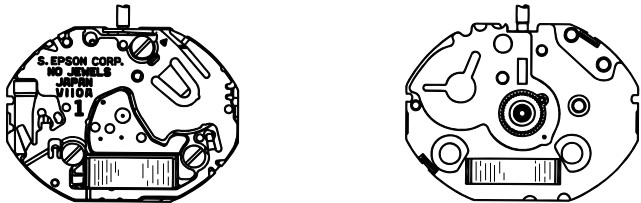


PARTS CATALOGUE/TECHNICAL GUIDE

Cal. V110A

[SPECIFICATIONS]

| Item | | Cal. No. | V110A |
|---------------------------------|----------------------|---|--|
| Movement | | |  <p style="text-align: right;">(x 2.0)</p> |
| Movement size | Outside diameter | 15.55 mm between 12 o'clock and 6 o'clock sides 11.80 mm between 3 o'clock and 9 o'clock sides | |
| | Casing diameter | 15.15 mm between 12 o'clock and 6 o'clock sides 11.80 mm between 3 o'clock and 9 o'clock sides | |
| | Height | 2.09 mm | |
| Time indication | | Two hands (Moves at 20-second intervals) | |
| Driving system | | Step motor (Load compensated driving pulse type) | |
| Additional mechanism | | <ul style="list-style-type: none"> • Electronic circuit reset switch • Overcharge prevention function | |
| Loss/gain | | Monthly rate at normal temperature range: less than 20 seconds | |
| Regulation system | | Nil | |
| Measuring gate by quartz tester | | Use 10-second gate. | |
| Power supply | Power generator | Solar power system | |
| | Rechargeable battery | Titanium lithium ion rechargeable battery | |
| Expected life per charge | | From full charge to stoppage: Approx. 5 months | |
| Jewels | | 0 jewels | |

PARTS CATALOGUE

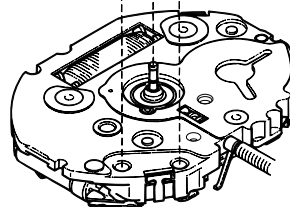
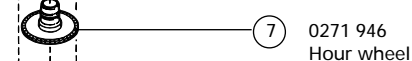
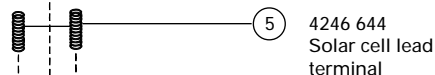
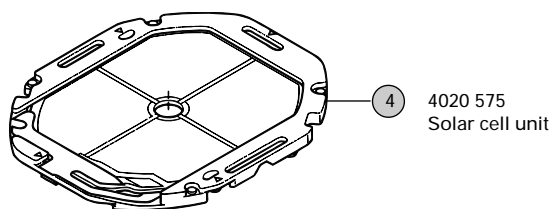
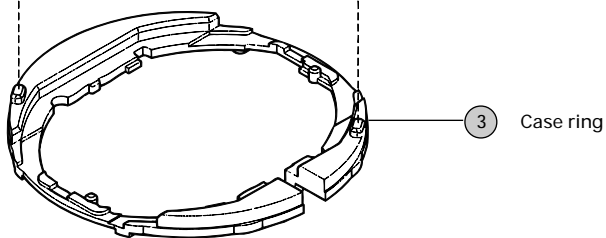
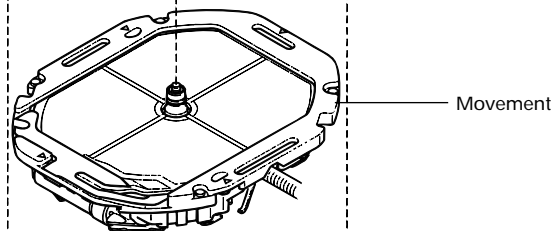
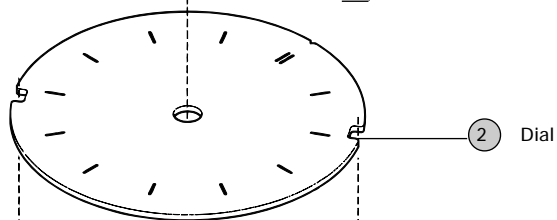
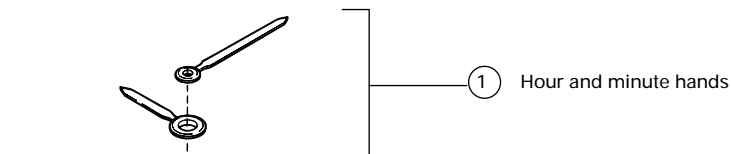
Cal. V110A

