

Watch Movement Specification and Drawing

CHRONOGRAPH

Cal. YM62A

Movement Size

12'''

Casing Diameter

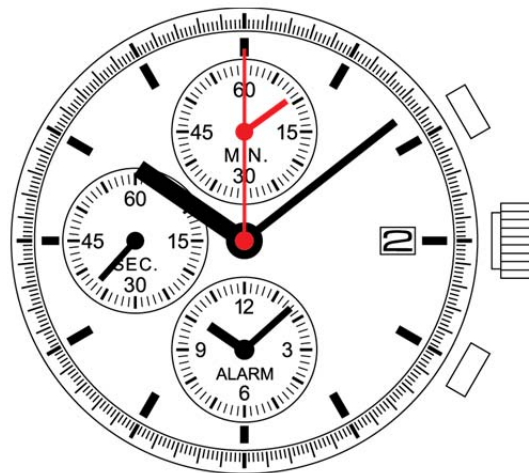
Ø 27.0mm

Height

3.7mm

Battery Life

3 years



Date: 15/Dec./17

Cal. YM62A

| Items | Rev. | Page |
|------------------------------------|------|-------|
| Specifications | 04 | 1 |
| Appearance | 01 | 2 |
| Casing | 04 | 3 |
| Hand fitting | 02 | 4 |
| Hand setting stem | 02 | 5 |
| Dial-01 | 02 | 6-01 |
| Dial-02 | 01 | 6-02 |
| Dial-03 | 01 | 6-03 |
| Dial-04 | 01 | 6-04 |
| Holding ring for dial-01 | 03 | 7-01 |
| Holding ring for dial-02 | 02 | 7-02 |
| Attention for assembly | 03 | 8 |
| Attention of casing part structure | 03 | 9 |
| Operation-01 | 02 | 10-01 |
| Operation-02 | 02 | 10-02 |

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 | 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

| | |
|---|--|
| 3 Hands | Hour / Minute / 1/5 second chronograph (Center) |
| Small hands | Alarm hour and minute (6H) / Small second (9H) Minute chronograph (12H) |
| 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 : 0.03 μ N·m |
| | Minute chronograph / Alarm minute hand : 0.03 μ N·m |
| | 1/5 second chronograph hand : 0.09 μ N·m |
| | Minute hand : 0.70 μ N·m |
| Moment of Inertia | 1/5 second chronograph hand : less than 0.2 μ g·m ² |

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 |

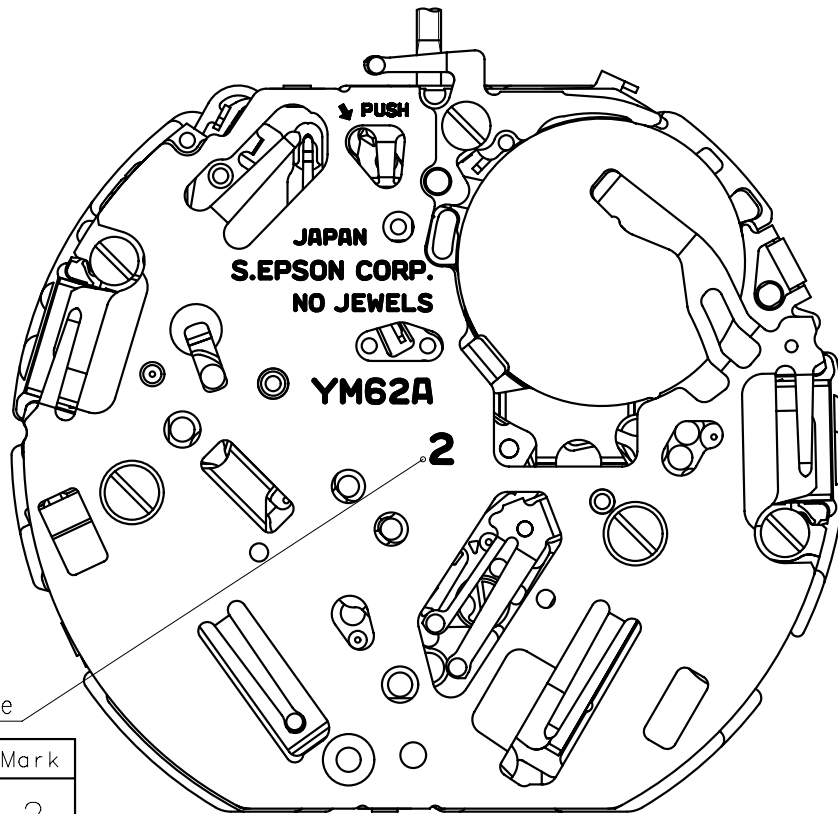
6. SEPARATED PARTS (Parts code)

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

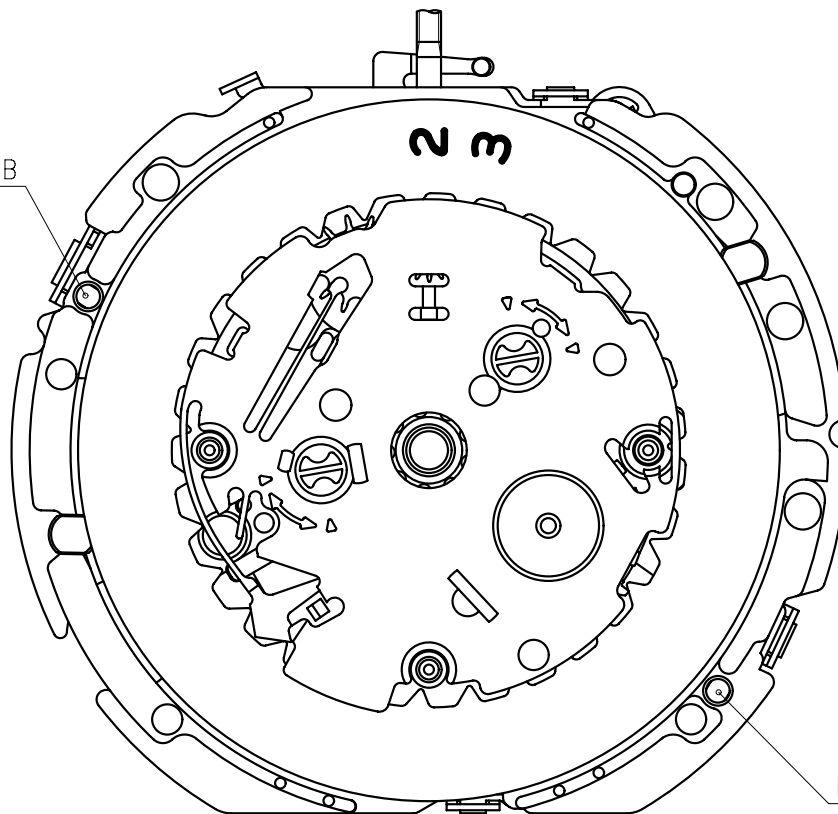
All specifications are subject to change without notice.



