

Watch Movement Specification and Drawing

CHRONOGRAPH

Cal. YM46A

Movement Size

12'''

Casing Diameter

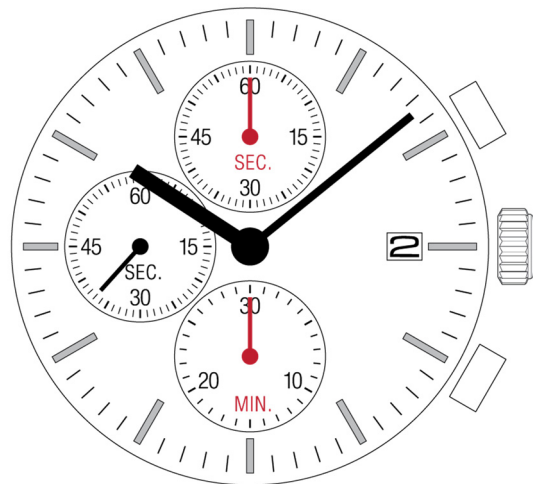
Ø 27.0mm

Height

3.7mm

Battery Life

5 years



Date: 31/Aug./'18

Cal. YM46A

Items	Rev.	Page
Specifications	00	1
Appearance	00	2
Casing	00	3
Hand fitting	00	4
Hand setting stem	00	5
Dial-01	00	6-01
Dial-02	00	6-02
Holding ring for dial	00	7
Attention for assembly	00	8
Attention of casing part structure	00	9
Operation	00	10

Analog Quartz 12''' Chronograph Movement

1. MOVEMENT DIMENSIONS

Outside diameter	ϕ 27.60mm(12H-6H) × 24.00mm(3H-9H)
Casing diameter	ϕ 27.00mm(12H-6H)
Total height	3.7mm (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°C to +50°C
Regulation device	Nil (Pre-adjusted)

3. INDICATOR / FUNCTIONS

2 Hands	Hour / Minute
Small hands	Minute chronograph(6H)/ Small second(9H)/ Second chronograph(12H)
Calendar	Instant setting device for date calendar
Reset switch	
Power depletion warning function (BLD)	
(Small second hand moves at 2-second intervals)	
Chronograph	The chronograph can measure up to 30 minutes in second

4. FEATURES

Jewels	0 Jewels	
Anti-magnetism	Over 1600A/m (Direct current magnetic field)	
Maximum unbalance of hands	Small second hand	: 0.03 μ N·m
	Second chronograph hand	: 0.03 μ N·m
	Minute chronograph hand	: 0.03 μ N·m
	Minute hand	: 0.70 μ N·m

5. BATTERY

Type / Size	Silver oxide battery / ϕ 9.5mm × t 2.73mm
Recommended battery	SR927SW
Nominal voltage	1.55 V
Battery life	Approx. 5 years
	(30 minutes chronograph operation per day)
Driving current consumption	Approx. 0.80 μ A
Operation stopping voltage	0.9 V

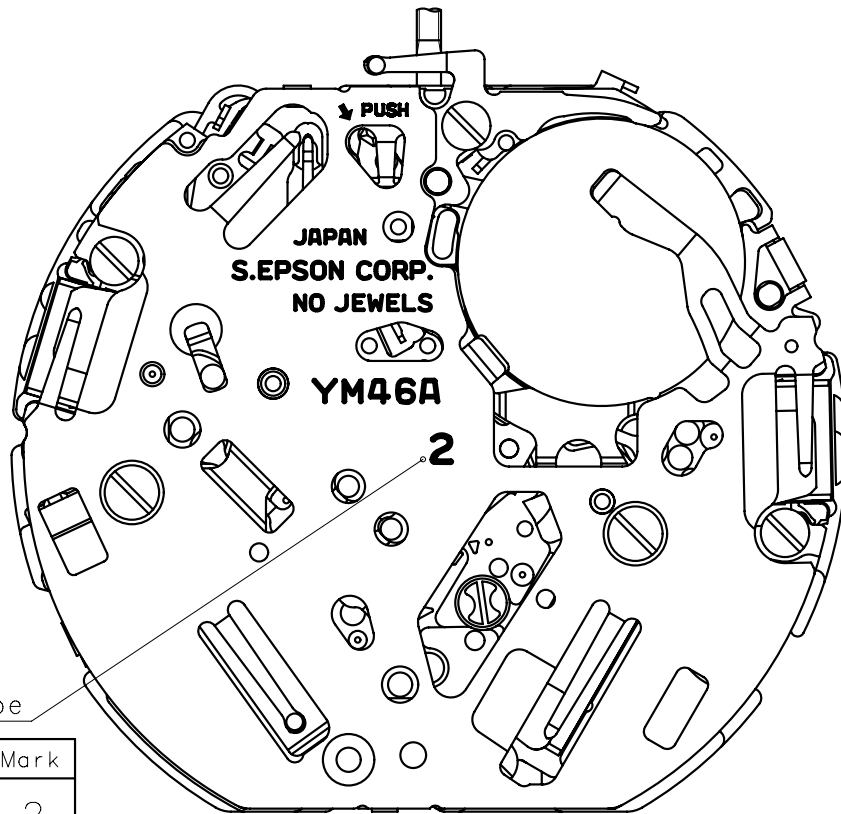
6. SEPARATED PARTS (Parts code)

