
CHAPTER 2 REPAIR

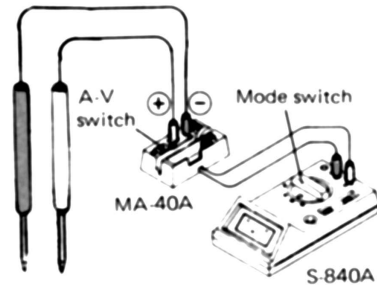
SUPPLEMENTARY INFORMATION ON THE MULTI-ADAPTOR MA-40A

It is possible to measure voltage and resistance even with the Digital Multi-Tester S-840A and the Multi-Adaptor MA-40A in combination, if they are connected as shown in the illustration below.

To measure voltage and resistance,

- 1) set MA-40A's A-V switch to **(A)**, and
- 2) set S-840A's mode as follows:

Voltage : DC V
Resistance : Ω



Note:

1. Voltage or resistance measurements on the following pages are described by connection diagrams using S-840A only. These measurements, however, can be made with S-840A and MA-40A in combination as explained in the above.

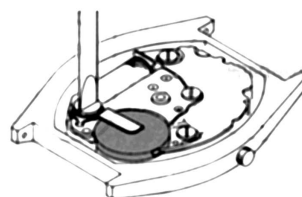
Voltage measurement : pages 34, 61, 64, 95, 102, 103, 104
Resistance measurement : pages 21, 29, 101

2. The Current Supplier S-833 is used in the connection diagrams on pages 27 and 30. These measurements, however, can be made using MA-40A and the Relay Cable S-842.

I. BEFORE MAKING REPAIRS

(1) Checking points before making repairs or trouble diagnoses

- Check that the battery clamp screw is not loosened or has not come off and that the battery clamp securely touches the battery, before measuring battery voltage. Looseness may cause stoppage or time loss (analogue quartz) and blank or dim display (digital quartz).
- Check that the battery in the watch is one authorized by SEIKO. Batteries differ in performance, depending on types, even if they are the same in size or capacity. Those other than SEIKO's authorized batteries may cause stoppage, time loss, or unexpected irregularities.
- When a battery is inserted into a digital watch, be sure to reset the circuit. The digital quartz watch may show an abnormal display when a battery is installed. Also, even if an abnormal display is not recognized, there are some calibers that need to have the circuit reset. Be sure to check whether they require circuit resetting after battery change.
To see which calibers apply and how to reset their circuits, refer to "Watch Service Bulletin No. 10" or the "PARTS CATALOGUE/TECHNICAL GUIDE" by caliber.



(2) Battery life indicator

When the battery begins to run down, it is signalled as follows:

- Analogue : The second hand moves at two-second intervals instead of the normal one-second intervals.
- Digital : All the segments in the liquid crystal panel flash.

Such a watch has a circuit that detects a voltage drop and gives a forewarning when the voltage drops down to 1.45V ~ 1.25V (in case of silver oxide battery), as the battery has become exhausted.

If there is defective conductivity somewhere or the circuit block is contaminated, the watch also shows a similar phenomenon.

(3) Time loss/gain (daily rate)

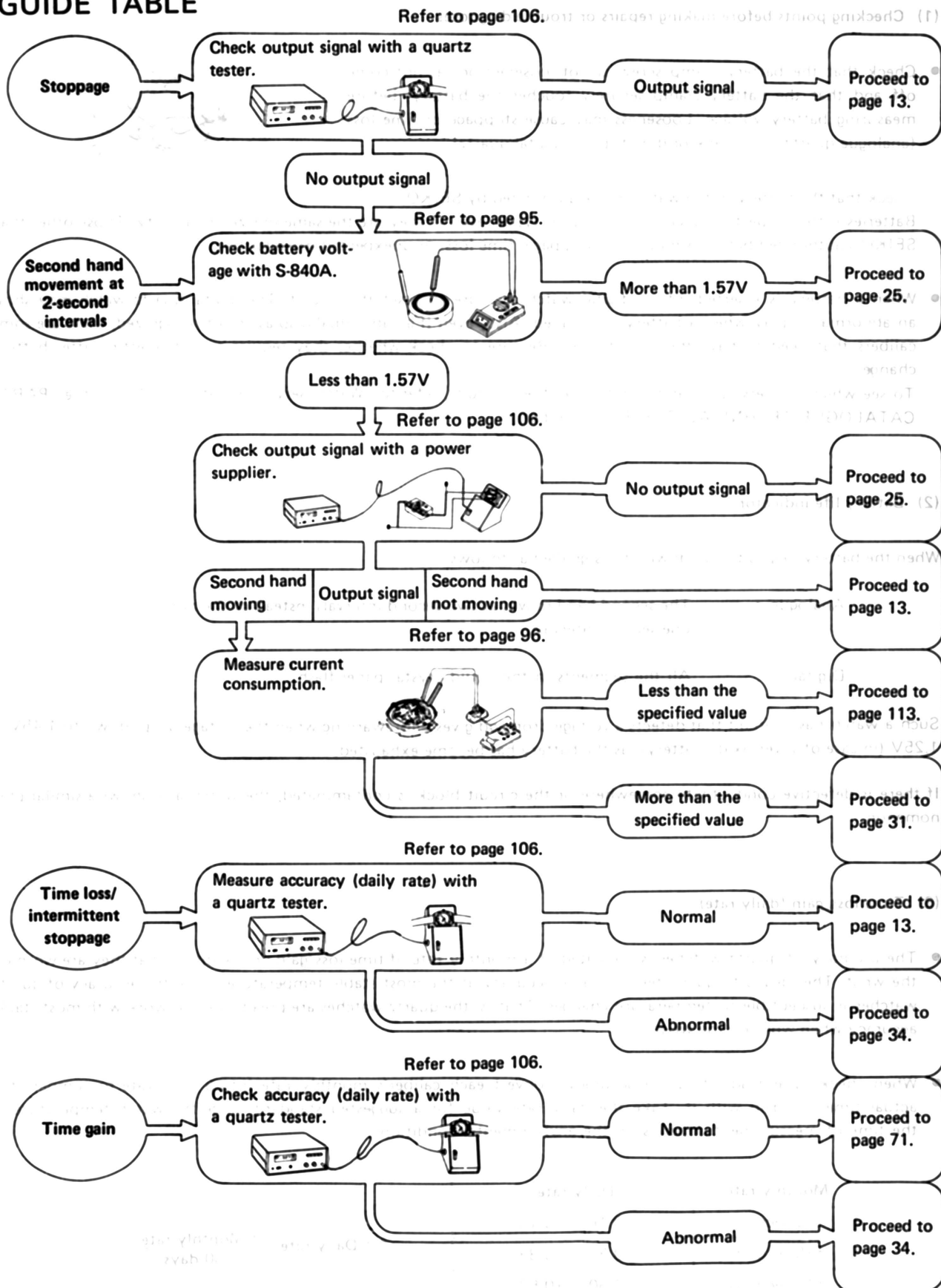
- The accuracy of quartz watches is indicated at a monthly rate of time loss/gain on condition that they are worn on the wrist. The idea is to guarantee a reliable accuracy at the most stable temperature, since the accuracy of quartz watches is susceptible to temperature changes. That is, the quartz watches are preadjusted to work with most stable accuracy when worn on the wrist.
- When checking and adjusting the accuracy, convert each caliber's monthly rate into a daily rate to compare the actual time loss/gain with it. Take the daily rate value for a suggested standard, since the watch temperature at the time of measurement depends on the environmental conditions.

