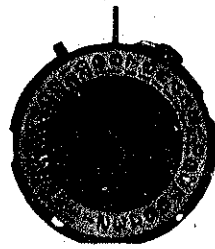


Cal. 7016A



Characteristics

- Casing diameter : 27.00 ϕ mm
- Maximum height : 6.40 mm
- Vibrations per hour : 21,600
- Automatic winding with sweep second
- Chronograph (w/12 hours recorder & 30 minutes recorder)
- Calendar (day & date)
- Instant setting device for day & date calendar
- Bilingual change-over system for day of week
- "Diasheck" Shock Resistant Device



112 063



122 013



171 033



201 059



224 015



225 011



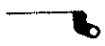
231 017



251 025



271 015



381 006



383 005



384 007



388 005



☆ 397 011



422 001



433 002



453 002



☆ 354 020



☆ 354 022



☆ 354 031



509 054



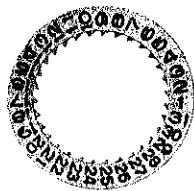
511 005



831 002



836 003



☆ 801 011



802 005



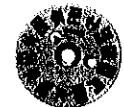
808 010



810 005



868 003



☆ 870 065



☆ 873 007



719 001



720 001



720 002



963 001



186 001



190 003



571 007



575 003



576 003



581 003



585 008



750 001



781 001



463 001



740 001



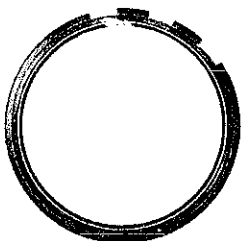
747 001



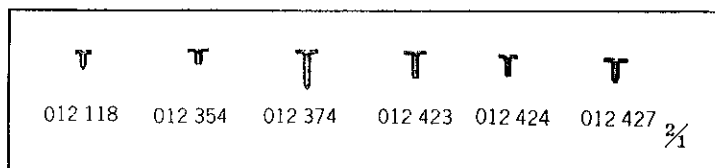
888 003



902 002



☆ 884 016
☆ 884 022



012 118



012 354



012 374



012 423



012 424



012 427

2/1

☆⇔Please see remarks on the next page.

As for all other parts not shown here, please refer to the basic calibre

(Cal. No. **7005A** 17J Catalog No. 70-05-1 Green page).

