TIME MODULE

Cal. VS37A

ϕ24.0 mm
H 2.57 mm

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Date: 31/Jan./'12

S.EPSON Products

CAL. VS37A

Solar Quartz 10 1/2''' Movement / Three hands(H/M/S) with Calendar

1. MOVEMENT DIMENSIONS

Outside diameter	φ25.00mm × 21.30mm(3-9H) × 24.00mm(12-6H)
Casing diameter	φ24.00mm × 19.30mm(3-9H) × 23.30mm(12-6H)
Total height	2.57mm (Including secondary battery : 2.98mm)

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℃ to +50℃
Regulation device	Nil (Pre-adjusted)

3. INDICATOR / FUNCTIONS

3 Hands	Hour / Minute / Second
Calendar	Instant setting device for date calendar
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. 6 hours (Under 100 KLX sunlight)
	Approx. 43 hours (Under 3000LX 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. 0.6μA (1.35V)
Operation stopping voltage	1.0V
Solar cell type	Amorphous silicon solar cell
Maximum unbalance of hands	Second hand : 0.05μN･m (5 μg･m)
	Minute hand : 0.80μN･m (80 μg･m)
	Hour hand : 0.50μN･m (50 μg･m)

5. SECONDARY BATTERY (Installed)

Type / Size	Titanium-lithium-ion second battery
Size	φ9.5mm × t 2.1mm
Nominal voltage	1.5 V
Capacity	3.0 mAh

6. SEPARATED PARTS (Parts code)

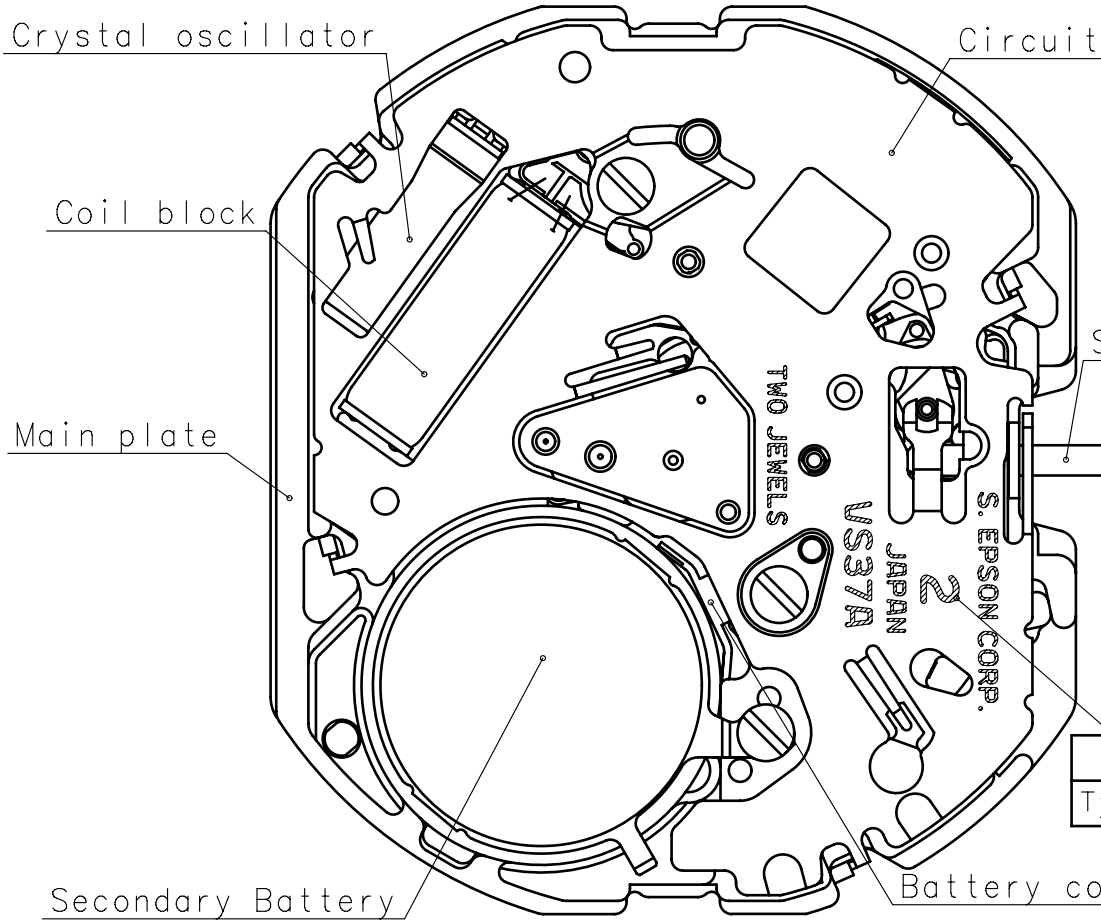
Solar cell unit	4020579
Hand setting stem	0351177
Solar cell lead terminal (2 pcs)	4246513
Dial washer	0491735

