TECHNICAL INFORMATION

CITIZEN QUARTZ Cal. No. 6700



(Cal. No. 6700)



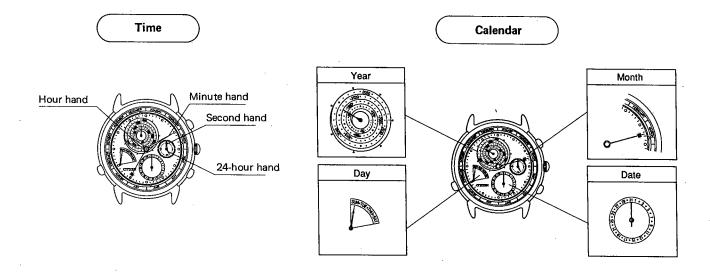
§1. USING THE WATCH

- Keep the crown pushed in to the normal position while the watch is used normally. If the watch is used with the crown pulled out, the lifetime of the battery is shortened. Also, keep the crown pushed in while the watch is not used.
- The calendar of this watch does not need to be adjusted at the end of each month and in each leap year, that is, it does not need to be adjusted at all as long as the watch is used normally.

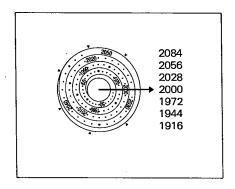
§2. SPECIFICATIONS

Caliber No.		6700-00A		
Туре		Analog quartz watch (Multi-hand)		
Module siz	ze (mm)	φ32.5 x 4.0 t		
Accuracy		±20 sec./month (at 5°C ~ 35°C)		
Oscillation	1	32.768 Hz		
Converter		Bipolar step motor (4 units)		
Integrated	circuit	C/MOS-LSI (One CPU and one for driving motor)		
Effective	temperature range	-10°C ~ +60°C (14°F ~ 140°F)		
Adjustme	nt of time rate	Trimmer condenser		
Measurem	ent of time rate	2 seconds		
Additional functions		 Hand-type calendar (Year, month, date and day) 24-hour system Automatic setting of date and day Fully automatic calendar Calling for calendar Callendar calling confirmation indicator Warning for incompletion of initial setting of calendar Second hand stopping device 		
Battery	Part No.	280-74		
	Battery code	SR936W		
	Size (mm)	φ9.4 x 3.6 t		
	Nominal voltage	1.55 V Nominal capacity 75 mAH		
	Lifetime	Approx. 3 years (The lifetime of the power cell depends on the frequency of calling the calendar. It will be about three years if the calendar is called 15 years a day or less frequently.)		

§3. WATCH DISPLAYS



Reading the year display



The year hand points to the years in its direction as shown at left. Under the Gregorian calendar, the years divisible by four are leap years. However, if a year is divided and its quotient cannot be divided by four, such as 1900, 2100, etc. it is not counted as a leap year but counted as a common year. Therefore, between the years 1901 and 2099, leap years occur once every four years, and each yearly calender repeats every 28 years.

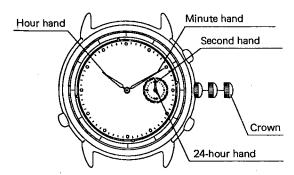
Since the year display has years (divisions) so that they appear at periods of 28 years, all the calendars of the years in the direction of the year hand are the same. (Example: 1916, 1944, 1972, 2000, 2028, 2056, 2084)

* The complete year display for the years 1901 – 2099 is enlarged and engraved on the back of the watch case for reference.

Notice on reading the month

The month hand may deviates from the correct position between the end of a month and the beginning of the next month. In this case, judge the end and beginning of those month by the position of the date hand.

§4. SETTING THE TIME



Pull out the crown to the second position to stop the second hand at the 12 o'clock position.

Turn the crown in either direction to set the time. The 24-hour display is synchronized with the hour hand. Use the 24-hour time display as a reference to confirm a.m and p.m. settings.

After the time is set, push the crown all the way into the normal position at the strike of a time signal.

* The calendar cannot be changed by changing the time. Even if the hands move to the next day while the time is set, the calendar remains the same, since the time is set independent of the calendar function.

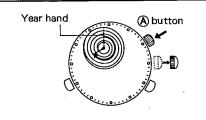
Notice To set correct times, move the minute hand 4 — 5 minutes past the desired time, and then return the minute hand to the desired time.

