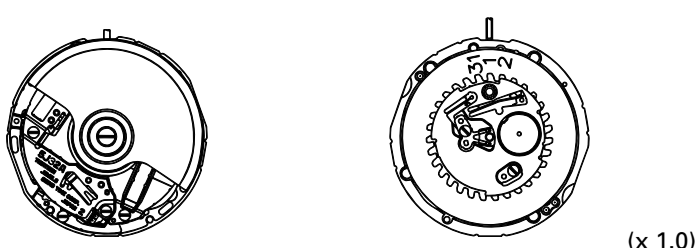


# PARTS CATALOGUE/TECHNICAL GUIDE

## Cal. 5J32A

### PARTS CATALOGUE/TECHNICAL GUIDE (p. 1 – 22)

#### [SPECIFICATIONS]

Item		Cal. No.	5J32A
Movement			
Movement size	Outside diameter		ø26.4 mm
	Casing diameter		ø25.6 mm
	Height		4.15 mm
Time indication			3 hands ( Hour and minute hands move at 5-second intervals. ) Second hand moves at 1-second intervals.
Driving system			• Step motor (Load compensated driving pulse type, 2 pieces)
Additional mechanism			<ul style="list-style-type: none"> <li>• Automatic generating system</li> <li>• Energy depletion forewarning function</li> <li>• Overcharge prevention function</li> <li>• Electronic circuit reset switch</li> <li>• Train wheel setting device</li> <li>• Date calendar</li> <li>• Instant setting device for date calendar</li> <li>• Automatic power save function</li> <li>• Manual power save function</li> <li>• Time relay function</li> </ul>
Loss/gain			Monthly rate at normal temperature range: less than 15 seconds
Regulation system			Nil
Measuring gate by quartz tester			Use 10-second gate.
Power supply	Power generator		Automatic generating system
	Electricity Storage Unit (E.S. Unit)		Titanium lithium ion rechargeable battery
Operating voltage range			0.45 V ~ 2.5 V
Duration of charge			Validity of time relay function : Approx. 4 years (Full charge)
Jewels			13 jewels

# REMARKS ON REPAIRING CAL. 5J32A

Cal. 5J32A is an epoch-making model of SEIKO's revolutionary KINETIC watches, just like 5J21A/5J22A. It is equipped with innovative functions that have introduced a completely new concept into the KINETIC technology SEIKO has cultivated in its long years of precision product manufacturing. In repairing Cal. 5J32A, therefore, you are requested to have the full knowledge of its functions and strictly observe the repairing and checking instructions provided in this guide so that the watch will be repaired securely.

## FEATURES OF CAL. 5J32A

Cal. 5J32A features the power save function that automatically stops the hands from moving if the watch is left untouched for a certain period of time. When you decide to use it again, swinging the watch several times will activate the time relay function, which starts the hands moving quickly to indicate the correct time and resume the normal operation. In this way, Cal. 5J32A conserves the stored electrical energy by stopping the hands while it is not in use, and, at the same time, it completely eliminates the cumbersome time setting procedure when it is used again.

Thanks to this innovative mechanism, the duration of charge has increased enormously.

### 1. POWER SAVE FUNCTION

- While the watch is not in use, the hands stop automatically to minimize the electrical energy consumed. This is called "the power save function". Though the hands stop, the built-in IC continues to compute the time, keeping the watch ready for the next use.
- The power save function can be activated either automatically or manually.

#### The automatic power save function

- If the watch is left untouched for approximately 72 hours, the power save function is automatically activated.

#### The manual power save function

- The power save function can be activated whenever you decide not to use the watch for a long time.
- By pulling out the crown to the first click and pushing it in to the normal position within one second, the power save function is activated manually.

#### Notes:

- \* Do not pull out the crown to the second click while the power save function is in operation. Otherwise, it is turned off, and the time retained inside the watch will be erased.
- \* While the second hand is moving at two-second intervals, the power save function cannot be activated manually.

### 2. TIME RELAY FUNCTION

- While the power saving function is working, the built-in IC continues to compute the time though the hands stop. As the watch detects a certain amount of electricity generated by swinging it, the hands are automatically adjusted to the time retained inside the watch, resuming the normal operation. This is called the "time relay function". As it is activated, the hour and minute hands are adjusted first, then, followed by the second hand.
- By only swinging the watch for 2 to 3 seconds, the time relay function will be activated.

#### Notes:

- \* The time relay function will not adjust the date. If you find the date incorrect after it is activated, it is necessary to adjust the date manually to the current date.
- \* The accuracy of the time computation by the built-in IC is equivalent to that of conventional quartz watches. If the power save function has been in operation for a long term before the time relay function is activated, the time indicated by the hands may include a certain amount of time loss or gain that has accumulated during that time.

### 3. DURATION OF CHARGE




- The duration of charge varies depending on the power reserve stored inside the watch. If the watch is fully charged, the power save function will keep it operating for about four years.

**Note:** If the power reserve is depleted completely while the power save function is in operation, the time relay function may not be activated by swinging the watch. Instead, the second hand starts moving at two-second intervals.



