

2205A

(1) Specifications

Casing diameter 17.20mm
 Height 5.66mm
 Vibrations per hour 28,800
 (8 beats per second)

Calendar with instant date setting mechanism (Pull-out type)

Automatic winding (with auxiliary hand winding mechanism)

Idle wheel system

(2) Features

This movement is designed based on calibre 2202, to which automatic winding mechanism is added. Other mechanisms are identical with 2202. Since the automatic winding mechanism can be separated from the other mechanisms, independent assembly of the automatic winding mechanism is possible, and it can be installed on the movement main body as is.

As this automatic winding mechanism adopts an idle wheel system of simple construction of parts, it is excellent in abrasion-resistant and shock-resistant characteristics. Winding ability is also stabilized.

On the other hand, by adopting a simple clutch mechanism, hand winding of the mainspring is achieved smoothly.

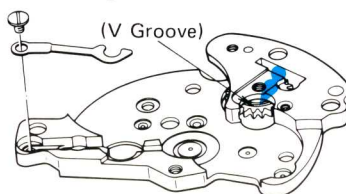
(3) Disassembly and assembly

Refer to 2202A for disassembling and assembling the train wheel, calendar, and date correcting mechanisms.

As for the automatic winding mechanism, disassemble according to Figs. ① - ⑯. Assemble by reversing the above procedures, Figs. ⑯ - ①, paying attention to the notes on the diagrams.

Note 3

Install the friction spring for intermediate pinion from the back side of the barrel and train wheel bridge before assembling the bridge. Confirm that the tip of the friction spring for intermediate pinion does not rub against the side of the barrel and train wheel bridge, or that its up-and-down motions are smooth. These are related to efficiency of the automatic winding mechanism.

