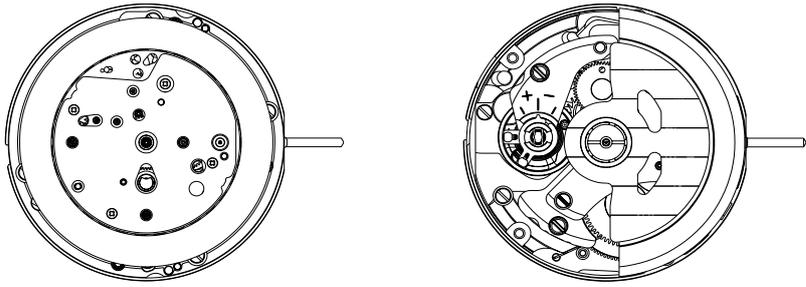


**TECHNICAL GUIDE  
&  
PARTS CATALOGUE**

**CaI.NE86A**

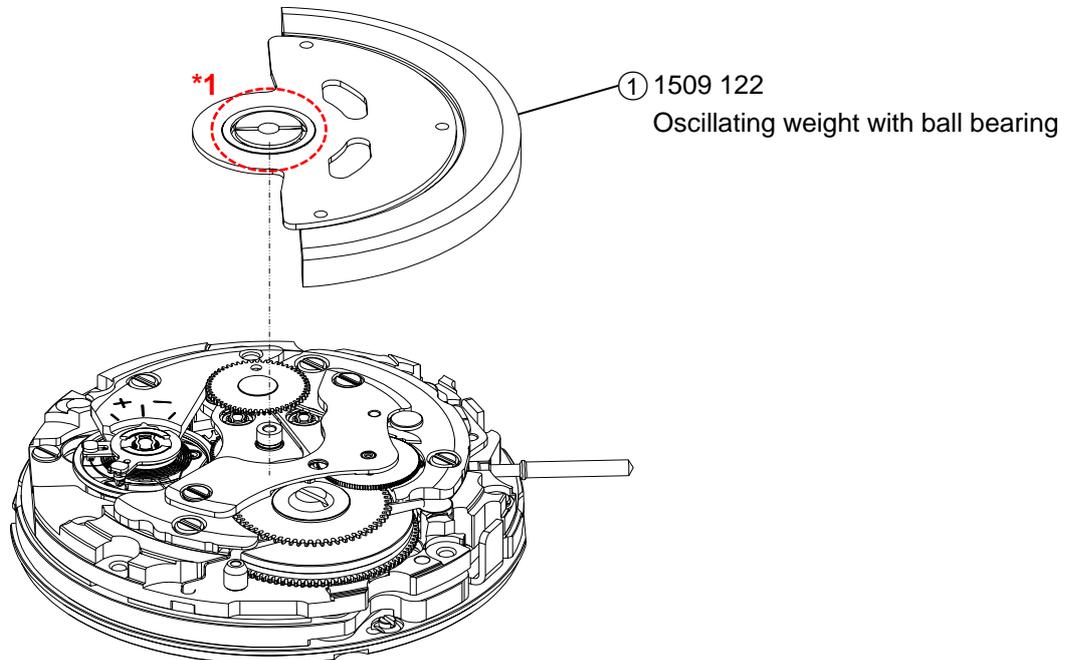
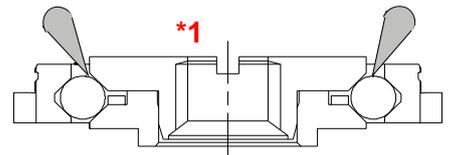
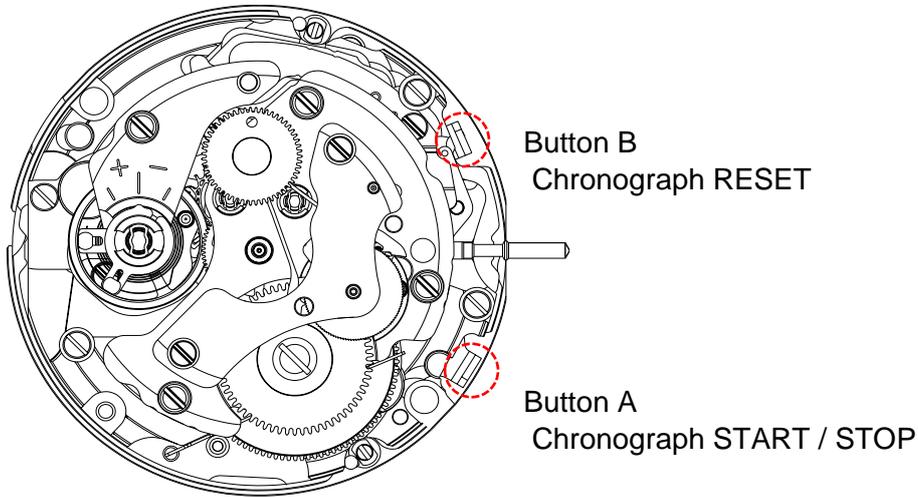
**AUTOMATIC MECHANICAL**

Cal. No.		<b>NE86A</b>	
Item			
Movement			
Movement size	Outside diameter	Φ28.60 mm	
	Casing diameter	Φ28.00 mm	
	Total height	7.62 mm	
Time indication	2 Hands ( Hour, Minute ) , Small Second hand ( 3H ) Date Calendar Chronograph 60 seconds counter ( Center ) , 30 minutes counter ( 9H )		
Basic function	Manual winding Automatic winding with ball bearing Stop-second device Quick date correction		
Frequency	28,800 vibrations per hour		
Accuracy	Static accuracy	- 15 ~ + 25 seconds per day * Measurement should be done within 10 ~ 60 minutes after fully wound up. * All measurements are made without the calendar & chronograph in function.	
	Measurement position	Direction of 3 positions. (1) Dial up (2) 9 o'clock up (3) 6 o'clock up	
	Lift angle	51 deg.	
	Measurement time	20 seconds * Equipment to be used : Witschi WATCH EXPERT	
	Posture difference	Difference is under 45 seconds within maximum value and minimum value. * Measurement should be done within 10 ~ 60 minutes after fully wound up. * Direction of 4 positions. (1) 12 o'clock up (2) 9 o'clock up (3) 6 o'clock up (4) 3 o'clock up	
Isochronisms (24h-0h)	- 10 ~ + 20 seconds per day * Direction position : Dial up * Difference of static accuracy of 24 h and 0 h		
Duration time	More than 45 hours (Mainspring after fully wound up) * Posture to confirmation : Dial up * Measurements are made without the chronograph in function.		
Winding the mainspring	<< Movement >> • Fully wound up by turning the crown minimum 55 times. • Fully wound up by turning the ratchet wheel screw 8 times. << Complete Watch >> A winding machine is needed to wind up the mainspring. *Full wind up conditions (Reference information) (1) Rotary speed : 30 rpm (2) Operating time : 60 minutes		
Jewels	34 jewels		
Crown position		Counterclockwise	Clockwise
	Normal position	Free	Manual winding
	First click	Date setting	Free
	Second click	Time setting	Time setting
Button position	Chronograph Start & Stop ( 2H ) , Chronograph Reset ( 4H )		

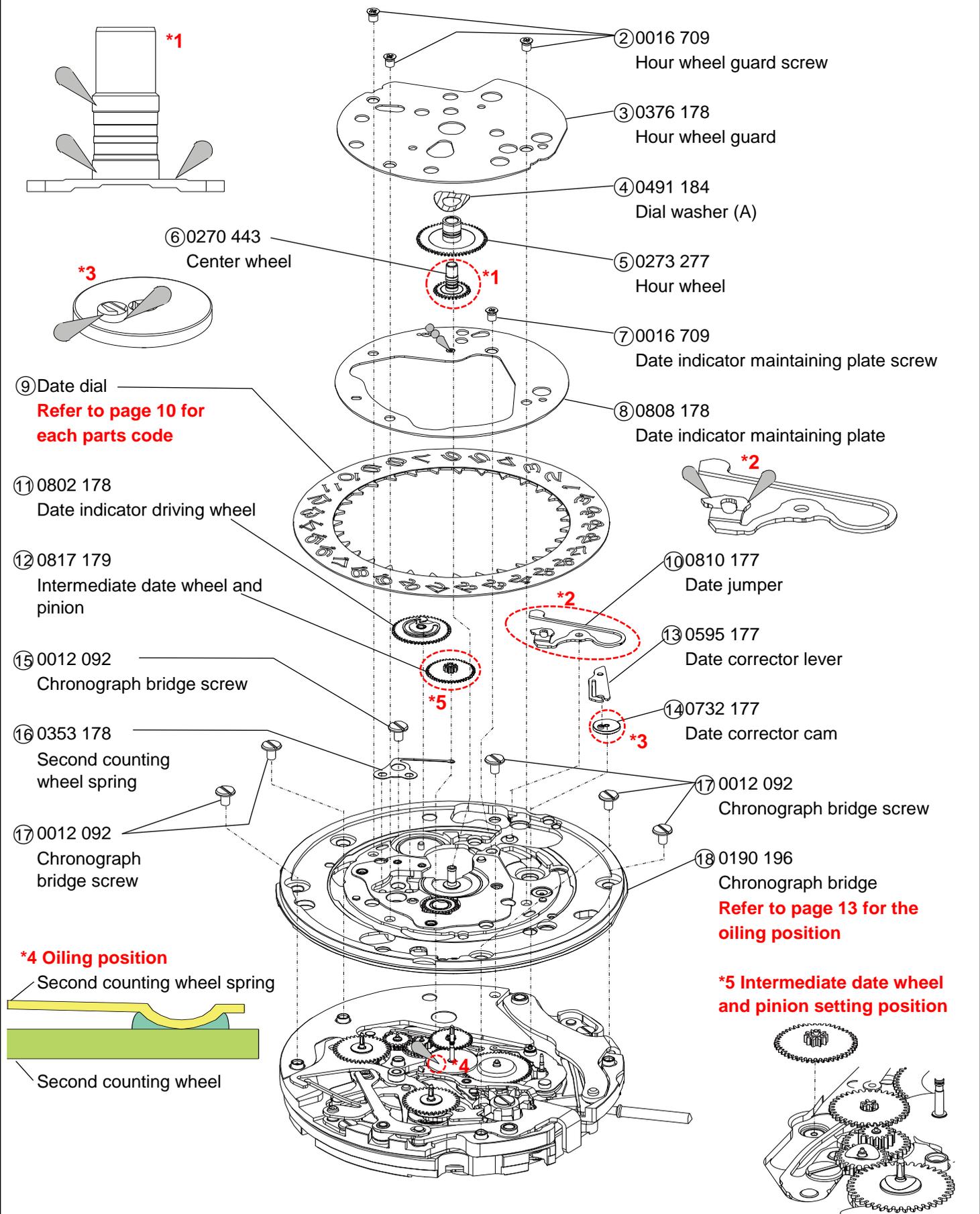
Disassembling procedures Figs. ① → ⑨③ Reassembling procedures Figs. ⑨③ → ①	<b>Type of oil</b>  Moebius 9010  A9a (S-4)	 A9a (S-6)  A8a (S-6)
	<b>Oil quantity mark</b>  Normal quantity  Sufficient quantity	

