

# **Nikkormat FT<sub>N</sub>**

**(31F3B)**

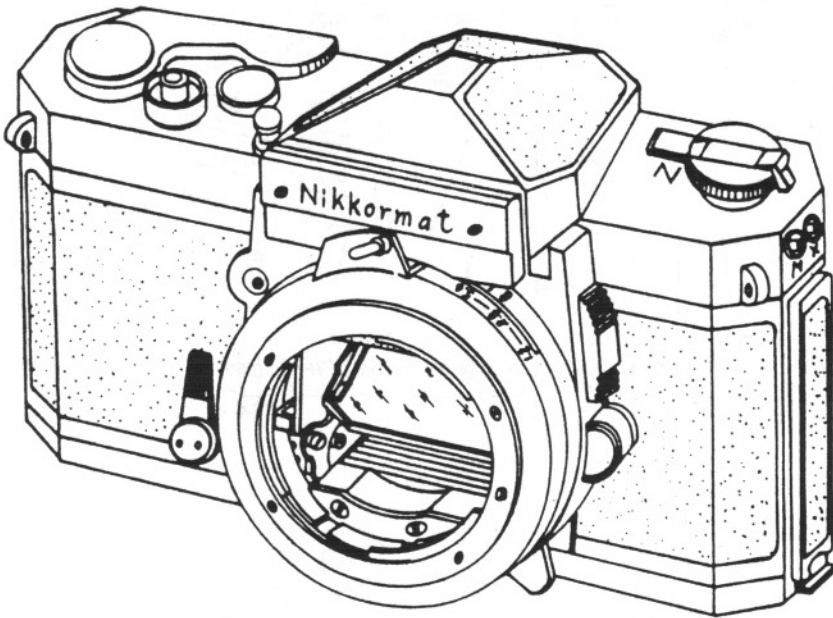
**REPAIR MANUAL  
(REVISED) -1**

**NIPPON KOGAKU K.K.**

Tokyo, Japan

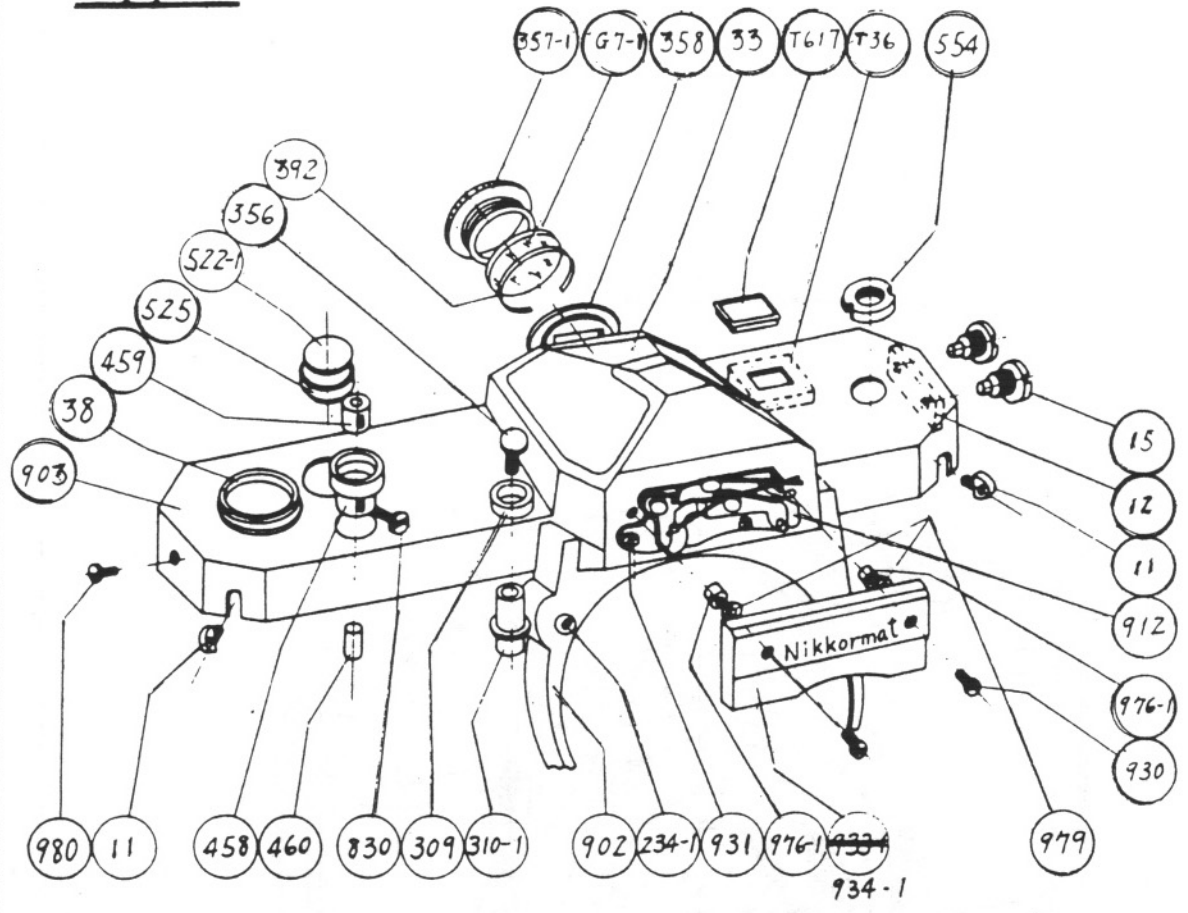


Nikkormat FTn

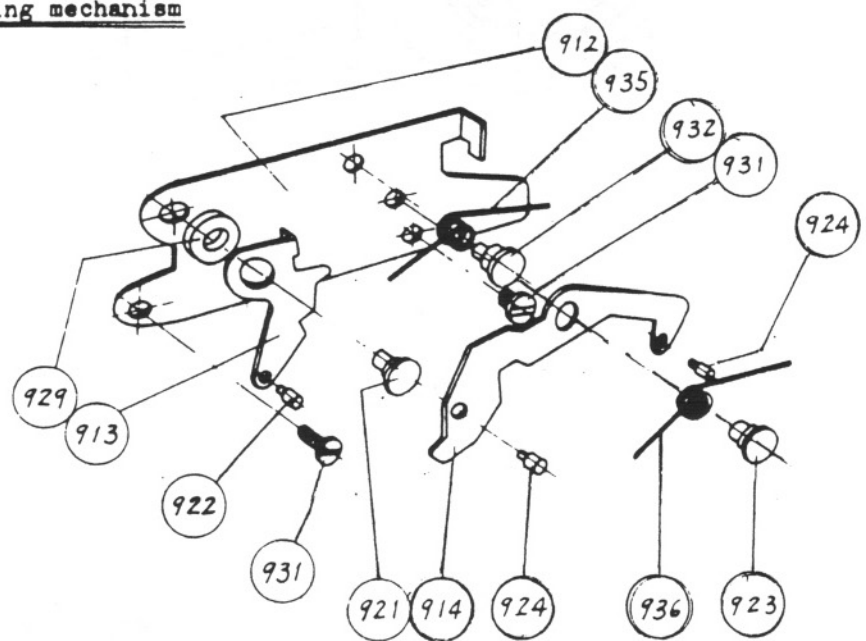


FTn - Fig. 1

Top plate

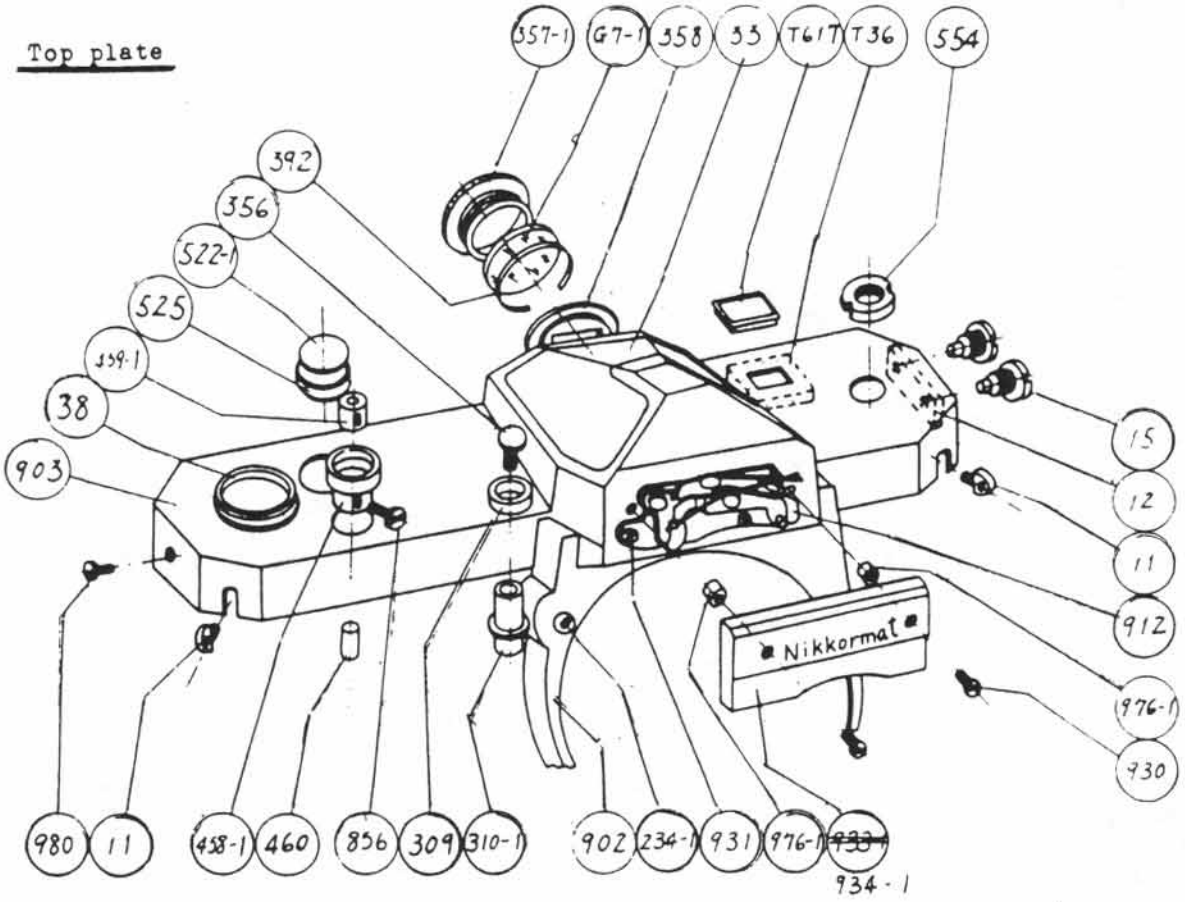


Releasing mechanism

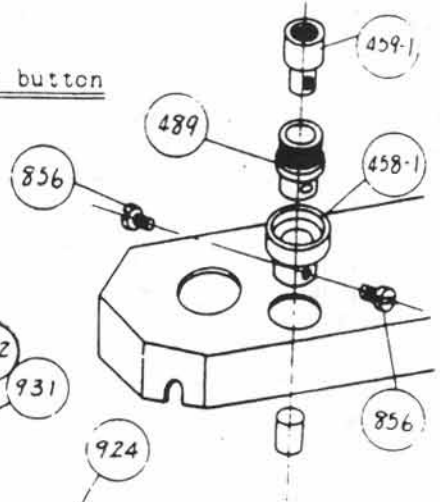


FTM - Fig. 2

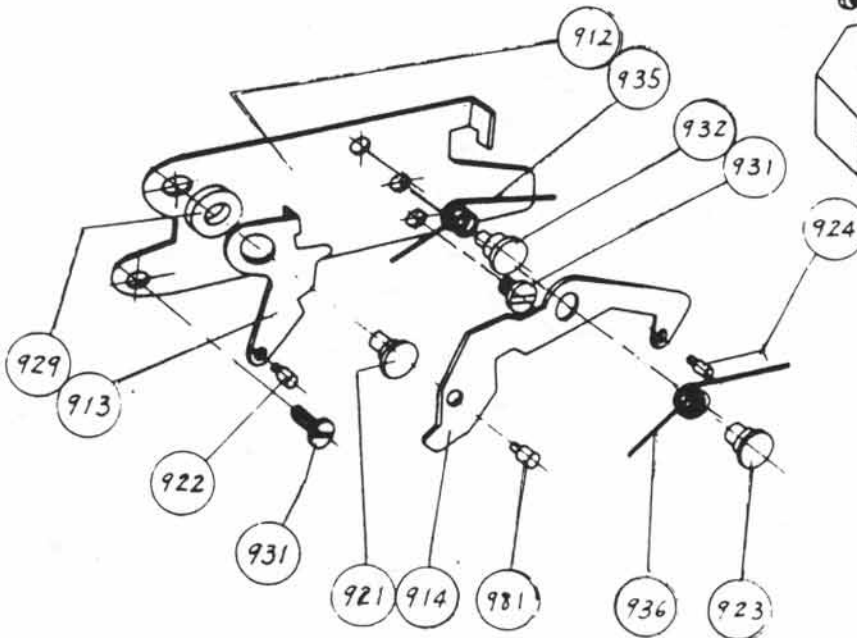
Top plate



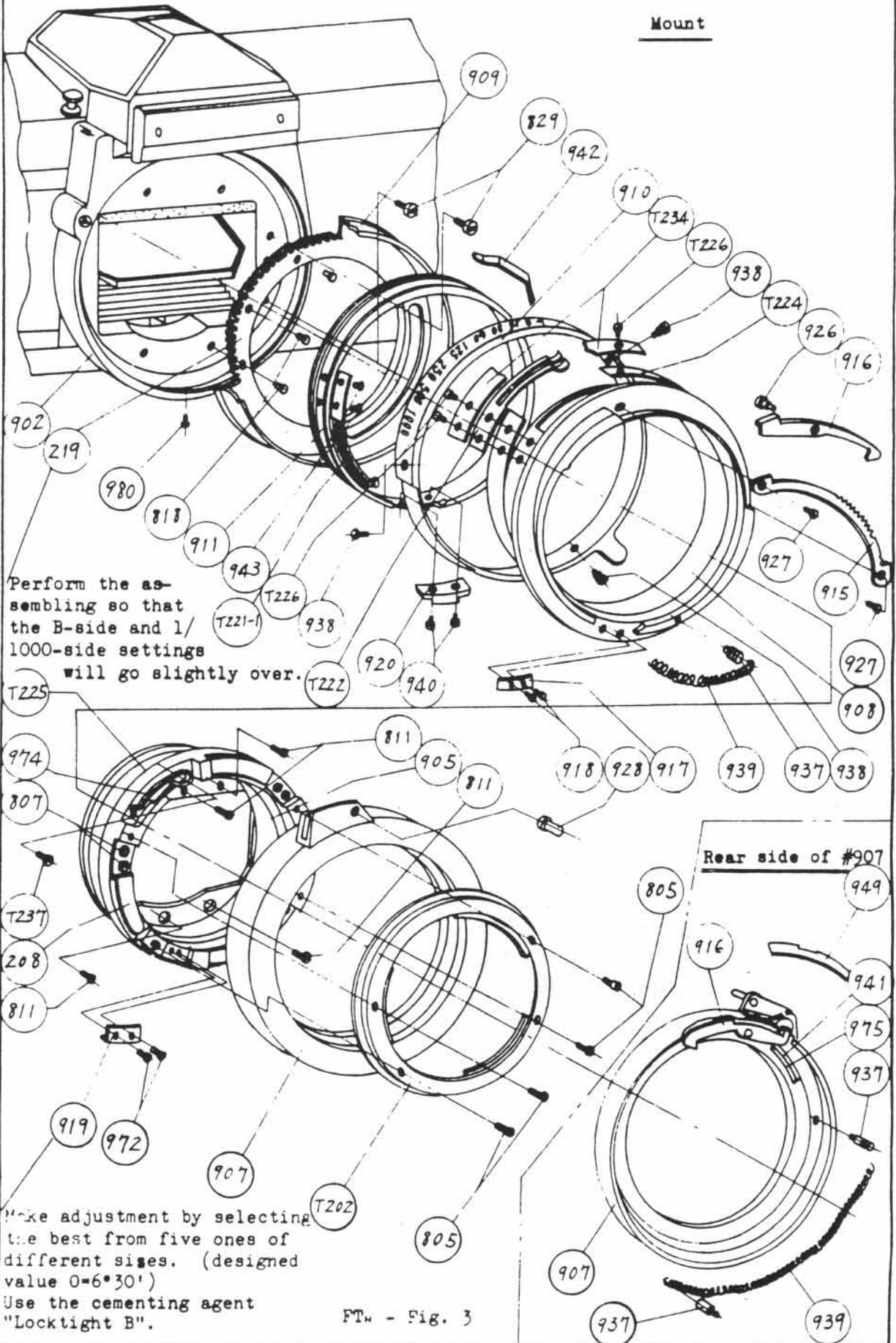
Release button



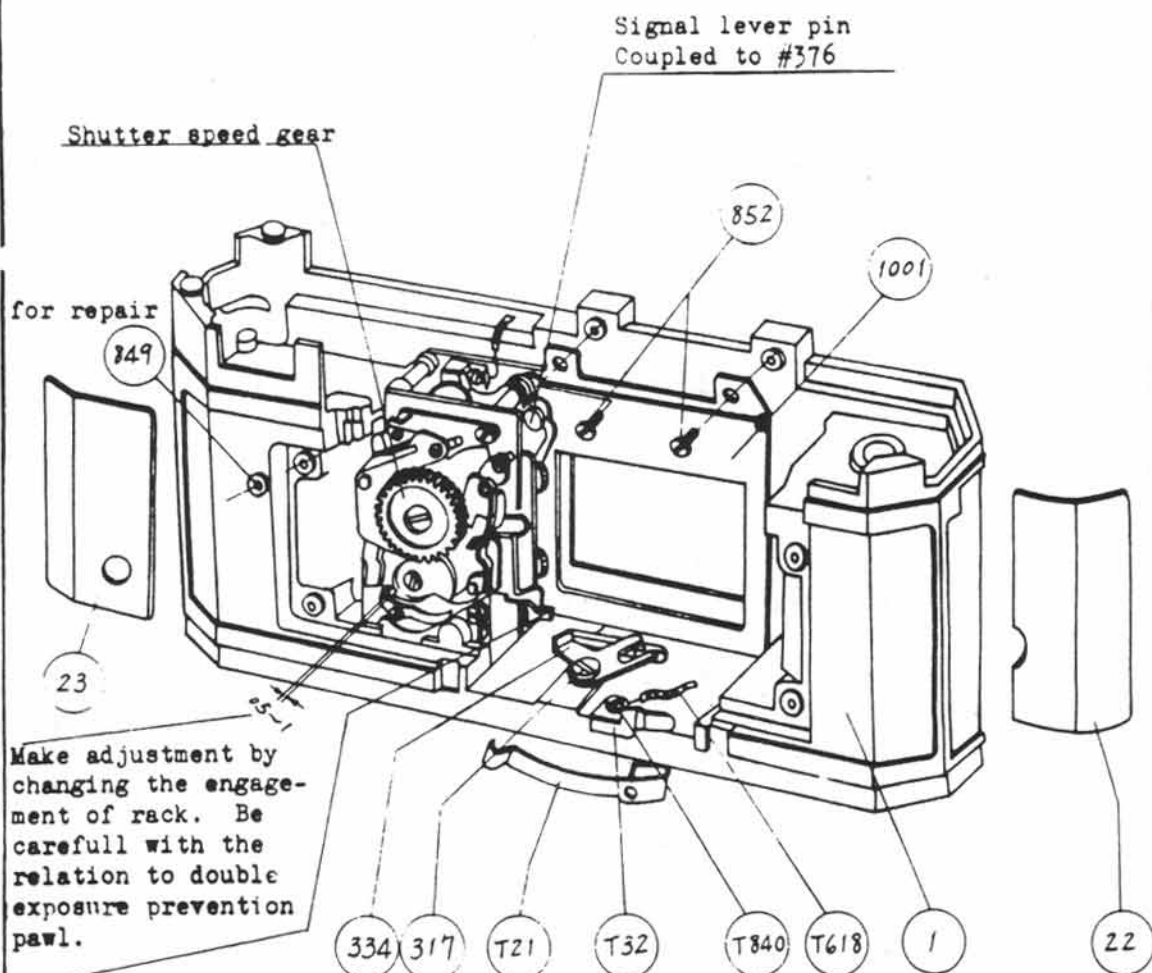
Releasing mechanism



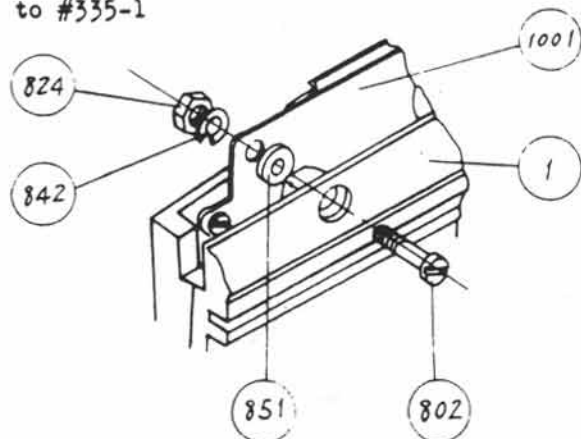
FTM - Fig. 2a

Mount



Attaching the shutter

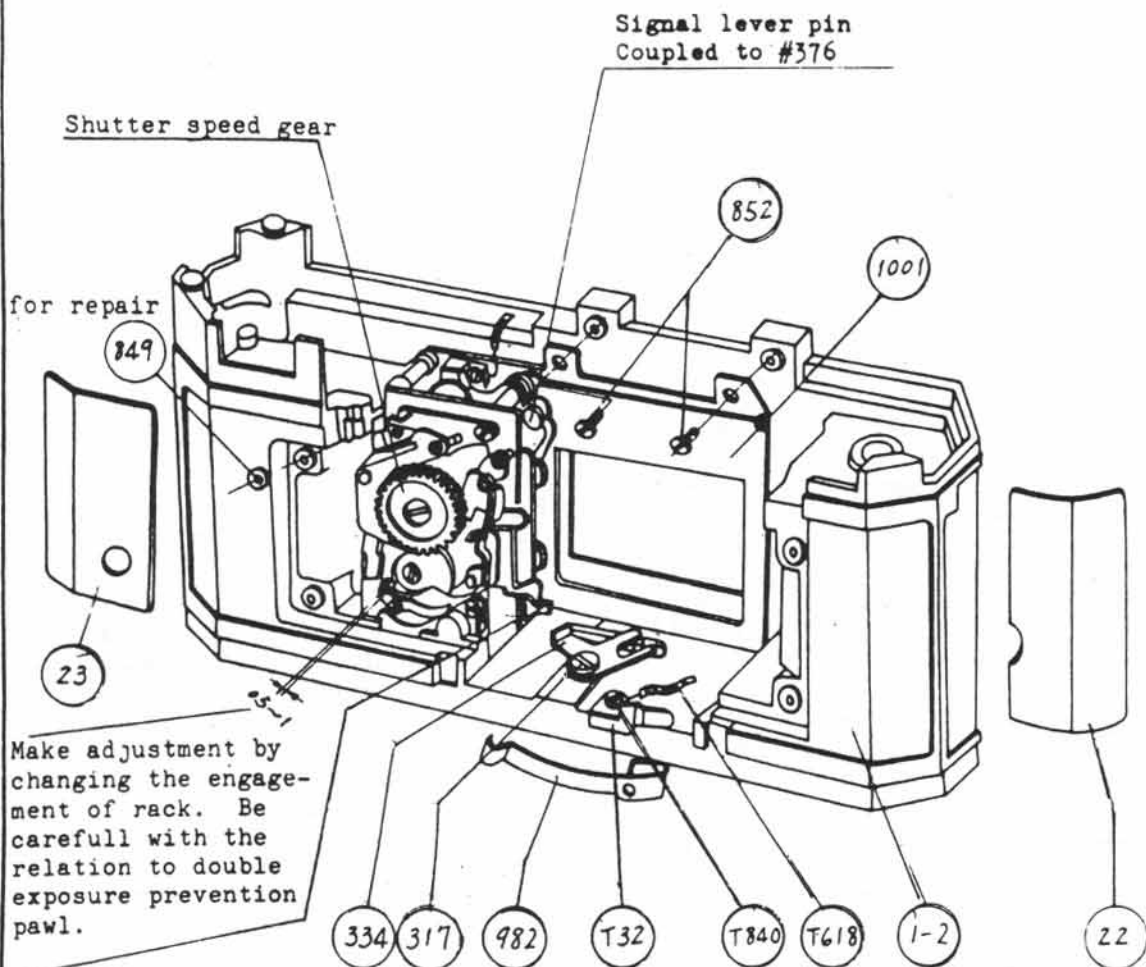
Release lever  
Coupled to #335-1



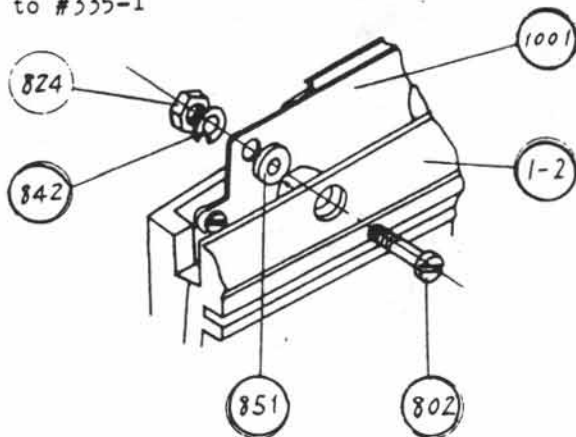
