作成承認印	配布許可印
ニコン 映像事業 CS推進部 GM	

F80 (SILVER)FAA36001 (BLACK)FAA36051

N80 (SILVER)FAA36101 (BLACK)FAA36151

F80D (SILVER)FAA36201 (BLACK)FAA36251

N80QD (SILVER)FAA36301 (BLACK)FAA36351

F80S (BLACK)FAA36451

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

Printed in Japan April 2000

SPECIFICATIONS

SPECIFICATIONS

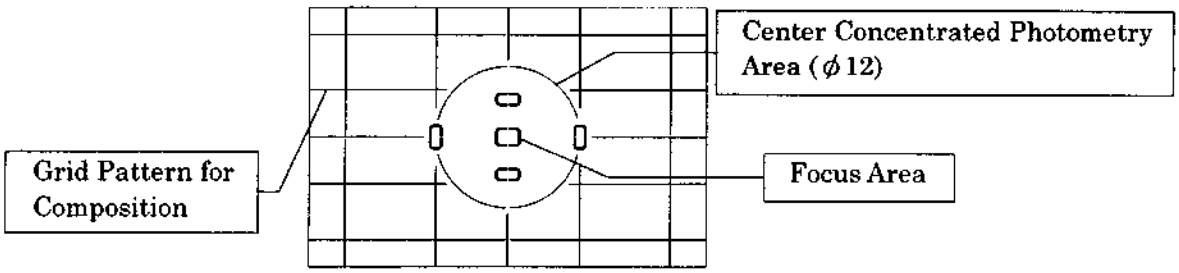
(Specifications and mechanisms not described in instruction manual and catalogues are described here).

1. Outline

This camera is intended to promote our company's position in the amateur market by improving operability by using a dial: also by reinforcing the AF and AE, using Five-Point AF where up and down areas highly evaluated in the market, the superimpose indication where visuality has been improved, and Ten-division Photometry.

2. Superimpose Indication

The focus area is indicated using a segment of diffusion type liquid crystal for superimposition: it is arranged between the screen and penta-prism.
When the background is dark the focus area is indicated by illumination using the segment, Which radiates and diffuses the liquid crystal segment for superimposition with the superimposition LED.
When the grid pattern indication for composition is custom selected, the liquid crystal for superimposition indicates the grid pattern for composition.
The liquid crystal for superimposition also indicates the center concentrated photometry area ϕ12 which is always lit up.
Moreover, this superimposition liquid crystal should be driven, when the power is turned on, to secure the finder view. Accordingly, when the battery is removed or almost used up the finder view turns to black (at the level of F11).



When the superimposition lighting is set to automatic (initial value) according to the brightness in the custom setting with a value of BVn - Avo 2.5 or more, the LED for superimposition does not light.

BVn: Brightness Value of the photometry element corresponding to the AF selected area AVo: Lens open F value (In the case of AVo < 3, it is assumed to be AVo = 3. Except for CPU built-in lens, it is assumed to be AVo = 0.)

3. Finder

Model	Pentagonal Roof Prism Type Single Lens Reflex Finder
Finder Screen	B Type Clear Mat Screen II
Diffusion Type Liquid Crystal for Superimposition	Selected Distance Measurement Area, φ12, Illuminated Indication of Grid Pattern for Composition
Finder Replacement	Unavailable
Screen Replacement	Unavailable
Visual Field Rate	Approx. 92% both vertically and horizontally (50 mm lens is used, ∞ (infinity))
Magnification	x 0.72~0.76 (50 mm lens is used, ∞) x 0.75 (at−1Dpt.)
Diopter	−1.8~+0.8Dpt.
Eye Point	15.5~19.9 mm 16.7 mm (at−1Dpt.)
View Finder Frame	Rectangular Shape (F70 type, DK-10 view finder eyepiece is attached)

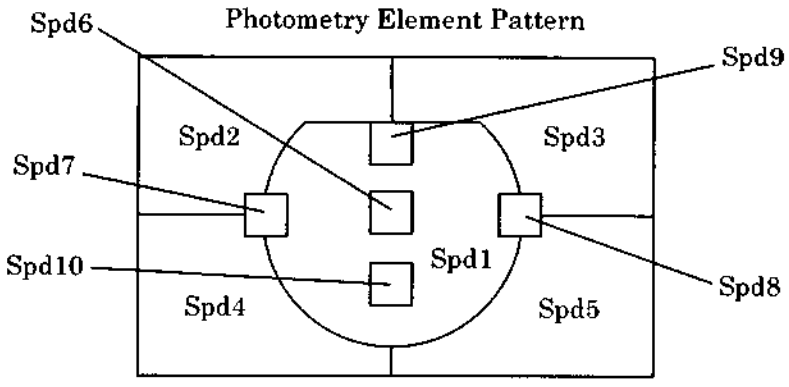
4. Shutter

① Unit Shutter made by Copal

② Max. Shutter Speed 1/4000, At Synchronous Second 1/125

5. Photometry

Photometry Element	Multi-Segment SPD (10 divisions) 1 Cell (IC integrated type)		
Photometry Function (ISO100F1.4 Lens)	Multi-Pattern Photometry	Center Concentrated Photometry	Spot Photometry
	EV0~21	EV0~21	EV3~21



6. Light Adjustment

Light Adjustment Element: TTL Light Multi-Adjustment SPD (5 divisions) 1 cell (IC integrated type)
Light Adjustment Range:
External Speed Light: ISO25 - 1000 (Control is performed even out of range)
Built-in Speed Light: ISO25 - 800

7. AF

TLL Phase Difference Detection System using Multi-CAM 900 Auto-Focus Module. The image, on the primary image formation surface in five locations on the film conjugate surface, is formed on the secondary image formation
surface: the defocus amount in each location is operated using the CCD output in the module.

	Brightness Limit for Distance Measurement	Open F Value Limit
Distance Measurement Function	EV－1～+19 (ISO100, Ordinary Temperature)	F1．2～5．6

8. Built-in Speed Light

Control System	: Serial Control, TTL Light Adjustment System
Guide No.	: 12.3 (ISO100.m)
Illuminating Angle	: Covering 28 mm Lens
Charging Time	: About 3 seconds at best
Red Eyes Reduction Measures	: AF Auxiliary Light,Self-Timer Lamp, Red Eyes Reduction Lamp Emission
Monitor Emission	: Max. Emission of GN2.8 and Light Adjustment is controlled in the range of Max. Emission Time (50μsec).

9. Data/Date Back (Application for F80D, N80QD and F80S)

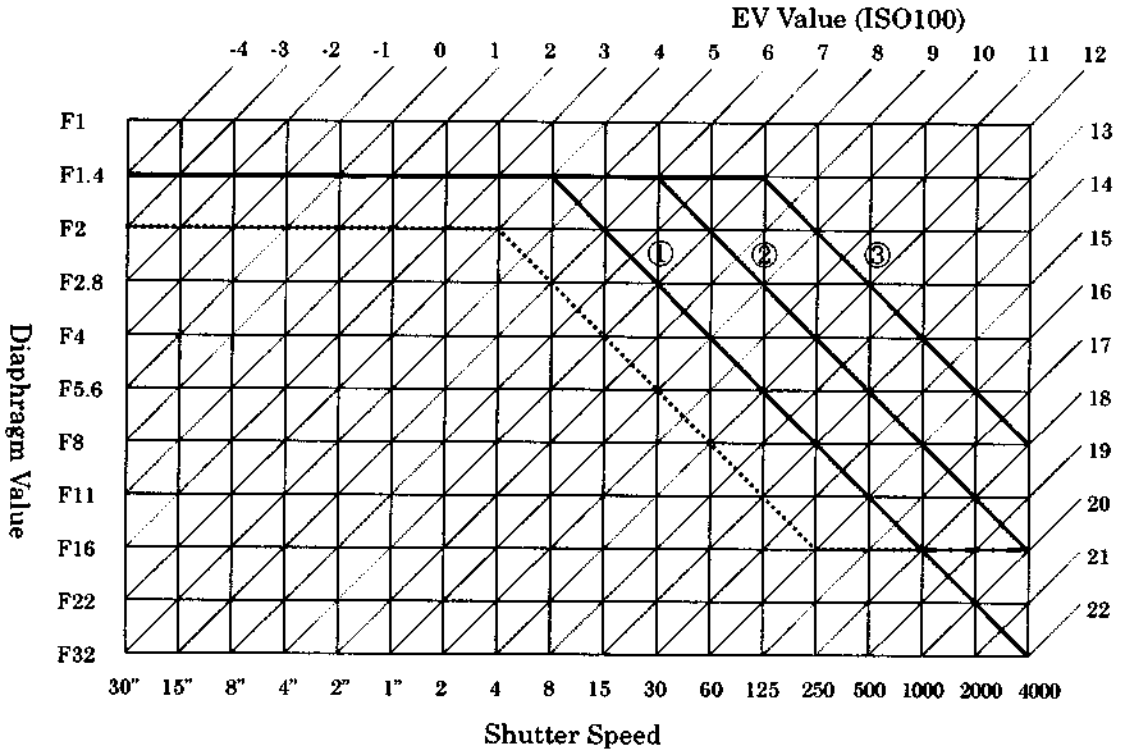
Simple QD:
Using the superimposition module, the superimposition of date is available on the image plane.

Between Film QD
Using the custom module and superimposition module, superimposition of the shutter speed, diaphragm value and corrected exposure value, are all available outside the image plane; and data are available inside the image plane.

Power Source: (Common to Simple and Between Films QDs)
The power is supplied from the camera body. The super-capacitor is mounted so that the date is not reset when the battery in the camera body is replaced.

10. Program Mode

[1] Program Diagram (When the speed light is not used)



① In the case of f ≦ 85 mm

② In the case of 85 mm < f ≦ 210 mm

③ In the case of 210 mm < f

Program Shift (When the speed light is not used)

(1) The program shift changes the diaphragm value and shutter timing (in seconds) and so changes the diagram while keeping the EV value consistent.

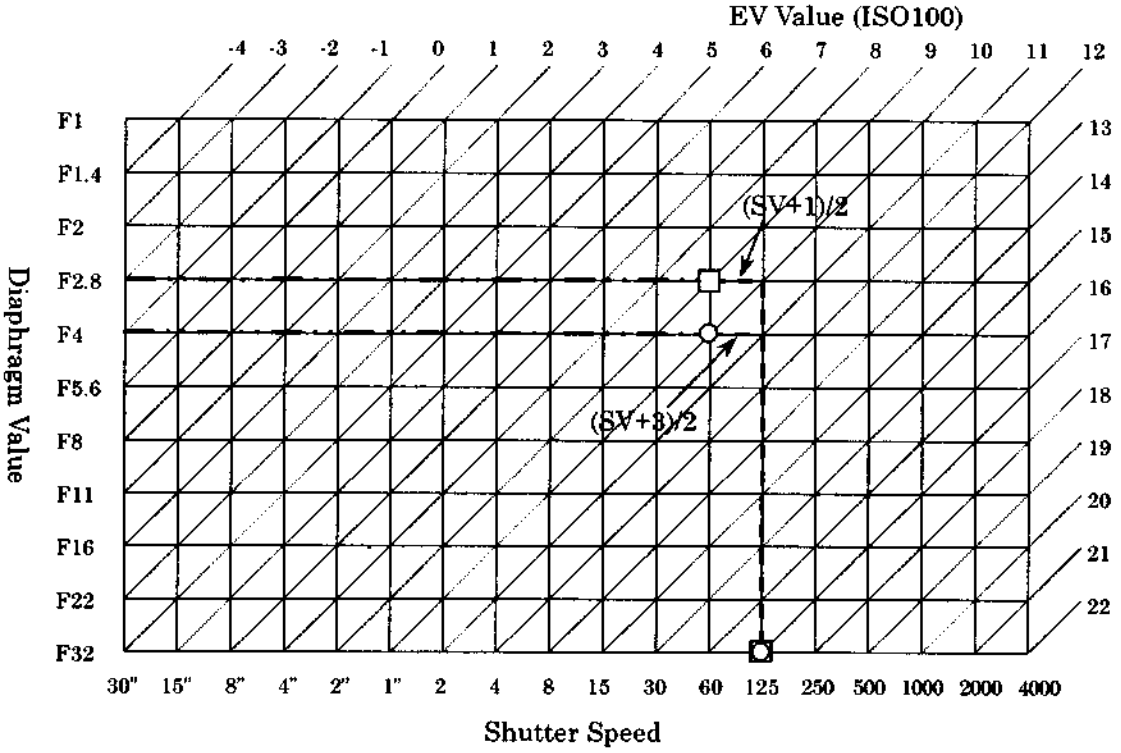
(2) As the program shift is performed by shifting the program line to the time direction (in seconds), the shift might not be performed at the control limit (Open diaphragm or Minimum diaphragm condition)

(3) Even at the control limit, the program line is shifted. At that time, the program shift is indicated.

(4) The program shift limit is +/- 5 [EV] both for diaphragm value and shutter speed.

When 50/1.4 unit is mounted and -1 [EV] program shift of shutter speed is performed at EV20, control is as shown by broken line in the figure. As the Min. diaphragm for 50/1.4 unit is F16, the diaphragm is limited to F16 in the program diagram and it becomes as indicated by the alternating long dashes and two short dashes line in the figure.

[2] Program Diagram (When the speed light is used)



When the speed light is used, the diaphragm value at opening side is limited by the ISO sensitivity and shutter speed at the high speed side is limited by the tuning time (in seconds) in the program diagram.

In the case except for slow synchronization, the shutter speed at the low speed side is limited to 1/60. When the built-in speed light and the external speed light are used together, the control is by the program diagram (when the speed light is used).

Program Shift when the Speed Light is Used:

(1) The program shift alters the diaphragm value and shutter timing (in seconds) and so changes the diagram while keeping the EV value consistent.
(2) As the program shift is performed by shifting the program line to the time (in seconds) direction, the shift might not be performable at the control limit (Open diaphragm or Minimum diaphragm condition)
(3) Even at the control limit, the program line is shifted. At that time, the program shift is indicated.
(4) The program shift limit is +/- 5 [EV] both for diaphragm value and shutter speed.
(5) For slow synchronization, the shutter speed at the low speed side is limited to 1/60.
(6) When the built-in speed light and the external speed light are used together, the control is performed using the program diagram (when the speed light is used).

11. Option

The following setting change and check can be done in the service facilities using check/adjustment software.

[1] Leaving Film Tongue when Film Rewinding is Completed

When the film rewinding operation is completed, normally the film tongue is wound in the film package; however, it can be set that so that it is left out of the film package.

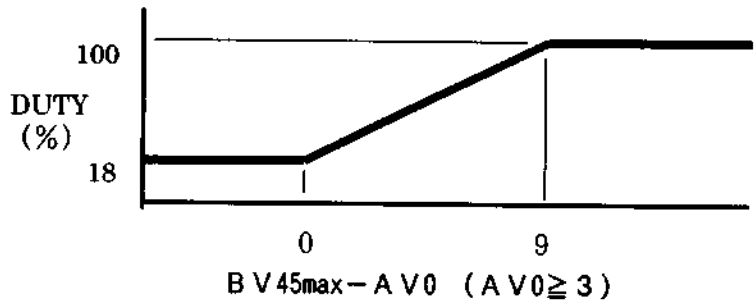
[2] Sequence Error Description Indication

The sequence error descriptions are indicated on the personal computer screen using the check/adjustment software for incident analysis, such as breakdown.

ERROR DESCRIPTION
Mirror UP Time Out
Mirror DOWN Time Out
First curtain Travel Time Out
Preview Time Out, Preview Error
Sequence Control Error (When Mirror UP is controlled)
Sequence Control Error (When Mirror DOWN is controlled)
Preview Control Error (When Preview Diaphragm is controlled)
Preview Control Error (At Preview Cancel Sequence)
Empty Feeding Error
Rewinding Error
Synchronous Switch Error
Switch Error Status (When Mirror UP Control is started)
Switch Error Status (When Mirror DOWN Control is started)
Switch Error Status (When Preview Control is started)
Switch Error Status (When transferred to Preview Cancel Sequence)
Diaphragm Control Error

12. Liquid Crystal Backlight in Finder

The liquid crystal backlight in the finder is always turned on when the liquid crystal is turned on and its brightness can be changed by changing the DUTY ratio in accordance with the brightness of the subject to be taken. However, the DUTY ratio is fixed during the film rewinding operation. The brightness of the subject to be taken and the DUTY ratio are described as follows.



BV45max :apex value of the output on the higher brightness side out of lower left and lower right photometry element.

AV0 :apex value of the opening value of mounted lens. However, when the lens brighter than F2.8 is mounted, it should be F2.8 (AV0= 3). If the lens (except for CPU built-in lens) is mounted, it also should be F2.8 (AV0= 0).

13. Communication Information Processing

This camera communicates with the following accessories.

Speed Light
Lens or Teleconverter

[1] Communication with the Speed Light

This camera communicates with the communication speed light mounted on the accessory shoe and data is transmitted and received between these units.

Speed Light Condition Judgment:

This camera attempts to communicate with the speed light periodically. As a result, the following three conditions are judged for the speed light mounted on the accessory shoe.

(1) A communication speed light is mounted.

- There are 6 models; SB-24, SB-25, SB-26, SB-27, SB-28 and SB-28DX for the existing communication speed light.

Note: In the case that the camera is connected to the above speed light through TTL light adjustment code SC-17, the communication is available.

(2) A non-communication speed light is mounted.

- This is the case that the speed light without communication function which has RDY terminal, is mounted on the accessory shoe. The available speed lights in this classification are SB-22 and SB-23, etc.

(3) Without a Speed Light
- This is the case that any speed light is not mounted on the accessory shoe.
- It includes the case that a speed light without the RDY terminal is mounted on the accessory shoe. The available speed lights in this classification are SB-1, SB-2, SB-3, etc.

Accessory Shoe Contact to be Used:

TTL Terminal	Communication Request from This Camera
STOP Terminal	Communication Data and Hand Shake
RDY Terminal	Communication Clock

[2] Communication with the Lens or Teleconverter
This camera communicates with the lens attached to the mount, or the teleconverter.

Judgment of Lens or Teleconverter:
This camera attempts to communicate with lens and teleconverter periodically. As a result, the following two conditions are considered for the lens attached to the mount and the teleconverter. Basically, it is impossible that a IX lens should be connected to this camera due to the structural problem.

(1) A CPU Built-in Lens is mounted.
There are following three types for the CPU built-in lens.

D Type AF Lens (AF-I lens, AF-S lens and including AF-I lens or AF-S lens where AF-I teleconverter is mounted)
AF Lens except D type (except AF lens for F3AF)
AI-P lens

(2) A CPU Built-in Lens is not mounted.

When a non-CPU lens is mounted and the teleconverter is mounted, it is decided as (2).

Lens Contacts to be Used:
This camera communicates with the lens (Synchronous Communication) through the following lens contacts.

Contact b	Hand Shake for CPU Built-in Lens
Contact c	Communication Clock
Contact d	Communication Data

Note: In addition to above, the Contact a (power source), Contact g (GND) and the mount (GND) are used.

14. Sequence

[1] Diaphragm Control

DIAPHRAGM OPENING CONTROL:

When the controlled diaphragm stage is ⊿AVs = 0, it is controlled as shown in the following figure.

(1) Diaphragm Mg is turned on.

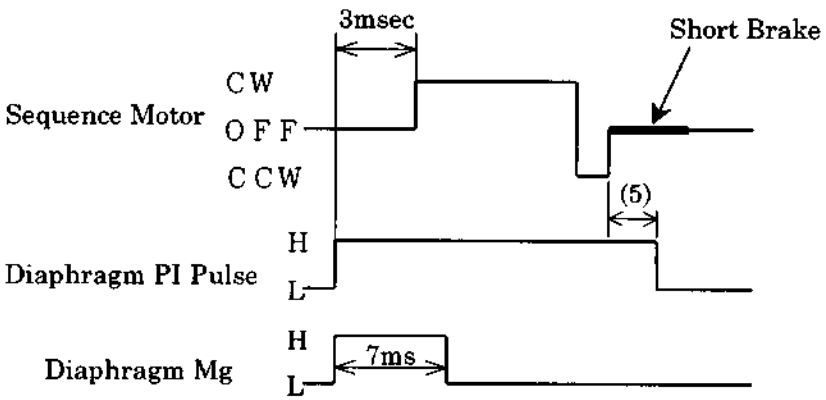
(2) After the diaphragm pulse detection is started (3 msec later), the sequence motor is turned on.

(3) 7 +/- 1 msec after the diaphragm Mg is turned on, the diaphragm Mg is turned off.

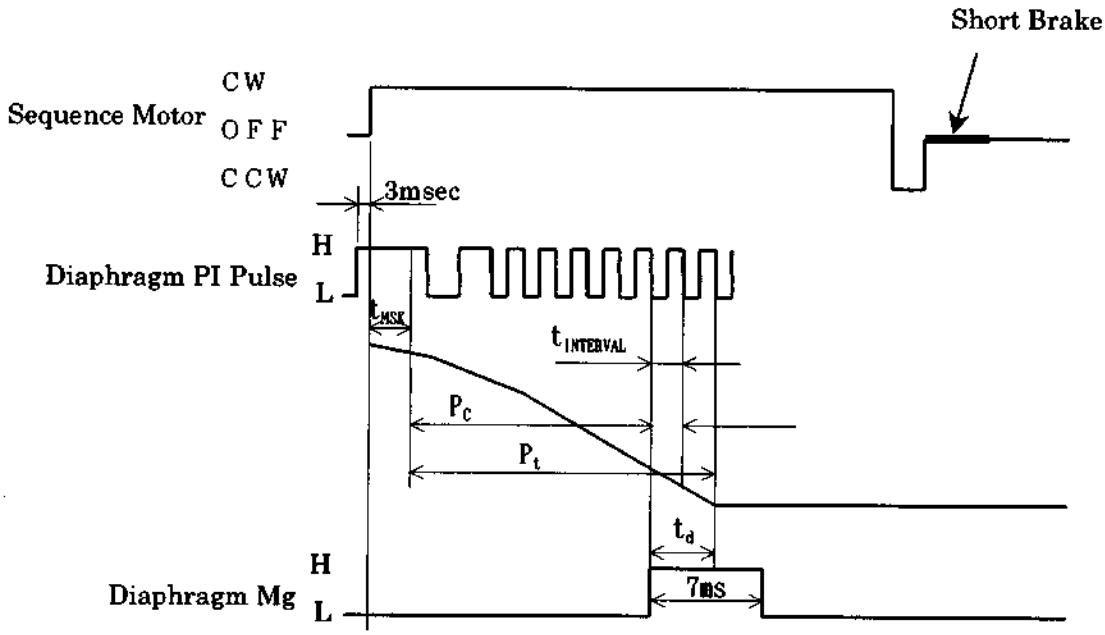
(4) The sequence motor is stopped at the stop control by the short brake.

(5) The detection of the diaphragm PI pulse is continued from the completion of the direction of current to the sequence motor up to the completion of the direction of current to the motor of the shutter pre-screen Mg.

※ When the diaphragm is fully opened, the film feeding speed is increased.



CONTROLS EXCEPT FOR DIAPHRAGM OPENING:



Except for opening the diaphragm is controlled as shown in above figure.

(1) The diaphragm PI is turned on.

(2) 3msec after the diaphragm PI is turned on, the sequence motor's normal rotation is started.

(3) When 5 +/- 0.5 msec. (0 ~ 10 msec) of mask time t MSK has passed after the sequence motor is turned on, the diaphragm PI pulse detection is started.

(4) The pulse frequency t INTERVAL is measured while the number of pulses are counted, and the targeted diaphragm control pulse pc after correction is operated (calculated). Pt means Controlled Diaphragm Pulse.
Pc = Pt - td/t INTERVAL
td = 1.7 (0 ~ 5) ± 0.1 msec.
(In order to secure the targeted diaphragm's controlled pulse, the diaphragm Mg has to be turned from the previous pulse count to the pulse rate corresponding to the response delay td of the diaphragm Mg).
When Pt = 1, it should be pc = pt.

(5) The diaphragm encoder pulse p is compared with the targeted diaphragm controlled pulse pc, and if p ≧ pc the diaphragm Mg is turned on for 7±1msec.

(6) The sequence motor is stopped in the stop control by the short brake.

(7) The detection of the diaphragm PI pulse is continued from when the change of direction of current to the sequence motor is completed and Tqus (Adjusted Value), until the change of direction of current to the shutter pre-screen Mg is completed.

[2] Preview Control

When the preview button is pressed and the preview switch is turned on, the diaphragm control is performed with the mirror down and the shutter charged by means of the reverse rotation of the sequence motor.

[3] Film Winding Control

The spool winds the film by the normal rotation of the film feeding motor. The amount of film wind is controlled by monitoring the feeding PR output which detects the film perforations. The feeding PR generates 16-edge signal by the winding of 38 mm of the film (one frame).

DRIVING TIMING OF THE FILM FEEDING MOTOR:

When the feeding mode is set (except for multi-shooting) the sequence motor and film feeding motor are driven parallel at the same time, while the mirror is down. However, if the power voltage is lower than specified value, they are driven sequentially.
When the setting is for superimposed data between the frame, then the film feeding motor is driven after the data superimposition is completed.

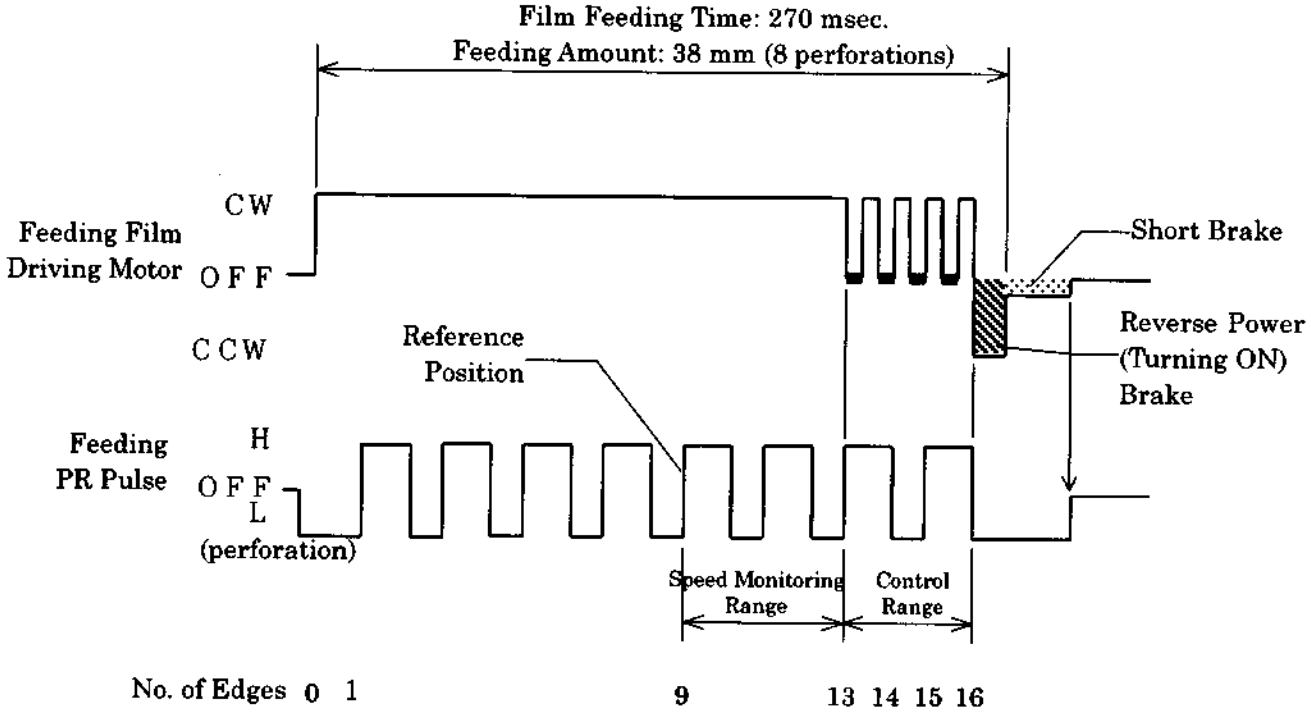
CHANGE-OVER CONDITION FOR PARALLEL AND SEQUENTIAL DRIVING:

When the battery check results in a sequential driving level or less, the parallel driving is changed to sequential driving.

RETURN CONDITION:

After automatic change from parallel to sequential drive, when the battery check yields a parallel driving level, it automatically returns from sequential to parallel driving.

FILM STOP CONTROL :



Reference Position

The 9th edge (Perforation - Film) which is detected by the feeding PR is taken as the reference position.

Stop Position

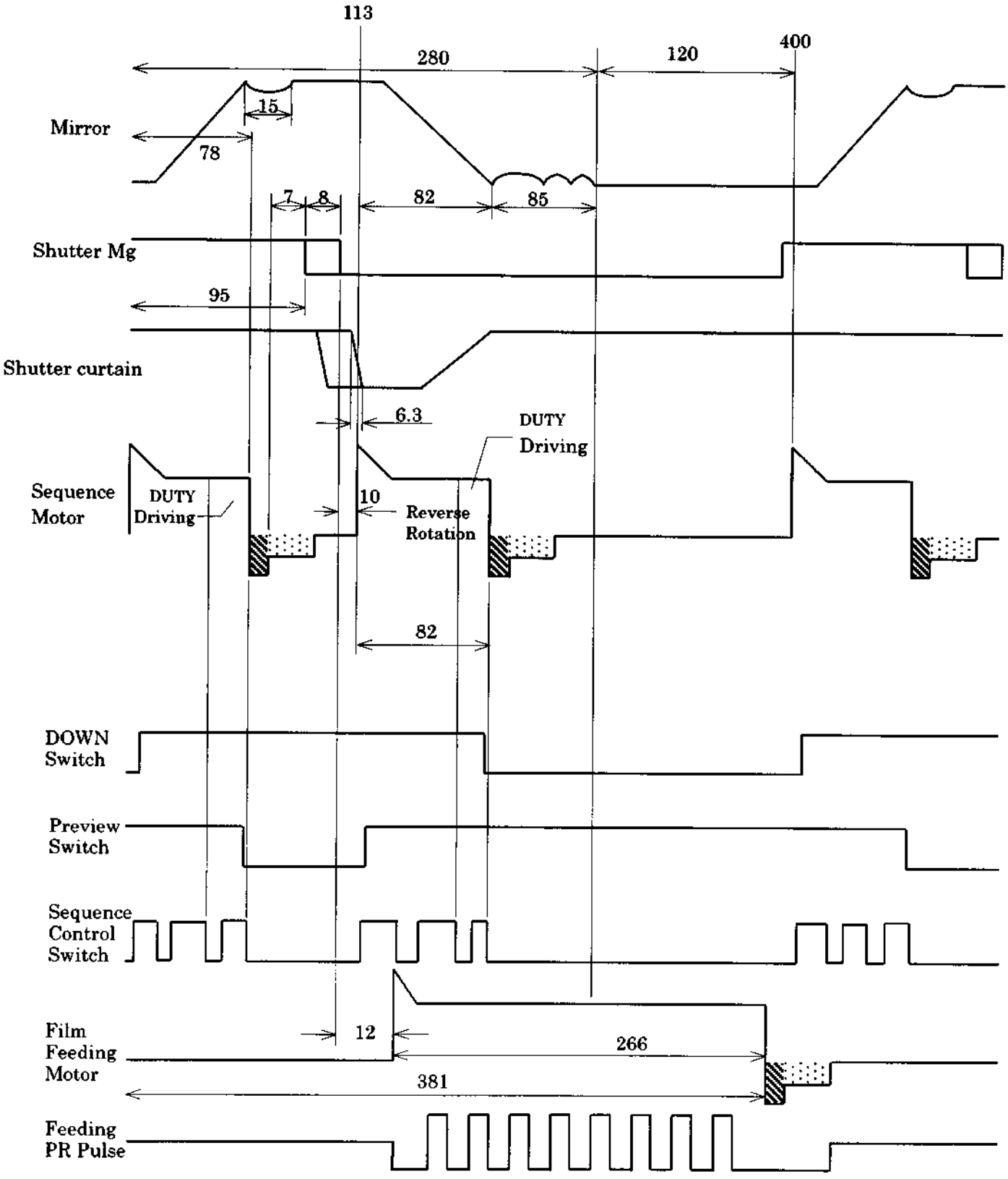
- It should be stopped at the position of 16th edge (7th from the reference position).
- Stop Accuracy: Target 0.5 ± 0.5 mm
- However, to secure that accuracy, the reverse power (turning-on) braking is performed at the 16th edge and then short braking is performed.

Stop Servo

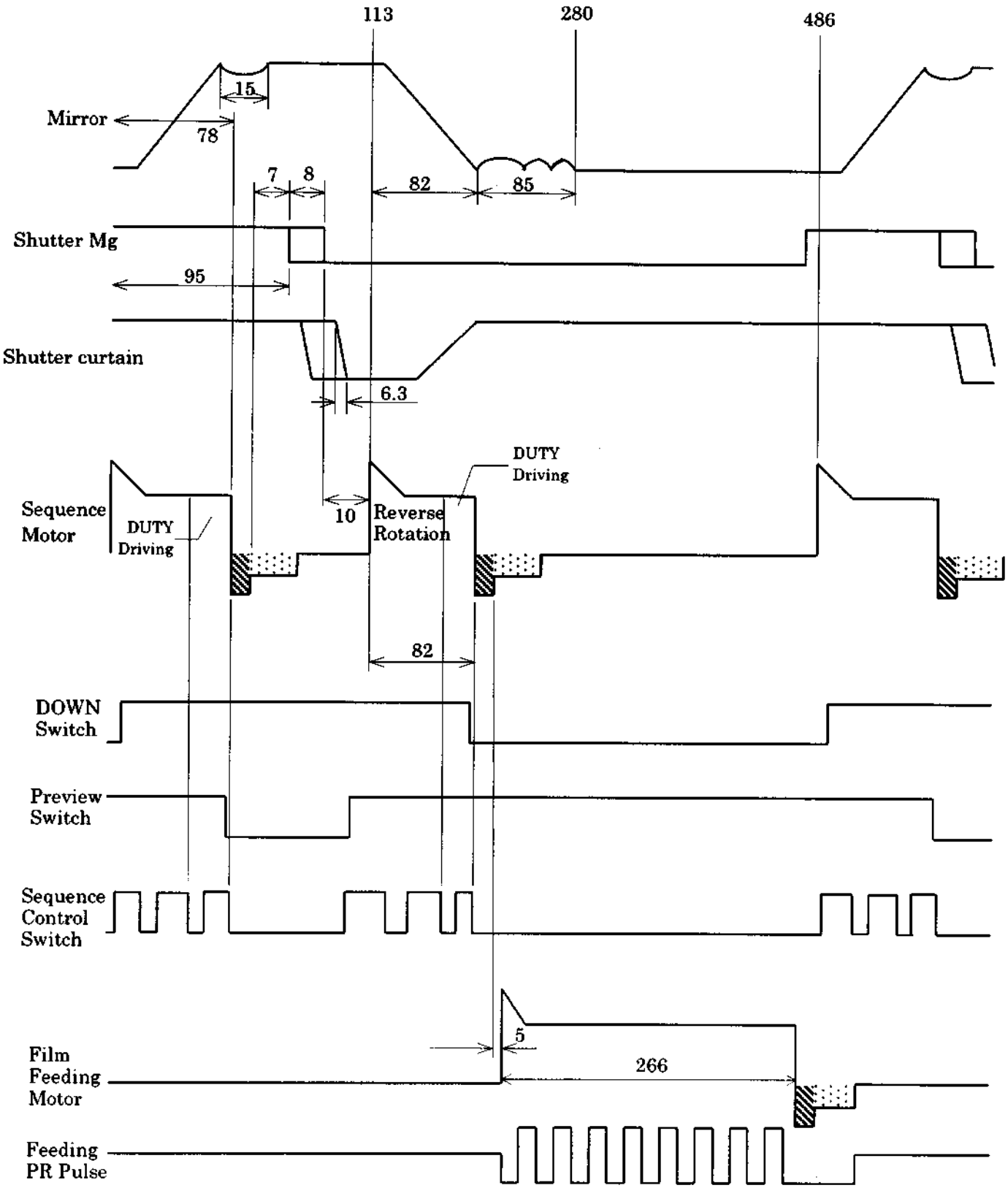
In order to maintain the stop accuracy during change of feeding speed due to voltage fluctuation, the film feeding speed is monitored so that the control method used is appropriate to the speed at that time in order to maintain the speed at the braking point.

[4] Sequence Diagram

Parallel Driving



Sequential Driving



15. Mechanism Switches

SWITCH NAME	LOCATION
Back Door Switch	Back Door Open/Close Lever
Synchronous Switch	Shutter Assembly
Sequence Control Switch	SQ Shutter Charge Cam and SQ FPC
DOWN Switch	SQ Shutter Charge Cam and SQ FPC
Preview Switch	SQ FPC (Diaphragm PI PCB)
Film Detection Switch	PR unit
f min Switch	Front Assembly (under the Bayonet)
SP Pop Up Switch	Top Cover FPC (Top Cover Section)

DISASSEMBLY

1. SEPARATION OF THE FRONT BODY FROM THE REAR BODY

2. FRONT BODY

3. REAR BODY

DISASSEMBLING

⚠ WARNING	
	● Due to its internal high voltage area, make sure to check the safety when removing the cover. ● Be sure to discharge the static electricity from the main condenser according to the instruction in the repair manual after removing the front cover.

Note : ① In the assembling and disassembling sections of this manual, we took an initially produced bodies as a model to explain wiring, Wiring are subject to change depending on the period of production and may not conform with the current products. Refer to the actual model.

② Be sure to take off the battery before disassembly.

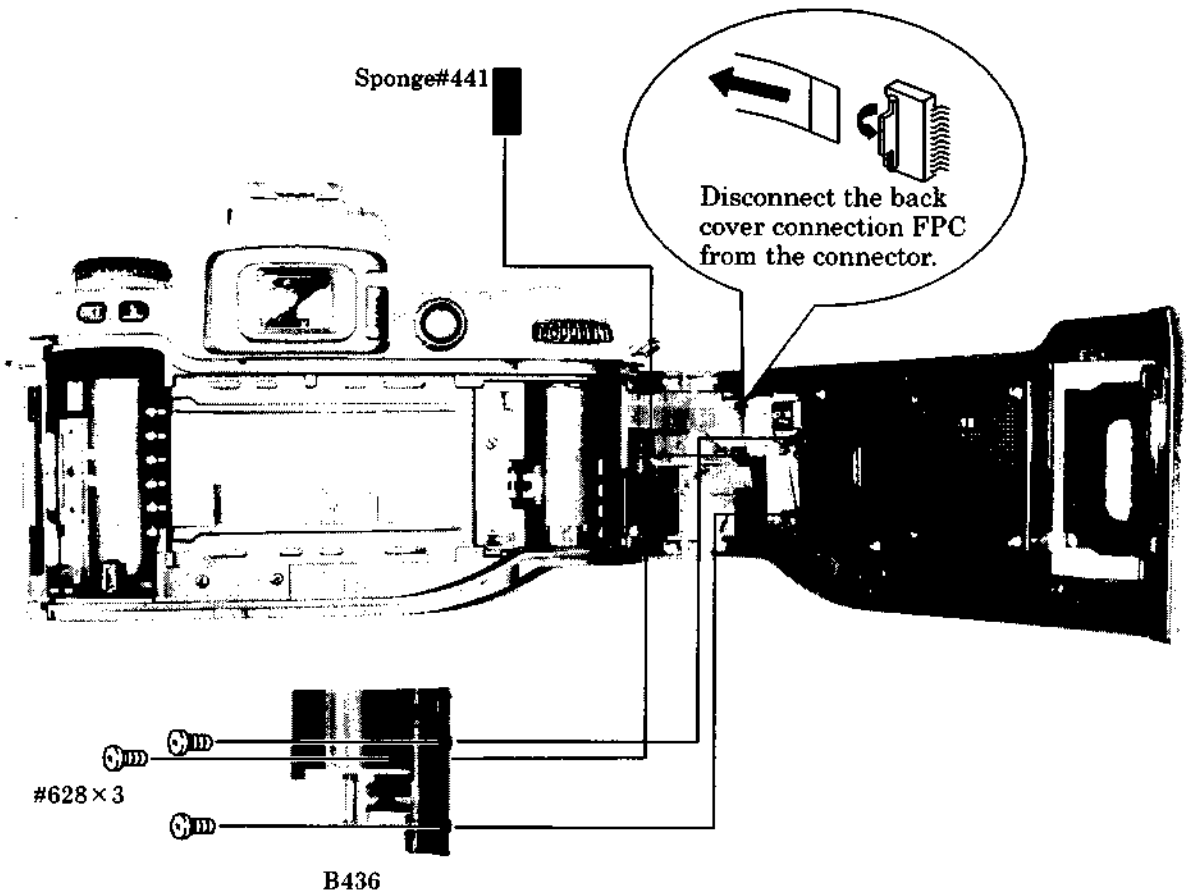
③ At disassembly, make sure to memorize how to arrange the wires, how to fix the screws, and the types of used screws.

④ Be sure to get yourself grounded because of the static electricity which exerts any serious adverse effect to ICs.

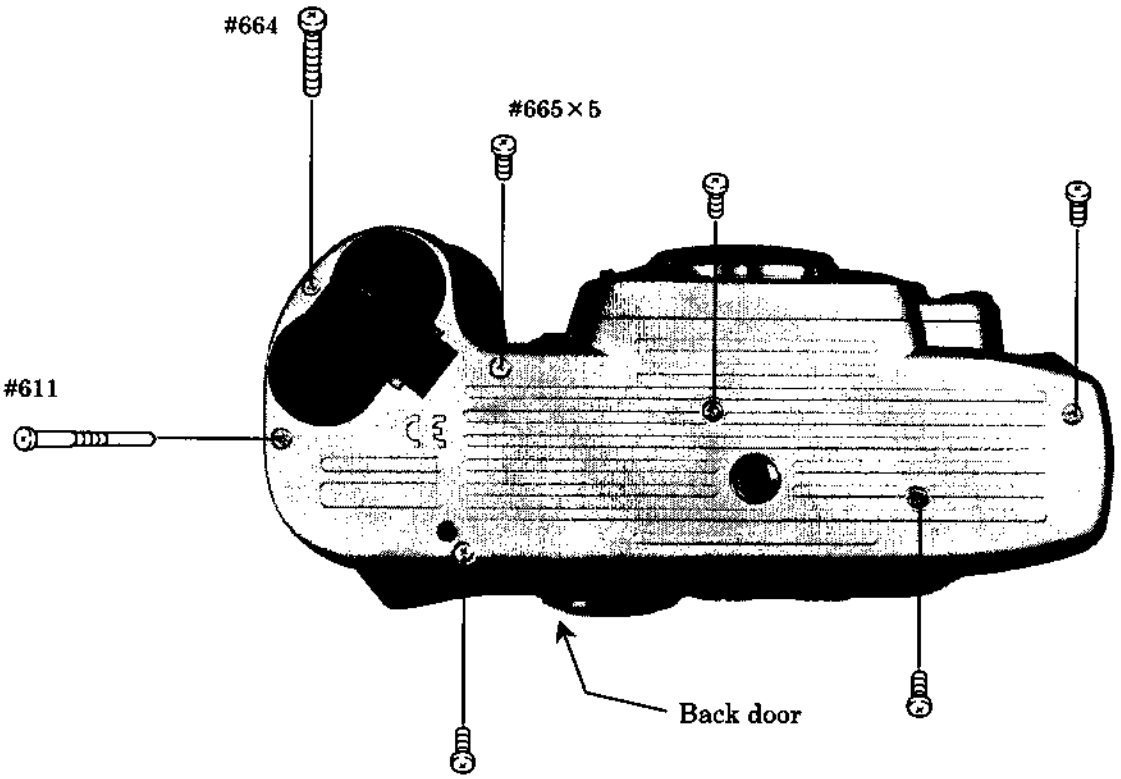
⑤ When you disassemble the camera body further

1. SEPARATION OF THE FRONT BODY FROM THE REAR BODY

FILM ROLLER UNIT

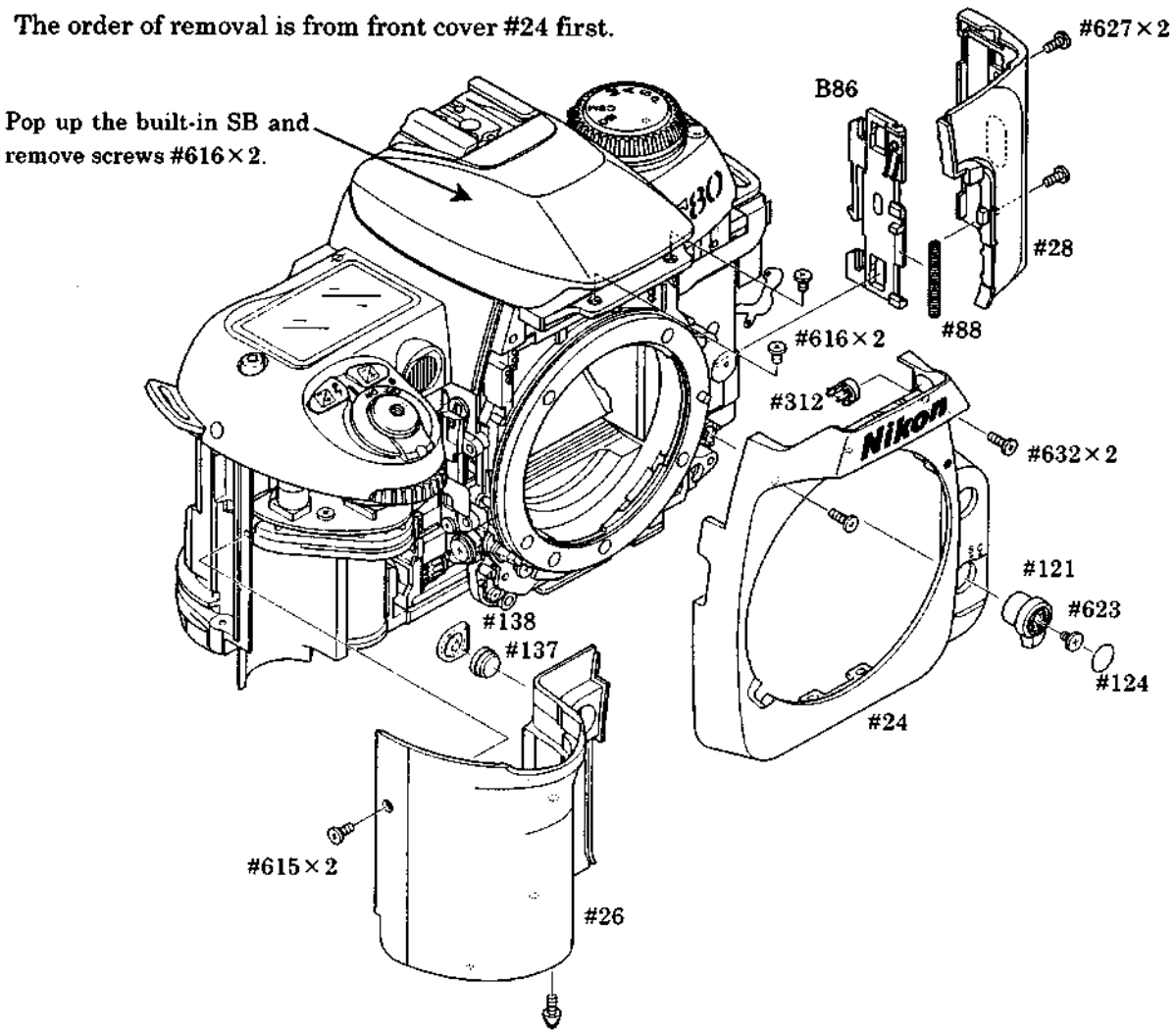


BOTTOMCOVER, BACK DOOR



FRONT COVER, BACK DOOR OPEN/CLOSE AREA, GRIP COVER

● The order of removal is from front cover #24 first.

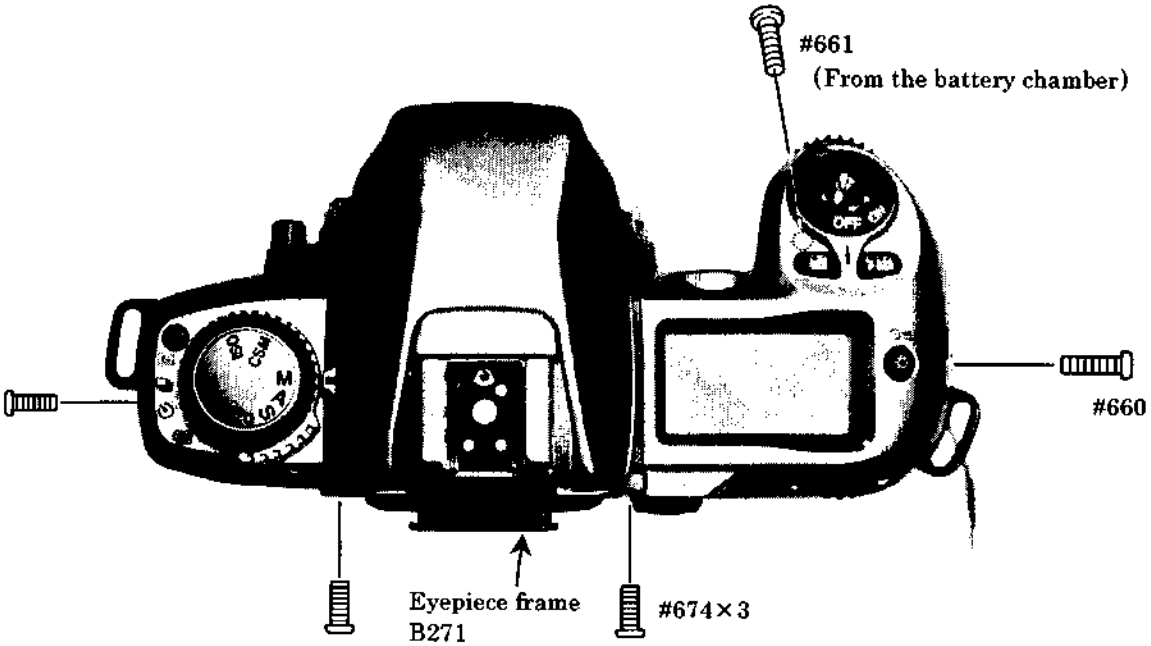


TOP COVER

1. Removal of screw(s)

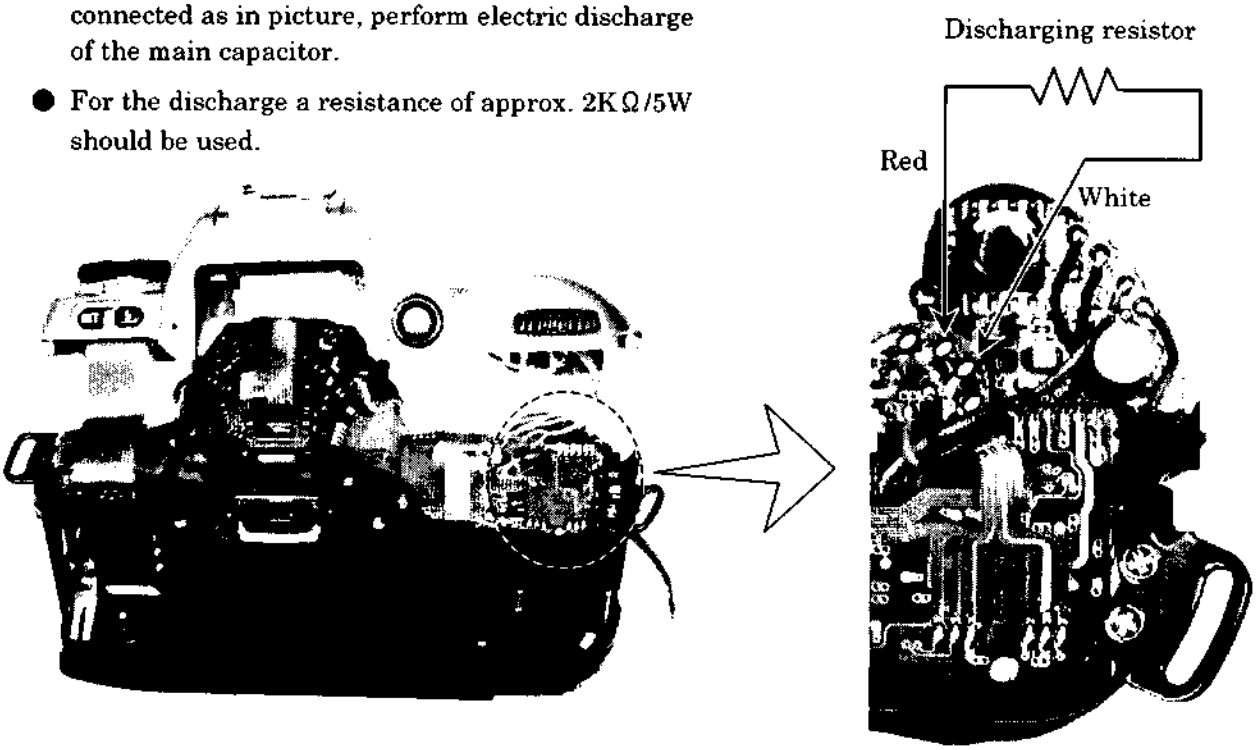
⚠ WARNING

- Due to its internal high voltage area, make sure to check the safety when removing the cover.
- Be sure to discharge the static electricity from the main condenser according to the instruction in the repair manual after removing the front cover.

