TECHNICAL GUIDE
AND
PARTS LIST

CAL. V600A

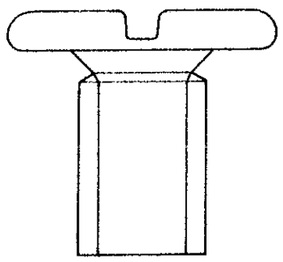
ANALOGUE QUARTZ

CONTENTS

I. SPECIFICATIONS

Item \ Cal. No.		V600A
Indication system		Three hands (hour, minute, second) + Multi function hand
Driving system		Step motor 3 pcs. (Fixed pulse system)
Display system		● Hands adjust display ● Countdown timer display ● Stopwatch display ● Time with alarm on display ● Time with alarm off display ● Alarm set display
Additional mechanism		● Alarm test system ● Operation check signal
Loss/gain		Monthly rate: Less than 20 seconds at normal temperature range
Movement size	Casing diameter	ϕ29.1 mm
	Height	3.8 mm (with battery clamp)
Regulation system		Trimmer condenser
Quartz Tester measuring gate		Any gate is available
Battery		SEIKO (SEIZAIKEN) SR1130W, MAXELL SR1130W, SONY EVEREADY 389, UCC 389 Voltage: 1.55V Battery life: Approx. 2 years
Jewels		0 jewel

II. LIST OF SCREWS USED

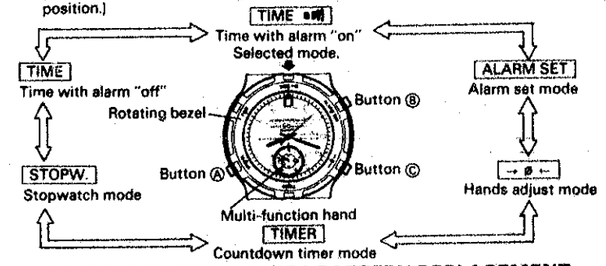


Battery clamp screw (1 pce.)
Switch spring screw (4 pcs.)
Coil block screw (3 pcs.)
Circuit block screw (1 pce.)
Screw for additional train wheel bridge (2 pcs.)
Train wheel bridge screw (2 pcs.)
Center wheel bridge screw (1 pce.)

III. OPERATION

1. MODE AND BUTTON OPERATION

(To select mode, turn rotating bezel and set desired mode at the 12 o'clock position.)



NOTE:
WHEN THE MODE IS CHANGED, ALL FOUR HANDS MOVE TO INDICATE THE SELECTED MODE TIME.

2. NECESSARY STEPS AFTER BATTERY REPLACEMENT

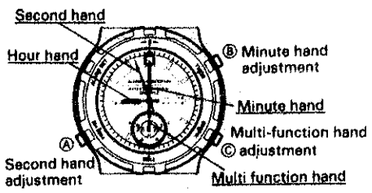
After replacing the battery, there will be a discrepancy between the information stored in the integrated circuit (IC) within the watch, and the position the hands indicate.
Be sure to proceed as follows.

1. Keep the 3 buttons pressed simultaneously for a few seconds, and release. The alarm will sound with a "beep". This can be done in any mode.

2. Turn the rotating bezel to the → 0 ← position, and set all four hands to the 12 o'clock position by pressing three buttons. (For setting hands, refer to item 3 in this page.)

3. Turn the rotating bezel to the TIME or TIME •m position. (For details, refer to item 4 in this page.)

3. HOW TO CHECK AND ADJUST FOR HANDS POSITION



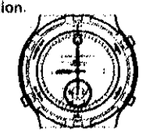
Before setting to other mode, turn the rotating bezel and set → 0 ← mark at the 12 o'clock position. Minute, second, and multi function hands should point to the 12 o'clock position as above. If not, follow right 1 to 4 steps to adjust.

Note: It is not necessary for the hour hand to point to 12 o'clock.

1. Press button Ⓐ successively to set the second hand to the 12 o'clock position.

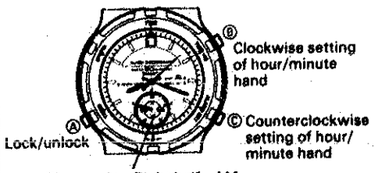
2. Press button Ⓑ successively to set the hour and minute hand to the 12 o'clock position.

3. Press button Ⓒ successively to set the multi function hand to the 12 o'clock position.



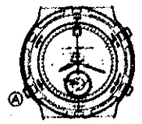
4. After adjusting the hands, proceed to the desired mode by rotating the bezel.

