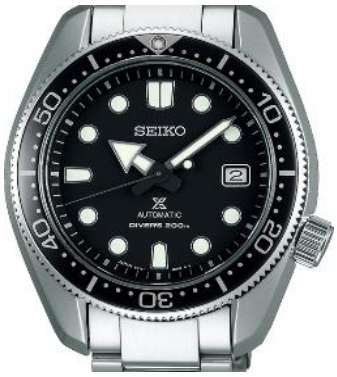
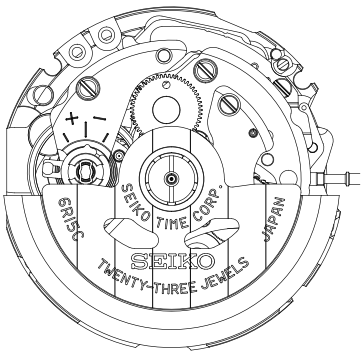
PARTS LIST / TECHNICAL GUIDE

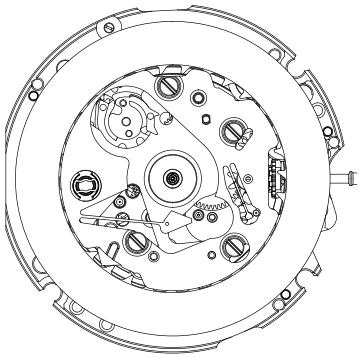
Cal.6R15C / 6R15D

[SPECIFICATION]

Item \ Cal. No.	6R15C / 6R15D







・3 Hands (Hour, minute and second hand)

・Calendar (Date: Date disk)

Movement size
・Diameter Outside : ϕ27.4 mm
Casing : ϕ27.0 mm
・Height : 5.25 mm

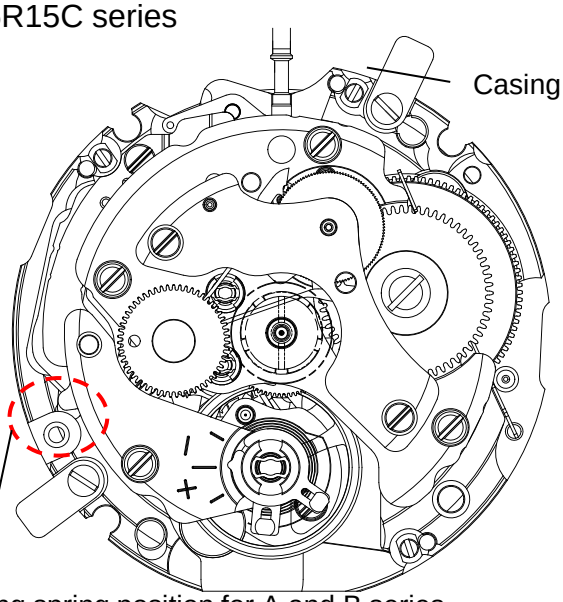
Driving system		Automatic winding with manual winding mechanism				
Additional function		・Instant date setting device ・Second hand stop function				
Crown position	Normal position	Manual winding (clockwise only)				
	1st click position	Date setting (counter clockwise only)				
	2nd click position	Time setting /Second hand stop function				
Vibrations per hour		21,600 (6 beats per second)				
Loss/ Gain	Daily rate	Between +25/-15 seconds per day (worn on the wrist at temperature-range between 5℃ and 35℃)				
	Standard rate for measurement		Instantaneous rate at T0 (Fully wound condition)			Isochronous fault
		Testing positions	Dial upward	6 o'clock at the top	9 o'clock at the top	Dial upward
		Measurement (daily rate in seconds:s/d)	±10 s/d	±15 s/d	±15 s/d	±10 s/d
Regulation system		ETACHRON system				
Lift angle of the escapement		53°				
Power reserve		From fully wound to stoppage: Approximately 50 hours				
Number of Jewels		23 Jewels				

PARTS LIST

FEATURES

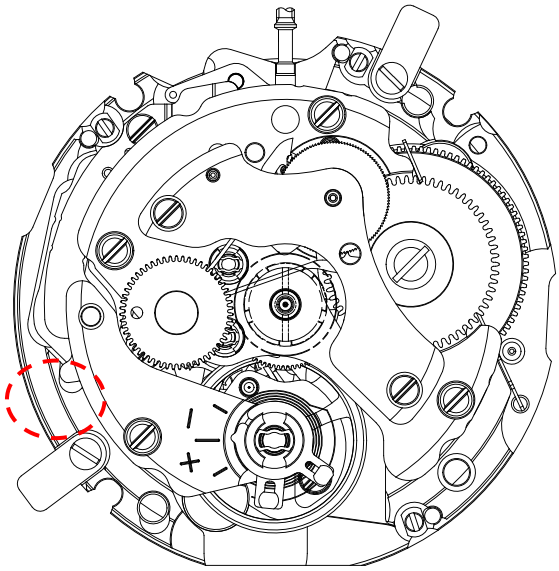
SEIKO Automatic Mechanical Cal. 6R15C/D are replacement caliber of Cal. 6R15A/B.
Cal. C is provided with additional Casing spring at 8H position to set into the case for Cal. A and B.
However, Cal.D is not provided with the Casing spring at 8H position. For the movement replacement, be careful that Cal. D is not installed to the case for Cal. A and B.

6R15C series

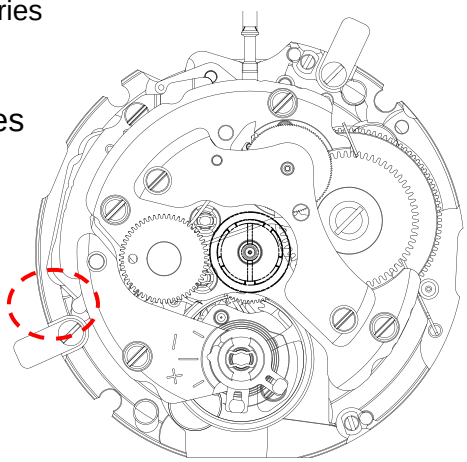


Casing spring position for A and B series

6R15D series



6R15A and B series



Parts difference between Cal.C and Cal.D

No.	Parts name	6R15C	6R15D
16	Oscillating weight with ball bearing	0509 400	1509 100
53	Main plate	0104 164	0104 165

Parts code (depends on type)

No.	Type / Parts name	Normal	Special	Special2
11	Hour wheel	0273 182	0273 184	0273 182
15	Cannon pinion	0225 420	0225 426	0225 449
36	Fourth wheel and pinion	0241 010	0144 185	0241 382
43	Center wheel and pinion	0224 203	0224 205	0224 339

Type of oil

AO-3(Moebius-A)