§5. SETTING THE CALENDEAR

1 Year settings

Pull the crown out to the first position.

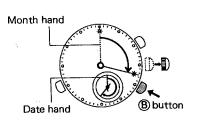
Press (A) to advance the year hand one year at a time. If it is pressed and held, the year hand is advanced quickly.



2 Month/Date settings

Keep the crown pulled out to the first position.

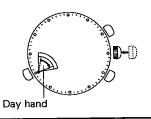
Press (B) to advance the date hand one day at time. If it is pressed and held, the date hand is advanced quickly. The month hand is synchronized with the date hand.



3 End of settings

Push the crown all the way into the normal position.

The day is set automatically in accordance with the month/date settings.



Notice



- Do not set the calendar between 11 p.m. and 1 a.m. Calendar settings during this period may not be correct.
- At the end of all calendar settings, be sure to push the crown into the normal position. The calendar will not function properly if the crown is left in the first position.

§6. CALLING UP THE CALENDAR

Any calendar between March 1, 1900 and Feb. 28, 2100 can be displayed on the watch.

1) Calling up the day of the week

Keep the crown at the normal position.

Choose a year, month and date.

Press (A) or (B) to choose a year, month and date.

Press (A) or (B) button to advance or return the date by one day. If either of them is pressed and held, the hand moves quickly.

The calendar year/month/date hands are synchronized with one another.

The day hand also moves together with the date hand.

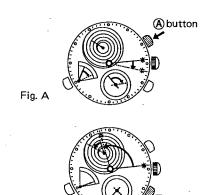


Fig. B

[Example]

What day is December 10, 1960?

The year display is repeated at the period of 28 years. The calendars of the years indicated by the year hand are the same ones.

[Example]

The calendars of 1932, 1960, 1988, 2016 — are the same.

Accordingly, move the hand to the desired calendar in the closer direction (in this case, press (A) to set the hand to December 10, 1984). (See Fig. B.)



Day of the week is called up.

If a year, month and date are chosen (the respective hands are set), the corresponding day is automatically called up.

You will find that December 10, 1960 is a Saturday.



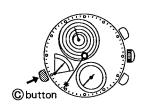
Bbutton



Returning to the current calendar

Press (C) to return to the current calendar.

* Even if © is not pressed, the calendar hands automatically return to the current calendar after about 30 seconds.



Notice



While the calendar is called up, the second hand advances 2 seconds at a time. When the current calendar is return to, the second hand returns to normal movement, and it advances 1 second at a time.

2) Calling up the month and date

Keep the crown at the normal position.

* Operate the buttons in the same way as calling a day of the week explained in 1).

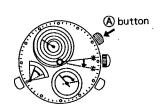
Choose a day.

Choose a day by pressing (A) or (B).

[Example]

Today is Tuesday, March 28. What date is the Saturday of the next week?

In this case, press (A) to move the day hand to the Saturday of the next week.



The month and date are called up.

If a day is chosen (the day hand is set), the corresponding month and date are automatically called up. (The year is also called up.)

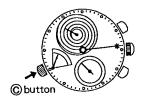
You will see that the Saturday of the next week is April 8.



Returning to the current calendar.

Press © to return to the current calendar.

Even if (C) is not pressed, the calendar hands automatically return to the current calendar after about 30 seconds.



Notice While the calendar is called up, the second hand advances 2 seconds at a time. When the current calendar is return to, the second hand returns to normal movement, and it advances 1 second at a time.

§7. IN LIKE THIS CASE

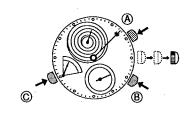
- The year hand moves rapidly counterclockwise. (Warning that initial calendar settings have not been completed.)
 - In this case, pull the crwon out to the second position, and perform initial setting of calendar in [2] and setting of the current calendar and time in [3] explained below.
- The calendar hands do not function properly.
 Perform "\$8. INITIAL MONITORING" to confirm the initial calendar setting.
 If the calendar is not set correctly, correct it according the following procedures [1], [2] and [3].

Notice When the battery is changed, the watch must be set correctly according to the following procedure, otherwise the watch will not function properly.

1 Perform all resetting.

Pull the crown out to the second position.

