

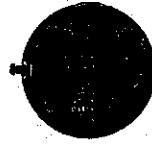
SEIKO

DIGITAL QUARTZ

Cal. B337A

PARTS LIST

Cal. B337A



354 850



4001 560



4216 562



4225 566



4245 560



4246 560



4270 560



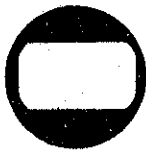
4295 845



4313 560



4313 561



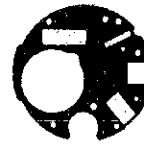
4398 560



4408 560



4408 561



4410 560



4450 845



4457 560



☆ 4510 690



4521 820



☆ Maxell SR721W



022 484

2/1

Cal. B337A

Characteristics

Casing diameter : ϕ 18.0 mm
 Maximum height : 4.6 mm
 Frequency of quartz crystal oscillator : 32,768 Hz (Hz = Hertz Cycles per second)
 Time display : 12 hour Digital Display System showing hour, minute, second and P.M. (A.M. is not displayed)
 Calendar display : Digital Display System showing month and date.
 Alarm display : Can be set to operate at any desired hour and minute.
 Timer display : Can be set one minute up to 60 minutes.
 Time signal : Can be set to ring every hour on the hour.
 Display medium : Nematic Liquid Crystal, FE-Mode.
 Regulation system : Electronic regulating by crown
 Battery life indicator : All the digits in the display begin flashing.

PART NO.	PART NAME	PART NO.	PART NAME
354 850	Winding stem		
4001 560	Circuit block		
4216 562	Insulator for battery		
4225 566	Battery clamp		
4245 560	Switch spring		
4246 560	Buzzer lead terminal		
4270 560	Battery connection (-)		
4295 845	Switch cam		
4313 560	Connector A		
4313 561	Connector B		
4398 560	Liquid crystal panel frame		
4408 560	Switch lever spacer		
4408 561	Reflecting mirror spacer		
4410 560	Circuit cover		
4450 845	Switch lever		
4457 560	Circuit block cover		
☆4510 690	Liquid crystal panel (Silver)		
☆4510 691	Liquid crystal panel (Gold)		
☆4510 692	Liquid crystal panel (Blue)		
4521 820	Reflecting mirror		
022 484	Battery clamp screw		
022 484	Screw for circuit block cover		
☆Maxell SR721W	Silver oxide battery		

Remarks :

Liquid crystal panel

☆4510 690 (Silver) } Be sure that the combination between the color of panel cover and liquid crystal
 ☆4510 691 (Gold) }panel should be matched according to the "SEIKO Quartz Casing Parts
 ☆4510 692 (Blue) } List".

Battery

☆Maxell SR721W.....The substitutive battery might be added to the applied battery in the future.
 In that case, please refer to separate "BATTERY LIST FOR SEIKO QUARTZ
 WATCHES".

