TECHNICAL INFORMATION

CITIZEN QUARTZ

Cal.No.925※※

CITIZEN

§1. OUTLINE

This is a multi-function type digital quartz crystal watch for ladies, which is developed to follow Cal. No. 9110 with addition of the new functions of the stop-watch and the dual time.

§2. FEATURES

1) The easy-to-see display with a unique design plus a simplified operation in spite of the multi-function structure.

2) The movement features a reduced number of component parts which are collected with just two pieces of screws, thus facilitating an easy disassembling and assembling.

3) The fully automatic calendar including the leap years (years possible to set up to 1970~2009).

4) About 2 years of the power cell life (with lamp lighting of about 5 sec. per day).

5) With the illumination lamp

§3. SPECIFICATIONS

Caliber No.		9250A
Movement		Size : 17.6mmϕ
		Thickness : 4.73mm
Oscillation		32,768Hz
Accuracy		±15 sec./month at normal temperatures
Display system		Matrix-driven FE twist type nematic liquid crystal display
Display information	Time display	Hour, minute, second and "A/P" mark
	Calendar display	Month, date, day, year (at setting time) and "DATE" mark
	Stopwatch	Minute, second and 1/100 sec. (up to 19'59"99). Hour, minute and second (up to 11:59'59" after 20 min.) With "LAP" and " 🏁 " mode marks
	Dual time	Hour, minute "A/P" and " 🌍 " mode marks
Effective temperature range		0°C ~ +60°C (+32°F ~ 140°F)
Integrated circuit		C/MOS-LSI (1 unit)
Adjustment of time		By trimmer condenser
Additional devices		•Stopwatch •Dual time •Instant manual return •Fully automatic calendar (incl. leap years), years set up to 1970 ~ 2009 •Lamp
Power cell		Silver oxide power cell : 1 unit Parts No. : 280–13 Nominal voltage : 1.55V Capacity : 45mAH Size : 7.9mmϕ x 3.6mm Life time : About 2 years

§4. HANDLING INSTRUCTIONS (The flashing areas are shown in the red color.)

1) Nomenclature of each part

Ⓛ Light button: For lamp lighting, instant manual return and start/stop of stopwatch

Ⓜ Mode button: For changing of functions

Ⓡ Read/set button: For switching/correction of display plus lap and reset of stopwatch

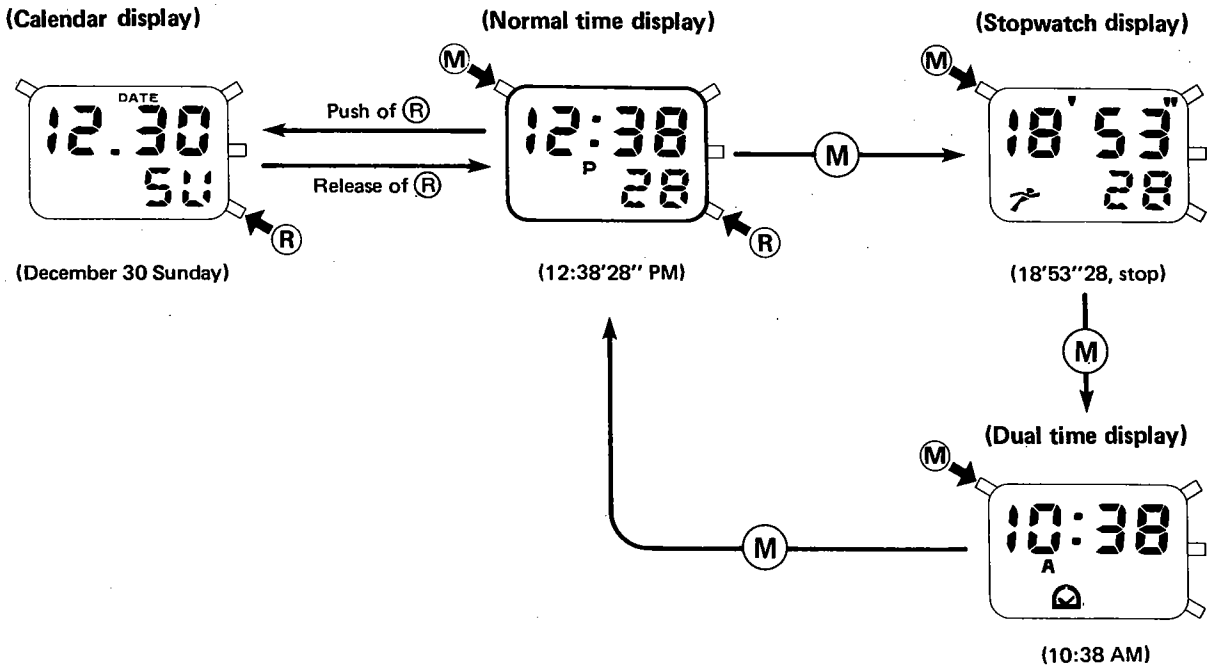
Ⓢ Select button: For selection of correcting digit

Stopwatch mode mark

Dual time mode mark

LAP Lap of stopwatch and A (AM)/P(PM) of time display

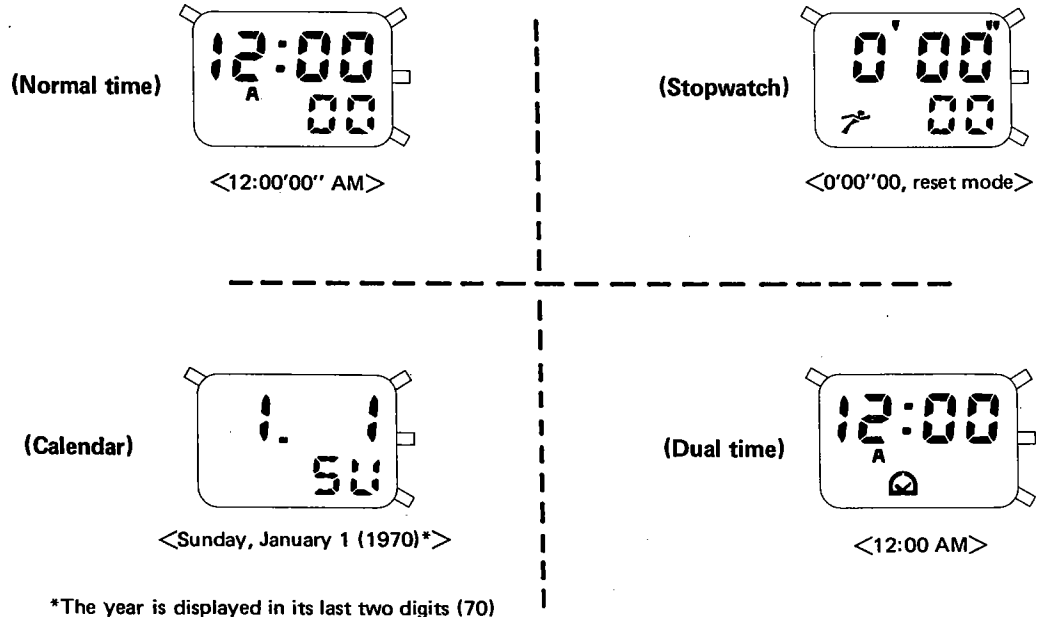
2) How to switch and read display



The calendar is displayed while Ⓡ button is pressed in the normal time display with every push of Ⓜ button in the normal time display, the display changes in that order:

normal time → stopwatch → dual time → normal time

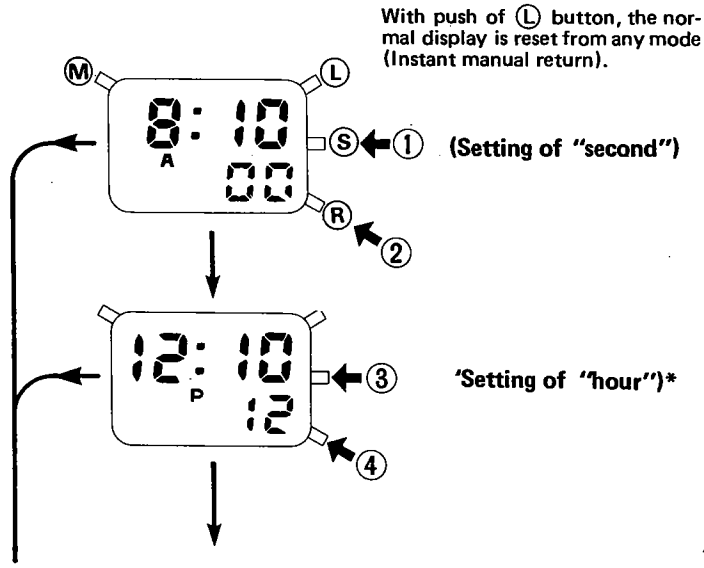
(Note) The displays are as follows after replacement and reassembling of the power cell.



*The year is displayed in its last two digits (70) in the display column of the "second" when the calendar is corrected. So set the correct year.

3) How to set time and calendar

With push of Ⓢ button, the area to be corrected is called out. And then Ⓡ button is pushed to correct the display. (The area to be corrected has flashing as shown by ◌ mark.)
The setting is carried out in the sequence of ① → ⑮ as shown next page. (For the individual setting of a certain digit, Ⓢ button is pushed several times to call out the digit to be corrected and then Ⓡ button is pushed for correction.)

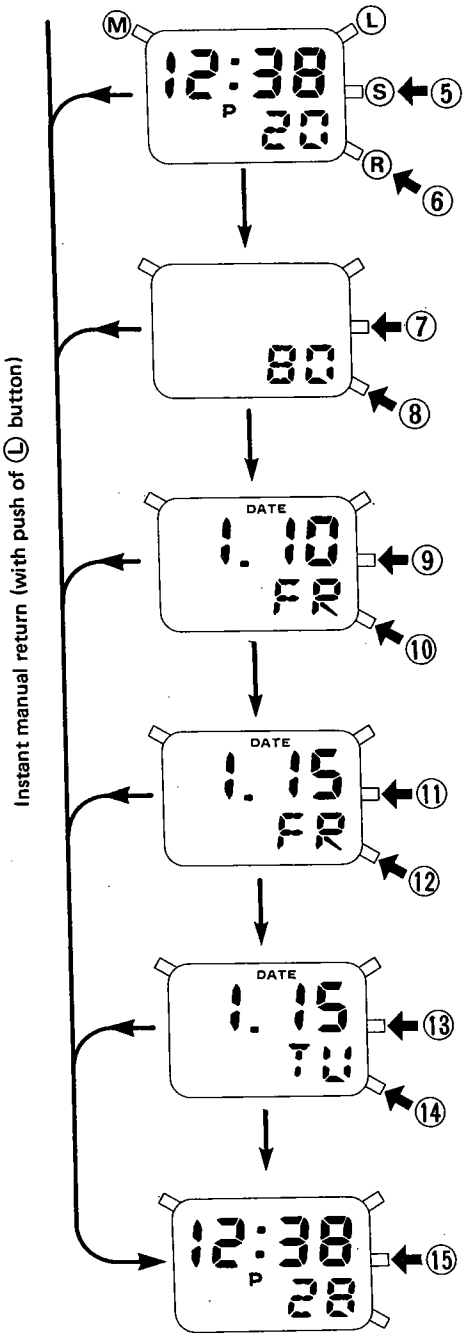


① With push of Ⓢ button, under the state of the normal time display the "second", flashes.

② With push of Ⓡ button, the time is reset to "0–second".
(The "minute" is carried when the "second" reads 30 ~ 59.)

③ With push of Ⓢ button, the "hour" and "A" or "P" have flashing.

④ With push of Ⓡ button, the "hour" is carried by one. Make sure "A" (AM) or "P" (PM).



(Setting of "minute")*

(Setting of "year")

(Setting of "month")

(Setting of "date")

(Setting of "day")

(Normal time display)

⑤ With push of Ⓢ button, the "minute" flashes.

⑥ With push of Ⓡ button, the "minute" is carried by one.

⑦ With push of Ⓢ button, the last two digits of the "year" are displayed in the column of "second" (in a cycle of 1970 ~ 2009).

⑧ With push of Ⓡ button, the "year" is carried by one.

⑨ With push of Ⓢ button, the "month" has flashing.

⑩ With push of Ⓡ button, the "month" is carried by one.

⑪ With push of Ⓢ button, the "date" flashes.

⑫ With push of Ⓡ button, the "date" is carried by one.

⑬ With push of Ⓢ button, the "day" has flashing.

⑭ With push of Ⓡ button, the "day" is set in the first two alphabet letters for each day of the week.

⑮ With push of Ⓢ button, the normal time display is reset.

*The Citizen digital watches usually feature the time setting sequence as "second → minute → hour". With this caliber, however, the different sequence is applied as "second → hour → minute".

