

***TECHNICAL
INFORMATION***

**CITIZEN QUARTZ
Cal.No.946 ※※**

§ 1. OUTLINE



This is a digital quartz crystal watch for gentlemen use, featuring the reasonable price for opening up a new market.

It incorporates the stopwatch and dual-time functions in addition to the normal time and calendar displays.

§ 2. MAIN FEATURES

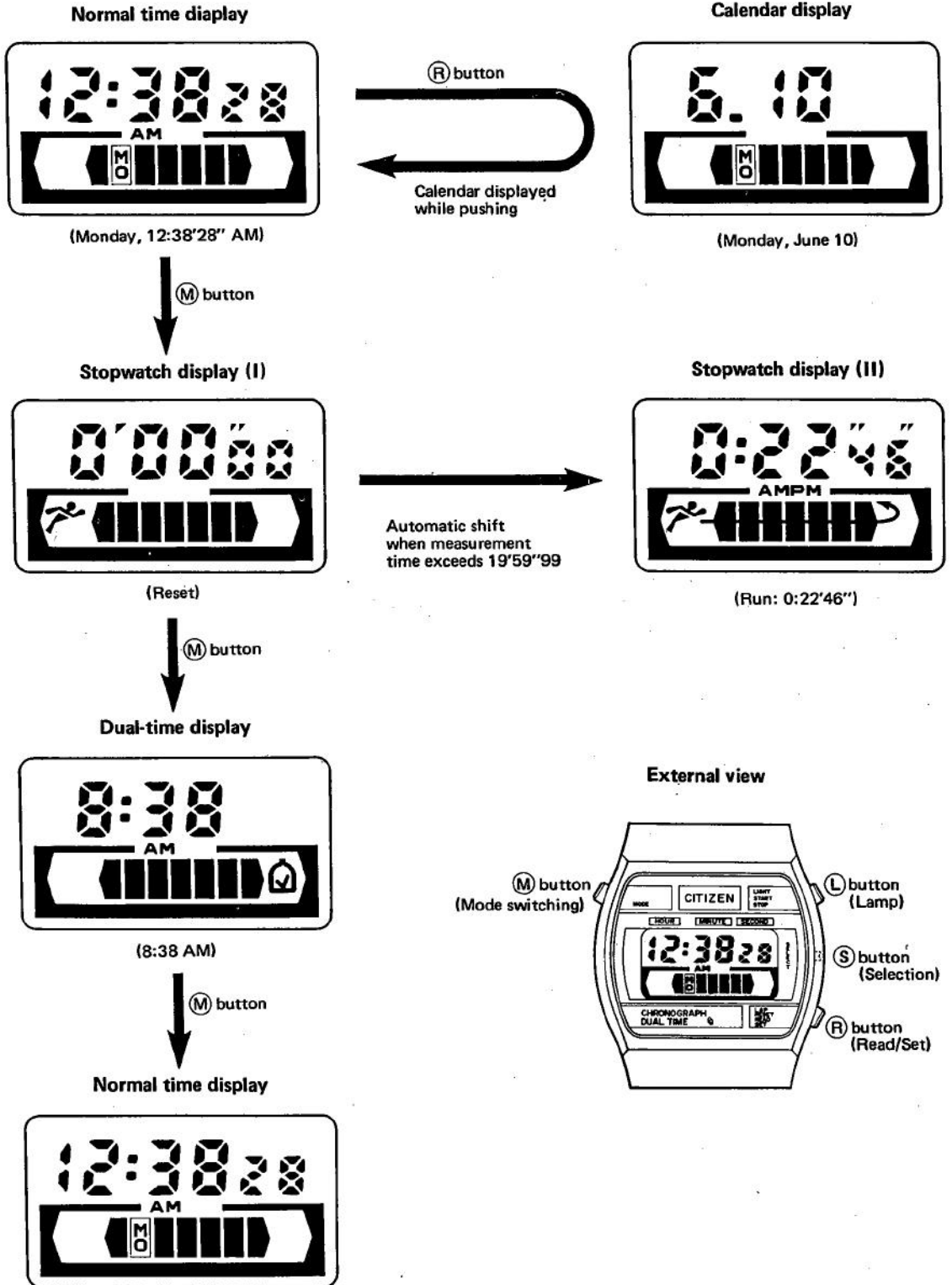
- 1) The popularization-type quartz oscillation watch with the digital display, featuring a big reduction of the cost.
- 2) The Citizen first application of the lithium battery for the power cell.
- 3) DFC (Digital Frequency Control)
The DFC is applied to this caliber, and as a result the perfect adjustment is already given to the time rate at the factory. In this connection, no trimmer condenser is incorporated into this watch. The DFC gives the frequency correction every 10 seconds within the circuit. Thus the unit time of measurement must be set to "10 seconds" or its integer-fold value when measuring the time rate.
- 4) The hooking method is adopted in place of the screwing method for structure. So good care must be given for handling the parts.
- 5) The power cell life of more than 5 years
The 5-years nonstop operation has been attained for the first time for the Citizen digital watches owing to application of the lithium battery.

