

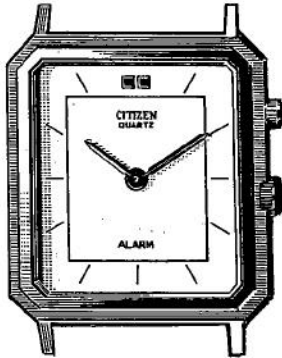
***TECHNICAL
INFORMATION***

CITIZEN QUARTZ

Cal. No. 24※※

 **CITIZEN**

■1. OUTLINE



This watch newly contains an alarm function in addition to the conventional merits of an analog watch, that is, the easy reading of time plus a good look. The adaption of a small-size movement realizes the unisexual use as a dress watch.

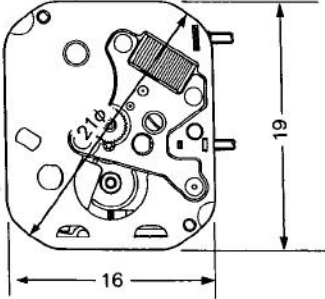
■2. FEATURES

- 1) A unique alarm function is incorporated.
The alarm can be set at every minute since the conventional standard needle is not used.
- 2) Both the alarm time and the ordinary time can be indicated in common by hour and minute hands to keep a good look of an analog watch.
- 3) An electromagnetic correction system is applied with the forward/backward turns of the crown.
- 4) The following two features are attained for the output of alarm.
 - A soft tone is obtained with the use of an envelop circuit.*
 - The tone of alarm features an original and soft melody including the chords.
- 5) DFC (Digital Frequency Control) system is applied.

*Envelope circuit

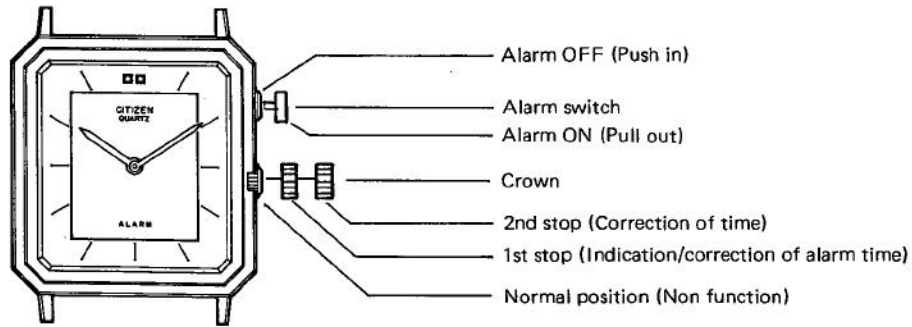
This circuit produces echoes to the alarm tone.

■3. SPECIFICATIONS

Caliber No.	2400-02
Type	Analog quartz watch (with hour/minute hands)
Size of movement (mm)	Thickness: 2.51 (Power cell part 2.6) <div style="text-align: center;">  </div>
Accuracy	±20 sec./month at normal temperatures
Oscillation	32,768Hz
Converter	Bipolar step motor a. For forward/backward revolutions b. 20-second step movement of hands
Integrated circuit	C/MOS-LSI (1 unit)
Effective temperature range	-10°C ~ +60°C (14°F ~ 140°F)
Adjustment of time rate	DFC system (Unit measurement of time 10 sec. with no control terminal)
Additional functions	<ul style="list-style-type: none"> ●Alarm (with melody) The alarm time is indicated by hour/minute hands in common with the ordinary time. ●Alarm monitor ●Auto-return system ●Hour/minute hand stopping device ●Electromagnetic correction system (Quick advance of time with forward/backward turns of crown)
Power cell (Silver oxide)	Parts No. : 280-53 (1 unit) Maker code : SR721W (Ag ₂ O/KOH) Size : 7.9φ x 2.1mm ^t Nominal voltage: 1.55V Nominal capacity: 25mAH Lifetime : About 2 years (With alarm actuated 24 sec. per day)