Hand setting stem	0351584 (Standard) or 0351585 (Long)
Holding ring for dial	0866650 (Standard) or 0866789 (Special)
Battery	SR927SW

7. TEST OF ACCURACY

Equipment to be used	SEIKO quartz tester QT-99, QT2100 Greiner quartz timer-C , Witschi Q-tester 4000
Duration of measurement	10 seconds
Microphone to be used	Electromagnetic detection type

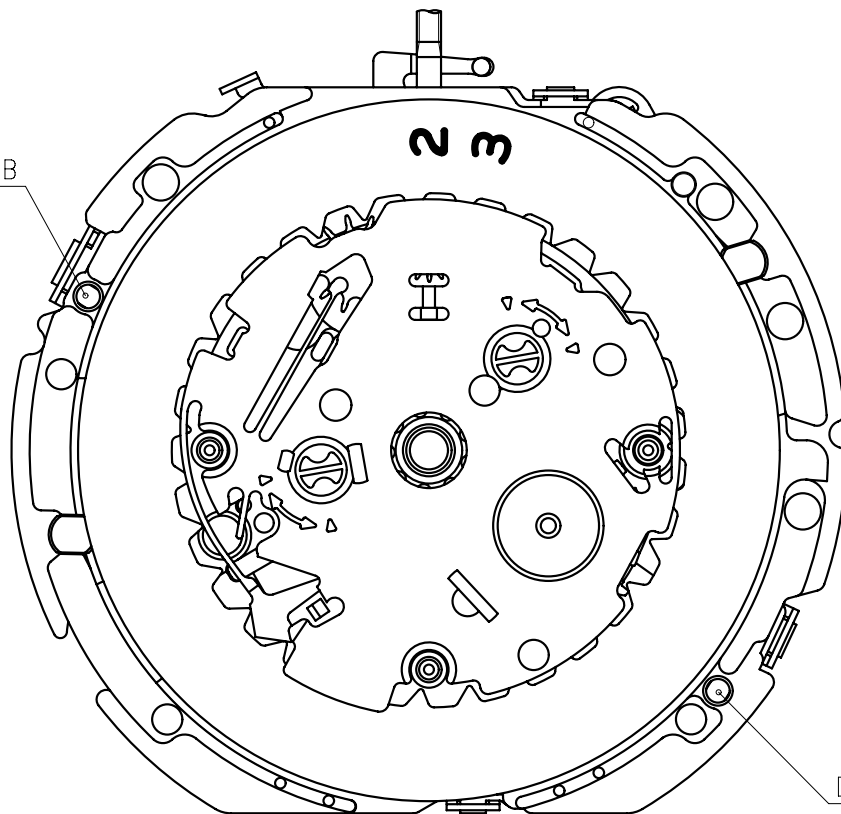
All specifications are subject to change without notice.



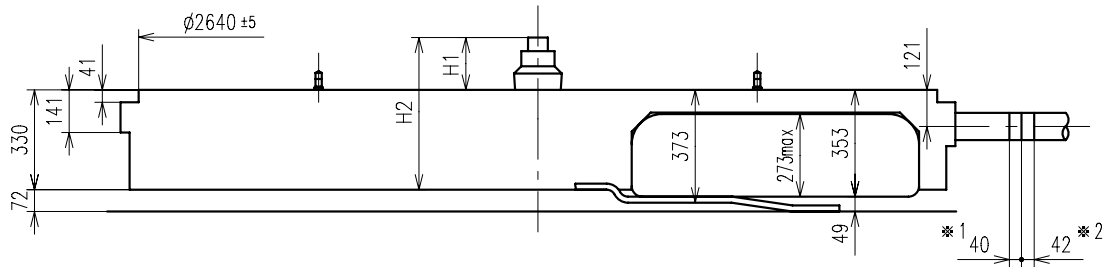
Hands type

	Mark
Type(M) YM46A**	2

Dial leg hole B

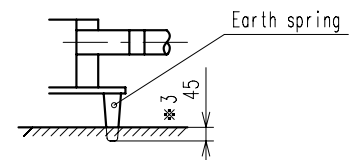
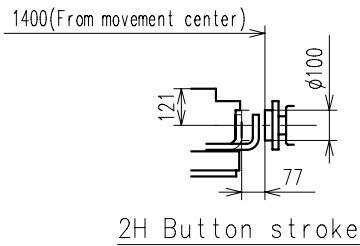
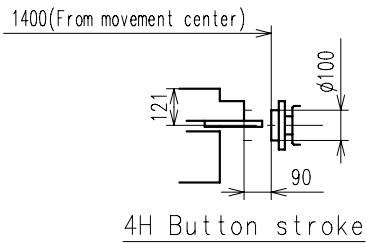