Monthly rate	Daily rate
± 5 seconds	-0.16 ~ +0.16
±10 seconds	-0.33 ~ +0.33
±15 seconds	-0.50 ~ +0.50
±20 seconds	-0.66 ~ +0.66

$$* \pm \text{Daily rate} = \frac{\pm \text{Monthly rate}}{30 \text{ days}}$$

II. ANALOGUE QUARTZ CHECKING/REPAIRING PROCEDURE

GUIDE TABLE



Note:






- For the respective measuring methods, refer to Chapter 5 "MEASUREMENT".
- For the specified standard values, refer to the "PARTS CATALOGUE/TECHNICAL GUIDE" by caliber or "ANALOGUE QUARTZ VALUE CHECKING LIST".

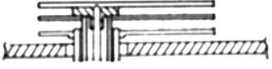

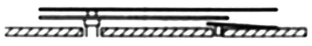
1. STOPPAGE

1-a: CHECK AND ADJUST HANDS CONDITION


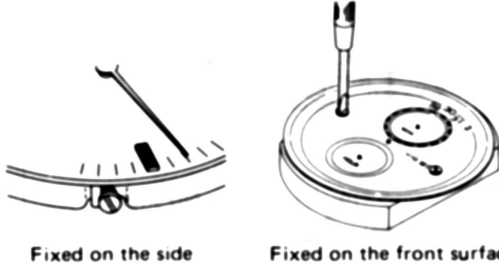
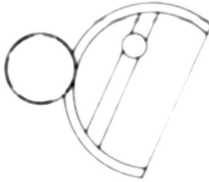
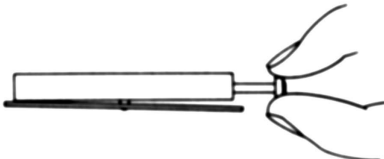
[Symptoms and Conditions]

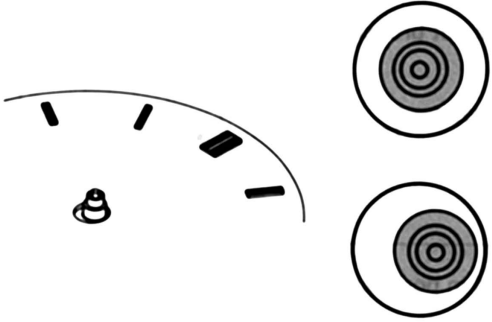
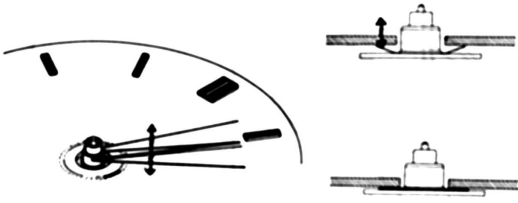
- The watch has stopped, but its output signal is found normal.
- The watch has lost time, but its accuracy (daily rate) is found normal.

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Apply a thin coating of Moebius A to the second hand in case of the three-hand models and to the minute hand in case of the two-hand models, and check with the watch complete.	<p>Check that the hands do not touch the glass anywhere.</p> <p>(1) Three hands With the glass down, allow the second hand to run for more than 1 minute to see if Moebius A leaves stains on the inside surface of the glass.</p>  <p>(2) Two hands With the glass down, turn the minute hand clockwise and counterclockwise at least one full cycle to see if Moebius A leaves stains on the inside surface of the glass.</p> 		<p>Note: After checking if the hands touch the glass, wipe off Moebius A with a nylon cloth moistened with Daiflon or benzene.</p>
②	Movement with hands and dial	<p>Check that the second hand does not touch the minute hand.</p> <ul style="list-style-type: none"> • Check it at 4 positions: 3 o'clock, 6 o'clock, 9 o'clock, and 12 o'clock positions.  <p>Check that the minute hand does not touch the hour hand or the hour markers.</p> <ul style="list-style-type: none"> • Turn the minute hand clockwise and counterclockwise to see if it touches the hour hand anywhere on the entire circumference.  <p>Check that the hour hand does not touch the calendar frame or marks such as "SEIKO QUARTZ".</p> <ul style="list-style-type: none"> • Turn the hour hand clockwise and counterclockwise to check it. 	<ul style="list-style-type: none"> • Does not touch • Touches 	<p>Proceed to ①-b .</p> <p>Adjust the hands with appropriate clearance to prevent them from touching the others. Then, proceed to ①-b .</p>

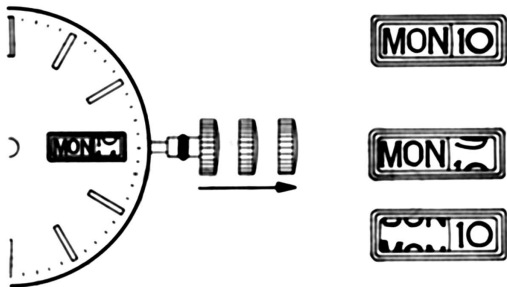
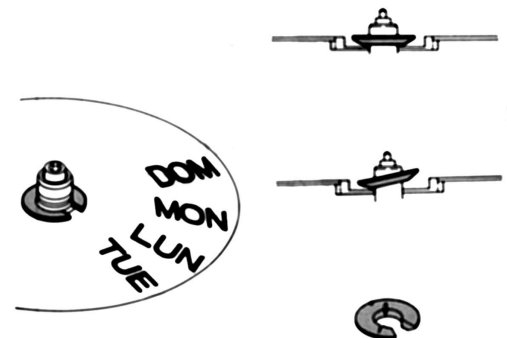
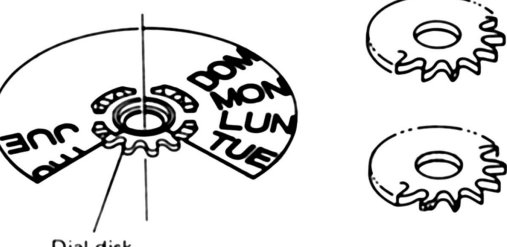
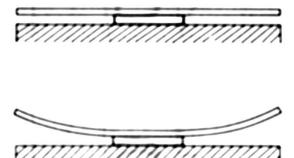
No.	Preparation	Checking points	Result	Adjustment and Repair
②	Movement with hands and dial	<p>Check that the second hand tube does not touch the minute hand.</p> <ul style="list-style-type: none"> While pushing down the second hand tube and pushing up the minute hand tube, check to see if the second hand tube touches the minute hand. 	<ul style="list-style-type: none"> • Does not touch • Touches 	<p>Proceed to ①-b .</p> <p>Adjust the hands with appropriate clearance to prevent them from touching the others. Then, proceed to ①-b .</p>
		<p>Check that the second hand tube does not touch the inside surface of the cannon pinion.</p> 		
		<p>If the watch has a small second hand, check that the small second hand does not touch the dial.</p> 		

