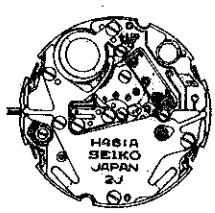
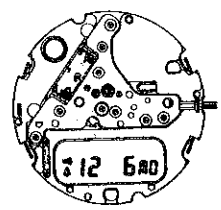
PARTS CATALOGUE

Cal. H461A

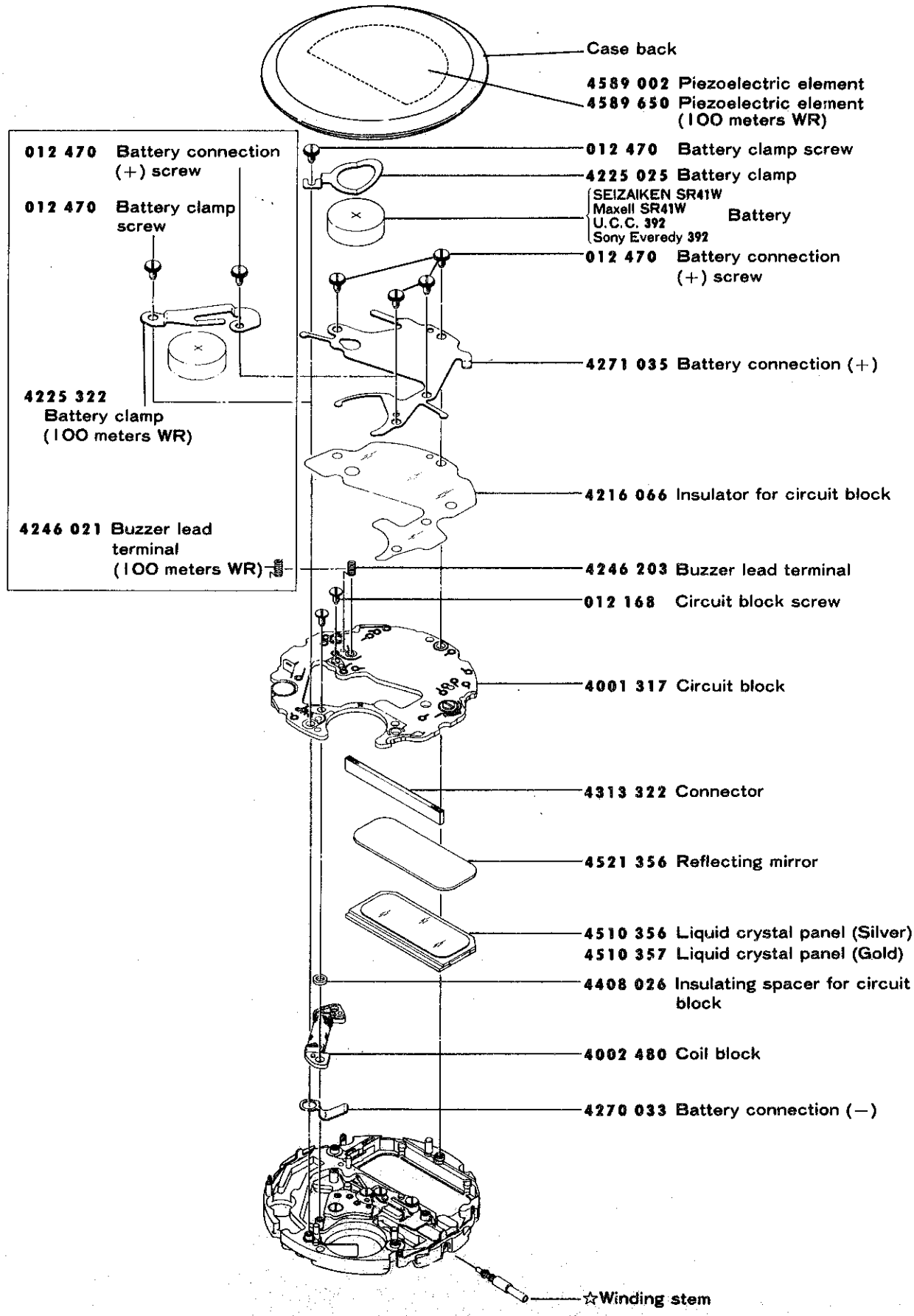
H461A (2j)