4) Operation of stopwatch

(1) Display marks of stopwatch

Stopwatch mode mark

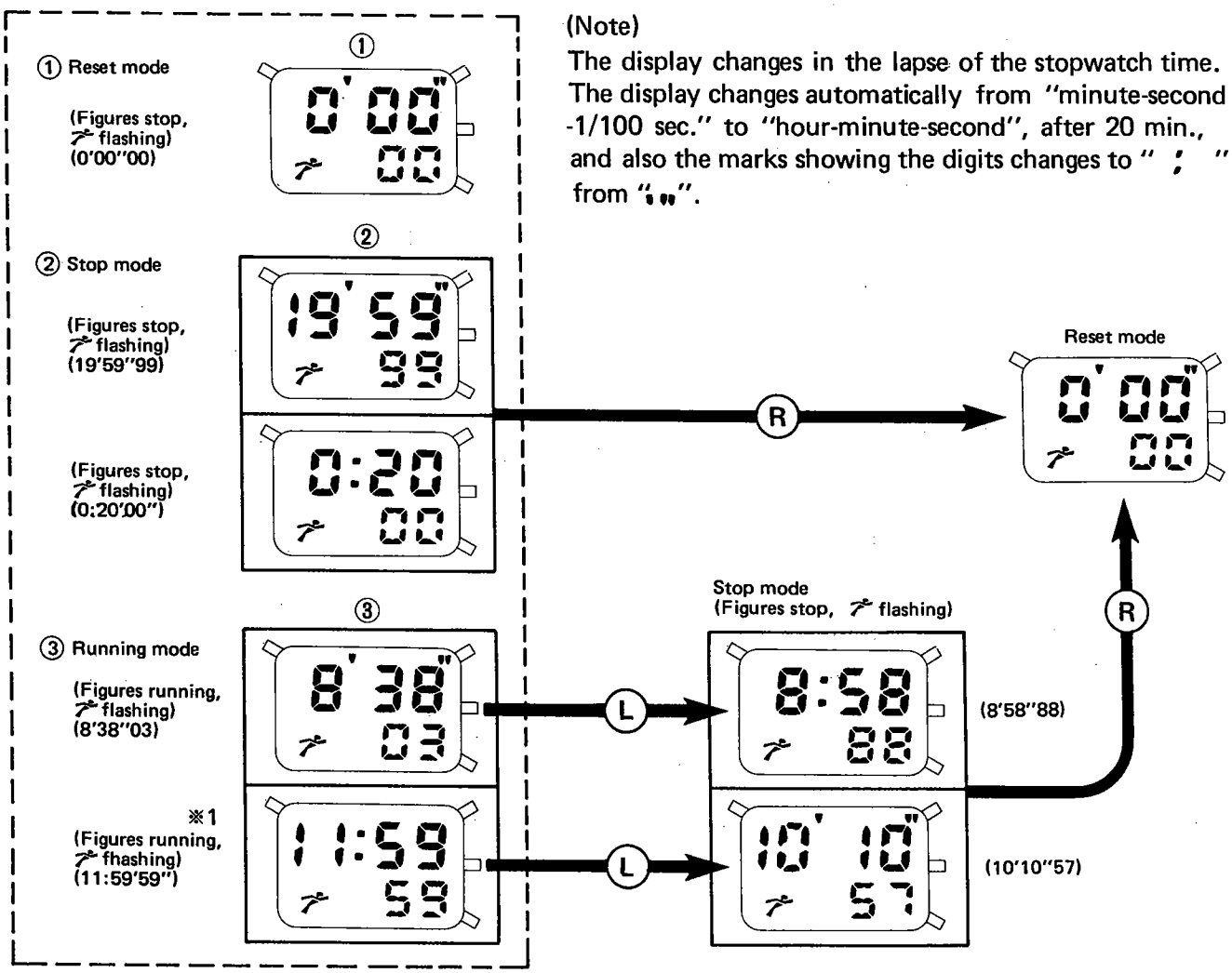
LAP Lap mark (no flashing at lap stop)

' " Display up to 0~19'59"99. The digits of "minute" and "second" are indicated by "'" and "" ", respectively with only figures for the time display of "1/100 sec.".

: Displayed between "hour" and "minute" as identical to the normal time display up to 20 min. ~ 11:59'59".

(2) Resetting method (The resetting must be given for use.)

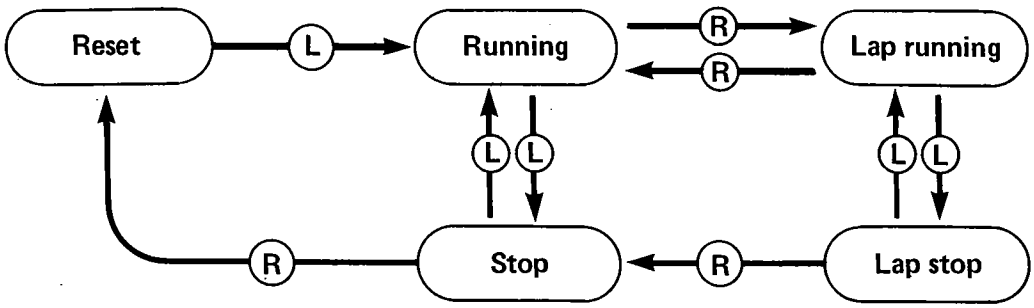
The display when the normal time display is switched to the stopwatch mode indicates the state given by switching the stopwatch mode to another mode. However, in case the stopwatch mode is switched to another mode under the lap running or lap stop state, the lap mode is cancelled to change the lap running and lap stop states to the running and stop states respectively. Thus the three modes of the reset, stop and running modes are displayed as shown below within the dotted-line box.



(Note)
The display changes in the lapse of the stopwatch time. The display changes automatically from "minute-second -1/100 sec." to "hour-minute-second", after 20 min., and also the marks showing the digits changes to " : " from "' "".

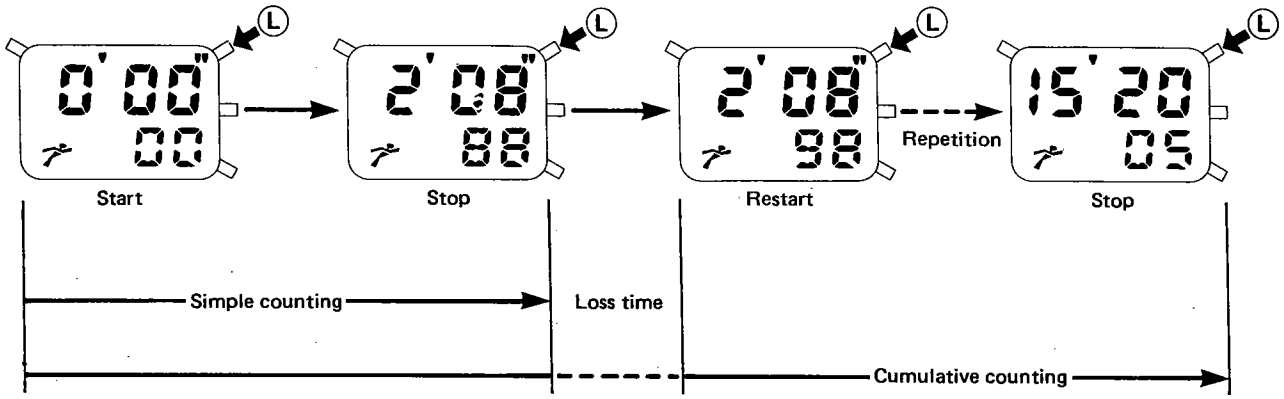
※1. As the count time exceeds 12 hours by the stop, the counting is given again from the reset mode.

