EPSON

Watch Movement Specification and Drawing

SOLAR SERIES

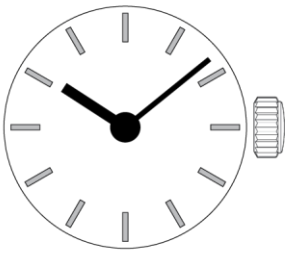
Cal. VS15A

Movement Size

5 1/2”’

Casing Diameter

11.8 × 15.15mm



Height

2.49mm

Running Time

Approx. 12 months

Date: 4/Aug./'23

Cal. VS15A

Cal. VS15A	Features	Date : 4/Aug./'23
		Rev. : 02

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 20%

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.

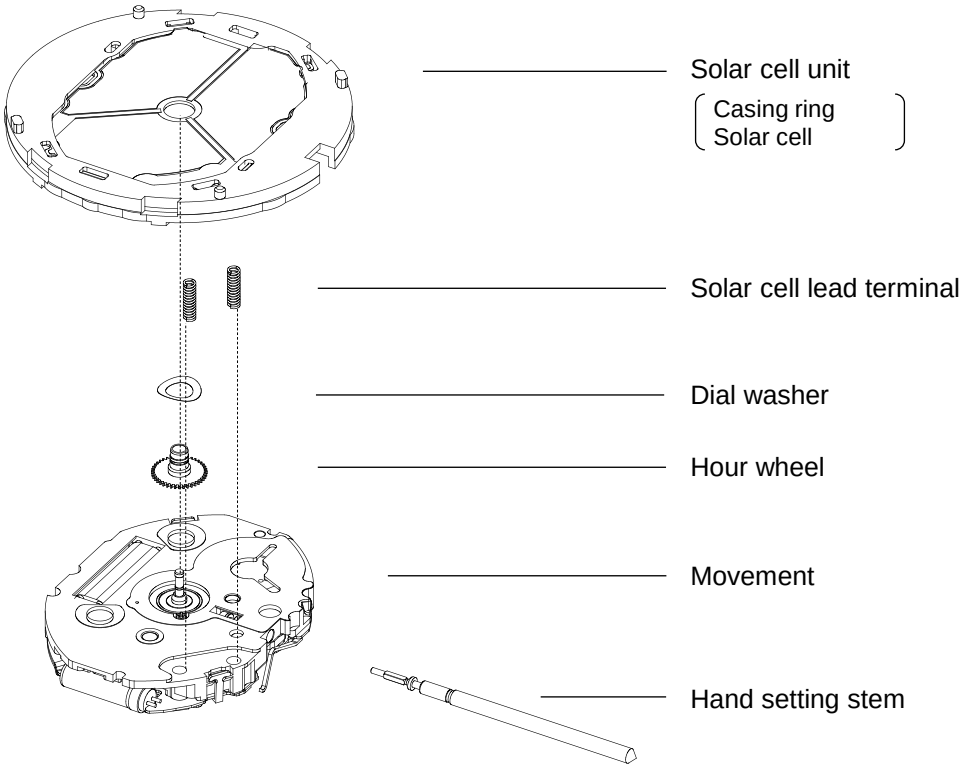
4. Running time

Expected running time from full charge to stoppage will be around 12 months.

5. 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.

6. Structure of the separated parts



Solar Quartz 5 1/2''' Movement / Tow hands(H/M)

1. MOVEMENT DIMENSIONS

Outside diameter	11.8mm(3-9H) × 15.55mm(12-6H)
Casing diameter	11.8mm(3-9H) × 15.15mm(12-6H)
Total height	2.09mm (Including solar cell : 2.49mm)

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

2 Hands	Hour / Minute	
Reset switch		
Running time	Approx. 12 months (After fully charged)	
Setting mechanism	Crown at normal position	: Free
	Crown pulled out 1st click	: Time setting / Reset

4. FEATURES

Jewels	0 Jewels	
Anti-magnetism	Over 1600A/m (Direct current magnetic field)	
Driving current consumption	Approx. 0.16μA (1.35V)	
Operation stopping voltage	1.0 V	
Solar cell type	Amorphous silicon solar cell	
Maximum unbalance of hands	Minute hand	: 0.15μN･m
	Hour hand	: 0.13μN･m

5. SECONDARY BATTERY (Installed)

Type	Lithium metal batteries
Size	φ5.8mm × t 1.65mm
Nominal voltage	1.5 V
Capacity	1.8 mAh

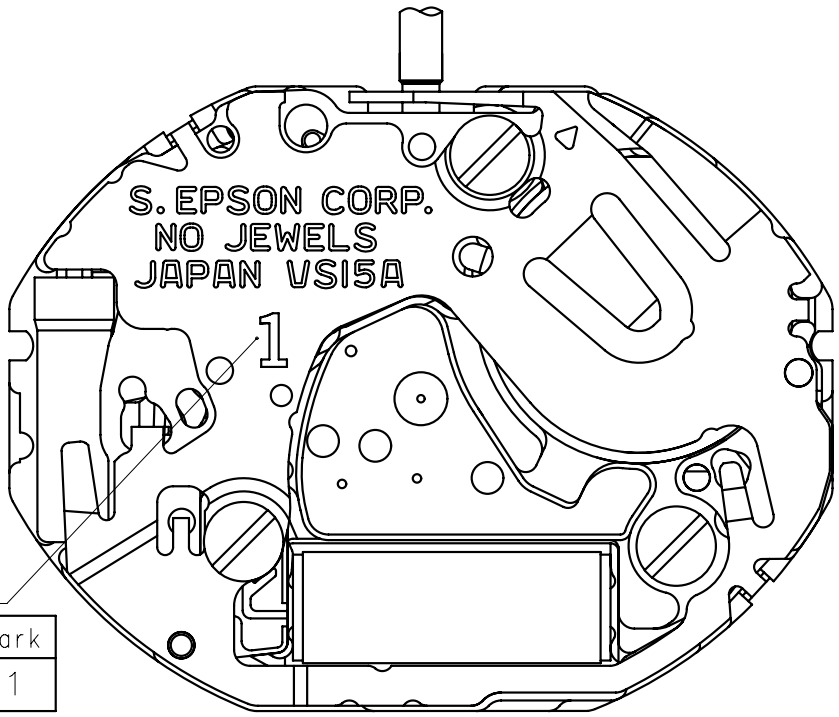
6. SEPARATED PARTS (Parts code)

Solar cell unit	4020583 (ROUND)	4020536 (ROUND-2)
	4020584 (SQUARE-1)	4020532 (SQUARE-2)
	4020585 (TONNEAU)	
Hand setting stem	0351819	
Solar cell lead terminal (2 pcs)	4246644	
Hour wheel	0271946	
Dial washer	0491735	

