



Cal. AS87A

15.3×17.8 mm
H 4.21 mm

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Date: 31/May/'13

S.EPSON Products

CAL. AS87A

Solar Quartz 6 3/4 × 8''' Movement / Three Hands (H/M/S) with Calendar

1. MOVEMENT DIMENSIONS

Outside diameter	16.30mm(3-9H) × 18.20mm(12-6H)
Casing diameter	15.30mm(3-9H) × 17.80mm(12-6H)
Total height	4.21mm (Including solar cell : 4.61mm)

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
Calendar	Instant setting device for date calendar
Reset switch	
Working time	Approx. 2 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 / Reset

4. FEATURES

Jewels	0 Jewels
Anti-magnetism	Over 1600A/m (Direct current magnetic field)
Driving current consumption	Approx. 1.64 μ A (1.4V)
Operation stopping voltage	1.2 V
Solar cell type	Amorphous silicon solar cell
Maximum unbalance of hands	Second hand : 0.06 μ N·m
	Minute hand : 0.6 μ N·m
	Hour hand : 0.5 μ N·m
Moment of inertia	Second hand : less than 0.6 μ g·m ²

5. BATTERY

Type	Titanium-lithium-ion second battery
Size	φ 6.8mm × t 2.15mm
Nominal voltage	1.5 V
Capacity	2.5 mAh

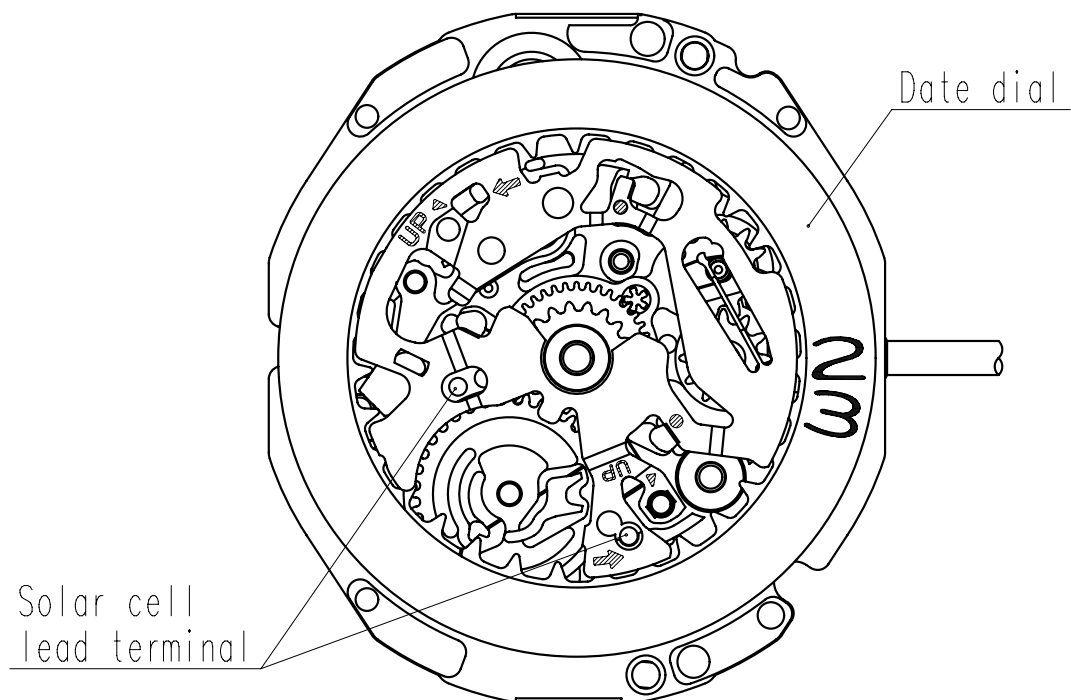
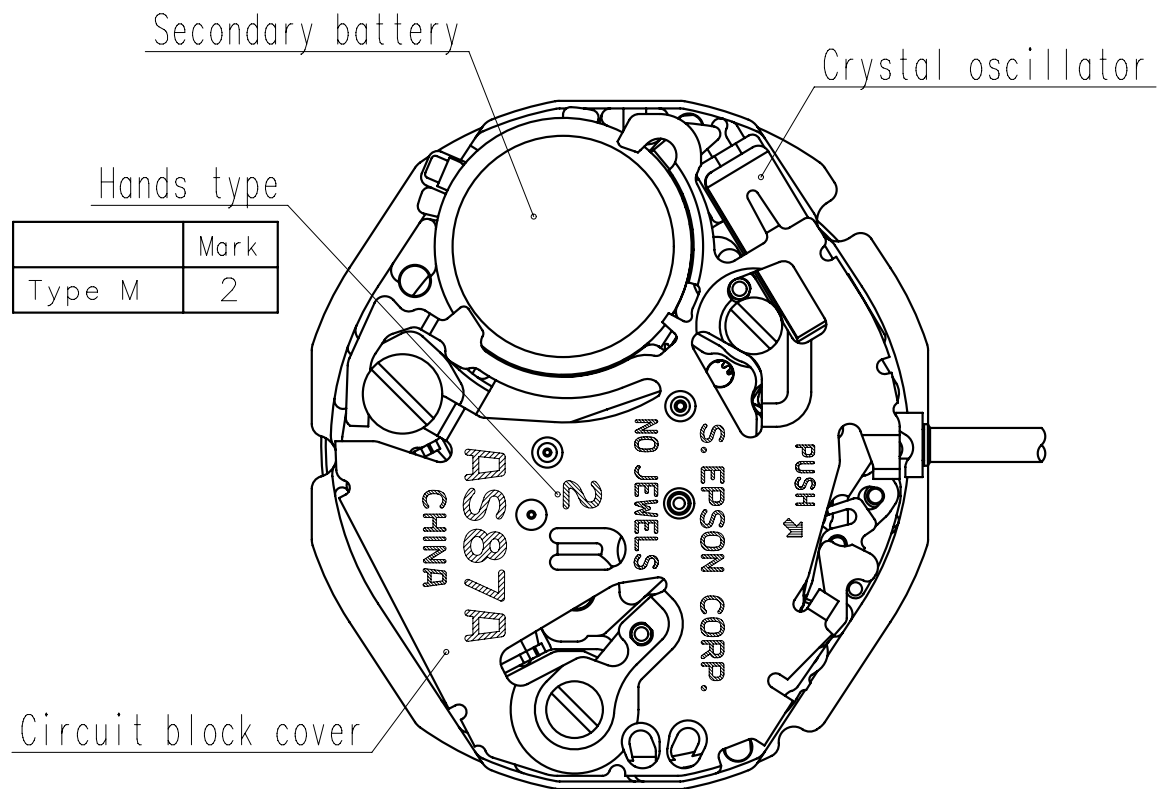
6. SEPARATED PARTS (Parts code)

