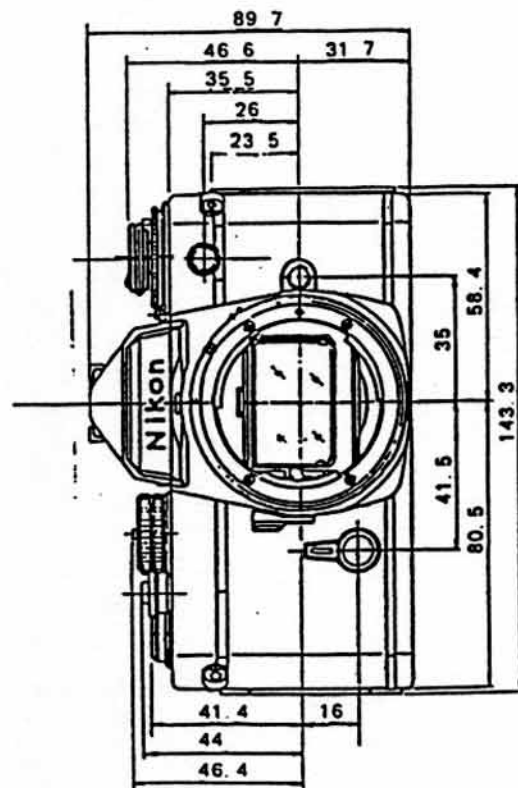
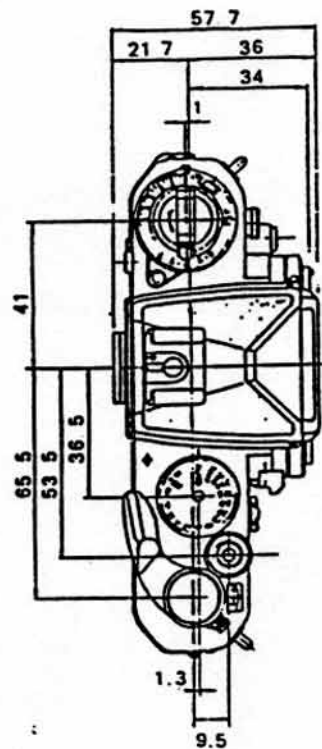


# Nikon FE ...

## REPAIR MANUAL

WITH NIKON FE-2

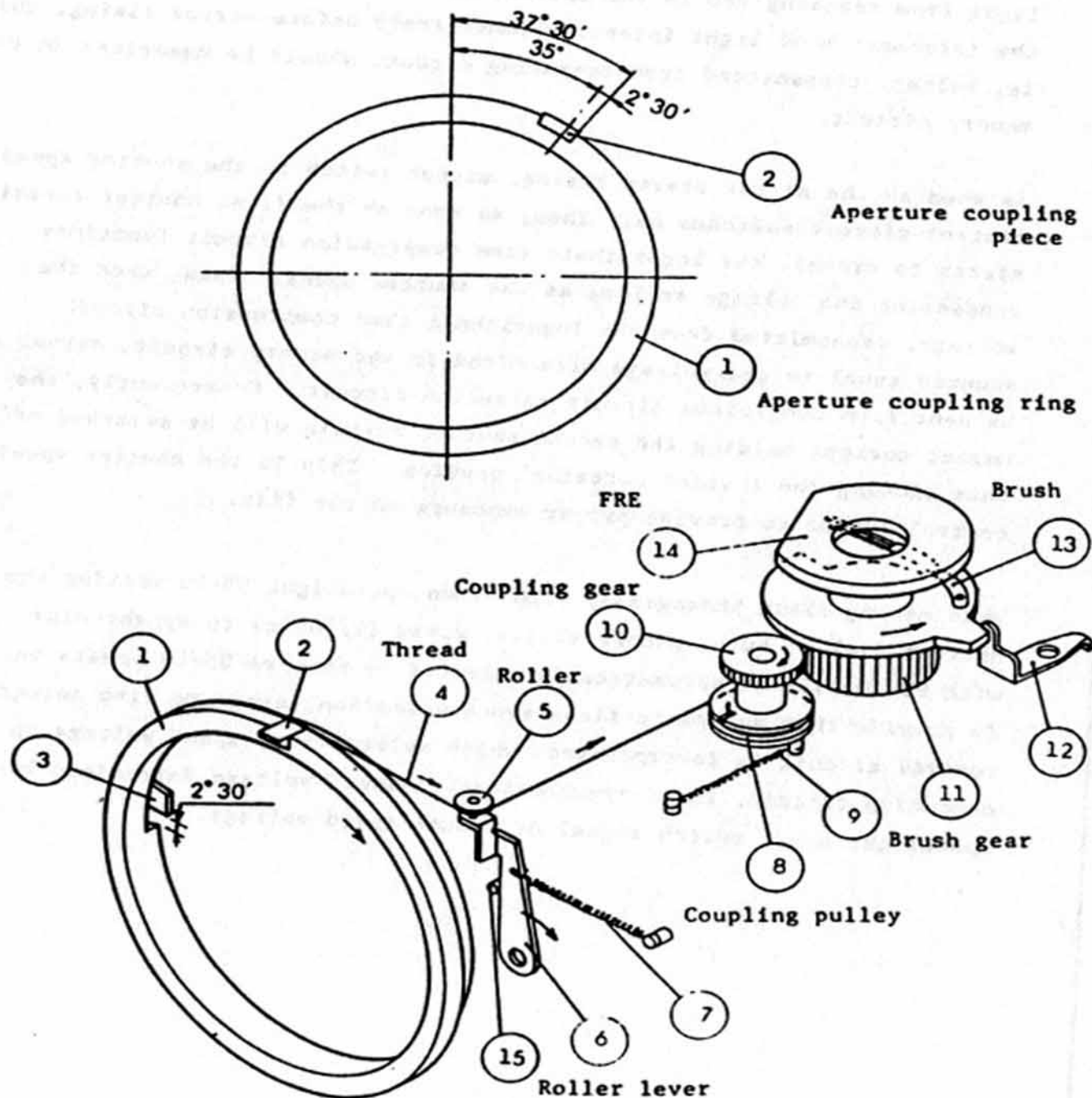


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## (2) Meter coupling system

Nikon FE's meter coupling system, same as that of Nikon FM or Nikon EL2, ensures the automatic maximum aperture indexing as soon as an AI-type Nikkor lens is mounted on the camera.



When the lens is mounted onto the camera body without pressing back aperture Coupling piece (2), lens' meter coupling ridge contacts aperture Coupling Piece (2). Thread (4), fixed onto aperture Coupling ring (1) at one end and onto Coupling pulley (8) incorporated with Coupling gear (10) on the other end, is pulled by Spring (9) on Coupling pulley (8) so as to rotate (1) clockwise.

Coupling gear ⑩ engages with Brush gear ⑪ on which Brush A ⑬ is installed, and Brush A ⑬ contacts FRE ⑭.  
The rotation of Brush gear ⑪ to the arrow direction is stopped by Brush gear stopper ⑫ where Brush gear ⑪ engages with Brush gear stopper ⑫. Roller ⑤ is installed free to rotate on Roller lever ⑥ which is pulled by Roller lever spring ⑦ of smaller tension than that of Spring ⑨.

When lens is dismounted, Aperture coupling ring ① rotates back to the arrow direction pulled by thread ④ via Spring ⑨ and Coupling pulley ⑧. When the right end of Aperture coupling piece ② locates at 35 degrees from the camera's vertical center line, Brush gear ⑪ engages with Brush gear stopper ⑫ and stops, simultaneously stopping Coupling gear ⑩ and Coupling pulley ⑧.  
At this stage, however, there still remains a clearance of 2°30' (corresponding to 1/3 stop) between Aperture coupling ring ① and Coupling ring stopper ③, and thus Aperture coupling ring ① will further rotate to the arrow direction pulled by Roller lever spring ⑦ via ⑥⑤ and ④.

When the lens is mounted, as soon as ① starts to rotate, ⑥ fitted with ⑦ rotates 2°30' until ⑥ comes in contact with ⑬. Further rotation of ① will rotate ⑪ and ⑬ via ④, ⑧ and ⑩, thus charging the electrical resistance of FRE ⑭.  
Aperture coupling piece ② contacts lens' meter coupling ridge at a position of 37°30' in case of f1.2 or f1.4 lens set at maximum aperture, while ② contacts at a position of 35° in case of lenses of wider maximum aperture such as f1.8.

### Operational sequences

lens' aperture ring



#### (4) Exposure Control Circuitry System

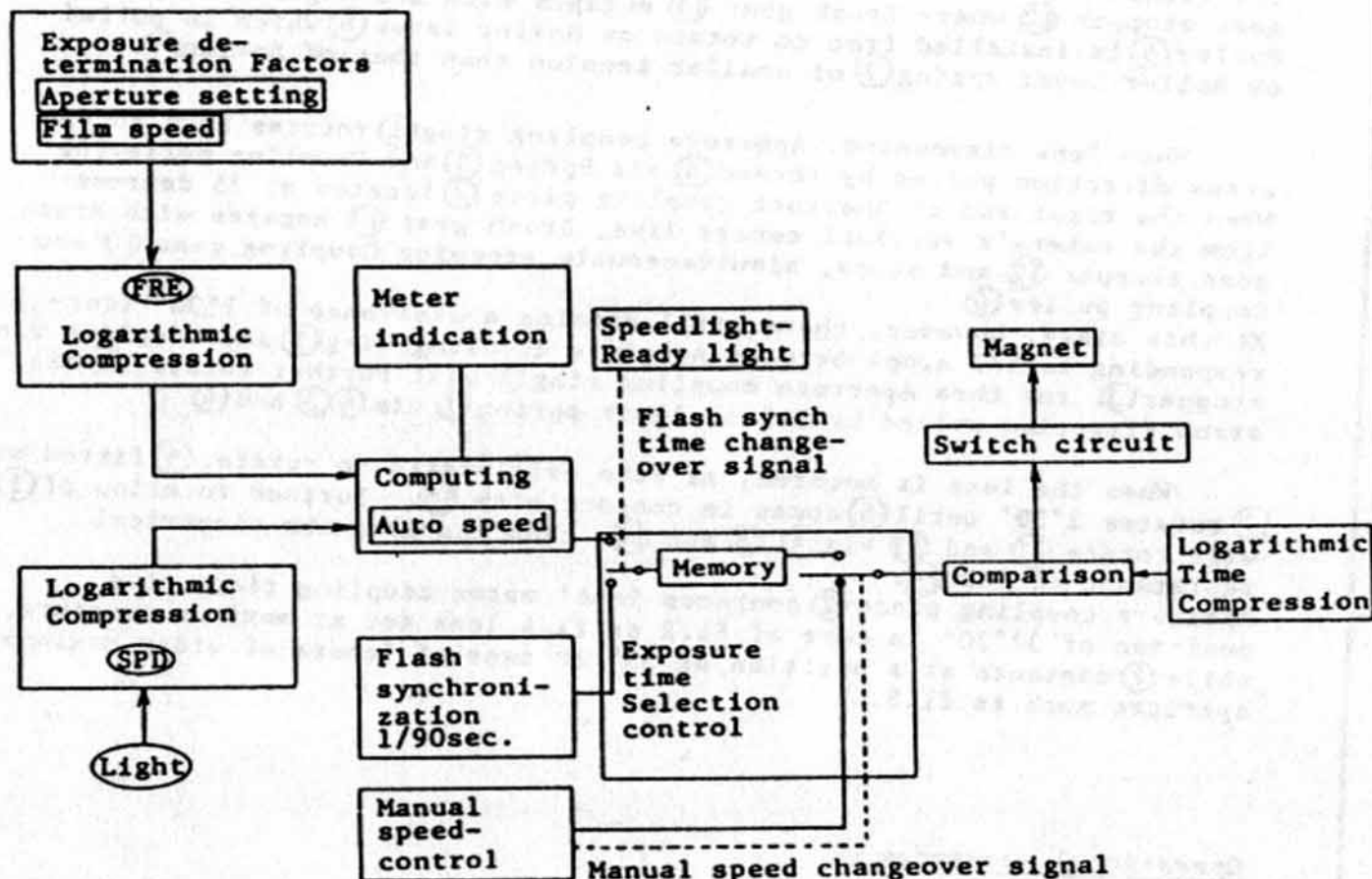


fig.1

First, the informations of film speed and aperture setting in use will be transmitted to FRE and registered as a change of resistance. Then, the resistance will be logarithmically compressed to a voltage change. The other information of light intensity will be registered as photo electric current by silicone photo Diode (SPD) positioned in the optical path in the viewfinder. The photo electric current will be also logarithmically compressed to a voltage change corresponding to the current. The voltages in two logarithmic compression circuits will be transmitted to computing circuit, where the voltage corresponding to the shutter speed for proper exposure will be determined. Consequently, meter needle swings indicating the shutter speed selected inside the viewfinder.

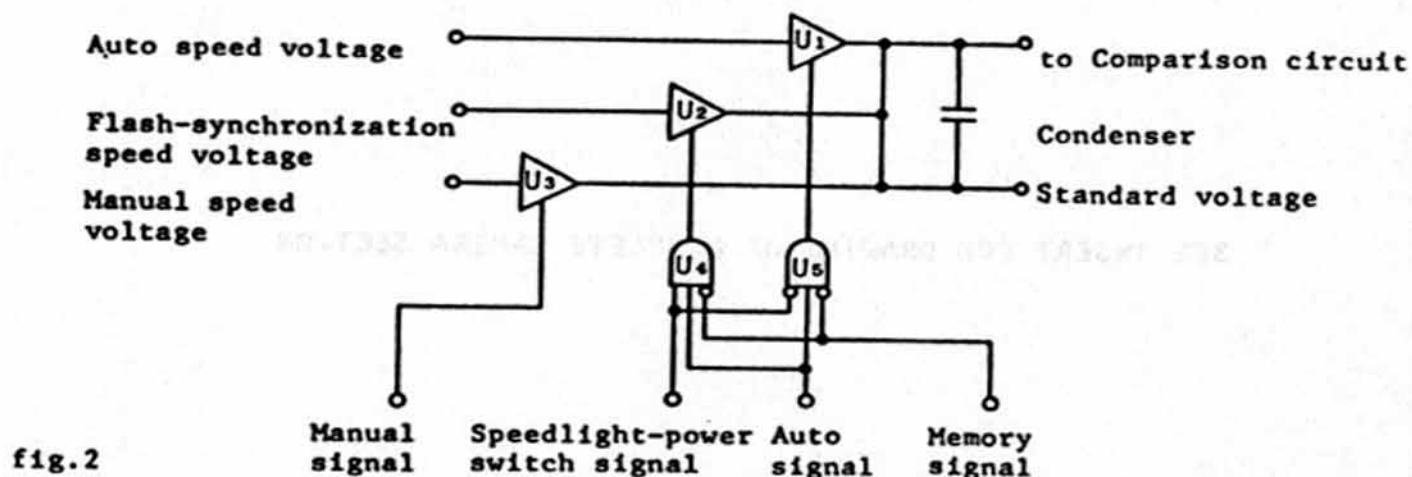
These circuits will be switched on by pulling out film-advance lever to a stand-off position, uncovering a red dot. In case of extremely low brightness out of the measureable range, the voltage, logarithmically compressed from photo electric current, will be detected by "Low-brightness standard voltage" in computing circuit, and the meter needle will swing into the "B" zone, thus warning the brightness to be out of the measurable range.

When the shutter release button is depressed, the mirror starts to rise. While the Mirror rising, the optical path will be cut, thus preventing the light from reaching SPD in the optical path in the viewfinder. Therefore, the information of light intensity immediately before mirror rising, that is, voltage transmitted from computing circuit should be memorized in the memory circuit.

As soon as the mirror starts rising, mirror switch in the shutter speed control circuit switches on. Then, as soon as the first shutter curtain starts to travel, the logarithmic time compression circuit functions, condensing the voltage as long as the shutter opens. Then, when the voltage, transmitted from the logarithmic time compression circuit amounts equal to the voltage determined in the memory circuit, signal will be sent from comparison circuit to switch circuit. Consequently, the magnet current holding the second shutter curtain will be switched off, thus closing the shutter curtains' opening. This is the shutter speed control system to provide proper exposure on the film.

When making flash photography with Nikon speedlight SB-10 setting the shutter dial at Auto, proper shutter speed (1/90sec) to synchronize with SB-10 will be automatically selected as soon as SB-10 powers on. To provide this automatic flash synchronization, exposure time selection control circuit is incorporated, which selects auto-speed voltage in computing circuit, flash-synchronization-speed voltage determined by speedlight power switch signal or manual speed voltage.

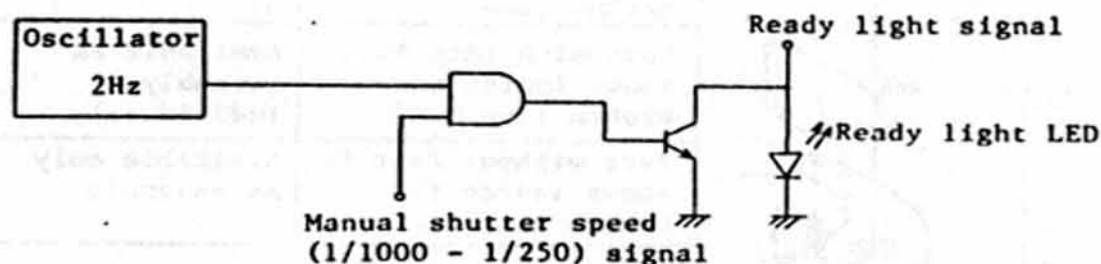
### Exposure time selection control circuit



U1, U2 and U3, analogue switches, functions as buffer amplifier when control terminal is high, and perform switch functioning to make the output impedance infinity when control terminal is low. U4 and U5 are AND circuits.

Therefore, as illustrated in Figure 2, Auto speed voltage, flash synchronization speed voltage or Manual speed voltage will be selected by auto signal, speedlight power switch signal or manual signal respectively, and transmitted to comparison circuit. Note that Auto speed voltage and flash synchronization speed voltage will be memorized into condenser by memory signal immediately before mirror rising or memory-lock operation.

Further, with this circuit incorporated, ready light LED glows on and off to warn if the shutter dial is set at the non-synchronizing manual speed. This warning system is possible by inputting the manual shutter speed signal of  $1/1000 - 1/250$ sec. which does not synchronize with AND circuit, and the oscillator of 2 Hz. Inputting the both will turn ON and OFF a transistor and let the ready light LED glows on and off. At the slower Manual speed than  $1/250$ sec., transistor turns off, thus turning the LED on to indicate proper synchronization.



## Battery check system

To enable the aforementioned exposure control, battery check system is incorporated as illustrated in Figure 4.

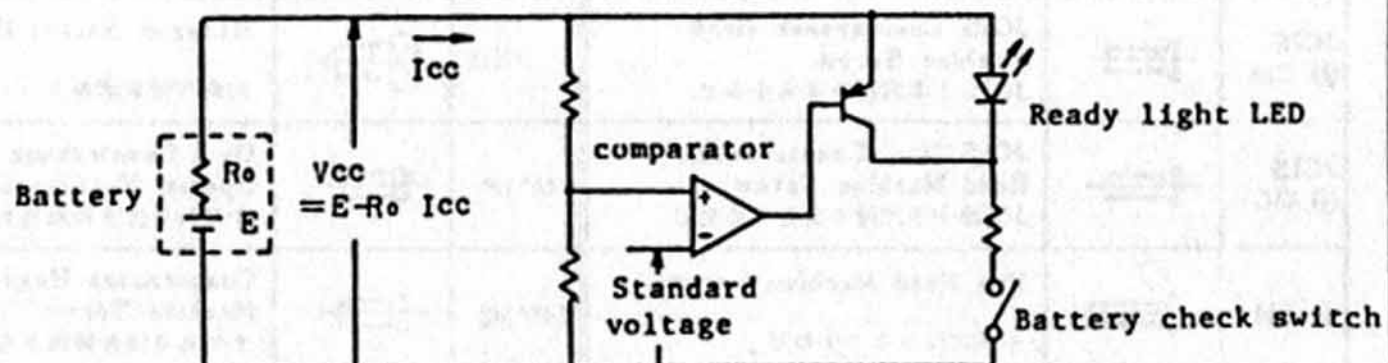


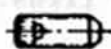
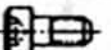
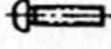
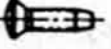
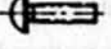
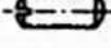
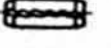
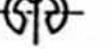
fig. 4

When battery is drained out, battery check switch turns on, thus extinguishing ready light LED. To ensure the LED extinguishment, transistor connected to the LED will be turned on and consumption current ( $I_{cc}$ ) will be increased. As a result, the voltage determined by  $I_{cc}$  and inner resistance of battery ( $R_o$ ) will be accordingly increased, thus providing hysteresis with  $V_{cc}$  and ensuring the positive extinguishment of ready light LED.

|                     |                                       |              |
|---------------------|---------------------------------------|--------------|
| Current consumption | Metering exposure (EV9, ASA100, F5.6) | approx. 2mA  |
|                     | Shutter running (Room temperature 3V) | approx. 12mA |
| Checker-off voltage | 2.25 $\pm$ 0.15V                      |              |

## MARKS IN THE PARTS LIST 記号説明

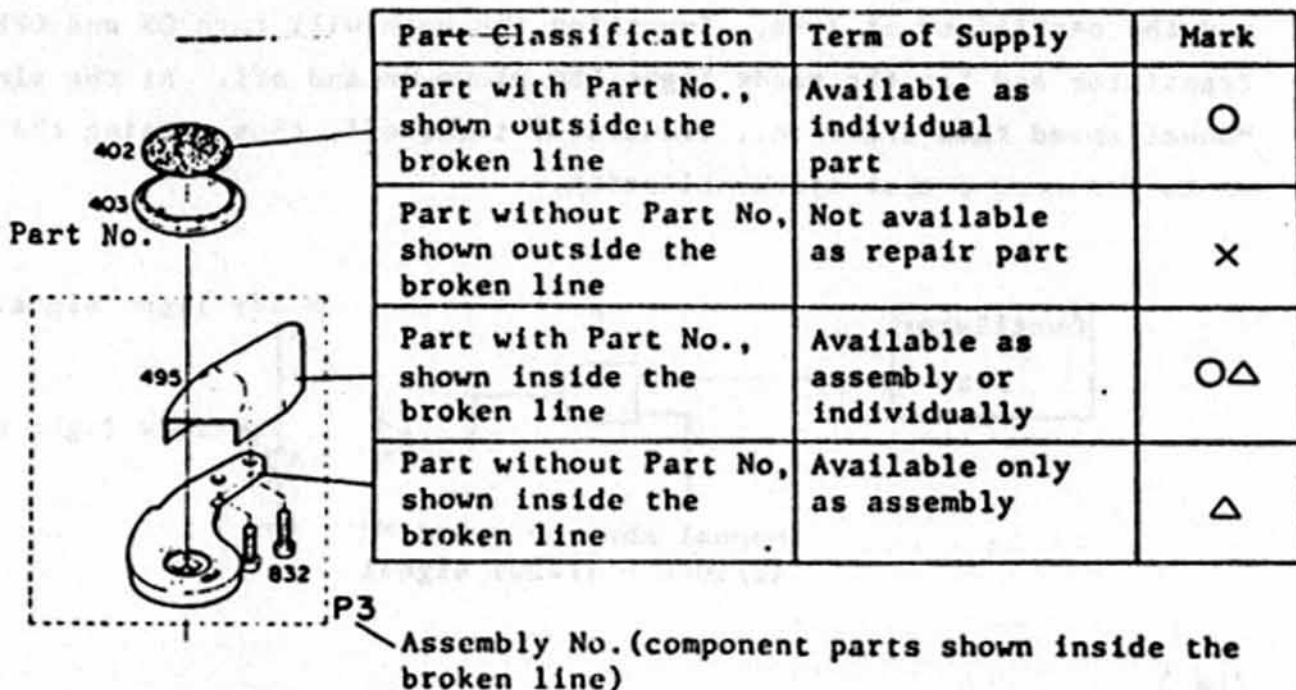
## (1) Standard mechanical elements 標準機械要素

| Mark<br>記号    | Shape<br>形状                                                                         | Name<br>名称                                                     | Mark<br>記号 | Shape<br>形状                                                                          | Name<br>名称                                                        |
|---------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| JCIS<br>⊕ PM  |    | JCIS Pan Head Machine<br>Screw<br>JCIS十字穴付きなべ小ねじ               | HS         |    | Hexagon Socket Head Set<br>Screw<br>六角穴付き止めねじ                     |
| JCIS<br>⊕ CM  |    | JCIS Countersunk Head<br>Machine Screw<br>JCIS十字穴付きさら小ねじ       | HSB        |    | Hexagon Socket Head Bolt<br>六角穴付きボルト                              |
| JCIS<br>⊕ OCM |    | JCIS Oval Countersunk<br>Head Machine Screw<br>JCIS十字穴付き丸さら小ねじ | (45°)P     |    | Oval Countersunk Head<br>Special Machine Screw<br>すりわり付き特殊丸さら小ねじ  |
| ⊕ PM          |    | Pan Head Machine Screw<br>十字穴付きなべ小ねじ                           | (45°)Q     |    | Countersunk Head Special<br>Machine Screw<br>すりわり付き特殊さら小ねじ        |
| ⊕ CM          |    | Countersunk Head Machine<br>Screw<br>十字穴付きさら小ねじ                | ⊕ PTB      |    | Pan Head Tapping Screw<br>Type B<br>十字穴付きなべタップピンねじB               |
| ⊕ OCM         |    | Oval Countersunk Head<br>Machine Screw<br>十字穴付き丸さら小ねじ          | ⊕ CTB      |    | Countersunk Head Tapping<br>Screw Type B<br>十字穴付きさらタップピンねじB       |
| ⊕ RM          |    | Round Head Machine Screw<br>十字穴付き丸小ねじ                          | ⊕ OCTB     |    | Oval Countersunk Head<br>Tapping Screw Type B<br>十字穴付き丸さらタップピンねじB |
| ⊕ TM          |   | Truss Head Machine Screw<br>十字穴付きトラス小ねじ                        | ⊕ PT       |   | Pan Head Tapping Screw<br>十字穴付きなべタップピンねじ                          |
| SR            |  | Set Screw Round Point<br>すりわり付き止めねじ丸さき                         | ⊕ CT       |  | Countersunk Head Tapping<br>Screw<br>十字穴付きさらタップピンねじ               |
| SC            |  | Set Screw Cone Point<br>すりわり付き止めねじとがりさき                        | ⊕ OCT      |  | Oval Countersunk Head<br>Tapping Screw<br>十字穴付き丸さらタップピンねじ         |
| SH            |  | Set Screw Half Point<br>すりわり付き止めねじくぼみさき                        | N          |  | Hexagon Nut<br>六角ナット                                              |
| TP            |  | Taper Pin<br>チーパピン                                             | SPP        |  | Spring Pin<br>スプリングピン                                             |
| STP           |  | Straight Pin<br>平行ピン                                           | E          |  | E-ring<br>E型止め輪                                                   |
|               |                                                                                     |                                                                |            |                                                                                      |                                                                   |
|               |                                                                                     |                                                                |            |                                                                                      |                                                                   |
|               |                                                                                     |                                                                |            |                                                                                      |                                                                   |

# SEE INSERT FOR DRAWING OF COMPLETE CAMERA SECTION

- Note:**
- 1) Parts in the explosion drawings are shown in the facing page as 35FB parts or as P33FB parts.
  - 2) Be sure to fill the part order form, respectively for 35FB parts and for P33FB parts.
  - 3) Parts in the Part List of this section are available as individual parts or as assembly.

## How to use explosion drawings:



| 部品番号<br>Part No. | 名称<br>Name                                 | 備考<br>Remarks | 部品番号<br>Part No. | 名称<br>Name                                     | 備考<br>Remarks |
|------------------|--------------------------------------------|---------------|------------------|------------------------------------------------|---------------|
| 35FB<br>67       | H シュー<br>Hot-shoe contact                  |               | 35FB<br>P3       | 巻上レバー<br>Wind-up lever                         | (Black)       |
| 68               | シューバネ<br>Shoe spring                       | (Black)       |                  |                                                |               |
| 78               | ペンタ革<br>Penta cover leatherette            |               | P33FB            |                                                |               |
| 84               | アースラグ板<br>Earth lug plate                  |               | P33FB<br>69      | 押え接点<br>Upper shoe switch contact              |               |
| 95               | LED 遮光板<br>LED light baffle                |               | 70               | 受け接点<br>Lower shoe switch contact              |               |
| 403              | レバー押えねじ<br>Wind-up lever screw             | (Black)       | 71               | D カラー<br>Collar                                |               |
| 468              | リリース扣飾り環<br>Release button ring            |               | 72               | 接点座環<br>Contact washer                         |               |
| 469              | かぶせリリース環<br>Release ring                   |               | 73               | 沖 棒<br>Switch plunger                          |               |
| 491              | 多重撮りつまみ<br>Multi-exposure knob             |               | 74               | シュー座金<br>Shoe washer                           |               |
| 493A<br>B, C     | 多重撮りシート<br>Multi-exposure sheet,<br>A,B,C  |               | 402              | 巻上レバー用皮<br>Wind-up lever leatherette           |               |
| 503-1            | 枚数計窓<br>Frame-counter window               |               | 406              | レバー戻しバネ<br>Film-advance lever returning spring |               |
| 575              | 飾り環<br>Cover ring                          | (Black)       | 470              | リリース内筒<br>Release inner tube                   |               |
| 577              | 飾り環座金<br>Cover ring washer                 |               | 495              | 指あて<br>Wind-up lever knob                      |               |
| 639              | 止め輪<br>Snap ring                           |               | 535A             | リリース扣<br>Release button                        |               |
| 873              | シュービス (短)<br>Hot-shoe                      |               | 535B             | リリースガイドビス<br>Release guide screw               |               |
| 944A             | Jプリント板ゴム<br>J print rubber                 |               | 803              | カバービス<br>JCIS ⑤ PM 1.7x3 Type(1)<br>Screw      | (Black)       |
|                  |                                            |               | 832              | 小ねじ<br>JCIS ⑤ PM 2x4.5 Type(1)<br>Screw        |               |
| C                | 上蓋部<br>Top cover                           | (Black)       |                  |                                                |               |
| C1               | シュー座モールド<br>Hot-shoe mould                 |               | C4               | 接眼窓<br>Eyepiece ring                           |               |
| C6               | レディライトプリント板<br>Ready-light printed circuit |               |                  |                                                |               |

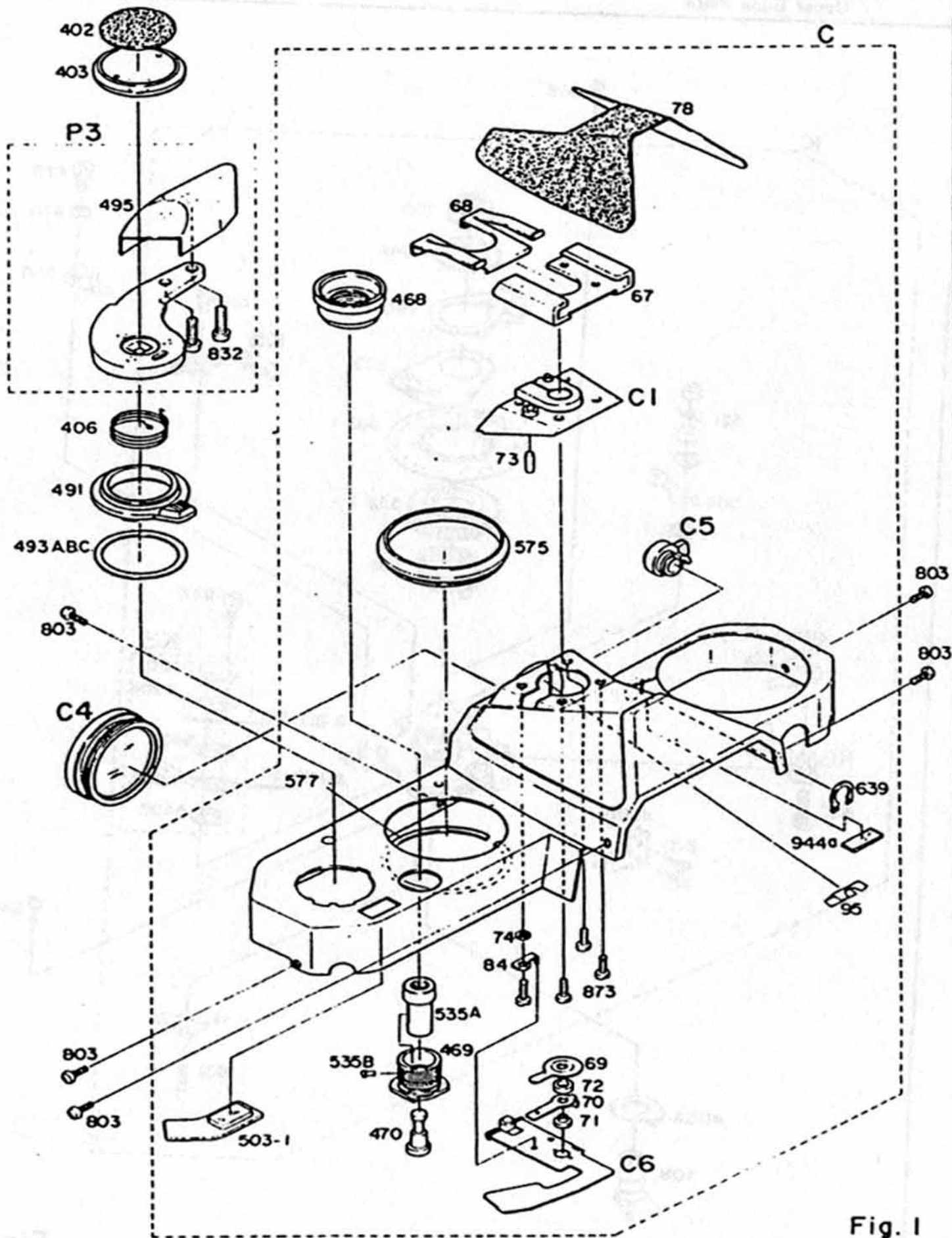


Fig. 1

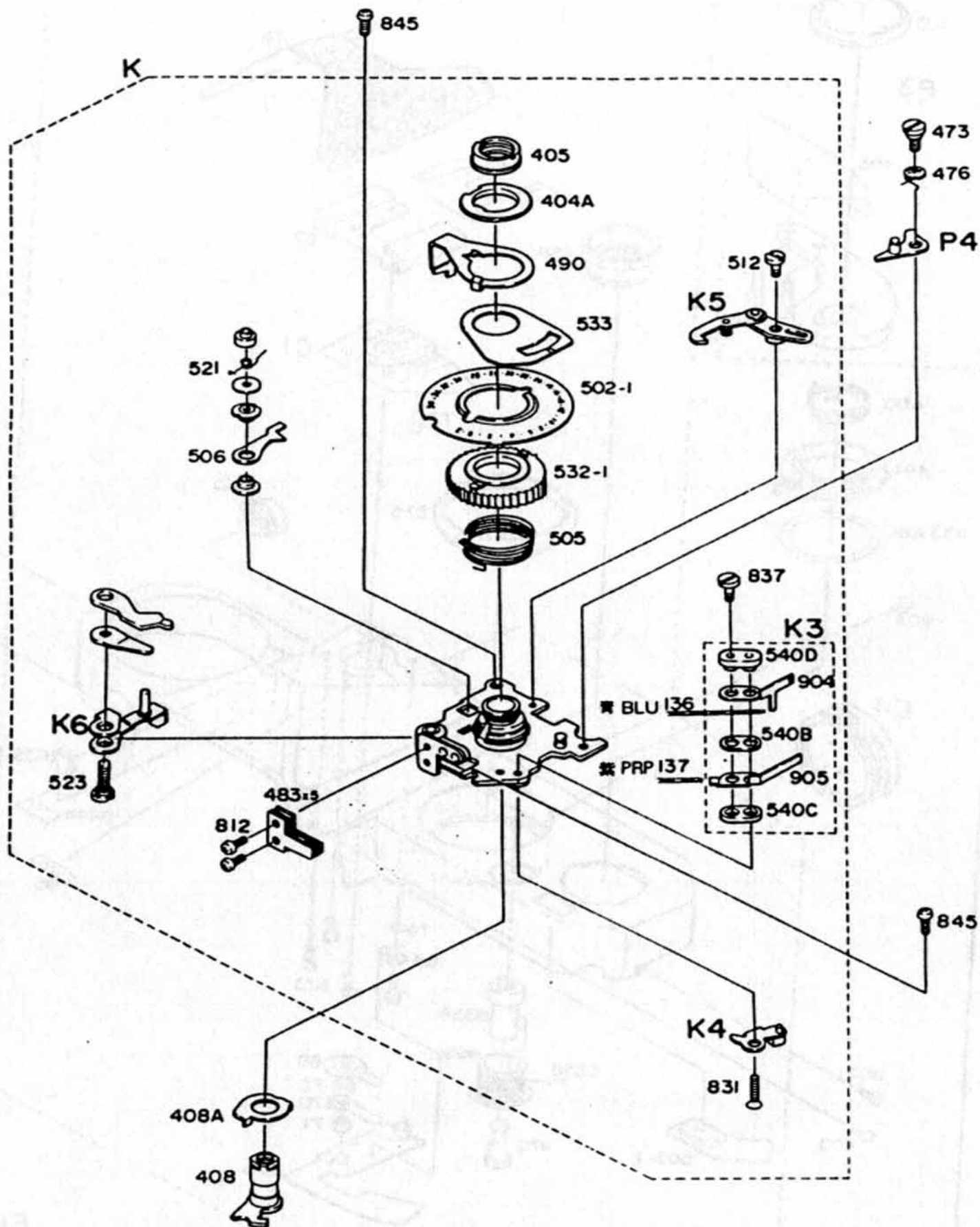


Fig. 2

| 部品番号<br>Part No. | 名 称<br>Name                                                | 備 考<br>Remarks | 部品番号<br>Part No. | 名 称<br>Name                                        | 備 考<br>Remarks |
|------------------|------------------------------------------------------------|----------------|------------------|----------------------------------------------------|----------------|
| 35FB<br>136      | MD スイッチコード<br>Lead wire, MD switch                         |                | <b>P33FB</b>     |                                                    |                |
| 137              | 後幕シグナルコード B<br>Lead wire B, second<br>curtain signal       |                | P33FB<br>405     | レバー軸ナット<br>Lever axle nut                          |                |
| 404A             | 枚数計押え板<br>Counter retaining ring                           |                | 408              | 巻上軸<br>Film advance shaft                          |                |
| 476              | スイッチ制限バネ<br>Switch stopper spring                          |                | 408A             | スプロケット制限除板<br>Sprocket stopper release<br>plate    |                |
| 490              | 多重撮り連結レバー<br>Multi-exposure lever                          |                | 473              | スイッチ制限軸<br>MD switch stopper axle                  |                |
| 540B<br>C, D     | MD スイッチ絶縁板B, C, D<br>MD switch insulation<br>Plate B, C, D |                | 483              | クリックレバーバネ<br>Click lever spring                    |                |
| 837              | MD スイッチ取付ビス<br>MD switch screw                             |                | 502-1            | 枚数計<br>Frame-counter dial                          |                |
| 904              | MD スイッチ接片 A<br>MD switch contact A                         |                | 505              | カウンターバネ<br>Counter spring                          |                |
| 905              | MD スイッチ接片 B<br>MD switch contact B                         |                | 506              | 止 爪<br>Ratchet claw                                |                |
|                  |                                                            |                | 512              | 送り爪レバー軸<br>Advance claw lever axle                 |                |
|                  |                                                            |                | 521              | 零戻しバネ<br>Resetting spring                          |                |
| K                | 上地板<br>Upper base plate                                    |                | 523              | 零戻しレバー軸<br>Counter reset lever axle                |                |
| K3               | MD スイッチ<br>MD switch                                       |                | 532-1            | ラチェット<br>Ratchet                                   |                |
| K4               | スイッチレバー<br>Lever switch                                    |                | 533              | 指標板<br>Frame-counter index                         |                |
| P4               | スイッチ制限<br>Switch lock lever                                |                | 812              | 小ねじ<br>JCIS $\otimes$ PM 1.7x2.2 Type(1)<br>Screw  |                |
|                  |                                                            |                | 831              | MD スイッチビス<br>JCIS $\otimes$ CM 1.4x4<br>Screw      |                |
|                  |                                                            |                | 845              | 巻戻し軸受けビス<br>JCIS $\otimes$ PM 2x3 Type(1)<br>Screw |                |
|                  |                                                            |                | K5               | 送り爪レバー<br>Advance lever                            |                |
|                  |                                                            |                | K6               | 零戻しレバー<br>Counter reverse lever                    |                |

| 部品番号<br>Part No. | 名称<br>Name                                           | 備考<br>Remarks | 部品番号<br>Part No.      | 名称<br>Name                   | 備考<br>Remarks |
|------------------|------------------------------------------------------|---------------|-----------------------|------------------------------|---------------|
| 35FB<br>126      | レバースイッチコード<br>Lead wire<br>Lever switch              |               | P33FB<br>897A<br>B, C | 巻上ギヤワッシャー<br>Washer          |               |
| 135              | マグネットプラスコード<br>Lead wire, magnet ⊕                   |               |                       |                              |               |
|                  |                                                      |               |                       |                              |               |
|                  |                                                      |               |                       |                              |               |
| A11              | 下地板<br>Lower base plate                              |               |                       |                              |               |
|                  |                                                      |               | A9                    | スプール軸<br>Spool shaft         |               |
|                  |                                                      |               | A12                   | スプロストッパー<br>Sprocket stopper |               |
| <b>P33FB</b>     |                                                      |               | A18                   | 巻上ギヤ<br>Wind up gear         |               |
| P33FB<br>412     | 三羽根爪押えバネ<br>Charge cam claw<br>retaining spring      |               |                       |                              |               |
| 413              | 巻上げカム<br>Film advance cam                            |               |                       |                              |               |
| 450              | スプロストッパー戻しバネ<br>Sprocket stopper<br>returning spring |               |                       |                              |               |
| 487              | 主スイッチ片 A<br>Lever switch contact A                   |               |                       |                              |               |
| 488              | " B<br>Lever switch contact B                        |               |                       |                              |               |
| 496              | スプロ制限板バネ<br>Sprocket stopper spring                  |               |                       |                              |               |
| 534              | スイッチ押え板<br>Claw release pin                          |               |                       |                              |               |
| 540A             | MDスイッチ絶縁板<br>MD switch insulation<br>plate A         |               |                       |                              |               |
| 815              | 巻上軸ビス<br>Film-advance shaft<br>screw (left handed)   |               |                       |                              |               |
| 819              | 小わじ<br>JCIS® PH 1.4x3 Type(3)<br>Screw               |               |                       |                              |               |
| 835              | 下地板取付ビス B<br>Lower base plate screw                  |               |                       |                              |               |
| 888              | スプロストッパービス<br>Sprocket stopper screw                 |               |                       |                              |               |

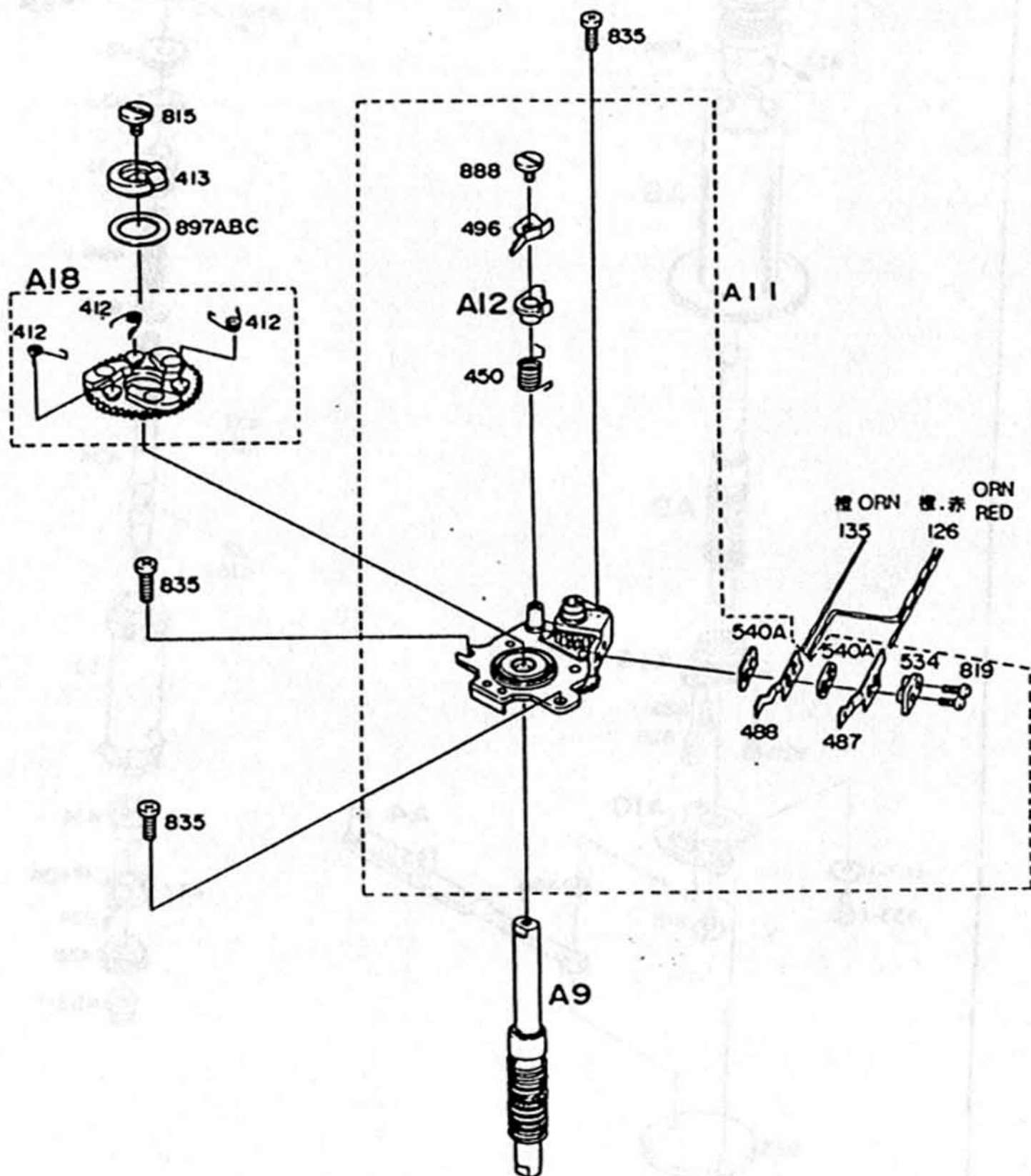


Fig. 3

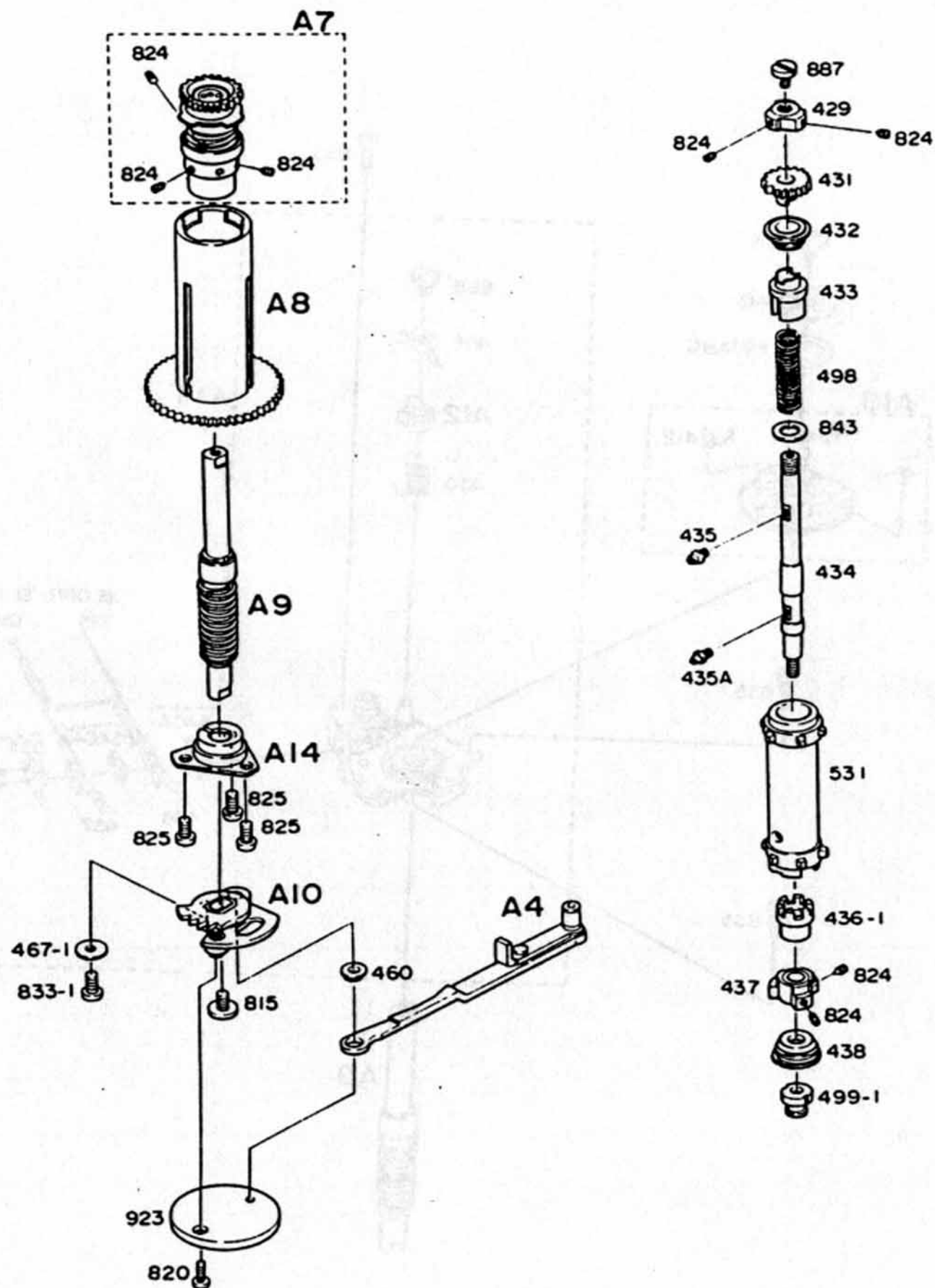


Fig. 4

| 部品番号<br>Part No. | 名称<br>Name                                         | 備考<br>Remarks | 部品番号<br>Part No. | 名称<br>Name                                   | 備考<br>Remarks |
|------------------|----------------------------------------------------|---------------|------------------|----------------------------------------------|---------------|
| 35FB             |                                                    |               | P33FB<br>824     | ギヤセットビス<br>Gear set screw                    |               |
|                  |                                                    |               | 825              | メタルビス<br>JCISB PH 2x2.5 Type(1)              |               |
|                  |                                                    |               | 833-1            | ゆるみ止めビス<br>Set screw                         |               |
| <b>P33FB</b>     |                                                    |               | 843              | スプロケットパネ受座金<br>Washer                        |               |
| P33FB<br>429     | スプロケット制限カム<br>Sprocket stopper cam                 |               | 887              | スプロケット左わじ<br>Sprocket screw<br>(left handed) |               |
| 431              | スプロ上ギヤ<br>Sprocket upper gear                      |               | 923              | モーターカップリング<br>Motor coupling                 |               |
| 432              | スプロケット軸受<br>Sprocket shaft bearing                 |               |                  |                                              |               |
| 433              | スプロケットカラー<br>Sprocket collar                       |               |                  |                                              |               |
| 434              | スプロケット軸<br>Sprocket shaft                          |               | A4               | シャッターチャージレバー<br>Shutter charge lever         |               |
| 435A             | スプロケットビス A<br>Sprocket screw A                     |               | A7               | スプール上ギヤ<br>Spool upper gear                  |               |
| 436-1            | スプロケットローラー A<br>Sprocket roller A                  |               | A8               | スプール<br>Spool                                |               |
| 437              | スプロカラー Aナット<br>Sprocket collar A nut               |               | A9               | スプール軸<br>Spool shaft                         |               |
| 438              | スプロ軸受<br>Sprocket shaft bearing                    |               | A10              | セットカム<br>Set cam                             |               |
| 460              | ピットカムカラー<br>Rewind button                          |               | A14              | スプール軸受ケース<br>Spool shaft bearing case        |               |
| 467-1            | ゆるみ止めカラー<br>Anti-reversing claw<br>shaft           |               |                  |                                              |               |
| 498              | スプロケットばね<br>Sprocket spring                        |               |                  |                                              |               |
| 499-1            | スプロケット軸カラー B<br>Sprocket shaft collar B            |               |                  |                                              |               |
| 531              | スプロケット<br>Sprocket                                 |               |                  |                                              |               |
| 815              | 巻上軸ビス<br>Film-advance shaft<br>screw (left handed) |               |                  |                                              |               |
| 820              | カップリングビス<br>Coupling screw                         |               |                  |                                              |               |

