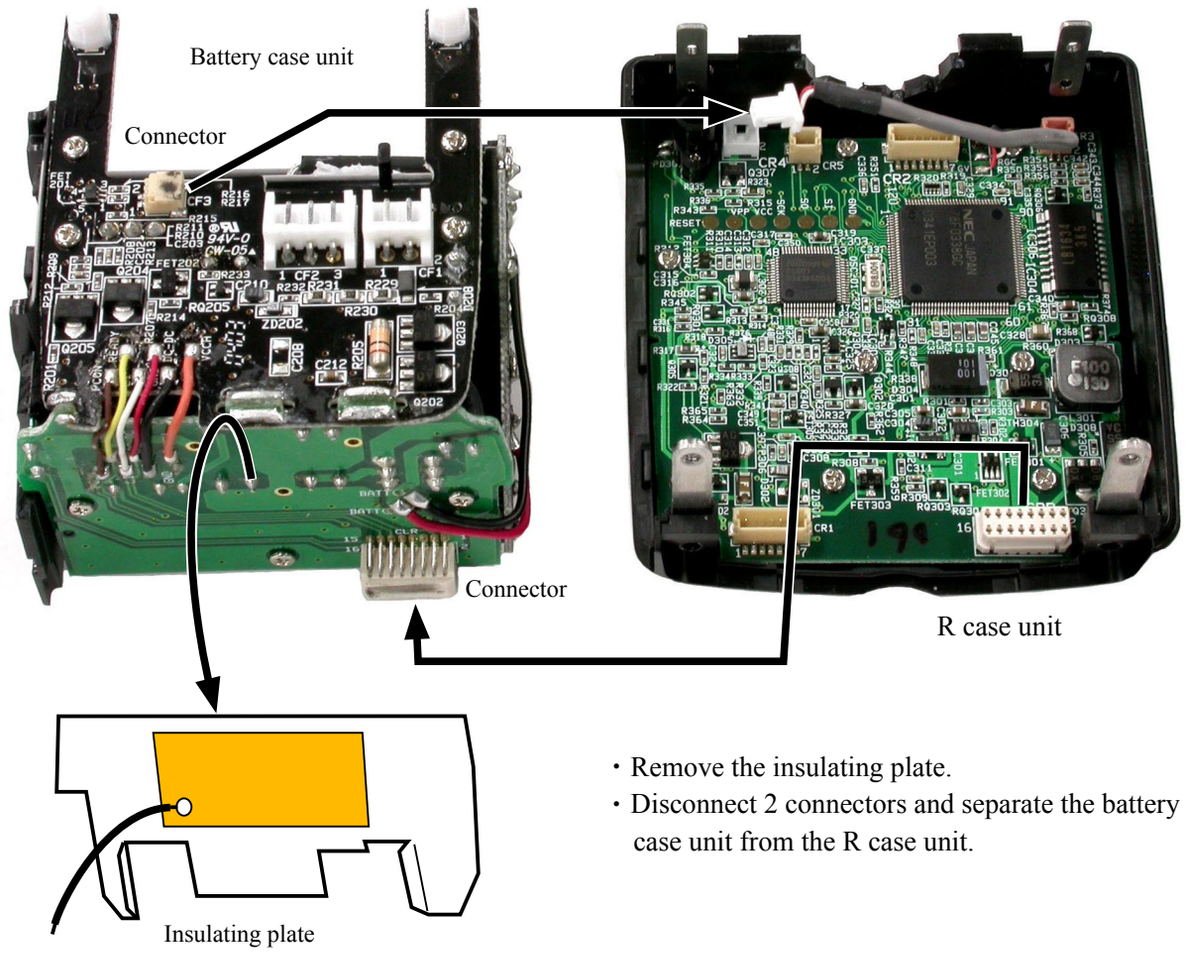


Fig.2

Battery case unit



・Remove the insulating plate.
・Disconnect 2 connectors and separate the battery case unit from the R case unit.

F-PCB, L-PCB

・Take out 7 screws (#226) and unsolder the L-PCB (to remove the red and black wires). (ref. Fig. 1)
・Detach the F-PCB and L-PCB at the same time from the battery case. (ref. Fig. 2)

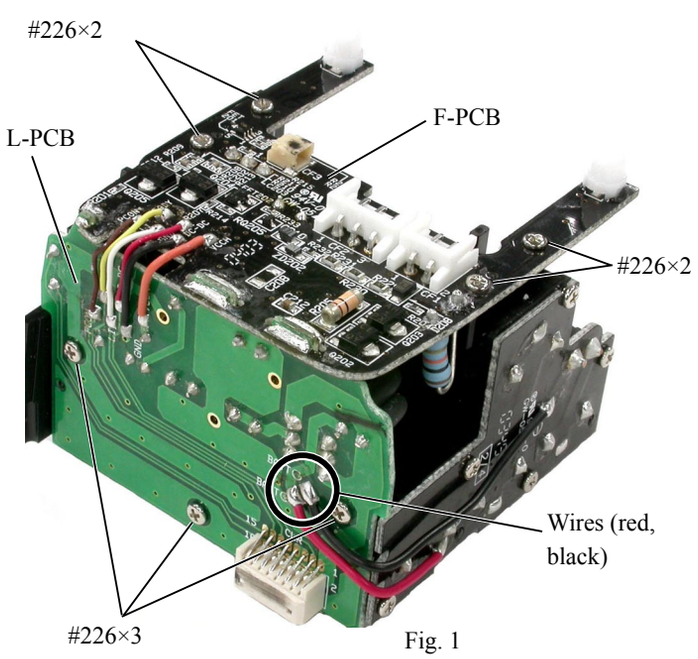


Fig. 1

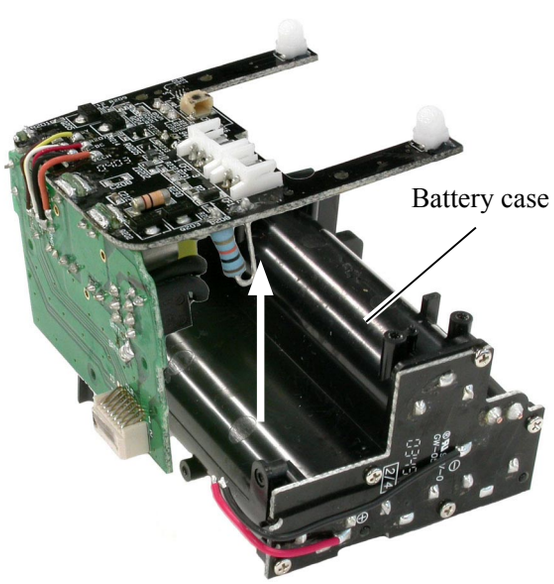
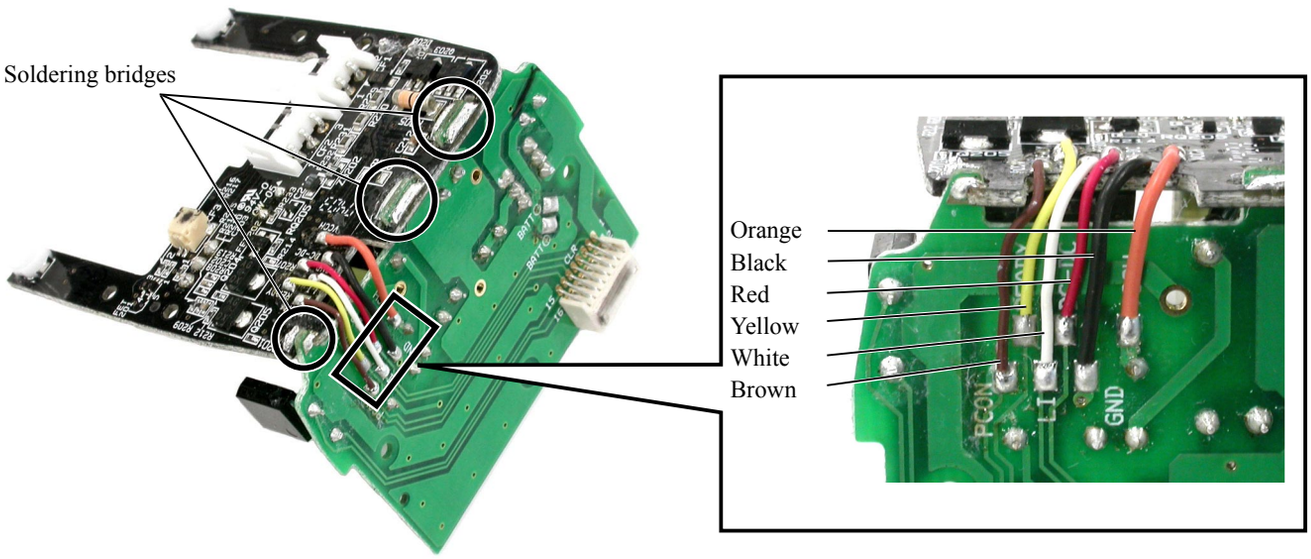
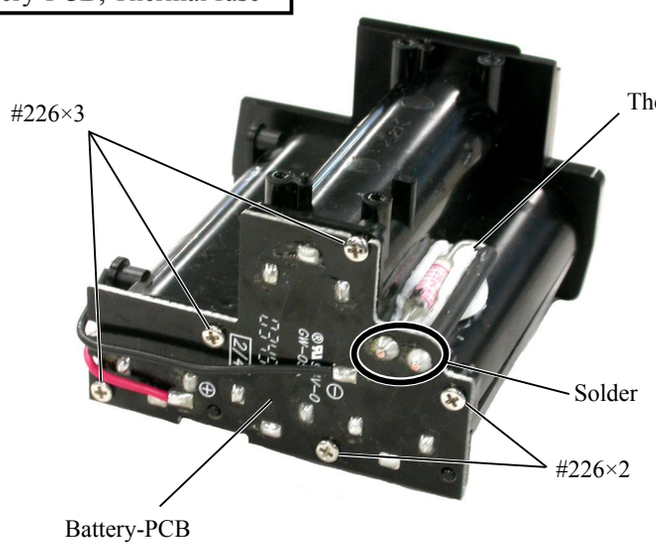


Fig.2

・Remove 3 soldering bridges and 6 soldering parts, and separate the F-PCB and L-PCB.



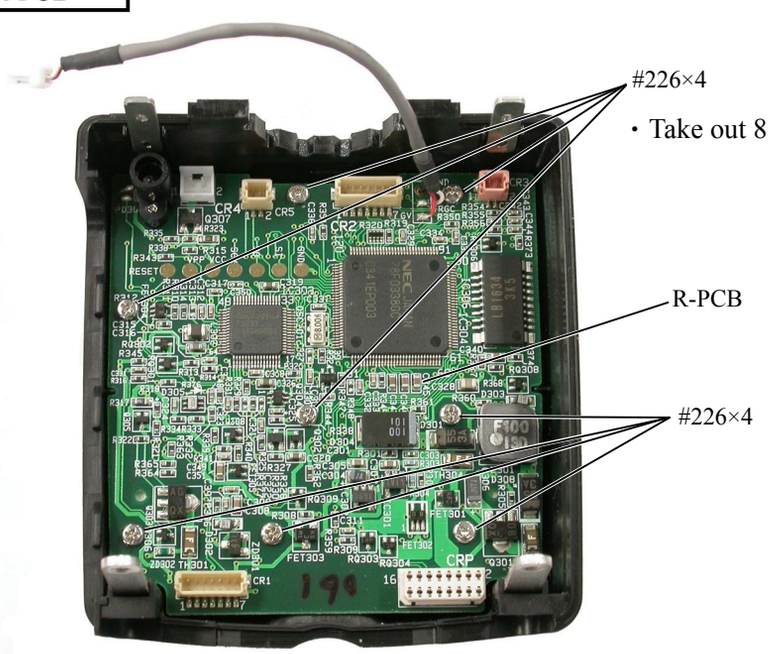
Battery-PCB, Thermal fuse



・Take out 5 screws (#226), and unsolder 2 parts of the thermal fuse. Then detach the battery-PCB from the battery box.

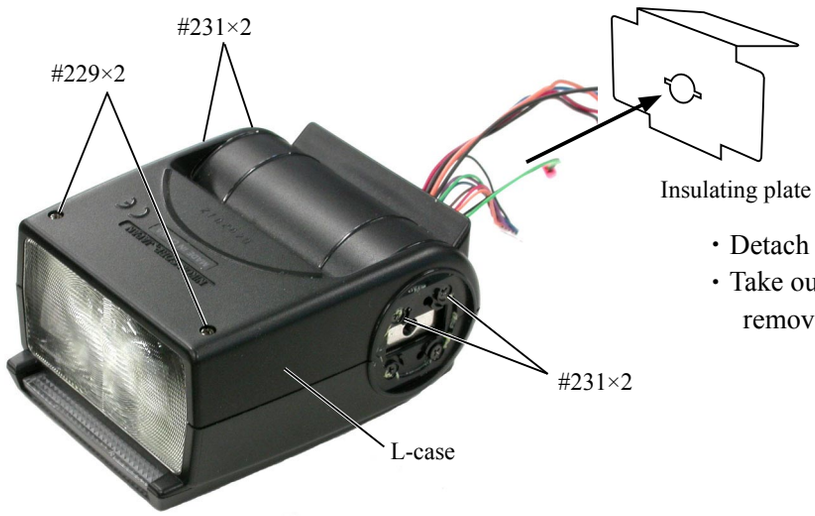
Note)
Unsolder the thermal fuse in a short time.
Otherwise, it may be damaged.

R-PCB



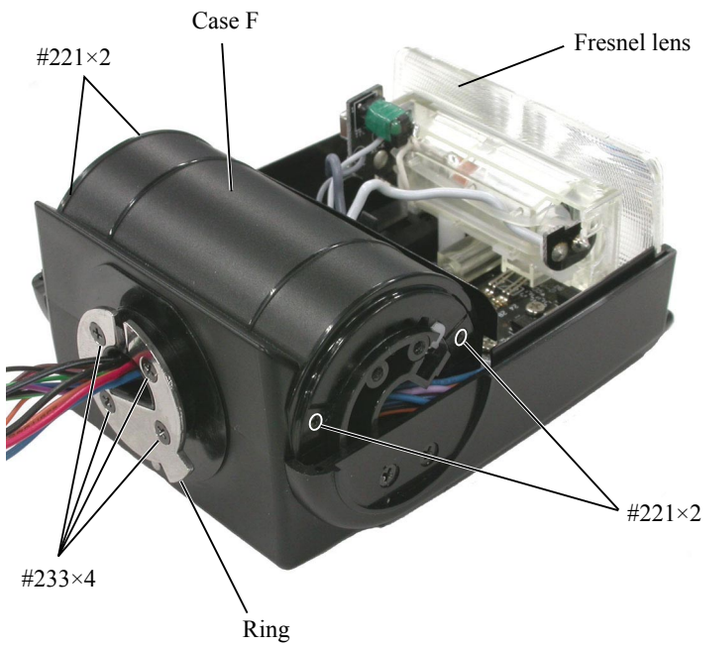
・Take out 8 screws (#226) to remove the R-PCB.

L-case



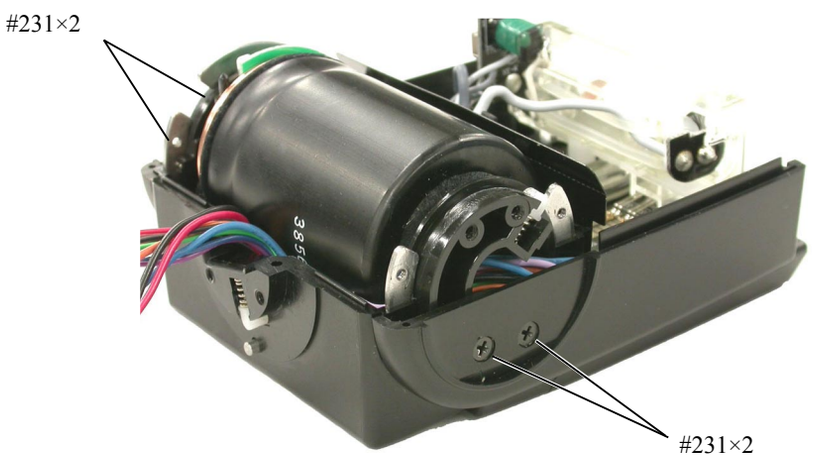
- Detach the insulating plate from the wires.
- Take out 2 screws (#229) and 4 screws (#231) to remove the L-case.

Bounce case F, Fresnel lens

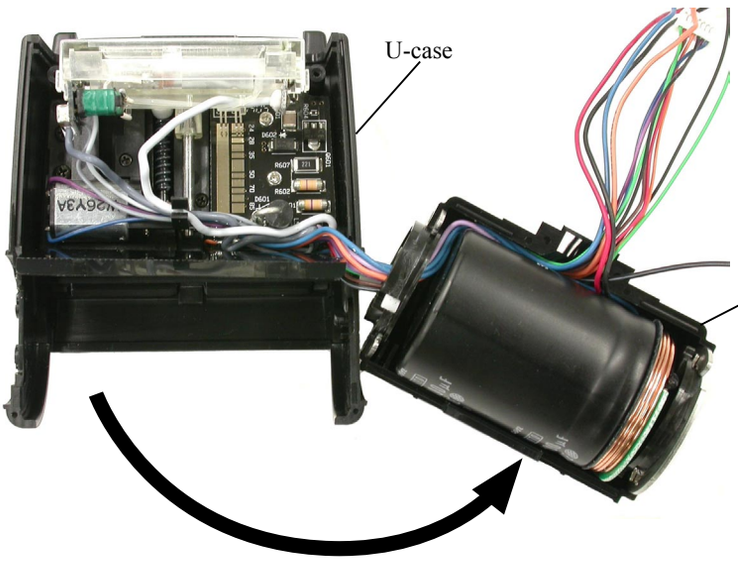


- Remove the fresnel lens.
- Take out 4 screws (#233) to remove the ring.
- Take out 4 screws (#221) to remove the bounce case F.

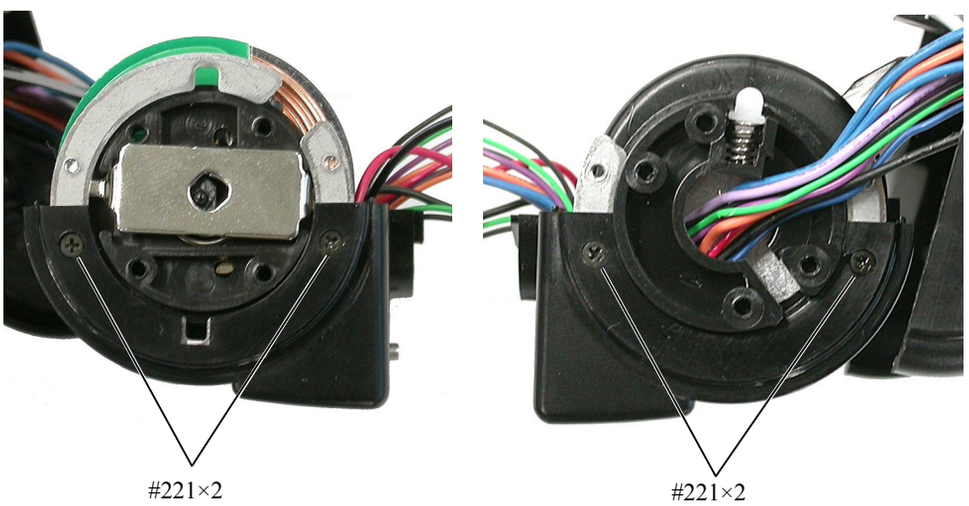
Bounce case R



- Take out 4 screws (#231).

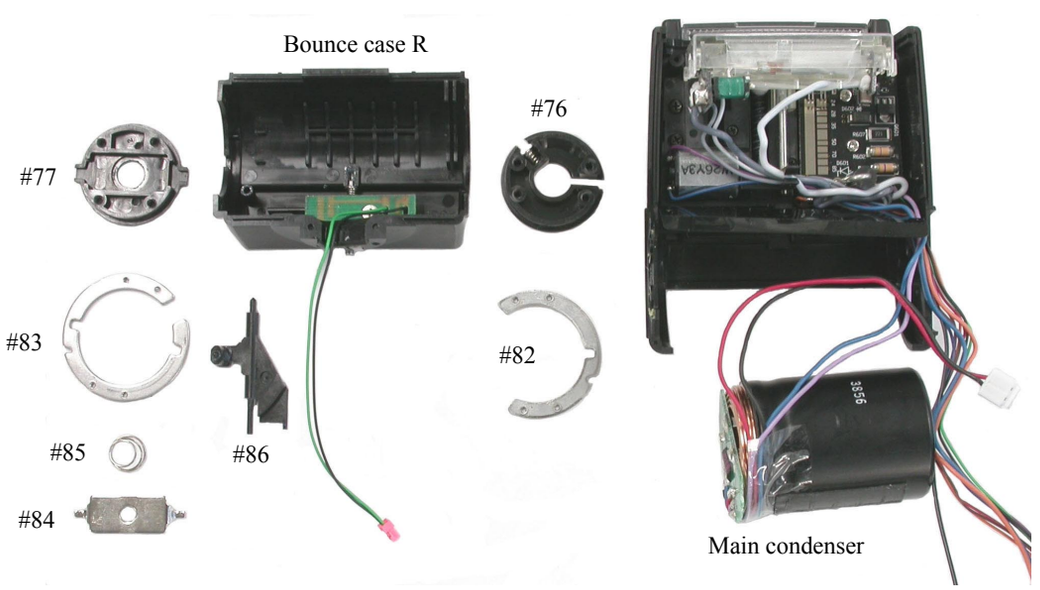


・Detach the bounce case R from the U-case.