- 1) Press all the three buttons for two seconds or more.
- About one second after the buttons are released, the calendar hands begin movement. This complete the reset procedure.



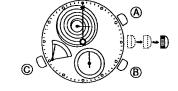
2 Set the calendar to initial position.

Set the calendar to December 31, 2000 (SUN).

- * Pull the crown out to the second position.
- 1) Set the year to 2000.

 Press the (A) button to advance the year hand one year at a time. If it is pressed and held, the year hand advances quickly.
- 2) Set the month and date to Dec. 31. Press

 B to advance the date hand one day at a time. If it is pressed and held, the date hand advances quickly. The month hand is synchronized with the date hand.
- Set the day to SUN.
 Press © to advance the day hand one day at a time.
 Repeat this until the hand is set to SUN.



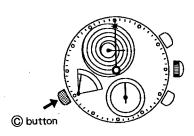
Note: When the calendar is set initially, the day hand may be positioned on the left side of SUN. This occurs only when the watch is set initially. The day hand is set to the normal position after the initial setting.

3 Set the current calendar/time.

See "§4. Setting the time" and "§5. Setting the calendar" in this instruction.

§8. INITIAL MONITORING

By this operation, it can be confirmed that the year, month, date and day of the calendar of this watch have been set correctly to the initial setting.



Keep the crown at the normal position.

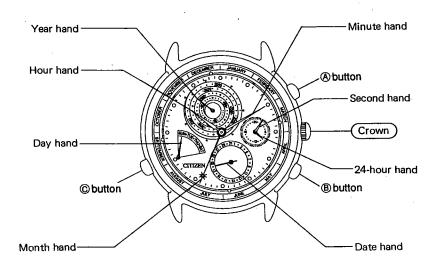
Press © for about 2 seconds, and all the calendar hands move quickly to December 31, 2000, SUN to confirm that the watch has been correctly set to the initial position.

Press © again, and the watch returns to the current calendar. Even if © button is not pressed, the watch automatically returns to the current calendar after about 30 seconds.

If the watch does not inidcate December 31, 2000, SUN by the above operation, the calendar will not work correctly. In this case, reset the watch according to procedures [1], [2] and [3] in "\$7. IN LIKE THIS CASE".

* "INI" of INI 2000-12-31 SUN" engraved along the periphery of the case back means the initial monitor.

§9. MAIN COMPONENTS AND OPERATION



Button Crown	Press (A) button.	Press (B) button.	Press © button.	Turn crown.
Normal position	Choose a year, month and date (day), and call up the day (month, date). The calendar hands turn clockwise.	Choose a year, month and date (day), and call up the day (month, date). The calendar hands turn counterclock- wise.	 Watch is forcedly returned to the current calendar. Initial monitoring. 	
First position	Year setting.	Month/date setting.	See Note.	
Second position				Time setting.

Note: If the month and date are set, the day of the week is set automatically, and © does not need to be pressed. If © is pressed, the day is changed. (The day is changed by one day every time (C) is pressed. The day cannot be changed quickly.)

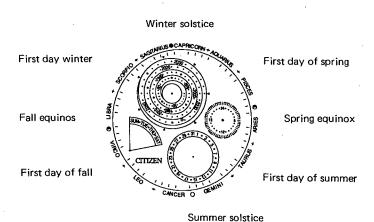


Notice If (A) or (B) is inadvertently pressed during operation, the second hand advances 2 seconds at a time (by the function of showing that the calendar is called up). In this case, press © to return the watch to the current calendar. The watch automatically returns to the current calendar after about 30 seconds even if © is not pressed.

§10. SPECIAL FEATURES

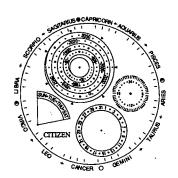
Some models of this watch can roughly show the following items. Use them for reference.

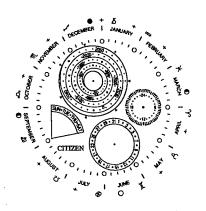
• The approximate dates of the spring and fall equinoxes, summer and winter solstices, first days of spring, fall, etc. can be determined using the calendar functions.



The dates of the equinoxes, solstices, etc. change from year to year.

• The constellation of this month and the approximate dates of the spring and fall equinoxes, etc. which are the representative twenty-four seasons of the old calendar are shown.





