6138A Automatic Chronograph

1) Specifications

Casing diameter		27.00mm	
Height		7.90mm	
Vibrations per hour		21,600	
Automatic winding winding)	(with	auxiliary	hand

Calendar (Day & date, Bilingual changeover mechanism for day indication, Rotary type instant day & date setting device)

Chronograph (Second, hour hand -12 hour totalizer; minute hand -30 minute totalizer, accumulated)

2) Features

- An-advanced automatic winding chronograph
- Easy-to-use, regular chronograph mechanism
- SEIKO's special clutch mechanism without starting/stopping errors
- Simplified structure and automatic winding by the stabilized pawl lever system
- Day and date instant setting device operated simply by revolving the crown
- Bilingual change-over mechanism for day indication selectable by preference
- Auxiliary hand winding device instantly usable for measuring time
- External devices with many functions

3) Disassembly and assembly

Disassemble the watch according to Figs. $(1 \rightarrow \mathfrak{P})$

Assemble by reversing the above: Figs. $(\mathbf{D}) \rightarrow (\mathbf{D})$

Installation of the automatic winding mechanism varies as compared with conventional watches.

The automatic winding mechanism should be installed after setting the movement with hands in the case for adjusting chronograph mechanism and setting hands works.

4) Lubrication

Colored symbols in the illustrated figures indicate the types of oil, its quantities to be applied, and lubricating points.

Types of oil:

- Moebius Synt-A-Lube
- Seiko watch oil S-4

Oil quantity

- Extremely small quantity
- Normal quantity
- ••• Sufficient quantity
 - × Oil must not be applied.
- Note: Unindicated portions do not require lubrication.

5) Checking and adjusting

Refer to 6139A Technical Guide for checking and adjusting items of second and minute chronograph mechanism.



Movement





6138A Calendar Mechanism

10

D,

HED

EBZ

(Installing the second hand and chronograph minute and hour hands)

- 1. At the fly-back position, tentatively set the hands on the "0" position.
- 2. Then repeat fly-back operation to ensure the "0" position. If the hands fail to resume correct position, adjust the hands while depressing the *fly-back button*.

However, since the *fly-back lever* of the *chronograph hour hand* has a springing characteristic, it prevents the hand from rotating while the *hammer button* is depressed. Consequently, reinstall the *chronograph hour hand* so that it coincides with "0" position.

 Completely push in the hands at the point where they correctly indicate the "0" position.

NOTE:

The second hand axle is cut as shown in the diagram. If the second hand is turned by force after completely depressing it to the bottom, the hand will loosen.

SEIKO provides a handy Movement Holder S-500 to facilitate hand-setting.



NOTE: However, since this movement holder is originally for 6139A, the movement is slightly raised when using this holder for 6138A. If the dowels on the holder are scraped off, it is impossible to use for 6139A.

(28) - Date dial guard screw-

29) Date dial guard -

When disassembling and assembling the *date dial guard*, perform carefully to avoid breaking the *chronograph hour hand pin*. (*2)

(30) - Date dial -

(31) - Date jumper
(32) - Date driving wheel screw

(33) Day finger —

34)-Date finger —

35)-Date driving wheel —

Chronograph minute hand 17 Chronograph hour hand 18 Chronograph hour hand 18 Dial If dial feet are bent, positions of the center hole of the dial and the chronograph hour and minute hand holes will become one sided resultion

one-sided, resulting in graduation slips. Pay attention to this point. Holding ring for dial

Second hand (14)

Hour hand

16

20

During fly-back operation clearance between

the minute hand and the second hand will

be slightly changed since the second hand

axle is pressed in one direction. Consequently,

install the minute hand and the second

hand by taking more clearance as compared with ordinary watches'. Minute hand (15)

Snap for day star with dial disk After assembling the snap for day star with dial disk, pull out the crown to the first click and turn the crown to right and left to check whether or not day and date correction is operated. Day star with dial disk

> Screw for intermediate wheel for day correction

> > Intermediate wheel (

NEVER lubricate the axle of the intermediate wheel for day correction.
After assembling the intermediate wheel for day correction, check on its rotating condition by turning the wheel with a small, soft-tipped brush.