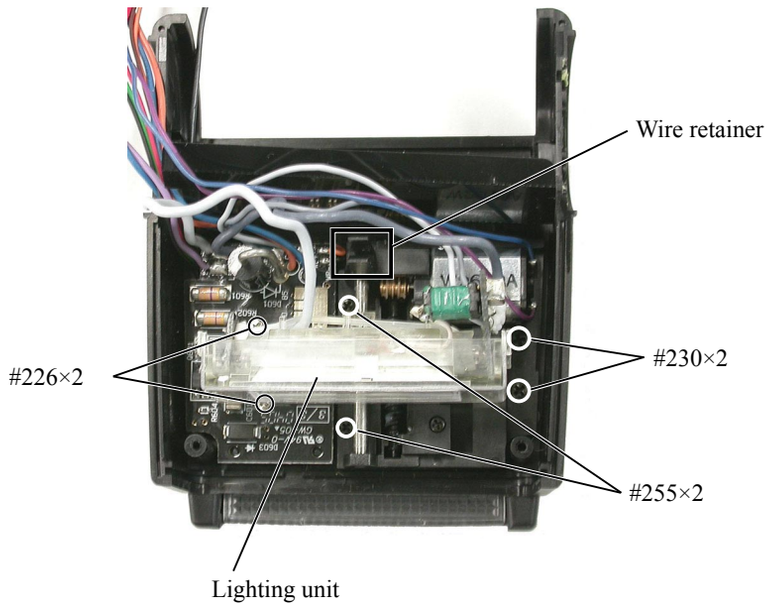


・Take out 4 screws (#221).

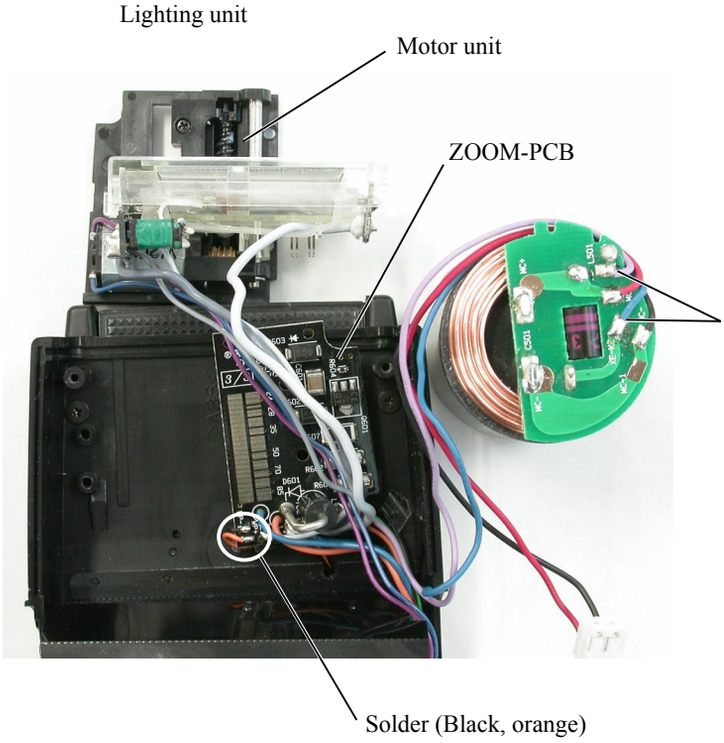
・By removing the main condenser, the parts can be disassembled as follows:



Motor unit, ZOOM-PCB

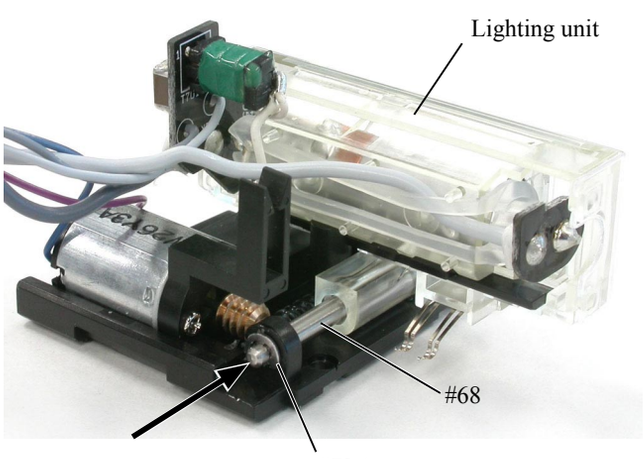


・Move the lighting unit to the left picture's position.
・Remove the wires from the wire retainer.
・Take out 2 screws (#226), 2 screws (#230) and 2 screws (#255).

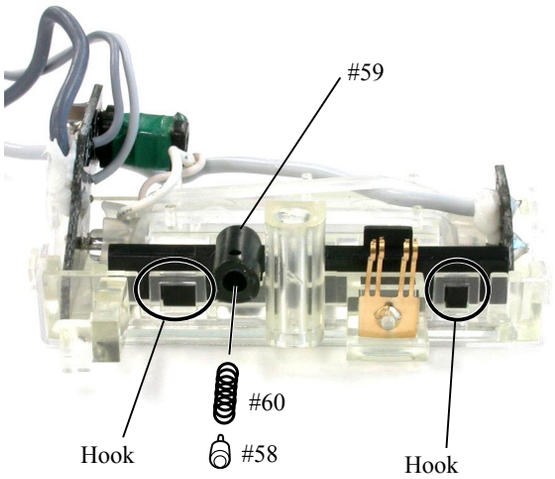


・Unsolder the main condenser (to remove blue and purple wires) and the ZOOM-PCB (to remove black and orange wires) to separate the ZOOM-PCB from the motor unit.

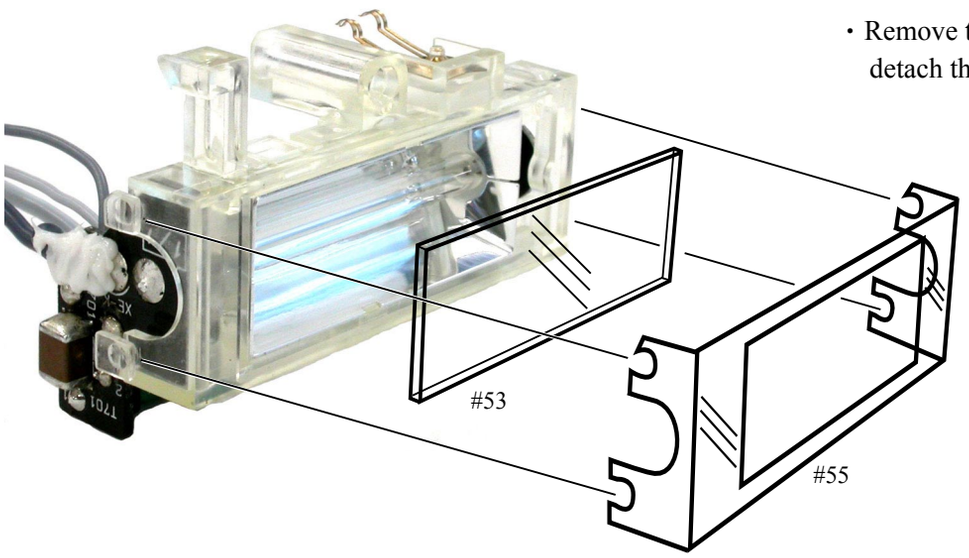
Lighting unit



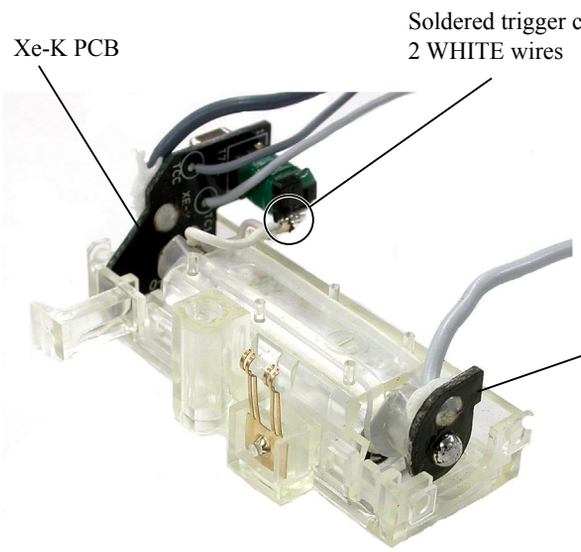
・Remove the E ring (#72).
*Attached with glue
・Push the guide shaft (#68) out in the direction indicated by the arrow, and remove the lighting unit.



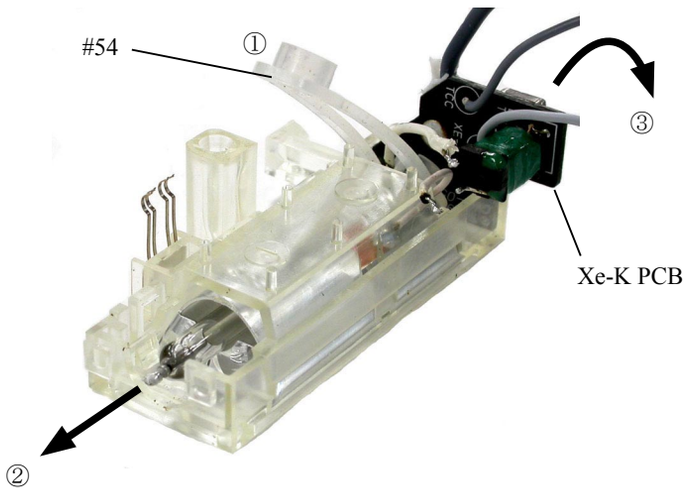
・Remove the spring (#60) and zoom pressure shaft (#58).
・Remove the left 2 hooks and zoom pressure shaft holder (#59).



・Remove the glass retainer (#55) to detach the glass panel (#53).

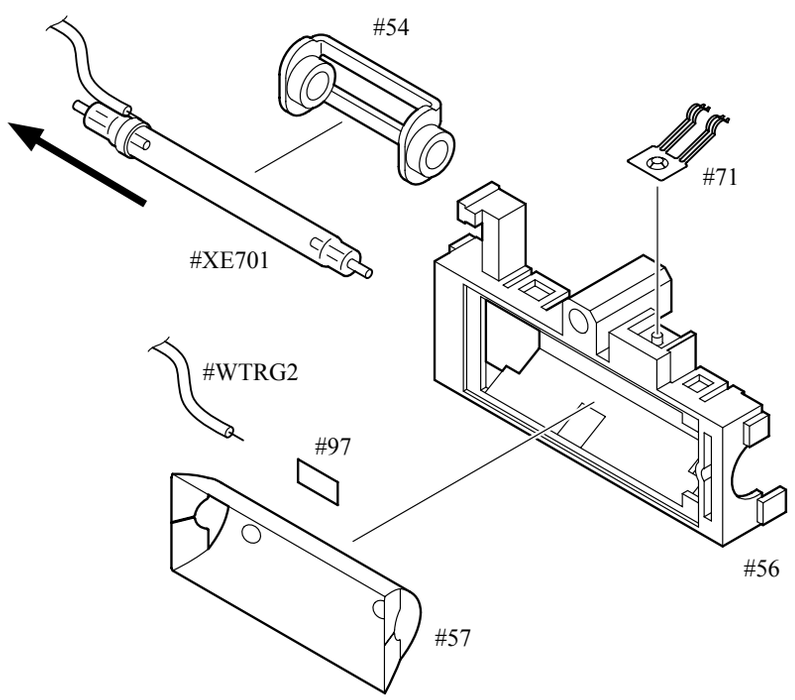


・Unsolder the trigger coil to remove 2 (white) wires.
・Unsolder the Xe-tube at both ends to remove the Xe-A PCB and Xe-K PCB by using wicking wire.
・Remove the Xe-A PCB.



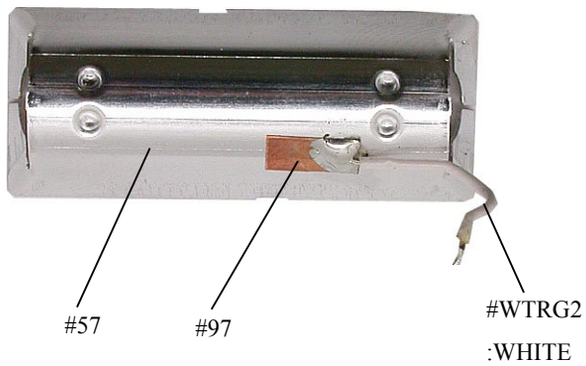
・Remove the ① Xe-A side of the Xe-band (#54).
・Pull out the Xe-tube a little in the direction of the arrow (②), and remove the Xe-K PCB by pulling it in the direction of ③ .

・The lighting unit can be disassembled as follows:

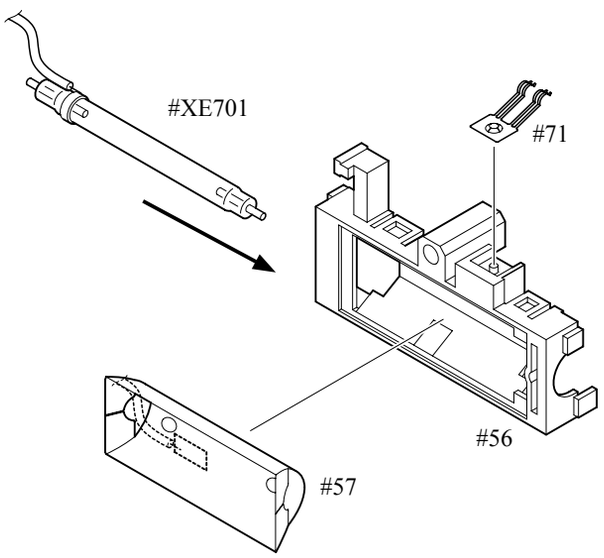


Assembly

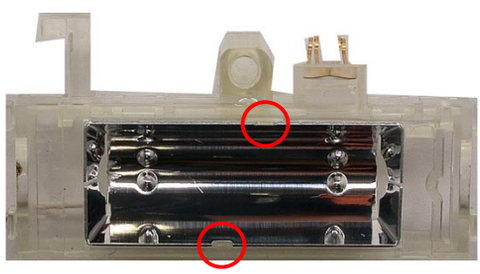
Lighting unit



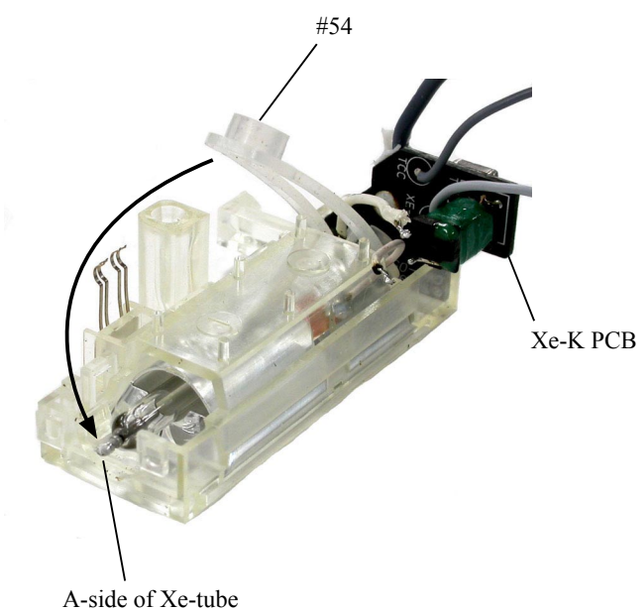
・Attach the conductive tape (#97) on the reflector (#57).
・Solder the wire (#WTRG2).



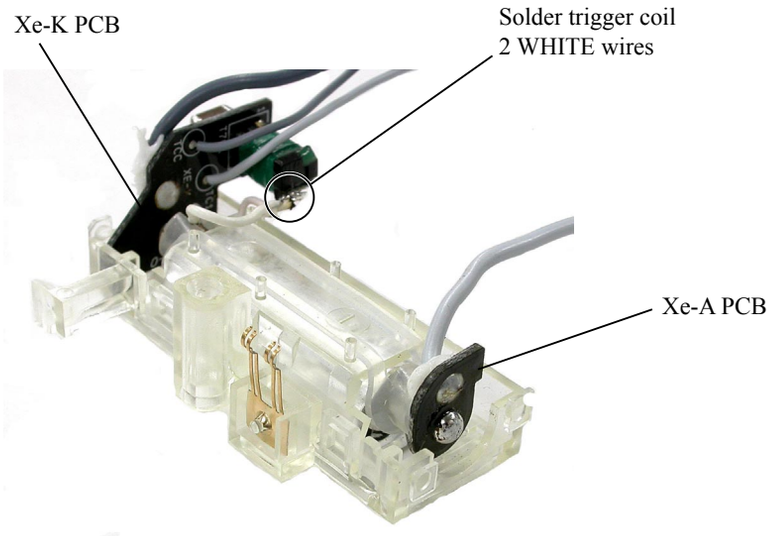
・Attach the zoom brush (#71) on the reflector holder (#56).
・Attach the reflector (#57).
＊ Note: Check that the below 2 parts are hooked tightly.



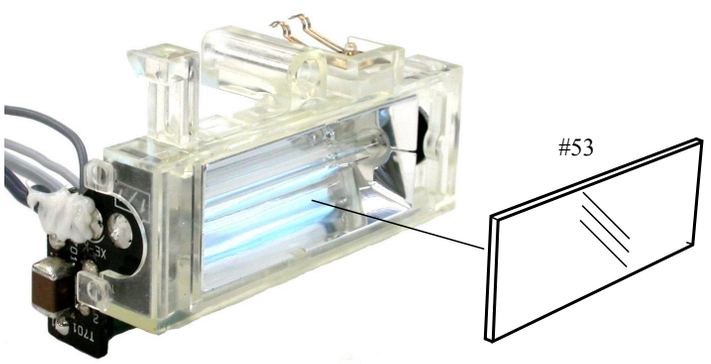
・Insert the Xe-tube (#XE701) in the direction of the arrow.



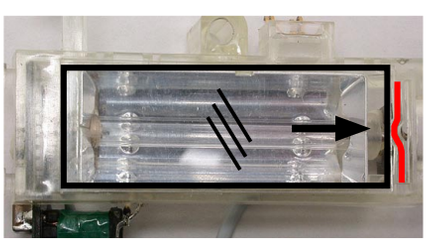
・While hooking the one part (slot side) of the Xe band (#54) as shown left, attach the Xe-K PCB. (Insert the terminal of the Xe-tube into the hole of the Xe-K PCB.)
・ Hook the other part of the Xe band (#54) to the A-side of the X-tube by following the arrow.

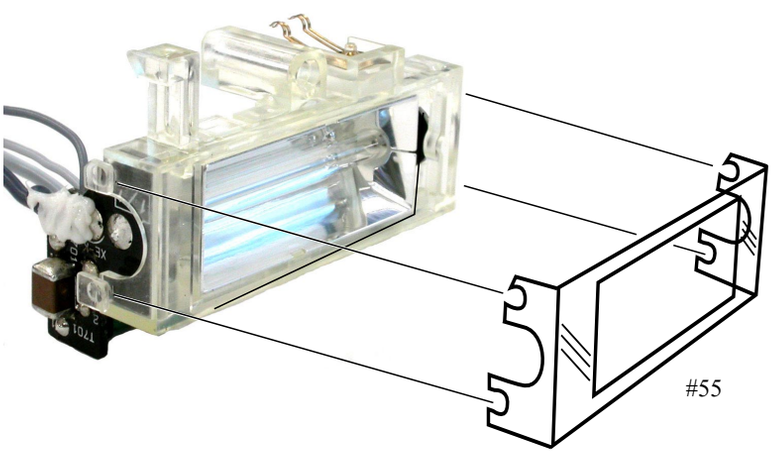


・Attach the Xe-A PCB to the Xe-tube.
・Solder the Xe-A PCB, Xe-K PCB, and Xe-tube.
・Solder 2 (white) wires of the trigger coil.



