

TECHNICAL GUIDE AND PARTS LIST

CAL. Y557
CAL. Y558
CAL. Y559

ANALOGUE QUARTZ

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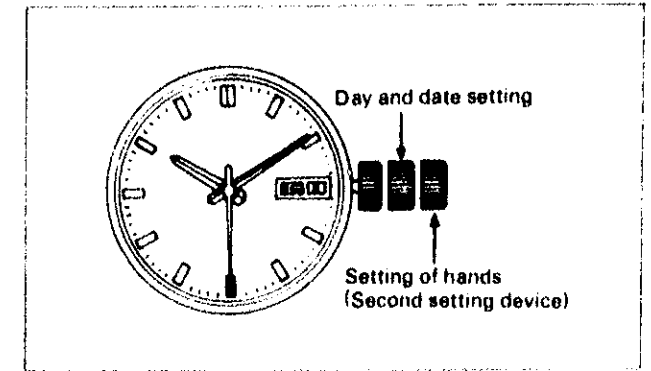
I. SPECIFICATIONS

| Cal. No. | | Y557A | Y558A | Y559A |
|------------------------------------|---|---------|---------|---------|
| Time indication | | 3 hands | 3 hands | 3 hands |
| Additional mechanism | Date | — | ○ | ○ |
| | Day | — | — | ○ |
| | Bilingual change-over system for the day of the week | — | — | ○ |
| | Instant day setting device | — | — | ○ |
| | Instant date setting device | — | ○ | ○ |
| | Second setting device (Stops at every second) | ○ | ○ | ○ |
| | 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 20 seconds | | | |
| Maximum diameter | 26.0 × 23.7 mm | | | |
| Height (excluding battery portion) | 3.0 mm | 3.5 mm | 3.6 mm | |
| Driving system | Step motor system (2 poles) | | | |
| Regulation system | Trimmer condenser | | | |
| Battery power | Silver oxide battery, Maxell SR926SW Battery life: Approx. 2 years Voltage: 1.55V | | | |
| Jewels | 3 jewels | | | |

II. HOW TO SET THE TIME AND CALENDAR

CROWN POSITION

- Normal position: Free
- 1st click: Change of day and date
Date change ... clockwise (turn away from you.)
Day change ... counterclockwise (turn towards you.)
- 2nd click: Hand setting, reset switch and second setting



1. To set the hour

- (1) Pull out the crown to the second click position

The second hand stops on one of the second markers.

- (2) Turn the crown and set the time of the hour hand and minute hand.

- First turn the hour hand past the 12 o'clock position to see if the date changes, then set the time correctly (Allow for the AM and PM period so that the date will change at midnight.)
- As the torque of the gear train is transmitted reversely, the time should be set by turning the hands between 5 to 10 minutes ahead and then turning it back to the desired time.

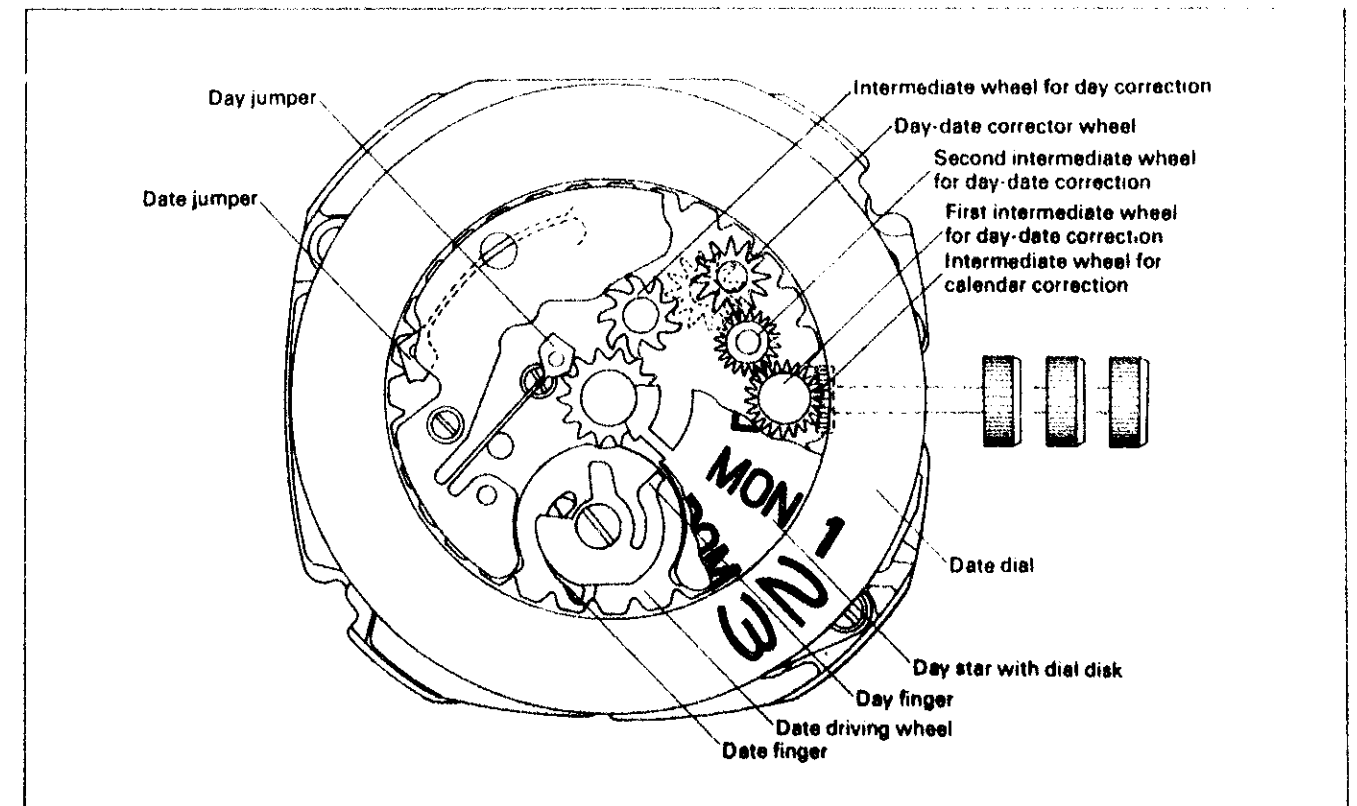
- (3) Push in the crown in accordance with a time signal to set the time accurately to the second.

2. Resetting the calendar

- Pull the crown out to the 1st click.

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 a time between 10:30 pm and 3:30 am, the calendar may not change to the next day. The setting must therefore be made before or after this time period



III. DISASSEMBLING, REASSEMBLING, LUBRICATING AND CLEANING

1. Disassembling, reassembling, and lubricating of the module

(1) Disassembling, reassembling and lubricating of the calendar mechanism.

