

# **ORIENT QUARTZ**

**TECHNICAL MANUAL**

**J3-SERIES  
CAL. No. J3920**





**ORIENT WATCH CO., LTD.**

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< Movement Series >	J3 Series	
< Cal. No. >	J3920	
< Type >	Analog display crystal oscillator wristwatch (two hands, small second hand and chronograph hands)	
< Additional Functions >	<ul style="list-style-type: none"> <li>• Second correction (small second hand) and electronic circuit reset functions.</li> <li>• Battery exhaust warning function (small second hand).</li> <li>• Date and day fast-forwarding adjustment</li> <li>• Stopwatch function (5/100 sec. to 30 min. and integrated and split time measurement).</li> <li>• Setting chronograph hands to 0.</li> <li>• Remaining-time counter</li> <li>• Counter</li> <li>• Chronograph hand test</li> </ul>	

## 1. About the J3920

The J3920 is a useful versatile wristwatch with stopwatch and counter functions as well as the regular time indicating and date and day-of-week indicating functions. It uses four stepping motors to perform these functions and the stopwatch and counter functions. The stopwatch function permits time measurement in units as small as 5/100 sec. Though packed with so many functions, it is very compact in size. Its outside diameter is 31.10 mm, and its thickness 4.71 mm.

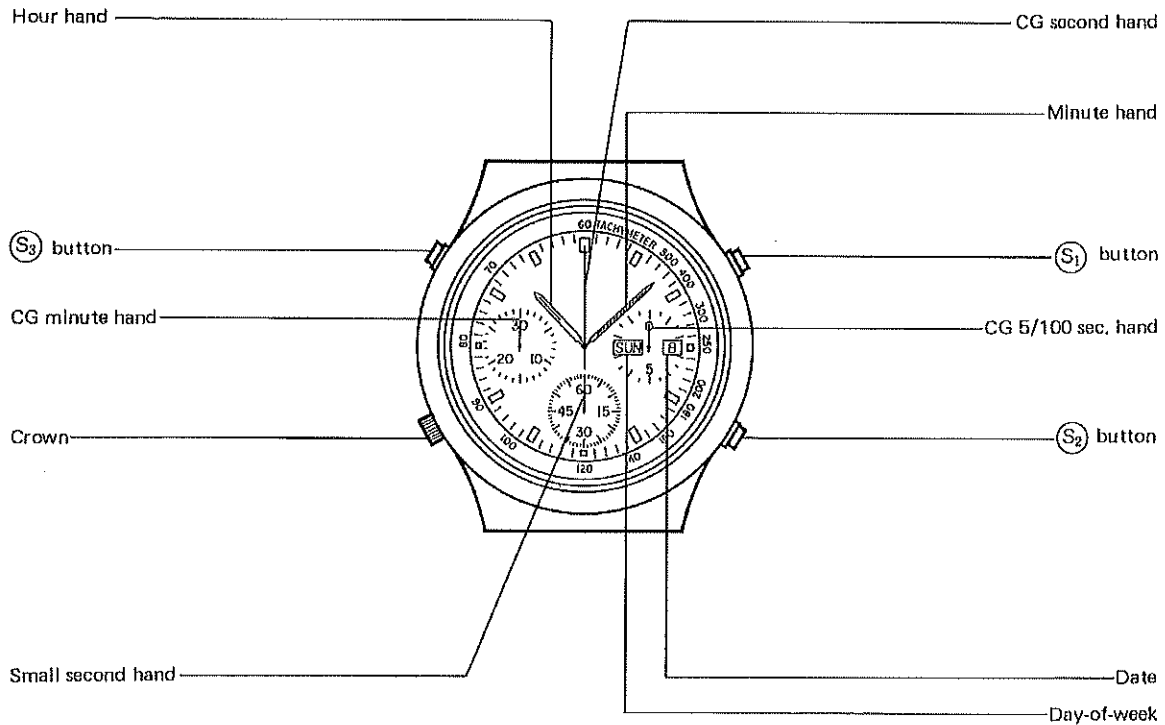
It was designed for high precision and high reliability and also for ease of assembling/disassembling.