Disassembling procedures Figs. : ① → ②⑥

Reassembling procedures Figs. : ②⑥ → ①

Lubricating: Types of oil

| | | | |
|----|-----------|----|-----------------|
| ●▶ | Moebius A | ○▶ | Normal quantity |
| ▨▶ | Moebius F | | |



Remarks on removing the winding stem

- To remove the winding stem, push the setting lever using something with a pointed, as the hole for pushing it is very small.
- In doing so, take care not to damage the circuit block board placed near the hole.

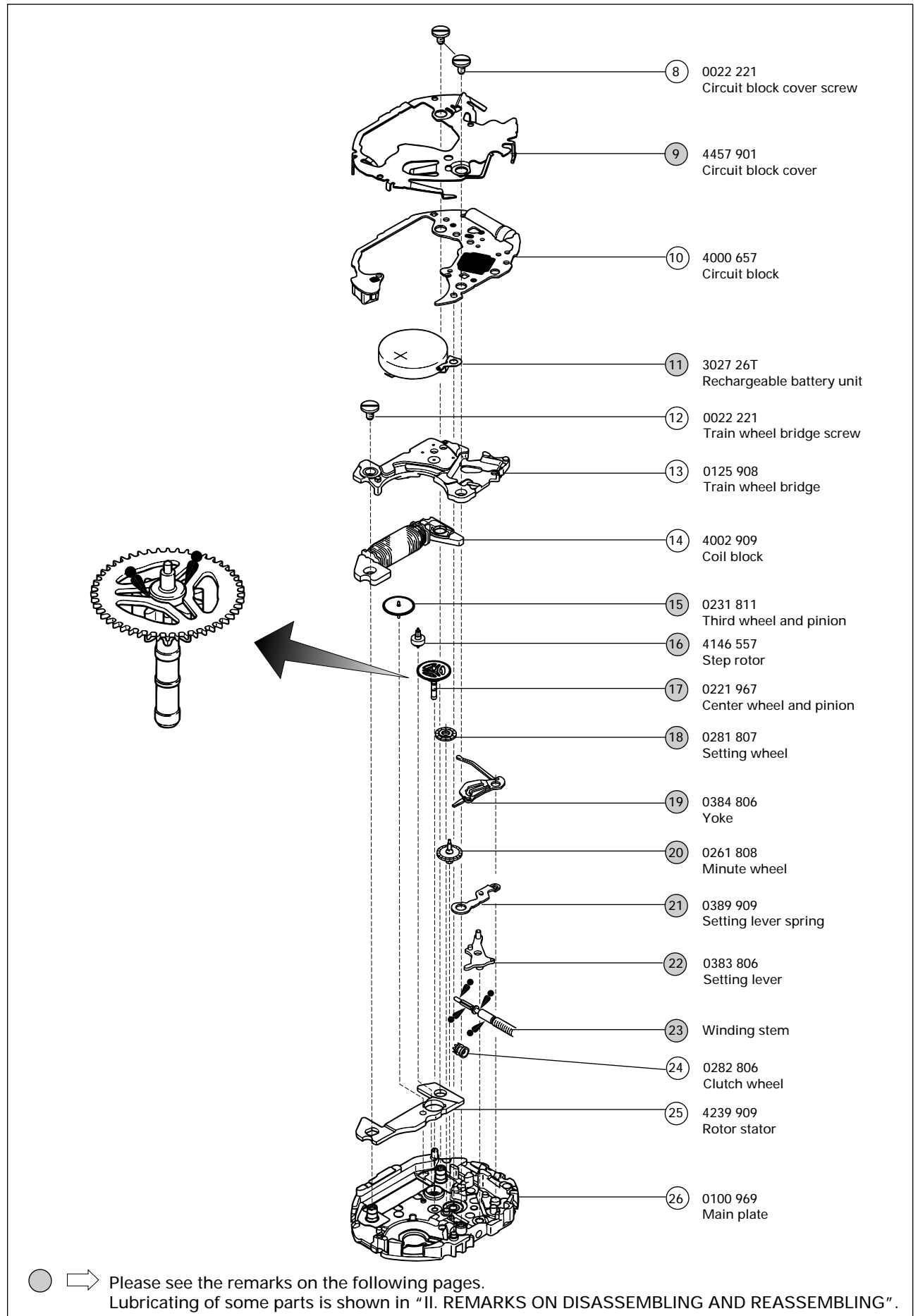


0022 221
 • Circuit block cover screw (2 pcs.)
 • Train wheel bridge screw (1 pc.)

