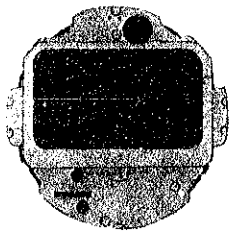
SEIKO

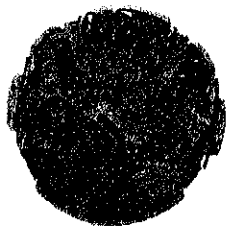
DIGITAL QUARTZ

Cal. A547A

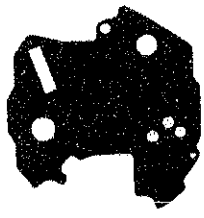
PARTS LIST

Cal. A547A





4001 765



4216 765

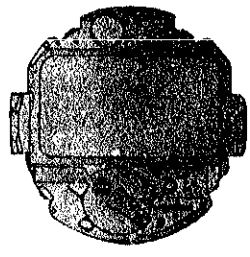
☆4225 765

4246 766

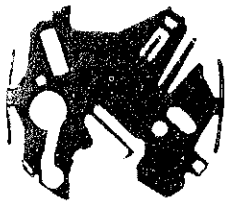
4270 765

4313 765

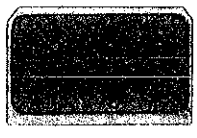
4313 766



4398 765



4457 765



☆4510 750

4521 800

4530 649

☆ Maxell SR726W

022 446

2/1

☆⇨Please see remarks on the next page.

Cal. A547A

Characteristics

Casing diameter: ϕ 27.0 mm
Maximum height: 3.2 mm without battery
Frequency of quartz crystal oscillator: 32,768 Hz (Hz=Hertz ..... Cycles per second)
Time and calendar display: Hour, minute, second, date and day of the week can be displayed in 12-hour indication or 24-hour indication. (The month is displayed only when the calendar is adjusted.)
Alarm display: Can be set to operate at any desired hour and minute.
Timer display: Can be set to operate at any desired minute up to 60 minutes.
Stop watch display: Digital Display System showing 12-hour, minute, second and 1/100 second.
Quick function change: Each of the above functions can be selected by simply depressing the appropriate quick-selection button below the display panel.
Time signal: Can be set to ring every hour on the hour.
Regulation system: Trimmer condenser
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 765	Circuit block		
4216 765	Insulator for circuit block		
☆4225 765	Battery clamp		
4246 766	Buzzer lead terminal		
4270 765	Battery connection (−)		
4313 765	Connector A		
4313 766	Connector B		
4398 765	Liquid crystal panel frame		
4457 765	Circuit block cover		
☆4510 750	Liquid crystal panel		
4521 800	Reflecting mirror		
4530 649	Bulb		
022 446	Circuit block screw		
☆Maxell SR726W	Silver oxide battery		

Remarks :

The parts for the front switch portion are the casing parts.

Check the case number and refer to **"SEIKO Quartz Casing Parts List"** to choose an apropriate front switch unit.

Battery clamp

☆4225 765·····Some models are not provided.

Liquid crystal panel

☆4510 750·····Be sure that the combination between the color of panel cover and liquid crystal should be matched according to the **"SEIKO Quartz Casing Parts List."**

Battery

☆Maxell SR726W·····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"**.

