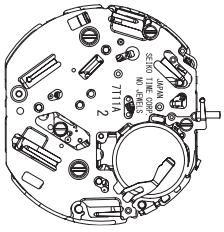
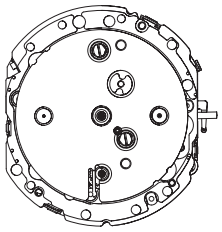
PARTS LIST /TECHNICAL GUIDE

Cal. 7T11A

[SPECIFICATIONS]

Item \ Cal. No.		7T11A
 • 3 hands (hour, minute, and small second hands) • 24 hour indicator		Movement   • Diameter Outside: Ø 27.6 mm Casing:Ø 27.0 mm • Height: 3.3 mm
Interval of hands movements		1 second
Driving system		Stepping motor, 3 pieces
Additional function		· STOPWATCH functions Measure up to 12 hours in one second increments Accumulated Elapsed Time Measurement Split Time Measurement STOPWATCH hand position adjustment · Battery life indicator (The small second hand moves at two-second intervals.) · Second hand stop function · Electronic circuit reset function
Crown operation	Normal position	Free
	1st click position	Time setting, hand position adjustment / resetting the circuit
Loss/Gain		Monthly rate: Less than 15 seconds (worn on the wrist at temperature range between 5 °C and 35 °C)
Regulation system		Nil
Gate time for rate measurement		Use 10-second gate.
Current consumption		Movement: Less than 1.10 µA Circuit block: Less than 0.20 µA
Coil resistance		4002700, 2 pieces: 2.10 – 2.70 KΩ 1. Coil block for hour, minute, and small second 2. Coil block for stopwatch second 4002711, 1 piece:1.80 – 2.40 KΩ 1. Coil block for stopwatch minute
Power supply	Battery No.	SEIKO SR927SW
	Battery voltage	1.55 V
	Battery life	Approx. 5 years
Number of jewels		0 jewel

SEIKO WATCH CORPORATION

SPECIFICATIONS

Cal. 7T11A has a new structure employing one crown and two buttons, but the basic movement structure of Cal. 7T11A is similar to the previous Cal. 7T Series watches, and the knowledge and technique you have gained in handling the previous Cal. 7T Series watches will come in handy when you repair Cal. 7T11A.

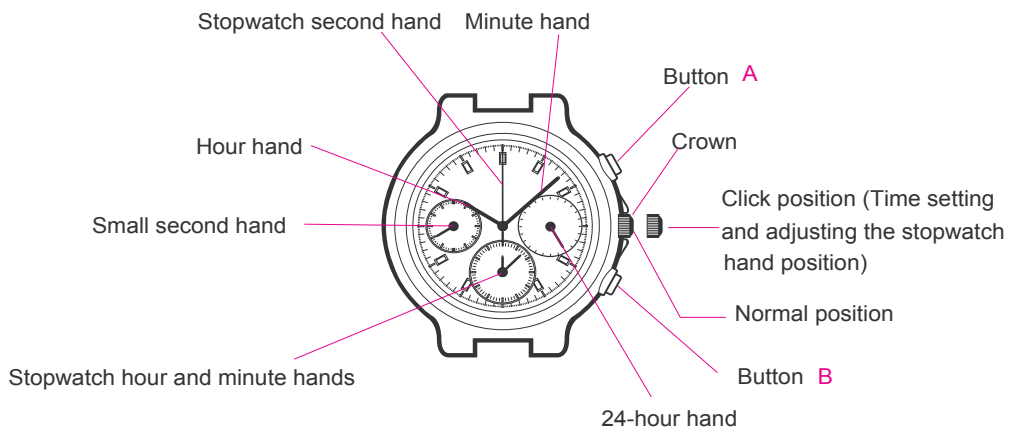
When repairing, however, you are requested to have full knowledge of the features characteristic of these watches and strictly observe the repairing and checking instructions provided in this guide so that the watches will be repaired correctly.

FEATURES

Cal. 7T11A

This is the multi-display analogue watch featuring a stopwatch function.

- The time is indicated by the 24-hour, hour and minute hands, and a small second hand.
- The stop watch can measure up to 12 hours.
  After 12 hours, it will stop automatically.



1. STOPWATCH FUNCTION

- Measurement performance
  Displays the elapsed time with the 3 designated STOPWATCH hands.
  Measures up to 12 hours in one second increments.

- Button operation (Crown position: Normal position)
  Button A: START/STOP
  Button B: SPLIT/SPLIT RELEASE/RESET

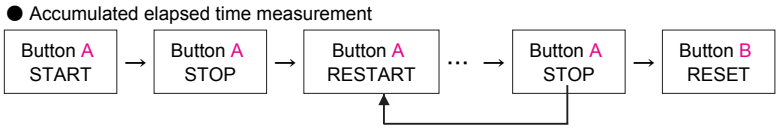
SPECIFICATIONS

Cal. 7T11A

- Measurement functions
  Accumulated elapsed time measurement and split time measurement are available.

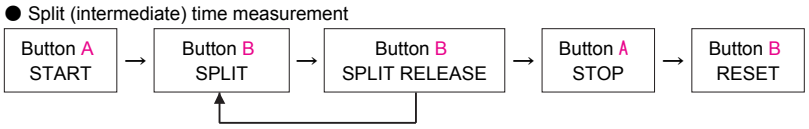
● Standard measurement

● Accumulated elapsed time measurement



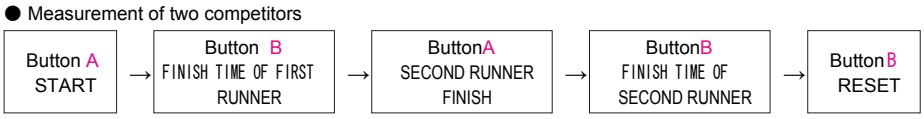
Restart and stop of the stopwatch can be repeated by pressing button A.

