EPSON

Watch Movement Specification and Drawing

CHRONOGRAPH

Cal. VR31B

Movement Size

13 1/2’’’

Casing Diameter

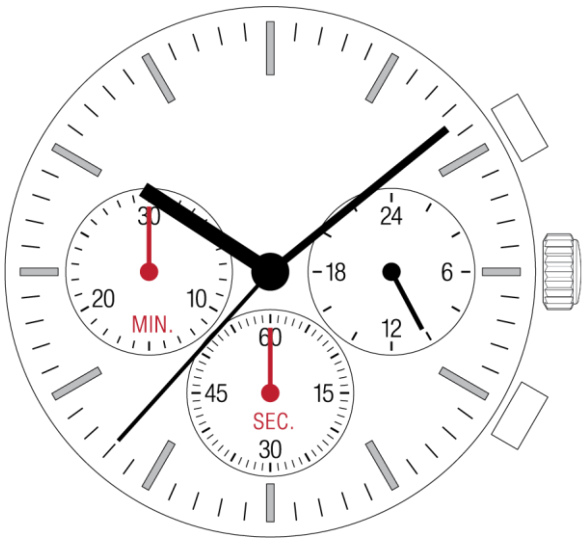
Ø 30.6mm

Height

3.97mm

Battery Life

3 years



Date: 7/Aug./'20

Cal. VR31B

Cal. VR31B	Specifications	Date : 7/Aug./'20
		Rev. : 01

Analog Quartz 13 1/2''' Chronograph Movement

1. MOVEMENT DIMENSIONS

Outside diameter	ϕ31.2mm × 28.0mm(3-9H)
Casing diameter	ϕ30.6mm
Total height	3.97mm (including battery)

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	
Small hands	24 hour(3H) / Second chronograph(6H) / Minute chronograph(9H)	
Reset switch		
Power depletion warning function (BLD)		
(Second hand moves at 2-second intervals)		
Setting mechanism	Crown at normal position	: Free
	Crown pulled out 1st click	: time setting / reset
Chronograph	1/1 second up to 30 minutes with split time measurement	

4. FEATURES

Jewels	0 Jewels	
Anti-magnetism	Over 1600A/m (Direct current magnetic field)	
Maximum unbalance of hands	Hour hand	: 0.6 μN・m
	Minute hand	: 0.9 μN・m
	Second hand	: 0.09 μN・m
	24 hour hand	: 0.05 μN・m
	Second chronograph hand	: 0.05 μN・m
	Minute chronograph hand	: 0.05 μN・m
Moment of Inertia	Second hand	: less than 0.35 μg・m²
	Second chronograph hand	: less than 0.05 μg・m²

5. BATTERY

Type / Size	Silver oxide battery / ϕ9.5mm × t 2.0mm
Recommended battery	SR920SW (Maxell, Murata, Seizaiken)
Nominal voltage	1.55 V
Battery life	Approx. 3 years
Driving current consumption	Approx. 1.2 μA
Operation stopping voltage	1.4V (Chronograph function)

