



PARTS LIST/TECHNICAL GUIDE

Automatic Cal. 4205C/4206C/4207C/4208B/4225B/4227B

[SPECIFICATIONS]

Cal. No.		4205C	4206C	4207C	4208B	4225B	4227B	
Item								
<div></div>								
Time indication	Time		3 hands (hour, minute and second hands)					
	Calendar		Date	Day & Date	Day & Date	Date	Date	Day & Date
Movement size	Diameter	Outside	Ø17.5 mm				Ø23.8 mm	
		Casing	Ø17.2 mm				Ø23.4 mm	
	Height		5.6 mm					
Driving system			Automatic winding with manual winding mechanism					
Additional function			Day / *date correction function * For Cal. 4206C, 4207C and 4227B only					
Crown operation	Normal position		Manual winding (clockwise only)					
	1st click position		Date setting (counterclockwise) / *Day setting (clockwise) * For Cal. 4206C, 4207C and 4227B only					
	2nd click position		Hands setting (Hour and Minute)					
Vibration per hour			21,600 (6 beats per second)					
Loss/Gain			Between +55 and -35 seconds (Daily rate worn on the wrist at the temperature between 5°C and 35°C)					
	Standard rate for measurement	Mainspring wind up status	Fully wind up			After 24 hours from fully wind up		
		Testing positions	Dial upwards: T0 (CH)	6 o'clock at the top	9 o'clock at the top	Dial upwards: T24 (CH)		
		Measurement (daily rate in seconds:s/d)	±30 s/d	±40 s/d	±40 s/d	(Isochronism fault: T24-T0) ±40 s/d		
Fine regulation system			n/a					
Lift angle of the movement			52°					
Power reserve			From fully wound to stoppage: Approximately 40 hours					
Number of jewels			17 jewels		21 jewels			

SEIKO WATCH CORPORATION

FEATURES

SEIKO Automatic Mechanical Cal. 42 series has been the most popular movement in both ladies size (7 3/4 lignes) and mid size (10 1/2 lignes) of the basic mechanical watches.

In order to further improve its durability and stability in the assembling process, we have decided to change the design of several parts as follows:

- **Discrimination**

The suffix of the caliber number which is engraved on the oscillating weight is changed as follows:

CURRENT	→	NEW
4205B		4205C
4206B		4206C
4207B		4207C
4208A		4208B
4225A		4225B
4227A		4227B

- **Change of the lift angle**

Lift angle is changed to 52 degrees from the current 49 degrees.

- **Change of the parts (Following parts are changed):**

MAIN PLATE, CENTER WHEEL, CENTER WHEEL WITH CANNON PINION, CENTER WHEEL BRIDGE, SPACER FOR BALANCE COCK, SECONDS PINION, BARREL & TRAIN WHEEL BRIDGE SCREW (A), DATE DRIVING WHEEL, DAY JUMPER SCREW, DATE FINGER, DATE DRIVING WHEEL SCREW

* Please refer to the cross-reference table for the new parts code.

Notes:

- Please replace all the parts at once in case you need to repair the watch with current movement after running out the spare parts of current version.
- Movement itself is compatible. Therefore, you may replace the whole movement instead of replacing the parts individually.

- **Availability of the new movement and spare parts:**

- Mass production *December 2009 production onwards
- Movement for after-sales service March 2010 PO onwards
- Spare parts April 2010 onwards

CHARACTERISTICS OF A MECHANICAL WATCH

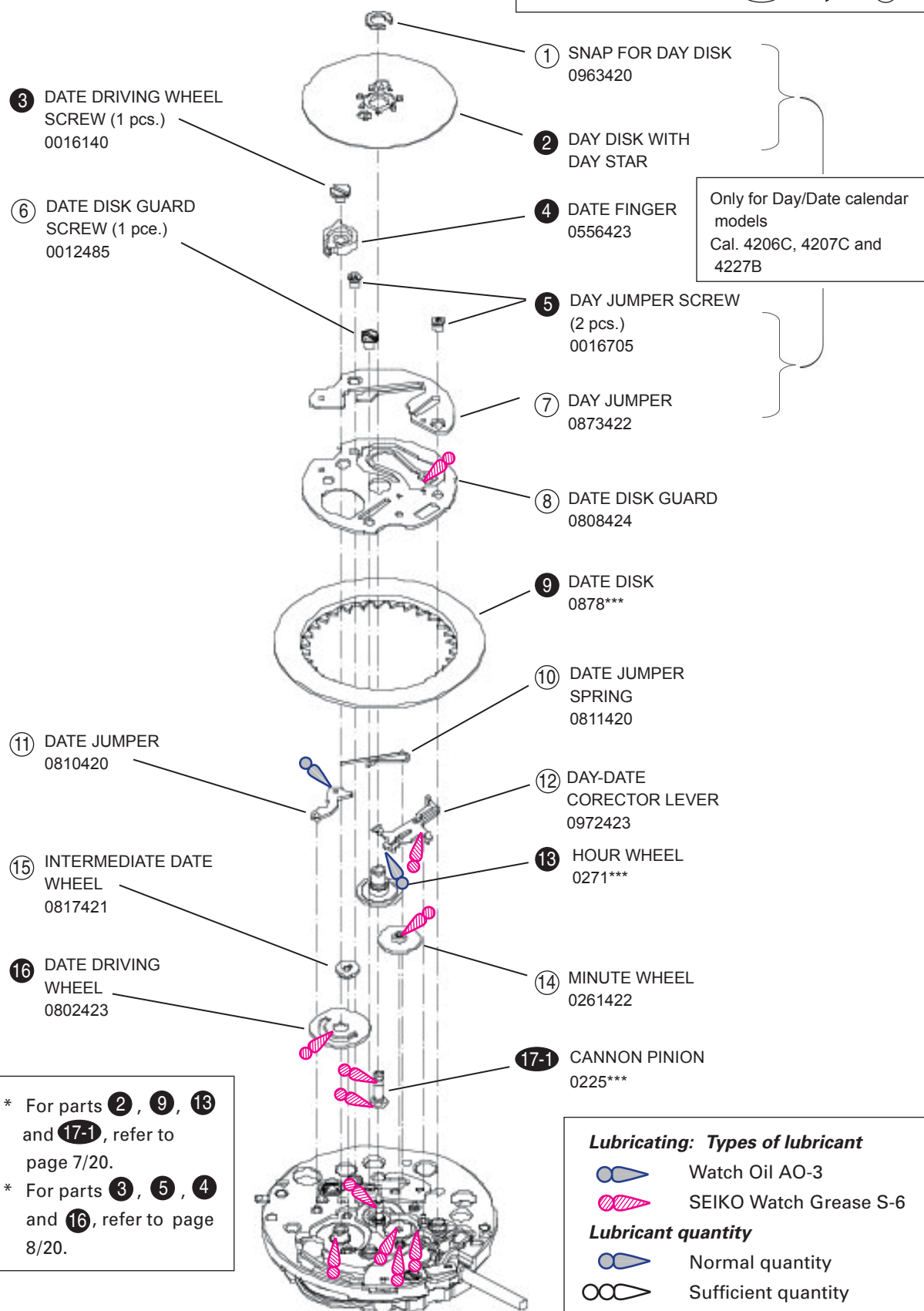
1. This mechanical watch operates using power obtained from a mainspring.
2. While loss/gain of a quartz watch is indicated by a monthly or annual rate, accuracy of a mechanical watch is normally indicated by a daily rate (loss/gain per day).
3. Normal usage accuracy of a mechanical watch varies according to conditions of use (time period that the watch is worn on the wrist, temperature environment, hand movement, and winding state of the mainspring).
4. When the watch is affected by strong magnetism, it temporarily gains or loses time. If the watch encounters a strong magnetic field, the parts of the watch may be magnetized. In this case, repairs such as removal of magnetism are required.