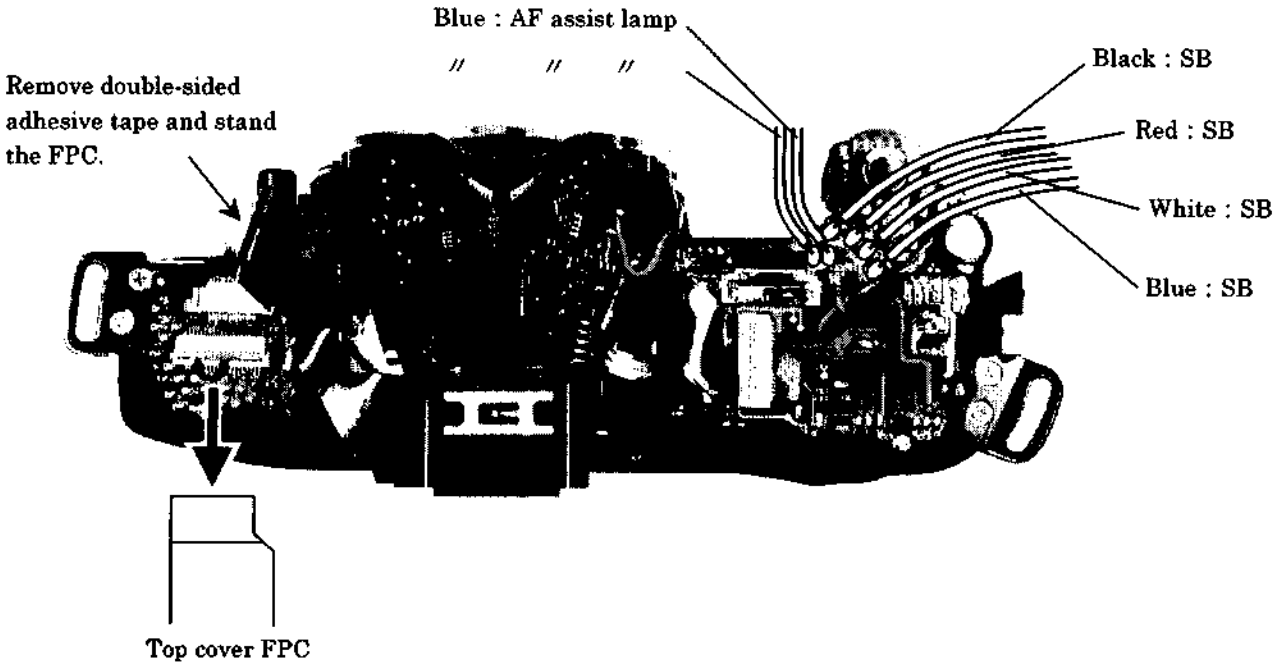


2. Discharging from the main capacitor

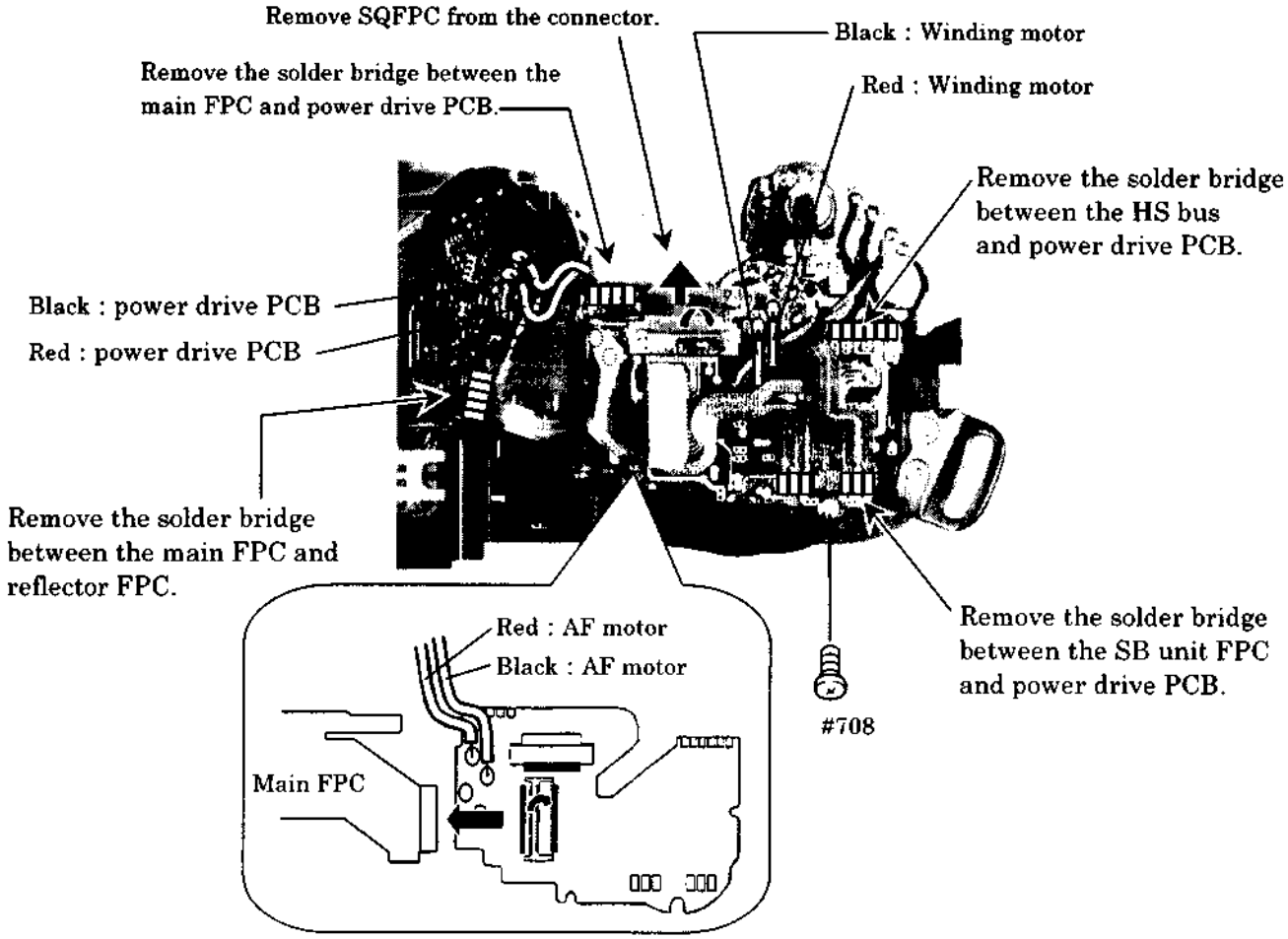
- Between the patterns where red and white wires are connected as in picture, perform electric discharge of the main capacitor.
- For the discharge a resistance of approx. 2KΩ/5W should be used.



3. FPC Removal from the Wire and Connector

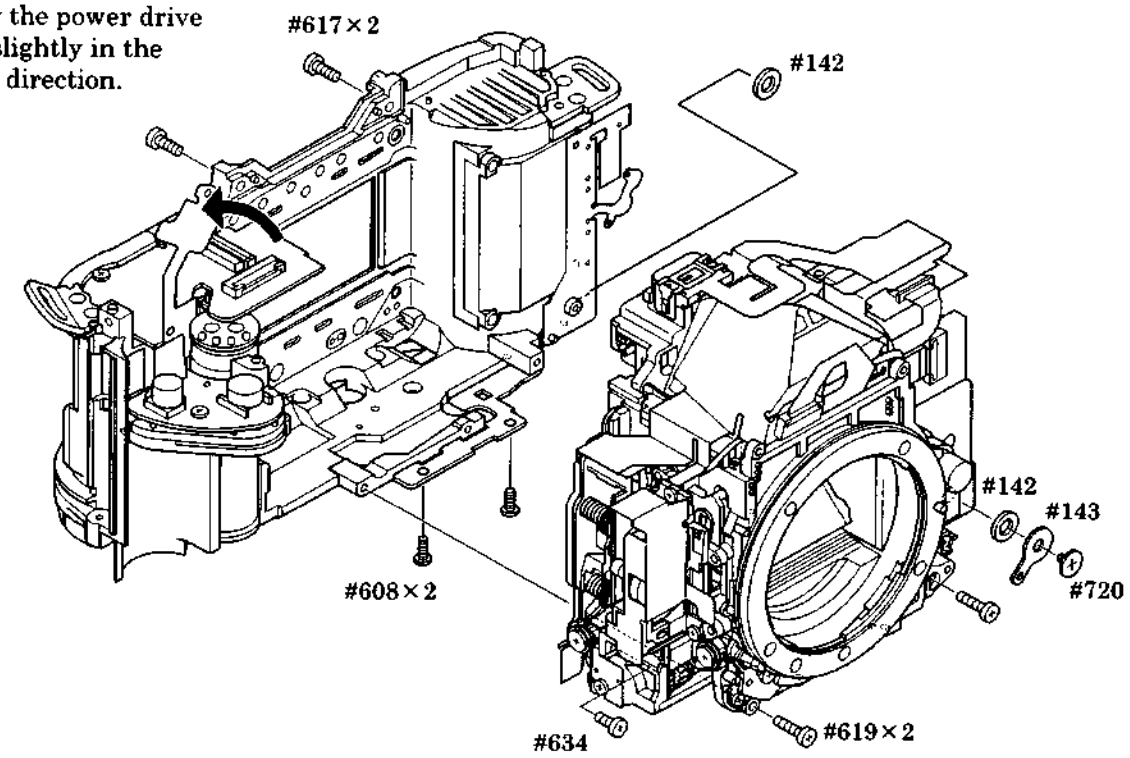


FPC REMOVAL FROM EACH WIRE, SOLDER BRIDGE AND CONNECTOR



CEPARATION OF THE FRONT AND REAR BODIES

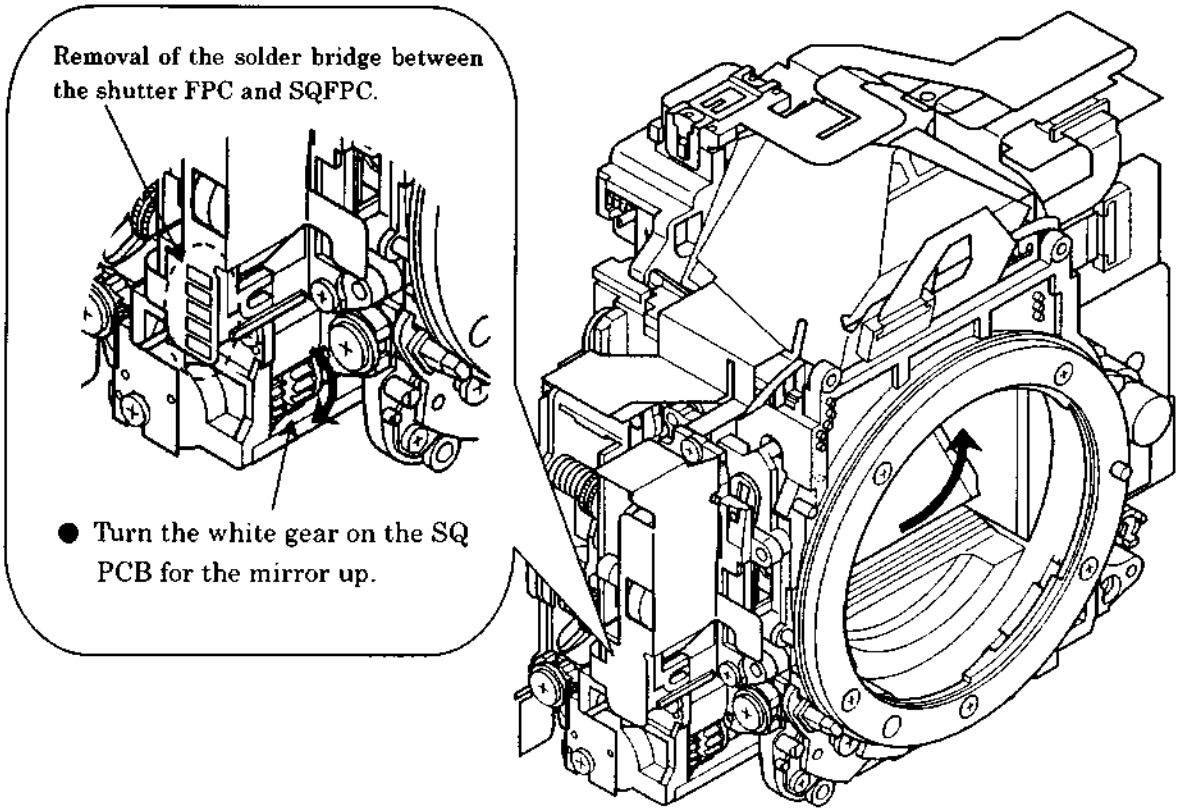
● Remove the front body, lifting the power drive PCB slightly in the arrow direction.



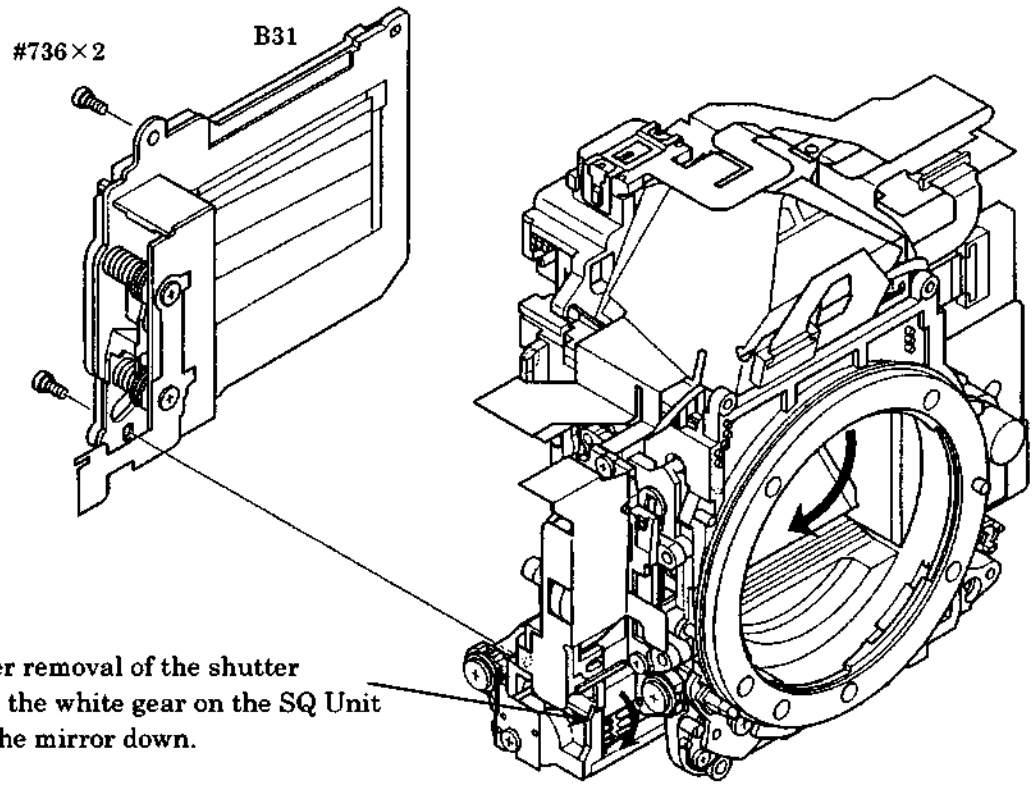
2. FRONT BODY

Shutter

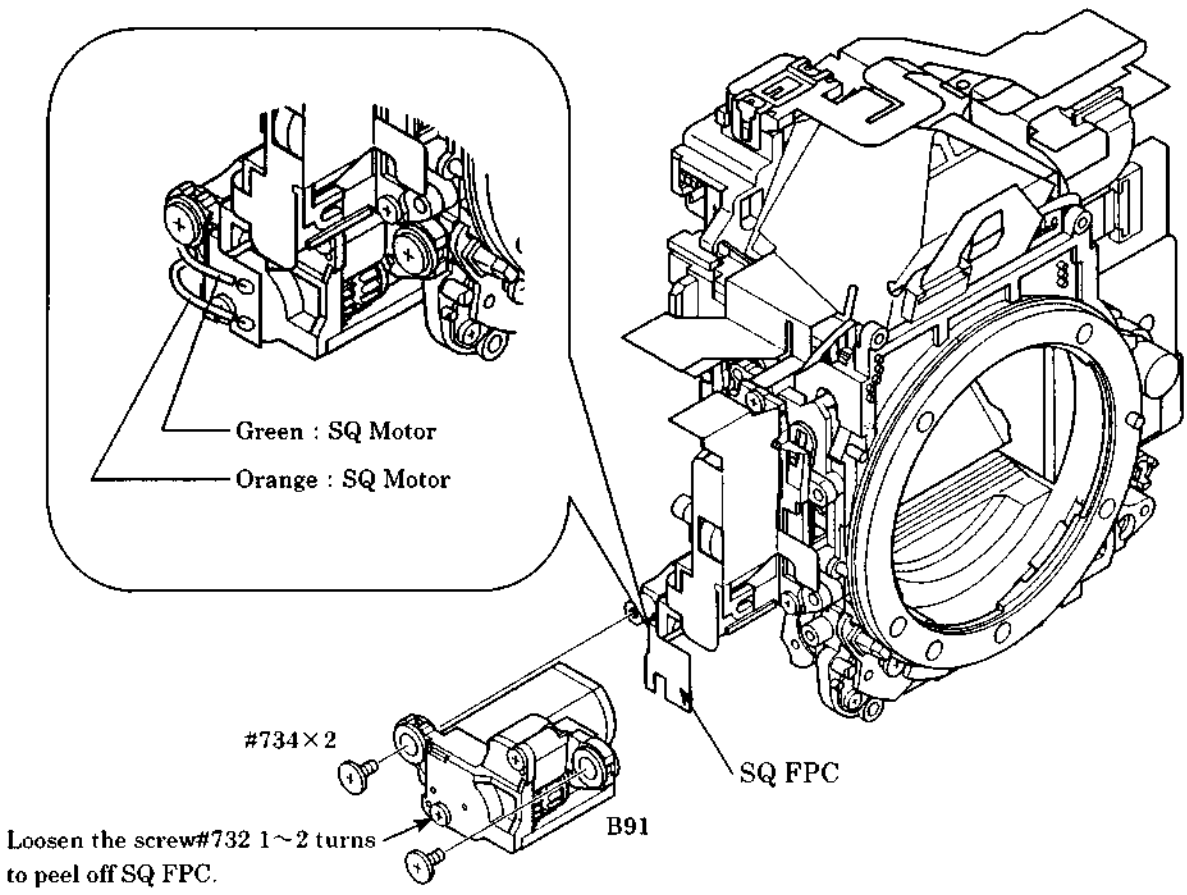
1. Mirror up, Removal of the solder bridge



2. Removal of the shutter

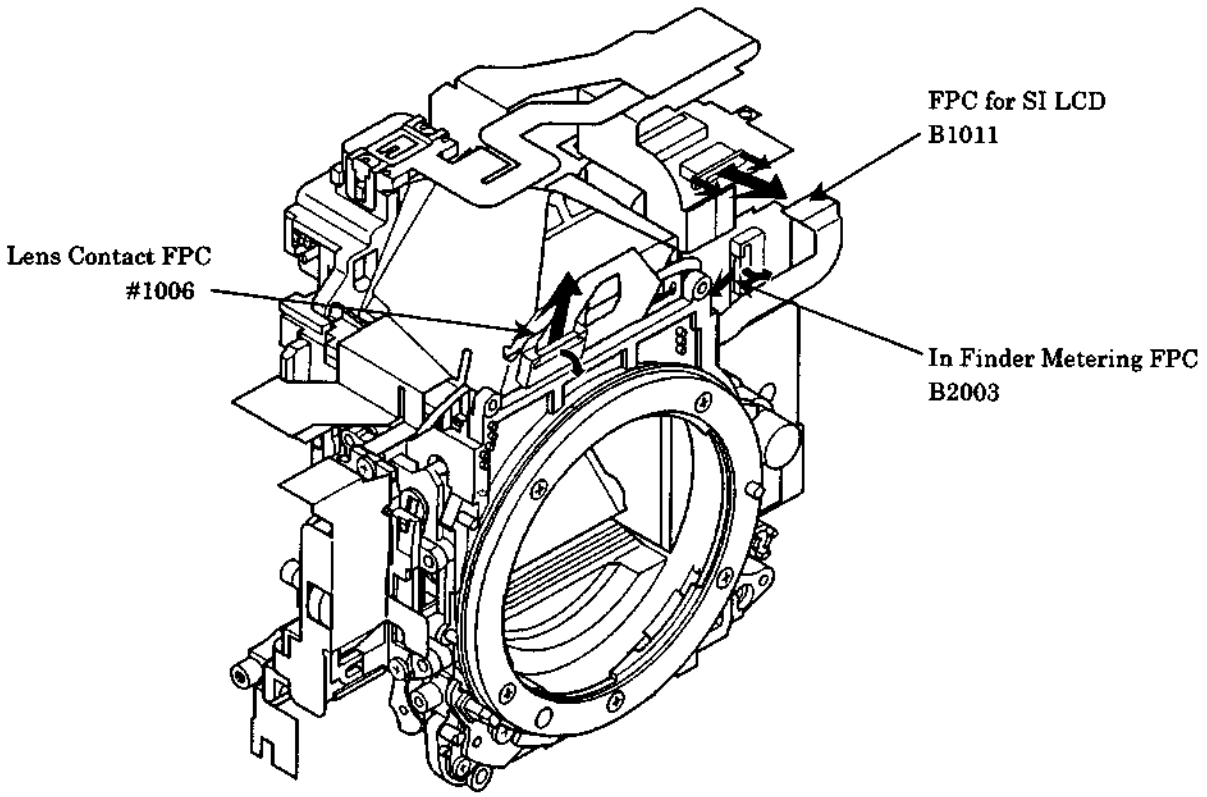


SQ UNIT

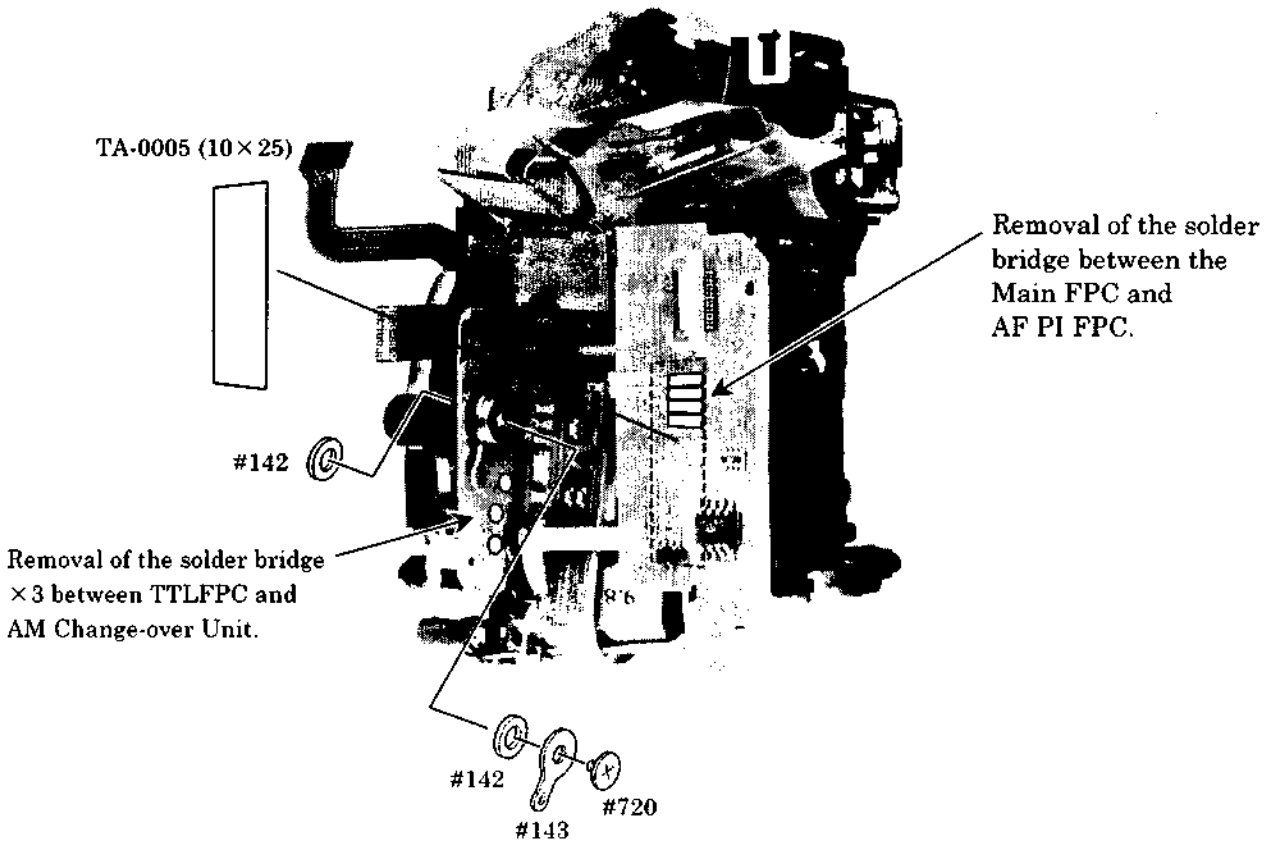


Main FPC

1. FPC Removal from the Connector

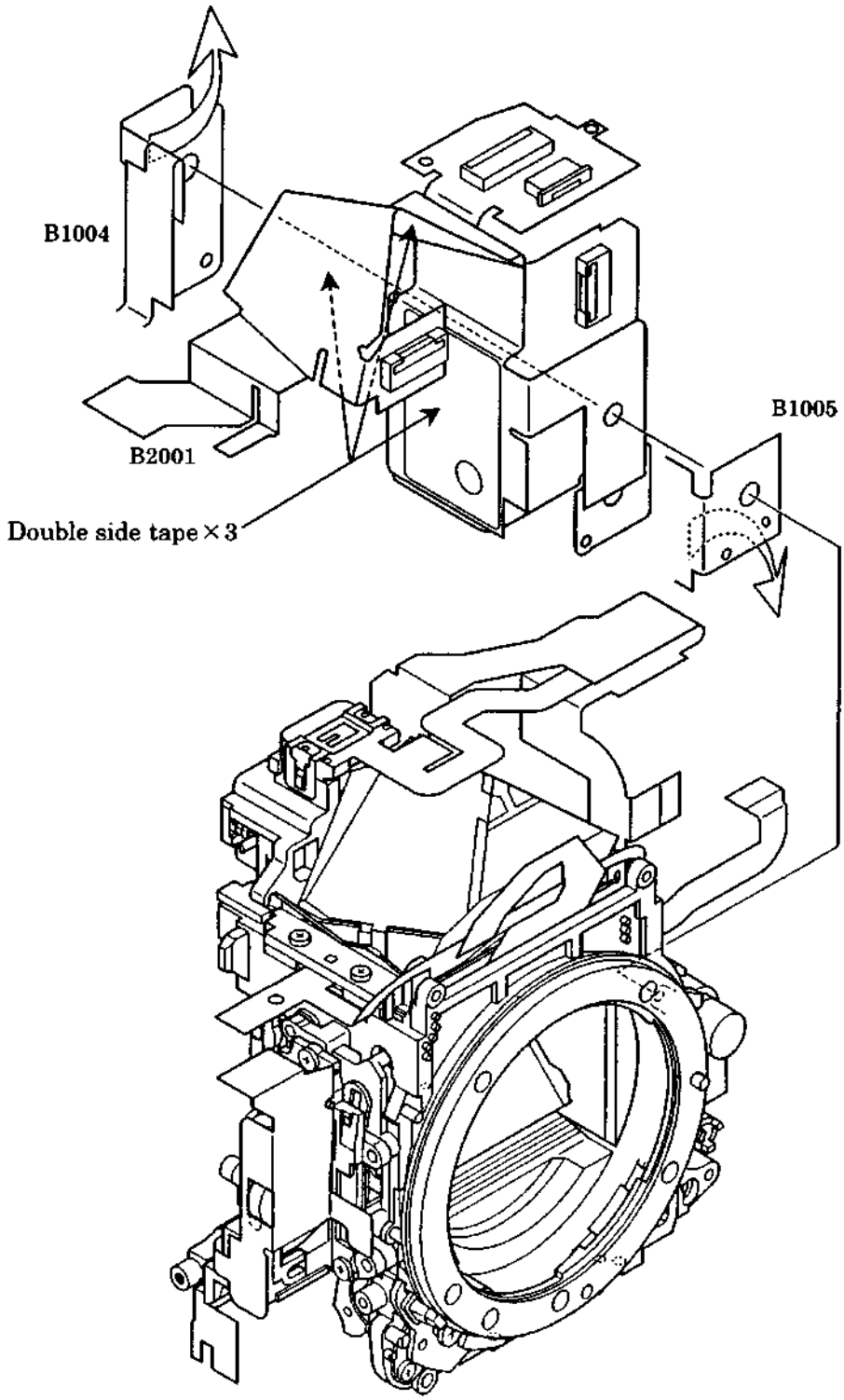


2. Removal of pressure welding and solder bridge



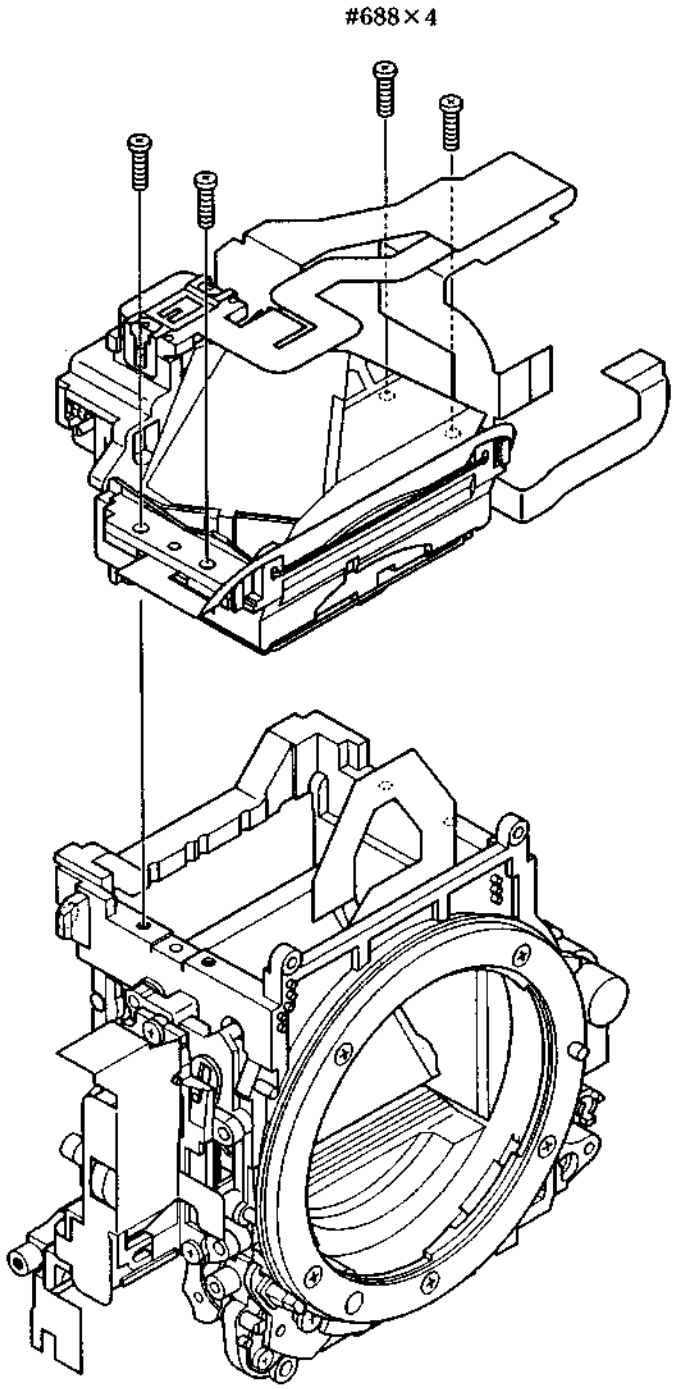
3. Removal of the Main FPC

● Stand the TTLFPC #B1004 and CCDFPC #B1005 at an angle or 90 degrees or more to the arrow direction and remove the main FPC #B2001.

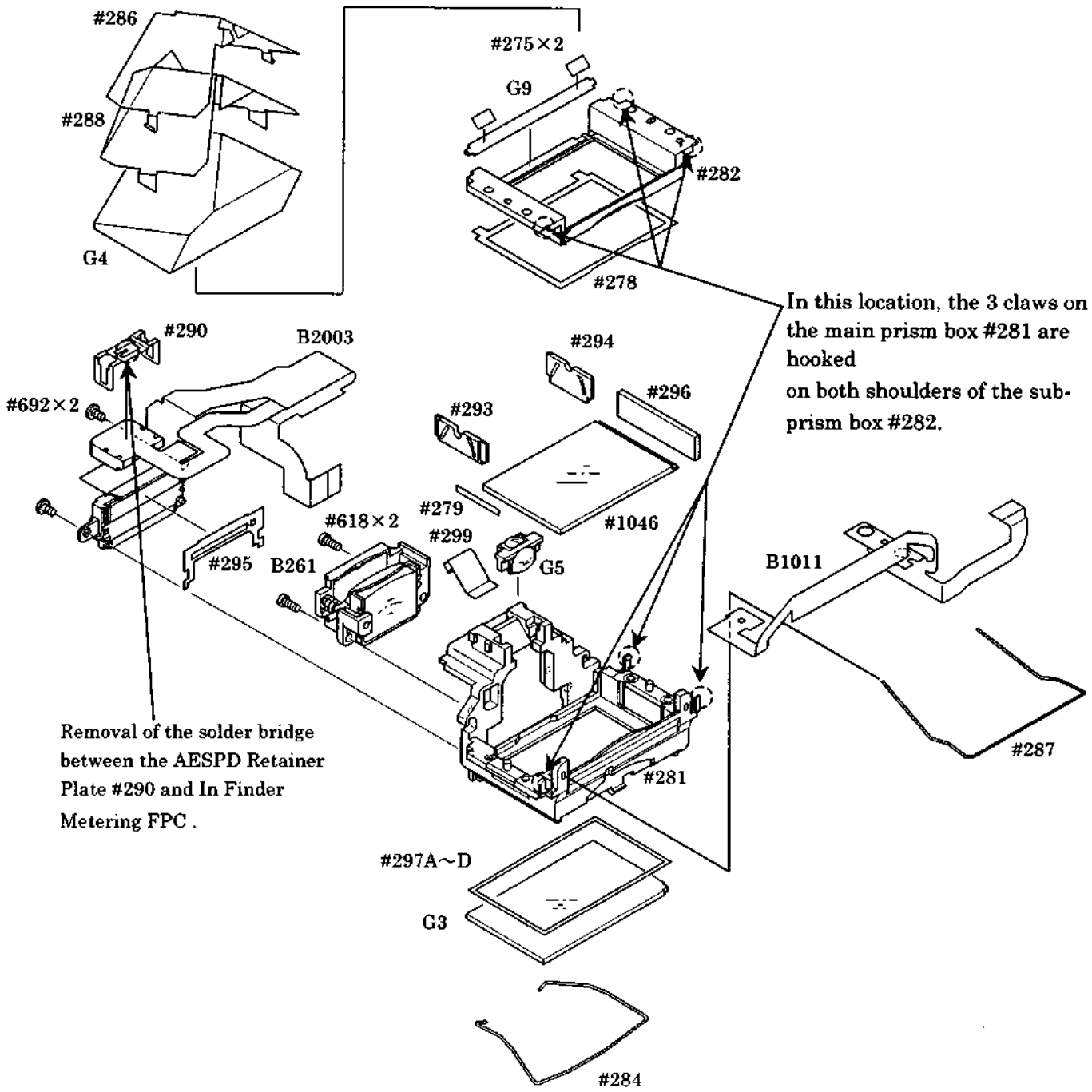


PRISM BOX UNIT

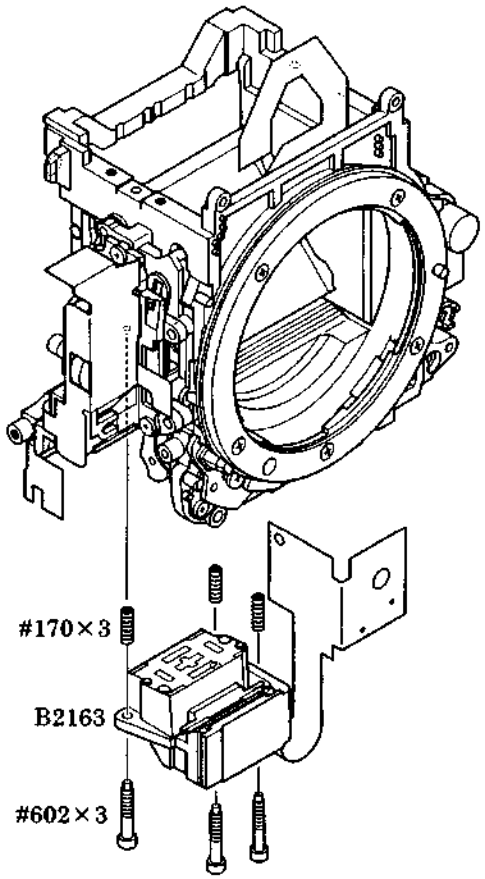
1. Removal of Prism box unit from the Front body



