Watch Movement Specification and Drawing

CHRONOGRAPH

Cal. YM04A

Movement Size

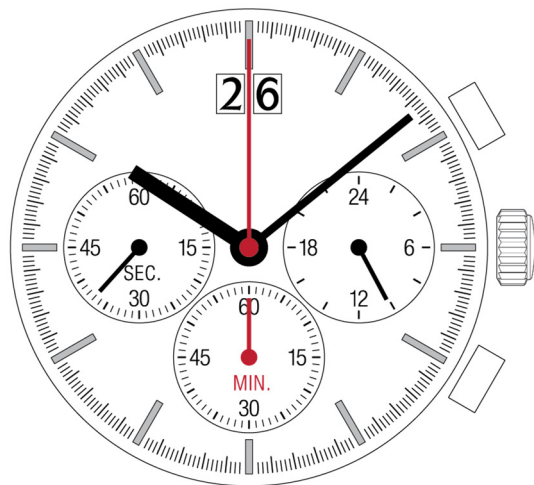**12'''**

Casing Diameter

Ø 27.0mm

Height

4.93mm

Battery Life

5 years

Cal. YM04A

Analog Quartz 12''' Big date Center second 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 4.93mm (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 / 1/5 second chronograph (Center)
Small hands Small second (9H) / Minute chronograph (6H) / 24 Hour (3H)
Calendar Big size date calendar (12H)
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 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
24 Hour hand : 0.03 μ N·m
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 SR927SW
Nominal voltage 1.55 V
Battery life Approx. 5 years
(2 hours 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 0866854 (Standard)
Battery SR927SW

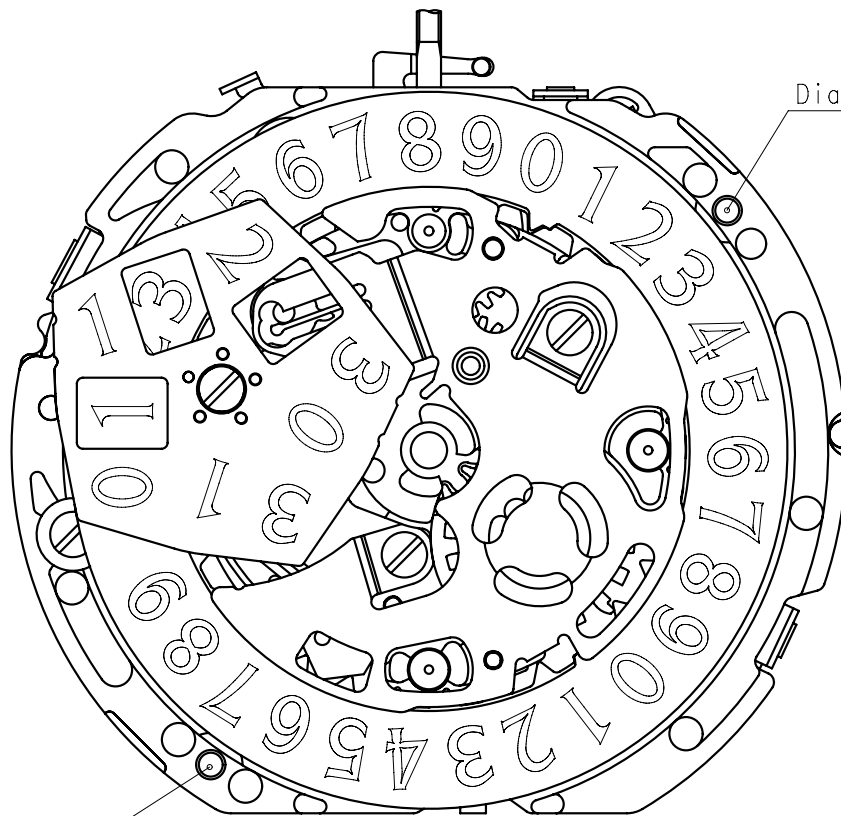### 7. TEST OF ACCURACY
Equipment to be used SEIKO quartz tester QT-99, QT2100
Greiner quartz timer-C , Witschi Q-tester 4000
Duration of measurement 10 seconds
Microphone to be used Electromagnetic detection type