[illegible]

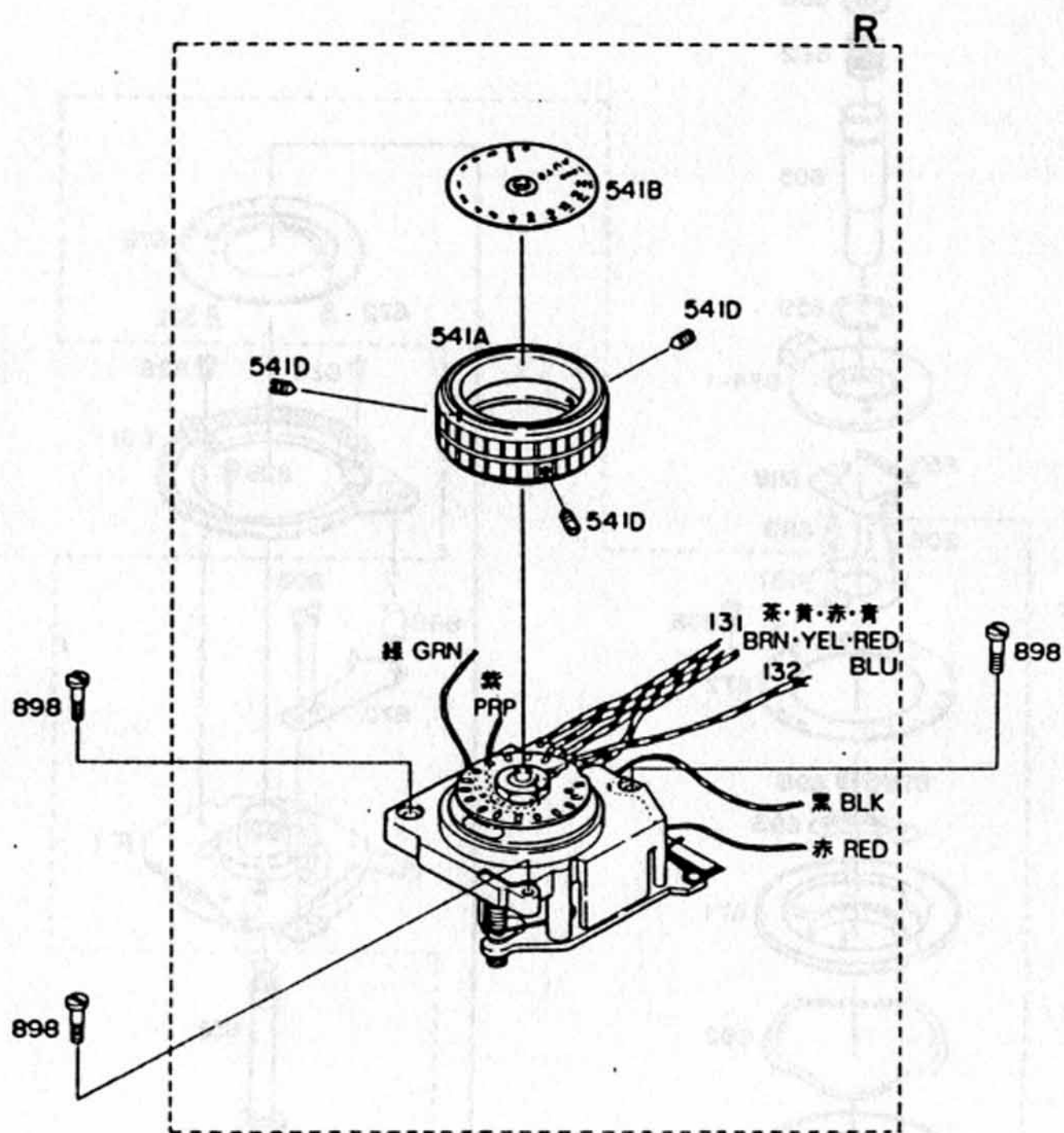


Fig. 5

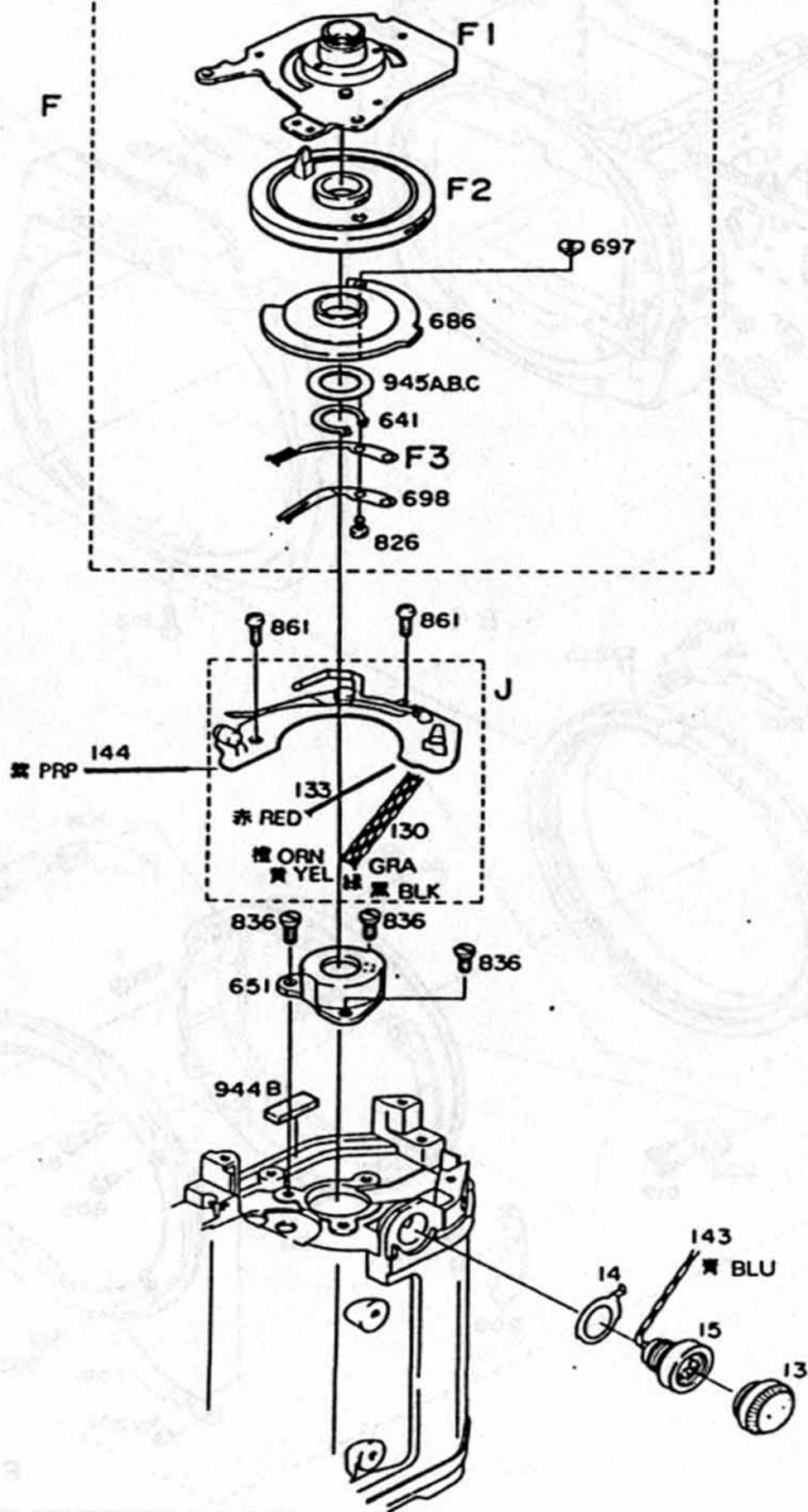


Fig. 6

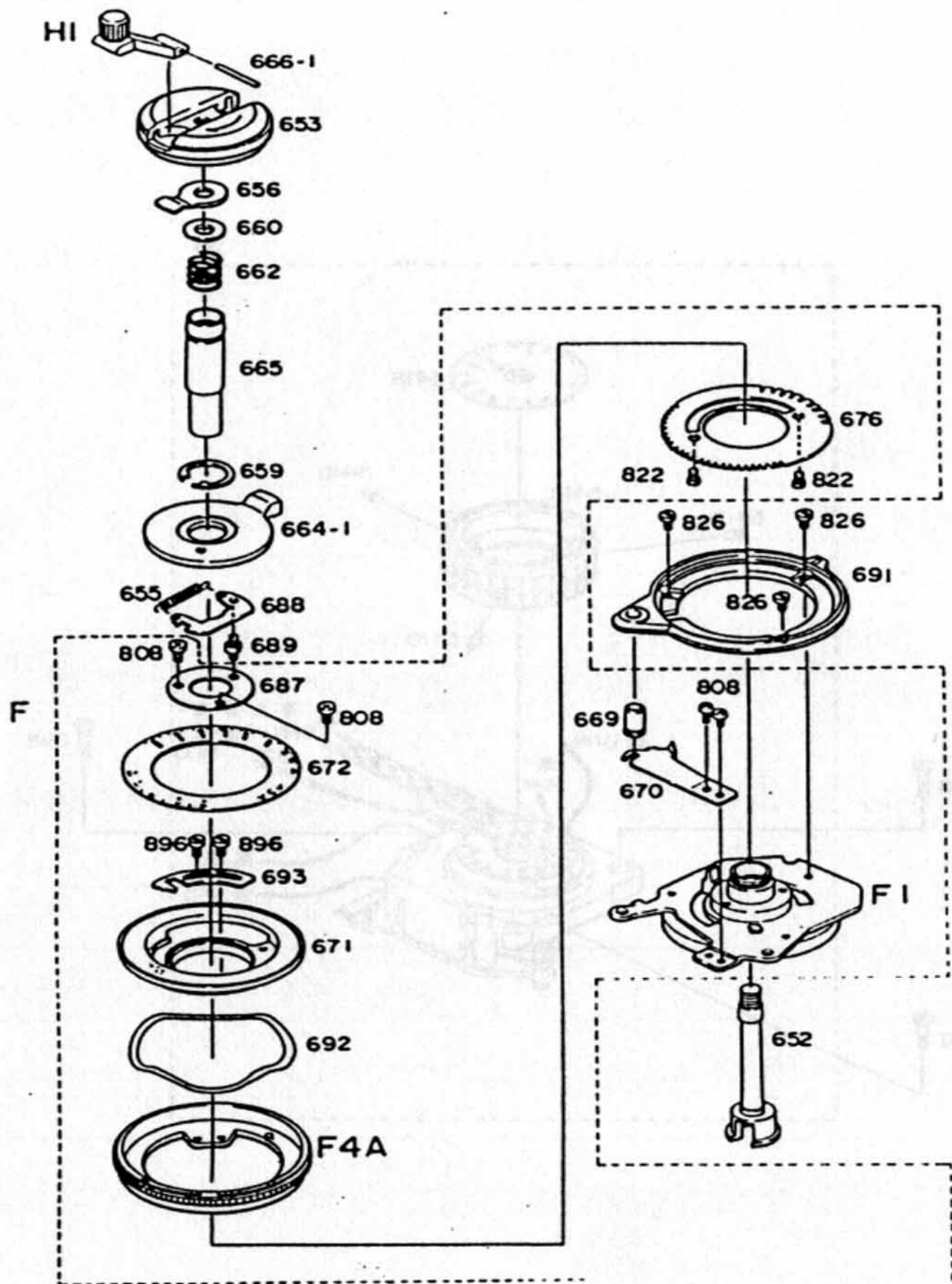


Fig. 7

| 部品番号<br>Part No. | 名称<br>Name                               | 備考<br>Remarks | 部品番号<br>Part No. | 名称<br>Name                                | 備考<br>Remarks |
|------------------|------------------------------------------|---------------|------------------|-------------------------------------------|---------------|
| 35FB<br>652      | 巻戻軸<br>Rewind shaft                      |               | 35FB<br>826      | ブラシ板ビス<br>Brush screw                     |               |
| 653              | 巻戻しノブ<br>Rewind knob                     |               | 896              | 運動板取付ビス<br>Aperture coupling plate screw  |               |
| 655              | 巻戻し軸受け板用バネ<br>Spring                     |               |                  |                                           |               |
| 659              | 開閉ノブ押えグリップ<br>Cover latch retaining clip |               |                  |                                           |               |
| 660              | 巻戻軸座金<br>Rewind shaft washer             |               | F                | FRE 部<br>FRE                              |               |
| 662              | フリクションバネ<br>Friction spring              |               | F1               | ASA ダイアル基板<br>ASA dial mount              |               |
| 664-1            | 開閉ノブ<br>O.C. knob                        |               | F4A              | ASA ダイアル<br>ASA dial                      |               |
| 665              | 巻戻軸ガイド<br>Rewind shaft guide             |               | H1               | 巻戻しレバー<br>Rewind crank                    |               |
| 669              | ASA クリック釦<br>ASA click button            |               |                  |                                           |               |
| 670              | ASA クリックバネ<br>ASA click spring           |               |                  |                                           |               |
| 671              | ASA 目盛貼付環<br>ASA dial base disk          |               | <b>P33FB</b>     |                                           |               |
| 672              | ASA 目盛板<br>ASA dial                      |               | P33FB<br>656     | レバー受バネ<br>Rewind crank spring             |               |
| 676              | ASA クリック板<br>ASA click plate             |               | 666-1            | 巻戻しレバー軸<br>Rewind crank shaft             |               |
| 687              | 目盛貼付環押え板<br>ASA dial base disk           |               | 822              | ASA 目盛貼付環制限<br>ASA-dial base disk stopper |               |
| 688              | 開閉ロックレバー<br>Rewind knob lock lever       |               |                  |                                           |               |
| 689              | ロックレバー軸<br>Knob lock lever shaft         |               |                  |                                           |               |
| 691              | ASA ダイアル受座<br>ASA dial mount             |               |                  |                                           |               |
| 692              | 露出補正バネ<br>Exposure correction spring     |               |                  |                                           |               |
| 693              | ASA 運動板<br>ASA coupler                   |               |                  |                                           |               |
| 808              | 抵抗器回転軸<br>FRE shaft screw                |               |                  |                                           |               |

| 部品番号<br>Part No. | 名称<br>Name                            | 備考<br>Remarks | 部品番号<br>Part No. | 名称<br>Name                   | 備考<br>Remarks |
|------------------|---------------------------------------|---------------|------------------|------------------------------|---------------|
| 35FB<br>14       | ターミナルアース板<br>Terminal earth plate     |               | 35FB<br>J        | FRE プリント板<br>Printed circuit |               |
| 130              | FREコード<br>Lead wire, FRE              |               |                  |                              |               |
| 133              | プラスコード A<br>Lead wire A               |               | P33FB            |                              |               |
| 143              | シンクロコード B<br>Lead wire B, synch       |               | P33FB<br>13      | ターミナルキャップ<br>Terminal cap    |               |
| 144              | チエッカーコード<br>Lead wire, checker        |               | 15               | シンクロソケット<br>Synch socket     |               |
| 641              | 止め輪<br>Snap ring                      |               |                  |                              |               |
| 651              | 巻戻軸受<br>Rewind shaft bearing          |               |                  |                              |               |
| 686              | ブラシギヤ<br>Brush gear                   |               |                  |                              |               |
| 697              | ブラシナット<br>Brush nut                   |               |                  |                              |               |
| 698              | 滑動ブラシ B<br>Sliding brush B            |               |                  |                              |               |
| 826              | ブラシビス<br>Brush screw                  |               |                  |                              |               |
| 836              | 巻戻し軸受ビス<br>Rewind shaft bearing screw |               |                  |                              |               |
| 861              | FREプリント板ビス<br>FRE printed board screw |               |                  |                              |               |
| 944B             | Jプリント板ゴム<br>J print rubber            |               |                  |                              |               |
|                  |                                       |               |                  |                              |               |
|                  |                                       |               |                  |                              |               |
| F                | FRE 部<br>FRE                          |               |                  |                              |               |
| F1               | ASAダイヤル基台<br>ASA dial mount           |               |                  |                              |               |
| F2               | FRE 環<br>FRE ring                     |               |                  |                              |               |
| F3               | ブラシ A<br>Brush A                      |               |                  |                              |               |

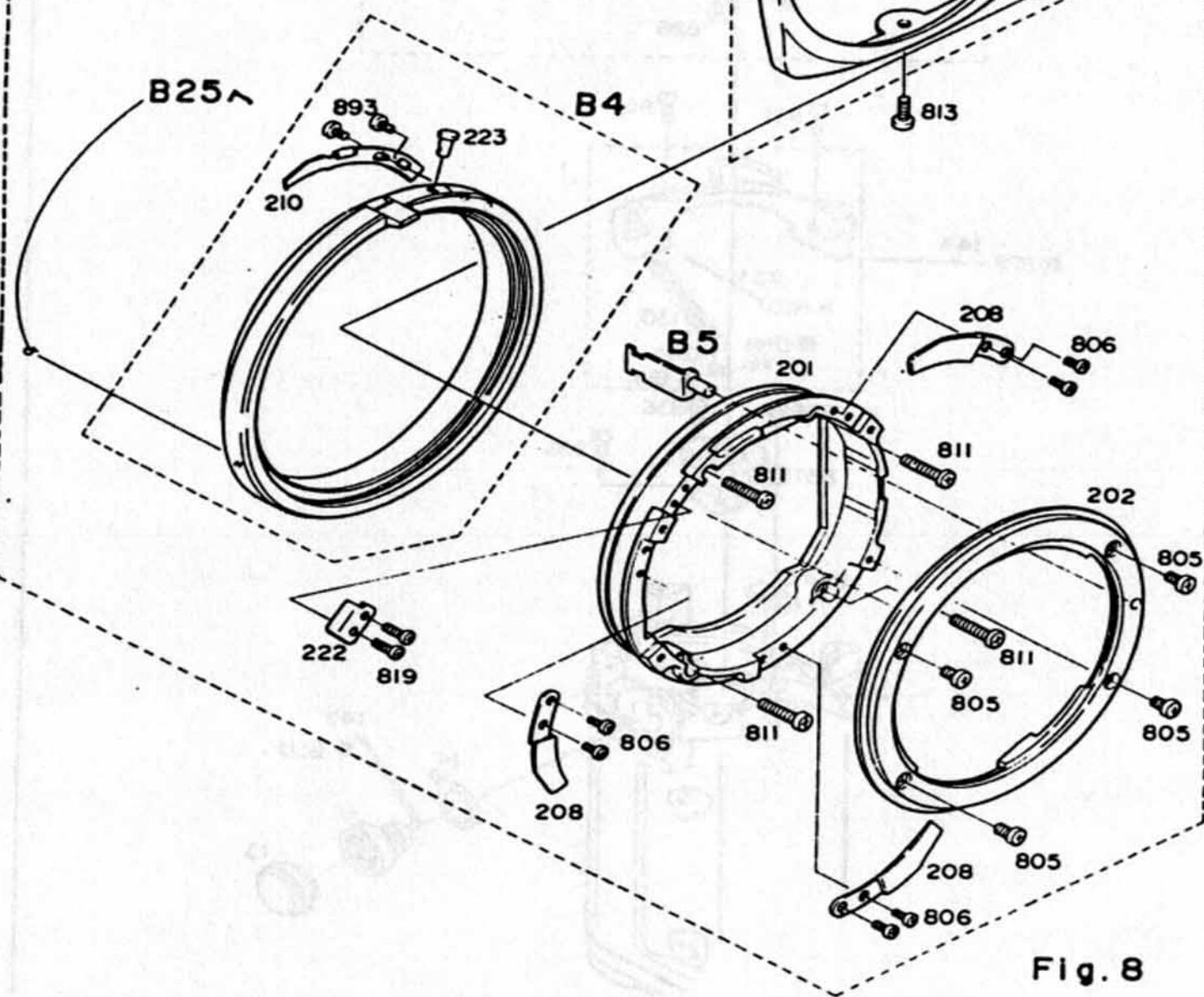
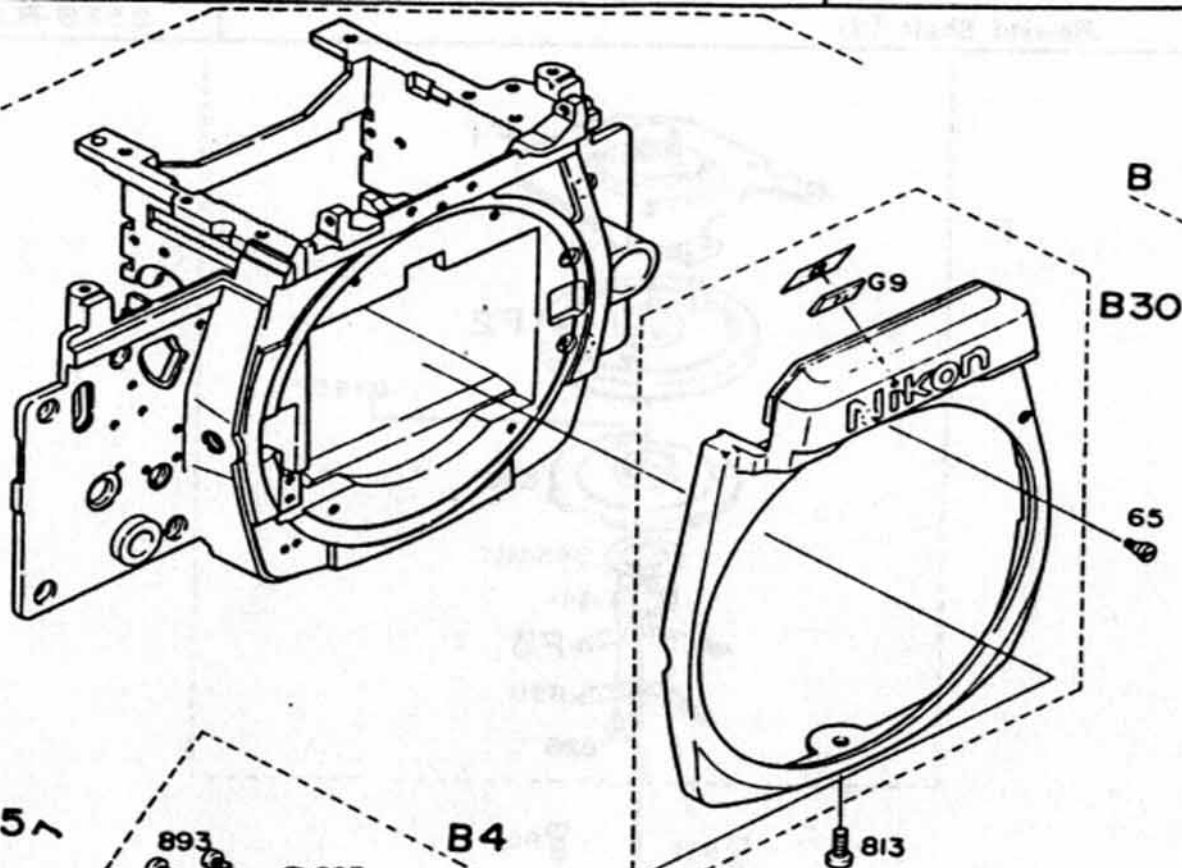


Fig. 8

| 部品番号<br>Part No. | 名称<br>Name                                | 備考<br>Remarks | 部品番号<br>Part No. | 名称<br>Name                                 | 備考<br>Remarks |
|------------------|-------------------------------------------|---------------|------------------|--------------------------------------------|---------------|
| 35FB<br>201      | マウント台<br>Bayonet mount                    |               | P33FB<br>893     | 絞り連動片パネビス<br>Aperture coupling piece screw |               |
| 222              | 連動環回転制限<br>Coupling ring stopper          |               |                  |                                            |               |
| G9               | レンズ<br>Lens                               |               |                  |                                            |               |
|                  |                                           |               | B5               | 脱レバー<br>Lens release lever                 |               |
| B                | 前板<br>Front plate                         |               |                  |                                            |               |
| B4               | 絞り連動環<br>Aperture coupling ring           |               |                  |                                            |               |
| B30              | 前カバー銘板<br>Front cover                     | (Black)       |                  |                                            |               |
|                  |                                           |               |                  |                                            |               |
|                  |                                           |               |                  |                                            |               |
| <b>P33FB</b>     |                                           |               |                  |                                            |               |
| P33FB<br>65      | 前カバー用段ビス<br>Front cover screw             | (Black)       |                  |                                            |               |
| 202              | バヨネット環<br>Bayonet                         |               |                  |                                            |               |
| 208              | バヨネットパネ<br>Bayonet spring                 |               |                  |                                            |               |
| 210              | 絞り連動片パネ<br>Coupling piece spring          |               |                  |                                            |               |
| 223              | 連動片パネボタン<br>Coupling piece spring button  |               |                  |                                            |               |
| 805              | バヨネット止ビス<br>Bayonet set screw             |               |                  |                                            |               |
| 806              | 小ねじ<br>JCIS ④ PM 1.7x1.8 Type(1)<br>Screw |               |                  |                                            |               |
| 811              | バヨネット台ビス<br>Bayonet mount screw           |               |                  |                                            |               |
| 813              | 前カバービス<br>Front cover screw               | (Black)       |                  |                                            |               |
| 814              | 小ねじ<br>JCIS ④ PM 1.4x3 Type(3)<br>Screw   |               |                  |                                            |               |

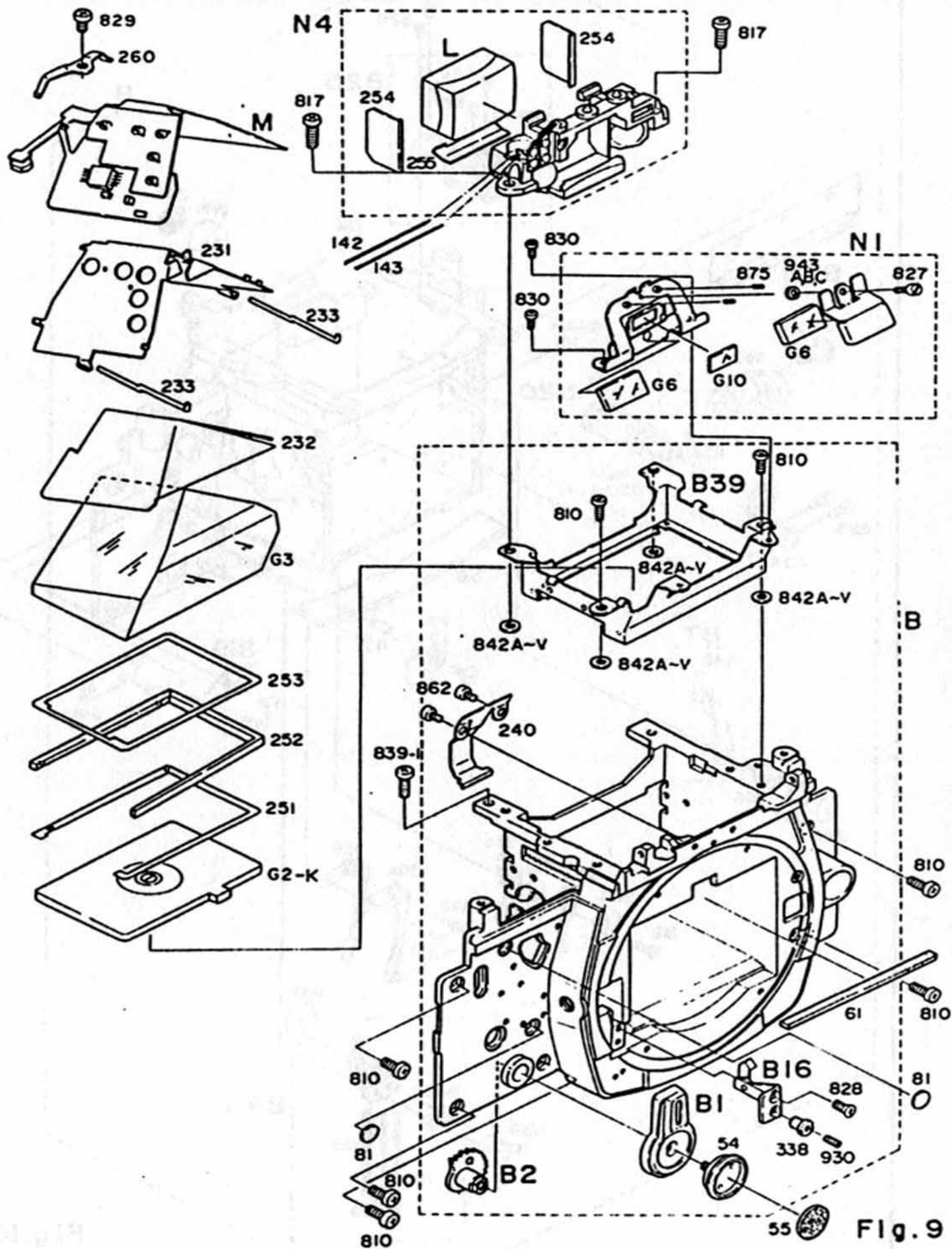


Fig. 9

| 部品番号<br>Part No. | 名称<br>Name                                   | 備考<br>Remarks | 部品番号<br>Part No. | 名称<br>Name                              | 備考<br>Remarks |
|------------------|----------------------------------------------|---------------|------------------|-----------------------------------------|---------------|
| 35FB<br>61       | ミラーアップ受けモルト<br>Mirror-up buffer              |               | 35FB<br>G2-K     | フレネル Kタイプ<br>Fresnel screen K type      |               |
| 81               | 前板孔カバー<br>Front plate hole lid               |               | G10              | レンズ<br>Lens                             |               |
| 142              | シンクロコード A<br>Lead wire A, synch              |               |                  |                                         |               |
| 143              | シンクロコード B<br>Lead wire B, synch              |               |                  |                                         |               |
| 231              | ペンタ押え板<br>Prism retaining plate              |               | B                | 前板<br>Front plate                       | (Black)       |
| 233              | プリズム押えバネ<br>Prism retainer spring            |               | B2               | セルフ起動ギヤ<br>Self-timer gear              |               |
| 240              | スクリーンロックバネ<br>Screen lock spring             |               | B16              | 45° ストッパー<br>45° stopper                |               |
| 251              | 視野枠<br>Finder field frame                    |               | B39              | プリズムボックス<br>Prism box                   |               |
| 252              | 間隙棒<br>Spacer                                |               | L                | 接眼レンズ<br>Eyepiece lens                  |               |
| 253              | プリズム絞り板<br>Prism mask                        |               | M                | IC プリント板<br>IC printed circuit          |               |
| 254              | 接眼構遮光板<br>Light baffle                       |               | N1               | ミラー保持基座板<br>Mirror retaining base plate |               |
| 260              | SPD プリント板押え<br>SPD printed board retainer    |               | N4               | 接眼目元ホルダメザネ<br>Eyepiece mold             |               |
| 338              | 45° ストッパー座止ビス<br>45° stopper base screw      |               |                  |                                         |               |
| 827              | ブラシ連動ギヤビス<br>Brush coupling gear screw       |               |                  |                                         |               |
| 828              | 小ねじ<br>JCIS® CM 2x2.5 Type(1)<br>Screw       |               | <b>P33FB</b>     |                                         |               |
| 839-1            | 小ねじ<br>JCIS® PM 1.7x4.5 Type(3)<br>Screw     |               | 54               | セルフレバービス<br>Self-timer lever screw      | (Black)       |
| 862              | 小ねじ<br>JCIS® PM 1.7x1.5 Type(1)<br>Screw     |               | 55               | レザーレット<br>Leatherette                   |               |
| 930              | ミラースイッチ調整ビス<br>Mirror switch adjusting screw |               | 232              | プリズム押えシート<br>Prism retainer             |               |
| 943A             | ミラー調整室ワッシャー<br>Washer                        |               | 255              | 接眼レンズ押え板<br>Eyepiece retainer           |               |
| 943B             | ミラー調整室ワッシャー<br>Washer                        |               | 810              | 前板取付ビス<br>Front plate screw             |               |

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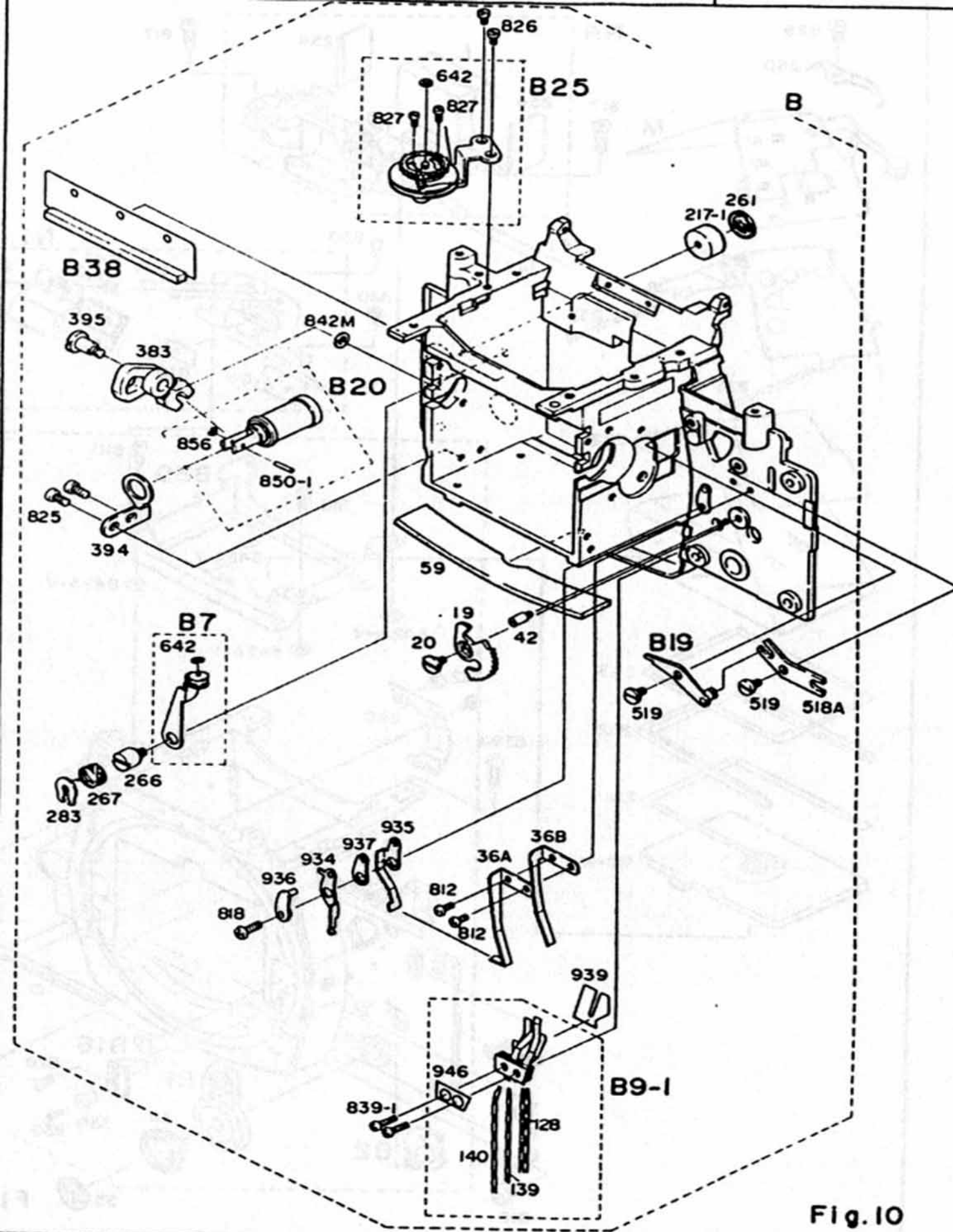
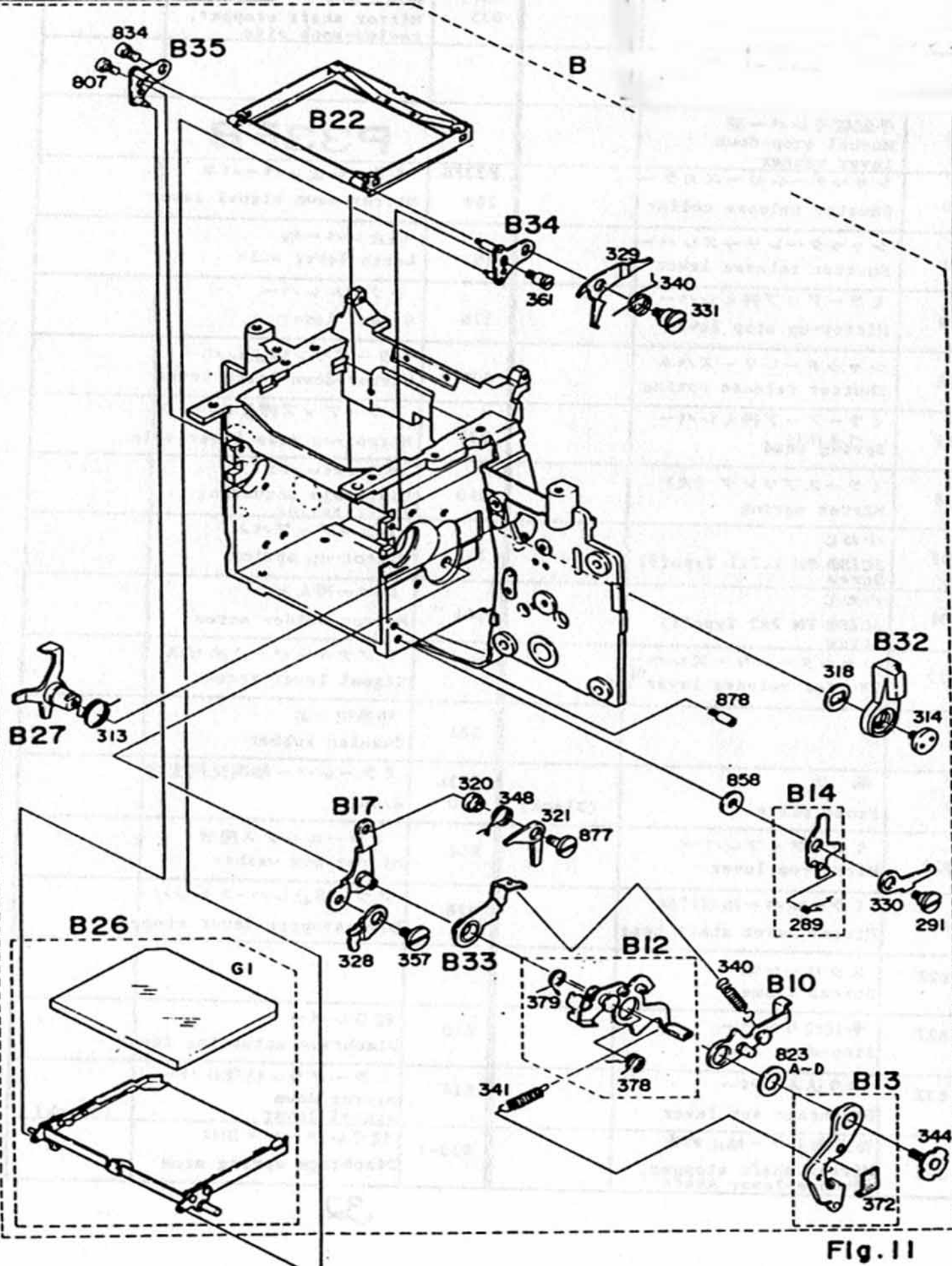
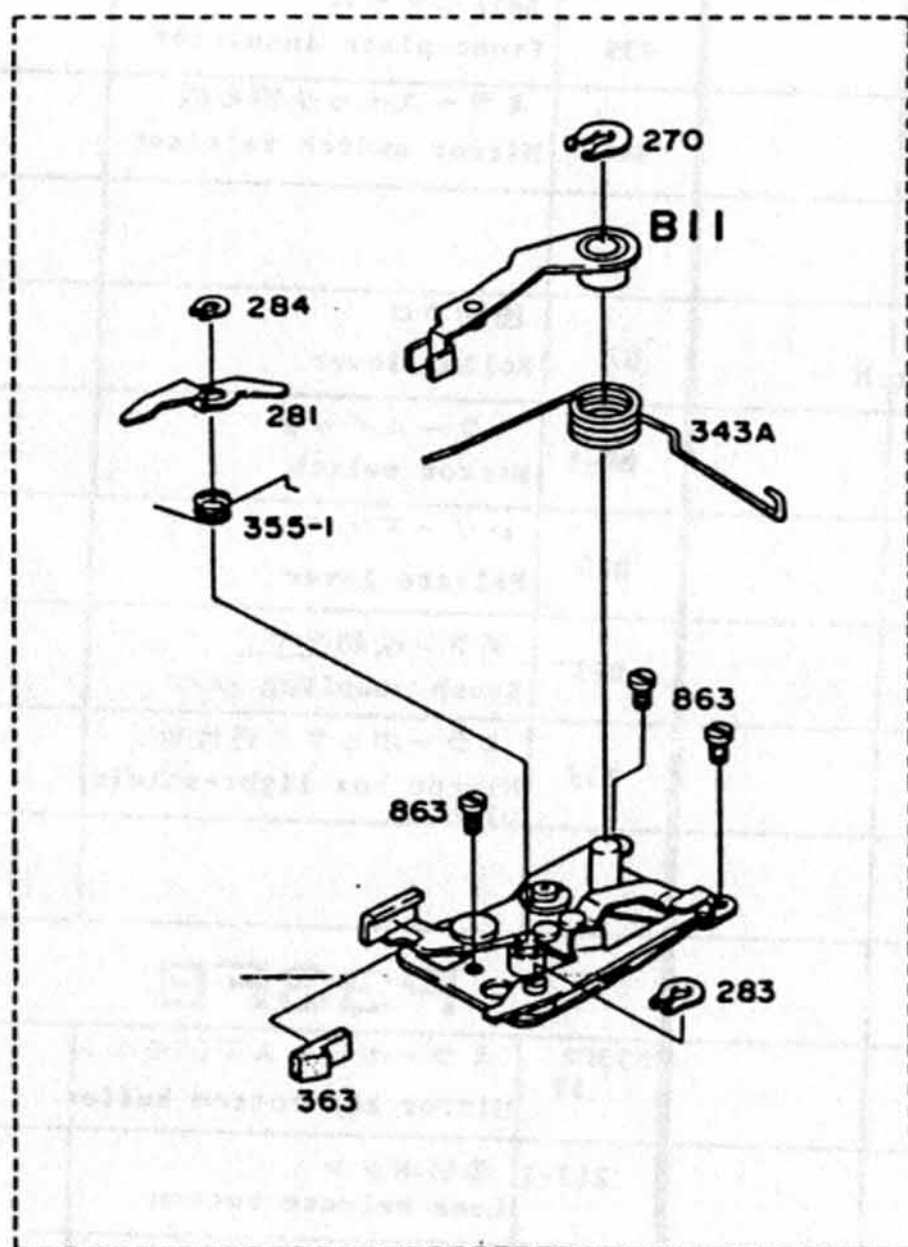


Fig.10

| 部品番号<br>Part No. | 名称<br>Name                                | 備考<br>Remarks | 部品番号<br>Part No. | 名称<br>Name                                    | 備考<br>Remarks |
|------------------|-------------------------------------------|---------------|------------------|-----------------------------------------------|---------------|
| 35FB<br>19       | セルフ連動ギヤ B<br>Self-timer gear B            |               | 35FB<br>936      | メモリースイッチ絶縁板A<br>Memory switch insulator A     |               |
| 20               | セルフ連動軸<br>Self-timer coupler              |               | 937              | メモリースイッチ絶縁板B<br>Memory switch insulator B     |               |
| 36A              | メモリースイッチバネ A<br>Memory switch spring A    |               | 939              | 絶縁板ミラー<br>Front plate insulator               |               |
| 36B              | メモリースイッチバネ B<br>Memory switch spring B    |               | 946              | ミラースイッチ押え板<br>Mirror switch retainer          |               |
| 42               | セルフギヤ制限<br>Self-timer gear stopper        |               |                  |                                               |               |
| 128              | シャッタースイッチコード<br>Lead wire, shutter switch |               | B7               | 運動コロ<br>Roller lever                          |               |
| 139              | メモリーロックコード<br>Lead wire, memory lock      |               | B9-1             | ミラースイッチ<br>Mirror switch                      |               |
| 140              | ミラースイッチコード<br>Lead wire, mirror switch    |               | B19              | リリースリバー<br>Release lever                      |               |
| 266              | コロレバー軸<br>Roller lever axle               |               | B25              | ブラシ連動ギヤ<br>Brush coupling gear                |               |
| 267              | コロレバーバネ<br>Roller lever spring            |               | B38              | ミラーボックス遮光板<br>Mirror box light-shield plate   |               |
| 283              | G リング<br>G ring                           |               |                  |                                               |               |
| 518A             | シーソーレバー<br>Seesaw lever                   |               | <b>P33FB</b>     |                                               |               |
| 519              | リリースレバー軸<br>Release lever axle            |               | P33FB<br>59      | ミラーボックス下部モルト<br>Mirror box bottom buffer      |               |
| 642              | E-リング<br>E-ring                           |               | 217-1            | 着脱ボタン<br>Lens release button                  |               |
| 818              | 小ねじ<br>JCIS® PH 1.7x3 Type(3)<br>Screw    |               | 261              | レンズ着脱ボタン墊<br>Lens release button pad          |               |
| 826              | ブラシ板ビス<br>Brush screw                     |               | 383              | エアダンパー駆動レバー<br>Air-damper lever               |               |
| 827              | ブラシ連動ギヤビス<br>Brush coupling gear screw    |               | 394              | エアダンパーホルダー<br>Air damper holder               |               |
| 839-1            | 小ねじ<br>JCIS® PH 1.7x4.5 Type(3)<br>Screw  |               | 395              | エアダンパー駆動レバー<br>止めビス<br>Air damper lever screw |               |
| 934              | メモリースイッチ A<br>Memory lock switch A        |               | 812              | 小ねじ<br>JCIS® PH 1.7x2.2 Type(1)<br>Screw      |               |
| 935              | メモリースイッチ B<br>Memory lock switch B        |               | 825              | 小ねじ<br>JCIS® PH 2x2.5 Type(1)<br>Screw        |               |



| 部品番号<br>Part No. | 名称<br>Name                                                 | 備考<br>Remarks | 部品番号<br>Part No. | 名称<br>Name                                               | 備考<br>Remarks |
|------------------|------------------------------------------------------------|---------------|------------------|----------------------------------------------------------|---------------|
| 35FB<br>313      | 手動絞りレバーバネ<br>Manual stop-down<br>lever spring              |               | 35FB<br>B35      | 巻戻し側ミラー軸止め板<br>Mirror shaft stopper,<br>rewind-knob side |               |
| 314              | 絞りレバービス<br>Diaphragm actuating<br>lever screw              |               |                  |                                                          |               |
| 318              | 手動絞りレバー座<br>Manual stop-down<br>lever washer               |               | <b>P33FB</b>     |                                                          |               |
| 320              | シャッターリリースカラー<br>Shutter release collar                     |               | P33FB<br>289     | ミラー係止レバーバネ<br>Mirror-down signal lever                   |               |
| 321              | シャッターリリースレバー<br>Shutter release lever                      |               | 291              | 係止レバー軸<br>Latch lever axle                               |               |
| 329              | ミラーアップ押えレバー<br>Mirror-up stop lever                        |               | 328              | シグナルレバー<br>Signal lever                                  |               |
| 348              | シャッターリリースバネ<br>Shutter release spring                      |               | 330              | ミラーダウン係止レバー<br>Mirror-down latch lever                   |               |
| 361              | ミラーアップ押えレバー<br>バネ掛け<br>Spring stud                         |               | 331              | ミラーアップ押えレバー軸<br>Mirror-up stop lever axle                |               |
| 378              | ミラースプリング (大)<br>Mirror spring                              |               | 340              | 絞りレバーバネ<br>Diaphragm actuating<br>lever spring           |               |
| 807              | 小ねじ<br>JCIS $\oplus$ PM 1.7x2 Type(3)<br>Screw             |               | 341              | ミラーアップバネ<br>Mirror-up spring                             |               |
| 834              | 小ねじ<br>JCIS $\oplus$ PM 2x2 Type(1)<br>Screw               |               | 344              | レバー押えビス<br>Mirror holder screw                           |               |
| 877              | シャッターリリースレバー軸<br>Shutter release lever axle                |               | 357              | シグナルレバー止めビス<br>Signal lever screw                        |               |
|                  |                                                            |               | 372              | 防振用ゴム<br>Cushion rubber                                  |               |
| B                | 前板<br>Front plate                                          | (Black)       | 823A<br>- D      | ミラーレバー軸調整用座金<br>Washer                                   |               |
| B12              | ミラーアップレバー<br>Mirror-up lever                               |               | 858              | ミラーボックス座板<br>Mirror box washer                           |               |
| B17              | ミラーレバー軸取付板<br>Mirror lever shaft base                      |               | 878              | ダウン係止レバーストッパー<br>Down-stopper lever stopper              |               |
| B22              | スクリーン枠<br>Screen frame                                     |               |                  |                                                          |               |
| B27              | 手動絞りレバー<br>Stop-down lever                                 |               | B10              | 絞りレバー<br>Diaphragm actuating lever                       |               |
| B32              | 絞り込みレバー<br>Diaphragm set lever                             |               | B14              | ミラーダウン信号レバー<br>Mirror down<br>signal lever               | (Black)       |
| B34              | 巻上側ミラー軸止め板<br>Mirror shaft stopper,<br>advance-lever shaft |               | B33-1            | 絞りレバーバネ掛け<br>Diaphragm spring stud                       |               |