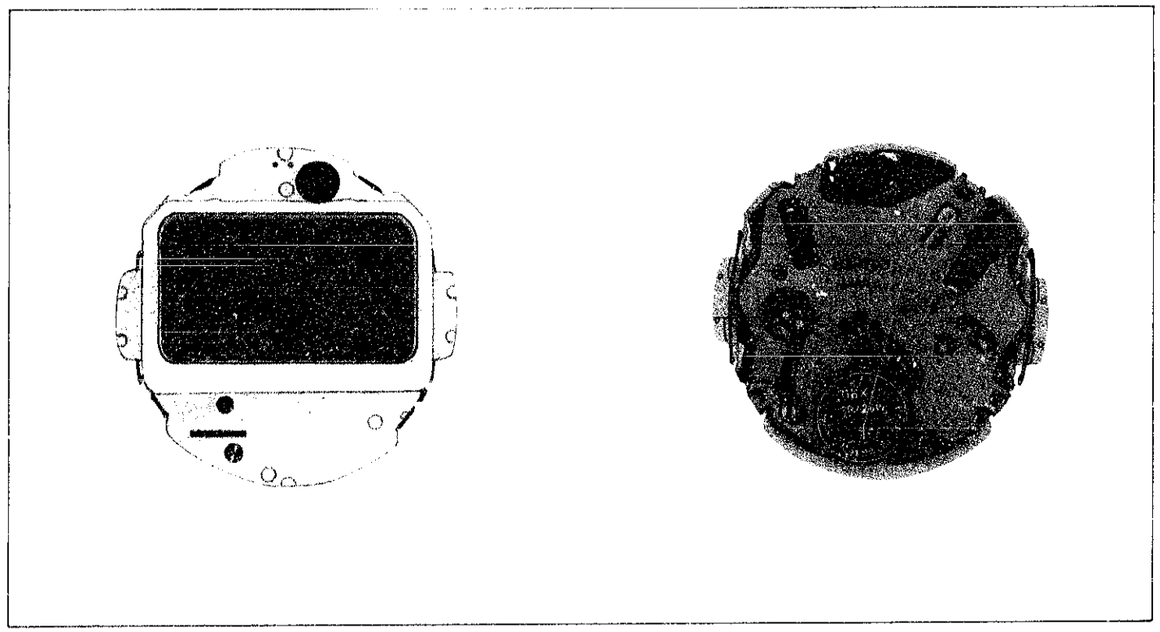
☆⇨Please see remarks.
Part numbers in light letters are not shown in photos.

TECHNICAL GUIDE

SEIKO

DIGITAL QUARTZ

CAL. A547A

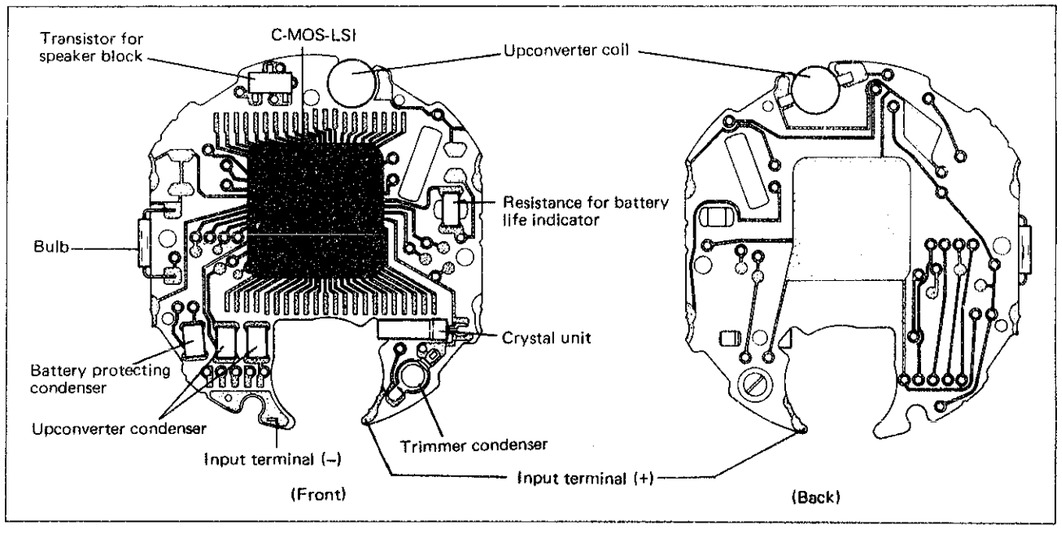


CONTENTS

I. SPECIFICATIONS

Item \ Cal. No.	A547A
Display medium	Nematic Liquid Crystal, FEM (Field Effect Mode)
Liquid crystal driving system	Multiplex driving system
Display system	• Time and calendar function (12 or 24 hour indication) • Alarm function (12 or 24 hour indication) • Stopwatch function • Timer function
Additional mechanism	• Battery life indicator • Pattern segment checking system • Illuminating light
Loss/gain	Loss/gain at normal temperature range Monthly rate : less than 15 seconds (Annual rate : less than 3 minutes)
Outside diameter	ϕ28.5 mm
Height	3.6 mm
Regulation system	Trimmer condenser
Measuring gate by Quartz Tester	Any gate is available.
Battery	Maxell SR726W Battery Life is approximately 2 years. Voltage: 1.55V

II. STRUCTURE OF THE CIRCUIT BLOCK



III. DISPLAY FUNCTION

The illuminating light is activated by depressing button D in any function.

