

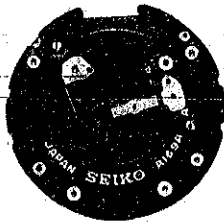
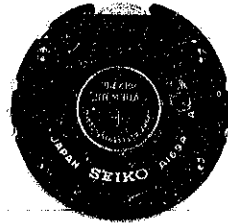
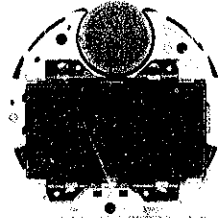
**SEIKO**

**DIGITAL QUARTZ**

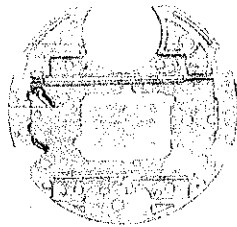
**Cal. A169A**

**PARTS LIST**

# Cal. A169A



4001 876



4033 865



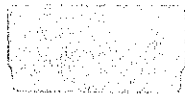
4245 860



4313 860



☆4510 790



4521 550  
4521 551



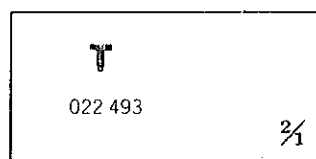
4540 860



4580 861



☆Maxell SR1130W



022 493

3/1

# Cal. A169A

## Characteristics :

Casing diameter :  $\phi$  30.1 mm  
 Maximum height : 6.5 mm without battery  
 Frequency of quartz crystal oscillator : 32,768 Hz (Hz = Hertz . . . . Cycle per second)  
 Time display : Digital Display System showing hour, minute, second and day of the week.  
 Calendar display : Digital Display System showing month, date, day of the week and "A"(AM) "P"(PM)  
 Stopwatch display : 12hour Digital Display System showing hours, minutes and seconds (or minutes, seconds and 1:10 seconds up to 20 minutes measurement).  
 Alarm functions : Can be set to operate at any desired hour and minute. The alarm plays the electronic melody for 12 seconds after it rings "Peep" for 4 seconds.  
 Display medium : Nematic Liquid Crystal, FE-Mode  
 Time signal : It can be set to ring every hour on the hour.  
 Time micro adjustor : Trimmer condenser system  
 Illuminating light : Illuminates all the digital displays in the dark by depressing the light button.  
 Battery life indicator : All the digits in the display begin flashing.

| PART NO.  | PART NAME                              | PART NO. | PART NAME |
|---|--|----------|-----------|
| 4001 876  | Circuit block                          |          |           |
| 4033 865  | Liquid crystal panel frame (with bulb) |          |           |
| 4245 860  | Switch spring                          |          |           |
| 4313 860  | Connector                              |          |           |
| ☆4510 790                                       | Liquid crystal panel                   |          |           |
| 4521 550  | Reflecting mirror (Silver)             |          |           |
| 4521 551  | Reflecting mirror (Gold)               |          |           |
| 4540 860  | Liquid crystal panel holder            |          |           |
| 4580 861  | Speaker block                          |          |           |
| 022 493   | Liquid crystal panel holder screw      |          |           |
| ☆Maxell SR1130W<br>☆U.C.C.389<br>☆Toshiba WG-10 | Silver oxide battery                   |          |           |

## Remarks :

### Liquid crystal panel

☆4510 790.....Be sure that the combination between the color of panel cover and liquid crystal panel should be matched according to the "SEIKO Quartz Casing Parts List".

### Battery

☆ Maxell SR1130W }  
 ☆ U.C.C.389 } ..... The applied battery for this calibre might be added the substitutive in the future. In that  
 ☆ Toshiba WG-10 } case, please refer to separate "BATTERIES FOR SEIKO QUARTZ WATCHES".

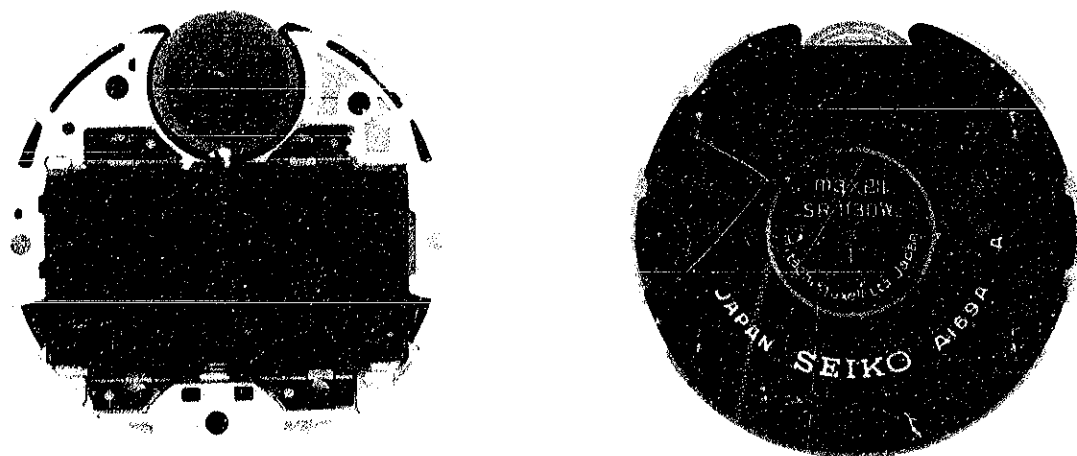
☆☐Please see remarks.