Disassembling procedures Figs. : ① ← ⑥1

Reassembling procedures Figs. : ⑥1 ← ①

**Lubricating: Types of oil**

-  Moebius A
-  Moebius F
-  SEIKO Watch Oil S-6

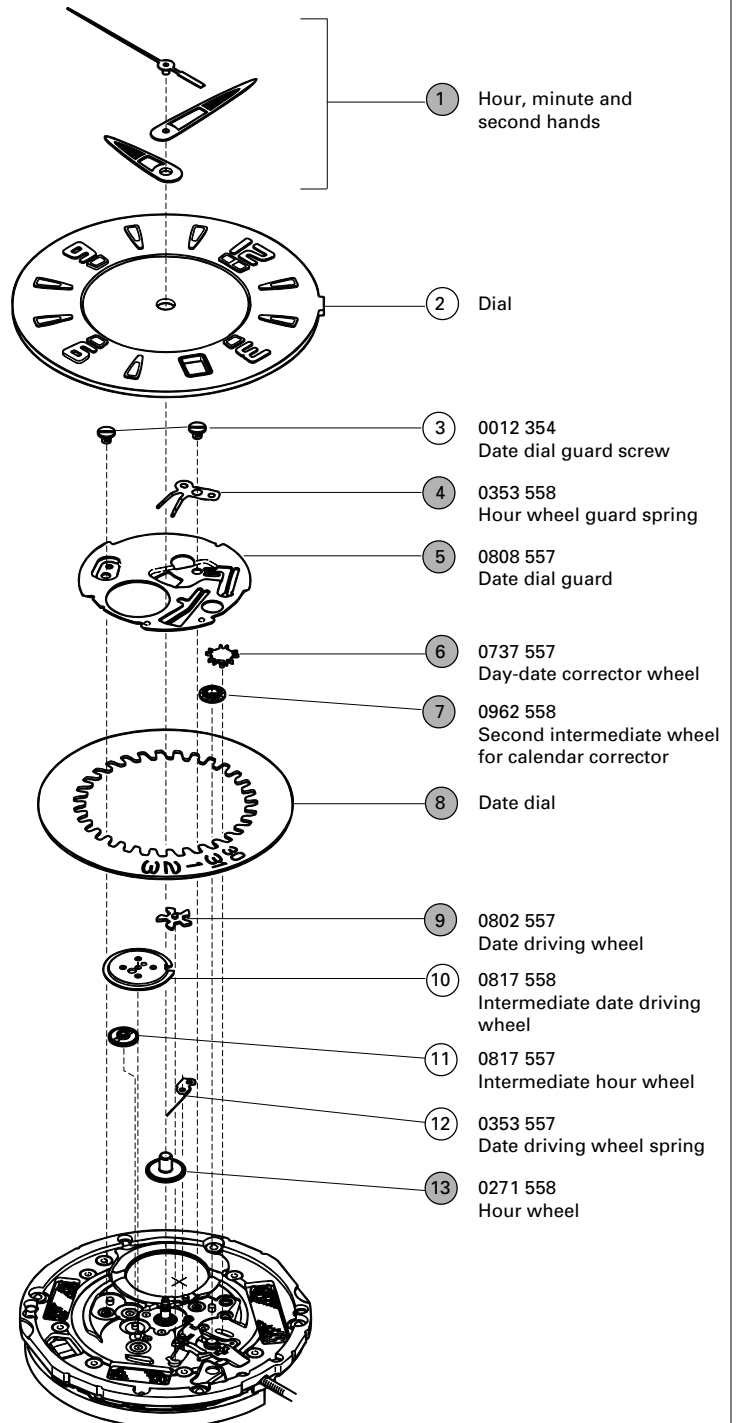
**Oil quantity**



-  Normal quantity
-  Liberal quantity



**Remarks on removing the winding stem**

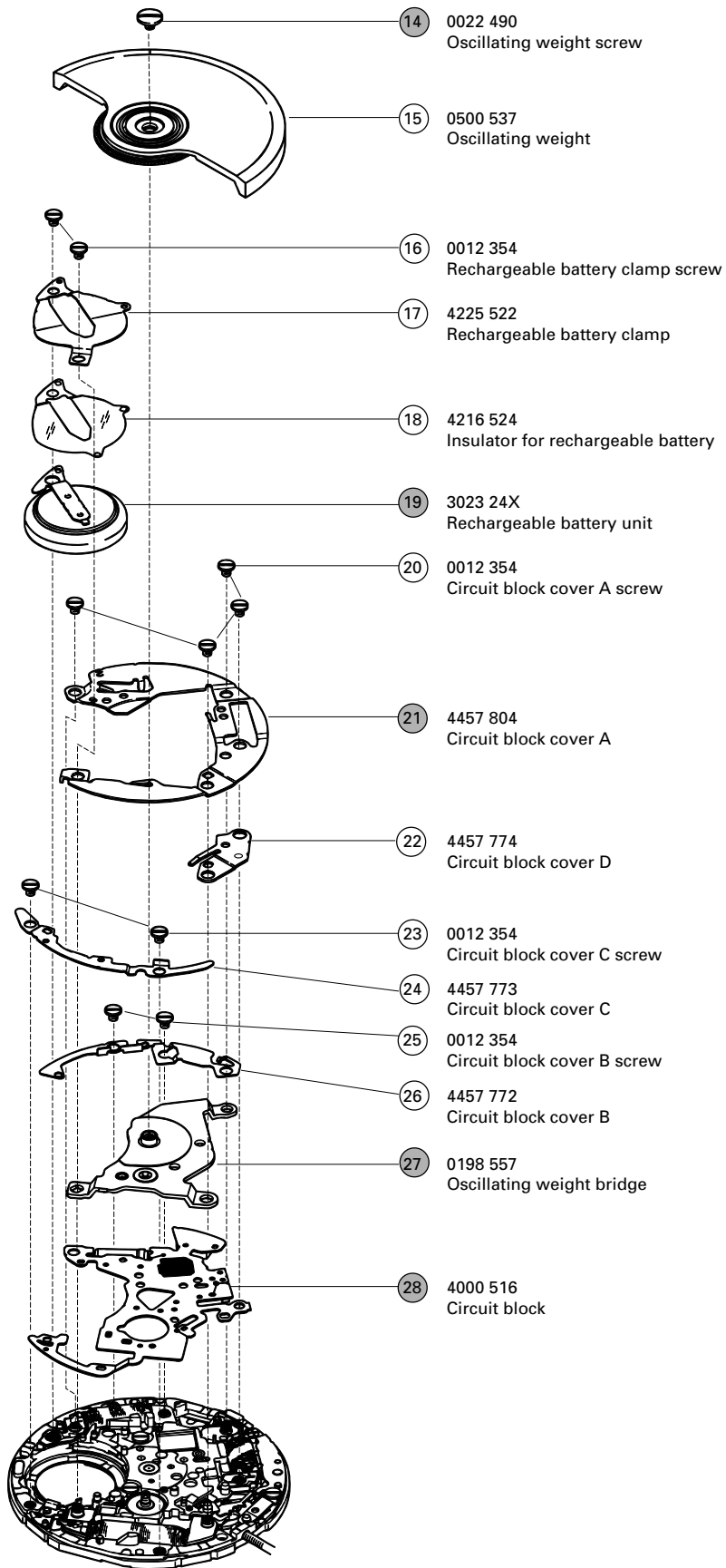
To remove the winding stem when taking out the movement from the case or while disassembling the parts during repair work, be sure to pull out the crown to the first click, and then, remove the winding stem while pushing the setting lever.

**Note:** If the winding stem is removed with the crown at the normal position, it may not be put back in place.



	<p>0012 354</p> <ul style="list-style-type: none"> <li>• Date dial guard screw (2 pcs.)</li> <li>• Rechargeable battery clamp screw (2 pcs.)</li> <li>• Circuit block cover A screw (4 pcs.)</li> <li>• Circuit block cover C screw (2 pcs.)</li> <li>• Circuit block cover B screw (2 pcs.)</li> <li>• Train wheel bridge screw (2 pcs.)</li> <li>• Setting lever spring screw (1 pc.)</li> </ul>
	<p>0022 490</p> <ul style="list-style-type: none"> <li>• Oscillating weight screw (1 pc.)</li> </ul>

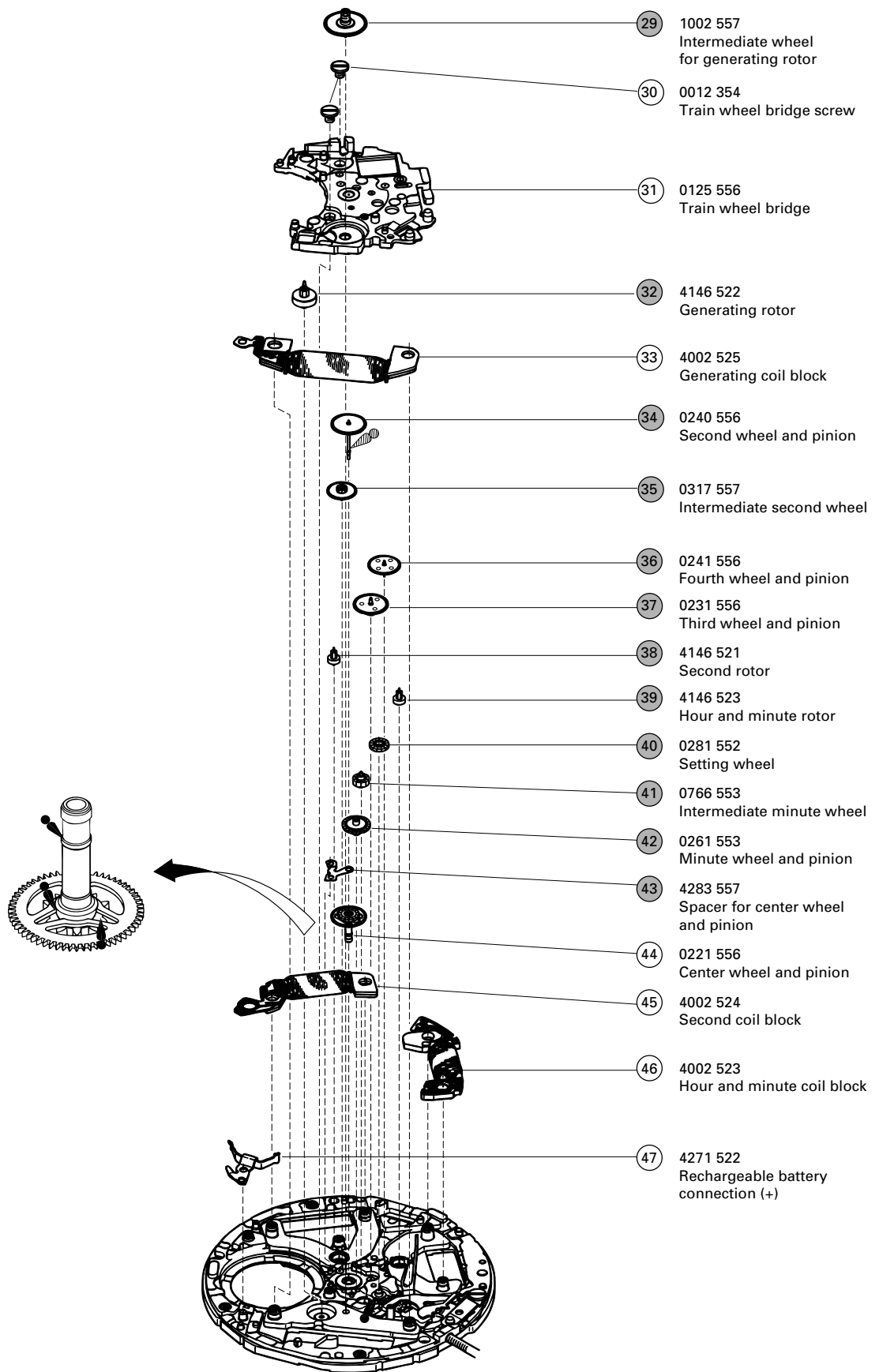
  Please see the remarks on the following pages.  
Lubricating of some parts is shown in "II. REMARKS ON DISASSEMBLING AND REASSEMBLING".





● ➔ Please see the remarks on the following pages.  
Lubricating of some parts is shown in "II. REMARKS ON DISASSEMBLING AND REASSEMBLING".

