

Watch Movement Specification and Drawing

SOLAR SERIES

Cal. VS3JA

Movement Size

10 1/2'''

Casing Diameter

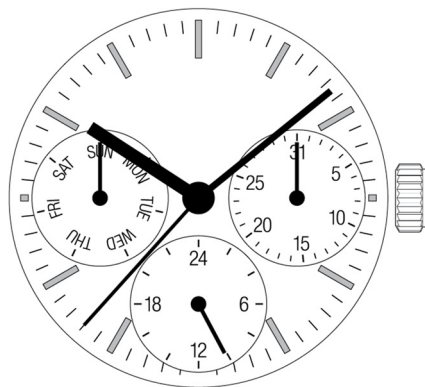
Ø 24.0mm

Height

3.47mm

Running Time

Approx. 6 months



Date: 21/May/'21

Cal. VS3JA

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1.Solar-powered watch

This watch is a solar-powered watch containing a solar cell underneath the dial to convert any form of light into " electrical energy" and store the power in a secondary battery.

2. Eliminating the need for battery replacement

Unlike conventional quartz watches, this watch does not use a silver oxide battery, thus eliminating the need for battery replacement.

3. You can use the dial which light transmittance is more than 30%

It is possible to assemble the dial which transmits light on the solar cell.

It enabled to cover the solar cell color, and you can design variety colors of dials.

4. Running time

Expected running time from full charge to stoppage will be around 6 months.

5. Power depletion warning function

The two-second intervals movement of the second hand is a signal of energy depletion.

The watch continuous running time after two-second intervals movement is 1 day.

6. Quick start function

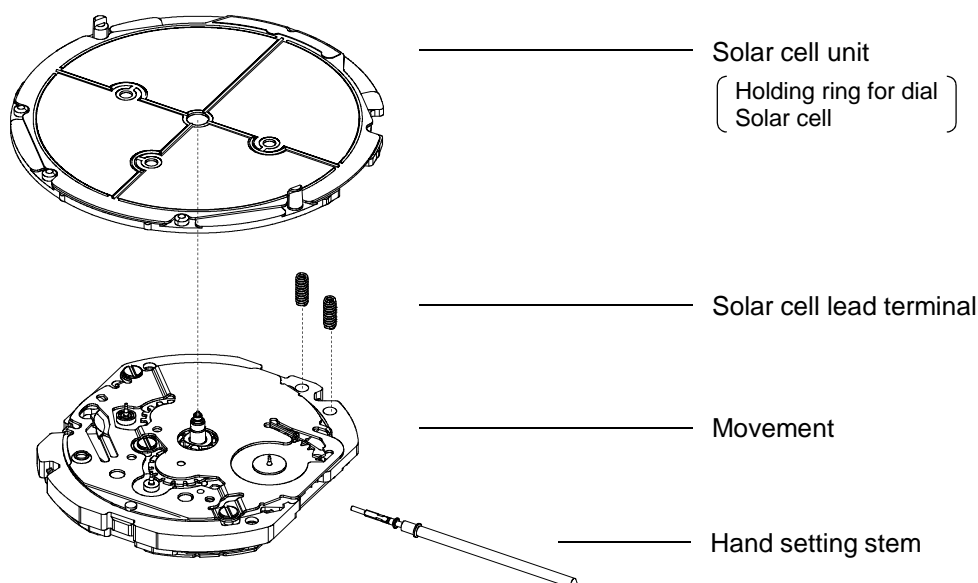
This watch has a "Quick start function".

It start working within a few seconds after exposure to a light more than 1000Lx.

(Fluorescent lamp 30W/ 70cm)

7. Over charge prevent function is equipped

If the secondary battery is charged more than predetermined voltage, over charge prevent function is operated to prevent the secondary battery deterioration and breakage.

8. Structure of the separated parts

Cal.	VS3JA	Specifications	Date : 21/May/'21
			Rev. : 07

Solar Quartz 10 1/2''' Movement / Three hands(H/M/S) with Three eyes
(Day / Date / 24 Hour indicators)

1. MOVEMENT DIMENSIONS

Outside diameter	φ 25.00mm × 21.30mm(3-9H) × 24.00mm(12-6H)
Casing diameter	φ 24.00mm × 19.30mm(3-9H) × 23.30mm(12-6H)
Total height	3.00mm (Including secondary battery : 3.47mm)

2. TIME STANDARD

Type of quartz oscillator	Tuning fork
Frequency of quartz oscillator	32,768 Hz
Accuracy	±20 seconds per month (on wrist)
Operating temperature range	−5°C to +50°C
Regulation device	Nil (Pre-adjusted)

3. INDICATOR / FUNCTIONS

3 Hands	Hour / Minute / Second
3 small hands	Day (9H) / Date (3H) / 24 Hour (6H)
Reset switch	
Power depletion warning function	(Second hand moves at 2-second intervals when voltage is 1.10V)
Quick start function	
Running time	Approx. 6 months (After fully charged)
Setting mechanism	Crown at normal position : Free
	Crown pulled out 1st click : Instant date change
	Crown pulled out 2nd click : Time setting (Day change) / Reset

4. FEATURES

Jewels	2 Jewels
Anti-magnetism	Over 1600A/m (Direct current magnetic field)
Driving current consumption	Approx. 0.6 μ A (1.35V)
Operation stopping voltage	1.0 V
Solar cell type	Amorphous silicon solar cell
Maximum unbalance of hands	Second hand : 0.045 μ N·m
	Minute hand : 0.80 μ N·m
	Hour hand : 0.50 μ N·m
	Day / Date / 24 Hour hand : 0.06 μ N·m