■4. HANDLING INSTRUCTIONS

1) Look of watch and nomenclature

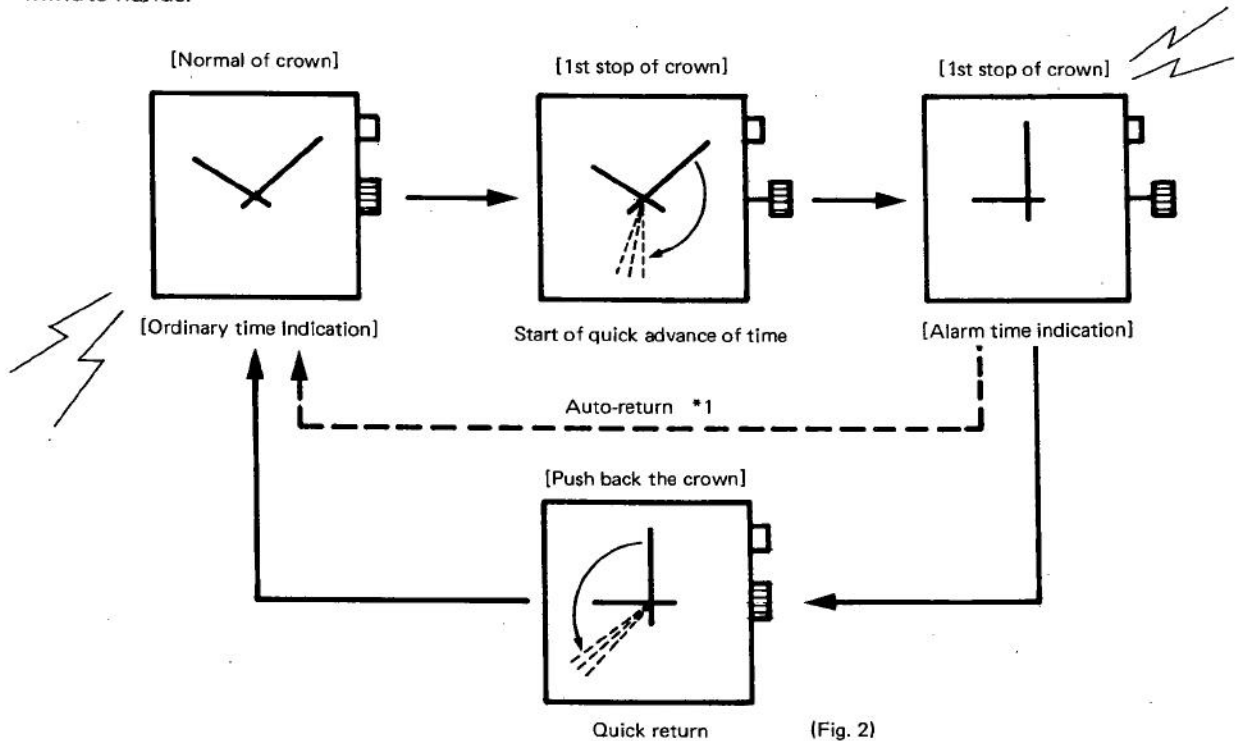


(Fig. 1)

* All operations must be carried out in a slow and steady way owing to their electrical switching actions.

2) Switching between ordinary/alarm time indications

Both the ordinary time and the alarm time are indicated in common by the same hour and minute hands.

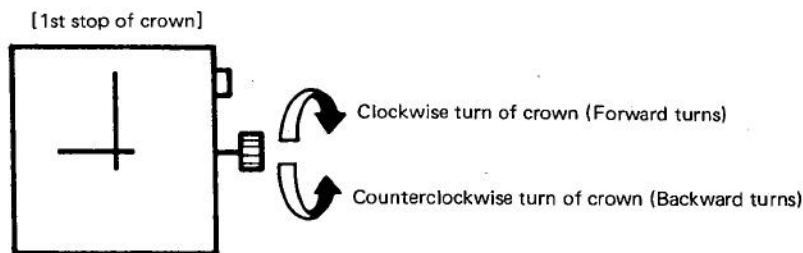


(Fig. 2)

*1 Auto-return

The ordinary time indication is automatically reset (with quick return) from the alarm time indication if no operation is carried out for two minutes. After an auto-return, the crown must be once pushed to its normal position before carrying out the subsequent operations.

3) Correction of alarm time

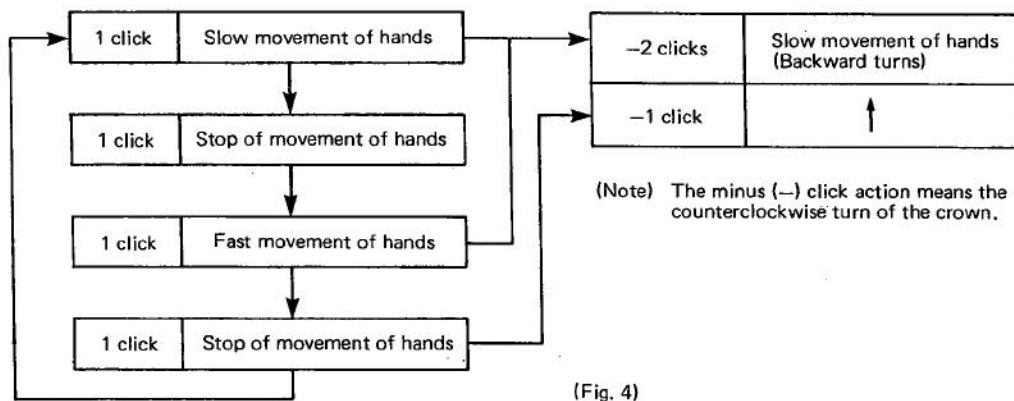


(Fig. 3)