**B****B37****Fig.12**

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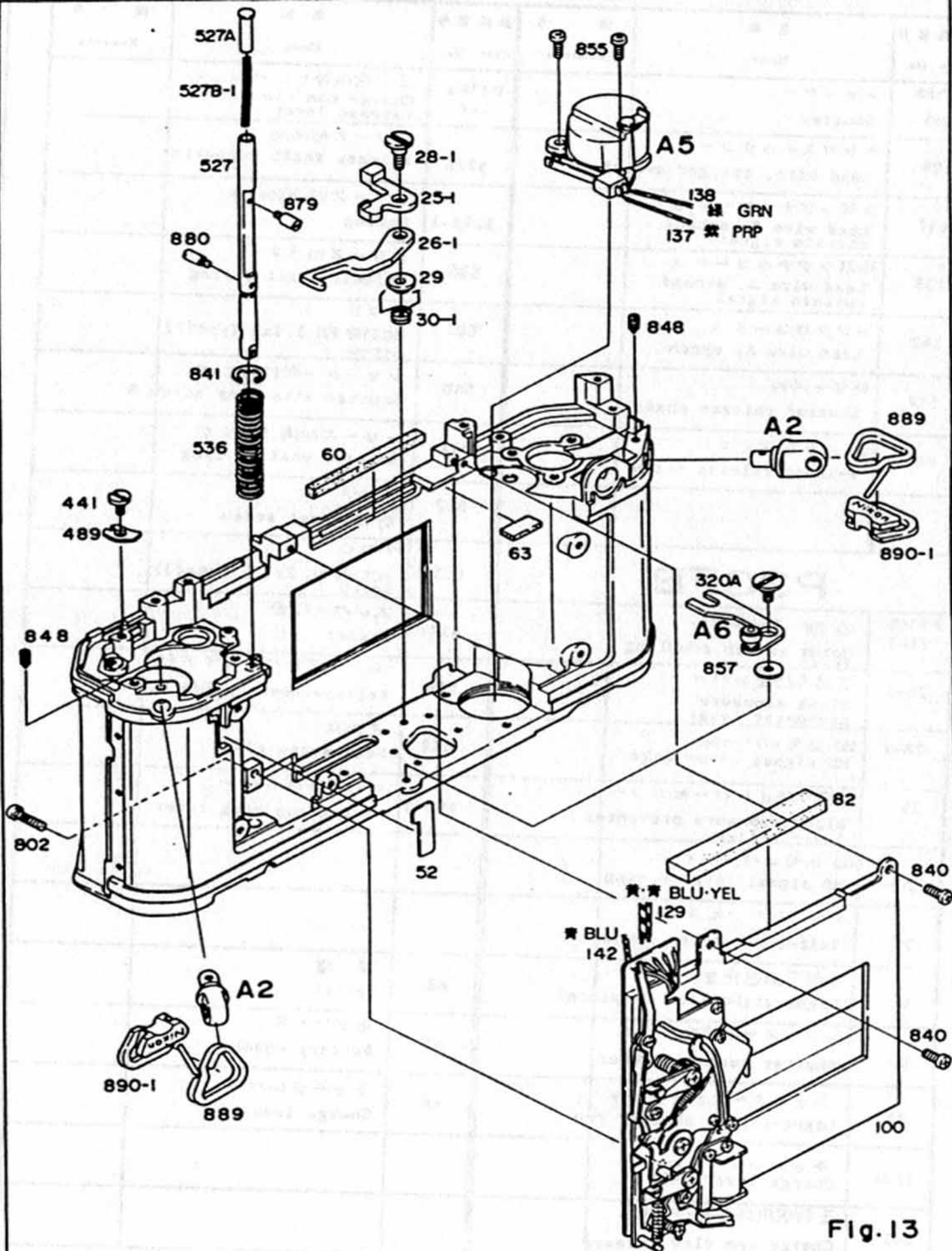
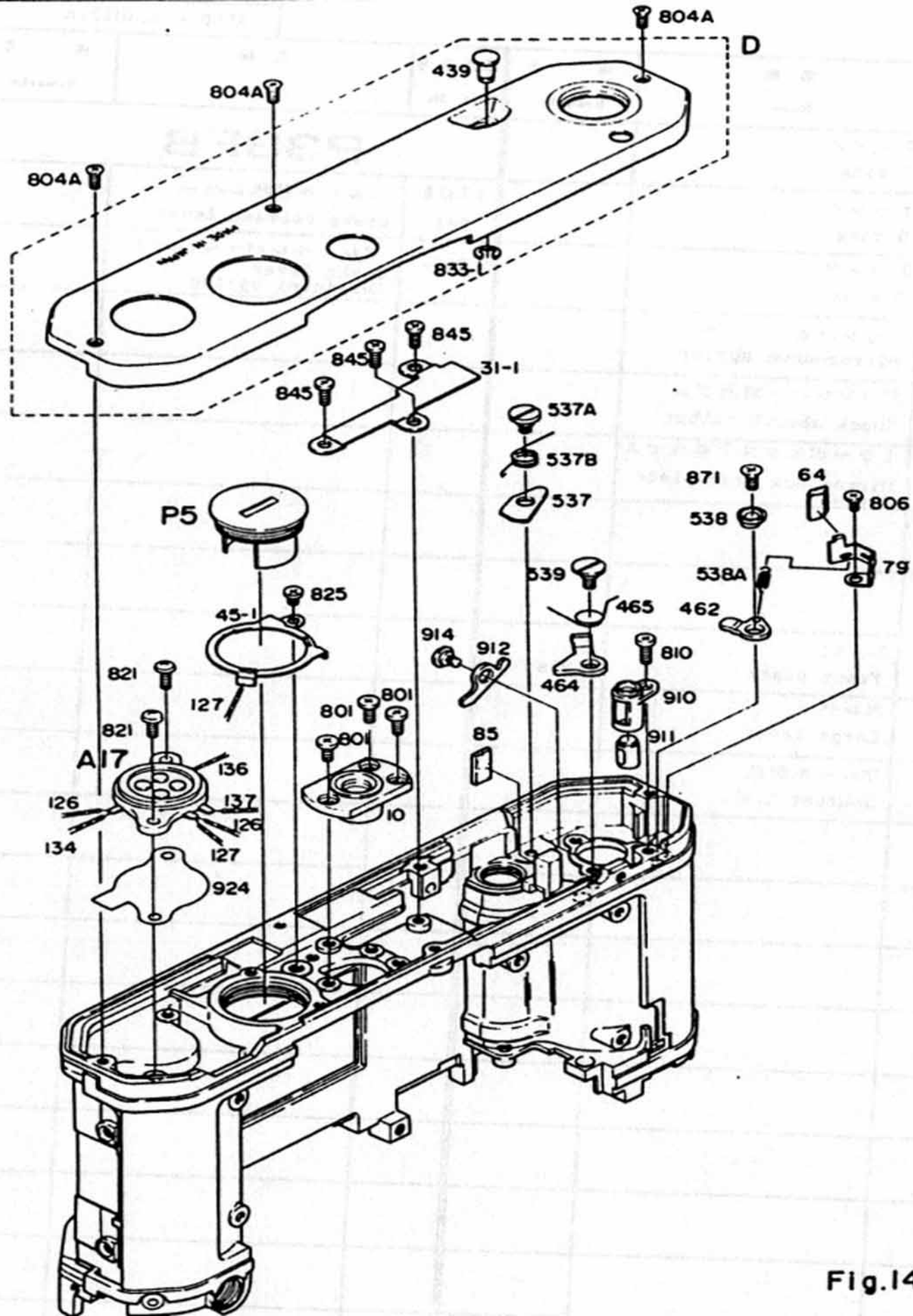


Fig.13

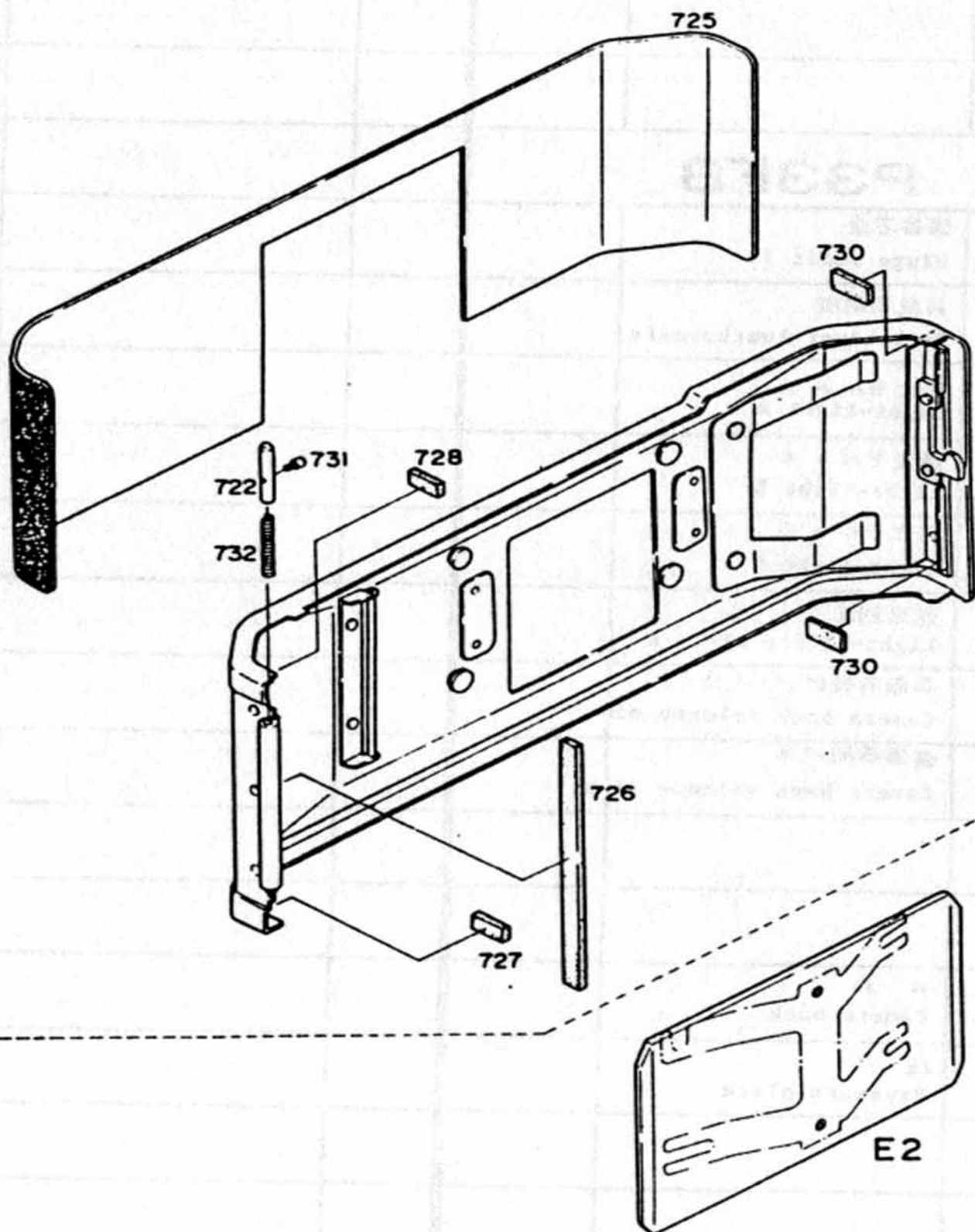
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|------------------|----------------------------------------------------------|---------------|------------------|----------------------------------------------|---------------|
| 35FB<br>100      | シャッター<br>Shutter                                         |               | P33FB<br>489     | 三羽爪外しレバー<br>Charge cam claw<br>release lever |               |
| 129              | トリガスイッチコード<br>Lead wire, trigger switch                  |               | 527A             | リリース軸補助<br>Release shaft supporter           |               |
| 137              | 後幕シグナルコード B<br>Lead wire B, second<br>curtain signal     |               | 527B-1           | リリース軸補助バネ<br>Spring                          |               |
| 138              | 後幕シグナルコード A<br>Lead wire A, second<br>curtain signal     |               | 536              | リリース軸バネ<br>Release shaft spring              |               |
| 142              | シンクロコード A<br>Lead wire A, synch                          |               | 802              | 小ねじ<br>JCIS® PM 1.7x3 Type(1)<br>Screw       |               |
| 527              | リリース軸<br>Shutter release shaft                           |               | 840              | シャッター取付ねじ B<br>Shutter attaching screw B     |               |
| 880              | Bレバー解除ビス<br>B-lever release screw                        |               | 841              | リリース軸用 Eリング<br>Release shaft E ring          |               |
|                  |                                                          |               | 848              | つり環ビス<br>Eyelet set screw                    |               |
| <b>P33FB</b>     |                                                          |               | 855              | 小ねじ<br>JCIS® PM 2x3.5 Type(3)<br>Screw       |               |
| P33FB<br>25-1    | MD・SW 連動レバー<br>Motor switch coupling<br>lever            |               | 857              | 大レバー座金<br>Washer                             |               |
| 26-1             | 空撮り防止レバー<br>Blank exposure<br>preventer lever            |               | 879              | リリースレバーガイド軸<br>Release lever guide pin       |               |
| 28-1             | MD 信号レバー軸<br>MD signal lever axle                        |               | 889              | 三角環<br>Neck-strap ring                       |               |
| 29               | 空撮り防止レバー軸カラー<br>Blank exposure preventer<br>lever collar |               | 890-1            | 三角環保護カバー<br>Neck-strap ring cover            |               |
| 30-1             | MD 信号レバーバネ<br>MD signal lever spring                     |               |                  |                                              |               |
| 54               | セルフレバービス<br>Self-timer lever screw                       |               |                  |                                              |               |
| 60               | 接眼下部遮光モルト<br>Light-tight (for eyepiece)                  |               | A2               | 耳環<br>Eyelet                                 |               |
| 63               | シャッター羽根受けゴム<br>Shutter curtain rubber                    |               | A5               | 電池ケース<br>Battery chamber                     |               |
| 82               | シャッター上遮光モルト<br>Light-tight, shutter top                  |               | A6               | チャージレバー<br>Charge lever                      |               |
| 320A             | チャージレバー軸<br>Charge lever axle                            |               |                  |                                              |               |
| 441              | 三羽爪外しレバー軸<br>Charge cam claw release<br>lever axle       |               |                  |                                              |               |



**Fig.14**

| 部品番号<br>Part No. | 名 称<br>Name                                      | 備 考<br>Remarks | 部品番号<br>Part No. | 名 称<br>Name                              | 備 考<br>Remarks |
|------------------|--------------------------------------------------|----------------|------------------|------------------------------------------|----------------|
| 35FB<br>79       | 緩衝板<br>Shock absorb plate                        |                | P33FB<br>538     | 振り子偏心軸<br>Pendulum eccentric axle        |                |
| 126              | レバースイッチコード<br>Lead wire, lever switch            |                | 538A             | 振り子バネ<br>Pendulum spring                 |                |
| 127              | 電源コード<br>Lead wire, power source                 |                | 539              | ロックレバー軸<br>Lock lever axle               |                |
| 134              | プラスコード B<br>Lead wire B                          |                | 801              | 小ねじ<br>JCISD PM 2x3 Type(3)<br>Screw     |                |
| 136              | MD スイッチコード<br>Lead wire, MD switch               |                | 804A             | 小ねじ<br>JCISD CM 1.7x2.5 Type(1)<br>Screw |                |
| 137              | 後扉シグナルコード B<br>Lead wire B                       |                | 806              | 小ねじ<br>JCISD PM 1.7x1.8 Type(1)<br>Screw |                |
|                  |                                                  |                | 810              | 前板取付ビス<br>Front plate screw              |                |
| <b>P33FB</b>     |                                                  |                | 821              | 小ねじ<br>JCISD PM 2x4 Type(3)<br>Screw     |                |
| P33FB<br>10      | 三脚座<br>Trippod socket                            |                | 825              | 小ねじ<br>JCISD PM 2x2.5 Type(1)<br>Screw   |                |
| 31-1             | 底部押え板<br>Retaining plate, bottom                 |                | 833-1            | ゆるみ止めビス<br>Set screw                     |                |
| 45-1             | 電池アース接片<br>Battery chamber<br>earth contact      |                | 845              | 小ねじ<br>JCISD PM 2x3 Type(1)<br>Screw     |                |
| 64               | 緩衝ゴム<br>Shock absorb rubber A                    |                | 871              | 小ねじ<br>JCISD CM 2x4.5 Type(3)<br>Screw   |                |
| 85               | シャッターチャージレバー<br>受けゴム<br>Charge lever base rubber |                | 910              | MD 軸受<br>MD shaft bearing                |                |
| 439              | 巻戻釦<br>Rewind button                             |                | 911              | MD 軸<br>MD shaft                         |                |
| 462              | 振り子<br>Pendulum                                  |                | 912              | MD シーソーレバー<br>MD seesaw lever            |                |
| 464              | ロックレバー<br>Lock lever                             |                | 914              | MD シーソーレバー軸<br>Seesaw lever axle         |                |
| 465              | ロックレバーバネ<br>Lock lever spring                    |                | 924              | 絶縁シート<br>Insulating seat                 |                |
| 517              | 偏心軸軸受<br>Eccentric shaft bearing                 |                | A11              | 下 地 板<br>Lower base plate                |                |
| 537A             | AR レバー軸<br>AR lever axle                         |                | D                | 底 蓋<br>Bottom plate                      |                |
| 537B             | AR レバーバネ<br>AR lever spring                      |                | P5               | 電池キャップ<br>Battery chamber cap            |                |

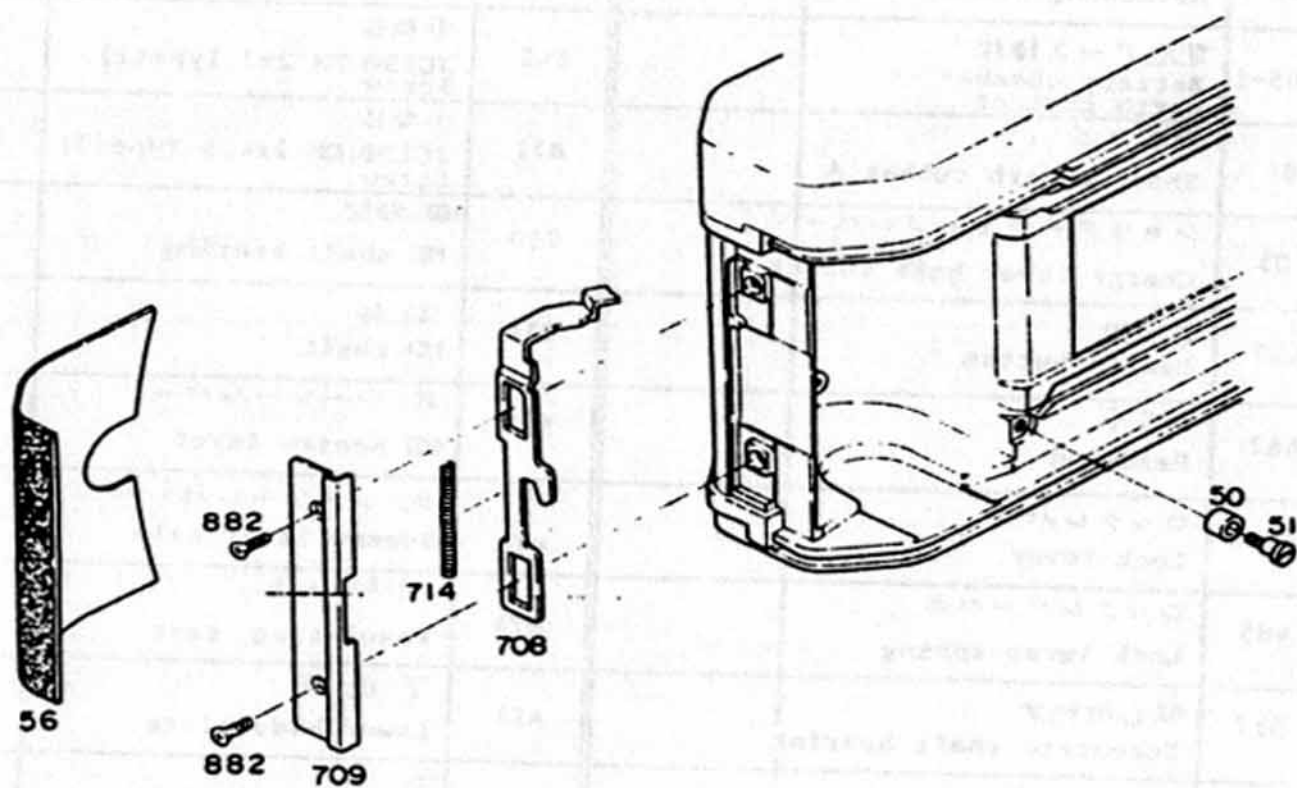
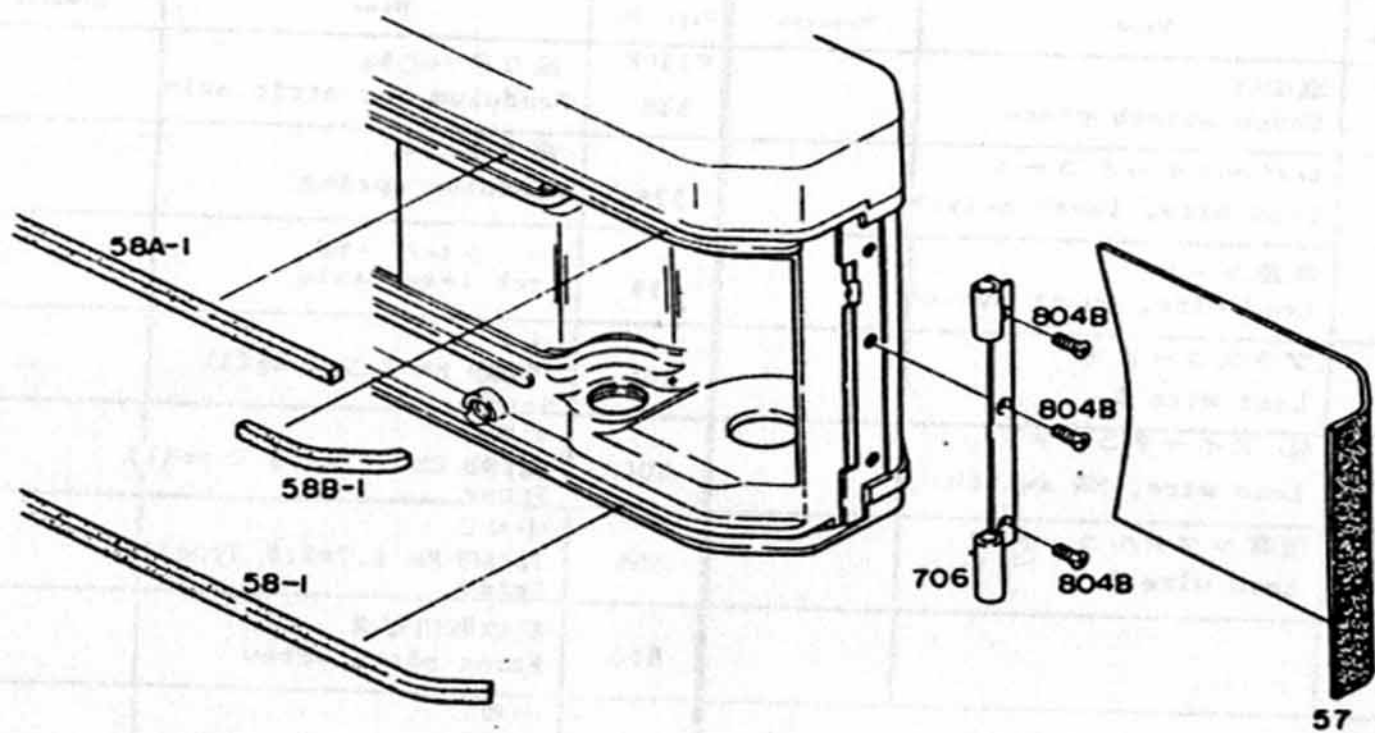
EI



E2

**Fig. 15**

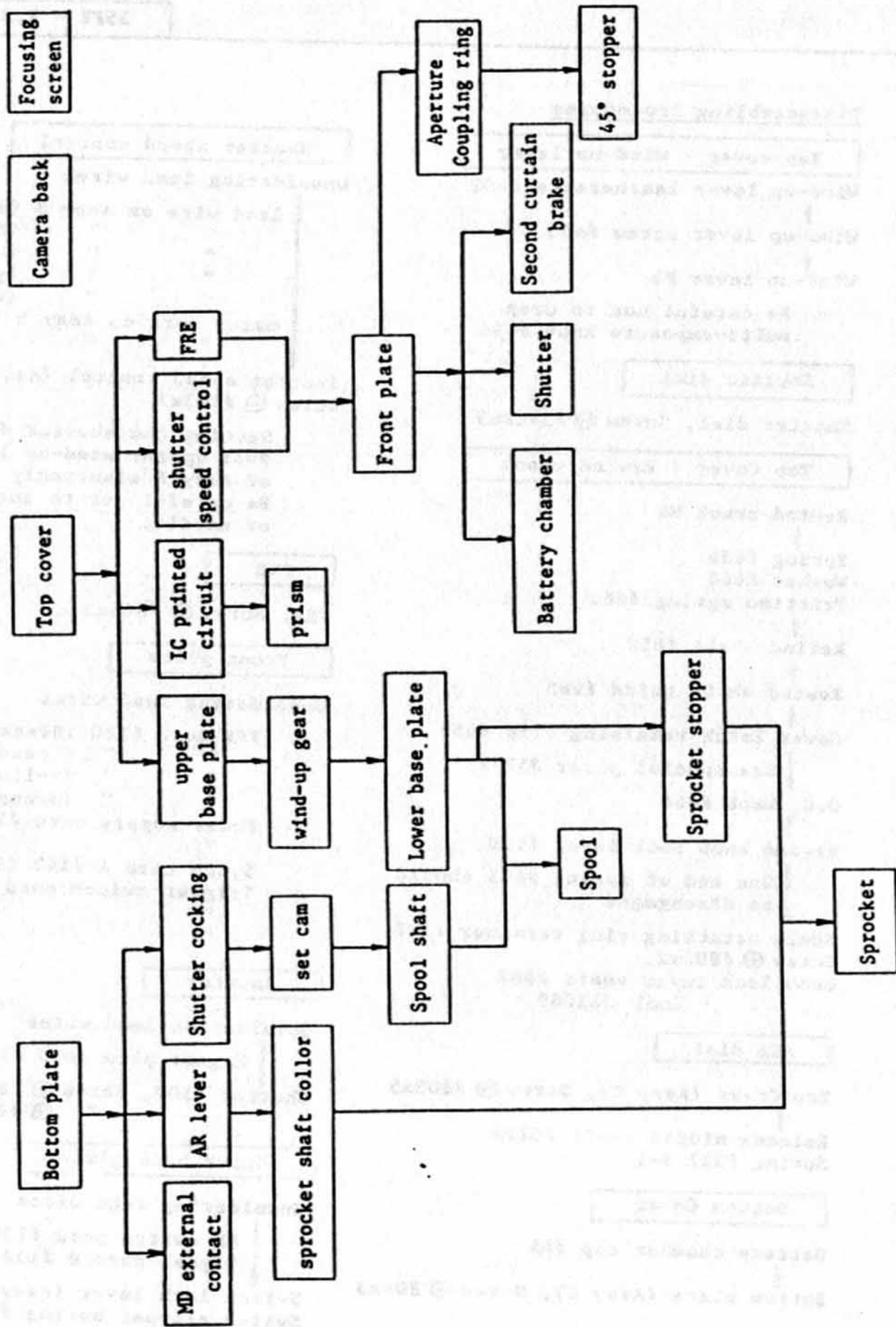
| Part No.     | Name                               | Remarks | Part No. | Name | Remarks |
|--------------|------------------------------------|---------|----------|------|---------|
| 35FB         |                                    |         |          |      |         |
|              |                                    |         |          |      |         |
|              |                                    |         |          |      |         |
| <b>P33FB</b> |                                    |         |          |      |         |
| P33FB<br>722 | 蝶番芯金<br>Hinge shaft B              |         |          |      |         |
| 725          | 裏蓋用貼皮<br>Back cover leatherette    |         |          |      |         |
| 726          | 遮光モルト A<br>Light-tight A           |         |          |      |         |
| 727          | 遮光モルト B<br>Light-tight B           |         |          |      |         |
| 728          | 遮光モルト C<br>Light-tight C           |         |          |      |         |
| 730          | 遮光別珍<br>Light-baffle cloth B       |         |          |      |         |
| 731          | 裏蓋着脱ピン<br>Camera back release pin  |         |          |      |         |
| 732          | 裏蓋着脱パネ<br>Camera back release ring |         |          |      |         |
|              |                                    |         |          |      |         |
|              |                                    |         |          |      |         |
| E1           | カメラ<br>Camera back                 |         |          |      |         |
| E2           | 圧板<br>Pressure plate               |         |          |      |         |
|              |                                    |         |          |      |         |
|              |                                    |         |          |      |         |



**Fig.16**

| 部品番号<br>Part No. | 名称<br>Name                                         | 備考<br>Remarks | 部品番号<br>Part No. | 名称<br>Name | 備考<br>Remarks |
|------------------|----------------------------------------------------|---------------|------------------|------------|---------------|
| 35FB<br>56       | ボディ擬革 A<br>Vinyle leatherette A                    |               |                  |            |               |
| 57               | ボディ擬革 B<br>Vinyle leatherette B                    |               |                  |            |               |
| 706              | 裏蓋蝶番 A<br>Camera back hinge A                      |               |                  |            |               |
| 708              | 止め爪 B<br>Latch B                                   |               |                  |            |               |
|                  |                                                    |               |                  |            |               |
|                  |                                                    |               |                  |            |               |
| <b>P33FB</b>     |                                                    |               |                  |            |               |
| P33FB<br>50      | ローラー<br>Roller                                     |               |                  |            |               |
| 51               | ローラー軸<br>Roller shaft                              |               |                  |            |               |
| 58-1             | 溝用モルトブレン<br>Light-tight (for groove)               |               |                  |            |               |
| 58A-1            | 上溝用モルトブレン A<br>Light-tight A                       |               |                  |            |               |
| 58B-1            | 上溝用モルトブレン B<br>Light-tight B                       |               |                  |            |               |
| 709              | 止め爪カバー<br>Latch cover                              |               |                  |            |               |
| 714              | 止め爪バネ<br>Latch spring                              |               |                  |            |               |
| 804B             | 小わじ<br>JCIS <del>CM</del> 1.7x2.5 Type(1)<br>Screw |               |                  |            |               |
| 882              | 小わじ<br>JCIS <del>CM</del> 1.7x3 Type(1)<br>Screw   |               |                  |            |               |
|                  |                                                    |               |                  |            |               |
|                  |                                                    |               |                  |            |               |

# Disassembling procedures chart



## Disassembling Procedures

### Top cover - Wind-up lever

Wind-up lever leatherette #402

Wind-up lever screw #403

Wind-up lever P3

Be careful not to drop  
multi-exposure knob #491

### Shutter dial

Shutter dial, Screw ⊖ #541Dx3

### Top Cover - Rewind crank

Rewind crank H1

Spring #656

Washer #660

Friction spring #662

Rewind shaft #652

Rewind shaft guide #665

Cover latch retaining clip #659

Use special plier J5272

O.C. knob #664

Rewind knob lock lever #688

One end of spring #655 should  
be disengaged

Scale attaching ring retainer #687

Screw ⊕ #808x2,

knob lock lever shaft #689

Tool J11089

### ASA dial

Top Cover (Assy C), Screw ⊕ #803x5

Release middle shaft #527A

Spring #527 B-1

### Bottom Cover

Battery chamber cap #44

Bottom plate (Assy D), Screw ⊕ 804x3

### Shutter speed control

Unsoldering lead wires

lead wire on Assy R (Blue) #131  
" " (Brown) "  
" " (Purple) "  
" " (yellow) "  
" " (white) #132  
meter cord on Assy R (Red)  
" " (Black)

Shutter speed control (R),  
Screw ⊖ #893x3

Setting the shutter dial at B,  
pull up the wind-up lever side  
of Assy R slantingly to remove R  
Be careful not to scratch T-film  
or needle.

### FRE

FRE, Screw ⊕ #861x3

### Front plate

Unsoldering lead wires

FRE cord #130 (Black)  
" " (Green)  
" " (Yellow)  
" " (Orange)  
Power supply cord #127 (Orange)  
" " (Black)  
Synch cord A #142 (Blue)  
Trigger switch cord #129 (yellow)  
" (Blue)  
" (Green)

### Shutter

Unsoldering lead wires

Magnet plus cord #135 (Orange)  
Shutter #100, Screw ⊕ #802  
" ⊕ #840x2

### Upper base plate

Unsoldering lead wires

MD switch cord #136 (Blue)  
Signal cord B #137 (Purple)  
Switch lock lever (Assy P4)  
Switch stopper spring #476  
Screw ⊖ #473  
Upper base plate (Assy K),  
Screw ⊕ #845x2

**Wind-up gear, Charge cam claw  
release lever**

Screw (left-handed) ⊖ #815

Sprocket stopper spring #496,  
Screw ⊖ #888-1

Wind-up gear A18, To be removed  
Advance cam #413 together

**Lower base plate**

Unsoldering lead wires

Lever switch cord #126 (Red)  
" #126 (Orange)  
Magnet plus cord #135 (Orange)

Lower base plate (Assy A11)  
Screw ⊕ #835x5

Spool upper gear (Assy A7)  
Be careful not to drop  
ball bearing

**Spool**

Motor coupling #923, Screw ⊕ #820

Retaining plate #31-1,  
Screw ⊕ #809x3

Shutter charge lever (Assy A4)  
Set cam collar #460

Screw #833-1, Collar #467-1

Set cam (Assy A10),  
Screw ⊖ #815 (left-handed)

Spool shaft bearing case (Assy A14)

Spool shaft (Assy A9)

Spool (Assy A8)

**Sprocket**

Sprocket screw (left-handed) #887

Sprocket stopper cam #429  
Screw ⊖ #824x2

Sprocket upper gear #431

Sprocket shaft collar B #499-1  
(left-handed), Tool J11129-1

Sprocket screw A #435A

Should be removed through the  
hole in sprocket #435 while  
pressing up sprocket shaft  
#434. Be careful not to drop  
#435A inside #435.

Sprocket collar A nut #437

Tool J11127

Sprocket

**IC printed circuit**

Unsoldering lead wires

Mirror switch cord #140 (Grey)  
Shutter switch cord #128 (Orange)  
" #128 (Pink)

Prism retaining spring #233x2

Eye piece mold (Assy N4)  
Screw ⊕ #817x2

Be careful not to drop  
washer #842

Prism G3

**Aperture coupling ring**

Bayonet #202, Screw ⊕ #805x4

Bayonet spring #208x2  
(on lens-release pin side)  
Screw ⊕ #806x4

Coupling ring stopper #222,  
Screw ⊕ #189x2

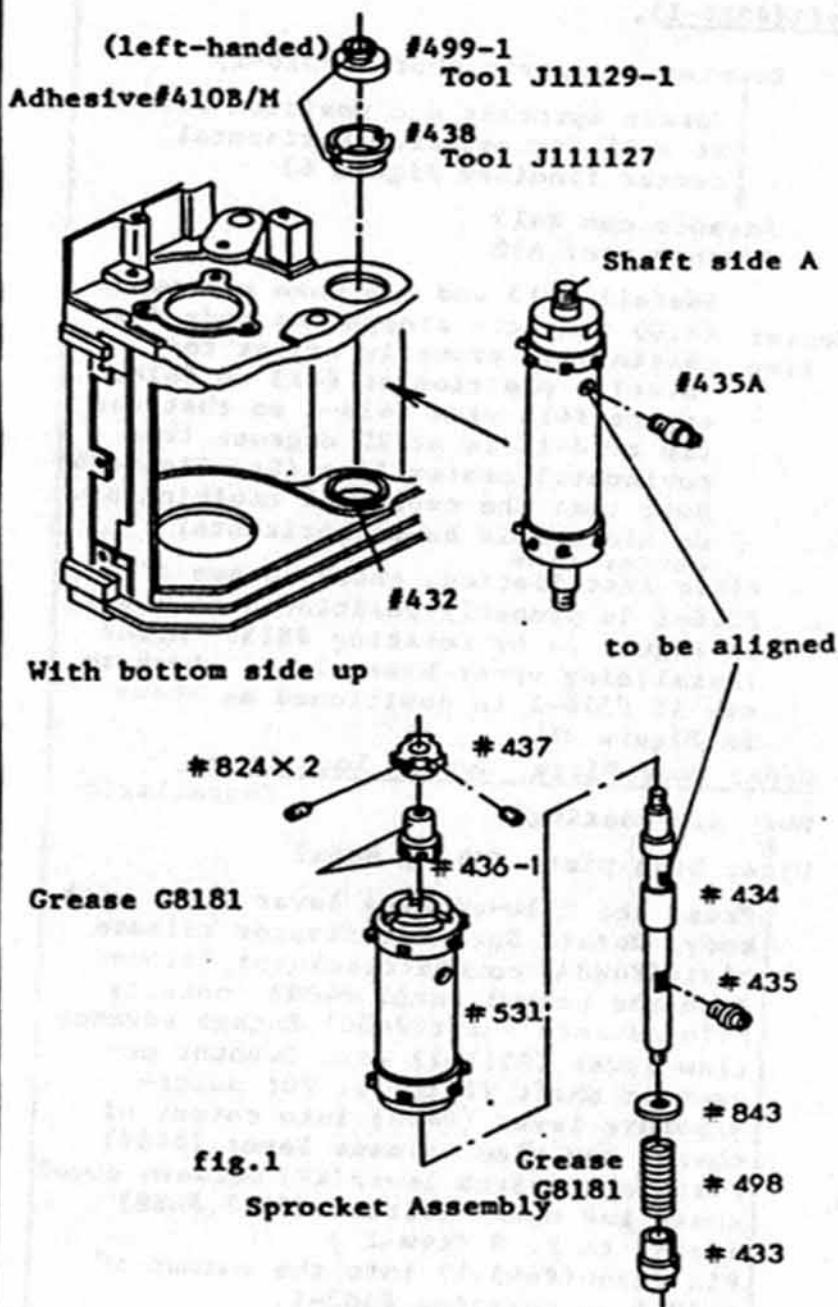
Bayonet mount #201, Screw ⊕ #811x4

Aperture coupling ring (Assy A4)  
Thread #269

•Be careful not to tighten the  
knot of #269.

•Be careful for #269 not to be  
wound into B25 after disas-  
sembling front plate (B).

## 1. Sprocket Installation



Body die-casting (#1)

Sprocket Assembly

Pre-assemble the sprocket parts, referring to Figure 1 and details below.

Insert the sprocket side A into body. Pulling up sprocket, locate opposite side into #432.

Sprocket shaft bearing #438

Sprocket screw #435A

Align each hole in #531 and in #434 to properly install #435A.

Sprocket shaft collar-B (#499-1)  
(left-handed thread)

Sprocket Assembly

Sprocket shaft #434

Washer #843

Sprocket spring #498

Sprocket screw #435

Install the above parts as a unit into sprocket.

Sprocket #531

Sprocket collar #433

Sprocket collar A #436

Sprocket collar A nut #437

Temporarily fix #437 onto #436 with two screws (#824) before mounting the unit onto #531.

For positioning of Sprocket teeth; refer to ( page 9 )

## 2. Sprocket upper gear and sprocket stopper cam Installation

Sprocket upper gear #431

Sprocket stopper cam #429

Screw #429 onto #434, being careful for #434 not to protrude above #429.

For positioning of #429, refer to page 9

Screw #887, left handed

### 3. Spool Installation

Body die-casting #1

↓  
Spool A8

↓  
Spool shaft A9

↓  
Spool shaft bearing case A14

Insert the tip of #529 into the slot of A14, then secure with three screws (#825) (see figure 2)

↓  
Set cam A10

Turn A9 one clockwise rotation, then install A10.

↓  
Screw ⊖ #815 (left-handed) Collar (#467-1)  
⊖ #833-1 (left-handed)

Make sure if Set Cam A10 properly returns

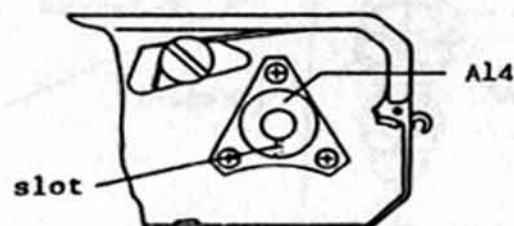
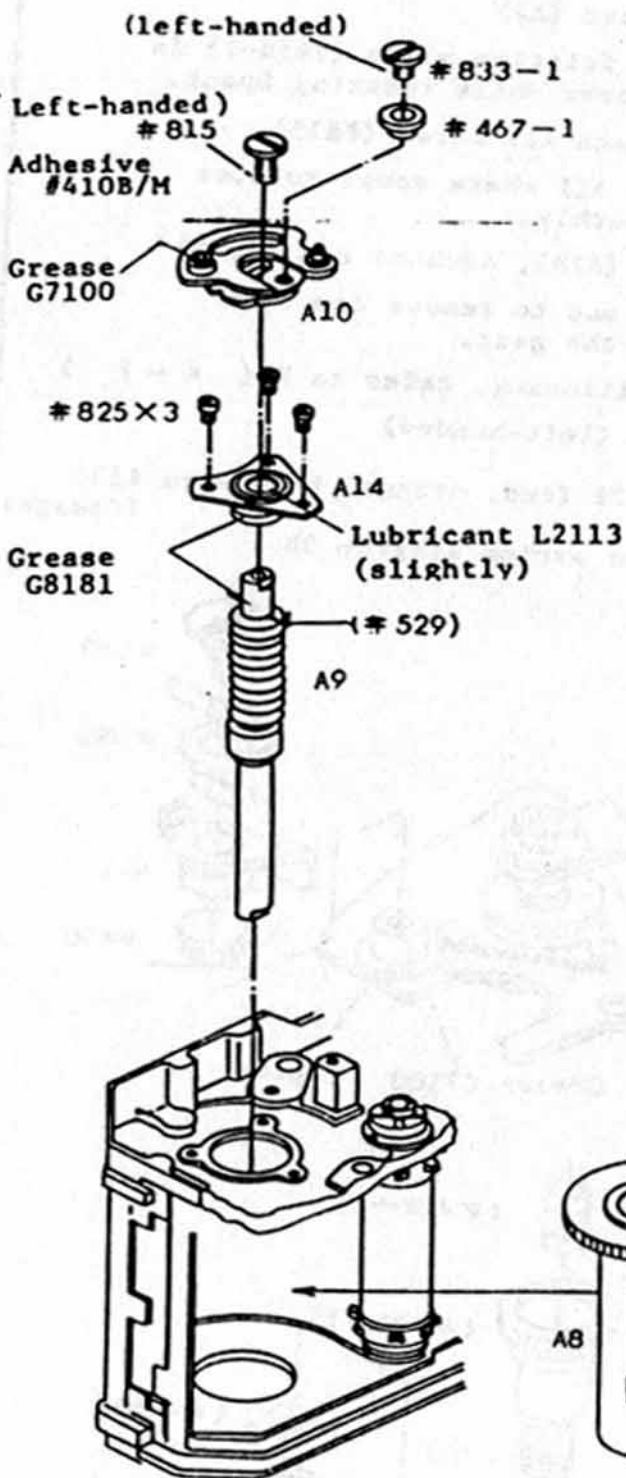


fig.2

A14 Positioning

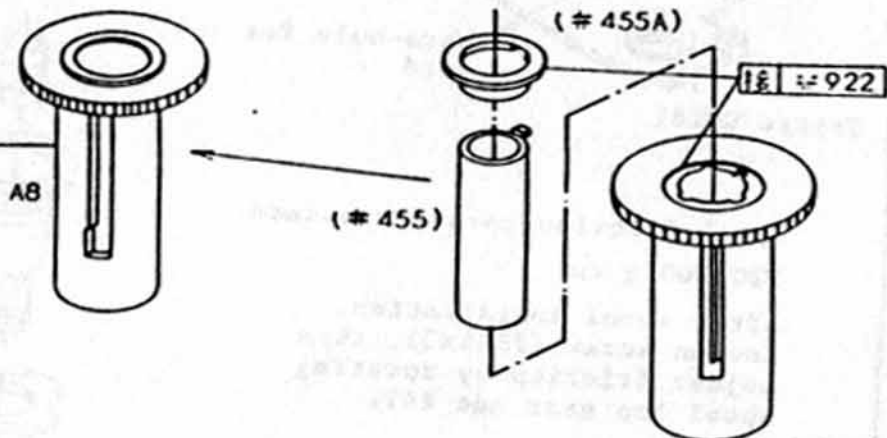
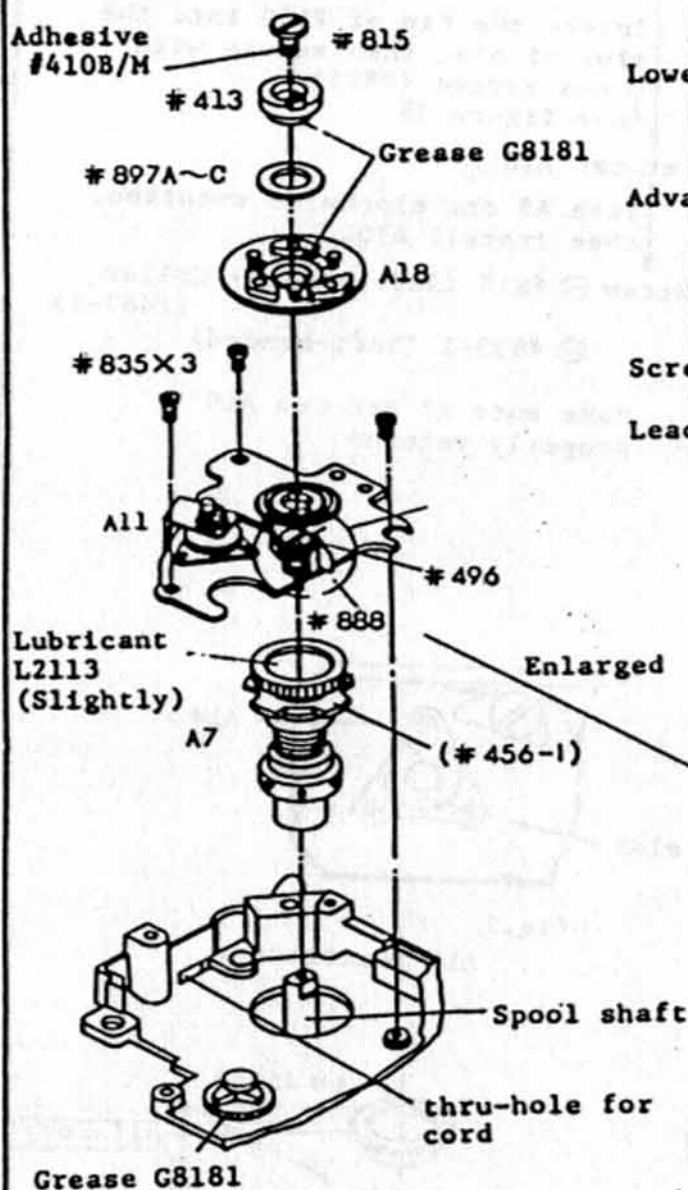


fig.3

A8 Exploded

#### 4. Spool Upper Gear, Lower Base Plate. Advance Gear Installation

(left-handed)



Spool Friction torque standard  
220-260 g.cm

After spool installation,  
loosen screw (#824x3), then  
adjust friction by rotating  
spool top gear nut #421

Spool upper gear (A7)

Position friction plate (#456-1) in  
Spool groove while rotating Spool.

Lower base plate A11 Screw (#835)

Position A11 where spool rotates  
most smoothly.

Advance gear (A18), Advance cam (#413)

Be sure not to remove cam from  
claw on the gear.

For positioning, refer to P. ( 4 - 7 )

Screw ⊖ #815 (left-handed)

Lead wire #126 (red, orange) Lead wire #135  
(Orange)

Refer to wiring diagram 38  
(P. 38 )

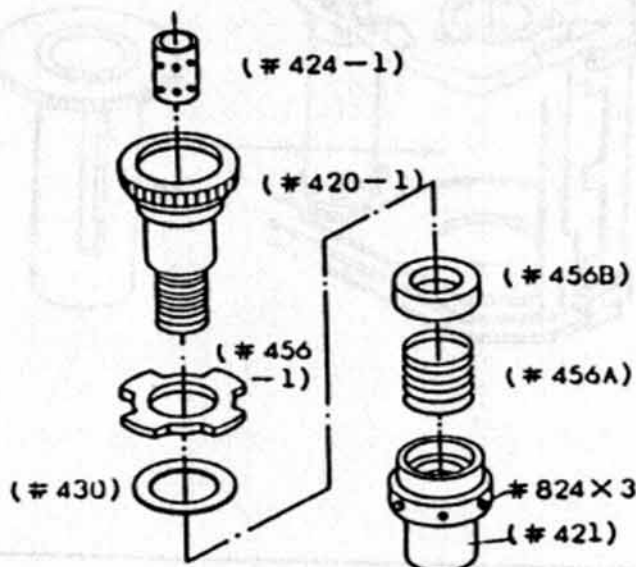
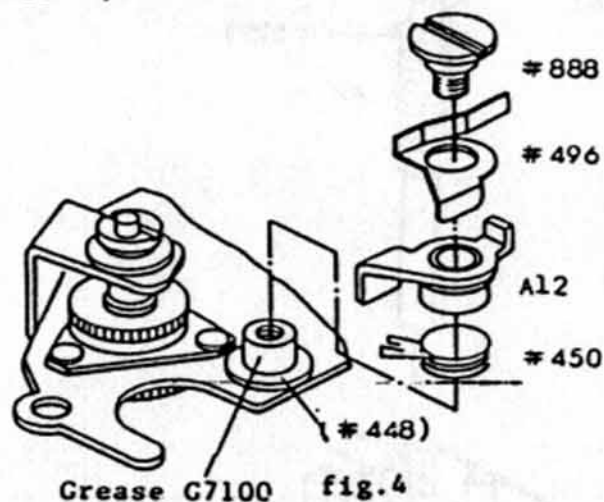
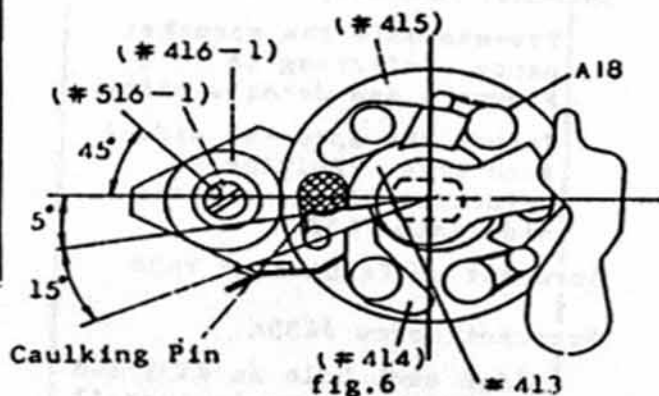
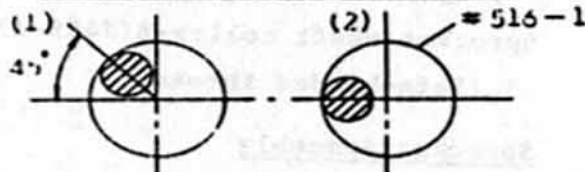


fig.5 A7 Exploded

5. Positioning of Counter Eccentric Shaft(#516-1),  
Advance Gear A18, Advance Cam #413



Eccentric shaft positioning



Set cam contacting stopper

Film-advance completed condition with upper base plate installed

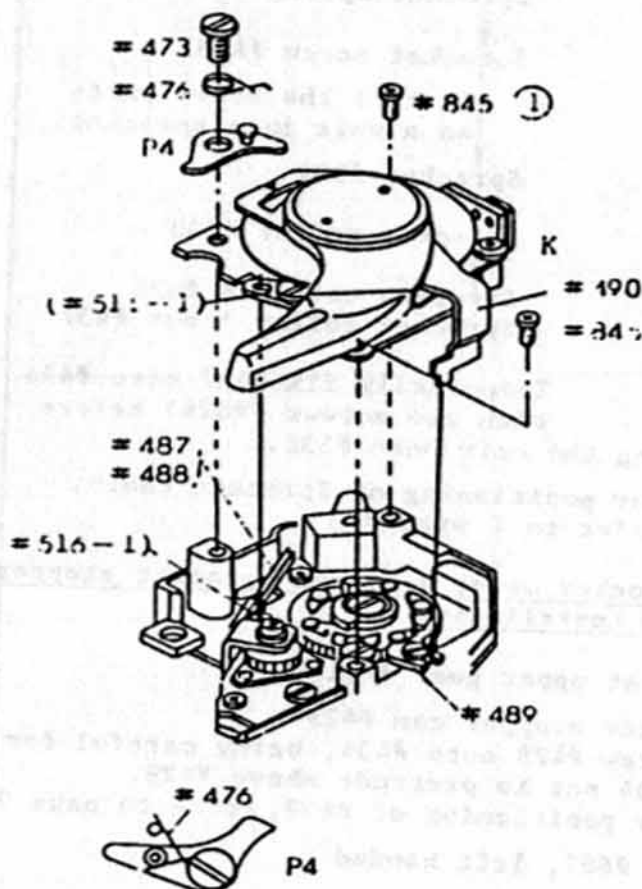


fig.8. Spring(#476) Installation

Counter eccentric shaft (#516-1)

Rotate sprocket and position #516-1 at a 45 degrees from horizontal center line(See Figure 6)

Advance cam #413  
Advance gear A18

Center line

Install #413 and A18 when set cam (A10) contacts stopper on body die-casting. To properly adjust the relative position of #413 to #414, engage #415 with #416-1 so that the tip of #414 is at 20 degrees from horizontal center line. (See Figure 6) Note that the center of caulking pin on A18 should be on horizontal center line

After installation, check to see if #516-1 is properly positioned as shown in Figure 7a by rotating #815. After installing upper base plate, check to see if #516-1 is positioned as shown in Figure 7b.