**[ NOTE ]**

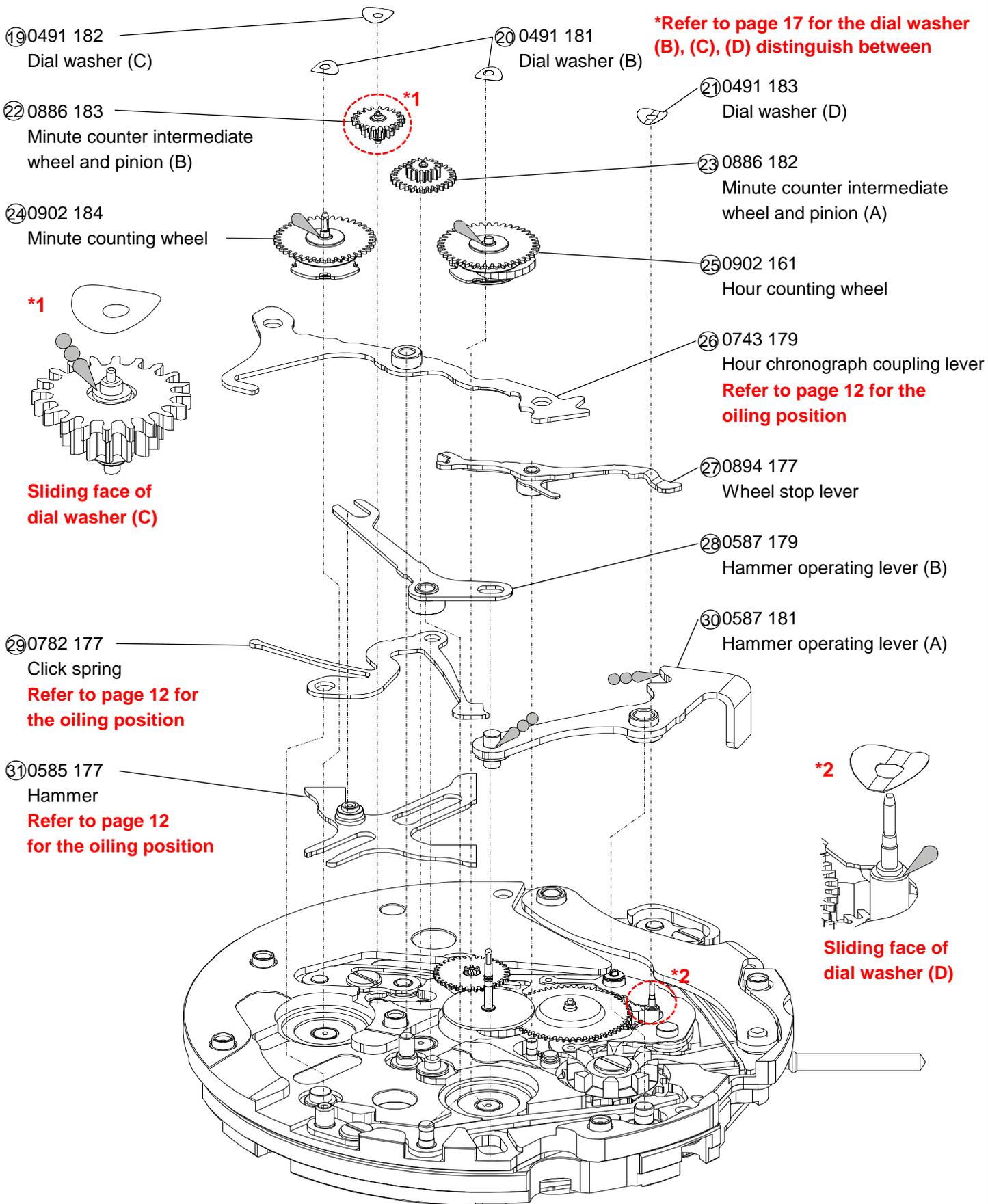
**Some parts cannot move when the chronograph is at RESET position.  
Please press button A to START the chronograph before assembly / disassembly.**

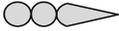


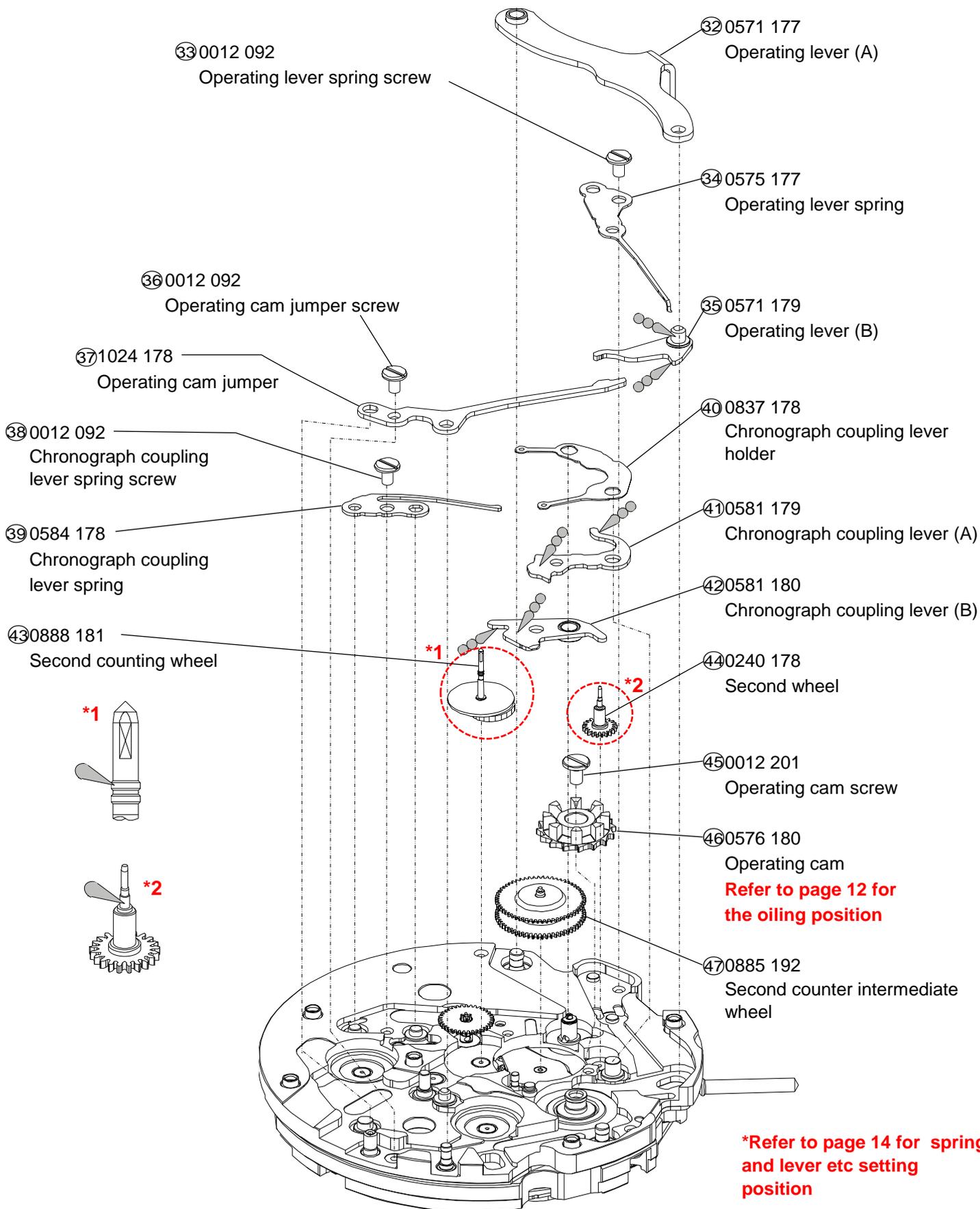
Disassembling procedures Figs. ① → ⑨③ Reassembling procedures Figs. ⑨③ → ①	<b>Type of oil</b>  Moebius 9010  A9a (S-4)	 A9a (S-6)  A8a (S-6)
	<b>Oil quantity mark</b>  Normal quantity  Sufficient quantity	



Disassembling procedures Figs. ① → ⑨③ Reassembling procedures Figs. ⑨③ → ①	<b>Type of oil</b>  Moebius 9010  A9a (S-4)	 A9a (S-6)  A8a (S-6)
	<b>Oil quantity mark</b>  Normal quantity	 Sufficient quantity



Disassembling procedures Figs. ① → ⑨③ Reassembling procedures Figs. ⑨③ → ①	<b>Type of oil</b>  Moebius 9010  A9a (S-4)	 A9a (S-6)  A8a (S-6)
	<b>Oil quantity mark</b>  Normal quantity	 Sufficient quantity



Disassembling procedures Figs.

① → ⑨③

Reassembling procedures Figs.

⑨③ → ①

**Type of oil**

Moebius 9010

A9a (S-4)

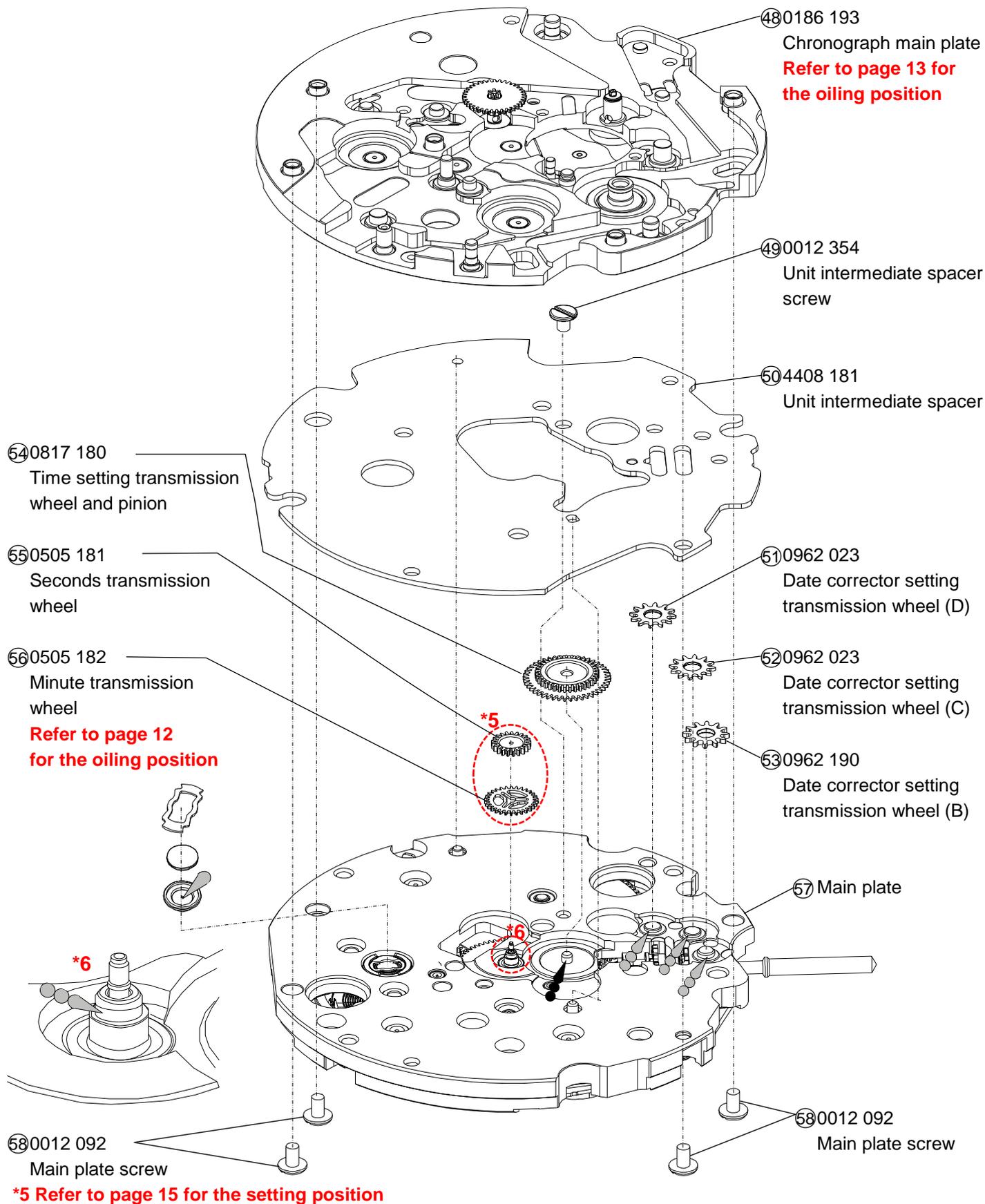
A9a (S-6)

A8a (S-6)

**Oil quantity mark**

Normal quantity

Sufficient quantity



**58**0012 092

Main plate screw

**\*5 Refer to page 15 for the setting position**

Disassembling procedures Figs.

