

# **TECHNICAL GUIDE**

**AND**  
**PARTS LIST**

CAL. V600A

**ANALOGUE QUARTZ**

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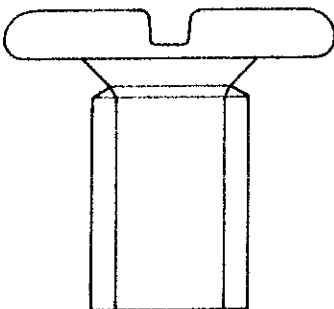
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## I. SPECIFICATIONS

| 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               |                 | <ul style="list-style-type: none"> <li>● Hands adjust display</li> <li>● Countdown timer display</li> <li>● Stopwatch display</li> <li>● Time with alarm on display</li> <li>● Time with alarm off display</li> <li>● Alarm set display</li> </ul> |       |
| Additional mechanism         |                 | <ul style="list-style-type: none"> <li>● Alarm test system</li> <li>● Operation check signal</li> </ul>  |       |
| 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<br>Voltage: 1.55V<br>Battery life: Approx. 2 years   |       |
| Jewels                       |                 | 0 jewel  |       |

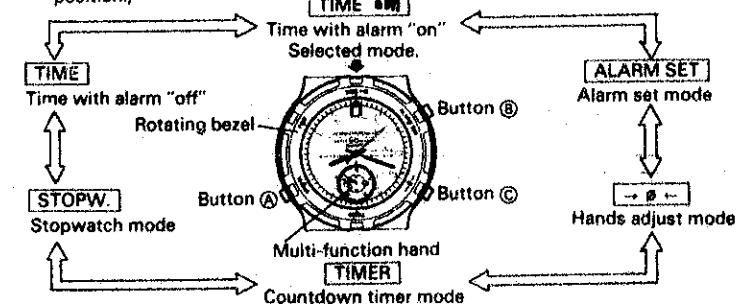
## II. LIST OF SCREWS USED

|   |  |
|---|--|
|  | Battery clamp screw (1 pce.)<br>Switch spring screw (4 pcs.)<br>Coil block screw (3 pcs.)<br>Circuit block screw (1 pce.)<br>Screw for additional train wheel bridge (2 pcs.)<br>Train wheel bridge screw (2 pcs.)<br>Center wheel bridge screw (1 pce.) |
| 012 201   |  |

## III. OPERATION

### 1. MODE AND BUTTON OPERATION

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



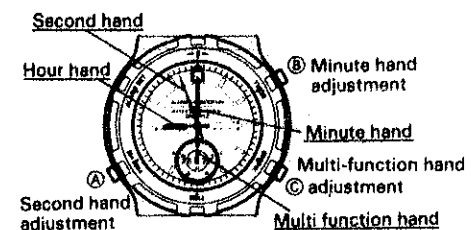
**NOTE:** WHEN THE MODE IS CHANGED, ALL FOUR HANDS MOVE TO INDICATE THE SELECTED MODE TIME.

### 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  $\rightarrow 0 \leftarrow$  position, and set all four hands to the 12 o'clock position by pressing three buttons. (For setting hands, refer to item 4 in this page.)
3. Turn the rotating bezel to the [TIME] or [TIME  $\bullet$ ] position. (For details, refer to item 4 in this page.)

### 3. HOW TO CHECK AND ADJUST FOR HANDS POSITION

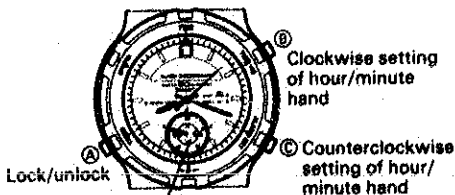


Before setting to other mode, turn the rotating bezel and set  $\rightarrow 0 \leftarrow$  mark at the 12 o'clock position. Minute, second, and multi function hands should point to the 12 o'clock position as above. If not, follow right [1] to [4] steps to adjust.

1. Press button A successively to set the second hand to the 12 o'clock position.
2. Press button B successively to set the hour and minute hand to the 12 o'clock position.
3. Press button C 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.