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Cal. 4208B/4225B/4227B

[(1) CALENDAR MECHANISM]

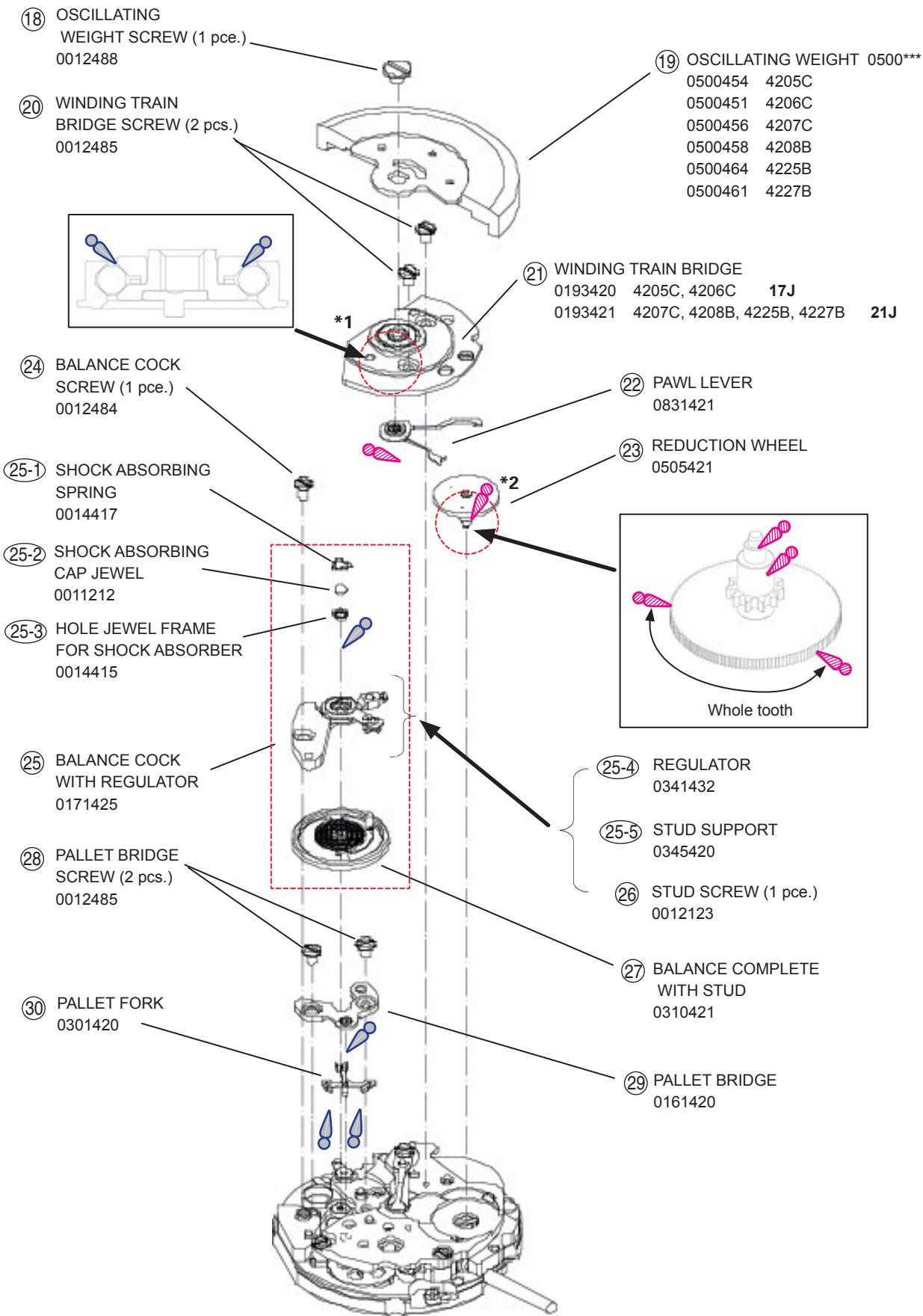
Order of disassembly: ① → ⑤7-3
Order of assembly: ⑤7-3 → ①