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

PARTS CATALOGUE

Cal. V110A



Remarks:

③ Case ring 8280 562

The type of case ring is determined based on the design of cases. Check the case number and refer to "SEIKO Casing Parts Catalogue" to choose a corresponding case ring.

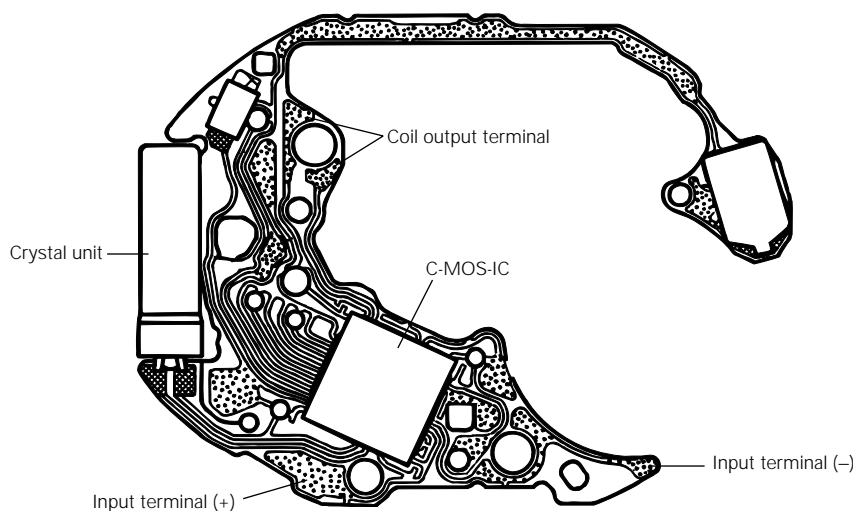
②③ Winding stem 0351 861

The type of winding stem is determined based on the design of cases. Check the case number and refer to "SEIKO Casing Parts Catalogue" to choose a corresponding winding stem.

TECHNICAL GUIDE

- The explanation here is only for the particular points of Cal. V110A.
- 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

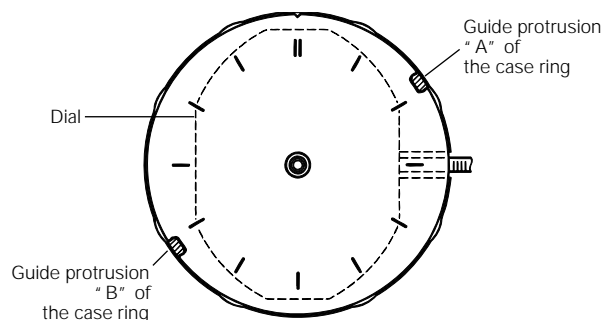
For disassembling and reassembling, be sure to use the universal movement holder.

② Dial

• How to install

Set the notched portions of the dial to the guide protrusions "A" and "B" of the case ring, and check that the dial is fixed in position.

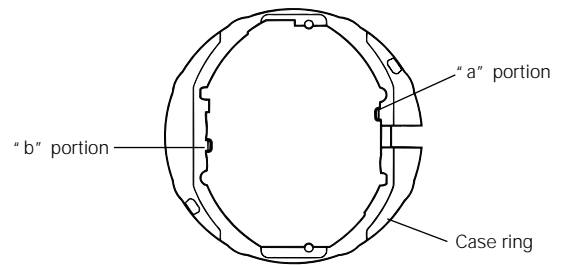
Note: When checking the assembling of the hands, hold the dial securely as it easily comes out of position.



③ Case ring

• How to install

- The case ring has two protrusions at the "a" and "b" portions as shown in the illustration at right, and it is fixed to the movement by the protrusions.
- To install the case ring, push it above the "a" and "b" portions so that the protrusions catch the movement securely.



