EPSON

Watch Movement Specification and Drawing

CHRONOGRAPH

Cal. YM9GA

Movement Size

12’’’

Casing Diameter

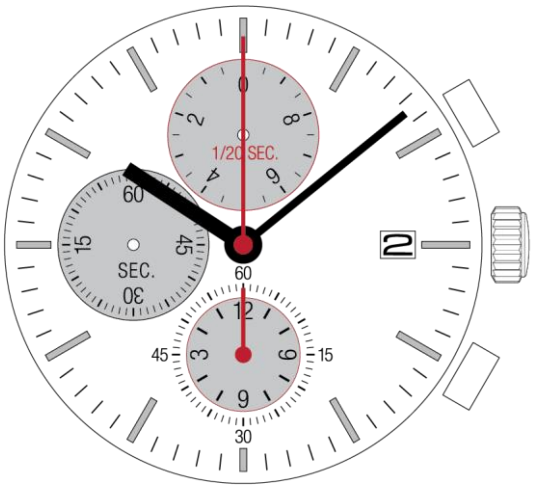
Ø 27.0mm

Height

4.34mm

Battery Life

3 years



Date: 22/Aug./'23

Cal. YM9GA

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Cal. YM9GA	Specifications	Date : 22/Aug./'23
		Rev. : 03

Analog Quartz 12''' Center second Chronograph Movement

1. MOVEMENT DIMENSIONS

Outside diameter	ϕ27.60mm (12H-6H) × 24.00mm (3H-9H)
Casing diameter	ϕ27.00mm (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℃ to +50℃
Regulation device	Nil (Pre-adjusted)

3. INDICATOR / FUNCTIONS

3 Hands	Hour / Minute / Second chronograph (Center)
Small hands	Small second (9H) / 1/20 second chronograph (12H) Hour and minute chronograph (6H)
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 12 hours in 1/20 second increments.

4. FEATURES

Jewels	0 Jewels		
Anti-magnetism	Over 1600A/m (Direct current magnetic field)		
Maximum unbalance of hands	Small second hand	: 0.03μN·m	
	1/20 second chronograph hand	: 0.03μN·m	
	Minute chronograph hand	: 0.03μN·m	
	Hour chronograph hand	: 0.025μN·m	
	Second chronograph hand	: 0.06μN·m	
	Minute hand	: 0.7μN·m	
Moment of Inertia	Second chronograph hand	: less than 0.2μg·m²	
	Small second hand	: less than 0.2μg·m²	(*)
(*) Disc hand available	1/20 second chronograph hand	: less than 0.4μg·m²	(*)
	Hour chronograph hand	: less than 0.4μg·m²	(*)
	Minute chronograph hand	: less than 0.2μg·m²	

5. BATTERY

Type / Size	Silver oxide battery / ϕ9.5mm × t 2.73mm
Recommended battery	SR927SW
Nominal voltage	1.55 V
Battery life	Approx. 3 years (2 hours chronograph operation per day)
Driving current consumption	Approx. 0.80μA
Operation stopping voltage	0.9 V

6. SEPARATED PARTS (Parts code)

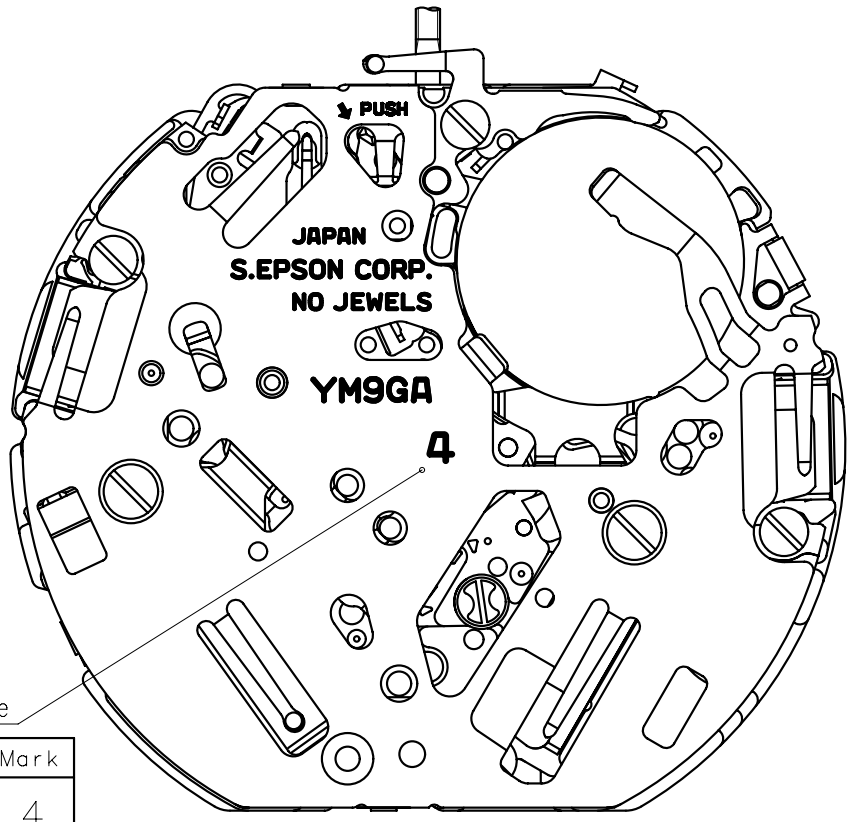
Hand setting stem	0351584 (Standard)
Holding ring for dial	0866854 (Standard)
Battery	SR927SW

