

# Cal. 7D46, 7D48

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You are now the proud owner of a SEIKO KINETIC® Cal. 7D46/7D48. For best results, please read the instructions in this booklet carefully before using your SEIKO KINETIC®. Please keep this manual handy for ready reference.

Sie sind jetzt stolzer Besitzer einer SEIKO KINETIC® Kal. 7D46/7D48. Lesen Sie diese Bedienungsanleitung vor der Verwendung Ihrer SEIKO KINETIC® aufmerksam durch, um die optimale Nutzung dieser Uhr zu gewährleisten. Heben Sie diese Bedienungsanleitung gut auf, um jederzeit wieder nachlesen zu können.

Vous voici l'heureux propriétaire d'une montre SEIKO KINETIC® Cal. 7D46/7D48. Pour en obtenir de bonnes performances, veuillez lire attentivement les explications de ce mode d'emploi avant d'utiliser votre montre SEIKO KINETIC®. Conservez ce mode d'emploi pour toute référence ultérieure.

Grazie per aver acquistato questo orologio SEIKO KINETIC® Cal. 7D46/7D48. Per ottenerne i migliori risultati leggere attentamente le istruzioni di questo libretto prima di passare all'uso dell'orologio stesso. Tenere poi il manuale a portata di mano, per ogni eventuale futura, ulteriore consultazione.

Usted es ahora un orgulloso propietario de un Reloj SEIKO KINETIC® Cal. 7D46/7D48. Para los mejores resultados, por favor lea las instrucciones de este librito cuidadosamente antes de utilizar su Reloj SEIKO KINETIC®. Le rogamos que guarde este conveniente manual para pronta referencia.

Você pode sentir-se orgulhoso de ter adquirido um SEIKO KINETIC® Cal. 7D46/7D48. Para obter dele os resultados máximos, solicitamos-lhe que, antes de usar o seu SEIKO KINETIC®, leia atentamente as instruções contidas neste opúsculo. E guarde este manual para referências futuras.

歡迎你購買精工 7D46/7D48 機型動力錶®。為了更好地使用精工動力錶®, 請您在使用前詳細閱讀本說明手冊, 並把說明手冊妥善保管, 以備隨時用於參考。

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☆ *For the care of your watch, see "TO PRESERVE THE QUALITY OF YOUR WATCH" in the attached Worldwide Guarantee and Instruction Booklet.*

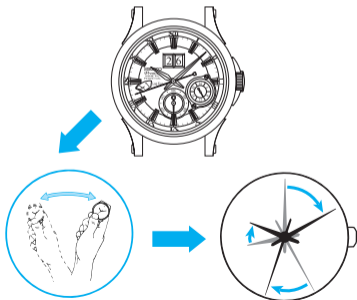
## FEATURES

Unlike the conventional quartz watch powered by the button-type battery, the KINETIC is an analog quartz watch equipped with an Automatic Generating System, the unique technology developed by SEIKO, which generates electrical energy to power the watch by utilizing the movement of the arm or wrist, and stores it in the KINETIC ELECTRICITY STORAGE UNIT (KINETIC E.S.U.) The watch is provided with the following additional functions.

### POWER SAVE FUNCTION AND TIME RELAY FUNCTION

In order to conserve the stored electrical energy, the watch automatically enters power save mode to stop the hands from moving approximately 24 hours after the watch is taken off the wrist. When you decide to wear the watch again, simply swinging the watch several times will awaken it and the hands will indicate the correct time to resume normal operation.

- ❖ The time retrieved by the time relay function may include a certain amount of time loss or gain within the range of accuracy of the watch ( $\pm 15$  seconds per month).
- ❖ *In a case that the fully charged watch enters the power save mode, the time relay function of the watch remains operable for approximately four years.*



## PERPETUAL CALENDAR FUNCTION

- Once set, the calendar automatically adjusts for odd and even months including February of leap years. (Exceptionally, the manual adjustment at the end of February is required for the years that are divisible by four but are not leap years, which comes only once every hundred years, for example, the year 2100.)
  - \* *It takes approximately two seconds for the calendar to change its display. However, it may take two minutes if the temperature is low or the stored electrical energy is being depleted.*
- While the watch is in power save mode, the perpetual calendar continues to function.
- Even if the watch is completely stopped due to a shortage of stored electrical energy, the calendar can be manually adjusted by simple procedures.

