



Cal. VS3JA

ϕ 24.0 mm
H 3.0 mm

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Date: 6/Apr./'12

S.EPSON Products

CAL. VS3JA

Solar Quartz 10 1/2" Movement / Three hands(H/M/S) with Three eyes
(Day , Date & 24H 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 Eyes	Day , Date & 24H indicators
Reset switch	
Power depletion warning function	
(Second hand moves at 2-second intervals when voltage is 1.10V)	
Quick start function (Start within a few seconds after exposure to a more than 1000LX)	
Working time	Approx. 6 months (After fully charged)
Charging time	Approx. 3 hours (Under 100 KLX sunlight)
	Approx. 120 hours (Under 1000LX fluorescent lamp)
Setting mechanism	Crown at normal position : Free
	Crown pulled out 1st click : Instant date change
	Crown pulled out 2nd click : Time setting / Reset

4. FEATURES

Jewels	2 Jewel
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 (4.5 μ g·m)
	Minute hand : 0.80 μ N·m (80 μ g·m)
	Hour hand : 0.50 μ N·m (50 μ g·m)

5. SECONDARY BATTERY (Installed)

Type	Titanium-lithium-ion second battery
Size	ϕ 9.5mm × t 2.1mm
Nominal voltage	1.5 V
Capacity	3.0 mAh

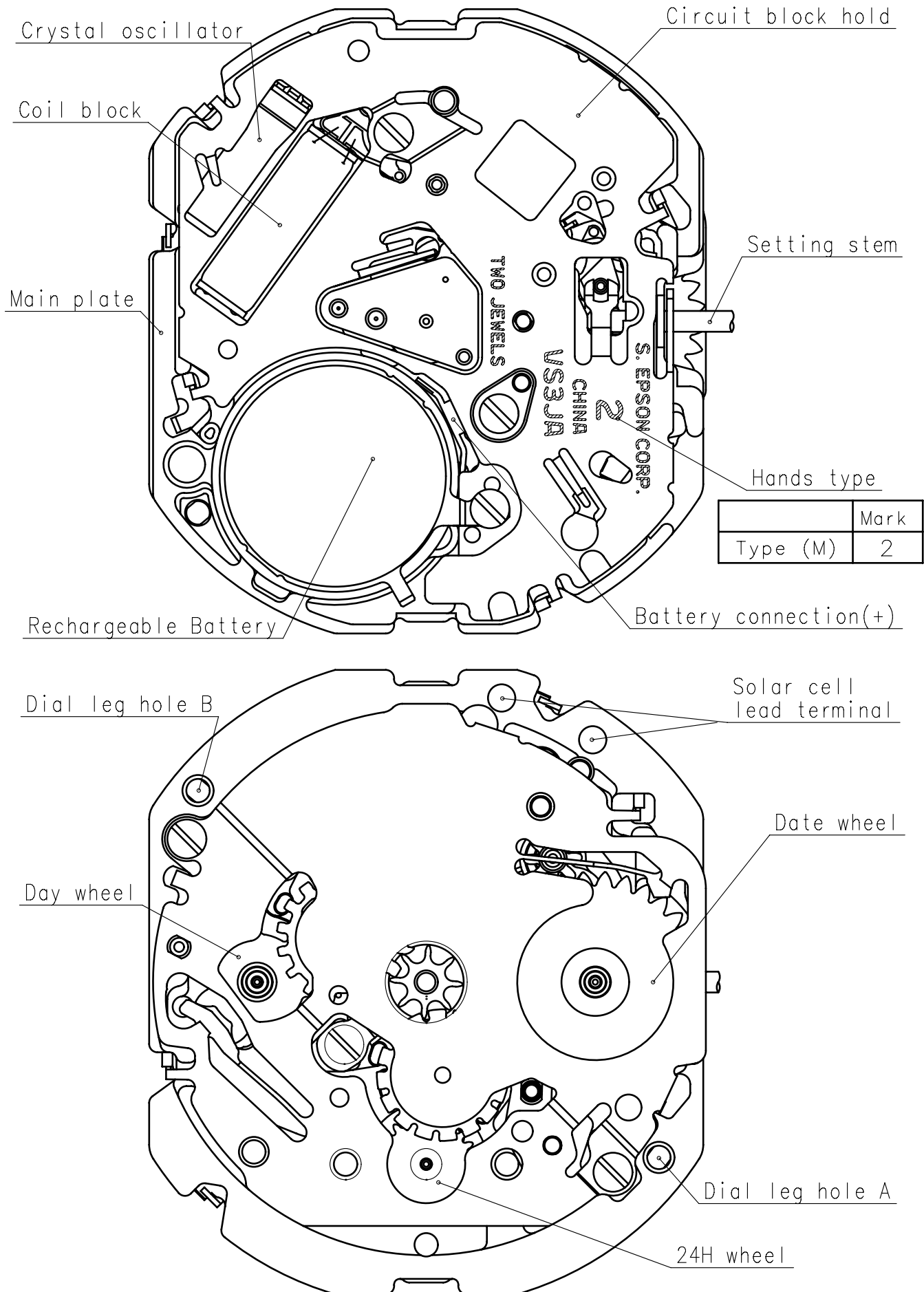
6. SEPARATED PARTS (Parts code)