Dial leg hole A

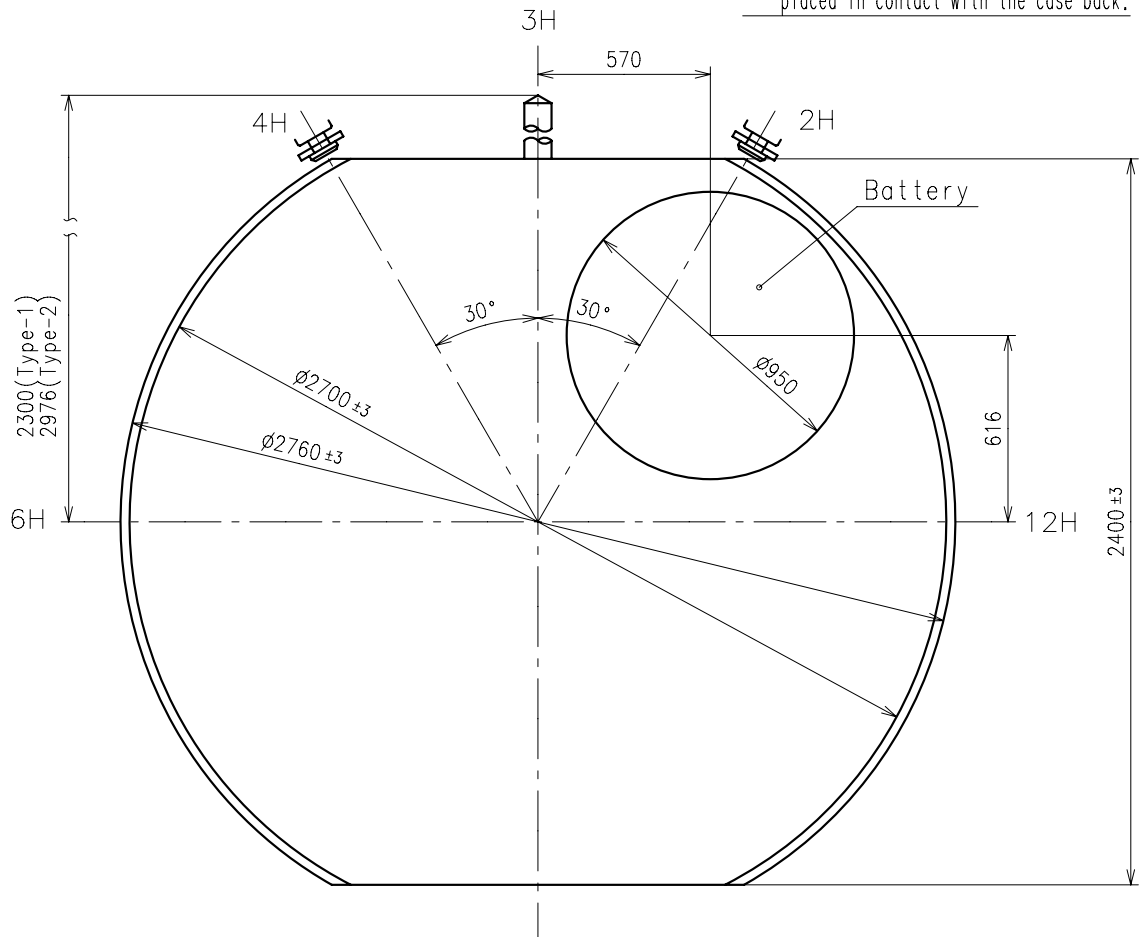


*1: First pullout stroke
*2: Second pullout stroke

Center post		Type M (2) YM46A**
Maximum height from dial support	H1	173
Total height including movement	H2	503

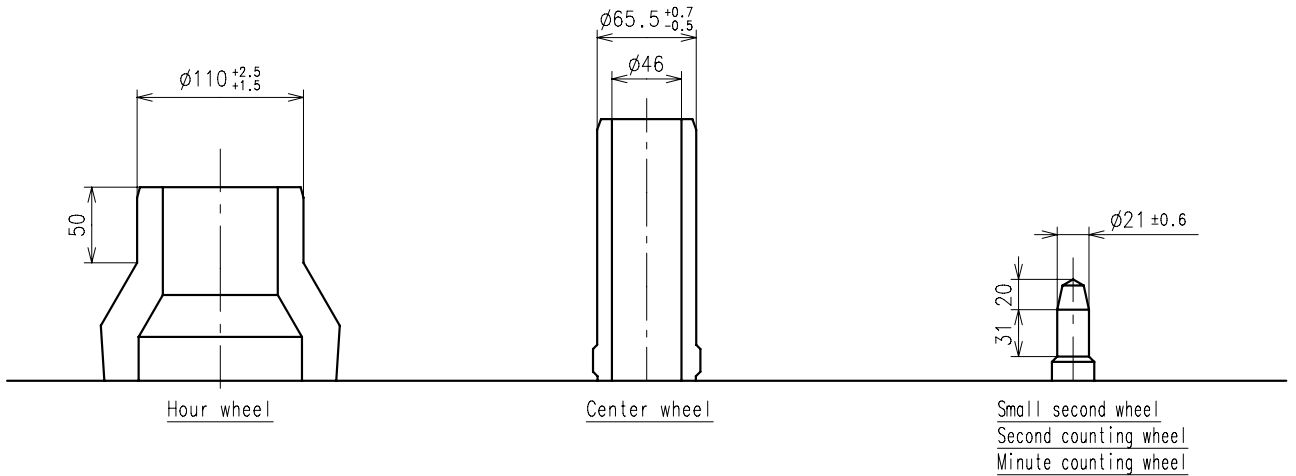


*3: The earth spring is absolutely placed in contact with the case back.