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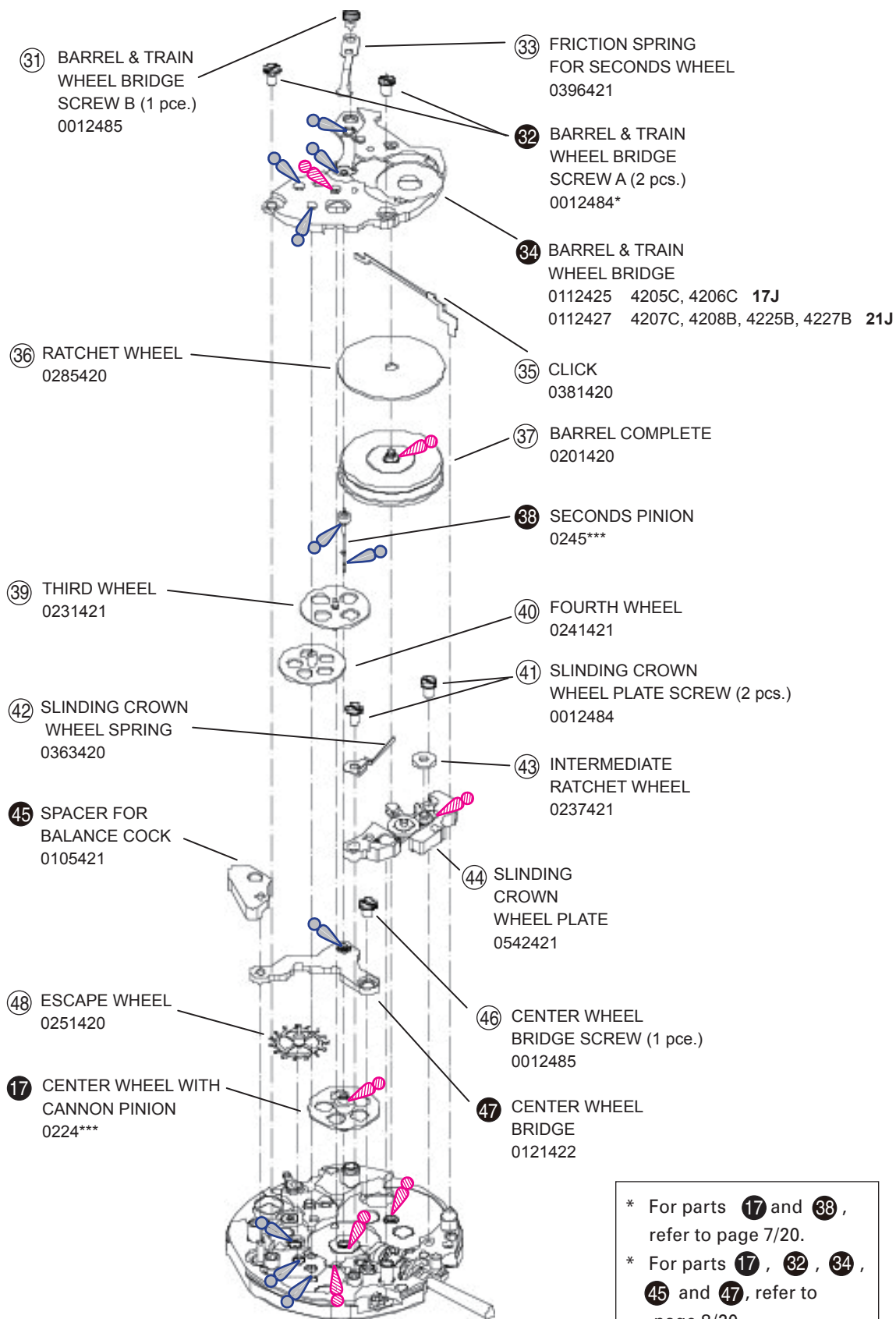
[(2) WINDING MECHANISM AND REGULATING UNIT]