CAPRICORN .12.22–1.19	AQUARIUS 1.20-2.18) (PISCES 2.19–3.20	ARIES 3.21–4.19	TAURUS 4.20-5.20	GEMINI 5.21–6.21
69	\mathcal{S}	MP	4	M	1
CANCER 6.22-7.21	LEO 7.23–8.22	VIRGO 8.23–9.22	LIBRA 9.23–10.23	SCORPIO 10.24-11.22	SAGITTARIUS 11.23–12.23

§11. FITTING PROCEDURE OF HANDS

Perform all reset. Keep the three all-reset (A patterns (1 – 3) on the electronic circuit with a roal electrically connect the train wheel bridge [II] Intermediate year wheel Set the calendar. Set the calendar. 4 — 5 seconds after the all reset is confirmed, electrically connect the train wheel bridge [II] and the confirmed performed the confirmed performed to make the confi	Step	Explanatory illustration	Remarks
Reep the three all-reset (A patterns (1 – 3) on the electronic circuit with a rod call-reset, and electrically connect the train wheel bridge [III] Intermediate year wheel bridge [III] Set the calendar. 4 – 5 seconds after the all reset condition is reset. 4 – 5 seconds after the all reset condition is reset. 4 – 5 seconds after the all reset condition is reset. 4 – 5 seconds after the all reset is confirmed, electric connect switch (S) pattern the electronic circuit and train wheel bridge [III]. * Perform this operation find operating time of calendar, similarly to find changing time of date dial.	crown to the		Keep the crown pulled to the second position while fitting the hands to this watch.
Reep the three all-reset (A patterns (1 – 3) on the electronic circuit with a rod call-reset, and electrically connect the train wheel brill for more than 2 secondary. If the all-reset has been performed normally, the intermediate year wheel bridge [III] Set the calendar. 4 – 5 seconds after the all reset condition is reset. 4 – 5 seconds after the all reset is confirmed, electric connect switch (S) pattern the electronic circuit and train wheel bridge [III]. Perform this operation find operating time of calendar, similarly to find changing time of date dial.			
Set the calendar. 4 — 5 seconds after the all-reset condition is reset. 4 — 5 seconds after the all-reset condition is reset.			
dar. 4 — 5 seconds after the all reset is confirmed, electric connect switch (S) pattern the electronic circuit and train wheel bridge [II]. * Perform this operation find operating time of calendar, similarly to find changing time of date dial.		Train wheel bridge [II] Intermediate year	connect the train wheel bridge [II] for more than 2 seconds. * If the all-reset has been performed normally, the intermediate year wheel starts after the all-reset
dar. 4 — 5 seconds after the all reset is confirmed, electric connect switch (S) pattern the electronic circuit and train wheel bridge [II]. * Perform this operation find operating time of calendar, similarly to find changing time of date dial.	· .	ARCH	
reset is confirmed, electric connect switch (S) pattern the electronic circuit and train wheel bridge [II]. * Perform this operation find operating time of calendar, similarly to find changing time of date dial.			4 - 5 seconds after the all
			reset is confirmed, electrically connect switch (S) pattern on the electronic circuit and train wheel bridge [II]. * Perform this operation to find operating time of the calendar, similarly to find changing time of

Step	Explanatory illustration	Remarks
Adjust the position of the switch wheel.		Turn the crown forward to set the switch spring of the switch wheel near the switch end.
	Switch spring Switch terminal	
6 Assemble parts related to hour wheel.		Assemble the additional hour wheel, month wheel and dial washer.
6 Install the dial.		
· · · · · · · · · · · · · · · · · · ·		
7 Install the year hand.		Install the year hand in any position of year dial.

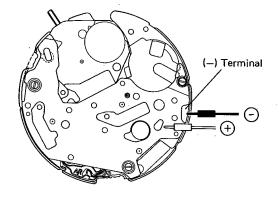
Step	Explanatory illustration	Remarks
Position the operating time of calendar.		1) Turn the crown forward, and stop when the year hand starts moving The year hand turns by 1/2 turn by quick moving operation.
		2) Slowly turn the crown backward, and stop when the year hand starts moving — The year hand turns by 1/4 turn by quick moving operation.
		3) Turn the crown forward, and stop when the year hand starts moving. The year hand turns by 1/2 turn by quick moving operation. The calendar operates at this position (time).
9 Install the day hand.		Install the day hand to "A" position of SAT.