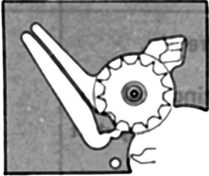
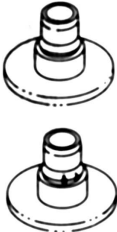
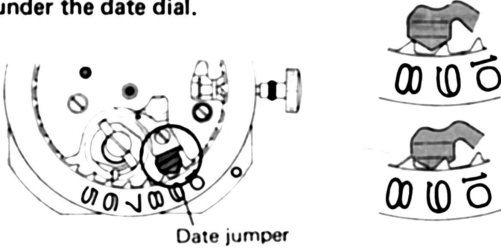
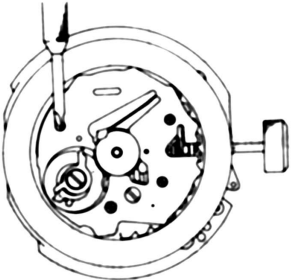

1-b: CHECK AND REPAIR DIAL






No.	Preparation	Checking points	Result	Adjustment and Repair
①	Movement with hands and dial	<p>Check that the dial legs are not broken.</p> 	<ul style="list-style-type: none"> • Not broken • Broken 	<p>Proceed to ② .</p> <p>Replace the dial with a new one. Then, proceed to ③ .</p>
②		<p>Check that the dial is fixed in position.</p> <p>(1) Screw type Check that the dial screw is not broken or loosened.</p>  <p>(2) Eccentric dial pin type Check that the dial legs are fixed securely by the eccentric dial pin.</p>  <p>(3) Snap-in type With the dial down, check that the dial is well seated.</p> 	<ul style="list-style-type: none"> • Neither broken nor loosened • Broken or loosened • Fixed • Not fixed • Seated • Unseated 	<p>Proceed to ③ .</p> <ul style="list-style-type: none"> • Broken: Replace the dial screw with a new one. Then, proceed to ③ . • Loosened: Tighten up the dial screw. Then, proceed to ③ . <p>Proceed to ③ .</p> <p>Turn the eccentric dial pin with a screwdriver to fix the dial legs. Then, proceed to ③ .</p> <p>Proceed to ③ .</p> <p>Replace the dial spacer with a new one. Then, proceed to ③ .</p>

No.	Preparation	Checking points	Result	Adjustment and Repair
③	Remove the hands to leave the movement with dial for checking.	<p>Check that the dial center is not out of alignment.</p> 	<ul style="list-style-type: none"> • Aligned • Out of alignment 	<p>Proceed to ④ .</p> <p>Remove the dial, and adjust the dial legs so that the dial can be centered. Then, proceed to ④ .</p>
④		<p>Check that there is shake for the hour wheel.</p> 	<ul style="list-style-type: none"> • Shake • No shake 	<p>Proceed to 1-c .</p> <p>Disassemble the dial, and remove the hour wheel guard. If the watch has no hour wheel guard, replace the hour wheel or the dial with a new one. Then, proceed to 1-c .</p>

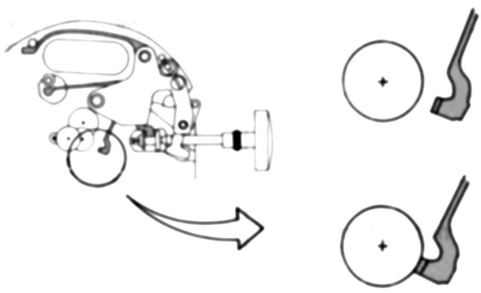
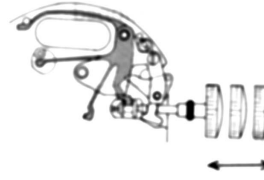
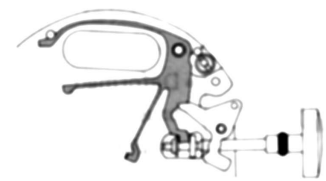
1-c: CHECK AND REPAIR CALENDAR FRAME

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Movement with dial	<p>Check that the date and day shift correctly.</p> <ul style="list-style-type: none"> • Pull out the crown to the hands setting position and slowly turn it clockwise. <p>Date and day shift condition</p> 	<ul style="list-style-type: none"> • The date and day shift correctly. • The date and day do not shift correctly. <ul style="list-style-type: none"> • Slippery shift • Stop halfway • No shift 	<p>Proceed to ①-d .</p> <p>Proceed to ② . If the watch has no day, proceed to ⑥ .</p>
②	Remove the dial to leave the movement alone for checking.	<p>Check that the snap for day star with dial disk is not unseated, deformed or cleaved.</p> 	<ul style="list-style-type: none"> • Neither unseated, nor deformed, nor cleaved • Unseated • Deformed or cleaved 	<p>Proceed to ③ .</p> <p>Reset the snap for day star with dial disk in position. Then, proceed to ③ .</p> <p>Replace the snap for day star with dial disk with a new one. Then, proceed to ③ .</p>
③	Remove the snap for day star with dial disk to leave the day star with dial disk alone for checking.	<p>Check that the day star with dial disk is well seated and that its teeth are not deformed or crushed.</p>  <p>Dial disk</p>	<ul style="list-style-type: none"> • Neither unseated, nor deformed, nor crushed • Unseated, deformed, or crushed 	<p>Proceed to ④ .</p> <p>Replace the day star with dial disk with a new one. Then, proceed to ⑤ .</p>
④		<p>Check that the day star with dial disk is not warped.</p> <ul style="list-style-type: none"> • Check it on a flat table. 	<ul style="list-style-type: none"> • Not warped • Warped 	<p>Proceed to ⑤ .</p> <p>Replace the day star with dial disk with a new one. Then, proceed to ⑤ .</p>

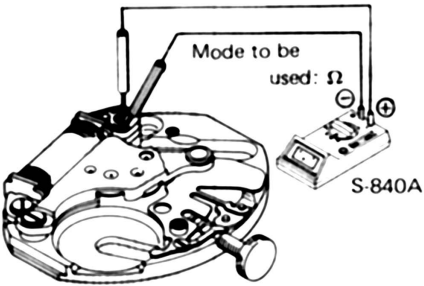
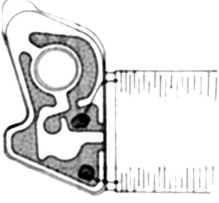
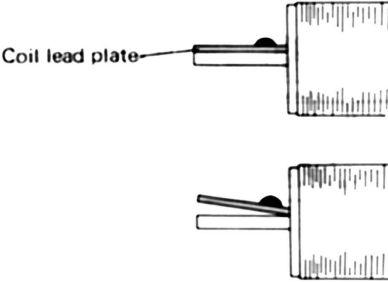
No.	Preparation	Checking points	Result	Adjustment and Repair
⑤	Disassemble all the movement parts up to the day star with dial disk and use the rest of the movement for checking.	Check that the day corrector is not deformed or broken. 	<ul style="list-style-type: none"> • Neither deformed nor broken • Deformed or broken 	Proceed to ⑥ . Replace the day corrector with a new one. Then, proceed to ⑥ .
⑥		Check that the hour wheel is not scratched and that its teeth are not crushed. 	<ul style="list-style-type: none"> • Neither scratched nor crushed • Scratched or crushed 	Proceed to ⑦ . Replace the hour wheel with a new one. Then, proceed to ⑦ .
⑦		Check that the date jumper has not slipped under the date dial.  <p style="text-align: center;">Date jumper</p>	<ul style="list-style-type: none"> • Has not slipped under the date dial • Has slipped under the date dial 	Proceed to ⑧ . Disassemble the date dial guard and reset the date jumper in position. Then, proceed to ⑧ .
⑧		Check that the date dial guard screw is not loosened. 	<ul style="list-style-type: none"> • Not loosened • Loosened 	Proceed to ⑨ . Tighten up the date dial guard screw. Then, proceed to ⑨ .
⑨		Check that the date dial's teeth are not deformed or crushed. • Pull out the crown to the calendar setting position, and turn the date dial to check for deformation or crush. 	<ul style="list-style-type: none"> • Neither deformed nor crushed • Deformed or crushed 	Proceed to ⑩ . Replace the date dial with a new one. Then, proceed to ⑪ .

