

NOVEMBER 1959

NO. 935

Servicing the

# **Kodak Retina Reflex S Camera**

**EASTMAN KODAK COMPANY**  
**Apparatus Service Department**  
**ROCHESTER 4, N.Y.**

KODAK RETINA III S CAMERA

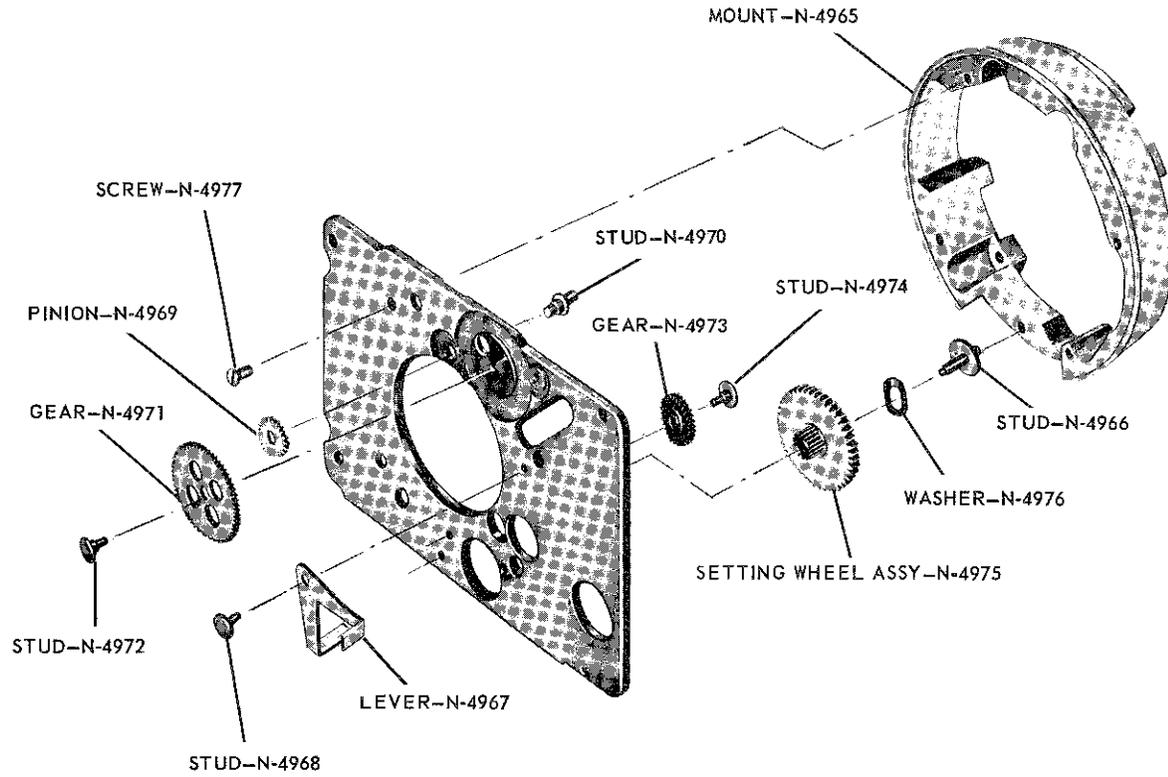


FIGURE 12

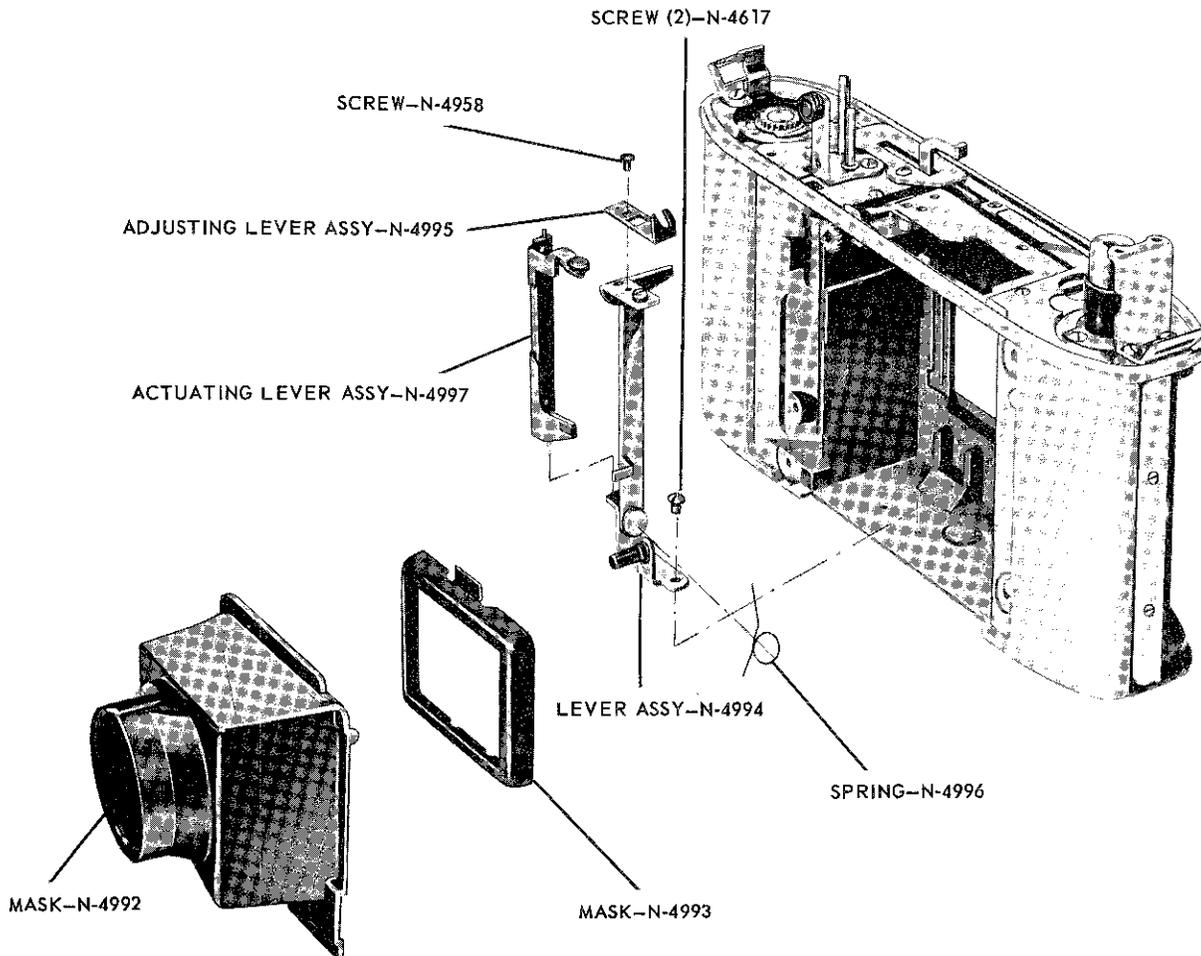


FIGURE 13

Always give PART NUMBER and NAME when ordering parts



SERVICE INSTRUCTIONS  
RETINA REFLEX S CAMERA

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1. GENERAL INFORMATION

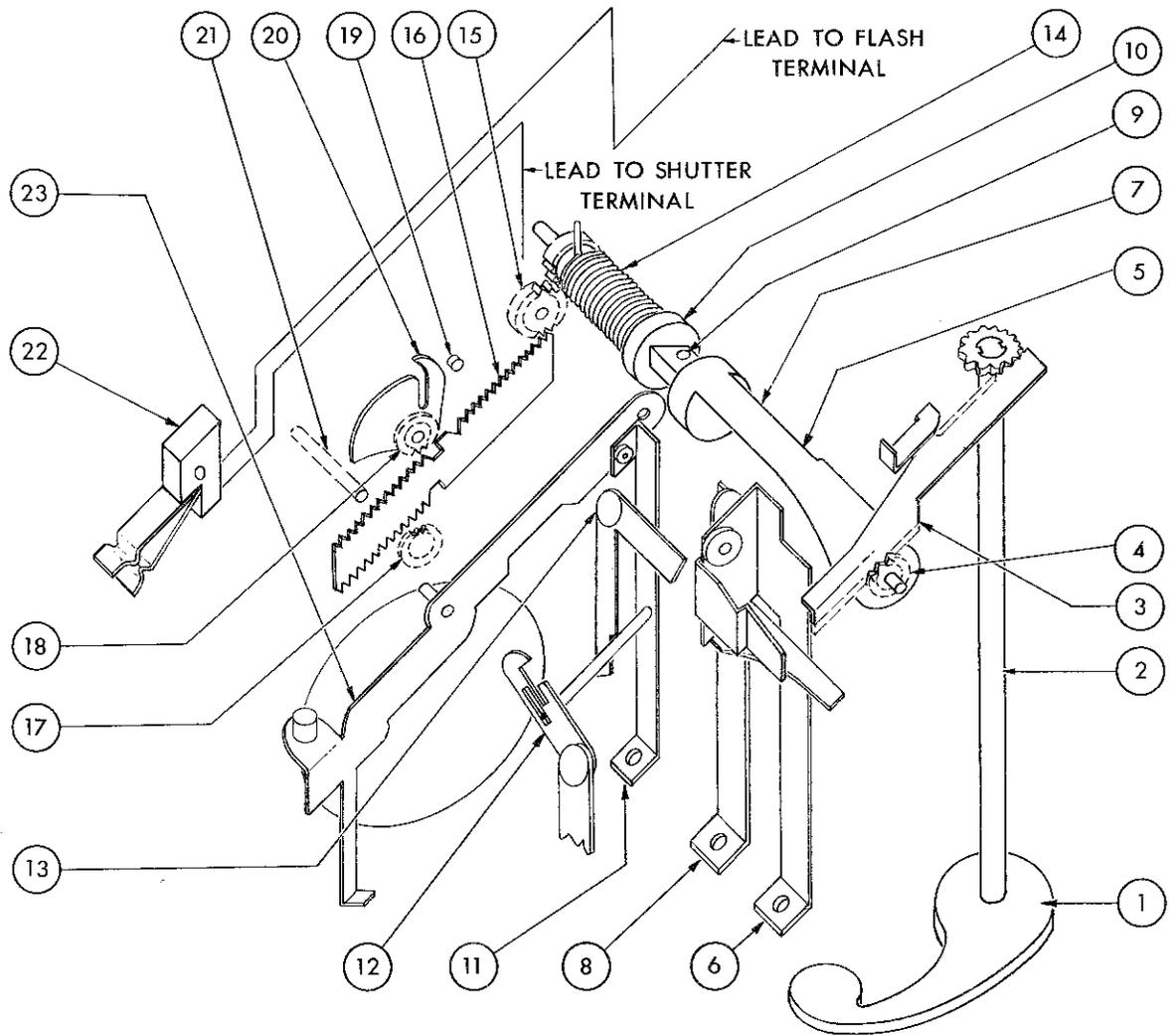
1.1 INTRODUCTION

It is presupposed that servicemen familiar with the previous RETINA REFLEX, RETINA III C and III S CAMERAS will be required to service this model. Therefore only those service problems which are peculiar to this model will be covered in this manual. Basically this will cover the shutter operation and a few other conditions. It should be