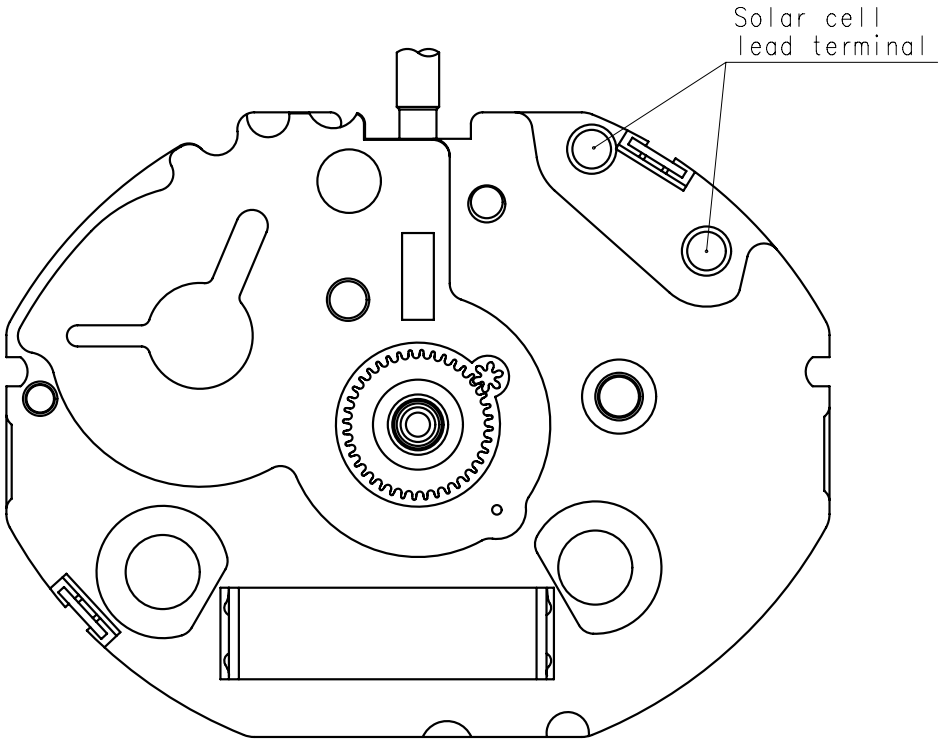
7. TEST OF ACCURACY

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

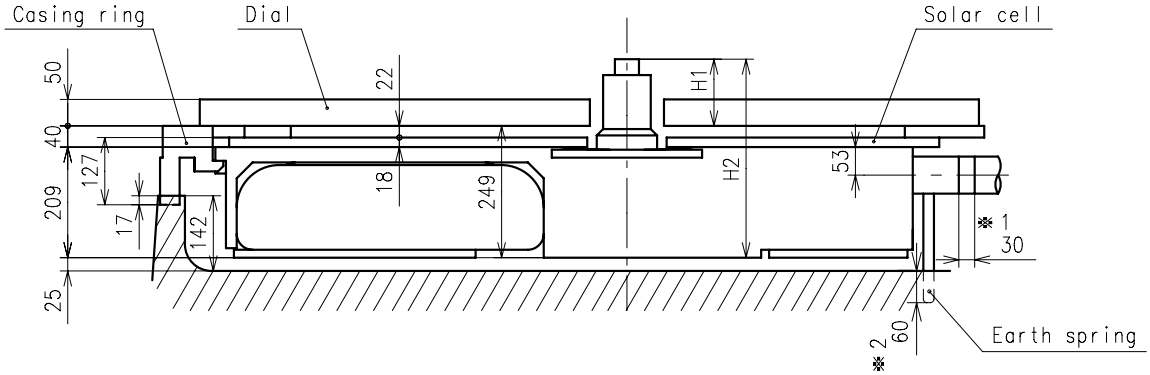
All specifications are subject to change without notice.


S.EPSON CORP.
NO JEWELS
JAPAN VS15A
1
Hands type

	Mark
Type(S)	1


Solar cell
lead terminal

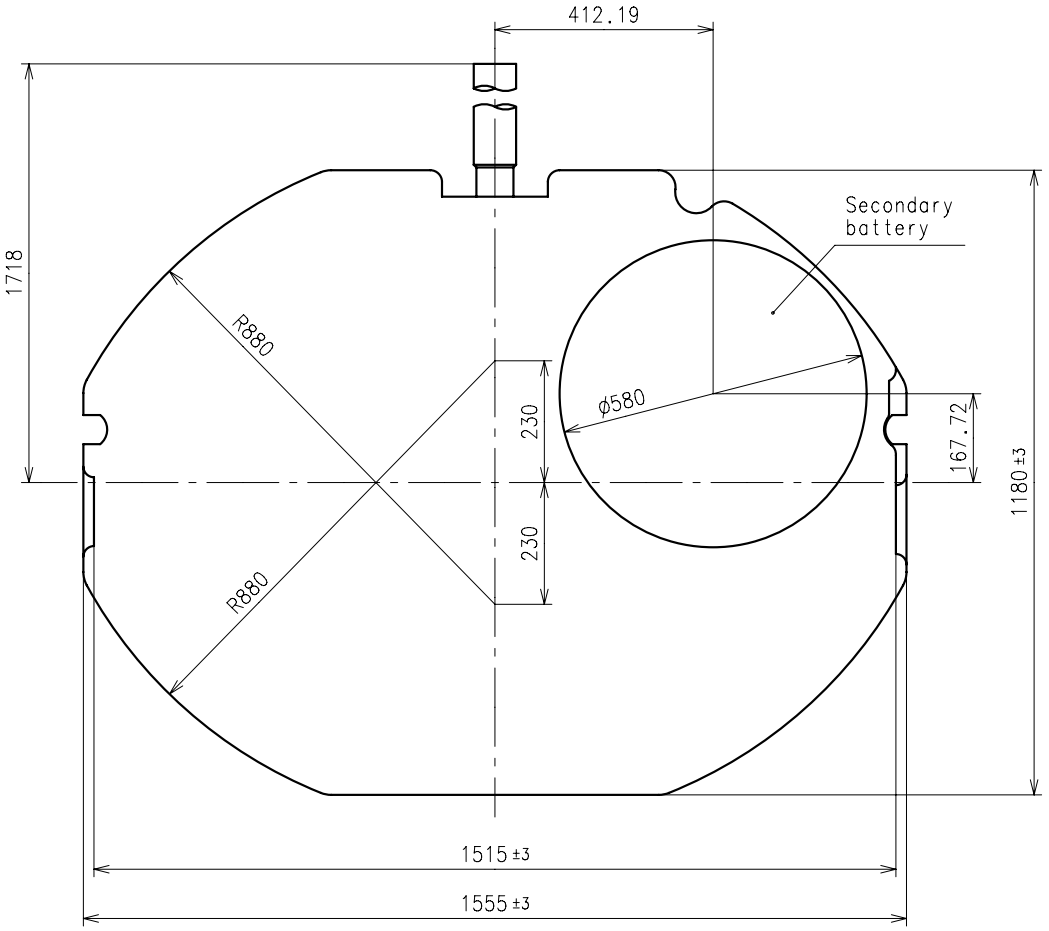
Cal. VS15A	Casing	Date:15/Dec./'17
		Rev.:04



※1 pullout stroke

※2:The earth spring is absolutely placed in contact with the case back.

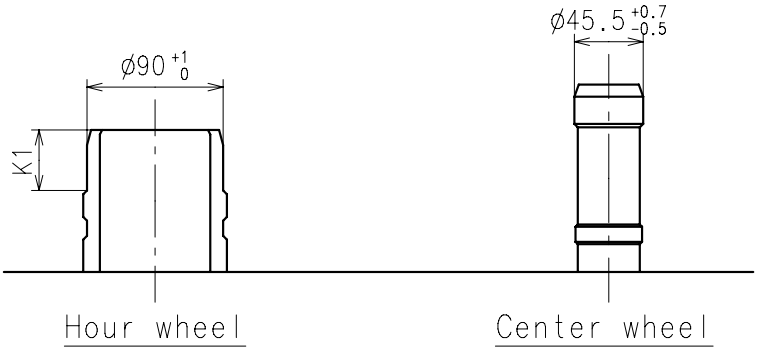
Center post		Type S (1) VS15A1
Maximum height from dial support	H1	126
Total height including movement	H2	375



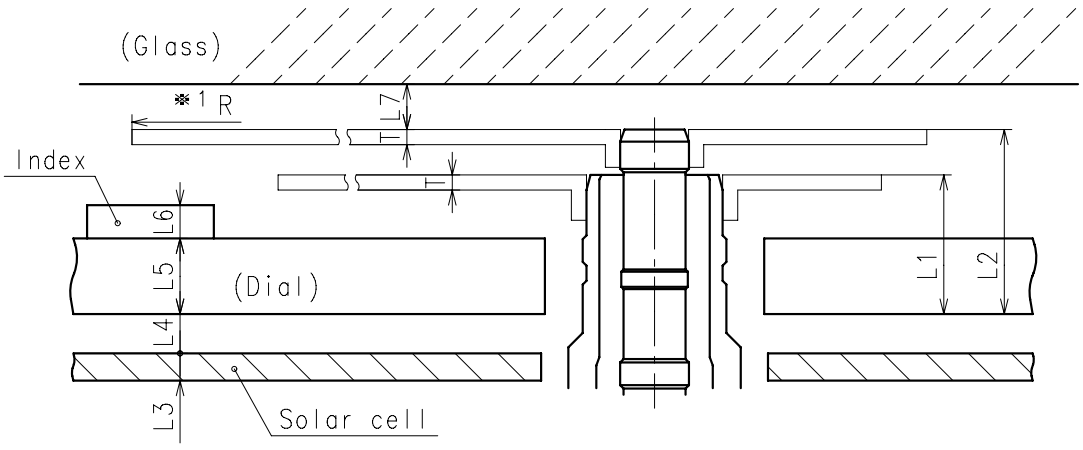
Unit : 1=1/100mm

Hand fitting

※Minute hand unbalance ≦ 15μ g・m(0.15μ N・m)
※Hour hand unbalance ≦ 13μ g・m(0.13μ N・m)



	Parts No.		Dimension
	Hour wheel	Center wheel	K1
Type S (1) VS15A1	0271946	0221967	40