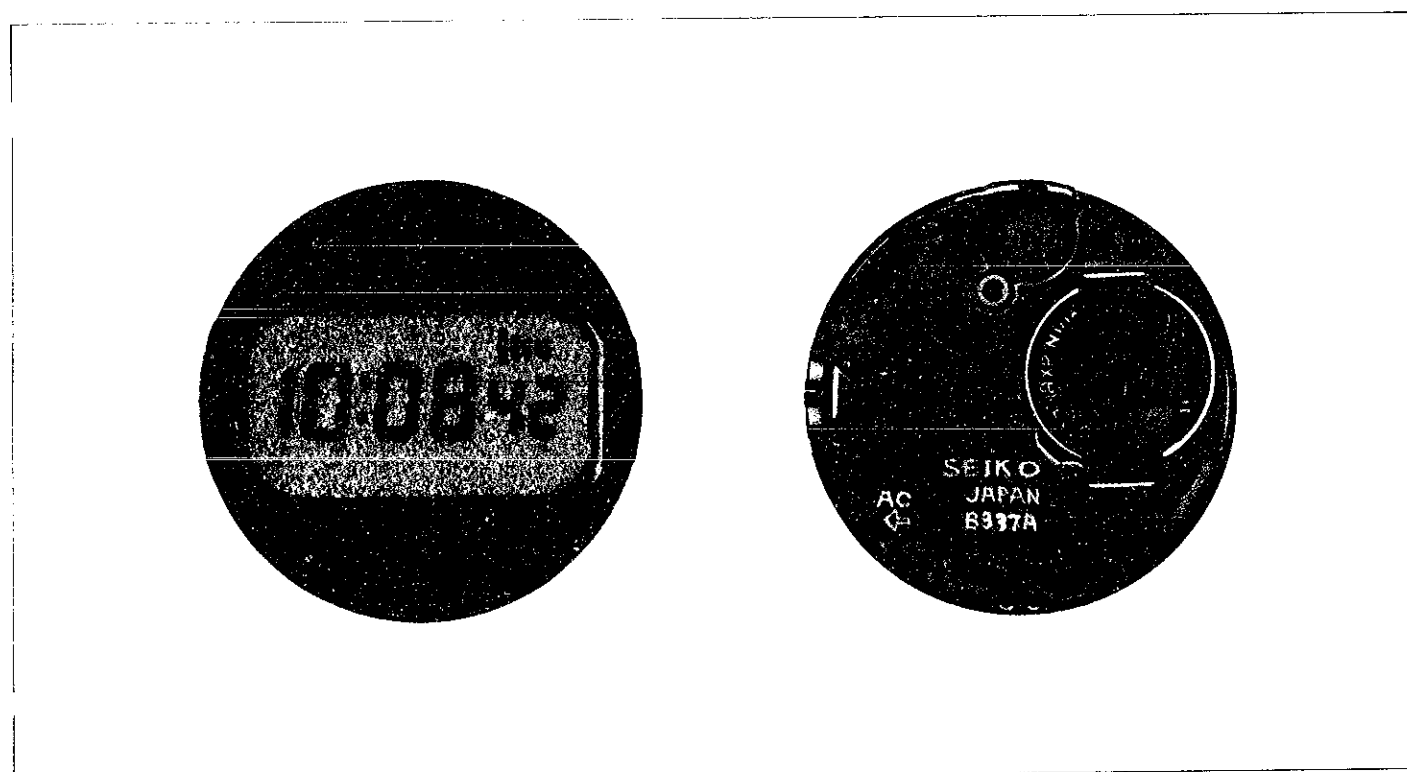
☆ ⇨ Please see remarks.

Part numbers in light letters are not shown in photos.

