

Nikon F-501

ニコン F-501

REPAIR MANUAL

修理 指 針



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Tokyo, Japan

SPECIFICATIONS & MECHANISM

Contents

Page

[1] SPECIFICATIONS M1

[2] MECHANISM M7

[1] SPECIFICATIONS

Nikon F-501 [N2020 for U.S.A. and Canada, Order No. is FAA20151]

1. Outline

The F-501 indicates the direction in which single-lens reflex camera will be advanced in the future.

It is provided a lot of functions well-balancedly such as multi program auto exposure mode, DX-code system, easy loading system etc.

This camera can be used with almost all lenses i.e. new AF lens, AF lens for the F3, AI-S Nikkor lens, AI Nikkor lens and E-series lens.

When a new AF lens is attached to the camera, the motor in the camera operates the focusing function of the lens. And the informations of the CPU in the lens can be transmitted to the camera via the contact of the mount.

2. Features

- 1) Autofocus detecting system by the phase contrast detecting
- 2) New AF lens can be focused by the motor in the camera.
- 3) The information from the CPU in the new AF lens is transmitted to the camera.
- 4) Old type AF lens for the F3 can be used with the F-501.
- 5) AF lens can focus either on Continuous Servo mode or on Single Servo mode.
- 6) Motor in the spool automatically advances the film. S mode(single frame shooting) or C mode(continuous shooting) is usable.
- 7) Film automatically advances to the first frame when shutter release button is depressed once.
- 8) Exposure metering system can be selected from Program mode(normal, high-speed and dual), auto mode(aperture priority) and manual mode.
- 9) TTL auto flash control is possible.
- 10) When the exposure metering mode selector is set to program mode, programmed TTL auto flash is possible.
- 11) Film speed can automatially be set when the DX-coded film is used. Manual setting is also possible.
- 12) In the condition of low light intensity, autofocus operates properly with the supporting light of the SB-20.

3. Specifications

Type of camera: Refer to the F-301.

Picture size: Refer to the F-301.

Usable film: Refer to the F-301.

Usable lens: 1) New type AF Nikkor lenses
 2) AF Nikkor lenses for the F3 (The TC-16S cannot be used.)
 3) AI-type Nikkor lenses (AI, AI-S, E-series lenses)

◦In autofocus shooting, all the lenses of 1) and 2) can be used and the lenses of 3) whose F number is smaller than 2.8 can be used with the TC-16AS.

◦In focus aid shooting, all the lenses of 1), 2) and 3) whose F number is smaller than 4.5 can be used.

(Some lenses modified to AI-type can be used.)

Standard lens: New AF Nikkor 50mm F2.8S or New AF zoom Nikkor 35 - 70mm F3.3 - 4.5S lens.

Maximum aperture index: Refer to the F-301.

Shutter: Refer to the F-301.

Lens mount: Refer to the F-301.

Exposure control mode: Dual programmed mode(PDUAL) is made in addition to the modes which the F-301 has.

On PDUAL mode, normal program is used with the lens whose focal length is shorter than 135mm, and high speed program is used with the lens whose focal length is 135mm or longer.

On PDUAL mode, normal or high speed program can automatically be selected because the camera body detects the focal length signal output from the lens.

Electronic circuit: 1) M50753P.....MCU
 2) M51004P.....Head amplifier
 3) M51046P.....Indicator and decoder IC
 4) M51049P.....AF motor driving IC
 5) HSM12N.....CCD sensor module
 6) HIM21.....Interface module

1) and 2) are used also in the F-301.

Autofocus detecting system: The distance from the camera to the subject is detected through the lens in the phase contrast detecting method by custom TCL. Sensor module is in the conjugate position to the film plane. Electric charge from 46 CCD in HSM is A/D-converted at interface module(HIM) and transmitted to CPU. CPU computes the data and decides the defocus amount.

Travelling of AF lens: New AF lens is focused by the AF motor in the camera via coupling of the mount.

Old type AF lens is focused by the motor in itself with the signal transmitted from the camera via AF contact on the mount.

Focusing of the AF lens operates while the power hold switch is on.

Lens for focus detection: The lens whose F number is smaller than 4.5.

°Components of TCL is laid in two rows.

One is F2.8 detector(for the lens whose F number is 2.8 or smaller) and the othre is F4.5 detector (for the other lens).

Brightness for focus detection:

In operating F2.8 detector — Approx. EV4.0 or brighter

In operating F4.5 detector — Approx. EV5.0 or brighter

Autofocus lock: 1) When the new AF lens is attached, AFL(autofocus lock) button on the camera is used.

2) When the old type AF lens is attached, AFL button on the lens as well as on the camera can be used.

* While AFL button is pressed, servo does not function.

Focusing range: $\pm 100\mu$ (In operating F2.8 detector)

$\pm 150\mu$ (In operating F4.5 detector)

The detector controls the lens travelling so that the subject will be in this range.

But once the subject is in this range, servo does not function again till the predictor defocus outside 150μ is detected.

Autofocus flash photography: In case that the user takes photographs in the low light condition, SB-20's AF illuminator makes it possible to take AF photography.

Exposure metering: Refer to the F-301.

Metering range: Refer to the F-301.

Exposure meter: Refer to the F-301.

Audible warning: Refer to the F-301.

Power source: 1) Four AA-type batteries

2) Four AAA-type batteries can be used with optional Nikon battery holder MB-4.

Power hold switch: Power hold switch is turned on when the shutter release button is depressed halfway; stays switched on for 8 sec after lifting finger from the button.

Shutter release: Refer to the F-301.

Battery consumption: When the power hold switch is on: Approx. 60mA
When AF lens is travelling: Apporx. 300mA

Battery check: In normal condition, the power hold switch remains on for apporx. 8 sec.

Film speed setting: Refer to the F-301.

Exposure compensation: Refer to the F-301.

Film loading: Refer to the F-301.

Frame counter: Refer to the F-301.

Self-timer: Refer to the F-301.

Servo system: With the new AF lens used, the output from the digital encoder in the camera is compared with the predictor defocus amount computed by CPU. With old type AF lens used, the output from the digital encoder in the lens is compared with the predictor defocus amount computed by CPU.

This stops focusing.

When the lens comes near the focusing point, duty proportion is changed and the rotating speed of the motor slows down by the pulse.

When the lens arrives at the focusing point, the motor is stopped by the short brake.

Focus mode: Three modes can be selected by the focus mode selector.

1) Continuous servo autofocus (C)

On this mode, AF lens travels continuously following the movement of the subject.

When the power hold switch is turned on, the lens starts to travel. When the shutter release button is depressed to the end, the shutter can be released even if the lens has not focused.

2) Single servo autofocus

Once focused, focus is locked as long as the power hold switch is on.

Shutter release is not possible until the focusing is complete.

3) Manual focus

The user must focus manually according to the indicator in the viewfinder.

With the old type AF lens used, continuous servo autofocus functions when the A-M switch is set to 'A', and manual focus functions when the A-M switch is set to 'M'.

* With the non-AF lens used, the focus indicator LEDs functions regardless of the mode of the focus mode selector.

AF contacts: Signals are transmitted between the camera and the lens via AF contacts on the upper side of the mount. Function of the each contact is decided depending on the lens attached to the camera body (new or old type AF lens).

Contact	A	B	C	D	E	F	G
With new AF lens used	Vcc1	R/W1	CLK	SI/SO	R/W2	-	GND
With old AF lens used	Vcc2	Limiter	Focusing 1	Focusing 2	-	X'	GND

* GND of the old AF lens is used as $\ominus$ terminal of the motor driving circuit, and GND of the signal system is the mount.

The contacts A, B, C, D, E, F and G are arranged from the left.

Firing rate: When the film-advance mode selector is set to 'C' with the fresh batteries set at 20°C, the average firing rate from the first frame to the 24th frame is as follows;

- 1) On continuous servo autofocus mode: 1.7 frame/sec
 - With focus lock: 2.5 frame/sec
 - With exposure lock: 1.4 frame/sec
 - With focus and exposure lock: 20 frame/sec
- 2) On single servo autofocus mode: Not fixed (depends on the subject status)
- 3) On manual focus mode: 2.5 frame/sec (with the non-AF lens)
1.7 frame/sec (with the AF lens)

Accessory shoe: Refer to the F-301.

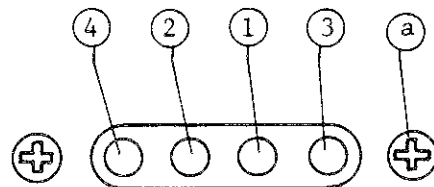
Flash synchronization: Refer to the F-301.

Auto exposure lock: Refer to the F-301.

Tipod socket: Refer to the F-301.

Sequence error warning: Refer to the F-301.

Data back contact: Four contacts are provided.



- ① Power hold/release signal contact
- ② Imprint signal contact
- ③ GND contact
- ④ Focusing signal contact

MF-19 detects the height of screw ④ and makes autofocus function.

Remote terminal: Refer to the F-301.

Viewfinder: 1) Focusing screen

Standard equipment: Type B(overall matte surface)

Interchangeable equipment: Type E(with a grid pattern)

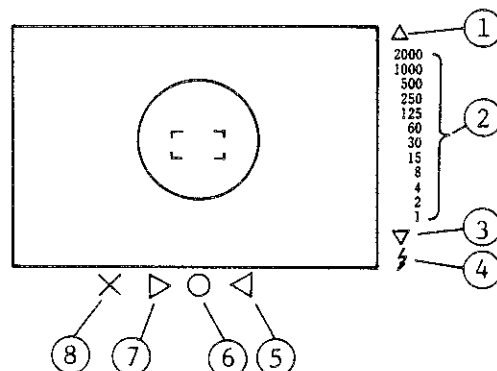
Type J(with a microprism)

Each of three focusing screens has focusing brackets.

2) Quick return mirror

Half mirror

Transmission: Approx. 35%



- ① - ④ are same as the F-301.
- ⑤ - ⑧ are focusing indicator LEDs.
- ⑤ Focus-to-left arrow (for too near subject)
- ⑥ In-focus indicator
- ⑦ Focus-to-right arrow (for too distant subject)
- ⑧ Focus-not-possible warning

Film-advance LED: Refer to the F-301.

Dimensions: 148.5 x 101.5 x 54.5 (With AA-type batteries)
(W x H x D)

Weight: Approx. 625g (without batteries)

[2] MECHANISM

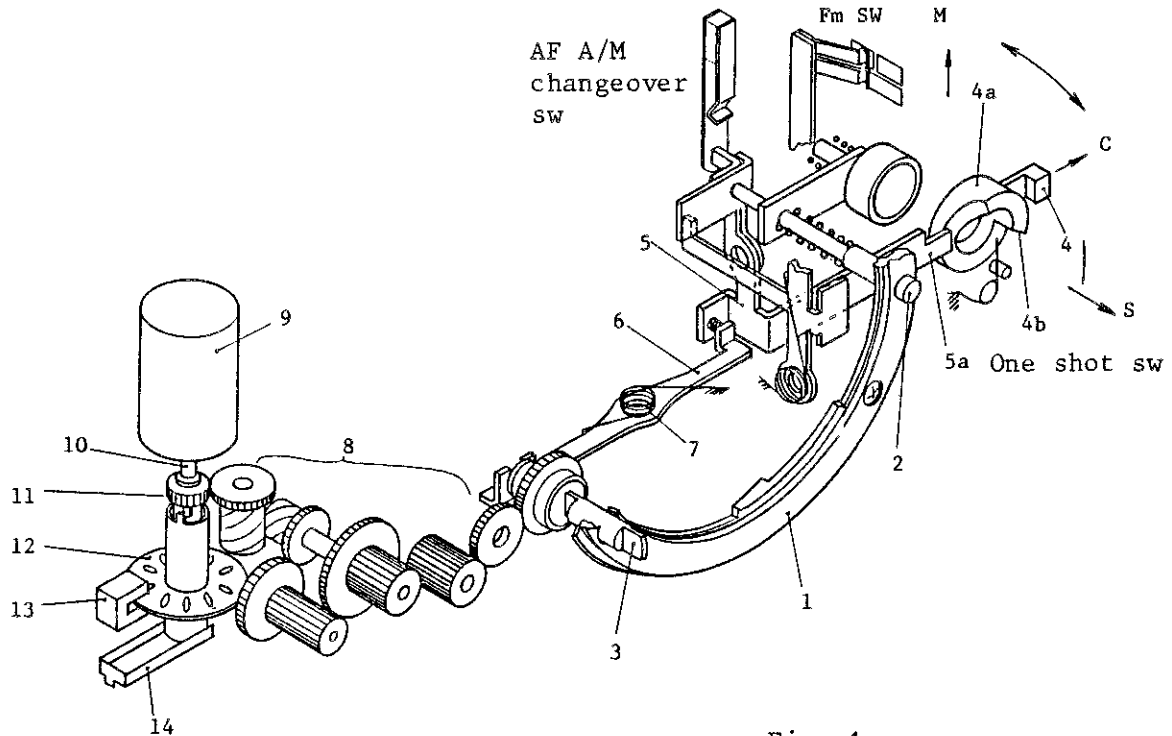


Fig. 1

Fig. 1 is a schematic diagram of autofocus control organization shown from the front side of the camera. (on continuous autofocus servo mode.) #1 is a bayonet mount of the camera and the lens will be attached to it. position of the lens to be attached is defined by the stopper pin #2. At the defined position, the bayonet mount of the camera is connected with the coupling for the optical operation of the lens. #3 is a coupling shoe of the camera. The coupling shoe #3 is combined with the motor #9 via motor gear unit #8. The motor rotation enables the coupling to operate for focusing.

Fig. 2 indicates the organization of the motor driving unit. In Fig. 2, the motor #9 is firmly fixed on the base plate. The first gear #11 of the motor gear unit is located on the motor shaft #10 which transmits the motor rotation to the gear so that the gear can rotate. Normally, the rotation torque of the motor is transmitted to the gear via slipping mechanism which is composed of the coiled compression spring #16 and the washer #15.

The slipping mechanism is prepared so that the load should not reach the motor #9, when a big load is provided to the transmitting organization, i.e. when the optical focusing unit stops at infinity or the nearest focusing point. When the more load than fixed is provided to the output side, the motor will slip.

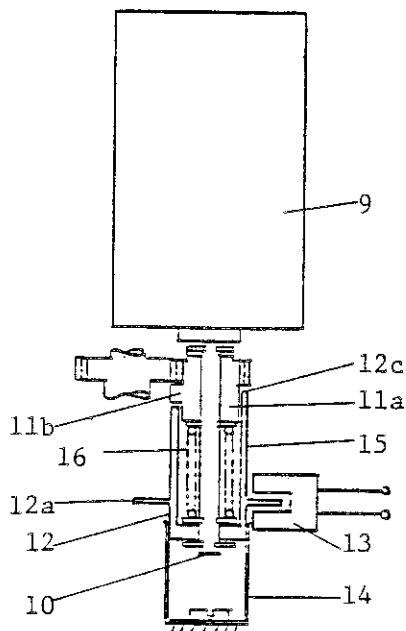


Fig. 2

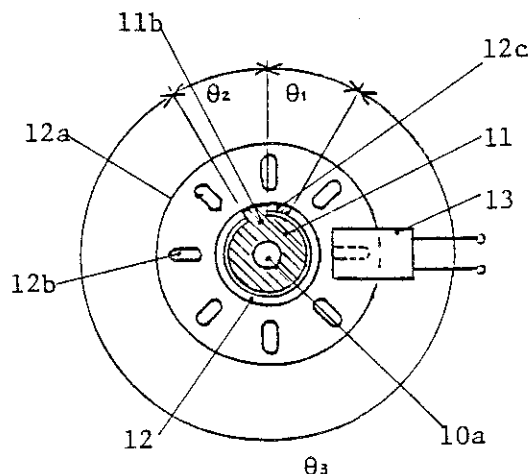


Fig. 3

#12 is relative distance signal plate and it has slits #12b in a radial shape on the plate #12a.

The encoder, which has univocal relation with the movement of the optical focusing unit, consists of this slits and the photo interrupter.

The relative distance signal plate #12 is engaged with the inner circle portion #11a of the first gear #11 and the motor shaft, and it is able to rotate by itself irrelevantly to the motor shaft or the first gear.

But the convex portion #12c on the relative distance signal plate #12 will be hanged on the convex portion #11b on the inner circle of the first gear.

So, the angle in which the relative distance signal plate can rotate irrelevantly to the backlash from the motor gear unit.

Since the relative distance signal plate #12 is supported by the plate spring #14 and given light pressure, it can rotate with the push of the convex portion but does not rotate by itself.

In the above-mentioned driving organization, focusing is controlled as follows. The motor is drive by the focusing condition detecting system and the calculation circuit in accordance with the data of defocus amount and its direction which is necessary for focusing. Moving amount of the optical focusing unit by motor driving is counted with pulse number of the encoder and the optical focusing unit moves in the amount estimated initially.

After moving of the optical focusing unit, the distance from the subject is detected again. If the focusing is not available, the optical focusing unit continues to move.

M mode

When the focus mode selector #4 is set to M, the lever #5a revolves to the left running up on the exchanging lever cam and makes the lever #6 revolve to the right.

On the other end of the focus mode selector #4, AF A/M switch is set. When the switch is off, motor can not be driven.

At the same time, with the revolution of the lever #6, the coupling sinks from the bayonet face. So the connection of the coupling with the lens is canceled and manual focusing is possible.

C mode

When the focus mode selector #4 is set to C, the lever #5a revolves to the right.

The lever #6 revolves to the left by the spring #7 with the revolution of the lever #5a and the coupling knocks against the lens.

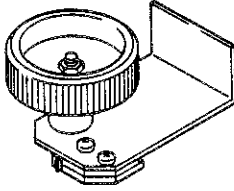
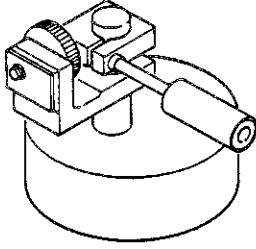
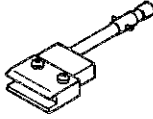
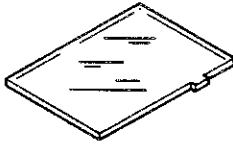
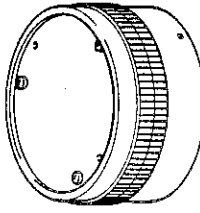
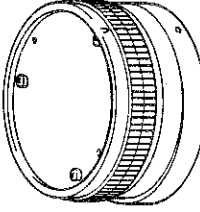
Aligning operation of the coupling is generated by the pressure of the spring and the driving force is transmitted effectively.

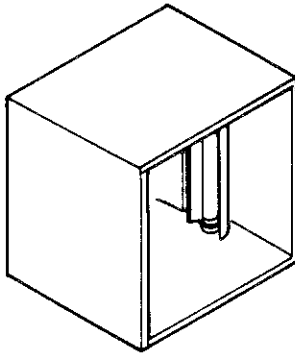
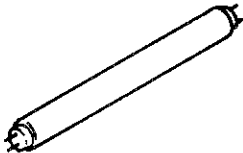
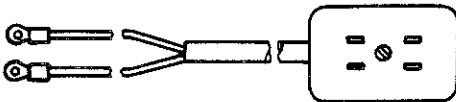
In this case, AF A/M changeover sw is on, One shot sw is off and continuous servo autofocus is possible.

S mode

When the focus mode selector #4 is set to S as well as C, the coupling is connected with the lens. One shot sw is turned off with the convex portion on the focus mode selector and sigle servo autofocus mode is selected.

	ITEM	STANDARD	TOOL
FIRING RATE	Max. firing rate (frame per second)	With a non-AF lens: 2.5 ± 0.5 fps On C mode: 1.7 ± 0.5 fps On AF lock: 2.5 ± 0.5 fps	J9001-5 Test film (24 exposure film) Watch
CURRENT VALUE	Battery consumption	Metering and distance detection: 120mA or less AF lens driving: 400mA or less Film-advancing: 700mA or less(average)	Digital voltmeter
BATTERY CHECK	Battery check voltage	5.5V or more: To hold power for 8sec 4.0V or less: To turn off LED and to lock shutter release	J9001-5 Digital voltmeter

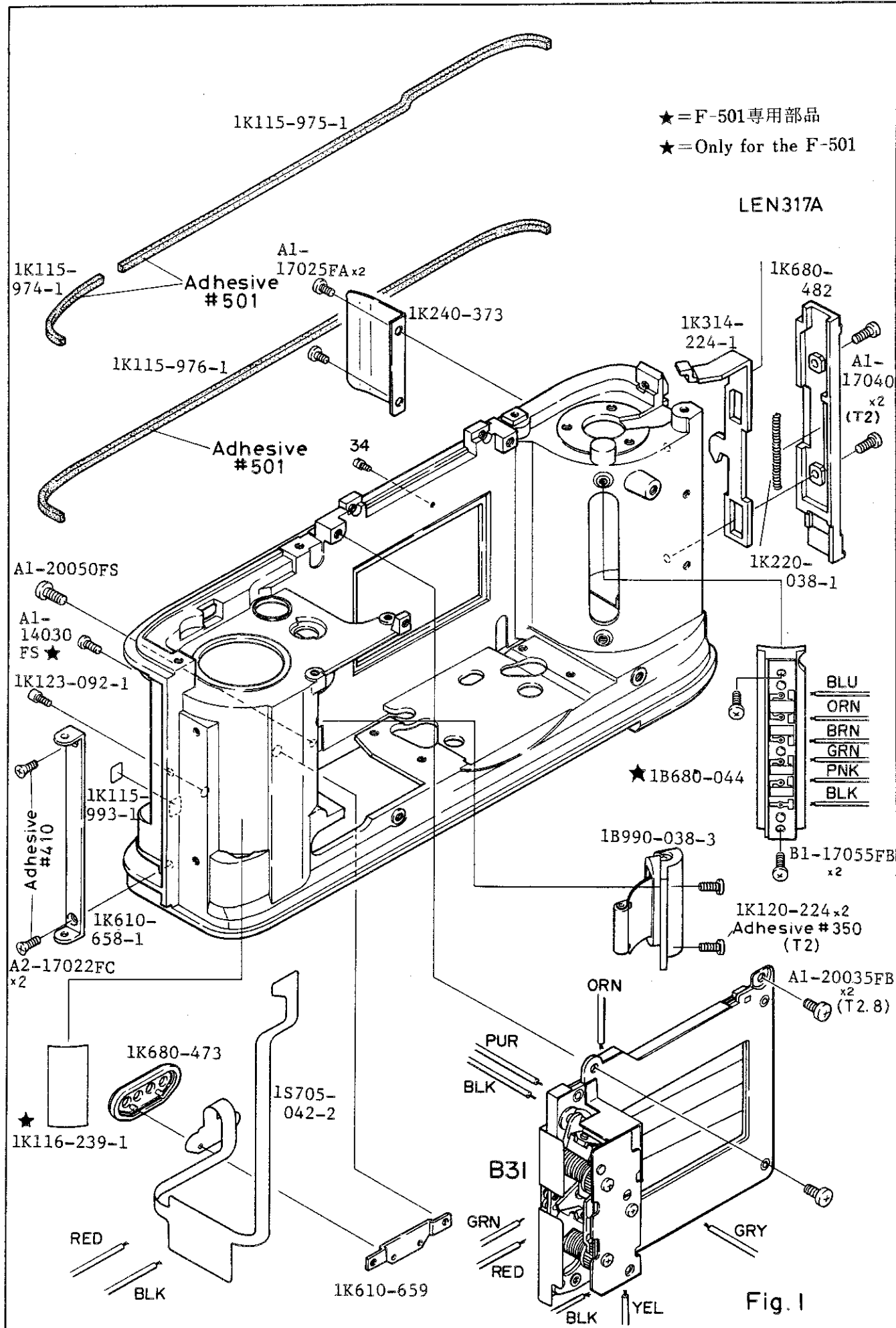
Tool No.	Name	Illustration	Class	Remarks
J15258	Manual film-advance tool		A	Common to the modified one for the F-301
J15259	AF adjuster		A	
J15260	AE LED pressure welding tool		A	Common to the modified one for the F-301
J18182	Mirror 45° inspecting tool		A	
J18184	Adapter for Yaw		A	
J18185	Adapter for pitch		A	
J18183	Lens for Z	50/1.4 S Fixed at 2m	A	
J18186	Sine chart for Z	Sine chart	A	

Tool No.	Name	Illustration	Class	Remarks
J15264	Lighting box for Z		A	For 50Hz For 60Hz
J15264-2	AAA flourescent light		A	
J15264-1	Transformer code		A	
J18191	ND filter 8x		A	

EXPLODED DRAWINGS

Contents

1. BODY-DIECASTING, SHUTTER UNIT	F1
2. MOTOR ROTATION REDUCING BASE PLATE	F2
3. FILM-ADVANCE MECHANISM UNIT	F3
4. BAYONET	F4
5. FRONT PLATE(REVERSE SIDE)	F5
6. BASE PLATE L	F6
7. FRONT PLATE	F7
8. PENTAPRISM	F8
9. MAIN FPC	F9
10. POWER SWITCH FPC	F10
11. REWIND SHAFT	F11
12. TOP COVER	F12
13. BATTERY CHAMBER, BOTTOM COVER	F13
14. CAMERA BACK	F14
PARTS NUMBER REFERENCE TABLE	F15



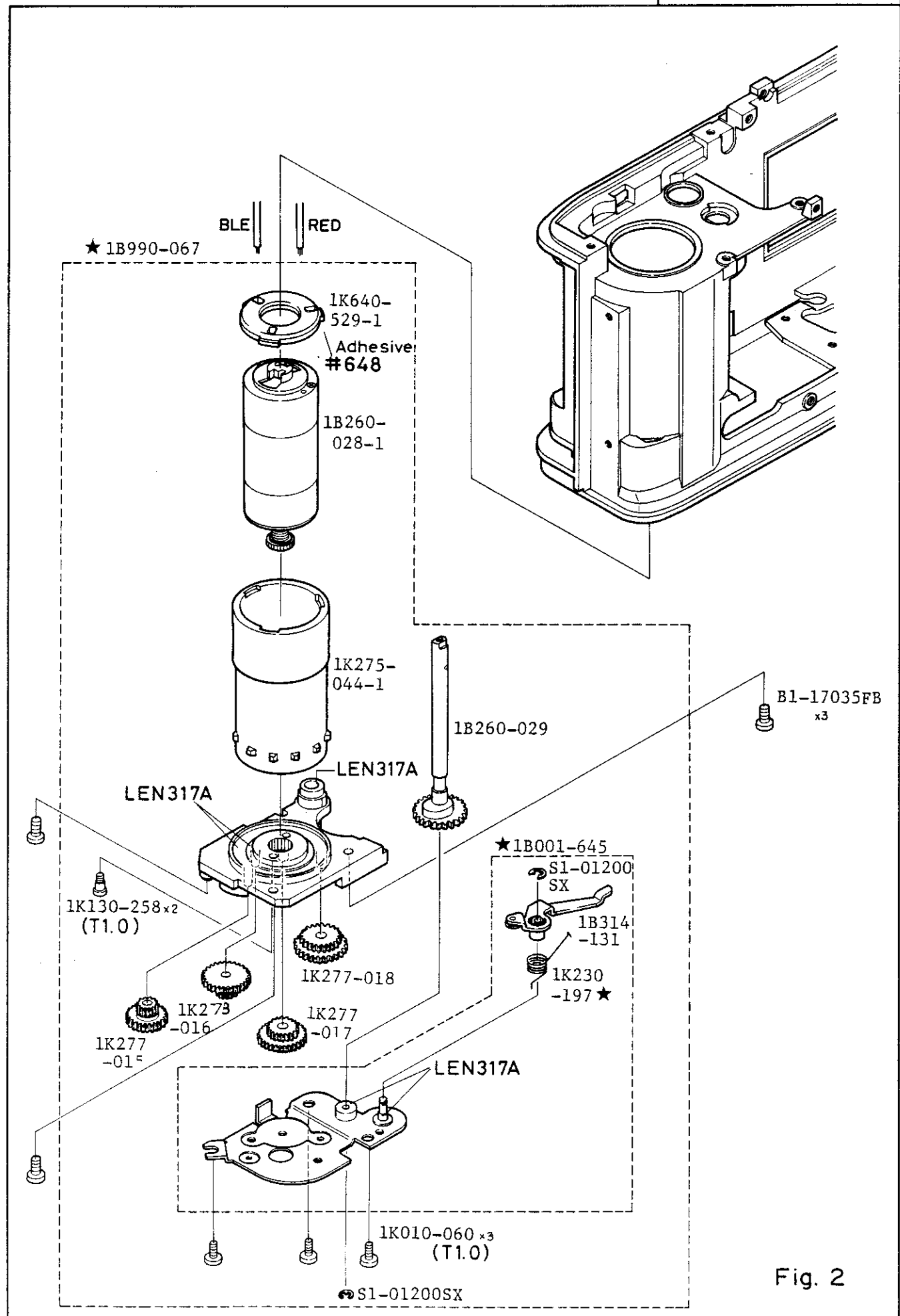


Fig. 2

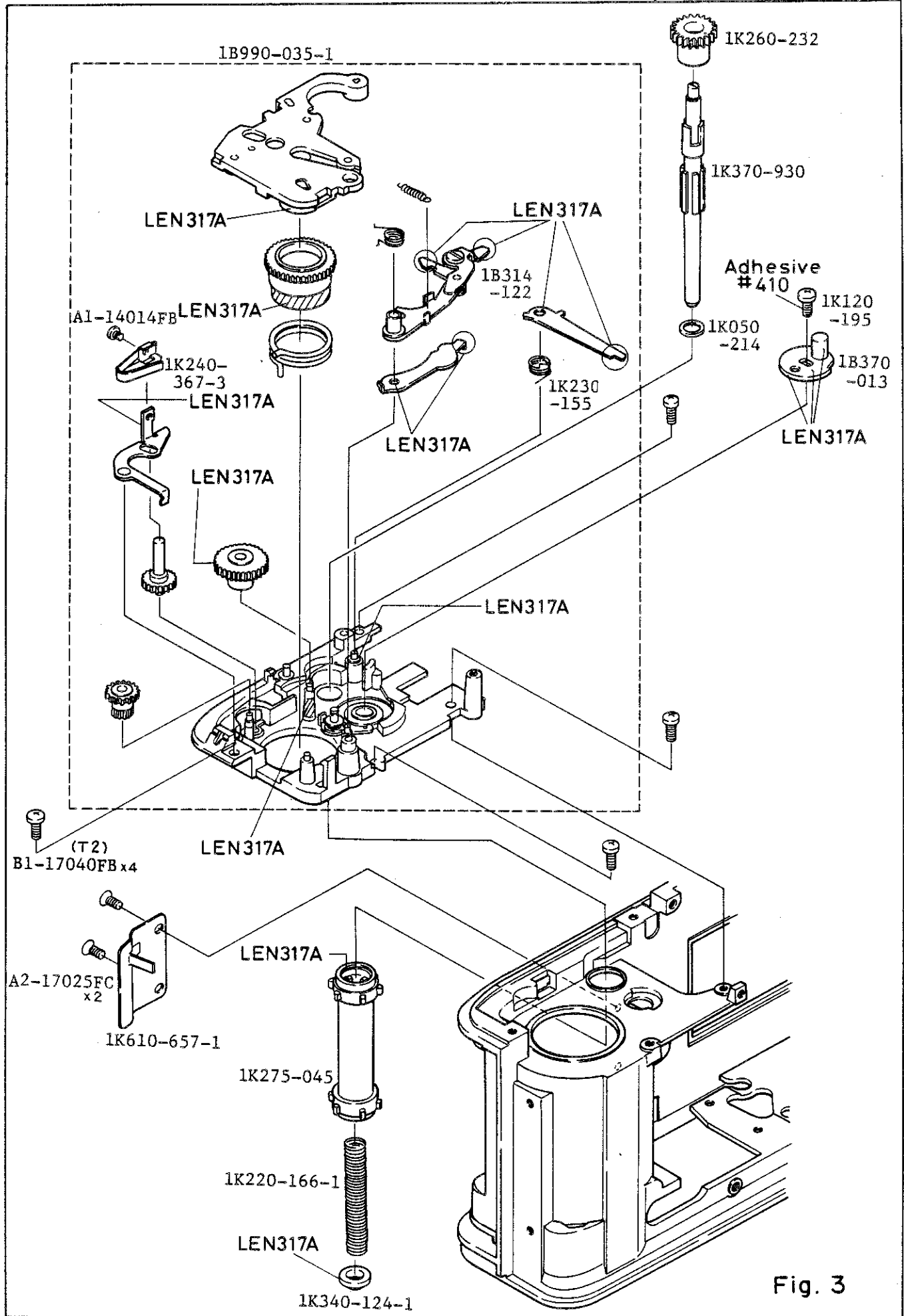


Fig. 3

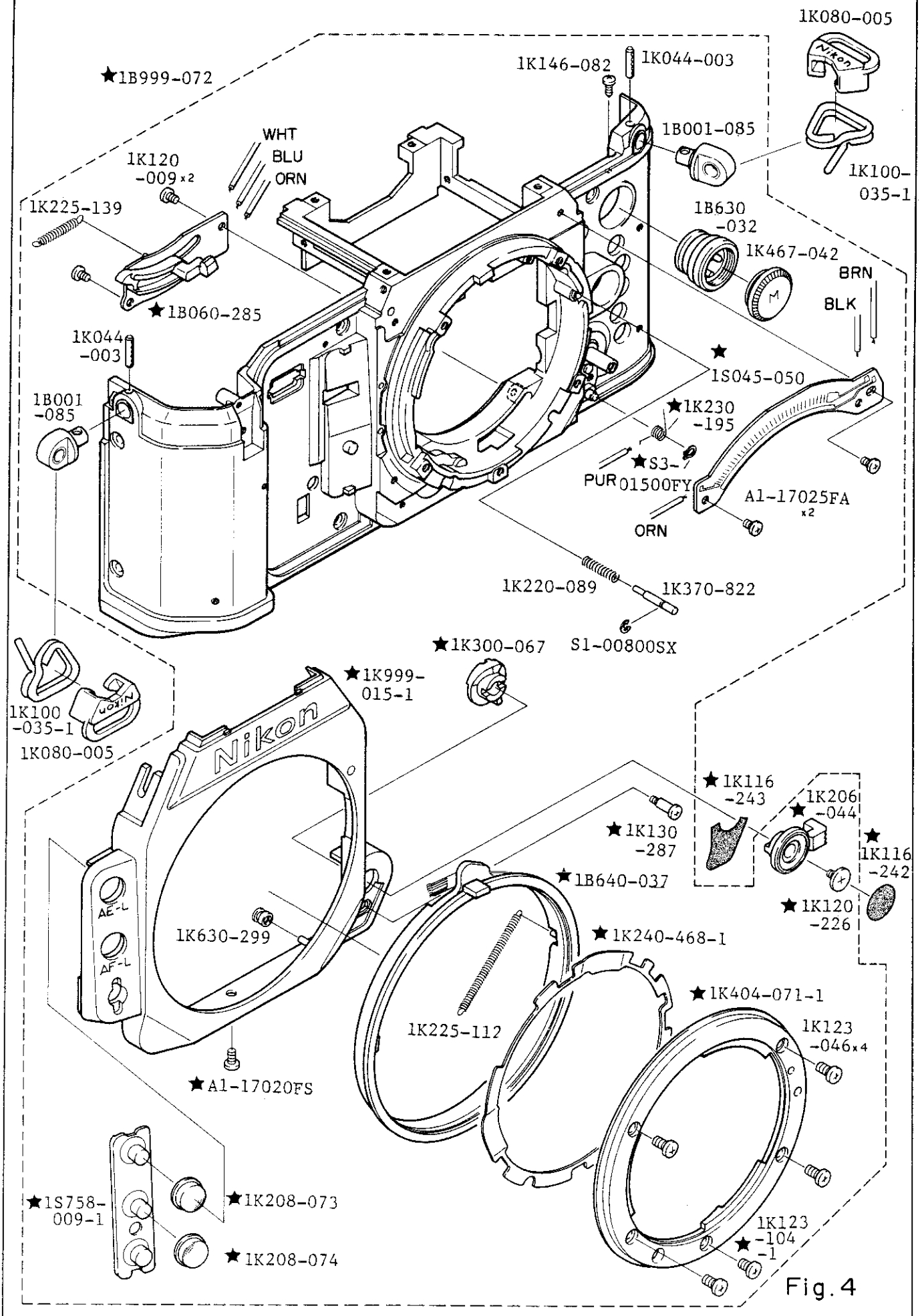
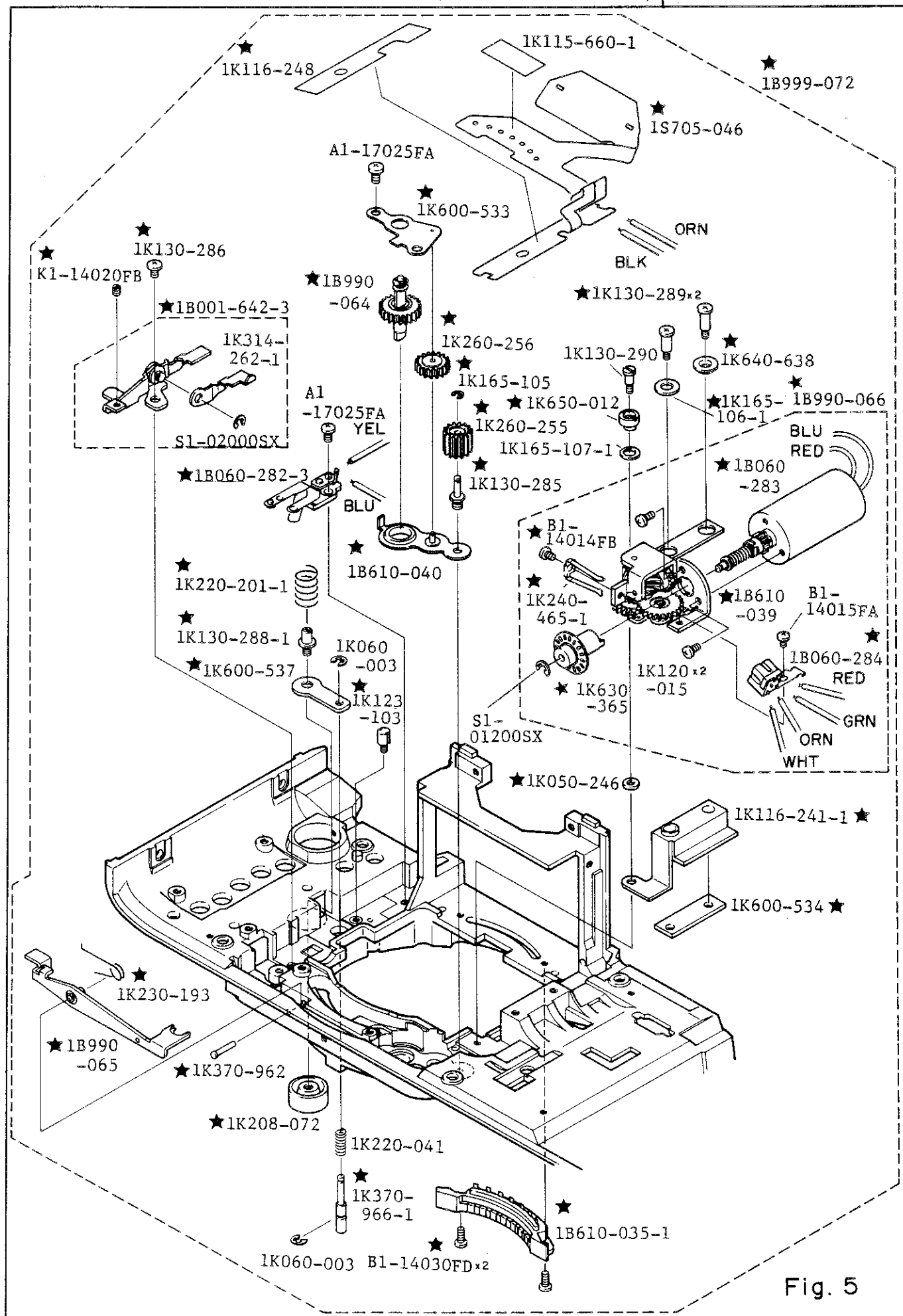


Fig.4



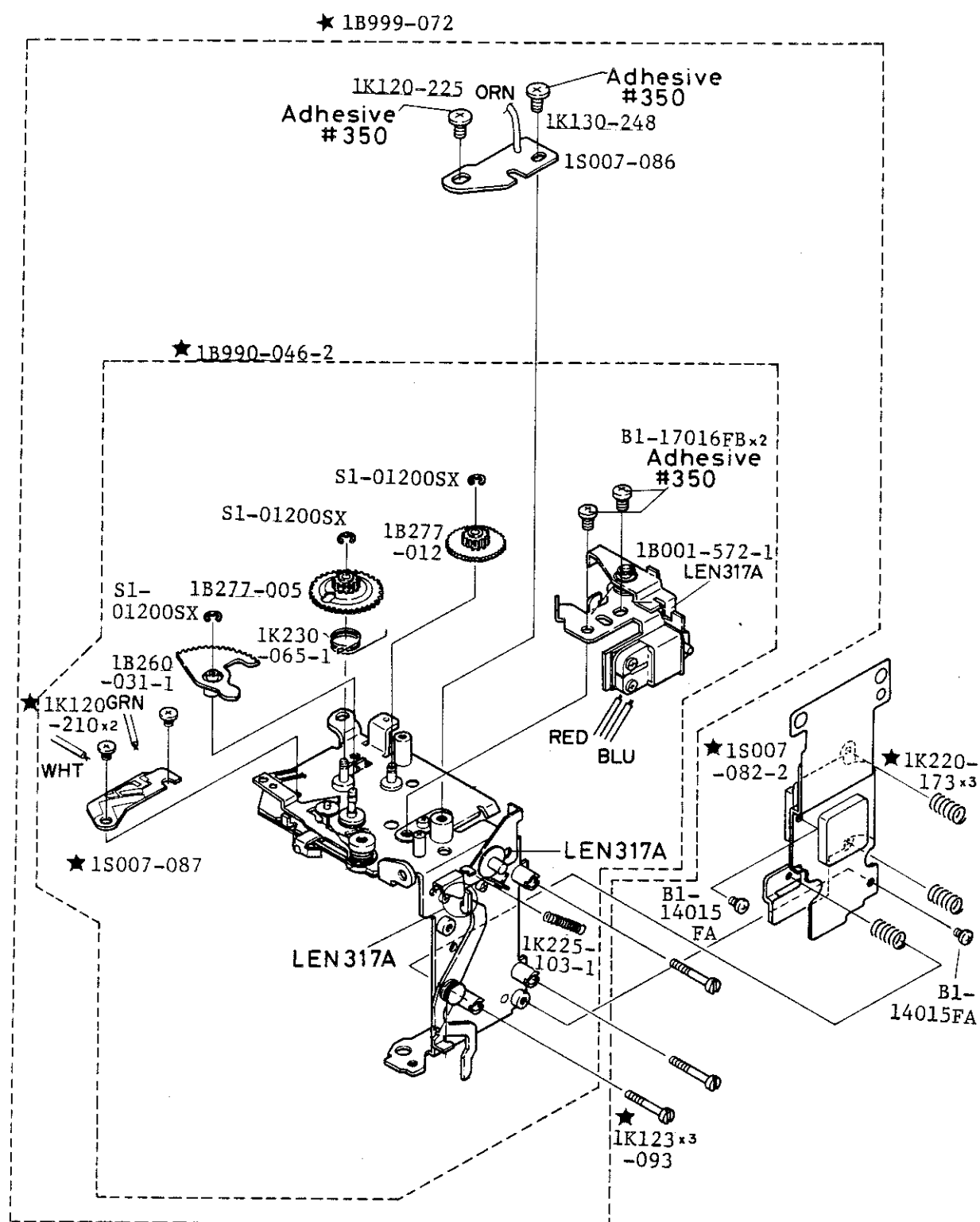


Fig. 6

DISASSEMBLING & ASSEMBLING & ADJUSTMENT & EXPLOSION DRAWINGS

Contents

[1] DISASSEMBLING

- 1. DISASSEMBLING OUTLINE D1
- 2. DISASSEMBLING PROCEDURE D2

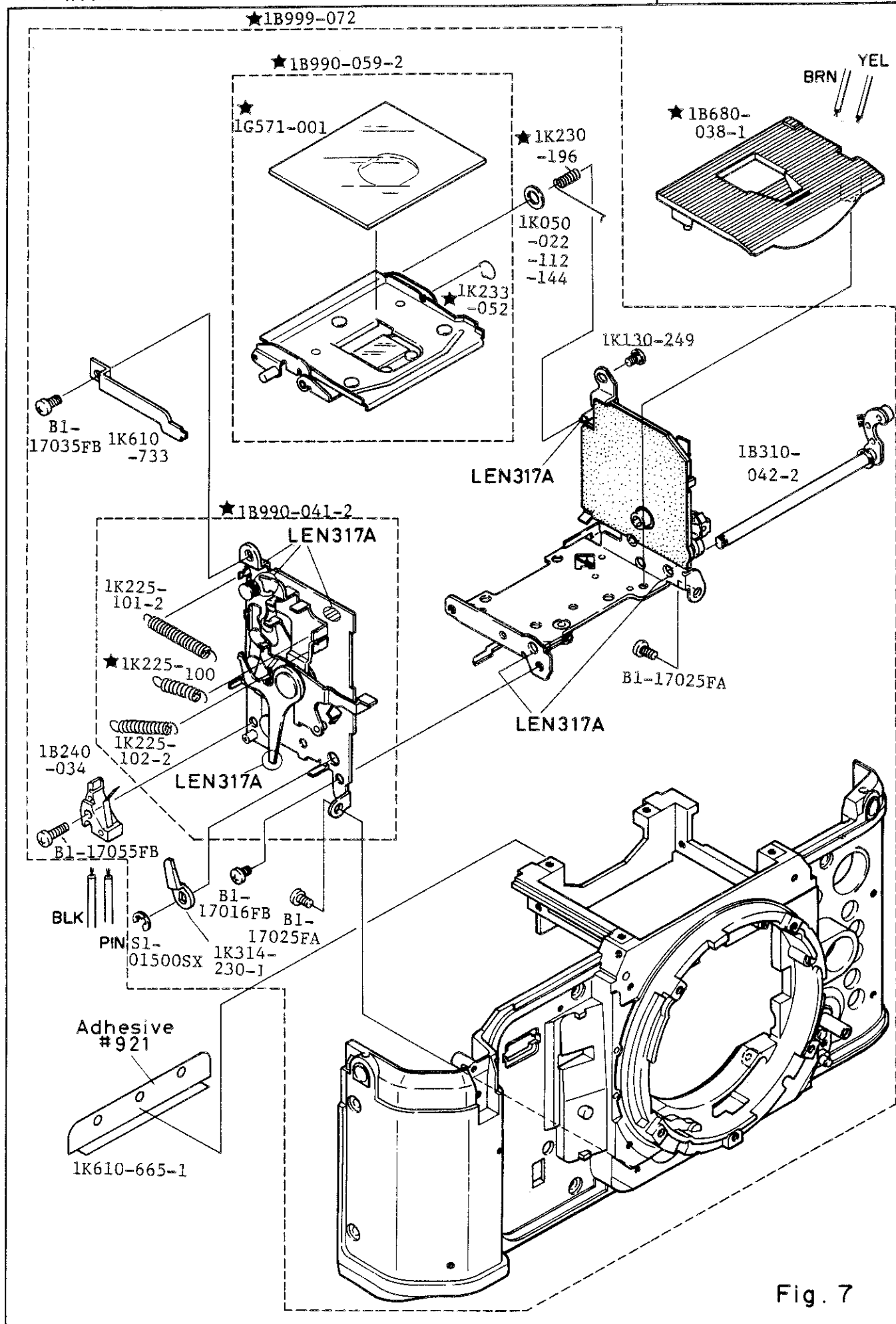
[2] ASSEMBLING & ADJUSTMENTS & EXPLOSION DRAWINGS

- 1. BODY-DICASTING, SHUTTER UNIT A1
- 2. MOTOR ROTATION REDUCING BASE PLATE A2
- 3. FILM-ADVANCE MECHANISM UNIT A3
- 4. BAYONET A5
- 5. FRONT PLATE(REVERSE SIDE) A7
- 6. BASE PLATE L A9
- 7. FRONT PLATE A11
- 8. PENTAPRISM A13
- 9. MAIN FPC A14
- 10. POWER SWITCH FPC A15
- 11. REWIND SHAFT A16
- 12. TOP COVER A17
- 13. BATTERY CHAMBER, BOTTOM COVER A19
- 14. CAMERA BACK A20
- 15. FRONT PLATE INSTALLATION A21
- 16. SHUTTER SPEED ACCURACY ADJUSTMENT A23
- 17. ADJUSTMENT OF AUTO FOCUS A25

Note) Please refer to the notice in the development elevation
for Assembly & Adjustments in the F-301 repair manual.