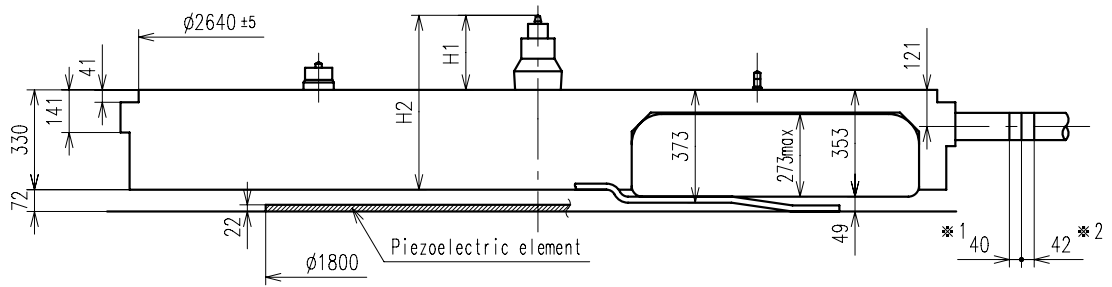
Hands type

| | Mark |
|--------------------|------|
| Type(M) YM62A** | 2 |

Dial leg hole B

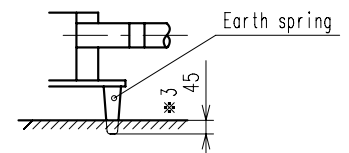
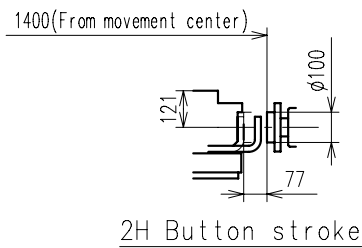
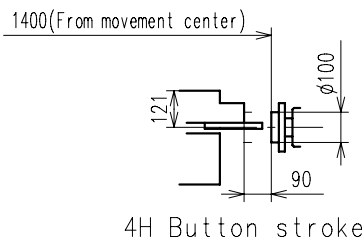


Dial leg hole A

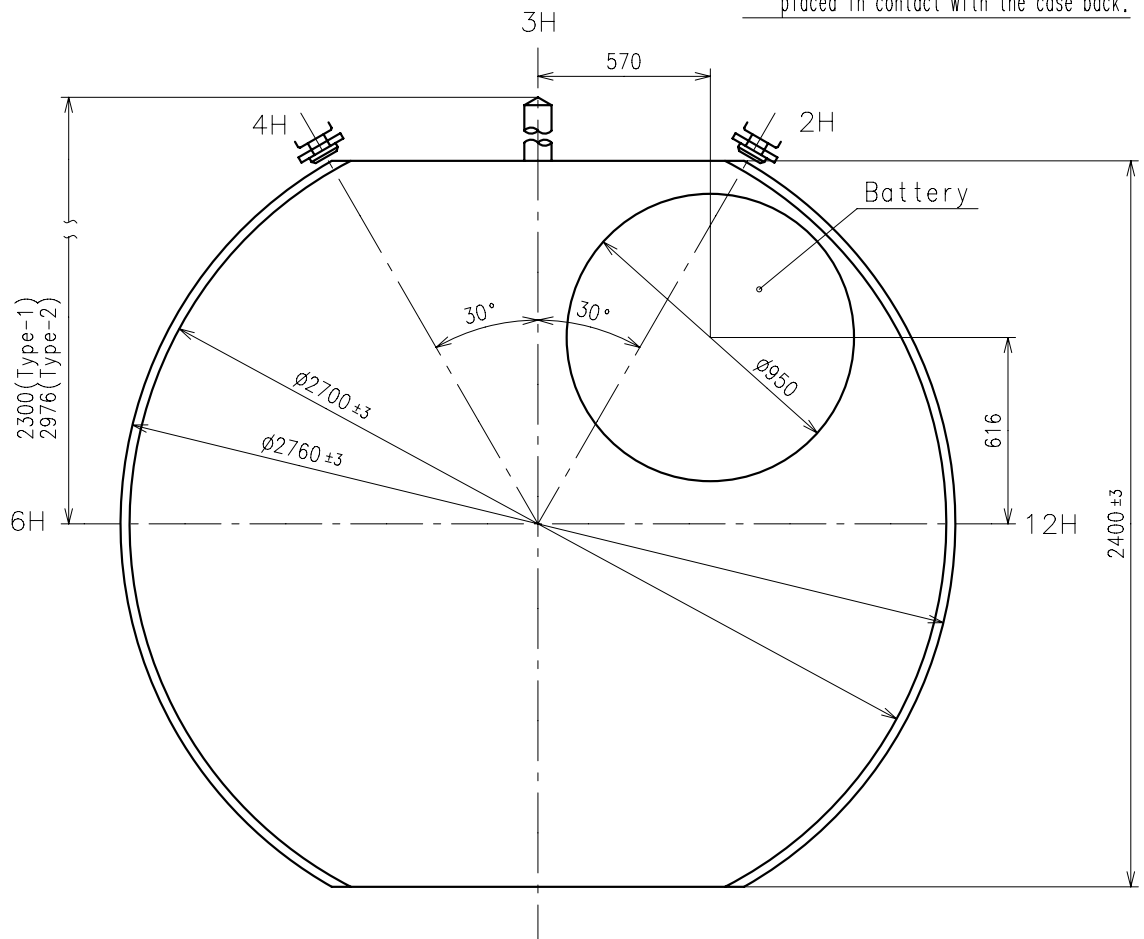


*1: First pullout stroke
*2: Second pullout stroke

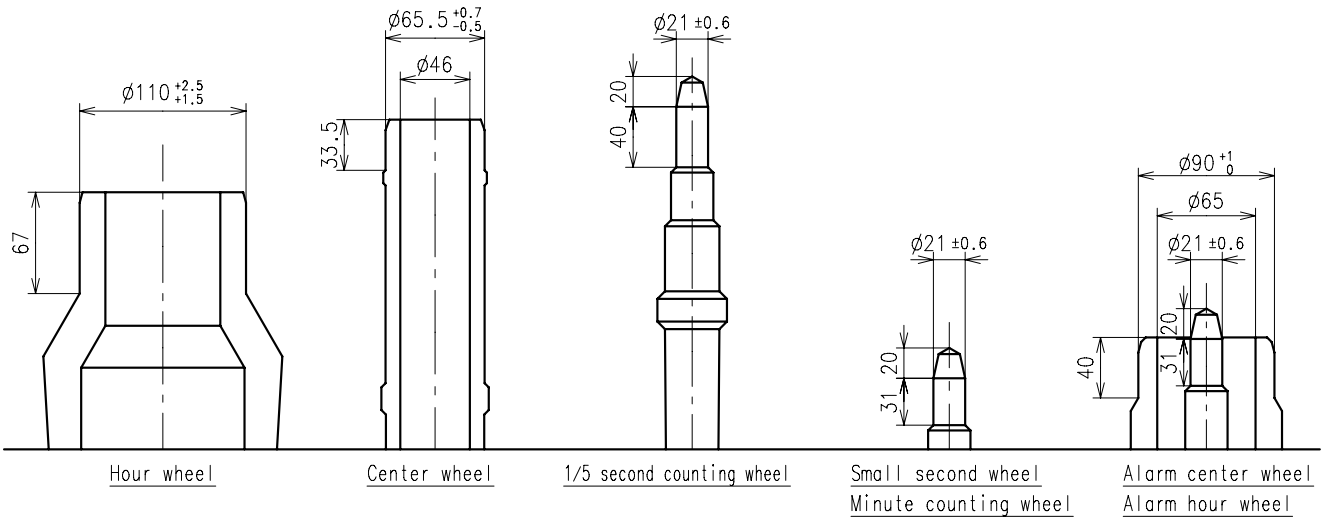
| Center post | | Type M (2) YM62A** |
|----------------------------------|----|-----------------------|
| Maximum height from dial support | H1 | 246.5 |
| Total height including movement | H2 | 576.5 |