Disassembling procedures Figs.: ① → ④⑤

Reassembling procedures Figs.: ④⑤ → ①

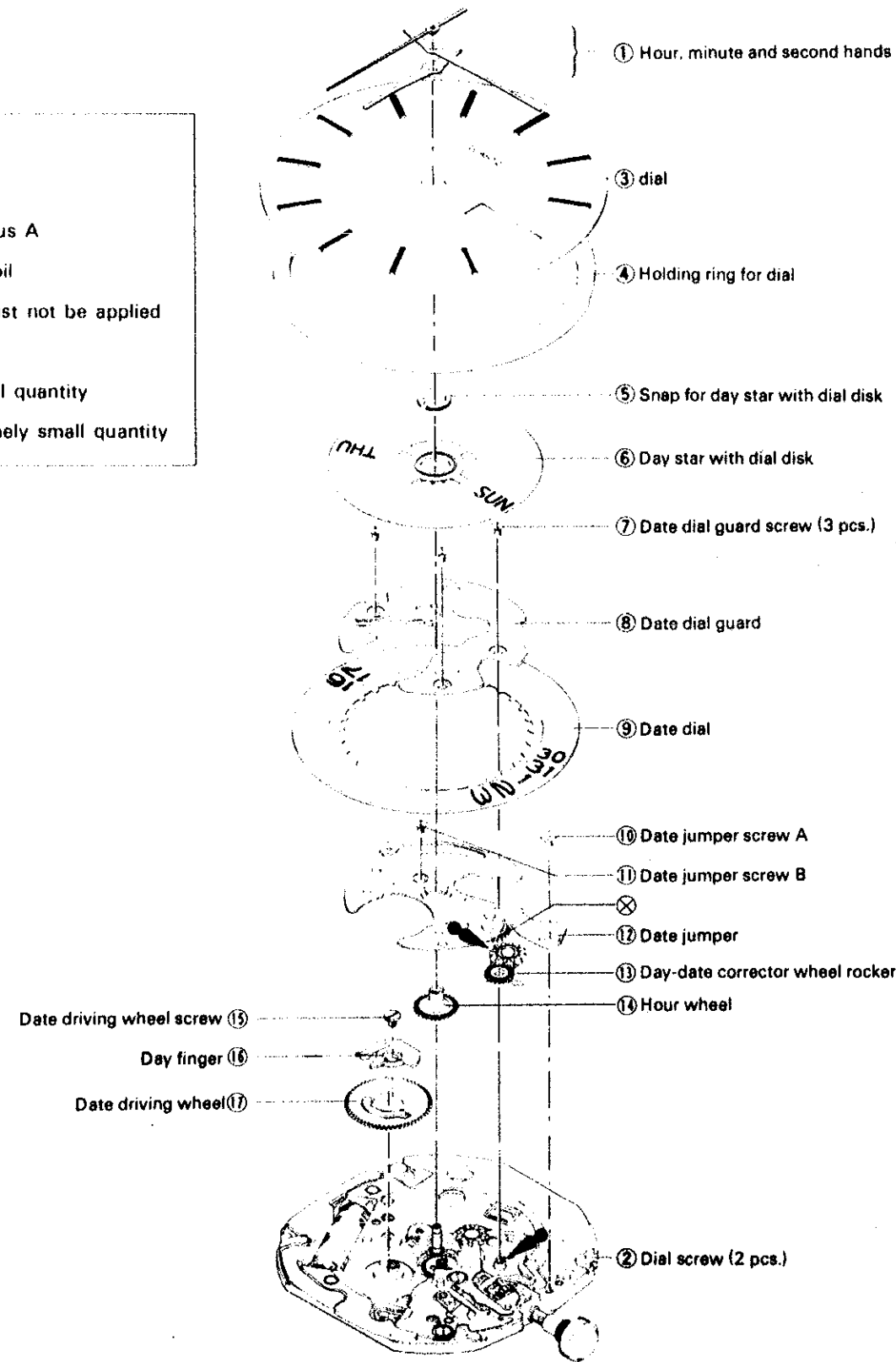
Lubrication

Types of oil

- Moebius A
- ⊗ Elgin oil
- ⊗ Oil must not be applied

Oil quantity

- Normal quantity
- Extremely small quantity



Remarks for disassembling and reassembling

① Hour, minute and second hands

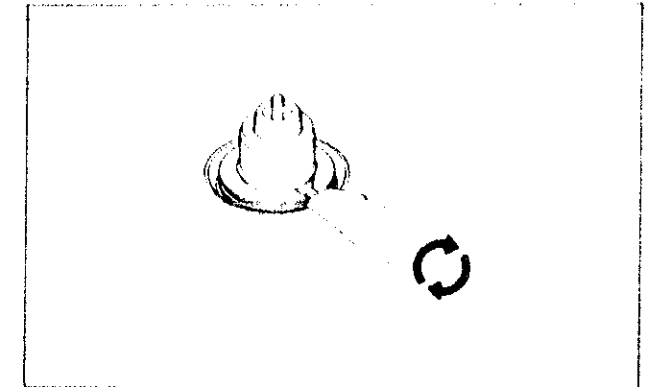
Remarks for disassembling and reassembling

- Pull out the crown to the second click position for disassembling and reassembling
- Be sure to assemble the second hand exactly on a second mark. (Any mark will do.)
- When reassembling, be careful that the hands do not touch each other as the watch is so thin that the clearance between the hands is less than that for ordinary type watches.

⑤ Snap for day star with dial disk

Remarks for disassembling

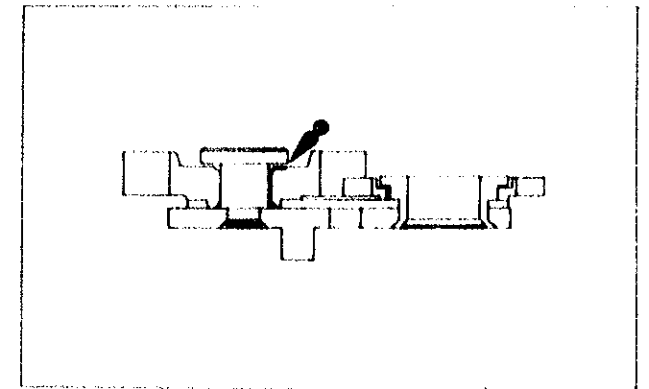
- Push the thin tip of a screw driver into the groove of the snap for day star with dial disk.



⑬ Day-date corrector wheel rocker

Remarks for reassembling

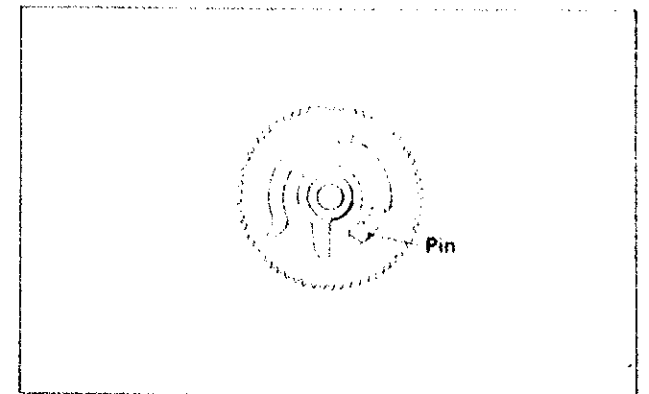
- Lubricate the day-date corrector wheel as shown in the illustration.
- Pull out the crown to the first click position and reassemble.