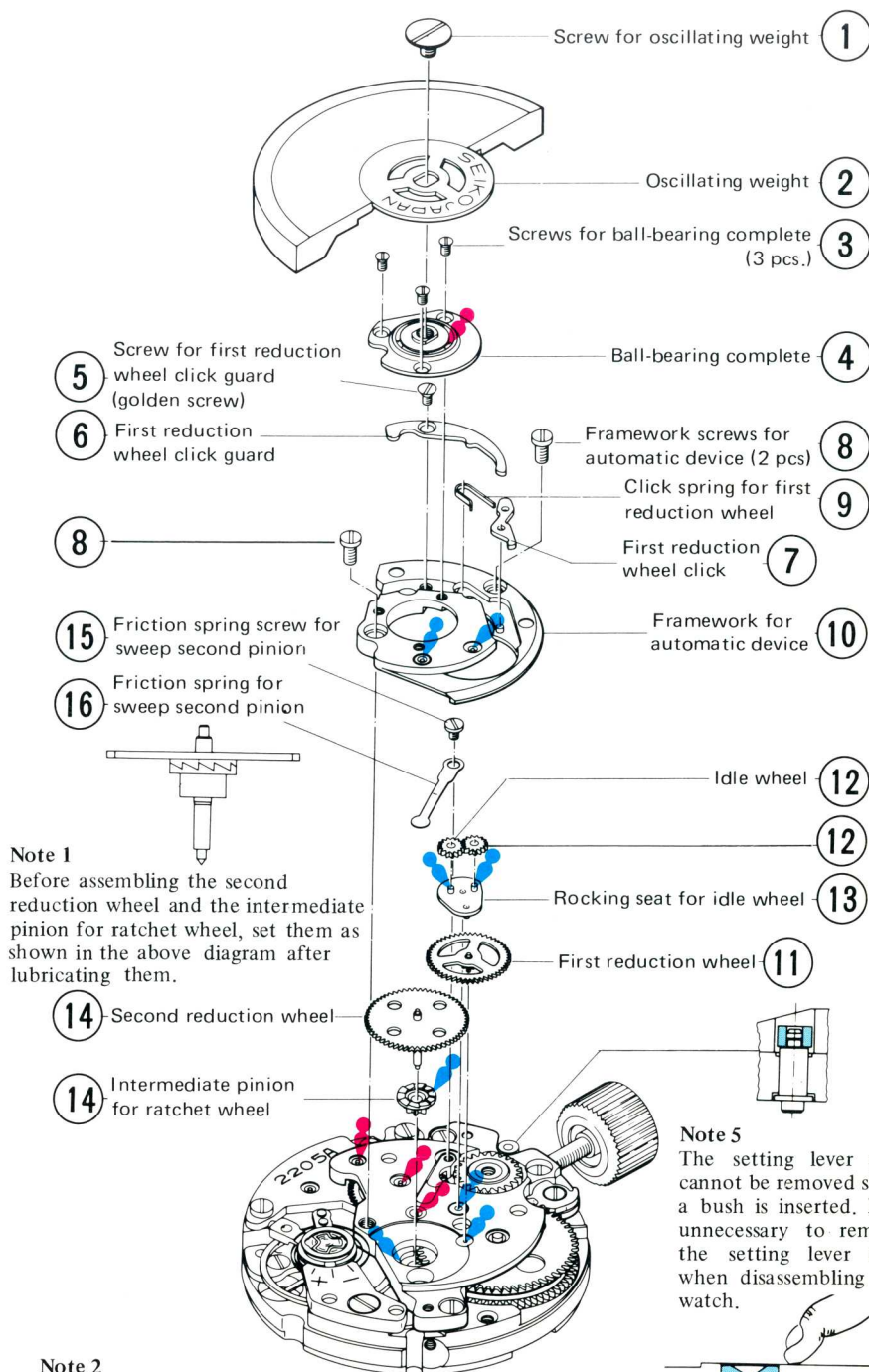


Note 2

The crown wheel is caulked on the barrel and train wheel bridge. Consequently, lubricate the V-grooved portion of the crown wheel from the back side of the barrel and train wheel bridge before assembling the bridge. If too much oil is applied, the bridge and other portions will become soiled; and if the oil is insufficient, it will cause inefficiency of the automatic winding mechanism.

Note 4

When assembling the barrel and train wheel bridge, if the upper surface of the bridge is forcibly depressed in a condition that the upper pivot of the sweep second pinion and the frame hole of the bridge are not set correctly (refer to the upper diagram), the frame hole will be crushed (at the arrow mark) and it causes stopping or other malfunctions.



Note 1

Before assembling the second reduction wheel and the intermediate pinion for ratchet wheel, set them as shown in the above diagram after lubricating them.

Note 5

The setting lever axle cannot be removed since a bush is inserted. It is unnecessary to remove the setting lever axle when disassembling the watch.

2205A Automatic Winding Mechanism

(4) Lubrication

The following colored symbols in the illustrated figures indicate the types of oil, quantities to be applied, and lubricating points. (Always comply with indications in figures.)

Types of oil

Moebius Synt-A-Lube

Seiko watch oil S-4

Oil quantity

Sufficient quantity

Normal quantity

Extremely small quantity

(5) Automatic winding mechanism

When the oscillating weight revolves clockwise, the idle wheel (A) turns counterclockwise by action of the oscillating weight pinion; also the rocking seat for idle wheel revolves in the arrow direction. (The pin of the rocking seat for idle wheel revolves in a range of hole of the barrel and train wheel bridge.) In this case, idle wheel (A) transmits force by meshing with the first reduction wheel, and idle wheel (B) is freed from the first reduction wheel (Refer to Fig. 1)

When the oscillating weight revolves counterclockwise, the idle wheel (A) turns clockwise, moving the rocking seat for idle wheel and disconnecting the first reduction wheel. On the contrary, the idle wheel (B) meshes with the first reduction wheel and transmits force by revolving in the direction of the arrow. Consequently, the first reduction wheel always revolves in one direction (clockwise) to wind up the mainspring. (Refer to Fig. 2)

Force transmission of the automatic winding mechanism is indicated on the right.

The first reduction wheel click prevents reverse revolution of the first reduction wheel by the action of the click spring for the first reduction wheel; that is, it prevents mainspring from loosening.