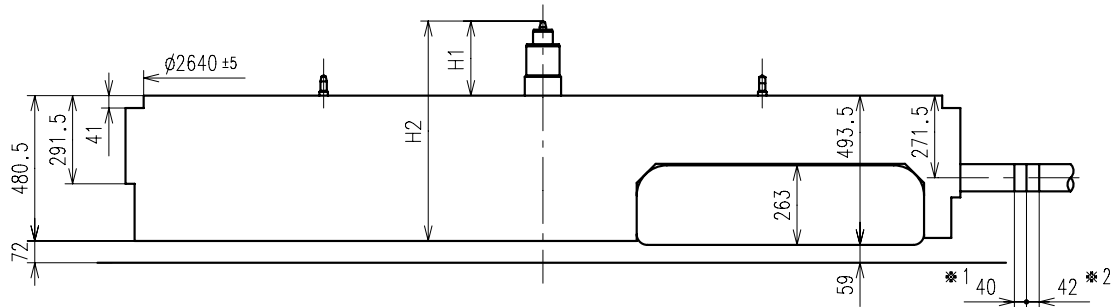All specifications are subject to change without notice.

JAPAN
S.EPSON CORP.
NO JEWELS

YM04A

2
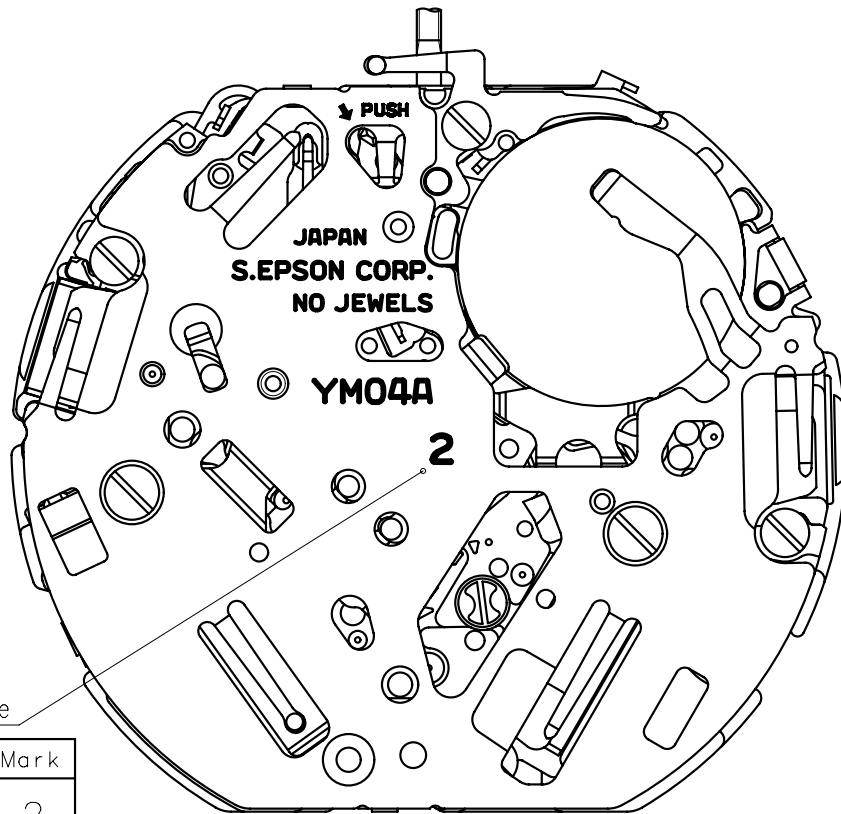
Hands type

	Mark
Type(M) YM04A**	2

Dial leg hole A

Dial leg hole B

ø2640 ±5

480.5
291.5
41
72
H1
H2
493.5
271.5
263
59
※1 40 42 ※2

※1:First pullout stroke
※2:Second pullout stroke

Center post		Type M (2) YMO4A**
Maximum height from dial support	H1	246.5
Total height including movement	H2	727