6. Upper Base Plate, Switch Lock Lever

Body die-casting#1

Installation

Upper base plate (K), ⊕ 845x2

Press the film-advance lever flush with body. Rotate Sprocket stopper release plate(#408A) counterclockwise (viewed from the below) until #408A contacts Film advance shaft(#408). Engage advance claw lever (#511-1) with Counter eccentric shaft (#516-1). Put multi-exposure lever (#490) into cutout of charge cam claw release lever (#489) Positions switch lever(K4) between spool shaft and meter switches(#487, #488) (Refer to P. 8 item 7) Fix Screw(#845-1) into the cutout of #502-1 by rotating #502-1.

Switch Lock Lever (P4), Screw(#473)

Pulling out film-advance lever, install P4. Be sure to properly engage #476 as illustrated in Fig. 8. Screw #473 into the notch of #502-1 rotating #502-1. To remove Upper Base Plate, be sure not to remove Switch Lock lever, but to loosen #473.

Lead wire #136(Blue), Lead wire #137(Purple) (Refer to P.34 item 38)

After soldering #136 and #137, attach camera back and check the frame counter for correct operation free from skipping, double-frame advance or failure of advance. Also, check for proper resetting.

## 7. Frame Counter Dial Installation

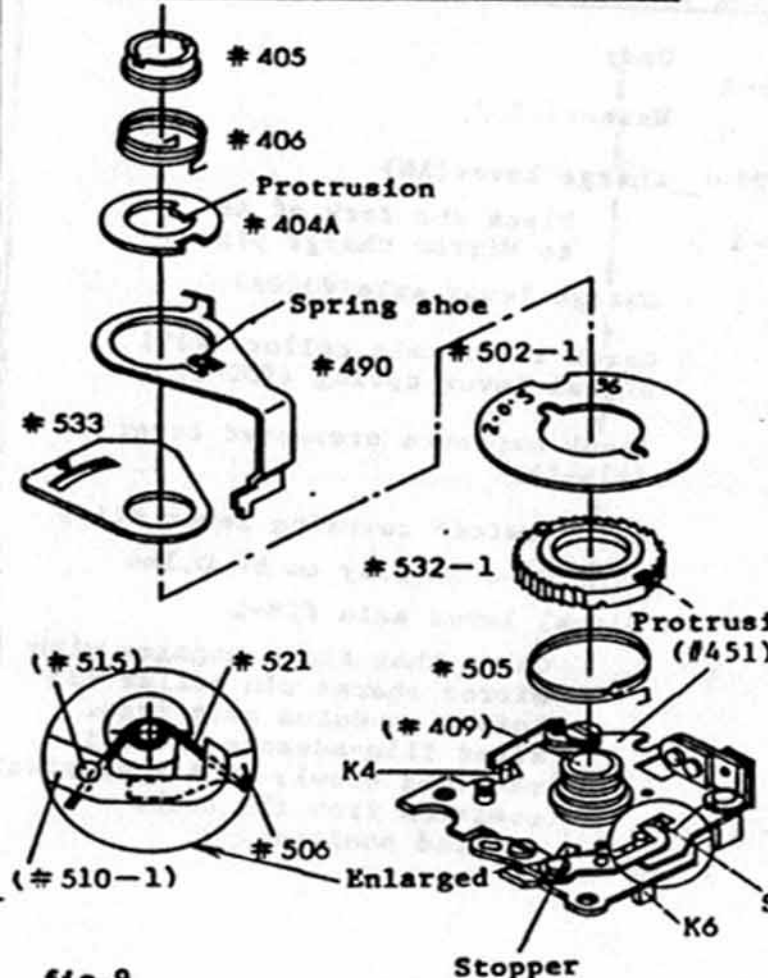


fig.9

### Spring(#521) Installation

## 8. Film Advance Lever Installation

Sprocket release plate(#408A)

Film advance shaft #408

Position referring to Fig.10

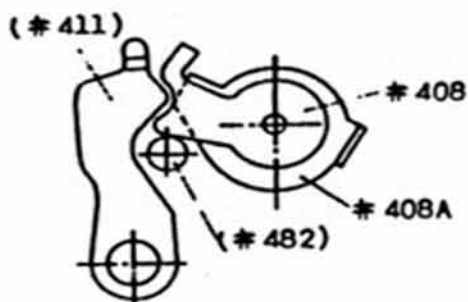
Film advance lever (P3)

Install #406 on P3 and turn P3 one full turn counterclockwise.

Wind-up lever screw #403

Check film advance lever for smooth operation.

Thrust play to be 0.13mm or less.



Spring(#505)

Install one end into spring hanging hole on the upper base plate(#451)

Ratchet(#532-1)

Install the other end of #505, turn #532-1 one turn clockwise and return #532-1 to the stopper.

Frame counter dial(#502-1)

Align the cut with the protrusions on #532-1 with "S" positioned toward bayonet.

Frame-counter index(#533), Multi-exposure lever(#490), Counter retaining ring(#404A)

Fit the protrusion of #404A in the cut of #409

Lever axle nut(#405)

Align index "V" of #533 with "S" of #502-1, then tighten #405.

Check to ensure smooth rotation of #502-1

Spring(#406)

Engage #406 onto spring shoe on #490

Spring engaging hole

After installing Upper Cover, apply adhesive #410S/L.

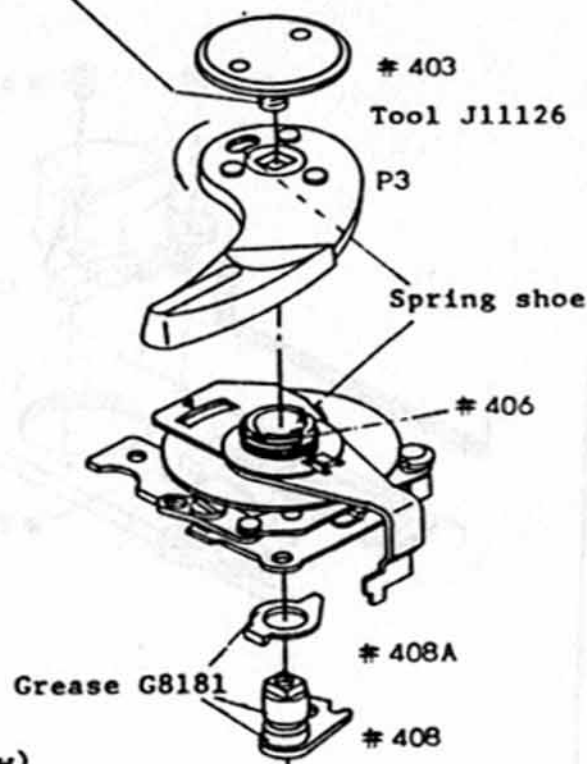


fig.10 Upper Base Plate(Bottom view)

## 9. Sprocket Stopper Positioning

Set sprocket teeth positioning gauge (J18064) onto body-aperture frame and holding film-advance lever fully stroked, measure the sprocket play on the scale of J18064. The play to be within 0.8mm.

Repeat the measurement three times in the same manner to make sure the proper operation of #429 at each area shown.

Adjust the play by rotating #429 after loosening #887 (left-handed) and #824. (Refer to Fig.11 and 12)

Be sure to provide 0.1 to 0.2mm clearance between #429 and #434 on positioning.

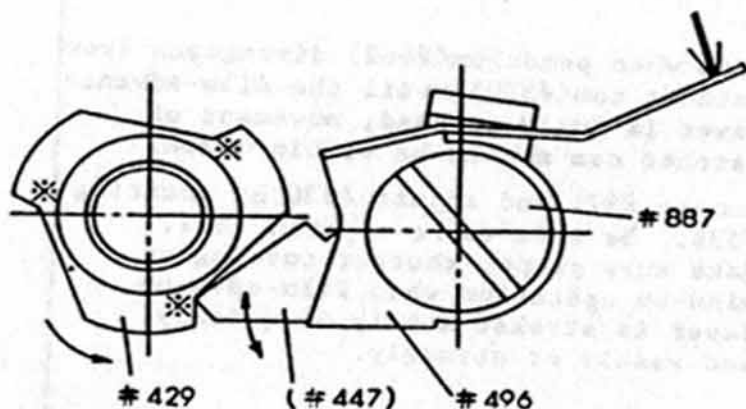


fig.11

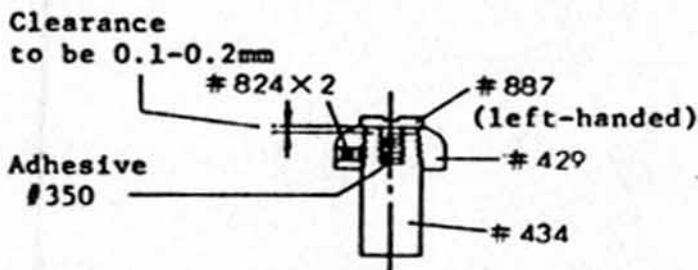


fig.12 Cross section of Sprocket shaft

### Sprocket Positioning

Check to see if end of the sprocket teeth comes to the position as depicted in Fig.13, with film-advance lever stroked by pressing the sprocket slightly by finger.

If improperly positioned, return the film-advance lever to the stand-off position. Then, applying a slight finger pressure on the lever, adjust #429 after loosening two screws (#824). See Figure 14.

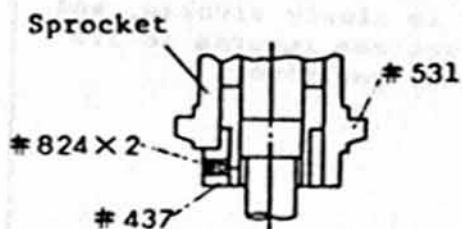


fig.14

Cross section of lower part of sprocket

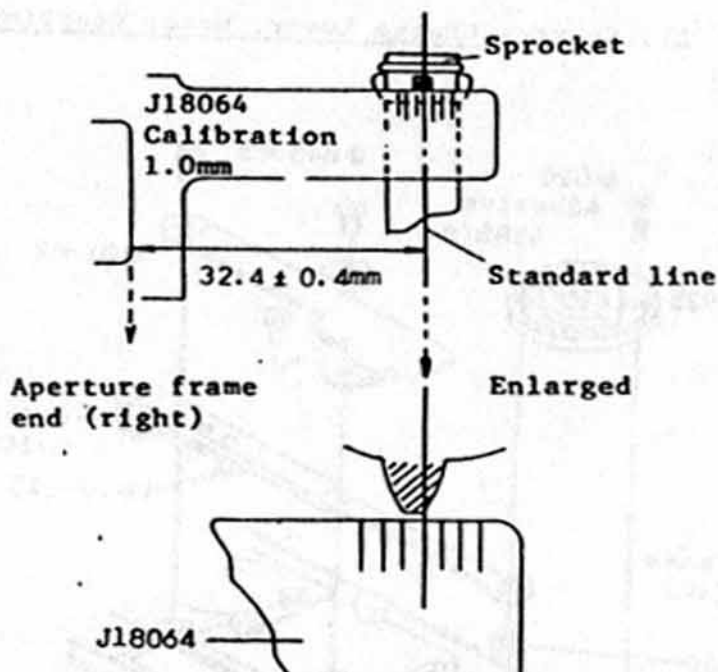


fig.13 the right tip of sprocket teeth to be on the standard line.

Measurement with J18064

## 10. Ratchet Cam, Pendulum Adjustment

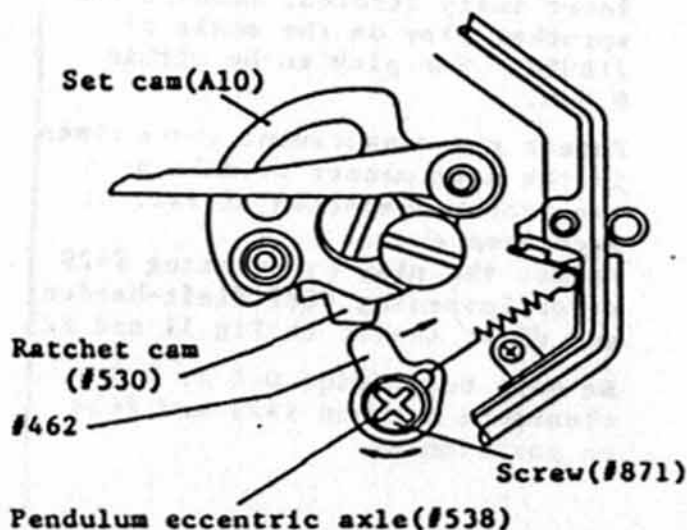
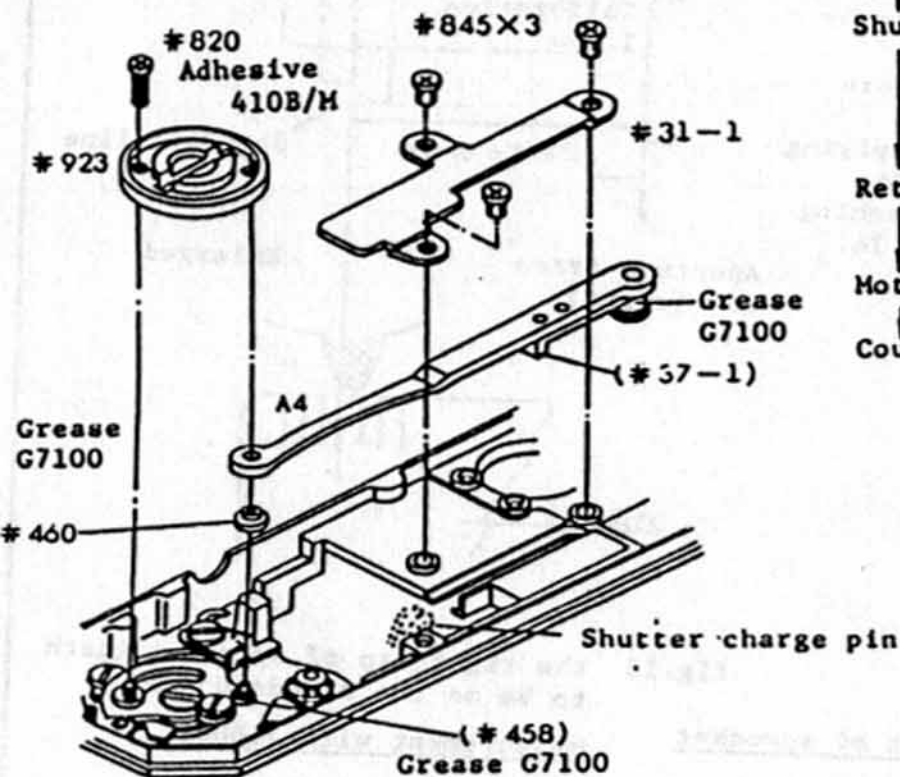


fig.14. Bottom view of wind-up mechanism

From when pendulum(#462) disengages from Ratchet cam(#530) until the film-advance lever is fully stroked, movement of ratchet cam should be within 0.2mm.

Loosen #871 and adjust #530 by rotating #538. Be sure to re-tighten #871. Make sure proper shutter cocking or wind-up operation when film-advance lever is stroked slowly or quickly, and weakly or strongly.

## 11. Shutter Charge Lever, Motor Coupling Installation



Set cam collar (#460)

Shutter charge lever (A4)

Fitting A4 onto #460, position #37-1 at right side of shutter charge pin.

Retaining plate(#31-1)

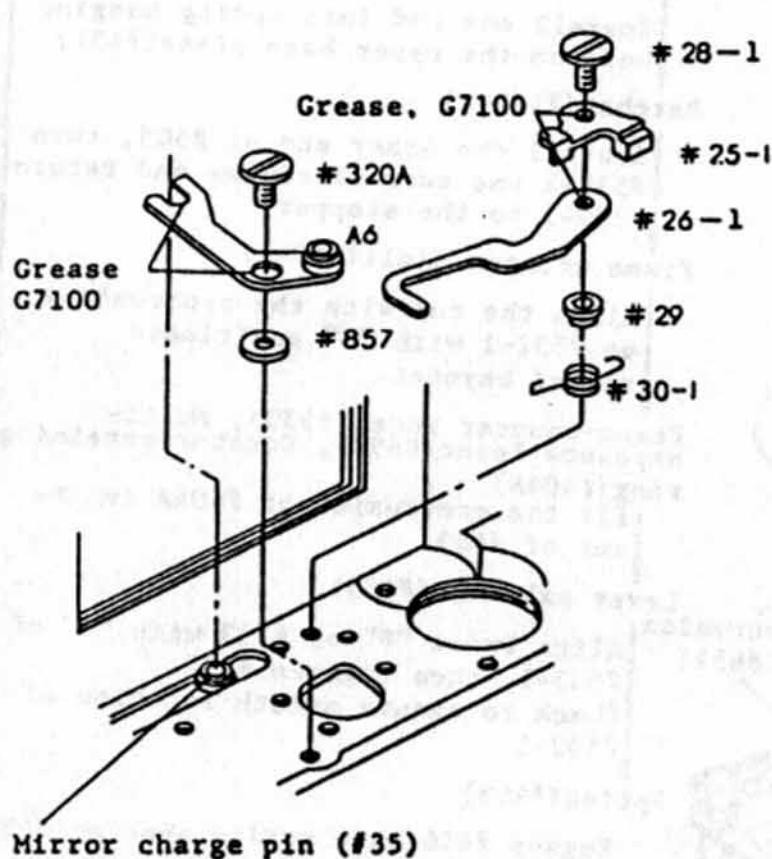
Screw ⊕ #845x3

Motor Coupling(#923)

Coupling screw(#820)

Check that shutter cocks certainly when film-advance lever is slowly stroked, and that set cam returns to its original position.

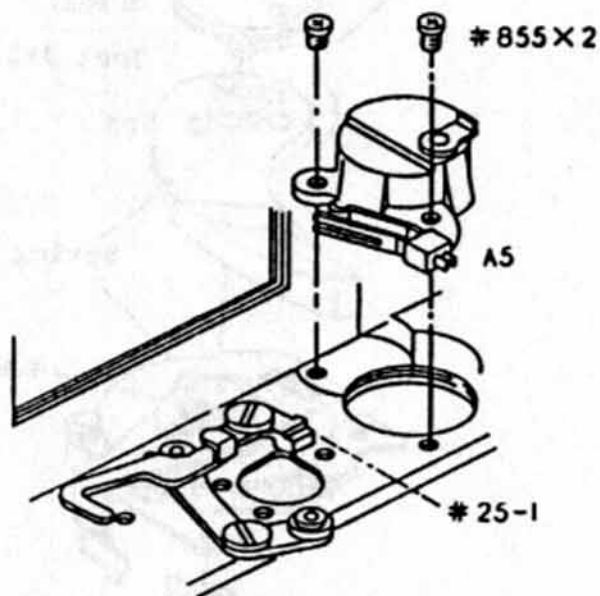
## 12. Charge lever, Motor Switch Coupling lever Installation



Body  
↓  
Washer(#857)  
↓  
Charge lever(A6)  
↓  
Place the fork of A6 to Mirror charge pin  
↓  
Charge lever axle(#320A)  
↓  
Check lever axle collar (#29)  
Signal lever spring (#30-1)  
↓  
Blank exposure preventer lever (#26-1)  
↓  
Motor switch coupling lever #25-1  
↓  
Up-down play to be 0.1mm  
Signal lever axle #28-1

Check that #26-1 engages with Mirror charge pin collar #35 before pendulum gets free. after film-advance lever is returned slowly to its original position from the fully striked position.

## Battery Case Installation



Body  
↓  
Battery case(A5) Screw(#855)

For MD winding switch adjustment, refer to ( page 12 )

Check MD winding switch not in contact with body die-casting.

### 13. Charge lever, MD take-up switch Adjustment

fig.15 MD take-up switch Operation

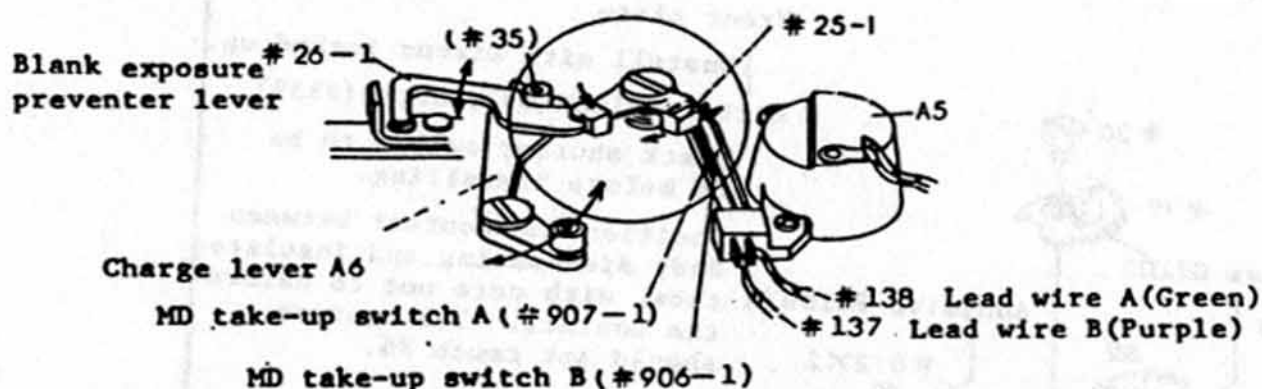
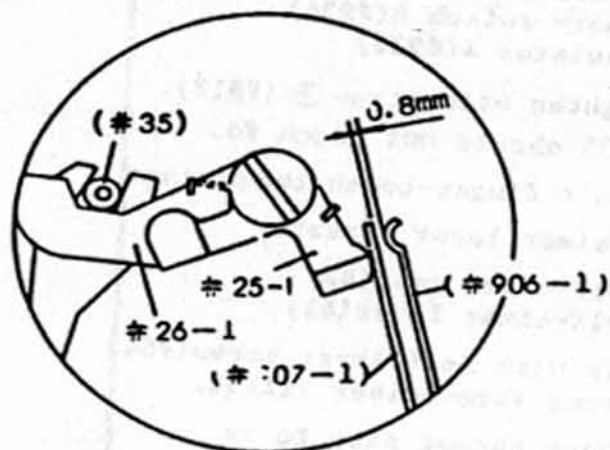


Fig.16 Film-advance completed.....MD Winding Switch turned OFF.

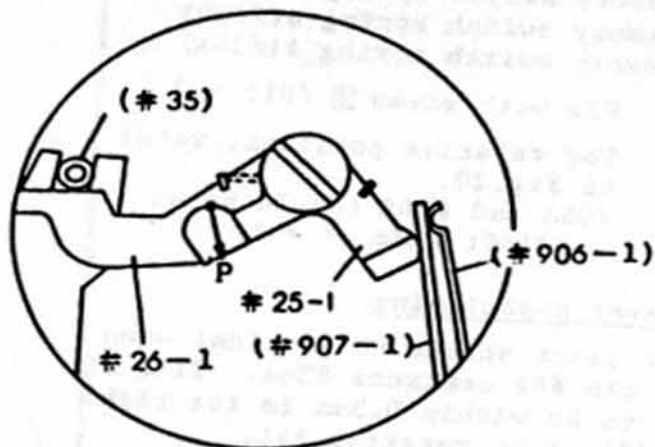


Check by gently operating A3 to ensure that #26-1 is pushed by #907-1 and contact against #35.

Bend #907-1 to a proper contact pressure

The clearance between #906-1 and #907-1 to be 0.8mm. adjustable by bending #906-1.

Fig.17 During film-advance operation...MD Winding Switch to be ON.



Check that MD winding switch is on.

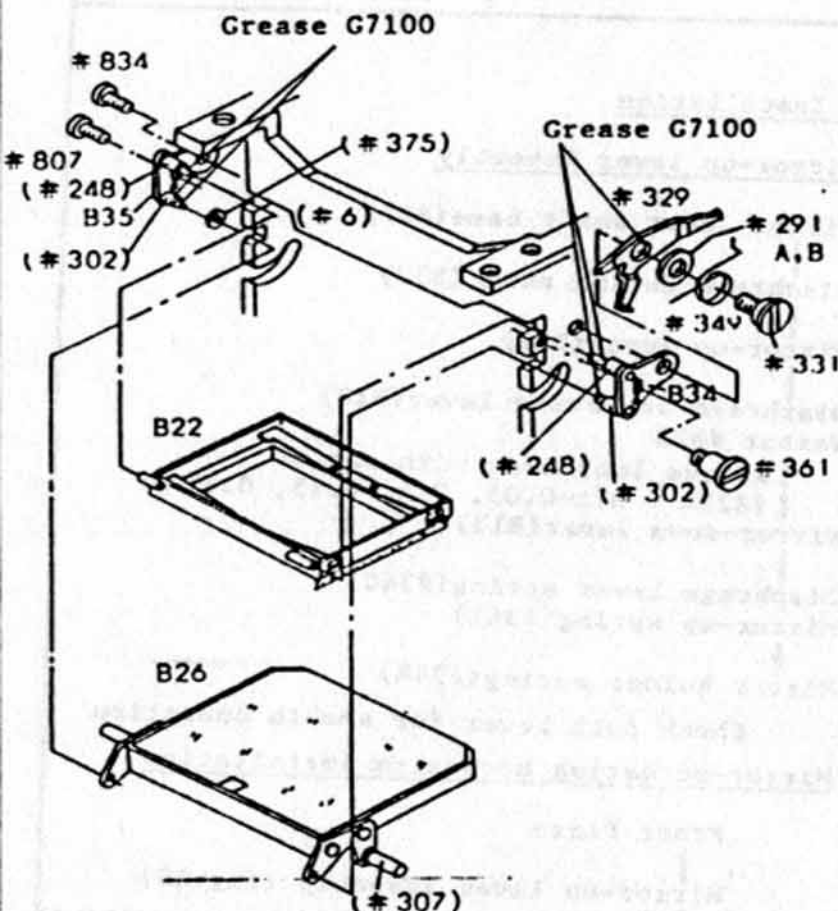
Set J5018 at P point (See figure 17) and measure spring pressure when #26-1 disengages from #35;

Spring pressure to be 75 to 100g

Adjust spring pressure by bending either #907-1 or #906-1

fig.17

# 14. Front Plate (Screen Frame, Mirror Holder, Diaphragm set lever) Installation



Front plate(#6)

Screen Frame(B22)

Mirror shaft stopper; rewind knob side(B35)

Insert #248 into the tube of B22 then tighten with screw ⊕ (#807) temporarily.

Mirror holder(B26)

Install washer(#375) into Mirror holder shaft(#302). then install B 26 by aligning #302 into the hole of B26

Mirror shaft stopper, advance-lever side(B34)

Insert #248 into the tube of B22 then tighten with screw ⊖ (#361)

Mirror-up stop lever (#329)  
Mirror-up stop lever spring(#349)  
Screw(#331)

#329 is secured with washer (#291A, B).  
Position #361 and #331 on top of oval hole in B34.  
For spring installation, refer to the left-below illustratin.

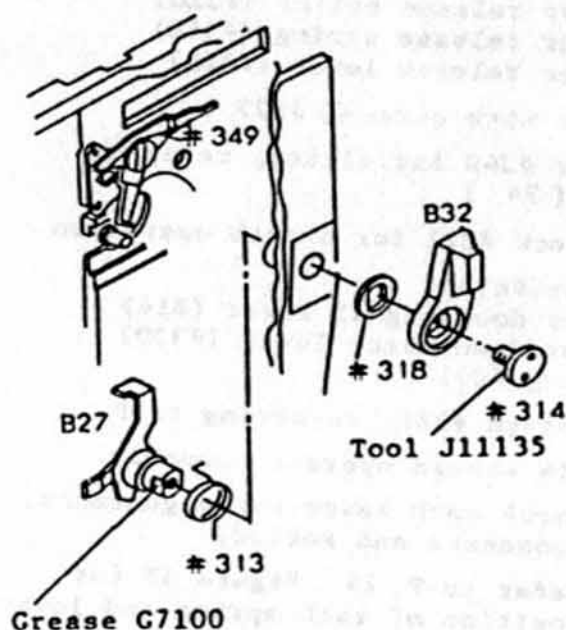
Screw(#834)

Both #807 and #834 to be positioned on top of oval hole in B35

Check that Screen frame(B22) surely drops of itself.

When screen lock spring(#240) is pulled and that B22 is locked firmly by #240.

For screen lock spring, refer to (page 30)  
Check Mirror holder B26 for smooth operation



Front plate(#6)

Stop-down lever spring(#313)

Stop-down lever(B27)

#313 installation illustrated in Fig.18.

Stop-down lever washer(#318)

Diaphragm set lever(B32)

Install the both onto B2'

Screw(#314)

Check|Diaphragm set lever.  
Check Diaphragm set lever for smooth operation.  
Thrust play of the lever to be within 0.2mm.

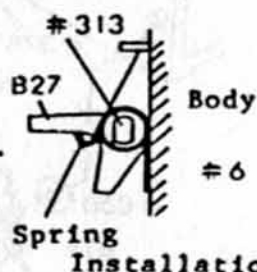


fig.18 #313 Installation

# 15. Front Plate (Mirror-up lever) Installation

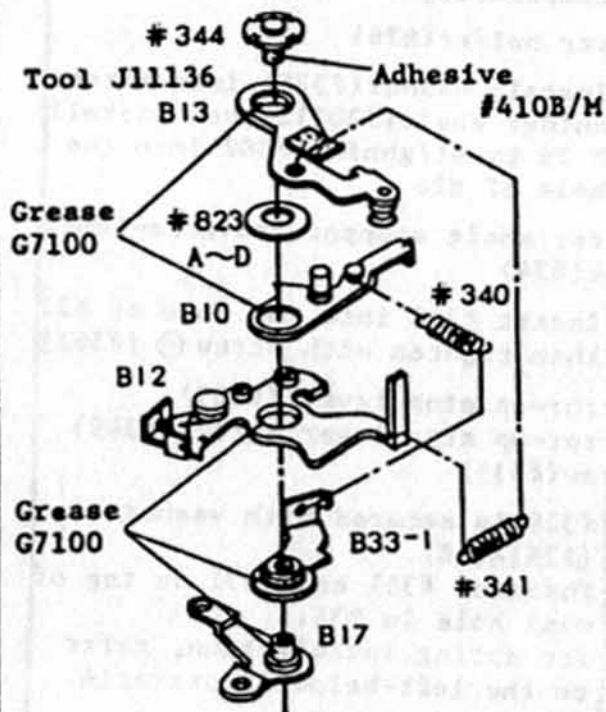


fig.19 Mirror-up lever Assembly

## Mirror-up lever Assembly

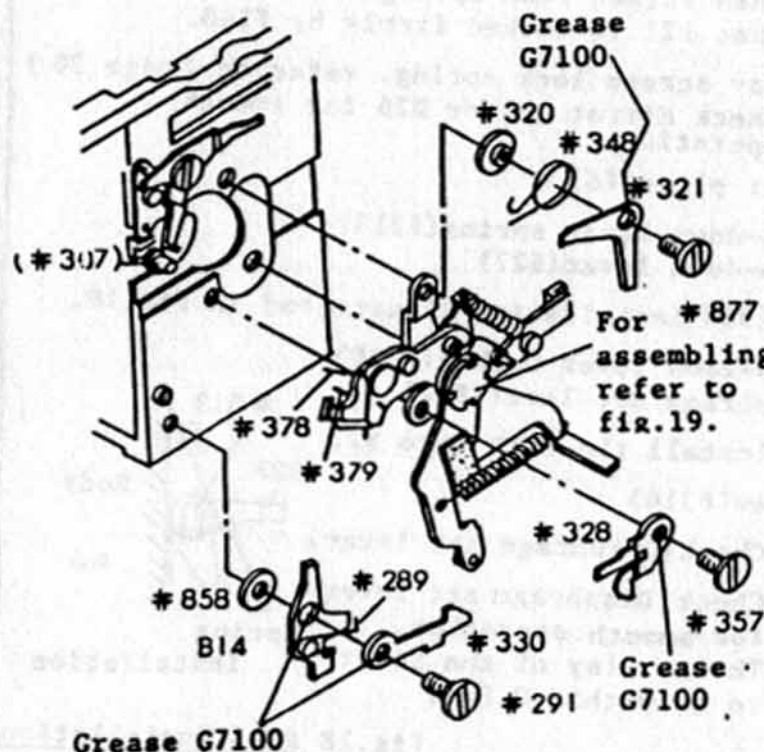
Mirror lever shaft base(B17)  
 ↓  
 Diaphragm spring stud (B33)  
 ↓  
 Mirror-up lever(B12)  
 ↓  
 Diaphragm actuating lever(B10)  
 Washer #823  
 ↓ Remove looseness with one of  
 #823A - D( $t=0.05, 0.1, 0.15, 0.2$ )  
 Mirror-down lever(B13)  
 ↓  
 Diaphragm lever spring(#340)  
 Mirror-up spring(#341)  
 ↓  
 Mirror holder spring(#344)

Check each lever for smooth operation

## Mirror-actuating mechanism installation

### Front Plate

Mirror-up lever assembly (fig.19)  
 ↓  
 Install #378 and #379 on Pin A(#307)  
 Signal lever (#328)  
 ↓  
 Tighten with screw ⊖ #357.  
 Check that #328 operates smoothly.  
 Shutter release collar (#320)  
 Shutter release spring (#348)  
 Shutter release lever (#321)  
 ↓  
 Fix with screw ⊖ #877  
 For #348 installing, refer to P.( 24 )  
 Check #321 for smooth operation  
 Washer(#858)  
 Mirror down signal lever (B14)  
 Mirror-down latch lever (#330)  
 Screw ⊖ #291



Front plate (Mirror Box), Wind-up side

# 16. Mirror Switch, Memory Switch, Self-timer lever installation

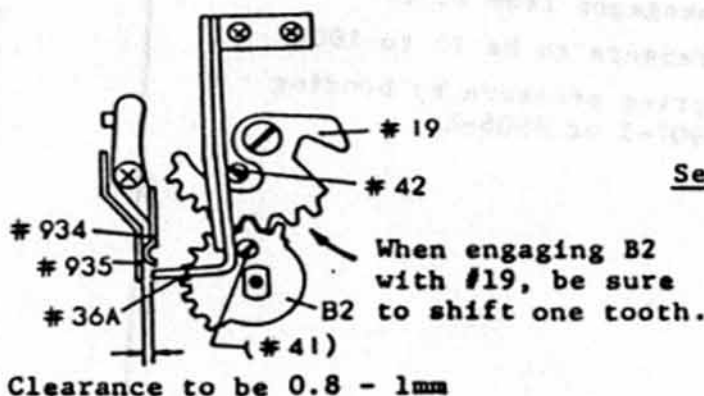
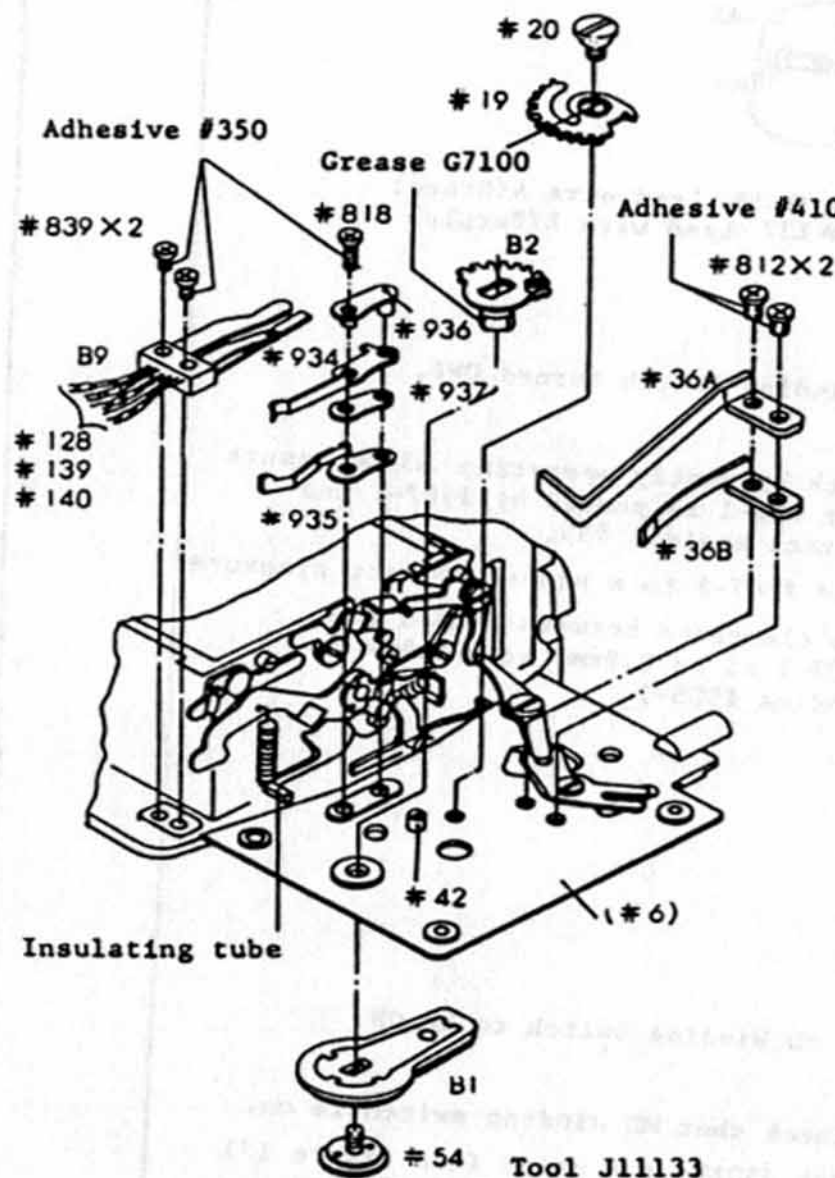


fig.20 Self-timer gear

## Front plate

Install with mirror locked up.

Mirror switch(B9), Screw(#839)

Check shutter switch to be ON before installing.

Position the contact between Body die-casting and insulator tube, with care not to deform the contact. The contact should not touch #6.

## Front plate

Memory switch assembly

Memory switch B(#935)  
Insulator B(#937)  
Memory switch A(#934)  
Insulator A(#936)

Tighten with screw ⊕ (#818).  
#935 should not touch #6.

Don't finger-touch the contact

Self-timer lever assembly

Self-timer gear(B2)  
Self-timer lever(B1)

Fix with Self-lever screw(#54) using screwdriver J11133.

Check thrust play to be within 0.15

Self-timer gear B(#19), Screw (#20)  
For the engagement with B2, refer to fig.20.

Memory switch spring  
Memory switch spring B(#36B)  
Memory switch spring A(#36A)

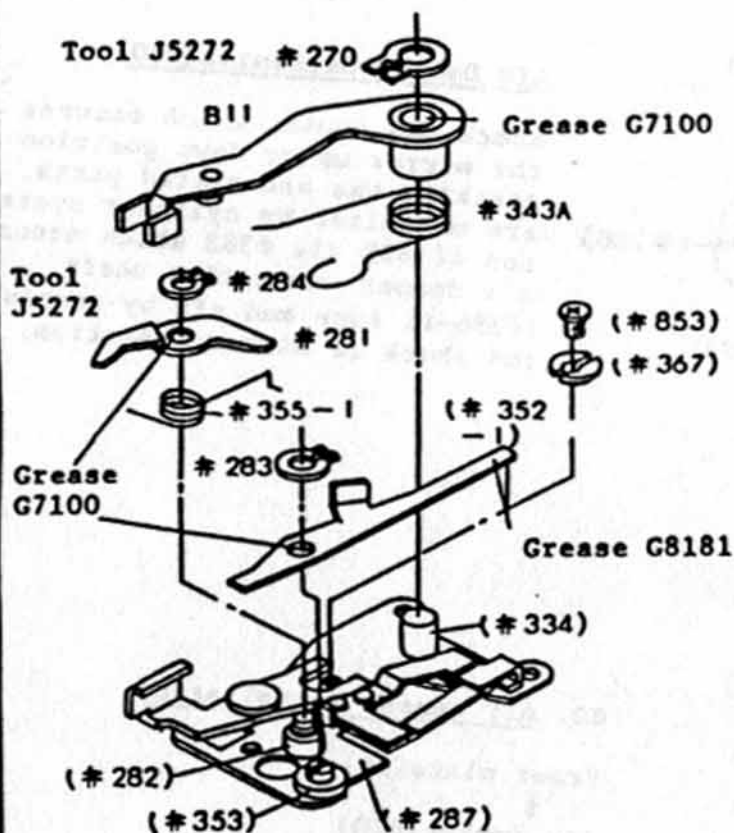
Fix with screw ⊕ #812 x 2

For relative position, refer to fig.20.  
#36A and #36B should be at the left side of #41.

## Self-timer lever positioning

Self-timer lever should be vertical when Eccentric pin #41 contacts #36A. Tilt of the lever to be within 0.5mm to the right or left. Adjust by rotating #41. Check the clearance between 36A and #935 to be 0.8 to 1.0mm. #935 should detach from #934 midway in turning self-timer lever toward memory-lock direction. Contact pressure of #935 to be 15g or more.

# 17. Front Plate (Mirror Charge lever, Down lever, Shutter brake) Installation



Mirror box base plate(#287)

Down lever eccentric axle(#367)

Screw #853

MD signal middle lever(#352-1)

Install into #353, then secure with G ring (#283), rounded edge below as depicted in fig.21.

Check the play of the tip of #352-1 to be within 0.5mm. If excessive, adjust by pressing down #283. Check for smooth operation.

Spring(#355)

Brake release lever(#281)

Install both parts onto brake release shaft(#282) and fix with #284. Install #284 and spring (#355-1) as depicted in fig.21.

The protrusion of #352-1 should not interfere with #284 when #352-1 gets into brake.

Check the play of the tip of #281 to be within 0.3mm.

Mirror-down spring(#343A)

Mirror charge lever(B11)

Install both parts onto Mirror charge lever axle(#334) and fix with #270. As for #343A installing, refer to fig.21. To tighten loose B11, pull down #270

## Detaching Power of Mirror Charge Lever (B11)

The power when B11 detaches from shock absorb rubber (#363) to be 180 to 220gms.

Measure the power with J15019 at the station 1 in fig.21, pulling in the arrow direction.

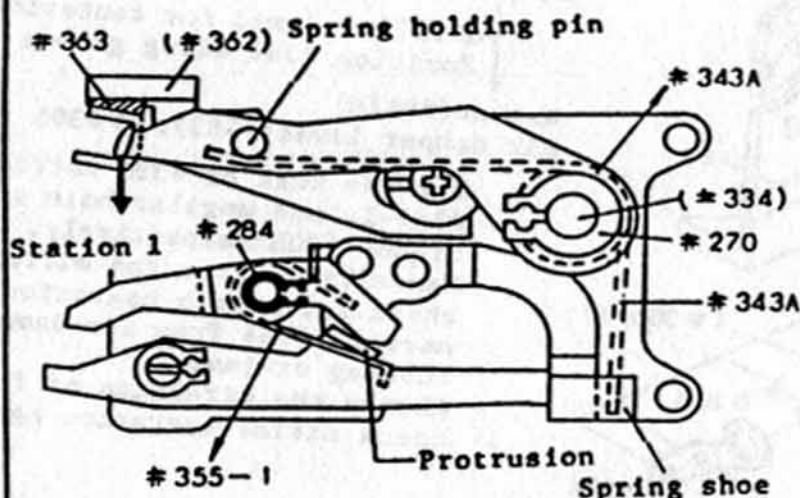


fig.21 Shutter brake assembly

## 18. Shutter Brake B37 Installation

### Front plate #6

### Shutter brake B37

Put #352-1 between Brake spring base #285-1 and Brake spring #286-1. Set Mirror-down lever B13 at down position, then engage with the fork of Mirror charge lever. (B11).

Fix with three screws (#863).

To position #352-1, pull out #352-1 from the brake spring and let #352-1 contact B14, then rotate #353 (see fig.22) until 1.0mm space is obtained between the tip of #352-1 and the bottom edge of #6.

Charge the mirror by B11, then release by B19 to check proper mirror-up operation

Set mirror at the down position by #328 and check a proper shutter brake operation.

Also check that shutter brake can be released by #281.

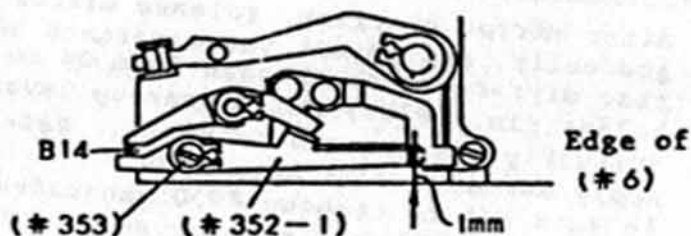
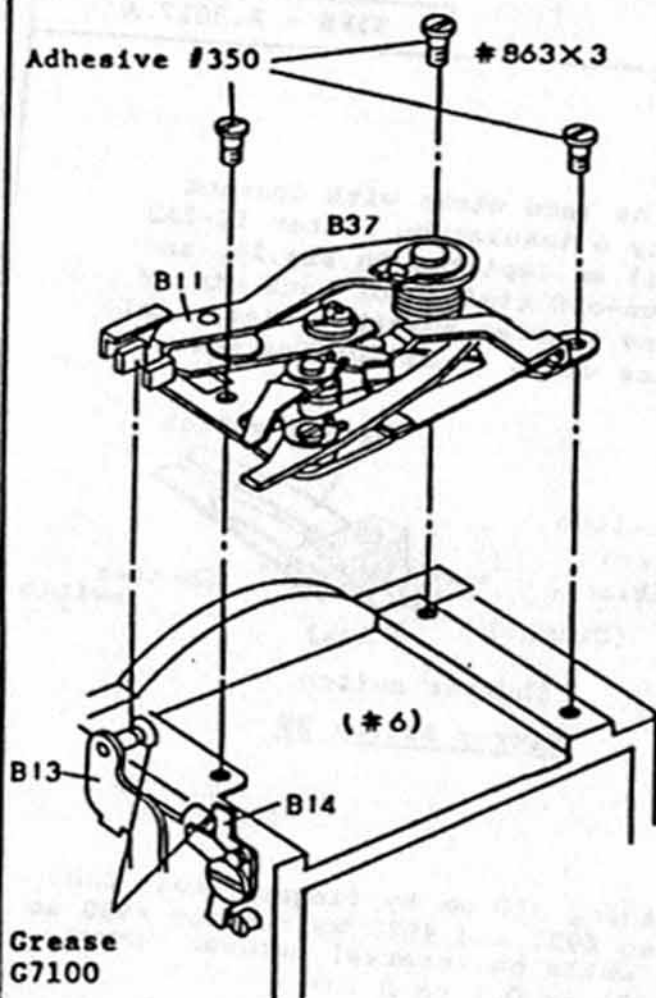


fig.22 MD signal middle lever(#352-1) positioning

### Brake Power for Signal Middle Lever

Measure the brake power with J15019, pulling in the arrow direction at the station 2 where the bending edge of #352-1 locates 6.5mm up from the bottom edge of base plate (See fig.23)

The brake power to be  $200g \pm 50g$

To adjust brake power, bend #284-1.

