

TECHNICAL GUIDE AND PARTS LIST

CAL. Y643A
CAL. Y642A

ANALOGUE QUARTZ

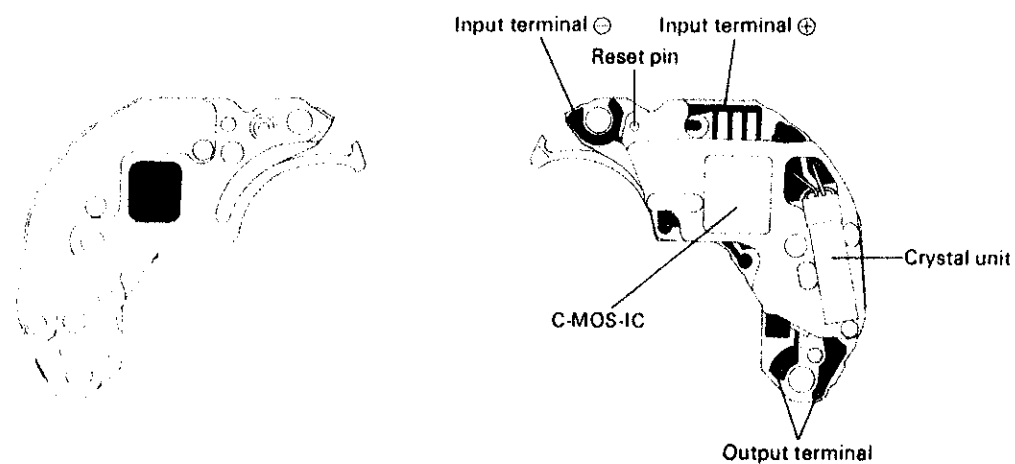
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I. SPECIFICATIONS

Item	Cal. No.	Y643A	Y642A
Time indication		3-hand	3-hand
Additional mechanism	Date	○	○
	Day	○	---
	Bilingual change-over system for the day of the week	○	---
	Instant date setting device	○	○
	Instant day setting device	○	---
	Train wheel setting device	○	○
	Electronic circuit reset switch	○	○
Loss/gain		Loss/gain at normal temperature range Monthly rate: less than 20 seconds	
Maximum diameter		φ18.0 mm	
Cashing diameter		φ17.6 mm (16.0 mm between 3 o'clock and 9 o'clock sides)	
Height		3.8 mm (excluding battery) (4.1 mm: including battery)	
Quartz tester measuring gate		Use for 10-second gate	
Battery		Maxell SR726SW Battery life: approx. 2 years Voltage: 1.55V	
Jewels		2 jewels	

II. CIRCUIT SCHEMATIC



III. DISASSEMBLING, REASSEMBLING AND LUBRICATING CAL. No. Y643

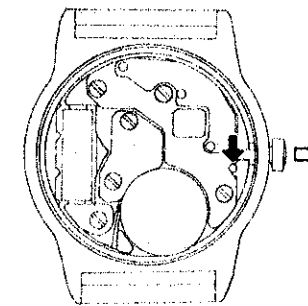
- Disassembling and reassembling
Disassembling procedures Figs.: ① ~ ④
Reassembling procedures Figs.: ④ ~ ①

- Lubricant
● Moebius Synt-A-Lube
○ Moebius Synt-V-Lube

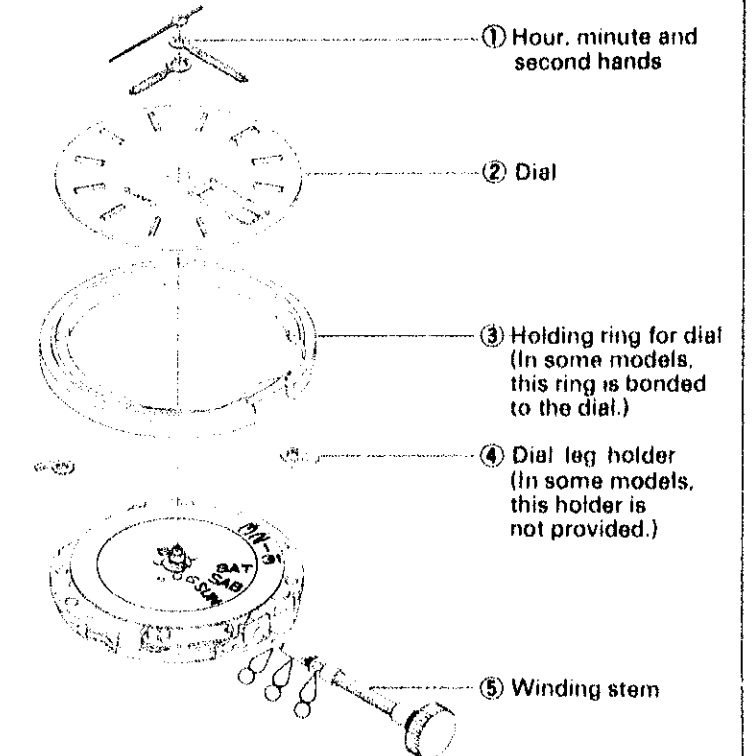
- Movement holder:
Use multi-purpose type movement holder for disassembly and reassembly. When reassembling, use the multi-purpose type movement holder after tightening the date dial guard screw.