1400(From movement center)

271.5
ø100
90

4H Button stroke

1400(From movement center)

271.5
ø100
77

2H Button stroke
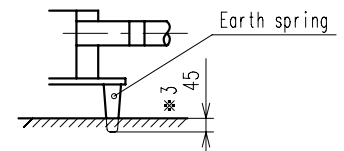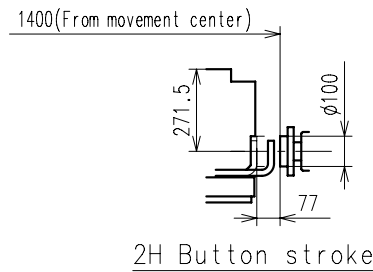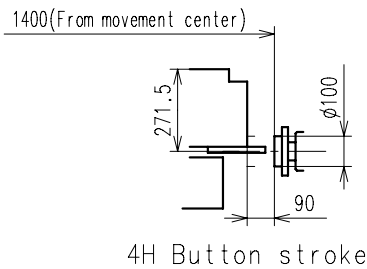
Earth spring
3
45

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

3H
570
4H
2H
Battery

2300(Type-1)
2976(Type-2)

30° 30°

ø2700 ±3
ø2760 ±3
ø950

616

6H
12H
2400 ±3
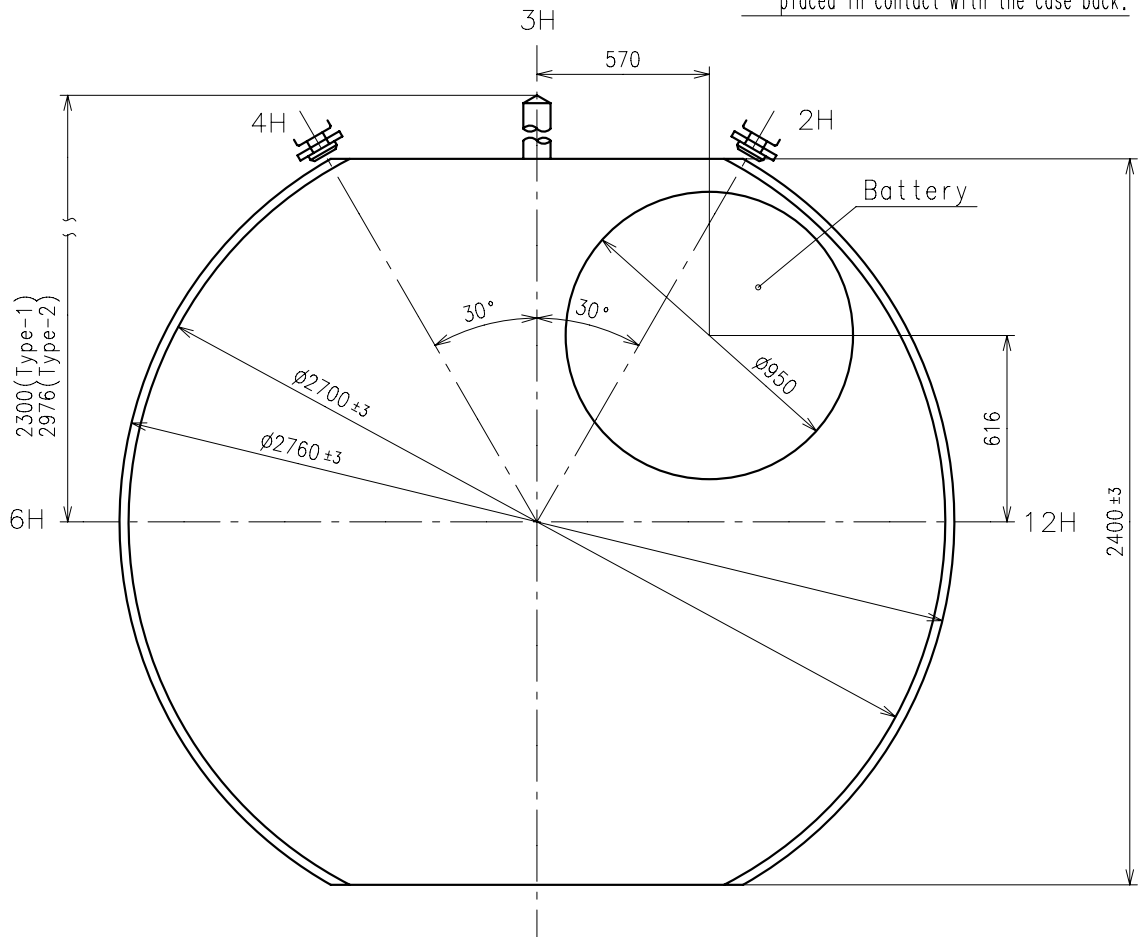
※ Unbalance
· Small second hand ≦ 0.03μ N·m (3μ g·m)
· 24 Hour hand ≦ 0.03μ N·m (3μ g·m)
· Minute chronograph hand ≦ 0.03μ N·m (3μ g·m)
· 1/5 second chronograph hand ≦ 0.09μ N·m (9μ g·m)
· Minute hand ≦ 0.70μ N·m (70μ g·m)
※ Moment of inertia
· 1/5 second chronograph hand ≦ 0.2μ g·m²