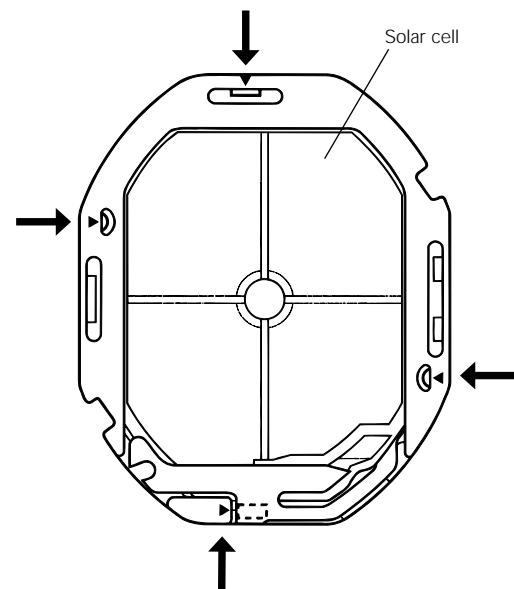
④ Solar cell unit

• How to remove

Release the four hooking portions marked with the arrows in the illustration at right from the main plate, using tweezers or the like.

• How to install

Push the solar cell unit above the four hooking portions marked with the arrows in the illustration at right so that they catch the main plate securely.



Notes:

- * When removing or installing the solar cell unit, take care not to damage the solar cell.
- * If the solar cell is damaged, its power generating capacity may be greatly decreased. In that case, check the output voltage for the solar cell unit, following the procedure in the corresponding section of this guide. If the voltage is not normal, replace the solar cell unit with a new one.
- * If the solar cell is soiled, gently wipe it with a soft chamois or the like soaked with alcohol, taking care not to damage it.

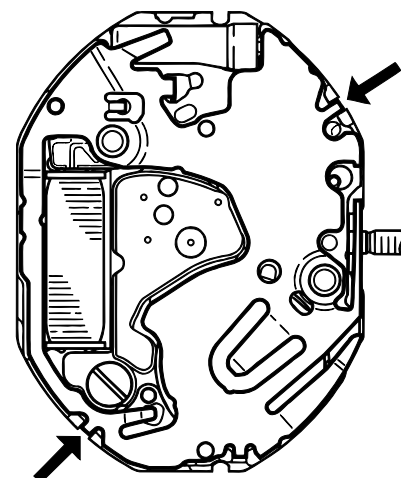
⑨ Circuit block cover

• How to remove

Remove the two circuit block cover screws, and then, release the two hooking portions marked with the arrows in the illustration at right from the main plate.

• How to install

Set the circuit block cover so that the two hooking portions marked with the arrows in the illustration at right catch the main plate securely, and then, tighten the circuit block cover screws.



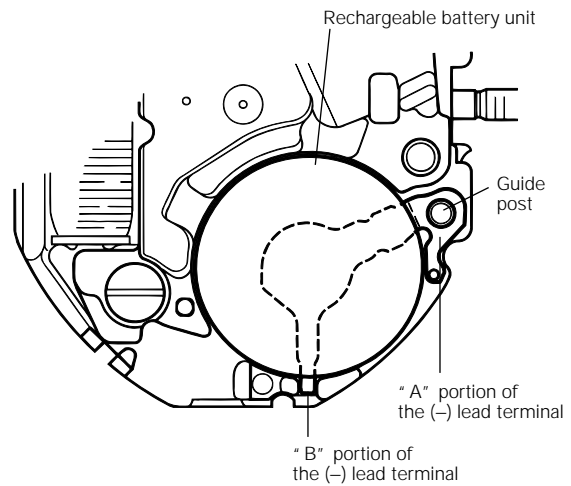
⑪ Rechargeable battery unit

• **How to install**

Set the "B" portion of the (-) lead terminal of the rechargeable battery unit to the groove of the main plate, and then, set the "A" portion of the (-) lead terminal to the guide post of the main plate.

Notes:

- * Handle the rechargeable battery unit with care so as not to short-circuit its (+) and (-) terminals. Otherwise, the rechargeable battery unit will be deteriorated.
- * Never wash the rechargeable battery unit as it is an electronic part.