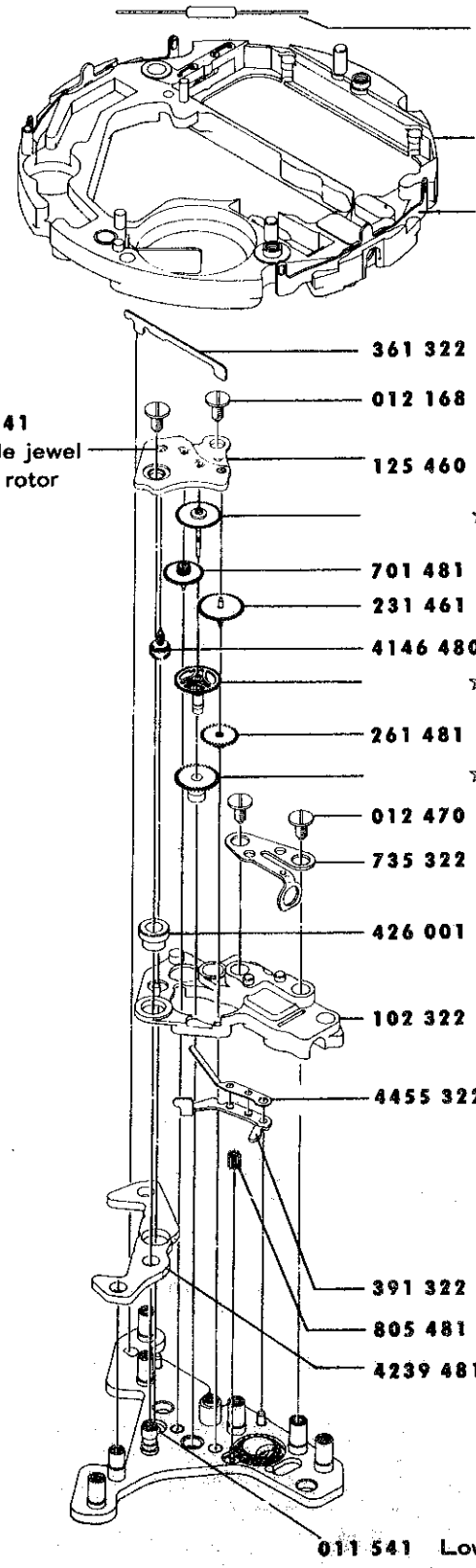




HATTORI SEIKO CO., LTD.

SEIKO


Case back
4589 002 Piezoelectric element
4589 650 Piezoelectric element (100 meters WR)
012 470 Battery clamp screw
4225 025 Battery clamp
SEIZAIKEN SR41W
Maxell SR41W
U.C.C. 392
Sony Everedy 392
Battery
012 470 Battery connection (+) screw
4271 035 Battery connection (+)
4216 066 Insulator for circuit block
4246 203 Buzzer lead terminal
012 168 Circuit block screw
4001 317 Circuit block
4313 322 Connector
4521 356 Reflecting mirror
4510 356 Liquid crystal panel (Silver)
4510 357 Liquid crystal panel (Gold)
4408 026 Insulating spacer for circuit block
4002 480 Coil block
4270 033 Battery connection (−)
☆Winding stem
012 470 Battery connection (+) screw
012 470 Battery clamp screw
4225 322 Battery clamp (100 meters WR)
4246 021 Buzzer lead terminal (100 meters WR)

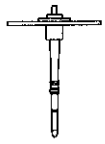
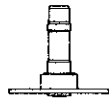
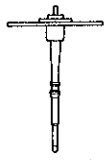
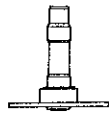
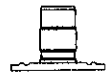


☆⇨Please see remarks on the reverse page.