● Split (intermediate) time measurement



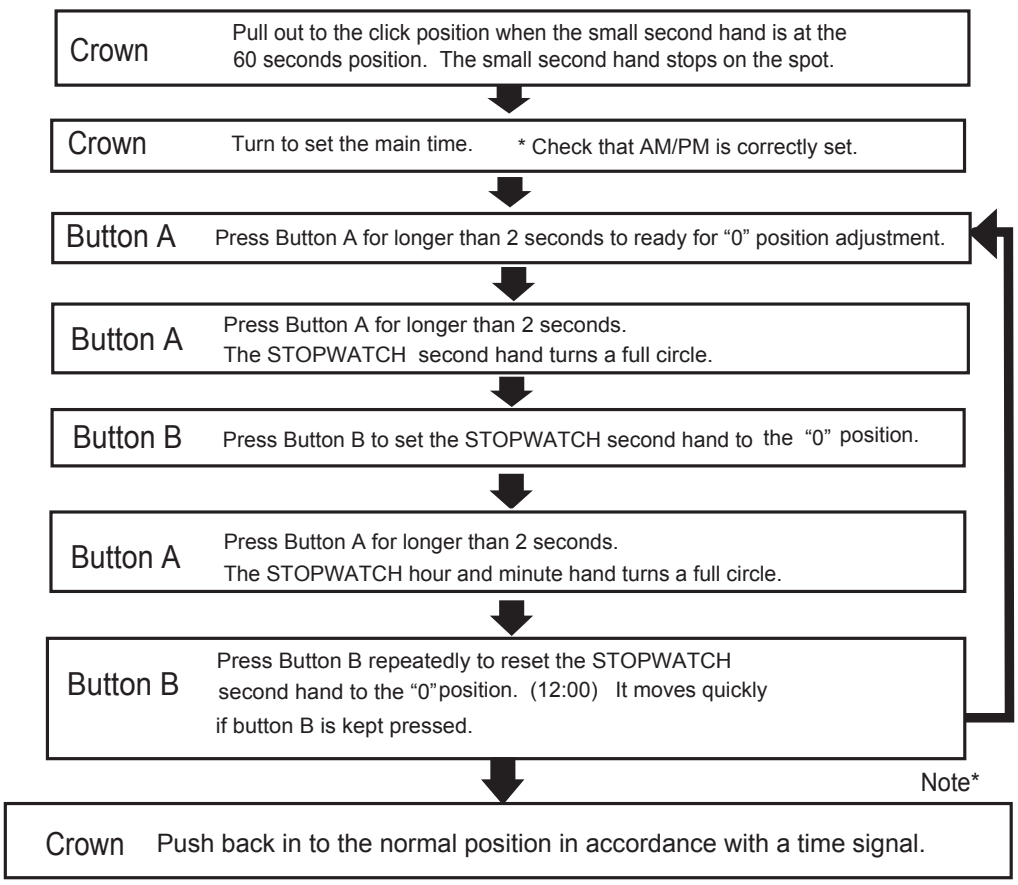
Measurement and release of the split time can be repeated by pressing button B.

● Measurement of two competitors



NECESSARY PROCEDURE AFTER BATTERY CHANGE

After installing the battery, pull out the crown to the second click position. And then follow the instructions below to correct the hand positions and set the time.



Note* Pressing Button A for longer than 2 seconds here will allow you to resume the procedure again

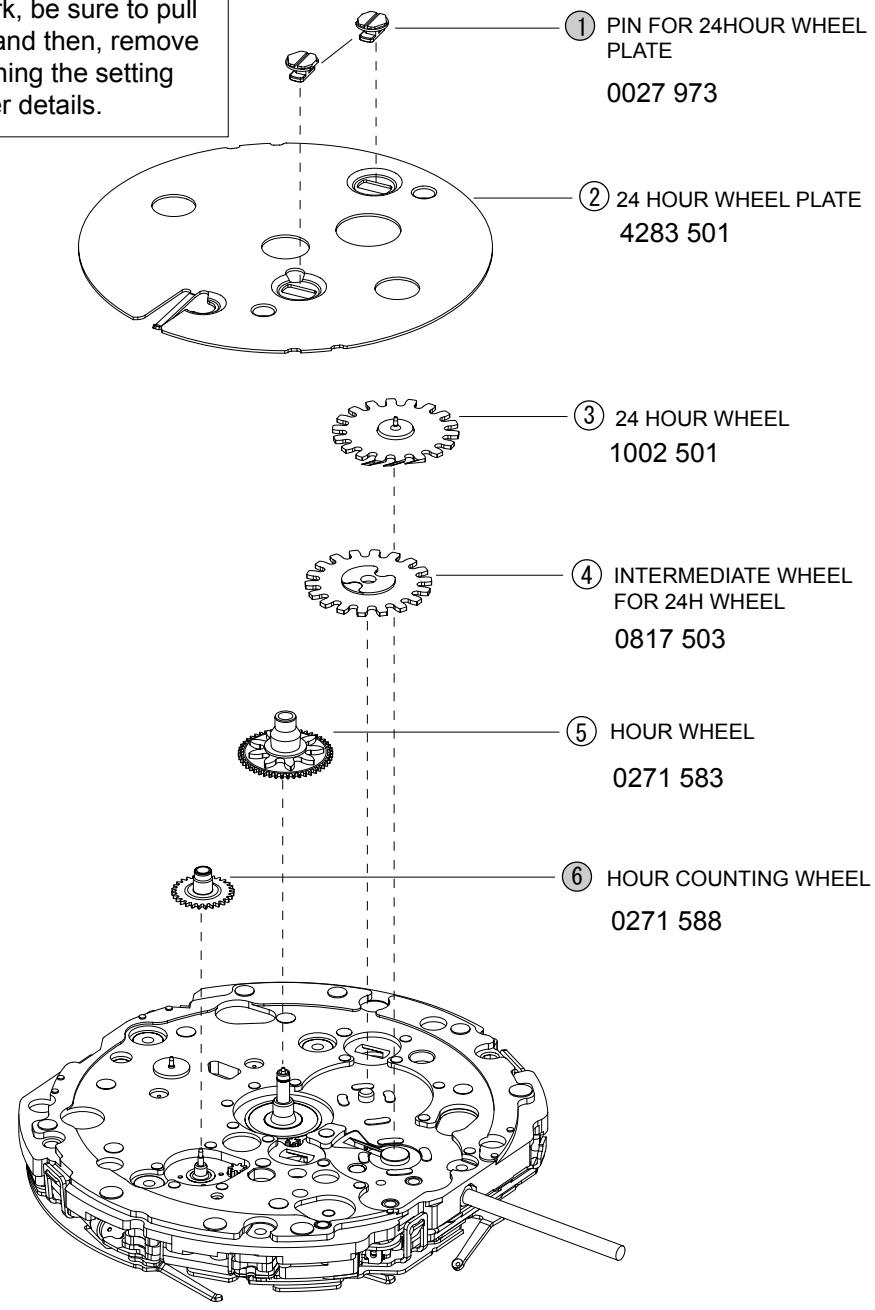
Disassembling procedures Figs.: ① → ㊼

Reassembling procedures Figs.: ㊼ → ①

Remarks on removing the Setting stem

To remove the SETTING STEM when taking out the movement from the case or while disassemb -ling the parts during repair work, be sure to pull out the crown to the first click, and then, remove the SETTING STEM while pushing the setting lever. Refer to page 9 for further details.

