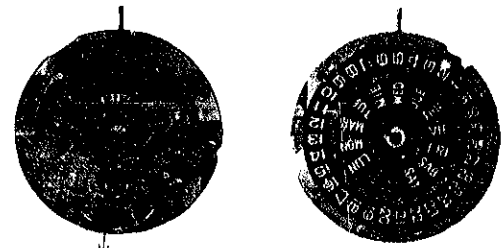


6106A (Automatic Chronograph)



Cal. 6138A

Characteristics

Casing diameter: 27.00 mm
 Maximum height: 8.00 mm
 Vibrations per hour: 21,600
 Automatic and auxiliary hand winding with sweep second
 Chronograph (12 hours recorder & 30 minutes recorder)
 Calendar (day & date)
 Instant setting device for day & date calendar
 Bilingual change-over system for day of week
 "Diashock" Shock Resistant Device

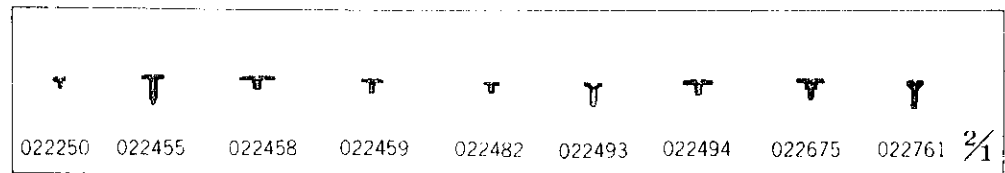
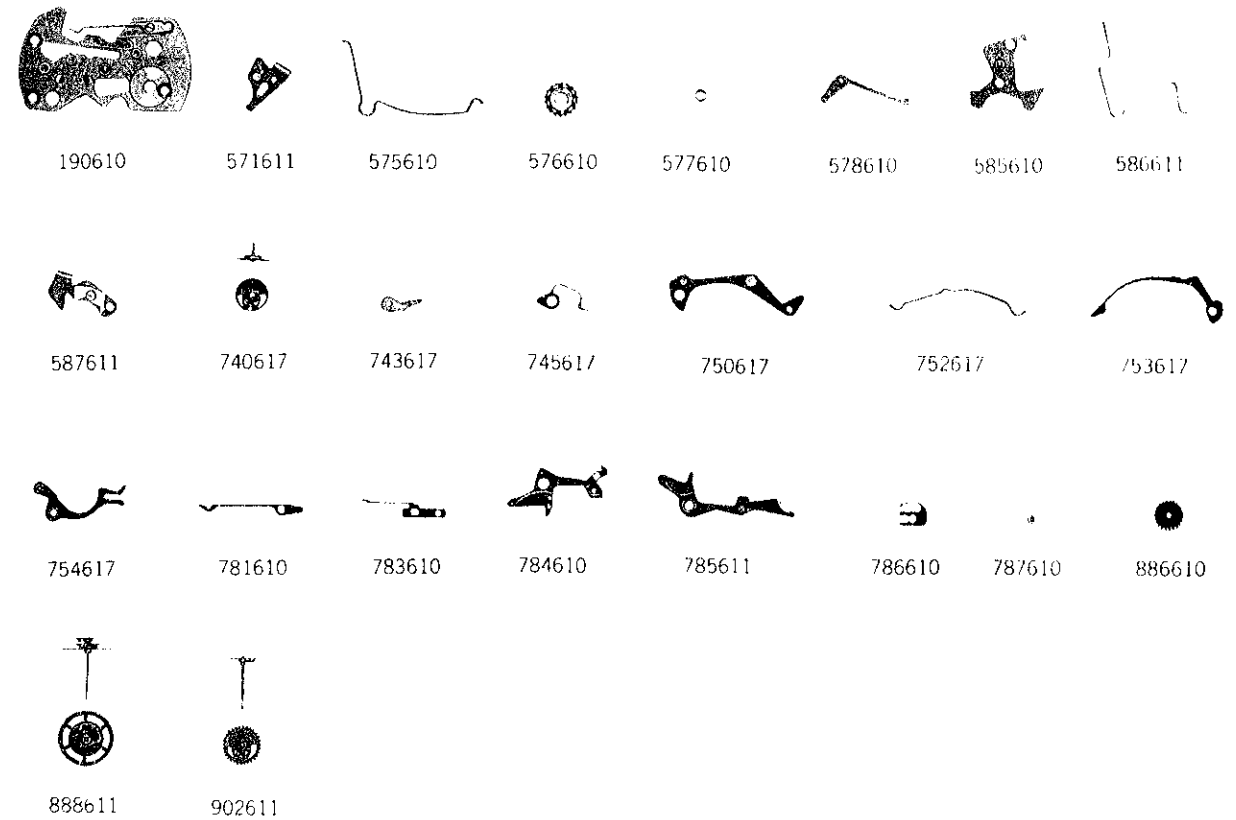
Catalog No.

61-38-1



6106A (Automatic Chronograph)

continued



☆ ☆ Please see remarks on the next reverse page.

As for all other parts not shown here, please refer to the basic calibre

(Cal. No. 6106A 25J Catalog No. 61-06-1 Green page).