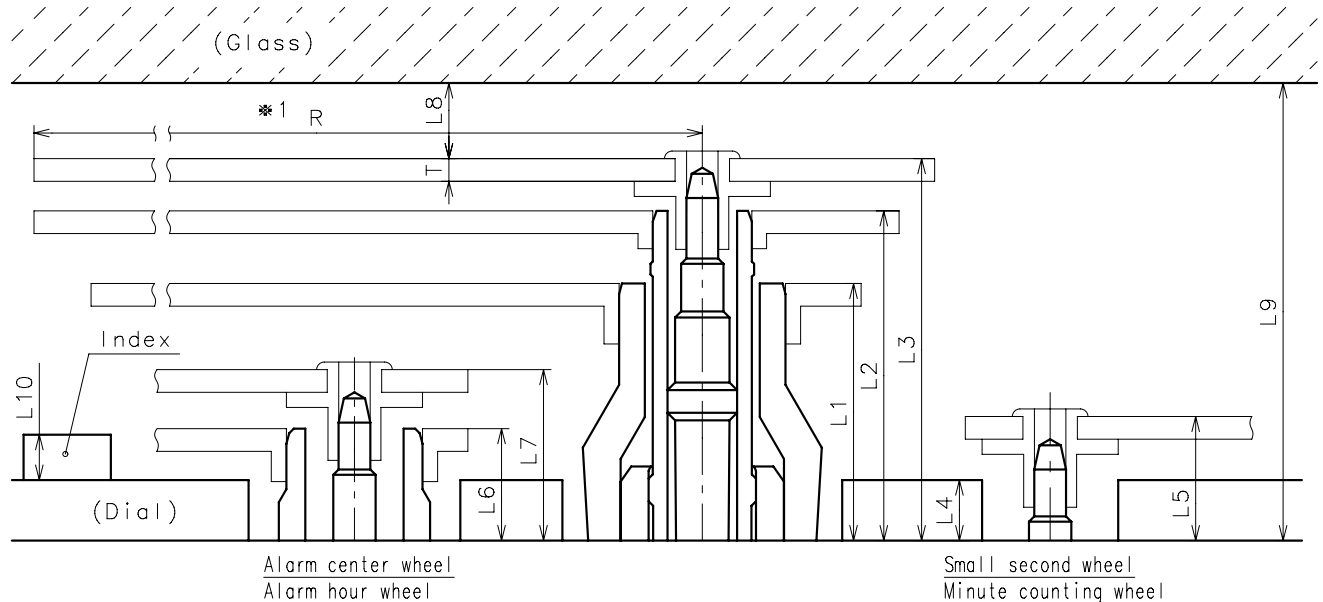
*3: The earth spring is absolutely placed in contact with the case back.



- * Unbalance
 - Small second hand $\leq 0.03\mu\text{ N}\cdot\text{m}$ ($3\mu\text{ g}\cdot\text{m}$)
 - 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 $\leq 0.2\mu\text{ g}\cdot\text{m}^2$

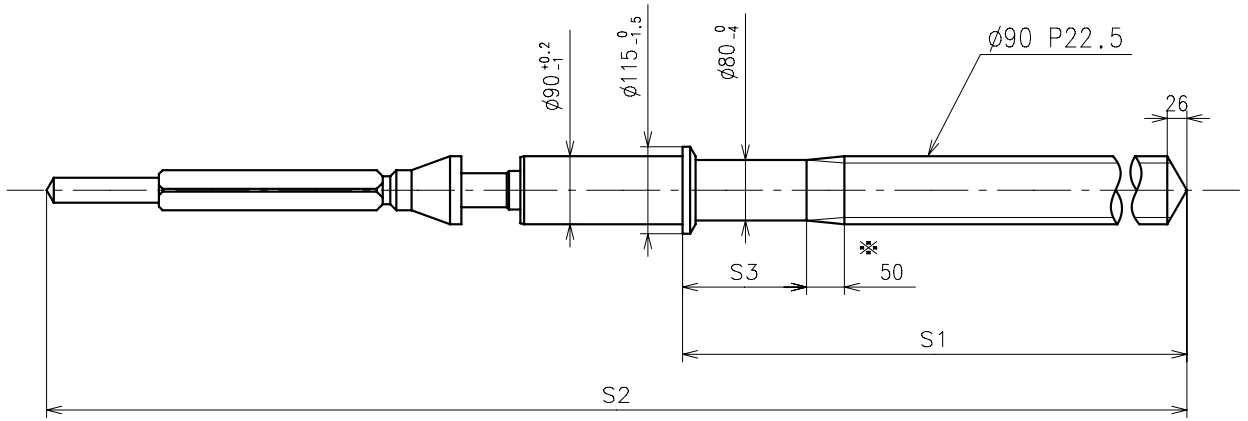


| | Parts No. | | | | | | |
|-----------------------|------------|--------------|---------------------------|--------------------|-----------------------|--------------------|------------------|
| | Hour wheel | Center wheel | 1/5 second counting wheel | Small second wheel | Minute counting wheel | Alarm center wheel | Alarm hour wheel |
| Type M (2) YM62A** | 0271588 | 0221583 | 0888582 | 0240580 | 0902580 | 0270582 | 0271583 |



| | L1 | L2 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | L10 | T | *1 R |
|-----------------------|-----|-----|-------|----|----|----|-----|------------|---------------|------------|----|--------------|
| Type M (2) YM62A** | 170 | 218 | 252.5 | 40 | 77 | 74 | 113 | 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.