Calibre No.		Jewels	Style Name	
7016A		17j		
⇒ Basic Calibre 7005A 17J Catalog No. 70-05-1				
PART NO.	LIST OF MATERIALS	PART NO.	LIST OF MATERIALS	
112 063	Barrel & train-wheel bridge	575 003	Operating lever spring	
122 013	Center wheel bridge	576 003	Pillar wheel	
161 004	Pallet cock	581 003	Coupling lever	
171 033	Balance cock	585 008	Hammer with hour hammer spring	
186 001	Lower plate for chronograph bridge	740 001	Hour recording wheel	
190 003	Chronograph bridge	747 001	Intermediate hour recording wheel	
201 059	Complete barrel with arbor & mainspring	750 001	Hour hammer	
224 015	Center wheel & pinion with cannon pinion	781 001	Hammer click	
225 011	Cannon pinion	888 003	Center chronograph wheel	
231 017	Third wheel & pinion	902 002	Minute recording wheel	
251 025	Escape wheel & pinion	012 118	Screw for intermediate hour recording wheel axle	
261 006	Minute wheel	012 123	Stud screw	
271 015	Hour wheel	012 354	Date driving wheel screw	
282 003	Clutch wheel	012 354	Date dial guard screw	
285 013	Ratchet wheel	012 354	Day corrector screw	
301 009	Jewelled pallet fork & staff	012 374	Chronograph bridge screw	
310 020	Balance complete with stud	012 374	Coupling lever screw	
315 008	Balance staff	012 417	Pallet cock screw	
331 005	Roller with jewel	012 417	Operating lever spring screw	
341 007	Regulator	012 423	Bridge screw	
345 007	Stud holder	012 424	Center wheel bridge screw	
☆ 354 020	Winding stem	012 424	Screw for day corrector spring (B)	
☆ 354 022		012 427	Setting lever spring screw	
☆ 354 031		012 539	Second reduction wheel screw	
381 006	Click	012 736	Day jumper screw	
383 005	Setting lever	012 919	Ratchet wheel screw	
384 007	Yoke (Clutch lever)	011 162	Upper hole jewel for 1st reduction wheel	
388 005	Setting lever spring	011 169	Lower hole jewel for center wheel	
☆ 397 011	Lever for unlocking stem	011 505	Upper hole jewel for pallet	
422 001	Holder of barrel & train-wheel bridge	011 505	Lower hole jewel for pallet	
433 002	Upper hole jewel with frame for 3rd wheel	011 528	Lower hole jewel for escape wheel	
453 002	Upper hole jewel with frame for escape wheel	011 528	Lower hole jewel for escape wheel	
014 293	Diashock upper frame	011 530	Lower hole jewel for 1st reduction wheel	
014 294	Diashock lower frame	011 540	Lower hole jewel for 3rd wheel	
014 295	Diashock hole jewel with frame	011 721	Upper hole jewel for center wheel	
011 220	Diashock cap jewel	013 011	Tube for day corrector screw	
014 217	Diashock spring	013 018	Tube for barrel & train-wheel bridge screw	
509 054	Oscillating weight with ball-bearing	013 019	Tube for operating lever spring screw	
511 005	First reduction wheel	013 094	Tube for setting lever spring screw	
514 002	Second reduction wheel	013 186	Tube for pallet cock screw (long)	
831 002	Pawl lever	013 193	Tube for 2nd reduction wheel screw	
836 003	First reduction wheel holder	013 198	Tube for pallet cock screw (short)	
556 004	Date finger	013 199	Tube for date driving wheel screw	
719 001	Day corrector	013 975	Eccentric dial pin	
720 001	Day corrector spring (A)			
720 002	Day corrector spring (B)			
☆ 801 011	Date dial			
802 005	Date driving wheel			
808 010	Date dial guard			
810 005	Date jumper			
817 004	Intermediate date wheel			
868 003	Day finger			
☆ 870 065	Day star with dial disk (English ↔ Japanese)			
☆ 873 007	Day jumper			
☆ 884 016	Holding ring for dial			
☆ 884 022				
963 001	Snap for day star with dial disk			
463 001	Intermediate hour recording wheel axle			
571 007	Operating lever			

☆⇒ Please see remarks on the next page.

Items in light letters are not shown in photos; those parts are interchangeable with the basic calibre

(Cal. No. **7005A** 17J Catalog No. 70-05-1 Green page).

Calibre No.

7016A

Jewels

17j

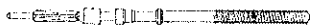
Style Name

⇒ Basic Calibre **7005A** 17J Catalog No. 70-05-1

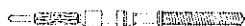
Remarks :

Winding stem — There are three types of winding stems. Select the suitable one by referring to the photos on the front page and the shapes in the lower diagram. _____

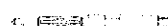
- ☆ 354 020.....Long winding stem for the square-type water-resistant case.
(Thread is provided only on the end of the crown portion).
- ☆ 354 022.....Short winding stem for the square-type water-resistant case.
(Thread is provided completely on the crown portion.)
- ☆ 354 031.....Used only for the watches other than the square-type water-resistant cases.



☆ 354 020



☆ 354 022



☆ 354 031

Lever for unlocking stem

- ☆ 397 011.....Used only for the square-type water-resistant case.

Date dial

- ☆ 801 011(Black figures on white background)Used when both the crown and the date frame are located at **3** o'clock position.

If the date dial is required in any other type, specify ① Cal. No. ② Jewels ③ the crown position ④ the date frame position and ⑤ the dial No.

Day star with dial disk

- ☆ 870 065(English ↔ Japanese, Black figures on white background)Used when both the crown and the day frame are located at **3** o'clock position.

If the day star with dial disk is required in any other type, specify the number printed on the disk.

Day jumper

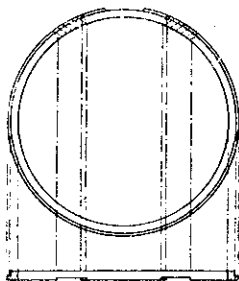
- ☆ 873 007.....Two different shapes in the same part number (interchangeable)



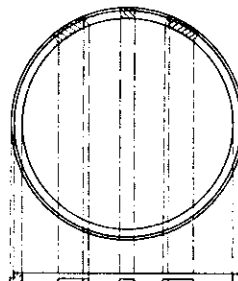
Holding ring for dial

The holding ring for dial comes in different shapes for specific dial models. Select the suitable one by referring to the photos on the front page and the diagrams below.

