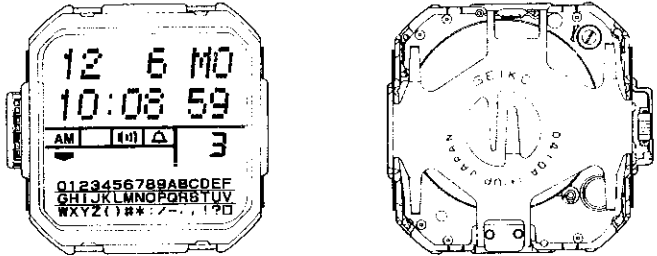


# PARTS CATALOGUE/ TECHNICAL GUIDE

## Cal. D410A

### [SPECIFICATIONS]

Cal. No.		D410A
Item		
Module	 <p style="text-align: right;">( x 1.5)</p>	
Module size	Outside diameter	26.0 mm between 6 o'clock and 12 o'clock sides 27.4 mm between 3 o'clock and 9 o'clock sides
	Casing diameter	—
	Height	4.9 mm
Display medium	Nematic Liquid Crystal, FEM (Field Effect Mode)	
Liquid crystal driving system	Multiplex driving system	
Display system	<ul style="list-style-type: none"> <li>• Time/calendar display (12- or 24-hour indication)</li> <li>• Memo display</li> <li>• Schedule alarm display</li> <li>• Alarm display</li> <li>• Stopwatch display</li> <li>• Contrast adjust display</li> </ul>	
Additional mechanism	<ul style="list-style-type: none"> <li>• Alarm test system</li> <li>• Hourly time signal</li> <li>• Full-automatic calendar</li> </ul>	
Loss/gain	Monthly rate at normal temperature range: $\pm 15$ seconds	
Regulation system	Trimmer condenser	
Measuring gate by quartz tester	Any gate can be used.	
Battery	SEIKO CR2016, Maxell CR2016, Sanyo CR2016, Matsushita BR2016 Battery life is approximately 1.5 years. Voltage: 3.0V	

HATTORI SEIKO CO., LTD.

