EMMYWATCH

VINTAGE RESTORATIONS

Seiko 0843A Movement Parts (1)

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SEIKO

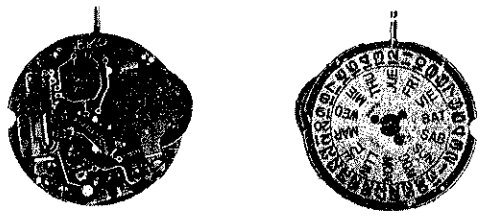
QUARTZ

3003

(Cal.0843A)

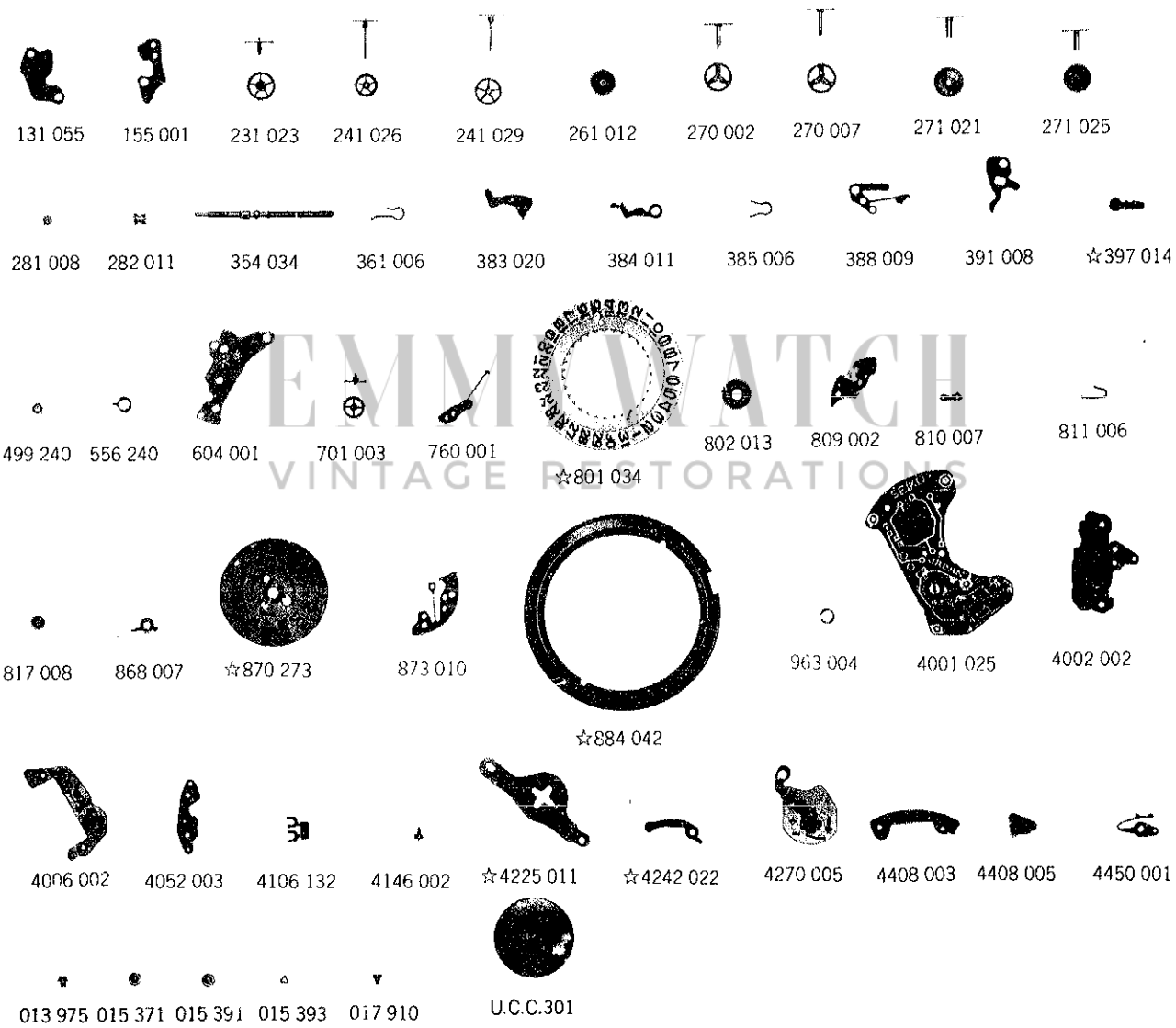
PARTS LIST

Calibre No.	Jewels	Style Name
0843A	**9j**	**QUARTZ 3003**



Characteristics

Casing diameter : ϕ 24.0 mm
Maximum height : 4.8 mm
Frequency of quartz crystal oscillator : 32,768 Hz
(Hz = Hertz ..... Cycles per second)
Driving system : Step motor system
Regulation system : Trimmer condenser
Second-setting device
Calendar (day & date)
Instant setting device for day & date calendar
Bilingual change-over system for day of week



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☆⇨Please see remarks on the next reverse page.

Calibre No.	Jewels	Style Name
0843A	9j	QUARTZ 3003

PART NO.	PART NAME
131 055	Third wheel bridge
155 001	Lower cock for fifth wheel
231 023	Third wheel & pinion
241 026	Fourth wheel & pinion (5.89mm)
241 029	Fourth wheel & pinion (6.59mm)
261 012	Minute wheel
270 002	Center minute wheel (3.59mm)
270 007	Center minute wheel (4.29mm)
271 021	Hour wheel (2.72mm)
271 025	Hour wheel (3.42mm)
281 008	Setting wheel
281 008	Setting wheel for calendar correction
282 011	Clutch wheel
354 034	Winding stem
361 006	Second-setting lever spring
383 020	Setting lever
384 011	Yoke (Clutch lever)
385 006	Yoke spring (Clutch lever spring)
388 009	Yoke spring holder
391 008	Second-setting lever
☆397 014	Lever for unlocking stem
499 240	Day finger ring
556 240	Date finger
604 001	Setting wheel plate complete
701 003	Fifth wheel & pinion
760 001	Second jumper
☆801 034	Date dial
802 013	Date driving wheel
809 002	Date jumper guard
810 007	Date jumper
811 006	Date jumper spring
817 008	Intermediate date wheel
868 007	Day finger
☆870 273	Day star with dial disk (English-Spanish)
☆870 274	Day star with dial disk (English-French)
☆870 275	Day star with dial disk (English-German)
☆870 276	Day star with dial disk (English-Italian)
☆870 277	Day star with dial disk (English-Chinese)
☆870 278	Day star with dial disk (English-Portuguese)
873 010	Day jumper
☆884 042	Holding ring for dial
963 004	Snap for day star with dial disk
4001 025	Circuit block
4002 002	Coil block
4006 002	Motor block
4052 003	Upper plate for step rotor
4106 132	Temperature compensation condenser
4146 002	Step rotor
☆4225 011	Holding spring for battery
☆4242 022	Plus terminal of battery connection
4270 005	Battery connection
4408 003	Insulator
4408 005	Insulating spacer for circuit block
4450 001	Switch lever
011 221	Diafix upper cap jewel for step rotor
011 221	Diafix lower cap jewel for step rotor

PART NO.	PART NAME
011 527	Upper hole jewel for fifth wheel
011 527	Lower hole jewel for fifth wheel
011 527	Lower hole jewel for third wheel
011 537	Upper hole jewel for third wheel
011 537	Upper hole jewel for fourth wheel
012 287	Second jumper screw
012 377	Coil block screw
012 378	Rotor stator screw
012 379	Third wheel bridge screw
012 380	Lead terminal screw
012 380	Temperature compensation condenser screw
012 382	Second-setting lever screw
012 383	Setting wheel plate complete screw
012 384	Yoke spring holder screw
012 385	Lower cock screw for fifth wheel
012 386	Case screw
012 387	Screw for holding spring for battery (A)
012 387	Plus terminal screw of battery connection
012 399	Screw for holding spring for battery (B)
012 694	Circuit block screw (A)
012 696	Circuit block screw (B)
012 736	Date jumper guard screw
012 736	Day jumper screw
012 767	Date driving wheel screw
013 975	Eccentric dial pin
015 371	Diafix upper hole jewel with frame for rotor
015 391	Diafix lower hole jewel with frame for rotor
015 393	Diafix upper spring for step rotor
015 393	Diafix lower spring for step rotor
017 016	Lower bridge tube for step rotor
017 017	Tube for yoke (Tube for clutch lever)
☆017 018	Tube for circuit block (A, D)
017 019	Switch pin
☆017 020	Tube for circuit block (B)
017 021	Tube for third wheel bridge screw
☆017 022	Tube for circuit block (C)
017 027	Second-setting lever pin
017 028	Lower cock tube for fifth wheel
☆017 082	Tube for circuit block (D)
017 910	Holding pin for second-setting lever
U.C.C.301 / Maxell SR43SW	Silver oxide battery

☆⇨Please see remarks on the reverse page.
Part numbers in light letters are not shown in photos.

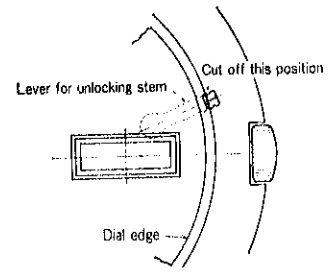
Calibre No.	Jewels	Style Name
0843A	**9j**	**QUARTZ 3003**

Remarks :

Lever for unlocking stem

☆397 014·····Used for the one-piece or square type water-resistant case.
Adjust the length of the unlocking stem lever by cutting the tail on the position marked arrow, which should be exposed on the case face, as shown in the illustration.

Movement in the case dial upside



Date dial

☆801 034·····Used when both the crown and the calendar frame are located at 3 o'clock position.