§3. SPECIFICATIONS

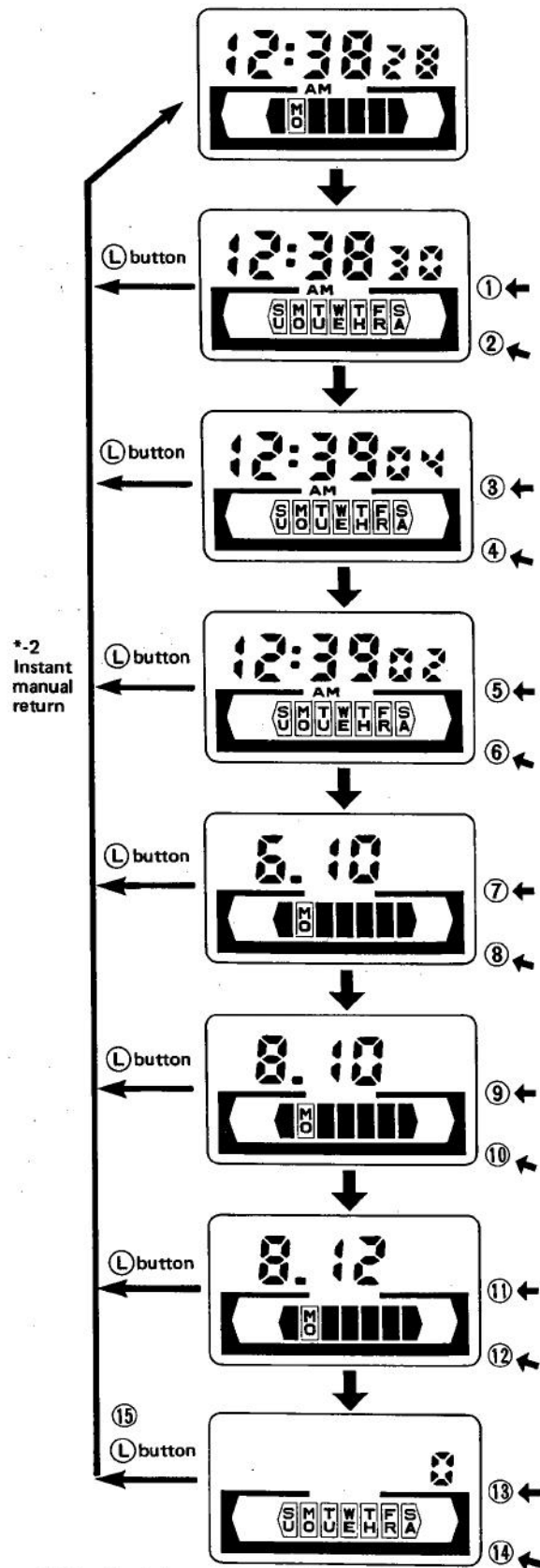
Caliber No.	9460-00A
Module	Outer dia.: 28.0mm ϕ (Maximum dia. 29.0mm ϕ) Thickness: 5.65mm (Power cell part 6.05mm)
Oscillation	32,768 Hz
Accuracy	± 15 sec./month at normal temperatures
Display method	FE twist-type nematic liquid crystal Two-division multiplex driving method
Digital display	<ul style="list-style-type: none"> ● Normal time display (Hour, minute, second, day and AM/PM) ● Calendar display by switching (Month, date and day) ● Stopwatch time display by switching Minute, second and 1/100 sec. (0 ~ 19'59''99) Hour, minute and second (0:20'00'' ~ 11:59'59'') ● Dual-time display (Hour, minute and AM/PM)
Integrated circuit	C/MOS-LSI
Effective temperature range	$\pm 0^{\circ}\text{C} \sim +60^{\circ}$ ($32^{\circ}\text{F} \sim 140^{\circ}\text{F}$)
Additional functions	<ul style="list-style-type: none"> ● Illumination lamp ● Fully automatic calendar (incl. leap years) ● Marks (Stopwatch mark and dual-time mark)
Power cell	Parts No. : 280-201 Maker No. : BR2320 Nominal voltage : 3.0V Size : 23.0mm ϕ x 2.0mm Capacity : 100mAH Life time : Over 5 years

§ 4. HANDLING INSTRUCTIONS

1) Mode switching



2) Time setting



Normal time display

•"Second" setting

- ① With push of (S) button in the normal time mode, the "second" flashes.
- ② The 0-second reset is given with push of (R) button. The "second" shows 00 when the time reads 0 ~ 29 seconds; while the "minute" is carried by one in 30 ~ 59 seconds.