Part numbers in light letters are not shown in photos.

# TECHNICAL GUIDE

## SEIKO DIGITAL QUARTZ

CAL. A169A



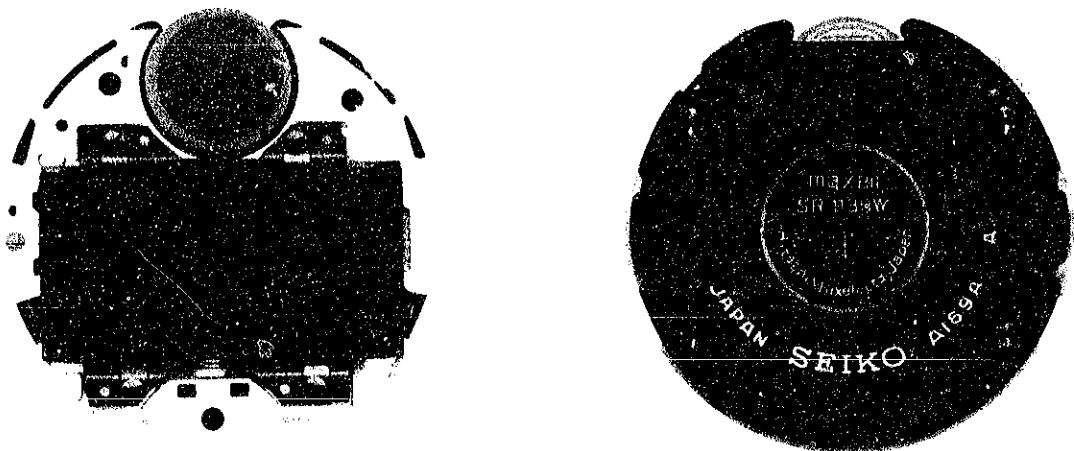
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Calibre A169A



Module

I. SPECIFICATIONS

| Item                          | Calibre No. A169A   |
|-------------------------------|---|
| Display medium                | Nematic Liquid Crystal, FEM (Field Effect Mode)   |
| Display system                | <p>Four-function changeover system with time, stopwatch, melody alarm setting and time/calendar setting functions.</p> <ul style="list-style-type: none"> <li>Time function: Digital display system showing hour, minute, second and day of the week.<br/>In the time function, calendar and time set for the melody alarm are displayed by depressing a button.<br/>Calendar: Digital display showing month, date, day of the week and "A" (for AM)/"P" (for PM)<br/>Time set for the melody alarm: Digital display showing hour, minute and "A" (for AM)/"P" (for PM)</li> <li>Stopwatch function: 12-hour digital display system showing hour, minute, second and 1/10 second. (The 1/10 second measurement is possible up to 20 minutes.)</li> <li>Melody alarm setting function: Melody alarm time can be set to operate at the desired minute and 12-hour (with "A" (for AM)/"P" (for PM) indication).</li> <li>Time/calendar setting function: Setting of the second, minute, hour ("A" (for AM)/"P" (for PM) ), date, month and day of the week.</li> </ul> |
| Additional mechanism          | <ul style="list-style-type: none"> <li>Melody alarm test system</li> <li>Battery life indicator (All the digits in the display start flashing when the battery nears its end.)</li> <li>Time signal starts sounding every hour on the hour (When the minute and second digits indicate "00".)</li> <li>Illuminating light</li> <li>Pattern segment checking system</li> </ul>   |
| Crystal oscillator            | 32,768 Hz (Hz = Hertz . . . . . Cycles per second)  |
| Loss/gain                     | <p>Loss/gain at normal temperature range</p> <p>Mean monthly rate : less than 10 seconds<br/>(Annual rate : less than 2 minutes)</p>  |
| Casing diameter               | φ30.1mm   |
| Height                        | 6.5mm without battery   |
| Operational temperature range | -10°C ~ +60°C (14°F ~ 140°F)  |
| Regulation system             | Trimmer condenser   |
| Battery power                 | <p>Silver oxide battery Maxell SR1130W, U.C.C. 389 or Toshiba WG-10</p> <p>Battery life is approximately 2 years.</p> <p>Voltage: 1.55V</p>   |
| IC (Integrated Circuit)       | C-MOS-LSI . . . . . 1 unit  |

## II. DISASSEMBLING, REASSEMBLING AND LUBRICATING

### 1. Disassembling and reassembling of the case

Disassembling procedures Figs.:

① → ⑥

Reassembling procedures Figs.:

⑥ → ①

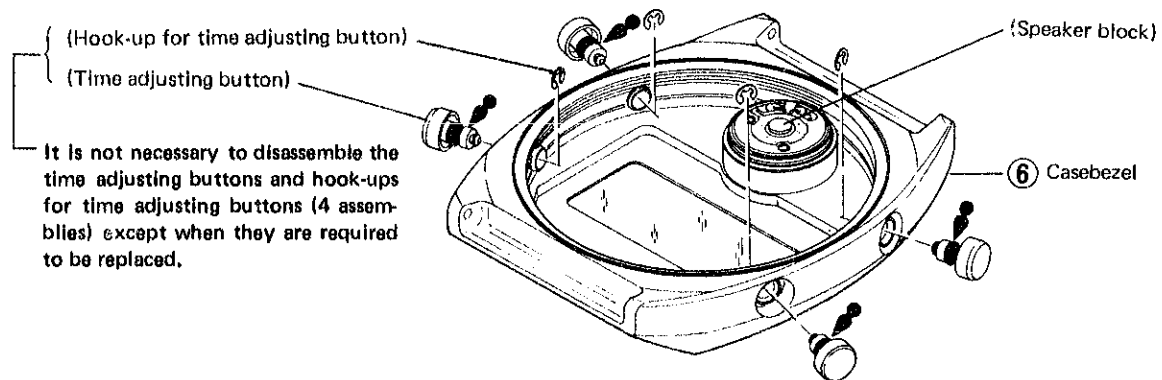
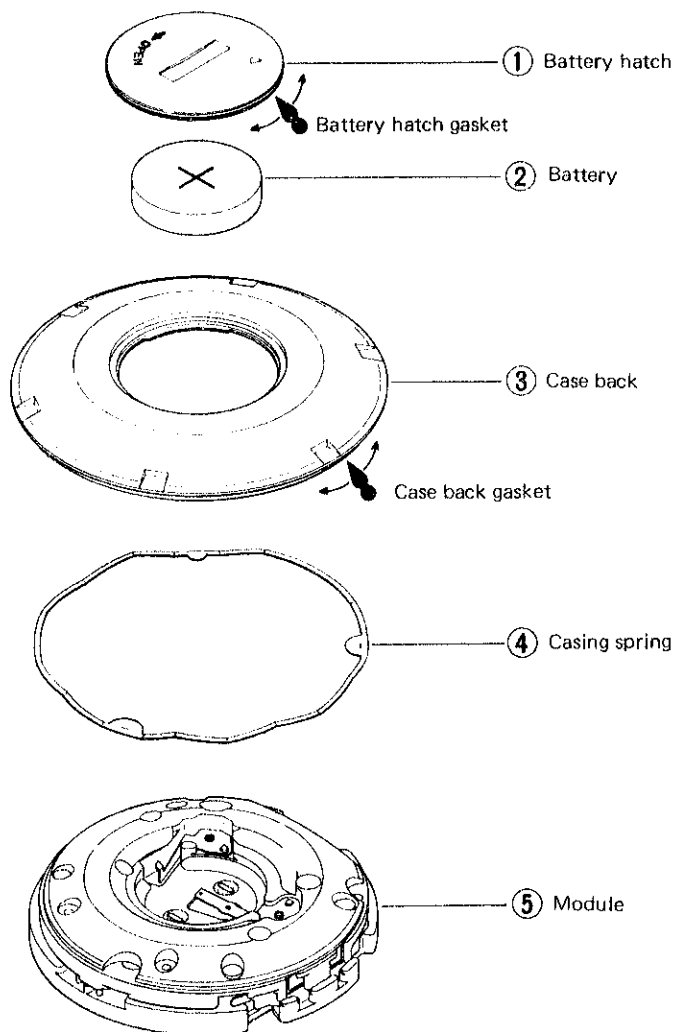
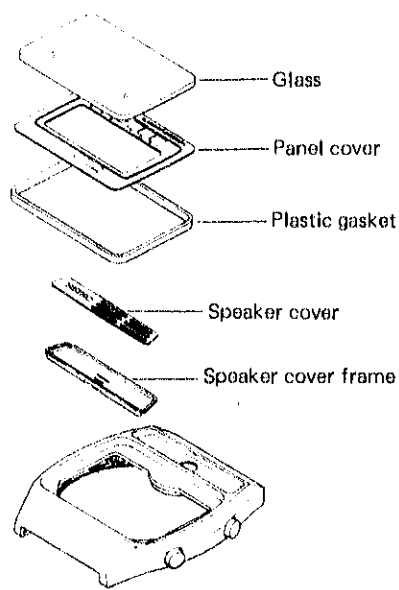
Lubricating:

Silicone grease 500,000 c.s.