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

### 4. HOW TO SET THE TIME



Time scale: Right half... AM  
 Left half... PM

1. Turn the rotating bezel and set [TIME] or [TIME  $\bullet$ ] 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.

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

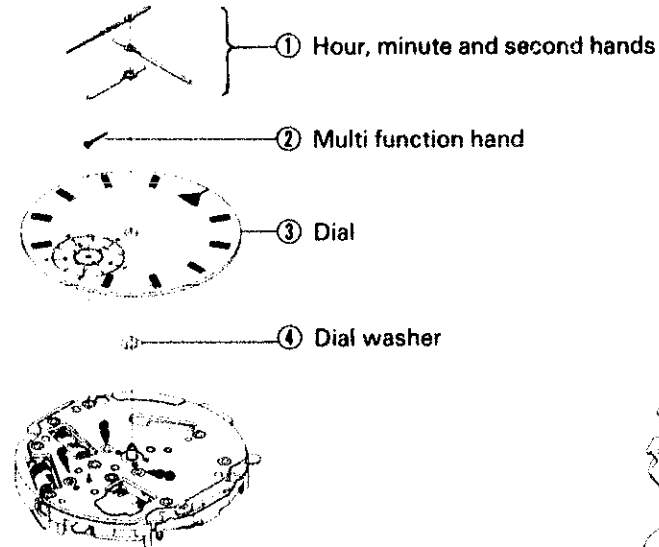
Disassembling procedures: Figs. ① → ⑬

Reassembling procedures: Figs. ⑬ → ①

Lubricating:

| Types of oil   | Oil quantity   |
|--|--|
| Moebius A            | Small     |
| Seiko watch oil S-6  | Standard  |

#### ● Hands ~ Battery connection (-)



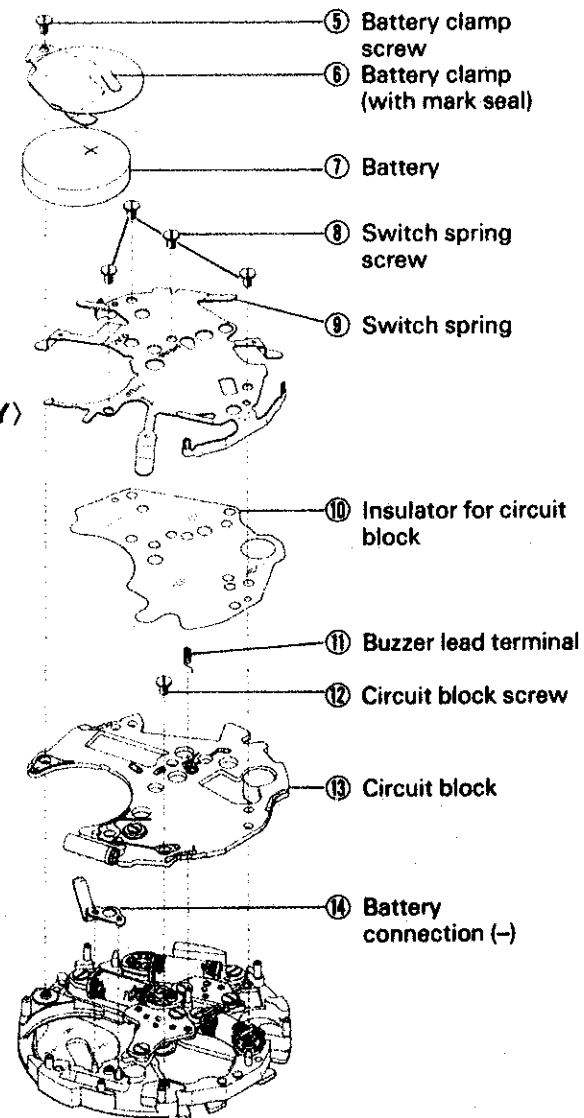
#### Note: Hands installation

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:

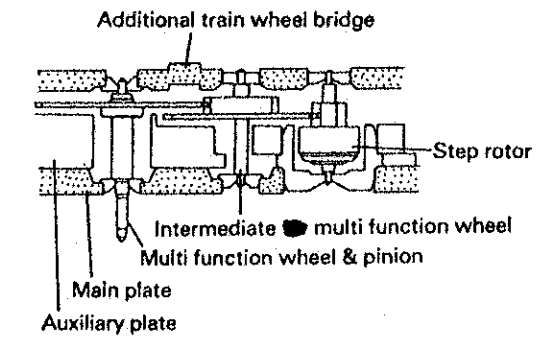
1. Keep the three buttons pressed simultaneously for a few seconds.
2. Short-circuit the AC (all clear) terminal and switch spring of the circuit block with conductive tweezers to reset the circuit.