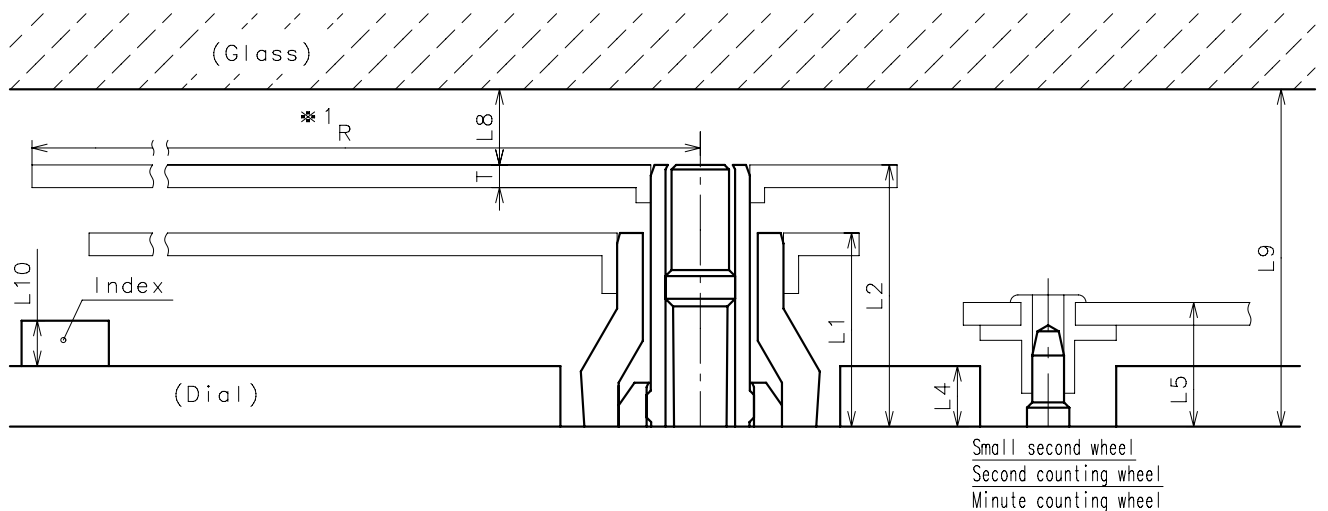


※ Unbalance

- Small second hand $\leq 0.03\mu\text{ N}\cdot\text{m}$ ($3\mu\text{ g}\cdot\text{m}$)
- Second chronograph hand $\leq 0.03\mu\text{ N}\cdot\text{m}$ ($3\mu\text{ g}\cdot\text{m}$)
- Minute chronograph hand $\leq 0.03\mu\text{ N}\cdot\text{m}$ ($3\mu\text{ g}\cdot\text{m}$)
- Minute hand $\leq 0.70\mu\text{ N}\cdot\text{m}$ ($70\mu\text{ g}\cdot\text{m}$)