How to attach the shutter to the bottom surface of body

FTM - Fig. 4



Attaching the shutter

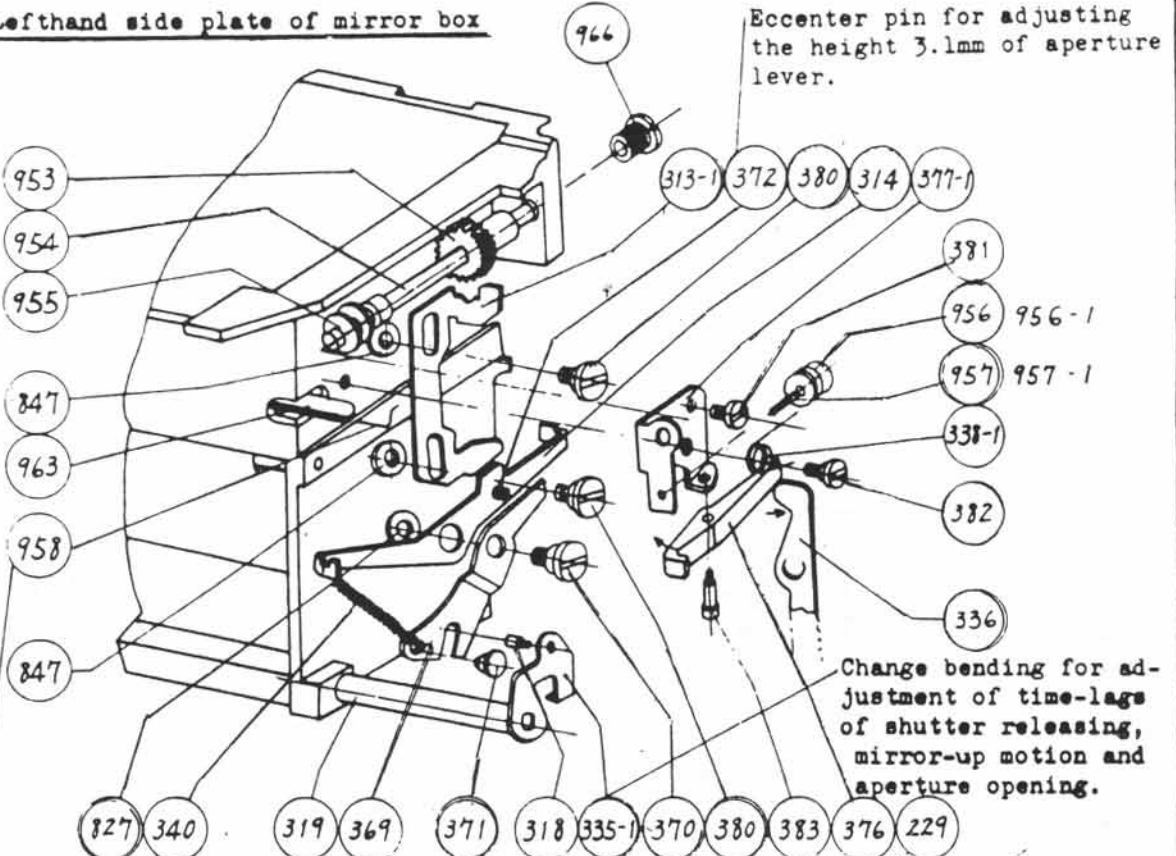
Release lever  
Coupled to #335-1



How to attach the shutter to  
the bottom surface of body

Left hand side plate of mirror box

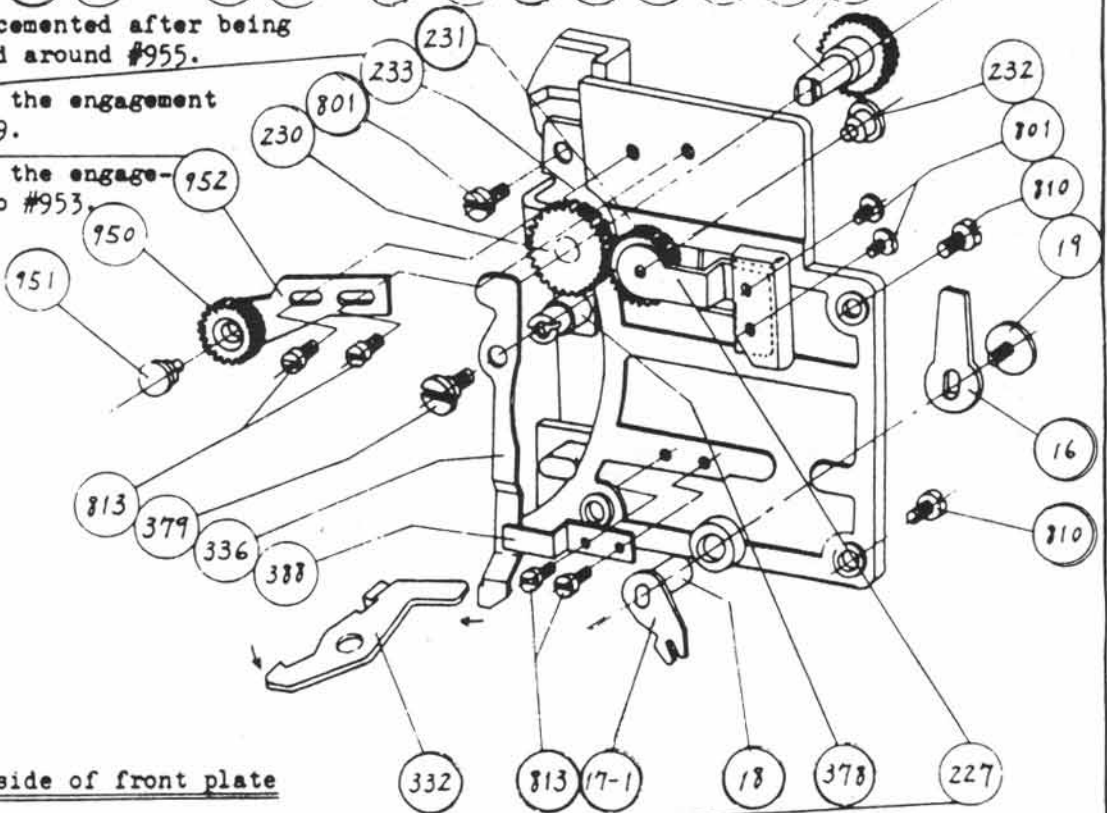
Eccenter pin for adjusting the height 3.1mm of aperture lever.



To be cemented after being wounded around #955.

Adjust the engagement to #219.

Adjust the engagement to #953.

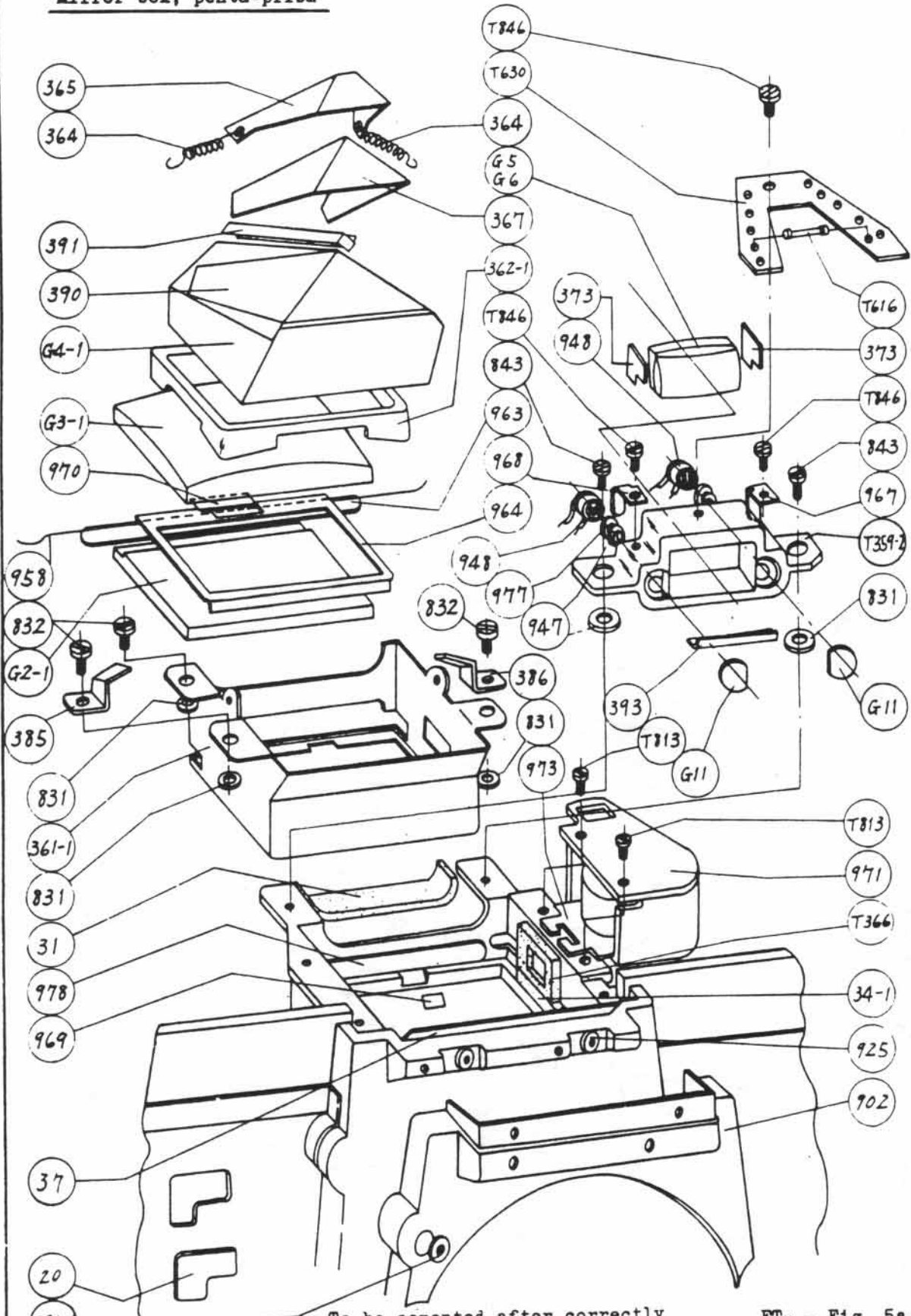


Left side of front plate

Adjust speed control gear on the shutter side and #230.

FT. - Fig. 5

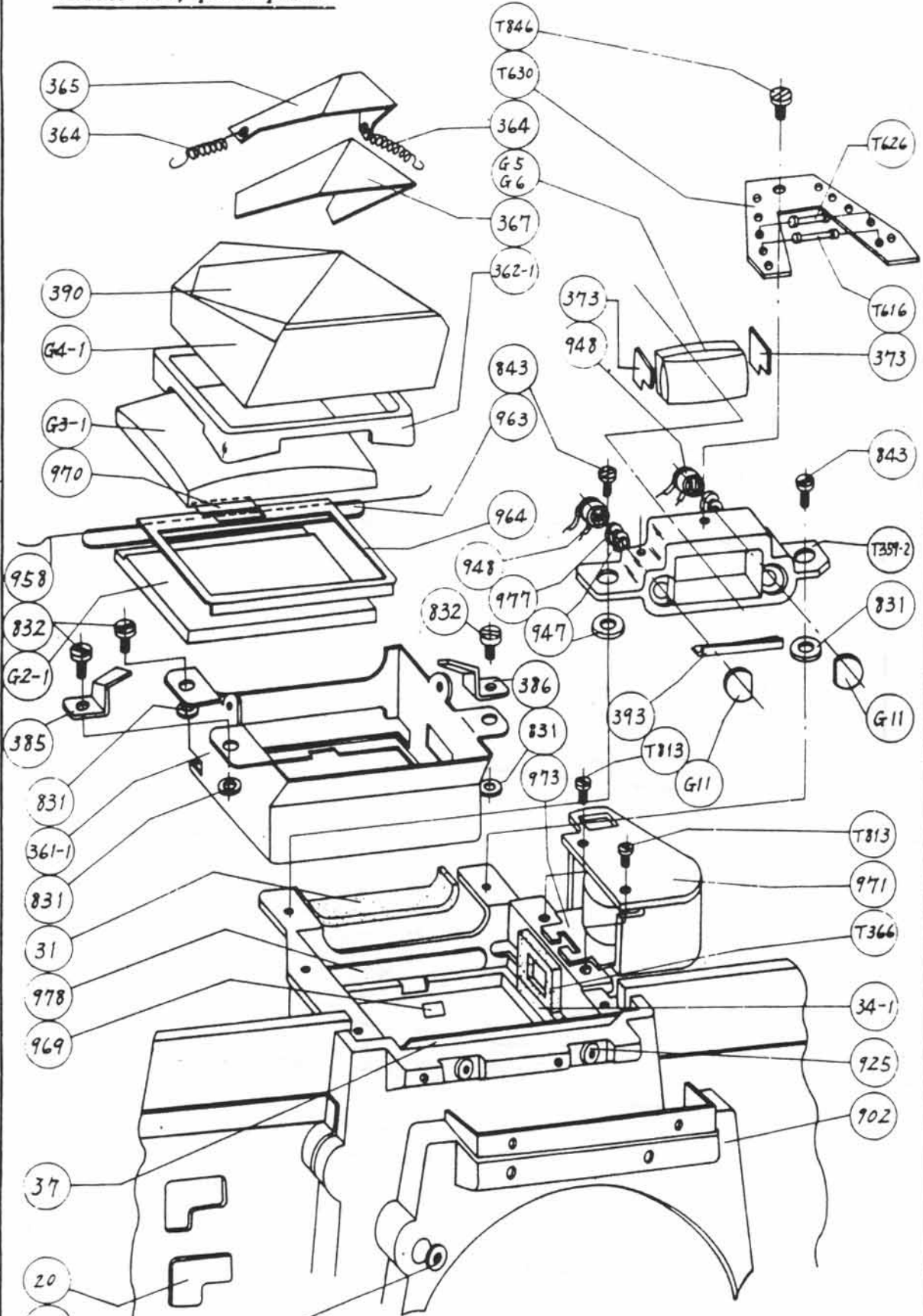
Mirror box, penta-prism



To be cemented after correctly positioned for #910 shutter speed scale. FTW - Fig. 5a