(3) Switching to each state of display under stopwatch mode

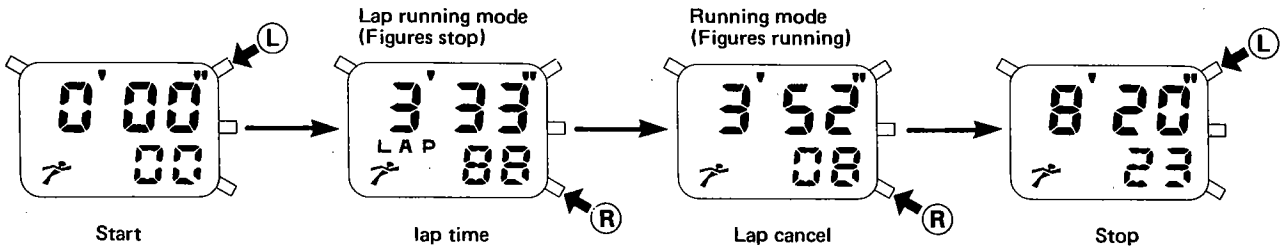


(4) Simple/Cumulative counting method

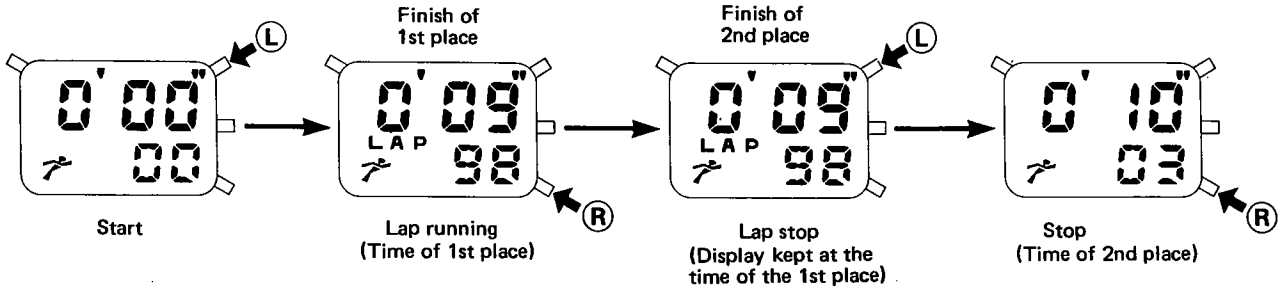
With every push of Ⓛ button, the start and stop are repeated alternately for timing. Thus the cumulative timing is possible continuously up to 11:59'59". After this, the display returns to the reset mode again to have the next start, which is repeated until the stop mode is given.



(5) Timing of lap time (par-way time)



(6) Timing of 1st and 2nd places



*In case the stopwatch is under the running state in the normal time display mode, the mode mark of the stopwatch is displayed.

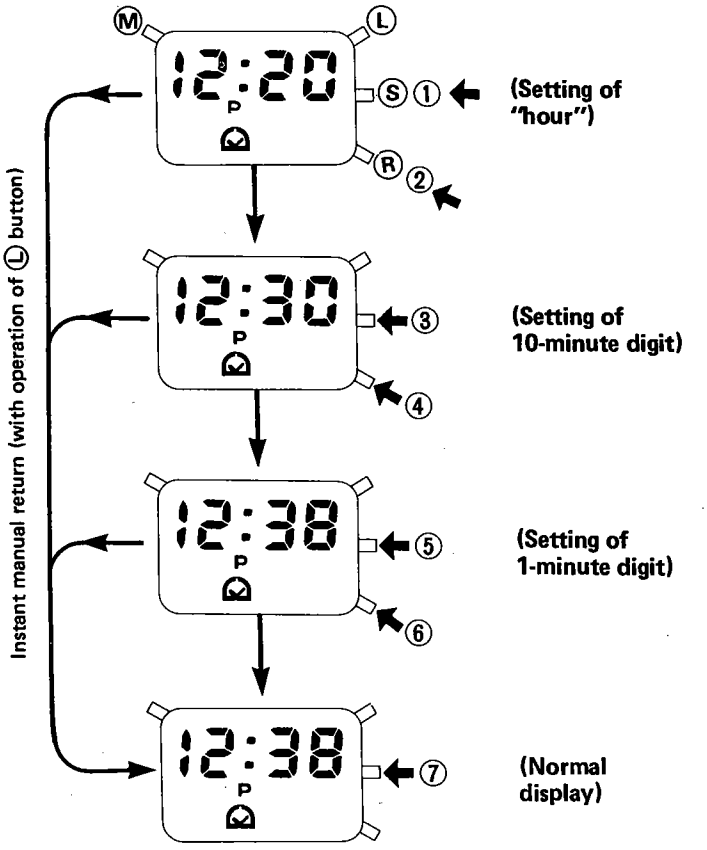
5) Operation of dual time

(1) Call-out of dual time mode and reset to normal time display

With push of Ⓜ button twice in the normal time display mode, the display is switched to the dual time mode via the stopwatch mode. And with push of Ⓜ button once in the "normal display" of the dual time, the normal time display is reset.

(2) Setting of time

With push of Ⓢ button, the area to be corrected is called out. And then Ⓡ button is pushed to carry out the correction of time (in sequence of ① → ⑦).



① With push of Ⓢ button, the "hour" plus "A" or "P" have flashing.

② With push of Ⓡ button, the "hour" is set by making sure of "A" (AM) or "P" (PM).

③ With push of Ⓢ button, the "10-minute digit" flashes.

④ With push of Ⓡ button, the "10-minute digit" is set.

⑤ With push of Ⓢ button, the "1-minute digit" flashes.

⑥ With push of Ⓡ button, the "1-minute digit" is set.

⑦ With push of Ⓢ button, the normal display of the dual time is reset.

Note

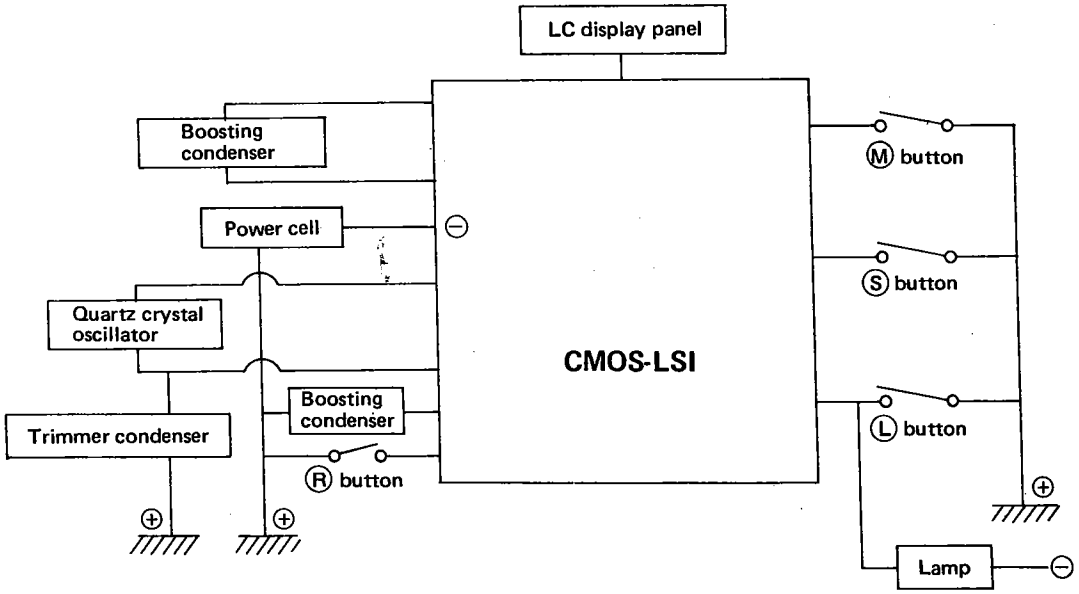
*In case the "non-existing" date is set when correcting the time and calendar, the date is kept on display even after switching to other displays. So the non-existing date must be corrected to the right calendar display.

