

Watch Movement Specification and Drawing

CHRONOGRAPH

Cal. YM64A

Movement Size

12'''

Casing Diameter

Ø 27.0mm

Height

4.34mm

Battery Life

3 years

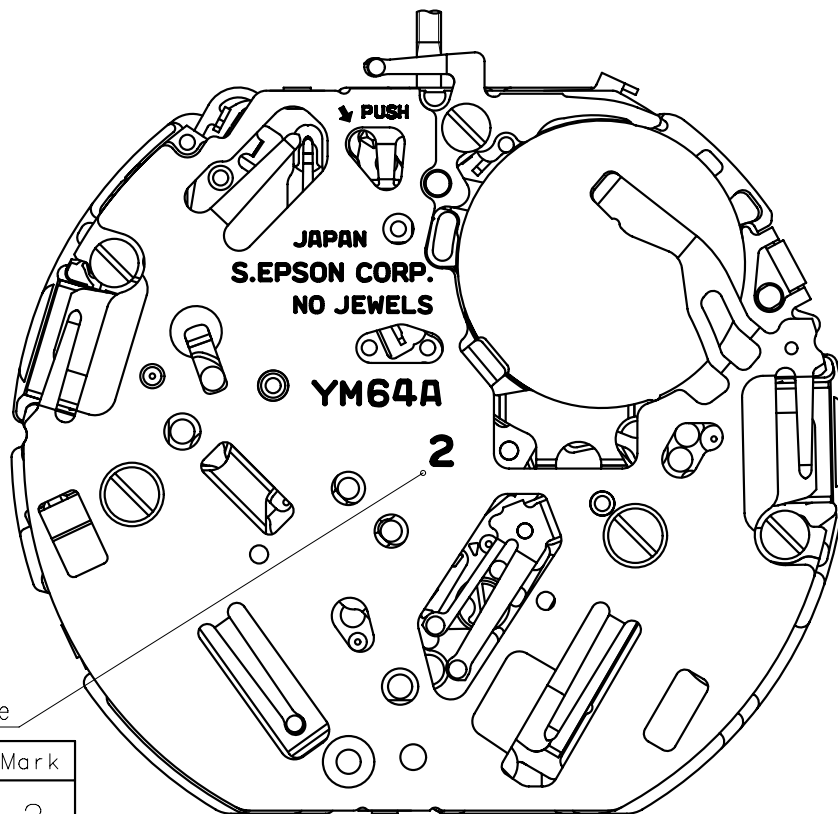


Date: 22/Aug./'23

Cal. YM64A

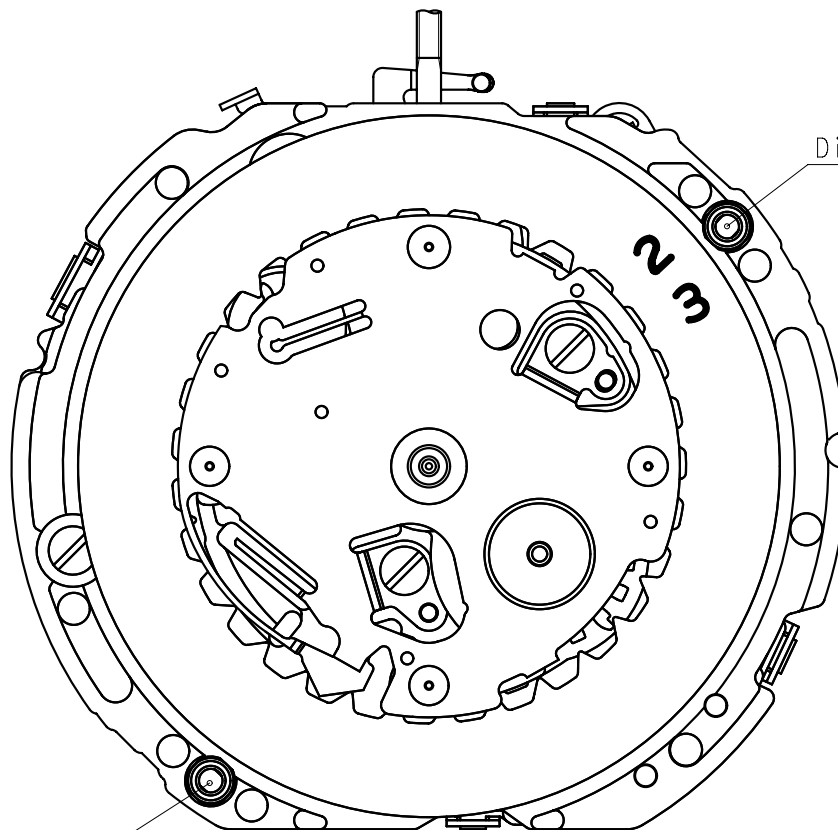
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Cal. YM64A	Specifications	Date : 22/Aug./'23
		Rev. : 03
Analog Quartz 12''' Center second Chronograph and Alarm Movement		
1. MOVEMENT DIMENSIONS		
Outside diameter	φ 27.60mm (12H-6H) × 24.00mm (3H-9H)	
Casing diameter	φ 27.00mm (12H-6H)	
Total height	4.34mm (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		
3 Hands	Hour / Minute / 1/5second chronograph (Center)	
Small hands	Alarm hour and minute (6H) /Small second (9H)	
	Minute chronograph (12H) / 24 Hour (3H)	
Calendar	Instant setting device for date calendar	
Reset switch		
Power depletion warning function (BLD)		
(Small second hand moves at 2-second intervals)		
Alarm		
Chronograph	The chronograph can measure up to 60 minutes in 1/5 second increments, capable of timing 12 hours.	
4. FEATURES		
Jewels	0 Jewels	
Anti-magnetism	Over 1600A/m (Direct current magnetic field)	
Maximum unbalance of hands	Small second hand / Alarm minute hand : 0.03 μ N·m	
	24 Hour hand / Minute chronograph hand : 0.03 μ N·m	
	1/5 second chronograph hand : 0.09 μ N·m	
	Minute hand : 0.7 μ N·m	
Moment of Inertia	1/5 second chronograph hand : less than 0.2 μ g·m²	
5. BATTERY		
Type / Size	Silver oxide battery / φ 9.5mm × t 2.73mm	
Recommended battery	SR927W	
Nominal voltage	1.55 V	
Battery life	Approx. 3 years	
	(2 hours chronograph and 20 seconds alarm 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)	
Holding ring for dial	0866854 (Standard)	
Battery	SR927W	
Piezoelectric element	4589801	
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) YM64A**	2