Remarks :

Fouth wheel & pinion, Center minute wheel, Hour wheel

There are two different types as specified below.

Type	Fourth wheel & pinion	Center minute wheel	Hour wheel
a.	 ☆241 481	 ☆270 481	 ☆271 064
b.	 ☆241 482	 ☆270 482	 ☆271 082

Winding stem

☆354 323
☆354 324
☆354 325
} ……If the combination of the winding stem and case is unknown, check the case number and refer to **"SEIKO Quartz Casing Parts Catalogue"** to choose a corresponding winding stem.

 012 168	Circuit block screw Train wheel bridge screw
 012 470	Battery clamp screw Battery connection (+) screw Winding stem holder screw

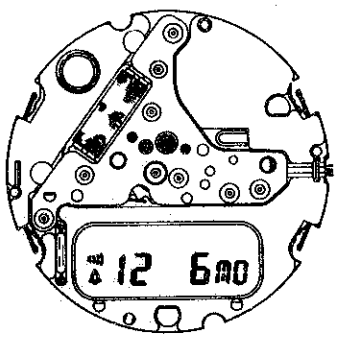
 017 286	Tube for battery connection (+) screw (B)
 017 298	Tube for train wheel bridge (A)
 017 653	Tube for circuit block screw (A)
 017 654	Tube for circuit block screw (B)
 017 655	Tube for train wheel bridge (B)
 017 656	Tube for battery clamp screw Tube for winding stem holder screw Tube for battery connection (+) screw (A)