Calibre No. 6138A		Jewels 21j	Style Name (Automatic Chronograph)	
↔ Basic Calibre 6106A 25J Catalog No. 61-06-1				
PART NO.	LIST OF MATERIALS	PART NO.	LIST OF MATERIALS	
112526	Barrel & train-wheel bridge (with crown wheel, second intermediate ratchet wheel, operating lever, pillar wheel jumper and fly-back lever)	☆ 870931	Day star with dial disk (English ↔ Spanish)	
122629	Center wheel bridge	873610	Day jumper	
161805	Pallet cock	☆ 884632	Holding ring for dial	
171523	Balance cock	963610	Snap for day star with dial disk	
190610	Chronograph bridge (with intermediate minute recording wheel and hammer click)	986617	Day-date corrector wheel rocking lever	
193555	Framework for automatic device with ball-bearing	989617	Intermediate wheel for day correction	
195610	Calendar plate	571611	Operating lever	
205555	Complete barrel with arbor (with intermediate hour recording wheel, intermediate hour recording wheel ring, and friction spring for intermediate hour recording wheel)	575610	Operating lever spring	
		576610	Pillar wheel	
		577610	Pillar wheel ring	
213616	Barrel arbor	578610	Pillar wheel jumper	
224612	Center wheel & pinion with cannon pinion	585610	Hammer	
		586611	Hammer spring	
225617	Cannon pinion	587611	Fly-back lever	
231618	Third wheel & pinion	740617	Hour recording wheel	
251612	Escape wheel & pinion	743617	Hour recording wheel stop lever	
261617	Minute wheel	745617	Spring for hour recording wheel stop lever	
268617	Second intermediate ratchet wheel	750617	Hour hammer	
271617	Hour wheel	752617	Hour hammer spring	
282615	Clutch wheel	753617	Hour fly-back lever	
283617	Winding pinion	754617	Intermediate hour recording wheel stop lever	
284617	Crown wheel		Hammer click	
285614	Ratchet wheel	781610	Hammer click	
287617	Intermediate ratchet wheel	783610	Minute recording jumper	
301611	Jewelled pallet fork & staff	784610	First coupling lever	
310611	P-plate complete with stud	785611	Second coupling lever	
315611	Balance staff	786610	Chronograph finger	
331610	Roller with jewel	787610	Rest of chronograph finger	
341612	Regulator	886610	Intermediate minute recording wheel	
345612	Stud holder	888611	Center chronograph wheel	
354616	Winding stem	902611	Minute recording wheel	
381611	Click	022150	Stud screw	
383617	Setting lever with axle	022250	Screw for minute recording jumper	
384615	Yoke (Clutch lever)	022351	Center wheel bridge screw	
385615	Yoke spring (Clutch lever spring)	022455	Calendar plate screw	
388618	Setting lever spring	022458	Screw for oscillating weight	
401616	Mainspring with slipping attachment	022459	Framework screw for automatic device with ball-bearing	
481617	Crown wheel ring	022467	Ratchet wheel screw	
014363	Diashock upper frame	022468	Pallet cock screw	
014364	Diashock lower frame	022471	Click screw	
014365	Diashock hole jewel with frame	022482	Screw for intermediate wheel of day correction	
011210	Diashock cap jewel		Bridge screw	
014317	Diashock spring	022493	Chronograph bridge screw	
500521	Oscillating weight	022493	Chronograph bridge screw	
505613	Transmission wheel	022494	Pillar wheel screw	
823619	Eccentric post	022494	First coupling lever screw	
831611	Pawl lever with jewel	022662	Setting lever spring screw	
838611	Pawl lever seat	022662	Setting wheel lever guard screw	
556611	Date finger	022675	Holding screw for coupling levers	
749617	Setting wheel lever guard	022677	Date driving wheel screw	
☆ 301618	Date dial	022760	Date dial guard screw	
802611	Date driving wheel	022760	Setting wheel lever plate screw	
803617	Setting wheel lever complete	022760	Day jumper screw	
808614	Date dial guard	022761	Dial screw	
810611	Date jumper			
814617	Setting wheel lever plate			
817610	Intermediate date wheel			
868611	Day finger			

☆ ↔ Please see remarks on the reverse page.
 Items in light letters are not shown in photos; those parts are interchangeable with the basic calibre
 (Cal. No. 6106A 25J Catalog No. 61-06-1 Green page).

Calibre No. 6138A		Jewels 21j	Style Name (Automatic Chronograph)	
↔ Basic Calibre 6106A 25J Catalog No. 61-06-1				
PART NO.	LIST OF MATERIALS	PART NO.	LIST OF MATERIALS	
	—continued—			
011145	Lower hole jewel for barrel	023100	Tube for bridge screw (short)	
011167	Upper hole jewel for center wheel	023101	Tube for bridge screw (long)	
011145	Lower hole jewel for center wheel	023150	Tube for pallet cock	
011306	Upper hole jewel for 3rd wheel	023150	Tube for balance cock screw	
011405	Lower hole jewel for 3rd wheel	023181	Tube for screw of intermediate wheel of day correction	
011406	Upper hole jewel for escape wheel			
011406	Lower hole jewel for escape wheel	023189	Tube for framework screw of automatic device	
011503	Upper hole jewel for pallet			
011503	Lower hole jewel for pallet	023443	Fly-back lever pin	
011147	Upper hole jewel for transmission wheel	023444	Hammer click pin	
011147	Lower hole jewel for transmission wheel	023446	Intermediate minute recording wheel pin	
011424	Upper hole jewel for center chronograph wheel	023865	Second intermediate ratchet wheel pin	
011544	Lower hole jewel for minute recording wheel	023868	Operating lever pin	
		023990	Pillar wheel jumper pin	
Remarks :				
Date dial				
☆801618(White figures on black background).....Used when both the crown and the date frame are located at 3 o'clock.				
If the date dial is required in any other type, specify ① Cal. No. ② the crown position ③ the date frame position and ④ the dial No.				
Day star with dial disk				
☆870931(English ↔ Spanish).....Used when both the crown and the day frame are located at 3 o'clock.				
When ordering any other type of the day star with dial disks, clearly mention the number printed on the disk. If the number is unknown, specify ① Cal. No. ② the crown position ③ the day frame position ④ the dial No. and ⑤ the national language.				
Holding ring for dial ———— Measure the total thickness and the outside diameter. ————				
☆884632.....1.36 mm total thickness and 31.1 ^φ mm outside diameter.				
If the holding ring for dial is required in any other type, specify ① Cal. No. and ② the dial No.				
—continued on reverse page—				

6138A Automatic Chronograph

1) Specifications

Casing diameter 27.00mm
 Height 7.90mm
 Vibrations per hour 21,600
 Automatic winding (with auxiliary hand winding)

Calendar (Day & date, Bilingual change-over mechanism for day indication, Rotary type instant day & date setting device)

Chronograph (Second, hour hand - 12 hour totalizer; minute hand - 30 minute totalizer, accumulated)

2) Features

- An-advanced automatic winding chronograph
- Easy-to-use, regular chronograph mechanism
- SEIKO's special clutch mechanism without starting/stopping errors
- Simplified structure and automatic winding by the stabilized pawl lever system
- Day and date instant setting device operated simply by revolving the crown
- Bilingual change-over mechanism for day indication selectable by preference
- Auxiliary hand winding device instantly usable for measuring time
- External devices with many functions

3) Disassembly and assembly

Disassemble the watch according to Figs. ① → ⑪

Assemble by reversing the above: Figs. ⑪ → ①

Installation of the automatic winding mechanism varies as compared with conventional watches.

The automatic winding mechanism should be installed after setting the movement with hands in the case for adjusting chronograph mechanism and setting hands works.

4) Lubrication

Colored symbols in the illustrated figures indicate the types of oil, its quantities to be applied, and lubricating points.

Types of oil:

- ▶ Moebius Synt-A-Lube
- ▶ Seiko watch oil S-4

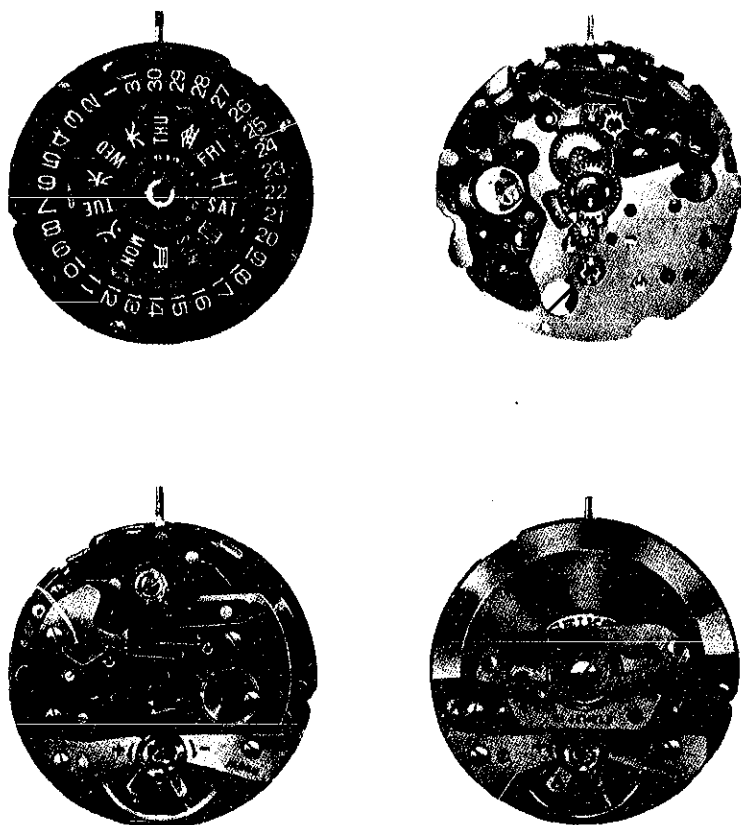
Oil quantity

- Extremely small quantity
- ◐ Normal quantity
- ◑ Sufficient quantity
- ⊗ Oil must not be applied.