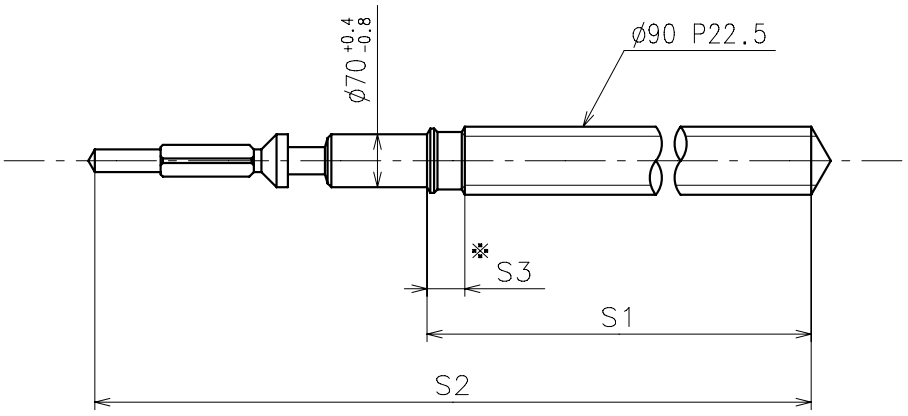


	L1	L2	L3	L4	L5	L6	L7	T	※1 R
Type S (1) VS15A1	96	126	18	22	50	22	MIN: 30	10	MAX: 750

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

Unit : 1=1/100mm

Cal. VS15A	Hand setting stem	Date:24/Apr./'15
		Rev.:01



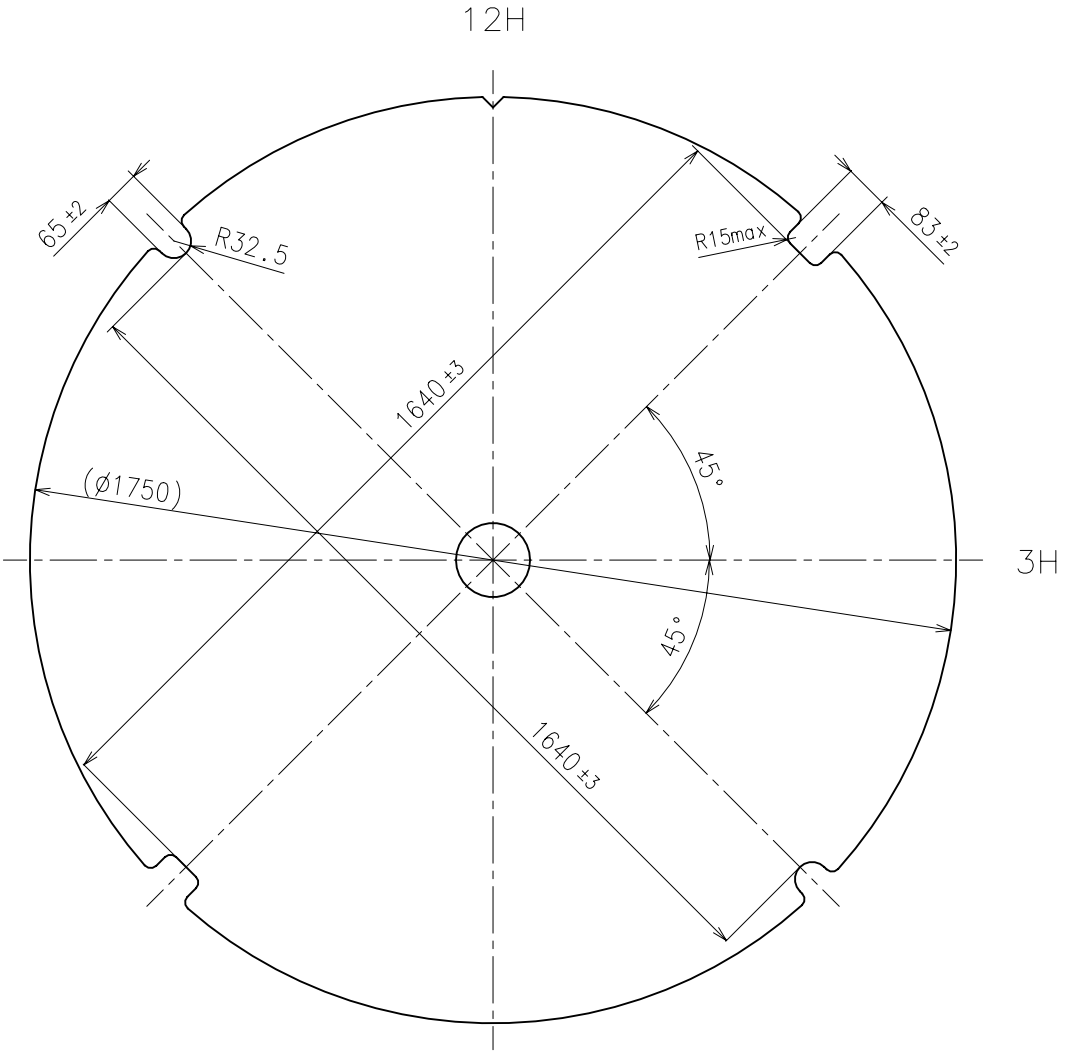
※ Not threaded

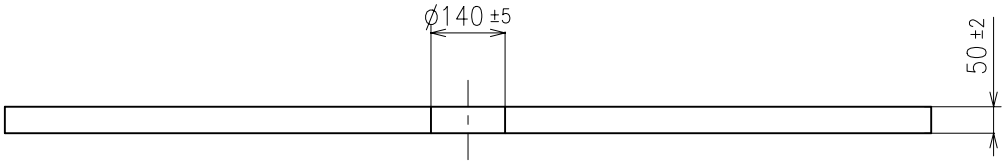
	Part No.	S1	S2	S3
Standard	0351819	1148	1577	50

Material : Steel

Hardness : Vickers 600±50

Cal. VS15A	Dial-01	Date: 4/Aug./'23
		Rev.:02





[Attention]
Each elements of solar cell must be kept the transparency rate of the dial more than 20%.
Refer to the Fig.[1] or [Solar cell unit] page instruction as to the shape of solar cell.

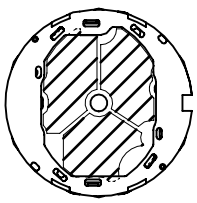
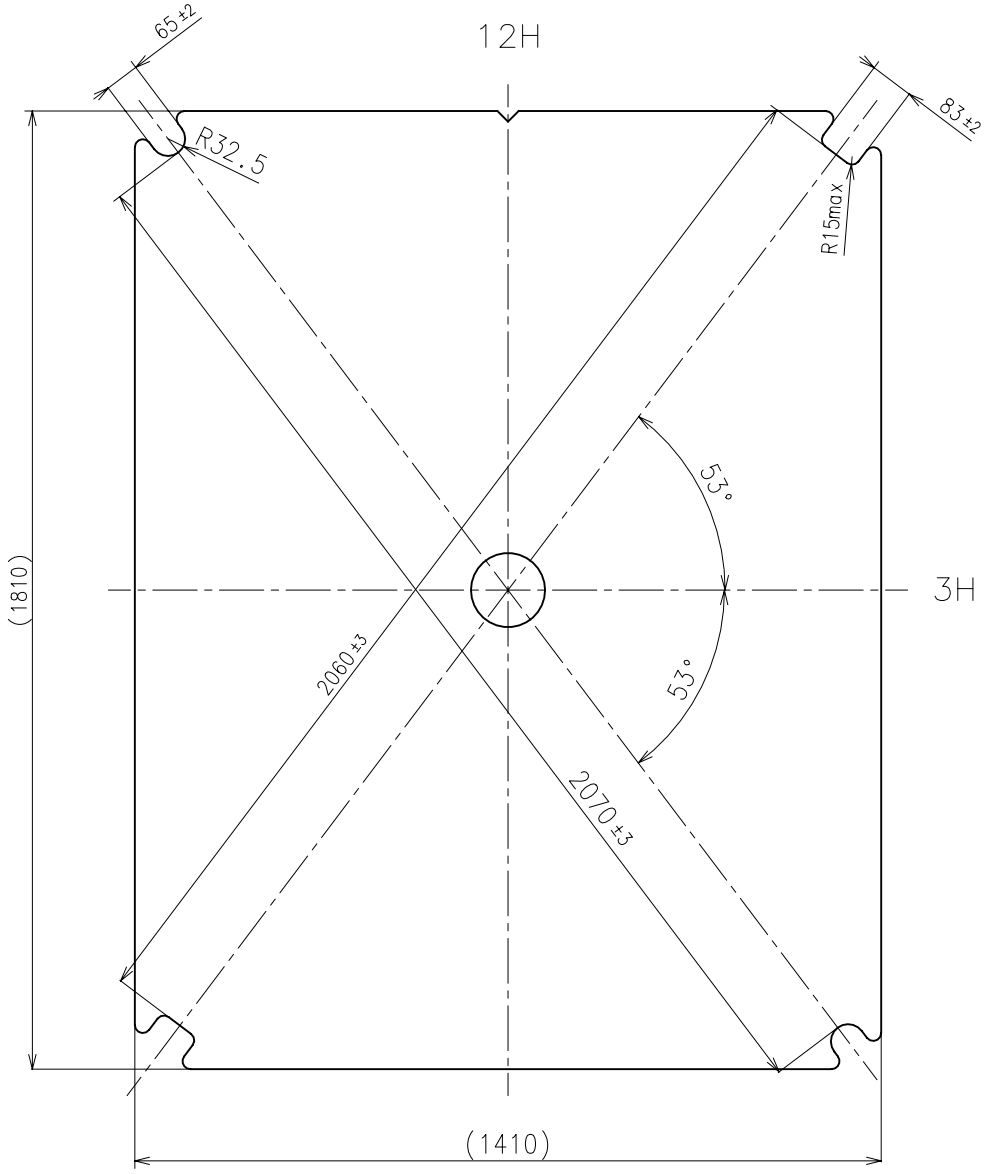