PARTS LIST

Cal. 4205C/4206C/4207C
Cal. 4208B/4225B/4227B

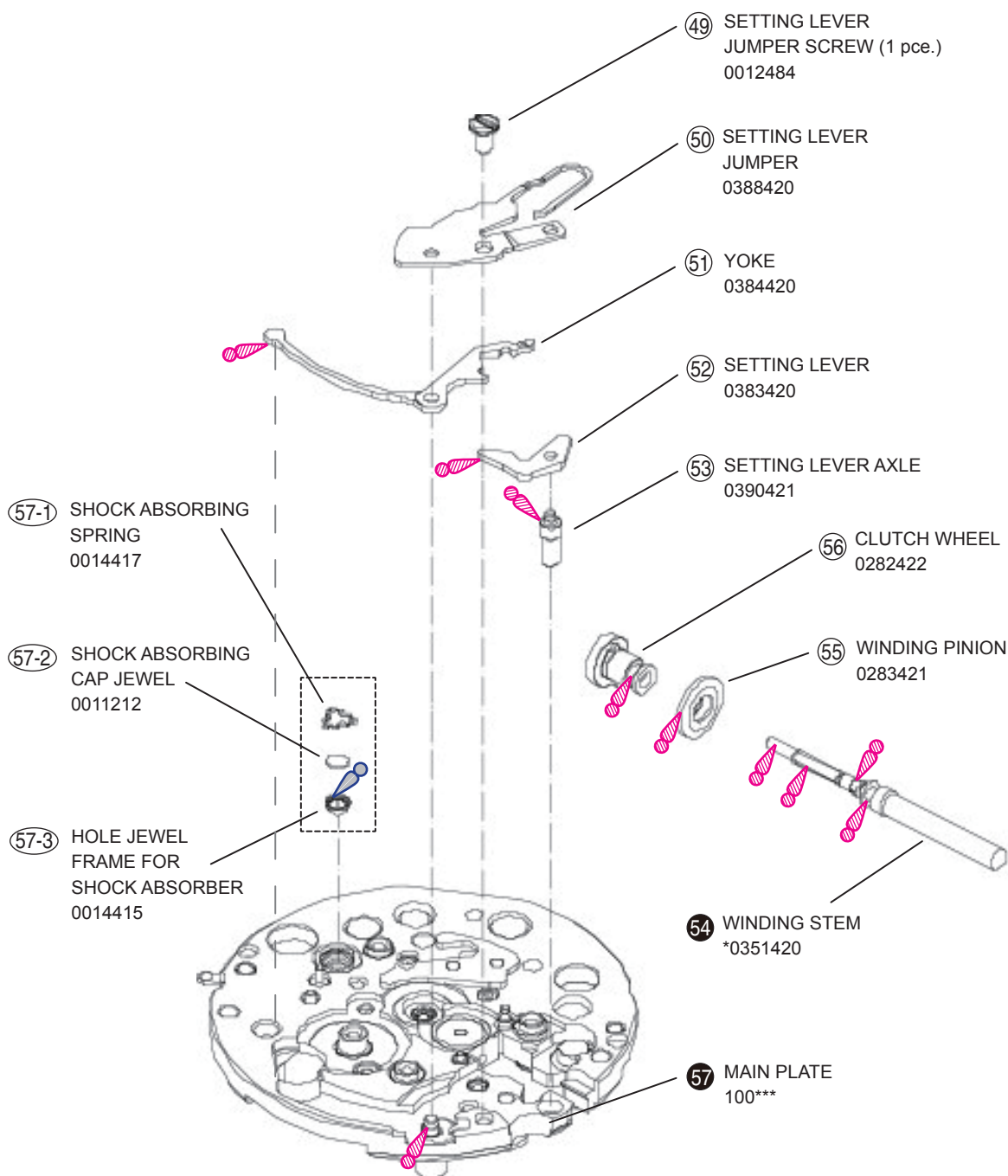
[(3) GEAR TRAIN MECHANISM]



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Cal. 4208B/4225B/4227B

[(4) SETTING MECHANISM]



* For part ⑤④, refer to page 7/20.
* For part ⑤⑦, refer to page 8/20.

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Cal. 4208B/4225B/4227B

● How to find the correct parts, if not determined by 4 digit caliber number

Following parts are determined based on the design of watches, such as hands height, dial color, and design of cases. Please refer to the SEIKO WATCH PARTS CATALOGUE in order to choose corresponding parts.

② DAY DISK WITH DAY STAR

Refer to the parts code number printed on the disk.

⑨ DATE DISK

0878***

⑤④ WINDING STEM

For screw down crown models, the stem is assembled to the crown and is not available separately.

⑬ HOUR WHEEL

⑰ CENTER WHEEL WITH CANNON PINION

⑰-① CANNON PINION

③⑧ SECONDS PINION

* Please refer to the following table in order to find the correct part number of each wheel according to the hand installation height. The numeral 1, 2 or 3 is printed on the DIAL.

	Cal.	⑬ HOUR WHEEL	⑰ CENTER WHEEL WITH CANNON PINION	⑰-① CANNON PINION	③⑧ SECONDS PINION
1	All	0271427	0224433	0225427	0245433
2	4205C, 4206C 4207C, 4208B	0271425	0224425	0225422	0245425
	4225B, 4227B	0273030	0224429	0225424	0245429
3	All	0271426	0224426	0225423	0245426

PARTS LIST

Cal. 4205C/4206C/4207C
Cal. 4208B/4225B/4227B

● Cross-reference table for the new parts

Part name	Part number		
	CURRENT	NEW	Remarks
57 MAIN PLATE	0100420	0100438	Cal. 4205C/4206C
	0100422	0100418	Cal. 4207C/4208B
	0100431	0100419	Cal. 4225B/4227B
17-2 CENTER WHEEL	0221421	0221424	
17 *CENTER WHEEL WITH CANNON PINION	0224421	0224425	
47 CENTER WHEEL BRIDGE	0121420	0121422	
45 SPACER FOR BALANCE COCK	0105420	0105421	
38 *SECONDS PINION	0245421	0245425	
34 BARREL & TRAIN WHEEL BRIDGE	0112430	0112425	Cal. 4205C/4206C
	0112432	0112427	Cal. 4207C/4208B/4225B/4227B
32 BARREL & TRAIN WHEEL BRIDGE SCREW A	0012484 (1 pce.)	0012484 (2 pcs.)	
16 DATE DRIVING WHEEL	0802422	0802423	
5 DAY JUMPER SCREW	0012797 (2 pcs.)	0016705 (2 pcs.)	Cal. 4206C/4207C/4227B only
4 DATE FINGER	0556422	0556423	
3 DATE DRIVING WHEEL SCREW	0012485 (2 pcs.)	0016140 (2 pcs.)	

* The relevant part number varies by hands height. Please check the table on page 7/20.

Notes:

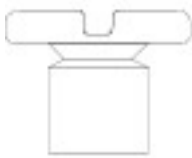




Please replace all the parts at once in case you need to repair the watch with current movement after running out the spare parts of current version.

Movement itself is compatible. Therefore, you may replace the whole movement instead of replacing the parts individually.