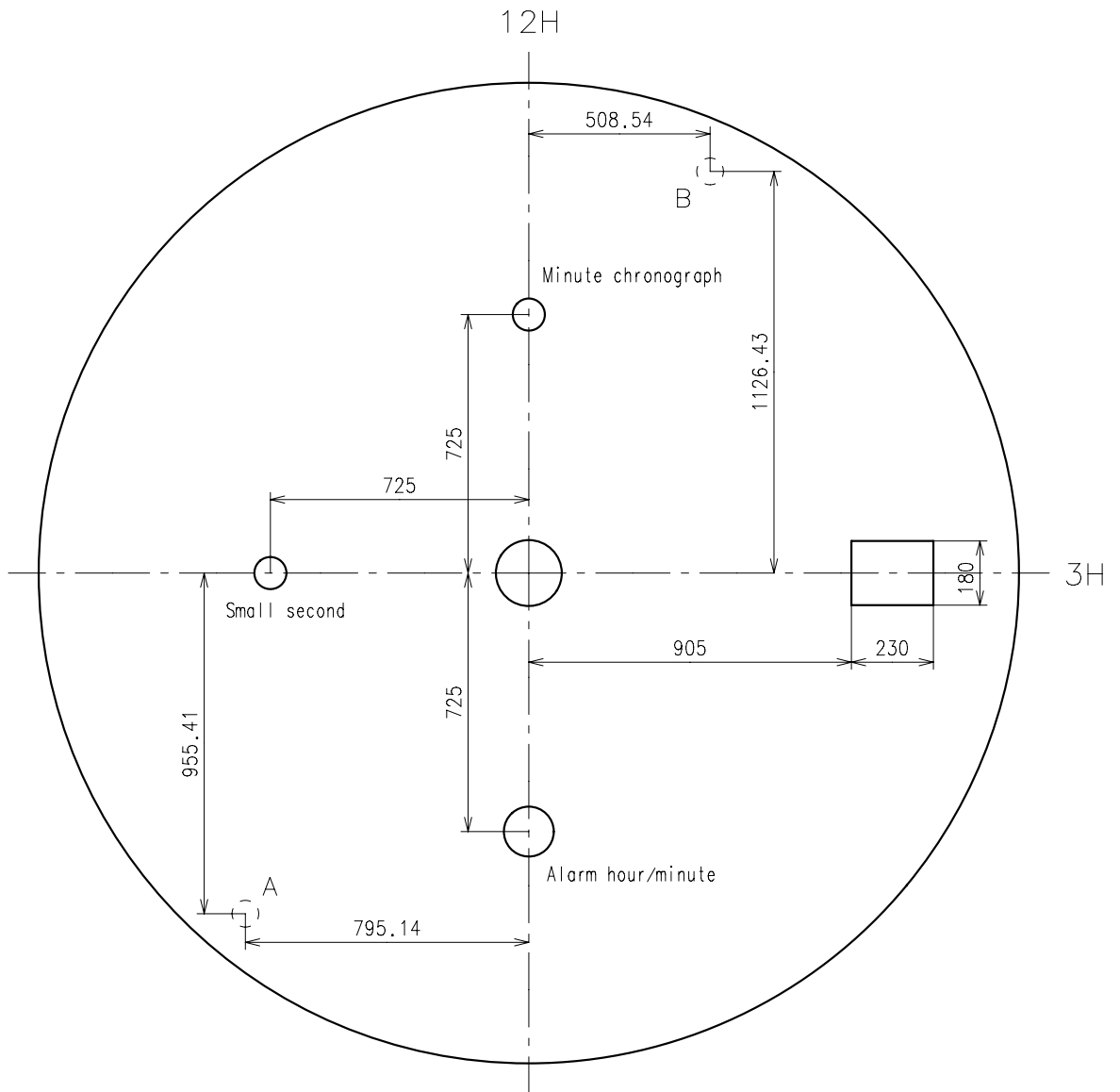


※ Not threaded

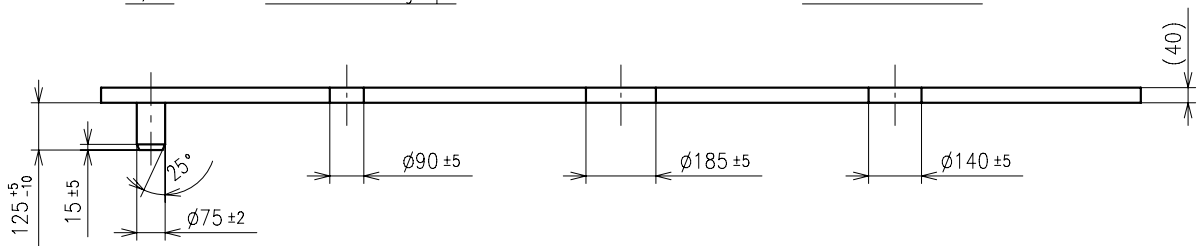
| | Part No. | S1 | S2 | S3 |
|----------------------|----------|------|--------|-----|
| Type-1 (Standard) | 0351584 | 1164 | 2005.5 | 164 |
| Type-2 (Long) | 0351585 | 1840 | 2681.5 | 750 |

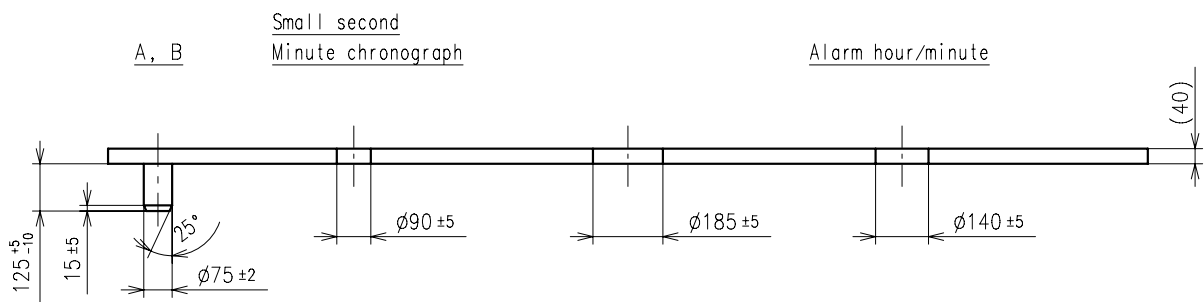
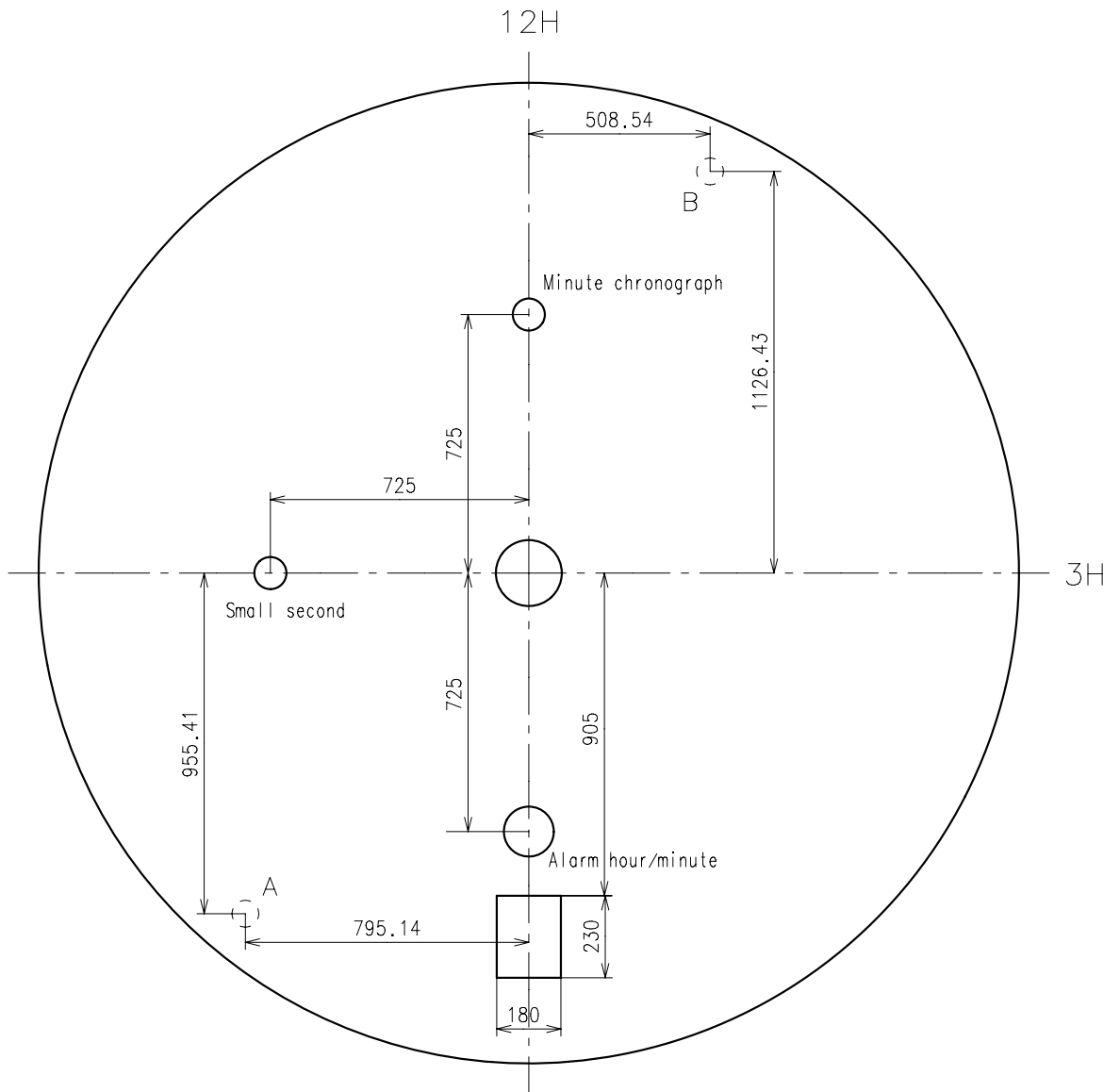
Material : Steel

