Canon F-1

REPAIR MANUAL

CANON SERVICE MANUAL

CANON INC. JAPAN

PREFACE

This manual is the guide for service after sales which we issue for the purpose of quality assurance of our products. This manual consists of six sections, i.e., General, Repair Manual, Repair Guide, Service Tools List, Price List of Spare Parts and Service Manual Report.

If any repaires are required, refer to Repair Manual, Repair Guide and Service Tools List.

A revised edition will be issued for any major alteration of the product, and minor changes will be issued under the Service Manual Report.

When parts are needed, it is important to order them by specifying the serial numbers and filling in the provided form, and also for any further details regarding tools, refer to the catalogue.

Any commentents or requests about this manual or product will be highly appreciated.

Canon Inc. SERVICE DEPARTMENT
30-2, Shimomaruko 3 Chome, Ohtaku,
Tokyo, Japan

CONTENTS

HOW TO USE THIS SERVICE MANUAL

Canon Service Manual consists of the following six sections: General, Repair Manual, Repair Guide, Service Tools List, Price List of Spare Parts and Service Manual Reports, which will be issued if the outward appearence, function or design of the product is changed. These six sections are divided by index sheets for easy identification.

GENERAL

The General section consists of information useful to the repairman. It may consist of any or all of the following: technical specifications, design principals, circuit explanations, new or unusual repair technics, or any other information useful to the repairman.

REPAIR MANUAL

1. The Repair Manual consists of Illustrated Parts List, containing Exploded Views and Parts List, and a numercial Part Number Index.
2. The parts list for each Exploded View is on the facing page and both pages have the same number.
3. The Illustrated Parts List are arrainged in the correct sequence of dissambly, but it is not always necessary to follow the sequence exactly to remove a certain part, or make a particular adjustment.
4. The Table of Contents list the mechanisms. To identify a part in the exposure meter, find EXPOSURE METER in the table and then turn to the Exploded view on the listed page.
5. The Parts List consist of five columns. The function of each column is :
   - Column 1. Part description in Japanese
   - Column 2. CLASS : This column list the consumption code letter for the part. This indicates the replacement probability. For a complete explanation, refer to the "PARTS LIST of CANON PHOTO PRODUCTS".
   - Column 3. PARTS NO. This column list the part number.
   - Column 4. QTY. This column list the number of identical parts used in the mechanism.
     - A. If several part numbers appear in square brackets and an N appears in the QTY. column, the part numbers indicate simular but not identical parts. The correct one should be used. Normally these are shims or washers of different thickness or ND filters of different transmission factor.

Ex.	Class	Parts No.	QTY.	Description
	A	[X32-505211 X32-505212]	N	Washer

     - B. If a single part number appears with an N in the QTY. column, it indicates that several of the part will probably be needed. Normally these are thin shims or washers.

Ex.	Class	Parts NO	Qty.	Description
	A	X32-504621	N	Washer

6. Parts listed in parenthesis ( ) in the Exploded View are available individually, but are also a part of a Bonded Part (B.P.).
7. When a part number is known but its use is not, locate it in the numerical Index of Part Numbers and turn to the indicated page.

REPAIR GUIDE

1. The repair guide contains the necessary instructions for complete repair, adjustment, and troubleshooting of the product.
2. In the troubleshooting section, the troubles are classified by mechanism. Possible causes and their remedies are listed for each trouble.
   But we Canon Inc. firmly believe that none of these troubles can happen.

SERVICE TOOLS LIST

1. This list all special tools and test equiptment required for service after sales and their uses.
2. For specifications and detailed explanation of test equiptment, see the Service Manual Report for the test equiptment.
3. Special Screwdrivers are listed in numerical order. Their part number includes the part number of the part they are designed to remove.
   Ex. Screwdriver T06A-13-8033-1 was designed to remove part 13-8033.

PRICE LIST OF SPARE PARTS

1. Price List of Spare Parts presents the unit price of the service parts you receive from us.
2. The unit price is F.O.B. Tokyo/Yokohama.
3. The page number on the Repair Manual in which each part is described is shown on the right side of each part so that you may easily identify.
4. All the prices of the Spare Parts on the Price List section are subject to change without notice.

SERVICE MANUAL REPORT

In keeping with our policy of the best service after sale, Service Manual Reports are issued when any ninor change is made in the product such as design or production changes, added capabilities, or appearence changes. Major changes are covered by the issuance of a revised Service Manual.

CANON GENERAL

CANON F-1

(REF. NO. 1-20711)

CANON INC. JAPAN

P R E F A C E

This GENERAL section of the Canon SERVICE MANUAL contains usefull information of a general nature applicable to the product covered by the Service Manual.

The GENERAL section of the Service Manual is intended to supplement the Repair Guide and Repair Manual by explaining the "Why's" of a product as opposed to the "what" and "How" which the Repair Manual and Repair Guide cover.

If you have any suggestions concerning items that you would like to see included in the GENERAL Section of future Service Manuals, please send them to:

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Printed in Japan

CONTENTS

1. SPECIFICATIONS

1.1 Model: 35mm focal plane shutter single lens reflex system camera

1.2 Film size: 24 x 36mm

1.3 Interchangeable Lens

1. FD series interchangeable lens are especially designed for the F-1 camera. All features of the F-1 can be utilized with FD lenses including.
   1) Maximum aperture TTL system (focal point central area metering)
   2) Maximum aperture fully automatic exposure (EE) with the Servo EE Finder.
   3) Automatic Diaphragm
2. For FL series lenses, stopped-down TTL metering is used and automatic diaphragm functions as the Canon FT.
3. R series lenses can be used if stopped down manually, using stopped-down TTL metering.

1.4 Interchangeable Finders and Focusing Screens

1. The standard finder is an eye-level pentaprism. Also available are the following interchangeable finders: Servo EE Finder, Booster T Finder, Speed Finder and Waist Level Finder.
2. The standard focusing screen (A) has a microprism center surrounded by Fresnel Lens. Three other types are also available: Split-Image (B), plain ground glass (C), and Grid-lined type (D). All screens have Fresnel lens for edge to edge brightness and a condenser lens with a central area half mirror to reflect a portion (13%) of the light to the CdS.
3. Finder information
   1) Focusing and depth of field preview
   2) Rectangular half mirror which indicates CdS metering area
   3) Following needle and meter needle
   4) Warning marks for incorrect exposure (upper and lower red zones)
   5) Index (Blue mark) for stopped-down metering. Also used for battery checker index.
   6) Warning mark to indicate that meter does not couple at shutter speed

and ASA set (Entire meter information window turns red.)

7) Shutter speed: "60" is yellow orange to indicate X sync. (Other figures are green.)

4. Magnification: 0.77 with 50mm lens

5. Field of View: 97% of actual frame
Finder aperture: 34.92 x 23.28mm

6. Flange to Focusing Screen distance: 42.03 ± 0.015mm

7. Eyepiece: -1.2 diopter (Standard)

8. Interchangeable Eyepieces: Seven available from +3 to -4 diopters.

9. Mirror cut-off: No mirror cut-off with lenses up to and including the FD200mm 1 : 4 set at infinity, and apertures larger than **F 11.**

10. Finder eyepiece: Equipped with eye cup (usable for both naked eye and glasses). An angle finder and magnifier are available to fit the eyepiece.

1.5 Mirror

1. Instant return, total reflection mirror:
Equipped with mirror shock absorption mechanism.

2. Mirror lock mechanism: The mirror can be locked at any time by setting the lock lever to "M", while pushing the metering lever. Therefore, it is never necessary to lose a frame to lock the mirror up. When the mirror is up, manual aperture is automatically available. Also, even after the self-timer has been charged, the mirror can be locked up.

1.6 Lens mount

1. Mount: Canon BB special Breach-Lock mount (Bayonet type).
All lenses of FD series, FL series and R series can be installed.
Flange to pressure plate distance is 42.14 ± 0.015mm.

2. Lens Coupling

1) Aperture signal lever for FD lens (right side facing mount)

2) Automatic diaphragm lever (underside)

3) Max. aperture correction lever (right lower corner facing mount)

1.7 Shutter

1. Model: Metal (titanium) curtain focal plane shutter
   Thickness of metal curtain: 0.014mm
   Equipped with a special braking system which minimizes shutter operating sound and shock

2. Shutter speed dial
   1) Single spindle, non-rotary system, equal interval scale
   2) Shutter speed scale order: B 1, 2, 4, 8, 15, 30, 60, 125, 250, 500, 1000, 2000
      "60" is yellow orange to indicate X sync.
      Other figures are green.
   3) Film speed scale: (ASA) 25-2000
   4) Equipped with 2 pins used for interlocking with Servo EE Finder and Booster T Finder.

3. Curtain speed (full frame): 12.5 to 13.5 ms (FT QL: 15.5 ms)

4. T exposure: Use "B" on shutter speed dial and shutter button lock.

5. Shutter button lock:
   1) When the shutter button lock lever is turned to the red "L", the button is locked. However, a cable release can be used.
   2) Accessories Cable release, 28, R30 and R50

6. Self-timer
   1) Built-in, charged by lever. It is activated by pressing the shutter button.
   2) Its time can be controlled. Maximum time: Approx. 10 sec.
   3) The self-timer lever is also used for the stopped-down metering lever when FL series lens are used. The lever is also used for depth-of-field preview.
      (In this case, press the lever foward the lens mount, it can be locked in position.)
   4) With the lever locked, the self-timer can still be used.

1.8 Exposure alignment mechanism

1. System: Unique Canon TTL metering system, in which a high sensitivity, wide metering range CdS is installed at the rear of the condenser lens which has a half mirror.

2. Metering method: Maximum aperture central area metering system. The area metered is visable in the finder.

3. Metering Area: The metering area is about 12% of the full frame area. The size is 12 x 8mm. The reflection ratio of the condenser lens half mirror is 13%.
   Light sensitive element: Special Canon designed high resistance CdS with very wide range and linear response.

4. Galvanometer: Pivot system equal interval meter.

5. Metering mechanism: By matching the following needle with the meter needle.
   The following needle moves as the aperture ring of FD series lens turns. The meter needle deflects as shutter speed, film speed or brightness of object varies. Metering procedures are as follows:

   1) When FD series lenses are used, correct exposure can be obtained by merely turning the meter main switch to ON and afterwards matching the following needle with the meter needle. Correction for Lens Maximum aperture is automatically set when the lens is attached.
   2) When FL series lenses are used.
      a. Turn the meter main switch ON.
      b. Turn the self-timer lever to its metering position, (The following needle will disappear and the lens stop down.)
      c. Make alignment by turning the aperture ring so that the meter needle in the finder aligns to the blue mark, the index for stopped-down metering. When the needle aligns with the mark, the exposure is correct. Stopped-down metering is possible with FD series lenses also, but it is not recommended for critical exposure at large apertures since the system is corrected for open aperture measurement.

6. Metering lock
   By setting the lock lever to "L", and pushing the self-timer lever to its metering position, the aperture is stopped down and locked. The metering

lock system is convenient for metering with the Booster T Finder.

7. Exposure meter coupling range

When f/1.4 lens is used with ASA 100 film: EV3 to EV19 (F1.4 1/4 to F16.1/2000)

When the setting is out of meter range, the entire finder information window becomes red, or the meter needle will be in one of the Red warning marks.

8. Exposure meter battery: Model HD Mercury cell 1 ea 1.3V (equivalent to MALLORY RM625 and EVEREADY E625)

9. Battery checker:

Voltage can be checked by setting the main switch dial to B.C. Then, if the voltage is correct the checker needle will point to the blue mark in the finder.

10. Film speed setting

The film speed can be set by pulling up and turning the shutter speed dial. ASA speed is indicated. The film speed setting is connected to the meter.

Scale order: ASA 25 .. 50 .. 100 .. 200 .. 400 .. 800 .. 1600.

11. TTL metering system EE

By using the Servo EE Finder and FD lens, fully automatic exposure, within the range of EV3 to EV19, at ASA 100 1:1.4 lens is possible. The Servo EE Finder is installed on the camera body instead of the eyelevel finder, and the EE arm is connected. The aperture ring of FD lens is to the green round mark (EE). The Shutter speed is set and the Servo EE Finder automatically sets the diaphragm.

12. Metering at low brightness

Use of the Booster T Finder, permits metering from EV -3 to EV +2 (ASA 100 1:1.4 lens.) The metering can be accomplished by attaching Booster T Finder on the body in place of the eyelevel finder. (For details, refer to the technical data of Booster T Finder.)

1.9 Flash

1. CAT system

This is a system which allows setting automatically aperture value by the

match-needle system in the camera finder, by using the Canon Speedlite 500A, Flash Adapter, and Flash Coupler, and one of the FD flash coupling lenses (50mm 1 : 1.4, 50mm 1 : 1.8 or FD 35mm 1 : 2).

2. Flash synchronization: Automatic timelag adjustment
   From 1/2000 to 1/125 sec: FP sync
   From 1/60 to 1 sec or B: X sync

3. Flash socket:
   1) For ordinary Flash European-type (PC) provided at the side of camera body
   2) CAT system Flash is located around the rewind knob for the Flash Coupler and Speedlite 500A. There are two contacts for the flash circuit and meter circuit.

1.10 Body

1. Each mechanism and operating part of camera body have been designed with utmost reguard for quality and durability.

2. Film chamber: Uses 35mm standard cartridge.

3. Film loading: The film can be loaded easily, quickly and securely using the multi-slit spool.

4. 4. Film stabilizer: Inproved cartridge holder and the oversized pressure plate guarantee film plane stability.

5. Film winding: Single stroke lever, Ratchet winding
   Winding angle : 180°
   Play: 10°
   Turning angle of motor drive unit coupling: 180°
   All systems are charged with film winding.

6. Safety mechanism
   1) Double Exposure and Skipped Frame Prevention
   2) Shutter release button cannot be pressed during winding.
   3) Winding is inpossible when the shutter button is pressed.

7. Film rewinding: Film is rewound by means of the rewind crank, pushing

the rewind button located at the body bottom. The rewind button returns to its original position automatically when the winding lever is turned once.

8. Double Exposure: After making the first exposure, push the rewind button and rewind the film 3/4 of a turn of the red dot on the rewind button. While lightly holding the rewind knob, advance the winding lever until resistance is felt; and then release the lever and the knob. Wind the film in the normal manner and the camera is ready for the next exposure.

9. Back cover:
   1) The back cover is hinged and removable.
   2) The back cover can be opened by pulling up the rewind knob with the pushbutton in front of the rewind knob depressed. The back cover can't be opened if the rewind knob is pulled up accidentally.
   3) Accessory: Film Chamber 250.

10. Base cover
   1) Removable
   2) Accessory: Motor drive unit.

11. Accessory shoe: Located at the rewind knob.
   On this accessory shoe, flash coupler D or flash coupler can be mounted, and other accessory mounted on them.

12. Tripod screw: Standard 1/4"-20 is located on the optical axis of the bottom.

13. Neck strap ring: A ring is provided on both sides of the camera front.

14. External dimensions: 98.7 x 146.7 x 43mm
   (3-7/8" x 5-3/4" x 1-11/16")

15. Weight: Body ... 820 g (1.8 lbs)
   With 50mm 1 : 1.4 lens 1,180 g (2.6 lbs.)

2. DETAILS

2.1 Performance, Quality and Durability

1. The outstanding features of Canon F-1 are its wide variety of functions, superior quality and durability.

   We, in the Design Department, bearing the above three conditions in mind, carried out extensive research on this camera based on techniques perfected with our previous single-lens reflex cameras including the FT QL, and sparing neither time and expense.

   Regarding functions, 40 or more types of exchange lenses (including FL) and at least 180 types of accessories are available.

   In addition to general photography, oscillograph photography, photomicrography, photomacrography, document copying, super telephoto photography and astrophotography, all of which were possible with our previous SLR cameras, the F-1 is capable of the following functions unmatched by any other camera on the market.

   1) Fully automatic photography by combining the F-1, Servo EE Finder and Motor Drive Unit
   2) Ultra low illumination photography by using the Booster T Finder
   3) Flash autophotography by using the Speedlite 500A and related accessories

2. Also, the F-1 has many inprovements over previous models. Some of them are:

   1) A top shutter speed of 1/2000 so that the ultra-speed films now available can be used freely. The shutter mechanism has been inproved for utmost stability.
   2) The winding mechanism gear train has been reduced as much as possible to assure smooth and secure film feeding.
   3) Since the old winding system (in which exposed side of film faces out) may cause the film to crack at very low temperature, a winding system has been employed in which the films natural curl is followed.
   4) Because the exposure meter employs a maximum aperture spot metering TTL system it is possible to take pictures at a correct exposure for any object.
   5) The finder and the focusing screen can be changed as necessary, and by using various accessories, the finder magnification or viewing direction can be changed.

Each operating part has been designed from a human engineering standpoint.

3. Strict quality control measures have been taken to ensure superior quality in every step of the manufacturing process.
Tolerances of precision parts are from 1/1000 to 1/100mm, while that of the general parts, ± 0.1mm. Lubricants have been chosen, after much research taking their permeability, durability, smoothness, cold- and heat-resistance into consideration.

Some examples of inprovements which have been made in particular mechanisms are explained below:

1) The lens mount has been designed so it is completely free from flexure or distortion, to insure correct focus with any of the over 40 lenses available for the F-1. The Canon "Breach-Lock" bayonet used on all Canon SLR's has long been the best in the field because the surfaces that determine the lens position, and therefore focus, do not rotate against each other so they never wear.
The mating surfaces of other bayonet systems turn against each other and, in time, wear so best focus cannot be maintained.
2) The film position is accurately maintained by using a special large pressure plate and redesigned cartridge holder.
3) The design of the instant return mirror mechanism was finalized only after extensive research and development including the use of motion analysis using high speed photography.
4) To minimize noise, shock absorbers have been employed on moving parts; and sealing against noise, as well as light, has been considered in the body design.
5) All light leaks and internal reflections have been eliminated completely so that the absolute maximum performance can be realized from the optics.
6) An expensive, special bearing alloy has been used for all bearings to insure smooth operation and durability.
7) The shutter uses ball bearings.

4. Regarding durability, the mechanisms have been designed by adopting the strong points of our previous products, and the strength of each part has been raised two or three times in general to insure ultra-reliable service for the professional photographer. The F-1 has been repeatedly subjected to Canon's severe environment and durability tests and has passed them

all.

Incidentally, the environment and durability test is carried out as follows:

Environment test: Vibration, impact and manual operation tests for long hours at temperatures of +60 to -30℃. (+140° to -22° F)

Durability test: Test of camera and of camera and of Motor Drive Unit of 100,000 operating cycles were made without failure.

Also, overall inspection, environment durability test and trail photography have been made with all the accessories of the F-1 system.

2.2 Finder

Five types of finders are available for the F-1: Servo EE Finder, Booster T Finder, Eyelevel Finder, Speed Finder and Waist Level Finder.
Each finder is easily removable and it locks automatically when installed.
The finders are changed by pushing the lock buttons and pulling toward the back. Four interchangeable focusing screens are available.
The standard focusing screen is simular to the FT QL's. It is divided into the condenser lens with half mirror and focus glass and is assembled in a metal frame. A window is provided at the rear of the focusing screen, which passes light from the half mirror to the CdS.
Also, the screen has been carefully designed for complete interchangeability. Particular attention has been payed to the seating position and to maintaining the ratio of light reflected to the CdS to insure proper focus and exposure regardless of which screen is used.

2.3 TTL Metering

1. Canon F-1 Metering System

The Canon F-1 has a sophisticated TTL metering system built into the camera body, not the finder, and therefore it never loses its meter regardless of the accessories used.

The outstanding features of this meter are:

1) Focus Point Metering (proved in the FT QL)

2) Universal Metering

A. Maximum aperture metering with automatic compensation (This system is used with FD series interchangeable lenses.)

B. Stopped-down metering (This system is used with FL and R series interchangeable lenses.)

Note: FD and FL lens automatic diaphragms operate with the F-1 but R series lenses must be set manually.

3) A new photoconductor design, containing both CdS and CdSe, which a wide range and very linear response curve.

2. Technical Advantages of Focal Point Metering

Focal Plane Metering is an ideal system because:

1) It measures focused light directly on the focus plane.

2) The brightness on the CdS varies directly as the aperture of the lens.

Note: This is a distinct advantage for maximum aperture metering, which will be explained later.

3) A small CdS can read all the light from any aperture lens because the light cone at the focus plane is a point not a circle, and the CdS current is higher since it receives all the light at any aperture.

4) The CdS is not effected by imperfect dispersion of the ground glass.

3. F-1 Meter Coupling Details

The F-1 Maximum Aperture Metering uses two needles, a Meter needle and a Following needle which is matched with the meter needle for correct exposure.

1) The meter needle position is determined by the following factors:

a. Shutter Speed

b. ASA speed

c. Subject illumination

d. Lens opening

a. and b. determine the meter position.

c. and d. determine the meter needle position.

2) If a, b, and c remain constant then only the lens opening determines meter needle position. In the maximum aperture metering system the lens is wide open while metering so the lens maximum aperture determines the needle position and the needle when using small aperture lenses will be closer to the following needle start position.

3) The following needle starting position is constant (See 2, 3. 4) and its swing is determined by the aperture ring setting so by matching the two needles, correct exposure is assured. Actual coupling parts are:

a. Aperture Ring controls

b. Lens Signal Lever which controls

c. F-1 aperture signal lever to which the wedge cam is attached and it controls the

d. Following Needle swing

4. Maximum Aperture Correction

It is technical impossible to build a perfect Focus Point metering system because:

1) In order to obtain a bright viewfinder, it is necessary to use a ground glass that does not have perfect light dispersion so the light passing through the ground glass is not absolutely portional to the lens aperture.

2) The CdS cannot be placed directly at the focus point. The father the CdS is located from the focus point the greater the error is. The Canon F-1 has very little error because the CdS is quite close to the focus point but even that slight error is corrected by changing the starting position of the following needle.

3) Mechanically, the correction is made in the following manner:

a. Canon engineers determine exactly how much correction is needed for each lens with aperture of F 2.8 or larger.

b. A pin of the calculated length is on the back of each FD lens. This pin presses against the F-1 Max. Aperture correction pin which causes the max. aperture correction lever to change the pivot position of the long lever to which the following needle is attached. This charges the starting position of the following needle.

c. Both the maximum aperture correction and aperture signal lever coupling are completely automatic and fool proof in the F-1 unlike most other cameras.

4) In the viewfinder the following needle starting position (lens aperture ring wide open) moves down as the maximum aperture of the lens becomes larger. (At F1.2 it is almost in the warning mark and at F4 it is even with the blue mark.)

2.4 Automatic Flash (CAT System)

Match-Needle Automatic Flash

The Canon F-1 has a match-needle automatic flash system. It is a further development of the CAT system used in the New Canonet QL 17.

The complete system consists of the Speedlite 500A, a new professional speedlite especially designed for the F-1; Flash coupler which couples the speedlite to the F-1; and a Flash Adaptor which couples to the lens (50mm 1 : 1.4, 50mm 1 : 1.8 and 35mm 1 : 2).

The principle is;

The guide number, and distance, are converted into electrical signals in the speedlite and flash adaptor, and the signals are introduced to the meter circuit of F-1, resulting in the meter needle swing.

The following needle deflects as the aperture ring of FD lens is turned.

The shutter speed must be fixed at 1/60 sec. for X sync. Moreover, the lenses which are usable for the flash auto photography are the FD 50mm 1 : 1.8, FD 50mm 1 : 1.4 and FD 35mm 1 : 2.

The special accessory shoe at the rewind knob has one contact which is connecting the guide number signal from the speedlite 500A and the distance signal from the flash adaptor and another contact connected to the X contact.

The 500A speedlite can be attached to the camera by using a bracket which screws into the tripod socket and the flash adaptor is mounted on the FD lens and the flash coupler is inserted into the accessory shoe, and the interconnecting cords installed.

In actual operation, the guide number, film speed and shutter speed are set and the lens is focused and then the aperture ring turned until the needles match. Then, the shutter button may be pressed.

2.5 Shutter mechanism

The F-1 shutter is an improved version of the metal focal plane shutter used in Canon Rangefinder cameras. It containes the newest type metal curtains.

An outstanding feature of this shutter is its stable 1/2000 shutter speed.

These days, as use of ASA 400 to 500 films has becomes routine, high shutter speeds are necessary to allow flexibility under daylight conditions.

Also, the shutter curtain speed has increased and X sync is possible at 1/60 sec with no need for a separate X setting.

The following items guarantee reliability of the F-1 shutter; a special alloy

and steel ball are used for the bearings a special oil is used to assure smooth and stable operation, and all parts are machined to the highest Canon Standards.

2.6 Film Plane stabilizing mechanism

Keeping the film face flat is essential for obtaining maximum sharpness. Bearing this point in mind, the design of the film chamber area was a basic research area in the F-1.

The FT QL, because of the layout and accuracy of its spool revolving direction, sprocket, pressure plate, rail face, film cartridge chamber and film holding roller, had already solved several of the film plane problems of older models and the F-1 improves on the FT's already excellent performance by making the pressure plate larger and employing a cartridge stabilizing unit. There seems to be a tendency, in ordinary single-lens reflex cameras, for a part of the film face to protrude from the focus face depending upon the spool revolving direction and the depth of the film cartridge chamber. Also, if a spool is employed that winds film with the emulsion face turned out the emulsion might peel off or the film itself might be damaged in very cold areas.

In the F-1, as with the FT QL, the spool turning direction corresponds to the normal film curling direction.

The sprocket and the film holding roller have been positioned for greatest film flatness and all parts are machined to Canon Standards. The main improvements in the film chamber area are:

1. Film unevenness caused by a difference in height between the film cartridge slot and the rail face has been completely eliminated. This insures that the film will not "set" in a curl where it comes out of the cartridge even when left in the camera a long time.

2. Film winding is smooth and light.
   Enlarging the film pressure plate permits keeping the film flat without adversely affecting the winding procedure. Thus, F-1 has been improved so that the film stays flatter than in FT QL, insuring that the maximum resolution that Canon lenses are famous for can be realized in the finished print.

2.7 Back cover operating mechanism

The F-1 uses only standard film cartridges so back cover opening by lifting the rewind knob can be used. This is the most convenient method for the user. A safety lock button is provided to prevent the cover from being opened accidentally. This lock mechanism is designed so the back will not open unless the safety is held down and the knob is pulled up.

2.8 External Design

Easy operation and pleasing design, as well as performance, are essential factors when designing a camera. The final shape and layout of the F-1 is the result of much Human Engineering, research of the needs of photographers and many prototypes.

Particular attention was paid to the shape and layout of the controls such as the winding lever, shutter button, shutter dial, rewind knob, rewind crank and self-timer lever.

Therefore, we believe users will be well satisfied with the performance, quality and durability of the F-1 camera.

Also, as the F-1 is designed for the professional, it will be produced in black only.

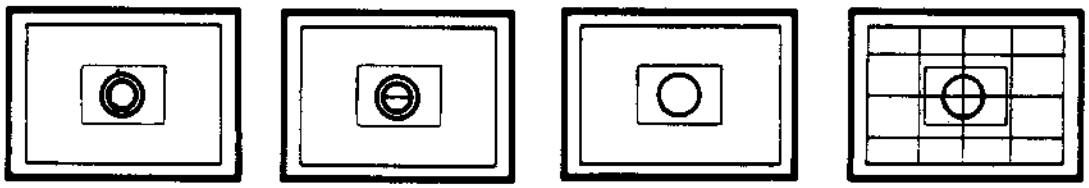


Fig. 1

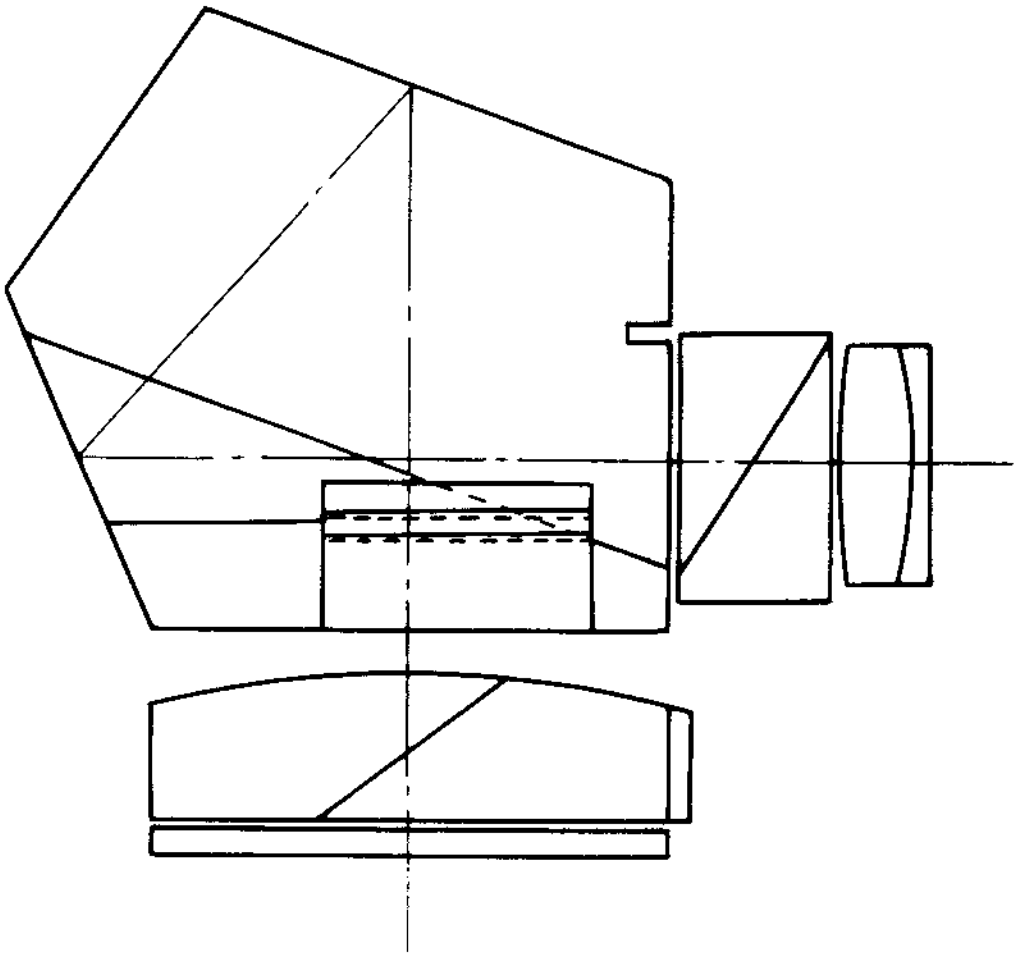
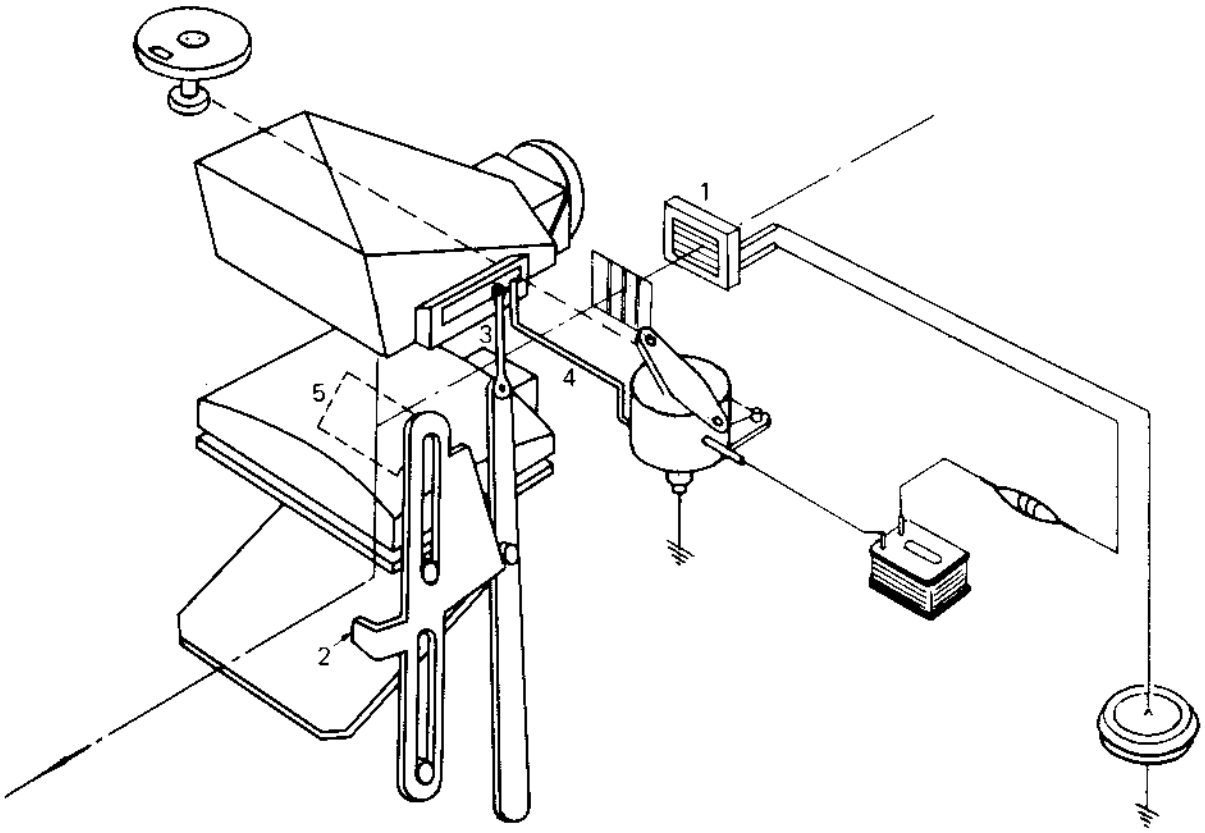


Fig. 2



1. CdS
2. Aperture Signal Coupling Leaver
3. Following Needle
4. Meter Needle
5. Beam-Splitting Mirror

Fig. 3

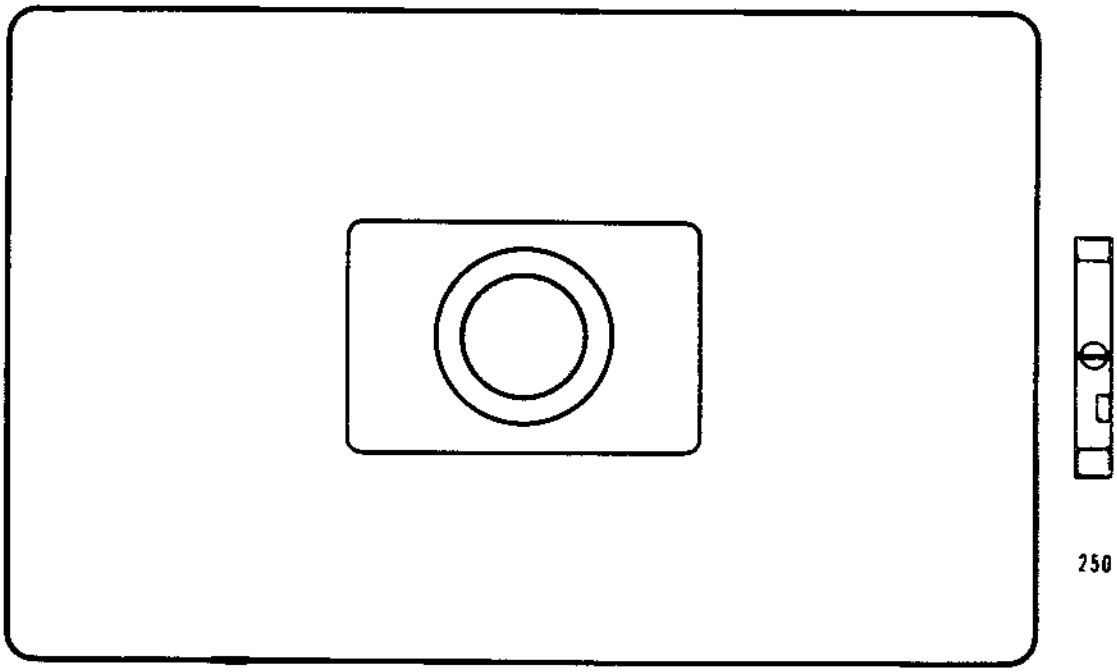


Fig. 4

Meter Coupling Theory
Illumination: 1/125, F4

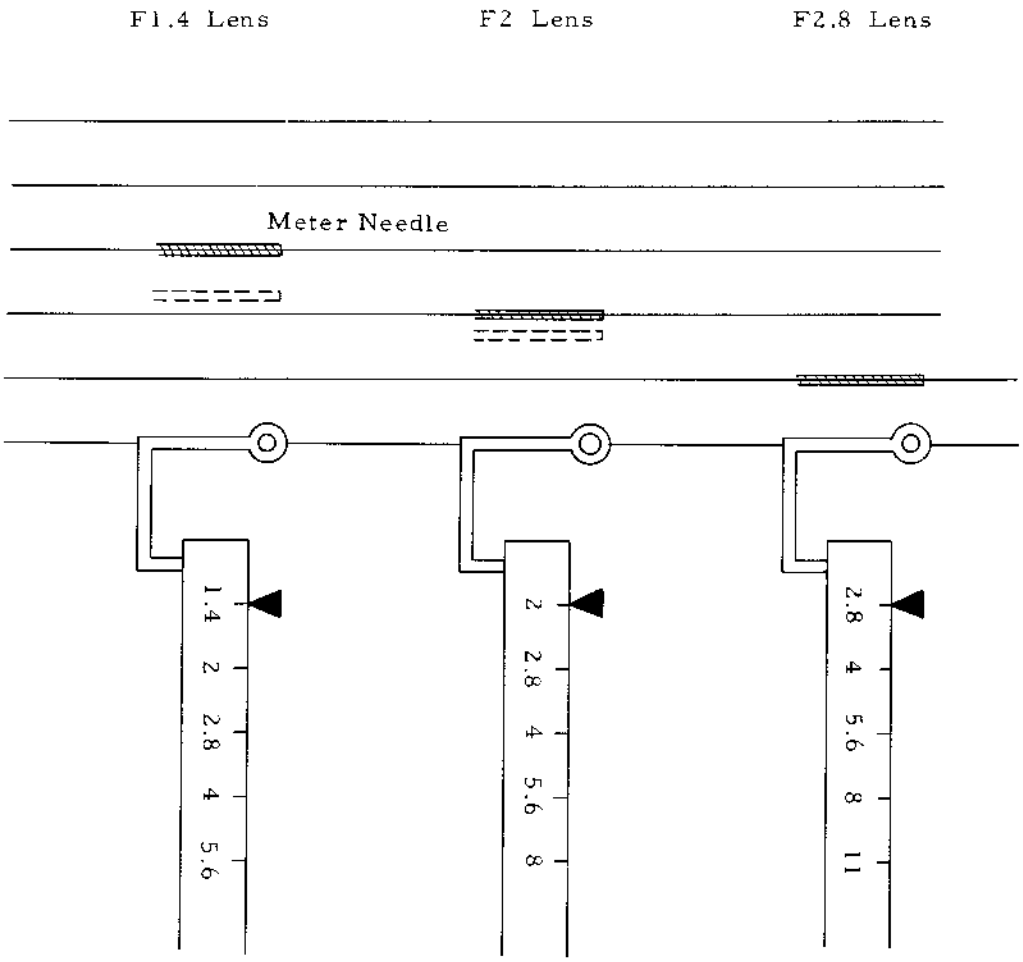


Fig. 5

Note: The meter needle shown is an ideal case.
The dotted needle shows the actual position.
The correction is explained in para. 2.3.4.