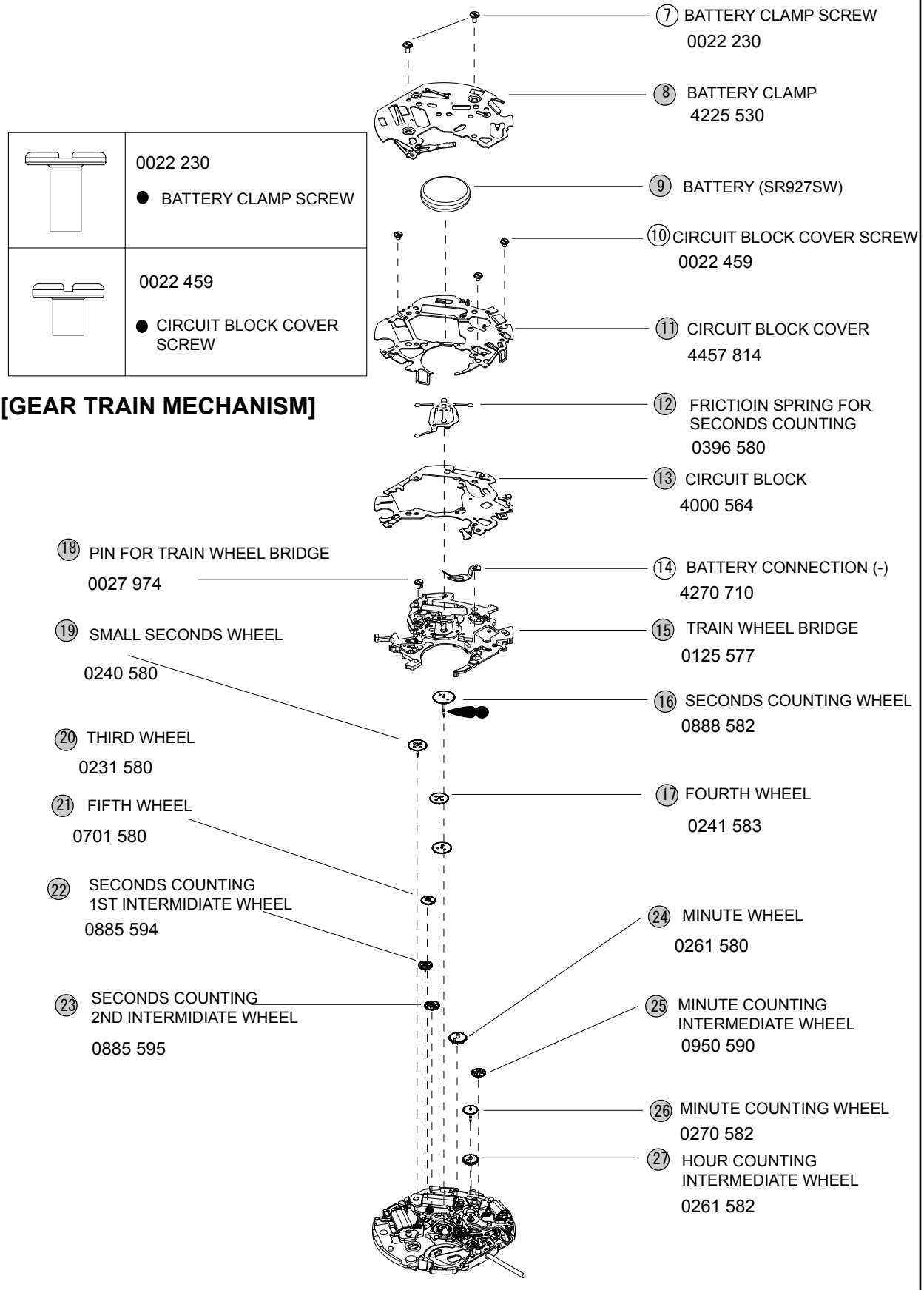
[24 HOUR INDICATOR MECHANISM]



Lubricating of some parts is shown in “REMARKS ON DISASSEMBLING AND REASSEMBLING.”