7. 前板部 FRONT PLATE

FAA2005I-R.3176.A



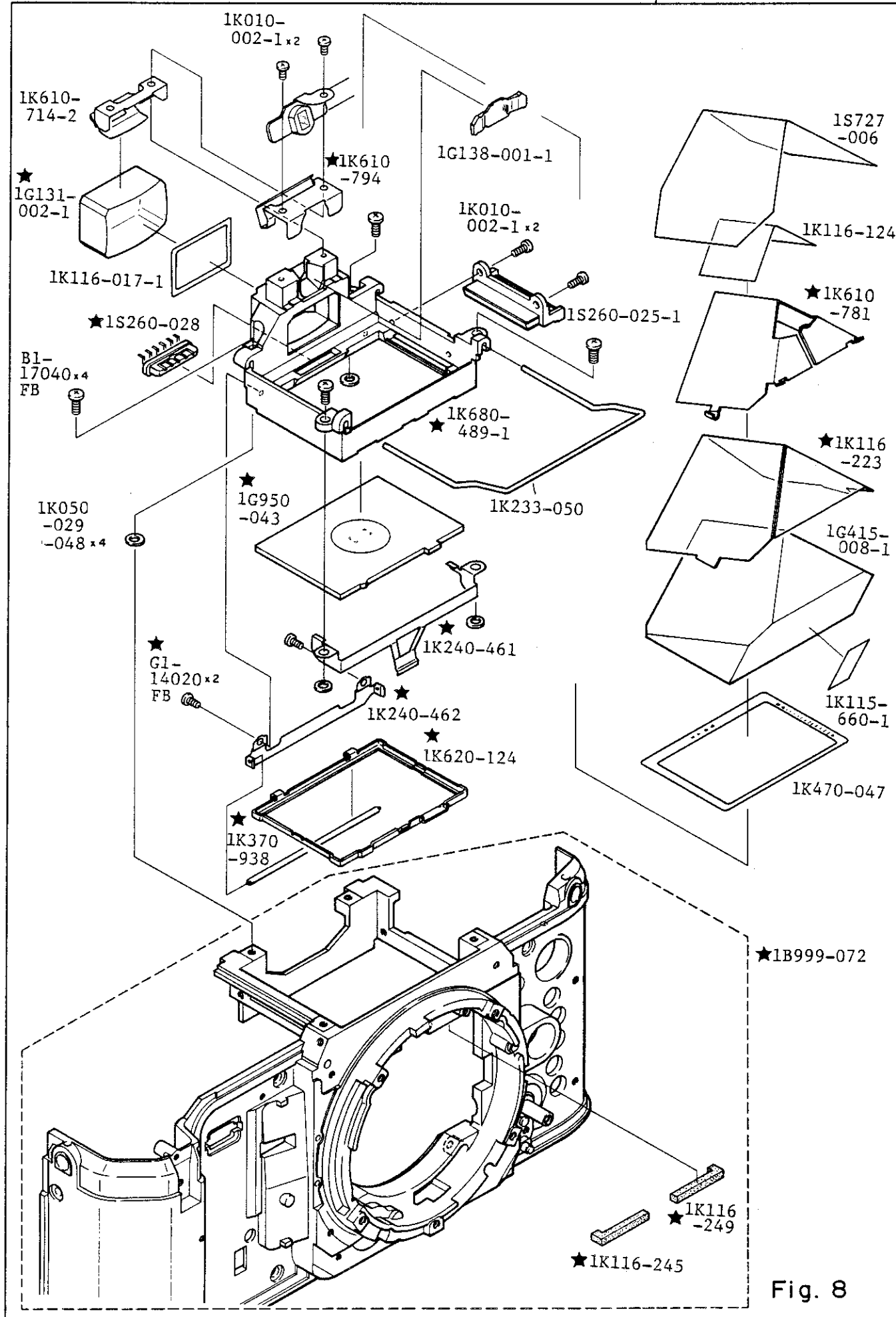


Fig. 8

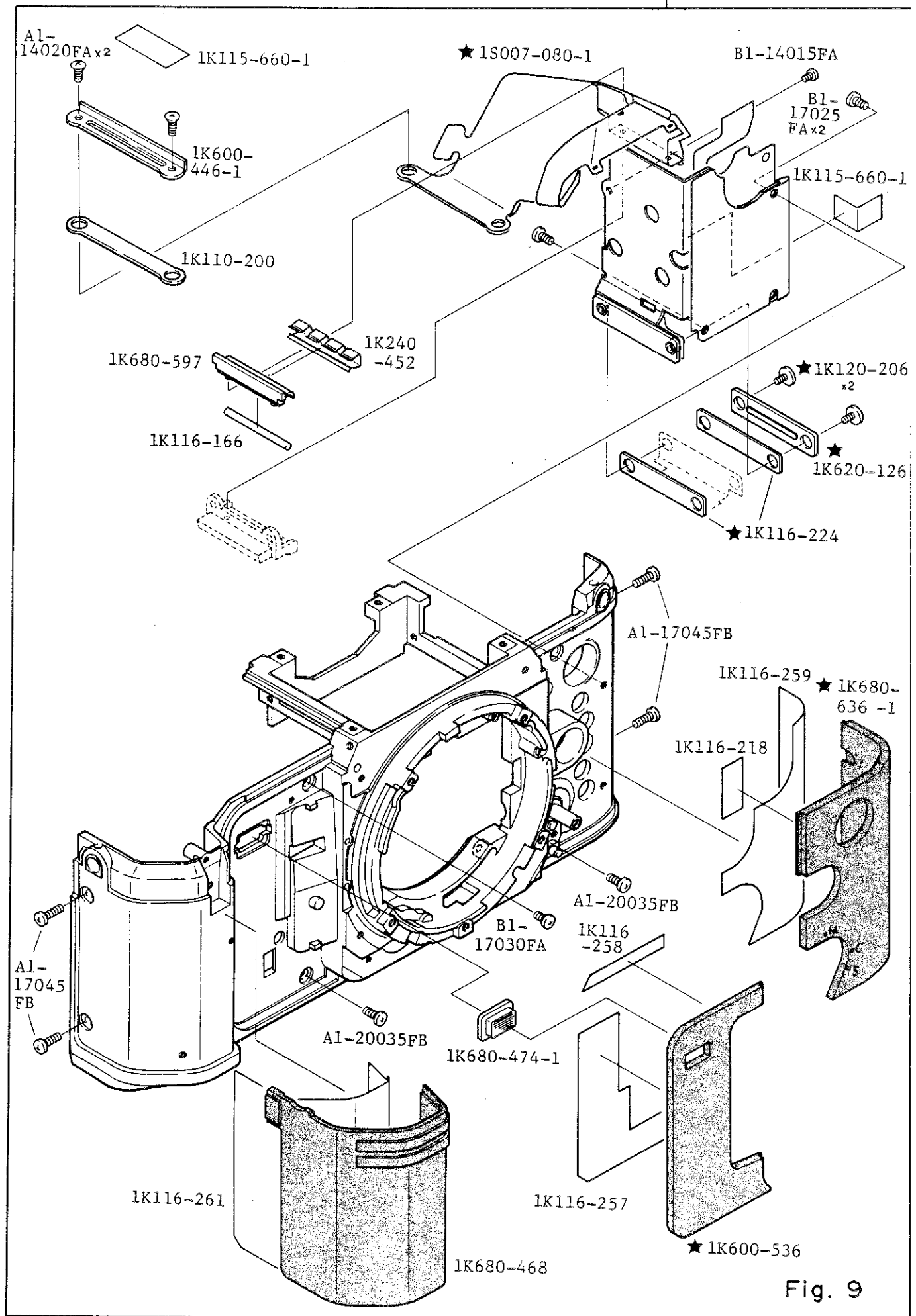


Fig. 9

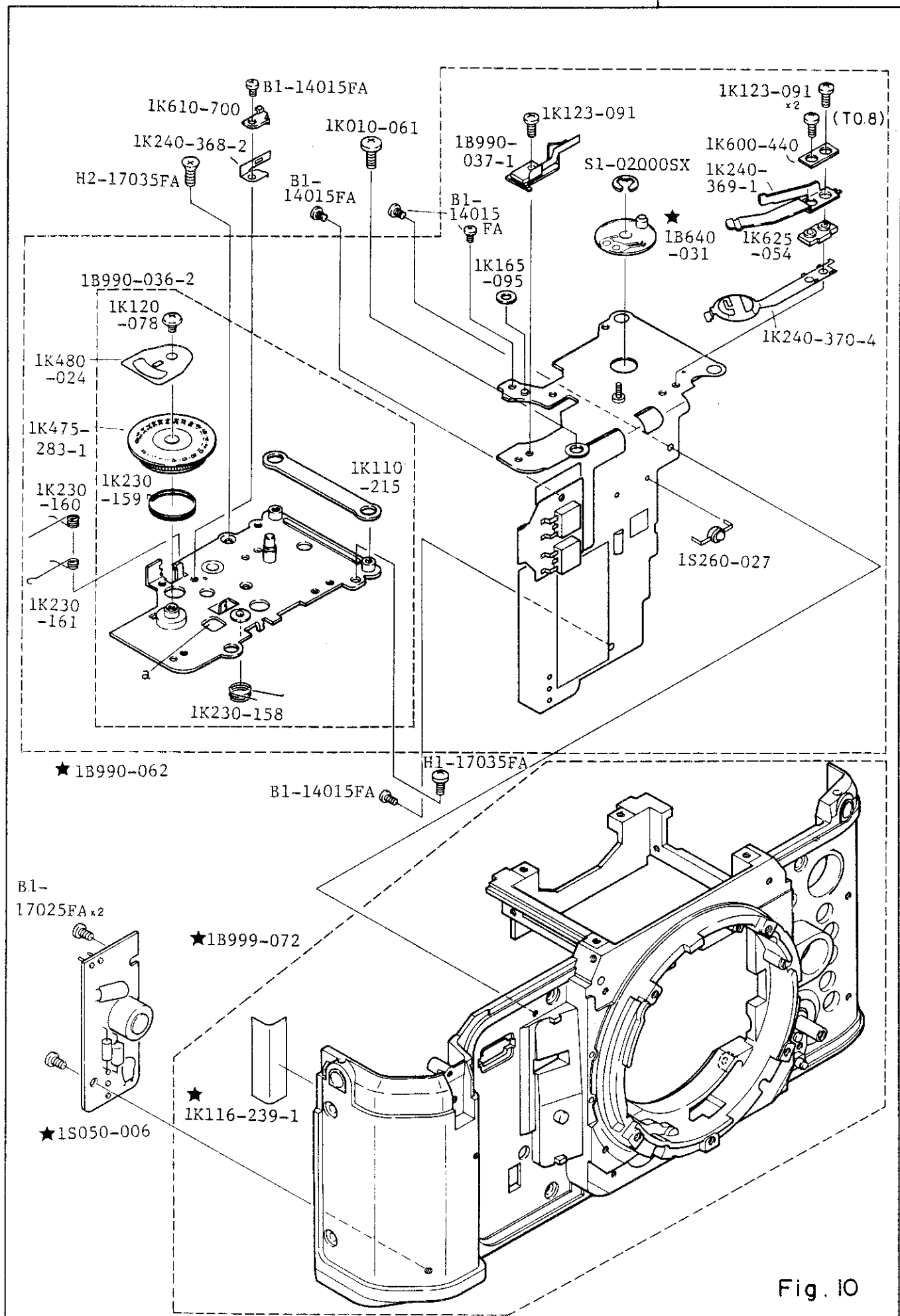


Fig. 10

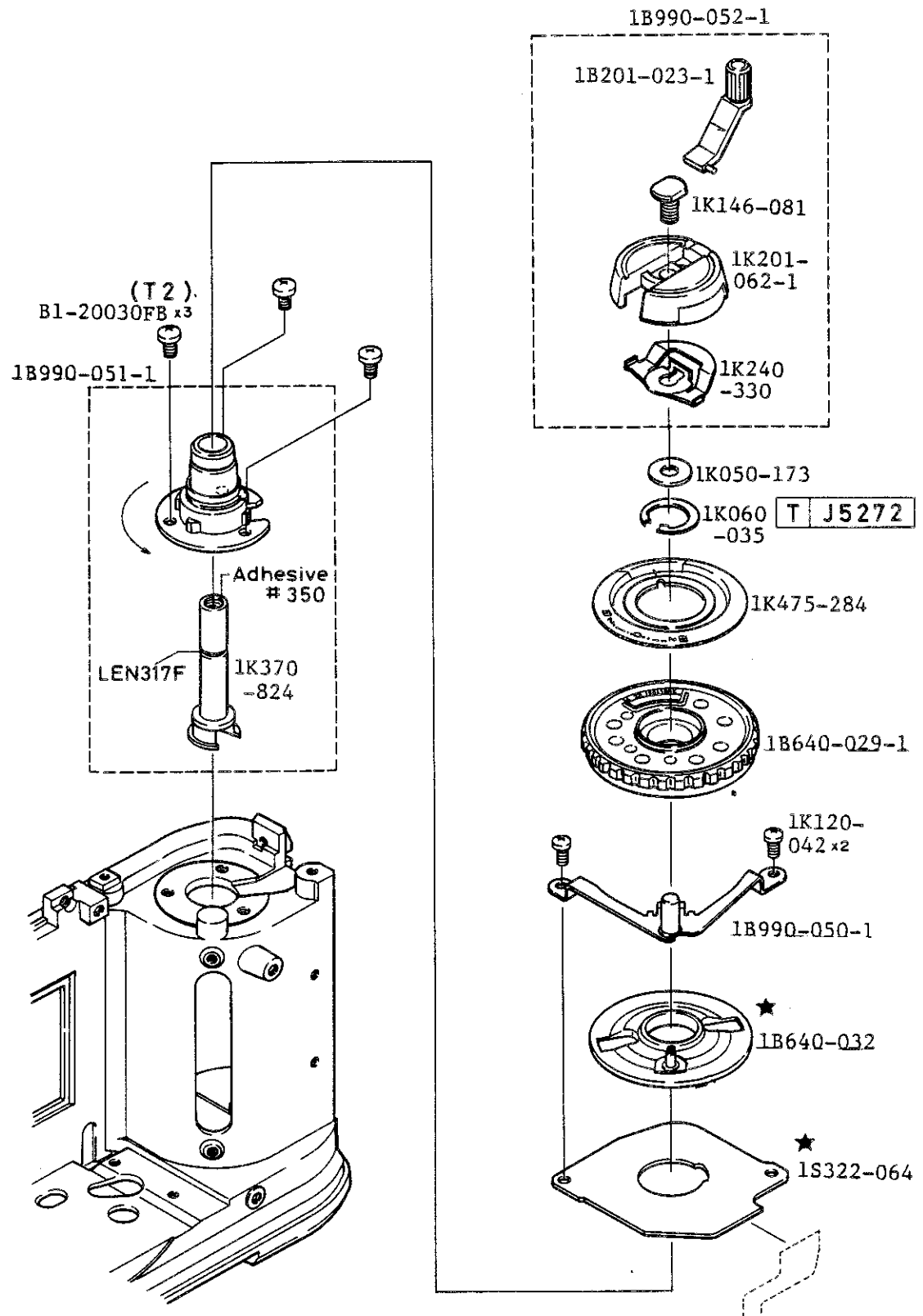


Fig. 11

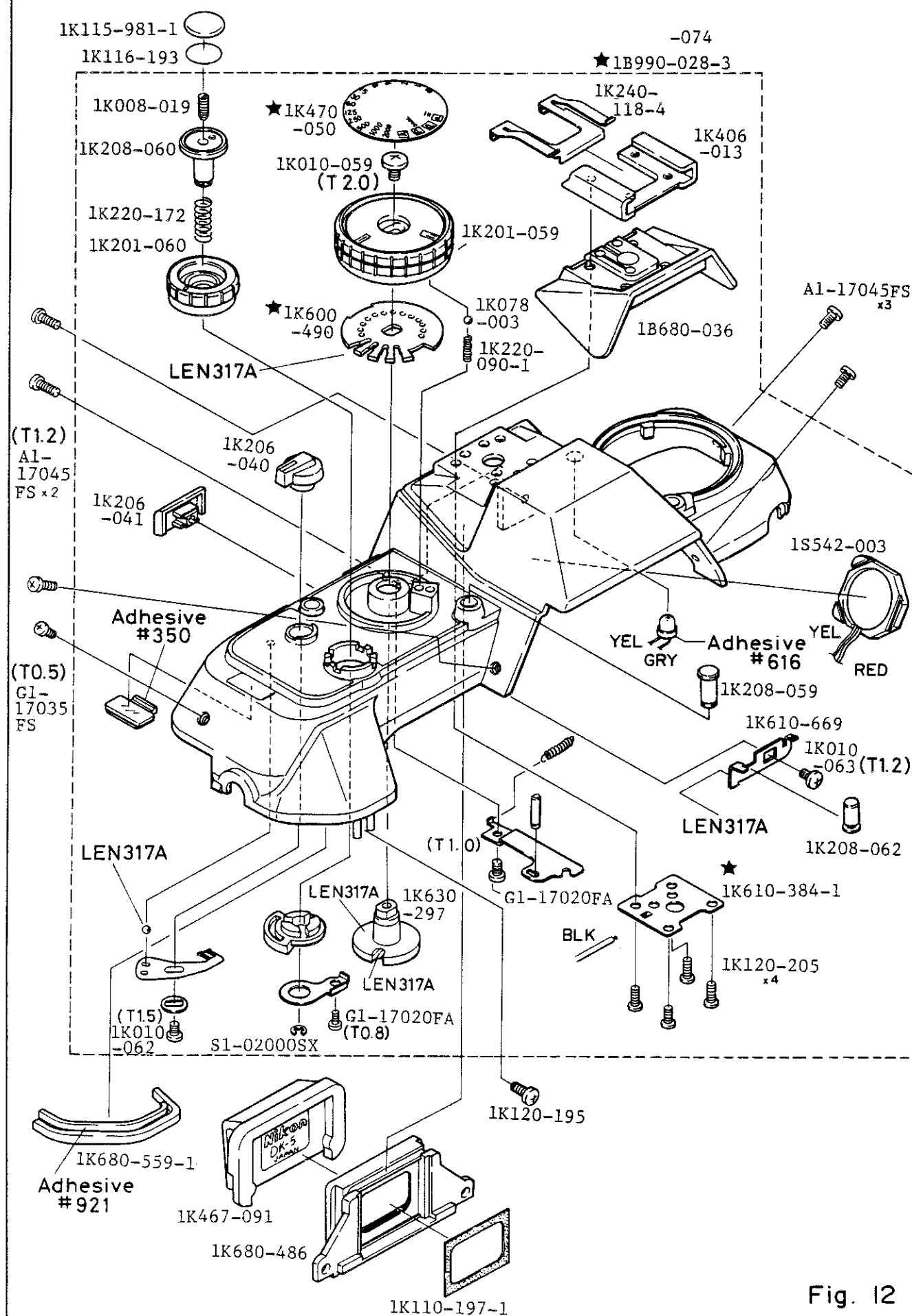


Fig. 12

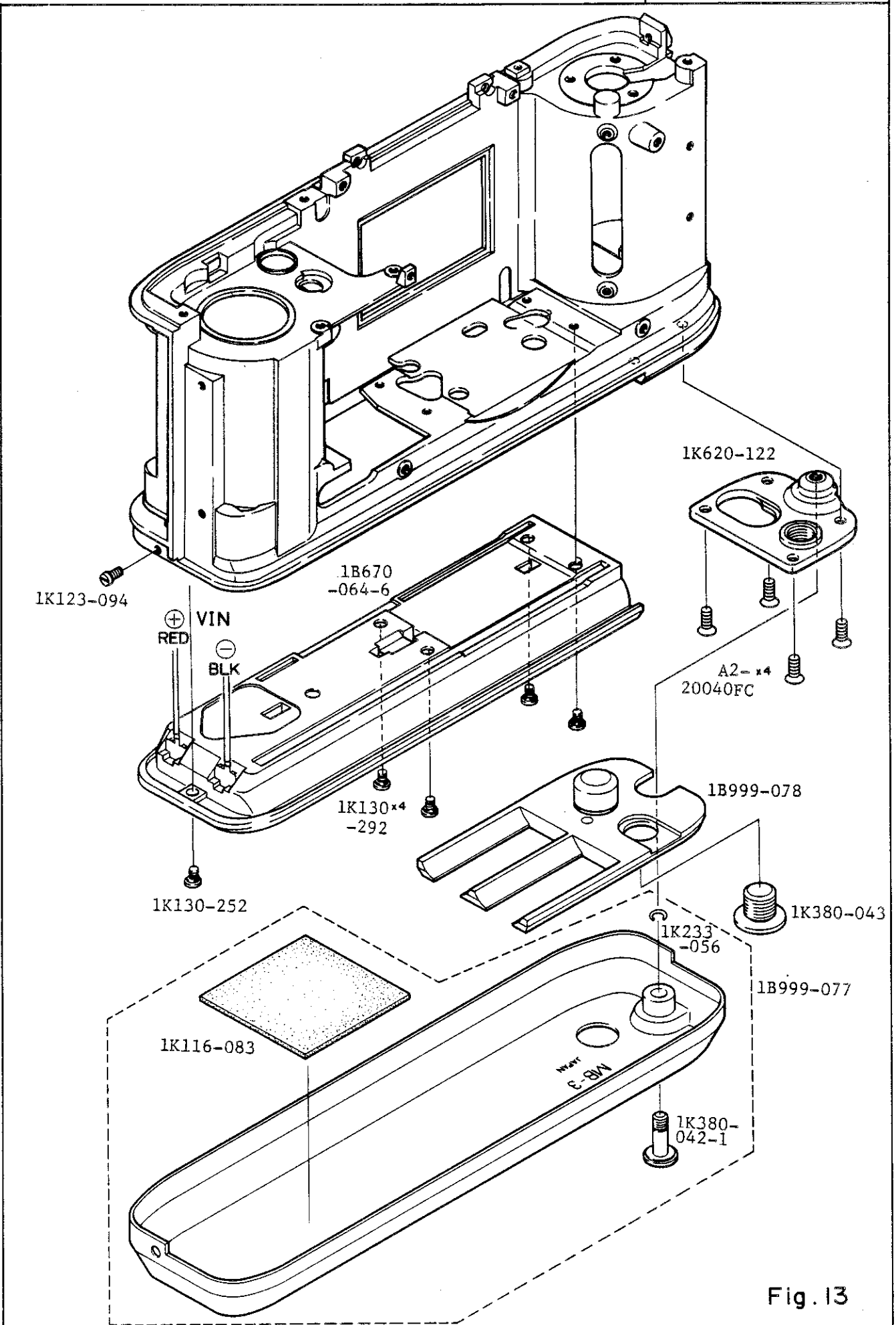


Fig. 13

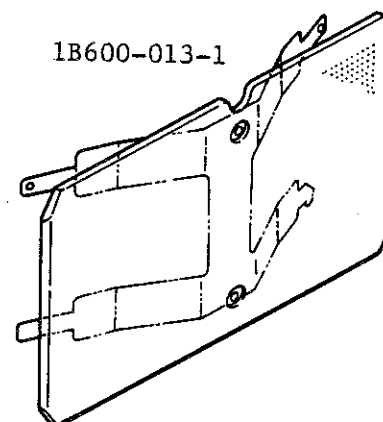
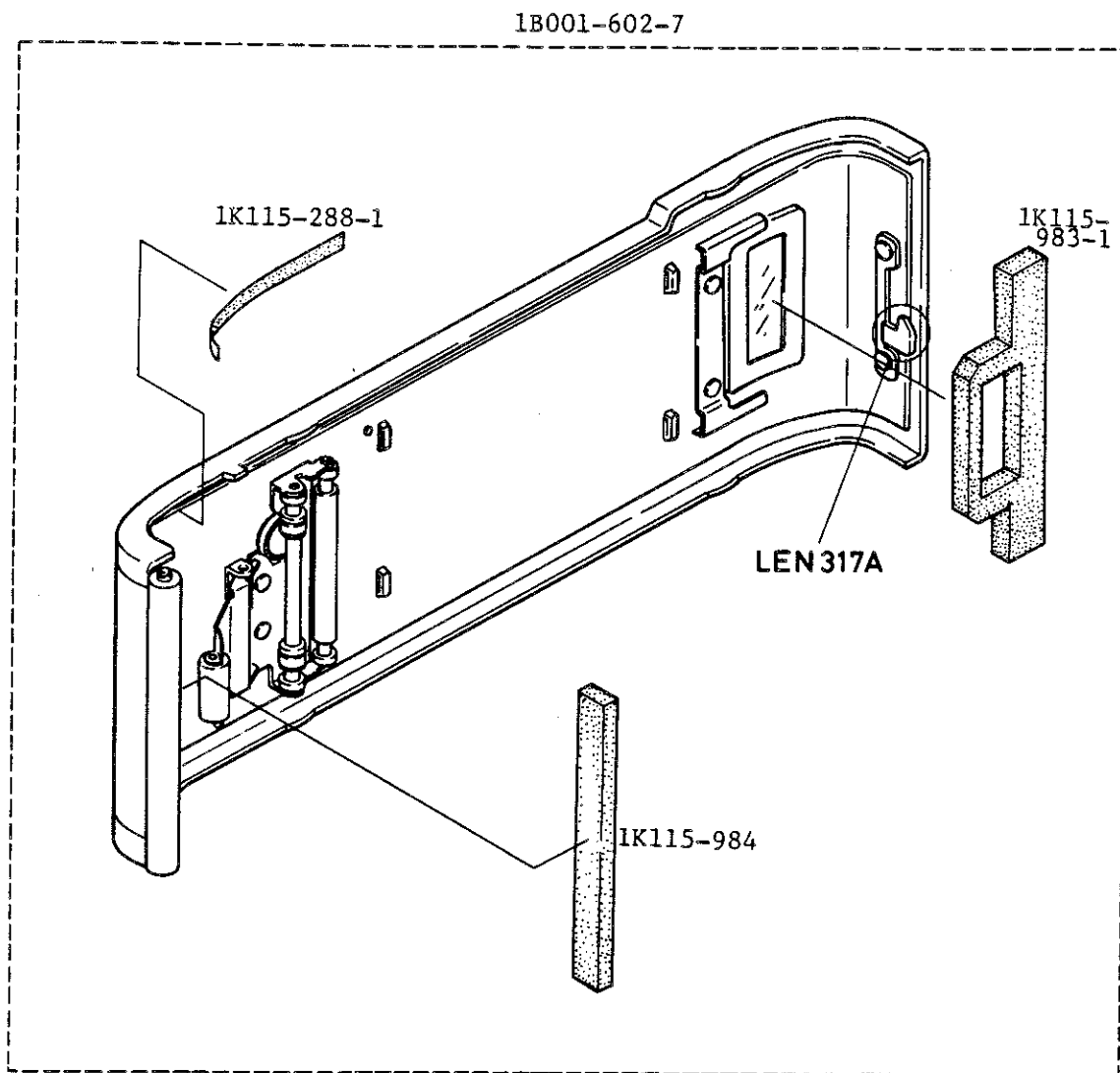


Fig. 14

部品对照表

Parts Number Reference Table

補助番号 Auxiliary Number	部 品 番 号 Part Number	補助番号 Auxiliary Number	部 品 番 号 Part Number	補助番号 Auxiliary Number	部 品 番 号 Part Number
22	1K999-015-1	206	1K115-993-1	405	1K123-093
34	1K120-223	207	1K120-224	406	1K220-173
35	1K680-559-1	208	1K610-657-1	410	1K230-196
37	1K680-468	217	1K240-373	415	1K610-665-1
38	1K600-536	220	1K680-482	416	1K116-245
39	1K680-636 -1	221	1K314-224-1	417	1K116-249
47	1K277-015	222	1K220-038-1	421	1K680-489-1
48	1K277-016	227	1K610-658-1	422	1K116-017-1
49	1K277-017	233	1K100-035-1	425	1K470-047
50	1K277-018	234	1K080-005	426	1K610-781
55	1K230-197	235	1K044-003	427	1K233-050
59	1K275-044-1	237	1K680-473	428	1K116-223
60	1K640-529-1	238	1K610-659	429	1S727-006
61	1K275-045	239	1K123-092-1	431	1K680-486
62	1K370-930	241	1K115-974-1	432	1K110-197-1
64	1K220-166-1	242	1K115-975-1	433	1K467-091
65	1K050-214	243	1K115-976-1	436	1K610-794
66	1K340-124-1	265	1K123-094	437	1K610-714-2
67	1K260-232	275	1K620-122	441	1K208-072
74	1K120-195	281	1K116-257	442	1K600-537
95	1K230-155	282	1K116-258	443	1K370-966-1
108	1K240-367-3	283	1K116-259	444	1K130-288-1
127	1K230-158	284	1K116-218	445	1K220-201-1
129	1K475-283-1	285	1K116-261	446	1K220-041
131	1K480-024	304	1K225-100	451	1K208-073
133	1K230-159	306	1K225-101-2	452	1K208-074
134	1K120-078	310	1K225-102-2	453	1S758-009-1
135	1K230-160	321	1K610-733	455	1K116-248
136	1K230-161	323	1K314-230-1	456	1K680-474-1
142	1K240-368-2	337	1K233-052	469	1K467-042
143	1K610-700	351	1K230-065-1	470	1K146-082
153	1K240-369-1	378	1K225-103-1	471	1K404-071-1
154	1K240-370-4	382	1K130-248	472	1K240-468-1
156	1K600-440	387	1K120-225	473	1K123-046
174	1K165-095	388	1K130-249	475	1K123-104-1
155	1K625-054			476	1K620-124
				477	1K240-461
				478	1K240-462

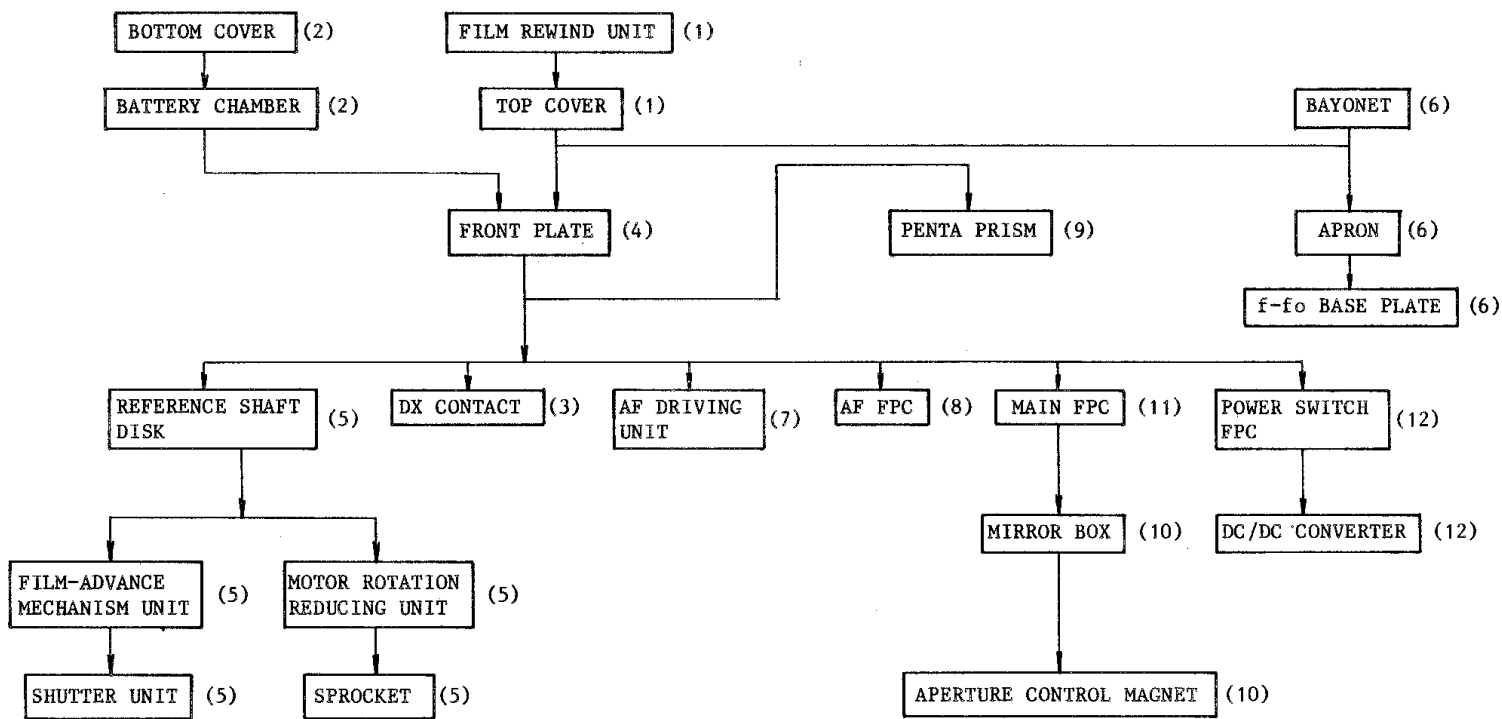
部品对照表

Parts Number Reference Table

補助番号 Auxiliary Number	部 品 番 号 Part Number	補助番号 Auxiliary Number	部 品 番 号 Part Number	補助番号 Auxiliary Number	部 品 番 号 Part Number
479	1K370-938	631	1K115-288-1	760	1K130-292
484	1K225-112	662	1K600-446-1	761	1K050-022
485	1K630-299	663	1K110-200	761	1K050-112
495	1K225-139	664	1K110-215	761	1K050-144
501	1K370-822	668	1K120-206	772	1K078-003
502	1K220-089	673	1K620-126	801	A2-20040FC
511	1K201-059	674	1K116-224	802	A1-17025FA
512	1K470-050	680	1K116-239-1	803	A1-17040FB
513	1K630-297	681	1K115-660-1	804	B1-17030FA
514	1K010-059	683	1K116-124	805	A1-14030FS
515	1K208-059	684	1K680-597	806	A1-20050FS
518	1K600-490	685	1K116-166	808	A2-17022FC
519	1K220-090-1	686	1K240-452	809	B1-17035FB
521	1K201-060	701	1K010-060	811	B1-17040FB
526	1K206-040	702	1K010-061	812	A1-14014FB
531	1K208-060	703	1K123-091	813	B1-17055FB
532	1K115-981-1	704	1K010-062	814	B1-20030FB
533	1K008-019	705	1K010-063	815	A1-20035FB
534	1K116-193	706	1K120-210	817	A1-17045FB
535	1K220-172	707	1K130-252	818	H1-17035FA
544	1K475-284	708	1K130-258	819	H2-17035FA
546	1K060-035	709	1K120-009	820	B1-14015FA
556	1K120-042	710	1K010-002-1	824	G1-17035FS
561	1K201-062-1	711	1K050-048	825	A1-17045FS
562	1K146-081	711	1K050-029	833	B1-14030FD
564	1K240-330	712	1K130-289	837	A1-17020FS
568	1K370-824	713	1K165-106-1	839	B1-17025FA
569	1K050-173	714	1K120-015	842	G1-14020FB
571	1K406-013	715	1K130-290	843	K1-14020FB
573	1K240-118-4	716	1K640-638	845	B1-14014FB
576	1K610-384-1	717	1K165-107-1	851	B1-17016FB
577	1K120-205	718	1K650-012	855	G1-17020FA
581	1K208-062	751	S1-01200SX	859	A2-17025FC
582	1K206-041	754	S1-01500SX	860	A1-14020FA
583	1K610-669	755	S1-00800SX		
607	1K115-983-1	756	S1-02000SX		
628	1K115-984	757	1K060-003		

1. DISASSEMBLING OUTLINE

Note: Numbers in parentheses refer to disassembling procedures.