•"Minute" setting

- ③ With push of (S) button in the mode of "second" setting, the "minute" flashes.
- ④ The "minute" is set with push of (R) button.

•"Hour" setting

- ⑤ With push of (S) button in the mode of "minute" setting, the "hour and "AM/PM" flash.
- ⑥ The "hour" is set with push of (R) button.

•"Month" setting

- ⑦ With push of (S) button in the mode of "hour" setting, the "month" flashes.
- ⑧ The "month" is set with push of (R) button.

•"Date" setting

- ⑨ With push of (S) button in the "month" setting mode, the "date" flashes.
- ⑩ The "date" is set with push of (R) button.

•"Day" setting

- ⑪ With push of (S) button in the "date" setting mode, the "day" flashes.
- ⑫ The "day" is set with push of (R) button.

•Setting of leap year *-1

- ⑬ With push of (S) button in the "day setting mode, the "year mark" is displayed.
- ⑭ The "leap year" is set with push of (R) button.
- ⑮ With the second push of (S) button, the display is reset to the normal time.

•The flashing areas are shown in red color.

***-1 Setting of leap year**

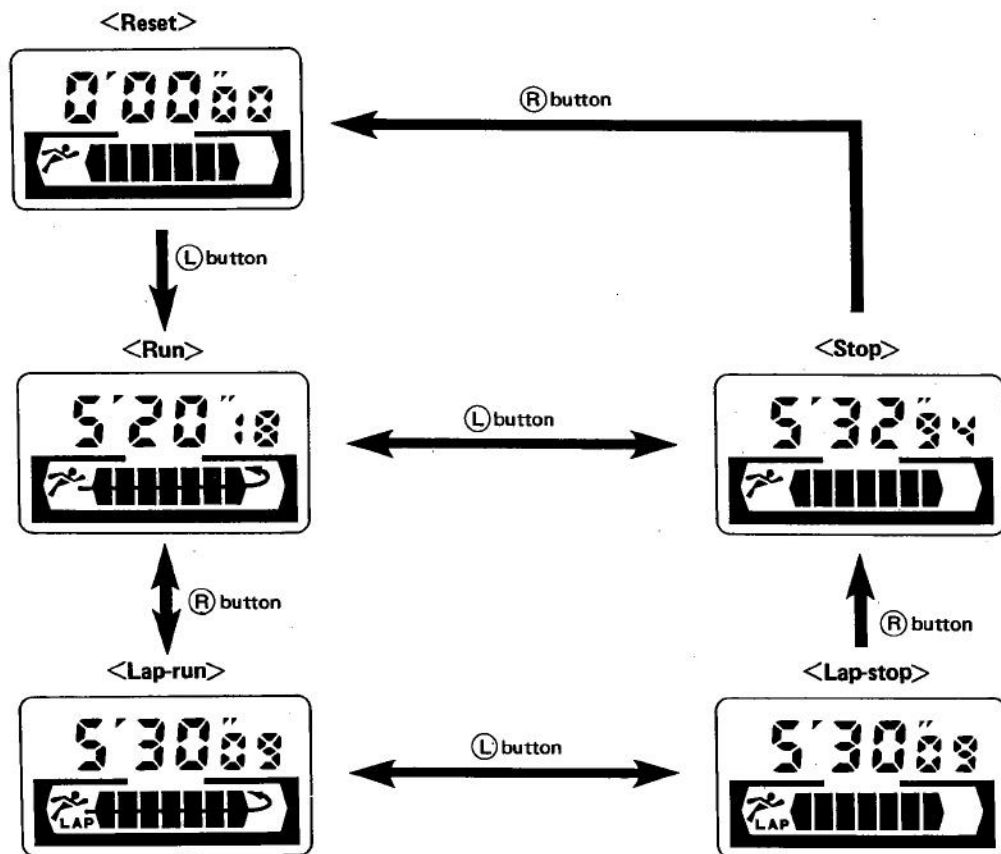
The year divisible by 4 is set to 0. Accordingly in the case of 1980, which is divisible by 4, the display of the "year mark" is set to 0. And the "year mark" varies as 0, 1, 2, 3, 0 1 and so on.