Dial leg hole B

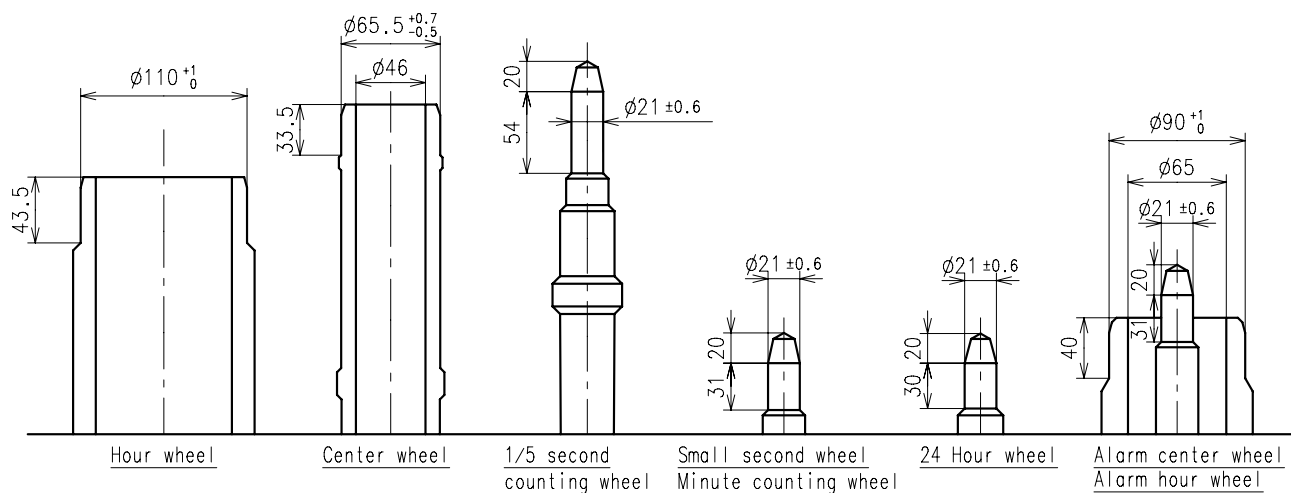
Dial leg hole A

※ Unbalance

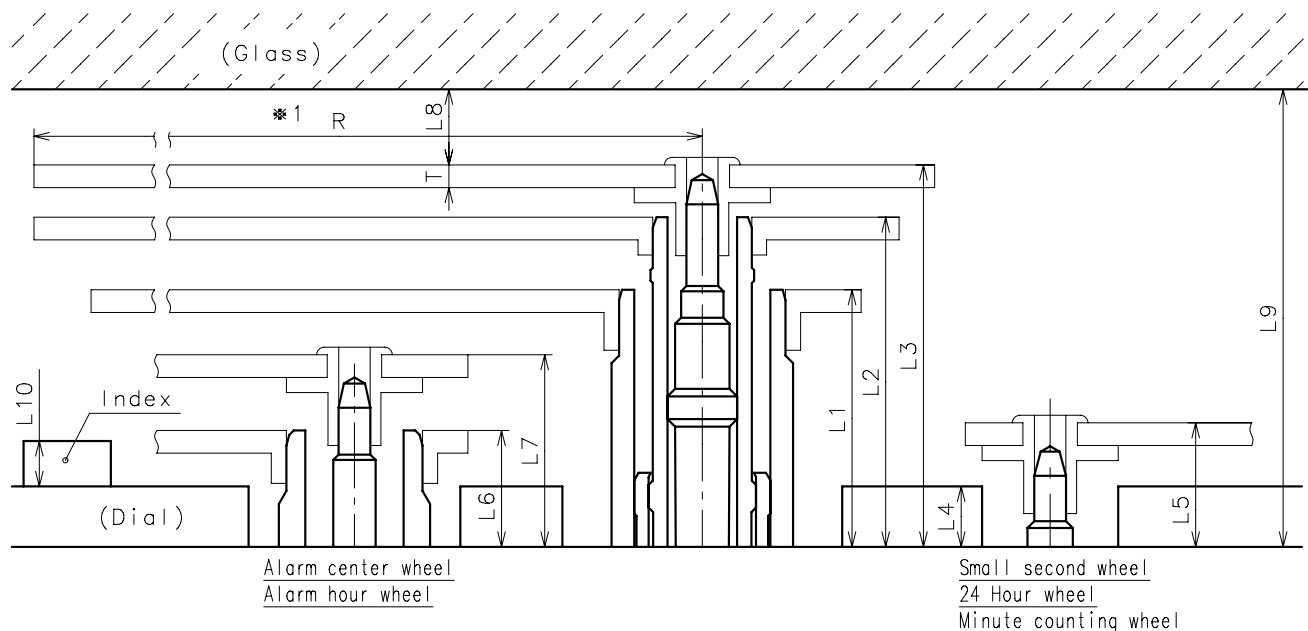
· Small second hand	$\leq 0.03\mu \text{ N} \cdot \text{m}$ ($3\mu \text{ g} \cdot \text{m}$)
· 24 Hour hand	$\leq 0.03\mu \text{ N} \cdot \text{m}$ ($3\mu \text{ g} \cdot \text{m}$)
· Alarm minute hand	$\leq 0.03\mu \text{ N} \cdot \text{m}$ ($3\mu \text{ g} \cdot \text{m}$)
· Minute chronograph hand	$\leq 0.03\mu \text{ N} \cdot \text{m}$ ($3\mu \text{ g} \cdot \text{m}$)
· 1/5 second chronograph hand	$\leq 0.09\mu \text{ N} \cdot \text{m}$ ($9\mu \text{ g} \cdot \text{m}$)
· Minute hand	$\leq 0.70\mu \text{ N} \cdot \text{m}$ ($70\mu \text{ g} \cdot \text{m}$)