Day jumper screws (3 pcs)

— Day jumper

When disassembling and assembling the *day jumper*, perform carefully to avoid breaking the *chronograph minute hand pin.* (*1)

Dial screws (2 pcs) (19

6138A Chronograph Mechanism



the friction spring for intermediate hour recording wheel.

wheel

Intermediate minute recording wheel.

Minute

recording wheel

6138A Train Wheel



6138A Hour Chronograph Mechanism



6138A Operation of Chronograph Mechanism



Stopping

The minute and second recording wheels are stopped when the clutch ring is raised through action of the coupling levers. The hour recording wheel comes to a halt by a slip of the hour recording friction spring of the barrel. The slip comes from the fact that the hour recording wheel stop lever brakes the hour recording wheel by the spring for hour recording wheel stop lever.

Fig. 15



Starting of chronograph minute and second hands



Starting of chronograph hour hand

Starting

The minute and second recording wheels are started when the coupling levers are separated from the clutch ring. Simultaneously, the second coupling lever pushes the intermediate hour recording wheel stop lever pin, revolving the intermediate hour recording wheel stop *lever* in the \rightarrow direction. And then, the force of the spring for hour recording wheel stop lever is not transmitted to the hour recording wheel stop lever to release the brake of the hour recording wheel and let it start.



Intermediate hour recording wheel stop lever

Spring for hour recording wheel stop lever



6138A Operation of Chronograph Mechanism

Resetting

1. Resetting of the chronograph minute hand and second hand

When pressing the second button, the force is transmitted to fly-back lever \rightarrow intermediate flv-back lever \rightarrow hammer, and the hammer strikes the minute heart and the second heart to reset the hands to "0" position.

2. Resetting of the chronograph hour hand

Simultaneously with the above, the fly-back lever presses the hour fly-back lever and the force is transmitted to the hour hammer to reset the chronograph hour hand to "0" position. At this moment, the intermediate hour recording wheel stop lever revolves in the \rightarrow direction by action of the hour hammer pin. and the hour recording wheel is released. When the second button is released, the chronograph hour hand returns to a stopped condition.

Fly-back safety mechanism

This mechanism protects the movement from the shock generated by the second button. End portions of the hammer and the intermediate fly-back lever are located outside the column during starting condition. When the second button is depressed, the end portion of the intermediate fly-back lever slips among the columns of the *pillar* wheel (as shown in Fig. 18), and the force is not transmitted beyond the hammer. On the other hand, the hour hammer does not move because the pin located on its tip strikes the intermediate hour recording wheel stop lever. At this moment, momentum of the second button is absorbed by a springing characteristic of the hour fly-back lever. Safety action is exhibited by integration of the above-mentioned operations.





Resetting of chronograph minute hand and second hand

6138A Setting Mechanism



Ordinary position of crown (mainspring winding)

The crown wheel and the second intermediate ratchet wheel are caulked on the barrel and train wheel bridge. The intermediate ratchet wheel is supported by a pin mounted on the plate.



Second position of crown (day and date correction)

- 1. Clockwise Date correction When turning the crown to the right (clockwise), the correcting gear moves to the date dial side and interlocks with it, thus date is corrected. Force transmission is through crown \rightarrow clutch wheel \rightarrow setting wheel \rightarrow correcting gear \rightarrow date dial.
- 2. Counterclockwise Day correction

When turning the crown to the left (counterclockwise), the correcting gear moves to the day star with dial disk side and interlocks with the intermediate wheel for day correction, and day is corrected. Force is transmitted through crown \rightarrow clutch wheel \rightarrow setting wheel \rightarrow correcting gear \rightarrow intermediate wheel for day correction \rightarrow day star with dial disk.

Third position of crown (setting time)

The setting wheel lever complete moves to the *minute* wheel side by action of the setting lever with axle, and the intermediate setting wheel interlocks with the minute wheel, hand is set correctly. Simultaneously, motion of the setting wheel lever complete is transmitted to the daydate correction wheel rocking lever, and the correcting gear attains a position where it interlocks neither the date dial nor intermediate wheel for day correction by action of the setting wheel lever complete and the day-date correction wheel rocking lever.

6138A Setting Mechanism

Fig. 24

Dav-date corrector

wheel rocking lever