① → 93

Reassembling procedures Figs.

93 → ①

**Type of oil**

 Moebius 9010

 A9a (S-4)

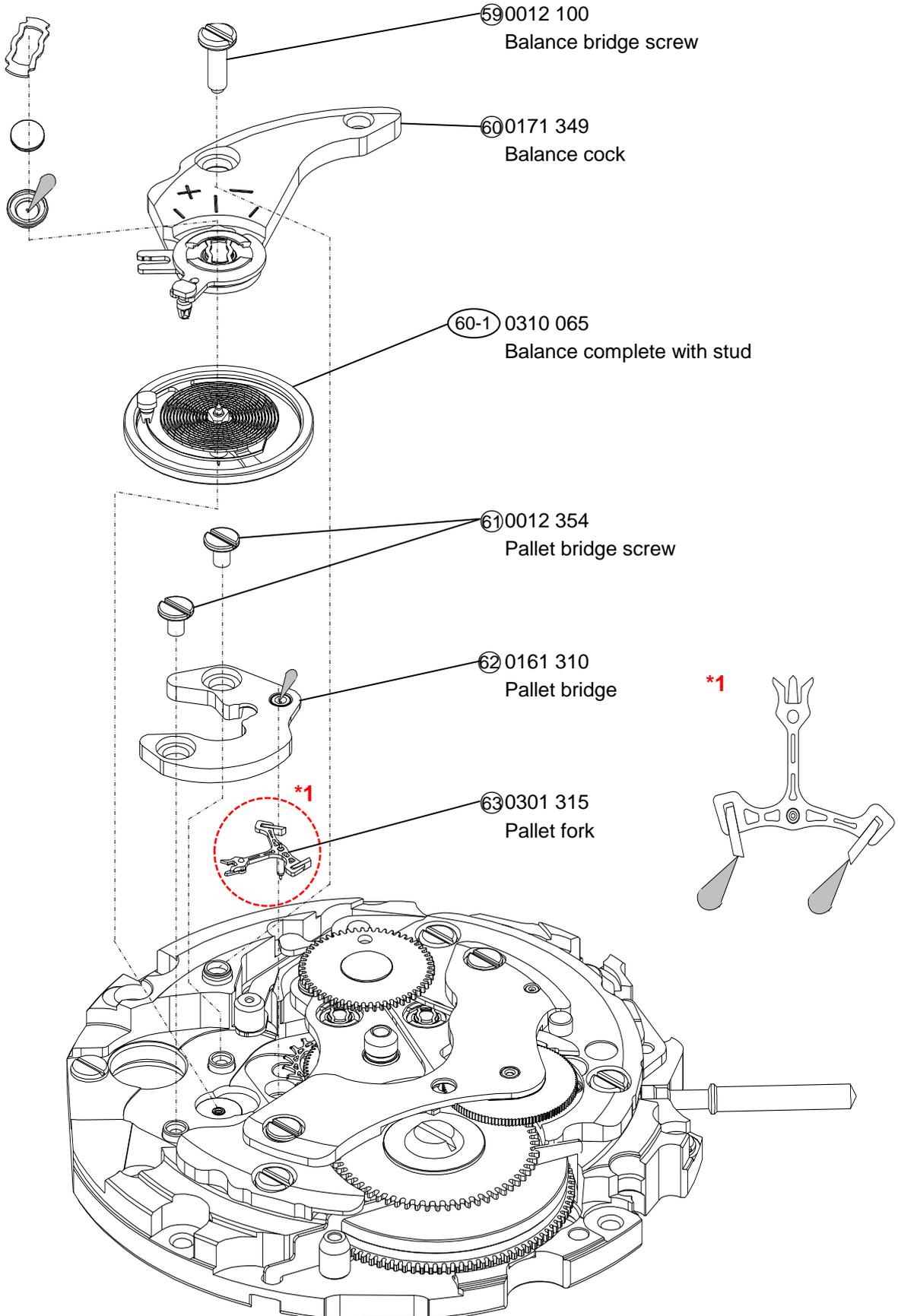
 A9a (S-6)

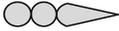
 A8a (S-6)

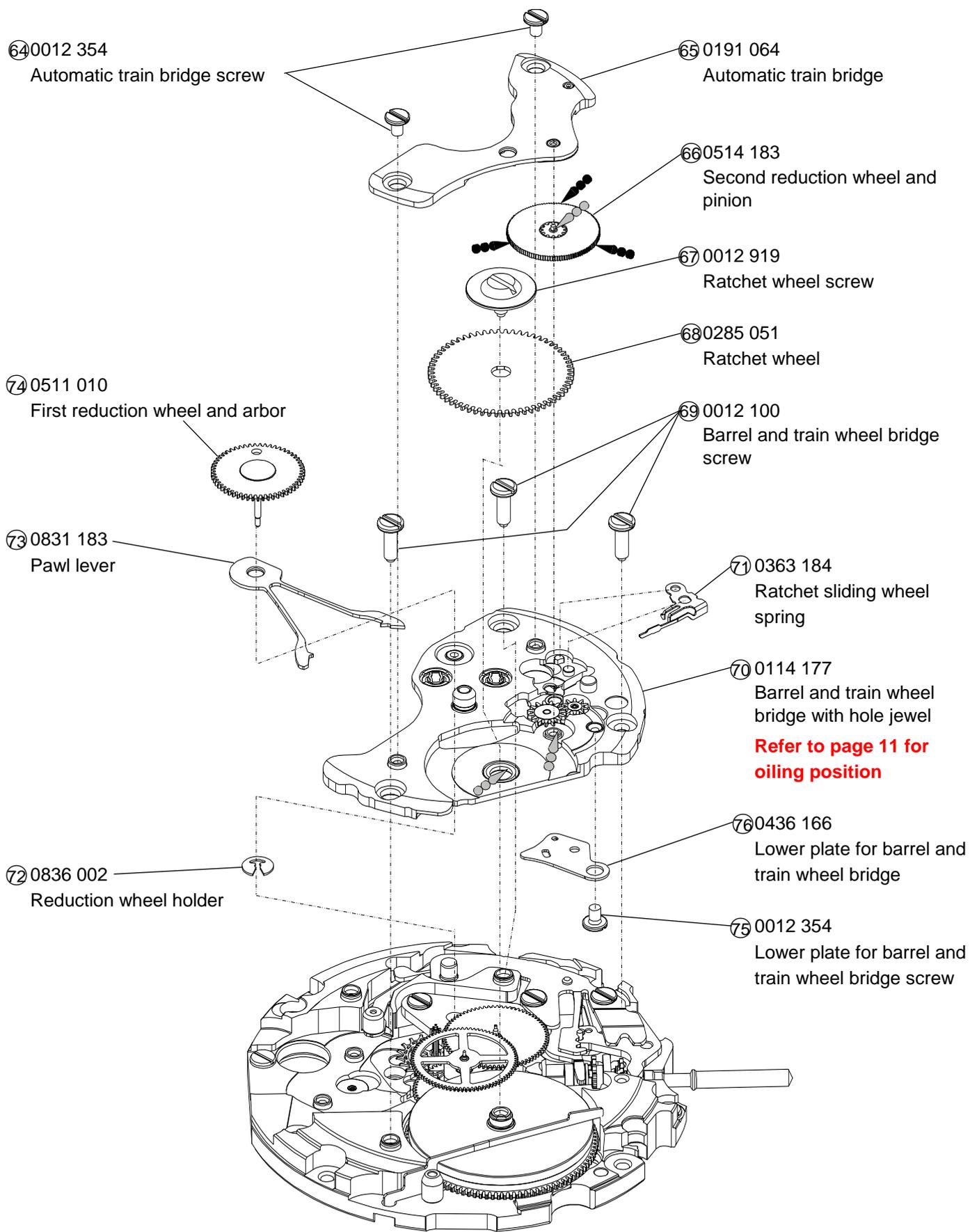
**Oil quantity mark**

 Normal quantity

 Sufficient quantity



Disassembling procedures Figs. ① → ⑨③ Reassembling procedures Figs. ⑨③ → ①	<b>Type of oil</b>  Moebius 9010  A9a (S-4)	 A9a (S-6)  A8a (S-6)
	<b>Oil quantity mark</b>  Normal quantity	 Sufficient quantity



Disassembling procedures Figs.

① → ⑨③

Reassembling procedures Figs.

⑨③ → ①

**Type of oil**

 Moebius 9010

 A9a (S-4)

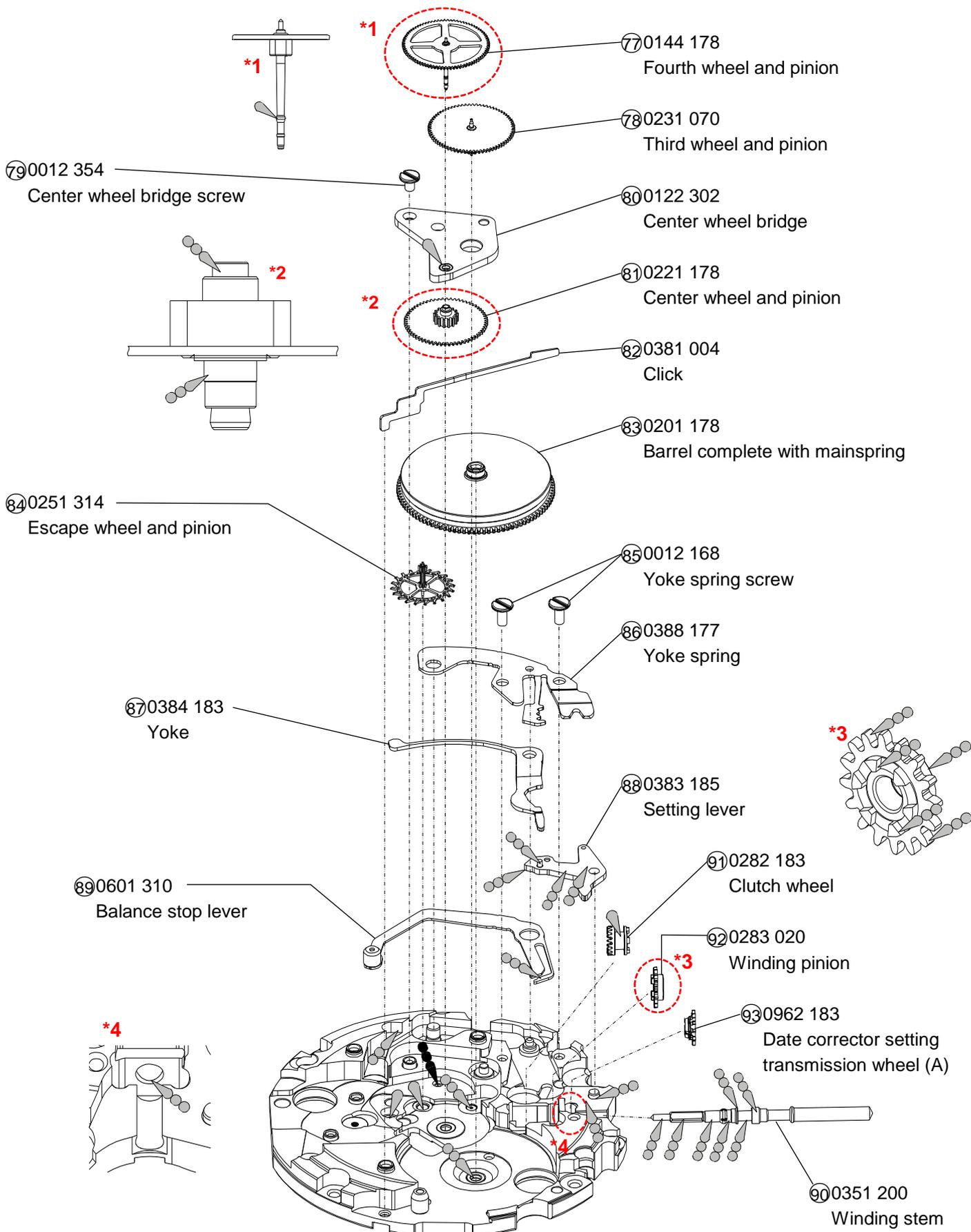
 A9a (S-6)