7. TEST OF ACCURACY

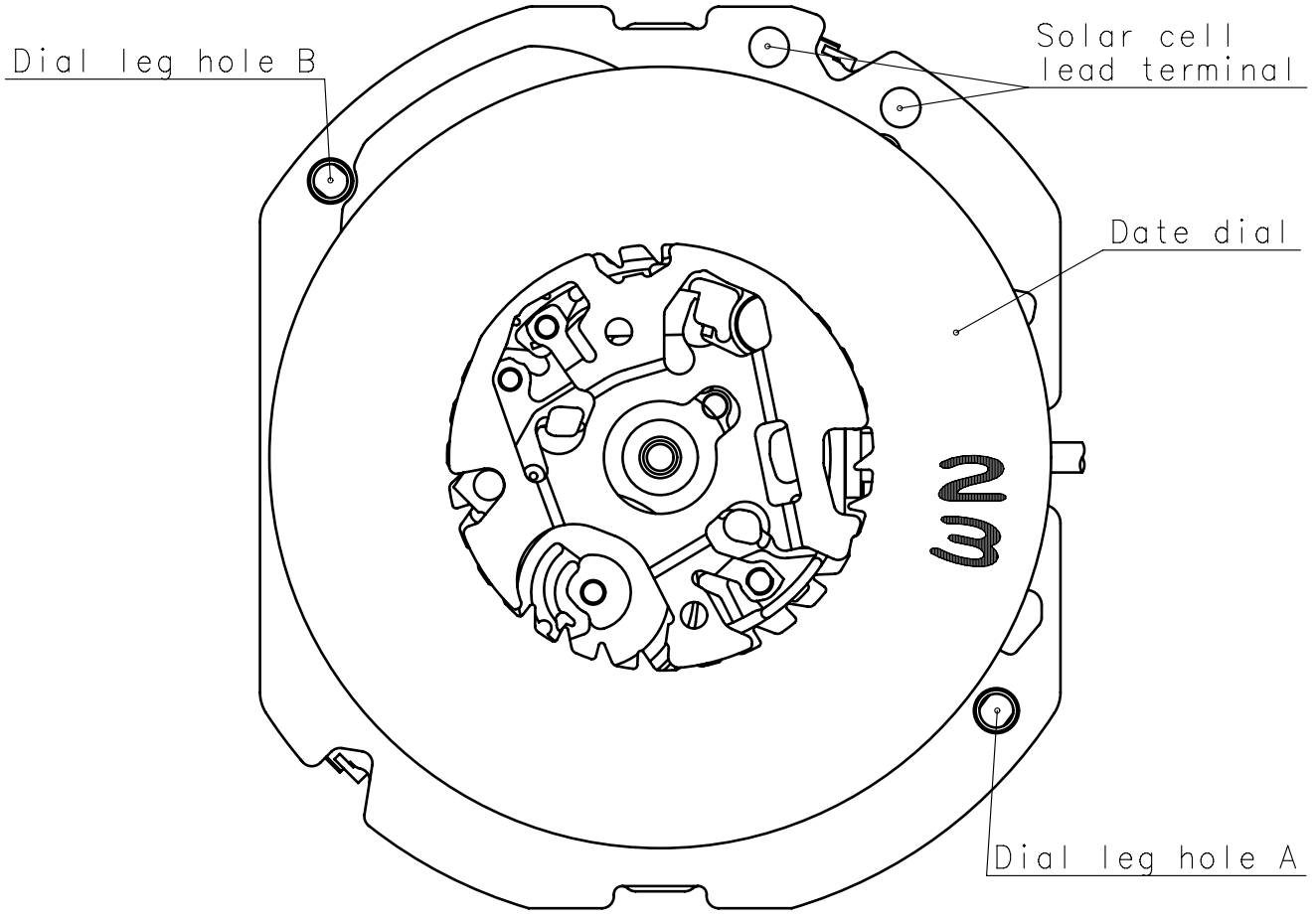
Equipment to be used	SEIKO quartz tester QT-99,
	Greiner quartz timer-C , Witschi Q-tester 4000
Duration of measurement	10 seconds
Microphone to be used	Electromagnetic detection type

All specifications are subject to change without notice.

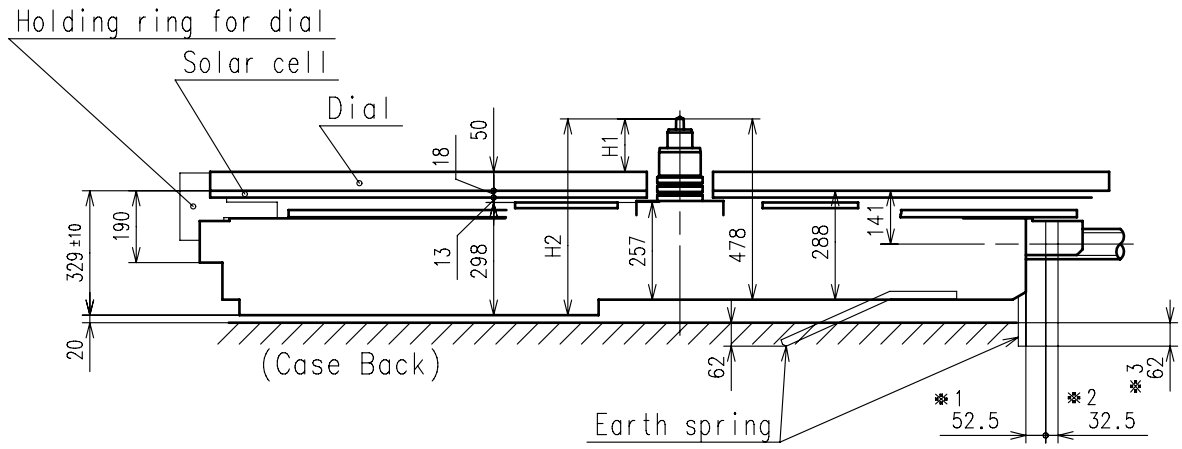
Cal. VS37A	Appearance	Date:13/May/'11
		Rev.:01