If any other type of date dial is required, specify ① Cal. No. ② the crown position ③ the date frame position and ④ Dial No.

Day star with dial disk

☆870 273～278·····Used when both the crown and the calendar frame are located at 3 o'clock position.

If any other type of day star with dial disk is required, specify the number printed on the disk.

Holding ring for dial

☆884 042·····Used except for one-piece type case.

The type of a holding ring for dial to be used is determined based on the design of cases and dials. Check the case number and refer to **"SEIKO Quartz Watch Casing Parts List"** to choose an appropriate holding ring for dial.
Specify the part number of the holding ring for dial assinged on the above parts list when you place the order.

Holding spring for battery

☆4225 011·····Used only for case without battery hatch.

Plus terminal of battery connection

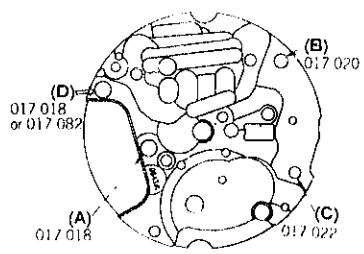
☆4242 022·····Used only for case with battery hatch.

Tube for circuit block (A, B, C, D)

☆017 018(A, D)
☆017 020(B)
☆017 022(C)
☆017 082(D)
·····

There are available four types of Tube for circuit block. They are used as illustrated on the right. Tube for circuit block (D) is also subclassified into two types; 017 018 and 017 082.
For the replacement of Tube for circuit block (D), select a proper part as instructed below.

- ○ Where the main plate for the tube (D) has a through hole: 017 018
- ○ Where the main plate for the tube (D) has no through hole: 017 082



Battery

☆U.C.C.301·····The applied battery for this calibre might be added the substitutive in the future. In that case, please refer to separate **"BATTERIES FOR SEIKO QUARTZ WATCHES"**.

75. 7
79. 6 Revised
Printed in Japan

TECHNICAL GUIDE

SEIKO

QUARTZ

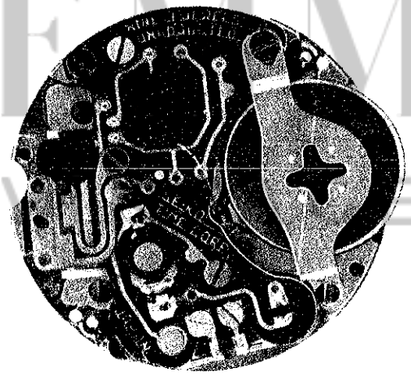
CAL.0843A

CONTENTS

SEIKO Quartz Calibre 0843A

The SEIKO Quartz Cal. 0843A is a thin and compact crystal oscillator watch providing easy after-servicing, that has been made possible through SEIKO's advanced manufacturing techniques and the possible complete electronic system available today.

Calibre 0843A



Movement

SPECIFICATIONS AND FEATURES

1. Specifications

Item \ Calibre	Cal. 0843A
Additional mechanism	Calendar (day & date) Bilingual change-over system for the day of the week Instant day and date setting Second setting device Electronic circuit reset switch
Crystal oscillator	32,768 Hz (Hz = Hertz . . . cycles per second)
Loss/gain	Loss/gain at normal temperature Monthly rate: less than 10 seconds (Annual rate: less than 2 minutes)
Casing diameter	ϕ 24.0 mm
Height	4.84 mm
Operational temperature range	−10°C ~ +60°C (14°F ~ 140°F)
Driving system	Step motor system (bipolar)
Regulation system	Trimmer condenser
Battery power	Battery life is over one year Silver oxide battery (U.C.C. 301) Voltage 1.5 V Capacity 100mAH Size ϕ11.6mm X 4.2mm
Jewel	9 jewels

2. Features

(1) The crystal oscillator is the ultrasonic tuning fork type and generates a stabilized oscillation of 32,768 Hz.

(2) One-second hand operation by the step motor system with high stability and durability.

(3) Second setting device
The second hand stops precisely on every second mark.

(4) The movement consists of the mechanical portion (gear train), electronic circuit block and motor block. These enable easy checking and adjustment.

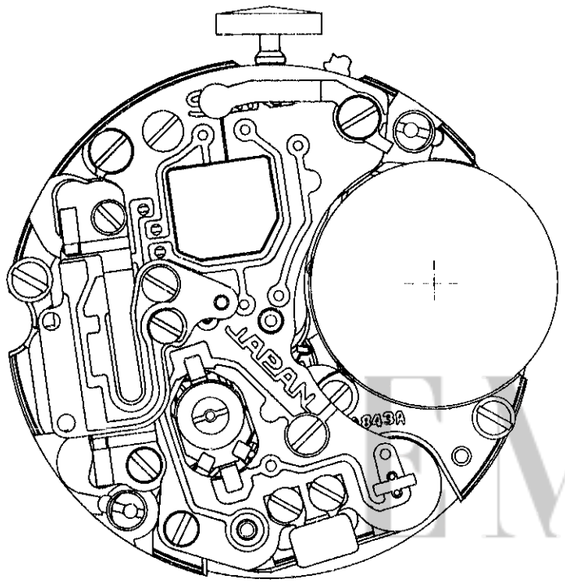
(5) The bilingual change-over system for the day of the week, and instant day and date setting device.

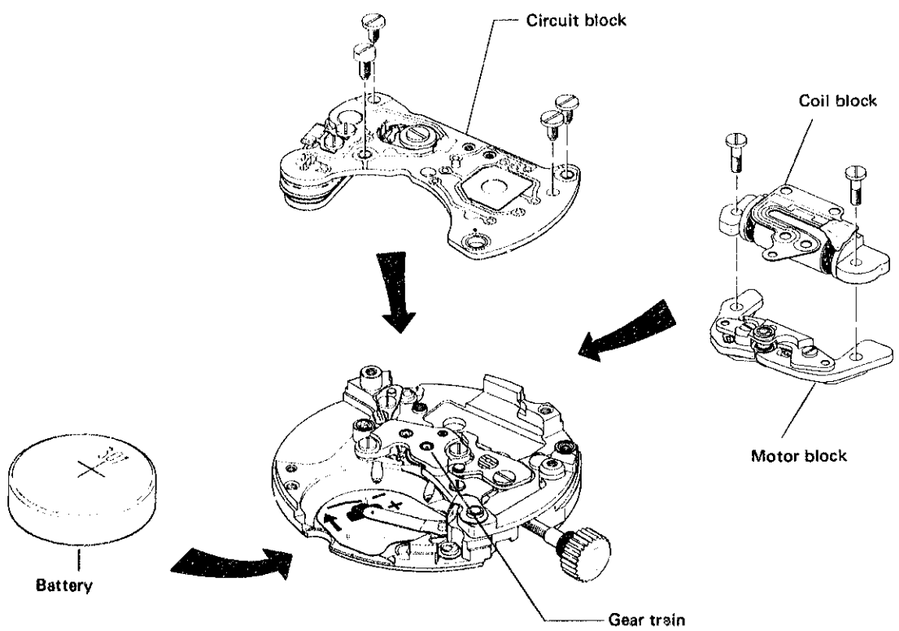
(6) The compact movement (casing diameter—ϕ 24.00 mm) makes a smartly designed watch possible.

(7) A battery life is over one year.

3. Movement structure

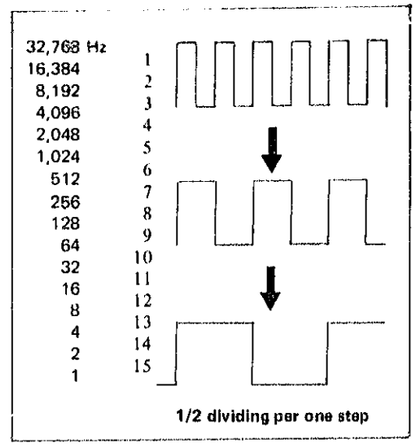
The circular movement consists of the circuit block, motor block, coil block, the battery and the mechanical portion of which the main component is a gear train.
Since each portion is a separate unit, easy checking and adjustment is possible.

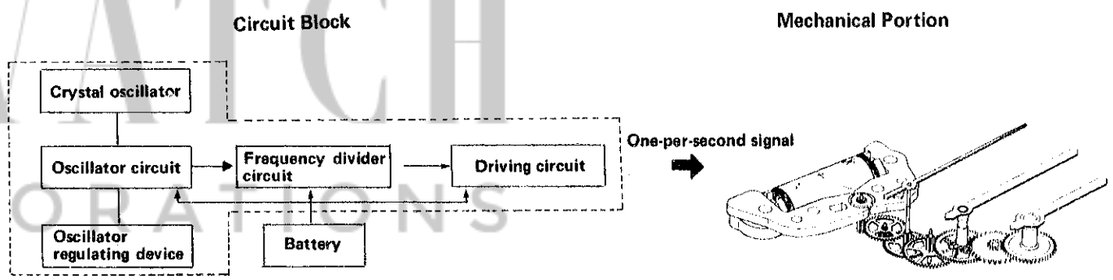




4. Outline of functioning

(1) The crystal oscillator by supplying voltage oscillates accurately at 32,768 Hz.
(2) The electronic circuit receives the 32,768 Hz oscillations (electric signals) and converts them into impulses at the rate of one per second, i.e. 1/2 (16,384 Hz), 1/2 (8,192 Hz). . . .
(3) The one-per-second signals are transmitted to the coil block, causing the step motor to rotate once every second in 180° increments.
(4) This rotation is transmitted to the gear train thus moving the hands.

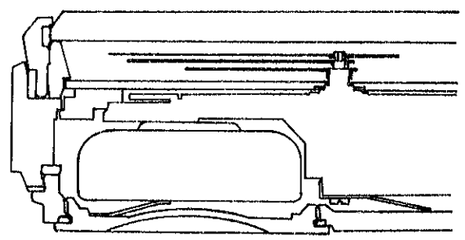




5. Case

- **Anti-magnetic construction**

  The SEIKO Quartz case is made of special anti-magnetic metal which completely shields the watch from external magnetic fields.