Depress button A, and the setting function is activated.

Select and Start/Stop

Set and Lap/Reset

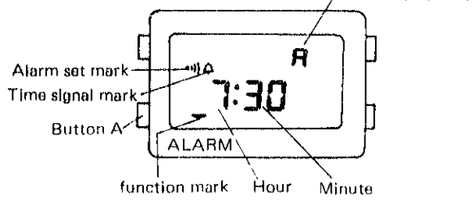
Function mark (indicates respective functions)

Quick-selection button (4 pcs.)

Depress the appropriate quick-selection button, and the desired function will be called from any display.

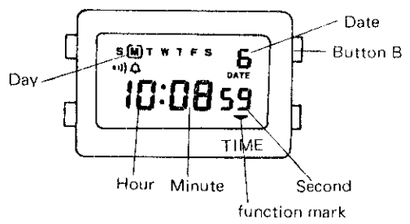
(not changed)

• Alarm display



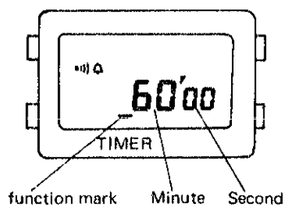
Depress button A, and the alarm time setting function is activated.

• Time and calendar display

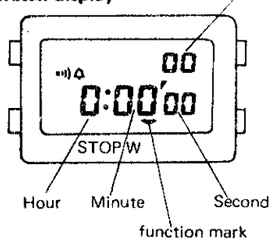


Depress button A, and the time and calendar setting function is activated. Depress button B continuously for 1～2 seconds, and the 12-hour indication is changed to and from the 24-hour indication.

• Timer display



• Stopwatch display



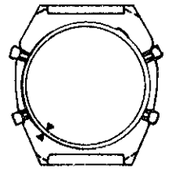
IV. DISASSEMBLING, REASSEMBLING AND LUBRICATING

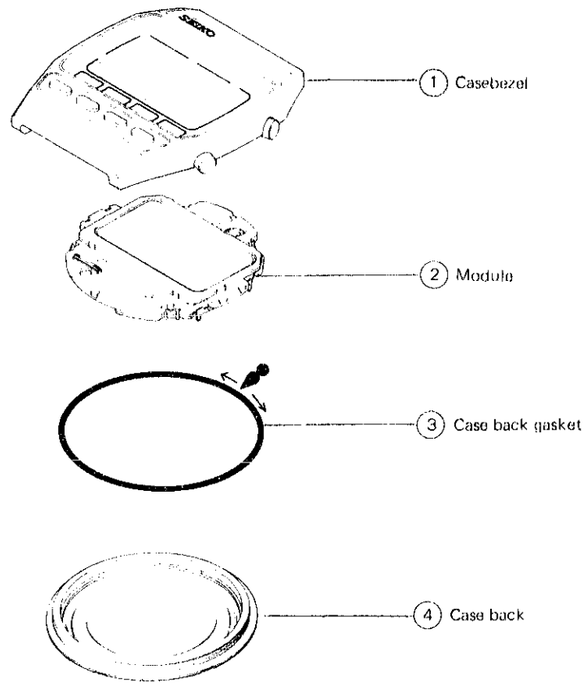
1. Disassembling, reassembling and lubricating of the case

- Disassembling procedures Figs.: (4) → (1)
  Reassembling procedures Figs.: (1) → (4)
- Lubricating
  Silicone grease 500,000 c.s.

Remarks for reassembling the case back

The case back of the regular model other than the SPORTS 100 type model is of snap type case construction.
Be sure to align the mark " ▲ " of the case back and that of the casebezel.