Fig.[1] ▨ elements of solar cell

Unit : 1=1/100mm

Cal. VS15A	Dial-02	Date: 4/Aug./'23
		Rev.:02



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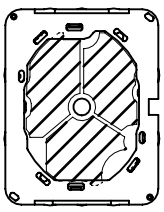
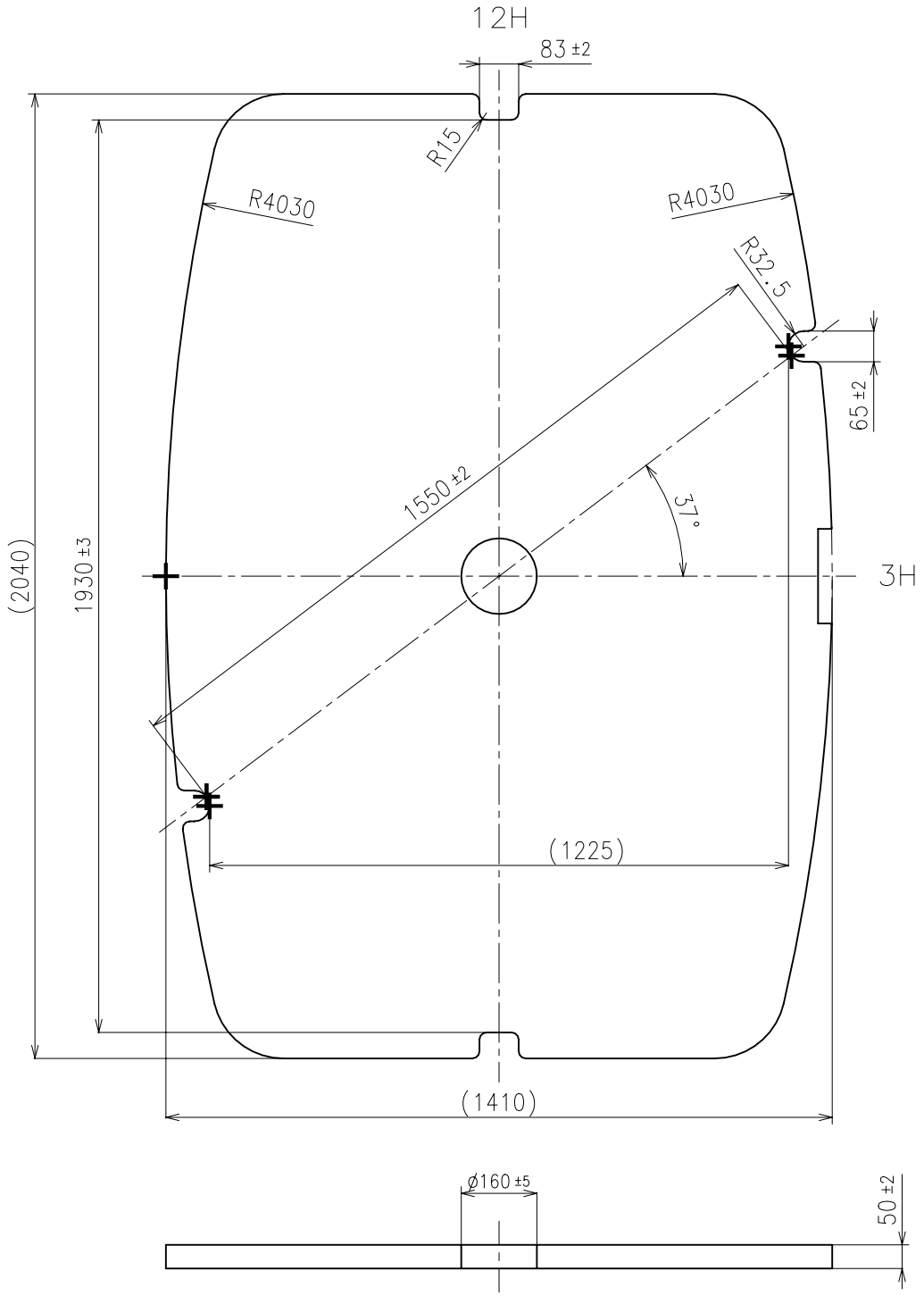


Fig.[1] ▨ elements of solar cell

Cal. VS15A	Dial-03	Date: 4/Aug./'23
		Rev.:01



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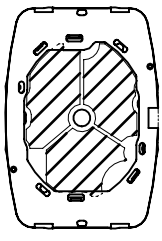
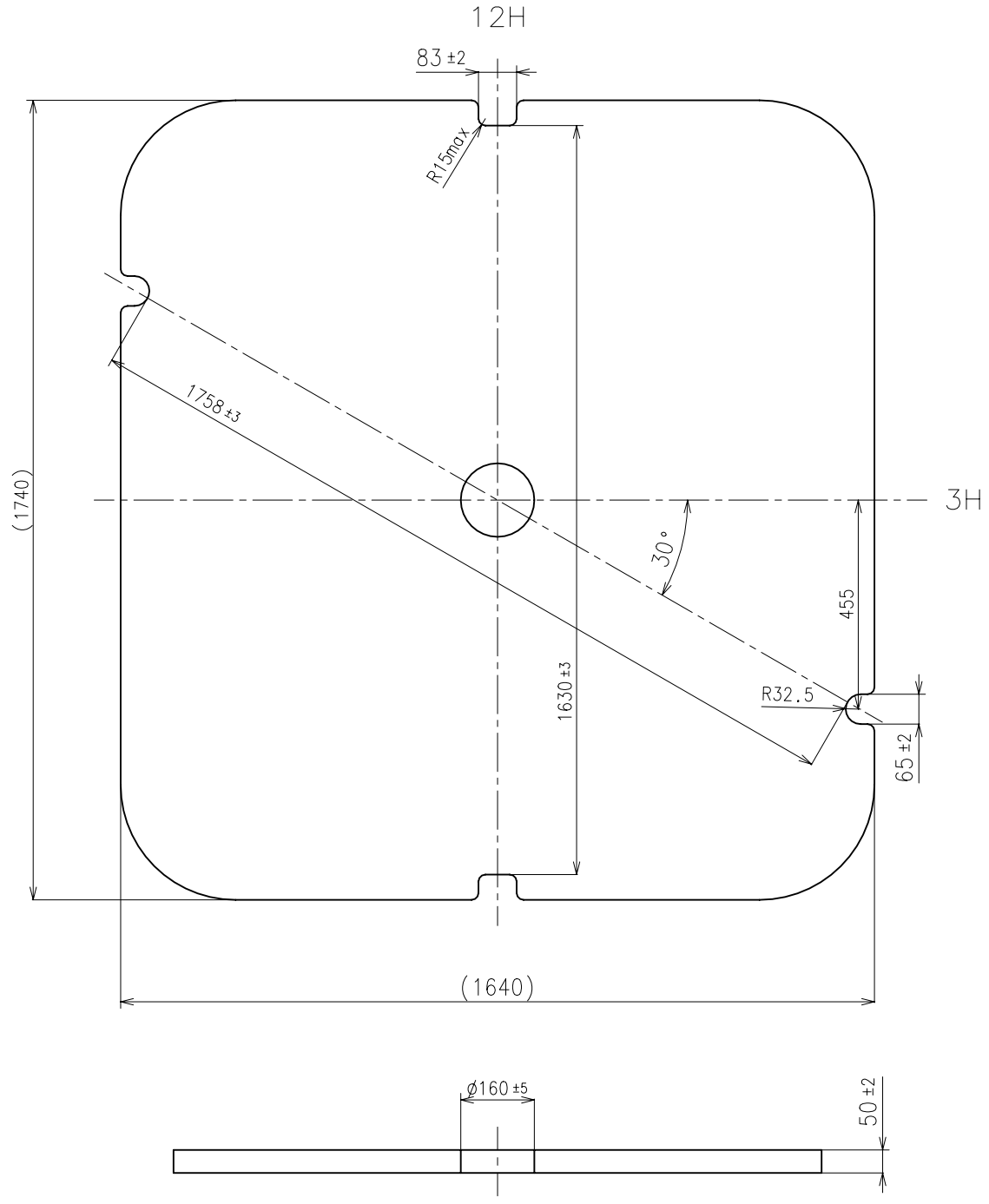