CANON REPAIR MANUAL

CANON F-1

(REF. NO. 1-20711)

CANON INC. JAPAN

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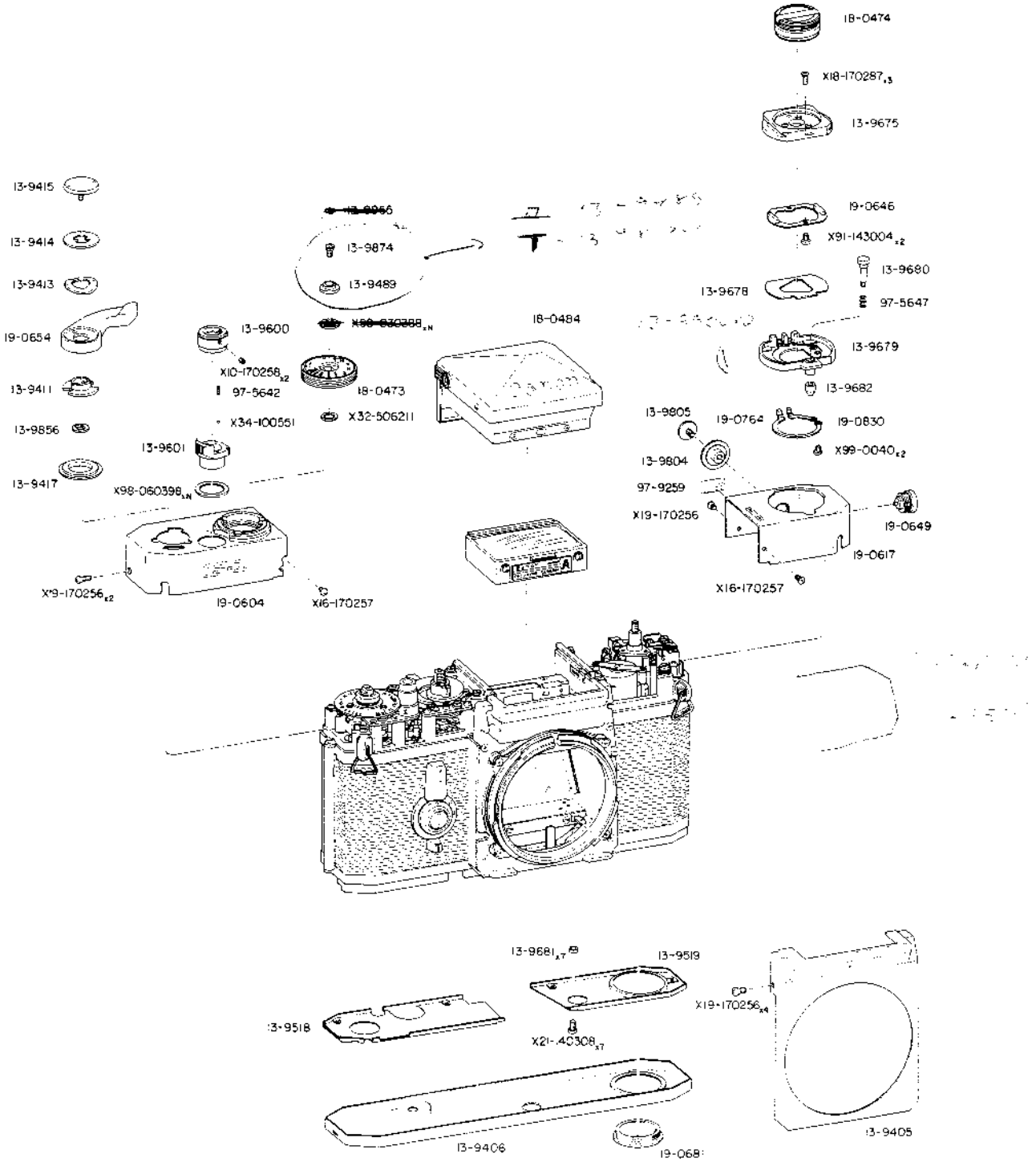

PARTS LIST

TOP COVER、BASE COVER & ACCESSORY SHOE

上部カバー　　下部カバー　　アクセサリー　シュー

部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
前カバー	C	13-9405	1	Front Cover
下部カバー	C	13-9406	1	Base Cover
巻上げレバー座	D	13-9411	1	Winding Lever Seat
ワッシャー	D	13-9413	1	Washer
ワッシャー	D	13-9414	1	Washer
カニ目ビス	A	13-9415	1	Pin Face Screw
スペーサー	C	13-9417	1	Spacer
カイドタボ	C	13-9489	1	Guide Collar
底内ぶた	C	13-9518	1	Inner Cover
底内ぶた	C	13-9519	1	Inner Cover
シャッター釦リング	C	13-9600	1	Shutter Button Ring
シャッター釦ロック	C	13-9601	1	Shutter Button Lock
アクセサリーシュー	C	13-9675	1	Accessory Shoe
絶縁板	C	13-9678	1	Insulator
絶縁板	C	13-9679	1	Insulator
解除釦	B	13-9680	1	Hook Release Button
カラー	D	13-9681	7	Collar
円錐	C	13-9682	1	Cone
スイッチつまみ	B	13-9804	1	Switch Knob
カニ目ビス	A	13-9805	1	Pin Face Screw
ワッシャー	C	13-9856	1	Washer
レザー	A	13-9865	1	Leather
ビス	D	13-9874	1	Screw
シャッタータイアル	C	18-0473	1	Shutter Speed Dial
巻戻しクランク	C	18-0474	1	Rewind Crank
ペンタプリスムユニット	C	18-0484	1	Pentaprism Unit
上部カバー	C	19-0604	1	Top Cover
上部カバー	C	19-0617	1	Top Cover
アクセサリーシューバネ	C	19-0646	1	Accessory Shoe Spring
フラッシュターミナルル	D	19-0649	1	Flash Terminal
巻上げレバー	B	19-0654	1	Winding Lever
電池室ふた	B	19-0681	1	Battery Cover
直結接片	C	19-0764	1	Contact
直結接片	C	19-0830	1	Contact
コイルスプリング	D	97-5642	1	Coil Spring
コイルスプリング	D	97-5647	1	Coil Spring
バッテリーチェック指示板	C	97-9259	1	Battery Check Indicator
止めビス		X19-170258	2	Screw
十字ナベビス		X16-170257	2	Screw
十字皿ビス		X18-170287	3	Screw
十字丸皿ビス		X19-170256	7	Screw
ワッシャー		X32-506211	1	Washer
平ビス		X21-140308	7	Screw
スチールホール		X34-100551	1	Steel Ball
平ビス		X91-143004	2	Screw
ワッシャー		X98-030388	N	Washer
調整ワッシャー		X98-060398 X98-060399 X98-060400	N	Adjusting Washer
平ビス		X99-0040	2	Screw

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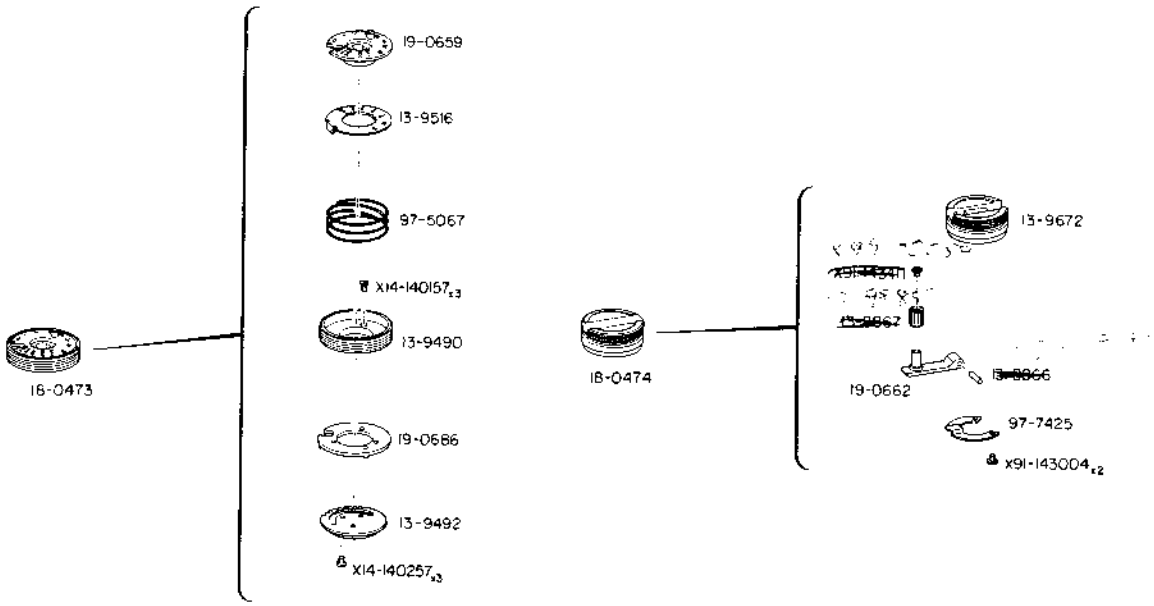

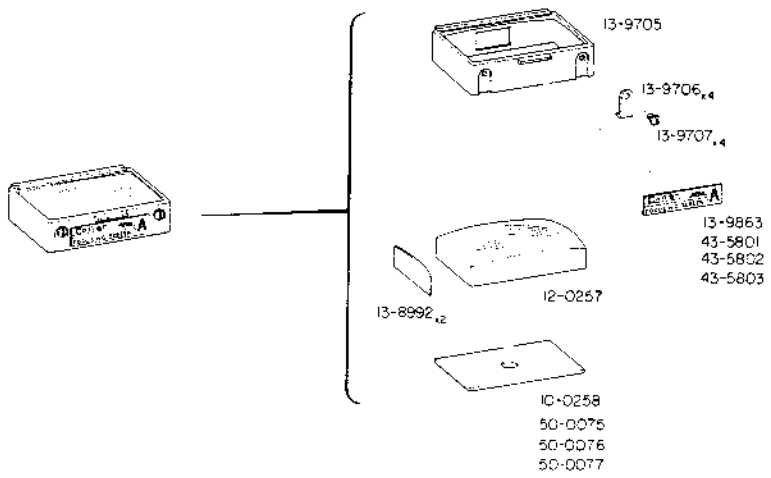

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PARTS LIST

SHUTTER SPEED DIAL, REWIND CRANK & FINDER SCREEN
シャッター　ダイアル　巻戻しクランク　ファインダースクリーン

部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
ピントクラスA	C	10-0258	1	Focusing Screen A
コンテンサーレンス	C	12-0257	1	Condenser Lens
ピボット	D	13-8866	1	Pivot
巻戻しつまみ	C	13-8867	1	Rewind Knob
スペーサー	C	13-8992	2	Spacer
シャッタータイアルつまみ	B	13-9490	1	Knurled Knob
感度割出し盤	C	13-9492	1	Film Speed Setting Disk
ASA目盛盤	C	13-9516	1	Film Speed Disk
コンテンサーボックス	D	13-9705	1	Condenser Lens Box
ピントクラス押え	D	13-9706	4	Focusing Screen Holder
ビス	D	13-9707	4	Screw
スクリーンラベルA	C	13-9863	1	Focusing Screen Label A
巻戻しつまみ	C	13-9882	1	Rewind Crank Knob
シャッタータイアル	C	18-0473	1	Shutter Speed Dial
巻戻しクランク	C	18-0474	1	Rewind Crank
シャッタースピートタイアル	B	19-0659	1	Shutter Speed Dial
巻戻しクランク	B	19-0662	1	Rewind Crank
感度割出し盤	C	19-0686	1	Film Speed Setting Ring
スクリーンラベルB	C	43-5801	1	Focusing Screen Label B
スクリーンラベルC	C	43-5802	1	Focusing Screen Label C
スクリーンラベルD	C	43-5803	1	Focusing Screen Label D
ピントグラスD	C	50-0075	1	Focusing Screen D
ピントグラスB	C	50-0076	1	Focusing Screen B
ピントグラスC	C	50-0077	1	Focusing Screen C
コイルスプリング	D	97-5067	1	Coil Spring
板ばね	D	97-7425	1	Spring Plate
皿ビス		X14-140157	3	Screw
皿ビス		X14-140257	3	Screw
平ビス		X91-143004	2	Screw
平ビス		X91-143411	1	Screw

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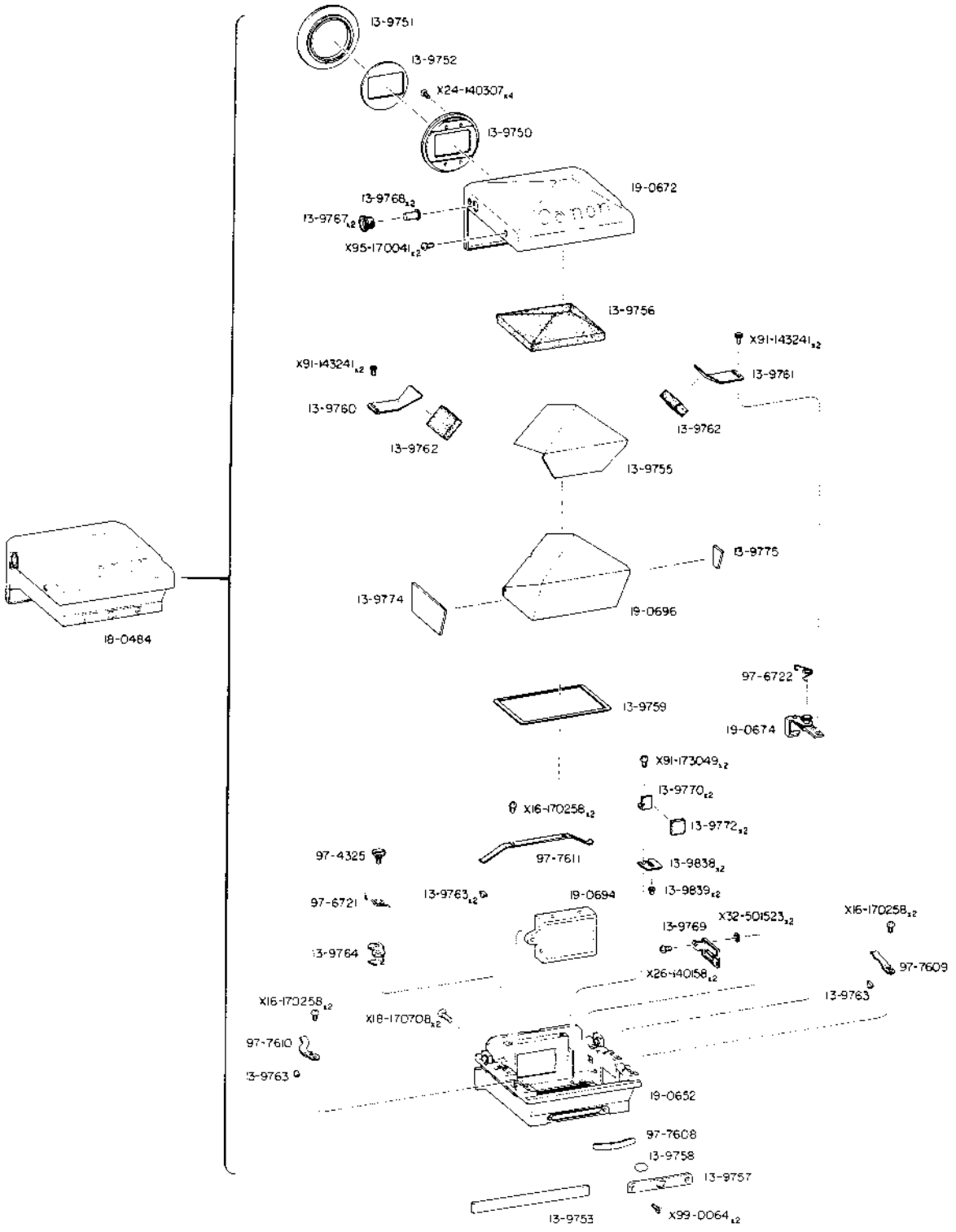

SCALE 1-2.0

PARTS LIST

PENTA PRISM UNIT
ペンタ プリズム ユニット

部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
接眼枠受け	B	13-9750	1	Eyepiece Base
接眼枠	C	13-9751	1	Eyepiece Ring
マスク	B	13-9752	1	Mask
化粧板	D	13-9753	1	Accessory Plate
ペンタプリズムカバー	D	13-9755	1	Pentaprism Cover
ペンタプリズム押え	D	13-9756	1	Pentaprism Holder
化粧板	D	13-9757	1	Plate
ピン	C	13-9758	1	Pin
マスク	C	13-9759	1	Mask
ペンタプリズム押え	D	13-9760	1	Pentaprism Holder
ペンタプリズム押え	D	13-9761	1	Pentaprism Holder
クッション	D	13-9762	2	Cushion
ガタ止めピン	C	13-9763	4	Pin
ファインターロックレバー	C	13-9764	1	Finder Lock Lever
解除釦	B	13-9767	2	Lock Release Button
釦受け	B	13-9768	2	Button Holder
マスク	D	13-9769	1	Mask
ペンタプリズム押え	D	13-9770	2	Pentaprism Holder
クッション	C	13-9772	2	Cushion
スペーサー	D	13-9774	1	Spacer
スペーサー	D	13-9775	1	Spacer
コンテンサー押え	D	13-9838	2	Condenser Lens Holder
コンテンサー押えピン	C	13-9839	2	Pin
ペンタプリズム枠	D	19-0652	1	Pentaprism Frame
ペンタプリズムカバー	C	19-0672	1	Pentaprism Cover
ロックレバー	D	19-0674	1	Lock Lever
アイピース	C	19-0694	1	Eyepiece
ペンタプリズム	C	19-0696	1	Pentaprism
段ビス	D	97-4325	1	Screw
スプリング	D	97-6721	1	Spring
スプリング	D	97-6722	1	Spring
板バネ	D	97-7608	1	Plate Spring
板ハネ	C	97-7609	1	Spring Plate
板バネ	C	97-7610	1	Spring Plate
板バネ	C	97-7611	1	Spring Plate
十字ナベビス		X16-170258	6	Screw
十字皿ビス		X18-170708	2	Screw
皿ビス		X24-140307	4	Screw
十字ナベビス		X26-140158	2	Screw
ワッシャー		X32-501523	2	Washer
平ビス		X91-143241	4	Screw
平ビス		X91-173049	2	Screw
丸ビス		X95-170041	2	Screw
十字皿ビス		X99-0064	2	Screw

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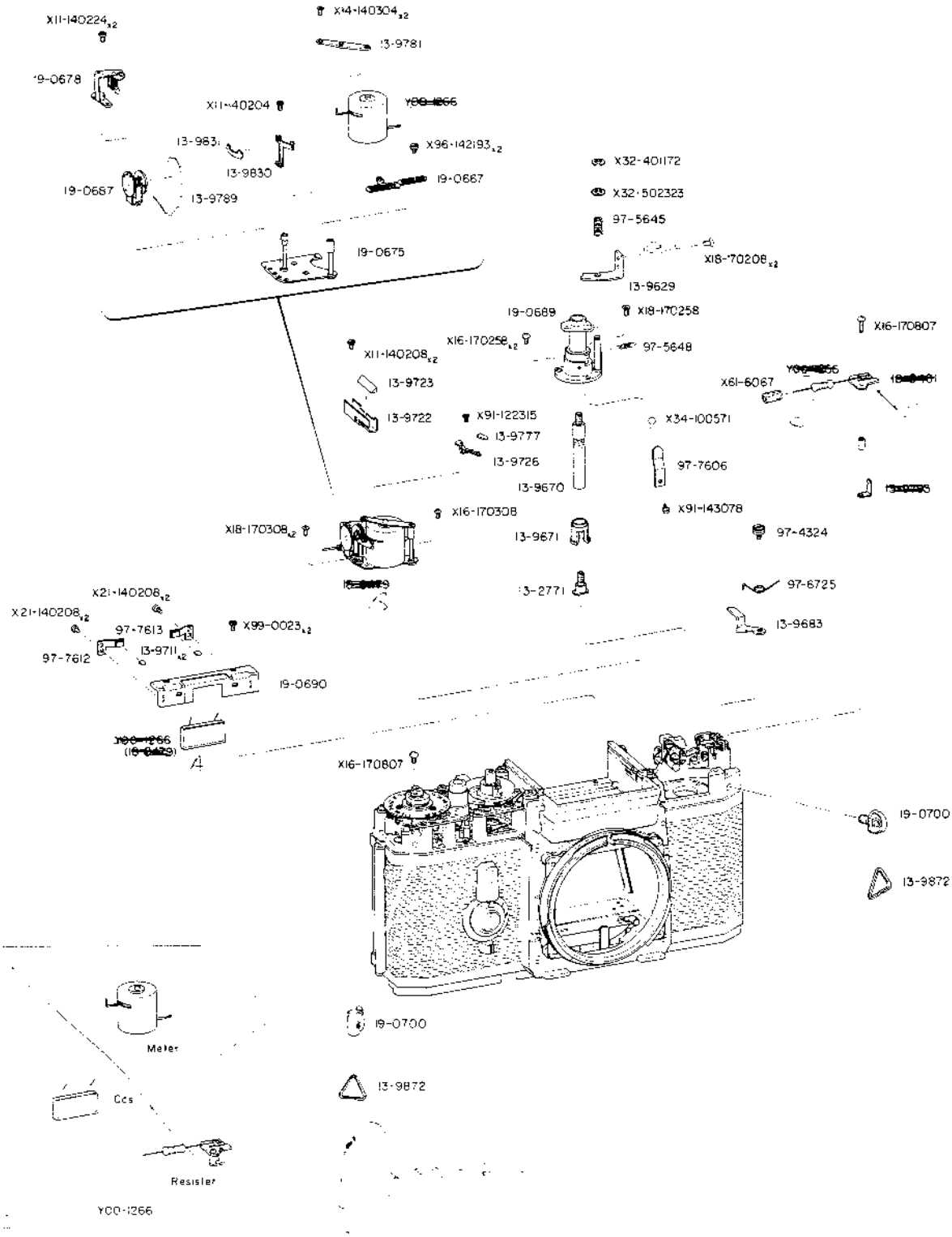

PARTS LIST

Cds METER & REWIND FORK
Cds メーター　巻戻し　フォーク

部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
CdSメーターユニット	C	Y00-1266	1	CdS, Meter Unit
巻戻し軸	C	13-2771	1	Rewind Shaft
裏ぶた開閉レバー	C	13-9629	1	Back Cover Opener
巻戻し軸	C	13-9670	1	Rewind Shaft
巻戻しフォーク	B	13-9671	1	Rewind Fork
ロックレバー	C	13-9683	1	Lock Lever
ピン	C	13-9711	2	Pin
反射ミラーホルター	D	13-9722	1	Reflector Holder
反射ミラー	D	13-9723	1	Reflector
警告レバー	C	13-9726	1	Warning Lever
警告マーク	C	13-9777	1	Warning Mark
メーター押え	D	13-9781	1	Meter Holder
糸	B	13-9789	1	Thread
レバー	D	13-9793	1	Lever
メーターストッパー	B	13-9830	1	Meter Stopper
メーターストッパー	B	13-9831	1	Meter Stopper
吊環	C	13-9872	2	Neck Strap Relation
メーターユニット	C	18-0479	1	Meter Unit
可変抵抗	C	18-0481	1	Variable Resistor
メーター位置決め板	C	19-0667	1	Meter Setting Lever
メーター地板	D	19-0675	1	Meter Base
プーリー	C	19-0678	1	Pulley
シャッター表示トラム	C	19-0687	1	Shutter Speed Indicator
巻戻し軸受け	D	19-0689	1	Rewind Shaft Holder
CdSケース	C	19-0690	1	CdS Case
耳環	C	19-0700	2	Neck Strap Catch
軸ビス	D	97-4324	1	Screw
コイルスプリング	D	97-5645	1	Coil Spring
コイルスプリング	D	97-5648	1	Coil Spring
板バネ	C	97-6712	1	Plate Spring
板バネ	C	97-6713	1	Plate Spring
スプリング	C	97-6725	1	Spring
クリックバネ	C	97-7606	1	Click Spring
平ビス		X11-140204	1	Screw
平ビス		X11-140208	2	Screw
平ビス		X11-140224	2	Screw
皿ビス		X14-140304	2	Screw
十字ナベビス		X16-170258	2	Screw
十字ナベビス		X16-170308	1	Screw
十字ナベビス		X16-170807	2	Screw
十字皿ビス		X18-170208	2	Screw
十字皿ビス		X18-170258	1	Screw
十字皿ビス		X18-170308	2	Screw
平ビス		X21-140208	4	Screw
緊定ワッシャー		X32-401172	1	Retaining Washer
ワッシャー		X32-502323	1	Washer
スチールボール		X34-100571	1	Steel Ball
ビニールチューブ		X61-6067	1	Vinyl Tube
平ビス		X91-122315	1	Screw
平ビス		X91-143078	1	Screw
段ビス		X96-142193	2	Screw
平ビス		X99-0023	2	Screw

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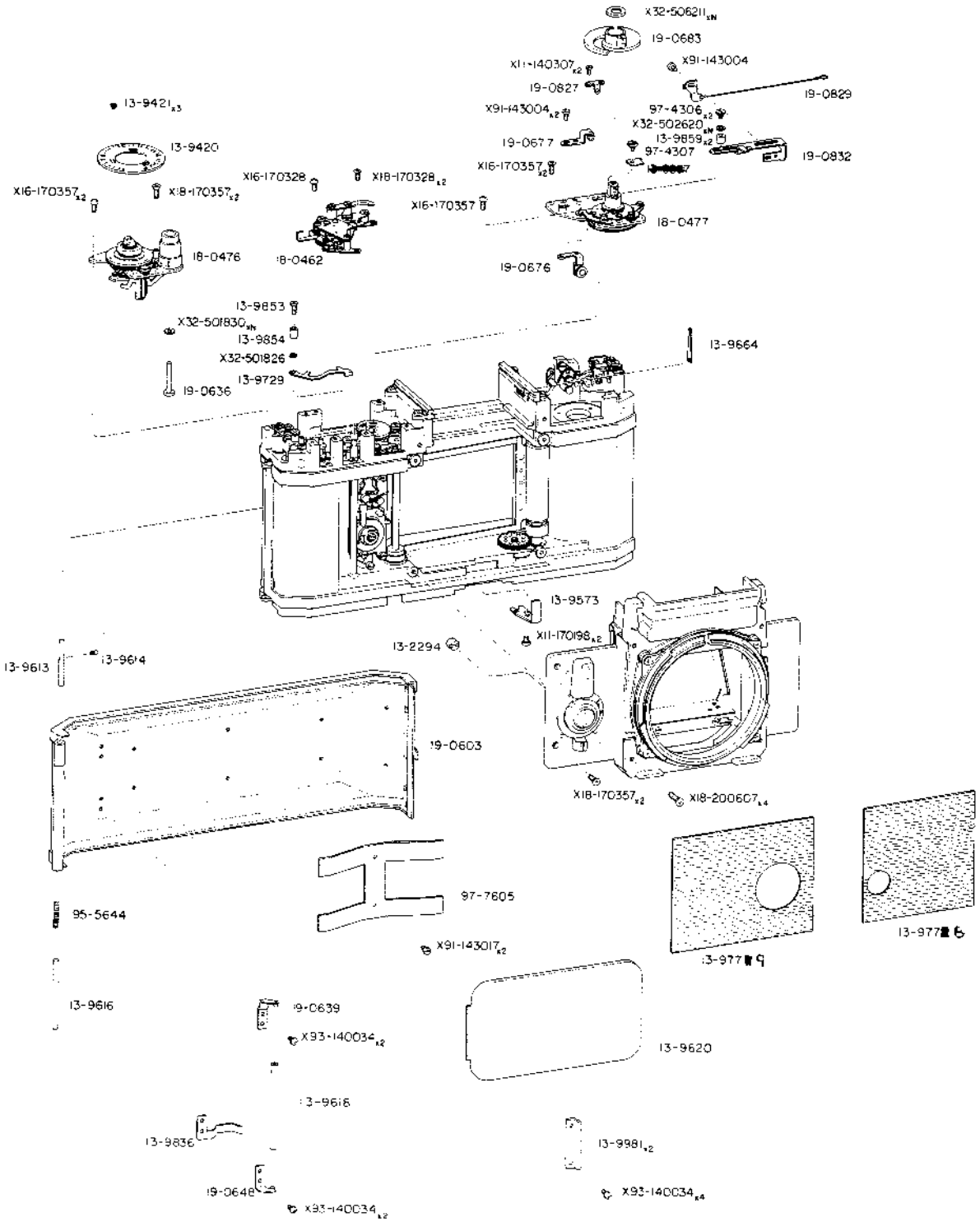

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PARTS LIST

BACK COVER, SLOW GOVERNOR & METER CAM
裏ぶた　スローガバナー　メーター カム

部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
ジョイント	C	13-2294	1	Joint
枚数板	B	13-9420	1	Film Counter
ビス	C	13-9421	3	Screw
絞り込みレバー	C	13-9573	1	Diaphragm Release Lever
蝶番軸	C	13-9613	1	Shaft of Hinge
ストッパー	D	13-9614	1	Stopper
蝶番軸	C	13-9616	1	Shaft of Hinge
ローラー	C	13-9618	1	Roller
圧着板	C	13-9620	1	Pressure Plate
パトローネ押え	C	13-9621	1	Cassette Holder
指針	B	13-9664	1	Following Needle
アンクル外しレバー	D	13-9729	1	Anchor Release Lever
レザー	A	13-977■9	1	Leather
レザー	A	13-977■8	1	Leather
フィルム押え	D	13-9836	1	Film Pressure
平ビス	C	13-9853	1	Screw
カラー	C	13-9854	1	Collar
ローラー	C	13-9859	2	Roller
圧着板押え	D	13-9881	2	Pressure Plate Holder
方タ止め	D	13-9887	1	Play Arester
スローガバナー	C	18-0462	1	Slow Governor
枚数板ユニット	C	18-0476	1	Winding-Counter Unit
シャッター棚板	C	18-0477	1	Shutter Speed Selector
裏ぶた	C	19-0603	1	Back Cover
シャッター釦軸	D	19-0636	1	Shutter Button Shaft
ローラー受け	D	19-0639	1	Roller Holder
ローラー受け	D	19-0648	1	Roller Holder
プーリー	C	19-0676	1	Pulley
プーリー	C	19-0677	1	Pulley
メータカム	C	19-0683	1	Meter Cam
プーリー	C	19-0827	1	Pulley
ワイヤー	C	19-0829	1	Wire
揺動レバー	C	19-0832	1	Meter Setting Lever
軸ビス	D	97-4306	2	Screw
ビス	D	97-4307	1	Screw
コイルスプリング	D	97-5644	1	Coil Spring
板バネ	D	97-7605	1	Spring Plate
平ビス		X11-140307	2	Screw
平ビス		X11-170198	2	Screw
十字ナベビス		X16-170328	1	Screw
十字ナベビス		X16-170357	4	Screw
十字皿ビス		X18-170328	2	Screw
十字皿ビス		X18-170357	6	Screw
十字皿ビス		X18-200607	4	Screw
ワッシャー		X32-501826	1	Washer
調整ワッシャー		X32-501830 X32-501831 X32-501832 X32-501833	N	Adjusting Washer
ワッシャー		X32-502620	N	Washer
調整ワッシャー		X32-506211 X32-506212	N	Adjusting Washer
平ビス		X91-143004	3	Screw
平ビス		X91-143017	2	Screw
丸平ビス		X93-140033	2	Screw
丸ニビス		X93-140034	8	Screw

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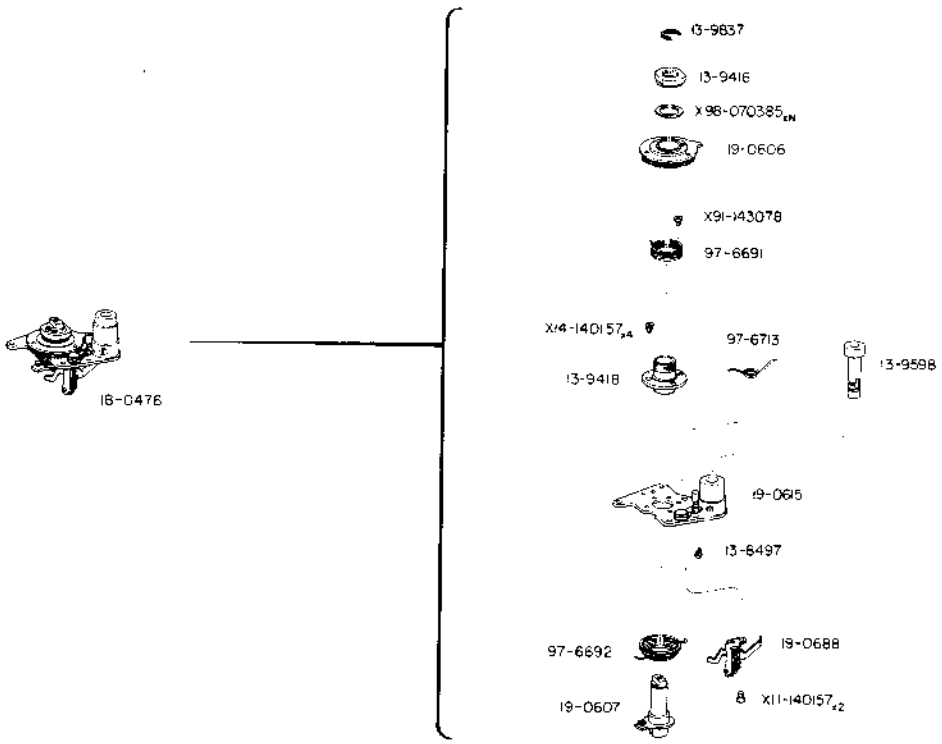
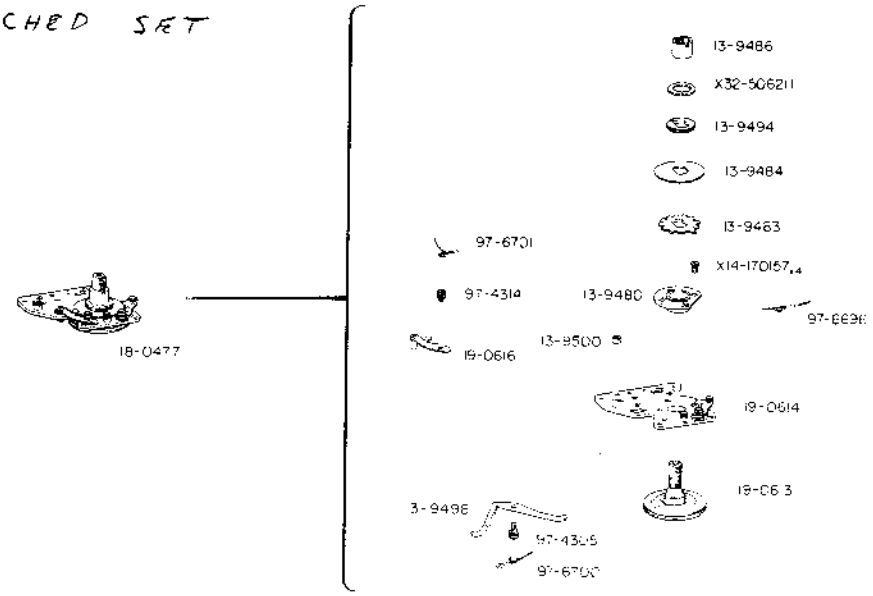


SHUTTER SPEED SECTION
AVAILABLE AS UNIT ONLY
MATCHED SET



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PARTS LIST

WINDING-COUNTER & SHUTTER SPEED SELECTOR

枚数盤ユニット　　シャッター 棚板

部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
ストッパー	D	13-8497	1	Stopper
ナット	C	13-9416	1	Nut
枚数盤軸	C	13-9418	1	Film Counter Shaft
軸受け	D	13-9480	1	Bushing
クリック板	C	13-9483	1	Click Disk
フラッシュ切換えカム	D	13-9484	1	Flash Cam
ナット	D	13-9486	1	Nut
プーリー	C	13-9494	1	Pulley
アンクル外しレバー	D	13-9498	1	Anchor Release Lever
ナット	D	13-9500	1	Nut
シャッターレリーズ鉦	D	13-9598	1	Shutter Release Button
緊定ワッシャー	C	13-9837	1	Retainer
枚数盤ユニット	C	18-0476	1	Winding-Counter Unit
シャッター棚板	C	18-0477	1	Shutter Speed Selector
枚数盤ギヤー	C	19-0606	1	Film Counter Gear
巻上げレバー軸	D	19-0607	1	Winding Lever Shaft
シャッタースピードカム	D	19-0613	1	Shutter Speed Cam
シャッター棚板	D	19-0614	1	Shutter Speed Selector Base
枚数盤地板	D	19-0615	1	Film Counter Base
シンクロ切換レバー	D	19-0616	1	Flash Change Lever
シンクロ切換接片	D	19-0688	1	Flash Change Contact
軸ビス	D	97-4305	1	Screw
バネ掛けビス	D	97-4314	1	Screw
スプリング	D	97-6691	1	Spring
スプリング	D	97-6692	1	Spring
スプリング	D	97-6696	1	Spring
スプリング	D	97-6700	1	Spring
スプリング	D	97-6701	1	Spring
スプリング	D	97-6713	1	Spring
平ビス		X11-140157	2	Screw
皿ビス		X14-140157	4	Screw
皿ビス		X14-170157	4	Screw
調整ワッシャー		[X32-506211 X32-506212]	N	Adjusting Washer
平ビス		X91-143078	1	Screw
調整ワッシャー		[X98-070385 X98-070386]	N	Adjusting Washer