$\phi 110 ^{+1}_{0}$ $\phi 65.5 ^{+0.7}_{-0.5}$ $\phi 46$ $\phi 21 \pm 0.6$ $\phi 21 \pm 0.6$ $\phi 21 \pm 0.6$

Hour wheel   Center wheel   1/5 second counting wheel   Small second wheel / Minute counting wheel   24 Hour wheel
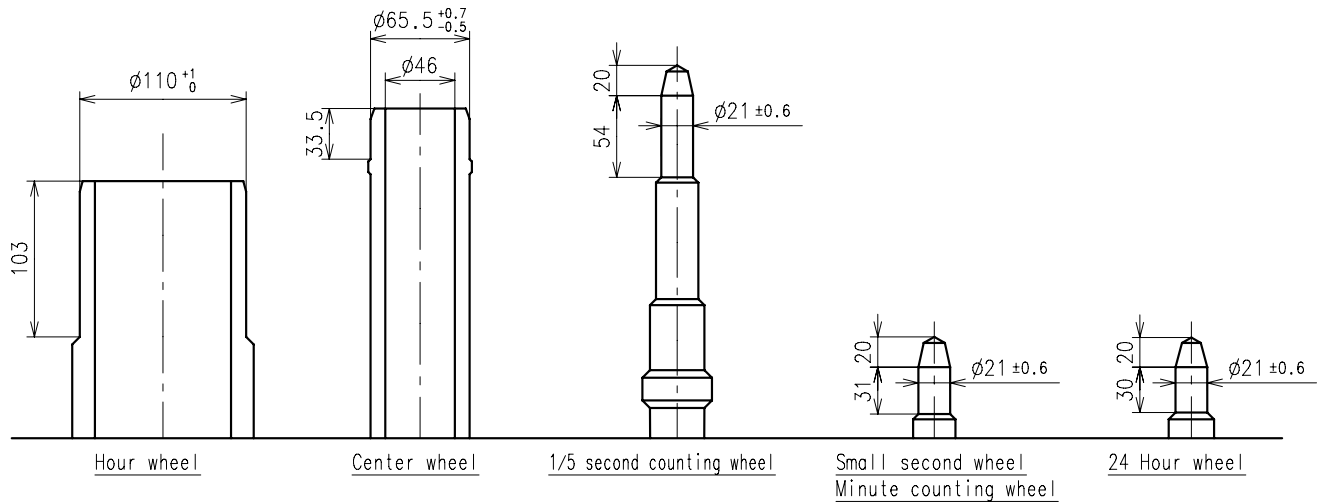
	Parts No.					
	Hour wheel	Center wheel	1/5 second counting wheel	Small second wheel	Minute counting wheel	24 Hour wheel
Type M (2) YMO4A**	0271636	0221604	0888501	0240511	0902500	1002534

