

TECHNICAL GUIDE

SEIKO
QUARTZ

CAL. 1E20A
CAL. 1E50A



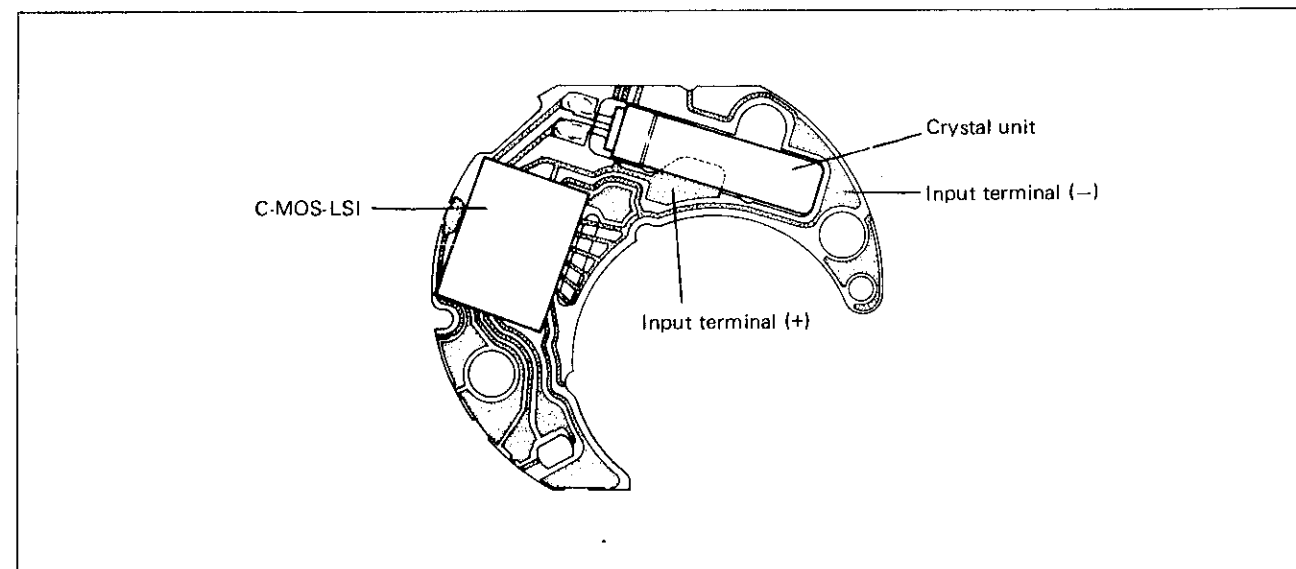
CONTENTS

I. SPECIFICATIONS	1
II. STRUCTURE OF THE CIRCUIT BLOCK	1
III. DISASSEMBLING, REASSEMBLING, AND LUBRICATING	2
1. Hour and minute hands ~ Minute wheel	2
2. Battery ~ Battery connection insulator	3
3. Setting lever spring screw ~ Clutch wheel	4
4. Train wheel bridge ~ Main plate	5
IV. CHECKING AND ADJUSTMENT	6
• Check output signal	6
• Check battery voltage	6
• Check coil block	6
• Check reset condition	6
• Check accuracy	6
• Check current consumption	7

I. SPECIFICATIONS



Cal. No.		1E20A	1E50A
Item			
Time indication		2 hands (Hand motion: 20-second step)	
Driving system		Step motor (Load compensative driving pulse system)	
Additional mechanism		Electronic circuit reset switch	
Loss/gain		Monthly rate at normal temperature range: less than 15 seconds	
Movement size	Outside diameter	φ9.5 mm 9.0 mm between 3 o'clock and 9 o'clock sides	φ12.8 mm 9.0 mm between 3 o'clock and 9 o'clock sides 10.0 mm between 12 o'clock and 6 o'clock sides
	Casing diameter	8.5 mm between 3 o'clock and 9 o'clock sides	φ12.3 mm
	Height	2.7 mm	
Regulation system		Regulating switch lever	
Measuring gate by quartz tester		Use the 10-second gate.	
Battery		Maxell SR512SW Battery life is approximately 2 years. Voltage: 1.55V	
Jewels		5 jewels	