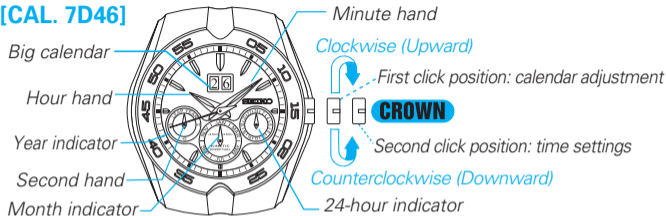


### CAUTION

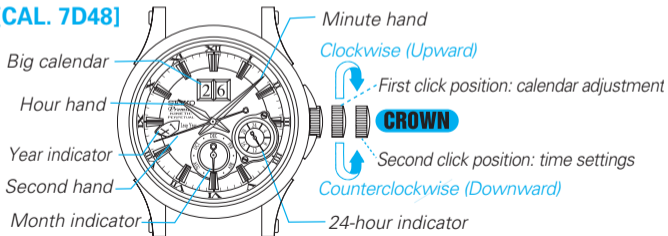
- **The movement of your arm while the watch is worn generates electrical energy to power the watch. Even if the watch is worn on your arm, it will not be charged while your arm is not in motion.**
  - **It is recommended that the watch be worn on your wrist daily for at least 10 hours.**
- ❖ *THE KINETIC E.S.U. is an abbreviation for KINETIC ELECTRICITY STORAGE UNIT, which is the name of the power source employed in the KINETIC movements.*

# DISPLAY AND BUTTON OPERATION

## [CAL. 7D46]



## [CAL. 7D48]



- ❖ Orientation of the displays of year, month and 24-hour indicator may vary depending on the model.

## BEFORE INITIAL USE

### ■ POWER SAVE FUNCTION

- This watch is powered by electrical energy generated and stored by the built-in Automatic Generating System. The watch also features the “**power save function**,” which automatically stops the hands from moving when the watch is not in use for a certain period of time to minimize the electrical energy consumption. When the watch is in power save mode, the hands stop moving but the built-in IC continues to calculate the time and calendar.
- When the watch is in power save mode, swinging the watch several times will activate the “**time relay function**,” which automatically resets the watch hands to the correct time that has been retained inside the watch.
  - \* *Do not pull the crown out to the second click position while the watch is in power save mode. This will cancel the power save function causing the time data retained in the watch to be erased.*
  - \* *Do not leave the watch with its crown being at the second click position, as the watch consumes greater energy than it uses while it is in power save mode.*

#### <Remarks on Power Save Function>

- When the watch is left untouched for approximately 24 hours (approximately one day), the power save function is automatically activated.
  - \* *While the second hand is moving at two-second intervals, the power save function cannot be activated.*

- When the power save function is activated, the hour, minute, second and 24-hour hands will stop moving.
  - \* *While the watch is in power save mode, the calendar continues to function normally.*
  - \* *When the watch is left untouched in power save mode and if the date does not change correctly, the stored electrical energy is being depleted. Recharge the watch until the watch resumes the usual one-second interval movement, and then reset the time and calendar before starting to wear it again.*
  - \* *When the watch wakes up from power save mode while it is running on extremely low electrical power, the second hand starts moving at two-second intervals. (Refer to "IF THE SECOND HAND STARTS MOVING AT TWO-SECOND INTERVALS" on page 18.)*