# PARTS CATALOGUE

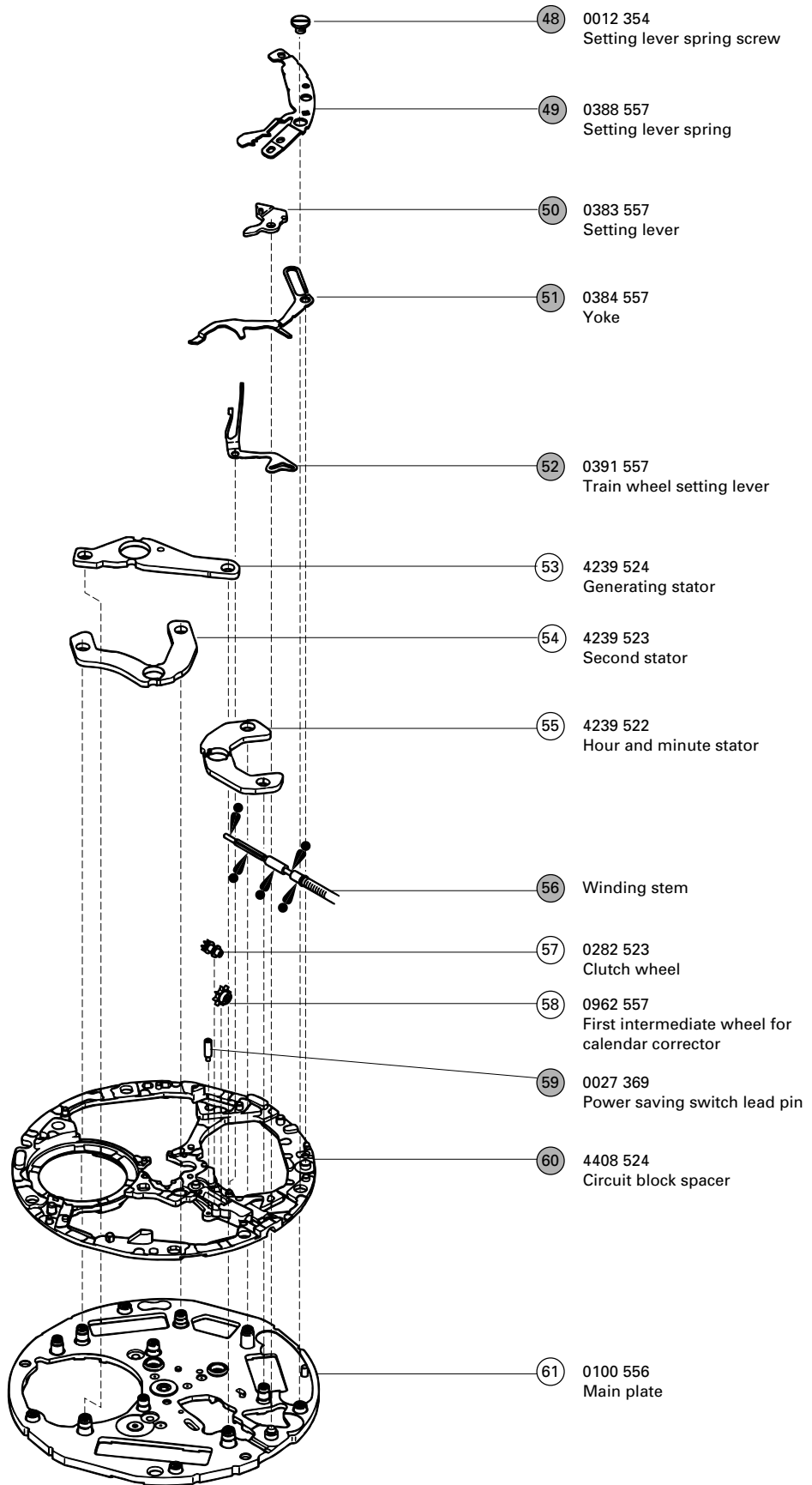
Cal. 5J32A





 Please see the remarks on the following pages.  
 Lubricating of some parts is shown in "II. REMARKS ON DISASSEMBLING AND REASSEMBLING".

# PARTS CATALOGUE

Cal. 5J32A



● → Please see the remarks on the following pages.  
Lubricating of some parts is shown in "II. REMARKS ON DISASSEMBLING AND REASSEMBLING".

### Identification of circuit block

In order to distinguish 5J32 circuit block from 5J21/5J22 circuit blocks, refer to "Identification of 5J series circuit blocks" on page 22.

### Remarks:

#### ⑧ Date dial

Part code	Position of crown	Position of calendar frame	Color of figure	Color of background
0878 942	3 o'clock	3 o'clock	White	Black
0878 943	3 o'clock	3 o'clock	Black	White

The type of date dial is determined based on the design of cases. (The table above does not cover all the date dial available.)

Check the case number and refer to "SEIKO Casing Parts Catalogue" or "Watch Parts Catalogue CD-ROM" to choose a corresponding date dial.

#### ⑤⑥ Winding stem 0351 557

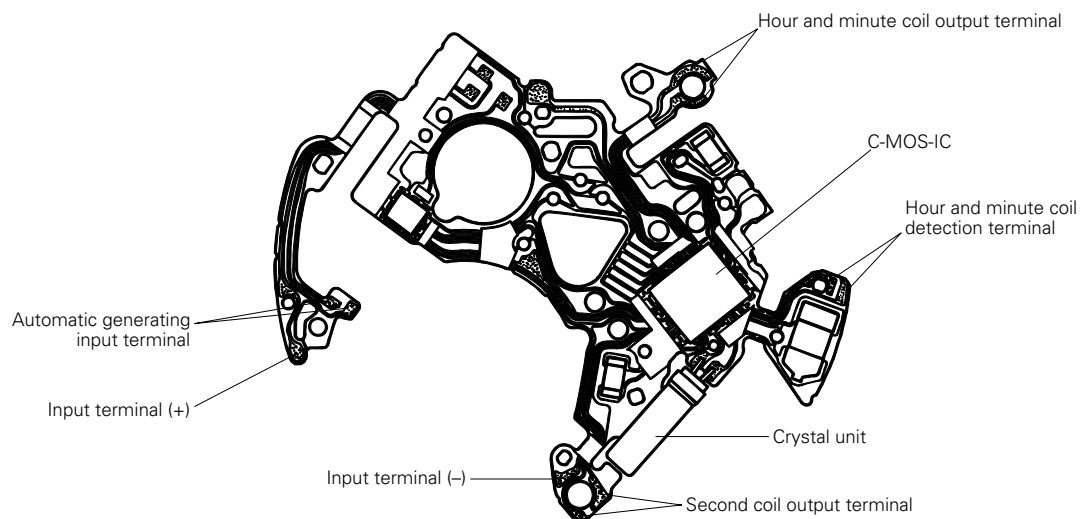
The type of winding stem is determined based on the design of cases.

Check the case number and refer to "SEIKO Casing Parts Catalogue" or "Watch Parts Catalogue CD-ROM" to choose a corresponding winding stem.

# TECHNICAL GUIDE

- The explanation here is only for the particular points of Cal. 5J32A.
- For the repairing, checking and measuring procedures, refer to the "TECHNICAL GUIDE, GENERAL INSTRUCTIONS".

## I. STRUCTURE OF THE CIRCUIT BLOCK



## II. REMARKS ON DISASSEMBLING AND REASSEMBLING

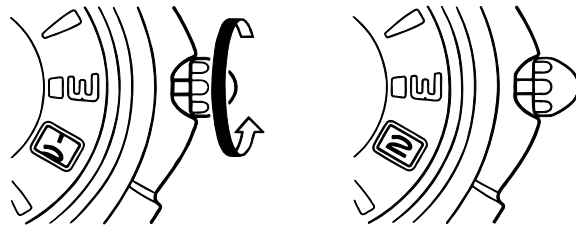
For disassembling and reassembling, be sure to use the universal movement holder.

### ① Hands

In case of conventional quartz movements, the hands should be installed immediately after the date changes by turning the crown. Cal. 5J32A uses a new calendar mechanism that changes without perceptible clicks, and therefore, the procedure below should be followed to install the hands.

#### • How to install

1. Pull out the crown to the second click, and turn it counterclockwise.
2. Check if the date numeral moves in the calendar frame. When it starts to move, turn the crown slowly, and stop turning it when the numeral stops moving.
3. Install the hour hand exactly at the 12 o'clock position.
4. Install the minute and second hands in the same manner as you would do for a conventional quartz movement.