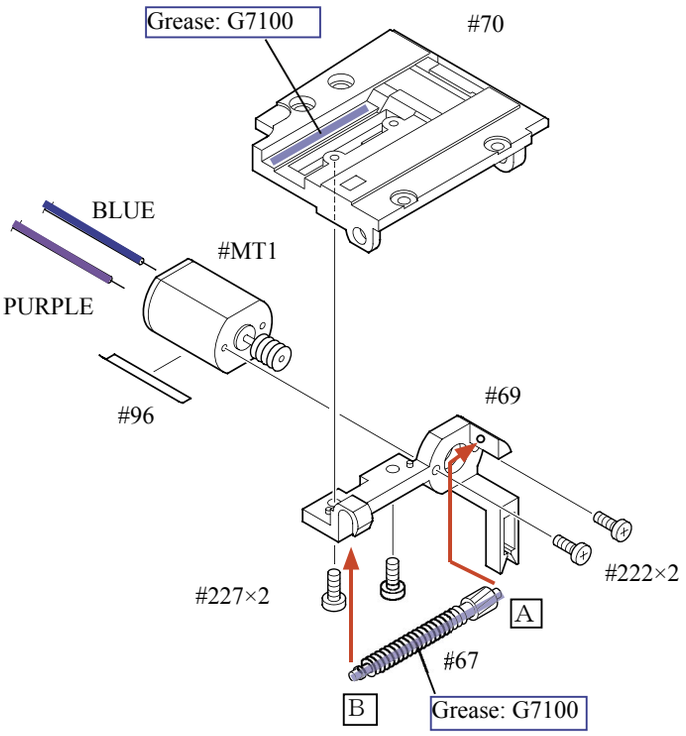
・Attach the glass panel (#53) to the lighting unit while pressing it in the below direction.
(Red part works as retainer.)





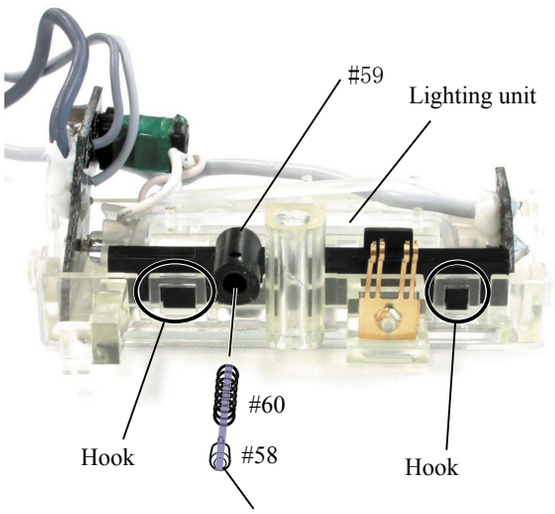
・Attach the glass retainer (#55).

Motor unit



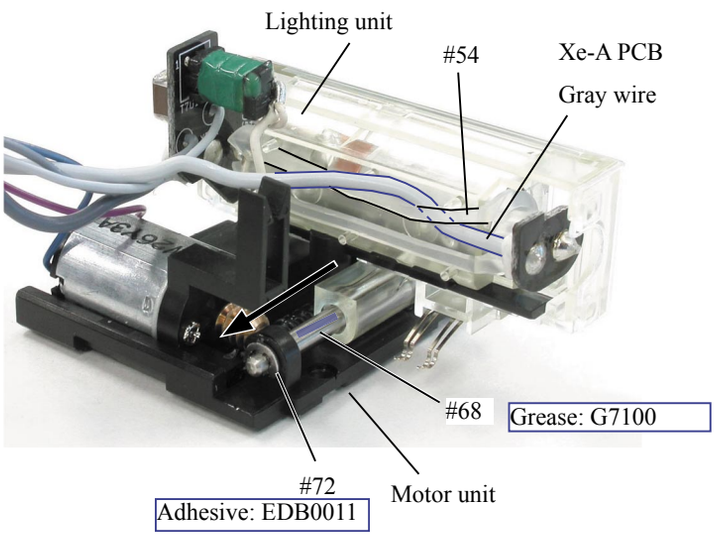
・First, put the A part of the zoom shaft (#67) into the hole of the motor holder (#69), then push the B part of it into #69.

・Solder 2 wires on the ZOOM motor.



・Insert the zoom pressure shaft holder (#59) into the lighting unit, and fix the 2 hooks as shown left.

・Insert the spring（#60) and zoom pressure shaft (#58).



・By handling the above spring (#60) and zoom pressure shaft (#58) with care, assemble the lighting unit and motor unit.

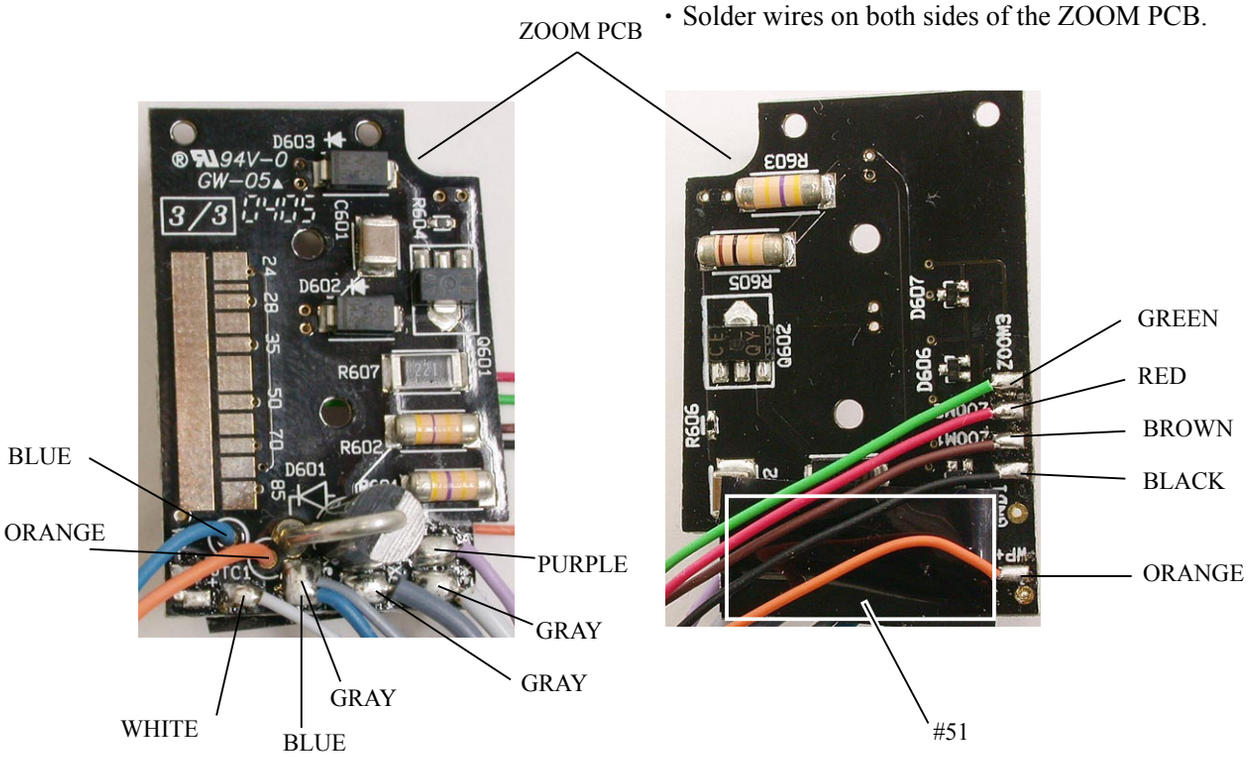
・Insert the guide shaft (#68) in the direction indicated by the arrow, and attach the E-ring (#72).

・Apply the screw lock (EDB0011) a little on the contact part of the E-ring and guide shaft.

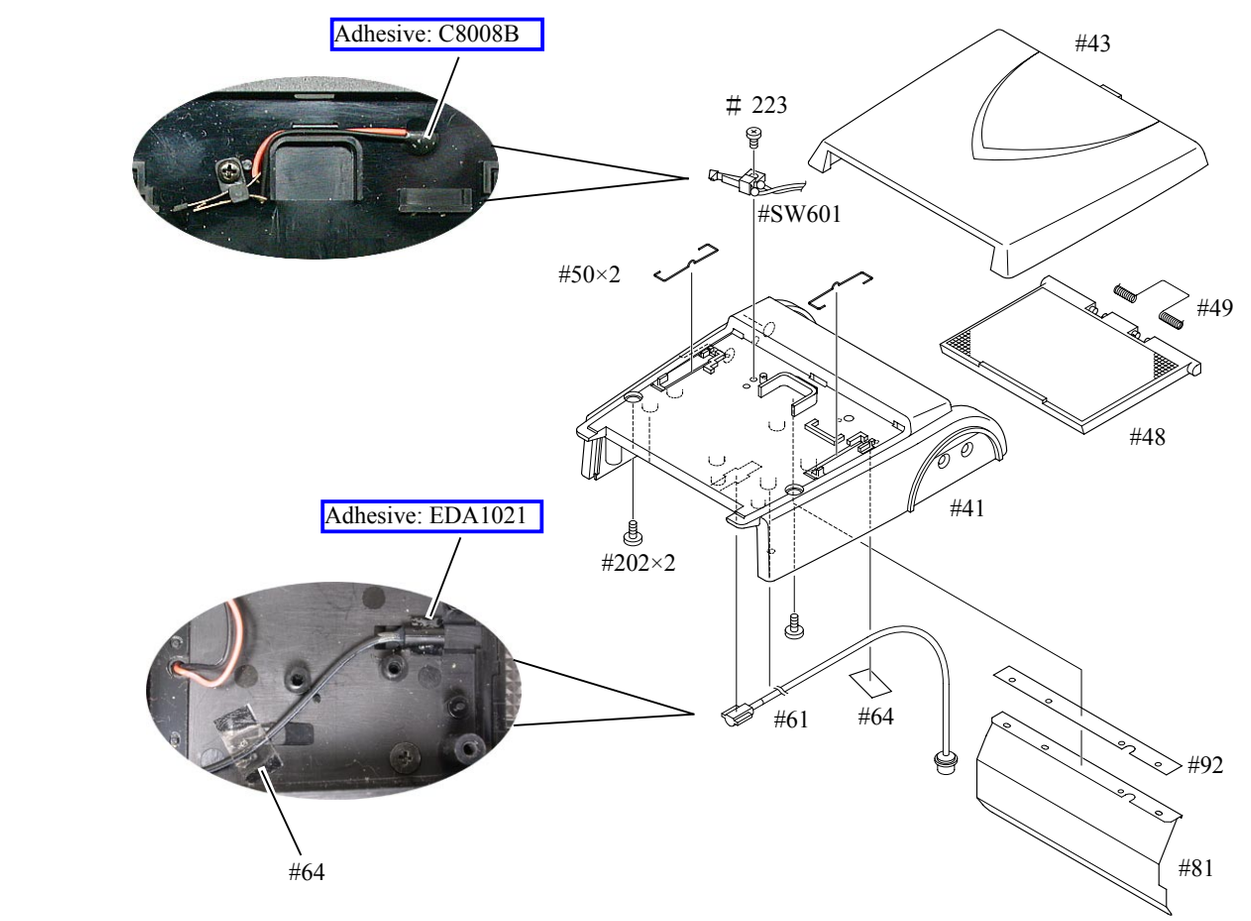
・Pass the gray wire of the Xe-A PCB through under the Xe band (#54).

ZOOM PCB

・Solder wires on both sides of the ZOOM PCB.

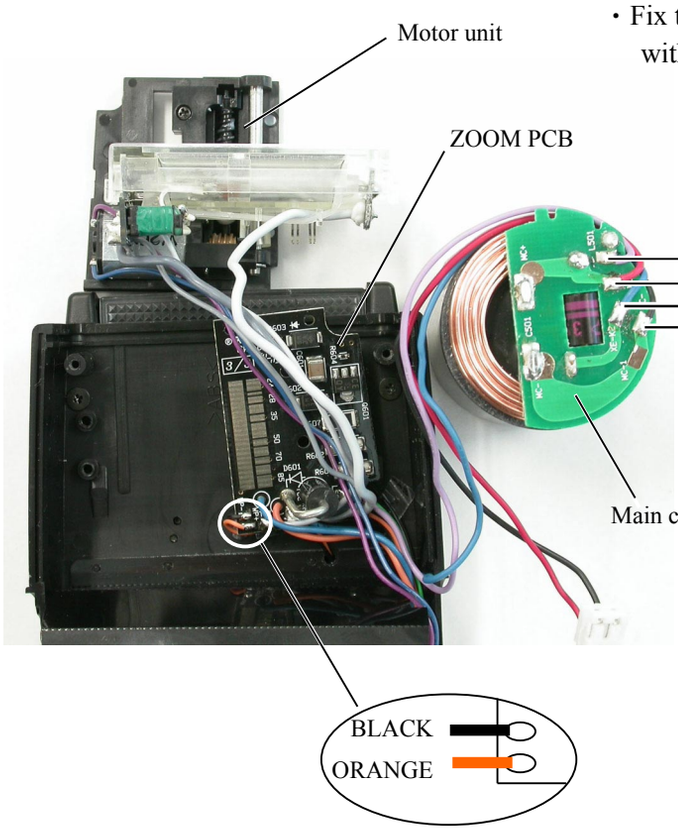


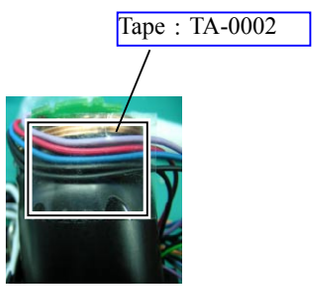
U case

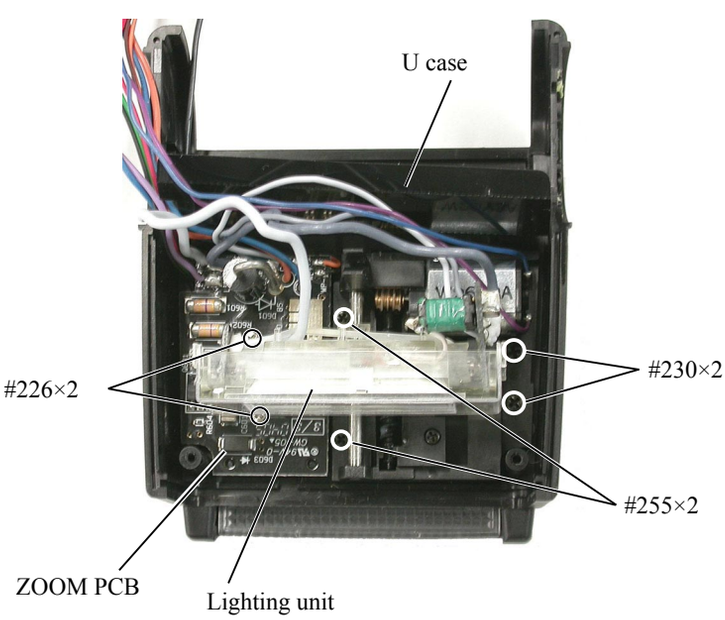


Main condenser

- Solder 4 wires on the main condenser.
- Solder 2 wires on the ZOOM PCB.
- Fix the 4 wires that are connected from the main condenser with the tape (TA-0002).

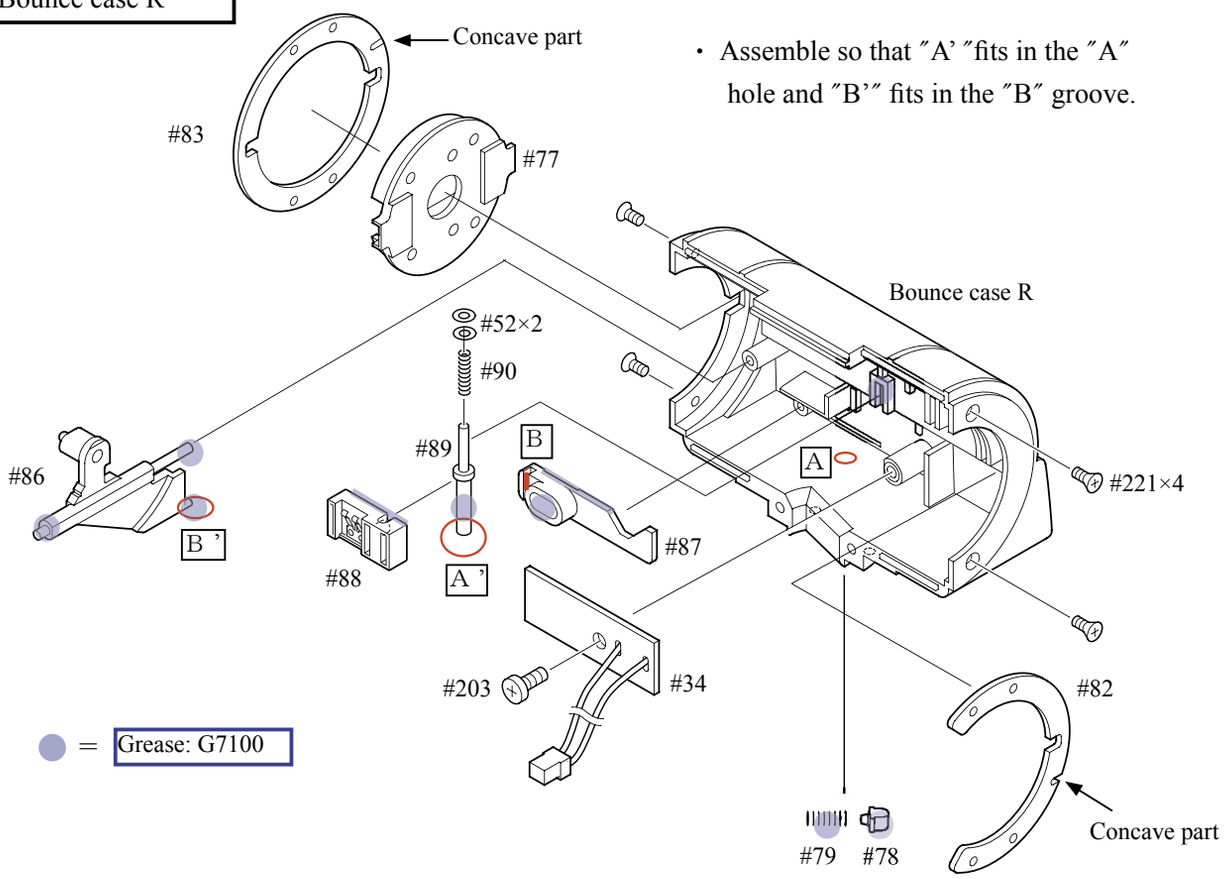






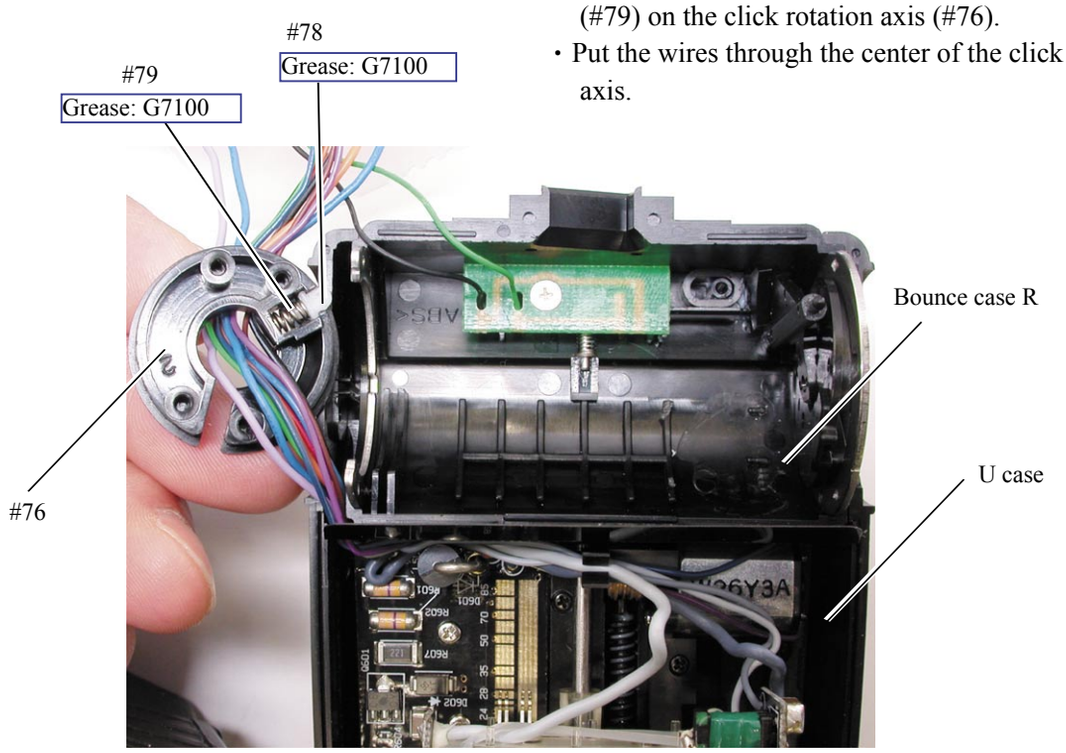
- Attach the ZOOM PCB on the U case with 2 screws (#226).
- Move the lighting unit to the left position, then attach it with 2 screws (#230) and 2 screws (#255).