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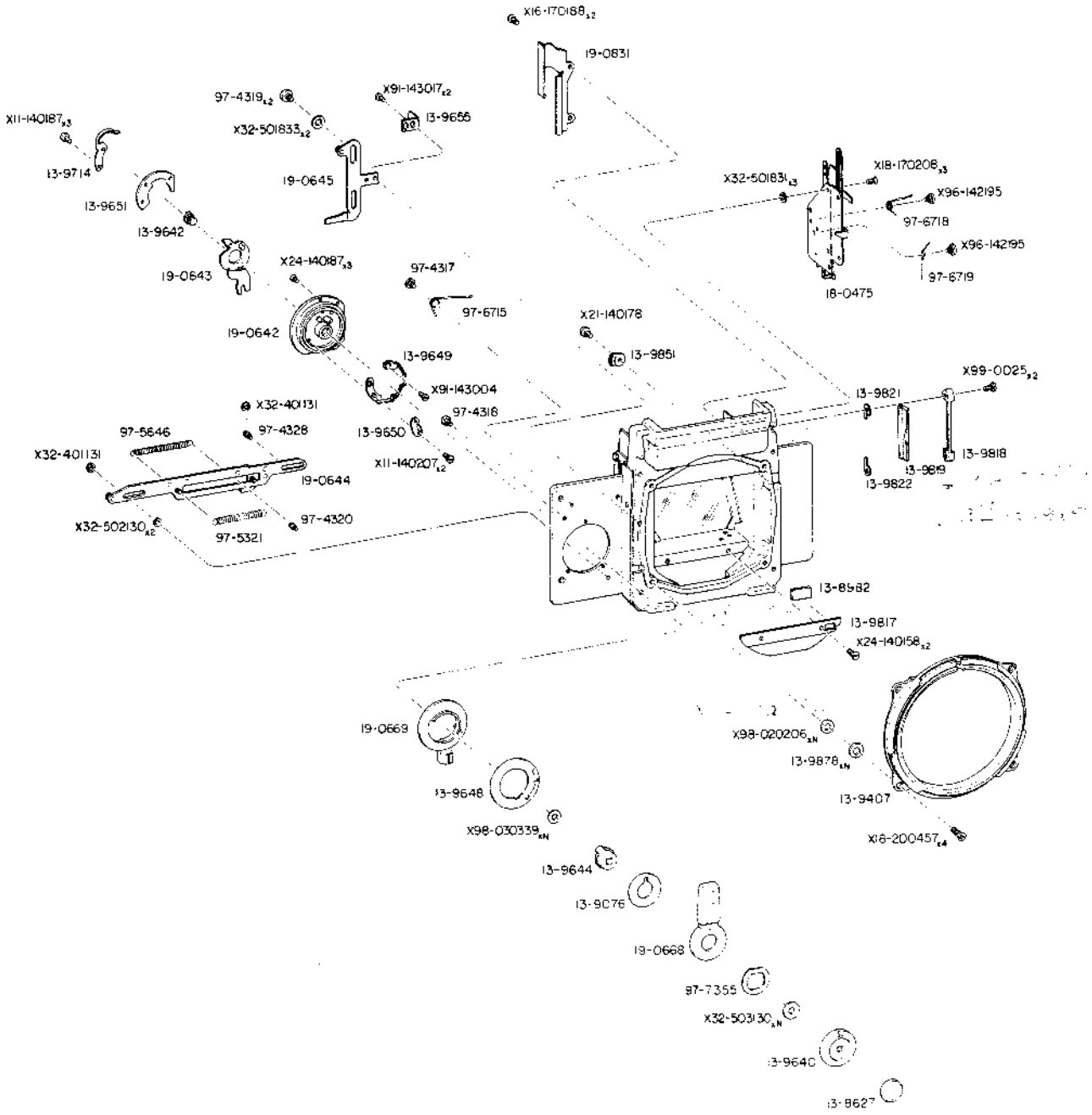

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PARTS LIST

CORRECTION LEVER UNIT & SELF TIMER LEVER

開口補正レバーユニット　　セルフタイマーレバー

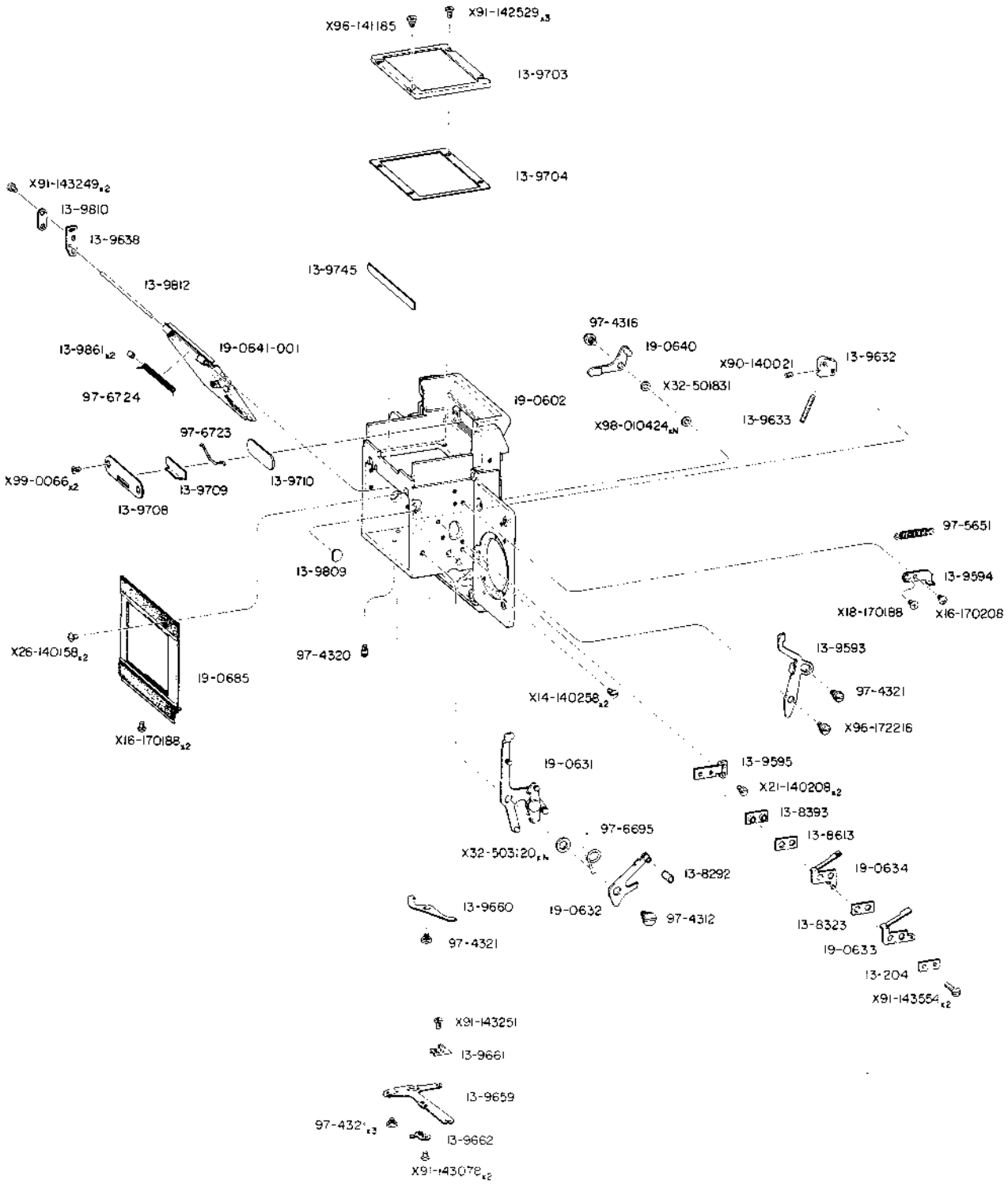
部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
カニ穴ビス	A	13-8627	1	Pin Face Screw
赤マーク	D	13-8982	1	Red Mark
ワッシャー	C	13-9076	1	Washer
マウント	D	13-9407	1	Body Mount
セルフタイマー指標	C	13-9640	1	Self Timer Index
ジョイント	D	13-9642	1	Joint
セルフタイマーチャージレバー	D	13-9644	1	Self Timer Charge Lever
指標板	B	13-9648	1	Index Plate
クリックバネ	D	13-9649	1	Click Spring
位置決め板	D	13-9650	1	Setting Plate
絞り込みレバー押え	D	13-9651	1	Lever Holder
ミラーアップレバー	D	13-9655	1	Mirror Up Lever
板バネ	C	13-9714	1	Plate Spring
遮光板	D	13-9817	1	Light Shield
板バネ	C	13-9818	1	Window Frame
サーホEE窓ふた	C	13-9819	1	Window Cover
板バネ	D	13-9821	1	Spring
板バネ	D	13-9822	1	Spring
リード線押え	D	13-9851	1	Lead Holder
ピントワッシャー	C	13-9878	N	Adjusting Washer
開口補正	C	18-0475	1	Correction Lever Unit
セルフタイマーレバー受け	D	19-0642	1	Self Timer Lever Base
絞り込みレバー	D	19-0643	1	Diaphragm Closing Lever
絞り込みレバー	D	19-0644	1	Diaphragm Closing Lever
ミラーアップレバー	D	19-0645	1	Rirror Clamp Lever
セルフタイマーレバー	B	19-0668	1	Self Timer Lever
ミラーアップレバー	B	19-0669	1	Mirror Clamp Lever
遮光板	D	19-0831	1	Light Shield
軸ビス	D	97-4317	1	Screw
軸ビス	D	97-4318	1	Screw
軸ビス	D	97-4319	2	Screw
バネ掛けビス	D	97-4320	1	Screw
ビス	D	97-4328	1	Screw
コイルスプリング	D	97-5321	1	Coil Spring
コイルスプリング	D	97-5646	1	Coil Spring
スプリング	D	97-6715	1	Spring
スプリング	D	97-6718	1	Spring
スプリング	D	97-6719	1	Spring
波ワッシャー	D	97-7355	1	Spring Washer
平ビス		XJ1-140187	3	Screw
平ビス		X11-140207	2	Screw
十字ナベビス		X16-170188	2	Screw
十字ナベビス		X16-170228	1	Screw
十字皿ビス		X18-170208	2	Screw
十字皿ビス		X18-200457	4	Screw
平ビス		X21-140178	1	Screw
皿ビス		X24-140158	2	Screw
皿ビス		X24-140187	3	Screw
緊定ワッシャー		X32-401131	2	Retaining Washer
ワッシャー		X32-501831	3	Washer
ワッシャー		X32-501833	N	Washer
ワッシャー		X32-502130	2	Washer
調整ワッシャー		X32-503130 X32-503131	N	Adjusting Washer
平ビス		X91-143004	1	Screw
平ビス		X91-143017	2	Screw
段ビス		X96-142195	2	Screw
ワッシャー		X98-020206	N	Washer
ワッシャー		X98-030339	N	Washer
平ビス		X99-0025	2	Screw

REF. NO. 1-20711

EXPLODED VIEW

of

CANON F-1



SCALE 1-2.0

PARTS LIST

MIRROR & FRONT PANEL(MIRROR BOX)
ミラー　　前板

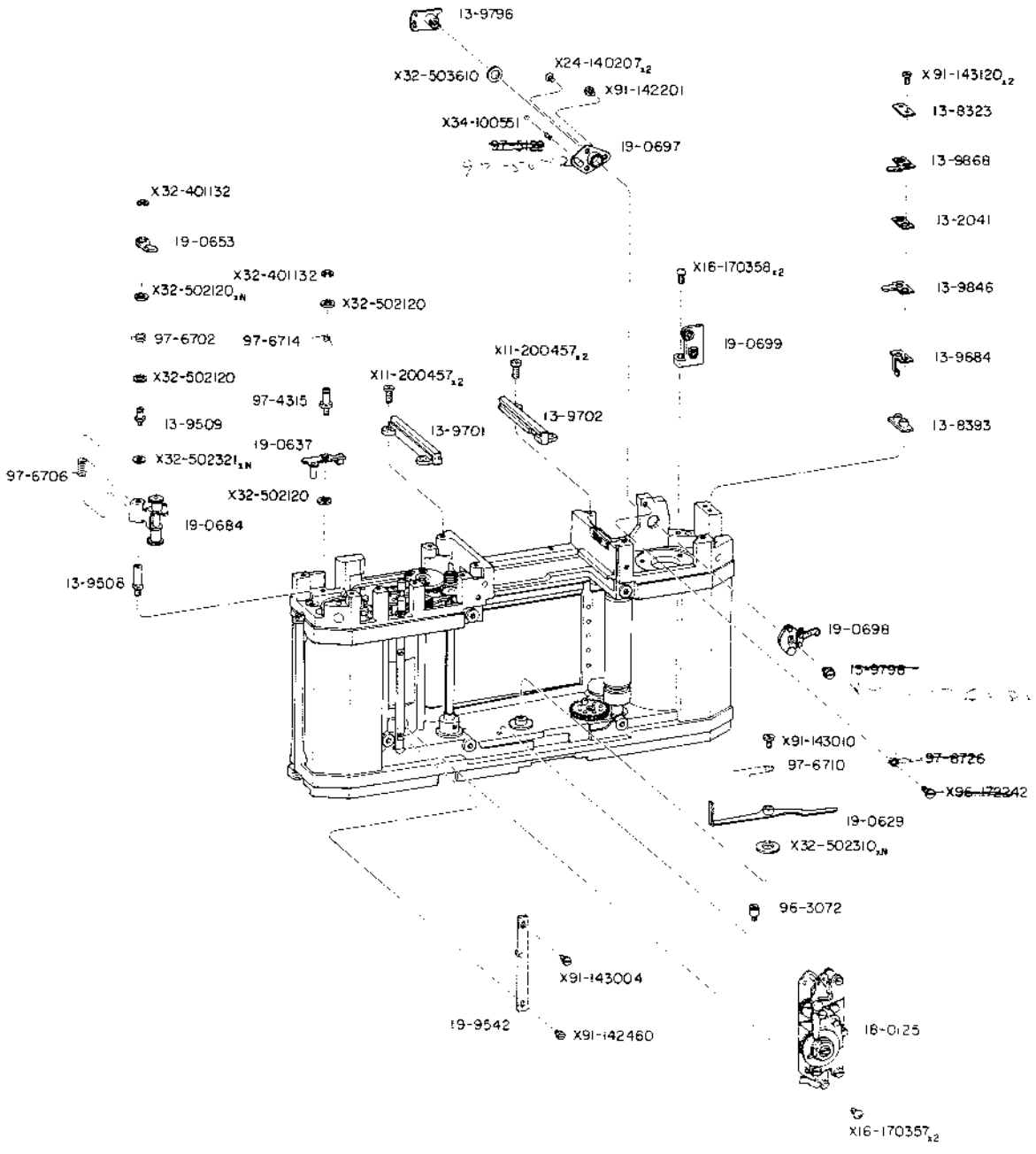
部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
絶縁板	C	13-2041	1	Insulator
ビニールチューブ	C	13-8292	1	Vinyl Tube
絶縁板	C	13-8323	1	Insulator
絶縁台	D	13-8393	1	Insulator
絶縁板	C	13-8613	1	Insulator
緊定外しレバー	C	13-9593	1	Release Lever
スプリング掛け	D	13-9594	1	Spring Catch
接片地板	D	13-9595	1	Contact Base
ミラーストッパー	D	13-9632	1	Mirror Stopper
調整ビス	C	13-9633	1	Adjusting Screw
ミラー軸受け板	D	13-9638	1	Mirror Shaft Support
開口補正レバー	D	13-9659	1	Max. Aperture Correction Lever
中間レバー	D	13-9660	1	Inter Lever
開口補正触子	D	13-9661	1	Max. Aperture Correction Tip
開口補正コマ	D	13-9662	1	Adjusting Plate
マスク	D	13-9703	1	Mask
調整ワッシャー （）内の数字は厚さを示す。 （単位 mm）	D	[13-9704(0.03) 13-9704(0.05) 13-9704(0.1) 13-9704(0.2)]	N	Adjusting Washer Parenthesized numbers indicate thickness. (Unit : mm)
化粧板	C	13-9708	1	Accessory Plate
スクリーンユニット押え	D	13-9709	1	Focusing Screen Unit Holder
保護板	D	13-9710	1	Protection Plate
遮光板	D	13-9745	1	Light Shield
キャップ	D	13-9809	1	Cap
ミラー軸押え	D	13-9810	1	Mirror Shaft Holder
ミラー軸	C	13-9812	1	Mirror Shaft
カラー	D	13-9861	2	Collar
前板	D	19-0602	1	Front Panel (Mirror Box)
ミラーチャージレバー	C	19-0631	1	Inter Locking Lever
ミラー押し下げレバー	D	19-0632	1	Swing Down Lever
高速接片	B	19-0633	1	FP Contact
高速接片	C	19-0634	1	FP Contact
ミラー押し上げレバー	D	19-0640	1	Swing Up Lever
ミラーユニット	C	19-0641-001	1	Mirror
遮光板	D	19-0685	1	Light Baffle
軸ビス	D	97-4312	1	Screw
軸ビス	D	97-4316	1	Screw
バネ掛けビス	D	97-4320	1	Screw
段ビス	D	97-4321	5	Screw
コイルスプリング	D	97-5051	1	Coil Spring
スプリング	D	97-6695	1	Spring
スプリング	D	97-6723	1	Spring
スプリング	D	97-6724	1	Spring
皿ビス		X14-140258	2	Screw
十字ナベビス		X16-170188	2	Screw
十字ナベビス		X16-170208	1	Screw
十字皿ビス		X18-170188	1	Screw
平ビス		X21-140208	2	Screw
十字ナベビス		X26-140158	2	Screw
調整ワッシャー		[X32-501831 X32-501832 X32-501833]	N	Adjusting Washer
調整ワッシャー		[X32-503120 X32-503121]	N	Adjusting Washer
止めビス		X90-140021	1	Screw
平ビス		X91-142529	3	Screw
平ビス		X91-143078	2	Screw
平ビス		X91-143249	2	Screw
平ビス		X91-143251	1	Screw
平ビス		X91-143554	2	Screw
段ビス		X96-141185	1	Screw
段ビス		X96-172215	1	Screw
調整ワッシャー		[X98-010424 X98-010425]	N	Adjusting Washer

REF. NO. 1-20711

EXPLODED VIEW

of

CANON F-1



SCALE 1-2.0

PARTS LIST

METER SWITCH & FEEDING GEAR
メーター スイッチ　　枚数盤送りギヤー

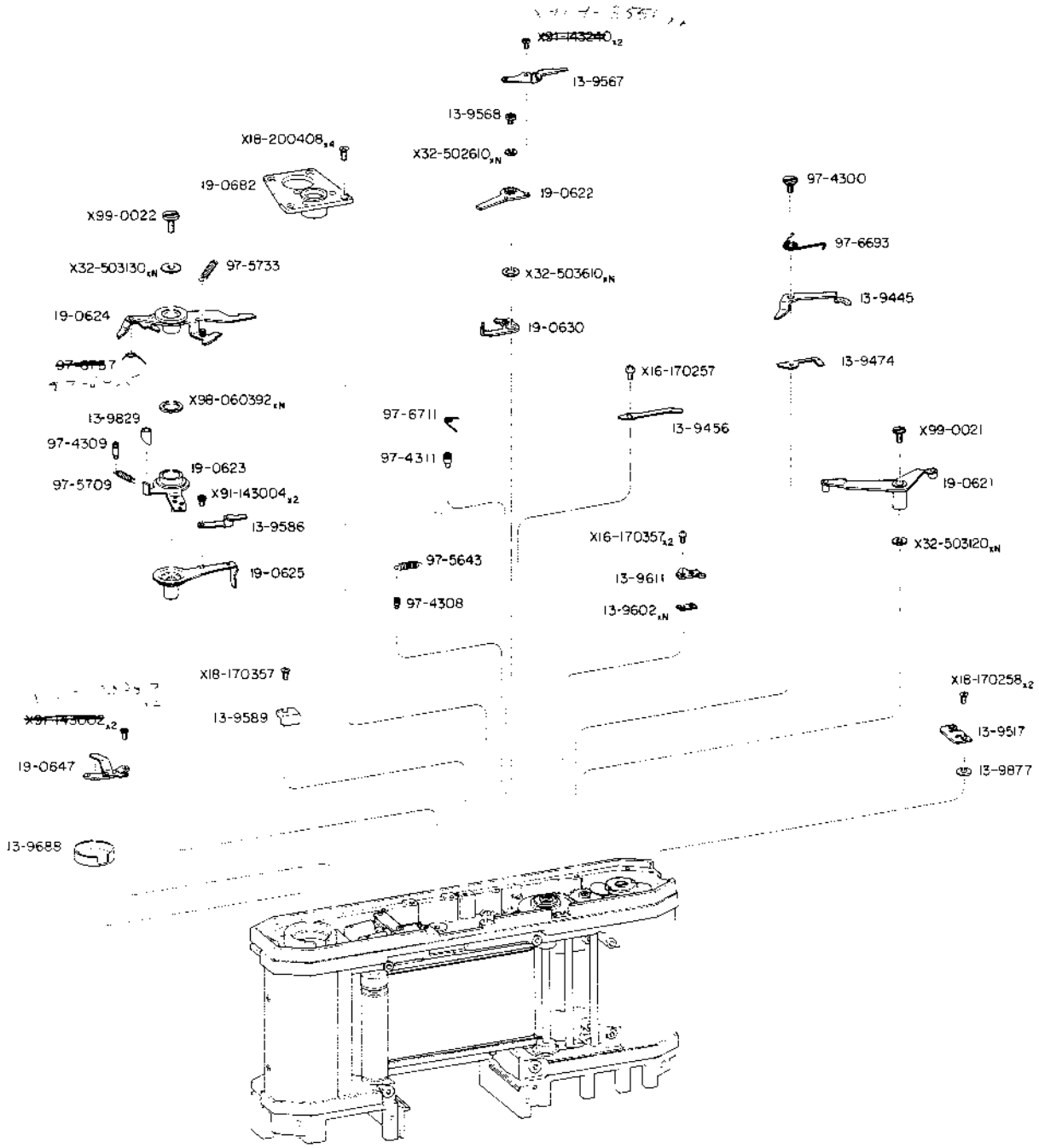
部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
絶縁板	C	13-2041	1	Insulator
絶縁板	C	13-8323	1	Insulator
絶縁台	D	13-8393	1	Insulator Base
スタッド	D	13-9508	1	Stud
スタッド	D	13-9509	1	Stud
ターミナル接片	C	13-9684	1	Flash Terminal Contact
レール	B	13-9701	1	Rail
レール	B	13-9702	1	Rail
メータースイッチ軸	D	13-9796	1	Meter Switch Shaft
ビス	D	13-9798	1	Screw
シンクロ接片	C	13-9846	1	Syncro Contact
接片	C	13-9868	1	Contact
セルフタイマー	C	18-0125	1	Self Timer
ミラーチャージレバー	C	19-0629	1	Mirror Charge Lever
枚数盤復帰レバー	C	19-0637	1	Counter Reset Lever
ロックレバー	D	19-0653	1	Lock Lever
枚数盤送りレバー	C	19-0684	1	Feeding Gear
スイッチ軸受け	C	19-0697	1	Switch Base
スイッチ接片	C	19-0698	1	Switch Contact
スイッチ接片	C	19-0699	1	Switch Contact
セルフタイマー始動板	D	19-9542	1	Self Timer Starter
バネ掛けビス	D	96-3072	1	Screw
スタッド	D	97-4315	1	Stud
コイルスプリング	D	97-5122	1	Coil Spring
スプリング	D	97-6702	1	Spring
スプリング	D	97-6706	1	Spring
スプリング	D	97-6710	1	Spring
スプリング	D	97-6714	1	Spring
スプリング	D	97-6726	1	Spring
平ビス		X11-200457	4	Screw
十字ナベビス		X16-170357	2	Screw
十字ナベビス		X16-170358	2	Screw
皿ビス		X24-140207	2	Screw
緊定ワッシャー		X32-401132	2	Retaining Washer
調整ワッシャー		[X32-502121 X32-502122]	N	Adjusting Washer
調整ワッシャー		[X32-502310 X32-502311]	N	Adjusting Washer
ワッシャー		X32-503610	1	Washer
スチールホール		X34-100551	1	Steel Ball
平ビス		X91-142201	1	Screw
調整ビス		[X91-142460 X91-143461 X91-143462]	1	Adjusting Screw
平ビス		X91-143004	1	Screw
平ビス		X91-143010	1	Screw
平ビス		X91-143120	2	Screw
段ビス		X96-172242	1	Screw

REF. NO. 1-20711

EXPLODED VIEW

of

CANON F-1



SCALE 1-2.0

PARTS LIST

DIAPHRAGM CHARGE LEVER
絞りチャージー　　レ バ ー

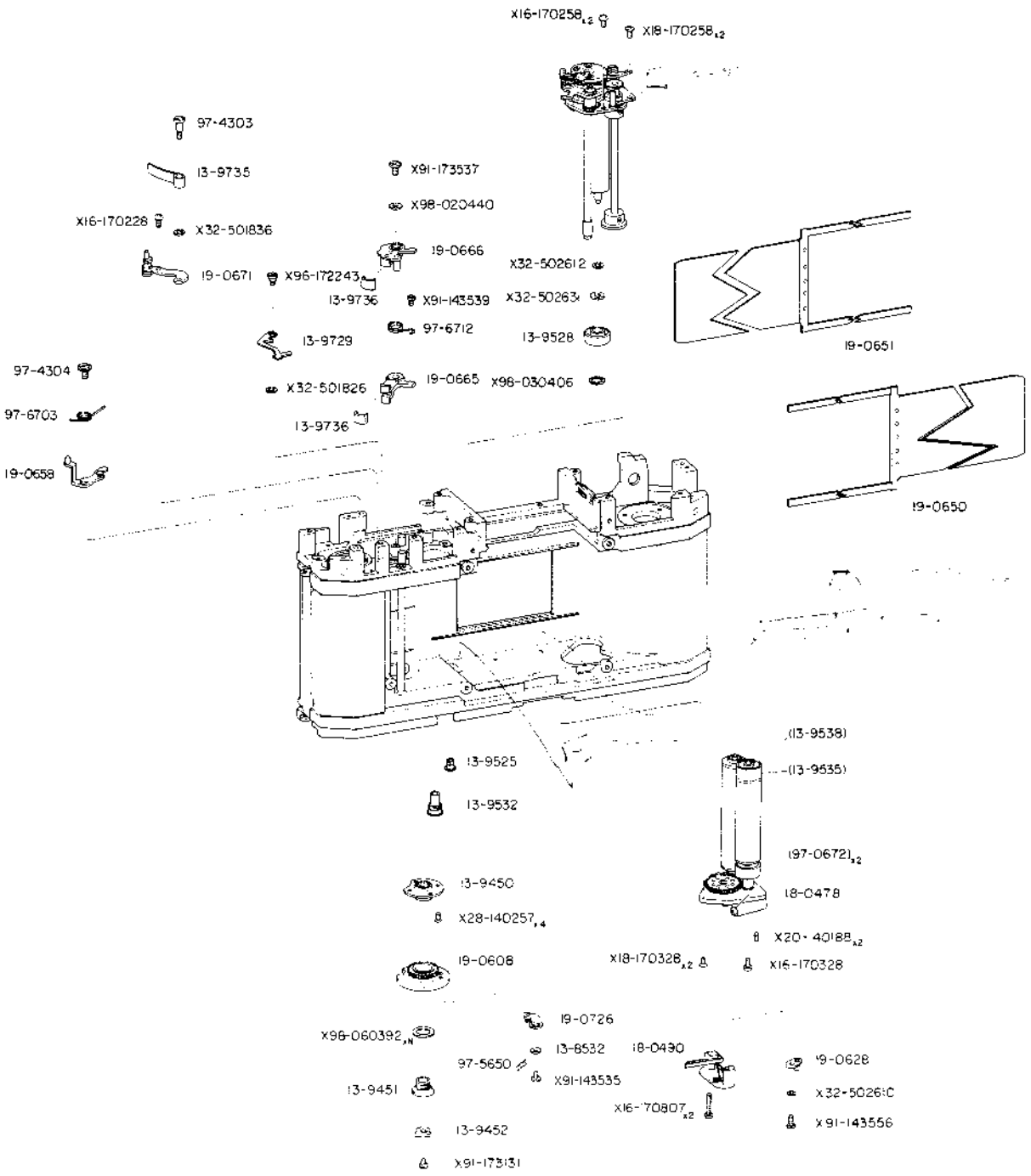
部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
巻戻しセットレバー	C	13-9445	1	Rewind Clamp Lever
ガイトレバー	C	13-9456	1	Clamp Lever Guide
スプリング	C	13-9474	1	Spring
下部カバー爪	B	13-9517	1	Base Cover Claw
レリーズレバー	C	13-9567	1	Release Lever
ビス	C	13-9568	1	Screw
ミラーチャージレバー	C	13-9586	1	Mirror Charge Lever
ショック受け	D	13-9589	1	Shock Absorber
ワッシャー	D	13-9602	N	Washer
カタ止め	C	13-9611	1	Play Arester
電池室	D	13-9688	1	Battery Case
ビニールチューブ	D	13-9829	1	Vinyl Tube
ワッシャー	D	13-9877	1	Washer
チャージレバー	B	19-0621	1	Charge Lever
絞り緊定レバー	D	19-0622	1	Diaphragm Release Lever
絞りレバー	C	19-0623	1	Diaphragm Release Lever
絞りチャージレバー	C	19-0624	1	Diaphragm Charge Lever
ミラーチャージレバー	C	19-0625	1	Mirror Charge Lever
緊定レバー	D	19-0630	1	Turning Stopper
電池接片	B	19-0647	1	Battery Contact
三脚地板	B	19-0682	1	Tripod Socket
段ビス	D	97-4300	1	Screw
バネ掛けビス	D	97-4308	1	Screw
バネ掛けビス	D	97-4309	1	Screw
バネ掛けビス	D	97-4311	1	Screw
コイルスプリング	D	97-5643	1	Coil Spring
コイルスプリング	D	97-5709	1	Coil Spring
コイルスプリング	D	97-5733	1	Coil Spring
スプリング	D	97-6693	1	Spring
スプリング	D	97-6711	1	Spring
スプリング	D	97-6737	1	Spring
十字ナベビス		X16-170257	1	Screw
十字ナベビス		X16-170357	2	Screw
十字皿ビス		X18-170258	2	Screw
十字皿ビス		X18-170357	1	Screw
十字皿ビス		X18-200408	4	Screw
調整ワッシャー		X32-502610 X32-502611 X32-502612	N	Adjusting Washer
調整ワッシャー		X32-503120 X32-503121	N	Adjusting Washer
調整ワッシャー		X32-503130 X32-503131 X32-503132	N	Adjusting Washer
調整ワッシャー		X32-503610 X32-503611 X32-503612	N	Adjusting Washer
平ビス		X91-143002	2	Screw
平ビス		X91-143004	2	Screw
平ビス		X91-143240	2	Screw
調整ワッシャー		X98-060392 X98-060393	N	Adjusting Washer
三ビス		X99-0021	1	Screw
十ビス		X99-0022	1	Screw

REF. NO. 1-20711

EXPLODED VIEW

of

CANON F-1



SCALE 1-2.0

PARTS LIST

CURTAIN, CURTAIN BRAKE & SPRING DRUM UNIT
シャッター幕 シャッター ブレーキ スプリング ドラム ユニット

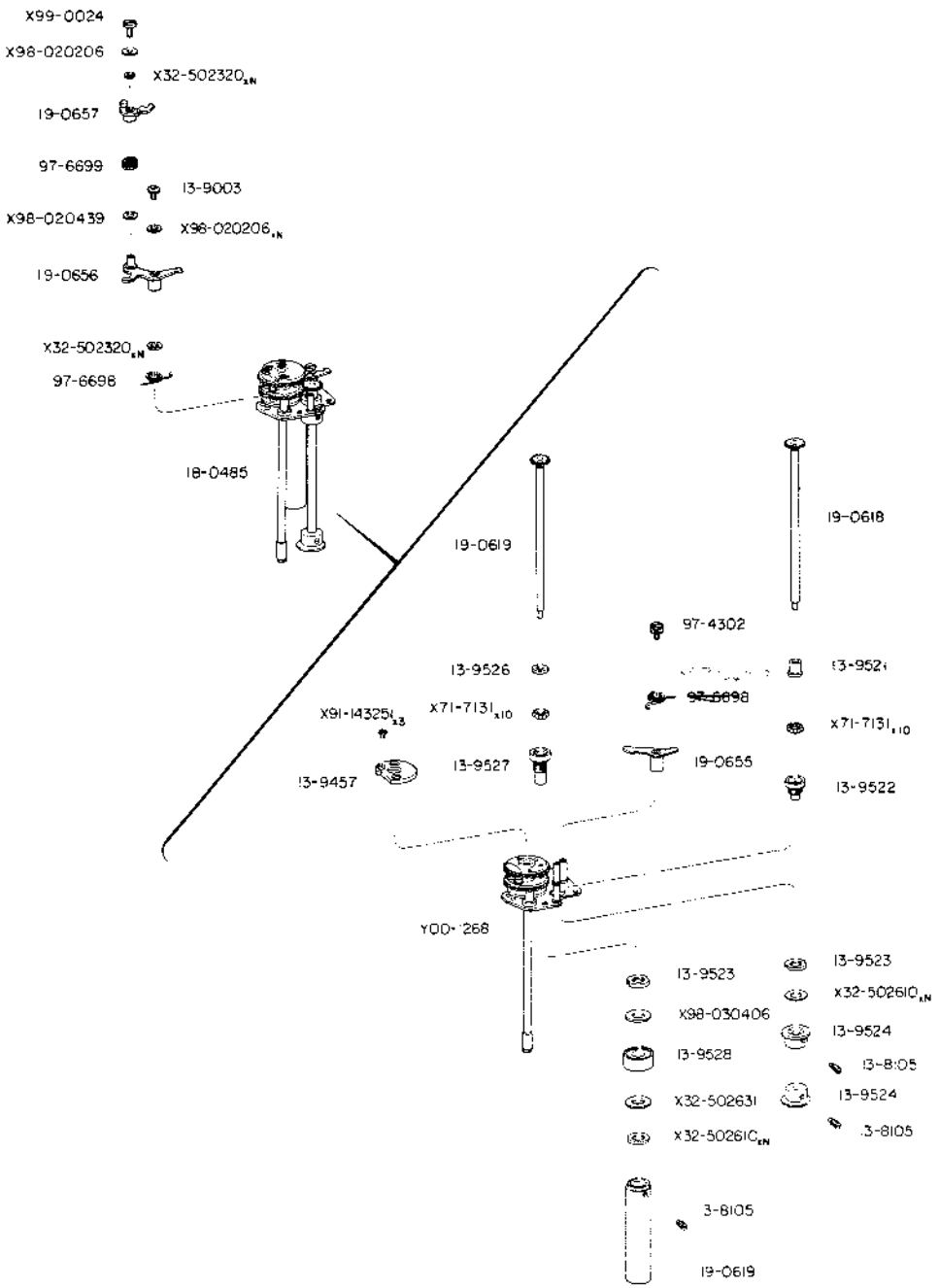
部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
カラー	D	13-8532	1	Collar
キヤー軸	D	13-9450	1	Gear Holder
押え環	D	13-9451	1	Assembly Collar
巻上げ爪	B	13-9452	1	Shutter Charge Pawl
軸受け	D	13-9525	1	Bushing
ローラー	C	13-9528	1	Roller
軸受け	D	13-9532	1	Bushing
ローラー	D	13-9535	1	Roller
ワッシャー	D	13-9538	1	Washer
アンクル外しレバー	D	13-9729	1	Anchor Release Lever
ブレーキバンド	D	13-9735	1	Brake Band
鹿皮	B	13-9736	2	Brake Leather
スプリングドラムユニット	C	18-0478	1	Spring Drum Unit
MD接片	C	18-0490	1	MD Contact
シャッターチャージギヤー	B	19-0608	1	Shutter Charge Gear
絞り解除レバー	D	19-0628	1	Diaphragm Reset Lever
先幕	C	19-0650	1	1st Curtain
後幕	C	19-0651	1	2nd Curtain
ブレーキチャージレバー	C	19-0658	1	Brake Charge Lever
先幕ブレーキ	D	19-0665	1	1st Curtain Brake
後幕ブレーキ	D	19-0666	1	2nd Curtain Brake
ブレーキバンド地板	D	19-0671	1	Brake Band Base
ウォームギヤー	C	97-0672	2	Worm Gear
逆止めレバー	D	19-0726	1	Stopper
軸ビス	D	97-4303	1	Screw
軸ビス	D	97-4304	1	Screw
コイルスプリング	D	97-5650	1	Coil Spring
スプリンク	D	97-6703	1	Spring
スプリング	D	97-6712	1	Spring
十字ナベビス		X16-170228	1	Screw
十字ナベビス		X16-170258	2	Screw
十字ナベヒス		X16-170328	1	Screw
十字ナベヒス		X16-170807	2	Screw
十字皿ヒス		X18-170258	2	Screw
十字皿ビス		X18-170328	2	Screw
止めヒス		X20-140188	2	Screw
十字皿ヒス		X28-140257	4	Screw
ワッシャー		X32-501826	1	Washer
ワッシャー		X32-501836	1	Washer
ワッシャー		X32-502610	1	Washer
ワッシャー		X32-502612	1	Washer
ワッシャー		X32-502631	N	Washer
平ビス		X91-143535	1	Screw
平ヒス		X91-143539	1	Screw
平ビス		X91-143556	1	Screw
平ビス		X91-173131	1	Screw
平ビス		X91-173537	1	Screw
段ヒス		X96-172243	1	Screw
ワッシャー		X98-020440	1	Washer
ワッシャー		X98-030406	1	Washer
調整ワッシャー		[X98-060392] [X98-060393]	N	Adjusting Washer