TECHNICAL GUIDE

SEIKO DIGITAL QUARTZ

CAL. B337A



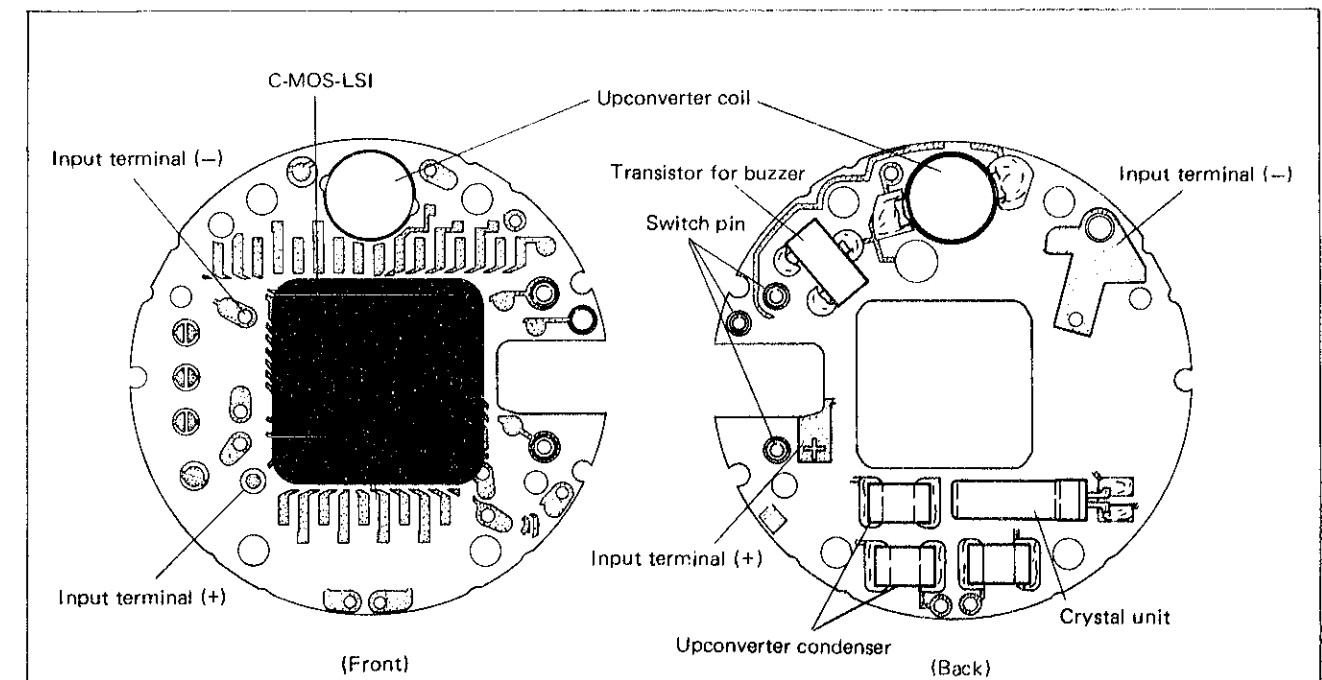
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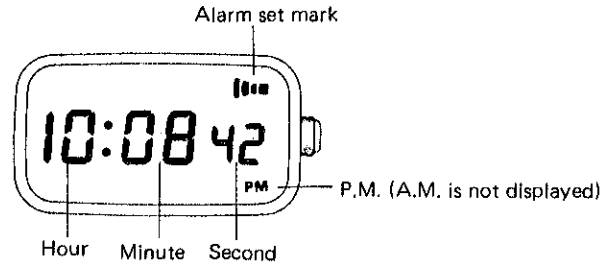
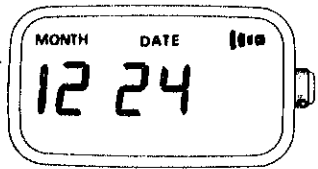
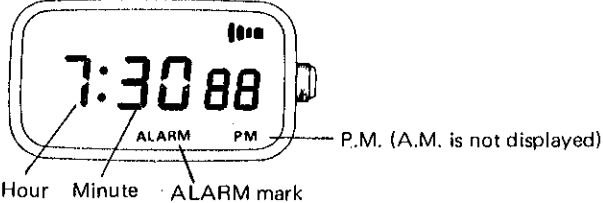
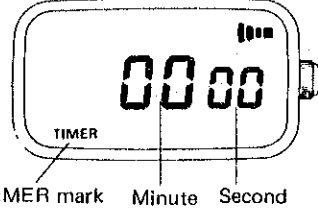
I. SPECIFICATIONS

Item	Cal. No.	B337A
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 function • Calendar function • Alarm function • Timer function
Additional mechanism		<ul style="list-style-type: none"> • Battery life indicator • Time signal • Pattern segment checking system
Loss/gain		Loss/gain at normal temperature range Monthly rate: less than 15 seconds (Annual rate: less than 3 minutes)
Outside diameter		φ 18.0 mm
Height		4.6 mm
Regulation system		Electronic regulating by crown
Measuring gate by Quartz Tester		The gate of 10 seconds is available.
Battery		Maxell SR721W Battery life is approximately 2 years. Voltage: 1.55V

II. STRUCTURE OF THE CIRCUIT BLOCK

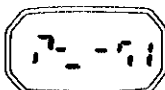
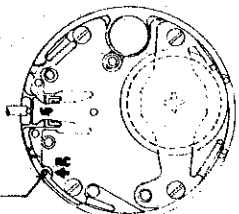


III. DISPLAY FUNCTION

- Time display**

- Calendar display**

- Alarm display**

- Timer display**


IV. REMARKS FOR BATTERY CHANGE

The SEIKO watch of Cal. B337A may show the faulty condition only when the battery is replaced. Be sure to follow the instruction below and correct it when replacing the battery.