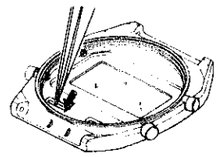




Disassembling of the front button portion

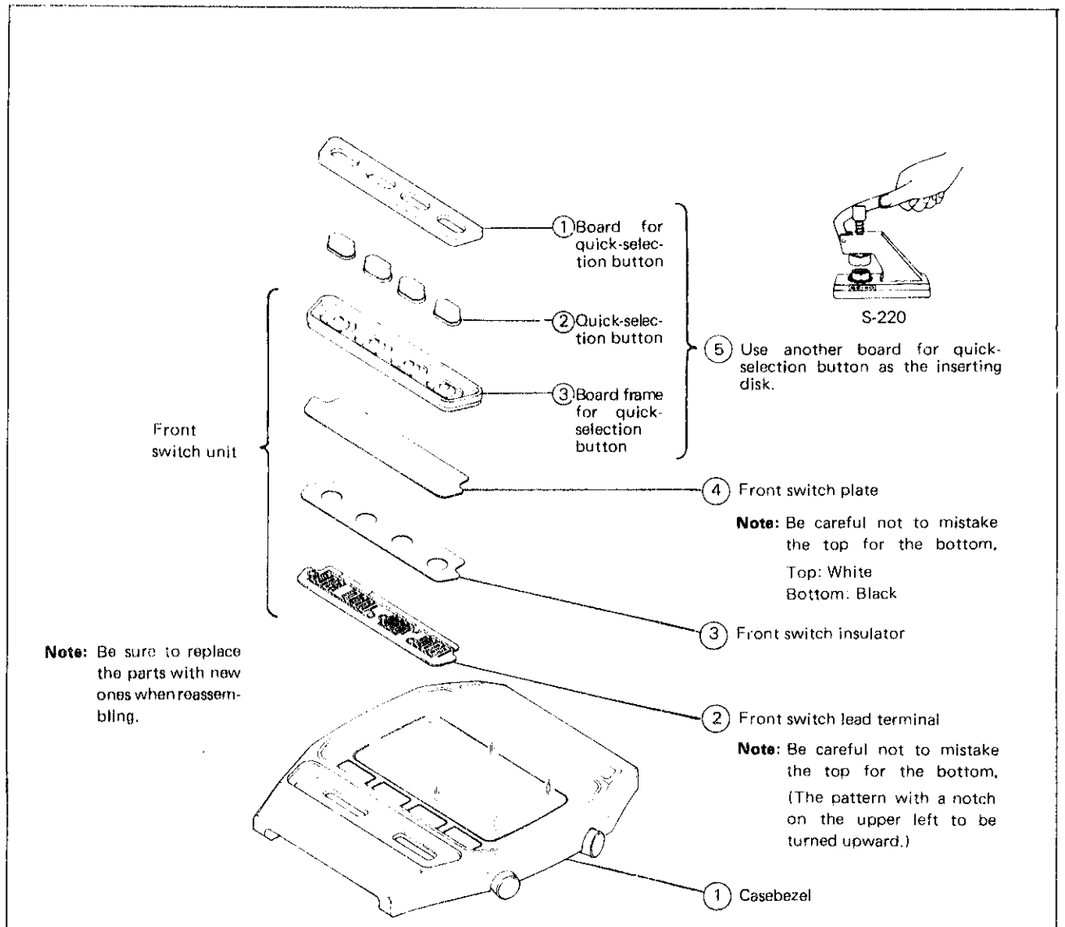
Push the front button portion with tweezers or screwdriver and remove it.

Note: It is not necessary to disassemble the front button portion except when the parts are replaced.



