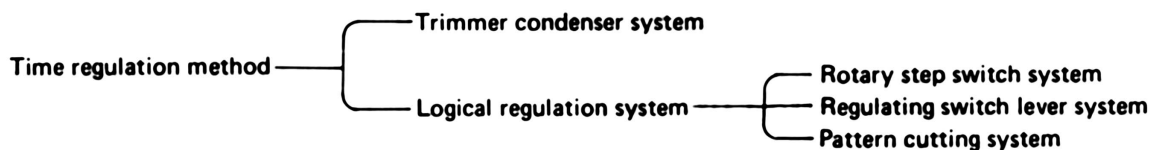

CHAPTER 6
ADJUSTMENT AND REPLACEMENT

I. TIME REGULATION

① IDENTIFY THE TIME REGULATION SYSTEM OF THE WATCH.

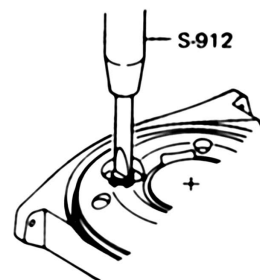


② IF THE DAILY RATE HAS BEEN FOUND ABNORMAL IN THE ACCURACY MEASUREMENT, ADJUST TIME ACCURACY AS DESCRIBED BELOW.

(1) Trimmer condenser system

Turn the trimmer condenser clockwise or counterclockwise with a screwdriver to regulate time loss/gain.

Note: Be careful not to overload the trimmer condenser.



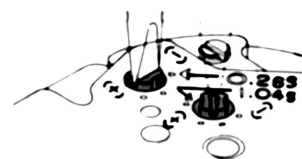
Ex.: Cal. 59 Series

(2) Logical regulation system

■ Rotary step switch system

Turn the rotary step switch by graduations with a screwdriver. The range to be regulated by the rotary step switch differs, depending on calibers. Watches that have the rotary step switch system are divided into two major groups: one with a rotary step switch which regulates approximately ± 0.5 sec. per graduation/day and the other with two rotary step switches for rough (approximately ± 1.04 sec./day) and fine (approximately ± 0.26 sec./day) regulation.

Note: Be sure to line up the slot on the head of the rotary step switch with the graduations.



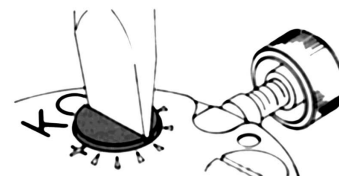
Ex.: Cal. 23 Series

■ Regulating switch lever system

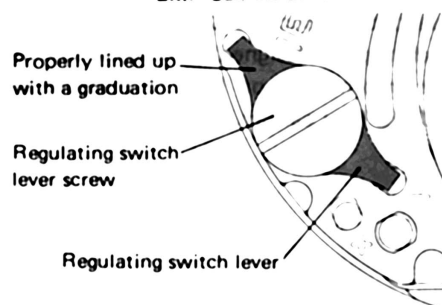
To regulate time, remove the regulating switch lever screw and set the regulating switch lever to the hole marked "+" (gain) or the hole marked "-" (loss).

The range to be regulated by the regulating switch lever differs, depending on calibers. It allows a regulation of approximately ± 0.5 sec./day or approximately ± 0.26 sec./day.

Note: After setting the regulating switch lever, be sure to tighten up the regulating switch lever screw.



Ex.: Cal. 1E Series



■ Pattern cutting system

To regulate time, cut a pattern in the hole marked "+" (gain) or in the hole marked "-" (loss) with a retractable knife. The range to be regulated by pattern cutting differs, depending on calibers. It allows a regulation of approximately ± 0.5 sec./day or approximately ± 0.26 sec./day.

Note: Perform a pattern cutting job with the circuit block alone.

Ex.: The illustration below shows that the (+) pattern is cut to gain time.



To measure accuracy of those watches with the logical regulation system, set the quartz tester's GATE TIME/CHANNEL setting switch to "10-SECOND GATE". Also note that the Ultrasonic Microphone US-32 cannot be used for them.