 A8a (S-6)

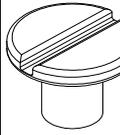
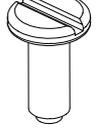
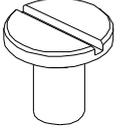
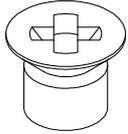
**Oil quantity mark**

 Normal quantity

 Sufficient quantity



● List of screw

Parts code	Parts name	Parts code	Parts name	Parts code	Parts name
<b>0012 092</b> 	①⑤ Second counting wheel spring screw	<b>0012 354</b> 	④⑨ Unit intermediate spacer screw	<b>0012 100</b> 	⑤⑨ Balance bridge screw
	①⑦ Chronograph bridge screw (x5)		⑥① Pallet bridge screw (x2)		⑥⑨ Barrel and train wheel bridge screw (x3)
	③③ Operation lever spring screw		⑥④ Automatic train bridge screw (x2)	<b>0012 168</b> 	⑧⑤ Yoke spring screw (x2)
	③⑥ Operation cam jumper screw		⑦⑤ Lower plate for barrel and train wheel bridge screw		
	③⑧ Chronograph coupling lever spring screw		⑦⑨ Center wheel bridge screw		
	⑤⑧ Main plate screw (x4)	<b>0012 201</b> 	④⑤ Operating cam screw	<b>0016 709</b> 	② Hour wheel guard screw (x3)
<b>0012 919</b> 	⑥⑦ Ratchet wheel screw			⑦ Date indicator maintaining plate screw	

⑨ Date dial

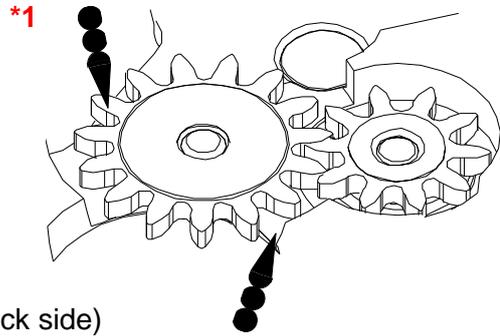
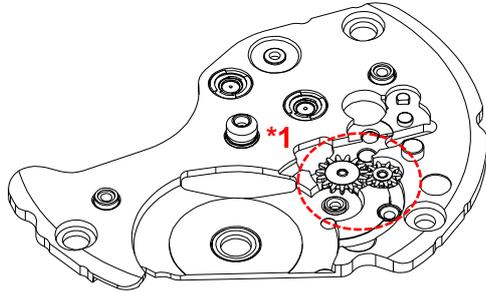
Parts code	Position of crown	Position of date frame	Color of numbers	Color of background
0878 109	3H	3H	Black	Silver (Plain metal)
0878 108	3H	3H	White	Black

**\*All parts code are subject to change without notice.**

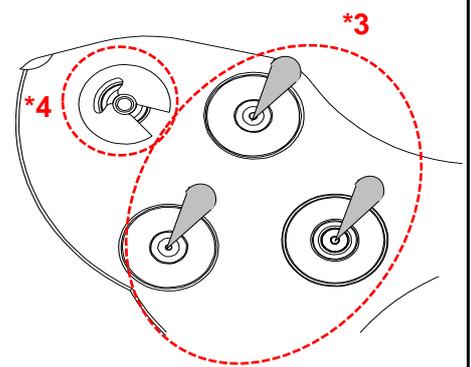
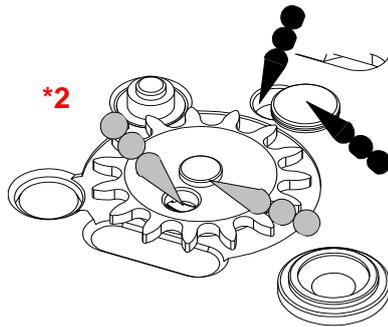
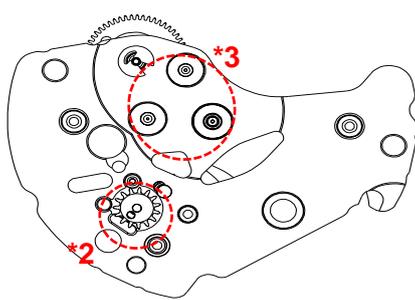
Type of oil			
	Moebius 9010		A9a (S-6)
	A9a (S-4)		A8a (S-6)
Oil quantity mark			
	Normal quantity		Sufficient quantity

1. Oiling spot

(1) ⑦⑩ Barrel and train wheel bridge with hole jewel frame

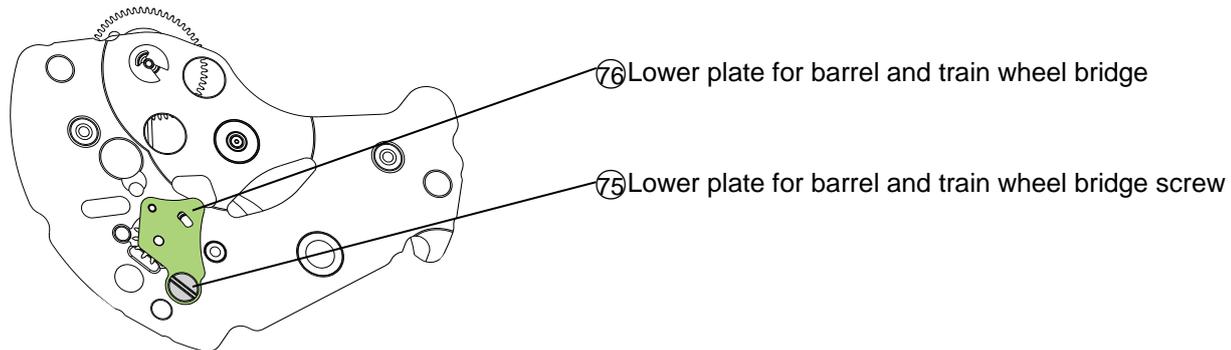


Barrel and train wheel bridge with hole jewel frame (back side)

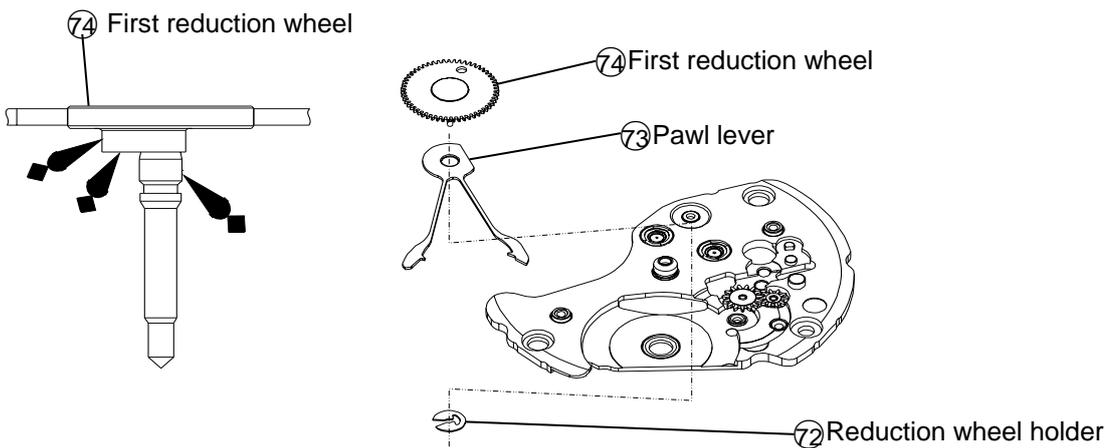


**Note**

\*2 After oiling, set lower plate for barrel and train wheel bridge & screw.



\*4 After oiling, set first reduction wheel & pawl lever & reduction wheel holder.



**Note**

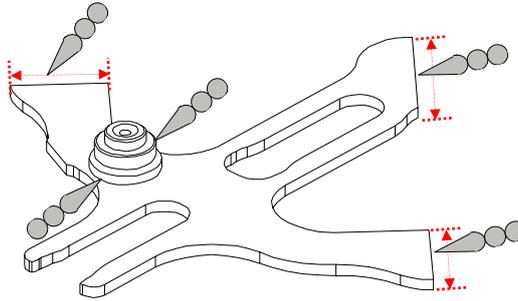
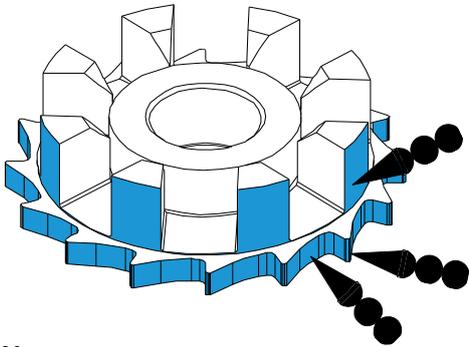
\*Refer to the page 16 for disassembling and reassembling.

Type of oil	
 Moebius 9010	 A9a (S-6)
 A9a (S-4)	 A8a (S-6)
Oil quantity mark	
 Normal quantity	 Sufficient quantity

1.Oiling spot

(2) ④⑥ Operating cam

(3) ③① Hammer



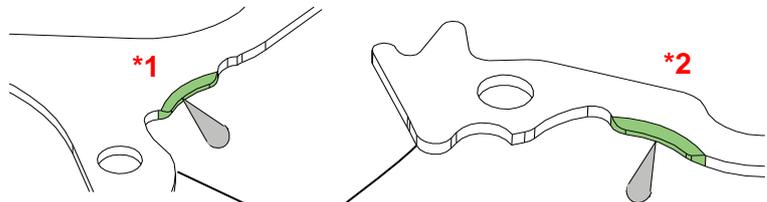
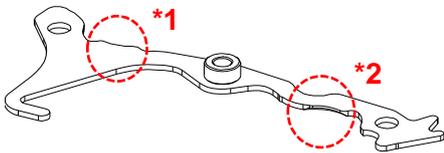
**Note**

**Do oiling on all teeth**

**Note**

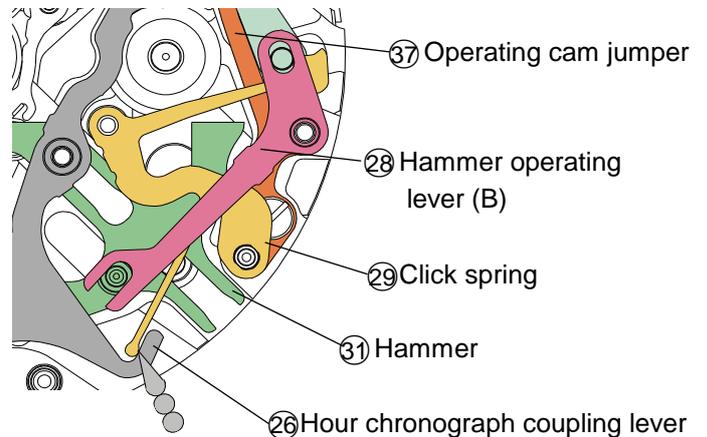
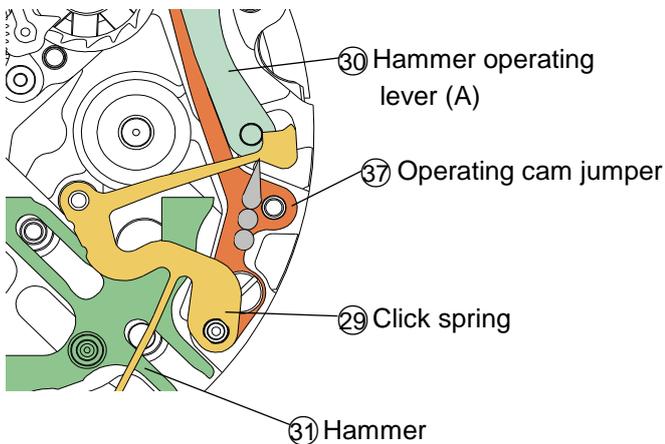
**There must be oil within the range of the arrow.**