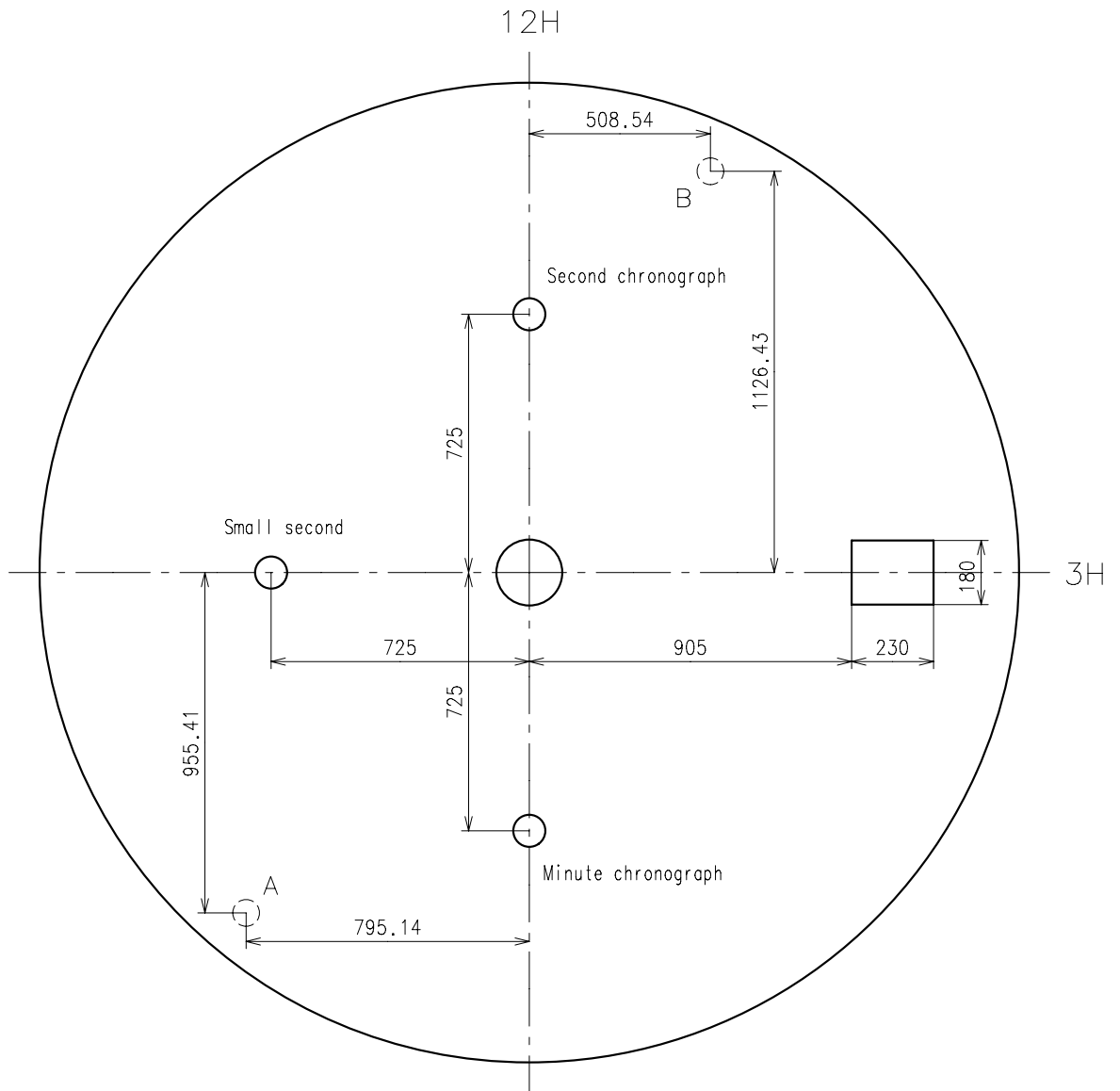


	Parts No.				
	Hour wheel	Center wheel	Small second wheel	Second counting wheel	Minute counting wheel
Type M (2) YM46A**	0271695	0221690	0240580	0902580	0902580



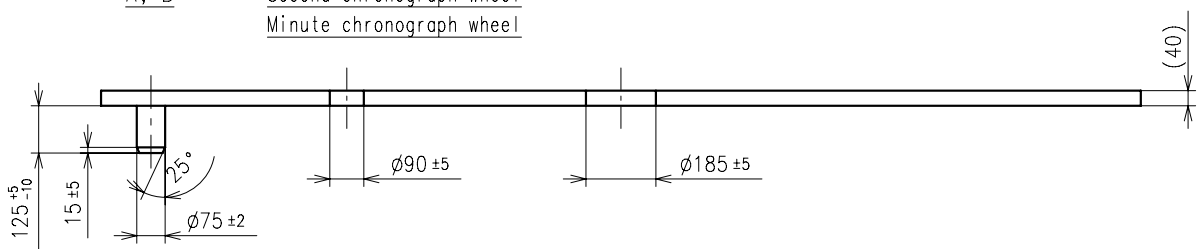
	L1	L2	—	L4	L5	—	—	L8	L9	L10	T	*1 R
Type M (2) YM46A**	128	173	—	40	77	—	—	MIN: 50	MIN: 223	MAX: 50	15	MAX: 1250