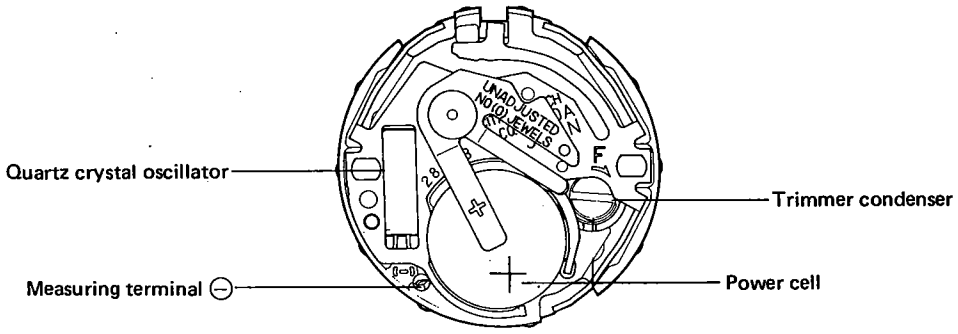
(Ex.) 1979 ← (The year is displayed only at the correcting time of the time and calendar.)

February 29, 1979	→	February 29
1980 (Leap year)		(Nonexisting date
Calendar setting		Calendar display

*The illumination lamp goes on with push of Ⓛ button in any mode (including the correcting mode).

§5. Constitution of Circuit

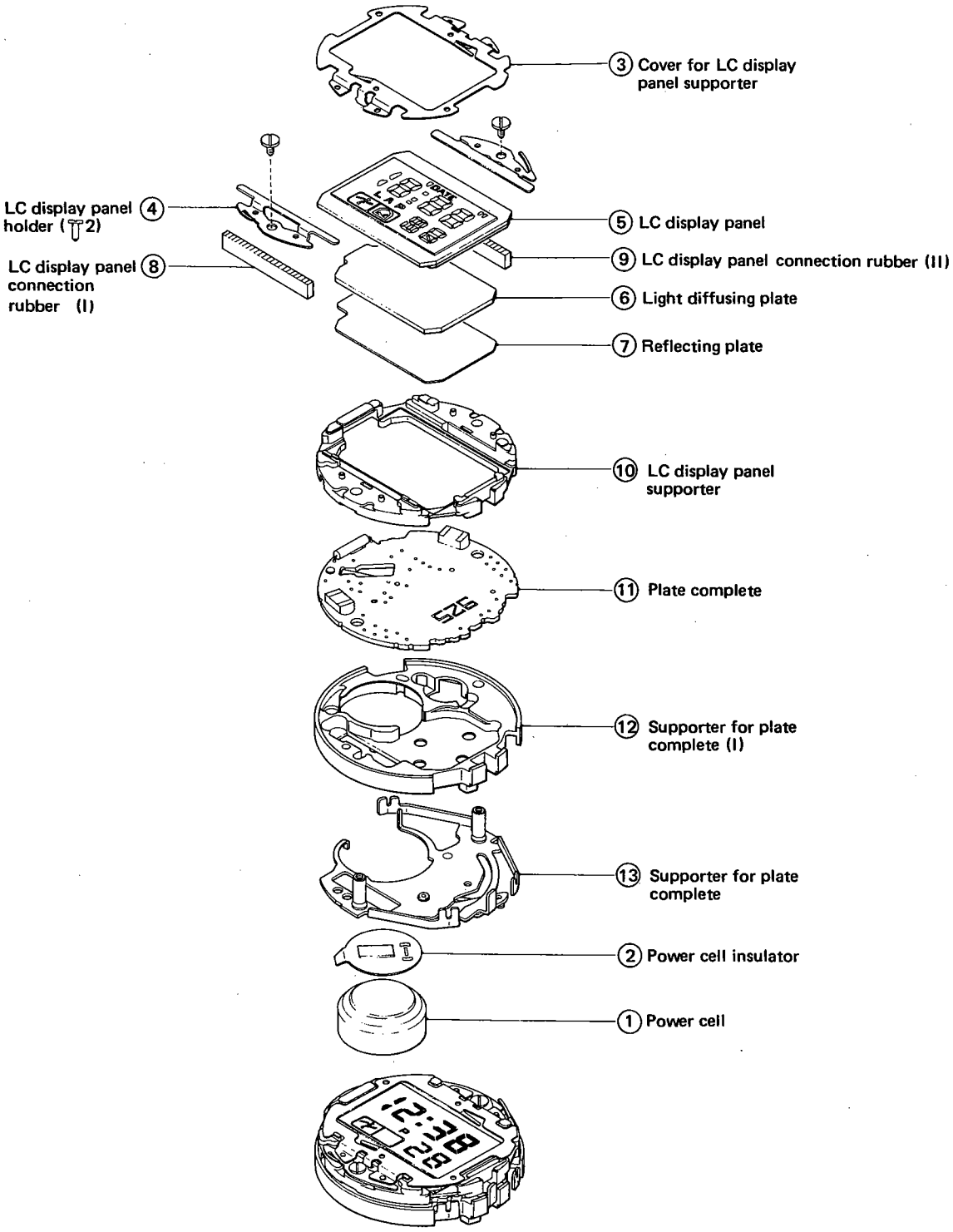




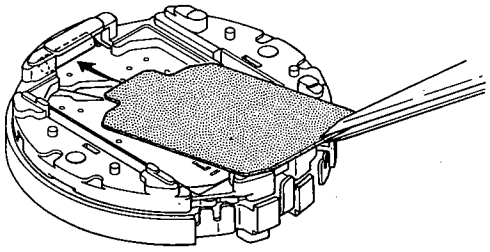
§ 6. Disassembling/Assembling Sequence of Movement

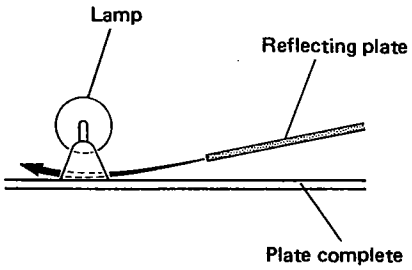
Disassembling sequence: ① ~ ⑬
Assembling sequence: ⑬ ~ ①

*Refer to the next page for handling of the reflecting plate and the power cell strap.



■ **Handling of refelcting plate**

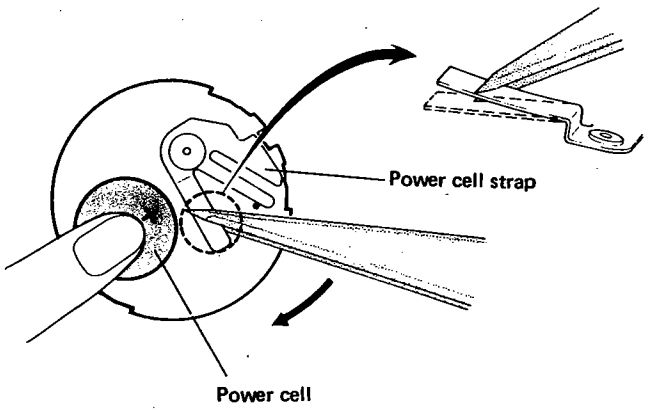


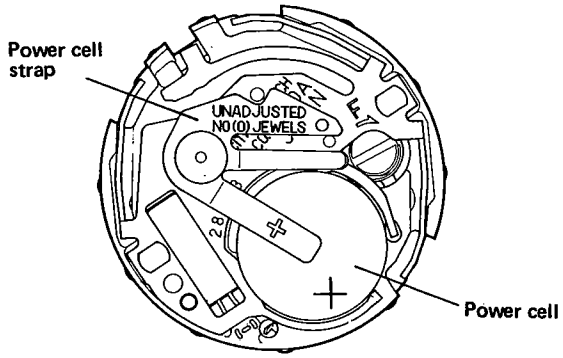


The reflecting plate is incorporated by sliding it under the lamp as illustrated above by holding softly the utmost fringe area of the plate.