6. SEPARATED PARTS (Parts code)

Hand setting stem	0351578 or 0351177
Battery	SR920SW

7. TEST OF ACCURACY

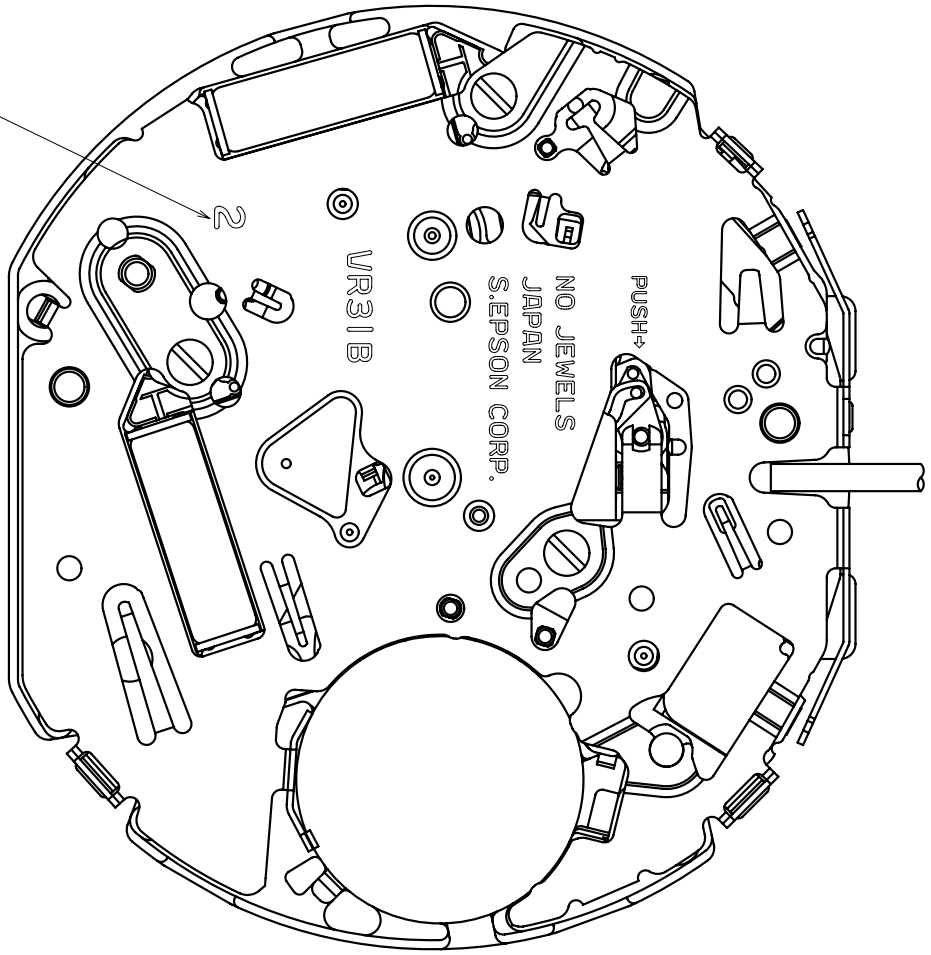
Equipment to be used	SEIKO quartz tester QT-99, Greiner quartz timer-C , Witschi Q-tester 4000
Duration of measurement	10 seconds
Microphone to be used	Electromagnetic detection type

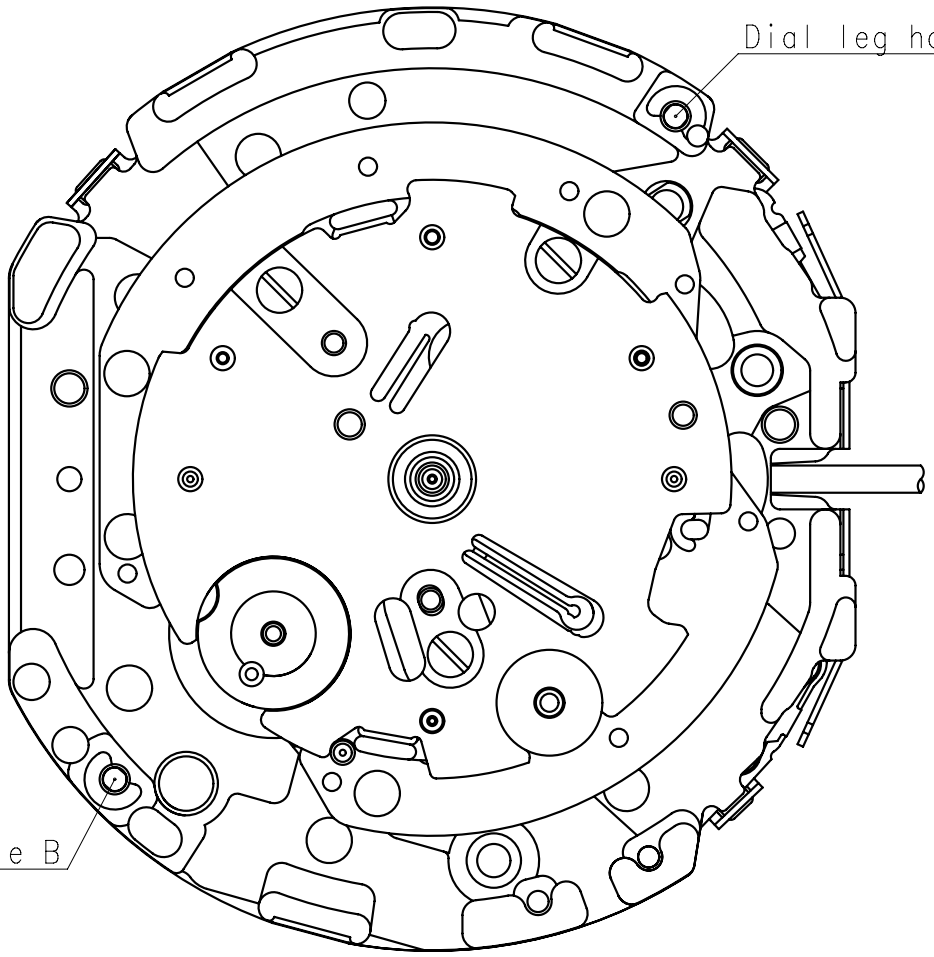
All specifications are subject to change without notice.