No.	Preparation	Checking points	Result	Adjustment and Repair
⑩	Disassemble all the movement parts up to the day star with dial disk and use the rest of the movement for checking.	<p>Check that there are shake and sideshake for the date dial.</p> <ul style="list-style-type: none"> Do not check the date dial for shake and sideshake while it is in the process of shifting the date. 	<ul style="list-style-type: none"> Shake and sideshake No shake and sideshake 	<p>Proceed to ⑪ .</p> <p>Replace the date dial with a new one. Then, proceed to ⑪ .</p>
⑪		<p>Check that the date finger is not deformed, crushed, or chipped.</p>  <p>Date finger</p> 	<ul style="list-style-type: none"> Neither deformed, nor crushed, nor chipped Deformed, crushed, or chipped 	<p>Proceed to ⑫ .</p> <p>Replace the date finger with a new one. Then, proceed to ⑫ .</p>
⑫		<p>Check that the day finger is not deformed, crushed, or chipped.</p>  <p>Day finger</p> 	<ul style="list-style-type: none"> Neither deformed nor chipped Deformed, crushed, or chipped 	<p>Proceed to 1-d .</p> <p>Replace the day finger with a new one. Then, proceed to 1-d .</p>

1-d: CHECK AND ADJUST TRAIN WHEEL SETTING CONDITION

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Remove the circuit block and use the rest of the movement for checking.	<p>With the crown at the normal position, check that there is a clearance between the wheel and the train wheel setting lever.</p> 	<ul style="list-style-type: none"> • Clearance • No clearance 	<p>Proceed to ①-e .</p> <p>Proceed to ② .</p>
②		<p>With the crown pulled out to the 2nd click, check that the train wheel setting lever regulates the wheel's movement.</p> <p>* If the watch has no calendar, pull out the crown to the 1st click.</p> 	<ul style="list-style-type: none"> • Regulates • Does not regulate 	<p>Proceed to ③ .</p> <p>Reset the train wheel setting lever in position. Then, proceed to ③ .</p>
③		<p>Check that the train wheel setting lever is not broken or deformed.</p> 	<ul style="list-style-type: none"> • Broken or deformed 	<p>Replace the train wheel setting lever with a new one. Then, proceed to ①-e .</p>

1-e: CHECK AND REPAIR COIL BLOCK

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Remove the circuit block and use the rest of the movement for checking.	Measure the coil block's resistance. *1 	<ul style="list-style-type: none"> • Within the specified value *2 • Out of the specified value *2 	Proceed to ② . Replace the coil block with a new one. Then, proceed to 1-f .
②		Check that the coil block's pattern portions are not contaminated. 	<ul style="list-style-type: none"> • Not contaminated • Contaminated 	Proceed to ③ . <ul style="list-style-type: none"> • Wipe off contamination with a nylon cloth moistened with alcohol. Then, proceed to ③ . • If contamination cannot be removed, replace the coil block with a new one. Then, proceed to 1-f .
③		Check that the coil lead plate has not come off. 	<ul style="list-style-type: none"> • Has not come off • Has come off 	End of procedure *3 Replace the coil block with a new one.

*1. For the measuring method, refer to page 101 ("MEASURING RESISTANCE OF THE COIL").

*2. For the specified standard resistance value of the coil block, refer to each caliber's "PARTS CATALOGUE/TECHNICAL GUIDE" or "VALUE CHECKING LIST".

*3. If the stoppage or the time loss has been successfully traced back to its cause in the procedure so far, judge by visual inspection if it is necessary to overhaul and clean the movement parts.

- Overhaul is necessary.
- Overhaul is not necessary.

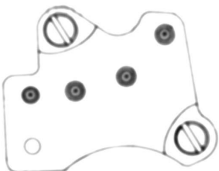

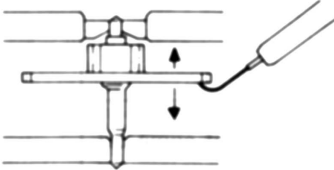
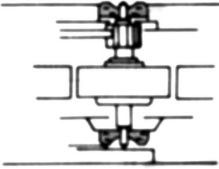
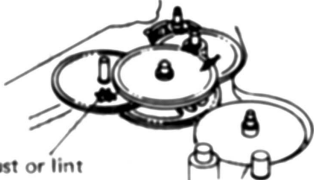
Proceed to page 72 ("OVERHAUL AND CLEANING").

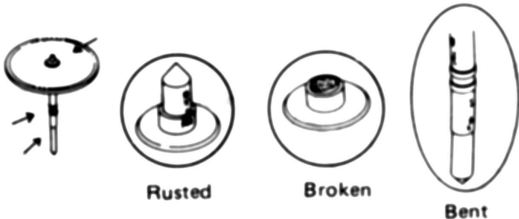
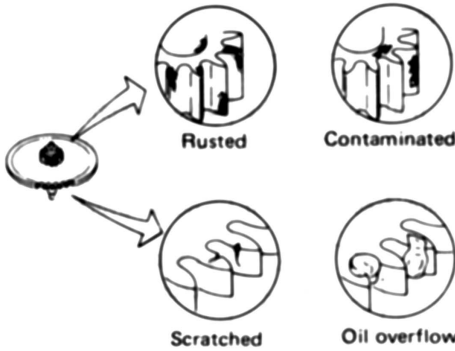
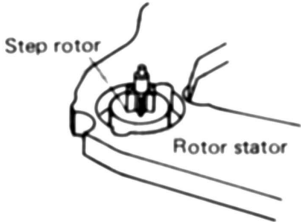
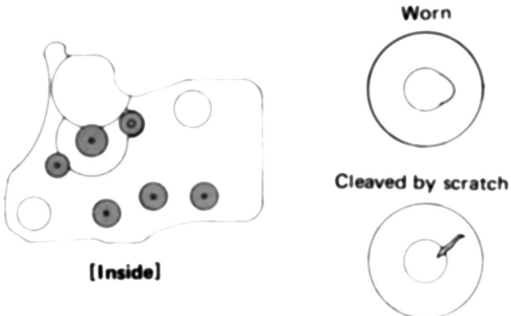
Proceed to page 82 ("CHECKING AND ADJUSTMENT").