If the parts number of the holding ring for dial is unknown or its shape is different from those in the diagram, specify ① Cal. No. ② Jewels ③ the dial No. and ④ the case No. when ordering.



☆ 884016



☆ 884 022

1) Specifications

Casing diameter 27.00 mm
 Height 6.40 mm
 Vibrations per hour 21,600
 Automatic winding
 Calendar (Day & date, bilingual changeover mechanism for day indication; crown winding date corrector; push-type day corrector mechanism)
 Chronograph (One revolution in 60 seconds, 30-minute totalizer, 12-hour totalizer, accumulated).

2) Features

7016A Automatic Chronograph is a high-grade watch in which a chronograph mechanism and an automatic winding mechanism are compactly and thinly assembled in a variety of attractive designs. Its structure also is more simplified than the conventional chronographs, thus assuring greatly improved reliability and durability.

- * Equipped with chronograph hour and minute hands, automatic winding and day and date mechanism the watch enables recording lapsed time in seconds, minutes and hours.
- * It is the smallest and thinnest multifunction watch on the market.
- * It has the outstanding reliability and durability in its quality based on the past experiences.
- * It has a unique design in that chronograph hour and minute hands are attached to a single axle.
- * As the chronograph mechanism is designed to eliminate adjustments, it ensures easy assembly or disassembly of the watch.

3) Disassembly and assembly

Disassemble the watch according to Figures ① → ⑦①

Assemble by reversing the above: Figures ⑦① → ①

4) Lubrication

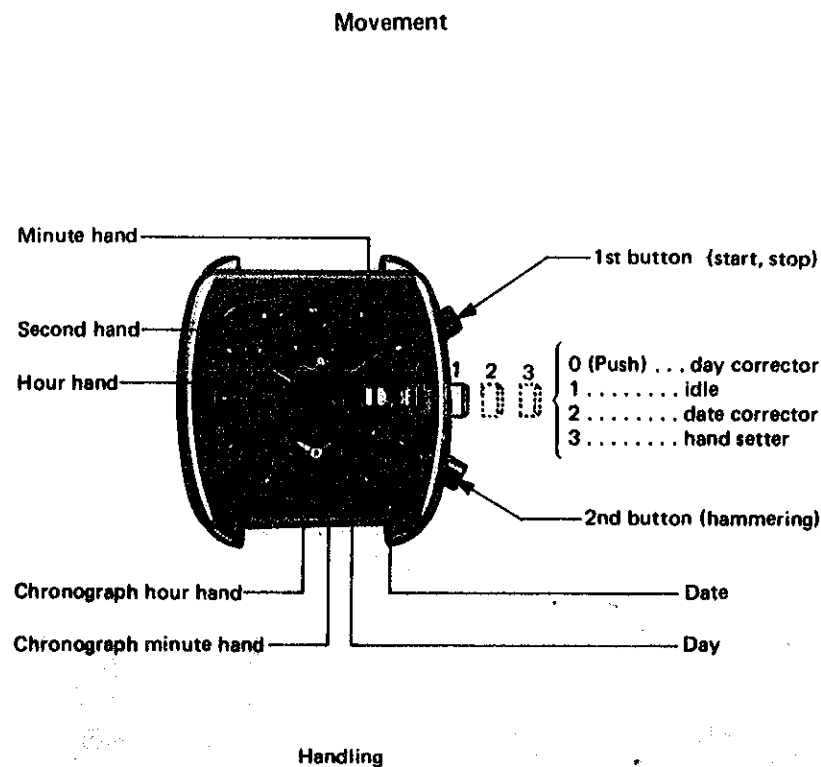
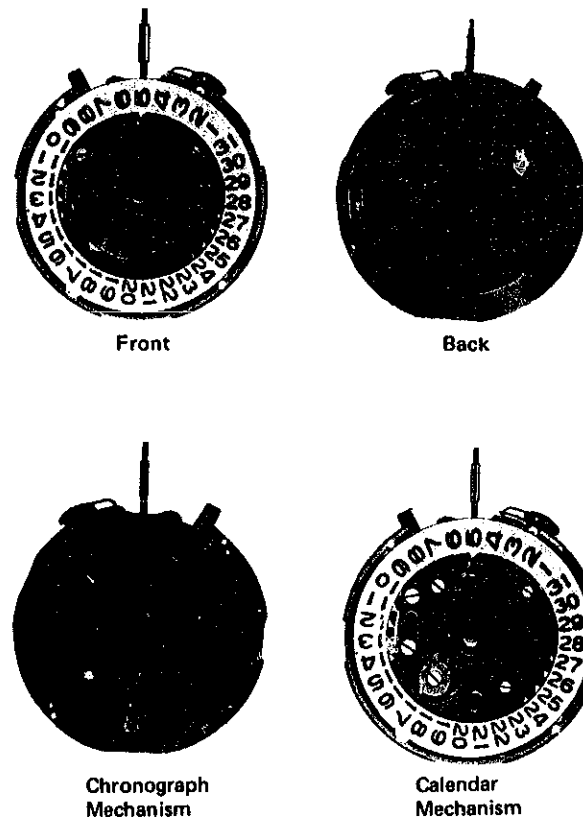
Shown below are the symbols used in sketch to indicate type of oil, degree of lubrication and lubricating points.