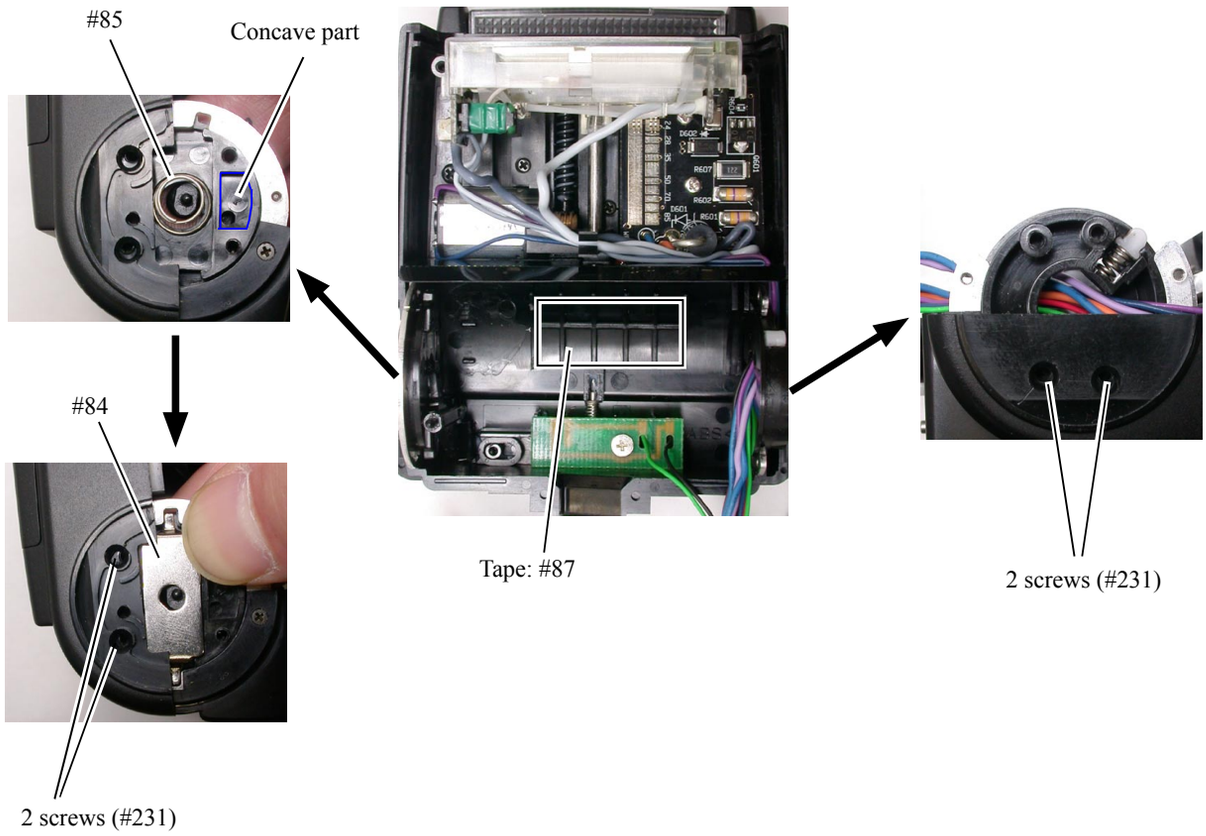
Bounce case R



・Assemble so that ″A'″fits in the ″A″ hole and ″B'″ fits in the ″B″ groove.

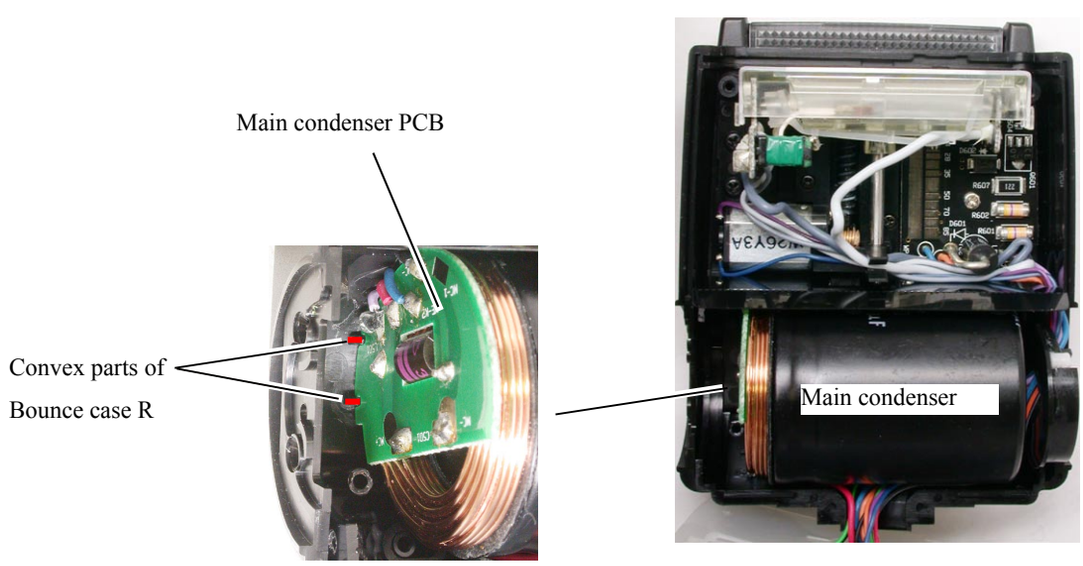
・Assemble the bounce case R into the U case.
・Attach the bounce roller (#78) and bounce roller spring (#79) on the click rotation axis (#76).
・Put the wires through the center of the click rotation axis.



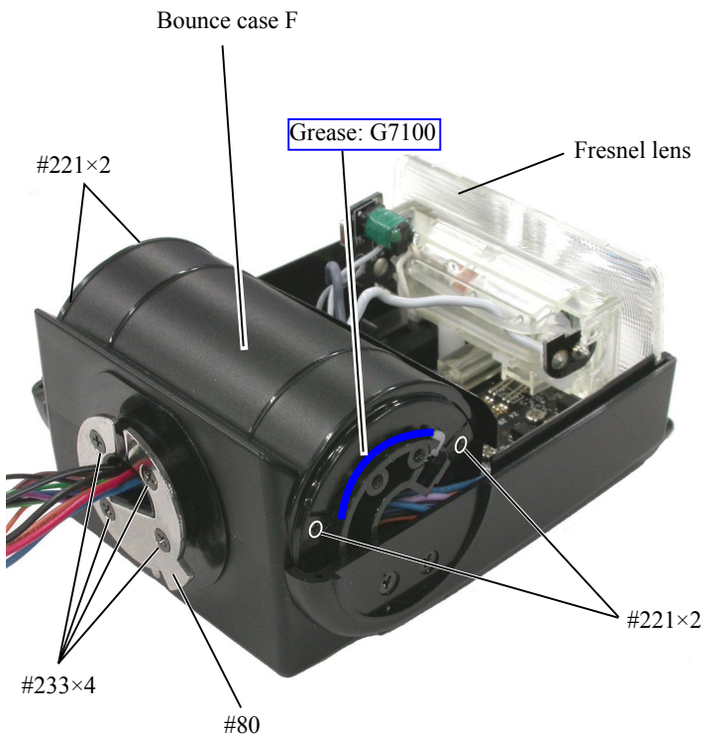


・Assemble the main condenser.

＊ Note: Assemble so that the convex parts of the bounce case R enters in the concave parts of the main condenser PCB.

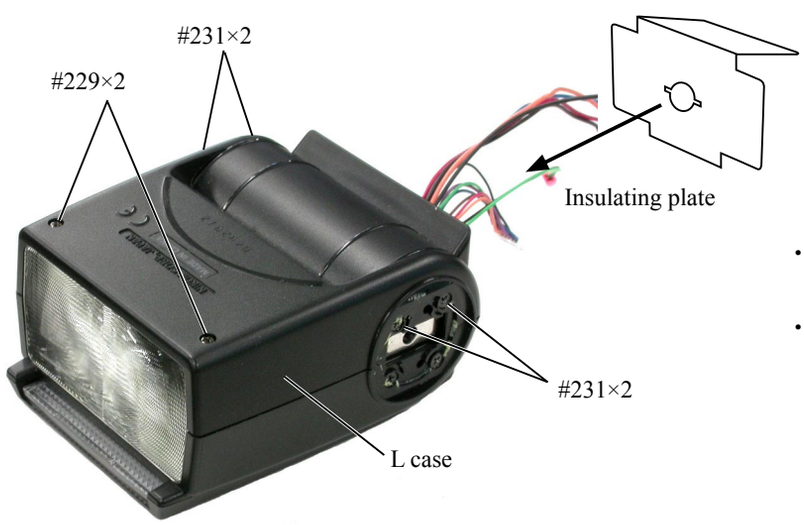


Bounce case F, Fresnel lens



- Attach the bounce case F with 4 screws (#221).
- Attach the ring (#80) with 4 screws (#233).
- Attach the fresnel lens.
- Apply the grease (G7100) on the bounce roller moving part.

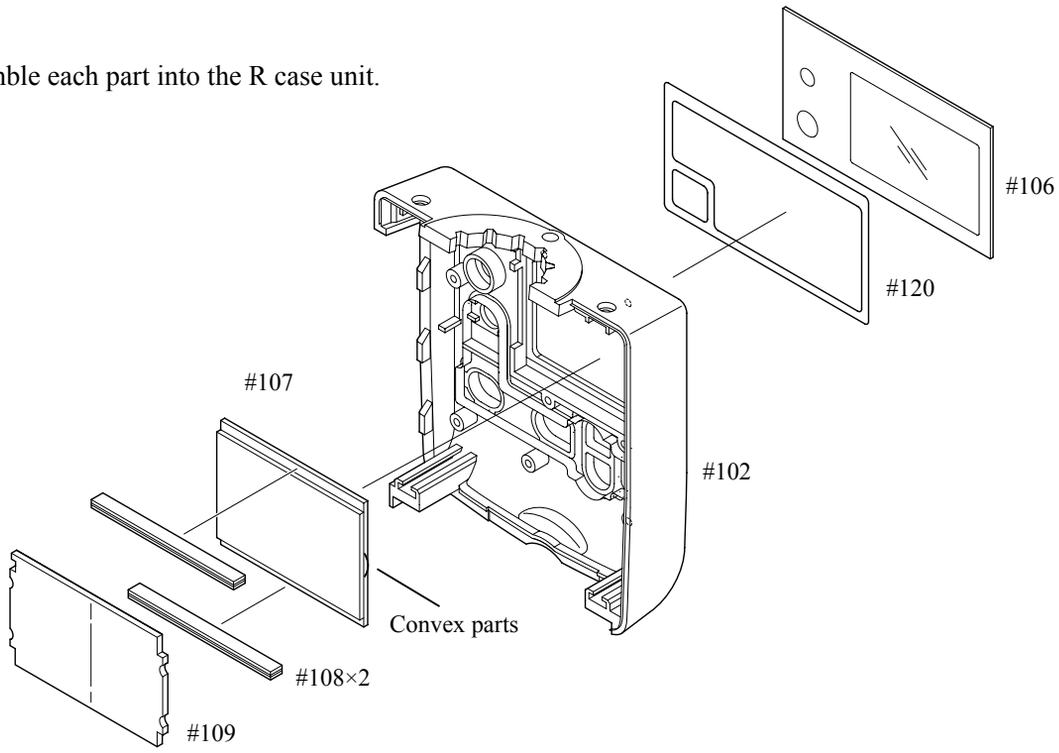
L case

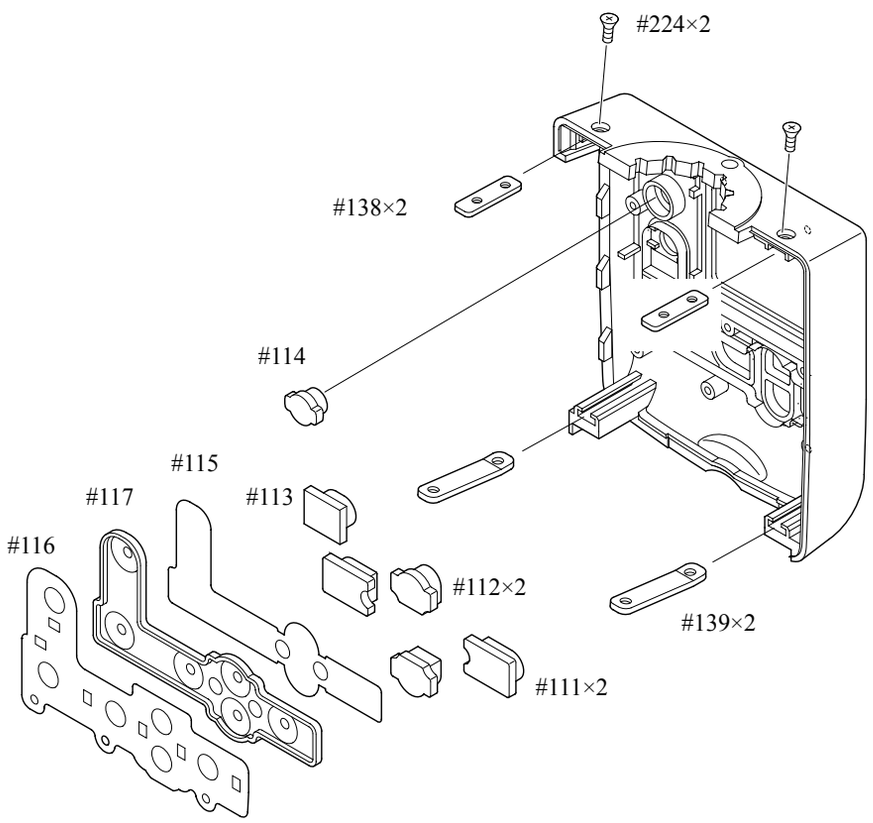


- Attach the L case with 2 screws (#229) and 4 screws (#231).
- Pass the wires through the hole of the insulating plate.

R case unit

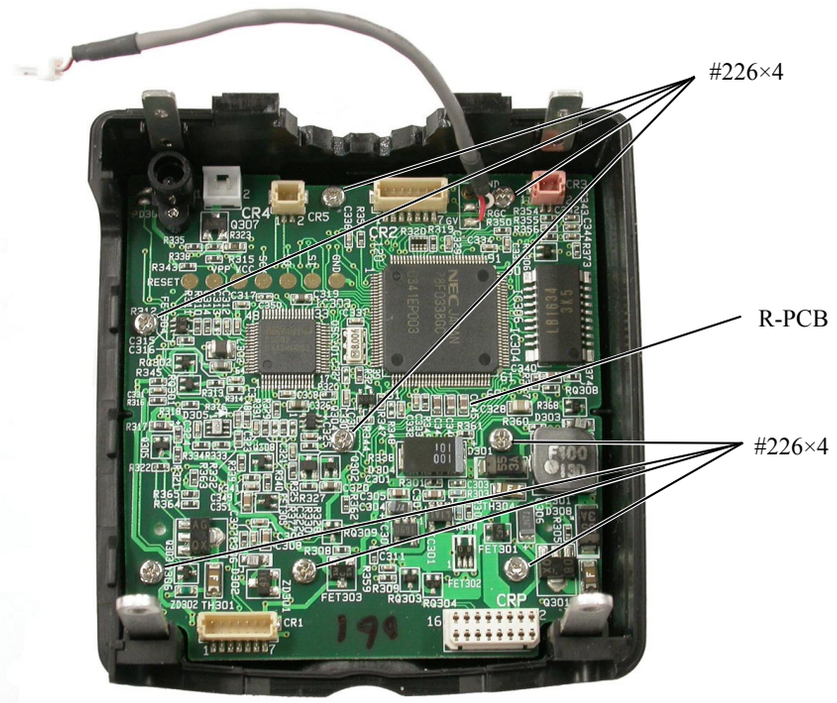
・Assemble each part into the R case unit.





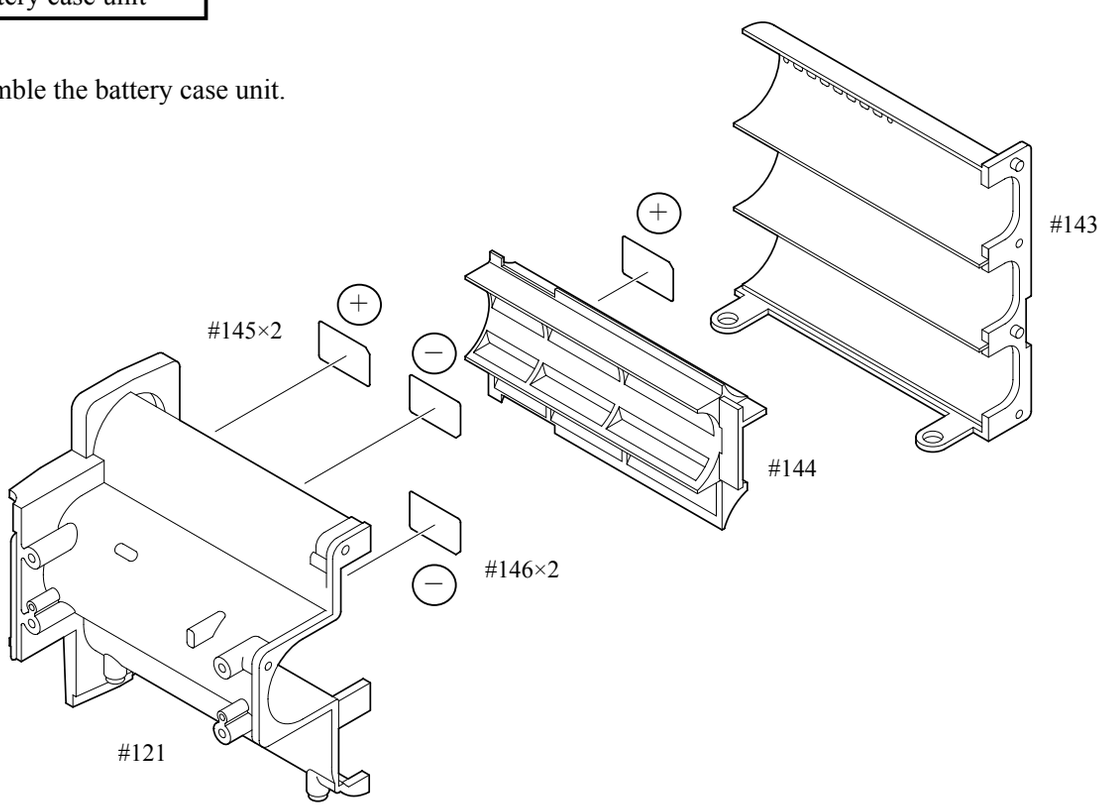
R PCB

・Attach the R-PCB with 8 screws (#226).

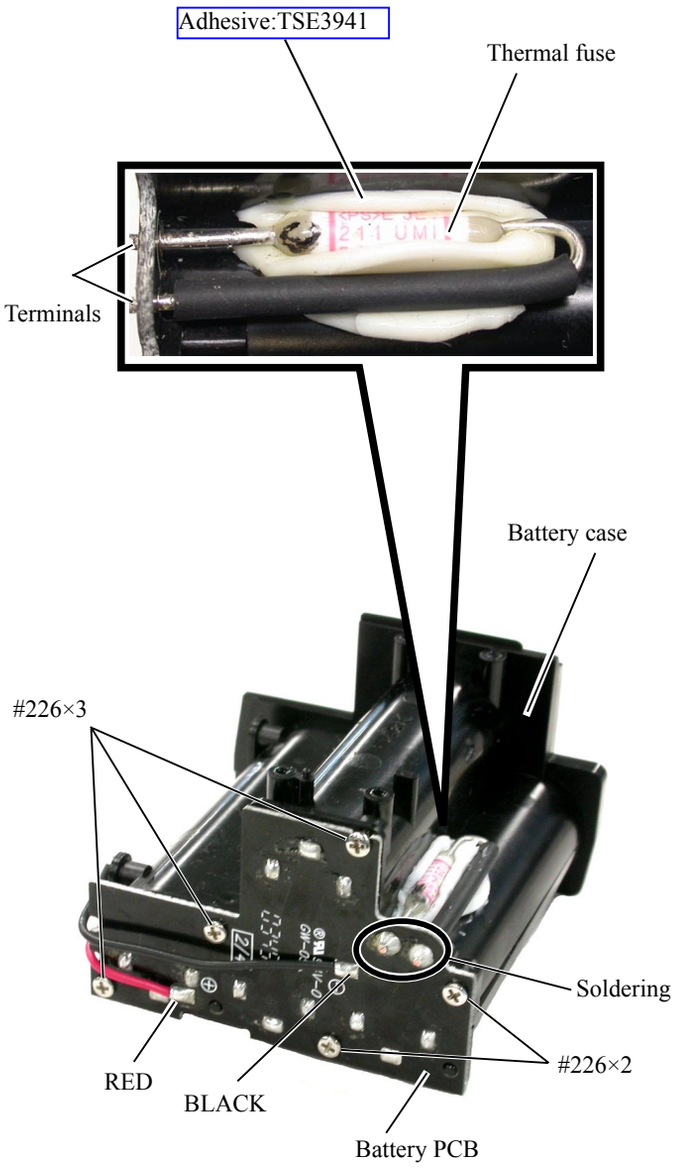


Battery case unit

・Assemble the battery case unit.



Thermal fuse, Battery PCB



・Attach the battery PCB with 5 screws (#226) on the battery case.

・Apply the adhesive (TSE3941) on the battery case, and fit the thermal fuse as shown left (by putting the terminals of the thermal fuse into the holes of the battery PCB.)