PARTS LIST

Cal. 4205C/4206C/4207C
Cal. 4208B/4225B/4227B

● List of screws

Parts code		Parts name	
0012 485		⑥ DATE DISK GUARD SCREW	1
		⑳ WINDING TRAIN BRIDGE SCREW	2
		㉔ PALLET BRIDGE SCREW	2
		㉑ BAREL & TRAIN WHEEL BRIDGE SCREW (B)	1
		㉕ CENTER WHEEL BRIDGE SCREW	1
0012 484		㉔ BALANCE COCK SCREW	1
		㉒ BAREL & TRAIN WHEEL BRIDGE SCREW (A)	2
		㉑ SLIDING CROWN WHEEL PLATE SCREW	2
		㉙ SETTING LEVER JUMPER SCREW	1
0016 140		③ DATE DRIVING WHEEL SCREW	1
0012 488		⑱ OSCILLATING WEIGHT SCREW	1
0016 705		⑤ DAY JUMPER SCREW	2

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Cal. 4205C/4206C/4207C
Cal. 4208B/4225B/4227B

● Location of the jewels

		Upper		Lower	
		Cap jewel	Hole jewel	Cap jewel	Hole jewel
GEAR TRAIN MECHANISM	①7-2 CENTER WHEEL	—	○	—	—
	④8 ESCAPE WHEEL	—	○	—	○
	④0 FOURTH WHEEL	—	○	—	(○)
	③9 THIRD WHEEL	—	○	—	(○)
	②3 SECONDS PINIONS	—	—	—	○
	③7 BARREL COMPLETE (WITH MAINSPRING)	—	(○)	—	—
WINDING MECHANISM	②3 REDUCTION WHEEL	—	(○)	—	—
	②2 PAWL LEVER	—	—	—	○
BALANCE AND ESCAPEMENT	③0 PALLET FORK	—	○	—	○
	ENTRY PALLET JEWEL	○			
	EXIT PALLET JEWEL	○			
	②7 BALANCE COMPLETE (WITH STUD)	○	○	○	○
	ROLLER JEWEL	○			
TOTAL NUMBER OF JEWELS		17 (21) jewels			

For Cal. 4205C and 4206C, 4 jewels with blackets do not exist. Thus these movements have only 17 jewels while other calibers, 4207C, 4208B, 4225B and 4227B, have 21 jewels.

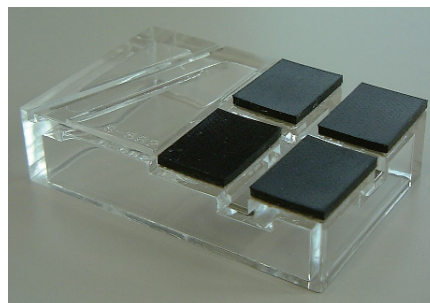
PARTS LIST

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Cal. 4208B/4225B/4227B

● Tools and consumables required for disassembling/reassembling

• Movement holder

UNIVERSAL MOVEMENT HOLDER
(S-682)



• Lubricants

SEIKO watch grease S-6 and watch oil AO-3 (or Moebius A)

S-6



AO-3



REMARKS ON DISASSEMBLING AND REASSEMBLING THE MOVEMENT

● How to remove the setting stem before dismantling the movement

[Crown at the normal position]

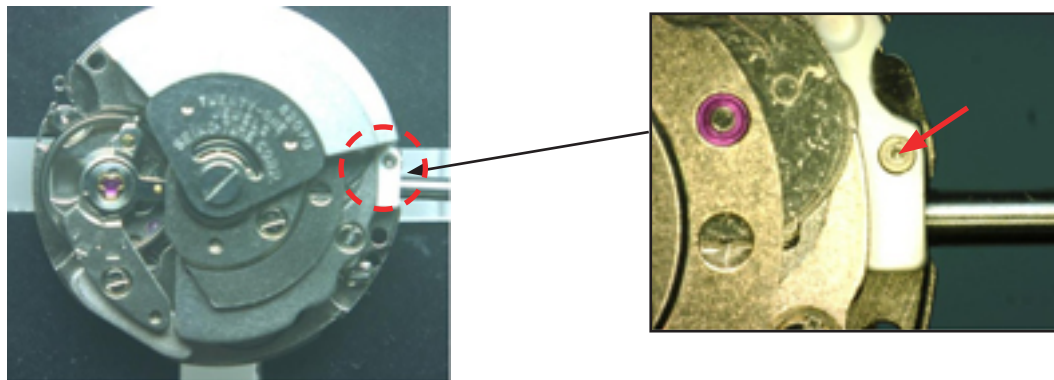


Fig. 1

Push the SETTING LEVER gently (refer to the picture above) in order to disengage it from the WINDING STEM. Then pull out the crown with stem completely.

● How to release the dial feet

The movement has two eccentric pins to hold the dial feet. Turn the pin about 90 degrees to release or fasten the dial feet and then disassemble or reassemble the dial.

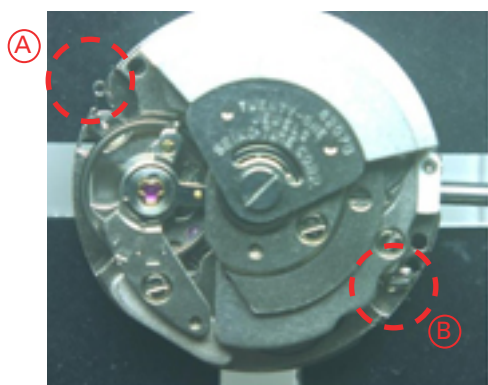
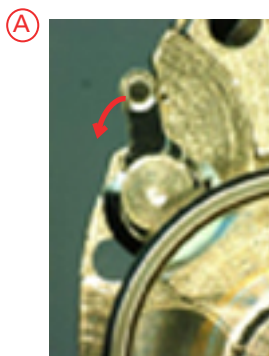


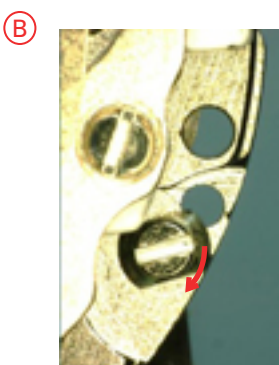
Fig. 2



A dial foot is locked.



A dial foot is released.



A dial foot is locked.