部品对照表

Parts Number Reference Table

補助番号 Auxiliary Number	部 品 番 号 Part Number	補助番号 Auxiliary Number	部 品 番 号 Part Number	補助番号 Auxiliary Number	部 品 番 号 Part Number
906	1K630-365	G1	1G571-001	B23	1B990-028-3
914	1K260-255	G3	1G950-043	B23	1B999-074
915	1K130-285	G4	1G415-008-1	B26	1B999-072
916	1K260-256	G5	1G131-002-1	B32	1B260-028-1
921	1K600-533	G7	1G138-001-1	B41	1B990-067
926	1K370-962			B51	1B001-645
928	1K230-193			B52	1B314-131
929	1K116-241-1			B71	1B260-029
930	1K240-465-1			B72	1B370-013
933	1K165-105			B81	1B990-035-1
935	1K314-262-1	MB2	1K240-375	B83	1B314-122
938	1K130-286	MB12	1K380-040-1	B121	1B990-036-2
944	1K230-195	MB13	1K116-083	B158	1B990-037-1
945	1K130-287	MB14	1K233-056	B165	1B640-031
946	1K300-067	MB32	1K380-042-1	B202	1B990-038-3
948	1K206-044	MB310	1K380-043	B211	1B680-044
949	1K116-242			B231	1B001-085
950	1K116-243			B251	1B670-064-6
951	1K120-226			B301	1B990-041-2
953	S3-01500FY			B319	1B240-034
956	1K123-103			B324	1B310-042-2
984	1K600-534			B341	1B990-046-2
985	1K050-246			B345	1B260-031-1
988	1K050-065			B349	1B277-005
1001	1S705-043			B353	1B277-012
1003	1S705-042-2			B355	1B001-572-1
1004	1S705-045			B420	1B680-038-1
1005	1S705-046			B467	1B630-032
1021	1S050-006			B474	1B610-035-1
1023	1S542-003			B482	1B640-037
1025	1S260-025-1			B505	1B060-282-3
1026	1S260-028			B542	1B640-029-1
1028	1S260-027			B549	1B990-050-1
1133	1S322-064			B550	1B640-032
				B558	1B990-051-1

Parts Number Reference Table

[illegible]

PARTS LIST

Contents

[1]	PARTS LIST	P1
[2]	SUBASSEMBLY LIST	P29

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
* 1K008-019	リリース鉤軸 Release button shaft	1	1B990-028-3	12	○△	F-301	5
* 1K010-002-1	Screw	4		8	○	F-301	10
* 1K010-059	Tダイヤルビス Screw, shutter dial	1	1B990-028-3	12	○△	F-301	10
* 1K010-060	減速ギア基板ビス Screw, reduction gear base plate	3	1B990-067	2	○△	F-301	10
* 1K010-061	上地基板ビス Screw, film-advance lever	1		10	○	F-301	10
* 1K010-062	音消しレバービス Screw, rewind lock lever	1	1B990-028-3	12	○△	F-301	10
* 1K010-063	Rロックレバービス Screw, rewind lock lever	1	1B990-028-3	12	○△	F-301	10
* 1K044-003	耳環圧入ピン Press-fit pin, eyelet	2	1B999-072	4	○△	F-301	10
* 1K050-022	チリトリガタ取りワッシャー B Washer, mirror holder 0.8 × 1.9 × 0.2	0~1	1B999-072	7	○△	F-301	10
* 1K050-029	46.5 調整用ワッシャー A Washer A 2.1 × 3.8 × 0.05	0~4		8	○	F-301	10
* 1K050-030	46.5 調整用ワッシャー B Washer B 2.1 × 3.8 × 0.06	0~4		8	○	F-301	10
* 1K050-031	46.5 調整用ワッシャー C Washer C 2.1 × 3.8 × 0.07	0~4		8	○	F-301	10
* 1K050-032	46.5 調整用ワッシャー D Washer D 2.1 × 3.8 × 0.08	0~4		8	○	F-301	10

部 品 表 Parts list

FAA 20051 — R. 3176. A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
*1K050-033	46.5 調整用ワッシャー E Washer E 2.1×3.8×0.09	0~4		8	○	F-301	10
*1K050-034	46.5 調整用ワッシャー F Washer F 2.1×3.8×0.1	0~4		8	○	F-301	10
*1K050-035	46.5 調整用ワッシャー G Washer G 2.1×3.8×0.11	0~4		8	○	F-301	10
*1K050-036	46.5 調整用ワッシャー H Washer H 2.1×3.8×0.12	0~4		8	○	F-301	10
*1K050-037	46.5 調整用ワッシャー I Washer I 2.1×3.8×0.2	0~4		8	○	F-301	10
*1K050-038	46.5 調整用ワッシャー J Washer J 2.1×3.8×0.3	0~4		8	○	F-301	10
*1K050-039	46.5 調整用ワッシャー K Washer K 2.1×3.8×0.4	0~4		8	○	F-301	10
*1K050-040	46.5 調整用ワッシャー L Washer L 2.1×3.8×0.5	0~4		8	○	F-301	10
*1K050-041	46.5 調整用ワッシャー M Washer M 2.1×3.8×0.6	0~4		8	○	F-301	10
*1K050-042	46.5 調整用ワッシャー N Washer N 2.1×3.8×0.7	0~4		8	○	F-301	10
*1K050-043	46.5 調整用ワッシャー O Washer O 2.1×3.8×0.8	0~4		8	○	F-301	10
*1K050-044	46.5 調整用ワッシャー P Washer P 2.1×3.8×0.9	0~4		8	○	F-301	10
*1K050-045-1 (1K050-045)	46.5 調整用ワッシャー Q Washer Q 2.1×3.8×1	0~4		8	○	F-301	10

部 品 表 Parts list

F A A 20051 — R. 3176. A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
* 1K050-046-1 (1K050-046)	46.5 調整ワッシャー R Washer R 2.1×3.8×1.1	0~4		8	○	F-301	10
* 1K050-047-1 (1K050-047)	46.5 調整ワッシャー S Washer S 2.1×3.8×1.2	0~4		8	○	F-301	10
* 1K050-048	46.5 調整ワッシャー T Washer T 2.1×3.8×0.03	0~4		8	○	F-301	10
* 1K050-065	座 金 Washer	1	1B999-072		○△	FG	10
* 1K050-112	チリトリガタ取りワッシャー C Washer, mirror holder 0.8×1.9×0.3	0~1	1B999-072	7	○△	F-301	5
* 1K050-144	チリトリガタ取りワッシャー A Washer, mirror holder 0.8×1.9×0.1	0~1	1B999-072	7	○△	F-301	10
* 1K050-173	巻戻しノブ座金 Washer, rewind knob 3.1×7×0.7	1		11	○	F-301	10
* 1K050-214	スプロケットワッシャー Sprocket washer 3.3×4.8×0.5	1		3	○	F-301	5
1K050-246	基板取付座 B Mount B	1	1B999-072	5	○△		10
* 1K060-003	レンズ着脱Eリング E-ring	2	1B999-072	5	○△	F-301	10
* 1K060-035	I S O内環止メ輪 Stopper ring	1		11	○	F-301	5
* 1K078-003	Tダイヤル音消しクリックボール Click ball, shutter dial	2	1B990-028-3	12	○△	F-301	10
* 1K080-005	三角環飾りモールド Neckstrap protector	2		4	○	F-301	10

部 品 表 Parts list

F A A 20051 — R 3176 A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
* 1K100-035-1 (1K100-035)	三角環 Neckstrap ring	2		4	○	F-301	5
* 1K110-197-1 (1K110-197)	接眼窓モールド遮光ゴム Light-tight rubber, eyepiece	1		12	○	F-301	5
* 1K110-200	メインフレキ圧接下ゴム Press-contact rubber	1		9	○	F-301	5
* 1K110-215	メインフレキ圧接上ゴム Press-contact rubber	1	1B990-036-2 1B990-062-2	10	○△	F-301	5
* 1K115-288-1	裏蓋カウンター遮光紙 Light baffle, camer back counter	1	1B001-602-7	14	○△	F-301	50
* 1K115-660-1 (1K115-660)	アセテートクロステープ Tape	4	1B999-072	5, 8, 9	○△	F-301	10
* 1K115-974-1	裏蓋溝上モルト A Sponge strip A, camera back(top)	1		1	○	F-301	5
* 1K115-975-1	裏蓋溝上モルト B Sponge strip B, camera back (top)	1		1	○	F-301	5
* 1K115-976-1	裏蓋溝下モルト Sponge strip, camera back (bottom)	1		1	○	F-301	5
* 1K115-981-1	レリーズ釦飾り板 Cover plate, shutter release button	1		12	○	F-301	5
* 1K115-983-1	裏蓋窓モルト Sponge strip, camera back	1	1B001-602-7	14	○△	F-301	5
* 1K115-984	裏蓋遮光モルト A Right-tight sponge A, camera back	1	1B001-602-7	14	○△	F-301	5
* 1K115-993-1	フィルム先端指標 Film leader index	1		1	○	F-301	5

部 品 表 Parts list

F A A 20051 — R. 3176. A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図書 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
* 1K116-017-1 (1K116-017)	接眼マスク Eyepiece mask	1		8	○	F-301	5
* 1K116-025	底カバーモルト Sponge strip, bottom cover	1	1B990-029-2	13	○△	F-301	5
* 1K116-124	両面テープ Adhesive double coated tape	3	1S007-080	8	○△	F-301	1
* 1K116-166	AE LED 圧接ゴム Press contact rubber	1		9	○	F-301	5
* 1K116-193	リリース釘飾り板テープ Adhesive double coated tape	1		12	○	F-301	5
* 1K116-218	前カバーゴムB用テープb Tape, front cover	1		9	○	F-301	5
1K116-223	ペンタ押えシート Pentaprism seat	1		8	○		5
1K116-224	AF フレキ圧接ゴム Press-contact rubber, AF FPC	2		9	○		5
1K116-239-1	上地フレキグリップ部絶縁テープ Tape, power sw FPC	2	1B999-072	1,10	○△		5
1K116-241-1	防振ゴム Rubber, vibration isolation	1	1B999-072	5	○△		5
1K116-242	S/C 飾り板 Plate, S/C lever	1		4	○		5
1K116-243	S/C 銘 板 Name plate, S/C lever	1		4	○		5
1K116-245	ミラーアップ受モルト A Sponge strip A, mirror	1	1B999-072	8	○△		5

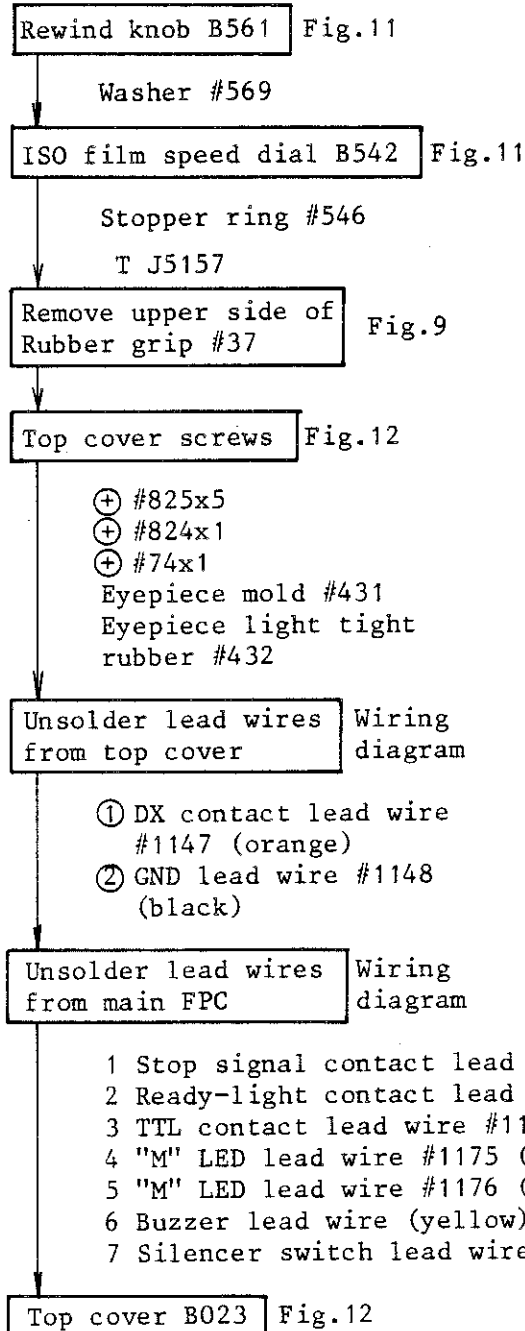
部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
1K116-248	AFL フレキSW部接着テープ Tape, AF lock sw	1	1B999-072	5	○△		5
1K116-249	ミラーアップ受モルトB Sponge strip B, mirror	1	1B999-072	8	○△		5
1K116-257	前カバーゴムA用テープ a Tape a, front cover rubber a	1		9	○		5
1K116-258	前カバーゴムA用テープ b Tape b, front cover rubber b	1		9	○		5
1K116-259	前カバーゴムB用テープ a Tape a, front cover rubber a	1		9	○		5
1K116-261	グリップカバー用接着テープ Tape, grip cover	1		9	○		5
* 1K120-009	fo ばねビス Screw, fo spring	2	1B999-072	4	○△	F-301	10
* 1K120-015	基板連結ビス Screw, AF motor unit	2	1B990-066 1B999-072	5	○△	FE2	10
* 1K120-042	ISO ロック板ビス Screw, ISO lock plate	2		11	○	F-301	10
* 1K120-078	カウンタービス Frame counte screw	1	1B990-036-2 1B990-062-2	10	○△	F-301	10
* 1K120-195	基準軸ビス 上カバービスC Screw C, top cover	2		3	○	F-301	10
* 1K120-205	シュービス Screw, accessory shoe	4	1B990-028-3	12	○△	F-301	10
1K120-206	圧接ビス Screw, press contact	2		9	○		10

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
* 1K120-210	f 基板ビス Screw	2	1B990-046-2 1B999-072	6	○△		10
* 1K120-223	フィルムガイドピン Screw, film guide	1		1	○	F-301	10
* 1K120-224	フィルムガイド板座ビス Screw, film guide	2		1	○	F-301	10
* 1K120-225 (1K120-081)	P. SW プリント板ビス Screw, program switch printed circuit	1	1B999-072	6	○△	F-301	10
1K120-226	S/C ビス Screw S/C lever	1	1B999-072	4	○△		10
* 1K123-046	バヨネットビス A Screw A, bayonet ring	4	1B999-072	4	○△	F-301	10
* 1K123-091	電源 SW, レリーズ SW ビス Screw, power switch and release switch	3	1B990-062-2	10	○△	F-301	10
1K123-092-1	DB 識別ビス Screw, DB contact	1		1	○		5
1K123-093	TCL ビス Screw, TCL module	3		6	○		5
* 1K123-094	底カバー着脱ピン Bottom cover release pin	1		13	○	F-301	5
1K123-103	A/M SW ビン Screw, A/M switch	1	1B999-072	5	○△		
1K123-104-1	バヨネットビス B Screw B, bayonet ring	1	1B999-072	4	○△		
* 1K130-248	P. SW プリント板止めビス A Retaining screw A, program switch printed circuit	1	1B999-072	6	○△	F-301	10

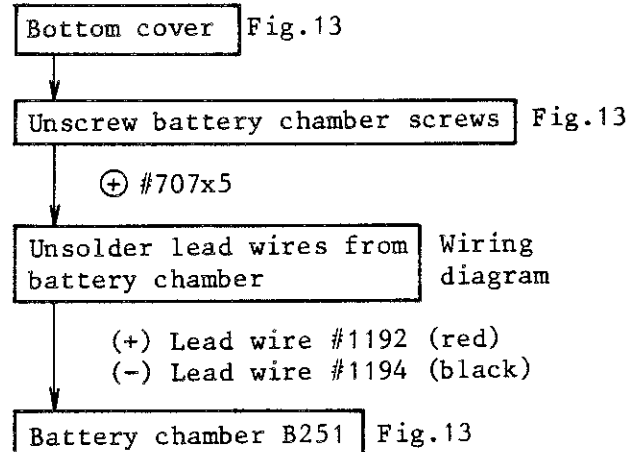
2. DISASSEMBLING PROCEDURES

- Note: 1) Disassembling should be started after batteries are removed.
- 2) Figure numbers refer to figures in reassembling procedures.
- 3) Be sure to learn how the lead wires are arranged.
- 4) As ICs are easily affected by static electricity, be sure to ground the camera when soldering or handling.

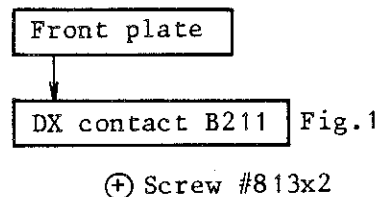
(1) Top cover



(2) Bottom cover



(3) DX contact



部 品 表 Parts list

F A A 20051 — R. 3176. A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図書 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
* 1K130-249	L基板止めビス A Retaining screw A, printed circuit	1	1B999-072	7	○△	F-301	10
* 1K130-252	電池室ビス Screw, battery chamber	1		13	○	F-301	10
* 1K130-258	モータービス Screw, motor	2	1B990-067	2	○△	F-301	10
1K130-285	ギヤC軸 Gear C shaft	1	1B999-072	5	○△		
1K130-286	第1 レバー 基板ビス Screw	1	1B999-072	5	○△		
1K130-287	S/C 軸 S/C shaft	1	1B999-072	4	○△		
1K130-288-1	レンズ着脱鉤軸 Axle, lens release button	1	1B999-072	5	○△		
1K130-289	モーター基板ビス Screw	2	1B999-072	5	○△		
* 1K130-292	電池室ビス Screw, battery chamber	4		13	○	F-301	
* 1K146-081	巻戻しノブビス Rewind knob screw	1	1B990-052	11	○△	F-301	5
* 1K146-082	リモートコネクター止めビス Retaining screw, remote	1	1B999-072	4	○△	F-301	5
* 1K165-095	カウンター S W絶縁ワッシャー Insulating washer, frame counter switch (t=0.1)	1	1B990-062-2	10	○△	F-301	5
1K165-105	ギヤ止めワッシャー Gear, retaining washer	1	1B999-072	5	○△		5

部 品 表 Parts list

F A A 20051 — R. 3176. A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
1K165-106-1	モーター基板ビス座 Washer, motor base plate	1	1B999-072	5	○△		5
* 1K201-059	T ダイアル Shutter dial	1	1B990-028-3	12	○△	F-301	5
* 1K201-060	S/C 切換ダイアル S/C selector ring	1	1B990-028-2	12	○△	F-301	5
* 1K201-062-1	巻戻しノブ Rewind knob	1	1B990-052	11	○△	F-301	5
* 1K206-040	音消しレバー Silencer lever	1	1B990-028-3	12	○△	F-301	5
* 1K206-041	R ロックレバー Rewind lock lever	1	1B990-028-3	12	○△	F-301	5
1K206-044	S/C レバー S/C lever	1	1B999-072	4	○△		5
* 1K208-059	T ダイアルロック解除釦 Release button, shutter dial lock	1	1B990-028-3	12	○△	F-301	5
* 1K208-060	リリース釦 Shutter release button	1	1B990-028-3	12	○△	F-301	5
* 1K208-062	R 釦 Rewind button	1	1B990-028-3	12	○△	F-301	5
1K208-072	レンズ着脱釦 Lens release button	1	1B999-072	5	○△		5
1K208-073	AEL 釦 Button, AE memory lock	1	1B999-072	4	○△		5
1K208-074	AFL 釦 Button, AF lock	1	1B999-072	4	○△		5

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
* 1K220-038-1	裏蓋開閉キーばね Spring, camera back O/C key	1		1	○	F-301	10
* 1K220-041	レンズ着脱ピンばね Spring, lens release pin	1	1B999-072	5	○△	F-301	10
* 1K220-089	EE 識別ピンばね Spring, EE lens pin	1	1B999-072	4	○△	F-301	10
* 1K220-090-1	T ダイヤルクリックばね Click spring, shutter dial	1	1B990-028-3	12	○△	F-301	10
* 1K220-166-1	スプロケットばね Sprocket spring	1		3	○	F-301	5
* 1K220-172	リリース釦ばね Spring, shutter release button	1	1B990-028-3	12	○△	F-301	5
1K220-173	TCL ばね TCL spring	3		6	○		10
1K220-201-1	レンズ着脱ボタン軸ばね Spring, lens release button axle	1	1B999-072	5	○△		10
1K225-100	ミラーアップばね Mirror-up spring	1	1B990-041-2 1B999-072	7	○△		5
* 1K225-101-2 (1K225-101)	絞りレバー戻しばね Aperture lever spring	1	1B990-041-2 1B999-072	7	○△	F-301	5
* 1K225-102-2 (1K225-102)	絞りレバー駆動ばね Aperture lever actuating spring	1	1B990-041-2	7	○△	F-301	5
* 1K225-103-1	絞り制御リセット板コイルばね Coil spring, aperture control reset plate	1	1B990-046-2 1B999-072	6	○△	F-301	5
* 1K225-112	運動環ばね Spring, aperture coupling ring	1	1B640-037 1B999-072	4	○△	F-301	5

部 品 表 Parts list

FAA 20051 -- R.3176. A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
*1K225-139	f _o ばね f _o spring	1	1B999-072	4	○△	F-301	5
*1K230-065-1 (1K230-065)	絞り制御ギヤ Bばね Spring, aperture control gear B	1	1B990-046-2 1B999-072	6	○△	F-301	10
*1K230-155	巻上制限係止レバーばね Spring, film-advance lath lever	1	1B990-035-1	3	○△	F-301	10
*1K230-158	巻上制限レバーばね Spring, film-advance stopper lever	1	1B990-036-2 1B990-062-2	10	○△	F-301	5
*1K230-159	カウンターばね Frame counter spring	1	1B990-036-2 1B990-062-2	10	○△	F-301	5
*1K230-160	巻上制限ワイヤー SW Wire switch, film-advance stopper	1	1B990-062-2	10	○△	F-301	5
*1K230-161	カウンターワイヤー SW Wire switch, frame counter	1	1B990-062-2	10	○△	F-301	5
1K230-193	第2 レバーばね Spring, 2nd lever	1	1B999-072	5	○△		5
1K230-195	S/C 接点板ばね Spring, S/C contact	1	1B999-072	4	○△		5
1K230-196	主ミラーダウンばね Main spring, mirror down	1	1B999-072	7	○△		5
1K230-197	Sチャージレバーばね Spring, shutter charge lever	1	1B001-645 1B990-067	2	○△		5
*1K233-050	ペンタ押えばね Retaining spring pentaprism	1		8	○	F-301	5
1K233-052	サブミラーばね Spring, sub mirror	1	1B990-059-1 1B999-072	7	○△		5

部 品 表 Parts list

F F A 20051 — R 3176 A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
* 1K233-056	線ばね Spring	1	1B990-029-2	13	○△	F-301	5
* 1K240-118-4 (1K240-118-3)	シューばね Spring, accessory shoe	1	1B990-028-3	12	○△	F-301	10
* 1K240-330	巻戻しクランクレバーばね Spring, rewind crank	1	1B990-052	11	○△	F-301	10
* 1K240-367-3	カウンター送りギヤばね Spring, frame counter advance gear	1	1B990-035-1	3	○△	F-301	5
* 1K240-368-2	AR ばね AR spring	1		10	○	F-301	5
* 1K240-369-1	リリース SW Release switch	1	1B990-062-2	10	○△	F-301	5
* 1K240-370-4	半押し SW Power hold switch	1	1B990-062-2	10	○△	F-301	5
* 1K240-373	パトロネ保持ばね Retaining spring, patorone	1		1	○	F-301	5
* 1K240-375	電池ホルダーばね B Spring, battery holder	2	1B990-039		○△	F-301	5
* 1K240-452	AE LED 圧接ばね Spring, press contact AE LED	1		9	○	F-301	5
1K240-461	スクリーン枠係止板 Holding plate	1		8	○		5
1K240-462	スクリーン枠支持板 Screen frame, supporting plate	1		8	○		5
1K240-465-1	相対距離信号押えばね Spring relative distance signal	1	1B990-066 1B999-072	5	○△		5

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
1K240-468-1	バヨネットばね Spring, bayonet ring	1	1B999-072	4	○△		5
* 1K260-232	スプロケットギヤ Sprocket gear	1		3	○	F-301	5
1K260-255	ギヤC Gear C	1	1B999-072	5	○△		5
1K260-256	ギヤB Gear B	1	1B999-072	5	○△		5
* 1K275-044-1 (1K275-044)	スプール Spool	1	1B990-067	2	○△	F-301	5
* 1K275-045	スプロケット Sprocket	1		3	○	F-301	5
* 1K277-015	減速ギヤB Reducing gear B	1	1B990-067	2	○△	F-301	5
* 1K277-016	減速ギヤC Reducing gear C	1	1B990-067	2	○△	F-301	5
* 1K277-017	減速ギヤD Reducing gear D	1	1B990-067	2	○△	F-301	5
* 1K277-018	減速ギヤE Reducing gear E	1	1B990-067	2	○△	F-301	5
1K300-067	S/C 切換カム S/C exchanging cam	1	1B999-072	4	○△		
* 1K314-224-1	裏蓋開閉キー Camera back O/C key	1		1	○	F-301	5
* 1K314-230-1	絞り制御連結レバー Aperture control coupling lever	1	1B999-072	7	○△	F-301	5

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
1K314-262-1	連動レバー Coupling lever	1	1B001-642-1	5	○△		5
* 1K340-124-1	スプロケット下軸受 Bearing, sproket lower shaft	1		3	○	F-301	5
* 1K370-822	E E 識別ピン E E lens pin	1	1B999-072	4	○△	F-301	5
* 1K370-824	巻戻しフォーク軸 Rewind folk shaft	1	1B990-051-1	11	○△	F-301	5
* 1K370-930	スプロケット軸 Sprocket shaft	1		3	○	F-301	5
1K370-938	スクリーン枠支持軸 Shaft, focusing screen frame	1		8	○		5
1K370-962	第2レバー軸 2 nd lever shaft	1	1B999-072	5	○△		5
1K370-966-1	レンズ着脱ピン Lens release pin	1	1B999-072	5	○△		
* 1K380-040-1 (1K380-040)	底カバービス Bottom cover screw	1	1B990-029-2		○△	F-301	5
1K380-042-1	ローレットネジ Screw	1	1B999-077	13	○△		5
1K380-043	三脚雄ネジ Screw	1		13	○		5
1K404-071-1	バヨネット Bayonet ring	1	1B999-072	4	○△		5
* 1K406-013	シュー Accessory shoe	1	1B990-028-3	12	○△	F-301	5

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
* 1K467-042	リモートコネクターキャップ Remote connector cap	1		4	○	F-301	5
* 1K467-091	接眼キャップ Eyepiece cap	1		12	○	F-301	5
* 1K470-047	視野枠 Viewfield frame	1		8	○	F-301	5
1K470-050	T ダイアル目盛板 Shutter speeds indicator	1	1B990-028-3	12	○△		5
* 1K475-283-1	カウンターラチェット Frame counter ratchet	1	1B990-036-2 1B990-062-2	10	○△	F-301	5
* 1K475-284	ISO 上表示板 ISO dial, upper	1		11	○	F-301	5
* 1K480-024	カウンター指標板 Frame counter index	1	1B990-036-2 1B990-062-2	10	○△	F-301	5
* 1K600-440	リリースSW押え板 Release switch retainer	1	1B990-062-2	10	○△	F-301	5
* 1K600-446-1	メインフレキ圧接板 Press-contact plate, main FPC	1		9	○	F-301	5
1K600-490	T ダイアルクリック板 Click plate, shutter dial	1	1B990-028-3	12	○△		5
1K600-533	ギヤ押え板 Gear retaining plate	1	1B999-072	5	○△		5
1K600-534	基板取付座 A Mount A	1	1B999-072	5	○△		5
1K600-536	前カバーゴム A Rubber A, front cover	1		9	○		5

部 品 表 Parts list

FAA 20051 - R. 3176.A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
1K600-537	レンズ着脱板 Lens release plate	1	1B999-072	5	○△		5
* 1K610-384-1 (1K610-384)	シュー裏打ち板 Plate, accessory shoe (bottom)	1	1B990-028-3	12	○△	FG FG-20	
* 1K610-657-1	スプロカバー板 Sproket cover	1		3	○	F-301	5
* 1K610-658-1	裏蓋ヒンジ板 Camera back hinge	1		1	○	F-301	5
* 1K610-659	DB 接点フレキ押え板 Retainer, data back contact	1		1	○	F-301	5
* 1K610-665-1	ミラー後部遮光板 Light baffle plate, mirror	1		7	○	F-301	5
* 1K610-669	R ロック板 Rewind lock plate	1	1B990-028-3	12	○△	F-301	5
* 1K610-700	A R ばね押え A R spring retainer	1		10	○	F-301	5
* 1K610-714-2	AE SPD シールド板 AE SPD shield	1		8	○	F-301	5
* 1K610-733	ミラー駆動レバーガタ防止板 Holding plate, mirror actuating lever	1	1B999-072	7	○△	F-301	5
1K610-781	ペンタ押え板 Pentaprism retaining plate	1		8	○		5
1K610-794	AE SPD 基板押えばね Spring, AE SPD base plate	1		8	○		5
* 1K620-122	三脚基板 Tripod base plate	1		13	○	F-301	5

部 品 表 Parts list

F A A 20051 -- R. 3176.A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
1K620-124	スクリーン枠 Frame, focusing screen	1		8	○		5
1K620-126	AF フレキ圧接板 Press-contact plate, AF FPC	1		9	○		5
* 1K625-054	半押し S W 絶縁座 Insulating plate, power hold switch	1	1B990-062-2	10	○△	F-301	5
* 1K630-297	T ダイアル軸 Axle, shutter dial	1	1B990-028-3	12	○△	F-301	5
* 1K630-299	運動環ばねローラー Roller, aperture coupling ring spring	1	1B999-072	4	○△	F-301	5
1K630-365	相対距離信号羽根 Blade, relative distance signal	1	1B990-066 1B999-072	5	○△		5
* 1K640-529-1	スプール上座 Spool upper cover	1	1B990-067	2	○△	F-301	5
1K640-638	ワッシャ Washer	1	1B999-072	5	○△		
1K650-012	偏心環 Eccentric ring	1	1B999-072	5	○△		
* 1K680-468	グリップゴム Rubber, grip	1		9	○	F-301	5
* 1K680-473	D B 接点座 Base, data back contact	1		1	○	F-301	5
* 1K680-474-1	セルフ窓 Self-timer window	1		9	○	F-301	5
* 1K680-482	裏蓋開閉キーカバー Cover, camera back O/C key	1		1	○	F-301	5

(4) Front plate

Unsolder lead wires from main FPC

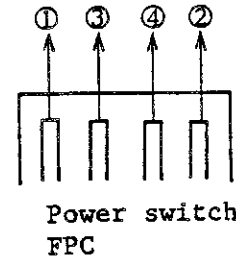
Wiring diagram

1 DX lead wire #1162 (black)	7 Shutter lead wire (ATO) #1145 (yellow)
2 -ditto- #1167 (pink)	8 -ditto- (GND) #1142 (black)
3 -ditto- #1166 (green)	9 -ditto- (IS) #1146 (purple)
4 -ditto- #1165 (brown)	10 -ditto- (1st Mg) #1143 (gray)
5 -ditto- #1164 (orange)	11 -ditto- (V Bat) #1141 (red)
6 -ditto- #1163 (blue)	12 -ditto- (2nd Mg) #1144 (green)

Unsolder lead wires from power switch FPC

Wiring diagram

- 1 Motor lead wire (red)
- 2 -ditto- (blue)
- 3 Power source lead wire #1193 (black)
- 4 -ditto- #1191 (red)



Unsolder four lead wires from power switch FPC and data back FPC

Wiring diagram

ISO dial lock button B549 Fig.11

- ⊕ Screw #556x2
- ISO film speed dial B542
- * Put aside ISO base plate from the rewind shaft retainer

Reatherette Fig.9

- Grip rubber #37
- Front cover rubber A #38
- Front rubber cover B #39

Unscrew screws of film-advance lever unit

Fig.10

- ⊕ Screw #819x1
- ⊕ Screw #818x1
- ⊕ Screw #702x1

Put Sprocket shaft #62 downward Fig.3

Lift Film-advance lever unit B121 up

Fig.10

S/C lever plate #949 Fig.4

- ⊖ S/C screw #951
- S/C lever #948

S/C lever name plate #950 Fig.4

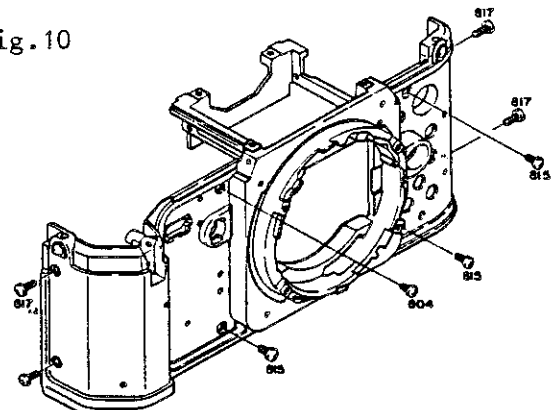


Unscrew screws of front plate

Fig.9

- ⊕ Screw #817x4
- ⊕ Screw #815x3
- ⊕ Screw #804x1

Front plate



F A A 20051 — R. 3176. A

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部 品 表 Parts list

F A A 20051 — R. 3176.A

部 品 番 号 Part No.	名 称 Name	1台分 個数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks
A1-14014FB	Screw	1	1B990-035	3	○△	
A1-14020FA	Screw	2		9	○	
A1-14030FS	Screw	1		1	○	
A1-17020FS	Screw	1	1B999-072	4	○△	
A1-17025FA	Screw	6	1B999-072	1, 4, 5	○△	
A1-17040FB	Screw	2		1	○	
A1-17045FB	Screw	4		9	○	
A1-17045FS	Screw	5		12	○	
A1-20035FB	Screw	5		1, 9	○	
A1-20050FS	Screw	1		1	○	
A2-17022FC	Screw	2		1	○	

部 品 表 Parts list

F A A 20051 — R. 3176. A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図書 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks
A2-17025FC	Screw	2		3	○	
A2-20040FC	Screw	4		13	○	
B1-14014FB	Screw	1	1B990-066 1B999-071 1B999-072	5	○△	
B1-14015FA	Screw	10	1B990-062-2 1B990-066 1B999-072	5,6 9,10	○△	
B1-14030FD	Screw	2	1B999-072	5	○△	
B1-17016FB	Screw	3	1B990-046-2 1B999-072	6,7	○△	
B1-17025FA	Screw	7	1B999-072	9,7	○△	
B1-17030FA	Screw	1		9	○	
B1-17035FB	Screw	4	1B999-072	2,7	○△	
B1-17040FB	Screw	8		3,8	○	
B1-17055FB	Screw	3	1B999-072	1,7	○△	
B1-20030FB	Screw	3		11	○	

部 品 表 Parts list

F A A 20051 — R. 3176. A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks
G1-14020FB	Screw	2		8	○	
G1-17020FA	Screw	2	1B990-028-3	12	○△	
G1-17035FS	Screw	1		12	○	
G2-17030FC	Screw	4	1B990-039		○△	
H1-17035FA	タップタイトネジ Self tapping screw	1		10	○	
H2-17035FA	タップタイトネジ Self tapping screw	1		10	○	
K1-14020FB	Screw	1		5	○	
S1-00800SX	E ring	4	1B990-064 1B060-283 1B999-071 1B999-072 1B990-066	4	○△	
S1-01200SX	E ring	8	1B001-645 1B060-283 1B260-028-1 1B990-046-2 1B990-067 1B990-066 1B990-028-3 1B999-072	2,6,5	○△	
S1-01500SX	E ring	2	1B310-042-2 1B999-072	7	○△	
S1-02000SX	E ring	3	1B990-062-2 1B001-642-3	10 12	○△	

F A A 20051 — R. 3176. A

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FAA 20051 — R.3176.A

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部 品 表 Parts list

FAA 20051 — R.3176. A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図書 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
*1S260-025-1	AE LED アレイ AE LED array	1		8, 9	○	F-301	5
*1S260-027	セルフ表示LED Self-timer LED	1	1B990-062-2	10	○△	F-301	5
1S260-028	LED アレイ LED array	1		8	○		5
1S322-064	ISO ダイアル基板 Base plate, ISO film speed	1		11	○		1
*1S542-003	圧電ブザー Buzzer	1	1B990-028-3	12	○△	F-301	5
*1S705-042-2	DB FPC Data back FPC	1		1	○	F-301	5
1S705-046	フレキシブルプリント板 (レンズ接点 FPC) Lens contact FPC	1	1B999-072	5	○△		1
*1S727-006	ペンタ絶縁シート Insulating sheet pentaprism	1		8	○	F-301	5
1S758-009-1	導電ゴム	1	1B999-072	4	○△		
*1S810-571	リード線 (赤) $\ell = 105$ Lead wire (Red)	2	1B990-028-3		×	W-0065 RE	
*1S810-572	リード線 (黒) $\ell = 100$ Lead wire (Black)	1			×	W-0065 BK	
*1S810-573	リード線 (灰) $\ell = 100$ Lead wire (Gray)	1			×	W-0065 GY	
*1S810-574	リード線 (緑) $\ell = 100$ Lead wire (Green)	1			×	W-0056 GN	
1S810-409	リード線 (赤) $\ell = 30$ Lead wire (Red)	1			×	W-0056 RE	

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks
*1S810-575	リード線 (黄) Lead wire (Yellow) $\ell = 100$	1			×	W-0056YE
*1S810-576	リード線 (紫) Lead wire (Purple) $\ell = 90$	1			×	W-0056PU
*1S810-577	リード線 (橙) Lead wire (Orange) $\ell = 95$	1			×	W-0056OR
*1S810-578	リード線 (黒) Lead wire (Black) $\ell = 11$	1			×	W-0056BK
*1S810-579	リード線 (桃) Lead wire (Pink) $\ell = 75$	1	1B990-028-3		×	W-0056PK
*1S810-580	リード線 (茶) Lead wire (Brown) $\ell = 75$	1	1B990-028-3		×	W-0056BN
*1S810-581	リード線 (緑) Lead wire (Green) $\ell = 80$	1	1B990-028-3		×	W-0056GN
*1S810-582-1	リード線 (青) Lead wire (Blue) $\ell = 60$	1	1B060-282-2		×	W-0056BE
*1S810-585-1	リード線 (橙) Lead wire (Orange) $\ell = 25$	1			×	W-0056OR
*1S810-590-1	リード線 (黒) Lead wire (Black) $\ell = 65$	1	1B990-068		×	W-0056BK
*1S810-591-1	リード線 (青) Lead wire (Blue) $\ell = 45$	1	1B990-068		×	W-0056BE
*1S810-592-1	リード線 (橙) Lead wire (Orange) $\ell = 50$	1	1B990-068		×	W-0056OR
*1S810-593-1	リード線 (茶) Lead wire (Brown) $\ell = 55$	1	1B990-068		×	W-0056BN
1S810-586-1	リード線 (青) Lead wire (Blue) $\ell = 25$	1			×	W-0056BE

部 品 表 Parts list

F A A 20051 — R. 3176. A

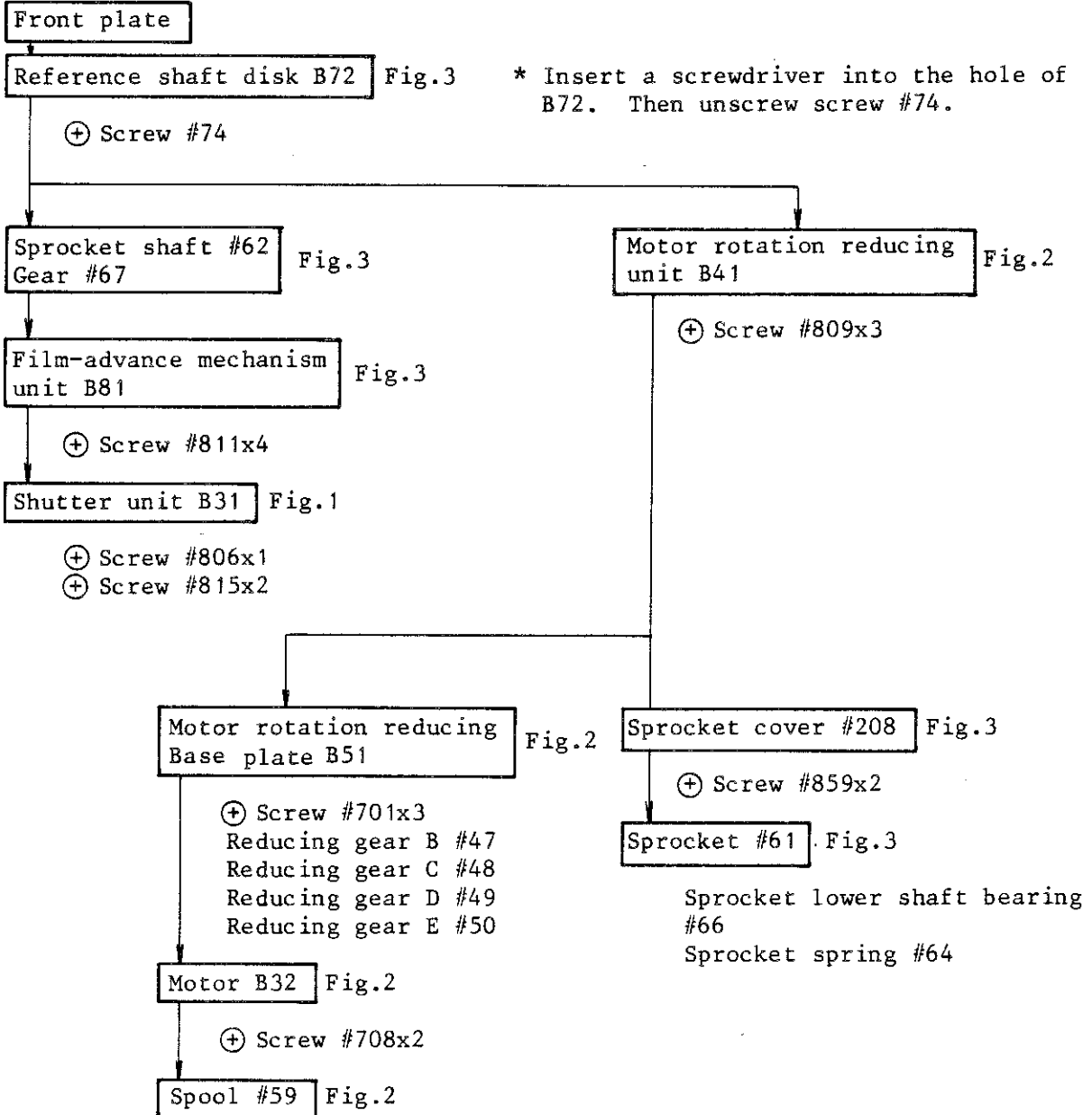
部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図書 Reference Fig. No.	販 充 区 分 Term of Sale	備 考 Remarks
*1S810-594-1	リード線 (緑) $\ell = 55$ Lead wire (Green)	1	1B990-068		×	W-0056GN
*1S810-595-1	リード線 (桃) $\ell = 60$ Lead wire (Pink)	1	1B990-068		×	W-0056PK
*1S810-598	リード線 (橙) $\ell = 30$ Lead wire (Orange)	1	1B999-072 1S007-086		×	W-0056OR
*1S810-599-1	リード線 (灰) $\ell = 45$ Lead wire (Gray)	1	1B680-038		×	W-0056BN
*1S810-600-1	リード線 (黄) $\ell = 50$ Lead wire (Yellow)	1	1B680-038		×	W-0056YE
*1S810-601	リード線 (黄) $\ell = 60$ Lead wire (Yellow)	1	1B990-028-3		×	W-0056YE
*1S810-602	リード線 (灰) $\ell = 60$ Lead wire (Gray)	1	1B990-028-3		×	W-0056GY
*1S810-605	リード線 (赤) $\ell = 80$ Lead wire (Red)	1			×	W-0080RE
*1S810-606	リード線 (赤) $\ell = 30$ Lead wire (Red)	1	1B670-064-5		×	OLD W-0080RE
*1S810-607	リード線 (黒) $\ell = 75$ Lead wire (Black)	1			×	W-0080BK
*1S810-608	リード線 (黒) $\ell = 30$ Lead wire (Black)	1	1B670-064-5		×	OLD W-0080BK
1S810-614	リード線 (緑) $\ell = 25$ Lead wire (Green)	1	1B990-046-2 1S007-087 1B999-072		×	W-0056GN
1S810-615	リード線 (白) $\ell = 30$ Lead wire (White)	1	1B990-046-2 1S007-087 1B999-072		×	W-0056WH

部 品 表 Parts list

FAA 20051 — R. 3176.A

部 品 番 号 Part No.	名 称 Name	1台分 個 数 Pcs. per Unit	部 組 品 番 号 Subassembly No.	参照図番 Reference Fig. No.	販 売 区 分 Term of Sale	備 考 Remarks	
1S810-753	リード線 (紫) Lead wire (Purple) $\ell = 30$	1	1B060-282 1B999-072		×	W-0056PU	
1S810-754	リード線 (黄) Lead wire (Yellow) $\ell = 30$	1	1B060-282 1B999-072		×	W-0056YE	
1S810-755	リード線 (茶) Lead wire (Brown) $\ell = 25$	1	1S045-050 1B999-072		×	W-0056BN	
1S810-756	リード線 (黒) Lead wire (Black) $\ell = 25$	1	1S045-050 1B999-072		×	W-0056BK	
1S810-757	リード線 (白) Lead wire (White) $\ell = 85$	1	1B060-285 1B999-072		×	W-0056WH	
1S810-758	リード線 (橙) Lead wire (Orange) $\ell = 85$	1	1B060-285 1B999-072		×	W-0056OR	
1S810-759	リード線 (黒) Lead wire (Black) $\ell = 85$	1	1B060-285 1B999-072		×	W-0056BK	
1S810-760	リード線 (橙) Lead wire (Orange) $\ell = 40$	1	1B999-072		×	W-0056OR	
1S810-761	リード線 (黒) Lead wire (Black) $\ell = 45$	1	1B999-072		×	W-0056BK	
1S810-762	リード線 (橙) Lead wire (Orange) $\ell = 75$	1	1S045-050 1B999-072		×	W-0056OR	
1S810-763	リード線 (桃) Lead wire (Pink) $\ell = 200$	1	1B999-072		×	W-0056PK	
1S810-764	リード線 (黒) Lead wire (Black) $\ell = 100$	1	1B999-072		×	W-0056BK	
1S810-765	リード線 (赤) Lead wire (Red) $\ell = 25$	1	1B060-284 1B999-066 1B999-072		×	W-0056RE	

(5) Shutter/Film-advance mechanism unit/Motor rotation mechanism unit



FAA 20051 — R. 3176. A

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部組品番号 Assembly No.	名 称 Name	1台分 個 数 Pcs.per Unit	大部組品番号 Main Assembly No	参照図番 Figure	備 考 Remarks	
*1B001-085	吊り環 Eyelet	2	1B999-072	4	F-301	10
*1B001-572-1 (1B001-572)	絞り制御Mg基板 Base plate, aperture control magnet	1	1B990-046-2 1B999-072	6	F-301	1
*1B001-602-7	裏 蓋 Camer back	1		14	F 301	1
1B001-642-3	着脱連動レバー基板 Base plate, lens release lever	1	1B999-072	5		5
*1B001-645	減速基板 Base plate, motor rotation reducing	1	1B990-067	2	F-301	1
1B060-282-3	E E 識別 S W EE lens swtch	1	1B999-072	5		5
1B060-283	A F モーター AF motor	1	1B990-066 1B999-072	5		1
1B060-284	フォトインターラプター保持基板 Base plate, photo interrupter	1	1B990-066 1B999-072	5		1
1B060-285	f o 基板 fo base plate	1	1B999-072	4		5
*1B201-023-1 (1B201-023)	巻戻しクランク Rewind crank	1	1B990-052	11	F-301	5
*1B240-034	板バネ Leaf spring	1	1B999-072	7	F-301	5
*1B260-028-1 (1B260-028)	モーターギヤ組 Gear unit, motor	1	1B990-067	2	F-301	1
*1B260-029	基準軸 Reference shaft	1	1B990-067	2	F-301	5

部組品一覧表 Assembly List

F A A 20051 — R. 3176. A

部 組 品 番 号 Assembly No.	名 称 Name	1台分 個 数 Pcs.per Unit	大 部 組 品 番 号 Main Assembly No.	参照図番 Figure	備 考 Remarks	
*1B260-031-1 (1B260-031)	セグメントギヤ Segment gear	1	1B990-046-2 1B999-072	6	F-301	5
*1B277-005	絞り制御ギヤ Aperture control gear	1	1B990-046-2 1B999-072	6	F-301	5
*1B277-012	ラチェットギヤ Ratchet gear	1	1B990-046-2 1B999-072	6	F-301	5
*1B310-042-2 (1B310-042-1)	横軸連結レバー Side shaft coupling lever	1	1B999-072	7	F-301	5
*1B314-122	ミラー駆動レバー Mirror actuating lever	1	1B990-035-1	3	F-301	5
*1B314-131	Sチャージレバー Shutter charge lever	1	1B001-645	2	F-301	5
1B370-013	基準軸円盤 Disk, reference shaft	1		3	F-301	5
*1B600-013-1	圧 板 Pressure plate	1		14	F-301	5
1B610-035-1	A F 接点 AF contact	1	1B999-072	5		5
1B610-040	カップリング軸受け基板 Base plate, coupling bearing	1	1B999-072	5		5
*1B630-032	リモートコネクター Remote connector	1	1B999-072	4	F-301	5
*1B640-029-1	I S Oダイヤル I S O film speed dial	1		11	F-301	5
1B640-031	T ブラシ環 Ring, shutter dial brush	1	1B990-062-2	10		5

部組品番号 Assembly No.	名 称 Name	1台分 個 数 Pcs. per Unit	大部組品番号 Main Assembly No.	参照図番 Figure	備 考 Remarks	
1B640-032	I SO ブラシ Brush, ISO film speed	1		11		5
1B640-037	連動環 Aperture coupling ring	1	1B999-072	4		5
* 1B670-064-5	電池室 Battery chamber	1		13	OLD	5
* 1B670-064-6					F-301	
* 1B680-036	シュー座 Accessory shoe	1	1B990-028-3	12	F-301	5
1B680-038-1	ミラーBox 底板 Bottom plate, mirror box	1		7		5
1B990-028-3	上カバー Top cover	1		12		1
* 1B990-029-2	底カバー Bottom cover	1			F-301	1
* 1B990-035-1	下地基板 Unit, film-advance mechanism	1		3	F-301	1
* 1B990-036-2	上地基板 Unit, film- advance	1	1B990-062-2	10	F-301	1
* 1B990-037-1 (1B990-037)	電源SW Power switch	1	1B990-062-2	10	F-301	5
* 1B990-038-3 (1B990-038-2)	フィルムガイド Unit, film arm	1		1	F-301	5
* 1B990-039	電池ホルダー Battery holder	1			F-301	5
1B990-041-2	I 基板 Base plate I	1	1B999-072	7		1

部 組 品 番 号 Assembly No.	名 称 Name	1台分 個 数 Pcs.per Unit	大 部 組 品 番 号 Main Assembly No	参照図番 Figure	備 考 Remarks	
1B990-046-2	L 基板 Base plate L	1	1B999-072	6		1
* 1B990-050-1	I S O ロック 釦 Button, ISO dial lock	1		11	F-301	5
* 1B990-051-1	巻戻し軸受 Rewind shaft bearing	1		11	F-301	5
* 1B990-052	巻戻しノブ Rewind knob	1		11	F-301	5
1B990-059-2	主ミラー Main mirror	1	1B999-072	7		1
1B990-062-2	電源 F P C Power sw FPC	1		10		1
1B990-064	カップリング軸 Axle, AF coupling	1	1B999-072	5		5
1B990-065	カップリング解除レバー Release lever, AF coupling	1	1B999-072	5		5
1B990-066	A F 駆動部 Unit, AF motor	1	1B999-072	5		1
1B990-067	M減速基板 Unit, motor rotation reducing	1		2		1
1B990-068	D X 接点 DX contact	1		1		5
1B999-071	モーター基板部 Base plate, AF motor	1	1B990-066 1B999-072	5		5
1B999-072	前 板 Front plate	1		4, 5 6, 7, 8 10		1
1B999-065	シャッター組 Shutter unit	1		1		1

FAA 20051 - R.3176.A

カナダ用
U.S.A.
For
Canada
U.S.A.