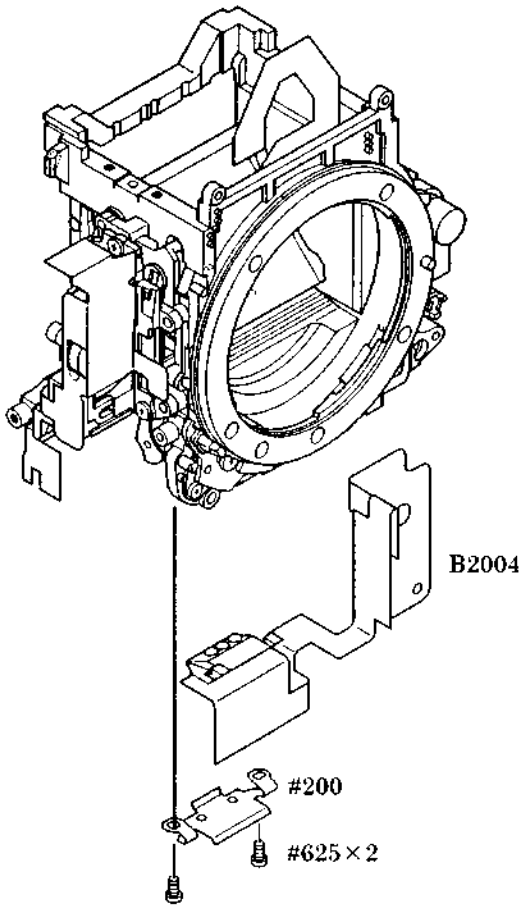
2. Disassembling of the Prism Box Unit



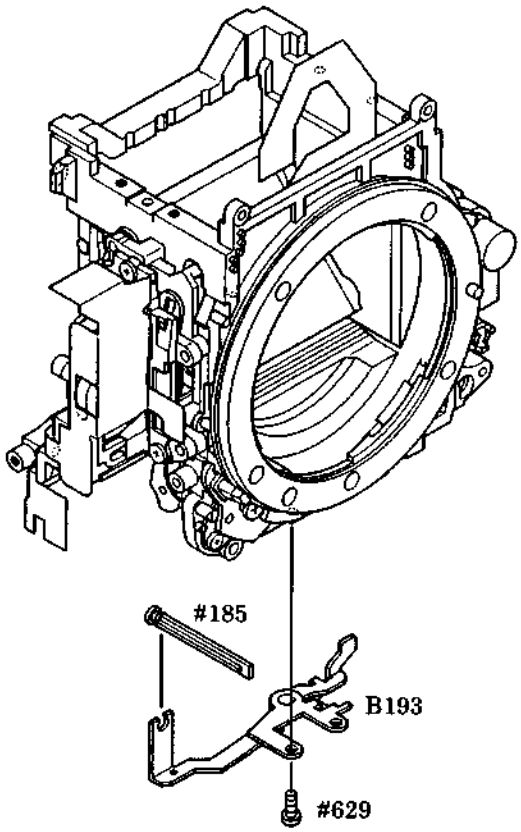
AF SENSOR UNIT



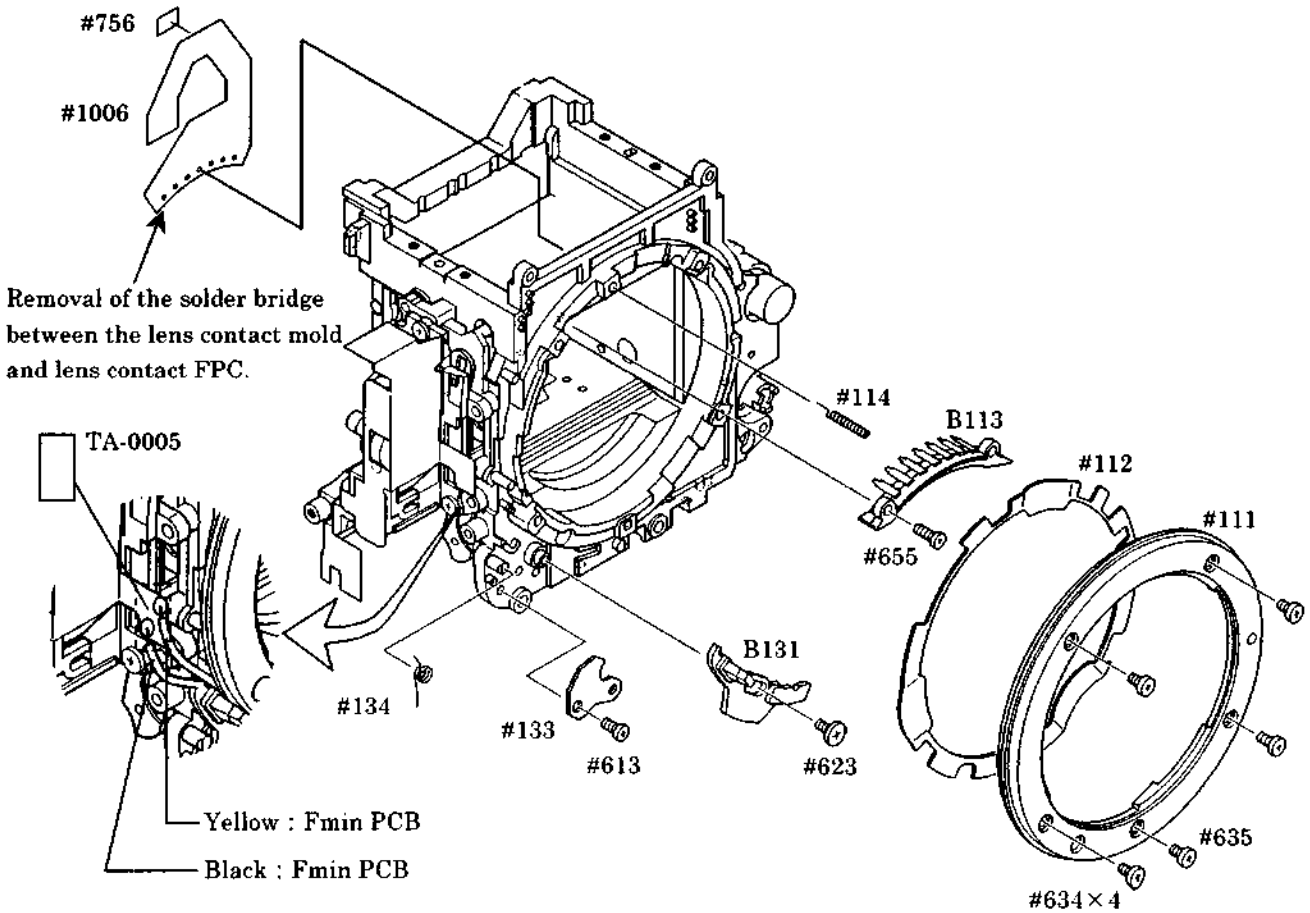
TTL SPD UNIT



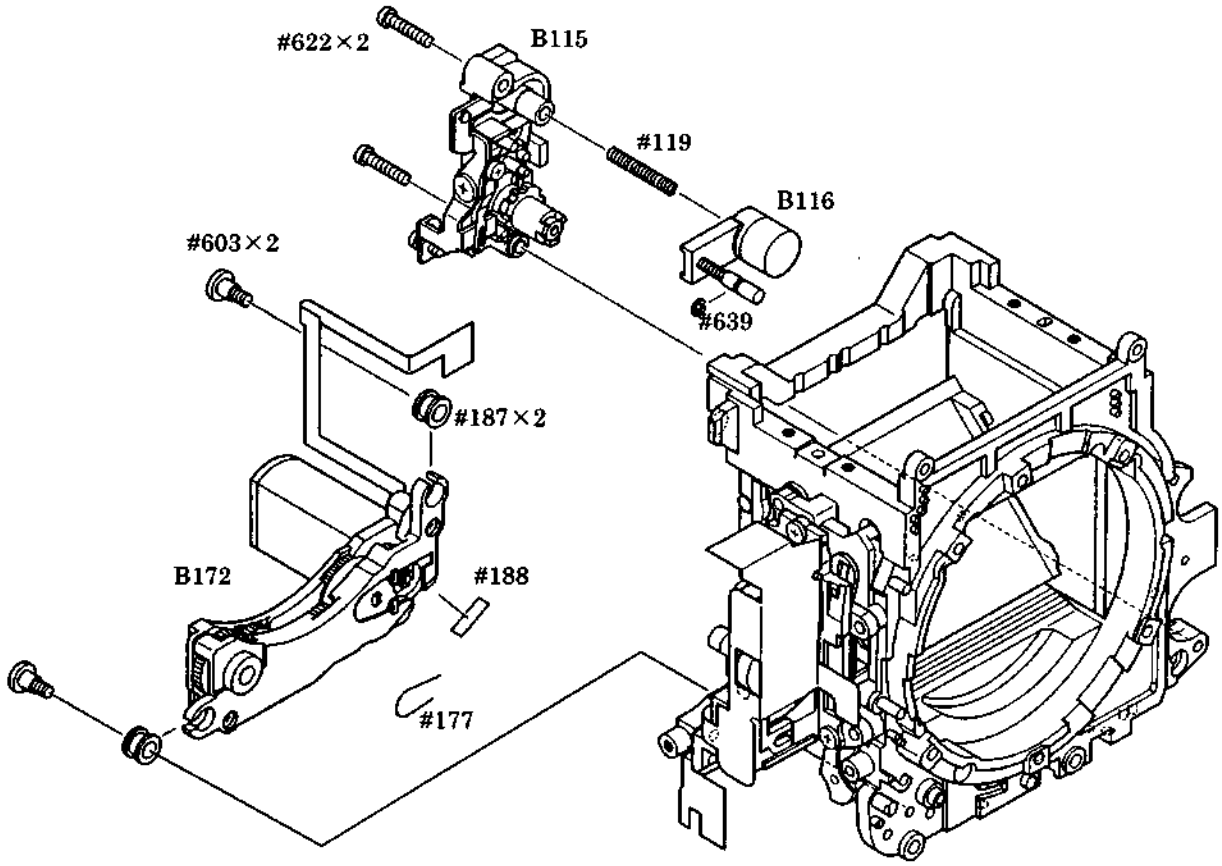
HORIZONTAL AF LEVER UNIT



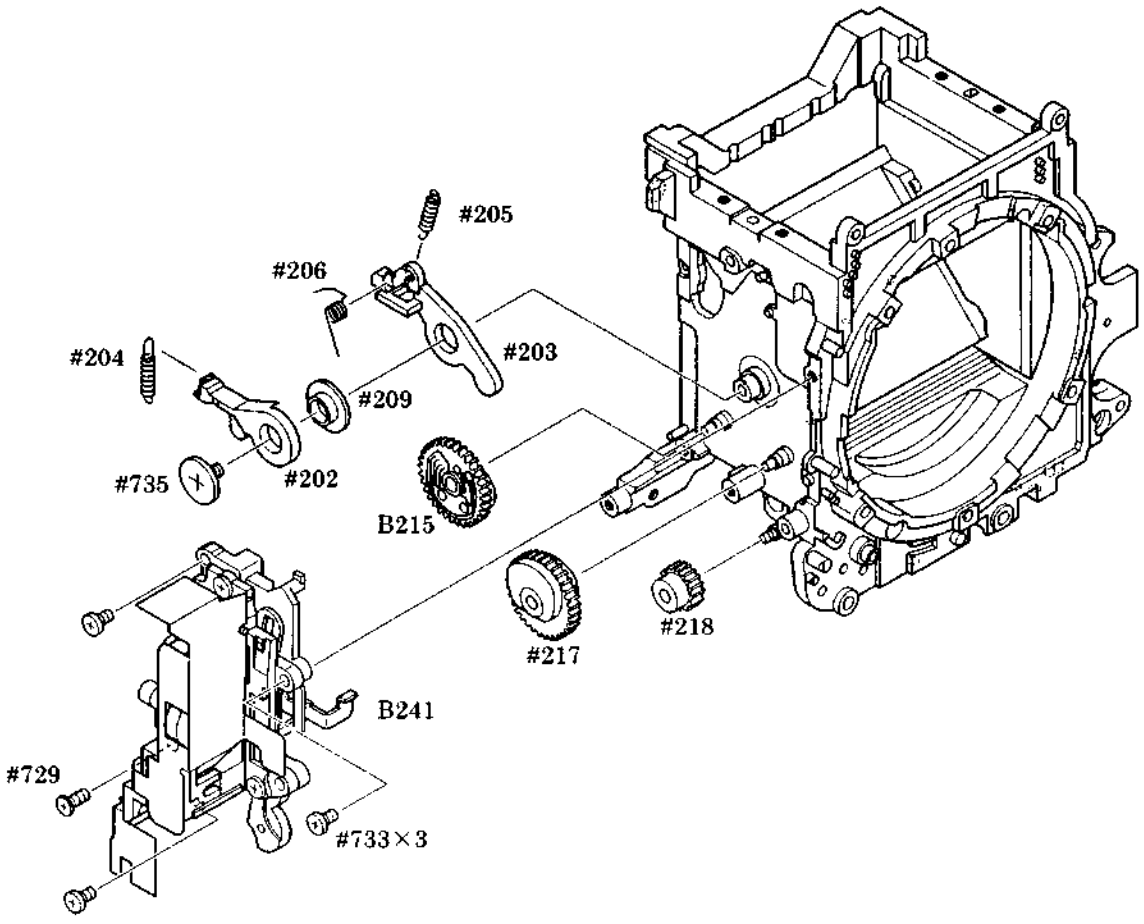
BAYONET MOUNT



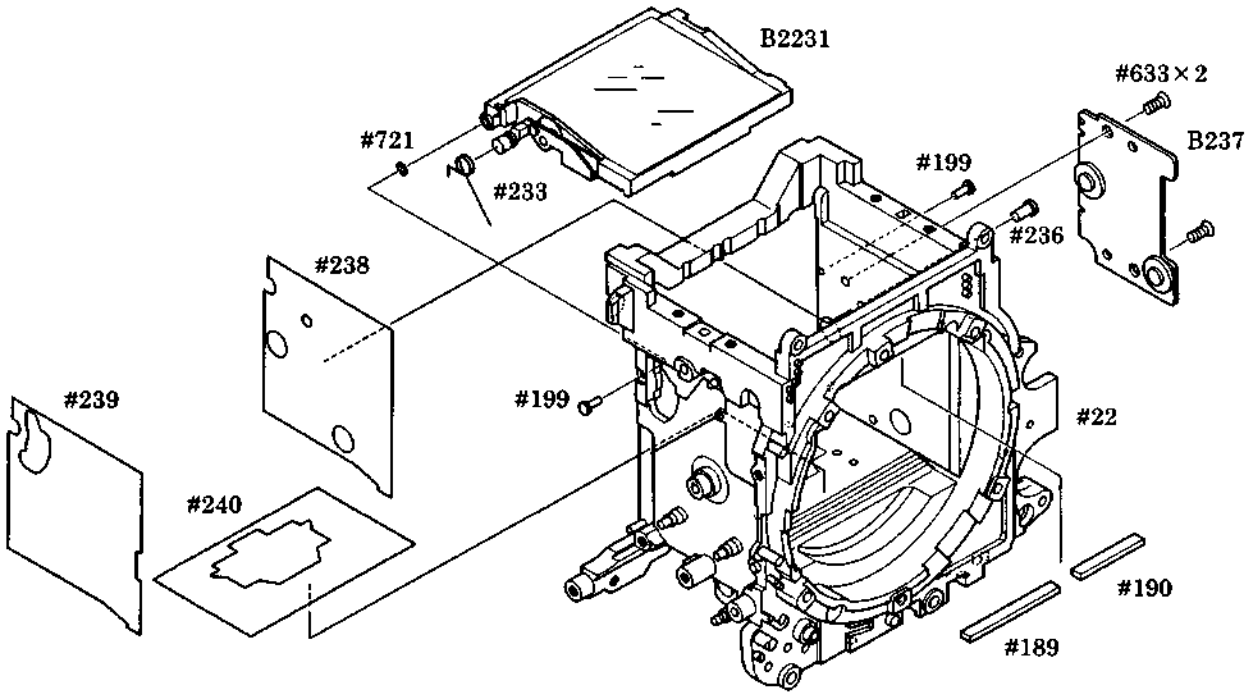
AM SWITCH UNIT, AF DRIVING UNIT



APERTURE CONTROL BASE PLATE

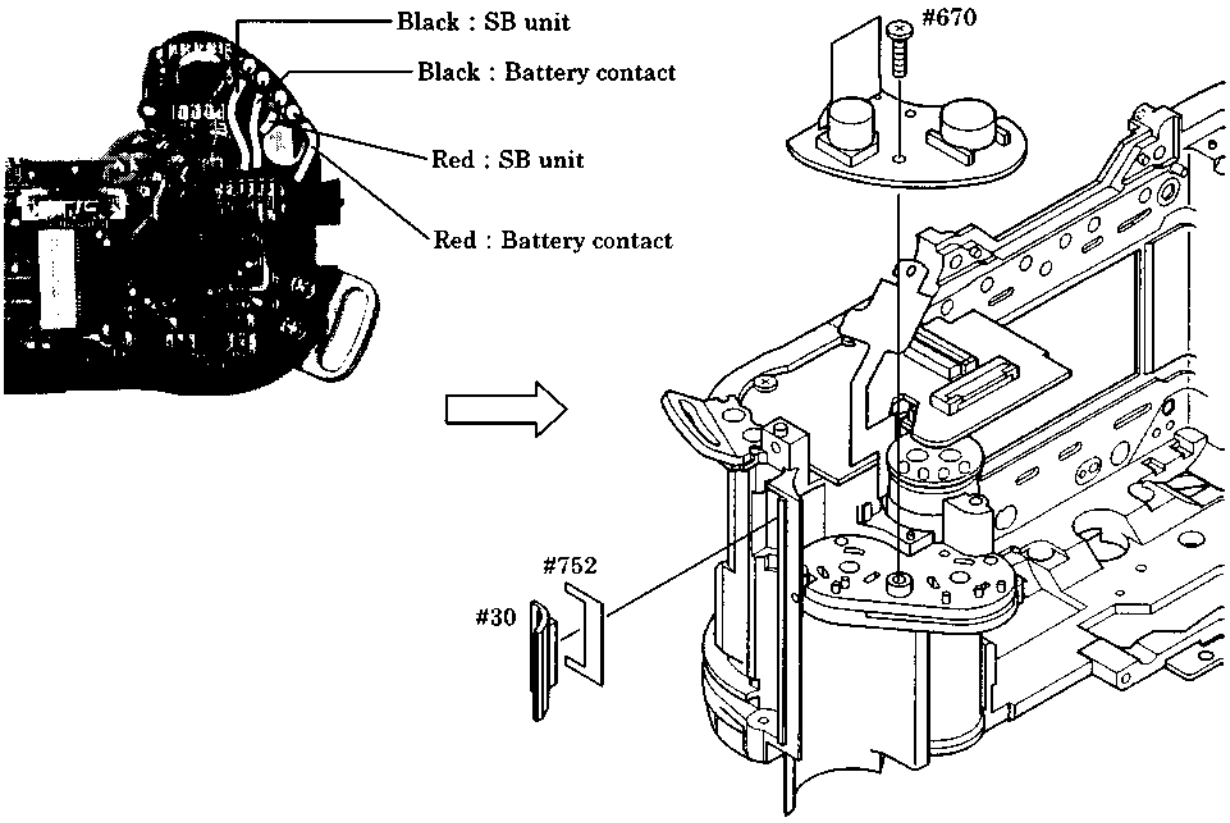


MIRROR HOLDER



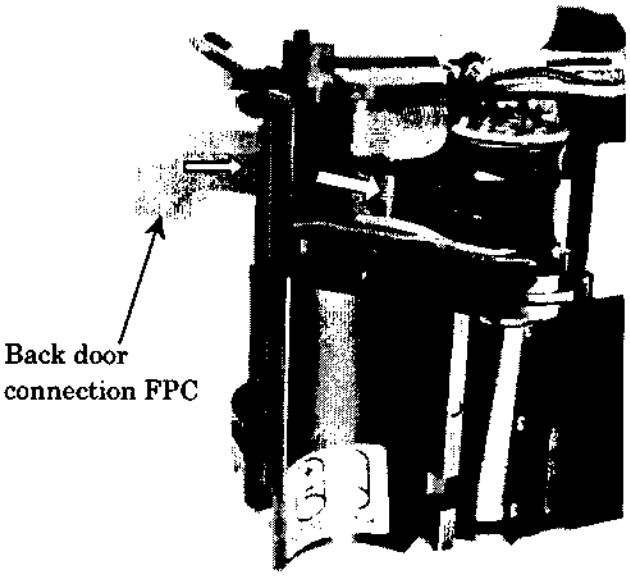
3. REAR BODY

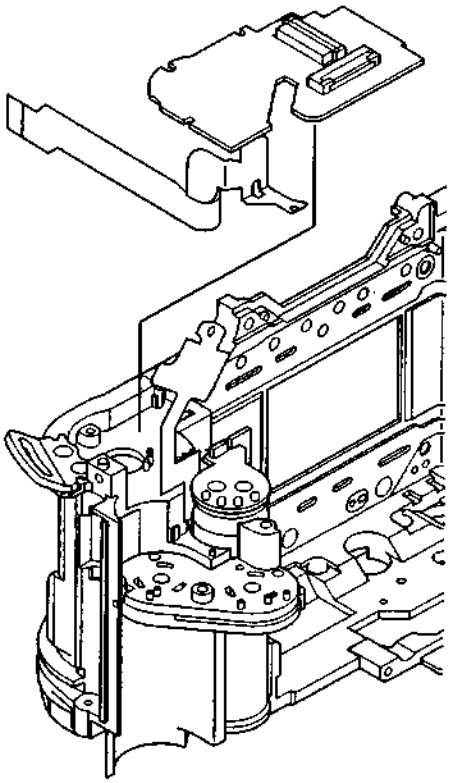
DC/DC UNIT



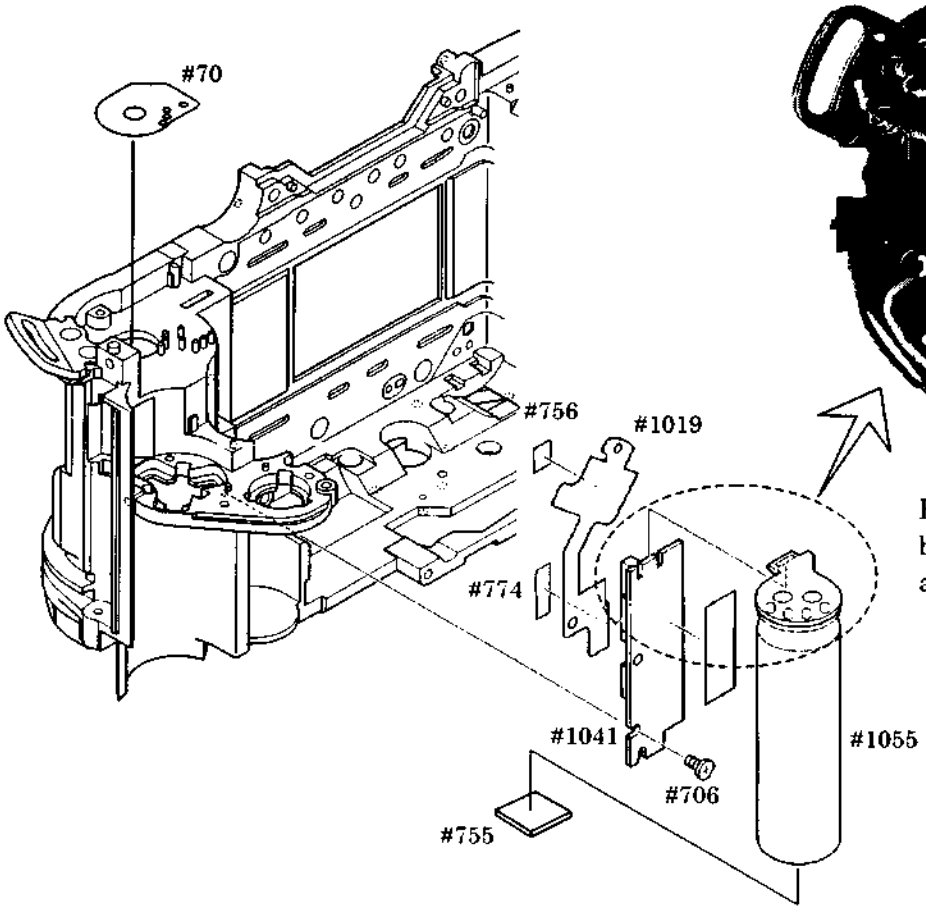
POWER DRIVE PCB

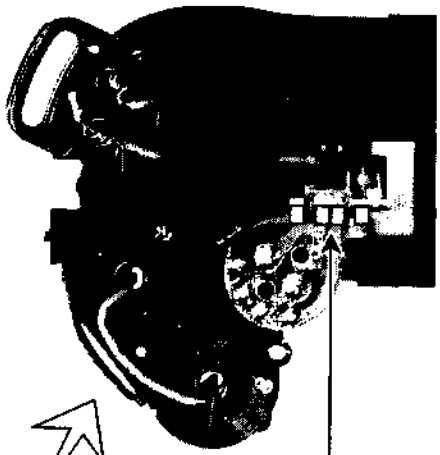
- Pull out the back door connection FPC to the arrow direction and remove the power drive PCB.





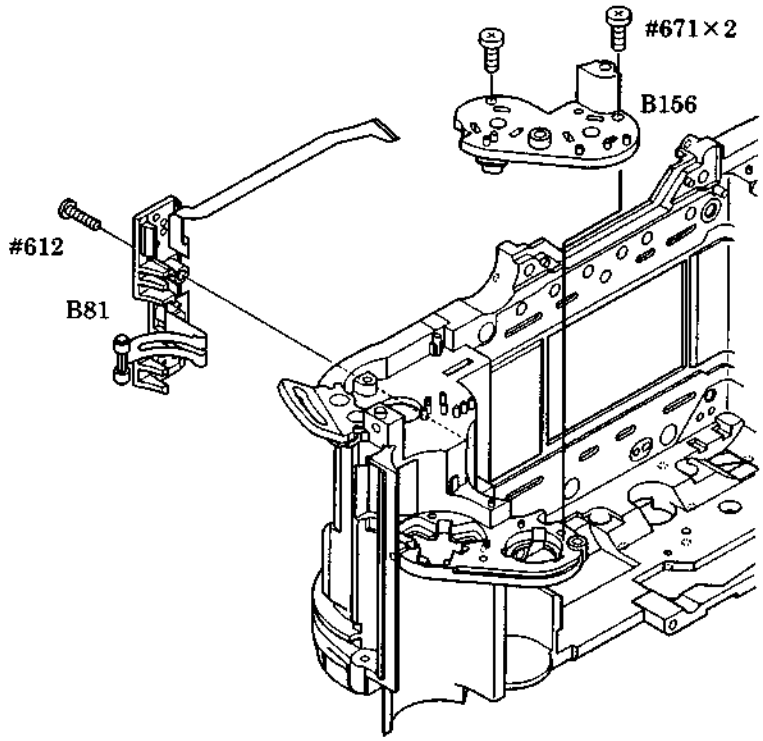
SB UNIT



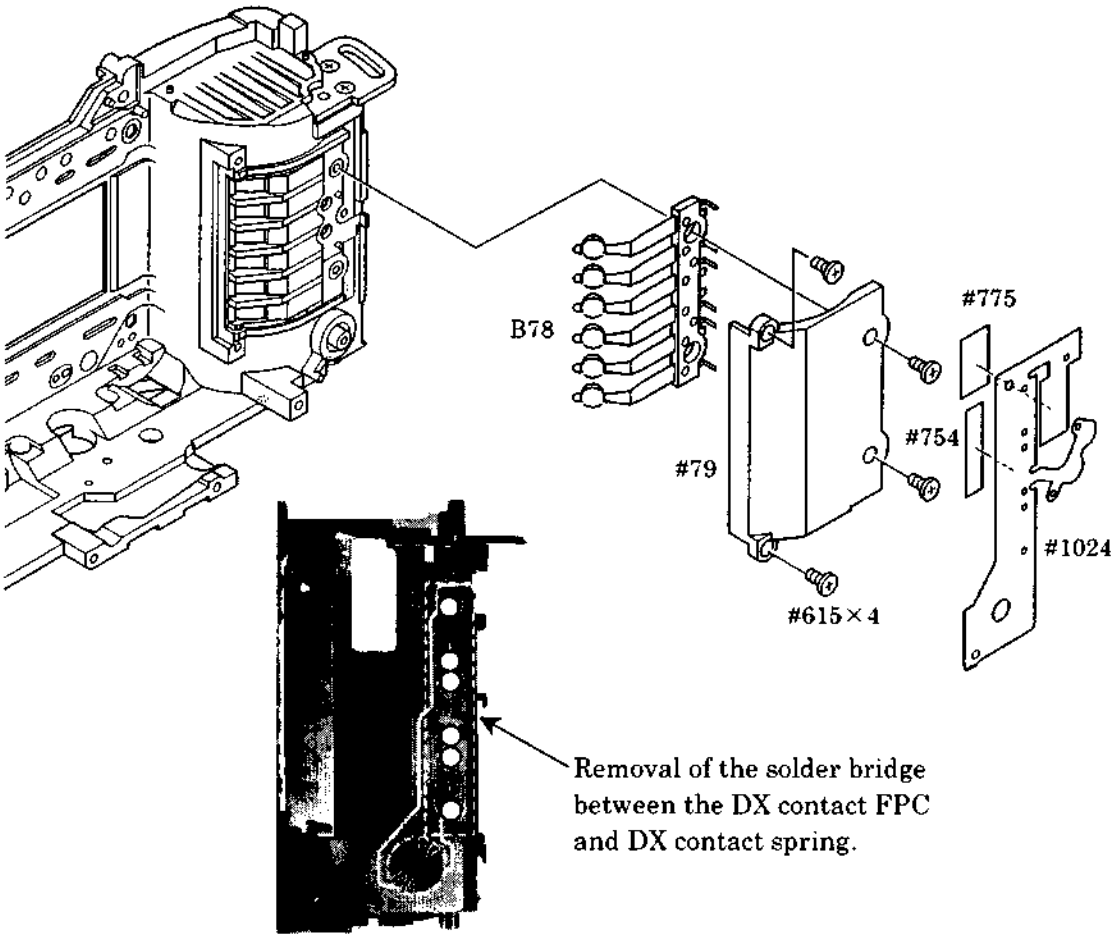


Removal of the solder bridge between the main capacitor and SB PCB.

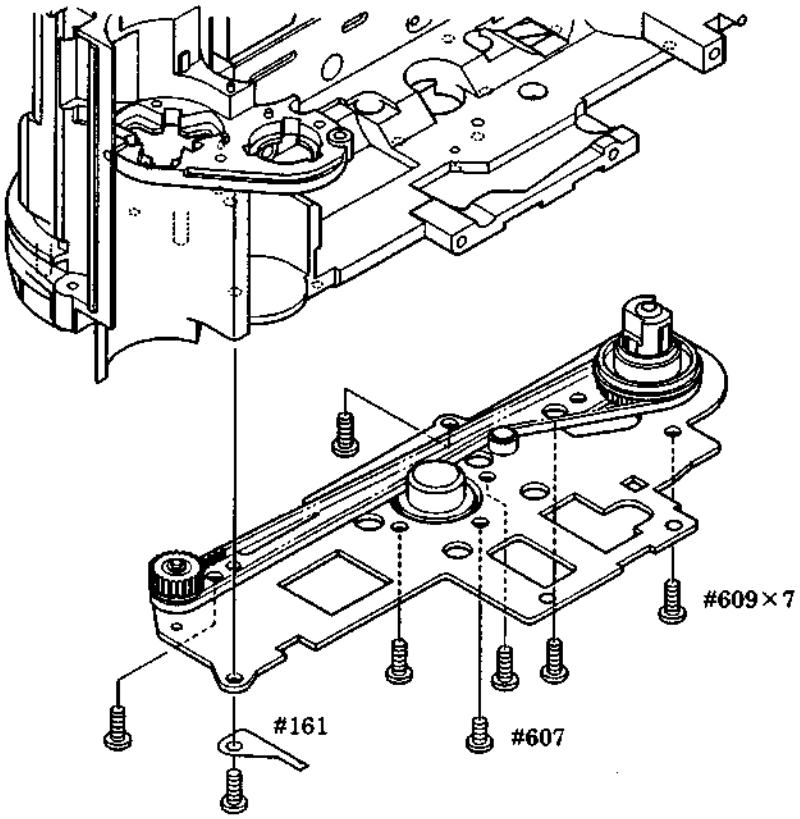
BATTERY CONTACT UNIT, PR UNIT



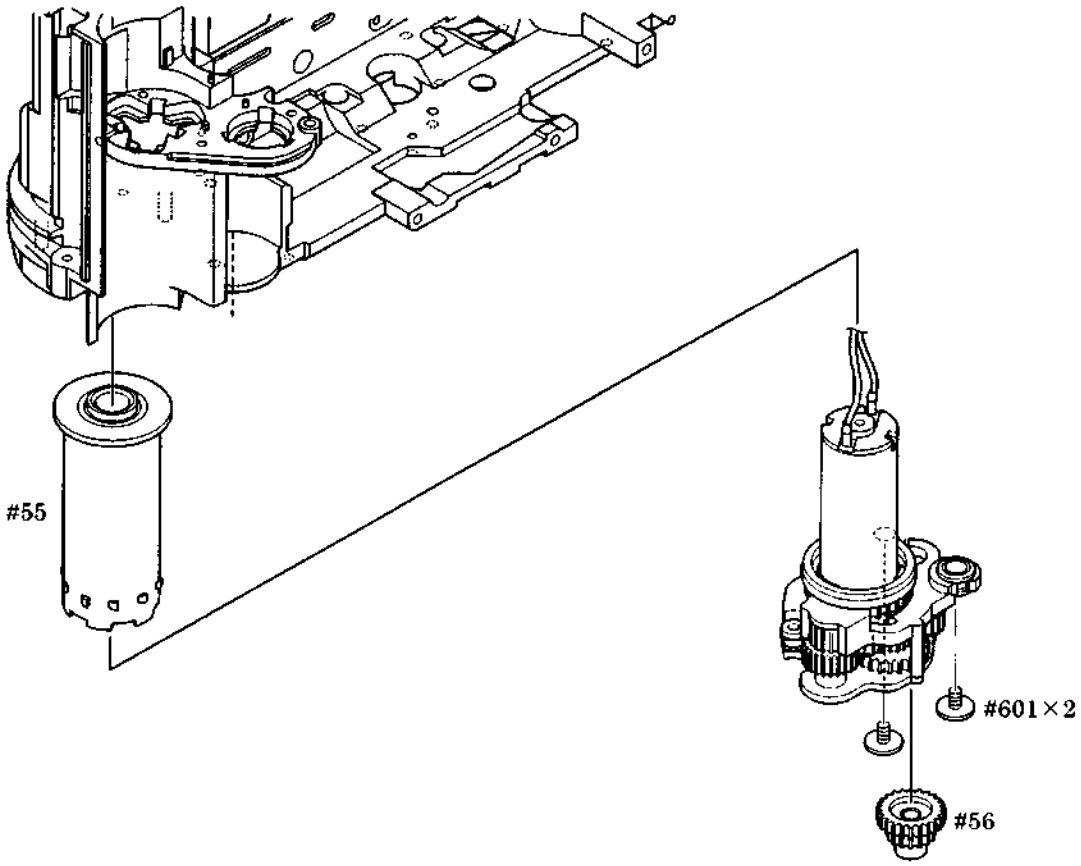
DX CONTACT



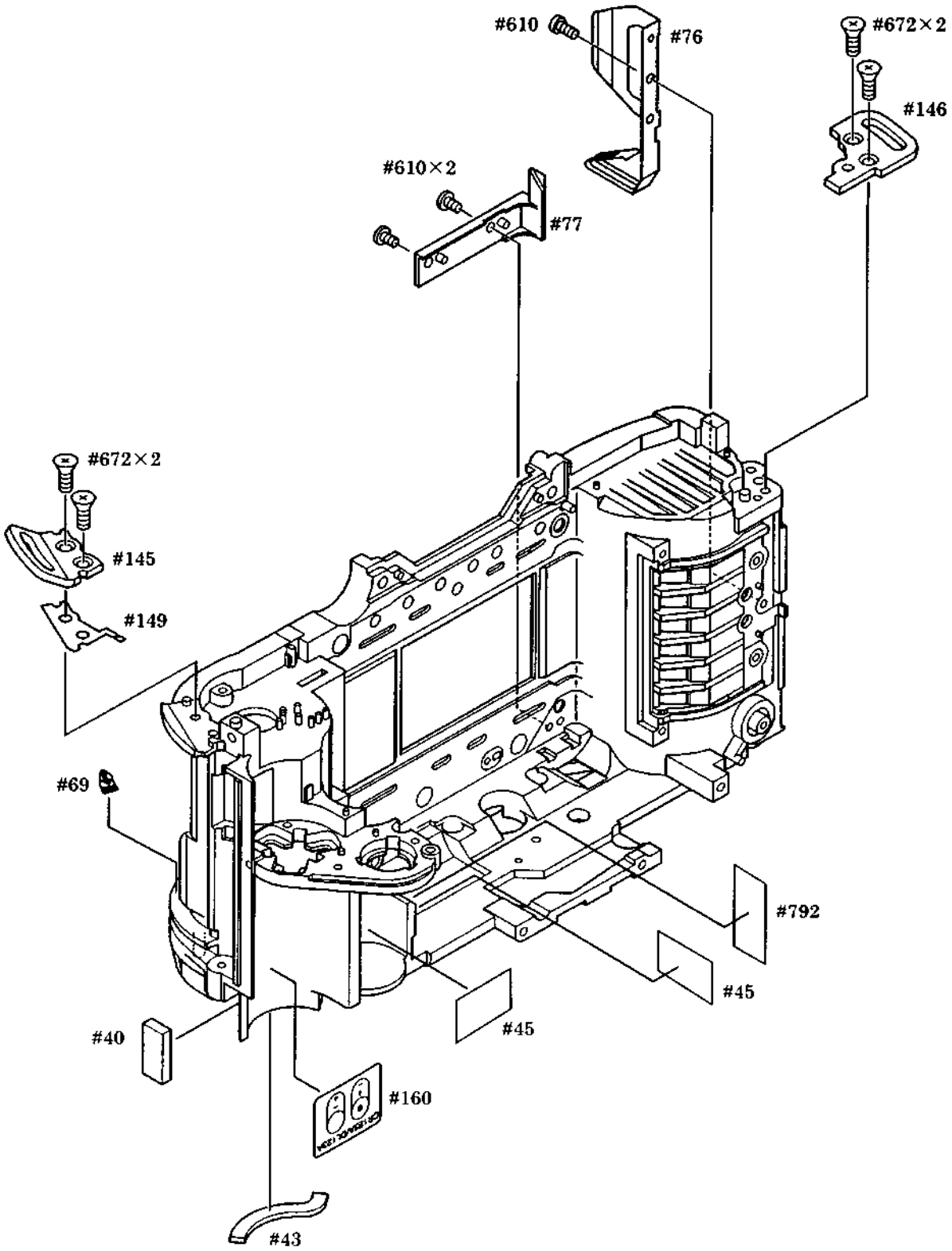
BOTTOM BASE PLATE



FILM ADVANCE UNIT



SMALL PARTS OF REAR BODY



ASSEMBLY AND ADJUSTMENT

1. FRONT BODY

2. REAR BODY

3. MOUNTING BOTH THE FRONT AND THE REAR BODIES

ASSEMBLY AND ADJUSTMENT

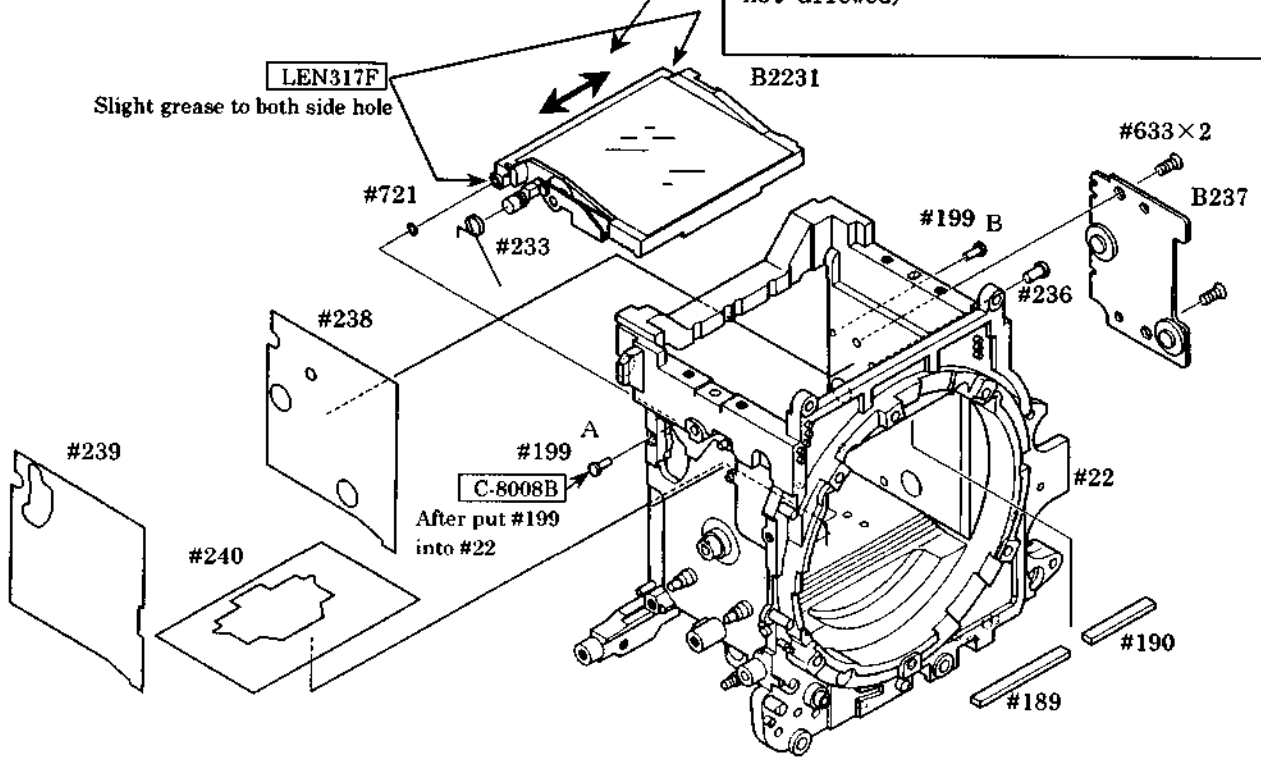
1. FRONT BODY

MIRROR HOLDER

① Affix both flocked paper and mirror receipt mold on the front body #22.
(Extrusion from each side of #22 is not allowed).
② Press the shaft #199 A side into the front body #22 and press 1/3 of the shaft #199 B side into the front body #22.
③ Place the washer #721 through the shaft #199 A side.
④ Assemble the mirror dust cleaner B2231 in the front body #22 aligning it with the shaft #199 A side and press the shaft #199 B side in the body to the end, aligning it with the mirror dust cleaner B2231.

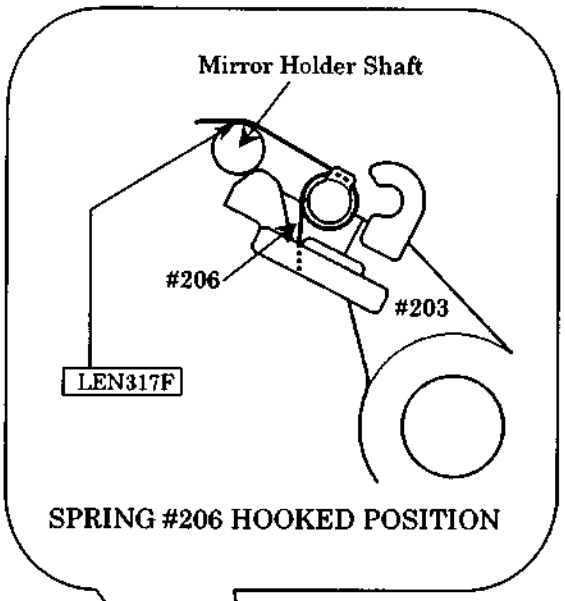
After the mirror dust cleaner is assembled in the front body #22 in step ④ above, check the thrust backlash. If the backlash is outside standard range, replace it by either of three thickness types of the washer #721 and adjust it.

Backlash Standard: 0.02 mm or less (0 is not allowed)



⑤ Stand the mirror up and assemble the sub-mirror deflection pin #236 into the front body #22.
⑥ Align the hole on the mirror box PCB B237 with the boss on the front body #22, and assemble and fix them using the screw #633×2.

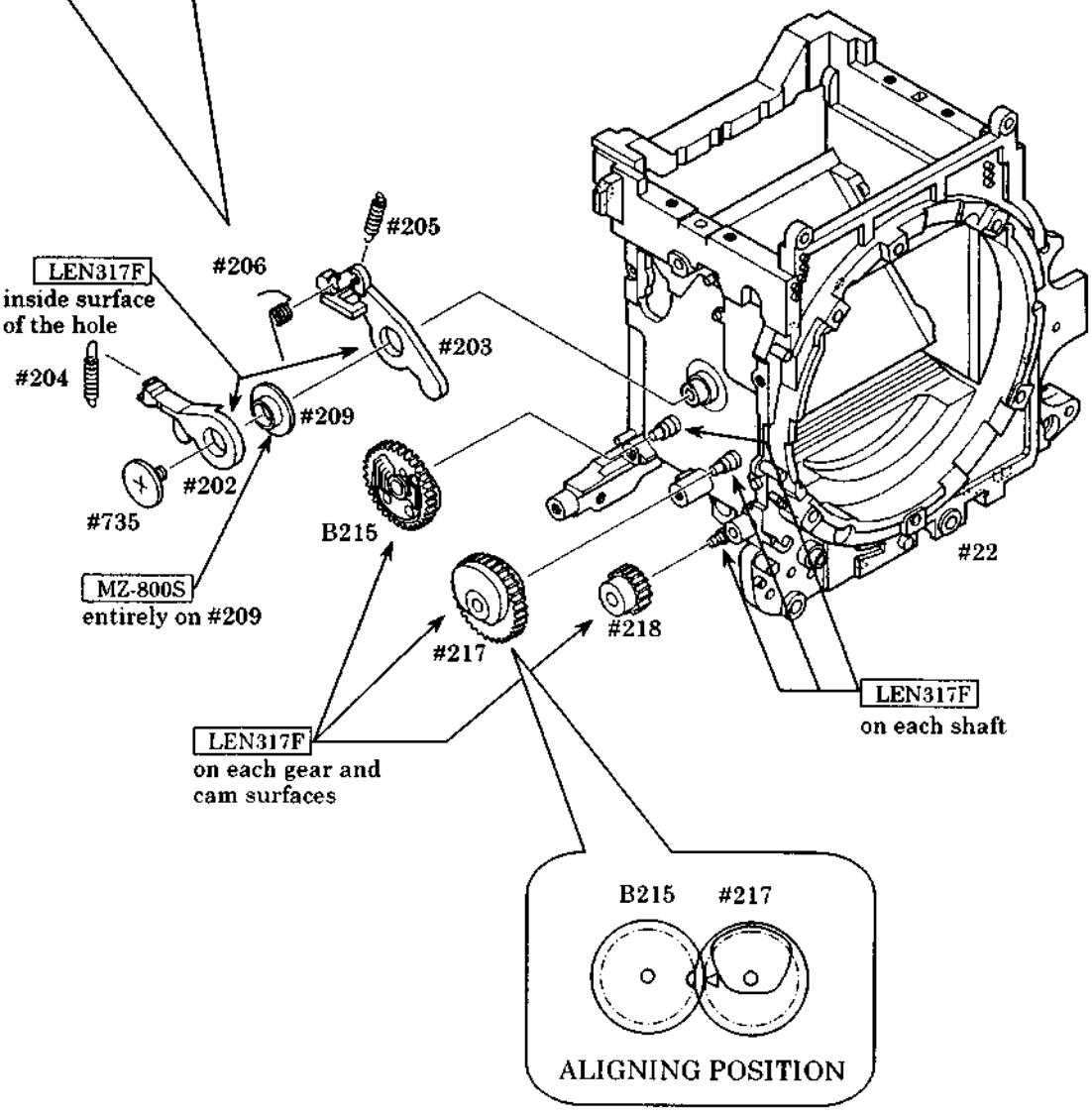
MIRROR UP LEVER



① Assemble the mirror UP levers #203, #209 and #202 in the front body #22 in this order and fix them with screw #735.

② Assemble the SQ shutter charge cam B215, #217 and #218 in the front body #22.

③ Hook the springs #204, #205 and #206 onto each lever.



APERTURE CONTROL UNIT

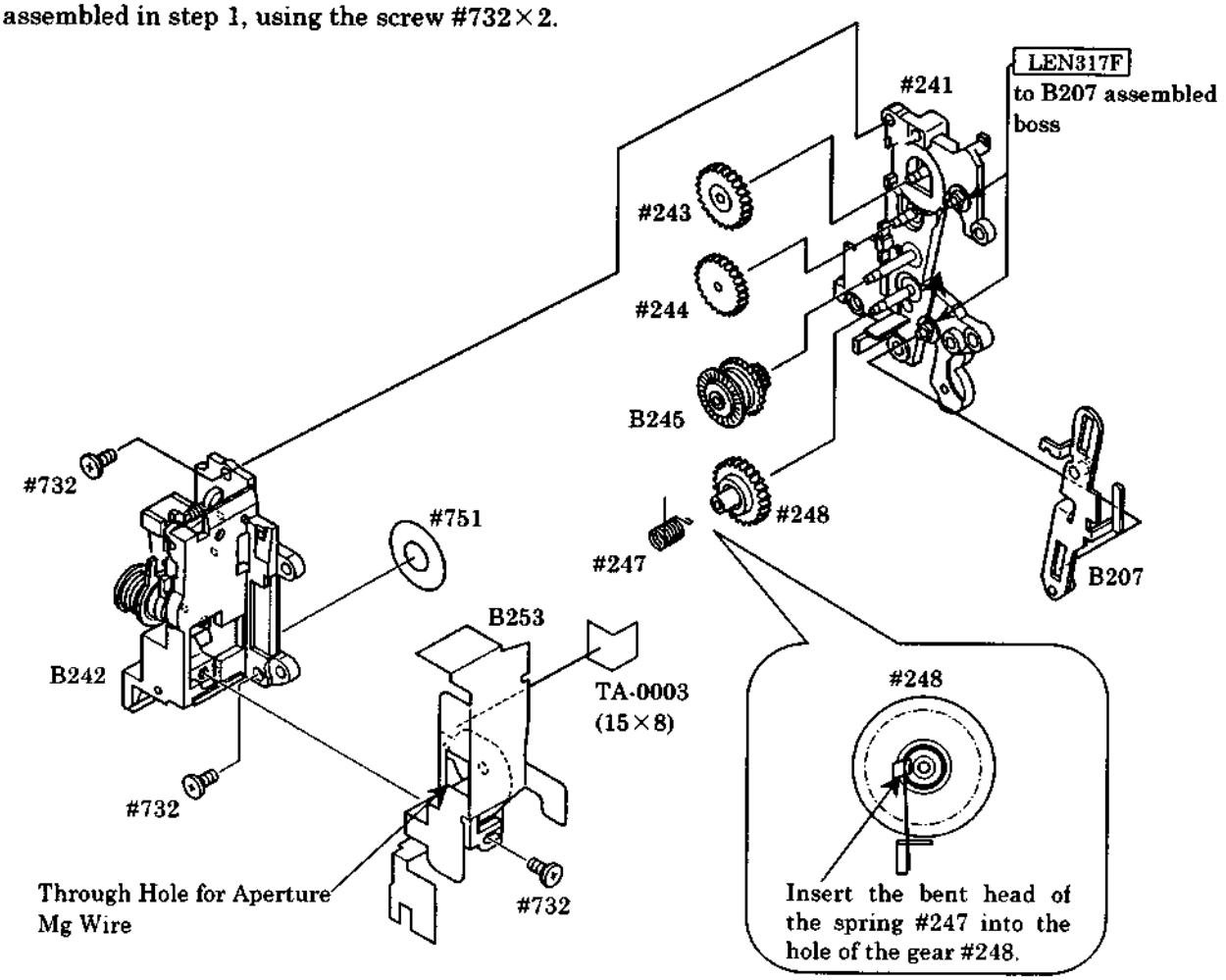
1. Assembly of Aperture Upper and Lower Base plates

① Assemble the gears #243 and #244 and Aperture driving lever B207, gear #248, spring #247 and gear B245 onto the Aperture control lower Base plate #241 in this order.

Note : The Aperture driving gear B242 should be slid to the arrow direction (upper) in advance.

② Attach the Aperture upper base plate on the Aperture control unit #241 which has been assembled in step 1, using the screw #732×2.

● Oil the four gear shafts using "Oil: CFD-005.5H ".



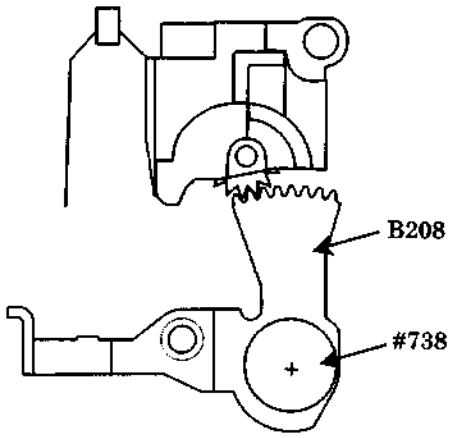
③ Affix the Aperture PI FPC unit B253 on the Aperture control unit which has been assembled in step 2, using a double-sided adhesive tape #751 and TA-0003.

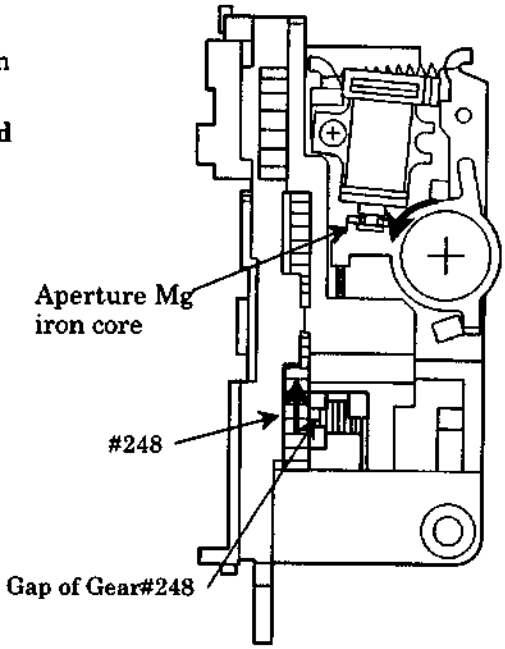
④ Fix the PI section of the Aperture PI FPC unit B253 using the screw #732.

2. Aperture Lever Installation

① Turn the gear #248 to the arrow direction as shown in the Gear Set Position Drawing. Turn one more time after the spring #247 starts working, and stop it when the groove of the gear #248 can be seen. Pull out the Aperture Mg iron core with forceps and fix the aligned gears.

② Attach the Aperture lever B208 at the position as shown in the figure, using the screw #738.



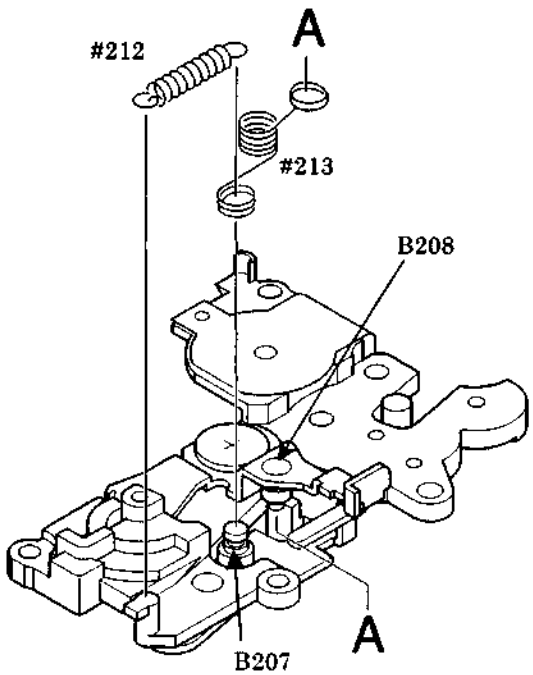


GEAR SET POSITION DRAWING

3. Hook the spring

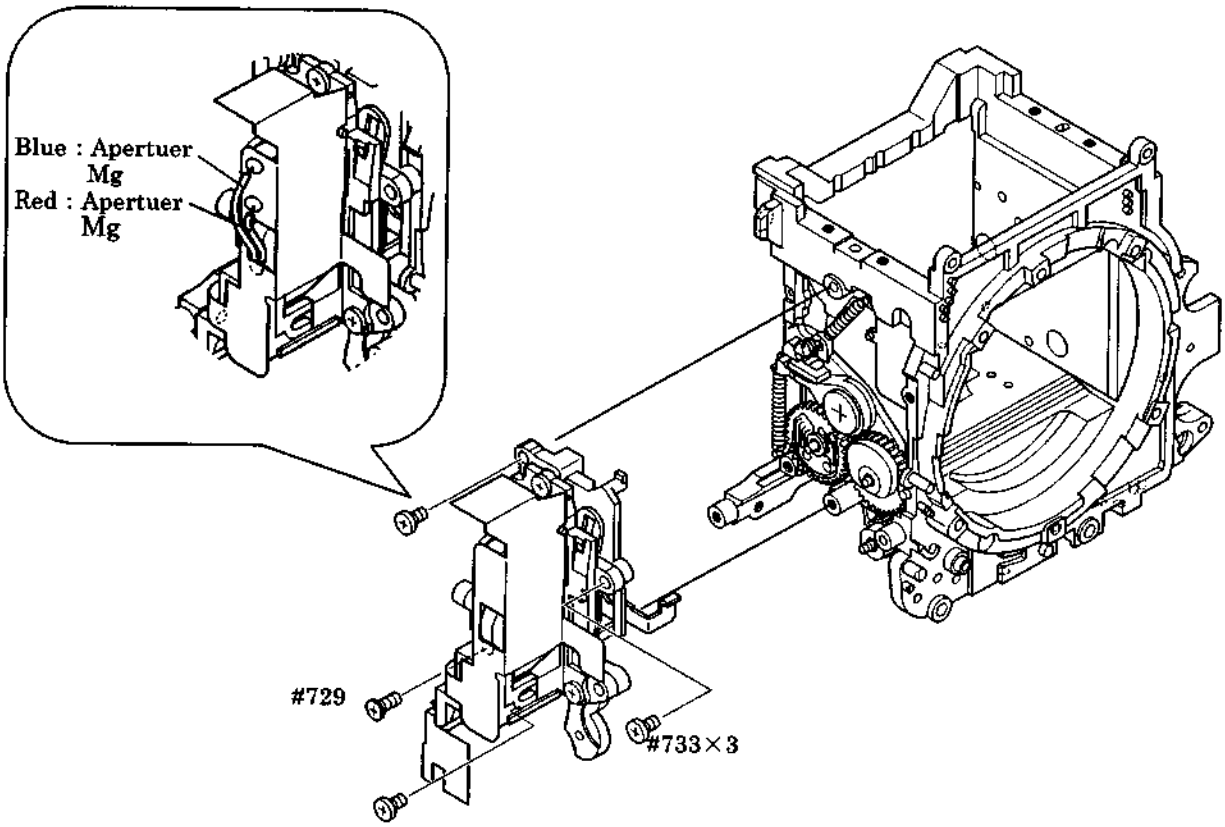
③ Hook the double wound side of the spring #213 on the column of the Aperture lever B208 and triple wound side of the spring #213 on the column of the Aperture control lever B207.

④ Hook the spring #212 on the position as shown in the figure.

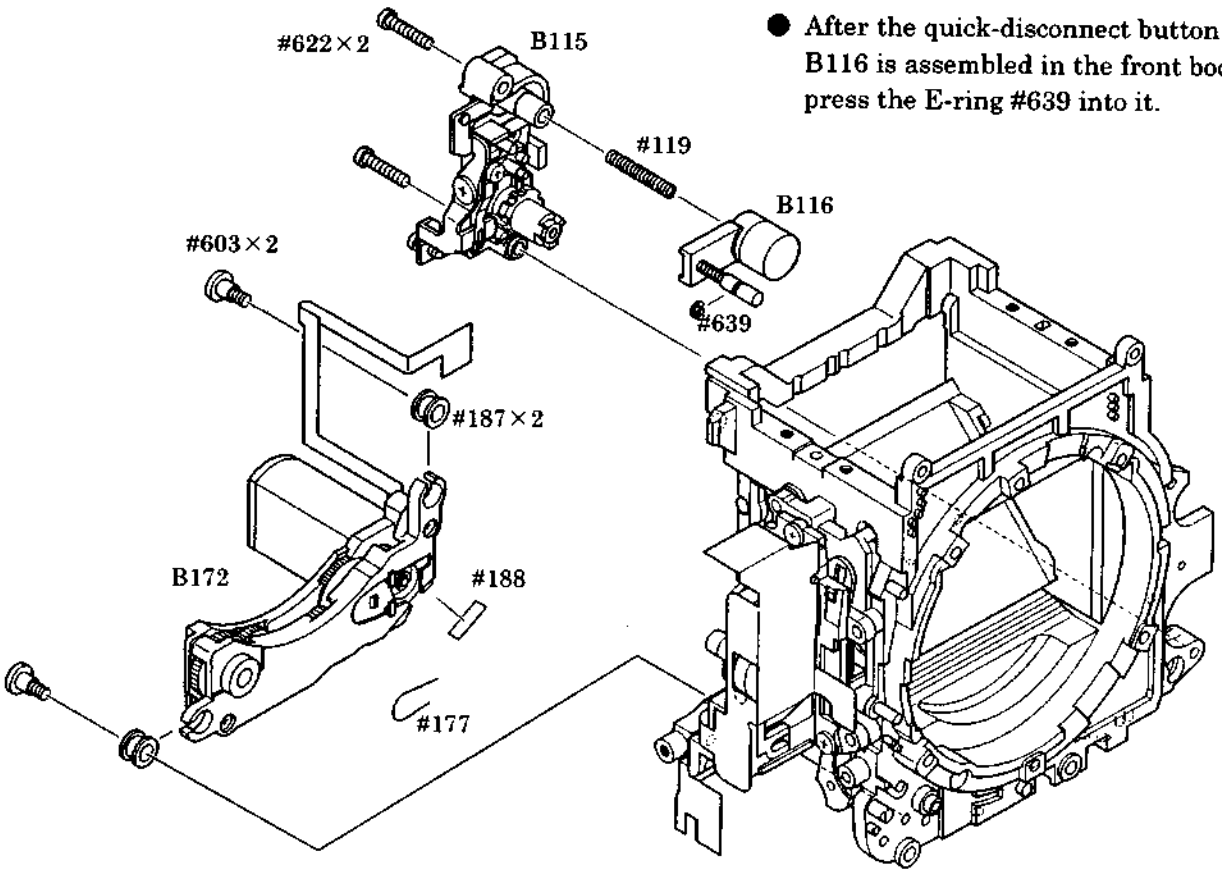


Check: Push down the Mg iron core which has been projected in the procedure of "2. Aperture Lever Installation" and make sure that when the Aperture lever B208 is pushed down with a finger it securely returns to the upward (installed position) when finger is released.