PARTS LIST

Cal. 7T11A

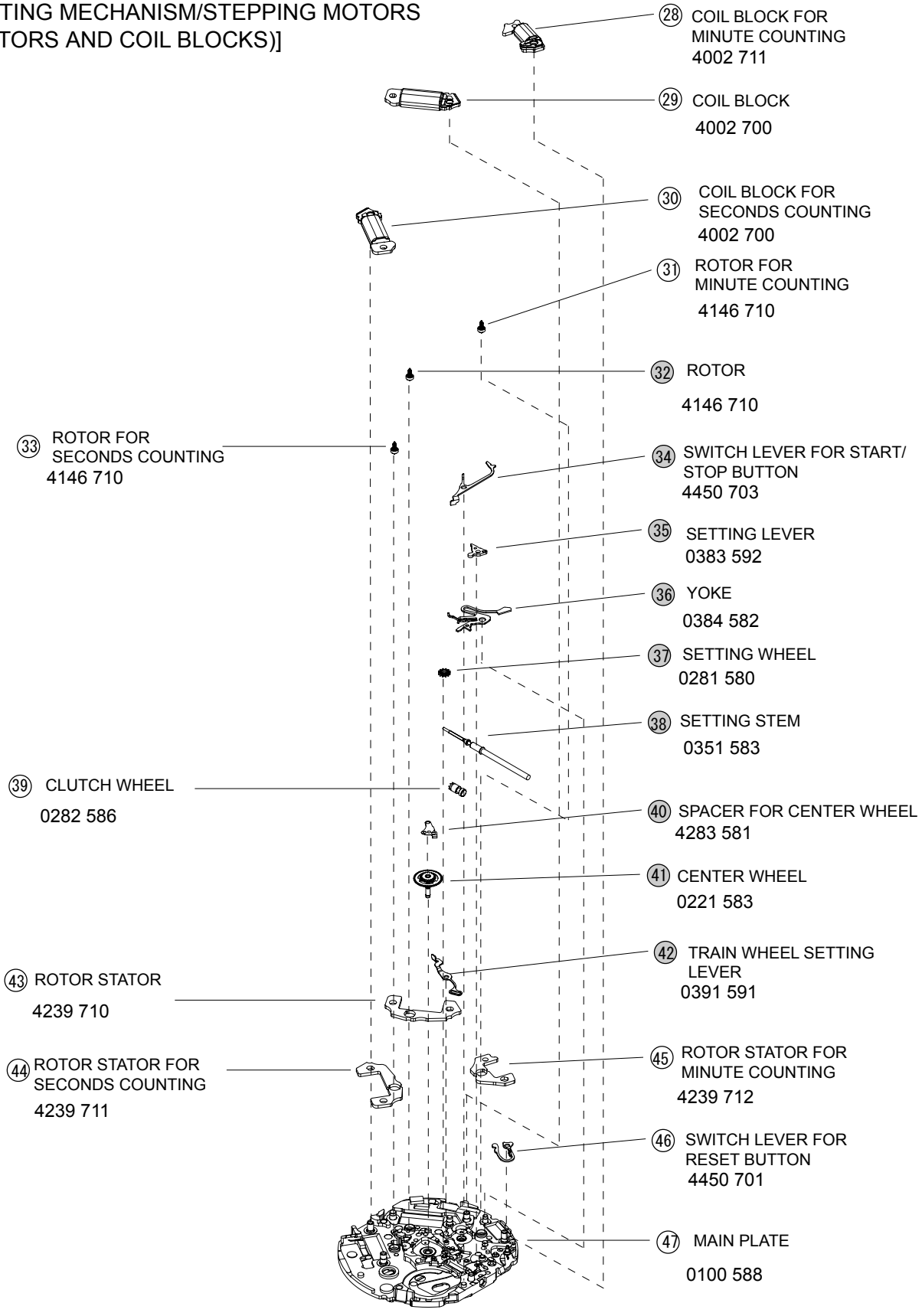


Lubricating of some parts is shown in “REMARKS ON DISASSEMBLING AND REASSEMBLING.”

PARTS LIST

Cal. 7T11A

[SETTING MECHANISM/STEPPING MOTORS (STATORS AND COIL BLOCKS)]



Lubricating of some parts is shown in “REMARKS ON DISASSEMBLING AND REASSEMBLING.”

● 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.

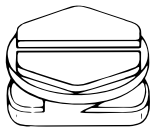
* HOLDING RING FOR DIAL (0866788)

㊳ SETTING STEM (0351583)

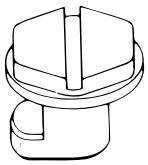
● How to discriminate resembled parts

Refer to the illustrations below to see the difference between those two types of pins.

① PIN FOR 24HOUR WHEEL PLATE
0027973



⑱ PIN FOR TRAIN WHEEL BRIDGE
0027974

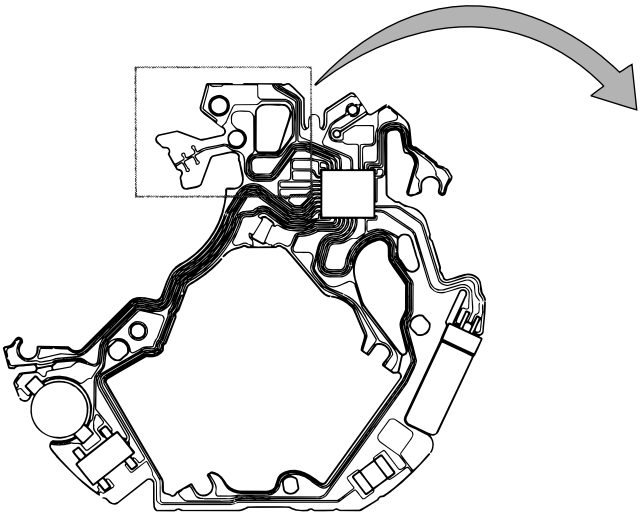


⑬ CIRCUIT BLOCK (4000 564)

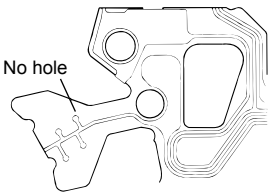
The circuit block (4000 564) for Cal.7T11A is also used for Cal.7T92A.

* The holes for discrimination are intended to discriminate among the circuit blocks for Cal. 7T11A, 7T62A, 7T92A and Cal.7T94.

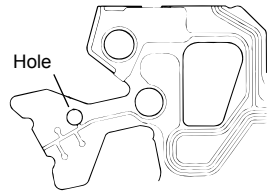
* After Cal. 7T11A was launched, in order to commonize the circuit block to Cal.7T92A, the shape of the circuit block was changed. The old circuit block (4000 518) for Cal.7T92A is usable only for Cal.7T92A. The new circuit block (4000 564) is usable for both Cal.7T11A and Cal.7T92A.



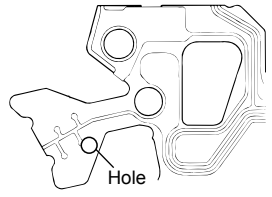
CAL. 7T62A



CAL. 7T11A, CAL.7T92A



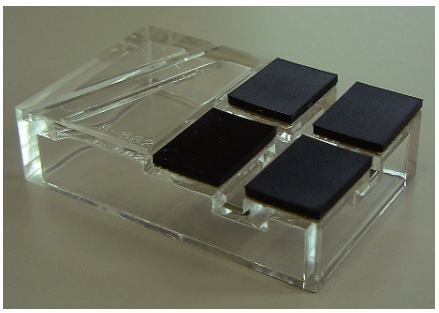
CAL. 7T94A



● Tools and consumables required for disassembling/reassembling

· Movement holder

UNIVERSAL MOVEMENT HOLDER
(S-682)



• Watch oils

SEIKO watch grease (S-6) and watch oils (AO-3 and AO-2)