Normal quantity

Glass and speaker portions

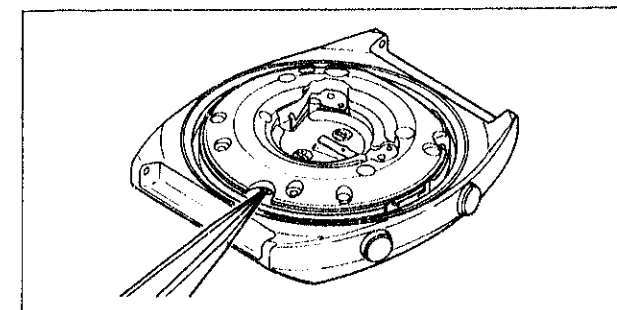
It is not necessary to disassemble the glass and the speaker cover except when they are required to be replaced. (Refer to pages 4 and 5 for handling them.)



Remarks for disassembling

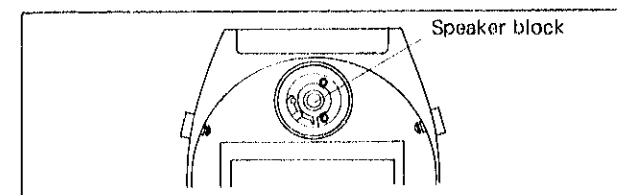
#### ⑤ Module

- The liquid crystal panel frame is fixed firmly to the case bezel. Pry up the module with tweezers to take out. (Do not pry up at the speaker portion; the terminals of the speaker coil may be broken.)



#### ⑥ Case bezel

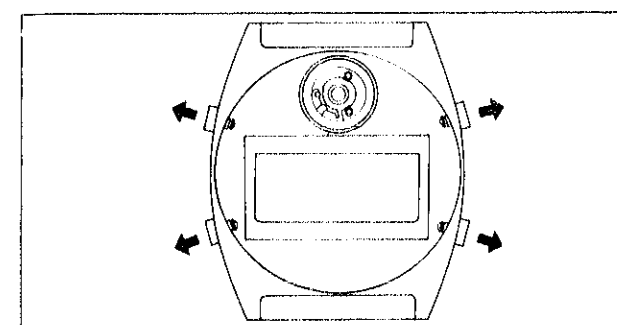
- The speaker block is set in the case bezel. (Refer to page 7 for disassembling procedures.)



Remarks for reassembling

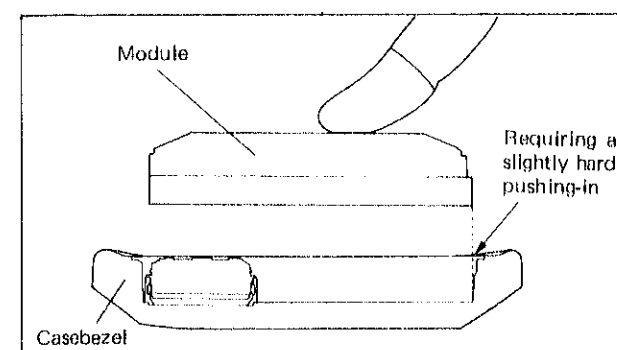
#### ⑥ Case bezel

- Before reassembling the module pull out all buttons so that the switch springs do not prevent the module from being reassembled. (Push the buttons from inside with tweezers.)



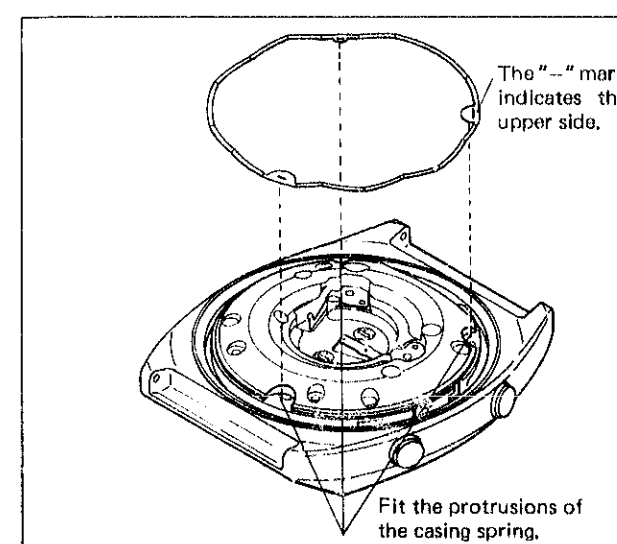
#### ⑤ Module

- The liquid crystal panel frame is fixed firmly to the case bezel. Push in the module with fingers.
- Push it in so that it does not catch the buttons.



#### ④ Casing spring

- Set the casing spring. Be careful not to mistake front for back. (The casing spring has three protrusions, two of which are larger and one is smaller. Be sure to fit each of them to the corresponding notches of the module.)