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

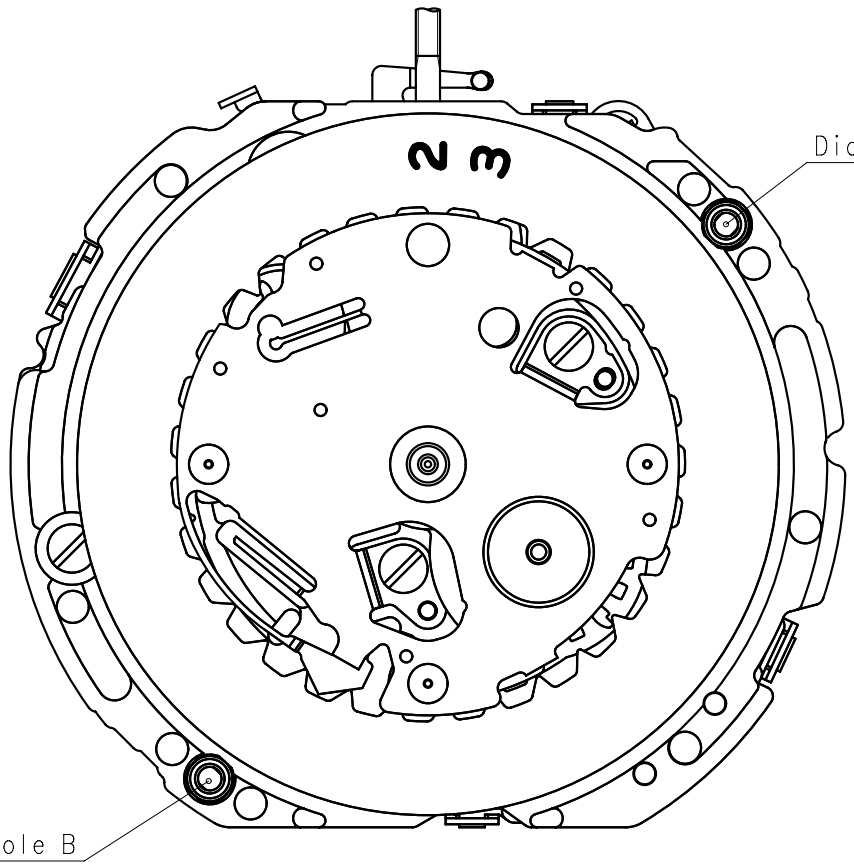
All specifications are subject to change without notice.

Cal. YM9GA	Appearance	Date:31/Jul./'14
		Rev.:01



Hands type

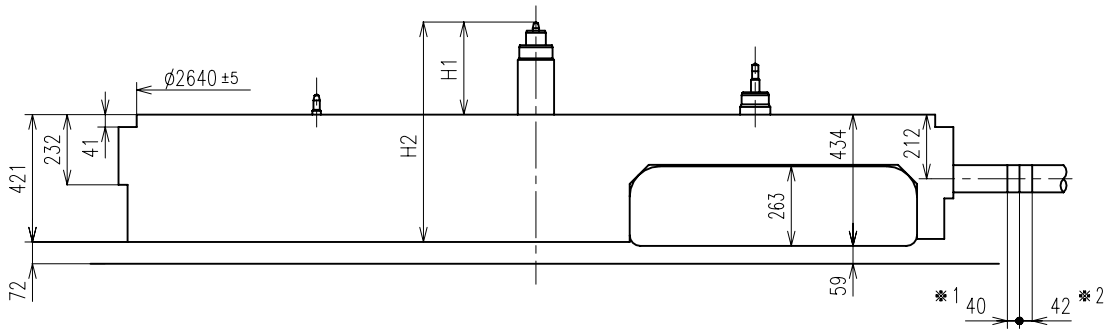
	Mark
Type(LL) YM9GA**	4



Dial leg hole A

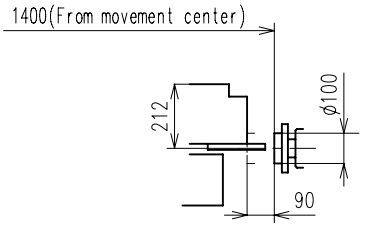
Dial leg hole B

Cal. YM9GA	Casing	Date:22/Aug./'23
		Rev.:03

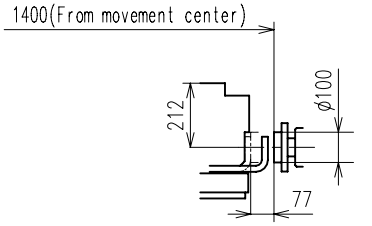


※1:First pullout stroke
※2:Second pullout stroke

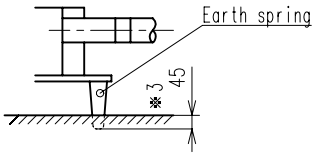
Center post		Type LL(4) YM9GA**
Maximum height from dial support	H1	306
Total height including movement	H2	727