# PARTS CATALOGUE

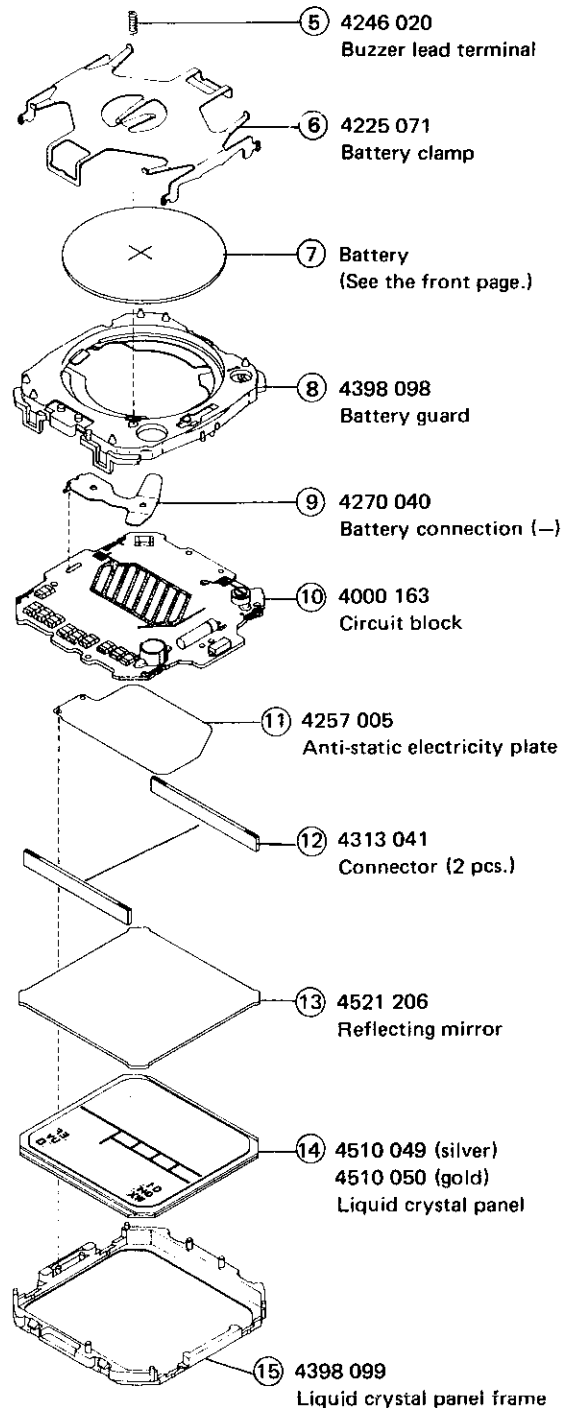
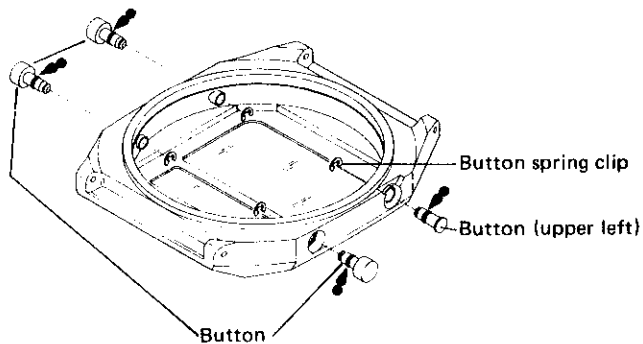
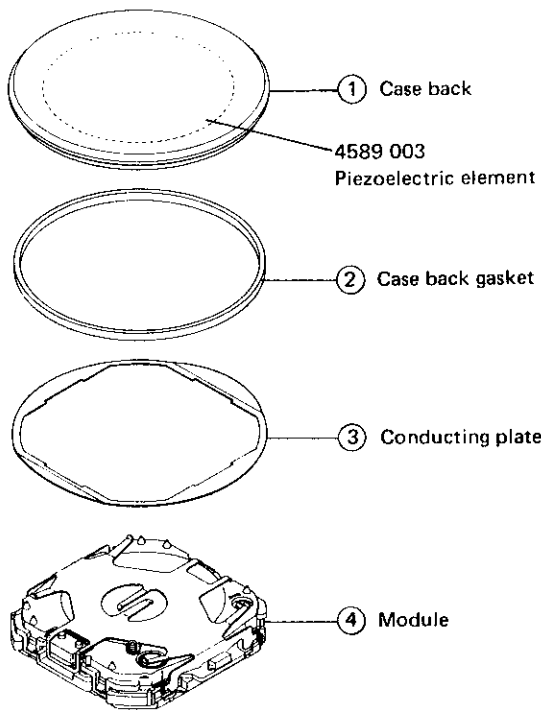
Cal. D410A