⑮ Third wheel and pinion

⑯ Step rotor

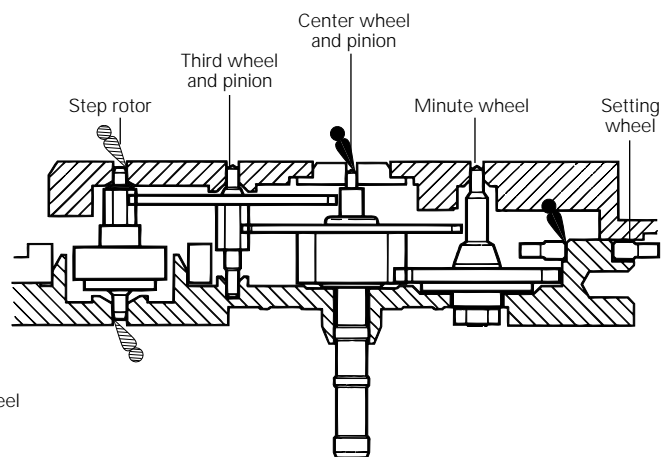
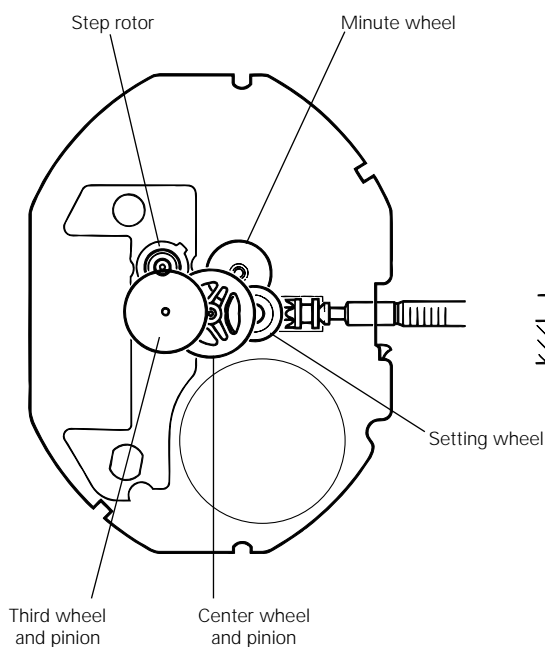
⑰ Center wheel and pinion

⑱ Setting wheel

⑳ Minute wheel

• **Setting position and lubricating**

Refer to the illustrations below for the setting position and lubrication of the respective wheels.



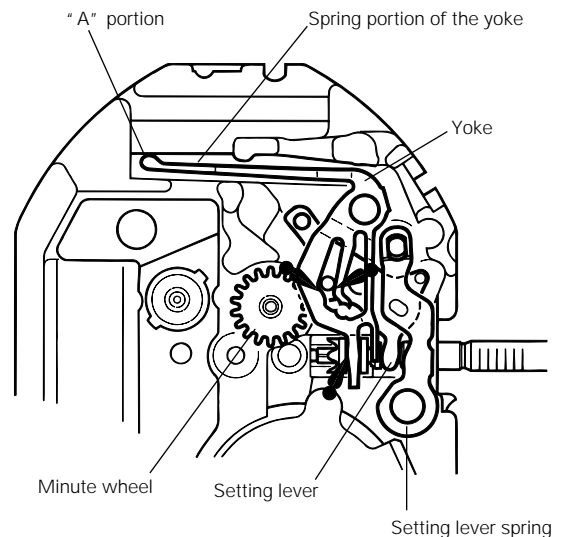
- ①9 Yoke
- ②1 Setting lever spring
- ②2 Setting lever

• **Setting position and lubricating**

Refer to the illustration below for the setting position and lubrication of the respective parts.

- Have the spring portion of the yoke securely catch the protruded portion of the main plate ("A" portion in the illustration).

Note: Take care not to install the setting lever spring upside down. (Refer to the illustration at right.)