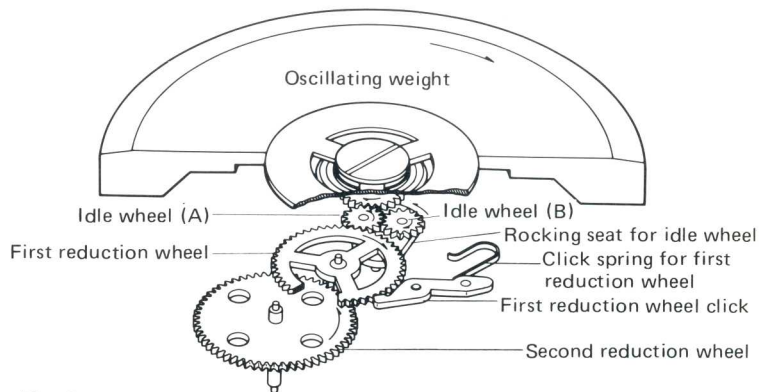


Fig. 1

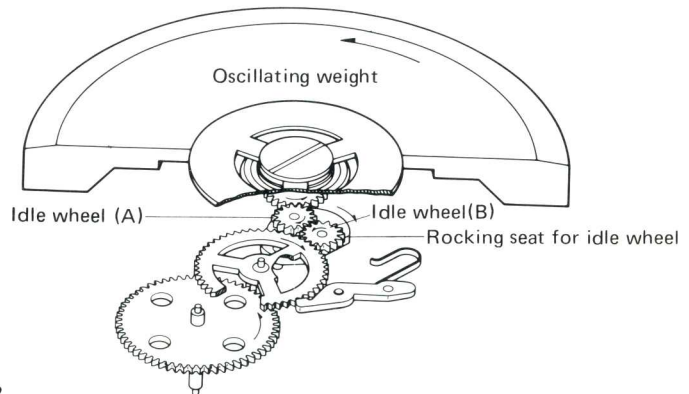
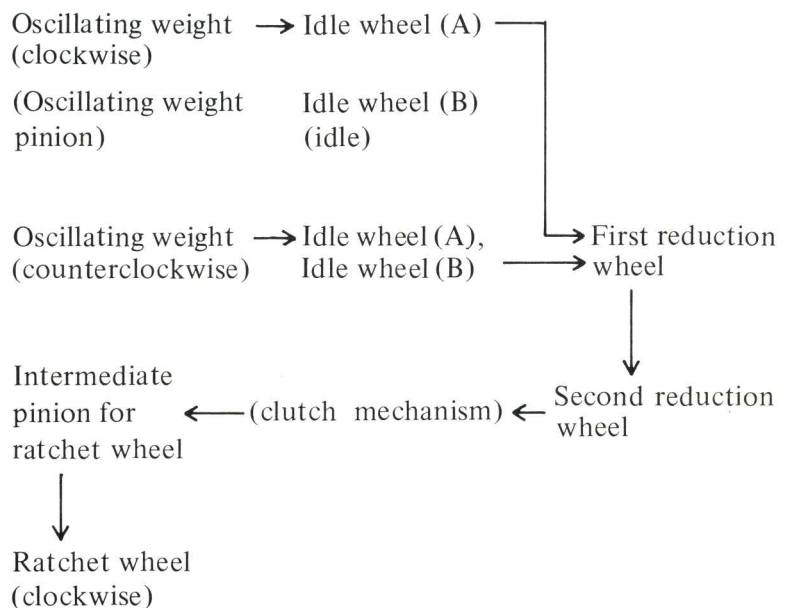


Fig. 2



2205A Automatic Winding Mechanism

(6) Clutch mechanism

The clutch mechanism makes possible both automatic winding and hand winding of the mainspring. Compared with conventional mechanisms, this device is very simple and is the same as meshing of the winding pinion and the clutch wheel. (Refer to Fig. 3)

Force transmission of the hand winding mechanism is as follows:

Crown → Winding pinion → Crown wheel



Intermediate pinion ← Ratchet wheel
for ratchet wheel



(Slip) (Winding the mainspring)

(Refer to Fig. 4)

