TIME MODULE

Cal. YM9GA

ϕ27.0 mm
H 4.34 mm

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Date: 17/Aug./'11

S.EPSON Products

CAL. YM9GA

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 hand / Minute hand / Second chronograph hand (Center)
Small hands	Small second hand (9H) / 1/20 second chronograph hand (12H)
	Hour and minute chronograph hand (6H)
Calendar	Instant setting device for date calendar
Reset switch	
Power depletion warning function (BLD)	
(Small second hand moves at 2-second intervals)	
Setting mechanism	Crown at normal position : Free
	Crown pulled out 1st click : Instant date change
	Crown pulled out 2nd click : Time setting / Reset
	: Chronograph hand reset
Stopwatch	2H button: start / stop
	4H button: sprit / reset

4. FEATURES

Jewels	0 Jewel		
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	
Inertia of hand's moment	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
Driving current consumption	Approx. 0.80μA
Operation stopping voltage	0.9 V

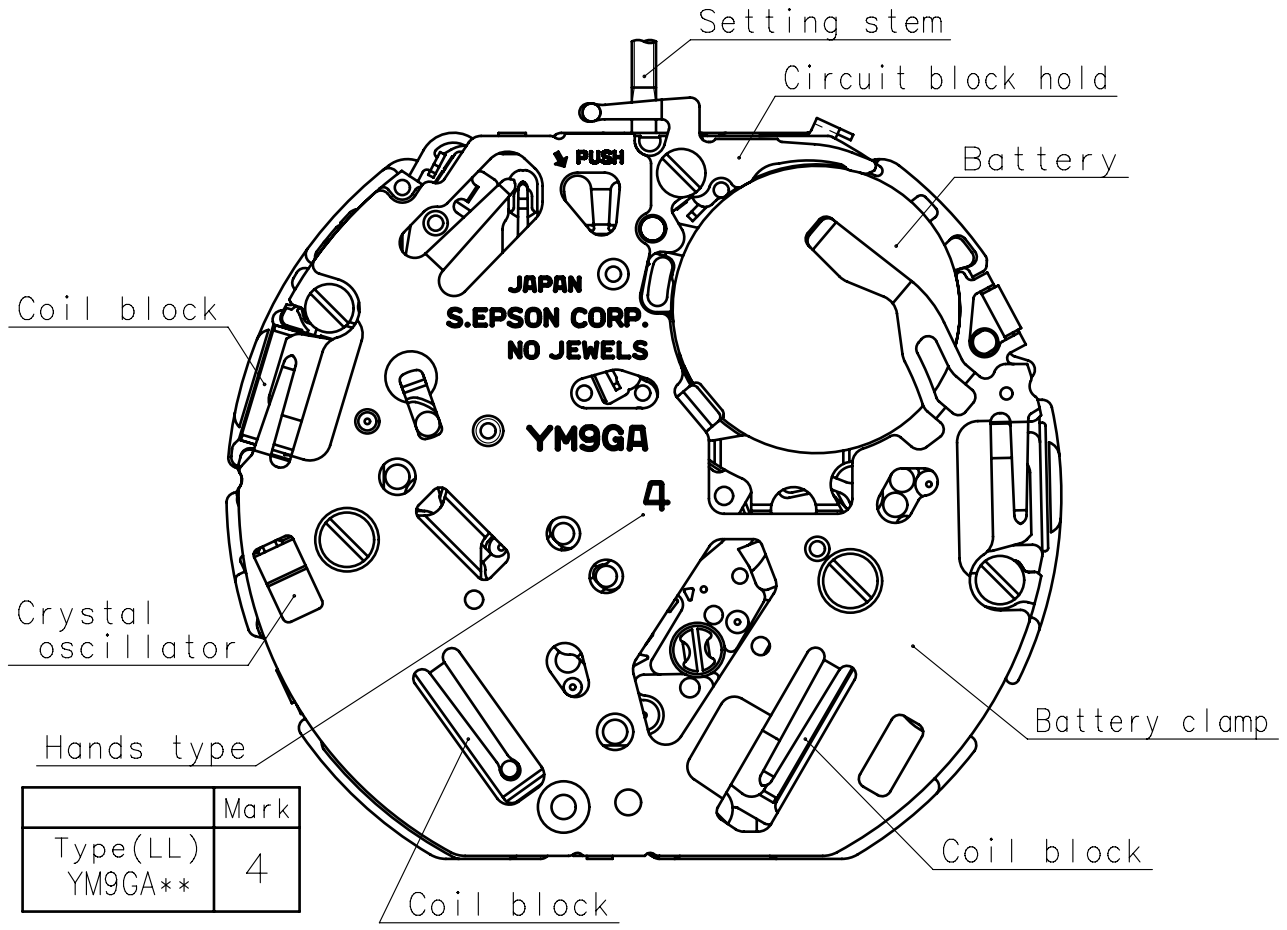
6. SEPARATED PARTS (Parts code)

Hand setting stem	0351584 (Standard) or 0351585 (Long)
Holding ring for dial	0866854 (Standard)
Battery	SR927SW