5. SECONDARY BATTERY (Installed)

Type	Lithium metal batteries
Size	φ 9.5mm × t 2.1mm
Nominal voltage	1.5 V
Capacity	3.0 mAh

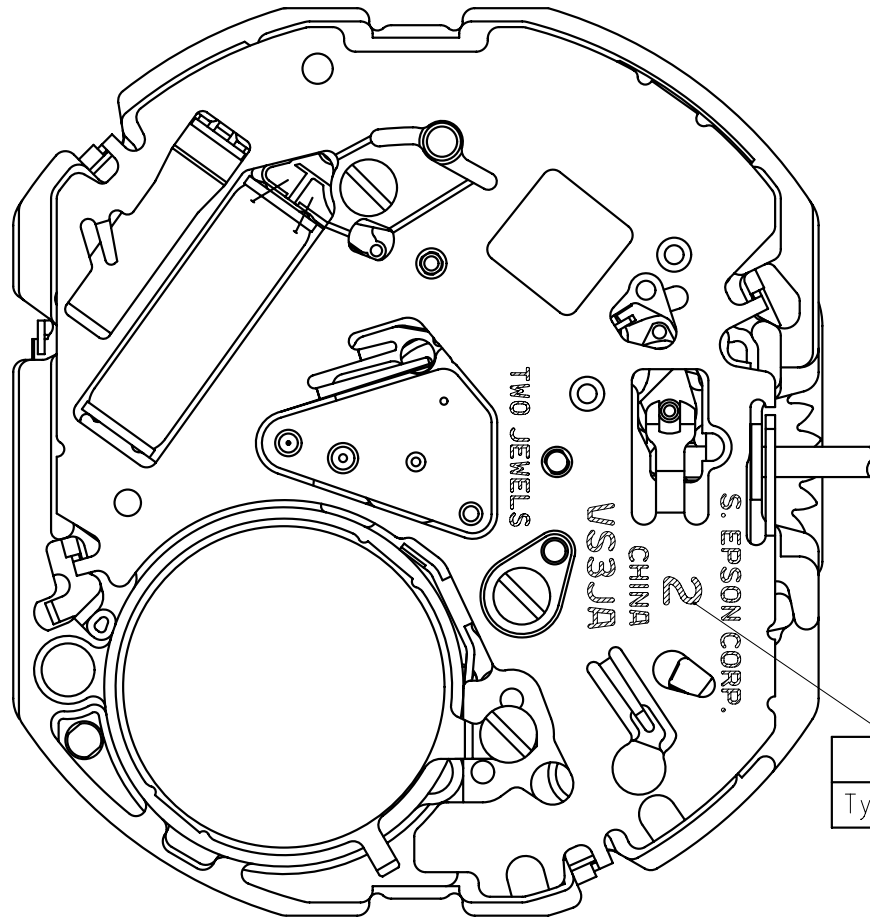
6. SEPARATED PARTS (Parts code)

Solar cell unit	4020540
Hand setting stem	0351177
Solar cell lead terminal (2 pcs)	4246636