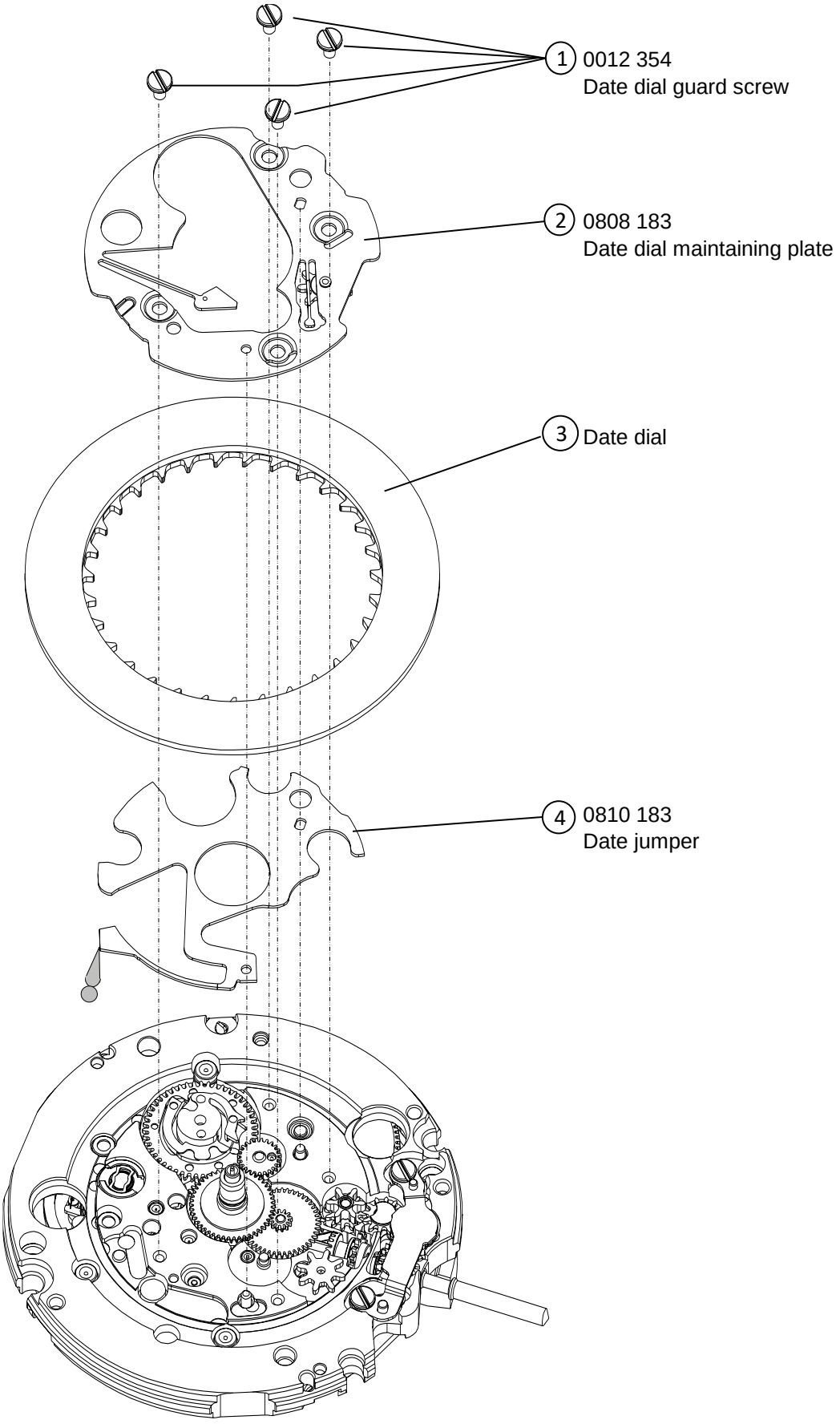
S-6

S-4

Oil quantity mark

NORMAL QUANTITY

SUFFICIENT QUANTITY



1 0012 354
Date dial guard screw

2 0808 183
Date dial maintaining plate