- **Current flow**

  The current flows from the battery through a case to the movement.

6. Hand setting and calendar setting

Date and day changes as follows:

- Date ..... 00:00 (22:30 ~ 24:00)
  Day ..... 2:55 (0:30 ~ 2:55)

Crown position

- Normal postion . . . Free
- First click . . .
  Change of day and date
  Date change . . . counterclockwise
  Day change . . . clockwise
- Second click . . . Hand setting, reset switch and second setting

(1) Hand setting

Pull out the crown to the second click and the second hand stops precisely on the second mark.

Procedures

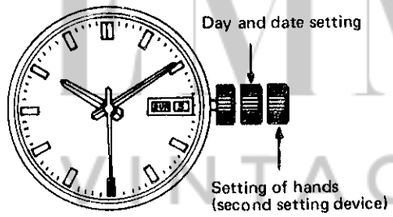
(1) Pull the crown out to the second click.
(2) Turn the crown and set the time of the hour hand and the minute hand.

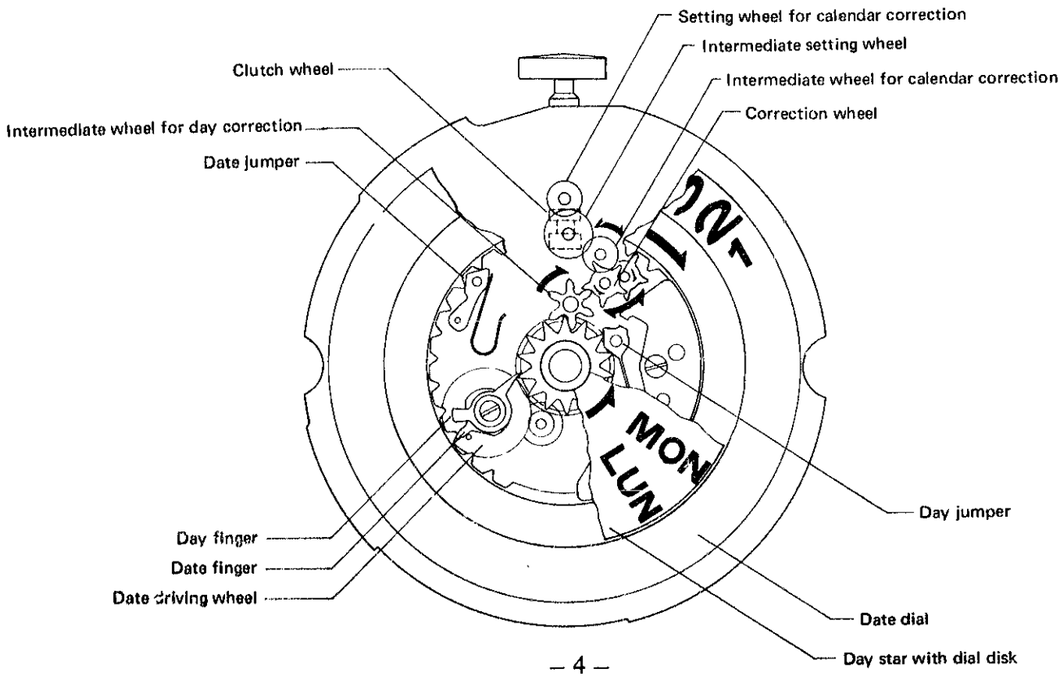
- First turn the hands past the 12:00 o'clock position to see if the day changes, then set the time correctly.
- As the torque of the gear train is transmitted reversly, the time is set accurately by turning the hands between 5 and 10 minutes ahead and then turning it back to the desired time.

(3) To synchronize with a time signal, push the crown in.
Push the crown in to the innermost position to start the watch. Then the hour, minute and second hand can be set exactly.

(2) Calendar setting

Pull the crown out to the first click.
(1) Turn the crown counterclockwise and the date will change.
(2) Turn the crown clockwise and the day of the week will change.
Select the desired language as two languages appear alternately when setting the day of the week.
If the setting of the calendar is made when the hour hand is pointing to the time between 9:00 p.m. and 3:00 a.m., sometimes the calendar will not change the next day. Please reset the calendar before or after this time period.



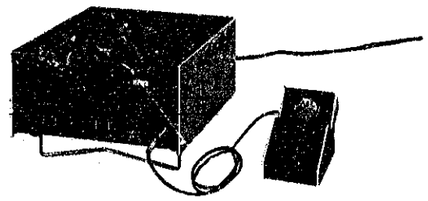


7. After-servicing instruments and materials

For after-servicing of the SEIKO Quartz watch, the following after-servicing instruments and materials are necessary.

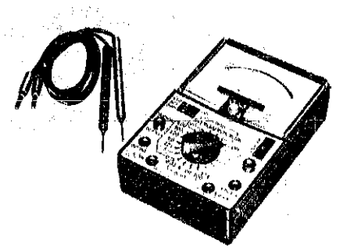
1. Quartz Tester

Used to check time accuracy and the flow of current from the circuit block to the coil block.



2. Tester

Used for checking battery voltage, measuring resistance and testing conductivity.



3. Movement holder

Used for disassembling and reassembling the movement.

4. Holding spring for battery

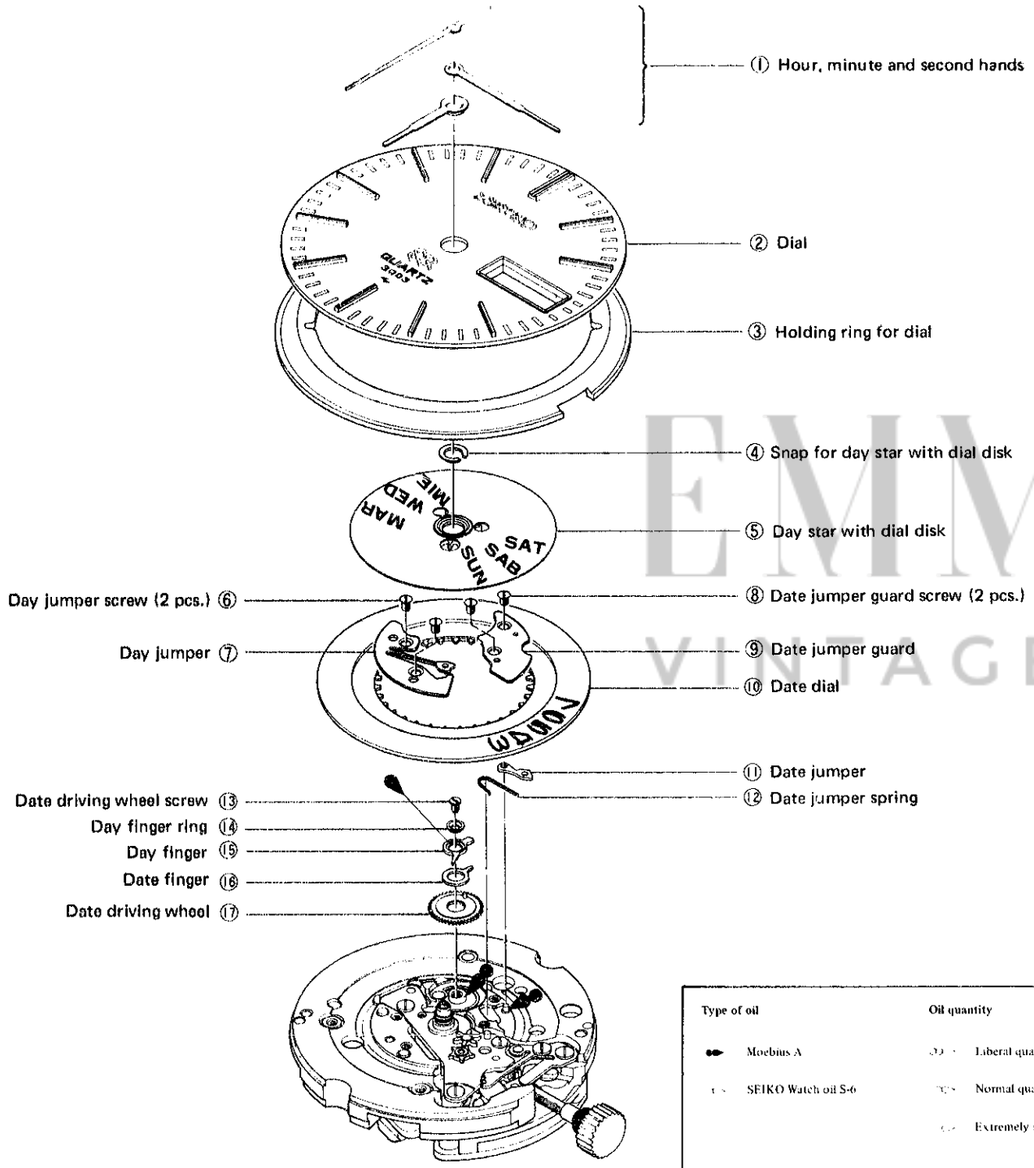
Used for securing the battery when the movement is removed from the case or when the case back is removed.

5. Others

(1) Anti-magnetic tweezers for handling the magnetized step rotor, etc.
(2) Nonmetallic tweezers for handling the battery.

Disassembling procedures Fig.: ① ~ ⑰
Reassembling procedures Fig.: ⑰ ~ ①

1. Calendar mechanism



Type of oil	Oil quantity
Moebius A	Liberal quantity
SEIKO Watch oil S-6	Normal quantity
	Extremely small quantity

Never lubricate the places marked ⊗

REMARKS:

As for the watch with a battery hatch, first remove the battery and the movement.