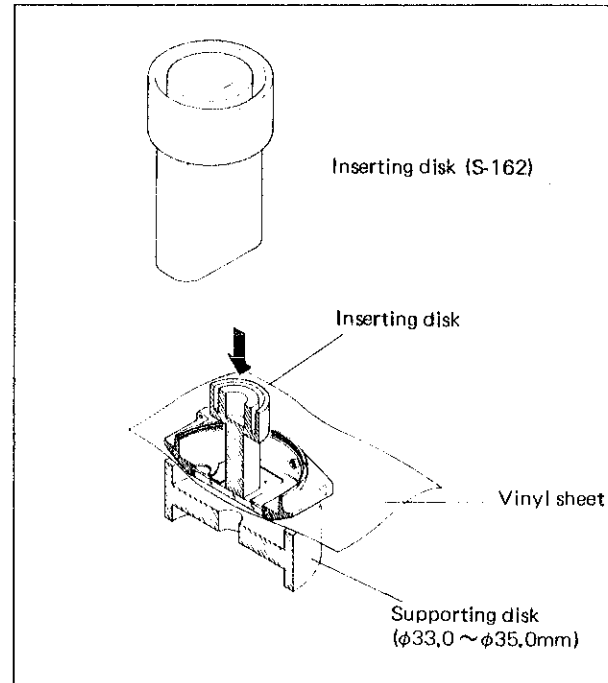


### How to replace the glass

(Do not disassemble the glass and the panel cover except when they are required to be replaced.)

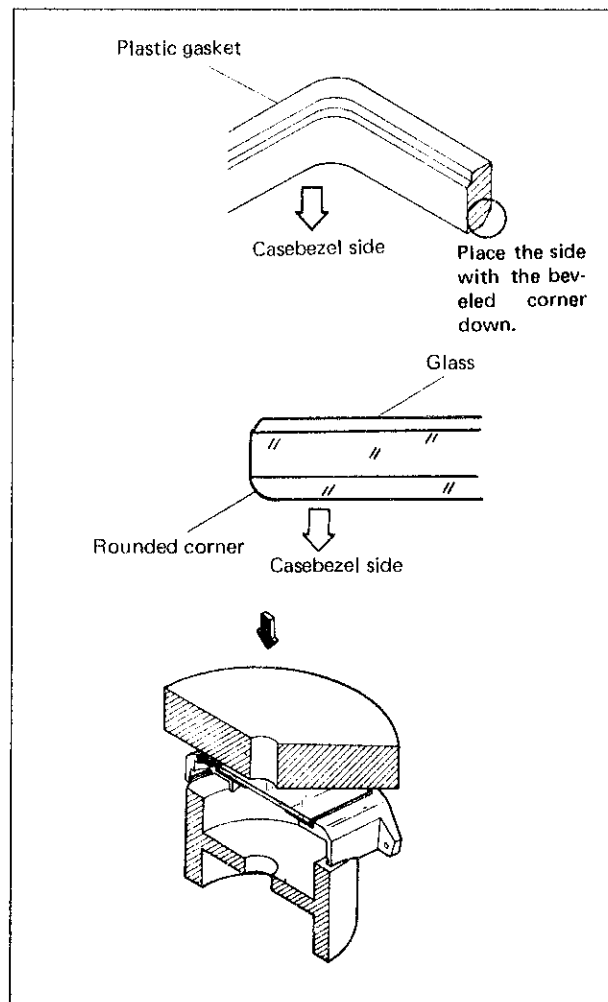
#### ● How to disassemble the glass

- Use the tightening tool (S-220) to disassemble the glass.  
Inserting disk : S-162  
Supporting disk :  $\phi 33.0\text{mm} \sim \phi 35.0\text{mm}$
- Place a vinyl sheet between the glass and the supporting disk as shown in the illustration on the right.
- Push only the glass for disassembling with the inserting disk (S-162). Do not push the panel cover.



#### ● How to reassemble the glass

- i) Set the plastic gasket.
  - Be sure to replace the plastic gasket with a new one.
  - Be careful not to mistake the upper side for the lower side.
- ii) Reassemble the panel cover.
  - Be sure to set the back side of the panel cover fast to the casebezel.
  - Be sure that the space between the casebezel and the edge of the panel cover is uniform in width.
- iii) Place the glass
  - Be careful not to mistake the upper side for the lower side. Place the round side down.
- iv) Push in the glass (by using S-220)
  - Inserting disk : Plastic supporting disk (S-173)
  - Supporting disk :  $\phi 28.0\text{mm}$  or  $\phi 28.5\text{mm}$