understood that the Exposure Meter and its Linkage and the Film Wind Mechanism are identical with that used in the RETINA III S and are covered completely in the Service Manual No. 913.

The shutter setting and release mechanisms have been completely re-designed to accommodate a slightly different shutter. The large setting ring of the RETINA REFLEX has been eliminated and in its place is a rack connecting the new spring-loaded front section of the transfer shaft to the shutter.

The discussions on the sequence of action (1.3 and 1.4) when the film advance lever or exposure release button is actuated may be helpful when service problems are encountered.

1.2 SCHEMATIC OF SETTING MECHANISM



1 FILM ADVANCE LEVER

2 WINDING SHAFT AND PINION

3 SETTING RACK

4 REAR TRANSFER SHAFT

5 APERTURE COVER CAM

6 APERTURE COVER ACTUATING LEVER

7 MIRROR ACTUATING CAM

8 MIRROR ACTUATING LEVER

9 ADJUSTING SCREW - SHUTTER OPENING  
AND LATCHING

10 MIRROR RELEASE LEVER CAM

11 MIRROR RELEASE LEVER

12 MIRROR LATCH ASSEMBLY

13 LATCH LEVER FOR MIRROR RELEASE LEVER  
( ATTACHED TO LEVER RETAINER PLATE )

14 FRONT TRANSFER SHAFT AND SPRING

15 IDLER PINION

16 SHUTTER OPENING AND SETTING RACK

17 SHUTTER SETTING PINION

18 SHUTTER OPENING CONTROL DISC PINION  
19 SHUTTER BLADE OPENING CONTROL DISC  
STOP STUD

20 SHUTTER BLADE OPENING CONTROL DISC

21 SHUTTER BLADE CONTROL PICK-UP PIN  
( PART OF SHUTTER )

22 FLASH CIRCUIT SWITCH

23 SHUTTER RELEASE CONTROL ASSEMBLY

## 1. GENERAL INFORMATION (Continued)

### 1.3 SEQUENCE OF ACTION - FILM ADVANCE LEVER

When the film advance lever is actuated, the aperture cover, the mirror and the shutter are controlled in sequence by the cams, pinions and rack connected to the two-section transfer shaft as follows:

- a) In the first half actuation of the LEVER (1) the APERTURE COVER is closed by the REAR CAM (5) of the REAR TRANSFER SHAFT (4) depressing the APERTURE ACTUATING LEVER (6); this also depresses the SAFETY LATCH at the lower right. At the same time the spring-loaded FRONT TRANSFER SHAFT (14) draws the RACK (16) toward the right and allows the SHUTTER RELEASE CONTROL LEVER (23) to release the FLASH CIRCUIT SWITCH (22) to break the continuity to the FLASH TERMINAL. This action of the RACK (16) rotates the SHUTTER OPENING CONTROL DISC (20) into a position where the shutter blades are opened during the balance of the lever actuation.
- b) In the second half of the lever actuation the MIRROR BRACKET is brought down by the FRONT CAM (7) of the REAR TRANSFER SHAFT (4) depressing the MIRROR ACTUATING LEVER (8). The movement of the MIRROR BRACKET down into the latching position releases the APERTURE COVER LATCH on the left side and retains the cover in the closed position. Meanwhile the LATCH LEVER (13) holds the MIRROR RELEASE LEVER (11) in a depressed position (so as to clear the mirror bracket) until the rotation of the CAM (10) reaches the drop off point for the MIRROR RELEASE LEVER (11). At the instant the MIRROR BRACKET reaches the latching position the STUD on the right side depresses the LATCH LEVER (13) which then releases the MIRROR RELEASE LEVER (11) and allows the MIRROR LATCH (12) to engage the MIRROR BRACKET.

During this action the RACK (16) continues to rotate the SHUTTER OPENING CONTROL DISC (20) which is engaged with the SHUTTER BLADE CONTROL RING (in shutter proper) by the SHAFT (21) and opens the shutter blades. At the same time the shutter mechanism is set, which in turn locks the FRONT TRANSFER SHAFT (14).

- c) On the return stroke of the FILM ADVANCE LEVER (1) only the REAR TRANSFER SHAFT (4) rotates. This releases both the MIRROR ACTUATING LEVER (8) and APERTURE ACTUATING LEVER (6) which in turn releases the APERTURE COVER SAFETY LATCH, thus locking the APERTURE COVER at both lower corners to complete the setting cycle.

### 1.4 SEQUENCE OF ACTION - EXPOSURE RELEASE BUTTON

The sequential action of the mechanism when the exposure release is depressed is as follows:

- a) Actuation of the exposure release button releases the film advance mechanism and actuates the BODY RELEASE ARM, which depresses the APERTURE COVER SAFETY LATCH and at the same time contacts the SHUTTER RELEASE and unlocks the shutter.
- b) At the instant the shutter is unlocked, the spring-loaded FRONT TRANSFER SHAFT (14) rotates and drives the RACK (16) which then actuates the SHUTTER OPENING DISC (20) to close the shutter blades. Further action of the RACK (16) is then temporarily blocked by the STUD on the SHUTTER RELEASE CONTROL LEVER (23). At the same time the CAM (10) on the FRONT TRANSFER SHAFT (14) depresses the MIRROR RELEASE LEVER (11), which releases the MIRROR BRACKET.
- c) The MIRROR BRACKET in moving up releases first the LATCH LEVER (13), which then engages the MIRROR RELEASE LEVER (11) and holds the MIRROR LATCH (12) down in readiness for latching the mirror bracket on the next actuation of advance lever. The MIRROR BRACKET then releases the APERTURE COVER which in turn strikes the SHUTTER RELEASE CONTROL LEVER (23), which then closes the FLASH CIRCUIT SWITCH (22) and releases the RACK (16). At this instant the spring-loaded FRONT TRANSFER SHAFT (14) drives the RACK (16) toward the left to rotate the SHUTTER SETTING RING (in the shutter proper) to cam off the trigger and release the shutter for the exposure.