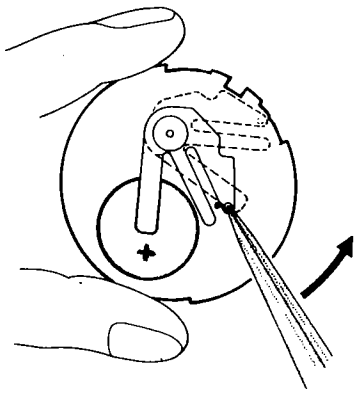
■ **Handling of power cell strap**

The power cell strap is not holding the power cell in the completed watch. Thus the power cell must be fixed with the power cell strap as illustrated below when the measurement of the time rate and others are carried out with the single unit of the movement.





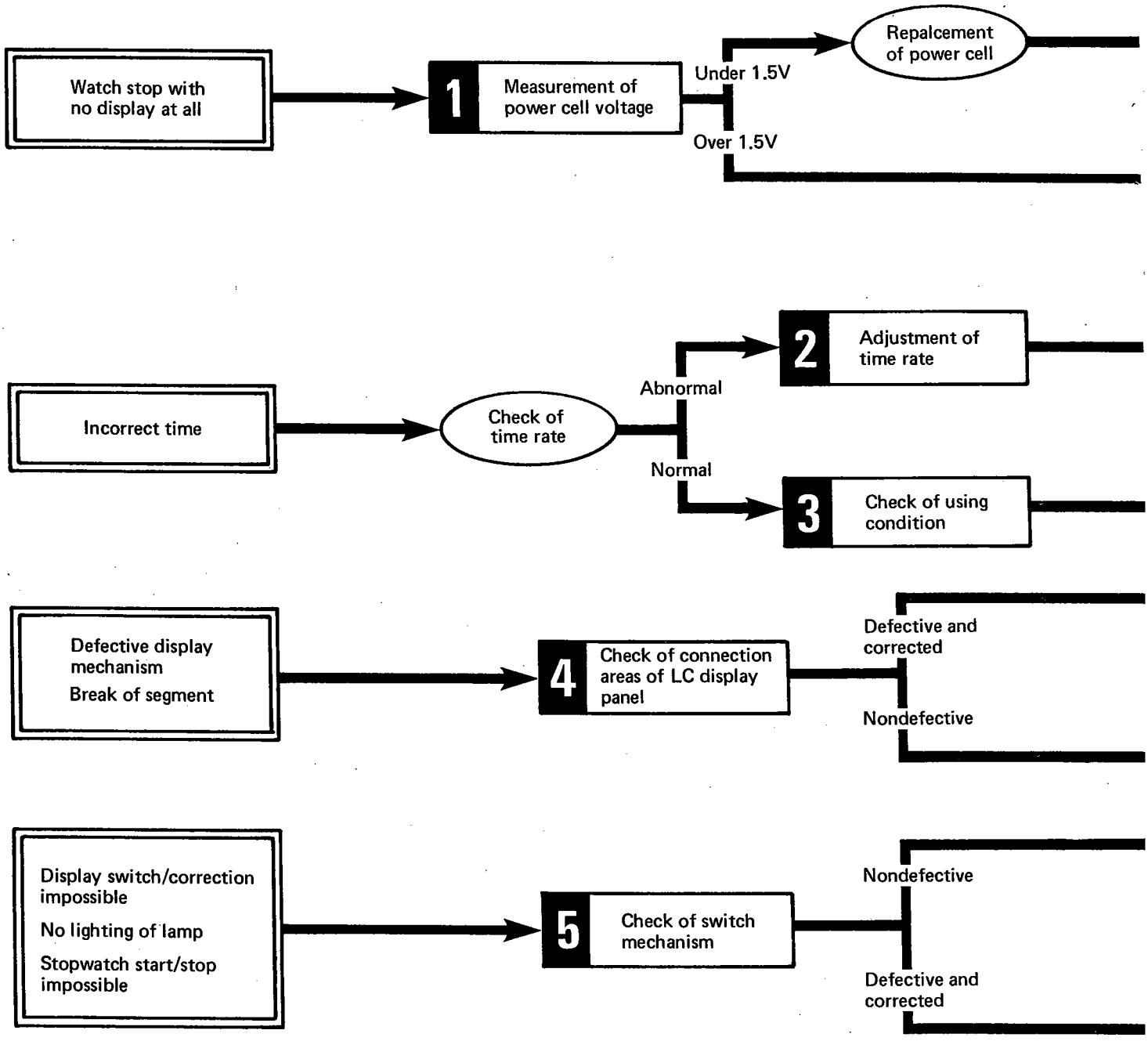
The power cell is put into the movement by turning it toward its center part and lifting up the dotted circle area of the power cell strap as shown in the above diagram.



The power cell can be removed by putting the tip of a tweezers into the hole of the power cell strap and turning the strap toward the arrow while holding the power cell.