● Faulty condition		● How to remove the faulty condition
[Faulty display] 	[Time loss/gain] Because the memory of the electronic regulating device in the circuit is shut off owing to the battery change, the electronic regulating step is traveled to other ones.	Push the ALL CLEAR (marked "AC"), and the faulty display is corrected and the electronic regulating step is reset to "0". Check accuracy and readjust the step properly according to loss/gain. 

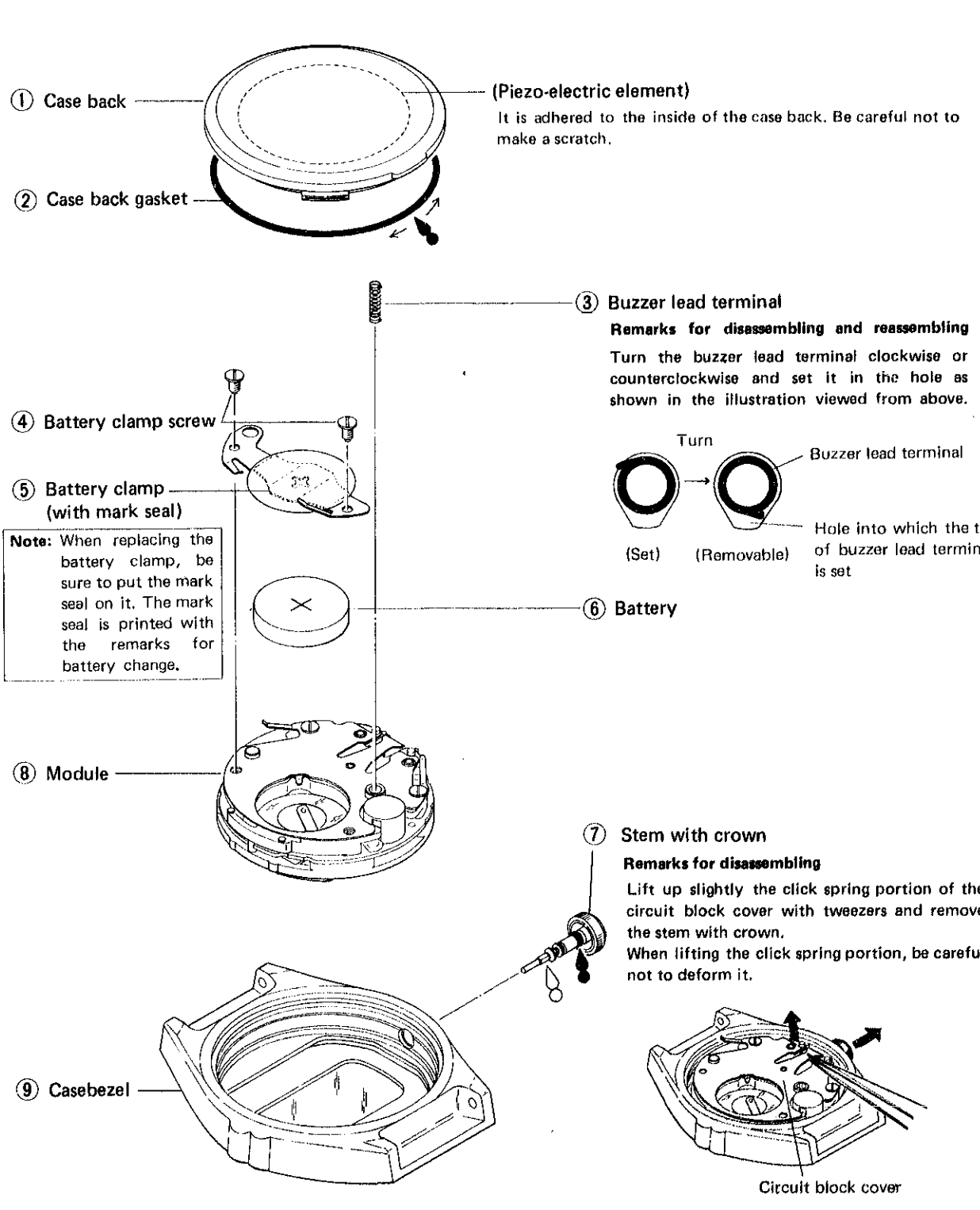
* As for checking accuracy, see the instruction on the page 7.