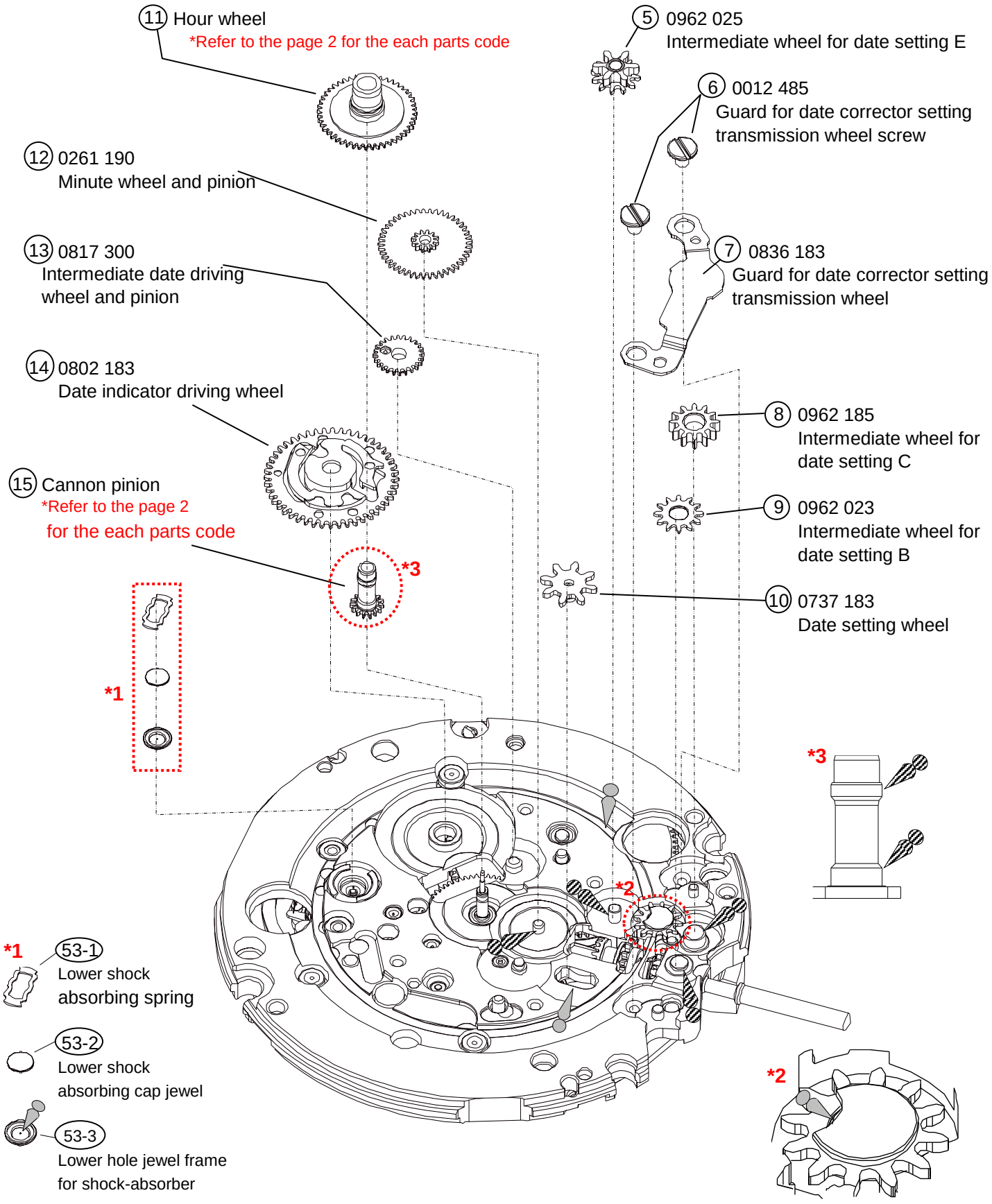
3 Date dial

4 0810 183
Date jumper

PARTS LIST

Type of oil
AO-3(Moebius-A)
S-6
S-4

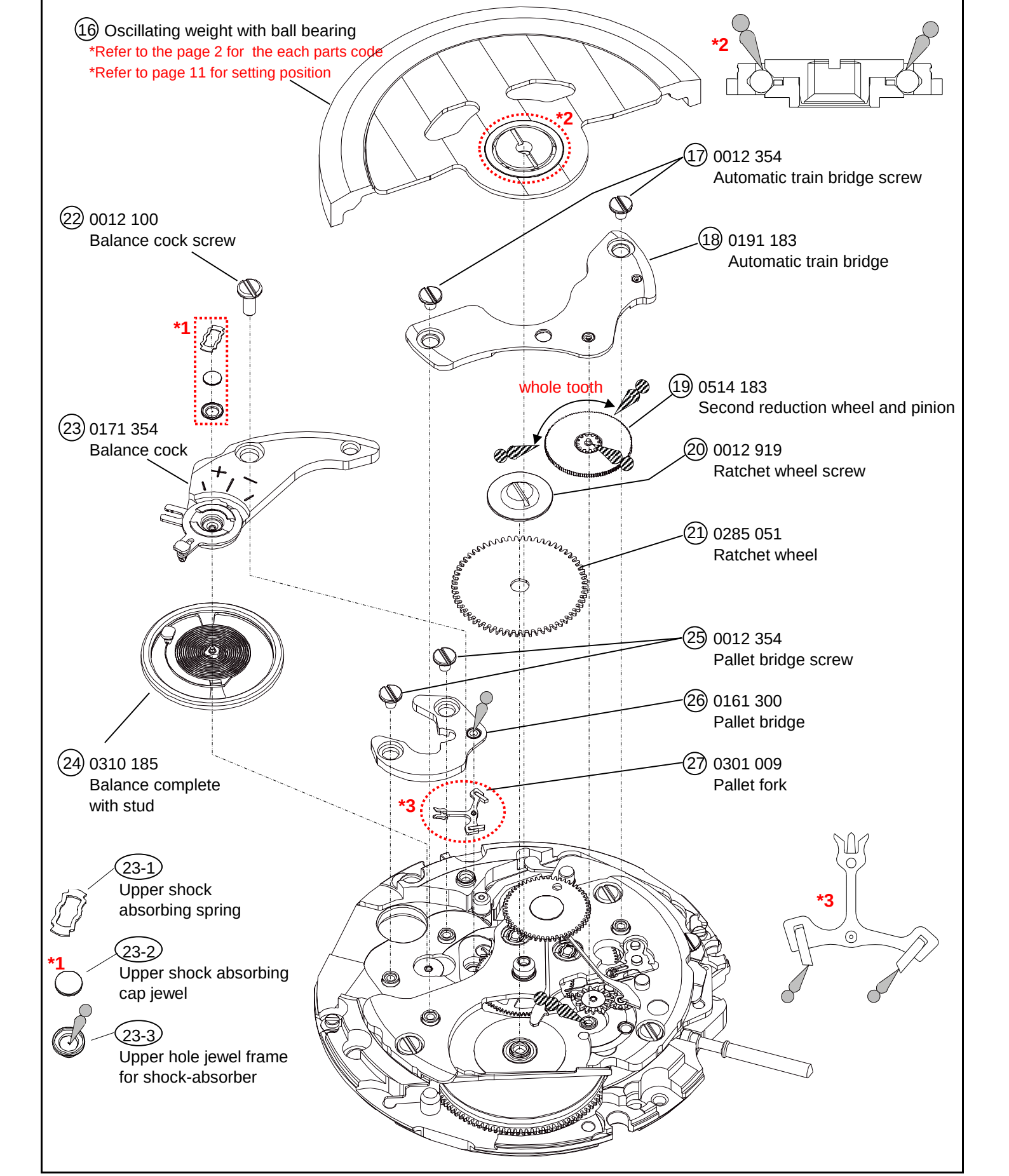
Oil quantity mark
NORMAL QUANTITY
SUFFICIENT QUANTITY



