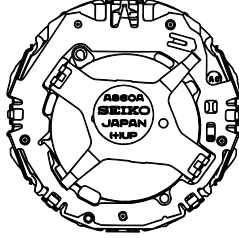
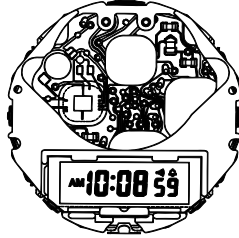


PARTS CATALOGUE / TECHNICAL GUIDE

Cal. A860A

Cal. A861A

[SPECIFICATIONS]



Item		Cal. No.	A860A	A861A
Module				
			The illustrations refer to Cal. A860A. (x 1.0)	
Module size	Outside diameter		ø32.0 mm 31.6 mm between 3 o'clock and 9 o'clock sides 31.7 mm between 6 o'clock and 12 o'clock sides	
	Casing diameter		-	
	Height		7.1 mm (Including the battery portion)	
Display medium			Nematic Liquid Crystal, FEM (Field Effect Mode)	
Liquid crystal driving system			Multiplex driving system	
Display system			<ul style="list-style-type: none"> • Time display • Stopwatch display (In 1/100 second increments for the first 20 minutes) • Alarm display 	
Additional mechanism			<ul style="list-style-type: none"> • Speaking function (Current time, stopwatch measurements, hourly time signal, alarm time and selected digits to be adjusted) • Battery life indicator • Alarm test system 	
Loss/gain			Monthly rate at normal temperature range: less than 20 seconds	
Regulation system			Nil	
Measuring gate by quartz tester			Any gate can be used.	
Battery			SEIKO CR2025, Maxell CR2025, Sony CR2025, Matsushita CR2025, Eveready ECR2025 Battery life is approximately 2 years. Voltage: 3.0 V	