A dial foot is released.

● Setting mechanism – assembly positions

- ⑤1 YOKE
- ⑤2 SETTING LEVER

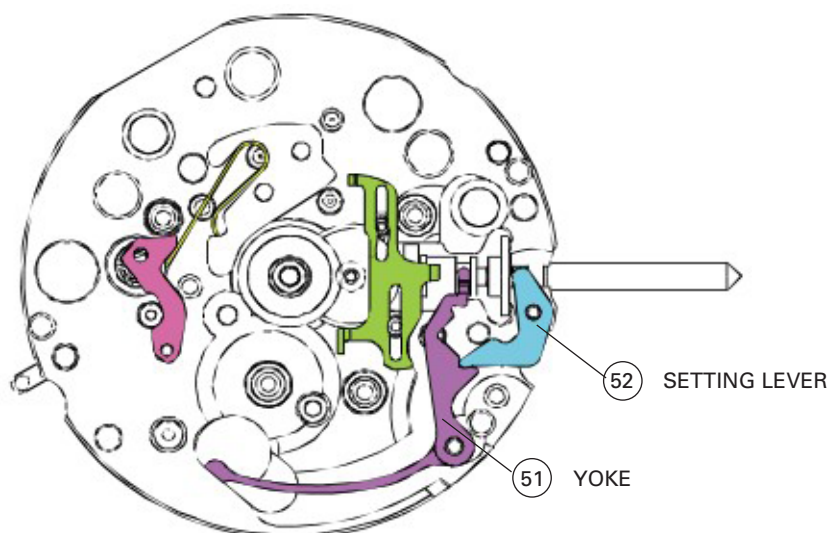


Fig. 3

● Gear train mechanism

- ④② SLIDING CROWN WHEEL SPRING
- ④③ INTERMEDIATE RATCHET WHEEL
- ④④ SLIDING CROWN WHEEL PLATE

Lubricate the sliding crown wheel which is pre-assembled to the SLIDING CROWN WHEEL PLATE (Fig. 4-2).

Secure the spring to the teeth of the sliding crown wheel (Fig. 4-3)

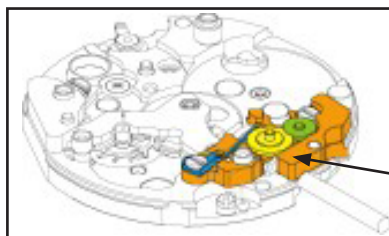


Fig. 4-1

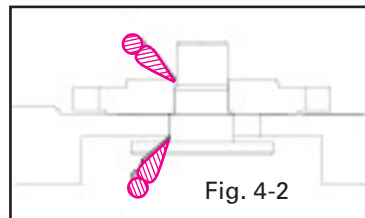


Fig. 4-2

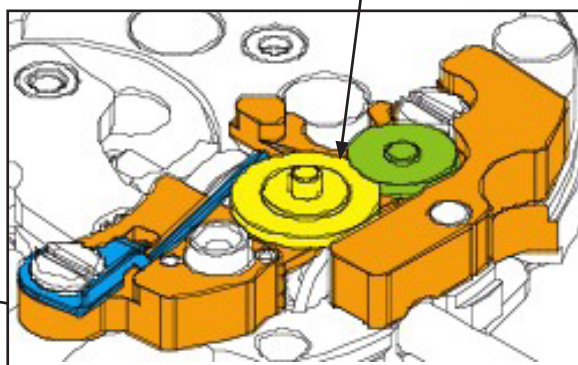


Fig. 4-3

● Winding mechanism

- ②① WINDING TRAIN BRIDGE
- ②② PAWL LEVER
- ②③ REDUCTION WHEEL

Assemble the PAWL LEVER to the ball-bearing suspension unit of the WINDING TRAIN BRIDGE and engage its teeth to the REDUCTION WHEEL (Fig. 5-1). Check if the teeth of the PAWL LEVER are correctly engaged through the holes on the bridge (Fig. 5-2).

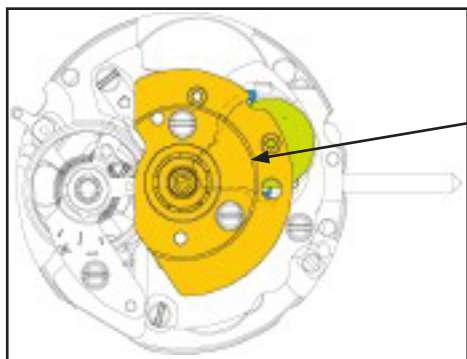


Fig. 5-1

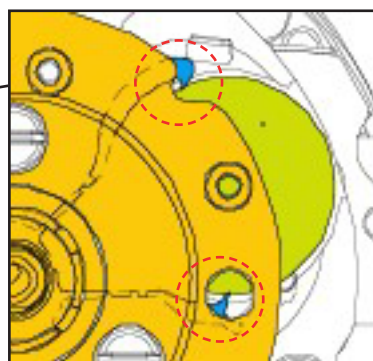


Fig. 5-2

①9 OSCILLATING WEIGHT

Assemble the OSCILLATING WEIGHT to the WINDING TRAIN BRIDGE. Both the hole on the weight and its axle are not circle. Make sure that the weight is set in a position according to the shape of its axle before tightening the OSCILLATING WEIGHT SCREW (Fig. 6).