## 1. GENERAL INFORMATION (Continued)

### 1.5 SHUTTER

This shutter mechanism has been modified in a number of ways which make it different from the mechanism used in the Retina Reflex Camera:

- a) Shutter setting mechanism
- b) Mechanism for opening and closing the shutter blades for viewing.
- c) Coupling mechanism for opening lens diaphragm for viewing.
- d) Addition of a flash circuit switch to break continuity to flash terminal when shutter blades are open for viewing.
- e) Shutter repairs, other than lens diaphragm opening control or faulty operation of the speed or diaphragm rings, will require removal of the complete front mount.

Shutter design and operation after the viewing cycle is similar to the shutter on the Retina III S.

It is recommended that the basic setting of "B" and f/1.9 as used on the Retina III S be made before disassembly and reassembly of the front mount or meter assembly.

## 2. DISASSEMBLY AND REASSEMBLY

### 2.1 DIAPHRAGM AND SPEED SCALE

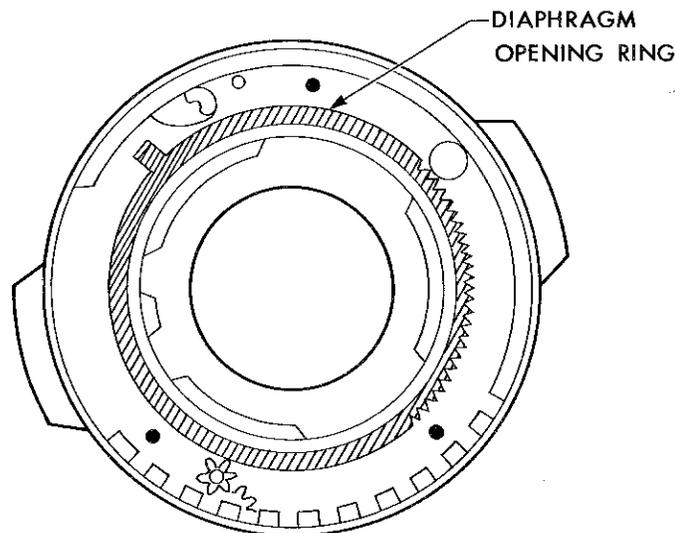
#### Disassembly

Remove three screws (one long, two short) and separate the diaphragm ring assembly from the lens seat.

**NOTE:** To separate this assembly, first remove the brass ring by rotating it until the clearance slot is in alignment with the coupler pinion.  
The remaining parts are coupled in the same way as in the Retina III S.

#### Reassembly

- a) Replace speed ring.
- b) Position the diaphragm opening ring as shown in the following figure:



## 2. D I S A S S E M B L Y   A N D   R E A S S E M B L Y (Continued)

- c) Replace the retainer, diaphragm scale and brass ring assembly, engaging the coupler pinion with the diaphragm ring so that the lug protrudes through the retainer at the top of slot.
- d) Replace the three screws, fitting the long one adjacent to the meter control pinion shaft.

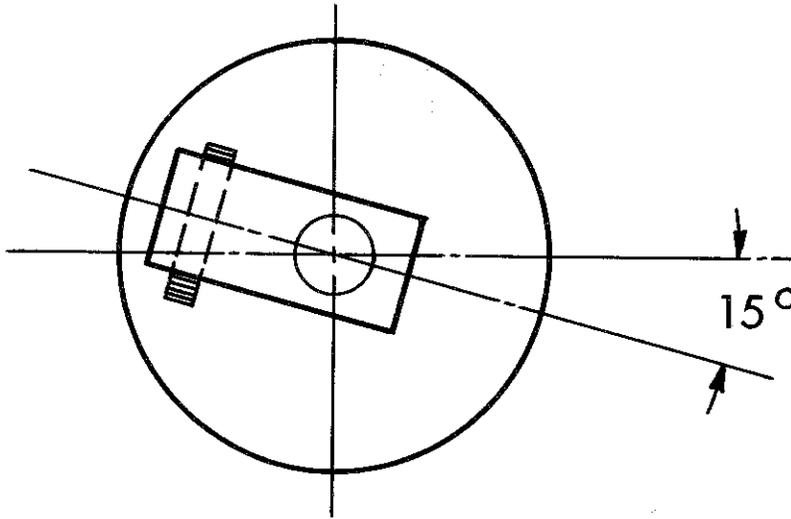
### 2.2 SHUTTER (COMPLETE WITH FRONT MOUNT) FROM CASE

#### Disassembly

Disassembly of the shutter and front mount is similar to the method recommended in the Service Manual #913 for the Retina III S. However in addition to the parts normally removed (front, covering, bottom panel and related parts) the top housing and pentaprism should be removed.