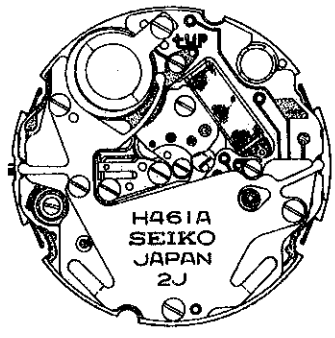
TECHNICAL GUIDE

SEIKO

QUARTZ

CAL. H461A

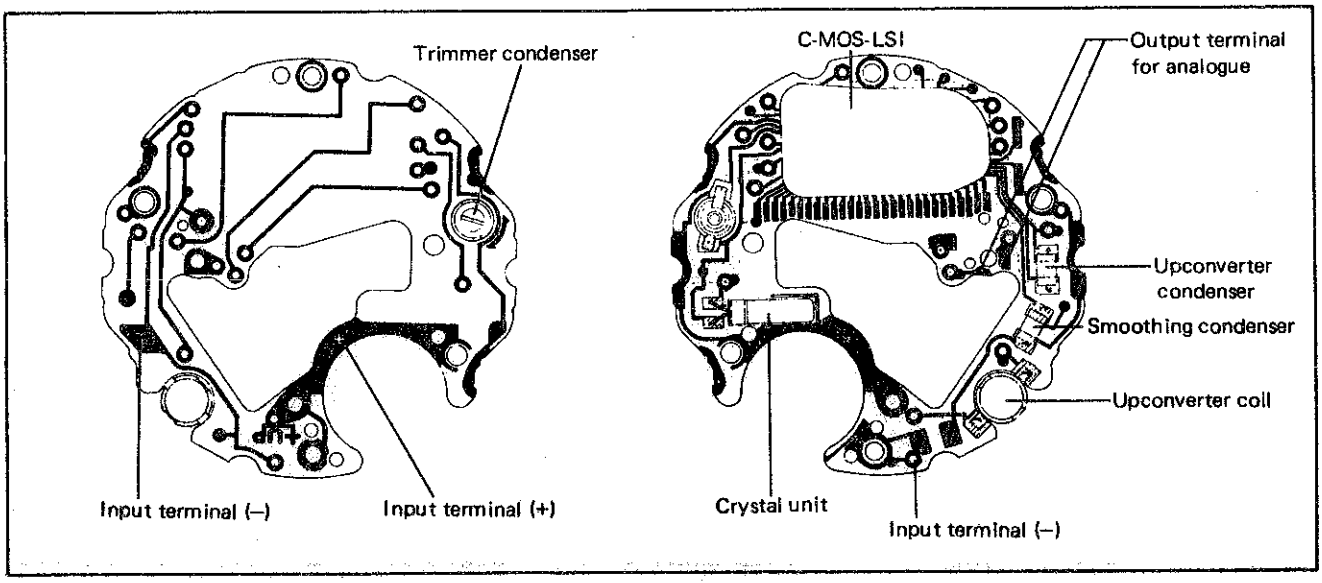




I. SPECIFICATIONS

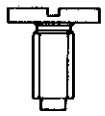
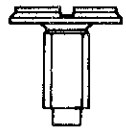
Item \ Cal. No.		H461A	
		Analogue section	Digital section
Display medium		3 hands	Nematic Liquid Crystal, FEM (Field Effect Mode)
Driving system		Step motor	Multiplex
Display system			• Time (12- or 24-hour indication) • Calendar • Alarm (Rings for 20 seconds) • Stopwatch (60 minutes)
Additional mechanism		• Electronic circuit reset switch • Train wheel setting device	• Alarm test system • Hourly time signal • All segments light-up system • Illuminating light
Loss/gain		Monthly rate at normal temperature range: less than 15 seconds	
Movement size	Casing diameter	ϕ28.0 mm	
	Height	3.4 mm (4.0 mm including battery)	
Regulation system		Trimmer condenser	
Measuring gate by quartz tester		Any gate can be used.	
Battery		Battery life is approximately 2 years for SEIKO (SEIZAIKEN) SR41W, SONY EVEREADY 392, and U.C.C. 392. Battery life is approximately 1.5 years for Maxell SR41W. Voltage: 1.55V	
Jewels		2 jewels	

II. STRUCTURE OF THE CIRCUIT BLOCK



III. DISASSEMBLING, REASSEMBLING, AND LUBRICATING

List of the screws used

Shape	Part No.	Name	Shape	Part No.	Name
	012 168	Train wheel bridge screw (2 pcs.) Circuit block screw (2 pcs.)		012 470	Battery clamp screw Winding stem holder screw (2 pcs.) Battery connection (+) screw (4 pcs.)