REV. J-134 A4 1-Y 80000 7

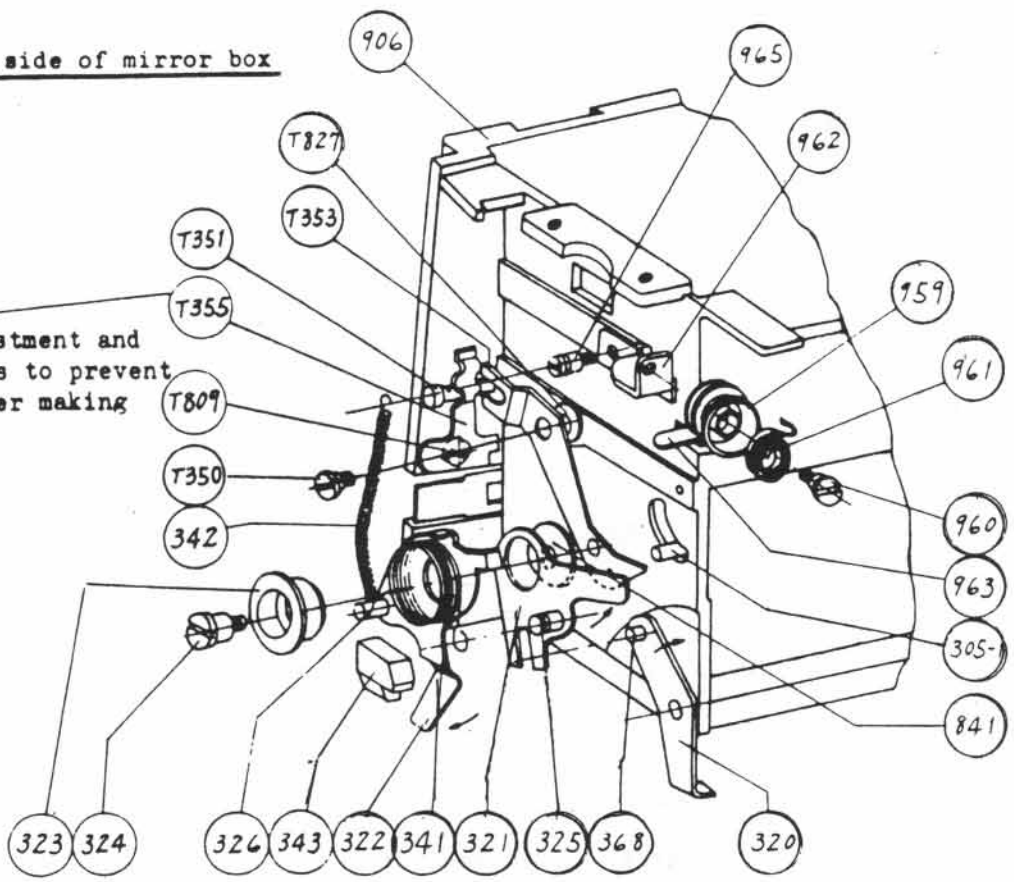
Mirror box, penta-prism



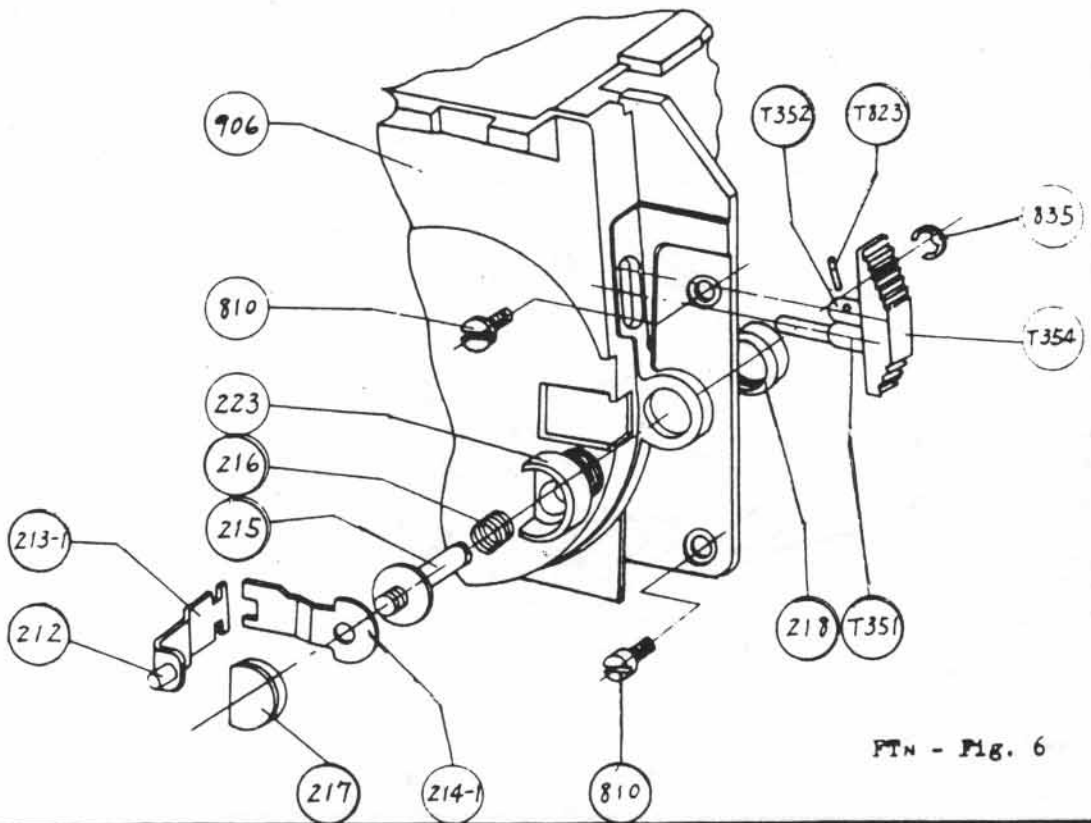
To be cemented after correctly positioned for #910 shutter speed scale. FT<sub>M</sub> - Fig. 5b

Right side of mirror box

Perform adjustment and fitting so as to prevent opening, after making mirror-up.

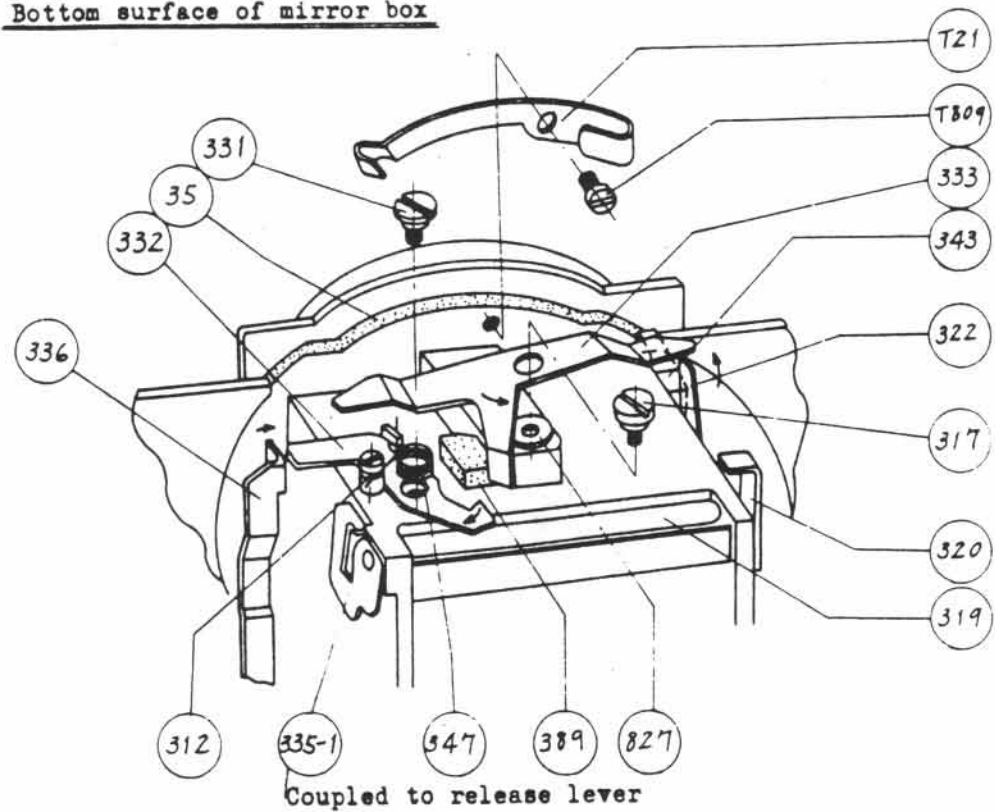


Lens lock button and mirror-up button

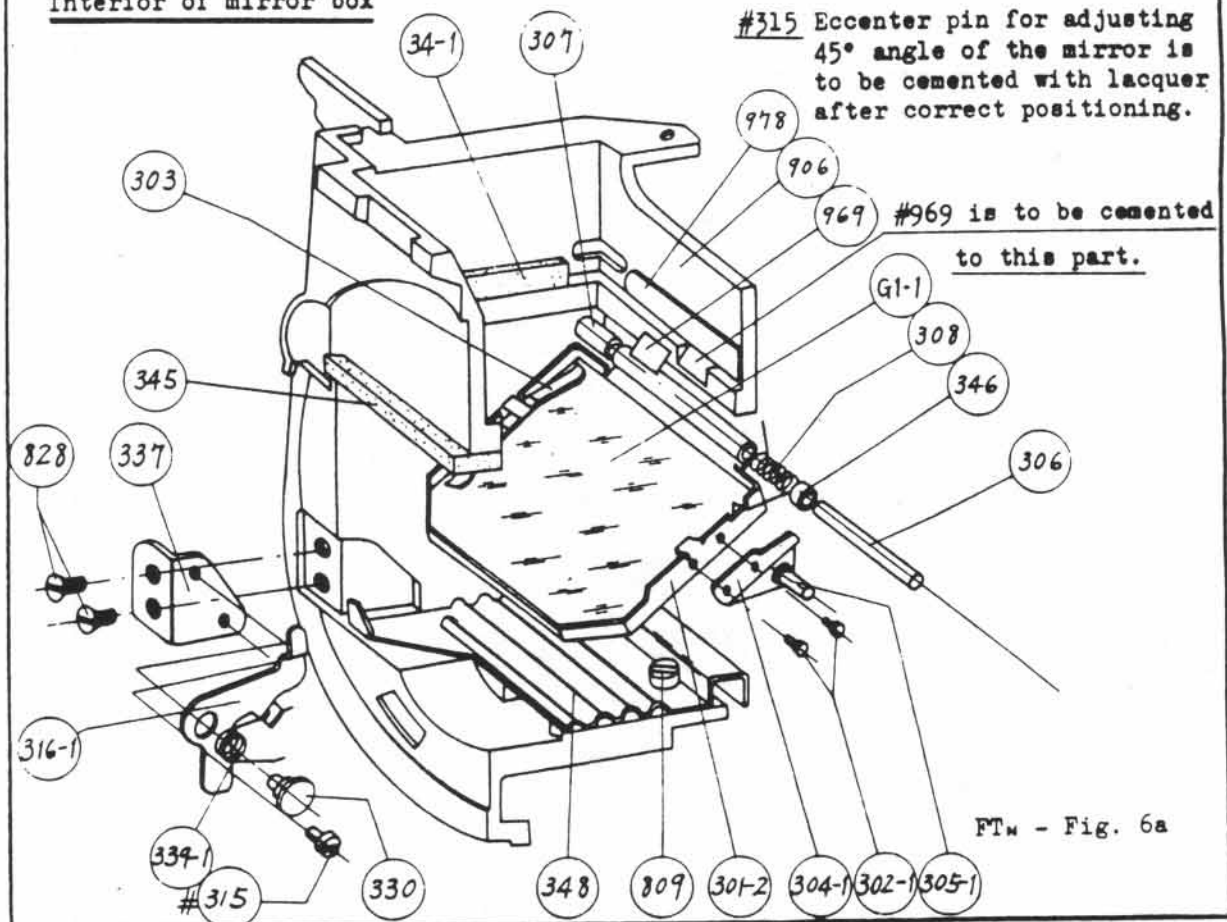


FTM - Fig. 6

Bottom surface of mirror box



Interior of mirror box

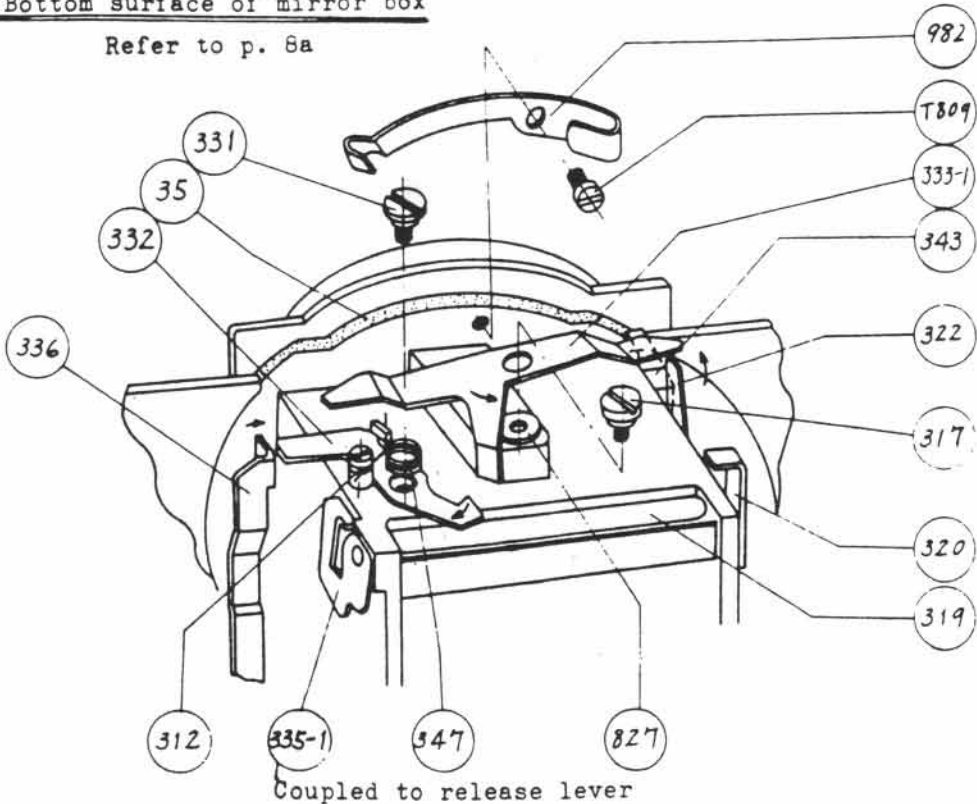


FTM - Fig. 6a

NKK 7 434 A4 1 8000 H

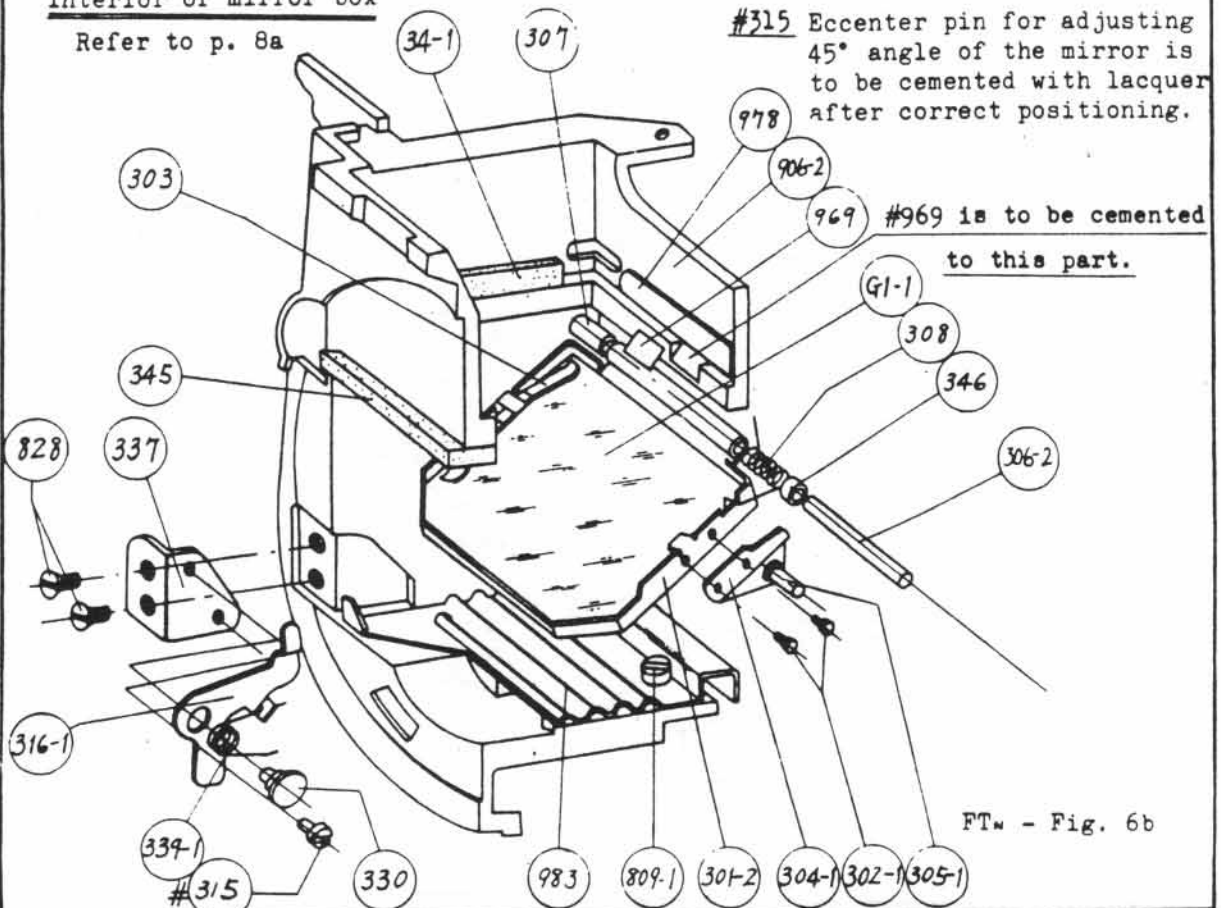
Bottom surface of mirror box

Refer to p. 8a



Interior of mirror box

Refer to p. 8a

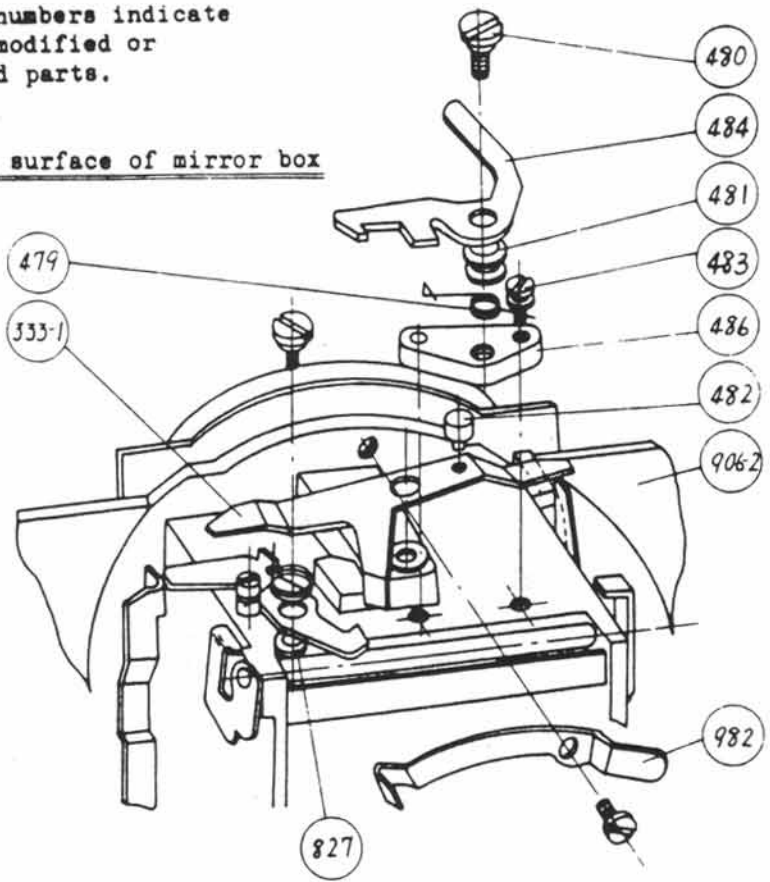


FTW - Fig. 6b

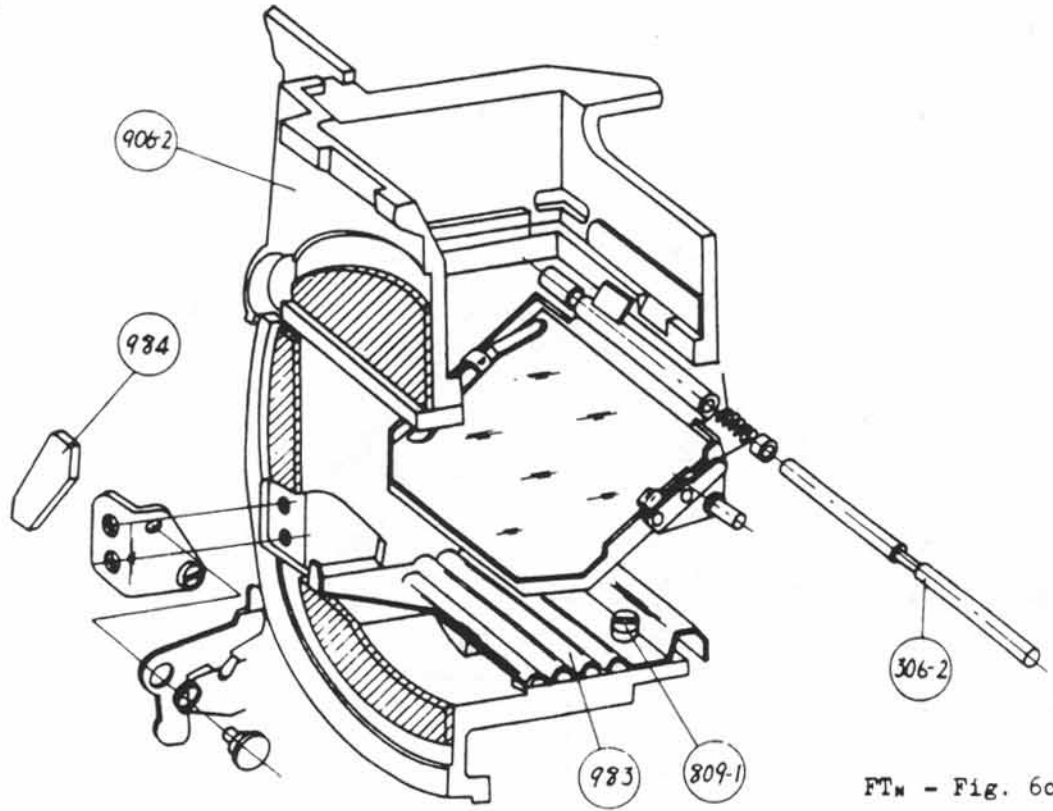
N.E. J. 424 44 1-4 8000 M

Note: The numbers indicate the modified or added parts.