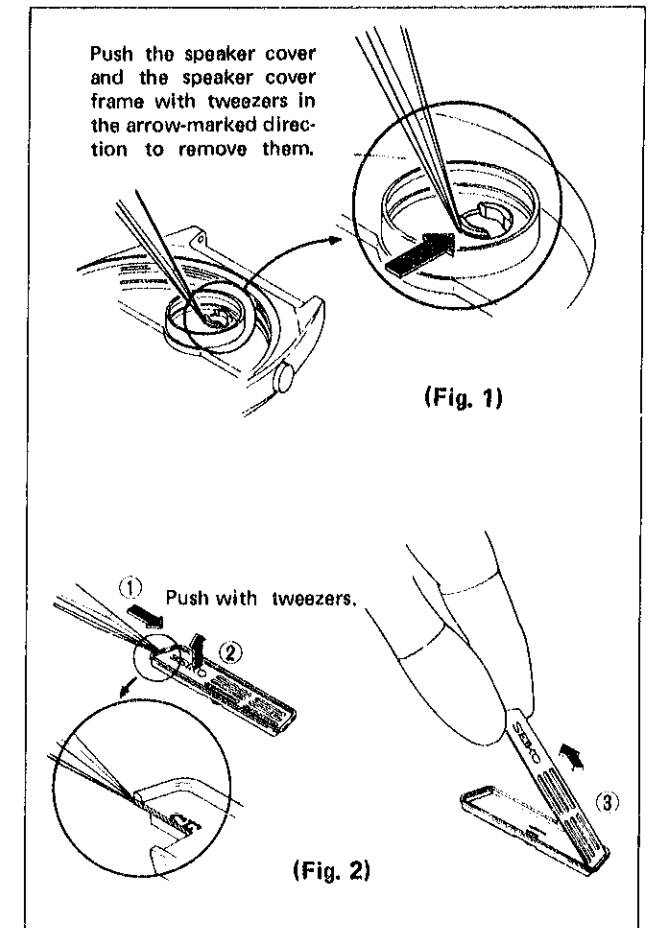


### How to replace the speaker cover

The speaker cover and the speaker cover frame are set to the casebezel. It is not necessary to disassemble the speaker cover and the speaker cover frame except when they are required to be replaced.

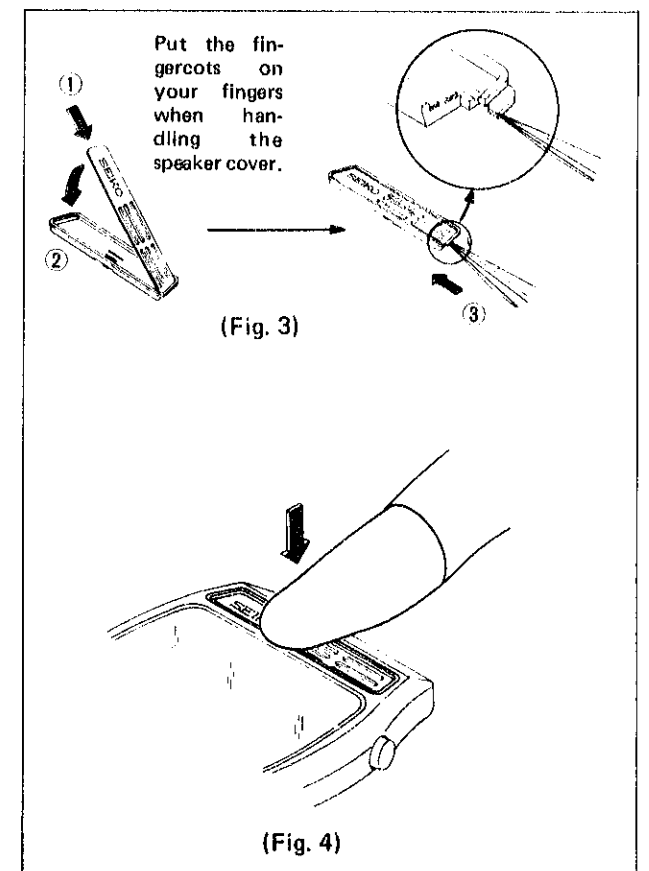
#### ● How to disassemble the speaker cover

- i) Disassemble the speaker.  
(Refer to page 7 for the disassembling procedures of the speaker.)
- ii) Disassemble the speaker cover by pushing it through the speaker hole inside the casebezel. The speaker cover and the speaker cover frame are removed together. (Fig. 1)
- iii) Remove the speaker cover as shown in Fig. 2. Remove the speaker cover in the order of ①, ② and ③ as shown in Fig. 2.