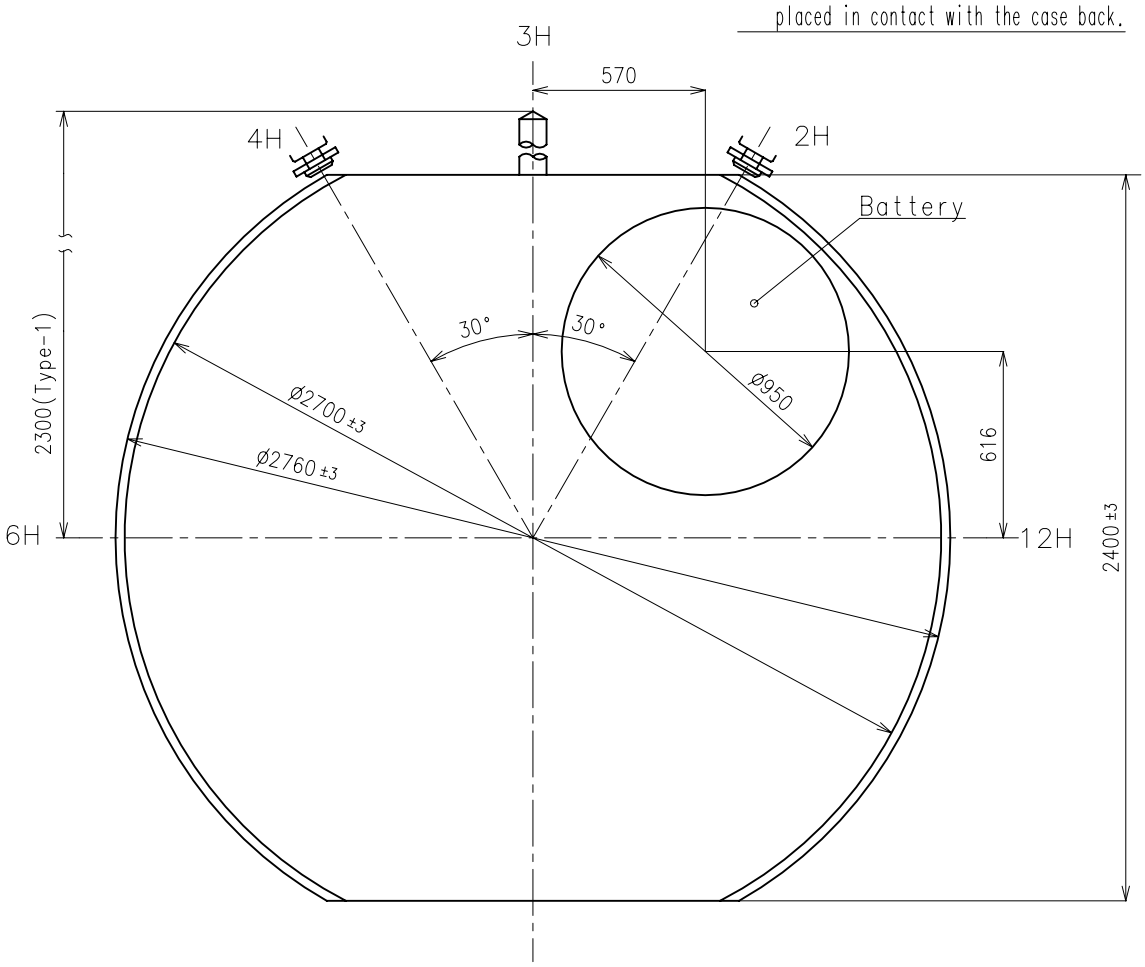
4H Button stroke



2H Button stroke



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



Unit : 1=1/100mm

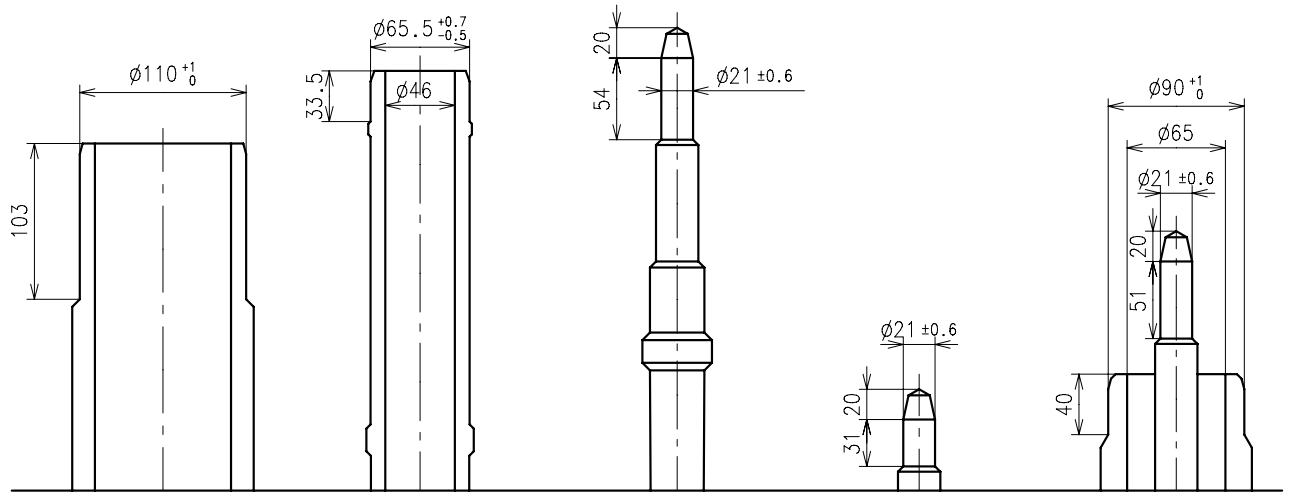
Cal. YM9GA	Hand fitting	Date:11/Jan./'19
		Rev.:02