## ■ TIME RELAY FUNCTION

- When the watch is in power save mode, the hands stop moving but the built-in IC continues to calculate the time. When a certain amount of electrical power is generated, the watch hands are adjusted automatically to the time retained inside the watch.
- The operable time of the time relay function varies depending on the electrical energy stored inside the watch. In a case that the fully charged watch enters the power save mode, the time relay function of the watch remains operable for approximately four years.
  - \* *If the stored electrical energy is completely depleted while the watch is in power save mode, swinging the watch will not activate the time relay function. Instead, the second hand starts moving at two-second intervals. (Refer to "HOW TO WAKE UP THE WATCH FROM POWER SAVE MODE" on page 10 or "IF THE SECOND HAND STARTS MOVING AT TWO-SECOND INTERVALS" on page 18.)*



## SCREW LOCK TYPE CROWN

- Some models have the screw lock type crown, which can be locked by the screw when it is not necessary to be operated.
- Locking the crown will prevent operating errors.
- Unscrew the crown before any crown operation. When the operation is over, screw the crown in to lock.

### ■ HOW TO OPERATE THE SCREW LOCK TYPE CROWN

If your watch has a screw lock type crown, unscrew it before any crown operation.

- ❖ Always keep the crown locked unless it is necessary for operating the crown.

#### [To unscrew the crown]

Turn the crown counterclockwise (downward) to unscrew it. The crown is unlocked and can be operated.



*The crown can be pulled out.*

#### [To screw the crown in]

Upon completion of the crown operation, screw the crown in completely until it stops by turning it clockwise (upward) while gently pressing it back into the original position.



*Turn the crown while pressing it back in.*

## HOW TO WAKE UP THE WATCH FROM POWER SAVE MODE

- In order to “wake up” the watch from power save mode, swing the watch gently from side to side to recharge it.
  - \* Do not pull out the crown to the second click position before performing the following procedures. This will cancel the time relay function.

Swing the watch from side to side approximately 4 to 6 times rhythmically at a rate of twice a second, making an arc of about 20 cm as shown in the illustration below.



- \* No additional benefit is obtained by swinging the watch with greater vigor.
- \* When the watch is swung, the oscillating weight in the generating system rotates to drive the mechanism. As it rotates, it gives out a sound, which is not a malfunction.

1. Only the hour, minute and 24-hour hands move quickly to indicate the current time which has been internally retained in the built-in IC.
2. Then the second hand will follow quickly to resume the normal movement.



The second hand remains still.



**Notes**

- \* *If there is any time difference between the factory default time settings and the local time in your area, reset the time and calendar before initially using the watch after purchase.*
- \* *While the watch is in power save mode, the built-in IC computes the time internally at an accuracy of  $\pm 15$  seconds per month which is equivalent to the accuracy of conventional quartz watches. Therefore, the time relayed from the built-in IC to the hands by the automatic time relay function may include a certain amount of time loss or gain within the range of the accuracy of the watch ( $\pm 15$  seconds per month.) In such a case, reset the time as needed before starting to wear the watch.*
- \* *When the watch wakes up from power save mode while it is running on extremely low electrical power, the second hand starts moving at two-second intervals. (Refer to "IF THE SECOND HAND STARTS MOVING AT TWO-SECOND INTERVALS" on page 18.)*

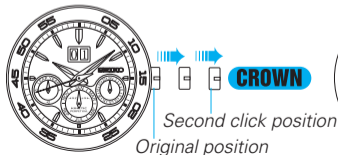
## HOW TO SET THE TIME AND CALENDAR

- If there is any time difference between the factory default time settings and the local time in your area, reset the time and calendar before initially using the watch after purchase.
- In a case that the watch is completely stopped due to a shortage of stored electrical energy, recharge the watch until the second hand resumes the normal one-second interval movement, and then reset the time and calendar. (Refer to "IF THE SECOND HAND STARTS MOVING AT TWO-SECOND INTERVALS" on page 18.)

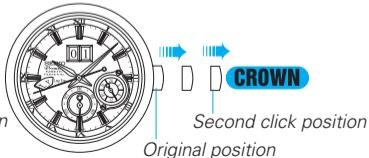
### ■ HOW TO SET THE TIME

1. Pull out the crown to the second click. The second hand will be stopping on the spot.
  - \* If your watch has a screw lock type crown, unscrew the crown first, and then pull it out to the second click.
  - \* To set the second hand exactly, pull out the crown to the second click at a moment the second hand is pointing to the 12 o'clock ("0" second) position.