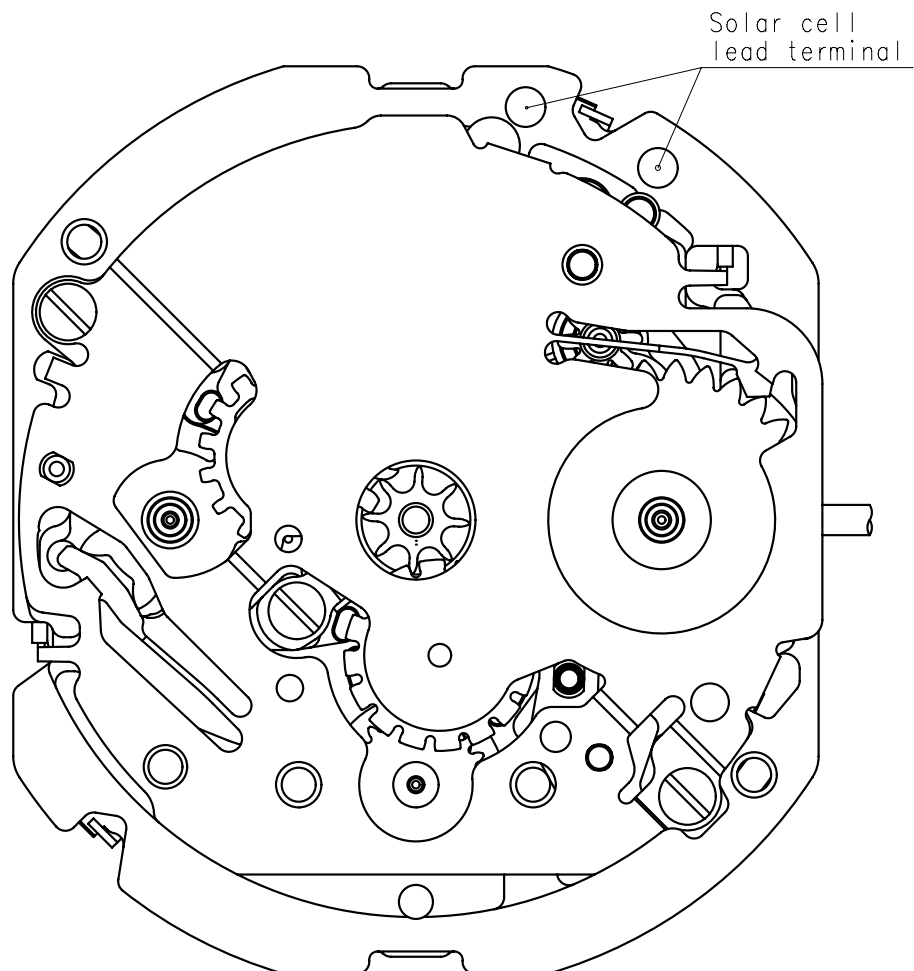
7. TEST OF ACCURACY

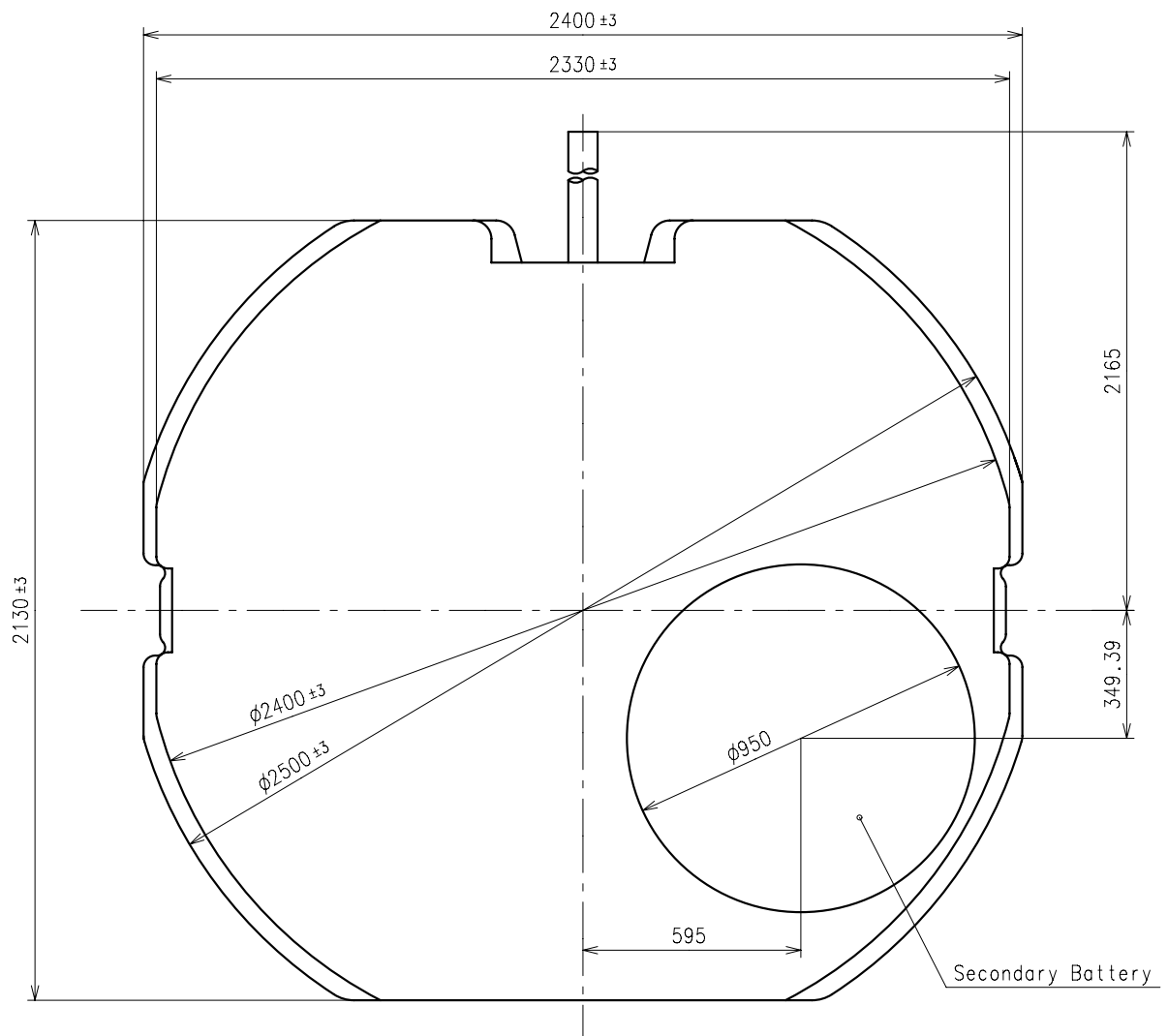
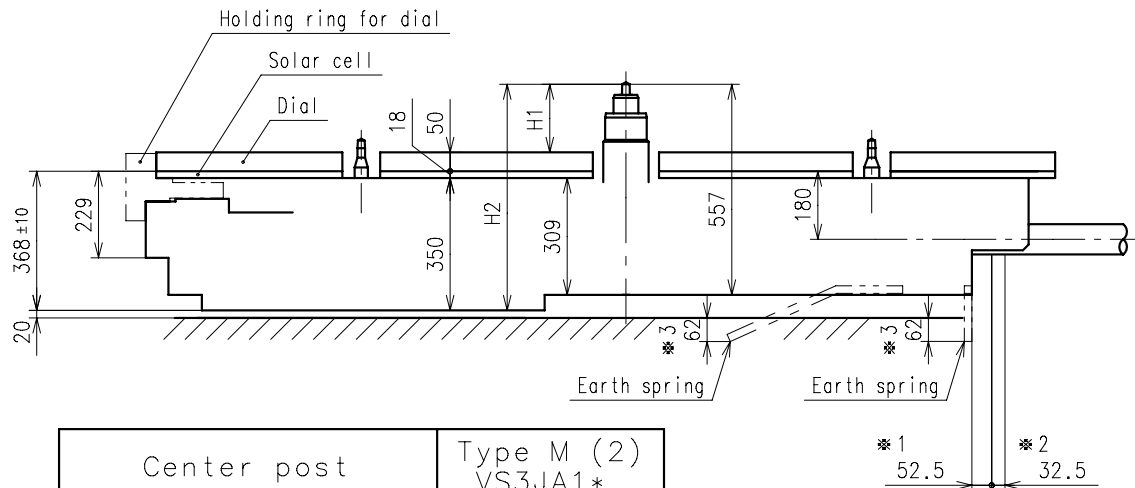
Equipment to be used	SEIKO quartz tester QT-99, Greiner quartz timer-C , Witschi Q-tester 4000
Duration of measurement	10 seconds
Microphone to be used	Electromagnetic detection type

All specifications are subject to change without notice.