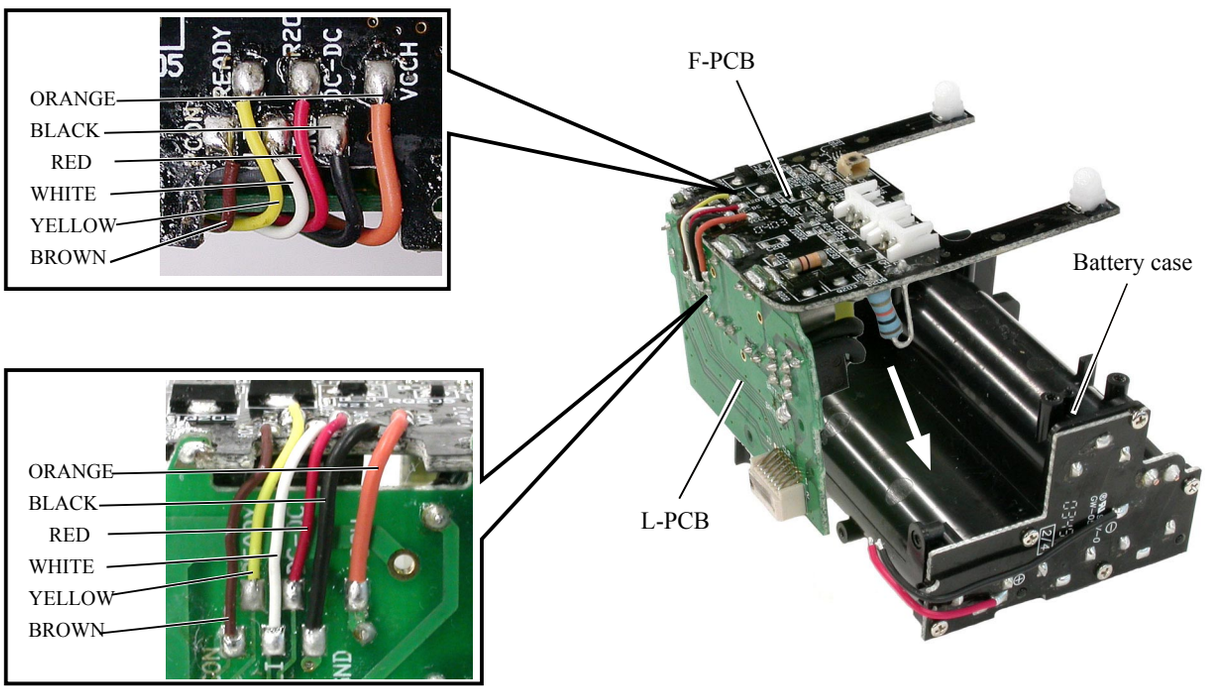
Caution: Using the adhesive other than TSE3941 may cause malfunction of the thermal fuse.
Use this adhesive only.

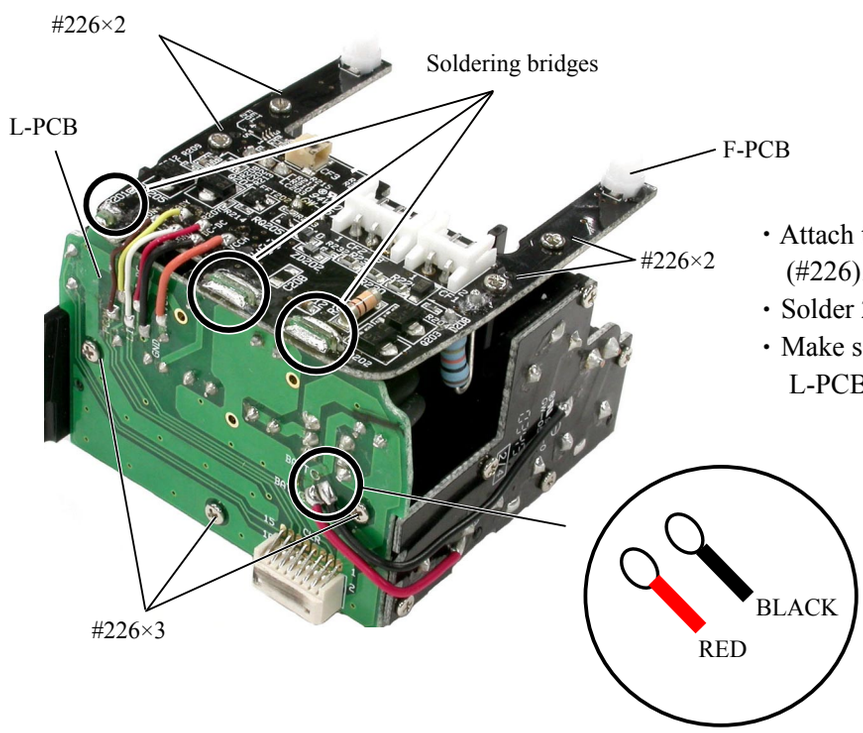
・Solder the thermal fuse.

Caution: Taking time to solder the thermal fuse may cause a damage to the thermal fuse.
Solder it in the shortest possible time.

F-PCB, L-PCB

・Solder 6 wires on the F-PCB and L-PCB.
・Assemble the F-PCB and L-PCB into the battery case.
(At this stage, do NOT make soldering bridges of the F-PCB and L-PCB.)

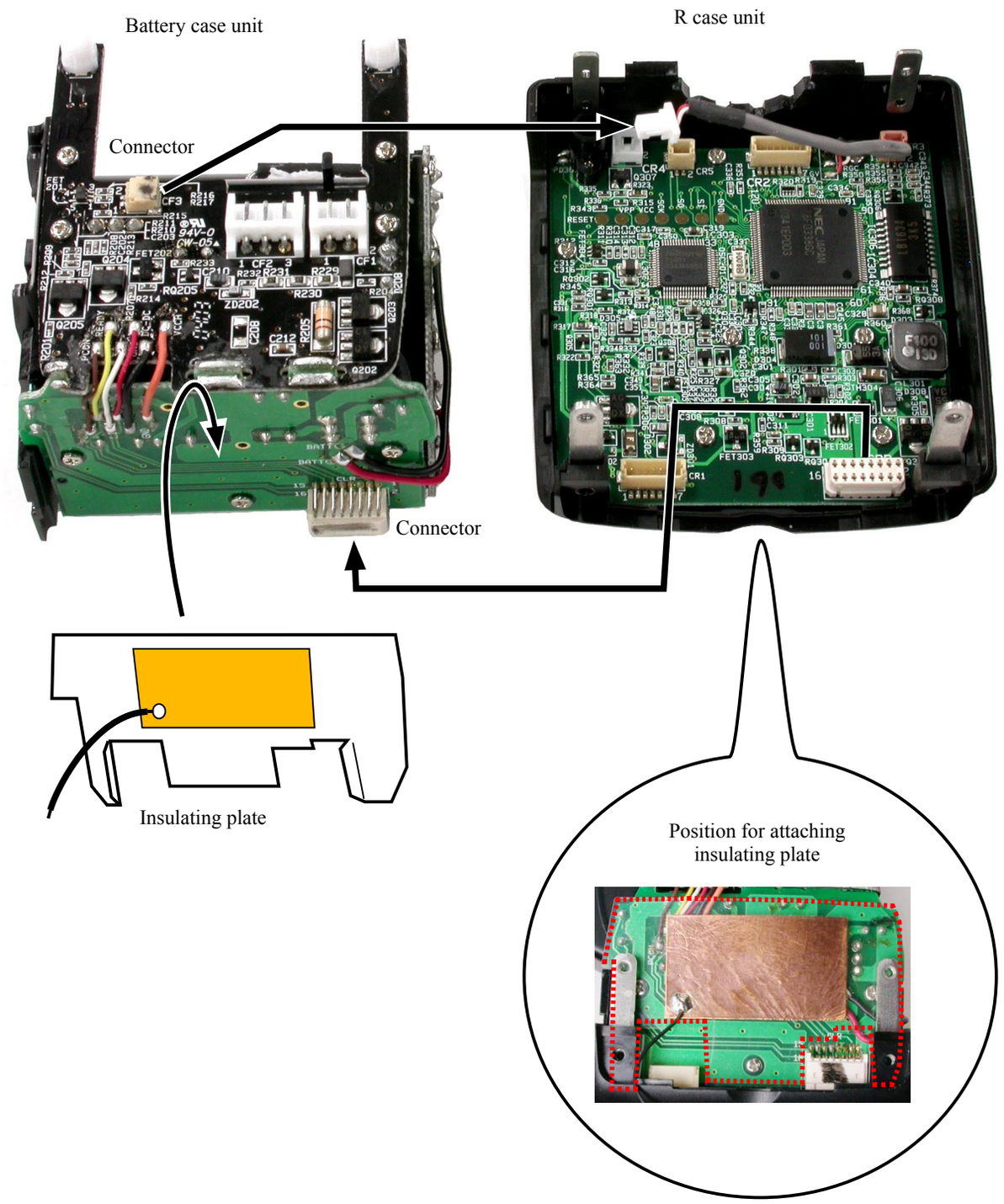




・Attach the F-PCB and L-PCB with 7 screws (#226).
・Solder 2 wires on the L-PCB.
・Make soldering bridges of the F-PCB and L-PCB.

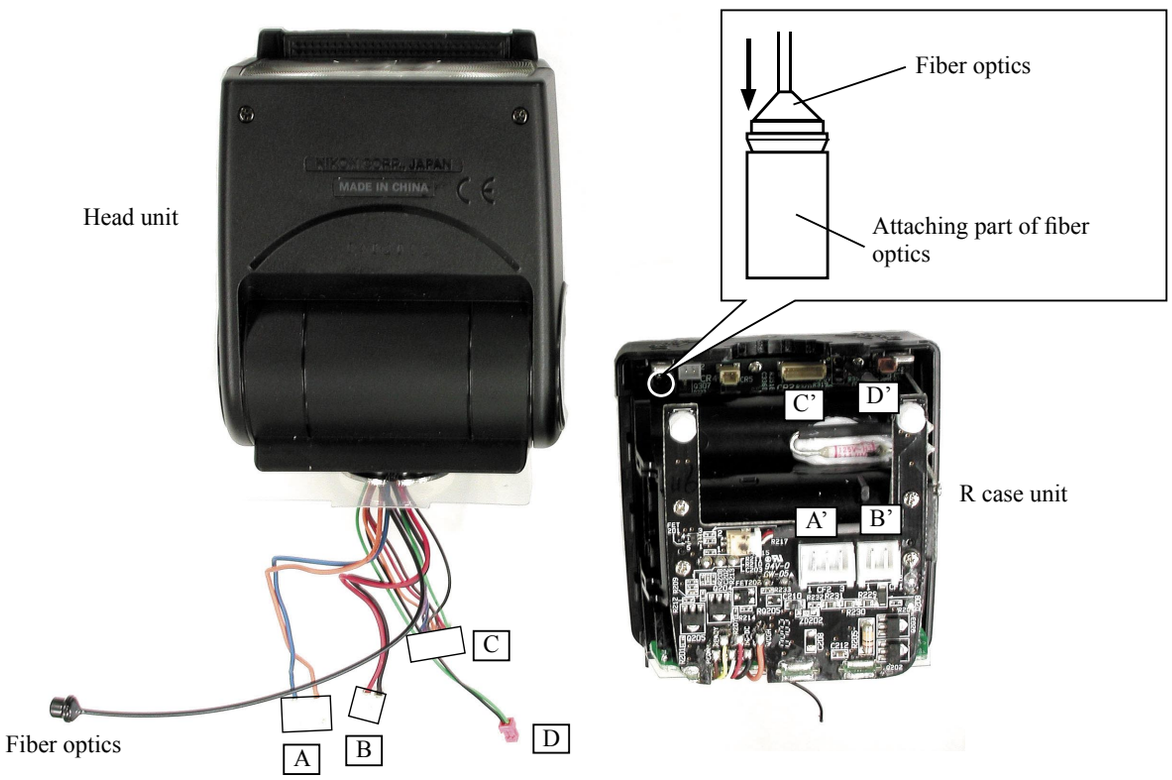
Assemble Battery case unit and R case unit

・Connect 2 connectors and assemble the battery case unit into the R case unit.
・Mount the insulating plate.



Connect connectors of the head unit to the R case unit

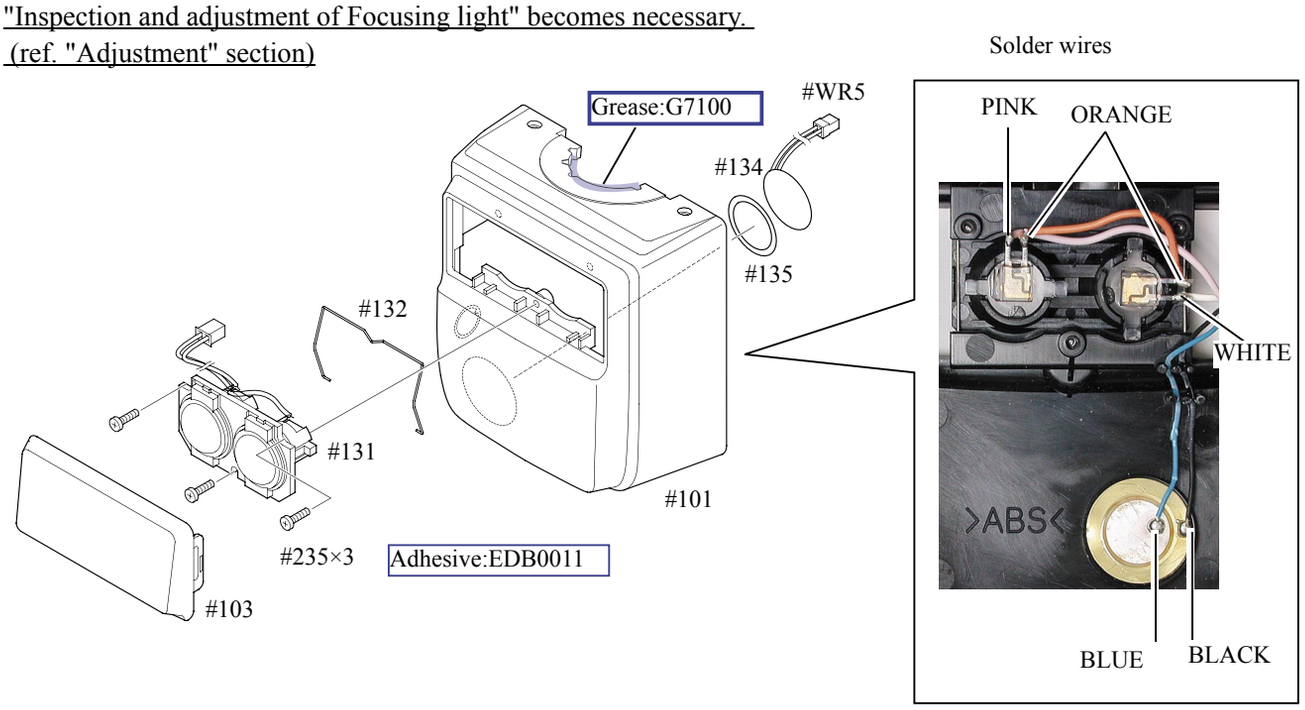
- Attach 4 connectors (A-D) to the right position (A'-D')which are connected from the head unit.
- Insert the fiber optics into the attaching part.



F case unit

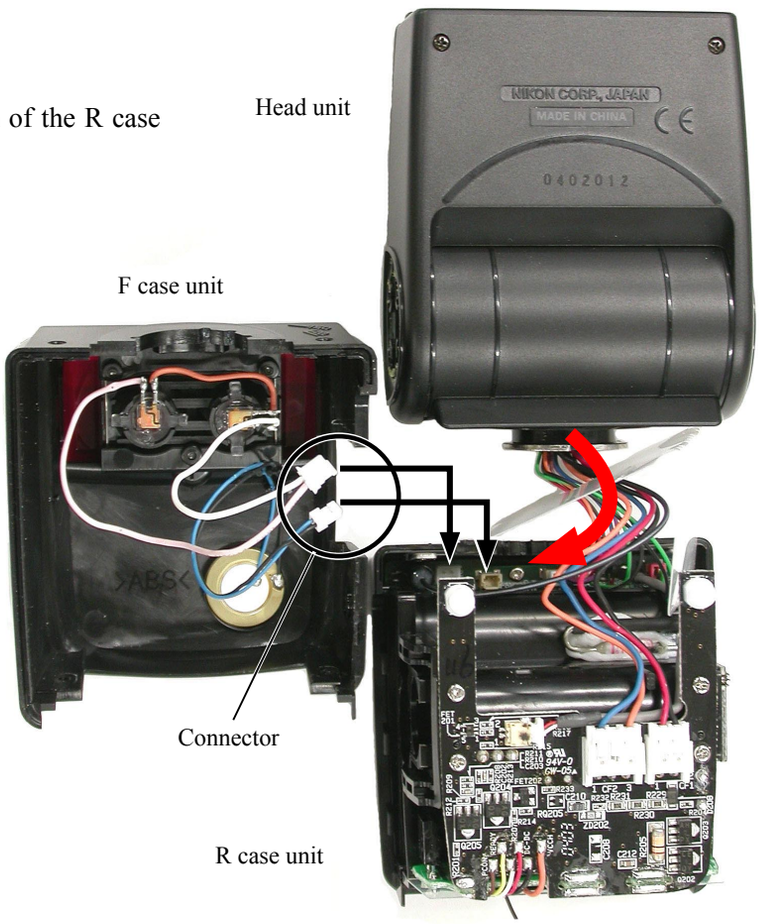
- Assemble each part into the F case unit.

＊ Note: In case the AF-assist illuminating lamp (#131) is disassembled, "Inspection and adjustment of Focusing light" becomes necessary. (ref. "Adjustment" section)

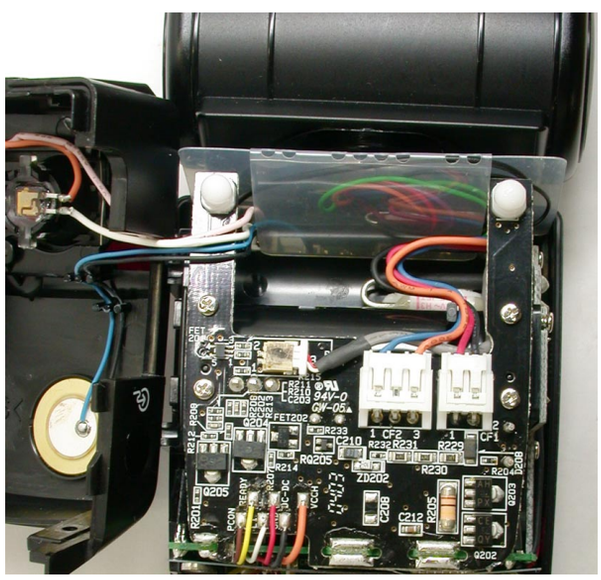


Assemble Head unit, F case unit, and R case unit

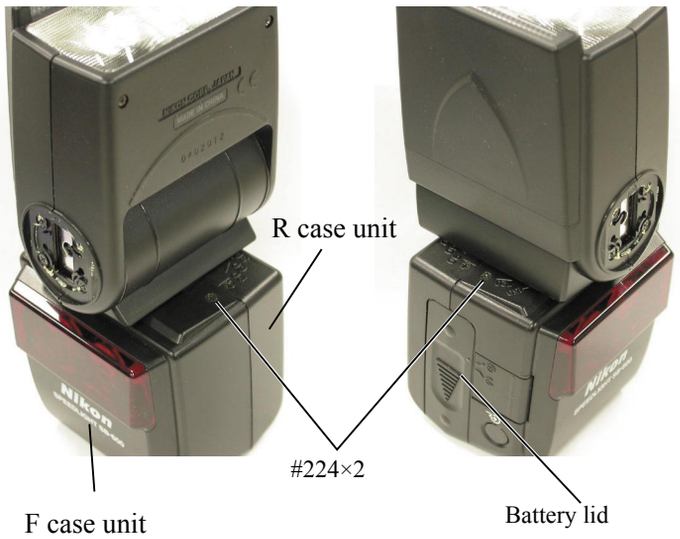
・Connect 2 connectors.
・Put the head unit in the right position of the R case unit by following the red arrow.