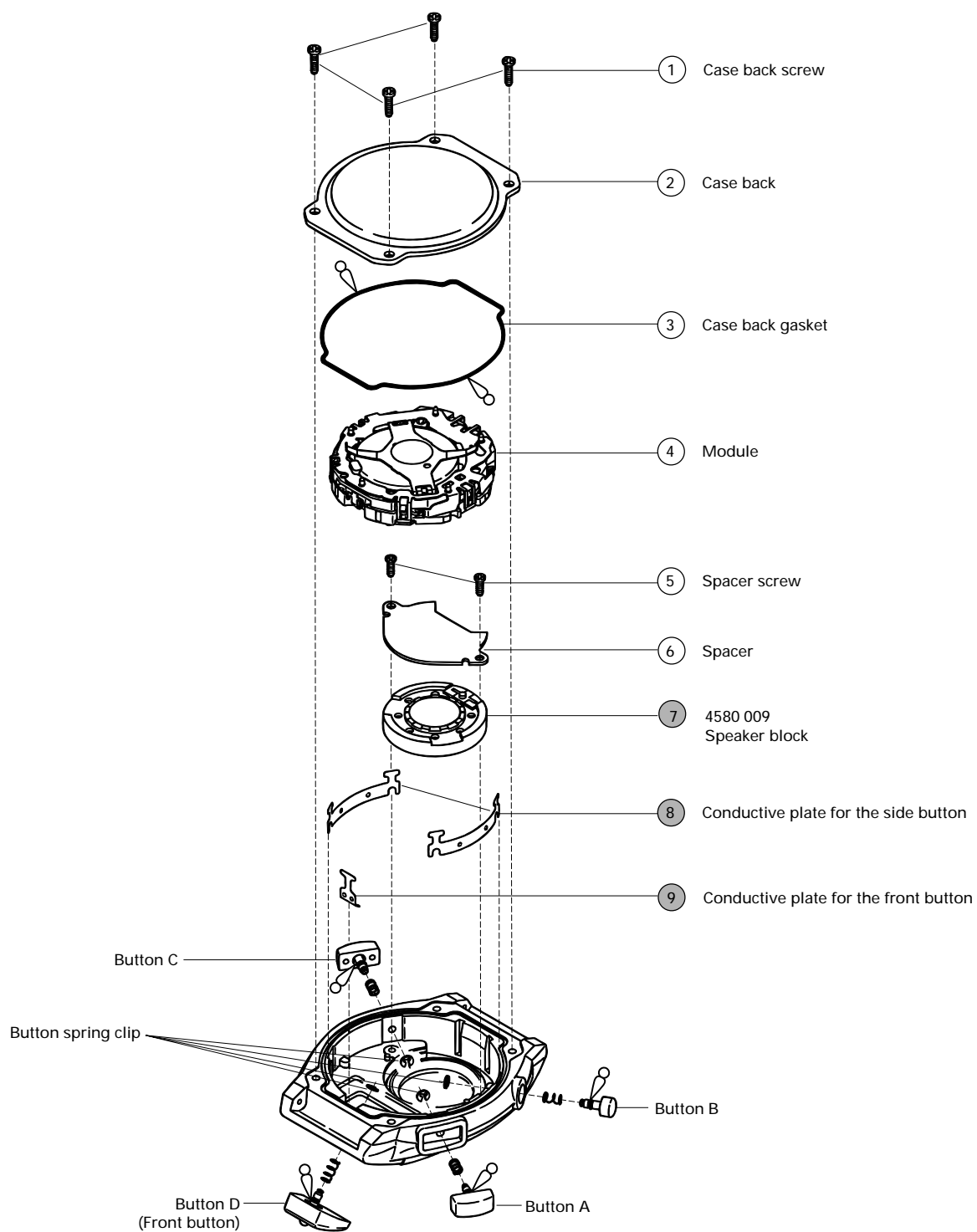
PARTS CATALOGUE

Cal. A860A, A861A

Disassembling procedures Figs. : ① → ⑳

Reassembling procedures Figs. : ㉑ ← ①

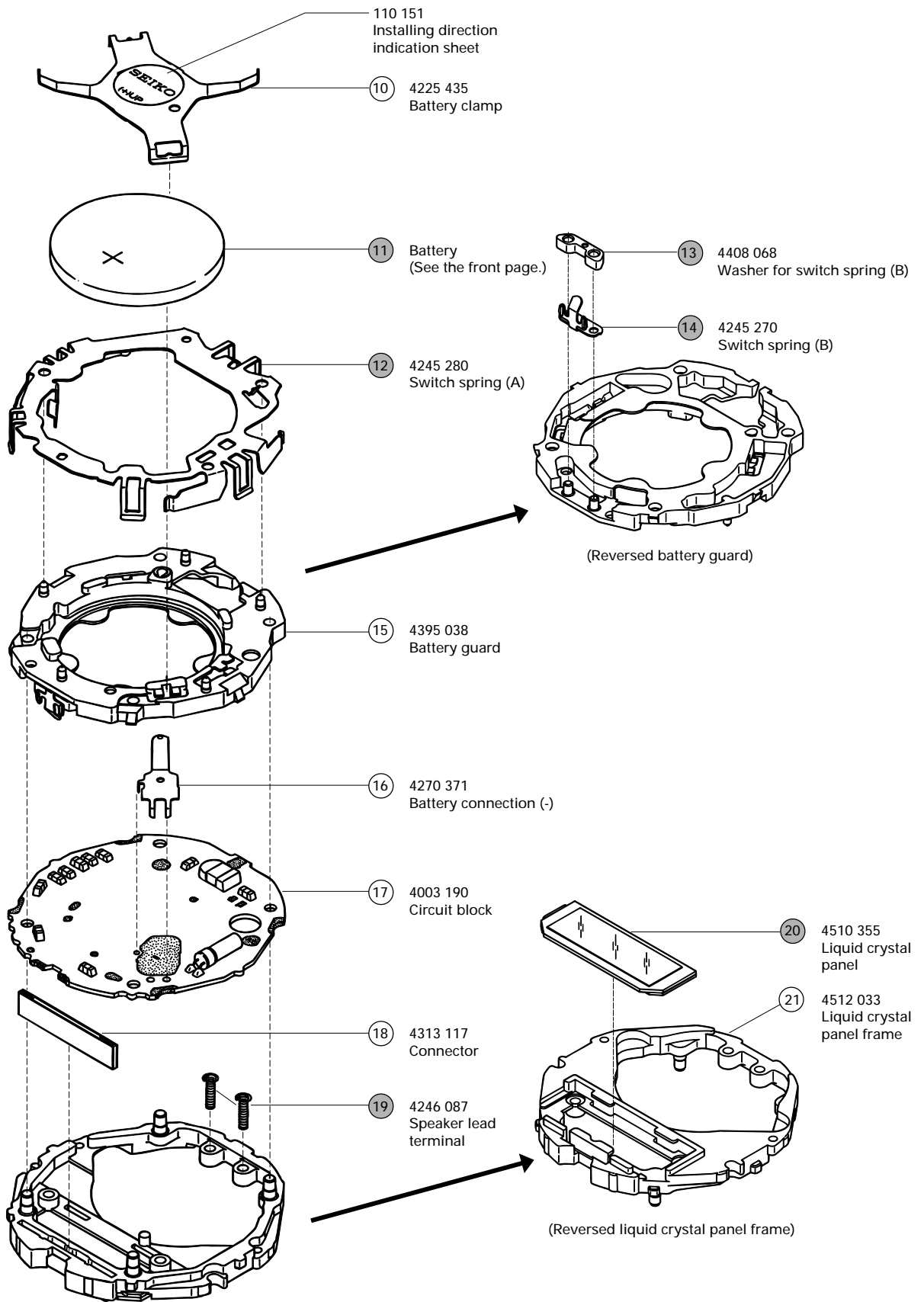
Lubricating: Types of oil **Oil quantity**
 Silicone oil 500,000  Normal quantity



○ ➡ Please see the remarks on the following pages.

PARTS CATALOGUE