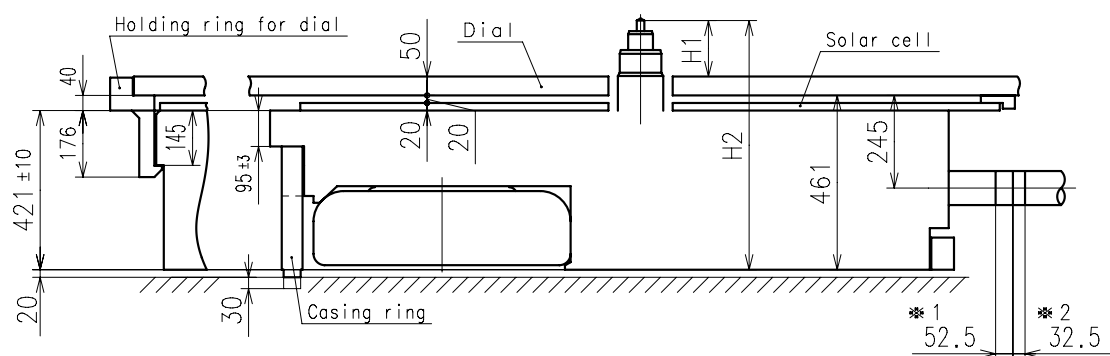
Hand setting stem	0351177
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7. TEST OF ACCURACY

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.