4. Installation of the Apertuer Control unit on the Front Body

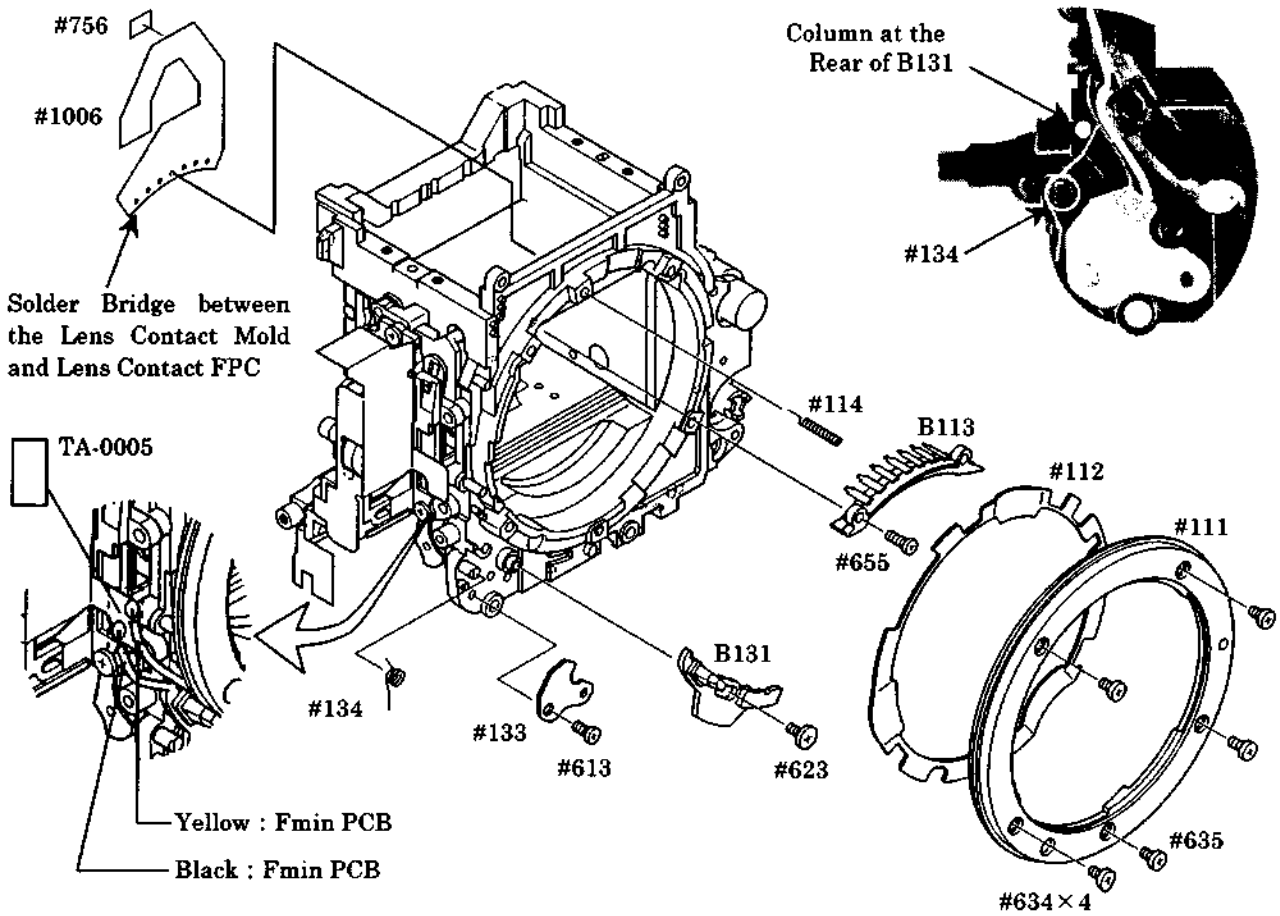


AF DRIVING UNIT, AM SWITCH UNIT

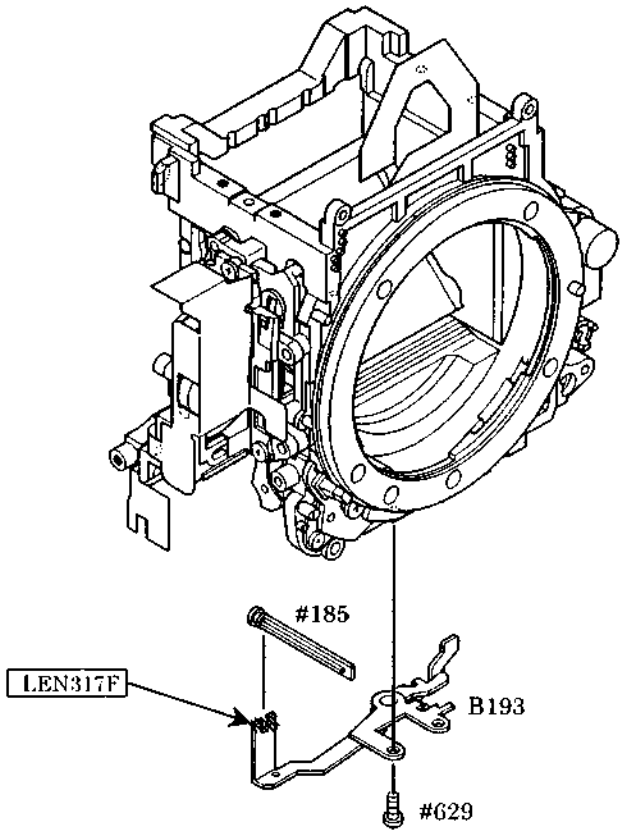


● After the quick-disconnect button B116 is assembled in the front body, press the E-ring #639 into it.

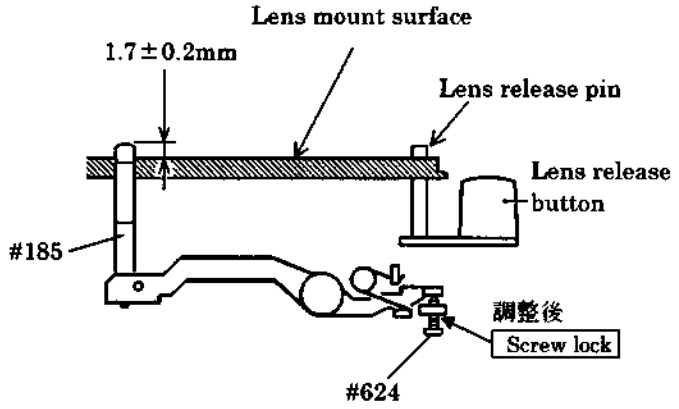
BAYONET MOUNT



HORIZONTAL AF LEVER UNIT



HIGHT ADJUSTMENT OF AF COUPLING SHAFT #185



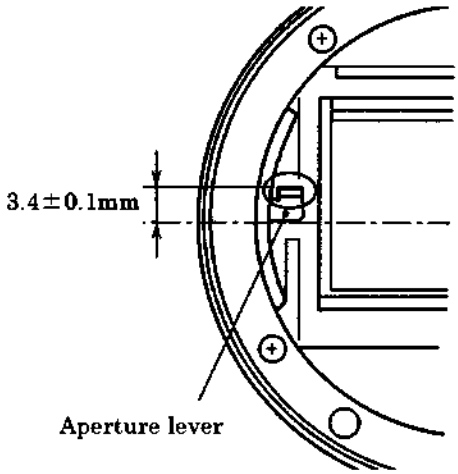
① Set the A/M change-over cam #122 to "S". After pressing the lens quick-disconnect button two or three times, measure the height of the AF coupling shaft #185.

② Adjust the height of the AF coupling shaft using screw #624.

③ The AF coupling shaft should not protrude over the lens mount surface, when the height of lens release pin is adjusted to 0.4mm.

④ After adjusting, secure screw #624 using Screw Lock.

ADJUSTMENT OF APERTURE LEVER POSITION

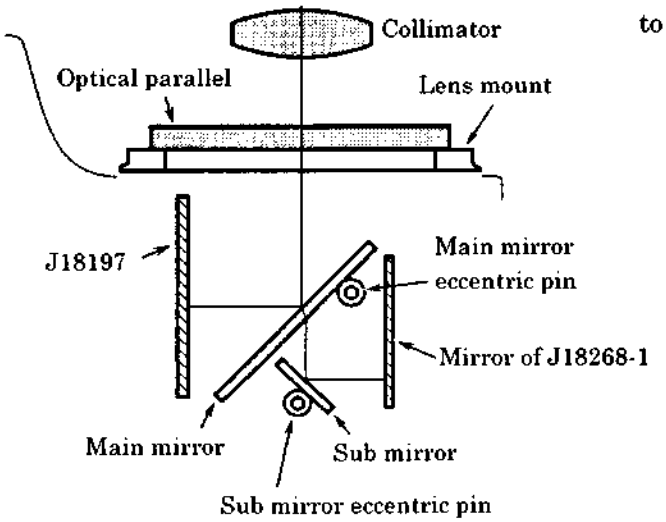


● Measure the height of the aperture lever using tool J18004.

Standard Value : 3.4±0.1mm

If the height of the aperture lever is out of the standard value, bend the circled position to adjust. While adjusting, take care not to bend the inside lever and stopper portion.

ANGLE ADJUSTMENT OF MAIN MIRROR AND SUB MIRROR TO 45°



Note : Adjust the followings after mounting the prism box to the front body as described page A11.

＊Use tools

1. Angle adjustment of main mirror
   ①Collimator (J19002)
   ②Mirror angle inspection mirror (J18197)
   ③Optical parallel (J18037)
   ④Hexagonal wrench
2. Angle adjustment of sub mirror
   ①Collimator (J19002)
   ②Sub mirror angle adjustment tool (J18268-1)
   ③Hexagonal Wrench

● Angle adjustment of main mirror to 45°

Note : Check to confirm the accuracy of the main mirror before and after adjustment by moving it up and down several times.

①Checking the discrepancy (right/left)

If horizontal displacement is out of the standard value, it is possible that bayonet spring #112 is pinched, mirror unit B2231 is defective, or mirror shaft is bent.

②Checking the discrepancy (up/down)

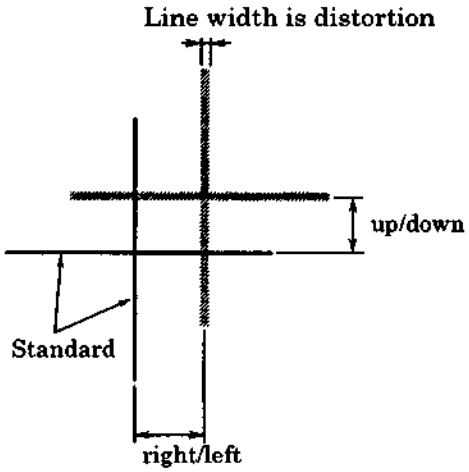
If the amount of the discrepancy is out of the standard value, rotate the main mirror eccentric pin to adjust.

● Angle adjustment of sub mirror to 45° (47.75°)

Note : Check to confirm the accuracy of the main mirror before and after adjustment by moving it up and down several times.

①Checking the discrepancy (up/down)

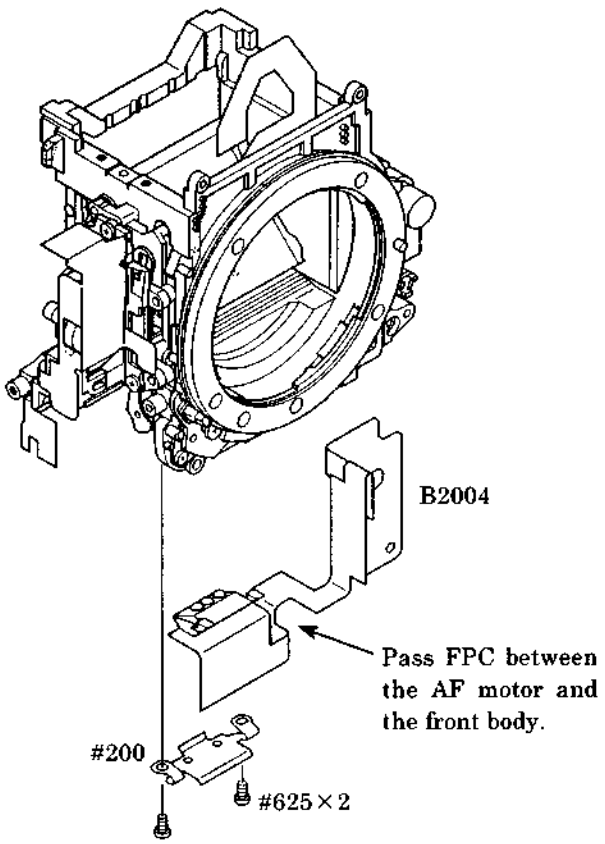
If the amount of the discrepancy is out of the standard value, rotate the sub mirror eccentric pin to adjust.

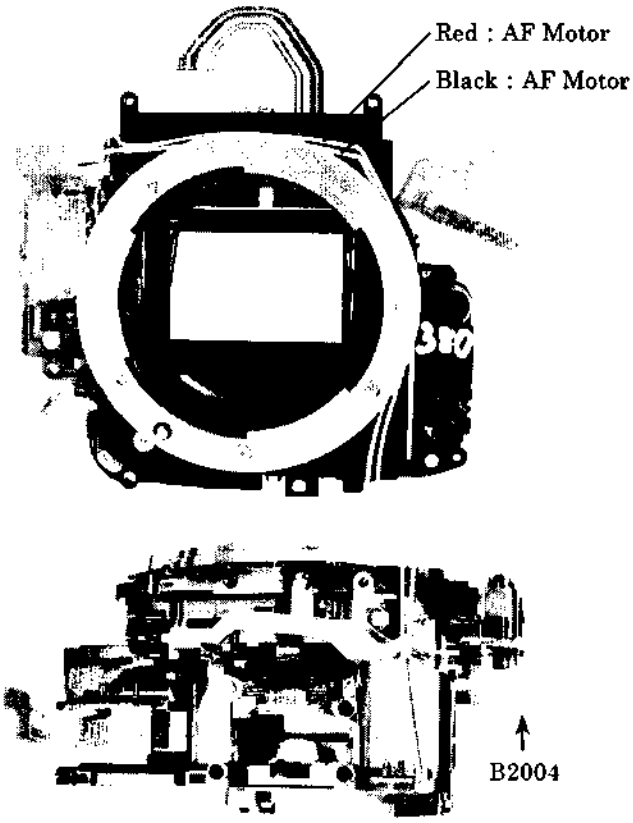


Standard :

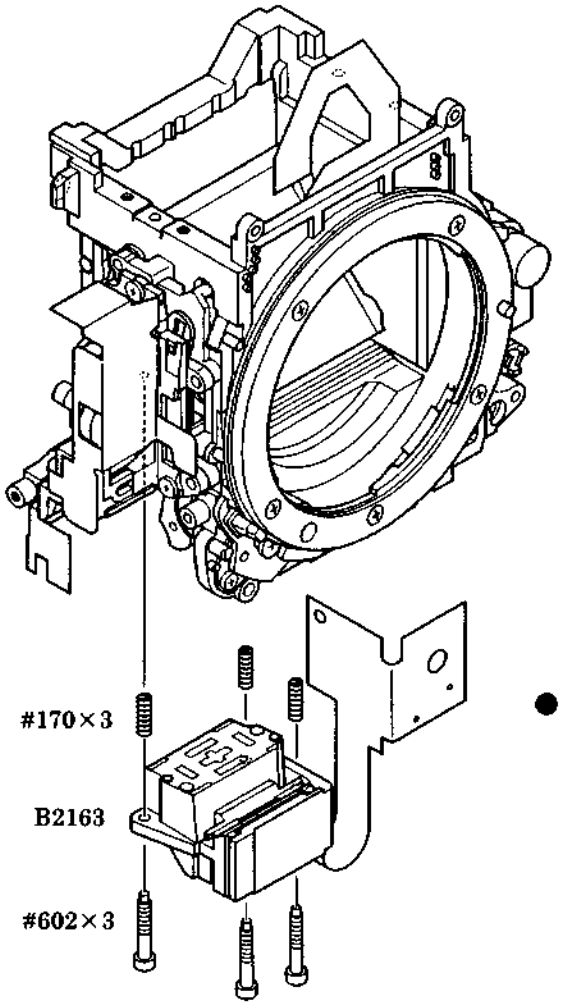
	Main mirror	Sub mirror
Discrepancy (right/left)	Within ±20'	
Discrepancy (up/down)	Within ±5'	Within ±5'
Distortion	Within ±8'	Within ±8'

TTL SPD UNIT

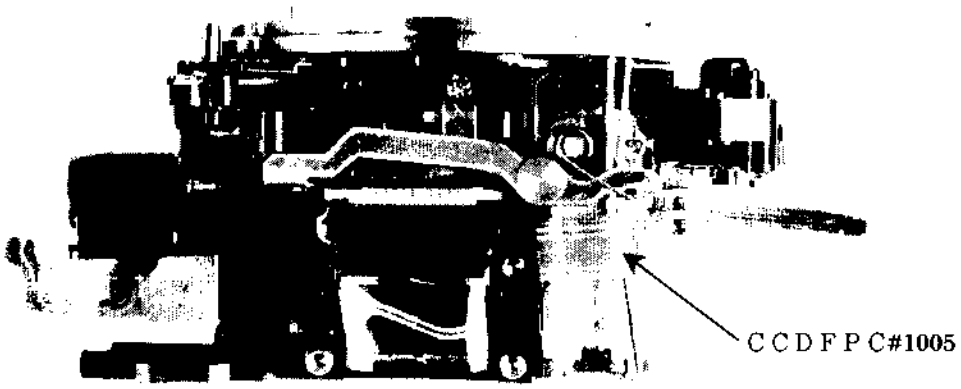




AF SENSOR UNIT



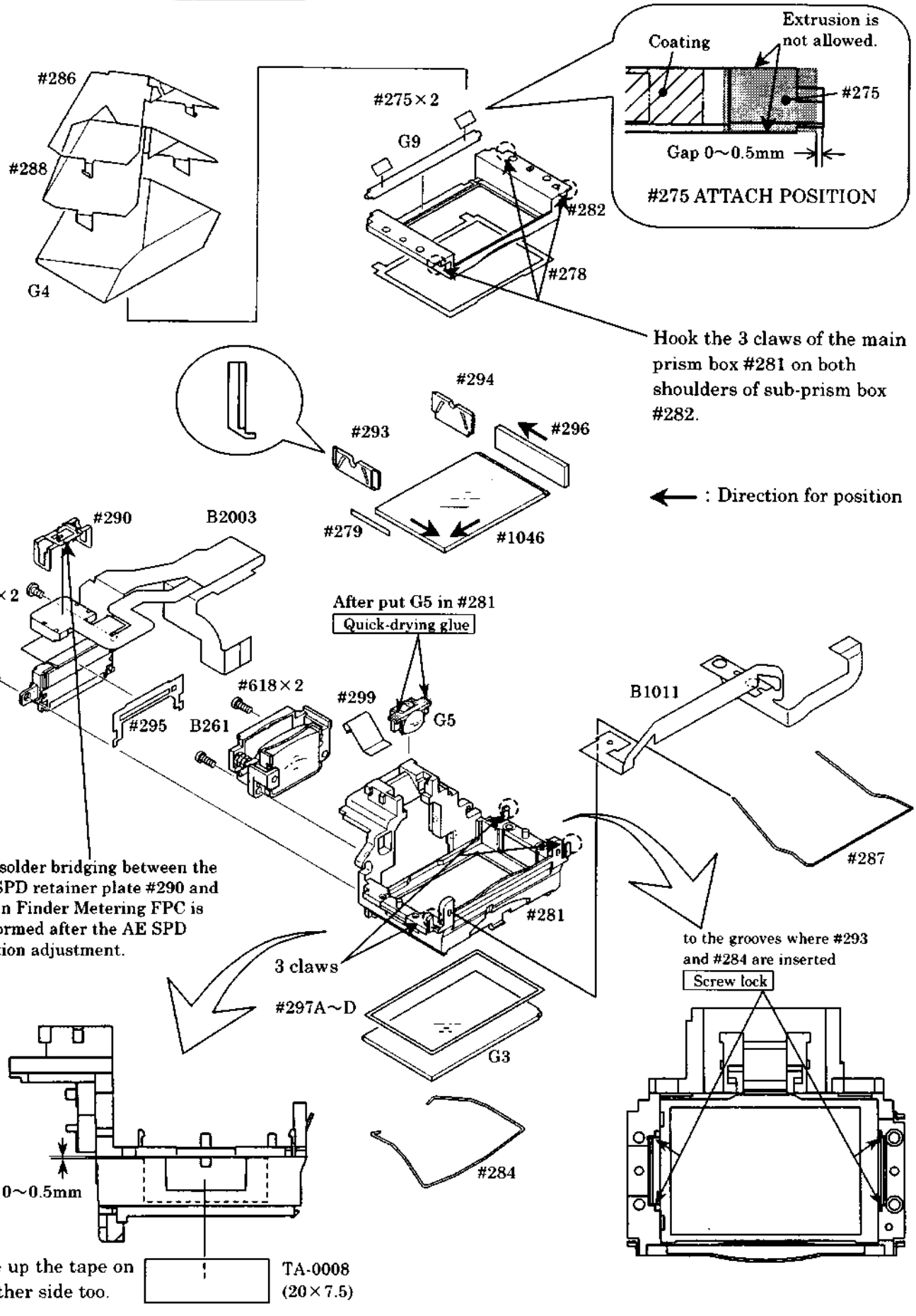
● After the screw #602×3 is fastened to the end using a hex key, turn it about 2 revolutions reverse.



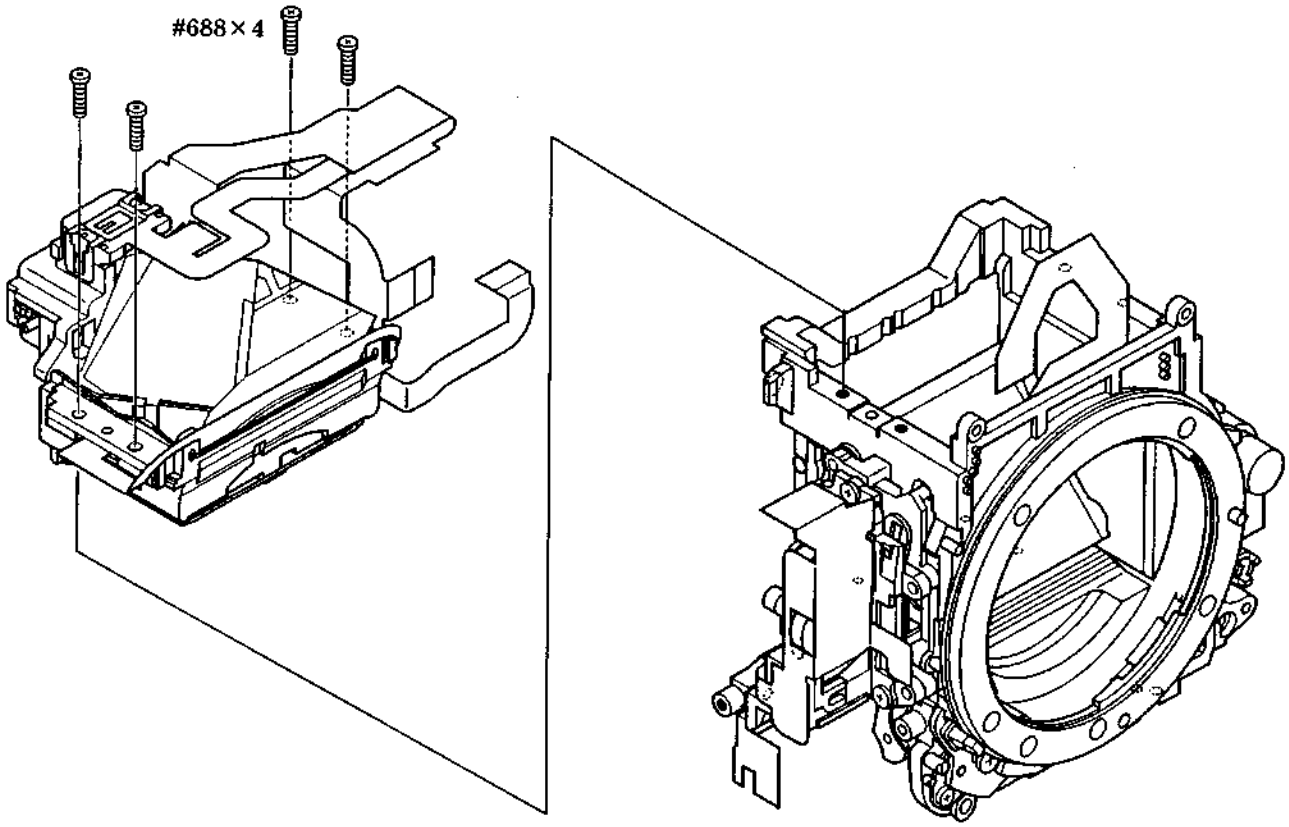
CCD FPC TREATMENT DRAWING

PRISM BOX UNIT

1. Assemble of Penta Box Section

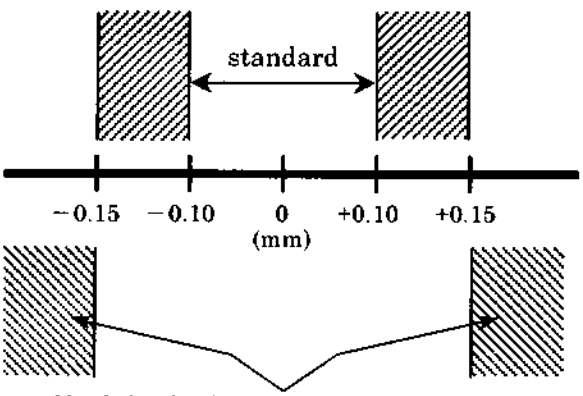


2. Mount prism box on front body



Note : Please adjust mirror angle as described page A7

ADJUSTMENT OF INFINITY (∞)



Check for the deformation of the front body or Prism box.

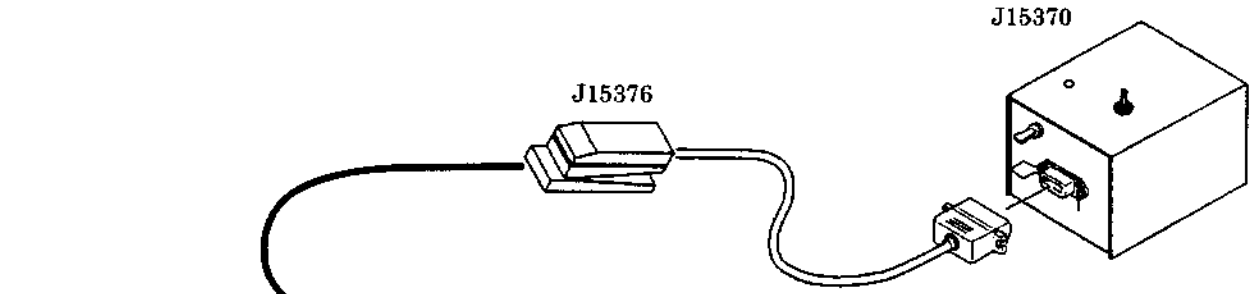
① Replace the screen by the screen J15371 (Common to the screen of F601M).

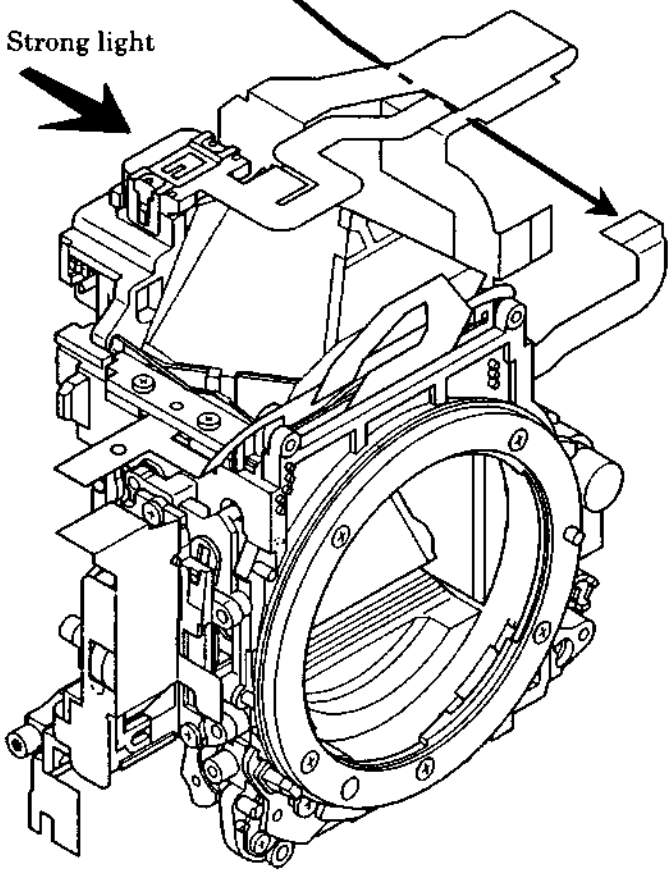
② Connect the SI translucent tool J15370 to the SI LCD FPC using the clip connector J15376. Then, turn on the power of the tool as described page A12.

③ Set the reference lens J18010 and read the value.

- In the case of -0.10～+0.10
  As it is within the standard range, adjustment is not required.
- In the case of -0.15～0.10 or +0.10～+0.15
  Replace the G3 washer #297.
- In the case of -0.15 or less or +0.15 or more
  Check for the deformation of the front body or Prism box.

AE SPD POSITION ADJUSTMENT





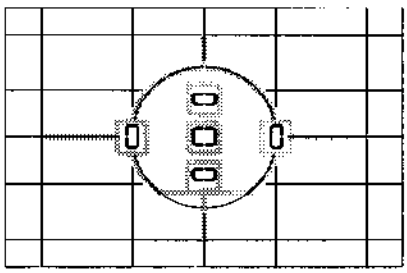
① Shade the eyepiece using a black tape.

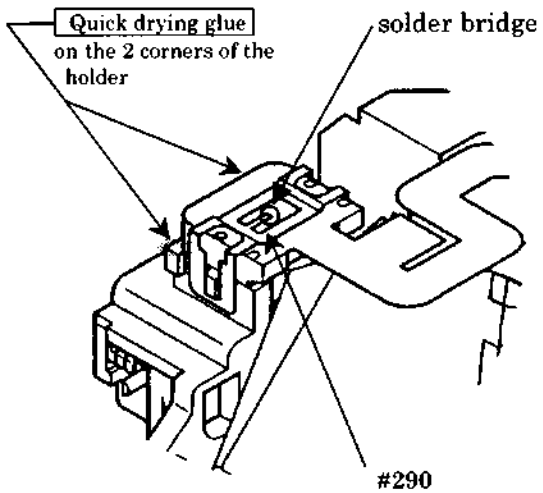
② Also, shade the shutter side of the mirror box and AF sensor using a black tape.

③ Connect the SI translucent tool J15370 to the SI LCD FPC using the clip connector J15376. Then, turn on the power of the tool and turn on the SI LCD pattern using the switch on the side of the tool.

④ As shown in the left figure, project strong light from the rear of the AE SPE so that the AE SPD pattern is reflected on the main mirror.

⑤ Move the AE SPD holder so that the five SI LCD focus areas are set on the center of each pattern on the five locations of AE SPD.



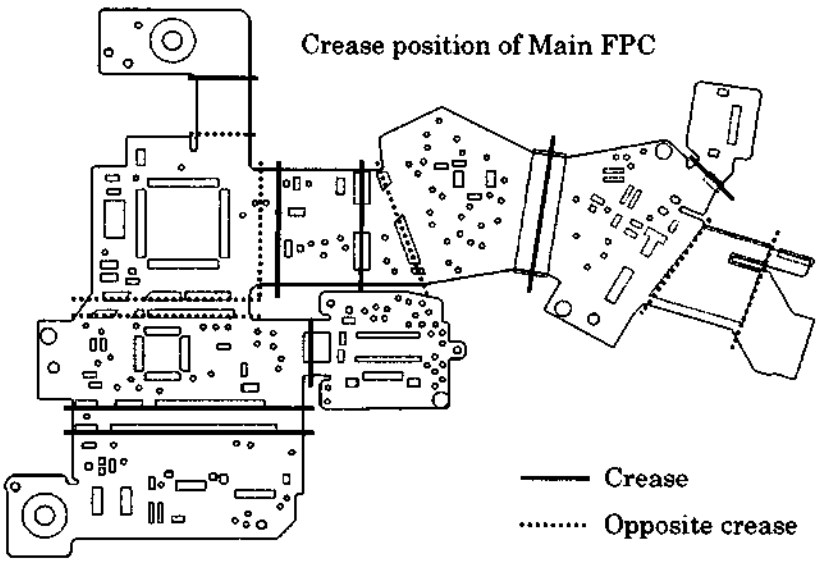


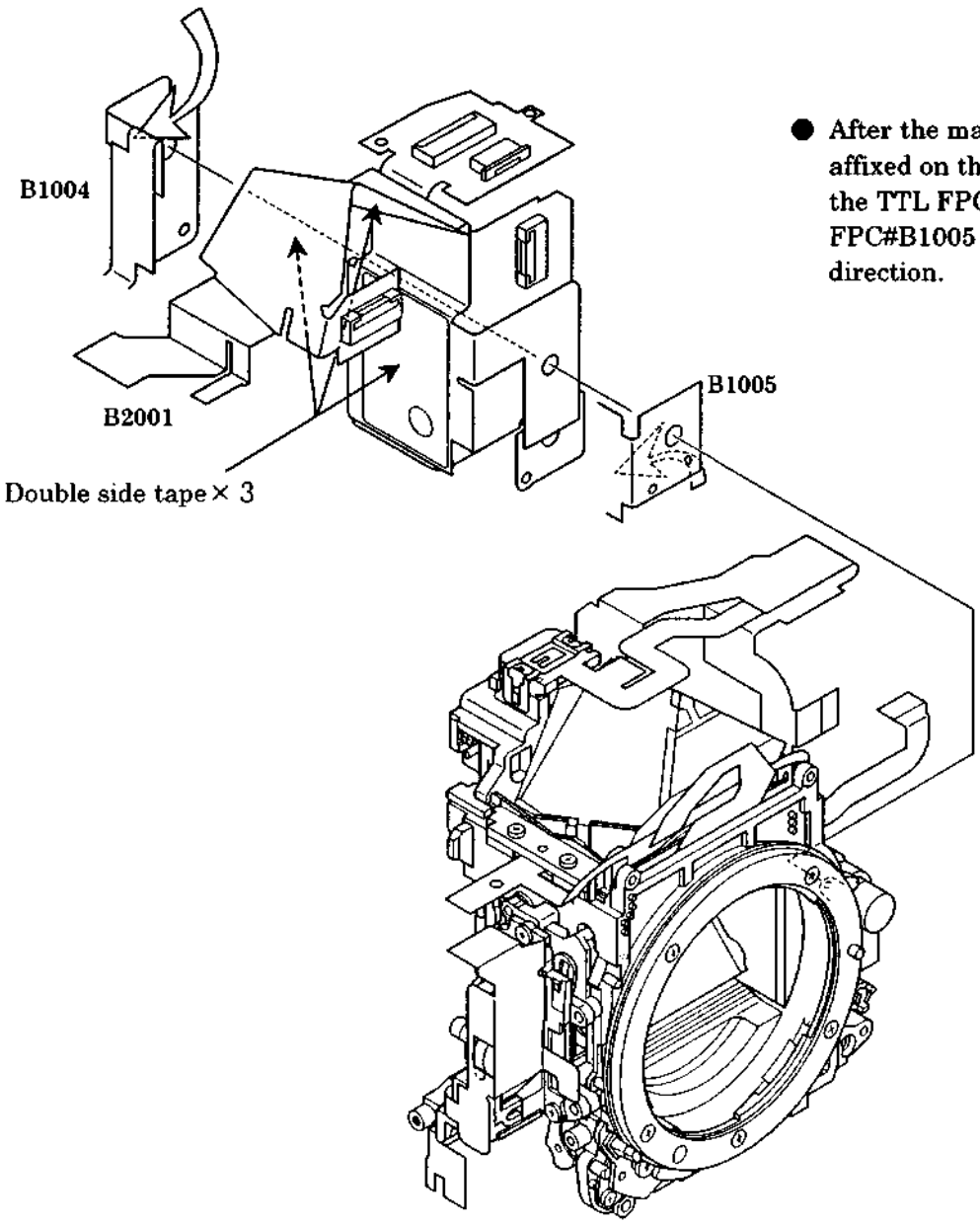
⑥ Fix the AE SPD holder on the prism box using Quick drying glue.

⑦ Perform solder bridging between the AE SPD retainer plate #290 and In Finder Metering FPC.

MAIN FPC

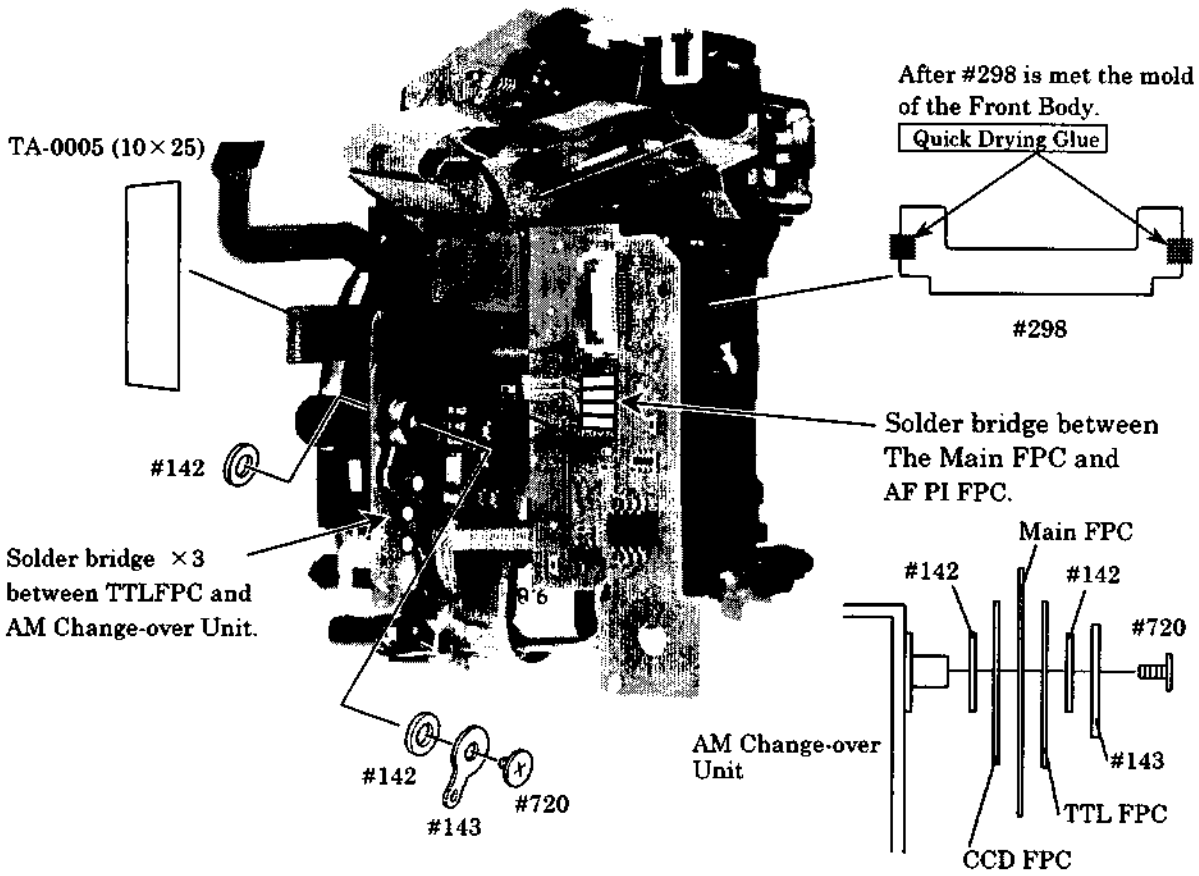
1. Mount the Main FPC to Front Body



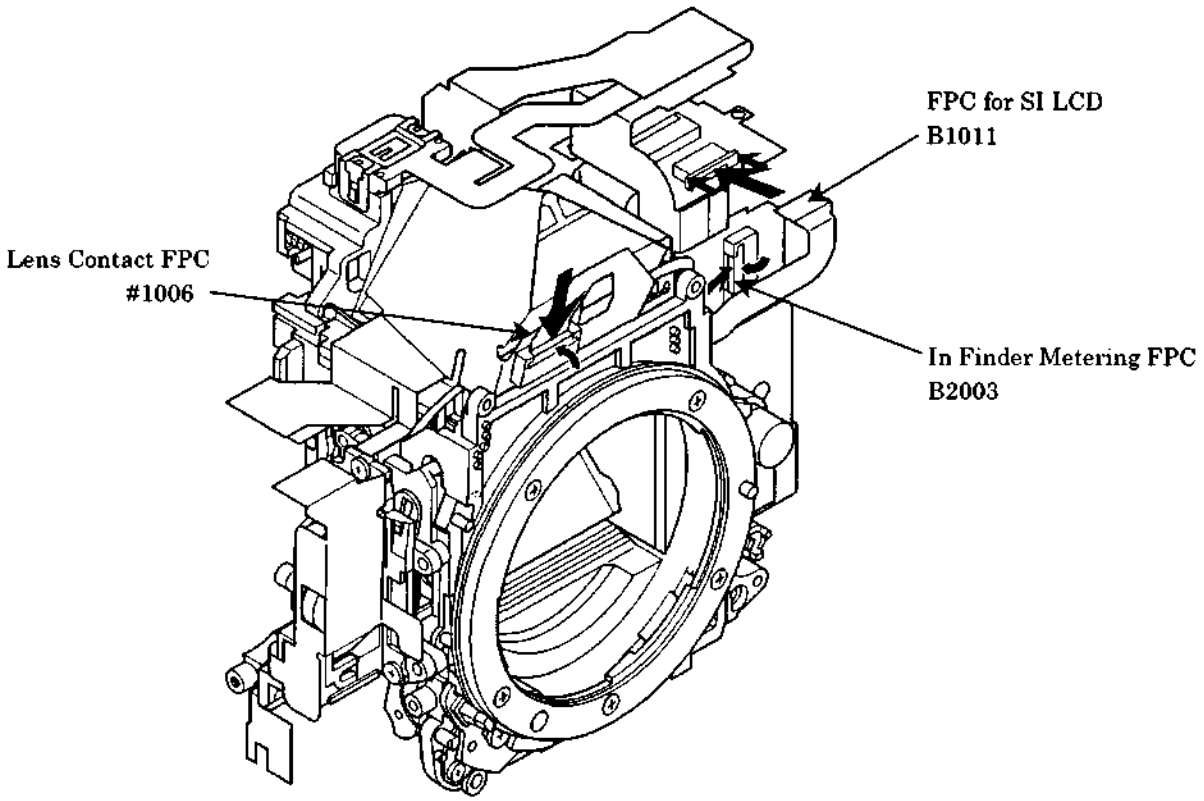


● After the main FPC #B2001 is affixed on the front body, fold the TTL FPC #B1004 and CCD FPC#B1005 to the arrow direction.