Cal. A860A, A861A



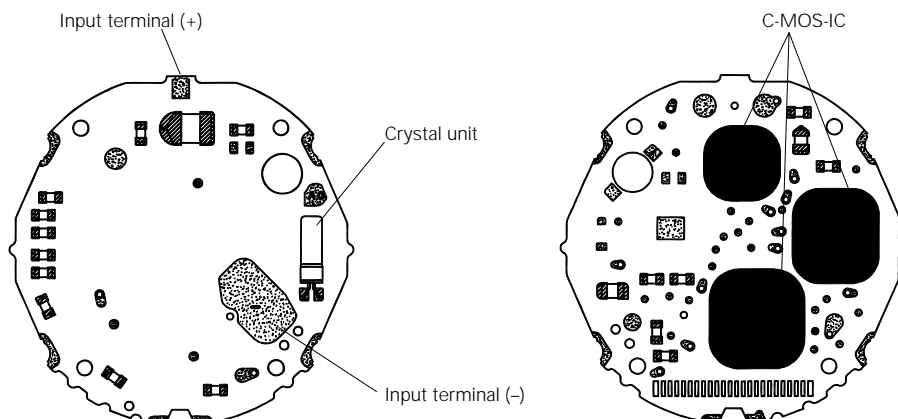
○ ➞ Please see the remarks on the following pages.

TECHNICAL GUIDE

Cal. A860A, A861A

- The explanation here is only for the particular points of Cal. A860A and A861A.
- For the repairing, checking and measuring procedures, refer to the "TECHNICAL GUIDE, GENERAL INSTRUCTIONS".