(6) Apron/f-fo base plate

Bayonet screw #473 Fig.4

- ⊕ Screw #473x4
- ⊕ Screw #475x1
- Bayonet ring #471
- Bayonet spring #472
- EE lens pin #501
- EE lens pin spring #502
- E-ring, EE lens pin #755

S/C lever plate #949 Fig.4

- ⊖ Screw #951
- S/C lever #948

Apron #22 Fig.4

- Unfasten ⊕ Screw #945
- ⊕ Screw #836
- Aperture coupling ring B482
- Aperture coupling ring
- Spring roller #485
- AEL button #451
- AFL button #452

Unsolder lead wires from f-fo base plate Wiring diagram

- 1 Lead wire #1157 (orange)
- 2 Lead wire #1158 (blue)
- 3 Lead wire #1156 (brown)

f-fo base plate B1131 Fig.4

- ⊕ Screw #802x2

(7) AF motor unit

Unsolder lead wires from power switch FPC Wiring diagram

- 1 Photo interrupter lead wire #1181 (red)
- 2 -ditto- #1182 (green)
- 3 -ditto- #1183 (orange)
- 4 -ditto- #1184 (white)
- 5 Lens contact FPC lead wire #1168 (orange)
- 6 -ditto- #1169 (black)
- 7 AF motor lead wire (red)
- 8 -ditto- (blue)

AF motor unit B2901 Fig.5

- ⊕ Screw #712x2
- ⊖ Screw #715x1

(8) AF FPC

Press-contact of AF FPC Fig.9

- ⊕ Screw #668x2
- Press-contact plate #673
- Press-contact rubber #674

Remove adhesive at mirror box bottom plate Fig.7

AF FPC B1004

- ⊖ Screw #405x3
- Spring #406x3
- ⊕ Screw #820x2

(9) Pentaprism

Press-contact of main FPC and power switch FPC Fig.9

Press-contact plate #662
Press-contact rubber B #664
⊕ Screw #860x2

Unsolder lead wires from main FPC Wiring diagram

- 1 Mirror sw lead wire #1177 (pink)
- 2 f-fo lead wire #1157 (orange)
- 3 Shutter lead wire (ATO) #1145 (yellow)
- 4 -ditto- (GND) #1142 (black)
- 5 -ditto- (IS) #1146 (purple)
- 6 -ditto- (1st Mg) #1143 (gray)
- 7 -ditto- (V BAT) #1141 (red)
- 8 -ditto- (2nd Mg) #1144 (green)

Unsolder nine lead wires from lens contact FPC Wiring diagram

Unsolder six lead wires from AF LED Wiring diagram

AE SPD base plate retaining spring #436 Fig.8

⊕ Screw #710x2

Pentaprism retainer #426 Fig.7

* Lift main FPC up.

Pentaprism G4 Fig.8

Pentaprism spring #427

(10) Mirror box/Aperture magnet

Take off fo spring #495

Unscrew mirror box screws Fig.7

- ⊕ Screw #839x2
 - ⊕ Screw #809
 - ⊕ Screw #388
- Mirror actuating lever holding plate #321

Mirror holder B331 Fig.7

Mirror down spring #410
Washer #761

Aperture control lever #327 Fig.7

E ring #754

Unscrew screws of base plate I Fig.7

- ⊕ Screw #813
 - ⊕ Screw #851
- Mirror switch B319

Base plate L B341 Fig.7

Program switch base plate B1136 Fig.6

- ⊕ Screw #382
- ⊕ Screw #387

Aperture magnet #355 Fig.6

⊕ Screw #851x2

(11) Main FPC

Press-contact of main FPC and power switch FPC Fig.9

- ⊕ Screw #860x2
- Press-contact plate #662
- Press-contact rubber B #664

Unsolder lead wires from main FPC Wiring diagram

- 1 Mirror sw lead wire #1177 (pink)
- 2 -ditto- #1178 (black)
- 3 Program sw lead wire #1170 (orange)
- 4 Aperture magnet lead wire (blue)
- 5 -ditto- (red)
- 6 EE lens sw lead wire #1153 (blue)
- 7 f-fo base plate lead wire #1157 (orange)
- 8 -ditto- #1158 (blue)
- 9 -ditto- #1156 (brown)
- 10 fo base plate lead wire #1161 (blue)
- 11 -ditto- #1159 (white)
- 12 -ditto- #1160 (orange)
- 13 TTL SPD lead wire #1172 (yellow)
- 14 -ditto- #1171 (brown)
- 15 Fmm sw lead wire #1173 (green)
- 16 -ditto- #1174 (white)
- 17 One shot sw lead wire #1152 (purple)
- 18 AF A/M changeover sw lead wire #1154 (white)
- 19 Pentaprism retaining plate #426

Unsolder nine lead wires from lens contact FPC Wiring diagram

Unsolder six lead wires from AF LED Wiring diagram

AE SPD base plate retaining spring #436 Fig.8

- ⊕ Screw #710x2

Unsolder lead wires from remote terminal Wiring diagram



Press-contact AF FPC Fig.9

- ⊕ Screw #668x2
- AF FPC press-contact rubber #764
- AF FPC press-contact plate #673

Unscrew main FPC screws of rewind side Fig.9

- ⊕ Screw #820x1
- ⊕ Screw #839x2

Press-contact of AE LED Fig.9

- AE LED press-contact spring #686
- AE LED press-contact mold #684
- AE LED press-contact rubber #685

Main FPC B1001 Fig.9

(9) Power switch FPC/DC/DC converter

Press-contacts of main FPC and power switch FPC Fig.9

- ⊕ Screw #860x2
- Press-contact plate #662
- Press-contact rubber B #664

Unsolder five contacts of DC/DC converter Wiring diagram

Unsolder lead wires Wiring diagram

- 1 Photo interrupter lead wire #1181 (red)
- 2 -ditto- #1182 (green)
- 3 -ditto- #1183 (orange)
- 4 -ditto- #1184 (white)
- 5 Lens contact FPC lead wire #1168 (orange)
- 6 -ditto- #1169 (black)
- 7 AF motor lead wire (red)
- 8 -ditto- (blue)

Unscrew power switch FPC screws Fig.10

- ⊕ Screw #820x3

Power switch FPC B4002 Fig.10

DC/DC converter B1021 Fig.10

- ⊕ Screw #839x2

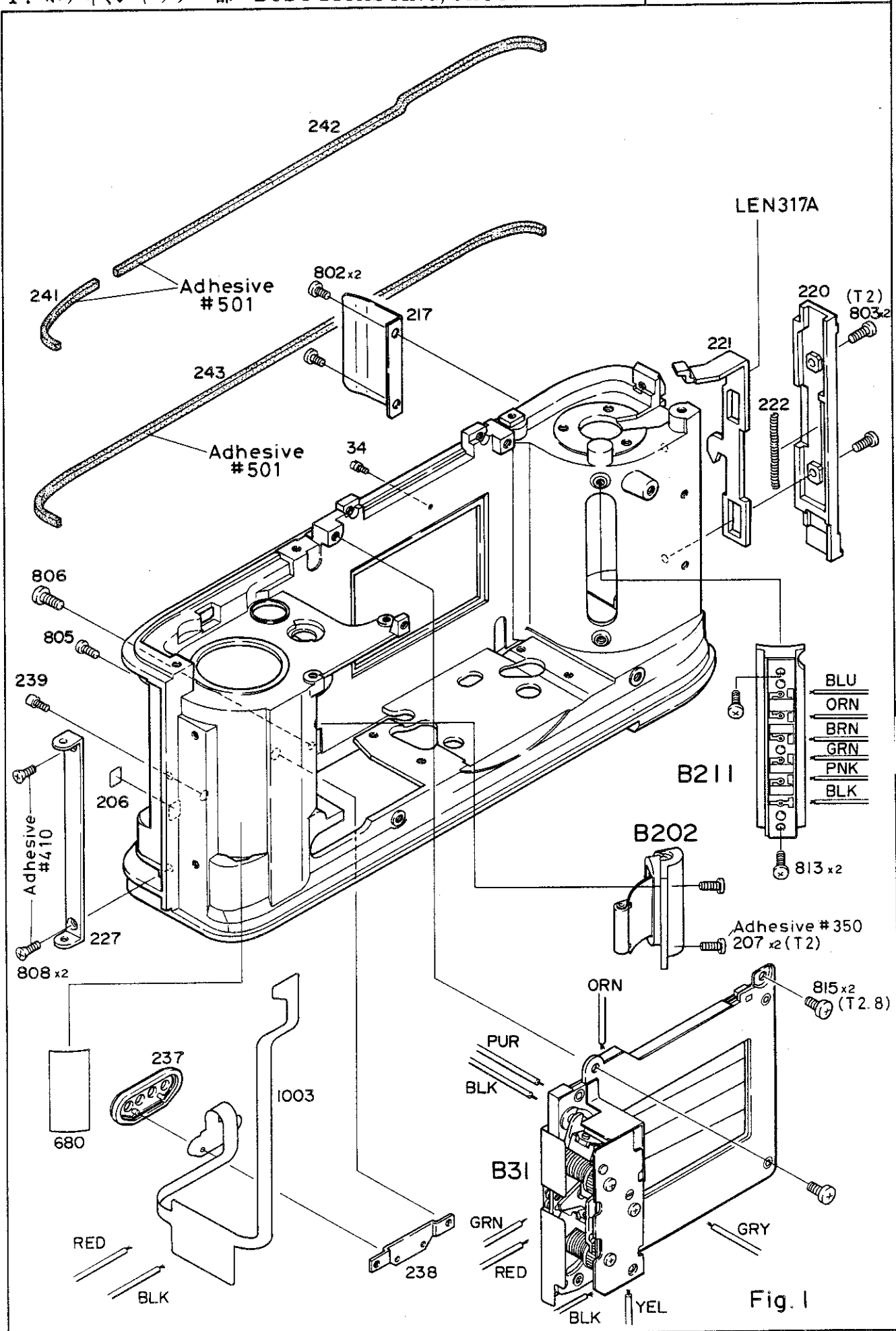


Fig. 1

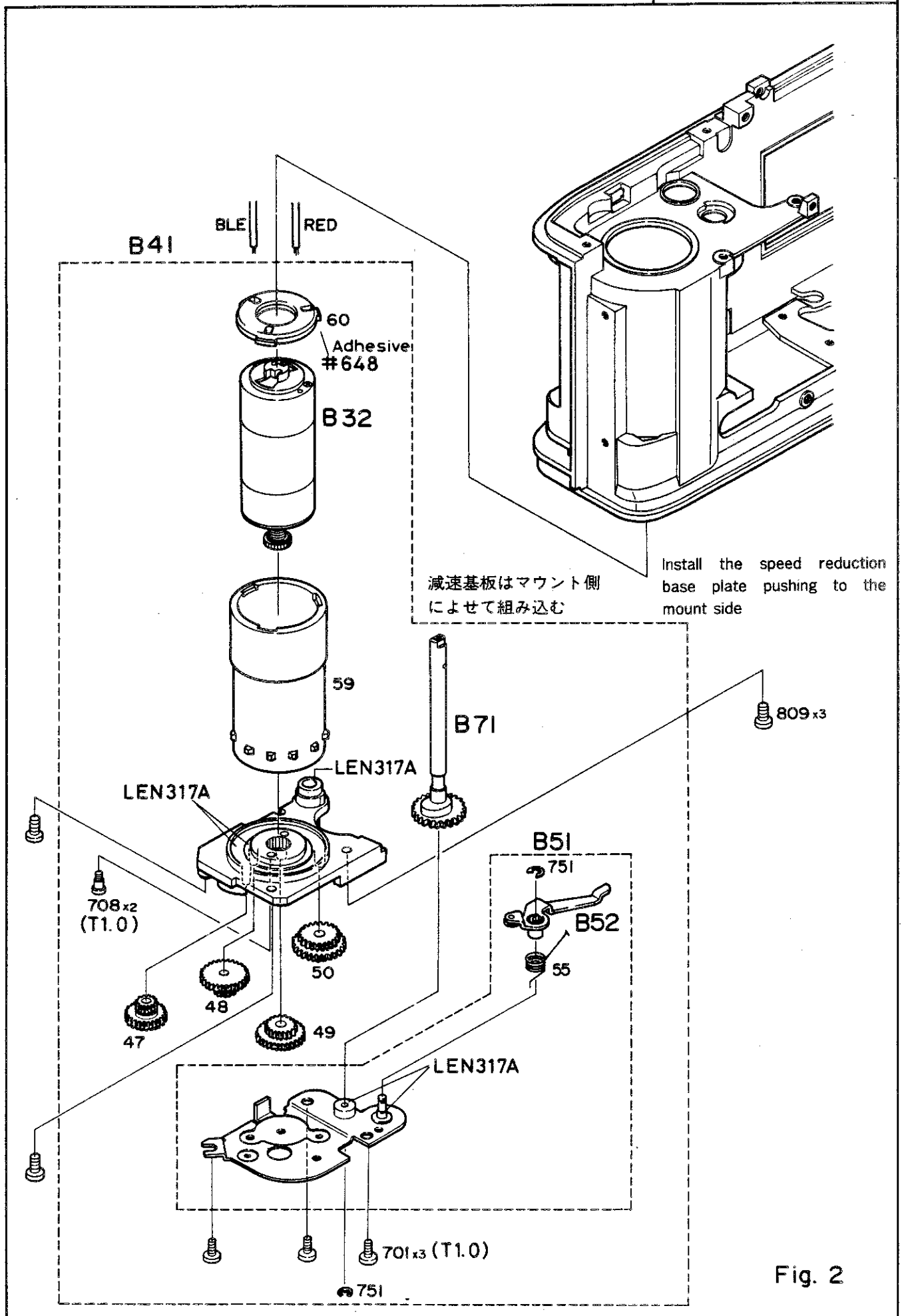


Fig. 2

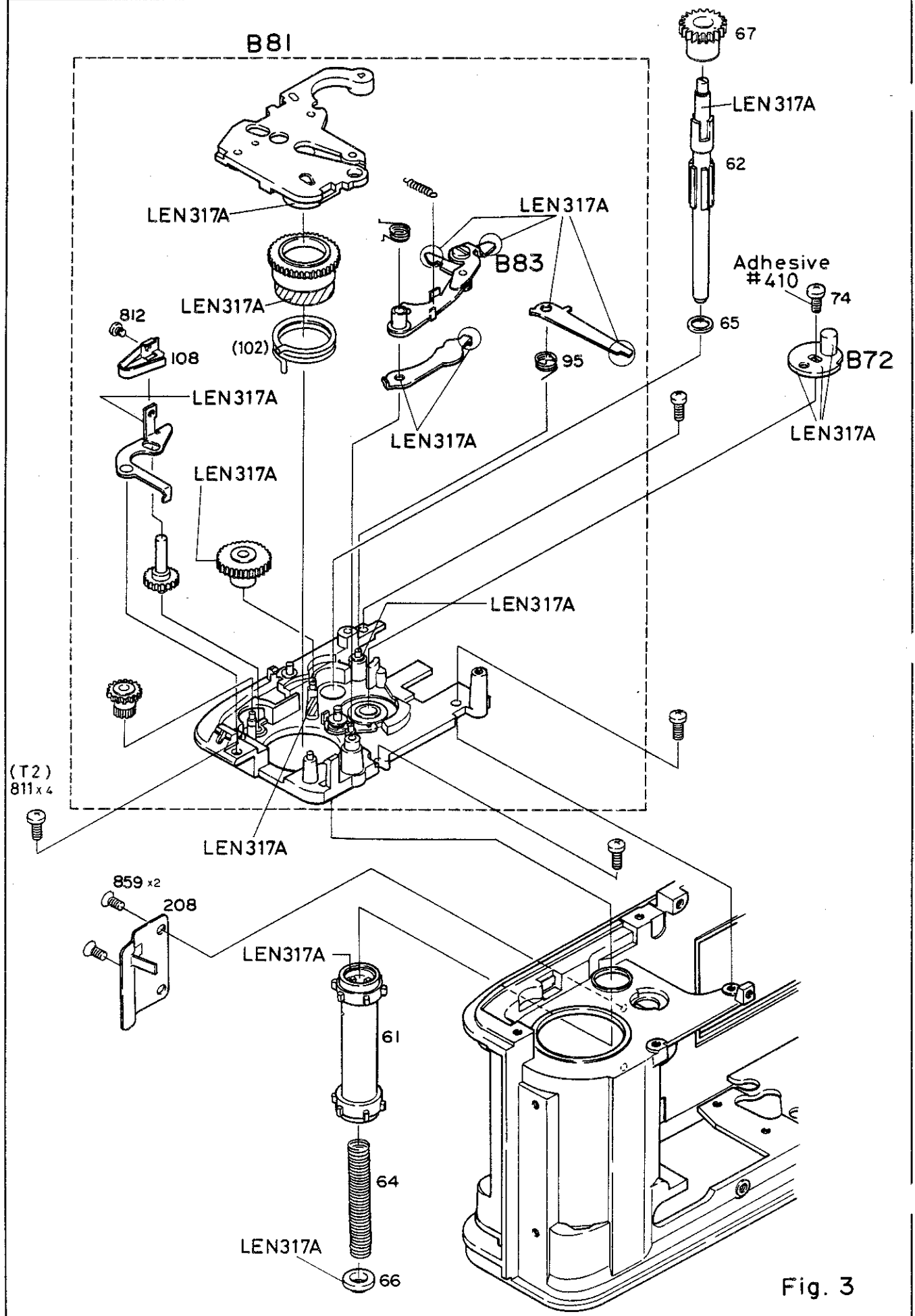
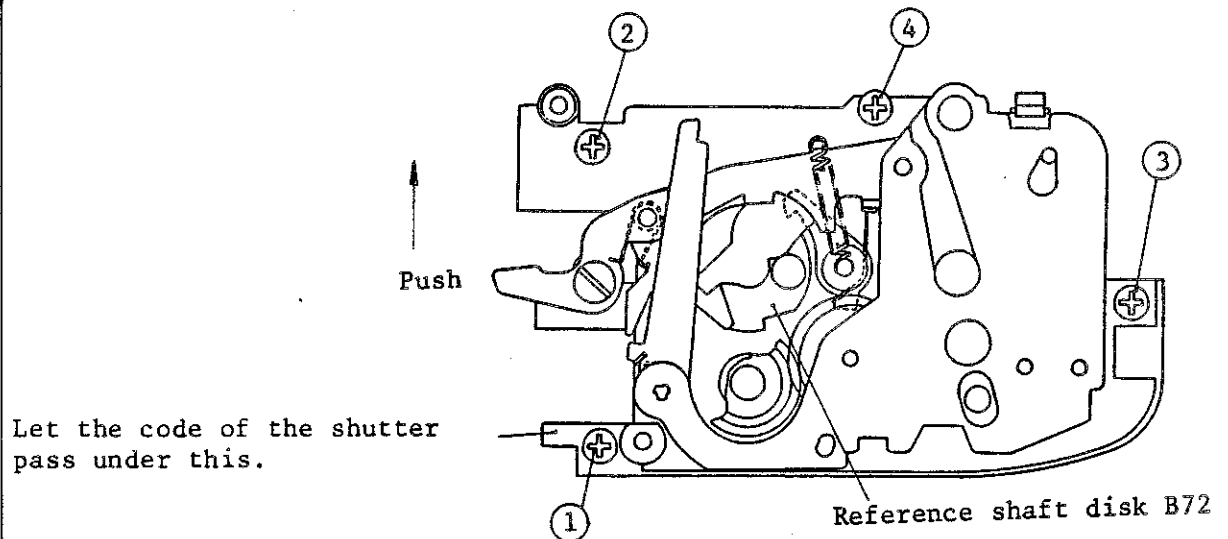


Fig. 3

fig. 3 How to install the film-advance mechanism unit and the reference shaft disk

After installing the film-advance mechanism unit, rotate the spool and fix the spool friction spring to the spool. Then, tighten the screw #811.

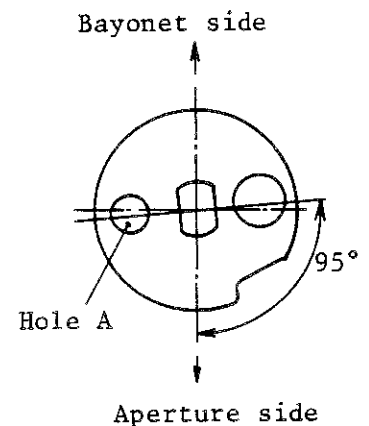


Push the film-advance mechanism unit to the mount side and tighten the screws in the order indicated in fig. 3-1.

Rotate the reference shaft B71 with the manual film-advance tool (J15258). When the charge lever B52 comes to the aperture side, set the reference shaft. (fig. 3-2)

Set the reference shaft and reference shaft disk at the position indicated in fig. 3-2

Apply the adhesive #410B/M to the point of the screw #74. Fix the hole A with the driver and tighten the screw #74.



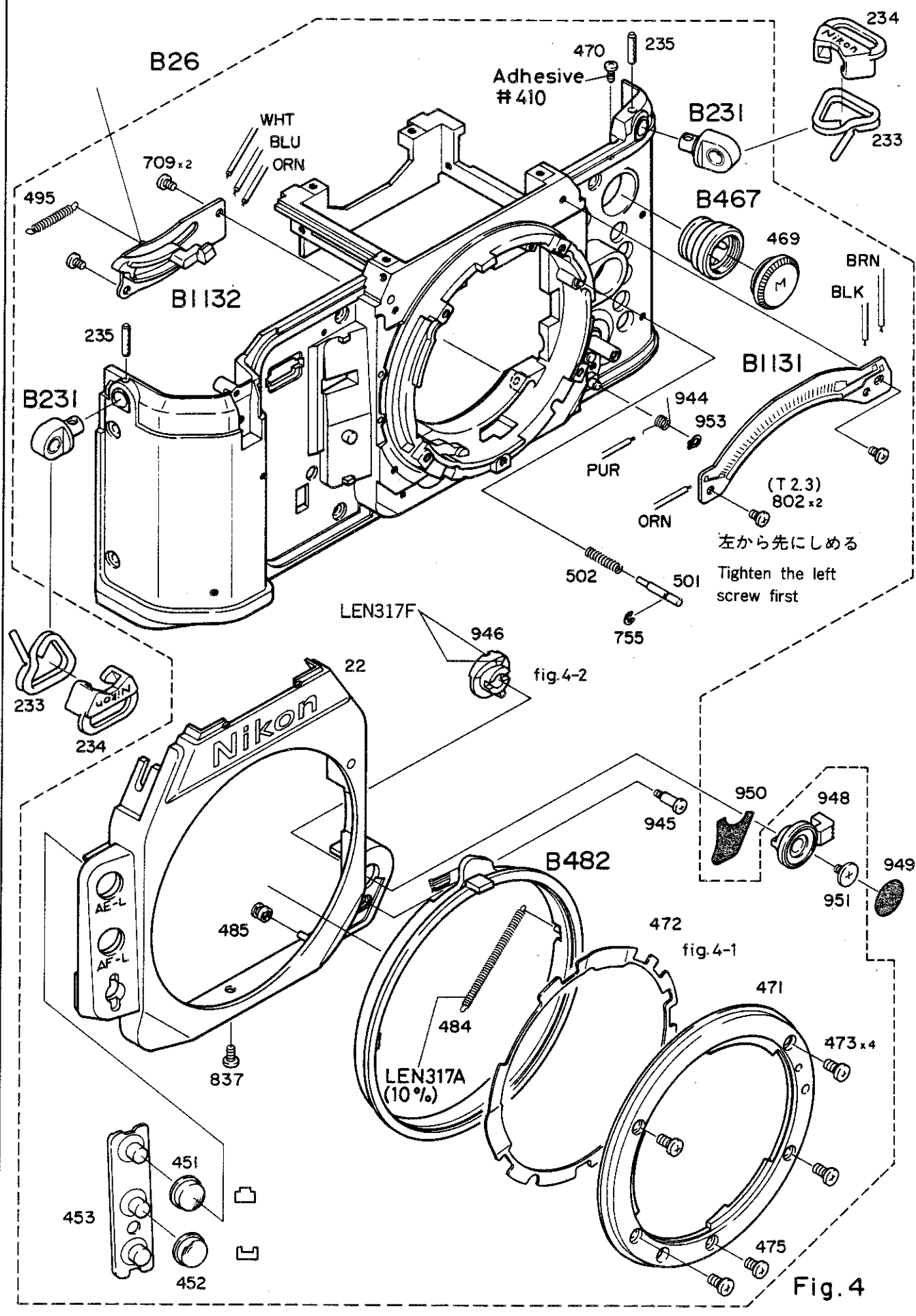


Fig. 4

fig. 4-1 Bayonet spring-lubrication

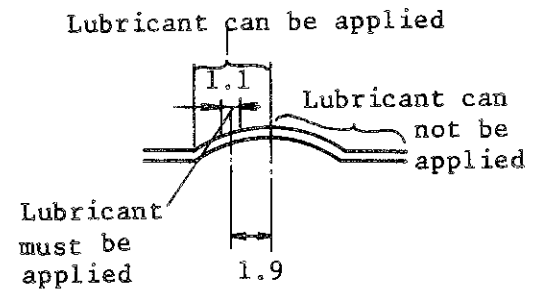


fig. 4-2 S/C exchanging cam

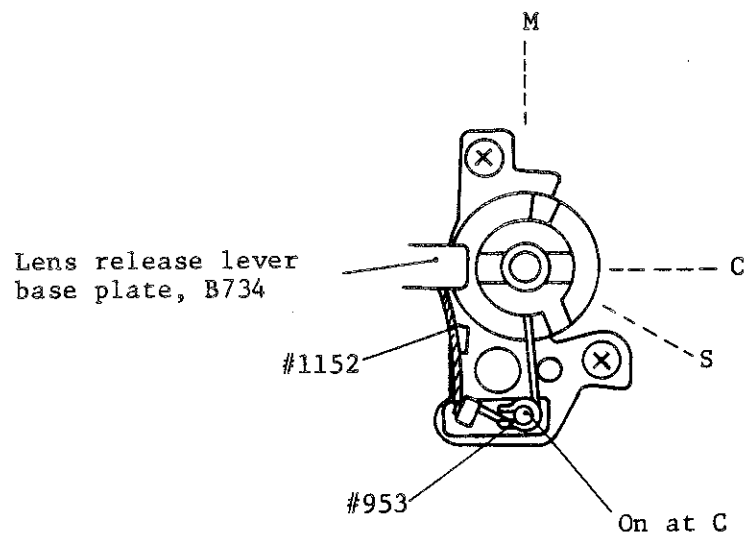


fig. 5-1 Soldering of the lens contact FPC (1005) with the lens contact B474

Solder should not be over the lens contact

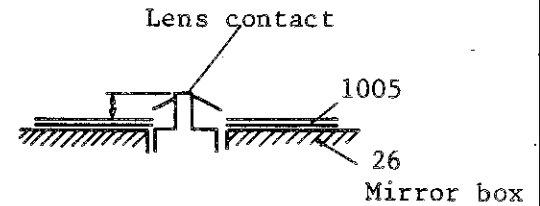


fig. 5-2 Installation of the photo interrupter

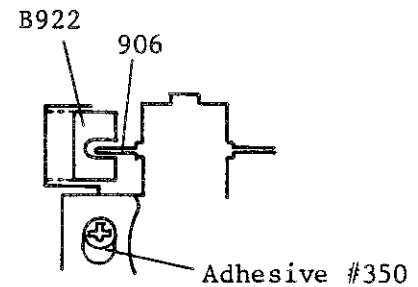


fig. 5-3 Positioning of the AF motor

After installing the AF motor unit B2901 to the camera, set the codes as indicated in the right figure.

- ① Turn #715 so that the current value will be maximum.
- ② Turn the collar #718 in the reverse direction to ① so that the current value will be minimum.
- ③ Then, turn #718 in the reverse direction to ② so that the current value starts to rise.
- ④ Return #718 in 30° from the position set in ③
- ⑤ Apply adhesive on the tops of #712x2 and #718.

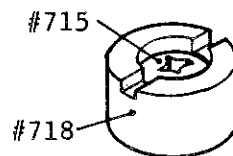
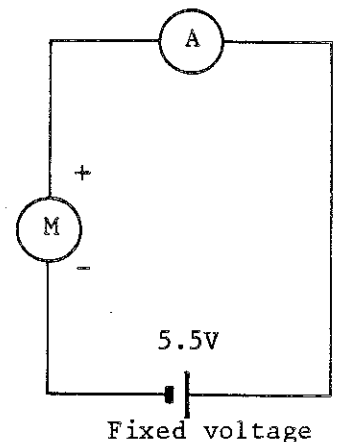
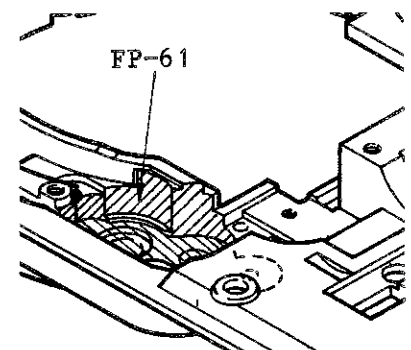


fig. 5-4 Application of the oil barrier

Apply the oil barrier to prevent the bleeding of the oil.



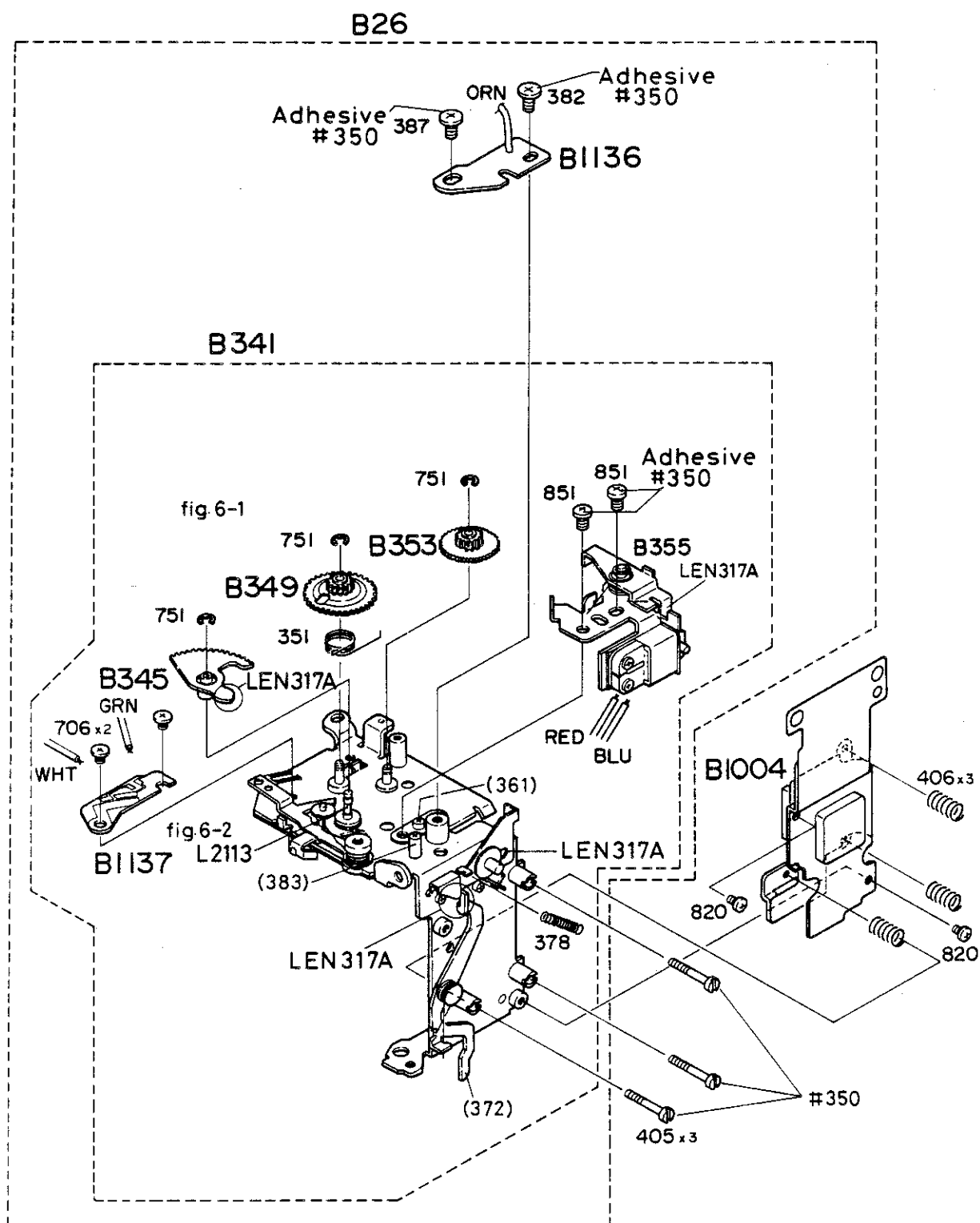


Fig. 6

fig. 6-1

Rotate the aperture control gear B349. Clockwise and keep it at the position where spring hole is facing to the center of #353. Then, install the segment gear B345.

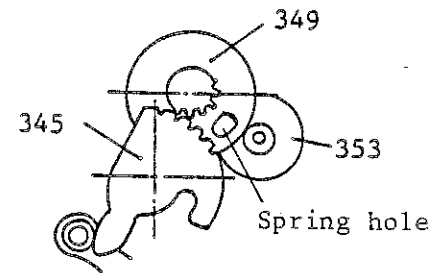


fig. 6-2 Positioning of the fmm switch

Loosen the screw #706 and adjust the fmm position.

- With the lens whose focal length is shorter than 135mm: white - off
green - off
- With the lens whose focal length is 135mm or longer: white - on
green - off
- With AI-S teleconverter: white - off
green - on

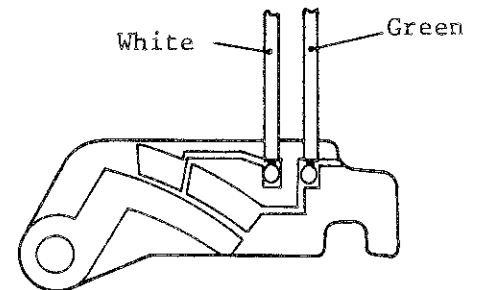


fig. 6-3

- 1) Connect the program switch lead wires to a tester.
- 2) Install the mirror box to the front body and set Tool J18004 to the bayonet of camera body.
- 3) Slowly move the mirror actuating lever #305.
- 4) Adjust eccentric screw #383 so that the program switch can be turned off when the reading of J18004 is 2.7 ± 0.1 .
- 5) After adjustment, apply on adhesive to both screw heads of screws #387 and #382.

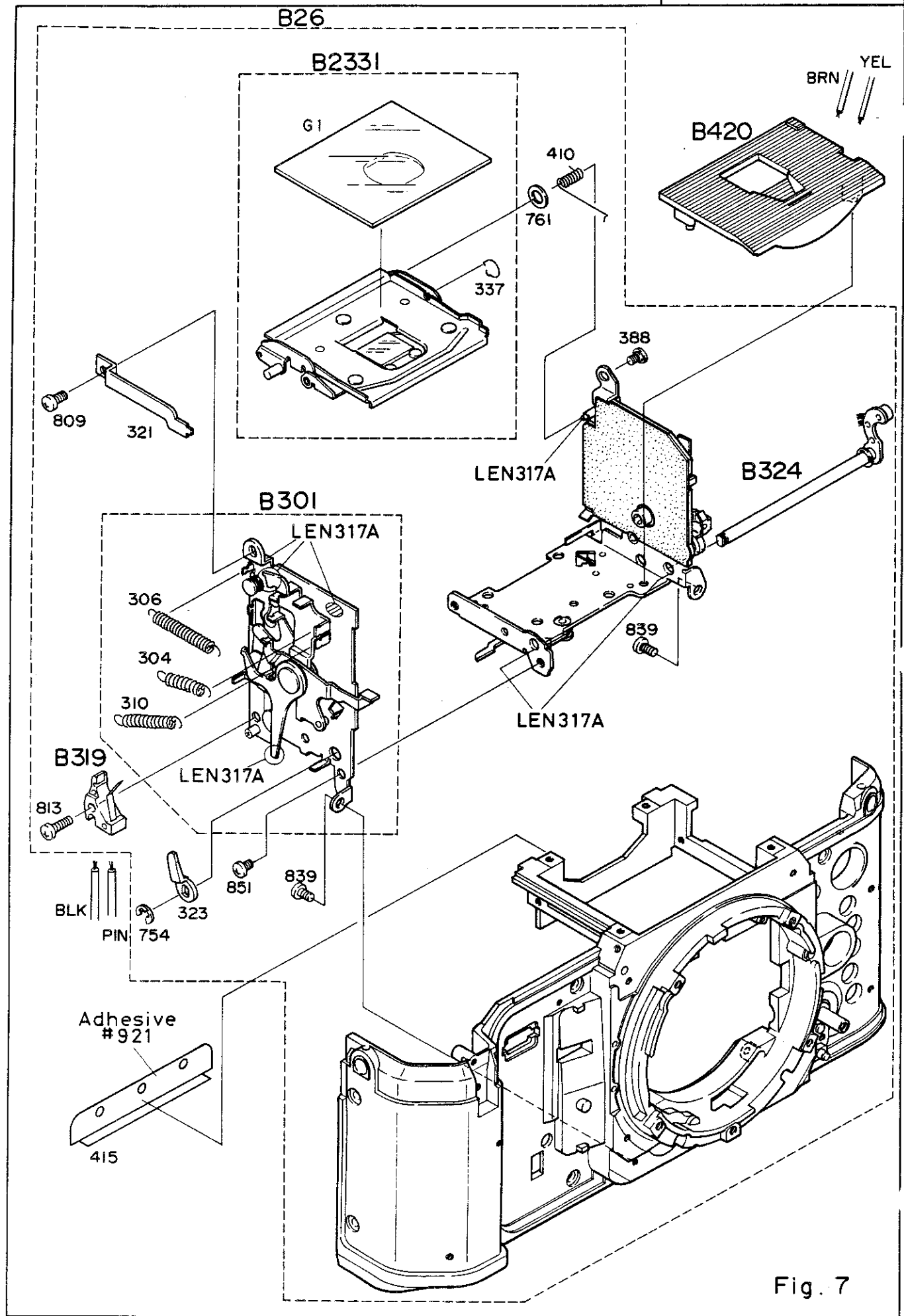


Fig. 7

Adjustment of 45° setting of the reflex mirror

Vertical collimator J19002
 Optical lens J18037
 Mirror 45° inspecting tool J18182

Set J18037 at the mount

Remove the focusing screen and set J18182.

Turn the switch of the collimator on,
 Then, turn the mount to the objective
 lens of the collimator.

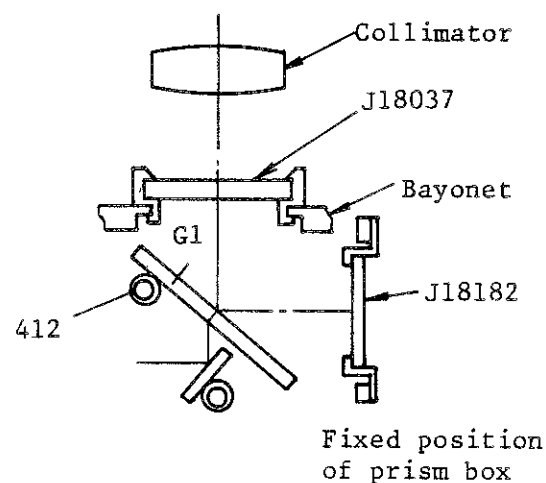
Adjust mirror 45°

- ① Horizontal: Shift the base plates
I and L
- ② Vertical: Rotate #412.
- ③ Distortion: Replaster the mirror

Standard Horizontal: $\pm 20''$
 Vertical: $\pm 5''$
 Distortion: $8''$

* Be careful not to touch the sub mirror.

As the field of vision of J19002 is 40° , please refer it in the
 above adjustment.