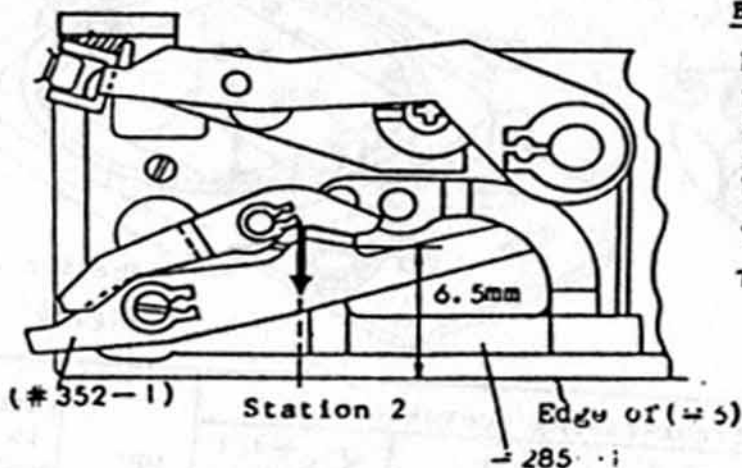


fig.23 Brake power measurement

## 19. Mirror-switch adjustment

J19028-1

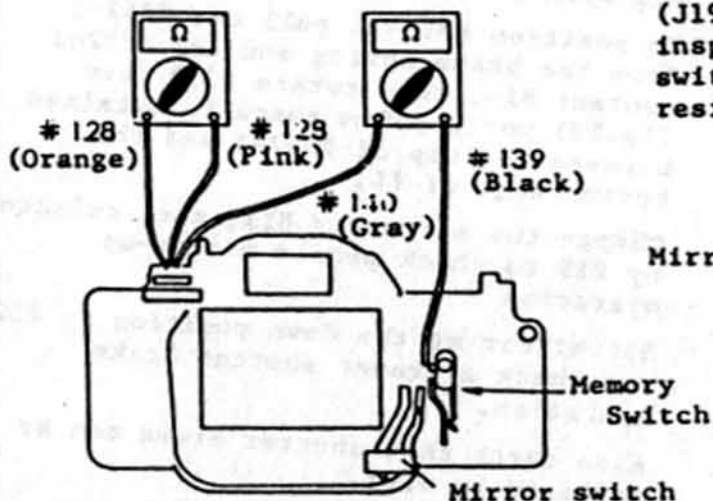
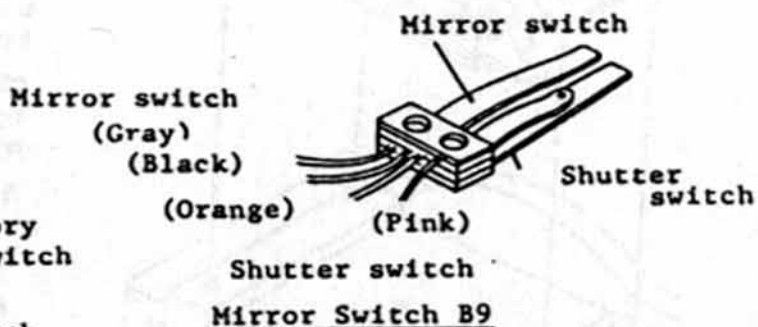


fig.24

Connect the lead wires with Contact efficiency & insulation tester IE-2A2 (J19028-1) as depicted in fig.24, and inspect on-off timings of both mirror switch and shutter switch. Electrical resistance of B9 to be 10MΩ or more.



### Switch ON-OFF Timing

After mirror charging, release mirror pressing B10 up by finger. lower B10 gradually, and adjust the clearance between #927 and #928 by turning #930 so that mirror switch changes from ON to OFF while on interval between Mirror holder pin A(#307) and Mirror-up lever(#322) is 0.2 to 0.1mm.

(Visually inspect the interval. Refer to fig.25. 26)

Apply adhesive #201 onto #930.

Be sure not to tighten #930 excessively.

Visually check that shutter switch changes from OFF to ON while #307 is shifting up 1.1mm away from its contacting point with #322 (no clearance between the two) (See the chart below)

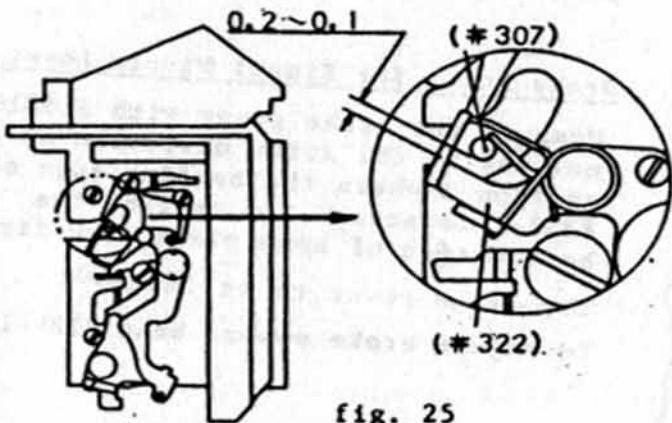


fig. 25

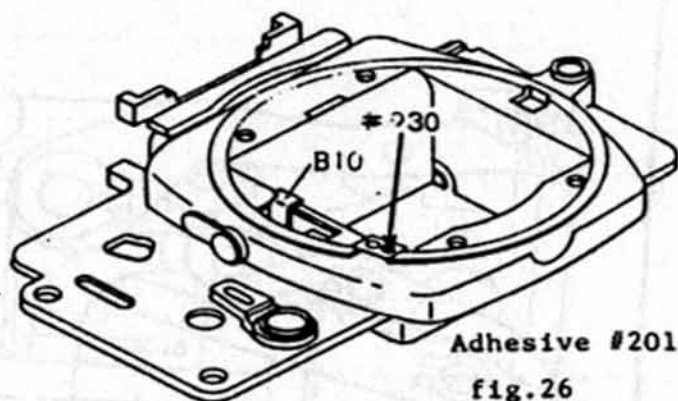


fig.26

| Position of Mirror | Switch | down-position | During mirror-rising operation |                |     |      | up-position | return to down-position |
|--------------------|--------|---------------|--------------------------------|----------------|-----|------|-------------|-------------------------|
|                    |        |               | -0.2<br>(#322)                 | -0.2<br>(#307) | 0   | +1.1 |             |                         |
| Mirror Switch      | ON     | ON            | ON                             | OFF            | OFF | OFF  | ON          | ON                      |
| Shutter Switch     | OFF    | OFF           | OFF                            | ON             | ON  | ON   | OFF         | OFF                     |

## 20. Air Damper installation

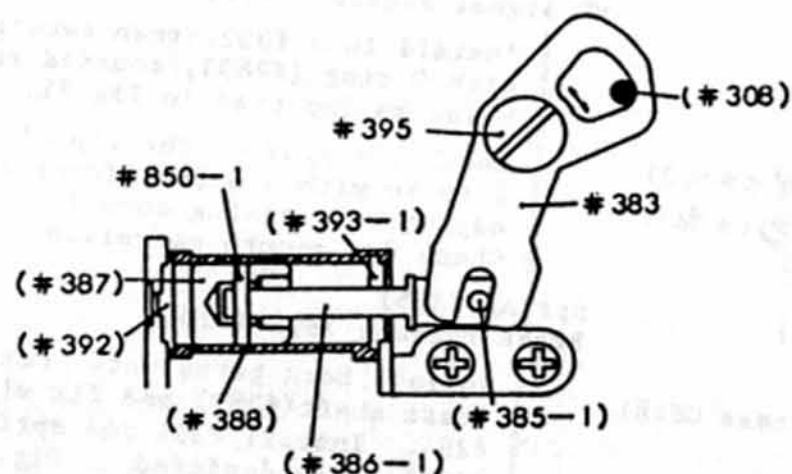


fig.27 Structure of Air Damper

## Air Damper Mechanism(B20)

Shock and sound, which occurs at the mirror up or down position striking the associated parts, are minimized by cylinder operation of B20 via #383 which actuates air damper connecting shaft (#386-1) fore and aft by receiving the shock of mirror operation.

## 20. Air Damper Installation

Front plate(#6)

Air damper(B20)

Put #385-1 into #386-1 and fix with #856 as illustrated. Install #397, #393 and #387 in order onto #386-1, then insert #850-1 into #386-1 through #387 aligning two holes.

Insert the above assembly into #388, using care not to drop #850-1.

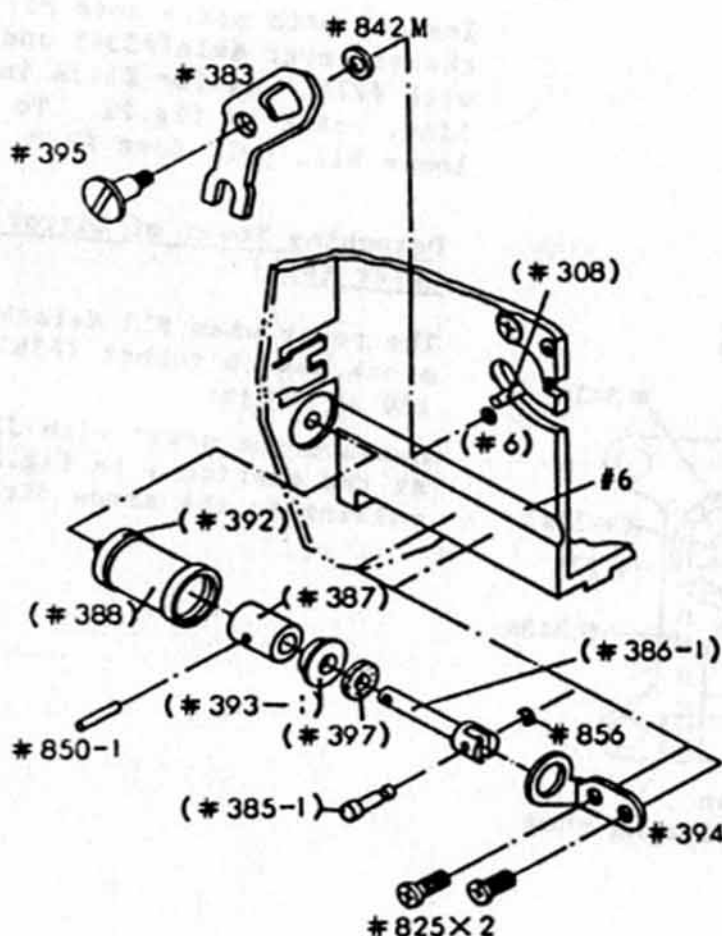
Air damper holder(#394)

⊕ #825x2 (used for centering)  
Position #388 along groove of #6

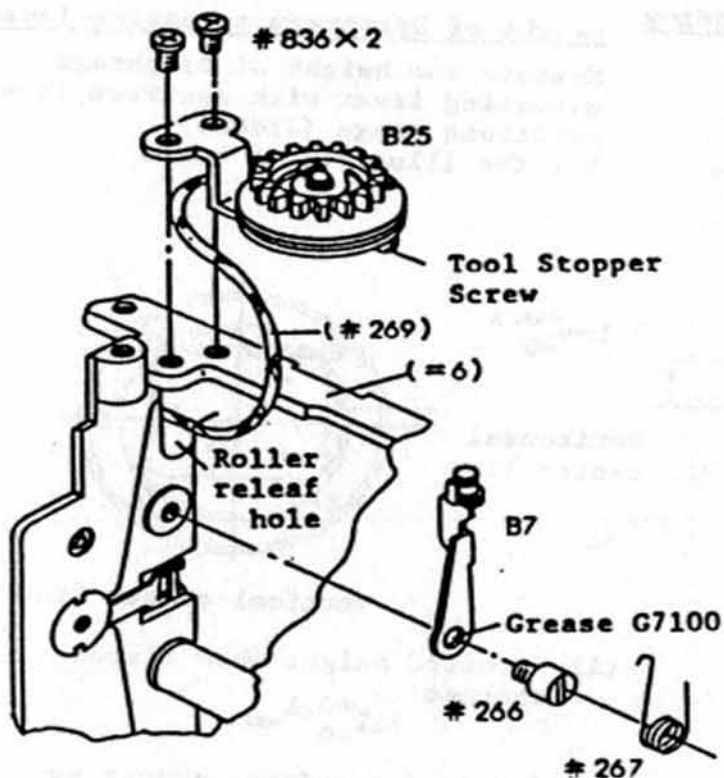
Washer(#842M)

Air damper lever(#383), ⊖ #395

Put the fork of #383 astride #385-1, and angular hole of #383 around #308 respectively. Manually operate the mirror and check for smooth operation of mirror, free from air damper's rubbing or jam. Change the direction of #6 and check mirror operation again.



## 21. Roller lever(B7), Brush coupling gear(B25) Installation



Front plate(#6); rewind-side

Front plate #6

Roller lever B7, Screw(#266)

B7 should not interfere with #6 due to excessive back-and-forth play

Roller lever spring(#267)

Refer to fig.28 for spring installation.

Brush coupline gear(B25)

Before installing. inspect for smooth operation and no abnormal sound of spring.

Pass thread #269 through roller releaf hole on #6. using care not to reduce the ring of 2mm dia at the end of #269

Install #269 between Roller(#262) and thread retaining plate(#264). (See fig.28)

⊕ #836x2

Be sure not to remove tool stopper screw before Bayonet #202 is installed.

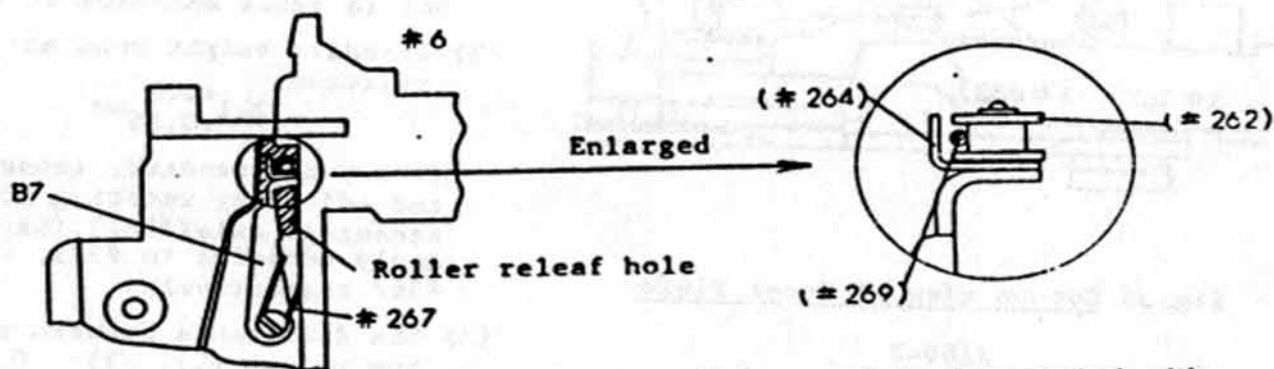


fig.28 Back view of Front plate #6; rewind-side

### Thread(#269) knotting

If #269 is unknotted, knot as depicted in fig.29, using care to tighten the knot securely.

The length of #269, from the cut in pulley on B25 to the knot to be  $116 \pm 0.5\text{mm}$

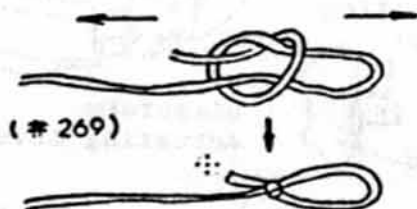
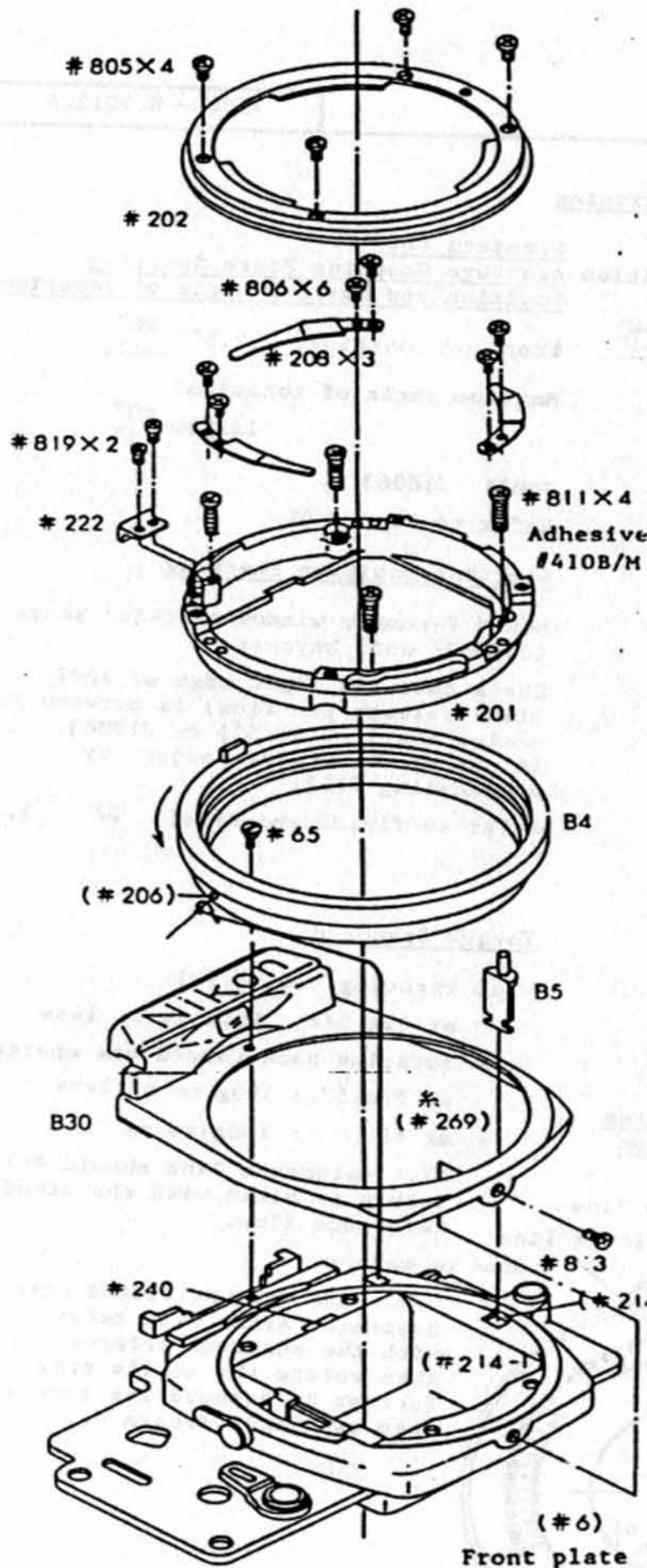


fig.29 #269 knotting



## 22. Bayonet Installation

Front plate(#6)

Front cover(B30): ⊕ #813x1  
⊖ #65x1

Aperture coupling ring(B4),  
Lens release lever(B5)

Insert B5 into fork of #214-1  
Install Thread(#269) securely  
into the groove of thread  
supporting pin(#206).

Bayonet mount(#201) ⊕ #811x4

Use care not to catch thread  
Temporarily loose fit with  
screw

Coupling ring stopper(#222) ⊕ #819 x 2

Turn B to the position where  
#222 can fit in B4, and hold  
with finger

Screw (⊕ #811)x4

Secure #201 tightly where B4  
rotates most smoothly

Bayonet spring(#208), ⊕ #806x6

Position #208 flush with outer  
circumference of #201 or at  
least 0.2mm inside.

Bayonet #202, ⊕ #805x4

Check B4 for smooth rotation

Remove tool stopper screw  
(See fig.30)

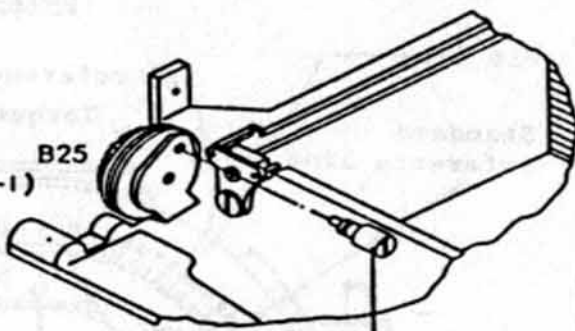


fig.30 Tool Stopper Screw

## 23. Aperture Coupling Piece Positioning

### Rotation limit position

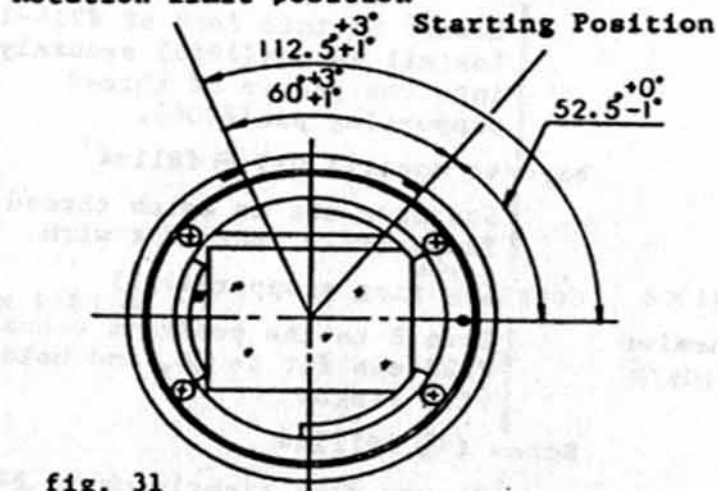


fig. 31

Positioning standard of aperture coupling ring

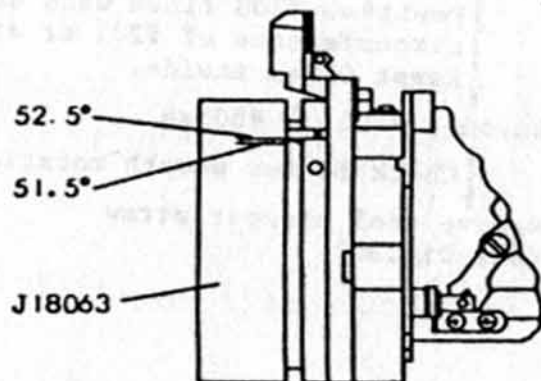
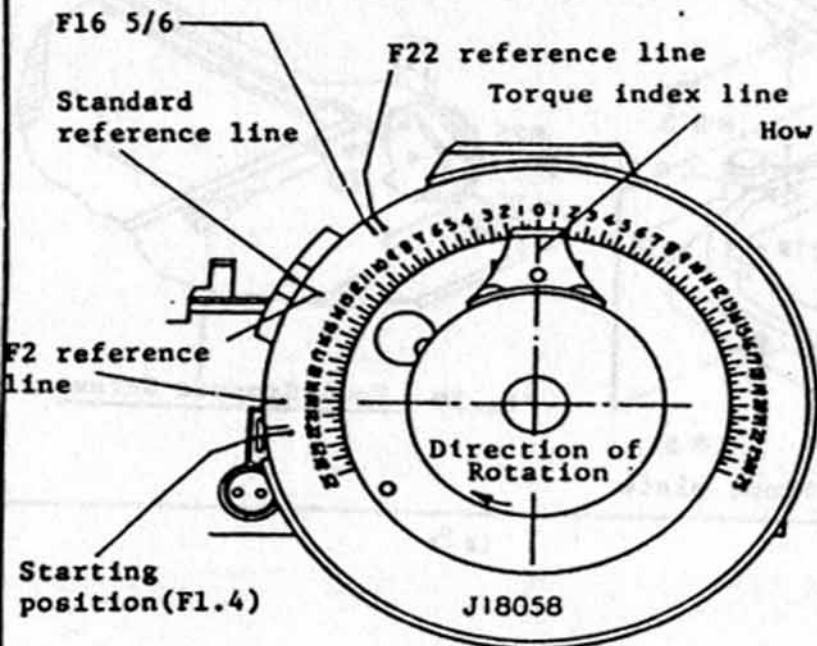


fig. 32

Aperture coupling piece starting position



### Standard for

Aperture Coupling Piece Starting Position and Maximum Angle of Rotation

Starting position:  $52.5^{\circ} \begin{smallmatrix} +0^{\circ} \\ -1^{\circ} \end{smallmatrix}$

Maximum angle of rotation:  $112.50 \begin{smallmatrix} +3^{\circ} \\ +1^{\circ} \end{smallmatrix}$

Tool: J18063

Refer to Figure 31

### Starting position checking

Mount F-number window checking gauge (J18063) onto bayonet.

Check that the right edge of #209 (lens release pin-side) is between two scales ( $52.5^{\circ}$  &  $51.5^{\circ}$ ) on J18063. If out of the scales, adjust by dislocating #222.

Refer to fig.32 and Page( 22 ).

### Torque Standard

When rotating toward F22

at F16 5/6: 950g.cm or less

When rotating back toward max aperture

at F16 5/6: 350g.cm or less

at F2 : 100g.cm or less

F1.4 reference line should surely return to align with the standard reference line.

### How to measure

Mount the tool No. J18058 onto the bayonet. Align each reference line with the standard reference line. then rotate the tool's ring further to measure the torque when two lines separate.

## 24. Diaphragm actuating lever positioning

Clearance  
to be 0.2mm

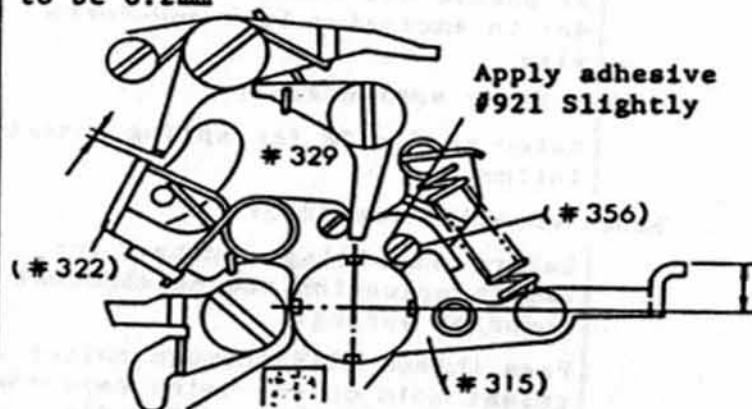


fig.34 Side View of Front Plate;  
Wind-up side

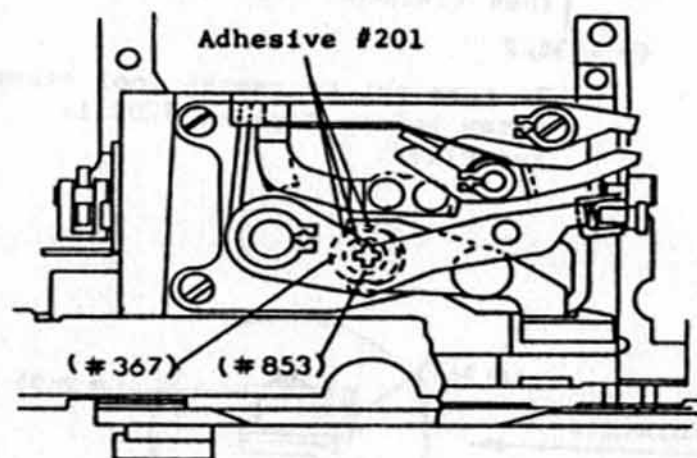


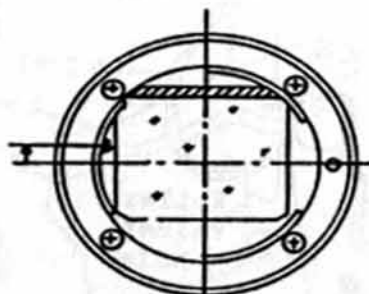
fig.35 Bottom view of Front Plate

## Height of Diaphragm actuating lever

Measure the height of Diaphragm actuating lever with Aperture lever positions gauge (J18004)  
See the illustration below

3.1mm<sup>+0.1</sup><sub>-0</sub>

Horizontal  
center line



Vertical center line

- (1) Standard height when mirror charged

3.1mm<sup>+0.1</sup><sub>-0</sub>

If out of standard, adjust by rotating Eccentric pin #356  
(See fig.34)

After adjustment, slightly apply adhesive #921 to #356. Use care not to exude adhesive to #315

- (2) Standard height when mirror released

3.1mm<sup>+0.4</sup><sub>+0.15</sub>

If out of standard, loosen #853 and adjust by rotating Down lever eccentric axle(#367). (See fig.35)  
Apply adhesive to #353, #362, and #367 respectively.

- (3) The difference between the above two values (1), (2): 0.15mm or more

Be sure to provide 0.2mm clearance between Mirror-up lever(#322) and Mirror-up stop lever(#329) in normal mirror down position.  
See fig.34.

## Position of Diaphragm actuating lever

Check the distance from vertical center line and the depth from bayonet surface with Aperture lever depth gauge J18042 (See fig.36)

The tip of diaphragm actuating lever should contact the "stop" side of J18042, and should not contact with "go" side.

Adjust the lever position by bending Diaphragm actuating lever.

J18042

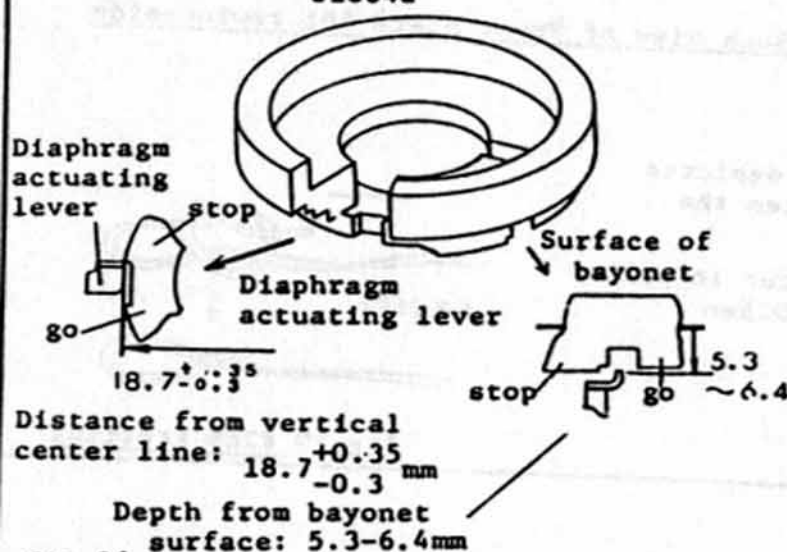


fig.36

## 25. Front Plate Installation

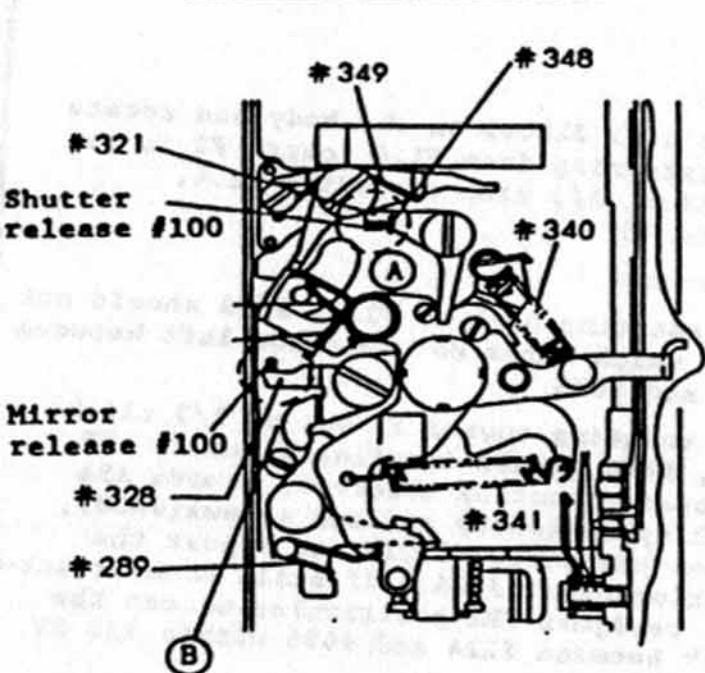


fig.37 Front plate, Mirror box side

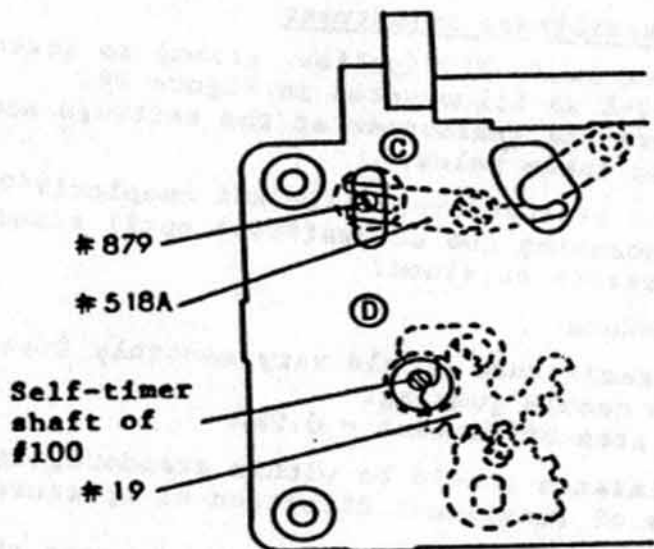


fig.38 Front plate, self-timer side

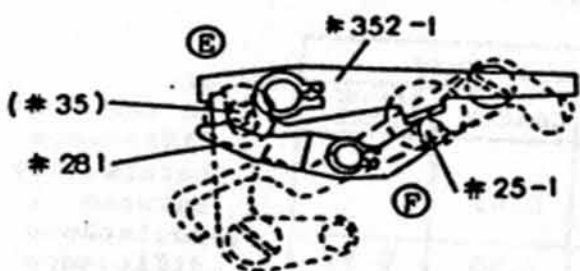


fig.39 Front plate, body bottom

Body

Cock the shutter, release the blank exposure prevention lever and set the film-advance lever halfway in the winding direction before front plate installation.

Front plate

Charge the reflex mirror

Install Front plate, being careful to ensure proper engagement at the areas (A, B, C, D, E, F) specified in Figure 37, 38, 39.

Engagement

- A(Shutter release lever(#321)
- Shutter release of #100
- B(Signal lever(#328)
- Mirror release of #100
- C(Release lever guide pin(#879)
- Sea-saw lever(#518A)
- D(Self-timer gear B(#19)
- Self-timer shaft of #100
- E(Brake release lever(#281)
- Mirror charge pin collar(#35)
- F(Motor switch coupling lever(#25-1)
- MD signal middle lever(#352-1)

Press front plate in the arrow direction in Fig.40, and secure with six screws (#810x5, #817x1) in the sequence shown in Figure 40.

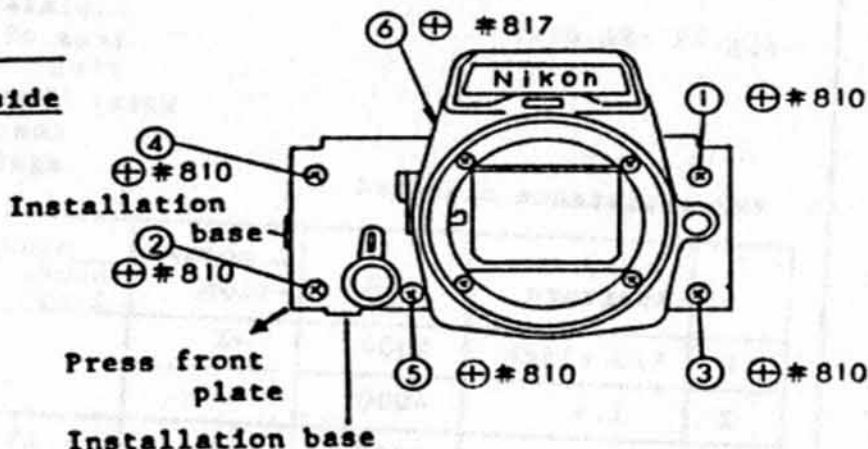


fig.40 Screw tightening sequences ① - ⑥

## 26. Mirror Position to Release Shutter

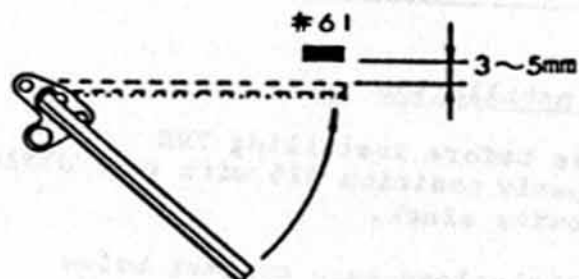


fig.40

Clearance of 3 - 5mm should be left between mirror buffer #61 and the mirror in the highest position to release shutter. (See Figure 40)

Be careful not to scratch or leave finger prints on the mirror

Adjust the mirror position by activating shutter release lever (#321) up and down with eccentric pin (#356).

(See Figure 41)

Apply adhesive on #356, being careful not to exude the adhesive on #321.

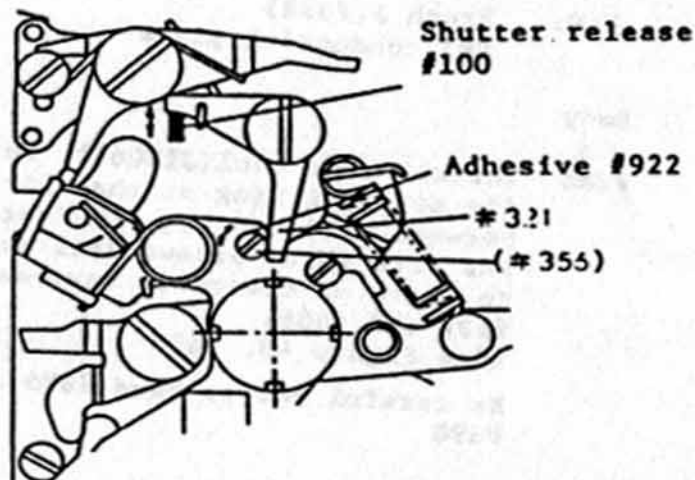


fig.41 Front plate, film-advance lever side

- Ⓐ looseness: within 1.0mm
- Ⓑ Inclination: within 0.5mm

## 27. Inspections after Front Plate Installation

### Body Back Distance Check:

Tools: J18001-1, J19004

Standard:  $46.67 \pm 0.02\text{mm}$  (at outer rails)

### Self-Timer Lever Operation Check:

8 - 14 sec. delay: Adjust with eccentric pin shown in Figure 42.

Cancellation: Cancellable when the lever is returned to the position ready for memory lock operation

Lever looseness: Within 1.0mm  
(See Figure 42)

### Blank exposure prevention lever check:

Inspect #26 and A3 for proper operation through tripod screw mounting hole.

### Mirror charge check:

Attach the tool (J18065), set its aperture setting to F16 and wind the film-advance lever several times, fast or slowly; mirror should be surely charged regardless of winding speed.

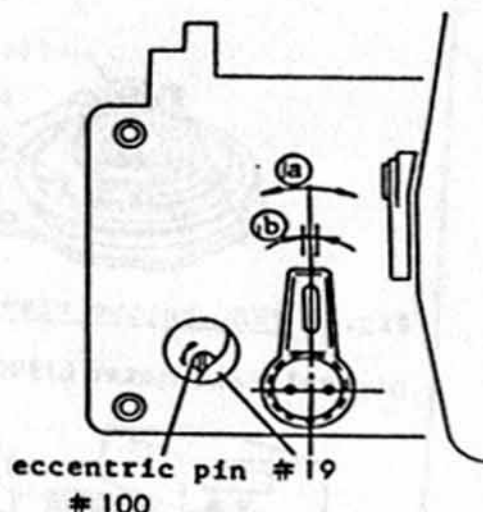


fig.42

Cares before installing FRE  
Properly position B25 with tool J15146,  
removing slack.

Alcohol-clean each contact below

Body: Brush A(#685)  
FRE Printed Circuit(J)

FRE: Brush B(#698)  
FRE conducting plate

Body

FRE: Install lens tool(J18065), set  
its aperture ring at the click  
between F1.4 and F2, and install  
FRE with three screws #861 so as  
to leave no clearance between  
#631 and #686.  
(See Figure 43, 45)

Be careful not to bend #685 and  
#698

#### Check Points

Rotating the aperture ring of  
J18065, inspect the gear slack  
between #224 and #686 to be  
within 1/6 EV (0.15k ) deviation  
with tester J9003-1. If  
excessive, shift FRE position  
until allowable slack obtained.  
If still excessive, readjust the  
B25 positioning.

Brush A(#685) should contact  
#684 at the middle of the  
circumference of #684

#631 and #678 should not contact  
each other. (See Figure 45)

Roller lever(B7) should not move  
before #686 contacts #631.  
Inspect through access hole in  
Fig.44.

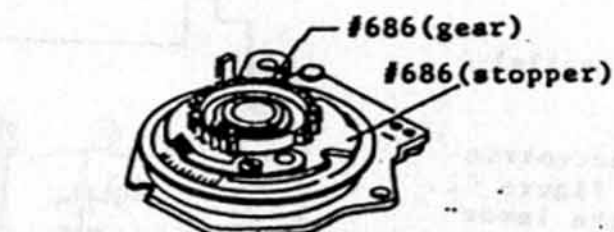


fig.43 FRE, bottom view

Digital Volt-Meter (J9003-1)

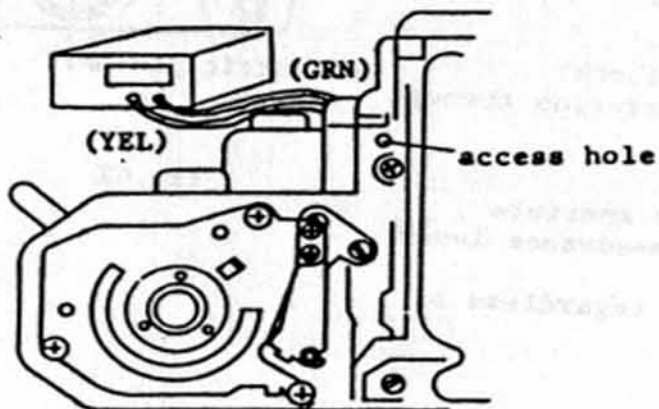


fig.44 Body, rewind-knob side

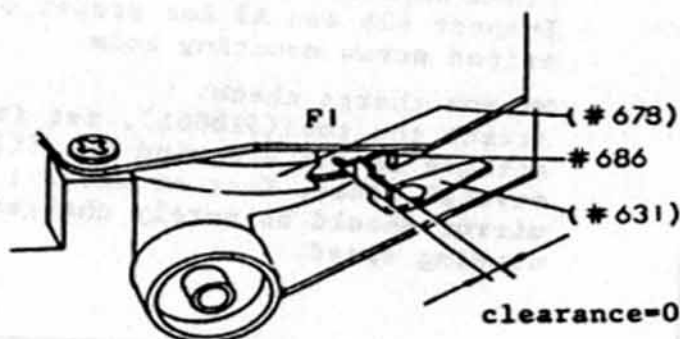
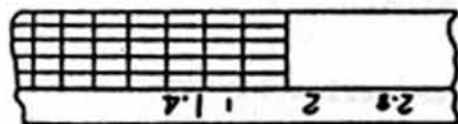


fig.45 Synch terminal

## 29. FRE Positioning

Aperture ring of J18065



F2

F1.4

Brush gear(#686) should move instantly #686 should not move instantly

fig.46 1/3 stop click(F1.4 1/3)

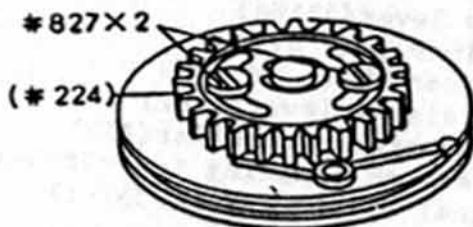


fig.47 Brass coupling pulley

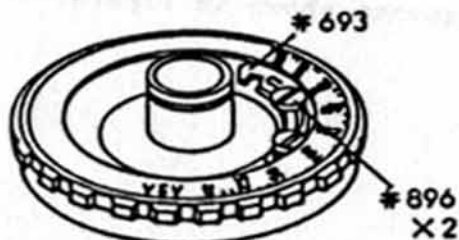


fig.48 ASA dial

Body

Mount the tool J18065 on the body and rotate the aperture ring from F1.4 toward F2 to set to the click, 1/3 stop exceeding F1.4. See Figure 46

### Check Points

When rotating back to F1.4, #686 should not move, which means no clearance left between #631 and #686

When rotating toward F2 out of 1/3 click stop, #686 should immediately move. If improper operation observed, remove ASA click spring(#670) and two screws(#808), loosen two screws(#827) and adjust the positioning of #224. If still unsatisfactory, readjust FRE positioning to set the slack between #224 and #686 within 1/6 EV deviation.

## 30. FRE Resistance Adjustment

Connect leads #130(yellow, green) to tester J19003-1 as illustrated in Figure 44. Measure the resistance at the settings shown in the table below.

If out of standard, slide ASA coupler(#693) by loosening two screws(#896) until standard resistance obtained.

### Check Points

FRE resistance should vary smoothly free from needle jumping.

One stop difference = 0.9k $\Omega$

Resistance should be within standard, regardless of rotational direction of aperture ring

Note: When changing ASA setting, depress the checker switch so as not to contact against FRE.

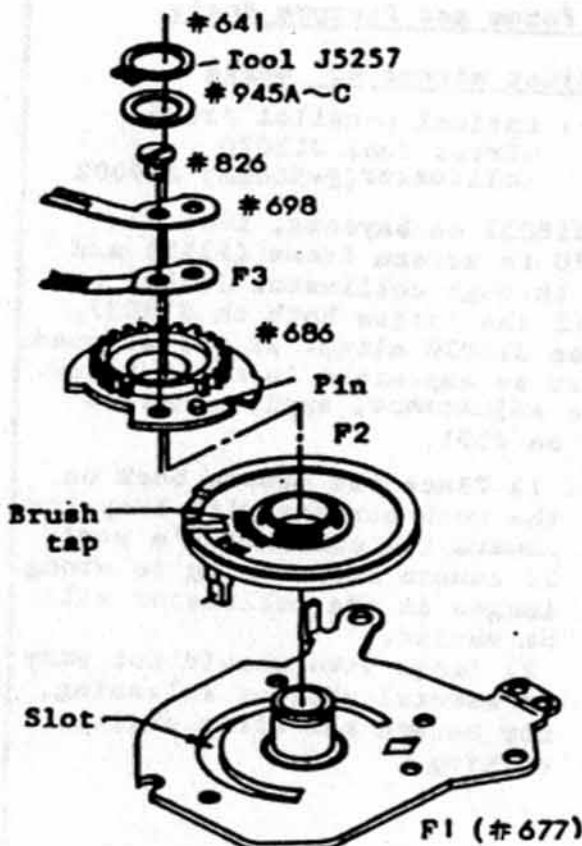
FRE resistance standard

|   | Aperture  | ASA  | Compensation | Standard (k $\Omega$ ) |        |             |
|---|-----------|------|--------------|------------------------|--------|-------------|
|   |           |      |              | upper limit            | Center | Lower limit |
| 1 | 1/3 click | 4000 | -1           |                        | 0.45   |             |
| 2 | 1.4       | 4000 | -1           |                        |        |             |
| 3 | 2         | 4000 | -1           | 1.15                   | 1.05   | 0.95        |
| 4 | 5.6       | 4000 | -1           | 4.2                    | 3.75   | 3.3         |
| 5 | 5.6       | 100  | 0            | 10.4                   | 9.45   | 8.4         |
| 6 | 2.2       | 12   | +2           | $\leq \infty$          | 16.65  | 14.9        |

Note:

- 1) No resistance difference permissible between 1 & 2
- 2) Resistance difference between 2 & 3 to be 0.6  $\pm$  0.1k $\Omega$

### 31. FRE Installation



#### To Install Brush

ASA dial mount (F1)

FRE ring (F2)

Be careful not to directly touch FRE pattern  
Clean the tapped area with a mixture of  
alcohol and ether

Brush gear (#686) Washer (#945 A, B, C)

Snap ring (#641)

#686 should rotate smoothly by adjusting with  
one of #945A, B, C

Brush A (F3), Brush B (#698) Screw (#826)

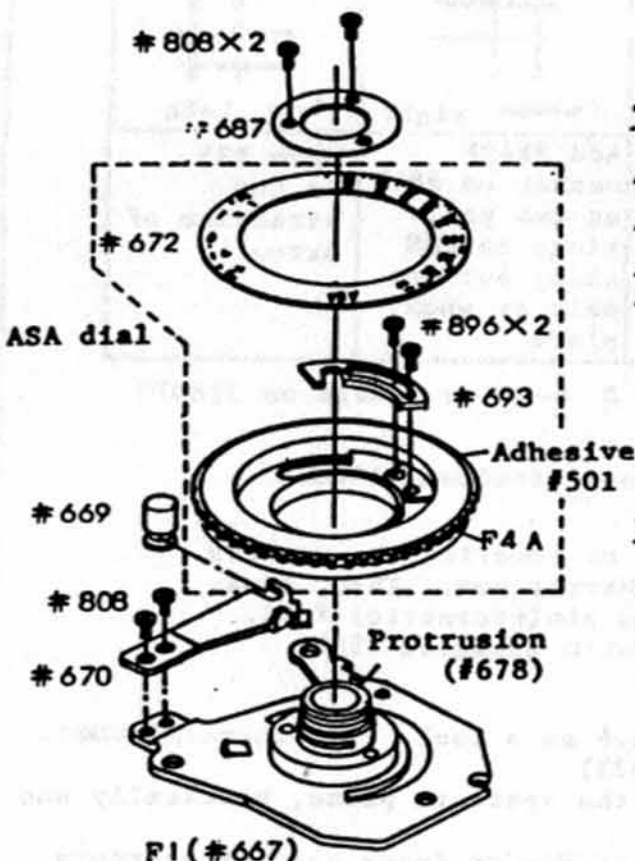
Set #698 on top of F3 and install both  
together, aligning the holes with pin on  
#686

All of six wires of F3 should firmly  
contact on taps of F2. (Ref. Figure 49)

Two contact plates of #698 should not  
disengage from FRE printed circuit (J)



fig.49 F3 position



#### To Install ASA dial (#672)

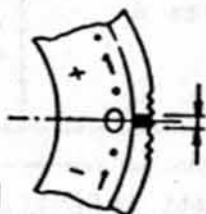
ASA dial (F4A)

ASA coupler (#693), Screw (#896x2)

ASA dial (#672),

Adhesive #501

Setting ASA click plate  
(#676) at the center  
click, fix #672 with  
its "O" setting aligned  
with the index.