REF. NO. 1-20711

EXPLODED VIEW

of

CANON F-1



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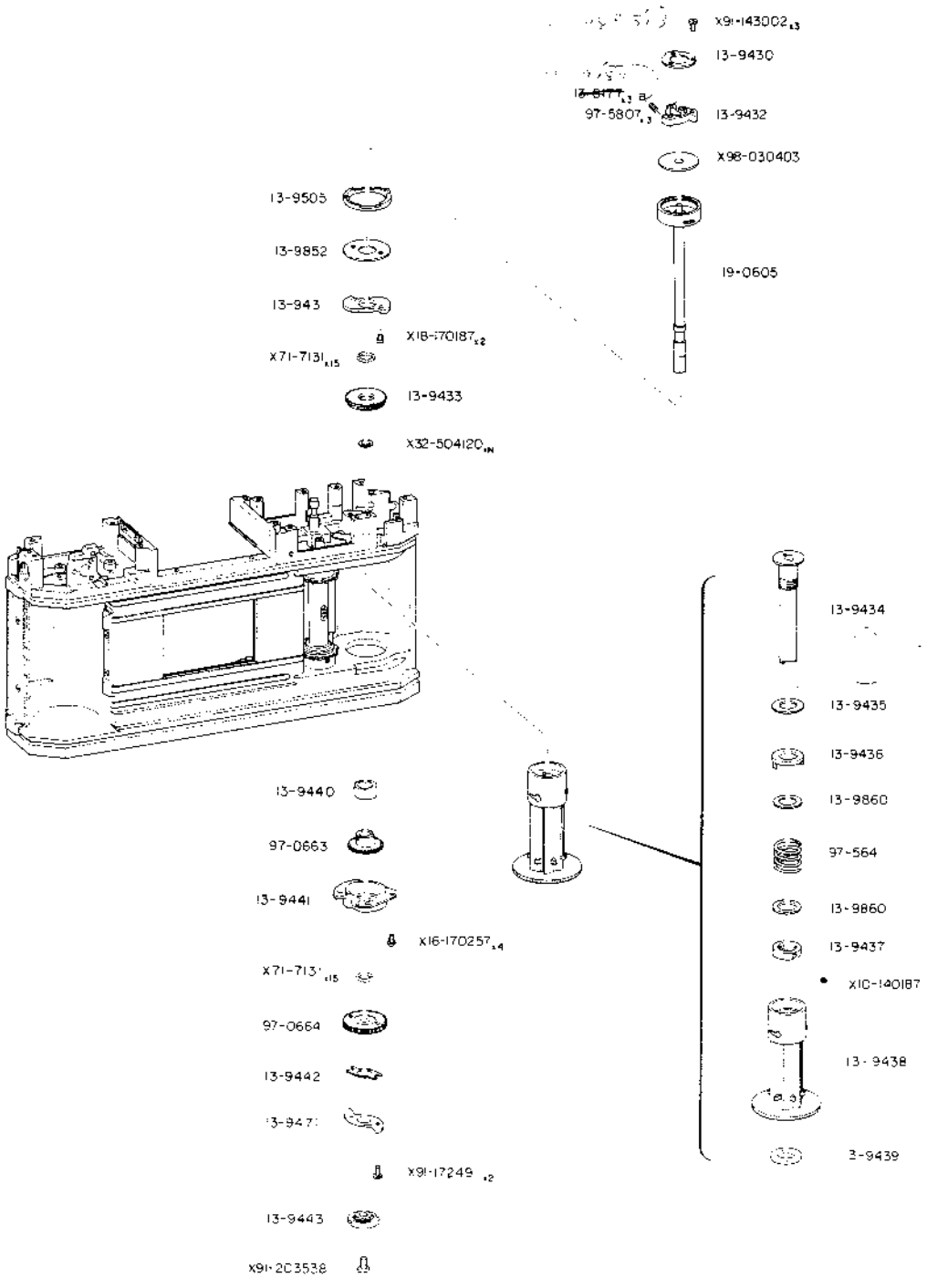
PARTS LIST

MASTER GEAR UNIT
マスター ギヤー ユニット

部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
マスターキヤーユニット	D	Y00-1268	1	Master Gear Unit
ヒス	C	13-8105	3	Screw
ヒス	C	13-9003	1	Screw
ケリカム	C	13-9457	1	Release Cam
カラー	D	13-9521	1	Collar
スチールボール受け	D	13-9522	1	Steel Ball Holder
ナット	D	13-9523	2	Nut
リボン車	C	13-9524	2	Roller
ワッシャー	D	13-9526	1	Washer
スチールボール受け	D	13-9527	1	Steel Ball Holder
ローラー	C	13-9528	1	Roller
マスターキヤーユニット	C	18-0485	1	Master Gear Unit
先幕軸	D	19-0618	1	1st Curtain Shaft
後幕ドラム	D	19-0619	1	2nd Curtain Drum
先幕緊定レバー	C	19-0655	1	1st Curtain Release Lever
カマ	C	19-0656	1	2nd Curtain Cam Follower
フリコ	C	19-0657	1	2nd Curtain Release Lever
バネ掛けビス	D	97-4302	1	Screw
スプリンク	D	97-6698	2	Spring
スプリング	D	97-6699	1	Spring
調整ワッシャー		[X32-502320] [X32-602321]	N	Adjusting Washer
ワッシャー		X32-502610	N	Washer
ワッシャー		X32-502631	N	Washer
スチールボール		X71-7131	20	Steel Ball
平ヒス		X91-143251	3	Screw
ワッシャー		X98-020206	N	Washer
ワッシャー		X98-020439	1	Washer
ワッシャー		X98-030406	1	Washer
平ビス		X99-0024	1	Screw

EXPLODED VIEW
of
CANON F-1



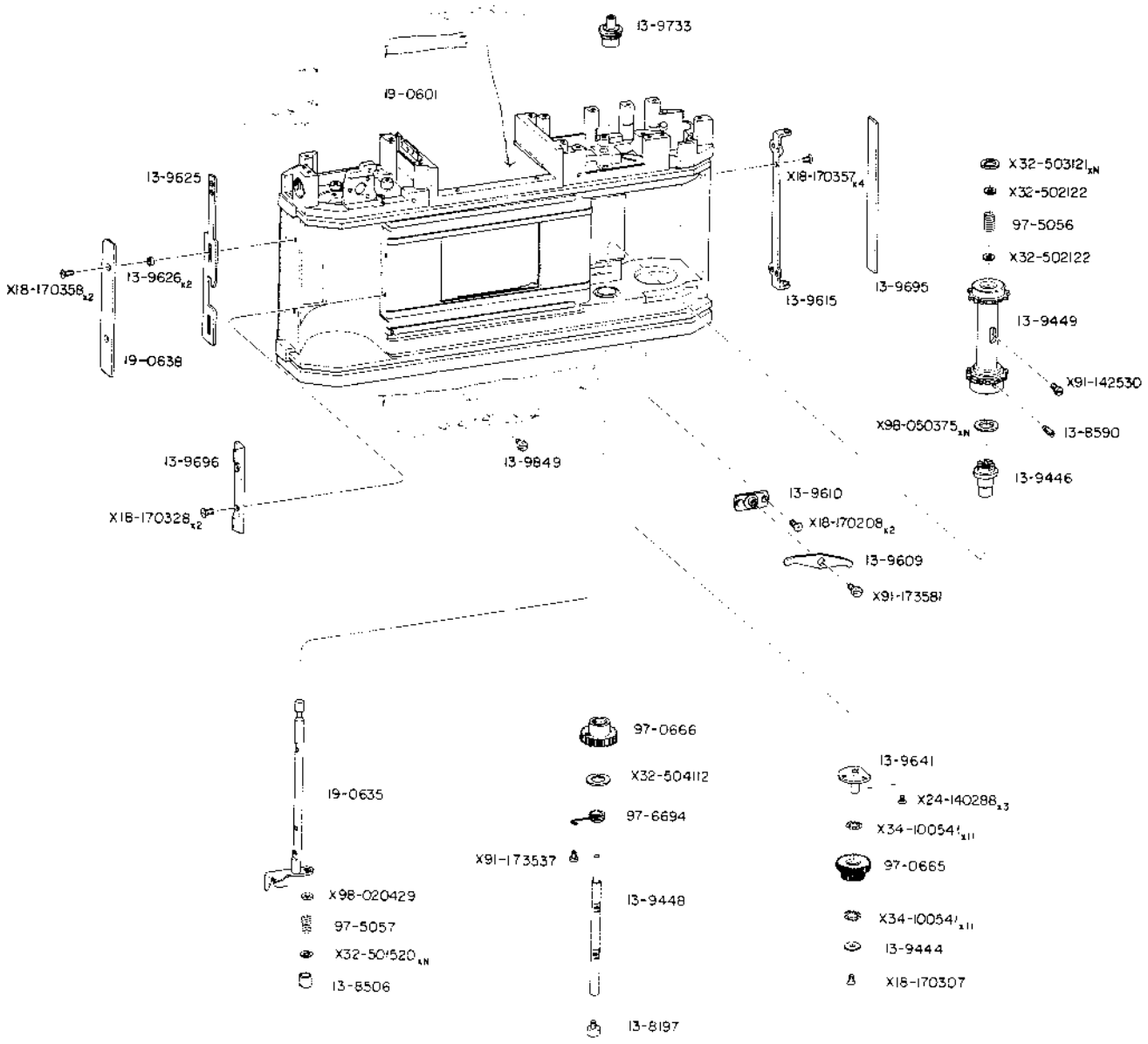
PARTS LIST

SPOOL & WINDING SHAFT
スプール　　巻上げ軸

部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
コロ	C	13-8177	3	Collar
風車押え板	C	13-9430	1	Cover Plate
ブレーキチャージカム	C	13-9431	1	Brake Charge Cam
風車	C	13-9432	1	Free Wheel Cam
巻上げ軸受け	D	13-9433	1	Bushing
スプール軸	D	13-9434	1	Spool Shaft
ワッシャー	D	13-9435	1	Washer
スプリング押え	D	13-9436	1	Spring Holder
ナット	D	13-9437	1	Nut
スプール	C	13-9438	1	Spool
巻上げ軸受け	D	13-9439	1	Bushing
カラー	D	13-9440	1	Collar
巻上げギヤー軸受け	D	13-9441	1	Winding Gear Holder
巻上げカム台	D	13-9442	1	Winding Cam Base
巻上げカプラー	C	13-9443	1	Winding Coupler
巻上げカム	C	13-9471	1	Winding Cam
枚数盤送り爪	C	13-9505	1	Film Counter Claw
ワッシャー	C	13-9852	1	Washer
ワッシャー	D	13-9860	2	Washer
巻上げ軸	C	19-0605	1	Winding Shaft
スプールギヤー	C	97-0663	1	Spool Gear
メインギヤー	C	97-0664	1	Main Gear
コイルスプリング	D	97-5641	1	Coil Spring
コイルスプリング	D	97-5807	3	Coil Spring
止めビス		X10-140187	3	Screw
十字ナベビス		X16-170257	4	Screw
十字皿ビス		X18-170187	2	Screw
調整ワッシャー		X32-504120 X32-504121 X32-504122 X32-504123	N	Adjusting Washer
スチールボール		X71-7131	30	Steel Ball
平ビス		X91-143002	3	Screw
平ビス		X91-172491	2	Screw
平ビス		X91-203538	1	Screw
ワッシャー		X98-030403	1	Washer

REF. NO. 1-20711

EXPLODED VIEW
of
CANON F-1



SCALE 1-2.0

PARTS LIST

SPROCKET, HOOK & BODY
スプロケット，開閉フック　本体

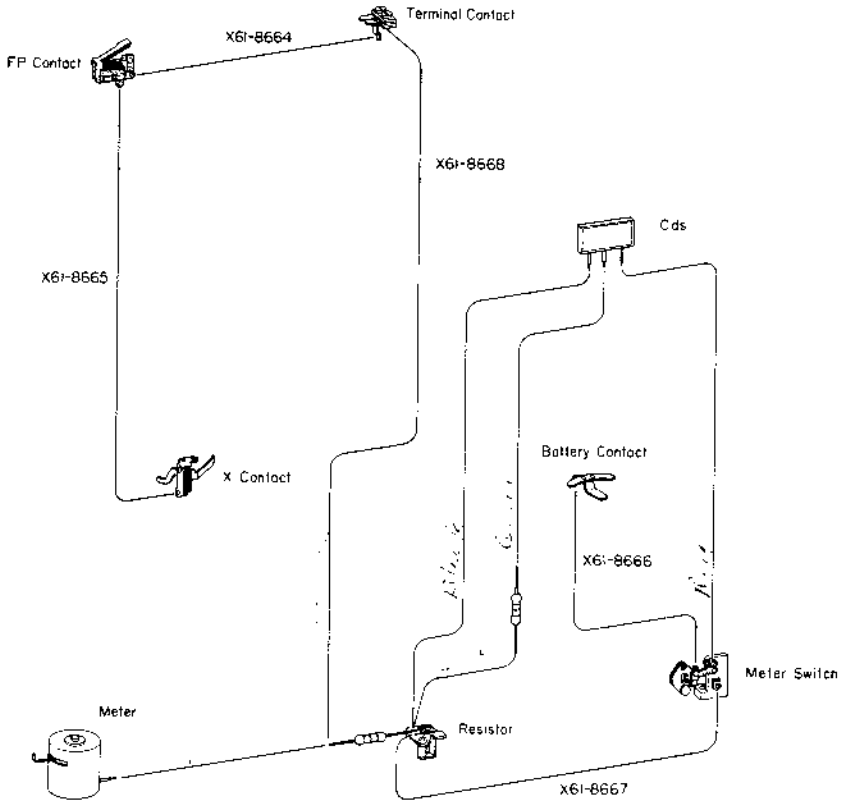
部品名称	CLASS	PARTS NO.	QTY.	DESCRIPTION
巻戻し釦	C	13-8197	1	Rewind Button
ナット	C	13-8506	1	Nut
ビス	C	13-8590	1	Screw
ワッシャー	C	13-9444	1	Washer
スプロケットクラッチ	C	13-9446	1	Sprocket Clutch
スプロケット軸	C	13-9448	1	Sprocket Shaft
スプロケット	C	13-9449	1	Sprocket
シャッターレリースレバー	C	13-9609	1	Shutter Release Lever
レリーズレバー支え	C	13-9610	1	Release Lever Support
蝶番軸受け	D	13-9615	1	Shaft Holder
開閉フック	B	13-9625	1	Hook
カラー	D	13-9626	2	Collar
ギヤー軸	D	13-9641	1	Gear Shaft
遮光板	D	13-9695	1	Light Shield
パトローネ位置決め板	C	13-9696	1	Cassette Set Plate
ブレーキレバー軸	D	13-9733	1	Brake Lever Shaft
フィルムガイド	D	13-9849	1	Film Guide
本体	E	19-0601	1	Body
シャッターレリース軸	D	19-0635	1	Shutter Release Shaft
フックカバー	D	19-0638	1	Hook Cover
ギヤー	C	97-0665	1	Gear
スプロケットギヤー	C	97-0666	1	Sprocket Gear
コイルスプリング	D	97-5056	1	Coil Spring
コイルスプリング	D	97-5057	1	Coil Spring
スプリング	D	97-6694	1	Spring
十字皿ビス		X18-170208	2	Screw
十字皿ビス		X18-170307	1	Screw
十字皿ビス		X18-170328	2	Screw
十字皿ビス		X18-170357	4	Screw
十字皿ビス		X18-170358	2	Screw
皿ビス		X24-140288	3	Screw
調整ワッシャー		[X32-502121 X32-502122]	N	Adjusting Washer
調整ワッシャー		[X32-503120 X32-503121]	N	Adjusting Washer
ワッシャー		X32-501520	N	Washer
ワッシャー		X32-504112	1	Washer
スチールホール		X34-100541	22	Steel Ball
平ビス		X91-142530	1	Screw
平ビス		X91-173537	1	Screw
平ビス		X91-173581	1	Screw
ワッシャー		X98-020429	N	Washer
ワッシャー		X98-050375	N	Washer

REF. NO. 1-20711

CIRCUIT DIAGRAM

of

CANON F-1



NO SCALE

REF. NO. 1-20711

INDEX OF PARTS NUMBERS

REF. NO. 1-20711

CANON REPAIR GUIDE

CANON F-1

(REF. NO. 1-20711)

CANON INC. JAPAN

PREFACE

This Repair Guide is issued to insure the continued high quality of the CANON F-1 through correct repair procedures.

This Guide consists of four parts, i.e., Repair Guide General, Disassembly, Replacement and Adjustment, and Reference Data.

If any repairs are required, refer to this Guide. Any comments or suggestions concerning this Guide will be appreciated.

Canon Inc.
Service Division, Camera Service
Technical Section
30-2 Shimomaruko 3 Chome
Ohta-ku, Tokyo, Japan

Printed in Japan

CONTENTS

Repair Guide General

The Canon F-1 camera is the nucleus of the best, most complete 35 mm photographic system ever manufactured. Since there are so many interchangeable components in the system, it is essential that tolerances be kept to an absolute minimum on both the basic camera and all other components of the system to prevent excessive "tolerance-buildup" and insure total interchangeability of components. A repair that might not be extremely critical in a "fixed-prism, non-motor" SLR, in which all parts, except lens, are fixed permanently in place and adjusted as a unit; becomes extremely important in the F-1 with its interchangeable prisms, meters, finders, motors, backs, etc. This requires utmost diligence and attention to detail on the part of the repair technician. Repair details for the F-1 system are covered in this and several other Repair Guides. The Service Manuals are listed (on the following page) for your convenience.

The following are items of special interest concerning F-1 repair.

1. During manufacture, final machining and drilling of the mirror box is completed after it is mated to the main body casting to insure greatest accuracy. Since this is impossible with service parts, replacement mirror boxes are supplied with the machining completed, but with the mounting flange face cut 0.2 mm deeper than normal to allow a greater range of adjustment.

2. The exposure meter and CdS matched to each other and adjusted with a precision fixed resistor to insure greatest accuracy. Service parts are matched in the same manner and supplied only as a set. The meter unit must be changes as a set only.

3. Winding torque is very important since it directly effects the operation of the Motor Drive Unit. Static torque tolerances are listed in the Repair Guide, but as a double check, check the operation with a known-good Motor Drive Unit.

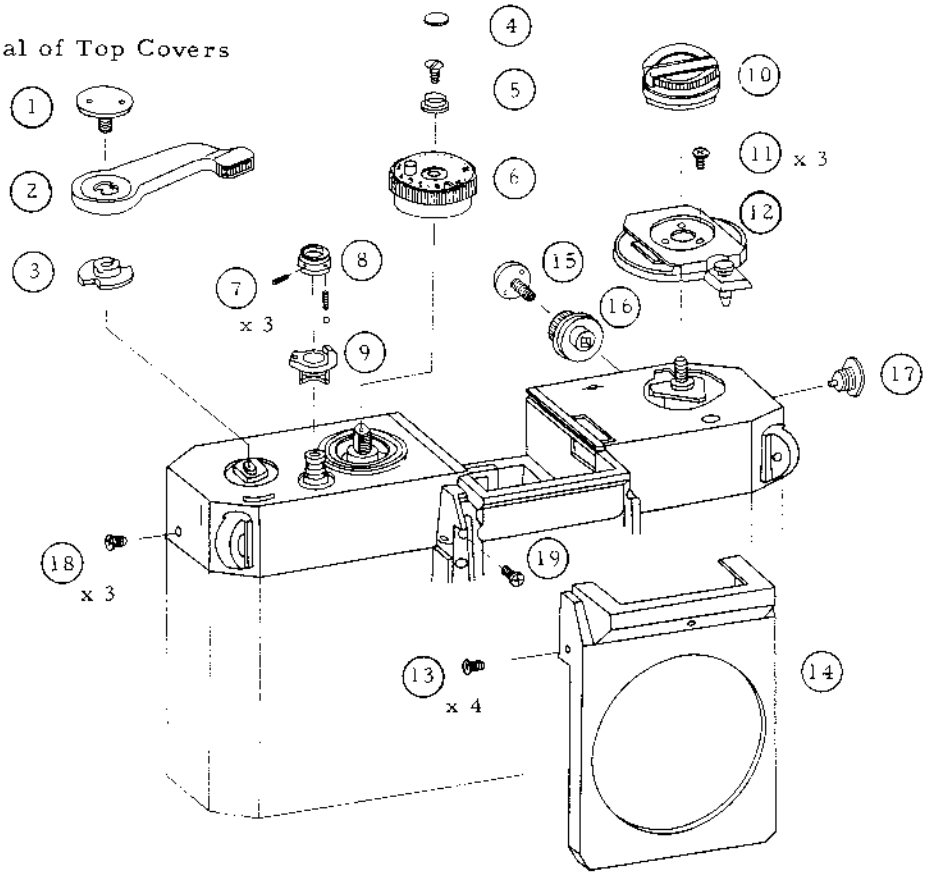
The Service Manuals of the F-1 system are:

Binder No.	Components	Remarks
C-030	F-1 camera	Including Eye-level prism
L-005	Wide-Angle Lenses	Repair Manual only
L-006	Standard Lenses	Repair Guide 50 mm 1:1.4**
L-007	Telephoto Lenses	Repair Manual only
S-003	Motor Drive Unit Film Chamber 250	
S-004	F-1 Finders	Servo EE, Booster T, and Speed Finder
S-005	Accessories	All other accessories

** : This Repair Guide serves as a standard for all FD Lenses.

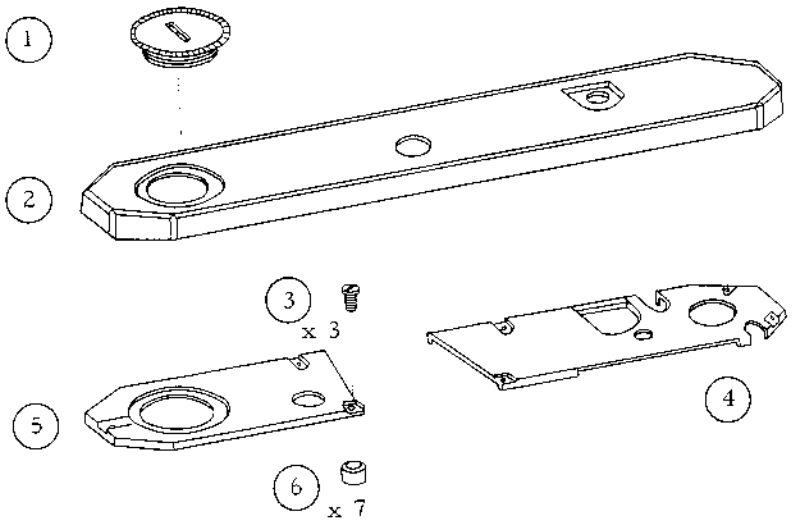
1. DISASSEMBLY

1.1 Removal of Top Covers



1	Pin Face Screw 13-9415	2	Winding Lever 19-0654
3	Winding Lever Seat 13-9411	4	Leather 13-9865
5	Screw 13-9874	6	Shutter Speed Dial 18-0696
7	Screw X10-170258 x3	8	Shutter Button Ring 13-9600
9	Shutter Button Lock 13-9601	10	Rewind Crank 18-0474
11	Screw X99-0056 x3	12	Accessary Shoe Base 13-9679
13	Screw X91-170041 x 4	14	Front Cover 13-9405
15	Pin Face Screw 13-9805	16	Switch Knob 13-9804
17	Flash Terminal 19-0649	18	Screw X95-170041 x3
19	Screw X16-1700257	20	Top Covers 19-0617+19-0605

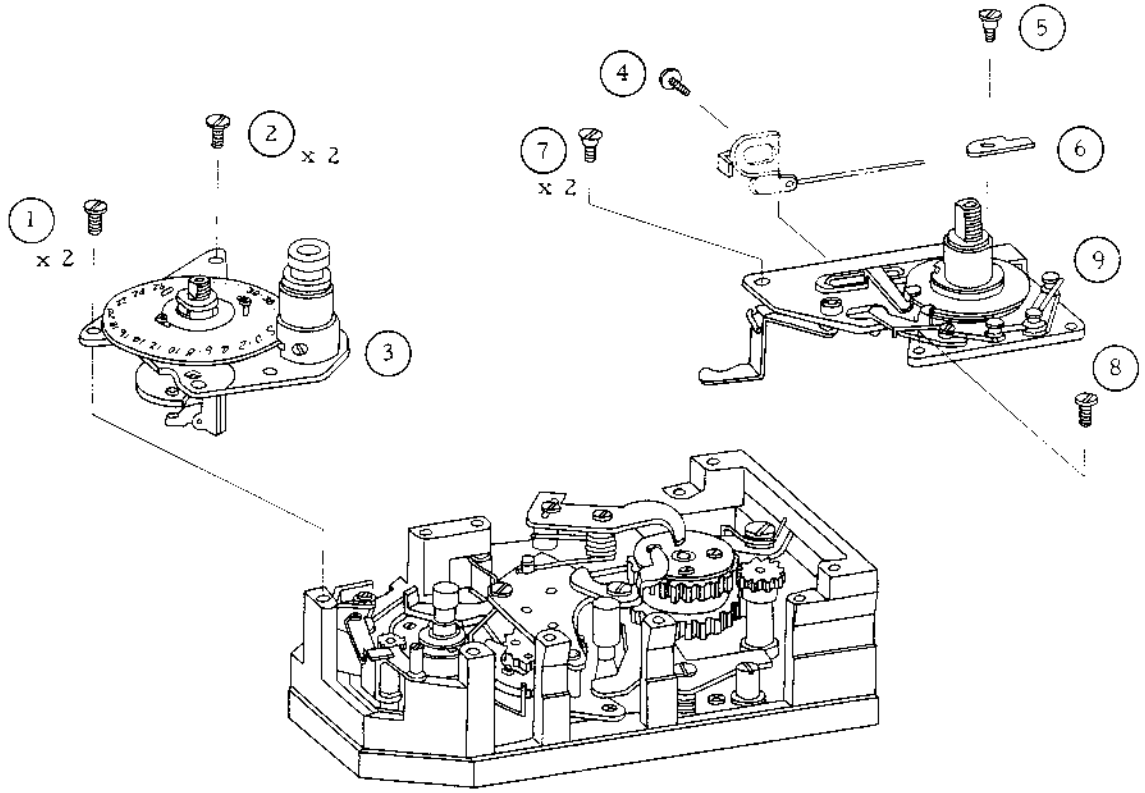
1.2 Removal of Bottom Covers



1	Battery Cover 19-0681	2	Base Cover 13-9406
3	Screw X21-140308 x7	4	Inner Cover 13-9518
5	Inner Cover 13-9519	6	Collar 13-9681 x7

(Note) Install the collar on Body with Diabond (bonding agent).

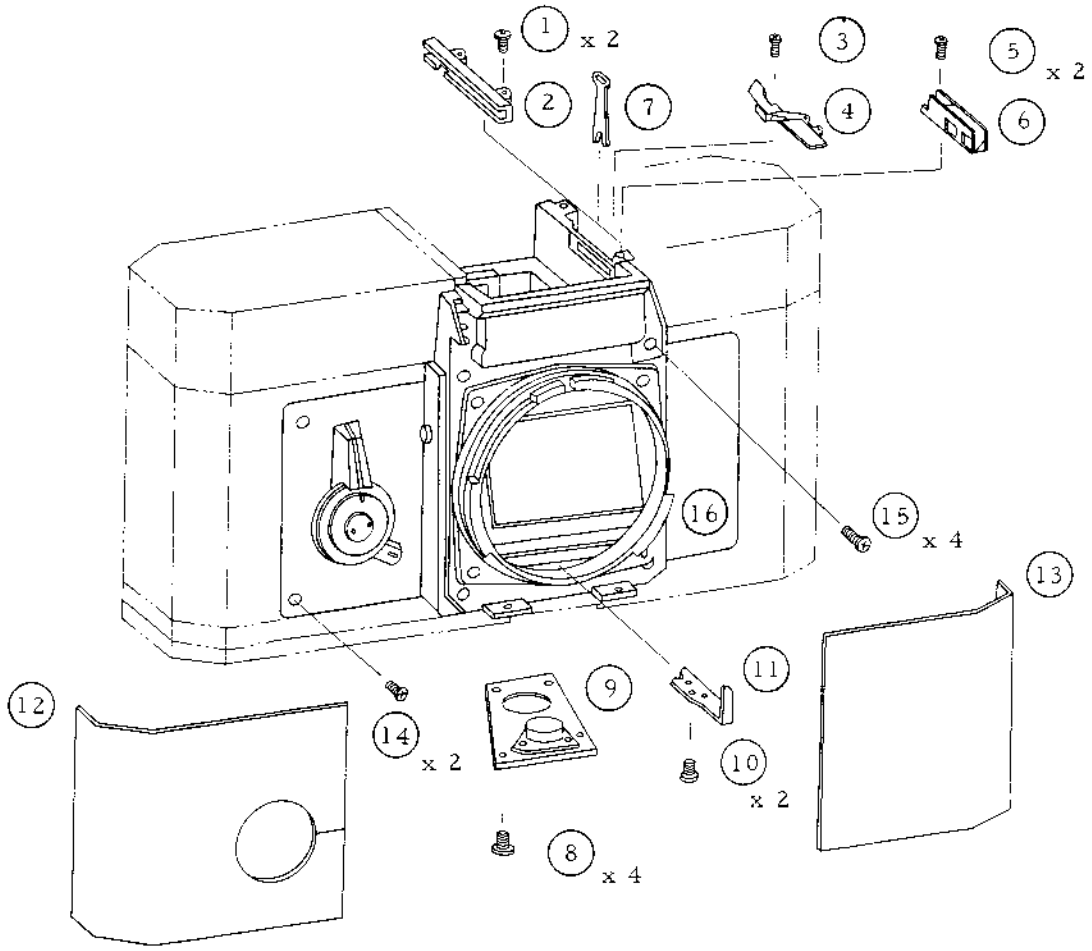
1.3 Winding-Counter Unit and Shutter Speed Selector



1. Removal of Winding Counter Unit	1	Screw X16-170357 x2	2	Screw X18-170357 x2
	3	Winding-Counter Unit 18-0476	4	Screw X91-143004
2. Removal of Shutter Speed Selector	5	Screw 97-4307	6	Play Arrester 13-9887
	7	Screw X18-170357 x2	8	Screw X16-170357
	9	Shutter Speed Selector 18-0477		

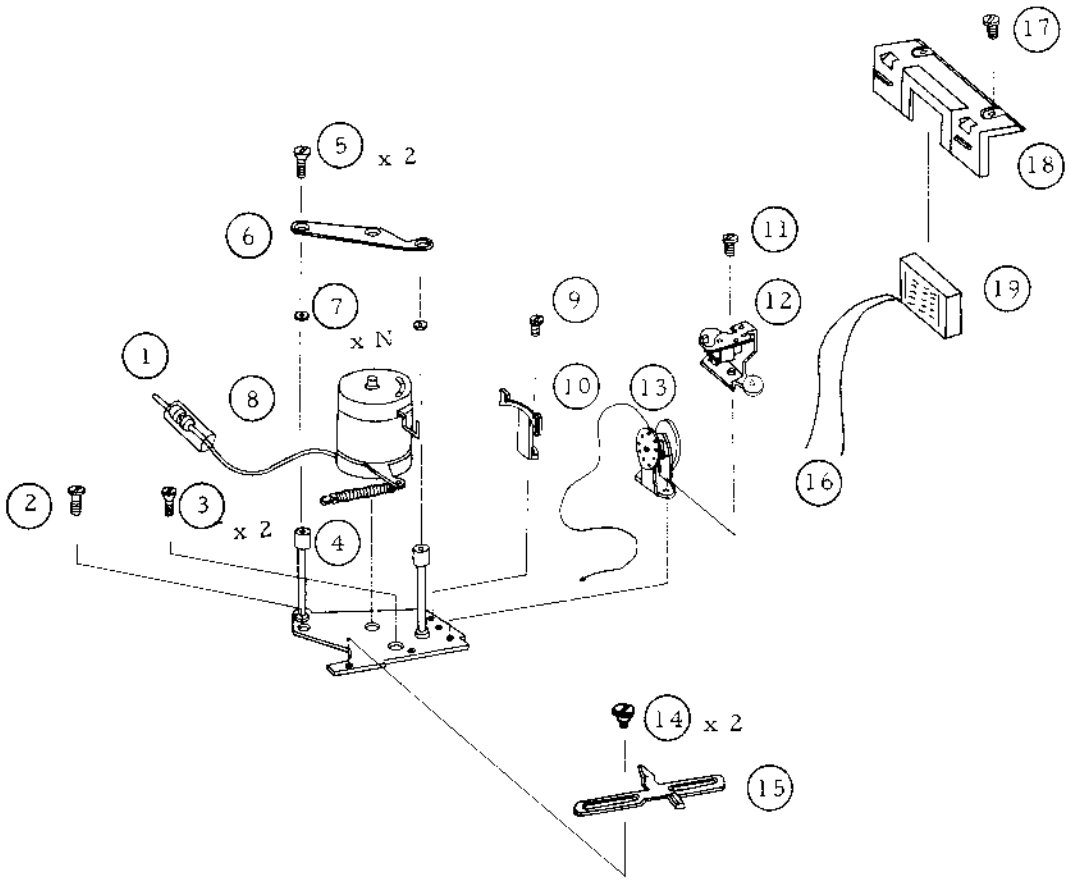
(Note) When detaching Winding-Counter Unit, as the flange of Winding Lever Shaft interferes with the lever of Film Counter Feeding Gear, it is necessary to separate the flange.

1.4 Removal of Front Panel (Mirror Box)



1	Screw X16-200457 x2	2	Rail 13-9702
3	Screw X91-122315	4	Warning Lever 13-9726
5	Screw X11-140208 x2	6	Prism 13-9722
7	Needle 13-9664	8	Screw X18-200408 x4
9	Tripod Socket 19-0682	10	Screw X11-170192
11	Diaphram Release Lever 13-9573	12	Leather 13-9778
13	Leather 13-9779	14	Screw X18-170357 x2
15	Screw X18-200607 x4	16	Front Panel (Mirror Box) Assembly

1.5 Removal of Meter Unit



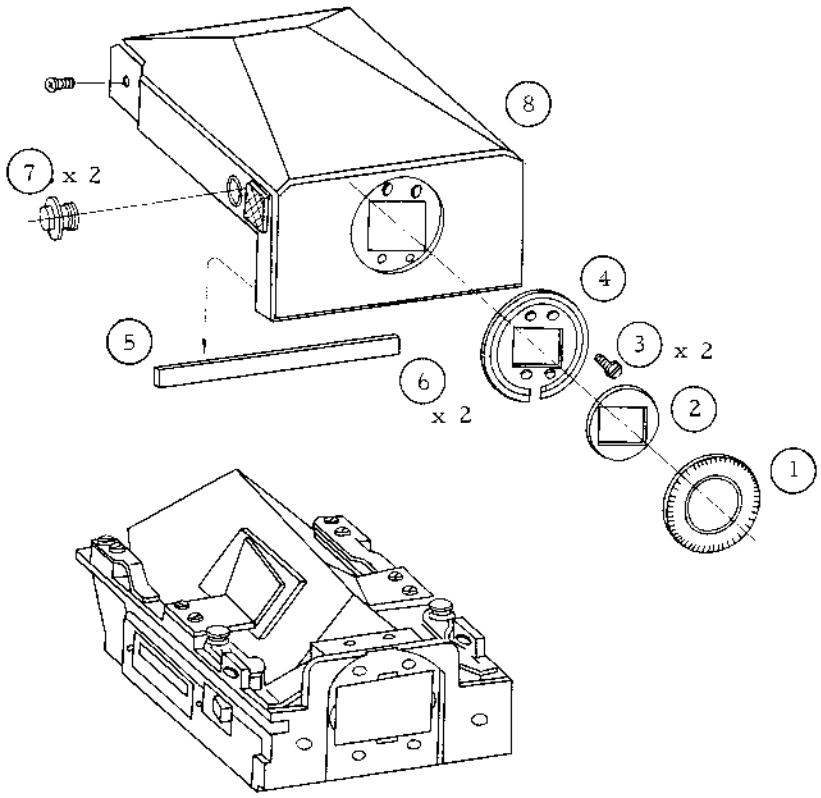
1. Disconnection of lead

1	Screw X16-170308	2	Screw X18-170308 x 2
3	Spring 97-5648	4	Screw X14-140304 x 2
5	Meter Holder 13-9781	6	Washer X32-501822 x N
7	p/o CdS Meter Unit Y00-1266 *	8	Screw X11-140204
9	Meter Stopper 13-9830	10	Screw X11-140224 x 2
11	Pulley 19-0678	12	Shutter Speed Indicator 19-0687
13	Screw X96-142193	14	Meter Setting Lever 19-0667
15	Disconnect leads	16	Screw X99-0023 x 2
17	CdS Case 19-0690	18	p/o CdS Y00-1266 *

Note: Install the CdS with Diabond (bonding agent).

*: The CdS Meter and resistor are a unit (Y00-1266) and must not be changed separately.

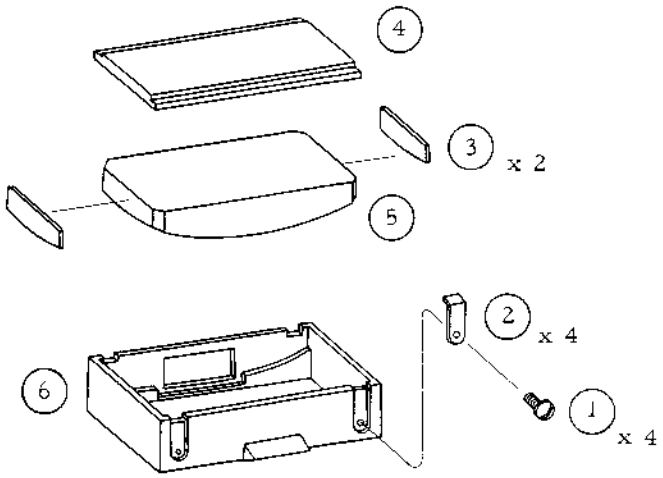
1.6 Removal of Pentaprism Cover



1	Eyepiese Ring 19-0673	2	Mask 13-9752
3	Screw X24-140307 x4	4	Eyepiece Base 13-9750
5	Accessary Plate 13-9753	6	Screw x2 X95-170041
7	Lock Release Button 13-9767	8	Pentaprism Cover 19-0672

(Note) Assemble the Pentaprism Cover with the notched groove of the Eyepiece Base turned down.

1.7 Disassembly of Focusing Screen



1	Screw 13-9707 x4	2	Focusing Screen Holder 13-9706 x4
3	Tape 13-8992 x2	4	Finder Screen A 10-0258
5	Condenser Lens 12-0263	6	Condenser Lens Box 13-9705

(Note) Disassembly of Focusing Screens B, C, and D is the same although the some of the part numbers are different.

2. REPLACEMENT and ADJUSTMENT

2.1 Sprocket

1. Removal of Sprocket

To replace the sprocket, remove the following parts; Shutter Speed Selector, Winding-Counter Unit, Brake Lever and Slow Governor.

To replace Sprocket Gear, the Shutter Charge Gear must be detached also.

Refer to Para. 1.3, 2.2, 2.7, and 2.9.

2. Mounting of Sprocket Clutch

1) Apply GE-7 to the oil groove over the circumference of Sprocket Gear (97-0666).
2) Install the parts as shown in Fig. 1.

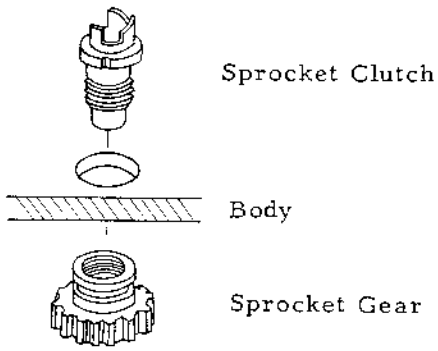


Fig. 1

3. Mounting of Sprocket

1) Install each part as shown in Fig. 2.
2) Apply GE-7 to the inside of Brake Lever Shaft and put Washer (X32-502122) on the Shaft.
3) Apply GE-7 to the upper and lower internal circumferences of Sprocket.
4) Install Washers (X98-050375, 6) x n on Sprocket Clutch.

4. Adjusting

1) Make Sprocket Pawl and Inner Rail equal vertically. Make adjustment with Washers (X98-050375, 6) x n.
2) Make adjustment with Washers (X32-503121, 2) x n so that vertical play of Sprocket is between 0.1 and 0.2mm.