Disassembling procedures Figs.: ① → ⑮

Reassembling procedures Figs.: ⑮ → ①

**Lubricating:**

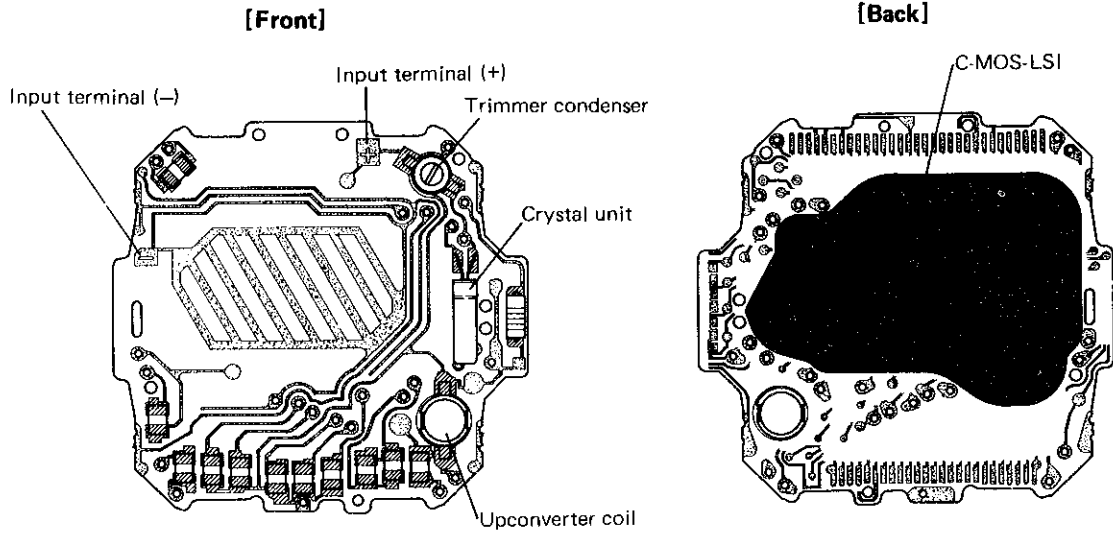
● Silicone grease 500,000 c.s. Normal quantity



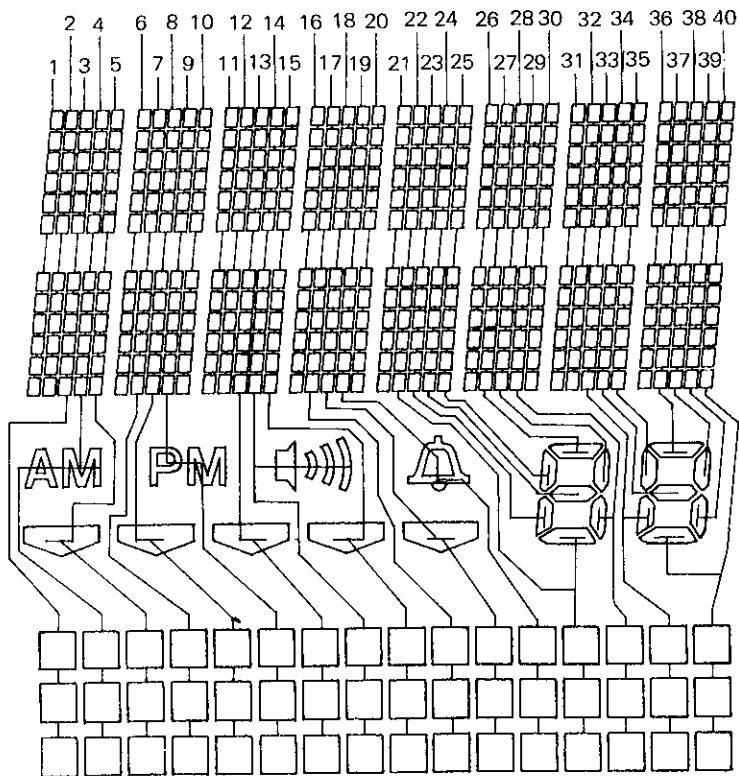
○ ⇨ Please see the remarks on the following pages.

