TIME MODULE

Cal. VS43A

ϕ28.6 mm
H 3.09 mm

Date: 31/Oct./'11

S.EPSON Products

CAL. VS43A

Solar Quartz 11 1/2"' Movement / Three hands(H/M/S) with Day/Date

1. MOVEMENT DIMENSIONS

Outside diameter	φ28.60mm
Total height	3.09mm (Including secondary battery : 3.50mm)

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
Day/Date	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. 5 hours (Under 100 KLX sunlight)
	Approx. 47 hours (Under 3000LX fluorescent lamp)
Setting mechanism	Crown at normal position : Free
	Crown pulled out 1st click : Instant day/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	1.0 V
Solar cell type	Amorphous silicon solar cell
Maximum unbalance of hands	Second hand : 0.045μN･m (4.5μg･m)
	Minute hand : 0.80μN･m (80μg･m)
	Hour hand : 0.50μN･m (50μg･m)

5. SECONDARY BATTERY (Installed)

Type	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)

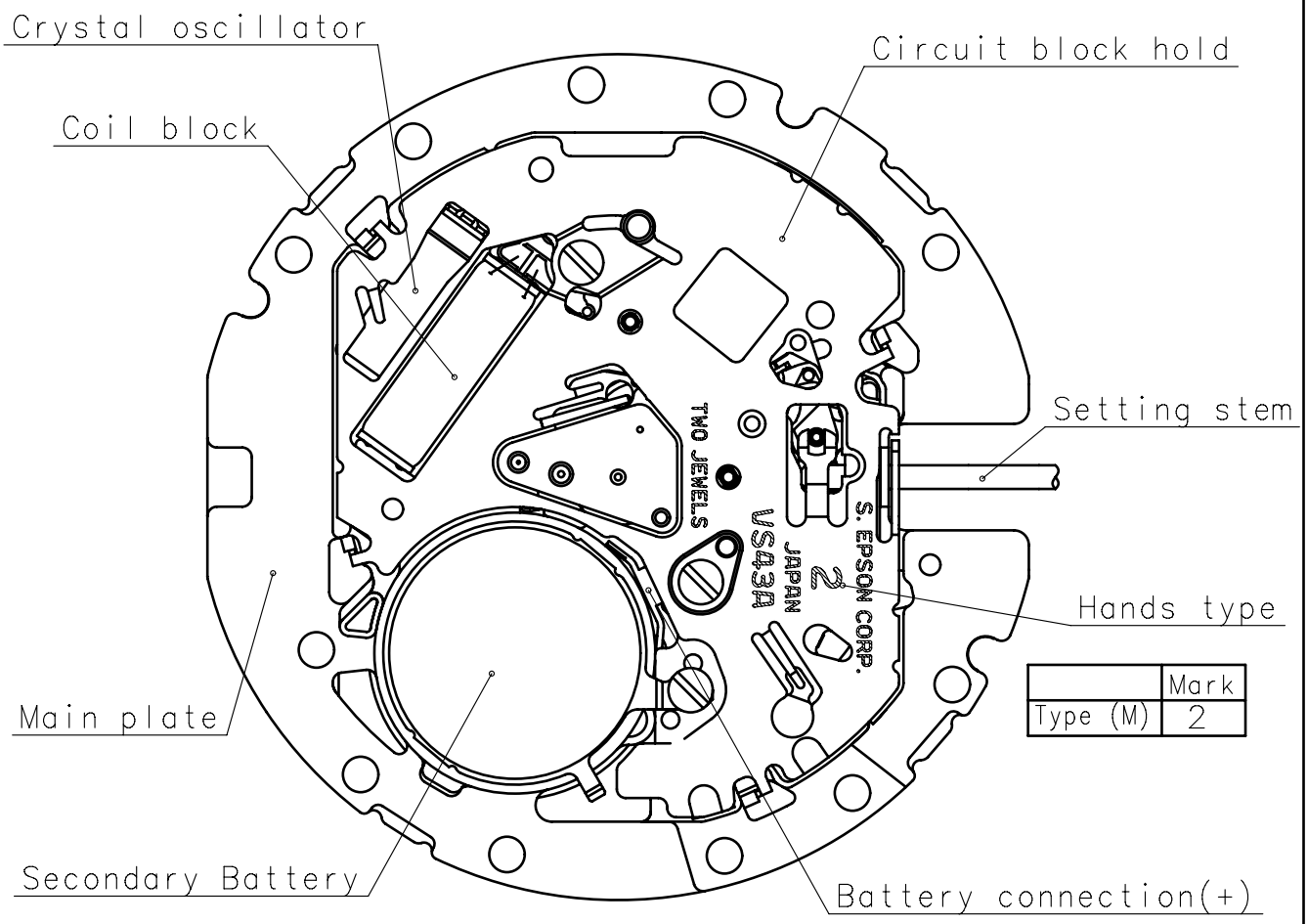
Solar cell unit	4020580
Hand setting stem	0351177
Solar cell lead terminal (2 pcs)	4246524
Hour wheel spacer	0493500