1. Indicating system

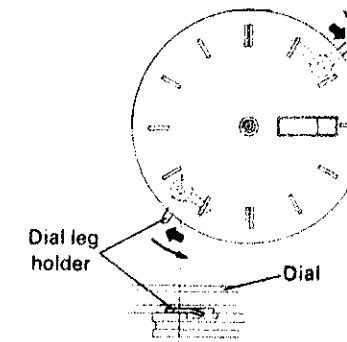
● How to pull out the winding stem



Fully pull out the winding stem, depress the portion indicated by the arrow with tweezers and remove the winding stem.



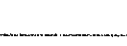


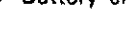


● How to remove/install dial



The dial is fixed with the dial leg holders. To remove the dial, turn the holders to the arrow (←) marked direction. When installing the dial to the movement, align the dial leg holder holes with those of the main plate, carefully place the dial and turn the dial leg holders to the arrow (→) marked direction.

● List of screws used

Used screw	All screws are common.
	Train wheel bridge screw (2 pieces)
	Circuit block screw (3 pieces)
	Coil block screws (1 piece)
	Setting lever axle spring screw (1 piece)
	Date dial guard screw (3 pieces)
	Date driving wheel screw (1 piece)
	Total: 11 pieces

- Battery clamp (In some models, this clamp is used.)

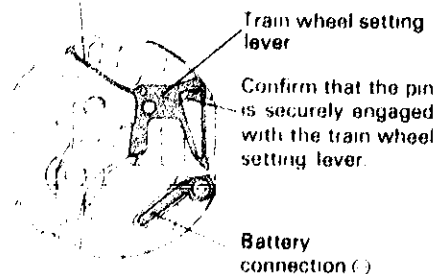


- As day of the week indication system is not provided in cal. Y642, day star, snap for day star with dial disk and day corrector are not used. The shape of the date dial guard with day corrector and marking of circuit block of Y642 differ from those of Y643. As the major procedures of the disassembly and reassembly are identical with cal. Y643, refer to this technical guide.

2. Electronic circuit and gear train

- Train wheel setting lever and battery connection ⊖ position

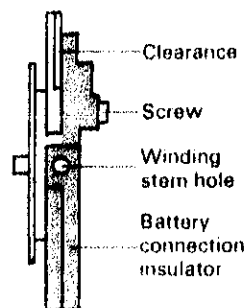
When disassembling and reassembling, be careful not to deform it.