Cal. VR31B	Appearance	Date:19/Oct./'18
		Rev.:00

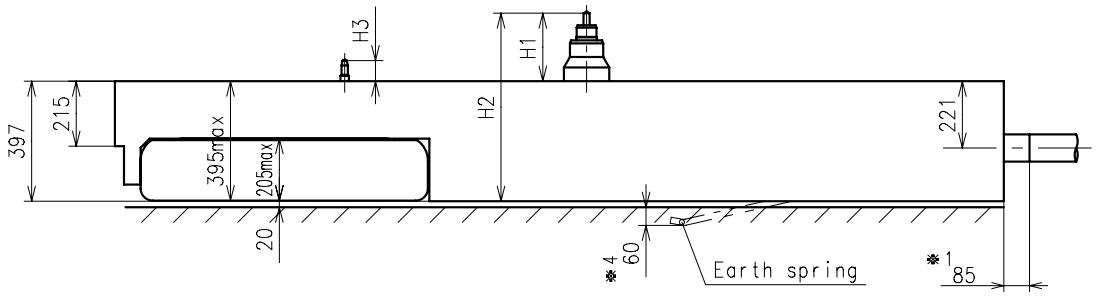
Hands type

	Mark
Type M	2





Cal. VR31B	Casing	Date:19/Oct./'18
		Rev.:00



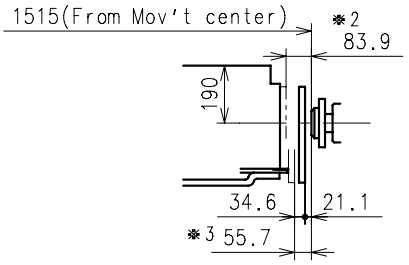
Center post		Type M (2) VR31B**
Maximum height from dial support	H1	225
Total height including movement	H2	622
Maximum height from dial support	H3	70