※Unbalance

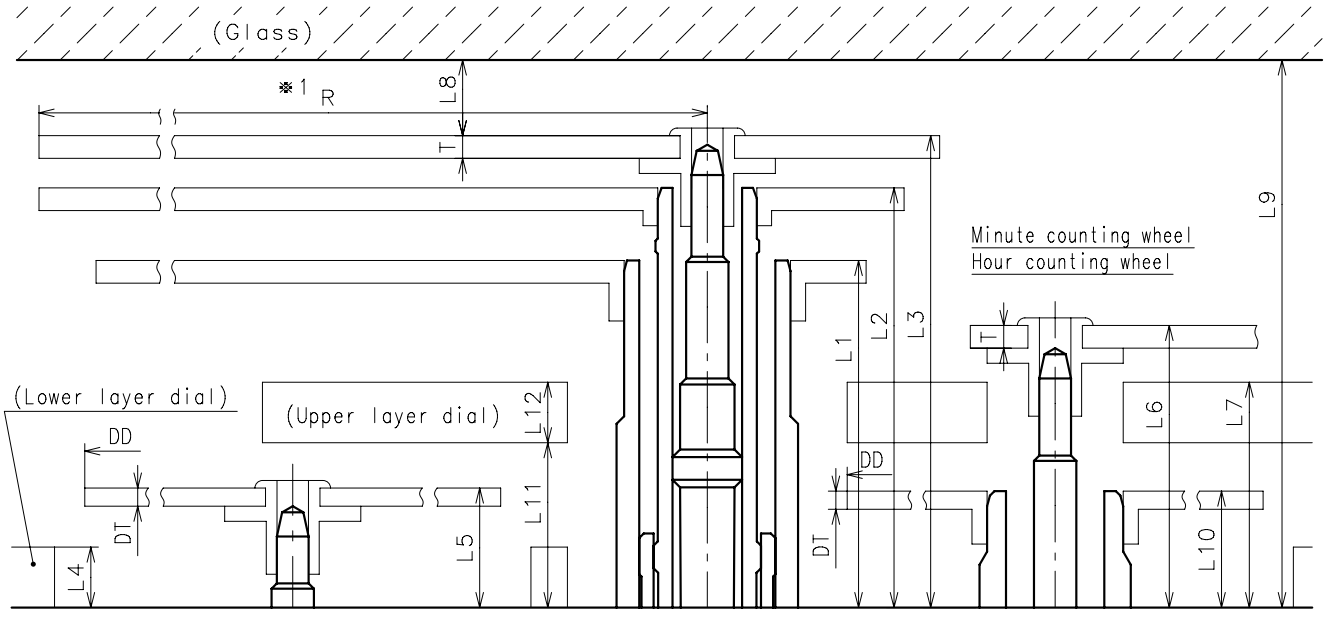
- Small second hand ≦ 0.03μ N・m (3μ g・m)
- 1/20 second chronograph hand ≦ 0.03μ N・m (3μ g・m)
- Minute chronograph hand ≦ 0.03μ N・m (3μ g・m)
- Hour chronograph hand ≦ 0.025μ N・m (2.5μ g・m)
- Second chronograph hand ≦ 0.06μ N・m (6μ g・m)
- Minute hand ≦ 0.7μ N・m (70μ g・m)

※Moment of inertia

- Small second hand ≦ 0.2μ g・m² (Disc hand available)
- 1/20 second chronograph hand ≦ 0.4μ g・m² (Disc hand available)
- Minute chronograph hand ≦ 0.2μ g・m²
- Hour chronograph hand ≦ 0.4μ g・m² (Disc hand available)
- Second chronograph hand ≦ 0.2μ g・m²



	Parts No.						
	Hour wheel	Center wheel	Second counting wheel	Small second wheel	1/20 second counting wheel	Minute counting wheel	Hour counting wheel
Type LL(4) YM9GA**	0271636	0221604	0888501	0240512	0902501	0902502	0271640



Maximum size of disc hand (Material:Aluminum)※2	DT	DD
Small second hand	10	MAX:ø900
1/20 second chronograph , Hour chronograph hand	10	MAX:ø1000

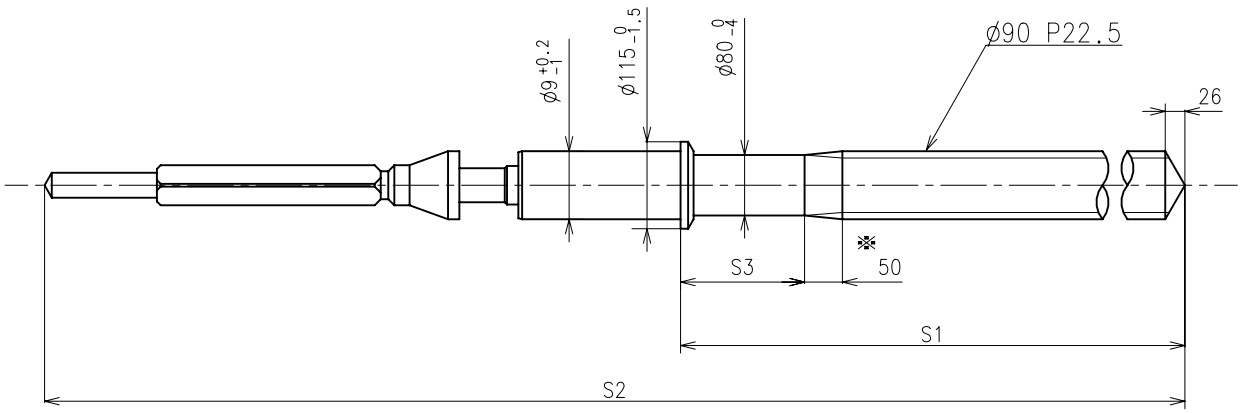
※2:When a different material is used, it is necessary to follow the moment of inertia.

	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	T	※1 R
Type LL(4) YM9GA**	229.5	277.5	312	40	79	186.5	MAX: 149	MIN: 50	MIN: 362	77	MIN: 107	40	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.