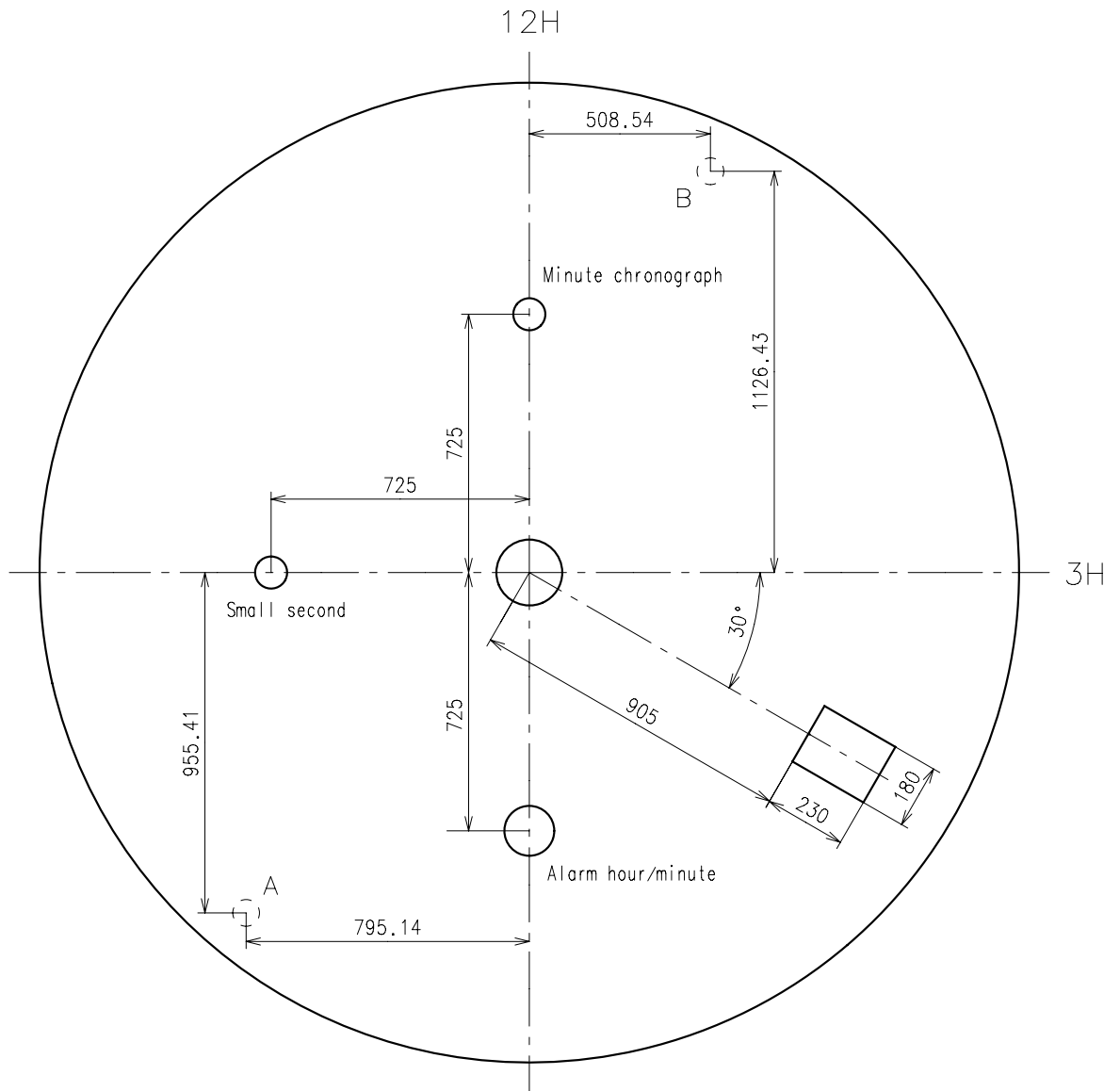
Hardness : Vickers 600 ± 50



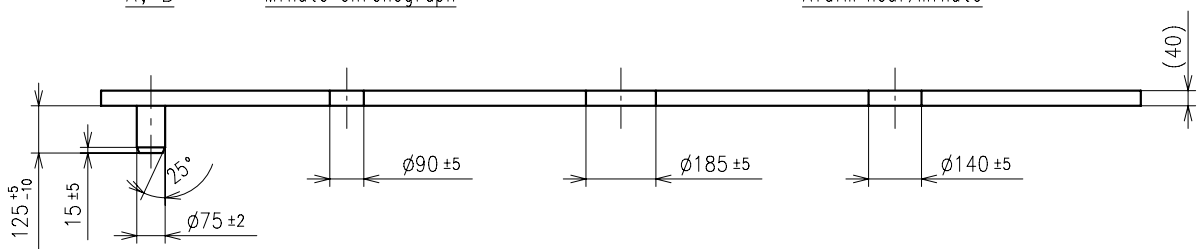
A, B Small second Minute chronograph Alarm hour/minute