Disassembling procedures Figs. : ① → ㊳

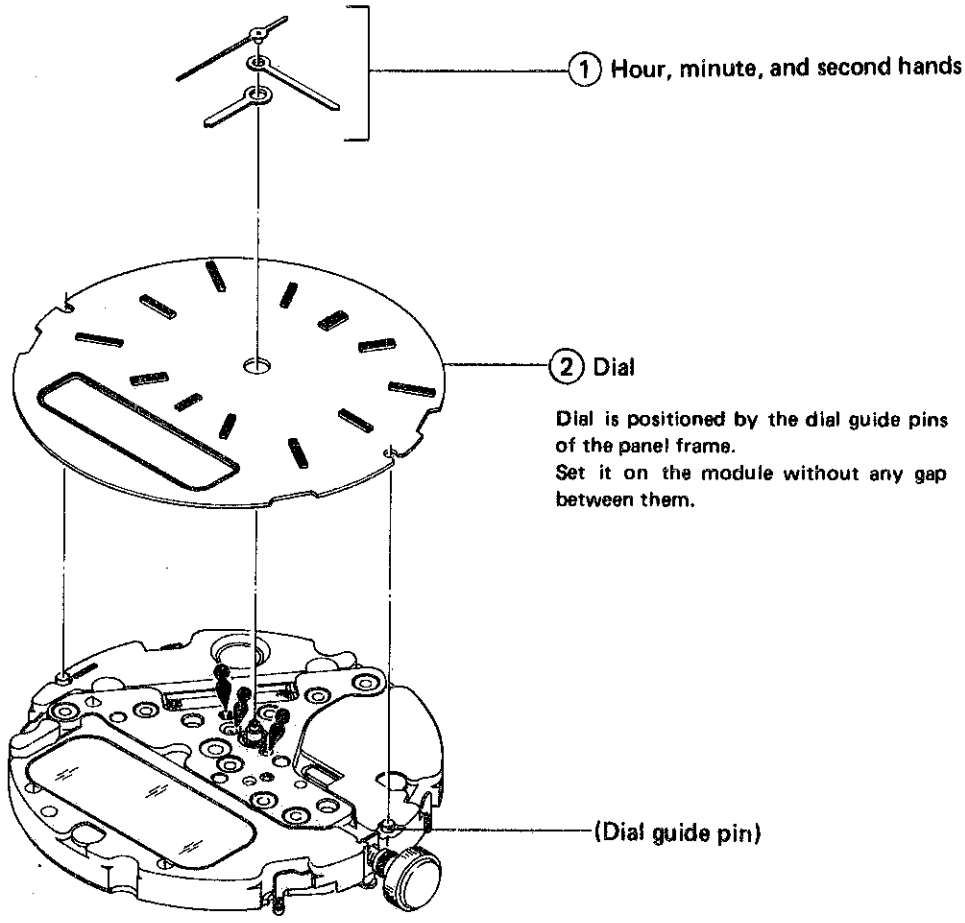
Reassembling procedures Figs. : ㊳ → ①

Lubricating: **Types of oil** **Oil quantity**

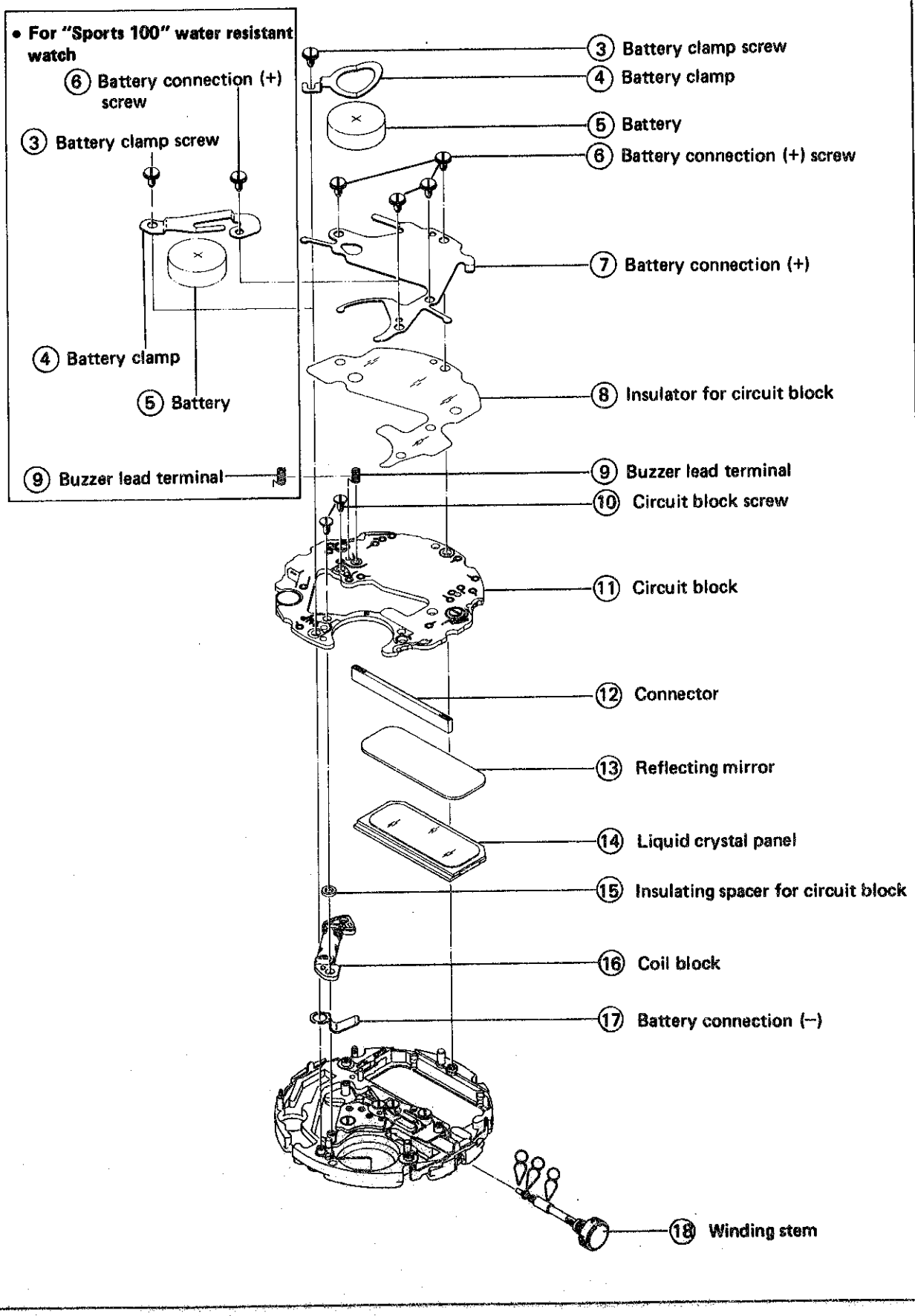
Moebius A — Normal

SEIKO Watch Oil S-6

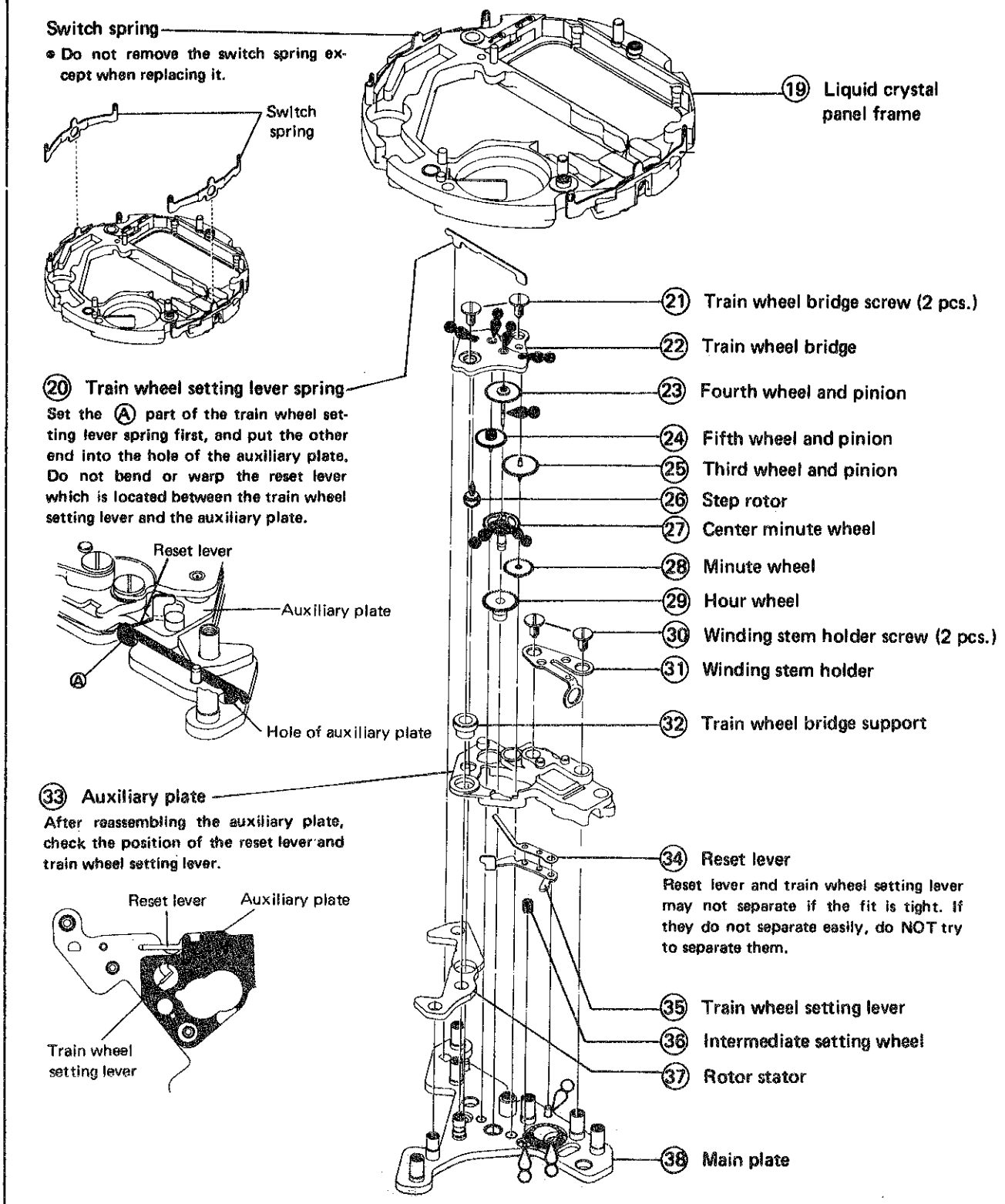
1. Second hand ~ Dial



2. Battery clamp screw ~ Winding stem



3. Liquid crystal panel frame ~ Main plate



IV. CHECKING AND ADJUSTMENT

- The explanation here is only for the particular points of Cal. H461A.