## 2. Movement Specifications

Item	Contents
Movement size	< Outside diameter > $\phi$ 31.10 mm < Dropped part diameter > $\phi$ 29.00 mm
Thickness	< Nominal thickness >    4.42 mm < Maximum thickness >    4.71 mm
Crystal oscillator frequency	32,768 Hz
Driving method	Stepping motor method (4 stepping motors)
Time adjustment	Logical Adjustment System or Rotary Step System (One step: Approx. 0.26 sec./day)
Battery	Silver oxide battery Sony Eveready No. 394 or Hitachi Maxell SR936SW < Capacity >    70 mAH < Battery life >    Approx. 2 years
No. of jewels	15 (center wheel top, fifth wheel top, second CG wheel top, rotor top and bottom, minute CG rotor top and bottom, second CG rotor top and bottom, 5/100 second CG rotor top and bottom, 5/100 second CG wheel top and bottom and 5/100 second CG intermediate wheel top and bottom)
Wrist-worn accuracy	(Normal temperature range) Mean monthly rate: Within $\pm 15$ sec.
Operating temperature range	$-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$

\* The movement specifications are subject to change without notice for improvement.

### 3. Functions of Crown and Buttons and Names of Components



Crown position	Crown's functions	Functions of switches
Normal position	Free	(S <sub>1</sub> ) : Starting/stopping of the stopwatch (S <sub>2</sub> ) : Resetting of the stopwatch, test of all CG hands (S <sub>3</sub> ) : Stopping of or releasing from split measurement
Pulled out one step	Date correction: Counterclockwise  Day correction: Clockwise	(S <sub>1</sub> ) : Fast-forwarding of the CG 5/100 sec. hand (S <sub>2</sub> ) : Fast-forwarding of the CG second hand (S <sub>3</sub> ) : Fast-forwarding of the CG minute hand <div style="display: inline-block; vertical-align: middle; margin-left: 10px;">                         } * Advanced to the next notch by pushing it once.                          Advanced fast and continuously by keeping it down.                     </div>
Pulled out two steps	Time setting Second-hand correction Electronic circuit reset switch	(S <sub>1</sub> ), (S <sub>2</sub> ), (S <sub>3</sub> ) : No function

\* Pulling out the crown when the CG hands are moving will not stop them. (The measurement will be continued.) Pulling it out when the CG hands are stopped will reset them.

\* "CG" stands for a chronograph (watch with a recording mechanism).