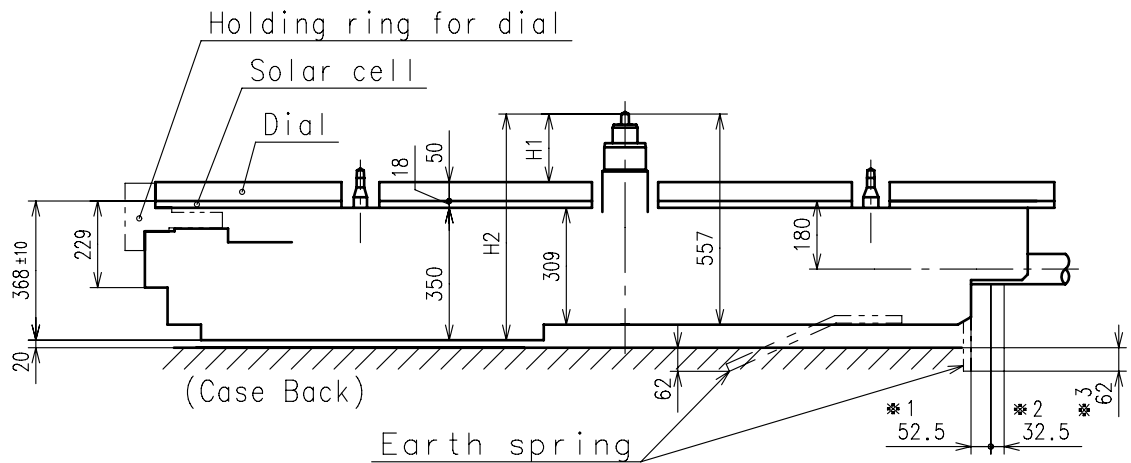
Solar cell unit	4020540
Hand setting stem	0351177
Solar cell lead terminal (2 pcs)	4246636

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

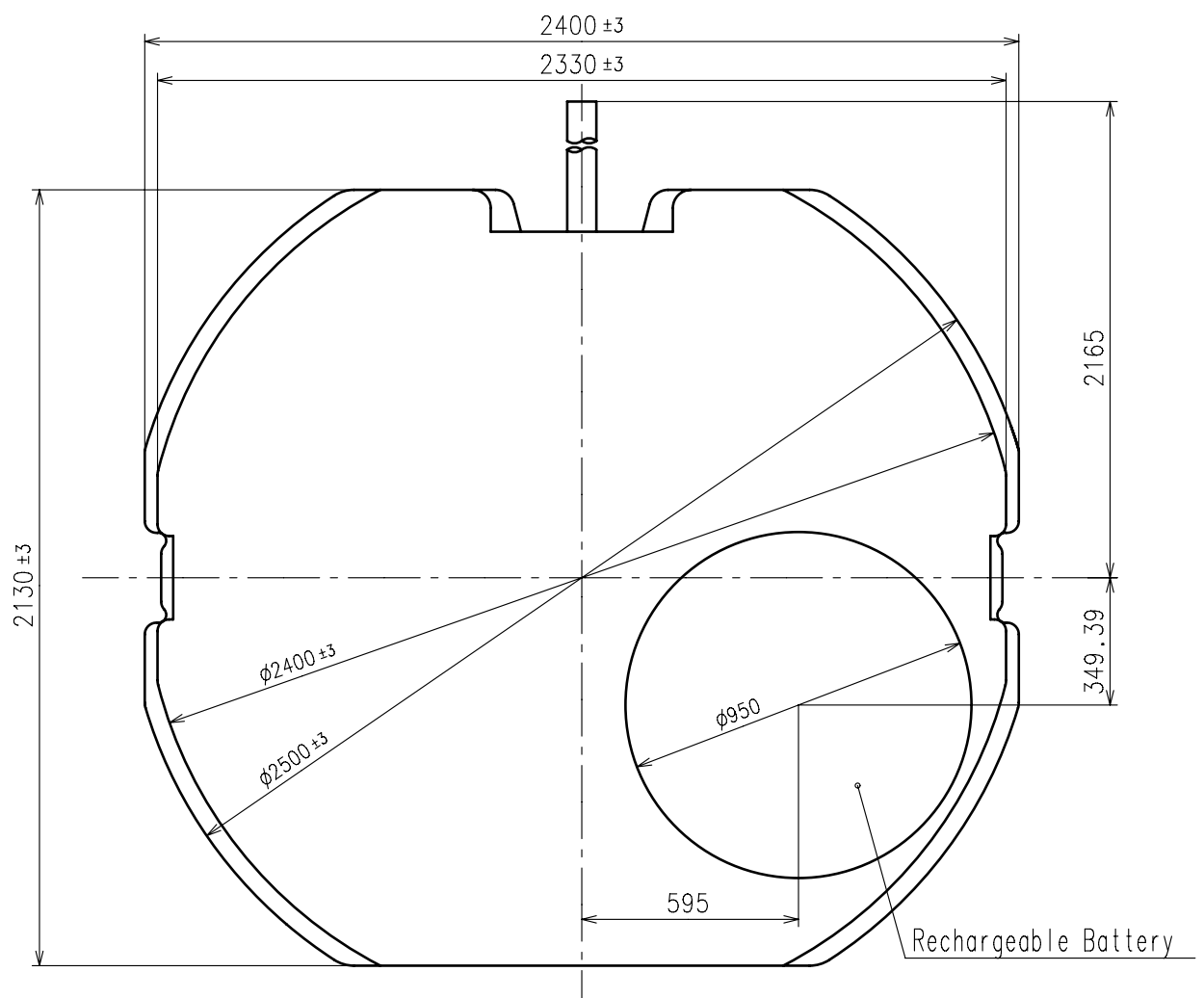
All specifications are subject to change without notice.