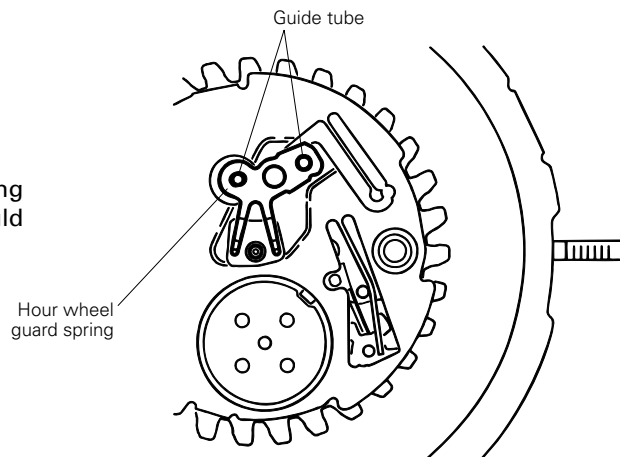


### ④ Hour wheel guard spring

#### • Setting position

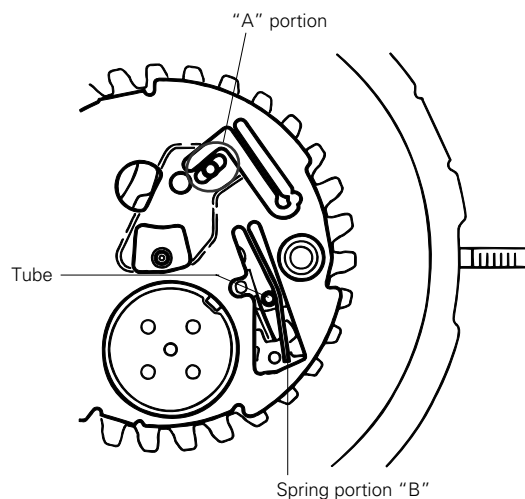
Refer to the illustration at right.

**Note:** Handle the hour wheel guard spring carefully lest its spring portion should be deformed.



### ⑤ Date dial guard

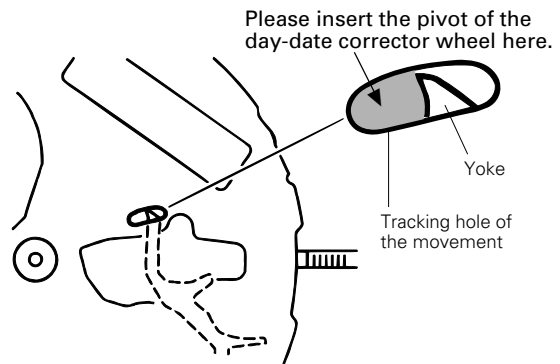
- "A" portion in the illustration at right has elasticity and is made tight in order to be set to the guide tube. Make sure that "A" portion is set securely in position.
- Hook the spring portion "B" of the date dial guard to the tube as shown in the illustration at right.





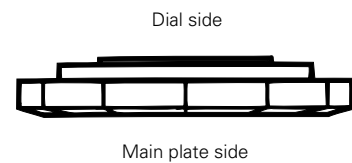
⑥ Day-date corrector wheel

Before setting the day-date corrector wheel, check the yoke through the tracking hole of the movement. Set the wheel in such a manner that its pivot portion passes through the shaded portion in the illustration at right.



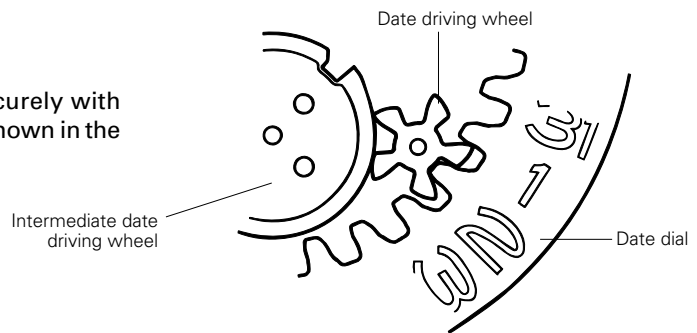
⑦ Second intermediate wheel for calendar corrector

Set the second intermediate wheel for calendar corrector in the direction as shown in the illustration at right, taking care not to set it upside down.



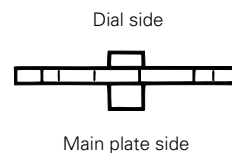
⑧ Date dial

Check that the date dial engages securely with the gear of the date driving wheel as shown in the illustration at right.



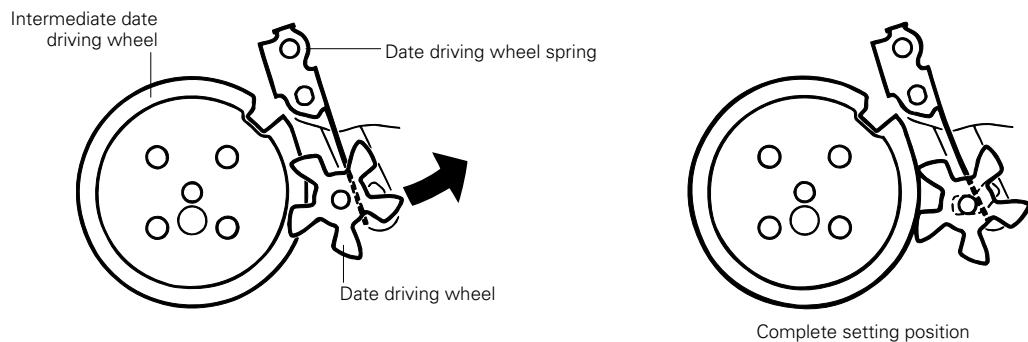
⑨ Date driving wheel

Set the date driving wheel in the direction as shown in the illustration at right. Make sure that its longer pivot faces the movement side.



• How to install

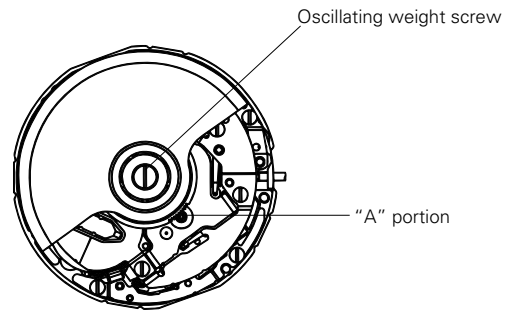
1. Apply the spring portion of the date driving wheel spring to the lower pivot of the date driving wheel, and then, slide the date driving wheel in the direction of the arrow in the illustration.
2. Slide the date driving wheel until its gear engages securely with the circumference of the intermediate date driving wheel.



**Note:** When setting the date driving wheel spring, take utmost care not to deform its shape.

⑭ Oscillating weight screw

- Before tightening the oscillating weight screw, check that the gear of the oscillating weight wheel securely engages with the pinion of the intermediate wheel for generating rotor ("A" portion in the illustration).
- Tighten the oscillating weight screw firmly, applying more force than usual. If the oscillating weight screw becomes loose, electricity generation will be defective.

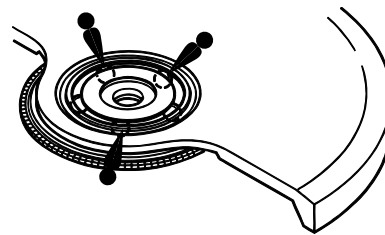


⑮ Oscillating weight

• **Lubricating**

Lubricate the ball-bearing of the oscillating weight as shown in the illustration at right.

**Note:** Be sure to lubricate at the position and in the quantity specified in the illustration.



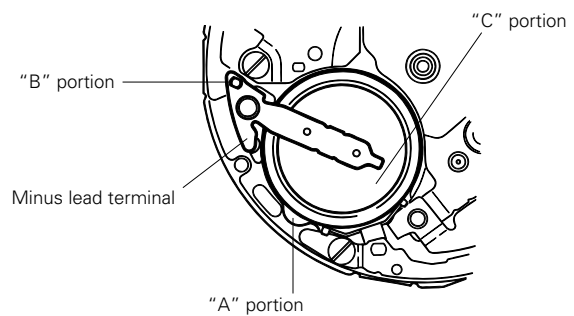
⑰ Rechargeable battery unit

• **How to remove**

Insert the tip of the tweezers into the "A" portion gap in the illustration, and pry up the rechargeable battery unit to remove it.

• **How to install**

Set the minus lead terminal to the guide post "B" in the illustration, push "C" portion down vertically so that the rechargeable battery unit is well seated in position.

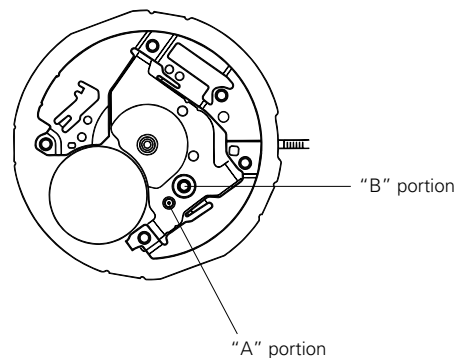


**Notes:**

- \* Take utmost care not to short-circuit the (+) and (-) terminals, as this will deteriorate the battery unit.
- \* Never clean the rechargeable battery unit, as it is an electronic part containing an IC.