※ Moment of inertia

· 1/5 second chronograph hand	$\leq 0.2\mu \text{ g} \cdot \text{m}^2$
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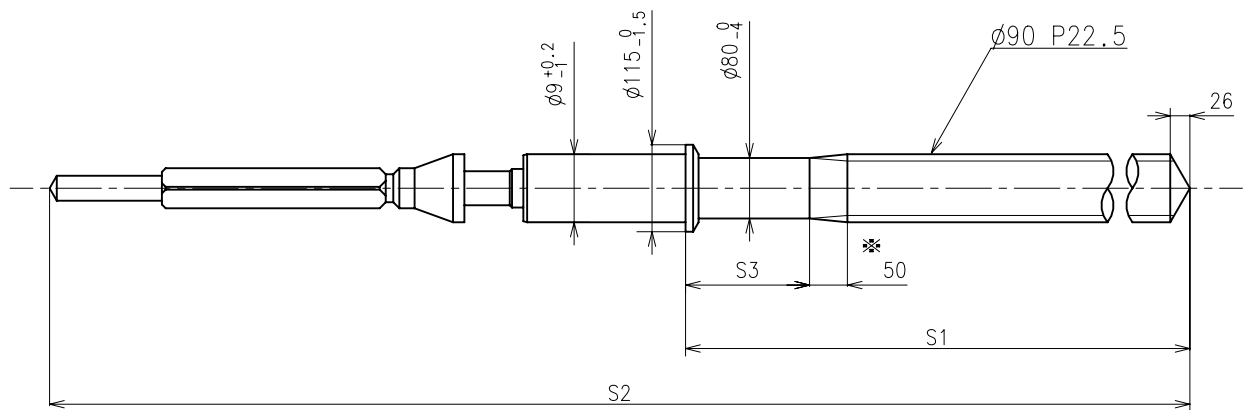


	Parts No.							
	Hour wheel	Center wheel	1/5 second counting wheel	Small second wheel	Minute counting wheel	24 Hour wheel	Alarm center wheel	Alarm hour wheel
Type M (2) YM64A**	0271637	0221605	0888502	0240512	0902501	1002535	0902503	0271640



	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	T	*1 R
Type M (2) YM64A**	170	218	252.5	40	82	77	127	MIN: 50	MIN: 302.5	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.