	Mark
Type (M)	2

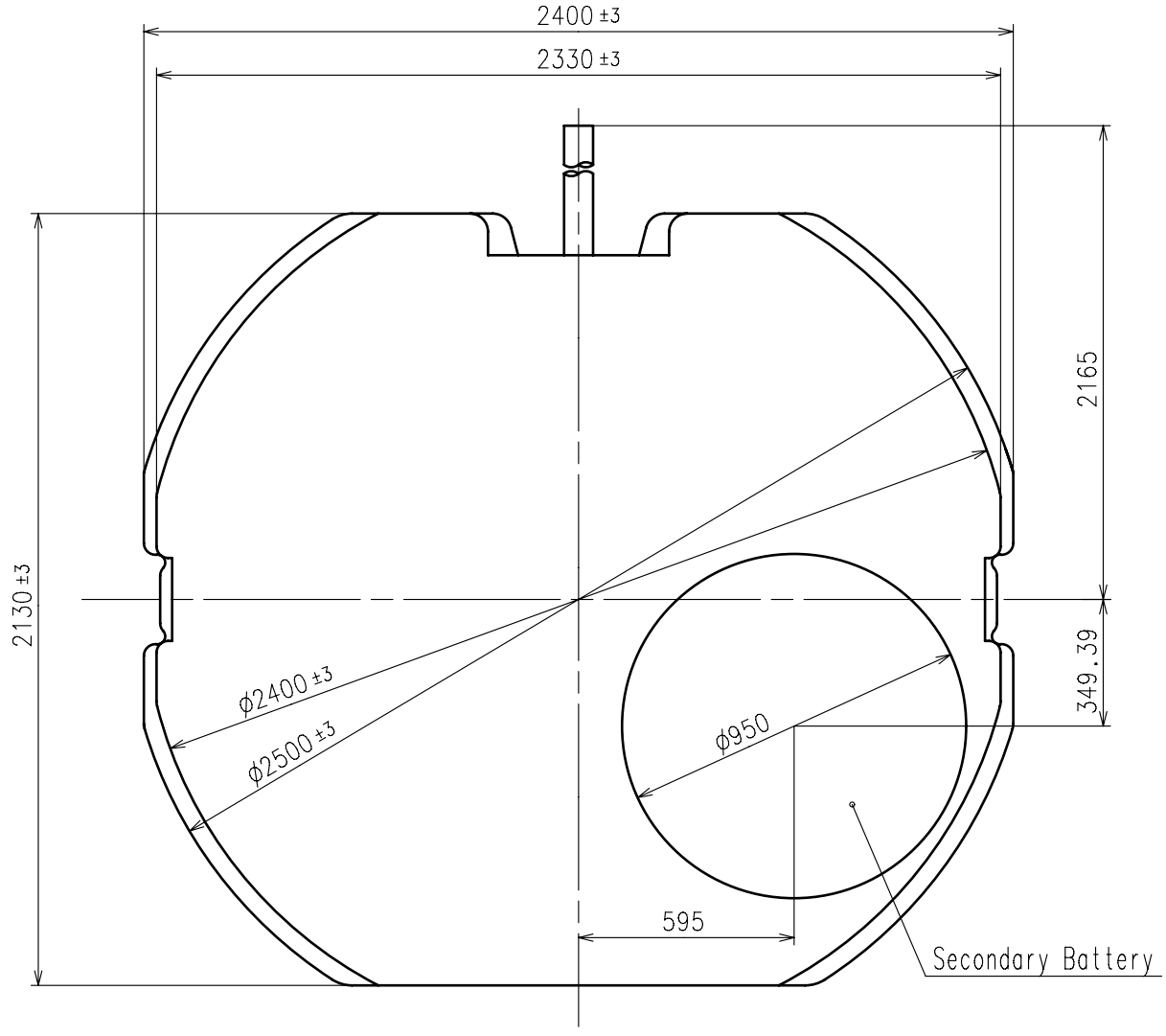


Cal. VS37A	Casing	Date:13/May/'11
		Rev.:01



Center post		Type M (2)
Maximum height from dial suppot	H1	140
Total height incl.movement	H2	526

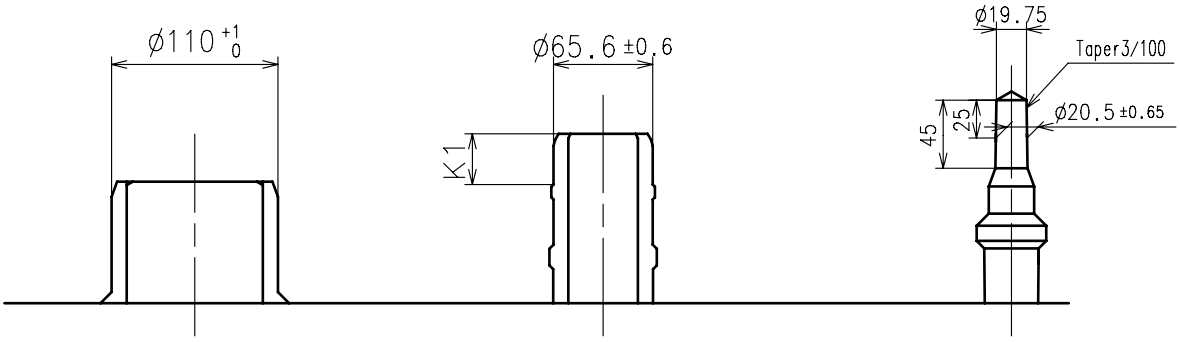
※1:First pullout stroke
※2:Second pullout stroke
※3:The earth spring is absolutely placed in contact with the case back