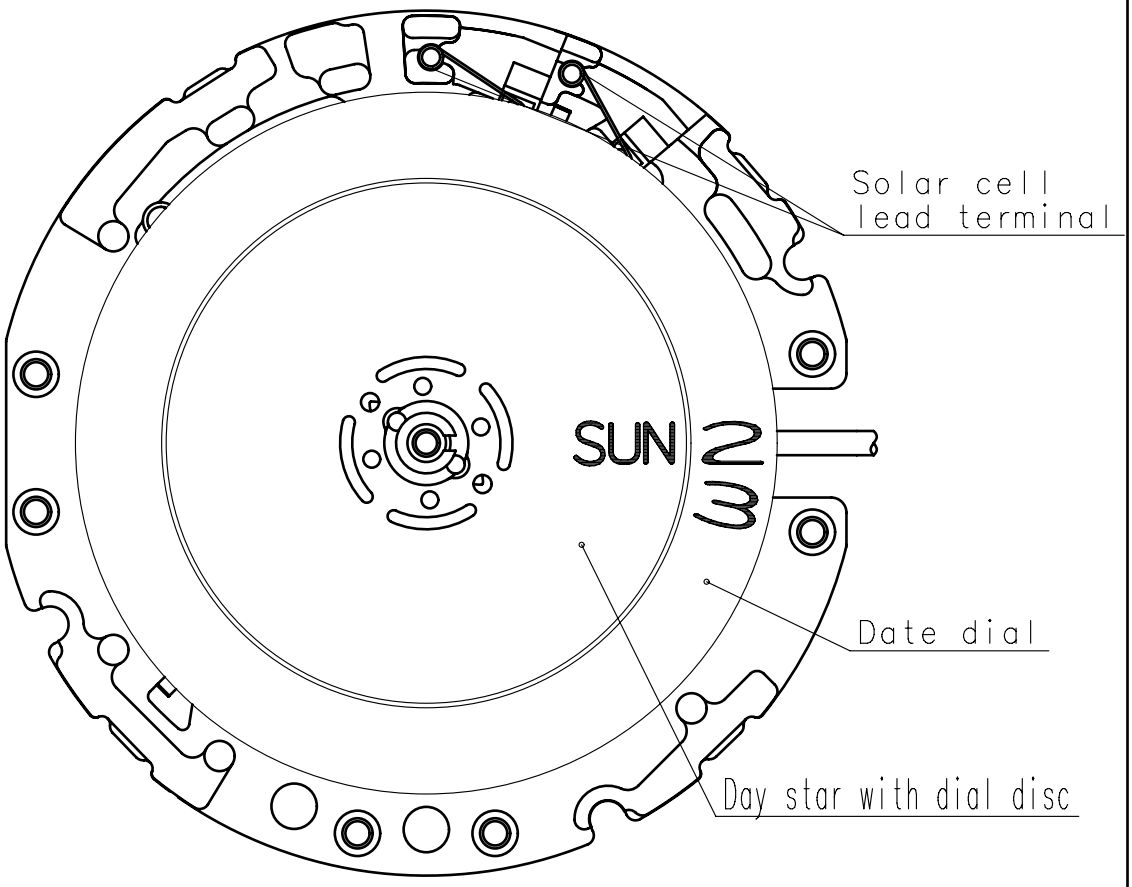
7. TEST OF ACCURACY

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

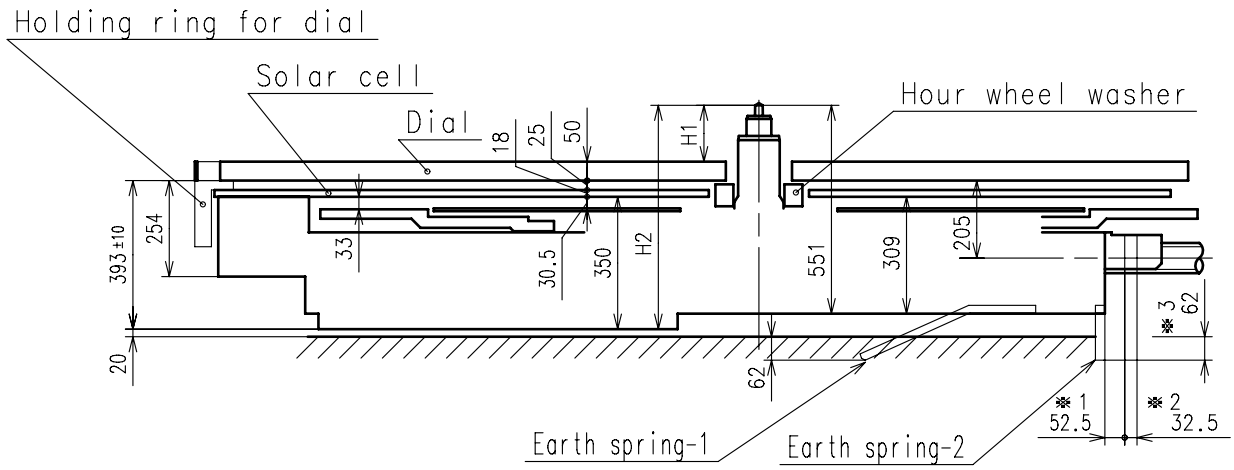
All specifications are subject to change without notice.