③ DESIRABLE EXTENT OF ACCURACY ADJUSTMENT

- In quartz watch specifications the accuracy is indicated at a monthly rate when the watches are worn on the wrist at a normal temperature range (+5°C ~ +35°C or 41°F ~ 95°F).
The idea is to guarantee a reliable wearing accuracy at the most stable temperature, since quartz watch accuracy is very susceptible to temperature changes. That is, the quartz watches are preadjusted to work with the most stable accuracy when worn on the wrist.
- The quartz tester displays the accuracy of each watch at a daily rate. It is consequently necessary to convert each caliber's monthly rate indicated in the specifications into the daily rate for comparison and evaluation.
The temperature of the watch at the time of measuring may be different from that indicated in the specifications, and the daily rate displayed by the tester should be taken only for an approximate value.
- Since customers rather dislike time loss more than time gain, adjust time accuracy according to the "Desirable extent of accuracy adjustment" in the table below.

Specifications		Desirable extent of accuracy adjustment
Time loss/gain	Daily rate	Daily rate
±5 sec.	-0.16 ~ +0.16	0.00 ~ +0.08
±10 sec.	-0.33 ~ +0.33	0.00 ~ +0.16
±15 sec.	-0.50 ~ +0.50	0.00 ~ +0.25
±20 sec.	-0.66 ~ +0.66	0.00 ~ +0.33

$$* \pm \text{Daily rate} = \frac{\pm \text{Monthly rate}}{30 \text{ days}}$$

④ WATCHES WITH TIME LOSS/GAIN EXPRESSED AS AN ANNUAL RATE

High-precision watches with time loss/gain expressed as an annual rate are classified into three major types: (1) twin quartz type, such as Cal. 9983, (2) temperature-compensating IC type, and (3) high-frequency crystal oscillator type. Each type is designed to be least susceptible to temperature changes in order to assure high accuracy.

For information on how to measure and adjust their accuracy, refer to the "PARTS CATALOGUE/TECHNICAL GUIDE" by caliber.

II. BATTERY REPLACEMENT

If battery replacement is found necessary through the checking procedure, replace the battery with a new one, observing the following precautions.

① CHECKING POINTS

(1) Type of battery

Check that the battery in the watch is one authorized by SEIKO.

(2) Contamination on the battery connection (-)

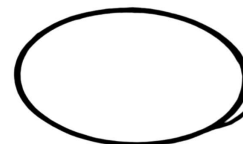
If the battery connection (-) is contaminated, wipe off contamination with a nylon cloth moistened with alcohol.

If the battery connection (-) is wet or white-powdered owing to battery leakage, first wipe them off with a nylon cloth soaked with water and wipe off moisture with a nylon cloth moistened with alcohol.



(3) Break, scratches, twist, and deformation of the case back gasket

If there are any irregularities with the case back gasket, replace it with a new one.



② PRECAUTIONS

- (1) Use non-metallic tweezers and/or finger cots to handle batteries.
- (2) Wipe off dust on the battery hatch or nearby well before opening the battery hatch.
- (3) If battery leakage is found inside, it is necessary to overhaul and clean the movement parts. Receive the watch for repair
- (4) Lubricate the case back gasket with silicone oil 500,000 c.s.
- (5) Use an authorized SEIKO battery for replacement.
- (6) After battery replacement, check time accuracy with the quartz tester.
- (7) After battery replacement, be sure to set the time correctly again.
- (8) If the watch has additional functions, operate them to check that there is no malfunction.

③ WATCHES THAT ARE CLAIMED TO "HAVE GONE OUT OF ORDER" OR TO "BE QUICK IN BATTERY CONSUMPTION"

Besides defects of the watch itself, the following two cases may be involved in the premature exhaustion of battery capacity.

Based on the information received from the customer, determine if either or both of them are involved. If so, explain it to the customer.

- (1) The battery inserted at the factory (monitor battery to check the performance and functions of the watch) has been used without any replacement.
- (2) The watch has illuminating light and alarm functions, and these functions are frequently used.