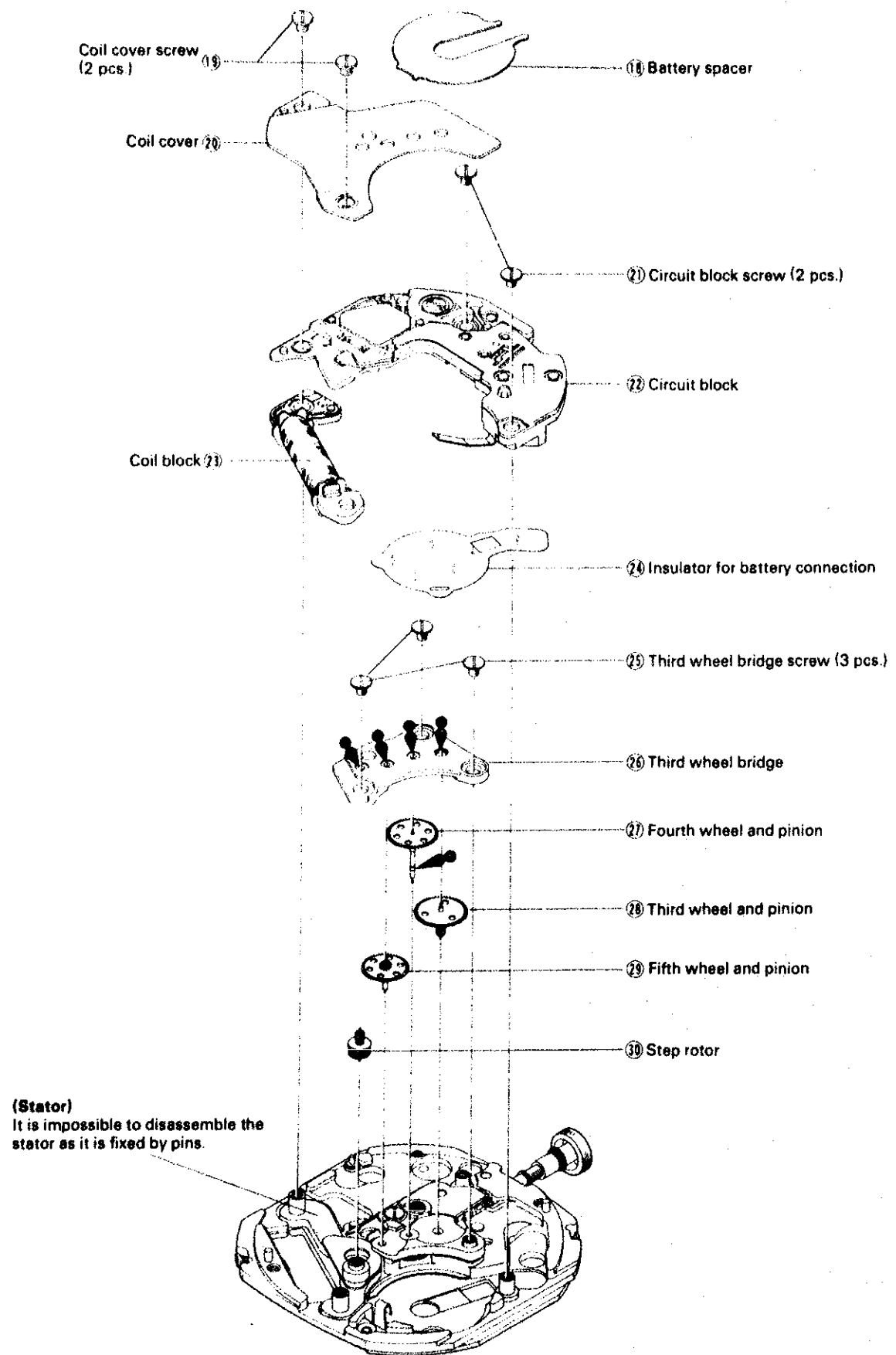
⑯ Day finger

Remarks for reassembling

- Reassemble so that the pin of the date driving wheel is positioned as shown in the illustration on the right.

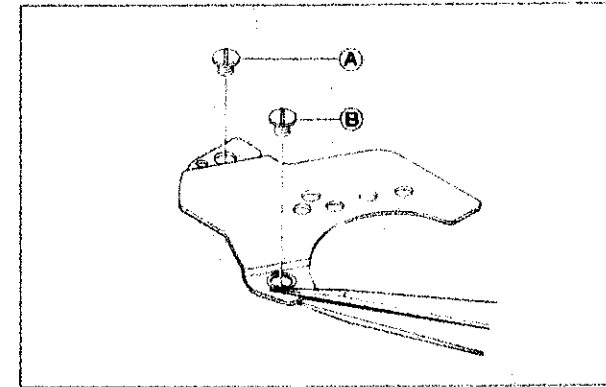


(2) Disassembling, reassembling and lubricating of the circuit block, coil block and gear train.



Remarks for disassembling and reassembling

20 Coil cover

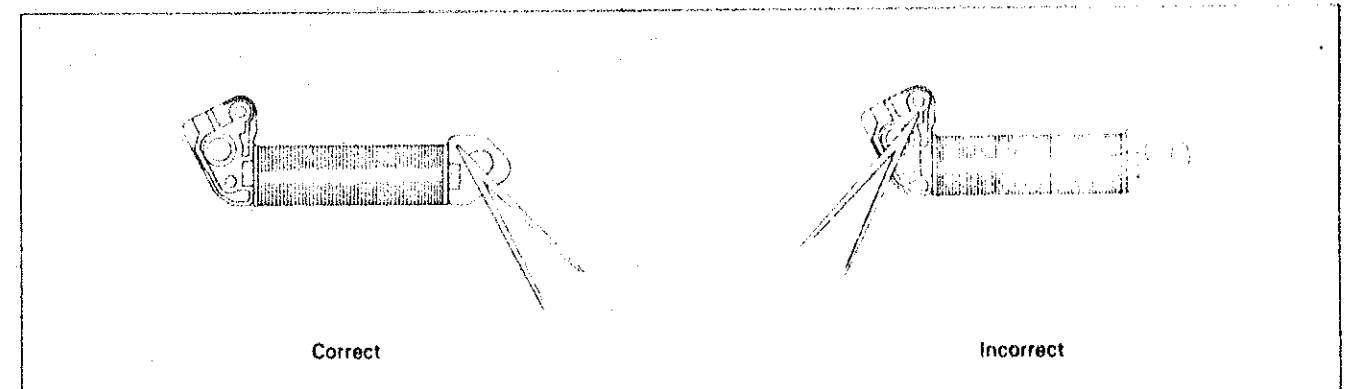


- Remarks for disassembling and reassembling
- Disassemble by holding the portion with tweezers as shown in the illustration on the left.
 - Be careful in handling as the coil cover is easily bent
 - Be sure to tighten the coil cover screw (A) first and then (B) next.
(If (B) is tightened first, it will be difficult to tighten (A) as the (A) portion of the coil cover will lift up.)

21 Coil block

Remarks for disassembling and reassembling

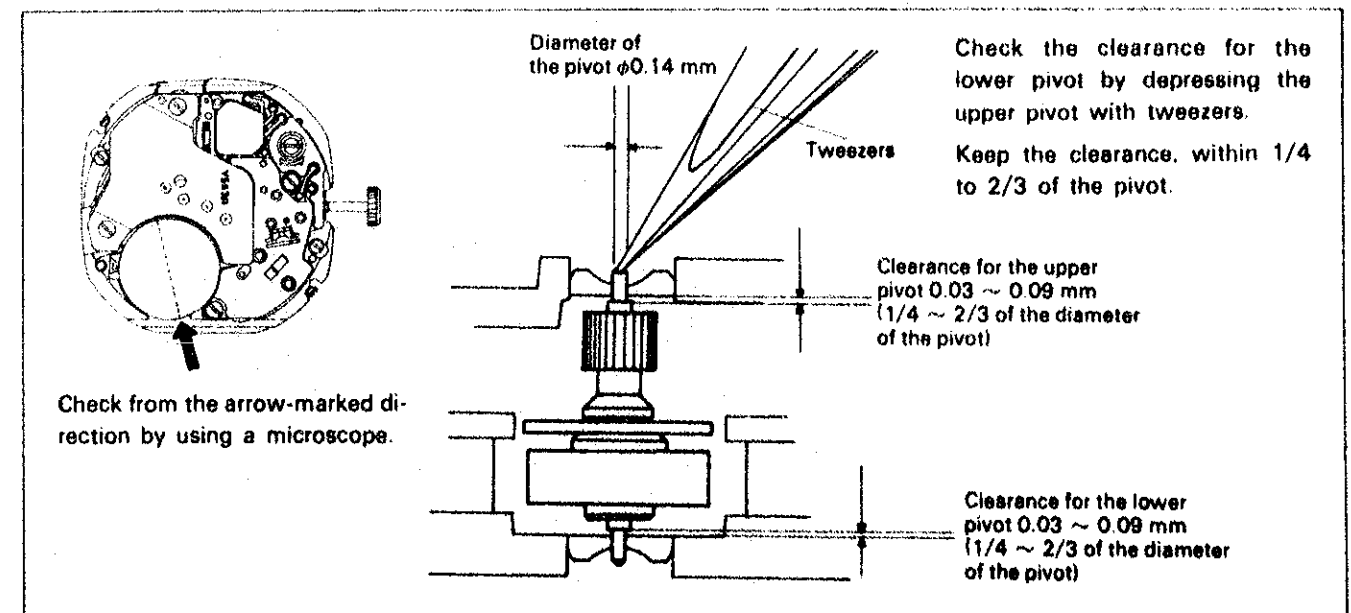
- be careful not to damage the coil wire and the lead terminal. Handle them as shown in the illustration below