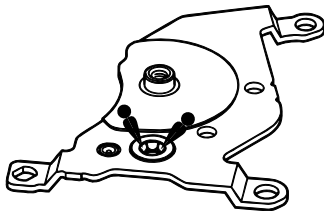
⑳ Circuit block cover A screw

Before tightening the circuit block cover A screw, check that the pivots of the generating rotor and intermediate wheel for generating rotor, "A" and "B" portions in the illustration, respectively, are securely set to the oscillating weight bridge.

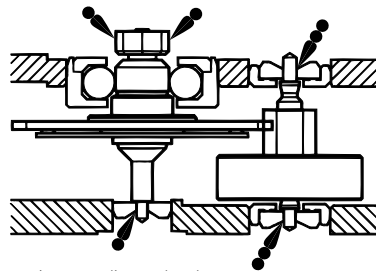


- ②⑦ Oscillating weight bridge
- ②⑨ Intermediate wheel for generating rotor
- ③② Generating rotor

- Lubricate the ball-bearing of the oscillating weight bridge as shown below before reassembling it to the main plate.
- Lubricate the upper and lower pivots and other portions of the generating rotor and intermediate wheel for generating rotor as shown in the illustration.

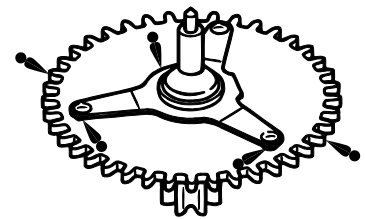


Oscillating weight bridge



Intermediate wheel  
for generating rotor

Generating  
rotor

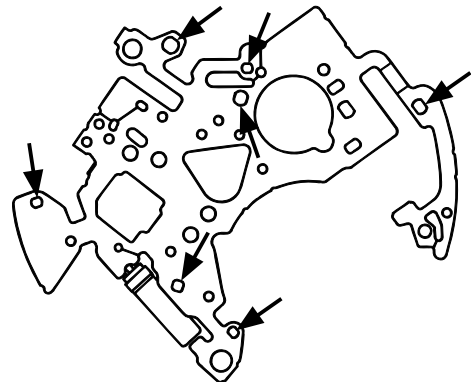


Intermediate wheel for generating rotor

**Note:** Be sure to observe the position, type of oil and quantity of the lubrication specified in the illustration.

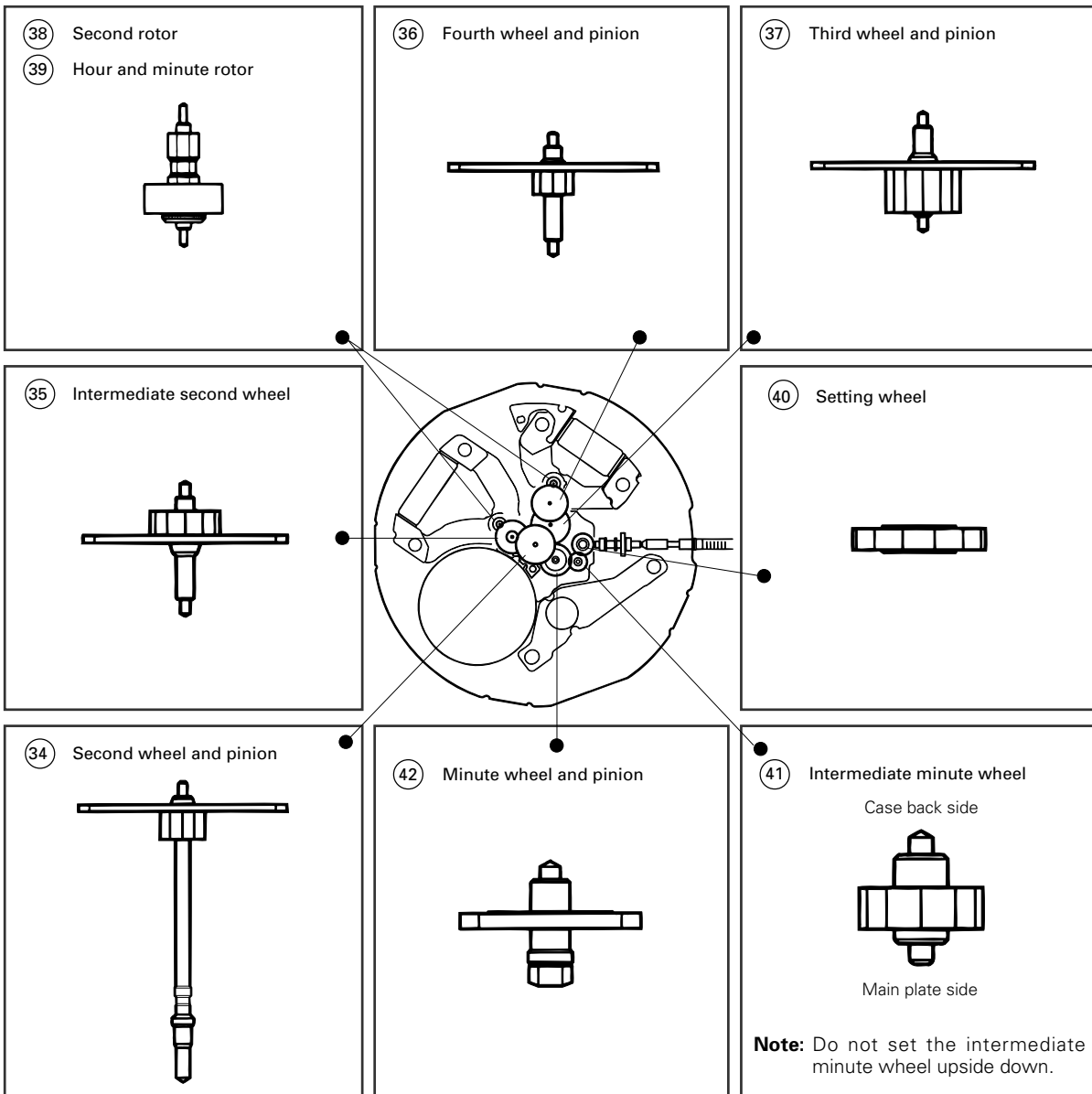
- ②⑧ Circuit block

The portions indicated by the arrows in the illustration have elasticity and are made tight for the guide tubes to which they are set. After setting the circuit block, press down those portions to make sure that it is well seated.



- ③④ Second wheel and pinion
- ③⑤ Intermediate second wheel
- ③⑥ Fourth wheel and pinion
- ③⑦ Third wheel and pinion
- ③⑧ Second rotor
- ③⑨ Hour and minute rotor
- ④① Setting wheel
- ④② Intermediate minute wheel
- ④③ Minute wheel and pinion

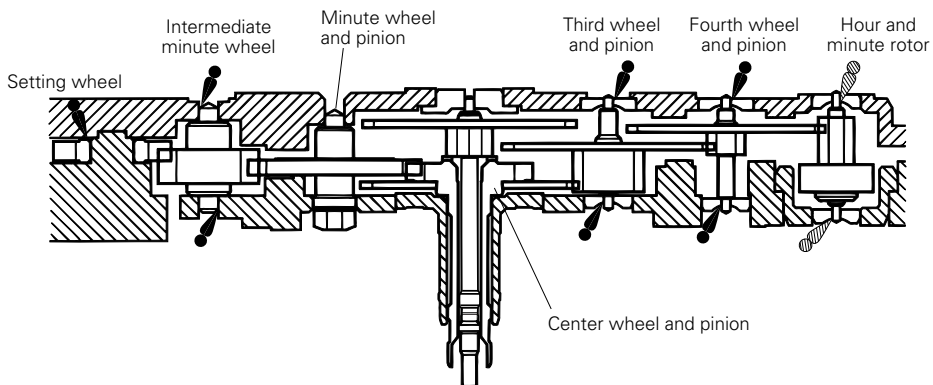
For the discrimination and setting position of these parts, refer to the table on the next page.

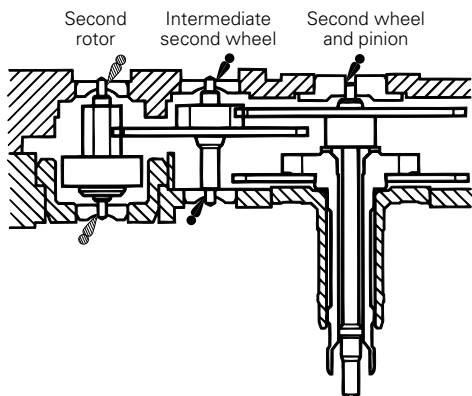


• **Lubricating**

For the lubrication of these parts, refer to the illustrations below.

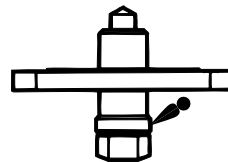
**Note:** Be sure to observe the position, type of oil and quantity of lubrication specified in the illustration.





**Notes:**

\* Lubricate the minute wheel and pinion before reassembling it to the train wheel bridge. When lubricating it, take care not to stain the pinion with oil.