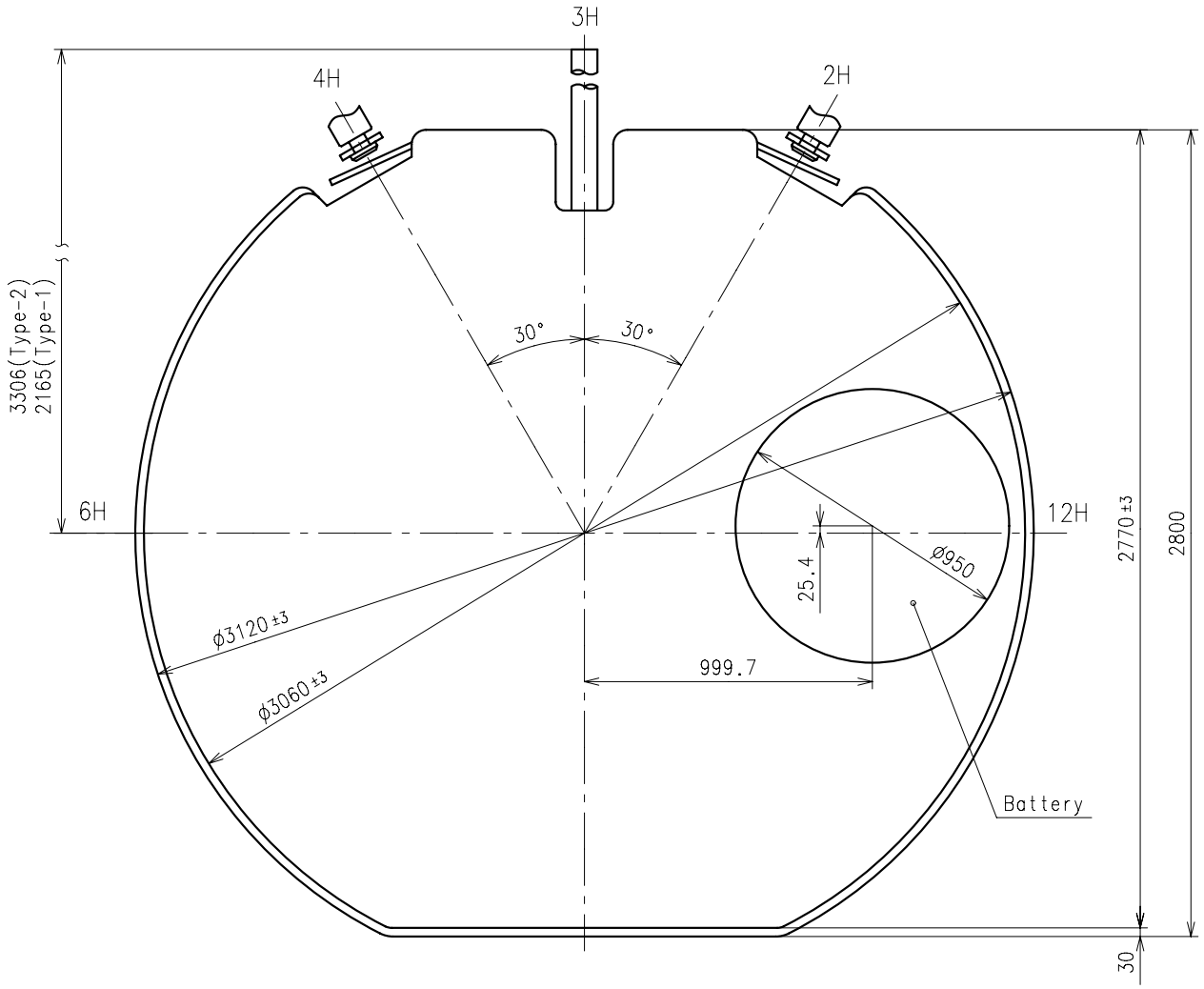
※1:Pullout stroke

※2:Button stroke

※3:Switching stroke

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





Unit : 1=1/100mm

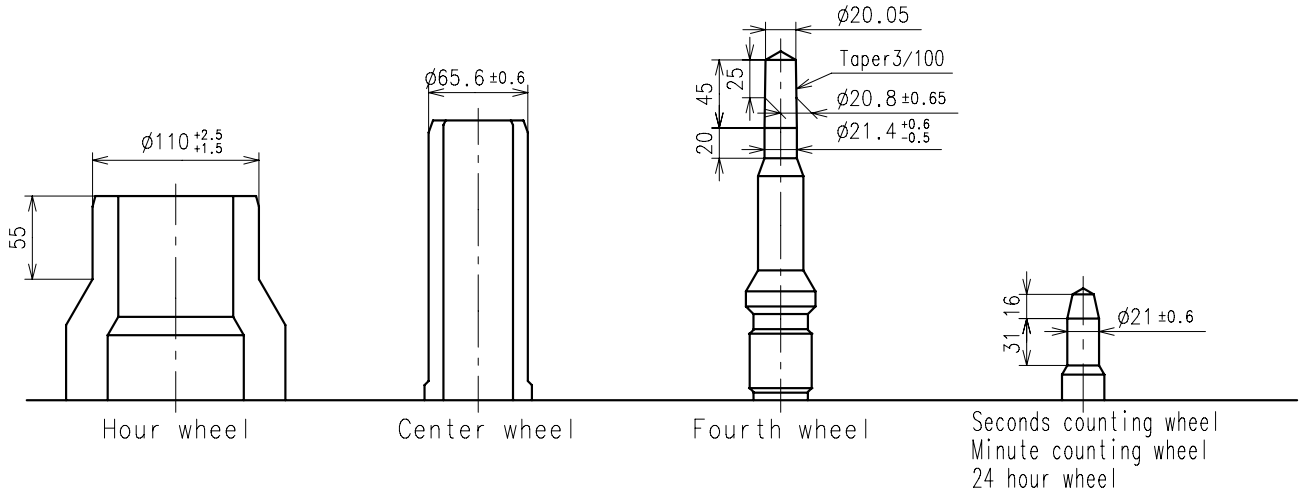
Hand fitting

※Unbalance

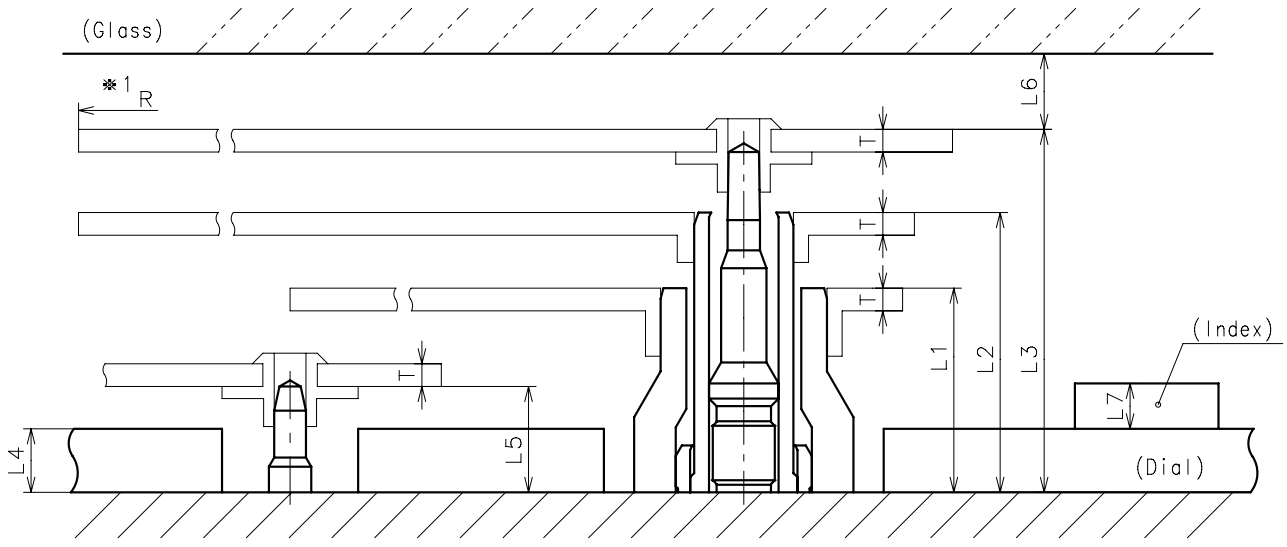
· Hour hand	≦	0.6μ N · m	(60μ g · m)
· Minute hand	≦	0.9μ N · m	(90μ g · m)
· Second hand	≦	0.09μ N · m	(9μ g · m)
· Second chronograph hand	≦	0.05μ N · m	(5μ g · m)
· Minute chronograph hand	≦	0.05μ N · m	(5μ g · m)
· 24 hour hand	≦	0.05μ N · m	(5μ g · m)

※Moment of inertia

· Second hand	≦	0.35μ g · m²
· Second chronograph hand	≦	0.05μ g · m²



	Parts No.					
	Hour wheel	Center wheel	Fourth wheel	Seconds counting wheel	Minute counting wheel	24 hour wheel
Type M (2) VR31B**	0271661	0221662	0241604	0888510	0888520	1002561