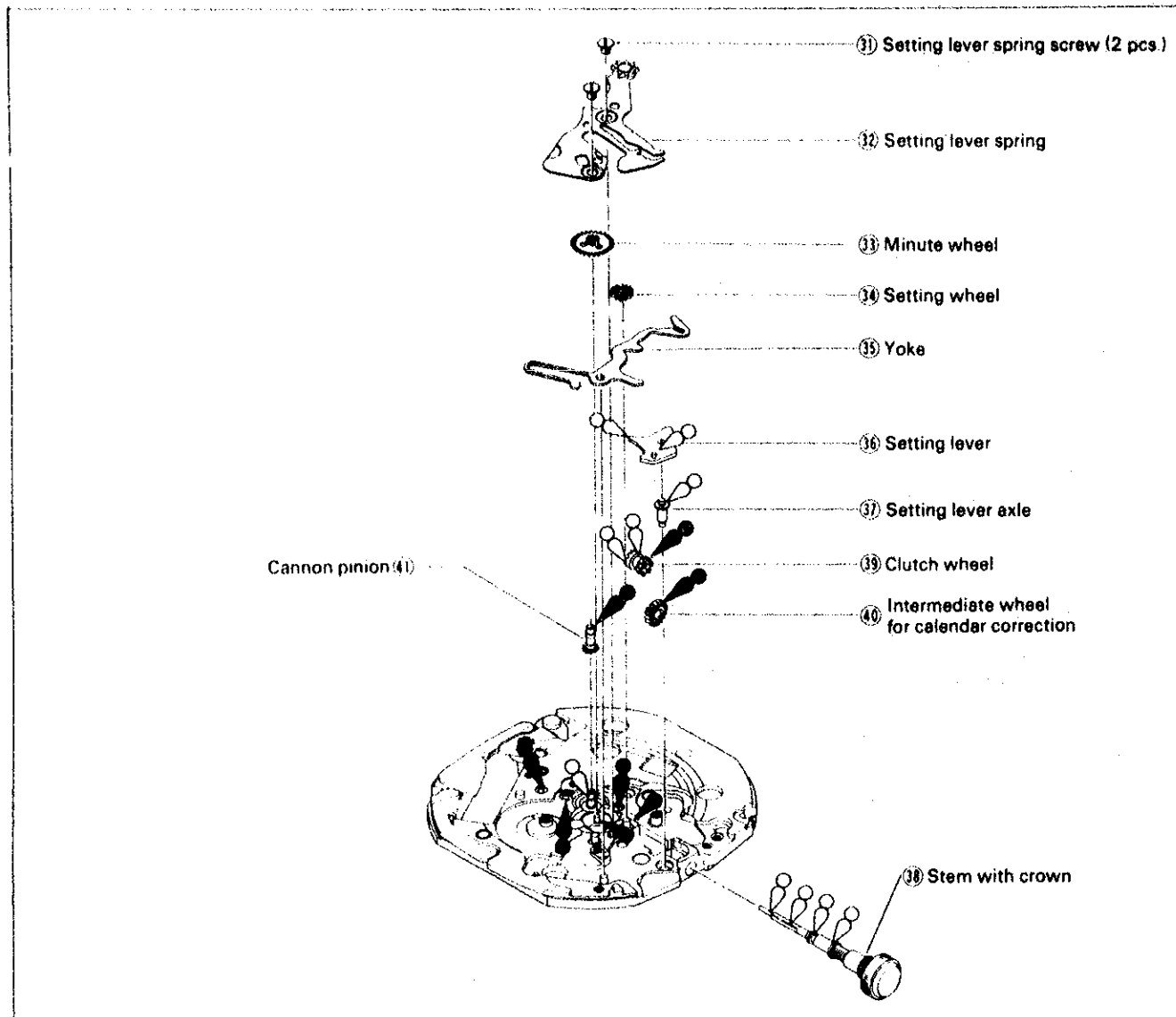
30 Step rotor

Remarks for reassembling

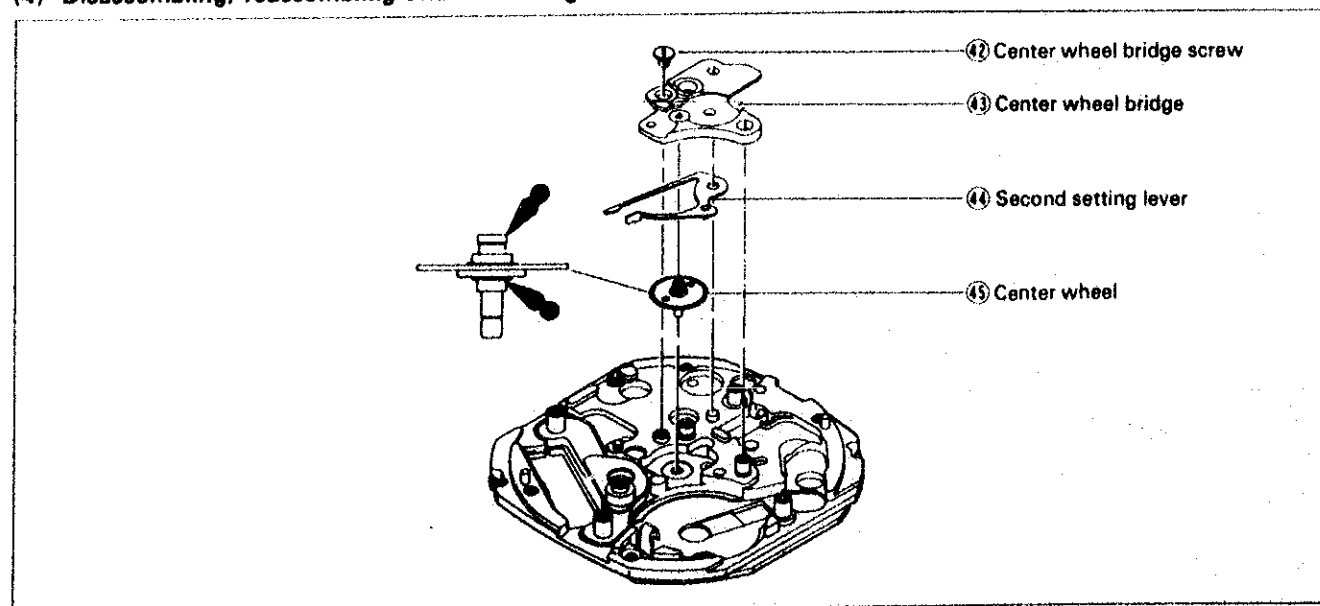
- Check the clearances for the upper and the lower pivots for the step rotor after reassembling the coil cover.



(3) Disassembling, reassembling and lubricating of the setting mechanism.



(4) Disassembling, reassembling and lubricating of the center wheel bridge ~ the center wheel.

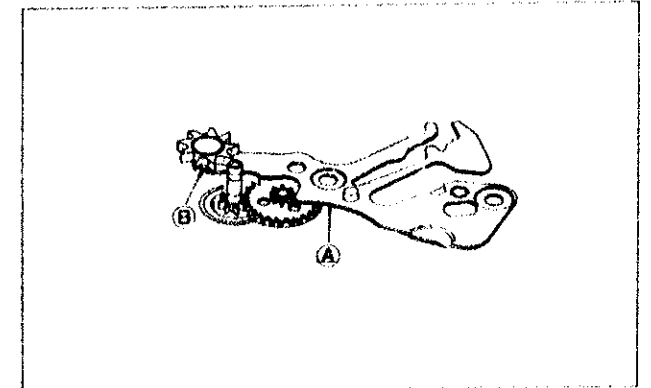


Remarks for disassembling and reassembling

31 Setting lever spring

Remarks for disassembling

- Pry up the arrow-marked portion (A) slightly and remove the arrow-marked pin (B) (positioned under the setting lever spring.). Then pry up the setting lever spring for disassembling by holding portion (A).