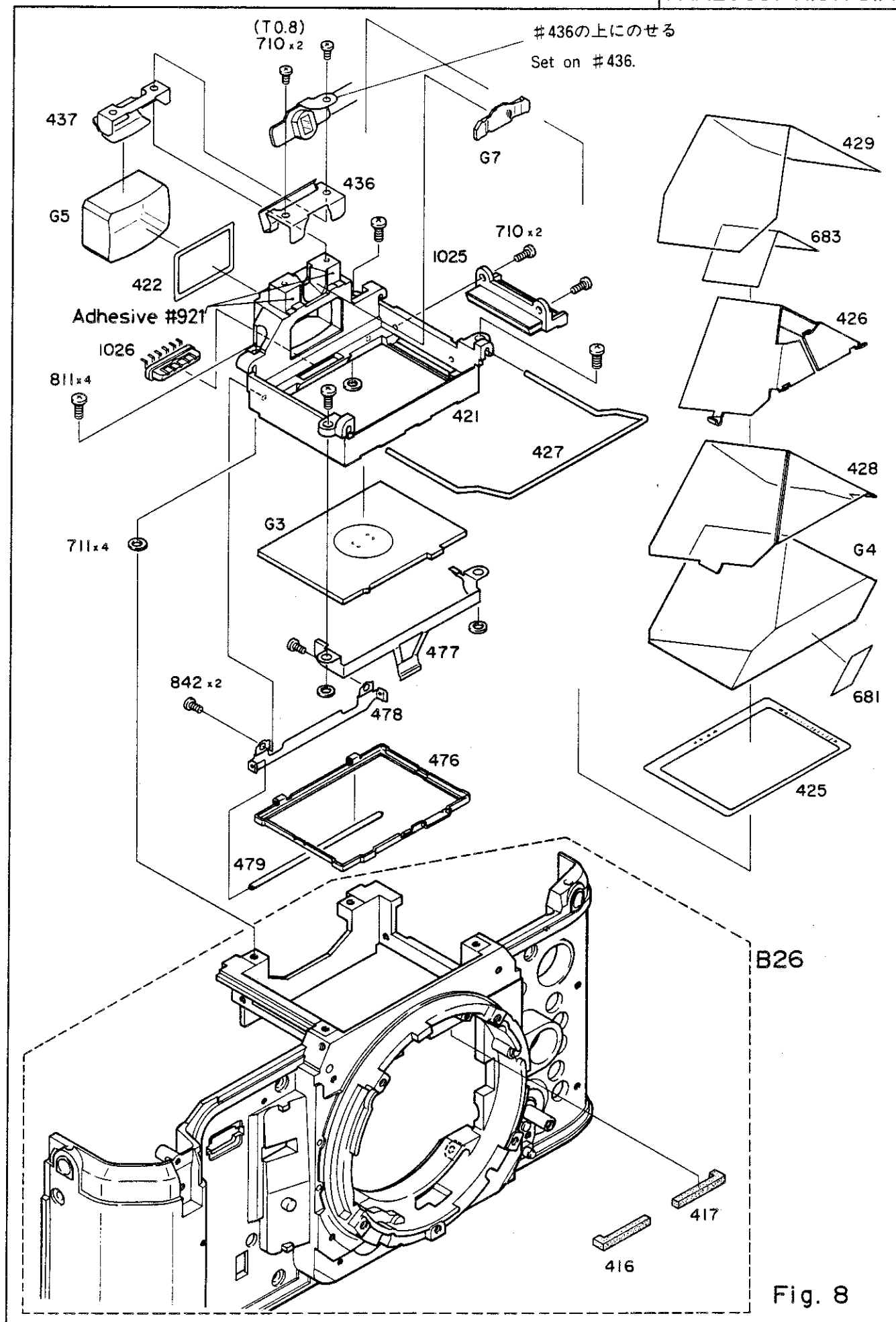


Fig. 8

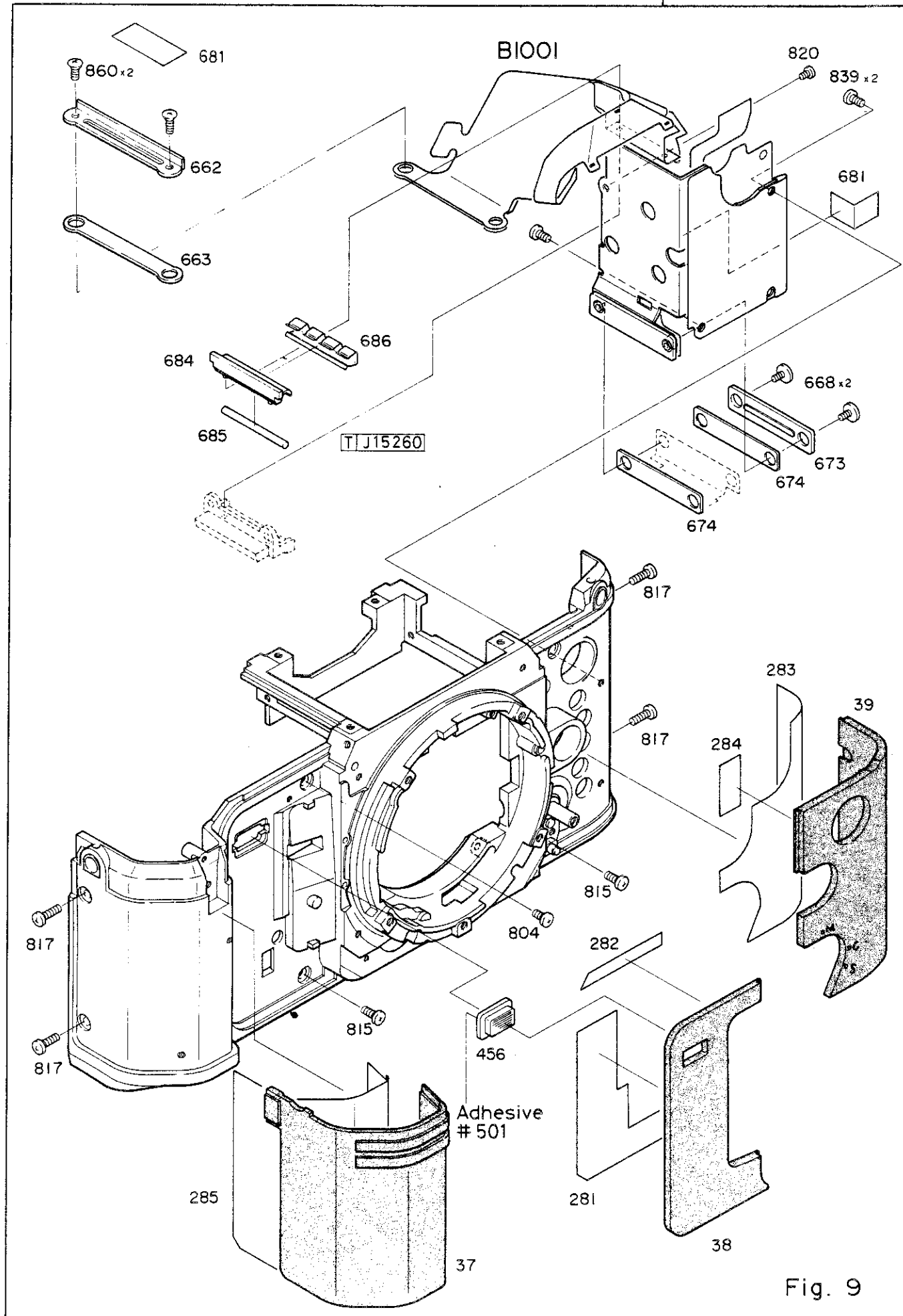
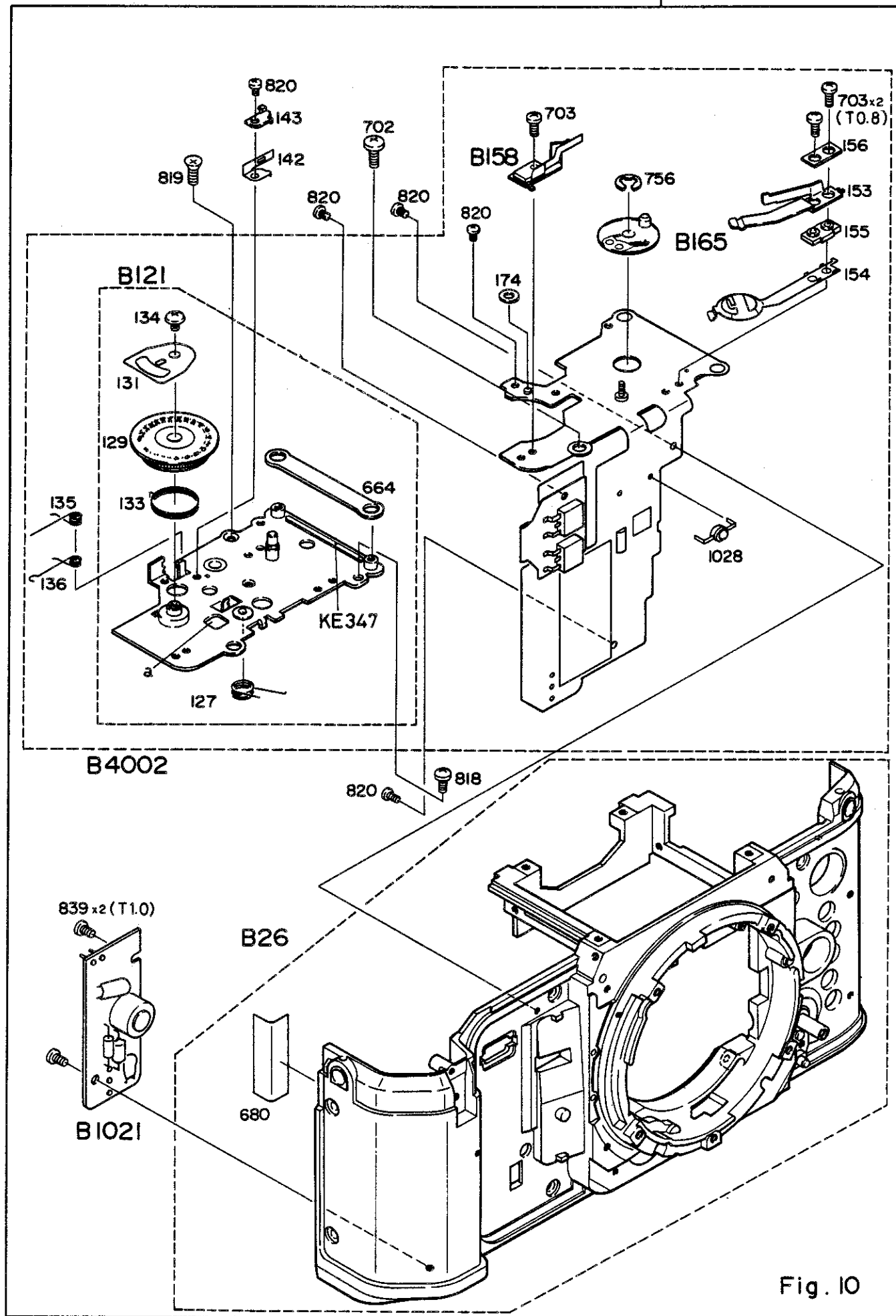


Fig. 9



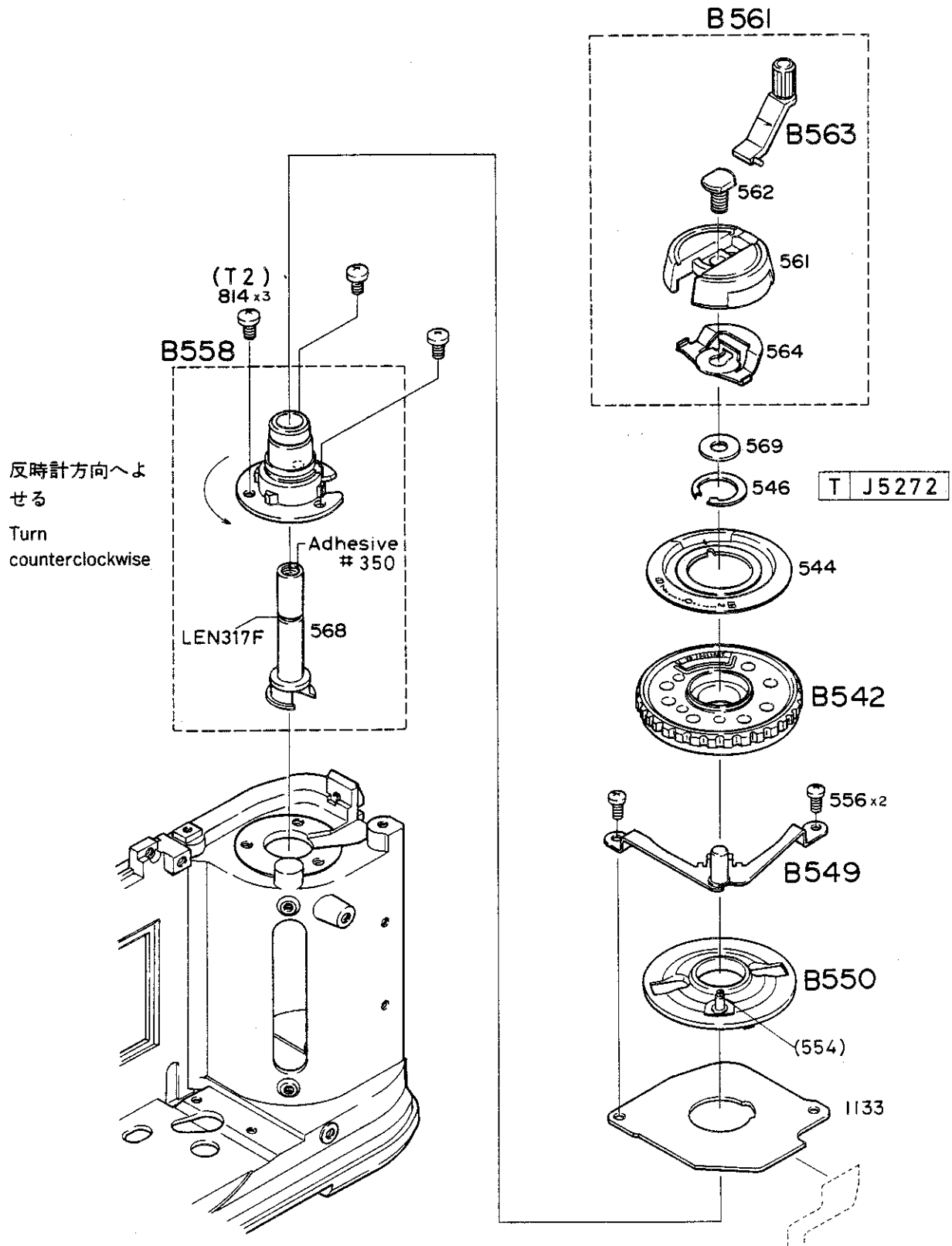


Fig. 11

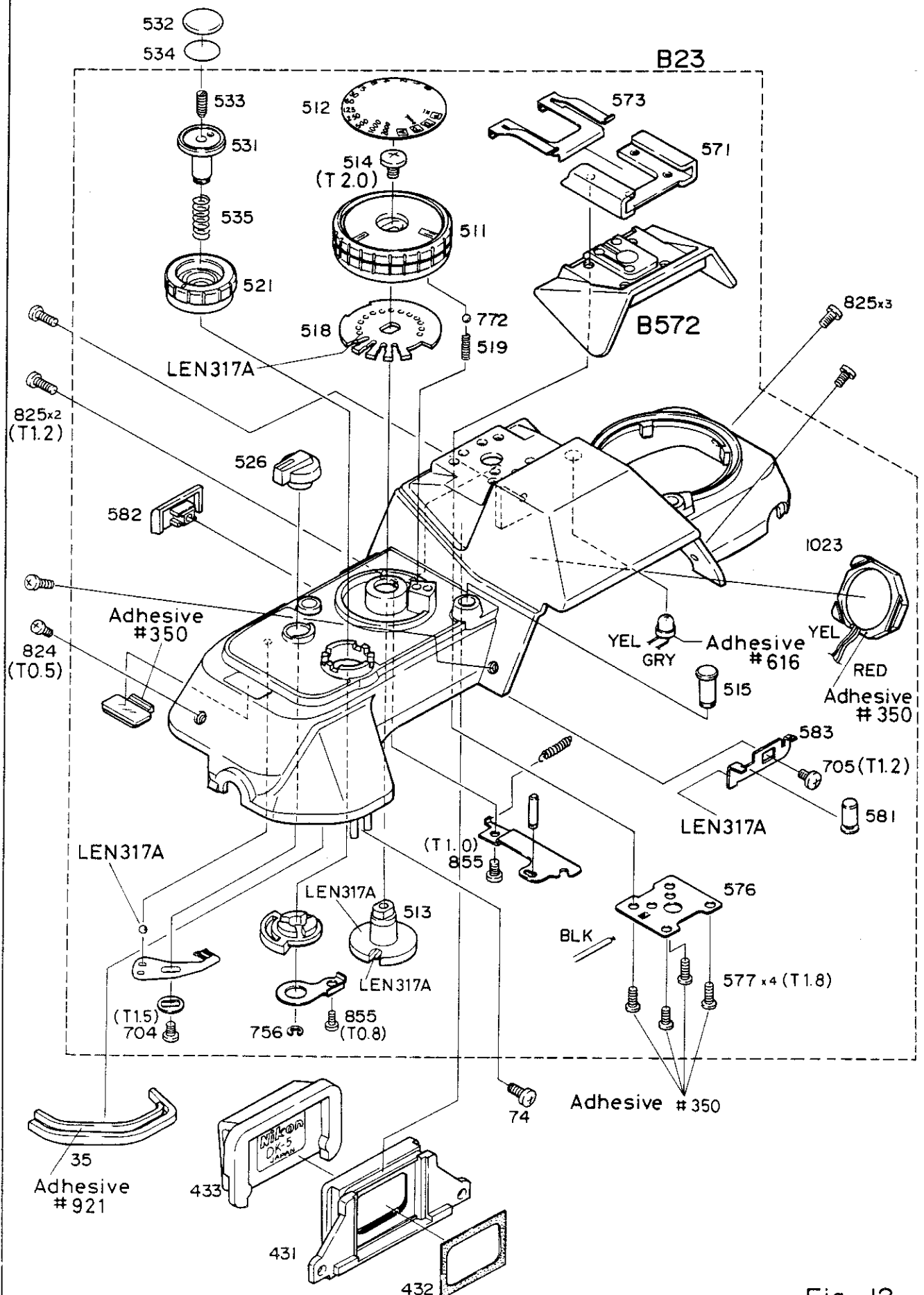


Fig. 12

fig. 12 Installation of the top cover

Solder nine lead wires Wiring diagram

Stick tapes on #1149 (pink),
#1150(brown) and #1151(green)

fig. 12-1

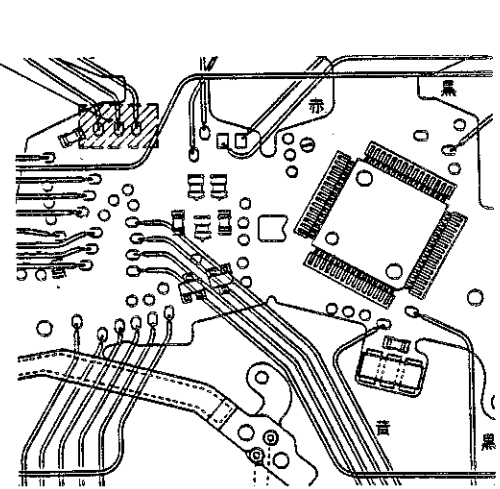
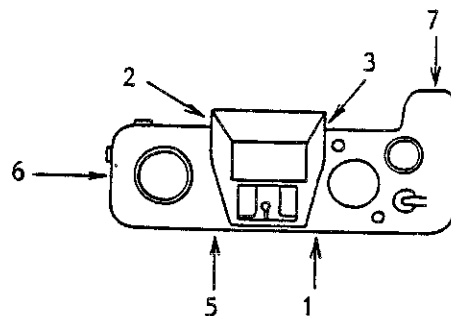


fig. 12-1

- ① Set the shutter dial to B
- ② Set the film-advance mode selector to S
- ③ Turn the shutter dial brush ring B165 (Fig. 10) counterclockwise to the limit.

Do not put the buzzer lead wires (red and yellow) on SPD.

Tighten the screws.



4 * Do not tight excessively, since screw is tightened to the plastic.

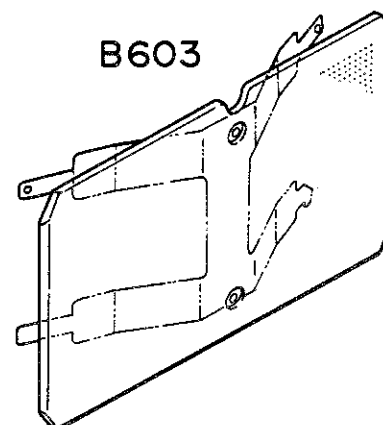
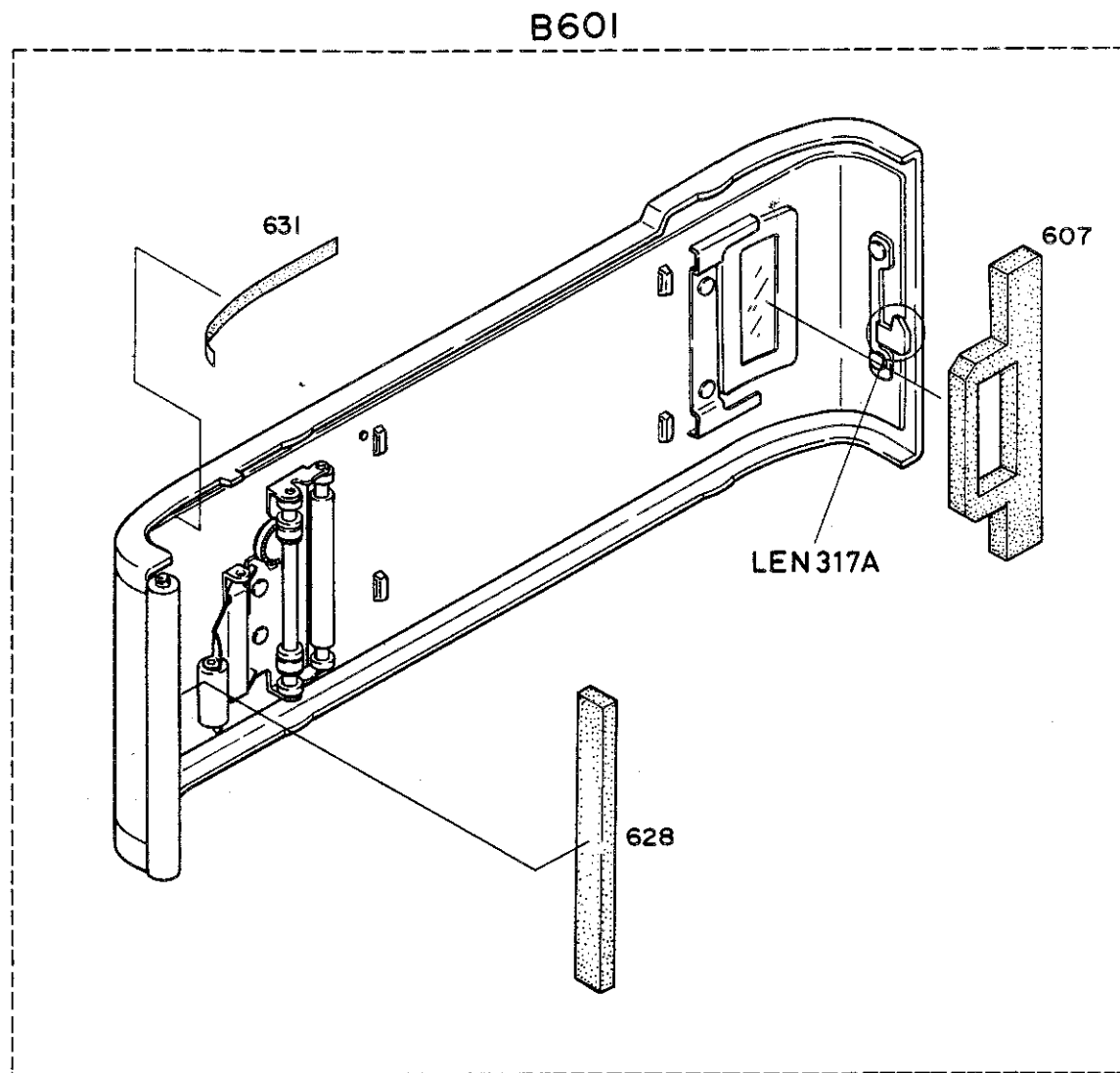


Fig. 14

15. Front plate installation

Install sprocket shaft #62. Fig.3

Set the reference shaft disk in place. Fig.3

See Fig.R1.

Operate the mirror once.
Fit the shutter set lever with the reset lever L.

See fig. R2

* The shutter set lever is to be free.

Install the front plate to the body die-casting

Be careful not to catch the data back FPC lead wires.

Set shutter charge lever B52 so that the shutter set lever can be positioned as shown in Fig.R3.

Use fingers to hold the front plate and set Manual film-advance tool J15255 to the front plate.

Turn Manual film-advance tool J15255 counterclockwise.

Move the mirror up.

Turn J15255 clockwise.

Move the mirror down. To charge shutter.
Shutter is to operate.
(Shutter curtain does not open.) -

Place and hold the front plate turned lower-left (film-advance side) and tighten screws according to the order indicated in Fig.R4.

Place and hold front plate toward the arrow direction.

Adjust the position of film-advance lever unit B121.



Bayonet side

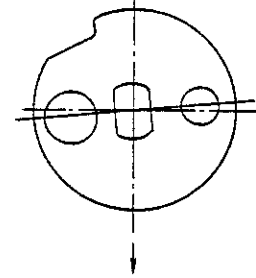


Fig. R1

Sprocket side

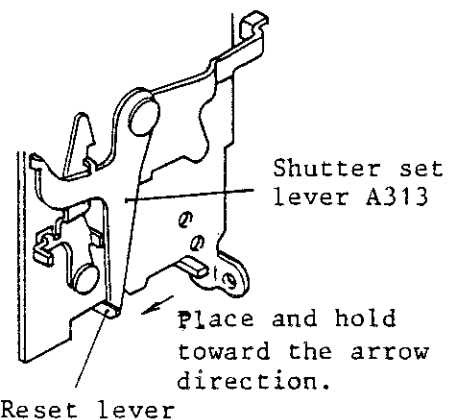


Fig.R2

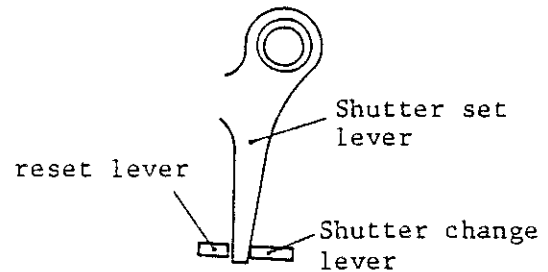


Fig. R3

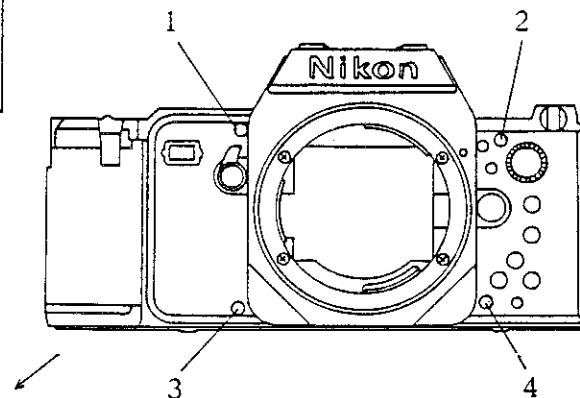


Fig.R4

1
Set a gear under film advance lever unit B121 to the position as shown in Fig. R5.

Film-advance completion sw ON position

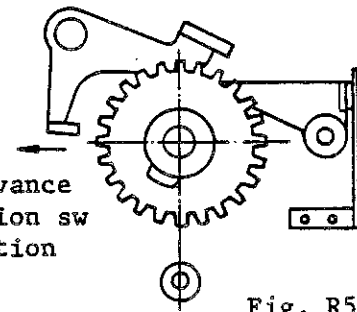


Fig. R5

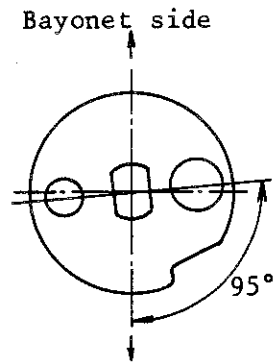
Set the reference shaft disk to the installing position. See Fig. R6

Position the cutout of Frame counter gear #105 to Direction b.



Fig. 3

Position the mark on the sprocket shaft #62 to Direction a and depress it.



Sprocket side.

Fig. R6

See Fig. R7.

Move the film-advance lath lever #94 to Direction c and install the film-advance lever unit.

Tighten three screws. Screw #819 should be tightened first.

Fig. 10

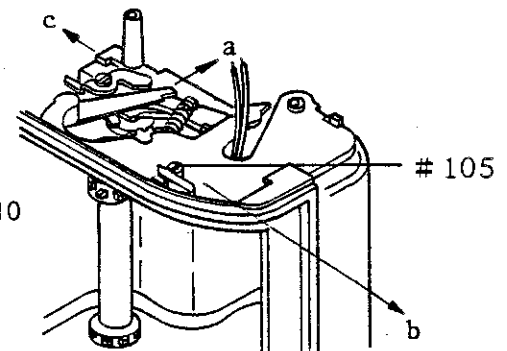


Fig. R7

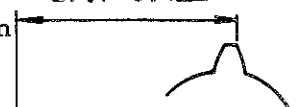
Release the press-contact of the main and power switch FPCs to facilitate installation of front plate necessary. Refer to Fig. 9.

Make sure that the mirror and the shutter operate properly by turning the manual film-advance tool(J15258) counterclockwise and then clockwise.

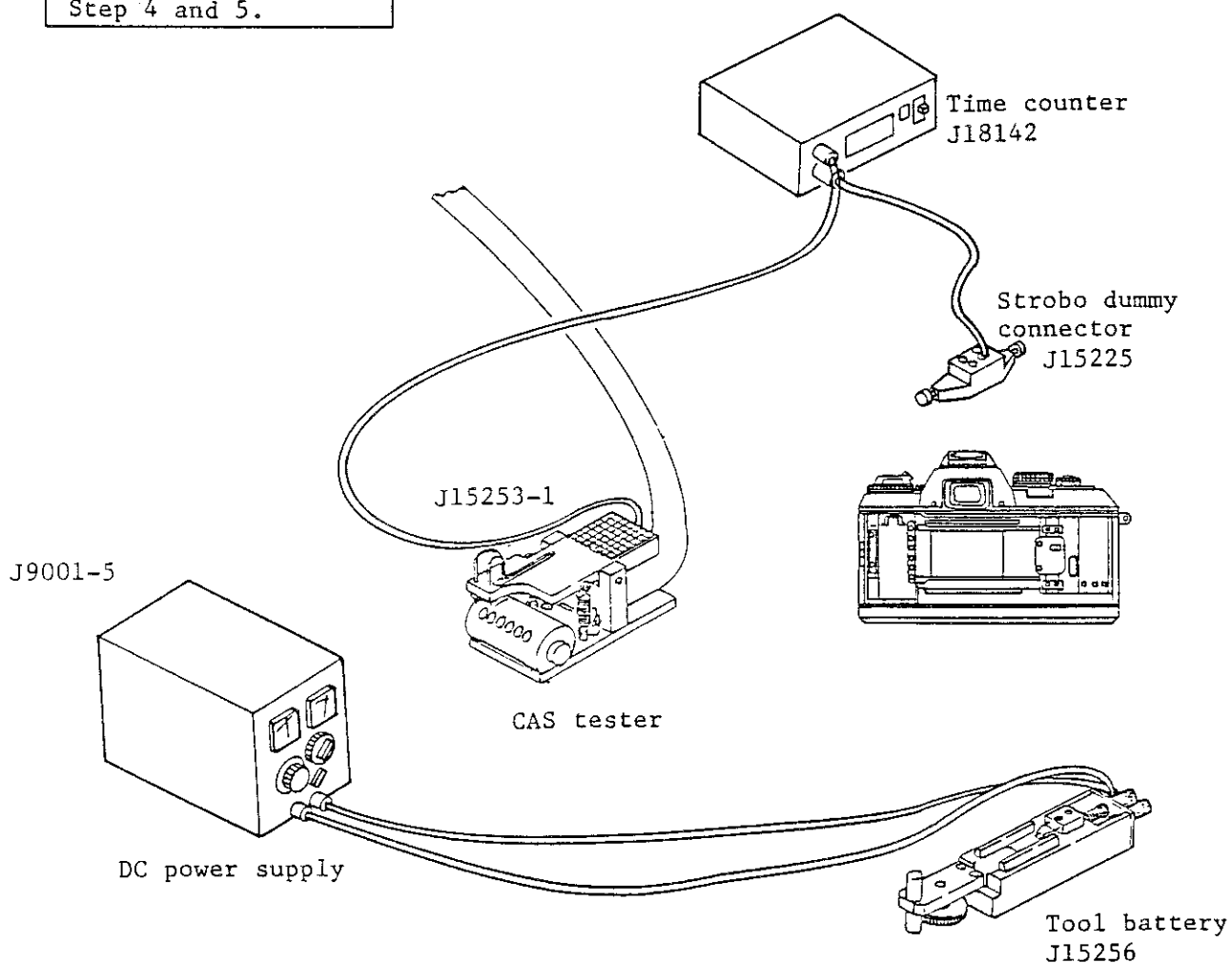
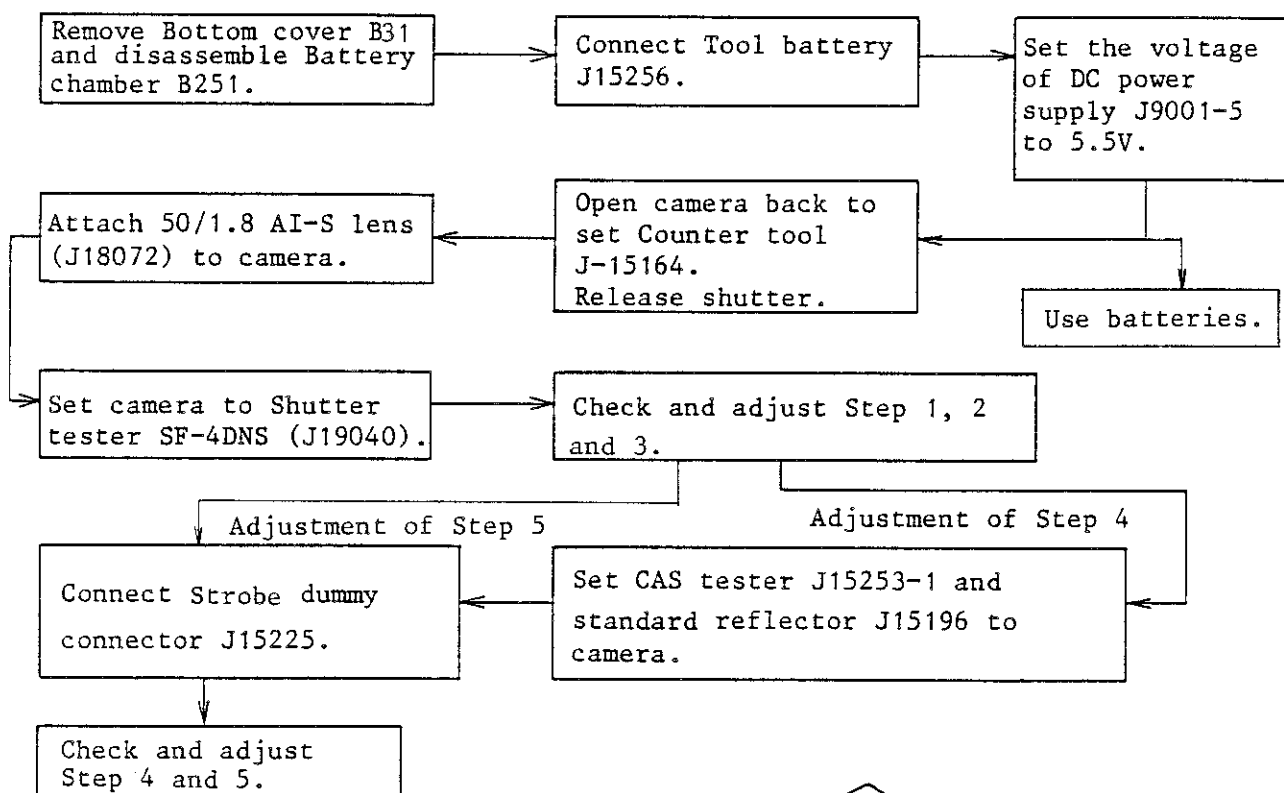
Use finger to position sprocket teeth of film-advance completion to check the position.

+0.8
27.7-0.4mm

right edge of the aperture



16. Shutter speed accuracy adjustment



Adjustment

Tools:

Adjustment for Step 1, 2, 3 and 5

Shutter tester SF-4DNS (J-19040), 50/1.8 AI-S lens (J-18072)

Tool battery (J-15256), DC power supply (J-9001-5)

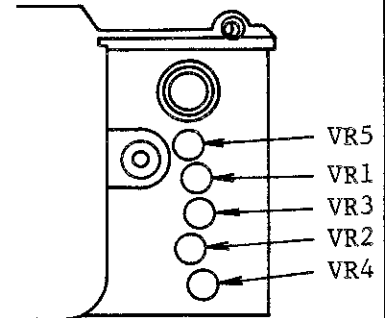
Counter tool (J-15164), Screw driver (J-15135)

Adjustment for step 4

The above tool with: Time counter (J-15188)

Strobo dummy connector
(J-15225)Standard reflector
(J-15196)

CAS tester (J-15253-1)

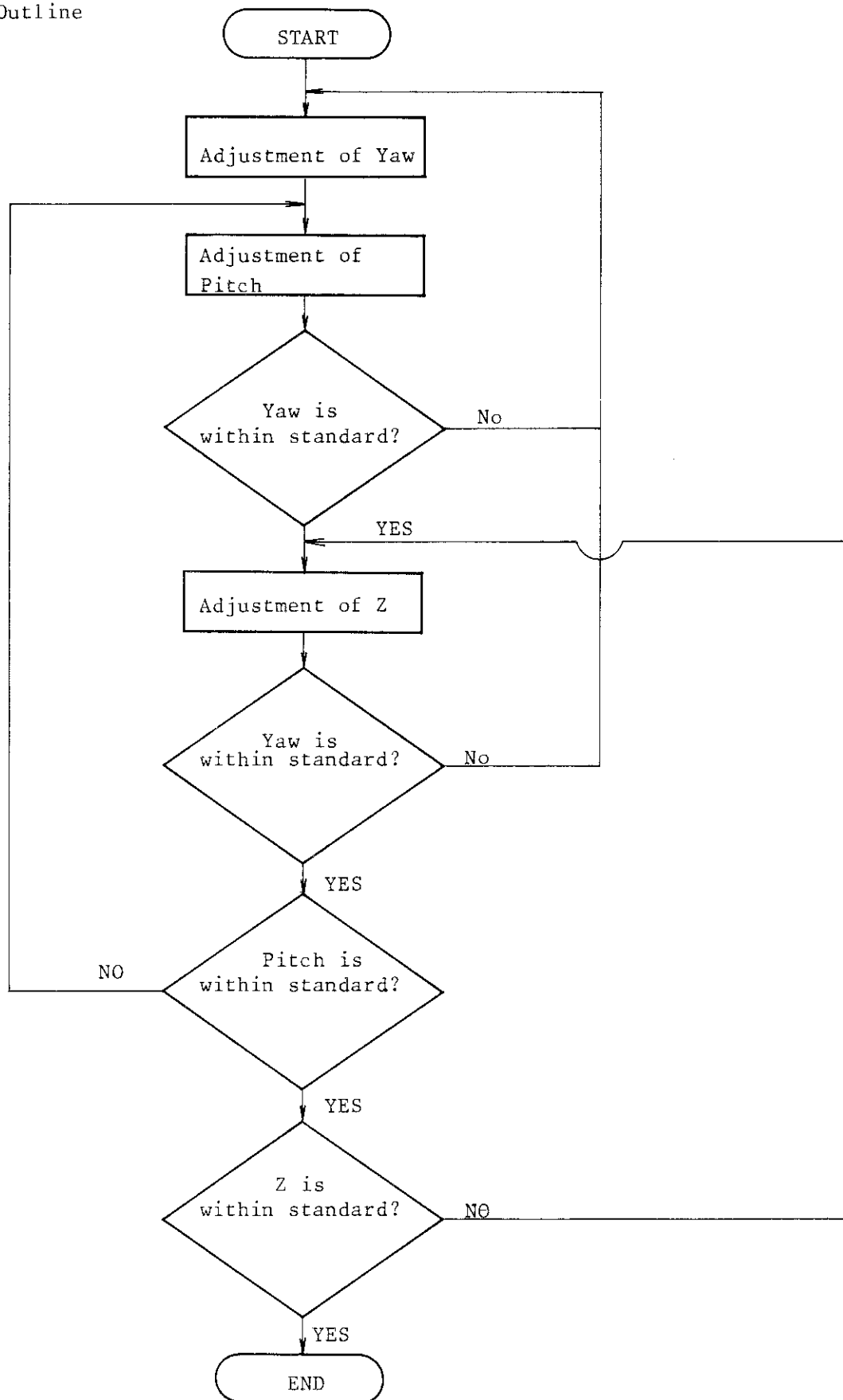


*1 If the only LED at 125 light up, it is without problem.

Step	Adjustment	Variable resistor	f/stop	Shutter dial	EV	ISO dial	Standard
1	Closing shutter curtain release timing	VR5	1.8	2000	15	100	0.3 - 0.57ms
2	Shutter speeds delivery on A mode	VR1	1.8	A	9	100	7.04 - 8.6ms
	Audio warning check		5.6	A	9	100	When the audible warning sw is on and the shutter release button is lightly pressed, audible warning should bleeps.
3	Display level	VR3	1.8	A	9	100	*1 1) LEDs at both 60 and 125 should light up. 2) LED at 125 should light up
	LED display check		1.8	A	9	100	LED at 125 should light up when a DX-coded film (ISO 100) is used.
4	TTL level	VR2	1.8	A	15	100	0.11 - 0.14ms (reading of time counter)
	LED display check		4	A	9	100	LED at 125 and "P" ready-light LED should light up. LED at 30 should blink.
5	Program level	VR4	16	P	15	100	F5.27 - F6.06 Value B of Shutter tester SF-4DNS
	LED display check		8	P	15	100	△ Both top and bottom ▽ LEDs should blink.
			16	P	15	100	△ Both LEDs should not ▽ turn on.

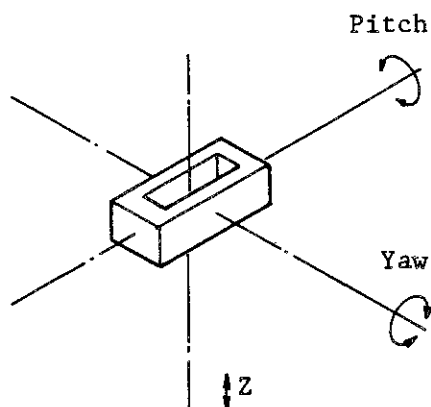
17. Adjustment of autofocus

Outline



Adjustment procedures

For adjustment of autofocus accuracy, perform the positioning of the sensor module.



Z: Parallel
Yaw: Inclination
Pitch: Inclination

Adjust with three screws #405 on the bottom of the body.
See Fig. 6.

Tools and measuring instruments

Shutter tester or photometric box
Adapter for Pitch (J18185)
Adapter for Yaw (J18184)
AF adjuster (J15259)
Lens for Z(fixed at 2m)(J18183)
Sine chart for Z (J18186)
CAS tester (J15253-1)
RAM tester (J15253)
ND filter 8X (J18191)

Lighting box for Z (J15264)
AAA flourescent light (J15264-2)
Transformer (J9005)
Transformer code (J15264-1)

Adjustment

When you receive the claim about autofocus accuracy or replace autofocus FPC, front plate or mirror box, please adjust autofocus accuracy as follow;

Make sure of 46.5mm and 45°

Disassemble the bottom cover, the battery holder and the battery chamber

* This is not necessary in inspecting the autofocus accuracy.

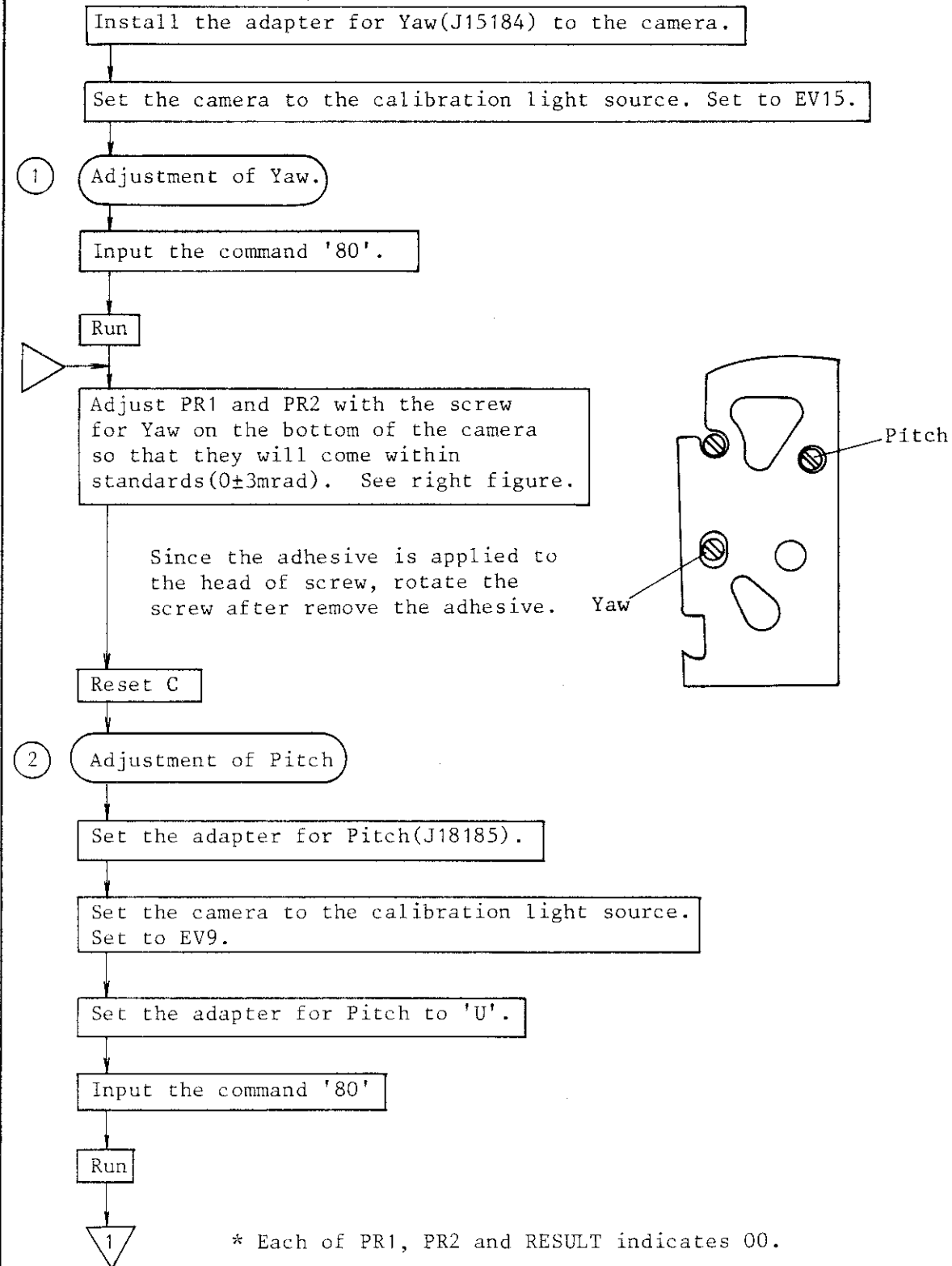
Install the AF adjuster (J15259) to tripod socket.

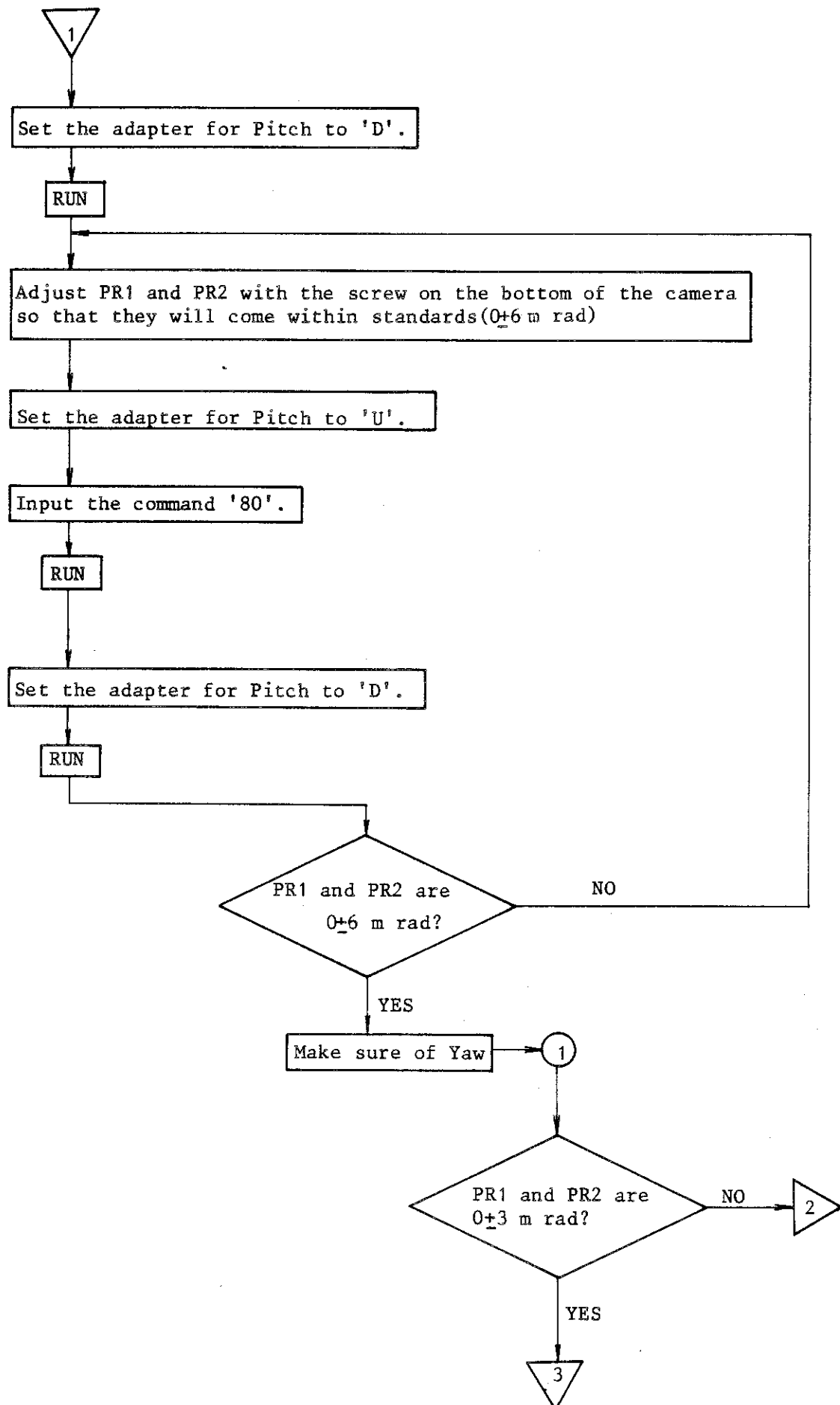
Solder two lead wires to data back FPC.