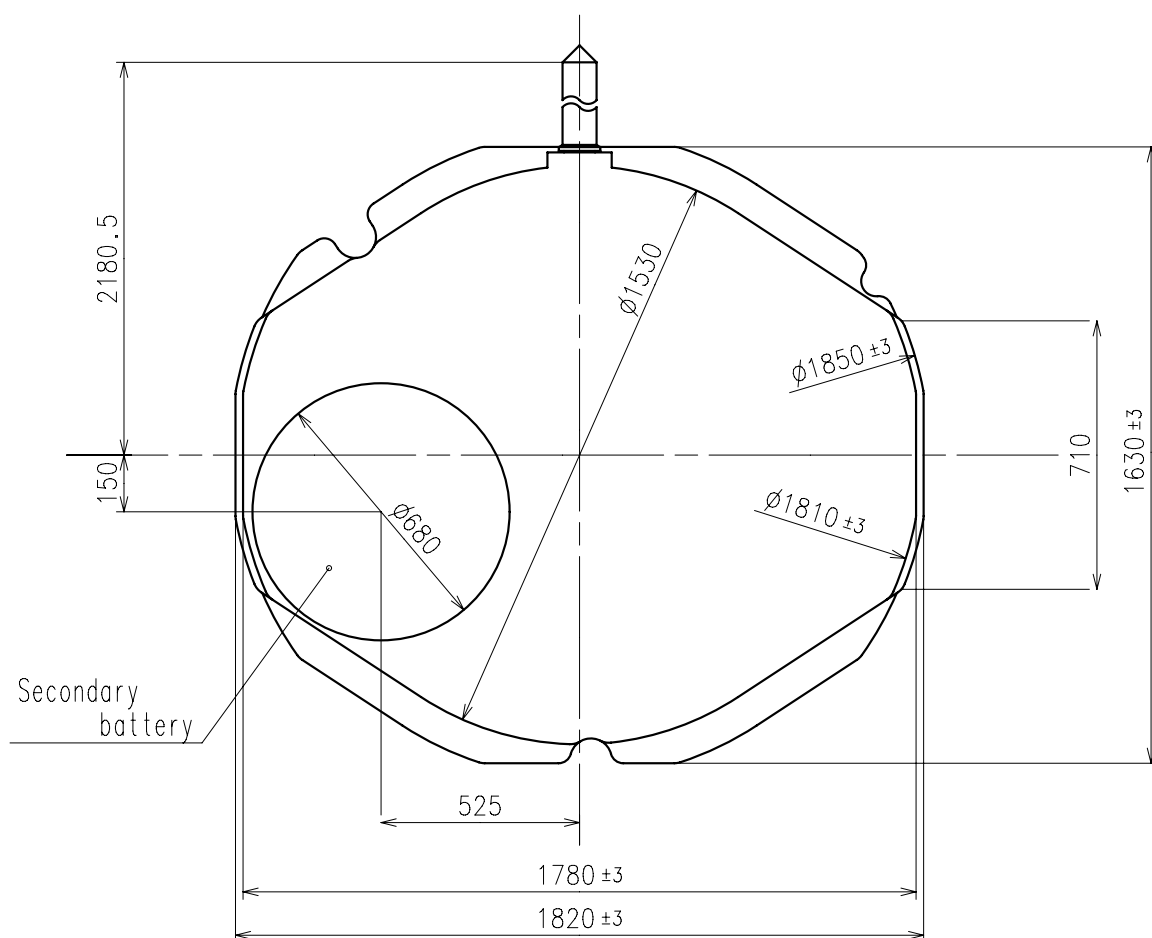




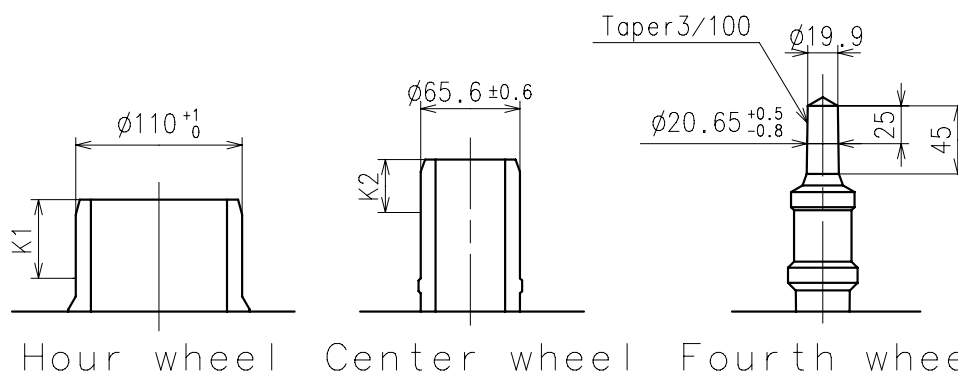
*1:First pullout stroke

*2:Second pullout stroke

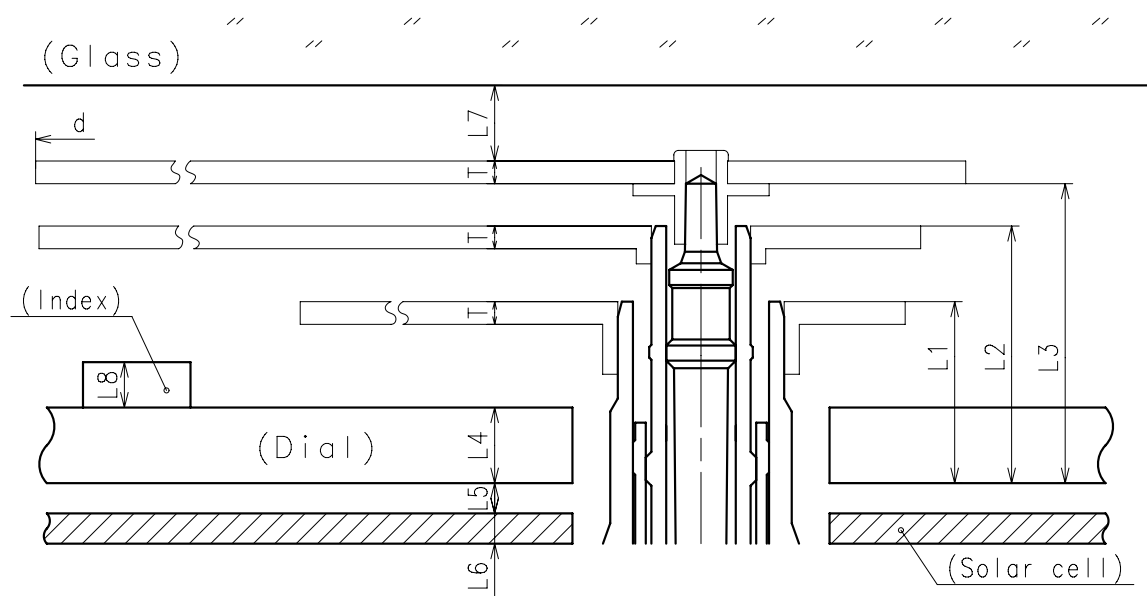
Center post		Type M (2) AS87A**
Maximum height from dial	H1	148
Total height incl. movement	H2	659