When the crown is pulled out to its 1st stop position in the mode of ordinary time indication, the mode is quickly advanced to the alarm time indication.

The alarm time can be corrected after the movement of hands is stopped and by turning the crown as indicated in Fig. 3.

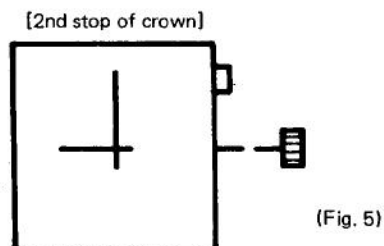
As this caliber applies an electromagnetic correction system, a consecutive correction is possible for the movement of hands with the following operation and without giving a consecutive turn to the crown.



(Fig. 4)

- * The ordinary time indication will be automatically reset in a consecutive movement of hands for 80 seconds in both modes of slow and fast movements of hands. In this case, the alarm is set at the last time of the 80 sec. movement of hands.
- * The switching operation must be assuredly done with each click.
- * The correction is possible with every 3 pulses, i.e., with every minute.

4) Correction of time



The correction mode is obtained for the ordinary time indication mode by pulling out the crown by 2 stops, and then the watch stops.

The correcting method is exactly equal to the correction of alarm time (mentioned in the preceding section) excepting the following points.

- The correction is done with each pulse, i.e., with every 20 seconds.
- The hands automatically stop after a consecutive movement of 80 seconds in both modes of slow and fast movements.

5) Just-minute synchronization between ordinary time and alarm time

The timing starts at the moment when the crown is pushed into its normal position after a correction of time. Then the hands moves in 20 seconds after the start of timing.

The alarm time has no change although the ordinary time is changed. However, the just-minute position sometimes has an error of ± 20 seconds.

(Ex.) Alarm time set at 9 : 00

- In case the alarm time is started at $\ast:\ast\ast' 00''$ after correction of an ordinary time. _____ The alarm rings at 9:00'00''.
- In case the alarm time is started at $\ast:\ast\ast' 20''$ after correction of an ordinary time. _____ The alarm rings at 9:00'20''.
- In case the alarm time is started at $\ast:\ast\ast' 40''$ after correction of an ordinary time. _____ The alarm rings at 8:59'40''.

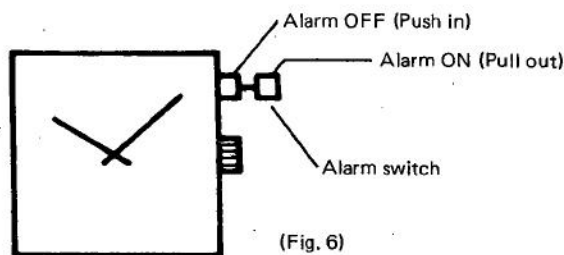
Thus the alarm time is decided as a "just second" (00'') at the moment when the "second" starts in the mode of ordinary time indication.

Accordingly the time must always be started at 00'' after correction of an ordinary time to secure the synchronization with the alarm time.

* It is impossible to set the alarm time at a "just second" when the ordinary time is started at a position excepting 00''.

6) ON/OFF of alarm

The alarm is switched on and off by pulling out and pushing in the alarm switch respectively. As the alarm mode is set under a 12-hour indication system, it rings twice (AM and PM) a day.



7) Alarm monitor

When the alarm switch is switched ON \rightarrow OFF \rightarrow ON (within a second), a melody is heard for 48 seconds as an alarm monitor. However, this alarm monitor is possible only in the ordinary time indication mode. The alarm monitor is discontinued by turning off the alarm switch.

8) Stopping of alarm

The alarm ring is stopped at the moment when the alarm switch is pushed into its normal position.

- Alarm tone

Owing to the property of an envelope circuit used in this caliber, the echoes of the alarm tone are apt to be short at a high temperature. This phenomenon does not mean a fault at all and can be recovered at the normal temperatures again.