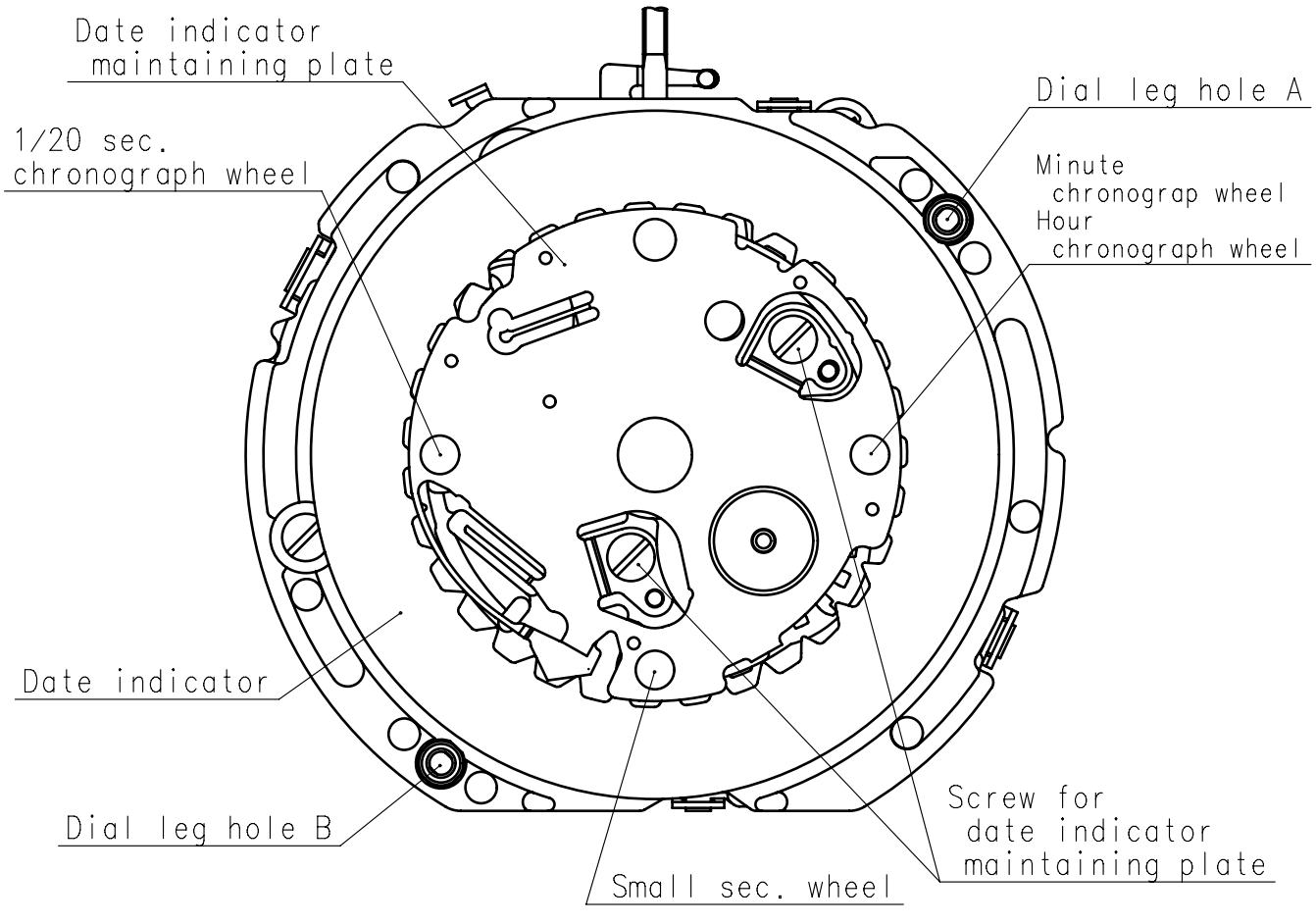
7. TEST OF ACCURACY

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

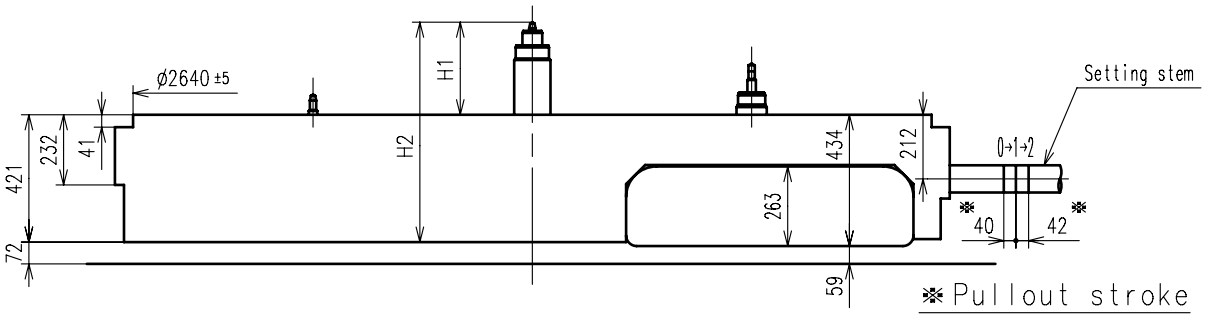
Cal. YM9GA	Appearance	Date:17/Aug./'11
		Rev.:00