S-6

AO-3

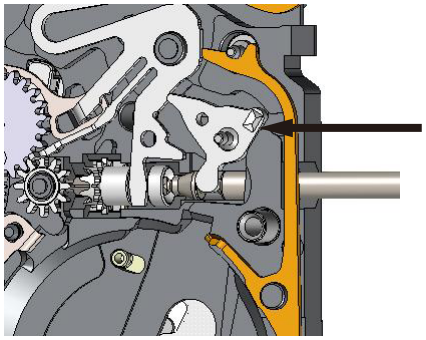
AO-2

REMARKS ON DISASSEMBLING AND REASSEMBLING THE MOVEMENT

● How to remove the SETTING STEM before dismantling the movement

Crown position: Click position

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



● Setting mechanism

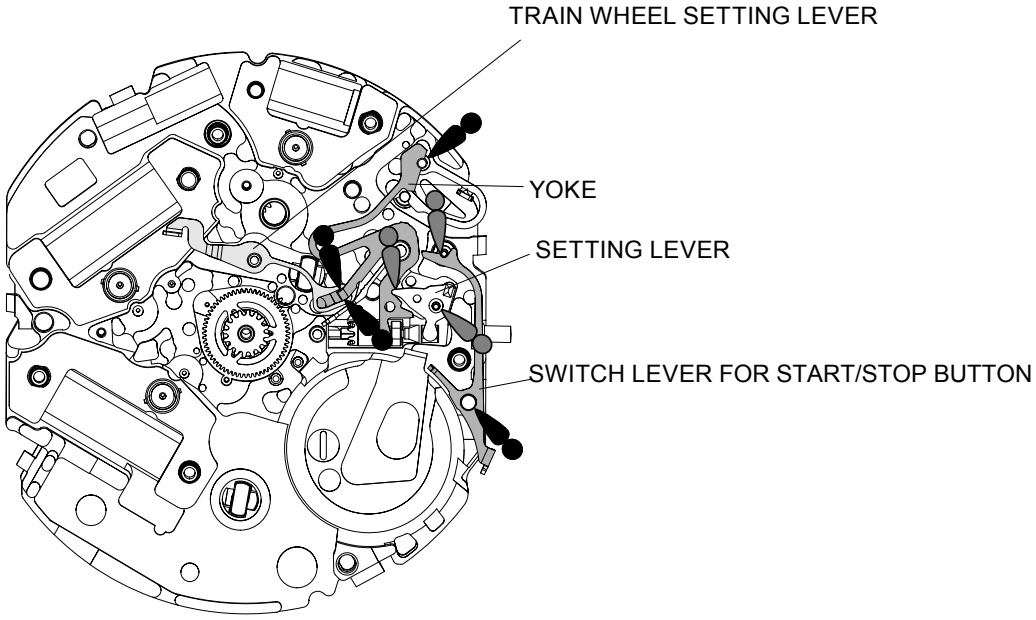
・ Setting position and lubricating

(34) SWITCH LEVER FOR START/STOP BUTTON

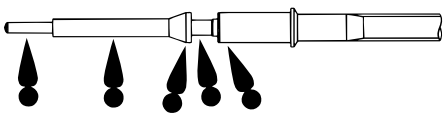
(35) SETTING LEVER

(36) YOKE

(42) TRAIN WHEEL SETTING LEVER



(38) SETTING STEM

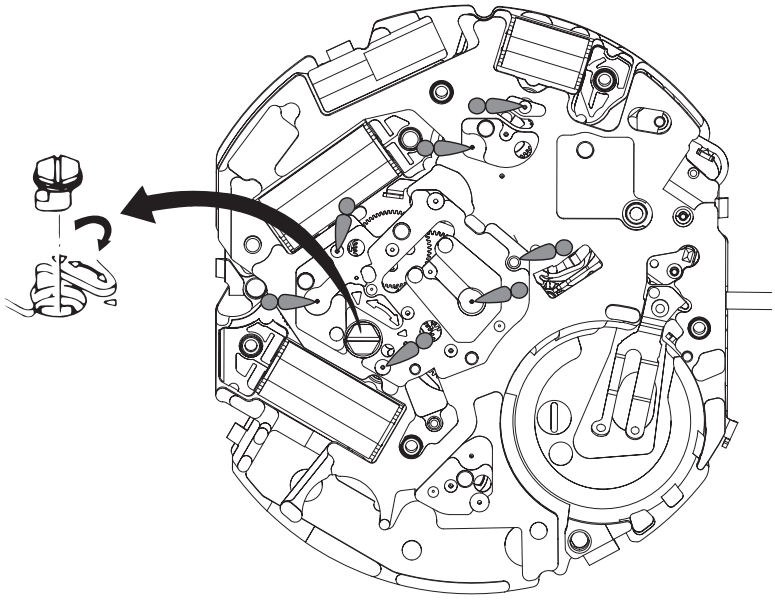


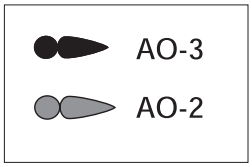
AO-3

SEIKO Watch Oil S-6

● Gear train mechanism

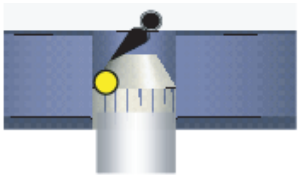
After setting the (15) TRAIN WHEEL BRIDGE and (18) PIN FOR TRAIN WHEEL BRIDGE as illustrated below, lubricate the upper pivots of the following parts:





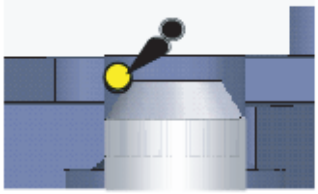
· (32) ROTOR, (33) ROTOR FOR SECONDS COUNTING, (31) ROTOR FOR MINUTE COUNTING (as illustrated below)

Upper pivot of the ROTOR

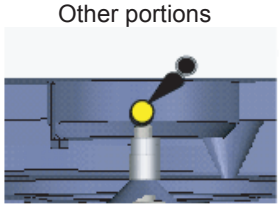


· (24) MINUTE WHEEL, (16) SECONDS COUNTING WHEEL and (19) SMALL SECONDS WHEEL (as illustrated below)