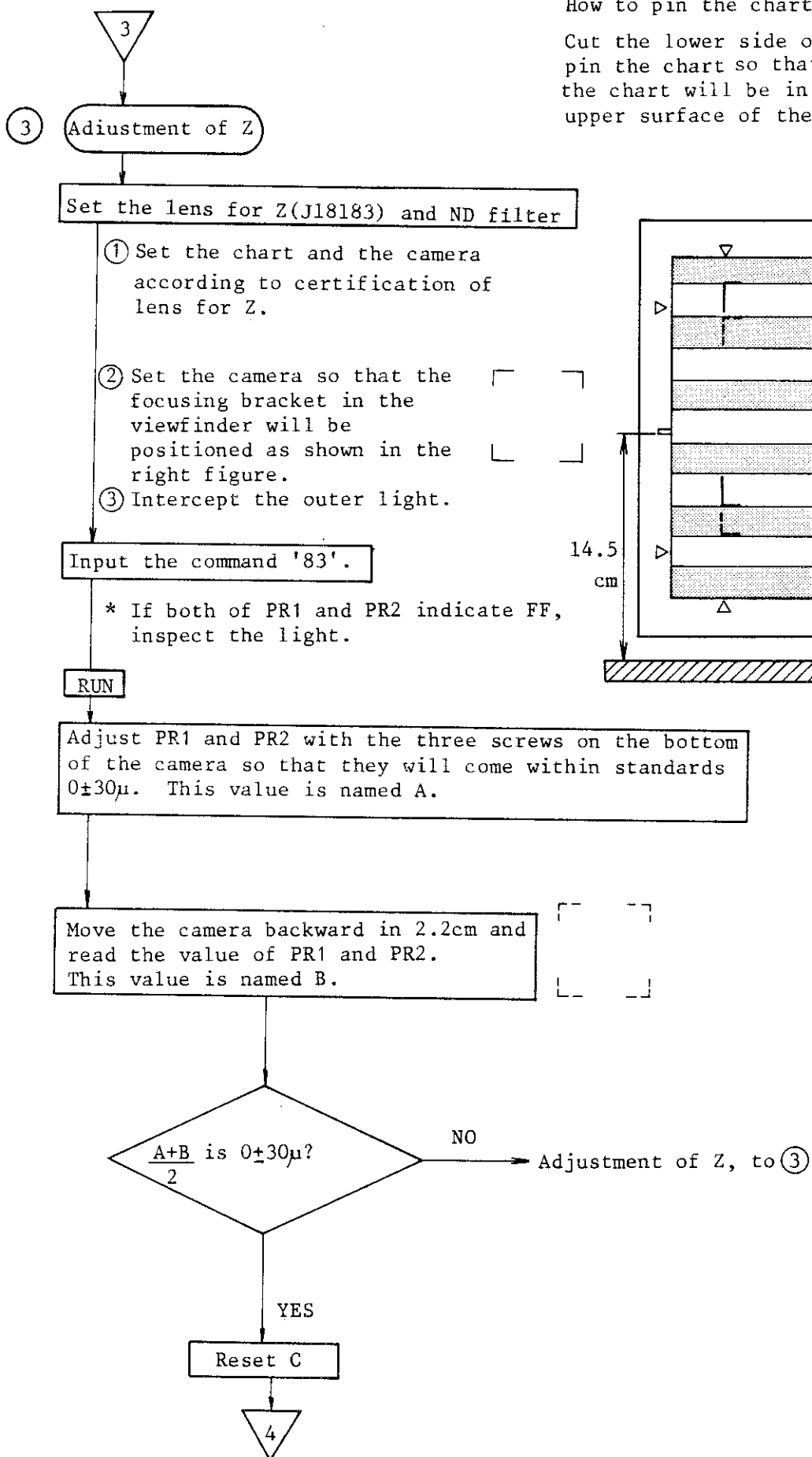
* Be sure not to connect reversely.
If the lead wires are connect reversely, DC/DC converter may be damaged.
Fixed voltage: 5.5V

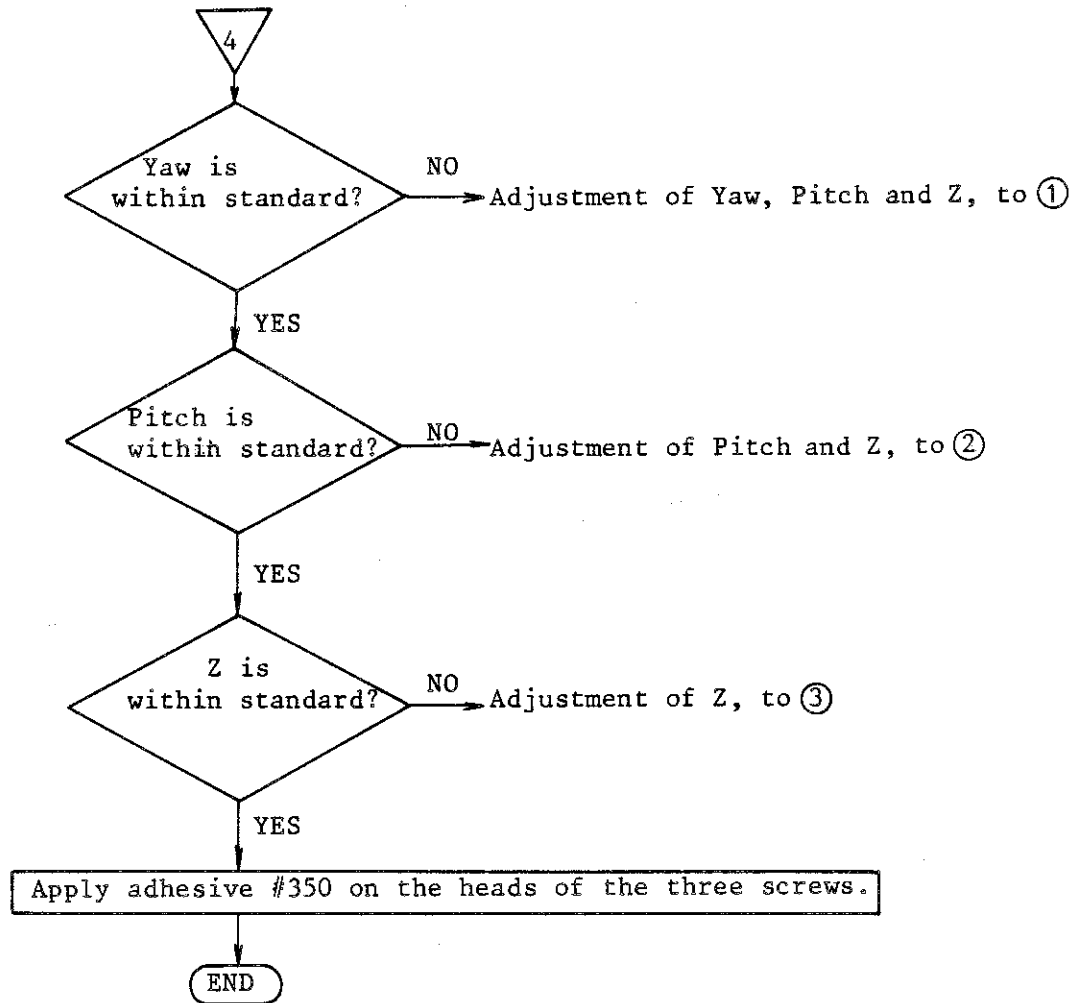
Take off the leatherette and set the CAS tester.

Turn the power of RAM tester on and set RAM tester to test mode.









ELECTRIC CIRCUIT

Contents	Page
ELECTRIC CIRCUIT BLOCK DIAGRAM.....	E1
OUTLINE OF THE F-501 CIRCUIT DIAGRAM.....	E2
AUTOFOCUS SYSTEM.....	E6
SWITCHES.....	E15
WIRING DIAGRAM (MAIN FPC).....	E16
WIRING DIAGRAM (POWER SW FPC).....	E17
MOISTURE-PROOF COATING DIAGRAM.....	E18
CIRCUIT DIAGRAM.....	E19
CIRCUIT DIAGRAM (MAIN FPC).....	E20
CIRCUITRY PARTS LOCATIONS.....	E21
CIRCUITRY PARTS LIST.....	E22
CHECK LANDS.....	E23
CHECKING LANDS (MAIN FPC).....	E24
HEAD AMPLIFIER TERMINALS.....	E25
MICRO COMPUTER TERMINALS.....	E26
DISPLAY DECODER IC TERMINALS.....	E27
AF MOTOR DRIVING IC TERMINALS.....	E28
AF LENS CONTACT, AF FPC TERMINALS.....	E29
MAIN FPC AND POWER SW FPC TERMINALS.....	E30
CIRCUITRY PARTS BASING DIAGRAM	E32
CIRCUITRY OUTLINE	E34

OUTLINE OF THE F-501 CIRCUIT DIAGRAM

The electric circuit of the F-501 is mainly composed of the following nine components;

1. Power source control
2. Operation/data input processing control
3. CPU
4. Decoder, display control
5. Film-advancing motor driving control
6. AE analog calculation control
7. TTL flash output calculation control
8. Light sensitive cell, Interface
9. AF lens control and focusing

1. Power source control

Common to the F-301

2. Operation/data input processing control

The information from on-off switching and dial settings performed by a user and also the information on sequence timing are inputted into one of CPU, AF interface and AF motor control circuit. According to the information from the AF A/M switch, which is inputted into the AF motor control circuit, only the AF motor is decided to start driving disregarding the information from the CPU.

Out of the informations from the four switches which is to be inputted into the AF interface, the remaining information, which the CPU cannot hold, is read via A/D channel of the interface module and is inputted into the CPU through the digital communication.

Other digital input data and analog input data are inputted into the CPU.

In addition to fo and f-fo signals, the data of the shutter speed dial and the ISO film speed dial are analog input data(A/D input).

CPU

Digital input data

Power hold sw	1-bit	Counter sw	1-bit
Release sw	1-bit	Program sw	1-bit
Self-timer sw	1-bit	Mirror sw	1-bit
AE lock sw	1-bit	Closing shutter curtain sw	1-bit
AF lock sw	1-bit	Film-advance completion sw	1-bit
S/C sw	1-bit		
		DX-coded film	5-bit
		FAI distinction	1-bit

Analog input data

fo signal
f-fo signal
Shutter speed dial
ISO film speed dial

AF interface(HIM)

Digital input data

AF S/C sw 1-bit
EE lens distinction 1-bit
Tele sw 1-bit
Teleconverter sw 1-bit

AF motor driving circuit
(M51049P)

Digital input data

AF A/M sw 1-bit

3. CPU

Function of the CPU mainly consists of the following eight factors.

1) - 5) are common to the function of the CPU for the F-301 except that analog data of the shutter speed dial and the ISO film speed dial are inputted after A/D conversion.

- 1) Sequence control
- 2) Calculation of the viewfinder display(AE)
- 3) Manual shutter speed control
- 4) Aperture control on programmed mode
- 5) Shutter and aperture control on speedlight mode
- 6) Calculation of distance detection and viewfinder display(AF)

The data output from HSM(light sensitive cell for autofocus, CCD) are A/D-converted serially by HIM(interface) and are inputted into CPU through communication. On the basis of these data, the defocus amount is calculated in accordance with the calculation routine.

The code and the defocus amount from the reference decide the viewfinder display($\times \triangleright \circ \triangleleft$), the lens travelling direction and the travelling amount.

- 7) Lens data detection

The new AF lens has the data of the field shift amount coefficient which is necessary for focusing control.

The CPU reads these data through serial I/O communication. And it is judged with the data that the new AF lens is attached.

- 8) Focusing control

In order to focus the lens, the motor is driven and the feedback pulse is counted by the CPU counter.

As the counter number increases (gets closer to the focus point), the motor rotation duty is changed and then, motor is stopped.

Higher focusing accuracy is available by this process.

4. Decoder display control

6-bit codes from CPU are decoded to light up the AE LED and the AF LED inside the viewfinder.

6-bit codes provided from CPU are decoded and they are latched by the strobe signal to be output to command the various operations.

The operations commanded by the latched output are as follows;

- 1) Film-advance motor driving
- 2) AF motor driving
- 3) Timing control for the analog AE control
- 4) Timing control for the digital shutter speed control on manual mode
- 5) Aperture control magnet actuation/self-timer LED blinking
- 6) LED lighting during film-advancing
- 7) Audio warning operation
- 8) Power source control for the new and old type AF lens

5. Motor driving control

Common to the F-301

6. AE analog calculation control

Common to the F-301

7. TTL flash output calculation control

Common to the F-301

8. Light sensitive cell for autofocus, Interface

HIM(interface module) receives the command from the CPU and commands HSM(sensor module: CCD) to store and transfer the electric charge. Then, the output signal is A/D-converted and transmitted to the CPU as digital signal.

For this operation, the clock generator is installed in HIM to control the CCD driving sequence.

HSM stores and transfers the proper electric charge, which corresponds to the light value, at one of the component rows(for F2.8 detector or F4.5 detector) in accordance with the driving clock and the component row changeover signal output from HIM.

HIM has another six channels of A/D converter. Two channels out of them are used for $\bar{x}$ p adjusting trimmer and other four channels are for read-out of the switches which are not directly related to distance detection.

9. AF lens control and focusing

When the new AF lens is attached and its A/M switch is set to A, the AF motor can be driven by the operation of the AF motor control circuit and the AF motor driving circuit in accordance with the driving signal from the decoder latch.

The AF motor is controlled on normal rotation, reverse rotation, braking and stopping modes. And the AF lens focuses via coupling of the mount.

This rotation of the AF motor is converted into pulse by the plate actuating with it and the photo interrupter. This signal is waveform-shaped into 'feedback pulse' by the control circuit and transmitted to the CPU.

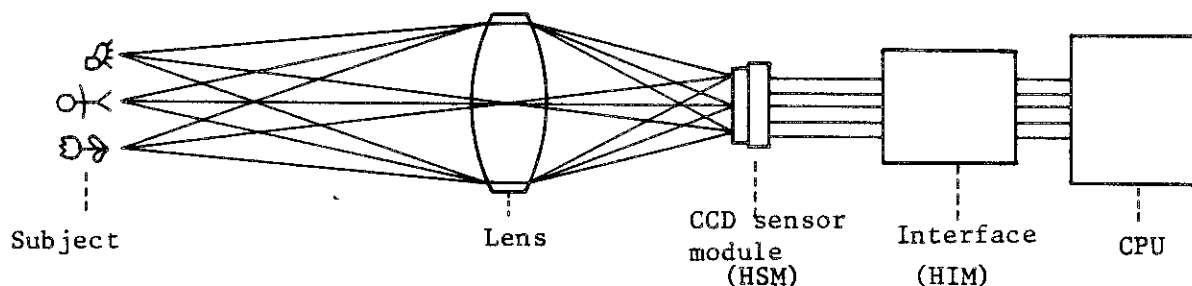
When the old type AF lens is attached, the driving signal from the decoder latch is transmitted to the lens contact directly.

The pulse from the relative distance terminal of the lens contact is waveform-shaped and transmitted to the CPU in the same way as the case of the new AF lens.

AUTOFOCUS SYSTEM

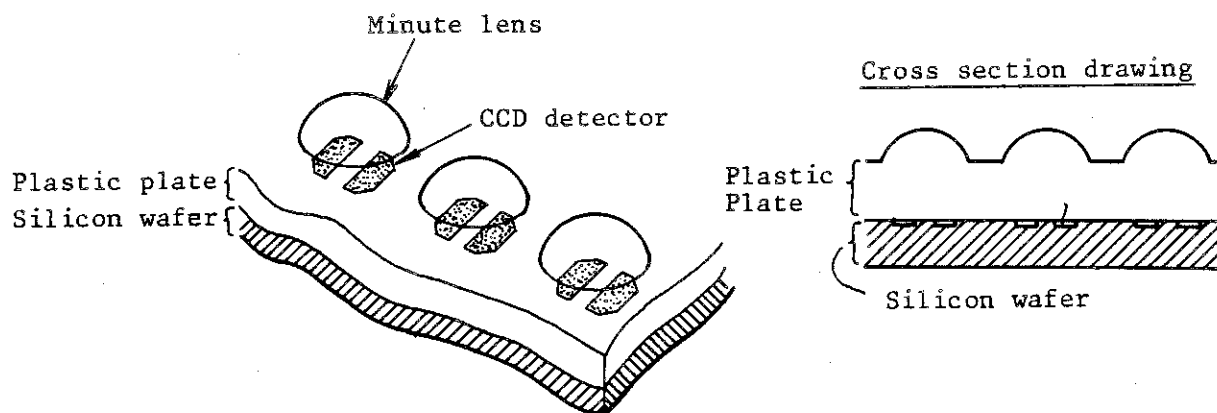
Autofocus system of the F-501 is composed of the closed loop control system which consists of the defocus detecting system by TCL system and the driving control system from CPU to the AF motor.

1. Defocus detecting system

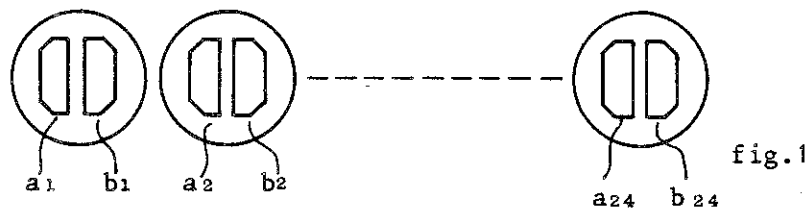


1) Construction of the sensor module

The sensor module(HSM) of TCL is CCD.
24 pairs of detectors(48pcs) are lined in a row on the silicon wafer.
A plastic plate is adhered on the silicon wafer and 24 minute lenses are built on the plastic plate (one minute lens for each pair of CCD detectors) as shown in the below figures.

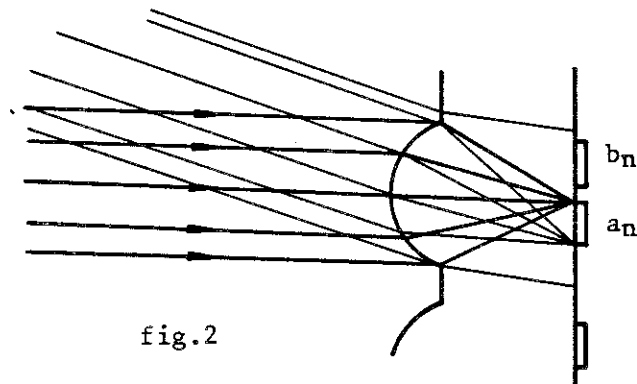


2) CCD output on various lens positions

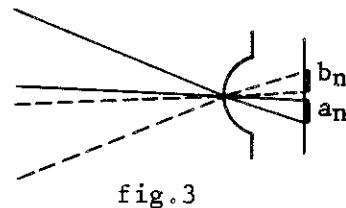


Each detector is named as shown in fig.1.

Light each detector receives is indicated in the fig.2.

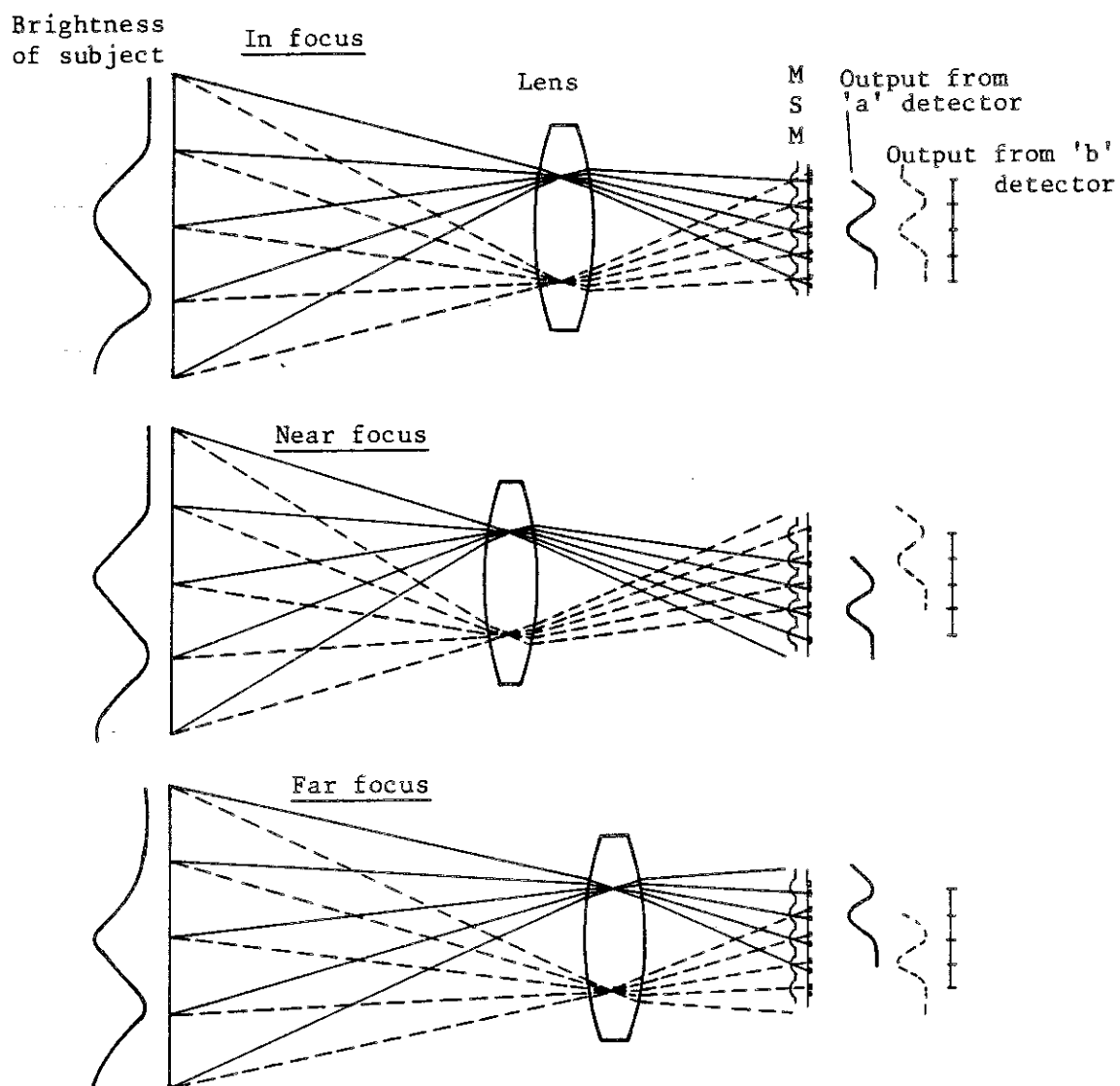


Detector 'a_n' receives only the beam from the right half and detector 'b_n' only from the left half as shown in fig.3.



This sensor module is located at such position as the distance from the subject to the sensor module is the same as the one to the film plane. In this condition, the output from the detectors a₁ - a₂₄ indicates the horizontal transition of light value of the subject, which is detected only from the beam of the right half. And the output from b₁ - b₂₄ indicates the vertical transition of light value which is detected only from the beam of the left half.

Following figures indicate the three focusing conditions.



Each distance is not the same as the one actually measured.

3) Calculation of the defocus amount

In focus, the output from 'a' detector is the same as that from 'b' detector. As the lens travels to the direction of the subject, the image of 'a' detector moves to the left and that of 'b' detector to the right. Moving amount of the images of both 'a' and 'b' detectors is the same. If the lens travels to the direction of the film plane, the image of 'a' detector moves to the right and that of 'b' detector to the left.

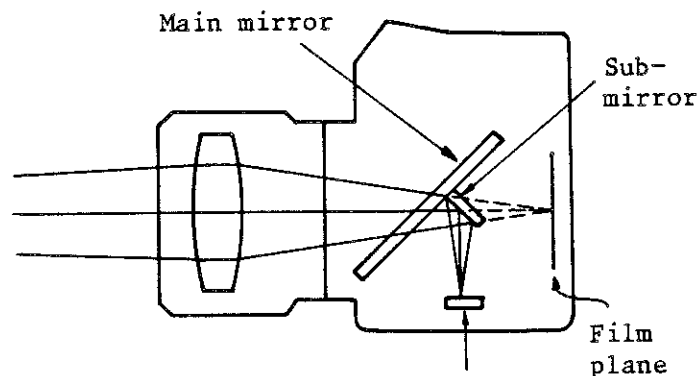
In principle, this moving amount(including +, - sign) is in proportion to the travelling amount of the lens, that is the distance from the film plane to the image formation plane on the optical axis. The coefficient is decided by the incident angle of the light to detectors. So, through the moving amount of the images of 'a' and 'b' detectors, travelling amount of the lens to the focusing point(including +, - sign) is decided.

Analog signal of the output from the sensor module is A/D-converted by the interface module(HIM). Then, it is inputted into the CPU as a digital signal. CPU calculates the above-mentioned moving amount by using the fixed algorithm.

Components of the sensor module are lined in two rows, and each detector has the different size. So, the angle in which the detectors can receive light is dependent on the detector. The two rows of the detectors are named F2.8 detectors and F4.5 detectors. F2.8 detectors cover the lenses whose maximum apertures are F2.8 or below. And F4.5 detectors cover the lenses whose maximum apertures are above F2.8. The lenses whose maximum apertures are above F4.5 cannot be used. Each of the F2.8 detectors and F4.5 detectors have K factor of their own, which is a ratio of the above-mentioned moving amount against the travelling amount of the lens.

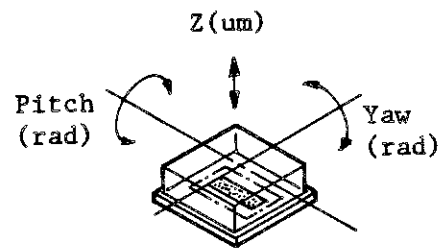
4) Alignment of the sensor module

The distance from the subject to the sensor module is made the same as the one to the film plane by the sub-mirror as shown in the following figures.



The position of the sensor module reflects directly to the focusing accuracy of the camera. So, the minute adjustment is required in aligning the sensor module.

There are three parameters for alignment as shown in the following figures.



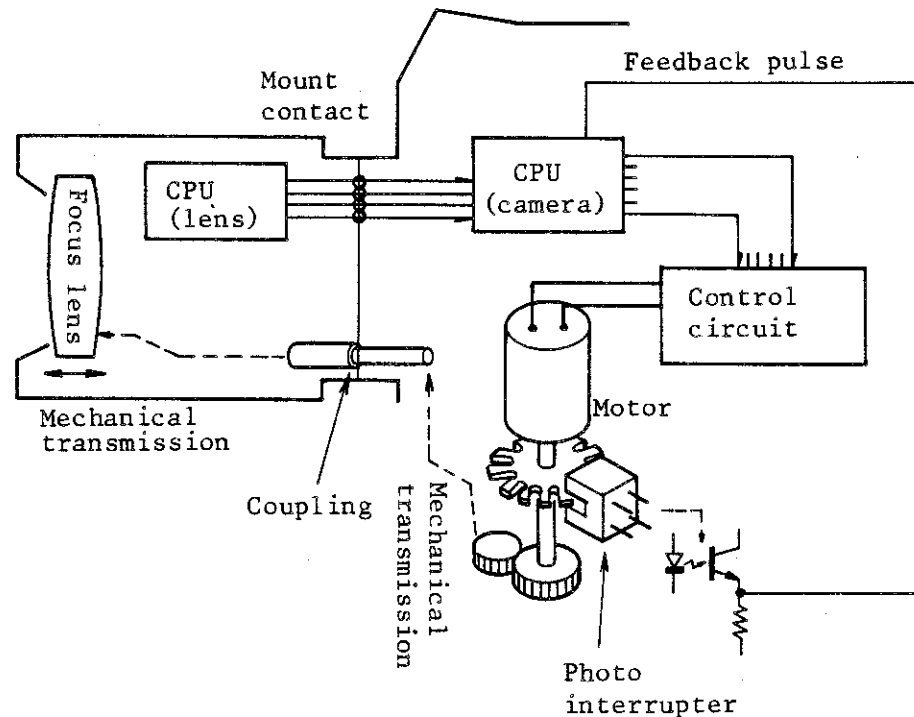
Please make adjustment by using the three adjusting screws, so that the three parameters may come close to zero.

2. AF lens driving control system

The defocus amount is calculated and given by the defocus detecting system.

AF lens driving control system drives the lens with necessary amount and stops the lens so that the defocus amount may become zero.

The following is the outline of the AF lens driving control system when the new AF lens is attached.



CPU in the camera demands that CPU in the lens should send the data of the image surface shift amount coefficient, and reads it as a digital signal through the mount contact.

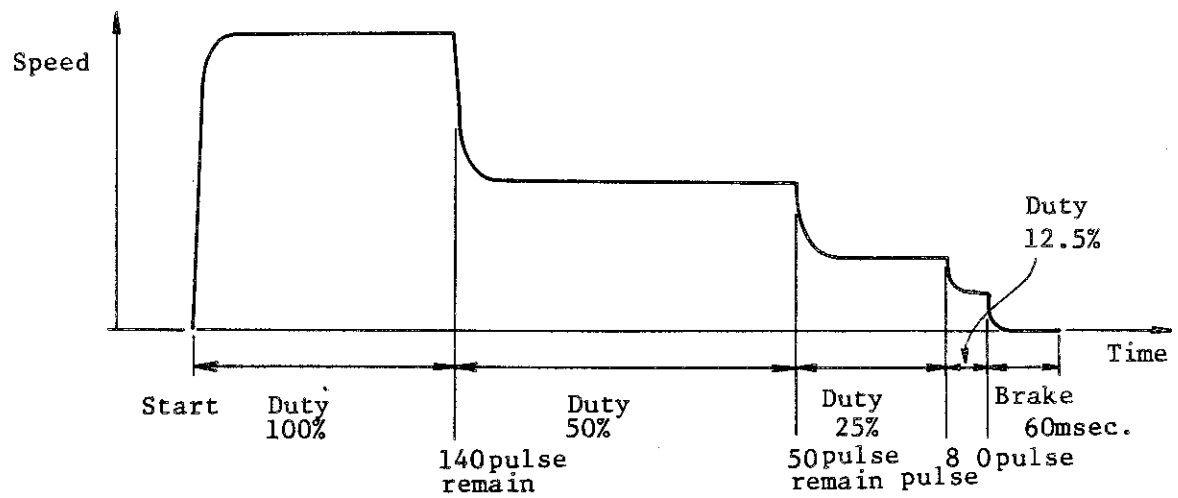
The image surface shift amount coefficient shows the ratio of the rotation of the coupling on the mount against the shift amount of the image surface given by the rotation frequency. In other words, this means how many motor rotations are required for the lens travelling.

Each lens has a value of its own. With the zoom lens, the value changes depending on the focal length set.

Then, CPU in the camera calculates the rotation of the AF motor with the use of the defocus amount detected by the defocus detecting system and the image surface shift amount coefficient. If the result is out of the focusing range, the AF motor travels.

When the motor rotates, the plate rotates together with the motor shaft. Then, the photo interrupter converts this rotation into electric pulse signal. CPU counts this pulse and monitors it till it comes to the desired value.

In order to stop the motor rotation precisely when the pulse comes to the desired value, the motor rotates on four steps of rotating speed as the following graph.



When the old type AF lens which does not have CPU is attached, the image surface shift amount is uniform. The AF motor and the feedback pulse generation circuit are in the lens and the signal is transmitted to the camera via the mount contact.

Exchanging of the driving speed of the AF motor is as follows;

Till remaining 8 pulse: Duty 100%

At remaining 8 pulse: Duty 50%

3. Control loop by all systems

The F-501 has three focus modes.

- 1) M mode (annual focus)
Servo does not operate. Only the viewfinder display operates.
- 2) C mode (continuous servo autofocus)
Focus detection continues as long as the power hold switch is on.
When the power hold switch is turned off, the lens stops moving.
The focus indicator LED remains on as long as the power hold timer is on even if the finger is detached from the shutter release button.
- 3) S mode (single servo autofocus)

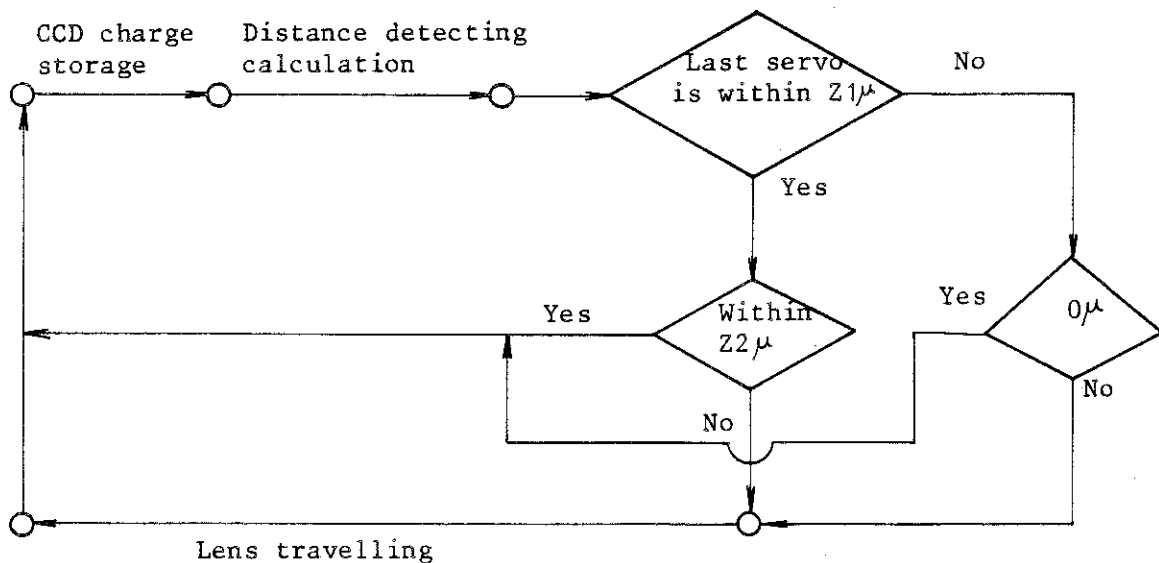
When the power hold switch is turned on, the lens start to travel.
Once focused, the lens stops travelling even if the power hold timer continues on.

If the finger is detached from the shutter release button, the lens stops travelling even before focusing.

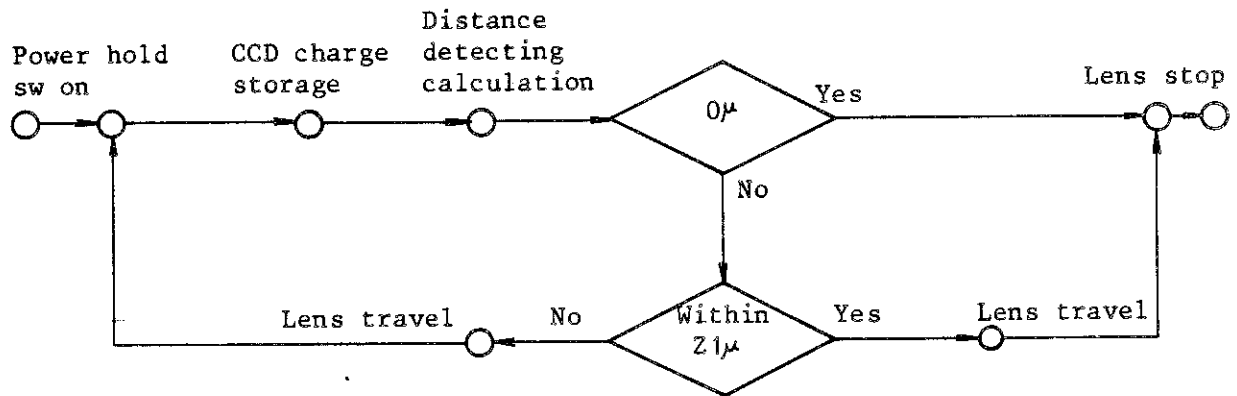
The viewfinder display operates while the power hold switch is on.
And when the power hold switch is turned off, the viewfinder display stops operating.

The following is control loops on C and S modes.

AF CONTROL LOOP ON C MODE (when the power hold switch is on)



If the calculatoin result from the inputted data is within Z1 , then, the defocus amount is judged to be small. And if it is within Z2 , the lens does not travel at all.

AF CONTROL LOOP ON S MODE

The power hold switch is turned on and storage, calculation and lens travelling are repeated.
 When the defocus amount is within $Z1\mu$, the lens will be stopped after the next one cycle.

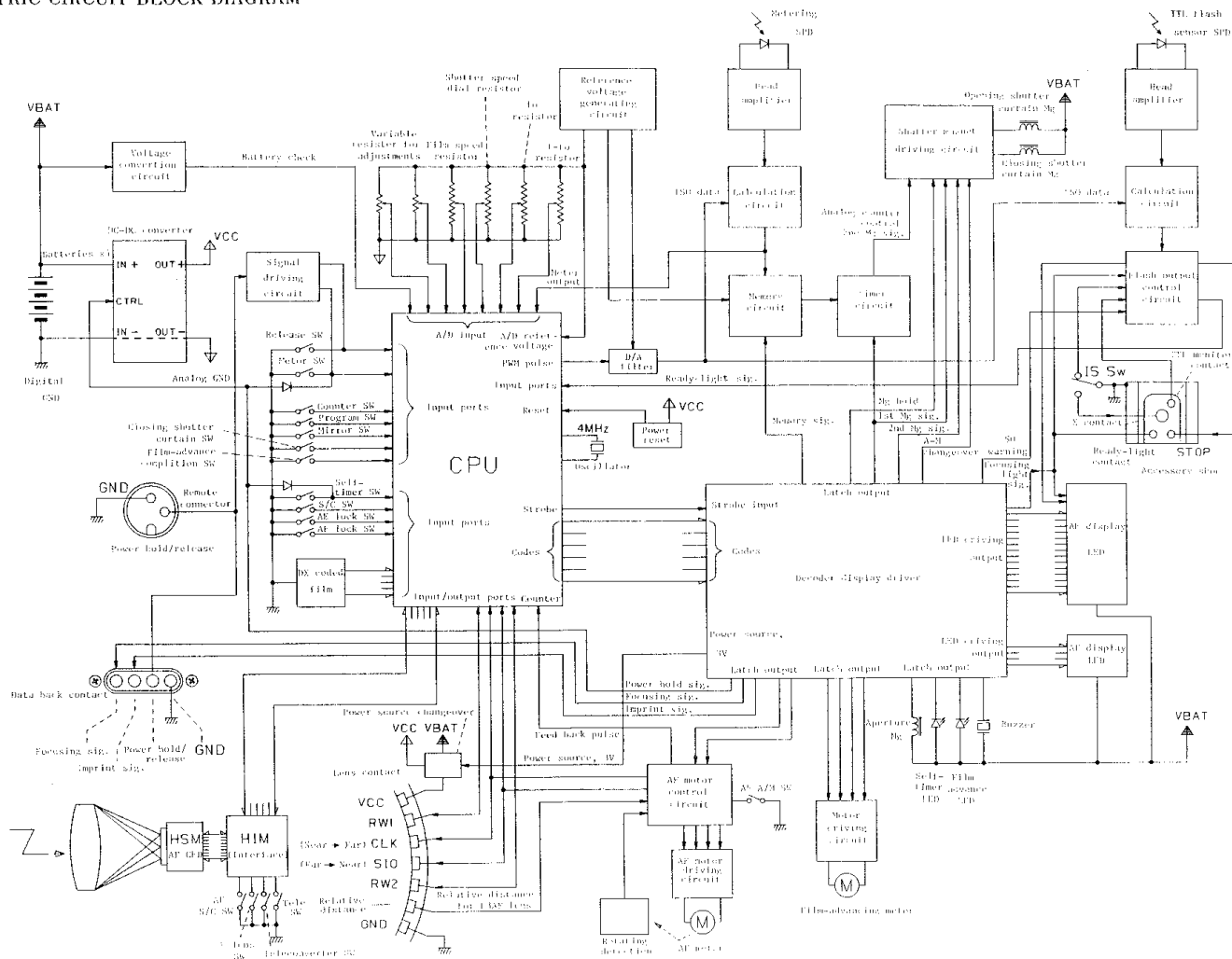
* $Z1$ and $Z2$ are the defocus amount which indicates the fixed focus judging zone. ($Z1 > Z2$)

SWITCHES

Name	Poisition	Operation
AF A/M changeover sw	reverse side of front plate	When the focus mode selector is set to M, it is turned off and focus mode is switched to manual mode.
One shot sw	Front side of front plate	When the focus mode selector is set to S, it is turned off and focus mode is switched to single autofocus servo mode.
fmm sw	Base plate L	Tele sw: When the lens whose focal length is 135mm or longer is attached, it is turned on. Teleconverter sw: When the AI-S teleconverter is attached, it is turned on.
AF lock sw	Front side of front plate	When the autofocus lock button is pressed, it is turned on and focus is locked.

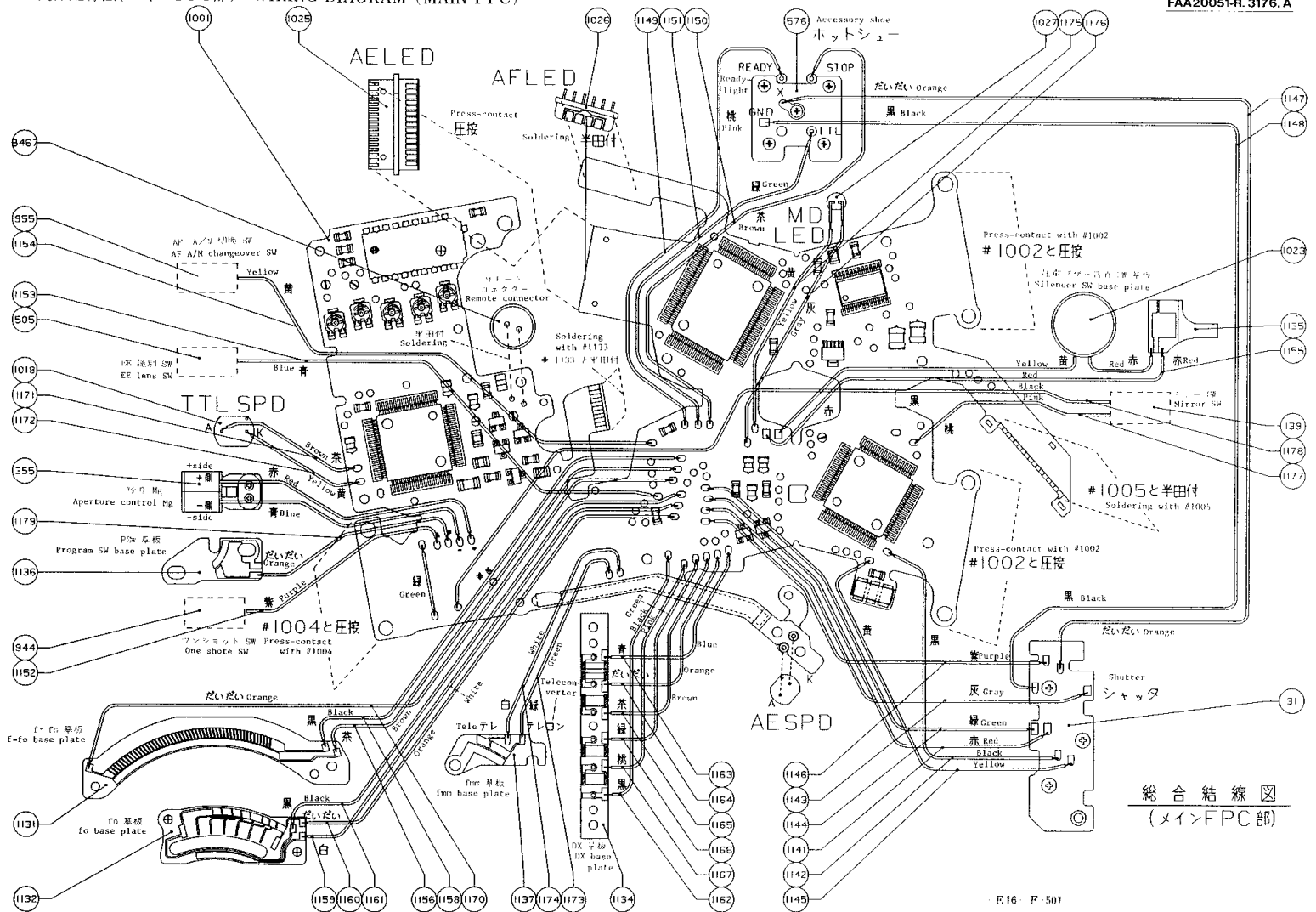
°The operation of the other switches is same as that of the F-301.
But the positions of the self-timer sw and the AE lock sw are
changed.