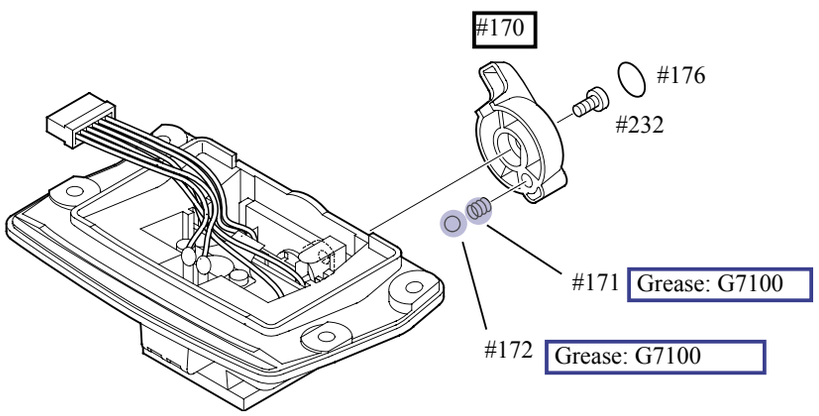
・Perform wire arrangement as follows:



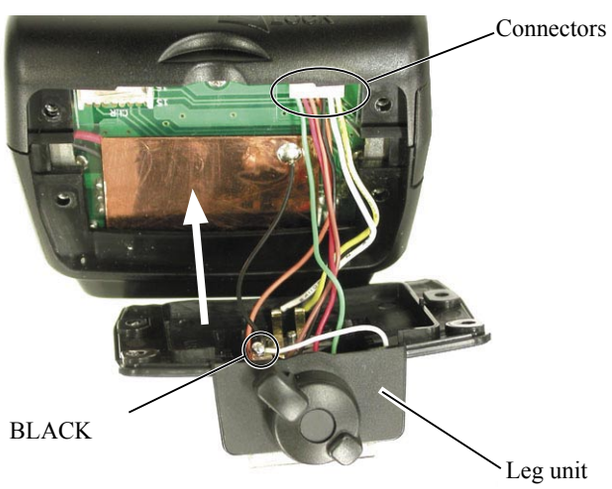
・With the battery lid being attached, combine the F case unit and R case unit with 2 screws (#224).



Leg unit



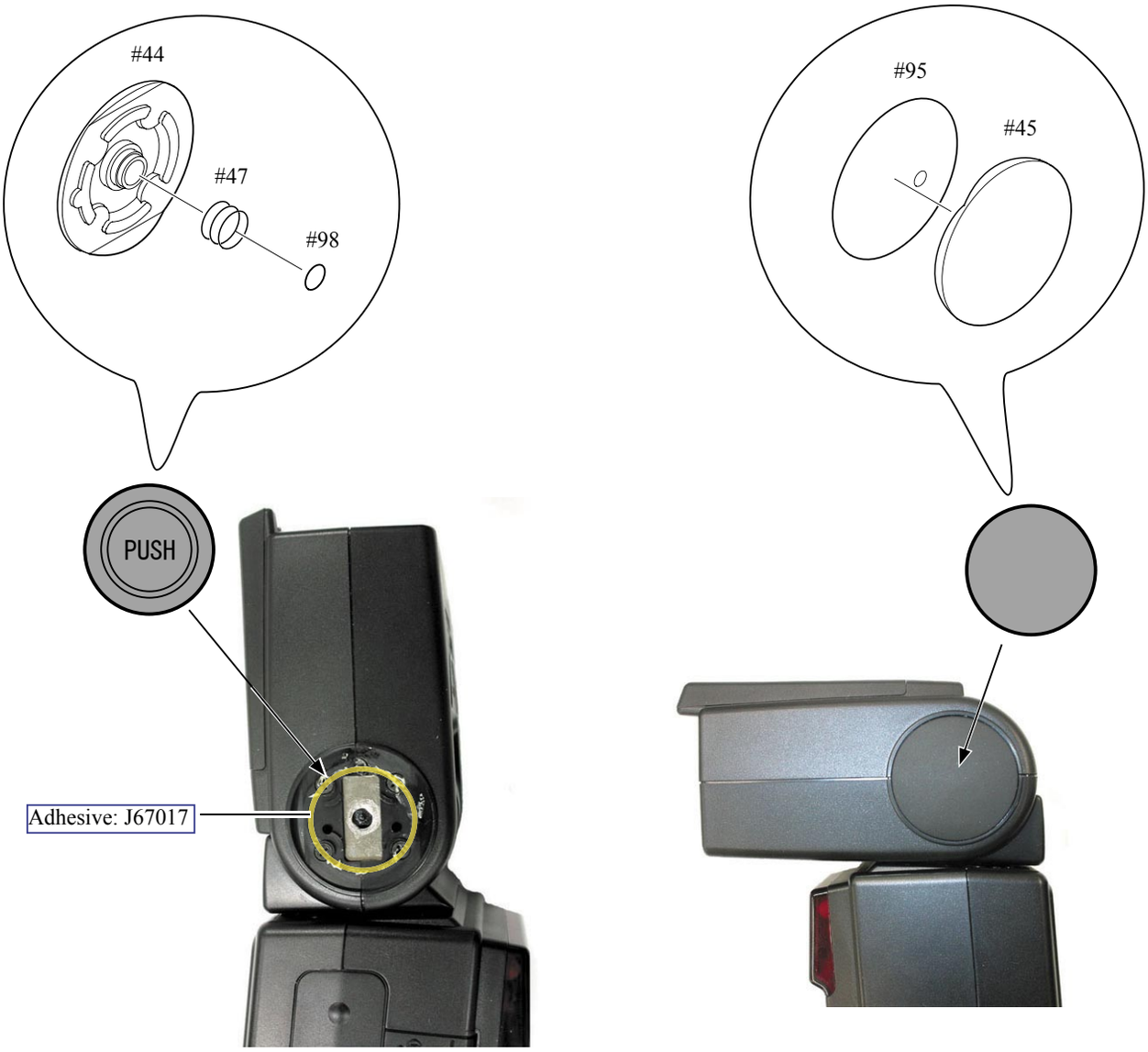
・Connect the connectors.
・Solder the black wire.
・Attach the leg unit with 4 screws (#234).



Side rubber

・Attach the right and left side rubbers.

＊Note: In case it is necessary to adjust by PC, make the adjustment before attaching the below side rubbers.
(ref. "Adjustment" section)



Adjustment

Equipment required:

1. Adjustment software (J18365)
2. Personal computer
3. NEW high-speed communication tool (J15405)
4. Flash meter
5. Stabilized power supply (possible to output 0-6V, 3A)
6. Chart of inspecting focusing light (Copy and magnify the Page A25 of the Repair Manual and use it.)

Inspections/adjustments:

1. Writing initial data
2. Voltage adjustment (Main capacitor)
3. Quantity of light adjustment
   - Full flash pulse inspection and adjustment
   - Manual mode inspection and adjustment
   - Monitor-Flash inspection and adjustment
   - D-TTL Flash inspection and adjustment
   - FP-Flash inspection and adjustment
4. Flash times inspection
5. Inspection & adjustment of focusing light

＊ The inspection (& adjustment) of all the above 1-4 is made electrically by using PC, so be sure to follow the instruction of the adjustment software.
Regarding 5. Inspection & adjustment of focusing light, be sure to follow the instruction of Page A24.

・Adjustments required after repairs

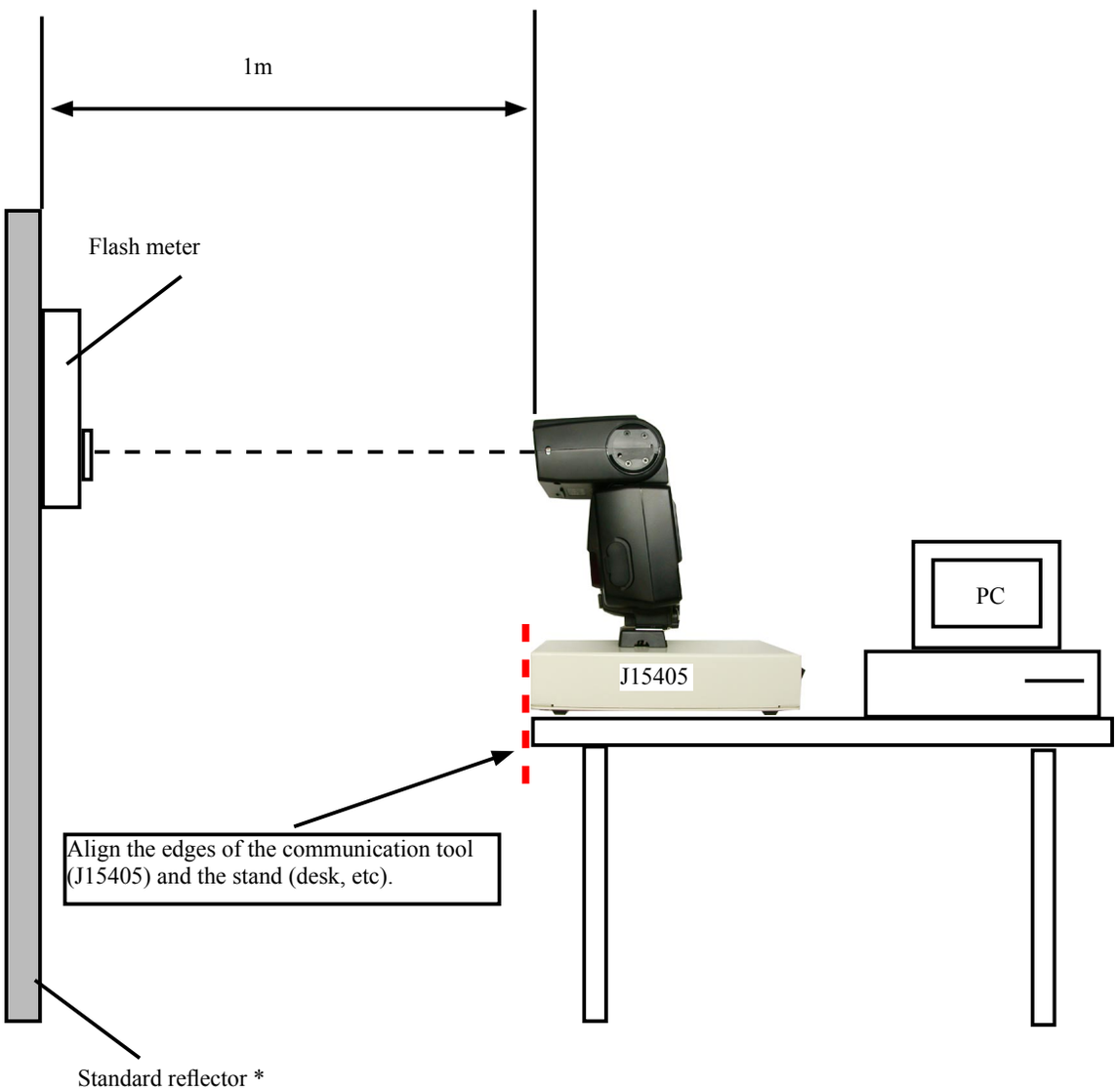
Details / Adjustment	Parts replacement				Disassembly	
	R-PCB	L-PCB	F-PCB	ZOOM-PCB	Head unit	F case unit
1. Writing initial data	○					
2. Voltage adjustment (Main capacitor)	○	○	○			
3. Quantity of light adjustment	○	○	○	○	○	
4. Flash times inspection						
5. Inspection & adjustment of focusing light						○

Points to notice for Inspection & Adjustment of Flash

When the adjustment item 3. Quantity of light adjustment is made, be careful of the following:

*Be sure to make the adjustment in a dark place (e.g. photo darkroom, etc) without influence of outside light.

*If there is some reflector (e.g. desk, etc) in front of SB, it may affect the accuracy.
Therefore, be sure to align both the edges of the communication tool (J15405) and stand (desk, etc) as shown below.

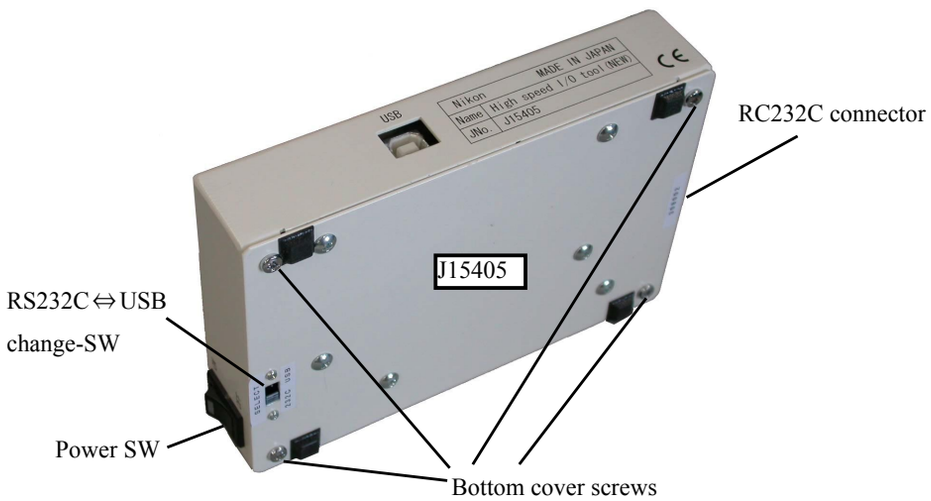


* SB-600 does NOT have "Auto mode", so inspection and adjustment can be made without the standard reflector. However, if there is something, etc that has extremely strong reflection in the background, it may affect the accuracy. So it is recommended to use the standard reflector (J18360/J18069) as background.

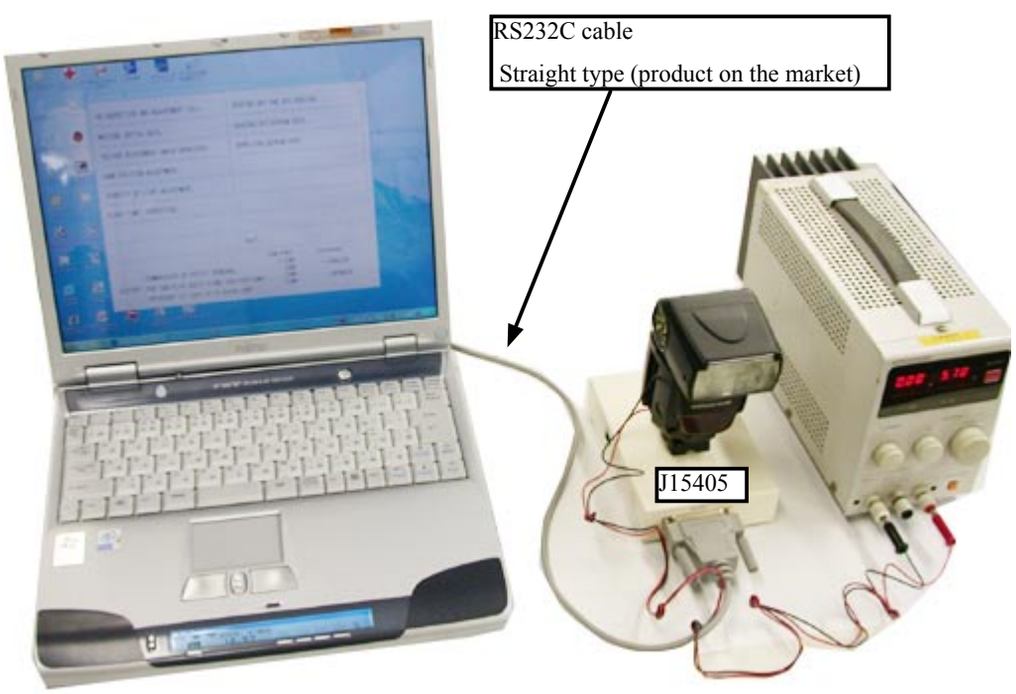
How to connect PC and SB when adjustments are made

* Serial communications

1. Setup of the NEW high-speed communication tool (J15405)
   - Set "RS232C ⇔ USB change-SW" to "RS232C".
   - Remove 4 screws of the bottom-cover and insert 4 AA-type alkaline batteries.



2. Connection
   - Connect the serial port of PC and NEW high-speed communication tool (J15405) via RS232C cable (product on the market).
   - Put SB on NEW high-speed communication tool (J15405).
   - Supply power for SB. (Stabilized power supply ＝ 5.7V)



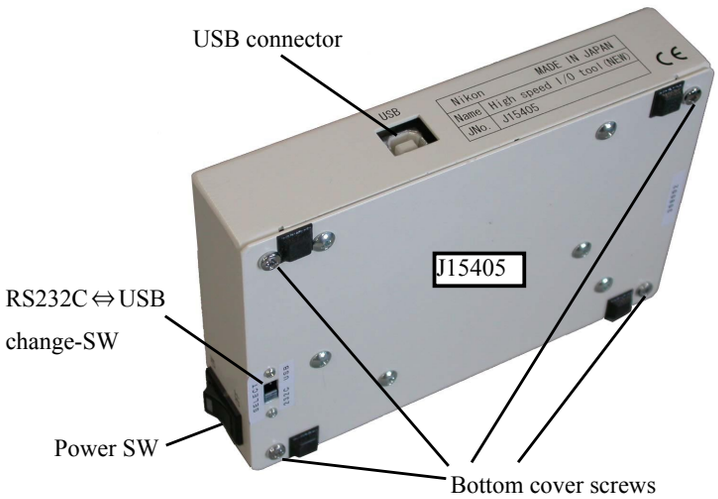
* USB communications

1. Setup of NEW communication tool (J15405)

・Set "RS232C ⇔ USB change-SW" to "USB".

・In case 4 AA-type alkaline batteries are in the tool, remove 4 screws of the bottom-cover to take out the batteries.

Note: For USB communications, batteries are NOT necessary because power is provided by PC. Although there is no operational problem with batteries being inserted, they should be taken out in order to prevent liquid leakage.

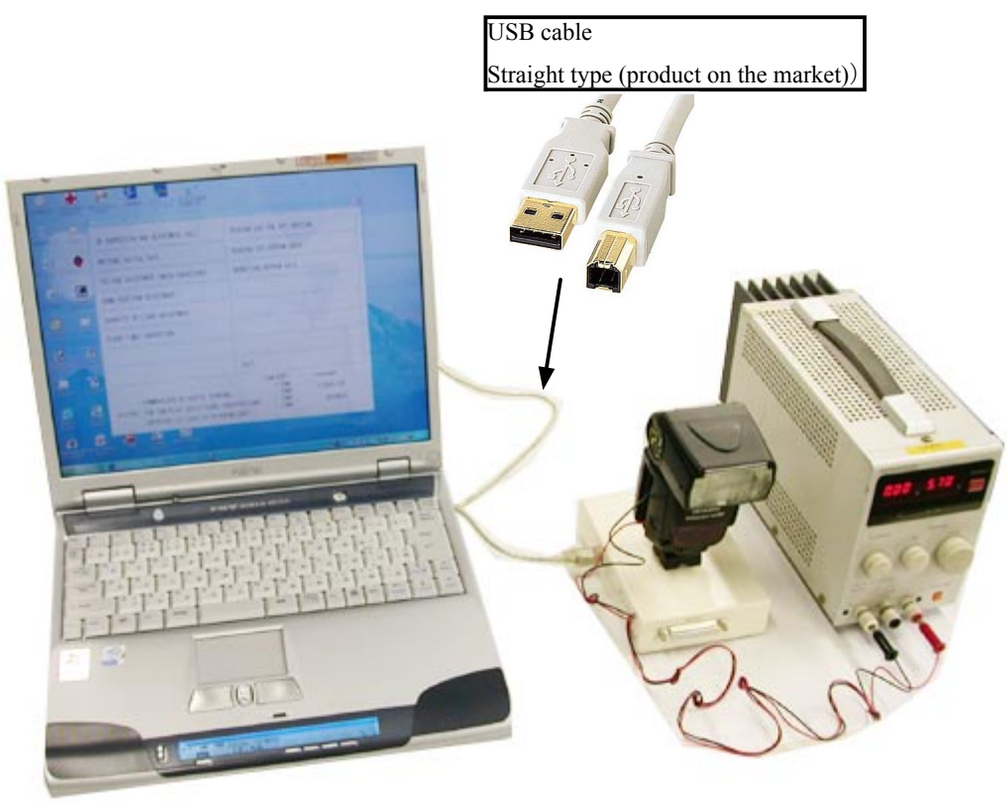


2. Connection

・Connect the USB port of PC and NEW high-speed communication tool (J15405) via USB cable (product on the market).

・Put SB on NEW high-speed communication tool (J15405).

・Supply power for SB. (Stabilized power supply=5.7V)



Note: For USB communications, "Set the USB driver" on the next page.

3. Setup of USB driver

Install a decompression tool on PC beforehand to decompress ZIP files.

① Via website (of the below address) for FTDI on the Internet, download a compressed file to PC that includes virtual COM port driver.
"http://www.ftdichip.com/Files/P8002104.ZIP"

② Decompress the downloaded file. (Refer to the instruction manual of the decompression tool for how to use.)
Move the decompressed file to any appropriate folder for driver.

③ Turn on the power of NEW high-speed communication tool (J15405).

④ Connect the USB cable.

⑤ When the cable is connected, it is necessary to choose the place of the USB driver.
Therefore, designate the folder of the above driver.
Depending on OS, it is necessary to designate INF file instead of folder.
In this case, install all the 3 drivers of INF file of the following:
ftdibus.inf 、FTDIPORT.INF 、FTSERMOU.INF

⑥ Click "Start", " Control Panel", "System", and "Device manager", to start the device manager. Then indicate by type.
Depending on OS, the start-up method is different.

⑦ Indicate the detailed items of "universal serial bass controller" of the device manager, then confirm that "USB High Speed Serial Converter" is there.

⑧ Indicate the detailed items of the port of the device manager, then confirm that "USB Serial Port (Com 1-4)" is indicated.
The designated COM (the above COM1-4) number of this item is used when the communication port of the adjustment software is actually designated.