§7. Troubleshooting and Adjustment

Flow chart of troubleshooting and adjustment



Display

No display

Replacement of plate complete

Adjustment impossible

Adjustment possible

Replacement of plate complete or LC display panel

Replacement of plate complete

Common checking items

6 Measurement of power cell voltage

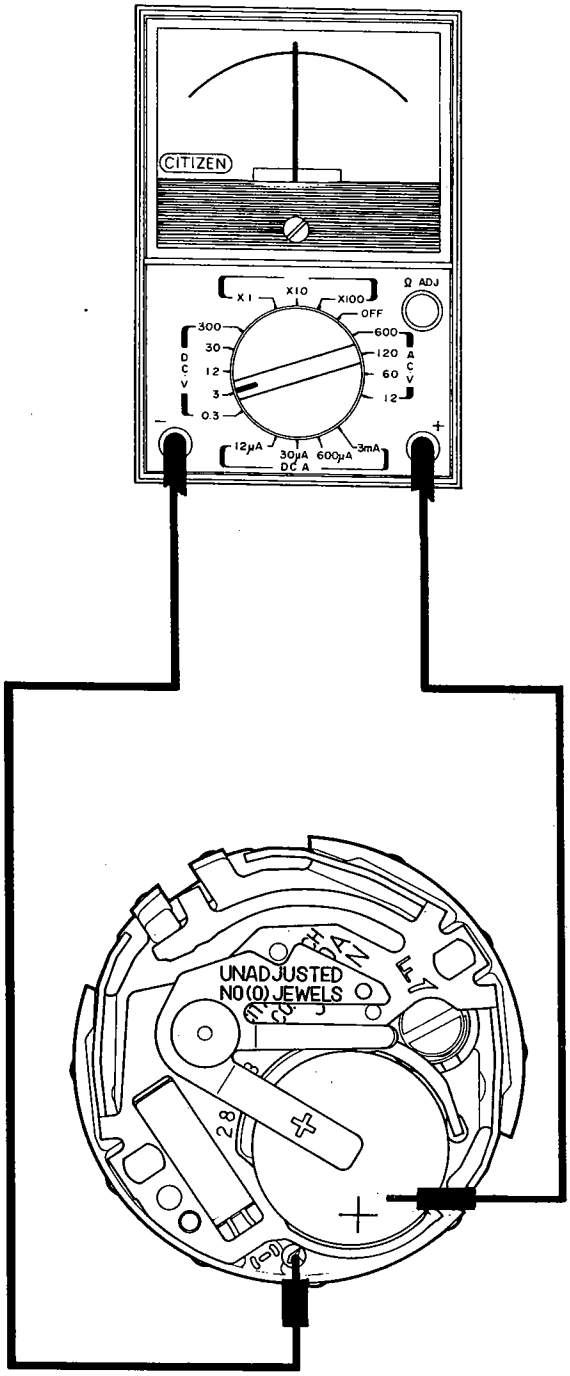
7 Measurement of power consumption

8 Adjustment of time rate

9 Check of appearance functions

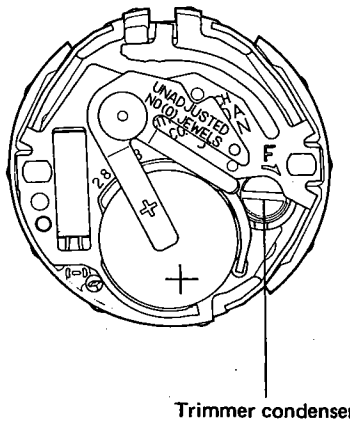
Completion

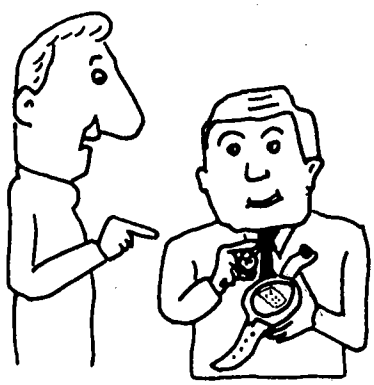
Watch stop -- No display at all

Checking items	How to check	Results & treatment
1 Measurement of power cell voltage		**Over 1.5V** → Replacement of plate complete **Under 1.5V** After replacement of power cell: • Display of LC display panel → 7 Measurement of power consumption • No display of LC display panel → Replacement of plate complete In case the watch has been used more than two years, must be replaced with new one although it shows move than 1.5V output.

• In case the readings is unsteady or shows OV with the power cell incorporated although the output of more than 1.5V is shown through the measurement with single unit of the power cell, an incomplete contact is suspected between the cell's minus (−) face and the power cell connector spring. So that a careful inspection must be given to the dust, stains or other foreign matters sticking to these contact areas.

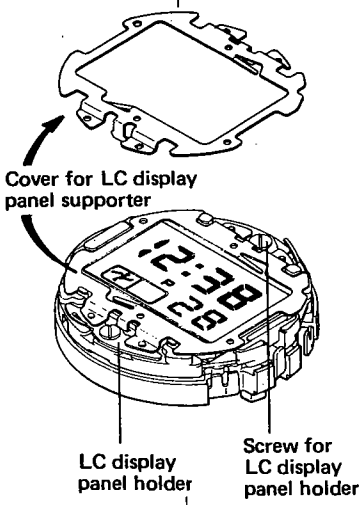
Abnormal time rate

Checking items	How to check ←	Results & treatment
2 Adjustment of time rate	This time rate is adjusted by turning the trimmer condenser.  In case the time adjustment is impossible even by turning the trimmer condenser, the quartz crystal oscillator may have some defect. And if the time rate has no change at all, the trimmer condenser may be defective.	•Adjustment possible → Common checking items •Adjustment impossible → Replacement of plate complete

Checking items	How to check	Results & treatment
3 Check of using condition	The check is given to how the user has been used his watch about the following points. • Whether the watch has been handled in a wrong way or not. • Whether the watch has been used outside the effective temperature range or not. • How many days have passed since the time was set last. • And other factors. 	

Incomplete functioning of display mechanism – Partial break of segment

Checking items	How to check	Results & treatment
4 Check of connection areas of LC display panel	Break of segment: ① Unsteady contact between LC display panel and electronic circuit ② Defects of LC display panel or electronic circuit The break of the segment is caused by ① more than ②. Thus the following points must be checked carefully. 1. Check of LC display panel holder and its related parts	



Before removal of the cover for LC display panel supporter, the check must be given first whether it is set in a correct way and has not some malformation or breakdown.

1) Whether the screws for LC display panel holder have some breakage or looseness.

Screw broken → To be replaced

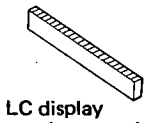
Screw loosened → To be tightened again

2) Whether the LC display panel holder is holding even the LC display panel and whether the LC display panel holder has some malformation.

Panel holder holding panel unevenly → To be set again

Malformation given to panel holder → To be replaced

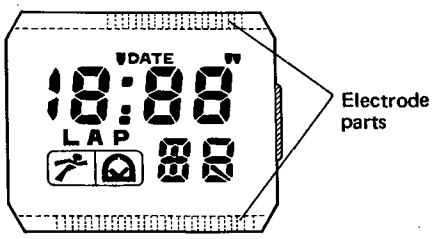
2. Check of LC display panel connection rubber. Whether the rubber is twisted, worn or stretched out extremely or whether some dust or stains are sticking to the rubber.



Rubber twisted, worn or stretched out → To be replaced

Dust or stains sticking to rubber → To be removed

3. The careful check must be given to the electrode part of the LC display panel at the area of the segment break whether some dust or stains are sticking to the electrode part or the electrode part has some crack.



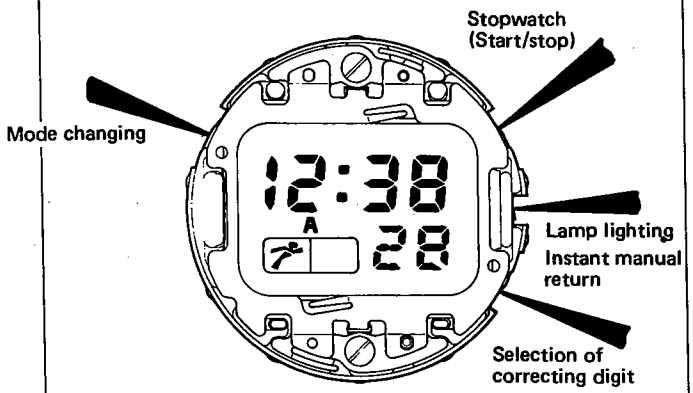
Dust or stains sticking to electrode part → To be removed

Nothing wrong perceived → Replace LC display panel, even after which trouble is not solved.