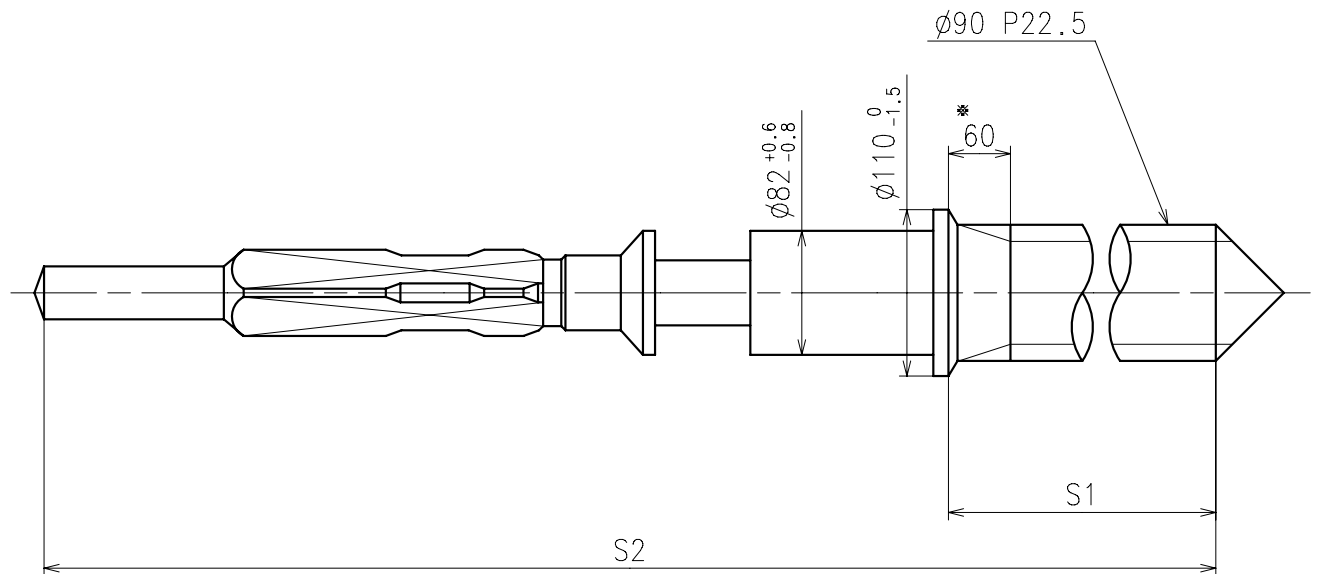
- ※ Hour hand unbalance $\leq 0.5\mu\text{ N}\cdot\text{m}$ ($50\mu\text{ g}\cdot\text{m}$)
- ※ Minute hand unbalance $\leq 0.6\mu\text{ N}\cdot\text{m}$ ($60\mu\text{ g}\cdot\text{m}$)
- ※ Second hand unbalance $\leq 0.06\mu\text{ N}\cdot\text{m}$ ($6\mu\text{ g}\cdot\text{m}$)
- ※ Second hand moment of inertia $\leq 0.6\mu\text{ g}\cdot\text{m}^2$



	Parts No.			Dimension	
	Hour wheel	Center wheel	Fourth wheel	K1	K2
Type M (2) AS87A**	0271649	0221654	0241584	60	35