Types of Oil

- SEIKO Watch Oil S-6
- SEIKO Watch Oil S-4
- SEIKO Watch Oil S-3
- Moebius Synt-A-Lube
- Moebius Synt-V-Lube

Oil quantity

- : Extremely small quantity
- : Normal quantity
- : Sufficient quantity



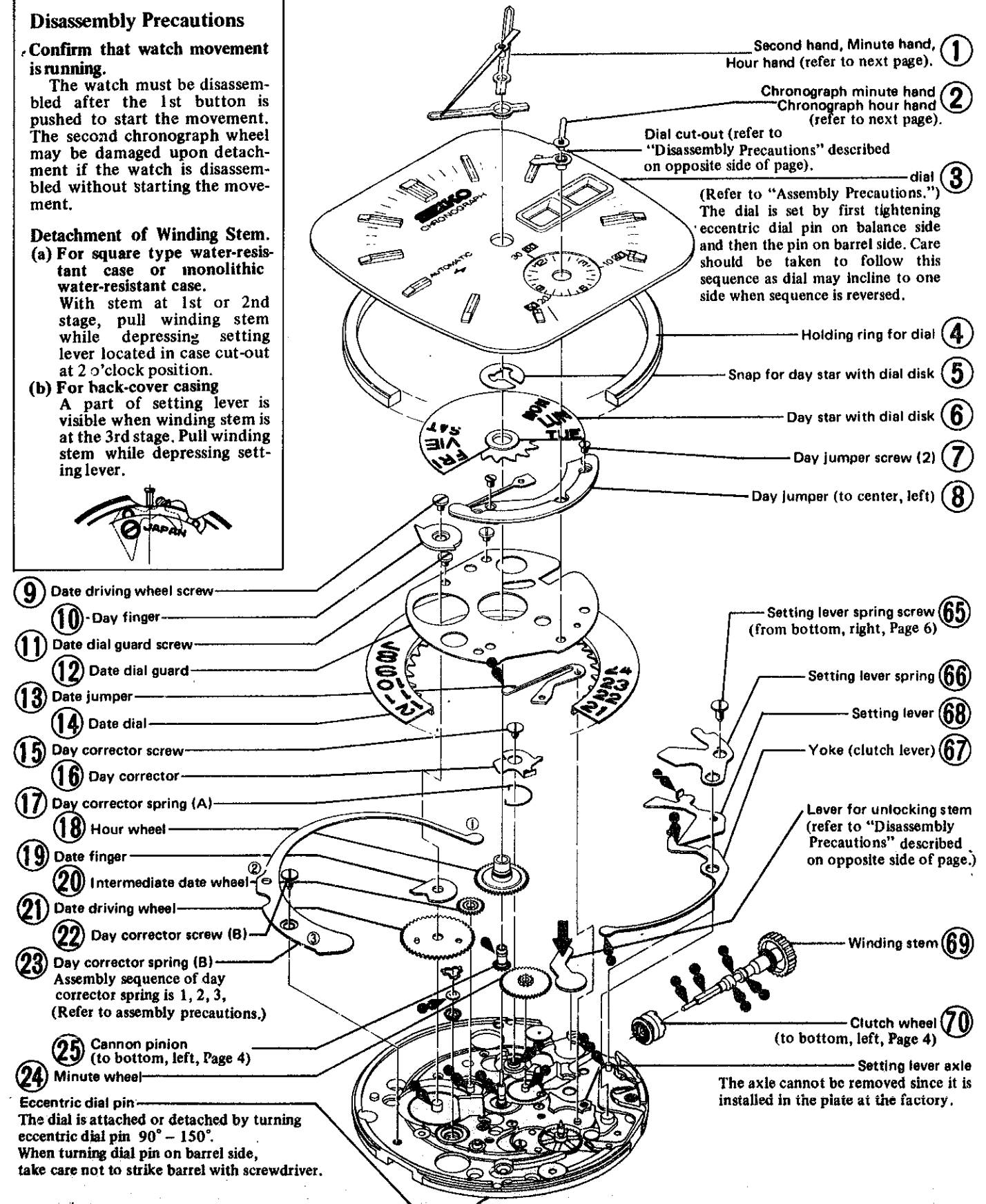
Disassembly Precautions

Confirm that watch movement is running.

The watch must be disassembled after the 1st button is pushed to start the movement. The second chronograph wheel may be damaged upon detachment if the watch is disassembled without starting the movement.

Detachment of Winding Stem.

- (a) For square type water-resistant case or monolithic water-resistant case.
 With stem at 1st or 2nd stage, pull winding stem while depressing setting lever located in case cut-out at 2 o'clock position.
- (b) For back-cover casing
 A part of setting lever is visible when winding stem is at the 3rd stage. Pull winding stem while depressing setting lever.



7016A Automatic Winding, Chronograph Mechanism

Assembly and Disassembly Precautions

Detachment and Attachment of Hands

(a) Detachment