Note: Unindicated portions do not require lubrication.

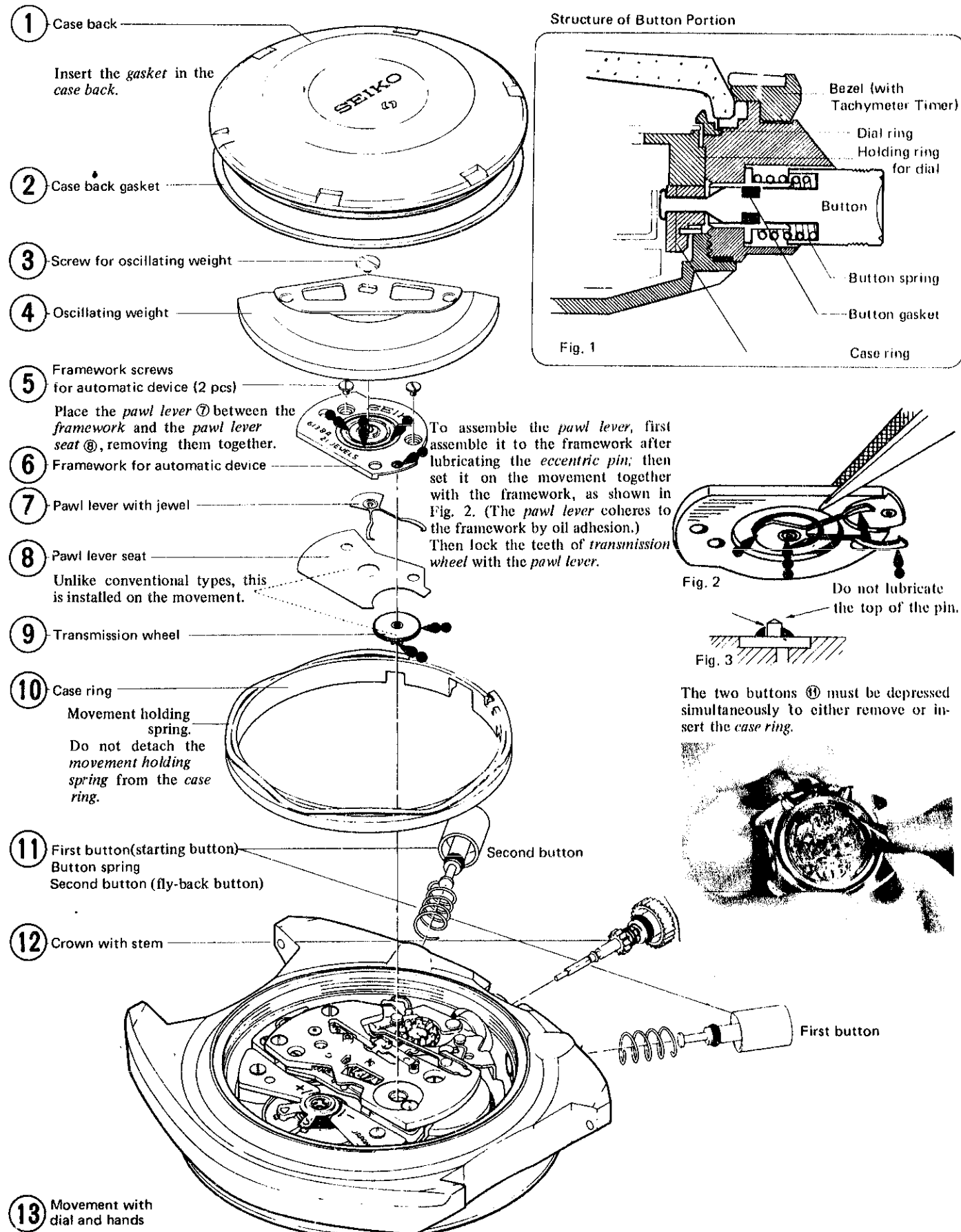
5) Checking and adjusting

Refer to 6139A Technical Guide for checking and adjusting items of second and minute chronograph mechanism.



Movement

6138A Automatic Winding Mechanism



6138A Calendar Mechanism

(Installing the second hand and chronograph minute and hour hands)

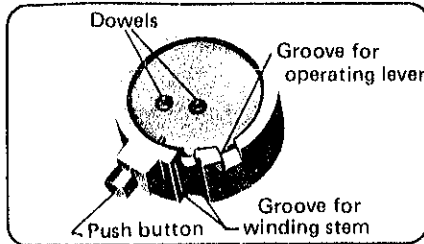
1. At the fly-back position, tentatively set the hands on the "0" position.
2. Then repeat fly-back operation to ensure the "0" position. If the hands fail to resume correct position, adjust the hands while depressing the fly-back button.

However, since the fly-back lever of the chronograph hour hand has a springing characteristic, it prevents the hand from rotating while the hammer button is depressed. Consequently, reinstall the chronograph hour hand so that it coincides with "0" position.

3. Completely push in the hands at the point where they correctly indicate the "0" position.

NOTE:
The second hand axle is cut as shown in the diagram. If the second hand is turned by force after completely depressing it to the bottom, the hand will loosen.

SEIKO provides a handy Movement Holder S-500 to facilitate hand-setting.



NOTE: However, since this movement holder is originally for 6139A, the movement is slightly raised when using this holder for 6138A. If the dowels on the holder are scraped off, it is impossible to use for 6139A.

28 Date dial guard screw

29 Date dial guard

When disassembling and assembling the date dial guard, perform carefully to avoid breaking the chronograph hour hand pin.