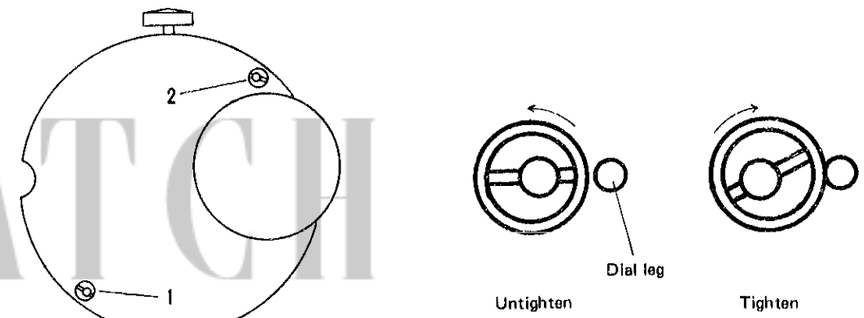
How to remove the hands and the dial

Removing and mounting the hands ①

Remove and mount the hands after pulling the crown out to the second click.

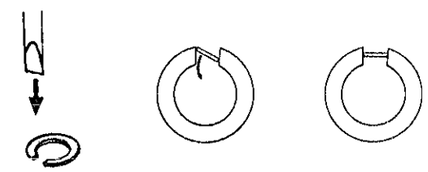
Removing and replacing the dial ②

After turning the eccentric dial pin between 90° and 150° in the arrow marked direction removing and replacing the dial is possible.
When replacing the dial, tighten the eccentric dial pin according to the figures shown in the following diagram.

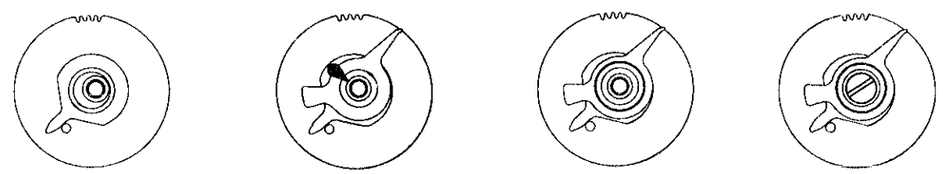


How to remove the snap for the day star with dial disk ④

Put the tip of a screw driver between the two ends of the snap for day star with dial disk and pull the screw driver up to remove the snap for day star with dial disk.

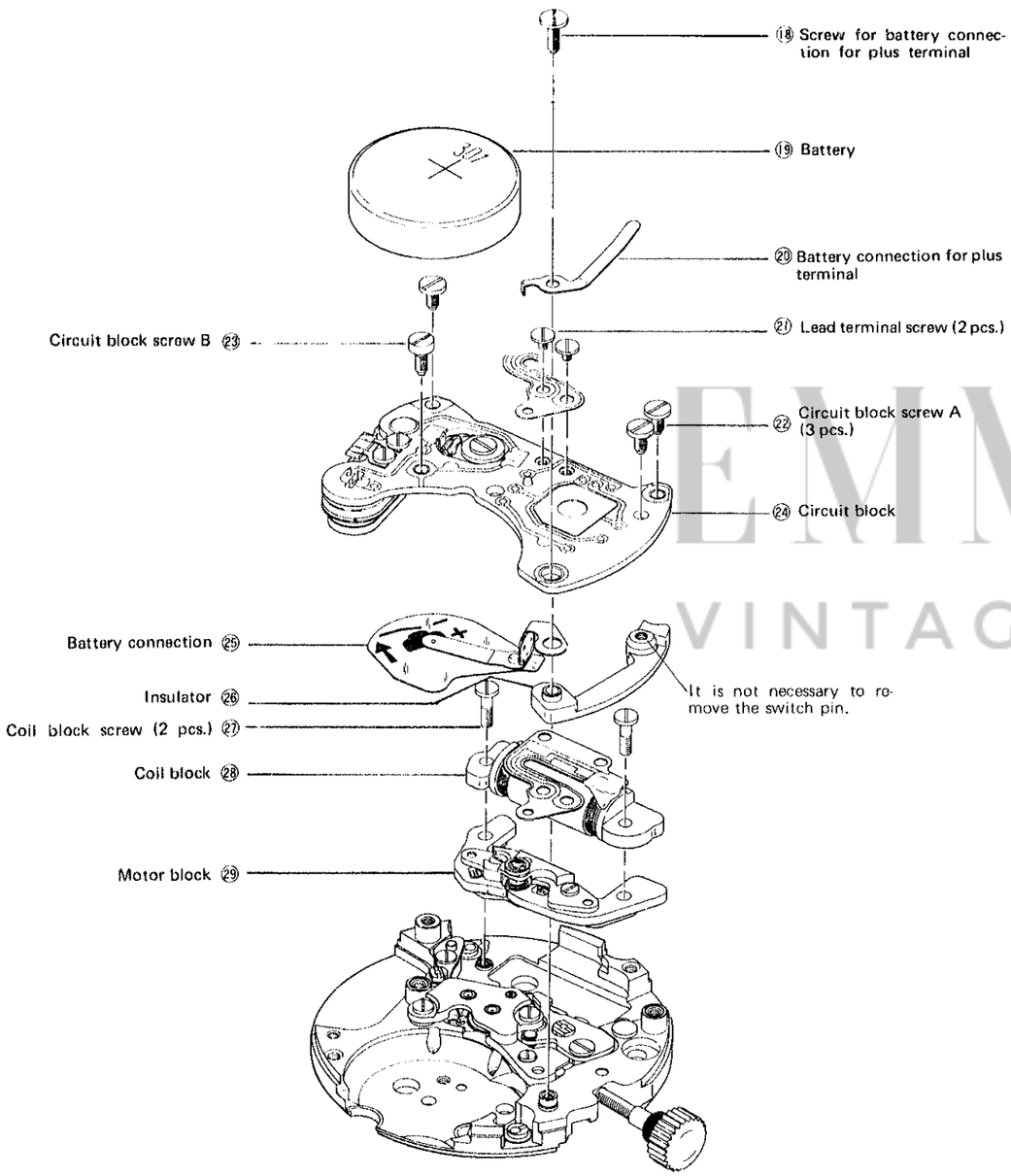


How to fix the date finger and the day finger ⑬ ⑭ ⑮ ⑯



1. Place the date finger as shown in the above diagram.
2. Put on the day finger and lubricate it a little.
3. Now put on the day finger ring.
4. Tighten the date driving wheel screw.

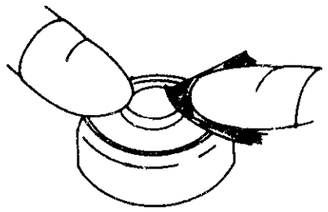
2. Electronic circuit mechanism



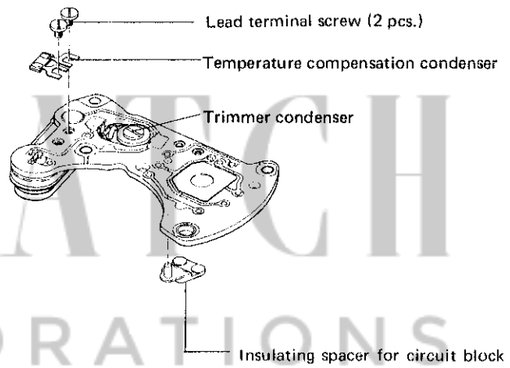
REMARKS:

Replacing the battery ⑲

(1) Check for a battery voltage reading of over 1.5 V before placing it in the case.
(2) Wipe off any foreign matter with a dry cloth.
(3) Use battery U.C.C. 301



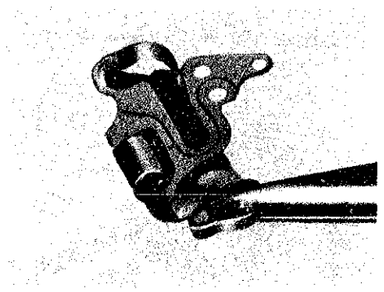
Circuit Block ㉔



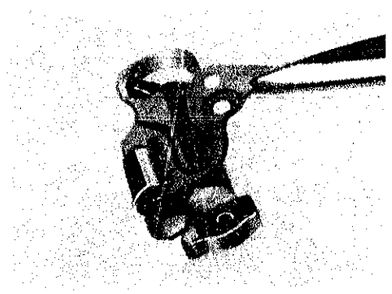
- It is not necessary to remove the insulating spacer for circuit block under normal disassembling conditions.
- Time accuracy is adjusted by turning the trimmer condenser. But, do not remove the temperature compensation condenser.

Hold the coil block ㉘

Hold the coil block as shown in a photo.