Bottom surface of mirror box



Interior of mirror box

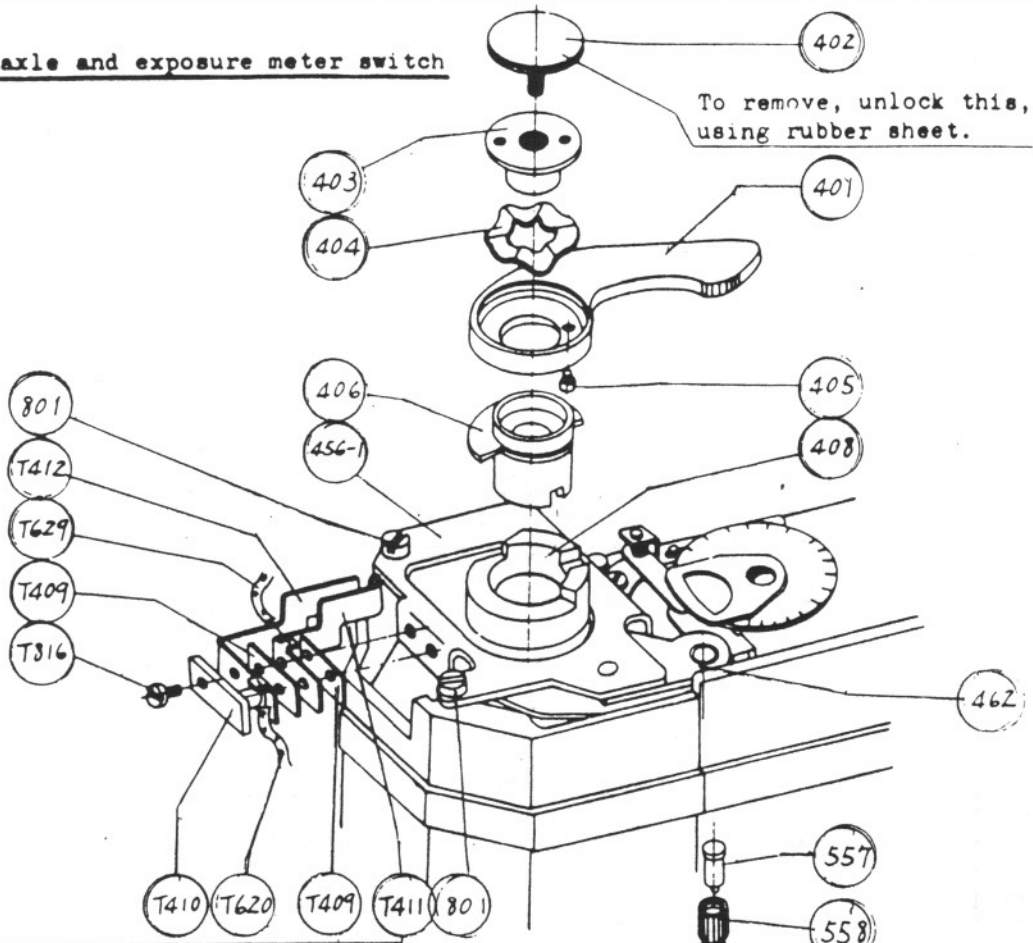


FTM - Fig. 6c

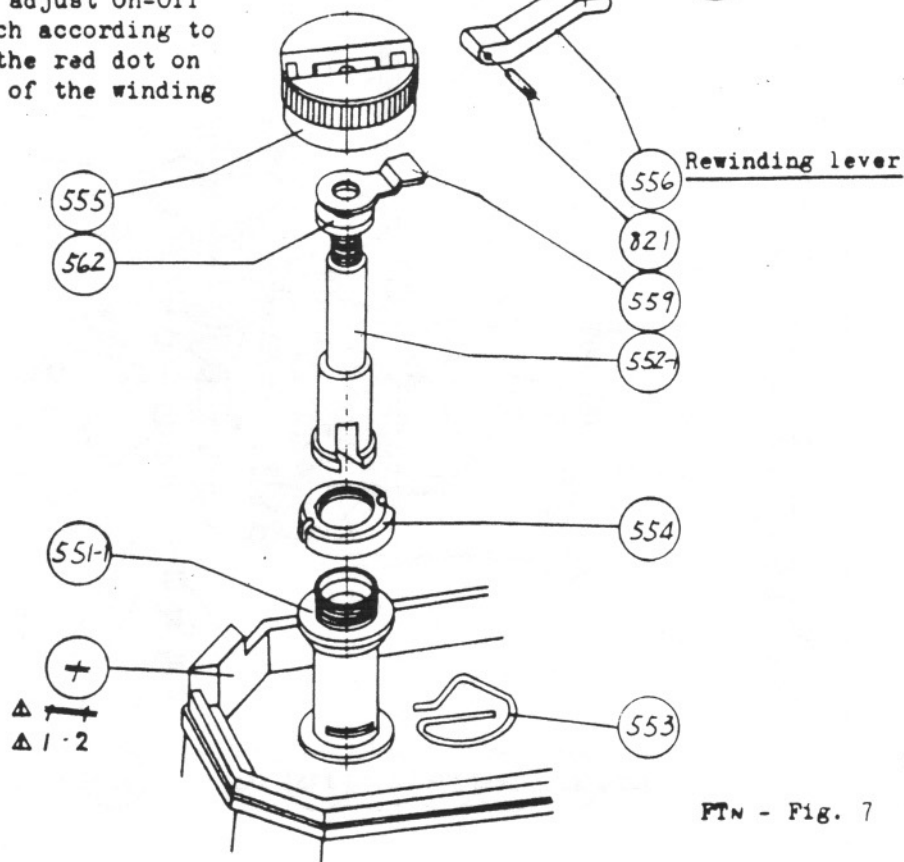


Winding axle and exposure meter switch

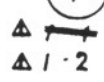
To remove, unlock this, using rubber sheet.



Change bending to adjust On-Off operation of switch according to the positions of the red dot on the top plate and of the winding lever.



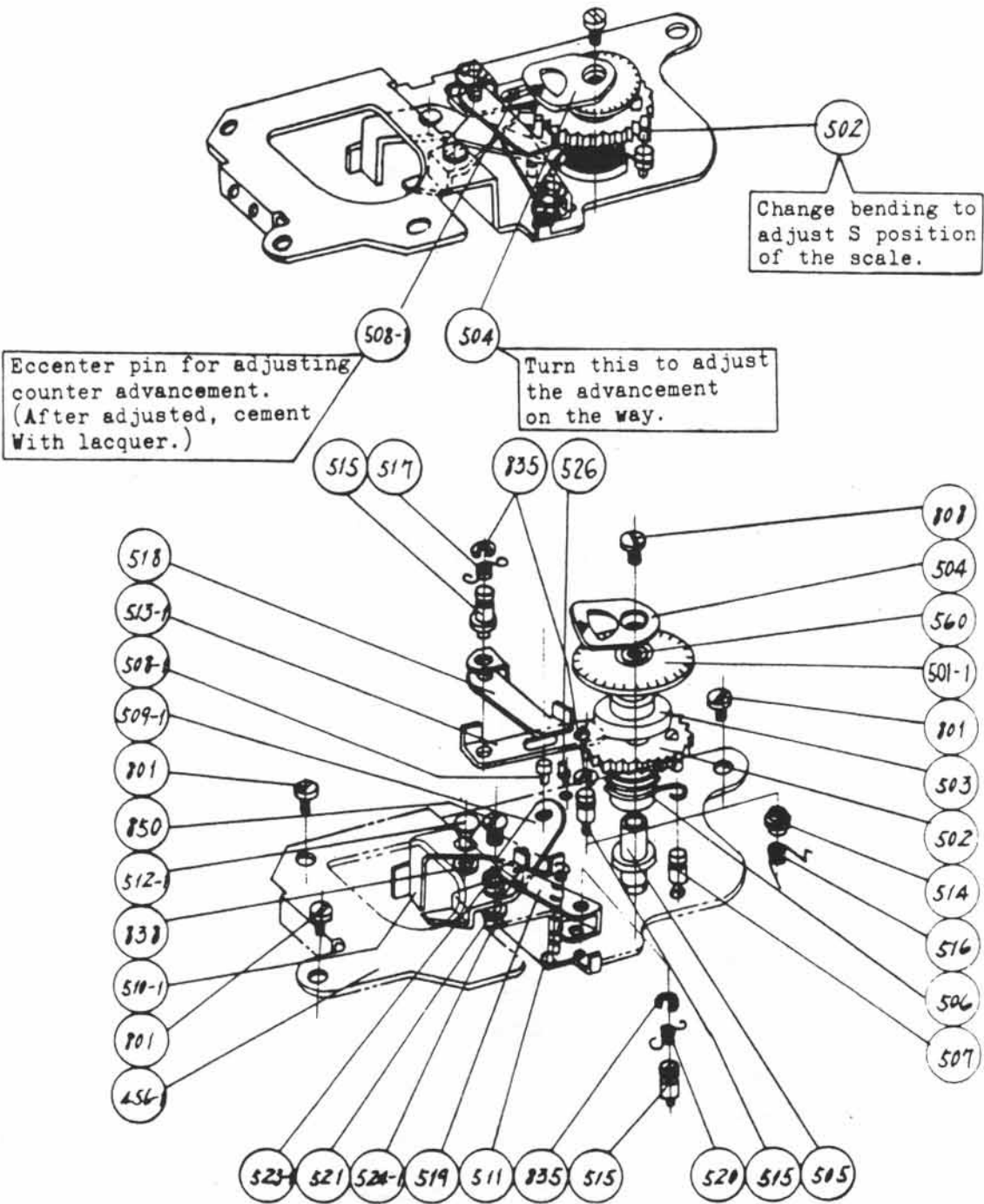
Rewinding lever



FTW - Fig. 7

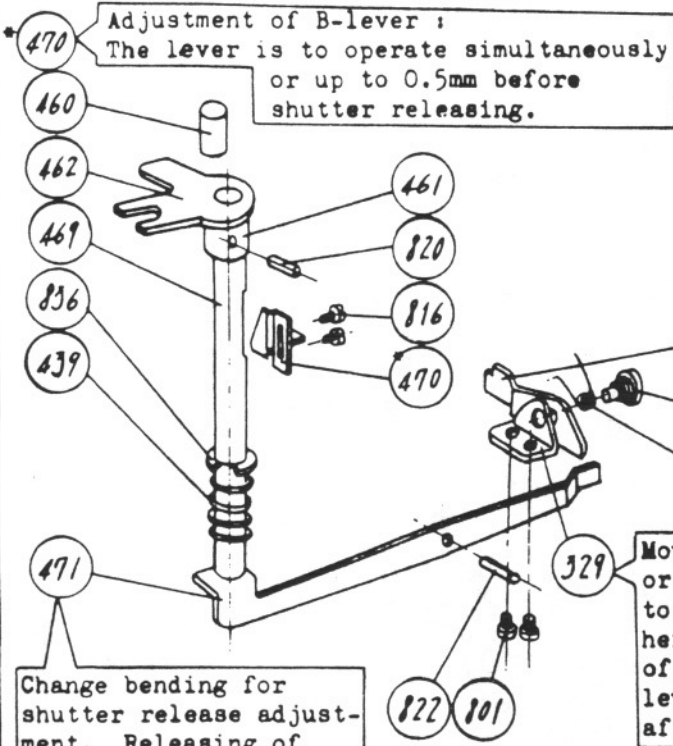
Film counter

Adjustment proceeds as follows;  
 Advance the scale to 10 - 20 after being assembled.  
 In this position, be sure of engagement of stopper pawl #519 to the ratchet. Set index plate #504 to the scale.  
 Then, adjust the advancement by means of eccentric pin #508-1. Open the camera back. Return the counter to zero.  
 In this position, if any displacement is found between S and the index, make adjustment by bending the stopper part of the ratchet #502.

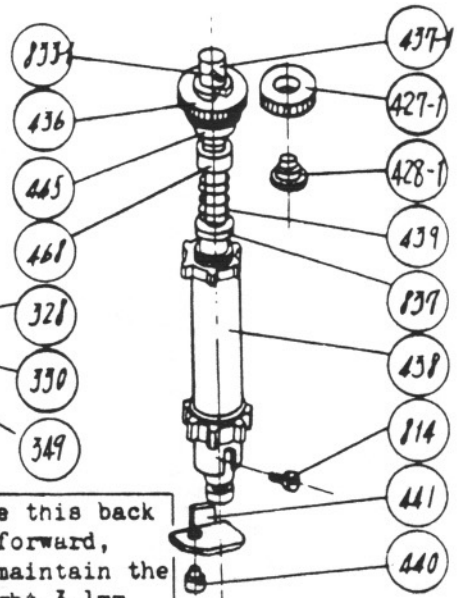


FTM - Fig. 8

Push button shaft and sec-saw lever



Sprocket shaft

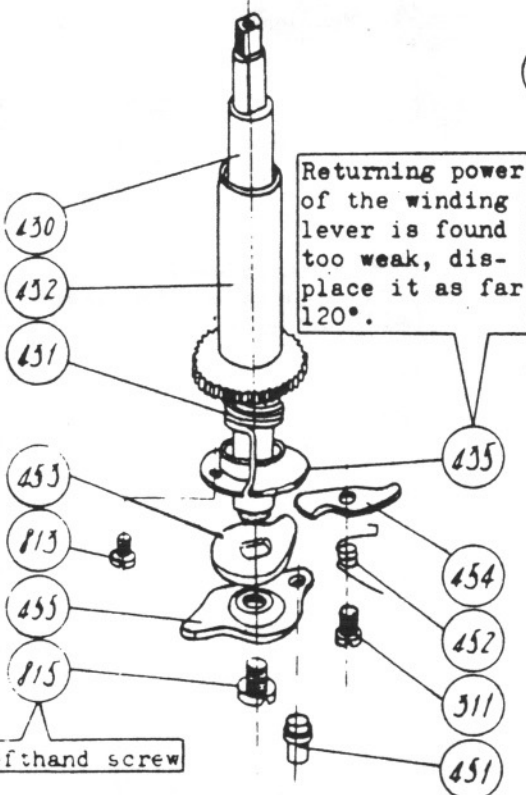


Change bending for shutter release adjustment. Releasing of safety device and the releasing position are to be adjusted so that shutter is released simultaneously or up to 0.3mm (in stroke) after the releasing.

Move this back or forward, to maintain the height 3.1mm of the aperture lever before or after winding.

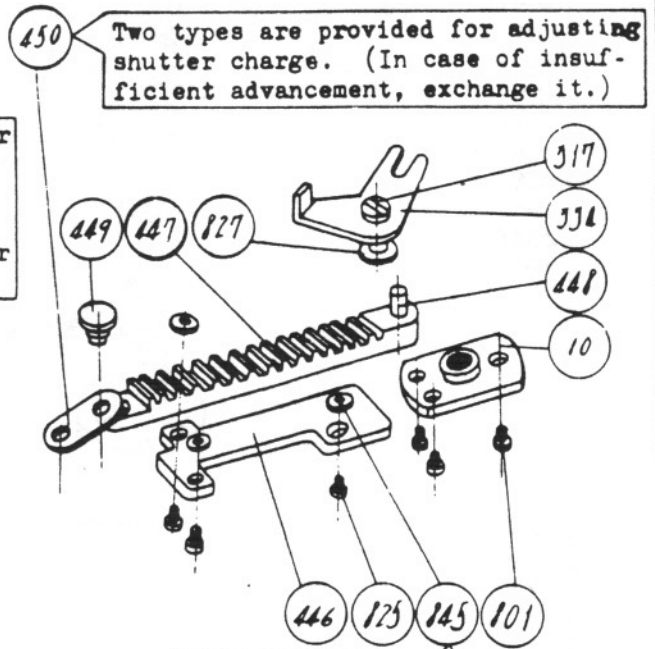
Releasing of safety device and the releasing position are to be adjusted so that shutter is released simultaneously or up to 0.3mm (in stroke) after the releasing.

Lower part of winding shaft



Left hand screw

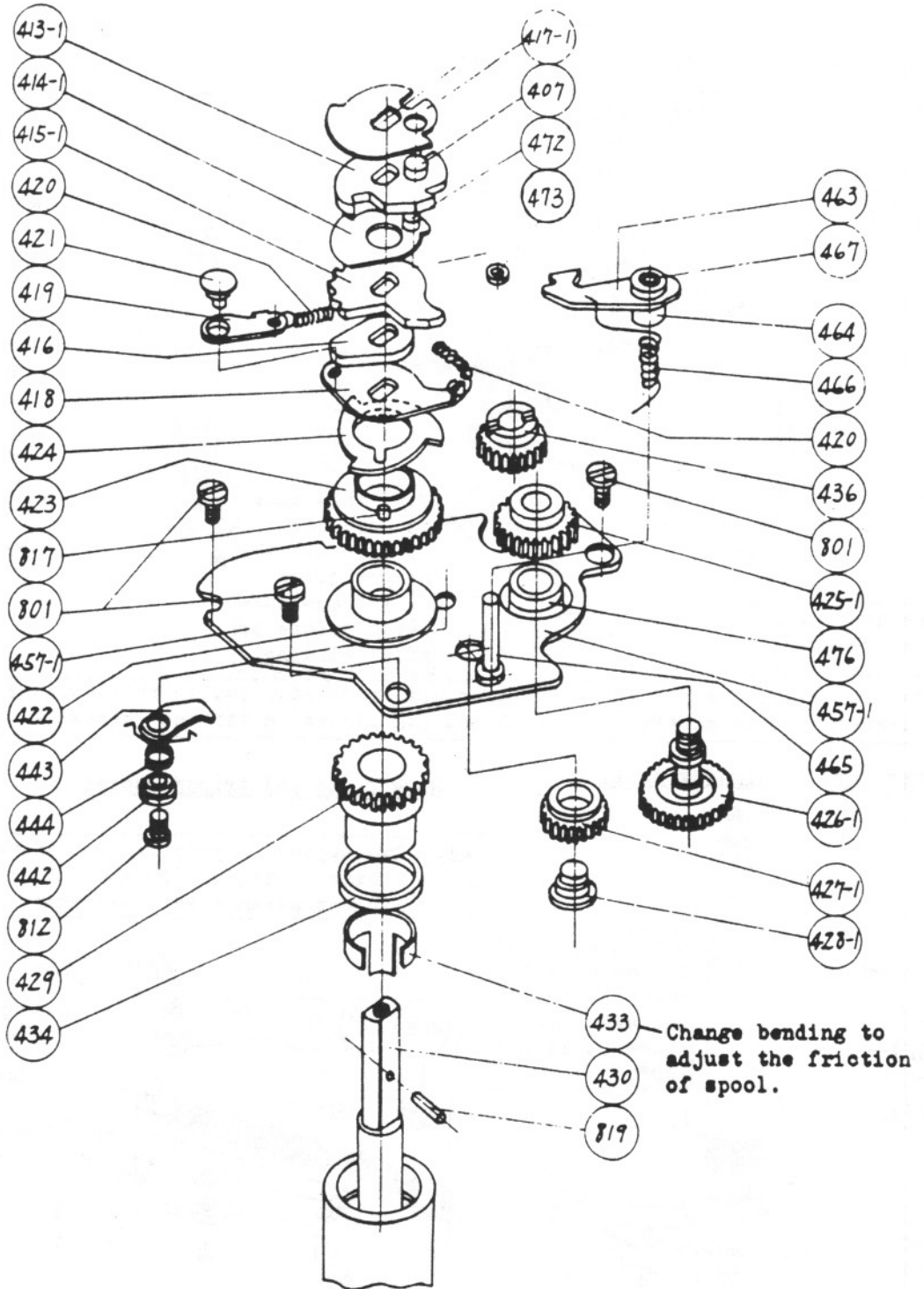
Rack plate and tripod socket



This is used for adjusting the engaging height between the rack and shutter gear.