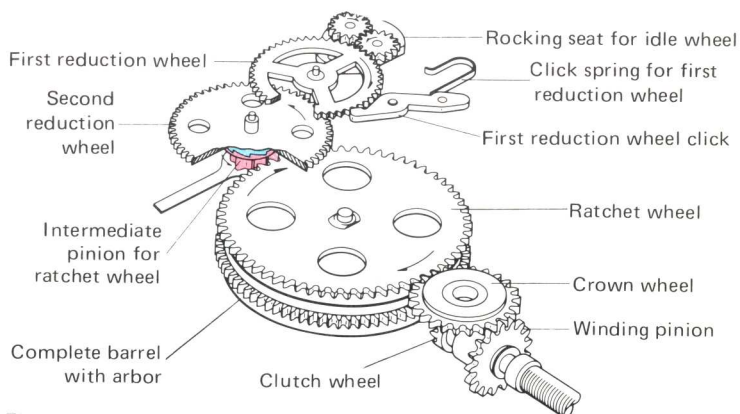


Fig. 3

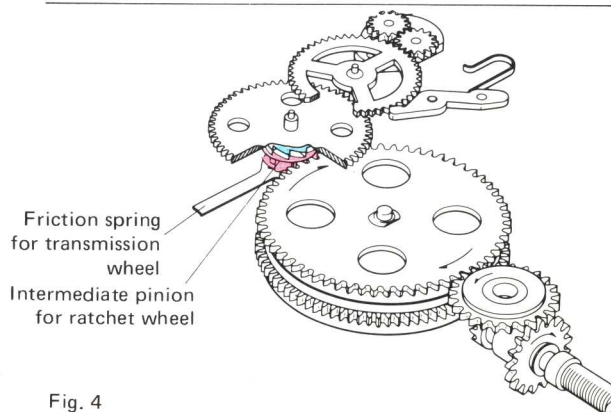
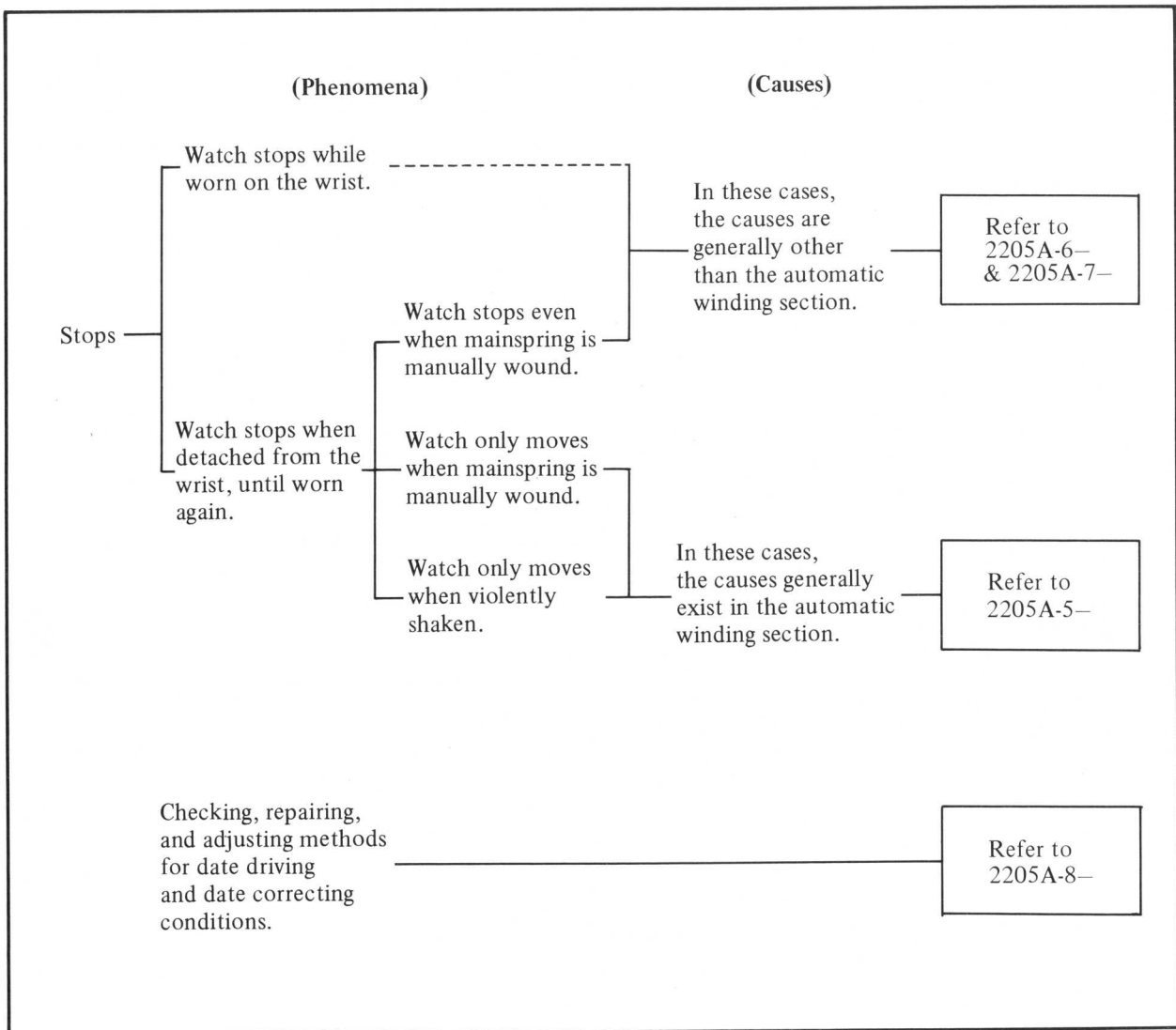