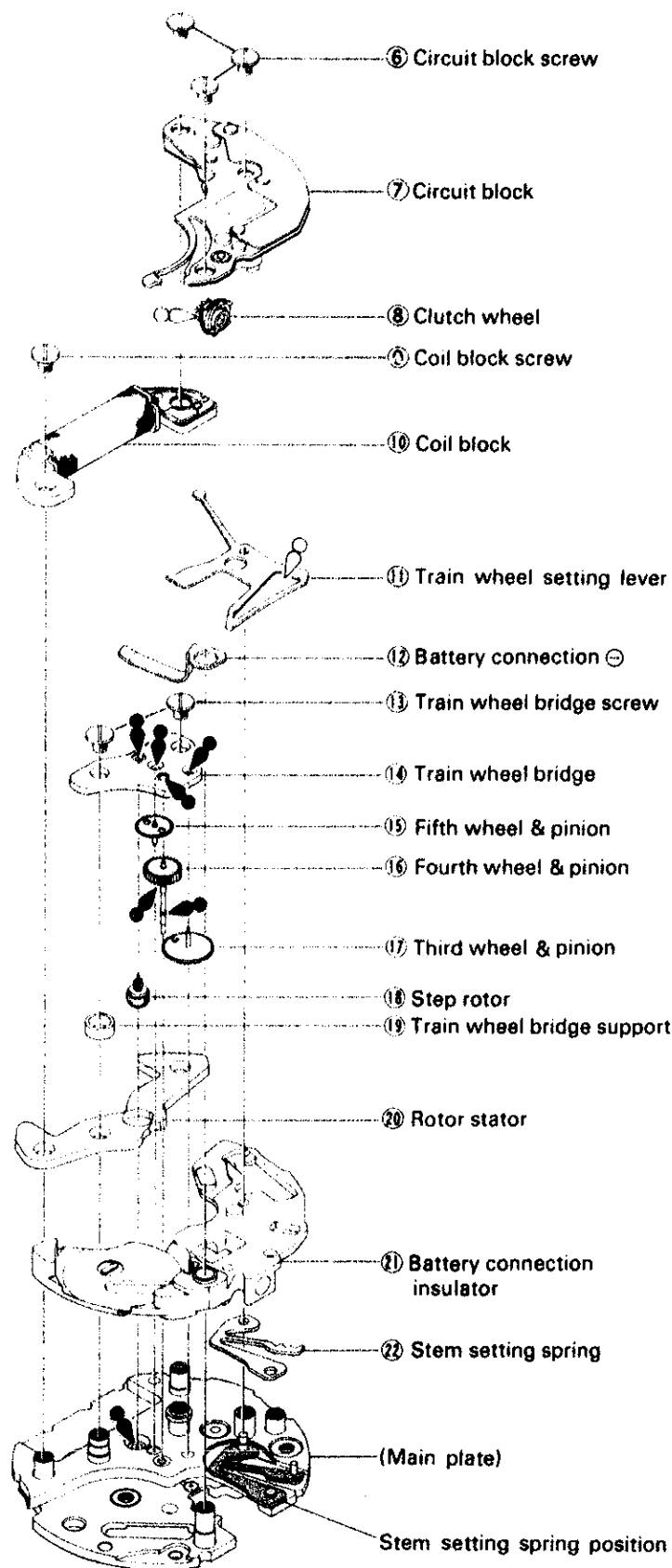
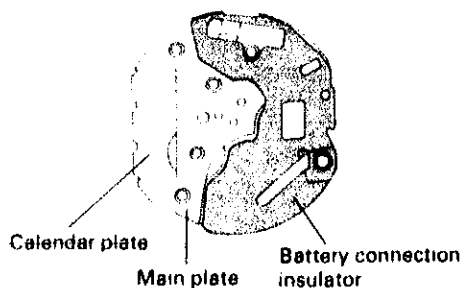
- How to remove battery connection insulator

Insert a screwdriver into the clearance shown in the figure below and slightly lift the battery connection insulator.

Insert the screwdriver in the vicinity of the screw and remove the battery connection insulator.

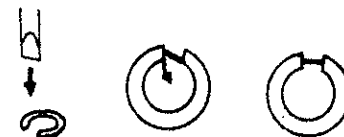


- Battery connection insulator position



3. Calendar and setting mechanism

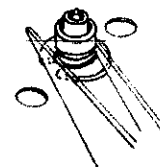
- How to remove snap for day star with dial disk



Widen the groove of the snap for day star with dial disk with a screwdriver as shown above and remove the snap for day star with dial disk.

- How to install the snap

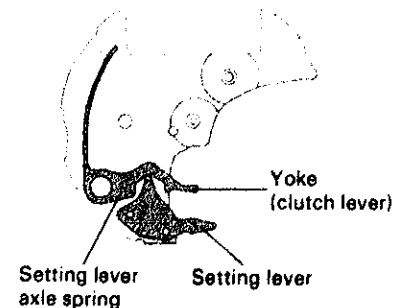
Install the snap for day star with dial disk so as not to transform it by means of a pair of tweezers as shown. After installation, make sure that there is no rub with the day star with dial disk.