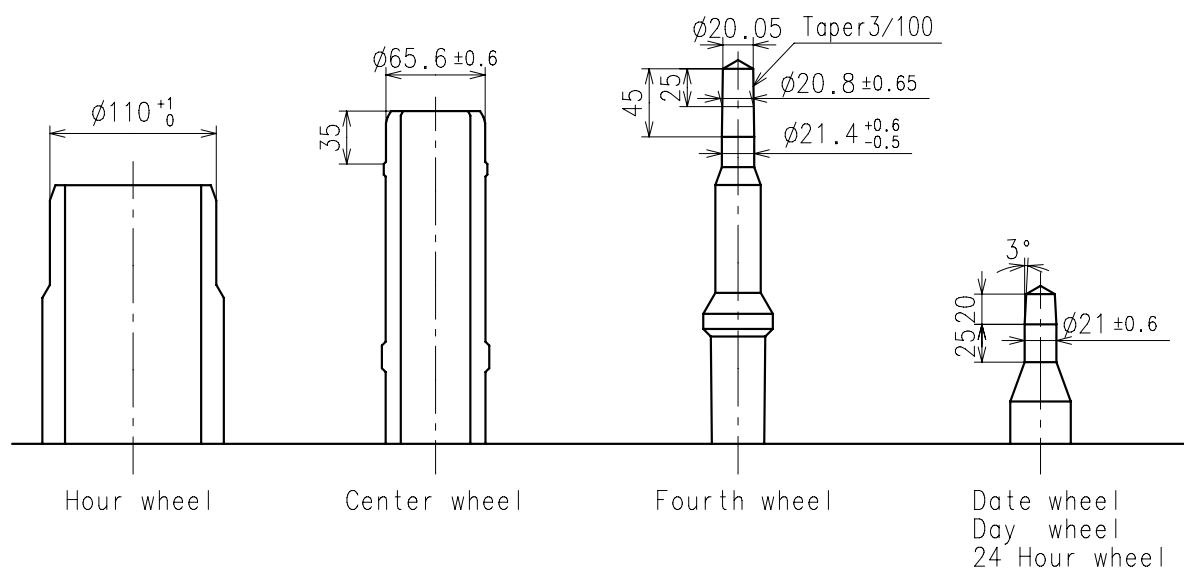


Mark	Type (M)
2	

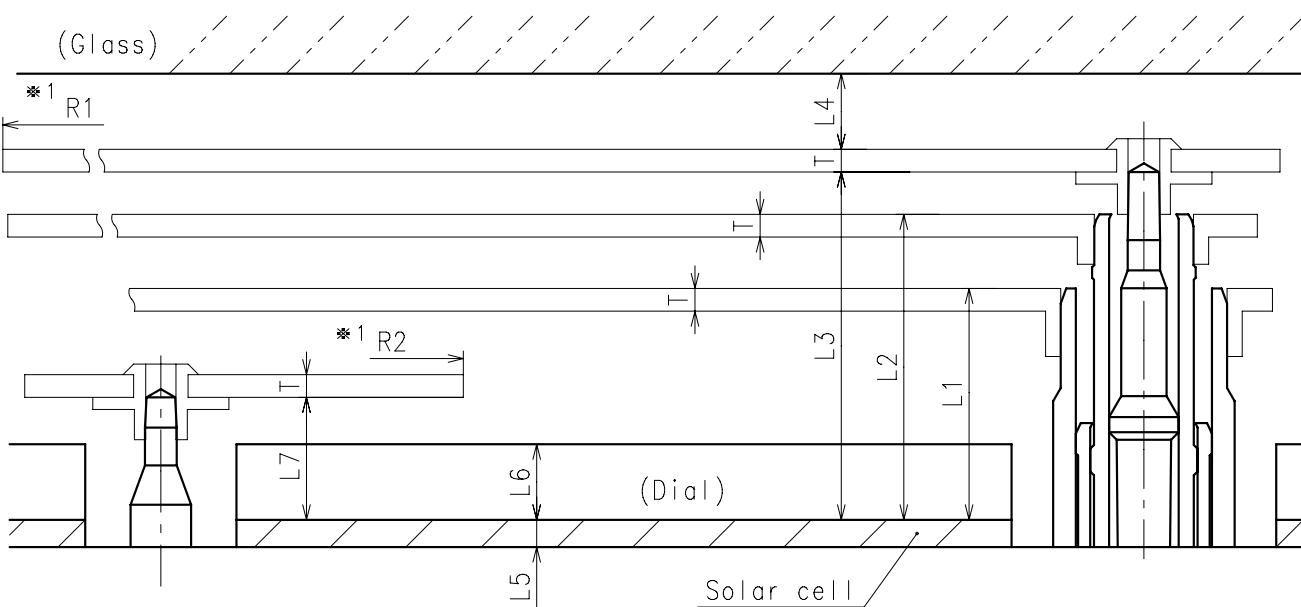




- * Second hand unbalance $\leq 0.045\mu \text{ N} \cdot \text{m} (4.5\mu \text{ g} \cdot \text{m})$
- * Minute hand unbalance $\leq 0.8\mu \text{ N} \cdot \text{m} (80\mu \text{ g} \cdot \text{m})$
- * Hour hand unbalance $\leq 0.5\mu \text{ N} \cdot \text{m} (50\mu \text{ g} \cdot \text{m})$
- * Day/Date/24Hour hand unbalance $\leq 0.06\mu \text{ N} \cdot \text{m} (6\mu \text{ g} \cdot \text{m})$