Cal. VS43A	Appearance	Date:30/Sep./'11
		Rev.:00





Cal. VS43A	Casing	Date:30/Sep./'11
		Rev.:00

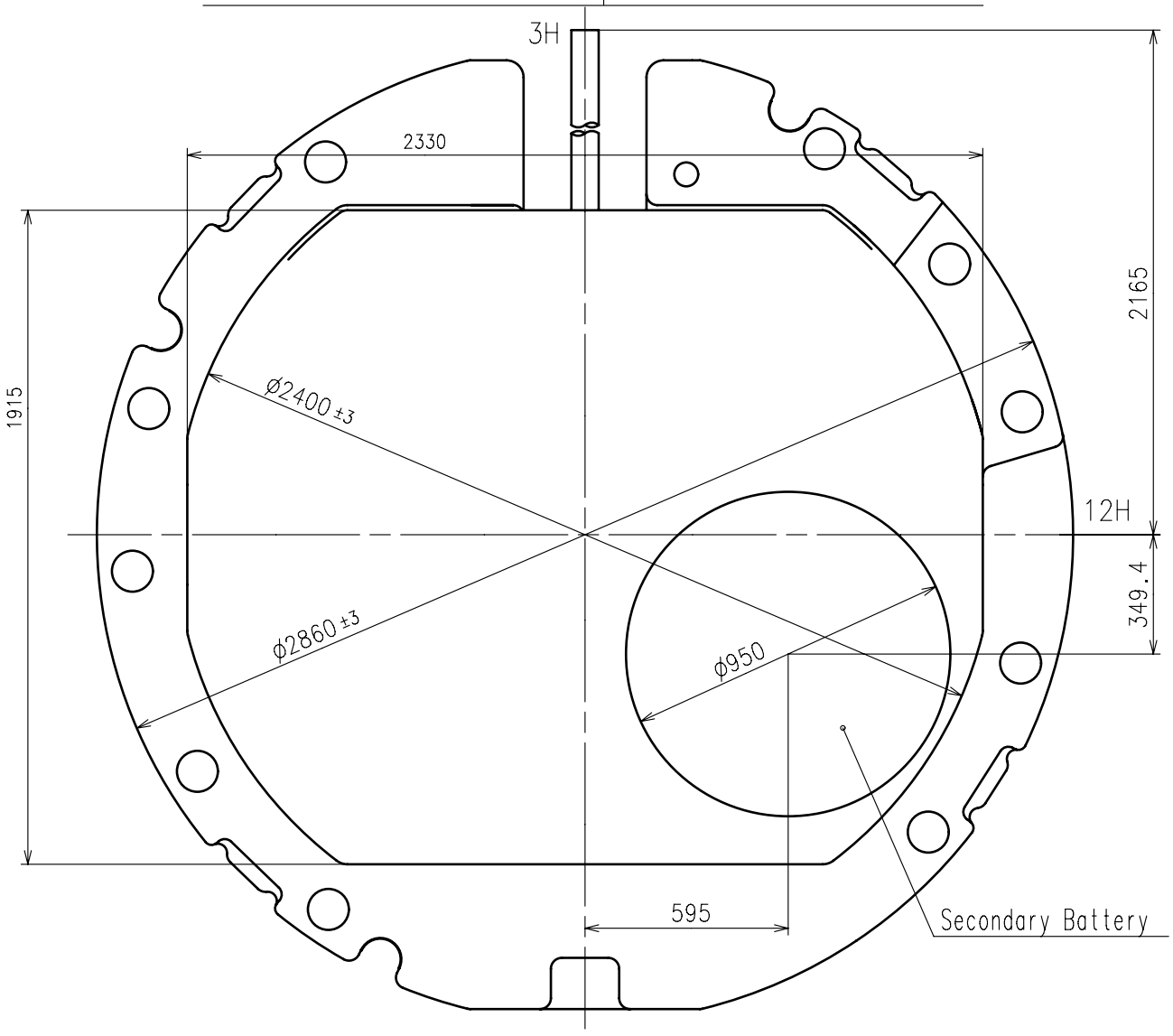


Center post		Type M (2) VS43A**
Maximum height from dial suppot	H1	149