Step	Explanatory illustration	Remarks
Install the 24-hour hand and second hand.		 Install the 24-hour hand to 24-hour position. Install the second hand at any position of scale.
Install the month hand.		Install the month hand to the position of December 31 (in the 12 o'clock direction).
1 Install the date hand.		Install the date hand to the position of 31st.
13 Install the hour and minute hands.		Install the hour and minute hands to 12 o'clock position.

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	Step	Explanatory illustration	Remarks
·	Confirm the operating time of calendar.		 Set the hour and minute hands to 23 hours by turning the crown backward. Slowly turn the crown clockwise, and confirm the time by the hour and minute hands when the year hand starts rotation.
	Install the module to the case.		
*			
. (Set the initial position of the calendar.		Pull the crown to the second
			 Set the calendar hand to December 31, 2000, SUN.> 1) Press (A) button to set the year hand to 2000.
		(a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	2) Press (B) button to set the month and day hands to December 31.
			3) Press © button to set the day hand to SUN. * The day hand may exceed the position of SUN. It does
			the position of SUN. It does not exceed during the normal use.
`			
	Set the hands to the current calendar and time.		
• •	·		

Illustration



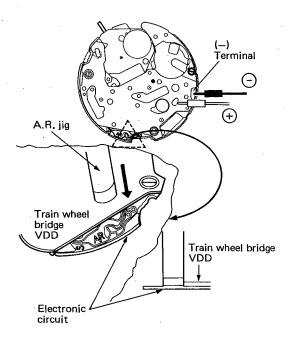
Explanation

When replacing the battery, remove one screw and remove the shield plate.

When replacing the battery, the watch power consumption must be measured, measurement is carried out with the module in the case.

Pull out the crown to the second position.

Set the tester for measuring current consumption, and apply the lead bars of the tester to (+) and (—) of the module. Keep the lead bars applied until the measurement is finished.



Keep the lead bars applied, apply the all-reset jig to the three AR patterns and train wheel bridge [II] for about 2 seconds to perform all-reset.

If the all-reset has been completed, the intermediate year wheel starts about 1 second after the jig is removed.

With the lead bars applied, press © button one time

With the lead bars applied, return the crown to the normal position.

Explanation

Read current consumption at this time. If there is no problem, set a new battery.

After the battery is replaced, the information in IC in the watch is not matched to the positions of the calendar hands.

To operate the calendar hands correctly, perform the initial setting operation for calendar.

Pull out the crown to the second position.

Press and hold the three buttons for more than 2 seconds to perform all resetting.

1 second after the buttons are released, the calendar hands start moving, and all resetting is completed.

Next, set the calendar hands to December 31, 2000, SUN for initializing the calendar.

Press (A) button to set the year to 2000.

Press (B) button to set the date to December 31.

Press © button until the day hand indicates SUN.

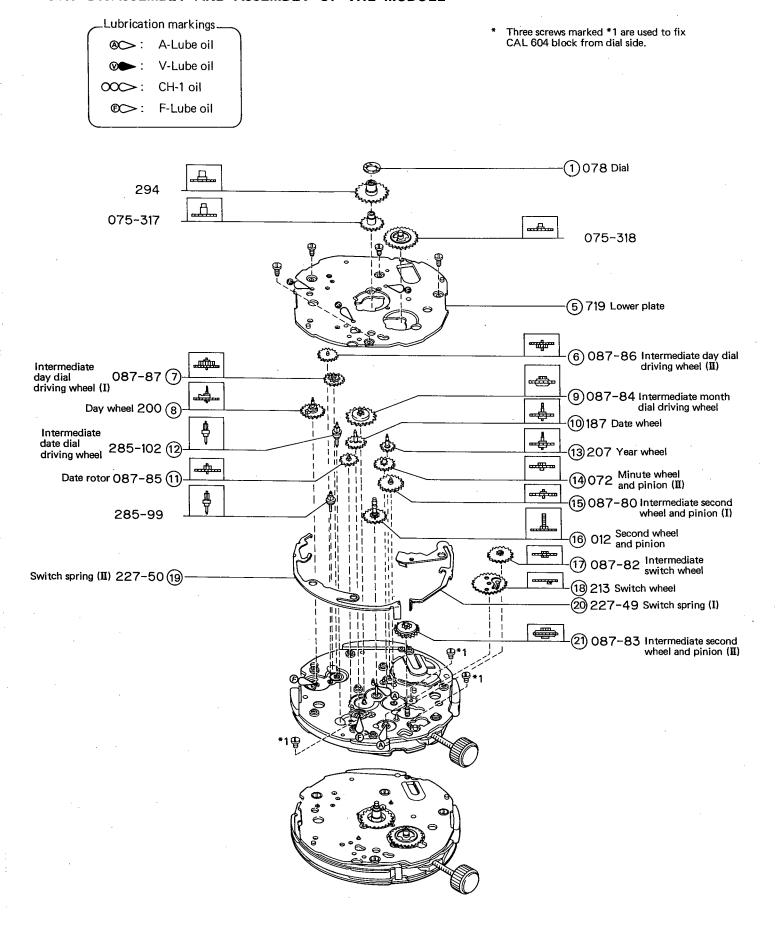
With the crown pulled out to the second position, set the time.