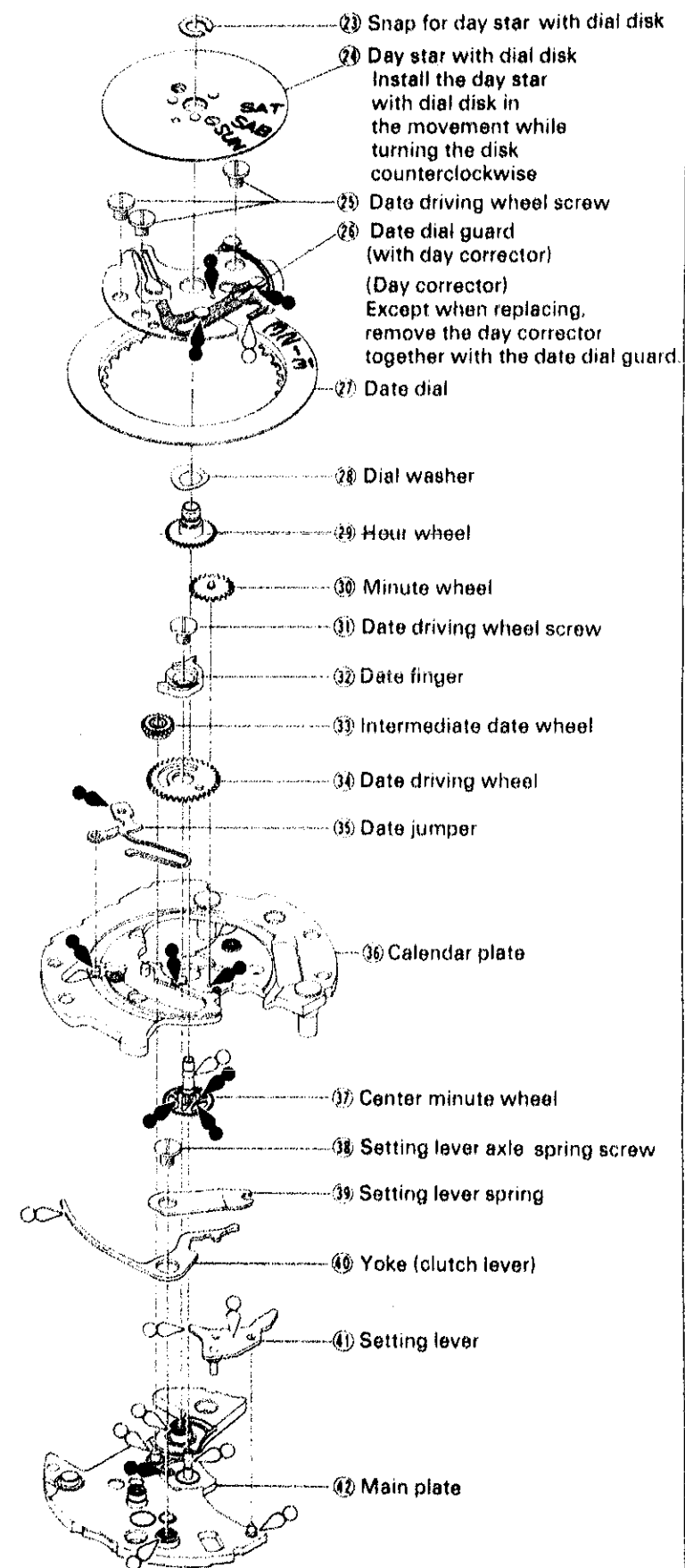
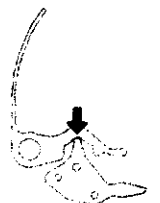
- Date jumper position



- How to install setting lever and yoke (clutch lever)



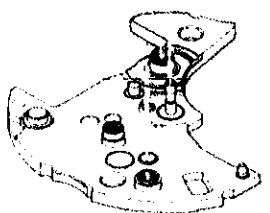
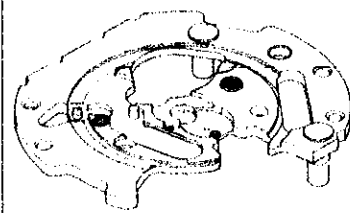


- Install the setting lever and yoke (clutch lever) as shown below. This will facilitate the clutch wheel installation.



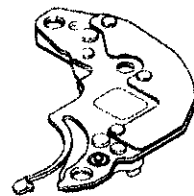
4. Cleaning

Use the following cleaning methods when cleaning.

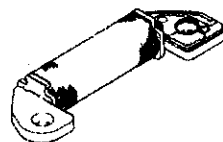
1) How to clean

Name of parts	Cleaning	Drying	Solution	Remarks
Main plate  Calendar plate  Step rotor  Rotor stator 	Rinse or wash with a soft brush.	Warm air	Benzene	<ul style="list-style-type: none"> Use a clean solution as the step rotor is magnetized. Any foreign matter which cannot be removed by cleaning should be removed with rodico.
Plastic parts (Date finger, battery connection insulator)	Rinse or wash with a soft brush	Warm air	Alcohol, benzene,	
Others (excluding the parts that must not be cleaned)	Rinse and wash with a cleaner or wash with a soft brush.	Warm or hot air	Benzene, trichloroethylene,	

2) Parts that must not be cleaned.