4. HOW TO SET THE TIME

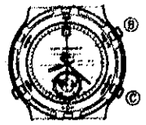


1. Turn the rotating bezel and set TIME or TIME •m mark at the 12 o'clock position.
2. Hands move and stop at previously set time.
3. When the hands stop, proceed to 1 to 3 steps to adjust correct time.

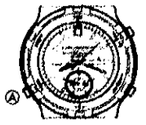
- When the button is kept pressed for a few second, the hand moves rapidly. To stop the hand, press one of buttons.



1. Keep button Ⓐ pressed for one second until the alarm sounds with a "beep". Second hand returns to the 12 o'clock position. Other hands are unlocked and ready to be set.



2. Press button Ⓑ successively to adjust the hour and minute hands.
   - When button Ⓒ is pressed, the hands move counterclockwise.
   - Check the multi function hand to see that AM/PM is correctly set.



3. Press button Ⓐ according to the time signal. The alarm sounds with "beep" and the hands begin to move. Correct time is now locked in.

NOTE : REGARDING THE ALARM SET, TIMER AND STOP WATCH OPERATION, REFER TO THE INSTRUCTION BOOKLET.

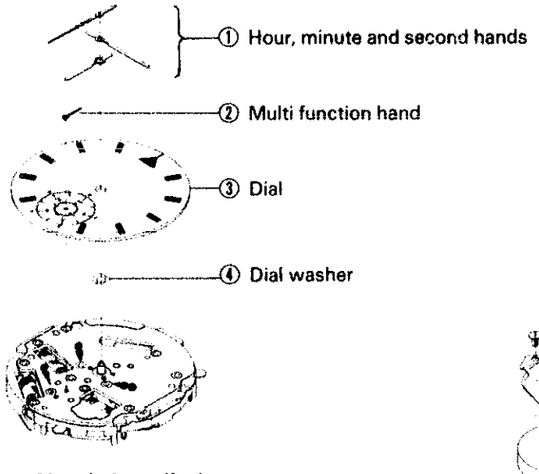
IV. DISASSEMBLING, REASSEMBLING AND LUBRICATING

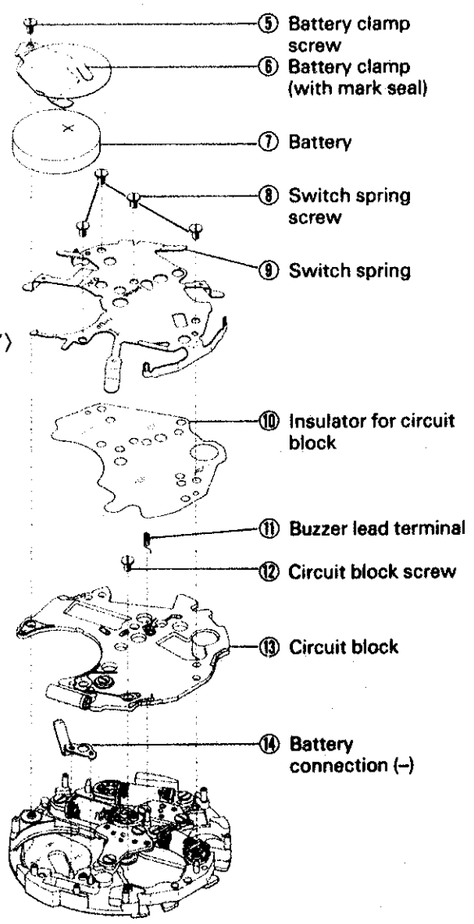
Disassembling procedures: Figs. ① → ㊸
Reassembling procedures: Figs. ㊸ → ①

Lubricating:

Types of oil	Oil quantity
Moebius A ●▬	Small ○
Seiko watch oil S-6 ○○	Standard ○○

● Hands ~ Battery connection (–)





Note: Hands installation

Install the hands in the order of multi function, hour, minute and second hand at the 12 o'clock position. At that time, take care not to misalign the hands.

〈SYSTEM RESET AFTER REPLACING THE BATTERY〉

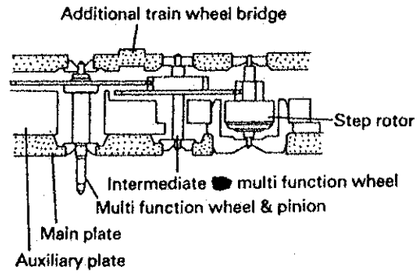
Immediately after the battery is replaced, be sure to act the system reset according to any one of the following manners:

1. Keep the three buttons pressed simultaneously for a few seconds.
2. Short-circuit the AC (all clear) terminal and switch spring of the circuit block with conductive tweezers to reset the circuit.