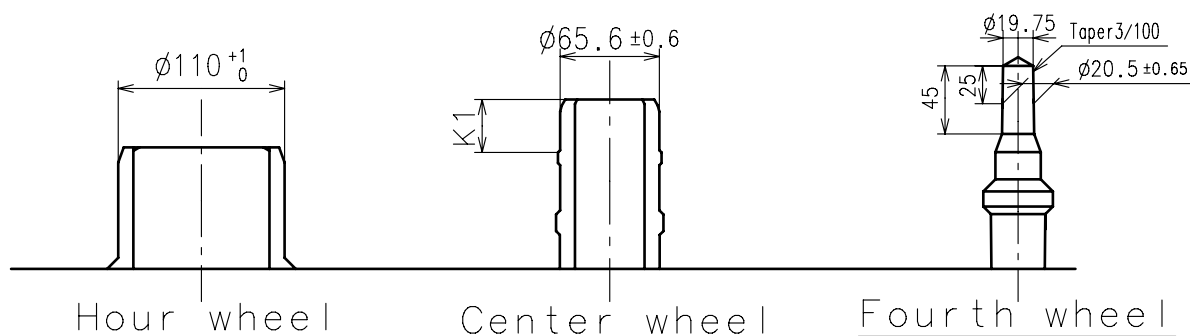


Center post		Type M (2) VS3JA1*
Maximum height from dial support	H1	180
Total height incl. movement	H2	598

- *1: First pullout stroke
 *2: Second pullout stroke
 *3: The earth spring is absolutely placed
 in contact with the case back



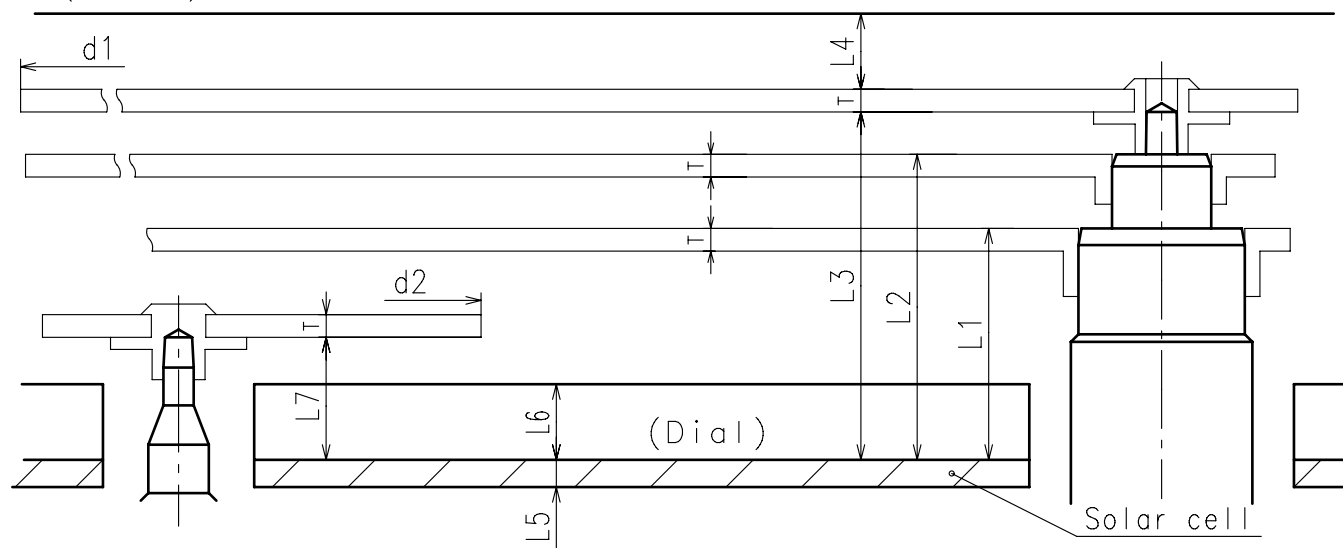
- ※ Second hand unbalance $\leq 0.045\mu\text{ N}\cdot\text{m}$ ($4.5\mu\text{ g}\cdot\text{m}$)
- ※ Minute hand unbalance $\leq 0.8\mu\text{ N}\cdot\text{m}$ ($80\mu\text{ g}\cdot\text{m}$)
- ※ Hour hand unbalance $\leq 0.5\mu\text{ N}\cdot\text{m}$ ($50\mu\text{ g}\cdot\text{m}$)
- ※ Day/Date/24Hour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