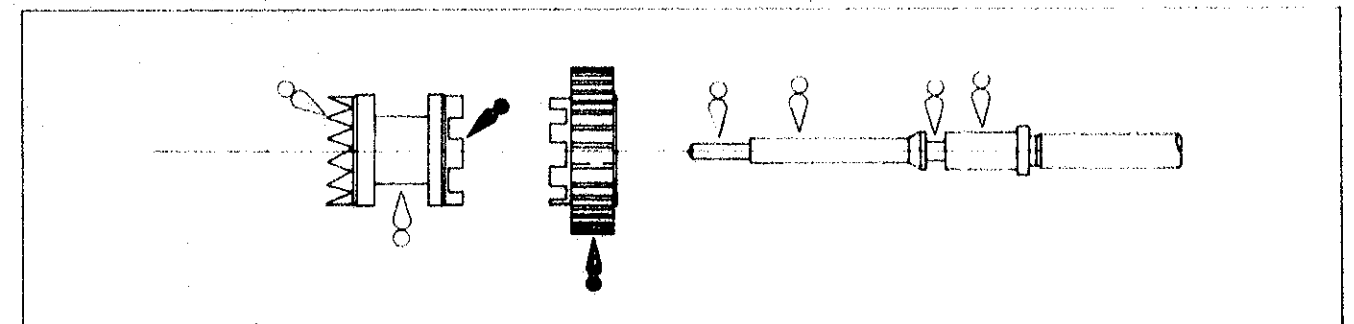
38 Stem with crown

39 Clutch wheel

40 Intermediate wheel for calendar correction

Remarks for reassembling

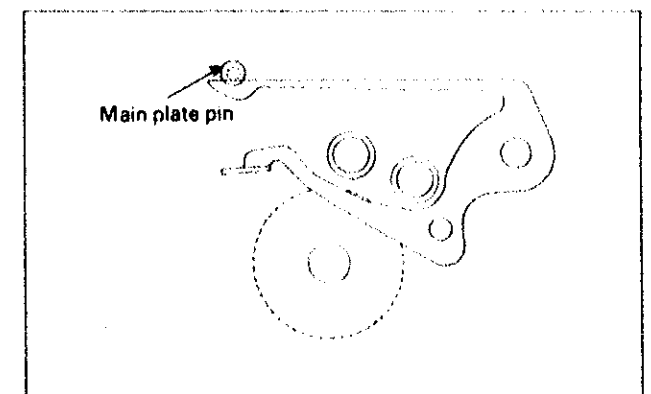
- Reassemble after reassembling the center wheel bridge.
 (It is difficult to reassemble the clutch wheel and the intermediate wheel for calendar correction if the center wheel bridge is not reassembled.)
- Refer to the illustration below for the direction of reassembling and the lubricating.



44 Second setting lever

Remarks for reassembling





- Hook the spring portion to the main plate pin as shown in the illustration on the right.
- Be sure to pull out the winding stem all the way and then reassemble the second setting lever when the setting mechanism is already reassembled.



2. Cleaning

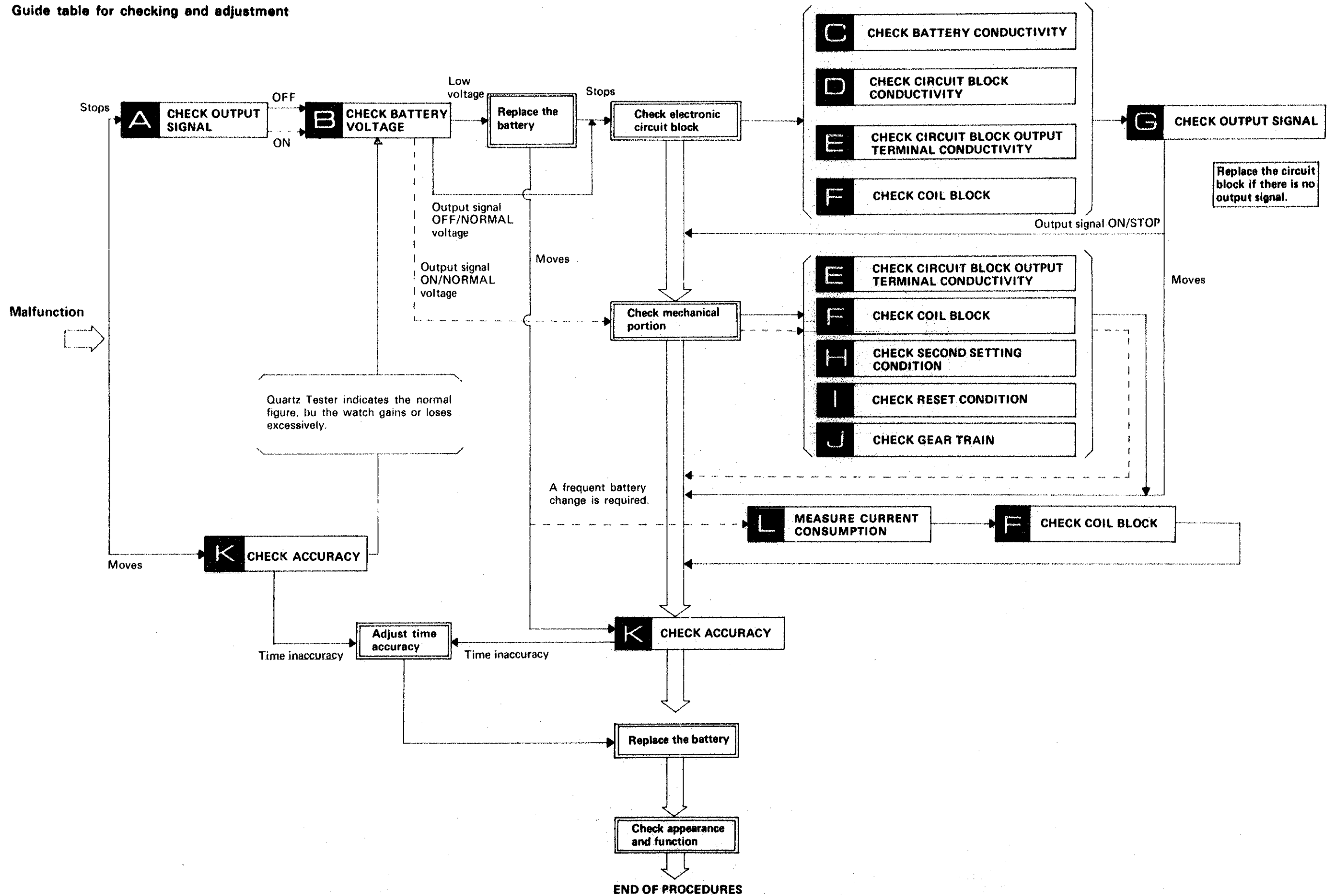
Since several special parts (electronic, etc.) used in Cal. Y557, Y558 and Y559 differ from conventional mechanical watches, use the following cleaning methods when cleaning.

HOW TO CLEAN

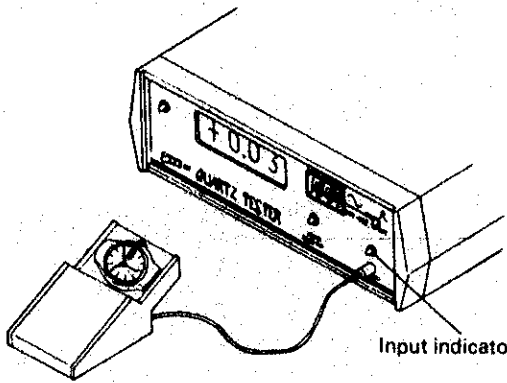
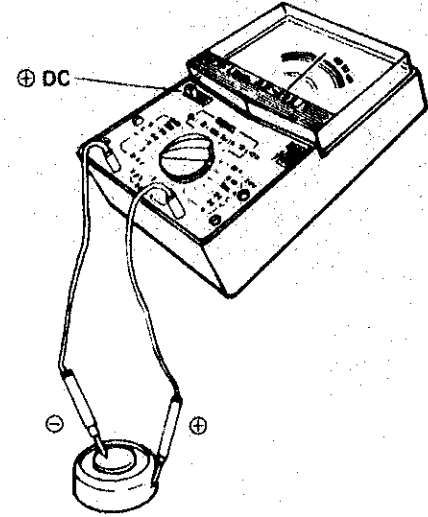
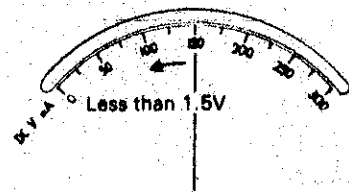
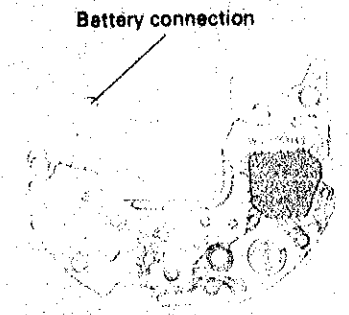
| Name of parts | Cleaning | Drying | Solution | Remarks |
|--|--|------------------------|-------------------------------------|---|
| (1) Circuit block  Coil block  | DO NOT CLEAN | | | <ul style="list-style-type: none"> ● Conductive portions ONLY may be cleaned with a cloth moistened with benzine or alcohol. Dry in COOL air. |
| (2) Main plate  Step rotor  Plastic parts Battery spacer Date driving wheel Insulator for battery connection | Rinse or scrub with a soft brush | Cool air drying | Benzine, alcohol | <ul style="list-style-type: none"> ● Be careful not to remove the parts fixed to the main plate. ● Use a clean solution as the step rotor is magnetized. Any foreign matter which cannot be removed by cleaning should be removed with rodico or adhesive tape. ● When cleaning with benzine, the cleaning time should be minimized. |
| (3) Others | Clean with a cleaner, rinse or gently scrub with a soft brush. | Cool or hot air drying | Benzine, trichloroethylene, alcohol | <ul style="list-style-type: none"> ● Be careful not to bend the coil cover. |