Total height incl.movement	H2	592

※1:First pullout stroke

※2:Second pullout stroke

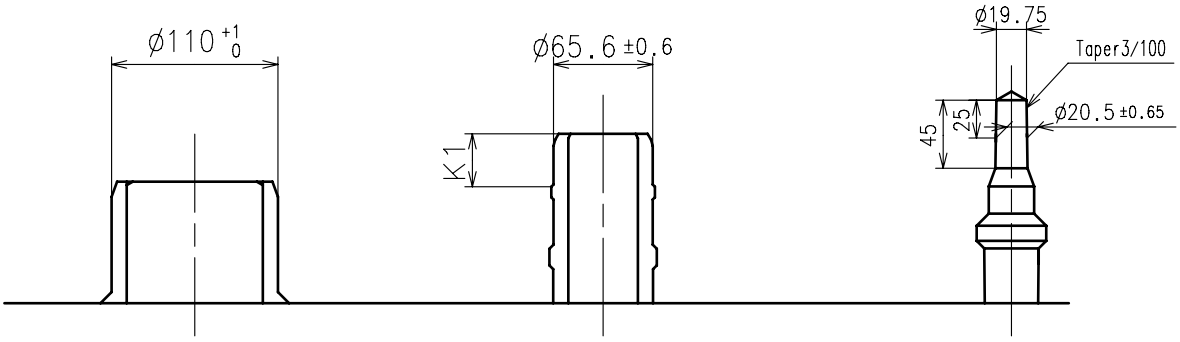
※3:NOTE) The earth sprong is absolutely placed in contact with the case backSecond pullout stroke