Fig. 4

2205A CHECKING ON WATCH STOPPING, AND REPAIRING AND ADJUSTING

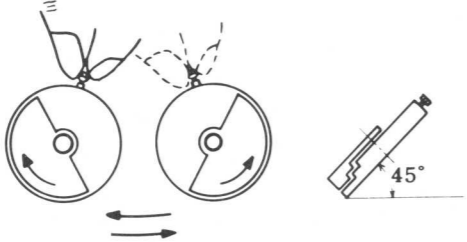
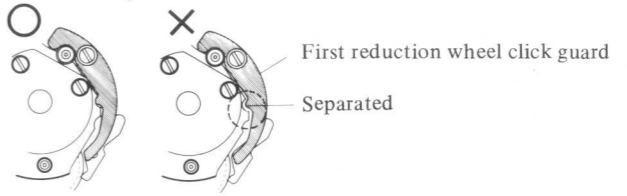
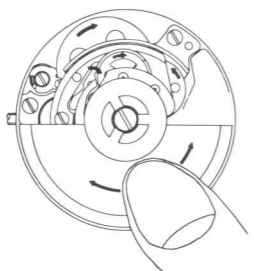
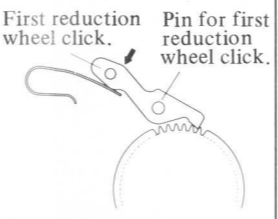
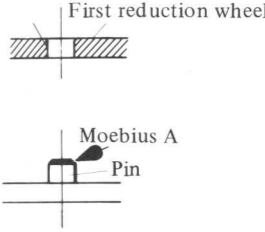
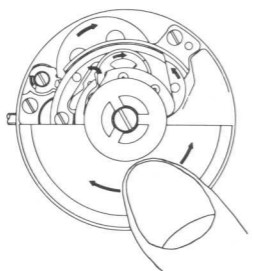
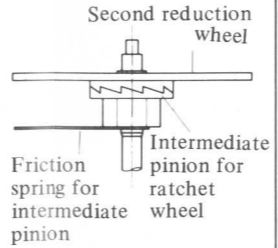
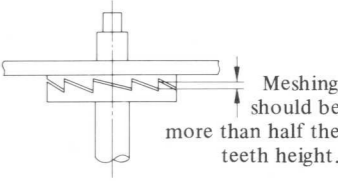
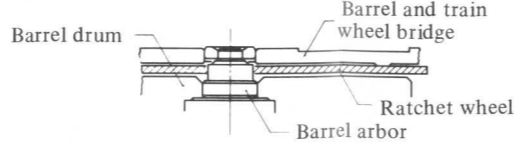
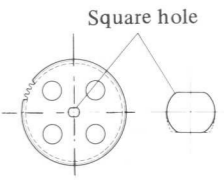
The pages of this guide mention ways and means of checking, repairing and adjusting unfunctioning Cal. 2205 watches and related further details on Lady's Automatic Winding Watches.

When accepting orders for repairing watches, always make sure of the following behavior to discover causes of the malfunction.