Use bow-type tweezers to avoid bending dial. Since the second-hand, chronograph minute-hand and hour-hand are attached firmly, it is necessary that they are removed individually by holding lower end of wheel pipe flange securely with tweezers.



(b) Attachment

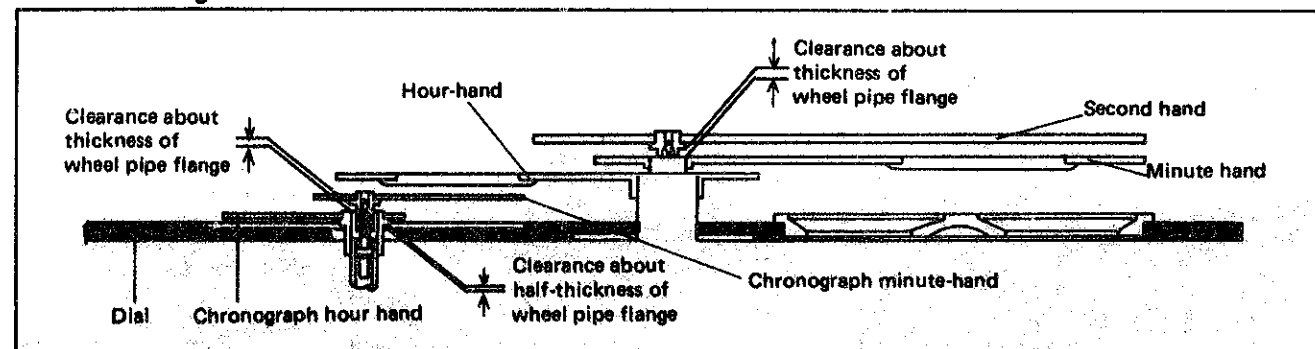
The chronograph hands must be attached using the movement holder designed exclusively for Cal. 7016.



Warping or slippage of the hands tend to occur when hands are attached without using the movement holder.

1. For attaching, first place movement on the movement holder. Be careful that neither oscillating weight or 1st reduction wheel strikes the thicker diameter pin.
2. Depress 1st button (operating lever) to stop movement; reset hands to zero while depressing 2nd button (hammer) and then depress hands gently into position.
3. Repeat hammering twice and check zero position of hands. When position is not correct, make corrections by turning hands with hammer in depressed position. After hammering, zero position of chronograph minute-hand is judged by releasing finger from button.
4. When zero position is correct, depress hands fully into position. Adequate attachment height of hands is attained by pushing hands to measurements described in sketch below.