Unit : 1=1/100mm

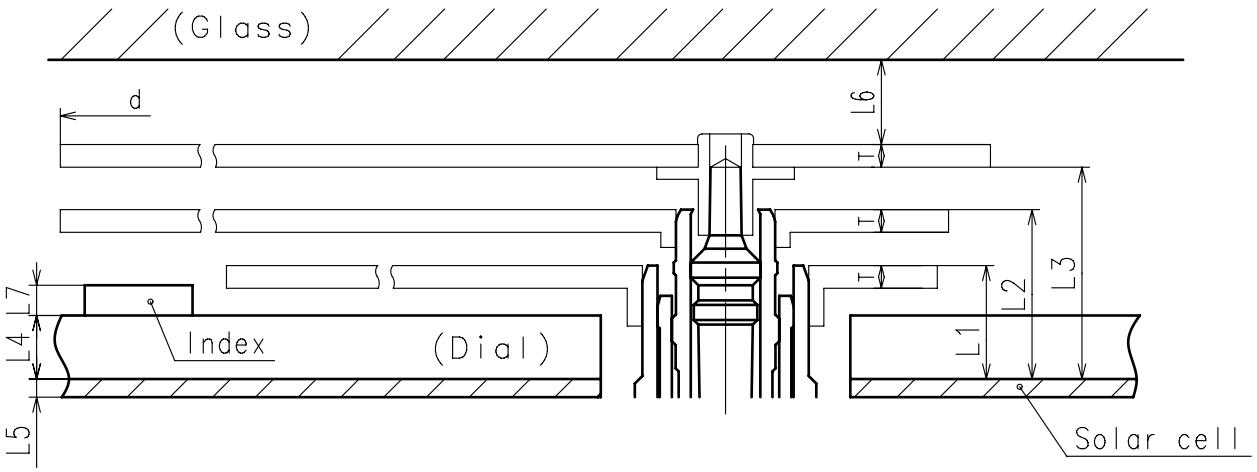
Cal. VS37A	Hand fitting	Date:19/Nov./'10
		Rev.:00

※Hour hand unbalance ≦ 0.5μ N・m (50μ g・m)
※Minute hand unbalance ≦ 0.8μ N・m (80μ g・m)
※Second hand unbalabce ≦ 0.05μ N・m (5μ g・m)



Hour wheel　　Center wheel　　Fourth wheel

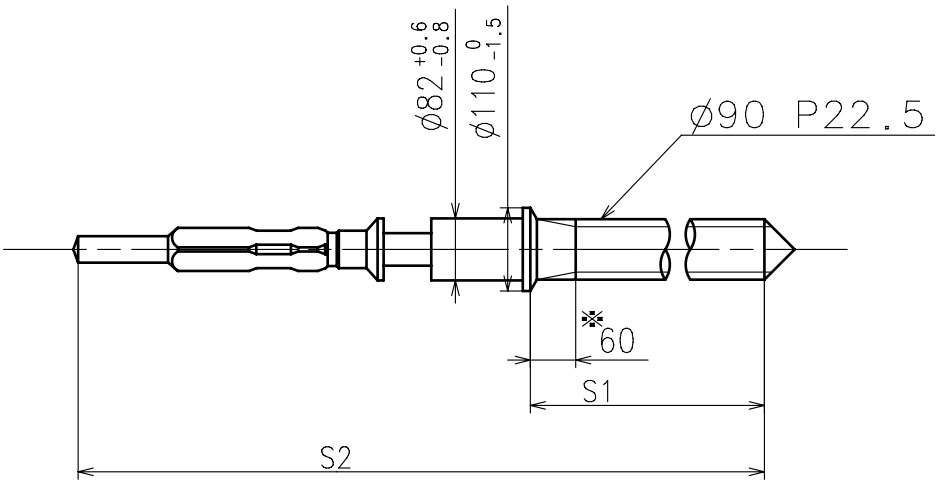
	Parts No.			Dimension
	Hour wheel	Center wheel	Fourth wheel	K1
Type M (2)	0271948	0221939	0241934	35



	L1	L2	L3	L4	L5	L6	L7	T	d
Type M (2)	113	162	190	50	18	MAX: 50	MAX: 50	15	MAX: ø2500