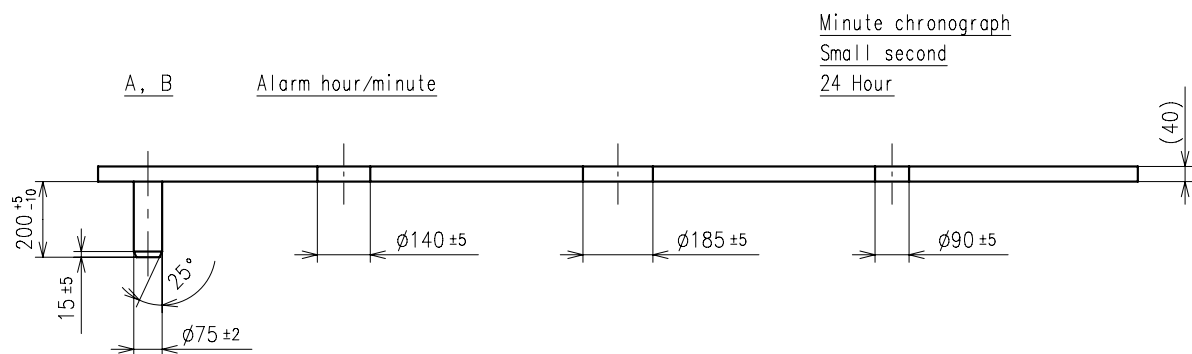
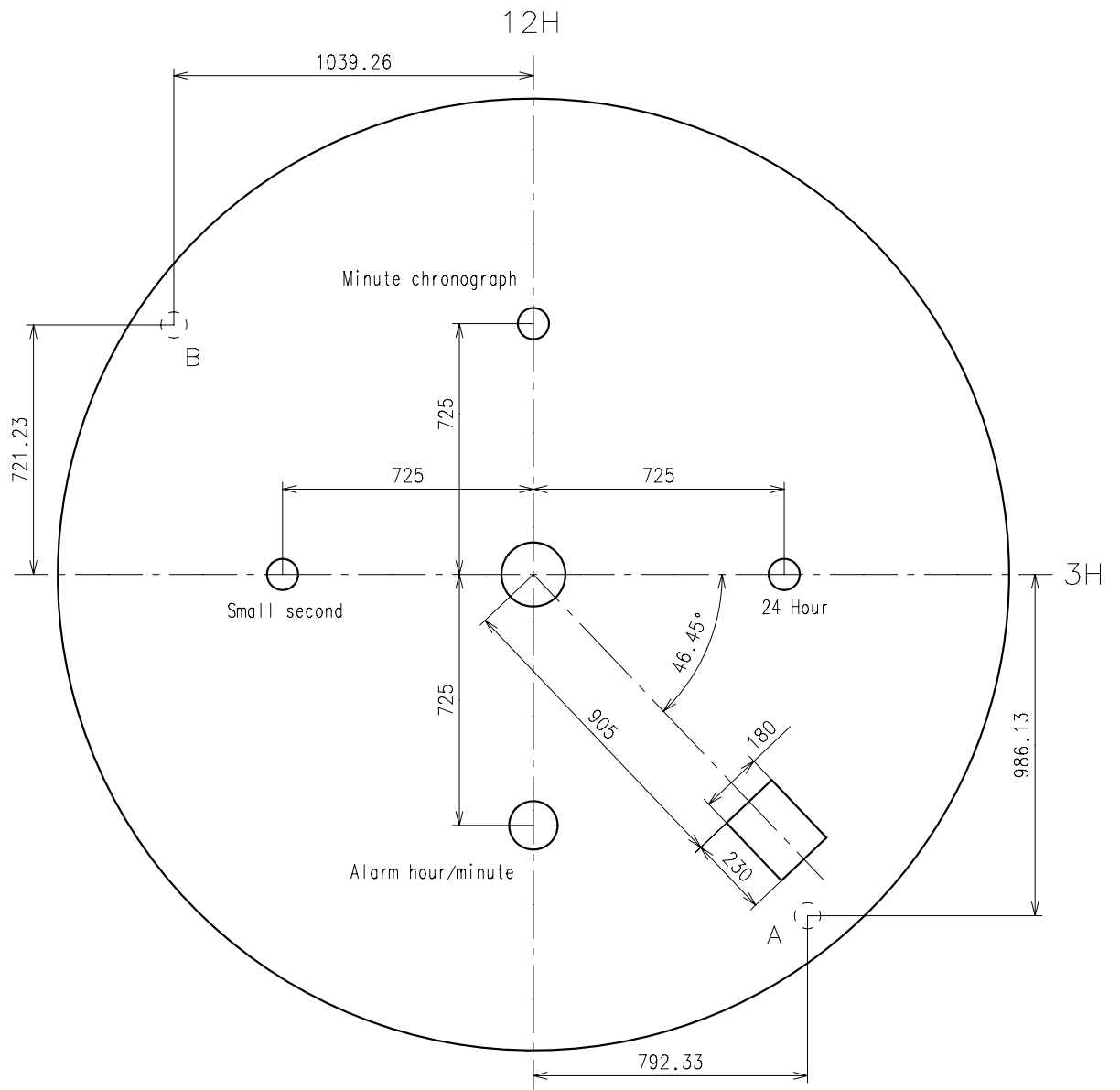