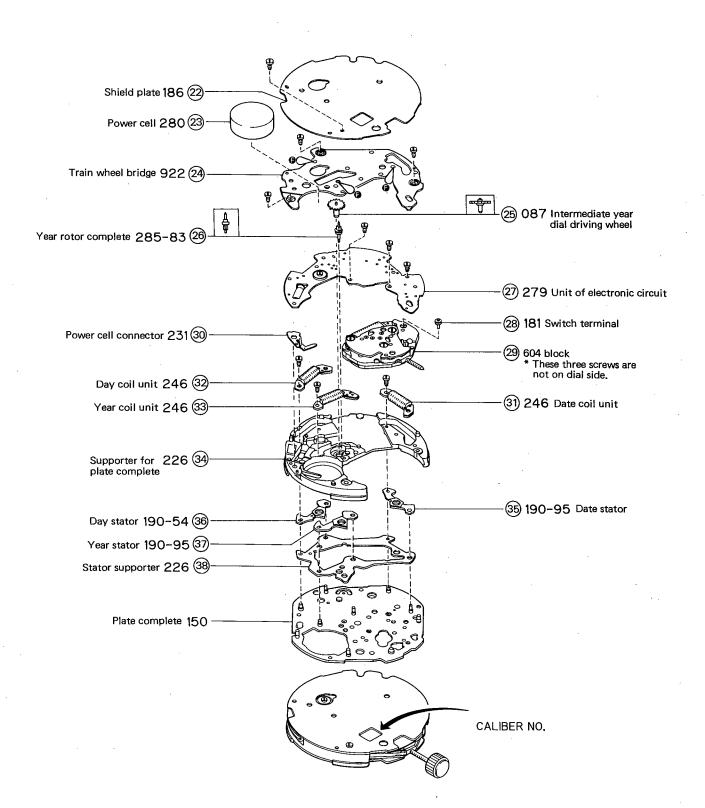
Push the crown into the normal position at the strike of time signal from radio etc.

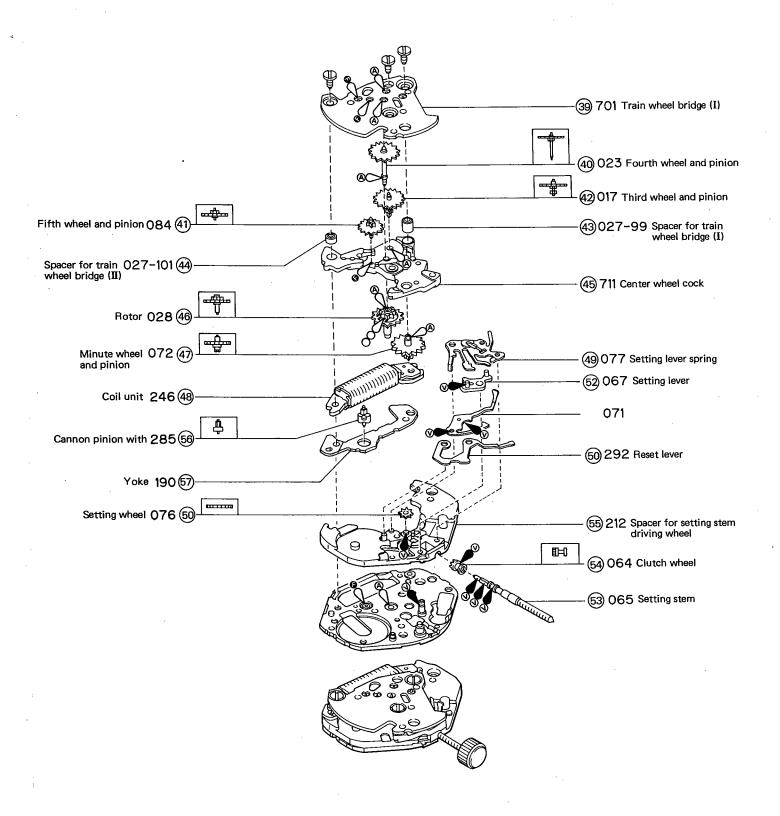
Pull the crown to the first position, and set the watch to the current calendar.