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[Cal. 7D48]



2. Turn the crown to set the time.
  - \* Remember to check the 24-hour indicator to correctly set AM/PM.
  - \* To set the time accurately, advance the minute hand 4 to 5 minutes ahead of the correct time, and then turn it back to the exact time.
3. Push the crown back into the original position. The watch immediately starts ticking.
  - \* To set the second hand exactly, push the crown back into the original position in accordance with a time signal.



## CAUTION

- **Avoid setting the time or calendar at a time between 23:00 and 1:00.**
  - \* If you adjust the time or calendar at a time between 23:00 and 1:00, and the date is incorrectly advanced or delayed one day, readjust the watch avoiding the above period of time.
- **While the watch runs in normal operation, the date changes during the time between 23:30 and 0:30.**

## ■ HOW TO SET THE PERPETUAL CALENDAR

- Date, month and year are interlocked on the perpetual calendar. To set the month or year, advance the date by turning the crown until the month or year becomes adjustable.
  - \* *The calendar can be adjusted by turning the crown in either direction upward or downward at the first click position.*

### <Remarks on month, year settings>

When the date advances to change to " 1 ," the month indicator rotates for one month to indicate the following month. When the date advances further until the month indicator moves forward from December (DEC) to January (JAN), the year indicator rotates to show the following year.



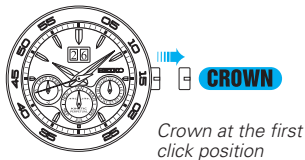
## CAUTION

- **When setting the calendar in the direction backward, put the date back for one or two days behind the date you wish to set, and then advance it to the desired date.**
  - \* *Follow the above procedure for setting the calendar in the direction backward, otherwise the date numeral may not appear in the center of the calendar frame. Even though this happens, the date display will be aligned correctly the following day.*
  - \* *When setting the calendar backward to dates in December, the year indicator may not be correctly aligned. In that case, set the calendar back to November then forward it to the correct date in December.*

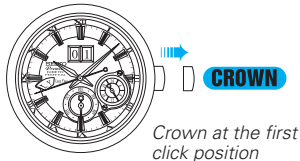
- Each calendar item should be adjusted in sequence of year, month and then date.  
Pull out the crown to the first click.

\* If your watch has a screw lock type crown, unscrew the crown first, and then pull it out to the first click.

[Cal. 7D46]



[Cal. 7D48]











- Turn the crown until the year becomes adjustable.

\* Each calendar item becomes adjustable in sequence of date, month and then year, by turning the crown.

\* The calendar can be adjusted by turning the crown in either direction upward or downward.

\* The year indicator shows the number of the year(s) past since the last leap year. When setting the year, check whether the year you are going to set is a leap year or not, if it is not a leap year, check how many years have passed (1, 2 or 3) since the last leap year.

Year indicator				
<b>CAL. 7D46</b>				
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<i>Year Indication</i>	L.Y.	+1	+2	+3
<i>Number of the years passed since the last leap year</i>	<i>Leap Year</i>	<i>One year</i>	<i>Two Years</i>	<i>Three Years</i>
<i>Year</i>	2004 2008 2012 . . . . 2088 2092 2096	2005 2009 2013 . . . . 2089 2093 2097	2006 2010 2014 . . . . 2090 2094 2098	2007 2011 2015 . . . . 2091 2095 2099

❖ *The design of the year indicator may vary depending on the model.*



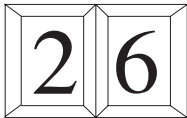
3. Turn the crown to rotate the year indicator until the desired indication appears. Continue to turn the crown until the month becomes adjustable.



*Month display*

*Example: Position of the month display hand (June)*

4. Turn the crown to set the month display hand to indicate the correct month. Then continue to turn the crown to set the date.



*Example: Date display of the 26th*

5. Upon completion of the calendar adjustment in sequence of year, month and date, push the crown back into the original position.