Circuit block



Coil block

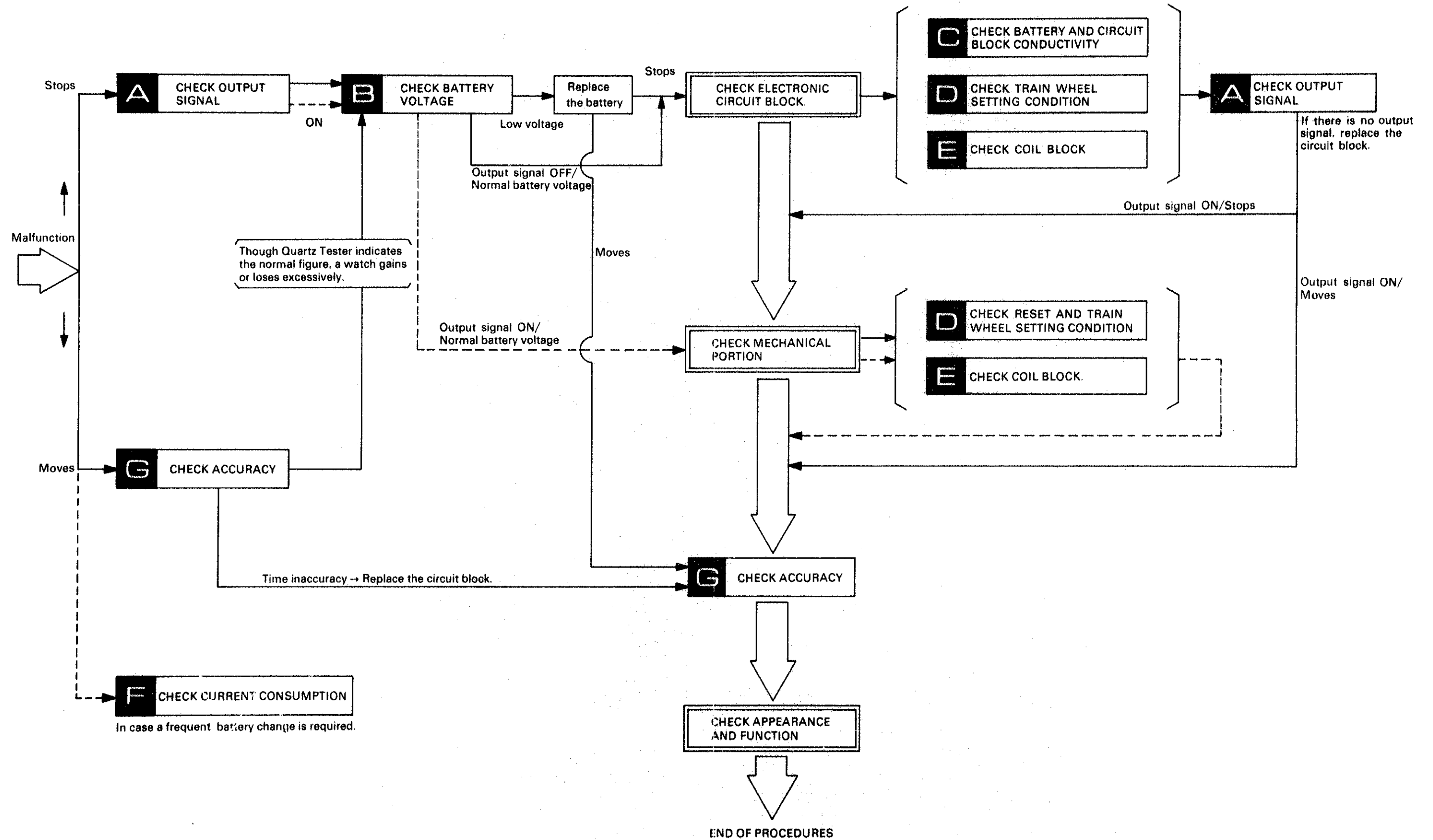


Battery

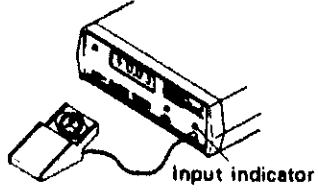
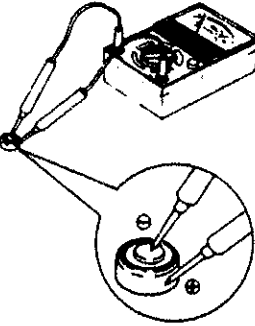
- Only the conductive portions should be wiped with a cloth moistened with benzene or alcohol and dried with warm air.