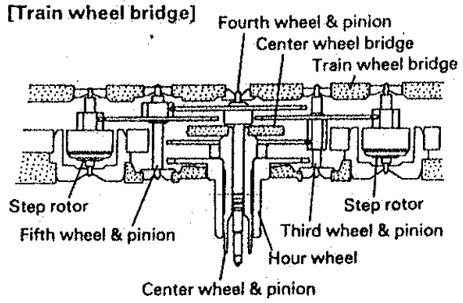
● Screw for additional train wheel bridge ~ Main plate

① Setting position of the train wheel

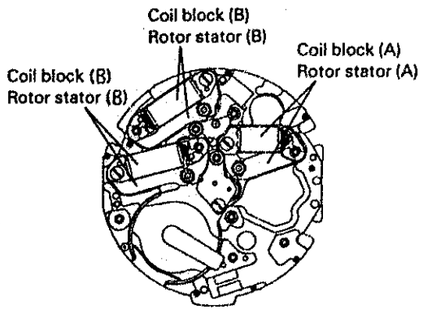
[Additional train wheel bridge]

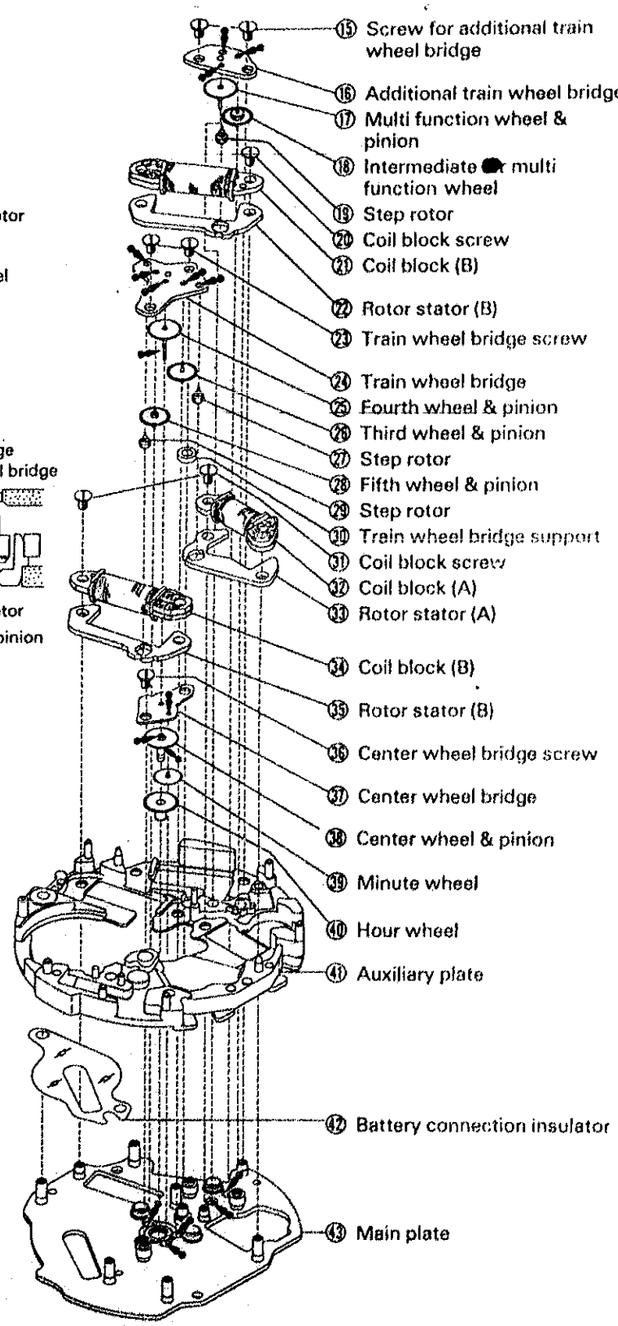


[Train wheel bridge]



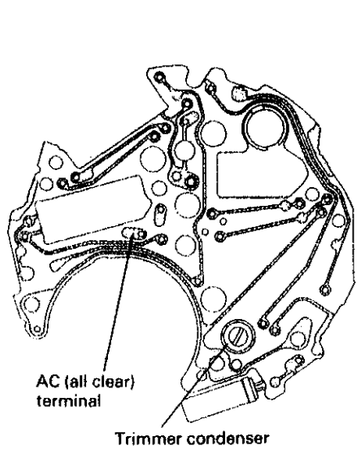
② Setting position of the coil block and rotor stator