PARTS LIST

Type of oil
AO-3(Moebius-A)
S-6
S-4

Oil quantity mark
NORMAL QUANTITY
SUFFICIENT QUANTITY

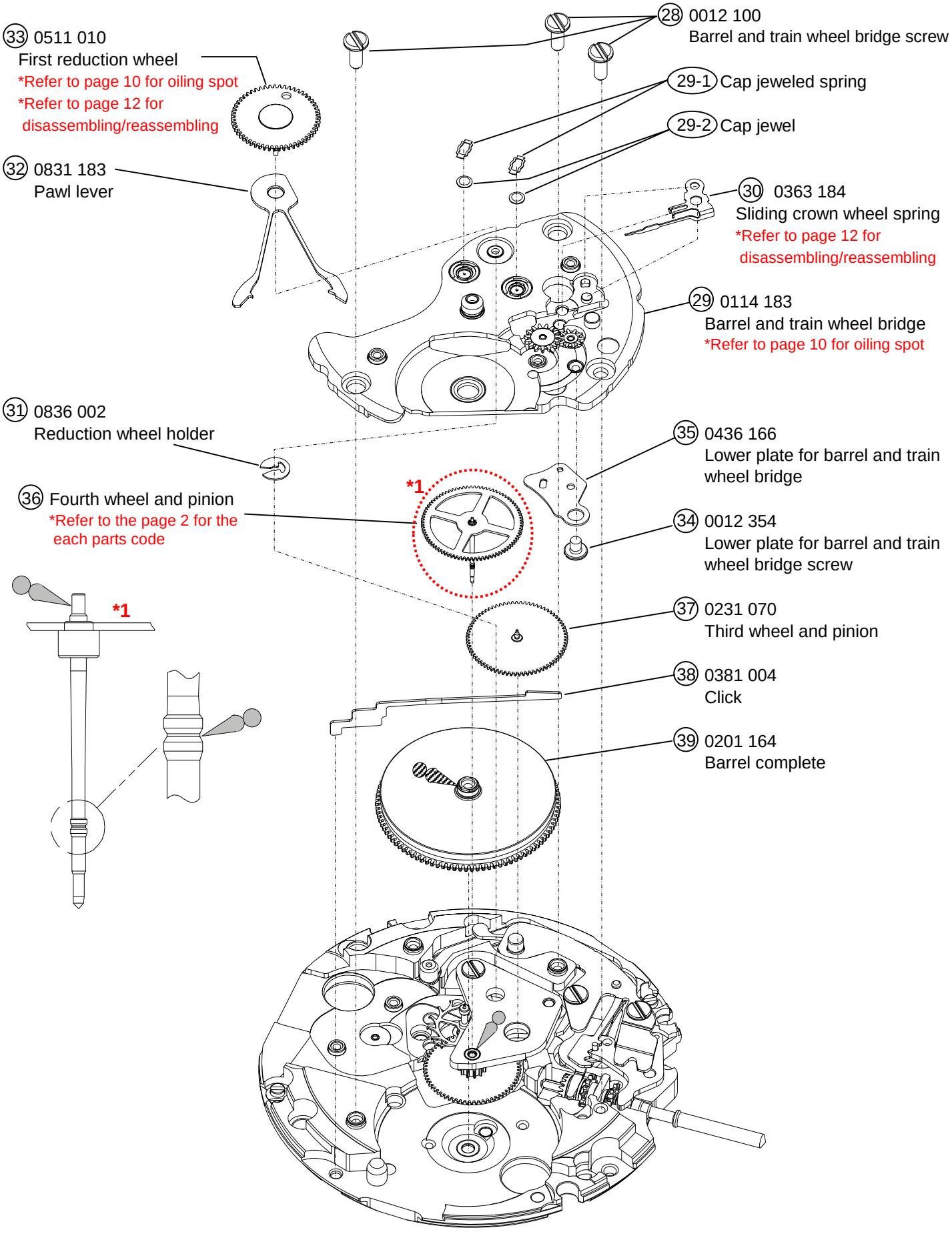


PARTS LIST

Cal.6R15C/D

Type of oil
AO-3(Moebius-A)
S-6
S-4

Oil quantity mark
NORMAL QUANTITY
SUFFICIENT QUANTITY

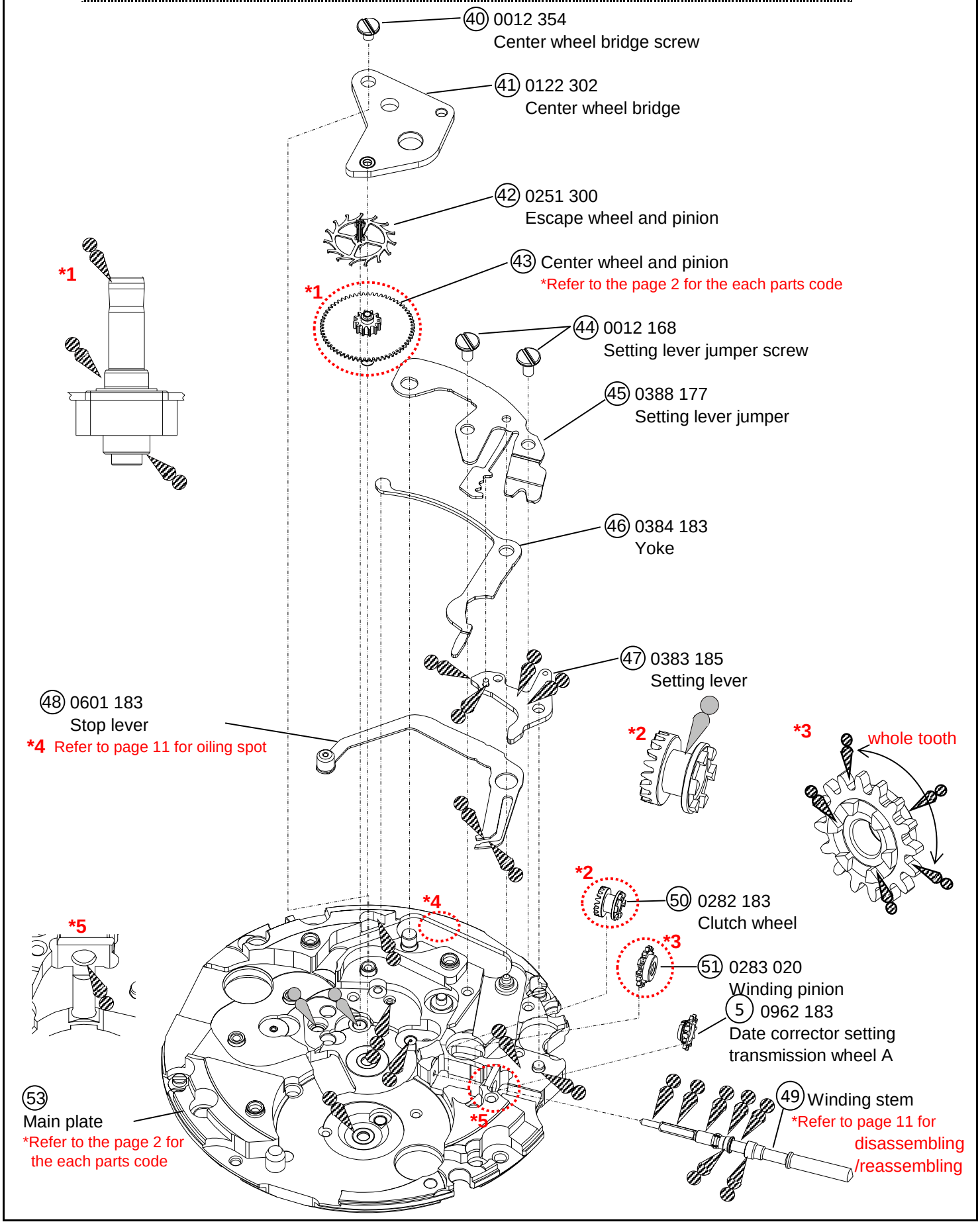


PARTS LIST

Cal.6R15C/D

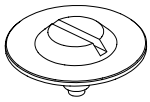
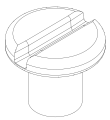
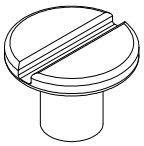
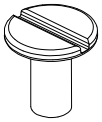
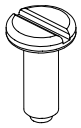
Type of oil
AO-3(Moebius-A)
S-6
S-4

Oil quantity mark
NORMAL QUANTITY
SUFFICIENT QUANTITY



PARTS LIST

● CROSS-SECTION VIEW OF THE SCREW PARTS

Parts No	Name	Parts No	Name	Parts No	Name
0012 919 	(20) Ratchet wheel screw	**0012 485** 	(6) Guard for date corrector setting transmission wheel screw (×2)	**0012 354** 	(1) Date dial guard screw (×4) (17) Automatic train wheel bridge screw (×2) (25) Pallet bridge screw (×2) (34) Lower plate for barrel and train wheel bridge screw (40) Center wheel bridge screw
0012 168 	(44) Setting lever jumper screw (×2)	**0012 100** 	(22) Balance cock screw (28) Barrel and train wheel bridge screw (×3)		

● LOCATION OF THE JEWELS

	Upper		Lower	
	Hole Jewel	Cap Jewel	Hole Jewel	Cap Jewel
Center wheel & pinion	○		○	
Forth wheel & pinion	○			
Third wheel & pinion	○	○	○	
Escape wheel & pinion	○	○	○	
Pallet fork	○		○	
Balance spring	○	○	○	○
Crown wheel	○			
First reduction wheel & arbor	○		○	
Second reduction wheel & pinion	○		○	
Entry pallet jewel	○			
Exit pallet jewel	○			
Roller jewel	○			
Total	23 jewels			

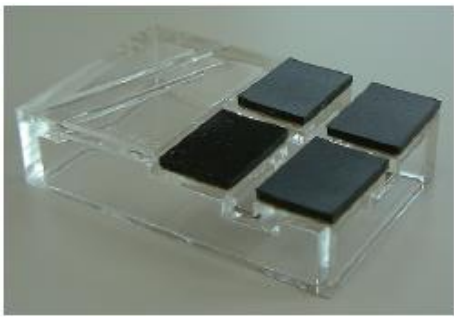
Remarks

The correct parts for the following are determined based on the design of the cases.
Refer to "SEIKO Watch Parts Catalogue (SEIKO WATCH SERVICE SITE)"
to choose corresponding parts.

- Holding ring for dial
- Date dial
- Winding stem

● Tools and consumables required for disassembling/reassembling

- Movement holder
  UNIVERSAL MOVEMENT HOLDER
  (S-682)



- Watch oils
  SEIKO Watch grease S-6 and S-4. Watch oil AO-3 (or Moebius A)