* Not threaded

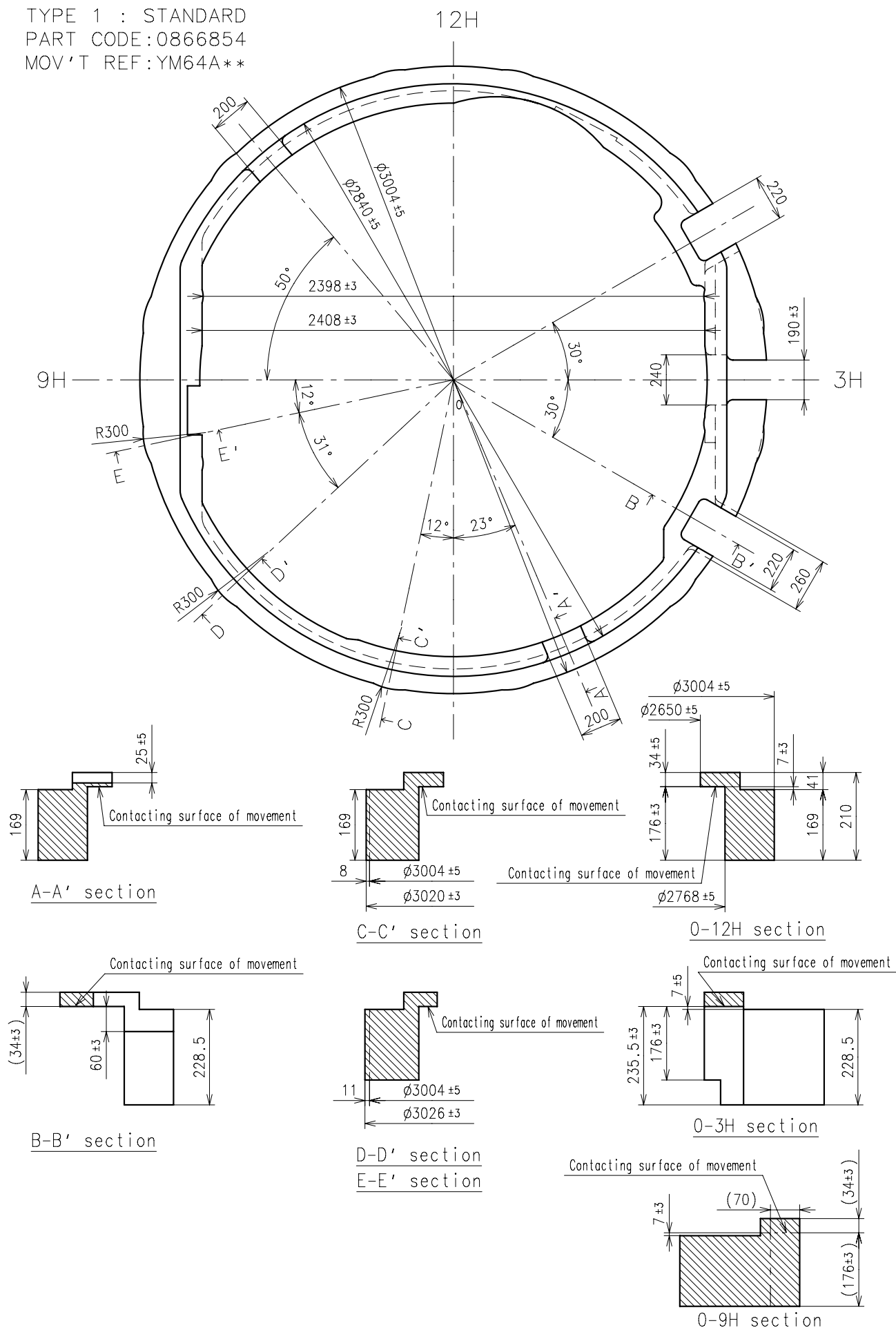
	Part No.	S1	S2	S3
Type-1 (Standard)	0351584	1164	2005.5	164

Material : Steel

Hardness : Vickers 600±50



TYPE 1 : STANDARD
PART CODE:0866854
MOV'T REF:YM64A**



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 alarm time same as current time to let the alarm work correctly, set the 1/5 second chronograph hand and minute chronograph hand at "0" position.