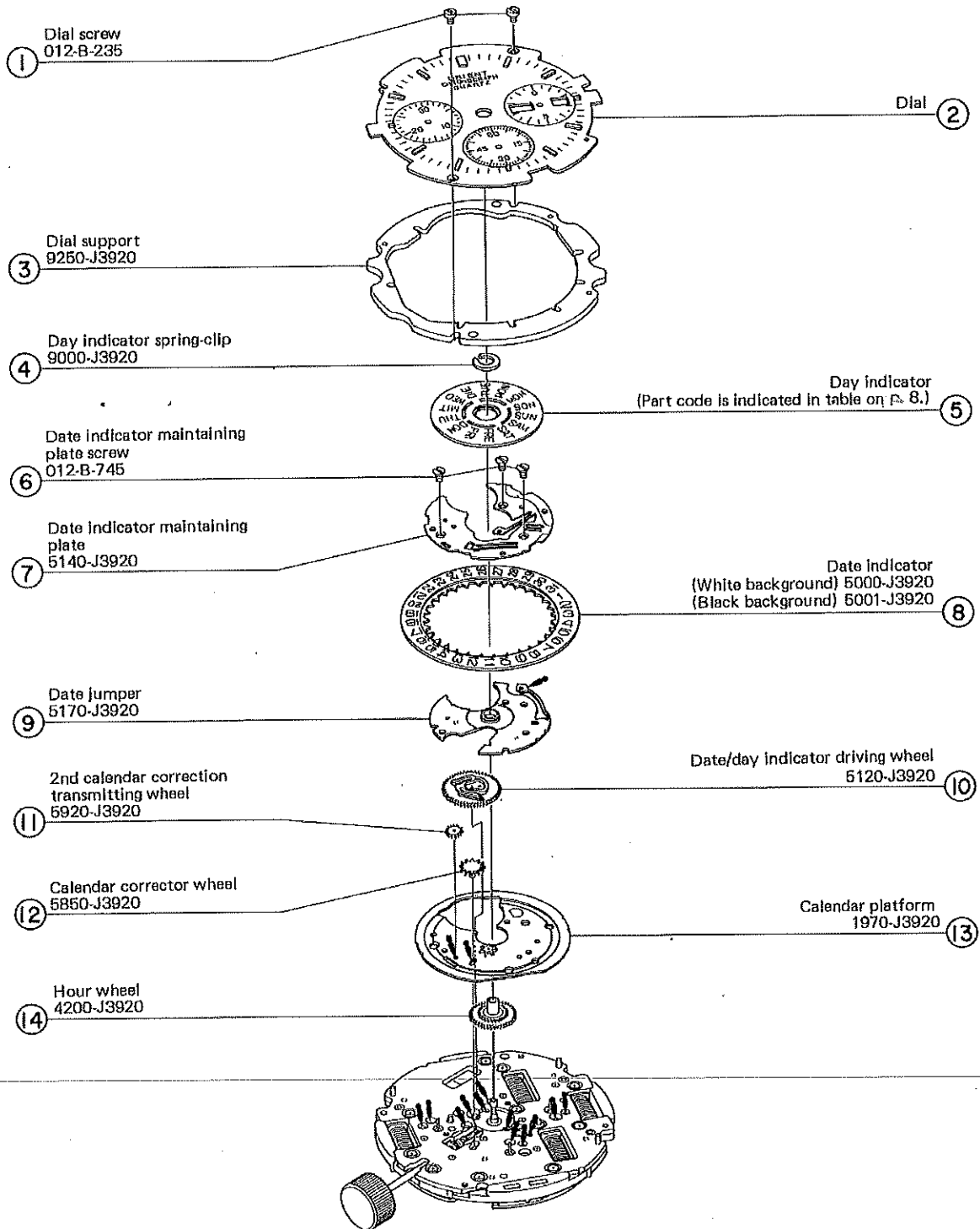
## ● J3920 Movement Exploded View

No. after part name is part code.