⑨ Close the device manager. Start the adjustment software to check if communications are made or not. (Note that it is impossible to change the port other than COM1-COM4 by the adjustment software.)

For uninstalling this USB driver, perform "Ftdiunin.exe" in the driver's folder.

Inspection & adjustment software (J18365)

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

PC: IBM PC/AT compatible

OS: Windows XP (Pro/Home), Windows 2000, Windows Millennium Edition (Me), Windows 98 Second Edition (SE)

CPU: Pentium Ⅱ 266MHz - Pentium Ⅳ 2GHz

RAM (memory): 64MB or more

HD: 6MB-or-more free disk space is required when installing

Monitor resolution: 800×600 pixels or more

Interface: RS232C or USB

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

<Notice on start-up>

When starting this program, close all other applications.

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

<Procedure for installation>

The file (PSB600.EXE) of this program is provided via FD or e-mail.

Because this is the self-extracting file, decompress the file when installing according to the next procedure.

1. Create a folder for installation under a name you like and PC drive. (e.g.) C:\SB600
2. Copy the file (PSB600.EXE) in the created folder.
3. Double-click on the pasted file to display the following screen.
   Press the OK button, then decompression starts.
4. When the decompression of file is finished, the file (SB600.EXE) is created.
5. The installation is completed.

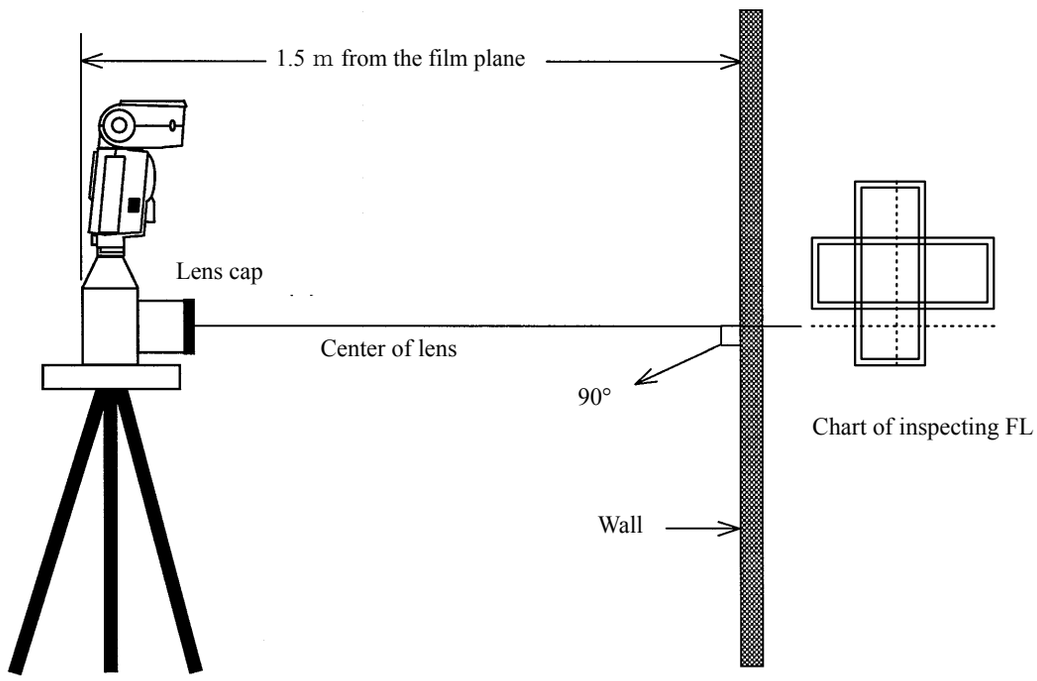
<Start-up of Program>

1. Double-click the file (SB600.EXE), then the Inspection & Adjustment program for SB600 starts.
2. To display in ENGLISH, select the radio button "ENGLISH" in "LANGUAGE" in the lower right-hand corner of the screen .
3. When the "HISTORY" button at the lower-left is pressed, the program version will be displayed.
4. Select the appropriate item button and follow the instructions on PC.
5. For this program, the communication port from COM1 to Com4 is selectable.
6. To finish the program, press the "Close (×)" button in the right-hand corner of the screen or "QUIT".

Inspection & adjustment of Focusing light

Preparations

1. Camera (F5)
2. AF lens (of any type) with lens cap
3. Tripod
4. Chart of inspecting FL * Note: Copy and magnify the next page to A3 size, and use it.



Procedure

① Arrange the equipment and materials as shown in the above, and set the AF mode of camera to S.

② In case "NO AF-ILL" is indicated on LCD of SB-600, have "AF-ILL" displayed by the custom setting.

③ Detach the red panel (1K467-242) of SB-600, and press the release button halfway to lighten AF-Assist illuminator.

④ Adjust by using 3 screws (H1-20055FD) so that the light projected on the inspection chart covers the reference frames completely and fits within the allowable limits of the frame.

⑤ After the adjustment, fix 3 screws (H1-20055FD) with Screw Lock.

⑥ Attach the red panel (1K467-242).

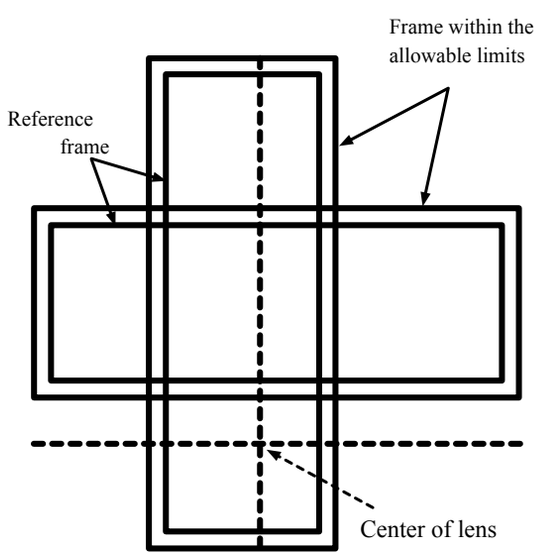
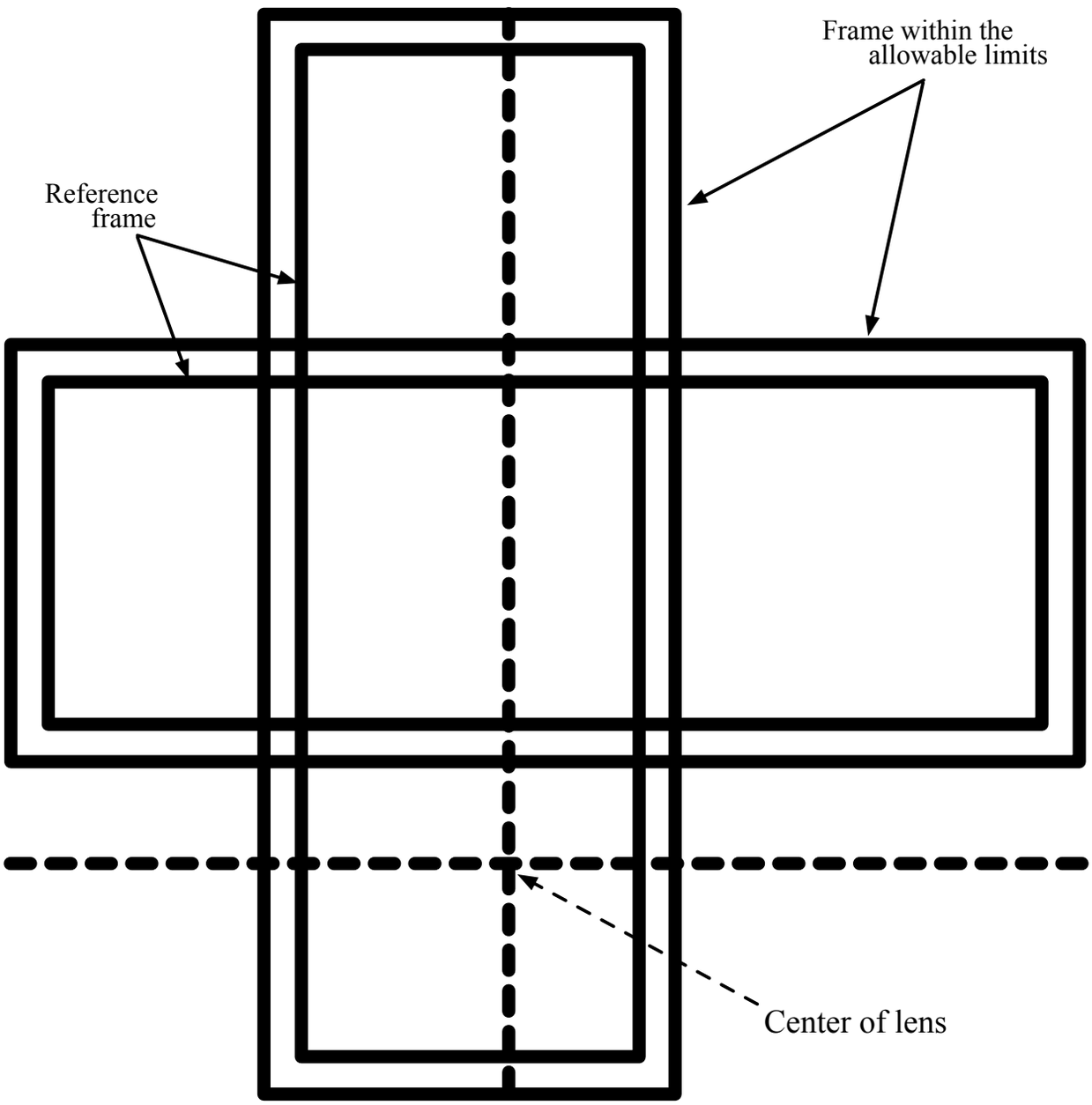


Chart of inspecting FL for SB-600

* Attention:

Magnify this page from printed A4 to A3-size, and use it.



Electricity

Circuitry

SB-600 consists of the Custom IC, 8-bit CPU, EEPROM and other peripheral circuitry. (ref. "Block diagram" on Page E4.)

・Battery:

4 size-AA batteries can be inserted internally in SB-600. Available types are alkaline manganese battery, NiCd battery, nickel-hydrogen battery, lithium battery, nickel manganese battery.

・Pressurization circuit:

This increases the voltage of internal batteries, and charges the main condenser up to the given voltage (330V).

・Voltage detection circuit:

This outputs the voltage of lighting ready-light and the voltage of stopping pressurization to the A/D input terminal of CPU.

・Safety circuit:

This always monitors the voltage of charging the main condenser when batteries are inserted, irrespective of power-supply of SB-600. In case the voltage exceeds the given voltage (350V), the light is forced to be emitted in order to prevent damages to the main condenser.

・Flash control circuit:

This starts light-emitting of flash-tube based on the flash-start signal (TG circuit) output by the Custom IC, and stops light-emitting based on the flash-stop signal (STP circuit). The flash-signal output by the safety circuit is irrelevant to the status of the power switch.

・Custom IC:

This consists of the data communication circuit, decoder circuit, camera interface, voltage monitoring circuit, metering circuit, TG circuit, STP circuit, AF assist illuminator circuit, data communication circuit, and buzzer drive cirucit.

・Data communication circuit:

This connects the CPU by 5-bit signal wires and STB terminal, totalling 6 signal wires. The moment the signal of STB terminal turns OFF, this sets the address for the Custom IC, and the moment the STB terminal turns OFF, this writes the data in the Custom IC or reads the data that is set in the Custom IC.

・Decoder circuit:

This decodes the address and data that were received at the data communication circuit, and performs various settings for internal each block.

・Camera interface circuit:

This makes electrical connections with camera through legs. This sends/receives data to/from camera based on the signals from CPU. This also controls input/output signals to each terminal of leg contacts.

・Voltage monitoring circuit:

This monitors the battery voltage in real time, and when the power volrage falls below a given voltage, it stops the operations of the pressurization circuit temporarily.

・Metering circuit:

This decides flash output based on the number of times, calculated by decreasing the preset constant electric current, each time the electric charge, of which the light volume is integrated by the photo cell in the integral condensr of the integration circuit, exceeds the threshold voltage.

・TG circuit:

This outputs the flash-start signals based on the flash-start command signals from the metering circuit, decoder circuit, camera interface, and external slave circuit.

・STP circuit:

This outputs the flash-stop signals based on the flash-stop command signals from the metering circuit, decoder circuit, camera interface, and external slave circuit.

・AF assist illuminator circuit:

This turns the illuminator on according to either the data received by the data communication from CPU or the lighting signal from the CRY terminal. The illuminator turns off according to the CPU command. In addition, there is a terminal prepared for SC-29 with the AF assist illuminator function. When SC-29 is attached, the built-in detection circuit automatically lights up the AF assist illuminator of SC-29, while the AF assist illuminator of SB does NOT ligtht up.

・Data communication circuit:

This is the control circuit for sending/receiving signals from camera to communicate data via camera interface. The CPU performs various settings or controls based on this data.

・Buzzer drive circuit:

This is the control circuit for sounding an external buzzer. The buzzer tone, pattern, etc are controled by the CPU.

・CPU:

This controls, etc the following: data communication control with camera via the custom IC; data communication control for setting data to the custom IC; reading of switches; power-supply control; AF assist illuminator control; LCD indications; motor drive circuit; voltage detection of the main condenser; turning ready-light to ON/OFF; EEPROM control; turning EL to ON/OFF; slave circuit control, etc.

・Ready-light:

This lights up by the CPU when the voltage reaches the ready-light illumination. The CPU judges the charging voltage by A/D conversion of the voltage output from the voltage detection circuit. At the same time, signals to illuminate the ready-light in the camera finder are sent to the custom IC via 5-bit data communications.

・Remote circuit:

This reveives pulse-emission communications transmitted by the master speedlight, then converts them to pulse signals to send to CPU via the custom IC.

・EEPROM:

This memorizes information such as status set by the switch input circuit, information necessary for the metering circuit, set value of the timer circuit, etc.

・LCD:

This indicates the flash control mode, TTL exposure compensation value, TTL underexposure ratio, zoom value, manual flash output, etc. This is a segment type of TN type.

・LED:

This is a backlight that illuminates LCD. This automatically lights up when any switch of SB-600 is turned on, and it goes out after a given time.

・Motor drive circuit:

This sets the illumination angle of the lighting unit. The lighting unit is set in position under command of the CPU.

・Switch input circuit:

This detects ON/OFF of the push switch on the backside of SB-600 and the mechanically required bounce position, the status of the wide panel setting, etc.

・Leg contacts:

This has 5 contacts (CX, CRY, CSTP, CSP, GND) and connects electcially to camera. This is also the signal contacts to communicate data with camera.

・AF LED:

This is the LED that lights based on the output from the AF assist illuminator circuit. This emits a specified vertical striped pattern to the object, and assists the AF distance measurement.

・Buzzer:

This is the piezoelectric buzzer that sounds by the output from the buzzer drive circuit. This sounds by the output by the buzzer drive circuit and the sounding tone and pattern are based on the CPU command.

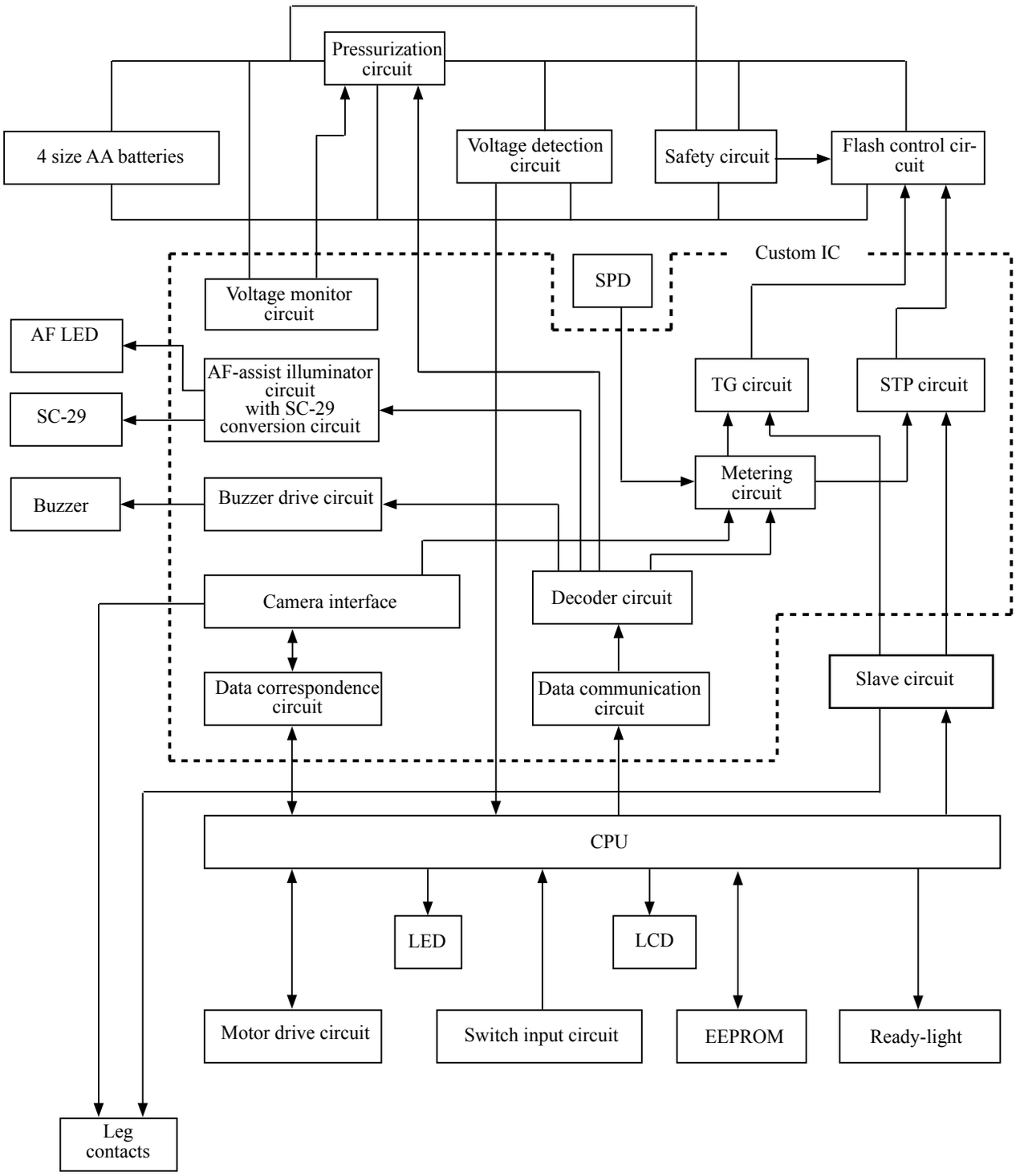
・SPD:

This is the sensor to control the pre-flash output, manual flash output, and external flash output by monitoring the light volume via connection to the metering circuit.

・SC-29 (External AF assist illuminator contacts:

When the TTL Remote Cord SC-29 with the AF assist illuminator function is attached, SB-600 automatically lights up the AF assist illuminator of SC-29 based on the AF light signal from the camera, instead of lighting the AF assist illuminator of SB-600.