\* Do not lubricate the lower pivots of the third wheel and pinion and intermediate second wheel excessively. Be sure to observe the specified quantity.

④③ Spacer for center wheel and pinion

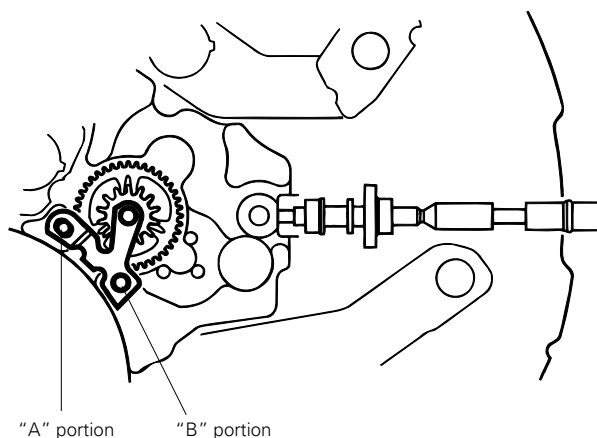
• **Setting position**

See the illustration at right.

• **How to install**

"A" and "B" portions have elasticity and are made tight for the guide tubes to which they are set. After setting the spacer for center wheel and pinion, press down those portions so that it is well seated in position.

**Note:** Take utmost care not to deform or damage the portion that makes contact with the center wheel and pinion.



④⑧ Setting lever spring screw

④⑨ Setting lever spring

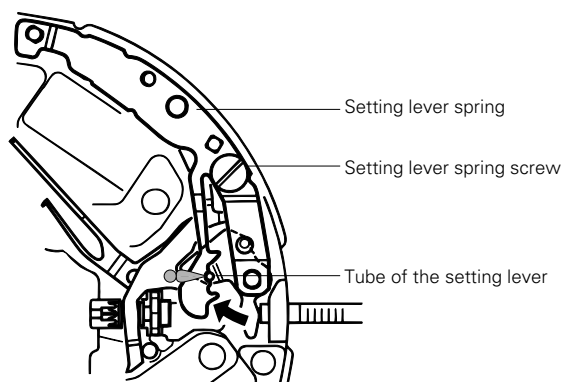
• **How to install**

- Check that the setting lever spring is securely set in position before tightening the setting lever spring screw.
- Then, gently bend the spring portion of the setting lever spring so that it catches the tube of the setting lever.

**Note:** Take care not to bend the spring portion more than necessary.

• **Lubricating**

See the illustration at right.



- ⑤① Setting lever
- ⑤② Yoke
- ⑤③ Train wheel setting lever

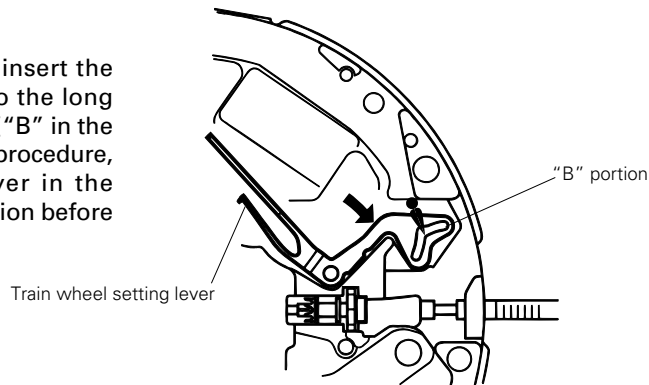
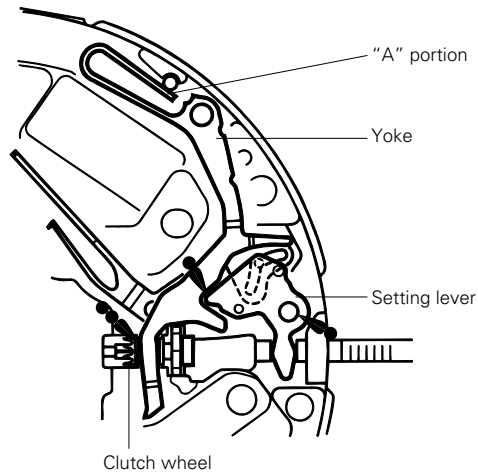
- Make sure that the spring portion of the yoke ("A" in the illustration) makes secure contact with the pin.

**Note:** If a defective contact occurs between the spring portion of the yoke and the pin, the manual power save function may not be activated.

• **Lubricating**

See the illustration at right.

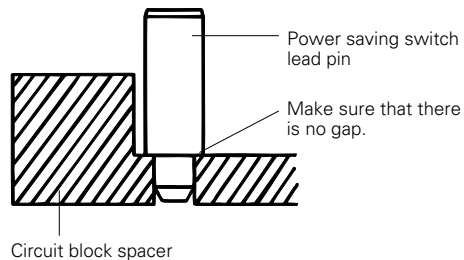
- When installing the setting lever, insert the tube on its underside properly into the long slot of the train wheel setting lever ("B" in the illustration). To facilitate the setting procedure, push the train wheel setting lever in the direction of the arrow in the illustration before installing the setting lever.



⑤④ Power saving switch lead pin

- Do not remove the power saving switch lead pin except when necessary.
- When installing the power saving switch lead pin, press it in securely to the circuit block spacer.

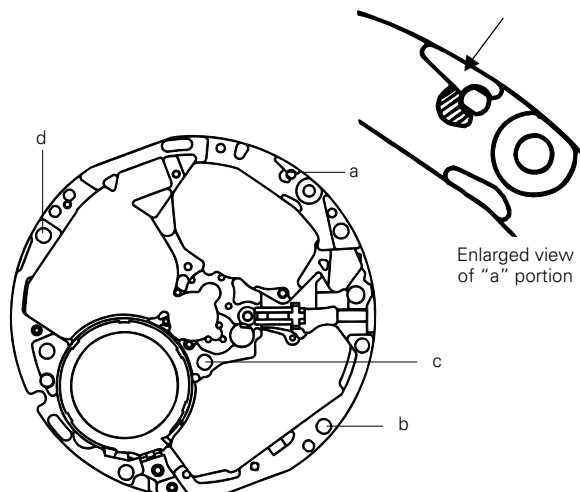
**Note:** If the power saving switch is not securely fixed to the circuit block spacer or if it comes off, the manual power save function may not be activated.



⑥① Circuit block spacer

- "a", "b", "c" and "d" portions in the illustration have elasticity and are made tight for the tubes of the movement to which they are set. After setting the circuit block spacer, press down these portions so that it is well seated in position.
- When pressing in "a" portion, press down only the portion indicated by the arrow in the enlarged view.

**Note:** Take care not to damage the shaded portion, as this will prevent the smooth movement of the setting lever spring.



## III. VALUE CHECKING AND ADJUSTMENT

### ● Coil block resistance

Second coil block : 2.00 K $\Omega$  ~ 2.45 K $\Omega$

Hour and minute coil block :

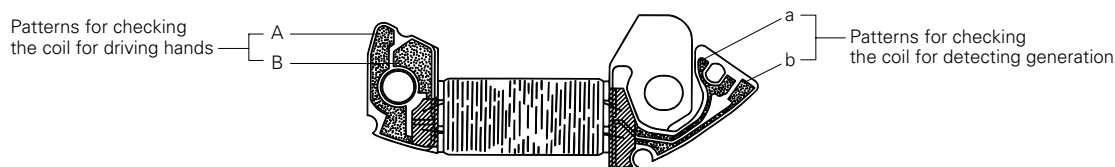
Coil for driving hands : 1.00 K $\Omega$  ~ 1.20 K $\Omega$

Coil for detecting generation : 280  $\Omega$  ~ 360  $\Omega$

**Note:** Measure the coil block resistance after installing each coil block to the movement, checking that stable measurements may be obtained.

\* The motor driving the hour and minute hands uses a special driving system so that they move quickly to indicate the current time immediately after the time relay function is activated. The hour and minute coil block has two layers of coils, one for driving hands and the other for detecting generation, and it is necessary to measure the resistance of each layer of coil.

• The illustration below shows the patterns to which the probes of the tester should be applied to measure the resistance of the respective coils.



### ● Checking for leakage between coil for driving hands and coil for detecting generation

\* If the hour and minute hands do not move properly when the time relay function is activated, that is, if they remain stopped or will not move smoothly, check for the leakage between coil for driving hands and coil for detecting generation. This checking is required only if such a problem is found.

If leakage is detected, replace the hour and minute coil block with a new one.

#### How to check the leakage

1. Make the tester ready for measuring the resistance.
2. Apply the probes of the tester to ① "A" and "a", ② "A" and "b", ③ "B" and "a", and ④ "B" and "b", respectively, to measure the resistance.
3. If the four measurements obtained are all infinitely great, that is, if the resistance was unable to be measured for all the four cases, there is no leakage between coil for driving hands and coil for detecting generation. As a guideline, there is a leakage if measurements of less than 2 K $\Omega$  were obtained.