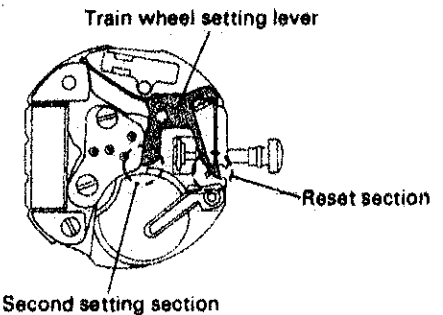
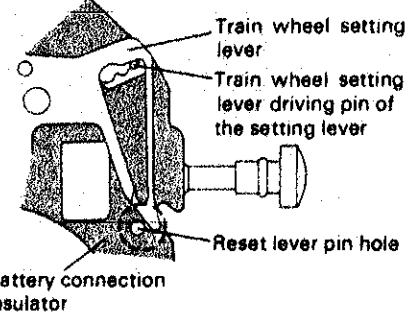
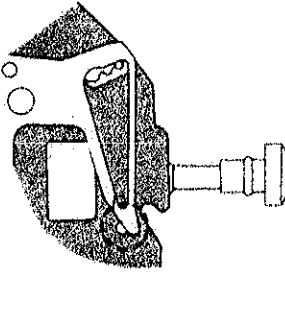
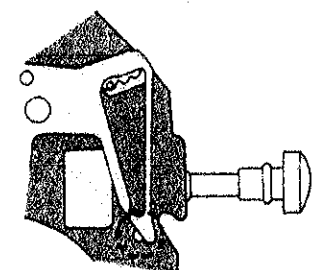
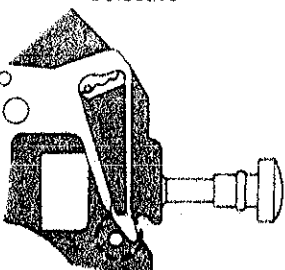
IV. CHECKING AND ADJUSTMENT

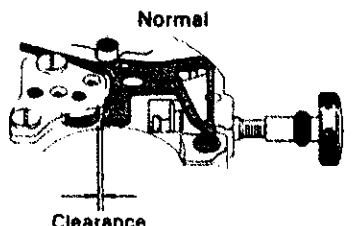
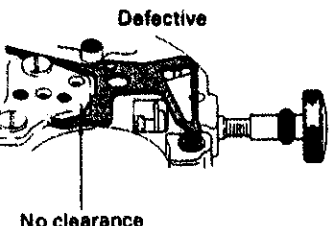
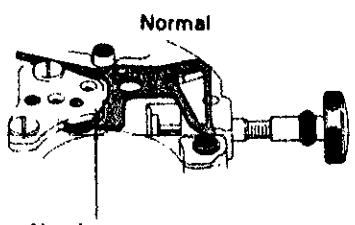
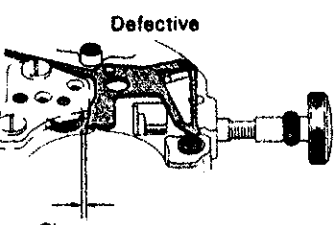
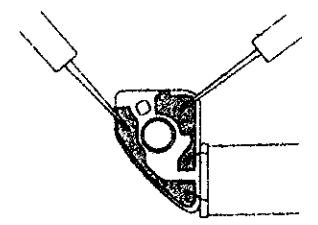
1. Guide table for checking adjustment

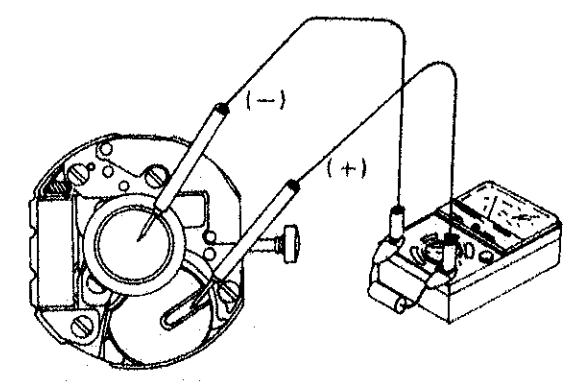


2. Procedures for checking and adjustment

	Procedure	Result and repair
CHECK OUTPUT SIGNAL	<ul style="list-style-type: none"> Check for output signal of the watch by checking to see if the input indicator blinks. This will determine whether the trouble is mechanical or electrical. <ol style="list-style-type: none"> Set up the Quartz Tester. Check for blinking input indicator.  <p style="text-align: center;">Input indicator</p> <p>Note: Check the output signal with the crown in the normal position.</p>	<p>One-second blinking: Normal No one-second blinking: Defective Check the battery voltage.</p>
CHECK BATTERY VOLTAGE	<ul style="list-style-type: none"> Check battery voltage. <ol style="list-style-type: none"> Set up the Volt-ohm-meter. Range to be used: DC3V Measuring <ul style="list-style-type: none"> Red probe (+) Battery surface (+) Black probe (-) Battery surface (-)  <p>Note: When handling the battery, use plastic or bamboo tweezers or fingercots.</p>	<p>1.5V or more: Normal Less than 1.5V: Defective Replace the battery.</p>
CHECK BATTERY AND CIRCUIT BLOCK CONDUCTIVITY	<ul style="list-style-type: none"> Check if the battery current flow to the circuit block is normal. Check for short circuit and defective conductivity of the conductive portions of the circuit block. <ol style="list-style-type: none"> Check the screws for tightness. (Circuit block screw, coil block screw, etc.) Check for any contamination on battery surface and battery connection (-). Check for broken wire, short circuit, contamination and solder peeling off of the circuit block pattern. 	<p>No loose screws: Normal Loose screws: Defective Retighten the screws. Uncontaminated: Normal Contaminated: Defective Wipe off any foreign matter. Conductive: Normal Not conductive: Defective Wipe off any foreign matter. For other defects, replace the circuit block.</p>