#### To install ASA dial (F4)

ASA dial mount (F1)

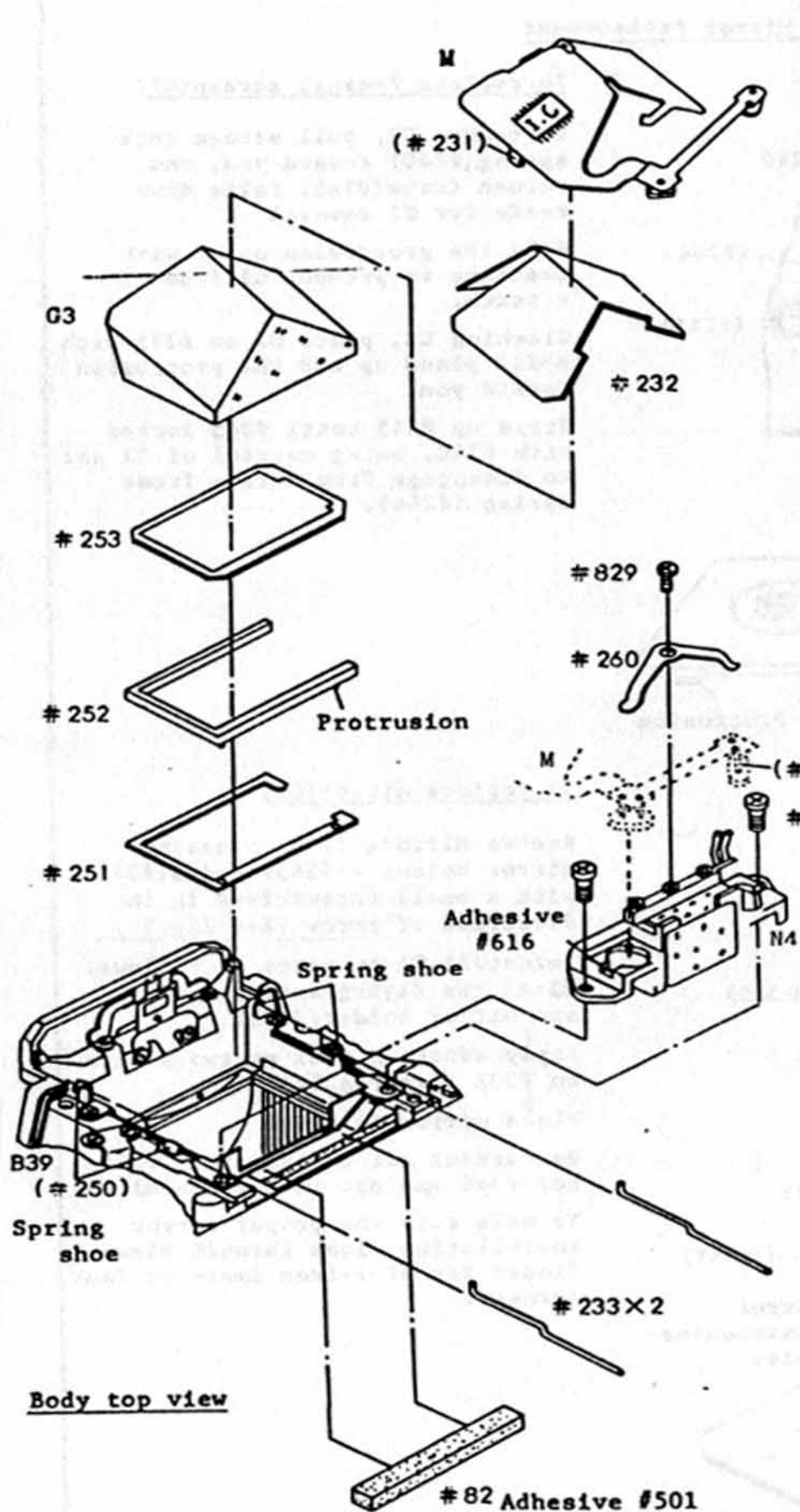
ASA dial (F4A), #896x2, #693, #672

Protrusion on #678 to be aligned with the  
slot in #693

Scale attaching ring retainer (#687),  
Screw (#808x2)

Inspect #687 for smooth rotation

### 32. Installation of Pentagonal Prism, Eyepiece and IC Printed Circuit



Prism box (B39)

Finder field frame (#251)

Spacer (#252)

Prism mask (#253)

Install each part, being careful of their direction. Positioning holes in #251 should align with pins on #252

Pentagonal Prism (G3)

Clean before installing

Prism retainer (#232)

IC printed circuit (M)

Spring (#233x2)

Engage the spring in following sequences. Eyepiece-side spring shoes of #250

Prism-retaining plate (#231)

Bayonet-side spring shoes of (#250)

Be careful not to scratch the prism.

Prism box (#250) of Front Plate (#6)

light-tight (#82)

Eyepiece mold (N4), Screw (#817)

Clean the prism-side surface of eyepiece lens

Photo diode (#258x2)

Fit into holes in N4

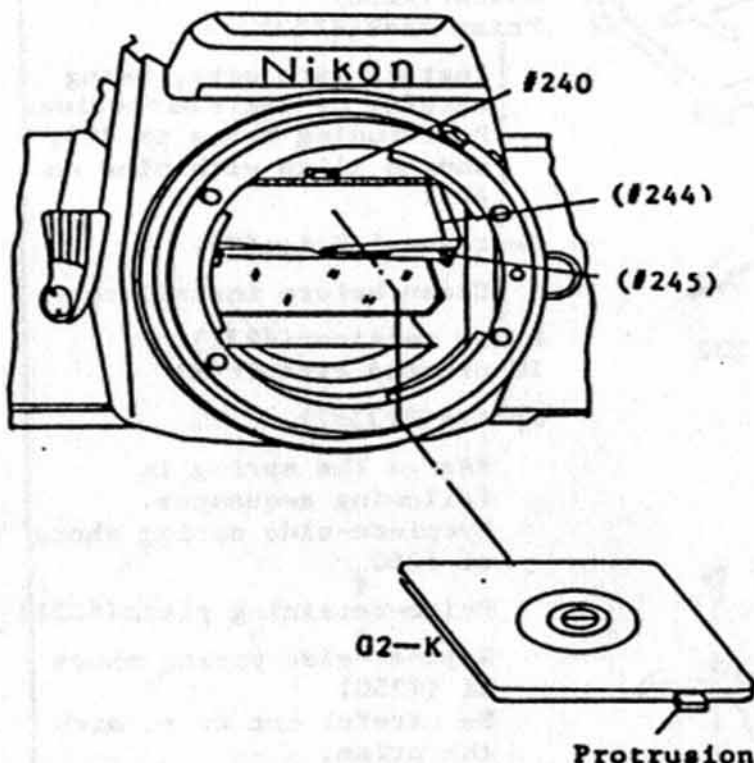
SPD printed board retainer (#260)

Screw (#829)

Apply adhesive at the cut in N4 to secure #258 on N4

Body top view

### 33. Fresnel Screen and Mirror replacement



#### To replace Fresnel screen(G2)

To remove G2, pull screen lock spring(#240) toward you, and screen frame(#245) falls down, ready for G2 removal

Hold the protrusion on G2 with tweezers to prevent G2 from scratch.

Cleaning G2, place G2 on #245 with split plane up and the protrusion toward you.

Press up #245 until #245 locked with #240, being careful of G2 not to disengage from screen frame spring (#244).

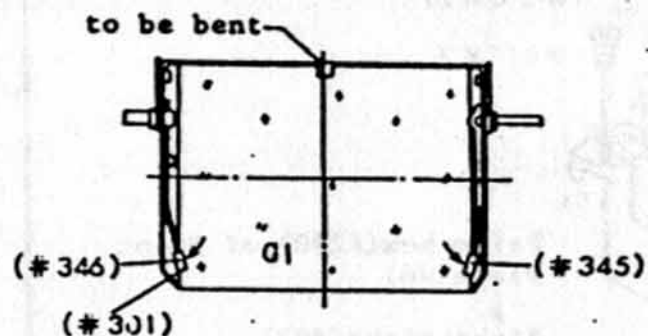


fig.51 Mirror holder B26

#### To replace mirror(G1)

Remove Mirror(G1) by pressing mirror holder A(#345) and B(#346) with a small screwdriver in the direction of arrow (See Fig.51).

Reinstall G1 in place as follows. Clean the faying surfaces of G1 and mirror holder(#301)

Apply adhesive #501 at two places on #301 (See Fig.52)

Place mirror in place

Be careful not to transform #345 nor #346 and not to scratch mirror

To make sure the proper mirror installation, look through viewfinder for blur-free image at four corners.

Adhesive #501:  
2mm off the  
wall

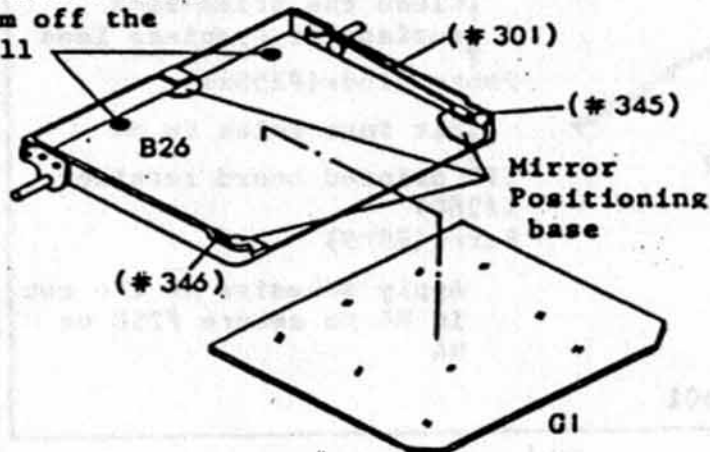
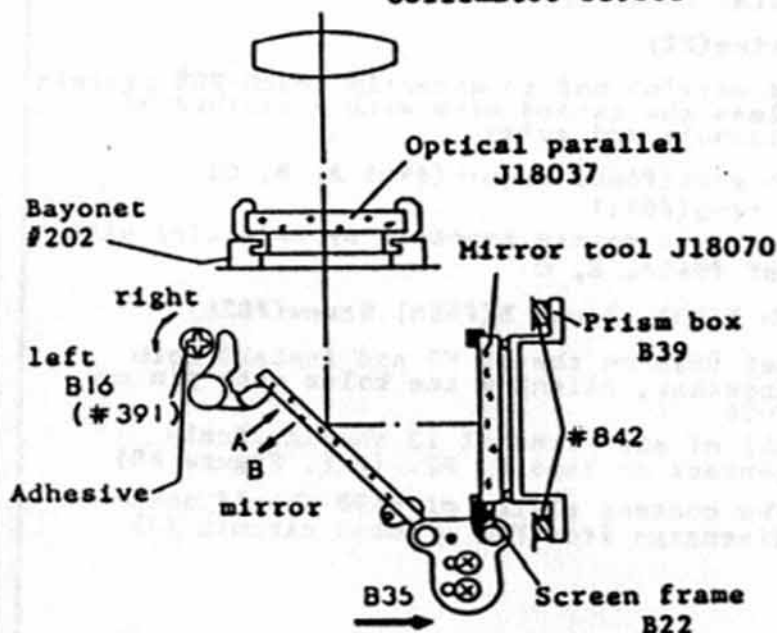


fig.52 Mirror replacement

### 34. Adjustment of Mirror 45° angle, Infinity focus and Picture Angle

Collimator J19002



#### To adjust mirror 45° angle

Tools: Optical parallel J18037  
mirror tool J18070  
Collimator(f=500mm) J19002

Set J18037 on bayonet, install J18070 in screen frame (#245) and look through collimator J19002 to see if the images both on J18037, and on J18070 align. If not aligned, adjust as explained in table below. After adjustment, apply adhesive #501 on #391.

Note: 1) Place the camera back on the work surface with body top toward the collimator's post. If camera positioning is wrong, images in the collimator will be varied.

2) Image view should not vary in several shutter releasing, nor before and after shutter cocking.

fig.35 Mirror positioning(FRE-side view)

Mirror 45° Adjusting Table:

|                                                                                                                                                                                                                                                                                                                                       | Upper                                                  | Lower                                                         | Left                                                                              | Right                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------|
| <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 2px; background-color: black; margin-right: 5px;"></div> Image A         </div> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 2px; background-color: black; margin-right: 5px;"></div> Image B         </div> | <br>down                                               | <br>up                                                        | <br>right                                                                         | <br>left                           |
| How to align Image B on Image A                                                                                                                                                                                                                                                                                                       | Rotate #391 clockwise, and mirror moves in B direction | Rotate #391 counterclockwise, and mirror moves in A direction | Add #842F washer to #842 at two positions on FRE side, but one only at each place | Move B35 in the direction of arrow |

Image A ———: Image on J18037, Image B ——— : Image on J18070

#### To adjust infinity( $\infty$ ) focus

Tools: Lens tool 50mm F2(J18010), Collimator f=600mm(J19001)  
Standard: Within 30"

Coarse-adjust the focus by evenly raising or lowering the washers (#842A - U) located at four places under Mirror box. Then, fine-adjust the focus with Mirror 45 adjusting pin(eccentric) #391. After adjustment, be sure to secure #391 with adhesive #501.

#### To adjust picture angle

Tools: Appropriate standard lens 50mm F1.4 as a tool. Test chart(J18006).  
Stage, Focusing screen tool (J18033)  
Standard: Parallax . . . Within 0.5mm in the aperture plane, vertically and horizontally.

Finder view . . . Inclination of Finder image against aperture plane to be within 1°30'.

### 35. F-number window positioning

Attaching F-number window check gauge J18063 onto camera body, check and adjust the Position of F-number window.

#### Standard

Sideway position: Within 5mm dia of split-image spot

Height above screen:  $H = 0.3 - 1.5h$

View of frame on: Within F-number window J18063

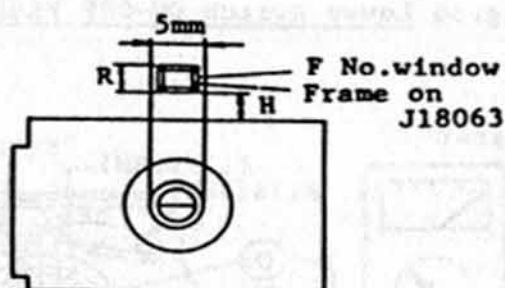
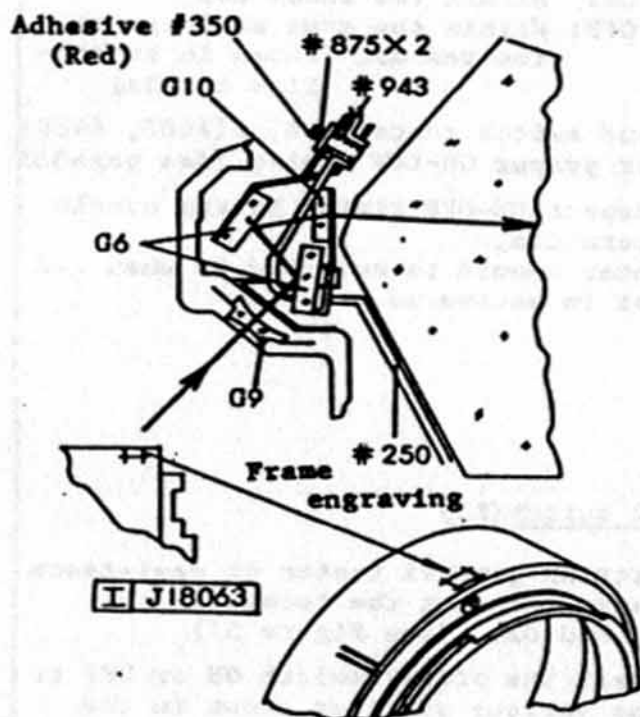
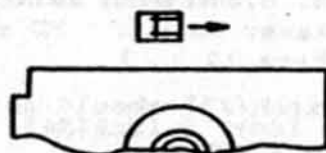


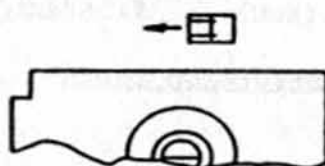
fig.54 F No. window positioning

#### How to adjust

- 1) by adjusting prism box (#250) to shift the window in the direction of arrow

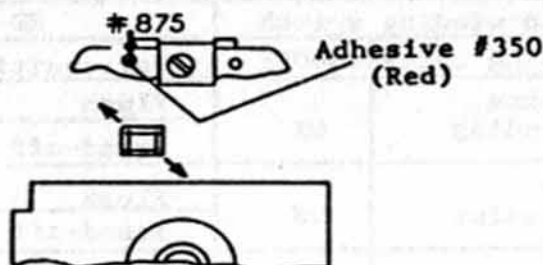
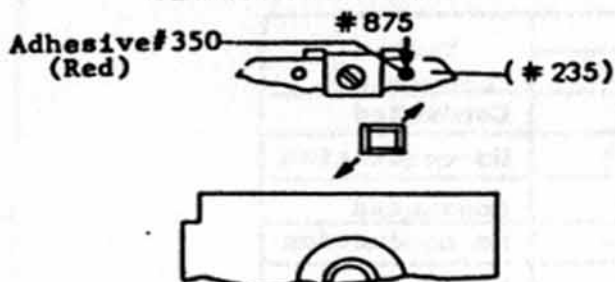


move #250 to the right

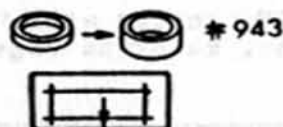


move #250 to the left

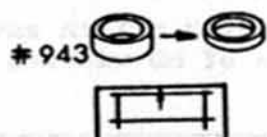
- 2) by adjusting screw(#875) to shift the window and the frame in the direction of arrow



- 3) by changing washer (#943A - D) to shift the frame on J18063



Use thicker washer to move the frame upward



Use thinner washer to move the frame downward

#### Washer

- 943A  $t=0.2$
- 943B  $t=0.4$
- 943C  $t=0.6$
- 943D  $t=0.8$

### 36. Shutter Speed Control(R) Installation

#### Body

#### Shutter Speed Control(R)

Set the shutter dial to "B", install Assy No.R in place so that shutter "B" Lever enters into the "B" change-over cam hole, and secure R with three screws (#893) aligning shutter speed film with screen frame. Fig.55) (See fig. 55)  
Be careful not to scratch film nor to bend the needle.

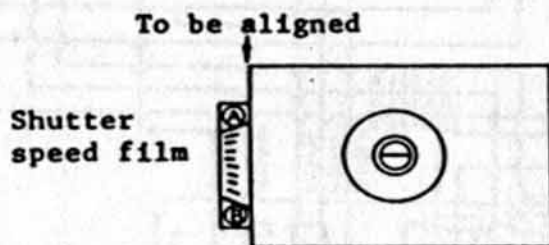
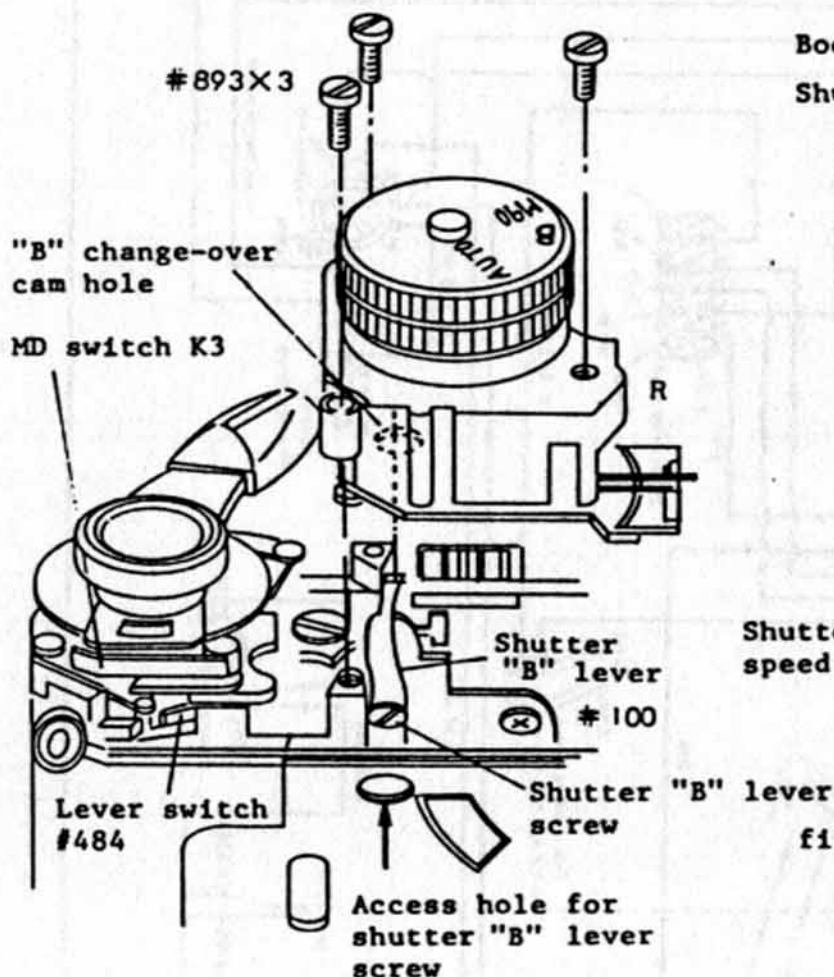


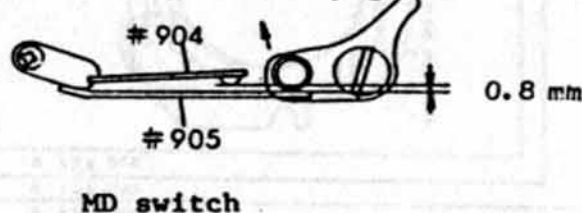
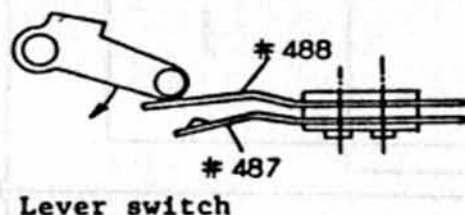
fig.55 Shutter speed film positioning

### 37. Mechanical Shutter Speed (B, M90) Adjustment

Adjust shutter "B" lever position through an access hole. Then, rotate shutter dial (Auto - M90 - B, B - M90 - Auto) to confirm proper change-over between M90 and B settings.

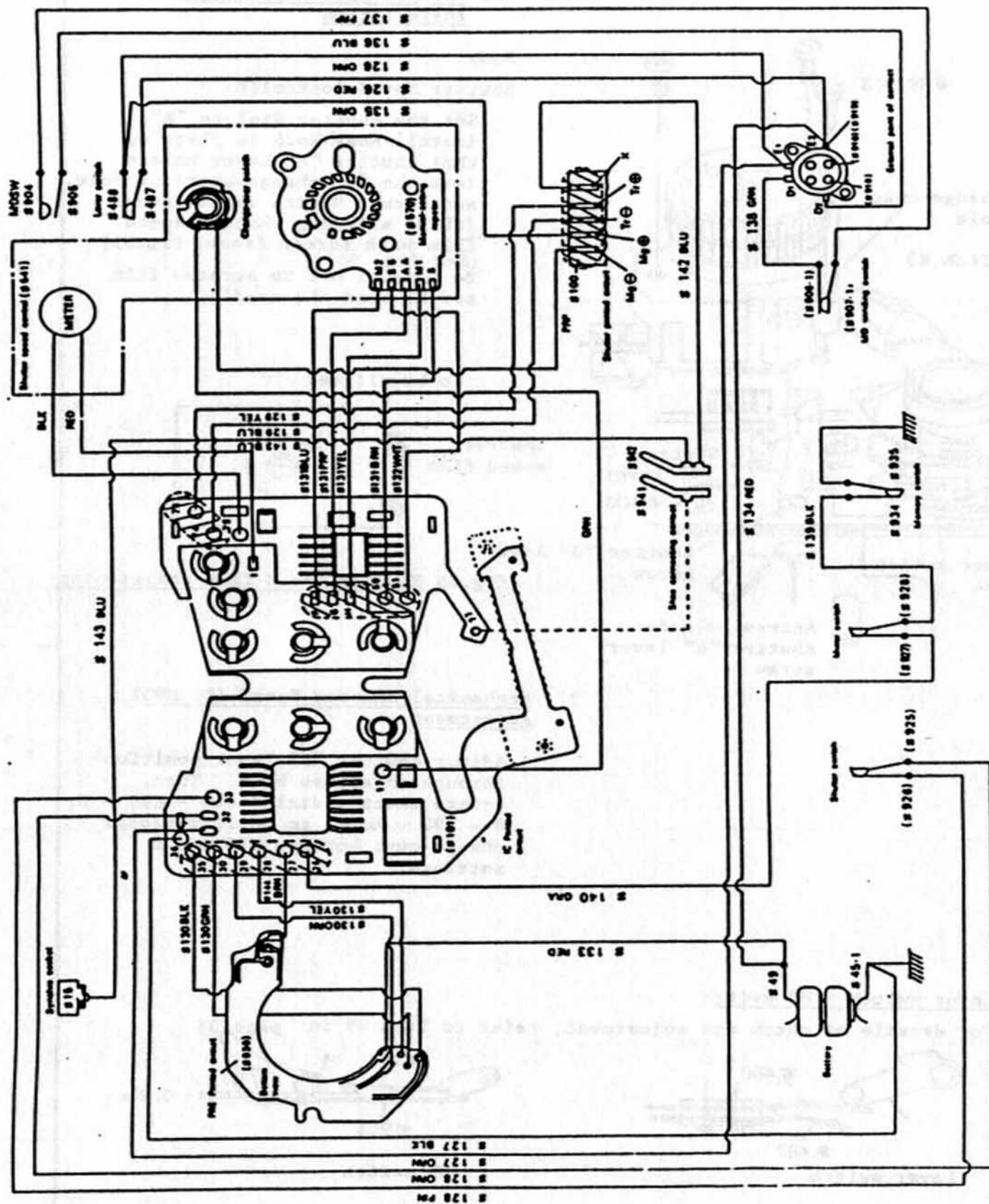
#### Lever switch · MD switch

For details of check and adjustment, refer to Item 39 in page 35



Use Soldering iron with earth.  
Solder in cloth-gloves.  
Apply insulation coating at the area shaded  
in the diagram

Soldering Material:  
Solder CCS  
Flux L-35



### 39. Lever Switch · MD switch check/ Adjustment Lever Switch(K4)

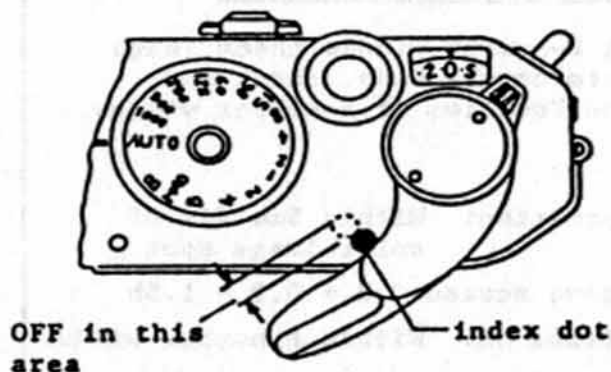


fig.56 Lever switch ON-OFF timing

ON-OFF position standard:

ON: Within red index dot

OFF: Within the area as large as the red dot (shown in broken-line circle)

Bend switch contacts A, B(#487, #488) for proper ON-OFF timing (See page33)

Inspect ON-OFF timing by the needle operation.

Meter should be switched ON when red dot is uncovered.

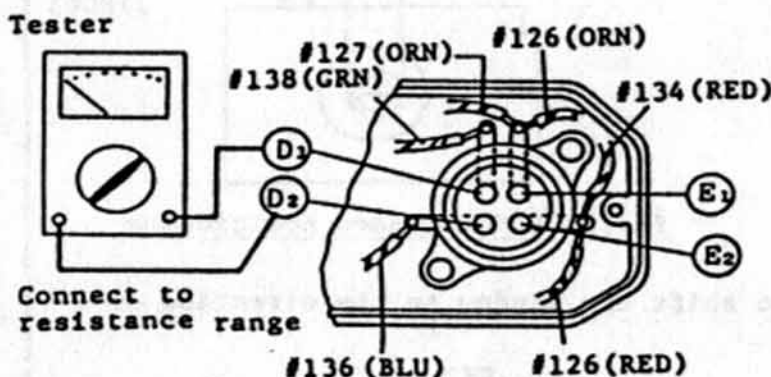


fig.57 MD switch conduction check

### MD switch(K3)

Setting general tester at resistance range, connect the terminals to D1 and D2. (See Figure 57)

Check the proper switch ON or OFF at the various settings shown in the table below from conduction into the tester.

Perform ON-OFF adjustment by bending MD switch contacts A, B(#904, #905). Contacts' interval between the two to be approx. 0.8mm when switched OFF. (See Lever switch · MD switch section on Page 33 )

Note: MD switch(K3) should switch ON after lever switch(K4) switched OFF.

Before MD switch ON, there should be a time where K3 and K4 are OFF.

### MD switch · Lever switch ON-OFF position

| MD winding switch |        | MD switch      |        | Tester<br>Conduction |
|-------------------|--------|----------------|--------|----------------------|
| winding cycle     | ON-OFF | Lever position | ON-OFF |                      |
| before winding    | ON     | Flush          | ON     | Conducted            |
|                   |        | Stand-off      | OFF    | No conduction        |
| Now winding       | ON     | Flush          | ON     | Conducted            |
|                   |        | Stand-off      | OFF    | No conduction        |
| Winding finished  | OFF    | Flush          | ON     | No conduction        |
|                   |        | Stand-off      | OFF    | No conduction        |

Note: When MD winding switch and MD switch are ON, tester will be conducted. For details of MD winding switch adjustment, refer to Page

#### 40. Shutter/Meter Accuracy Adjustment

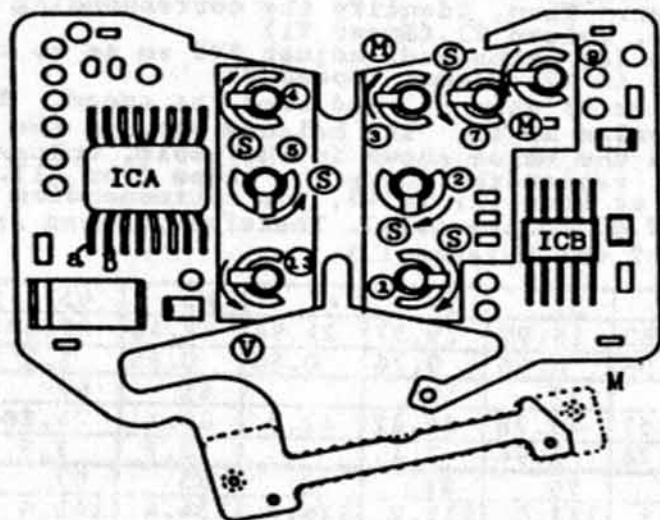


Fig.58 LC printed circuit

##### Marks:

Encircled No.: shows the number of variable resistor

Encircled alphabet

S : Variable resistor for shutter speed adjustment

M: Variable resistor for meter needle swing adjustment

V : Variable resistor for voltage adjustment

##### Arrows:

Show the directions to slow the shutter speed, to enlarge the needle swing or to lower the voltage.

e.g.: ⑤

Shutter speed can be lengthened by rotating the resistor.

Note: As a rule, when IC printed circuit is subassembled, its off-set adjustment and Auto- adjustment are performed. Thus, adjust in the sequences shown below (1) - (7) only when malfunctions observed.

##### Tools:

Digital Volt-meter: Input impedance to be at least 1000MΩ  
Resolution power to be at most 10mV

Shutter tester (J19022-1)

Tool lens for J19022-1, 50mm F1.4

Special Top cover for brightness adjustment (J15145)

Insulated screw driver (J15135)

##### 1). OFF set Voltage Adjustment

Potential at ICA terminals a, b to be equal

Potential Difference standard:  $|a-b| < 0.5\text{mV}$

Measurement: Setting at EV14, measure the voltage between Body(-) and terminal a, and the voltage between Body and terminal b with Digital volt meter(J9003-1). (See fig. 58)

Note: Before measurement, remove anti-humidity silicone coating on terminals a, b with xylol.

Adjustment: Made by rotating variable resistor ⑬.

Voltage change by RV ⑬ is larger at terminal a than terminal b, therefore, adjust the voltage at terminal a to be equal with the voltage at terminal b.

##### 2). Automatic Shutter Speed Control Adjustment

When set at ASA100 and F16, shutter speed at EV9 should be 32 times as slow as that at EV14

Standard: 31.5 - 32.4 times

Adjustment: Made by rotating RV ⑦. Shutter speed change by RV ⑦ is larger at EV9 than at EV14, therefore, if shutter speed at EV9 is 32-times or more slower than that at EV14, rotate RV ⑦ clockwise.

3) FRE  $\gamma$  Adjustment

Shutter speeds between the two settings' combination (a) (b) should be equal.

- a) ASA12, compensation +1, F5.6, EV14
- b) ASA3200, Compensation -1, F5.6, EV4

Standard: Shutter speed difference 0.96 - 1.039 times each other

Adjustment: Made by rotating RV ⑤. Shutter speed change is larger at settings (1) than settings (2), therefore rotate RV ⑤ clockwise if shutter speed at settings(1) is slower than that at (2).

4) Automatic Shutter Speed Control Level Adjustment

Made by rotating RV ④. At ASA100, F5.6 and EV9, shutter speed should be 1/15 sec.

Standard shutter speed: 60.2 - 64.9ms (1/15)

5) Manual Shutter Speed Control  $\gamma$  Adjustment

Shutter speed at 1/2sec.(Manual) should be 32 times as slow as that at 1/60sec.(Manual).

Standard: 31.5 - 32.4 times

Adjustment: Made by rotating RV ②. Shutter speed change by RV ② is larger at slower settings. Therefore, if shutter speed at 1/2sec. is 32-times or less slower than that at 1/60sec, rotate RV ② clockwise.

6) Manual Shutter Speed Control Level Adjustment

Inspect shutter speeds at the settings of 1/125sec., 1/60sec., 1/2sec., 8sec. to be within standard. If out of standard, adjust by rotating RV ③.

Standard: 1/125sec. . . . 8.67 - 9.61ms    1/2sec. . . . 467 - 535ms  
1/50sec. . . . 14.6 - 16.7ms    8sec. . . . 7000 - 9000ms

7) Meter Level/ $\gamma$  Adjustment

a) Meter level Adjustment

At ASA200, F5.6 and EV14, the meter needle should point to the 1sec. setting, or at ASA200, F5.6 and EV9. the needle should point to the 1/30sec. setting. If not, adjust by rotating RV ③.

b) Meter  $\gamma$  Adjustment

At ASA200, F5.6 and EV14, the meter needle should point to the 1/1000sec. setting. If not, adjust by rotating RV ⑨.

Note: Adjustment by RV ③ or RV ⑨ affects the meter level or meter  $\gamma$  each other. Therefore, one is adjusted, be sure to inspect the other.

Meter needle swing by rotation of RV ⑨ is larger at EV14 than at EV4. Therefore, adjust RV ⑨ so that the needle at EV14 will point as the needle at EV4 points, showing the similar deviation if any.

## 8) Shutter Speed Check

### a) Automatic shutter speed setting

| Sequence Check | F No. |     |    | Standard    |          |             |
|----------------|-------|-----|----|-------------|----------|-------------|
|                |       |     |    | Lower limit | Standard | Upper limit |
| 1              | 5.6   | 100 | 9  | 44.2        | 62.5     | 88.4        |
| 2              |       |     | 14 | 1.38        | 1.95     | 2.76        |
| 3              | 16    | 25  |    | 44.2        | 62.5     | 88.4        |
| 4              |       |     | 9  | 1414        | 2000     | 2828        |
| 5              | 2     | 400 |    | 1.38        | 1.95     | 2.76        |
| 6              |       |     | 4  | 44.2        | 62.5     | 88.4        |
| 7              | 5.4   | 100 |    | 1414        | 2000     | 2828        |

### b) Manual Shutter Speed Setting

| Speed setting | Standard    |          |             |
|---------------|-------------|----------|-------------|
|               | Lower limit | Standard | Upper limit |
| 1000          | 0.68        | 0.98     | 1.41        |
| 125           | 7.81        | 7.81     | 11.2        |
| 15            | 49.0        | 62.5     | 79.7        |
| 1             | 785         | 1000     | 1275        |
| 8             | 6277        | 8000     | 10190       |

## 9) Speedlight-coupling mechanism check

Tool: Speedlight-substitute tool(J15147)

- a) Auto shutter speed setting:  
Mounting J15147 and setting at ASA 100, F5.6 and EV9, shutter speed should be;  
1/90 sec.

- b) Manual shutter speed setting:  
When set at 1/250 sec. or higher setting with J15147 mounted, the ready light should continuously turn ON and OFF.

### Meter Accuracy Check

| ASA | F No. | EV | Needle points |
|-----|-------|----|---------------|
| 100 | 8     | 4  | 4             |
| 100 | 4     | 14 | 1000          |

## 10) Memory Check

- a) Set at ASA 100, F5.6 and EV9, and measure the shutter speed at Auto  
b) At the above settings, make the memory-lock operation. While changing exposure value (EV) from EV9 to EV14, measure the Auto shutter speed and compare the values with the values obtained without memory-lock operation. Extreme difference not permitted between the two.

#### 41 FRE Y Adjustment by use of Reference Table

- 1) Adjust RV 5 to get shutter speed of  $62.5 \pm 1.1$  ms at the settings of ASA12, exposure compensation setting +2, F5.6 and EV14.
- 2) Set the camera at ASA 3200, compensation 0, F5.6 and EV4, and read the shutter speed from the tester. Then, identify the corresponding speed in the FRE Y Adjustment Table, column T1. (Speed T1)
- 3) Keeping the settings of step (2) unchanged, adjust RV5 so as to change the speed in T1 to the speed in T2 column. (Speed T2)
- 4) Set the camera at the settings of step (1) and read the speed. Then, compare the value with the value in T2. The balance between the two should be within the value shown in the value shown in the table, column Balance. If out of the balance value, repeat the adjusting steps from (1).  
e.g.: If Speed T1 obtained at step (2) is 45, the corresponding T2 speed FRE Y Adjustment Table is 27.67(Follow down). Therefore, speed at Step (4) should be  $27.67 \pm 1.1$  because of the balance 1.1.

|         |       |       |       |       |       |       |       |       |       |       |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| T1      | 29    | 31    | 33    | 35    | 37    | 39    | 41    | 43    | 45    | 47    |
| T2      | 9.27  | 10.95 | 12.79 | 14.83 | 16.99 | 19.37 | 21.94 | 24.46 | 27.67 | 30.81 |
| Balance | 0.36  | 0.43  | 0.5   | 0.58  | 0.66  | 0.76  | 0.86  | 0.96  | 1.1   | 1.2   |
| T1      | 49    | 51    | 53    | 55    | 57    | 59    | 61    | 63    | 65    | 67    |
| T2      | 34.17 | 37.74 | 41.53 | 45.57 | 49.76 | 54.22 | 62.5  | 69.1  | 74.38 | 80.02 |
| Balance | 1.33  | 1.47  | 1.62  | 1.78  | 1.94  | 2.1   | 2.3   | 2.7   | 2.9   | 3.12  |
| T1      | 71    | 73    | 75    | 77    | 79    | 81    | 83    | 85    | 87    | 89    |
| T2      | 85.91 | 92.05 | 98.36 | 105.1 | 112.0 | 119.2 | 126.7 | 134.4 | 142.4 | 150.7 |
| Balance | 3.35  | 3.59  | 3.84  | 4.1   | 4.37  | 4.65  | 4.94  | 5.24  | 5.55  | 5.88  |
| T1      | 91    | 93    | 95    | 97    | 99    | 101   | 103   | 105   | 107   | 109   |
| T2      | 159.2 | 168.1 | 177.3 | 186.6 | 196.3 | 206.3 | 216.7 | 227.3 | 238.2 | 249.4 |
| Balance | 6.2   | 6.55  | 6.9   | 7.28  | 7.7   | 8.05  | 8.45  | 8.86  | 9.3   | 9.73  |
| T1      | 111   | 113   | 115   | 117   | 119   | 121   | 123   | 125   | 127   | 129   |
| T2      | 260.9 | 272.8 | 284.9 | 297.4 | 310.2 | 323.4 | 336.8 | 350.5 | 364.7 | 379.2 |
| Balance | 10.2  | 10.6  | 11.1  | 11.6  | 12.1  | 12.6  | 13.13 | 13.67 | 14.22 | 14.79 |

#### 42 Manual Speed Y Adjustment

- 1) Adjust RV 2 so as to get  $15.6 \pm 1$  ms at 1/60sec. manual setting
- 2) Set at 1/2sec. setting and read the shutter speed from the tester. Then, identify the corresponding speed in the Table below, column T1. (Speed T1)
- 3) Keep setting at 1/2sec., and adjust RV 2 so as to change the speed in T1 to that in T2 column. (Speed T2)
- 4) Setting at 1/60 sec. manual speed, read the speed. The speed should be within the value shown in the Table, Column T2/32(T2 speed + 32).  
If out of the value of T2/32 column, repeat the steps from (1).  
e.g. If Speed T1 obtained at step (2) is 420, the corresponding T2 speed is 580. Therefore, the speed at step (4) should be  $18.1 \pm 0.7$  ms.

Manual speed Y Adjustment Table

|       |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| T1    | 350                | 360                | 370                | 380                | 390                | 400                | 410                | 420                | 430                | 440                |
| T2    | 670                | 655                | 640                | 630                | 615                | 600                | 590                | 580                | 570                | 560                |
| T2/32 | 20.9<br>$\pm 0.8$  | 20.5<br>$\pm 0.8$  | 20<br>$\pm 0.8$    | 19.68<br>$\pm 0.8$ | 19.22<br>$\pm 0.8$ | 18.75<br>$\pm 0.7$ | 18.43<br>$\pm 0.7$ | 18.1<br>$\pm 0.7$  | 17.8<br>$\pm 0.7$  | 17.5<br>$\pm 0.7$  |
| T1    | 450                | 460                | 470                | 480                | 490                | 500                | 510                | 520                | 530                | 540                |
| T2    | 550                | 540                | 530                | 520                | 510                |                    | 495                | 490                | 483                | 475                |
| T2/32 | 17.18<br>$\pm 0.7$ | 16.88<br>$\pm 0.7$ | 16.56<br>$\pm 0.6$ | 16.24<br>$\pm 0.6$ | 15.94<br>$\pm 0.6$ |                    | 15.47<br>$\pm 0.6$ | 15.31<br>$\pm 0.6$ | 15.09<br>$\pm 0.6$ | 14.8<br>$\pm 0.6$  |
| T1    | 550                | 560                | 570                | 580                | 590                | 600                | 610                | 620                | 630                | 640                |
| T2    | 470                | 460                | 455                | 450                | 445                | 440                | 430                | 425                | 420                | 415                |
| T2/32 | 14.7<br>$\pm 0.6$  | 14.38<br>$\pm 0.6$ | 14.22<br>$\pm 0.5$ | 14.06<br>$\pm 0.5$ | 13.9<br>$\pm 0.5$  | 13.75<br>$\pm 0.5$ | 13.43<br>$\pm 0.5$ | 13.28<br>$\pm 0.5$ | 13.12<br>$\pm 0.5$ | 12.97<br>$\pm 0.5$ |
| T1    | 650                | 660                | 670                | 680                | 690                | 700                | 710                | 720                | 730                | 740                |
| T2    | 410                | 405                | 400                | 395                | 390                | 388                | 385                | 380                | 375                | 372                |
| T2/32 | 12.8<br>$\pm 0.5$  | 12.66<br>$\pm 0.5$ | 12.5<br>$\pm 0.5$  | 12.34<br>$\pm 0.5$ | 12.19<br>$\pm 0.5$ | 12.13<br>$\pm 0.5$ | 12.03<br>$\pm 0.5$ | 11.87<br>$\pm 0.5$ | 11.72<br>$\pm 0.5$ | 11.62<br>$\pm 0.5$ |
| T1    | 750                | 760                | 770                | 780                | 790                | 800                |                    |                    |                    |                    |
| T2    | 368                | 365                | 360                | 355                | 350                | 347                |                    |                    |                    |                    |
| T2/32 | 11.5<br>$\pm 0.5$  | 11.41<br>$\pm 0.5$ | 11.25<br>$\pm 0.5$ | 11.11<br>$\pm 0.5$ | 110.9<br>$\pm 0.5$ | 10.8<br>$\pm 0.5$  |                    |                    |                    |                    |

### 43. Shutter release - Hot-shoe Contact Inspection

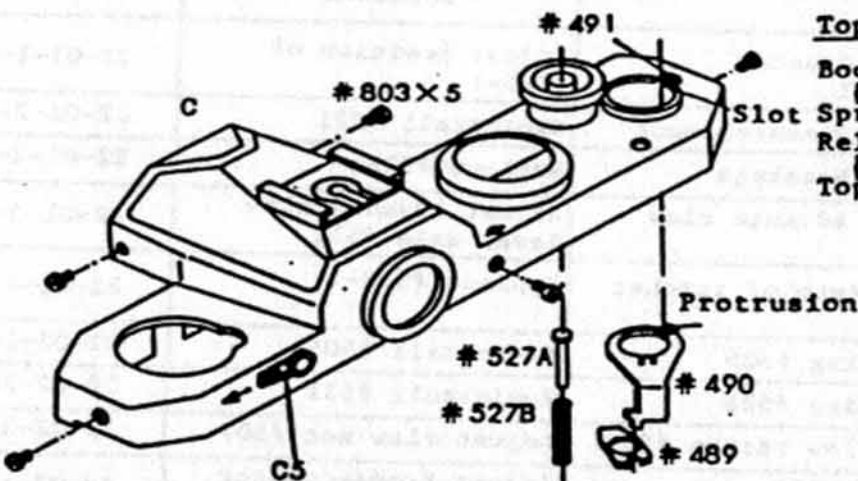


fig.59 Top cover Installation

#### Top Cover (Assy C) Installation

Body

Spring (#527 B-1)

Release middle shaft (#527A)

Top cover (C), Screw (#803x5)

Charge cam claw release lever (#489) should couple with Multi-exposure lever (#490).

Protrusion on #490 should engage into the cut of multi-exposure knob (#491)

Install checker lever ((C5) positioning the lever as illustrated in Figure 59

Be careful not to damage the cover of lead wires.

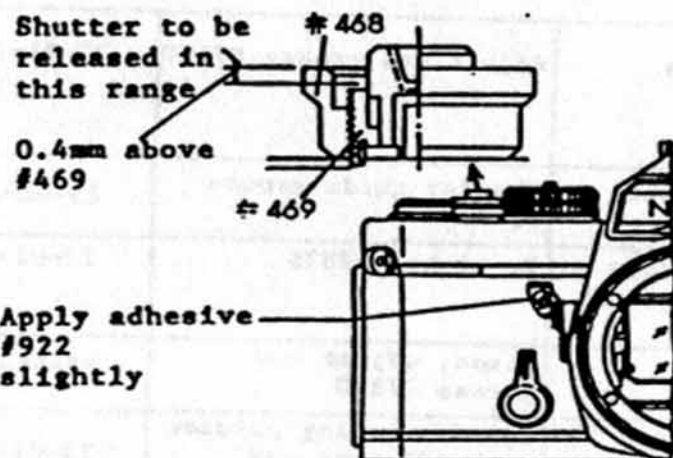


fig.60 Release button stroke

#### Shutter Release Timing

Shutter release button stroke:  
2.7±0.3mm

Shutter should be released when release button depressed within the depth below #468 down to 0.4mm above #469. The button's stroke is 1.7mm.