S-6

AO-3

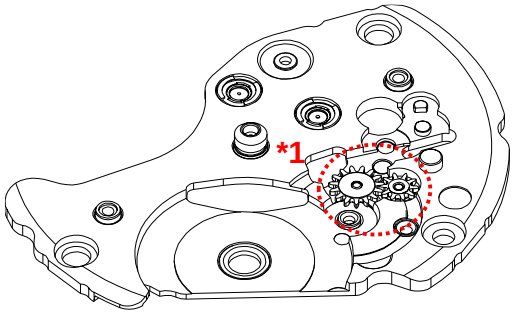
S-4

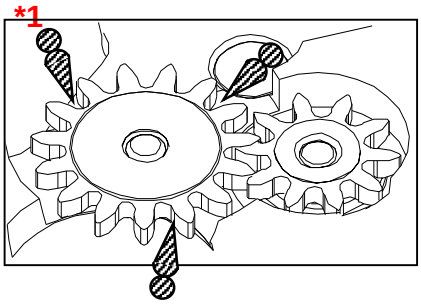
Type of oil
AO-3(Moebius-A)
S-6
S-4

Oil quantity mark
NORMAL QUANTITY
SUFFICIENT QUANTITY

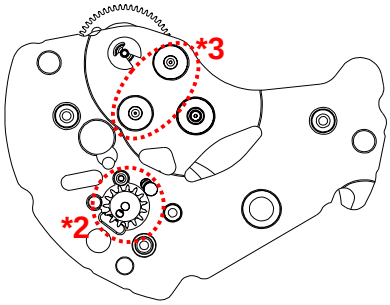
1. Oiling spot

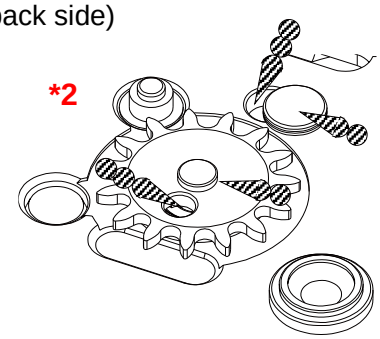
(29) Barrel and train wheel bridge (Top side)

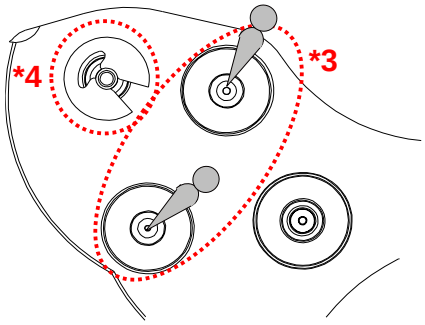




Barrel and train wheel bridge (back side)

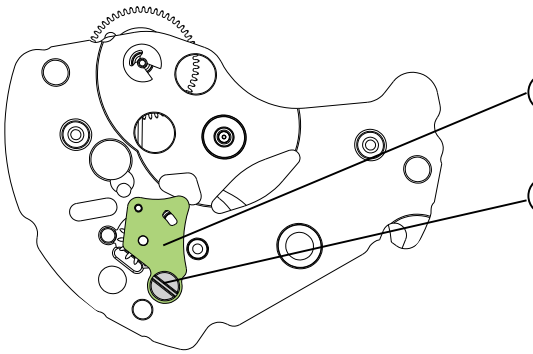






Note:

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

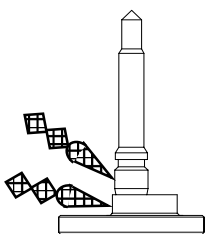


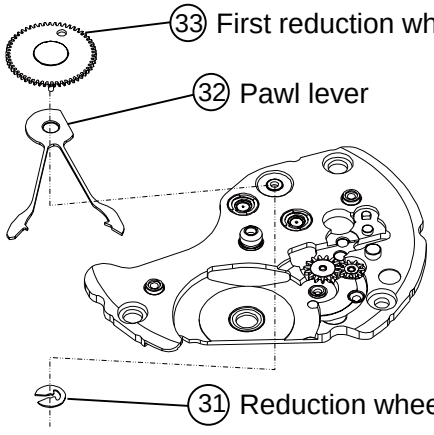
(35) Lower plate for barrel and train wheel bridge

(34) Lower plate for barrel and train wheel bridge screw

***4 After lubrication, set <u>First reduction wheel,</u> <u>Pawl lever</u> & <u>Reduction wheel holder</u>.**

(33) First reduction wheel



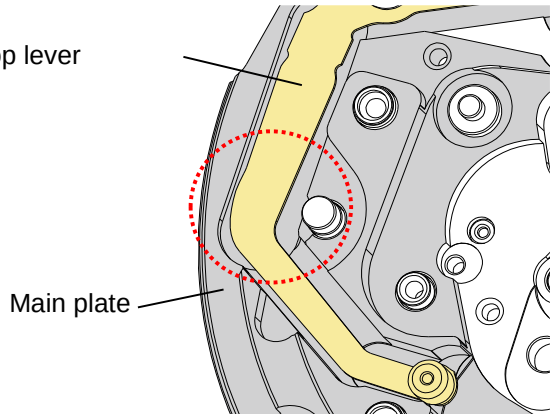


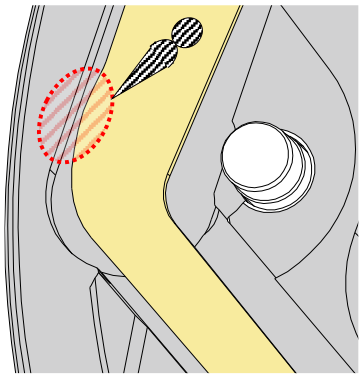
(33) First reduction wheel

(32) Pawl lever

(31) Reduction wheel holder

(48) Stop lever

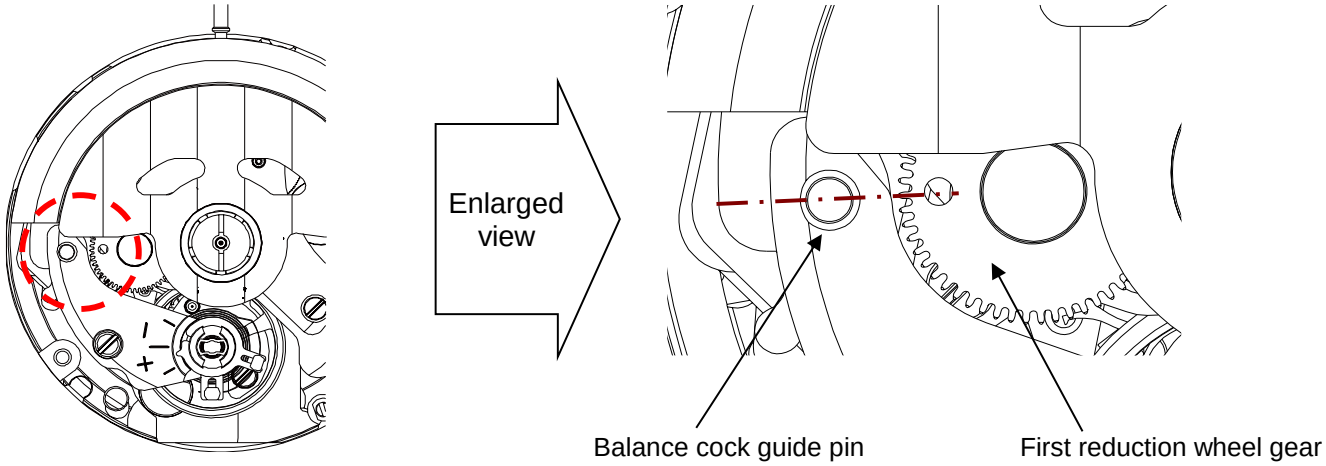




Contact part of main plate and balance stop lever

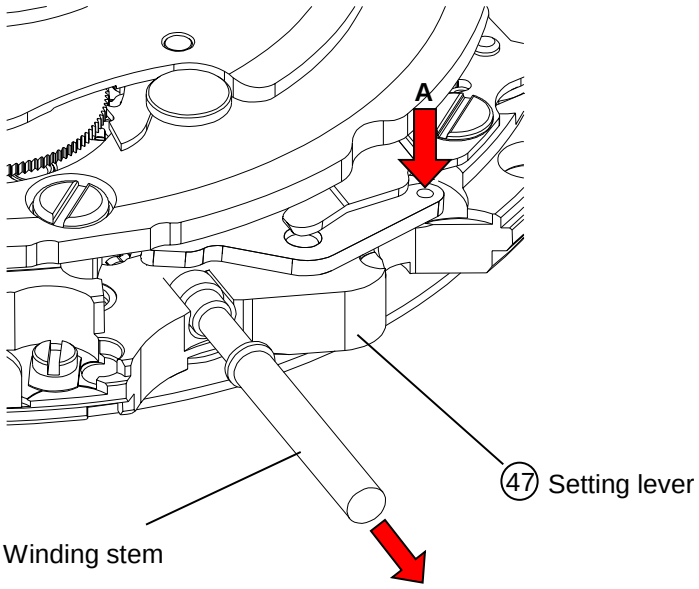
2. Setting position of Oscillating weight

When fixing the Oscillating weight, an alignment with the First reduction wheel is necessary in order to wind the Mainspring most efficiently. Rotate the First reduction wheel manually until its hole aligns with the guide pin for Balance cock (gilt dot) and set the Oscillating weight vertically at the stem side, and then tighten the screw. Refer to the figure below.