Unit : 1=1/100mm

Cal. YM9GA	Hand setting stem	Date:22/Aug./'23
		Rev.:02



※ Not threaded

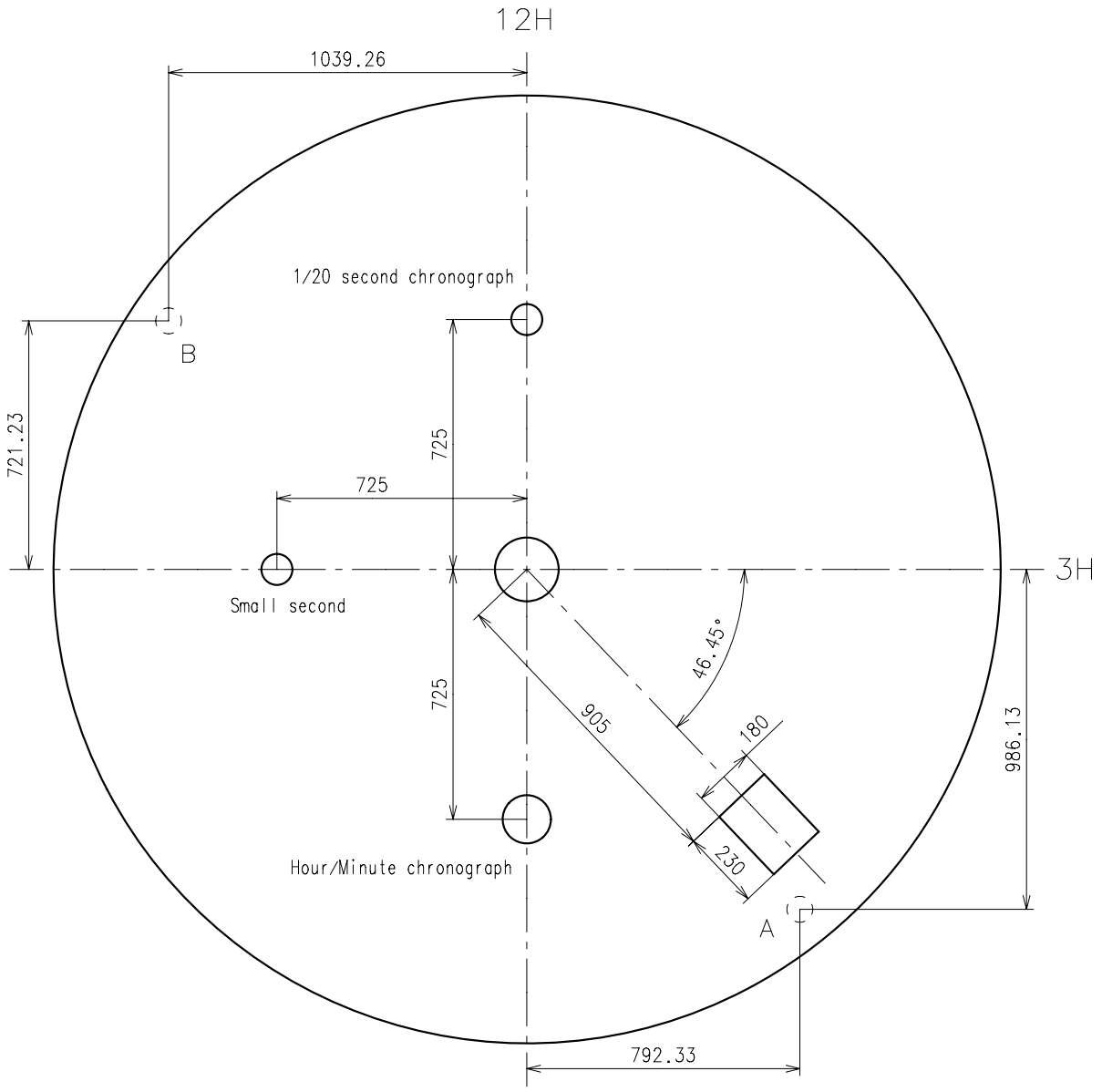
	Part No.	S1	S2	S3
Type-1 (Standard)	0351584	1164	2005.5	164