Tool: Micrometer J18002

Release stroke adjustment is possible by eccentric pin (#519A)

#### Hot-shoe contact inspection

Check with tool J15147 ready light (#94), Auto-set shutter speed, X contact conduction. Ready light ON/OFF

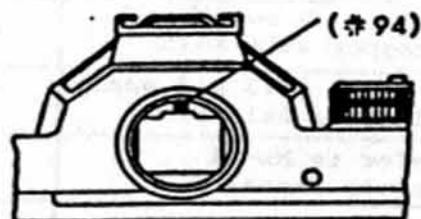


fig.61 Ready light

| Shutter Speed dial | Ready light |
|--------------------|-------------|
| Auto               | ON          |
| 1/1000 - 1/250sec. | OFF         |
| 1/125 - B          | ON          |

When ready light glows, auto-shutter speed should be automatically controlled to 1/90sec, regardless of the shutter speed indication inside the viewfinder.  
X contact conduction is observed by the illumination of LED on J15147  
Be careful not to release shutter with high-voltage insulation tester connected.

| Trouble                            | Cause                                                                                 |                                         | Solution                                        | Code No.  |
|------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------|-----------|
| Film-advance lever fails to return | Spool shaft spring (#529)                                                             | Disengagement                           | Re-install #529                                 | 21-01-1-1 |
|                                    |                                                                                       | Breakage                                | Replace spool shaft (A9)                        | 21-01-1-2 |
|                                    | Interference between pendulum #462 and ratchet cam (A10)                              |                                         | Adjust the positions of #538, #871 or both      | 21-01-2-1 |
| Idle film-advance operation        | Improper movement of charge cam claw (#414)                                           |                                         | Replace set cam (A10)                           | 21-02-1-1 |
|                                    | Inoperative blank exposure preventer lever (#26-1)                                    |                                         | Adjust #26-1                                    | 21-02-2-1 |
|                                    | Claw spring #412                                                                      | Disengagement                           | Re-install #412                                 | 21-02-3-1 |
|                                    |                                                                                       | Breakage                                | Replace #412                                    | 21-02-3-2 |
|                                    | Sprocket screw (#435) comes off                                                       |                                         | Supplement ⊖ #435                               | 21-02-4-1 |
|                                    | Spring #406                                                                           | Disengagement                           | Re-install #406                                 | 21-02-5-1 |
|                                    |                                                                                       | Breakage                                | Replace #406                                    | 21-02-5-2 |
| Inoperative multiple exposures     | Broken Film advance shaft (#408)                                                      |                                         | Replace #408                                    | 21-02-6-1 |
|                                    | Inoperative charge cam claw release lever #489                                        |                                         | Engage Multi-exposure lever #490 with #489      | 21-03-1-1 |
|                                    | Foreign material enters into camera body.                                             |                                         | Remove foreign material                         | 21-04-1-1 |
|                                    | Defective shutter #100                                                                |                                         | Replace #100                                    | 21-04-2-1 |
|                                    | Stick of Blank exposure preventer lever #26-1                                         |                                         | Adjust Motor switch coupling lever #25-1        | 21-04-3-1 |
| Inoperative film-advance lever     | Stick of Pendulum #462 in set cam A10                                                 |                                         | Adjust Rendulm eccentric axle #538 and #871     | 21-04-4-1 |
|                                    | Lock lever #464 fails to return                                                       | Disengagement of Lock lever spring #465 | Re-install #465                                 | 21-04-5-1 |
|                                    |                                                                                       | Broken #465                             | Replace #465                                    | 21-04-5-2 |
|                                    |                                                                                       | #464 rubs with #1 and #539              | Adjust and lubricate L 2113                     | 21-04-5-3 |
|                                    | Catch of Sprocket stopper A12                                                         | A12 rubs against associated parts       | Adjust #447 and #888 then lubricate L 2113      | 21-04-6-1 |
|                                    |                                                                                       | Disengagement of spring #450            | Re-install #450                                 | 21-04-6-2 |
|                                    |                                                                                       | Broken #450                             | Replace #450                                    | 21-04-6-3 |
|                                    | Shutter release shaft #527 fails to return due to defective Release shaft spring #536 |                                         | Re-install Release shaft E-ring #841            | 21-04-7-1 |
|                                    | MD Shaft #911 fails to return                                                         |                                         | Clean and lubricate L 2113                      | 21-04-8-1 |
|                                    |                                                                                       |                                         | Replace #911                                    | 21-04-8-2 |
| Inoperative Anti-reversing         | Screw #871 loosened                                                                   |                                         | Adjust position of Pendulum eccentric axle #538 | 21-05-1-1 |
|                                    | Pendulum spring #538A                                                                 | Disengagement                           | Re-install #538A                                | 21-05-2-1 |
|                                    |                                                                                       | Breakage                                | Replace #538A                                   | 21-05-2-2 |

| Trouble                                                   | Cause                                                                      |                           | Solution                                        | Code No.  |
|-----------------------------------------------------------|----------------------------------------------------------------------------|---------------------------|-------------------------------------------------|-----------|
| Inoperative sprocket<br>Anti-reversing                    | Improper movement of Anti-reversing claw A #443 and B #444                 |                           | Adjust #443 and #444                            | 21-06-1-1 |
|                                                           |                                                                            |                           | Replace Lower base plate A11                    | 21-06-1-2 |
|                                                           | Weak Anti-reversing claw spring #445                                       |                           | Adjust #445                                     | 21-06-2-1 |
|                                                           |                                                                            |                           | Replace Lower base plate A11                    | 21-06-2-2 |
| Excessive play of sprocket or Uneven frame-to-frame space | Incorrect position of sprocket stopper cam #429                            | Incorrect positioning     | Adjust position of #429                         | 21-07-1-1 |
|                                                           |                                                                            | Loose Gear set screw #824 | Adjust position of #429                         | 21-07-1-2 |
|                                                           | Sprocket stopper #447 bent                                                 |                           | Adjust #447                                     | 21-07-2-1 |
|                                                           |                                                                            |                           | Replace sprocket stopper A12                    | 21-07-2-2 |
|                                                           | Broken sprocket stopper spring #496                                        |                           | Replace #496                                    | 21-07-3-1 |
|                                                           |                                                                            |                           |                                                 |           |
| Overlapped exposures                                      | Pendulum #462 is released from Ratchet cam #530 too early                  |                           | Adjust position of Pendulum eccentric axle #538 | 21-08-1-1 |
|                                                           | Excessive play of sprocket                                                 |                           | Refer to code No. (21-07-1-1)-(21-07-3-1)       | 21-08-2-1 |
|                                                           | Weak spool tension                                                         |                           | Adjust tension (220 - 260g)                     | 21-08-3-1 |
| Failure to cock shutter                                   | Defective shutter #100                                                     |                           | Replace #100                                    | 21-09-1-1 |
|                                                           | Loose caulking of shutter charge lever A4                                  |                           | Replace A4                                      | 21-09-2-1 |
| Failure to charge mirror                                  | Loose caulking of charge lever A6                                          |                           | Replace A6                                      | 21-10-1-1 |
|                                                           | Poor engagement of Mirror-down latch lever #330 and Mirror-down lever B13. |                           | Adjust #330                                     | 21-10-2-1 |
|                                                           |                                                                            |                           | Replace #330                                    | 21-10-2-2 |
|                                                           |                                                                            |                           | Replace B13                                     | 21-10-2-3 |
|                                                           | Spring #289                                                                | Disengagement             | Re-install #289                                 | 21-10-3-1 |
|                                                           |                                                                            | Breakage                  | Replace #289                                    | 21-10-3-2 |
|                                                           | Bent tip of Mirror charge lever B11                                        |                           | Replace B11                                     | 21-10-4-1 |
| Excessive play of Film advance lever                      | Loose Wind-up lever screw #403                                             |                           | Re-tighten #403                                 | 21-11-1-1 |
| Abnormal sound during film-advance operation              |                                                                            |                           |                                                 | 21-12-1-1 |

## 2. Frame Counter Mechanism Trouble

35Fb - R.3012.A

| Trouble                          | Cause                                               | Solution                                 | Code No.  |
|----------------------------------|-----------------------------------------------------|------------------------------------------|-----------|
| Failure of frame counter advance | Improper position of Counter eccentric shaft #516-1 | Adjust position of #516-1                | 22-01-1-1 |
|                                  | Spring #521                                         | Disengagement                            | 22-01-2-1 |
|                                  |                                                     | Breakage                                 | 22-01-2-2 |
|                                  | Improper movement of advance claw #510-1            | Adjust advance claw lever axle #512      | 22-01-3-1 |
|                                  | Incorrect shape of teeth of ratchet #532-1          | Replace #532-1                           | 22-01-4-1 |
| Inoperative counter resetting    | Disengagement of spring #505                        | Re-install #505                          | 22-02-1-1 |
|                                  | Disengagement of spring #521                        | Re-install #521                          | 22-02-2-1 |
|                                  | Failure of ratchet claw return #506                 | Adjust claw nut #507                     | 22-02-3-1 |
| Disaligned Index                 | Loose lever axle nut #405                           | Adjust Frame-counter index #533 and #405 | 22-03-1-1 |

## 3. Shutter Release Mechanism Trouble

|                                              |                                                                         |                              |                                                       |           |
|----------------------------------------------|-------------------------------------------------------------------------|------------------------------|-------------------------------------------------------|-----------|
| Unsmooth shutter button operation            | Shutter release shaft #527 rubs against Body die-casting #1             |                              | Adjust and grease G7100                               | 23-01-1-1 |
|                                              | Release lever guide pin #879 rubs against body die-casting #1           |                              | Chamfer guide groove of #1                            | 23-01-2-1 |
|                                              | Loose release lever guide pin #879                                      |                              | Re-tighten #879                                       | 23-01-3-1 |
|                                              | Release button rubs against Release ring #469                           |                              | Clean, adjust and grease G7100                        | 23-01-4-1 |
|                                              | Mirror-up lever B12 rubs against Mirror-up stop lever #329              |                              | Grind engaging portion with oilstone and grease G7100 | 23-01-5-1 |
| Incorrect shutter release timing             | Incorrect position of Eccentric pin #519A                               |                              | Adjust position of #519A                              | 23-02-1-1 |
| Failure of Shutter release button depression | Lock lever #464 fails to return                                         |                              | Adjust movement of #464                               | 23-03-1-1 |
|                                              | Broken lock lever spring #465                                           |                              | Replace #465                                          | 23-03-2-1 |
|                                              | Switch lock lever P4 fails to disengage from shutter release shaft #527 | Disengagement of spring #476 | Re-install #476                                       | 23-03-3-1 |
|                                              |                                                                         | Broken #476                  | Replace #476                                          | 23-03-3-2 |
|                                              |                                                                         | P4 rubs against #473         | Adjust MD switch stopper axle #473                    | 23-03-3-3 |
| Unable to release shutter with motor drive   | Release connecting screw #913 comes off                                 |                              | Install #913 and apply adhesive #410 B/M              | 23-04-1-1 |
|                                              | Defective Motor Drive                                                   |                              | Refer to MD-11 Repair Manual                          |           |

## 4. Shutter Mechanism Trouble

35FB - R.3012.A

| Trouble                                    | Cause                                                           |                              | Solution                            | Code No.  |
|--------------------------------------------|-----------------------------------------------------------------|------------------------------|-------------------------------------|-----------|
| Incorrect shutter speed                    | Defective shutter #100                                          |                              | Replace #100                        | 24-01-1-1 |
|                                            | Electrical circuitry trouble                                    |                              | Refer to electrical troubleshooting |           |
| Shutter curtain jam during film advance    | Defective shutter #100                                          |                              | Replace #100                        | 24-02-1-1 |
| Shutter rear curtain fails to return       | Too tight Brake spring (#286-1)                                 |                              | Replace shutter brake B37           | 24-03-1-1 |
| Inoperative 'B' setting                    | Incorrect position of shutter 'B' lever eccentric screw of #100 |                              | Adjust position of eccentric screw  | 24-04-1-1 |
|                                            | Improper movement of shutter 'B' lever                          | Lever bent                   | Adjust #100                         | 24-04-2-1 |
|                                            |                                                                 |                              | Replace #100                        | 24-04-2-2 |
|                                            |                                                                 | Poor Eccentric axle caulking | Replace #100                        | 24-04-2-3 |
|                                            | Defective shutter #100                                          |                              | Replace #100                        | 24-04-3-1 |
| Shutter curtain fails to open at M90       | Defective shutter #100                                          |                              | Replace #100                        | 24-05-1-1 |
| Incorrect shutter speed at M90             | Defective shutter #100                                          |                              | Replace #100                        | 24-06-1-1 |
| Shutter speed sometimes becomes 'B' at M90 | Incorrect position of shutter 'B' lever eccentric screw of #100 |                              | Adjust #100                         | 24-07-1-1 |

## 5. Self-timer Mechanism Trouble

|                           |                                                        |           |                                    |           |
|---------------------------|--------------------------------------------------------|-----------|------------------------------------|-----------|
| Unable to cock self-timer | Defective self-timer                                   |           | Replace shutter #100               | 25-01-1-1 |
| Self-timer stops halfway  | Self-gear assembly                                     | Dust      | Clean self-gear assembly           | 25-02-1-1 |
|                           |                                                        | Defective | Replace shutter #100               | 25-02-1-2 |
| Unable to cancel setting  | Incorrect position of self-timer shaft eccentric screw |           | Adjust position of Eccentric screw | 25-03-1-1 |
|                           | Defective self-timer                                   |           | Replace shutter #100               | 25-03-2-1 |
|                           |                                                        |           |                                    |           |

## 6. Flash Synchronization Trouble

35FB - R.3012.A

| Trouble                                     | Cause                                                                                       |                                                      | Solution                                             | Code No.  |
|---------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|-----------|
| Poor synchronization                        | Incorrect X contact clearance of #100                                                       |                                                      | Adjust contact clearance                             | 26-01-1-1 |
|                                             |                                                                                             |                                                      | Replace #100                                         | 26-01-1-2 |
|                                             | Incorrect shutter speed at M90                                                              | Poor adjustment of Shutter 'B' lever eccentric screw | Adjust position of shutter 'B' lever eccentric screw | 26-01-2-1 |
|                                             |                                                                                             | Defective shutter #100                               | Replace #100                                         | 26-01-2-2 |
| Failure of flash output on hot-shoe contact | Defective sync socket #15                                                                   |                                                      | Replace #15                                          | 26-02-1-1 |
|                                             | X contact of #100                                                                           | Incorrect clearance                                  | Adjust clearance                                     | 26-02-2-1 |
|                                             |                                                                                             |                                                      | Replace #100                                         | 26-02-2-2 |
|                                             |                                                                                             | Contamination or dust                                | Clean contact                                        | 26-02-2-3 |
|                                             | Lead wire A #142<br>Lead wire B #143                                                        | Disconnection                                        | Replace #142 or #143                                 | 26-02-3-1 |
|                                             |                                                                                             | Disengagement                                        | Re-solder                                            | 26-02-3-2 |
|                                             | Incorrect clearance between upper shoe switch contact #69 and Lower shoe switch contact #70 | Bend of #69 or #70                                   | Adjust clearance between #69 and #70                 | 26-02-4-1 |
|                                             |                                                                                             | Loose nut #76                                        | Re-tighten #76                                       | 26-02-4-2 |
| Poor insulation                             | Defective sync. socket #15                                                                  |                                                      | Replace #15                                          | 26-03-1-1 |
|                                             | Lead wire A #142<br>Lead wire B #143                                                        | Broken vinyl cover                                   | Replace #142 or #143                                 | 26-03-2-1 |
|                                             |                                                                                             | Poor soldering                                       | Re-solder                                            | 26-03-2-2 |
|                                             | Defective Hot-shoe mould (C1)                                                               |                                                      | Replace C1                                           | 26-03-3-1 |
|                                             | Defective Ready-light printed circuit C6                                                    |                                                      | Replace C6                                           | 26-03-4-1 |

## 7. Lens Mount Mechanism Trouble

|                                           |                                   |                           |                        |           |
|-------------------------------------------|-----------------------------------|---------------------------|------------------------|-----------|
| Unable to release lens                    | Inoperative lens release lever B5 |                           | Clean and grease G7100 | 27-01-1-1 |
| Excessively tight or loose lens releasing | Bayonet spring #208 x 3           | Excessive spring pressure | Adjust bending of #208 | 27-02-1-1 |
|                                           |                                   | Weak spring pressure      | " "                    | 27-02-2-1 |
|                                           | Defective bayonet #202            |                           | Replace #202           | 27-02-2-1 |
|                                           |                                   |                           |                        |           |

| Trouble                                        | Cause                                                                    |                                 | Solution                                                      | Code No.  |
|------------------------------------------------|--------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------|-----------|
| Unsmooth Aperture Coupling ring operation      | Incorrect position of Bayonet mount #201                                 |                                 | Re-locate #201 to provide smooth operation of B4              | 23-01-1-1 |
|                                                | Improper combination of Bayonet mount #201 and Aperture coupling ring B4 |                                 | Change parts combination for proper match                     | 28-01-2-1 |
|                                                | Improper engagement of Brush coupling gear B25                           |                                 | Adjust position of B25                                        | 28-01-3-1 |
|                                                |                                                                          |                                 | Replace B25                                                   | 28-01-3-2 |
|                                                | Tread #269                                                               | Disengaged from Roller lever B7 | Re-install #269 Check position of Thread retaining plate #264 | 28-01-4-1 |
|                                                |                                                                          | Poor knot                       | Re-knot #269                                                  | 28-01-4-2 |
|                                                |                                                                          |                                 | Replace B25                                                   | 28-01-4-3 |
|                                                | Incorrect shape of Brush gear teeth #686                                 |                                 | Replace #686                                                  | 28-01-5-1 |
|                                                | Poor engagement of Brush gear #686 with Brush coupling gear B25          |                                 | Adjust play between #686 and B25                              | 28-01-6-1 |
|                                                | Brush B #698 disengages from FRE printed circuit J                       |                                 | Adjust position of #698                                       | 28-01-7-1 |
|                                                | Defective spring #694 of B25                                             | Insufficient spring pressure    | Replace B25                                                   | 28-01-8-1 |
|                                                |                                                                          | Broken #694                     | Replace B25                                                   | 28-01-8-2 |
|                                                | Uneven rotation of FRE                                                   |                                 | Adjust FRE rotation                                           | 28-01-9-1 |
|                                                |                                                                          |                                 | Replace FRE ring F2                                           | 28-01-9-2 |
| Coupling ring fails to couple with FRE         | Thread (269)                                                             | Sanpped                         | Replace Brush coupling gear B25                               | 28-02-1-1 |
|                                                |                                                                          | Disengagement                   | Re-knot #269                                                  | 28-02-1-2 |
|                                                |                                                                          |                                 | Replace B25                                                   | 28-02-1-3 |
| Excessive play of Aperture coupling piece      | Coupling Piece Spring                                                    | Bend                            | Adjust bending of #210                                        | 28-03-1-1 |
|                                                |                                                                          | Incorrect position              | Adjust position of #210                                       | 28-03-1-2 |
| Unable to release Aperture coupling piece      | Calking of Aperture coupling piece #209 comes off                        |                                 | Replace Aperture coupling ring B4                             | 28-04-1-1 |
| Incorrect Maximum Aperture (F1.4) compensation | Incorrect setting position of Brush coupling gear B25                    |                                 | Adjust position of coupling gear #224                         | 28-05-1-1 |
|                                                | Improper movement of Roller lever B7                                     |                                 | Adjust movement of B7                                         | 28-05-2-1 |
|                                                |                                                                          |                                 | Replace B7                                                    | 28-05-2-2 |
|                                                | Roller lever spring #267                                                 | Disengagement                   | Re-install #267                                               | 28-05-3-1 |
|                                                |                                                                          | Breakage                        | Replace #267                                                  | 28-05-3-2 |

## 9. Diaphragm Actuating Lever Trouble

35FB - R.3012.A

| Trouble                                                                 | Cause                                                                                                |               | Solution                                                                                      | Code No.  |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------|-----------|
| Inoperative Diaphragm actuating lever                                   | Diaphragm lever spring #340                                                                          | Disengagement | Re-install #340                                                                               | 29-01-1-1 |
|                                                                         |                                                                                                      | Breakage      | Replace #340                                                                                  | 29-01-1-2 |
| Failure to open to maximum aperture                                     | Incorrect height of Diaphragm actuating lever B10, with shutter cocked                               |               | Adjust height to be 3.1 +1 -0 by Eccentric pin #356                                           | 29-02-1-1 |
| Shutter is released while stroking film advance lever with lens mounted | Insufficient difference of height of B10 between before shutter cocking and after shutter releasing. |               | After releasing shutter adjust Down lever eccentric axle #367 Difference to be 0.15mm or more | 29-03-1-1 |
| Incorrect height of Diaphragm actuating lever, with shutter cocked      | Shock absorb rubber #363 comes off                                                                   |               | Affix #363 with adhesive #501                                                                 | 29-04-1-1 |

## 10. Reflex-Mirror Mechanism Trouble

|                                                      |                                                        |                                          |                               |           |
|------------------------------------------------------|--------------------------------------------------------|------------------------------------------|-------------------------------|-----------|
| Abnormal mirror sound                                | Inoperative Air damper B20                             |                                          | Replace B20                   | 30-01-1-1 |
|                                                      | Cushion rubber #372 comes off                          |                                          | Affix #372 with adhesive #501 | 30-01-2-1 |
|                                                      | Incorrect spring pressure of Brake spring #286-1       |                                          | Replace B37                   | 30-01-3-1 |
|                                                      | Excessive play between Mirror holder B26 and Mirror G1 | Defective Mirror holder A #345 or B #346 | Replace B26                   | 30-01-4-1 |
|                                                      |                                                        | G1 comes off                             | Affix G with adhesive #501    | 30-01-4-2 |
| Incorrect position of Mirror                         | Incorrect angle of Mirror holder A #345 and B #346     |                                          | Adjust #345 and #346          | 30-02-1-1 |
|                                                      |                                                        |                                          | Replace Mirror holder B26     | 30-02-1-2 |
| Too early or late mirror-rising                      | Incorrect position of Eccentric pin #356               |                                          | Adjust #356                   | 30-03-1-1 |
| Mirror stops midway during operation                 | Air damper B20 jams                                    | Contamination                            | Clean B20                     | 30-04-1-1 |
|                                                      |                                                        | Rust                                     | Replace B20                   | 30-04-1-2 |
| Shift of Mirror position dependent on camera holding | Mirror spring (s) #379                                 | Insufficient spring pressure             | Replace #379                  | 30-05-1-1 |
|                                                      |                                                        | Breakage                                 | Replace #379                  | 30-05-1-2 |

## 11. Viewfinder Mechanism Trouble

35FB - R.3012.A

| Trouble                                               | Cause                                                   |                                           | Solution                                  | Code No.  |
|-------------------------------------------------------|---------------------------------------------------------|-------------------------------------------|-------------------------------------------|-----------|
| Improper infinity focusing                            | Improper movement of 45° stopper B16                    |                                           | Adjust B16                                | 31-01-1-1 |
|                                                       |                                                         |                                           | Replace B16                               | 31-01-1-2 |
|                                                       | Excessive play between Mirror holder B26 and Mirror G1  | Defective Mirror holder A #345 and B #346 | Adjust #345 and #346                      | 31-01-2-1 |
|                                                       |                                                         |                                           | Replace B26                               | 31-01-2-2 |
|                                                       | Deformation of Mirror holder B26                        | G1 comes off                              | Affix G1 with adhesive #501               | 31-01-2-3 |
|                                                       |                                                         | Deformed Mirror holder #301               | Replace B26                               | 31-01-3-2 |
|                                                       |                                                         | Loose calking of pin A #307               | Replace B26                               | 31-01-3-2 |
|                                                       |                                                         | Loose calking of pin B #308               | Replace B26                               | 31-01-3-3 |
| Incorrect picture format                              | Incorrect mirror angle                                  |                                           | Adjust 45° stopper B16                    | 31-02-1-1 |
|                                                       | Incorrect position of Prism box B39                     |                                           | Adjust position of B39                    | 31-02-2-1 |
| Poor viewing                                          | Fresnel screen G2                                       | Distortion                                | Replace G2                                | 31-03-1-1 |
|                                                       |                                                         | Poor installation                         | Adjust G2 installation                    | 31-03-1-2 |
|                                                       | Incorrect position of Prism box B39                     |                                           | Adjust height of B39                      | 31-03-2-1 |
|                                                       | Incorrect mirror angle                                  |                                           | Adjust 45° stopper B16                    | 31-03-3-1 |
| Fresnellens prone to come off                         | Insufficient spring pressure of screen lock spring #240 |                                           | Adjust #240                               | 31-04-1-1 |
| Incorrect position of T-film                          | Incorrect position of shutter speed control R           |                                           | Adjust position of R                      | 31-05-1-1 |
| Incorrect position of lens aperture indication window | Poor adjustment of Reflex Mirror G6                     |                                           | Adjust G6                                 | 31-06-1-1 |
|                                                       | Poor adjustment of G10                                  |                                           | Adjust G10                                | 31-06-2-1 |
|                                                       | Incorrect position of Prism box B39                     |                                           | Adjust position of B39                    | 31-06-3-1 |
| Incorrect position of green needle                    |                                                         |                                           | Adjust R                                  | 31-07-1-2 |
|                                                       |                                                         |                                           | Replace R                                 | 31-07-1-2 |
| Poor focusing                                         | Improper infinite focusing                              |                                           | Refer to Code No. (31-01-1-1)-(31-01-3-3) |           |
|                                                       | Incorrect flange back                                   |                                           | Adjustment                                | 31-08-1-1 |
| Aluminum plating separation on penta prism            |                                                         |                                           | Replace G3                                | 31-09-1-1 |
| Dust or contamination in viewfinder                   |                                                         |                                           | Clean                                     | 31-10-1-1 |
| Scratch on fresnel screen                             |                                                         |                                           | Replace G2                                | 31-11-1-1 |
|                                                       |                                                         |                                           |                                           |           |

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### 13. Memory Lock Mechanism Trouble

|                         |                                |                                      |           |
|-------------------------|--------------------------------|--------------------------------------|-----------|
| Inoperative memory lock | Memory switch fails to be OFF  | Adjust by bending Memory switch #934 | 33-01-1-1 |
|                         | Defective electrical circuitry | Refer to Electrical Trouble shooting |           |
|                         |                                |                                      |           |

## 14. ASA Setting Mechanism Trouble

35FB - R.3012.A

| Trouble                                       | Cause                                                                                     |                              | Solution                                            | Code No.  |
|-----------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------|-----------|
| Unsmooth rotation of ASA film speed ring      | Tight rotation of FRE(F2)                                                                 |                              | Adjust and clean FRE ring F2                        | 34-01-1-1 |
|                                               |                                                                                           |                              | Replace FRE ring F2                                 | 34-01-1-2 |
| Unable to change ASA setting                  | Protrusion of ASA click spring #670 does not disengage from ASA click plate #676          |                              | Adjust bending of #670                              | 34-02-1-1 |
| Unable to lock ASA setting                    | Protrusion of ASA click spring #670 does not fit into the cut-out of ASA click plate #676 |                              | Adjust bending of #670                              | 34-03-1-1 |
|                                               | Loose ASA dial #672                                                                       |                              | Secure knob lock lever shaft #689 with screw ⊕ #802 | 34-03-2-1 |
| Disaligned ASA index                          | ASA dial #672 comes off                                                                   |                              | Affix #672 with adhesive #501                       | 34-04-1-1 |
| Unsmooth rotation of Exposure correction ring | Exposure correction spring #692                                                           | Insufficient spring pressure | Adjust #692                                         | 34-05-1-1 |
|                                               |                                                                                           | Contamination                | Clean #692                                          | 34-05-1-2 |
|                                               | Unsmooth rotation of FRE ring F2                                                          |                              | Adjust and clean F2                                 | 34-05-2-1 |
|                                               |                                                                                           |                              | Replace F2                                          | 34-05-2-2 |
| Unable to compensate exposure                 | Broken Exposure correction click pin #695                                                 |                              | Replace ASA dial F4                                 | 34-06-1-1 |

## 15. Rewinding Mechanism Trouble

|                                                           |                                                         |                                        |                                      |           |
|-----------------------------------------------------------|---------------------------------------------------------|----------------------------------------|--------------------------------------|-----------|
| Unsmooth rewinding                                        | Creak of Rewind shaft #652 and Release shaft guide #665 |                                        | Clean #652 and #665 and grease G7100 | 35-01-1-1 |
|                                                           |                                                         |                                        | Replace #652                         | 35-01-1-2 |
|                                                           |                                                         |                                        | Replace #665                         | 35-01-1-3 |
| Inoperative camera back latch release                     | Spring #655                                             | Disengagement                          | Re-install #652                      | 35-02-1-1 |
|                                                           |                                                         | Breakage                               | Replace #665                         | 35-02-1-2 |
| Difficult to lift up rewind knob when opening camera back | Improper movement of Latch B #708                       |                                        | Clean contact of #708                | 35-03-1-1 |
| Inoperative Film rewind button                            | AR lever #537                                           | Improper movement                      | Adjust #537                          | 35-04-1-1 |
|                                                           |                                                         | Disengagement of AR lever spring #537B | Re-install #537B                     | 35-04-1-2 |
|                                                           |                                                         | Broken AR lever spring #537B           | Replace #537B                        | 35-04-1-3 |
|                                                           |                                                         |                                        |                                      |           |

## 16. Battery Consumption Trouble

35FB - R.3012.A

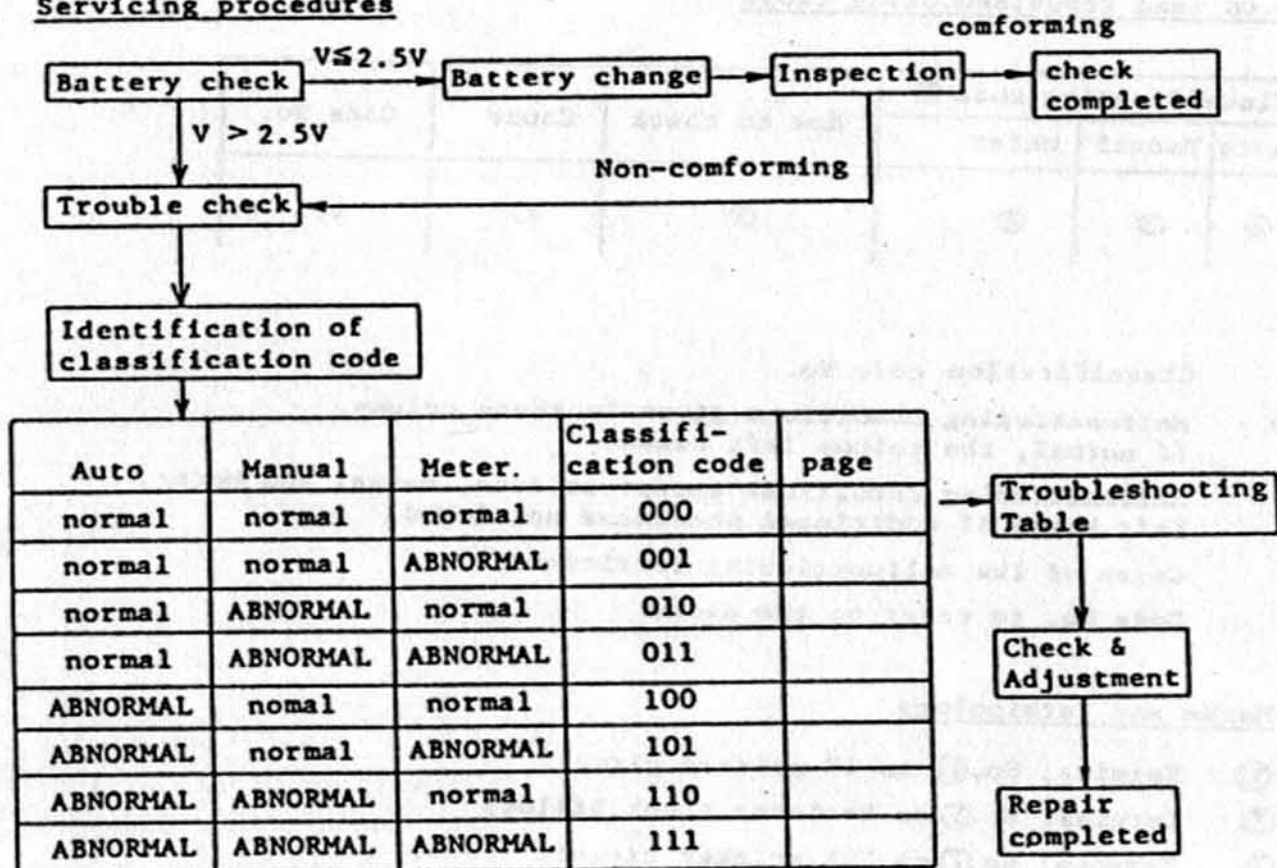
| Trouble                                                 | Cause                                                                                            | Solution                               | Code No.  |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------|-----------|
| Poor insulation between MD external contact pin ① and ② | Lever switch contact A #487 touches B #488                                                       | Adjust clearance between #487 and #488 | 36-01-1-1 |
|                                                         | Vinyl cover of Lead wire #126(Orange) (Red) is broken and comes in contact with Body die-casting | Replace #126                           | 36-01-2-1 |
|                                                         | Poor soldering of Lead wire #126                                                                 | Re-solder #126                         | 36-01-3-1 |
|                                                         | Defective electrical mechanism                                                                   | Refer to electrical trouble shooting   |           |

## 17. MD External Contact Pin Mechanism Trouble

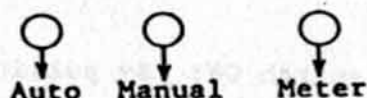
|                                     |                                                         |                                                                                                        |                                            |           |
|-------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------|
| Failure to operate with motor drive | Poor conduction between MD external contact pin ① and ② | Poor contact of MD terminal pin                                                                        | Clean and adjust                           | 37-01-1-1 |
|                                     |                                                         | Poor contact between MD take-up switch A(#906-1) and B(#907-1)                                         | Clean #906-1 and #907-1                    | 37-01-2-1 |
|                                     |                                                         |                                                                                                        | Adjust clearance between #906-1 and #907-1 | 37-01-2-2 |
|                                     |                                                         |                                                                                                        | Replace Battery chamber A5                 | 37-01-2-3 |
|                                     |                                                         | Poor contact of MD switch K3                                                                           | Clean #904 and #905                        | 37-01-3-1 |
|                                     |                                                         |                                                                                                        | Adjust clearance between #904 and #905     | 37-01-3-2 |
|                                     |                                                         | Poor operation of switch lock lever P4                                                                 | Adjust P4                                  | 37-01-4-1 |
|                                     |                                                         |                                                                                                        | Replace P4                                 | 37-01-4-2 |
|                                     |                                                         | Switch stopper spring #476 of P4 disengaged or broken                                                  | Re-install #476                            | 37-01-4-3 |
|                                     |                                                         |                                                                                                        | Replace #476                               | 37-01-4-4 |
|                                     | MD external contact pin ① and ② fail to be OFF          | Disconnection or poor soldering of Lead wire (#136, #137, #138)                                        | Replace #136, #137, #138                   | 37-01-5-1 |
|                                     |                                                         |                                                                                                        | Re-solder #136, #137, #138                 | 37-01-5-2 |
|                                     |                                                         | Soldered portion of MD switch K3 contacts upper base plate K                                           | Re-solder                                  | 37-02-1-1 |
|                                     |                                                         | MD take-up switch A #906-1 and B #907-1 contact body die-casting                                       | Adjust bending of #906-1 and #907-1        | 37-02-2-1 |
|                                     |                                                         |                                                                                                        | Replace Battery chamber A5                 | 37-02-2-2 |
|                                     |                                                         | Short-circuit between Lead wire (#136, #137, #138) and Body die-casting due to breakage of vinyl cover | Replace #136, #137, #138                   | 37-02-3-1 |
|                                     | Camera body only operative                              | Defective motor drive                                                                                  | Refer to MD repair manual                  |           |



# 1. Servicing procedures

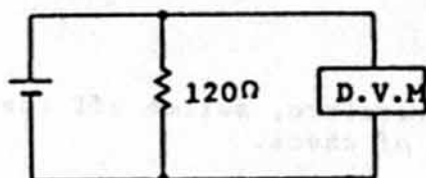


Note: Classification code is represented by three figures. The first figure from the left represents the normal or abnormal Condition of Auto setting. The middle figure is for the condition of manual setting, and the last figure for the condition of meter needle indication. If the operation is normal, "0" will be given in the corresponding place, and "1" if abnormal.



e.g. Auto      Manual      Meter  
          ↓            ↓            ↓  
      Normal      Abnormal      Normal  
          0            1            0      → thus classification code is 010

## Battery check



$V < 2.5V$ : conforming  
 $V \geq 2.5V$ : Nonforming

D.V.M: Digital Volt meter

## How to check the trouble

Use power source box (J19024) and Battery tool (J15148).  
 Unless otherwise specified, check at the settings of ASA100 and F5.6.

## 2. How to read troubleshooting table

| Classification code ① |        |       | How to check | Cause | Code No. |
|-----------------------|--------|-------|--------------|-------|----------|
| Auto                  | Manual | Meter |              |       |          |
| ②                     | ③      | ④     | ⑤            | ⑥     | ⑦        |

①: Classification code No.

②,③,④: Malfunctioning conditions given in these column.  
If normal, the columns left blank.

⑤: Malfunctioning conditions except at Auto, Manual and Meter.  
Left blank if additional phenomena not found.

⑥: Cause of the malfunctioning conditions

⑦: Code No. to refer to the cause

### Marks and Terminology

#101 ①: Terminal No. ① on IC printed circuit

#108 ①: Terminal No. ① on Resistor block B(#108)

#630 ⑦: Terminal No. ⑦ on FRE printed circuit (#630)

#100 Tr +: Terminal Tr + on shutter printed circuit (#100)

#570 AA: Terminal AA on manual printed circuit (#570)

Lever switch ON: By pulling out the film-advance lever to stand-off position.

Trigger switch ON: By turning the film-advance lever.

Shutter switch ON: Switches on while mirror is rising. To facilitate the check by keeping the switch ON, set the self-timer and depress the shutter release button, holding the mirror with finger to allow the mirror to gently rise.

Icc: Current at Power source

### Standard Icc

With lever switch ON: Approx. 1 - 2.5mA

With Trigger switch ON: Approx. 1 - 2.5mA

With Shutter switch ON: Approx. 12 - 20mA

Note: Extremely large Icc may damage the IC. Therefore, switch off the power source immediately after completion of check.

### 3. Switches

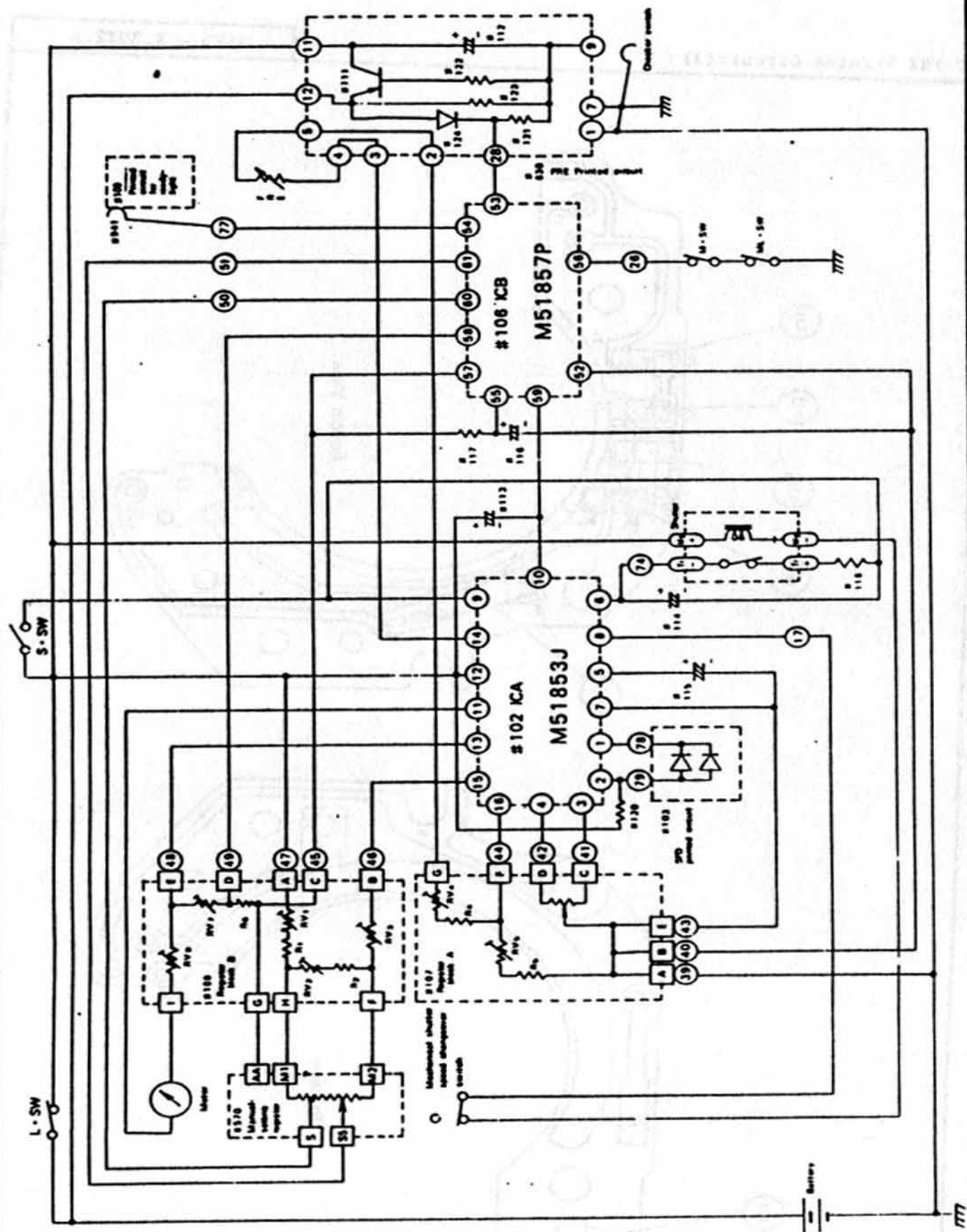
| Description                   | Abbreviation | Position              |
|-------------------------------|--------------|-----------------------|
| Lever switch                  | L. sw        | Lower base plate      |
| Mirror switch                 | M. Sw        | Front plate           |
| Shutter switch                | S. Sw        | Front plate           |
| Trigger switch                | Tr. Sw       | Shutter               |
| Second curtain switch         |              | Battery chamber       |
| Synch switch                  |              | Shutter               |
| MD switch                     | MD Sw        | Upper base plate      |
| Memory lock switch            | ML Sw        | Front plate           |
| Mech. speed changeover switch |              | Shutter speed control |
| Checker switch                |              | FRE Printed circuit   |

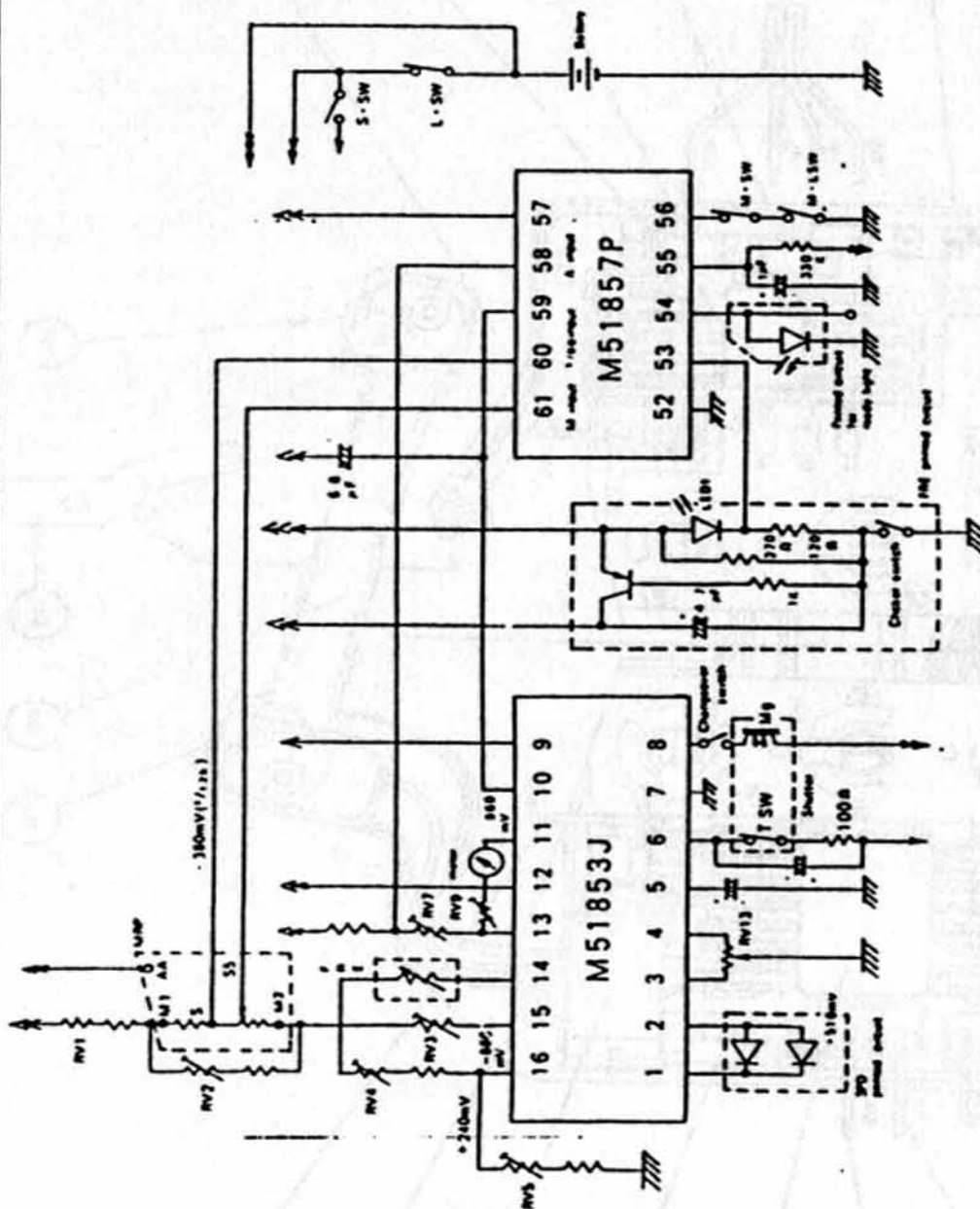
#### Switch Operation

| Camera operation               | Film-advance lever pulled out | Film-advance starts | Film-advance finished | Shutter button pushed | Mirror-up starts | Shutter-release starts | Mirror-up finished                        | 1st curtain starts | 1st curtain travel finished | 2nd curtain starts | 2nd curtain travel finished | Mirror-down starts | Mirror-down finished | Film-advance lever pressed back                    |
|--------------------------------|-------------------------------|---------------------|-----------------------|-----------------------|------------------|------------------------|-------------------------------------------|--------------------|-----------------------------|--------------------|-----------------------------|--------------------|----------------------|----------------------------------------------------|
| L. Sw                          | ON                            |                     |                       |                       |                  |                        |                                           |                    |                             |                    |                             |                    |                      | OFF                                                |
| M. Sw                          |                               |                     |                       |                       |                  | OFF                    |                                           |                    |                             |                    |                             |                    |                      |                                                    |
| S. Sw                          |                               |                     |                       |                       |                  |                        | ON immediately after M. Sw OFF            |                    |                             |                    |                             |                    |                      |                                                    |
| Tr. Sw                         |                               | ON                  |                       |                       |                  |                        | OFF immediately before 1st curtain travel |                    |                             |                    |                             | ON                 |                      |                                                    |
| 2nd curtain Sw                 |                               | OFF                 |                       |                       |                  |                        |                                           |                    |                             |                    |                             |                    |                      |                                                    |
| Synch. Sw                      |                               |                     |                       |                       |                  |                        |                                           | ON                 |                             | OFF                |                             |                    |                      |                                                    |
| MD. Sw                         | OFF                           |                     |                       |                       |                  |                        |                                           |                    |                             |                    |                             |                    |                      | ON                                                 |
| ML Sw.                         |                               |                     |                       |                       |                  |                        |                                           |                    |                             |                    |                             |                    |                      | OFF when memory lock lever pressed toward the lens |
| Mech. speed change-over switch |                               |                     |                       |                       |                  |                        |                                           |                    |                             |                    |                             |                    |                      | OFF at "B" and M90                                 |
| Checker switch                 |                               |                     |                       |                       |                  |                        |                                           |                    |                             |                    |                             |                    |                      | ON when checker lever lowered                      |

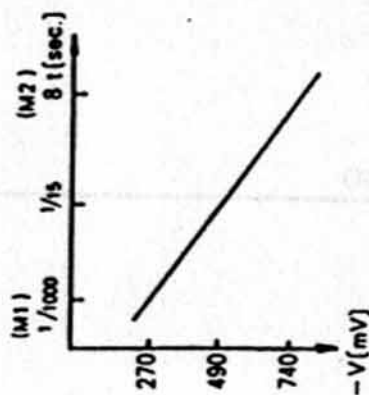
#### 4. Circuitry Diagram

35FB - R.3012.A





Voltage/Shutter speed relation  
(determined at computing  
circuit)



#### M51853 J:

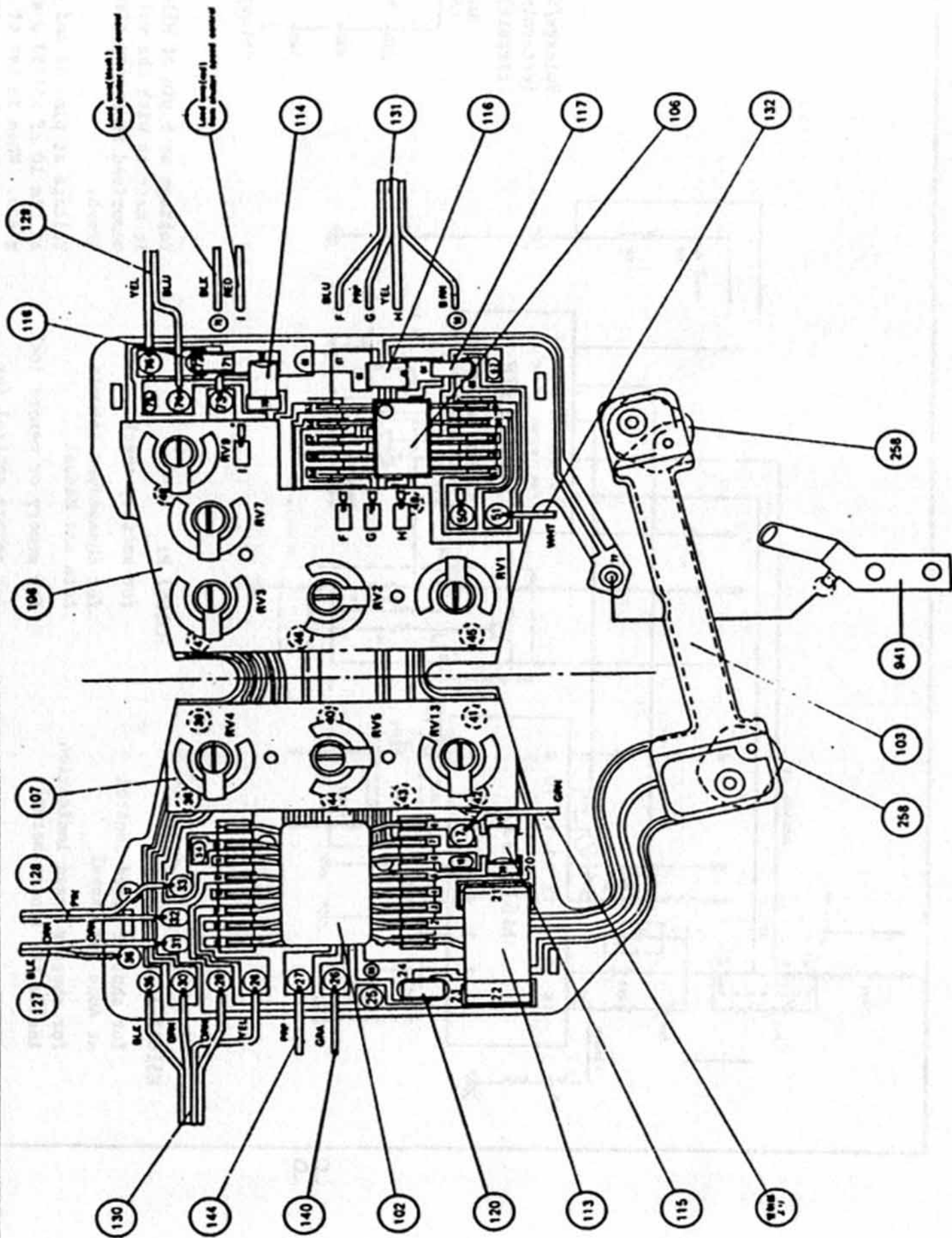
for shutter speed control  
at Auto and Manual  
for shutter speed indication  
inside the finder(meter)

#### M51857 P:

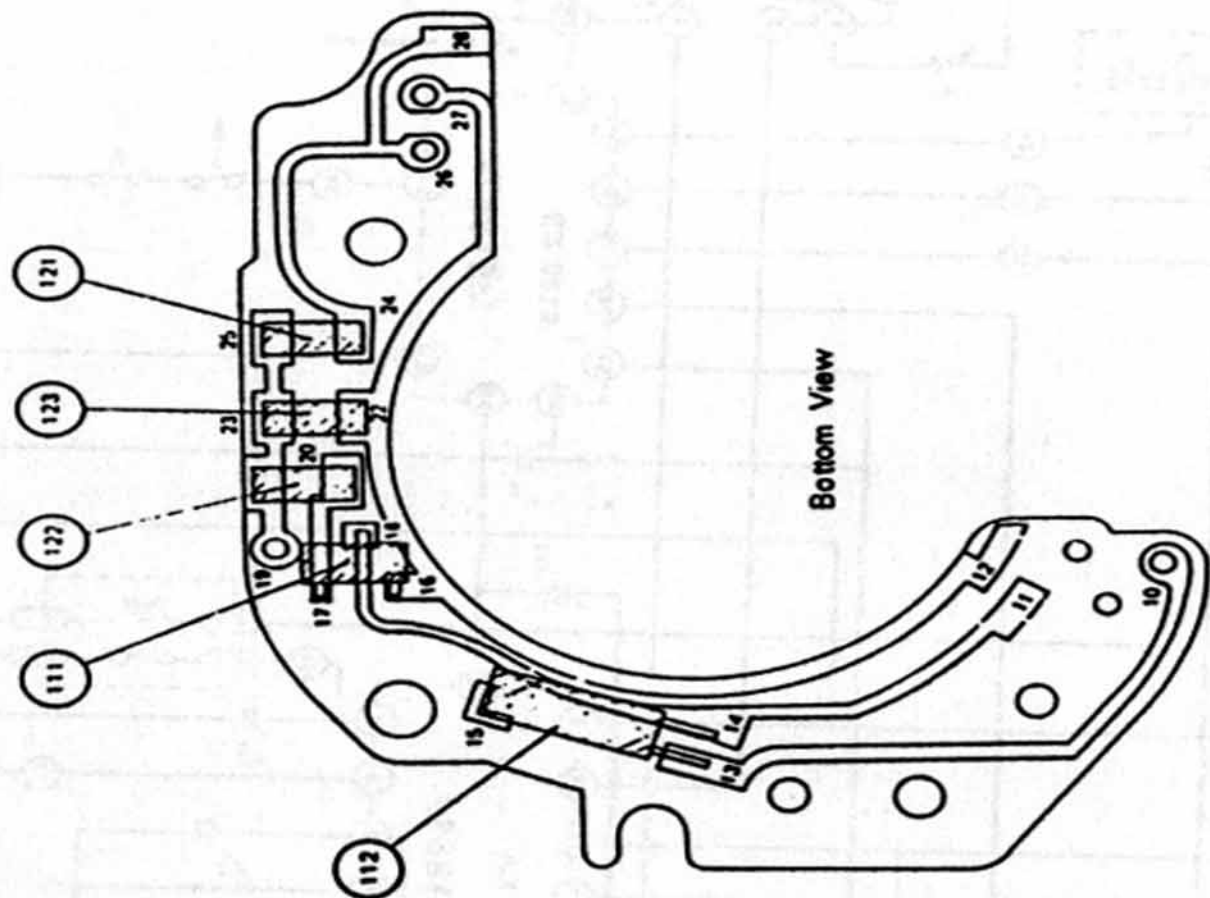
for battery check  
for changeover between  
Auto and Manual  
for memory or memory lock  
for camera control for  
proper SB-10 operation

Voltage at 6 pin of M51853 J varies until  
it matches with the voltage(shutter speed)  
memorized in memory circuit as shown in the  
graph.