	L1	L2	L3	L4	L5	L6	L7	L8	T	d
Type M(2) AS87A**	120	170	198	50	20	20	MIN: 50	MAX: 30	15	MAX: Ø1500



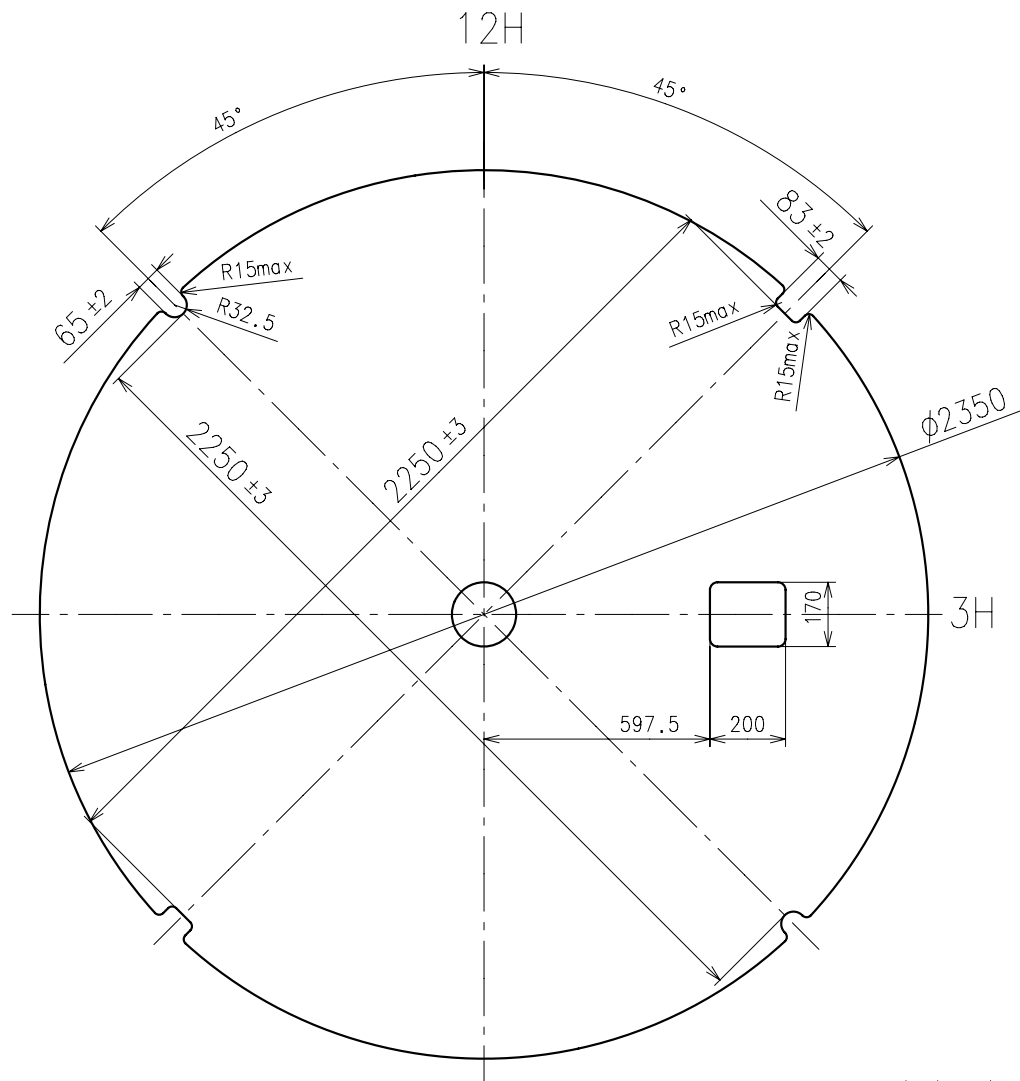
※ Not threaded

	Part No.	S1	S2
Standard	0351177	1366	1964

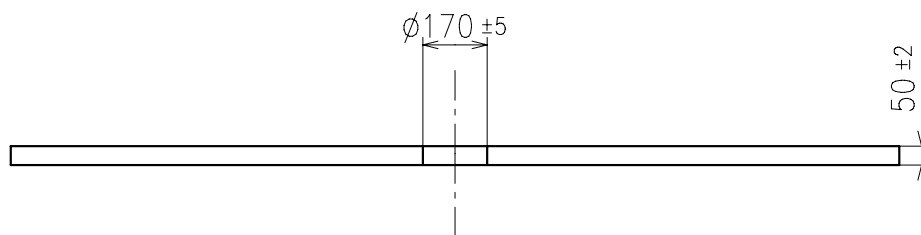
Material : Steel

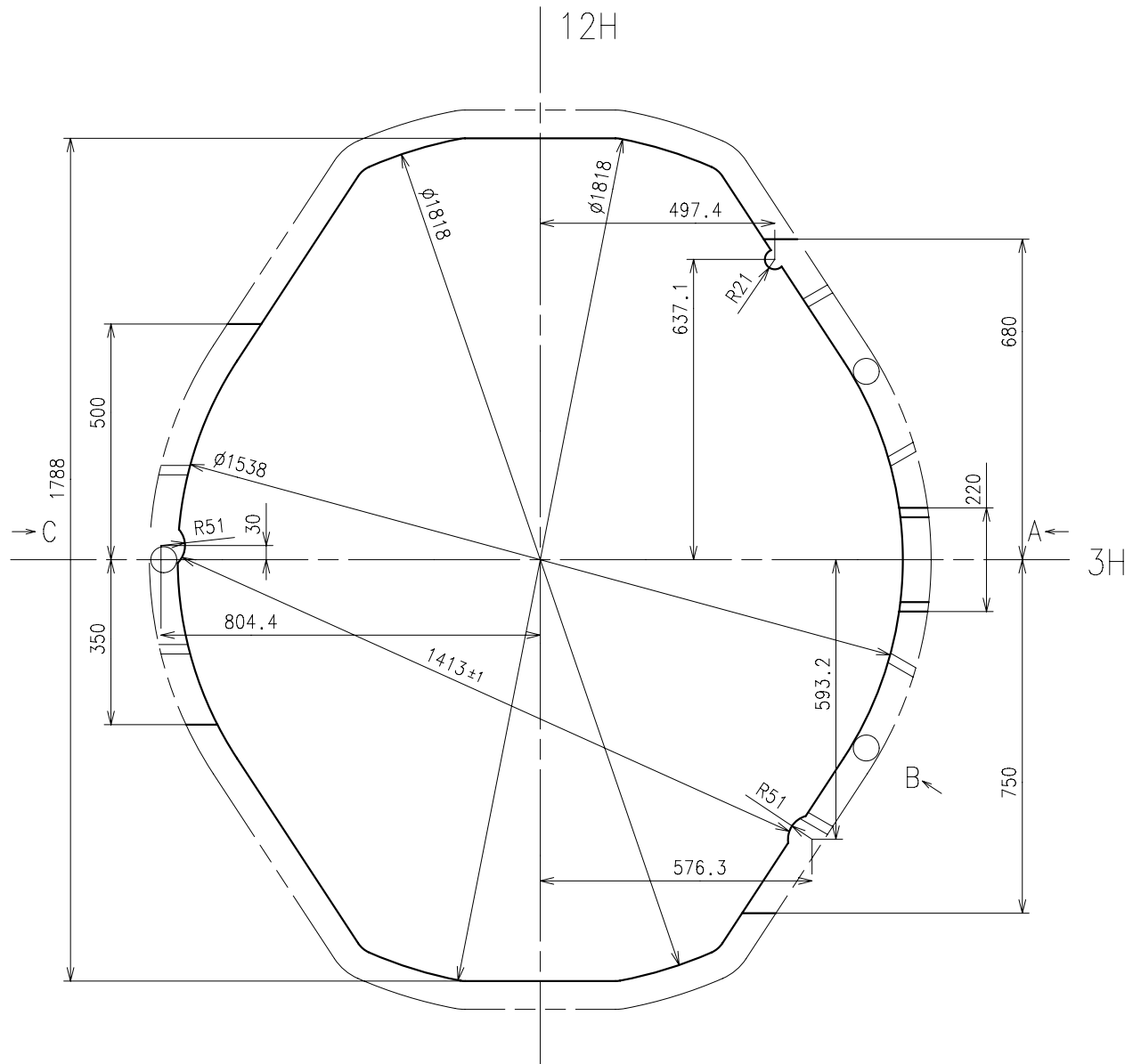
Hardness : Vickers 600±50

transmit light more than 40%

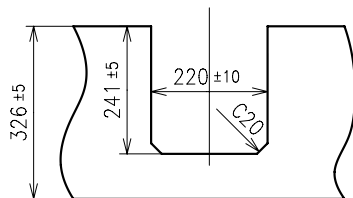