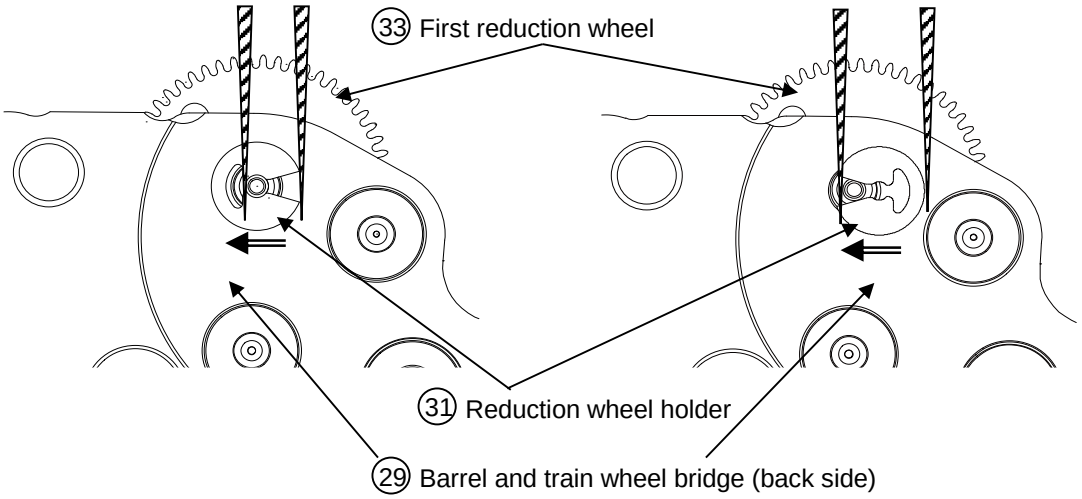
3. Disassembling the winding stem

1) Set the winding stem at normal position.
2) Pull out the winding stem, while pushing "A"



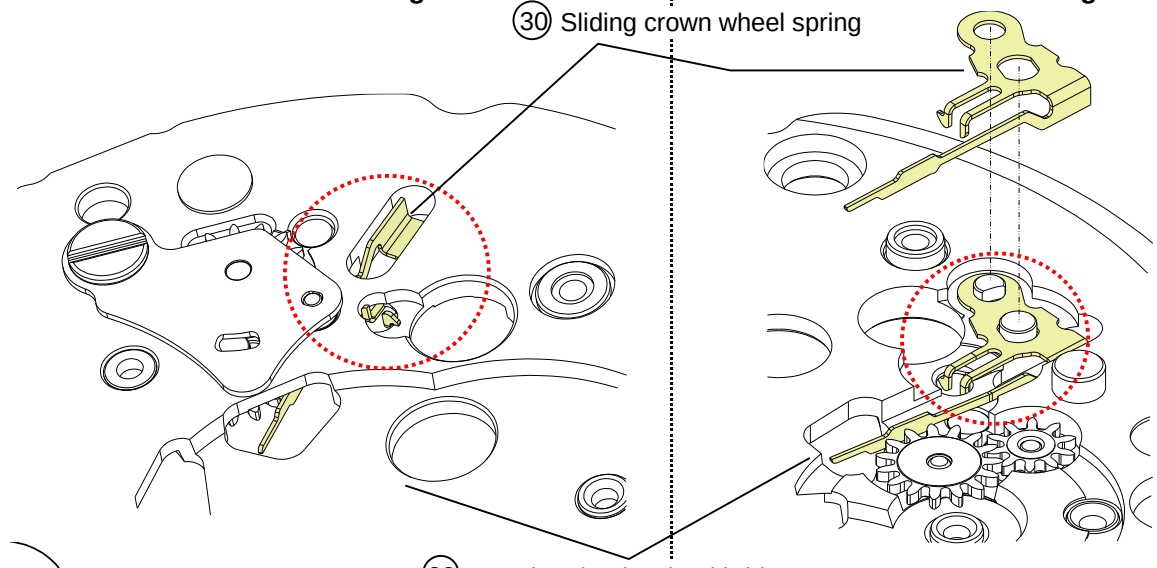
4. Disassembling / assembling of the First reduction wheel

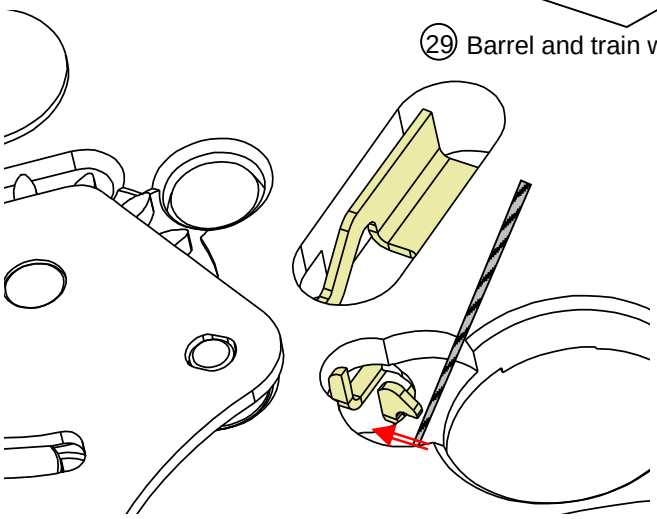
<< Disassembling >> **<< Assembling >>**



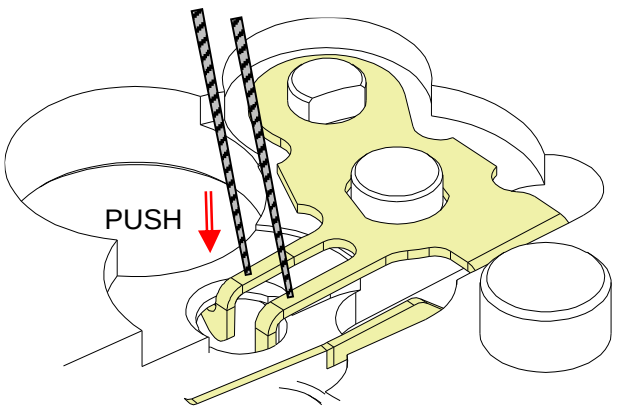
5. Disassembling / assembling of the Ratchet sliding wheel spring.