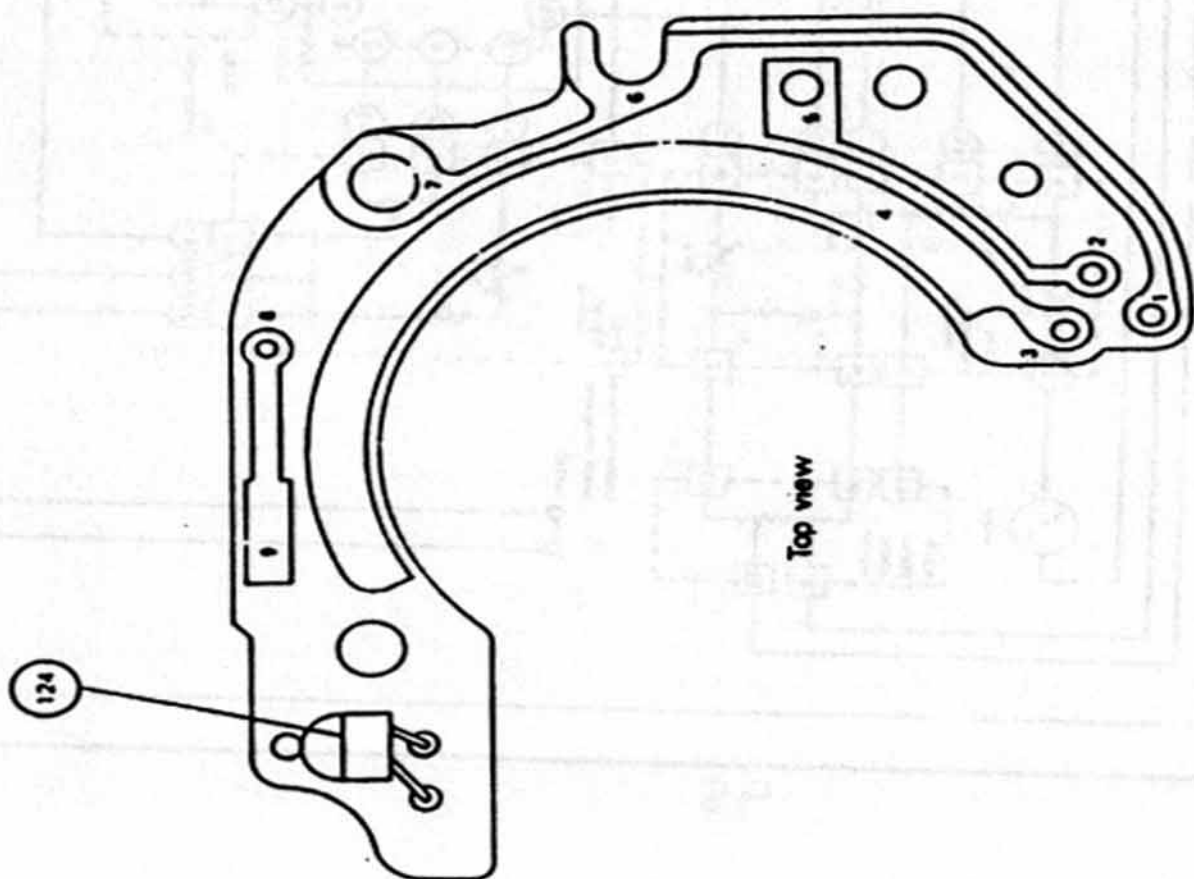
Voltage at pins 59 and 61 of M51857 P, and  
at pin 10 of M51853 J are traceable from the  
graph. When in use of SB-10 at Auto,  
voltage of approx. - 400mV(1/90)



Bottom View



Top view



| Classification Code: 000 |        |       | How to check                                                                                                                           | Cause                                                          | Code No. |
|--------------------------|--------|-------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------|
| Auto                     | Manual | Meter |                                                                                                                                        |                                                                |          |
|                          |        |       | Failure of memory lock                                                                                                                 | Memory Lock cord, Black (#139) shorts to body                  | 000-01-1 |
|                          |        |       |                                                                                                                                        | Memory lock switch (#934) shorts to body                       | 000-01-2 |
|                          |        |       |                                                                                                                                        | Switch (#934) does not switch OFF                              | 000-01-3 |
|                          |        |       |                                                                                                                                        | Mirror switch (#928) shorts to body                            | 000-01-4 |
|                          |        |       | With Trigger switch ON, Icc of Approx. 15mA                                                                                            | Short between Orange and Pink shutter switch cords (#128)      | 000-02-1 |
|                          |        |       |                                                                                                                                        | Short between terminals ⑫ and ⑬ or between ⑫ and ⑬ on #101     | 000-02-2 |
|                          |        |       |                                                                                                                                        | Self-timer switch does not switch off                          | 000-02-3 |
|                          |        |       | with shutter switch ON, Icc of 40-45mA current flows                                                                                   | Short between Tr + and X on #100                               | 000-03-1 |
|                          |        |       | with lever switch OFF, Icc of Approx. 2mA<br>Too fast battery consumption                                                              | Lever switch does not switch OFF                               | 000-04-1 |
|                          |        |       |                                                                                                                                        | Short between Red and Orange cords (#126)                      | 000-04-2 |
|                          |        |       |                                                                                                                                        | Short between terminals ⑪ and ⑫ on #630                        | 000-04-3 |
|                          |        |       | with lever switch OFF, Icc of Approx. 10mA or extremely large Icc.<br>Too fast battery consumption checker always glow on or is broken | Checker cord, Purple (#144) shorts to body                     | 000-05-1 |
|                          |        |       | with checker switch ON, needle jumps down to B-M zone limit                                                                            | Resistor C (#120) unsoldered between terminals ③ and ④ on #101 | 000-06-1 |
|                          |        |       | Failure of checker LED illumination                                                                                                    | Lead wire A, Red (#133)                                        | 000-07-1 |
|                          |        |       |                                                                                                                                        | Cord, Red (#133) unsoldered from #49 or #630 ②                 | 000-07-2 |
|                          |        |       |                                                                                                                                        | Checker resistor A (#121) unsoldered between ② and ③ on #630   | 000-07-3 |
|                          |        |       |                                                                                                                                        | Checker LED (#124) unsoldered from ⑥ or ⑦ on #630              | 000-07-4 |
|                          |        |       |                                                                                                                                        | Short between ⑦ and ⑧ on #630                                  | 000-07-5 |
|                          |        |       | With checker switch ON LED glows down to Vcc of approx. 1.5V<br>With lever switch ON Normal Vcc                                        | Checker resistor B (#122) unsoldered between ② and ③ on #630   | 000-08-1 |
|                          |        |       |                                                                                                                                        | Base of transistor (#111) unsoldered from #630 ⑦               | 000-08-2 |
|                          |        |       |                                                                                                                                        | Emitter of #111 unsoldered from #630 ⑧                         | 000-08-3 |
|                          |        |       |                                                                                                                                        | Corrector of #111 unsoldered from #630 ⑨                       | 000-08-4 |
|                          |        |       |                                                                                                                                        |                                                                |          |

| Classification Code: 000 |        |       | How to check                                                                                   | Cause                                                                              | Code No. |
|--------------------------|--------|-------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------|
| Auto                     | Manual | Meter |                                                                                                |                                                                                    |          |
|                          |        |       | With checker switch ON, LED glows down to Vcc of approx. 1.5V                                  | FRE cord, Orange (#130) broken                                                     | 000-09-1 |
|                          |        |       |                                                                                                | #130 (Orange) unsoldered from #101 (29) or #630 (13)                               | 000-09-2 |
|                          |        |       |                                                                                                | Checker cord, purple (#144) broken                                                 | 000-09-3 |
|                          |        |       |                                                                                                | #144 (Purple) unsoldered from #101 (27) or #630 (28)                               | 000-09-4 |
|                          |        |       | By use of SB-10, Auto speed becomes Time. If set at manual speed, Ready-light turns on and off | Shutter speed control cord A Brown (#131) broken                                   | 000-10-1 |
|                          |        |       |                                                                                                | #131 (Brown) unsoldered from #101 (60) or #570 (5)                                 | 000-10-2 |
|                          |        |       | By use of SB-10, Ready-light fails to turn ON, and Auto speed does not become 1/90 sec.        | Shoe connecting contact A (#941) shorts to body                                    | 000-11-1 |
|                          |        |       |                                                                                                | Poor contact of #941                                                               | 000-11-2 |
|                          |        |       |                                                                                                | Signal contact (#77) in poor contact                                               | 000-11-3 |
|                          |        |       | SB-10 does not flash                                                                           | Synch cord A, Blue (#142) broken                                                   | 000-12-1 |
|                          |        |       |                                                                                                | #142 (Blue) unsoldered from #100 (X) or shoe connecting contact B (#942)           | 000-12-2 |
|                          |        |       |                                                                                                | Synch cord B, Blue (#143) broken                                                   | 000-12-3 |
|                          |        |       |                                                                                                | #143 (Blue) unsoldered from shoe connecting contact B (#942) or synch socket (#15) | 000-12-4 |
|                          |        |       |                                                                                                | Poor contact of #942                                                               | 000-12-5 |
|                          |        |       |                                                                                                | Upper and lower shoe switch contact (#69, #70) does not switch ON                  | 000-12-6 |
|                          |        |       |                                                                                                | X contact on #100 does not switch ON                                               | 000-12-7 |
|                          |        |       |                                                                                                | Synch contact (#75) in poor contact                                                | 000-12-8 |
|                          |        |       | Immediately when SB-10 charged, continuous flash output occurs                                 | Synch cord A, Blue (#142) shorts to body                                           | 000-13-1 |
|                          |        |       |                                                                                                | Synch cord B, Blue (#143) shorts to body                                           | 000-13-2 |
|                          |        |       |                                                                                                | Shoe connecting contact B (#942) shorts to body                                    | 000-13-3 |
|                          |        |       |                                                                                                | Lower shoe switch contact (#70) shorts to body                                     | 000-13-4 |
|                          |        |       |                                                                                                | X contact on #100 does not turn OFF                                                | 000-13-5 |
|                          |        |       |                                                                                                | #100 (X) shorts to body                                                            | 000-13-6 |
|                          |        |       | When SB-10 connected to synch socket, electric shock occurs at synch contact                   | Upper and lower shoe switch contact (#69, #70) does not switch OFF                 | 000-14-1 |
|                          |        |       |                                                                                                |                                                                                    |          |



| Classification Codes: 011 |                                     |                                               | How to check                                                                                                       | Cause                                                                | Code No. |
|---------------------------|-------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------|
| Auto                      | Manual                              | Meter                                         |                                                                                                                    |                                                                      |          |
|                           | Time                                | Needle jumps up to the A-zone limit           | With SB-10 attached, warning lamp does not glow at manual high speed. Auto and manual settings become Time         | Shutter speed control cord A, yellow (#131) broken                   | 011-01-1 |
|                           |                                     |                                               |                                                                                                                    | #131(yellow) unsoldered from #108 (H) or #570 (H)                    | 011-01-2 |
|                           |                                     | Needle swings approx 8 steps toward A-zone    | By use of SB-10, warning lamp does not glow at manual high speed at Auto, approx. 1.4mS                            | Pattern of manual printed circuit (#570) broken between S and M      | 011-02-1 |
|                           | Failure of shutter opening          | Needle jumps down to B-M zone limit           | By use of SB-10, warning lamp does not glow at certain speed down to 1/250sec. at manual high speed. At Auto, Time | Pattern of #570 broken between S and M                               | 011-03-1 |
|                           |                                     | Needle swings approx. 8 steps toward B-M zone |                                                                                                                    | Short between #101 (S) and #101 (S)                                  | 011-04-1 |
|                           | Auto                                | Needle jumps down to B-M zone limit           | By use of SB-10, warning lamp does not glow at Manual high speed. AT Auto, failure of shutter opening;             | Short between Purple wire and Blue one of #131 cord A                | 011-05-1 |
|                           |                                     |                                               |                                                                                                                    | Short between #108 (C) and #108 (P)                                  | 011-05-2 |
|                           |                                     |                                               |                                                                                                                    | Short between #101 (S) and #101 (S) or between #101 (S) and #101 (S) | 011-05-3 |
|                           |                                     | Needle swings 7 steps or more toward B-M zone | By use of SB-10, warning lamp does not glow at Manual high speed. At Auto, approx. 1.4mS.                          | Short between #101 (S) and #101 (S)                                  | 011-06-1 |
|                           |                                     |                                               |                                                                                                                    | Short between #570 (S) and #570 (AA)                                 | 011-06-2 |
|                           | Every setting becomes 1/1000sec.    | Needle jumps up to A-zone limit               | By use of SB-10, warning lamp does not glow at Manual high speed. At Auto, approx. 1.4mS                           | Shutter speed control cord A, Blue (#131) broken                     | 011-07-1 |
|                           |                                     |                                               |                                                                                                                    | #131(Blue) cord unsoldered from #108 (P) or #570 (M)                 | 011-07-2 |
|                           |                                     | Needle jumps down to B-M zone limit           |                                                                                                                    | Short between #108 (P) and RV (S)                                    | 011-07-3 |
|                           | Normal at 1/1000sec. and 8sec. only | Needle swings 12 steps toward B-M zone        |                                                                                                                    |                                                                      |          |
|                           |                                     | Needle jumps down to B-M zone limit           | At Auto or Bulb, the faster the speed, the more the needle swings toward B-M zone                                  | Short between #570 (M) and #570 (S)                                  | 011-08-1 |
|                           |                                     |                                               |                                                                                                                    |                                                                      |          |

| Classification Code: 011 |                                                                                                                                               |                                                                                   | How to check                                                                                    | Cause                                                                        | Code No. |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------|
| Auto                     | Manual                                                                                                                                        | Meter                                                                             |                                                                                                 |                                                                              |          |
|                          | Normal at 1/1000sec. and 1/125sec. only                                                                                                       | Needle swings approx. 1 - 8 steps toward B-M zone                                 |                                                                                                 | Short between #101 $\textcircled{S}$ and #101 $\textcircled{S}$              | 011-09-1 |
|                          | At higher speed above certain speed, 1/1000.<br>At lower speed below certain speed, Time                                                      | Needle jumps up to A-zone limit or<br>Needle swings approx. 8 steps toward A-zone | By use of SB-10, warning lamp does not glow at Manual high speed.<br>At Auto, approx. 1.4mS     | Pattern of #570 broken between $\textcircled{S}$ and $\textcircled{M2}$      | 011-10-1 |
|                          |                                                                                                                                               |                                                                                   | By use of SB-10, warning lamp does not glow at certain speed down to 1/250sec.<br>At Auto, Time | Pattern of #570 broken between $\textcircled{S}$ and $\textcircled{M1}$      | 011-11-1 |
|                          | At higher speed above certain speed, 1/1000sec.<br>At lower speed below certain speed, slower speed than normal (8sec. becomes 3sec.)         | Needle swings approx. 1.3 steps toward B-M zone                                   | By use of SB-10, warning lamp does not glow at Manual high speed.<br>At Auto, approx. 1.4mS     | Shutter speed control cord A (#131) short between a Brown and a yellow cord  | 011-12-1 |
|                          |                                                                                                                                               |                                                                                   |                                                                                                 | Short between #570 $\textcircled{S}$ and #570 $\textcircled{M1}$             | 011-12-2 |
|                          | At higher speed above certain speed, same as Auto.<br>At lower speed below certain speed, failure of shutter opening, or extremely high speed | Needle jumps down to B-M zone limit                                               |                                                                                                 | Short between #101 $\textcircled{S}$ and #101 $\textcircled{S7}$             | 011-13-1 |
|                          |                                                                                                                                               | Needle swings approx. 7 or 8 steps toward B-M zone                                |                                                                                                 | Shutter speed control cord A (#131) short between a yellow and a purple cord | 011-13-2 |
|                          |                                                                                                                                               |                                                                                   |                                                                                                 | Short between #108 $\textcircled{C}$ and #180 $\textcircled{H}$              | 011-13-3 |
|                          |                                                                                                                                               |                                                                                   |                                                                                                 | Short between #570 $\textcircled{M1}$ and #570 $\textcircled{AA}$            | 011-13-4 |
|                          |                                                                                                                                               |                                                                                   |                                                                                                 |                                                                              |          |

| Classification Code: 100 |        |       | How to check                                                                                                                       | Cause                                                                            | Code No. |
|--------------------------|--------|-------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------|
| Auto                     | Manual | Meter |                                                                                                                                    |                                                                                  |          |
|                          |        |       | Failure of memory lock                                                                                                             | Mirror switch cord, Grey (#140) shorts to body                                   | 100-01-1 |
|                          |        |       |                                                                                                                                    | Mirror switch A(#927) shorts to body                                             | 100-01-2 |
|                          |        |       |                                                                                                                                    | Mirror switch A(#927) does not switch OFF                                        | 100-01-3 |
|                          |        |       | Even in use of SB-10, Auto speed becomes Time                                                                                      | Memory lock cord, Black (#139) broken                                            | 100-02-1 |
|                          |        |       |                                                                                                                                    | #139(Black) unsoldered from memory switch A(#934) or mirror switch B(#928)       | 100-02-2 |
|                          |        |       |                                                                                                                                    | Mirror switch cord, Grey(#140) broken                                            | 100-02-3 |
|                          |        |       |                                                                                                                                    | #140 cord(Grey) unsoldered from #101 ② or Mirror switch A(#927)                  | 100-02-4 |
|                          |        |       |                                                                                                                                    | Mirror switch does not turn ON                                                   | 100-02-5 |
|                          |        |       |                                                                                                                                    | Memory switch A(#934) does not turn ON                                           | 100-02-6 |
|                          |        |       | With lever switch OFF, Icc becomes extremely large or approx. 10mA. Checker LED always glows or breaks. Faster battery consumption | Short between #101 ② and #101 ③                                                  | 100-03-1 |
|                          |        |       |                                                                                                                                    | Shutter speed control cord A, Purple (#131) broken                               | 100-04-1 |
|                          |        |       |                                                                                                                                    | #131 cord (Purple) unsoldered from #108 ① or #570 AA                             | 100-04-2 |
| Slower speed             |        |       | Failure of memory lock                                                                                                             | Mirror switch cord, Grey(#140) shorts to body                                    | 100-05-1 |
|                          |        |       |                                                                                                                                    | Mirror switch shorts body                                                        | 100-05-2 |
|                          |        |       |                                                                                                                                    | Mirror switch does not turn OFF                                                  | 100-05-3 |
| Erratic speed            |        |       | Even with SB-10 used, Auto speed becomes Time                                                                                      | Memory lock cord, Black (#139) broken                                            | 100-06-1 |
|                          |        |       |                                                                                                                                    | #139 cord (Black) unsoldered from memory switch A(#934) or mirror switch B(#928) | 100-06-2 |
|                          |        |       |                                                                                                                                    | Mirror switch cord, Grey(#140) broken                                            | 100-06-3 |
|                          |        |       |                                                                                                                                    | #140 cord(Grey) unsoldered from #101 ② or mirror switch A(#927)                  | 100-06-4 |
|                          |        |       |                                                                                                                                    | Mirror switch does not switch ON                                                 | 100-06-5 |
|                          |        |       |                                                                                                                                    | Memory switch (#934) does not turn ON                                            | 100-06-6 |
| A few steps slower speed |        |       |                                                                                                                                    | Short between #108 ① and RV ⑦                                                    | 100-07-1 |
|                          |        |       |                                                                                                                                    |                                                                                  |          |

| Classification Code: 101 |        |                                                  | How to check                                                                                                | Cause                                                                | Code No. |
|--------------------------|--------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------|
| Auto                     | Manual | Meter                                            |                                                                                                             |                                                                      |          |
|                          |        | Needle jumps down to B-M zone limit              | With lever switch ON lcc becomes approx 30mA                                                                | Meter cord, Red on shutter speed control broken                      | 101-01-1 |
|                          |        |                                                  |                                                                                                             | Short between #101 (29) and #101 (63)                                | 101-02-1 |
|                          |        | Needle jumps up to A-zone limit                  | With lever switch ON, lcc becomes approx. 30mA                                                              | Meter cord, Black on shutter speed control shorts to body            | 101-03-1 |
| Shutter does not open    |        | Needle jumps up to A-zone limit                  |                                                                                                             | Short between #101 (6) and #101 (63)                                 | 101-04-1 |
|                          |        |                                                  |                                                                                                             | FRE cord #130 short between a yellow and a Green cord                | 101-04-2 |
|                          |        |                                                  |                                                                                                             | Short between #630 (3) and #632 (2) or between #630 (2) and #630 (4) | 101-04-3 |
|                          |        |                                                  |                                                                                                             | Short between #101 (16) and #101 (28)                                | 101-04-4 |
| A few steps longer speed |        | Needle swings 1/3 step toward A-zone than normal |                                                                                                             | Short between #108 (1) and RV (7)                                    | 101-05-1 |
| Extraordinary speed      |        | Needle jumps up to A-zone limit                  | With shutter switch ON lcc becomes approx. 16mA                                                             | Short between #101 (17) and #101 (20)                                | 101-06-1 |
| At EV4, approx. 1/1000   |        | Needle swings approx. ten steps toward A-zone    | Auto speed varies by rotation of FRE                                                                        | Short between #101 (16) and #101 (63)                                | 101-07-1 |
|                          |        |                                                  | Auto speed does not vary by rotation of FRE                                                                 | FRE cord #130 shorts between a yellow and a Green cord               | 101-08-1 |
|                          |        |                                                  |                                                                                                             | Short between #630 (2) and #630 (1) or between #630 (2) and #630 (4) | 101-08-2 |
| Extraordinary speed      |        | No Needle swing                                  | With lever switch ON, extremely large lcc. With checker switch ON, extremely large lcc. No LED illumination | Short between #101 (29) and #101 (26)                                | 101-09-1 |

| Classification Code: 110 |        |       | How to check                                                      | Cause                                                                               | Code No. |
|--------------------------|--------|-------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|
| Auto                     | Manual | Meter |                                                                   |                                                                                     |          |
| Time                     | Time   |       | With lever switch ON, lcc of approx. 15mA. At M90 or Bulb. Time   | Mech. speed changeover switch cord, purple, on shutter speed control shorts to body | 110-01-1 |
|                          |        |       |                                                                   | #100 (Hg) shorts to body                                                            | 110-01-2 |
|                          |        |       | With lever switch ON, lcc of approx. 15mA                         | Changeover switch cord, green, on shutter speed control shorts to body              | 110-02-1 |
|                          |        |       |                                                                   | Short between #101 (17) and #101 (63)                                               | 110-02-2 |
|                          |        |       |                                                                   | Short between #100 (Hg) and #100 (Tr)                                               | 110-02-3 |
|                          |        |       | In use of S8-10, warning lamp does not light at manual high speed | Shutter speed control cord B, White (#132) broken                                   | 110-03-1 |
|                          |        |       |                                                                   | #132 cord (White) unsoldered from #101 (51) or #570 (52)                            | 110-03-2 |
|                          |        |       |                                                                   | Trigger switch does not switch OFF                                                  | 110-04-1 |
|                          |        |       |                                                                   | Trigger switch cord (#129) shorts between a yellow and a blue cord                  | 110-04-2 |
|                          |        |       |                                                                   | Short between #101 (24), (23) and #101 (23), (29)                                   | 110-04-3 |
|                          |        |       |                                                                   | Short between #100 (Tr) and #100 (Tr)                                               | 110-04-4 |

| Classification Code: 110   |                            |       | How to check                                                                     | Cause                                                                                         | Code No. |
|----------------------------|----------------------------|-------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------|
| Auto                       | Manual                     | Meter |                                                                                  |                                                                                               |          |
| Failure of shutter opening | Failure of shutter opening |       | With trigger switch ON, lcc of approx. 35mA                                      | Trigger switch cord, Blue(#129) shorts to body                                                | 110-05-1 |
|                            |                            |       |                                                                                  | #100 (Tr-) shorts to body                                                                     | 110-05-2 |
|                            |                            |       | With shutter switch ON, extremely large lcc                                      | Shutter switch (#926) shorts to body                                                          | 110-06-1 |
|                            |                            |       |                                                                                  | Shutter switch cord, Pink(#128) shorts to body                                                | 110-06-2 |
|                            |                            |       | With shutter switch ON, lcc of approx. 100mA                                     | Short between #100 (Hgr+) and #100 (Hgr-)                                                     | 110-07-1 |
|                            |                            |       | With shutter switch ON, lcc of approx. 35mA                                      | #100 (Tr+) shorts to body                                                                     | 110-08-1 |
|                            |                            |       |                                                                                  | Trigger switch cord, yellow (#129) shorts to body                                             | 110-08-2 |
|                            |                            |       | With shutter switch ON, lcc of approx. 3-5mA                                     | Short between #101 (13) and #101 (14), or between #101 (13) and #101 (14)                     | 110-09-1 |
|                            |                            |       |                                                                                  | Magnet coil of #100 broken                                                                    | 110-09-2 |
|                            |                            |       |                                                                                  | Mech. speed changeover switch cord, purple, on shutter speed control broken                   | 110-09-3 |
|                            |                            |       |                                                                                  | Mech. speed changeover switch cord (Purple) unsoldered from #100 (Hgr-)                       | 110-09-4 |
|                            |                            |       |                                                                                  | Mech. speed changeover switch cord (Green) on shutter speed control broken                    | 110-09-5 |
|                            |                            |       |                                                                                  | Mech. speed changeover switch cord (Green) on shutter speed control unsoldered from #101 (13) | 110-09-6 |
|                            |                            |       | lcc when shutter switch switched ON is same as lcc when lever switch switched ON | Shutter switch cord, Orange (#128) broken                                                     | 110-10-1 |
|                            |                            |       |                                                                                  | #128 cord (Orange) unsoldered from #101 (12) or shutter switch A(#925)                        | 110-10-2 |
|                            |                            |       |                                                                                  | Shutter switch cord, Pink (#128) broken                                                       | 110-10-3 |
|                            |                            |       |                                                                                  | #128 cord (Pink) unsoldered from #101 (11) or shutter switch B(#926)                          | 110-10-4 |
|                            |                            |       |                                                                                  | Shutter switch does not switch ON                                                             | 110-10-5 |
|                            |                            |       |                                                                                  | Trigger switch does not switch ON                                                             | 110-10-6 |
|                            |                            |       |                                                                                  | Trigger switch cord, yellow (#129) broken                                                     | 110-10-7 |
|                            |                            |       |                                                                                  | #129 cord (yellow) unsoldered from #101 (16) or #100 (Tr+)                                    | 110-10-8 |
|                            |                            |       |                                                                                  | Trigger switch cord, Blue(#129) broken                                                        | 110-10-9 |
|                            |                            |       |                                                                                  | #129 cord (Blue) unsoldered from #101 (14) or #100 (Tr-)                                      | 110-10-0 |
|                            |                            |       |                                                                                  |                                                                                               |          |

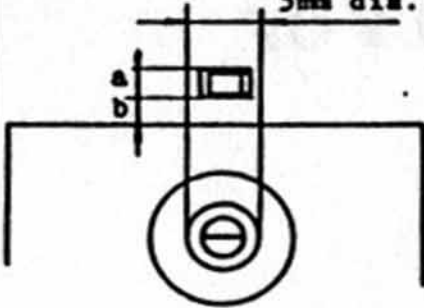
| Classification Code: 111   |                            |                  | How to check                                                                                                               | Cause                                                                                  | Code No. |
|----------------------------|----------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------|
| Auto                       | Manual                     | Meter            |                                                                                                                            |                                                                                        |          |
| Failure of shutter opening | Failure of shutter opening | No needle moving | With lever switch OFF, extremely large lcc                                                                                 | Lever switch cord, Red(#126) shorts to body                                            | 111-01-1 |
|                            |                            |                  |                                                                                                                            | Plus cord A, Red(#133) shorts to body                                                  | 111-01-2 |
|                            |                            |                  |                                                                                                                            | Plus cord B, Red(#134) shorts to body                                                  | 111-01-3 |
|                            |                            |                  |                                                                                                                            | Lever switch (#487) shorts to body                                                     | 111-01-4 |
|                            |                            |                  |                                                                                                                            | Battery contact B ⊕ (#49) shorts to body                                               | 111-01-5 |
|                            |                            |                  |                                                                                                                            | MD external contact lug(#919) shorts to body                                           | 111-01-6 |
|                            |                            |                  | With lever switch ON, extremely large lcc (Measure the lcc by disconnecting power supply cord, orange (#127) from #101 31) | Lever switch cord, Orange(#126) shorts to body                                         | 111-02-1 |
|                            |                            |                  |                                                                                                                            | Power source cord, Orange(#127) shorts to body                                         | 111-02-2 |
|                            |                            |                  |                                                                                                                            | Magnet plus cord, Orange(#135) shorts to body                                          | 111-02-3 |
|                            |                            |                  |                                                                                                                            | Lever switch (#488) shorts to body                                                     | 111-02-4 |
|                            |                            |                  |                                                                                                                            | #100 (Mg+) shorts to body                                                              | 111-02-5 |
|                            |                            |                  |                                                                                                                            | Power supply cord(#127) shorts between a Orange and a black cord                       | 111-02-6 |
|                            |                            |                  | With lever switch ON, extremely large lcc. No resistance (0Ω) between #101 31 and body                                     | Shutter switch cord, Orange(#128) shorts to body                                       | 111-03-1 |
|                            |                            |                  |                                                                                                                            | FRE cord, Orange (#130) shorts to body                                                 | 111-03-2 |
|                            |                            |                  |                                                                                                                            | Shutter speed control cord, purple (#131) shorts to body                               | 111-03-3 |
|                            |                            |                  |                                                                                                                            | #570 AA shorts to body                                                                 | 111-03-4 |
|                            |                            |                  |                                                                                                                            | Shutter switch (#925) shorts to body                                                   | 111-03-5 |
|                            |                            |                  |                                                                                                                            | Short between #101 ⑪, ⑫ and #101 ⑬, ⑭                                                  | 111-03-6 |
|                            |                            |                  | No lcc observed. Checker LED does not illuminate                                                                           | Power supply cord, Black(#127) broken                                                  | 111-04-1 |
|                            |                            |                  |                                                                                                                            | #127 cord, Black(#127) unsoldered from #101 ⑭ or Battery chamber earth contact (#45-1) | 111-04-2 |
|                            |                            |                  |                                                                                                                            | Battery plus contact B(#49) in poor contact                                            | 111-04-3 |
|                            |                            |                  |                                                                                                                            | Battery earth contact (#45-1) in poor contact                                          | 111-04-4 |
|                            |                            |                  | No lcc observed                                                                                                            | Lever switch cord, Red(#126) broken                                                    | 111-05-1 |
|                            |                            |                  |                                                                                                                            | #126 cord(Red) unsoldered from Lever switch (#487) and MD external contact lug (#919)  | 111-05-2 |
|                            |                            |                  |                                                                                                                            | Lever switch cord, Orange (#126) broken                                                | 111-05-3 |
|                            |                            |                  |                                                                                                                            |                                                                                        |          |

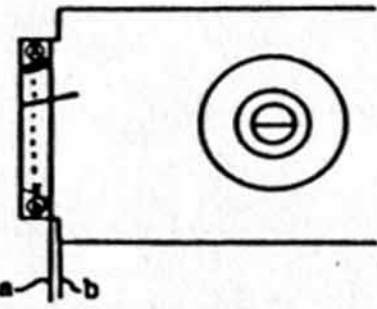
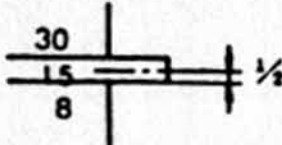
| Classification Code: 111   |                            |                                                                        | How to check                                                                                                                                                                                                               | Cause                                                                                              | Code No. |
|----------------------------|----------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------|
| Auto                       | Manual                     | Meter                                                                  |                                                                                                                                                                                                                            |                                                                                                    |          |
| Failure of shutter opening | Failure of shutter opening | No needle swing                                                        |                                                                                                                                                                                                                            | Lever switch cord, Orange(#126) unsoldered from Lever switch (#488) or external contact lug (#919) | 111-05-4 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | Power source cord, Orange(#127) broken                                                             | 111-05-5 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | #127 cord (Orange) unsoldered from #101 ① or the contact lug (#919)                                | 111-05-6 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | Plus cord B, Red (#134) broken                                                                     | 111-05-7 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | #134 cord (Red) unsoldered from battery contact B ② (#49) or the external contact lug (#919)       | 111-05-8 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | Lever switch does not turn ON                                                                      | 111-05-9 |
|                            |                            | Needle jumps up to A-zone limit                                        | With lever switch ON, lcc of approx. 10mA                                                                                                                                                                                  | Short between #101 ⑦ and #101 ⑧, or between #101 ③ and #101 ④                                      | 111-06-1 |
|                            |                            | Needle swings toward A-zone away from normal position                  |                                                                                                                                                                                                                            |                                                                                                    |          |
|                            |                            | Needle swings approx. one step toward B-zone away from normal position | With lever switch ON, lcc of approx. 5mA.<br>With trigger switch ON, lcc of approx. 8mA.                                                                                                                                   | Short between #101 ①⑦ and #101 ①⑥ or between #101 ①⑦ and #101 ①⑧                                   | 111-07-1 |
|                            |                            | Needle jumps up to A-zone limit                                        | With lever switch ON, extremely large lcc (at auto speed)<br>With lever switch ON, normal lcc (at manual)                                                                                                                  | Shutter speed control cord B, White(#132) shorts to body                                           | 111-08-1 |
|                            |                            | No needle swing                                                        |                                                                                                                                                                                                                            | #570 ⑤ shorts to body                                                                              | 111-08-2 |
|                            |                            |                                                                        | Unsoldering FRE cords, yellow and green(#130) from IC printed circuit measure the resistance. If infinity value detected, one of the causes to the right considerable<br><br>Normal value: approx. 9.45 K at ASA 100, F5.6 | Yellow or Green FRE cord (#130) broken                                                             | 111-09-1 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | Sliding brush A(#685) in poor contact                                                              | 111-09-2 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | Brush A(#682) in poor contact                                                                      | 111-09-3 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | Sliding brush B(#698) in poor contact                                                              | 111-09-4 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | Sliding brush A(#685) unsoldered from #630 ③                                                       | 111-09-5 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | FRE(#680) unsoldered from FRE conducting plate(#684)                                               | 111-09-6 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | FRE cord, yellow (#130) unsoldered from #630 ③                                                     | 111-09-7 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | FRE cord, green(#130) unsoldered from #630 ②                                                       | 111-09-8 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            | FRE cord, yellow(#130) unsoldered from #101 ②                                                      | 111-10-1 |
|                            |                            |                                                                        |                                                                                                                                                                                                                            |                                                                                                    |          |

| Classification Codes: 111 |                                                 |                                                                                                     | How to check                                                                                                               | Cause                                                   | Code No. |
|---------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------|
| Auto                      | Manual                                          | Meter                                                                                               |                                                                                                                            |                                                         |          |
| Time                      | Time                                            | Needle jumps down to B-M zone limit                                                                 |                                                                                                                            | FRE cord, Green(#130) unsoldered from #101 ⑥            | 111-10-2 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between #101 ⑥ and one of #101 ②, ③, ④            | 111-10-3 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between #101 ⑦ and #101 ⑥                         | 111-10-4 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between #101 ⑥ and one of #101 ②, ③               | 111-10-5 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between #101 ④ and one of #101 ②, ③               | 111-10-6 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between #101 ② and #101 ③                         | 111-10-7 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between Green and Yellow FRE cord(#130)           | 111-10-8 |
| Extraordinary speed       | Time                                            | Needle jumps up to A-zone limit                                                                     | With SB-10 used, manual high speed warning lamp does not glow. Both at Auto and Manual, Time                               | Shutter speed control cord, Yellow(#131) shorts to body | 111-11-1 |
|                           |                                                 |                                                                                                     |                                                                                                                            | #570 ④ shorts to body                                   | 111-11-2 |
|                           |                                                 |                                                                                                     | When SB-10 used, warning lamp glows properly at Manual high speed. At Auto and Manual, Time 1 - 2mA higher Icc than normal | Shutter speed control cord, Brown (#131) shorts to body | 111-12-1 |
|                           |                                                 |                                                                                                     |                                                                                                                            | #570 ⑤ shorts to body                                   | 111-12-2 |
|                           |                                                 |                                                                                                     |                                                                                                                            | FRE cord, Green(#130) shorts to body                    | 111-12-3 |
|                           |                                                 |                                                                                                     |                                                                                                                            | FRE conducting plate (#684) shorts to body              | 111-12-4 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Sliding brush A(#685) shorts to body                    | 111-12-5 |
|                           |                                                 |                                                                                                     |                                                                                                                            | FRE cord (#130) shorts between a Green and a Black cord | 111-12-6 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between #101 ⑥ and #101 ③                         | 111-12-7 |
|                           |                                                 |                                                                                                     | When SB-10 used, warning lamp glows properly at Manual high speed. At Auto and Manual, Time (Normal Icc)                   | Short between #630 ① and #630 ②                         | 111-12-8 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Shutter speed control cord, Blue(#131) shorts to body   | 111-13-1 |
|                           |                                                 |                                                                                                     |                                                                                                                            | #570 ④ shorts to body                                   | 111-13-2 |
|                           |                                                 |                                                                                                     |                                                                                                                            | FRE cord, Yellow (#130) shorts to body                  | 111-13-3 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Brush A(#682) or Brush mount (#683)                     | 111-13-4 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Sliding brush B(#698) shorts to body                    | 111-13-5 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between one of #630 ①, ② and one of ③, ④          | 111-13-6 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between one of #630 ③, ④ and #698 brush, B        | 111-13-7 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between #630 ④ and checker switch (#633)          | 111-13-8 |
|                           |                                                 |                                                                                                     | With shutter switch ON, Icc of approx. 30mA                                                                                | Short between #101 ① and #101 ③                         | 111-14-1 |
|                           |                                                 |                                                                                                     |                                                                                                                            | Short between #101 ⑦ and #101 ②                         | 111-14-2 |
|                           | 1/4 - 1KV longer speed than normal              | Needle jumps up to A-zone limit by 5 steps with lever switch on, and 7 steps with Trigger switch ON |                                                                                                                            |                                                         |          |
|                           | High speed slower than normal Low speed, normal | Needle jumps up to A-zone limit                                                                     | With shutter switch ON, Icc of approx. 16mA                                                                                | Short between #101 ⑦ and #101 ②                         | 111-15-1 |

## INSPECTION STANDARD FOR REPAIR

| Item                                                                           | Position                     | Subject                                                                                                                                            | Tool            |        |        |        |                                                                                                                    |                                                 |
|--------------------------------------------------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|--------|--------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Wind-up & Shutter release Mechanism                                            | Wind-up lever                | Wind-up torque: Within 1.5kg.cm (No film loaded)<br>Within 4.5kg.cm (Film loaded)                                                                  | Torque meter    |        |        |        |                                                                                                                    |                                                 |
|                                                                                | Spool                        | Spool friction: 200 - 260g                                                                                                                         | J15003          |        |        |        |                                                                                                                    |                                                 |
|                                                                                | Sprocket                     | Sprocket slack (at wind-up limit):<br>within 0.8mm at top of tooth                                                                                 | J18064          |        |        |        |                                                                                                                    |                                                 |
|                                                                                | Wind-up coupling             | Wind-up angle at start: -1° - +2°<br>at wound-up: 132° - 138°<br>Wind-up torque: Equal to or less than the<br>torque on wind-up lever.             | Torque<br>meter |        |        |        |                                                                                                                    |                                                 |
|                                                                                | Rewind button                | To be set at the position pushed 2.7mm<br>above bottom cover surface                                                                               | Vernier         |        |        |        |                                                                                                                    |                                                 |
|                                                                                | Rewind crank                 | Friction torque when no film loaded:<br>25 - 40g.cm                                                                                                | J5018           |        |        |        |                                                                                                                    |                                                 |
|                                                                                | Shutter<br>release<br>button | Shutter-release force: 240 - 400g                                                                                                                  | J5019           |        |        |        |                                                                                                                    |                                                 |
|                                                                                |                              | Full Stroke: 2.7 $\pm$ 0.3mm                                                                                                                       | J18002          |        |        |        |                                                                                                                    |                                                 |
|                                                                                |                              | Release stroke: Shutter should be released when<br>the button depressed below #468<br>down to 0.4mm above #469<br>(Button's stroke: Approx. 1.7mm) |                 |        |        |        |                                                                                                                    |                                                 |
|                                                                                | MD<br>releasing<br>shaft     | Shaft protrusion height: 0.7 $\pm$ 0.2 mm                                                                                                          | Vernier         |        |        |        |                                                                                                                    |                                                 |
| Shaft-actuating power 500g or less                                             |                              | Vernier                                                                                                                                            |                 |        |        |        |                                                                                                                    |                                                 |
| Shaft's height to release shutter above<br>bottom plate surface: 3.4mm or less |                              | Vernier                                                                                                                                            |                 |        |        |        |                                                                                                                    |                                                 |
| Shutter Accuracy                                                               | Exposure<br>time             | Shutter speed<br>setting (or<br>theoretical<br>speed                                                                                               | Allowance (ms)  |        |        |        | J19022-1<br>When in use<br>of different<br>model from<br>J19022-1:<br>Auto<br>Measure<br>between EV14<br>and EV15. |                                                 |
|                                                                                |                              |                                                                                                                                                    | Auto            |        | Manual |        |                                                                                                                    |                                                 |
|                                                                                |                              | Standard                                                                                                                                           |                 |        |        |        |                                                                                                                    | 1/1000, 4,<br>8sec.: $\pm$ 0.65EV               |
|                                                                                |                              | 1000                                                                                                                                               | 0.98            | 0.62-  | 1.54   | 0.68-  | 1.41                                                                                                               |                                                 |
|                                                                                |                              | 500                                                                                                                                                | 1.95            | 1.38-  | 2.76   | 1.36-  | 2.81                                                                                                               |                                                 |
|                                                                                |                              | 250                                                                                                                                                | 3.91            | 2.76-  | 5.53   | 2.72-  | 5.63                                                                                                               | 1/500 - 2sec.:<br>$\pm$ 0.5EV                   |
|                                                                                |                              | 125                                                                                                                                                | 7.81            | 5.53-  | 11.0   | 7.81-  | 11.2                                                                                                               |                                                 |
|                                                                                |                              | 60                                                                                                                                                 | 15.6            | 11.0 - | 22.1   | 12.2 - | 19.9                                                                                                               |                                                 |
|                                                                                |                              | 30                                                                                                                                                 | 31.3            | 22.1 - | 44.3   | 24.6 - | 39.9                                                                                                               | MANUAL<br>1/1000 - 1/250<br>sec.: $\pm$ 0.525EV |
|                                                                                |                              | 15                                                                                                                                                 | 62.5            | 44.2 - | 88.4   | 49.0 - | 79.7                                                                                                               |                                                 |
|                                                                                |                              | 8                                                                                                                                                  | 125             | 88.4 - | 177    | 98.1 - | 159                                                                                                                |                                                 |
|                                                                                |                              | 4                                                                                                                                                  | 250             | 174 -  | 354    | 196 -  | 319                                                                                                                | 1/125: $\pm$ 0.525EV<br>-0 EV                   |
|                                                                                |                              | 2                                                                                                                                                  | 500             | 354 -  | 707    | 392 -  | 637                                                                                                                |                                                 |
|                                                                                |                              | 1                                                                                                                                                  | 1000            | 707 -  | 1414   | 785 -  | 1275                                                                                                               |                                                 |
|                                                                                |                              | 2                                                                                                                                                  | 2000            | 1414 - | 2828   | 1569 - | 2549                                                                                                               | 1/60 - 8sec.:<br>$\pm$ 0.35EV                   |
|                                                                                |                              | 4                                                                                                                                                  | 4000            | 2549 - | 6277   | 3138 - | 5098                                                                                                               |                                                 |
|                                                                                |                              | 8                                                                                                                                                  | 8000            | 5098 - | 12553  | 6277 - | 10190                                                                                                              |                                                 |

| Item                                                                                                                               | Position                                                                         | Subject                                                                                                                                                                                                                                                                                                                                                                | Tool                        |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------|------------------------------------------------------------|-------------------------|---|---|----|------------------------------------------------------------|------|----|----|-------------------------------|----------------------|
| Shutter Accuracy                                                                                                                   | Shutter speed difference                                                         | Shutter speed difference between the adjacent settings: 1/1000 - 1/125sec.: 1.2 - 3.4 times<br>1/60 - 8sec: 1.4 - 2.8 times                                                                                                                                                                                                                                            | J19022-1                    |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | Uneven exposures (in one frame)                                                  | Allowable exposure difference:<br>Max. 0.25EV among the values measured at Start(S), Center(C) and End(E), setting to 1/1000sec.                                                                                                                                                                                                                                       | J19033                      |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | Uneven exposures (among frames)                                                  | When measured at Auto-speed 1/15sec., ASA100, F5.6 and LV9 five times, the speed deviation should be within 10ms.                                                                                                                                                                                                                                                      | J19022-1                    |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | Self-timer                                                                       | Can be set for 8 - 14sec. delay.<br>Setting cancellable by manually rotating back self-timer lever to the memory-lock position.                                                                                                                                                                                                                                        | Stop-watch                  |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | X contact                                                                        | Time lag: 0.3 - 1.0ms (Full open: 2.2ms or more)                                                                                                                                                                                                                                                                                                                       | J19008-1                    |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    |                                                                                  | Contact efficiency: 70% or more (specified 1ms, 2.5ms)                                                                                                                                                                                                                                                                                                                 | J19028-1                    |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
| Insulation: 30MΩ or higher                                                                                                         |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                        |                             |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
| Exposure meter accuracy                                                                                                            | Needle indication accuracy                                                       | ASA100 compensation 0                                                                                                                                                                                                                                                                                                                                                  |                             |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    |                                                                                  | <table border="1"> <thead> <tr> <th>cd/m<sup>2</sup></th><th>EV</th><th>F No.</th><th>Meter needle indication</th></tr> </thead> <tbody> <tr> <td>2</td><td>4</td><td>F8</td><td>To be within the range of the center "0" of the digit 1000</td></tr> <tr> <td>2040</td><td>14</td><td>F4</td><td>To be within the range of "4"</td></tr> </tbody> </table>            | cd/m <sup>2</sup>           | EV                            | F No.                                                      | Meter needle indication | 2 | 4 | F8 | To be within the range of the center "0" of the digit 1000 | 2040 | 14 | F4 | To be within the range of "4" | J19022-1<br>J18041-1 |
|                                                                                                                                    |                                                                                  | cd/m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                      | EV                          | F No.                         | Meter needle indication                                    |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    |                                                                                  | 2                                                                                                                                                                                                                                                                                                                                                                      | 4                           | F8                            | To be within the range of the center "0" of the digit 1000 |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | 2040                                                                             | 14                                                                                                                                                                                                                                                                                                                                                                     | F4                          | To be within the range of "4" |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
| In case of the other combinations of the settings, meter needle should be within the range of the digit to show theoretical speed. |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                        |                             |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
| Meter needle Starting position                                                                                                     | With lever switch OFF, the needle should be locked above the center of B-M zone. | Visual Inspection                                                                                                                                                                                                                                                                                                                                                      |                             |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | Infinity ( ) coincidence                                                         | Coincidence: ±30"<br>Conspicuous blurs should not be visible at four corners of the viewfinder.                                                                                                                                                                                                                                                                        | J19001<br>J18010            |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | Parallax                                                                         | Parallax: Within 0.5mm vertically and horizontal                                                                                                                                                                                                                                                                                                                       |                             |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | Frame coverage                                                                   | At least 93% vertically and horizontally at the center of the viewfinder                                                                                                                                                                                                                                                                                               | J18006<br>Lens: 50mmf1.4    |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | Viewfield frame                                                                  | Inclination: within 1°30'                                                                                                                                                                                                                                                                                                                                              |                             |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |
|                                                                                                                                    | F No. window position                                                            | <p>Within 5mm dia.</p>  <p><u>F No. window position</u><br/>Sideways:<br/>Within 5mm dia. of split-image spot<br/>Height: <math>b=0.3a-1.5a</math><br/><u>Position of frame on J18063</u><br/>Within the F No. window</p> <p>The window's inclination should not be conspicuous</p> | J18063<br>Visual inspection |                               |                                                            |                         |   |   |    |                                                            |      |    |    |                               |                      |

| Item            | Position                                          | Subject                                                                                                                                                                                                                                                                     | Tool                   |
|-----------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Finder accuracy | Shutter speed film position                       |  <p>The film and (a) and finder frame end (b) should be aligned within an allowable interval of max. 0.2mm. (a) should not exceed (b).<br/>Vertical deviation of the film not allowed.</p> | Visual inspection      |
|                 | Green needle and speed indication digit alignment | <p>Meter needle should overlay at least half of the height of speed digits or letter (A, B, M). Be sure to check at click position.</p>                                                    | Visual inspection      |
| Lens mount      | Aperture coupling lever                           | Height: $3.1^{+0.1}_{-0}$ mm (after shutter cocking)<br>3.5mm or less (Before shutter cocking)<br>Height difference between after and before shutter cocking: 0.15mm or more                                                                                                | J18004                 |
|                 |                                                   | Stroke: 7.1mm or more                                                                                                                                                                                                                                                       |                        |
|                 |                                                   | Power to depress the lever: 90 - 120g at 3.1mm height                                                                                                                                                                                                                       | J18003                 |
|                 | Aperture coupling ring                            | Start position $52.5^{+0}_{-1}$ °                                                                                                                                                                                                                                           | J18063                 |
|                 |                                                   | Max. rotation angle $112.5^{+3}_{-1}$ °                                                                                                                                                                                                                                     | J18058                 |
|                 |                                                   | Rotation torque Min. aperture direction $950\text{g}\cdot\text{cm}$<br>Max. aperture direction $100 - 350\text{g}\cdot\text{cm}$                                                                                                                                            | J18058                 |
|                 | Back focus                                        | Flange back dimension $46.67 \pm 0.2\text{mm}$                                                                                                                                                                                                                              | J18001-1               |
|                 |                                                   | Parallelism allowance within 0.02mm                                                                                                                                                                                                                                         |                        |
|                 |                                                   | Height difference between outer and inner rails $0.23 \pm 0.02\text{mm}$                                                                                                                                                                                                    |                        |
| Others          | Battery checker                                   | Lowest voltage for illumination:<br>$2.25 \pm 0.15$ (with lever switch ON)                                                                                                                                                                                                  | J19024                 |
|                 | Ready light                                       | Shutter dial setting<br>Auto<br>1/1000 - 1/250 (Manual)<br>1/125 - B (Manual)                                                                                                                                                                                               | LED<br>ON<br>OFF<br>ON |
|                 | Pressure plate                                    | Flatness within 0.02mm                                                                                                                                                                                                                                                      | J15147                 |
|                 |                                                   |                                                                                                                                                                                                                                                                             |                        |

## **FE-2 SUPPLEMENT**

**Physically and construction-wise, the Nikon FE-2 is very similar to the Nikon FE. The primary difference is that the FE-2 shutter speed is faster than the older FE. It's speed is 4 milliseconds and the synch strobe is 1/250 sec. The faster speed is due to much thinner blades. In all other aspects, the FE-2 shutter is identical to the Nikon FE's Copal shutter as depicted in this manual. Care should be taken with the FE-2 shutter as it is easily damaged. Otherwise, THIS MANUAL SHOULD BE CONSIDERED AS A COMPLETE GUIDE FOR ANY DISSASSEMBLY, REPAIR AND REASSEMBLY OF THE NIKON FE AND FE-2 CAMERAS.**