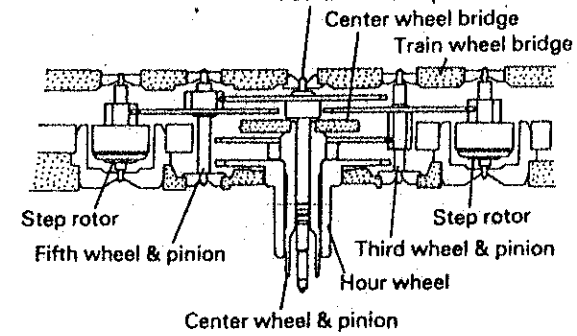
#### ● Screw for additional train wheel bridge ~ Main plate

#### ① Setting position of the train wheel

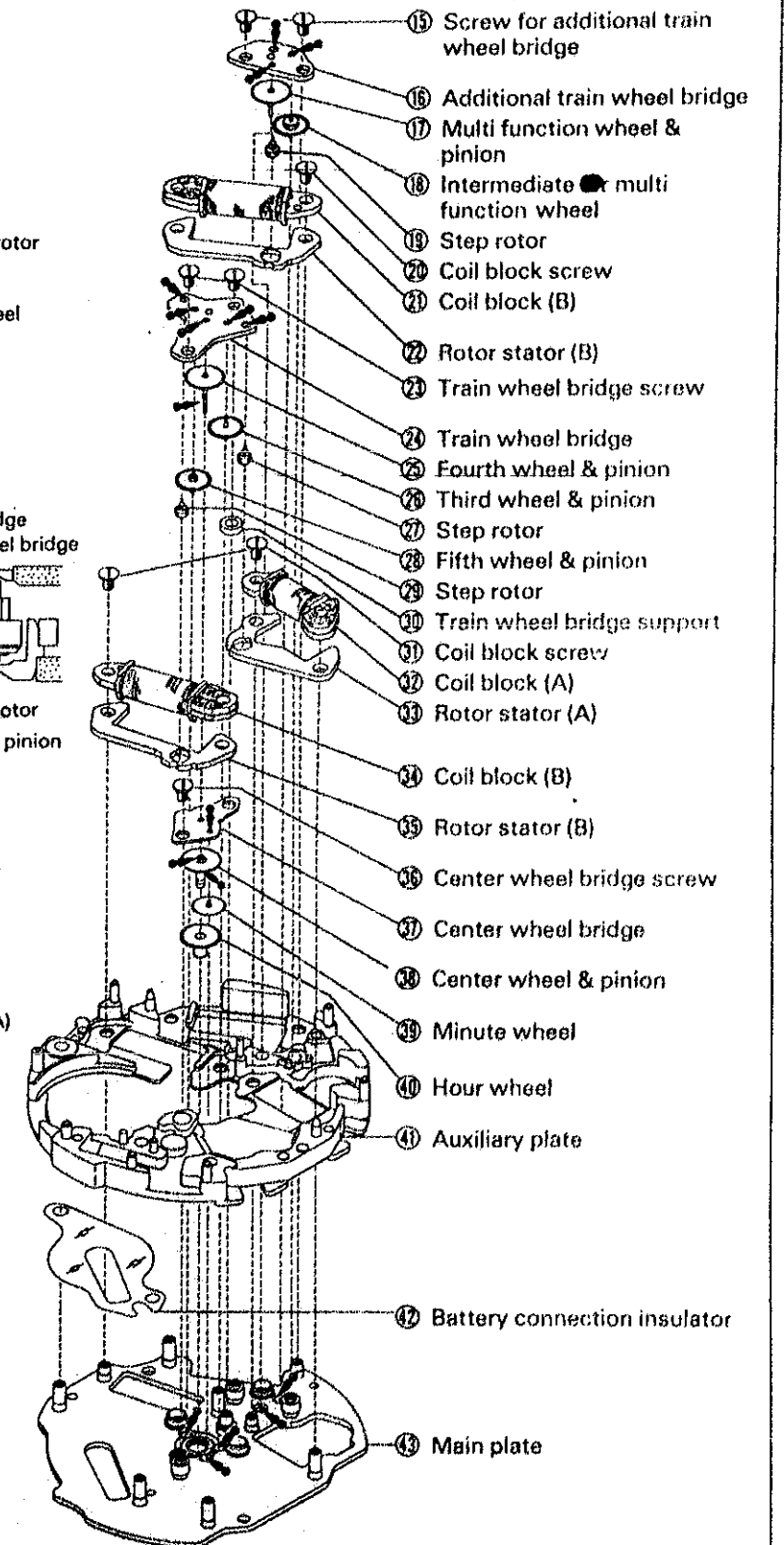
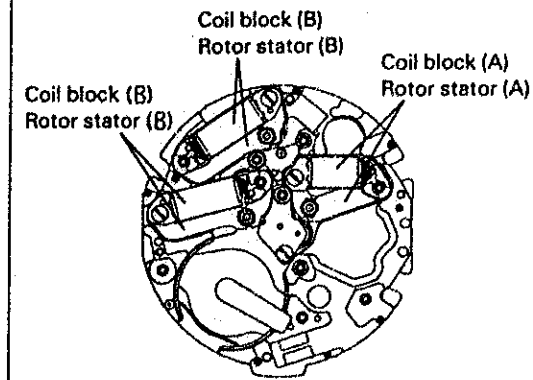
[Additional train wheel bridge]