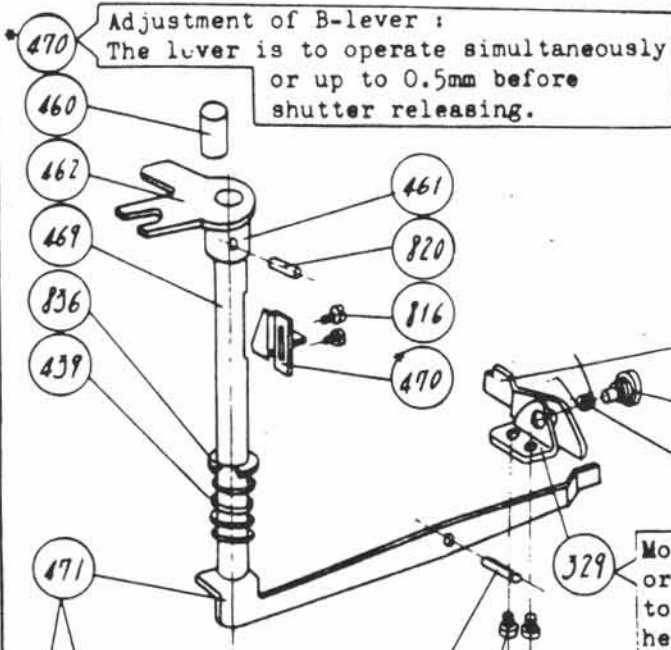
FTN - Fig. 9

Take-up shaft and safety device

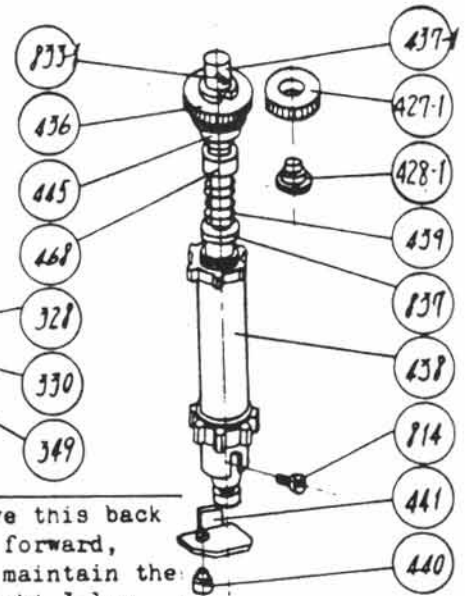


FTw - Fig. 9a

Push button shaft and sec-saw lever



Sprocket shaft



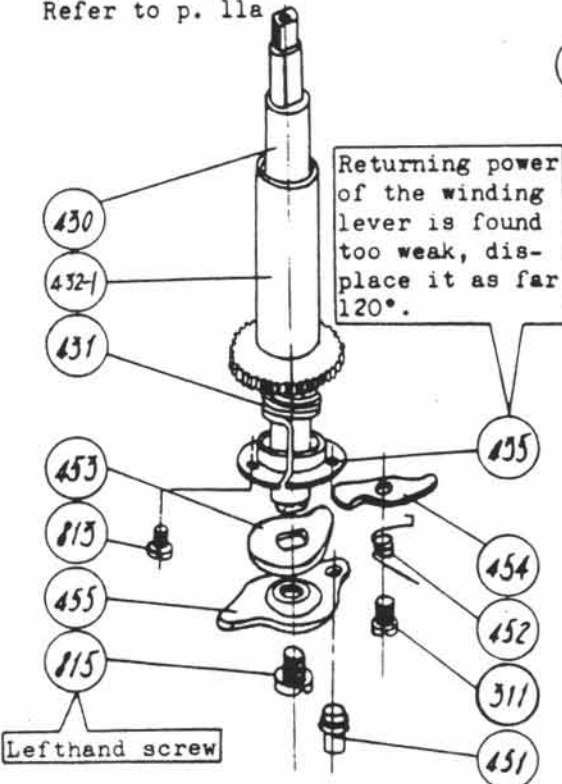
Move this back or forward, to maintain the height 3.1mm of the aperture lever before or after winding.

Change bending for shutter release adjustment. Releasing of safety device and the releasing position are to be adjusted so that shutter is released simultaneously or up to 0.3mm (in stroke) after the releasing.

Releasing of safety device and the releasing position are to be adjusted so that shutter is released simultaneously or up to 0.3mm (in stroke) after the releasing.

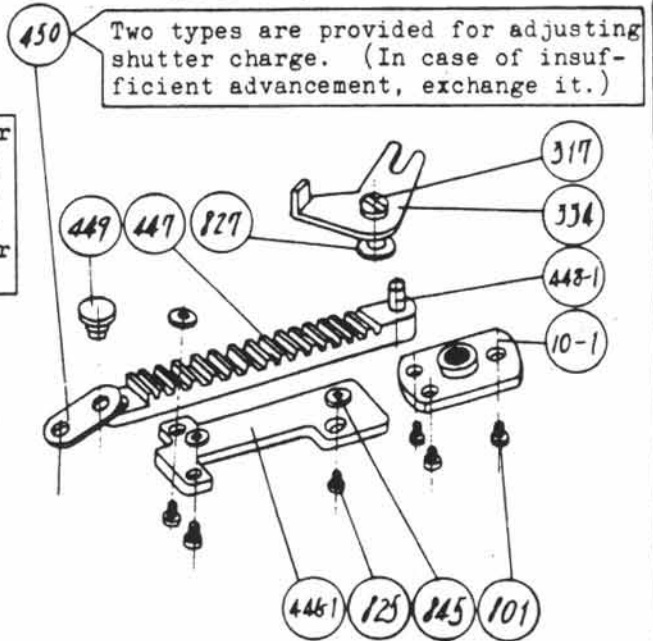
Lower part of winding shaft

Refer to p. 11a



Rack plate and tripod socket

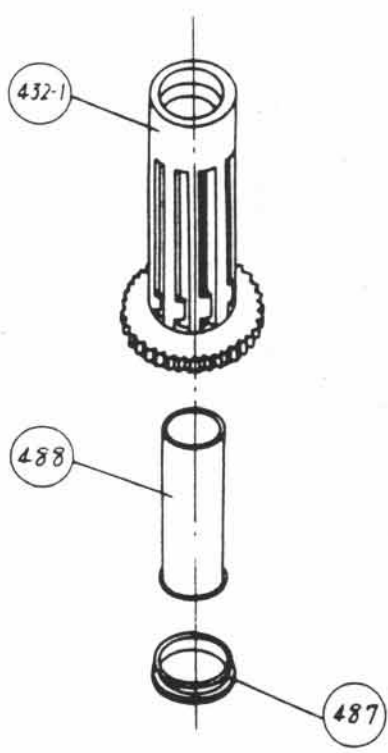
Refer to p. 11a



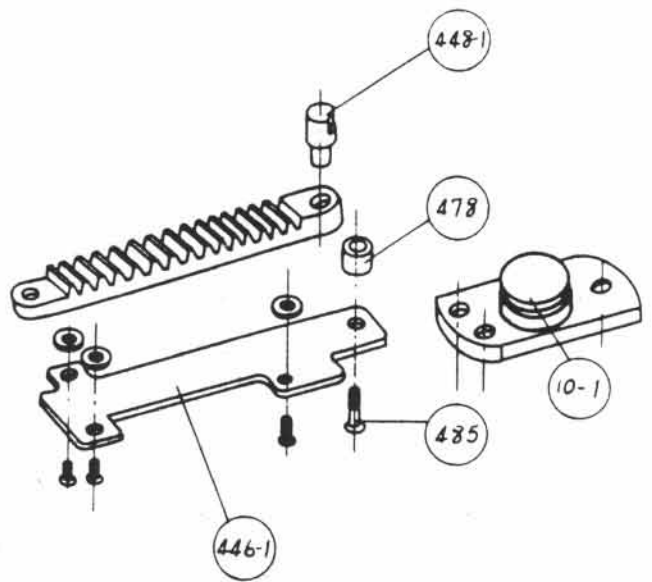
This is used for adjusting the engaging height between the rack and shutter gear.

FTW - Fig: 9b

Lower part of winding shaft



Rack plate and tripod socket



Note: The numbers indicate the modified or added parts.

FTW - Fig. 9c

N.E.E. J-554 Ad 1-4 5000 N

Camera bottom

Washer for adjusting the engagement between rack and pinion. (If unnecessary, remove it.)

Two types are provided for adjusting shutter charge. (Exchange!)

450

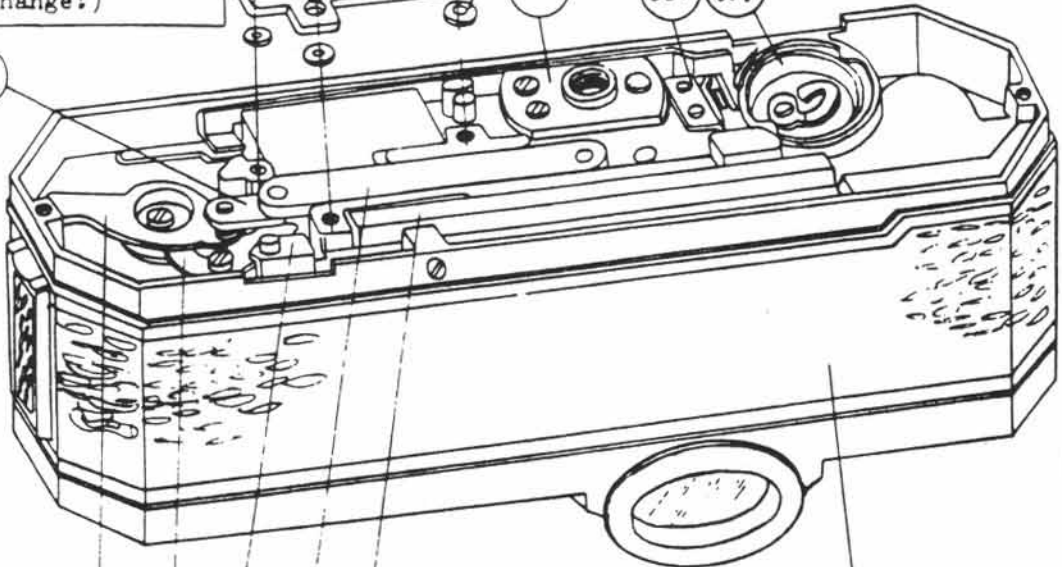
446

141

10

329

T 608



455

454

441

447

1001

26

T 607

102

Battery case

T 4

T 613

T 609

T 610

T 639

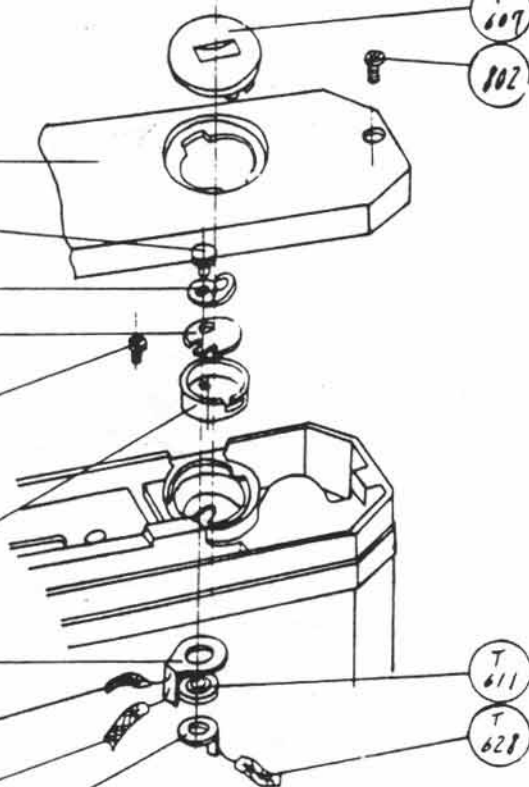
T 608

T 624

T 618

T 619

T 612



To be located so as not to come in contact with large lever #222 of mirror box assembled and operated.

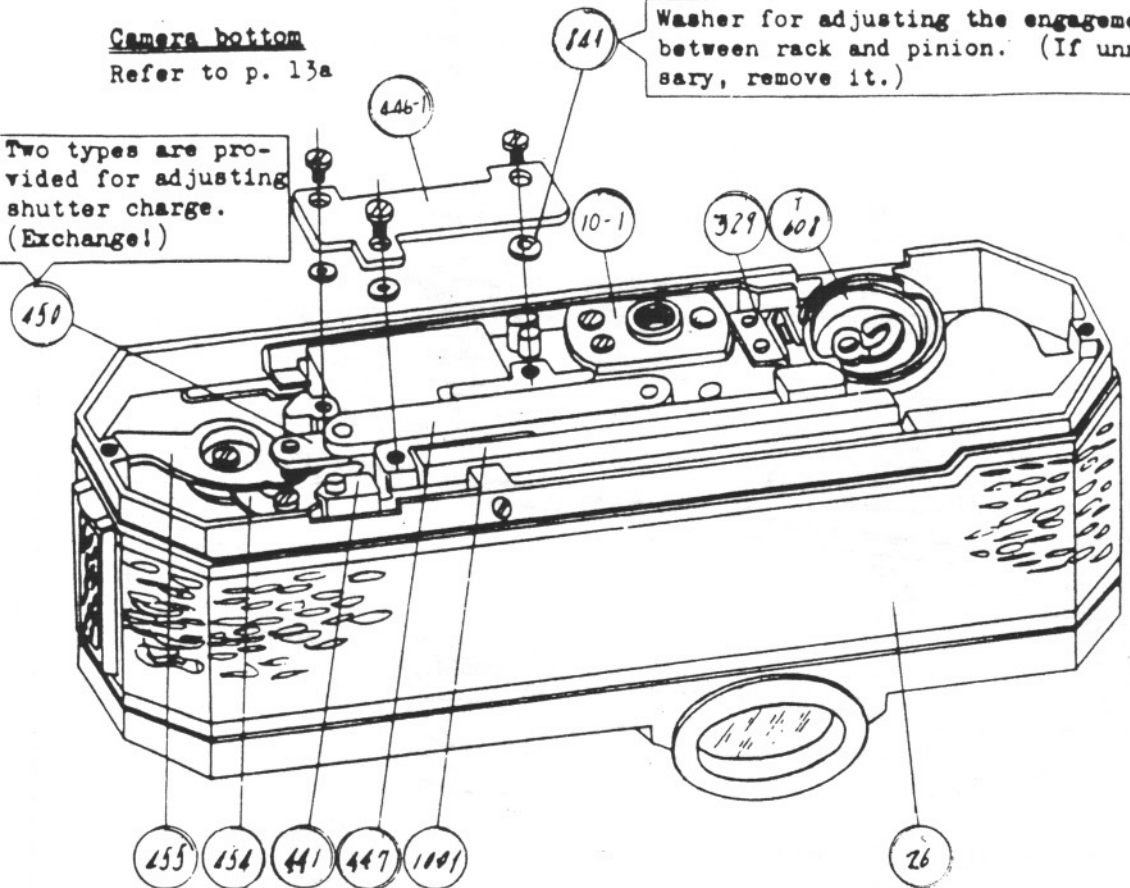
T 611

T 621

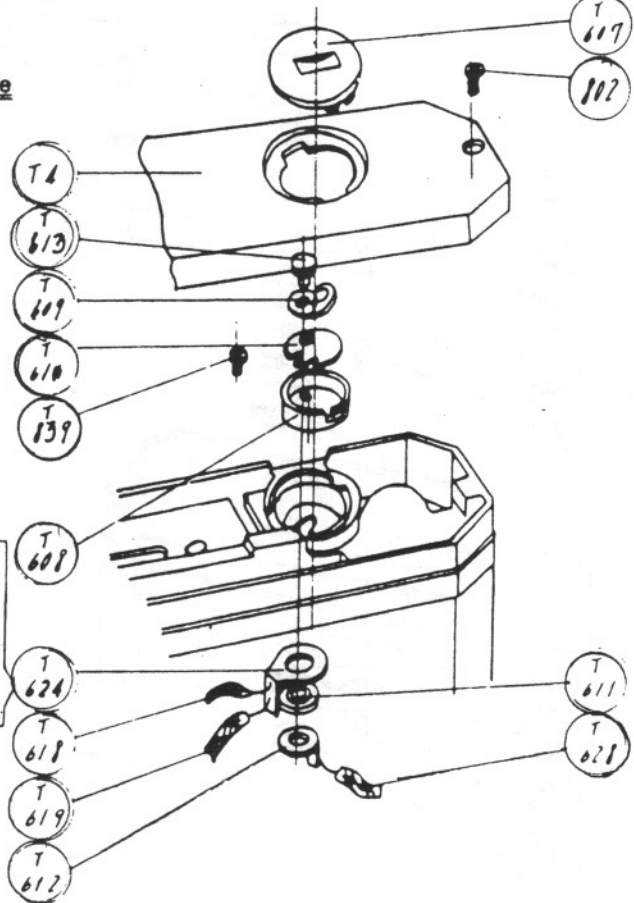
Camera bottom  
Refer to p. 13a

Washer for adjusting the engagement between rack and pinion. (If unnecessary, remove it.)

Two types are provided for adjusting shutter charge. (Exchange!)



Battery case

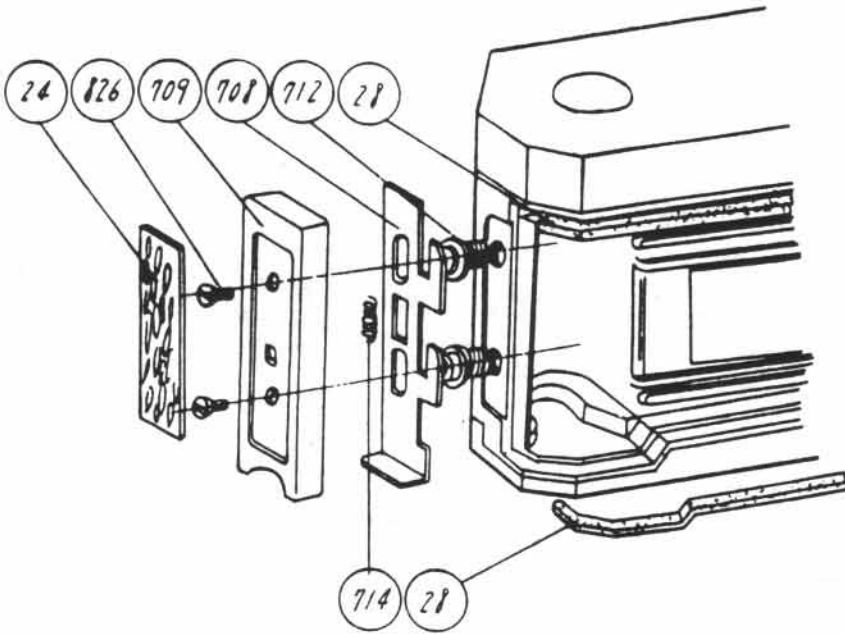
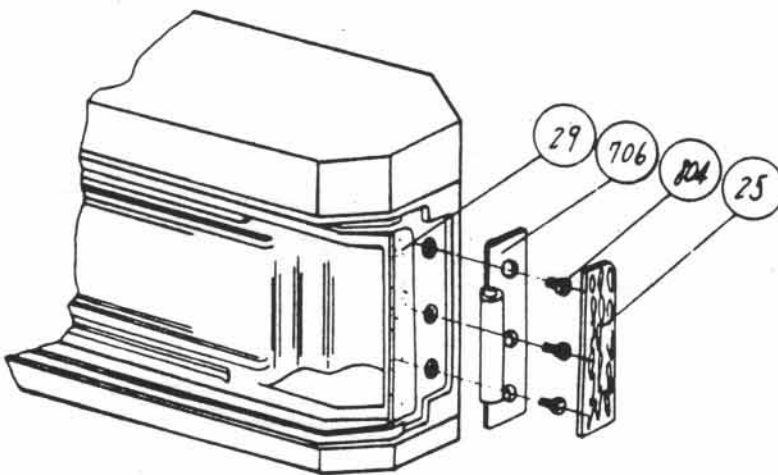


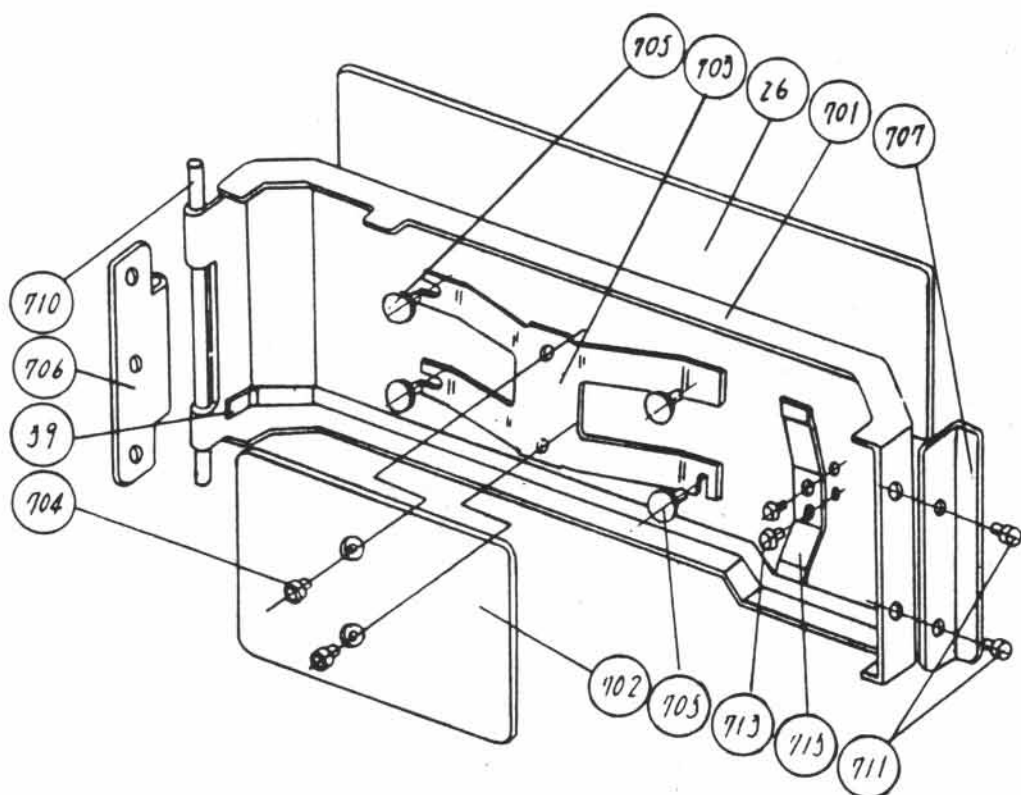
To be located so as not to come in contact with large lever #333 of mirror box assembled and operated.