Correct

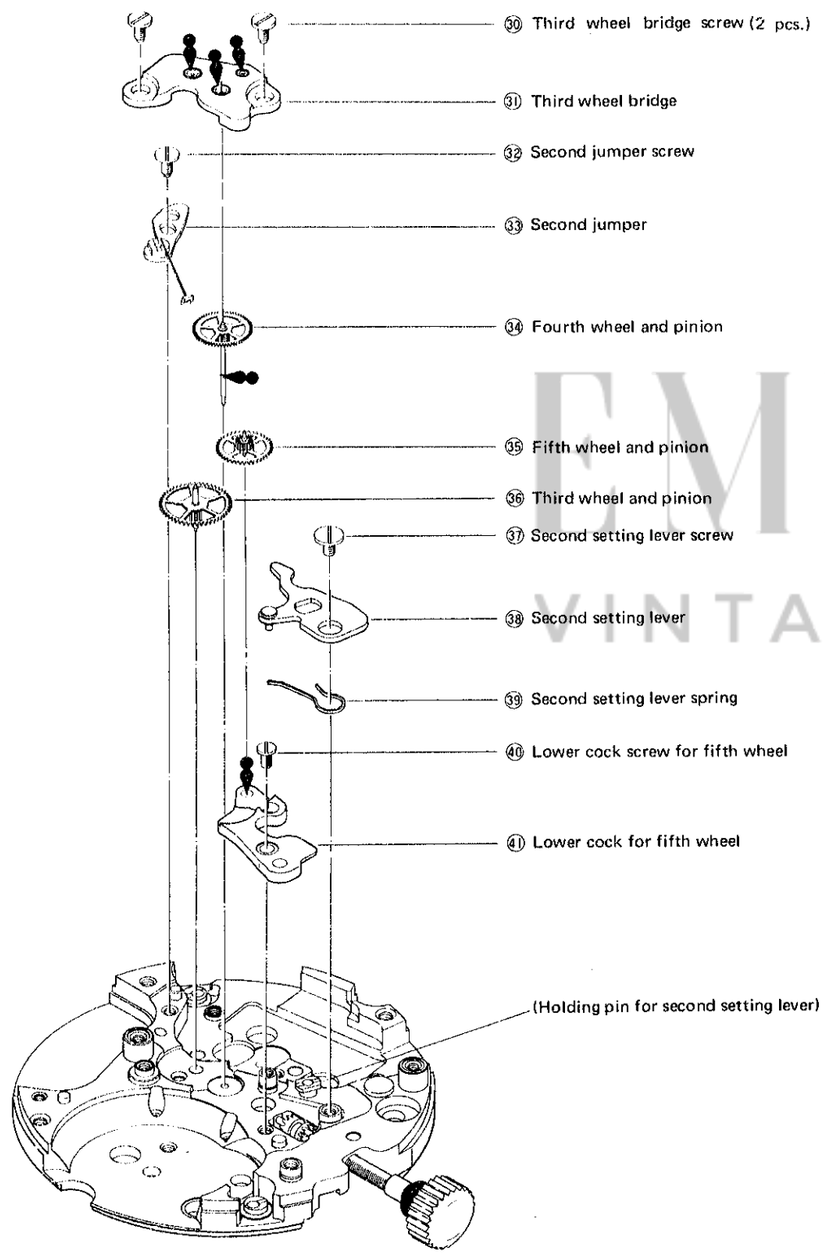


Incorrect

Motor block ㉙

It is not necessary to disassemble except when foreign matter is found inside.

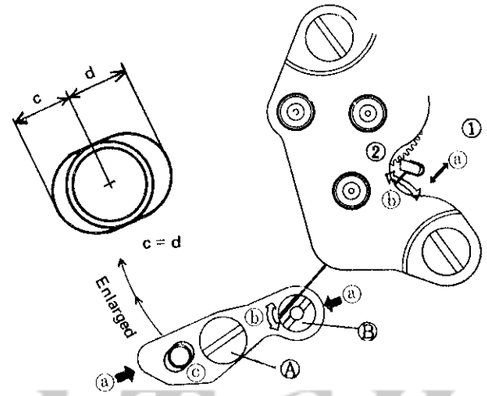
3. Gear train mechanism

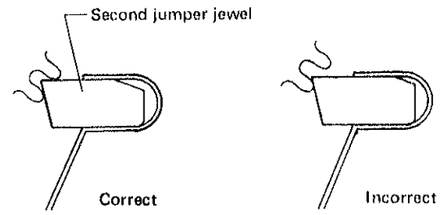


REMARKS:

Reassembling procedures for the second jumper ㉝

Determine the second jumper position after assembling the motor block and coil block.





Reassembling procedures:

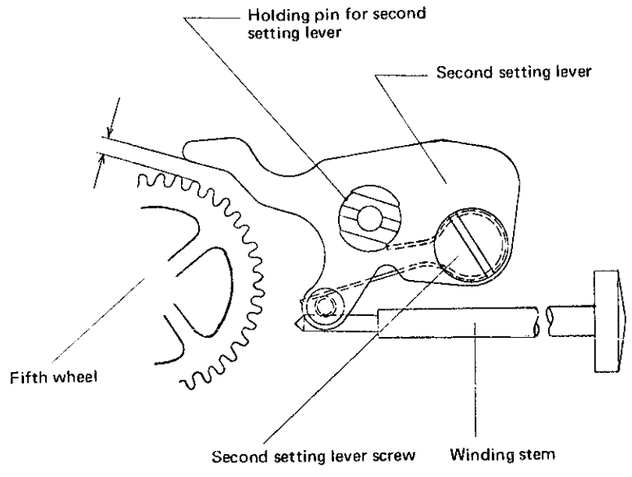
(1) Fix the second jumper so that a pin of the main plate ⓒ can be placed in the center of the oval hole of the second jumper.

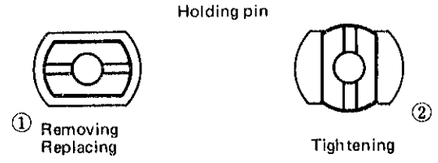
(2) Loosen the Ⓐ screw a little and adjust the second jumper in the arrow marked direction ⓐ and then tighten it.

(3) Turn the Ⓑ pin and adjust the second jumper spring in the arrow marked direction ⓑ.

(4) Be sure that no pressure is put on the fourth wheel and pinion by the second jumper jewel. Also make sure that the fourth wheel cog meet exactly with the second jumper jewel. Be careful second jumper jewel not to bend the second jumper spring.

How to assemble the second-setting lever ㊲ ㊳





Assembling procedures:

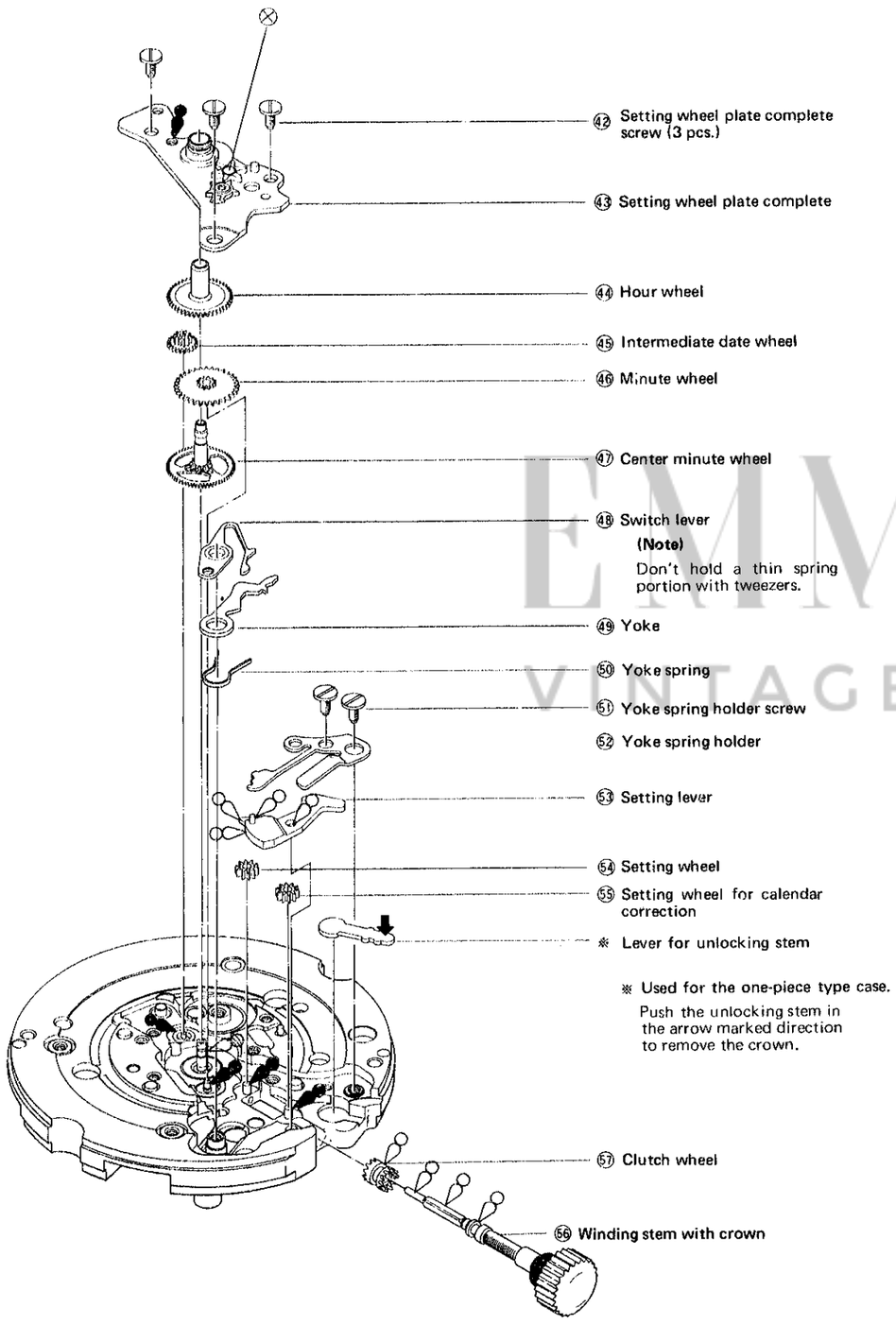
(1) Pull the crown out to the second click.

(2) Fix the second-setting lever as shown by ① in the above photo and turn the holding pin to tighten.

(3) Tighten the second-setting lever screw.