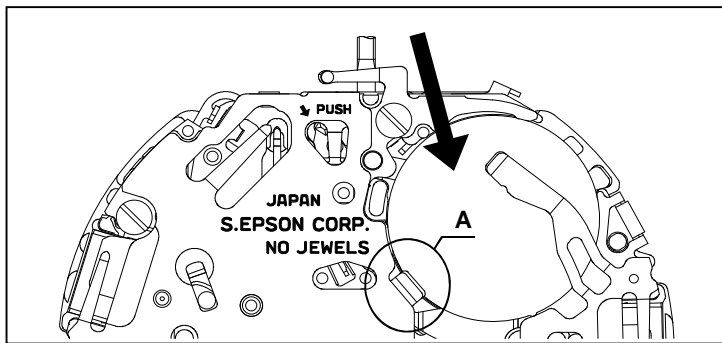


Fig.[1]

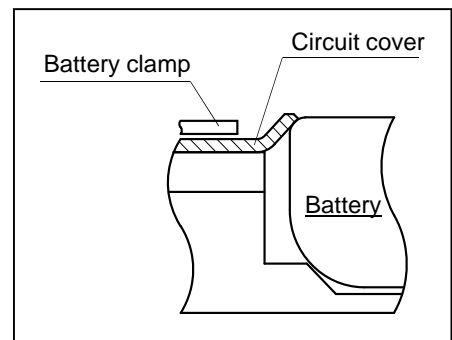


Fig.[2] A section

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].)

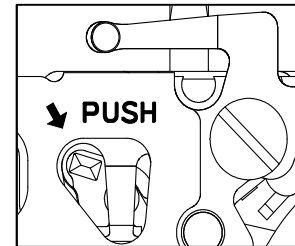


Fig.[3] Crown pulled out at 1st click

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.Minute hand

The center wheel have a safety stopper structure to prevent the minute hand from being pressed too much. However pay attention to the contact between hour hand and minute hand.

2.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.

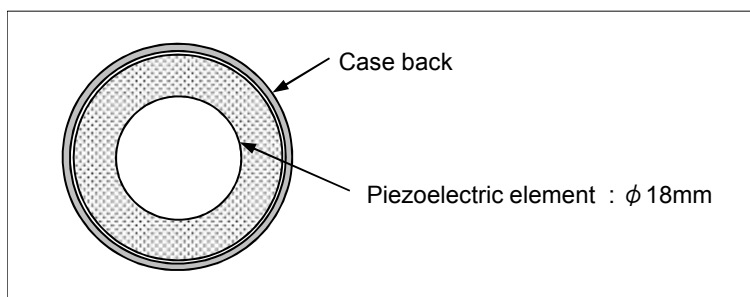
Refer to the [Holding ring for dial] page instruction as to the shape and tolerance.

3.Case

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

4.Piezoelectric element

Stick piezoelectric element to the center of case back.



Piezoelectric element must be stuck to case back by thermoplastic adhesive.

Thermoplastic adhesive is already printed to the surface of piezoelectric element.

Heating temperature and time to stick piezoelectric element is shown in the following table.

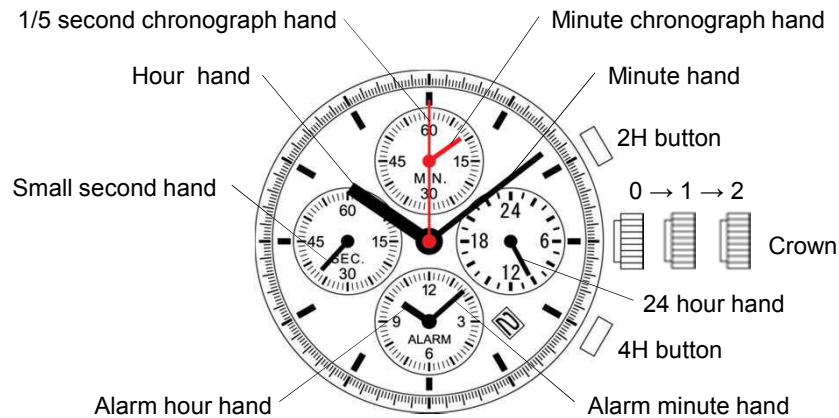
Material of case back	Heating temperature	Heating time
Stainless	250°C	5 seconds
Titanium	250°C	6 seconds

Check piezoelectric element is definitely stuck to case back after heating.

•Sticking position

The amount of the misalignment between the center of case back and piezoelectric element : 0.35mm and less

If the sticking position of piezoelectric element is drastically misaligned or if the electrical continuity is bad, no sound may occur.