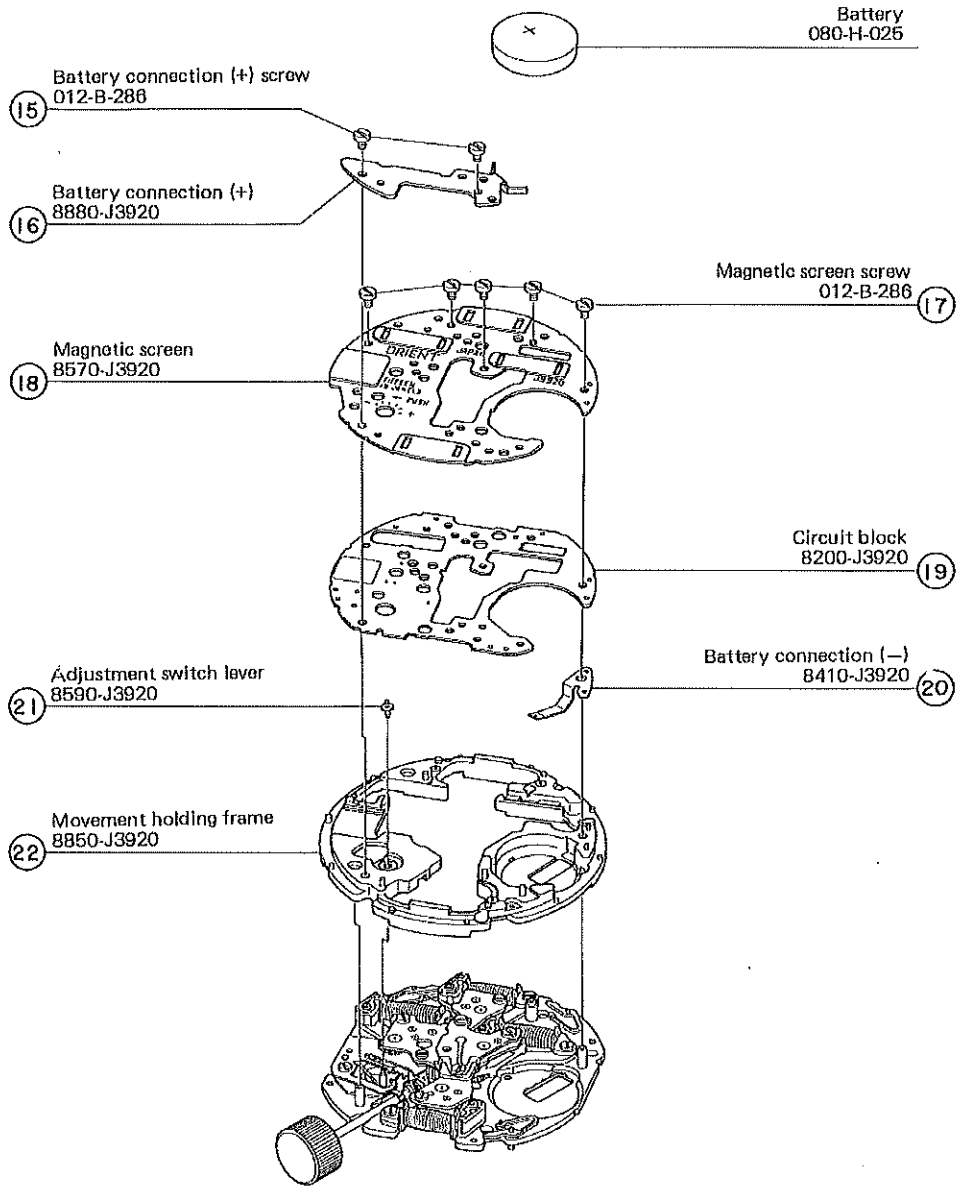
### Lubricant Codes

- Moebius A standard volume
- ◄ Moebius grease standard volume

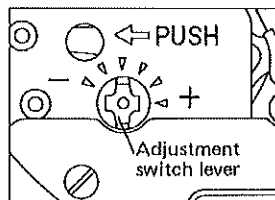
### ● Dial ~ hour wheel · Assembly and disassembly procedure



• Battery ~ movement holding frame



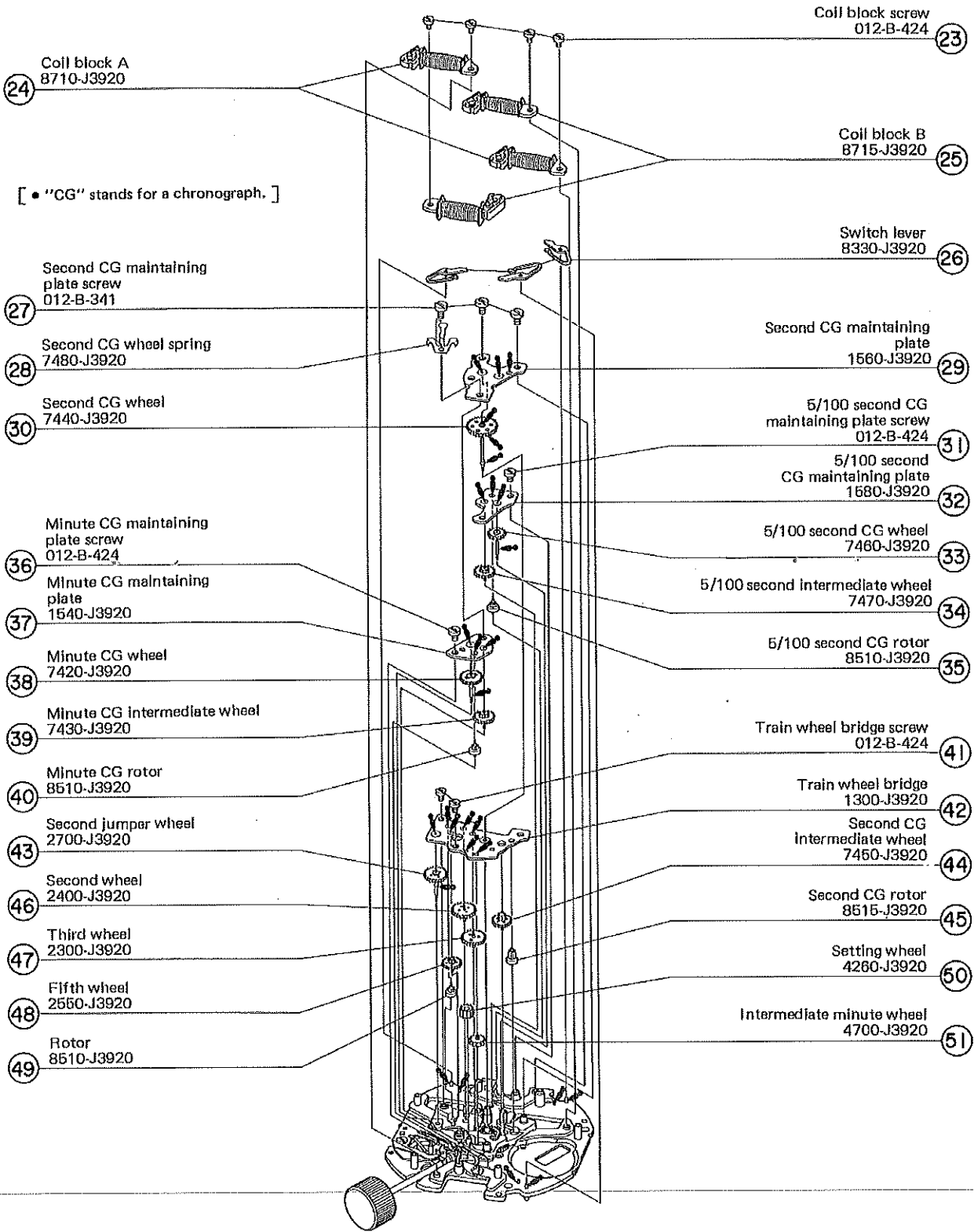
• Precautions in assembling adjustment switch lever (21).