I. STRUCTURE OF THE CIRCUIT BLOCK



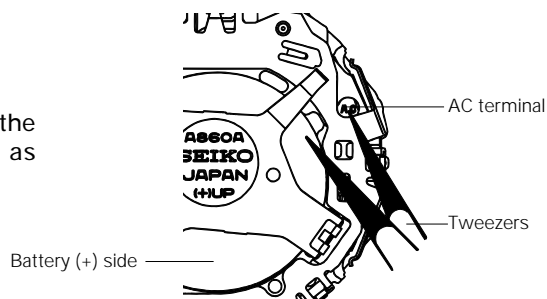
II. REMARKS ON INSTALLING THE BATTERY

After the battery is replaced with a new one, or after the battery is re-installed following the repairing procedures, be sure to follow either of the two methods below to reset the circuit.

• METHOD 1

To reset the circuit of a module:

Short-circuit the AC terminal of the circuit block and the battery positive surface with conductive tweezers as illustrated at right.

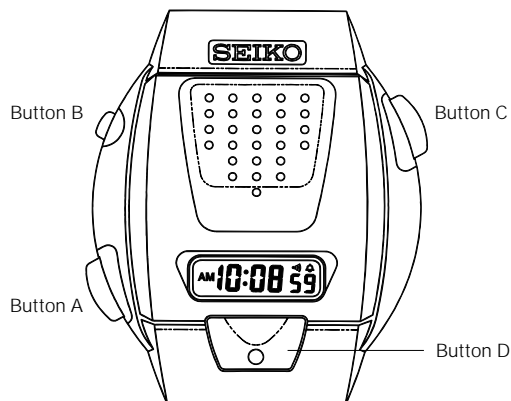


• METHOD 2

To reset the circuit of a complete watch:

Press and hold buttons "A", "B", "C" and "D" at the same time for 2 to 3 seconds.

* The display will become blank, indicating that the circuit is reset.



* When the circuit is reset, "AM 12:00 00" is displayed as the seconds start counting immediately.

* After resetting the circuit, set the time. (See "HOW TO USE".)

III. REMARKS ON DISASSEMBLING AND REASSEMBLING

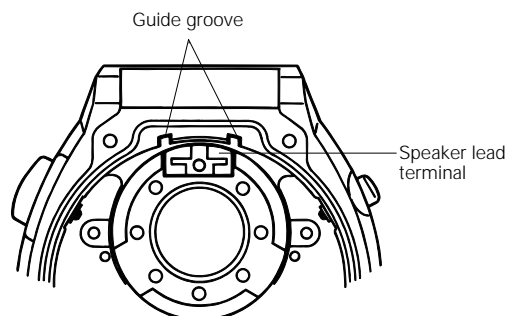
Use the universal movement holder for disassembling and reassembling.

⑦ Speaker block

• How to install

Set the speaker block so that the speaker lead terminal is positioned between the guide grooves of the case as shown in the illustration at right.

Note: When installing the speaker block, take care not to damage its transparent sound diaphragm.

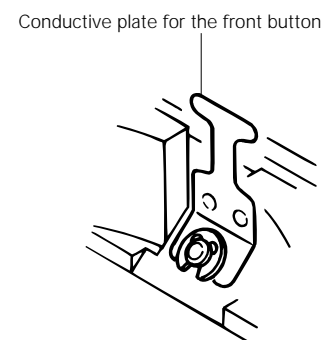
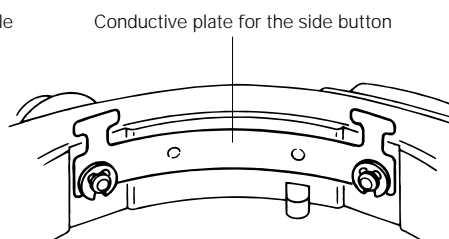
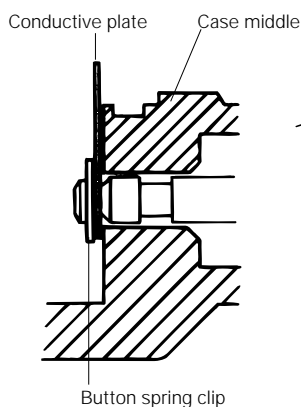