III. VALUE CHECKING

● **Coil block resistance**

1.2 K Ω ~ 1.6 K Ω

● **Current consumption**

For the whole movement : Less than 0.22 μ A (with voltage supplied from a battery)

For the circuit block alone : Less than 0.16 μ A (with voltage supplied from a battery)

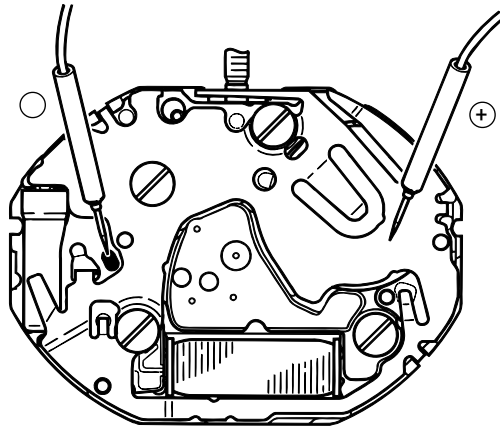
How to measure the current consumption for the whole movement

1. Remove the solar cell unit.
2. Remove the rechargeable battery unit, and then, reassemble the circuit block, circuit block cover and two circuit block cover screws.
(As a result, only the rechargeable battery is removed from the movement.)
3. Apply the probes of the tester as shown in the illustration on the next page.

Note: When applying the minus probe of the tester, take care not to short-circuit the minus probe and circuit block cover.

4. After checking that a stable measurement is obtained with the tester connected, read the current consumption.
(As the hands move at 20-second intervals, 3 to 5 minutes may be required before a stable measurement is obtained.)

Note: If the measurement value remains high or unstable, shut out the light from the movement, and make a measurement again.

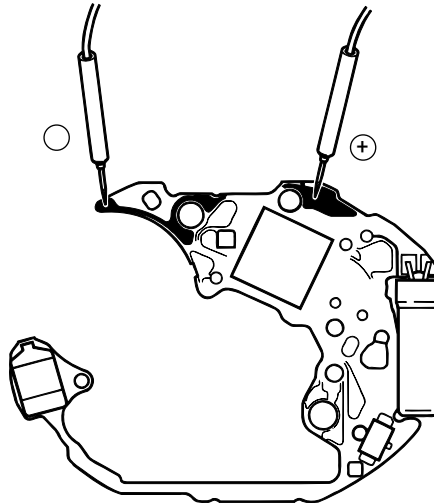


How to measure the current consumption for the circuit block alone

1. Apply the probes of the tester as shown in the illustration.
2. Shut out the light from the circuit block.

Note: If the circuit block is exposed to light, an extremely high measurement value may be obtained.

3. After checking that a stable measurement is obtained with the tester connected, read the current consumption.

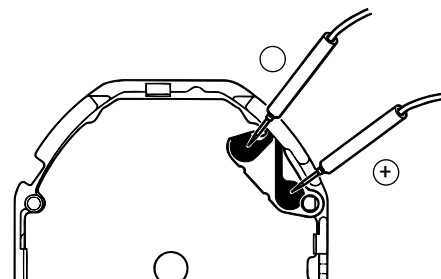


● Output voltage for the solar cell unit

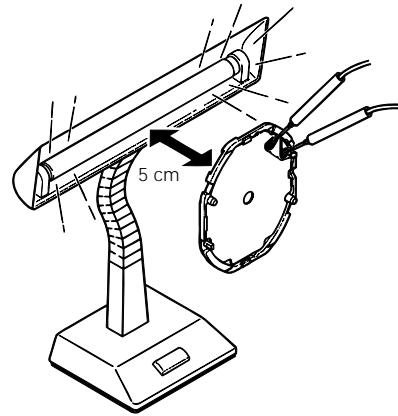
Output voltage when the watch is placed at a distance of 5 cm under a fluorescent light of 15 to 20 watts : More than 2.3 V

Checking procedure

1. Connect the tester to the output terminal of the solar cell unit as shown in the illustration at right.



2. With the probes of the tester applied, place the solar cell unit at a distance of 5 cm under a fluorescent light of 15 to 20 watts, exposing the solar cell side to the light, and then measure the output voltage.

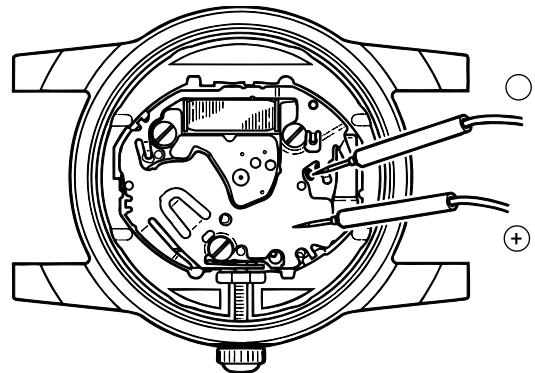


● Checking the recharging function

A conventional method of checking the recharging function is to check the difference of the rechargeable battery voltage between before and after a recharge.