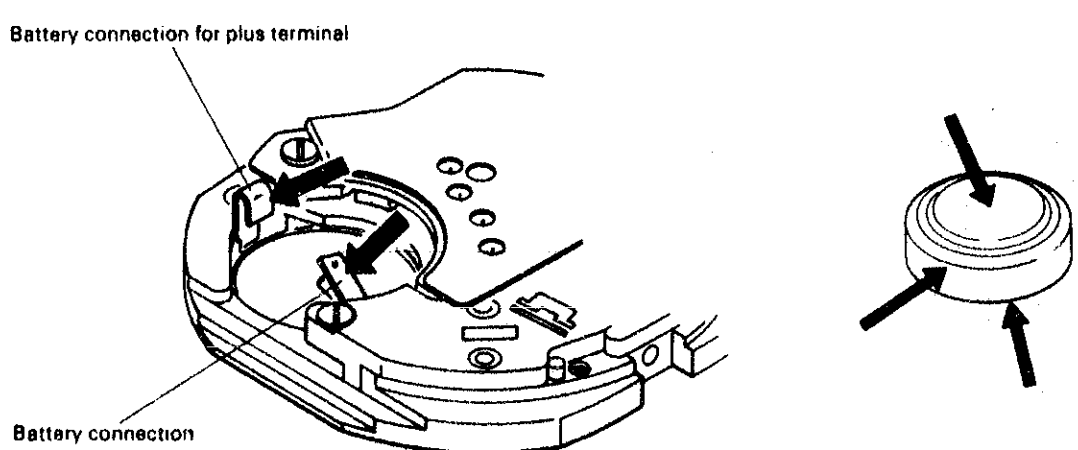
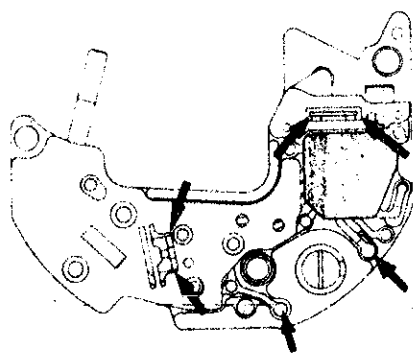
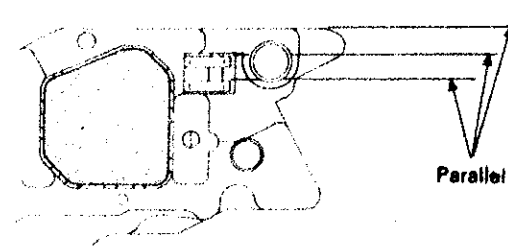
IV. CHECKING AND ADJUSTMENT

1. Guide table for checking and adjustment

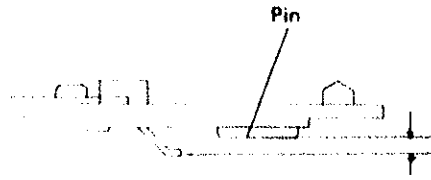


2. Procedures for checking and adjustment

| | Procedure | Result | Adjustment and Repair |
|--|--|--|--|
| <p style="writing-mode: vertical-rl; transform: rotate(180deg);">CHECK OUTPUT SIGNAL</p> | <p>Check output signal</p> <p>(1) Set up the Quartz Tester.</p> <p>(2) Checking Check for blinking input indication light.</p> <div style="border: 1px solid black; padding: 5px;"> <p>< Note > Be sure that the crown is in the normal position.</p> </div>  | <p>One-second blinking..... Normal</p> <p>No one-second blinking..... Defective</p> | <p>Proceed to B.</p> |
| <p style="writing-mode: vertical-rl; transform: rotate(180deg);">CHECK BATTERY VOLTAGE</p> | <p>Check battery voltage.</p> <p>(1) Set up the volt-ohm-meter Range to be used: DC3V</p> <p>(2) Measuring Probe Red..... Battery surface ⊕ Probe Black Battery surface ⊖</p> <div style="border: 1px solid black; padding: 5px;"> <p>< Note > When handling the battery, use non-metallic tweezers or fingernails.</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p>When there is battery electrolyte leakage, refer to "HOW TO CHECK FOR BATTERY ELECTROLYTE LEAKAGE AND REPAIR" below.</p> </div>  | <p>More than 1.5V..... Normal</p> <p>Less than 1.5V..... Defective</p>  | <p>Proceed to Check mechanical portion if one-second blinking is found. Proceed to Check electronic circuit block if one-second blinking is not found.</p> <p>Proceed to Replace the battery</p> <ul style="list-style-type: none"> ● If the watch operates after battery replacement, proceed to B. ● If the watch does not operate, proceed to Check electronic circuit block. |
| <p style="writing-mode: vertical-rl; transform: rotate(180deg);">HOW TO CHECK FOR BATTERY ELECTROLYTE LEAKAGE AND REPAIR</p> | <ol style="list-style-type: none"> 1. Remove the movement from the case. 2. Disassemble the movement. 3. Wipe off battery electrolyte on the circuit block. <ol style="list-style-type: none"> (1) Wipe off battery electrolyte on the circuit block with a cloth moistened with distilled water. (If distilled water is not available, use ordinary water.) (Do not use cloths which give off lint such as gauze, flannel, etc.) <p>Do not expose the trimmer condenser to water or alcohol, as it may result in a change in condenser capacity and eventually in time accuracy.</p> | <p>Be sure to clean the battery connection.</p>  | <ol style="list-style-type: none"> (2) Wipe with a cloth moistened with alcohol. (If the cleaned portions remain wet with water, they will corrode with rust.) (3) Dry with cool air by using a dryer. 4. Wipe off battery electrolyte on the other parts by referring to page 10. (Clean the insulator for battery connection with water.) 5. Reassemble the movement. (Replace the battery with a new one.) 6. Check to see if the time setting functions and the current consumption are normal. |

| | Procedure | Result | Adjustment and Repair |
|--|---|--|--|
| C CHECK BATTERY CONDUCTIVITY | <p>Check to see if the battery current flow is normal.</p> <p>(1) Check for any stains on the connecting portions of the battery, the battery connection for plus terminal and the battery connection.</p>  | <p>Uncontaminated Normal →</p> <p>Contaminated Defective →</p> | <p>Proceed to D.</p> <ul style="list-style-type: none"> Wipe off carefully. <div style="border: 1px solid black; padding: 5px;"> <p>< Note > Be careful not to bend the plus terminal of the battery connection and the battery connection.</p> </div> |
| D CHECK CIRCUIT BLOCK CONDUCTIVITY | <p>Check for defective conductivity of the circuit block.</p> <p>Check conductivity of the arrow-marked portions by using a microscope.</p>  | <p>No defective conductivity Normal →</p> <p>Defective conductivity Defective →</p> | <p>Proceed to E.</p> <ul style="list-style-type: none"> Replace the circuit block with a new one. |
| E CHECK CIRCUIT BLOCK OUTPUT TERMINAL CONDUCTIVITY | <p>Check the connecting portions of the circuit block and the coil.</p>  <p>1. Check to see if the two output terminals are parallel to the edge of the circuit board when the circuit block is viewed from the back side.</p> | <p>Parallel Normal →</p> <p>Bent Defective →</p> | <p>Proceed to F.</p> <ul style="list-style-type: none"> Correct the bend of the output terminal. |

Procedure



Output terminal rises higher than the head of the pin.

2. Check to see if the circuit block output terminal rises higher than the head of the pin for circuit block screw when viewed from the side.