(4) ②⑥ Hour chronograph coupling lever



**Back side**

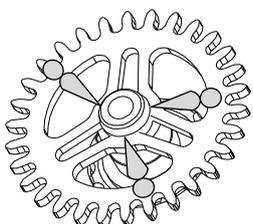
(5) ②⑨ Click spring



**Note**

**There must be oil within the range of the arrow.**

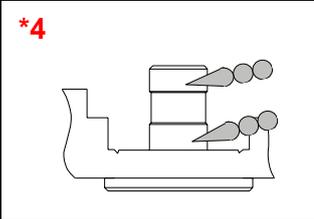
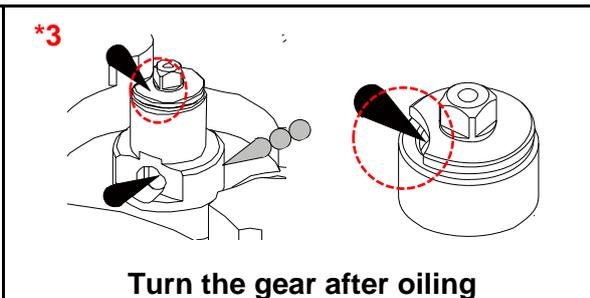
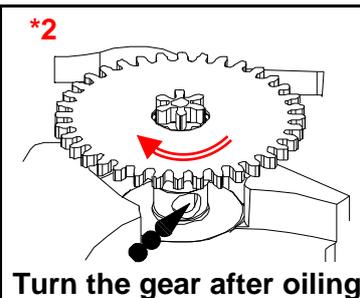
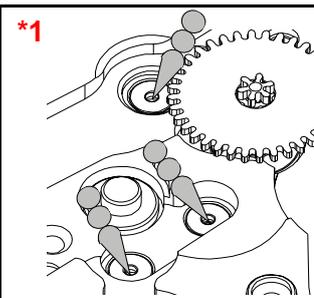
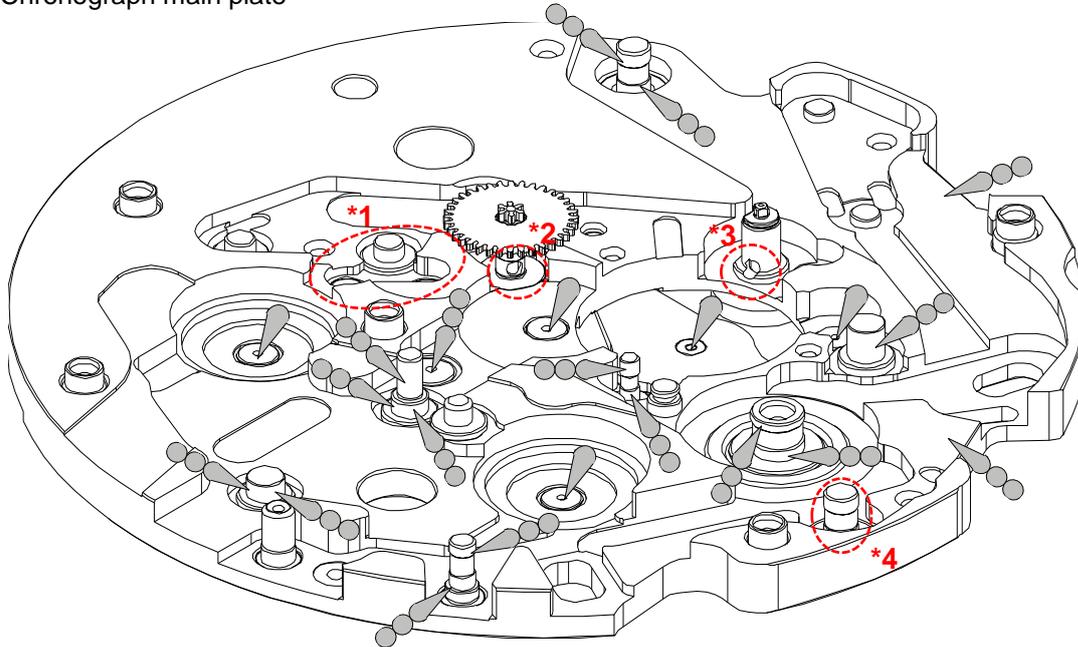
(6) ⑤⑥ Minute transmission wheel



<b>Type of oil</b>			
	Moebius 9010		A9a (S-6)
	A9a (S-4)		A8a (S-6)
<b>Oil quantity mark</b>			
	Normal quantity		Sufficient quantity

1.Oiling spot

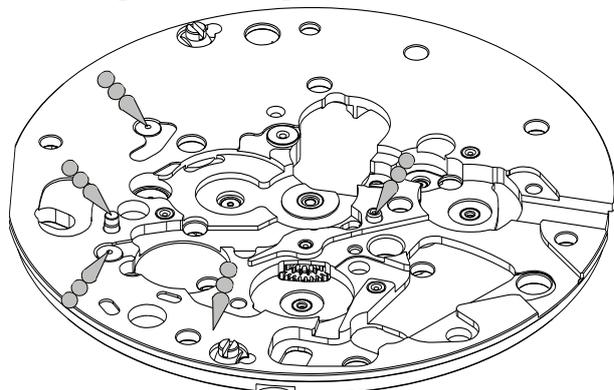
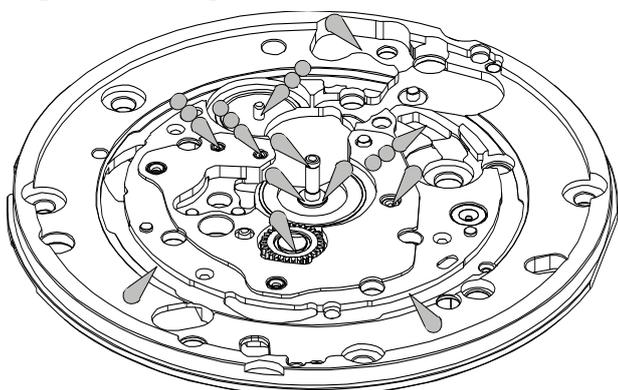
(7) ④ Chronograph main plate



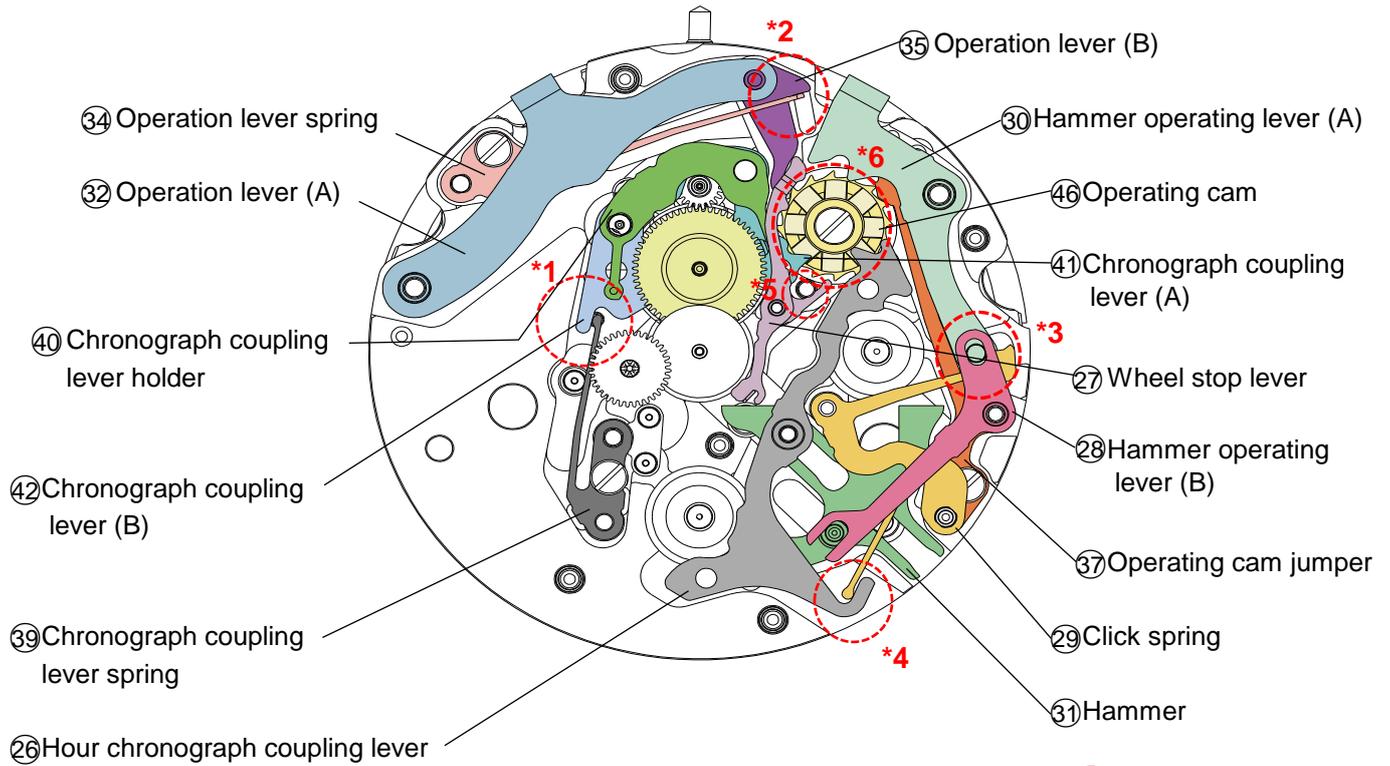
**Note**  
There must be oil within the range of the arrow.