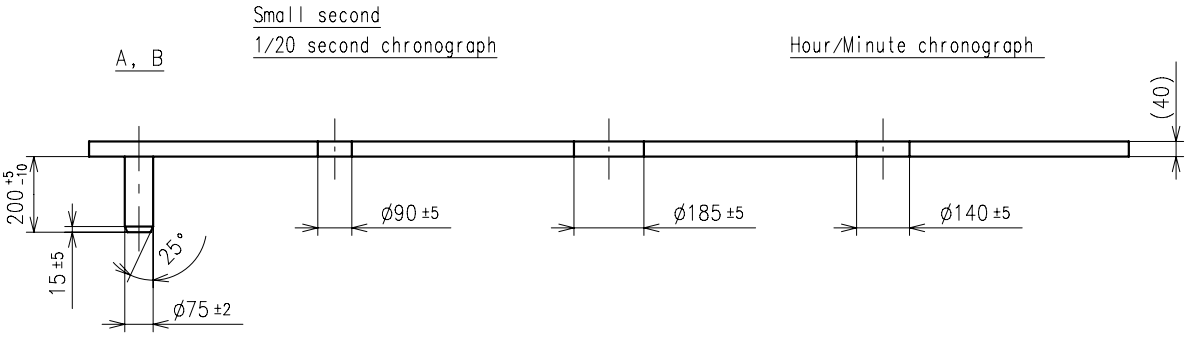
Material : Steel

Hardness : Vickers 600±50

Unit : 1=1/100mm

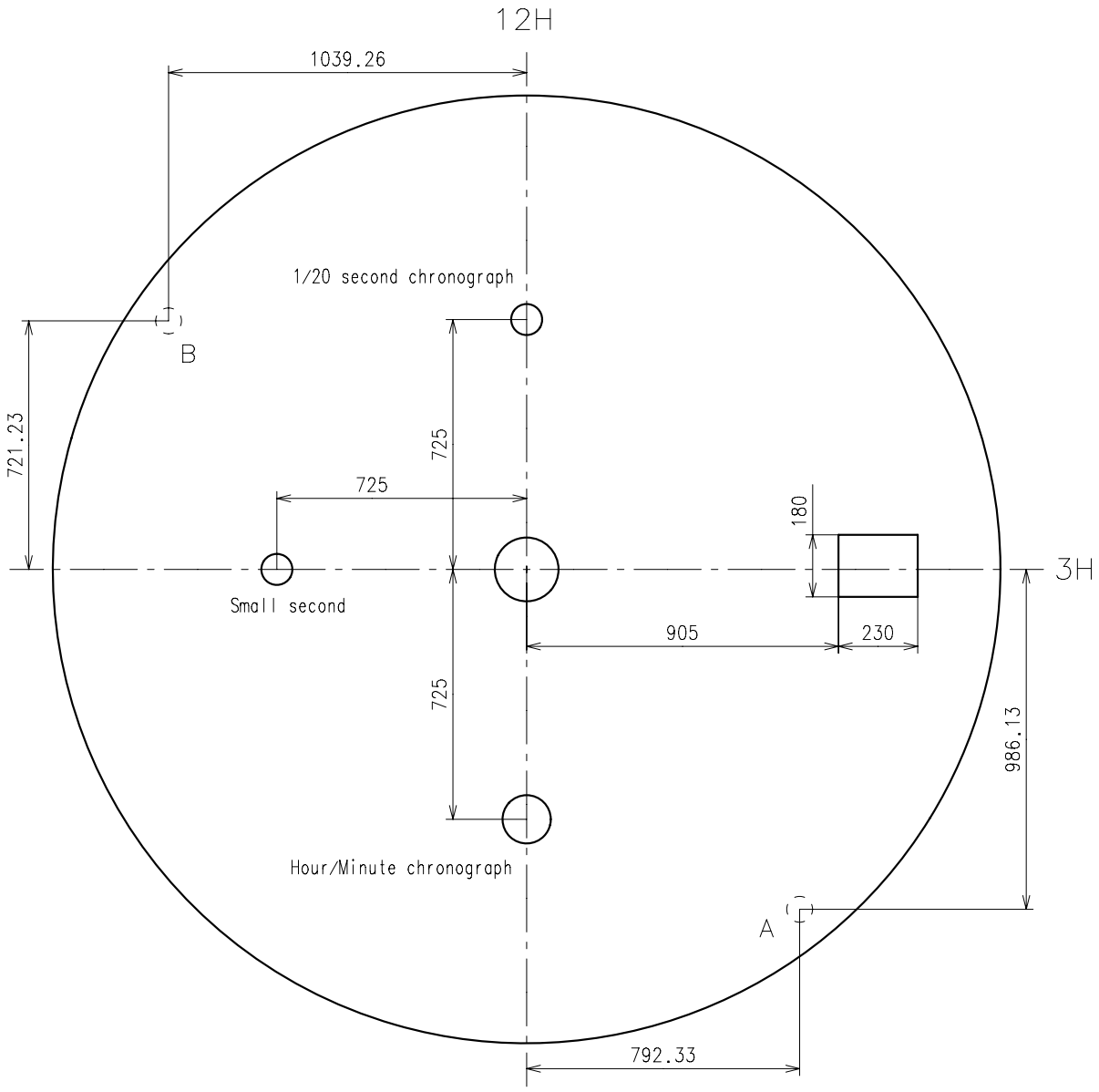
Cal. YM9GA	Dial-01	Date:31/Jul./'14
		Rev.:01