3. Check for any contamination on the circuit block output terminal and the coil lead terminal.

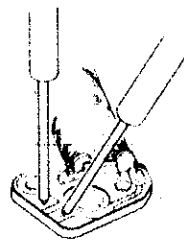
Check for broken coil wire and short circuit of the coil block.

(1) Set up the Volt-ohm-meter.

Range to be used: OHMS R x 100

(2) Checking

Apply the red and black probes of the Volt-ohm-meter to the two lead terminals of the coil.

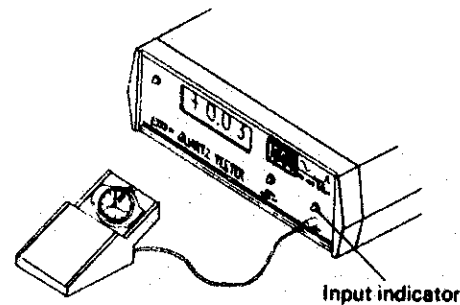


Check output signal.

(1) Set up the Quartz Tester.

(2) Checking

Follow the same procedures as in **A**.



Result

Higher Normal

Not higher Defective

Uncontaminated Normal

Contaminated Defective

Pointer of the Volt-ohm-meter swings Normal

Broken coil wire
(Pointer of the Volt-ohm-meter hardly swings.) Defective

Short circuit
(Pointer of the Volt-ohm-meter swings excessively.) Defective

One-second blinking ———— Functioning

————— Not functioning

No one-second blinking Defective

Adjustment and Repair

Proceed to **E** 3.

● Raise the output terminal.

Proceed to **F**.

● Wipe off the contamination.

Proceed to **G** if Electronic circuit block must be checked.

Proceed to **H** if Mechanical portion must be checked.

● Replace the coil block with a new one.

Proceed to **K**.

● **Check Mechanical portion** **I**.

● Replace the circuit block with a new one.

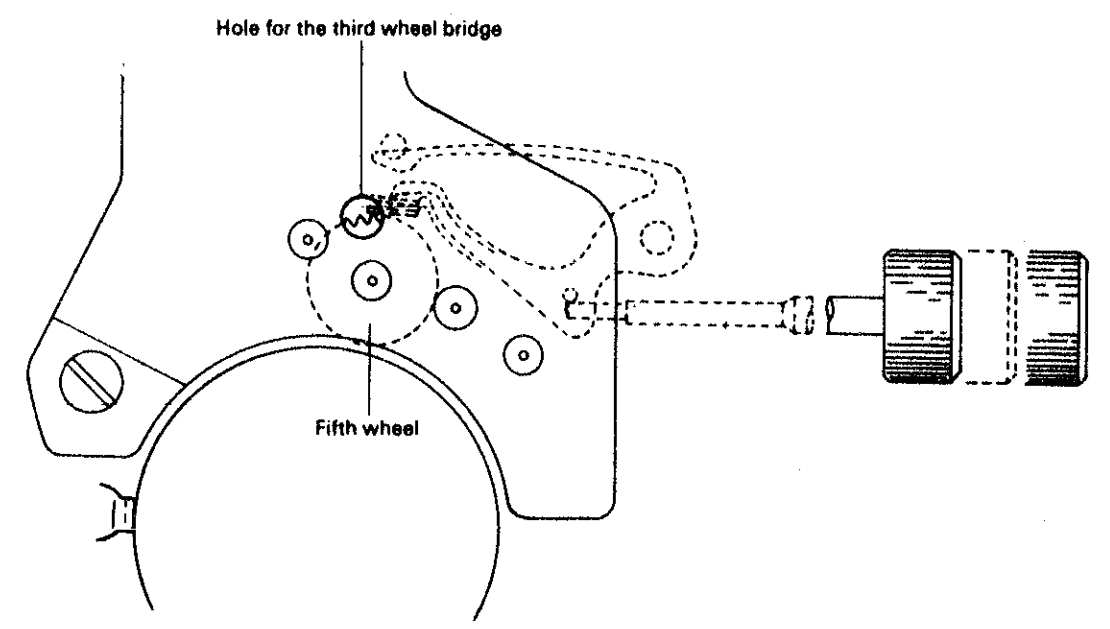
I

CHECK SECOND SETTING CONDITION

Procedure

Check the second setting condition.

Check to see if there is clearance between the second setting lever and the fifth wheel when the crown is in the normal and the first click positions. Also, check to see if the second setting lever touches the fifth wheel when the crown is in the second click position.
(Check through the hole for the third wheel bridge and the coil cover by using a microscope.)



Result

Functions properly Normal →

Does not function properly.. Defective →

Adjustment and Repair

Proceed to **I**.

- Correct the bend of the second setting lever.

—

CHECK RESET CONDITION

Check the reset condition after the circuit block and the battery are reassembled.

1. Check to see if the second hand stops immediately when the crown is pulled out completely and if it starts promptly one second after the crown is pushed in to the normal position.
2. Check to see if the conductivity between the reset pin and the main plate is normal when the crown is pulled out completely.

(1) Set up the Volt-ohm-meter
Range to be used: OHMS R × 1.

< Note >
Be careful not to use a range other than R × 1. The circuit might be damaged if another range is used.

Stops completely and starts moving after one second Normal →

Does not stop or moves irregularly Defective →

Less than 10Ω Normal →

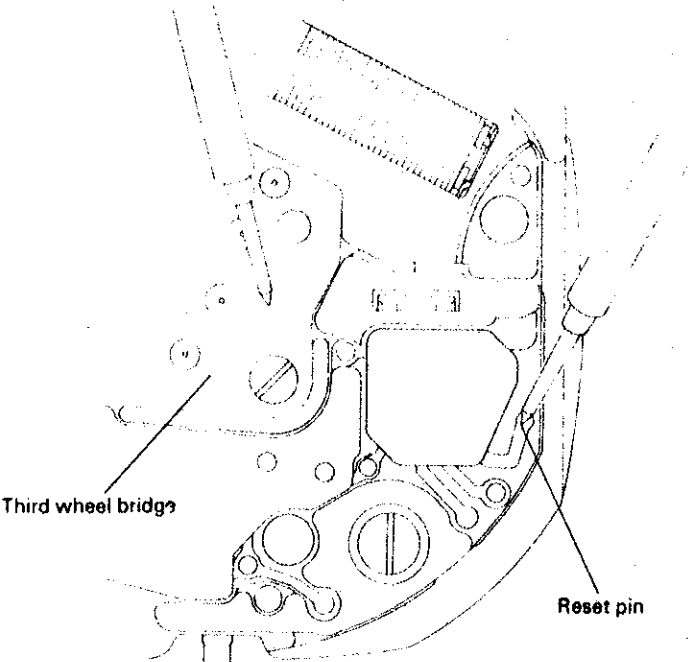
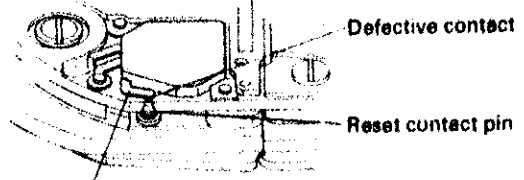
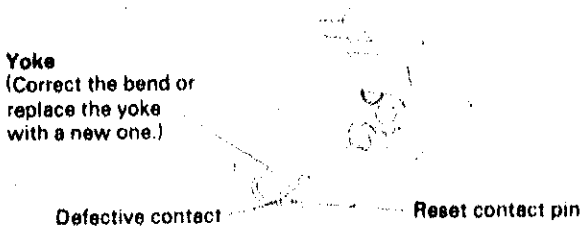
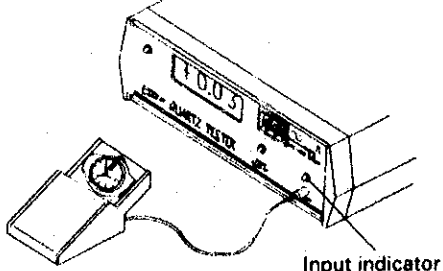
More than 10Ω Defective →

Proceed to **K**.

Proceed to **I** 2.

- Replace the circuit block with a new one.
- The defect is caused by one of the reasons stated on page 20.