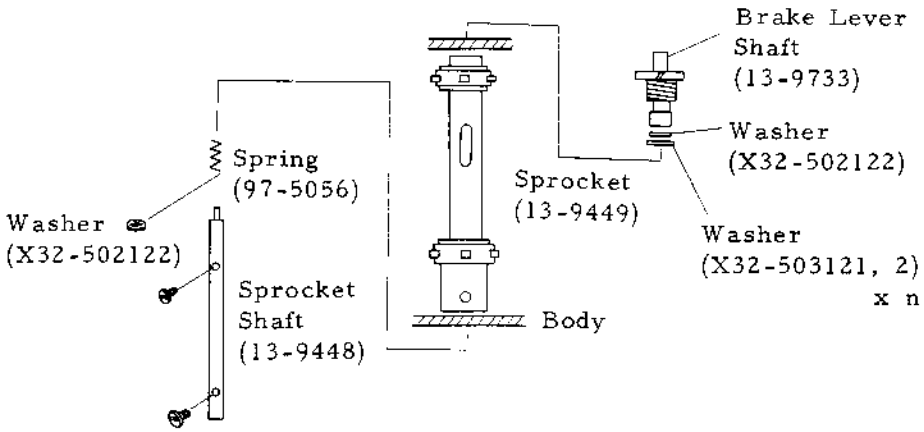


Fig. 2

5. Mounting of Sprocket Shaft

1) Insert Spring and Sprocket Shaft from underside.

2) Put in Washer (X32-502122) from the slot of Sprocket, as shown in Fig. 2

3) Install each part in the sequence shown in Fig. 2.

(Note) Apply GE-7 to the fitting part of Sprocket Shaft.

2.2 Brake and Associated Parts

To replace parts related to the Brake; the Shutter Speed Selector, Winding-Counter Unit and Slow Governor must be removed.

However, to make the Brake torque adjustment, it is not necessary to remove the above parts.

1. Mounting of Brake Band Base

Mount it with Screw (X16-170228), putting the eccentric dowel in the hole of Main Body.

(Note) Apply Diabond (bonding agent) to the Screw after the Base is mounted.

2. Mounting of Brake Lever

1) Apply GE-7 to Brake Lever.

2) Install each part as shown in Fig. 3.

(Note 1) 2nd Brake Lever (19-0666) should be installed together with Master Gear Unit (18-0485).

(Note 2) Don't grease the Spring seat.

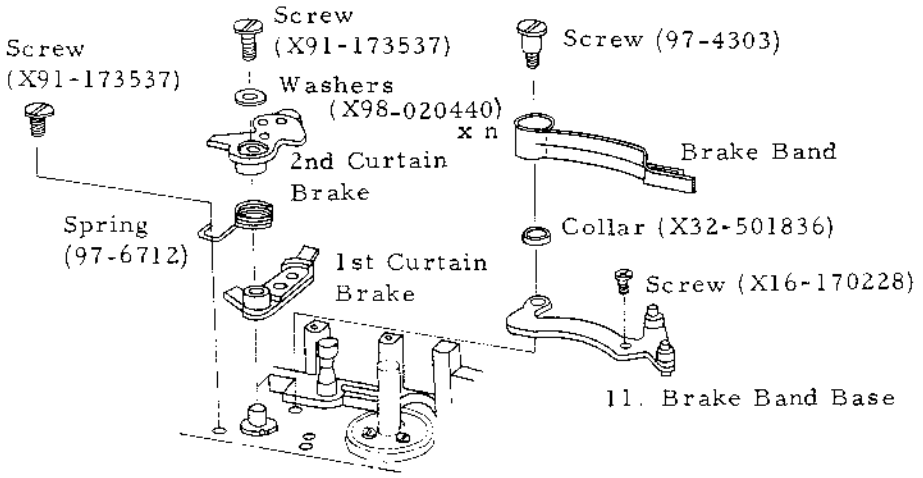


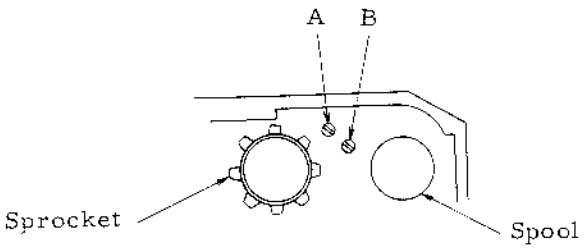
Fig. 3

3. Adjusting

1) Make adjustment with Washers (X98-020440 to 2) x n so that vertical play of the Brake Lever is between 0.05 to 0.15mm.

2) Make adjustment with the eccentric screw so that 1st Curtain Brake torque is between 500 and 600 g and 2nd Curtain Brake torque, 300 to 400 g.

3) For adjusting the Brake torque externally, use the eccentric screws A and B shown in Fig. 4.



A: For 2nd Curtain Brake

B: For 1st Curtain Brake

Fig. 4

2.3 First and Second Curtain

1. Installation of the 2nd Curtain

1) Mount the Curtain as shown in Fig. 5.

2) When the mechanism is wound, the distance between the 2nd Curtain edge and the edge of the aperture should be 6 to 6.5mm. See Fig. 6

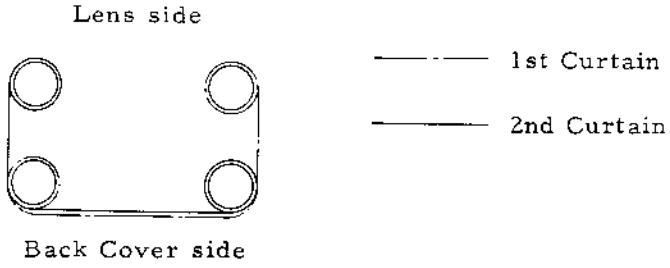


Fig. 5

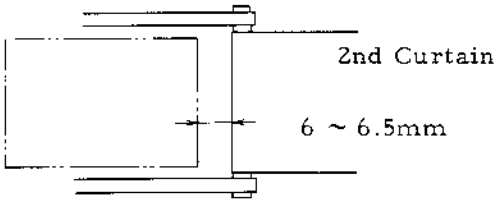


Fig. 6

(Note) Bond the ribbon, with the mechanism wound, completely around the drum, but with no overlap.

2. Installation of the 1st Curtain

1) Mount the Curtain as shown in Fig. 5.

2) The 1st Curtain must overlap the 2nd Curtain by 2.0 to 2.5mm at all positions.

3) Bond the ribbon, with the mechanism not wound, completely around the roller, but with no overlap.

(Note) The ribbon must be wound evenly on the roller.

2.4 Spool

1. Spool Unit

1) Install each part in the order shown in Fig. 7.

(Note 1) Apply MoS_2 grease to Washers.

(Note 2) Install the Bushing with Diabond (bonding agent)

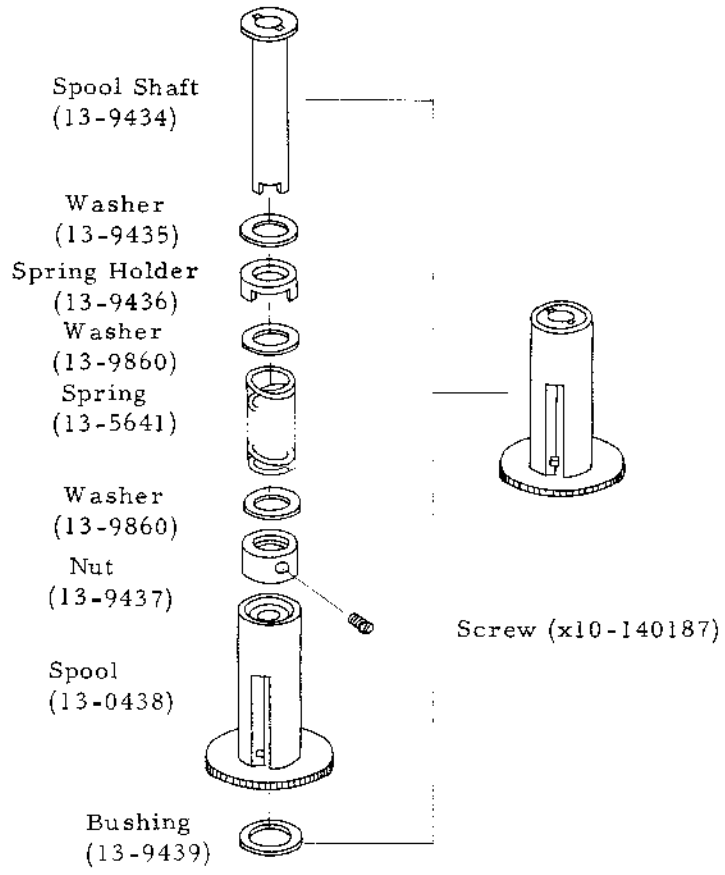


Fig. 7

2. Spool Torque adjustment

1) Measured at 13-9434 with a torquedriver, the torque should be 60 to 120 gcm. Adjust Spring (97-5641).

2) Measured with a string around 13-9438 and a tension gauge it should be 93 to 185 g.

2.5 Winding Shaft and Associated Parts

1. Winding Gear Unit Install each part in the order shown in Fig. 8.

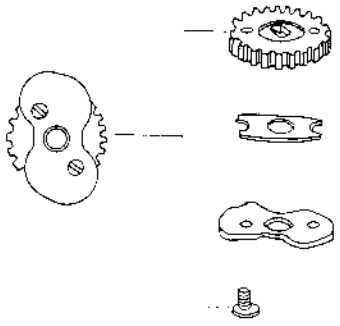


Fig. 8

(Note 1) Apply Diabond (bonding agent) to the Screws.

(Note 2) Be careful about the mounting direction of Cam.

2. Winding Shaft Unit

Install each part in the order shown in Fig. 9.

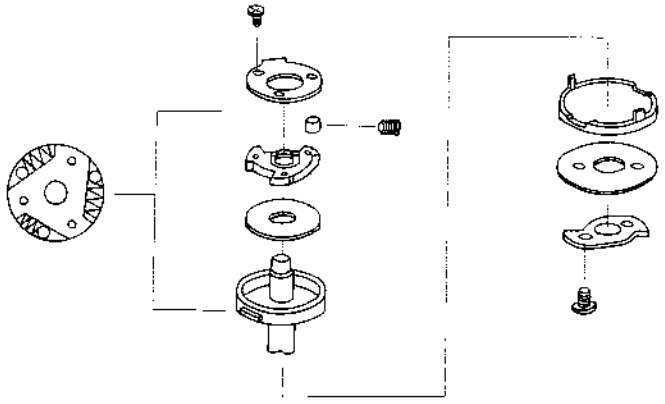


Fig. 9

(Note) After each part is installed, apply Diabond to the Screws.

3. Mounting and Adjustment of Winding Shaft Unit and Sppl Unit

1) Wind the camera.
2) Apply GE-7 to the following parts; oil groove of Winding Shaft, Stell Ball, inner face of Spool Gear and bearing race.
3) Apply MoS_2 grease to Brake Charge Cam (13-9431).
4) Install each part as in Fig. 10.

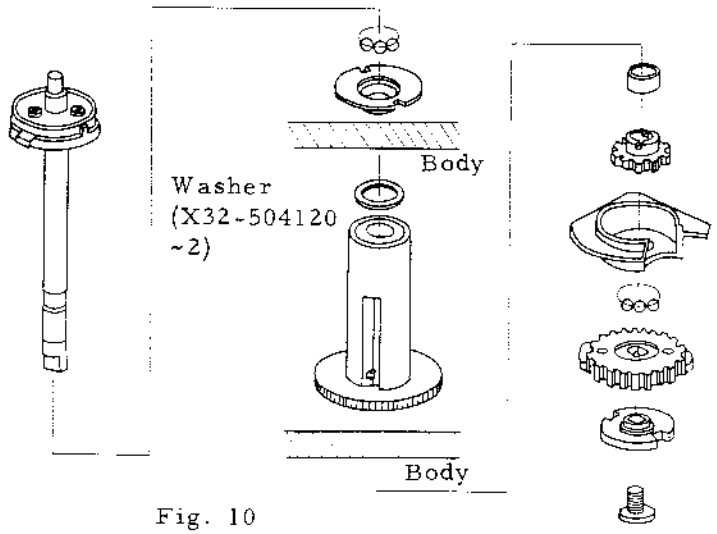
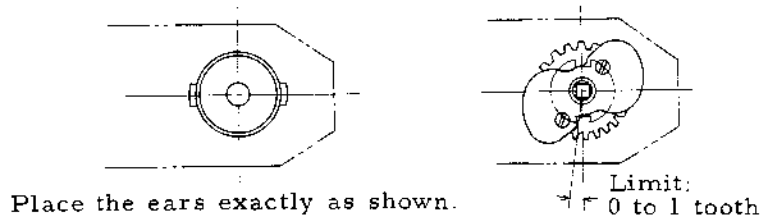


Fig. 10

(Note) Use 15 Steel Balls (X71-7131) for the upper and the lower bearing.

5) Make adjustment with Washers (X32-504120 to 2) x n so that vertical play of Spool Shaft is 0.1 to 0.2mm.

6) Setting Winding Shaft as shown in Fig. 11, install Winding Gear unit.
Make adjustment by aligning the gear engagement.



Place the ears exactly as shown.

Fig. 11

(Note) Apply a bonding agent to the mounting screw of Winding Coupler (13-9443).

2.6 Shutter Speed Selector and Winding-Counter Unit

1. Shutter Speed Selector — Install each part as shown in Fig. 12.

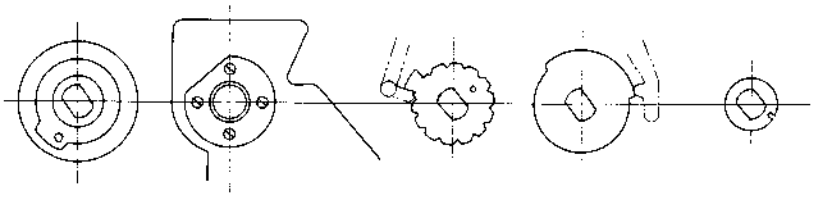


Fig. 12

(Note 1) Grease Bearing (13-9480) and Cam Shaft with GE-7.

(Note 2) Apply bonding agent to Screw (X14-170157).

2. Mounting of Shutter Speed Selector — Refer to "Disassembling" (Para. 1.3)

(Note 1) Anchor Release Lever must be inside (Lens side) Anchor Release Lever of Slow Governor.

(Note 2) Clearance between Play Arrester (13-9887) and Meter Setting Lever (19-0832) should be 0.03mm.

3. Winding-Counter Unit — Install each part in the order shown in Fig. 13.

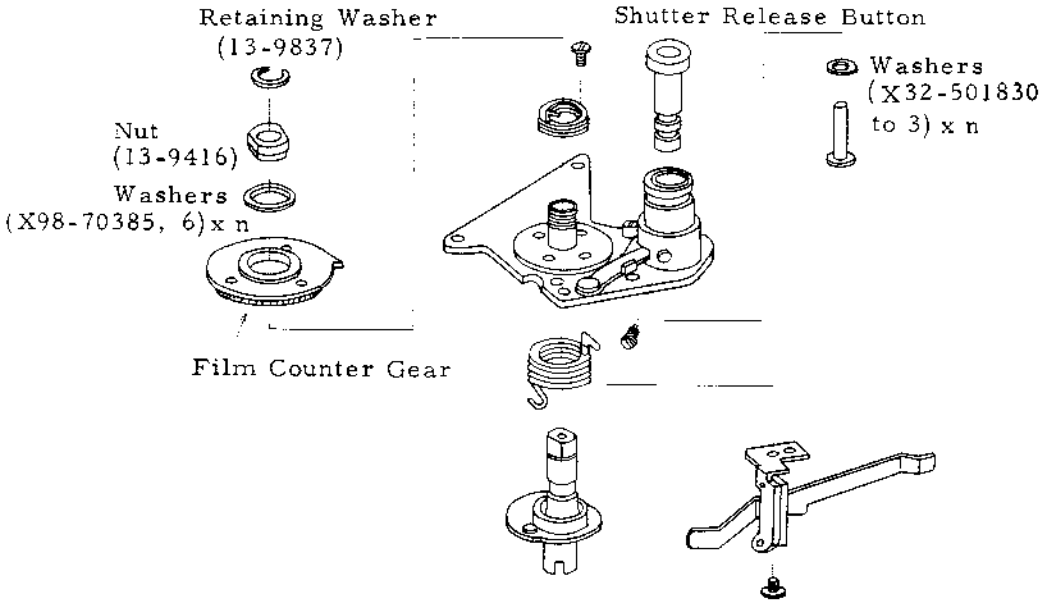


Fig. 13

(Note 1) Nut (13-9416) has left-hand threads.

(Note 2) Apply PL-15 to the part between Shutter Release Button and Base Plate.

(Note 3) Apply GE-7 to the oil groove of Winding Shaft.

4. Adjustment of Winding-Counter Unit

1) Vertical play of Winding Shaft must be between 0.15 and 0.25mm.
Adjustment is made by selecting a Retaining Washer (13-9837) which provides the correct play.

2) Vertical play of Film Counter Gear (19-0606) must be 0.05 to 0.1mm. Adjust the play with Washers (X98-70385, 6) x n.

3) Vertical Play of Shutter Release Button must be 0.1 mm or less.
Adjust the play with Washers (X32-501830 to 3) x n.

5. Mounting of Shutter Speed Selector

1) Wind the mechanism.

2) See "Disassembling" (Para. 1.3)

(Note) Switching contact and X contact are at the respective positions shown in Fig. 14.

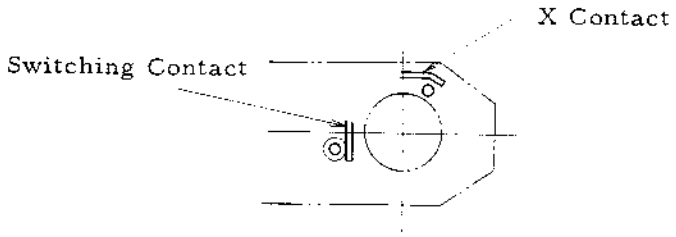


Fig. 14

2.7 Shutter Adjustment

1. Mounting and adjustment of Anchor Release Lever

1) Wind the mechanism.

2) 2nd Curtain Brake Lever (19-0666) must touch Anchor Release Lever (13-9729). Make adjustment by aligning the setting position of the Anchor Release Lever.

3) Adjust the Anchor Release Lever by using Tool (Anchor Release Lever Positioning Tool-1) so that A value (0 to 0.2mm) in Fig. 15 can be assured at the Lever end.
Make adjustment by bending B part of the Lever.

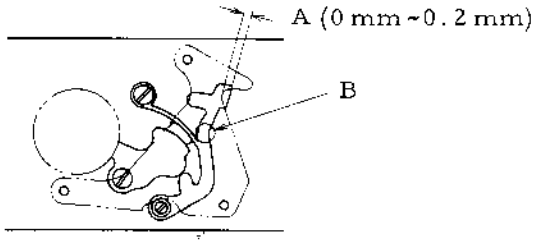


Fig. 15 (With the mechanism wound)

(Note 1) Where the Tool is unavailable, the following must be fulfilled.

i) When Shutter is released at slow speed (under 1/8 sec), the Anchor Release Lever must be cancelled simultaneously with the 2nd curtain closing, and there shouldn't be any furture slow governor sound.

ii) Adjust the slow governor speeds with Eccentric Screw A (fig. 16).

If the Anchor Release is not properly adjusted, it will be impossible to adjust the slow governor with Eccentric Screw A.

2. Mounting and Adjustment of Slow Governor

1) Wind the mechanism.

2) 1/1 sec is to be aligned by eccentric screw A (Fig. 16).

3) 1/8 sec is to be aligned by screw C, slackening screw B.

4) Align the slow speed Shutter by the preceding two adjustments alternately.

(Note 1) Adjust the slow speed Shutter after alignment of Curtain speed.

(Note 2) Sector position is set by the eccentric screw D (Fig. 16). If it is changed, the entire alignment is effected.

(Note 3) Screw C should lightly touch the shaft even when loosened for adjustment.

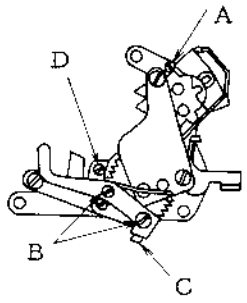


Fig. 16

3. Adjustment of Curtain Speed

1) Full Frame Curtain speed must be between 12.5 and 13.5 ms, and between 11.5 and 12.5 ms using the PA-16 Transistor Shutter Tester). Adjustment is made with the Worm Gear.

(Note) After adjustment, apply Diabond to the setscrew.

4. Adjustment of high speed shutter

Refer to paragraph "2nd Curtain Release Lever (19-0656) and 2nd Curtain Release Lever (19-0657). (Page 22)

1) Adjust the Shutter speed of 1/125 sec by the eccentric screw of 2nd Curtain Release Lever (19-0657).

2) Adjust the speed 1/2000 and 1/1000 sec by Release Cam (13-9457). (Fig. 17)

3) For fine adjustment of 1/2000 sec, enlarge or narrow the slot of the Shutter cam. See Fig. 18.

4) Adjust the Shutter alternately through the above adjusting procedures. 1), 2), and 3).

(Note) Check if the Shutter is completely open at 1/60 sec, and "B" (bulb).

Fig. 17

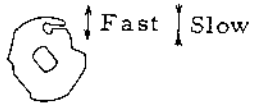


Fig. 18

2.8 Shutter Release

1. Adjustment of Shutter Button stroke

The operation of the mechanism related to Shutter button is as shown in the chart.

Unit: mm

0 0.4 0.8 1.2 1.6 2.0	Adjustment
Shutter Button free travel: 0.4±0.2	Adjust by bending
Starting of Self-timer: 0.8±0.05	Position of Charge Lever (19-0621)
Total stroke of Self-timer: more than 1.75	Select Screw (X91-142460)
Released position of Diaphragm Release Lever: 1.5±0.1	For set position, see Page
Total stroke of Shutter Button: 2.0±0.1	Washers (X32-501520 to 2) x n Fig. 19

2. Adjustment of Shutter Button pressure

The Shutter Button pressure should be between 150 and 400 g. Also, it should be under 550 g at the Motor Drive Shutter Release Lever (13-9609).

Make adjustment by Spring (97-5057).

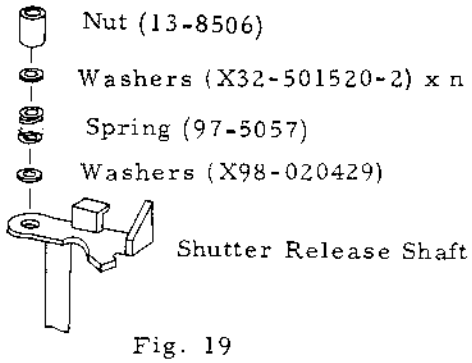


Fig. 19

3. Mounting and adjustment of Shutter Release Lever

(1) For mounting of the Lever, see Fig. 20.

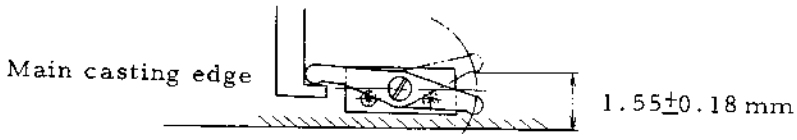


Fig. 20

(2) The Shutter must released within A in Fig. 20. For adjustment, choose a suitable Shutter Release Lever.

2.9 Master Gear Unit and Spring Drum Unit

1. Mounting of Master Gear Unit

Apply Astrooil to the oil groove of each part.

(Note 1) The number of steel balls to be used for one part is 10.

(Note 2) Since the Steel Ball (X71-7131) differs from the steel ball (X71-7002) used so far. Be careful not to mix them up.

(Note 3) 1st Curtain Release Lever (19-0655) should be used together with Master Gear Unit as one unit.

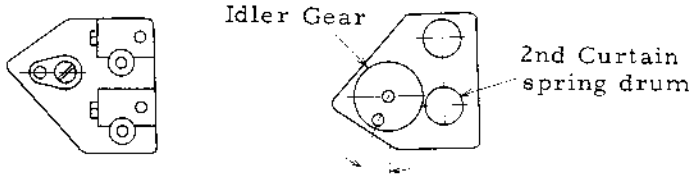
(Note 4) 1st and 2nd Curtains master gears cannot be disassembled.

2. Adjustment

Make adjustment with Washers (X32-502610 to 2) x n so that vertical play of 1st Curtain Shaft and 2nd Curtain Shaft is 0.1 to 0.2mm.

3. Mounting and adjustment of Idler Gear and Diaphragm Reset Lever

1) Install the Gear at the position shown in Fig. 21 with Shutter released. Make adjustment by aligning the engaging position of Idler Gear (19-0626).



Limit: 1.0 to 2.0 teeth (0° to about 14°)

Fig. 21

2) Vertical play of Diaphragm Reset Lever (19-0628) must be between 0.03 and 0.08mm. Adjust it with Washers (X32-502610, 1) x n.

(Note 1) Install the Idler Gear before the 2nd Curtain spring drum is mounted.

(Note 2) Apply astrooil to the oil groove of Idler Gear.

2.10 2nd Curtain Release Lever and 2nd Curtain Cam Follower

1. Mounting of 2nd Curtain Release Lever (19-0656) and 2nd Curtain Cam Follower (19-0657). See Fig. 22.

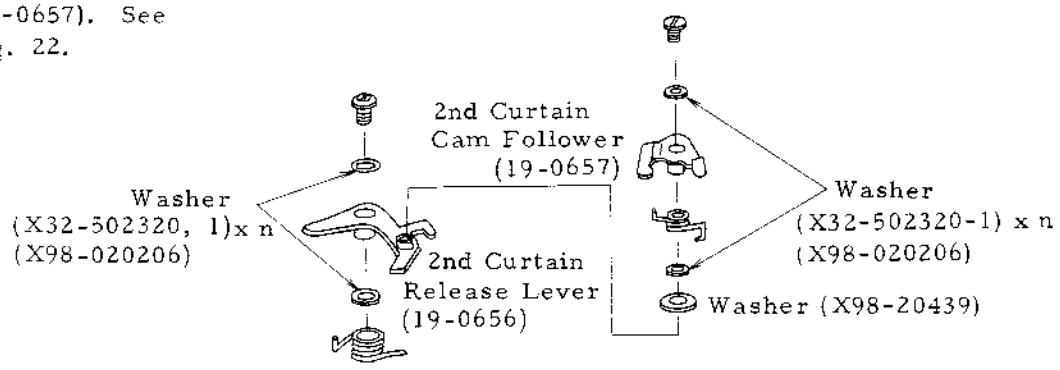


Fig. 22

2. Adjustment of 2nd Curtain Release Lever (19-0656)

1) Vertical play at the end of the Lever must be under 0.15mm. Make adjustment with Washers (X32-502320, 1) x n, (X98-020206).

2) 2nd Curtain Release Lever (19-0656) and Hook must be the same height. Limit : ± 0.1mm Make adjustment with Washers (X32-502320, 1) x n, (X98-020206).

3) Install the Lever and Hook as shown in Fig. 23.

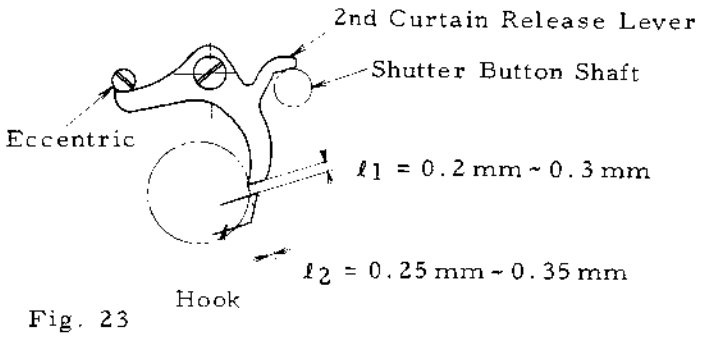


Fig. 23

Adjustment

For ℓ_1 adjustment, select a suitable 2nd Cutain Release Lever (19-0656). (Fig. 23)

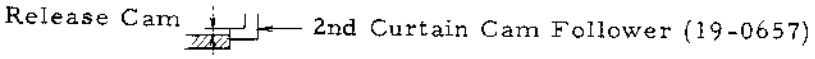
For ℓ_2 adjustment, align the eccentric screw. (Fig. 23)

(Note) Adjustments 2.10.2 (1) and (2) must be performed together.

3. Adjustment of 2nd Curtain Cam Follower (19-0657)

1) The Follower and Release cam must be the same height.

Limit: +0.1 mm to -0.2 mm



Make adjustment with Washers (X32-502320, 1) x n, (X98-020206).

2) The heights of the Follower and fixed Cam are as shown in Fig. 24. For adjustment, use Washers (X32-502320 to 1) x n, (X98-020206), and chose a suitable Lever. Fig. 24

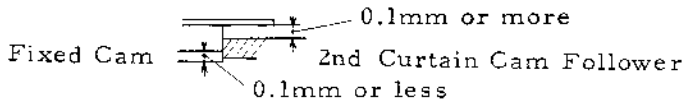


Fig. 24

2.11 Meter Unit

(Note) The Meter, CdS and Variable Resistor are a unit. They must be changed as a unit.

1. Mounting and adjustment of Following Needle

1) To mount the Following Needle (13-9664), refer to Fig. 25.

Fig. 25

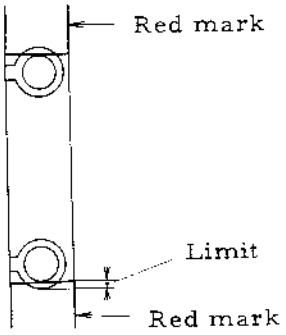


Fig. 26

2) Needle is at the position shown in Fig. 26.

a. When the aperture of FD Lens 50 mm 1:1.4 is open, the inside circumference of the Needle must align with the edge of the lower red mark.

b. At F16 of a FD Lens 50 mm 1:1.4, the inside circumference of the Needle must align with the edge of the upper red mark.

c. Make adjustment by aligning the Needle mounting position.

d. Limit: At F 1.4, the red mark just between the outside and inside circumference of the Needle.

e. The Needle must always be in the center of the information findow, horizontally.

(Note 1) The Needle must swing smoothly contacting the information window frame lightly. (It is perferable to install the Needle after it is bent).

(Note 2) Height of Conection pin of FD50 mm F1.4 Lens must be 8.1±0.1 mm.

(Note 3) When Diaphragm Release Lever is locked, the Needle must disappear. For adjustment, refer to para. 2-15.2.

(Note 4) After the Needle is installed, apply Diabond to it.

2. Mounting of Wire — Install Wire (Y00-1267) on Meter Setting Lever (13-9497).

3. Mounting of CdS

1) Install CdS on CdS case (19-0690). Mount it with Diabond as shown in Fig. 27.

Fig. 27

2) Arrange CdS lead under Meter Unit Base Plate.

4. Mounting of CdS Meter Unit

See Para. 1.5. for disassembly.

(Note 1) Leave Coil Spring (97-5648) mounted on the Meter.

(Note 2) The Meter Unit can be removed without removing the Front Panel (Mirror Box).

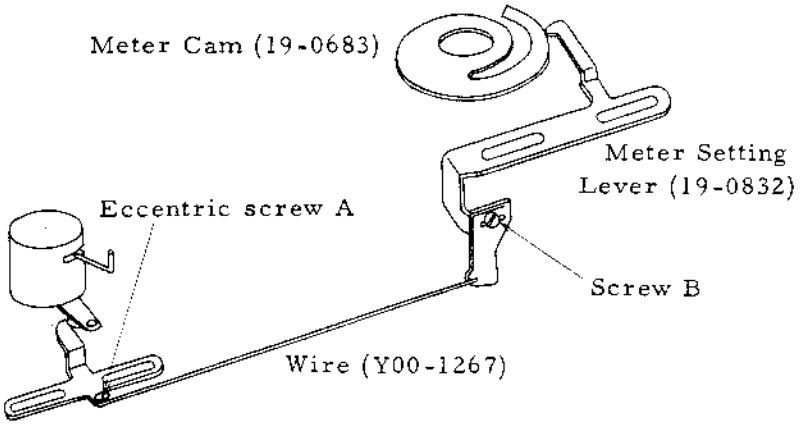


Fig. 28

5. Adjustment of zero position

1) Install Wire and Meter Cam.
The Meter Cam and Meter Setting Lever must be the same height. Make adjustment with Washers (X32-506210 to 2) x n.

2) Set the eccentric screw A (Fig. 28) to its position.

3) At ASA 100 1/125 sec, the inscribed line of Meter Holder (13-9781) coincides with that of Meter Cover. In this case, the lever of Meter becomes perpendicular. See Fig. 29. Make adjustment by turing the screw B. See Fig. 28.

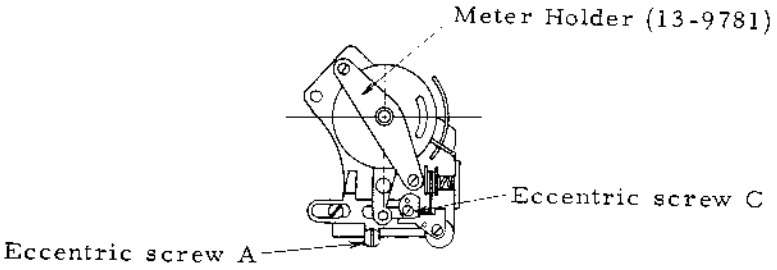


Fig. 29

6. Adjustment of Meter accuracy

1) The Meter needle must stay within the upper and lower red zones. For adjustment, align Meter Stopper (13-9830).

2) The Meter needle must align at the center of the Following Needle at the specified brightness. See Fig. 30. Make adjustment with the eccentric screw A (Fig. 29).

EV	cd/m^2	ASA	Shutter speed	Aperture value	Tolerance

Fig. 30

(Note 1) Adjustment of Meter accuracy is to be performed after the Meter zero position is aligned.

(Note 2) For adjustment of Meter accuracy, employ the standard Lens (whose pin and aperture diameter have already been adjusted).

7. Mounting of Prism

1) Install Prism (13-9722).

(Note 1) There should be no black-out in the information window due to the Prism frame.

8. Mounting and adjustment of Warning Lever

1) Warning Lever (13-9726) must work properly between 1/4 and 1/2 sec at ASA 100. Adjust it with eccentric screw C (Fig. 29).

2) At 1/2 sec, the Warning Lever is parallel to the Information Prism. Make adjustment by aligning the

Warning Lever set position.

3) After adjustment, apply Diabond to the setscrew.

9. Mounting of Warning Mark

1) Mount the mark with Diabond.

2) At ASA 100 1/2 sec, the entire Information Prism is covered and at 1/4 sec, it is uncovered.

10. Adjustment of checker

The needle should be at the center of the blue mark at 1.3V. (ASA 100, 1/2000). For adjustment, use the variable resistor.

2.12 Shutter Indicator

1. Mounting of pulley
See Fig. 31

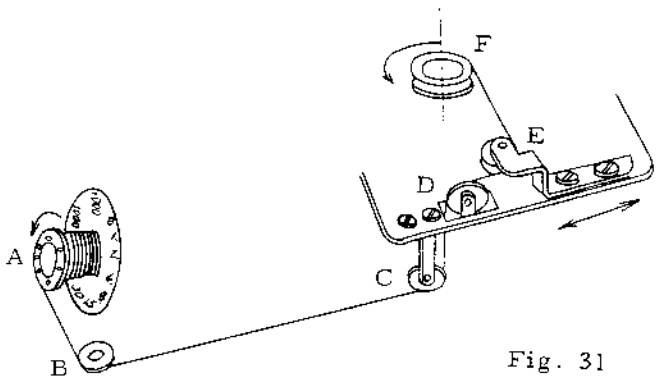


Fig. 31

(Note 1) Install pulley E at the middle of the slot.

2. Adjustment of Shutter indication

1) Set Shutter Speed Dial to "B".

2) Lock pulley A so the spring doesn't unwind. (Pass a piano wire through the hole.)

3) Put the indication string on the pulleys B, C, D and E.

4) Unlock pulley A and check the operation of the pulleys by moving the string forwards and backwards.

5) Bring the character "B" to the center of Shutter indication window. Make adjustment by moving the string forwards and backwards.

6) Knot the string at the string mounting hole position of the pulley F. Make sure the "B" remains in the center of the window.

7) Trim the knot end of the string.

8) After the string is fixed, put bonding agent on the knot only.

9) Check that the full range of shutter speeds appear in

the window when it is turned.

Adjustment: pulley E.

(Note 1) Don't let pulley A spring unwind.

(Note 2) Arrange the indication string parallel to Wire (Y00-1267).

(Note 3) Do not apply bonding agent to any part other than the knot at pulley F.

(Note 4) The indication string is wound in CCW direction on the pulley F.

3. Adjustment of Pulley A spring torque

Pulley A is supplied with the spring wound. It is not necessary to adjust unless it is unwound. Make 2 to 2.5 revolution of Shutter Speed Indicator in CCW direction observing from the pulley A side (Fig. 31).

(Note 1) The indication string is wound about 14° at 1/2000 and about 340° at "B", on the pulley A.

(Note 2) The string should not overlap.

(Note 3) The string knot, at 1/2000 sec, shouldn't be to the right side of perpendicular.

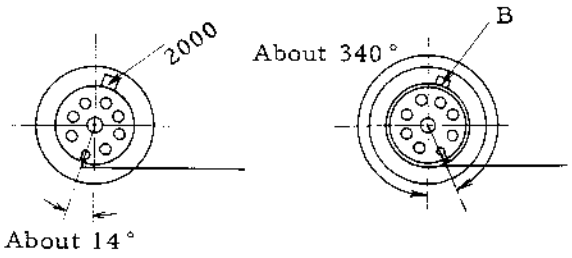


Fig. 32

2.13 Shutter Charge Gear

1. Mounting and adjustment of Shutter Charge Gear

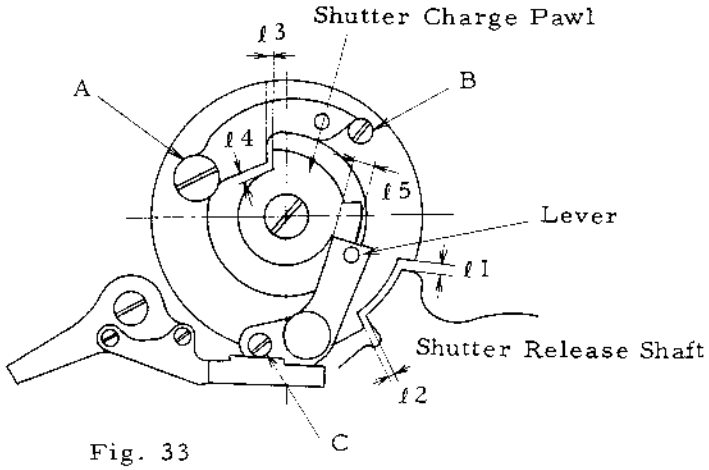


Fig. 33

Symbol	Dimension	Adjustment	Remarks
ℓ_1	0.3 mm	Shutter Charge Pawl	Master Gear and Diaphragm release engaged.
ℓ_2	0.5 mm	Engaging position of Shutter Charge Gear	With the mechanism fully wound.
ℓ_3	0.05 ~ 0.15	Screw A	With the mechanism wound fully and the winding lever held in the full wind position.
ℓ_4	0.1 ~ 0.2	Eccentric screw B	
ℓ_5	0.2 ~ 0.4	Eccentric screw C	Diaphragm Release Lever released

1) Vertical play: Shutter Charge Gear (19-0608): 0.05 mm

Adjustment: Washers (X98-060392, 3) x n

(Note 1) Apply GE-7 to the oil groove of the Gear (19-0608) shaft and the holding part of the nut.