V. DISASSEMBLING, REASSEMBLING AND LUBRICATING

1. Disassembling, reassembling and lubricating of the case

- Disassembling procedures Figs. : ① → ⑨
- Reassembling procedures Figs. : ⑨ → ①
- Lubricating ● Silicone grease 500,000 c.s.

SEIKO Watch Oil S-6



- Case back
- Case back gasket
- Buzzer lead terminal
- Battery clamp screw
- Battery clamp (with mark seal)
- Battery
- Stem with crown
- Module
- Casebezel

(Piezo-electric element)
It is adhered to the inside of the case back. Be careful not to make a scratch.

Remarks for disassembling and reassembling
Turn the buzzer lead terminal clockwise or counterclockwise and set it in the hole as shown in the illustration viewed from above.

Turn
Buzzer lead terminal
Hole into which the tip of buzzer lead terminal is set

(Set) (Removable)

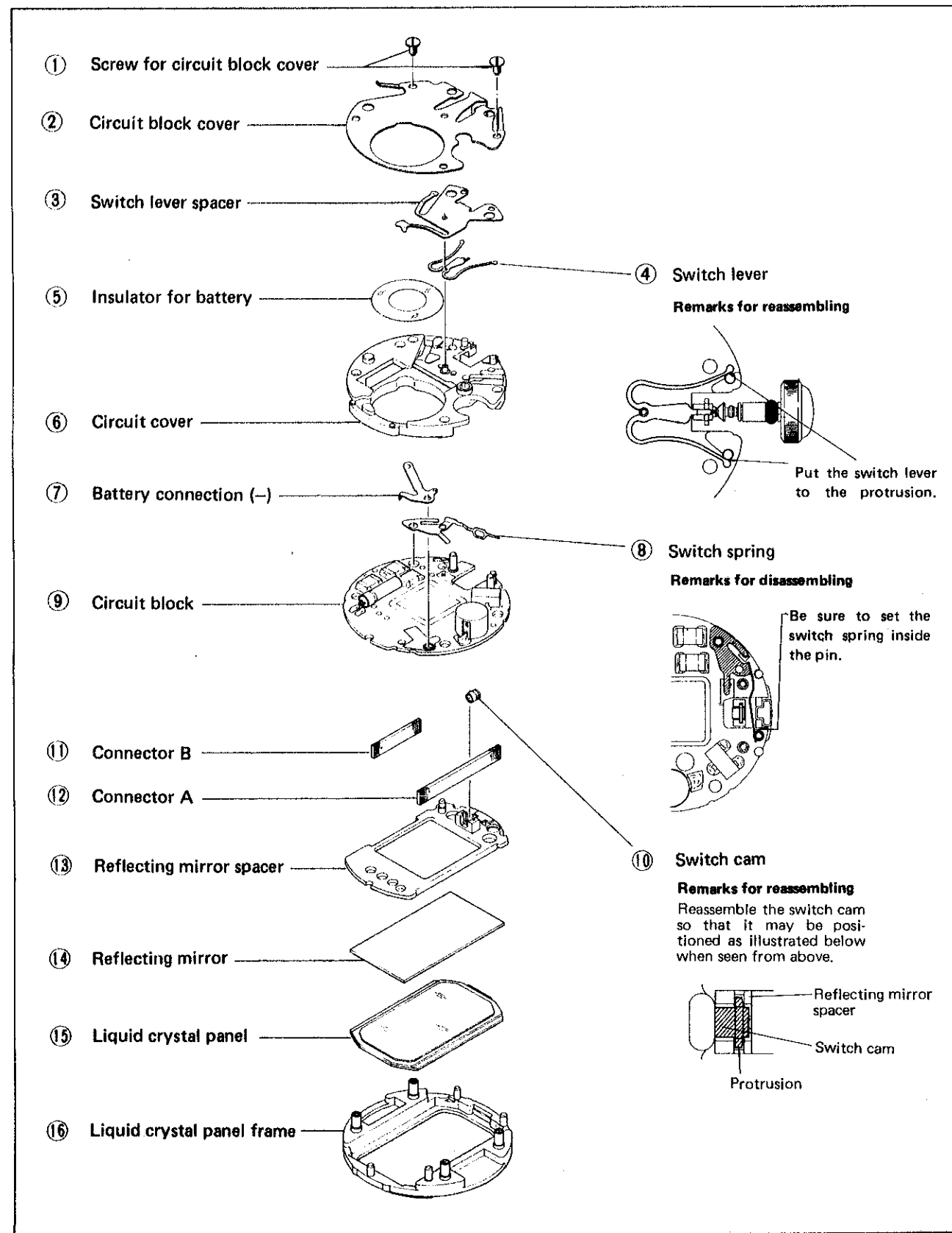
Note: When replacing the battery clamp, be sure to put the mark seal on it. The mark seal is printed with the remarks for battery change.