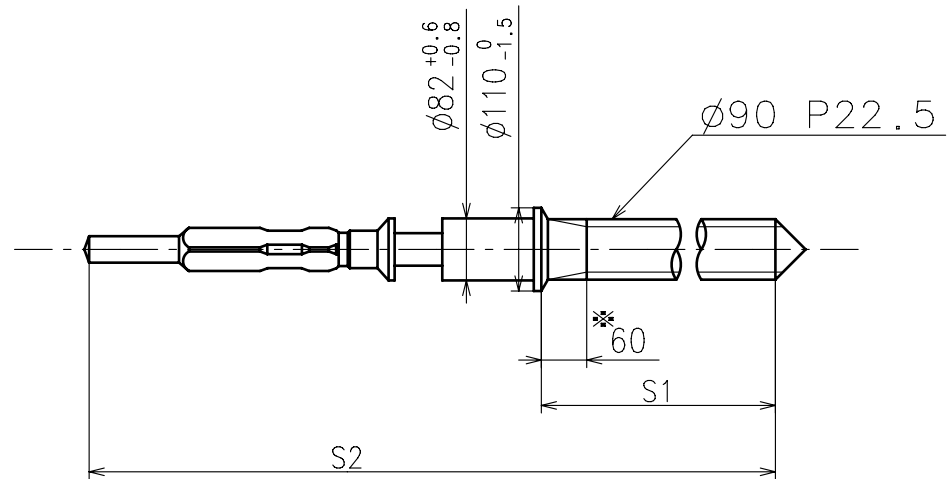
	Parts No.			Dimension
	Hour wheel	Center wheel	Fourth wheel	K1
Type M (2) VS3JA1	0271949	0221966	0241966	35

" " " " " " "

(Glass) " " " " "



	L1	L2	L3	L4	L5	L6	L7	T	d1	d2
Type M (2) VS3JA1	153	202	230	MIN: 50	18	50	81	15	MAX: ø2500	MAX: ø700

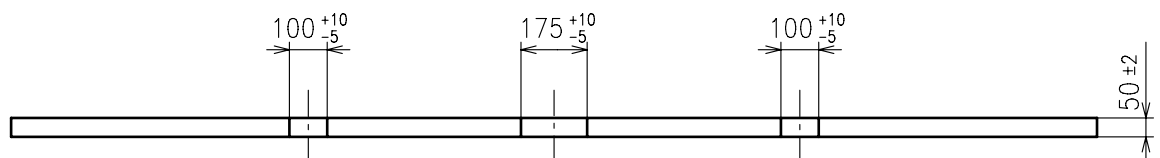
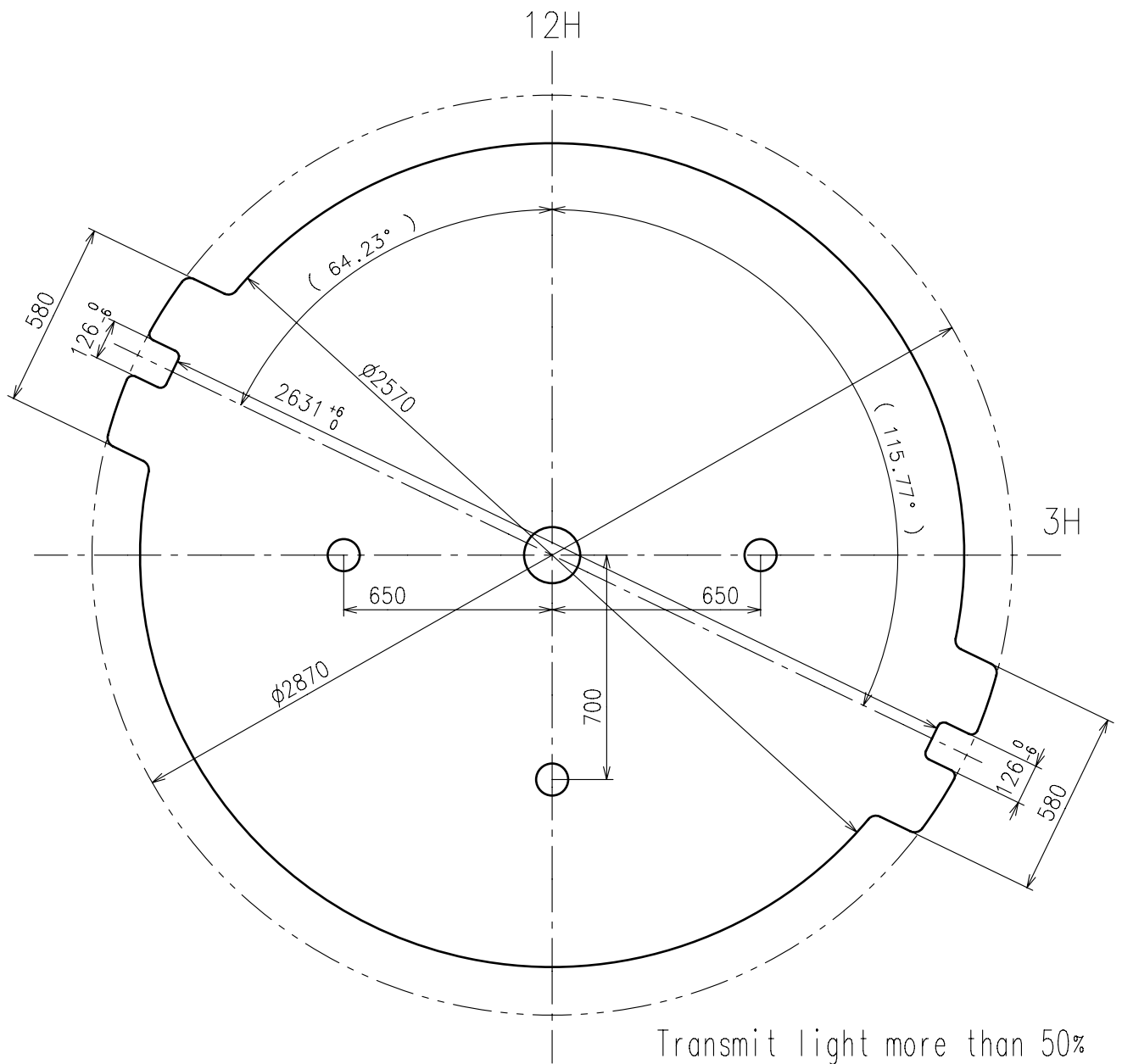