⑧ Conductive plate for the side button

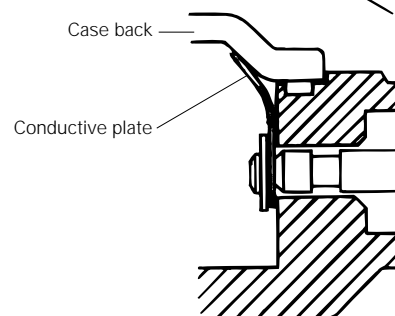
⑨ Conductive plate for the front button

• How to install

- Insert the conductive plates for the side and front buttons into the gap between the button spring clip and the case middle as shown in the illustrations below.



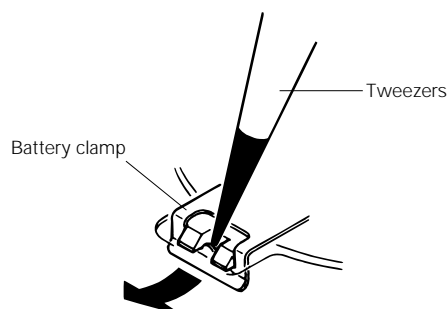
- When closing the case back, check that the conductive plates are in contact with the case back, being bent by it towards the center of the watch.
- In doing so, the case back may be hard to set in position, as the conductive plates have a repelling force when bent.



⑩ Battery clamp

• How to remove

Insert the tip of tweezers into the center of the hooking portion of the battery clamp and pry it up toward the direction of the arrow in the illustration at right to remove it.



⑪ Battery

• **How to install**

Set the battery with its (-) side down.

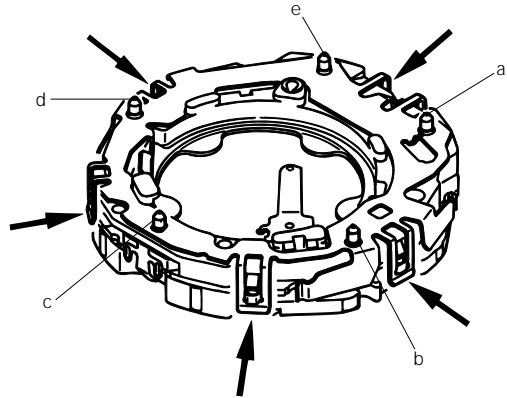
⑫ Switch spring (A)

• **How to remove**

Release the five hooking portions of the switch spring (A) indicated by the arrows in the illustration at right, and then, lift it up to remove.

• **How to install**

Set the switch spring (A) to the guide posts "a", "b", "c", "d" and "e" in the illustration at right, and then, have the five hooking portions of the switch spring catch the module securely.



⑬ Washer for switch spring (B)

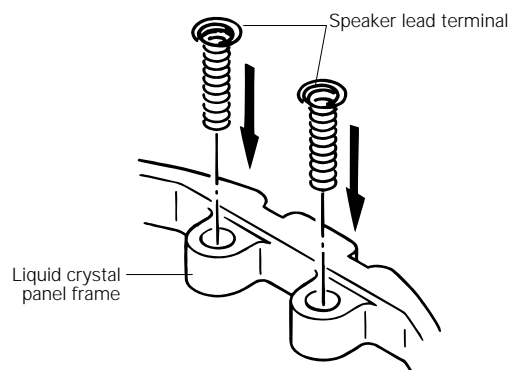
⑭ Switch spring (B)

- Do not disassemble the switch spring (B) and its washer except when they need to be replaced.
- When installing the switch spring (B), take care not to set it in the wrong direction. (See the exploded view on page 3.)

⑰ Speaker lead terminal

• **How to install**

Set the end portion of smaller diameter to the guide hole of the liquid crystal panel frame.