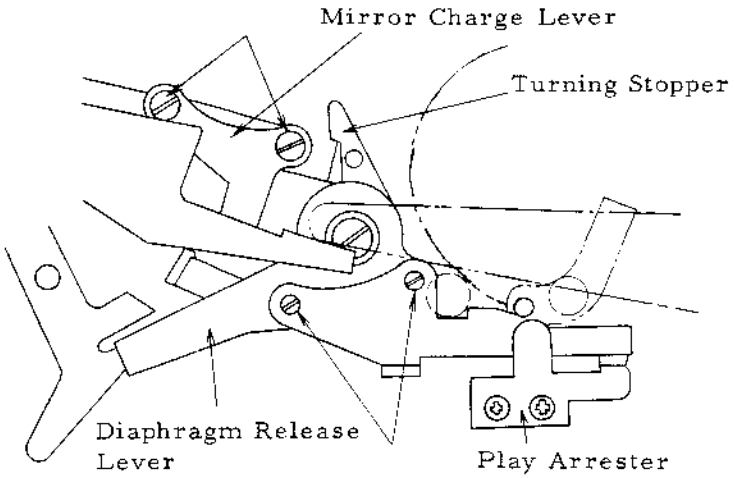
(Note 2) Apply astrooil to the oil groove of Master Gear shaft.

(Note 3) Adjustment of ℓ_5 must be performed after Diaphragm Release Lever release is alligned. See next paragraph (Fig. 34)

(Note 4) Make adjustment of Shutter charge Gear together with perforation position alignment.

2.14 Camera Bottom Mechanism

1. Adjustment of release position of Diaphragm Release Lever



The Diaphragm Release Lever releases at Shutter Button stroke 1.5 ±0.1 mm.

Adjust: screw A (Fig. 34).

2. Timing adjustment of Mirror charge Turning Stopper (19-0630) and Diaphragm Release Lever

Maladjustment results in Shutter releasing but mirror does not rise.

1) The Mirror Charge Lever must move over 0.5 mm after the Turning Stopper sets.
Adjust: 2 screws B. (19-0630)

2) The Diaphragm Release Lever should set at 0 to 0.3 mm after the Turning Stopper sets.
Adjustment: choose suitable Turning Stopper (19-0630).

3. Adjustment of Play Arrester (13-9611)

1) Vertical play at the end of Diaphragm Release Lever must be between 0.05 and 0.15 mm. Adjust it with Washer (13-0602).

2) Radial play of Shutter Release Shaft is between 0.05 and 0.1 mm. Adjustment is to be performed by the set position of Play Arrester.

4. Adjustment of Rewind Button set position

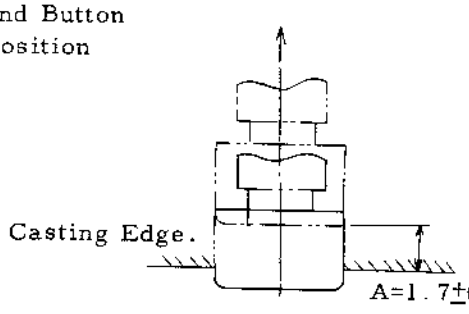


Fig. 35

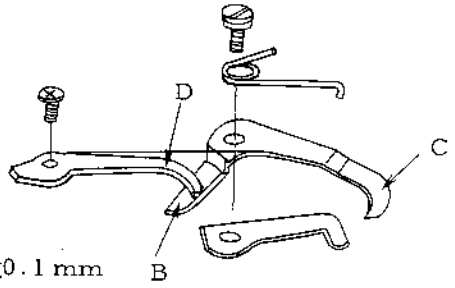
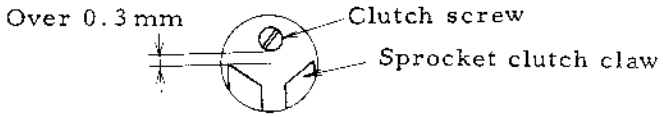


Fig. 36

1) The set position of Rewind Button is "A" in Fig. 35. Make adjustment by bending "B" part (Fig. 36) of Clutch Lever.

2) When the Rewind Button is set, the height of Screw (X91-172491) must be over 2/3 of the thickness of Clutch Lever. Adjust it by bending "C" part (Fig. 36).

3) When the Rewind Button is set, the clearance between the clutch screw and sprocket clutch claw must be over 0.3 mm.
Make adjustment by bending "D" part (Fig. 36) of Clamp Lever Guide (13-9456).



(Note) When the Button is not set, the Clutch lever must not contact with the Screw (X91-172491).

5. Adjustment of MD Contact

Contact Resistance: Shutter Closed: 0Ω: Open: ∞

6. Film Perforations

When Sprocket is pushed in rewind direction, the film perforations should align as shown in Fig. 37.
Adjustment: Shutter Charge Gear engagement.

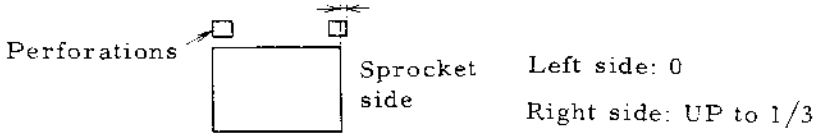


Fig. 37

2.15 Front Panel (Mirror Box)

1. Adjustment of Max. Aperture Correction Lever

When Inter Lever (13-9660) is in contact with Needle lever (A in Fig. 38), the clearance between adjusting Plate (13-9662) and the Lever is between 0 and 0.1 mm.

Adjust: Change the position of adjusting Plate.

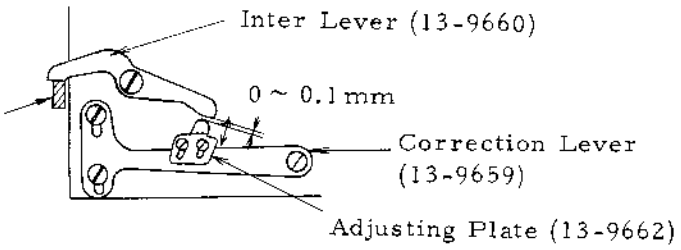


Fig. 38

(Note) Don't move the Correction Lever while making the adjustment.

2. Adjustment of Correction Lever Unit (18-0475)

With the Diaphragm Closing Lever locked, and a 50 mm, 1:1.4 lens installed, the relation between the long lever and the wedge of the aperture control bar should be as shown in Fig. 39. Adjust by bending "B".

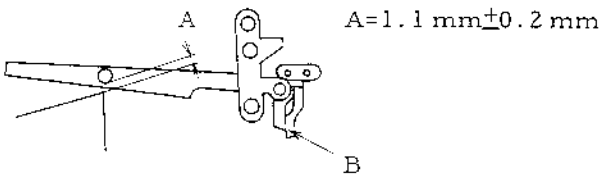


Fig. 39

3. Correction Tip Positioning

The distance from the mounting Flange to the end of Correction Tip (13-9661) must be 6.9 ± 0.1 mm.

(Note) Use a vernier caliper to measure. Do not

push the tip while measuring.

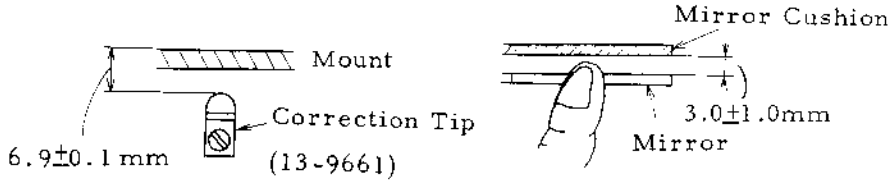


Fig. 40

2.16 Miscellaneous

1. Timelag

	Shutter speed	Limits	Remarks
FP	1/1000	(A line on PA-16): 10.5 to 13.5 ms	Clearance between contacts: 1.5 mm to 2.0 mm
X	1/60	(A line on PA-16): Over 10ms (B line on PA-16): Over 3.2ms	
Changeover of FP and X Contacts	Contact is ON: 1/2000 to 1/125 OFF: 1/60 to 1/1		

2. Film Counter

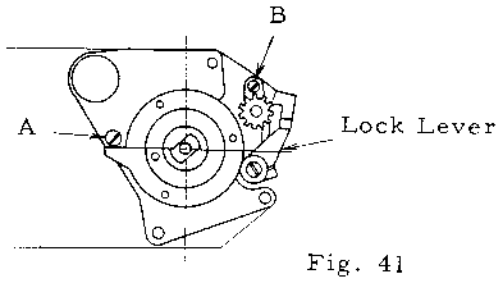


Fig. 41

1) When the back cover is closed, the Film Counter Gear must engage with the Feeding Gear, and the Film Counter Gear shouldn't shift.

2) Adjustment of Counter feeding Eccentric screw B (Fig. 41).

(Note 1) When Lock Lever (19-0653) is released, the Film Counter must return.

3. Adjustment Pentaprism Rail position

1) Install the rail.

2) Use the Pentaprism Rail positioning tool.

(Note 1) Where the tool is unavailable, detach only one of the rails. Decide the other rail position with the Pentaprism.

4. Adjustment of Pentaprism box claw

Align the claw position by using an F-1 whose Pentaprism rail position has been adjusted with the tool.

5. MD winding torque

Winding static torque measured at the MD coupler must be under 2.3kg cm reguardless of film load.
Adjustment: Winding mechanism.

6. Adjustment of Range Finder

1) Adjust the mirror to 45°.
(Slackening the setscrew, from the rear, and adjust the 45° screw from the front.

2) Adjust the Rangefinder with Washers (13-9704) x n located under Mask.

3) Screw (X96-141185) set Mask position.
It is the screw at the lower right side of the mask as observed from Back Cover.

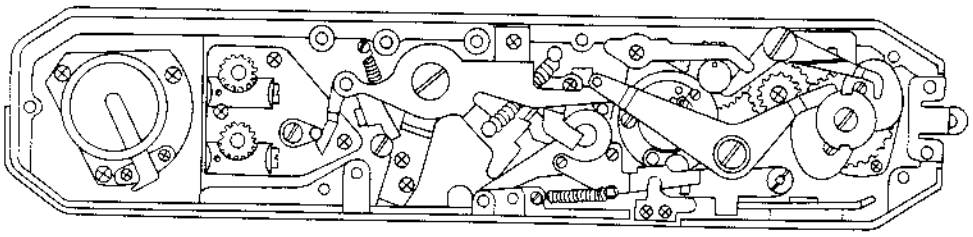
(Note 1) First, mount Screw (X96-141185).

(Note 2) Don't bend the Mask.

(Note 3) Flange back and lens focus must be adjusted before making this adjustment.

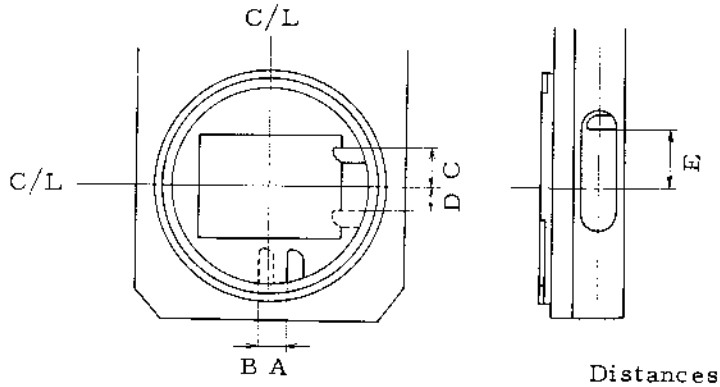
7. Camera Bottom Lever Position

Figure 42 shows the correct position of all the levers with the mechanism NOT wound.



REFERENCE DATA

Lens Coupling



Distances measured from c/l 's.

1. Position of Automatic Diaphragm Release Lever

   With mechanism wound: A = 5.8 ± 0.3 mm

   During Exposure (B): B = 1.5 to 3.0 mm

   Shutter must be released securely within the range of A.

2. Automatic Diaphragm Release Lever Tension.

   The strength at the position, B = 2 mm: 160^{+40}_{-20} g (by means of tension gage)

3. Diaphragm timelag

   The time until 1st Curtain edge appears on the aperture frame from the Lever position, A = 4.8 mm: 26ms or more.

4. Position of Diaphragm Signal Lever

   Position with Lens removed: C = 8 ± 0.2 mm

   Maximum position: D = 8.5 mm

   The Lever must be operated smoothly.

5. Diaphragm Signal Lever Tension

   Over 10 g at C = 8mm

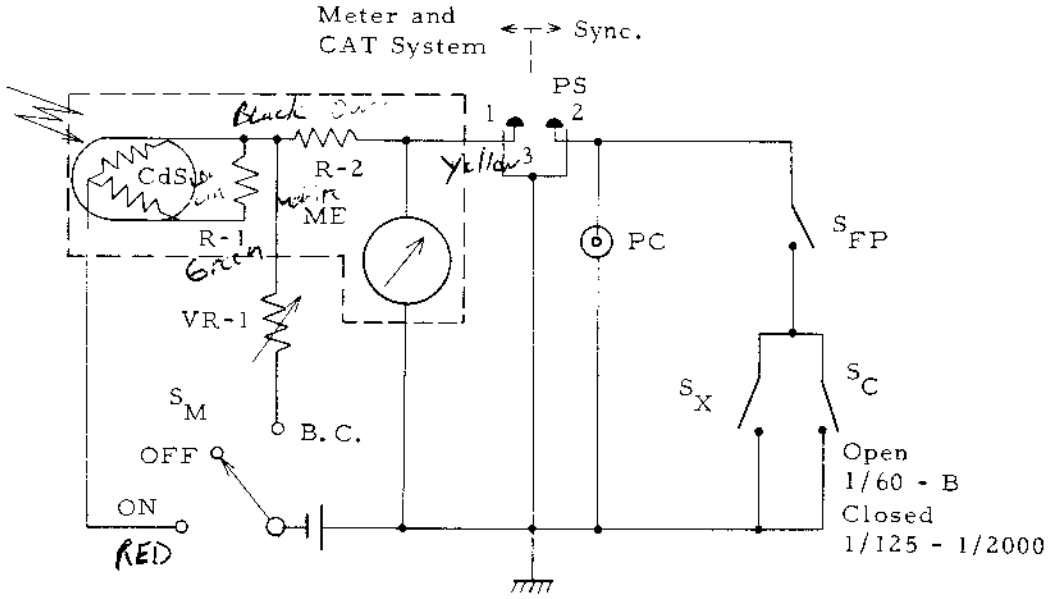
   Under 35 g at D = 7.5mm

6. Max. Aperture Correction Pin.

   6.9 ± 0.1 mm below the mount face

7. Position of EE coupling lever:

   E = 17 ± 0.3 mm (E - C = 9 ± 0.1 mm)



Electronic Parts List

BAT	Battery Hg (1.3V) H-D (Eqv. M-20, PX-625, E625N)		S_C	Sync. Change Switch	19-0688 19-0616
CdS	Photoconductor		S_{FP}	FP Sync. Switch	19-0633 19-0634
ME	Meter	Y00-1266			
R-1	Resistor		S_M	Main Switch	19-0698 19-0699
R-2	Resistor				
PC	Flash Plug	19-0649	S_X	X Sync. Switch	19-0688 19-0658
PS	Acessory Shoe				
		1 19-0830			
		2 19-0764			
		3 19-0646			

Note: Switch part numbers listed are for the main contacts only and are for reference. When ordering parts, refer to the parts list.

Check Points

Unit / Function	F-1	FD Lens	Motor Drive	Film Chamber 250	Servo EE Finder	Booster Finder
Exposure	1. Meter Accuracy 2. Max. Aperture correction pin 3. Signal lever torque 4. Shutter accuracy 5. Following needle position 6. Diaphragm time lag 7. MD contact timing	1. Aperture size 2. Max. Aperture correction pin 3. Signal lever angle 4. Diaphragm lever torque			1. ÈE accuracy 2. Max. Aperture pin position 3. Aperture scale position 4. Bulb switch 5. Upper and lower limit switch	1. Exposure a accuracy 2. Timer 3. VR and shutter dial position
Release	1. Shutter release point 2. Shutter Button stroke 3. Shutter release pressure		1. Release pressure 2. Shutter release stroke 3. Release button release point			1. Shutter release button lock position 2. Shutter release button normal position
Winding	1. Winding torque 2. Spool torque 3. Perforation position		1. Winding torque 2. No-load winding current 3. Timer speed 4. Braking 5. Winding switch timing 6. Auto contact switching	1. Spool torque 2. Winding motor RPM 3. Switch parts 4. End-of-film Switch lever		
Coupling	1. Prism box rail position 2. Lock claw position	1. Bayonet angle		1. Clamp lever tightening	1. Lock claw position 2. Shutter dial position	1. Lock claw position 2. Shutter dial position
Focusing	1. Flange back 2. Focusing screen position 3. Freznal lens position	1. Lens Focus				
Other	1. Film counter 2. Battery checker 3. Insulation	1. EE pin height	1. Insulation 2. Film counter	1. Film counter	1. Battery checker 2. Voltage limits	1. Battery checker

Canon SERVICE MANUAL REPORT

Serial No. AC 30-003 E

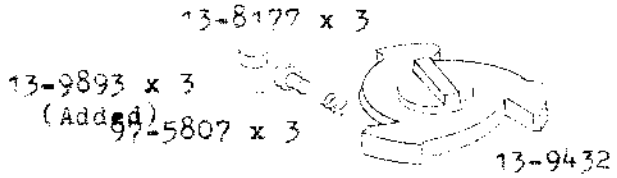
Service Manual No. C-003

Issued by Camera Service Department, Canon Inc.

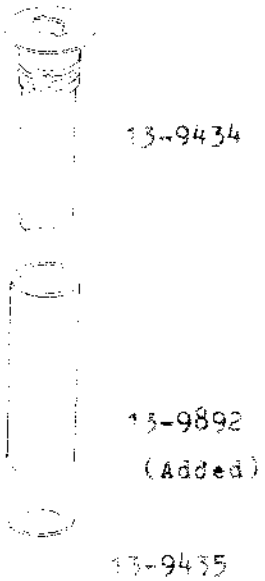
Date 1971 / 5 / 21

Canon F-1 Parts Additions

A Pin(13-9893) has been added to each of the three springs in the Free Wheel Cam(13-9432).



Spool Groove(13-9892) has been added to Spool (13-9434)



Canon SERVICE MANUAL REPORT

Serial No. AC 30-010 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

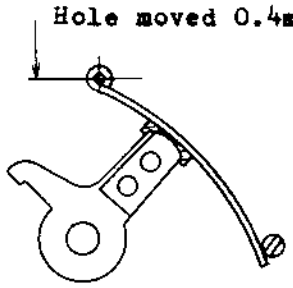
Date 1971 / 6 / 14

Canon F-1 Changes

1. First Curtain Bounce Prevention

1.1 Change

The screw hole for Brake Band Shaft(97-4303) has been moved in 0.4mm, and Brake Band(13-9735) has been changed so it has an equal radius of curvature for its entire length.

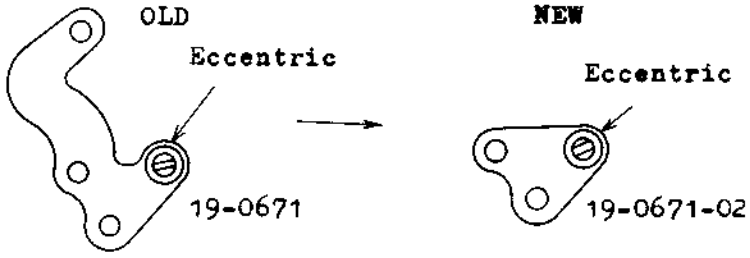


To accomplish this change, the following parts changes have been made.

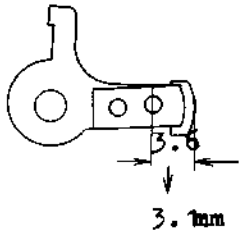
Body (19-0601)

Brake band shaft hole moved in 0.4mm.

Brake Band Base (19-0671)

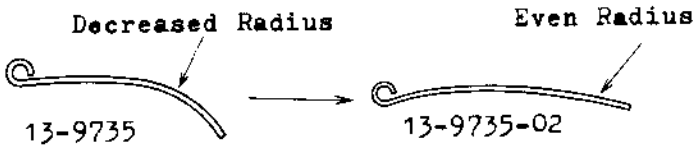


Brake (19-0665)



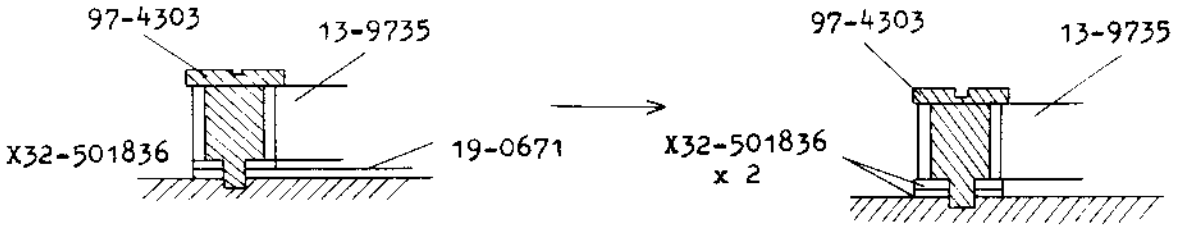
19-0655 → 19-0655-02

Brake Band (13-9735)



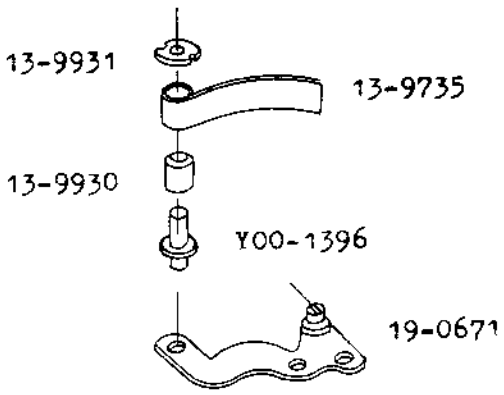
Washer (X32-501836)

A second washer has been added under the brake band to replace the deleted portion of Brake Band Base(19-0671).



1.2 Repair

Old and new parts are not interchangeable. Camera Service will stock only new bodies, but will stock both new parts and old parts including special service parts which are shown below. Brake Band(13-9735) for use with old cameras is available with two different end radii. (15R and 18R). The 18R band is correct for most cameras.

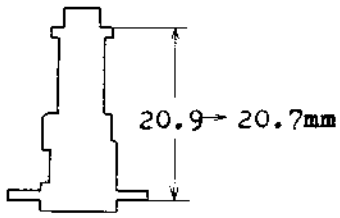


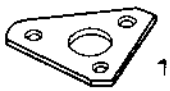
These special parts are used to cure first curtain bounce in older cameras. Screw(97-4303) is not used.

2. Accessory Shoe Base

2.1 Change

To prevent the Accessory Shoe from being loose, a washer (available in different thickness) has been added under Accessory Shoe Base(13-9679). The Rewind Shaft Holder(19-0689) has also been shortened from 20.9 to 20.7mm.





13-9946(Added)
Thicknesses: 0.05, 0.1, and 0.2mm

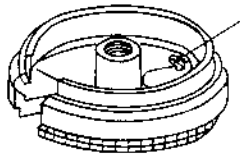
2.2 Repair

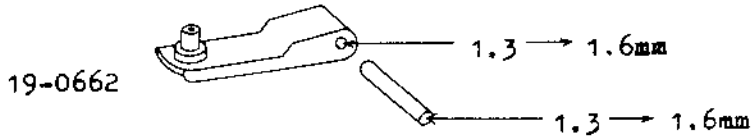
The adjusting washers cannot be used with the old rewind shaft holder. Camera Service will stock only new Rewind Shaft Holder(19-0689).

3. Rewind Crank

3.1 Change

To improve durribiltiy, the Rewind Crank Pin's diameter has been increased from 1.3 to 1.6mm. Therefore the hole size in the Rewind Crank(19-0662) and Rewind Crank Knob(13-9672) slot size have been enlarged.





3.2 Repair

Old and new parts are not interchangeable but the entire Rewind Crank Assembly(18-0474) is interchangeable. Camera Service will stock both Rewind Crank Pins (13-9890 and 13-9890-02). New 13-9672 and 19-0662 will be stocked. If one of these parts must be replaced, all new parts must be used.

Canon SERVICE MANUAL REPORT

Serial No. AC 30-011 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc

Date 1971 / 6 / 14

Canon F-1 First Curtain Brake Material Change

1. Change

   First Curtain Brake(19-0665) , which is made of polycarbonate, cracke sometimes; so it is now made from die cast zinc.

   First Curtain Brake (19-0665)

   Material : Changed from polycarbonate to die cast Zinc

2. Repair

   If a polycarbonate brake cracks, replace it with the new die cast brake. Camera Service will stock only the die cast brake.

Canon SERVICE MANUAL REPORT

Serial No. AC 30-012 E

Service Manual No C-030

Issued by Camera Service Department, Canon Inc

Date 1971 / 7 / 21

Canon F-1 Repair Guide Changes

Please make the following changes in the F-1 Repair Guide to bring it up to date.

Repair Guide General (Pg. 1) Addition

4. For CAT System alignment and repair, refer to the Canon Speedlite 133 D Repair Guide.

Reference DATA (Pg. 35) Changes

1. ---

During Exposure (B): B = 2.2 to 3.2mm

2. Automatic Diaphragm Release Lever Tension (Change the entry to read)

When the shutter is released at "B" and the lever stoped at the $^{C}/_{L}$ with a tension gage, the tension should be over 110 g.

Repair Guide

Pg.5 Delete number 6 in the drawing and the text.

Pg. 8 In the drawing change (3) x 2 to (3) x 4

At the bottom add notes 2. and 3.

Note 2. The left side of Mask(13-9752) is wider than the right.

Note 3. The back(eyepiece) and left side of Mask(13-9759)(not shown) are wider than the other sides.

Pg. 12 Delete Para. 2.2.3.2). Delete "A" from Fig. 4 and Para. 2.2.3.3, and add notes 1, 2, and 3.

Note 1. Wind the mechanism before adjusting torque.

Note 2. After adjusting the torque, check the Anchor Release Lever position.(Para.2.7.1.3) Note 1.)

Note 3. See SMR AC30-010E and AC30-015E for new adjustment.

Pg. 14, Para. 2.4.2 should read:

1) ----------should be 60 to 90 gm.

2) ----------should be 110 to 140 g.

Pg. 18, Fig. 15, Delete (0mm ~ 0.2mm) and (With the mechanism wound) and add:

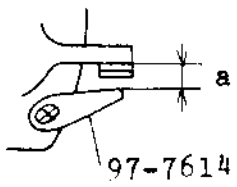
"A" deminsion (mechanism wound) = Under 0.2 mm

(mechanism released) = 1.5 to 1.7 mm

In Para. 2.7.1.3) delete : (0 to 0.2mm)

Pg. 19 Fig 16 Add Stopper(97-7614) to the drawing as shown and add this note to the figure.

"a" = 0 to 0.2 mm
(released position)



Pg. 19, Para. 2.7.1.3.1) Add the PA-16 Curtain Speed limits in the blanks provided:

--, and between 11.5 and 12.5 ms using the PA-16 Transistor Shutter Tester.

Also add: Note 2. After adjusting the slow shutter, adjust only the first curtain. If the 2nd Curtain is adjusted the slow shutter must be readjusted.

Pg. 20 , Fig. 20 , Change limit to: 1.27 to 1.63 mm

Pg. 27, Para. 2.11.11 (Added)

11. CATS Accuracy Check

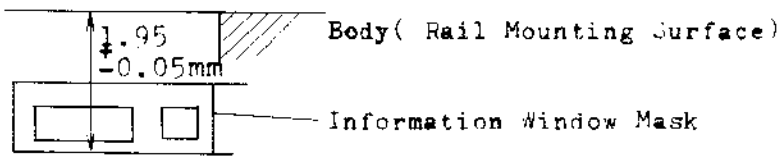
To insure that the meter will give correct CATS exposure, check as follows: After adjusting the normal functions of the meter, remove the camera battery, then place a mercury cell(1.3V) variable resistor(We use a 4Mohm from the Canon Booster I) and microammeter wired in series between the camera body and the CATS contact(inside contact on accessory shoe). With a 50mm 1:1.4 lens set at f16,ASA100,1/60sec; adjust the resistor till the meter needle is centered in the following needle. The ammeter should read 84$\pm$ 3 uA. If not , replace the meter.

Note: For complete CATSystem alignment, see the Speedlite 133D Repair Guide.

Pg. [illegible] Para. 2.11.12 (Added)

12. Information Window Position

Install the window as shown in the drawing .



Pg. 32, Para 2.15.2, Make the following changes:

Delete -------, and a 50mm, 1:1.4 lens installed,----

Change "A" limit to: A = 1.3 ± 0.1 mm

Add note:

Note: After assembly, the following needle must be entirely in the red warning mark or invisable when the "Stopped Down Metering" lever is pushed.

Pg. 33, Para. 2.15.3, Add Note 2:

Note 2: Flange Back must be adjusted before doing this adjustment.

Pg. 34, Para 2.16.5, Change to read:

----------at the MD coupler must be under 1.7 kgcm without film loaded.

Canon SERVICE MANUAL REPORT Serial No. AC30-013 E

Service Manual No. C-030

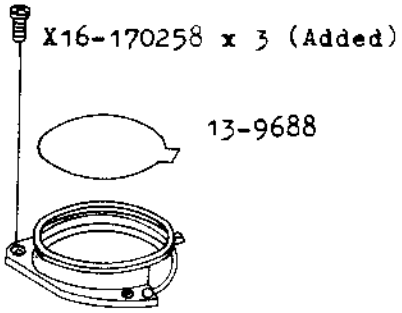
Issued by Camera Service Department, Canon Inc. Date 1971 / 7 / 21

Canon F-1 Mercury Cell Chamber Service Parts Addition

The mercury cell chamber parts are not listed separately in the Repair Manual. They were a part of the Body(19-0601), but the are now available as individual parts.

The part number for the Body is now 18-0489.

Add the drawing and new parts to page 10 in the Repair Manual.



Added Parts

Qty.	Class	Part No.	Description
1	D	13-9718	Battery Box
1	E	18-0489	Body
3		X16-170258	Screw

Canon SERVICE MANUAL REPORT

Serial No. AC30-014 E

Service Manual No. C-030

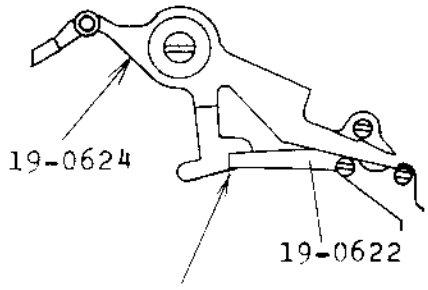
Issued by Camera Service Department, Canon Inc

Date 1971 / 7 / 21

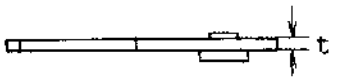
Canon F-1 Diaphragm Release Lever Change

1. Change

Both the Diaphragm Charge Lever(19-0624) and Diaphragm Release Lever(19-0622) were made from 0.8mm stock. If there was a small amount of play in there pivots, it was possible for them to slip past each other. To prevent this, Diaphragm Release Lever has been thickened to 1.0mm.



Problem occured here



t = 0.8 → 1mm

2. Repair

Old and new parts are interchangeable. Camera Service will stock the new part only. If this problem occures, change Diaphragm Release Lever (19-0622).

Canon SERVICE MANUAL REPORT

Serial No. AC 30-015 E

Service Manual No. C-030

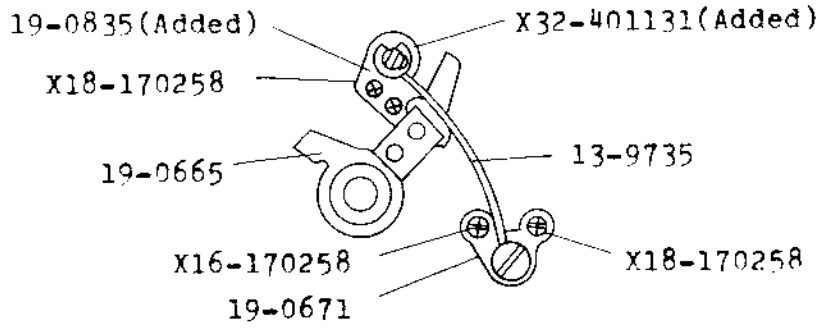
Issued by Camera Service Department, Canon Inc

Date 1971 / 7 / 21

Canon F-1 First Curtain Brake Change

1. Change

Certain changes to prevent 1st Curtain bounce were reported in SMR AC30-010 E. Further improvements have been made by increasing the 1st Curtain Brake stroke and making both ends of the brake band adjustable with eccentric screws.



1st Curtain Brake Assembly

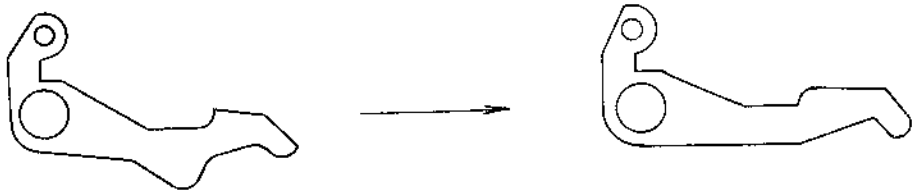
Several parts have been changed to lengthen the brake stroke. They were changed as shown below.

OLD NEW

Brake Charge Cam (13-9431)

13-9431 13-9431-02

Brake Charge Lever (19-0658)



19-0658 19-0658-03

OLD NEW

Brake Band (13-9735)

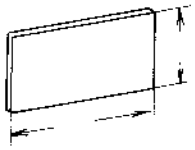
Old was 0.3mm thick with two different radii

13-9735-01 (18R) (15R)

New is either 0.2 or 0.25mm thick for adjustment

13-9735-02 (0.2) (0.25)

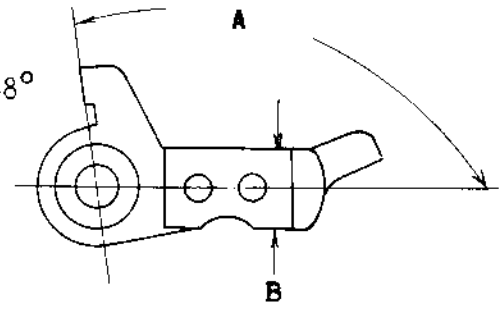
Brake Leather(13-9736)



Old Dimension:
3 X 6.5mm
13-9736

New Demension:
2.7 X 9.0mm
13-9736-03

1st Curtain Brake (19-0665)



Angle A = 88°
B = 3.6mm
19-0665

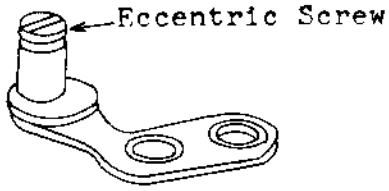
Angle A = 100°
B = 4.4mm
19-0665-04

19-0665 19-0665-04

Brake Band Base (19-0671)

19-0671-02 19-0671-04

Brake Band Base (19-0835)(Added Part)



Body (18-0489) The body now has two holes for mounting Brake Band Base(19-0835)(Added Part) instead of one hole.

2. Repair

Old F-1 bodies cannot be fitted with the new brake parts. Camera Service will stock new bodies and both old, new and special service brake parts.

In SMR AC30-010E, the part numbers for the even radius brake band should be 13-9735-01 instead of 02. When ordering 13-9735-01 specify (18R)or(15R).When ordering 13-9735-02 for the new type brake specify (0.2) or (0.25) thickness.

Added Parts

Class	QTY.	Part No.	Description
D	1	19-0835	Brake Band Base

Canon SERVICE MANUAL REPORT

Serial No. AC30-016 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

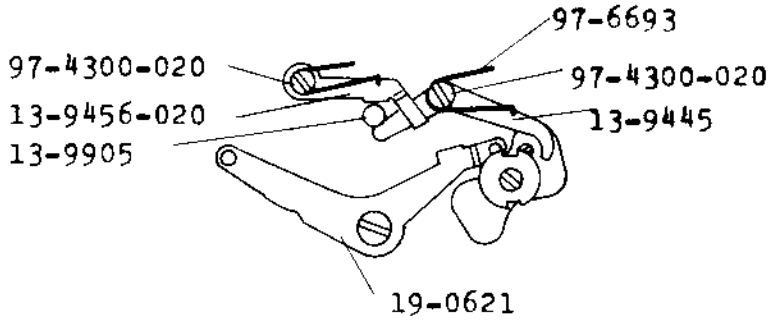
Date 1971 / 7 / 27

Canon F-1 Rewind Clutch Mechanism Change

1. Change

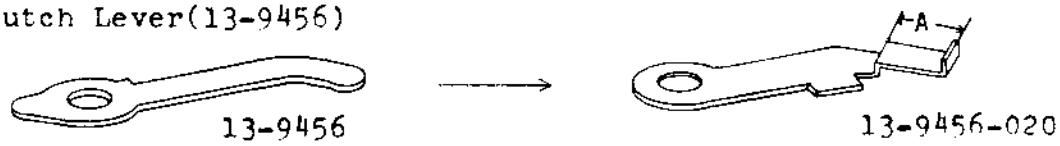
With the original design of the rewind clutch mechanism, the rewind button would not always clamp if the winding had stoped at certain positions in mid-stroke. To remedy this condition, the mechanism has been redesigned. Rewind Clamp Lever(13-9445) preformed both rewind clamp and release function and Clamp Lever Guide(13-9456) was a guide only. Now both parts function to clamp the rewind button. 13-8445 is released the same as before but Clamp Lever(formerly Clamp Lever Guide)(13-9456-020) is cancelled by Charge Lever(19-0621). Both the Charge Lever and Clamp Lever are changed and the clutch lever is also available in different lengths.

Note: As a result of this change, an important operational change must also be made. For double exposure, the rewind button is only returned 1/2 turn rather than 7/8 turn with the old system. Cameras with the new system have a GREEN rewind button instead of the old RED button.