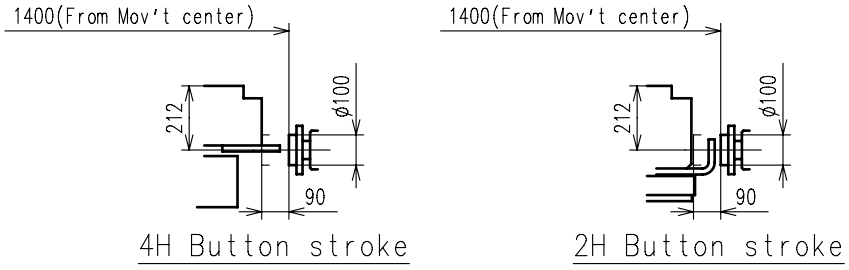
	Mark
Type(LL) YM9GA**	4

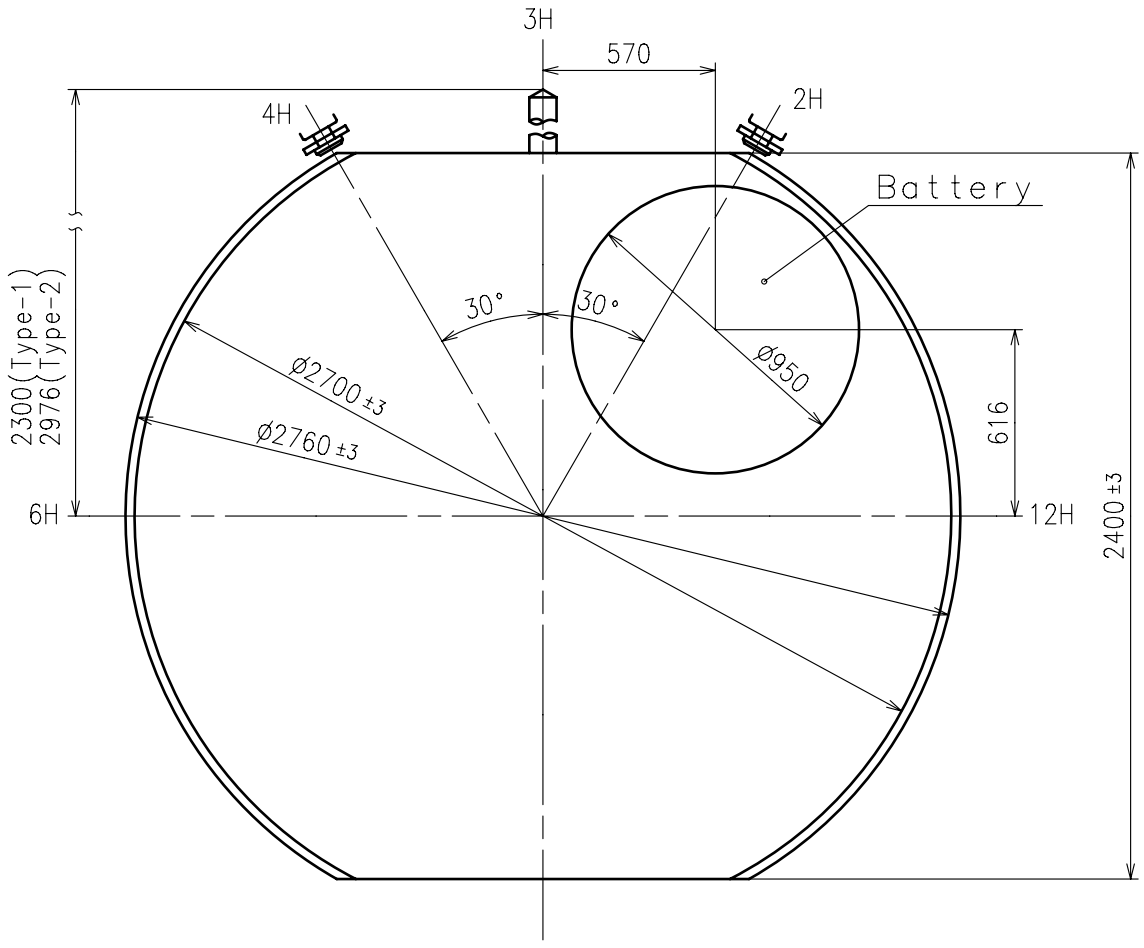


Cal. YM9GA	Casing	Date:17/Aug./'11
		Rev.:00



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



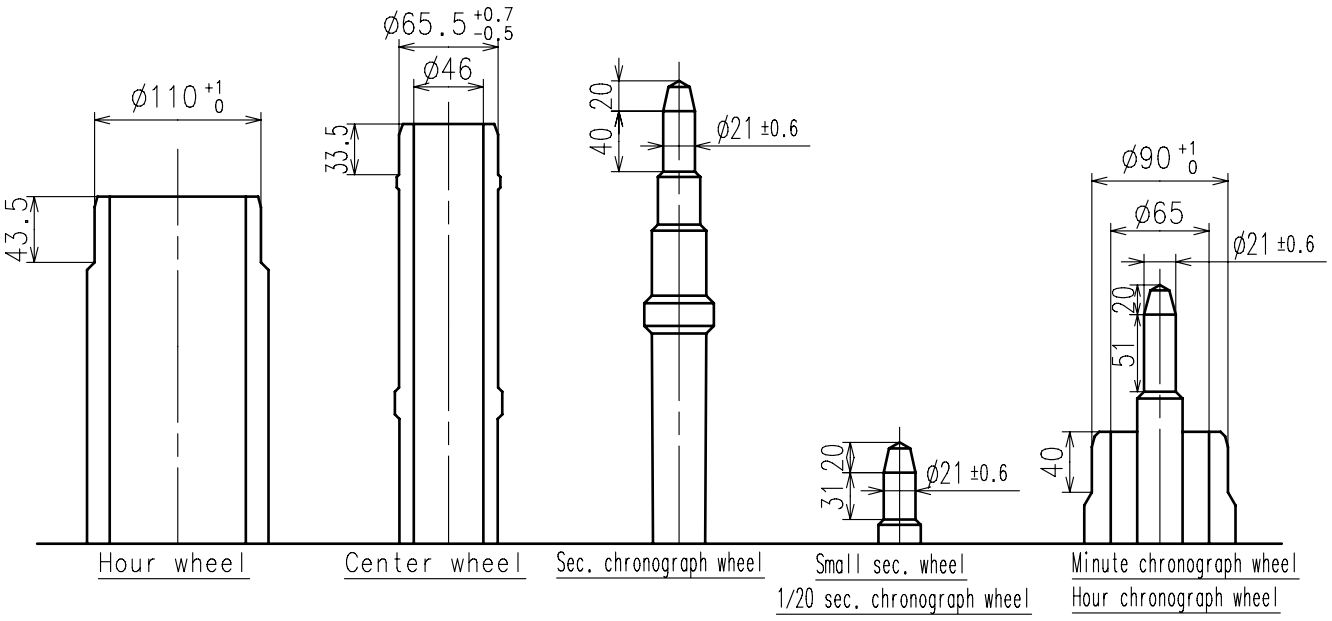


Unit : 1=1/100mm

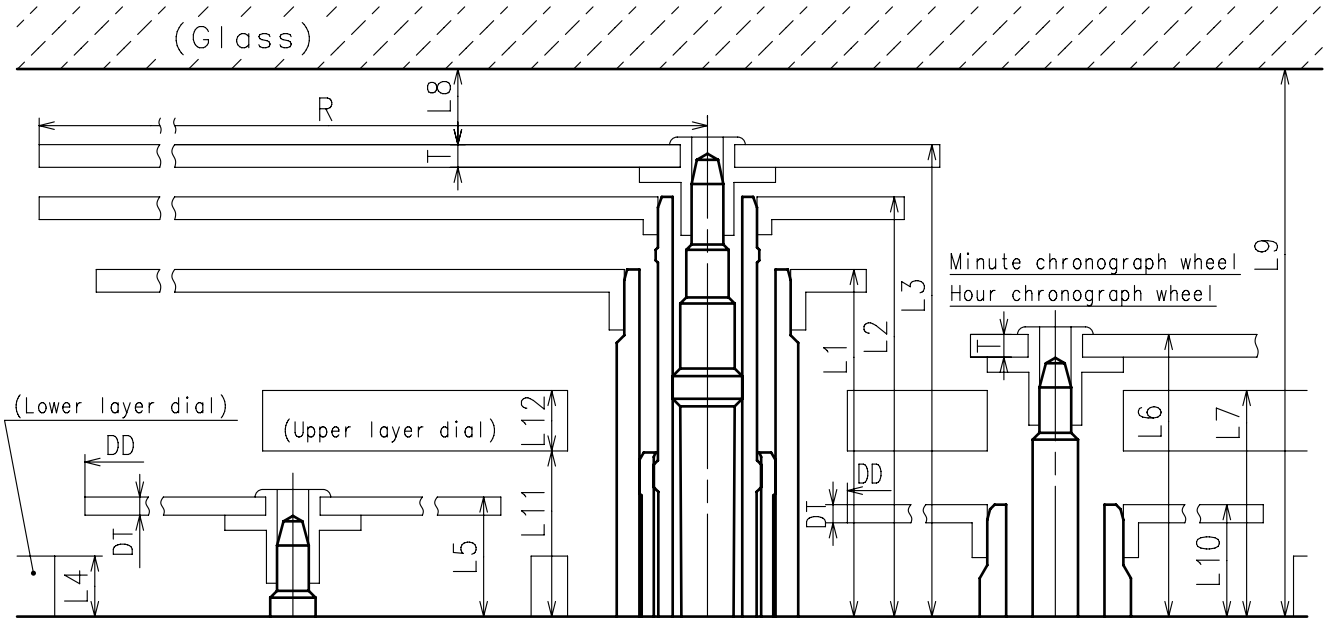
Cal. YM9GA	Hand fitting	Date:17/Aug./'11
		Rev.:00

※Unbalance
- Sec. chronograph hand ≦ 0.06μ N・m(6μ g・m)
- Minute hand ≦ 0.70μ N・m(70μ g・m)

※Moment of inertia
- Sec. chronograph hand ≦ 0.2μ g・m²
- Small second hand ≦ 0.2μ g・m² (Disc hand available)