30 Date dial

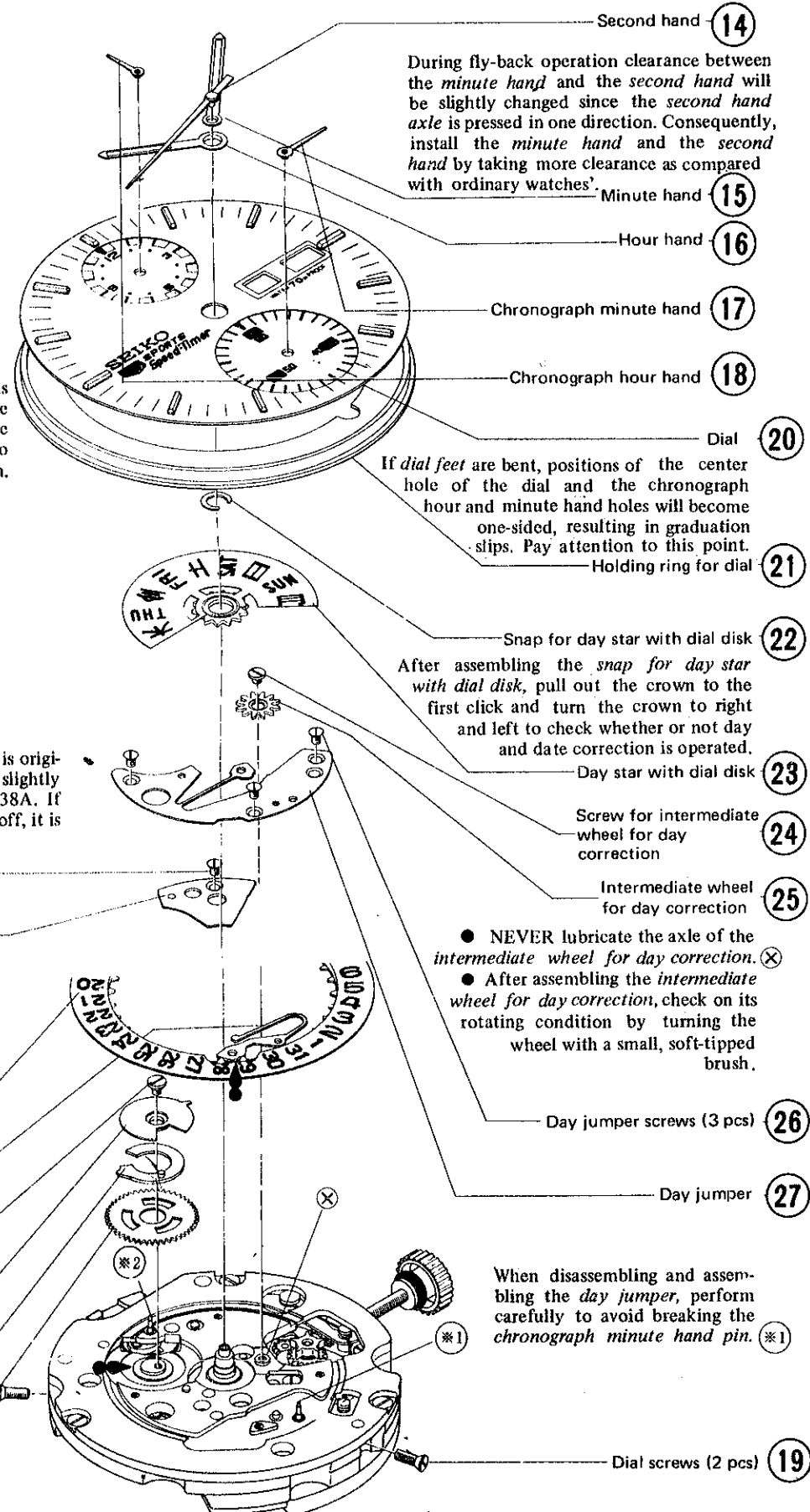
31 Date jumper

32 Date driving wheel screw

33 Day finger

34 Date finger

35 Date driving wheel



6138A Chronograph Mechanism

Explanations on this page are for the nucleus of 6138A. Sufficiently check and adjust the assembled movement.

1. Items to be checked before assembling the jewelled pallet fork and staff, after setting the chronograph bridge.

- 1) Confirm that free running force is transmitted unaffectedly. Even though no roll back motion exists, as long as it functions smoothly there is no problem. And at the same time check the performance of starting and stopping actions of the hour recording wheel by turning over the movement.
- 2) Check for meshing condition of the first and second coupling levers (Refer to 6139A-8).
- 3) Check clearance between the second coupling lever and the intermediate hour recording wheel stop lever pin and their actions.

When stopping, clearance must exist between the second coupling lever and the intermediate hour recording wheel stop lever pin; when starting, the second coupling lever must push and move the intermediate hour recording wheel stop lever pin.

- Stop Start
- Second coupling lever
Intermediate hour recording wheel stop lever

Fig. 4

Should they malfunction, adjust them by turning the second coupling lever axle eccentric pin. In this case, perform this adjustment while observing the delicate clearance between the second coupling lever and the clutch lever.

2. Items to be checked after assembling the balance

- 1) Check for strength and height of the minute recording jumper (Refer to 6139A-8).
- 2) Check for meshing position of the chronograph finger (Refer to 6139A-9).
- 3) Check for contacting condition of the hammer and hearts (Refer to 6139A-10).