Remarks for disassembling
Lift up slightly the click spring portion of the circuit block cover with tweezers and remove the stem with crown. When lifting the click spring portion, be careful not to deform it.

Circuit block cover

2. Disassembling, reassembling and lubricating of the module

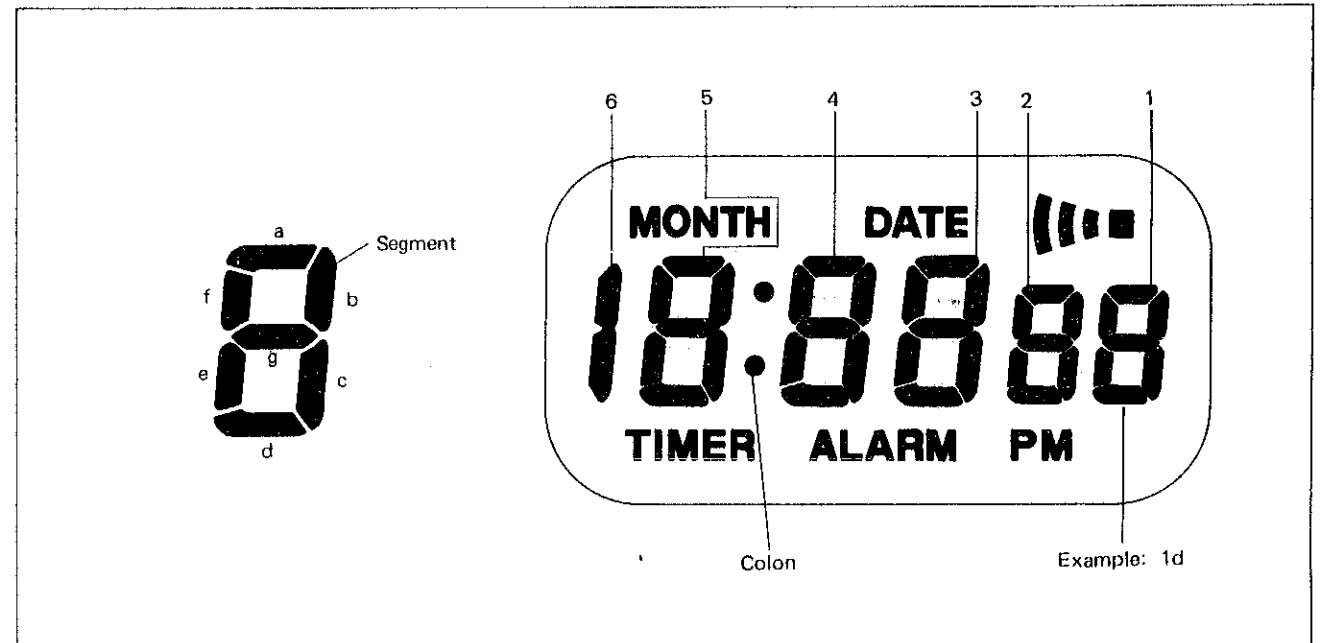
- Disassembling procedures Figs. : ① → ⑩
- Reassembling procedures Figs. : ⑩ → ①