Fig.[1] ▨ elements of solar cell

Unit : 1=1/100mm

Cal. VS15A	Dial-04	Date: 4/Aug./'23
		Rev.:01



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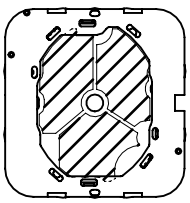
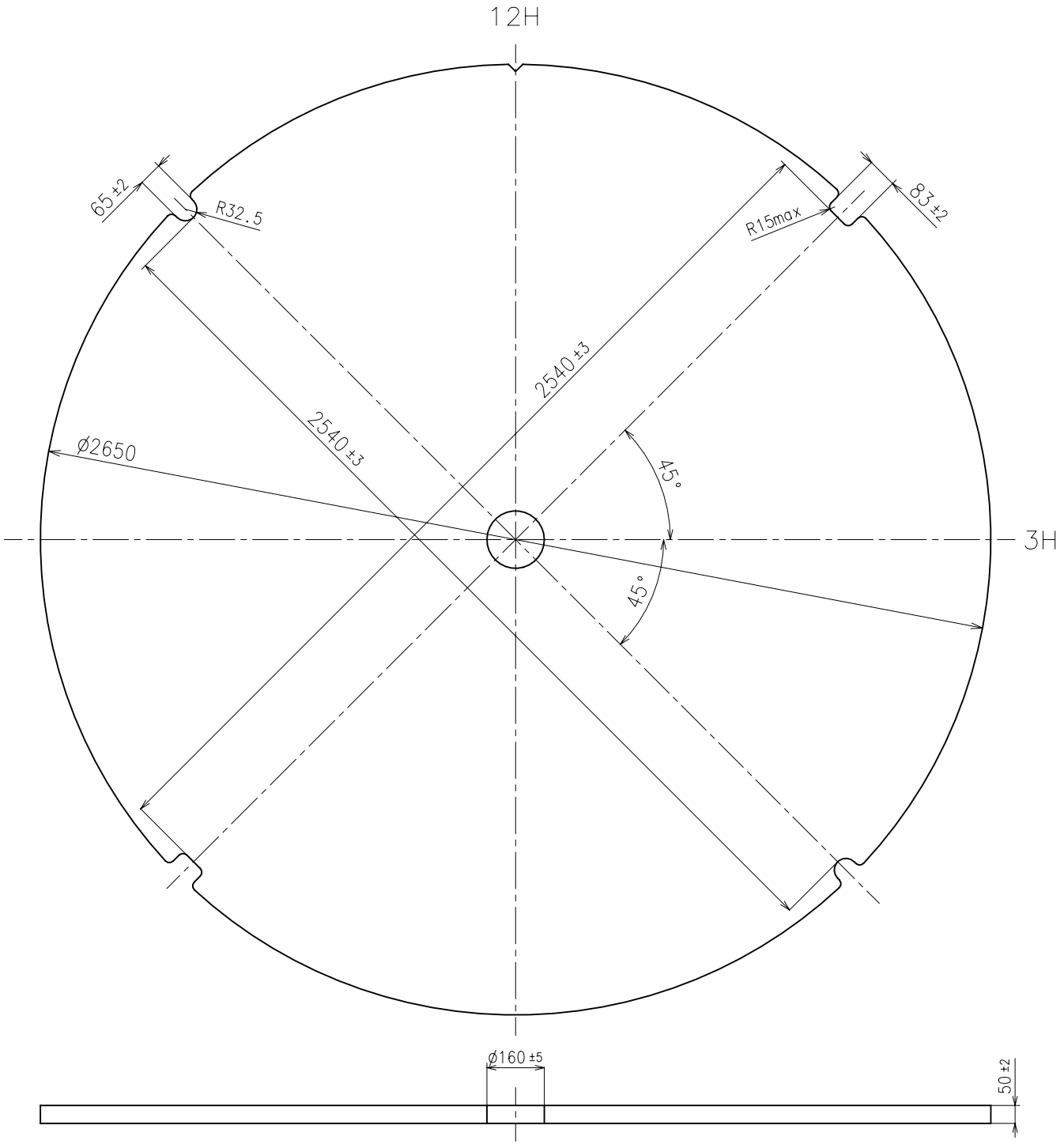


Fig.[1] ▨ elements of solar cell

Unit : 1=1/100mm

Cal. VS15A	Dial-05	Date: 4/Aug./'23
		Rev.:01



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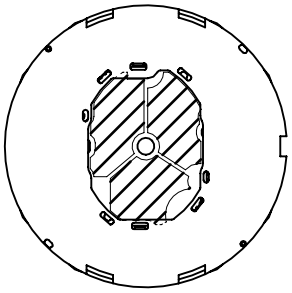
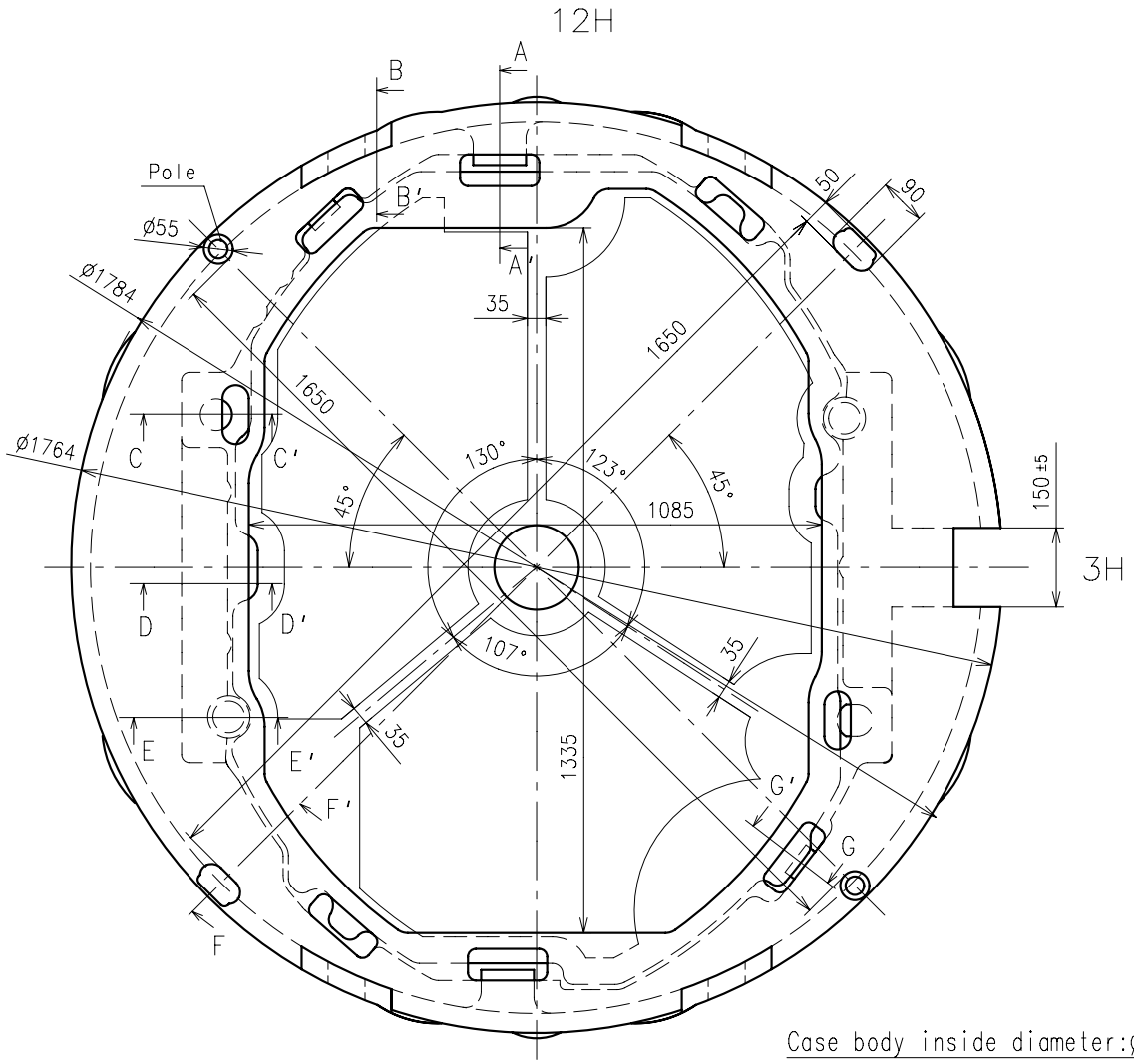