<< Disassembling >> **<< Assembling >>**



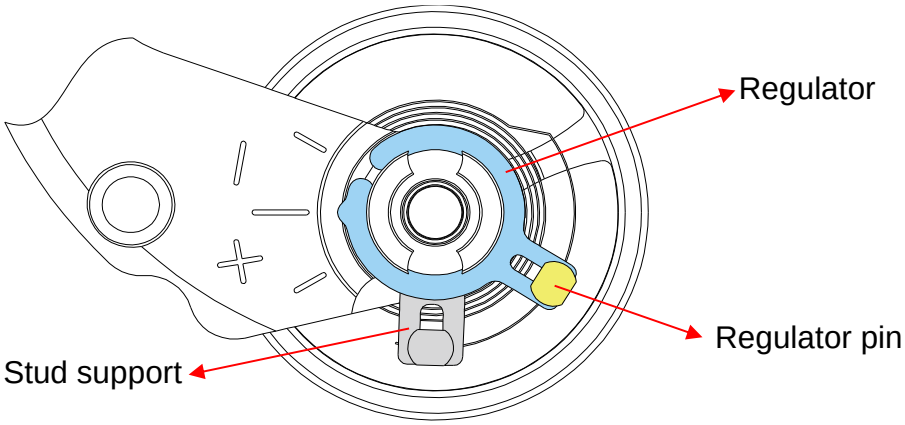


Remove the hook of the Sliding crown wheel spring from Barrel and train wheel bridge.



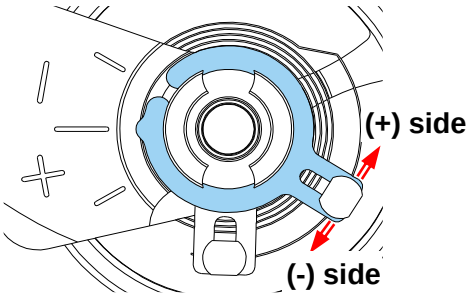
Set the part to the Barrel and train wheel bridge and push the hook from the top with tweezers so that it will be engaged securely.

6. Accuracy adjustment

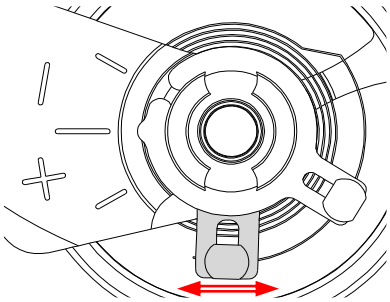


Note:

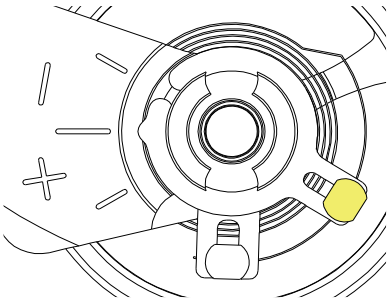
・Regulator … Time adjustment



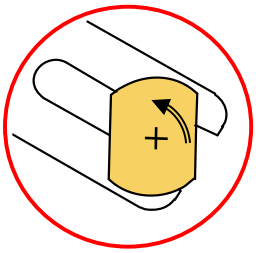
・Stud support … Beat error adjustment



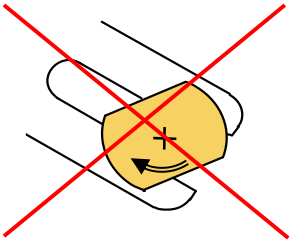
・Regulator pin … Gap adjustment of balance spring and regulator pin



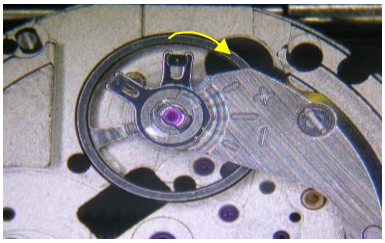
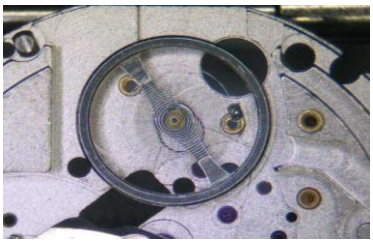
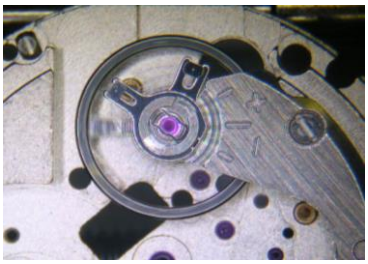
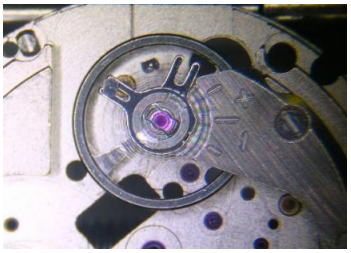
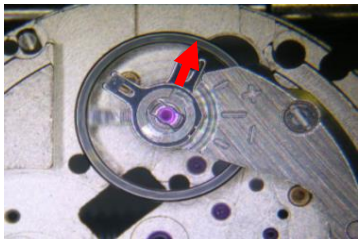
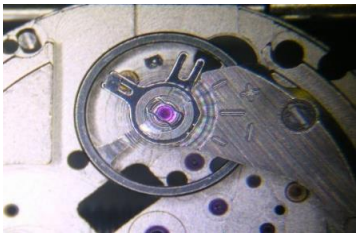
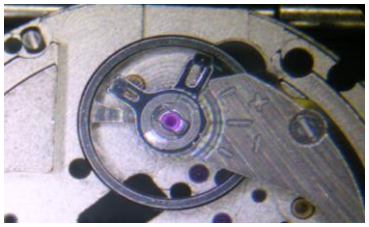
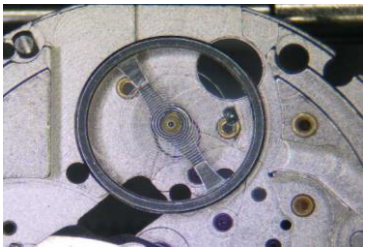
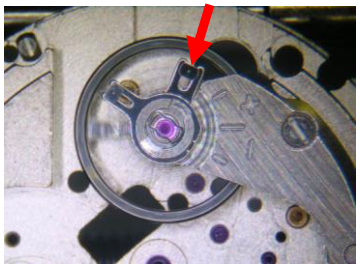
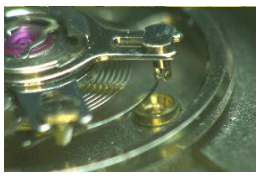
Anticlockwise rotation



No clockwise rotation



● How to remove and install the Balance complete with stud

How to remove	How to install
1. Initial phase Move the stud support toward the arrow marked direction until it touches the balance cock. 	1. Initial phase Set a new balance complete with stud to the main plate. 
2. Make sure that the outer coil is not removed from the regulator arm. 	2. Set the Balance cock and tighten the balance cock screw. 
3. Using sturdy tweezers, push the stud outward from the direction of the arrow shown in the illustration until it is removed from the stud support.  	3. Temporarily set the stud to the stud support. Make sure that the balance spring passes outside the regulator pin. * Be careful not to damage the balance spring.  
4. Unscrew the Balance cock screw and remove the Balance cock. 	4. Using sturdy tweezers, set the stud to the stud support and press it down. Make sure that the outer coil passes through the regulator pin slot. * Be careful not to damage the balance spring.  

● How to regulate the isochronous fault by adjusting the position of the balance-spring

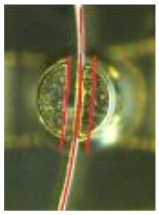
This caliber has the Etachron system for fine regulation of the isochronous fault.
The watch shows a gain trend as amplitude decreases and loses time badly near the end of its useful power reserve.
The isochronous fault can be adjusted easily by turning the Regulator pin to make the gap in the slot either larger or smaller.

1) Make sure that the Regulator pin is aligned in a vertical position to the Regulator and the balance-spring passes parallel through the slot of the Regulator pin before fine-tuning the STUD and the Regulator pin.