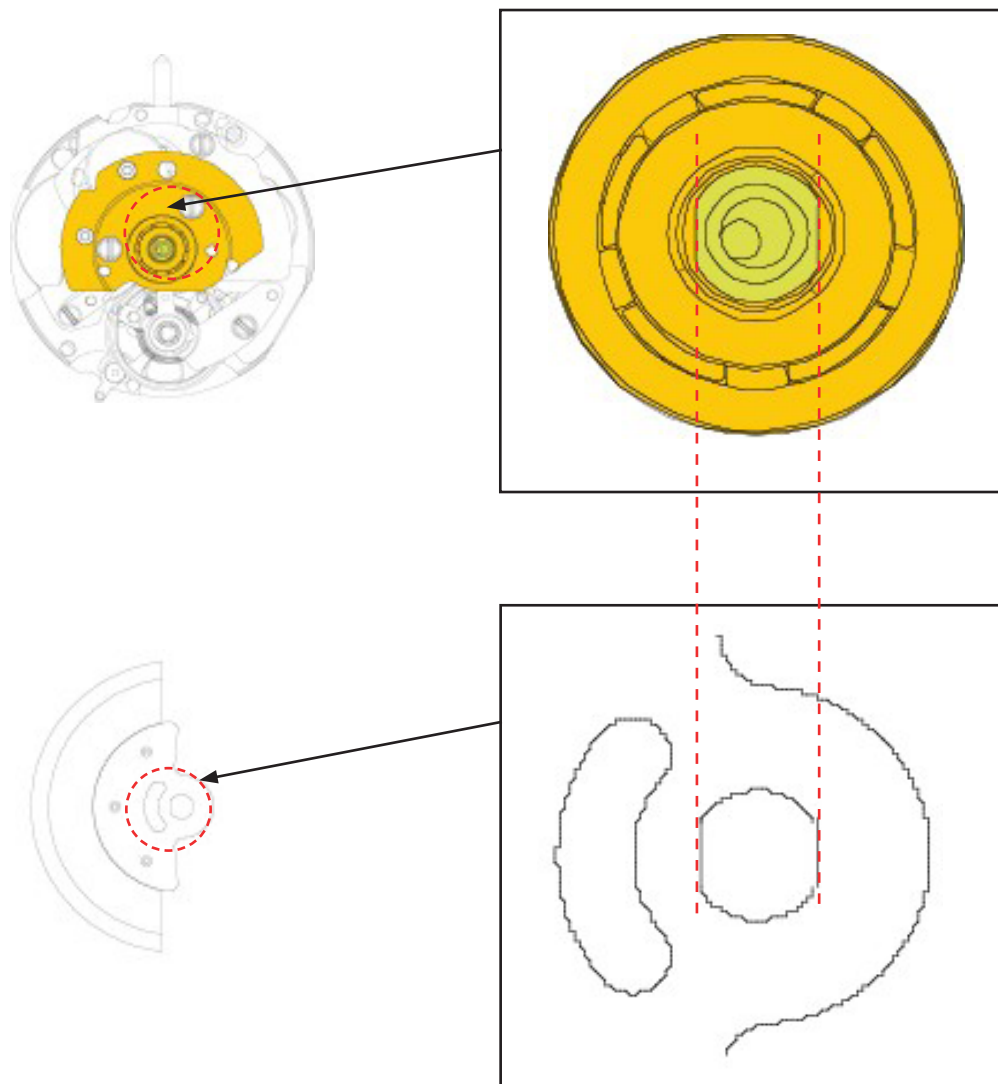


Fig. 6

[Automatic winding mechanism]

Cal. 42 series has an automatic winding mechanism with a pawl lever reverser system. The pawl lever is attached to the eccentric pin on the ball-bearing suspension unit for oscillating weight which is under the oscillating weight. Therefore, the pawl lever moves backward and forward against the reduction wheel when the oscillating weight oscillates around to left or right. The pawl lever has two fingers which engage with the reduction wheel gear. The reduction wheel gear is in the ratchet shape and the reduction wheel turns around in one direction by operation of the pawl lever. Rotation of the reduction wheel is transmitted to the ratchet wheel which is engaged with the reduction wheel and eventually the mainspring will be wound.

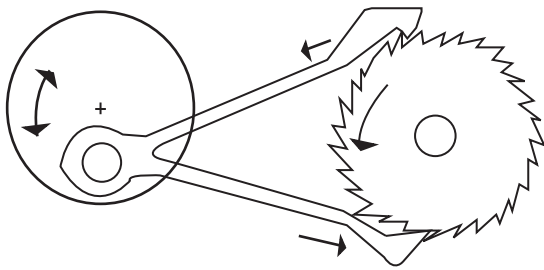


Fig. 7-1

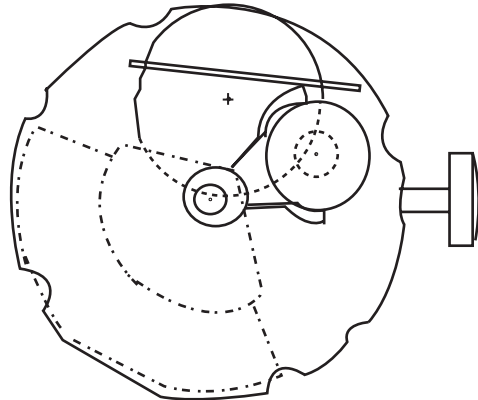


Fig. 7-2

The mainspring of this watch can be wound by turning the crown as well as the automatic winding mechanism. When the crown is turned clockwise, rotatory power is transmitted in the following order and the mainspring will be wound eventually.

Winding pinion → Sliding crown wheel → Intermediate ratchet wheel → Pinion of the reduction wheel → Ratchet wheel

If the crown is turned counterclockwise, the mainspring won't be wound because the sliding crown wheel will part from the intermediate ratchet wheel.