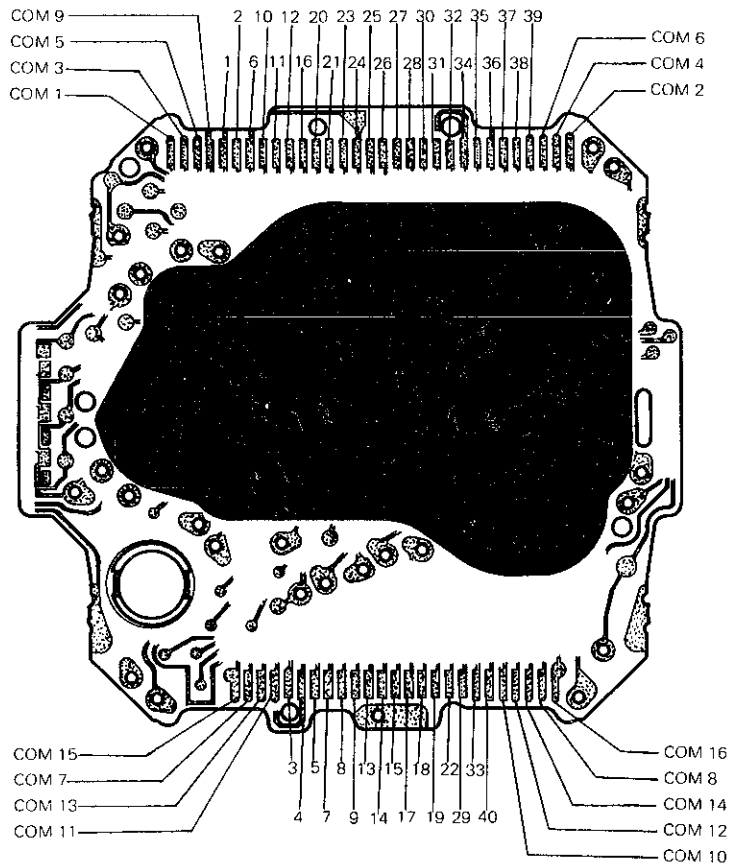
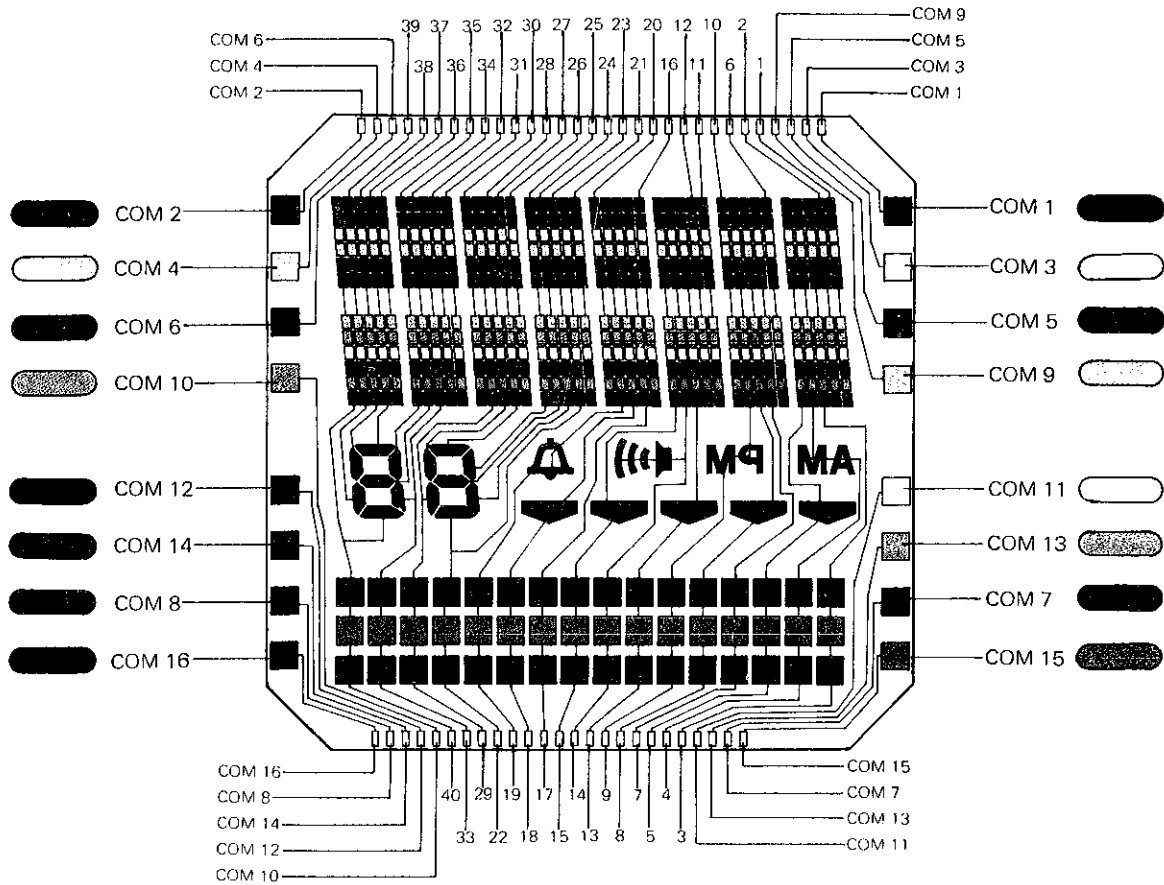
- The explanation here is only for the particular points of Cal. D410A.
- For the repairing, checking and measuring procedures, refer to the "TECHNICAL GUIDE, GENERAL INSTRUCTION".