36 Balance cock screws (2 pcs)

37 Balance cock

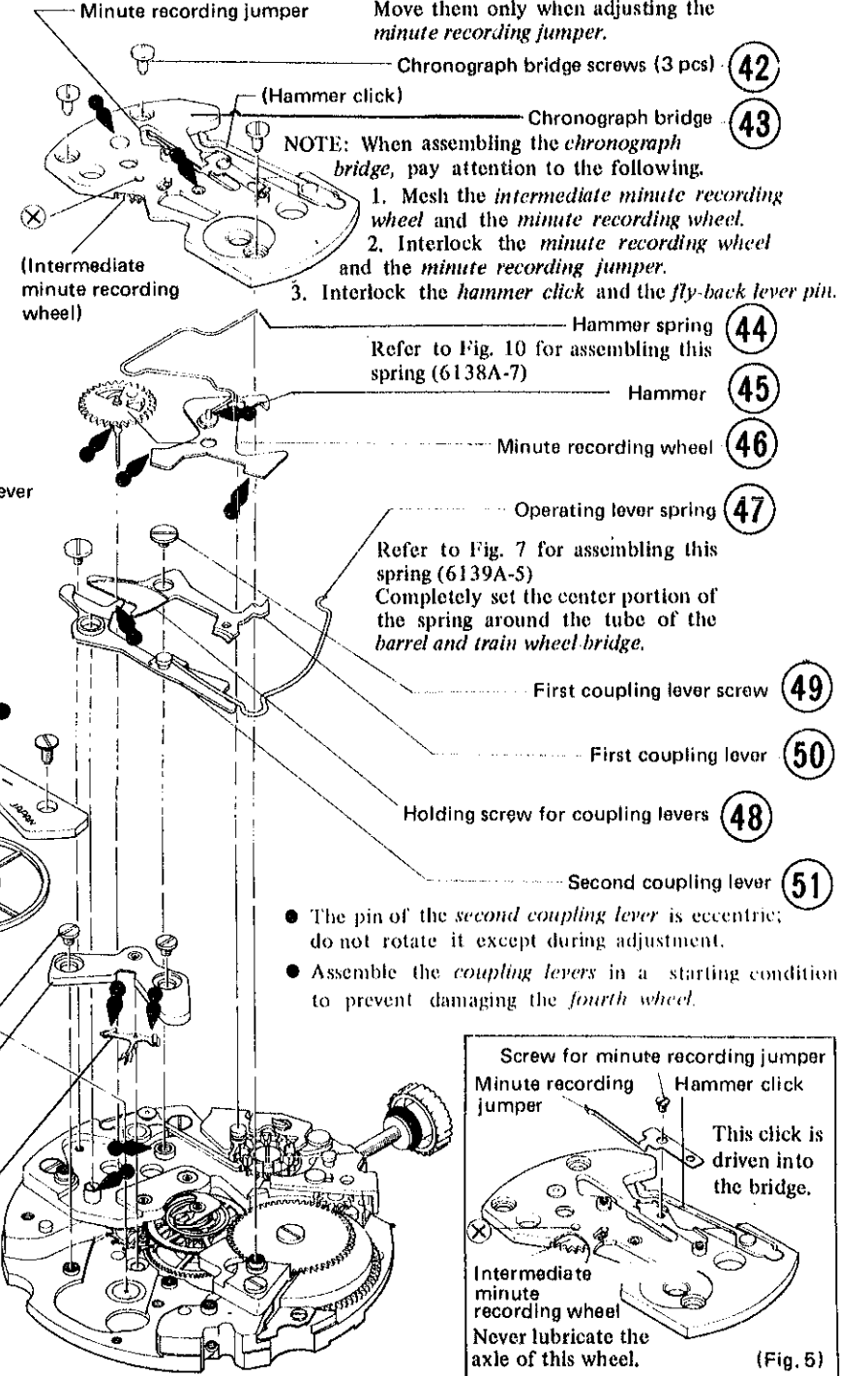
38 Balance complete with stud

39 Pallet cock screws (2 pcs)

40 Pallet cock

41 Jewelled pallet fork and staff

It is not necessary to remove the minute recording jumper and screws. Move them only when adjusting the minute recording jumper.

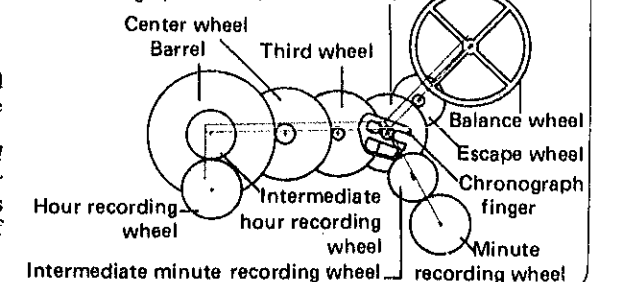


Train wheel (process of force transmission)

Transmission of force when chronograph mechanism is started.
Transmission of force when chronograph mechanism is stopped.

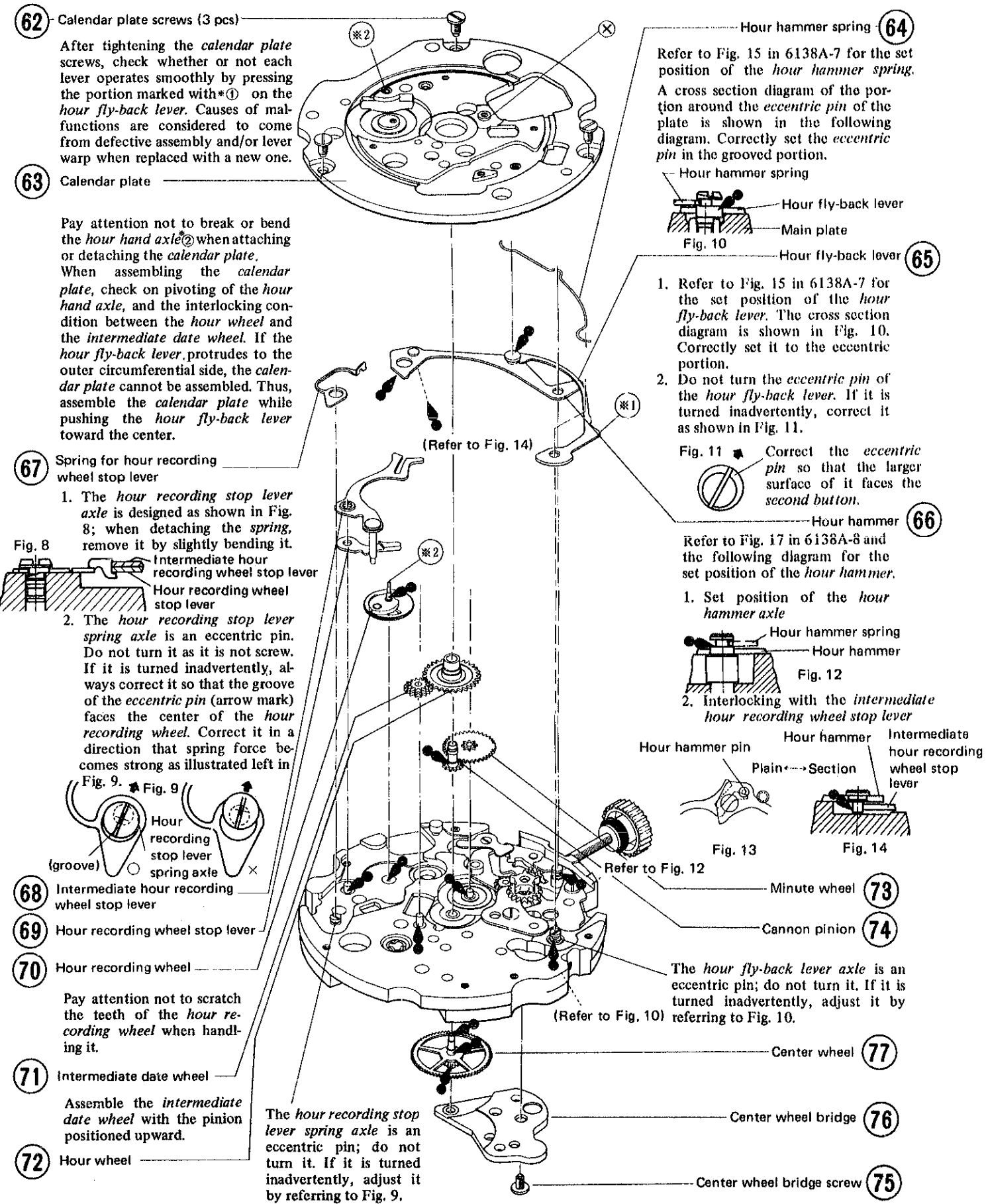
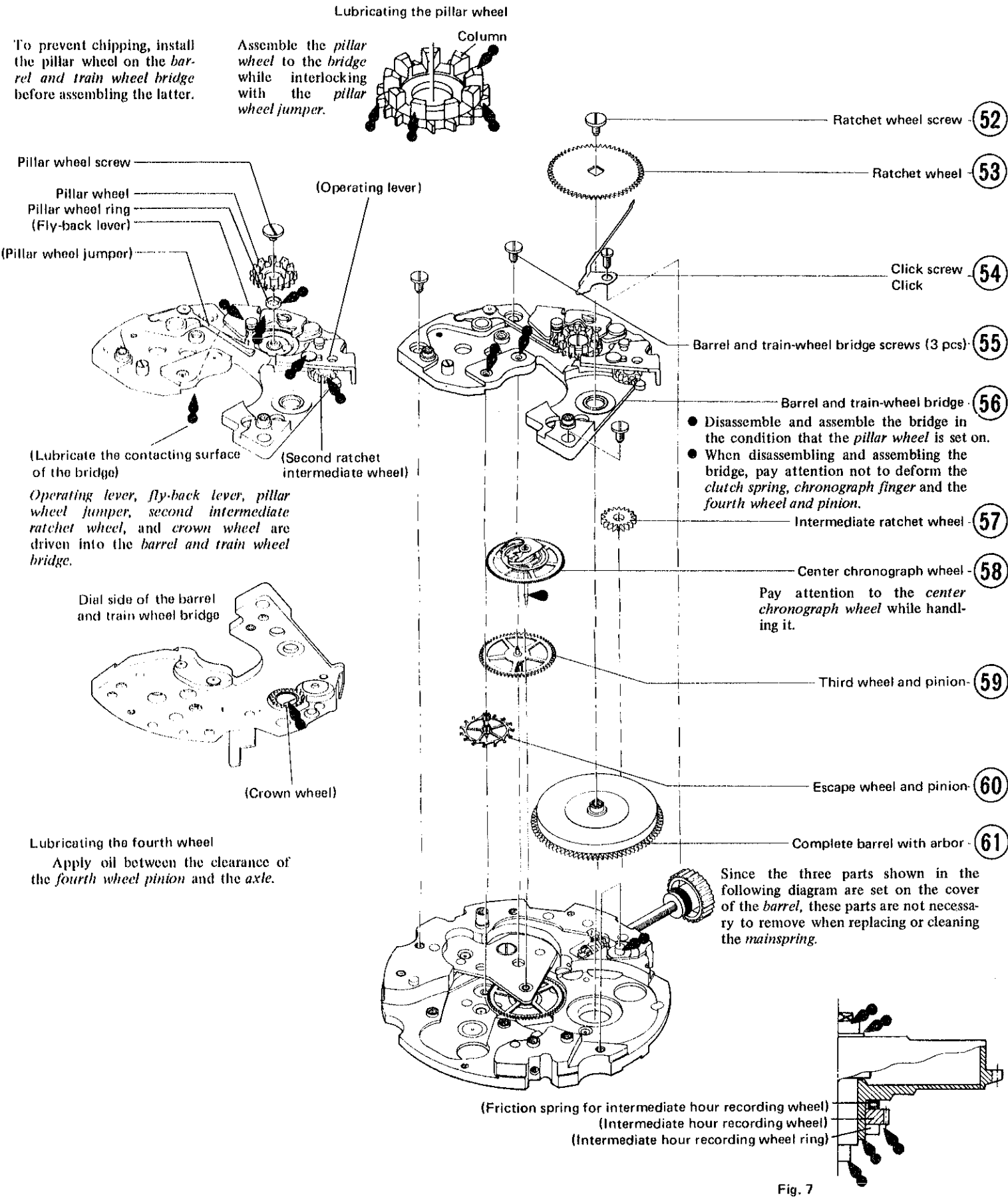
When the minute and second chronographs are started, the force is transmitted to both chronograph and train wheel by the action of the clutch, and when the chronographs are stopped, the force is transmitted only to the train wheel. When the hour chronograph is started, the force is transmitted from the barrel → friction spring for intermediate hour recording wheel → intermediate hour recording wheel → hour recording wheel. When the hour chronograph is stopped, force transmission to the hour recording wheel is stopped by a slip of the friction spring for intermediate hour recording wheel.