REGULATOR PIN

Top side view

Back side view



Angled view

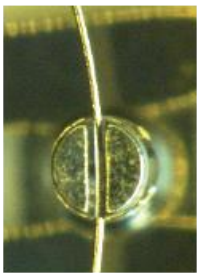
2) Rotate the STUD in order to align the position of the balance-spring passes through the center of the slot of the Regulator pin.

STUD

Top side view

REGULATOR PIN

Back side view

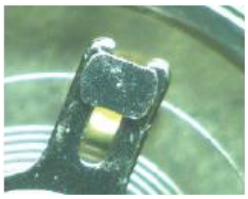


3) Rotate the REGULATOR PIN counterclockwise in order to fine-tune the clearance of the balance-spring passing through the slot of it. Set it to moderate gap to get the stable trend.

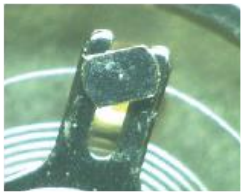
REGULATOR PIN

Top side view

Before rotating

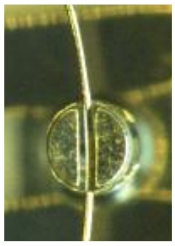


After rotating



Back side view

Before rotating

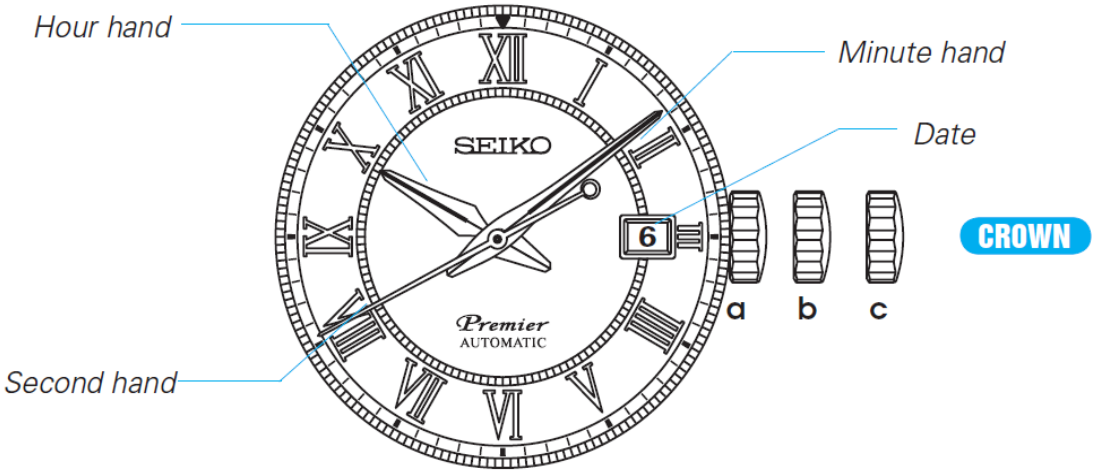


(Maximum clearance)

After rotating

(Minimum clearance)

【6R15 operation manual】



1. How to manually wind the mainspring by turning the crown

1) Slowly turn the crown clockwise (in the 12 o'clock direction) to wind the mainspring.
2) Continue to turn the crown until the mainspring is sufficiently wound. The second hand will start moving.
3) Set the time and date before putting the watch on your wrist.

2. How to set the time and date

• Check that the watch is operating, and then set the time and date.
• The watch is provided with a date function and is so designed that the date changes once every 24 hours.
The date changes around 12 o'clock midnight. If AM/PM is not properly set, the date will change around 12 o'clock noon.

1) Pull out the crown to the first click. (The second hand continues moving and the accuracy of the watch is unimpaired.)
2) The date can be set by turning the crown counterclockwise. Turn it until the previous day's date appears.
Ex.) If today is the 6th of the month, first set the date to "5" by turning the crown counterclockwise.
3) Pull out the crown to the second click when the second hand is at the 12 o'clock position.
(The second hand stops on the spot.)
Turn the crown to advance the hands until the date changes to the next.
The time is now set for the a.m. period. Advance the hands to set the correct time.
4) Push the crown back in to the normal position in accordance with a time signal.

CAUTION

• Do not set the date between 10:00 p.m. and 1:00 a.m.
If you do, the date may not change properly / it may cause a malfunction.
• The mechanism of mechanical watches is different from that of quartz watches.
When setting the time, be sure to turn back the minute hand a little behind
the desired time and then advance it to the exact time.

●Water resistance test

Check the water resistance according to the designated specification of the watch

Marking on the case back	Test method	Applied pressure
WATER RESISTANT(WATER RESIST)	Air leak test	3 BAR
WATER RESIST 5BAR	Water pressure test	5 BAR
WATER RESIST 10BAR		10 BAR
WATER RESIST 15BAR	Condensation test	15 BAR
WATER RESIST 20BAR		20 BAR
SCUBA DIVERIS （AIR DIVERIS）150 m	Condensation test	18.75 BAR ＝150(m)times 0.125
SCUBA DIVERIS (AIR DIVERIS)200 m		25 BAR ＝200(m)times 0.125
He-GAS DIVERIS 300 m	Water pressure test	37.5 BAR ＝300(m)times 0.125
He-GAS DIVERIS 600 m		75 BAR ＝600(m)times 0.125
He-GAS DIVERIS1000m	Condensation test	125 BAR ＝1000(m)times 0.125

● Accuracy test

Measure the rate in three different positions within 30 minutes after the watch is fully wound up (wait approximately for 5 minutes after winding up in order to get a stable oscillation of the balance) and make sure the value shows within the range in the table below.

Measure the rate in dial-up position after 24 hours from fully wound up (T24) and check the rate difference with the rate in dial-up position when it is fully wound up (T0). Make sure that the value of T24-T0 shows within the range of the isochronism in the table below.

		Instantaneous rate at T0 (Fully would condition)			Isochronous fault
Standard rate for measurement	Testing positions	Dial upward	6 o'clock at the top	9 o'clock at the top	Dial upward
	Measurement (Daily rate in seconds:s/d)	± 20 s/d	± 30 s/d	± 30 s/d	±30 s/d

● Accuracy of Mechanical Watches

- ✤ The accuracy of mechanical watches is indicated by the daily rates of one week or so.
- ✤ The accuracy of mechanical watches may not fall within the specified range of time accuracy because of loss/gain changes due to the conditions of use, such as the length of time during which the watch is worn on the wrist, arm movement, whether the mainspring is wound up fully or not, etc.
- ✤ The key components in mechanical watches are made of metals which expand or contract depending on temperatures due to metal properties. This exerts an effect on the accuracy of the watches. Mechanical watches tend to lose time at high temperatures while they tend to gain time at low temperatures.
- ✤ In order to improve accuracy, it is important to regularly supply energy to the balance that controlsthe speed of the gears. The driving force of the mainspring that powers mechanical watches varies between when it is fully wound and immediately before it is unwound. As the mainspring unwinds, the force weakens.
  Relatively steady accuracy can be obtained by wearing the watch on the wrist frequently for the selfwinding type and winding up the mainspring fully everyday at a fixed time to move it regularly for the wind-up mechanical type.
- ✤ When affected by external strong magnetism, a mechanical watch may loss/gain time temporarily. The parts of the watch may become magnetized depending on the extent of the effect. In such a case, consult the retailer from whom the watch was purchased since the watch requires repair, including demagnetizing.

● Duration time test

Check the Power reserve of the watch after the ㎡10/16
condition with the dial-up position. Make sure that the watch runs approximately 41 hours until it stops.