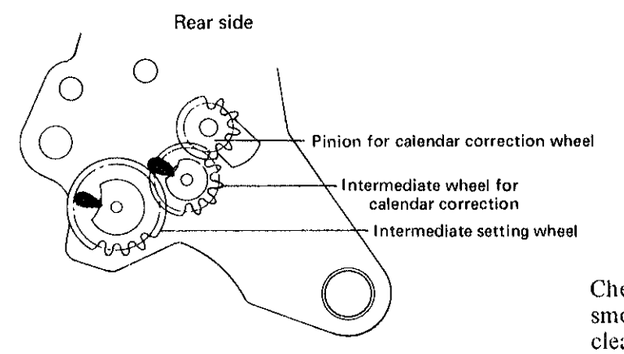
(4) Make sure that the second-setting lever functions correctly.
Check to be sure that the second-setting lever makes the clearance between the fifth wheel and pinion when the crown is in the normal position and at the first click, and that it is flush with the fifth wheel and pinion when the crown is at the second click.

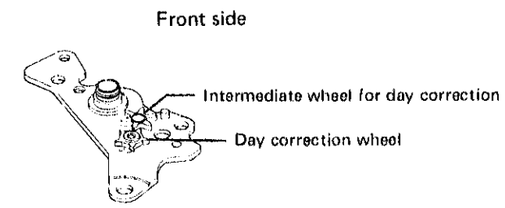
4. Setting mechanism



REMARKS:

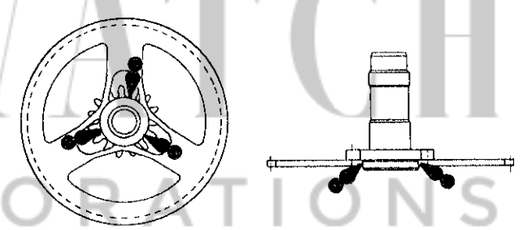
Lubrication of setting wheel plate complete ㊸





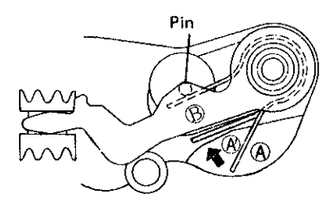
Check to see if the correction wheel moves smoothly and if it does not move smoothly, clean it again.

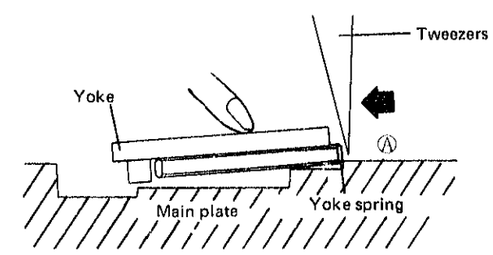
Lubrication of center minute wheel ㊼



Don't disassemble the cannon pinion and center minute wheel.

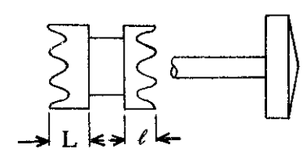
How to assemble the yoke and yoke spring ㊾ ㊿





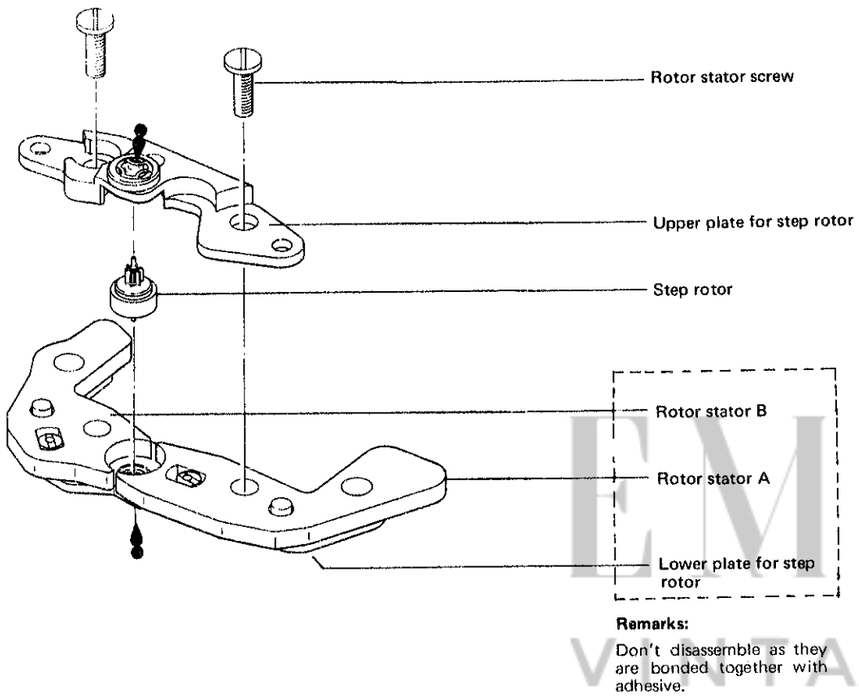
(1) Put the fork of the yoke spring on the Ⓐ side of the main plate as shown in the diagram.
(2) Put the fork of the yoke spring on the Ⓑ side as shown in the diagram.
(3) Hold the yoke with a finger as shown in the above illustration and push the yoke spring from Ⓐ to Ⓐ position in the arrow marked direction.

Clutch wheel ㊼



Place the clutch wheel with the L side (long side) facing the center minute wheel and the ℓ side (short side) facing the crown.

5. Motor block



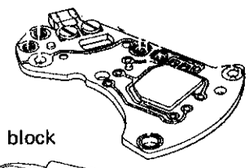
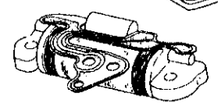
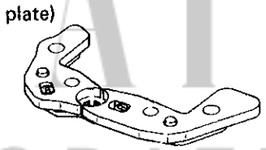
REMARKS:

(1) Don't disassemble the lower plate for step rotor and rotor stators (A.B.) as they are bonded together with adhesive after adjustment.

(2) Use adhesive tape or RODIKO to remove the filing and lint from the step rotor.