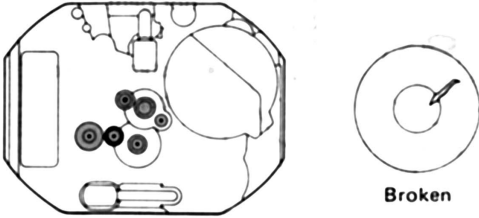


If the cause has not been found, proceed to 1-f CHECK AND REPAIR GEAR TRAIN MECHANISM.

1-f: CHECK AND REPAIR GEAR TRAIN MECHANISM

The gear train mechanism is composed of many parts, and the trouble may be due to a combination of factors. To locate the true cause or causes, go through the entire procedure up to No. ⑩, and then make an adjustment or repair as required.

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Disassemble all the movement parts up to the coil block, and use the rest of the movement for checking.	<p>Check that the train wheel bridge's holes for wheels are not oil-dried or contaminated.</p> 	<ul style="list-style-type: none"> • Neither oil-dried nor contaminated • Oil-dried or contaminated 	<p>Proceed to ② .</p> <p>Clean and lubricate the train wheel bridge's holes for wheels. Then, proceed to ② .</p>
②		<p>Check that the train wheel bridge screw is not loosened.</p> 	<ul style="list-style-type: none"> • Not loosened • Loosened 	<p>Proceed to ③ .</p> <p>Tighten up the train wheel bridge screw. Then, proceed to ③ .</p>
③		<p>Check that there is shake for all of the wheels and the step rotor.</p> <ul style="list-style-type: none"> • Use a fine probe to check for shake of the wheels. • Move the step rotor up with a fine probe and release to see if it returns down to the original position, and reverse the procedure to see if it returns up to the original position.  	<ul style="list-style-type: none"> • Shake • No shake • Shake • No upward shake • No downward shake 	<p>Proceed to ④ .</p> <p>Correct the shake with a staking tool. Then, proceed to ④ .</p> <p>Proceed to ④ .</p> <p>Using a staking tool, correct the upward shake by adjusting the upper hole jewel position and the downward shake by adjusting the lower hole jewel position. Then, proceed to ④ .</p>
④	Remove the train wheel bridge and use the rest of the movement for checking.	<p>Check that there is no dust or lint in the gear train mechanism.</p> 	<ul style="list-style-type: none"> • No dust or lint • Dust or lint 	<p>Proceed to ⑤ .</p> <p>Wipe off dust or lint. Then, proceed to ⑤ .</p>

No.	Preparation	Checking points	Result	Adjustment and Repair
⑤	Each of the wheels alone	<p>Check that each wheel's pivot is not rusted, broken, or bent.</p>  <p>Rusted Broken Bent</p>	<ul style="list-style-type: none"> • Neither rusted, nor broken, nor bent • Rusted, broken, or bent 	<p>Proceed to ⑥ .</p> <p>Replace the wheel with a new one. Then, proceed to ⑥ .</p>
⑥		<p>Check that each wheel's pinion and teeth are not scratched, rusted, contaminated, chipped, or crushed and that they are free from oil overflow.</p>  <p>Rusted Contaminated Scratched Oil overflow</p>	<ul style="list-style-type: none"> • No defects • Scratched, rusted, chipped, or crushed • Contaminated or with oil overflow 	<p>Proceed to ⑦ .</p> <p>Replace the wheel with a new one.</p> <p>Clean the wheel. Then, proceed to ⑦ .</p>
⑦	Disassemble all the movement parts up to the gear train mechanism and use the rest of the movement for checking.	<p>Check that there is no sludge settling on the step rotor.</p> <ul style="list-style-type: none"> • Check for accumulation of sludge especially between the rotor stator and the step rotor.  <p>Step rotor Rotor stator</p>	<ul style="list-style-type: none"> • No sludge • Sludge 	<p>Proceed to ⑧ .</p> <p>Remove sludge with "RODICO", etc. Then, proceed to ⑧ .</p>
⑧	Train wheel bridge alone	<p>Check that the train wheel bridge's hole jewels are not broken and that the holes themselves are not worn or cleaved by scratches.</p>  <p>Worn Cleaved by scratch</p> <p>[Inside]</p>	<ul style="list-style-type: none"> • Neither broken, nor worn, nor cleaved • Hole jewel is broken • Hole is worn or cleaved 	<p>Proceed to ⑨ .</p> <p>Replace the hole jewel with a new one.</p> <p>Replace the train wheel bridge with a new one. Then, proceed to ⑨ .</p>

No.	Preparation	Checking points	Result	Adjustment and Repair
⑨	Main plate alone	<p>Check that the main plate's hole jewels are not broken.</p>  <p>[Outside]</p>	<ul style="list-style-type: none"> • Not broken • Broken 	<p>Proceed to ⑩ .</p> <p>Replace the hole jewel with a new one. Then, proceed to ⑩ .</p>
<p>■ If the watch belongs to those calibers that have the third wheel bridge in addition to the train wheel bridge, check its third wheel bridge in the same procedure as above.</p>				
⑩	Each setting mechanism part alone	<p>Check that the teeth of the hour wheel, the center minute wheel, the cannon pinion, the minute wheel, etc. are not chipped, crushed, or contaminated and that they are free from oil overflow.</p>  <p>Scratched</p>  <p>Oil overflow</p>	<ul style="list-style-type: none"> • Neither chipped, nor contaminated, or with no oil overflow • Chipped or crushed • Contaminated or with oil overflow 	<p>End of procedure *1</p> <p>Replace the defective part with a new one.</p> <p>Clean the part.</p>

*1. After adjusting or repairing jobs are finished, proceed to page 72 ("OVERHAUL AND CLEANING").

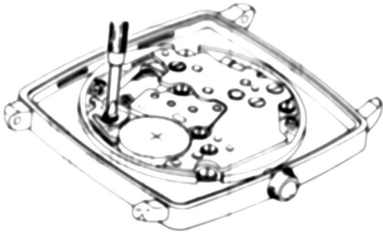
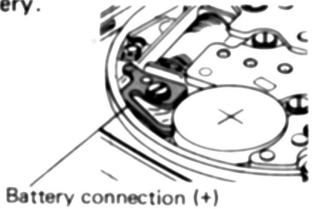
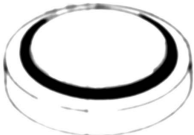
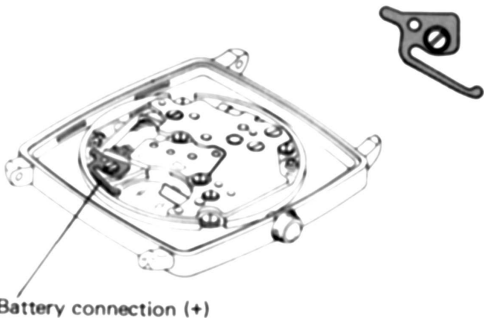
Note: Even if the gear train mechanism does not appear to be contaminated, be sure to overhaul the gear train mechanism for cleaning.