  For details, refer to the "TECHNICAL GUIDE, GENERAL INSTRUCTION" each for SEIKO Analogue Quartz and for SEIKO Digital Quartz.

Procedure

CHECK OUTPUT SIGNAL

Result:

Normal: Input indicator blinks every second.
Defective: Input indicator does not blink every second.

CHECK BATTERY VOLTAGE

Use the Digital Multi-Tester S-840A.
Mode to be used: DC V

Result:

Normal: More than 1.57V
Defective: Less than 1.57V

CHECK COIL BLOCK

Use the Digital Multi-Tester S-840A.
Mode to be used: Ω

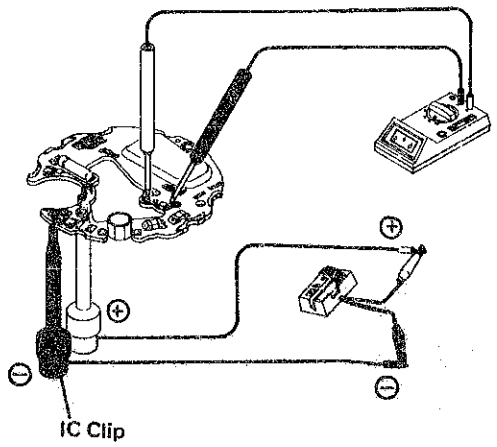
Result:

Normal: 2.2KΩ ~ 2.6KΩ
Defective — Less than 2.2KΩ (Short circuit)