### ● Generating coil block resistance

340  $\Omega$  ~ 440  $\Omega$

**Note:** Measure the generating coil block resistance after installing it to the movement, checking that stable measurements are obtained.

## ● Current consumption

For the whole movement

(while the hands are moving): Less than  $0.70 \mu\text{A}$  (with 1.55 V supplied from a battery)

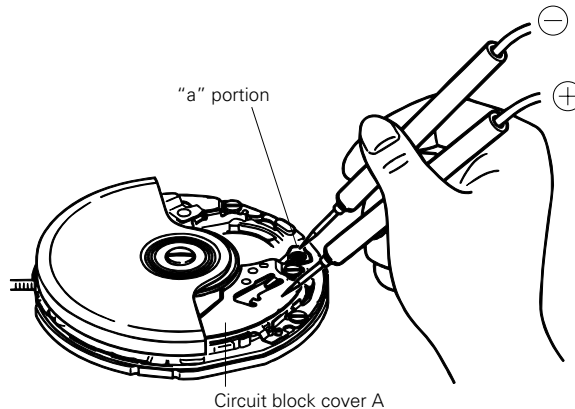
For the circuit block alone : Less than  $0.13 \mu\text{A}$  (with 1.55 V supplied from a battery)

\* The current consumption for the circuit block alone is approximately equivalent to that obtained while the power save function is in operation.

If the duration of charge is shorter than normal while the watch is left untouched, it is necessary to measure the current consumption while the power save function is in operation. In that case, however, measure the current consumption for the circuit block alone instead to decide if the watch is defective or not.

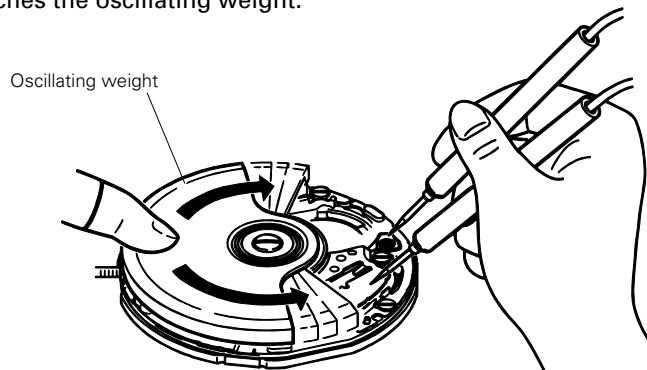
### How to measure the current consumption for the whole movement (while the hands are moving)

1. Disassemble unnecessary parts to make the movement ready for the measurement. Follow the disassembling procedure illustrated in this manual until you remove the rechargeable battery unit, and then, reassemble the oscillating weight. As a result, the rechargeable battery unit, insulator for rechargeable battery and rechargeable battery clamp are removed from the movement.
2. Apply the minus terminal to "a" portion in the illustration and plus terminal to the circuit block cover A, respectively.



3. For a few seconds after the probes of the tester are applied to the movement, the IC is in the quick start mode, and current consumption cannot be measured properly. To switch the IC from the quick start to the normal hand movement mode, move the oscillating weight from side to side continuously for more than three seconds with the tester connected to the movement. The IC will detect the electricity generation and will be switched to the normal hand movement mode.

**Note:** When moving the oscillating weight from side to side, take care lest the minus terminal of the tester touches the oscillating weight.



4. After checking that the IC has been switched to the normal hand movement mode and a stable measurement can be obtained, read the measurement. If the measurement value remains high or unstable, repeat step "3" above.

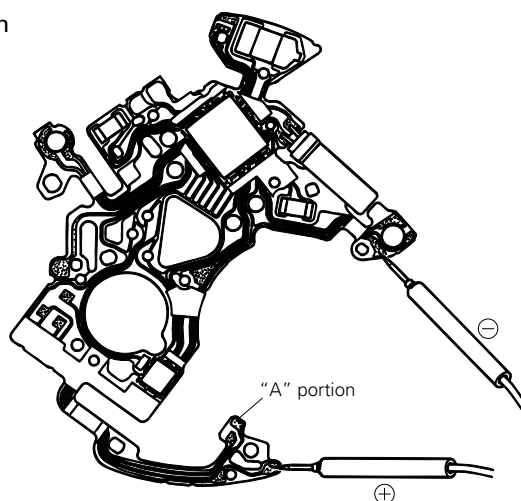


**Notes:**

- \* Light may increase the current consumption, resulting in an inaccurate measurement. If the current consumption exceeds the standard value, protect the movement from light with a black cloth or the like after following step "3" above, and make a measurement again.
- \* When the current consumption for the whole movement exceeds the standard value while the current consumption for the circuit block alone is within the standard value range, a driving pulse may be generated to compensate for the heavy load applied on the gear train, etc. In that case, overhaul and clean the movement parts, and then, measure the current consumption for the whole movement again.

**How to measure the current consumption for the circuit block alone**

1. Connect the tester to the circuit block as shown in the illustration.



2. With the tester connected to the circuit block, short-circuit "A" portion in the illustration and the input pattern (-) with a conductive tweezers for approximately 1 second. The IC will be switched from the quick start to the normal hand movement mode.
3. Checking that a stable measurement is obtained, read the current consumption.

**Notes:**

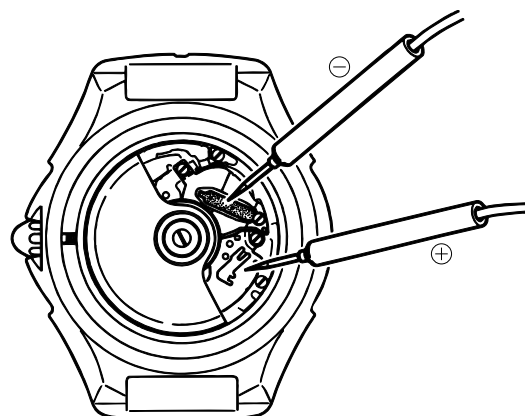
- \* The current consumption measurement for the circuit block alone is particularly susceptible to light, and a value higher than the actual measurement may be obtained if the circuit block is exposed to light. Protect the circuit from light with a black cloth or the like after following step "2" above, and then, measure the current consumption.
- \* If the current consumption for the circuit block alone exceeds the standard value, the duration of the charge will be shorter than specified. In that case, replace the circuit block with a new one.

● **Checking the automatic generating system**

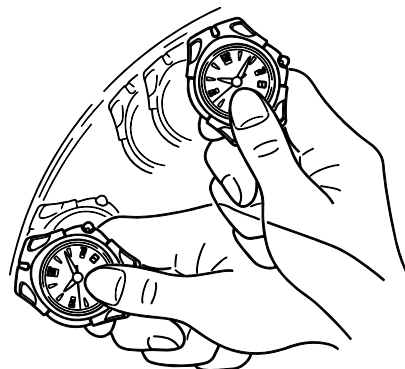
1. Apply the probes of the tester as shown in the illustration, and measure the voltage of the rechargeable battery. The obtained voltage is called the "initial voltage".

**Notes:**

- \* When applying the minus probe of the tester to the rechargeable battery, take care not to short-circuit the lead terminal (-) and the rechargeable battery clamp.
- \* If a short-circuit has occurred, leave the watch untouched for more than ten minutes, and measure the voltage again, checking that a stable measurement is obtained.



2. Close the case back tentatively, and swing the watch from side to side 200 times at a rate of 2 to 3 swings a second, making an arc of approximately 20 cm.
3. Within 3 minutes after swinging the watch, measure the voltage of the rechargeable battery in the same manner as in step "1" above.



4. Refer to the table below, and decide whether the automatic generating system is normal or defective.

**[ Initial voltage and guidelines of normal/defective decision ]**

Initial voltage	Guidelines of normal/defective decision
0.45 V ~ 1.0 V	After charging, the voltage of rechargeable battery has increased 0.1 V or more from the initial voltage.
1.01 V ~ 1.2 V	After charging, the voltage of rechargeable battery has increased 0.05 V or more from the initial voltage.

- \* The guidelines specified in the above table apply only when the initial voltage is within the range between 0.45 V and 1.2 V.
- \* The amount of electricity generated by swinging the watch varies depending on the manner in which you swing it, such the rate of swinging and the size of the swinging arc. Please note, therefore, that checking through the procedure above provides only the guideline of normal/defective decision.

**[ For your information ]**

**1. Number of swings and power reserve**

- When the power reserve in the rechargeable battery is depleted and the watch stops completely, swinging it approximately 500 times at a rate of 2 to 3 times a second will start the second hand moving at normal one-second intervals instead of two-second intervals. If the second hand still moves at two-second intervals after 500 swings, swing the watch further until it moves at one-second intervals.
- While the second hand is moving at one-second intervals, approximately 200 swings will reserve up to one day of power.