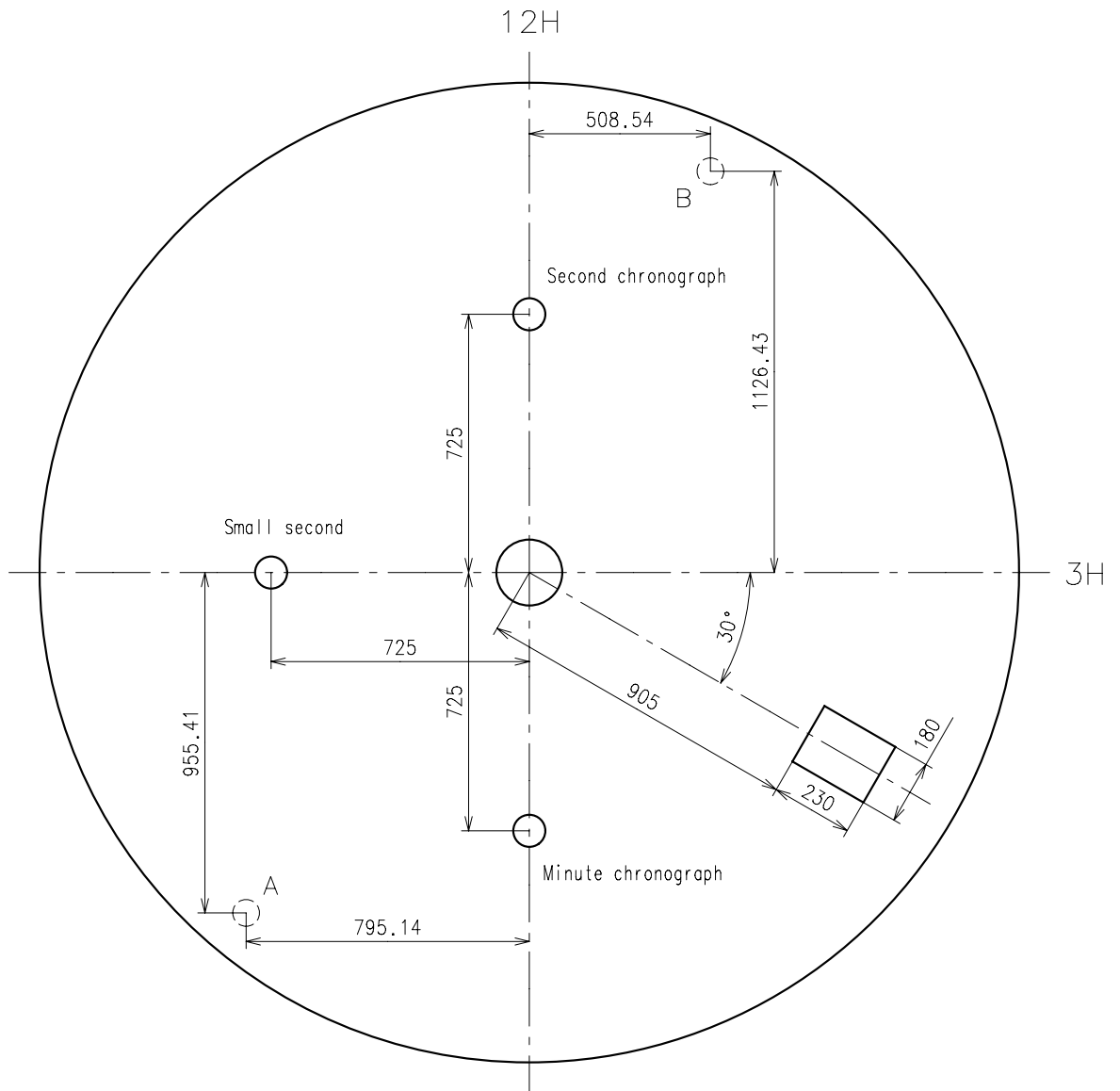
※ 1: It is the size taken into consideration for hands attachment.
Please observe some standard value specified in unbalance and moment of inertia when using long hands.