FTw - Fig. 10a

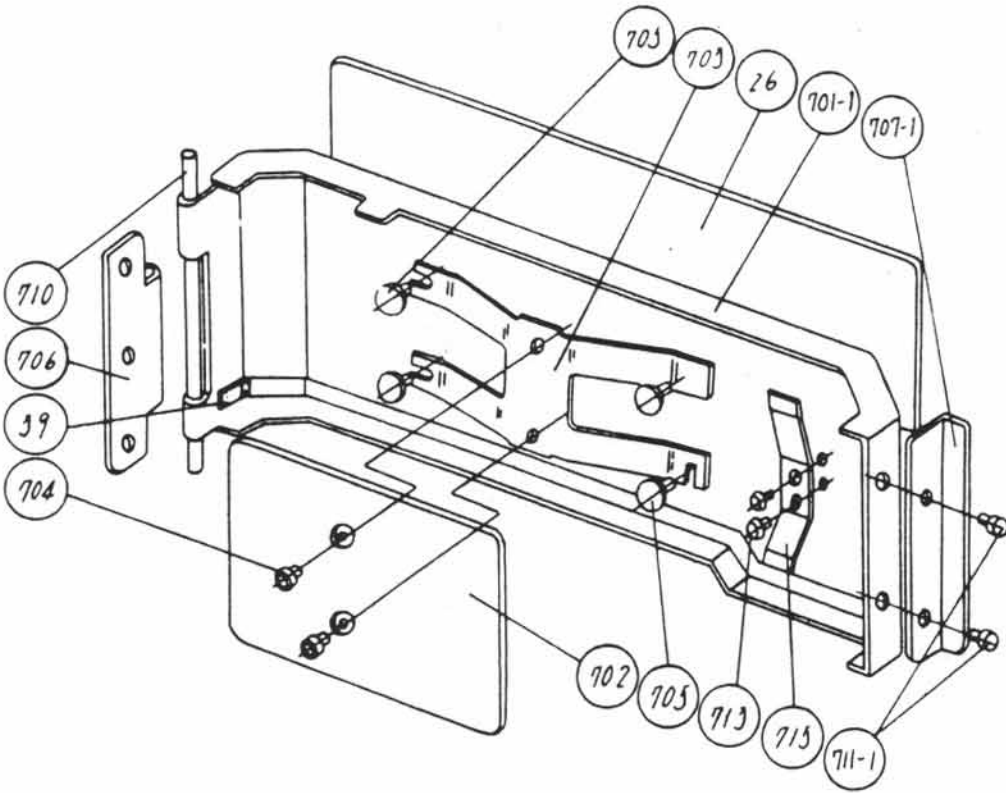




LatchHinge

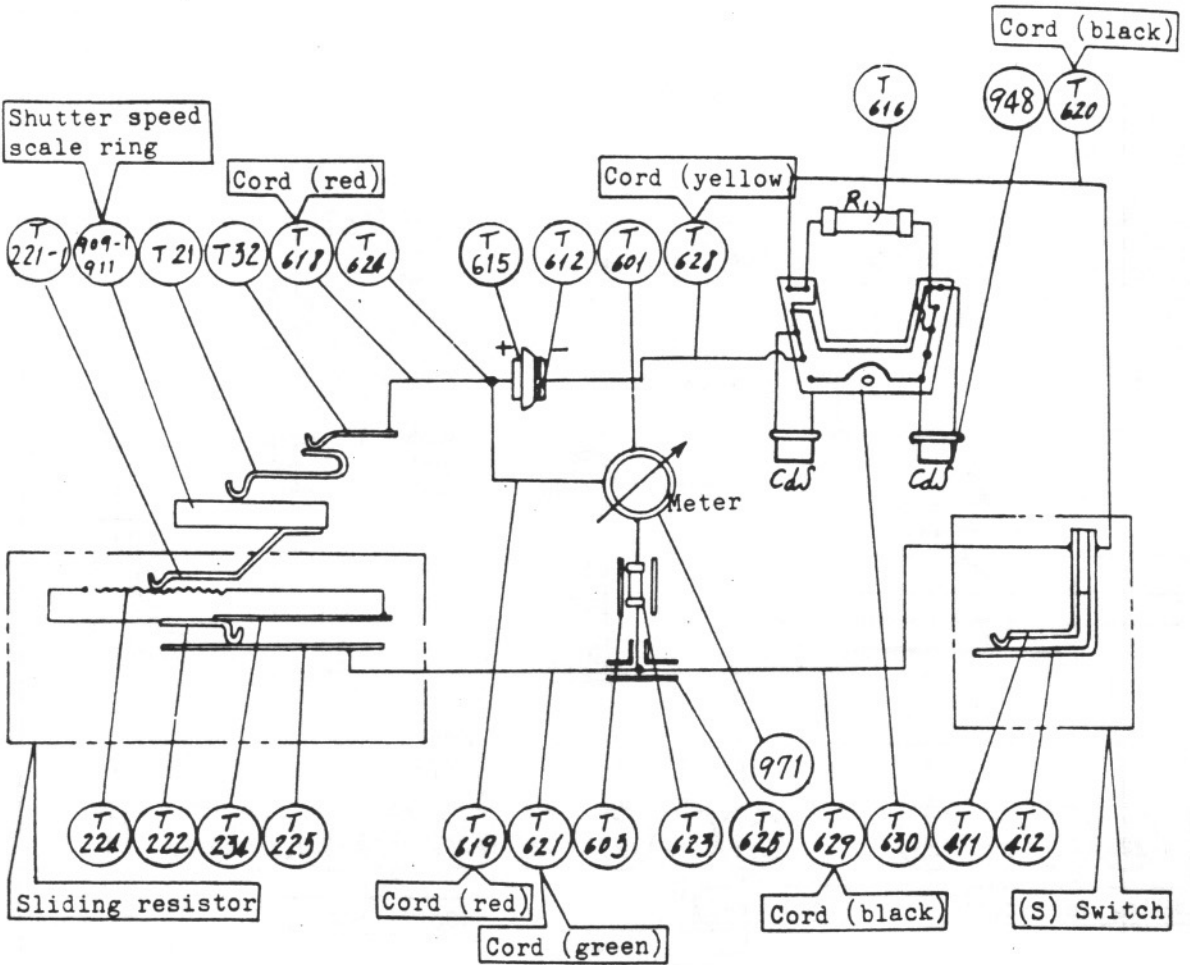
Back cover, hinge

FTM - Fig. 12

Back cover, hinge

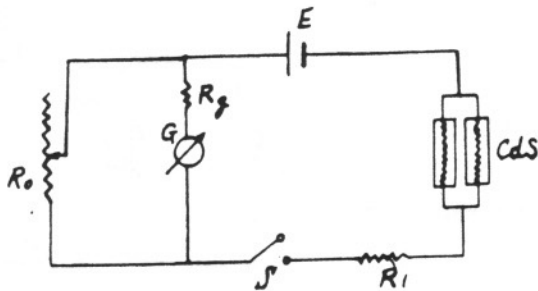
FTW - Fig. 12a

Schematic view of wiring

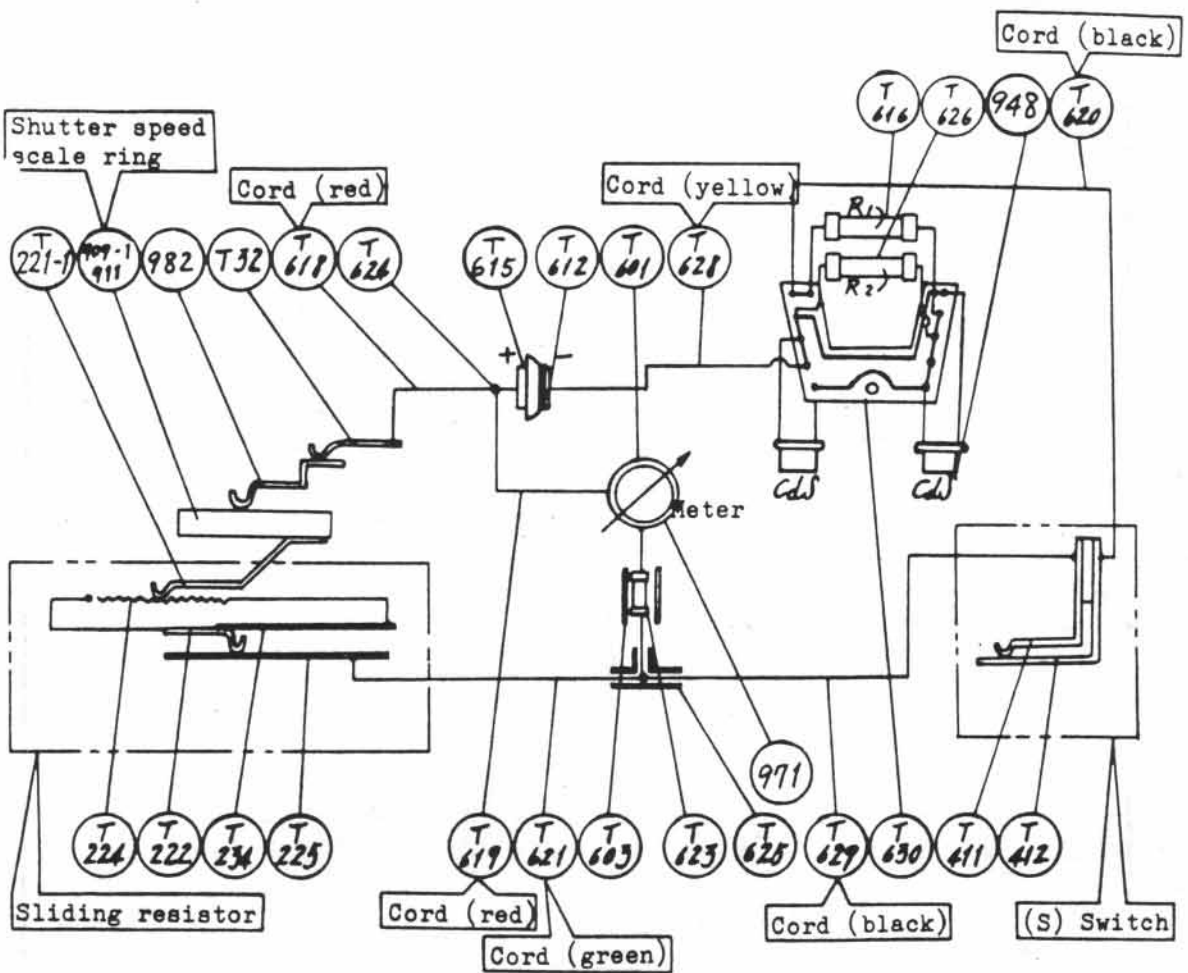


Wiring diagram

- S = Switch
- R<sub>1</sub> = Resistor
- R<sub>0</sub> = Sliding resistor
- G = Meter
- E = Battery
- CdS = Cadmium sulfide photo-conductor

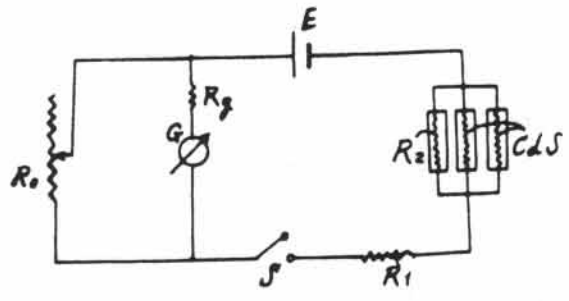


Schematic view of wiring




















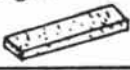

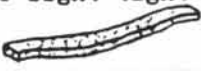




Wiring diagram

- S = Switch
- R<sub>1</sub> = Resistor
- R<sub>2</sub> = Resistor
- R<sub>0</sub> = Sliding resistor
- G = Meter
- E = Battery
- CdS = Cadmium sulfide photo-conductor



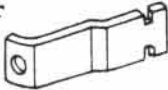










FTM - Fig.13a






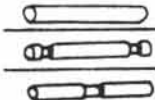









No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31PB-1	Body 	1		4, 7	×	
Δ 1-1	Body	1		7, 10b	×	Modified
Δ 1-2	Body	1		4a, 7 10b	×	Modified
10	Tripod socket 	1		9, 10	○	Modified
Δ 10-1				9b, 9c 10a		
11	Eyelet 	2		2, 2a	○	
12	Synchro terminal nut plate 	1	TNA1	2, 2a	○ Δ	
15	Synchro terminal 	2	TNA1	2, 2a	○ Δ	
16	Self-timer lever 	1	TNC1	5	○	
17-1	Self-timer coupling lever 	1	C14-1	5	Δ	
18	Self-timer lever shaft 	1	C14-1	5	Δ	
19	Self-timer lever screw 	1	TNC1	5	○ Δ	
20	Front plate hole cover 	1		5a, 5b	○	
22	Right front leather 	1		4, 4a	○	
23	Left front leather 	1		4, 4a	○	




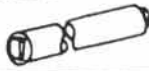










No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig No	Term of Sale	Remarks
31FB-24	Latch cover leather 	1		11	○	
25	Hinge side leather 	1		11	○	
26	Back cover leather 	1	E1	10, 10a 12, 12a	○ △	
28	Body light tight sheet 	2		11	○	
29	Hinge light tight sheet 	1		11	○	
31	Eye guard light tight sheet 	1	TNC15	5a, 5b	○ △	
33	Top cover leather 	1	TNA1	2, 2a	○ △	
34-1	Fresnel frame light tight sheet 	2	TNC1	5a, 5b 6a, 6b	○ △	
35	Front plate lower light tight sheet 	1	TNC1	6a, 6b	○ △	
37	Front plate upper light tight sheet 	1	TNC1	5a, 5b	○ △	
38	Take-up shaft dust-tight ring 	1	TNA1	2, 2a	△	
39	Light tight sheet 	2	E1	12, 12a	○ △	













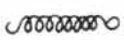
















No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-						
208	Bayonet spring 	3	TND5	3, 3a	○△	
212	Lens lock pin 	1	D7-1	6	△	
213-1	Lens lock lever 	1	D7-1	6	△	
214-1	Lens lock lever coupling 	1	TNC1	6	○△	
215	Lens lock axle 	1	TNC1	6	○△	
216	Lens lock button spring 	1	TNC1	6	○△	
217	Lens lock button 	1	TNC1	6	○△	
218	Lock button base nut 	1	TNC1	6	○△	
<del>△ 219</del>	<del>Shutter A gear </del>	<del>1</del>	<del>TND1</del>	<del>3</del>	<del>△</del>	<del>Disused</del>
223	Lens lock button base 	1	TNC1	6	○△	
227	D gear bearing 	1	C13	5	△	

























No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-301-2	Mirror support 	1	C2-2	6a, 6b	△	
302-1	Pin seat rivet 	2	C2-2	6a, 6b	△	
303	Mirror pressure plate 	1	TNC1	6a, 6b	○△	
304-1	Mirror support pin bearing 	1	C2-2	6a, 6b	△	
305-1	Mirror support pin 	1	C2-2	6, 6a 6b	△	
306	Mirror shaft 	1	TNC1	6a	○△	Modified
△ 306-1						
△ 306-2			TNC1-1	6b, 6c		
307	Mirror shaft collar (left side) 	1	TNC1	6a, 6b	○△	
308	Mirror spring 	1	TNC1	6a, 6b	○△	
309	Manual aperture button base 	1	TNA1	2, 2a	△	
310-1	Manual aperture button axle 	1	TNA1	2, 2a	○△	
311	A.R lever axle 	1		9, 9b	○	
312	Spring retaining screw 	1	TNC1	6a, 6b	○△	
313-1	Manual aperture lever 	1	TNC1	5	○△	
314	Aperture lever 	1	C10	5	△	
315	Mirror angle adjusting pin 	1	C3-1	6a, 6b	△	

No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-316-1	Mirror angle adjusting lever 	1	C3-1	6a, 6b	△	
317	Large lever axle 	2	TNC1	4, 4a 6a, 6b 9, 9b	○ △	
318	Left coupling lever pin 	1	C5-1	5	△	
319	Coupling lever shaft 	1	C4	5, 6a 6b	△	
320	Right coupling lever 	1	C4	6, 6a 6b	△	
321	Mirror up lever 	1	C8	6	△	
322	Mirror down lever 	1	C7	6, 6a 6b	△	
323	Mirror down lever sleeve 	1	C7	6	△	
324	Down lever axle 	1	TNC1	6	○ △	
325	Mirror up spring retainer 	1	C8	6	△	
326	Spring retainer 	1	C7	6	△	
328	Mirror up holding lever 	1	B10	9, 9b	△	
329	Mirror up holding lever base 	1	B10	9, 9b 10, 10a	△	
330	Mirror up holding lever axle 	2	B10 C3-1	6a, 6b 9, 9b	△	















No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-331	Set lever axle 	1	TNC1	6a, 6b	○ △	
332	Set lever 	1	TNC1	5, 6a 6b	○ △	
333	Coupling lever 	1	TNC1	6a	○ △	
△ 333-1			C25	6b, 6c		Modified
334	Charge lever 	1		4, 4a 9, 9b	○	
335-1	Left coupling lever 	1	C5-1	5, 6a 6b	△	
336	Signal lever 	1	TNC1	5, 6a 6b	○ △	
337	Mirror angle adjusting base plate 	1	C3-1	6a, 6b	△	
338-1	Aperture button spring 	1	TNC1	5	○ △	
339-1	Mirror cushion spring 	1	C3-1	6a, 6b	○ △	
340	Aperture lever spring 	1	TNC1	5	○ △	
341	Mirror up spring 	1	TNC1	6	○ △	
342	Mirror down spring 	1	TNC1	6	○ △	
343	Lever cushion 	1	TNC1	6, 6a 6b	○ △	
345	Mirror up cushion sheet 	1	TNC1	6a, 6b	○ △	


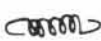









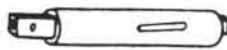




No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-346	Mirror shaft collar (right) 	1	TNC1	6a, 6b	○ △	
347	Set lever spring 	1	TNC1	6a, 6b	○ △	
<del>Δ 348</del>	<del>Light-baffle plate </del>	<del>1</del>	<del>TNC1</del>	<del>6a</del>	<del>○ △</del>	<del>Disused</del>
349	Mirror up holding lever spring 	1	B10	9, 9b	○ △	
356	Manual aperture button 	1	TNA1	2, 2a	○ △	
357-1	Eye guard 	1	A2-1	2, 2a	○ △	
358	Eye guard holder 	1	TNA1	2, 2a	△	
361-1	Condenser, prism box 	1		5a, 5b	○	
362-1	Condenser retainer 	1		5a, 5b	○	
364	Prism holding spring 	2		5a, 5b	○	
365	Prism holder 	1		5a, 5b	○	
367	Prism holder sheet 	1		5a, 5b	○	




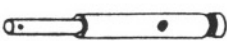
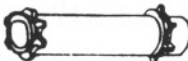










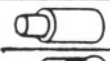

No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig No.	Term of Sale	Remarks
31FB-368	Coupling lever pin (right) 	1	C4	6	△	
369	Aperture connecting lever 	1	C9	5	△	
370	Aperture lever axle 	1	TNC1	5	○△	
371	Aperture lever spring pin 	1	C9	5	△	
372	Aperture lever adjusting pin 	1	C10	5	△	
373	Eyepiece 	2	TNC15	5a, 5b	○△	
376	Side signal lever 	1	TNC11	5	○△	
377-1	Side signal lever base 	1	TNC11	5	△	
378	Signal lever axle 	1	TNC1	5	○△	
379	Signal lever shoulder screw 	1	TNC1	5	○△	
380	Manual aperture lever shoulder screw 	2	TNC1	5	○△	
381	Side signal lever base screw 1.7R - 1.8 	1	TNC1	5	○△	
382	Manual aperture spring retainer 	1	TNC1	5	○△	


















No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig No	Term of Sale	Remarks
31FB-383	Side signal lever axle 	1	TNC11	5	△	
385	Prism holding plate (left) 	1		5a, 5b	○	
386	Prism holding plate (right) 	1		5a, 5b	○	
388	Signal lever stop plate 	1	TNC1	5	○△	
<del>△ 389</del>	<del>Set lever stopper </del>	<del>1</del>	<del>TNC1</del>	<del>6a</del>	<del>○△</del>	<del>Disused</del>
390	Tin foil 	1		5a, 5b	○	
<del>△ 391</del>	<del>Tin foil </del>	<del>1</del>		<del>5a</del>	<del>○</del>	<del>Disused</del>
392	Eyepiece lens holding spring 	1	A2-1	2, 2a	○△	
393	Eyepiece light baffle 	1	TNC15	5a, 5b	○△	


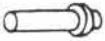





















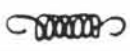




No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig No	Term of Sale	Remarks
31FB-401	Take-up lever 	1	B15	7	△	
402	Take-up lever retaining screw 	1		7	○	
403	Take-up lever retaining screw nut 	1		7	○	
404	Take-up lever spring washer 	1		7	○	
405	Take-up lever pin 	1	B15	7	△	
406	Take-up lever tube 	1		7	○	
407	Release cam pin 	1	B6-1	9a	△	
408	Meter contact cam ring 	1		7	○	
413-1	Contact claw releasing cam 	1	B6-1	9a	△	
414-1	Cam intermediate plate 	1	B22	9a	△	
415-1	Lever pawl cam 	1		9a	○	
416	Take-up lever intermediate base 	1		9a	○	
417-1	Cam contact claw guide plate 	1		9a	○	
418	Stopper plate 	1	B5	9a	△	
