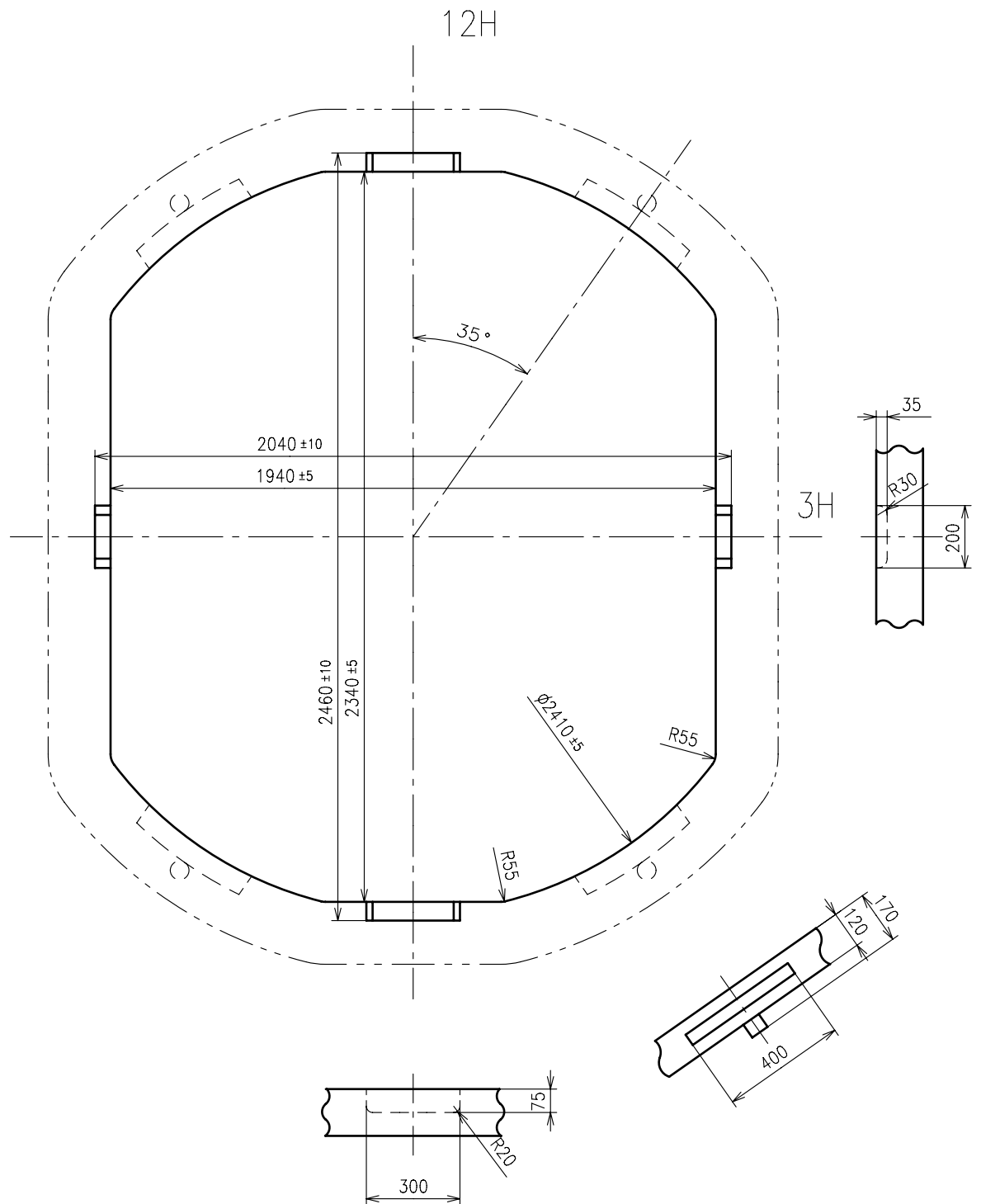
※ Not threaded