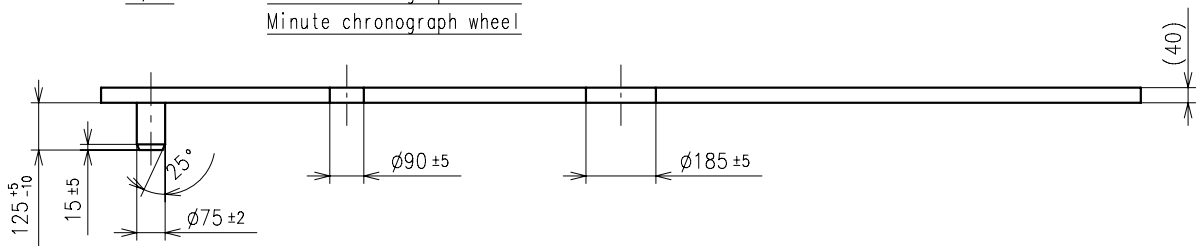
A, B

Small second wheel
Second chronograph wheel
Minute chronograph wheel

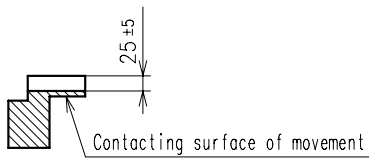
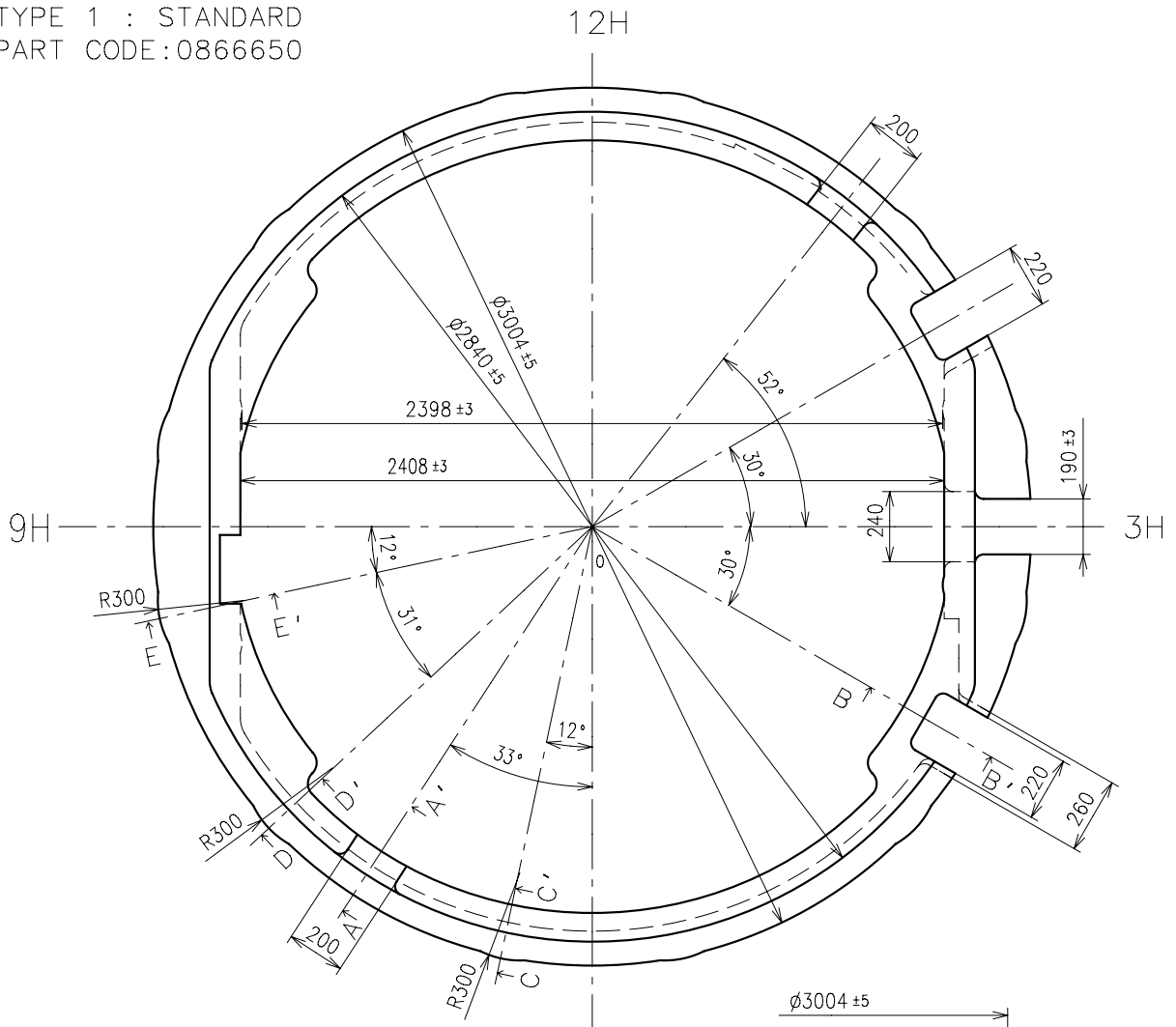




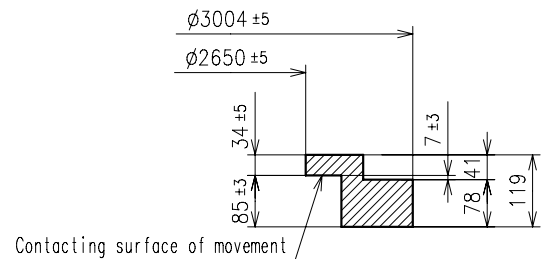
A, B
Small second wheel
Second chronograph wheel
Minute chronograph wheel



TYPE 1 : STANDARD
PART CODE: 0866650

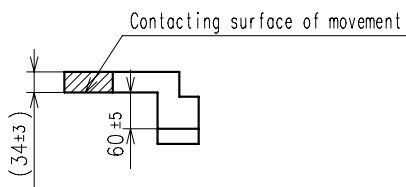


A-A' section

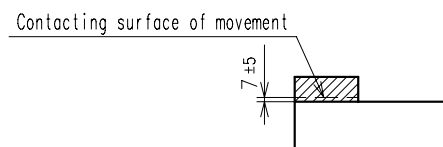


Contacting surface of movement

0-12H section

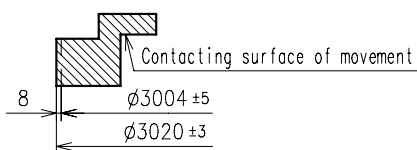


B-B' section

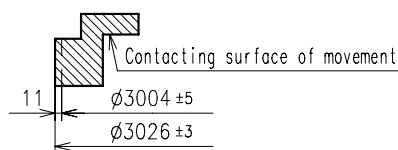


Contacting surface of movement

0-3H section

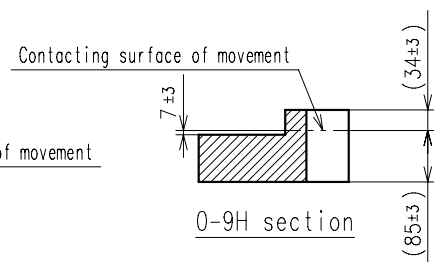


C-C' section



D-D' section

E-E' section



Contacting surface of movement

0-9H section

1.How to replace the battery

- Please use the specified battery to keep the stable performance for a long time.
- Please install the minus part of the battery towards inside of the watch.
- When installing or changing the battery, it is recommended to remove two battery clamp screws first, then remove the battery clamp not to damage the movement parts.
If you install the battery without removing the battery clamp, please install the battery from [→] direction as illustrated below Fig.[1].
- Install the battery under the circuit cover as illustrated below Fig.[1] and Fig.[2].
- System-reset is not required.
- After installing the battery, set the current time and then set the second chronograph hand and minute chronograph hand at "0" position.