#### Reassembly

- a) The rear transfer shaft assembly should be engaged with the setting rack so that the end view of shaft is as shown in the following figure:



- b) Replace spacing washers (concave surfaces toward each other).
- c) Position the front transfer shaft assembly on rear shaft and wind up the spring one revolution, retaining it during installation of front.
- d) Replace front mount, engaging pinion shaft with meter actuating drum, and engage the spring on side of casting. Fit long screw to retain washers.
- e) Depress mirror and aperture cover to allow front to drop into position and engage transfer shaft with idler gear.
- f) Check operation with winding lever; if correct, replace long screws with originals and draw front down until the distance between lens seat and film plane is  $1.874" \pm .001"$ .

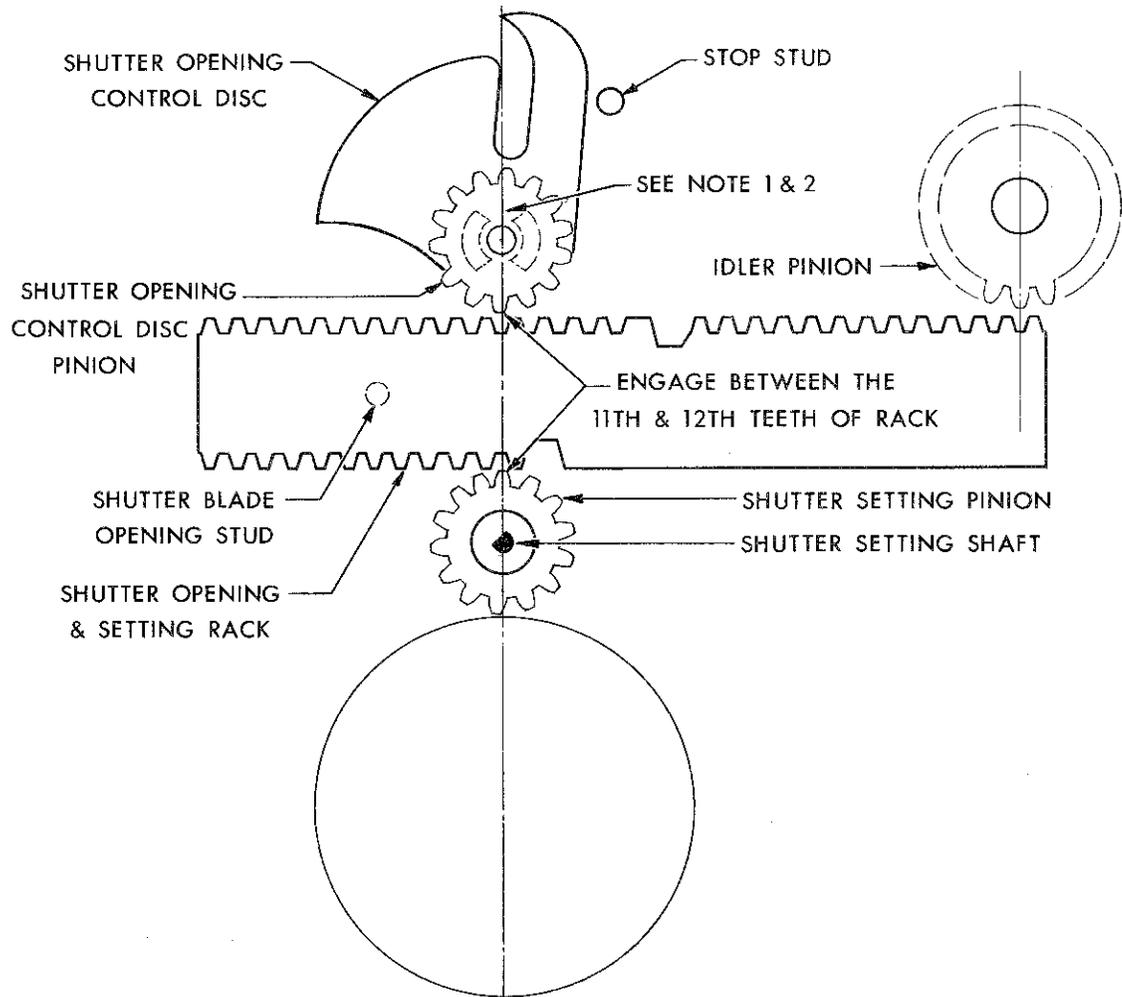
2.3 SHUTTER FROM FRONT MOUNT

Disassembly

- a) Disassemble as in Instruction 2.2.
- b) Remove shutter release control lever and the flat spring retaining the shutter opening control disc pinion.
- c) Remove two screws directly above rack and two screws accessible through the holes in the setting wheel cover plate and unsolder the lead between flash switch and flash terminal on shutter.
- d) Separate shutter assembly from mount.
- e) Separate the shutter from the assembly in the same manner as the Retina III S.

Reassembly

- a) Reassemble shutter to diaphragm and speed scale assembly in the same manner as the Retina III S.
- b) Reassemble shutter assembly to front mount.
- c) Lubricate sparingly: rack, pinions and shutter control disc.
- d) The following figure illustrates the position and timing of the shutter setting mechanism:



## 2. D I S A S S E M B L Y   A N D   R E A S S E M B L Y (Continued)

NOTE: There are several slightly different types of mechanism used at this point.  
The following notes pertain to the late style versions.

- #1 - When the pinion with small lugs is properly engaged with the disc and rack, there should be approximately 1/16" play between the edge of disc and stop stud.
- #2 - When the pinion with wide lugs is properly engaged with the disc and rack, there should be little or no play between disc and stop stud.

### 3. SERVICE HINTS

#### 3.1 CHECKING SYNCHRONIZATION OF MIRROR, APERTURE COVER AND SHUTTER

- a) Attach lens and set speed at 1/500 and diaphragm at f/1.9 or f/2.8.
- b) When shutter is tripped a full circular lens opening should be visible.