No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-419	Stopper 	1	B5	9a	△	
420	Stopper spring 	1	B5	9a	○ △	
421	Stopper axle 	1	B5	9a	△	
422	Take-up gear shaft 	1	B3-1	9a	△	
423	Take-up gear 	1	B4	9a	△	
424	Advancing cam 	1	B4	9a	△	
425-1	Idle gear A 	1	B3-1	9a	△	
426-1	Idle gear B 	1	B3-1	9a	△	
427-1	Idle gear C 	1	B3-1	9, 9a 9b	△	
428-1	Idle gear C axle 	1	B3-1	9, 9a 9b	△	
429	Spool upper gear 	1		9a	○	
430	Take-up shaft 	1	B1	9, 9a 9b	△	
431	Lever return spring 	1	B1	9, 9b	△	
432	Spool 	1		9	○	Modified
△ 432-1				9b, 9c		
433	Spool spring 	1		9a	○	



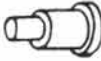




No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No	Term of Sale	Remarks
31FB-434	Spool collar 	1		9a	○	
435	Take-up shaft bearing 	1		9, 9b	○	
436	Sprocket upper gear 	1		9, 9a 9b	○	
437-1	Sprocket shaft 	1		9, 9b	○	
438	Sprocket 	1		9, 9b	○	
439	Release button shaft spring 	2		9, 9b	○	
440	Rewind button 	1	B17	9, 9b	△	
441	Rewind button guide plate 	1	B17	9, 9b 10, 10a	△	
442	Pawl collar 	1	B3-1	9a	○	
443	Pawl 	1	B3-1	9a	○	
444	Pawl spring 	1	B3-1	9a	○	
445	Sprocket shaft bearing 	1		9, 9b	○	
446	Rack retaining plate 	1		9, 10	○	
△ 446-1				9b, 9c 10a		Modified
447	Rack 	1	B9	9, 9b 10, 10a	△	
448	Charge pin 	1	B9	9	△	
△ 448-1			B9-1	9b, 9c		Modified

No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-449	Rack coupling pin 	1	B9	9, 9b	△	
450	Rack coupling lever 	1	B9	9, 9b 10, 10a	△	
451	Take-up stroke cam pin 	1	B2	9, 9b	△	
452	A.R lever spring 	1		9, 9b	○	
453	A.R lever release cam 	1		9, 9b	○	
454	A.R lever 	1		9, 9b 10, 10a	○	
455	Take-up stroke cam 	1	B2	9, 9b 10, 10a	△	
456-1	Film counter base metal 	1	B11-1	7, 8	△	
457-1	Take-up shaft base metal 	1	B3-1	9a	△	
458	Release button cover 	1	TNA1	2	△	Modified
△ 458-1	ring 		TNA1-1	2a		
459	Release button 	1	TNA1	2	○ △	Modified
△ 459-1			TNA1-1	2a		
460	Release inner rod 	1		2, 2a 9, 9b	○	
461	Double exposure preventing lever collar 	1	B8	9, 9b	△	
462	Double exposure preventing lever 	1	B8	7, 9 9b	△	
463	Cam contact claw 	1	B7	9a	△	

















No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-464	Cam contact claw collar 	1	B7	9a	△	
465	Claw shaft 	1	B3-1	9a	△	
466	Claw spring 	1		9a	○	
467	Claw washer 	1	B7	9a	△	
468	Sprocket spring 	1		9, 9b	○	
469	Release shaft 	1	B8	9, 9b	△	
470	B-action lever 	1		9, 9b	○	
471	See-saw lever 	1		9, 9b	○	
472	Eccentering pin 	1	B22	9a	△	
473	Adjusting pin washer 	1	B22	9a	△	
476	Idle gear shaft bearing 	1	B3-1	9a	△	














No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig No.	Term of Sale	Remarks
31FB-501-1	Film counter scale 	1	B13-1	8	△	
502	Counter ratchet wheel 	1	B13-1	8	△	
503	Counter ratchet boss 	1	B13-1	8	△	
504	Counter index plate 	1	B11-1	8	○△	
505	Counter scale shaft 	1	B11-1	8	△	
506	Counter spring 	1	B11-1	8	○△	
507	Counter stop pin 	1	B11-1	8	△	
508-1	Counter adjusting pin 	1	B19	8	△	
509-1	Ratchet advancing lever A 	1	B19	8	△	
510-1	Film counter release lever 	1	B11-1	8	△	
511	Film counter release lever spring 	1	B11-1	8	○△	
512-1	Film counter release lever axle 	1	B11-1	8	△	
513-1	Ratchet advancing B lever 	1	B20	8	△	
514	Ratchet advancing B lever boss 	1	B20	8	△	
515	Ratchet advancing B lever shaft 	3	B20 B11-1	8	△	














No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-516	Advancing B lever spring 	1	B11-1	8	○△	
517	Advancing pawl spring 	1	B11-1	8	○△	
518	Advancing pawl 	1	B11-1	8	○△	
519	Ratchet locking pawl 	1	B21	8	○△	
520	Ratchet locking pawl spring 	1	B11-1	8	○△	
521	Ratchet locking pawl pin 	1	B21	8	△	
522-1	Counter scale window 	1	TNA1	2, 2a	○△	
523-1	Advancing lever eccentric axle 	1	B11-1	8	○△	
524-1	Advancing A lever washer 	1	B11-1	8	○△	
525	Counter scale window frame 	1	TNA1	2, 2a	△	
526	Adjusting pin 	1	B11-1	8	△	
551-1	Rewinding shaft bearing 	1	B18-1	7	○△	
552-1	Rewinding shaft 	1	B18-1	7	○△	
553	Rewinding shaft click spring 	1	B18-1	7	○△	
554	Rewinding shaft nut 	1		2, 7 2a	○	













No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-555	Rewind knob 	1		7	○	
556	Rewind lever 	1	B16	7	△	
557	Rewind lever knob shaft 	1	B16	7	△	
558	Rewind lever knob 	1	B16	7	△	
559	Rewind lever spring 	1		7	○	
560	Counter scale shaft washer 	1	B11-1	8	○ △	
562	Rewind shaft washer 	1		7	○	



























No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-701	Back plate 	1	E1	12	△	
△ 701-1	Pressure plate		E1-1	12a		Modified
702	Pressure plate 	1	E2	12, 12a	△	
703	Pressure plate spring 	1	E2	12, 12a	△	
704	Pressure plate stud 	2	E2	12, 12a	△	
705	Pressure plate spring holder pin 	4	E1	12, 12a	△	
706	Back plate hinge 	1	E1	11, 12 12a	○△	
707	Latch retaining plate 	1	E1	12	△	
△ 707-1			E1-1	12a		Modified
708	Latch 	1		11	○	
709	Latch cover 	1		11	○	
710	Hinge shaft 	1	E1	12, 12a	○△	
711	Latch rivet 	2	E1	12	△	
△ 711-1			E1-1	12a		Modified
712	Latch slide guide 	2		11	○	
713	Film cartridge spring rivet 	2	E1	12, 12a	△	
714	Latch spring 	1		11	○	
715	Film cartridge spring 	1	E1	12, 12a	△	


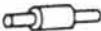









No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-801	Tripod socket screw  2R - 3	16	TNC1	5, 7 8, 9a 9b, 9	○△	
802	Shutter screw 	1		4, 4a 10, 10a	○	
804	Bottom plate screw  1.7Q - 2.5	5		11	○	
805	Bayonet set screw  2R - 3.5	4		3, 3a	○	
807	Bayonet spring screw  1.7R - 1.8	6	TND5	3, 3a	○△	
808	Index plate screw  1.4T - 1.5	1	B11-1	8	○△	
809	Light baffle plate screw 	1	TNC1	6a	○△	
▲ 809-1	2R - 2		TNC1-1	6b, 6c	△	Modified
810	Front plate screw 	5		5, 6	○	
811	Bayonet screw 	4		3, 3a	○	
812	Locking pawl shaft screw 	1	B3-1	9a	○△	
813	Take-up shaft bearing screw 	5	TNC1	5, 9 9b	○△	
814	Sprocket screw 	1			○	
815	Take-up shaft fastening screw 	1		9, 9b	○	










No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig No	Term of Sale	Remarks
31FB-816	B-action lever screw 1.4R - 3 	2		9, 9b	○	
817	Advancing cam stop pin 	1	B4	9a	△	
<del>△ 818</del>	<del>A-gear pin </del>	<del>3</del>	<del>TND1</del>	<del>3</del>	<del>△</del>	Disused
819	Take-up shaft pin SP1 - 4 	1		9a	○	
820	Releasing shaft pin SP1 - 6 	1	B8	9, 9b	○△	
821	Rewind lever pin SP1 - 8 	1		7	○	
822	See-saw lever pin SP1.6 - 8 	1		9, 9b	○	
824	Shutter attaching nut 2N - 1.5 	1		4, 4a	○	
825	Rack holder screw 2Q - 3.5 	3		9, 9b	○	
826	Latch cover screw 	2		11	○	
827	Aperture lever shaft washer 	3 △ 4	TNC1	5, 6a 6b, 6c 9, 9b	○△	Modified
828	Mirror angle adjusting plate screw 2Q - 3.5 	2	TNC1	6a, 6b	○△	
829	Shutter dial stopper screw 	2		3	○	
<del>△ 829-1</del>	<del>2R - 2</del>		<del>TNC1-1</del>	<del>3a</del>		Modified
<del>△ 830</del>	<del>Shutter button guide screw 1.4K - 1.5</del>	<del>1</del>	<del>TNA1</del>	<del>2</del>	<del>○△</del>	Disused

No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-831	Focus adjusting washer 	5		5a, 5b	○	
832	Prism box screw 2R - 4 	3		5a, 5b	○	
833-1	Sprocket shaft pin SP1.6 - 6 	1		9, 9b	○	
835	E-ring 	4	B11-1 TNC1	6, 8	○△	
836	Releasing shaft E-ring 	1		9, 9b	○	
837	Sprocket shaft washer 	1		9, 9b	○	
838	Film counter release lever washer 	1	B11-1	8	○△	
841	Mirror down lever washer 	1	TNC1	6, 10 10a	○△	
842	Shutter spring washer 	1		4, 4a	○	
843	Eyepiece frame screw 	2		5a, 5b	○	
845	Rack adjusting washer 	3		9, 9b	○	
847	Manual aperture lever washer 	2	TNC1	5	○△	



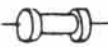










No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31FB-849	Back focus adjusting washer 	4		4, 4a	○	
850	Advancing A lever screw 	1	B11-1	8	○△	
851	Shutter washer 	1		4, 4a	○	
852	Shutter screw 	2		4, 4a	○	
G1-1	Mirror 	1	TNC1	6a, 6b	○△	
G2-1	Fresnel 	1		5a, 5b	○	
G3-1	Condenser lens 	1		5a, 5b	○	
G4-1	Prism 	1		5a, 5b	○	
G5	Eyepiece lens 	1	C16	5a, 5b	△	
G6	" 	1	C16	5a, 5b	△	
G7-1	Eyepiece dust proof glass 	1	A2-1	2, 2a	○△	
G11	Light acceptance fresnel lens 	2	TNC15	5a, 5b	○△	








No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31F2B-T4	Bottom cover 	1		10, 10a	○	
<del>Δ T21</del>	<del>Earth terminal plate </del>	<del>1</del>	<del>TNC1</del>	<del>4, 6a 13</del>	<del>○△</del>	<del>Disused</del>
T32	Earth piece 	1	TB14	4, 13 4a, 13a	○△	
T36	Meter window cover 	1	TNA1	2, 2a	○△	
T202	Bayonet 	1		3, 3a	○	
T221-1	Resistor brush 	1	TND8	3, 3a 13a	△	
T222	Brush 	1	TND2	3, 13 3a, 13a	○△	
T224	Resistor 	1	TND2	3, 13 3a, 13a	○△	
T225	Conductive plate 	1	TND5	3, 13 3a, 13a	○△	
T226	Brush rivet 	3	TND2	3, 3a	○△	
T234	Resistor base plate 	1	TND2	3, 13 3a, 13a	○△	
T237	Click spring screw 	1	TND5	3, 3a	○△	



No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31F2B-T350	Mirror up axle 	1	TNC1	6	○△	
T351	Mirror up button axle 	1	TC6	6	△	
T352	Axle holder 	1	TC6	6	△	
T353	Mirror up lever 	1	TNC1	6	○△	
T354	Mirror up button 	1	TC6	6	△	
(T354-1)	Mirror up button 	1		6	○	TC6
T355	Mirror up lever spring 	1	TNC1	6	○△	
T359-2	Eyepiece frame 	1	TNC15	5a, 5b	△	
T366	Meter window cover 	1	TNC1	5a, 5b	○△	
T409	Contact insulating plate 	2	TB12	7	△	
T410	Contact retaining plate 	1	TB12	7	△	










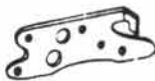





No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31F2B-T411	Contact A 	1	TB12	7, 13 13a	△	
T412	Contact B 	1	TB12	7, 13 13a	△	
T603	Tube 	1		13, 13a	○	
T607	Battery cap 	1		10, 10a	○	
T608	Battery case 	1	TB14	10, 10a	△	
T609	Battery spring plate 	1	TB14	10, 10a	△	
T610	Insulating plate 	1	TB14	10, 10a	△	
T611	Insulating washer 	1	TB14	10, 10a	△	
T612	Tip A 	1	TB14	10, 10a	△	





























No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31F2B-T613	Tip rivet 	1	TB14	10, 10a	○△	
T615	Mercury battery 	1		13, 13a	□	
T616	Resistor 40Ω, 50Ω, 60Ω, 70Ω 	1	TNC17	5a, 5b 13, 13a	○△	
T617	Meter window 	1	TNA1	2, 2a	○△	
T618	Lead wire (red) D4233 	1	TB14	4, 4a 10, 10a 13, 13a	○△	
T619	" 	1	TB14	10, 10a 13, 13a	○△	
T620	Lead wire (black) D4231 	1	TB12	7, 13 13a	○△	
T621	Lead wire (green) D4236 	1	TND5	13, 13a	○△	
T623	Meter resistor 1KΩ, 2KΩ, 3KΩ 	1		13, 13a	○	
T624	Tip B 	1	TB14	10, 10a 13, 13a	△	
T625	Cord tube 	1		13, 13a	○	
△ T626	Resistor 250KΩ, 400KΩ, 750KΩ 	1		5b, 13a	○	Added
T628	Lead wire (yellow) D4235 	1	TB14	10, 10a 13, 13a	○△	
















No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31F2B-T629	Lead wire (black) D4231 	1	TB12	7, 13 13a	○△	
T630	Print 	1	TNC17	5a, 5b 13, 13a	○△	
T809	Earth terminal screw 2R - 2	2	TNC1	6, 6a 6b	○△	
T813	Meter screw 	2		5a, 5b	○	
T816	Meter contact screw 1.4R - 3 	1		7	○	
T823	Mirror up coupling shaft pin TP1 - 6 	1	TNC1	6	○△	
T827	Mirror up lever washer 	2	TNC1	6	○△	
T839	Battery case screw 1.4Q - 2 	1		10, 10a	○	













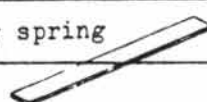


No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig No	Term of Sale	Remarks
31F2B-T840	Earth piece screw 	1		4, 4a	○	
T846	Printed circuits plate screw 	3		5a, 5b	○	

No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31F3B-902	Front cover 	1		2, 2a 3, 3a 5a, 5b	○	
903	Top cover 	1	TNA1	2, 2a	△	
905	Bayonet base 	1	TND5	3	△	
△ 905-1			TND5-1	3a		Modified
906	Front plate 	1	TNC1	6, 6a	△	Modified
△ 906-1						Modified
△ 906-2			TNC1-1	6b, 6c		Modified
907	Diaphragm coupling ring 	1	TND3	3	△	
△ 907-2			TND3-1	3a		Modified
908	Max. aperture scale ring 	1	TND2	3, 3a	△	
909	Shutter A gear ring 	1	TND1	3	△	
△ 909-1			TND1-1	3a, 13 13a		Modified
910	Shutter speed scale ring 	1	TND1	3, 3a	△	
911	Resistor brush ring 	1	TND8	3, 3a 13, 13a	△	
912	Ratchet release base plate 	1	TNC18	2, 2a	△	
913	Lever retainer 	1	TNC18	2, 2a	△	
914	Ratchet release lever 	1	TNC18	2, 2a	△	
915	Ratchet 	1	TND2	3, 3a	○△	
916	Ratchet claw 	1	TND3	3, 3a	○△	
917	Max. aperture scale stopper 	1	TND2	3, 3a	○△	















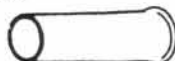
No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No	Term of Sale	Remarks
31F3B-918	Rivet 	2	TND2	3, 3a	○△	
919	Coupling stopper 	1	<del>TND5</del>	3, 3a	○ <del>△</del>	
920	ASA index 	1	TND8	3	△	Modified
△ 920-1			TND8-1	3a		
921	Lever retaining axle 	1	TNC18	2, 2a	△	
922	Pin 	1	TNC18	2, 2a	△	
923	Ratchet release lever axle 	1	TNC18	2, 2a	△	
924	Pin 	2	TNC18	2, 2a	△	Modified
		△ 1				
925	Collar 	2		5a, 5b	○	
926	Ratchet claw axle 	1	TND3	3, 3a	○△	
927	Rivet 	2	TND2	3, 3a	○△	
928	Coupling pin 	1	TND3	3, 3a	△	
929	Washer 	1	TNC18	2, 2a	△	
930	Name plate screw 	2		2, 2a	○	
931	Screw 	2		2, 2a	○	
932	Axle 	1	TNC18	2, 2a	△	

No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig No.	Term of Sale	Remarks
31F3B-						
934-1	Name plate 	1		2, 2a	○	
935	Lever spring 	1	TNC18	2, 2a	○△	
936	Ratchet release lever spring 	1	TNC18	2, 2a	○△	
937	Spring stud 	2	TND2 TND3	3, 3a	△	
938	Shutter rivet 	3	TND1	3, 3a	△	
939	Spring 	1	△ TND3-1	3, 3a	○ ○△	
940	Rivet 	2	TND8	3, 3a	△	
941	Ratchet claw spring 	1	TND3	3	△	
△ 941-1			TND3-1	3a		Modified
942	ASA friction spring 	2		3, 3a	○	
943	Brush rivet 	2	TND8	3, 3a	△	
947	Light entrance diaphragm 	2	TNC15	5a, 5b	○△	

No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31F3B-948	Cds 	2		5a, 5b 13, 13a	○	
Δ 949	Dust baffle 	1	TND3	3	○△	Disused
950	Idle gear 	1	TNC19	5	△	
951	Idle gear axle 	1	TNC19	5	△	
952	Idle gear base plate 	1	TNC19	5	△	
953	Shutter speed scale gear 	1	TNC20	5	△	
954	Gear shaft 	1	TNC20	5	△	
955	Winding shaft 	1	TNC20	5	△	
956	Guide roller 	1	TNC11	5	△	Modified
Δ 956-1			TNC11-1			
957	Roller shaft 	1	TNC11	5	△	Modified
Δ 957-1			TNC11-1			
958	Connecting string 	1	TNC21	5, 5a 5b	△	
959	Barrel drum 	1	TNC22	6	△	
960	Barrel arber 	1	TNC22	6	△	
961	Main spring 	1	TNC22	6	○△	
962	Barrel holder plate 	1	TNC22	6	△	

No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig. No.	Term of Sale	Remarks
31F3B-963	Shutter speed scale plate 	1	TNC21	5, 5a 5b, 6	△	
964	Fresnel mask 	1	TNC23	5a, 5b	△	
965	Down spring stud 	1	TNC1	6	○△	
966	Gear shaft bearing 	1	TNC1	5	○△	
△ 967	CdS retainer (right) 	1		5a	○	Disused
△ 968	CdS retainer (left) 	1		5a	○	Disused
969	Scale mirror 	1	TNC1	5a, 5b 6a, 6b	○△	
970	Shutter speed scale mask 	1	TNC23	5a, 5b	△	
971	Meter 	1	TNC24	5a, 5b 13, 13a	△	
972	Screw 	2	△	3, 3a	○ <del>△</del>	
974	Click spring 	1		3, 3a	○	
973	Meter needle index 	1	TNC24	5a, 5b	△	
△ 975	Ratchet claw spring 	1	<del>TNC3</del>	3	△	Disused
976-1	Washer 	2		2, 2a	○	
977	ND filter 	2		5a, 5b	○	



No. of Part	Name and Shape	Pcs. per Unit	No. of Subassembly	Ref. Fig No	Term of Sale	Remarks
31F3B-978	Shutter speed scale supporter 	1	TNC1	5a, 5b 6a, 6b	△	
△ 979	Washer 	1		2	○	Disused
980	Front cover screw M1.7 - 3.5 	2		2a, 3a	○	
1001	Shutter 	1		4, 4a 10, 10a	○	
△ 478	Rack retainer collar 	1		9c	○	Added
△ 479	Spring 	1	TNC1	6c	△	Added
△ 480	Lever axle 	1	TNC1	6c	△	Added
△ 481	Lever base 	1	TNC1	6c	△	Added
△ 482	Coupling lever pin 	1	C25	6c	△	Added
△ 483	Spring stud 	1	TNC1	6c	△	Added
△ 484	Lever 	1	TNC1	6c	△	Added
△ 485	Rack retainer screw 	1		9c	○	Added
△ 486	Lever base 	1	TNC1-1	6c	○	Added
△ 487	Spool washer 	1		9c	○	Added
△ 488	Spool inner tube 	1		9c	○	Added