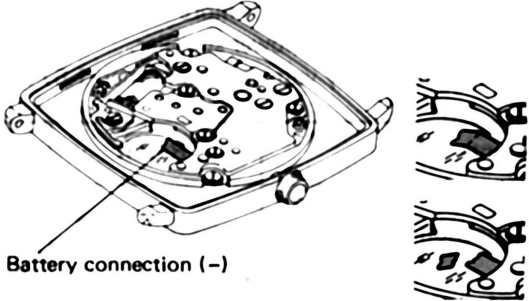
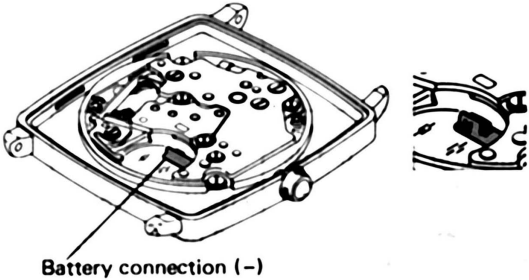

2. STOPPAGE / 2-SECOND STEP HAND MOVEMENT

2-a: CHECK AND ADJUST BATTERY CONDUCTIVITY

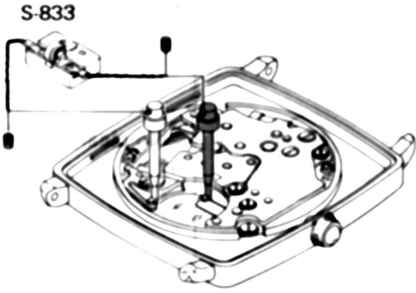
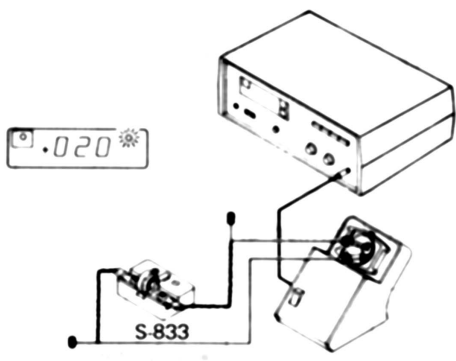
[Symptoms and Conditions]

- The watch has stopped with no output signal, but the battery voltage is more than 1.57V.
- The watch has stopped, and its oscillation does not resume with a power supplier.
- The second hand moves at two-second intervals, but the battery voltage is more than 1.57V.

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Watch complete with the case back opened	<p>Check that the battery connection (+) screw is not loosened.</p> 	<ul style="list-style-type: none"> • Not loosened • Loosened 	<p>Proceed to ② .</p> <p>Tighten up the battery connection (+) screw. Then, proceed to ② .</p>
②		<p>Check that the battery connection (+) is not deformed or broken, and has sufficient force to touch the battery.</p> 	<ul style="list-style-type: none"> • Neither deformed nor broken • Deformed or broken 	<p>Proceed to ③ .</p> <p>Replace the battery connection (+) with a new one. Then, proceed to ③ .</p>
③	Battery alone	<p>Check that there is no battery leakage and that the battery is not rusted or contaminated.</p> 	<ul style="list-style-type: none"> • No leakage, and neither rusted nor contaminated • Leakage, rusted or contaminated 	<p>Proceed to ④ .</p> <p>Replace the battery with a new one. Then, proceed to ④ .</p>
④	Watch complete without case back and battery	<p>Check that the battery connection (+) is not rusted or contaminated.</p> 	<ul style="list-style-type: none"> • Neither rusted nor contaminated • Rusted • Contaminated 	<p>Proceed to ⑤ .</p> <p>Replace the battery connection (+) with a new one. Then, proceed to ⑤ .</p> <p>Wipe off contamination with a nylon cloth moistened with alcohol. Then, proceed to ⑤ .</p>

No.	Preparation	Checking points	Result	Adjustment and Repair
⑤	Watch complete without case back and battery	<p>Check the battery connection (-) is not permanently set in fatigue, bent, or broken.</p>  <p>Battery connection (-)</p>	<ul style="list-style-type: none"> • Neither permanently set in fatigue, nor bent, nor broken • Permanently set in fatigue, bent, or broken 	<p>Proceed to ⑥ .</p> <p>Replace the battery connection (-) with a new one. Then, proceed to ⑦ .</p>
⑥		<p>Check that the battery connection (-) is not rusted or contaminated.</p>  <p>Battery connection (-)</p>	<ul style="list-style-type: none"> • Neither rusted nor contaminated • Rusted • Contaminated 	<p>Proceed to ⑦ .</p> <p>Replace the battery connection (-) with a new one. Then, proceed to ⑦ .</p> <p>Wipe off contamination with a nylon cloth moistened with alcohol. Then, proceed to ⑦ .</p>
⑦		<p>Check that the circuit block screw is not loosened.</p> 	<ul style="list-style-type: none"> • Not loosened • Loosened 	<p>Proceed to 2-b .</p> <p>Tighten up the circuit block screw. Then, proceed to 2-b .</p>

2-b: CHECK OSCILLATION AND HANDS MOTION

No.	Preparation	Checking points	Result	Adjustment and Repair
①	<p>Watch complete without case back and battery</p>	<p>Check that the hands move with a power supplier.</p> <ul style="list-style-type: none"> • Be careful not to short-circuit the IC clip to the main plate. 	<ul style="list-style-type: none"> • Moves • Does not move • Second hand moves at 2-second intervals 	<p>End of procedure *1</p> <p>Proceed to ② .</p> <p>Replace the circuit block with a new one, and this is the end of procedure. *1</p>
②		<p>Using the quartz tester, check that there is oscillation.</p> 	<ul style="list-style-type: none"> • Output signal • No output signal 	<p>Proceed to 1-a .</p> <p>Proceed to 2-c .</p>

*1. If the trouble source has been successfully located in the procedure so far, judge by visual inspection if it is necessary to overhaul and clean the movement parts.

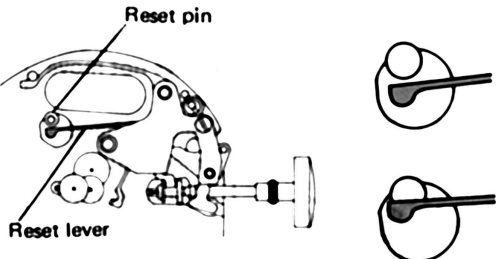
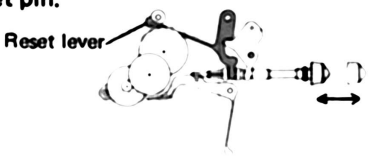
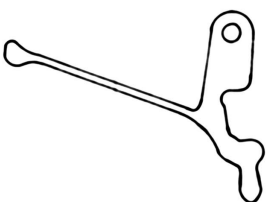
• Overhaul is necessary.

Proceed to page 72 ("OVERHAUL AND CLEANING").