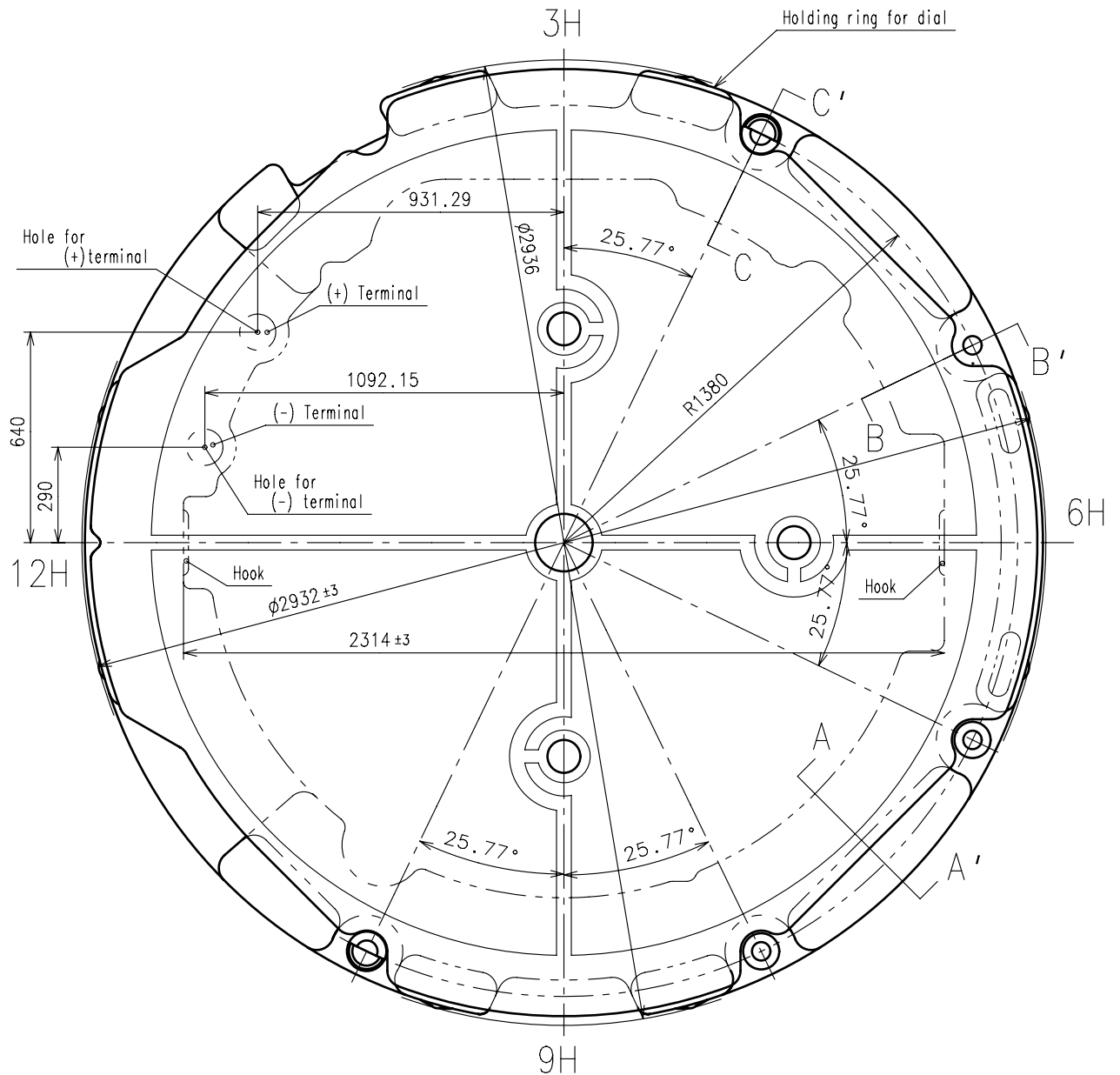
	Part No.	S1	S2
Standard	0351177	1366	1964