(8) ⑱ Chronograph bridge  
[ Front side ]

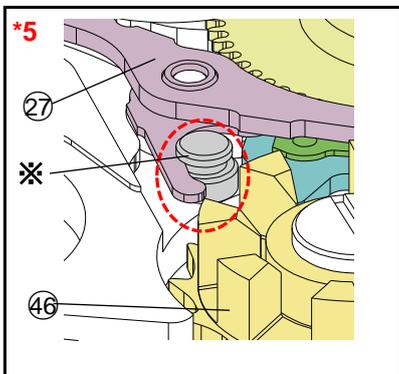
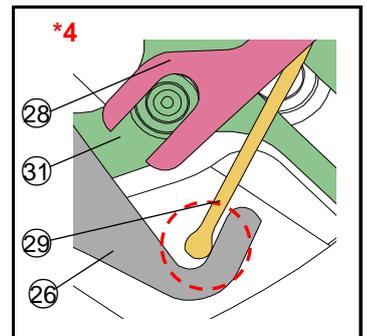
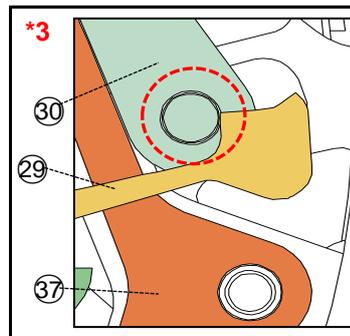
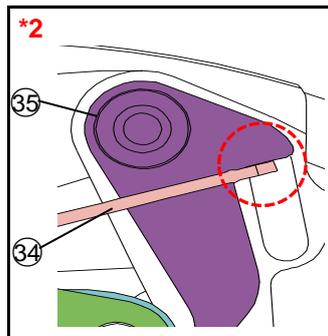
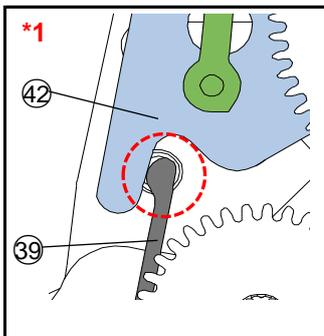
[ Back side ]



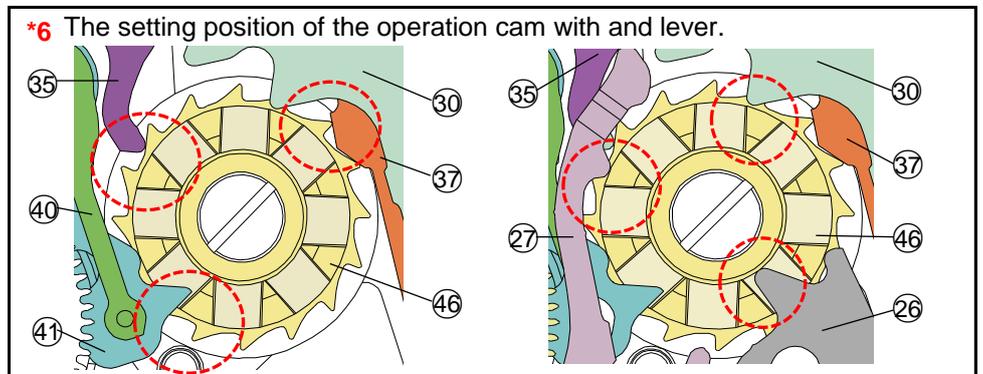
## 2.The setting position of the spring and lever etc.



Setting position



※ 48 Chronograph main plate



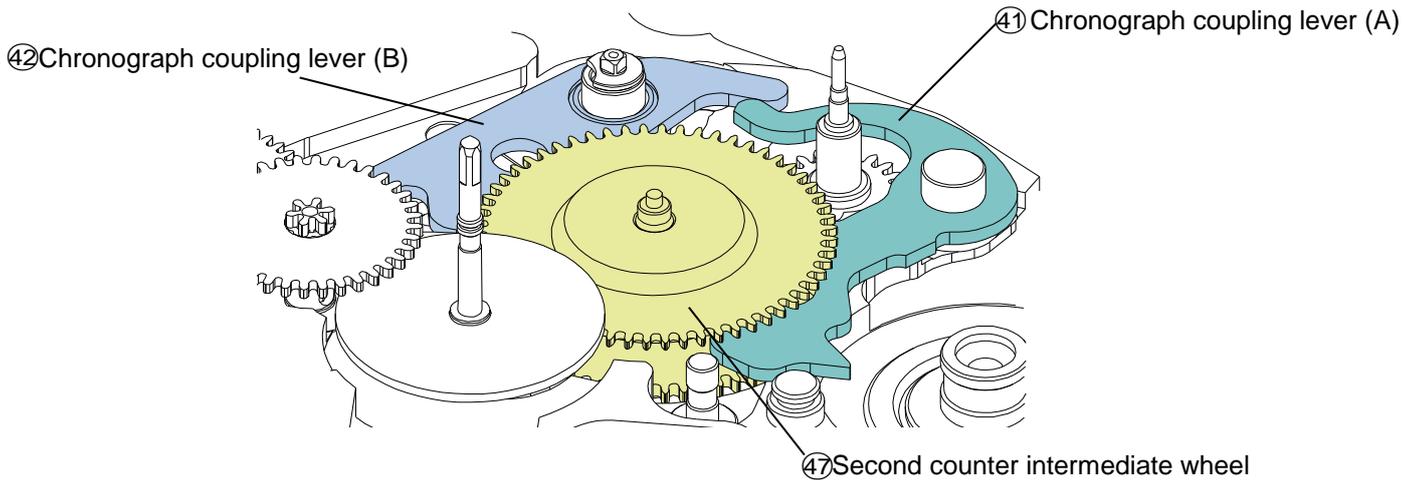
\*6 The setting position of the operation cam with and lever.

### Note

If it is not possible to operate the button after assembling the movement, please recheck the spring position.

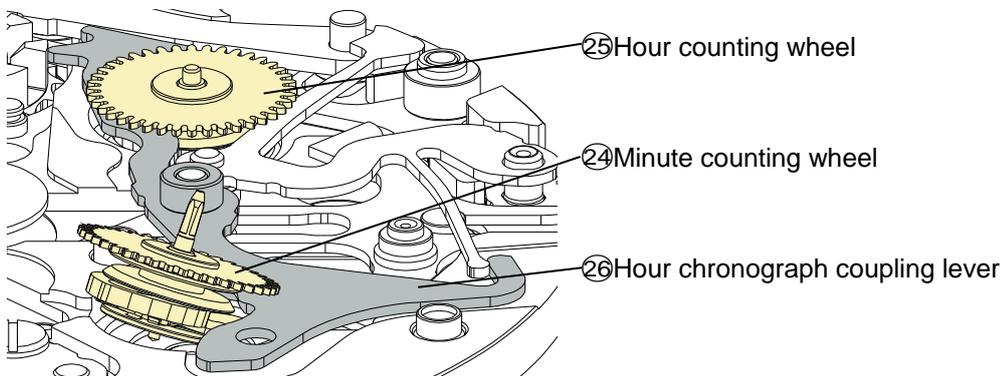
### 3. Chronograph coupling (A) and (B) setting position

Set chronograph coupling lever (A) and chronograph coupling lever (B) between the gears of second counter intermediate wheel.



### 4. Hour chronograph coupling lever setting position

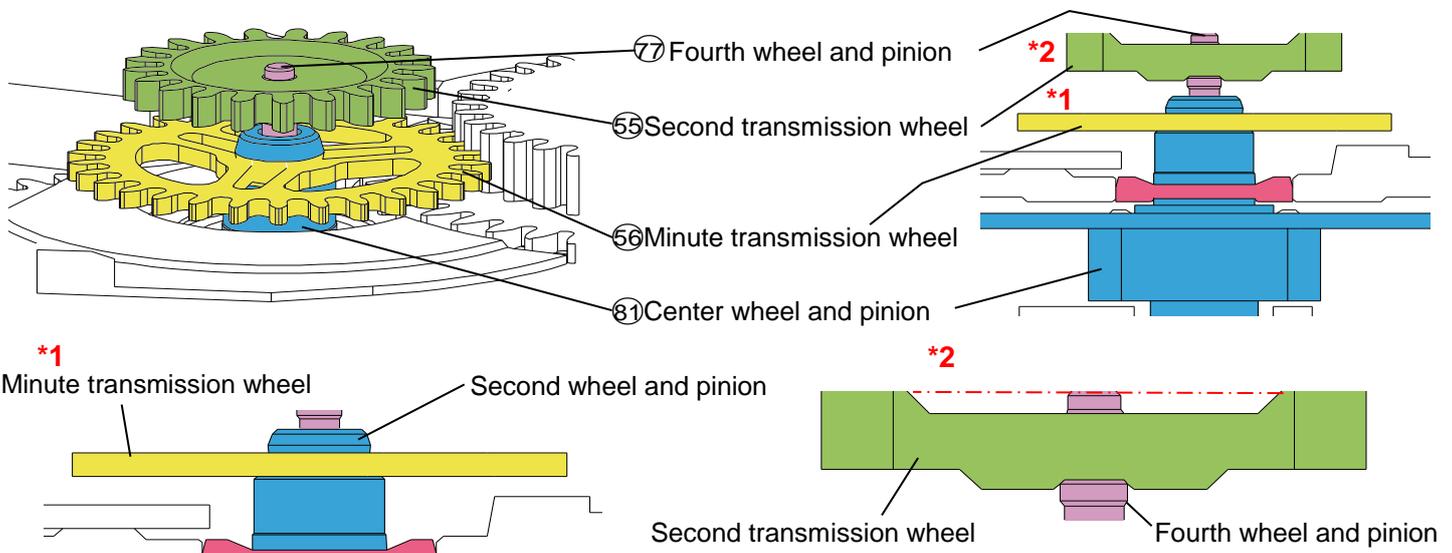
Hour and minute counting wheel need to be inclined when setting.



### 5. Second transmission wheel and minute transmission wheel setting position

· Second transmission wheel and minute transmission wheel should be set parallel to main plate.

· **After detaching, it is prohibited to reuse them.**



· Make sure to parallel with the main plate.  
· But even if it is inclining a little, there is no problem if there are no other parts interfering together.

· The second transmission wheel top surface should be set parallel with the fourth wheel and pinion tip.  
· But even if it is inclining a little, there is no problem if there are no other parts interfering together.

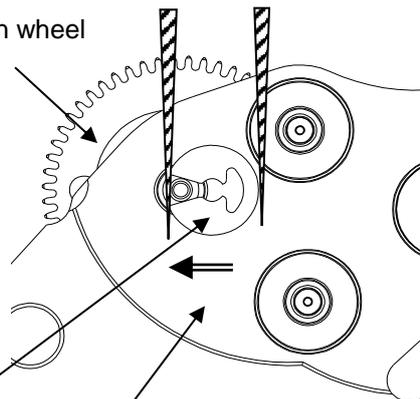
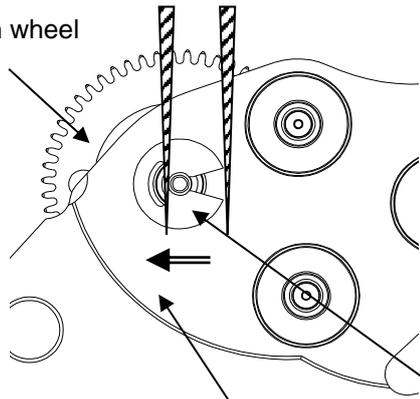
## 6. Disassembling / assembling of the first reduction wheel

<< Disassembling >>

<< Assembling >>

74 First reduction wheel

74 First reduction wheel



72 Reduction wheel holder

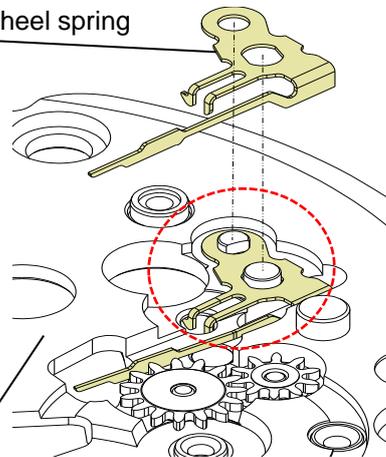
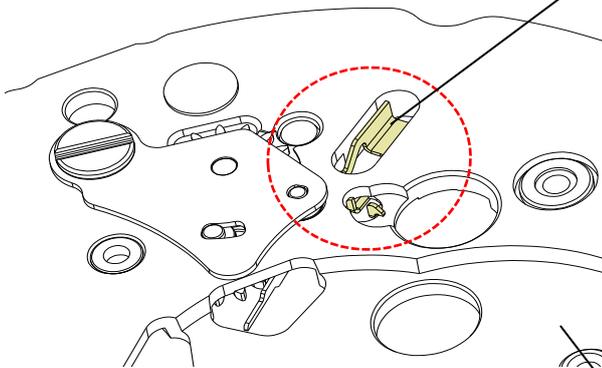
70 Barrel and train wheel bridge with hole jewel frame (back side)