Unit : 1=1/100mm

Cal. VS37A	Hand setting stem	Date:19/Nov./'10
		Rev.:00



※ Not threaded

	Part No.	S1	S2
Standard	0351177	1366	1964

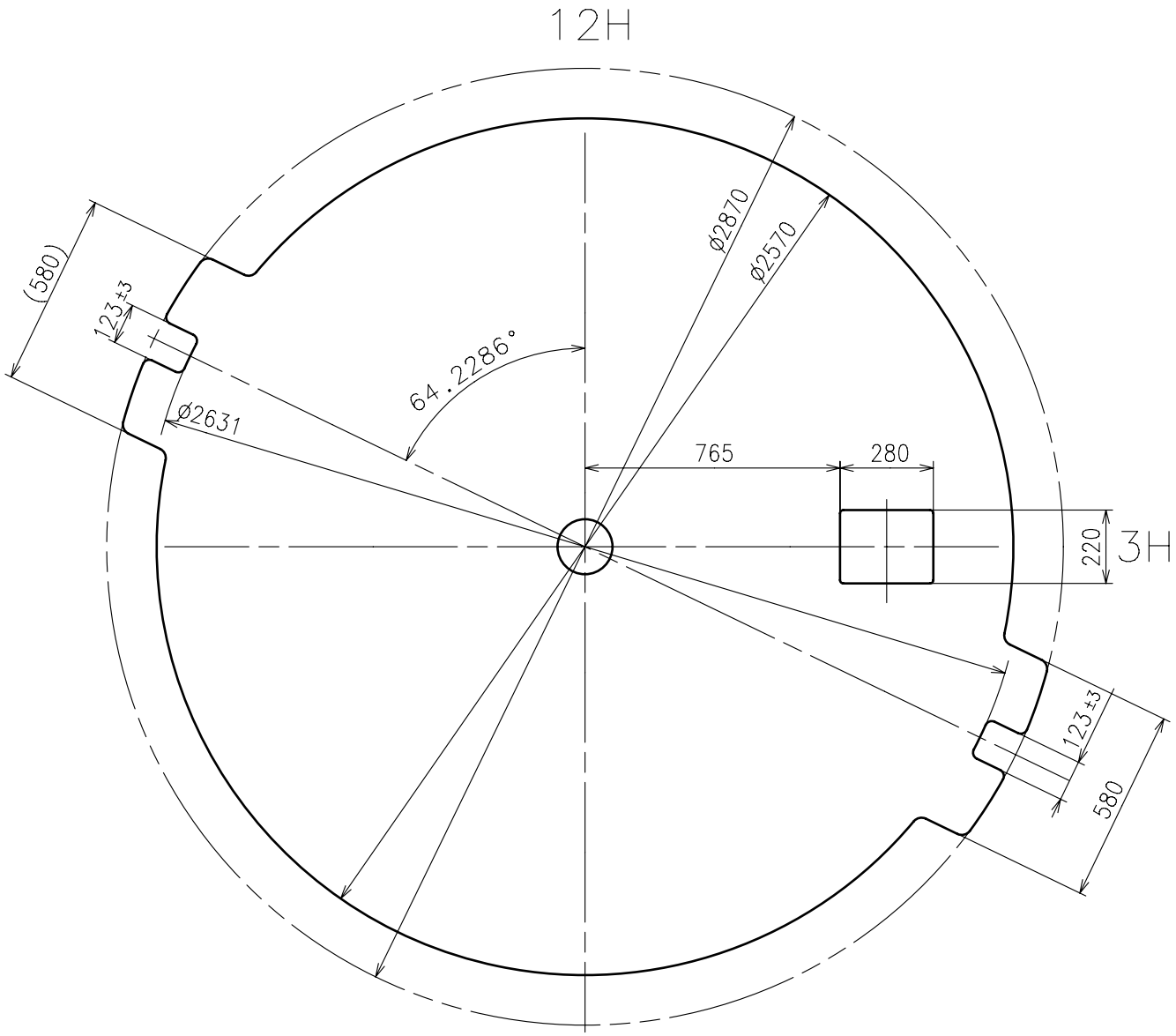
Material : Steel

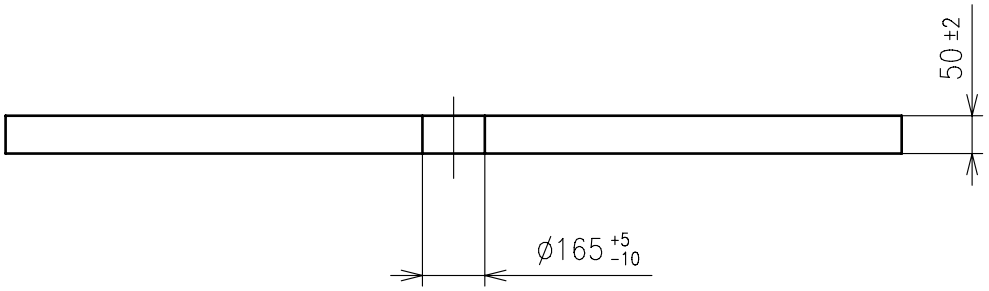