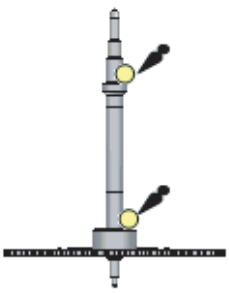
Upper pivot of the MINUTE WHEEL



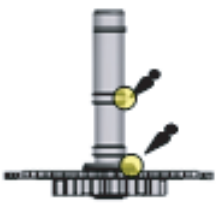
Other portions



(16) SECONDS COUNTING WHEEL

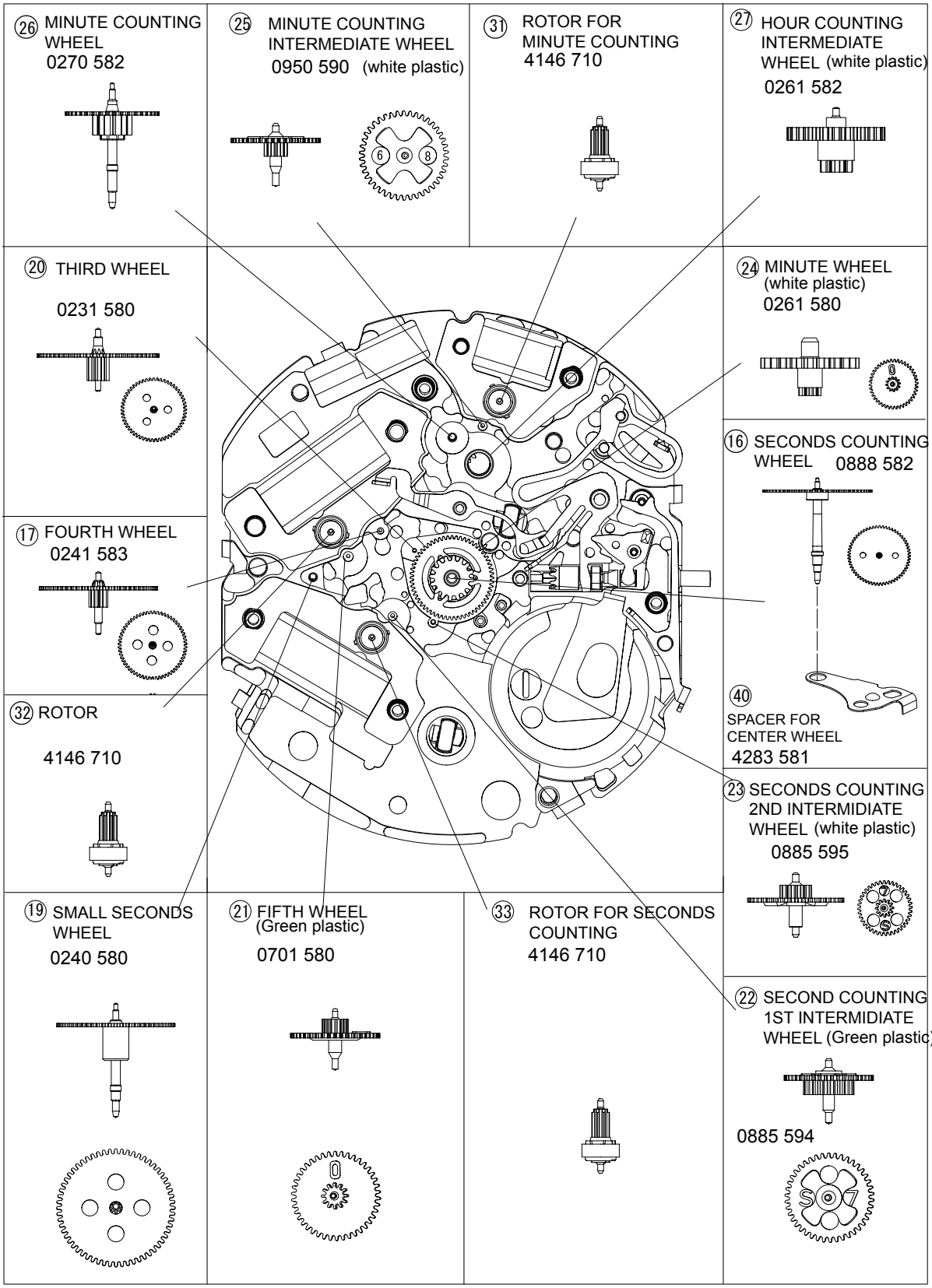


(41) CENTER WHEEL

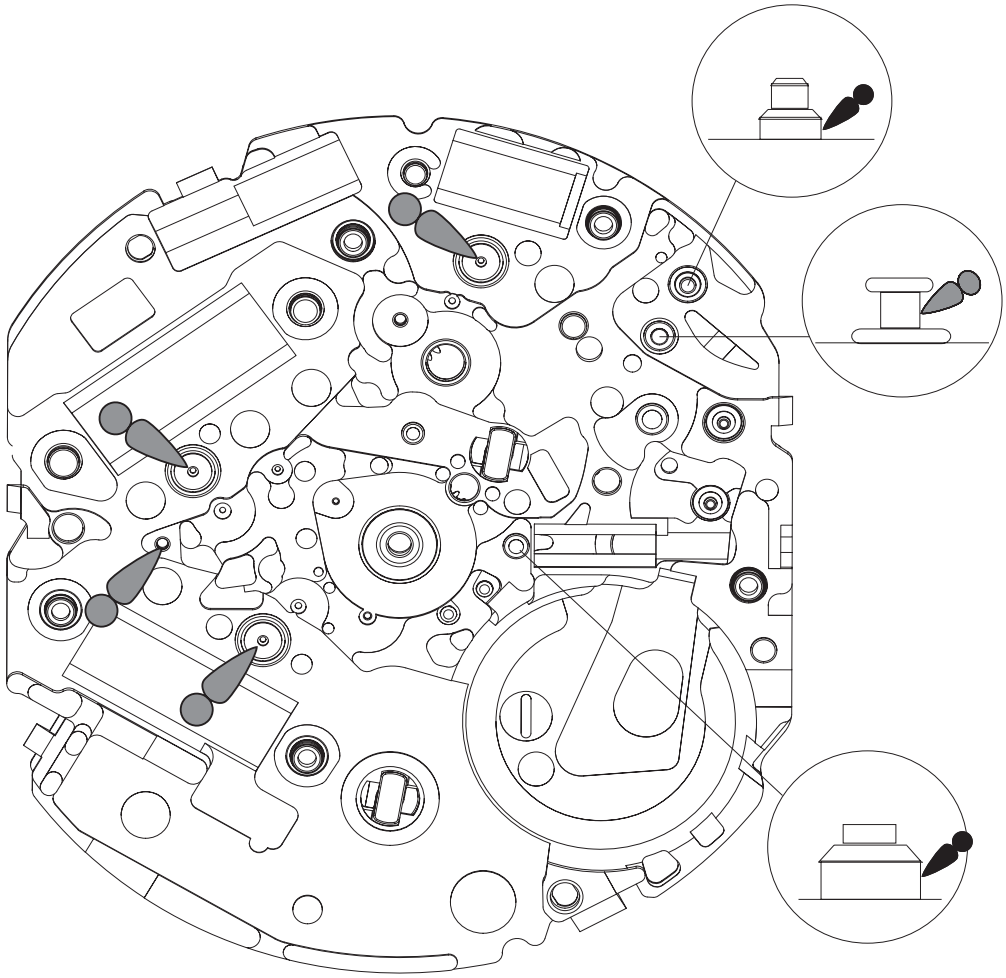


● Gear train mechanism

Setting position and lubricating



㊼ MAIN PLATE
Lubricating



AO-3
AO-2
S-6

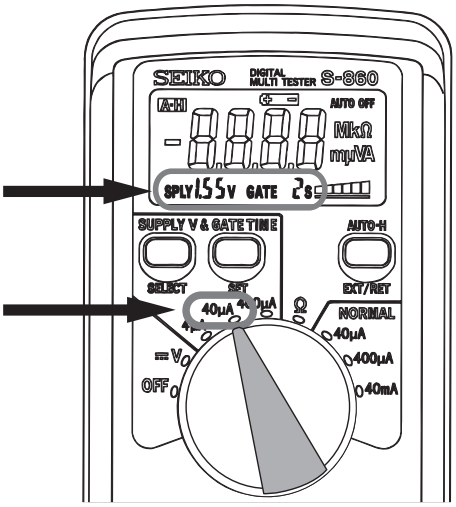
REMARKS ON INSPECTION AND MEASUREMENT

● How to measure the current consumption for the whole movement

1. To measure the current consumption for the whole move – ment, connect the (-) probe to the battery connection (-) and (+) probe to the other metal part of the movement, such as battery clamp or circuit block cover.

* When measuring the current consumption using the SEIKO digital multi-tester (S-860), use the range of 40 μ A of SUPPLY V (= 1.55 V) & GATE TIME (2 S).

2. Connect the AC component to the positive terminal for 2 seconds until a short circuit occurs to reset the integrated circuit.