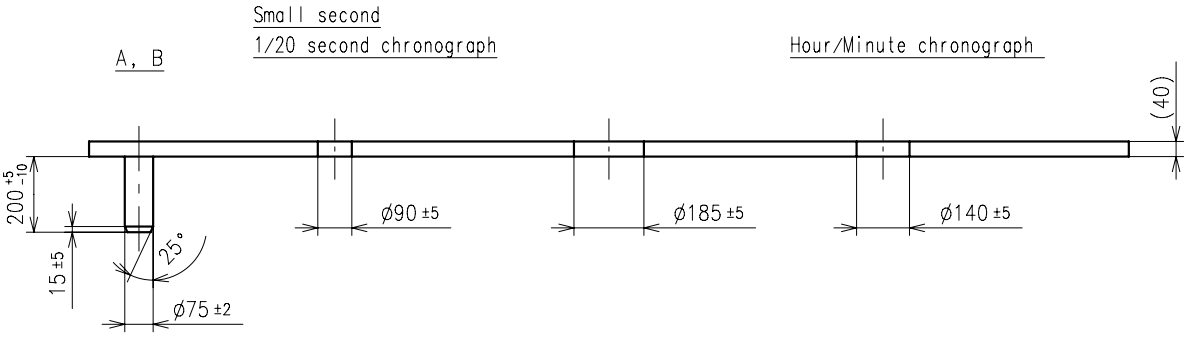




Unit : 1=1/100mm

Cal. YM9GA	Dial-02	Date:31/Jul./'14
		Rev.:01

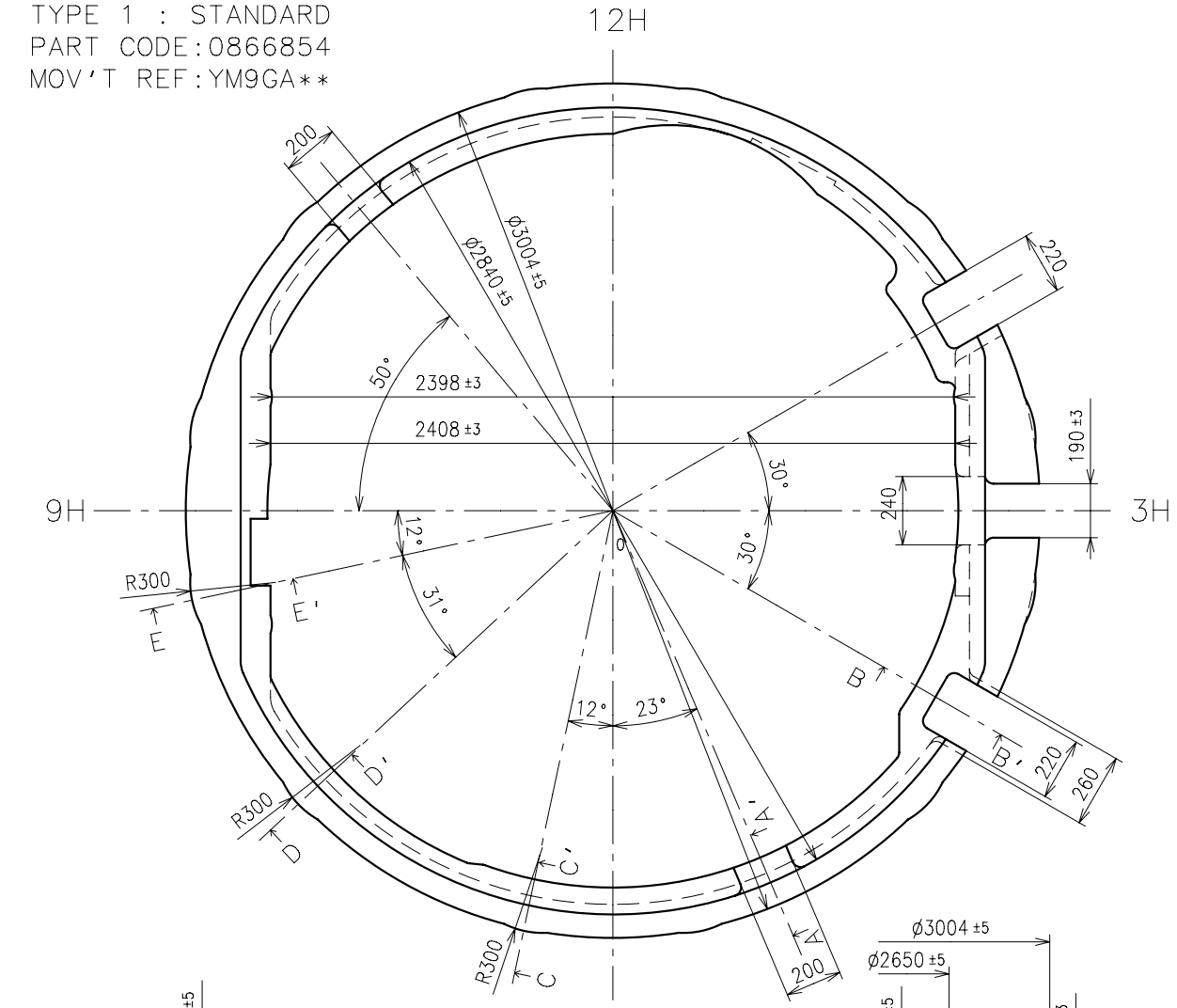


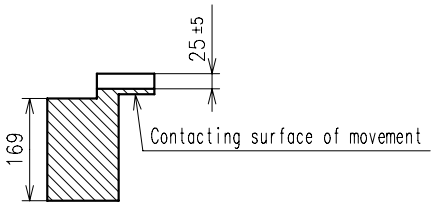


Unit : 1=1/100mm

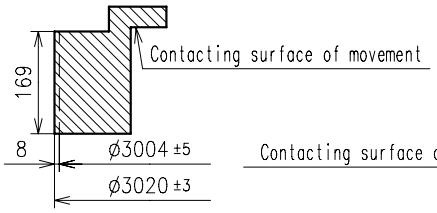
Cal. YM9GA	Holding ring for dial	Date:31/Jul./'14
		Rev.:01

TYPE 1 : STANDARD
PART CODE:0866854
MOV'T REF:YM9GA**

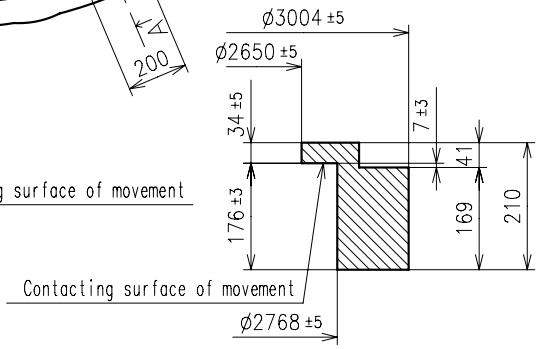




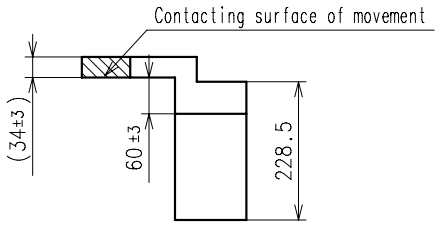
A-A' section



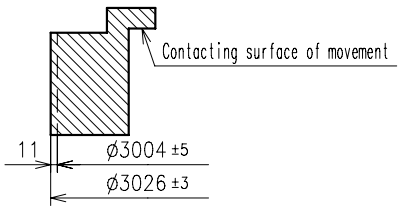
C-C' section



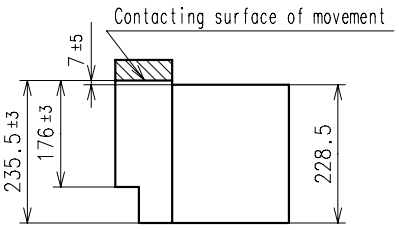
0-12H section



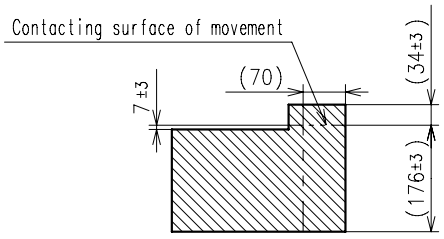
B-B' section



D-D' section
E-E' section



0-3H section



0-9H section

Unit : 1=1/100mm

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 1/20 second chronograph hand, second chronograph hand and hour/minute chronograph hand at "0" position.