(Glass)

※1 R   L8   T   L1   L2   L3   L9   L10   Index   L4   L5

(Dial)

Small second wheel
24 Hour wheel
Minute counting wheel
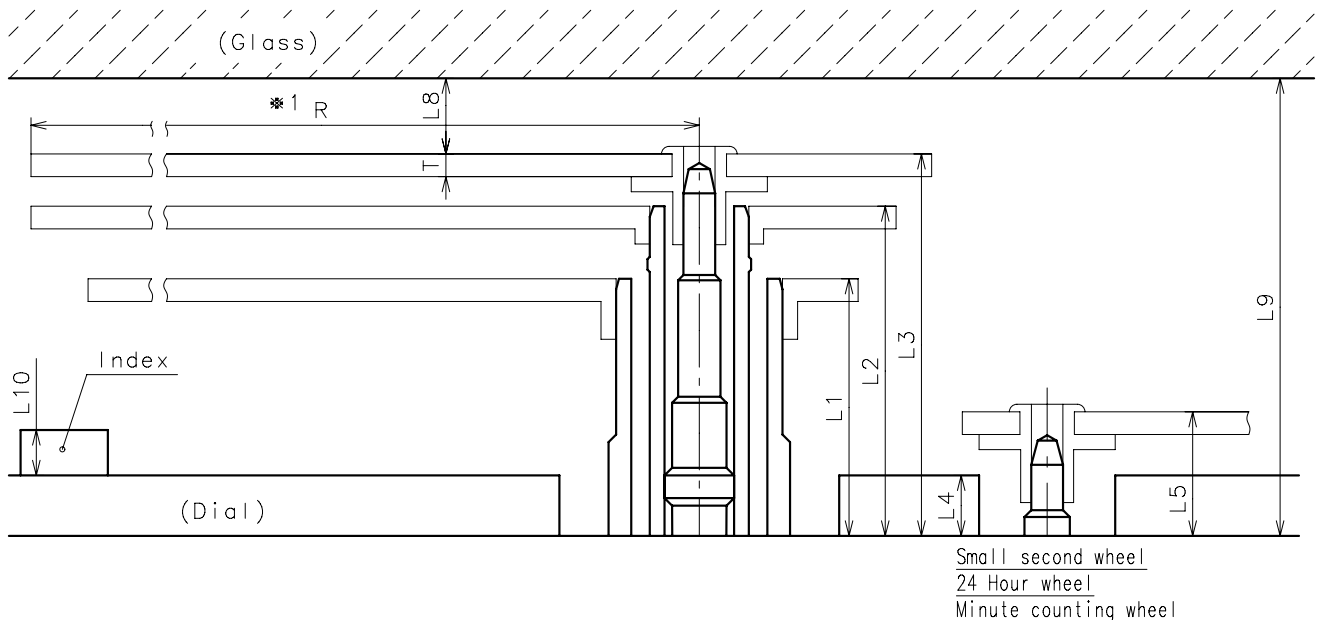
	L1	L2	L3	L4	L5	—	—	L8	L9	L10	T	※1 R
Type M (2) YMO4A**	170	218	252.5	40	82	—	—	MIN: 50	MIN: 302.5	MAX: 50	15	MAX: 1250

※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.