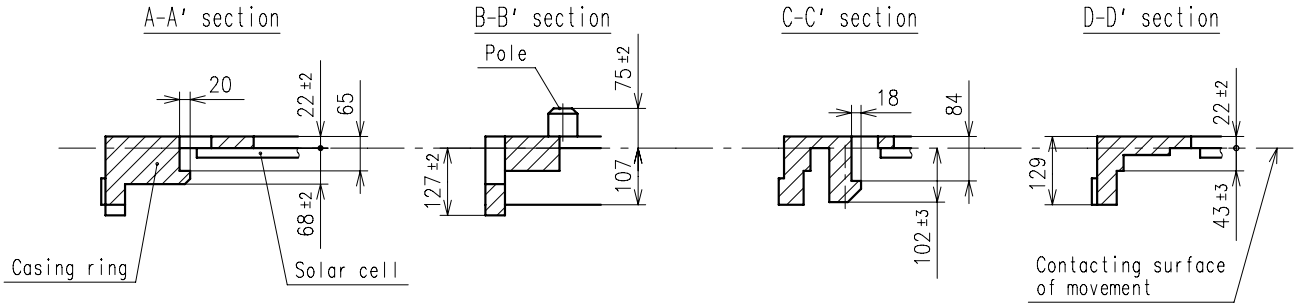
Fig.[1] ▨ elements of solar cell

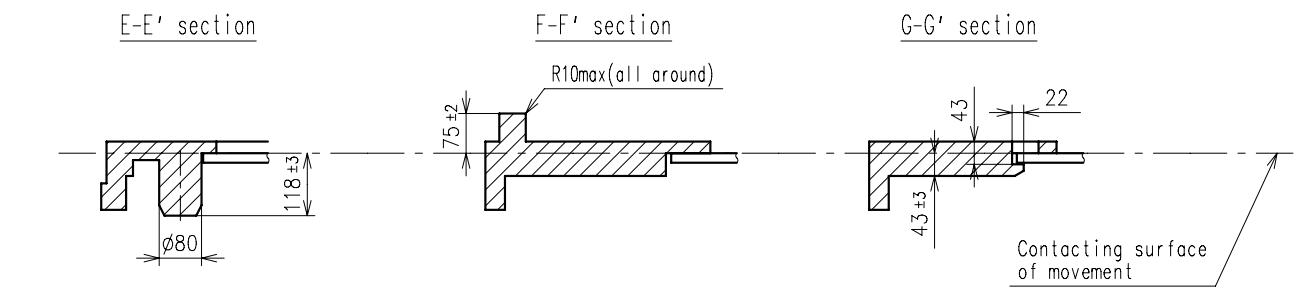
Unit : 1=1/100mm

Cal. VS15A	Solar cell unit-01	Date:24/Apr./'15
		Rev.:03



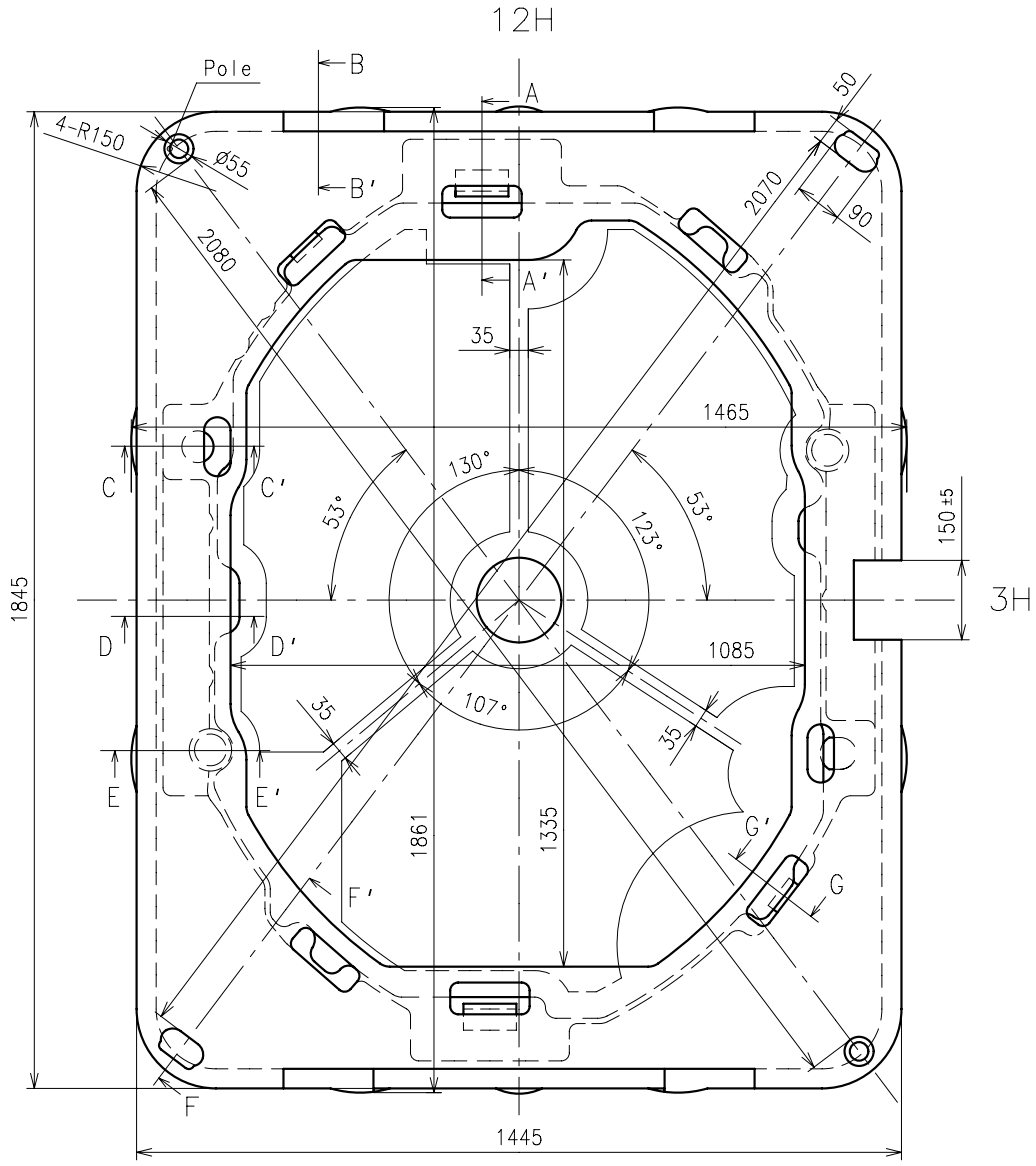
Case body inside diameter:ø1780



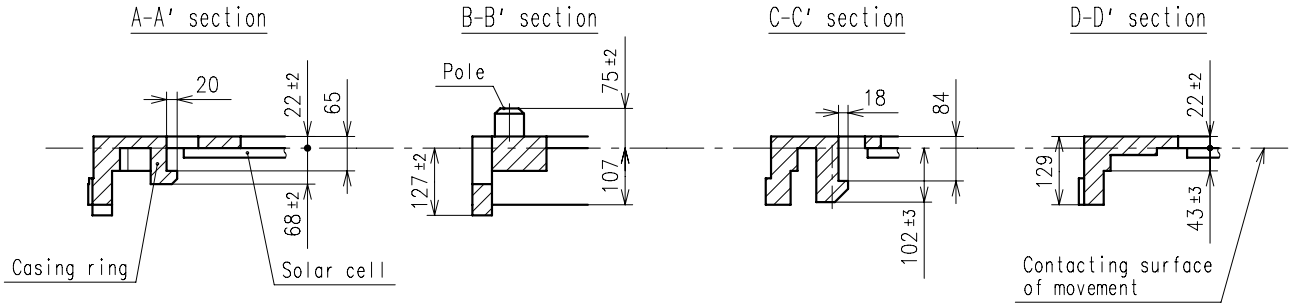


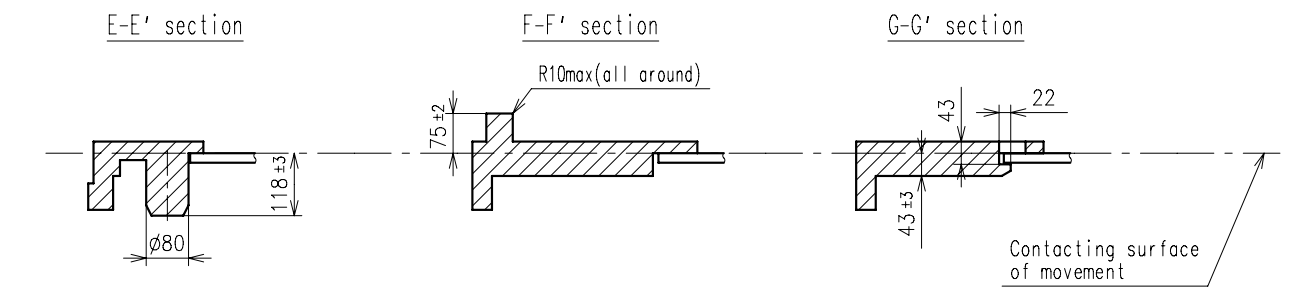
Unit : 1=1/100mm

Cal. VS15A	Solar cell unit-02	Date:24/Apr./'15
		Rev.:05



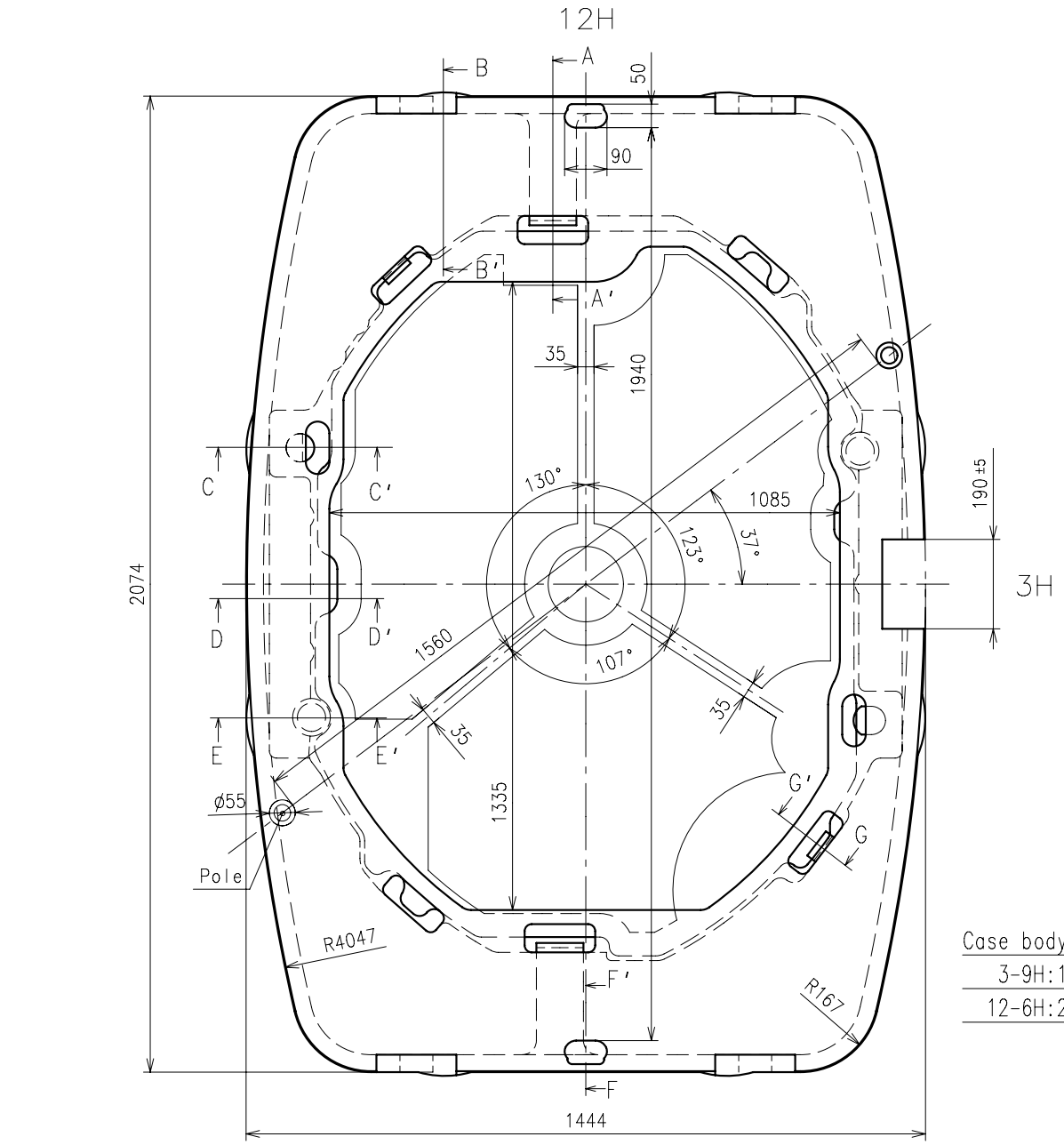
Case body inside dimension:1461×1861





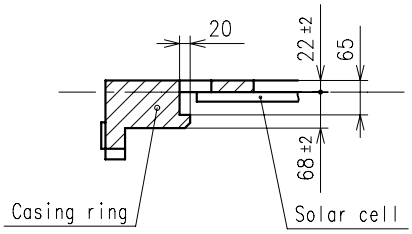
Unit : 1=1/100mm

Cal. VS15A	Solar cell unit-03	Date:31/Aug./'17
		Rev.:00

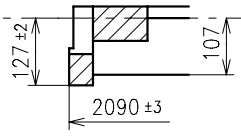


Case body inside
3-9H:1460
12-6H:2090

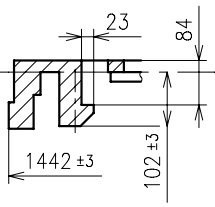
A-A' section



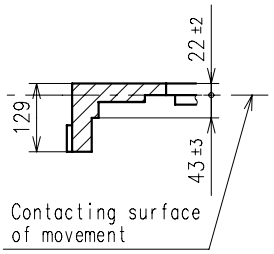
B-B' section



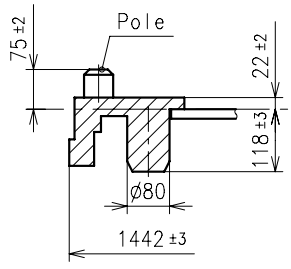
C-C' section



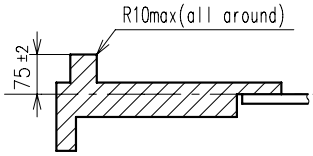
D-D' section



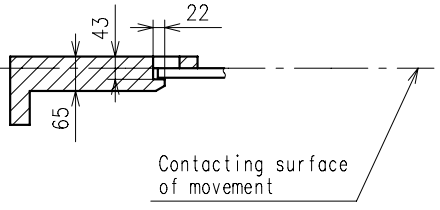
E-E' section



F-F' section

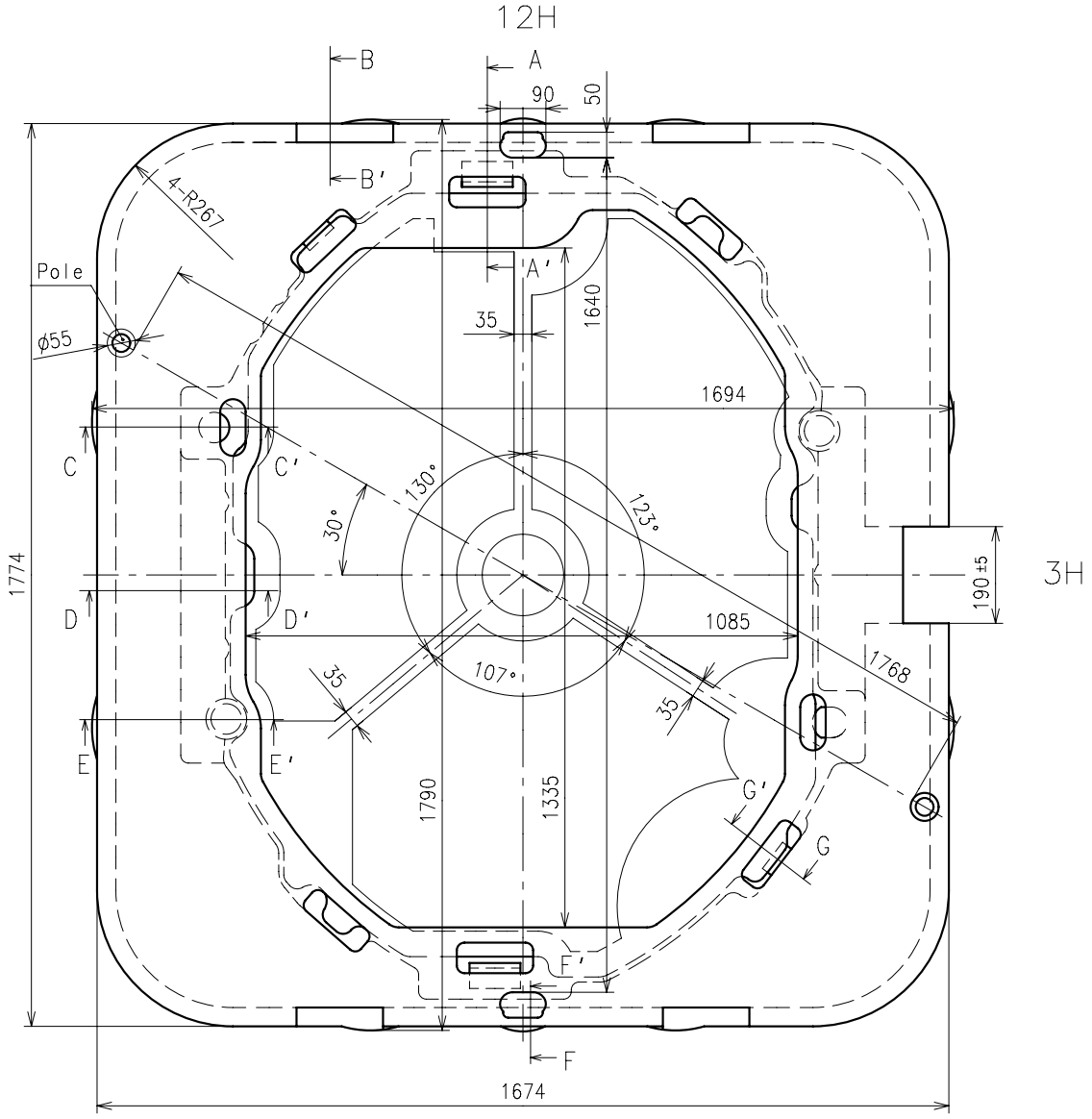


G-G' section



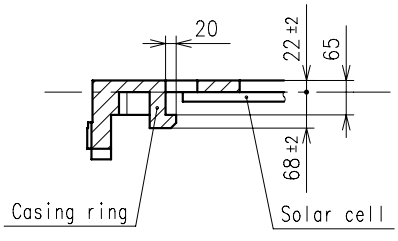
Unit : 1=1/100mm