If the crown is kept pulled out to the first position, the calendar will not change.

§13. DISASSEMBLY AND ASSEMBLY OF THE MODULE

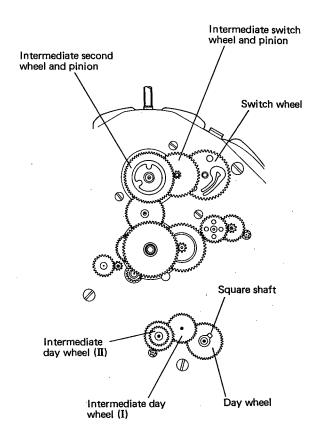




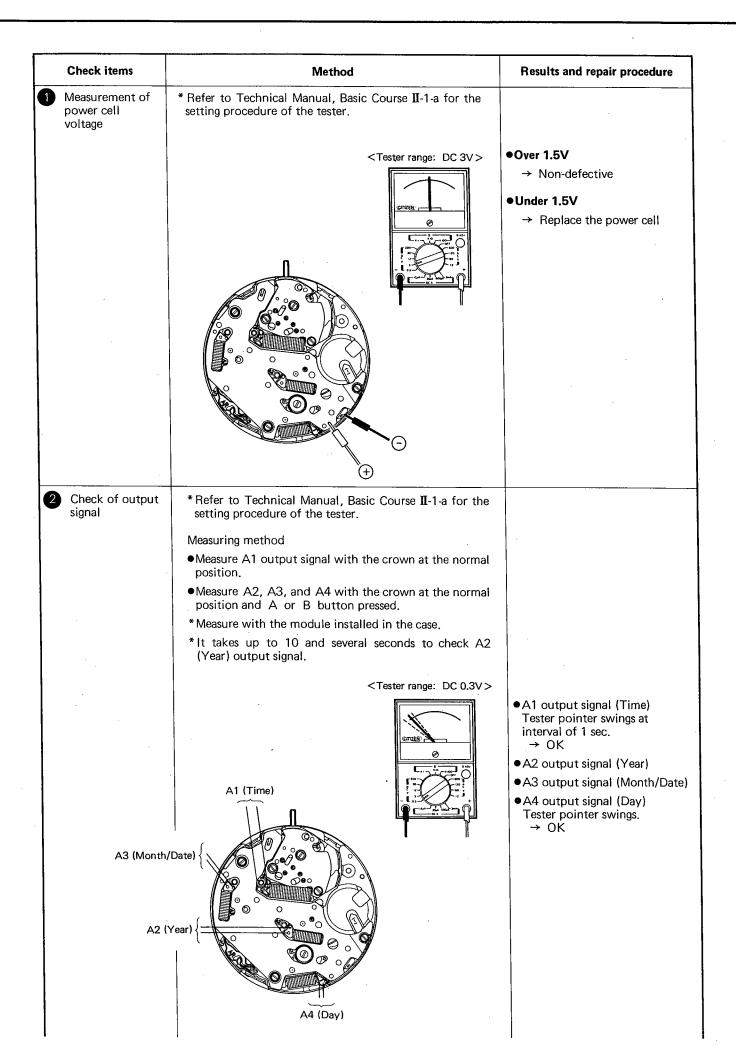


§14. PRECAUTIONS IN DISASSEMBLY AND ASSEMBLY

- 1) The day stator has one more round hole than other stators. The date stator and year stator are the common parts.
- 2) Since the intermediate second wheel and pinion is fitted by pressing, pry it up with the tip of a screwdriver when removing it.
- Install the switch wheel with the spring part down.
- 4) Both sides of the intermediate switch wheel and pinion are the same.
- 5) Install the day wheel with its top square shaft directed toward the shaft hole of intermediate day wheel (II).