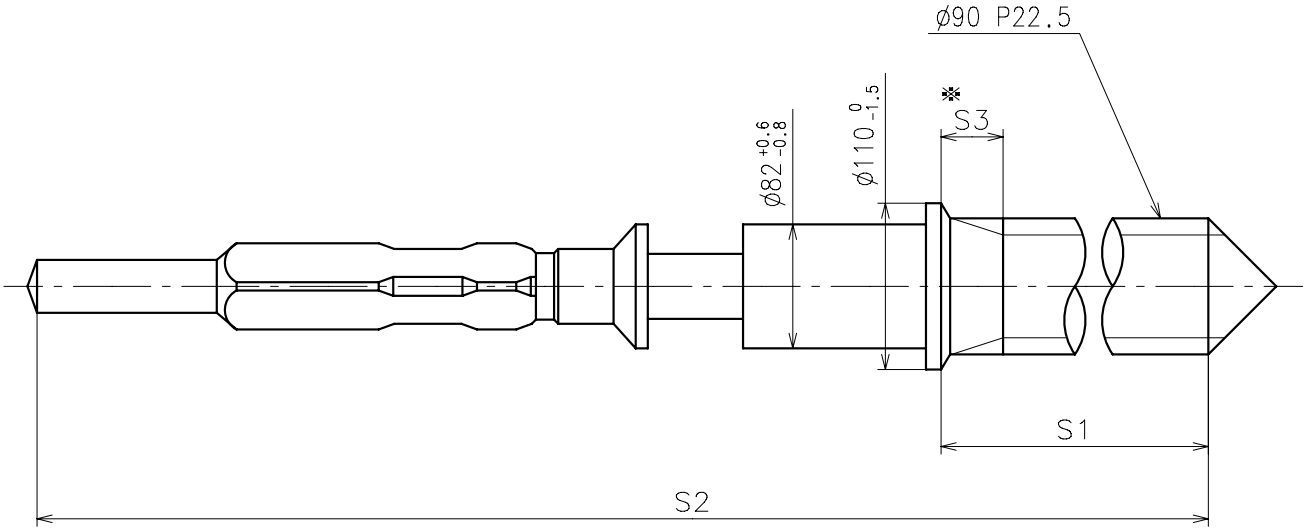


	L1	L2	L3	L4	L5	L6	L7	T	※1 R
Type M (2) VR31B**	135	185	240	40	70	MIN: 50	MAX: 50	15	MAX: 1500

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

Unit : 1=1/100mm

Cal. VR31B	Hand setting stem	Date:19/Oct./'18
		Rev.:00



※ Not threaded

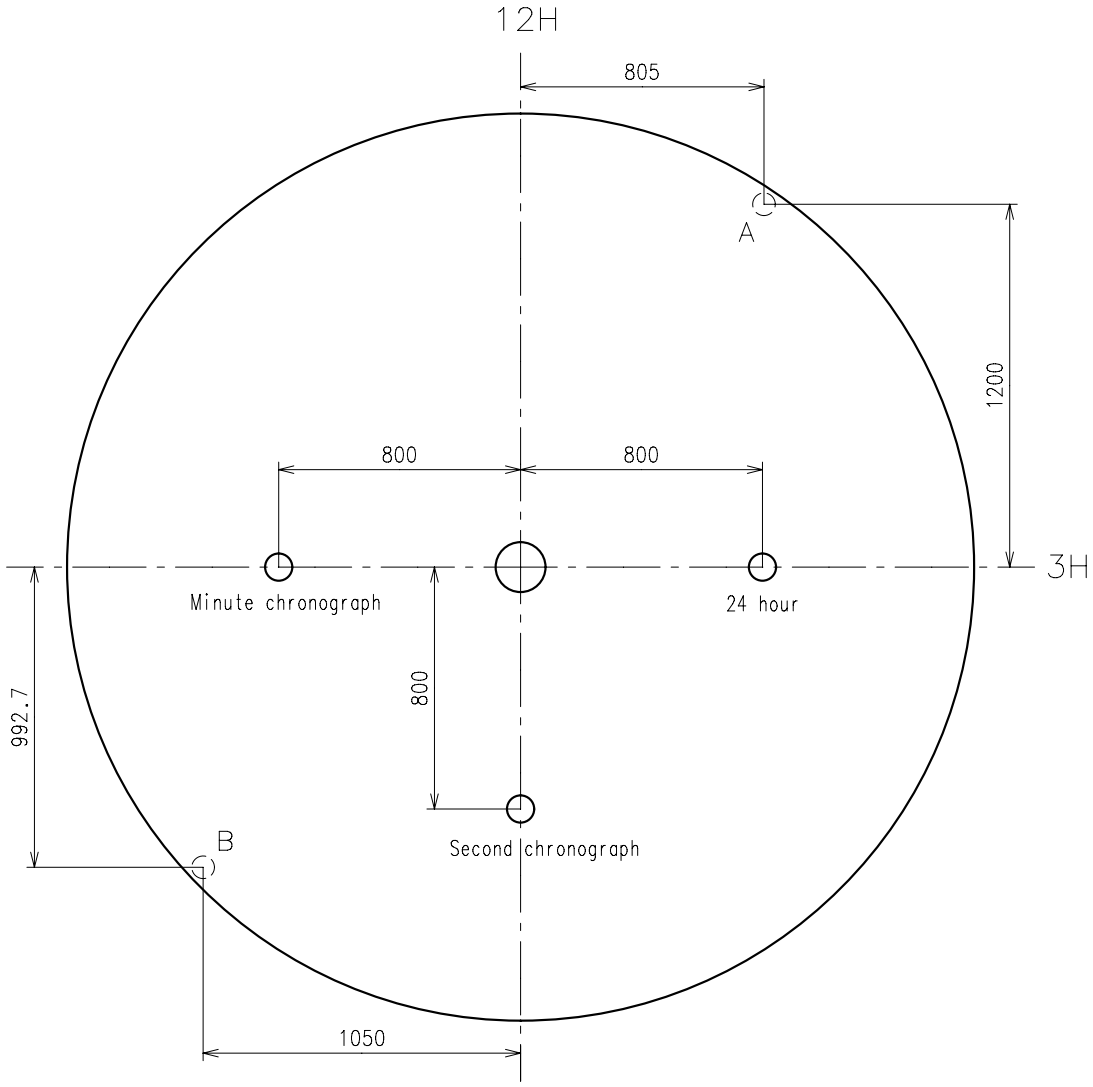
	Part No.	S1	S2	※ S3
Type-1	0351177	1366	1964	60
Type-2 (Standard)	0351578	2507	3105	650