Reassembling of the front button portion

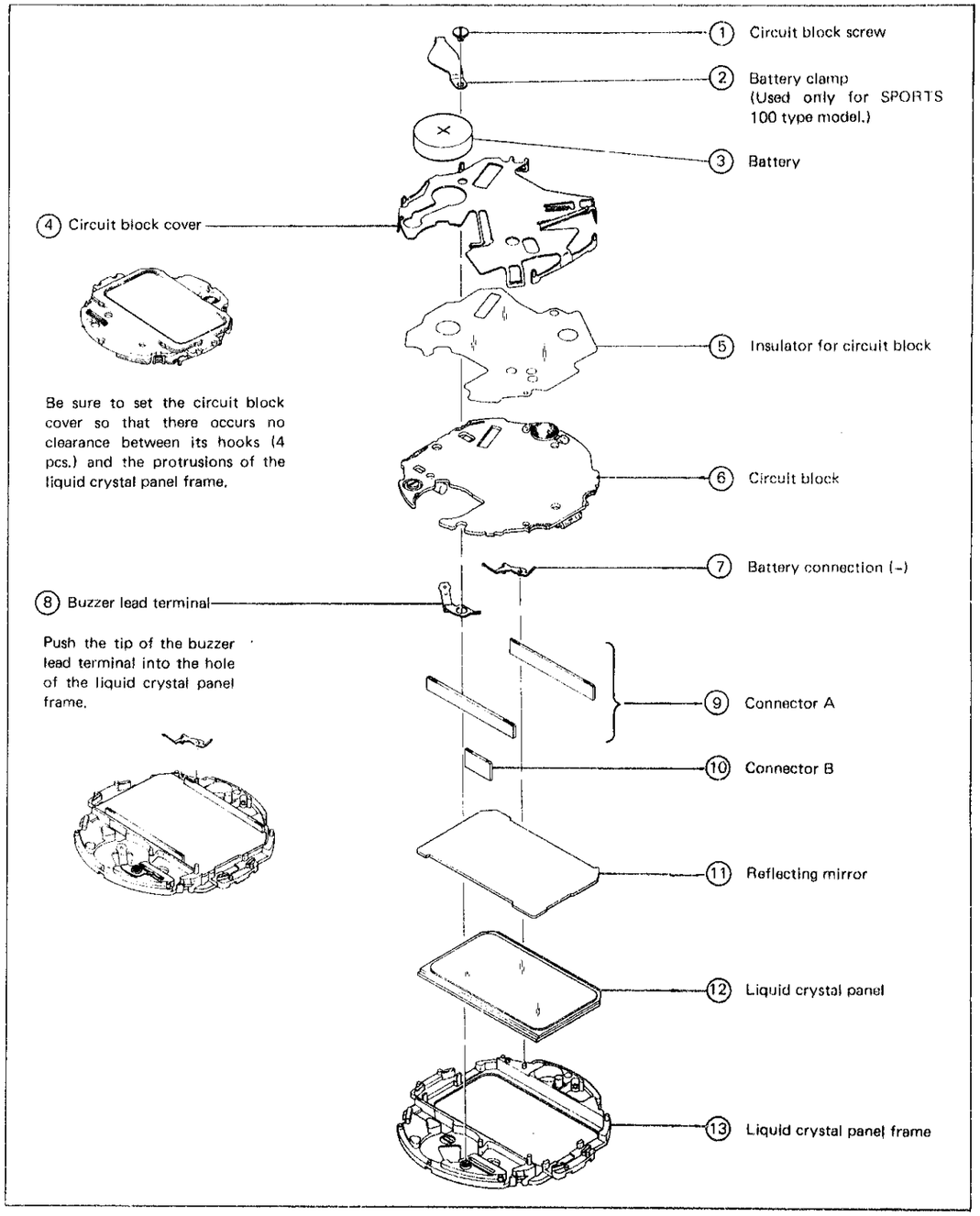
Reassembling procedures Figs.: (1) → (5)



2. Disassembling and reassembling of the module

Disassembling procedures Figs.: (1) → (13)

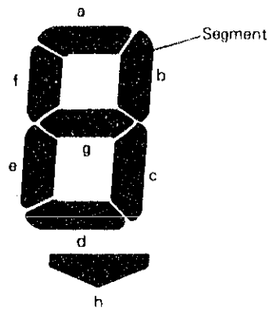
Reassembling procedures Figs.: (13) → (1)