#### ● How to reassemble the speaker cover

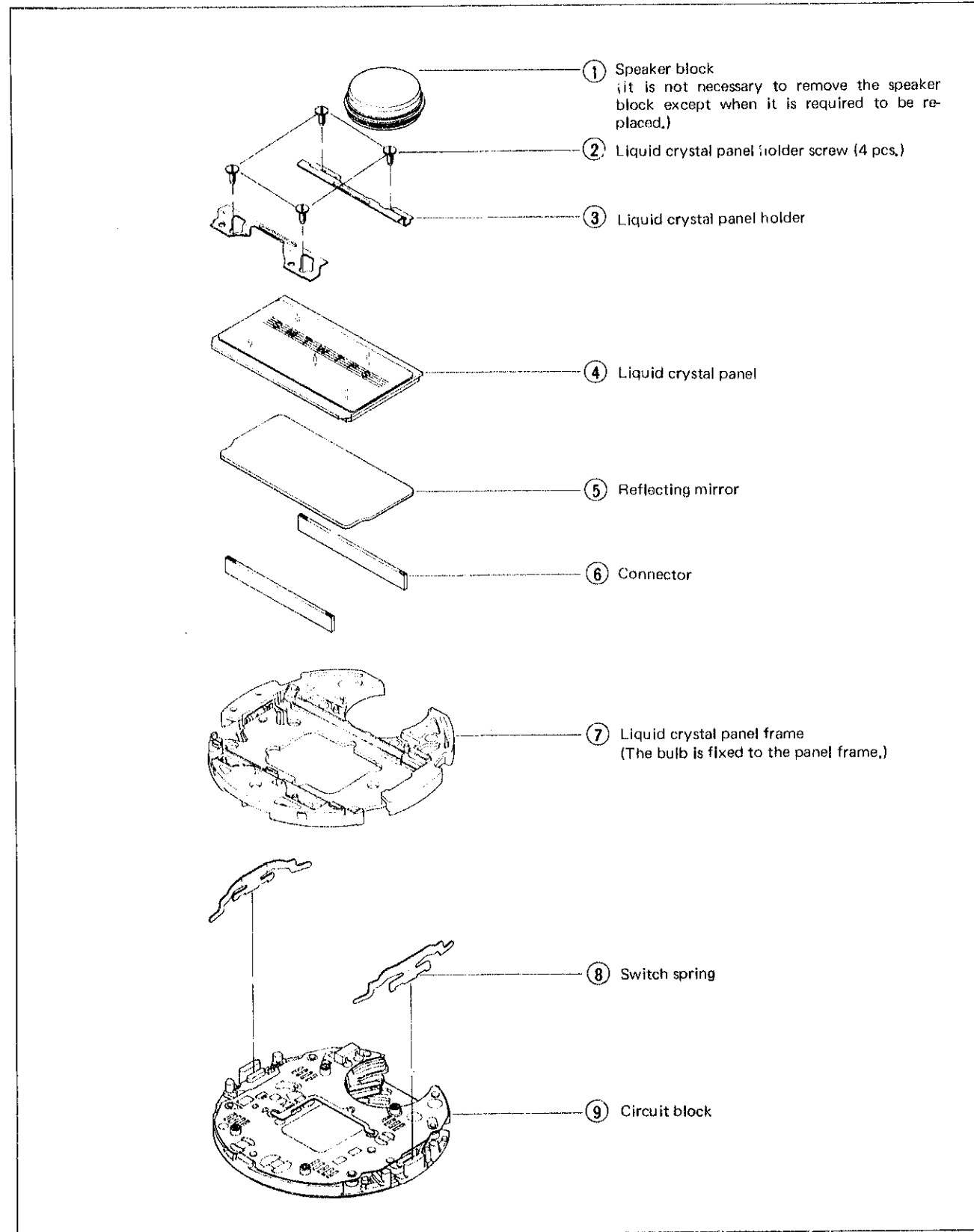
- i) Set the speaker cover to the speaker cover frame in reverse order of the disassembling procedures. (Fig. 3)  
The speaker cover frame can be reused, if not damaged.
- ii) Set the speaker cover and the speaker cover frame to the casebezel.  
Fit the leg portion of the speaker cover to the speaker hole portion of the casebezel and push it in. (Fig. 4)  
If the speaker cover cannot be pushed in with fingers, place a vinyl sheet on it so as not to scratch and push it hard with the flat part of the end of the tweezers.



## 2. Disassembling and reassembling of the module

Disassembling procedures Figs.: ① → ⑨

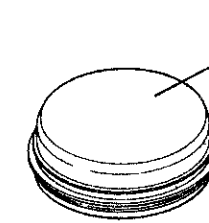
Reassembling procedures Figs.: ⑨ → ①



### Remarks for disassembling

#### ① Speaker block

- Hold the speaker block at its groove by the tips of tweezers and pull out the speaker block from the case bezel as shown in the illustration.
- Or pry out the speaker block by pushing up on its outer edge evenly with the tip of a screwdriver.



Sound diaphragm  
(The sound diaphragm is so thin that it is easily damaged by the tips of tweezers. Be careful not to pick at the sound diaphragm with the tips of tweezers. Any damage to the sound diaphragm will change the volume and tone of the alarm or cause poor water resistance.)

- When the speaker gasket is replaced, be careful not to mistake the upper side for the lower side. (Reassemble the speaker gasket with its round side turned up. Otherwise, the speaker gasket may be twisted.)

#### ⑤ Reflecting mirror

- Be careful not to scratch or contaminate the reflecting mirror.

#### ⑥ Connector

- The connectors may be disassembled together with the liquid crystal panel.
- Be careful not to scratch the connectors with tweezers.
- There is no difference between the top and bottom of the connectors.