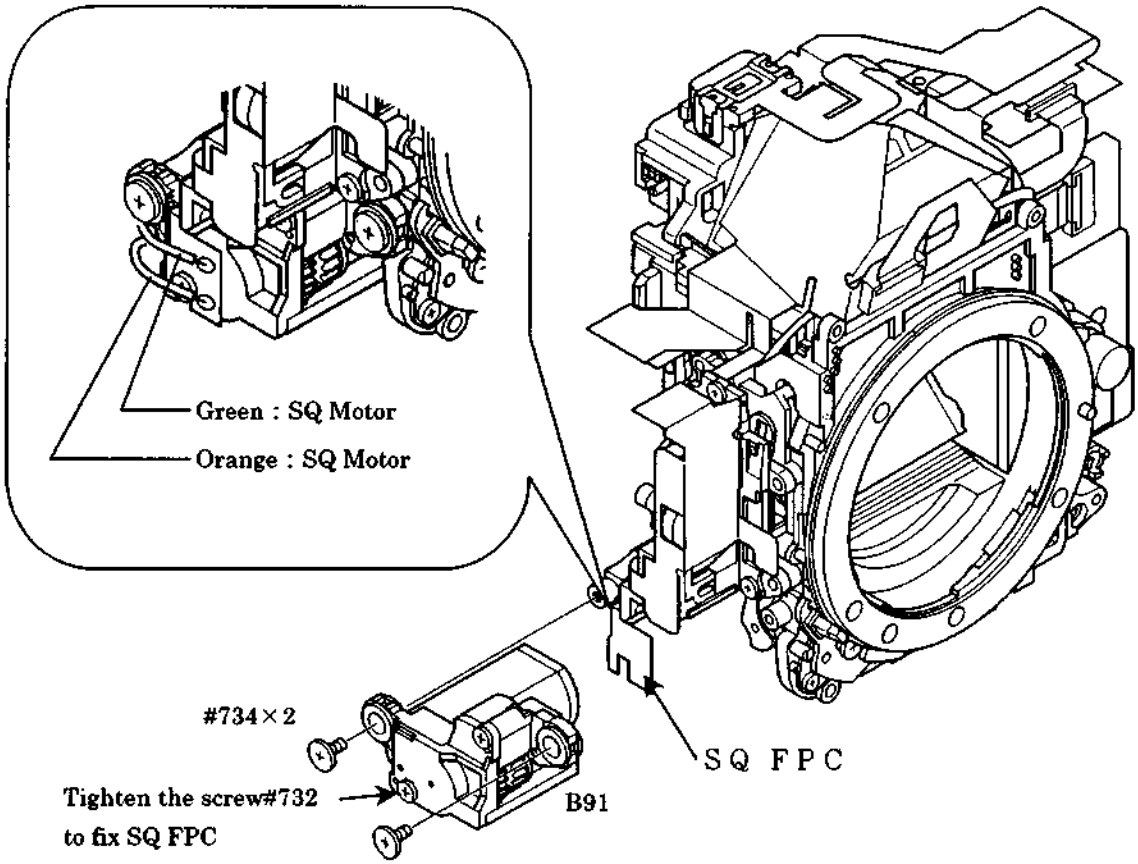
2. Pressure Welding and Solder bridge



3. Connect each FPC to the Connector

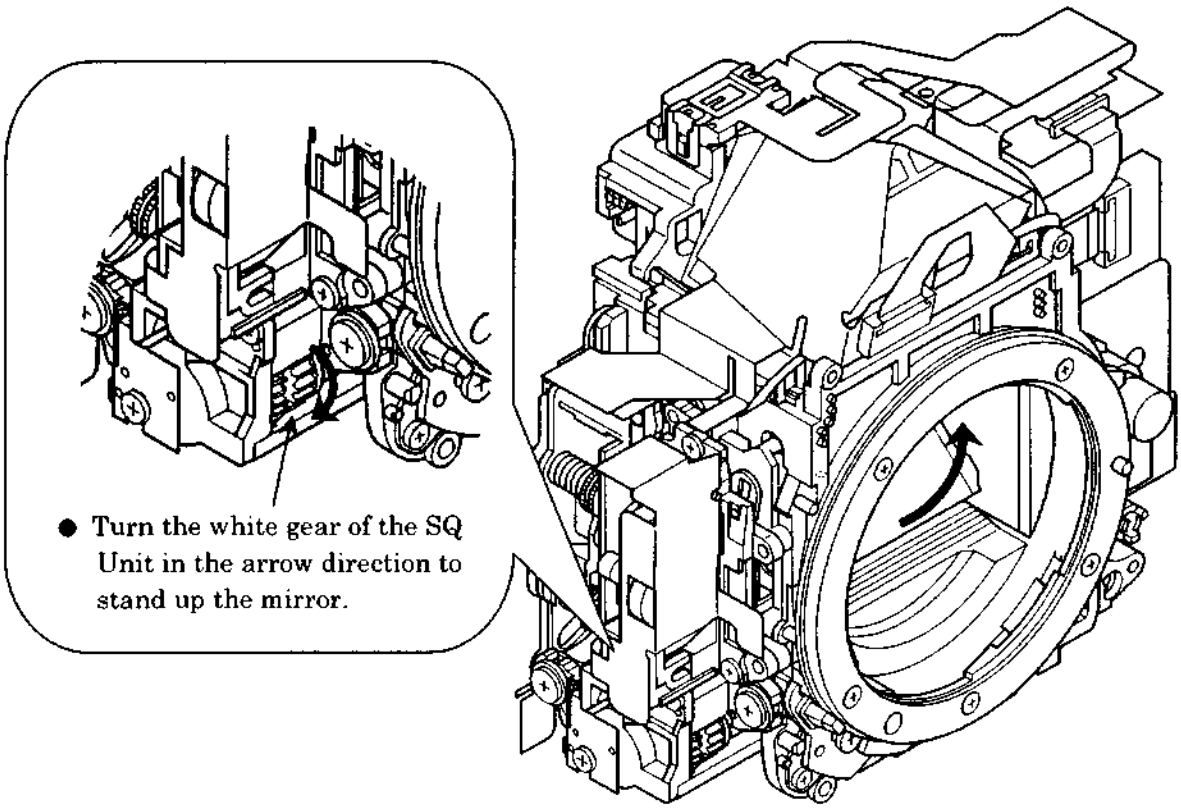


SQ UNIT

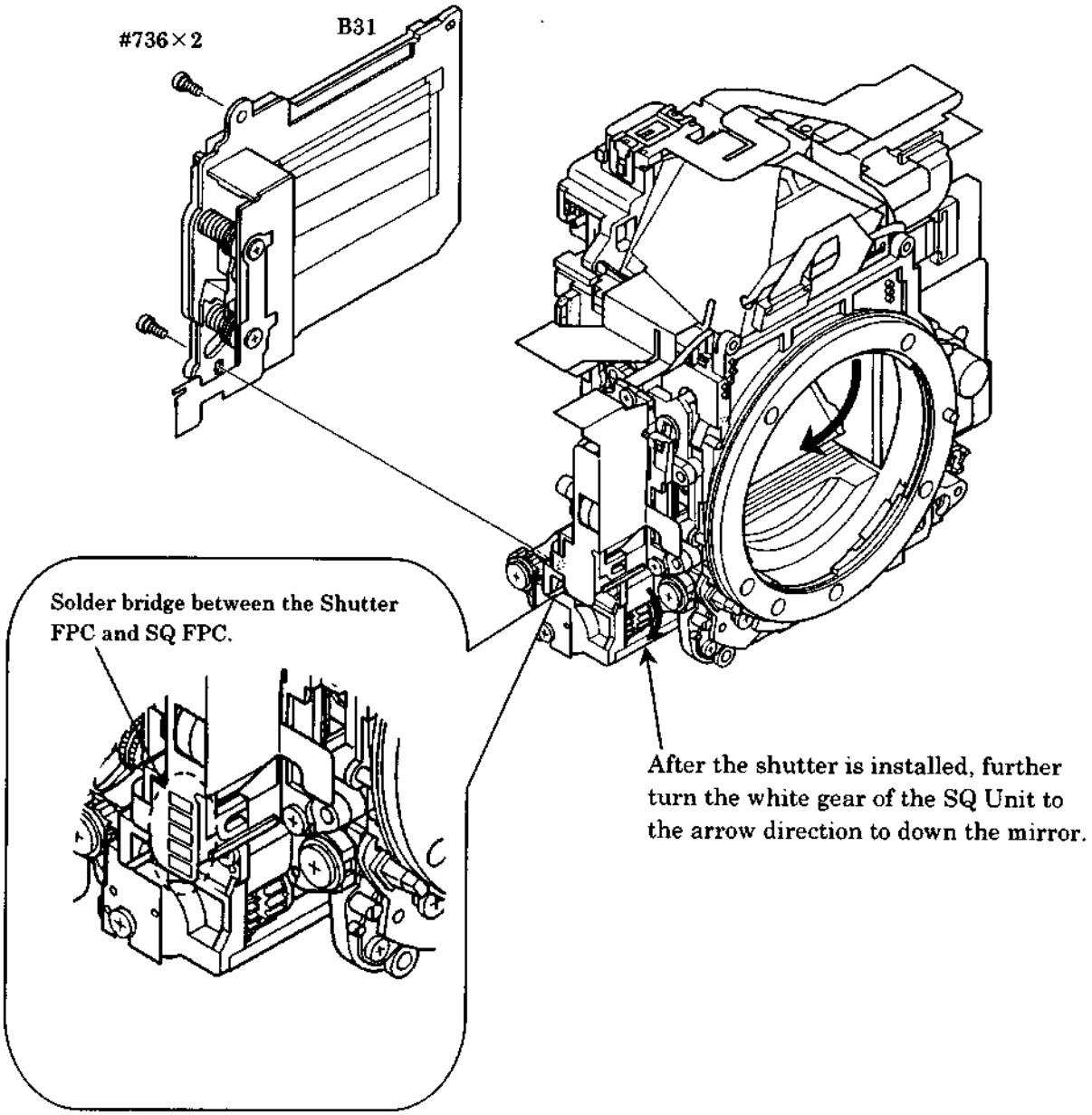


SHUTTER

1. Mirror up

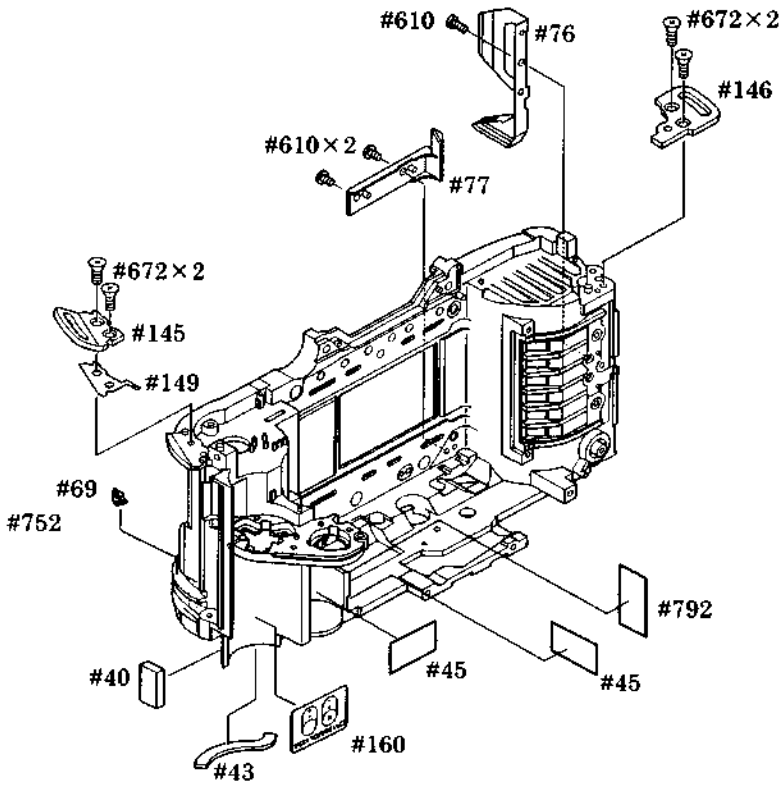


2. Mount the Shutter Unit to Front Body



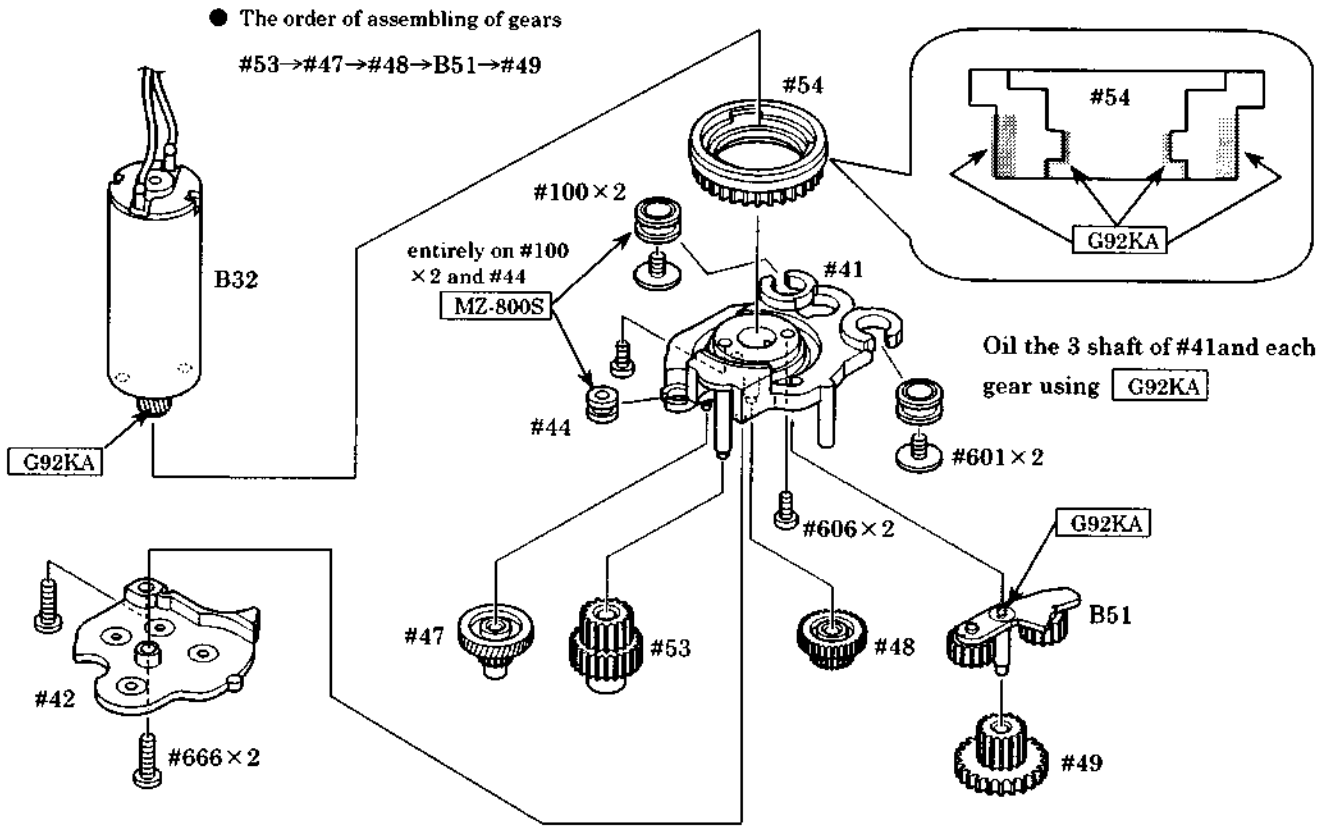
2. REAR BODY

SMALL PARTS OF REAR BODY

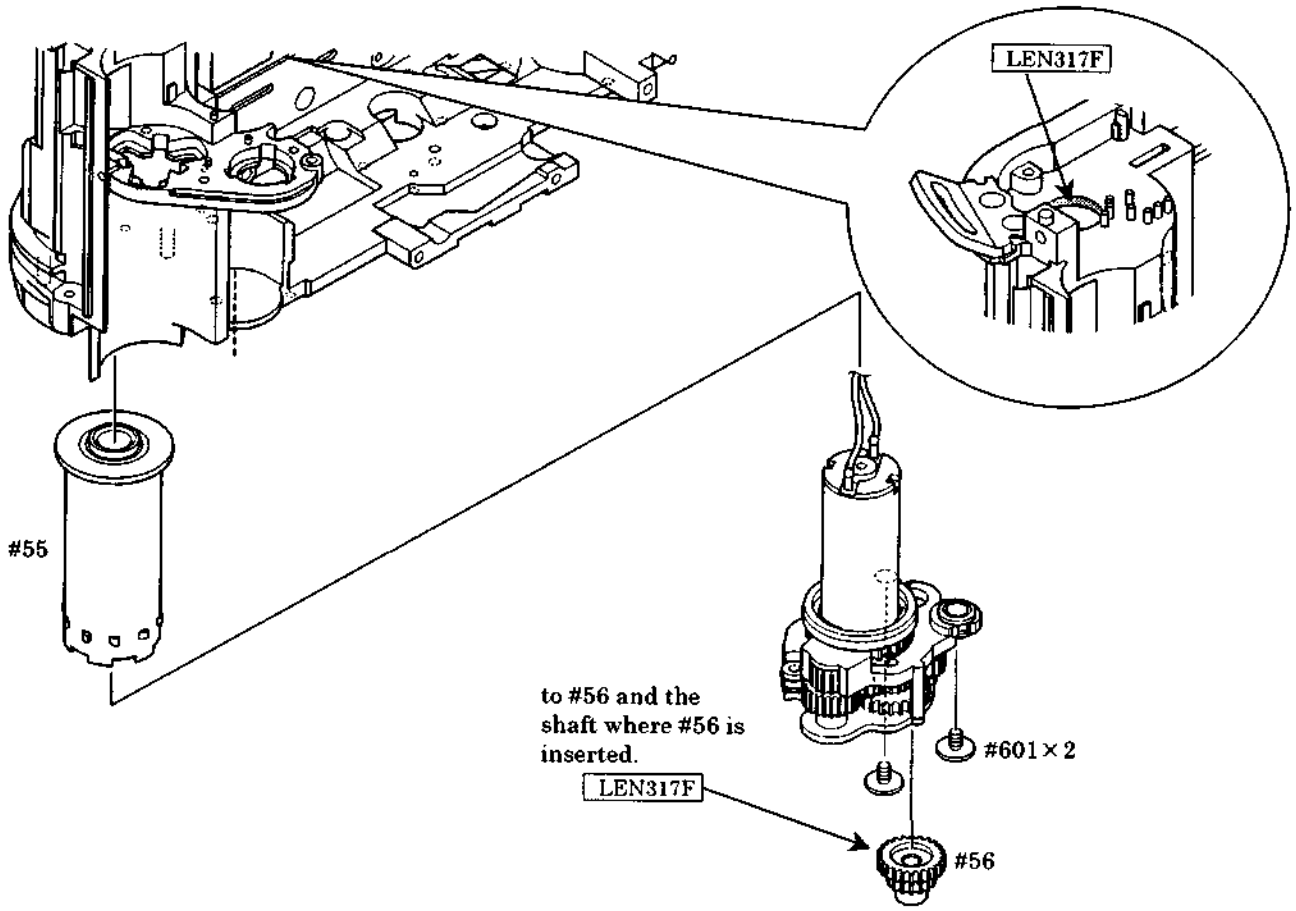


FILM ADVANCE UNIT

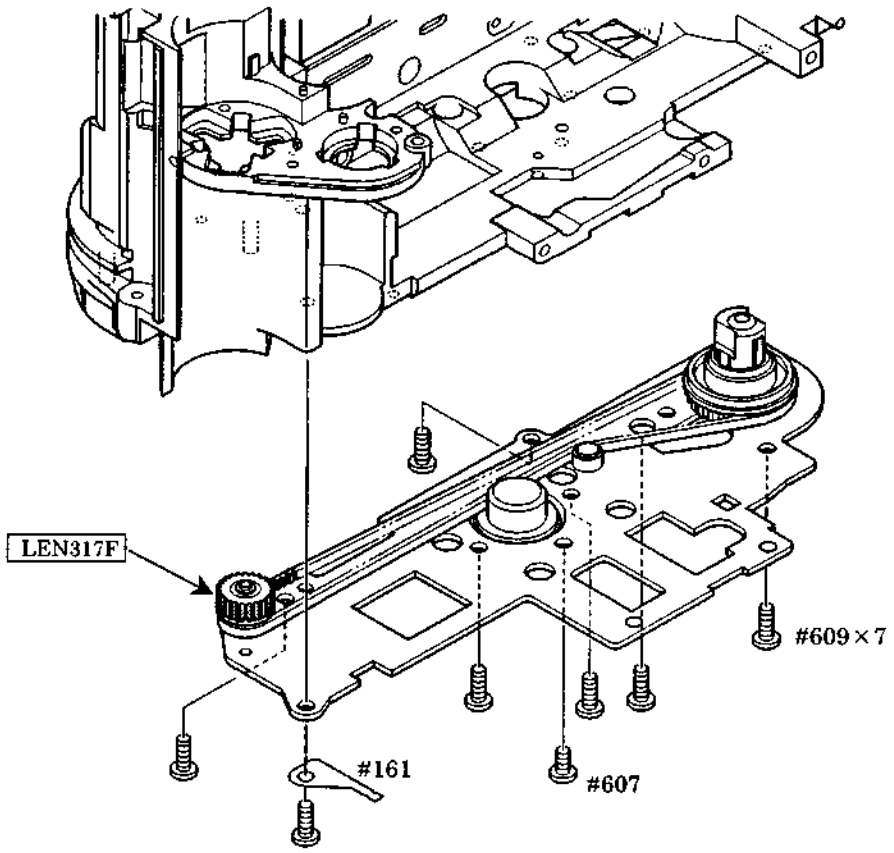
1. Assembling of each gear



2. Mount the Film Advance Unit to the Rear Body

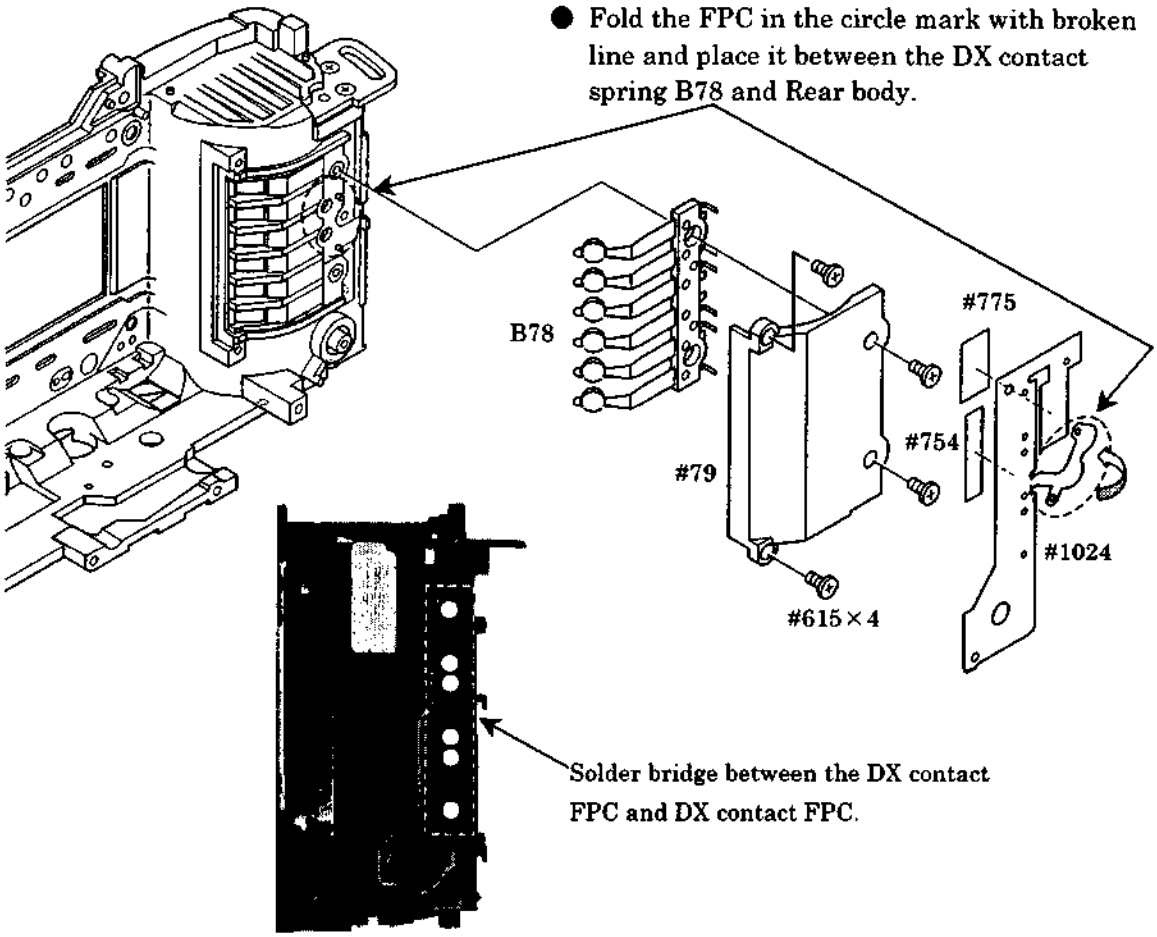


BOTTOM BASE PLATE



DX CONTACT

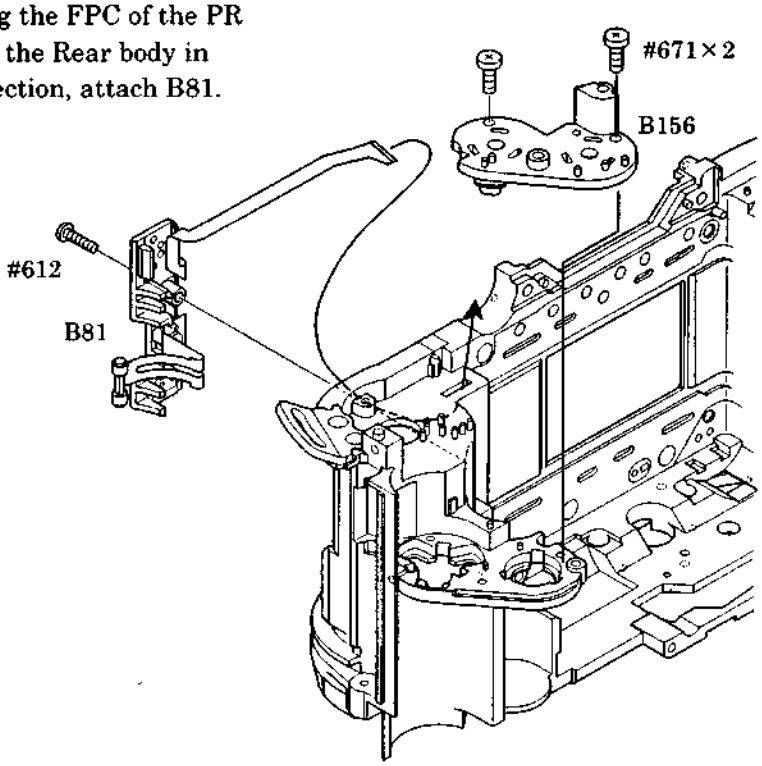
● Fold the FPC in the circle mark with broken line and place it between the DX contact spring B78 and Rear body.



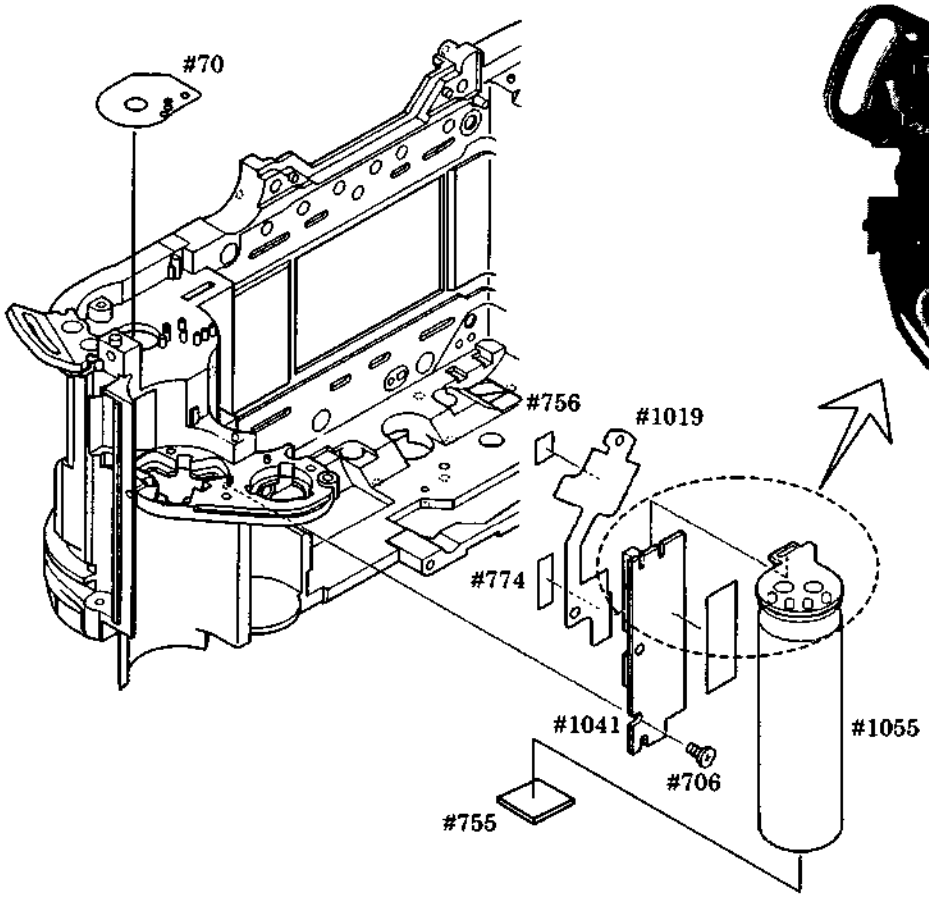
Solder bridge between the DX contact FPC and DX contact FPC.

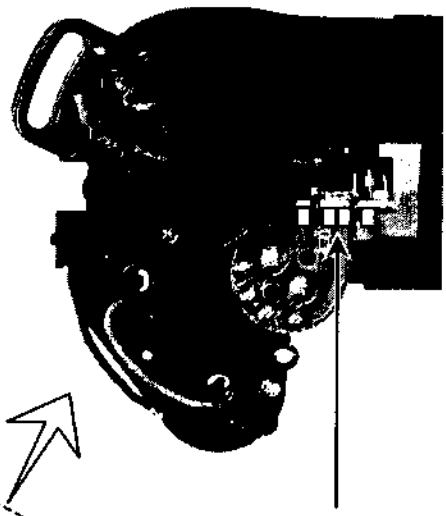
BATTERY CONTACT UNIT, PR UNIT

● After inserting the FPC of the PR Unit B81 into the Rear body in the arrow direction, attach B81.

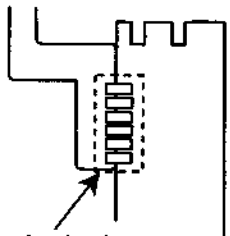


SB UNIT





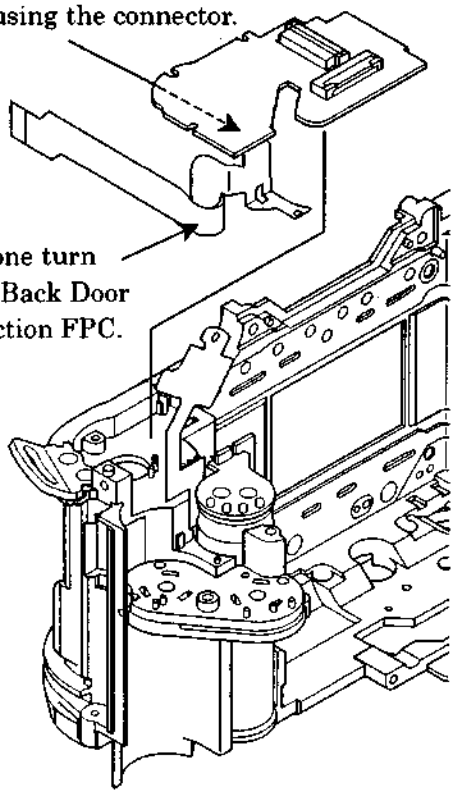
Solder bridge between the Main Capacitor and SB PCB.



Solder bridge between the SB PCB and FPC.

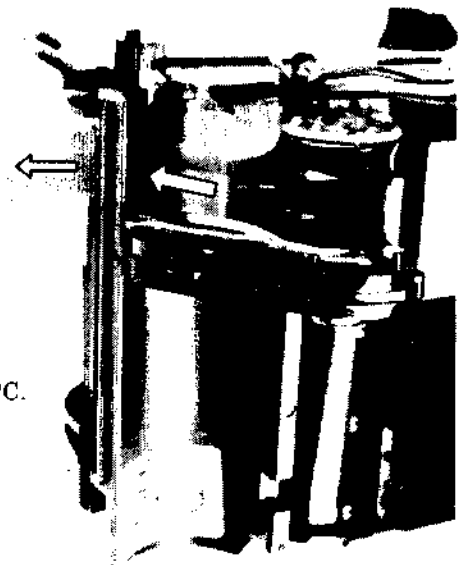
POWER DRIVE PCB

- Connect the power drive PCB and Back Door Connection FPC using the connector.



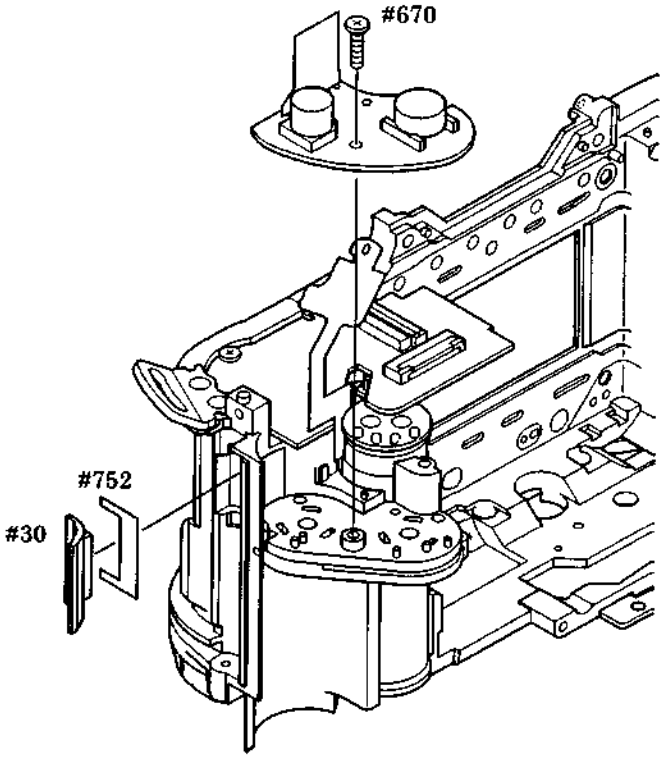
Make one turn on the Back Door Connection FPC.

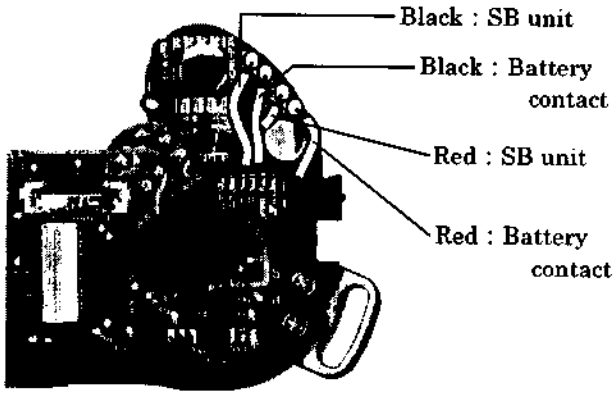
- Insert the Back Door Connection FPC into the opening on the Rear body in the arrow direction and mount the power drive PCB.



Back Door Connection FPC.

DC/DC UNIT

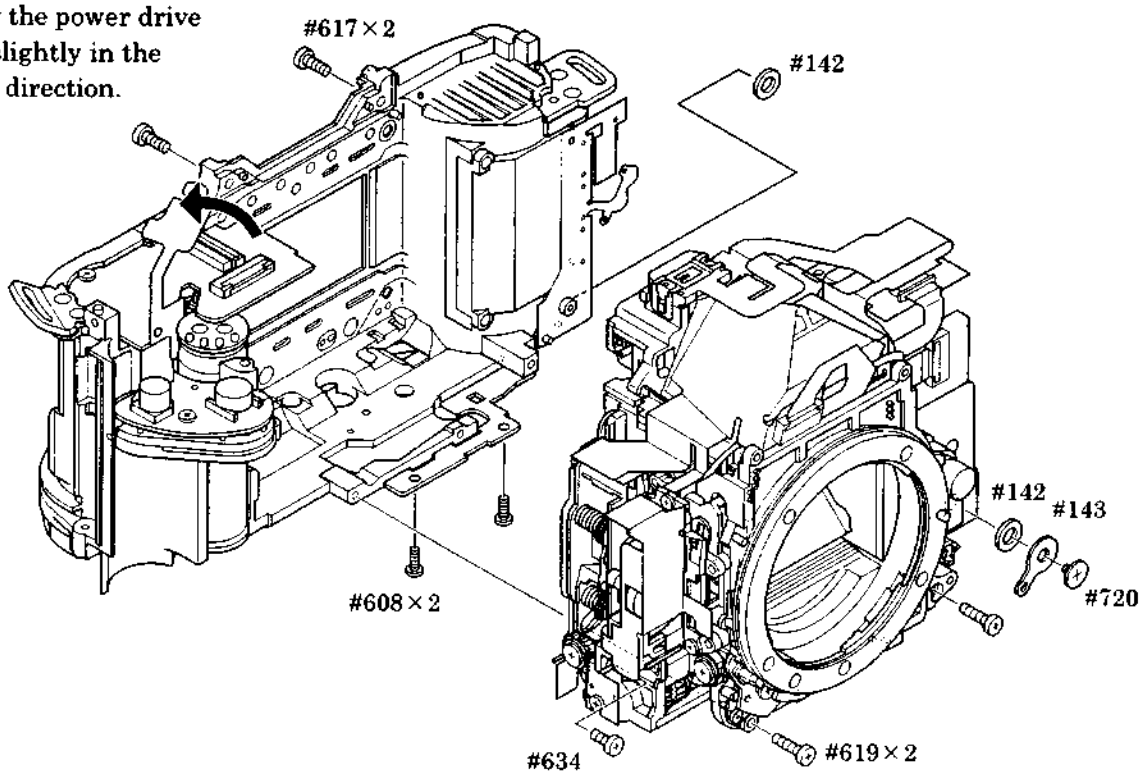




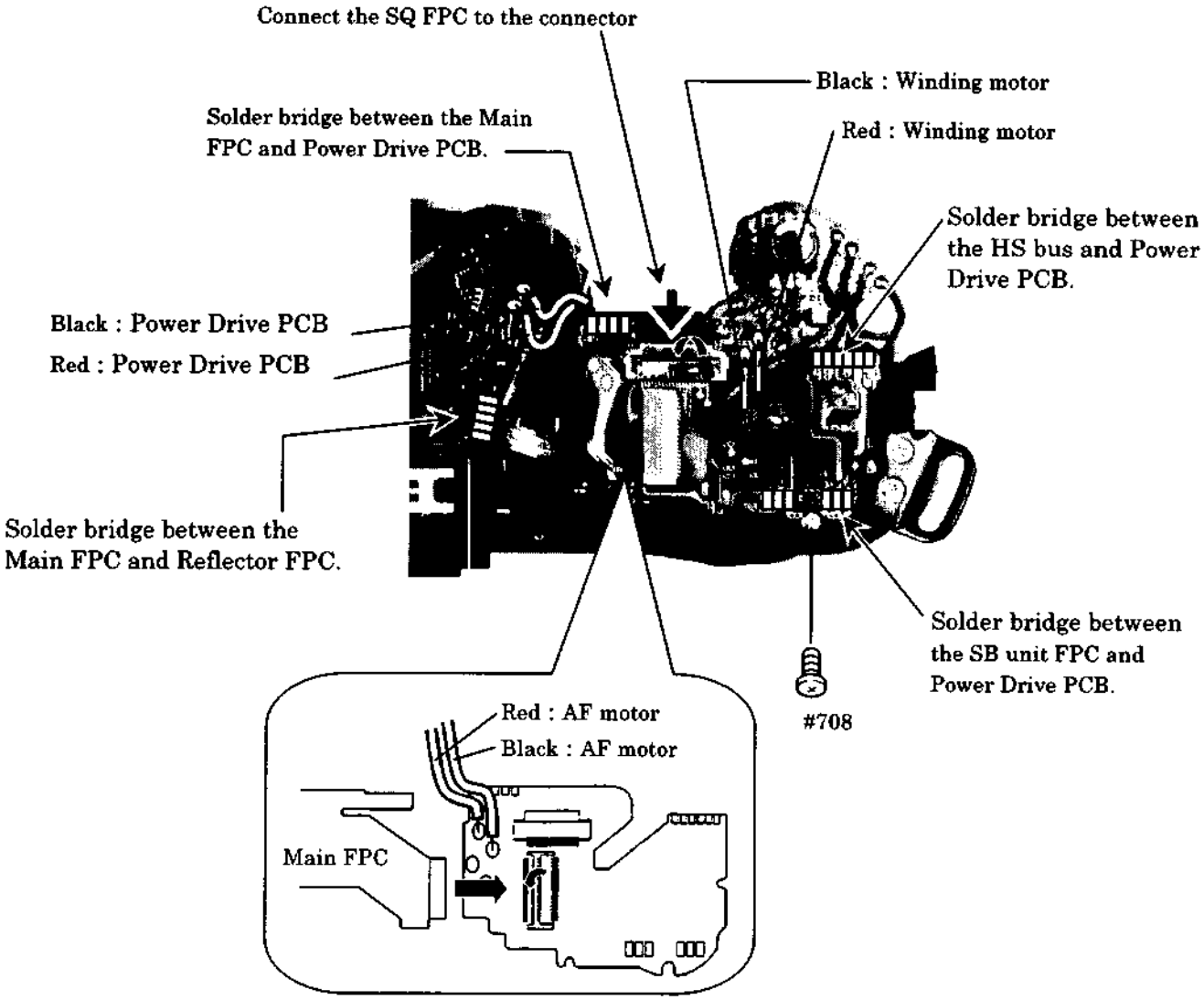
3. MOUNTING BOTH THE FRONT AND THE REAR BODIES

MOUNT THE FRONT BODY TO THE REAR BODY

- Install the front body, lifting the power drive PCB slightly in the arrow direction.

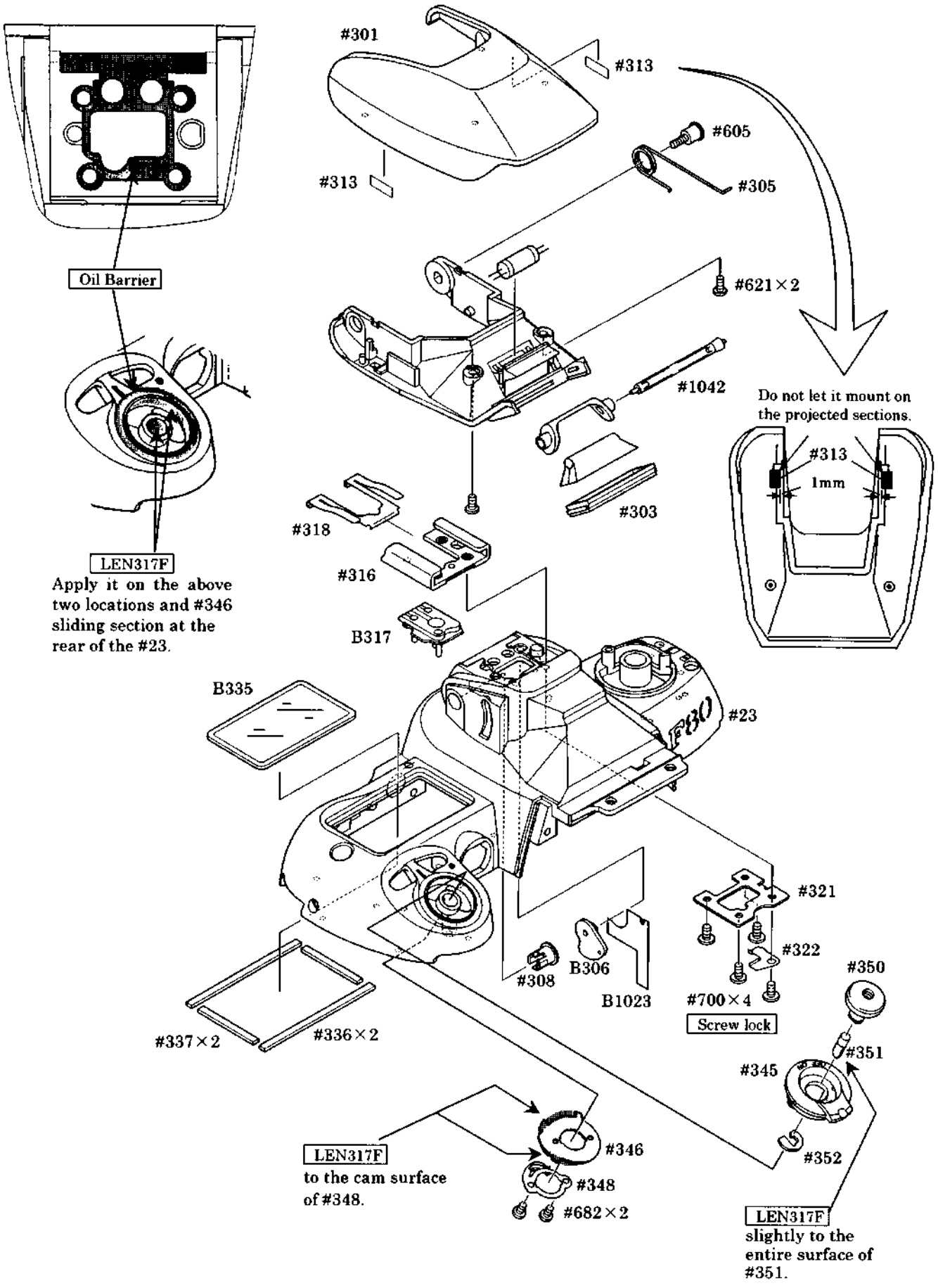


EACH WIRE, SOLDER BRIDGE AND CONNECTOR

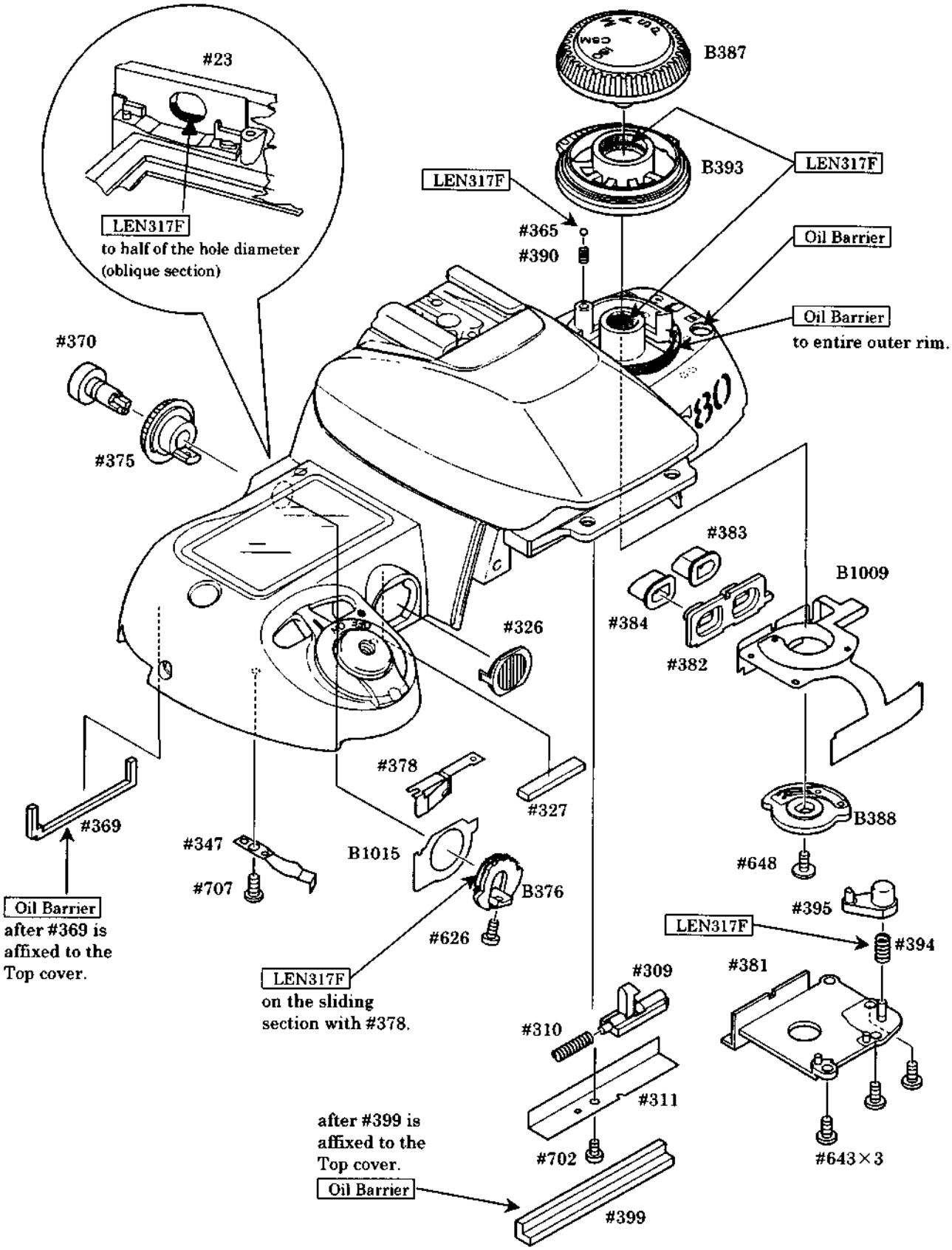


TOP COVER

1. SB area, Small Parts

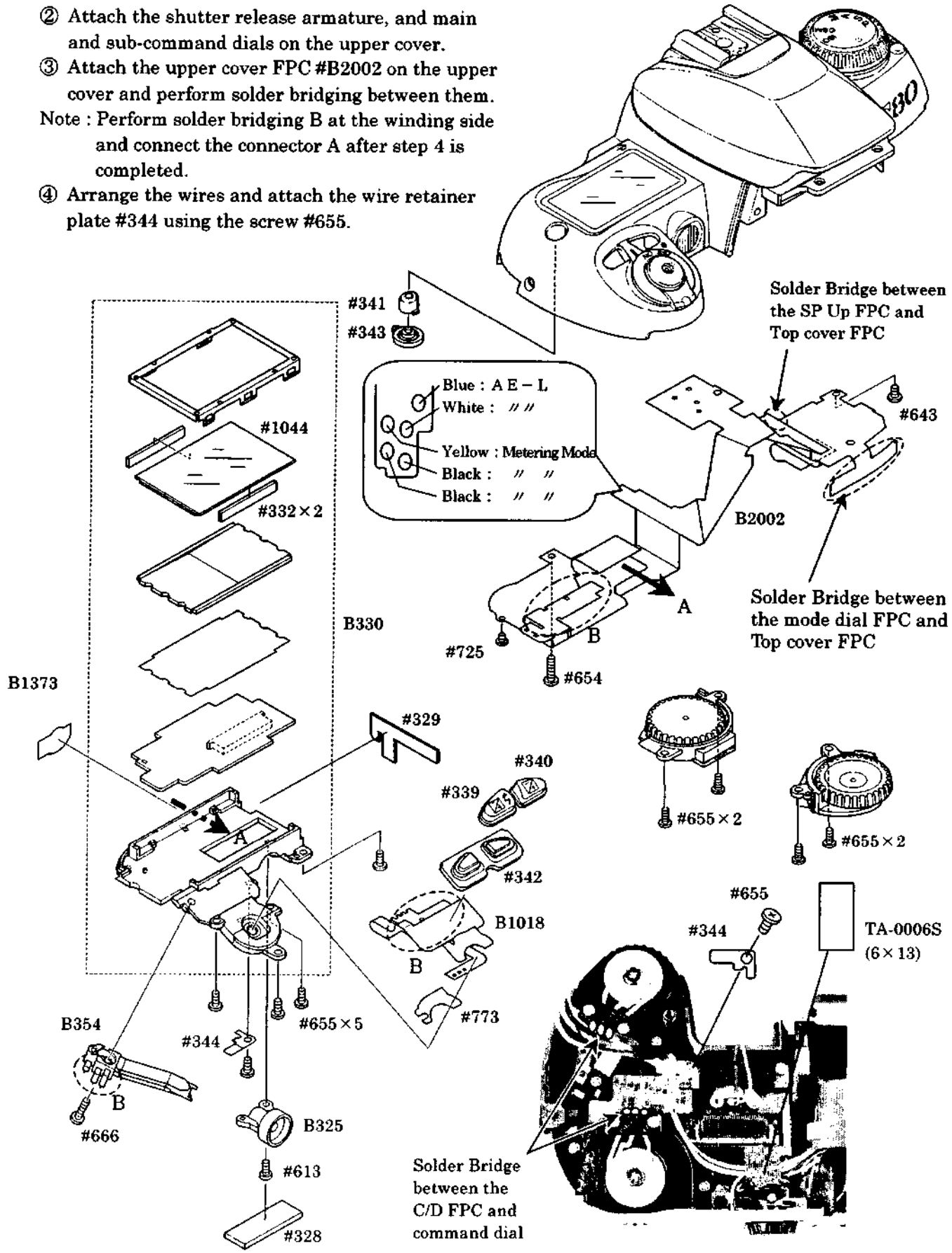


2. Mode Dial, Small Parts

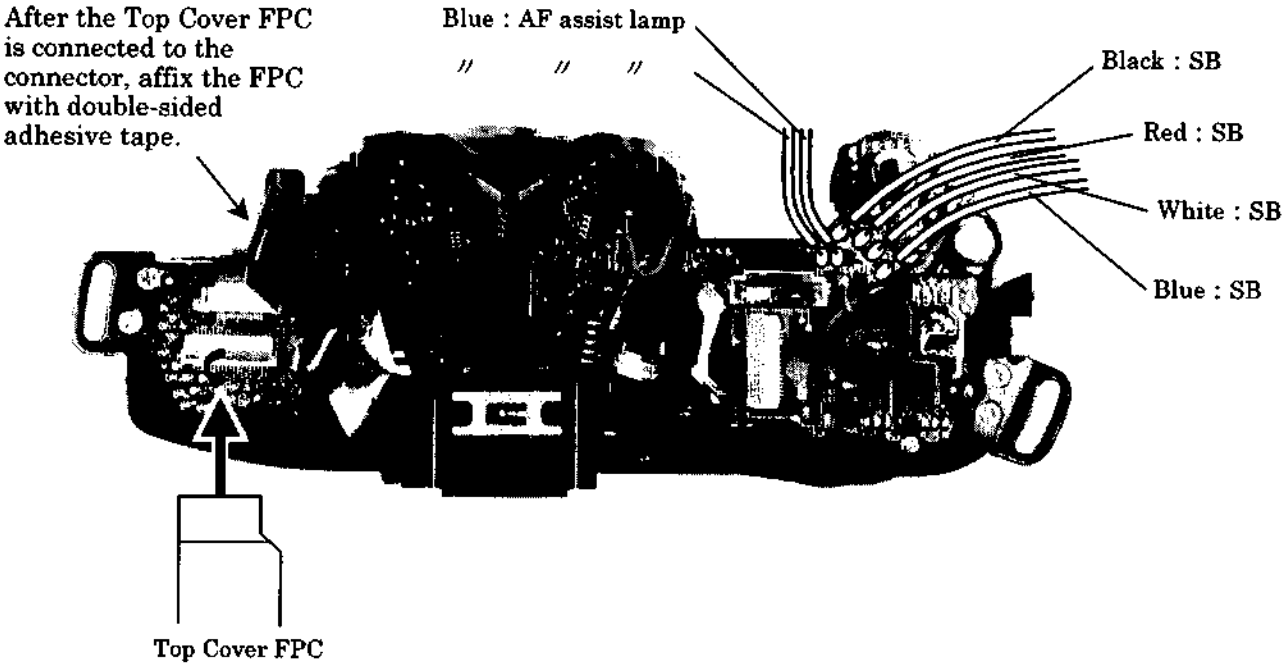


3. Outer LCD Unit, Command Dials, Top Cover FPC

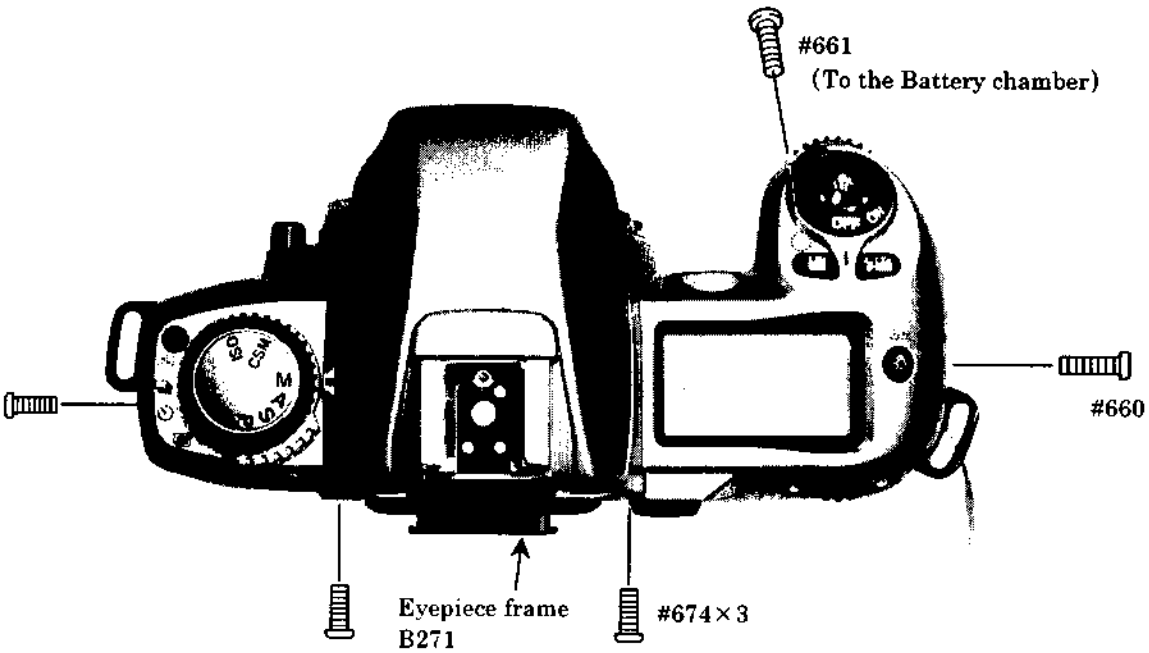
① Affix the C/D FPC #B1018 on the Outer LCD Unit and fix it on the Top cover using the screw #655 x 4.
② Attach the shutter release armature, and main and sub-command dials on the upper cover.
③ Attach the upper cover FPC #B2002 on the upper cover and perform solder bridging between them.
Note : Perform solder bridging B at the winding side and connect the connector A after step 4 is completed.
④ Arrange the wires and attach the wire retainer plate #344 using the screw #655.