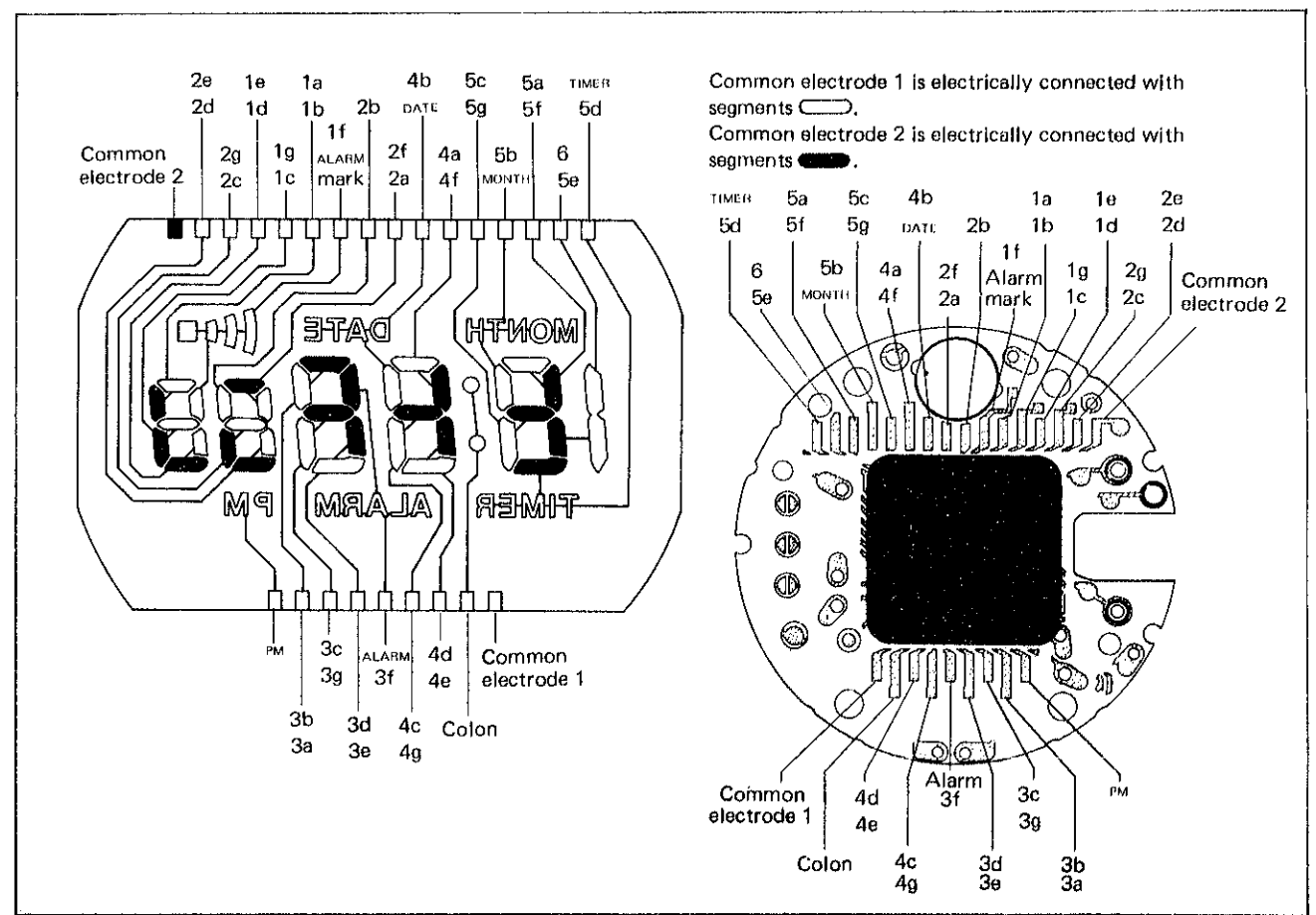
3. Relationship between the segment (Liquid Crystal Panel Electrode) and the C-MOS-LSI output terminal

A complete knowledge of how the segment (Liquid Crystal Panel Electrode) works with the C-MOS-LSI output terminal will provide the proper procedures for checking and adjustment.

• Designation of segment



• Relationship between the segment (Liquid crystal panel electrode) and the C-MOS-LSI output terminal



VI. CHECKING AND ADJUSTMENT

- Refer to the "SEIKO QUARTZ TECHNICAL GUIDE, GENERAL INSTRUCTION" for digital watches for details.