	No. of Subassembly	Name	Pcs. per Unit	No. of Constituent Parts (*: Main parts)	Ref. Fig.No.	Remarks
Top cover	31F3B - TN1	Top cover (TN)	1	12, 15x2, 33, 38, 309 310-1, 356, 358, 458 459, 522-1, 525, <del>630</del> *903, T36, T617	2	
	31FB - A2-1	Eyeguard	1	*357-1, 392, G7-1	2	
Body	31FB - B1	Take-up shaft	1	*430, 431	9, 9A	
	31FB - B2	Take-up stroke cam	1	451, *455	9, 10	
	31FB - B3-1	Take-up shaft base metal	1	422, 425-1, 426-1, 427 -1, 428-1, 442, 443 444, *457-1, 465, 476 812	9A	
	31FB - B4	Take-up gear	1	*423, 424, 817	9A	
	31FB - B5	Stopper	1	*418, 419, 420, 421	9A	
	31FB - B6-1	Contact claw releasing cam	1	407, *413-1	9A	
	31FB - B7	Cam contact claw	1	*463, 464, 467	9A	
	31FB - B8	Release shaft	1	461, 462, *469, 820	9	
	31FB - B9	Rack	1	*447, 448, 449, 450	9, 10	
	31FB - B10	Mirror up holding lever	1	*328, 329, 330, 349	9	
	31FB - B11-1	Film counter base metal	1	B13-1, B19, B20, B21 *456-1, 504, 505, 506 507, 510-1, 511, 512-1 515x2, 516, 517, 518 520, 523-1, 524-1, 526 560, 808, 835x3, 838 850	7	
	31F2B - TB12	Meter switch	1	T409x2, T410, *T411 T412, T620, T629	7	
	31TB - B13-1	Film counter scale	1	*501-1, 502, 503	8	
	31F2B - TB14	Battery case	1	T32, *T608, T609, T610 T611, T612, T613, T618 T619, T624, T628	10	
	31FB - B15	Take-up lever	1	*401, 405	7	

No. of Subassembly	Name	Pos. per Unit	No. of Constituent Parts (*: Main parts)	Ref. Fig.No.	Remarks
Body	31FB - B16	Rewind lever	1 *556, 557, 558	7	
	31FB - B17	AR button	1 *440, 441	9, 10	
	31FB - B18-1	Rewind shaft	1 *551-1, 552-1, 553	7	
	31FB - B19	Ratchet advancing A lever	1 508-1, *509-1	8	
	31FB - B20	Ratchet advancing B lever	1 *513-1, 514, 515	8	
	31FB - B21	Ratchet locking pawl	1 *519, 521	8	
	31FB - B22	Cam intermediate plate	1 *414-1, 472, 473	9A	
Front plate	31F3B - TNC1	Front plate (TN)	1 C2-2, C3-1, C4, C5-1 TC6, C7, C8, C9, C10 TNC11, C12, C13, C14-1 TNC19, TNC20, TNC22, 16 19, 34-1x2, 35, 37, 214 -1, 215, 216, 217, 218 223, 303, 306, 307, 308 312, 313-1, 317, 324 331, 332, 333, 336, 338 -1, 340, 341, 342, 343 345, 346, 347, <del>348</del> <sup>△</sup> 370 378, 379, 380x2, 381 382, 388, <del>389</del> <sup>△</sup> 301x3 809, 813x4, 827x2, 828 x2, 835, 841, 847x2 *906, 965, 966, 969 976, <del>977</del> <sup>△</sup> , T350, T353 T355, T366, T809x2 T823, T827x2, G1-1	6, 6A	
	31FB - C2-2	Mirror support	1 *301-2, 302-1x2, 304-1 305-1	6A	
	31FB - C3-1	Mirror angle adjusting lever	1 315, 316-1, 330, *337 339-1	6A	
	31FB - C4	Coupling lever shaft	1 *319, 320, 368	5, 6A	
	31FB - C5-1	Left coupling lever	1 318, *335-1	5, 6A	
	31F2B - TC6	Mirror up button	1 T351, T352, *T354	6	

No. of Subassembly	Name	Pcs. per Unit	No. of Constituent Parts (*: Main parts)	Ref. Fig.No.	Remarks
31FB - C7	Mirror down lever	1	*322, 323, 326	6, 6A	
31FB - C8	Mirror up lever	1	*321, 325	6	
31FB - C9	Aperture connecting lever	1	*369, 371	5	
31FB - C10	Aperture lever	1	*314, 372	5	
31F3B - TNC11	Side signal lever	1	376, *377-1, 383, 956 957	5	
31FB - C12	BC gear	1	229, 230, *233	5	
31FB - C13	D gear	1	*227, 231, 232	5	
31FB - C14-1	Self-timer lever shaft	1	*17-1, 18	5	
31F3B - TNC15	Eyepiece frame (TN) (including CdS)	1	C16, 31, 373x2, 393 947x2, *T359-2, G11x2	5A	
31FB - C16	Eyepiece lens	1	G5, G6	5A	
31F3B - TNC17	Printed circuits plate	1	T616, *T630	5A	
31F3B - TNC18	Ratchet release base plate	1	*912, 913, 914, 921 922, 923, 924x2, 929 932, 935, 936	2	
31F3B - TNC19	Idle gear	1	950, 951, *952	5	
31F3B - TNC20	Gear shaft	1	953, *954, 955	5	
31F3B - TNC21	Shutter speed scale plate	1	958, *963	5, 5A	
31F3B - TNC22	Barrel drum	1	*959, 960, 961, 962	6	
31F3B - TNC23	Fresnel mask	1	*964, 970	5A	
31F3B - TNC24	Meter	1	*971, 973	5A	
31F3B - TND1	Shutter A gear (TN)	1	<del>919, 918</del> , *909, 910 938x3	3	
31F3B - TND2	Max. aperture scale ring	1	*908, 915, 917, 918x2 927x2, 937, T222, T224 T226x3, T234	3	
31F3B - TND3	Diaphragm coupling ring (TN)	1	*907, 916, 926, 928 937, 941, <del>949, 975</del>	3	

Front plate

Mount

	No. of Subassembly	Name	Pcs. per Unit	No. of Constituent Parts (*: Main parts)	Ref. Fig.No	Remarks
Mount	31F3B - TND5	Bayonet base (TN)	1	*905, T225, T621, 208 x3, 807x6, 919, 972x2 T237	3	
	31FB - D7-1	Lens lock pin	1	212, *213-1	6	
	31F3B - TND8	Resistor brush ring	1	*911, 920, 940x2, 943 x2, T221-1	3	
Back plate	31FB - E1	Back plate	1	26, 39x2, *701, 705x4 706, 707, 710, 711x2 713x2, 715	12	
	31FB - E2	Pressure plate	1	*702, 703, 704x2	12	

No. of Subassembly	Name	Pcs. per Unit	No. of Constituent Parts (*: Main parts)	Ref. Fig.No.	Remarks
31F3B - TNA1-1	Top cover (TN)	1	12, 15x2, 33, 38, 309 310-1, 356, 358, 458-1 459-1, 489, 522-1, 525 856, *903, T36, T617	2	
31FB - B9-1	Rack	1	*447, 448-1, 449, 450	9, 10	
31F3B - TNC1-1	Front plate (TN)	1	C2-2, C3-1, C4, C5-1 TC6, C7, C8, C9, C10 TNC11-1, C12, C13, C14 -1, TNC19, TNC20, TNC22 C25, 16, 19, 34-1x2, 35 37, 214-1, 215, 216 217, 218, 223, 303, 306 -2, 307, 308, 312, 313-1 317, 324, 331, 332, 336 338-1, 340, 341, 342 343, 345, 346, 347, 370 378, 379, 380x2, 381 382, 388, 479, 480, 481 483, 484, 486, 801x3 809-1, 813x4, 827x2 828x2, 829-1x2, 835, 841 847x2, *906-2, 965, 966 969, 978, 982, 983, 984 T350, T353, T355, T366 T809x2, T823, T827x2 G1-1	6, 6A	
31F3B - TNC11-1	Side signal lever	1	376, *377-1, 383 956-1, 957-1	5	
31F3B - TNC18-1	Ratchet release base plate	1	*912, 913, 914, 921 922, 923, 924, 929 932, 935, 936, 981	2	
31F3B - TND1-1	Shutter A gear (TN)	1	*909-1, 910, 938x3	3	

No. of Subassembly	Name	Pcs. per Unit	No. of Constituent Parts (*: Main parts)	Ref. Fig.No.	Remarks
31F3B - TND3-1	Diaphragm coupling ring (TN)	1	*907-2, 916, 926, 928 937, 941-1, 939	3	
31F3B - TND5-1	Bayonet base (TN)	1	*905-1, T225, T621 208x3, 807x6, T237	3	
31F3B - TND8-1	Resistor brush ring	1	*911, 920-1, 940x2 943x2, T221-1	3	
31FB - E1-1	Back plate	1	26, 39x2, *701-1 705x4, 706, 707-1 710, 711-1x2, 713x2 715	12	
31F3B - C25	Coupling lever	1	*333-1, 482	6A	



Nikkormat FT<sub>N</sub> Exposure Meter

## § 1. STANDARDS OF MAIN PARTS

## A) Resistance Characteristics of CdS Photo. Conductor #948

## A - 1 Illumination - Resistance characteristics

	2 cd/m <sup>2</sup>	64 cd/m <sup>2</sup>	4096 cd/m <sup>2</sup>
Resistance	75.0 - 54.5K $\Omega$	7.25 - 5.25K $\Omega$	0.570 - 0.435K $\Omega$

## B) Variable Resistor T224

EV	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Upper Limit	K $\Omega$	K $\Omega$	K $\Omega$	K $\Omega$	K $\Omega$	$\Omega$	$\Omega$	$\Omega$	$\Omega$	$\Omega$	$\Omega$	$\Omega$	$\Omega$	$\Omega$	$\Omega$
Lower Limit	$\infty$	13	5.0	2.55	1.25	740	445	275	170	108	71	47	32.5	22.5	16.2
Upper Limit					$\Omega$										
Lower Limit	20	64	28	148	865	525	515	200	124	80	53.5	36	24.5	17.5	13

## C) Meter #971

Current when the needle comes to the center	12.3 $\pm$ 1 $\mu$ A
Swing angle	10 $\pm$ 1°
Internal resistance	about 3 K $\Omega$
Torque	0.2m $\tau$ - cm/deg. or higher

## D) Fixed Resistor

R <sub>1</sub>	T616	40, 50, 60, 70, 100 $\Omega$
R <sub>2</sub>	T626	250, 400, 750K $\Omega$
R <sub>g</sub>	T623	1, 2, 3, 3.5, 4, 4.5, 5 K $\Omega$

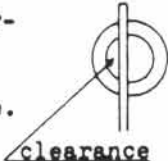
## §2. TROUBLE CHART

Trouble	Cause	Checking	Remedy
Pointer needle does not move.	1. Batteries are not correctly deposited.	Open the battery chamber for checking	Make correction.
	2. Drain on the batteries.	Check for correct voltage of batteries.	Replace the batteries.
	3. Disconnection. (Not correctly soldered)	Check the circuit using the tester.	<ul style="list-style-type: none"> <li>● Make connection.</li> <li>● Replace the disconnected part.</li> </ul>
	4. Contact on the batteries or switch is not good.	Check for correct functioning of #T608 and #T610. Check for sufficient conductivity of switch, using the tester.	<ul style="list-style-type: none"> <li>● Clean the contact.</li> <li>● Replace the part.</li> <li>● Correct the bending of the contact or replace it.</li> </ul>
	5. Short-circuit	Check the circuit, using the tester.	<ul style="list-style-type: none"> <li>● Replace or insulate the short-circuited part.</li> </ul>
	6. Moving part of meter is seized.	Meter needle does not move even when blown, or it stops at an indefinite position.	<ul style="list-style-type: none"> <li>● Remove dust.</li> <li>● Replace the meter.</li> </ul>

Trouble	Cause	Checking	Remedy
	7. Moving part of meter is seized, when the meter is fitted to the camera.	The needle does not move, although it moves correctly in the meter before assembly.	Clean or replace the mirror housing window, condenser, pentaprism or meter
Unsteadiness of pointer needle indication.	1. Disconnection (not always)	Check the circuit, using the tester.	<ul style="list-style-type: none"> <li>• Make connection.</li> <li>• Replace the disconnected part.</li> </ul>
	2. Incorrect contact of variable resistor. (not always)	Check for correct pressure of contact brush.  The variable resistor is worn out.	<ul style="list-style-type: none"> <li>• Adjust the contact brush.</li> <li>• Replace the part.</li> </ul>
	of switch	Check for sufficient conductivity.	Correct the bending of the contact or replace it.
	of battery chamber	Check for correct functioning of #T608 and #T610.	Cleaning, correct bending or replacement.

H 0000 5 31 F 3 B 3 K K

Trouble	Cause	Checking	Remedy
	3. Short-circuit.	Check the circuit, using the tester.	Insulate or replace the short-circuited part.
	4. Moving part of meter is seized.		<ul style="list-style-type: none"> <li>● Remove dust.</li> <li>● Replace the meter.</li> </ul>
	5. Inadequate friction of meter needle.	The position of needle when set at EV9 differs too much from that obtained after the meter is once faced toward a brightness of EW15 and then returned to EV9.	Replace the meter.
	6. Excessive slack of shutter dial.	Remarkable movement of needle within the range of the slack.	Adjust #227.
	7. Unbalance of meter needle.	Indication changes over 0.3mm at the end of needle, according to the posture of the meter.	Replace the meter.

Trouble	Cause	Checking	Remedy
Too much difference between the indications by internal and external pointer needles.		With the internal needle coincided with the index, see if the external one come to touch the index circle with no clearance on one side. 	Replace the meter.
Incorrect zero-position of pointer needle.		Even when switched off, the needle does not go out of the frame.	Replace the meter.
Even with the cap put on, the needle moves.		Set the needle to EV-3, put on the cap and switch on. The needle swings close up to the index.	Replace R . Choose a resistance high enough to get the needles within $\pm 1/2$ step.
Pointer needle is swung out.	1.The needle is adhered.	The needle moves normally when subjected to vibration.	Replace the meter.
	2.Insufficient conductivity of the shunt circuit.	Check for correct contact of #T222.	Replace the part.

Trouble	Cause	Checking	Remedy
	3. Short-circuit on the printed wiring plate.	Check short-circuit on the lead wire, resistor and soldering points.	Insulate the short-circuited part.
Inaccuracy of indication.	1. Drain of batteries.	Insufficient swing of needle on the whole range. Check the voltage.	Replace the batteries.
	2. Aging or the like of CdS, variable resistor, or fixed resistor.	Although the movement needle is normal, high accuracy is not obtained. Check every part individually.	Replace the part below standards.
Loosening of ASA ring lock.	#T203 or #T209 wears down.	ASA ring moves unintentionally.	Replace the part.
Incorrect click of ASA ring.	Notch on #T203 is worn out. #T236 is broken.	Stop-down measuring click does not operate securely or at all.	Replace the part.

## § 3. DISASSEMBLING PROCEDURES OF THE EXPOSURE METER

- 1) Release #402, using a piece of rubber sheet to remove #40<sup>2</sup>, #404 and #401. (Use the screw driver J11020)

Thereafter, remove #555 and #559 as well as #554 and #930.

(Use the screw driver J11022)

Taking care of the synchro cord, push up the top plate of the camera gently and unsolder the parts.

- 2) Meter

Draw out #551-1. (Use the screw driver J11021)

Unscrew #T813 (meter setting screws)

Put it out carefully, taking care of the meter pointer needle and of the index.

- 3) Switch

Remove #T816.

- 4) Printed wiring plate.

Remove #T846.

- 5) Variable resistor

Unscrew four screws #811.

Holding #910 (shutter ring), remove #213 and #214, to detach the whole bayonet part. Then, remove #910, #907-1 and #908 from the bayonet in this order.

Note 1. When detaching the bayonet part from the front plate, take caution not to disconnect #T621 (green colored cord).

Note 2. For removing #908, draw it out after bringing #T222 (brush) up to the position of the notch on the #905.

- 6) CdS cells

Unsolder the printed wiring plate.

To remove the CdS cells, take them out by the flange of the sealed case, using the end of a screw driver.

## § 4. MEASUREMENT OF EACH PART OF METER

## 1) CdS cells

Disconnect all the wirings except for the CdS cells from the printed wiring plate. Take measurement of the parallel-connected resistance of the CdS cells. If the measuring result is not within the Standard §1.A - 1, replace one or two of the cells.

For measurement, use the standard lens 50mm/1.4 (J18011).

Note: The above measurement should not be affected by the brightness of the surroundings.

## 2) Variable resistor

Connect the ends of #T619 and #T621 to the tester to measure the resistance.

Replace the resistor which is remarkably out of the standard.

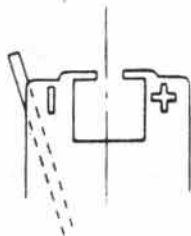
For the measurement, the slack of the shutter gear is to be adjusted to a minimum or to be brought to either side.

Use the standard lens 50mm/1.4 (J18011) for the measurement.

## 3) Meter

## 3) - 1 Position of the zero point

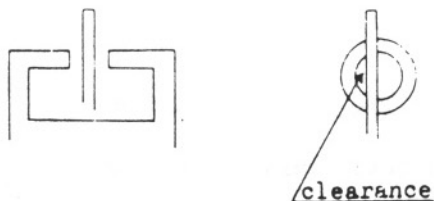
The pointer needle should move beyond the negative (-) mark of the bracket.





## 3) - 2 Displacement of the pointer needle

When the pointer needle in the finder is brought to the center, the top needle should have clearance on either side in the index ring (See Fig.).



## 4) Fixed resistor

Measure the resistance of each fixed resistor, using the tester.

## § 5. ASSEMBLING OF THE EXPOSURE METER

## 1) Variable resistor

Reverse the disassembling procedures mentioned in § 3 - 5), that is, fit #T203, #T204 and #T205 to #T201. Then, pass the green cord (#T621) through the hole in the front plate. Putting #213 into #214, gear up #009-1 with #229.

Note: Adjust the slack on the shutter dial by means of #227.

At the same time, assure the short-circuit between the positions EV-2 and EV-3, with a clearance made at either end of the resistor against both the stoppers at B and 1/1000 sec.

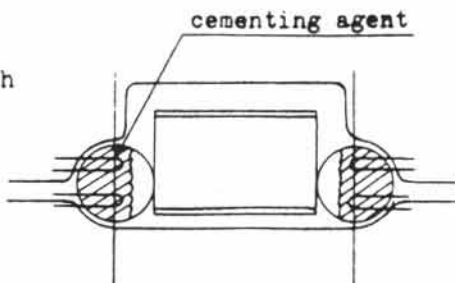
## 2) Meter

Set the mirror box in place, taking care of the pointer needle and the index.

Note: Viewing into the finder, fasten #T815 tightly, so that the index frame becomes parallel to the viewfield frame.

## 3) CdS cells

Put the CdS cells into #T359-1, with the side not coated with cementing agent faced inside, and at the same time attach the two lead wires vertical at their base, with lacquer.



## 4) Printed wiring plate

Do not fasten #T846 too firmly.

## § 6. ADJUSTMENT OF THE EXPOSURE METER

In principle, the exposure meter is to be adjusted by means of the fixed resistors  $R_1$  (T616),  $R_2$  (T626) and  $R_G$  (T623), and not by means of adjustment of the filter on the C1S or that of the sensitivity of the meter. However, if need arises, the filter #132 for the Photomic-T can be used.

Replacement and readjustment are also carried out in the following way:

First, make temporary wiring.

It will be convenient to begin with

$R_1 = 50\Omega$ ,  $R_2 = \text{---} K\Omega$  and  $R_G = 3k\Omega$ , although any of  $R_1$  and of  $R_2$  within the range (see p. ) can be taken.

- 1) Facing the meter toward the brightness of EV9, adjust the  $R_G$  until the pointer needle comes to the center.
- 2) Facing the meter toward the brightness EV15, observe the accuracy. If the indication remains within  $\pm 1/2$  step (in terms of the aperture of the lens), leave it. If the needle swings too much, increase  $R_1$ . If the swing is not sufficient, decrease  $R_1$ . However, it is desirable that  $R_1$  be as large as possible within the range of  $1/2$  step.
- 3) Facing the meter toward the brightness EV4, observe the accuracy. If the indication is within  $\pm 1/2$  step, leave it. Too large swing needs the increase of  $R_1$  and conversely, too little swing requires the reduction of  $R_1$ . It is desirable that the swing be as large as possible within the range of  $\pm 1/2$  step.

Note: In adjustment, take care to prevent the brightness of the surroundings from affecting the C1S.