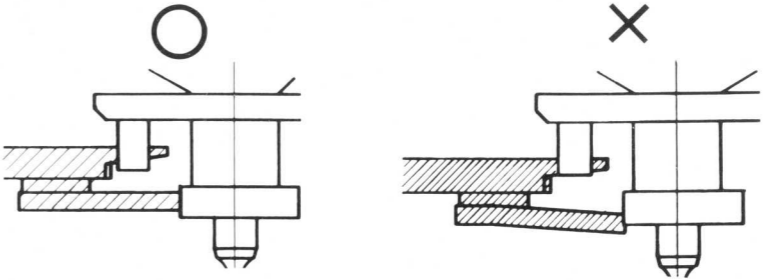
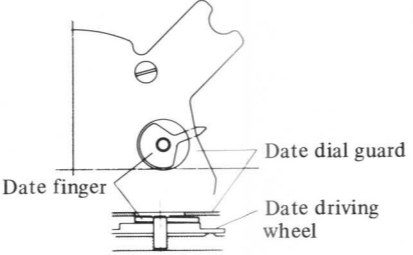
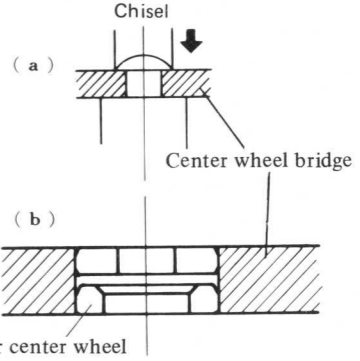
2205A CHECKING ON WATCH STOPPING, AND REPAIRING AND ADJUSTING

For malfunction 1. in the automatic winding section.

Checking (1)		Checking (2)	Results	Repairing and adjusting method.
A	<p>Incline watch about 45° and shake repeatedly, gently and slowly. Next, wind the main-spring manually about one revolution of the ratchet wheel, then check whether the oscillating weight moves smoothly or does not.</p> 	<p>1</p> <p>As explained in A, slowly shake the watch and check whether the motion of the oscillating weight meets some resistance. (The oscillating weight may rub against the first reduction wheel click guard.)</p>	<p>Oscillating weight rubs against the first reduction wheel click guard.</p>	<p>While pushing the first reduction wheel click guard toward center portion of the bridge, tighten the screw sufficiently.</p> 
	<p>As shown in the following diagram, move the oscillating weight slowly to the right and left with finger at an angle where the functioning of the automatic winding is clearly visible. (Approximately ten times).</p> 	<p>2</p> <p>In checking B, check whether the first reduction wheel click moves lightly or does not.</p> 	<p>Does not move lightly (Will not return easily)</p>	<p>If it does not move lightly, slightly expand the hole surface where the pin for first reduction wheel click is inserted.</p> <p>Apply a small quantity of oil (Moebius A) to the head and side portion of the pin for first reduction wheel click.</p> 
B	<p>As shown in the following diagram, move the oscillating weight slowly to the right and left with finger at an angle where the functioning of the automatic winding is clearly visible. (Approximately ten times).</p> 	<p>3</p> <p>In checking B, if the ratchet wheel does not rotate while the second reduction wheel does, check meshing condition of the upper and lower ratchet teeth of the second reduction wheel. Check on revolving condition</p> 	<p>Shallow meshing of the upper and lower ratchet teeth.</p> <p>Loosened mechanism.</p>	<p>If burrs exist between the upper and lower teeth, remove them. If teeth meshing is still shallow, replace the second reduction wheel.</p> <p>When the revolving condition is loose, replace the parts. Even when the transmission wheel holder spring is not effective, it may sometimes unmesh the meshing.</p> 
	<p>Check whether the ratchet wheel can or can not be easily removed from the barrel arbor.</p> 	<p>4</p> <p>Check whether the ratchet wheel can or can not be easily removed from the barrel arbor.</p>	<p>Ratchet wheel does not easily removed from the barrel arbor.</p>	<p>Should installing the barrel arbor prove too difficult, use a fine file and slightly expand the ratchet wheel hole. Expand the hole as shown by dotted line in diagram.</p> 