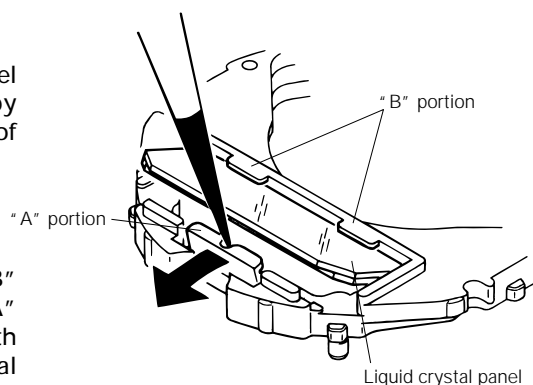
⑳ Liquid crystal panel

• **How to remove**

Release the hooking portion of the liquid crystal panel frame ("A" portion in the illustration at right) by moving it in the direction of the arrow with the tip of tweezers, and remove the liquid crystal panel.

• **How to install**

Slip the liquid crystal panel into the gap under "B" portions of the liquid crystal panel frame, release "A" portion by moving it in the direction of the arrow with the tip of tweezers, and then, set the liquid crystal panel.



IV. VALUE CHECKING

- **Speaker block resistance**

44 Ω ~ 84 Ω

- **Current consumption**

For the whole module : Less than 5.0 μ A (with voltage supplied from a battery)

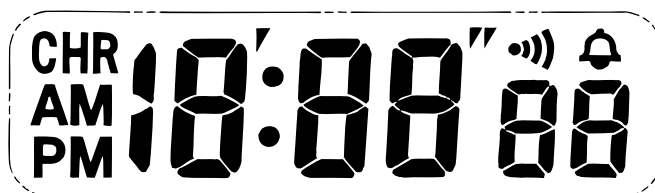
For the circuit block alone : Less than 4.0 μ A (with voltage supplied from a battery)

- **All the segments lit up**

How to light up all the segments

Press and hold button "B" for 2 to 3 seconds to show the TIME SETTING display, and then, press buttons "C" and "D" at the same time to light up all the segments of the display.

With all the segments lit up, check for abnormal displays, etc.



[All the segments lit up]

- To return to the normal display, press button "A", "B", "C" or "D". (The watch will return to the TIME mode.)

- **Time accuracy**

- 1) Light up all the segments of the display, following the procedure above.
- 2) Place the watch on the microphone's mark for placing the watch with the liquid crystal panel facing the mark.

* If a stable measurement cannot be obtained, adjust the level by turning the level adjuster knob.

HOW TO USE

Cal. A860A, A861A

- The functions and operation of the buttons are listed below. For checking or repair of the watch, refer to the table below for guidance.



Button A (Changeover of modes)	Button B	Button C	Button D (Speaking button)
	(Not pressed)	Engagement/disengagement of the hourly time signal Engaged: Hourly time signal mark is displayed. Disengaged: Hourly time signal mark is not displayed.	Announcement of the current time by voice
	TIME SETTING function by pressing for 2 to 3 seconds	Selection of the digits (flashing) to be adjusted	Setting the seconds, minutes and hour
	Resetting the stopwatch	Start/stop of the stopwatch	Announcement of the elapsed time by voice
	(Not pressed)	Engagement/disengagement of the alarm	Announcement of the alarm time or digits to be adjusted, by voice
	ALARM SETTING function by pressing for 2 to 3 seconds	Selection of the digits (flashing) to be adjusted	Hour and minute setting

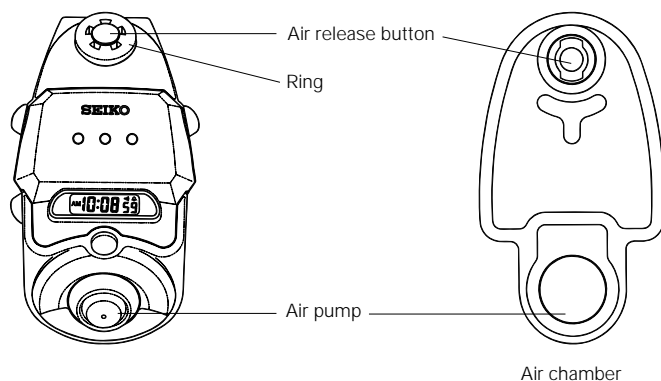
* With each press of button "A", the mode changes over in the above order.