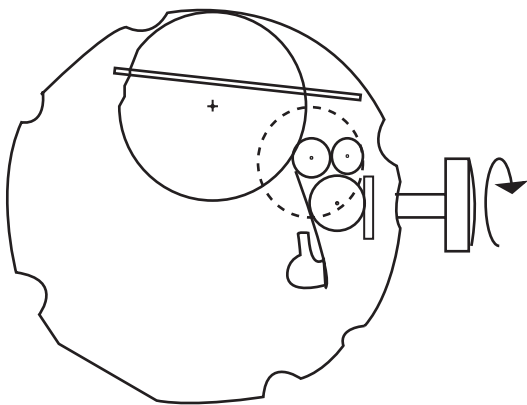


Fig. 8-1 (Winding)

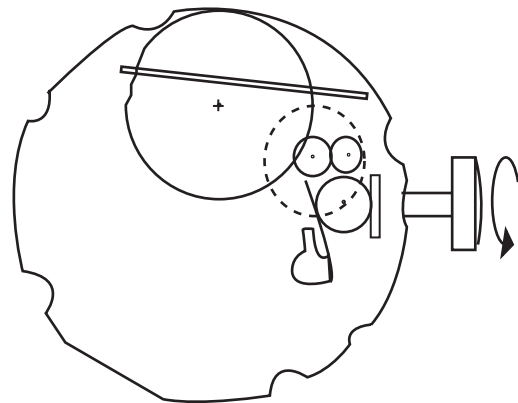


Fig. 8-2 (Disengaged)

● Calendar mechanism

⑧ DATE DISK GUARD

Assemble the DATE DISK GUARD with its hole to the post A on the MAIN PLATE. Then, engage its spring to the finger of the DAY-DATE CORRECTOR LEVER.

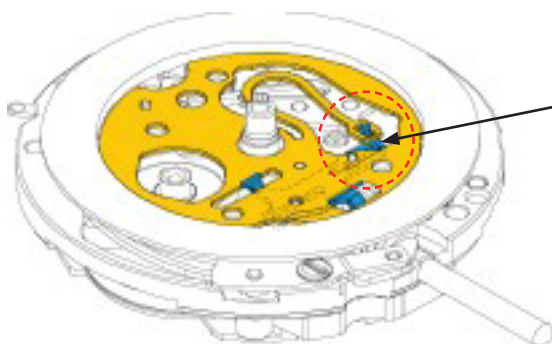
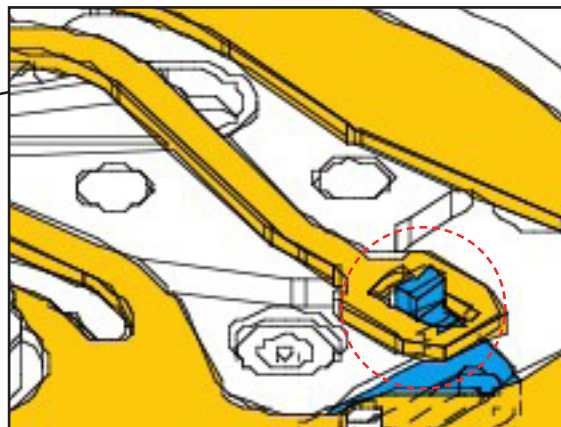
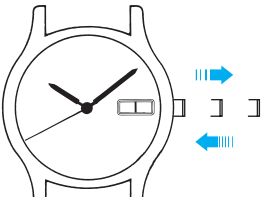
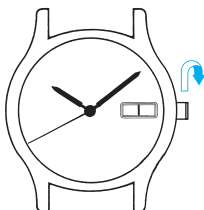
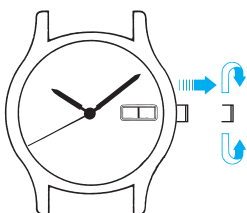
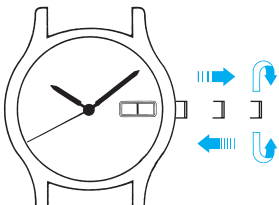


Fig. 9



REMARKS ON INSPECTION AND MEASUREMENT

● Function check

Operation	Function	Checkpoint
 <p>Pull out the crown to the 2nd click and push it back in to the normal position. Repeat the same several times.</p>	Setting mechanism - switching the function of the time setting.	Make sure that it has a click at each position and the stem is not pulled off.
 <p>Turn the crown clockwise.</p>	Manual winding function.	Check if the mainspring is wound when turning the crown clockwise.
 <p>Pull out the crown to the 1st click, then turn it.</p>	Calendar mechanism - correcting the day and date setting.	Make sure that the day and date change smoothly.
 <p>Pull out the crown to the 2nd click, then turn it.</p>	Setting mechanism - hour and minute hand setting	Make sure that the hour and minute hands move smoothly (without touching each other or touching the surface of the dial or inside of the glass).
	Hands installation	
	Calendar mechanism - day and date change	Make sure that the day and date change when the hour and minute hands pass around midnight.

TECHNICAL GUIDE

Cal. 4205C/4206C/4207C
Cal. 4208B/4225B/4227B

● 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	<div>Water pressure test</div> <div>↓</div> <div>Condensation test</div>	5 BAR
WATER RESIST 10BAR		10 BAR
WATER RESIST 15BAR		15 BAR
WATER RESIST 20BAR		20 BAR
SCUBA DIVER'S (AIR DIVER'S) 150 m	Condensation test	18.75 BAR = 150 (m) times 0.125
SCUBA DIVER'S (AIR DIVER'S) 200 m	↓	25 BAR = 200 (m) times 0.125
He-GAS DIVER'S 300 m	Water pressure test	37.5 BAR = 300 (m) times 0.125
He-GAS DIVER'S 600 m	↓	75 BAR = 600 (m) times 0.125
He-GAS DIVER'S 1000 m	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.

Standard rate for measurement	Mainspring wind up status	Fully wind up (T0)			After 24 hours from fully wind up (T24)
	Testing positions	Dial upwards: T0 (CH)	6 o'clock at the top	9 o'clock at the top	Dial upwards: T24 (CH)
	Measurement (daily rate in seconds:s/d)	±30 s/d	±40 s/d	±40 s/d	(Isochronism fault: T24-T0) ±40 s/d

● Power reserve test

Check the Power reserve of the watch after the mainspring is fully wound up and leave it on natural condition with the dial-up position. Make sure that the watch runs **more than 40 hours** until it stops.