[Train wheel bridge]

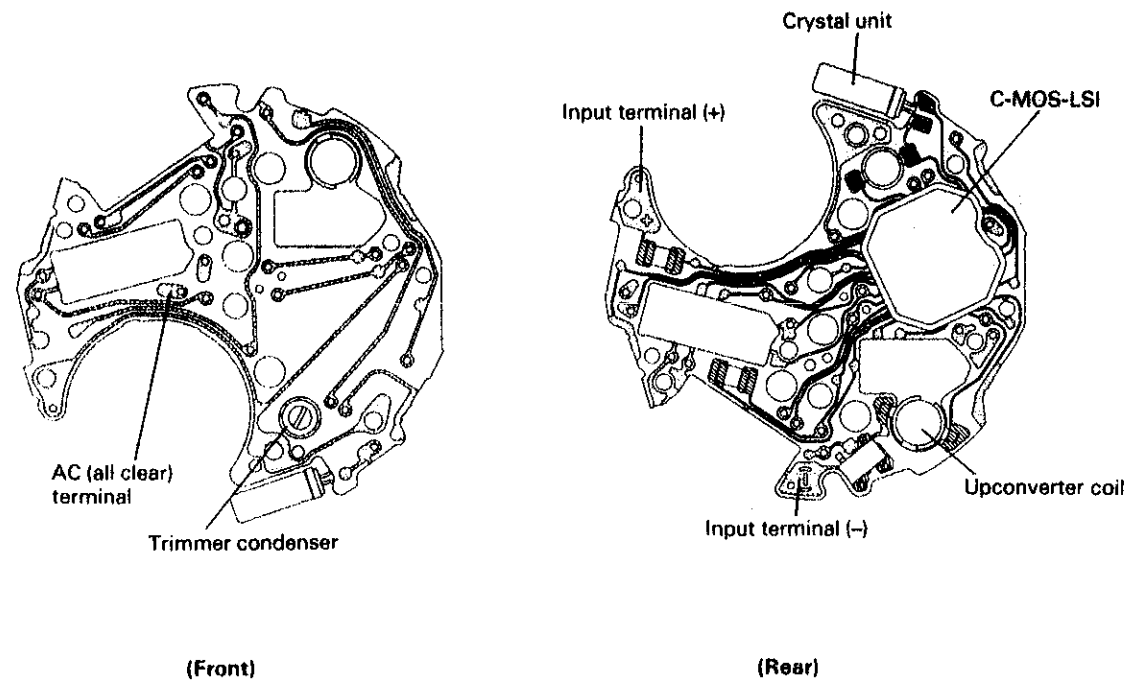


#### ② Setting position of the coil block and rotor stator



## V. CHECKING AND ADJUSTMENT

### 1. Structure circuit block



### 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:  $\Omega$

Result:  
Coil block (A)  
1.4 ~ 2.0k $\Omega$  : Normal  
 { Less than 1.4k $\Omega$  (short circuit): Defective  
 More than 2.0k $\Omega$  (broken wire): Defective  
 Replace the coil block (A) with a new one

Result:  
Coil block (B)  
2.3 ~ 2.7k $\Omega$  : Normal  
 { Less than 2.3k $\Omega$  (short circuit): Defective  
 More than 2.7k $\Omega$  (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  $\rightarrow$   $\mu$ A  
(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