ELECTRIC CIRCUIT BLOCK DIAGRAM

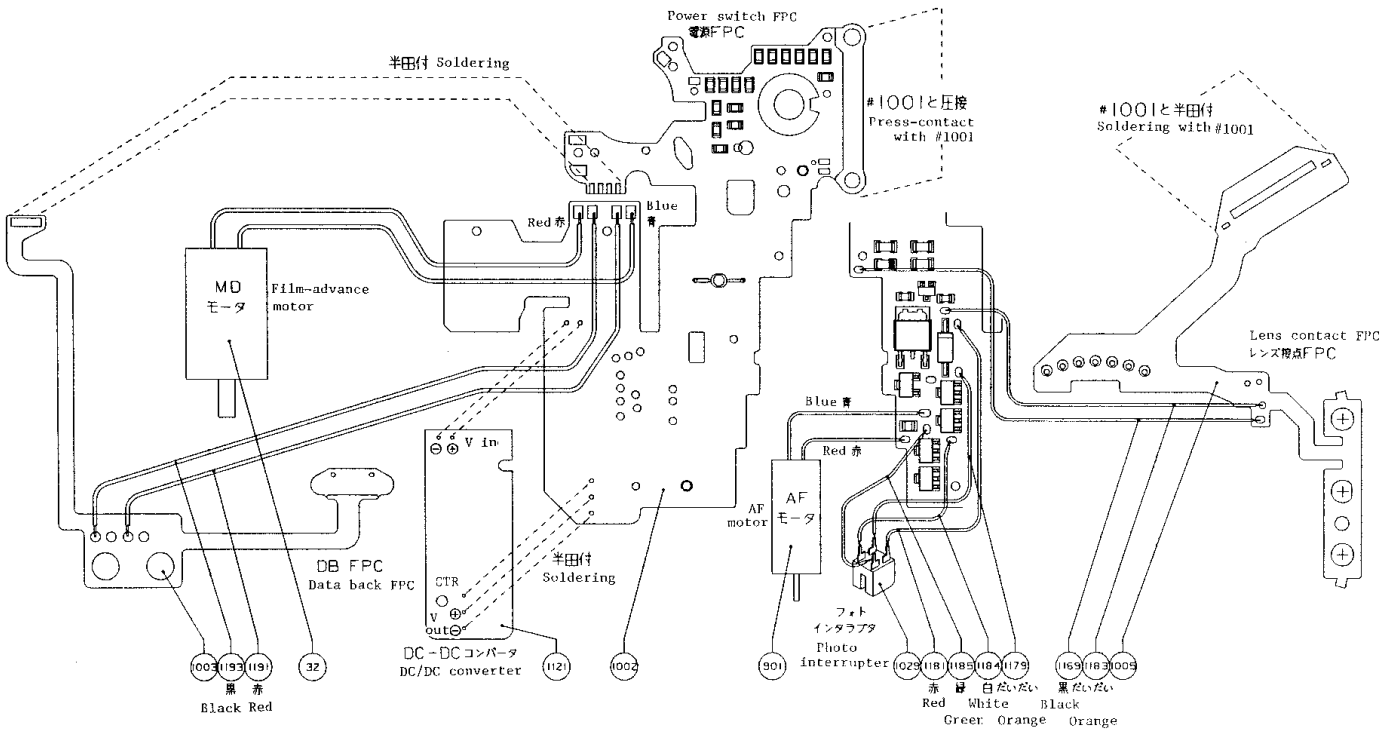


実体配線図(メインFPC部) WIRING DIAGRAM (MAIN FPC)

FAA20051-R. 3176. A



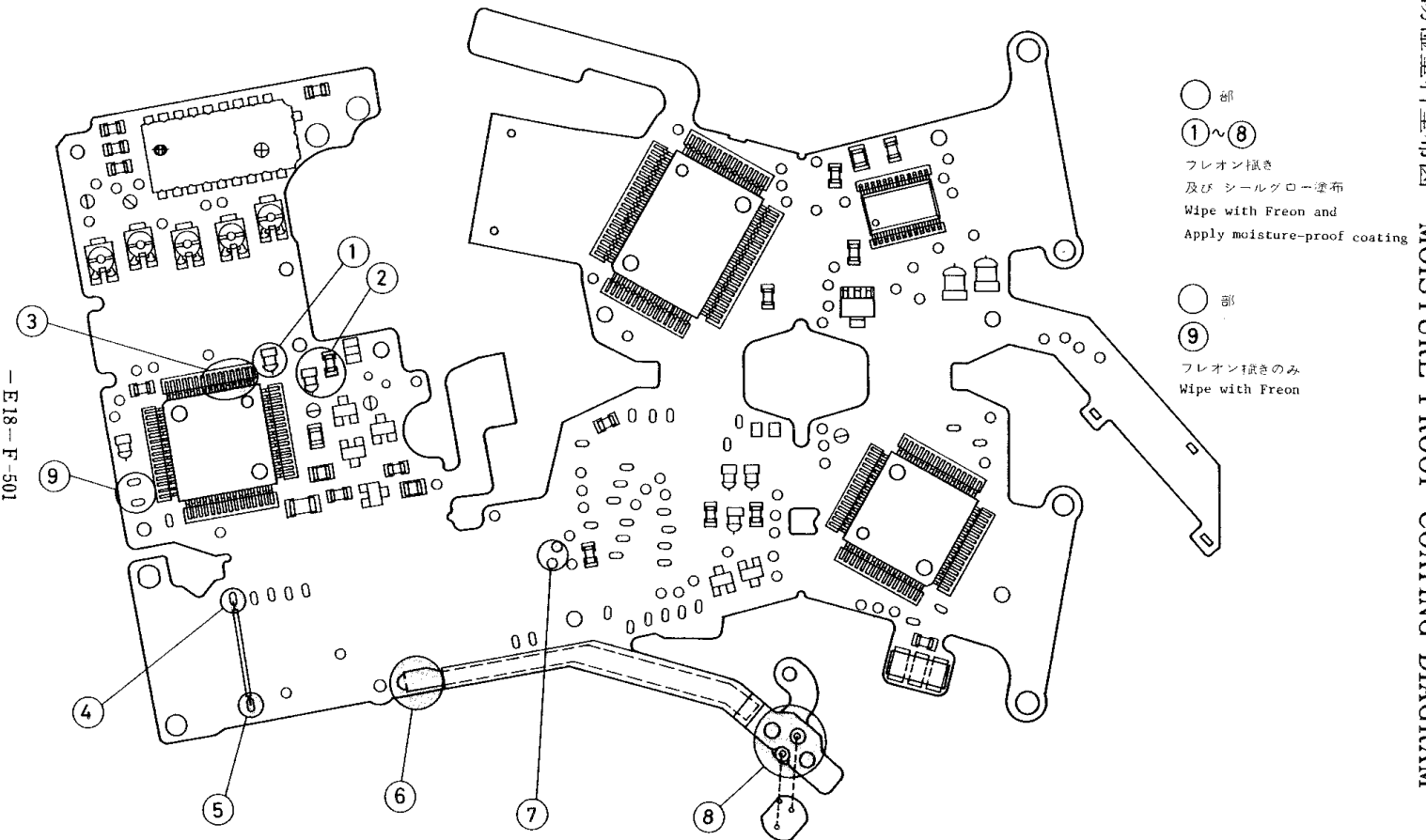
総合結線図
(メインFPC部)

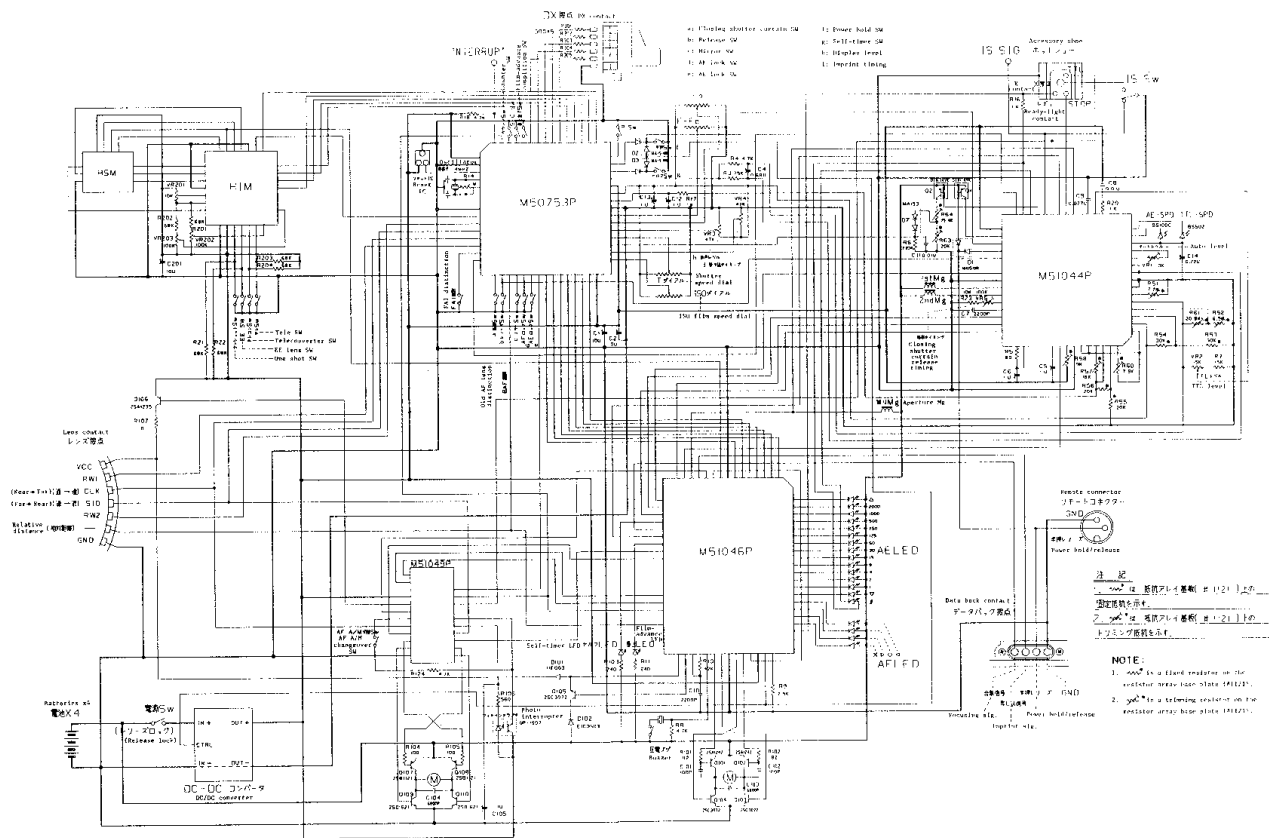


防湿塗料塗布図

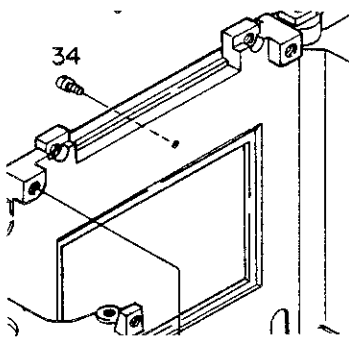
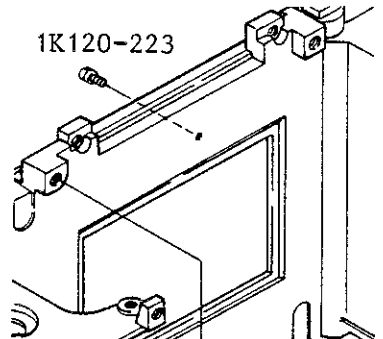
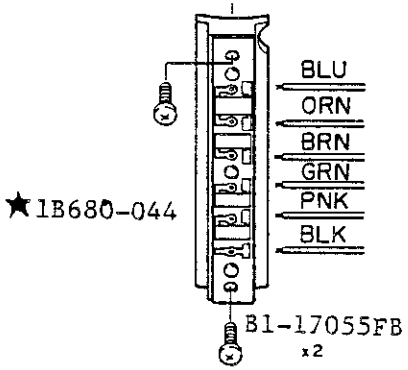
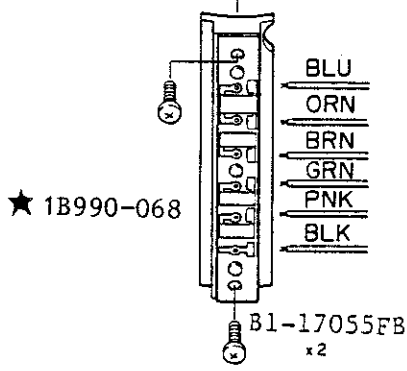
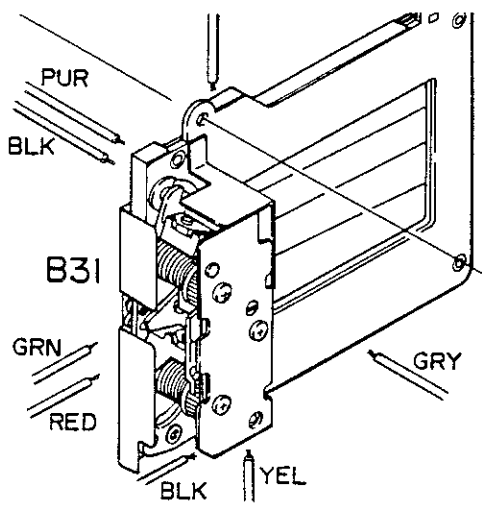
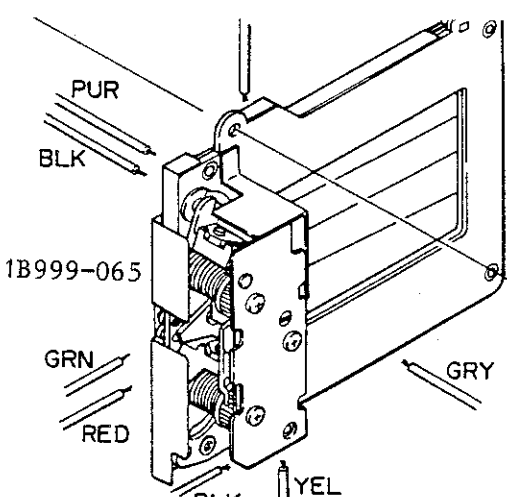
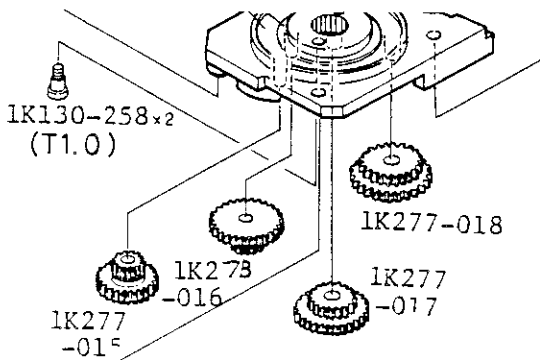
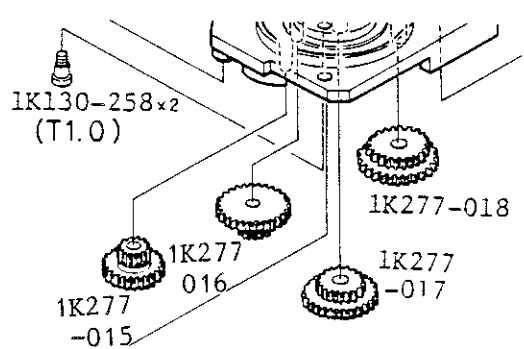
MOISTURE-PROOF COATING DIAGRAM

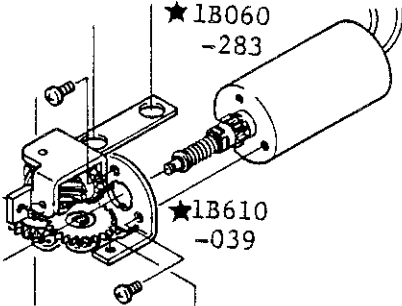
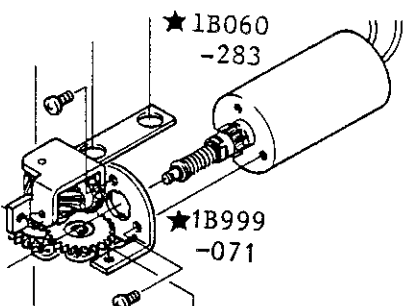
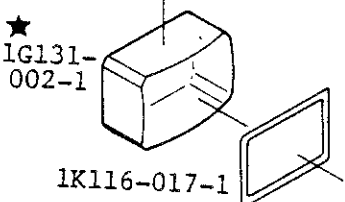
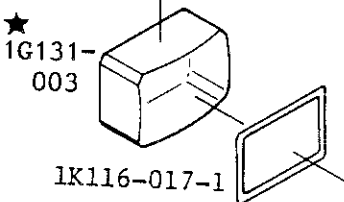
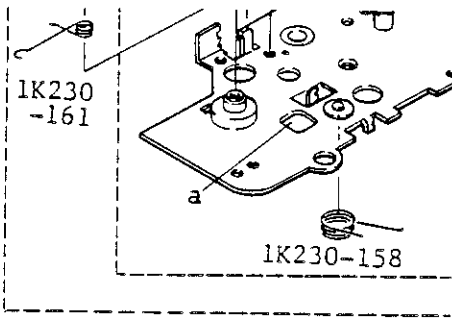
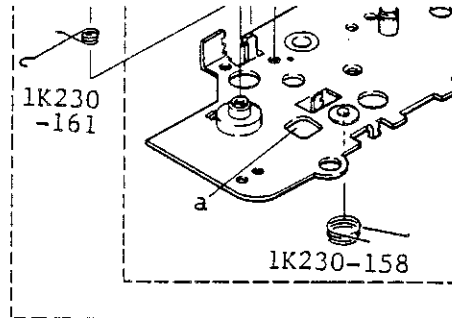
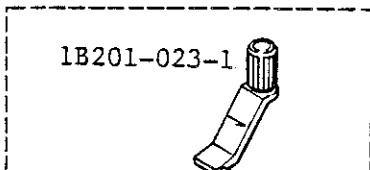
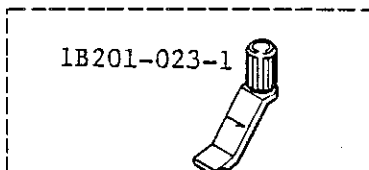
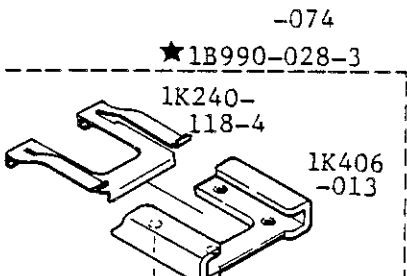
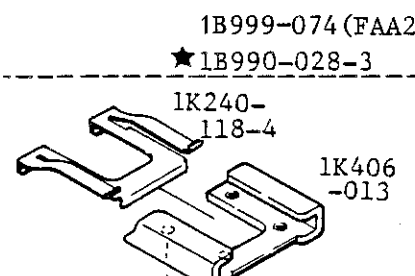
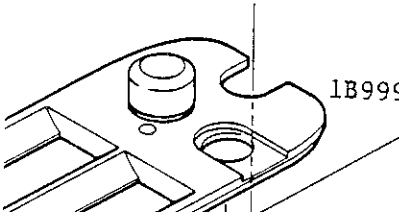
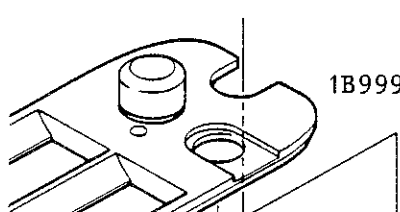
FAA20051-R.3176.A

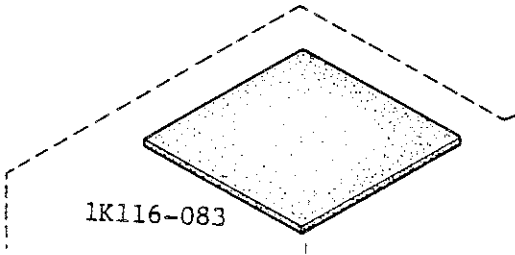
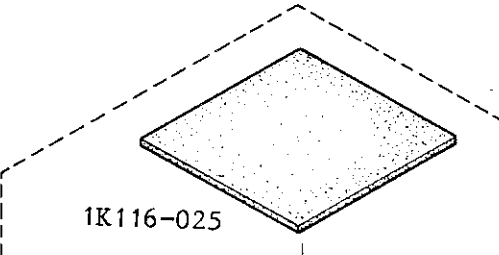




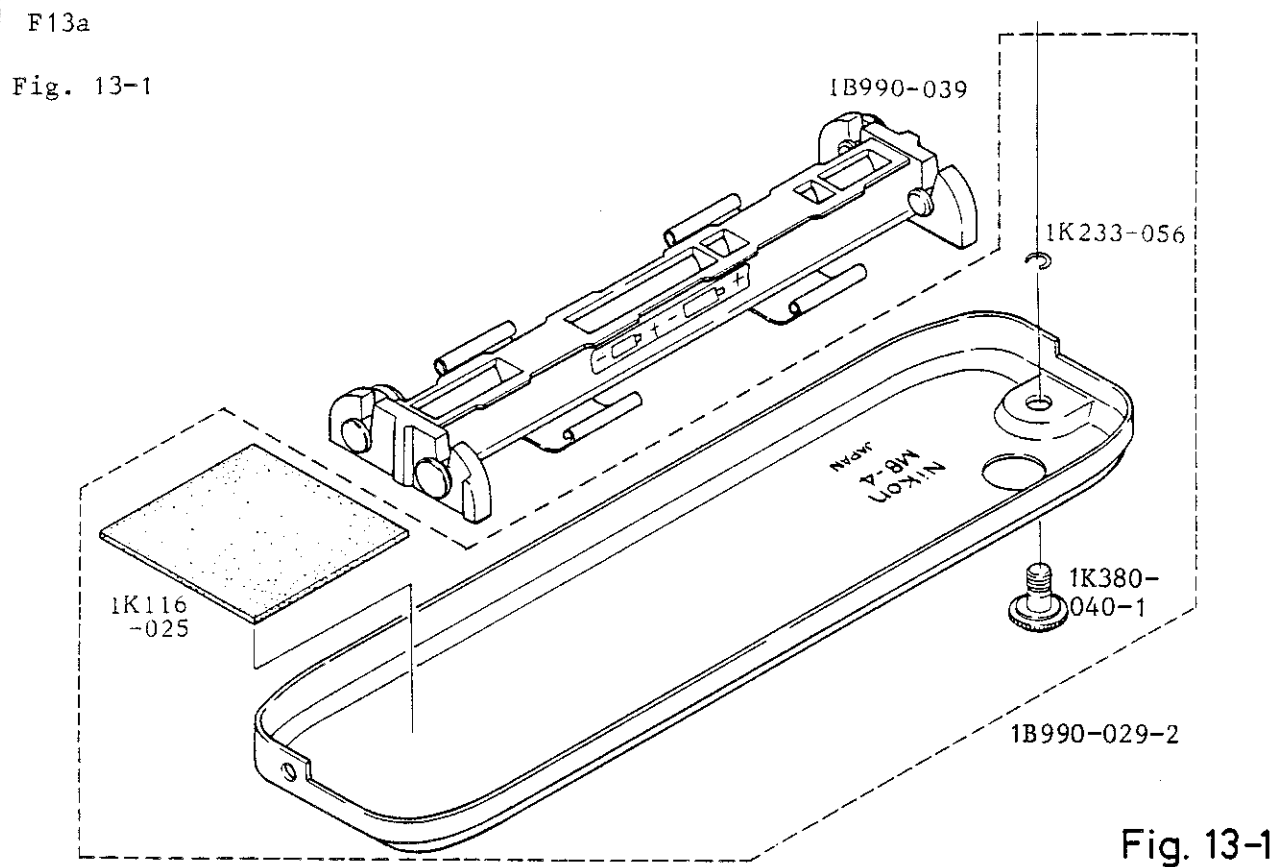
正誤表 Corrections

Page	MISTAKE	CORRECT
F1 Fig. 1	Fig. 1  34	 1K120-223
	 ★1B680-044 BLU ORN BRN GRN PNK BLK B1-17055FB x2	 ★1B990-068 BLU ORN BRN GRN PNK BLK B1-17055FB x2
	 PUR BLK B31 GRN RED BLK YEL	 PUR BLK 1B999-065 GRN RED GRY YEL
F2 Fig. 2	 1K130-258x2 (T1.0) 1K277-015 1K277-016 1K277-017 1K277-018	 1K130-258x2 (T1.0) 1K277-015 1K277-016 1K277-017 1K277-018

Page	MISTAKE	CORRECT
F5 Fig. 5	 ★1B060-283 ★1B610-039	 ★1B060-283 ★1B999-071
F8 Fig. 8	 ★1G131-002-1 1K116-017-1	 ★1G131-003 1K116-017-1
F10 Fig. 10	 ★1B990-062 1K230-161 1K230-158 a	 ★1B990-062-2 1K230-161 1K230-158 a
F11 Fig. 11	 1B990-052-1 1B201-023-1	 1B990-052 1B201-023-1
F12 Fig. 12	 ★1B990-028-3 1K240-118-4 1K406-013 -074	 ★1B990-028-3 1K240-118-4 1K406-013 1B999-074 (FAA20151)
F13 Fig. 13	 ★1B999-078	 ★1B999-078-1

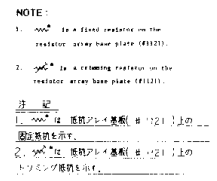
Page	MISTAKE	CORRECT
F13 Fig. 13		

展開図追加 Additional Figure

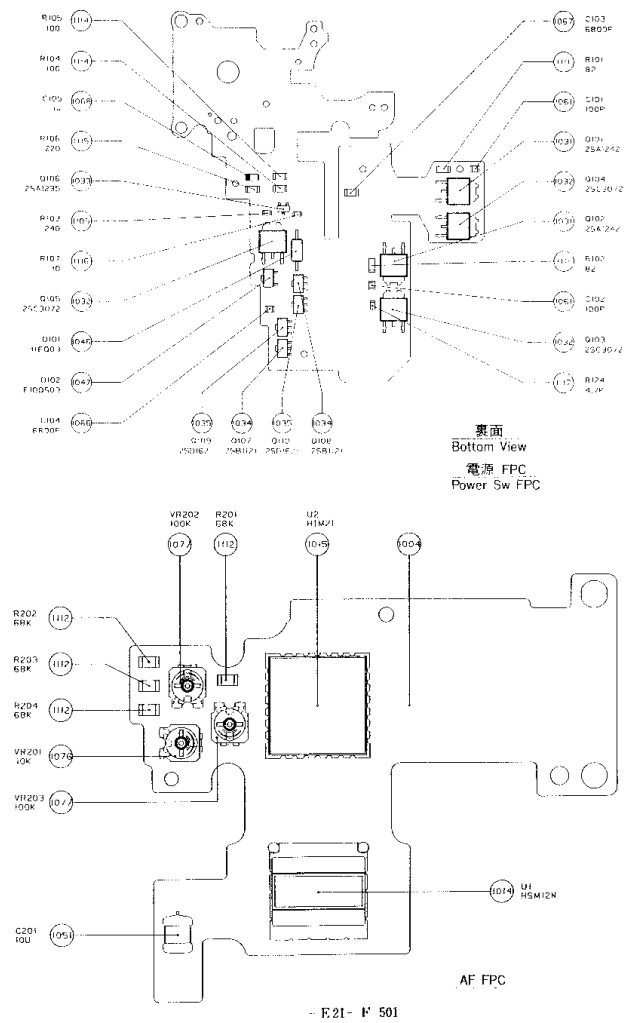


Page	MISTAKE	CORRECT
F17	G5, 1G131-002-1	1G131-003
	MB13, 1K116-083	1K116-025
	B211, 1B680-044	1B990-068
	Additional part No.	B31, 1B999-065
F18	B561, 1B990-052-1	1B990-052
	B902, 1B610-039	1B999-071
	B4002, 1B990-062	1B990-062-2
	BMB32, 1B999-078	1B999-078-1

FAA20051-R. 3176. A



FAA20051-R. 3176. A



CIRCUITRY PARTS LIST

Index		Function	Index		Function 称
R3	75K Ω	PWM filter resistor	C101	100P	Prevention of spike
R4	4.7K Ω	PWM discharging	C102	100P	Prevention of spike
R5	180 Ω	Timer C discharging	C103	6800P	Motor noise reduction C
R6	330K Ω	Battery check resistor	C104	6800P	Motor noise reduction C
R7	15K Ω	TTL level fixing	C105	1 μ	Relative distance pulse condenser
R8	4.7K Ω	Buzzer discharging	C201	10 μ	By-pass condenser
R9	7.5K Ω	LED current set			
R10	47K Ω	Oscillation resistor			
R11	240 Ω	MD LED resistor	Q1	DTA114V	Remote sw power-on transistor
R14	1M Ω	Oscillator resistor	Q2	DTA114V	Battery check transistor
R16	1K Ω	Ready-light current supply control	Q101	2SA1242	MD transistor
R17	1K Ω	Filter resistor	Q102	2SA1242	MD transistor
R18	4.7K Ω	INT pull-up	Q103	2SC3072	MD transistor
R20	1K Ω	Integration condenser resistor	Q104	2SC3072	MD transistor
R21	68K Ω	HIM A/D pull-up	Q105	2SC3072	Old lens Vcc supply
R22	68K Ω	HIM A/D pull-up	Q106	2SA1235	New lens Vcc supply
R23	10K Ω	Closing shutter curtain release timing fixing	Q107	2SB1121	AF MD transistor
R101	82 Ω	Q101 base resistor	Q108	2SB1121	AF MD transistor
R102	82 Ω	Q102 base resistor	Q109	2SD1621	AF MD transistor
R103	240 Ω	Self-timer LED current supply control	Q110	2SD1621	AF MD transistor
R104	100 Ω	Q107 base resistor			
R105	100 Ω	Q108 base resistor	D1	MA151WK	Remote diode
R106	560 Ω	Photo interrupter current supply control	D2	MA151WK	Remote diode
R107	10 Ω	New lens Vcc protecting	D3	MA151WK	Self-timer diode
R124	4.7K Ω	Photo interrupter load	D7	MA153	Battery check level shift
R201	68K Ω	X-BAR-P fixing	D101	11EQ03	3V protection
R202	68K Ω	X-BAR-P fixing	D102	E10QS03	Protection from reverse connection of battery
R203	68K Ω	HIM A/D pull-up			
R204	68K Ω	HIM A/D pull-up	VR1	10K	Auto mode level
C1	10 μ	By-pass condenser	VR2	15K	TTL mode level
C2	10 μ	By-pass condenser	VR3	47K	LED display level
C4	0.68 μ	PWM filter condenser	VR4	47K	Aperture stage down timing
C5	1 μ	Memory condenser	VR5	100K	Closing shutter curtain release timing
C6	1 μ	Timer condenser	VR201	10K	HIM A/D reference adjustment
C7	2200P	Closing shutter curtain release timing	VR202	100K	HIM X-BAR-P
C8	0.01 μ	Integration condenser	VR203	100K	HIM X-BAR-P
C9	0.027 μ	IS delay condenser	M51044P		Head amplifier IC
C10	2200P	Oscillation condenser	M51046P		Display, decoder IC
C11	0.01 μ	Battery check condenser	M50753P		MCU
C12	1 μ	Filter condenser	M51049P		AF driving IC
C13	1 μ	Vref filter condenser	M51943		Reset IC
C14	0.22 μ	TTL flash output control regulator	HSM12N		Sensor module
			H1M21		Interface module

CHECK LANDS

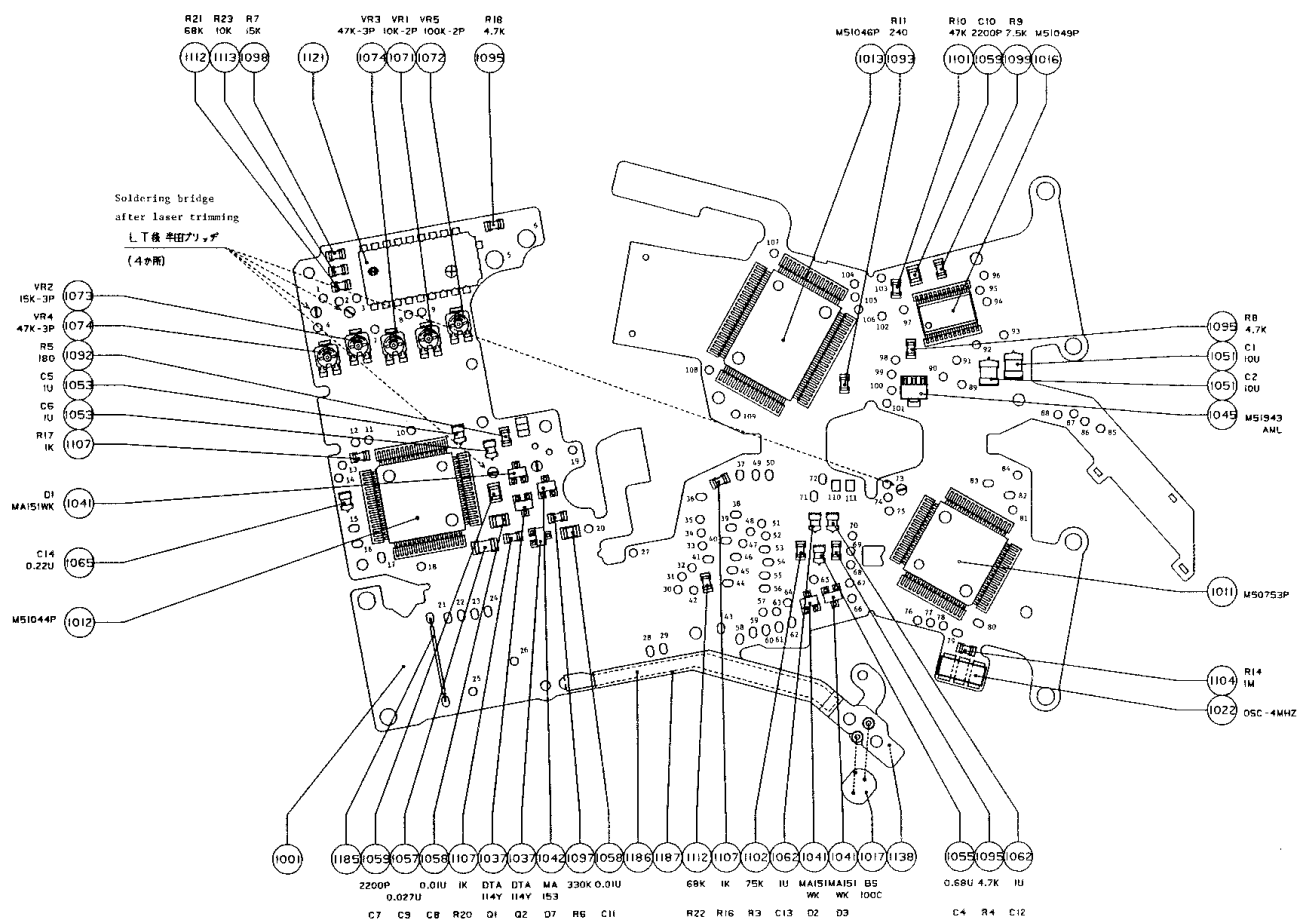
1) *Lead wire soldering terminal

2) Number in parentheses is the check land number for the F-301.

1	Auto level shift	(10)	41	EE lens sw lead wire (blue)	(40)	81	Release sw	(72)
2	f-fo reference output	(7)	42	Vcc		82	*Mirror sw	
3	A2 out	(13)	43	*FAI lead wire (black)	(56)		lead wire (pink)	(85)
4	Auto level shift	(12)	44	*fo lead wire (orange)	(49)	83	GND	
5	IS terminal S	(8)	45	*fo lead wire (white)	(48)	84	SI0	
6	INT	(9)	46	*fo lead wire (black)	(47)	85	AE lock	(83)
7	TTL mode level	(1)	47	First Mg signal	(50)	86	RW1	
8	Meter output 2	(4)	48	Second Mg signal	(51)	87	Clock	
9	Shutter speed proportion 2	(5)	49	*TTL terminal (green)	(42)	88	RW2	
10	Auto r	(15)	50	*Stop terminal (brown)	(43)	89	TTL signal	
11	Meter output 1	(2)	51	A/M changeover		90	AFD2	
12	Meter output 3	(14)	52	ISO warning		91	Q108	
13	A/D r reference	(18)	53	*Second Mg lead wire (green)	(62)	92	Q109	
14	Analong GND	(21)	54	*V BAT lead wire (red)	(63)	93	Q107	
15	*TTL SPD A lead wire (brown)	(16)	55	*First Mg lead wire (gray)	(64)	94	Q110	
16	*TTL SPD K lead wire (yellow)	(17)	56	*IS sw lead wire (purple)	(65)	95	AFD1	
17	SPD K	(19)	57	Analog GND		96	AFLK	
18	Shutter speed proportionon 1	(20)	58	*FAI lead wire (pink)	(57)	97	Q102	(102)
19	Battery check	(92)	59	*FAI lead wire (green)	(58)	98	Vcc	
20	FAI indentification	(32)	60	*FAI lead wire (brown)	(59)	99	Digital GND	
21	*One shot sw lead wire (purple)		61	*FAI lead wire (orange)	(60)	100	RESET	
22	*Program sw lead wire (orange)	(28)	62	*FAI lead wire (blue)	(61)	101	CNTR	
23	*Aperture Mg lead wire (blue)	(29)	63	Program sw	(70)	102	SELF-TIMER LED	(98)
24	*Aperture Mg lead wire (red)	(30)	64	DA		103	Q101	(99)
25	*Mirror sw lead wire (black)	(84)	65	Power hold sw	(67)	104	3.6V	
26	Remote terminal	(24)	66	Self-timer sw	(71)	105	3.0V	
27	Film speed dial		67	RC (remote control)	(69)	106	Q104	(101)
28	*Teleconverter lead wire (green)		68	1.5V	(3)	107	Q103	(100)
29	*Tele lead wire (white)		69	PWM	(68)	108	AF LED 1 sec.	(103)
30	Memory condenser	(54)	70	Meter output	(75)	109	Ready-light K	
31	Timer condenser	(53)	71	*MD LED K lead wire (gray)	(93)	110	*Silencer sw	
32	Integration condenser		72	*MD LED K lead wire (yellow)	(94)		lead wire (red)	(105)
33	Mg hold	(38)	73	Vcc		111	*PVC lead wire	
34	Memory signal	(39)	74	INT2			(yellow)	(106)
35	Aperture Mg signal	(52)	75	Shutter dial				
36	*A/M change over sw lead wire (yellow)		76	Film-advance sw	(77)			
37	*Ready-light LED (pink)	(41)	77	AF S/C changeover sw ((AF))				
38	*f-fo lead wire (black)	(44)	78	Frame counter sw	(73)			
39	*f-fo lead wire (brown)	(45)	79	*Closing shutter curtain sw				
40	*f-fo lead wire (orange)	(46)		lead wire (yellow)	(87)			
			80	*GND shutter lead wire (black)	(86)			

メインFPC部品実装図 COMPONENT MOUNTING DIAGRAM (MAIN FPC)

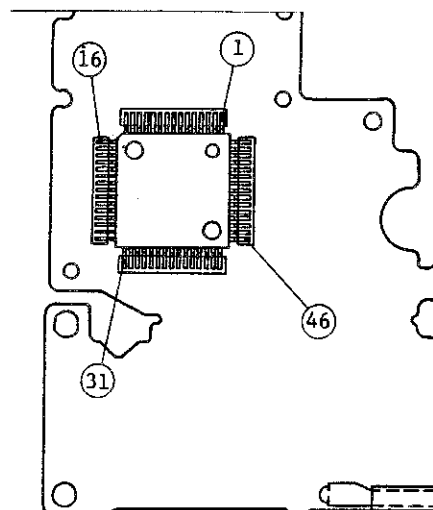
FAA20051-R. 3176. A



HEAD AMPLIFIER TERMINALS

(51044)

(A1~A60)



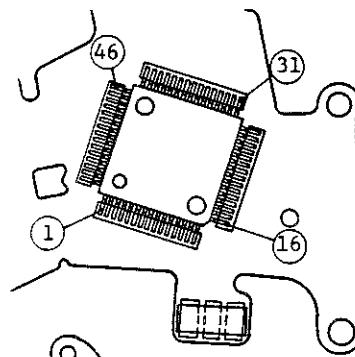
	Name	Function		Name	Function
1	Condenser discharge	Timer condenser discharge	32	T	Temperature proportion
2	A11	A11 $\ominus$	33	Integration condenser	Integration condenser
3	A18 out	NC	34	A13	TTL level
4	A18	NC	35	A19	A19
5	A18	NC	36	1.2V	NC
6	A9 out	Memory condenser	37	Zener	Zener
7	A9	A9 memory	38	STOP	STOP
8	A9	Auto r	39	ISO WARNING	ISO WARNING
9	A8 changeover	A8 changeover	40	TTL	TTL
10	A8-1	f-fo output	41	ISS	IS SW
11	A8-2	f-fo output	42	Monitor	Vcc monitor
12	A8	Metering calculation output 3	43	K	Ready-light LED-Cathode
13	A7 out	Metering calculation output 2	44	A	Ready-light LED-Anode
14	A7	Metering calculation output 1	45	CPU	Speedlight Ready-light
15	A2	f-fo r reference	46	Vcc	Vcc
16	A2 out	f-fo r	47	RC in	Remote control
17	A3 out	A/D r	48	RC out	Power hold
18	A3	A/D r reference	49	RC in	Remote control
19	A17	Temperature proportion	50	RC out	Remote release
20	A17 out	D/A r	51	NC	NC
21	A16	Temperature proportion	52	1 sig.	First Mg signal
22	A4 changeover	Analog GND	53	D GND	Digital GND
23	A GND	A GND	54	1st Mg	First Mg output
24	A4-2	D/A output	55	2nd Mg	Second Mg output
25	A4-1	D/A output	56	Timing R	Closing shutter curtain release timing resistor
26	A6	Auto level shift	57	Timing C	Closing shutter curtain release timing condenser
27	A5 out	Auto level shift	58	2 sig.	Second Mg signal
28	A4 out	SPD-Analog	59	Mg Hold	Magnet hold
29	A5	SPD-Cathode	60	A-M	A-M changeover
30	A14	TTL-SPD-Cathode			
31	A14 out	NC			

MICRO COMPUTER TERMINALS

(M50753)

C1 ~ C60

() ----- Terminals No in F-301.



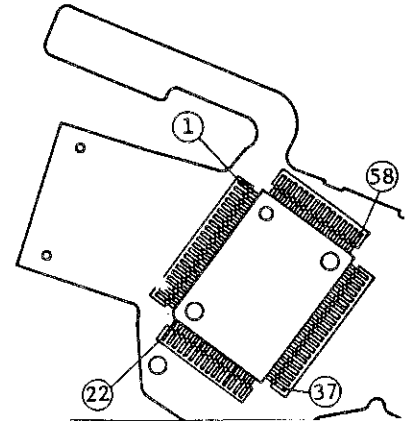
	Name	Function	I/O		Name	Function	I/O
1	P24	HIM Bus control	I/O	31	P15	Closing shutter curtain SW (3)	I
2	P23	HIM NB3	I/O	32	P14	Release sw (59)	I
3	P22	HIM NB2	I/O	33	P13	New/old lens distinction	I
4	P21	HIM NB1	I/O	34	P12	Mirror SW (5)	I
5	P20	HIM NB0	I/O	35	P11	AF lock SW	I
6	P37	DX 4 (6)	I/O	36	P10	AF lock SW	I
7	P36	DX 3 (7)	I/O	37	P07	TTL flash unit distinction	I
8	P35	DX 2 (8)	I/O	38	P06	Strobe signal T (38)	O
9	P34	DX 1 (9)	I	39	P05	Decoder output A (44)	O
10	P33	DX 0 (10)	I	40	P04	Decoder output B (43)	O
11	P32	Film-advance SW (4)	I	41	P03	Decoder output C (42)	O
12	P31	S-C changeover SW (31)	I	42	P02	Decoder output D (41)	O
13	P3	Counter SW (58)	I	43	P01	Decoder output E (40)	O
14	CNTR	Relative distance pulse	I	44	P00	Decoder output F (39)	O
15	INT1	Interrupt SC-13 (15)	I	45	Vcc	Vcc	
16	INT2	Test	I	46	INT7	ISO dial	I
17	CMVss	D GND (17)		47	INT6	Aperture stop down timing (47)	I
18	Reset	Reset CPU (18)		48	INT5	Battery check (48)	I
19	X IN	Clock input (19)	I	49	INT4	Shutter speed dial	I
29	X OUT	Clock output (20)		50	INT3	Display level (50)	I
21		NC		51	INT2	fo (51)	I
22		NC		52	INT1	f-fo (52)	I
23	Vss	D GND		53	A Vss	Analog GND (53)	
24	2 φ	HIM clock		54	INT0	Metering output (54)	I
25	P43	AF lens signal R/W2		55	V ref	A/D reference voltage input (55)	
26	P42	AF lens signal SI/O I/O		56	A Vcc	Vcc (56)	
27	P41	AF lens signal CLK I/O		57	PWM	PWM (57)	
28	P40	AF lens signal R/W1 I/O		58	P27	Self-timer SW	I
29	P17	FAI distinction (11)	I	59	P26	Power holding SW	I
30	P16	Speedlight ready-light sig. (29)	I	60	P25	Strobe program SW	I

DISPALY DECODER I C TERMINALS

M51046P

(B1 ~ B72)

() ----- Terminals No. in F-301.