	Crown position		
	0 click	1st click	2nd click
Crown	Free	Turn clockwise for date change	Time setting
2H button	Chronograph Start/Stop Restart	Free (No effect)	[*1]
4H button	Chronograph Reset Split Split release	Alarm time setting (at 6H small circle)	[*1]

[*1] How to set the "0" position

Pull crown out to the 2nd click position.

↓
--> Press 4H button repeatedly to set alarm hands to the time the main time hands indicate.

↓
Press 2H button for 2 seconds.
Minute chronograph hand turns a full round and can now be set to correct "0" position.

↓
Press 4H button repeatedly to set it to "0" position.

↓
Press 2H button for 2 seconds.
1/5 second chronograph hand turns a full round and can now be set to correct "0" position.

↓
Press 4H button repeatedly to set it to "0" position.

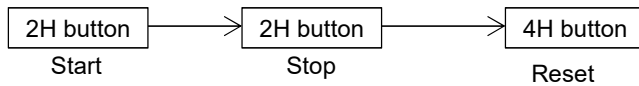
↓
Press 2H button for 2 seconds here will allow you to resume the procedure again as indicated by the arrow if necessary.

↓
Push crown back to normal position.

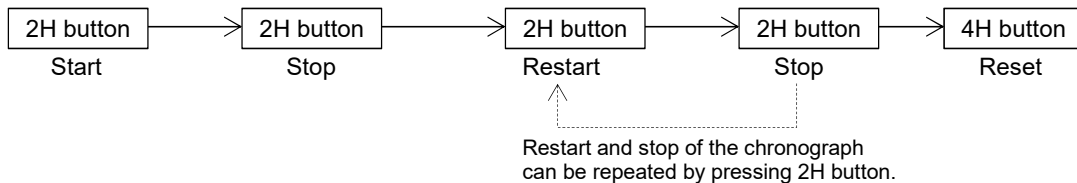
Chronograph function

- The chronograph can measure up to 60 minutes in 1/5 second increments, capable of timing 12 hours.
- When the measurement reaches 12 hours, the chronograph automatically stops counting.

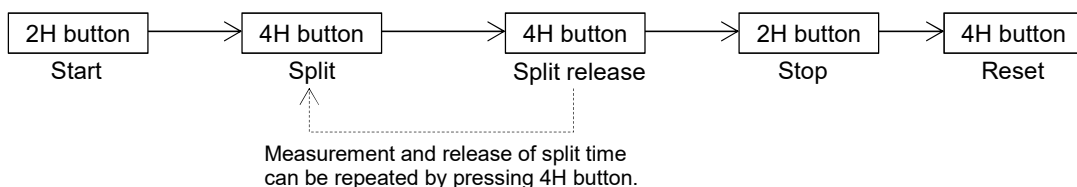
■ Standard measurement



■ Accumulated elapsed time measurement



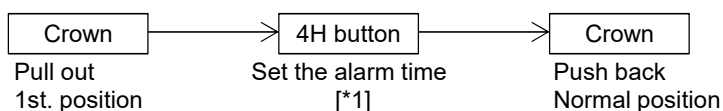
■ Split time measurement



Alarm function

- The alarm can be set to ring only once at a designated time within the coming 12 hours.
- The alarm time can be set in one minute increments.

■ Set the alarm time



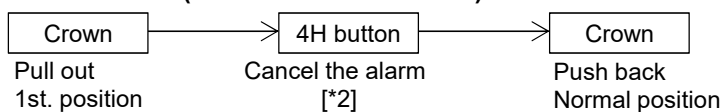
[*1]

Press 4H button repeatedly to set the alarm hands to the desired alarm time.
The alarm hands move quickly when the 4H button is kept pressed. They stop when the hands reach to the current time.
Release and press the 4H button, the alarm hands will start moving again.

■ Stop the alarm

- At the designated time the alarm rings for 20 seconds, and it is automatically disengaged as it stops. It is possible to stop ringing manually when pressing any button.
- While the alarm is ringing, no chronograph operation can be made.

■ Cancel the alarm (when alarm time is set)



[*2]

Press and hold 4H button until alarm hands stop and indicate the current time.