Case body inside diameter: φ2380

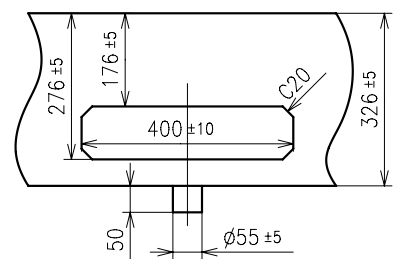




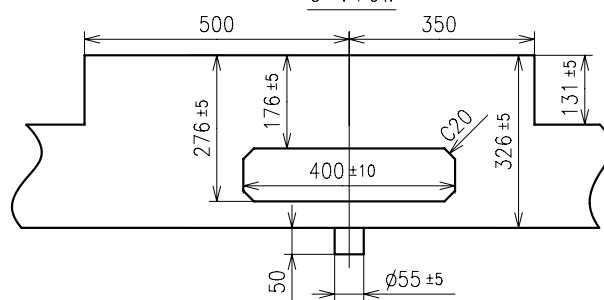
A view

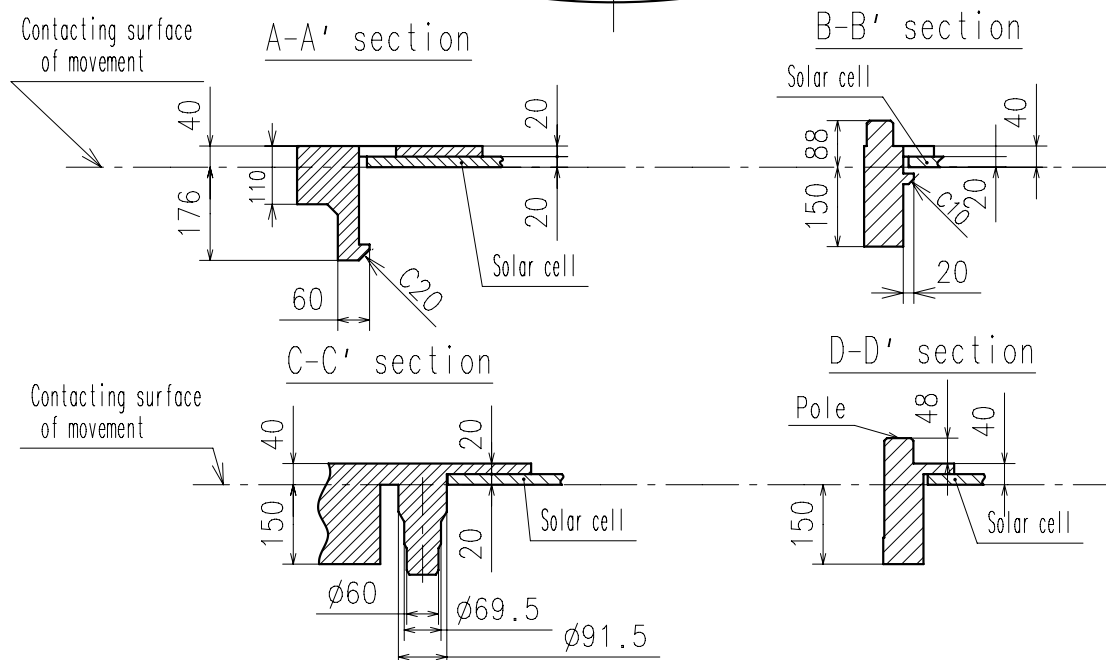
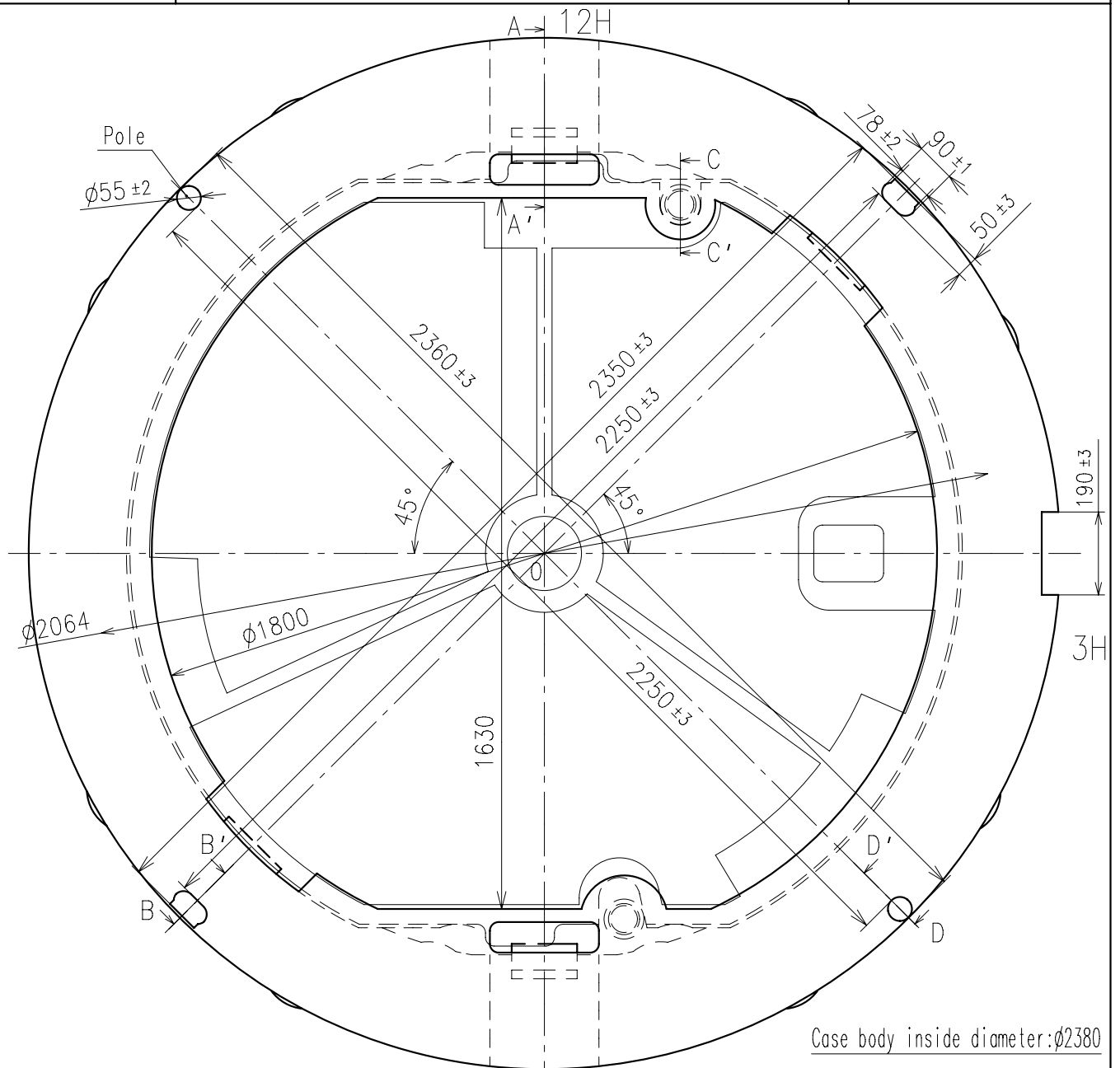


B view



C view





AS87A Characteristics

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. Working time

Expected life per charge from full charge to stoppage will be around 2 months.

4. Eco-friendly

The secondary battery is Titanium-lithium-ion battery without any environmentally harmful substances.

AS87A Attention

1. How to pull out the setting stem

When you pull out the setting stem, please put the 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

Please pay attention not to scratch the surface of solar cell unit.

3. Attention for dial transparency rate

Please use the dial with transparency rate more than 40%.