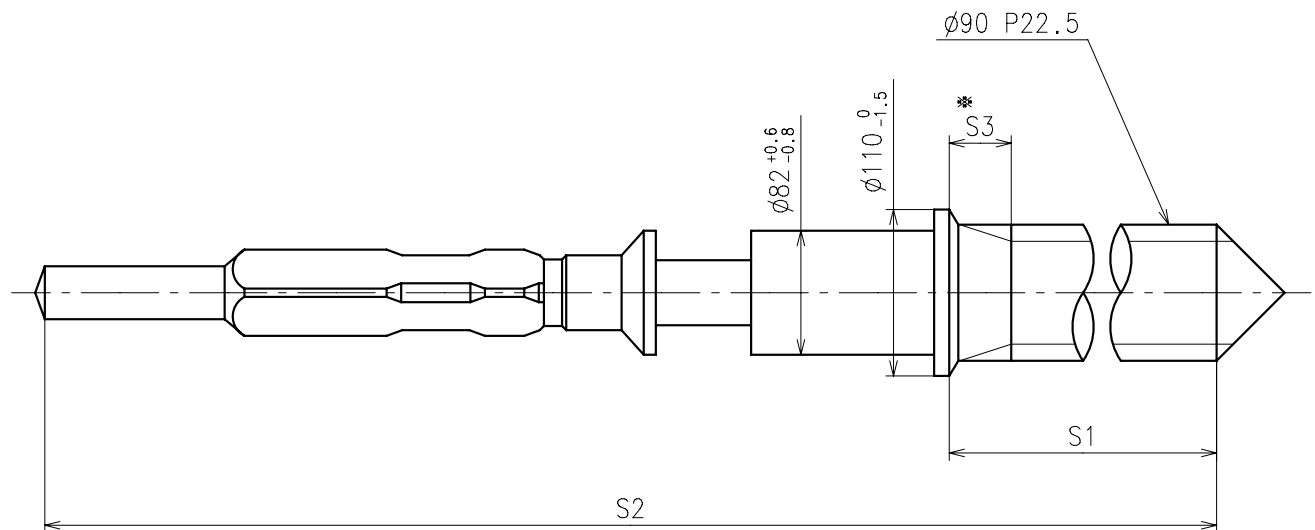


	Parts No.					
	Hour wheel	Center wheel	Fourth wheel	Date wheel	Day wheel	24 Hour wheel
Type M (2) VS3JA1	0271949	0221966	0241966	0970966	1002966	0157966



	L1	L2	L3	L4	L5	L6	L7	T	*1 R1	*1 R2
Type M (2) VS3JA1	153	202	230	MIN: 50	18	50	81	15	MAX: 1250	MAX: 350

*1: It is the size taken into consideration for hands attachment.
Please observe some standard value specified in unbalance when using long hands.