- 1/20 sec. chronograph hand ≦ 0.4μ g・m² (Disc hand available)
- Hour chronograph hand ≦ 0.4μ g・m² (Disc hand available)
- Minute chronograph hand ≦ 0.2μ g・m²



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



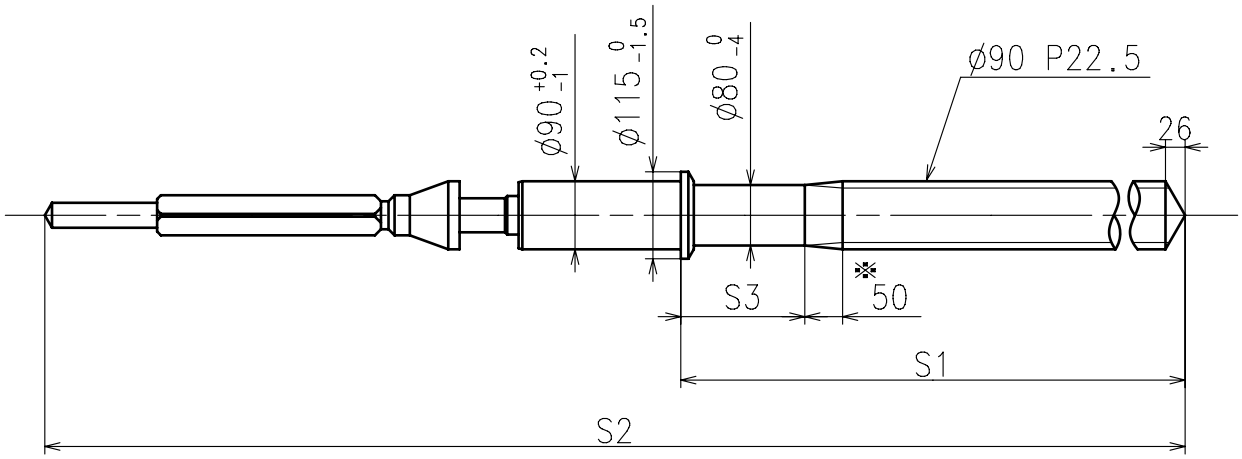
Maximum size of disk hand (Material:Aluminum)※	DT	DD
Small sec. hand	10	MAX: Ø900
1/20 sec. & Hour chronograph hand	10	MAX: Ø1000

※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	R
Type LL(4) YM9GA**	229.5	277.5	312	40	79	186.5	MAX: 149.5	MIN: 50	MIN: 362	77	MIN: 107	40	15	MAX: 1250