Charge Lever(19-0621)

Clutch Lever(13-9456)



A: 5.2mm
5.45mm
5.7mm

Canon SERVICE MANUAL REPORT Serial No. AC30-017 E

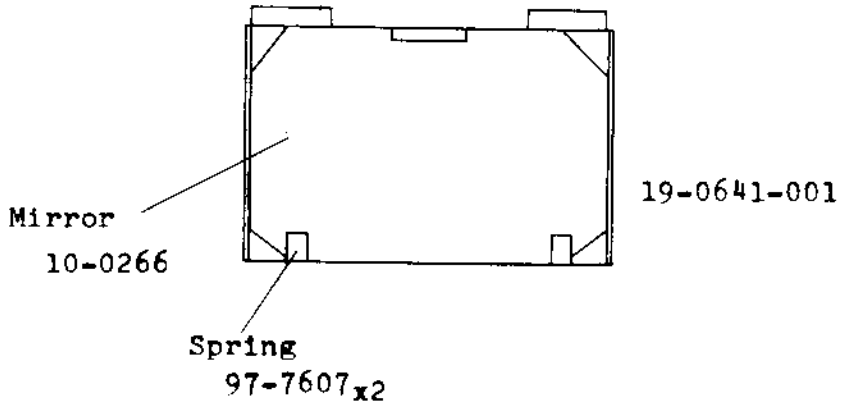
Service Manual No. C-030

Issued by Camera Service Department, Canon Inc. Date 1971 / 8 / 2

Canon F-1 Service Parts Change (Mirror Replacement)

1. Change

Mirror(10-0266) and Spring(97-7607) are now available as separate parts so the mirror can be replaced without removing the mirror box as is necessary when the Mirror Unit(19-0641-001) is replaced.



2. Repair

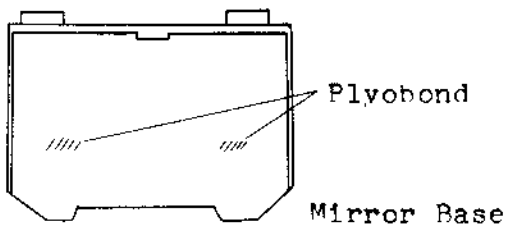
To change the mirror without removing the mirror box proceed as follows.

2.1 Disassembly

1. Apply a small amount of solvent(ME Ketone) to the two Springs (97-7607) and remove them.
2. Put solvent between the mirror and mirror base and remove the mirror.
3. Clean the mirror base with solvent.

2.2 Assembly

Note: Don't remove the protective tape from the mirror.
1. Apply plyobond to the mirror base as shown.
2. Carefully slip the mirror under the spring at the back of the mirror base.
3. Apply Diabond to the springs and slip them into place.
4. Remove protective tape from the mirror and check the mirror.



Canon SERVICE MANUAL REPORT

Serial No. AC30-019E

Service Manual No. C-030

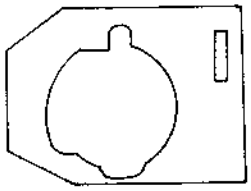
Issued by Camera Service Department, Canon Inc.

Date 1971 / 8 / 24

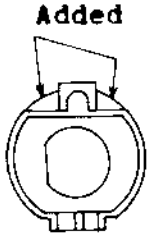
Canon F-1 Top Cover Change

1. Change

To enable the battery checker to be adjusted without removing Top Cover(19-0604), the hole under the Accessory Shoe Base (13-9679) has been enlarged. Accessory Shoe Base(13-9679) has also been enlarged to cover the enlarged hole.



19-0604



139679

There are actually 3 different Top Cover's(19-0604); the original, enlarged hole, and slightly less enlarged hole which is the final improvement. Either the old or new Accessory Shoe Base(13-9679) can be used with the first or last top cover, but the enlarged base must be used middle cover with the largest hole.

2. Repair

Camera Service will stock only the new parts which can be used on all cameras.

Canon SERVICE MANUAL REPORT

Serial No. AC30-021 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc

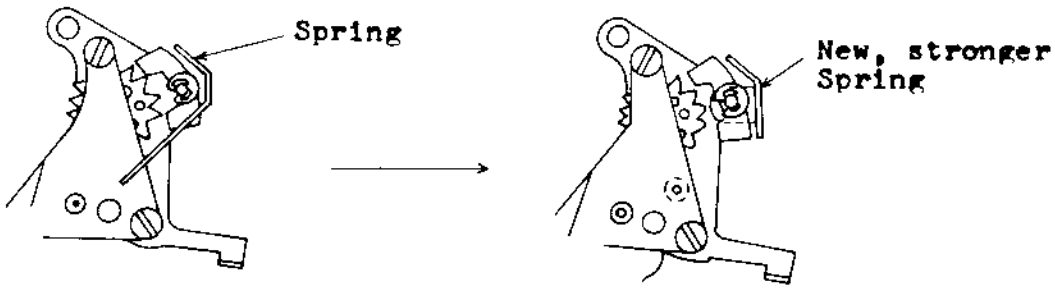
Date 1971 / 8 / 26

Canon F-1 Slow Governor Improvement

1. Change

To improve the durability of the Slow Governor(1--0462) , the anchor spring has been redesigned and strengthened.

OLD NEW



18-0462

2. Repair

Old and new slow governors are interchangeable. Camera Service will stock only the new slow governor.

Canon SERVICE MANUAL REPORT

Serial No. AC30-022 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

Date 1971 / 8 / 30

Canon F-1 Shutter Curtain Change

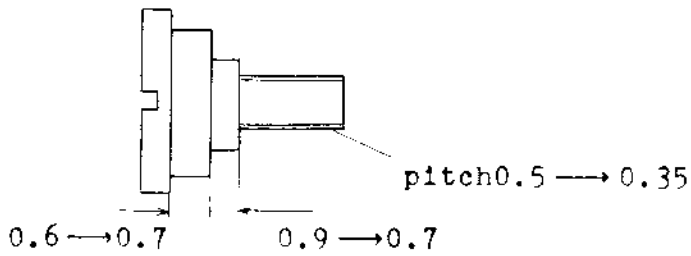
1. Change

   To improve the duribility of Shutter Curtains(19-0650,19-0651), the coating has been changed.

2. Repair

   The old and new shutter curtains are interchangeable but due to a slight difference in appearance, if one curtain is changed they should both be changed.

   Camera Service will stock new shutter curtains only.



97-4300 ⟶ 97-4300-020

BODY: Pivot hole for 13-9456 has been moved, and a boss added to the die casting to provide additional thread area. Screw (97-4300) has been changed accordingly.

Note: 3000 cameras were made with the new mechanism except they do not have the added boss. If these cameras two special service parts are used when needed for repair.

Special Service Parts: Collar (Y00-1426)
Screw (Y00-1427)

Rewind Button: 13-8197 (Red dot)
13-9905 (Green dot)

2. Repair
Old and new parts are, in general, not interchangeable. 13-9456 and 97-4300 cannot be interchanged. The new 19-0621 can be used in old cameras but the old one cannot be used in new cameras. Old and new Rewind Buttons are physically interchangeable but they must not be interchanged since the are the only external sign as to which double exposure system must be used. Camera Service will stock only new Bodys(18-0489) and Charge Levers(19-0621), but will stock both old and new 13-9456, 97-4300, and both Rewind Buttons as well as the special service parts (Y00-1426 and Y00-1427).

Adjustment: The rewind button is now released by 19-0621 pushing 13-9456-02. Release should occure at 70 to 90° of the winding stroke. Adjustment is made by choosing the correct 13-9456-02 from the 3 sizes available.

Added Parts:

Class	Part No.	Qty.	Description
D	Y00-1426	1	Collar(Special Service Part)
D	Y00-1427	1	Screw(Special Service Part)
C	13-9456-020	1	Rewind Clamp Lever
C	13-9905	1	Rewind Button(Green)
D	97-4300-020	1	Screw
D	97-6800	1	Spring

Canon SERVICE MANUAL REPORT

Serial No. AC30-024 E

Service Manual No. C-030

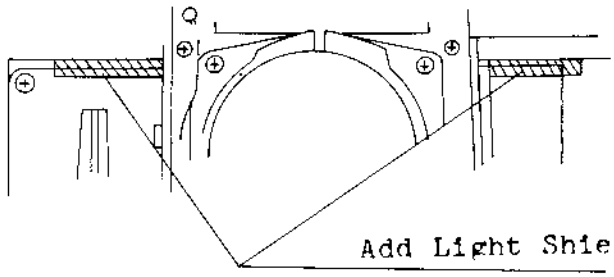
Issued by Camera Service Department, Canon Inc

Date 1971 / 10 / 5

Canon F-1 Light Shield Addition

1. Change

To prevent light leaks, light shields(13-9954) have been added as shown in the drawing.



Add Light Shield (13-9954) to all repaired cameras

2. Repair

Add the light shields to all cameras that are repaired.

Canon SERVICE MANUAL REPORT

Serial No. AC30-025 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

Date 1971 / 10 / 21

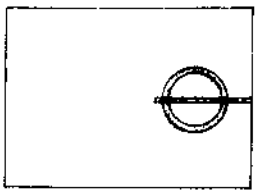
Canon F-1 Meter and CATS Changes

1. Change

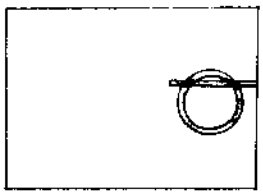
The original alignment has been found to cause a slight over-exposure of 0.2 F stops. To eliminate this error without extensive realignment of service equipment, the alignment position of the needle has been moved up 0.2 F. as shown in the drawings.

1.1 Meter Change

The meter needle should be aligned at the position shown in the right hand drawing with the same brightnesses as before.



Original Adjustment Position



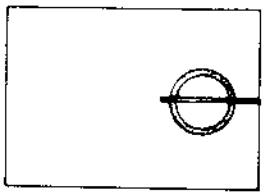
New Adjustment Position (+0.2F)

1.2 CATS Change

The CATS alignment position remains the center of the circle, but the ammeter reading is changed from 84 to 82.6±3uA.

Note: The CATS accuracy check is not in the original Repair Guide but was added by SMR AC30-012E.

OLD	NEW
ASA100 - 1/60sec. F16= 84 ± 3uA.	ASA100 - 1/60sec. F16= 82.6± 3uA

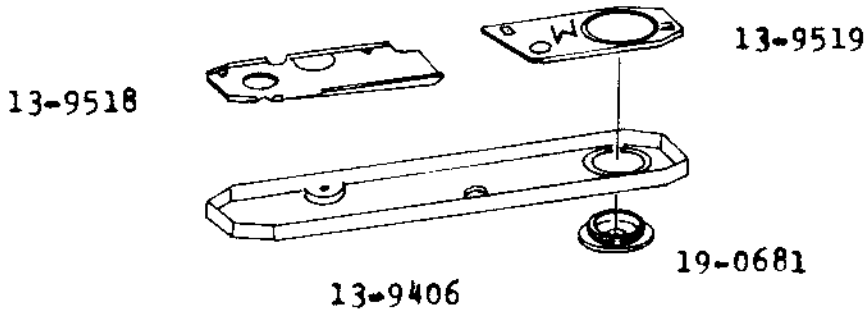


CATS adjustment
Needle position is not changed but current value is.

2. Repair

Adjust all cameras returned for service to the new alignment point and check the CATS check point.

Put a red " M " as shown in the drawing after making the adjustment.



Canon SERVICE MANUAL REPORT

Issued by Camera Service Department, Canon Inc

Serial No. AC30-026 E

Service Manual No. C-030

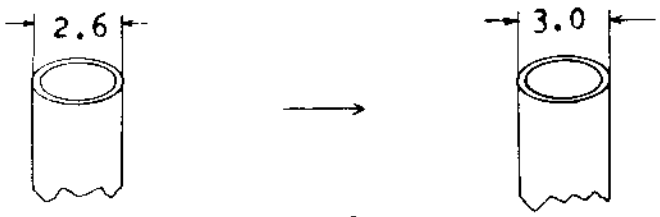
Date 1971 / 10 / 21

Canon F-1 Back Cover Roller Diameter Change

1. Change

To prevent film overlap the size of Roller(13-9618) has been increased to press the film more firmly against Sprocket(13-9449).

Unit: mm



13-9618

2. Repair

Old and new parts are interchangeable. Camera Service will stock only the new parts.

Canon SERVICE MANUAL REPORT

Serial No. AC30-027 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

Date 1971 / 11 / 19

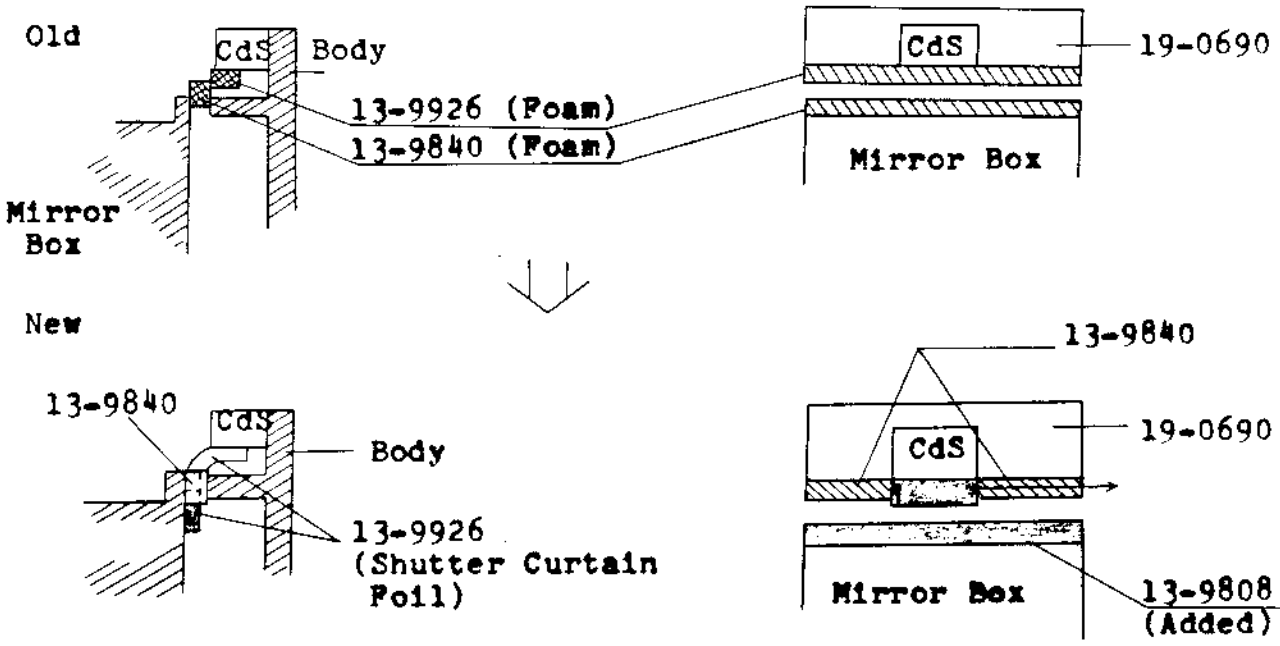
Canon F-1 Light Leak Prevention

1. Change

A light leak at the lower edge of the Cds effecting the upper 2/3 of the film (lower 2/3 of the print) has been discovered in some cameras. To prevent it the changes shown here have been made.

Originally two pieces of foam type light shield material were used. One under the CdS Case and one between the upper part of the rear of the mirror box and the body.

Now the piece between the body and mirror is made from F-1 shutter curtain material. The single piece of foam under the CdS Case has been replaced by 3 pieces. A piece of foam is used under each end of the case and a piece of shutter curtain is used directly under the CdS. This piece also curves down between the body and the mirror box.



Parts Changed or Added:

13-9926 - Foam Light Shield changed to Shutter Curtain 5mm x 21mm
13-9840 - Foam Light Shield (46.5mm) changed to 15.5mm x 2.
13-9808 - Light Shield (Shutter Curtain) Added

2. Repair

Old and new parts are interchangeable. Camera Service will stock new parts only.

If there is evidence of a light leak on the upper 2/3 of the film, install the new light shields.

Added Parts:

Class	Part No.	Qty.	Description
D	13-9808	1	Light Shield (Metal)

Canon SERVICE MANUAL REPORT

Serial No. AC30-028 E

Service Manual No C-030

Issued by Camera Service Department, Canon Inc.

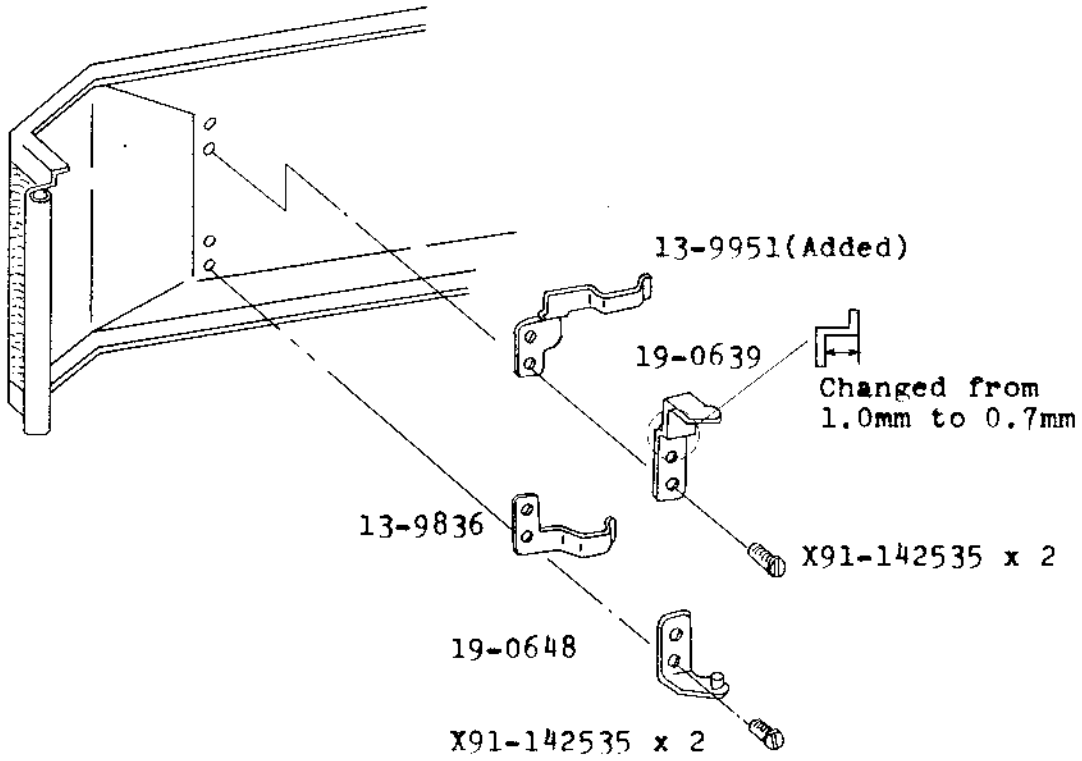
Date 1971 / 12 / 20

Canon F-1 Film Overlap Prevention

1. Change

Another Film Pressure Spring(13-9951) has been added to hold the film against the upper sprocket, in addition to the lower Film Pressure Spring(13-9836).

The new spring mounts at the same position as Roller Holder (19-0639) so the offset part of the holder has been reduced from 1.0mm to 0.7mm.



2. Repair

The new parts can be added to any F-1. Both must be added if either one is added. These parts and the larger roller(SMR AC30-026E) should be added to any camera with film overlap problems. Spool Torque is not changed.

Added Parts

Class	Part No.	Qty.	Description	Price
D	13-9951	1	Film Pressure Spring	$0.05

Canon SERVICE MANUAL REPORT

Serial No. AC30-029 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

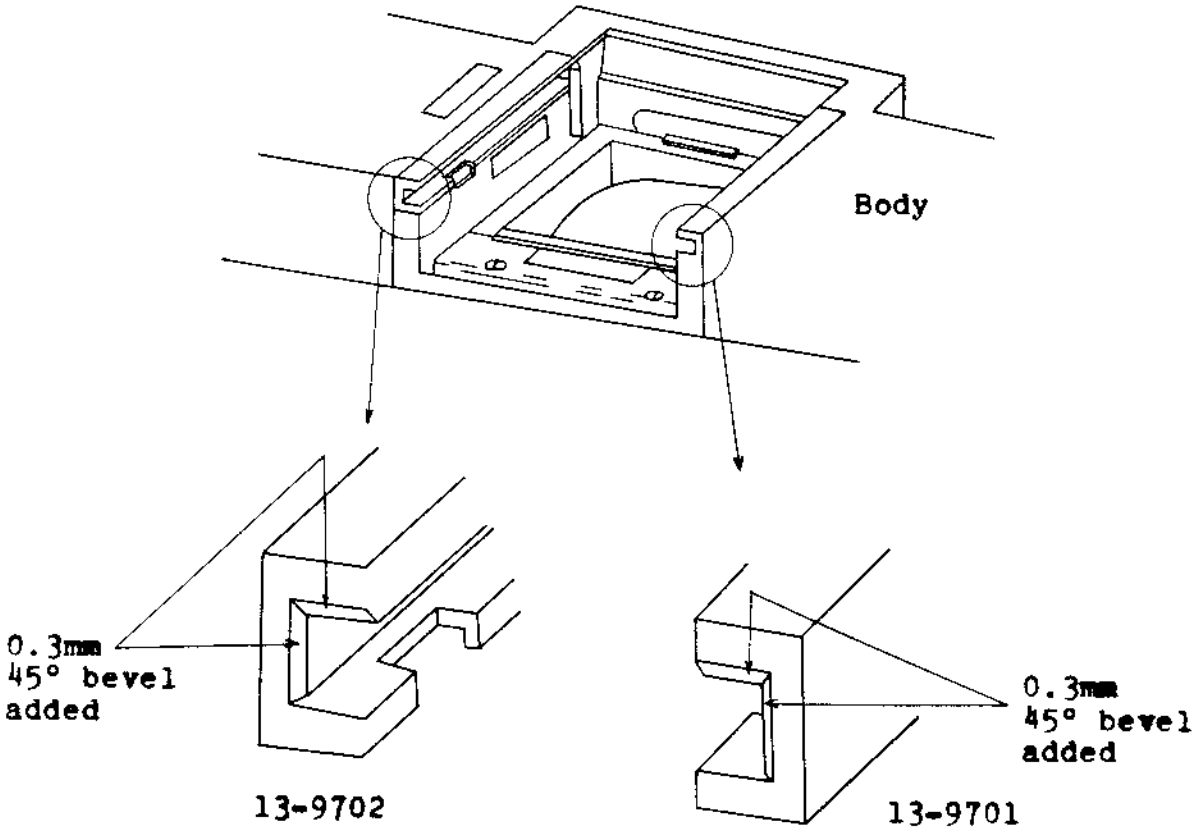
Date 1971 / 12 / 20

Canon F-1 Pentaprism Rail Change

1. Change

The rails of the pentaprism(and other finders) were sometimes scratched by the sharp edges at the entrance of the camera Pentaprism Rails(13-9701, 13-9702). These scratches caused the pentaprism to be difficult to install.

To prevent this problem, a 0.3mm, 45° bevel has been added to both pentaprism rails.



2. Repair

Old and new parts are interchangeable. Both rails should be changed if either one is changed. Camera Service will stock new parts only.

Canon SERVICE MANUAL REPORT

Serial No. AC30-031 E

Service Manual No C-030

Issued by Camera Service Department, Canon Inc.

Date 1972/1/18

Canon F-1 Changes

1. Irregular Film Transport

1.1 Change

There have been occasional problems of frame overlap and irregular spacing between frames. Coil Spring(97-5641) has been changed to prevent these problems.

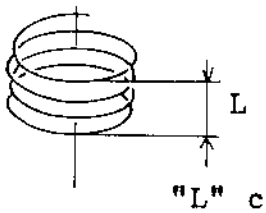
Repair Manual , pg. 13

Repair Guide, pg. 14

Spool Torque:Para. 2.4.2

Method 1: 100-160 gcm

Method 2: 152-242 g



"L" changed from 9 to 8 ± 0.5mm

The number of coils has been reduced from 4 to 3 and the length changed from 9 to 8 ± 0.5mm.

1.2 Repair

Old and new parts are interchangeable. Camera Service will stock new parts only.

2. Mirror Up Lever and Diaphragm Lever Sticking

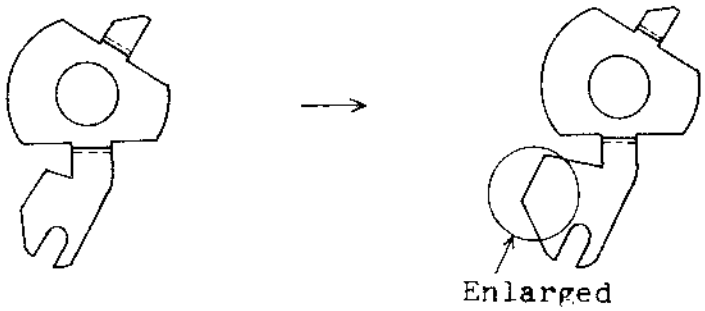
2.1 Change

The correct method for locking the mirror up is to first press the stop down lever and set the lock lever to "M". If the lock lever is set to "M" without first pressing the stop down lever, the two Diaphragm Closing Levers (19-0643,19-0644) sometimes stick. To prevent this, they have been changed.

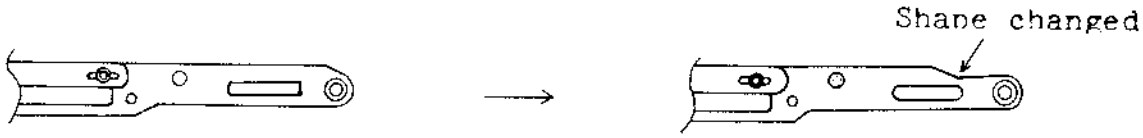
Repair Manual, pg. 7

Old New

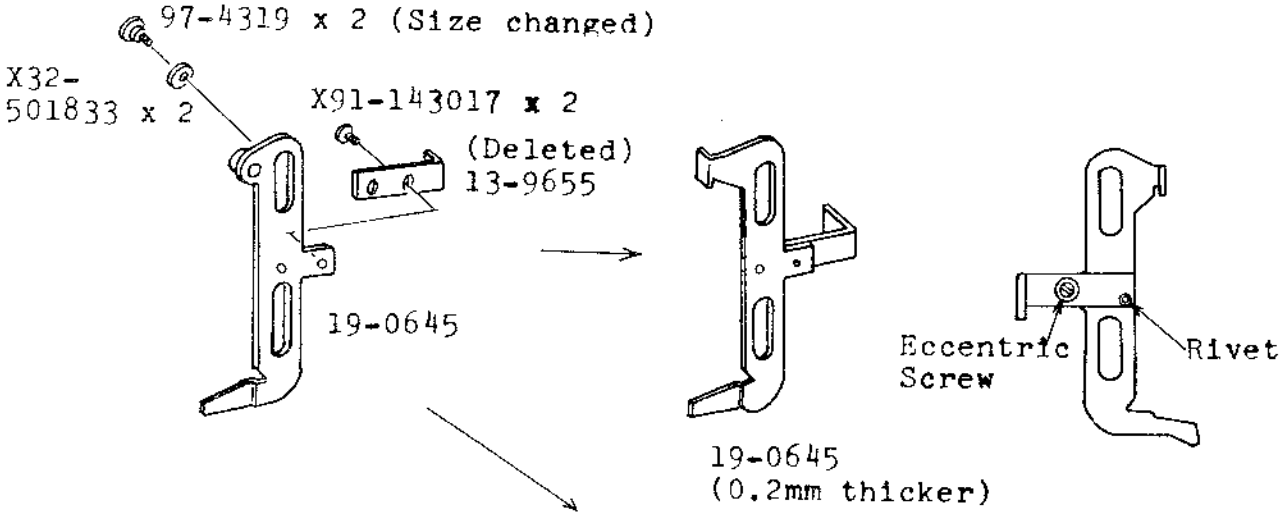
Diaphragm Closing Lever
(19-0643)



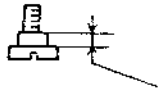
Diaphragm Closing Lever
(19-0644)



Mirror Clamp Lever
(19-0645)



Screw(97-4319)



$0.70^{+0.05}_{-0}$ ⟶ $0.90^{+0.05}_{-0}$

2.2 Repair

Old and new individual parts are not interchangeable. 19-0643 and 19-0644 must be changed together. Camera Service will stock new parts only.

Canon SERVICE MANUAL REPORT

Serial No. AC30-032 E

Service Manual No.C-030

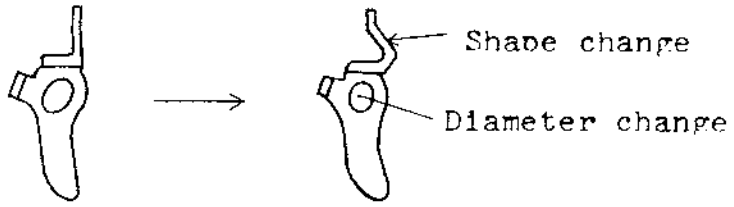
Issued by Camera Service Department, Canon Inc.

Date 1972/2/24

Canon F-1 Self Timer Change

1. Change

To prevent the self timer from failing to set when wound, the following changes have been made.

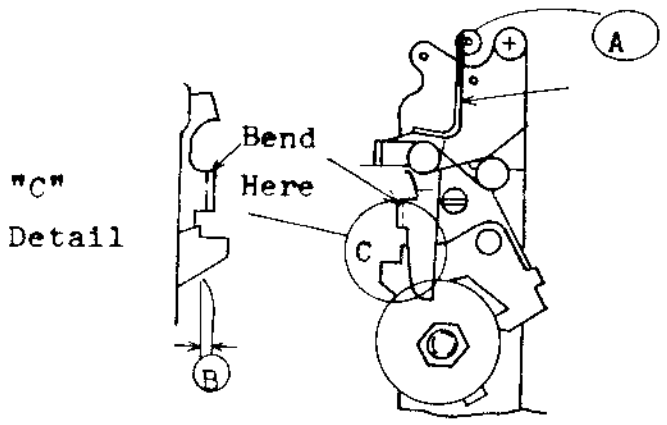


Metal hardness changed to(HV 550-580)

2. Repair

Old self timer can normally be adjusted to work by bending the tab shown toward the self timer.(This reduces the "B" dimension shown in the partial drawing.)

It is not reccomended to bend the top of the lever "A". This normally provides a temporary repair only.



Canon SERVICE MANUAL REPORT

Serial No. AC30-033 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

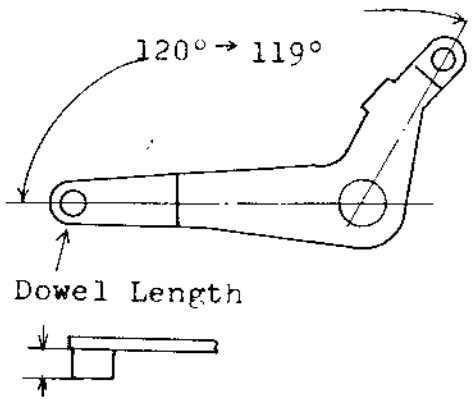
Date 1972/2/24

Canon F-1

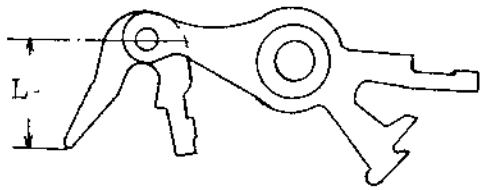
1. Change

When using the F-1 with 2 FL extension tubes the lens diaphragm will not stop down all the way to the smallest aperture automatically. The diaphragm relaese stroke has been lengthened to eliminate this problem. Refer to the drawing on page 35 of the Repair Guide. The "B" position limits are changed to 1.8 to 3.2 mm from the center line. The "A" position is not changed but the " Automatic Diaphragm Release Lever Tension should be changed to "over 110 g.".

19-0621

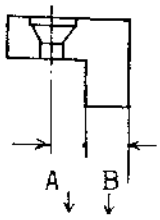


19-0624



L from 10 to 10.5mm

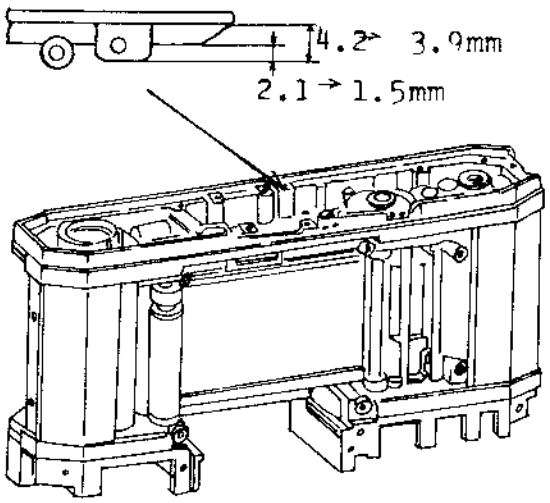
Cushion(13-9589) and the body casting have both been changed also.



A from 2.1 to 1.5mm

B from 1.4 to 1.7mm

13-9589 to 13-9589-050



Canon SERVICE MANUAL REPORT

Serial No. AC30-034 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

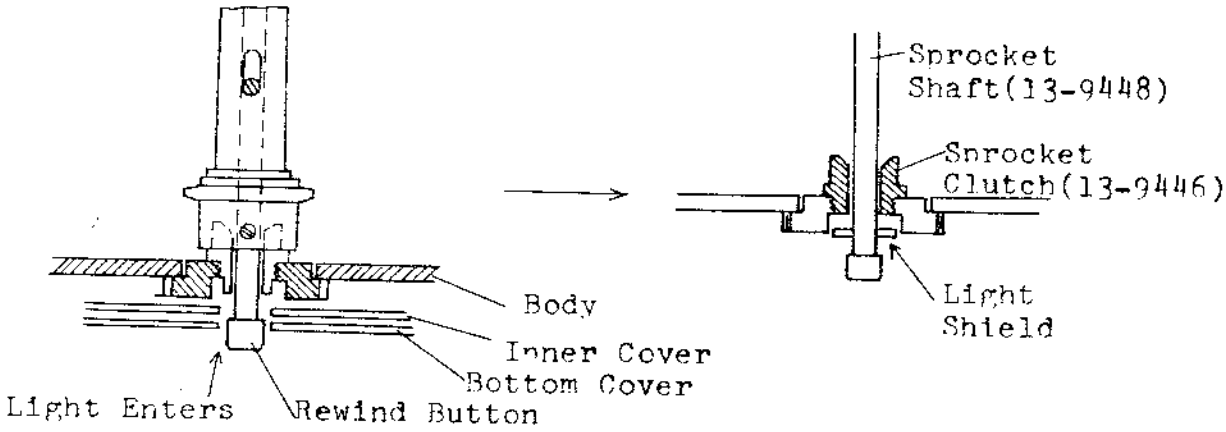
Date 1972/3/7

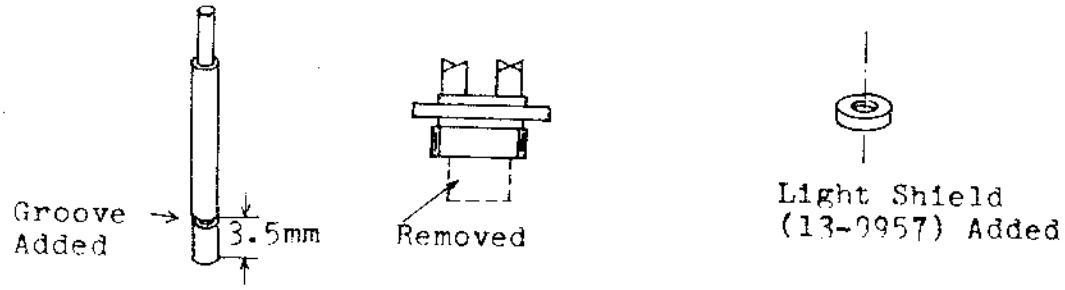
Canon F-1(1-20711) Light Leak Prevention

1. Change

To prevent possible light leak around the rewind button thru the middle of the sprocket and out around the screw slot in the sprocket, a Light Shield Collar(13-9957) has been added to the Sprocket Shaft(13-9448).

Repair Manual, pg. 4





2. Repair

If this problem occures, change 13-9446, 13-9448 and add 13-9957. The old 13-9448 cannot be used.
Camera Service will stock new parts only.

Added Parts List:

Class	Part No.	Qty.	Description	Price
C	13-9957	1	Light Shield Collar	$0.05

Canon SERVICE MANUAL REPORT

Serial No. AC30-035 E

Service Manual No. C-030

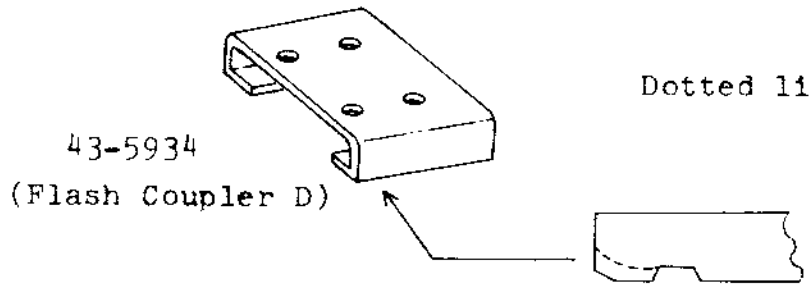
Issued by Camera Service Department, Canon Inc.

Date 1972/3/7

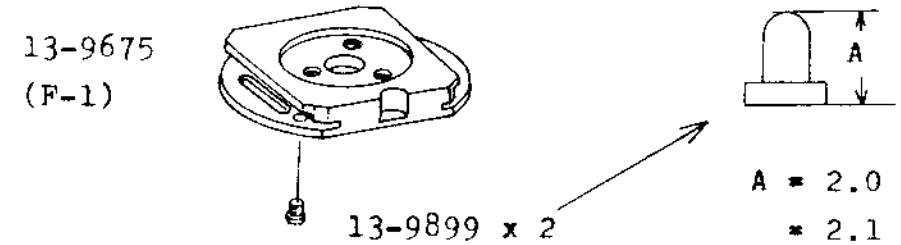
Canon F-1 Flash Coupler D Accidental Separation Prevention

1. Change

The click lock on some early Flash Coupler D's does not hold the coupler securely enough. The Flash Coupler D Foot (43-5934) has been changed to make the click lock more positive.



Click Pin(13-9899) x 2 which were a part of Accessory Shoe (13-9675) are now separate service parts and available in 3 different lengths to adjust the strength of the click lock.



2. Repair

If a customer has this problem with his flash coupler , change the flash coupler Shoe(43-5934) and the Click Pins. Adjust the force required to remove the coupler from the F-1 to 1.6 to 3.2 Kg by installing the correct length click pin.