II. STRUCTURE OF THE CIRCUIT BLOCK



III. DISASSEMBLING, REASSEMBLING, AND LUBRICATING

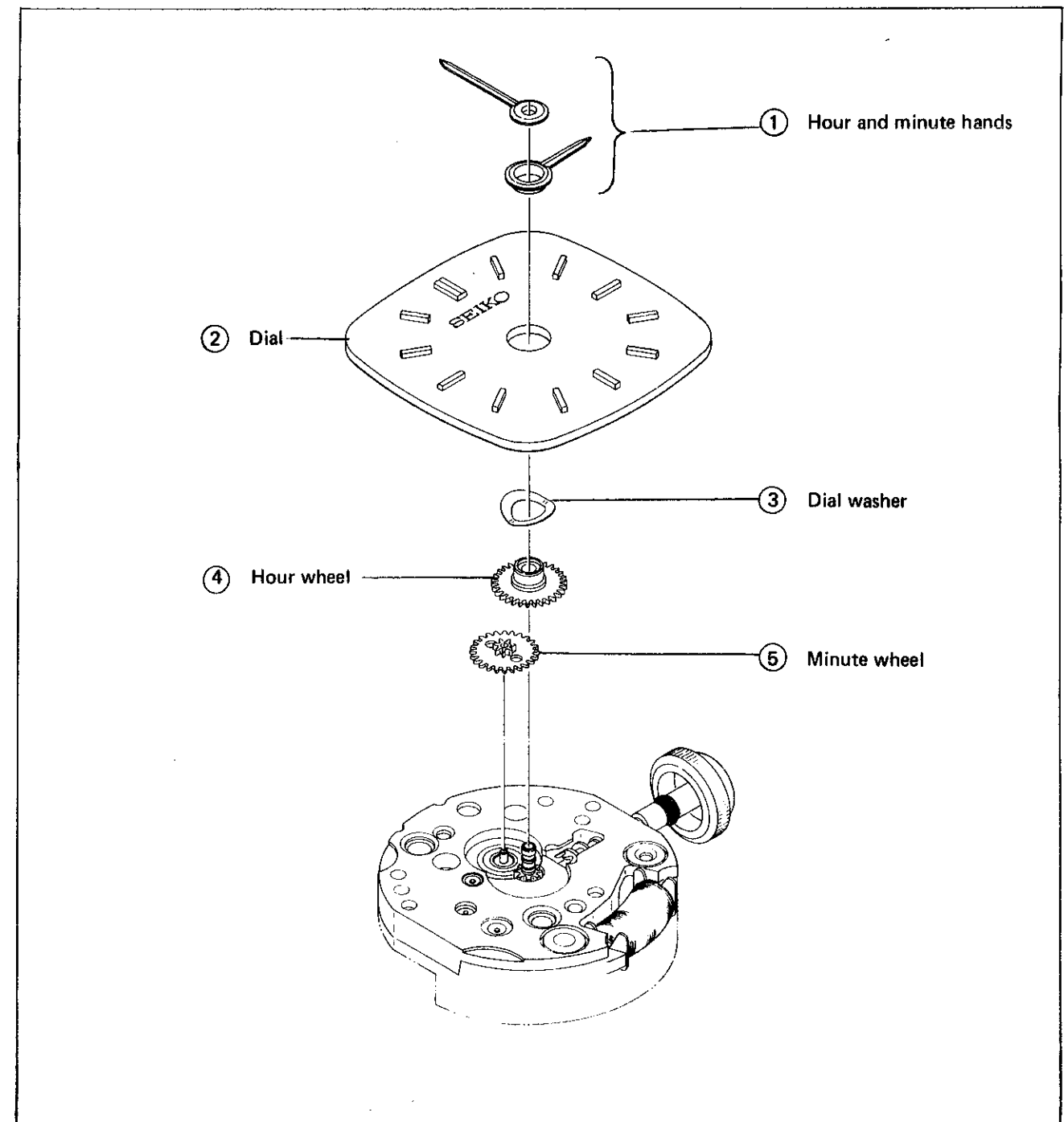
List of the screws used

Shape	Part No.	Name	Shape	Part No.	Name
	022 342	Train wheel bridge screw Setting lever spring screw Battery connection (+) screw		022 343	Regulating switch lever screw