Cal. VS15A	Solar cell unit-04	Date:31/Aug./'17
		Rev.:00

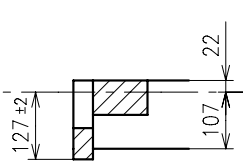


Case body inside dimension:1690×1790

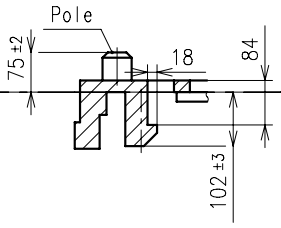
A-A' section



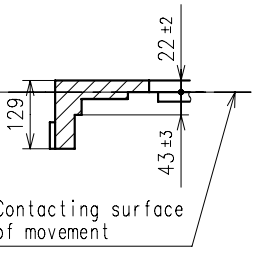
B-B' section



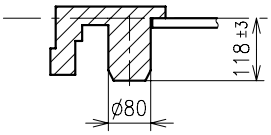
C-C' section



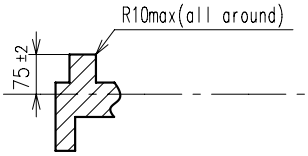
D-D' section



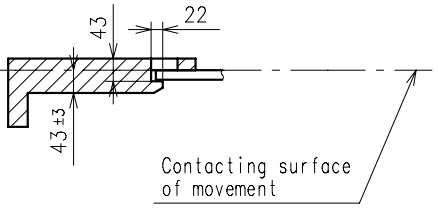
E-E' section



F-F' section

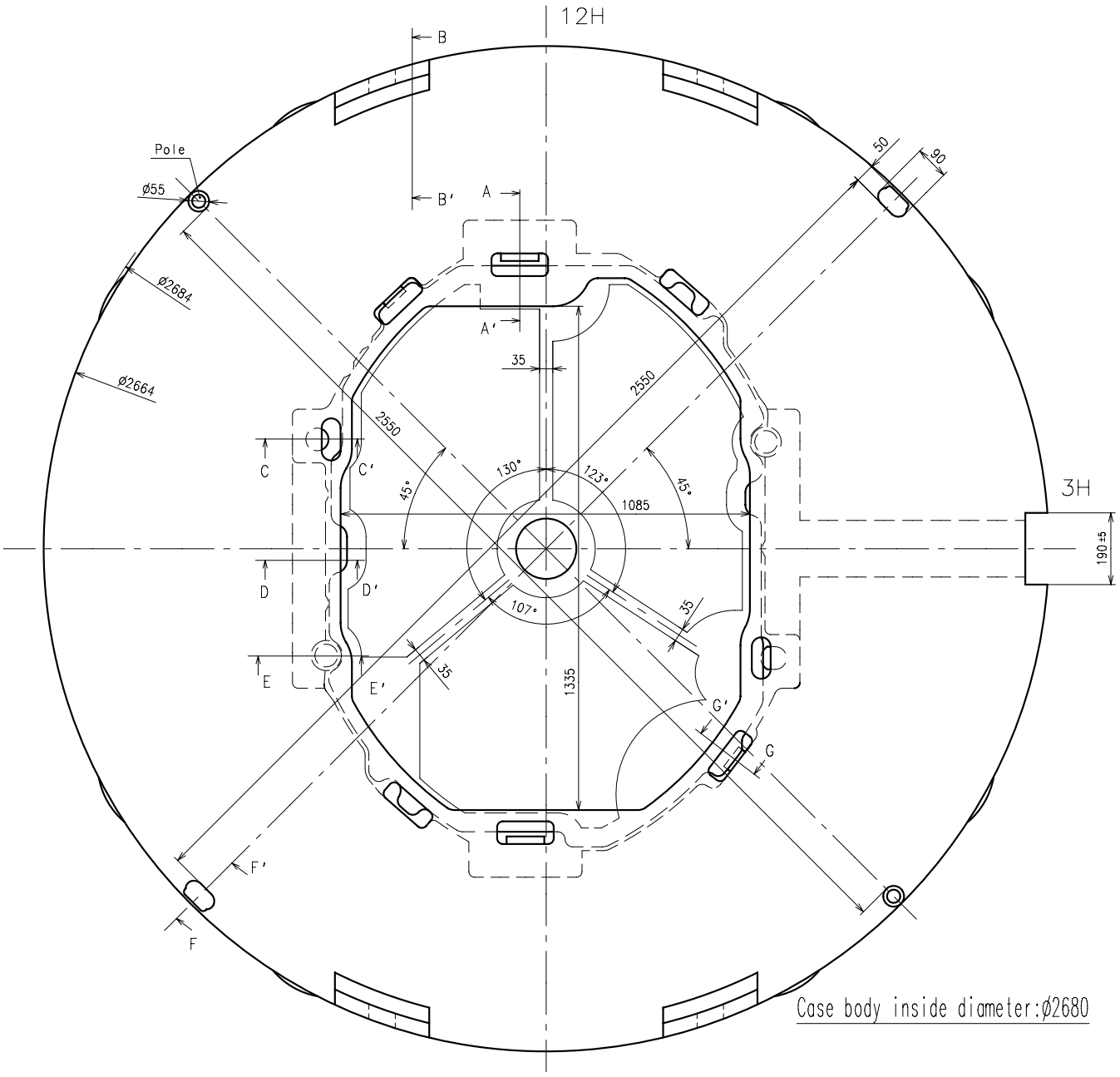


G-G' section



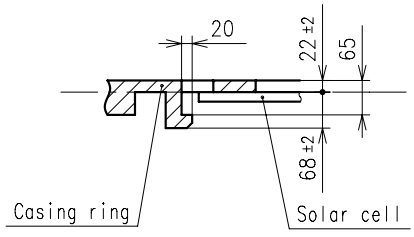
Unit : 1=1/100mm

Cal. VS15A	Solar cell unit-05	Date:30/Jul./'19
		Rev.:00

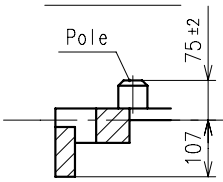


Case body inside diameter:ø2680

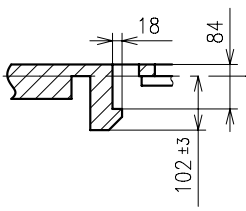
A-A' section



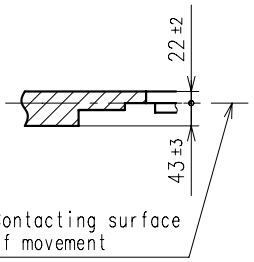
B-B' section



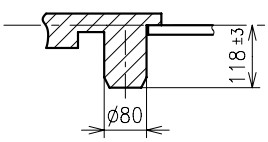
C-C' section



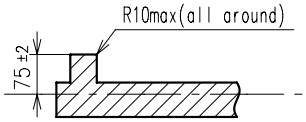
D-D' section



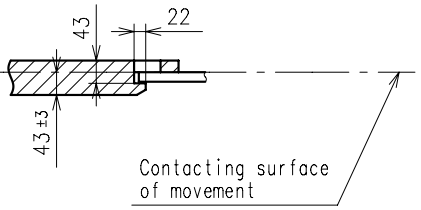
E-E' section



F-F' section



G-G' section



Unit : 1=1/100mm

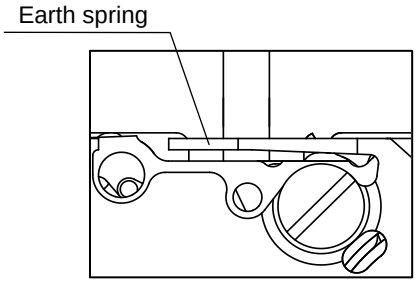
1. How to remove the setting stem