3. After the integrated circuit is reset, wait approximately for 10 seconds until a stable measurement is obtained, and then read the measurement.
4. Make sure the read value is less than 1.10 μ A.



● How to measure the current consumption for the CIRCUIT BLOCK alone

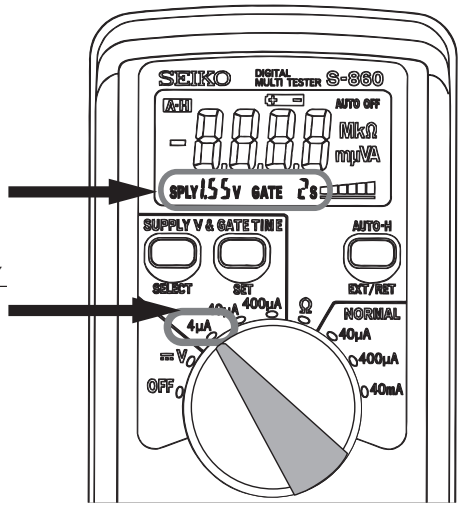
1. To measure the current consumption for the CIRCUIT BLOCK alone, connect each probe to the appropriate– positive (+) or negative (-) input terminal of the CIR– CUIT BLOCK (please refer to “Structure of the CIRCUIT BLOCK” below).

* When measuring the current consumption using the SEIKO Multi-Tester S-860, use the range of 4 μ A of SUPPLY V (= 1.55 V) & GATE TIME (2 S).

2. Repeat the same procedures as 2. and 3. of measuring current consumption for the whole movement above.

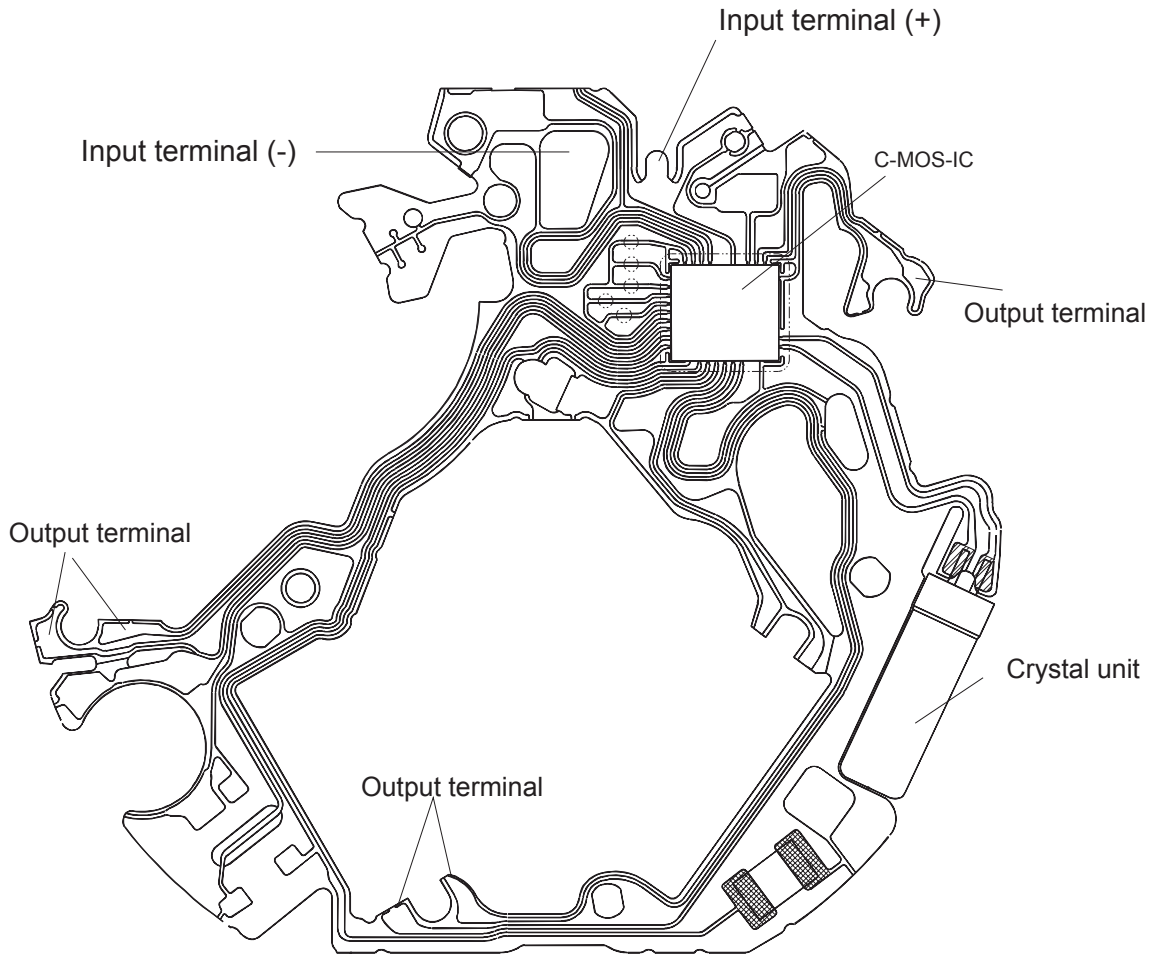
* When measuring the current consumption for the CIRCUIT BLOCK alone, be careful not to damage or deform the pat tern of the circuit block.