	Procedure	Result and repair
CHECK RESET AND TRAIN WHEEL SETTING CONDITION	<p>Check for normal reset and Train wheel setting condition.</p> <ol style="list-style-type: none"> Confirm that the second hand stops when the crown is at second click position and that the second hand starts moving 1 second after the crown is returned to the normal position. (Check with output signal or check with the second hand installed.)  <ol style="list-style-type: none"> Checking Train wheel setting lever reset section (Check when the circuit block is removed. Confirm that the Train wheel setting lever and battery connection insulator are not floated.) <ol style="list-style-type: none"> With the crown at normal and first click position <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Normal</p>  </div> <div style="text-align: center;"> <p>Defective</p>  </div> </div> With the crown at second click position <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Normal</p>  </div> <div style="text-align: center;"> <p>Defective</p>  </div> </div> 	<p>The second hand stops and starts moving after 1 second: Normal The second hand does not stop or move irregularly: Defective Check the Train wheel setting lever reset section and Train wheel setting section.</p> <p>Whole the battery connection insulator reset lever pin hole can be observed: Normal A half of the hole is covered: Defective Check the Train wheel setting lever driving pin of setting lever for bending or lubricant. Replace the Train wheel setting lever.</p> <p>A half of the reset lever pin hole is covered: Normal Whole the hole can be observed: Defective Check the Train wheel setting lever driving pin of setting lever for bending or lubricant. Replace the Train wheel setting lever.</p>

	Procedure	Result and repair
CHECK RESET AND TRAIN WHEEL SETTING CONDITION	<p>3. Checking Train wheel setting lever setting section (Check when the circuit block is removed. Confirm that the Train wheel setting lever and battery connection insulator are not floated.)</p> <p>(1) With the crown at normal and first click position.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Normal</p>  <p>Clearance</p> </div> <div style="text-align: center;"> <p>Defective</p>  <p>No clearance</p> </div> </div> <p>(2) With the crown at second click position</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Normal</p>  <p>No clearance</p> </div> <div style="text-align: center;"> <p>Defective</p>  <p>Clearance</p> </div> </div>	<p>Clearance between fourth wheel and pinion and Train wheel setting lever: Normal No clearance between fourth wheel and pinion and Train wheel setting lever: Defective</p> <p>Check the Train wheel setting lever driving pin of setting lever for bending or lubricant. Replace the Train wheel setting lever.</p> <p>No clearance: Normal Clearance: Defective</p> <p>Check the Train wheel setting lever driving pin of the setting lever for bending or lubricant. Replace the Train wheel setting lever.</p>
CHECK COIL BLOCK	<ul style="list-style-type: none"> Check the coil block for broken wire or short circuit. <p>(1) Set up the Volt-ohm-meter. Range to be used: OHMS \times 100 Always calibrate the Volt-ohm-meter.</p> <p>(2) Checking Apply the two probes of the Volt-ohm-meter to the two lead terminals of the coil block. Any probe will do.</p> 	<p>2.0 kΩ ~ 3.0 kΩ: Normal Less than 2.0 kΩ: Defective (Short circuit) more than 3.0 kΩ: Defective (broken wire) Replace the coil block.</p>

	Procedure	Result and repair
CHECK CURRENT CONSUMPTION	<ul style="list-style-type: none"> Check for normal current consumption. <ol style="list-style-type: none"> Set up the Volt-ohm-meter. Range to be used: DC12 μA Attach 200 ~ 500 μF condenser kit to the Volt-ohm-meter. Place the battery with its (+) surface facing downward. Apply two probes of the Volt-ohm-meter to the battery surface and battery connection (-). Red probe (+) Battery connection (-) Black probe (-) Battery surface (-) Read the Volt-ohm-meter. 	<p>Less than 1.3 μA: Normal 1.3 μA or more: Defective</p>
CHECK ACCURACY	<ul style="list-style-type: none"> Check gain and loss of time. <ol style="list-style-type: none"> Set the Quartz tester measuring gate to 10 second. (Any gate of some 10 seconds will do.) Always use electromagnetic microphone. Do not use the ultrasonic microphone which measures the crystal oscillation. If the ultrasonic microphone is used, the measured value is false. <ul style="list-style-type: none"> The above condition should be satisfied, as the Y643 uses the logical regulation system, which compensates the time by controlling the dividing ratio of the IC dividing by 16 steps according to the crystal oscillation. As the trimmer condenser is not used, replace the circuit block if the watch loses or gains excessively. 	<p>Does not lose or gain: Normal Lose or gain: Defective Replace the circuit block. (Loss or gain of this watch is less than 20 seconds/month.)</p>