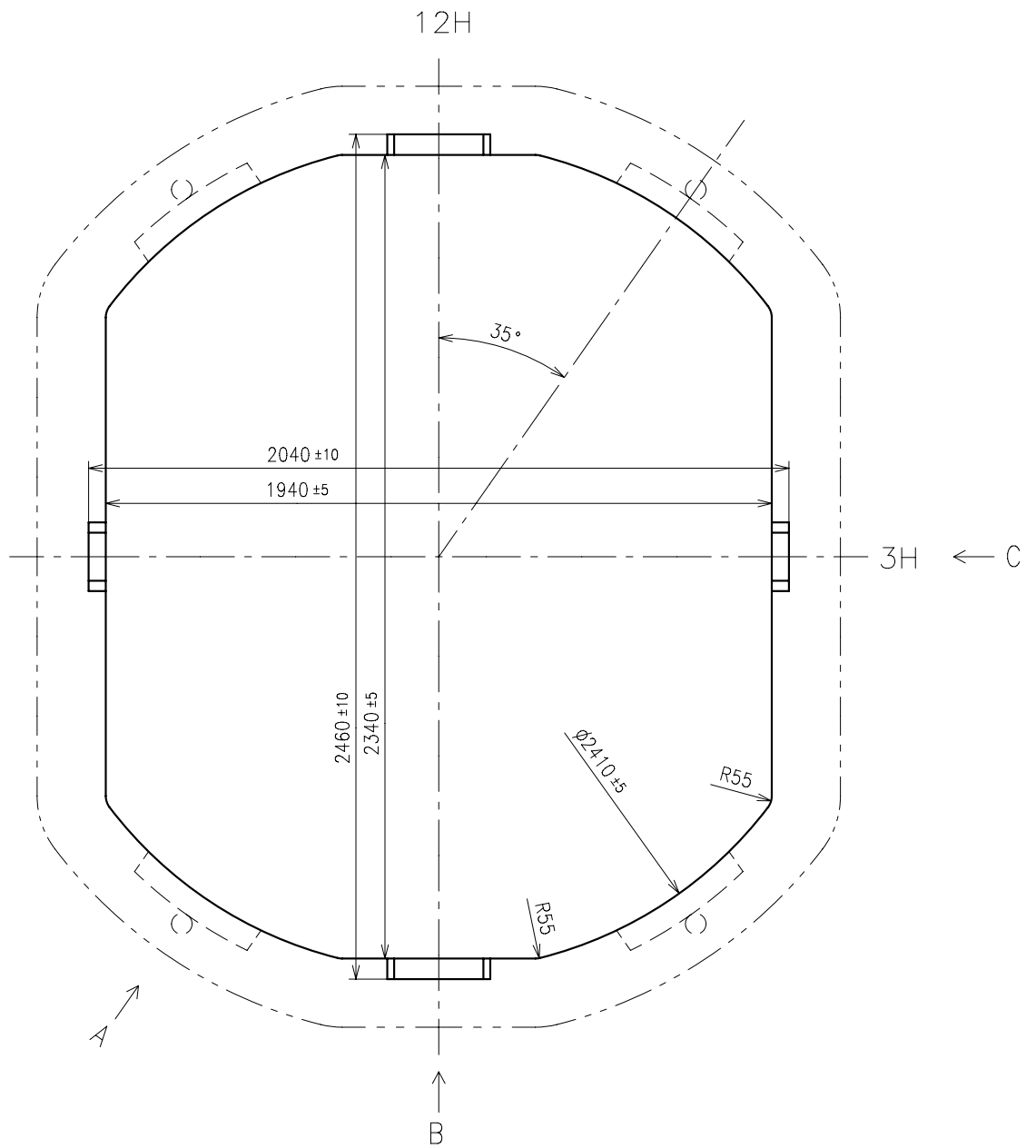


※ Not threaded

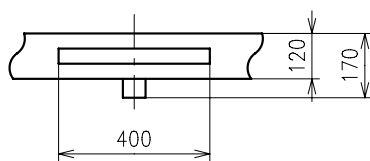
	Part No.	S1	S2	※ S3
Standard	0351177	1366	1964	60