3. Make sure the read value is less than 0.20 μ A



TECHNICAL GUIDE

[Structure of the CIRCUIT BLOCK]



● Value checking – coil resistance (coil blocks)

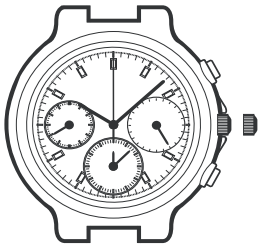
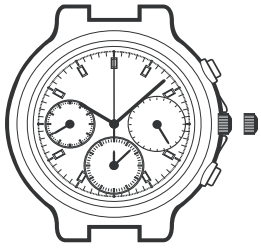
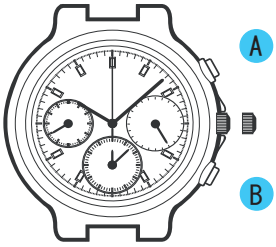
Check the resistance of each coil block if they are within the range in the following table.

COIL BLOCK	4002700	2.10 KΩ ~ 2.70 KΩ
COIL BLOCK FOR SECONDS COUNTING	4002700	2.10 KΩ ~ 2.70 KΩ
COIL BLOCK FOR MINUTE COUNTING	4002711	1.80 KΩ ~ 2.40 KΩ

TECHNICAL GUIDE

● Function check

Before doing the following function check, follow the instructions on P.3 to correct the hand positions, set the time and operate the stopwatch function.

<table>
<tr><th>Operation</th><th>Function</th><th>Check point</th></tr>
<tr><td> 
Pull out the crown to the click position and push it back in to the normal position. Repeat the same several times.</td><td>Setting mechanism - switching the function of the time seting</td><td>Make sure that it has a click at the position and the stem is not pulled off.</td></tr>
<tr><td rowspan="3"> 
Pull out the crown to the click position when the small second hand stops on the spot.</td><td>Stop watch second hand stop function</td><td>Make sure that the stop watch second hand stops when the crown is pulled out to the click position.</td></tr>
<tr><td>Setting mechanism - hour and minute hand setting</td><td rowspan="2">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).</td></tr>
<tr><td>Hands installation</td></tr>
<tr><td> 

<Standard Measurement>
Press button A to stop the stopwatch.
Press button B to reset the stopwatch.
A → A → B
Start Stop Reset

<Split Time Measurement>
A → B → B → A → B
Start Split Split Stop Reset
Release</td><td>Stopwatch mecha - nism</td><td>Make sure that the Stopwatch hands start/ stop smoothly.

Make sure that the Stopwatch hands are reset to the “0” posi - tion.</td></tr>
</table>

● Water resistance test

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

Marking on the case back	Water resistance test	Applied pressure
WATER RESISTANT (WATER RESIST)	Air overpressure test	3 BAR
WATER RESIST 5 BAR	Water overpressure test and condensation test	5 BAR
WATER RESIST 10 BAR		10 BAR
WATER RESIST 15 BAR		15 BAR
WATER RESIST 20 BAR		20 BAR
SCUBA DIVER'S (AIR DIVER'S) 150 m	Water-tightness and water overpressure test and condensation tests before/after water overpressure 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		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		125 BAR = 1000 (m) times 0.125

● Accuracy test

Measure the rate and make sure the value shows within ±0.50 s/d

Use 10 seconds gate of the tester.

TROUBLESHOOTING

	Symptom	Possible causes	Solutions
Movement	The watch stops operating.	The battery has been depleted.	Measure the battery voltage. Replace the battery with a new one.
		The hour wheel and the pinion of the minute wheel are not properly engaged. (Or the teeth of the hour wheel and/or minute wheel have been broken.)	Check the relevant parts, and replace the damaged parts with new ones.
		The hooking portions of the circuit block cover are not properly engaged, resulting in poor conductivity. The coil is broken.	Securely attach the hooks of the circuit block cover to the main plate. Measure the coil block resistance. Replace the coil with a new one.
		One or more wheels have been contaminated with dirt, dust or other particles. An excessive amount of oil in the movement has caused adhesive forces among the parts. (wringing)	Remove dirt or dust and clean the contaminated wheels. Be careful so as not to damage the teeth of the plastic parts while cleaning.
	The current consumption for the whole movement exceeds the standard value.	Dirt, dust or foreign particles are adhered to the movement.	Remove dirt, dust or foreign particles and clean the movement.
		The driving pulse is generated in order to compensate the excessive load applied to the wheels. (The oil has deteriorated, leaked or run out.)	If the current consumption for the circuit block alone is within the standard value range, overhaul and clean the movement parts, and then make the measurement again.
	The current consumption for the circuit block alone exceeds the standard value.	The light from outside the movement is affecting the measurement.	Shut out the light, and make the measurement again.
		There is a defect in the IC (integrated circuit).	Replace the circuit block with a new one.

	Symptom	Possible causes	Solutions
STOPWATCH	One or more STOPWATCH hands have stopped moving or show an abnormal movement.	The relevant coil is broken.	Measure the coil block resistance. Replace the coil with a new one if necessary.
		An excessive load is being applied to the chronograph wheels due to dust or foreign particles adhering to them or oil starvation.	Clean the relevant parts and lubricate with an adequate amount of oil.
	The step motor shows an abnormal movement .	There is a crack on the circuit block switch pattern.	Replace the circuit block with a new one.
		The step motor has been deformed.	Replace the stator with a new one.
	The buttons do not operate normally.	The amount of oil around the buttons is insufficient.	Clean the buttons and lubricate appropriately.
		The circuit block pattern has been broken or bent.	Adjust the circuit block pattern or replace the circuit block with a new one.
Exterior parts	The crown falls off.	The winding stem is not securely installed. (the setting lever and yoke are disengaged.)	Check the main plate, winding stem, setting lever and yoke. Replace the defective parts with new ones.
	The current consumption exceeds the standard value.	An excessive load is being applied due to friction among the hour, minute and STOPWATCH hands.	Adjust or remount the relevant hands.
	Small amount of water/ blur inside of the glass persists.	Water resistance is deteriorated. The watch has been subjected to water pressure that exceeds the guaranteed degree.	Investigate the causes to take necessary measures, while cleaning inside of the watch.