Disassembling procedures Figs.: ① → ⑤

Reassembling procedures Figs.: ⑤ → ①

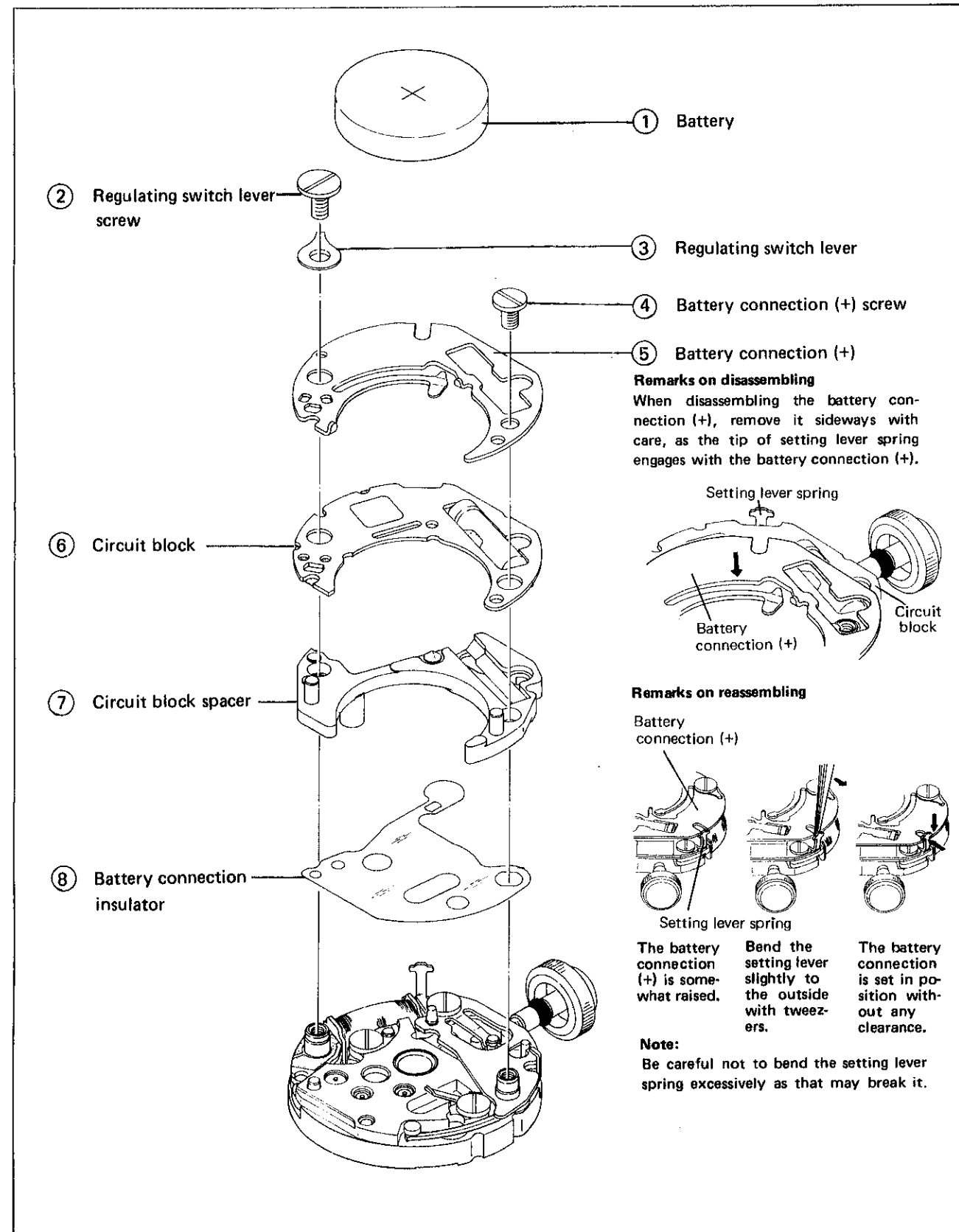
1. Hour and minute hands ~ Minute wheel



Disassembling procedures Figs.: ① → ②⑦

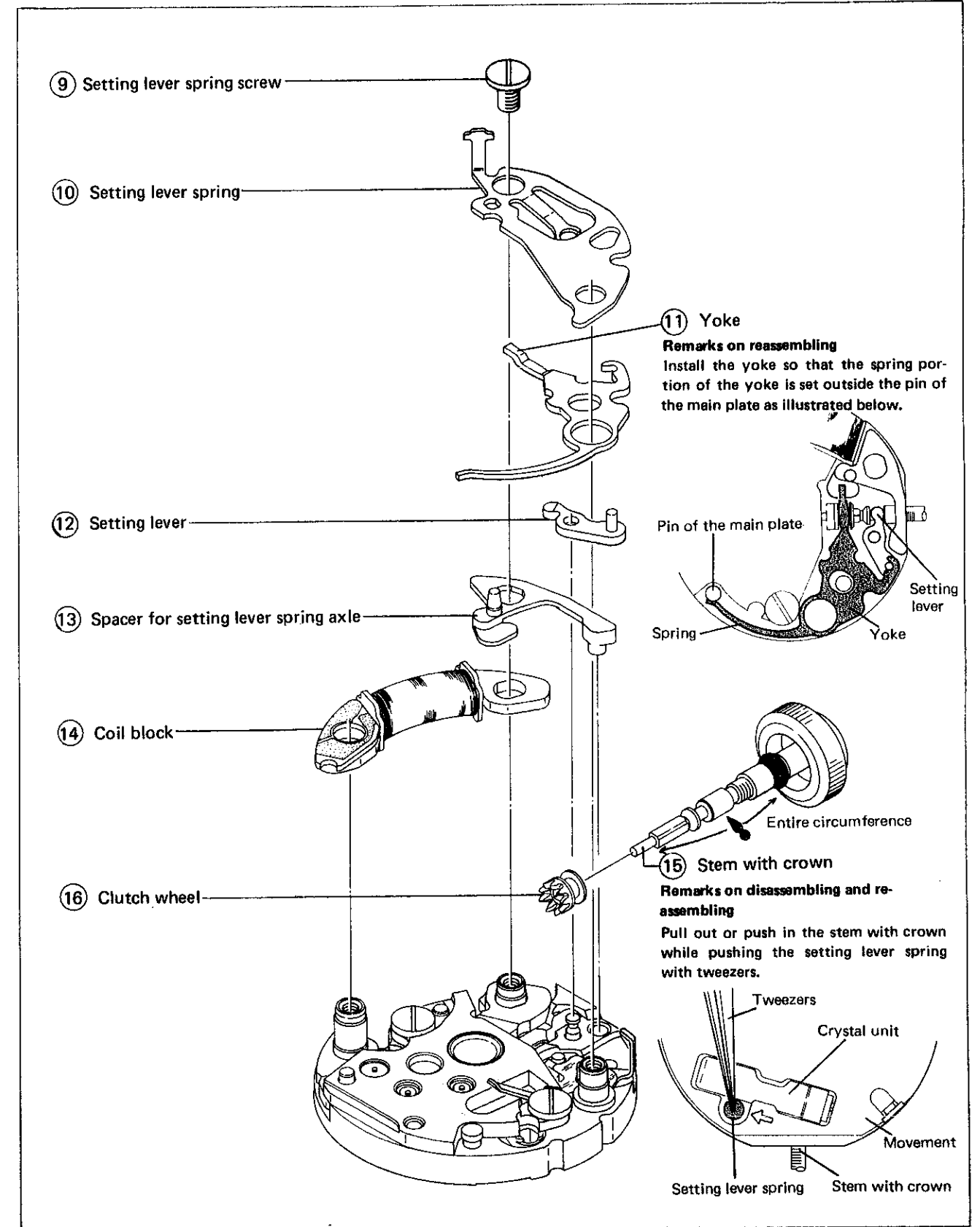