Defective — More than 2.6KΩ (Broken wire)

CHECK LIQUID CRYSTAL PANEL AND CIRCUIT BLOCK

Use the Digital Multi-Tester S-840A.
Mode to be used: DC V

(1) Check output voltage for the analogue section.



Probe red (+) } Output terminal for analogue
Probe black (-) }

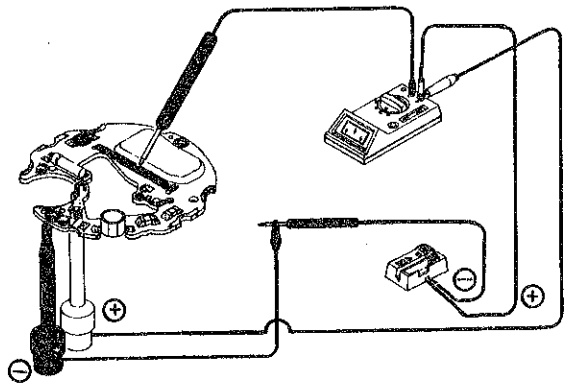
IC Clip red (+) ... Input terminal (+)
IC Clip black (-) ... Input terminal (-)

Result:

Normal: The output voltage is displayed intermittently.
Defective: The digits displayed remain unchanged.
Replace the circuit block with a new one.