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.

When removing the setting stem, pay attention not to break or not to cut off the circuit block.

Please do not transform the earth spring.



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 20%.

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

4. The guideline of charging time is as in below

			Dial transparency rate = 20%			Dial transparency rate = 30%		
Illumination (Lx)	Source of light	Environment	A (Approx. Hours)	B (Approx. Hours)	C (Approx. Minutes)	A (Approx. Hours)	B (Approx. Hours)	C (Approx. Minutes)
700	A fluorescent lamp	Inside the office	–	52	65	–	40	50
3,000		30W 20cm	180	13	14	120	10	11
10,000	Sun light	Cloudy	60	5.2	4	40	4	3
100,000		Fine weather	10	0.7	1	7	0.5	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.

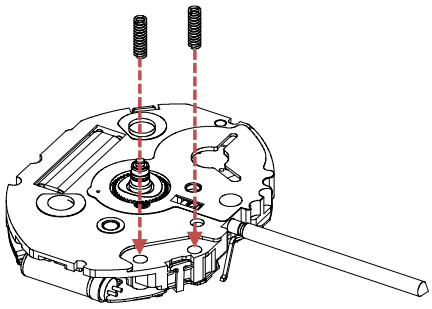
6. Caution

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

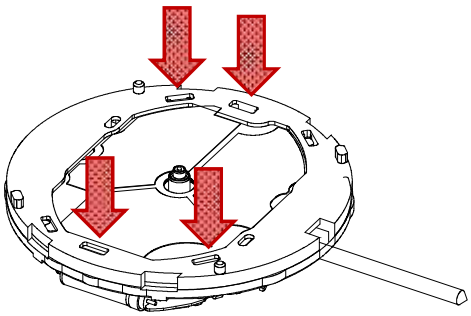
Please set 2pcs of solar cell lead terminals in accordance with this illustration.

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 four guide poles on the solar cell unit.