Material : Steel

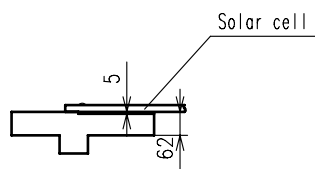
Hardness : Vickers 600±50



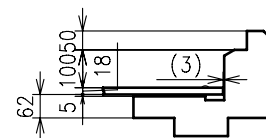




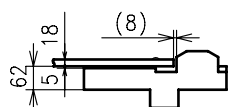
A-A' Section



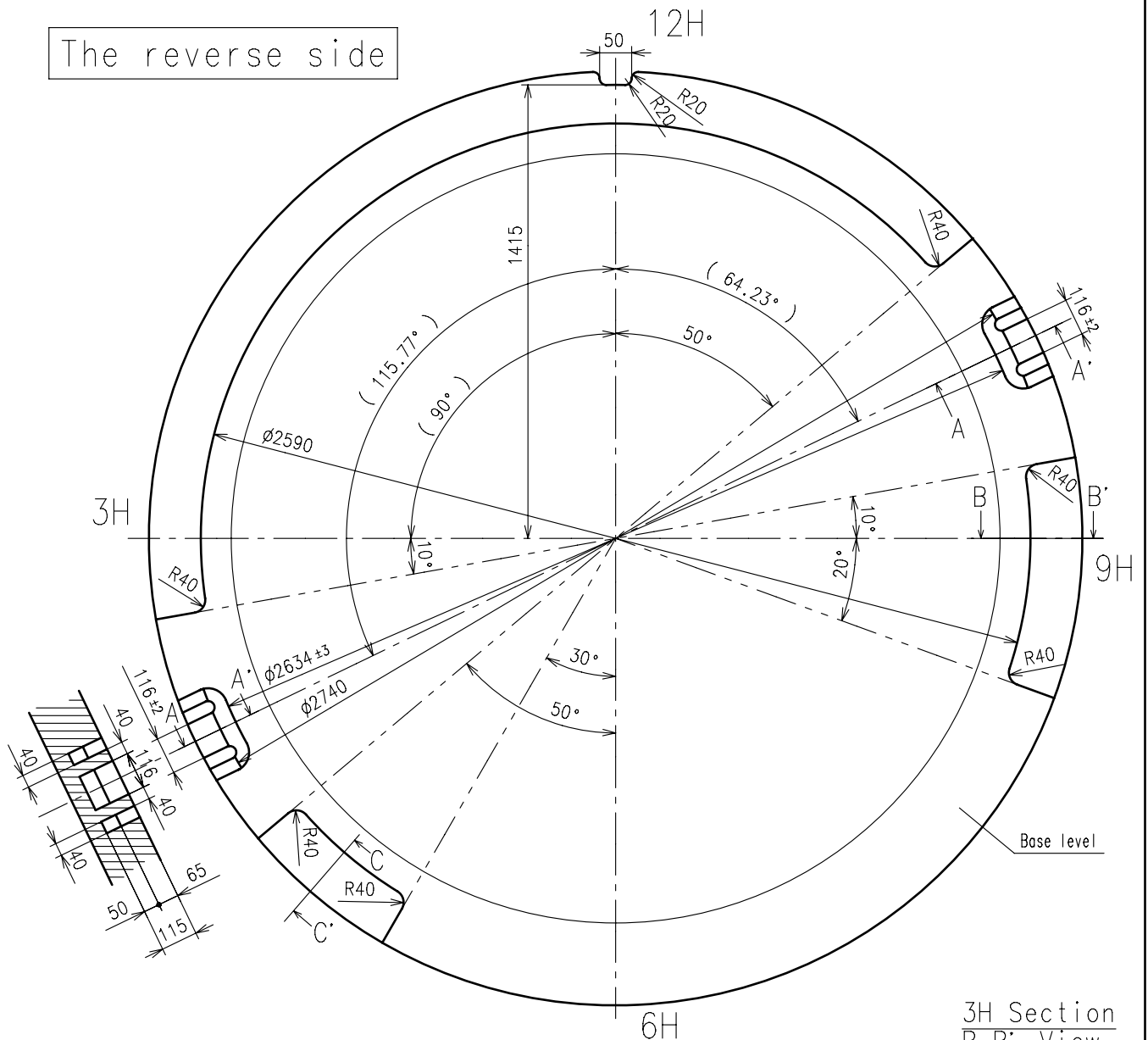
C-C' Section



B-B' Section

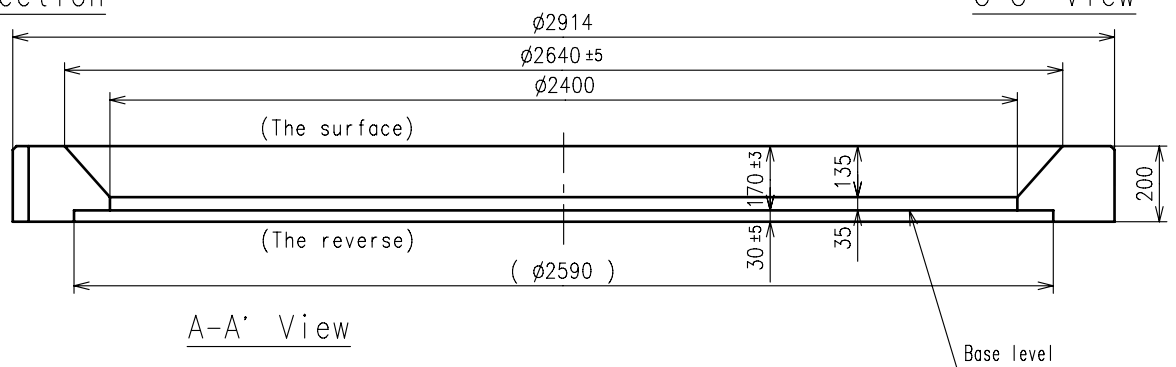


The reverse side

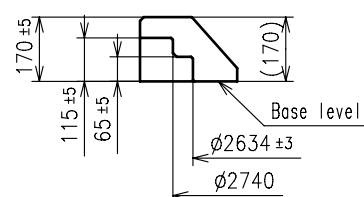


12H Section

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



A-A' View



The characteristics of this movement is as follows,

- 1 The power source of this movement is light.
- 2 This movement save the power in order to keep working at night or under the environment of less lightning.
This movement is different from the normal quartz watch, and you don't have to change the battery. We use the eco-friendly exclusive secondary battery.
- 3 Once you fully charged the battery, this movement keeps working approximately 6 months without any light.
- 4 When the reserved power is decrease at certain level, the second hand starts to move at two-seconds interval. It shows that you need to charge the battery.
- 5 This movement has the instant start function, and you can let it work instantly after the watch stopped.

1.This movement has the following characteristics

1) This movement is superior to the other movement in function and visually

- In addition to the normal hands, it has other small hand of day, date and 24 hour hand.
- Our technology enabled to make it keep working approximately 6 months.
(This is 45 times longer than that of the former ones)
- You can keep using it on wrist under the environment with little light such as in the long sleeves etc. in winter season.

2) We use the eco-friendly exclusive secondary battery

- The battery for this movement is not a normal battery, but it is an eco-friendly Titanium-lithium-ion secondary battery without any harmful material for environment.

3) Any types of transparent dials make it possible to create various designs of solar watches ever made before

- 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 color dials for dress watches.

2. More convenient function

1) Instant start function

- This movement has an instant start function and the second hand starts to move instantly under the light of 1000Lx.

2) Power depletion warning function

- When the reserved power is decrease at certain level, the second hand starts to move at two-seconds interval.
It means that you need to charge the battery.

Continuous time after two-seconds interval movement Approximately 3 days

3) Over charge warning function

- To prevent over charging, when the voltage up to a certain level, the over charge warning function will start to work.