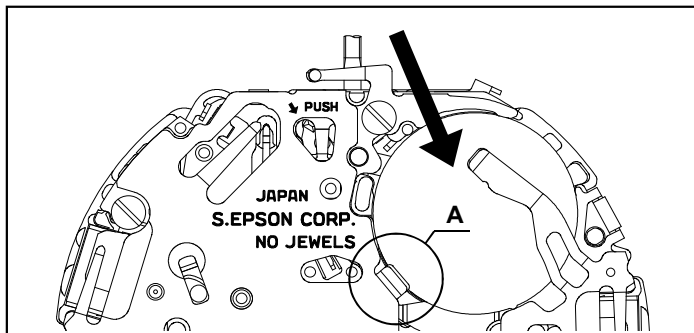


Fig.[1]

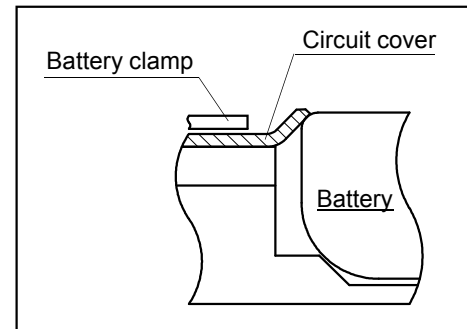


Fig.[2] A section

2.How to remove the stem

- When removing the stem, pull out the crown at 1st click position and then remove the stem while pressing the hollow portion of setting lever by tweezers. (Refer to the Fig.[3].)

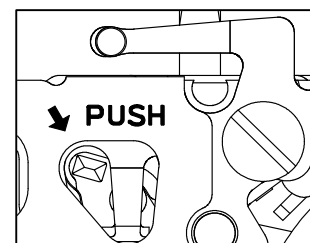


Fig.[3] Crown pulled out at 1st click

3.How to set the hands

- Each hand moves at step interval. Set the each hand at correct position according to the scale on the dial in order not to make a mistake in reading time.
- Do not turn the hand forcibly.

4.How to remove the hands

- When removing the hands, use exclusive fork-shaped tools.
- Do not remove the dial under the condition that any hands are set.

5.How to test the accuracy

- When measuring the time accuracy, use specified Quartz Tester and change the gate time in 10 seconds.

1. Holding ring for dial

Use the specified holding ring for dial to prevent rotation of the movement inside of the case in order to stabilize the button operation.

Refer to the [Holding ring for dial] page instruction as to the shape and tolerance.

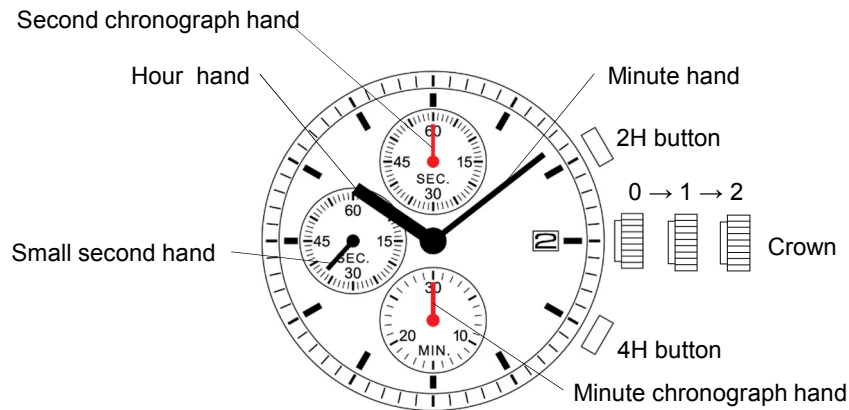
2. Case

Use the metal case to prevent from the movement mal-function by static electricity.

3. 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.

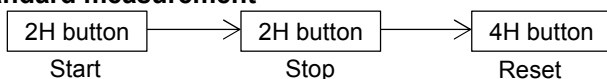


	Crown position		
	0 click	1st click	2nd click
Crown	Free	Turn clockwise for date change	Time setting
2H button	Chronograph Start/Stop Restart	Chronograph Start/Stop Restart	Second Chronograph hands 0-setting
4H button	Chronograph Reset Split Split release	Chronograph Reset Split Split release	Minute Chronograph hands 0-setting

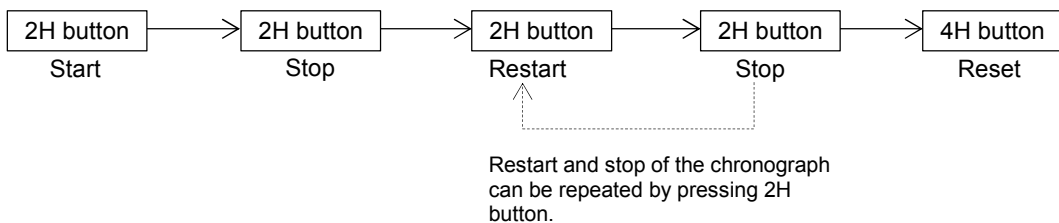
Chronograph function

- The chronograph can measure up to 30 minutes in second increments.
- When the measurement reaches 30 minutes, the chronograph automatically stops counting.

■ **Standard measurement**



■ **Accumulated elapsed time measurement**



■ **Split time measurement**