Hardness : Vickers 600±50

Unit : 1=1/100mm

Cal. VS37A	Dial	Date:19/Nov./'10
		Rev.:00

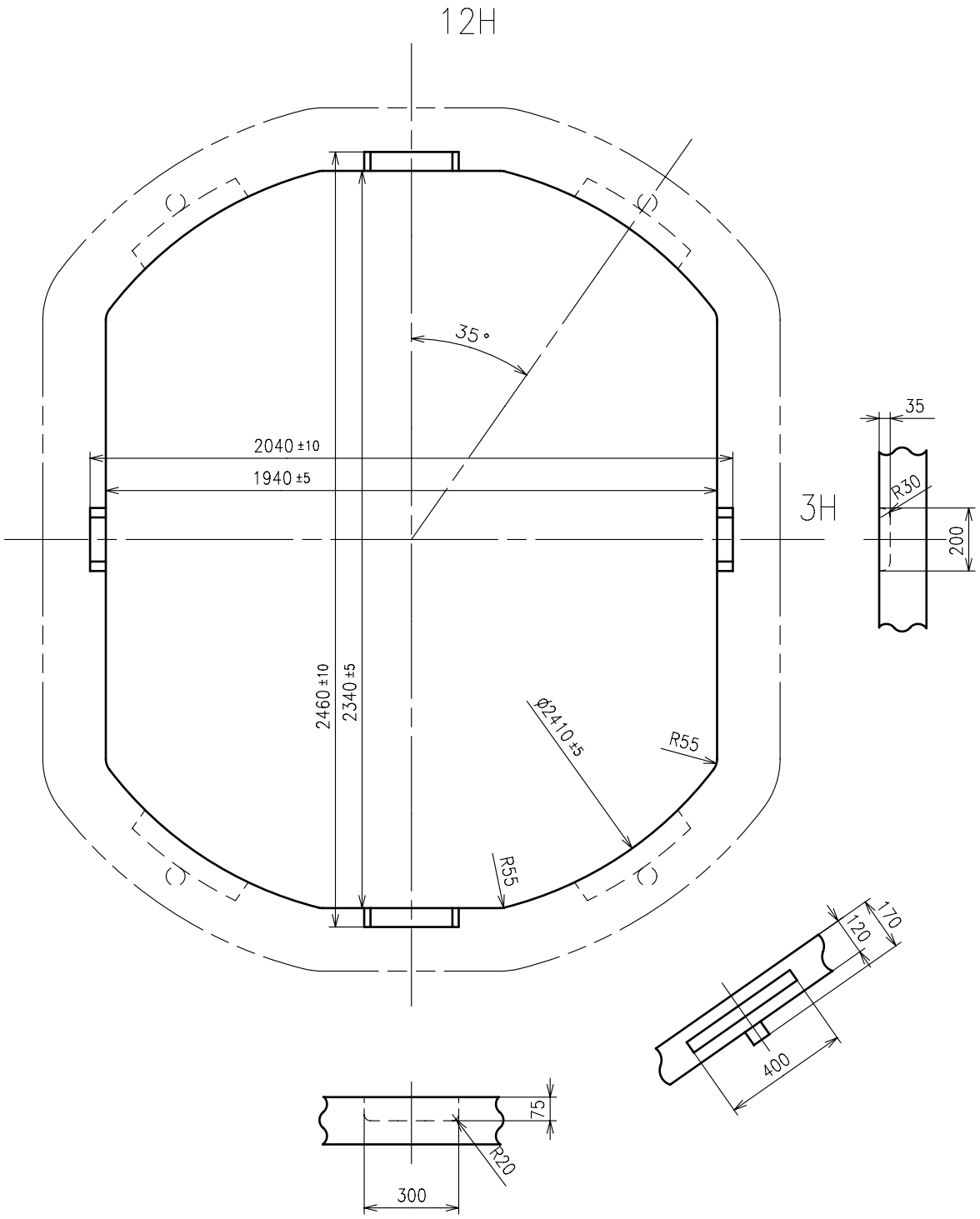
Transmit light more than 30%
(Under the condition of ø2500 dial aperture)