Unit : 1=1/100mm

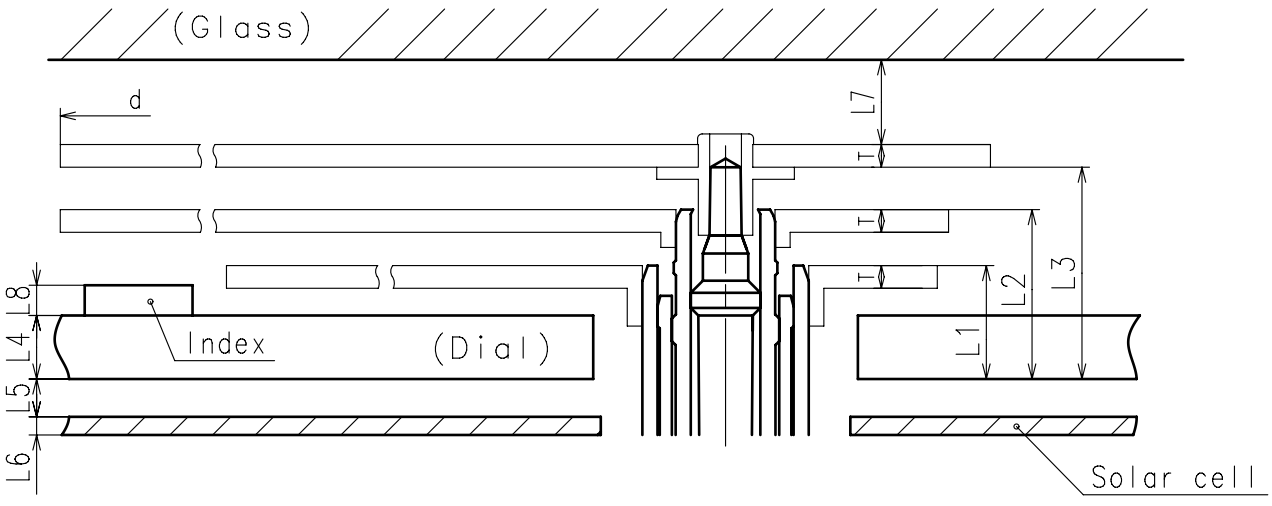
Cal. VS43A	Hand fitting	Date:30/Sep./'11
		Rev.:00

※Hour hand unbalance ≦ 0.5μ N・m (50μ g・m)
※Minute hand unbalance ≦ 0.8μ N・m (80μ g・m)
※Second hand unbalabce ≦ 0.045μ N・m (4.5μ g・m)



Hour wheel　　Center wheel　　Fourth wheel

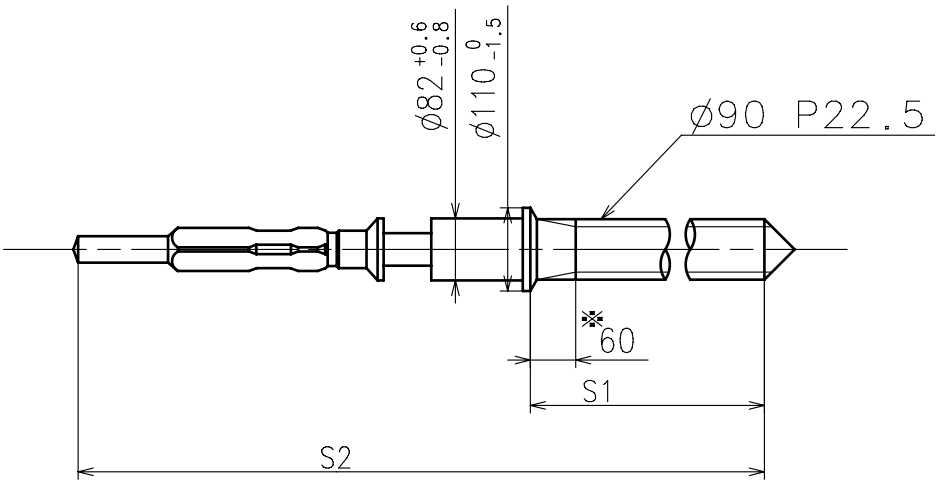
	Parts No.			Dimension
	Hour wheel	Center wheel	Fourth wheel	K1
Type M (2) VS43A**	0271639	0221602	0241559	35