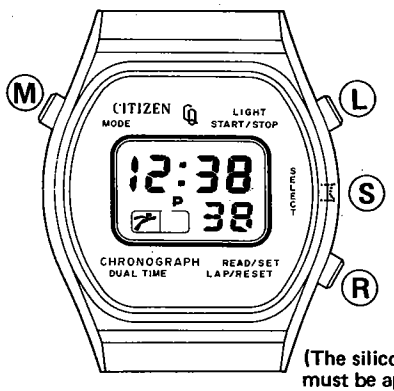
→ Replacement of plate complete

Incomplete functioning of additional mechanisms – Display correction impossible

Checking items	How to check	Results & treatment
5 Check of switch mechanism	1. Make sure whether each function has the correct operation by pressing via the tweezers the switch spring corresponding to each push-button in the state of the movement.	Nothing wrong with operation (No trouble in movement) → 2. Check of push-buttons Something wrong with operation → 3. Check of switch spring mechanism No lighting → 4. Check of lamp

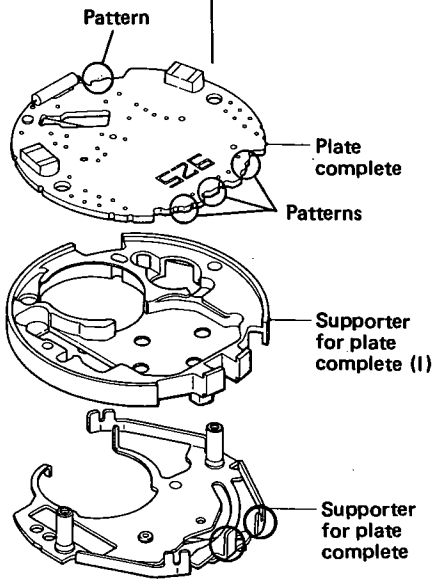
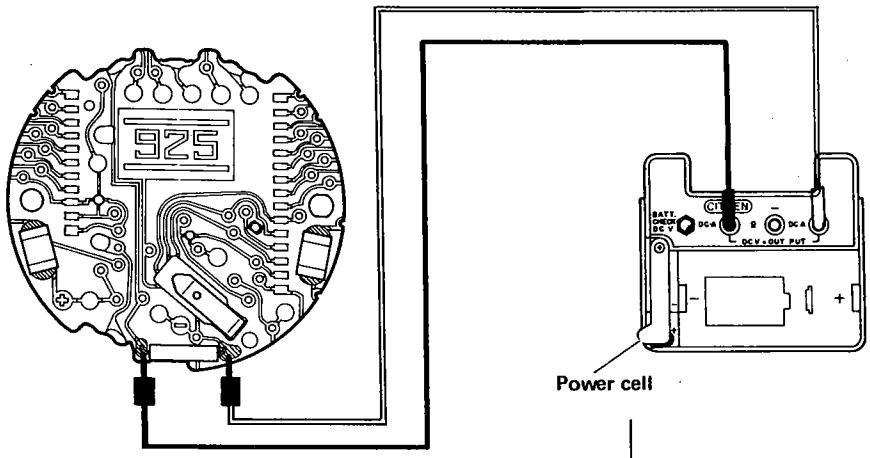


2. Check of push-buttons
In case no defective operation is detected through the check in the state of the movement, the push-button may have some defect.



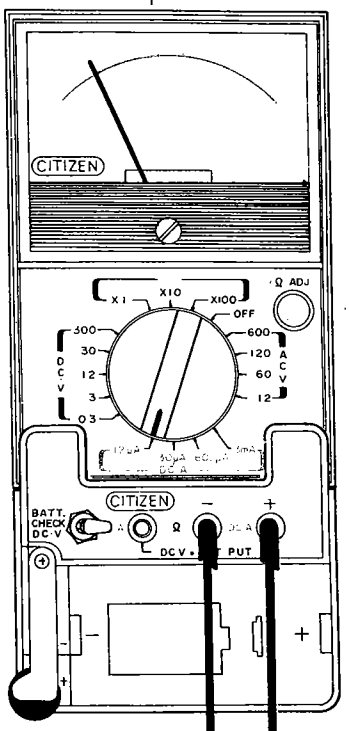
(The silicon oil must be applied to the O-ring of the push-button.)

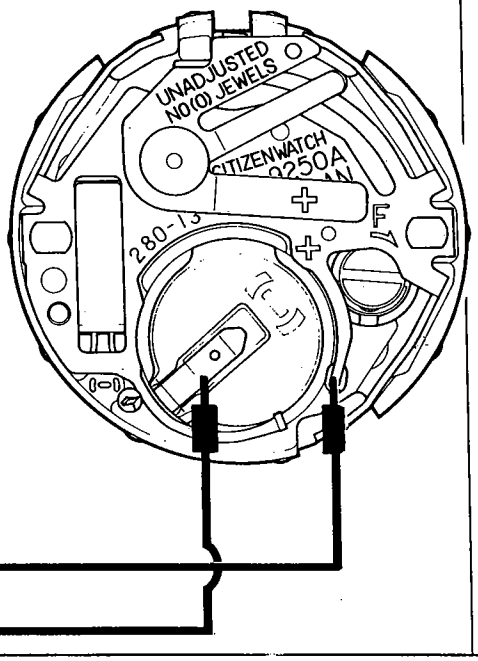
- Whether some dust or stains are sticking to the push-button or the area of the case where the push-button is removed.
  → Dust or stains sticking → To be removed
- Whether the push-button has some malformation or breakage.
  → Push-button deformed or broken → To be replaced
- Make sure whether the smooth operation is secured after setting the push-button to the case.

Checking items	How to check	Results & treatment
	3. Check of switch spring mechanism	
	•Whether each switch spring has some malformation or breakage. •Both the supporter for plate complete (I) and the plate complete are set into the supporter for plate complete. Then the center part of the plate complete is pressed lightly by the finger with fingerstall, and at the same time each switch spring is pushed with the tweezers or the like in order to check whether a correct contact is secured between each switch spring and the pattern of the plate complete.	Spring deformed or broken → To be replaced No defect detected → Replacement of plate complete
	4. Check of lamp In case no detected through checks of above 2. and 3. with no lighting of the lamp, the following point must be checked. •As illustrated right, the lead terminals of the tester are applied to the both ends of the lamp attached to the plate complete by means of the adaptor of the Citizen Multi-Tester. And check whether the lamp lights up or not.	No lighting of lamp → Replacement of plate complete or lamp
		

Common check items

Checking items	How to check	Results & treatment
6 Measurement of power cell voltage	Refer to ① for the details of measurement.	**Over 1.5V** → 7 Measurement of power consumption **Under 1.5V** After replacement of power cell: → 7 Measurement of power consumption
7 Measurement of power consumption	• The measurement must be carried out in the mode of the normal time display. • The power consumption is measured at the electronic circuit with the LC display panel removed.	**Under 2.5μA** → 8 The adjustment of time rate **Over 2.5μA** → Measurement of power consumption at electronic circuit **Under 2.0μA** → Replacement of LC display connection rubber or LC display panel **Over 2.0μA** → Replacement or repair of plate complete





Checking items	How to check	Results & treatment
8 Time adjustment	The time rate is measured by the timing machine for adjustment. Refer to 2	
9 Check of appearance functions	When all above checks are over, the appearance functions are inspected as follows. • Whether the operation is correct and smooth for each function. • Whether the marks displayed are correct. • Whether some dust or stains are sticking to each function part. • And other factors. 	

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