(Effective aperture is ϕ 1.9mm)

4. The guideline of charging time is as in below

(Dial transparency rate = 40%)

Illumination (Lx)	Source of light	Environment	A (Approx. Hours)	B (Approx. Hours)	C (Approx. Minutes)
700	A fluorescent lamp	Inside the office	—	45	132
3,000		30W 20cm	60	4	33
10,000	Sun light	Cloudy	20	1.5	11
100,000		Fine weather	5	15 minutes	2.5

* For reference: 1,000Lx is 70cm under from 30W fluorescent lamp

Condition A : Time required for full charge

Condition B : Time required for steady operation

Condition C : Time to charge 1 day of power

5. 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.

6. Secondary battery unit replacement

Please set the exclusive secondary battery unit.

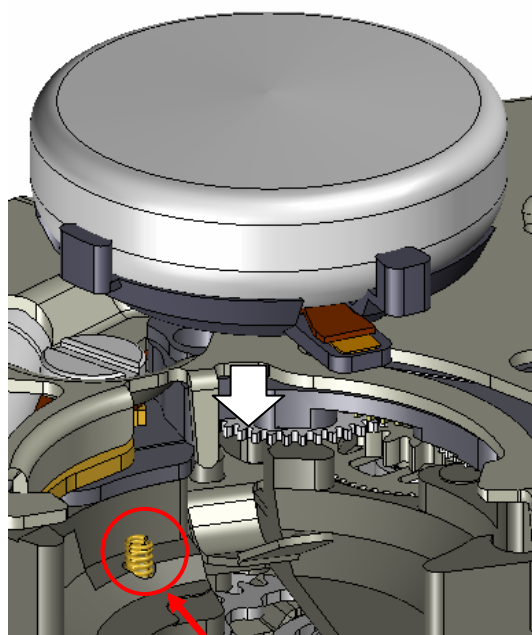
If the silver oxide battery is accidentally be set and charged, there is a possibility of battery explosion.

To prevent the battery explosion, it is adopted safety structure

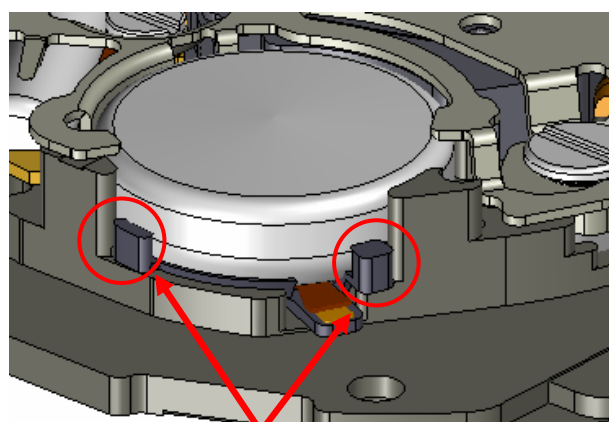
not to charge the silver oxide battery even if it is accidentally be set.

When the secondary battery is assembled, please match the phase in accordance with this illustration and push the battery vertical direction.

Please pay attention not to bend the solar cell lead terminal.



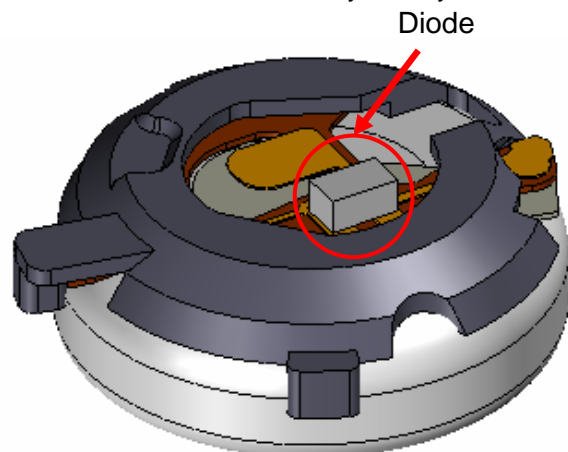
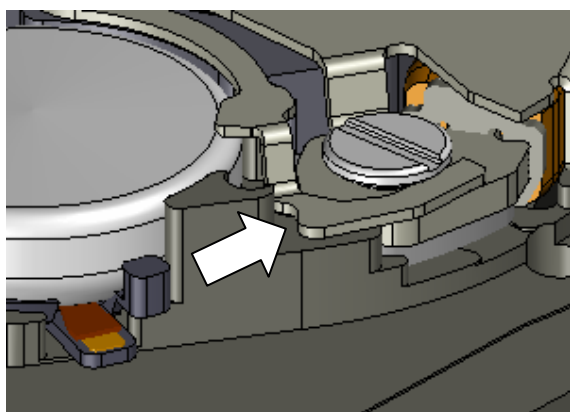
Solar cell lead



Setting position

When the secondary battery is disassembled, please broaden the spring of circuit block cover toward the (⇒) direction and remove the battery in accordance with this illustration.

Please refrain from touching the diode element on the back side of the secondary battery.



AS87A Attention-3

Date: 31/Jan./'13

Rev.: 00

7.Attention for hands disassemble

When the hand is disassembled, please be sure to hold the dial.

If the hand is disassembled without holding the dial, it may have a possibility to break the movement.