(to be continued on page 19)

| | Procedure | Result | Adjustment and Repair |
|-----------------------|---|-------------------------------------|--|
| CHECK RESET CONDITION | <p>(2) Checking</p> <p>Apply the probes of the Volt-ohm-meter to the third wheel bridge and the reset pin.</p> <p style="border: 1px solid black; padding: 2px; display: inline-block;">Either red or black probe will do</p>  <p>Third wheel bridge</p> <p>Reset pin</p> | | <p>(1) Defective contact between the reset lead terminal of the circuit block and the reset contact pin.</p>  <p>Defective contact</p> <p>Reset contact pin</p> <p>Reset lead terminal (Touch the reset lead terminal and the reset contact pin by using tweezers.)</p> <p>(2) Defective contact between the reset pin and the yoke when the crown is pulled out completely.</p>  <p>Yoke (Correct the bend or replace the yoke with a new one.)</p> <p>Defective contact</p> <p>Reset contact pin</p> |
| CHECK ACCURACY | <p>Check gain and loss of time.</p> <p>(1) Set up the Volt-ohm-meter.</p> <p>(2) Checking</p> <p>Check using the same procedures as in A.</p>  <p>Input indicator</p> | <p>Correct →</p> <p>Incorrect →</p> | <p>Follow the procedures on page 11.</p> <p>Proceed to Adjust time accuracy.</p> |
| CHECK GEAR TRAIN | <p>Check the gear train with respect to the following points.</p> <ol style="list-style-type: none"> 1. Check for dust, lint and filings. 2. Check for oil condition (quantity, deterioration, etc.). 3. Check to see if the clearance is normal. | <p>Correct →</p> <p>Incorrect →</p> | <ul style="list-style-type: none"> ● Replace the circuit block with a new one. ● Correct the defective portions. (Removal of dust, lint and filings, relubricating and adjustment of clearance). |

Procedure

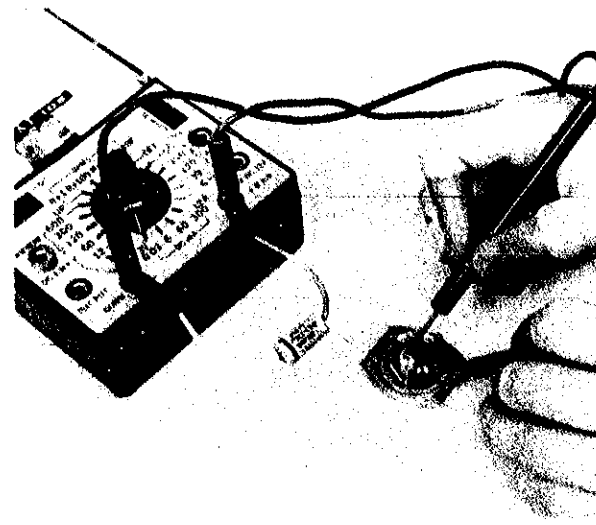
In cases where a frequent battery change is required, a current consumption test is recommended. Use the following procedure:

1. Set up the Volt-ohm-meter

- Range to be used: DC 0.03 mA
- Set up a condenser of 200 ~ 500 μ F as shown in the photo.

2. Measurement

- Place the battery on the anti-magnetic shieldplate with its minus side up.
 - Probe Red \oplus Battery connection
 - Probe Black \ominus Battery surface \ominus
- Be sure to measure with the crown in the normal position.



Result

Less than 2.5 μ A

More than 2.5 μ A

Remarks:

There might be a slight difference in the measured value depending upon the type of volt-ohm-meter.
When judging the condition of the circuit block, be sure to take this into consideration.

Adjustment and Repair

Proceed to **R**

Proceed to **F** When the coil block is found to be normal, replace the circuit block with a new one.

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

(REVISED)

PARTS LIST

Y559A, Y558A AND Y557A

| PART NO. | | | PART NAME |
|-------------------------------------|-------------------------------------|-------------------------------------|---|
| Y559A | Y558A | Y557A | |
| 122 731 | 122 731 | 122 731 | Center wheel bridge |
| 131 990 | 131 990 | 131 990 | Third wheel bridge |
| 221 781 | 221 781 | 221 781 | Center wheel and pinion |
| 225 784 | 225 783 | 225 781 | Cannon pinion |
| 231 781 | 231 781 | 231 781 | Third wheel and pinion |
| 241 784 | 241 783 | 241 781 | Fourth wheel and pinion |
| 261 781 | 261 781 | 261 781 | Minute wheel |
| 271 784 | 271 783 | 271 781 | Hour wheel |
| 281 589 | 281 589 | 281 589 | Setting wheel |
| 282 782 | 282 782 | 282 781 | Clutch wheel |
| 354 781 | 354 781 | 354 780 | Winding stem |
| 383 780 | 383 780 | 383 780 | Setting lever |
| 384 781 | 384 781 | 384 781 | Yoke (Clutch lever) |
| 386 782 | 386 783 | 386 781 | Setting lever spring |
| 390 780 | 390 780 | 390 780 | Setting lever axle |
| 391 781 | 391 781 | 391 781 | Train wheel setting lever |
| *470 | - | - | Day star with dial disk |
| 701 781 | 701 781 | 701 781 | Fifth wheel and pinion |
| *801 785 | *801 | - | Date dial |
| 802 781 | 802 782 | - | Date driving wheel |
| 808 781 | 808 782 | - | Date dial guard |
| 810 781 | 810 782 | - | Date jumper lever |
| 868 781 | - | - | Date finger |
| *884 877 | *884 877 | *884 877 | Holding ring for dial |
| 962 781 | 962 781 | - | Intermediate wheel for calendar correction |
| 963 781 | - | - | Snap for day star with dial disk |
| 981 781 | 981 781 | - | Day-date correction wheel rocker |
| 4001 979 | 4001 979 | 4001 979 | Circuit block |
| 4002 782 | 4002 782 | 4002 781 | Coil block |
| 4146 970 | 4146 970 | 4146 970 | Step rotor |
| 4216 781 | 4216 781 | 4216 781 | Insulator for battery connecton |
| 4242 780 | 4242 780 | 4242 780 | Plus terminal for battery connecton |
| 4462 | 4462 | 4462 | Coil cover |
| 011 324 | 011 324 | 011 324 | Upper hole jewel for fifth wheel and pinion |
| 011 537 | 011 537 | 011 537 | Upper hole jewel for rotor |
| 011 537 | 011 537 | 011 537 | Lower hole jewel for rotor |
| 022 468 | 022 468 | 022 468 | Center wheel bridge screw |
| 022 468 | 022 468 | 022 468 | Third wheel bridge screw |
| 022 468 | 022 468 | 022 468 | Coil cover screw |
| 022 468 | 022 468 | 022 468 | Circuit block screw |
| 022 491 | 022 491 | 022 491 | Setting lever spring screw |
| 022 491 | 022 491 | - | Date jumper screw A |
| 022 754 | 022 754 | - | Date jumper screw B |
| 022 491 | - | - | Date finger screw |
| 022 754 | 022 754 | - | Date dial guard screw |
| 022 764 | 022 764 | 022 764 | Dial screw |
| 027 492 | 027 492 | 027 492 | Pin for plus terminal of battery connecton |
| MAXELL SR926SW SEIZAIKEN TR926SW | MAXELL SR926SW SEIZAIKEN TR926SW | MAXELL SR926SW SEIZAIKEN TR926SW | Battery |

★ Please see remarks on the reverse side.

Remarks:**Date dial**

★801 785 (Black figures on white background) for Cal. Y559A

Used for both the crown and calendar frame at 3 o'clock position.

If any other type of date dial is required, specify 1) Cal. No. 2) The crown position 3) The calendar frame position 4) Jewels and 5) Dial No.

★801 for Cal. Y558A

| | | |
|----------|------------------------------------|--|
| ★801 783 | Black figures on white background | Figures are printed on outside of date dial. |
| ★801 770 | Black figures on yellow background | |
| ★801 784 | Black figures on white background | Figures are printed on inside of date dial. |
| ★801 788 | White figures on black background | |
| ★801 789 | Black figures on yellow background | |

Holding ring for dial

The type of a holding ring for dial is determined based on the design of cases and dials.

Day star with dial disk

| | | |
|----------|-----------------------------------|--------------------|
| ★470 785 | Black figures on white background | English + Spanish |
| ★470 781 | Black figures on white background | English + Japanese |

Used for both the crown and calendar frame at 3 o'clock position.

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