$\phi 90 ^{+0.2}_{-1}$ $\phi 115 ^{0}_{-1.5}$ $\phi 80 ^{0}_{-4}$ $\phi 90$ P22.5

26

※

S3   50

S1

S2
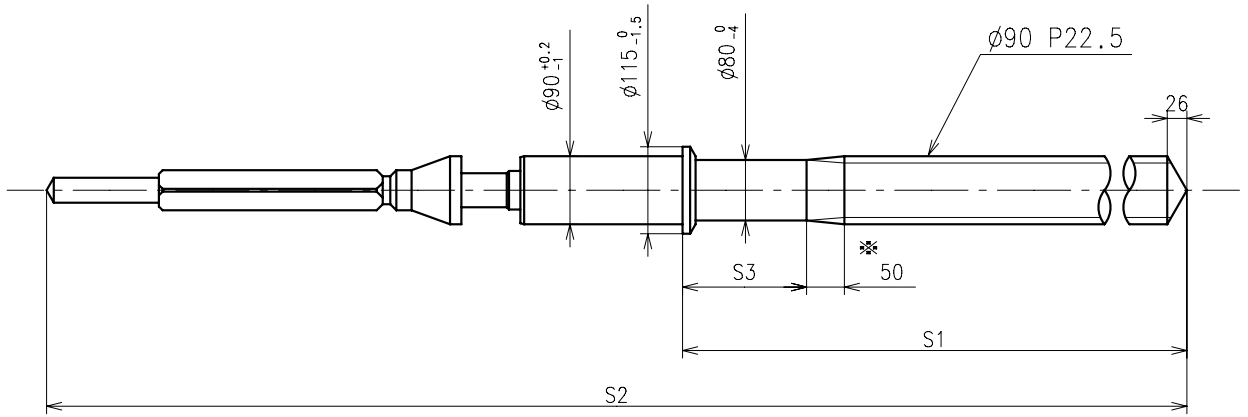
※ Not threaded

	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

Make flat the backside surface of this area.
Projection from the legs of index or something
will affect to the motion of date disk.

12H

1039.26

430

60

260

185   30

884

ø300

202.6

685.7

721.23

B

Small second

24 Hour

3H

725   725

725

986.13

Minute chronograph

A

792.33

Minute chronograph
Small second
24 Hour

(40)

A, B

200 +5 -10

15 ±5

25°

ø75 ±2

ø185 ±5

ø90 ±5

TYPE 1 : STANDARD
PART CODE:0866854
MOV'T REF:YMO4A**

12H

200

φ3004 ±5

φ2840 ±5

50°

2398 ±3

2408 ±3

9H

220

190 ±3

240

3H

30°

30°

R300

12°

E'

31°

E

12° 23°

B'

B' 220

260

R300

D'

D

C'

A'

A

R300

C

200

A-A' section
25 ±5
169
Contacting surface of movement

B-B' section
(34±3)
Contacting surface of movement
60 ±3
228.5

C-C' section
169
Contacting surface of movement
8
φ3004 ±5
φ3020 ±3

D-D' section
E-E' section
Contacting surface of movement
11
φ3004 ±5
φ3026 ±3

O-12H section
φ3004 ±5
φ2650 ±5
34 ±5
7 ±3
176 ±3
41
169
210
Contacting surface of movement
φ2768 ±5

O-3H section
Contacting surface of movement
7 ±5
235.5 ±3
176 ±3
228.5

O-9H section
Contacting surface of movement
7 ±3
(70)
(34±3)
(176±3)

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 1/5 second chronograph hand and minute chronograph hand at "0" position.
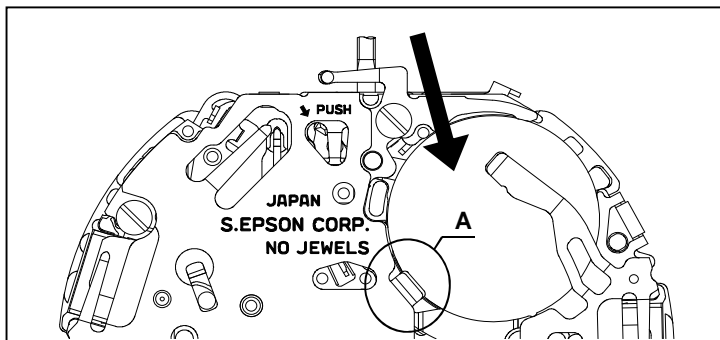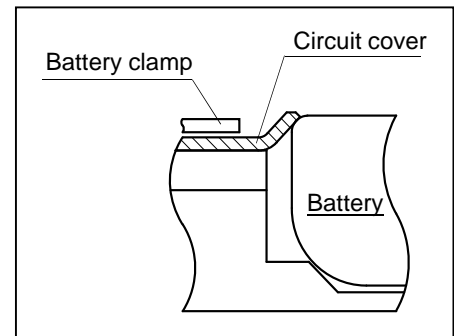
Fig.[1]