	L1	L2	L3	L4	L5	L6	L7	L8	T	d
Type M (2) VS43A**	118	171	199	50	25	18	MIN: 50	MAX: 60	15	MAX: ø2900

Unit : 1=1/100mm

Cal. VS43A	Hand setting stem	Date:30/Sep./'11
		Rev.:00



※ Not threaded

	Part No.	S1	S2
Standard	0351177	1366	1964

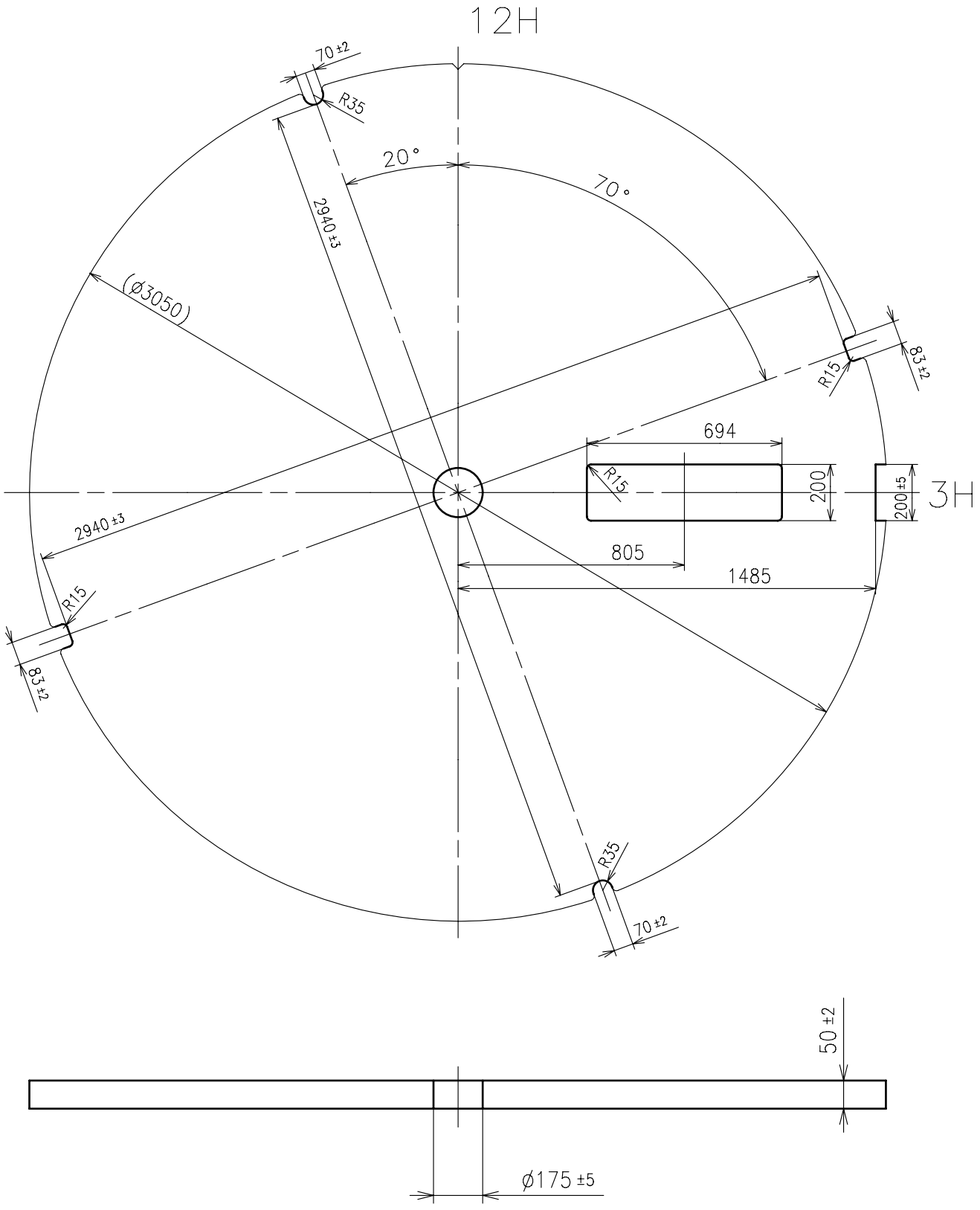
Material : Steel

Hardness : Vickers 600±50

Unit : 1=1/100mm

Cal. VS43A	Dial	Date:30/Sep./'11
		Rev.:00

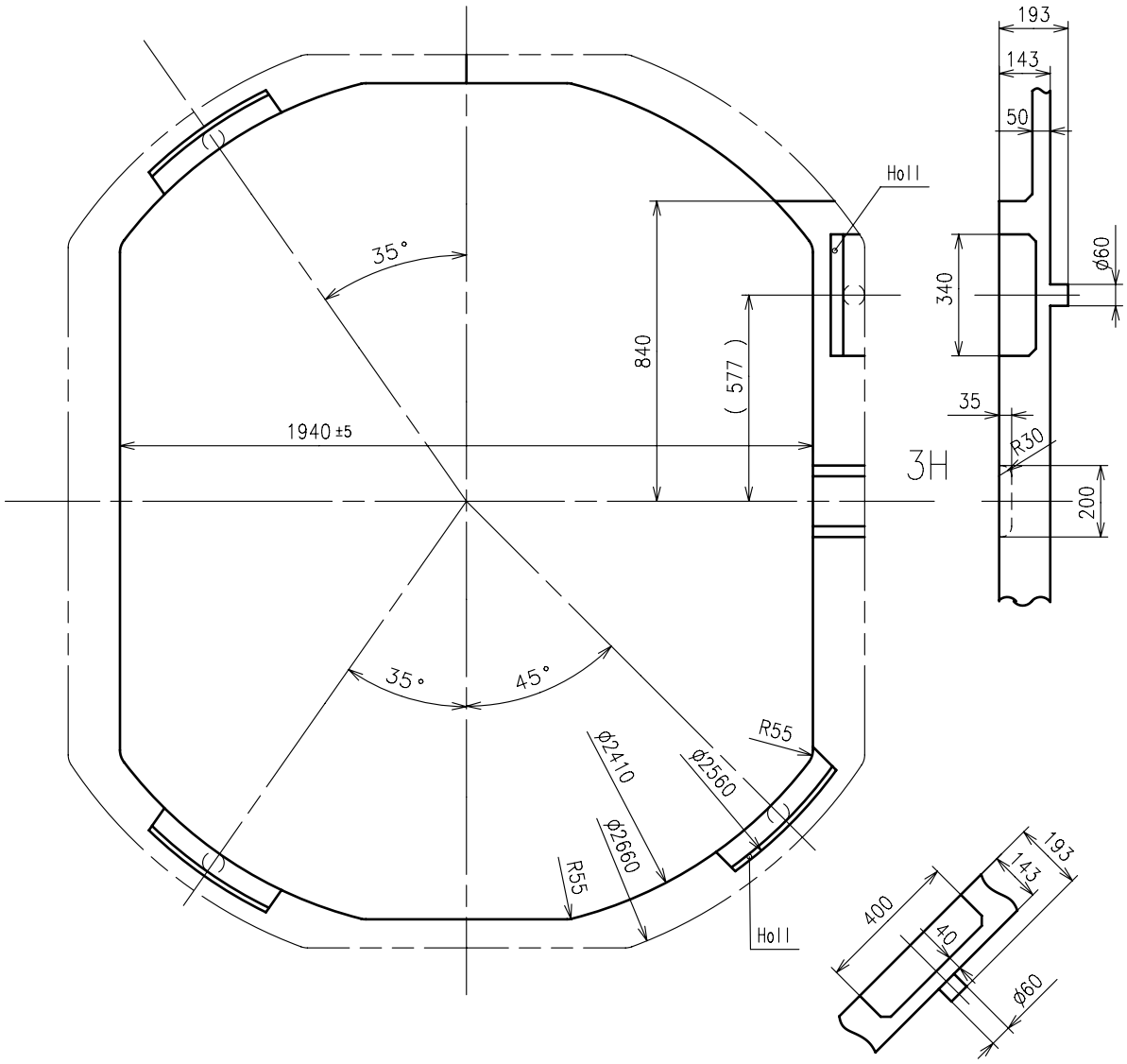
Transmit light more than 30%



Unit : 1=1/100mm

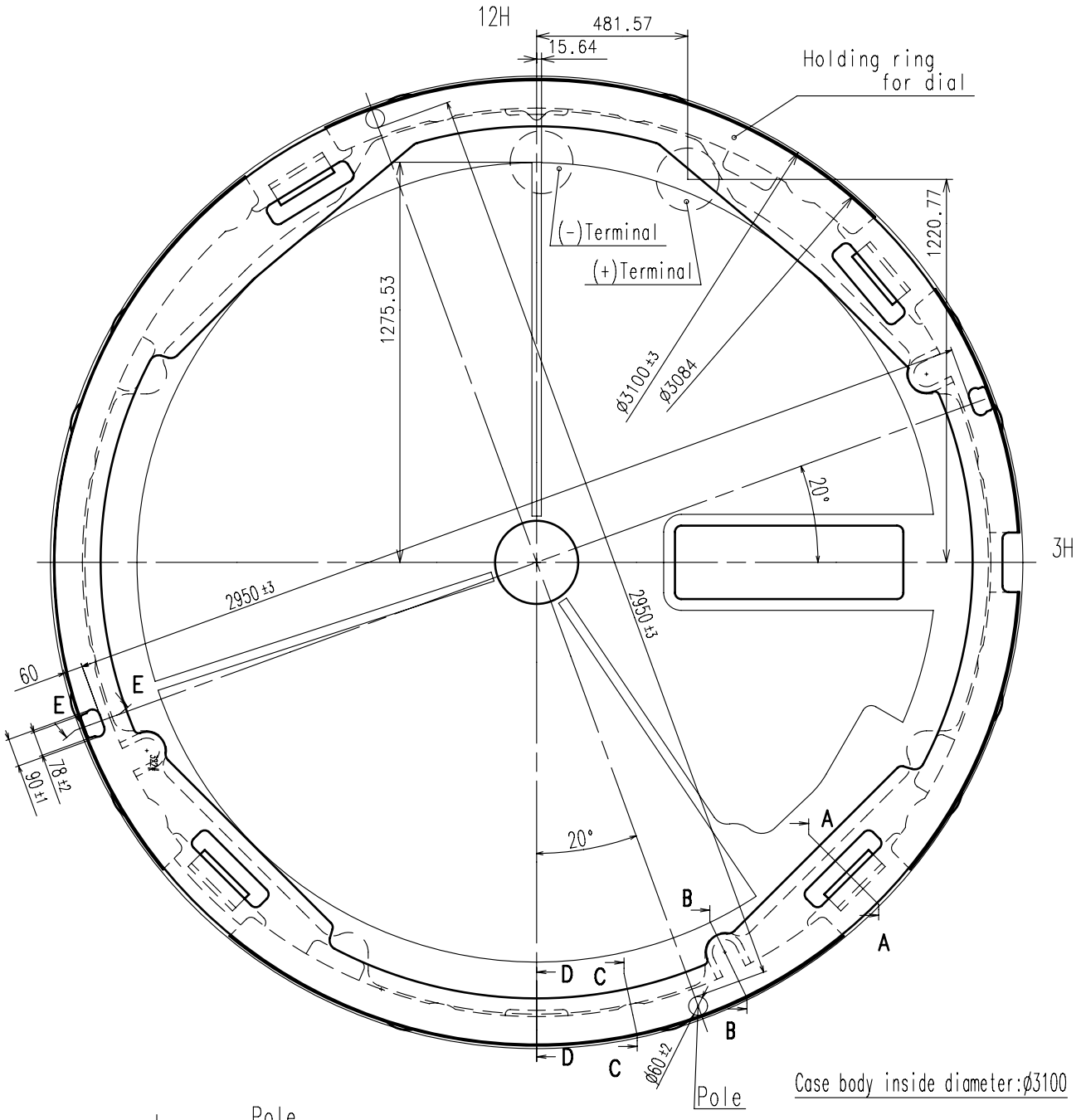
Cal. VS43A	Casing ring	Date:30/Sep./'11
		Rev.:00

12H



Unit : 1=1/100mm

Cal. VS43A	Solar cell unit	Date:30/Sep./'11
		Rev.:00



Unit : 1=1/100mm

Date : 30/Sep./'11
Rev. : 00

VS43A 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.

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Rev. : 00

VS43A Attention-1

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	—	18	30
3,000		30W 20cm	47	8	15
10,000	Sun light	Cloudy	13	2	4
100,000		Fine weather	5	42 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.

Date: 30/Sep./'11
Rev.: 00

VS43A Attention-2

7. How to set the solar cell lead terminal

Please set one side of the solar cell lead terminal into the 318# or 319# hole first.

Then, please set the other side of the solar cell lead terminal under the main plate according to the following procedure.

Tilt the spring slightly and slide the bottom part of the spring under the main plate.
Push the top part of the spring and place it under the main plate.
(Please refer to the illustration.)

Please pay attention not to damage a date disk.