Center chronograph wheel (Fourth wheel)

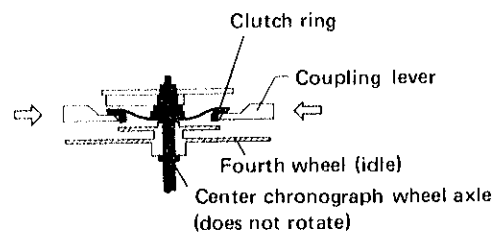


6138A Train Wheel

6138A Hour Chronograph Mechanism



Stopping of chronograph minute and second hands

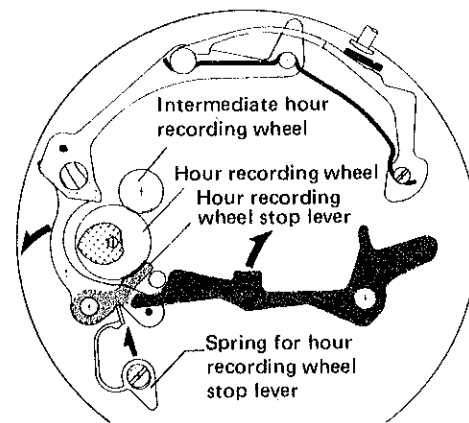


Stopping

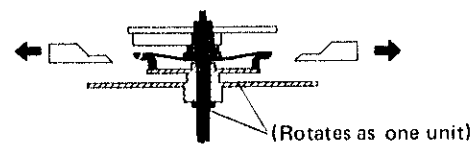
The *minute and second recording wheels* are stopped when the *clutch ring* is raised through action of the *coupling levers*. The *hour recording wheel* comes to a halt by a slip of the *hour recording friction spring* of the barrel. The slip comes from the fact that the *hour recording wheel stop lever* brakes the *hour recording wheel* by the *spring for hour recording wheel stop lever*.

Fig. 15

Stopping of chronograph hour hand



Starting of chronograph minute and second hands

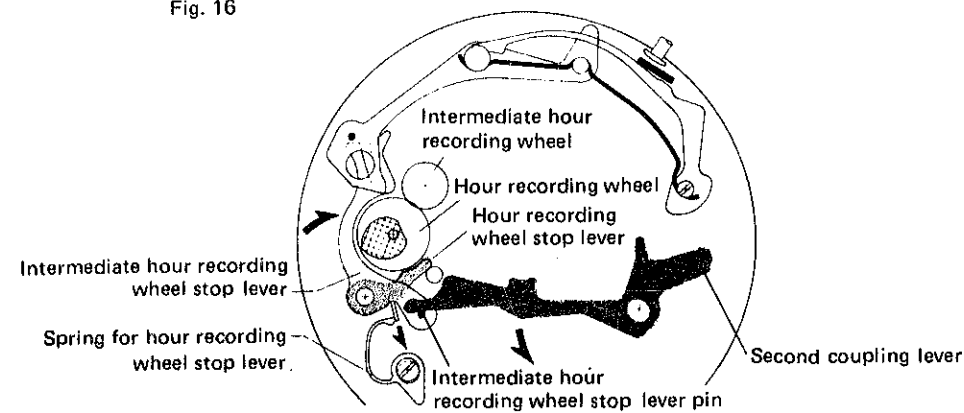


Starting

The *minute and second recording wheels* are started when the *coupling levers* are separated from the *clutch ring*. Simultaneously, the *second coupling lever* pushes the *intermediate hour recording wheel stop lever pin*, revolving the *intermediate hour recording wheel stop lever* in the → direction. And then, the force of the *spring for hour recording wheel stop lever* is not transmitted to the *hour recording wheel stop lever* to release the brake of the *hour recording wheel* and let it start.