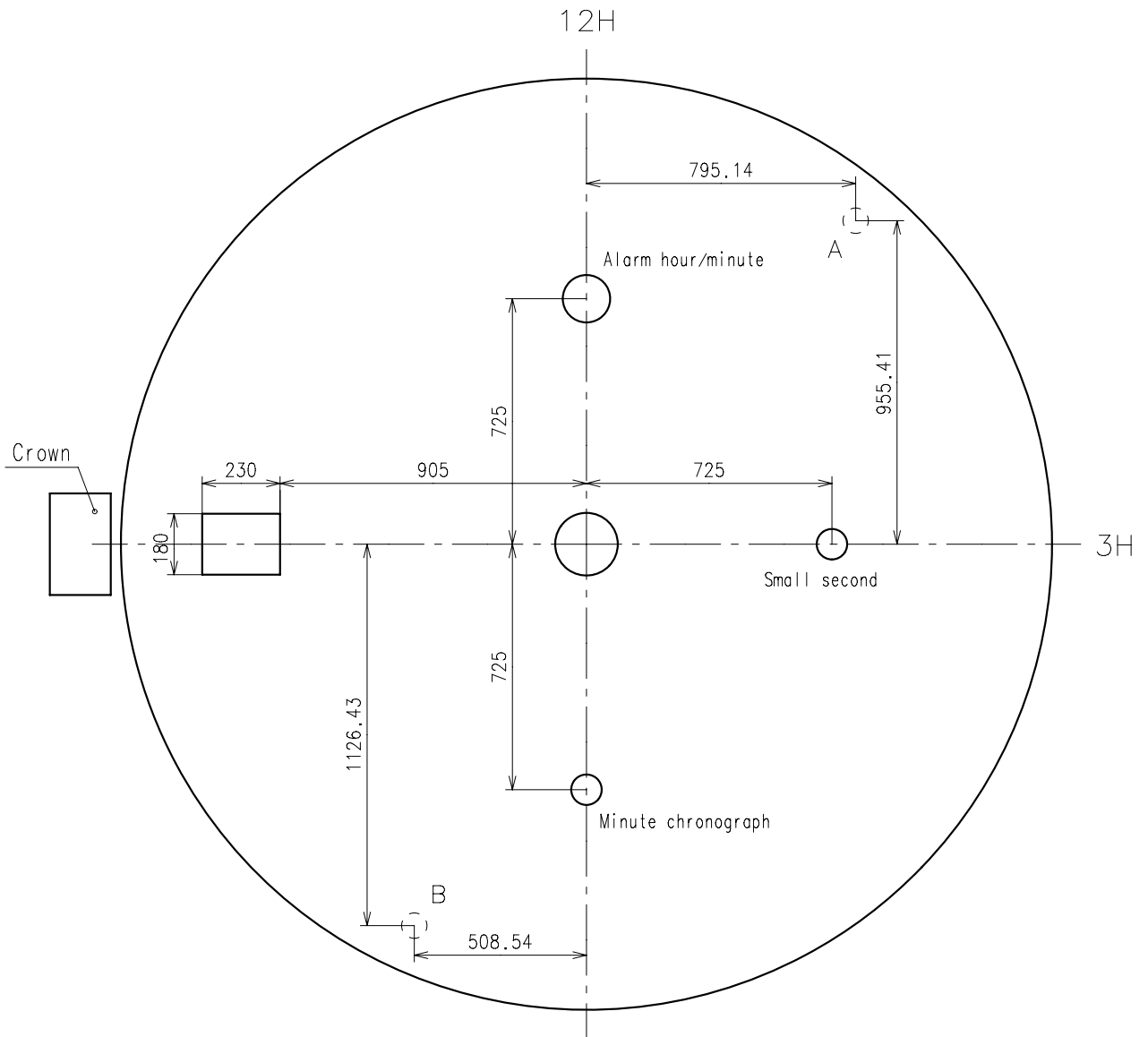




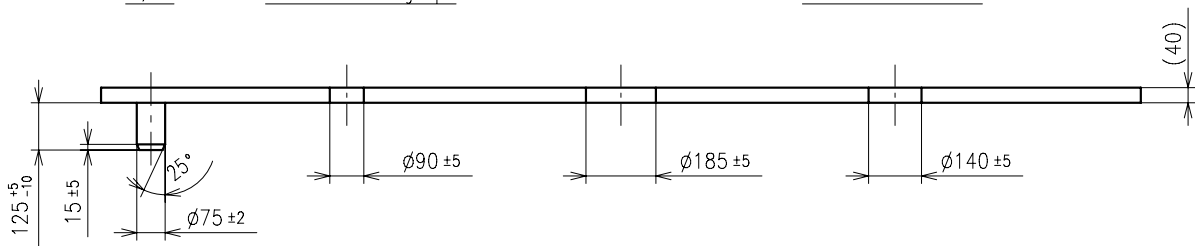


A, B Small second
Minute chronograph Alarm hour/minute

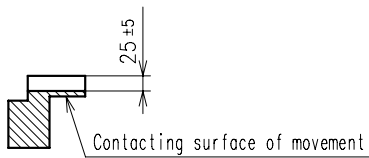
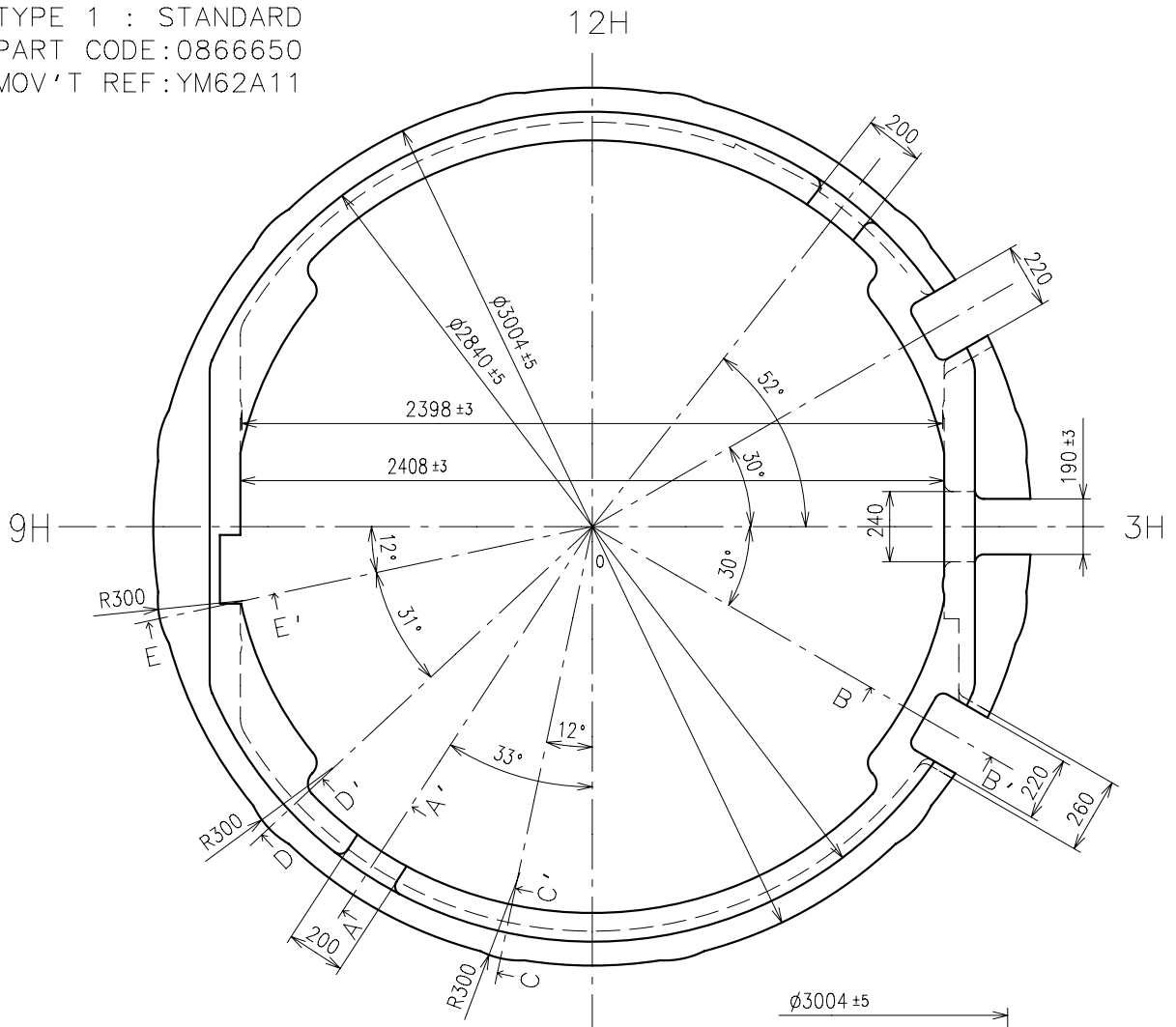