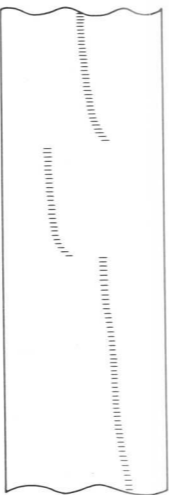
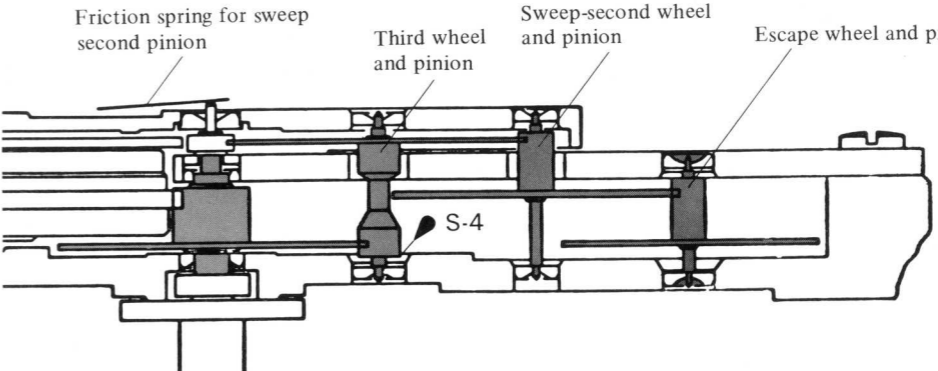
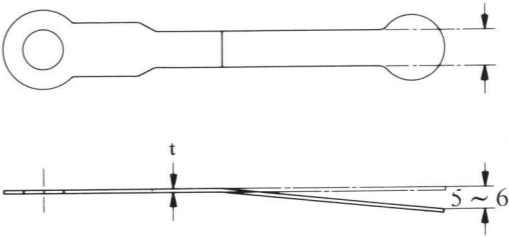
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2. When malfunction exists elsewhere than in the automatic winding section (1)

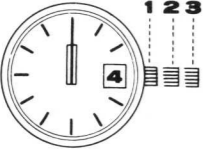
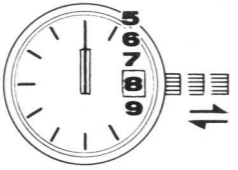
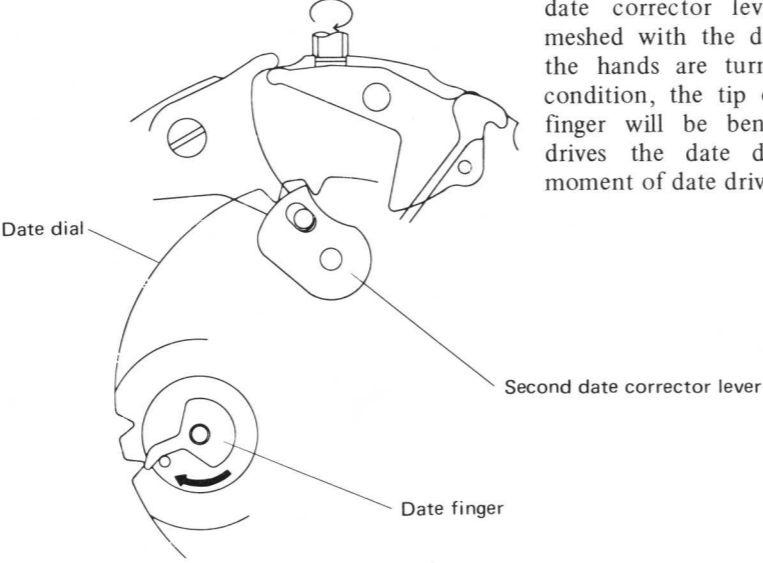
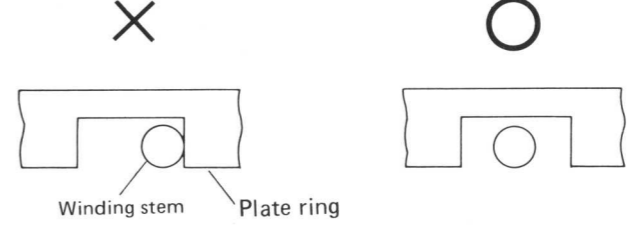
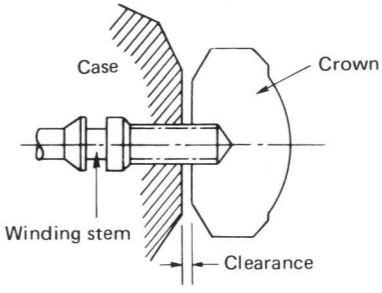
		Checking	Repairing and adjusting methods
When watch does not move even with mainspring fully wound.	1	Check whether or not the pallet tip is detached from the roller with jewel.	<p>Adjust so that the tip comes to the center of the roller with jewel.</p> 
	2	Check whether or not the pallet tip rubs against the roller jewel by turning over the watch.	
	3	<p>When the train wheel does not rotate even when the balance and the pallet are detached, check on the following:</p> <p>a. Is there any dust or adherence?</p> <p>b. Is the date finger raised, thus rubbing the hole (inner side) of the date dial guard?</p> <p>Refer to the diagram on the right.</p>	<p>To prevent rise of the date finger, apply small quantity of oil (Moebius A) between the date finger and the date driving wheel.</p> 
When amplitude of the balance movement is not sufficient even when the mainspring is manually wound.	4	<p>Check on shake of the train wheel (shake in upper and lower direction).</p> <p>a. Does the teeth of center wheel and pinion rub the barrel due to too much shake of the center wheel and pinion? (Check position of the upper hole jewel for center wheel.)</p> <p>b. Is there any shake between the barrel and barrel arbor?</p>	<p>Correct shake of the train wheel. Correct shake of the center wheel bridge as follows or make replacement.</p> <ol style="list-style-type: none"> 1. Remove the jewel with a chisel. 2. Narrow the hole diameter on the bridge (Diagram a.) 3. Drive in the jewel (Align jewel height with the bridge surface as shown in diagram b.) <p>Create shake by lightly striking the barrel arbor from opposite side of the cover.</p> 
	5	Check for oil shortage on the pallet jewels	Wash the pallet with benzine and apply oil. (Moebius A) to the hole jewel.