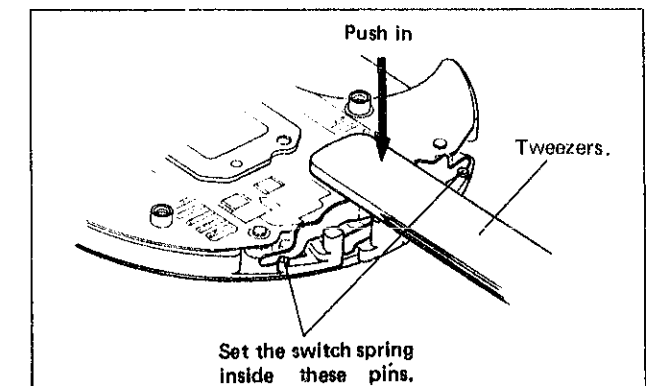
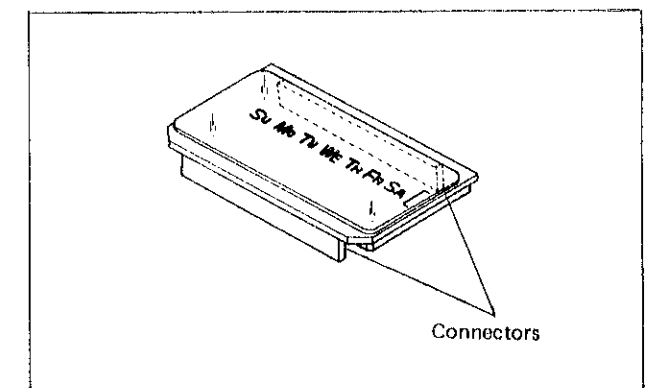
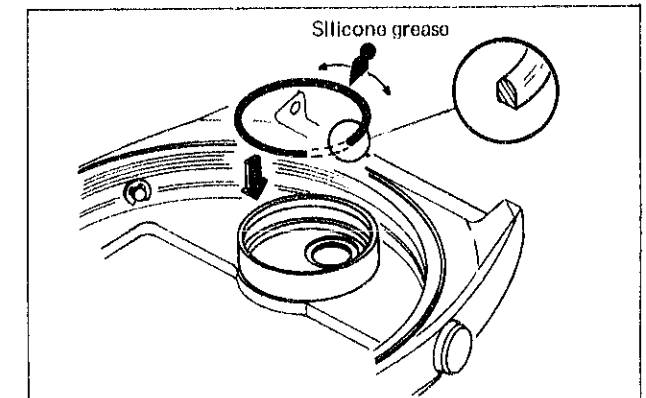
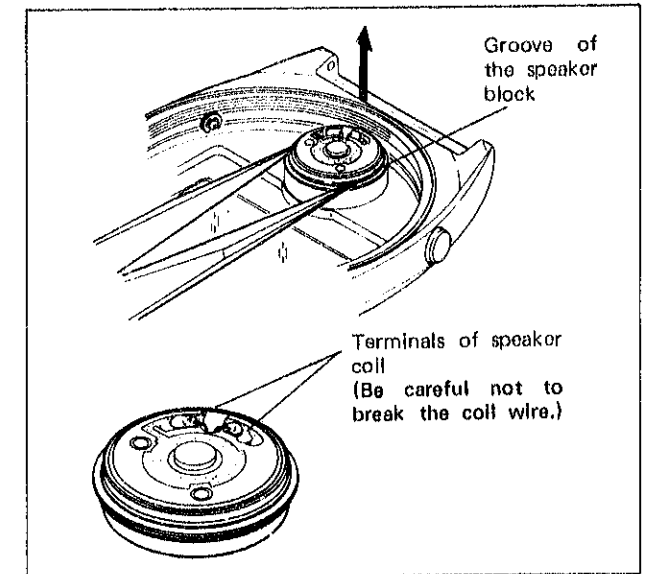
#### ⑨ Circuit block

- Be careful not to touch the electronic parts except when it is required.

### Remarks for reassembling

#### ⑧ Switch spring

- Set the switch spring in position vertically from above.
- Push in by the flat part of the end of the tweezers.





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### III. CHECKING AND ADJUSTMENT

For checking and adjustment of Cal. A169A, refer to the "TECHNICAL GUIDE" for Cal. A158A. Cal. A169A differs from Cal. A158A only in the following.

#### 1. Differences in function

##### Cal. A158A

- 1) Ordinary alarm
- 2) The alarm sounds to indicate that the button is depressed in the stopwatch function.

##### Cal. A169A

- 1) Melody alarm
- 2) The melody alarm does not sound to indicate that the button is depressed in the stopwatch function.

#### 2. Difference in parts

| Parts Name                 | Cal. A169A | Cal. A158A |
|----------------------------|------------|------------|
| Circuit block              | 4001 876   | 4001 860   |
| Liquid crystal panel frame | 4003 865   | 4033 860   |
| Liquid crystal panel       | 4510 790   | 4510 930   |
| Speaker block              | 4580 861   | 4580 860   |

\* For further details, refer to the respective parts catalogue.