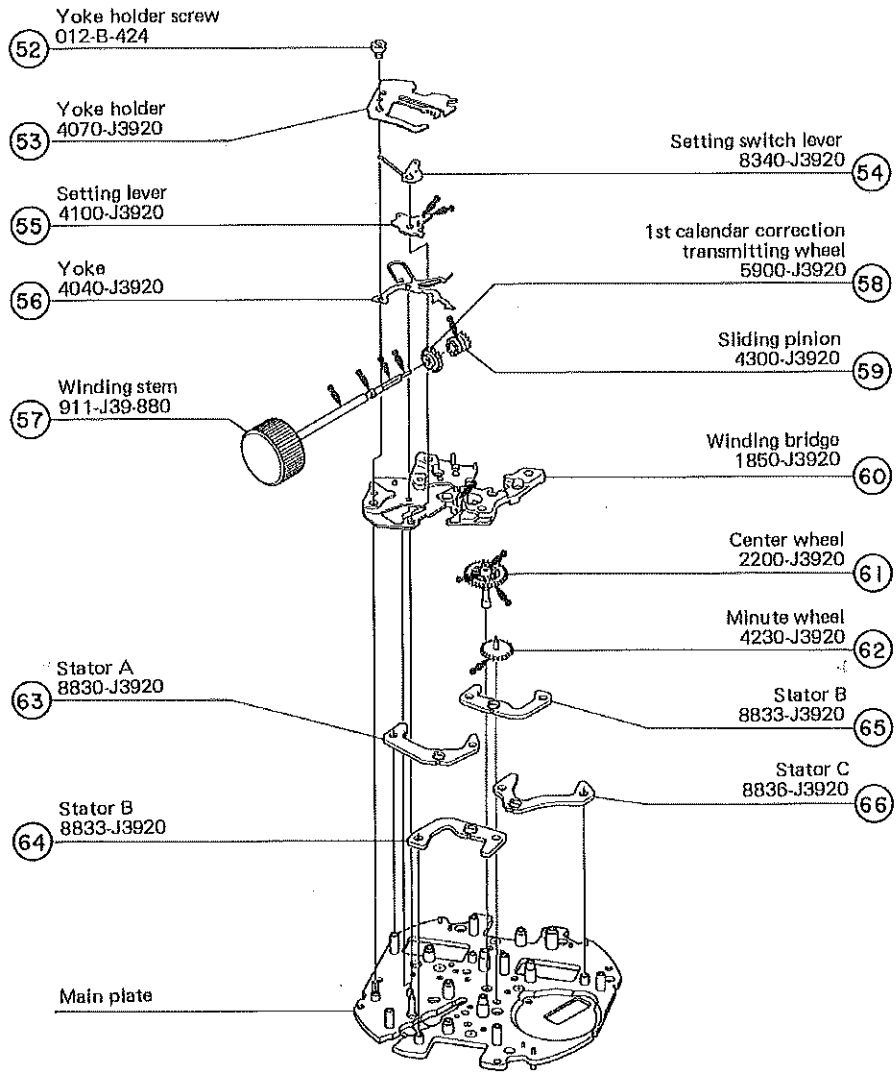
Usually, set the adjustment switch lever in the position illustrated below.