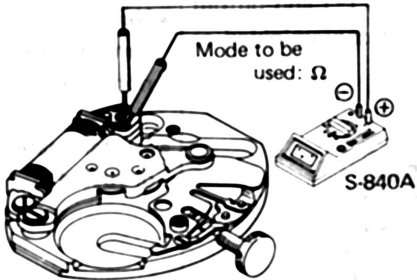
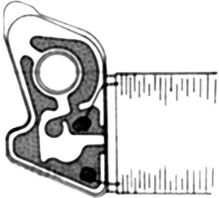
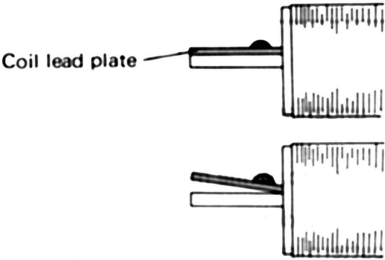
• Overhaul is not necessary.

Proceed to page 82 ("CHECKING AND ADJUSTMENT").

2-c: CHECK AND ADJUST RESET CONDITION

No.	Preparation	Checking points	Result	Adjustment and Repair
①	<p>Remove the circuit block, and use the rest of the movement for checking.</p> <p>Note: If the circuit block has a reset pin, do not remove it from the movement.</p>	<p>With the crown at the normal position, check that there is clearance between the reset lever and the reset pin.</p> 	<ul style="list-style-type: none"> • Clearance • No clearance 	<p>Proceed to 2-d .</p> <p>Proceed to ② .</p>
②	<p>Movement without circuit block</p>	<p>With the crown pulled out to the hands setting position, check that the reset lever touches the reset pin.</p> 	<ul style="list-style-type: none"> • Touches • Does not touch 	<p>Proceed to ③ .</p> <p>If the reset lever is not set in position, adjust it. Then, proceed to ③ .</p>
③		<p>Check that the reset lever is not deformed or broken.</p> 	<ul style="list-style-type: none"> • Deformed or broken 	<p>Replace the reset lever with a new one. Then, proceed to 2-d .</p>

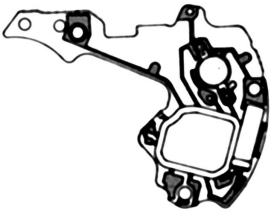
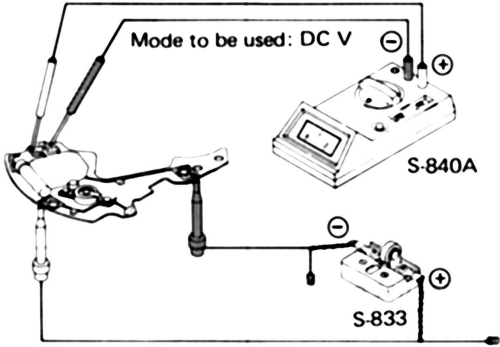
2-d: CHECK AND REPAIR COIL BLOCK

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Movement without circuit block	Measure the coil block's resistance.*1 	<ul style="list-style-type: none"> ● Within the specified value*2 ● Out of the specified value*2 	Proceed to ② . Replace the coil block with a new one. Then, proceed to 2-a .
②		Check that the coil block's pattern portions are not contaminated. 	<ul style="list-style-type: none"> ● Not contaminated ● Contaminated 	Proceed to ③ . <ul style="list-style-type: none"> · Wipe off contamination with a nylon cloth moistened with alcohol. Then, proceed to ③ . · If contamination cannot be removed, replace the coil block with a new one. Then, proceed to 2-e .
③		Check that the coil lead plate has not come off. 	<ul style="list-style-type: none"> ● Has not come off ● Has come off 	Proceed to 2-e . Replace the coil block with a new one. Then, proceed to 2-e .

*1. For the measuring method, refer to page 101 ("MEASURING RESISTANCE OF THE COIL").

*2. For the specified standard resistance value of the coil block, refer to each caliber's "PARTS CATALOGUE/ TECHNICAL GUIDE" or "VALUE CHECKING LIST".

2-e: CHECK AND REPAIR CIRCUIT BLOCK

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Circuit block alone	<p>Check that the circuit block's pattern portions, such as input terminals (+) and (-) and output terminal for coil block, are not contaminated or rusted.</p> <div style="text-align: center;">  </div>	<ul style="list-style-type: none"> • Neither contaminated nor rusted • Contaminated or rusted 	<p>Proceed to ② .</p> <p>Wipe off contamination or rust with a nylon cloth moistened with alcohol. Then, proceed to ② .</p> <p>• If contamination or rust cannot be removed, replace the circuit block with a new one. This is the end of procedure. *2</p>
②		<p>Check that the circuit block's output signal is normal. *1</p> <div style="text-align: center;">  </div>	<ul style="list-style-type: none"> • Output signal • No output signal 	<p>End of procedure *2</p> <p>Replace the circuit block with a new one. This is the end of procedure. *2</p>

Note:

- Do not check output signal of the circuit block under an incandescent lamp since strong light may cause the oscillation to stop.
Be sure to protect the IC from light with a black cloth, etc. while measuring.
- Circuit blocks that have film-like thin plates are easily deformed. Handle them with care. Utmost care should be taken not to bend them especially when their pattern portions are clasped with IC clips. Also be careful not to scratch their pattern portions with IC clips.

*1. For the measuring method, refer to page 99 ("MEASURING OUTPUT SIGNAL OF THE CIRCUIT BLOCK").

*2. If the trouble source has been successfully located in the procedure so far, judge by visual inspection if it is necessary to overhaul and clean the movement parts.

- Overhaul is necessary.
- Overhaul is not necessary.

Proceed to page 72 ("OVERHAUL AND CLEANING").

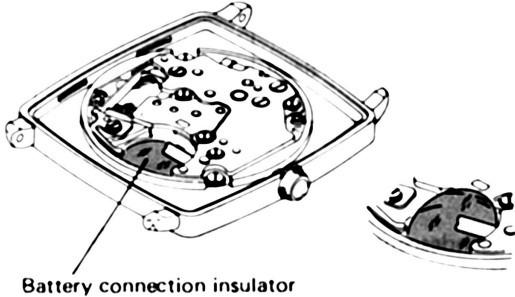

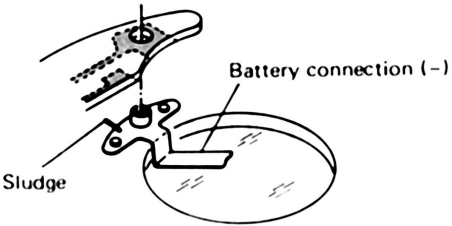
Proceed to page 82 ("CHECKING AND ADJUSTMENT").

3. STOPPAGE

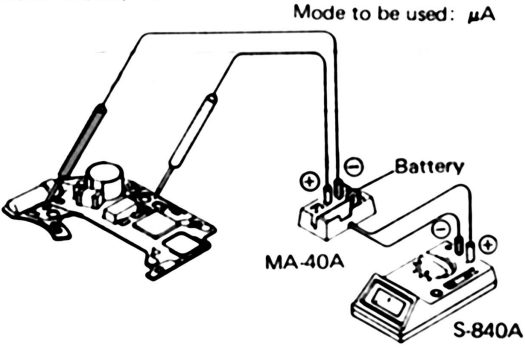
3-a: CHECK AND ADJUST BATTERY

[Symptoms and Conditions]

- The watch has stopped. Its hands move with a power supplier, but the current consumption is more than the specified value.