## **IF THE SECOND HAND STARTS MOVING AT TWO-SECOND INTERVALS (ENERGY DEPLETION FOREWARNING FUNCTION)**

- When the second hand starts moving at two-second intervals whether it is worn or left untouched, the watch may run down within approximately 12 hours.
- When the watch wakes up from power save mode while it is running on extremely low electrical power, the second hand starts moving at two-second intervals.
- In such a case, swing the watch from side to side to sufficiently charge the KINETIC E.S.U. (refer to “HOW TO CHARGE THE WATCH” on page 19), and then reset the time and calendar.

## ■ HOW TO CHARGE THE WATCH

1. Swing the watch from side to side rhythmically at a rate of twice a second as shown in the illustration below.

This movement will recharge the watch to start moving at the normal one-second intervals from the two-second interval movement. If you find the second hand moving at two-second intervals after swinging the watch, swing it further until the second hand moves at the normal one-second intervals.



- \* *After swinging the watch, check that the second hand is moving at one-second intervals.*

- \* *To charge the KINETIC E.S.U. efficiently, swing the watch from side to side rhythmically at a rate of twice a second, making an arc of about 20 cm.*
  - \* *No additional benefit is obtained by swinging the watch more quickly or with greater vigor.*
  - \* *When the electrical energy stored in the KINETIC E.S.U. is completely depleted after the watch is left untouched for a long time, the watch requires at least 450 swings to generate power to resume the normal operational movement.*
2. It is recommended that the watch be swung further until it can reserve enough power to run the watch for approximately one day.  
As a guideline, 200 swings will generate the power to run the watch for approximately one day.

## POWER RESERVE GUIDELINES FOR THE KINETIC E.S.U.

- Wearing the watch continuously for 12 hours will accumulate power to run the watch for approximately one and a half additional days.
  - \* *As a general guideline, if you wear the watch every day for 12 hours over a period of a week, the power to run the watch for approximately ten days will be additionally secured. If the watch enters the power save mode, this amount of energy will keep the watch running for approximately one month and a half.*

## POWER SOURCE (KINETIC E.S.U.)

This watch requires no periodic battery replacement as it is powered by the exclusive secondary battery, which is completely different from conventional batteries for watches. This exclusive secondary battery is an environmentally friendly, clean energy storage device.



### CAUTION

**Never install a silver oxide battery for conventional watches in place of the KINETIC E.S.U. , which can generate heat that can cause bursting or ignition.**

## SPECIFICATIONS

- |   |   |  |
|---|---|--|
| 1 | Frequency of crystal oscillator .....   | 32,768 Hz (Hz = Hertz ... Cycles per second)   |
| 2 | Loss/gain (monthly rate) .....  | Less than 15 seconds (worn on the wrist at normal temperature range 5 °C ~ 35 °C)                              |
| 3 | Operational temperature range .....   | -10 °C ~ +60 °C  |
| 4 | Driving system  |  |
|   | • Step motor: 2 pieces  |  |
|   | One for the hour and minute hands moving at five-second intervals   |  |
|   | The other for the second hand moving at one-second intervals  |  |
|   | • Piezoelectric motor (For perpetual calendar): 1 piece   |  |
| 5 | KINETIC electricity storage unit .....  | Button type, 1 piece   |
| 6 | Continuous operating time   |  |
|   | • Time relay function .....   | Approximately 4 years (if the watch is fully charged)  |
|   | • After the second hand starts moving at two-second intervals .....   | Approximately 12 hours   |
| 7 | Additional functions .....  | Power save function, Perpetual Calendar, Energy depletion forewarning function, Overcharge prevention function |
| 8 | IC (Integrated Circuit) .....   | C-MOS-IC, 3 pieces   |
|   | Oscillator, frequency divider, drive and charge control, auto-relay control circuit, calendar control circuit |  |
| 9 | Generating system .....   | Miniature AC generator   |
| * | The specifications are subject to change without prior notice for product improvements.                       |  |