Fig. 16

Starting of chronograph hour hand



Resetting

1. Resetting of the chronograph minute hand and second hand

When pressing the *second button*, the force is transmitted to *fly-back lever* → *intermediate fly-back lever* → *hammer*, and the *hammer* strikes the *minute heart* and the *second heart* to reset the hands to "0" position.

2. Resetting of the chronograph hour hand

Simultaneously with the above, the *fly-back lever* presses the *hour fly-back lever* and the force is transmitted to the *hour hammer* to reset the *chronograph hour hand* to "0" position. At this moment, the *intermediate hour recording wheel stop lever* revolves in the → direction by action of the *hour hammer pin*, and the *hour recording wheel* is released. When the *second button* is released, the *chronograph hour hand* returns to a stopped condition.

Resetting of chronograph minute hand and second hand

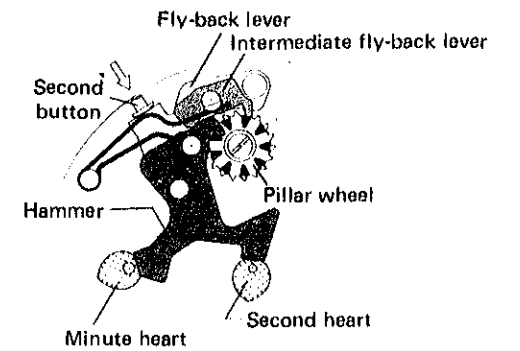
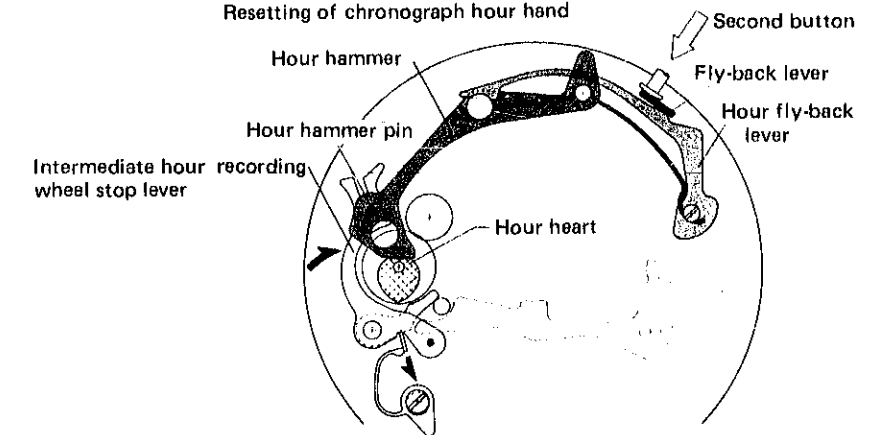


Fig. 17

Resetting of chronograph hour hand



Fly-back safety mechanism

This mechanism protects the movement from the shock generated by the *second button*. End portions of the *hammer* and the *intermediate fly-back lever* are located outside the column during starting condition. When the *second button* is depressed, the end portion of the *intermediate fly-back lever* slips among the columns of the *pillar wheel* (as shown in Fig. 18), and the force is not transmitted beyond the *hammer*. On the other hand, the *hour hammer* does not move because the pin located on its tip strikes the *intermediate hour recording wheel stop lever*. At this moment, momentum of the *second button* is absorbed by a springing characteristic of the *hour fly-back lever*. Safety action is exhibited by integration of the above-mentioned operations.

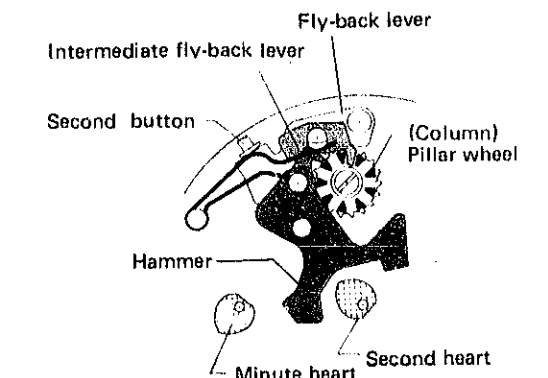
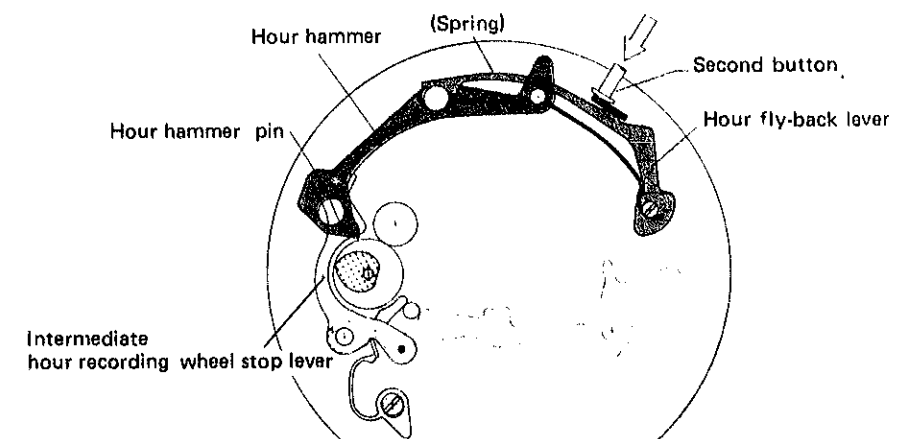
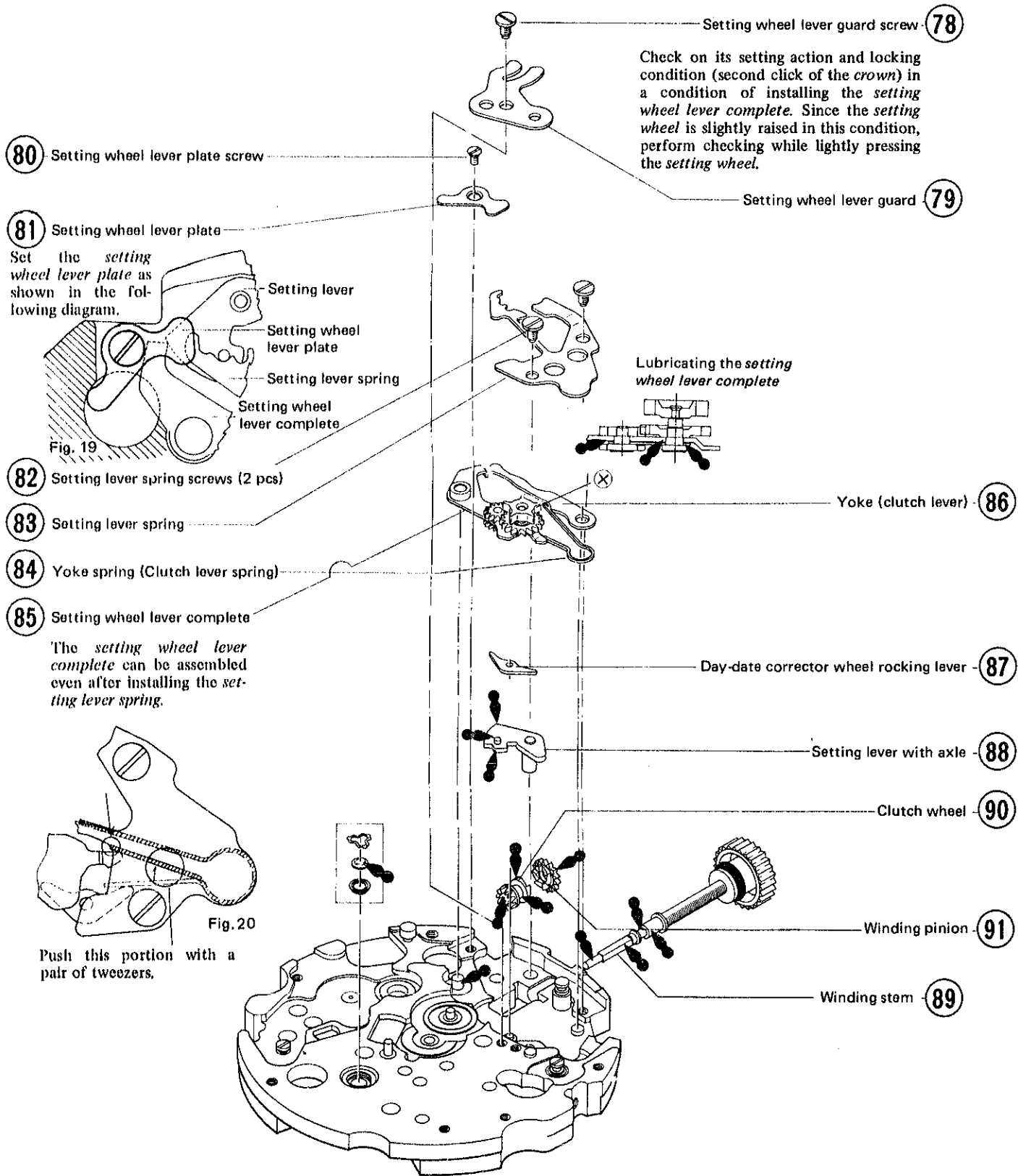