Turn it toward + or - when step movement must be adjusted. See p. 7 for step movement adjustment.

• Coil block screw ~ intermediate minute wheel



• Yoke holder screw ~ stator B





## 4. Assembly and Disassembly

### (1) Movement assembly and disassembly procedure

(Refer to the movement exploded view on p. 3 to 6.)

Disassembly ① → ⑥⑥

Assembly ⑥⑥ → ①

### (2) Lubrication spots and lubricant types

The lubrication spots and lubricant types are as shown in the movement exploded view on p. 3 to 6.

## 5. Rate Check Precautions and Rate Check and Adjustment Procedures

### (1) Rate check precautions

- Before checking the step movement by a quartz meter, set its measuring time selector to a range of a multiple of 10 seconds (10 sec., 20 sec., 30 sec., etc.). Stop all the CG hands before making the measurement.
- At any other range, measurement cannot be performed because indicated values will be incorrect.

### (2) Adjustment of Step Movement

A rotary step system is adopted on the time adjustment device of the watch. Adjust the step movement by the adjustment switch lever.

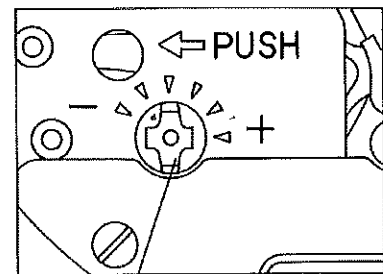
- ① Turn the adjustment switch lever using tweezers or the like.
- ② To put the watch forward, turn the switch lever toward +. To put it back, turn the lever toward -. Stop the lever at a notch ( ▽ )— not between notches.

\* The adjustment switch lever when in the position indicated at right is set at the present accuracy  $\pm 0$  sec.

The switch lever can be turned up to 3 steps toward + and up to 2 steps toward - from this position.

(One step: Approx. 0.26 sec./day)

Note: If further adjustment is necessary, replace the circuit block.



Adjustment switch lever

## 6. Cleaning Procedures, Checks and Adjustments

- For other details regarding checking and adjustment, please refer to the General Inspection and Adjustment Manual for Orient Analog Quartz Watches. Normal (acceptable) resistance of the coil blocks and reference current consumption are indicated below:

Coil resistance	Coil block A	2.4 to 3.0 k $\Omega$ (normal level)
	Coil block B	1.8 to 2.4 k $\Omega$ (normal level)
Power consumption	When regular hands are moving (chronograph hands are stopped).	1.8 $\mu$ A or less
	When chronograph hands are moving.	75 $\mu$ A or less

\* Make each measurement with a capacitor at 200 to 500  $\mu$ F connected between the terminals of the tester.

- Refer to p. 2 when checking the crown or switches for normal working.

**7. Day Indicator Code Table**

Languages	Background color	Part code
English and Spanish	White	5500-J3920
	Black	5540-J3920
English and French	White	5501-J3920
	Black	5541-J3920
English and Portuguese	White	5502-J3920
	Black	5542-J3920
English and Chinese	White	5503-J3920
	Black	5543-J3920
English and Italian	White	5504-J3920
	Black	5544-J3920
English and Japanese	White	5505-J3920
	Black	5545-J3920
English and Roman numerals	White	5506-J3920
	Black	5546-J3920
English and Arabic	White	5507-J3920
	Black	5547-J3920
English and German	White	5508-J3920
	Black	5548-J3920
English and Persian	White	5509-J3920
	Black	5549-J3920



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