Material : Steel

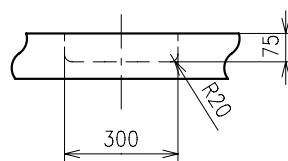
Hardness : Vickers 600±50



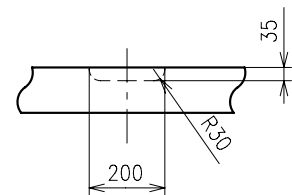
A view

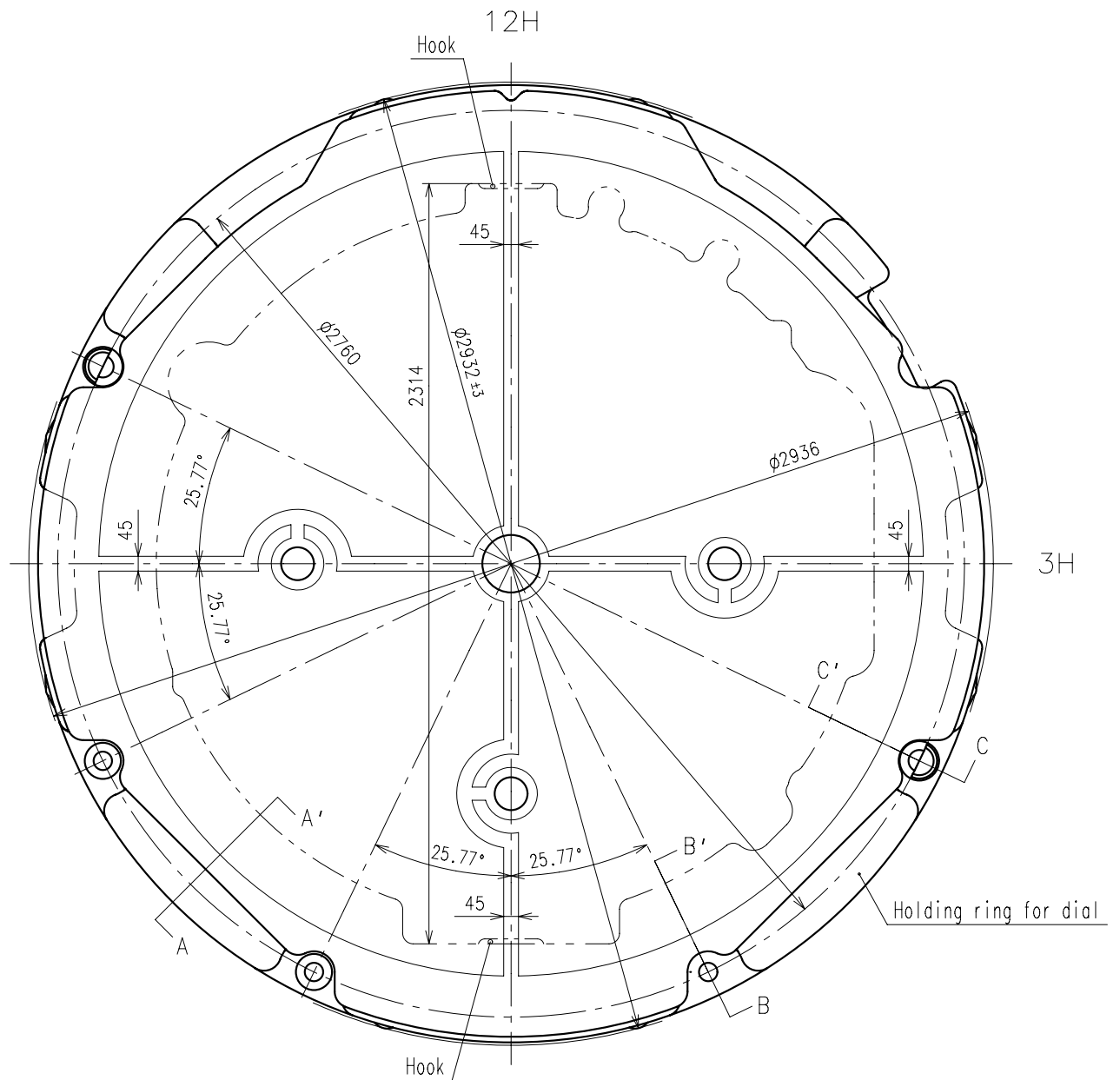


B view



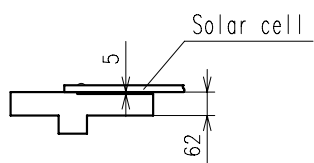
C view



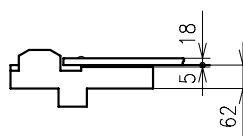


Case body inside diameter:Ø2930

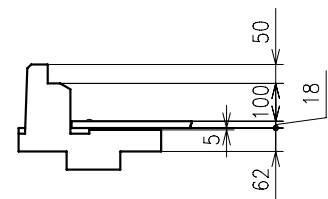
A-A' Section

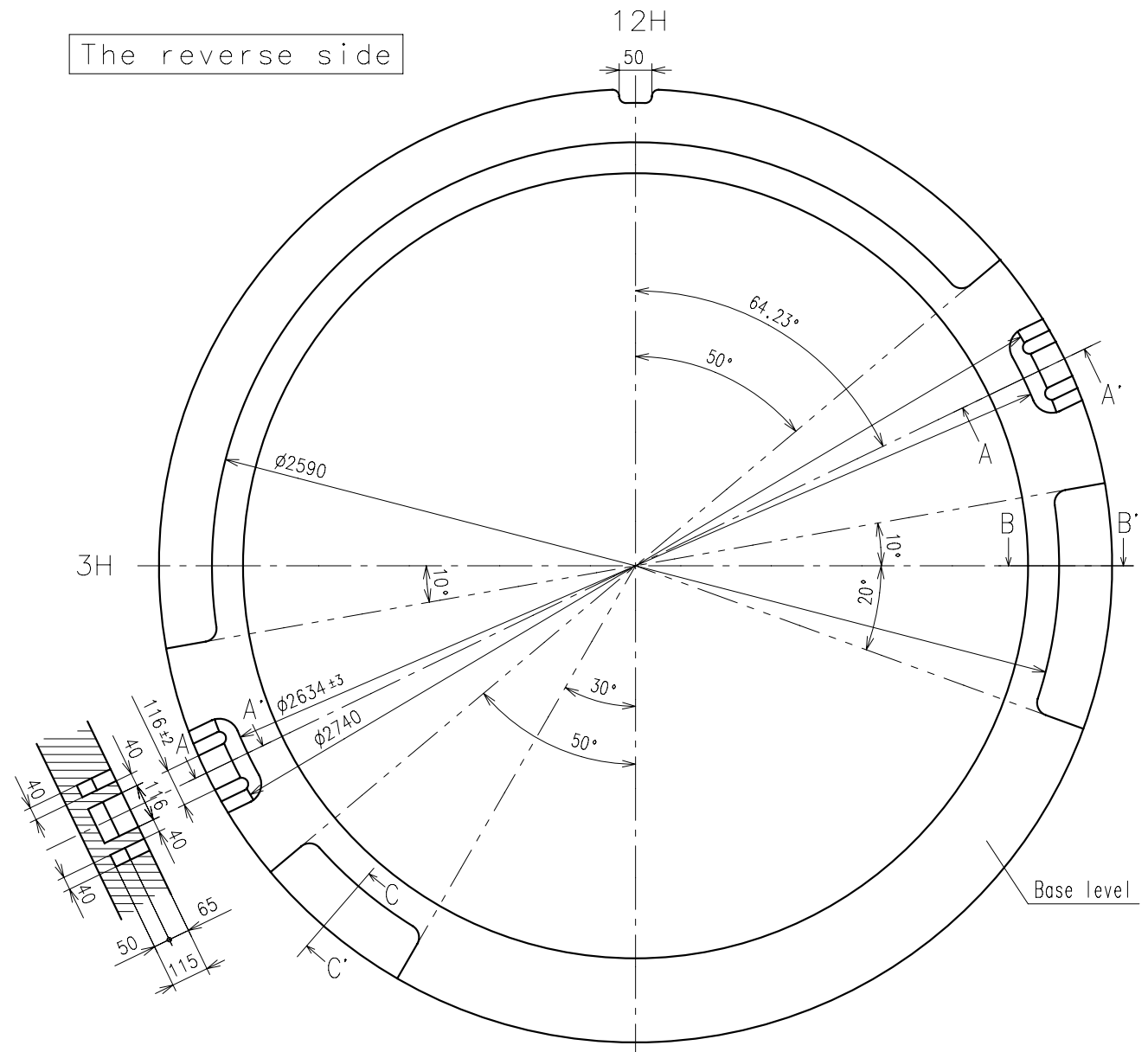


B-B' Section

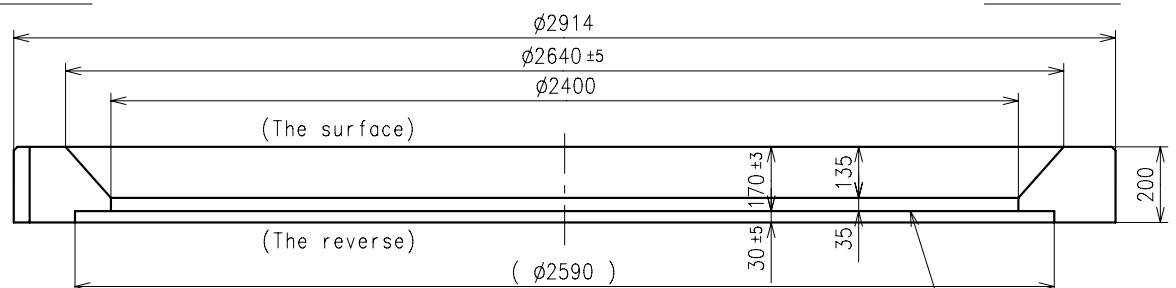


C-C' Section



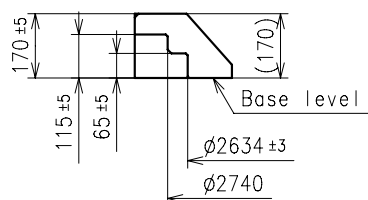


12H Section



3H Section
B-B' View
C-C' View

A-A' View



Cal.	VS3JA	Attention-01	Date : 21/May/'21
			Rev. : 06

1. How to remove the setting stem

When removing the setting stem, put the setting stem at normal position and push the "setting lever" by tweezers.

The "setting lever" can not be push if the setting stem is not at normal position.

2. Attention for solar cell unit

Pay attention not to touch and scratch the surface of the solar cell.

3. Dial transparency rate

Keep the transparency rate of the dial more than 30%.

Each elements of solar cell must be kept the transparency rate.

4. The guideline of charging time is as in below

(Dial transparency rate = 30%)

Illumination (Lx)	Source of light	Environment	A (Approx. Hours)	B (Approx. Hours)	C (Approx. Minutes)
700	A fluorescent lamp	Inside the office	197	37	54
3,000		30W 20cm	43	8	12
10,000	Sun light	Cloudy	13	3	4
100,000		Fine weather	6	36 minutes	1

Condition A : Time required for full charge

Condition B : Time required for steady operation