4. Mount the Top Cover to the Body



5. Mount the Screws

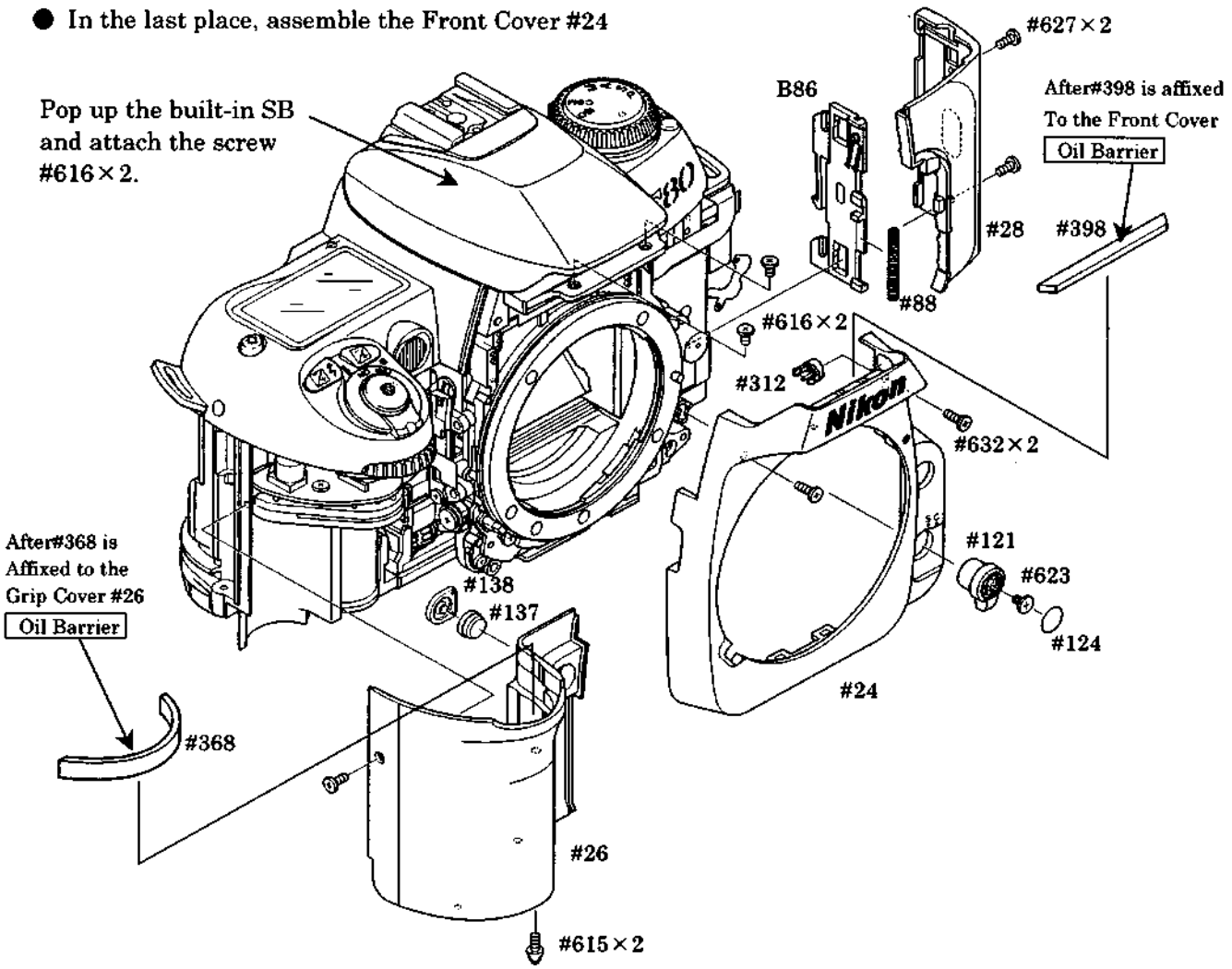


● Attach the eyepiece frame B271, setting the diopter adjustment lever to "-" side (lowest position) and passing the frame under the movable lens lever.

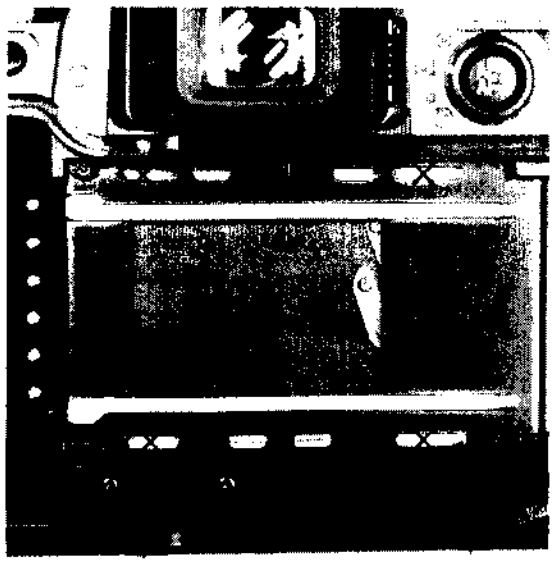
Check : After the eyepiece frame is attached, slide the diopter adjustment lever and check the diopter correction lens performance.

GRIP COVER, BACK DOOR OPEN/CLOSE AREA, FRONT COVER

● In the last place, assemble the Front Cover #24



INSPECTION & ADJUSTMENT OF BODY BACK

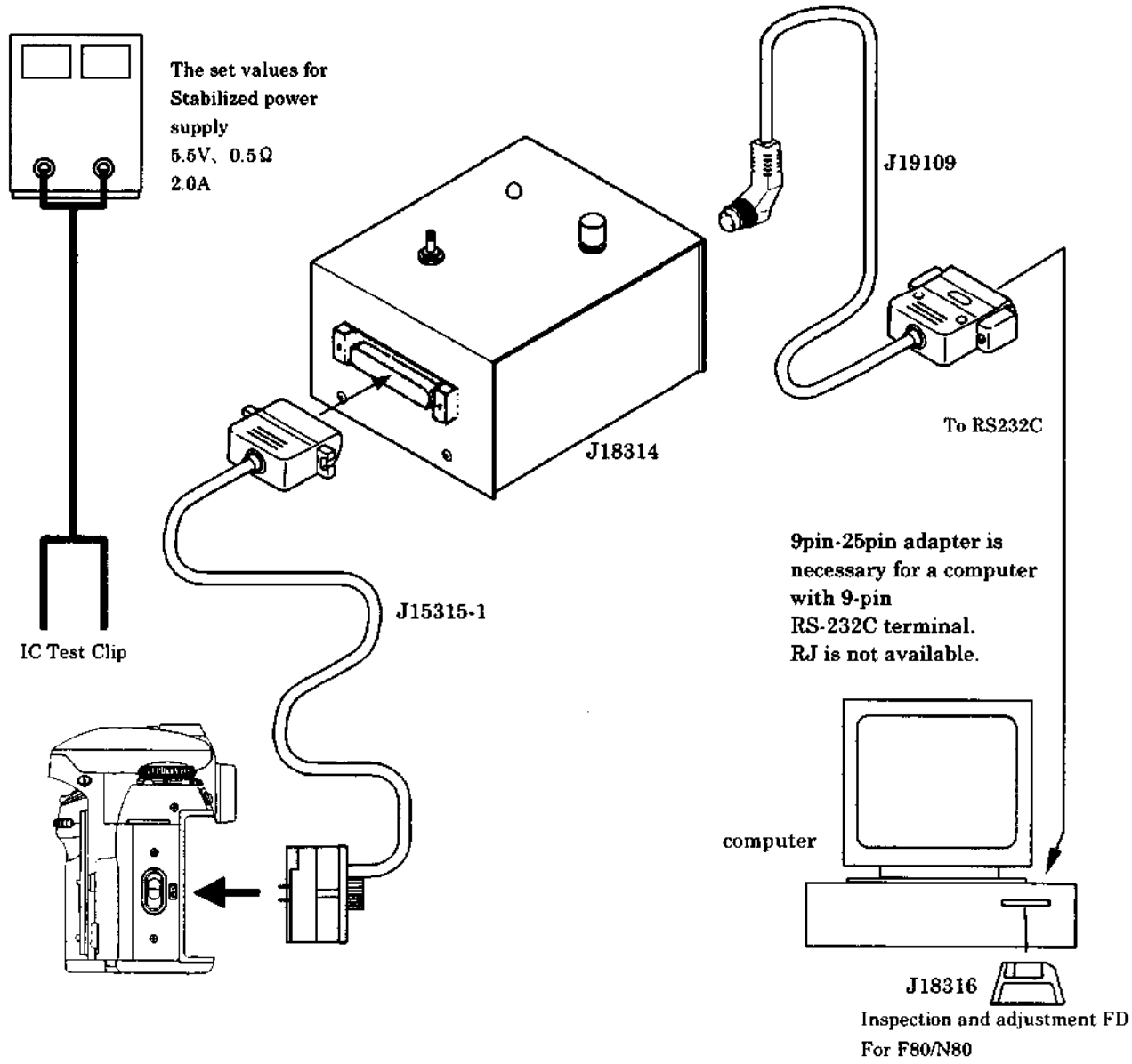


● Measure from the bayonet surface to the external rail. The ×-marked positions are where to be measured.
Standard : 46.67±0.02 mm / Tolerance for flatness : within 0.02 mm

● If the measured value is out of the standard Value, unfasten bottom of screws #609 and #607 to move the front body back and forth.
If it is within -0.05 mm, adjust it, placing the washer under the bayonet mount. If it is -0.06mm or more, adjust it placing the washer between the docking surface of front and rear bodies.

ADJUSTMENT THROUGH PC

● If the camera is connected to a personal computer, connect the MC-31 (J19109) to the RS232C connector of the personal computer as shown in the following figure and connect the communication tool (J15315-1) to the camera through the newly specified power tool (J18314) for RS232C.



Conduct each adjustment in accordance with the adjustment software instructions on PC screen.

1. Adjustment for temperature detection voltage
2. AE adjustment
3. aperture adjustment
4. M1/ 4000 adjustment
5. TTL adjustment

NOTE : Be sure to utilize either "F90" or " N90" oriented camera's shutter curtain.

6. Battery check adjustment

Confirmation of the Battery check display mode

After adjusting the battery check, input below-mentioned each voltage data to the camera and then check the external LCD mode.

Note : Conduct the inspection by switching each voltage in order of No.1 to 5.

External LCD mode	Set up voltage from the stabilized power supply	
	① 5.5V	⑤ 5.2±0.2V
	② 4.9±0.2V	④ 4.9±0.2V
 blinks	③ 4.6±0.2V	

AF ADJUSTMENT

〔Inspection and adjustment items〕

① Inspection and adjustment for the AF accuracy (whole item shall be adjusted)

② YAW, PITCH

③ LARK adjustment

④ CCD output

〔Tools in use〕

1. For adjustment of whole item:

   The tool(s) used for the AE-oriented adjustment shall be utilized.

2. For check of the AF accuracy

   ① Z adjustment lens (J18266) for F5、F100

   ② AF adjustment stand (J15259)

   ③ Z lens holder (J15280) or position conversion adapter (J15271) for tripod socket

   ④ AF chart (J18237) for F5、F100

   ⑤ Lighting box (J15264) for high frequency

3. For adjustment of YAW, and PITCH

   ① The whole tool used for the check of AF accuracy just as mentioned above

   ② Adjustment tool for YAW, and PITCH (J18230)

4. For adjustment of LARK

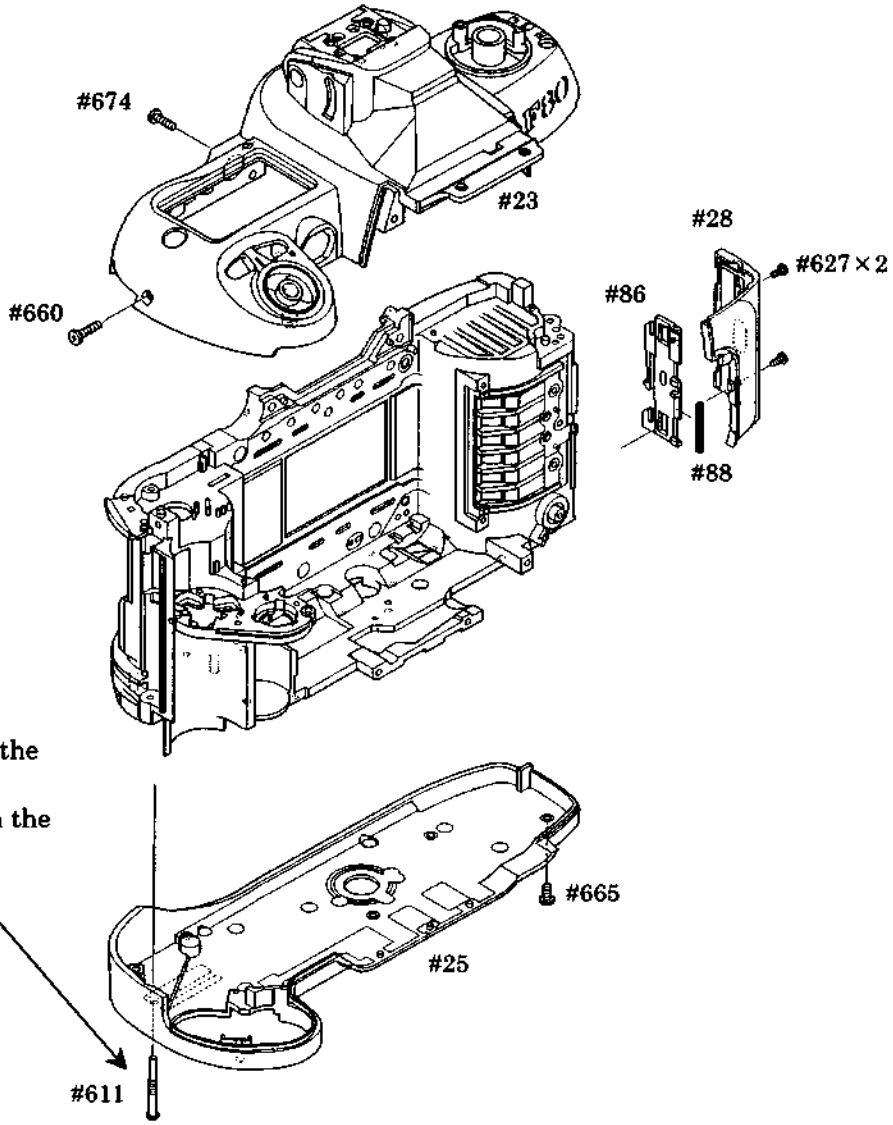
   The whole tool used for the check of AF accuracy just as mentioned above

5. For adjustment of CCD output

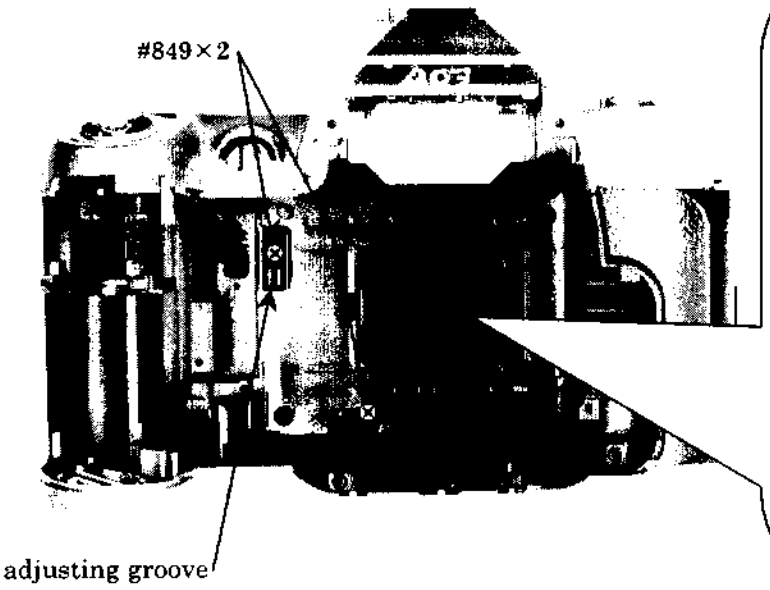
   AF50/1.4D lens

ADJUSTMENT OF BETWEEN FRAMS DATA POSITION (ONLY F80S)

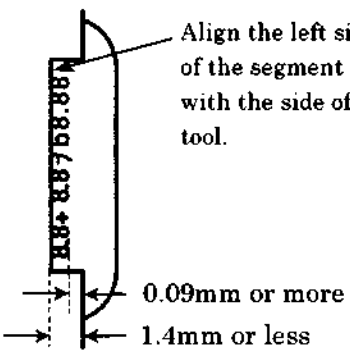
1. Assembling of the RJ Tool (J15381)



2. Adjustment of Position

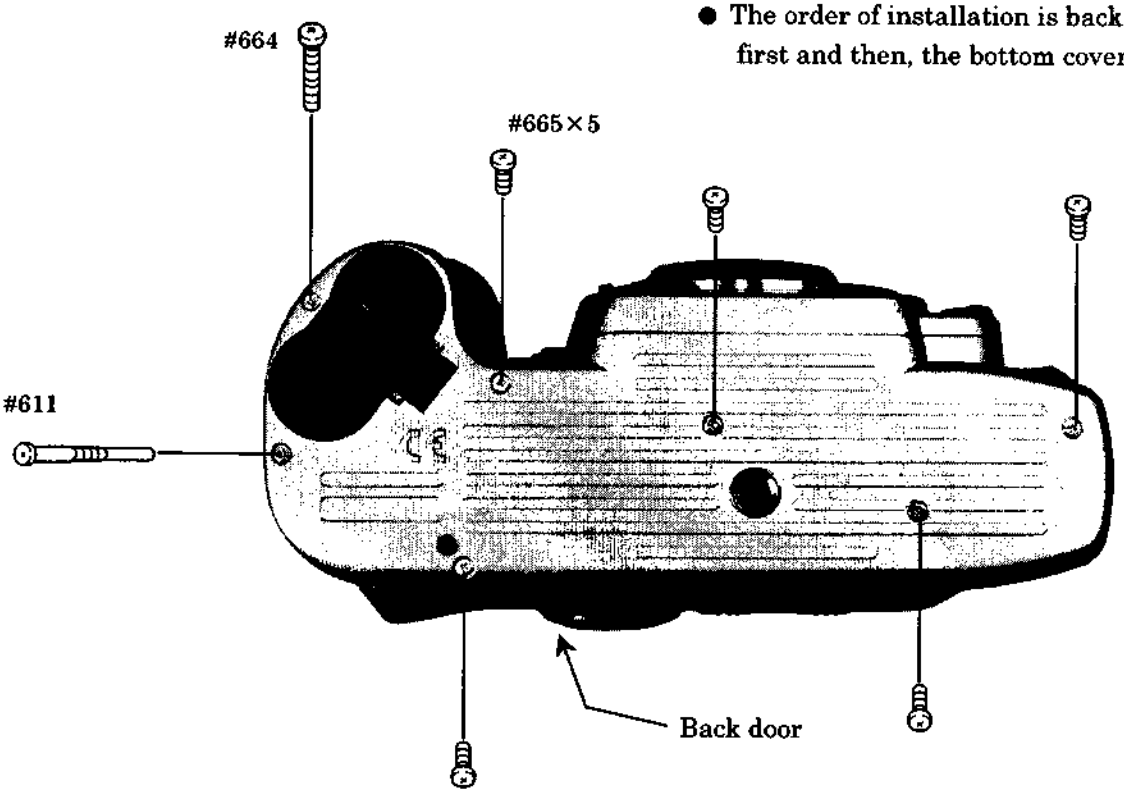


Loosen screw #849×2 and adjust the location, moving the adjusting groove to left and right. After the adjustment, fasten the loosened screw #849×2 to fix the module.

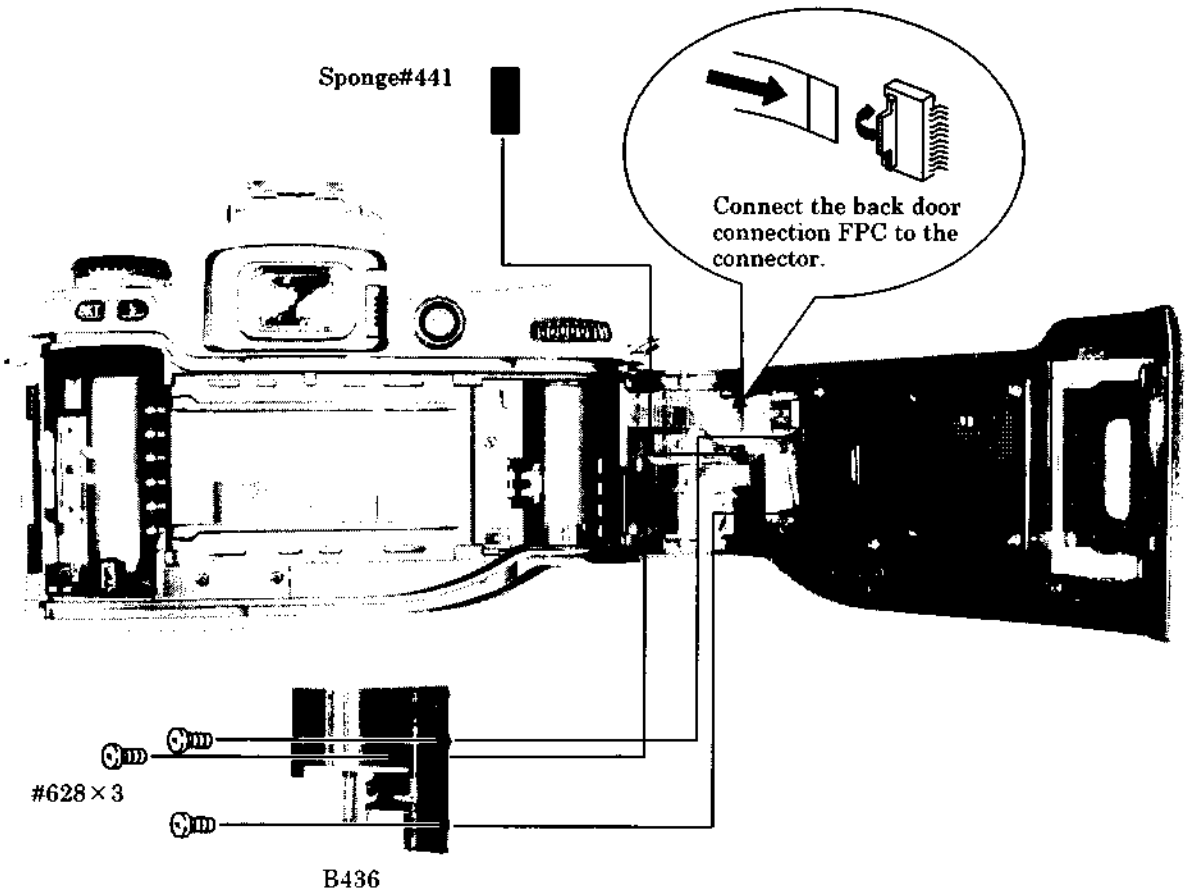


BACK DOOR, BOTTOM COVER

● The order of installation is back door first and then, the bottom cover.

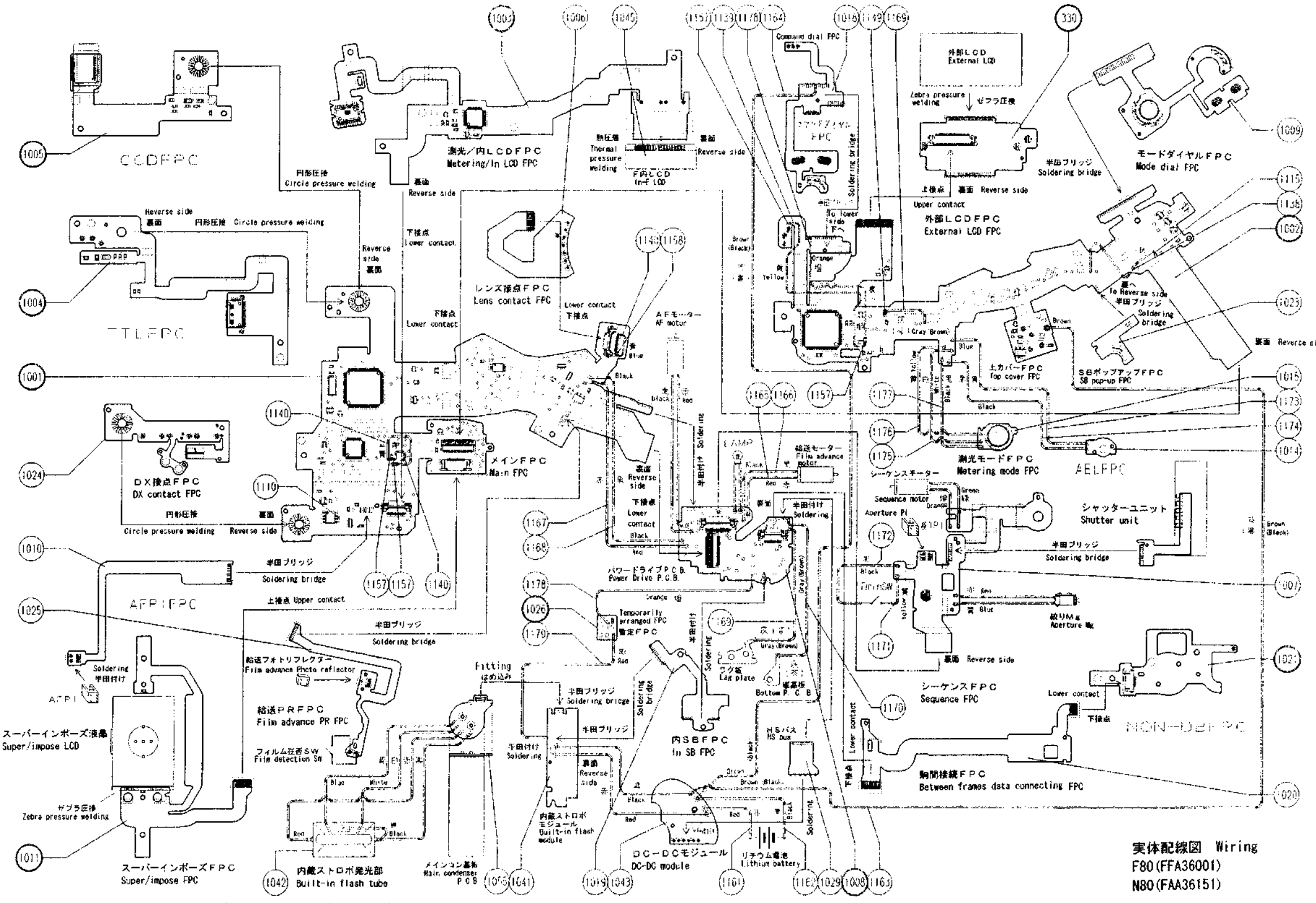


FILM ROLLER UNIT



電気編目次

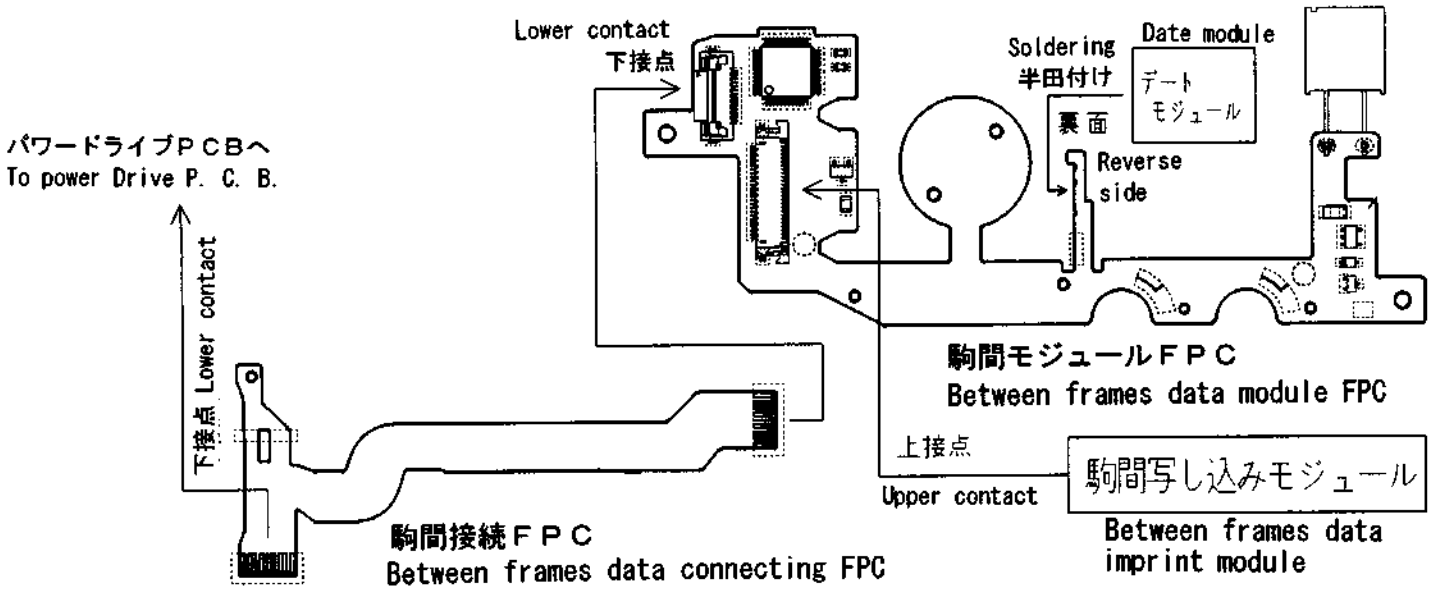
ELECTRIC CIRCUIT



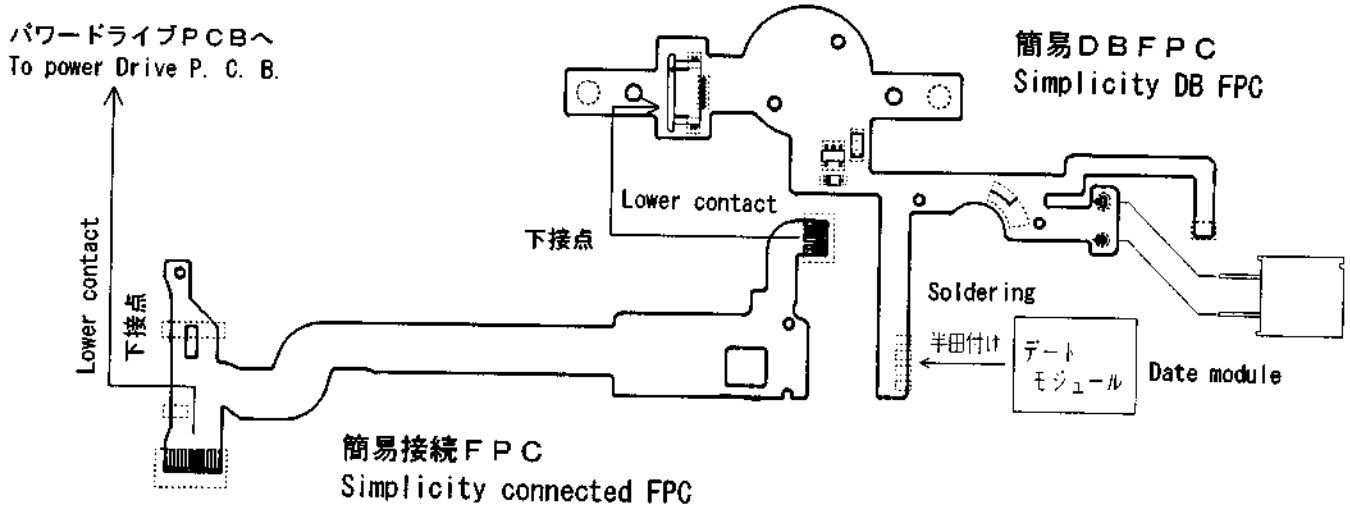
実体配線図 Wiring
F80(FFA36001)
N80(FAA36151)

注) 量産時では暫定的に一部リード線が（ ）内の色になります。
(Notes) At the first mass production, the color of some lead wires are the color in ( ) temporarily.

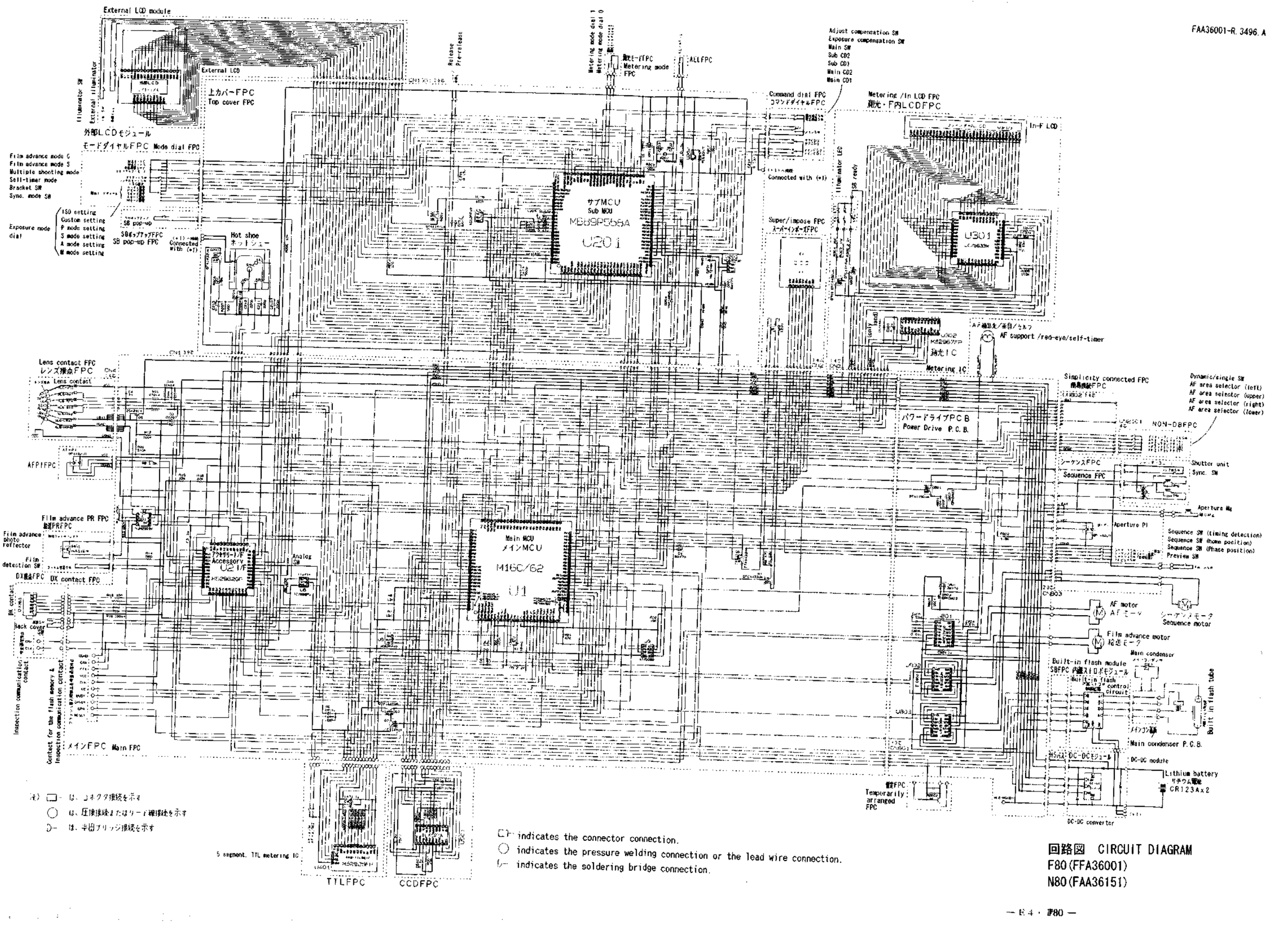
実体配線図　Wiring
F80s (FFA36451)
N80s (FAA36551)



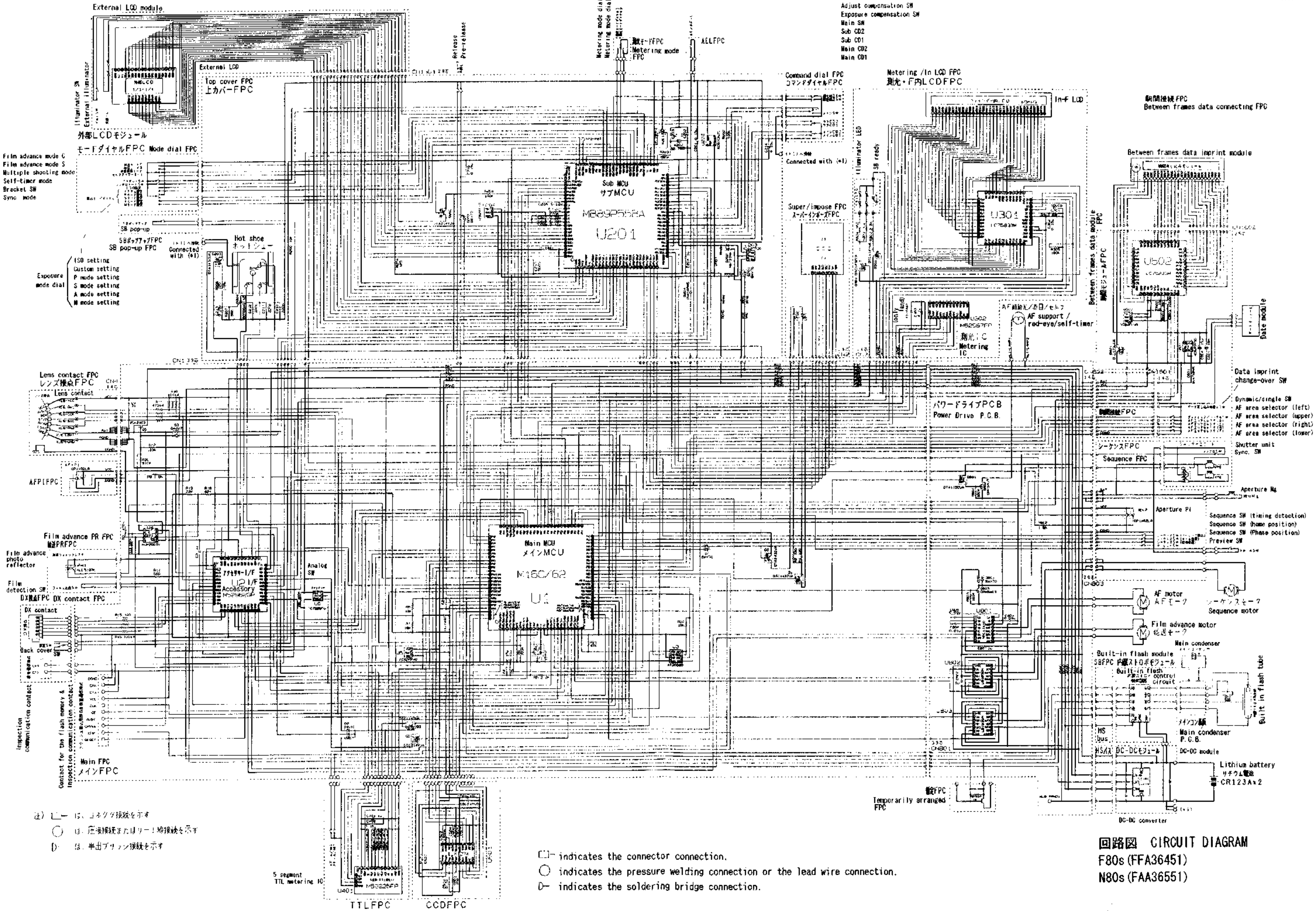
実体配線図　Wiring
F80D (FFA36201, 36251)
N80D (FAA36301, 36351)



FAA36001-R. 3496. A



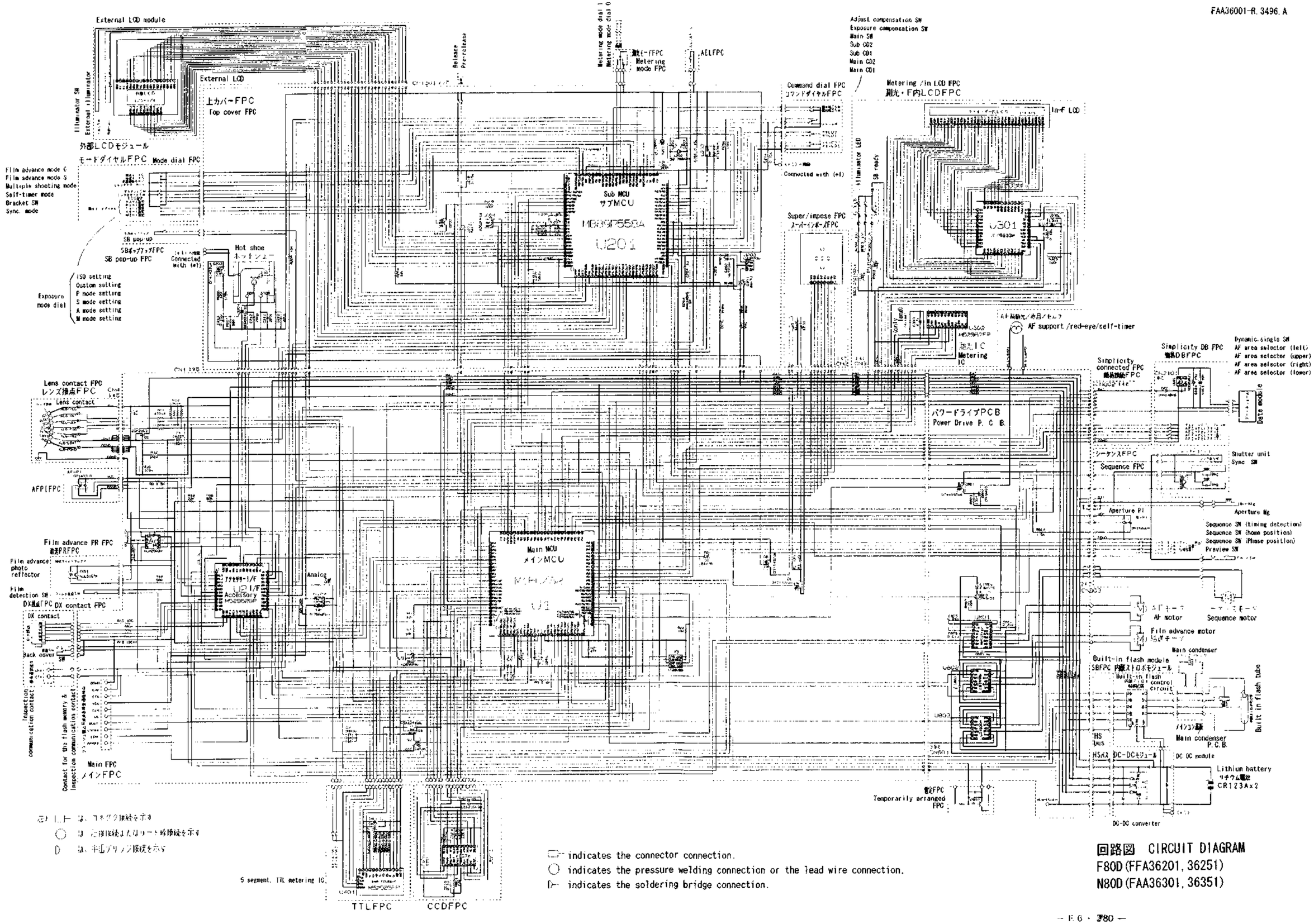
回路図 CIRCUIT DIAGRAM
F80(FFA36001)
N80(FAA36151)



注） ⊏⊐— は、コネクタ接続を示す
◯ は、圧接接続またはリード線接続を示す
▷ は、半田ブリッジ接続を示す

⊏⊐— indicates the connector connection.
◯ indicates the pressure welding connection or the lead wire connection.
▷— indicates the soldering bridge connection.

回路図 CIRCUIT DIAGRAM
F80s (FFA36451)
N80s (FAA36551)

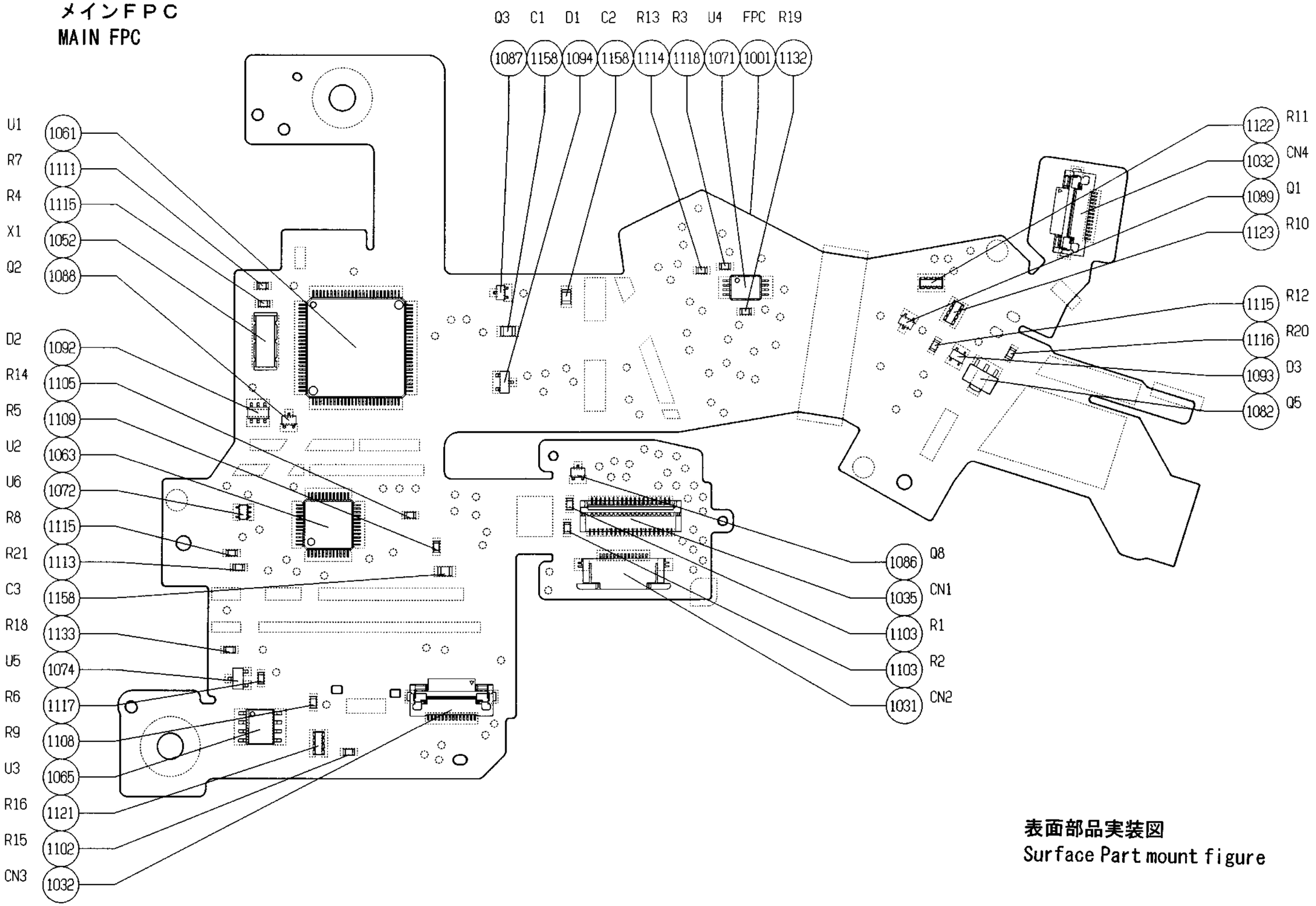


□ 印は、コネクタ接続を示す
○ 印は、圧着接続またはリード線接続を示す
▷ 印は、半田ブリッジ接続を示す

□ indicates the connector connection.
○ indicates the pressure welding connection or the lead wire connection.
▷ indicates the soldering bridge connection.