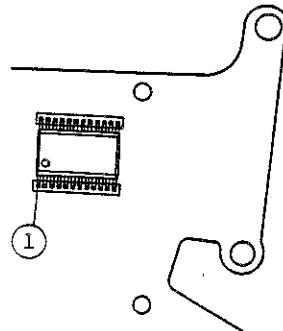


	Name	Function		Name	Function
1		NC			
2	O 1 9	Ready signal (Focusing light)			
3	O 1	Low contrast ×	3 9	Q 3	2nd Mg (3 2)
4	O 2	Near ◁	4 0	Q 4	A-M changeover (3 3)
5	O 3	Correct ○	4 1	Q 5	Self-timer LED (3 4)
6	O 4	Far ▷	4 2	Q 6	Focusing signal
7	O 5	Under ▽ (1 5)	4 3	Q 7	ISO warning (2 9)
8	O 6	1 (1 4)	4 4	Q 1 3	Motor drive LED (3 7)
9	O 7	2 (1 3)	4 5	A 1	AF motor Far → Near
10	O 8	4 (1 2)	4 6	A 2	AF motor Near → Far
11	O 9	8 (1 1)	4 7		NC
12	O 1 0	1 5 (1 0)	4 8		NC
13	O 1 1	3 0 (9)	4 9		NC
14	O 1 2	6 0 (8)	5 0		NC
15	O 1 3	1 2 5 (7)	5 1	P 4	AF lock detection for F3 AF lens
16	O 1 4	2 5 0 (6)	5 2	P 5	AF lock detection for F3 AF lens
17	O 1 5	5 0 0 (5)	5 3	P 6	Relative distance pulse
18	O 1 6	1 0 0 0 (4)	5 4	P 7	NC
19	O 1 7	2 0 0 0 (3)	5 5	RD I S	Relative distance for F3 AF lens
20	O 1 8	Over △ (2)	5 6		NC
21		NC	5 7		NC
22	A	Strobe A (1 6)	5 8	3 V	3 V
23	B	Strobe B (1 7)	5 9	3. 6 V	3. 6 V
24	C	Strobe C (1 8)	6 0	S 1	Oscillation circuit (4 8)
25	D	Strobe D (1 9)	6 1	S 2	Oscillation circuit (4 9)
26	E	Strobe E (2 0)	6 2	O s c	Oscillation output (5 0)
27	F	Strobe F (2 1)	6 3	MD 1	MD1 Motor driving (5 1)
28	T	Strobe T (2 2)	6 4	MD 3	MD3 Motor driving (5 4)
29	GND	GND (2 3)	6 5	GND	GND
30	Q 2 0	TCL selection	6 6	MD 4	Motor driving (5 5)
31	Q 1 9	Power source control for F3 AF lens	6 7	MD 2	Motor driving (5 2)
32	Q 1 8	AF lens selection	6 8	CTR	3.6V control (5 6)
33	Q 1 6	Data back imprint (2 7)	6 9	V c c	V c c (5 7)
34	Q 1 5	Aperture Mg (2 8)	7 0	RC	Remote control (5 8)
35	Q 1 4	Memory (2 6)	7 1	I L	I LED (5 9)
36	Q 1	1st and 2nd Mg off	7 2	NC	NC
37		NC			
38	Q 2	1st Mg (3 1)			

AF MOTOR DRIVING IC TERMINALS

M51049P

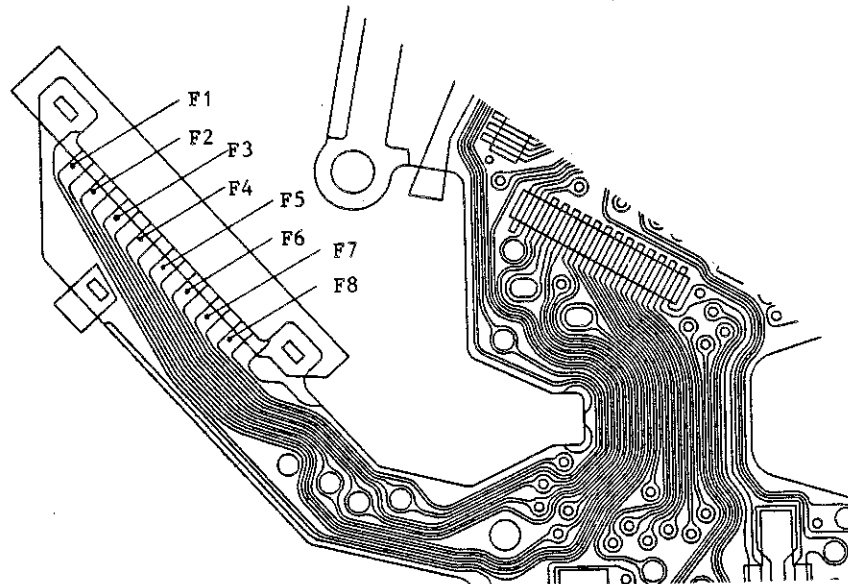
D1 ~ D24



	Function		Function
1	AF lock detecting for F3 AF lens	13	MD10
2	AF lock detecting for F3 AF lens	14	MD7
3	NC	15	Far → Near
4	Vcc	16	Far → Near(for F3 AF lens)
5	Power source control for new AF lens	17	Photo interrupter LED
6	Selection of lens (new or old)	18	Relative distance
7	AF A-M changeover SW	19	NC
8	Near → Far (for F3 AF lens)	20	TTL monitor
9	Near → Far	21	Relative distance pulse
10	MD8	22	TTL mode detection
11	MD9	23	NC
12	GND	24	NC

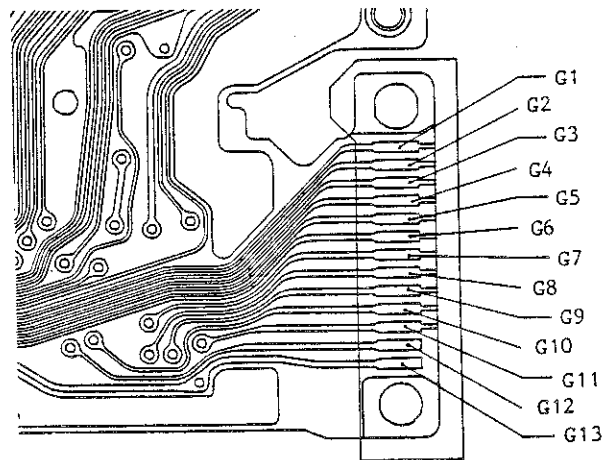
AF LENS CONTACT

F1 ~ F8



	Name	Function		Name	Function
F1	AELock	AE lock SW	F5	CLK	AF lens signal
F2	SELF SW	Self-timer SW	F6	SIO	AF lens signal
F3	AFLOCK	AF lock SW	F7	RW2	AF lens signal
F4	RW1	AF lens signal	F8	RDIS	F3 AF lens distinction

AF FPC TERMINAL

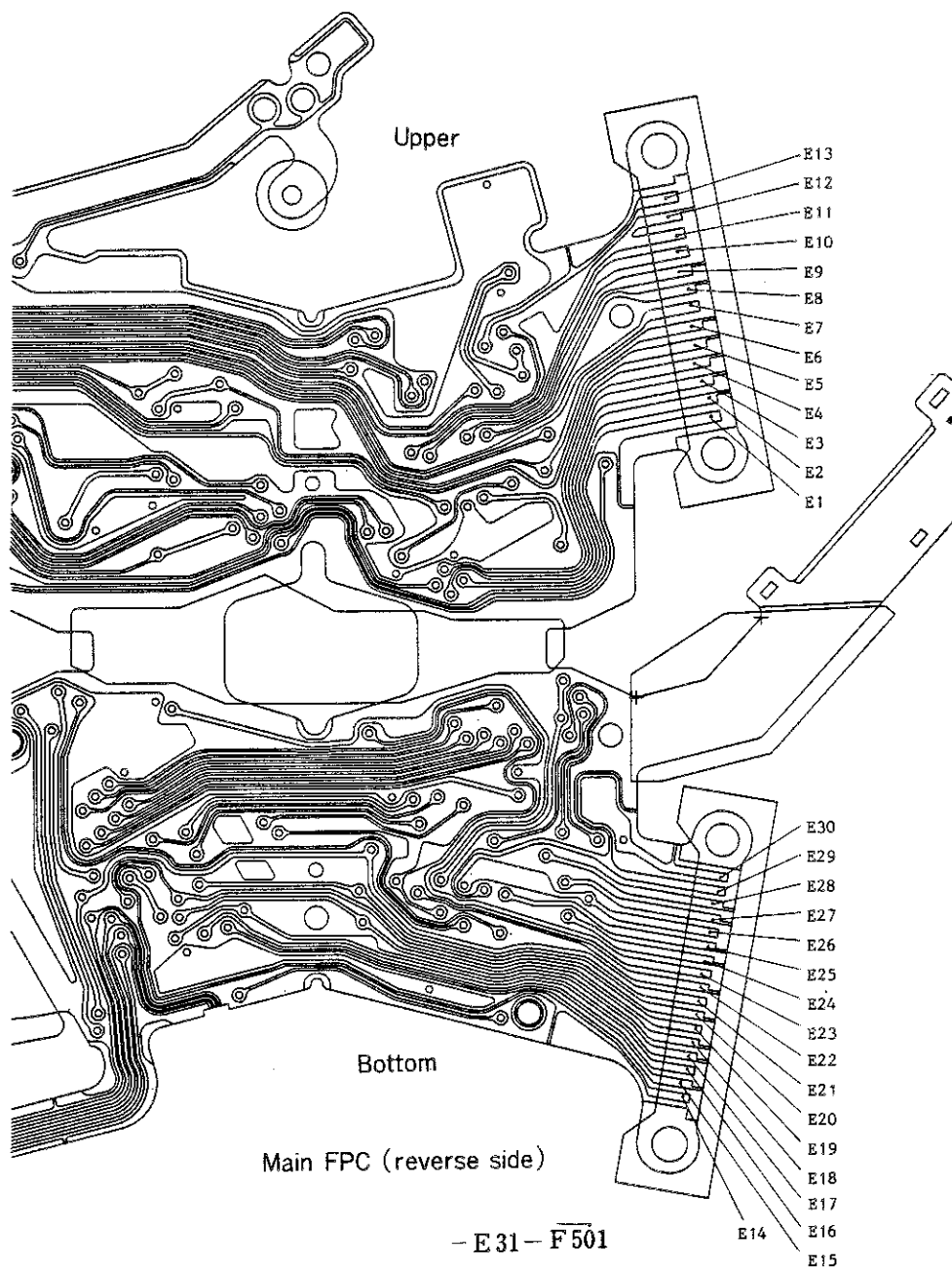
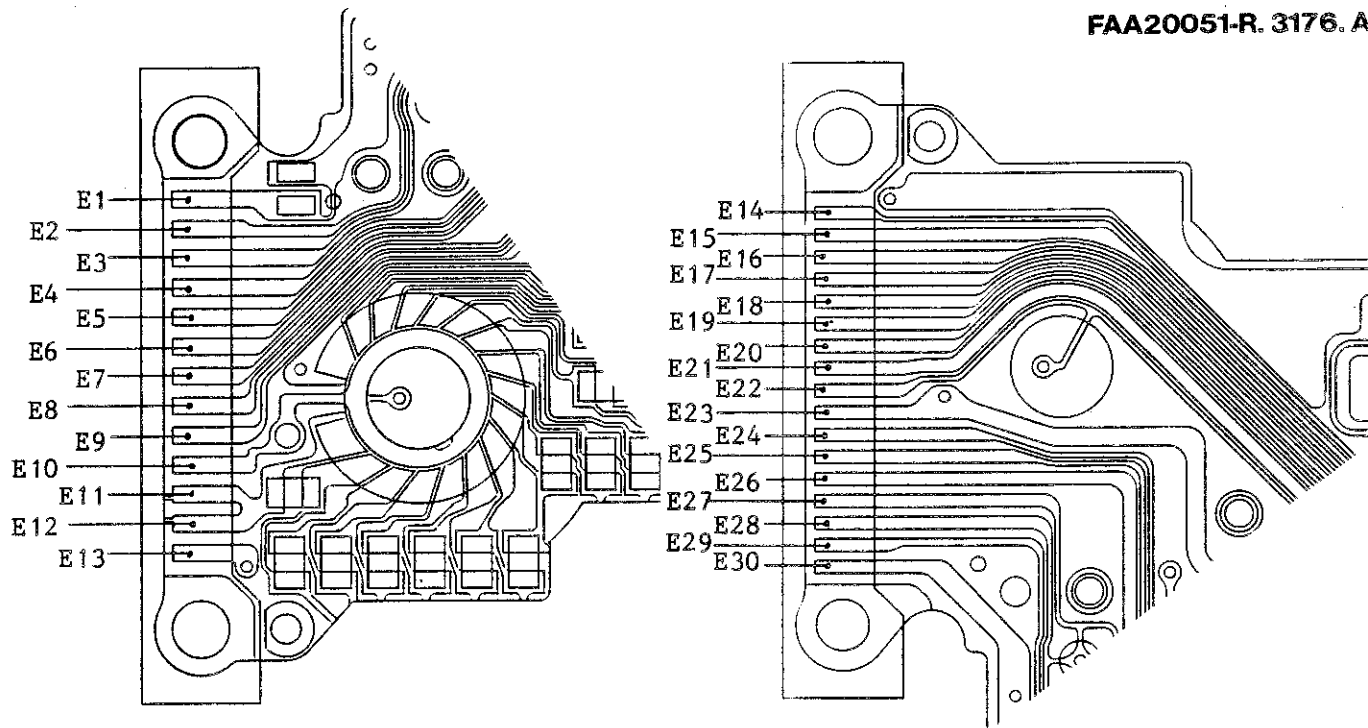


	Name	Function		Name	Function
G1	CLK	Clock	G8	TELE	Tele SW
G2	BUSC	HIM bus control	G9	TC	Teleconverter SW
G3	NB 0	HIM NB0	G10	EE	EE lens SW
G4	NB 1	HIM NB1	G11	ONESHOT	One shot SW
G5	NB 2	HIM NB2	G12	VCC	V c c
G6	NB 3	HIM NB3	G13	DGND	GND
G7	DS	DS signal			

MAIN FPC AND POWER SWITCH FPC TERMINALS

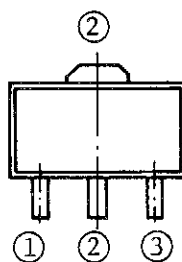
() ----- Terminals No. in F-301

	Name	Function
E 1	HLE SW	Power holding SW (E 1 2)
E 2	PINT K	Photo interrupter K
E 3	PINT E	Photo interrupter E
E 4	LV c c CTR	Vcc control for new AF lens
E 5	RC	RC (E 2 0)
E 6	RLSSW	Release SW (E 8)
E 7	DBRMT	Data back power hold/release (E 1 4)
E 8	WINDSW	Film-advance SW (E 7)
E 9	SCSW	S/C changeover SW (E 6)
E 1 0	TDIAL	Shutter speed dial
E 1 1	TVREF	Shutter speed dial reference voltage
E 1 2	TVREF	Shutter speed dial reference voltage
E 1 3	COUNTER	Counter SW (E 1)
E 1 4	DBUK	Data back imprint signal (E 1 5)
E 1 5	DBAF	Data back focusing signal
E 1 6	Q 1 0 1	Q 1 0 1 B (E 1 6)
E 1 7	Q 1 0 4	Q 1 0 4 B (E 1 7)
E 1 8	Q 1 0 2	Q 1 0 2 B (E 1 9)
E 1 9	Q 1 0 3	Q 1 0 3 B (E 1 8)
E 2 0	SELFLED	Self-timer LED K (E 2 1)
E 2 1	VBAT	V BAT (E 2 3)
E 2 2	3 V	Vcc for F3 AF lens
E 2 3	AGND	GND (E 2 2)
E 2 4	Q 1 1 0	Q 1 1 0 B
E 2 5	Q 1 0 8	Q 1 0 8 B
E 2 6	V c c	V c c (E 1 1)
E 2 7	Q 1 0 7	Q 1 0 7 B
E 2 8	Q 1 0 9	Q 1 0 9 B
E 2 9	3. 6 V	3. 6 V
E 3 0	DGND	GND



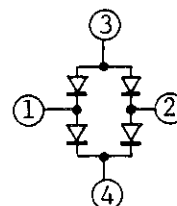
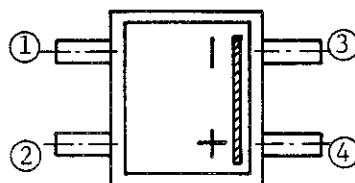
1. Power transistor

2SD1621



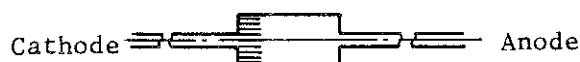
- ① Base
- ② Collector
- ③ Emitter

2. Rectifier diode bridge



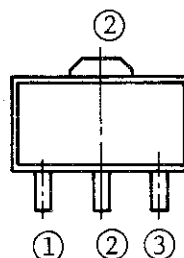
3. Shotky barrier diode

11EQ03



4. Reset IC

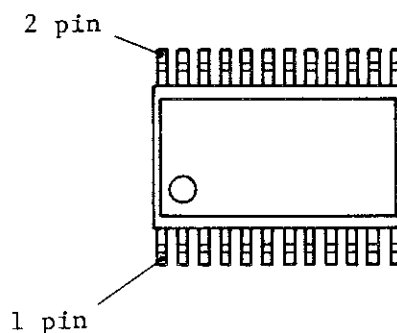
M51943



- Terminal
- ① Vcc
 - ② GND
 - ③ Reset out

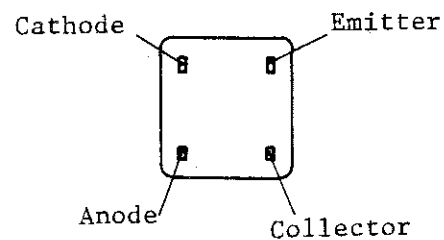
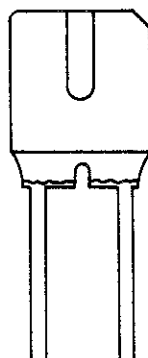
5. AF driver IC

M51049P

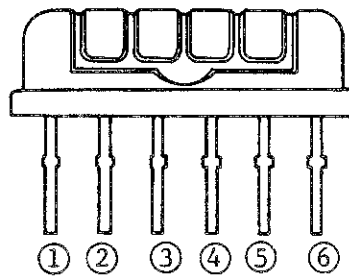


6. Photo interrupter

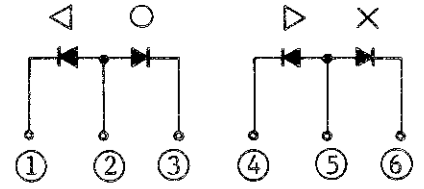
GPIS07



7. AF LED



Terminal arrangement



CIRCUITRY OUTLINE

1. Power control circuit

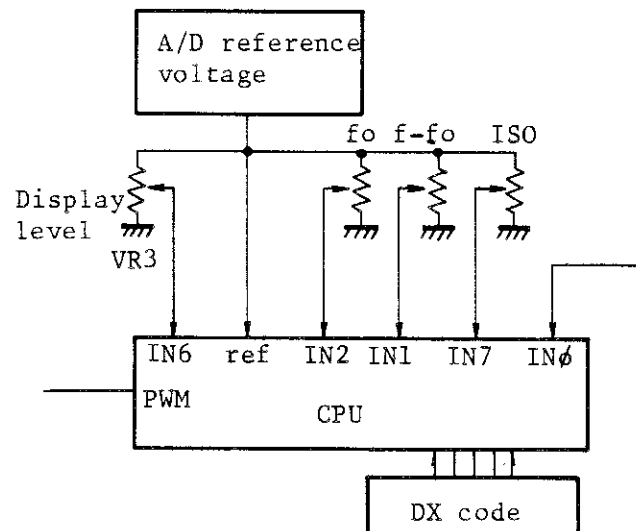
The same as in the F-301 except the following points

- Decoder IC is changed. (M51045P $\Rightarrow$ M51046P)
(This is the same in Fig.1-1.)
- '16sec. power hold timer' is changed to '8sec power hold timer'.
- 2) of 8sec. power hold operation is changed to 'To hold power while Auto exposure switch is on or Autofocus lock switch is on'.

2. Metering calculation for LED display

The same as in the F-301 except the following points

- CPU reads the ISO data from gray codes of ISO film speed dial or.....'
'CPU reads the ISO data from A/D conversion of brush's electric potential of the variable resistor which actuates with ISO film speed dial and is located between Reference voltage for A/D conversion and GND or'.
- 'The ends of both F-Fo resistor and Fo resistor are connected to Reference voltage for A/D conversion, and the other ends are connected to F-Fo reference voltage.' $\longrightarrow$ 'The ends of both F-Fo resistor and Fo resistor are connected to Reference voltage for A/D conversion, and the other ends are connected to GND.'
- Fig.2-1 is changed as follows;



3. Aperture control circuit

The same as in the F-301

4. Analog shutter speed control

The same as in the F-301

5. Digital shutter speed control

The same as in the F-301

6. Shutter actuating circuit

The same as in the F-301

7. LED display circuit

The same as in the F-301 except the following

'14 dots of LED for shutter speed display is directly controlled by Decoder IC.' ———> '14 dots of LED for shutter speed display and 4 dots of focus indicator LED are directly controlled by Decoder IC.'

8. Motor driving circuit(for film-advancing)

The same as in the F-301

9. TTL flash output control circuit

The same as in the F-301

10. Aperture control on TTL programmed auto mode

The same as in the F-301

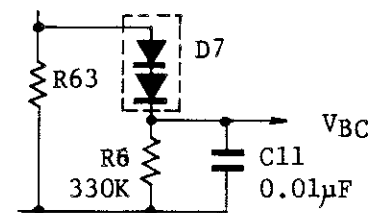
11. Battery check circuit

The same as in the F-301 except the following

In Fig.11-1, the position of C11 is changed to parallel position to R7.

12. Remote signal detecting circuit

The same as in the F-301



13. LED display circuit (other LEDs) and audio warning

The same as in the F-301

14. Variable resistors for adjustments

The same as in the F-301

15. Defocus amount detecting circuit (Fig.15-1)

Data are furnished between CPU and HIM via 6 lines, that are CLK, BUSC (Bus control) and 4-bits of NB0 - 3. CPU takes timing with BUSC and sends commands to HIM with NB0 - 3. The commands are to send data from CCD and A/D conversion.

On the other hand, after execution of the commands, HIM sends 8-bits data divided in two times (4-bits data in a time) to CPU with NB0 - 3, while taking timing with BUSC.

There is a circuit in HIM to control HSM. And it commands HSM to store the electric charge of CCD, transmit the data and reset with the five clocks of T, R and 1 - 3 used.

HIM outputs reference voltage (Vref) used for storage of electric charge in HSM and has a special A/D converter to A/D-convert the analog output from HSM.

In addition to that, HIM has 6 channels of A/D converters for general use. 2 channels of them send adjustment value for $\bar{x}_p$ to compensate the data from CCD. HSM repeats the cycle of storage of electric charge, transmission and reset, and sends outputs from CCD to HIM.

CPU reads ϕ signal and transmits DS signal to HSM and HIM via decoder, by which it is decided which detector is used, F2.8 detector or F4.5 detector. After this process, HSM exchanges the components row and HIM exchanges the A/D timing of the output from CCD which is inputted serially. 24 pairs of the output data from CCD transmitted to CPU detect the distance from the film plane to the focusing point, with fixed algorithm for defocus amount calculation.

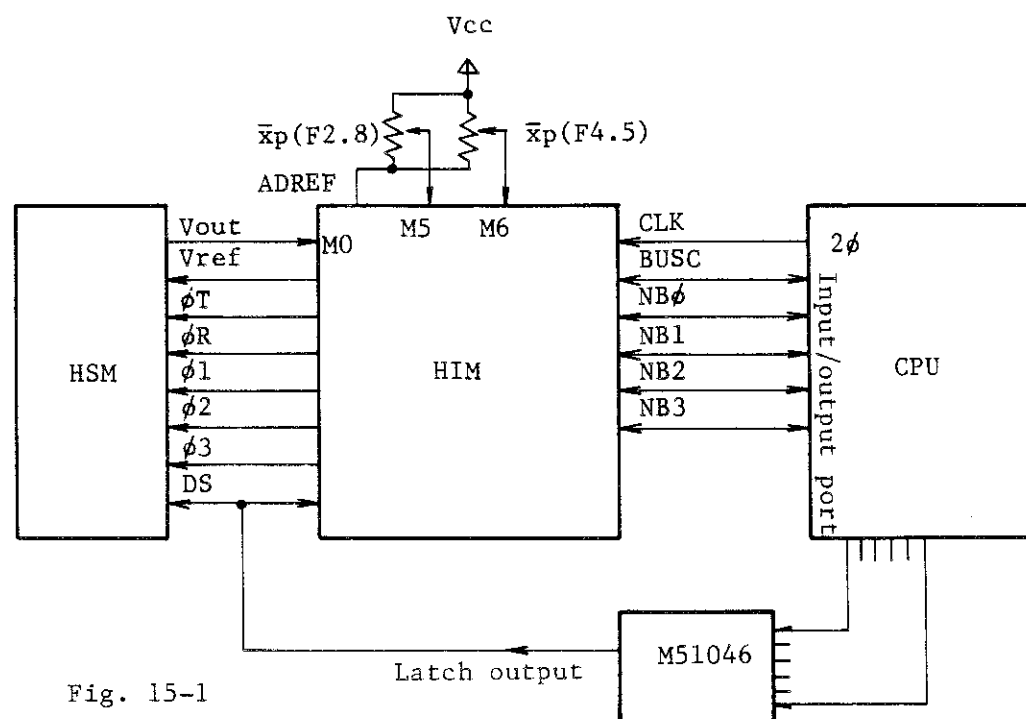


Fig. 15-1

16. Transmission of the AF lens data

When the power switch is turned on or fo signal is changed, CPU in the camera tries serial communication with the mount contacts. If the new AF lens (or TC-16AS) is attached, a proper response is returned to CPU. CPU judges whether the new AF lens is attached or not by checking the possibility of the serial communication.

Signal lines for the communication are terminal B, C and D. Existence of CPU in the lens is detected by B signal from the camera. Then, digital command is transmitted serially by D signal and CPU reads it together with C signal. CPU in the lens treats this command and informs CPU with B signal that sending the data is ready.

Then, CPU in the camera outputs C signal to receive the data from lens. CPU in the lens transmits the appointed address data to CPU in the camera and informs CPU in the camera with B signal that sending the data is completed and receiving the next command is ready.

The above-mentioned operation is a cycle for data reading. CPU in the F-501 repeats this cycle and reads a series of data.

Serial communication after detection of new AF lens is carried out once a storage of CCD.

When the teleconverter TC-16AS is attached, the terminal for use is switched. i.e. When the teleconverter switch detects the teleconverter, CPU in the camera substitute E signal for B signal. (In CPU in the lens, the same terminal is used.)

In Fig.16-1, only lens distinction bits and bits for zoom encoder are indicated, but CPU in the lens has other bits, too.

17. AF lens driving control circuit (Fig.17-1)

The F-501 has circuits for driving of both of old type AF lens(AF Nikkor for the F3AF) and new type AF lens(AF AI Nikkor). After detecting of new or old type AF lens, CPU decides which circuit is used.

1) When the new type AF lens is attached

CPU makes the lens distinction signal(046- 32 or 049- 6) low and turns new lens Vcc on via M51046P. In order to drive the lens, CPU makes one of driving signals(A1 or A2) low. And CPU makes both of A1 and A2 low to brake the lens.

At that moment, if the focus mode selector is set to C or S, AF motor driving circuit(Q107 - Q110) is provided with base current.

The base current is approx. 40mA. And the current of the motor in driving the lens is approx. 600 - 800mA(in starting) or approx.200mA (in normal driving). If the focus mode selector is set to M, even though the driving signal(A1 and A2) reaches the motor driving circuit, current is not generated in the circuit and the motor does not rotate.

The photo interrupter which detects the motor rotation operates only when it is necessary. That is, only when the current actually flows in the motor driving circuit (when driving or braking), LED of the photo interrupter lights up. At the same time, the photo interrupter encodes light and shade of the signal plate which passes through the slit, and inputs the feedback pulse made rectangular by the comparator to the counter of CPU.

As for the actual sequence of the driving control, please refer to 'Autofocus system'.

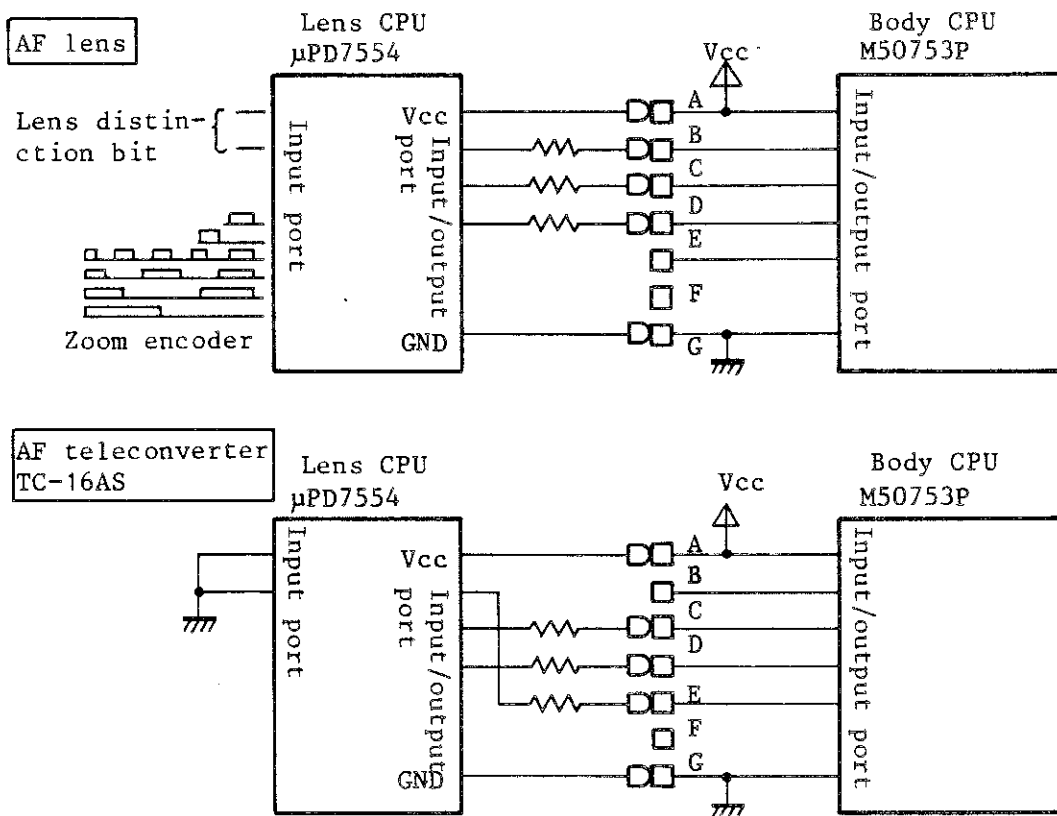


Fig.16-1

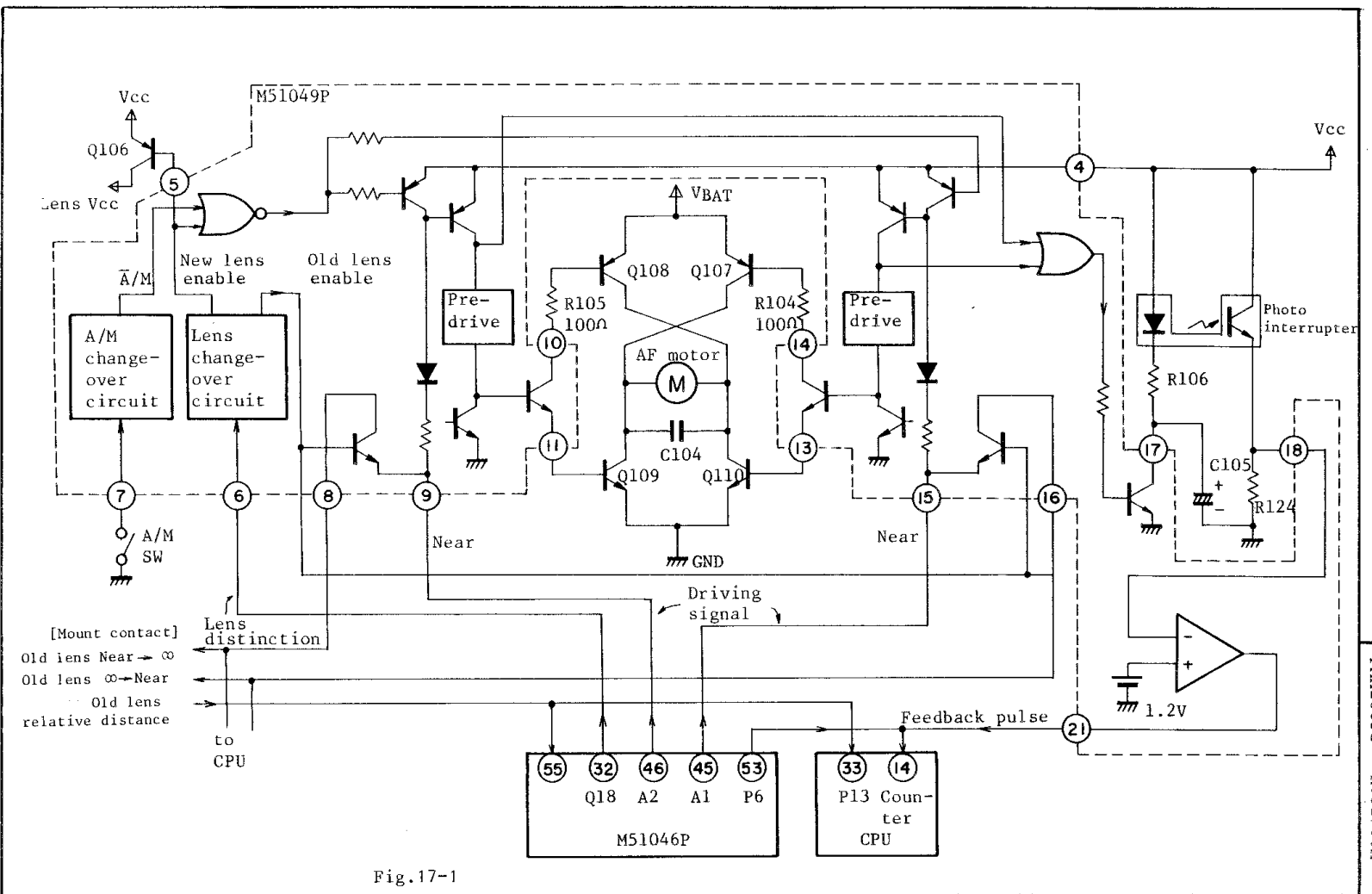


Fig.17-1

2) When the old type AF lens is attached

The relative distance signal terminal of the old type AF lens is for transmission of the feedback pulse to detect the rotating amount of the motor in the lens. Between this terminal and GND, resistors of approx. 200 - 3.3k Ω are connected. The port(P13) of CPU reads the information from this terminal. If the result is low, it is judged that the old type AF lens is attached.

When the old type AF lens is distinguished, the lens distinction signal (046- ③② or 049- ⑥) becomes high and the new lens Vcc is turned off. At the same time, the power source of 3V for the old type AF lens is turned on via 046.

If the lens distinction signal is high, the driving signal(A1, A2) output from 046 is directly transmitted to 049 8 and ⑥ pin and then, transmitted to the lens via two terminals of the mount contacts. Then, the motor in the lens will rotate.

The focus mode is not decided by the focus mode selector of the camera but is decided by the focus mode selector of the lens. The feedback pulse enters to 046 and is changed to rectangular pulse and then, enters to the counter of CPU.

As for the actual sequence of the driving control, please refer to 'Autofocus system'.

3) When the non-AF lens is attached

When the result of the lens distinction does not apply to either of the above-mentioned two cases, a non-AF lens is distinguished. In this case, the lens distinction signal is high(old type AF lens side), Vcc for the new AF lens is turned off and also the power source for the old type AF lens is turned off.

•Vcc supply circuit for new and old type AF lenses (Fig.17-2)

When the power source is turned on or fo signal is changed, the lens distinction signal L is output via 046 to try the serial communication against the lens. And Vcc for new type AF lens (5 - 6V) is turned on once. Then, the serial communication is tried twice successively. The following operation will be divided as shown below according to the result.

- 1 In case that the serial communication is acceptable (in case that new type AF lens is attached):
The power source for the new AF lens remains on and 3V power source is not turned on.
- 2 In case that the serial communication is not acceptable
 - 2 -1. When the relative distance terminal for old type AF lens (P13 of CPU) is low (when the old type AF lens is attached):
The lens distinction signal becomes high, the power source for the new type AF lens is turned off, 3.6V output is turned on via 046 and the power source for the old type AF lens is turned on.
 - 2 -2. When the relative distance terminal for old type AF lens (P13 of CPU) is high (when the non-AF lens is attached):
The lens distinction signal becomes high, Vcc for the new AF lens is turned off, 3.6V output remains off and the power source for the old type AF lens is turned off.

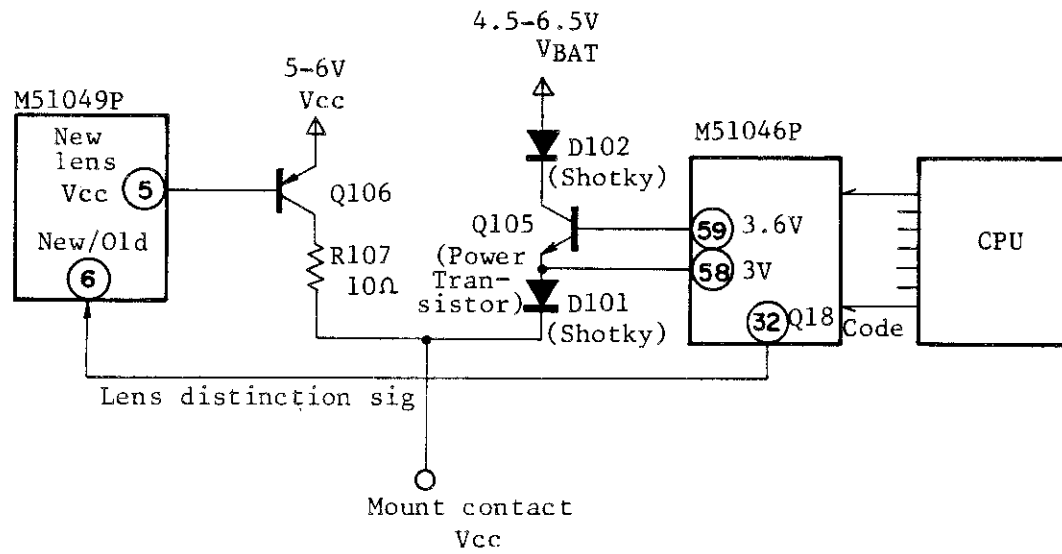


Fig.17-2

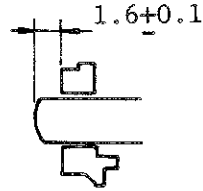
INSPECTION STANDARDS FOR REPAIR & TOOLS

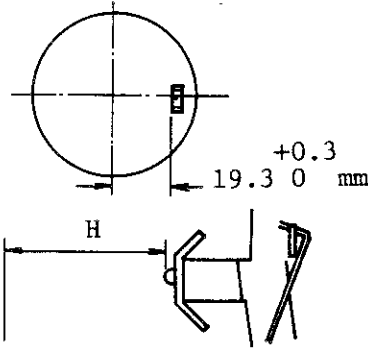
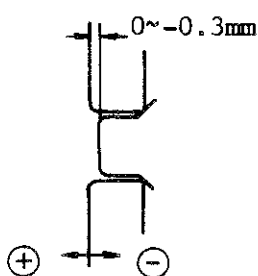
Contents

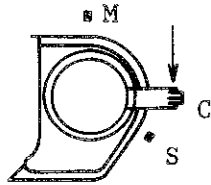
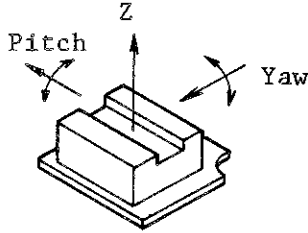
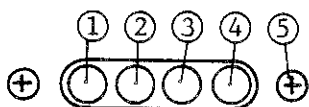
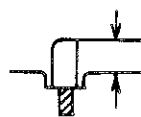
	Page
[1] INSPECTION STANDARDS FOR REPAIR	R1
[2] TOOL LIST	R5

INSPECTION STANDARDS FOR REPAIR

*Please refer to 'INSPECTION STANDARDS FOR REPAIR' of the F-301 repair manual, for further information on the standard regulations.

	ITEM	STANDARD	TOOL
VIEWFINDER	Focus brackets	Against the viewfinder frame inclination: within 1° displacement from the center: $X=0\pm0.2\text{mm}$ $Y=0.5\pm0.2\text{mm}$	
LENS MOUNT	Lens release button	Tension: 700g or less (on S or C mode of AF mode)	J5029
	AF coupling	Operation: When the lens release button is pressed to the end, its head should be below the bayonet face(on S or C mode). The coupling should be below the bayonet face(on M mode). Height: $1.6\pm0.1\text{mm}$ Tension: 60g or less(on the bayonet face) 	Slide caliper J5018
	Aperture lever	Height: $3.1^{+0.1}_{-0}\text{mm}$ (after shutter-cocking) Stroke: 7.1mm or more Tension for return: 90 - 120g Horizontal position: $18.7^{+0.35}_{-0.3}\text{mm}$ (from the center of the camera) Depth: $5.8^{+0.9}_{-0.5}\text{mm}$ (from the bayonet face)	Slide caliper J5019 J18004 J18005-1
	Screen installation	Spring release tension: $90\pm30\text{g}$	J5018

	ITEM	STANDARD	TOOL				
	fmm lever	Horizontal position: $19.3^{+0.3}_{-0}$ mm		Slide Caliper J5019			
		Stroke:					
		Tension:					
		Focal Length			H	Tension	PDUAL
		Shorter than 135mm			6.9mm or shorter	40gr or more	PN
135mm or longer	7.25 - 8.0mm		PHI				
Telecon- verter	8.2 - 8.4mm	60gr or less	PHI				
AE LOCK BUTTON/AF LOCK BUTTON/SELF-TIMER BUTTON	AE lock button	ON position: To be on at limit OFF position: To be off when the finger is lifted from the button Tension: 110 - 190g Height: 1.6mm or more		J5019 Slide Caliper			
	AF lock button	ON position: To be on at limit OFF position: To be off when the finger is lifted from the button Tension: 110 - 190g Height: 1.1mm or more		J5019 Slide Caliper			
	Self-timer button	Reset: To be reset by pressing self-timer button during self-timer is in operation Height: 0 - -0.3mm ON position: -0.8mm - -1.4mm Tension: 60g or more Delay action time: 10±2sec		J5019 Slide Caliper Watch			

	ITEM	STANDARD	TOOL
FOCUS MODE SELECTOR	Focus mode selector	M mode: Servo does not operate. C mode: Shutter can be released whether the lens is focusing or not. S mode: Shutter cannot be released until the lens focuses. Switching torque: $350 \pm 100\text{g}$ 	J5029 New AF lens
HSM	Accuracy	Yaw: $0 \pm 3\text{mrad}$ Pitch: $0 \pm 6\text{mrad}$ Z: $0 \pm 30\mu\text{m}$ 	J18185 J18184 J15259 J18183 J18186 J15253-1 J15253
DATA BACK CONTACT	Data back contact	  Diecast is regarded as reference. 1 Focusing signal contact 2 Imprint signal contact 3 Power hold/release signal contact 4 GND 5 Body distinction screw Height of 5 : $1.4^{+0.3}_{-0.2}\text{mm}$	
AF ACCURACY	Low brightness limit Lighting range of in-focus indicator LED	F2.8 detector: EV4 or brighter F4.5 detector: EV5 or brighter $\pm 150\mu\text{m}$ (conversion at image surface)	50mm F1.8 AF lens
STROBE	Warning for minimum aperture setting	With an AI-S type lens AV8(F16) < Warning does not operate. AV6(F8) $\geq$ Warning operates.	SB-15