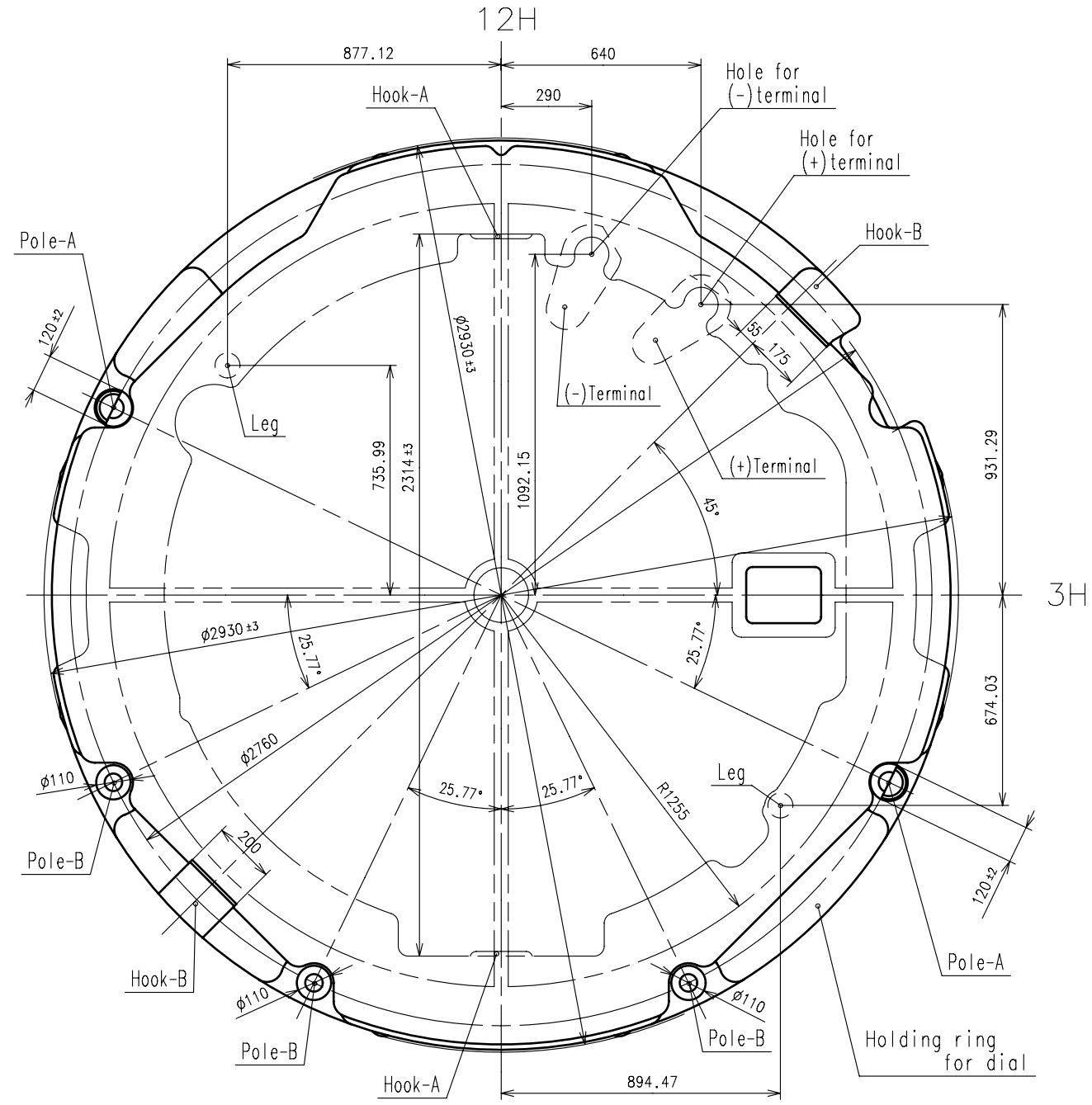
Unit : 1=1/100mm

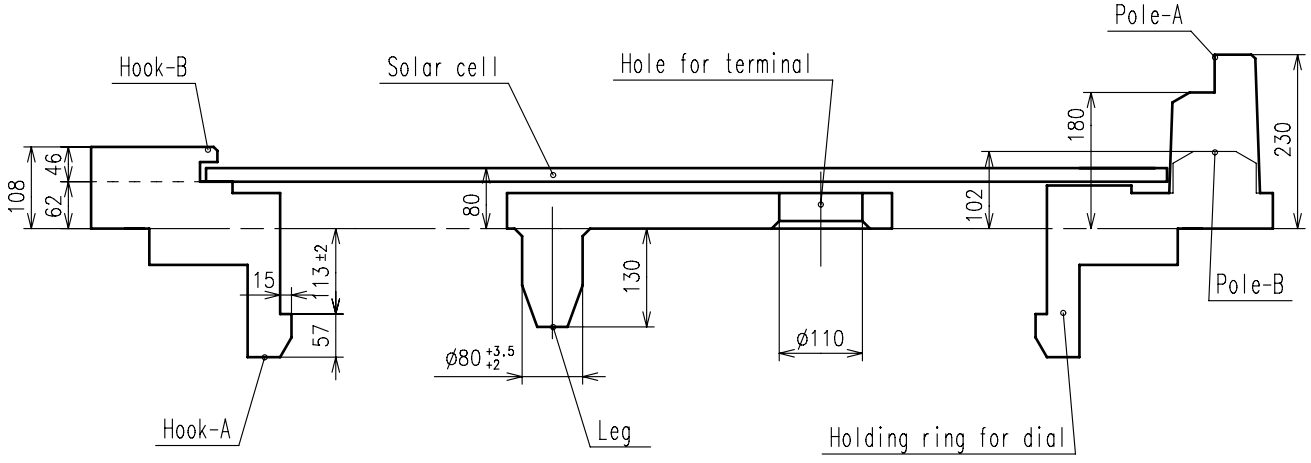
Cal. VS37A	Casing ring	Date:19/Nov./'10
		Rev.:00