8 FLOW CHART OF TROUBLESHOOTING AND ADJUSTMENT



Check items	Method	Results and repair procedure
Check of connection part	*Refer to the analog part of Technical Manual, Basic Course II-2-1. If the output signal cannot be obtained for checking, dust may be caught between electronic circuit unit and each part. When the fixing screws of the electronic circuit unit are loosened, the output signal may not be obtained. Tighten those screws securely.	●Dust and dirt → Remove
Measurement of coil resistance	* Refer to Technical Manual, Basic Course II-1-c for the setting procedure of the tester.	
	<tester range:="" x10ω=""></tester>	Resistance • Coil unit 2.1 kΩ ~ 2.5 kΩ → Non-defective • Year coil unit/Date coil unit/Day coil unit 2.0 kΩ ~ 2.4 kΩ → Non-defective
Check of train wheel	* Refer to Technical Manual, Baisc Course II-2-b. 1. Confirm all the gears are meshed smoothly. 2. Confirm reset lever works securely. 3. Confirm all the parts are properly lubricated.	
6 Check of dial side (calendar)	* Refer to Technical Manual, Basic Course II-2-c. If the calendar is not correct, press and hold C button for at least about 2 sec (with the setting stem at the normal position), and confirm the calendar hands indicate Dec. 31 2000 SUN to check their initial setting. (Refer to page 7/28.)	 ◆The calendar hands are not set to initial positions. → Correct by performing steps 1 , 2 , and 3 in page 7/28.

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Check items	Method	Results and repair procedure
7 Measurment/ adjustment of time rate	* Refer to Technical Manual, Basic Course II-2-d. Measure the time with CITIZEN QUARTZ TESTER and adjust it if necessary.	
	Measurement of time rate The major time can be measured with the tester in any range.	
	Adjustment of time rate Adjust the time rate with the trimmer capacitor.	
	Do not measure the time rate under the direct sunlight or incandescent lamp. If measured under them, the time rate may shift and may not be measured correctly.	
8 Check of calendar mechanism	* Refer to Technical Manual, Basic Course II-2-e. 1. Since the accuracy may be affected by the environment of the watch, confirm the using condition of the watch (Magnetism, extremely high or low temperature and humidity, impacts, etc).	
·	Confirm how many days have passed after the time was set last time.	
9 Measurement of current consumption	*Refer to Technical Manual, Basic Course II-1-f for the setting procedure of the tester.	
	<tester 12μa="" dc="" range:=""></tester>	●Under 3.1 μA
		→ Non-defective •Over 3.1 μA
	O TIZEN TO THE TIME TO THE TIM	 → Measure the electronic circuit unit separately. Measurement of the separate
		electronic circuit unit • Under 2.1 μA
		→ Non-defective Over 2.1 μA
	Power cell	→ Replace the electronic circuit unit.
	⊕	

Check items	Method	Results and repair procedure
	 *Precautions in measurement of current consumption 1 This watch is equipped with a load compensation circuit. This circuit adjusts the drive output according to the wave form obtained when the rotor rotates. This function works for 10 ~ 30 sec after the power cell is set. At this time, the current of about 1.7 μA is consumed, and "abnormal current consumption" is indicated. In this case, wait for at least 30 sec to measure correctly. 2 If the module is exposed to the light of an incandescent lamp or the sun, much current may be consumed. The light of a fluorescent lamp does not affect the current consumption. 	
10 Check of appearance and functions	 * Refer to Technical Manual, Basic Course II-2-f. 1. Confirm there is not dust, dirt, etc. on the dial. 2. Confirm the corwn works normally. 3. Pull the crown to the second click (C position), and confirm the second hand stops and the time can be set normally (Cal. No. 2850/2860). 4. Pull the crown to the first click (B position), and confirm the date and day can be set normally (Date only in case of Cal. No. 2860). 	

CITIZEN WATCH CO., LTD. Tokyo, Japan