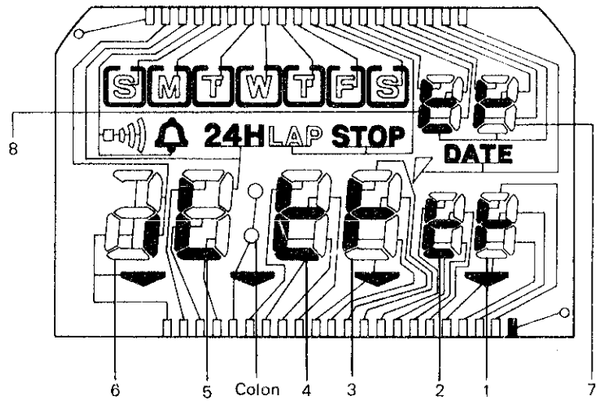


3. Relationship between the segment (Liquid Crystal Panel Electrode) and the C-MOS-LSI output terminal

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

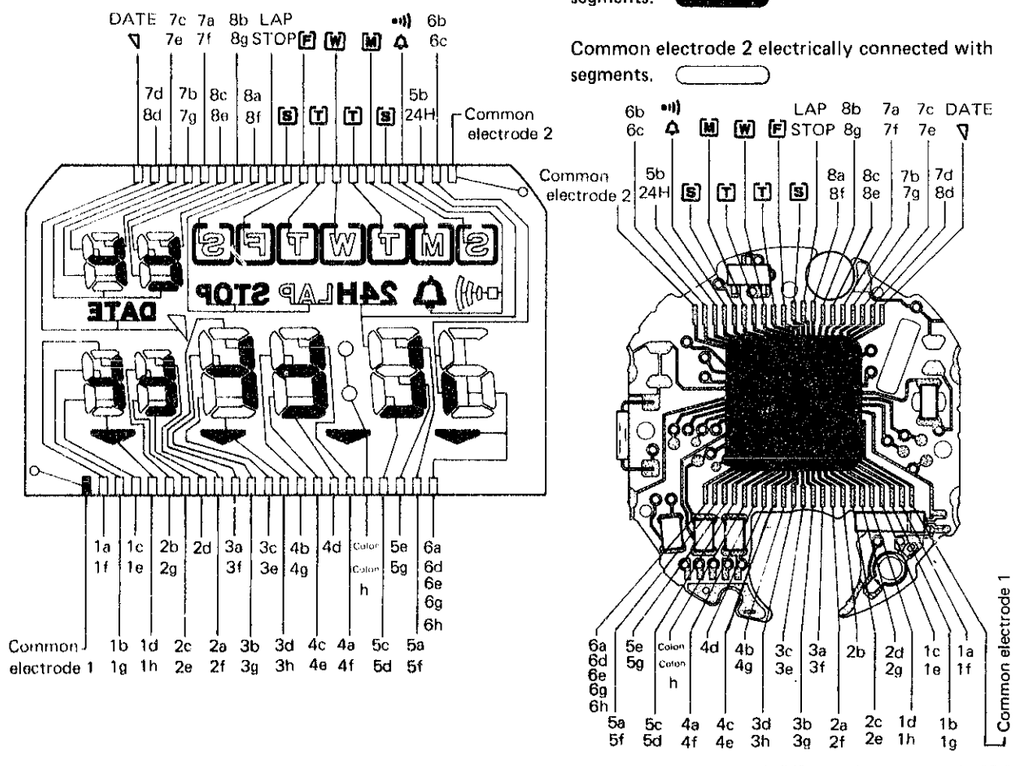




- Relationship between the segment and the C-MOS-LSI output terminal

Common electrode 1 electrically connected with segments.

Common electrode 2 electrically connected with segments.



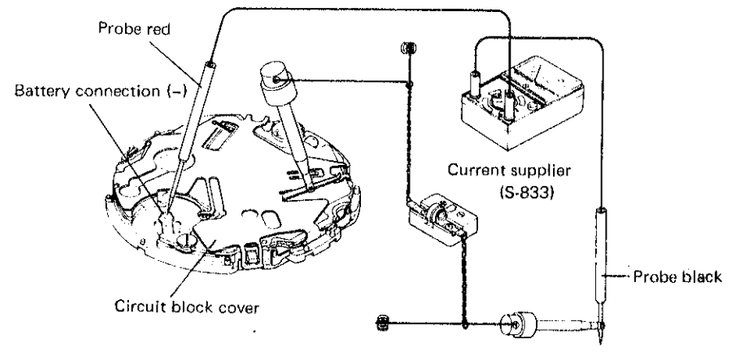
V. CHECKING AND ADJUSTMENT

Procedure	
CHECK BATTERY VOLTAGE	**Result:** More than 1.5V: Normal Less than 1.5V: Defective
CHECK BATTERY CONDUCTIVITY	
CHECK CURRENT CONSUMPTION	

1. Current consumption for the whole of the module

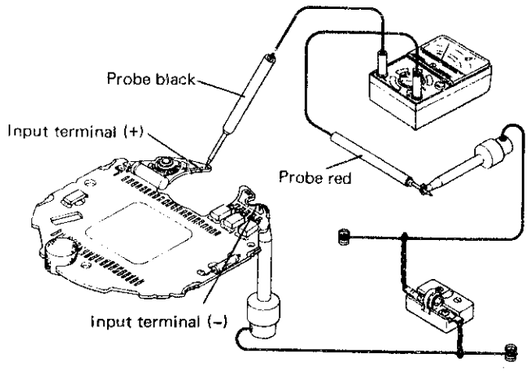
- It is possible to check the current consumption in any functions.

Result:
Less than 1.3μA: Normal
More than 1.3μA: Defective
Check the current consumption for the circuit block alone.