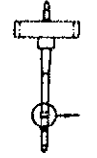


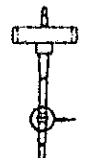


V. PARTS LIST

PART NAME	Cal. Y642A	Cal. Y643A	PART NAME	Cal. Y642A	Cal. Y643A
	PART NO.	PART NO.		PART NO.	PART NO.
Train wheel bridge	* 126 340	* 126 340	Intermediate date wheel	817 340	817 340
Calendar plate	195 340	195 340	Holding ring for dial	☆ 884 ...	☆ 884 ...
Third wheel & pinion	231 340	231 340	Snap for day star with dial disk	-	963 340
Fourth wheel & pinion (5.14mm)	☆ 241 340	☆ 241 340	Circuit block	4001 352	4001 346
(5.41mm)	☆ 241 341	☆ 241 341	Coil block	4002 340	4002 340
Minute wheel	261 340	261 340	Step rotor	4146 340	4146 340
Center minute wheel (2.99mm)	☆ 270 342	☆ 270 342	Battery connection insulator	4219 340	4219 340
(3.26mm)	☆ 270 343	☆ 270 343	Battery clamp	4226 340	4226 340
Hour wheel (1.83mm)	☆ 271 342	☆ 271 342	Rotor stator	4239 340	4239 340
(2.05mm)	☆ 271 343	☆ 271 343	Battery connection (-)	4270 340	4270 340
Clutch wheel	282 340	282 340	Upper hole jewel for step rotor	011 541	011 541
Winding stem	354 340	354 340	Train wheel bridge screw	012 179	012 179
Setting lever	383 340	383 340	Circuit block screw	012 179	012 179
Yoke (Clutch lever)	384 340	384 340	Coil block screw	012 179	012 179
Setting lever axle spring	389 340	389 340	Setting lever axle spring screw	012 179	012 179
Train wheel setting lever	391 340	391 340	Date dial guard screw	012 179	012 179
Train wheel bridge support	426 340	426 340	Date driving wheel screw	012 179	012 179
Day star with dial disk	-	☆ 470 ...	Tube for train wheel bridge (A)	017 273	017 273
Dial washer	491 141	491 141	Tube for circuit block screw (A)	017 274	017 274
Dial leg holder	540 340	540 340	Tube for circuit block screw (B)	017 275	017 275
Date finger	556 340	556 340	Tube for date dial guard screw (A)	017 276	017 276
Stem setting spring	637 340	637 340	Tube for yoke screw	017 277	017 277
Fifth wheel & pinion	701 340	701 340	Tube for train wheel bridge (B)	017 278	017 278
Day corrector	-	719 340	Tube for date dial guard screw (B)	017 279	017 279
Date dial	☆ 801 ...	☆ 801 ...	Tube for circuit block screw (C)	017 280	017 280
Date driving wheel	802 340	802 340	Tube for coil block screw	017 281	017 281
Date dial guard with day corrector	-	808 340	Tube for intermediate date wheel	017 968	017 968
Date dial guard	808 342	-	Silver oxide battery	{ MAXELL	{ MAXELL
Date jumper	810 340	810 340		{ SR726SW	{ SR726SW

Remarks:

Fourth wheel and pinion, Center wheel and pinion, and Hour wheel.
There are two different types as specified below.

Combination:

Type	Fourth wheel and pinion	Center minute wheel	Hour wheel
a	 ☆ 241 340	 ☆ 270 342	 ☆ 271 342
b	 ☆ 241 341	 ☆ 270 343	 ☆ 271 343

Date dial

- ☆ 801 340 (Black figures on white background)
- ☆ 801 341 (White figures on black background)

Used for both the crown and calendar frame at 3 o'clock position.
If any other type of date dial is required, specify 1) Cal No. 2) The crown position 3) The calendar frame position 4) Jewels and 5) Dial No.

Holding ring for dial

The type of a holding ring for dial is determined based on the design of cases and dials.
At the time of ordering, please refer to the case number.

Day star with dial disk

	Black figures on white background	White figures on black background
☆ English - Spanish	470 441	470 451
☆ English - French	470 442	470 452
☆ English - German	470 443	470 453
☆ English - Italian	470 444	470 454
☆ English - Arabic	470 447	470 457
☆ English - Roman figures	470 449	470 459

Used for both the crown and calendar frame at 3 o'clock position.
If any other type of day star with dial disk is required, specify the number printed on the disk.

SEIZAIKEN
TR726SW

☆ ○ Please see remarks.

11 * Train Wheel Bridge for Pulsar Watches

125341 (Pulsar marking)