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Watch complete without case back and battery	<p>Check that the battery connection insulator is properly installed.</p> 	<ul style="list-style-type: none"> • Properly installed • Slipped 	<p>Proceed to ② .</p> <p>Reset the battery connection insulator in position. Then, proceed to ② .</p>
②		<p>Check that the battery connection insulator is not broken.</p> 	<ul style="list-style-type: none"> • Not broken • Broken 	<p>Proceed to ③ .</p> <p>Replace the battery connection insulator with a new one. Then, proceed to ③ .</p>
③	Remove the circuit block, and use the rest of the movement for checking.	<p>Check that there is no sludge touching the circuit pattern and the battery connection (-), thereby causing a short circuit between them.</p> 	<ul style="list-style-type: none"> • No sludge • Sludge 	<p>Proceed to 3-b .</p> <p>Remove the sludge. Then, proceed to 3-b .</p>

3-b: CHECK CURRENT CONSUMPTION FOR THE CIRCUIT BLOCK ALONE

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Circuit block alone	Measure current consumption for the circuit block alone. *1 	<ul style="list-style-type: none"> • Less than the specified value *2 • More than the specified value *2 	Proceed to ①-a . *3 Replace the circuit block with a new one. This is the end of procedure. *4

Note:

- Do not check current consumption under an incandescent lamp since strong light may cause the watch to consume excessive current.
Be sure to protect the IC with a black cloth, etc. while measuring.
- Circuit blocks that have film-like thin plates are easily deformed. Handle them with care. Utmost care should be taken not to bend them especially when their pattern portions are clasped with IC clips. Also be careful not to scratch their pattern portions with IC clips.

- *1. For the measuring method, refer to page 98 ("MEASURING CURRENT CONSUMPTION FOR THE CIRCUIT BLOCK ALONE").
- *2. For the specified standard value of current consumption for the circuit block alone, refer to "ANALOGUE QUARTZ VALUE CHECKING LIST".
- *3. When the current consumption exceeds the standard value for the whole of the movement but is less than the standard value for the circuit block alone, overhaul and clean the movement parts and then measure current consumption for the whole of the movement again. The driving pulse generated to compensate a heavy load that may apply on the gear train, etc. is considered to cause excessive current consumption for the whole of the movement.
- *4. If the trouble source has been successfully located in the procedure so far, judge by visual inspection if it is necessary to overhaul and clean the movement parts.

- Overhaul is necessary.
- Overhaul is not necessary.

Proceed to page 72 ("OVERHAUL AND CLEANING").

Proceed to page 82 ("CHECKING AND ADJUSTMENT").

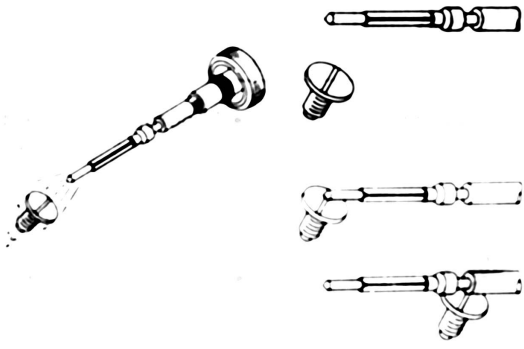
4. TIME LOSS/OCCASIONAL STOPPAGE

[Symptoms and Conditions]

- The watch has lost time or has sometimes stopped, but its accuracy (daily rate) is found normal.

CHECK RESIDUAL MAGNETISM

Analogue quartz watches, if brought near a strong magnetic field, are affected by magnetism and stop while they are kept there. They resume normal operation when they are taken beyond the reach of magnetism. The effect of magnetism on the watches consequently results in time loss. If watches have lost time or have sometimes stopped, be sure to check for residual magnetism to see if they are affected by magnetism.

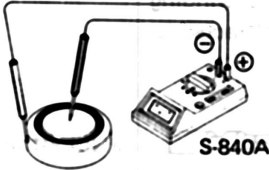

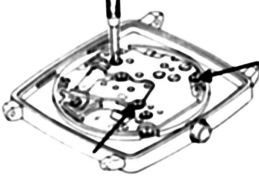

No.	Preparation	Checking points	Result	Adjustment and Repair
①	<p>Winding stem alone</p> <p>Note: Rinse oil out of the winding stem before checking.</p>	<p>Bring the circuit block screw near the winding stem to check that the former is not attracted to the latter owing to residual magnetism.</p> 	<p>• Not attracted</p> <p>• Attracted</p>	<p>Proceed to 1-a .</p> <p>Demagnetize all the metal parts other than the step rotor, using a demagnetizer. Then, proceed to 1-a .</p>

5. TIME INACCURACY (TIME LOSS/GAIN)

[Symptoms and Conditions]

- The watch has lost or gained time, and its accuracy (daily rate) is found abnormal.

CHECK ACCURACY

No.	Preparation	Checking points	Result	Adjustment and Repair
①	Battery alone	<p>Measure the battery voltage. *1</p> <ul style="list-style-type: none"> • A battery voltage drop may cause the advancing pace to become erratic, which in turn may result in time inaccuracy. Check that the battery voltage is normal.  <p>Mode to be used: DC V S-840A</p>	<ul style="list-style-type: none"> • More than 1.57V • Less than 1.57V 	<p>Proceed to ② .</p> <p>Replace the battery with a new one. Then, proceed to ② .</p>
②	Install a battery, and check with the watch complete without case back.	<p>Measure the timing rate with a quartz tester. *2</p> 	<ul style="list-style-type: none"> • Abnormal • Unmeasurable 	<p>Adjust time accuracy. If time accuracy cannot be adjusted normal, proceed to ③ .</p> <p>Proceed to ③ .</p>
③		<p>Check that the circuit block screw is not loosened.</p> 	<ul style="list-style-type: none"> • Not loosened • Loosened 	<p>Replace the circuit block with a new one. Then, proceed to ④ .</p> <p>Tighten up the circuit block screw. Then, proceed to ④ .</p>
④		<p>Measure the timing rate again with the quartz tester.</p> 	<ul style="list-style-type: none"> • Normal • Abnormal • Unmeasurable 	<p>End of procedure *3</p> <p>Adjust time accuracy, and this is the end of procedure. *3</p> <p>Replace the circuit block with a new one, and then adjust time accuracy. This is the end of procedure. *3</p>

Note:

- Be careful not to bring the quartz tester microphone near to a fluorescent lamp, etc. that generates electric noises, since this may disturb precise measurement.
 - Be sure to select the quartz tester's correct gate for measuring the timing rate. Otherwise, the timing rate measurement will be inaccurate.
- *1. For the measuring method, refer to page 95 ("MEASURING BATTERY VOLTAGE").
- *2. For the measuring method, refer to page 106 ("MEASURING ACCURACY").
- *3. If the trouble source has been successfully located in the procedure so far, check by visual inspection if it is necessary to overhaul and clean the movement parts.

- | | |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• Overhaul is necessary.• Overhaul is not necessary. | <p>Proceed to page 72 ("OVERHAUL AND CLEANING").</p> <p>Proceed to page 82 ("CHECKING AND ADJUSTMENT").</p> |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|