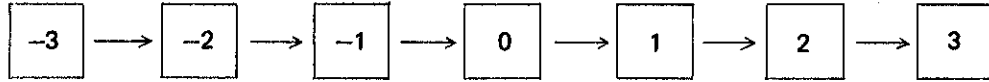
Procedure	
CHECK BATTERY VOLTAGE	<p>Result: More than 1.5 V: Normal Less than 1.5V: Defective</p>
CHECK BATTERY CONDUCTIVITY	
CHECK CURRENT CONSUMPTION	
<p>1. Current consumption for the whole of the module</p> <ul style="list-style-type: none"> ● It is possible to check the current consumption in any of the functions. 	<p>Result: Less than 1.5 μA: Normal More than 1.5 μA: Defective</p>
<p>2. Current consumption for the circuit block alone</p>	<p>Result: Less than 1.0 μA: Normal More than 1.0 μA: Defective</p>

Procedure	
CHECK WATER RESISTANCE	
CHECK CONTACT BETWEEN C-MOS-LSI AND LIQUID CRYSTAL PANEL	
CHECK LIQUID CRYSTAL PANEL AND CIRCUIT BLOCK	<ul style="list-style-type: none"> ● Check the liquid crystal panel ● Check the output voltage of the circuit block
CHECK ACCURACY	
<p>Daily rate measuring</p> <ul style="list-style-type: none"> ● Set the measuring gate at "10 seconds". ● To measure the daily rate, use the electric-field detection microphone for digital watches or the electro-magnetic/electric-field detection microphone (DM-1). ● Check accuracy in the daily rate measuring function with all the segments displayed. Be careful not to check the daily rate in the time setting function because a wrong value will be given. To light up all the segments perform the following procedure within 1 ~ 2 seconds. (With the crown at the normal position, turn it clockwise more than one turn, and turn it counterclockwise as much and pull it out.) 	
<p>Time accuracy adjusting</p> <p>For time accuracy adjustment, a new type of "Electronic Regulating by Crown" is used in Cal. B337A. As the different time accuracy adjustment is necessary, follow the procedures below.</p> <ul style="list-style-type: none"> ● With all the segments displayed, turn the crown clockwise or counterclockwise and the electronic regulating device is activated. (The regulating step is displayed.) ● Turn the crown clockwise (Gain) or counterclockwise (Loss) and adjust the time accuracy. Every 1-step of the regulating step will make a change of about 0.26 second fast or slow per day. <p>The regulating step and adjustment volume change as shown on the next page.</p>	

Procedure

a) Turn the crown clockwise (Gain).

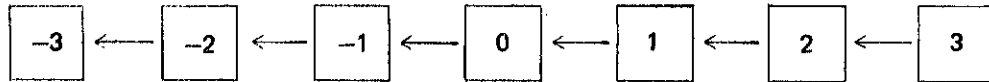
Regulating step



The step indication will not change even if the crown is turned any more.

b) Turn the crown counterclockwise (Loss).

Regulating step



The step indication will not change even if the crown is turned any more.

c) The table shows the adjustment volume at each step from the step "0".

Step	-3	-2	-1	0	1	2	3
Loss/gain to be adjusted							
Daily rate (Second)	-0.791	-0.527	-0.264	0	+0.264	+0.527	+0.791
Monthly rate (Second)	-24	-16	-8	0	+8	+16	+24

(Example)

Suppose the regulating step is set at "0" and the monthly rate is +10 seconds, change the regulating step to "-1" and the monthly rate will become +2 seconds.

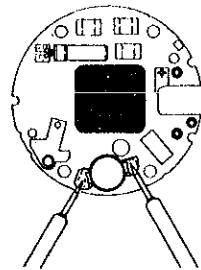
CHECK FUNCTIONING AND ADJUSTMENT

CHECK CONDUCTIVITY OF SWITCH COMPONENTS

CHECK ALARM CONDITION

- Check the contact (between the piezo-electric element and the buzzer lead terminal).
- Check the resistance for the upconverter coil and check it for any broken wire and short circuit.

Range to be used: R x 1



Result: $45\Omega \sim 70\Omega$: Normal
 Less than 45Ω (Short circuit) → Defective
 More than 70Ω (Broken wire) → Defective

CHECK FUNCTIONING

All Procedures of Disassembling, Reassembling, Checking and Adjustment are completed.