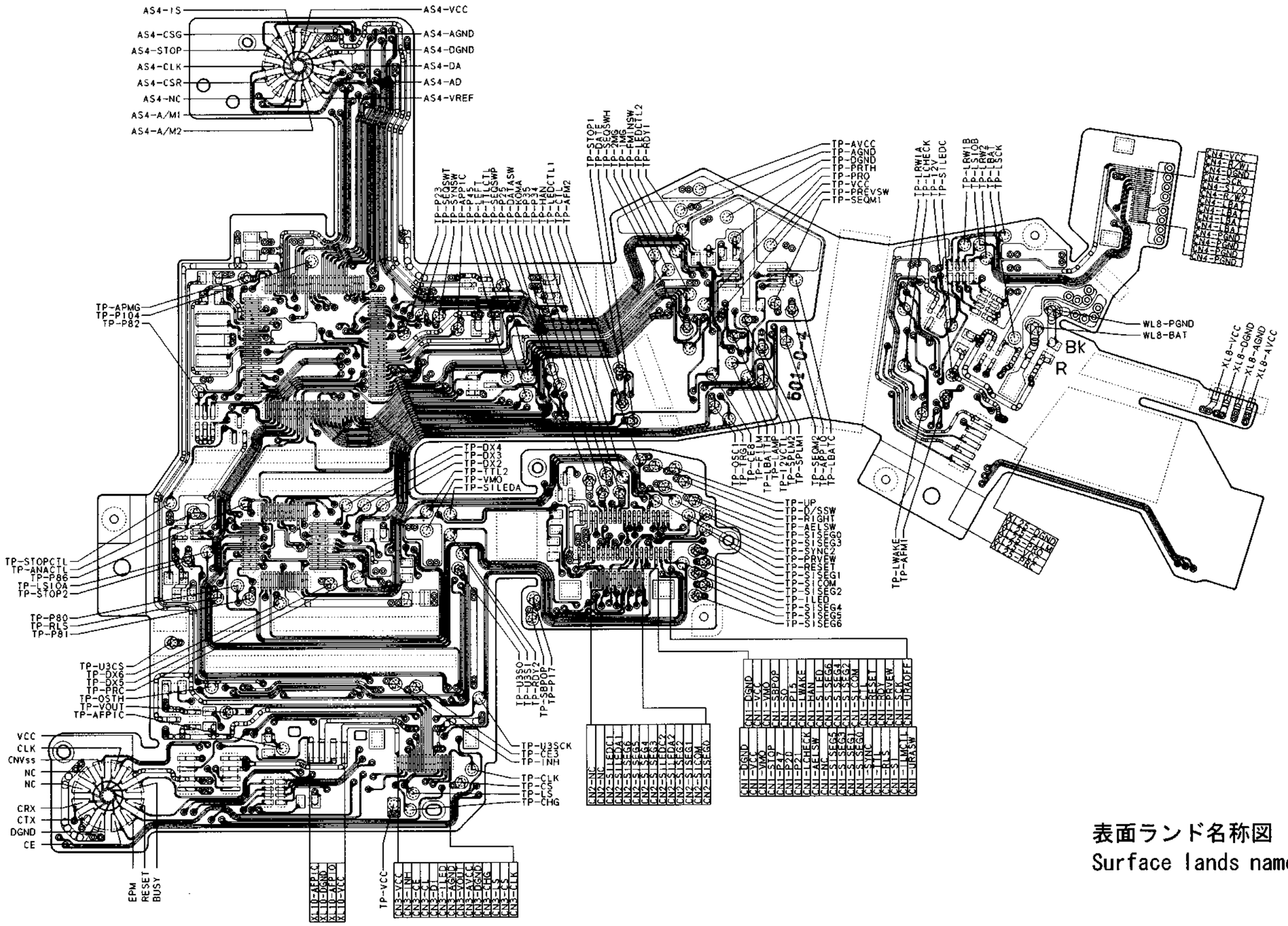
回路図 CIRCUIT DIAGRAM
F80D (FFA36201, 36251)
N80D (FAA36301, 36351)

メインＦＰＣ
MAIN FPC



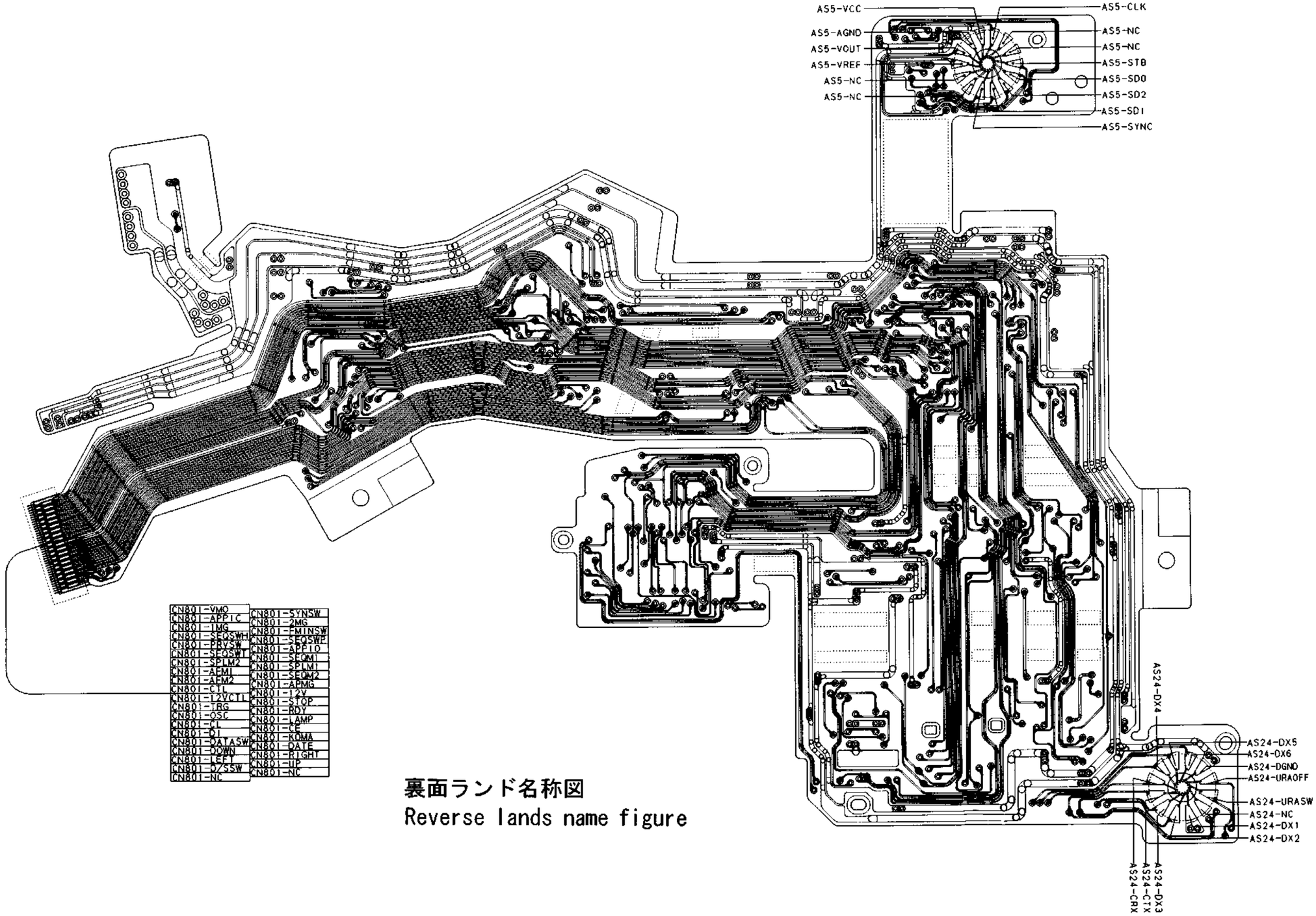
表面部品実装図
Surface Part mount figure

メインＦＰＣ
MAIN FPC



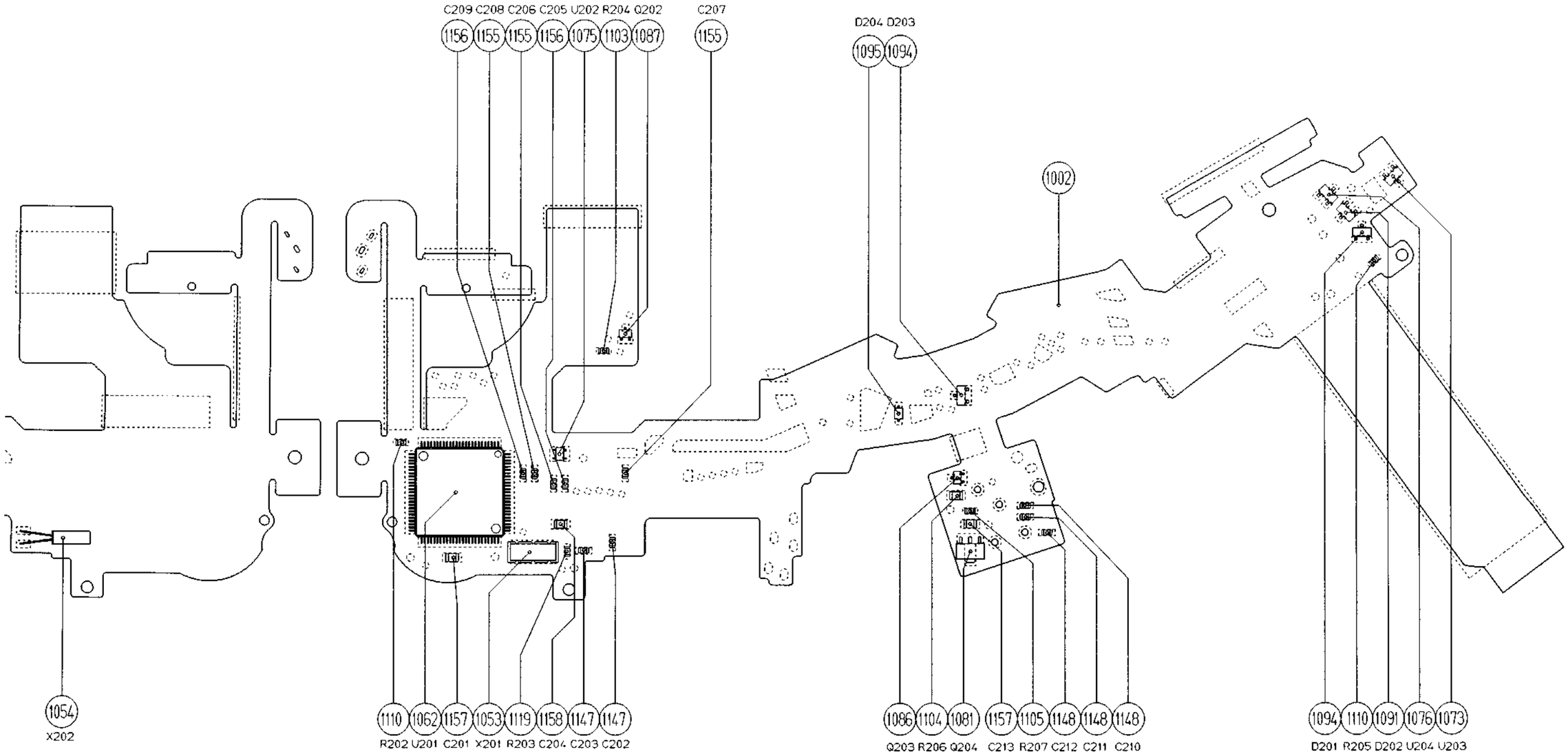
表面ランド名称図
Surface lands name figure

メインＦＰＣ
MAIN FPC



裏面ランド名称図
Reverse lands name figure

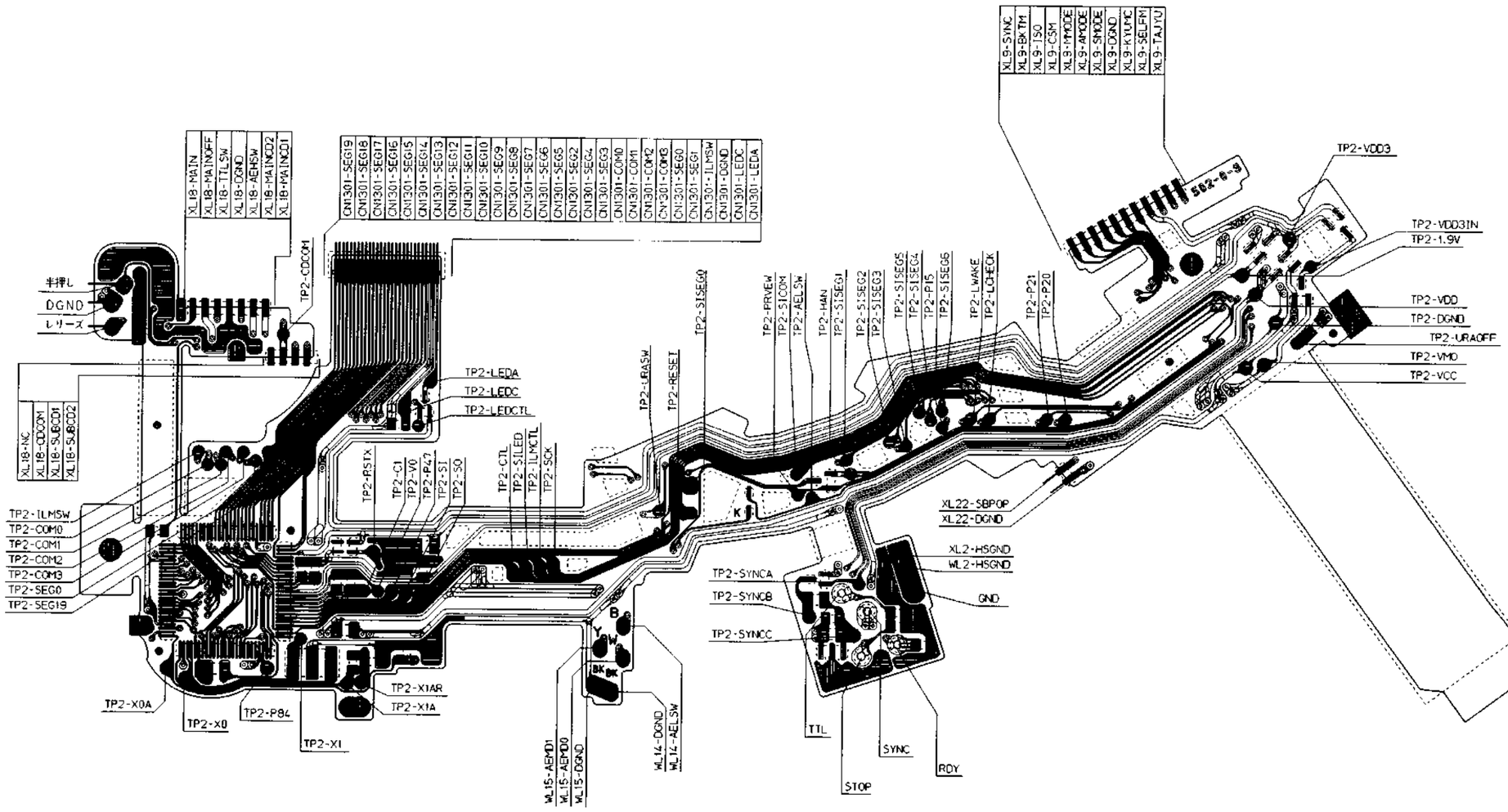
上カバー FPC
TOP COVER FPC



裏面部品実装図
Reverse Parts mount figure

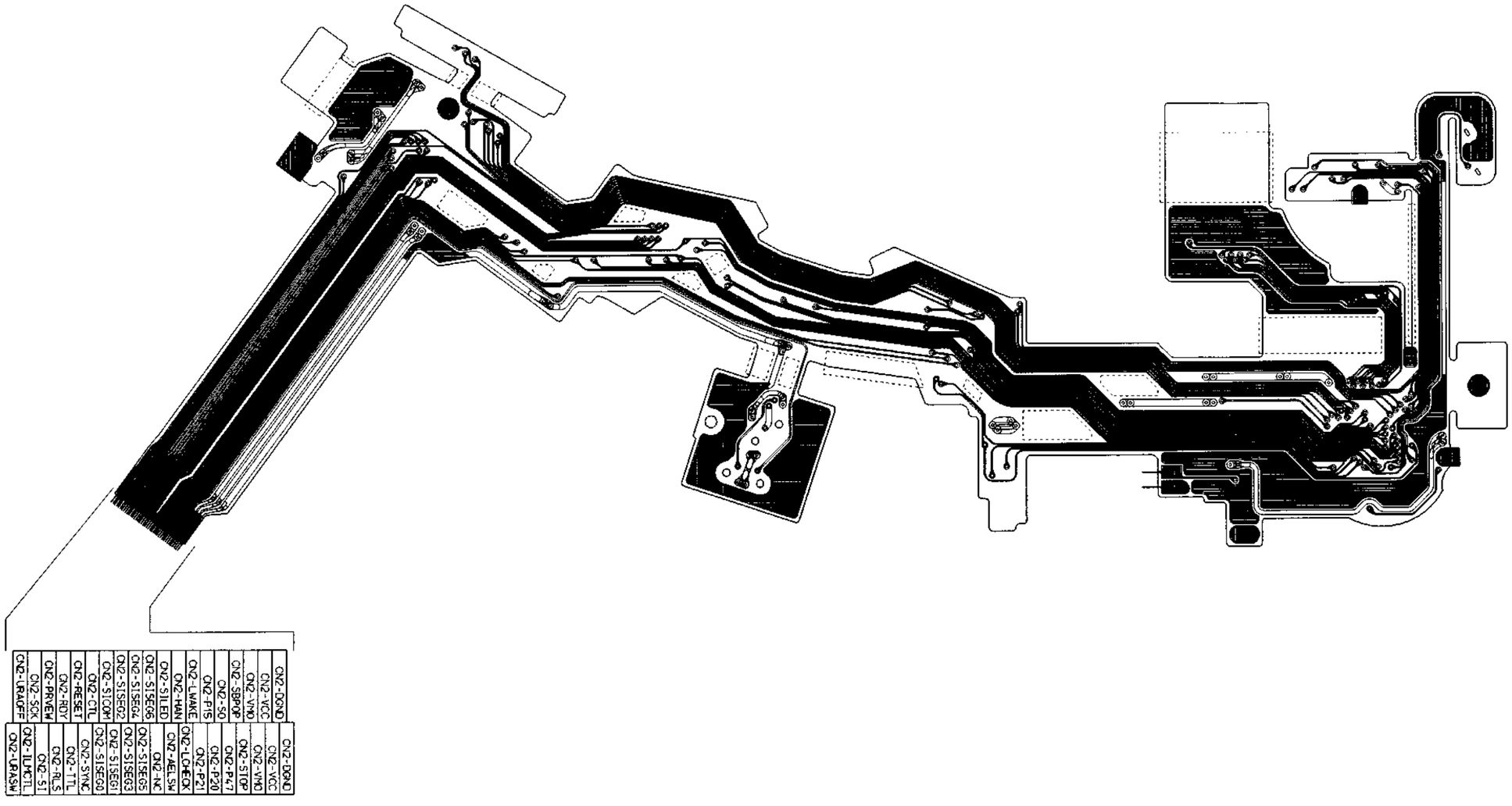
表面部品実装図
Surface Part mount figure

上カバーFPC
TOP COVER FPC



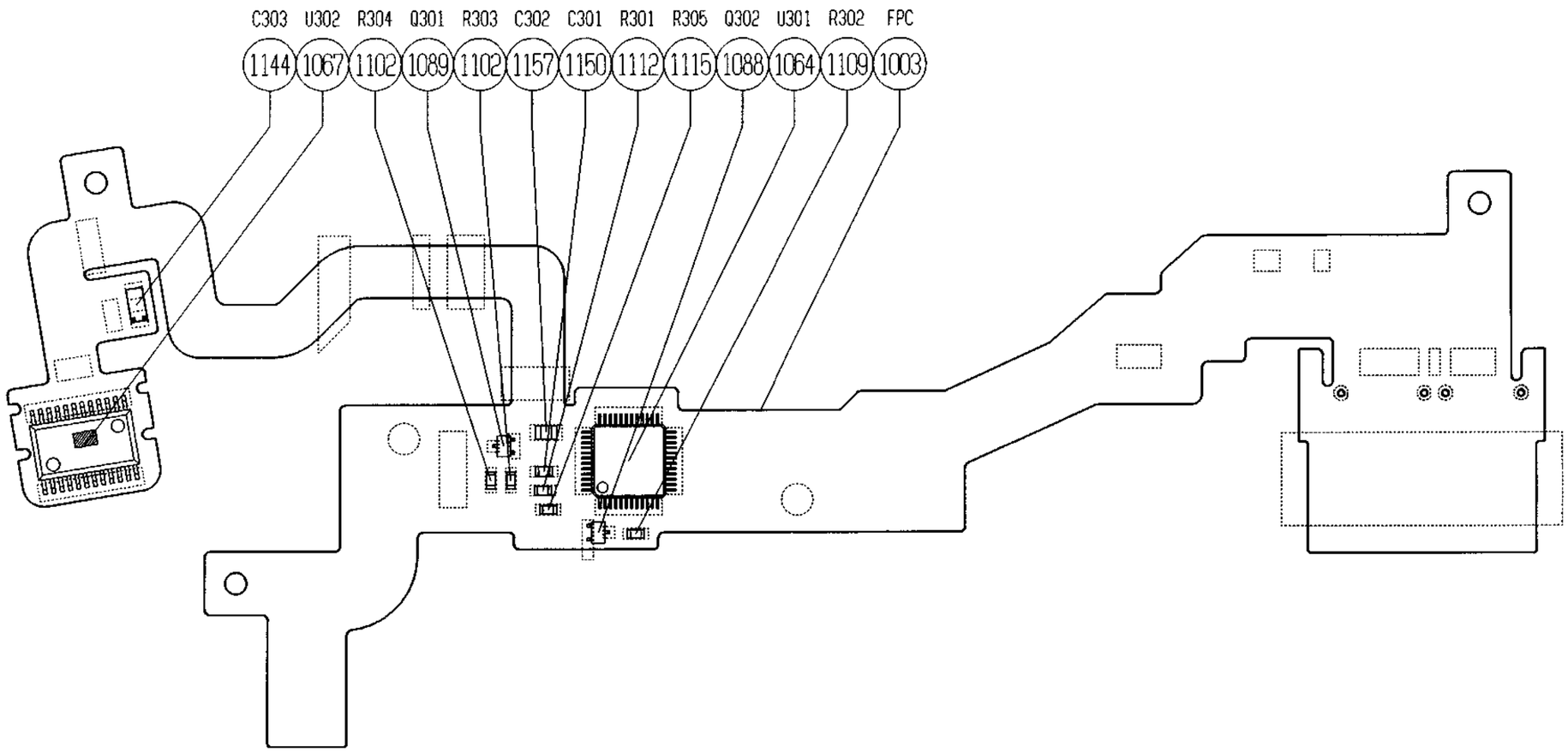
表面ランド名称図
Surface lands name figure

上カバーＦＰＣ
TOP COVER FPC



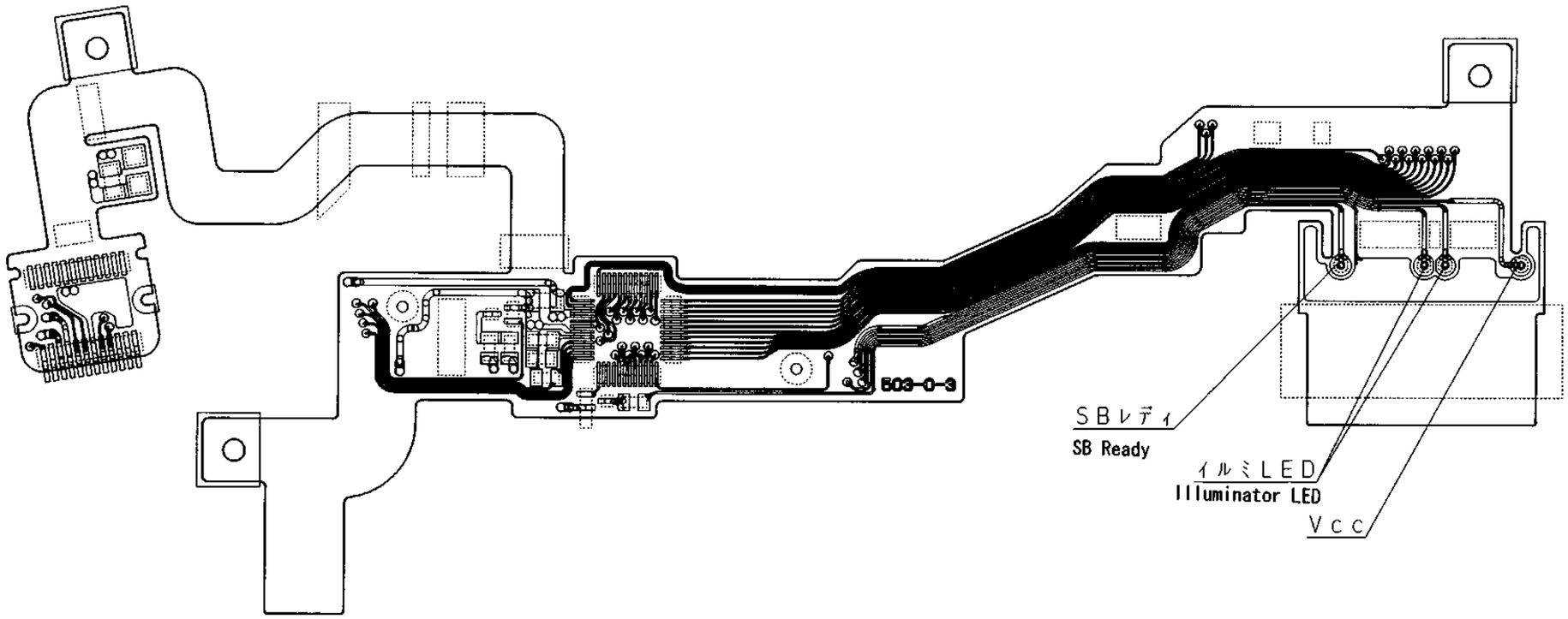
裏面ランド名称図
Reverse lands name figure

測光Ｆ内ＦＰＣ
METERING/IN FINDER FPC



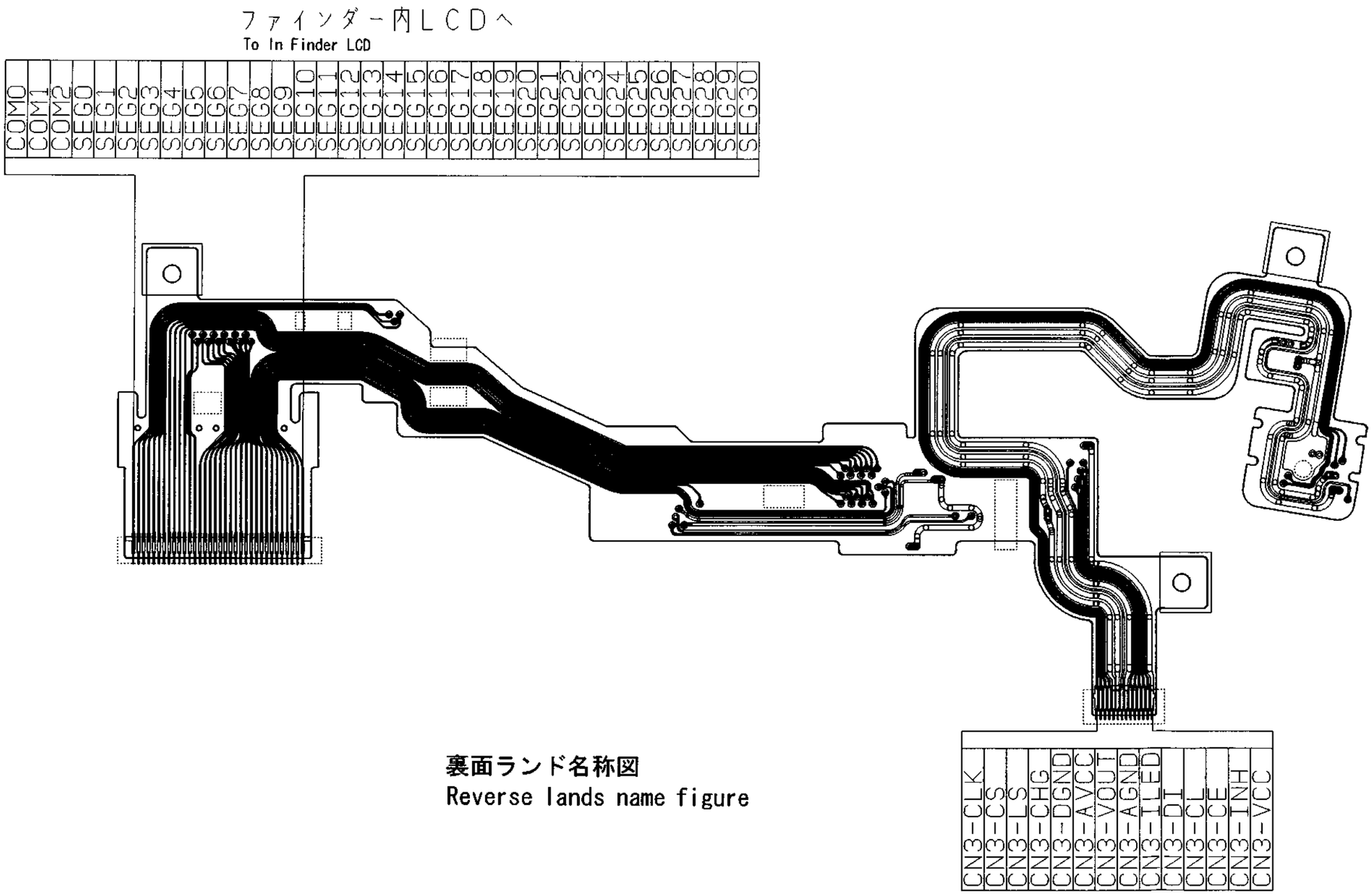
表面部品実装図
Surface Part mount figure

測光Ｆ内ＦＰＣ
METERING/IN FINDER FPC



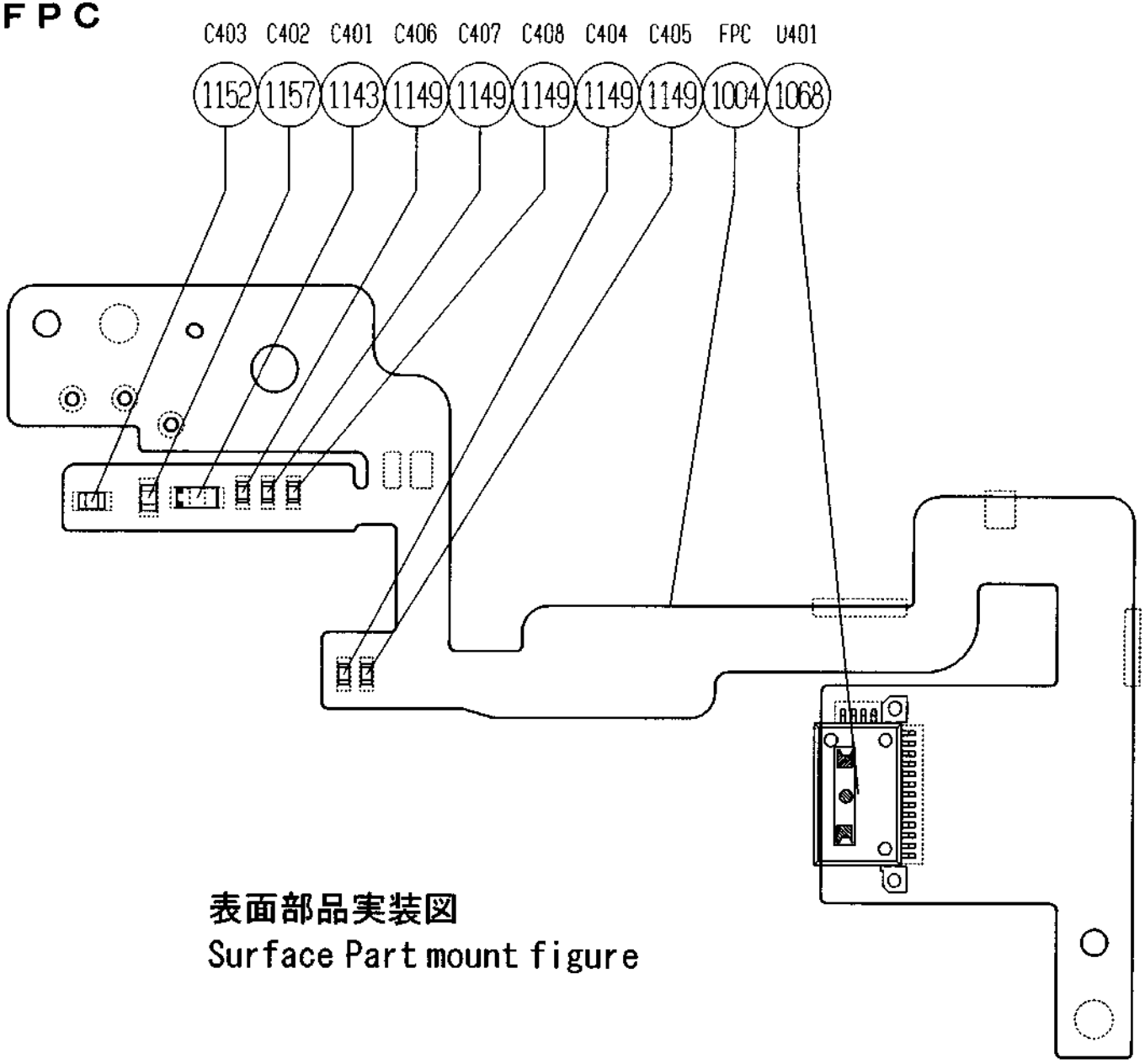
表面ランド名称図
Surface lands name figure

測光Ｆ内ＦＰＣ
METERING/IN FINDER FPC



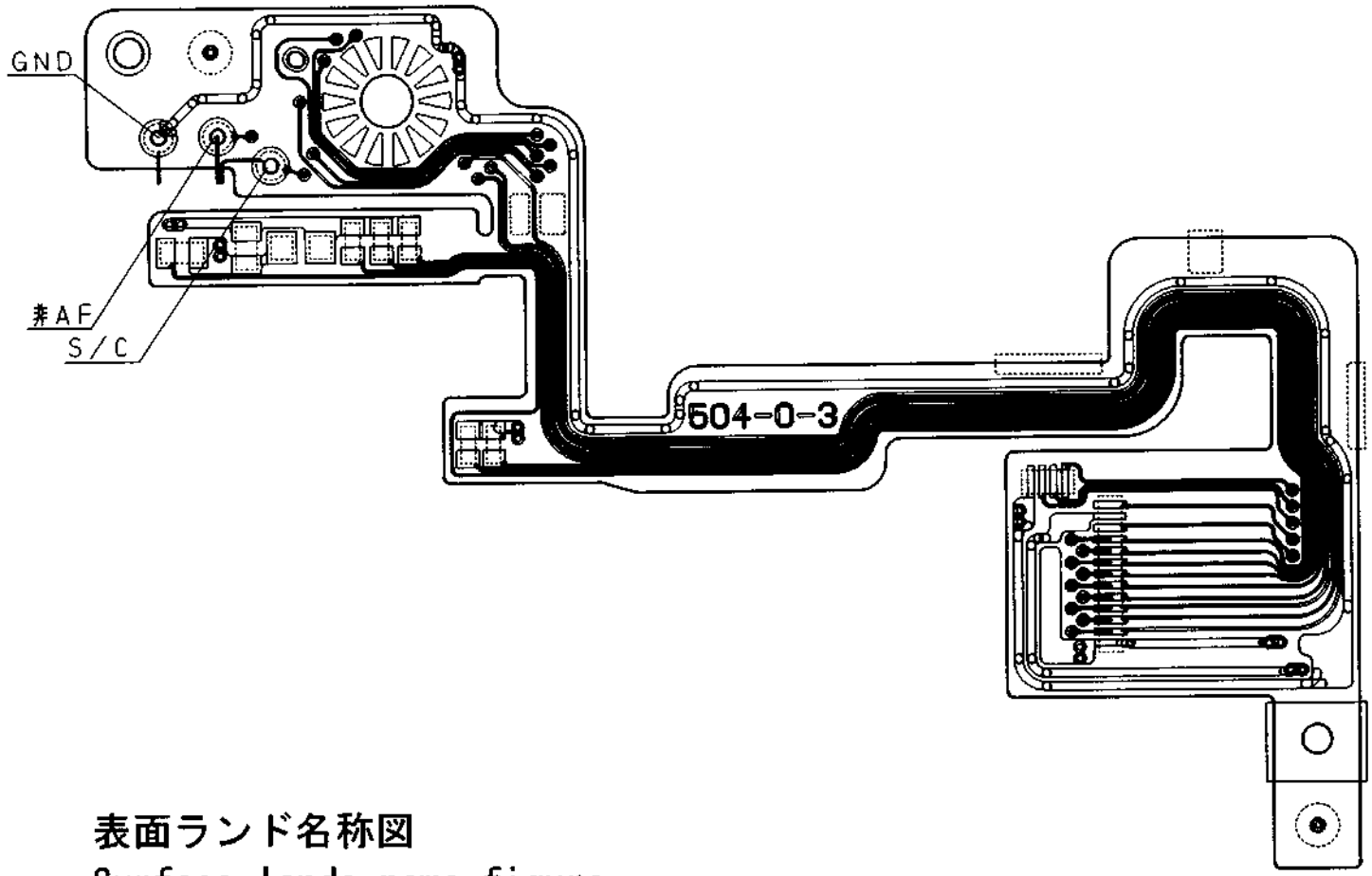
裏面ランド名称図
Reverse lands name figure

TTL FPC



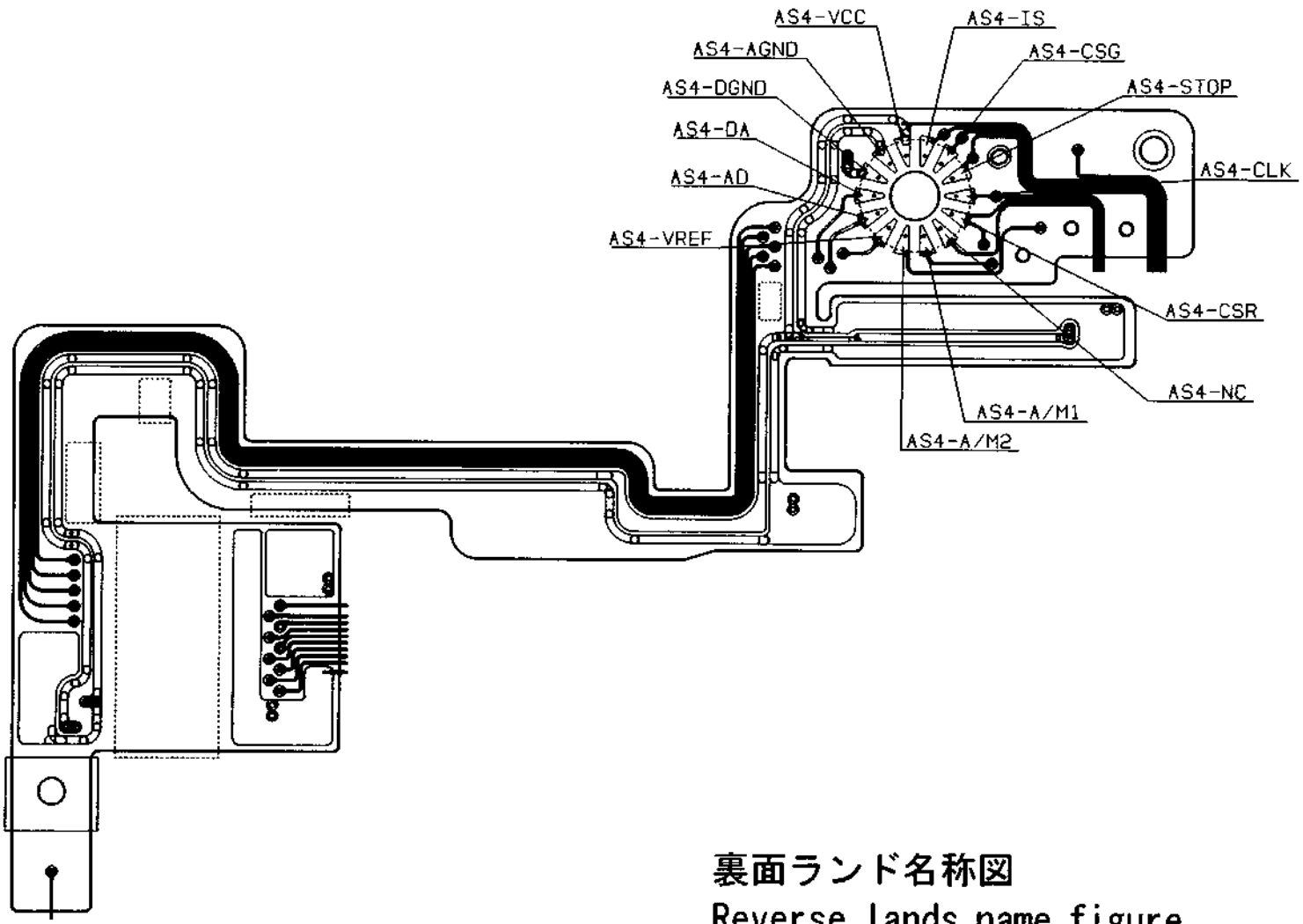
表面部品実装図
Surface Part mount figure

ＴＴＬ　ＦＰＣ



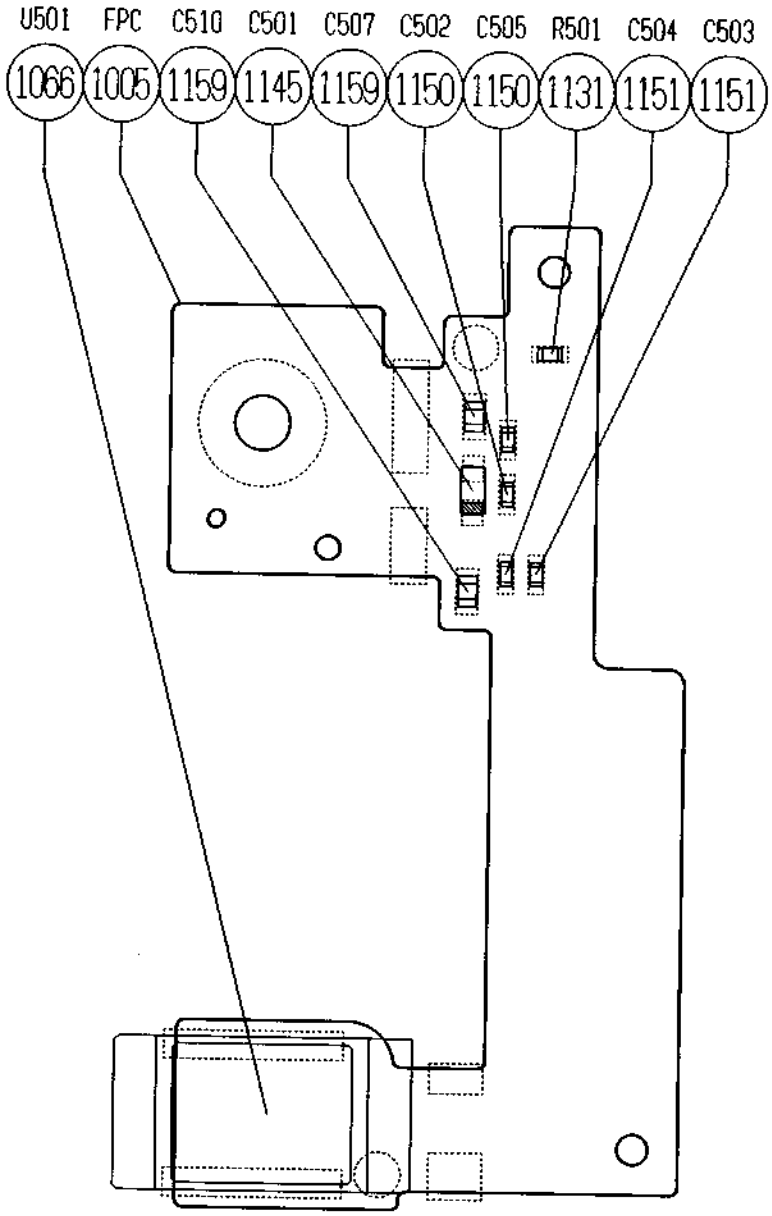
表面ランド名称図
Surface lands name figure

TTL FPC



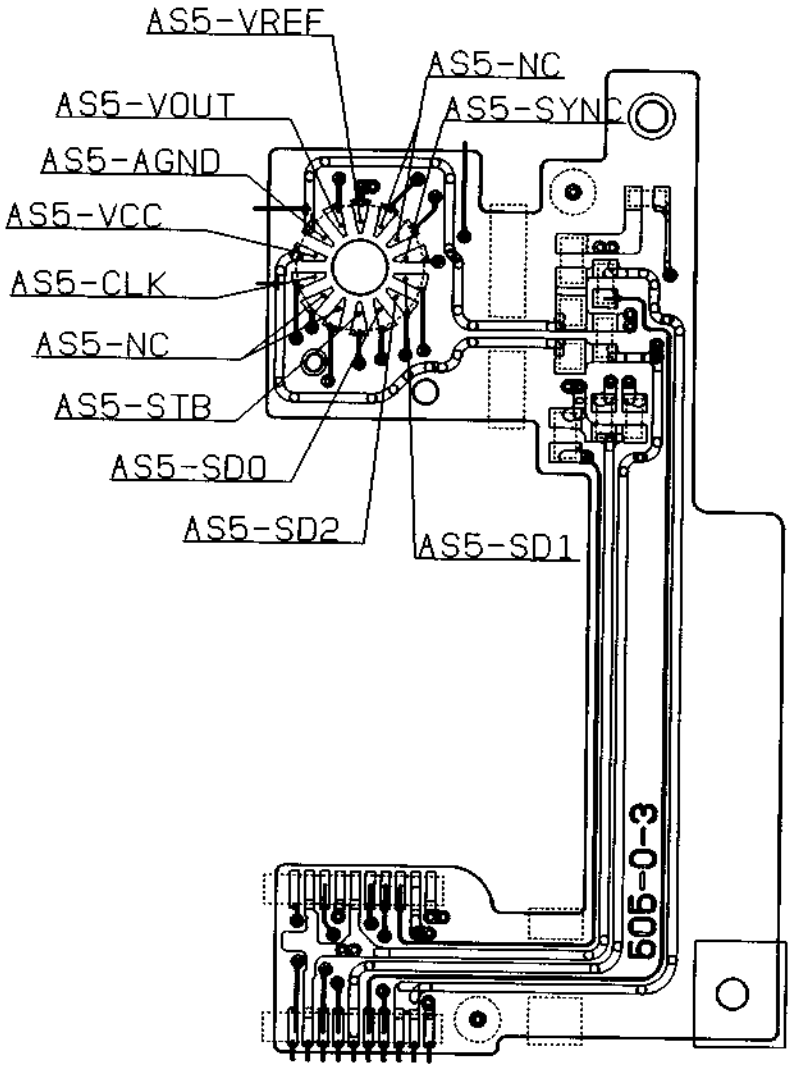
裏面ランド名称図
Reverse lands name figure

CCD FPC



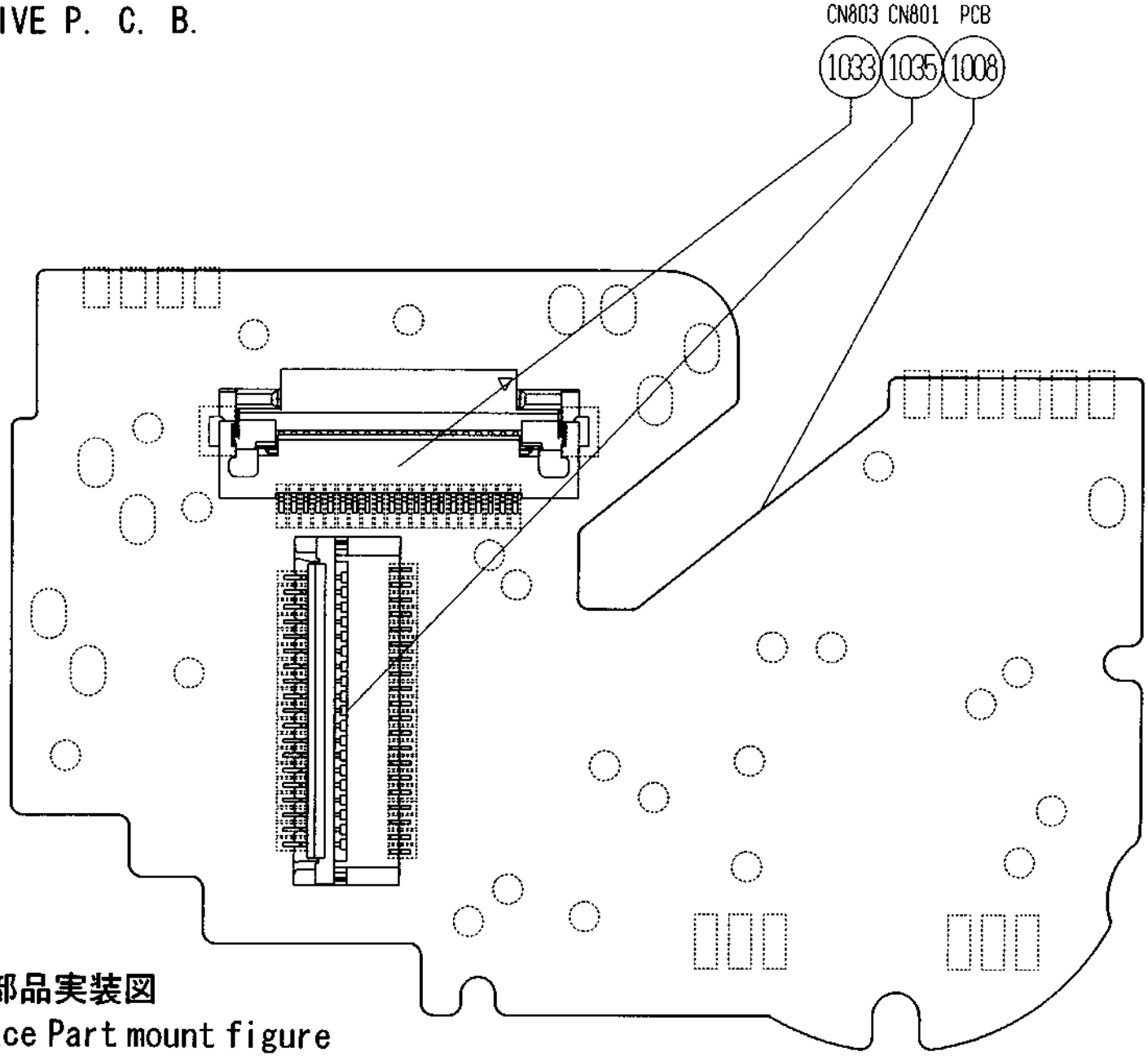
表面部品実装図
Surface Part mount figure

CCD FPC

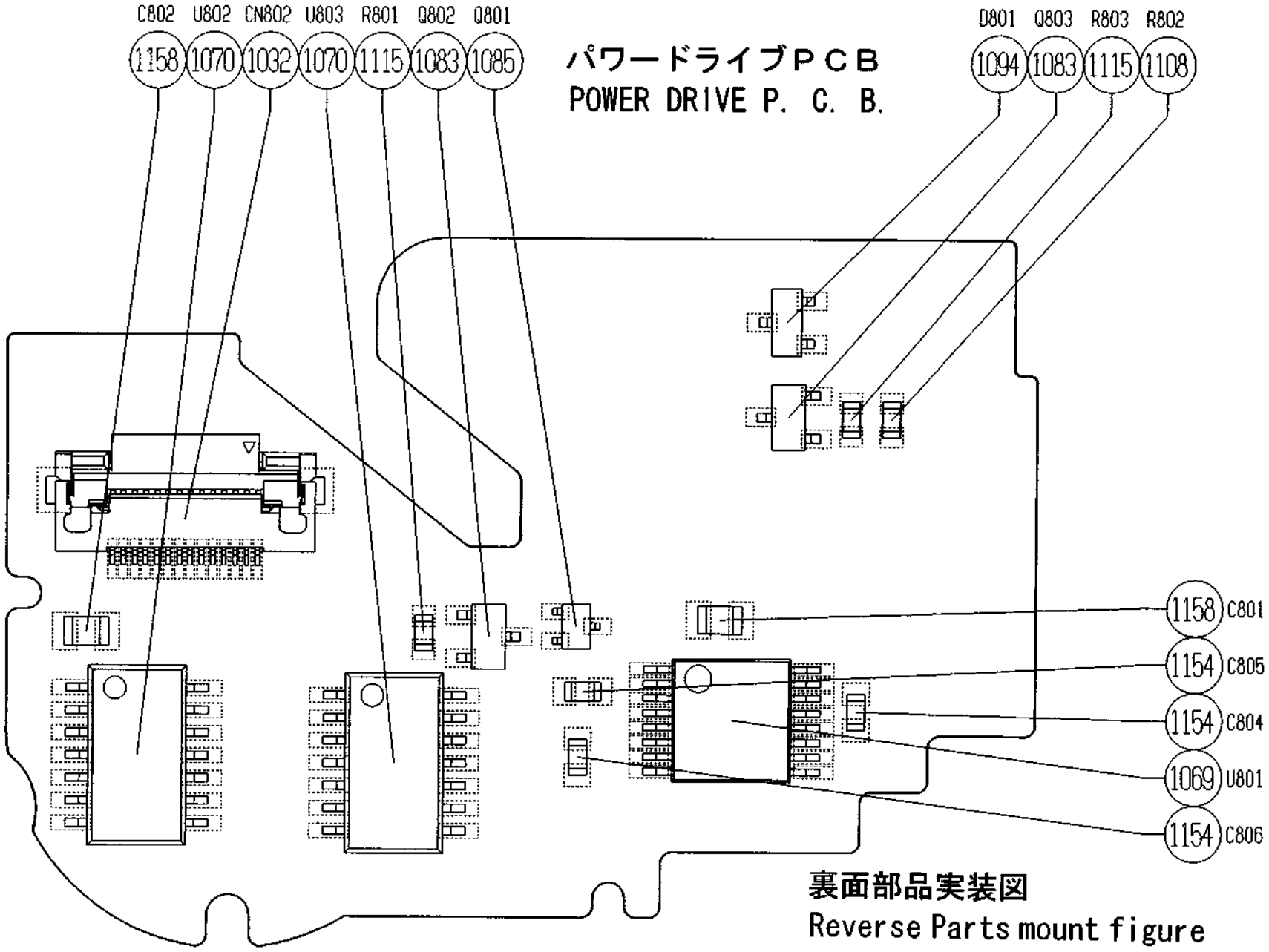


表面ランド名称図
Surface lands name figure

パワードライブＰＣＢ
POWER DRIVE P. C. B.