**2. The number of days over which the watch is worn and power reserve**

- Wearing the watch continuously for 12 hours will accumulate approximately one and a half additional days of power reserve.  
If you wear the watch every day for 12 hours over a period of a week, approximately 10 days of power reserve will be secured in the rechargeable battery. While the power saving function is in operation and the hands are stopped, this amount of power reserve will keep the watch operating for approximately 2 months.

**● Checking the manual power save and time relay functions**

Cal. 5J32A is equipped with the automatic and the manual power save functions to conserve the stored energy and the time relay function to start the hands moving to indicate the current time as the power save function is canceled.

**Note:** The checking procedure below can be performed only while the watch is operating. If the watch stops completely, swing the watch until the second hand starts moving at one-second intervals. Swing it further more than 200 times, and then, proceed to the checking procedure.

## Checking procedure

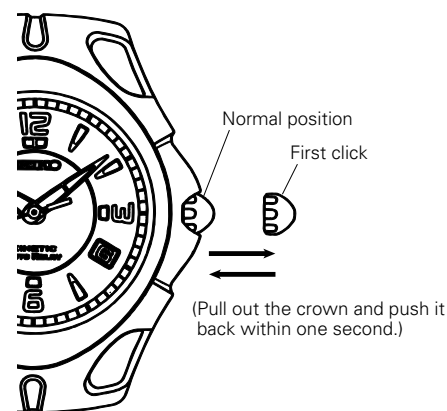
1. Adjust the time of the watch to a base time indicated by another watch.
2. Pull out the crown to the first click and push it back in to the normal position within one second. The manual power save function is activated, and the second hand stops moving.

### Notes:

- \* Take care not to pull out the crown all the way to the second click.
- \* If this happens by mistake, resume the checking procedure from step "1".

3. Leave the watch untouched for more than one minute, making sure that the power save function is in operation.
4. Swing the watch continuously for 2 to 3 seconds. The watch detects the generation of electricity, and the hands move to indicate the current time.
5. If the time indicated by the watch is identical with the base time used in step "1", the manual power save and time relay functions are normal.

**Note:** If the power save function has been in operation for a long term before the time relay function is activated, the time indicated by the watch and the base time may differ slightly though the watch is normal. This is because the two watches are different in time accuracy and different amounts of time loss or gain have accumulated during that time.



## IV. TROUBLESHOOTING GUIDE

The following are the tips on repairing Cal. 5J32A, which you will find helpful in working on the watch.

### Important functions characteristic of Cal. 5J32A

- 1) The power save function is activated after the watch is left untouched for approximately 72 hours.
- 2) The manual power save function is activated by pulling out the crown to the first click and pushing it in to the normal position within one second.
- 3) While the second hand is moving at two-second intervals, the power save function cannot be activated either automatically or manually.
- 4) If the crown is pulled out to the second click while the power save function is in operation, the time computed by the built-in IC will be canceled, thus disabling the time relay function.
- 5) The built-in IC does not compute the date, and the time relay function will not adjust the date. If the power save function has been active for more than one day before the time relay function is activated, it is necessary to adjust the date to the current date.
- 6) The accuracy of the time computed by the built-in IC while the power save function is in operation is equivalent to that of conventional quartz watches. If the power save function has been active for a long term before the time relay function is activated, the time indicated by the hands may include a certain amount of time loss or gain that has accumulated during that time.
- 7) If the power reserve is depleted while the power save function is in operation, the time relay function may not be activated by swinging the watch. Instead, the second hand starts moving at two-second intervals.

## Problems, causes and methods of repair

Problems	Possible causes	Methods of repair and checking	See the page below.
The quickness of the hand movement after the activation of the time relay function has reduced a little.	1) The coil for detecting generation of the hour and minute coil block is broken.	1) Check the resistance of the coil for detecting generation. Replace the hour and minute coil block if the coil is broken.	Page 15
The oscillating weight rotates at an abnormally high rate, and no charging is made.	1) The coil of the generating coil block is broken.	1) Check the resistance of the generating coil block. Replace the generating coil block if the coil is broken.	Page 15
	2) The pivot of the generating rotor is broken. (The pinion of the generating rotor and the gear of the intermediate wheel for generating rotor are out of mesh.)	2) Remove the broken piece of the generating rotor, and replace and lubricate the generating rotor. (Overhaul and clean if necessary.)	Page 11
The oscillating weight will not rotate.	1) The gear of the oscillating weight and the pinion of the intermediate wheel for generating rotor are out of mesh.	1) If the gear of the oscillating weight and the pinion of the intermediate wheel for generating rotor are intact, reassemble them to the movement.	Page 10
	2) The pivot of the generating rotor is broken. (The pinion of the generating rotor and the gear of the intermediate wheel for generating rotor engage with each other.)	2) Remove the broken piece of the generating rotor, and replace and lubricate the generating rotor. (Overhaul and clean if necessary.)	Page 11
The current consumption for the whole of the movement exceeds the standard value.	1) When the measurement is made, the IC is still in the quick start mode. (When the current consumption measures about 200 $\mu$ A, it is likely that the IC is in the quick start mode.)	1) After connecting the tester, move the oscillating weight more quickly for a longer period of time, and then, make the measurement again.	Page 16
	2) The load applied on the gear train, etc. has increased, and the driving pulse to compensate it has been generated.	2) If the current consumption for the circuit block alone is within the standard value range, overhaul and clean the movement parts, and then, make the measurement again.	Page 17
The current consumption for the circuit block alone exceeds the standard value.	1) The light from outside the movement is affecting the measurement.	1) Shut out the light, and make the measurement again.	Page 17
	2) When the measurement is made, the IC is still in the quick start mode. (When the current consumption measures about 200 $\mu$ A, it is likely that the IC is in the quick start mode.)	2) Switch the IC to the normal mode, and make the measurement again.	Page 17
	3) The IC is out of order.	3) Replace the circuit block.	
The manual power save function cannot be activated.	1) The energy depletion forewarning function is in operation.	1) Swing the watch until the second hand moves at one-second intervals, and then, check if the manual power save function is activated.	Page 18
	2) The power save switch lead pin is not in contact with the yoke.	2) Check if the power save switch lead pin is set in position. Check if the yoke functions properly.	Page 14
	3) The yoke and the movement do not conduct electricity.	3) Check if the spring portion of the yoke catches the pin of the movement while making contact with it.	Page 14

Problems	Possible causes	Methods of repair and checking	See the page below.
Swinging the watch while the power save function is active will not activate the time relay function. (Swinging the watch starts the second hand moving at two-second intervals.)	1) The energy stored in the rechargeable battery has been depleted while the power save function is in operation.	1) Swing the watch until the second hand moves at one-second intervals, and activate the power save function manually to check if the time relay function can be activated.	Page 18
Swinging the watch while the power save function is active will not activate the time relay function. (Swinging the watch will not start the second hand moving at all.)	1) There is electric leakage inside the hour and minute coil block.	1) Check for leakage of the hour and minute coil block. Replace the part if leakage is detected.	Page 15
After the time relay function is activated, the hands do not make the quick movement smoothly, or the hands indicate a time that differs greatly from the correct time.	1) There is electric leakage inside the hour and minute coil block.	1) Check for leakage of the hour and minute coil block. Replace the part if leakage is detected.	Page 15
The date numeral does not appear in the center of the calendar frame.	1) As the date driving wheel spring is deformed, the date driving wheel does not contact with the intermediate date driving wheel, thus making the date driving wheel turn irregularly.	1) Correct the deformation of the date driving wheel spring. Replace the date driving wheel if it is deformed to the extent that the correction is impossible.	Page 9

\* For the troubleshooting of such defects as conventional quartz watches have in common, refer to the "TECHNICAL GUIDE, GENERAL INSTRUCTIONS".

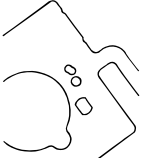
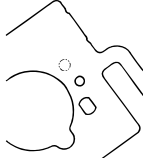
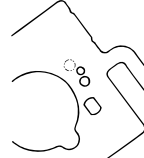
**Interchangeability among the new 5J32 parts and existing 5JCAL. series parts**

Part name	Part code	CAL.	5J32	5J22	5J21
Train wheel bridge	0125556		○	○	○
	0125557		×	○	○
Minute wheel and pinion	0261553		○	○	○
	0261552		×	○	○
Clutch wheel	0282523		○	○	○
	0282522		×	○	○
Circuit block spacer	4408524		○	○	×
	4408521		×	○	×
	4408523		×	×	○
Main plate	0100556		○	○	×
	0100557		×	○	×
	0100558		×	×	○

\* Dedicated part code for 5J21 only

\* Dedicated part code for 5J21 only

Identification of 5J series circuit blocks

CAL.	5J32	5J22	5J21
Part code	4000516	4000679	4000689
External appearance		* 	* 

\* Some circuit blocks have a hole shown in dotted line.