Checking procedure

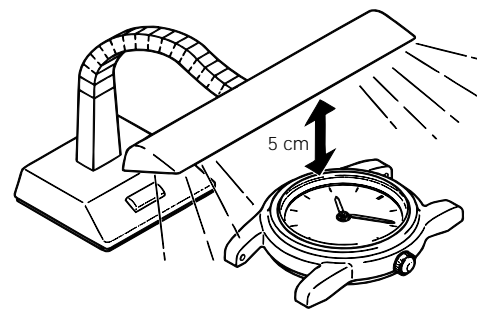
1. Apply the probes of the tester as shown in the illustration at right to measure the voltage of the rechargeable battery before recharge (initial voltage).



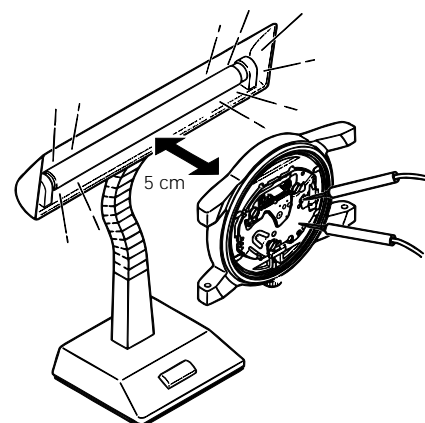
2. Place the watch at a distance of 5 cm under a fluorescent light of 15 to 20 watts, and charge it for 30 minutes.

Notes:

- * Use a fluorescent light to charge the watch, as light sources generating heat may cause damage to the watch. To charge the watch efficiently, place it under the center of the fluorescent tube.
- * While charging the watch, make sure that the watch temperature does not exceed 60° C.



3. After recharging for 30 minutes, apply the probes of the tester in the same manner as in step "1" above, and measure the rechargeable battery voltage while keeping the watch exposed to the light.



4. Refer to the table below to determine whether the recharging function is normal or not.

[Initial voltage and guidelines of normal/defective decision]

| Initial voltage | Guidelines of normal/defective decision |
|-----------------|--|
| 0.5 V ~ 1.00 V | The battery is normal if the rechargeable battery voltage obtained after recharge is more than 1.2 V. |
| 1.01 V ~ 1.2 V | The battery is normal if the rechargeable battery voltage has increased more than 0.08 V after recharge. |

[For your information]

● Guideline of charging time (approx.)

| Illumination (lux) | Light source | Environment | Time required for full charge | Time required for steady operation ★1 | Time required to charge 1 day of power ★2 |
|--------------------|----------------------------|-------------------|-------------------------------|---------------------------------------|---|
| 500 | 60-watt incandescent light | Distance of 60 cm | 190 hours | 20 hours | 70 minutes |
| 700 | Fluorescent light | Office, overhead | 140 hours | 16 hours | 50 minutes |
| 1,000 | 30-watt fluorescent light | Distance of 70 cm | 100 hours | 11 hours | 35 minutes |
| 3,000 | 30-watt fluorescent light | Distance of 20 cm | 30 hours | 3.5 hours | 11 minutes |
| 5,000 | 30-watt fluorescent light | Distance of 12 cm | 15 hours | 100 minutes | 6 minutes |
| 10,000 | 30-watt fluorescent light | Distance of 3 cm | 8 hours | 50 minutes | 3 minutes |
| 10,000 | Sun | Cloudy weather | 8 hours | 50 minutes | 3 minutes |
| 100,000 | Sun | Fair weather | 2 hours | 15 minutes | 1 minute |

★1: The time required to charge 1-day of power after all the energy stored in the rechargeable battery is totally depleted.

★2: The time required to additionally charge 1-day of power while the watch is in use.

* The above table provides only a general guideline, and actual charging time may differ from model to model.

Caution for charging:

To prevent damage to the watch caused by heat from a light source, make sure that the watch temperature does not exceed 60° C while charging the watch.