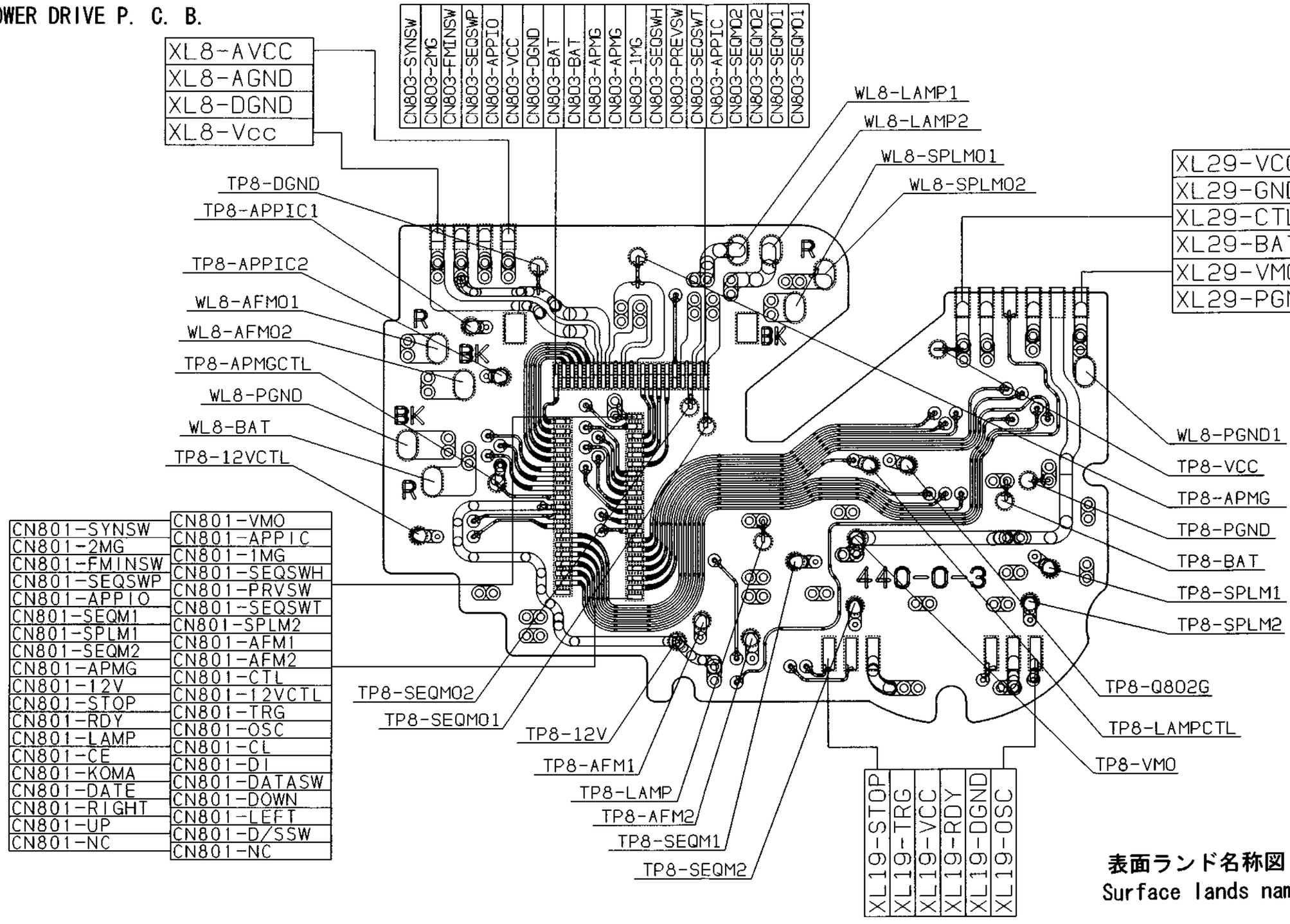


表面部品実装図
Surface Part mount figure



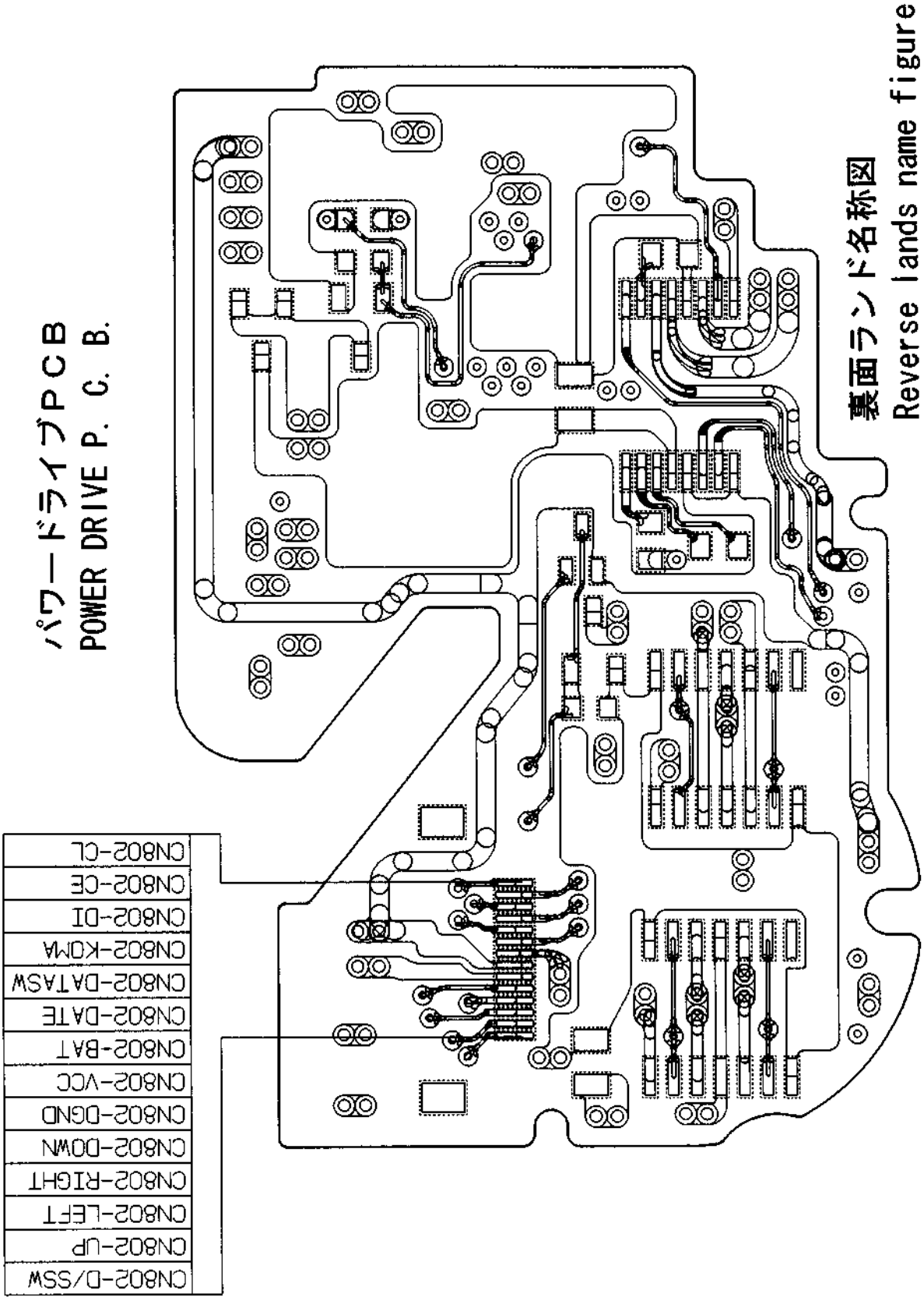
裏面部品実装図
Reverse Parts mount figure

パワードライブＰＣＢ
POWER DRIVE P. C. B.



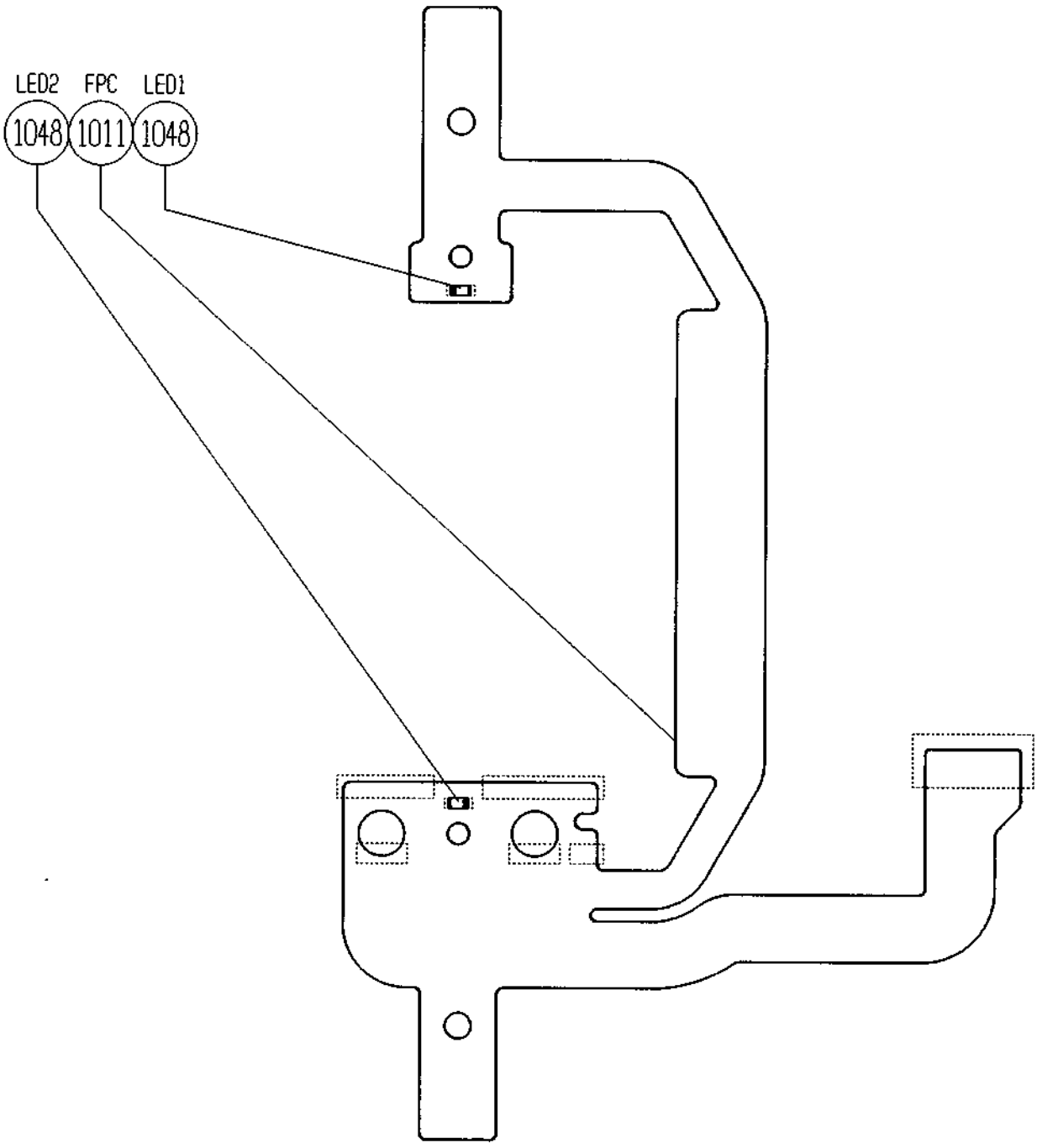
表面ランド名称図
Surface lands name figure

パワードライブPCB
POWER DRIVE P. C. B.



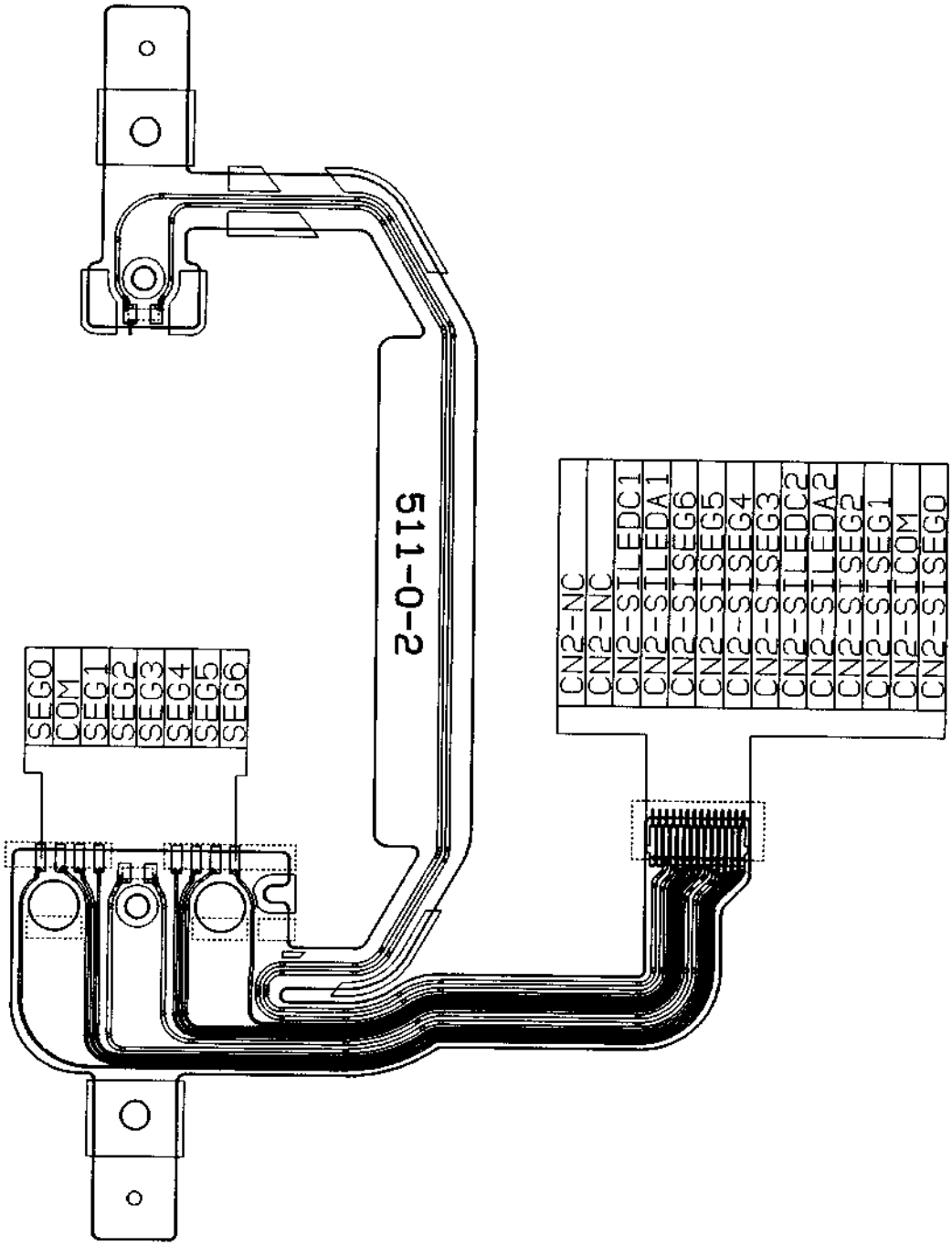
裏面ランド名称図
Reverse lands name figure

S I　F P C



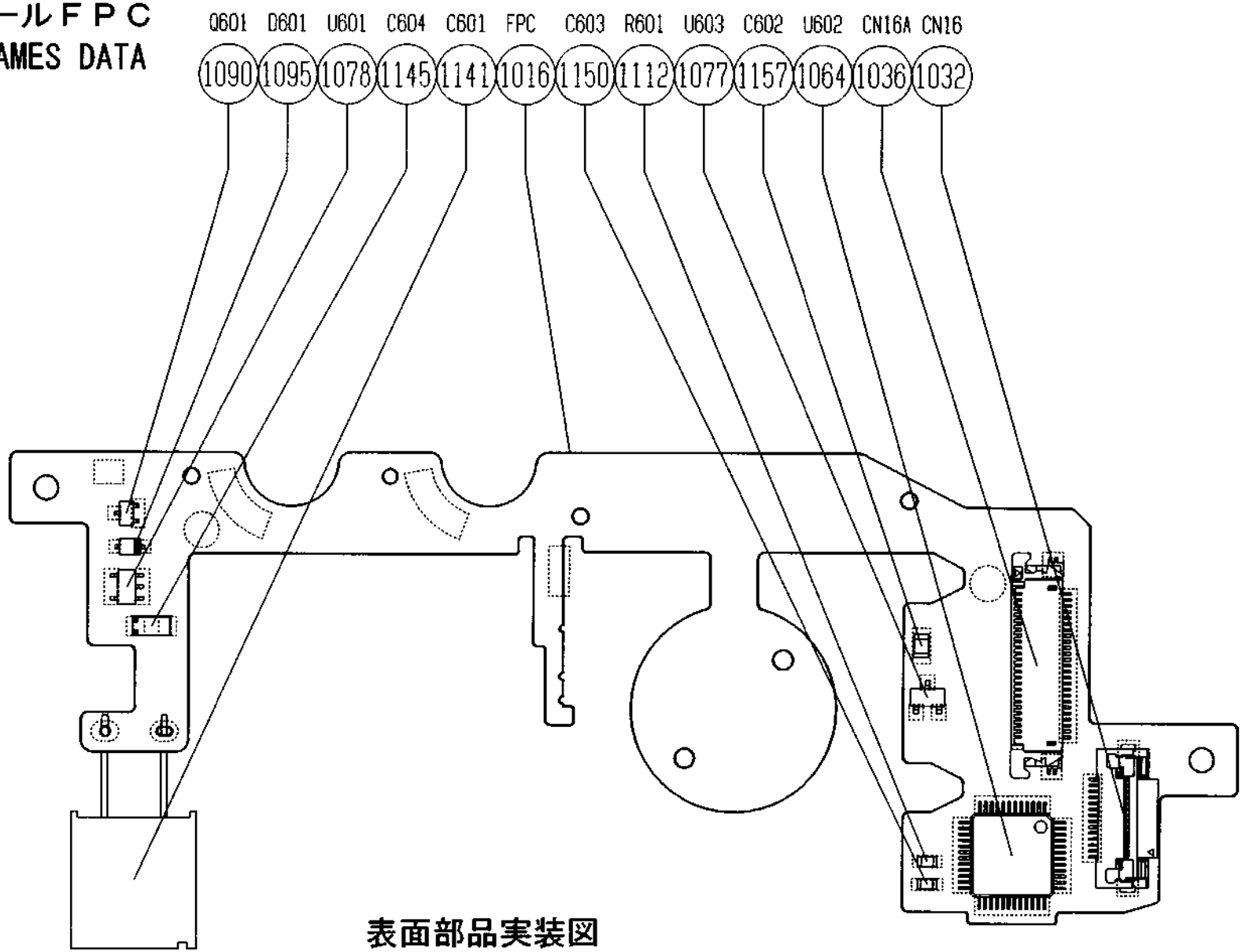
表面部品実装図
Surface Part mount figure

S I　F P C



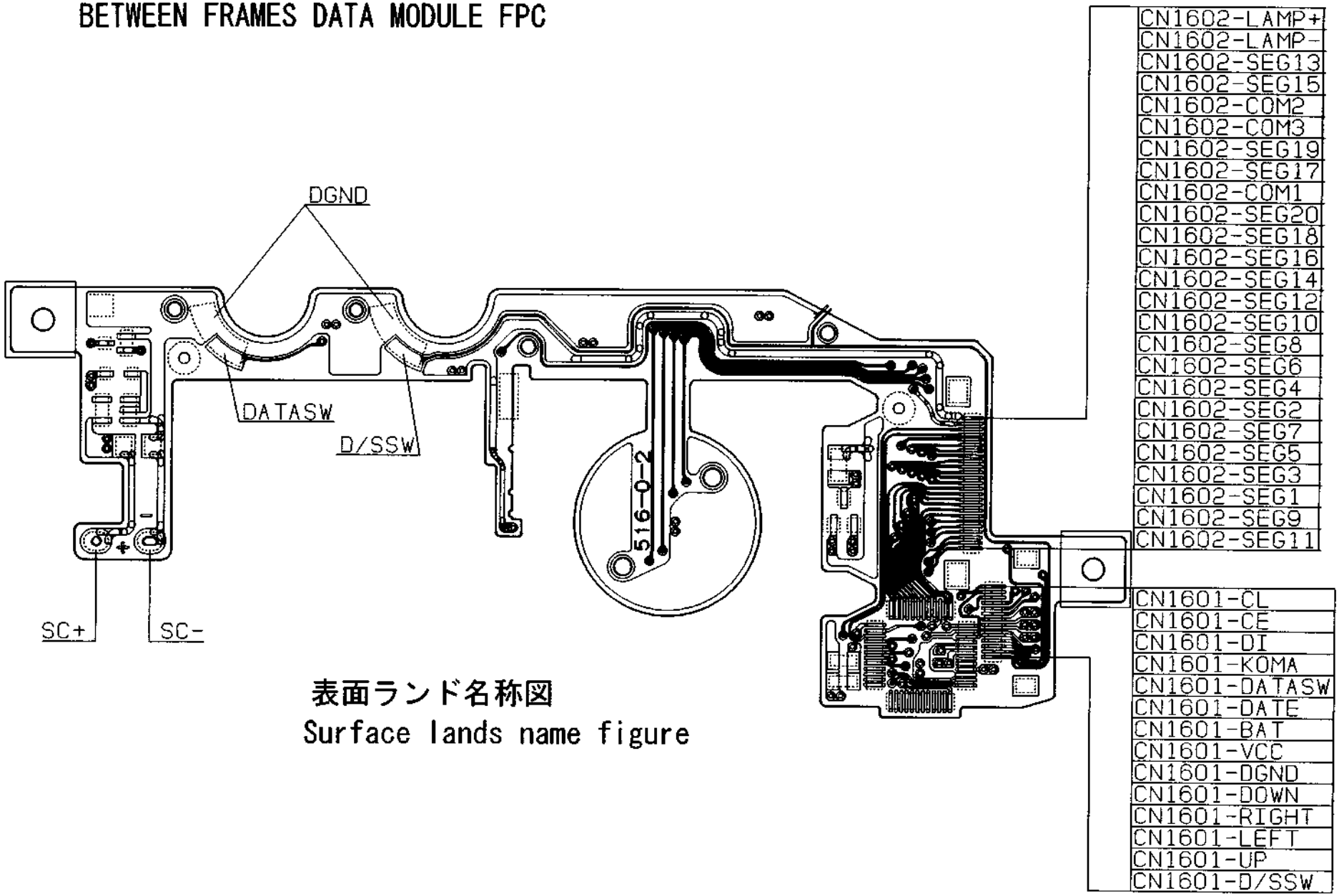
表面ランド名称図
Surface lands name figure

駒間モジュールＦＰＣ
BETWEEN FRAMES DATA MODULE FPC



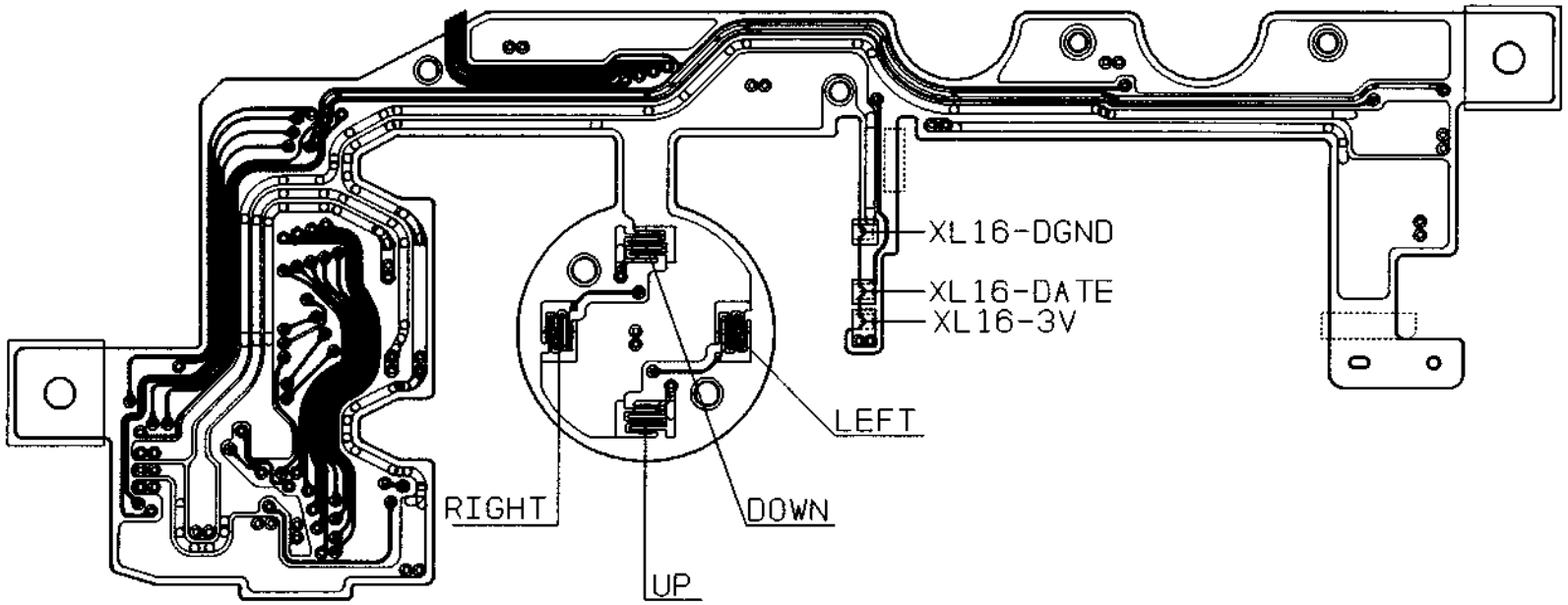
表面部品実装図
Surface Part mount figure

駒間モジュールＦＰＣ
BETWEEN FRAMES DATA MODULE FPC



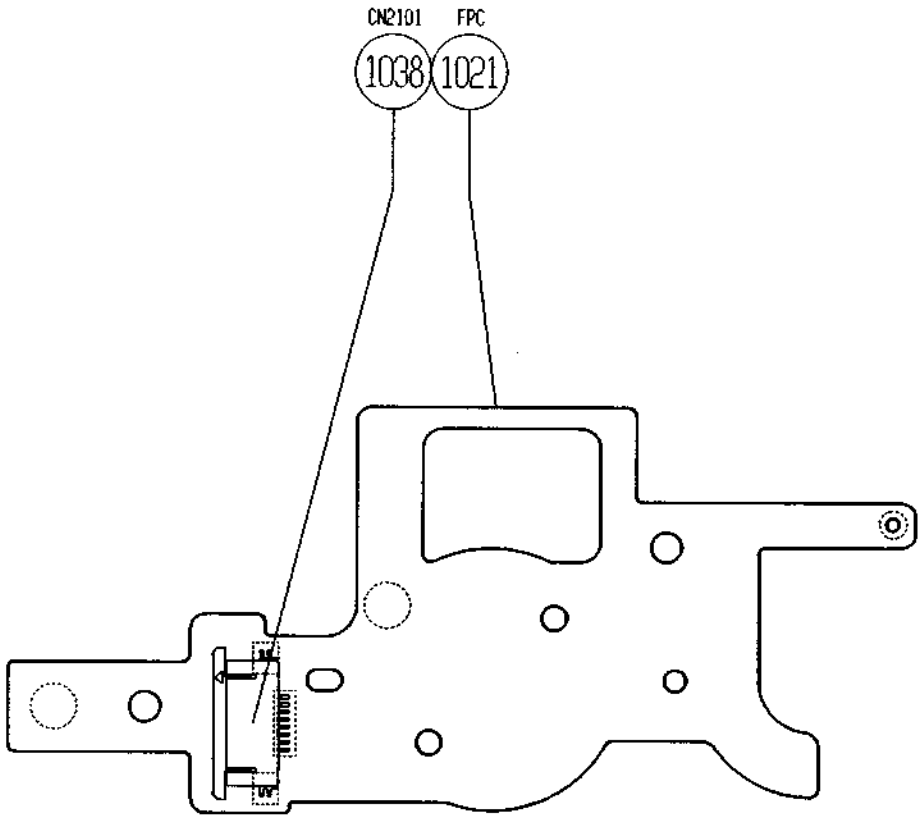
表面ランド名称図
Surface lands name figure

駒間モジュールＦＰＣ
BETWEEN FRAMES DATA MODULE FPC

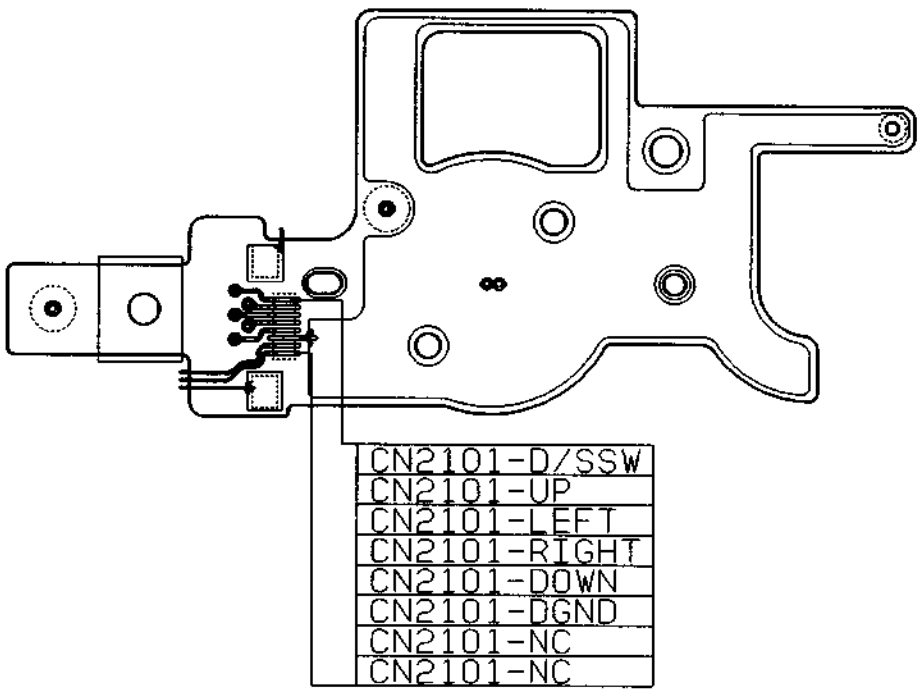


裏面ランド名称図
Reverse lands name figure

NON—DB FPC

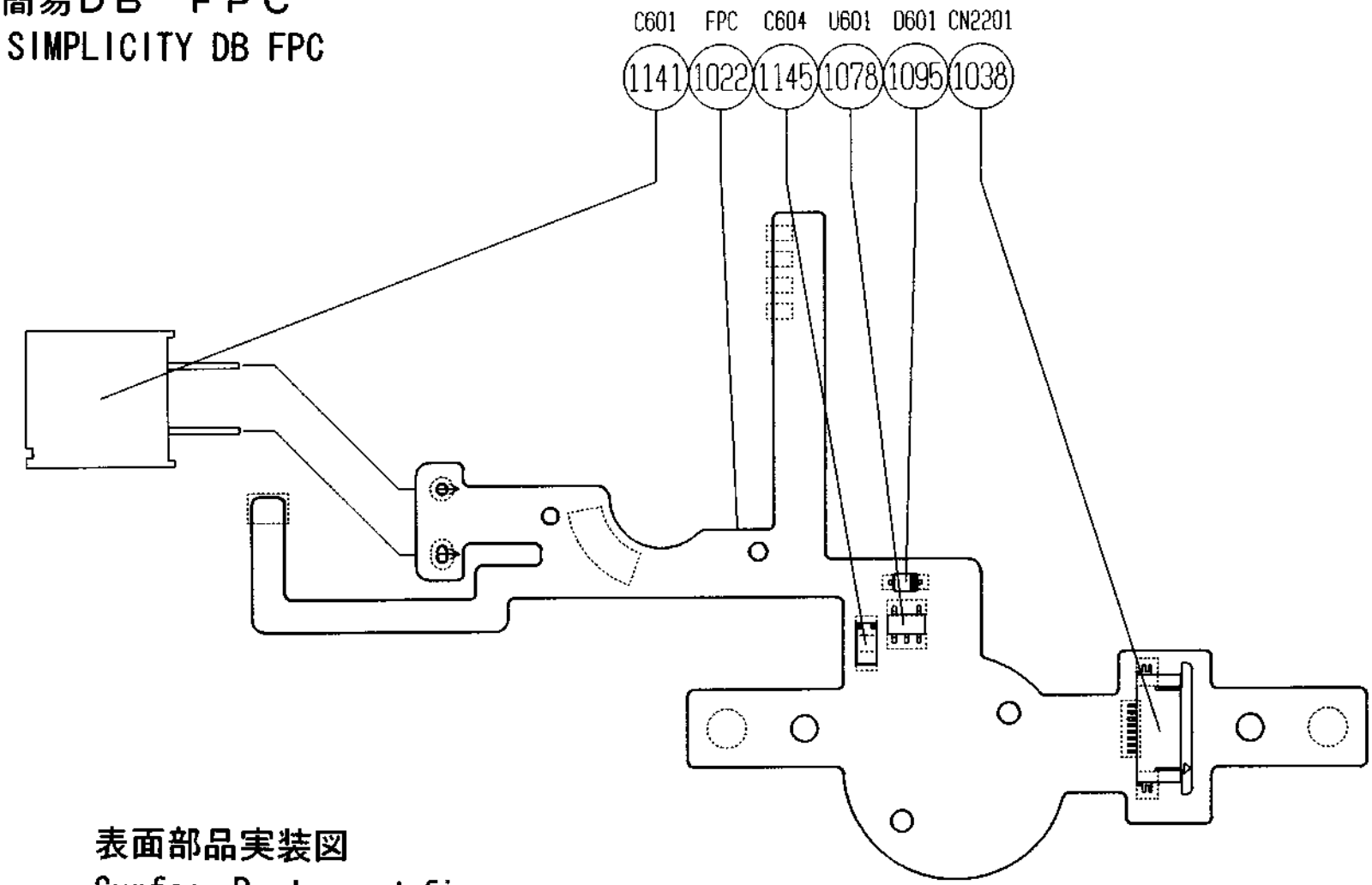


表面部品実装図
Surface Part mount figure



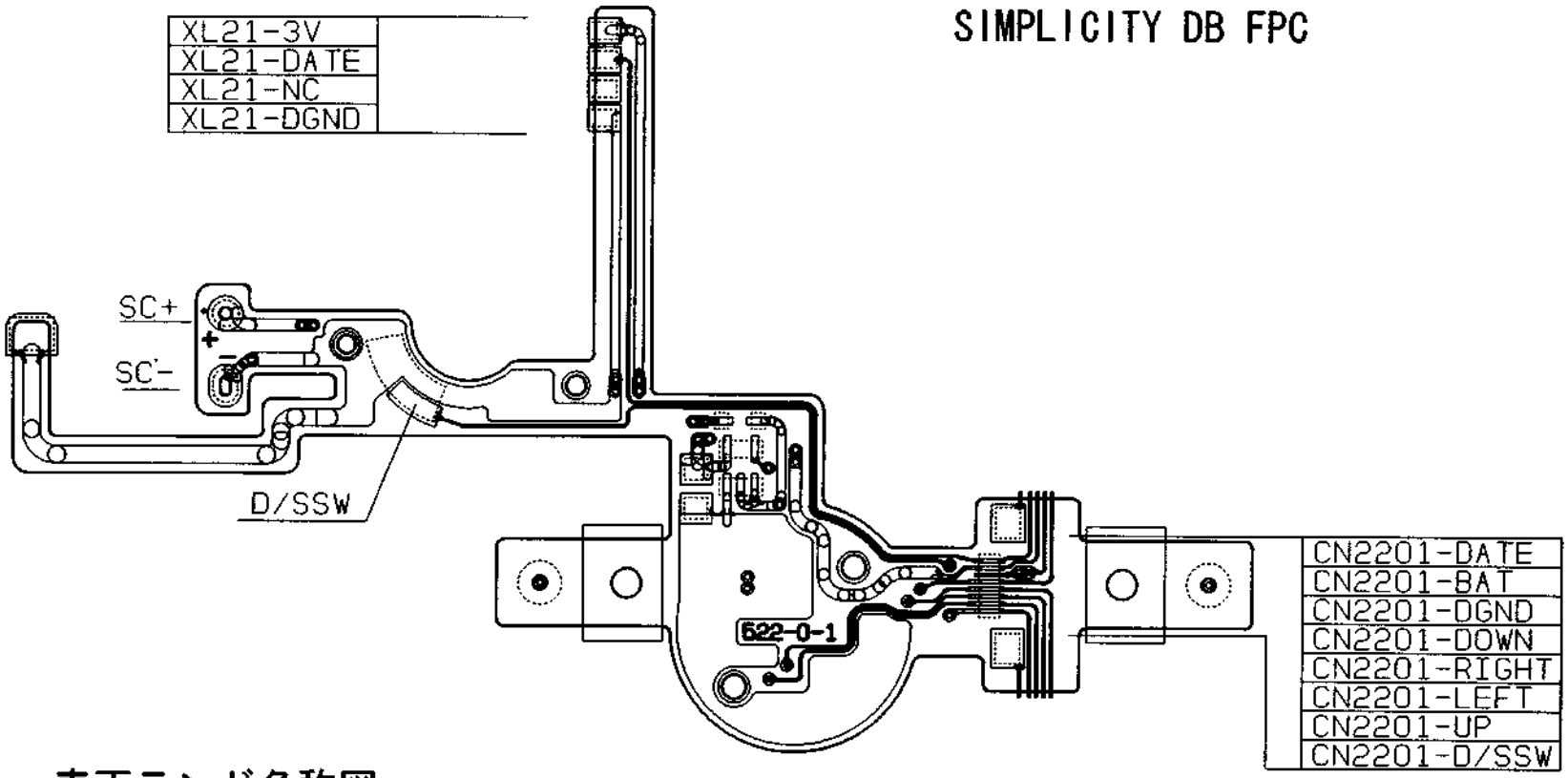
表面ランド名称図
Surface lands name figure

簡易ＤＢ　ＦＰＣ
SIMPLICITY DB FPC



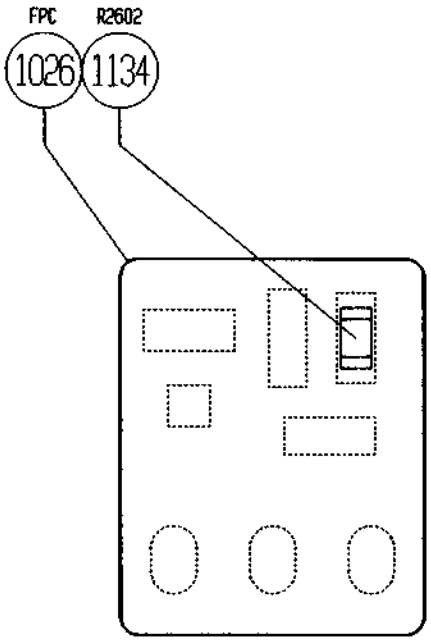
表面部品実装図
Surface Part mount figure

簡易ＤＢ　ＦＰＣ
SIMPLICITY DB FPC

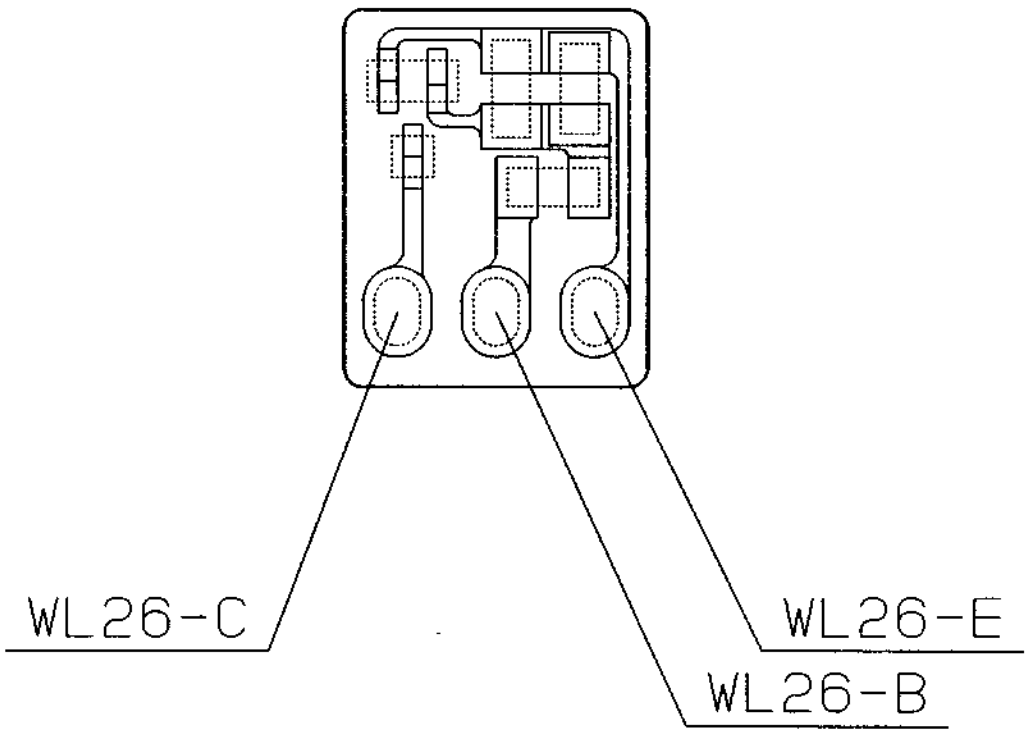


表面ランド名称図
Surface lands name figure

暫定ＦＰＣ
TEMPORARY FPC



表面部品実装図
Surface Part mount figure



表面ランド名称図
Surface lands name figure

INSPECTION CRITERIA and TOOLS

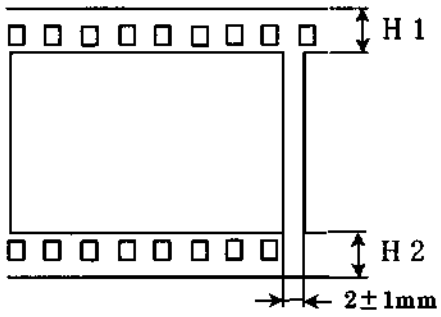
CONDITION FOR INSPECTION

Normal temperature : ２０±５℃　　Humidity : ６５±２０％
Power source : ５．５±０．０３Ｖ　２Ａ or more at ０．５Ω load
Light source : ２８５６° Ｋ
Ｋ coefficient : １．１６
Camera : Finished Product

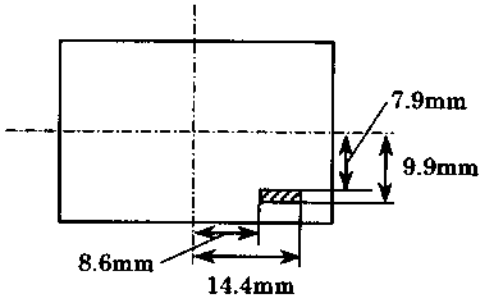
INSPECTION CRITERIA

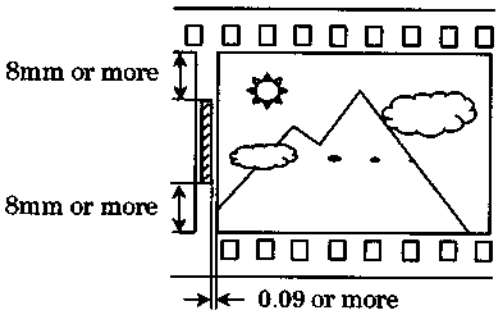
●When using the power supply, set the output to 5.5V with a resistance of 0.5Ω.

INSPECTION ITEM	CRITERIA	REMARKS
Shutter System		Exposure Mode: M.S
(1) Tolerance	1/2000 or more : +0.65dTV～−0.45dTV	Shutter testor (EF-8000)
	1/2000 : +0.35dTV～−0.25dTV	
	1/2000～30" : ±0.2dTV	
(2) Curtain Speed	5.25±0.25ms	21mm
(3) Dispersion	1/4000～1/2000 : Within 0.35TV	
(4) Curtain Bound	There should be no curtain bound.	
AE Image Surface Exposure		Exposure Mode: P.A.S.
(1) Tolerance	1/2000 or more : ±0.65EV (Except for AMP)	Shutter testor (EF-8000)
	less than 1/2000 : ±0.5EV	
(2) Dispersion	1/2000 or more : Within 0.6EV	
	less than 1/2000 : Within 0.3EV	
Diaphragm Control Accuracy	LV12 (ISO100)、1/125	Exposure Mode: S
(1) Tolerance	F5.6 : ±0.4EV	Shutter testor (EF-8000)
	Except for F5.6 : ±0.5EV	
(2) Dispersion	F5.6 : Within 0.4EV	
	Except for F5.6 : Within 0.5EV	
AF Adjustment Accuracy		Personal Computer and other
(1) Yaw	Center : 0±4mrad Side : 0±10mrad Upper/Lower : 0±10mrad	special tools
(2) Pitch	Center : 0±5mrad Side : 0±10mrad Upper/Lower : 0±10mrad	
(3) Lark	0±50μm	
Diaphragm Lever Height	3.4±0.1mm	J18004
Main Mirror 4 5 °	Upper/Lower : ±10'	When it is stood up, there
(Collimator	Right/Left : ±30'	should be no gap. J19002 · J18197
Measured Value)	Distortion : Within 8'	· J18037 Hex key Wrench
Sub-Mirror 4 7.7 5°	Upper/Lower : −5' +20'～−45'	J19002 · J18268-1
	Distortion : Within 8'	Hex key Wrench
M. B. F	Outer Rail : 46.67±0.03mm Outer Rail Parallelism : Within 0.03mm Height Difference between Inner and Outer Rails : 0.23±0.02mm Aperture Surface Stage Difference of Inner Rail : 0.2mm or more	J18001 Dial Gauge
∞ (Infinity) Agreement	±100μm	J18010

INSPECTION ITEM	CRITERIA	REMARKS
Battery Check (1) First Level (2) Second Level	 Reducing Direction : 4.9±0.2V Returning Direction : 5.2±0.2V Reducing Direction : 4.6±0.2V Returning Direction : 4.9±0.2V	Power Supply
Image Plane Size (50/1.4 F5.6) Image Plane Position Frame Interval	Length : $24^{+0.4}_{-0.0}$mm／Width : $36^{+0.4}_{-0.0}$mm [H 1 − H 2] = ±0.4mm or less  2±1mm	Calipers ISO100 Film
Consumption Current Items 5 and later, the values are products of consumption current and operating time	①Main Switch is OFF : 60μA or less····F80,N80 (90μA or less····F80D,F80S,N80QD) ②Main Switch is ON and Half-Push Timer is OFF : 180μA or less··F80,N80 (210μA or less····F80D,F80S,N80QD) ③Main Switch is ON and Half-Push Timer is ON : 250mA or less (For Flash Version, it is 280mA or less) ④Main Switch is ON and Illumination is ON : 300mA or less ⑤AF50/1.8 Lens is driven : 500mAsec or less (Operating Time : 1000ms or less) ⑥AF70-200/4-5.6 Lens is driven : 800mAsec or less (Operating Time : 2000ms or less) ⑦Preview is Operated : 120mAsec or less (Operating Time : 200ms or less) ⑧Empty Release : 250mAsec or less (Operating Time : 300ms or less) ⑨Empty Feeding : 500mAsec or less (Operating Time : 1000ms or less) ⑩S Mode Winding : 350mAsec or less (Operating Time : 420ms or less) ⑪Film Rewinding (High Speed) : 7000mAsec or less (Operating Time : 15s or less) ⑫Film Rewinding (Low Speed) : 12000mAsec or less (Operating Time : 23s or less)	
Half-Push Timer Time	After Half-Push Switch OFF : Power should be turned OFF 6±1sec later. After Releasing : Power should be turned OFF 2±1sec later.	
Bulb Battery Life	5.5 hours or more	
Brightness for AF Assist Light turned ON	Brightness for Light turned ON (50/1.8) : It should be turned ON and equivalent to EV5 or less	

<table>
<tr><th>INSPECTION ITEM</th><th>CRITERIA</th><th>REMARKS</th></tr>
<tr><td rowspan="3">Finder</td><td colspan="2">Visuality Ratio : Vertical and Horizontal 92^{+3}_{-1}%</td></tr>
<tr><td colspan="2">Parallax : Upper/Lower, Right/Left : Within 0.05mm</td></tr>
<tr><td colspan="2">Eye Point : Distance from eyepiece (In the case of−1.8dpt) 15.5mm±10%
(In the case of−1.0dpt) 16.7mm±10%
(In the case of+0.8dpt) 19.9mm±10%</td></tr>
<tr><td>DB Print Position
(1) F80D
N80QD

(2) F80S</td><td> 



Right/Left: The characters should be superimposed in the range of 0.09～1.4 mm from the left image plane and apart from 0.09 mm or more from the adjacent image plane.
The superimposed position in the image plane is the same as that of F80D and N80QD.</td><td>Calipers
ISO100 Film</td></tr>
</table>

工 具 TOOLS

1．TOOLS FOR F80/N80

☆：NEW TOOL

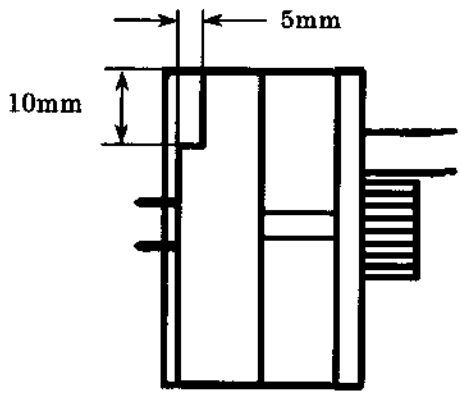
	工具番号 TOOL No.	名 称 NAME	備 考 Others
☆	J15315-1	カメラ通信工具 CAMERA COMMUNICATION TOOL	For F70,F50 F60
☆	J18314	RS232C 用電源工具 POWER SUPPLY FOR RS232C	
☆	J19109	MC-31	For F5,F100
☆	J15381	駒間位置調整工具 DATA BETWEEN FRAMES POSITION ADJUSTMENT TOOL	
☆	J15370	ＳＩ表示透過工具 SI DISPLAY CHACK TOOL	
☆	J15376	クリップコネクター CRIPE CONECTOR	For J15370
☆	J15371	無限合致調整用スクリーン INFINITY FOCUS ADJUSTMENT SCREEN	For F601, F50,F60, etc.
	J18266	ＡＦ調整用Ｚレンズ（１m用） AF TESTING LENS（For 1 m）	For F5,F100
	J18268-1	サブミラー４５° 出し工具 SUB MIRROR ANGLE ADJUSTMENT TOOL	For F5,F100
	J18273	ＡＦチャート AF ADJUSTMENT CHART	For F5,F100
	J18230	YAW, PITCH 工具 YAW, PITCH ADJUSTMENT TOOL	For F5,F100 F90,F90X
☆	J18316A	点検・調整ソフト　ＮＥＣ　5.0インチ INSPECTION & ADJUSTMENT F.D.FOR NEC PC 5.0'	
☆	J18316B	点検・調整ソフト　ＮＥＣ　3.5インチ INSPECTION & ADJUSTMENT F.D.FOR NEC PC 3.5'	
☆	J18316C	点検・調整ソフト　ＩＢＭ　5.0インチ INSPECTION & ADJUSTMENT F.D.FOR IBM PC 5.0'	
☆	J18316D	点検・調整ソフト　ＩＢＭ　3.5インチ INSPECTION & ADJUSTMENT F.D.FOR IBM PC 3.5'	

注) J18268-1 サブミラー４５° 出し工具は、前ボディにシャッターを取り付けた後、使用できません。

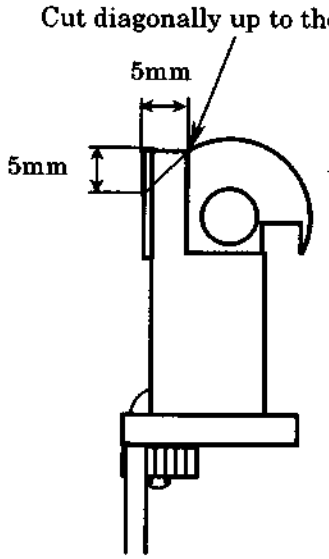
Note : Do not use J18268-1 after mounting the shutter to the front body.

2. Modification of Old Communication Tool (J15315)

Since part of the film pack chamber of F80 is projected, the old communication tool (J15315) can be used as it is. Accordingly, in order to communicate between the F80 series camera and a personal computer, use the newly specified communication tool J15315-1, or old communication tool after cutting part off it as shown in the following figure. The newly set communication tool J15315-1 and modified old communication tool can be used for the existing cameras F50, F60 and F70.



SIDE VIEW



TOP VIEW