- c) Re-check at 1/500 and f/22.

#### 3.2 ADJUSTING SYNCHRONIZATION OF MIRROR, APERTURE COVER AND SHUTTER

- a) Adjust initial release or closing of shutter blades (prior to release of mirror) with set screw on body release slide. This can best be adjusted with the front mount in place and with an appropriate screw driver through the meter cord hole in the top of the casting. The small cover plate directly below the flash terminal can be removed to facilitate this adjustment.
- b) Adjust release of aperture cover by mirror, using adjusting screw on cover retainer slide. Aperture cover should be released when mirror is approximately 3/4 of the way up.

#### 3.3 MIRROR AND APERTURE COVER FAIL TO RELEASE

Jamming of the mirror and aperture cover in the down position (aperture cover open approximately 3/8") is caused when the camera receives a severe jar on the bottom. When this happens, the stud on the right side of the mirror bracket slips off the LATCH LEVER (13) and locks behind it, thereby jamming both the mirror and cover.

To release the assemblies, remove the top housing and pentaprism and carefully press the latch lever forward and at the same time depress the mirror latch.

NOTE: Cameras above serial number 805300 are fitted with modified parts designed to prevent the jamming condition. These parts are: (1) the Mirror Latch Lever Assembly (N5187) which has been altered to provide an adjustable lug to prevent mirror from passing the latch and (2) the Lever Guide Strap Assembly (N5060) which has been altered by the addition of a stud to control the excess downward travel of the mirror release lever.

It is recommended that these two parts be fitted to all cameras with serial number below 805300 which are received with jammed mirrors or which require the removal of the front mount for any reason.

#### 3.4 MIRROR BRACKET FAILS TO LATCH

The MIRROR RELEASE LEVER (11) may bind.

The LATCH LEVER (13) may bind or fail to engage LEVER (11).

The latch lever spring may be disengaged or missing.

The mirror bracket may have excessive side play. Correct by installing a new 9 1/2 coil actuating spring (N5186).

#### 3.5 APERTURE COVER FAILS TO CATCH

The aperture cover latch on left side may bind.

The aperture cover latch actuating spring may be disengaged.

### 3. SERVICE HINTS (Continued)

#### 3.6 SHUTTER FAILS TO SET OR OPEN FOR THE EXPOSURE

The RACK (16) may not travel fully in either direction. Correct with ADJUSTMENT SCREW (14) on rear transfer shaft.