Added Parts:

Class	Part No.	Qty.	Description	Price
C	13-9899(2.00) 13-9899(2.10) 13-9899(2.20)	2	Click Pin	$0.05

Flash Coupler D part

C	43-5934	1	Coupling Shoe	0.60

Canon SERVICE MANUAL REPORT

Report No. AC30-037 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

Date 1972/4/19

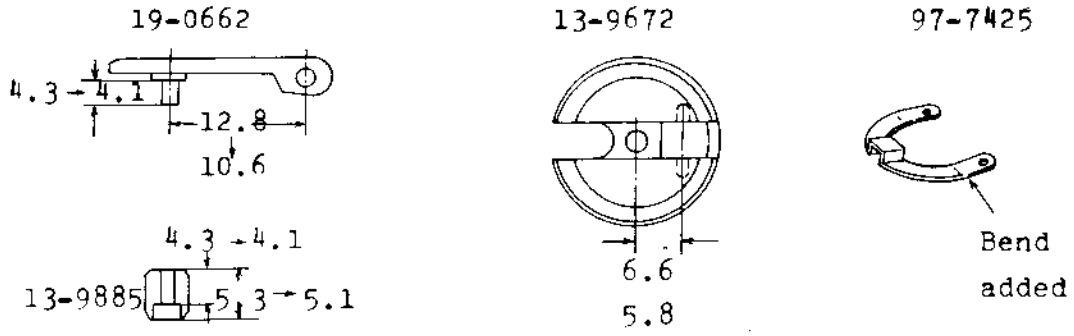
Canon F-1 Rewind Crank and Pressure Plate Changes

1. Changes

1.1 Rewind Crank

To facilitate rewinding with the Servo EE finder mounted, the changes shown in the drawings have been made to the rewind crank. These changes provide greater clearance for the fingers when rewinding.

Unit: mm



1.2 Repair

Individual parts are not interchangeable but Rewind Crank (18-0474) is. Camera Service will stock both types until the supply of the old type is exhausted.

If a customer complains about rewind with the Servo EE finder replace the rewind crank.

2. Pressure Plate

2.1 Change

To prevent any possible film bulge toward the lens, the pressure plate has been made slightly concave.

Limits:	Old	New
Pressure Plate	0.0 to 0.001 mm concave	0.001 to 0.003 mm concave
Flange Back:	42.14 $\pm$ 0.02	42.155 $\pm$ 0.02 (Center) 42114 $\pm$ 0.02 (Edge)

2.2 Repair

If pressure plate is changed, be sure to check flange back. (Repair Manual, pg. 5)

1. File this report in the service manual binder F-1 (C-030)
2. Post additional parts, modified parts, etc. in the repair manual (disassembly drawings, parts list and index).
3. Check the file numbers of the service manual reports. If any are missing, request them from us.

Canon SERVICE MANUAL REPORT

Report No. AC30-041 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

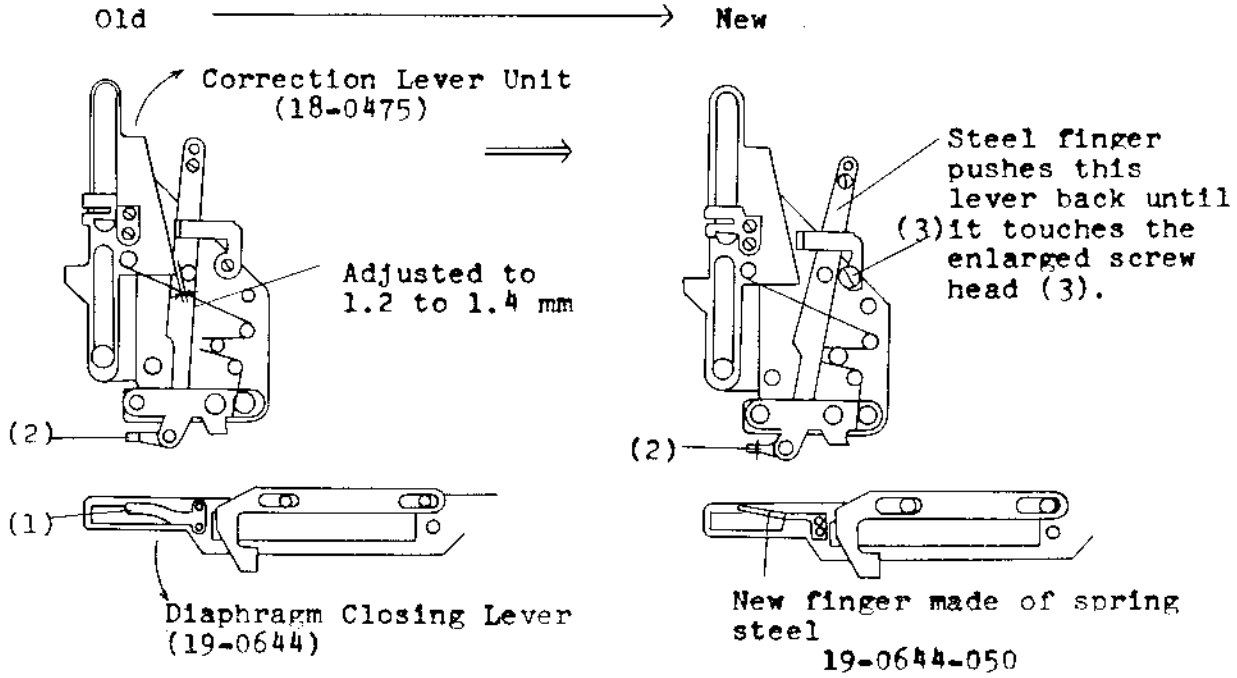
Date 1972/5/24

Canon F-1 Following Needle Adjustment Change

1. Change

The original mechanism and adjustment of the Following Needle is shown in the left drawing. This adjustment is made to remove the following needle from the finder information window when stopped down metering is used . The finger (1) on the Diaphragm Closing Lever(19-0644) pushes against the end of the long lever and forces it back. The adjustment was made by bending the finger. Sometimes the finger will not stay bent correctly allowing the following needle to appear in the finder even when the stop down lever is pushed.

The design has been changed as shown in the right side drawing. The finger is now made from spring steel and no adjustment is necessary. Excess rearward movement is prevented by the larger screw head holding the retaining clip.



1. File this report in the service manual binder F-1 (C-030)
2. Post additional parts, modified parts, etc. in the repair manual (disassembly drawings, parts list and index).
3. Check the file numbers of the service manual reports. If any are missing, request them from us.

2. Repair

When replacing either the Correction Lever Unit (18-0475) or the Diaphragm Closing Lever(19-0644), it is necessary to determine whether the camera is the old or new type. The old and new parts cannot be mixed.

Camera Service will stock only the new Correction Lever Unit (18-0475) but will stock both Diaphragm Closing Levers (19-0644 and 19-0644-050).

In an old camera if 18-0475 is replaced, replace 19-0644 with 19-0644-050 also. If only 19-0644 must be replaced, replace it with an identical part.

In new cameras, the only precaution is to be sure to use the new type Diaphragm Closing Lever (19-0644-050).

Added Part:

Class	Part No.	Qty.	Description	Price
D	19-0644-050	1	Diaphragm Closing Lever	$0.70

Canon SERVICE MANUAL REPORT

Report No. AC30-045 E

Service Manual No.C-030

Issued by Camera Service Department, Canon Inc.

Date 1972/6/26

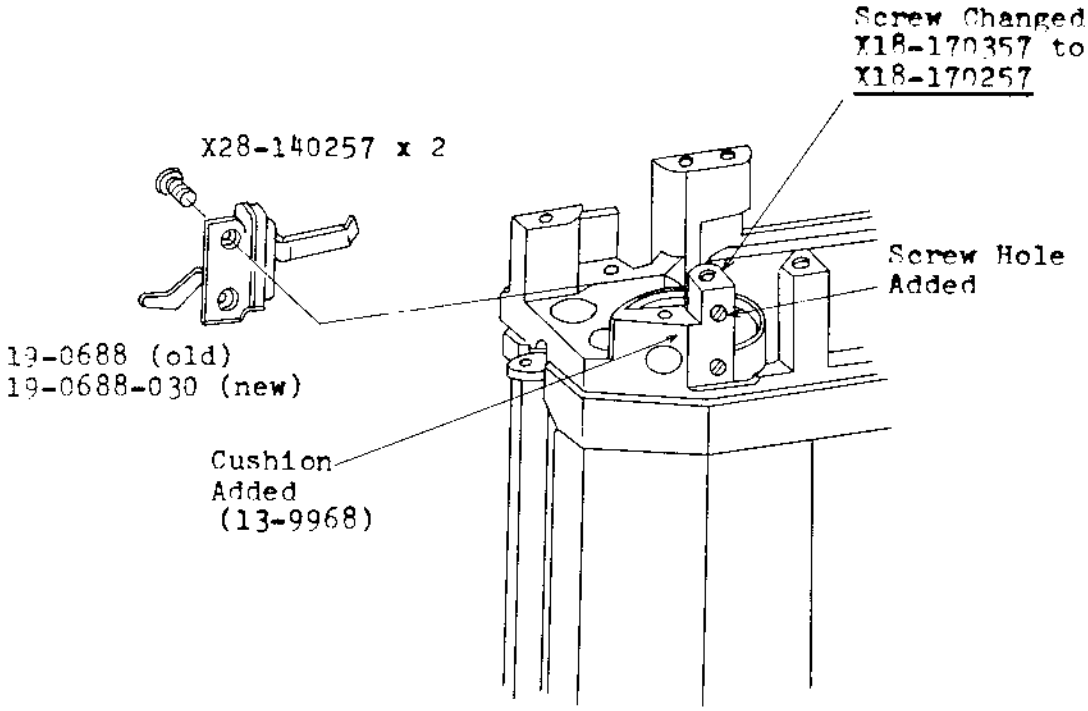
Canon F-1 Changes

1. Flash Change Contact

1.1 Change

Flash Change Contact(19-0688) was originally a part of Winding-Counter Unit(18-0476) and attached to Film Counter Base(19-0615).

To improve production efficiency the mounting position of the flash(syncro) change contact has been moved to the body.



The mounting holes for the contact have been deleted from Film Counter Base(19-0615).

One of the mounting screws for 19-0615 is now shorter so it does not interfere with the flash change contact screw.

Cushion(13-9968) has been added to prevent the contact from chattering.


13-9968

1. File this report in the service manual binder F-1 (C-030)
2. Post additional parts, modified parts, etc. in the repair manual (disassembly drawings, parts list and index).
3. Check the file numbers of the service manual reports. If any are missing, request them from us.

1.2 Repair

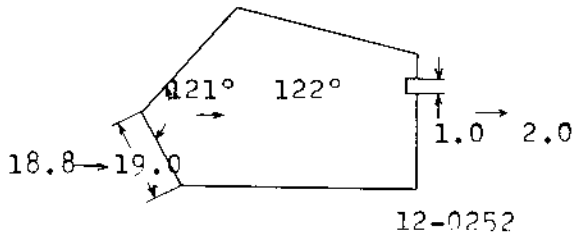
Old and new parts are not interchangeable. Both old and new parts will be stocked.
If syncro problems are present, add the cushion. The cushion can be added to older cameras.

2. Pentaprism Dimension Change

2.1 Change

The dimensions of the pentaprism have been changed to prevent cracking.

Unit: mm



Pentaprism Cover(19-0672) has also been enlarged to fit the new prism.

2.2 Repair

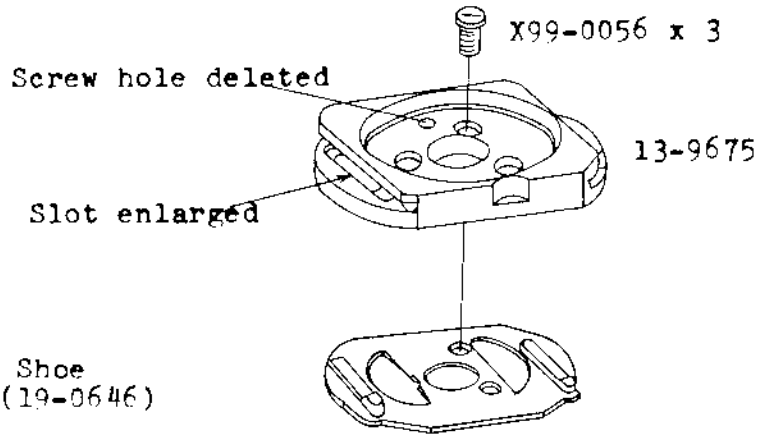
Old and new parts are interchangeable. Camera Service will stock new parts only. The pentaprism cover must be changed if the pentaprism is changed.

3. Accessory Shoe Spring Change

3.1 Change

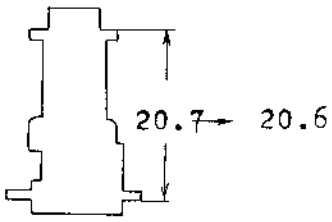
To insure more positive locking of Flash Coupler-D and other accessories, Accessory Shoe Spring(19-0646) has been redesigned. Changes have also been made to the Accessory Shoe(13-9675) and Rewind Shaft Holder(19-0680).

Accessory
Shoe (13-9675)



Rewind Shaft
Holder (19-0689)

(Repair Manual
pg. 4)



Deleted Parts:

Pin (13-9899) and Screw (X16-140188)

3.2 Repair

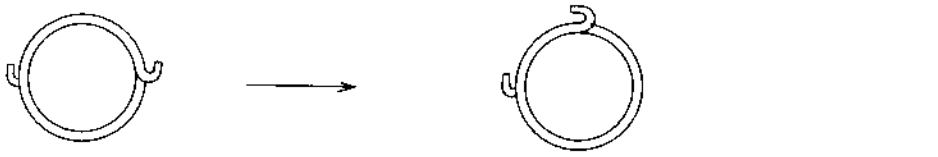
13-9675, 19-0646, and 19-0689 can be installed in older cameras as a set but not individually. Only the new parts will be stocked.

Deleted Parts(13-9899) and (X16-140188) will also be stocked.

4. Spring Change

4.1 Change

Winding Lever Spring(97-6692) has been strengthened by the changes illustrated.



7 1/2 turns
Piano wire

7 1/4 turns
High grade spring steel

4.2 Repair

Old and new parts are interchangeable. Only new parts will be stocked.

Added Parts:

Class	Part No.	Qty.	Description	Price
C	13-9968	1	Cushion	$0.05
D	19-0615-020	1	Film Counter Base	1.10
D	19-0688-030	1	Film Change Contact	0.25

Canon **SERVICE MANUAL REPORT** Report No.AC30-048 E *
Service Manual No. C-030
Issued by Camera Service Department, Canon Inc. Date 1972/7/20

Canon F-1 First Curtain Brake

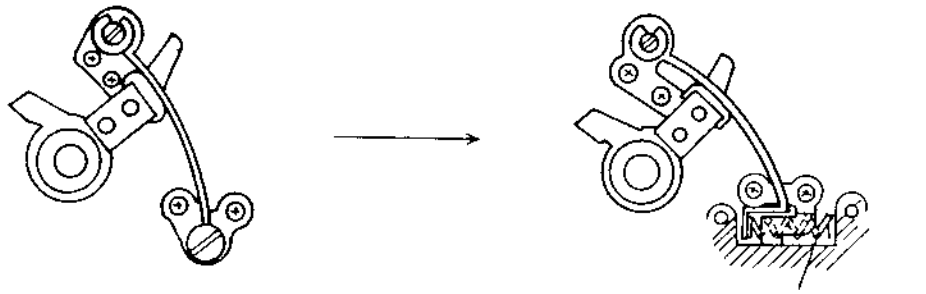
This report is a combination of two reports (AC30-043*and AC30-048). It covers the measures taken to prevent 1st Curtain bounce , or jump as it is sometimes called, and also includes a summary of all important information from previous SMR's on the same subject.

1. Coil Spring Addition

1.1 Change

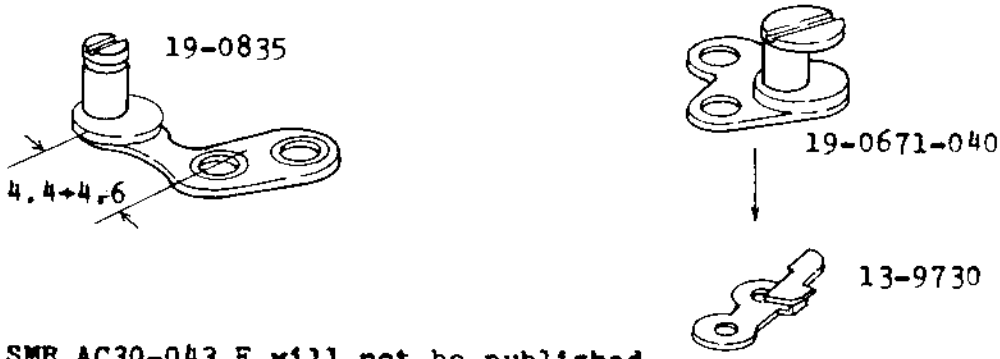
A coil spring has been added at one end of the brake band to insure constant contact between the brake and the brake band.

OLD NEW



Brake Band

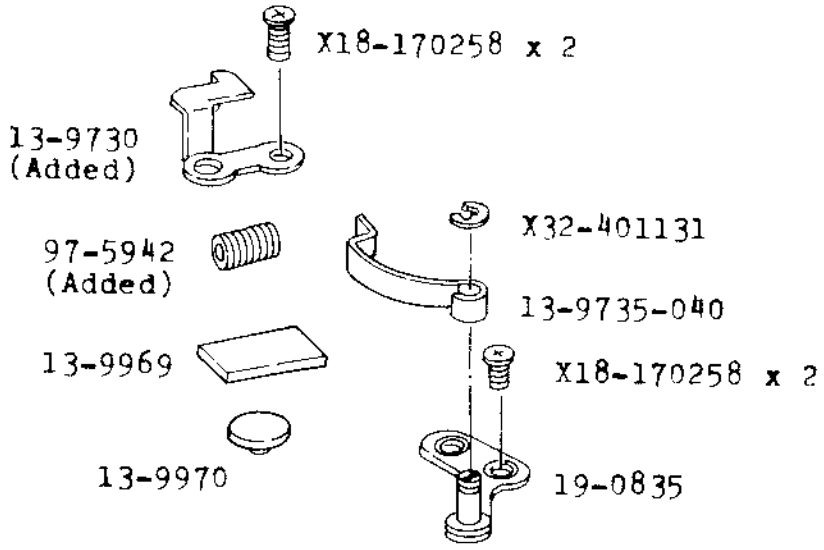
Brake Band Base



* SMR AC30-043 E will not be published.

1. File this report in the service manual binder **F-1 (C-030)**
2. Post additional parts, modified parts, etc. in the repair manual (disassembly drawings, parts list and index).
3. Check the file numbers of the service manual reports. If any are missing, request them from us.

New Brake Assembly Exploded View



Bodies that have the hole for adjusting the deleted dowel from inside the film chamber need Cap(13-9970) to cover the hole when the coil spring type brake is used. (Repair Manual, pg. 11)

1.2 Repair

The coil spring brake system can be added to cameras with classification numbers of 11 or higher (All cameras with Type 3 breaks). Reference SMR AC30-015E.

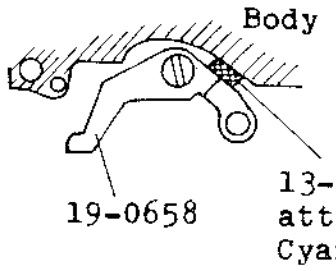
There are 7 different strength Springs(97-5942) available to adjust brake band tension.

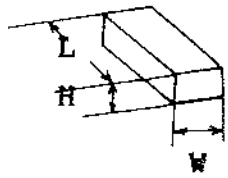
Camera Service will stock only new parts except for the Brake Band. Both Brake Bands(13-9735-020 and 13-9735-040) will be stocked..

2. Auxiliary Brake and Lining Change

2.1 Change

A silicon rubber pad has been added behind Brake Charge Lever(19-0658) to assist the main brake in bringing the 1st curtain to a smooth halt. Brake Leather(13-9736) is changed from suede to pig skin.





Part No.	L	W	H
13-9971(2.50)	4	2.5	2
13-9971(3.00)	4	3.0	2

13-9736

Suede ⟶ Pig Skin

Repair Manual, pg. 11

2.2 Repair

Adding the silicon rubber auxiliary brake will cure 1st curtain bounce in almost all cases. Adding the pig skin brake leather will correct any case of bounce not corrected by the silicon, providing the eccentric (if applicable) is correctly adjusted.

Procedure:

1. Install silicon rubber brake.
2. Adjust eccentric.
3. Install pig skin brake leather.

Note: If step 1 corrects the bounce, steps 2 and 3 are not necessary.

There are two basic type F-1 body castings, Type 10 and Type 20. Type 10 bodies are identifiable buy the separate Collars (13-9681) under Inner Covers(13-9518 and 13-9519). Type 20 bodies have the collars built into the casting.

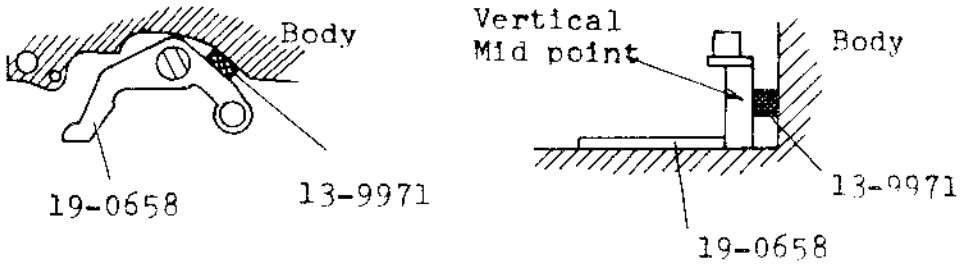
Silicon Rubber (13-9971) is available in two sizes. Type 20 bodies use one of these two sizes. About 70% will need the 2.5mm Wide [13-9971(2.50)].One of the LH surfaces is glued to the body with Cyanobond using a hypodermic needle applicator.

Type one bodies use the 3.00 wide rubber[13-9971(3.00)] but they use it rotated 90° so the effective width is 2.0mm instead of 3.0mm. Cyanobond is applied to one of the LW surfaces.

The best way to install the rubber is to put it in place and force a small amount of Cyanobond between it and the body through a hypodermic needle.

Silicon Rubber Installation Instructions

1. Place the silicon rubber between Brake Charge Lever (19-0658) and the body. Center the rubber midway of the vertical part of the lever as shown in the drawing.



2. Checkpoints

2.1 The rubber should not touch the charge lever Spring (97-6703).

2.2 Be sure to install the rubber correctly for the type of body (Type 10 or 20).

2.3 When the camera is wound, the brake charge lever should at least touch or slightly depress the rubber.

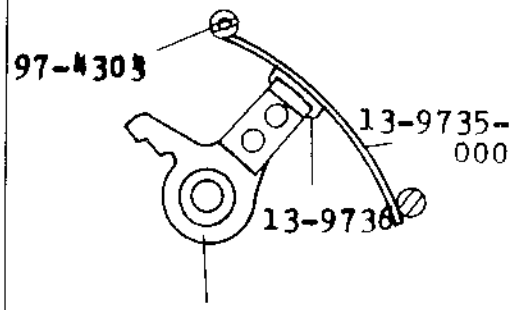
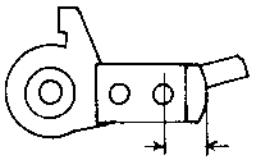
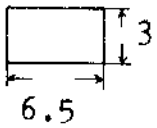
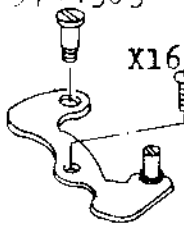
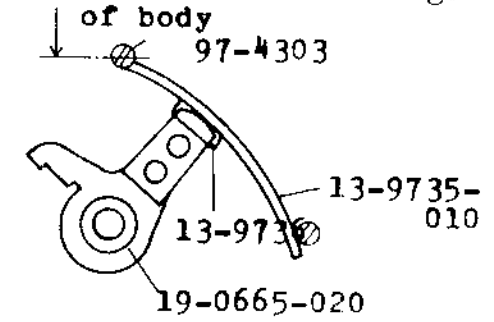
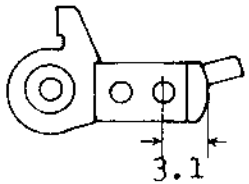
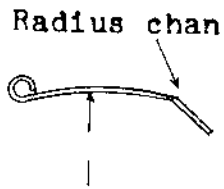
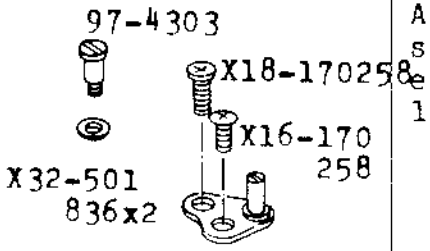
2.4 When the shutter is released at "B", the charge lever should contact the rubber before the master gear completes its travel. The master gear turns 280°. The lever should touch the rubber 1 to 1/2 teeth before the gear completes its travel.

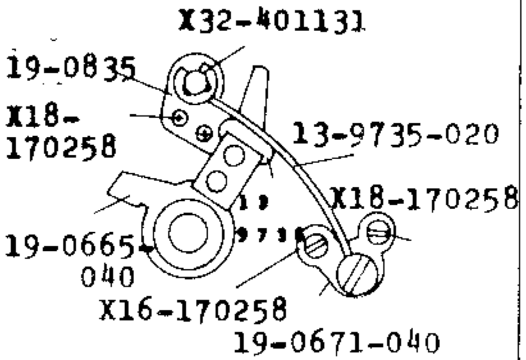
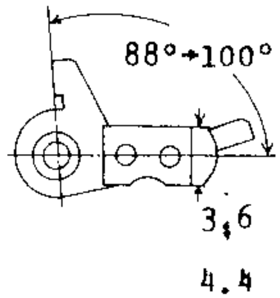
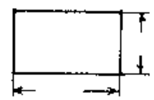
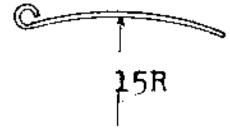
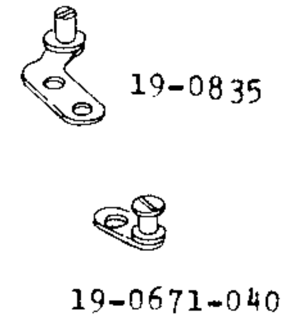
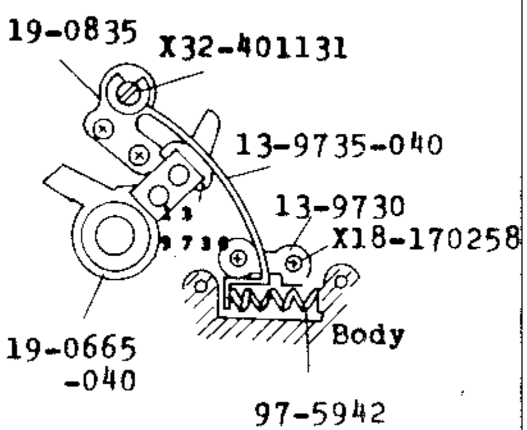
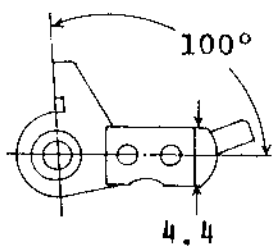
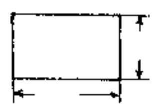
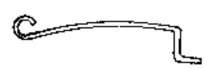
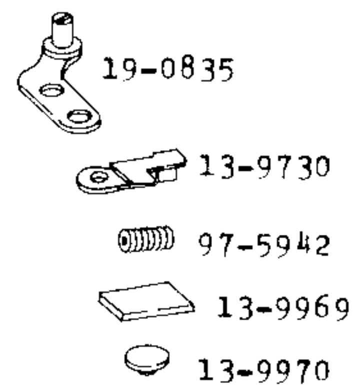
Brake Leather (13-9736) will be stocked in the large size only. Only the basic number, 13-9736, is needed when ordering. The large size leather can be trimed or used without trimming in cameras designed for the small size leather.

3. First Curtain Brake Summary

On the next two pages is a complete summary of the changes made to the F-1 1st Curtain Brake.

Unit: mm

Assemblied Drawing	Brake Lever	Brake Leather	Brake Band	Brake Band Base,etc.	Stock Info.
Original (Type 1)  	19-0665-000  	13-9736  	13-9735-000  15R & 18R available t=0.3mm	97-4303  19-0671-000	All parts stocked execpt break leather
Type 2. (Brake Band Radius correction) Mounting hole moved in 0.4mm.  Service Manual Report: AC30-010 E	19-0665-020  Material changed from Polycarbonate to diecast	13-9736  6.5 x 3	13-9735-010  15R & 18R available t= 0.3	97-4303  19-0671-020	All parts stocked except leather

Type 3. Long stroke, double eccentric type SMR AC30-015E 	19-0665-040 	13-9736  9.0 x 2.7	13-9735-020  t=0.25		Brake Band only stocked. others use all Type 4 parts.
Type 4. Coil Spring type SMR AC30-048E 	19-0665-040 	13-9736 	13-9735-040 		Suede leather not stocked. All others stocked.
Type 5. Present type with silicon rubber and pig skin	19-0665-040 As above	13-9736 Suede to Pig Skin	13-9735-040	Silicon Rubber added	All parts stocked.

Added Parts:

Class	Part No.	Qty.	Description	Price (¥)[3]
D	13-9730	1	Coil Spring Holder	¥ 15
D	13-9969	1	Spacer	¥ 15
D	13-9970	1	Cap	¥ 15
C	13-9971 (3.00)*1 13-9971 (2.50)	1	Brake Rubber(Silicon)	¥ 15
C	97-5942 (625)*2 97-5942 (700) 97-5942 (775) 97-5942 (850)	1	Coil Spring	¥15

* Number in parentheses indicates ($_1$) width or ($_2$) strength of the coil spring.

[3] Prices in Japanese yen are effective August 1, 1972 for all spare parts from Canon Camera Service. Old U.S. dollar prices are not valid after that date.

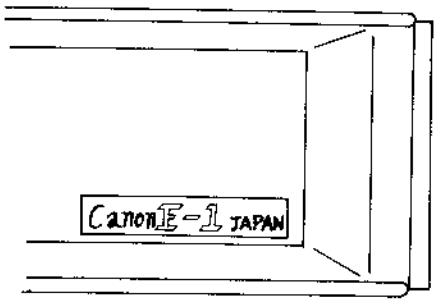
Canon SERVICE MANUAL REPORT Report No. AC30-073 E
Service Manual No. C-030
Issued by Camera Service Department, Canon Inc. Date 1973/6/1

Canon F-1 Back Cover and Wiring Change

1. Back Cover

1.1 Change

A name plate has been added to the lower left corner of the F-1 back cover. The part number for the plate is 13-9999 and the new part for the back cover is 18-0669.



Name Plate(13-9999)

Back Cover Unit
18-0488

18-0669

With this change the product code number has been changed to 1-20721.

1.2 Repair

The back covers are interchangeable. Camera Service will stock the new back cover.

1.3 Classification

From: --29

Canon SERVICE MANUAL REPORT Report No.AC30-074 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc. Date 1973/7/2

Canon F-1 Nut(13-9959) Change

1. Change

Nut(13-9959) which has been used on Meter Cam(19-0683) has been changed to a spacer without threads.

Repair Manual: pg. 5

Threads deleted

13-9959

2. Repair

Old and new parts are interchangeable. Camera Service will eventually stock the new part only.

The "Description" of the part has been changed from "Nut" to "Spacer".

3. Classification

--29

NOTE:

In the Repair Manual, pg. 4 change the following part number.

Old	New
X14-140304	X18-140221

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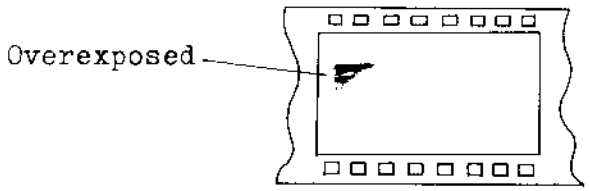
1. File this report in the service manual binder F-1 (C-030) pg. 1/1
2. Post additional parts, modified parts, etc. in the repair manual (disassembly drawings, parts list and index).
3. Check the file numbers of the service manual reports. If any are missing, request them from us.

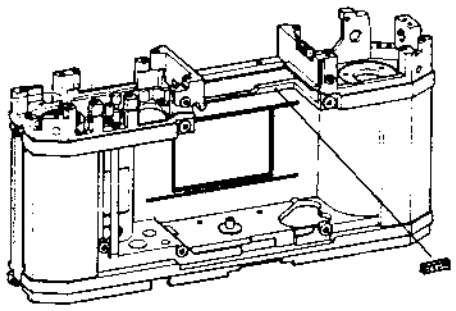
Canon SERVICE MANUAL REPORT
Report No. AC30-081 E
Service Manual No. C-030
Issued by Camera Service Department, Canon Inc.
Date 1973/11/20

Canon F-1 Light Leak Prevention

1. Light Shield is being installed to prevent a possible light leak if Light Shield(13-9926) is installed slightly askew. The light leak appears as shown in the following drawing.



The new Light Shield is installed as shown in the following drawing.



(Repair Manual, pg. 9, 12)

2. Repair

If the above light leak occures, install Y16-0036.

3. Classification

From : --30

Added Parts

Class	Part No.	Qty.	Description
E	Y16-0036	1	Light Shield

1. File this report in the service manual binder F-1 (C-030) pg. 1/1
2. Post additional parts, modified parts, etc. in the repair manual (disassembly drawings, parts list and index).
3. Check the file numbers of the service manual reports. If any are missing, request them from us.

Canon SERVICE MANUAL REPORT

Report No. AC30-079 E

Service Manual No. C-030

Issued by Camera Service Department, Canon Inc.

Date 1973/11/20

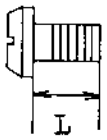
Canon F-1 Film Counter Gear and Brake Rubber Change

1. Film Counter Gear

1.1. Change

Film Counter Gear(19-0606) was made from two parts riveted together. The new Film Counter Gear(97-0681) which replaces the old one is made from a single Casting. 19-0606 is deleted from the parts list.

The three screws which hold the Film Counter(13-9420) dial have been lengthened.(Repair Manual , pg. 5, 6)



13-9421-000 (L = 1.2mm)

13-9421-020 (L = 2.0mm)

1.2. Repair

Old and new parts are interchangeable, providing both gear and screws are changed. Camera Service will stock the new gear and both old and new screws.

1.3. Classification

From: --29

2. Brake Rubber

2.1. Change

Brake Rubber(13-9971) has been available in 2.5 and 3.0mm widths but experence shows the 3.00mm width is not necessary. It is now available in 2.1 and 2.5mm widths.

	L	W	H	(Unit: mm)
13-9971(210)	4.0	2.1	2.0	
13-9971(250)	4.0	2.5	2.0	

In type 10 bodies, install the rubber rotated 90° so its height becomes the width (2.0mm). (See SMR AC30-048 for details.)

1. File this report in the service manual binder **F-1** (C-030) pg. 1/2
2. Post additional parts, modified parts, etc. in the repair manual (disassembly drawings, parts list and index).
3. Check the file numbers of the service manual reports. If any are missing, request them from us.

Added Parts

Class	Part No.	Qty	Description
C	13-9421-020	3	Screw
C	13-9971(210)	1	Brake Rubber
C	13-9971(250)*	1	Brake Rubber
C	97-0681	1	Film Counter Gear

* Suffix changed from (2.50) to (250). No actual change to the part was made.

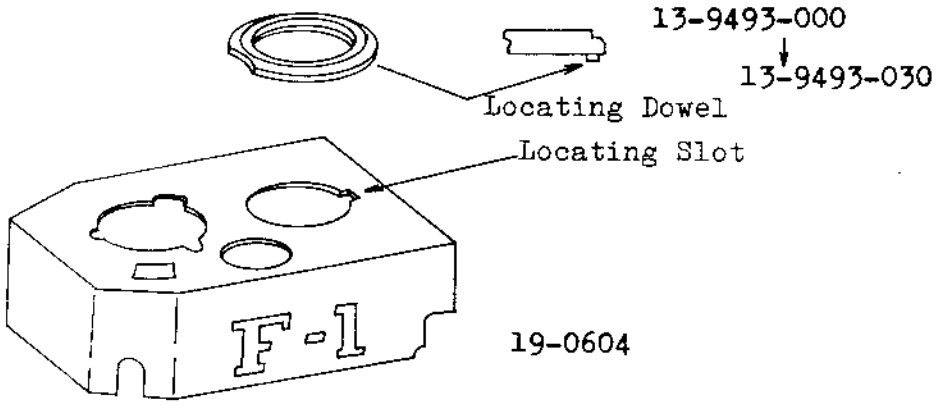
Canon SERVICE MANUAL REPORT Report No. AC30-080 E
Service Manual No. C-030
Issued by Camera Service Department, Canon Inc. Date 1973/11/20

Canon F-1 Top Cover and Mirror Charge Lever Change

1. Change

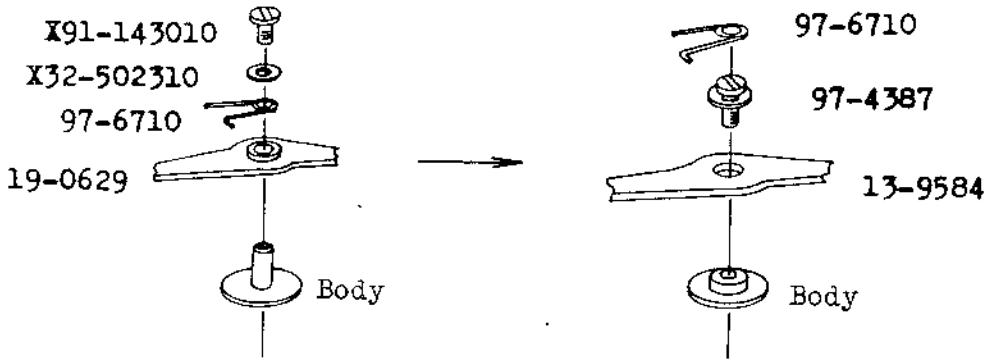
1.1. Top Cover

When Shutter Index Ring(13-9493) became a separate part (AC30-071), the locating dowels were used on the Top Cover (19-0604). Now a locating dowel is moulded into the ring and a slot is cut in the top cover. (Repair Manual , pg. 1 and Service Manual Report AC30-071)



1.2. Mirror Charge Lever

The riveted bush has been eliminated from Mirror Charge Lever(19-0629) , the body bearing stud and retaining screw have also been redesigned.



1. File this report in the service manual binder F-1 (C-030) pg. 1/2
2. Post additional parts, modified parts, etc. in the repair manual (disassembly drawings, parts list and index).
3. Check the file numbers of the service manual reports. If any are missing, request them from us.

2. Repair

2.1. Top Cover(19-0604) and Shutter Index Ring(13-9493) are interchangeable as a set. Both the old and new rings will be stocked. The old top cover will be supplied until the present stock is exhausted.

2.2. Except for the body, both old and new parts will be stocked since they are not interchangeable. The old body will be supplied until the present stock is exhausted, and then only the new body will be stocked.

3. Classification

Both changes from: --29

Added Parts

Class	Part No.	Qty.	Description
C	13-9493-030	1	Shutter Index Ring
C	13-9584	1	Mirror Charge Lever
C	97-4387	1	Screw