Procedure

(2) Check output voltage for the digital section.



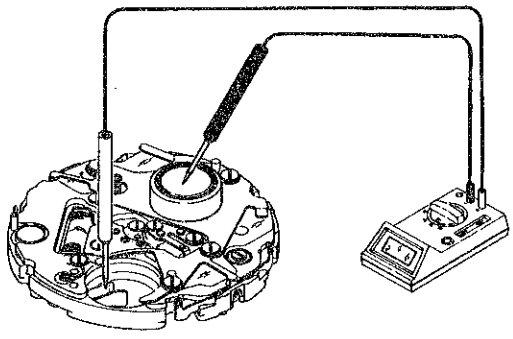
Result:

Normal: More than 1.2V
Defective: Less than 1.2V
Replace the circuit block with a new one.

CHECK CURRENT CONSUMPTION

Use the Digital Multi-Tester S-840A.
Mode to be used: μA

(1) Current consumption for the whole of the movement (module)



Result:

Normal: Less than 2.8μA
Defective: More than 2.8μA
Check current consumption for the circuit block alone.

Probe (+) red . . . . . Battery connection (−)
Probe (−) black . . . . . Battery (−) surface

(2) Current consumption for the circuit block alone

Result:

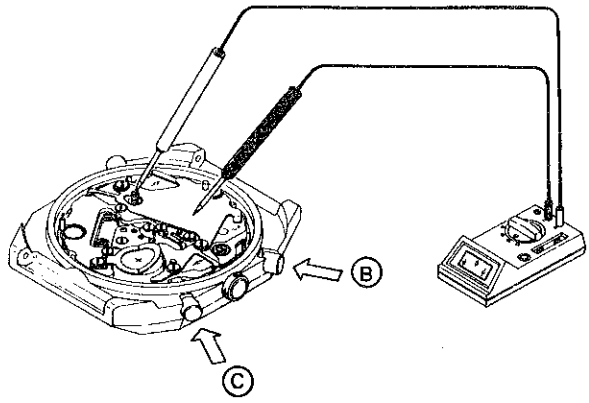
Normal: Less than 1.4μA
Defective: More than 1.4μA

CHECK ALARM CONDITION

(1) Check to see if the output voltage for alarm is correctly transmitted from the circuit block.

Activate the alarm test system by keeping buttons B and C at the same time in the time or calendar display.

Use the Digital Multi-Tester S-840A.
Mode to be used: DC V



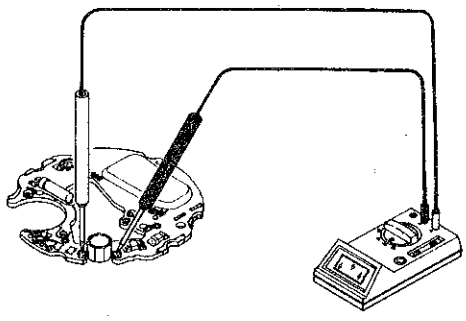
Result:

Normal: The output voltage is displayed intermittently.
Proceed to (3).

Defective: The digits displayed remain unchanged.
Replace the upconverter coil with a new one.

(2) Check the upconverter coil.

Use the Digital Multi-Tester S-840A.
Mode to be used: Ω



Result:

Normal: 130Ω ~ 170Ω
Proceed to (3).

Defective — Less than 130Ω
More than 170Ω
Replace the circuit block with a new one.

(3) Check the piezoelectric element.

Check the piezoelectric element to see if there is any crack, chip, peeling, or the like on it.

All procedures of Disassembling, Reassembling, Lubricating, Checking and Adjustment are completed.