#### 3.7 SHUTTER BLADES REMAIN PARTLY OPEN

This is generally caused when the lugs on the SHUTTER OPENING CONTROL DISC PINION (18) slip out of contact with the slots in the SHUTTER OPENING CONTROL DISC (20).

The trouble can be caused by a bind in the shutter proper or insufficient tension of the flat spring retaining the pinion.

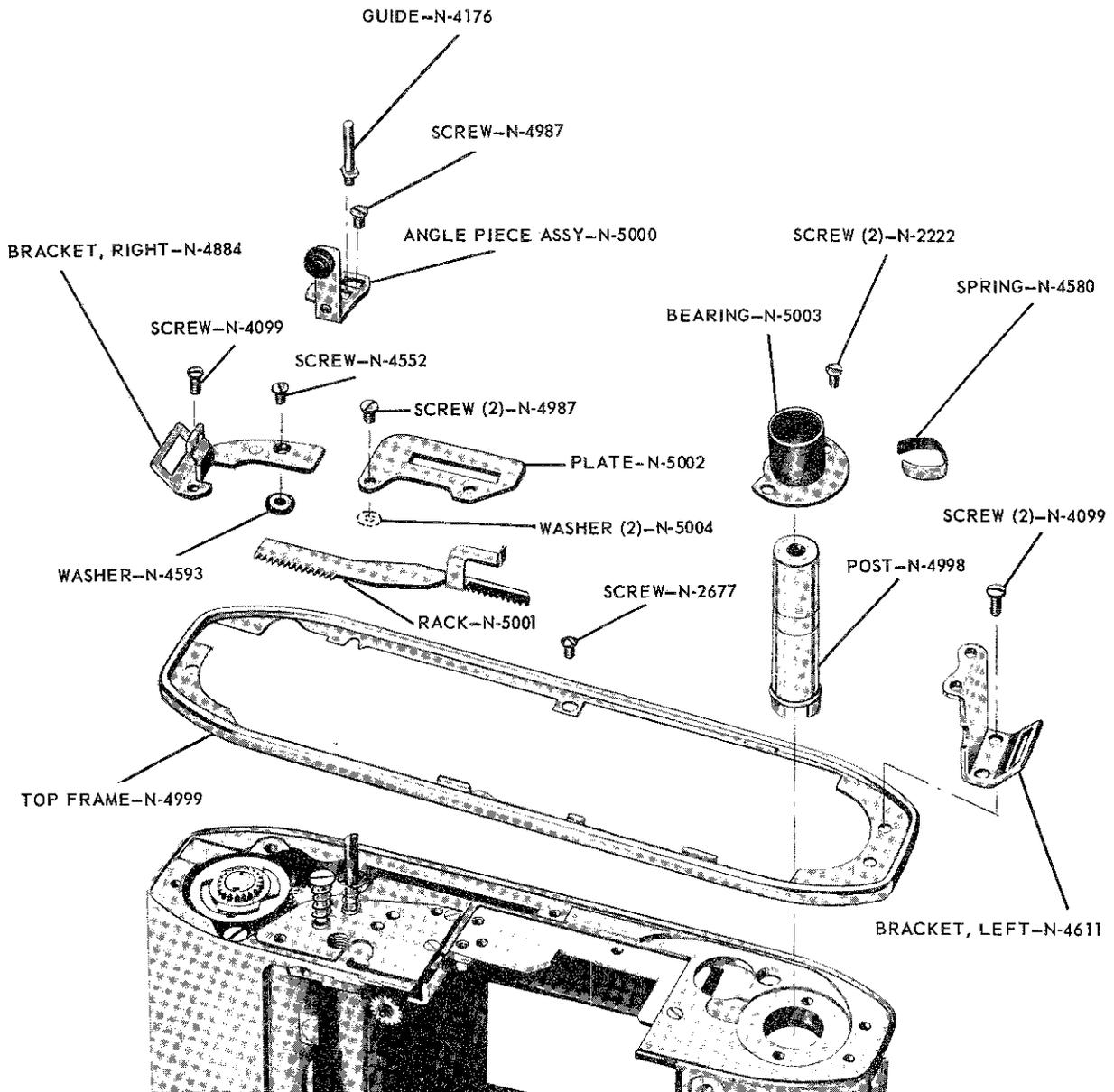


FIGURE 14