Attachment Height of Hands



5. Next, check zero position of chronograph minute and hour hands.

Chronograph hour-hand

With hammer in depressed position, determine whether hand returns to original position when it is lightly moved using tweezers to the left and right over the space of about 30 minutes (one digit to next digit).

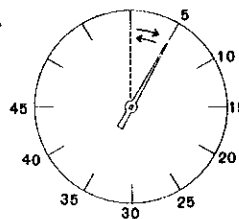
Chronograph minute-hand

With hammer in depressed position, move hand gently right and left over space of about 2 minutes (half of distance between two digits) and check if hand returns to original position.

(c) Exchange of Parts

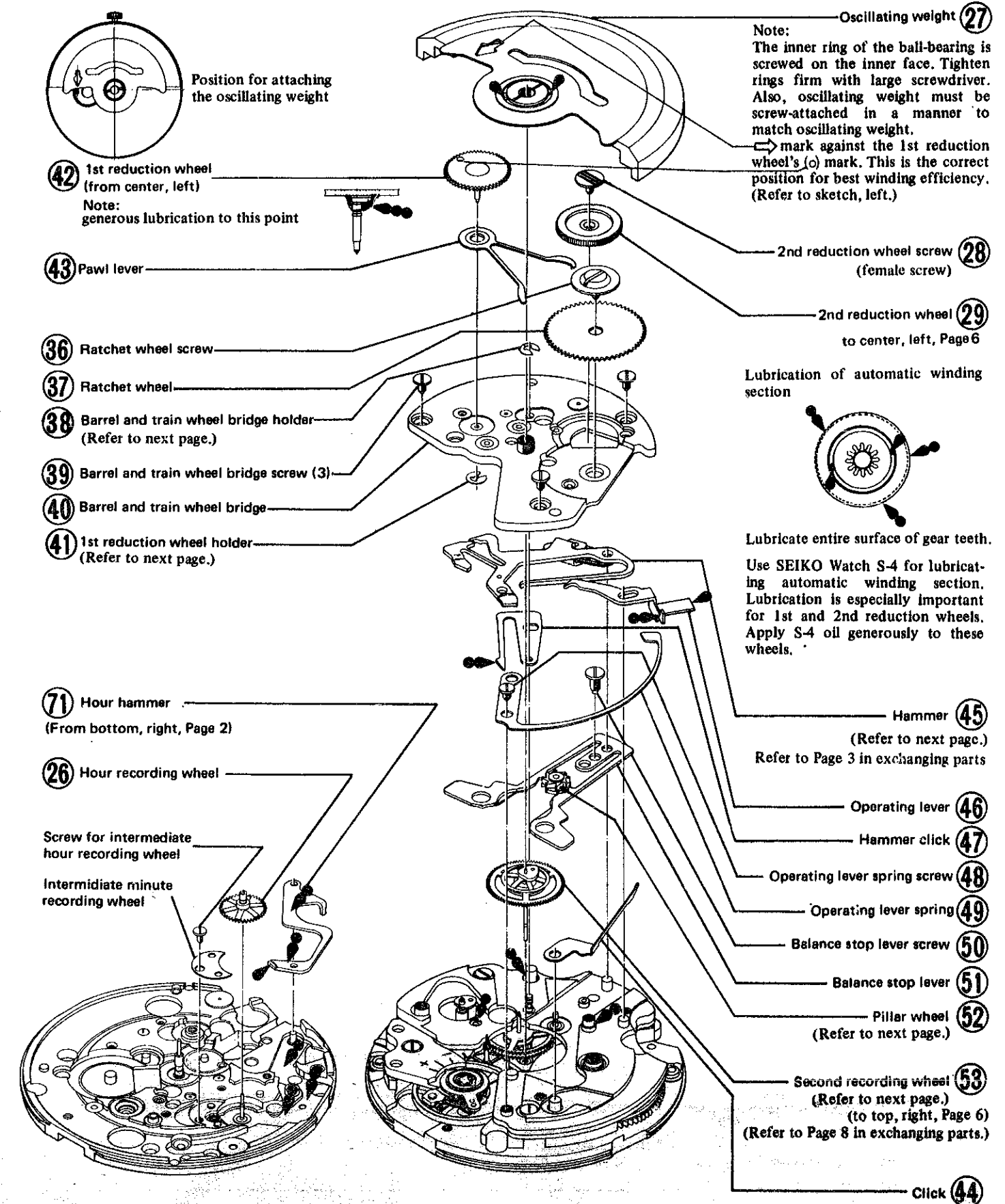
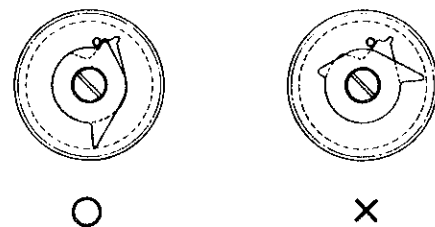
When hammer or second chronograph wheel are exchanged, check the operation of second hand.