* By pressing a button in each display, the function to be performed is announced by voice. (Speaking function)

HOW TO REMOVE/ATTACH THE RING AND AIR CHAMBER (FOR CAL. A861A)

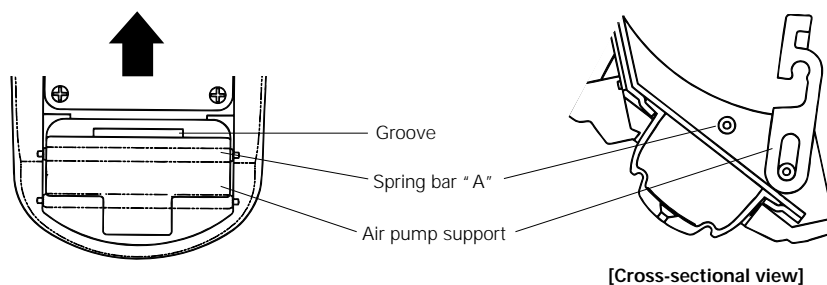
- Before removing the air chamber from the watch case or attaching it to the case for such purposes as cleaning and replacement with a new one, be sure to push the air release button to let the air completely out of it.
- Before replacing the battery with a new one, be sure to remove the air chamber from the watch case.

• Parts of the air chamber

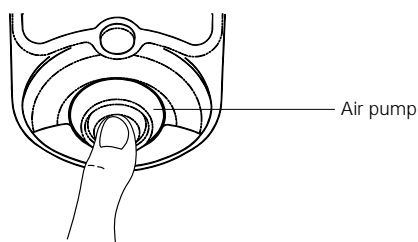


• How to remove

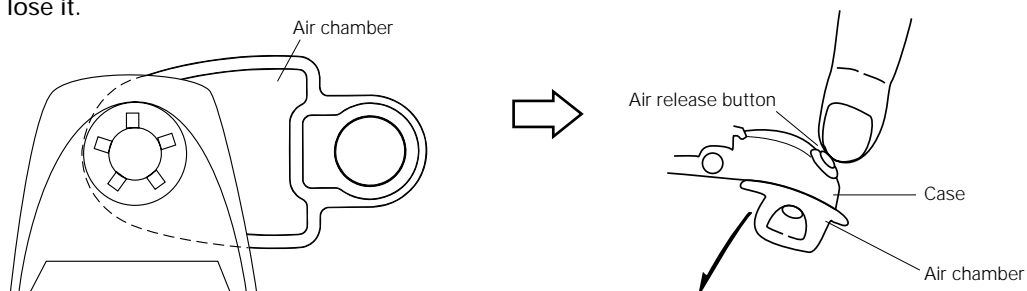
- 1) Insert a coin or the like into the groove of the air pump support on the rear of the watch, and move it toward 12 o'clock side to release it from the spring bar "A". The support snaps out of its place.



- 2) While squeezing the air pump with fingers, pull out the air chamber through the gap between the case hole and spring bar "A".



- 3) Turn the air chamber 90°. Then, push in the air release button to remove the air chamber from the case. In doing so, the ring may also come off from the case, and therefore, hold it with a finger, taking care not to lose it.