Reassembling procedures Figs.: ②⑦ → ①

2. Battery ~ Battery connection insulator



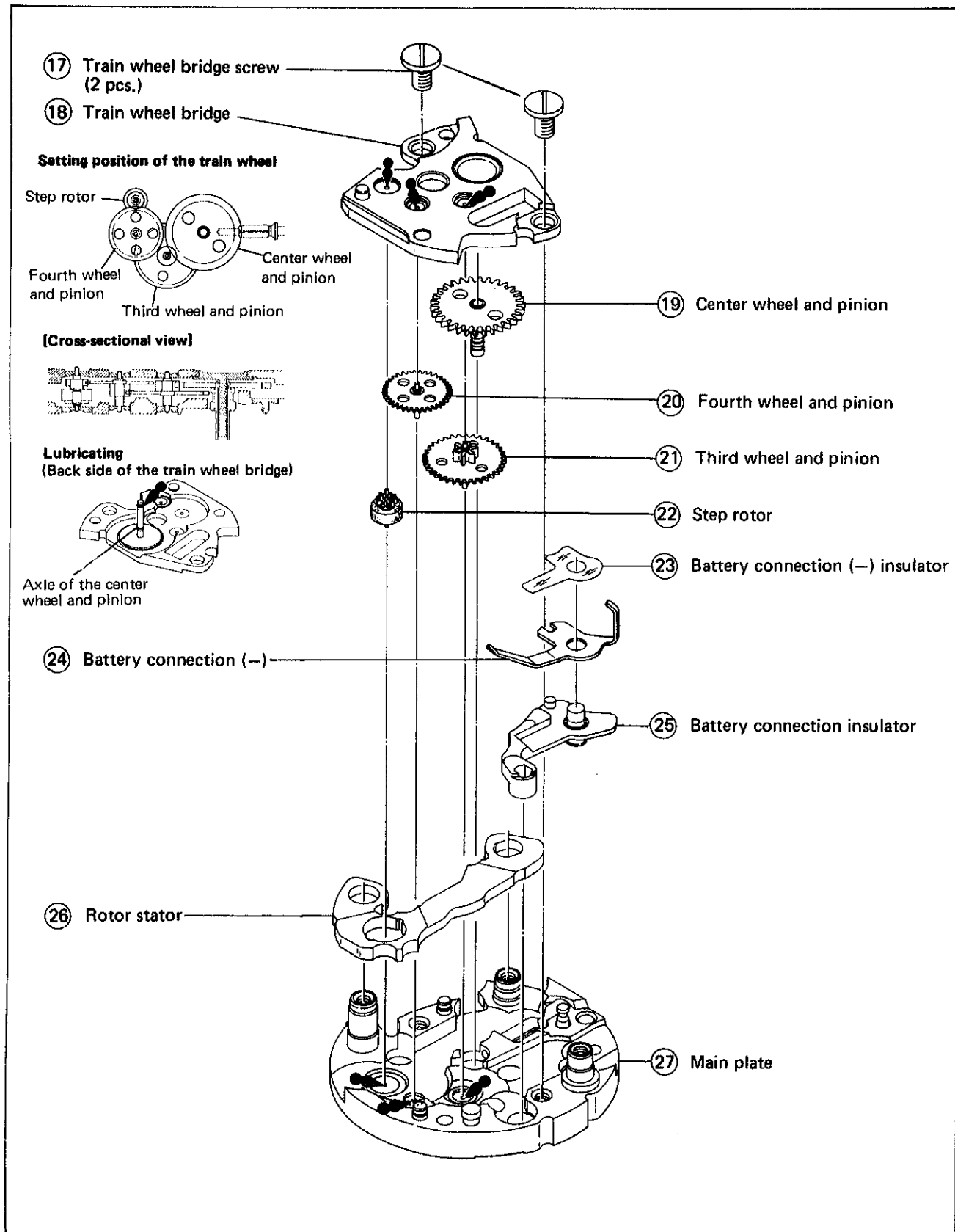
3. Setting lever spring ~ Clutch wheel

Lubricating: ● Moebius A
Normal quantity



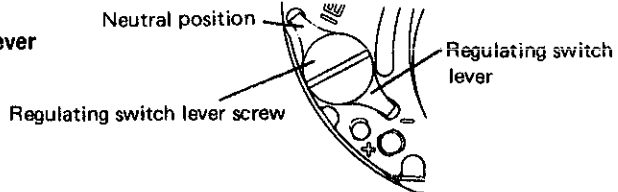
4. Train wheel bridge screw ~ Main plate

Lubricating:  Moebius A
Normal quantity



IV. CHECKING AND ADJUSTMENT

- The explanation here is only for the particular points of Cals. 1E20A and 1E50A.
Refer to the "TECHNICAL GUIDE, GENERAL INSTRUCTION" for SEIKO Analogue Quartz for details.