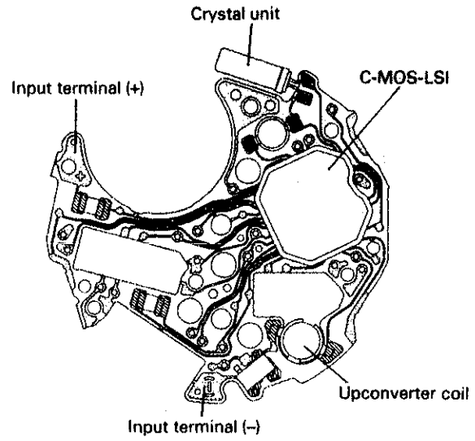


V. CHECKING AND ADJUSTMENT

1. Structure circuit block



(Front)



(Rear)

2. Procedure for checking and adjustment

- This section only gives the checking and adjustment procedure which is exclusive for this cal. V600A. For the normal checking and adjustment, refer to the "TECHNICAL GUIDE GENERAL INSTRUCTION, Analogue Quartz".

COIL BLOCK

Check the coil blocks (A) and (B) for broken wire and short circuit using the SEIKO Digital Multi Tester S-840A.
Range to be used: Ω

Result:
Coil block (A)
1.4 ~ 2.0kΩ : Normal
- Less than 1.4kΩ (short circuit): Defective
- More than 2.0kΩ (broken wire): Defective

Replace the coil block (A) with a new one

Result:
Coil block (B)
2.3 ~ 2.7kΩ : Normal
- Less than 2.3kΩ (short circuit): Defective
- More than 2.7kΩ (broken wire): Defective

Replace the coil block (B) with a new one

CURRENT CONSUMPTION

Use the SEIKO Digital Multi Tester S-840A (with Multi Adaptor MA-40).
Range to be used: mA → μA
(When using the Volt-Ohm-Meter S-831, follow the same procedure as for the S-840A.)

① CHECK THE CURRENT CONSUMPTION FOR THE WHOLE OF THE MOVEMENT

- Read the stable display after resetting the circuit.

Procedures

1. As just after the power is connected, the current consumption is high, first set the Digital Multi Tester to mA range.
2. After setting as shown in Fig. 1, reset the circuit by applying metal tweezers to the switch spring as shown in Fig. 2 and then release the tweezers.

Fig. 1

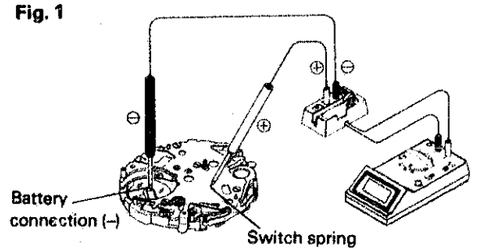
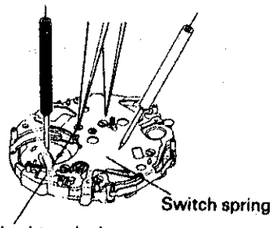


Fig. 2



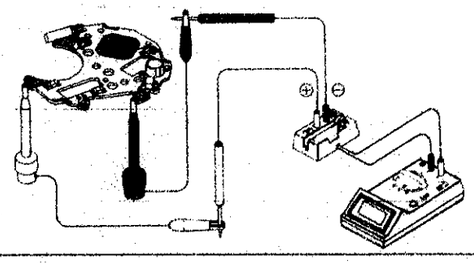
〈**SYSTEM RESET**〉
How to reset the circuit
⬇
Short-circuit the AC (all clear) terminal and switch spring with tweezers.

3. When the current reading of the Digital Multi Tester is stabilized, set the range from mA to μA and measure the current consumption.

NOTE:
When measuring the current consumption on complete watch, turn the rotating bezel and set TIME or TIME mark at the 12 o'clock position.

② CHECK THE CURRENT CONSUMPTION OF THE CIRCUIT BLOCK ALONE.

Fig. 3



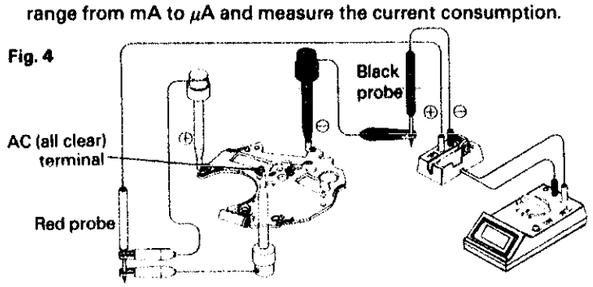
Result:
Less than 4.0 μA: Normal
More than 4.0 μA: Defective

Check the current consumption of the circuit block.