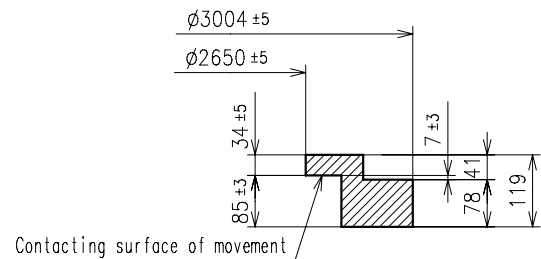
A, B Small second Minute chronograph Alarm hour/minute



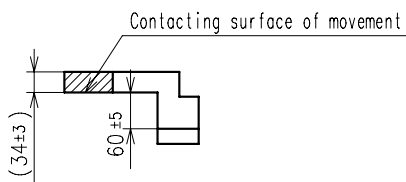
TYPE 1 : STANDARD
PART CODE:0866650
MOV'T REF:YM62A11



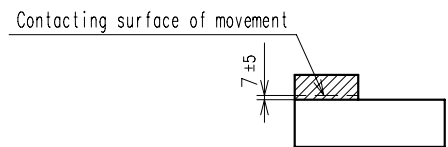
A-A' section



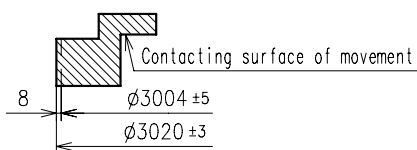
0-12H section



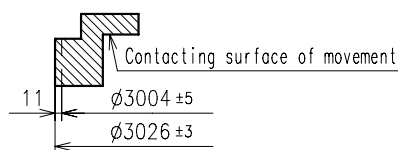
B-B' section



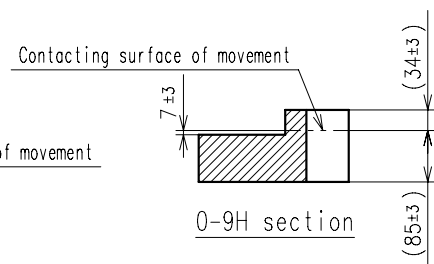
0-3H section



C-C' section

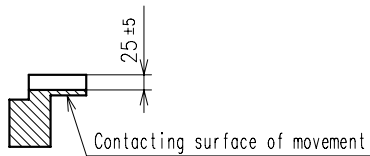
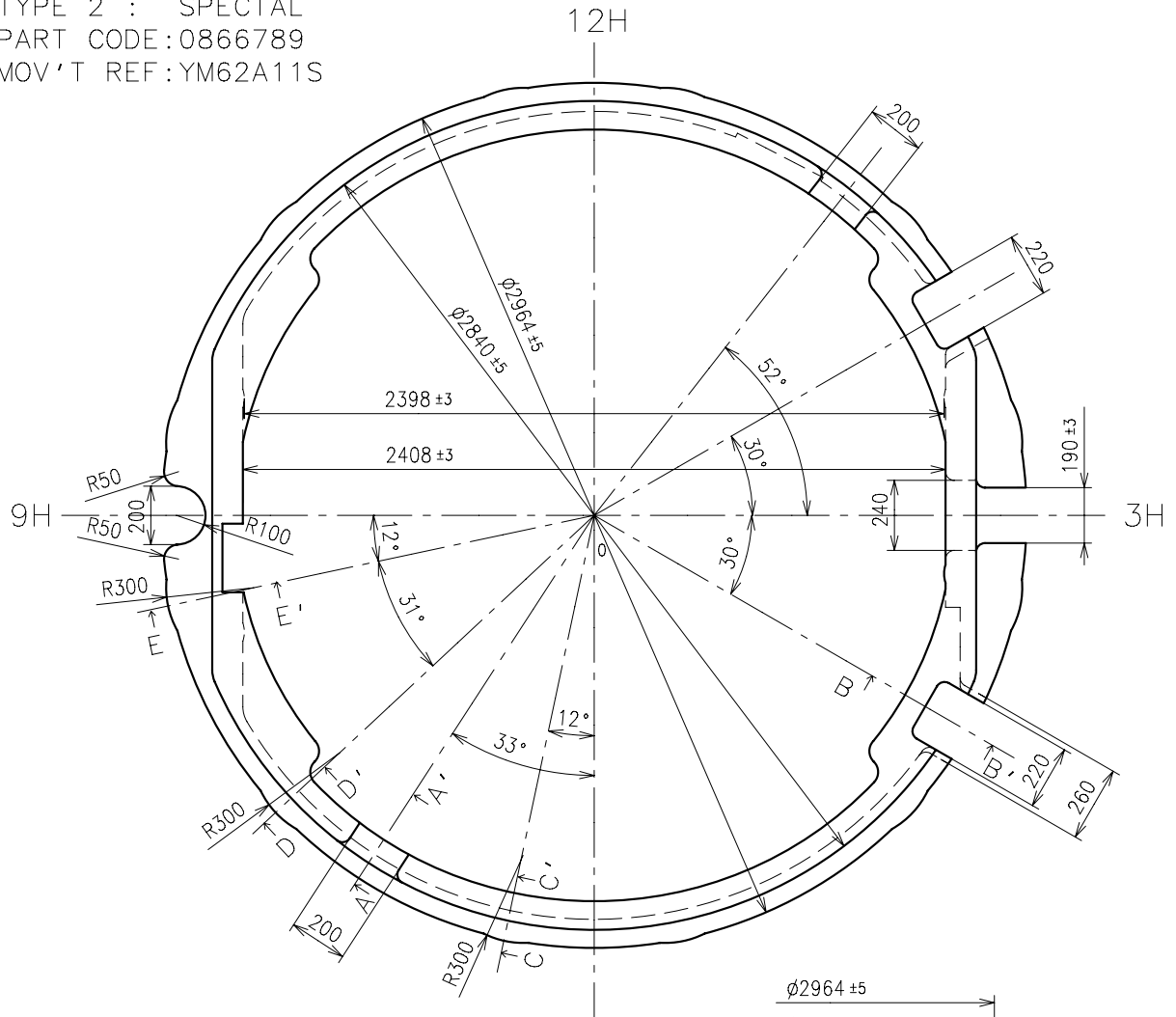