## 7. Disassembling / assembling of the ratchet sliding wheel spring.

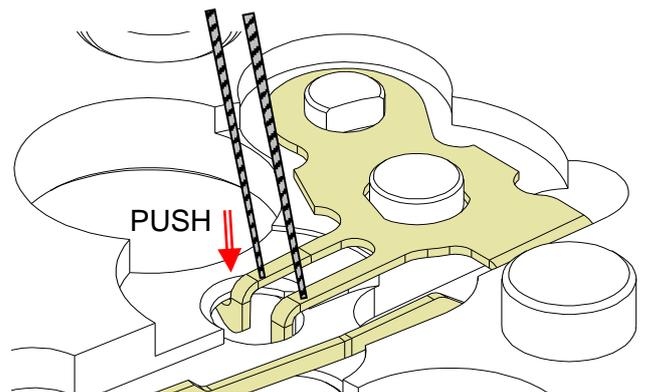
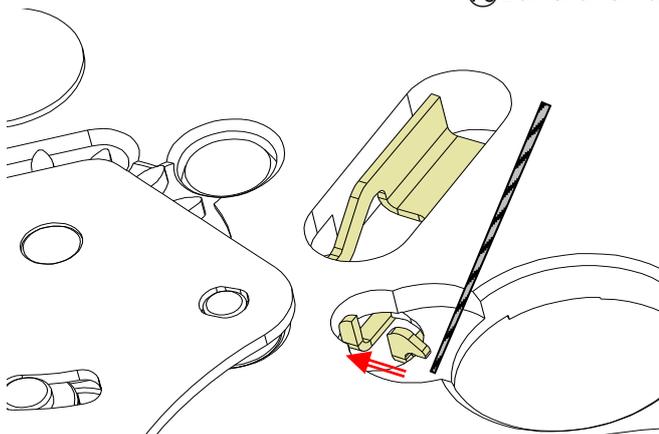
<< Disassembling >>

<< Assembling >>

71 Ratchet sliding wheel spring



70 Barrel and train wheel bridge with hole jewel frame



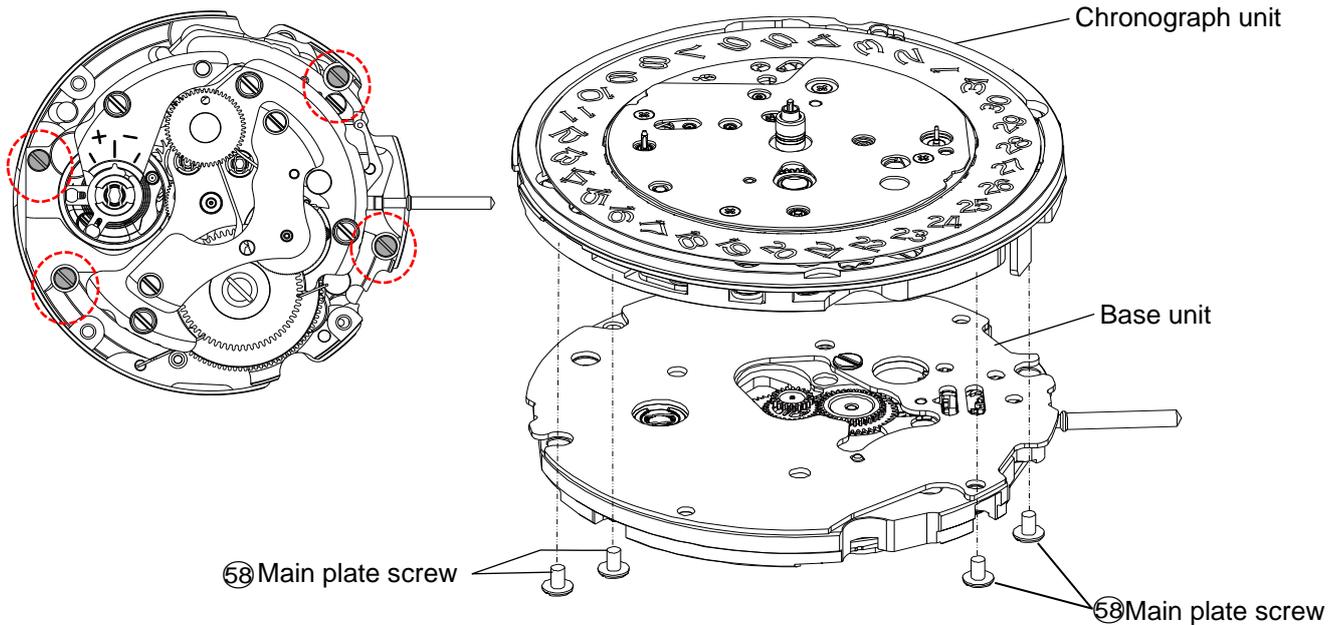
Remove the hook of the ratchet sliding wheel spring from barrel and train wheel bridge with hole jewel frame.

The hooks of ratchet sliding wheel spring are hung up on barrel and train wheel bridge with hole jewel frame.

## 8. Chronograph unit and Base Unit ( Disassembling and Reassembling )

Detachment of the chronograph unit and base unit by taking off the screws (4pcs.)

Attachment of the chronograph unit with the base unit.



### Note

When attaching chronograph unit on base unit, set the push button A in START position, in order to ensure that the following wheels mesh perfectly with one another.

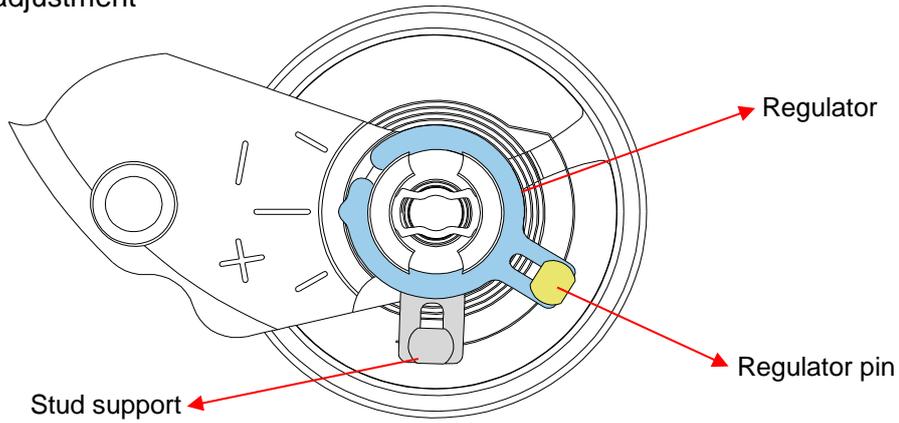
Crown position	Base unit	Chronograph unit	Check point
First position	51 Date corrector setting transmission wheel (D)	Date corrector setting transmission wheel (E)	Date display with quick correction
Second position	56 Minute transmission wheel	Minute wheel pinion (A)	Hand setting
	55 Seconds transmission wheel	Seconds counter intermediate wheel	Driving

**Before attaching the chronograph unit, check that base unit operates correctly.**

## 9. Method to distinguish between dial washers

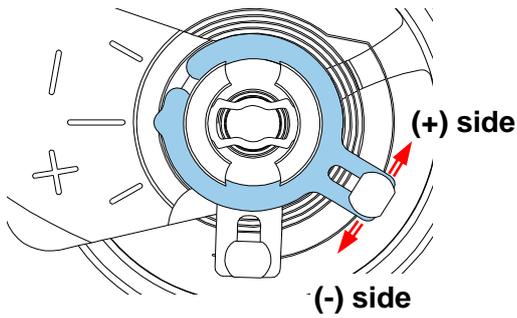
Parts name	Parts code	Set position	Note
20 Dial washer (B) ( X2 )	0491 181	 Minute counting wheel Hour counting wheel	<ul style="list-style-type: none"> <li>· Color of Brass</li> <li>· Handling caution</li> </ul>
19 Dial washer (C)	0491 182	 Minute counter intermediate wheel and pinion (B)	· Color of Silver
21 Dial washer (D)	0491 183	 Second wheel	· Color of Brass

## 10. Accuracy adjustment

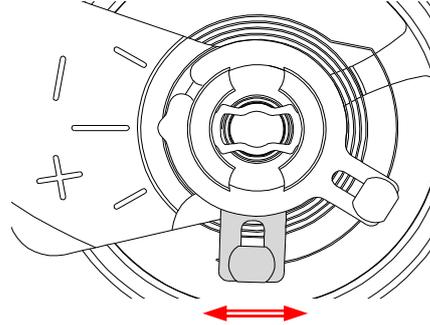


**Note:**

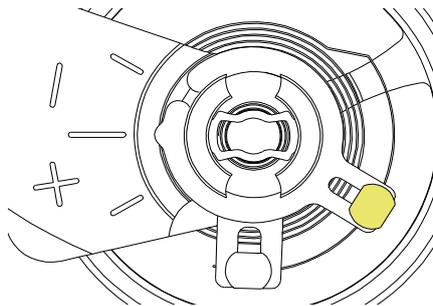
•Regulator (Time adjustment)



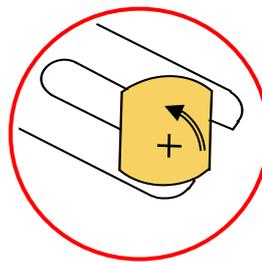
•Stud support (Beat error adjustment)



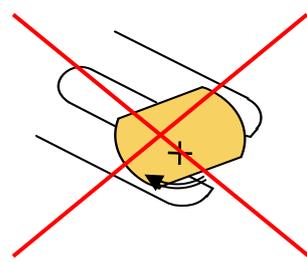
•Regulator pin (Gap adjustment of balance spring and regulator pin)



Anticlockwise rotation



No clockwise rotation



## 11. Setting position of oscillating weight

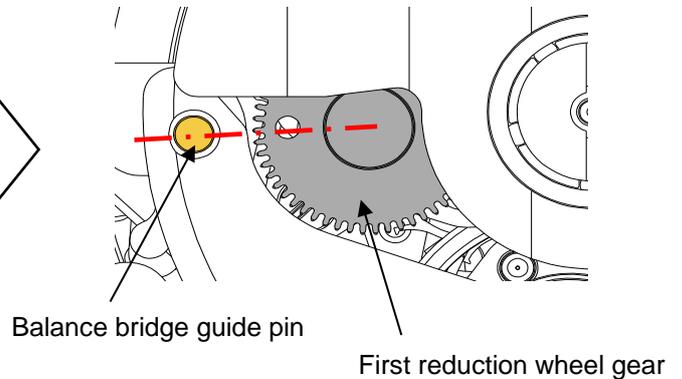
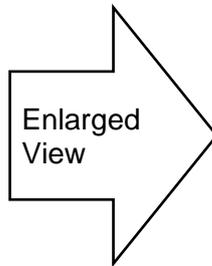
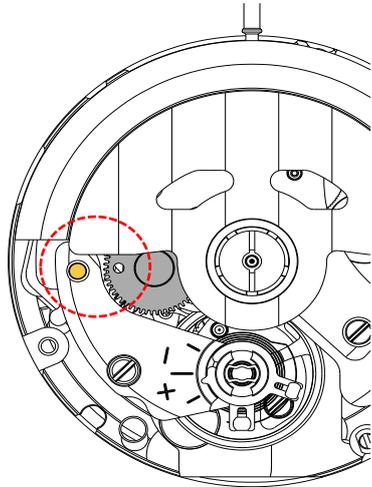
· Before assembling oscillating weight.

Match the center of oscillating weight and winding stem.

Set the hole of first reduction wheel gear on the imaginary line toward balance bridge guide pin.

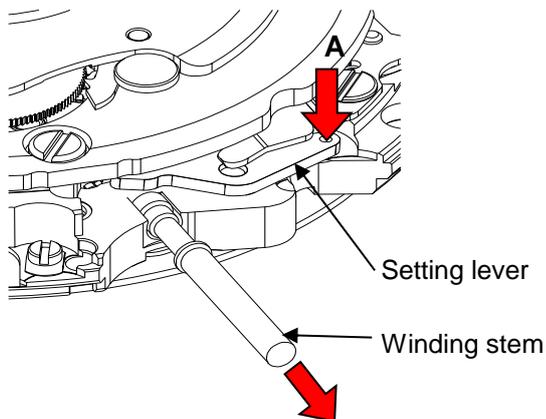
### Note

This procedure is necessary to maximize the performance of automatic winding.