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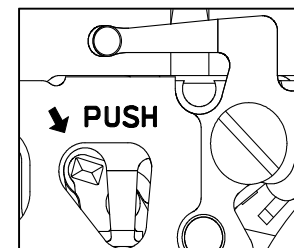
Fig.[3] Crown pulled out at 1st click

3.Attention to adjust the date

· Don't touch the date disks.

· When adjusting the date, don't turn the date disk directly by finger.

4.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.

· Set the hour and minute hands on the date between "02-08".

5.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.

6.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.
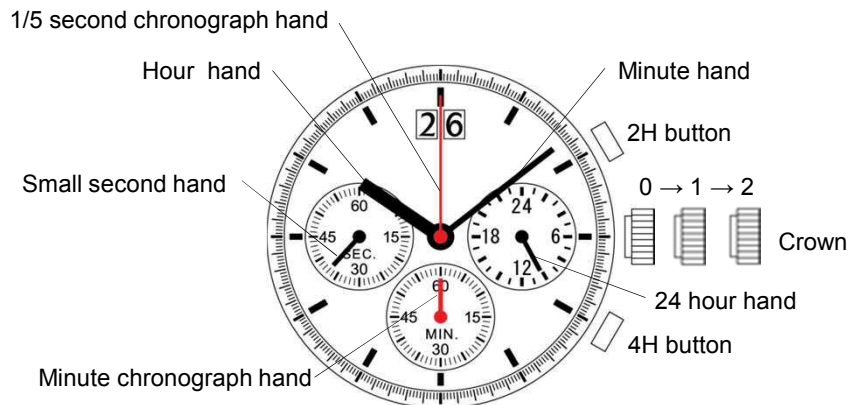
2.Holding ring for dial

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.

1/5 second chronograph hand

Hour hand

Minute hand

2H button

Small second hand

0 → 1 → 2

Crown

24 hour hand

4H button

Minute chronograph hand

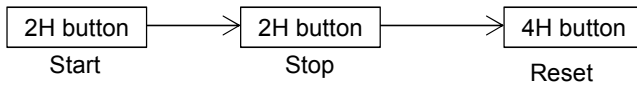|	Crown position		
	0 click	1st click	2nd click
Crown	Free	Turn clockwise for date change	Time setting
2H button	Chronograph Start/Stop Restart	Chronograph Start/Stop Restart	[*1]
4H button	Chronograph Reset Split Split release	Chronograph Reset Split Split release	[*1]

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

Pull crown out to the 2nd click position.
↓
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.
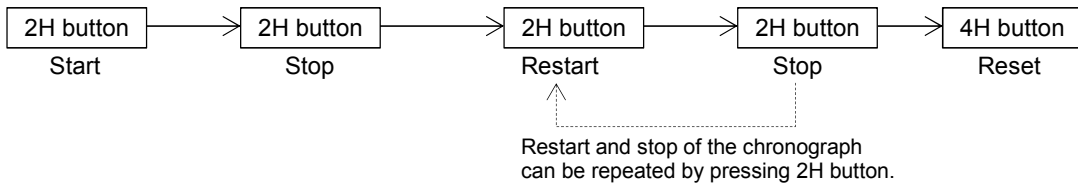↓
Push crown back to normal position.

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**

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

■ **Accumulated elapsed time measurement**

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

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

■ **Split time measurement**

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

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