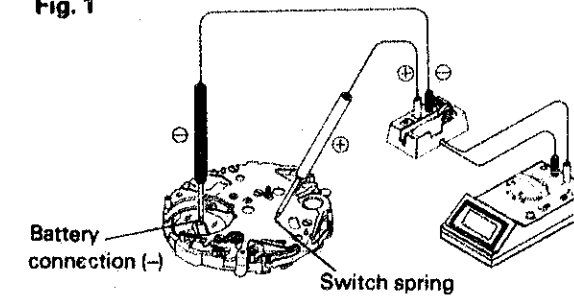
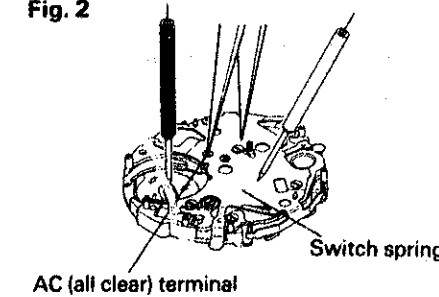


Fig. 2



#### (SYSTEM RESET)

How to reset the circuit

Short-circuit the AC (all clear) terminal and switch spring with tweezers.

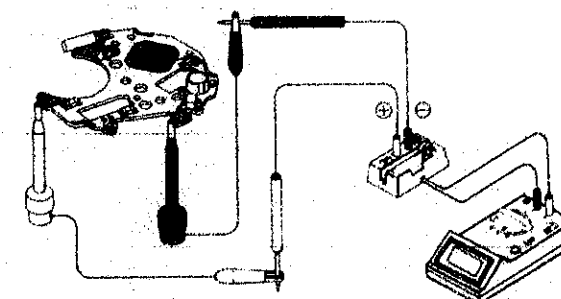
3. When the current reading of the Digital Multi Tester is stabilized, set the range from mA to  $\mu$ A and measure the current consumption.

#### NOTE:

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

#### ② CHECK THE CURRENT CONSUMPTION OF THE CIRCUIT BLOCK ALONE.

Fig. 3

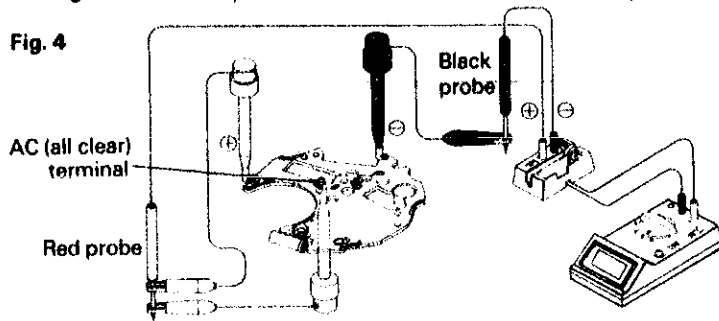


Result:  
Less than 4.0  $\mu$ A: Normal  
More than 4.0  $\mu$ A: Defective  
Check the current consumption of the circuit block.

**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  $\mu$ A 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  $1.8 \mu$ A: Normal  
 More than  $1.8 \mu$ A: Defective  
 Replace the circuit block.

**ALARM TEST SYSTEM**

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

**Result:**

The alarm rings: Normal  
 The alarm does not ring: Defective  
 Proceed to the alarm condition.

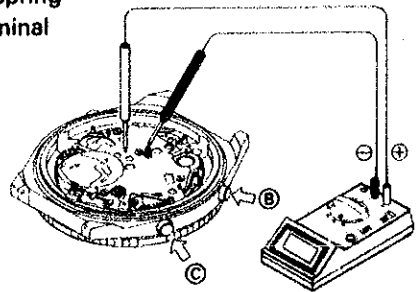
**ALARM CONDITION**

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

Keep buttons (B) and (C) pressed simultaneously with the desired mode set at the **TIME** 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



- ② Check the upconverter coil.  
 Range to be used:  $\Omega$

**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.

**Result:**

$130\Omega - 170\Omega$ : Normal  
 Less than  $130\Omega$  } : Defective  
 More than  $170\Omega$  }  
 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 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 M..... Standard type  
 (Movement type) L..... Long type

\* SWITCH SPRING FOR PULSAR WATCHES

4245068 (Pulsar marking)