Fig. 18





Ordinary position of crown (main-spring winding)

The *crown wheel* and the *second intermediate ratchet wheel* are caulked on the *barrel and train wheel bridge*. The *intermediate ratchet wheel* is supported by a pin mounted on the plate.

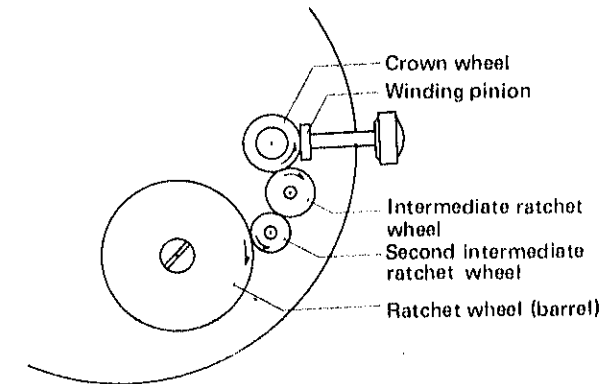


Fig. 21

Second position of crown (day and date correction)

1. Clockwise – Date correction:

When turning the *crown* to the right (clockwise), the *correcting gear* moves to the *date dial* side and interlocks with it, thus date is corrected. Force transmission is through *crown* → *clutch wheel* → *setting wheel* → *correcting gear* → *date dial*.

2. Counterclockwise – Day correction:

When turning the *crown* to the left (counterclockwise), the *correcting gear* moves to the *day star with dial disk* side and interlocks with the *intermediate wheel* for day correction, and day is corrected. Force is transmitted through *crown* → *clutch wheel* → *setting wheel* → *correcting gear* → *intermediate wheel* for day correction → *day star with dial disk*.

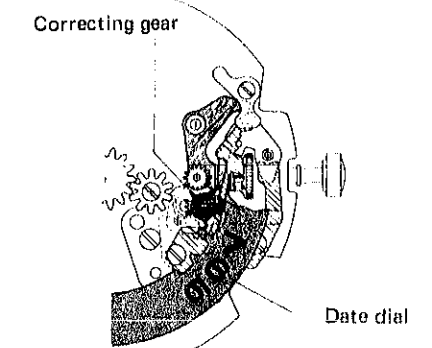


Fig. 22

Third position of crown (setting time)

The *setting wheel lever complete* moves to the *minute wheel* side by action of the *setting lever with axle*, and the *intermediate setting wheel* interlocks with the *minute wheel*, hand is set correctly. Simultaneously, motion of the *setting wheel lever complete* is transmitted to the *day-date correction wheel rocking lever*, and the *correcting gear* attains a position where it interlocks neither the *date dial* nor *intermediate wheel* for day correction by action of the *setting wheel lever complete* and the *day-date correction wheel rocking lever*.

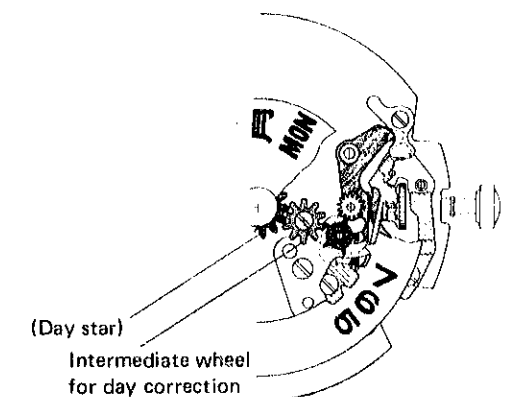


Fig. 23

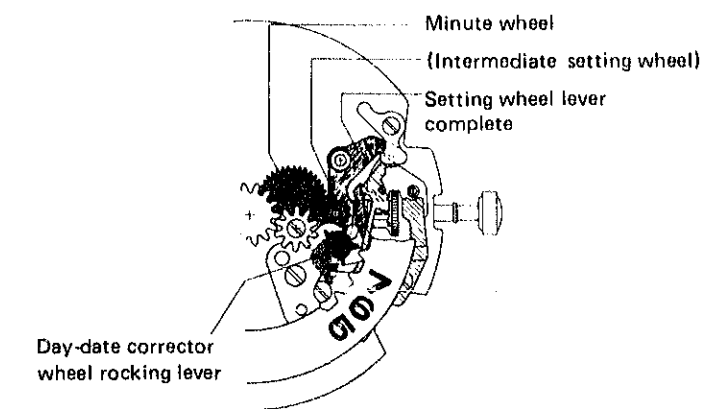


Fig. 24