Condition C : Time to charge 1 day of power

5. Attention for the secondary battery unit

Please set the exclusive secondary battery unit.

(The secondary battery is Lithium metal batteries without any environmentally harmful substances.)

If the silver oxide battery is accidentally set and charged, there is a possibility of battery explosion.

To prevent from the battery explosion, it is adopted safety structure not to charge the silver oxide battery even if it is accidentally set.

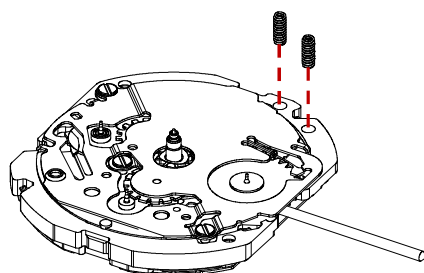
6. Caution

When charging the watch, do not place it too close to fluorescent lamp or other light sources as the watch temperature will become extremely high, causing damage to the parts inside the watch.

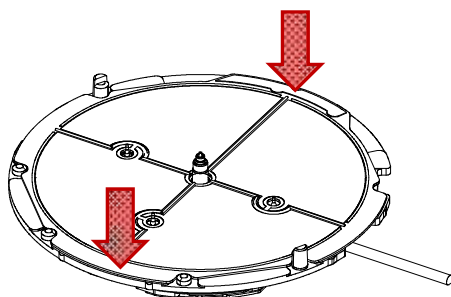
7. How to set the solar cell lead terminal

Please set 2pcs of solar cell lead terminals in accordance with this illustration.

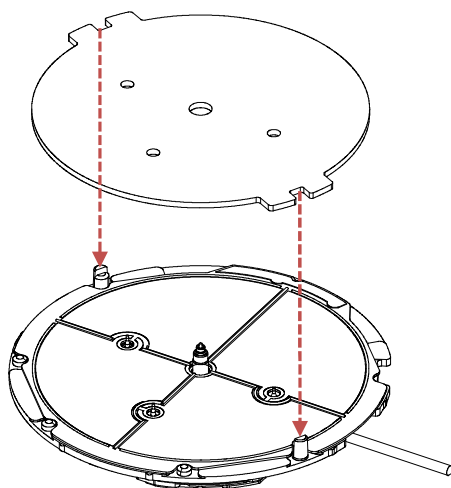
As to the solar cell lead terminal shape, there is no distinction between upper and lower.

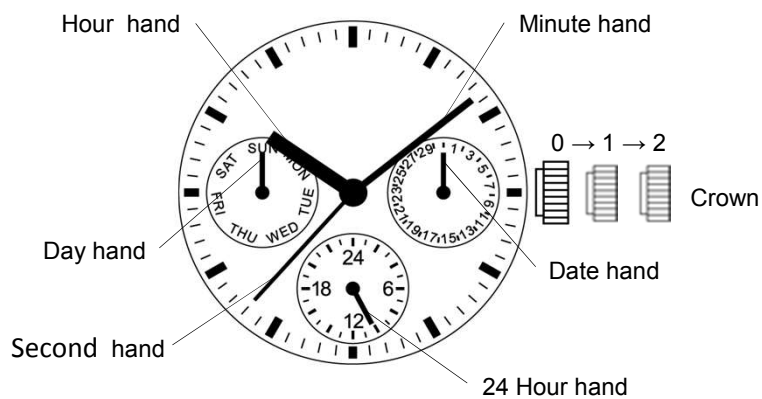
**8. How to set the solar cell unit**

Push above part of each hook on the solar cell unit into main plate certainly.

**9. How to set the dial**

The dial is held by the two guide poles on the solar cell unit.





Crown position			
0 click		1st click	2nd click
Crown	Free	Turn counterclockwise for date change	Time setting (Day change)

* Do not set the day and date between 9:00 PM and 4:00 AM.
Otherwise, the day and date may not change properly.