## I. STRUCTURE OF THE CIRCUIT BLOCK



## II. RELATIONSHIP BETWEEN THE SEGMENT (LIQUID CRYSTAL PANEL ELECTRODE) AND THE C-MOS-LSI OUTPUT TERMINAL





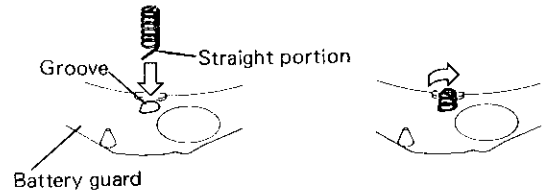
## III. REMARKS ON DISASSEMBLING AND REASSEMBLING

### Remarks on installing the battery

After installing the battery, press the four buttons at the same time for 2 to 3 seconds.

#### ⑤ Buzzer lead terminal

When removing or installing the buzzer lead terminal, turn it so that the straight portion of its end is released from or hooked to the groove of the battery guard.



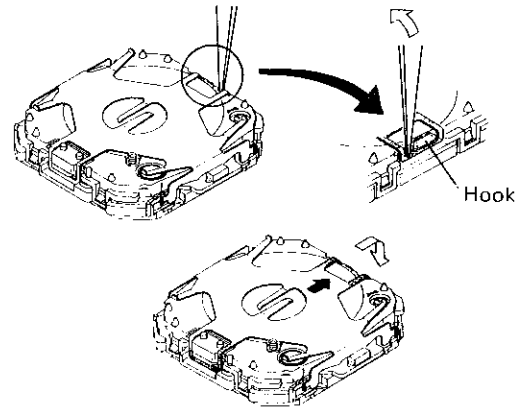
#### ⑥ Battery clamp

##### • How to remove

Release the battery clamp hook portion from the battery guard at 12 o'clock position first.

##### • How to install

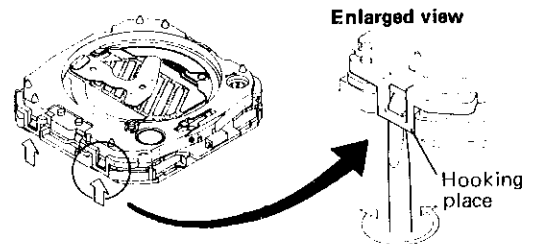
First, hook the battery clamp to the battery guard at the 6 o'clock position and then at the 12 o'clock position.



#### ⑧ Battery guard

##### • How to remove

Pry up the battery guard lightly at the four hooking places by using a screwdriver.



## IV. VALUE CHECKING

#### • Upconverter coil resistance

$130\Omega \sim 170\Omega$

#### • Time accuracy

The daily rate can be measured easily when all the segments light up. Press buttons C and D simultaneously in the contrast adjust display to light up all the segments.

#### • Current consumption

For the whole of the module: less than  $6.0\mu A$

For the circuit block alone: less than  $3.7\mu A$

#### Remarks:

Before measuring current consumption, temporarily short-circuit the probes black and red with the lead wire.

Otherwise, all the segments will light up or the display will become disordered, and as a result current consumption cannot be measured correctly.

Probe red . . . . . Input terminal (+)

Probe black . . . . . Battery (-) surface