1. Depress operating lever to stop watch movement.
2. Next, move second-hand on 5 seconds position using tweezers and depress hammer.
3. Repeat above hammering.
4. Repeat hammering twice each for 10, 15, 20, 25, 30, 40, and 45 seconds to move second hand smoothly.



Attachment of Date and Day Fingers

Be sure to attach date finger while day finger on the other hand is attached with due attention to position of tube for date driving wheel screw. Incorrect changeover of date and day will result when these procedures are not correctly followed.

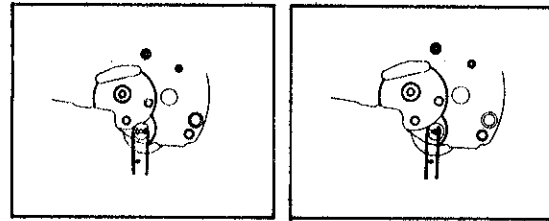


7016A Train wheel, Escapement and Regulating Mechanisms

Assembly and Disassembly Precautions

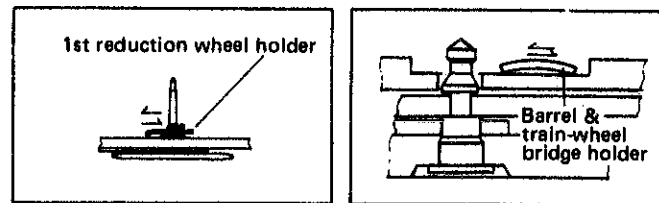
Detachment and Attachment of 1st Reduction Wheel Holder and Barrel & Train-wheel Bridge Holder

Insert tip of tweezers from the side in manner shown in sketch below. Be sure not to mistake front and back side of 1st reduction wheel in attaching 1st reduction wheel holder.



Detachment

Attachment



Hammer

Detachment

Detachment must always start with hour hammer

④ .

Attachment

Begin by bringing hammer spring ① into contact with pin, then hammer pin ② with hammer click. Place into hammer pin ③ and set up hour hammer ④ .

Position to Lubricate

- ⑤ second heart click surface
- ⑥ minute heart click surface
- ⑦ contact surface with barrel and train-wheel bridge
- ⑧ contact surface with hour hammer
- ⑨ contact surface with 2nd button

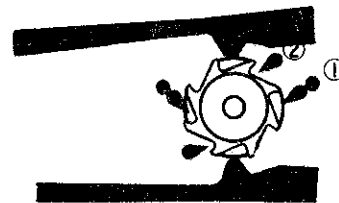
Balance Stop Lever, Pillar Wheel Detachment and Attachment

As the second recording wheel can be damaged by detaching balance stop lever in closed state (dead condition), it is essential that balance stop lever is detached in open state (during motion) with the pillar wheel linked.

Attach in same manner described above and following same precautions.