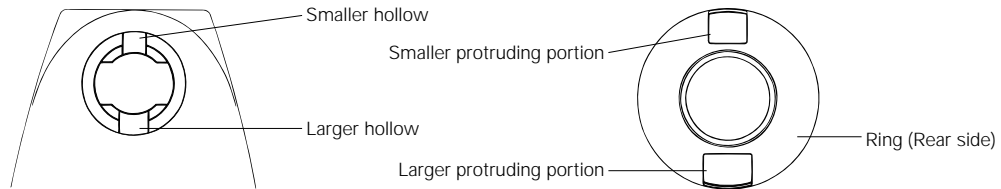
HOW TO USE

Cal. A861A

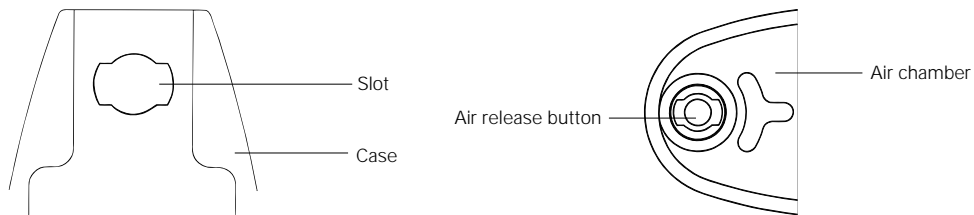
• How to attach

1) Set the ring at the 12 o'clock side of the case.

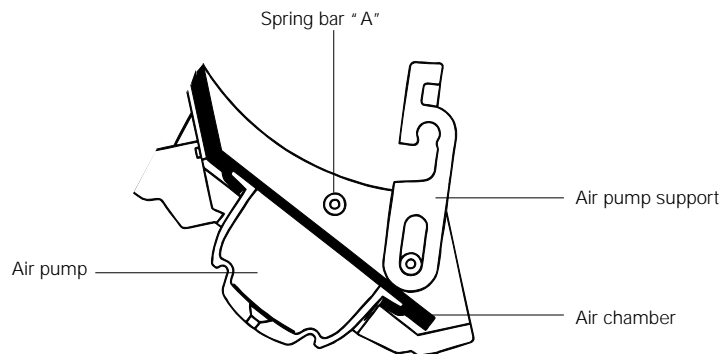
* The two protruding portions of the ring differ in size. Check that they are set to the hollows of the corresponding sizes.



2) While holding the ring with a finger, turn the case over, set the air release button to the slot of the case, and turn the air chamber 90° to fix the ring to the case.

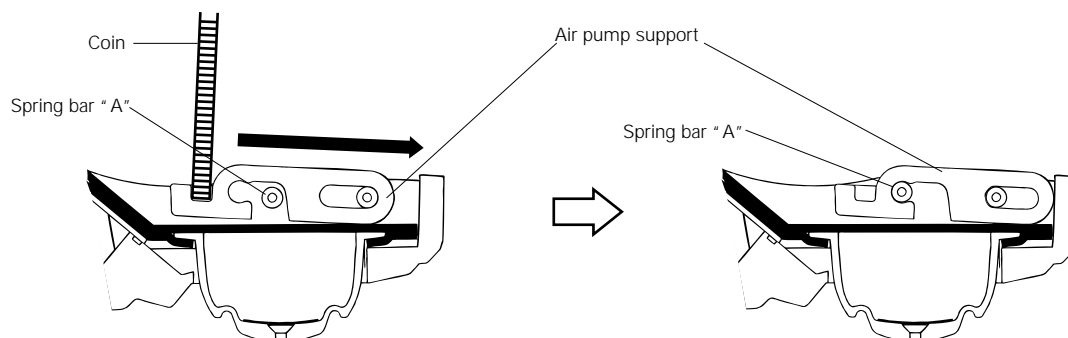


3) Open the air pump support. Then, while squeezing the air pump with fingers, put the air chamber through the gap between the spring bar "A" and case to set it in position.



[Cross-sectional view]

4) Have the hooking portion of the air pump support catch the spring bar "A" securely. To do so, insert a coin or the like into the groove of the support and move it toward the 6 o'clock side until it snaps in place.



[Cross-sectional view]