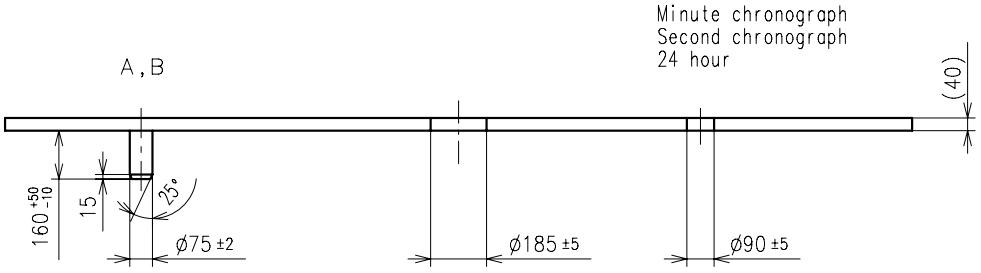
Material : Steel

Hardness : Vickers 600±50

Unit : 1=1/100mm

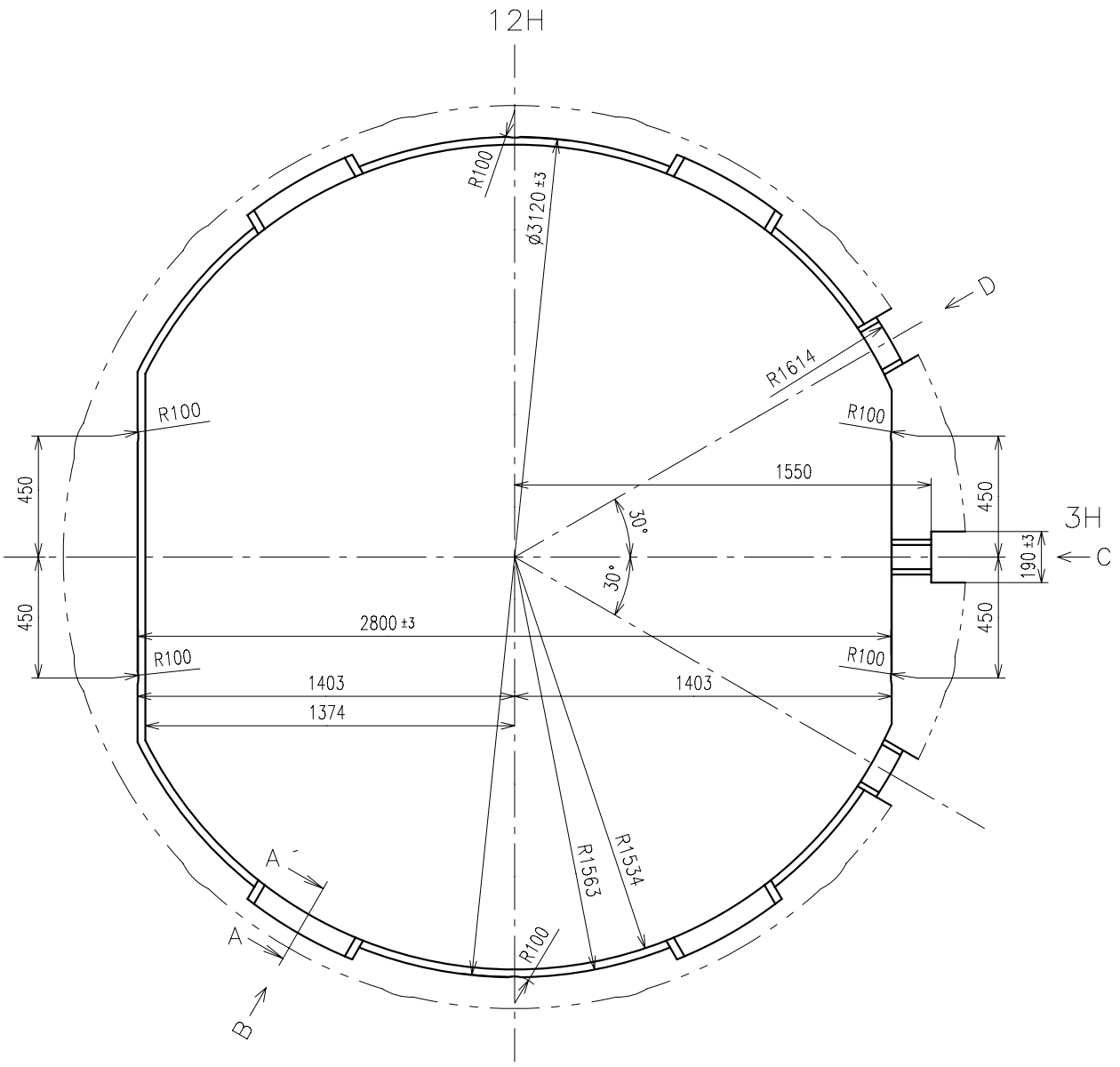
Cal. VR31B	Dial	Date:19/Oct./'18
		Rev.:00



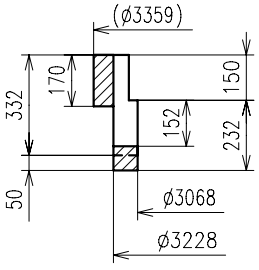


Unit : 1=1/100mm

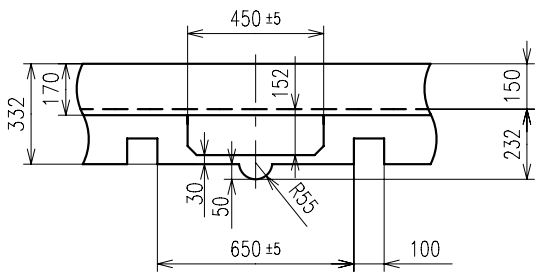
Cal. VR31B	Casing ring	Date:19/Oct./'18
		Rev.:00