## 12. To remove winding stem

- 1) Set winding stem to normal position.
- 2) Pull out winding stem while pushing "A".

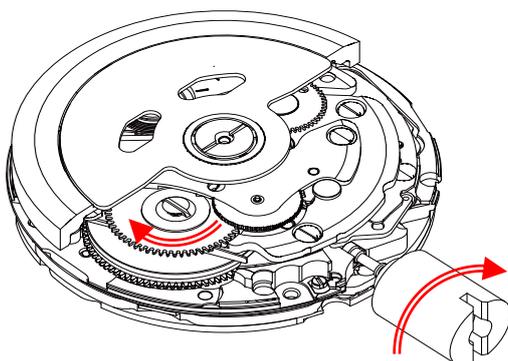


## 13. To wind up the mainspring

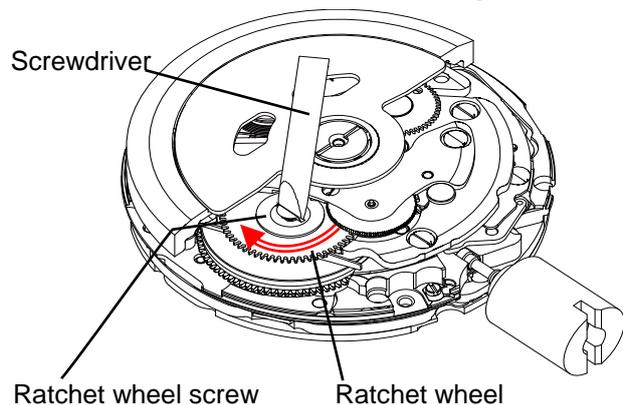
<<Movement>>

- Manual winding (Fully wound up by turning the crown minimum 55 times)
- Screwdriver winding (Fully wound up by turning the ratchet wheel screw 8 times)

[ Manual winding ]



[ Screwdriver winding ]

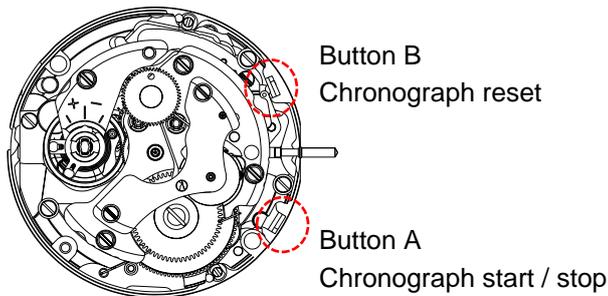
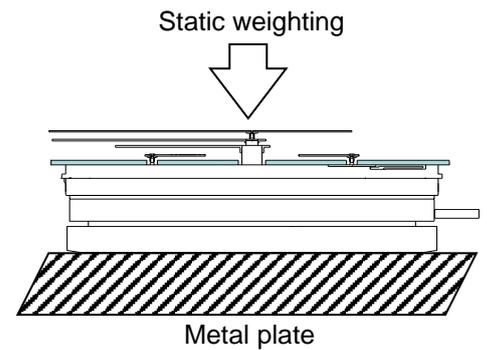


#### 14.How to install hands

Place the movement directly on a flat metal plate or something similar to install the hands.  
We recommend the use of movement holder to install hands.  
For hands attachment, please use a special equipment.  
When the movement receives a strong shock, it may be damaged.

**Note: Second / minute / Hour chronograph hands setting**

- (1) Push button A ( chronograph start )
- (2) Push button A ( chronograph stop )
- (3) Push button B ( chronograph reset )
- (4) After (1)~(3), install the second and hour hands at "12" o'clock, minute hand at "30"minute position.



**\*Do not reuse the chronograph hands once detached. Please change and use new hands.**

**Note**

During time setting, if the chronograph is started, chronograph minute hands will rotate simultaneously.  
This is not a malfunction. Please reset chronograph by pushing button B.  
Chronograph hour and minute hands will return to their reset positions.

#### 15.Accuracy measurement condition

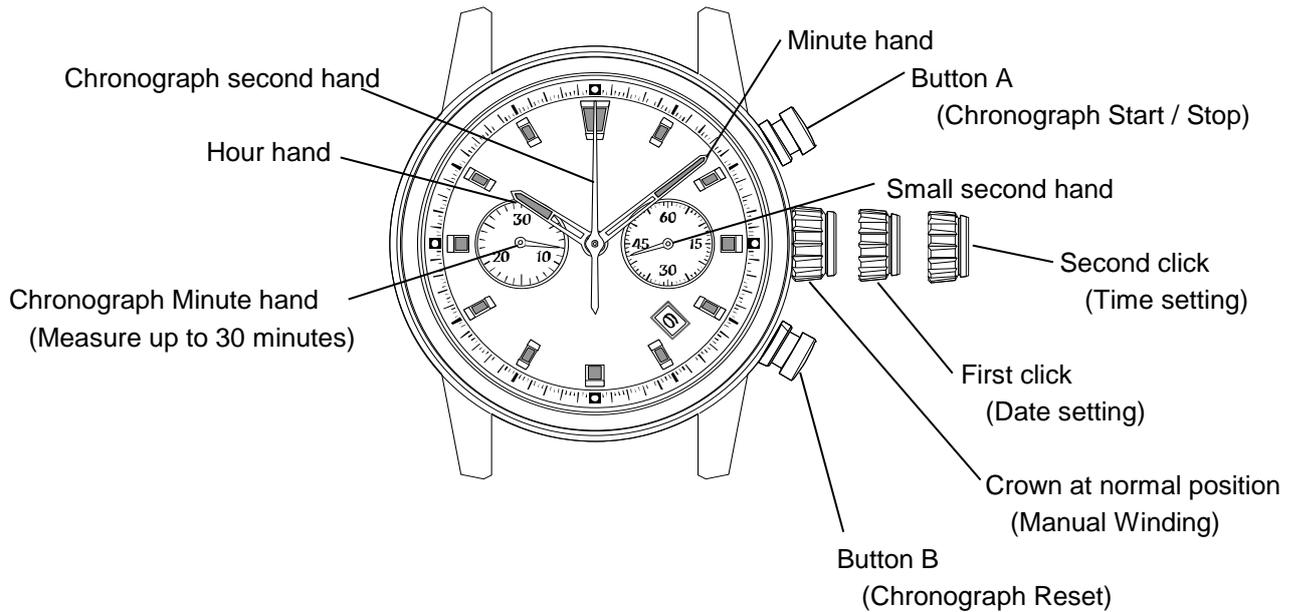
Static accuracy : - 15 ~ + 25 second per day

Measurement conditions

- (1) Measurement should be done within 10 ~ 60 minutes after fully wound up.
- (2) Lift angle : 51 deg
- (3) Measurement position : ① Dial up ② 9 o'clock ③ 6 o'clock
- (4) Minimum measurement time : 20 seconds
- (5) Stabilizing time

Leave the watch for at least 20 seconds to stabilize after you change its measurement position.

## DISPLAY AND CROWN / BUTTON OPERATION



### 1. How to set the time

- 1) Pull out the crown to the second click position.
- 2) Turn the crown to set hour and minute hands.  
(Check that AM / PM is set correctly.)
- 3) Push the crown back into the normal position.

#### Note

During time setting, if the chronograph is started, chronograph minute hands will rotate simultaneously. This is not a malfunction. Please reset chronograph by pushing button B. Chronograph hour and minute hands will return to their reset positions.

### 2. How to set the date

- 1) Pull out the crown to the first click position.
- 2) Turn the crown to left for date setting.  
\*Do not set the date between 8:00 P.M. and 2:00 A.M. as this will cause a malfunction.
- 3) Push the crown back into the normal position.

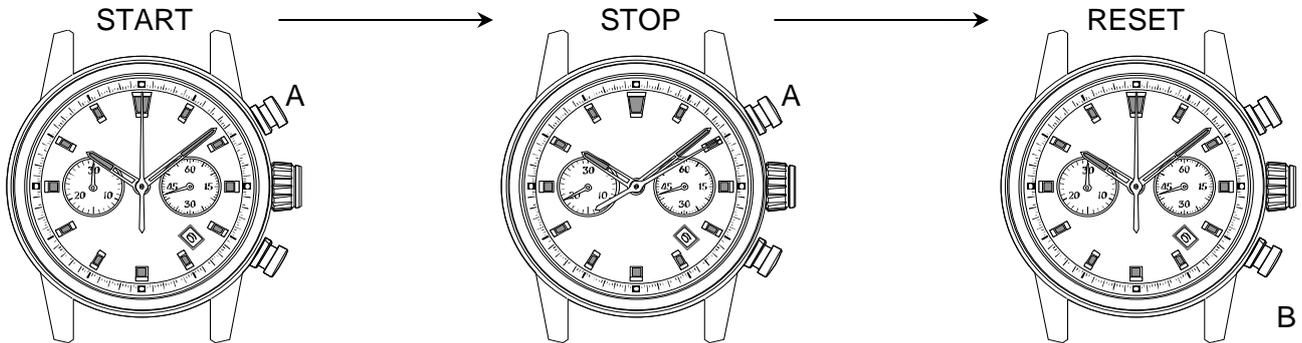
### 3. To wind up the mainspring

- a) Manual winding (Rotate the crown clockwise at normal position)  
Fully wound up by turning the crown minimum 55 times. It will start to move naturally after shaking slightly.
- b) To wind up with winding machine.  
Full wind up conditions (Reference information)
  - Rotary speed : 30 rpm
  - Operating time : 60 minutes

## HOW TO USE THE CHRONOGRAPH

### [ Standard measurement ]

Press the buttons in the following order : A → A → B



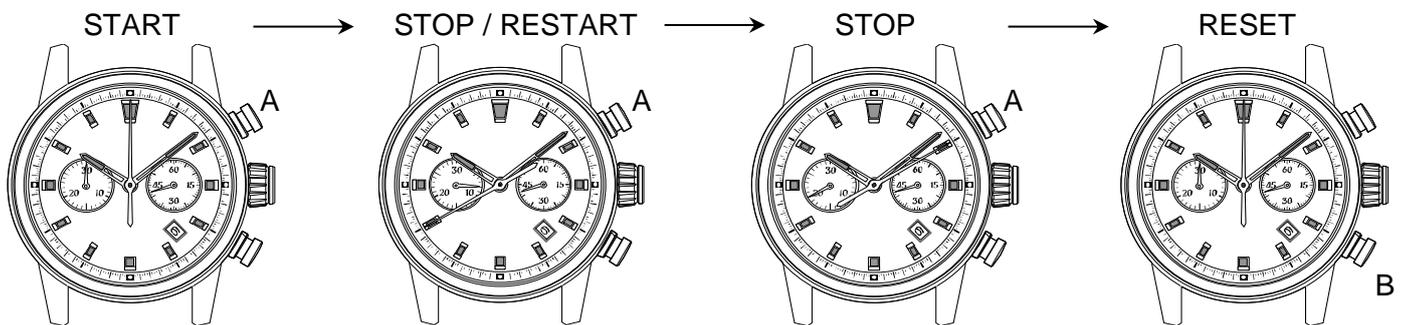
• Press button A to start chronograph.  
Chronograph second hand will start moving.

( 20 minutes 10 seconds )  
• Press button A again to stop chronograph.  
Chronograph hands stop to indicate the elapsed time.

• Press button B to reset chronograph.  
All chronograph hands will be reset to "0" position.

### [ Accumulated elapsed time measurement ]

Press the buttons in the following order : A → A / A → A → B



( 8 minutes 40 seconds )      ( 20 minutes 10 seconds )

\*Restart and stop of chronograph can be repeated as many times as necessary by pressing button A