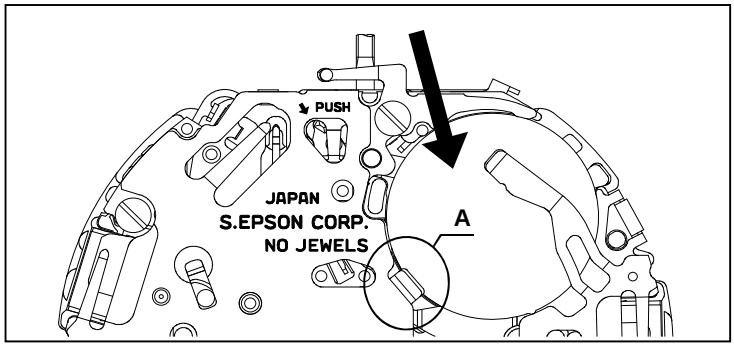


Fig.[1]

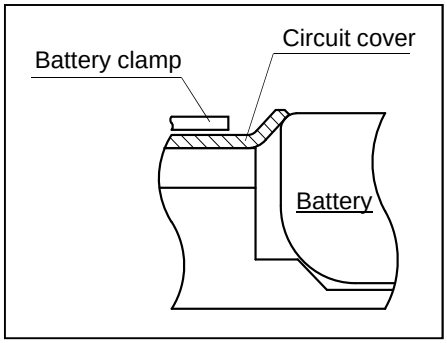


Fig.[2] A section

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].)

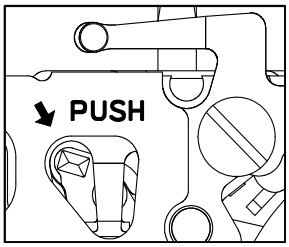


Fig.[3] Crown pulled out at 1st click

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

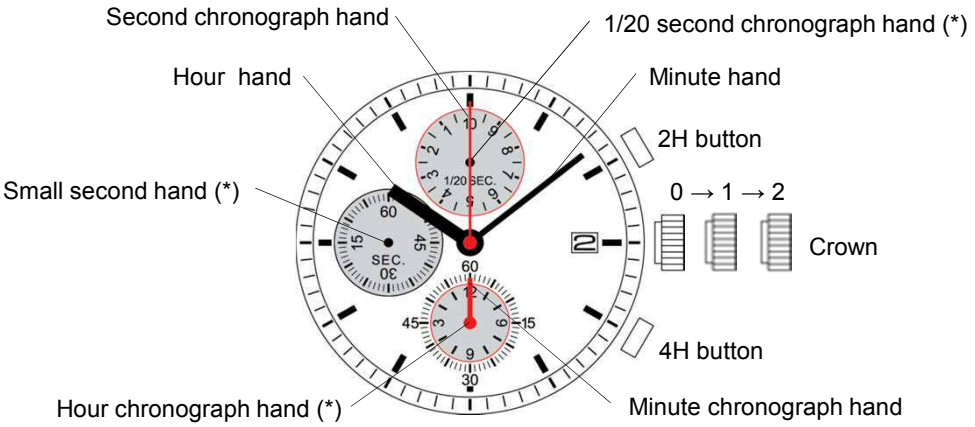
The center wheel have a safety stopper structure to prevent the minute hand from being pressed too much. However pay attention to the contact between hour hand and minute hand.

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.



(*) Disc hand available

	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.
1/20 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.
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.
Hour and 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.

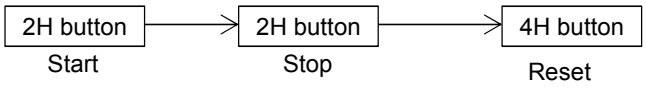
Press 2H button for 2 seconds here will allow you to resume the procedure again as indicated by the arrow if necessary.

↓
Push crown back to normal position.

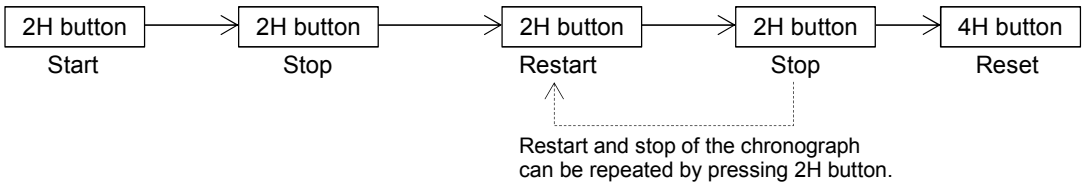
Chronograph function

- The chronograph can measure up to 12 hours in 1/20 second increments.
- After the chronograph is started or restarted or split time is released, 1/20 second chronograph hand moves about 10 minutes and automatically stops at the "0" position.
  When the measurement is stopped or split time is measured, it moves to indicate the elapsed 1/20 seconds.
- When the measurement reaches 12 hours, the chronograph automatically stops counting.

■ Standard measurement



■ Accumulated elapsed time measurement



■ Split time measurement