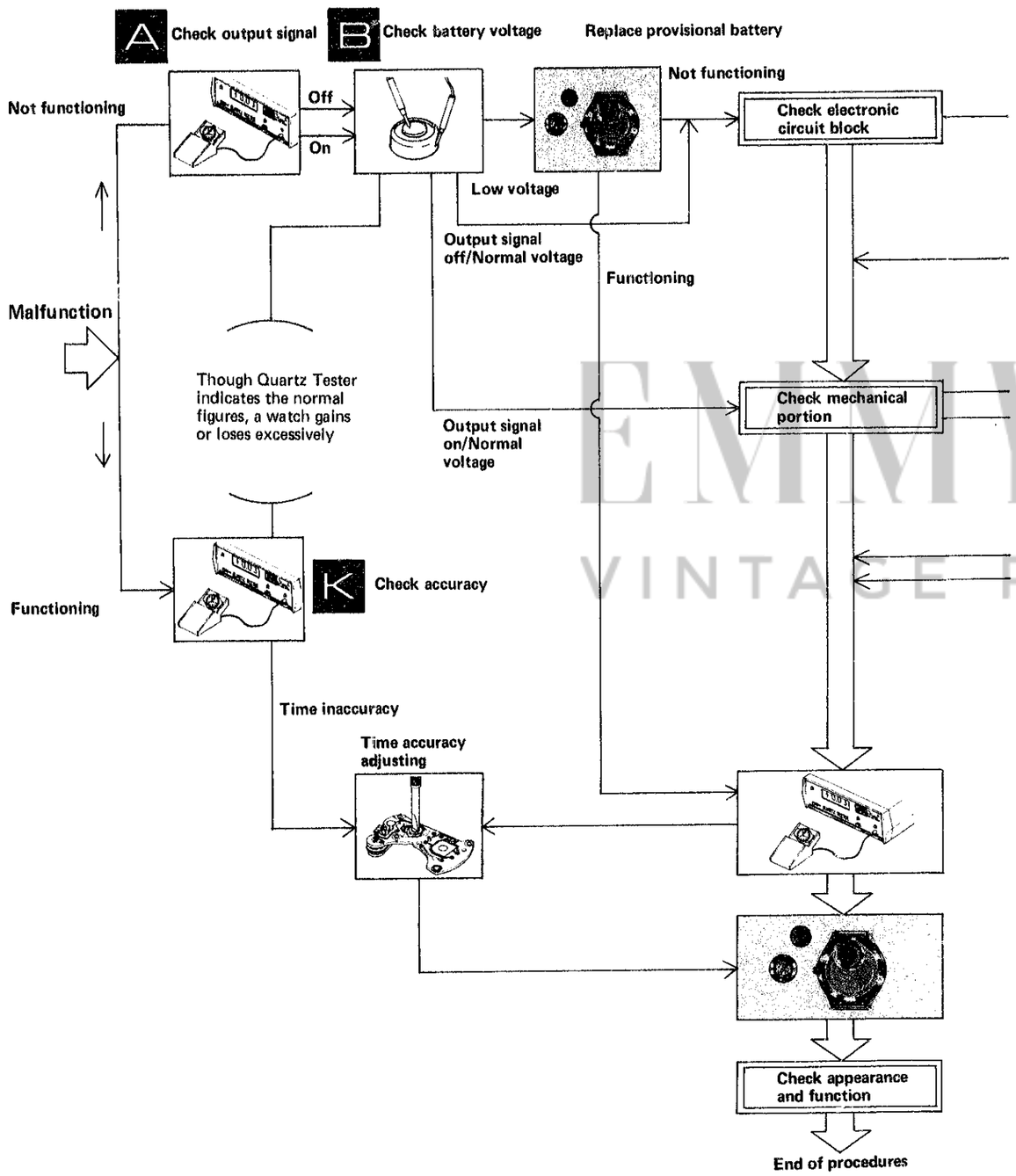
6. Cleaning

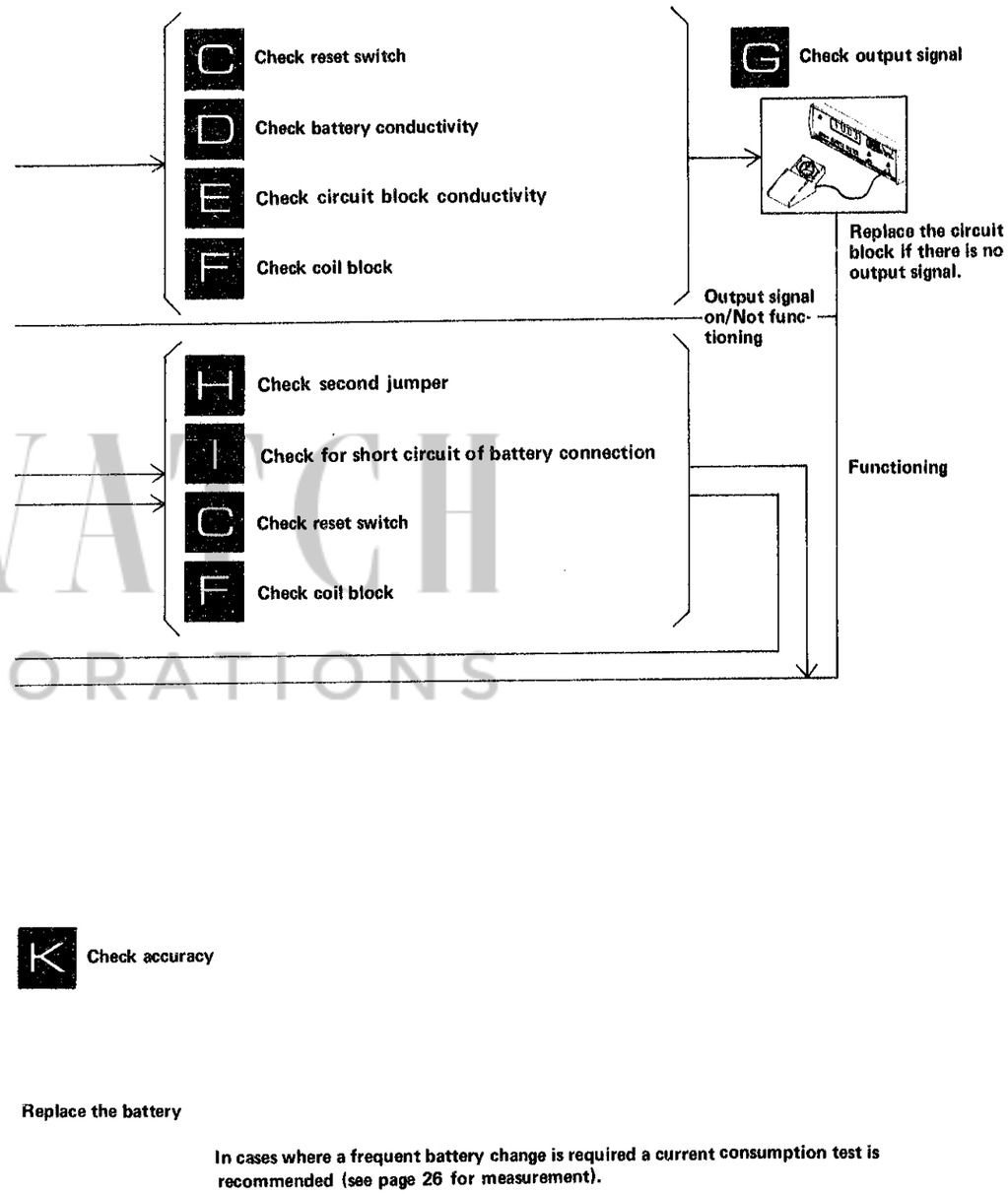
Since several special parts (electronic, plastic, etc.) are used in the SEIKO Quartz Cal. 0843A, use the following cleaning methods when cleaning.

Name of Parts	Cleaning	Drying	Solution	Remarks
Circuit block  Coil block 	DO NOT CLEAN			Conducting portion ONLY may be cleaned with a cloth moistened with benzine or alcohol. Dry in COOL air.
Rotor stator (with lower plate)  Step rotor  Second jumper 	Rinse or gently scrub with brush	Cool air drying	Benzine	• Don't disassemble the lower plate and rotor stator as they are bonded. Don't use trichloroethylene and alcohol. • Use a clean solution as the step rotor has a magnet. • Be careful not to bend the spring or remove a jewel of the second jumper.
Plastic parts	Rinse or gently scrub with brush	Cool air drying	Alcohol or benzine	
Parts other than the above	Clean with cleaner, rinse or gently scrub with brush	Cool or hot air drying	Benzine or trichloroethylene	

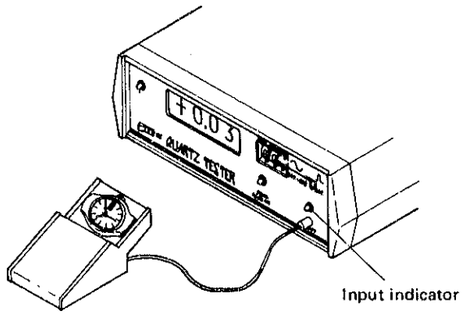
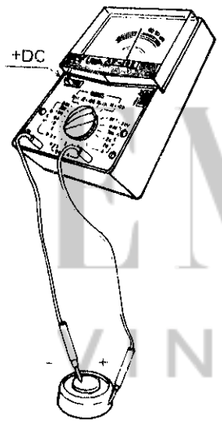
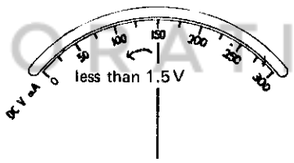
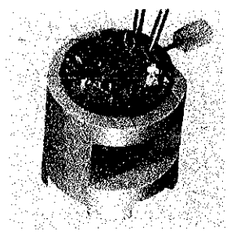
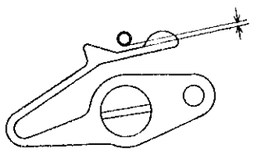
CHECKING AND ADJUSTMENT

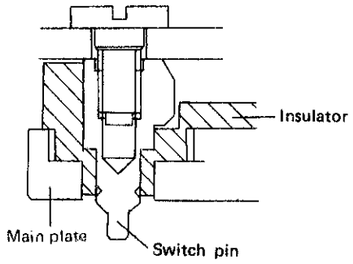
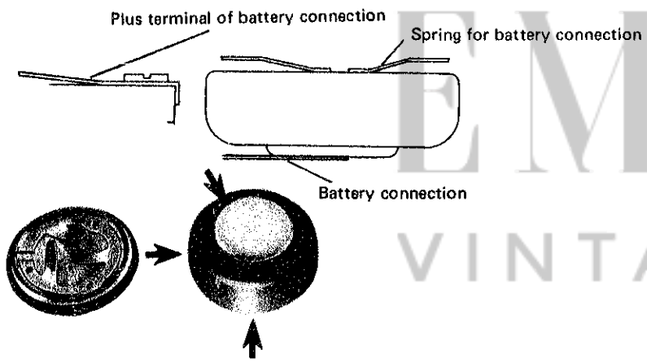
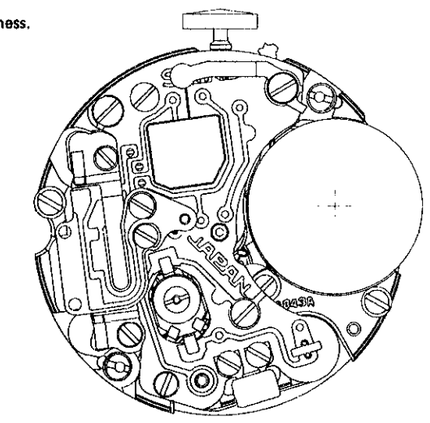
1. Guide for Checking and Adjustment

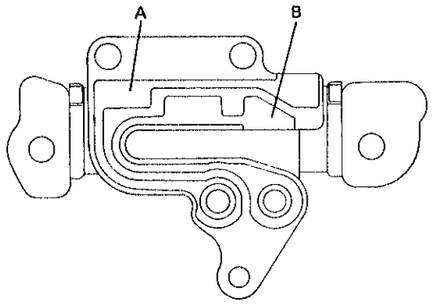
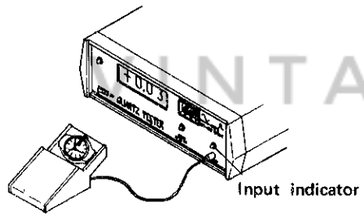
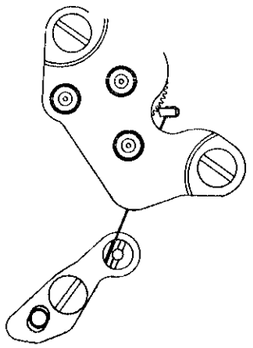
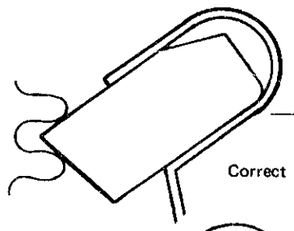
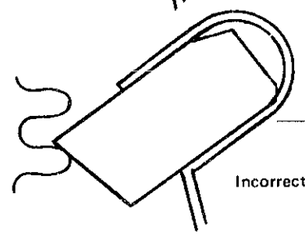