Unit : 1=1/100mm

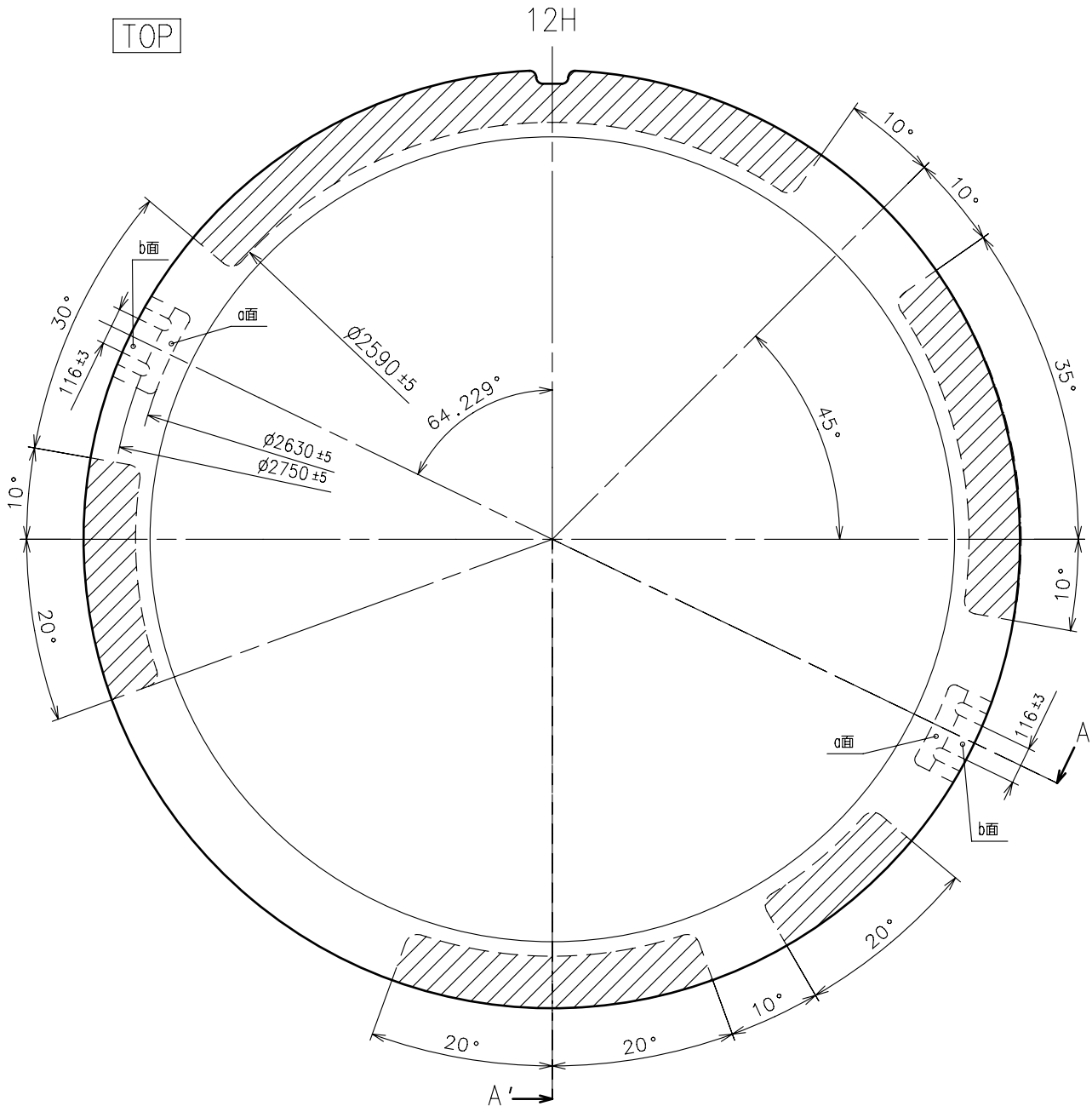
Cal. VS37A	Solar cell unit	Date:19/Nov./'10
		Rev.:00



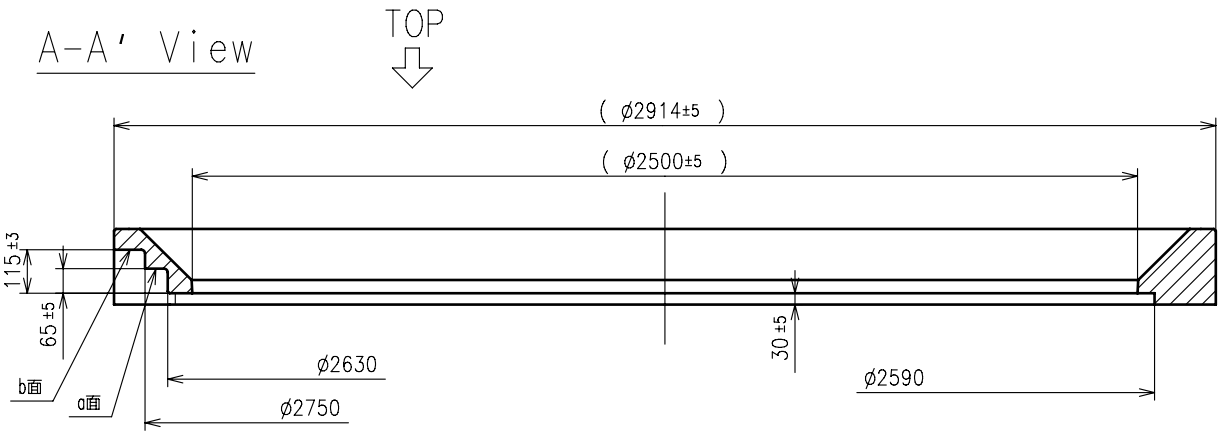


Unit : 1=1/100mm

Cal. VS37A	Dial ring	Date:19/Nov./'10
		Rev.:00



A-A' View



Unit : 1=1/100mm

VS37A Features

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 sliver oxide battery, thus eliminating the need for battery replacement.

3.Working time

Expected life per charge from full charge to stoppage will be around 6months.

4.Power depletion warning function

The two-second interval movement of the second hand is a signal of energy depletion.
The watch continuous working time after two-second interval movement is approximately 3 days.
When the second hand starts moving at two-second intervals,
please charge the watch by exposing it to light.

5.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)

6.Eco-friendly

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

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.

Date: 19/Nov./'10
Rev.: 00

VS37A 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 30%.
(Effective aperture is ϕ2500)

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

* 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.Secondary battery replacement

Please set the exclusive secondary battery.
If the silver oxide battery is accidentally be set and charged, there is a possibility of batery 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.

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.