2. Current consumption for the circuit block alone

Result:
Less than 1.3μA: Normal
More than 1.3μA: Defective



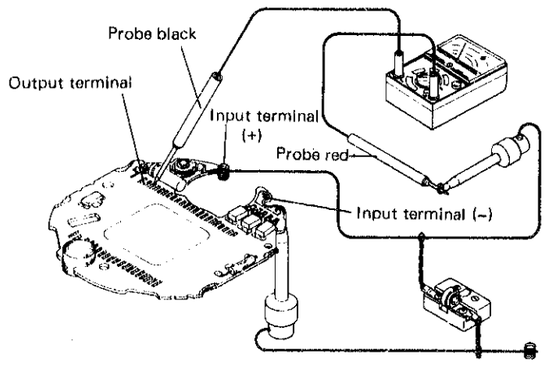
CHECK WATER RESISTANCE

Note: When the water resistance is poor, water may have entered the front button portion. Disassemble the the front button portion for repairing.

CHECK CONTACT BETWEEN C-MOS-LSI AND LIQUID CRYSTAL PANEL

CHECK LIQUID CRYSTAL PANEL AND CIRCUIT BLOCK

- Check the liquid crystal panel.
- Check the circuit block output voltage.



CHECK ACCURACY

Check the watch for accuracy in the daily rate measuring function with all the segments displayed. Depress button A to activate the setting function and then depress buttons B and C at the same time, and all the segments lights up. At this time, the alarm rings every second.
Check the accuracy by using the electromagnetic microphone in the same manner as for the analogue quartz watches.

CHECK FUNCTIONING AND ADJUSTMENT

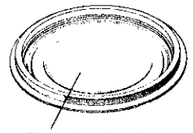
CHECK ALARM TEST SYSTEM

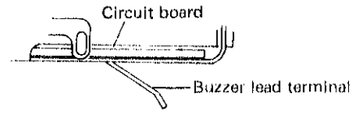
Depress buttons B and C at once in the time and calendar function or the alarm function.

CHECK CONDUCTIVITY OF SWITCH COMPONENTS

CHECK ALARM CONDITION

(1) Check to see if there is any contamination on the connecting portion of the piezoelectric element on the case back and the buzzer lead terminal. Also, check to see if there is seen a deformation on the buzzer lead terminal.

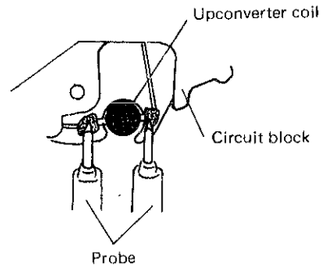




Limit the protrusion of the buzzer lead terminal from the module to approx. 3mm.

(2) Measure the upconverter coil resistance of the circuit block and check it for broken wire and short circuit.

Range to be used: OHMS R x 1



Result:
45Ω ~ 70Ω: Normal
Less than 45Ω (Short circuit) — Deffective
More than 70Ω (Broken wire) — Deffective

Apply the probes of the Volt-ohm-meter to the wire terminal of the upconverter coil.

CHECK BULB CONDITION

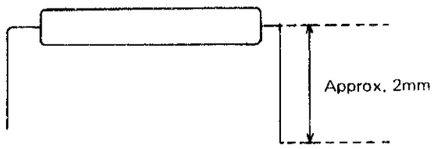
*** How to replace the bulb**

Be sure to use the soldering iron of low heat capacity with as fine a tip as possible.
Thickness of the tip: Approx. ϕ1 mm
Heat capcity: 5W ~ 20W of power consumption

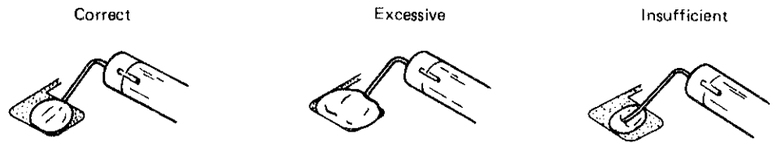
(1) Remove the defective bulb.
Hold the defective bulb gently with tweezers, apply the soldering iron to the bulb lead terminal and lift the lead of the bulb to remove it.

Procedures

(2) The lead of the bulb is made somewhat longer.
Out it off properly with nippers.



(3) Solder the new bulb.
Note: If the soldering iron is applied too long, the circuit block may be damaged. Be sure to apply the soldering iron to such an extent that the solder is melted uniformly at the connection (for approx. 1 second).



(4) Finally check the bulb condition again.

CHECK FUNCTIONING

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