1. Pulling out the setting stem

- When you pull out the setting stem, please put the stem at normal position and pull it out while you are pressing the hollow part of the setting lever by tweezers.
- Please note that you can not pull the setting stem when the stem is not at normal position.
- When you pull out the setting stem, please pay attention not to break or not to cut off the printed circuit board.

2. How to treat the solar cell unit

- Even though, the upper surface of this unit is coated, please pay attention not to add a crack on it. If you give some damage to the upper surface of this unit, it may largely influenced to the generation performance.

3. Attention for dials

- Please use the dial of which light transmittance is more than 50% in order to charge the battery for normal daily use.

4. Measurement of the accuracy

- Sometimes the accuracy may not be stabilized when you measure it by a state of movement. Please wait for a while, and measure it again.

VS3JA Attention for sales

Date: 16/Jan./04

Rev.: 01

1.Attention for this movement sales

- If the second hand moves at two-seconds interval, it shows lack of battery and it will soon stop.
Please hand it to the customer when the second hand keeps working at one-second interval.

Enough battery charge time to let the watch keep working one day is depend on the strength of the light.

Please refer to the following chart.

Illumination (Lx)	Source of light	Environment	Battery charge time (to full charge)	Battery charge time (from stopped condition to start moving)	Battery charge time (to charge the battery for one day use)
500	An incandescent lamp	60W 60cm	Approx. 250 hours	Approx. 15 hours	Approx. 1 hours
700	A fluorescent lamp	inside the office	Approx. 175 hours	Approx. 11 hours	Approx. 50 minutes
1000	A fluorescent lamp	30W 70cm	Approx. 120 hours	Approx. 6 hours	Approx. 30 minutes
3000	A fluorescent lamp	30W 20cm	Approx. 40 hours	Approx. 2 hours	Approx. 10 minutes
5000		30W 12cm	Approx. 22 hours	Approx. 80 minutes	Approx. 6 minutes
10000		30W 3cm	Approx. 10 hours	Approx. 30 minutes	Approx. 3 minutes
10000		cloudy	Approx. 10 hours	Approx. 30 minutes	Approx. 3 minutes
100000		fine weather	Approx. 3 hours	Approx. 8 minutes	Approx. 1 minutes

2.How to change the secondary battery

- Please set the exclusive secondary battery.
To prevent explosion, it is not conduct if you accidentally set the silver oxide battery to this movement.

3.In order not to decline the watch accuracy

Please do not put the watch under the environment that the temperature in the showcase will be more than 60 degrees for long time. It may decline the watch accuracy.