Unit : 1=1/100mm

Cal. YM9GA	Hand setting stem	Date:17/Aug./'11 Rev.:00



※ Not threaded

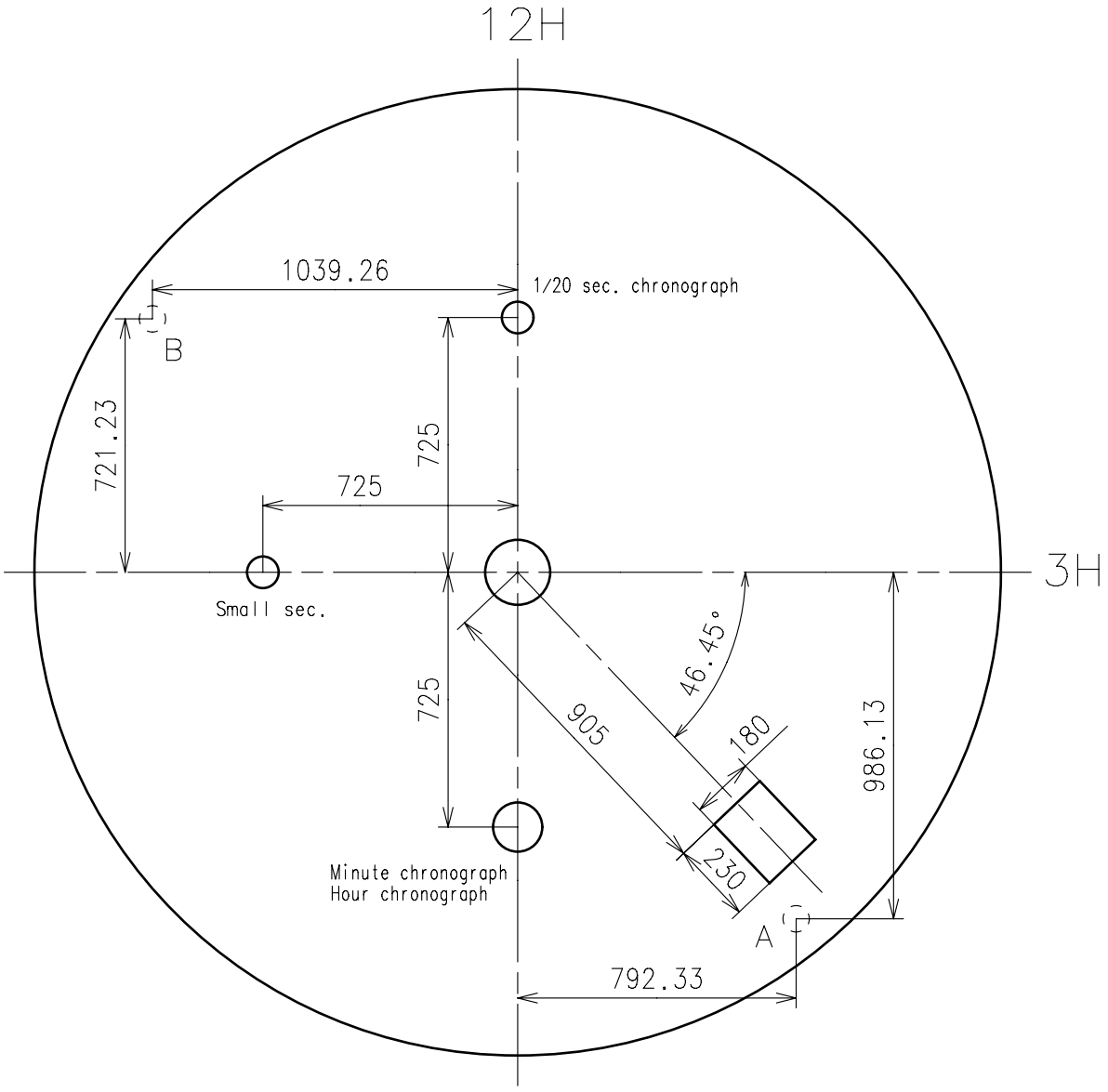
	Part No.	S1	S2	S3
Type-1 (Standard)	0351584	1164	2005.5	164
Type-2 (Long)	0351585	1840	2681.5	750

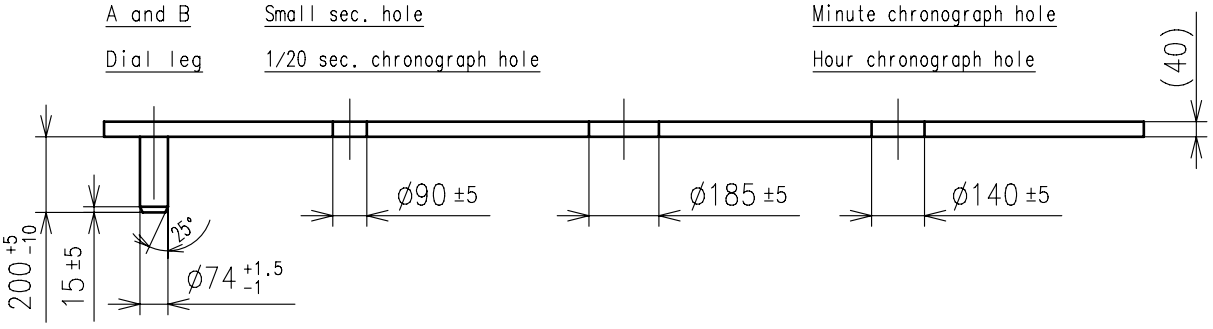
Material : Steel

Hardness : Vickers 600±50

Unit : 1=1/100mm

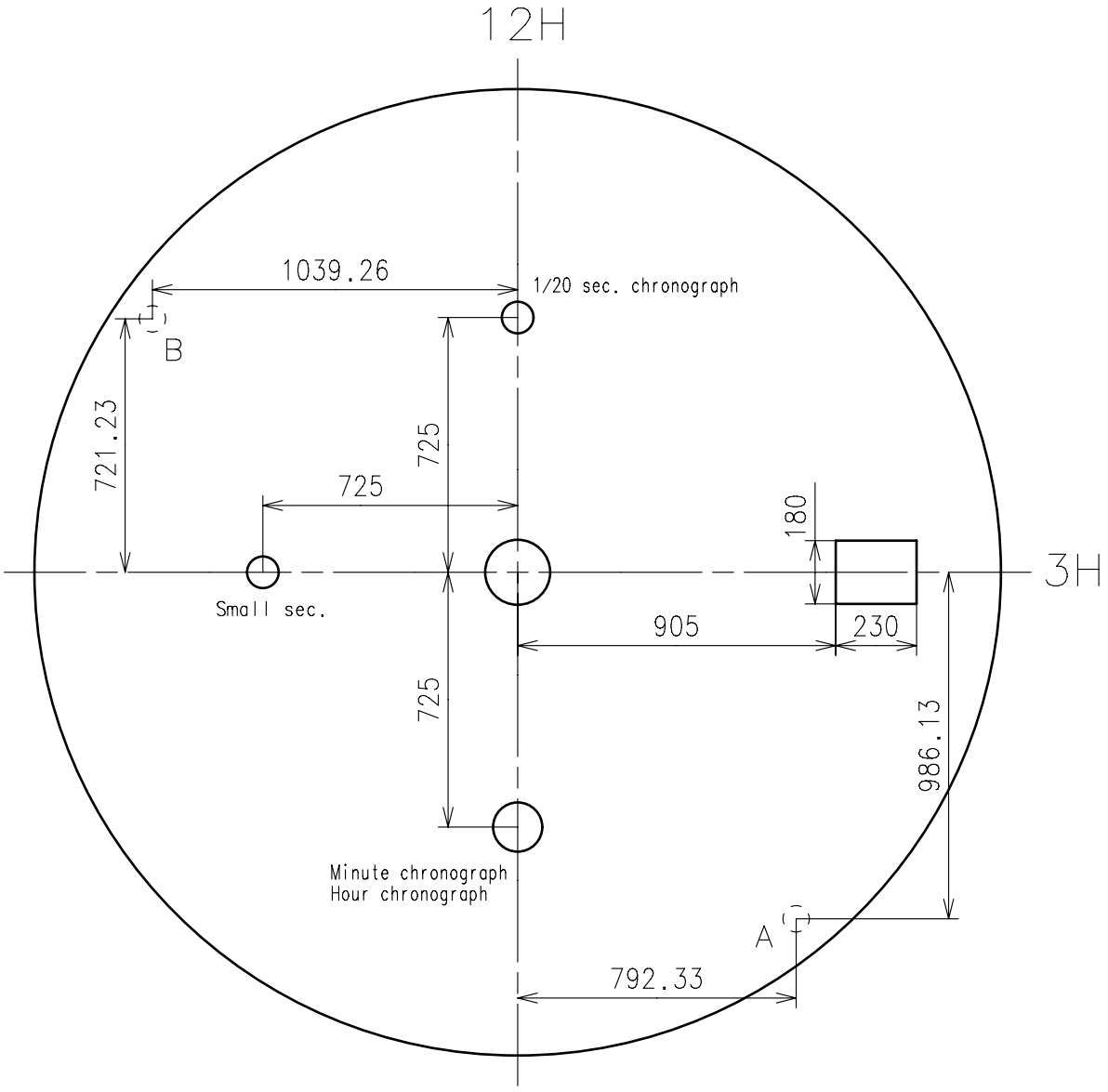
Cal. YM9GA	Dial-01	Date:17/Aug./'11
		Rev.:00