Procedures

1. First set the Digital Multi Tester S-840A to mA range.
2. After setting as shown in Fig. 3, reset the circuit by connecting the AC (all clear) terminal using the lead wire and red probe as shown below (Fig. 4).
3. When the current reading of the Digital Multi Tester is stabilized, set the range from mA to μA and measure the current consumption.

Fig. 4



〈**SYSTEM RESET**〉 Turn the circuit block upside down and connect the AC terminal and red probe.

Result:
Less than 1.8 μA: Normal
More than 1.8 μA: Defective

Replace the circuit block.

ALARM TEST SYSTEM

Turn the rotating bezel and set [Time •ıl)] mark at the 12 o'clock position. Check to see if the alarm rings by pressing buttons Ⓑ and Ⓒ simultaneously.

Result:
The alarm rings: Normal
The alarm does not ring: Defective

Proceed to the alarm condition.

ALARM CONDITION

① Check to see if the alarm output signal correctly transmitted from the circuit block.

Keep buttons Ⓑ and Ⓒ pressed simultaneously with the desired mode set at the [TIME •ıl)] position and check that the alarm signal is output.

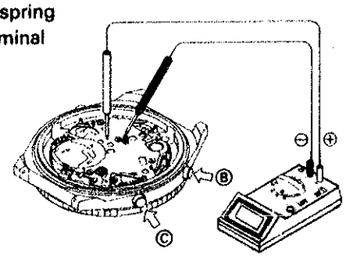
- Use the SEIKO Digital Multi Tester (S-840A).
  Range to be used: DCV

  Red probe: A part of switch spring
  Black probe: Buzzer lead terminal

Result:
The output voltage is displayed intermittently: Normal
(The alarm output signal is output.)

The digits displayed remain "00.0": Defective
Check the upconverter coil.

② Check the upconverter coil.
Range to be used: Ω



Result:
130Ω – 170Ω: Normal
Less than 130Ω } : Defective
More than 170Ω }
Replace the circuit block.

③ Check the appearance of piezoelectric element.
If items No. ① and ② above are normal, check the piezoelectric element for crack or peel off.

VI. PARTS LIST

Cal. V600 A			
PARTS NO.	PARTS NAME	PARTS NO.	PARTS NAME
102 014	Auxiliary plate	4239 033	Rotor stator (B)
121 079	Center wheel bridge	* 4245 067	Switch spring
125 048	Train wheel bridge	4246 033	Buzzer lead terminal
126 009	Additional train wheel bridge	4270 062	Battery connection (–)
* 221 027	Center wheel & pinion	4589 650	Piezoelectric element
* 221 028	Center wheel & pinion	012 201	Center wheel bridge screw
231 035	Third wheel & pinion	012 201	Train wheel bridge screw
* 241 069	Fourth wheel & pinion	012 201	Screw for additional train wheel bridge
* 241 070	Fourth wheel & pinion	012 201	Circuit block screw
261 022	Minute wheel	012 201	Coil block screw
* 271 085	Hour wheel	012 201	Switch spring screw
* 271 086	Hour wheel	012 201	Battery clamp screw
426 002	Train wheel bridge support	032 048	Tube for circuit block screw
491 220	Dial washer	032 048	Tube for battery clamp screw
701 012	Fifth wheel & pinion	032 048	Tube for switch spring screw
817 018	Intermediate [redacted] multi function wheel	032 049	Tube for coil block screw
1002 002	Multi function wheel & pinion	032 050	Tube for train wheel bridge (A)
4000 136	Circuit block	032 051	Tube for train wheel bridge (B)
4002 025	Coil block (B)	032 052	Tube for center wheel bridge
4002 028	Coil block (A)		
4146 015	Step rotor	● SEIKO (SEIZAIKEN) SR1130W	Battery
4216 067	Insulator for circuit block	● MAXELL SR1130W	
4216 069	Battery connection insulator	● UCC 389	
4225 068	Battery clamp	● SONY EVEREADY 389	
4239 032	Rotor stator (A)		

Remarks:

* Center wheel & pinion, Fourth wheel & pinion, Hour wheel
  There are two different types as specified below.
  Combination:

*Type	Center wheel & pinion	Fourth wheel & pinion	Hour wheel
M	221 027	241 069	271 085
L	221 028	241 070	271 086

* abbreviation (Movement type) M..... Standard type L..... Long type

* SWITCH SPRING FOR PULSAR WATCHES

4245068 (Pulsar marking)