***-2 Instant manual return**

In the time setting mode, the display varies usually as second → minute → hour → month → date → day → year in that regular order. However if the discontinuation of mode setting is desired in the course of the above setting order, the mode can be reset to the normal time display from any other display mode with push of (L) button.

3) Stopwatch function

The stopwatch mode can be secured with push of (M) button in the mode of normal time display.

**(1) Simple counting**

With push of (L) button in the "Reset" mode (preparatory for measurement), the shift is given to the 7 segments for display of the day to secure the "Run" mode (under measurement). Then with the second push of (L) button, the shift of the 7 segments stops to secure the "Stop" mode. With push of (R) button in that instant, the display is returned to the "Reset" mode.

(2) Cumulative counting

With push of (R) button in the "Run" mode (under measurement), the display stands still but the shift of the 7 segments continues to indicate the "Run" mode. And then with push of (L) button, the shift of the 7 segments stops to secure the "Lap-stop" mode. With push of (R) button in that instant, the cumulated count time is displayed.

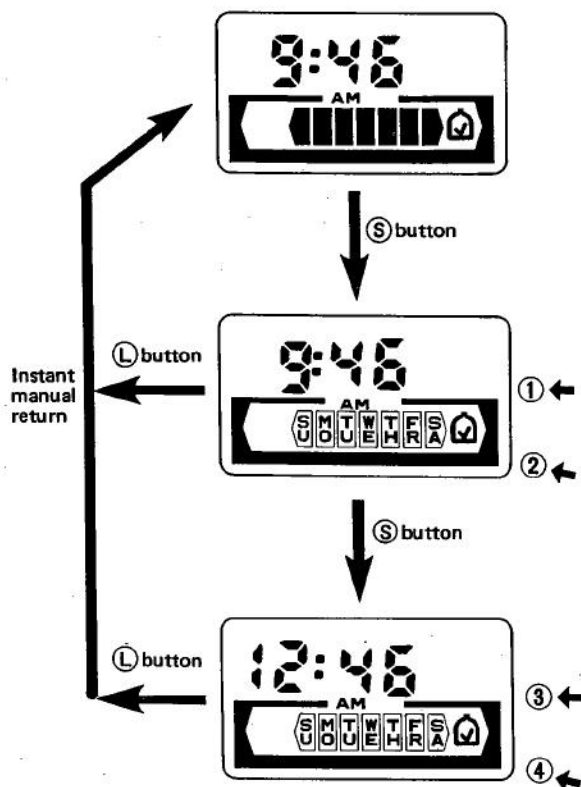
(3) The display changes automatically to 0:20'00" when the counting exceeds 19'59"99. Thus the display of "minute, second and 1/100 sec." shifts to the display of "hour, minute and second".



4) Dual-time function

With push of (M) button twice in the mode of normal time display, the dual-time display mode is secured with display of "hour", "minute", "AM/PM" plus the dual-time mark.

(1) Dual-time setting



Dual-time display

•Setting of dual-time "hour"

- ① With push of (S) button under the dual-time display, the 7 segments for display of the day disappears to give flashing to the "hour" and "AM/PM".
- ② The "hour" is set with push of (R) button.

•Setting of dual-time "minute"

- ③ With push of (S) button in the "hour" setting mode, the 10-minute digit of the minute" flashes.
- ④ The "minute" is set with push of (R) button.
(Ex.) 16min. → 26 min. → 36 min.
As shown in the above example, the "minute" digit varies every 10 minutes.

•The flashing areas are shown in red color.

§ 5. HANDLING NOTES ON LITHIUM BATTERY

- 1) Like in the case of the silver battery, avoid giving the short-circuit to the lithium battery via the metal tweezers or the like or holding the both surfaces of the battery with the bare hand. If so, the lithium battery has a large amount of drops of the voltage level compared with the silver battery. (And it takes a long time to recover the normal voltage.)
- 2) The level differs for the lithium battery between the voltage when incorporated into the watch and the open voltage (with no load and the battery itself).
The open voltage can secure more than 3V after it becomes steady and although it is discharged considerably. The power cell voltage must be measured after the power cell is put into the watch and with the load applied.
- 3) If the power cell voltage is measured immediately after the illumination lamp has been lit up, the measured value shows a low level even in case the measurement is carried out with the battery put into the watch. In such case, it is advised to leave the battery as it is for about five minutes or longer before the second measurement.
- 4) The display is not sometimes secured after replacement of the battery. In such case, the (L) button is pushed to secure the display.