Procedure	
CHECK OUTPUT SIGNAL	
Use the quartz tester. Range to be used: 10-second gate	
CHECK BATTERY VOLTAGE	
Use the Digital Multi-Tester. Range to be used: DC V	Result: Normal : More than 1.57V Defective : Less than 1.57V
CHECK COIL BLOCK	
Use the Digital Multi-Tester. Range to be used: Ω	Result: Normal : 1.6 K Ω ~ 2.8 K Ω Defective { Less than 1.6 K Ω (Short circuit) More than 2.8 K Ω (Broken wire)
CHECK RESET CONDITION	
Pull the crown out completely, and push it in to see if the minute hand moves after 20 seconds.	
Note: Protect the movement from light while checking.	
CHECK ACCURACY	
Measuring time accuracy	
<ul style="list-style-type: none"> Use the 10-second gate of the quartz tester. 	
Do not measure accuracy under an incandescent lamp, since strong light adversely affects time accuracy. Be sure to protect the movement from light with case back or black paper while measuring.	
Adjusting time accuracy	
<ul style="list-style-type: none"> Loosen the regulating switch lever screw, and fix the end of the regulating switch lever in the (+) hole to gain time and in the (-) hole to lose time. The range to be regulated by the regulating switch lever is approximately ± 0.26 sec./day. 	<p>Ex.: The illustration below shows that the end of the regulating switch lever is set in the (-) hole.</p> 

Procedure

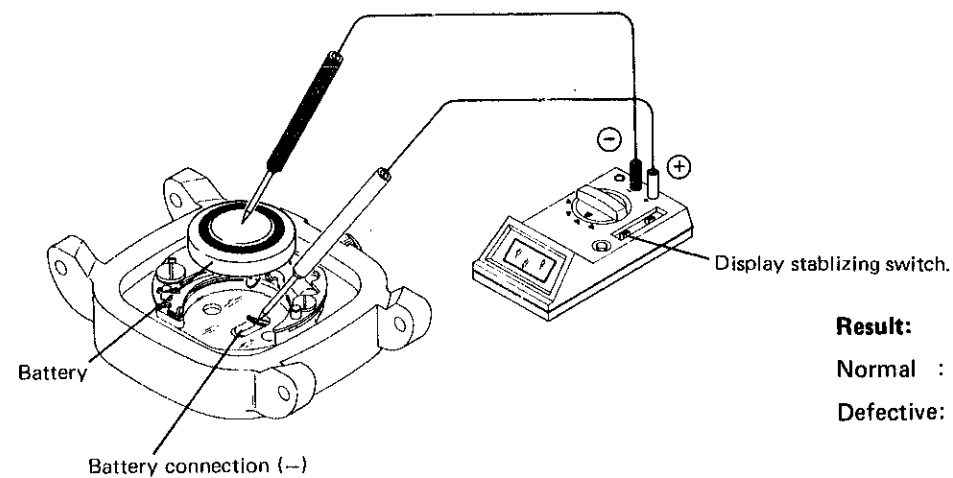
CHECK CURRENT CONSUMPTION

Be sure to protect the movement from light with black paper while measuring.
Do not check current consumption under an incandescent lamp, since strong light may cause a watch to consume excess current.

Check current consumption for the whole of the movement.

Use the Digital Multi-Tester S-840.

Range to be used: μA



Result:

Normal : Less than $0.3 \mu A$

Defective: More than $0.3 \mu A$

Set the display stabilizing switch of the tester to the "B" position.

When the (+) and (-) probes of the tester are applied as shown in the illustration above, the tester displays a value, indicating that electric current is flowing in the IC.

The value displayed is increased, since the motor driving current flows in the step motor once every 20 seconds. Read a maximum value to judge the current consumption value. (When the display stabilizing switch is set to the "B" position, the tester's value-averaging calculation function works.)