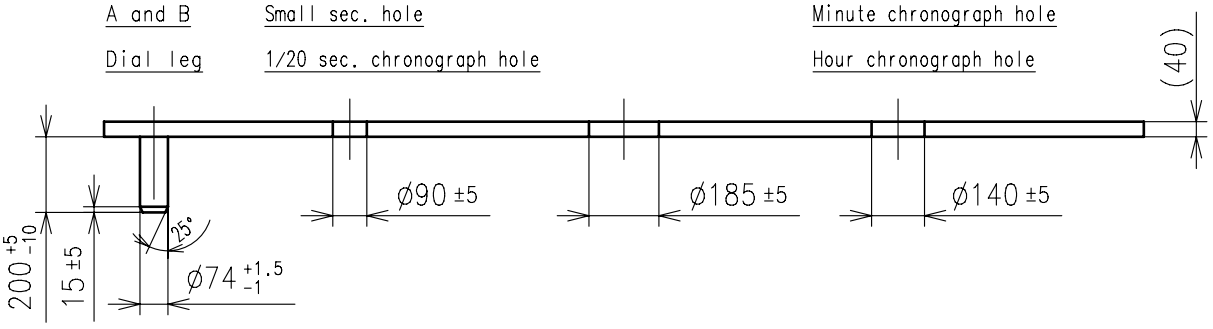




Unit : 1=1/100mm

Cal. YM9GA	Dial-02	Date:17/Aug./'11
		Rev.:00

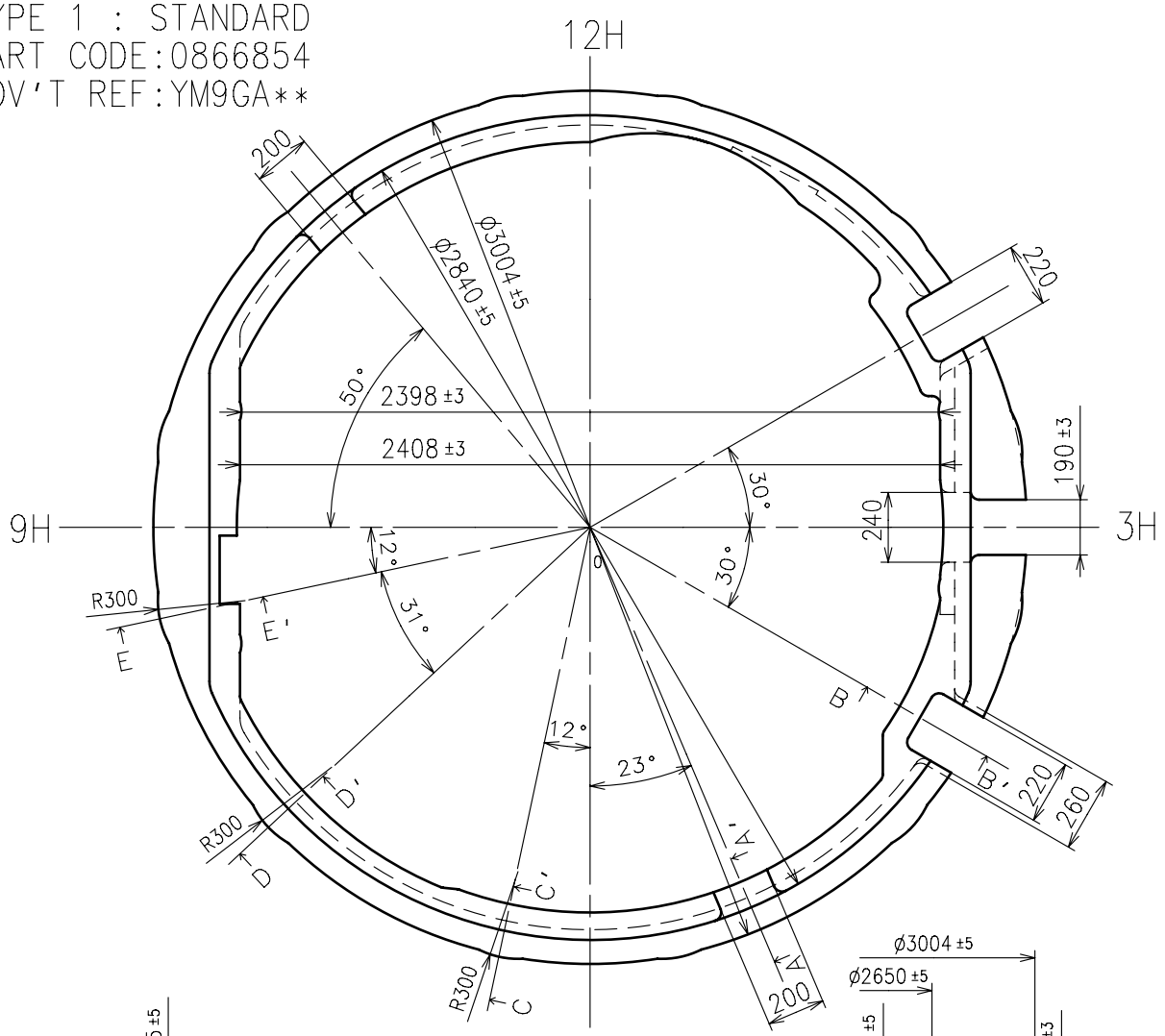


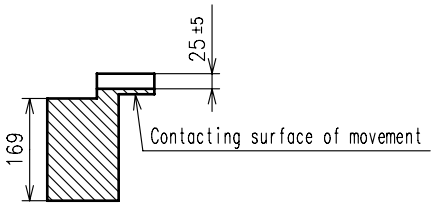


Unit : 1=1/100mm

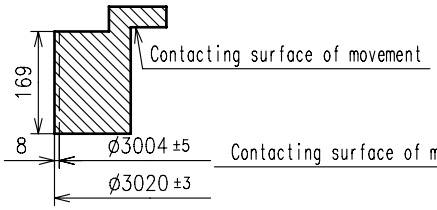
Cal. YM9GA	Casing ring	Date:17/Aug./'11
		Rev.:00

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

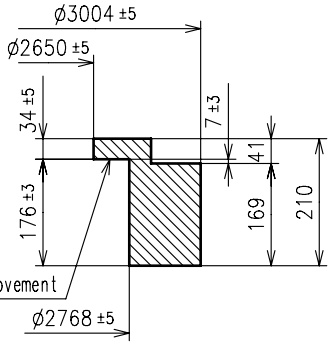




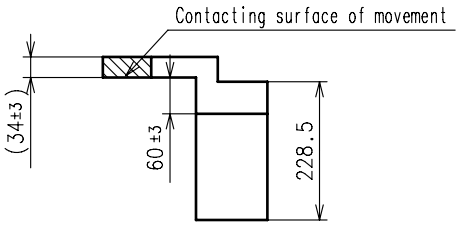
A-A' section



C-C' section



0-12H section



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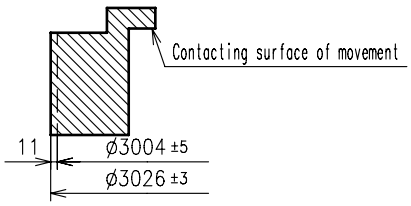
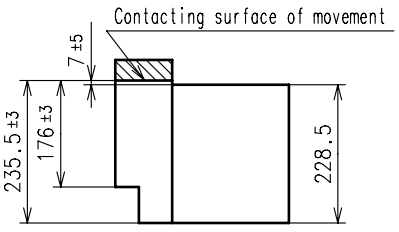
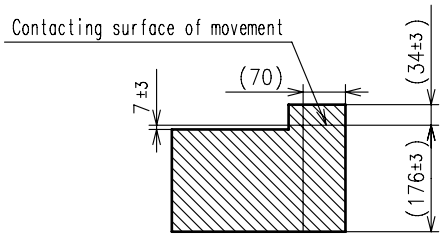


D-D' section
E-E' section



0-3H section



0-9H section

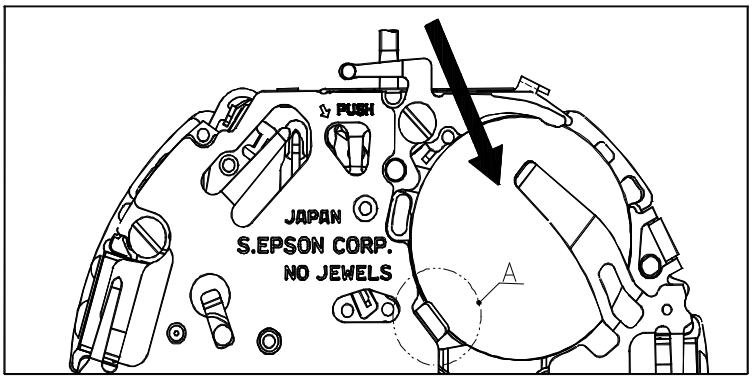
Unit : 1=1/100mm

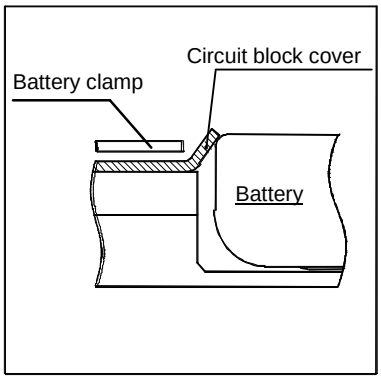
YM9G Attention for assembly

Date: 17/Aug./'11
Rev.: 00

1.How to change the battery

- Please use the exclusive battery to keep the stable performance for a long time.
- Please set the battery with the minus part toward the inside of the watch.
- When you assemble or change the battery, it is recommended to pull out two battery clamp screws first, and then take out the battery clump in order not to add the damage to the movement part.
- When you assemble the battery without taking out the battery clamp, please refer to the picture in below and set the battery from the [→] direction.
- Regarding the [A] part of the following chart, it is recommended that the battery must be under the circuit holder.
- It is not necessary to do system-reset.
- After the battery is changed, please set the current time first, and then set the 1/20 second CG hand, second CG hand, hour CG hand and minute CG hand at "0" position.