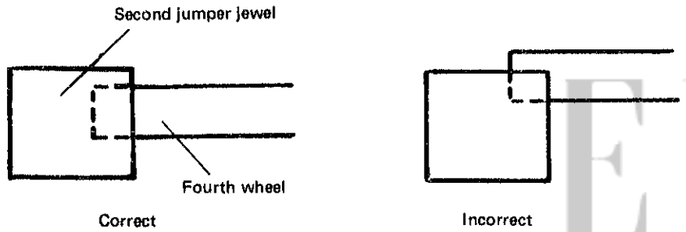
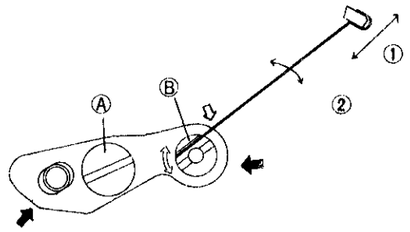
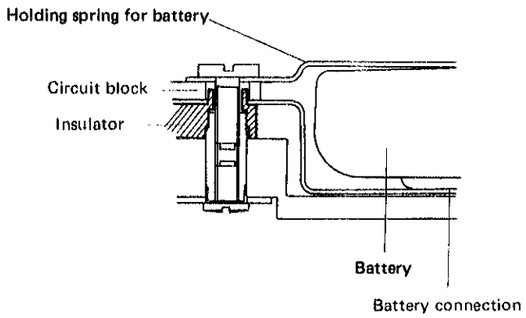


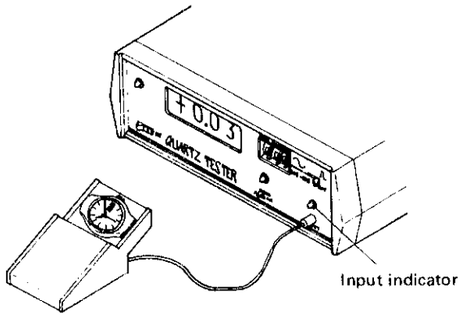
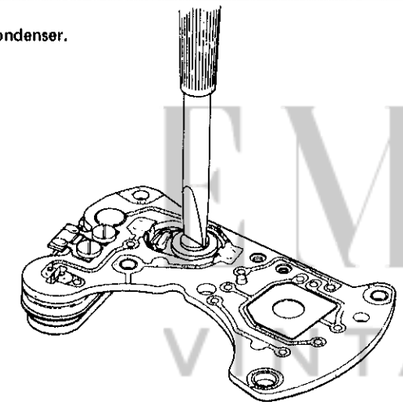
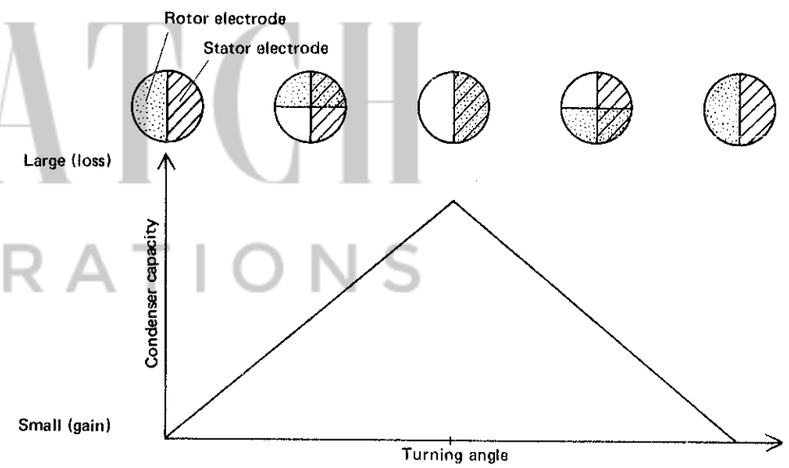
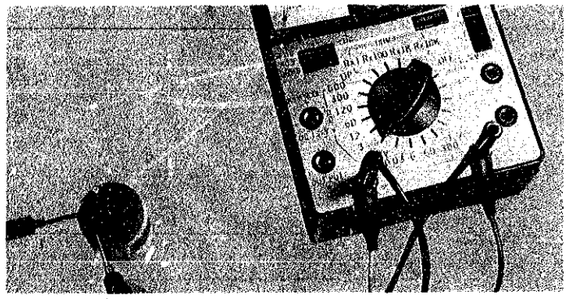
2. Procedures for Checking and Adjustment

	Procedures	Results	Adjustment and Repair
A CHECK OUTPUT SIGNAL	Check for output signal. **1. Set up the Quartz Tester** **2. Checking** Check for an output signal.  	One-second blinking No one-second blinking (including the cases where it is lit continuously or does not blink once per second)	Proceed to **B**
B CHECK BATTERY VOLTAGE	Use the following procedures to check battery voltage. **1. Set up the tester** Range to be used DC 3V  **2. Measuring** • Probe Red (+) ..... Battery surface (+) • Probe Black (–) .... Battery surface (–) **(Note)** When handling the battery, use non-metallic tweezers or a fingercod.	More than a 1.5 V reading indicates Less than a 1.5 V reading indicates  	In procedure **A** if one-second blinking is found, check the **Mechanical Portion** In procedure **A** if one-second blinking is NOT found, check the **Electronic Circuit Block** **Replace with a provisional battery** ●If a watch operates after battery replacement, proceed to **K** ●If a watch does not operate, check the **Electronic Circuit Block**
C CHECK RESET SWITCH	Check for a short circuit of the switch pin and main plate when the crown is at the normal position and when it is pulled out to the first click. **Remove the circuit block.** **Set up the tester** Range to be used OHMS R x 1 **C1 First check** Check for a short circuit of the switch pin and main plate. Touch the red and black probes to the main plate and switch pin when the crown is at the normal position and pulled out to the first click (there is no difference between the red and black probes).  **C2 Second check** Check to see if there is clearance between the switch lever and switch pin when the crown is at the normal position and when it is pulled out to the first click. 	When the needle of the tester does not move When the needle of the tester moves Clearance No clearance	Proceed to **D** Proceed to **C2** Proceed to **C3** Replace the switch lever

	Procedures	Results	Adjustment and Repair
C CHECK RESET SWITCH	**C3 Third check** Check for foreign matter on the insulator between the switch pin and the main plate.  	No foreign matter, uncontaminated →	Proceed to **D**
		Foreign matter, contaminated →	Wipe off carefully.
D CHECK BATTERY CONDUCTIVITY	Use the following procedures to check to see if the battery current flow to the circuit is normal. **1. First check** Check for any foreign matter on the connecting point of the battery, spring for battery connection, the battery connection and the plus terminal of the battery connection.  	Uncontaminated →	Proceed to **D**
		Contaminated →	Wipe off carefully.
	2. Second check Make sure that the plus terminal screw of the battery connection is tightened firmly.	No loosened screw →	Proceed to **E**
		Loosened screw →	Retighten screws
E CHECK CIRCUIT BLOCK CONDUCTIVITY	Check for short circuit and defective contact of the circuit block conducting portions. Check the eight (8) screws in the diagram below for looseness.  	No loosened screw →	Proceed to **F**
		Loosened screw →	Retighten screw. Be careful not to tighten them excessively.

	Procedures		Results	Adjustment and Repair
F CHECK COIL BLOCK	Remove the circuit block and check for broken coil wire and short circuit of the coil block. **1. Set up the tester** Range to be used OHMS R x 100 **2. Checking method** Touch the probes of the tester to the two terminals (A and B) of coil respectively.  		3.0 KΩ ~5.0 KΩ More than 5.0 KΩ (Broken wire) Less than 3.0 KΩ (Short circuit)	Proceed to G • Replace the coil block
G CHECK OUTPUT SIGNAL	Check the output signal. **1. Set up the Quartz Tester** **2. Checking method** Check for output signal (Blinking input indication light)  		One blink per second — Watch functioning Not functioning No blinking	Proceed to J • Check the Mechanical block. • Replace the circuit block.
H CHECK SECOND JUMPER	H_1 Check to see if the second jumper jewel gears with the fourth wheel and pinion exactly. 		  	Proceed to H_2 Adjust the second jumper

	Procedures	Results	Adjustment and Repair
H CHECK SECOND JUMPER	He. **Check to see if the second jumper jewel is at the proper height.**  	More than the thickness of the fourth wheel →	 1. After loosening the screw Ⓐ, adjust second jumper ① by pushing in the arrow-marked direction (⇨). Retighten the screw Ⓐ after adjustment. 2. Adjust in the direction of ② by turning the pin Ⓑ (⇔). Proceed to **I**
		Less than the thickness of the fourth wheel →	Adjust the foot of the pin (⇨) with a pair of tweezers. (see the above diagram)
I CHECK FOR SHORT CIRCUIT OF BATTERY CONNECTION	Check for short circuit of the main plate and the battery connection.  Check for short circuit of the battery connection, holding spring for battery, battery and the main plate by filings, etc.	Normal condition →	Proceed to **J** If not functioning, check **F**
		Short circuit →	• Wipe off the foreign matter.

	Procedures		Results	Adjustment and Repair
J CHECK ACCURACY	Check gain and loss of time. • **Set up the Quartz Tester**  		Normal →	Check the appearance and Function
			Defective →	Adjust time accuracy
TIME ACCURACY ADJUSTING METHOD	Time accuracy is adjusted by turning the trimmer condenser.  • Adjustment should be made after ascertaining by the Quartz Tester whether the watch tends to gain or lose. The watch gains or loses according to the direction in which the trimmer condenser is turned. • Note for handling of Trimmer Condenser (1) Avoid excessive depressing. (2) Avoid turning the Trimmer Condenser unnecessarily.		• Capacity of Trimmer Condenser The capacity is changed by turning the Trimmer Condenser as shown in the diagram below.  	
MEASURING CURRENT CONSUMPTION	In cases where a frequent battery change is required, a current consumption test is recommended. Use the following procedures:  **Procedures:** **1. Set up the Tester** • Range to be used DC 0.03mA • Set up the condenser of 200 ~ 500 μF as shown in a photo.		**2. Measurement** • Probe Red (+) ..... Battery surface (+) • Probe Black (−) .... Circuit block Check the current consumption when the crown is at the normal position and when it is pulled out to the first click. When the current consumption is more than 10 μA, follow procedures F and I	