Block Diagram



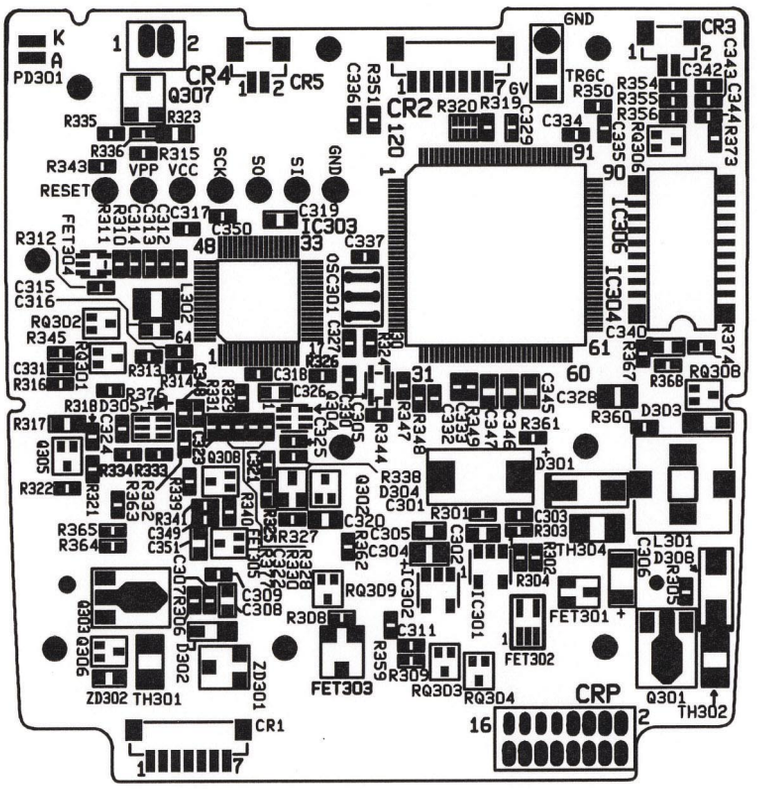
EEPROM DATA

SB-600

ADDRESS	DATA	ADDRESS	DATA
0 ～ 15	制御用データ Control data	208 ～ 253	制御用データ Control data
16 ～ 18	本発光回数 No.of times for Main Flash	254	チェックサム補助データ Check sum support data
19	制御用データ Control data	255	チェックサム Check sum
20 ～ 22	モニター発光回数 No.of times for Monitor Flash		
23 ～ 127	制御用データ Control data		
128 ～ 130	メインコンデンサ Main condenser		
131 ～ 135	制御用データ Control data		
136 ～ 157	フル発光パルス Full flash pulse		
158 ～ 164	マニュアル光量 Manual out put		
165 ～ 166	モニター発光量 Monitor flash		
167	制御用データ Control data		
168 ～ 170	ＦＰ発光量 FP-flash		
171 ～ 172	Ｄ－ＴＴＬ発光量 D-TTL flash		
173 ～ 200	制御用データ Control data		
201 ～ 207	ＦＰ発光量 FP-flash		

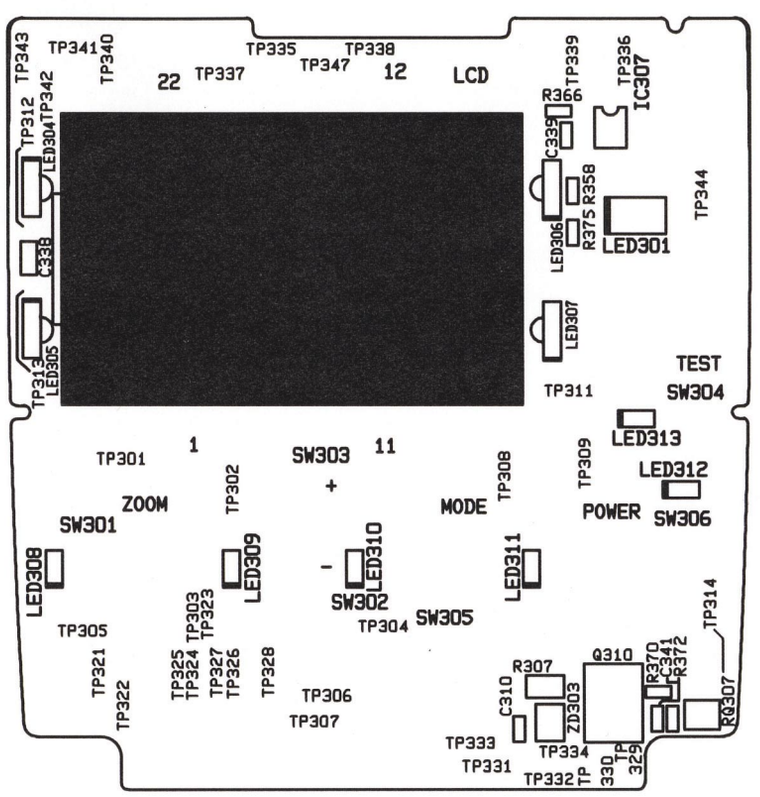
R基板（1）

R-PCB(1)



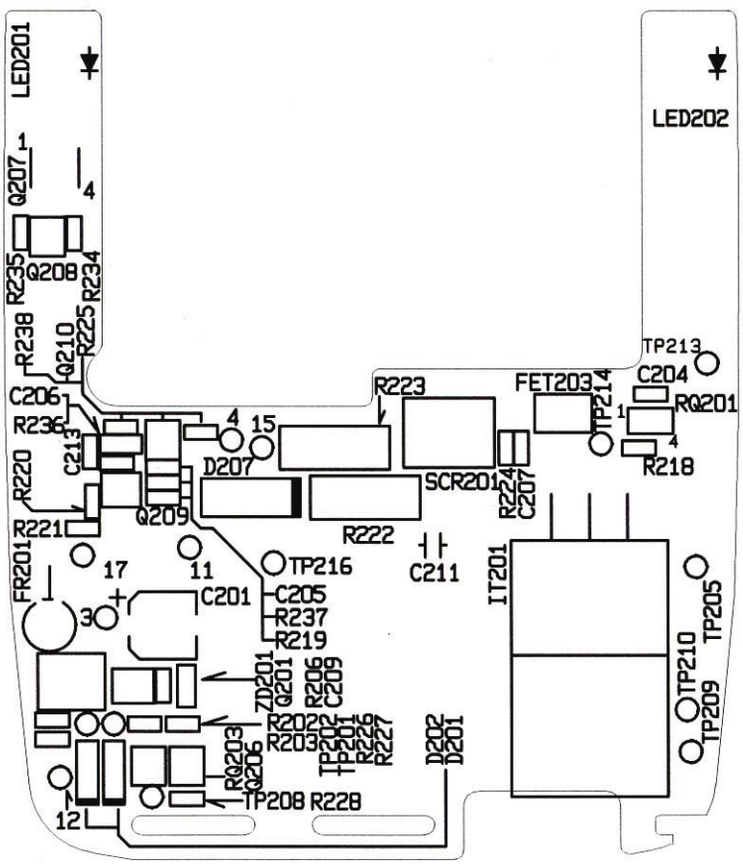
R基板（2）

R-PCB(2)



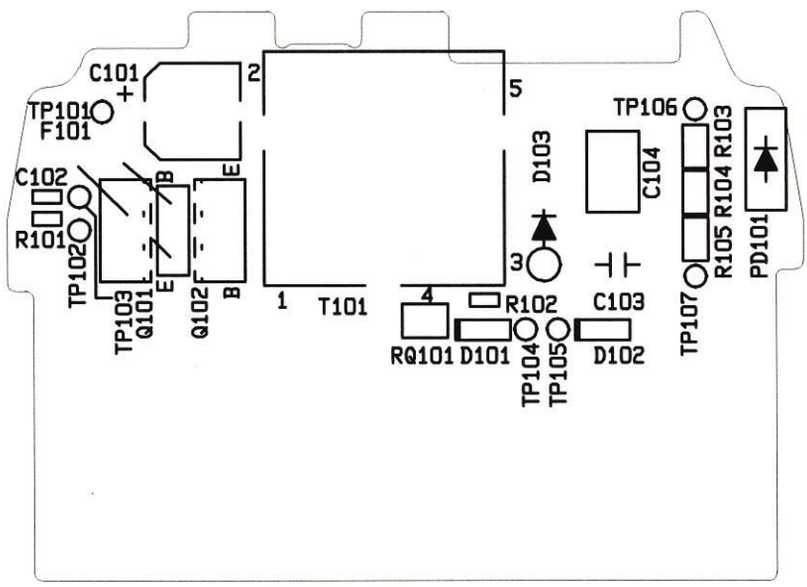
Ｆ基板

F-PCB



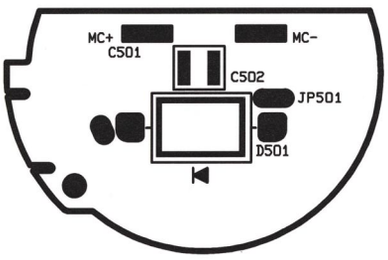
Ｌ基板

L-PCB



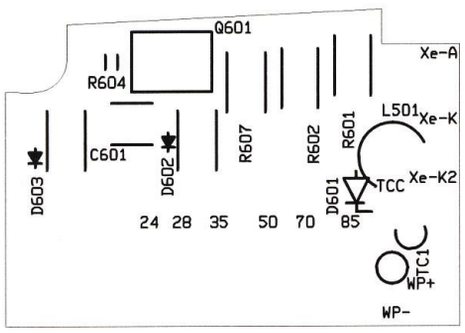
Ｃ基板

C-PCB



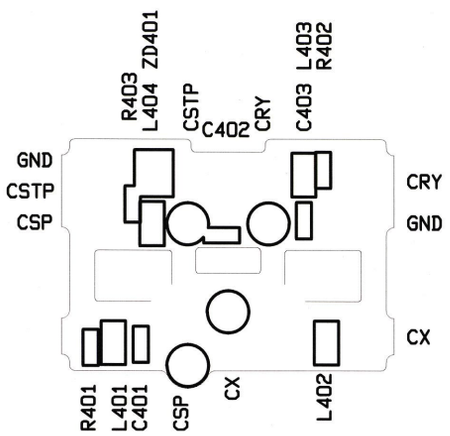
ズーム基板

ZOOM-PCB



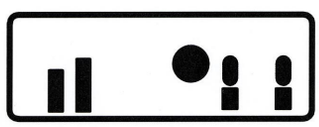
脚基板

FOOT-PCB



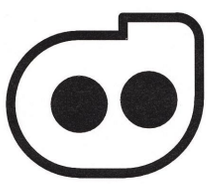
バウンス基板

BOUNCE-PCB



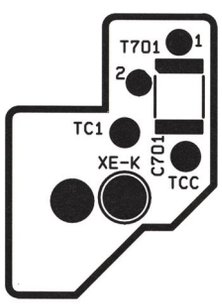
ＸＥ－Ａ基板

XE-A-PCB

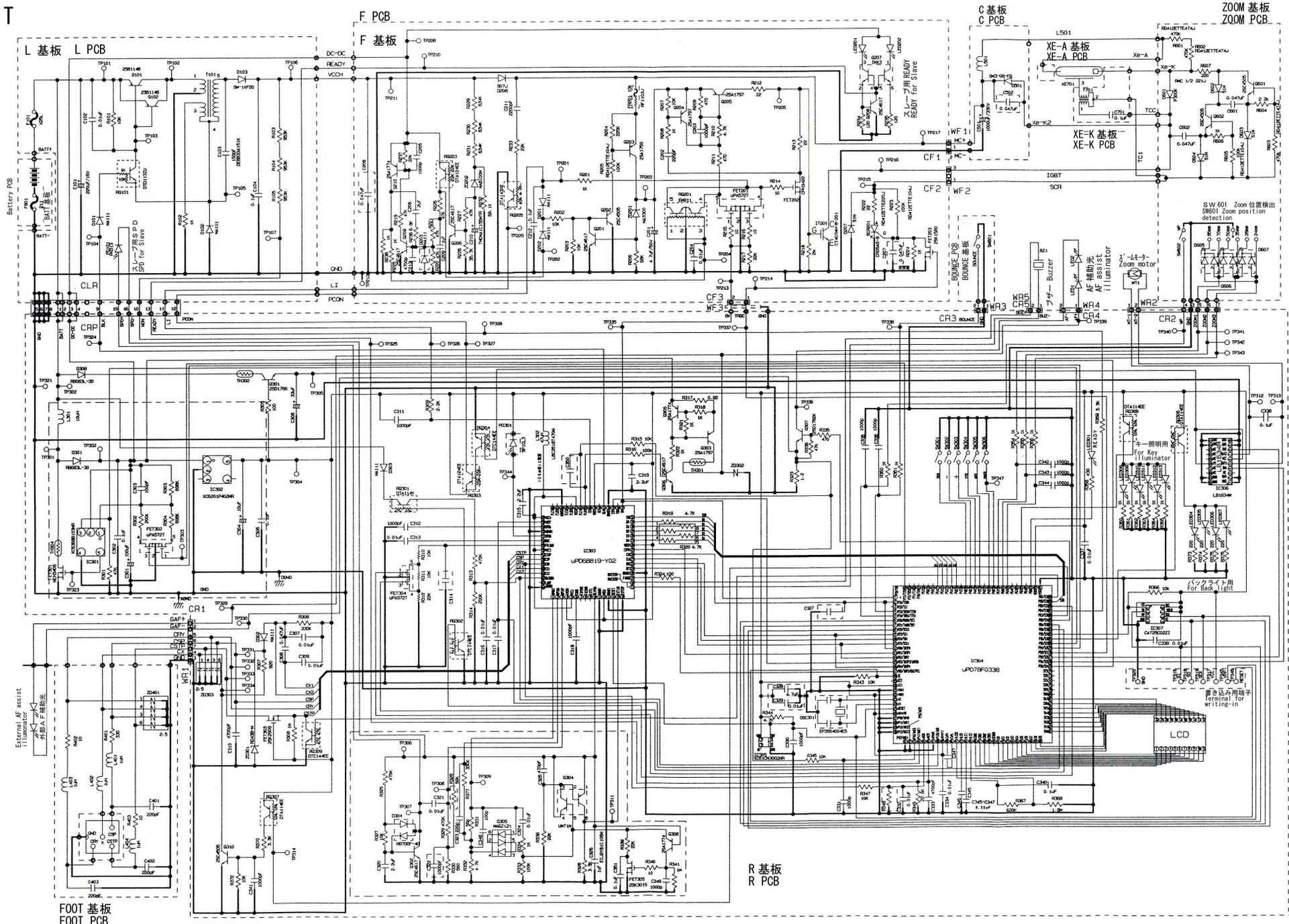


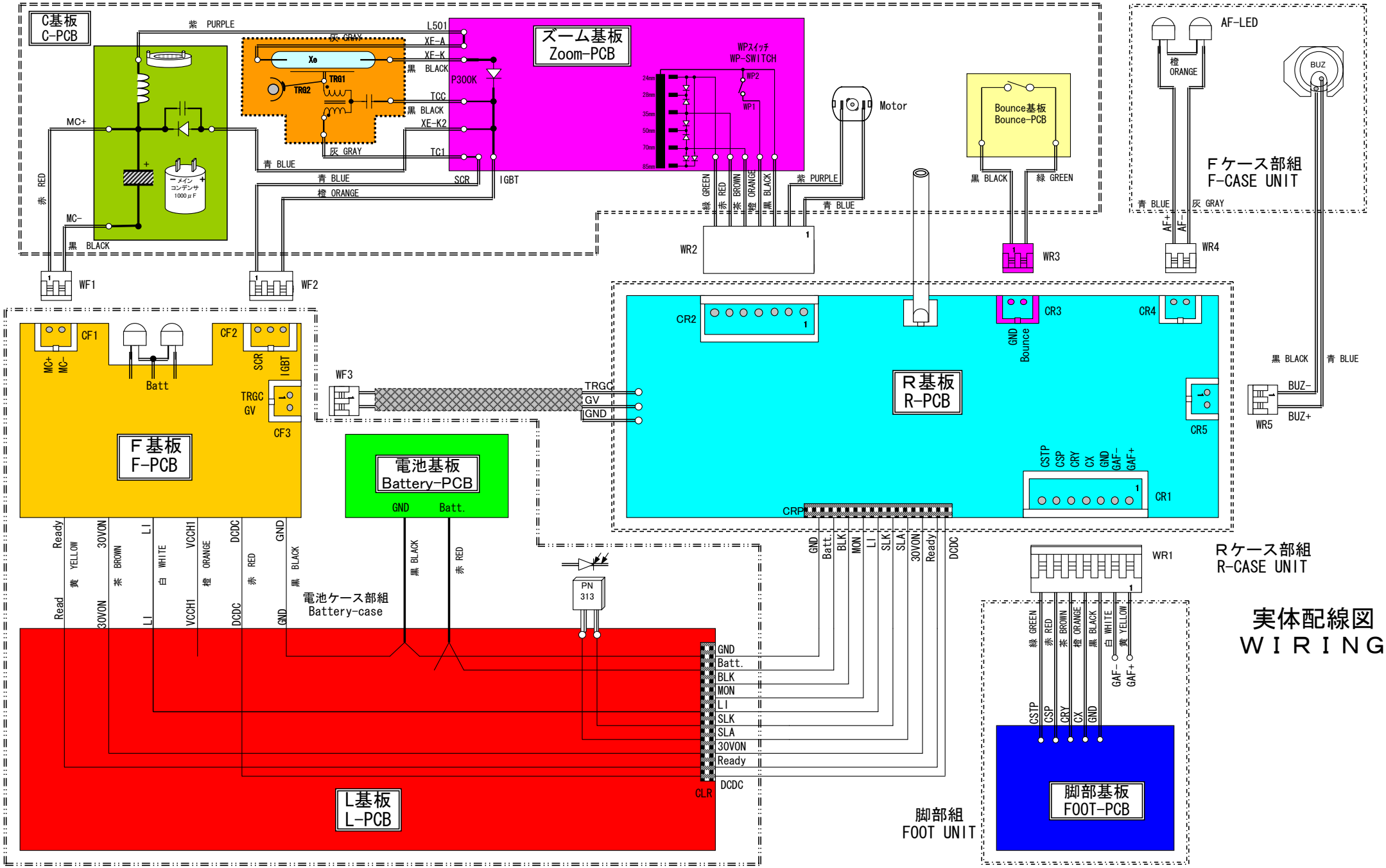
ＸＥ－Ｋ基板

XE-K-PCB



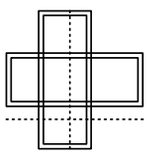
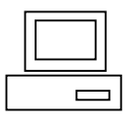
回路図
CIRCUIT


L 基板 L PCB
F PCB
F 基板
C基板
C PCB
ZOOM 基板
ZOOM PCB
XE-A 基板
XE-A PCB
XE-K 基板
XE-K PCB
R 基板
R PCB
FOOT 基板
FOOT PCB
Battery PCB
BOUNCE PCB
BOUNCE 基板
Zoom motor
ズームモータ
AF assist illuminator
AF補助光
Buzzer
ブザー
For Key illuminator
キー照明用
For Back light
バックライト用
External AF assist illuminator
外部AF補助光
書き込み用端子
terminal for writing-in
LCD
IGBT
SCR
SW601 Zoom位置検出
SW601 Zoom position detection
DC-DC
READY
VCCH
GND
CLR
LI
PCON
BATT+
BATT-
IC303
uPD6881 9-Y02
IC304
uPD78F0338


C基板
C-PCB
紫 PURPLE
灰 GRAY
L501
XE-A
XE-K
黒 BLACK
P300K
TCC
黒 BLACK
XE-K2
TC1
青 BLUE
SCR
IGBT
橙 ORANGE
灰 GRAY
Xe
TRG1
TRG2
MC+
MC-
赤 RED
黒 BLACK
メイン
コンデンサ
1000μF
ズーム基板
Zoom-PCB
WPスイッチ
WP-SWITCH
WP2
WP1
24mm
28mm
35mm
50mm
70mm
85mm
Motor
緑 GREEN
赤 RED
茶 BROWN
橙 ORANGE
黒 BLACK
紫 PURPLE
青 BLUE
Bounce基板
Bounce-PCB
黒 BLACK
緑 GREEN
AF-LED
橙 ORANGE
BUZ
Fケース部組
F-CASE UNIT
青 BLUE
灰 GRAY
AF+
AF-
WR1
WR2
WR3
WR4
WR5
WF1
WF2
WF3
CF1
CF2
CF3
MC+
MC-
Batt
SCR
IGBT
TRGC
GV
F基板
F-PCB
CR1
CR2
CR3
CR4
CR5
GND
Bounce
R基板
R-PCB
CSTP
CSP
CRY
CX
GND
GAF-
GAF+
CRP
黒 BLACK
青 BLUE
BUZ-
BUZ+
電池基板
Battery-PCB
GND
Batt.
黒 BLACK
赤 RED
電池ケース部組
Battery-case
PN
313
Ready
黄 YELLOW
30VON
茶 BROWN
LI
白 WHITE
VCCH1
橙 ORANGE
DCDC
赤 RED
GND
黒 BLACK
Read
GND
Batt.
BLK
MON
LI
SLK
SLA
30VON
Ready
DCDC
CLR
L基板
L-PCB
Rケース部組
R-CASE UNIT
実体配線図
WIRING
脚部組
FOOT UNIT
脚部基板
FOOT-PCB
緑 GREEN
赤 RED
茶 BROWN
橙 ORANGE
黒 BLACK
白 WHITE
黄 YELLOW
GAF-
GAF+
CSTP
CSP
CRY
CX
GND

工　具・TOOLS

★：新規設定工具・NEW　TOOL

工具番号 Tool No.	名　称 Name of tool	備　考 Others
J15405 	新高速通信工具 New high speed I/O tool	For　SB-800
★ J18365 	点検、調整ソフト Inspection and adjustment software	IBM 3.5 inches
	AF 補助光用チャート Chart for AF Assist light	修理指針Ａ 25 ページ使用 Use the page　A 25 of the Repair Manual
	パーソナルコンピュータ Personal computer	汎用品 RJ is Not available
	ＲＳ２３２Ｃケーブル ＲＳ２３２Ｃ　cable	汎用品 RJ is Not available
	安定化電源（６.０Ｖ　３Ａ） Power supply(6.0V 3A)	汎用品 RJ is Not available
	デジタルマルチメータ Digital　meter	汎用品 RJ is Not available
	フラッシュメータ Flash　meter	汎用品 RJ is Not available

その他・Others

工具番号 Tool No.	名　称 Name of tool	備　考 Others
EBB0061 	グリース　G7100 Grease　G7100	NET = 100g
TA-0002 	テープ　W＝20mm	
★ TSE3941 	シリコン　TSE3941 SILICONE　TSE3941	温度ヒューズ用接着剤 Glue　For　Thermal　fuse NET = 150g
EDA1021 	セメダインハイスーパー CEMEDINE　Hi-SUPER	エポキシ樹脂系接着剤 Epoxy　glue
EDB0011 	ネジロック（赤） Screw　Lock　(RED)	
J67017 	セメダイン 575 CEMEDINE　575	