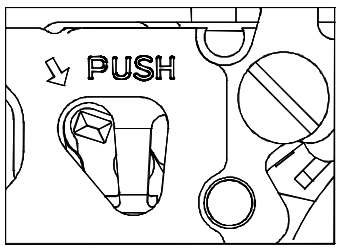


A section

2.How to pull out the stem

- Please pull out the crown at 1st click and then pull out the stem while you are pressing the hollow part of the setting lever by tweezers. If the stem is not at 1st position, it is impossible to be pulled out.

(Crown pulled out at 1st click)



3.Attention to set each hand

- Hand moves at one-second interval. Please set the each hand at correct position according to the scale of the dial in order not to make a mistake.
- Please do not turn the hour hand forcibly.

4.How to take off the hand

- When you take off the hand, please use the fork-shaped exclusive tools.
- Please do not take off the dial when any hands are assembled.

5.How to test the accuracy

- Measure the timing with Quartz Tester in 10 second's gate.

YM9G　Attention of casing part structure

Date: 17/Aug./'11
Rev.: 00

1.Minute hand

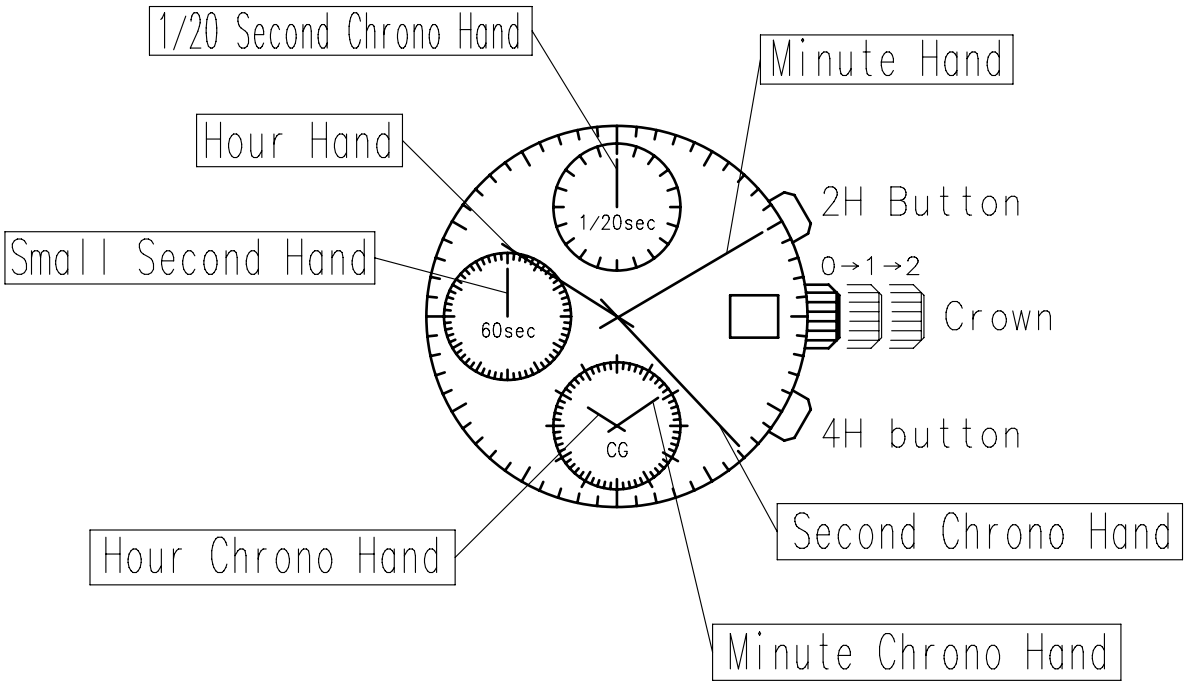
・In order not to push the minute hand too much, the second wheel have a safety stopper structure.　　However, please pay attention for the friction between hour hand and minute hand.

2.Casing ring

・Please use the exclusive casing ring to fix the movement tightly inside of the case, and to stabilize the button switching stroke.　As to the shape and tolerance, please refer to the [Casing ring] page instruction.

3.Case

・Please use the metal case to prevent movement from being mal-functioned by static electricity.



- Crown
  - 0 Click
    - Turning — Free
    - Push Buttons
      - 2H:Chronograph Start/Stop
      - 4H:Chronograph Reset Split Start/Stop
  - 1st Click
    - Turning — Turn Clockwise for Date change
    - Push Buttons
      - 2H:Chronograph Start/Stop
      - 4H:Chronograph Reset Split Start/Stop
  - 2st click — Turning — Time Adjustment

※CG Reset

Push 2H button(2sec) → 4H Button Push for 1/20 Second Chronograph Hand 0-setting

1/20 Second Chronograph Hand moves, then Time Ajustment is available

Push 2H button(2sec) ↓

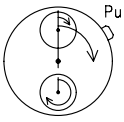
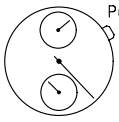
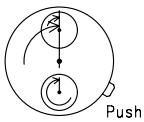
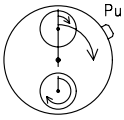
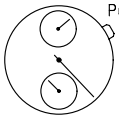
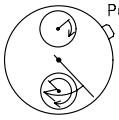
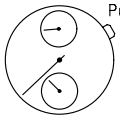
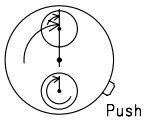
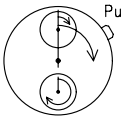
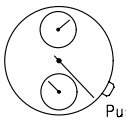
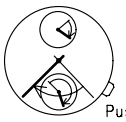
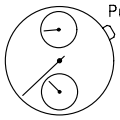
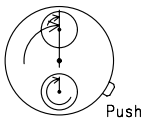
4H Button Push for Second Chronograph Hand 0-setting

Second Chronograph Hand moves, then Time Adjustment is available

Push 2H button(2sec) ↓

4H Button Push for Minute/Hour Chronograph Hand 0-setting

Minute/Hour Chronograph Hand moves, then Time adjustment is available

Chronograph Operation (Crown 0-Click)					
Total Time	START	STOP			RESET
					
Accumlated Time	START	STOP	RESTART	STOP	RESET
					
Split Time	START	SPLIT	RESPLIT	STOP	RESET
					

1/20sec chrono hand stop running after 10 minutes.
(inside mechanism continues caliculating)