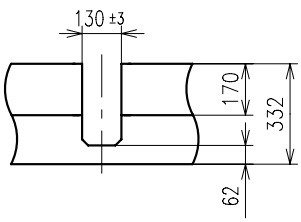
A-A´ section



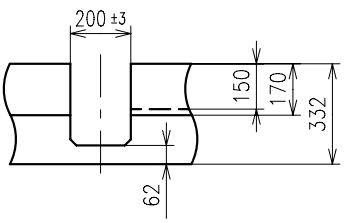
B view



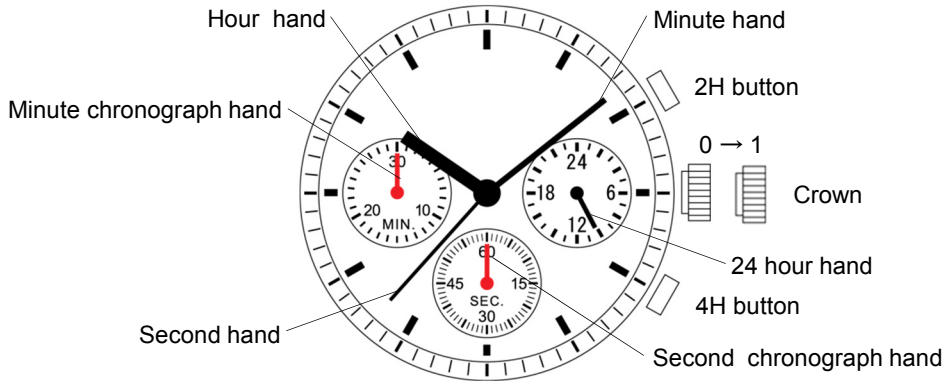
C view



D view



Unit : 1=1/100mm



	Crown position	
	0 click	1st click
Crown	Free	Time setting
2H button	Chronograph Start/Stop Restart	Chronograph hands 0-setting (clockwise)
4H button	Chronograph Reset Split Split release	Chronograph hands 0-setting (counterclockwise)

Chronograph function

Second chronograph hand is capable of timing 30 minutes. (60 seconds x 30 times)
Minute chronograph hand is capable of timing 30 minutes.

■ Standard measurement

2H button (Start) → 2H button (Stop) → 4H button (Reset)

■ Accumulated elapsed time measurement

2H button (Start) → 2H button (Stop) → 2H button (Restart) → 2H button (Stop) → 4H button (Reset)

Restart and stop of the chronograph can be repeated by pressing 2H button.

■ Split time measurement

2H button (Start) → 4H button (Split) → 4H button (Split release) → 2H button (Stop) → 4H button (Reset)

Measurement and release of split time can be repeated by pressing 4H button.

■ Measurement of two competitors

2H button (Start) → 4H button (Finish time of 1st competitor) → 2H button (2nd competitor finishes) → 4H button (Finish time of 2nd competitor) → 4H button (Reset)

1. Case

Please use the metal case back to prevent from the movement mal-function by static electricity.

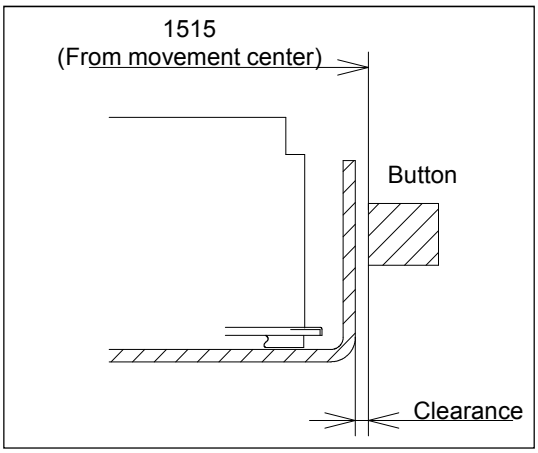
2.Hour Wheel

When set and remove the hour hand repeatedly, it may reduce the hand fixing torque because the hour wheel is made by plastic.

To ensure the enough fixing torque, it isn't recommended to re-assemble the hour hand more than five times.

3. Button position

Please keep the clearance between the movement and the tip of button to prevent the interference in assembling and enable to be cased smoothly.



To keep the clearance,it is recommended to use button spring.