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3. When malfunction exists elsewhere than in the automatic winding section (2)

Checking		Repairing and adjusting methods.
<p>When watch moves and stops intermediately or starts to move given a light shock.</p>	<p>1 Check watch for interrupted beating rate as shown in diagram when measuring watch with timegrapher.</p>  <p style="text-align: center;">↓</p> <p>Check whether or not the torque of mainspring is transmitted sufficiently and the train wheel rotates lightly.</p>	<p>When the beating rate appears to be interrupted, thoroughly wash the third wheel and pinion, sweep-second wheel and pinion, and the escape wheel and pinion.</p> <p>Using Ultrasonic washer is recommended. When using a brush for washing, wash well the wheels and pinions.</p> 
	<p>2 Check on shake of the third wheel and pinion, sweep second wheel and pinion, escape wheel and pinion and teeth tips.</p>	<p>After washing, if shake of wheels still exists or teeth tips are damaged, or interrupted beating rate still exist, then the sweep-second wheel and pinion and the escape wheel and pinion should be replaced. Apply small quantity of S-4 oil to lower pivot of the third wheel and pinion.</p>
	<p>3 Check on installation position of the friction spring for sweep-second pinion and see how it presses.</p> <p>Has the installation position slipped? Is the pressing force of the friction spring for sweep-second pinion too strong or too weak?</p>	<p>If malfunction still exists, adjust as follows:</p>  <p>Adjust so that the pivot end of the sweep second pinion enters the range indicated by the arrows.</p> <p>Bending of the tip some 5-6 times the thickness of the spring is sufficient.</p>
	<p>4 In this case, check on oil shortage of the pallet jewels.</p>	

2205A CHECKING ON WATCH STOPPING, AND REPAIRING AND ADJUSTING

	Checking	Repairing and Adjusting Method
<p>When date driving fails, or when the crown does not smoothly return from the second click to the first click after date correction, the following inspection and repair procedures are recommended.</p> 	<p>As shown in the diagram below, make date correction by pulling out crown and check returning condition.</p>  <p>a. Date is changed by pulling crown out to the second click. b. Then, detach the finger, and slightly rotate crown. If it does not, in this condition, return to the first click, it is faulty.</p> <p>(Reasons)</p> <p>When the crown does not return to the first click, the date corrector lever remains meshed with the date dial. If the hands are turned in this condition, the tip of the date finger will be bent, since it drives the date dial at the moment of date driving.</p> 	<p>a. Apply sufficient amount of silicon grease to the crown gasket.</p> <p>b. In case of water resistant case, if the winding stem contacts the plate ring or the crown pipe of the case, adjust the crown position to the center.</p>  <p>c. When the winding stem or the crown have been replaced and the clearance between crown and case is widened, the pipe packing of crown might become detached, and the crown refuse to return at the second click. Then reduce clearance to minimum between the crown and the case.</p>  <p>d. When the date finger is bent or split, replace it.</p>