D-D' section
E-E' section

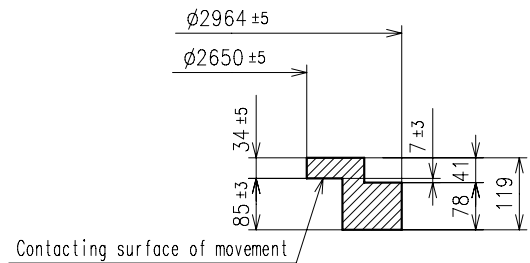


0-9H section

TYPE 2 : SPECIAL
PART CODE:0866789
MOV'T REF:YM62A11S

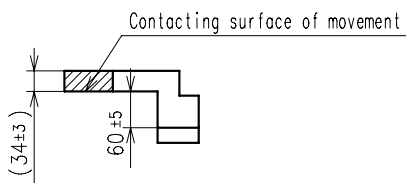


A-A' section

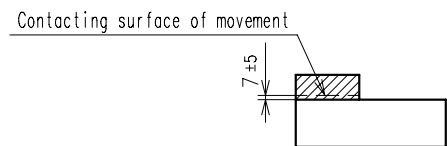


Contacting surface of movement

0-12H section

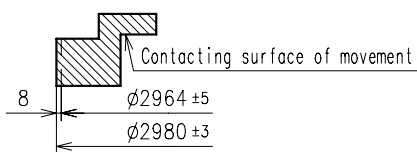


B-B' section

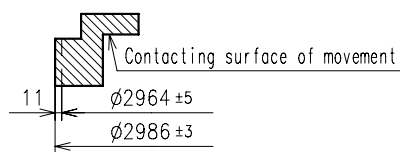


Contacting surface of movement

0-3H section

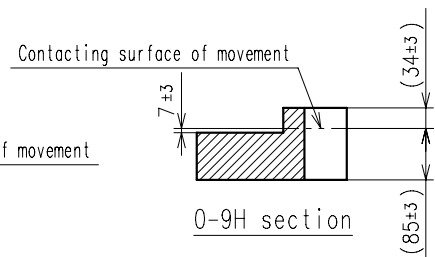


C-C' section



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 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.

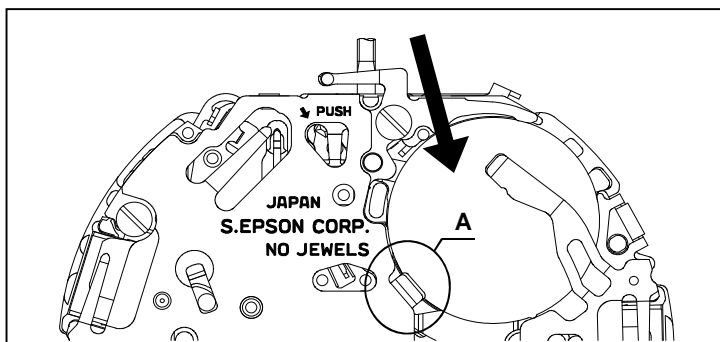


Fig.[1]

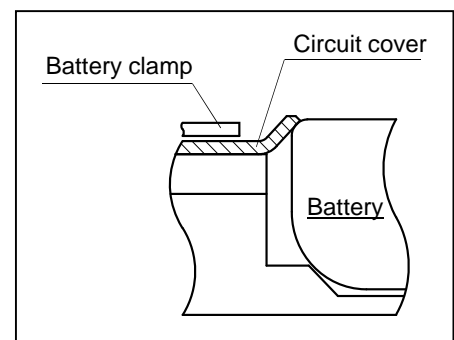


Fig.[2] A section

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].)

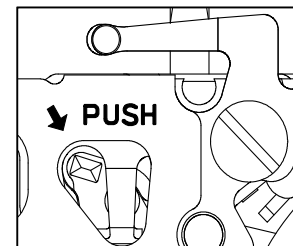


Fig.[3] Crown pulled out at 1st click

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

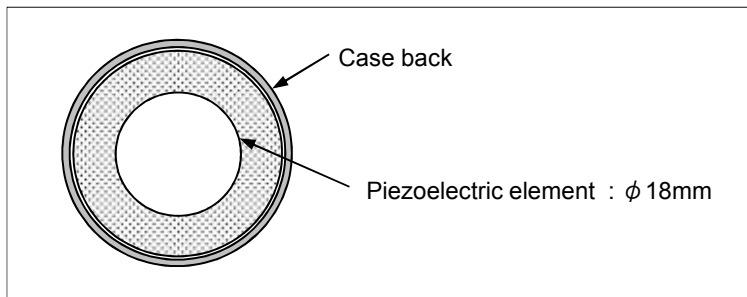
Use the metal case to prevent from the movement mal-function by static electricity.

4.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.

5.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.

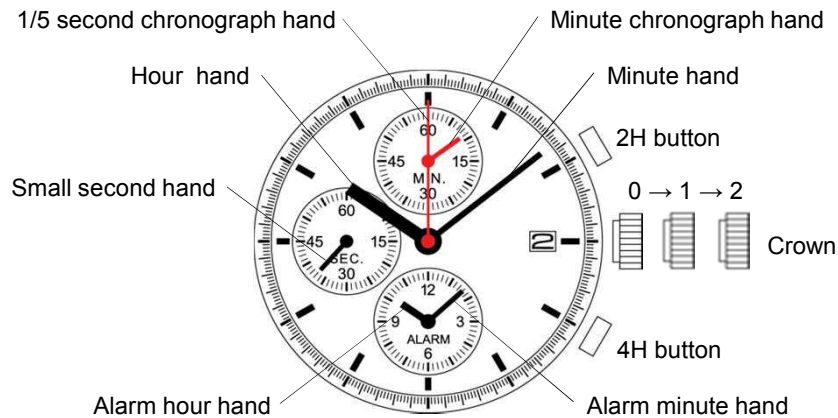
| Material of case back | Heating temperature | Heating time |
|-----------------------|---------------------|--------------|
| Stainless | 250°C | 5 seconds |
| Titanium | 250°C | 6 seconds |

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.

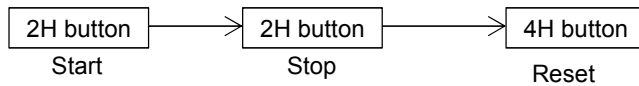
↓

Push crown back to normal position.

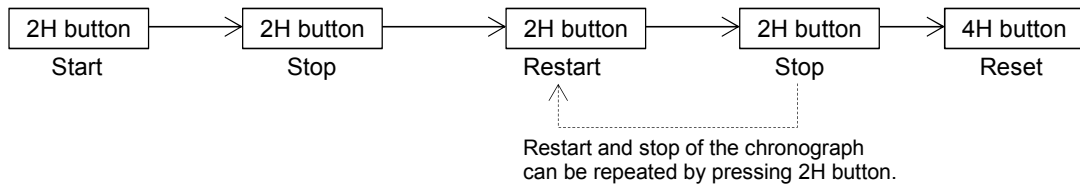
Chronograph function

- 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.

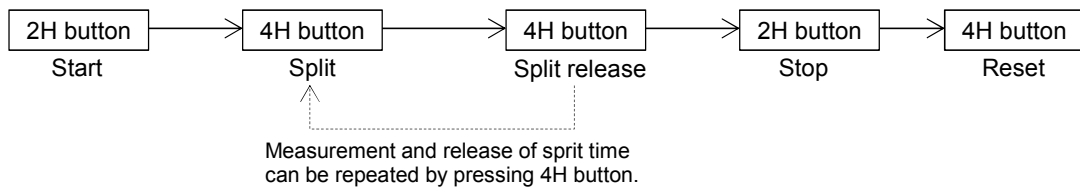
■ Standard measurement



■ Accumulated elapsed time measurement



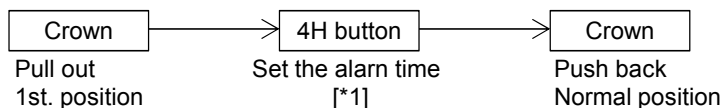
■ Split time measurement



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



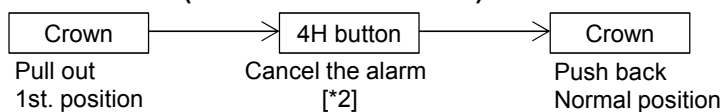
[*1]

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.