Position to Lubricate

- ① Four-pronged cam 2 portions
- ② Ratchet 2 portions



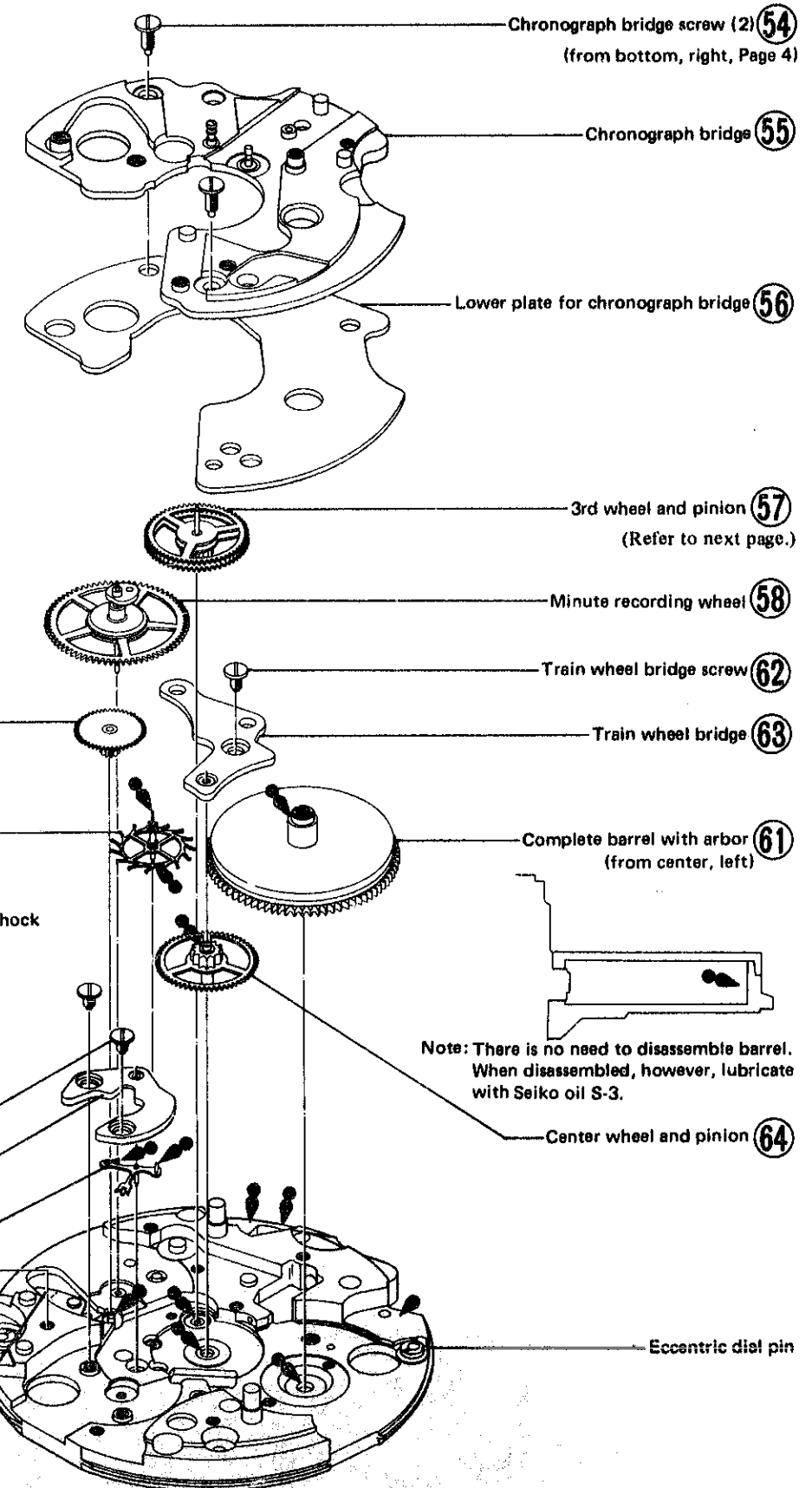
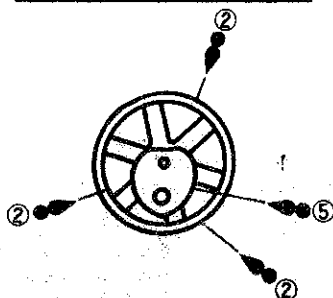
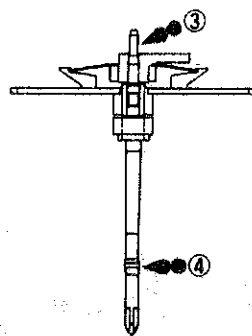
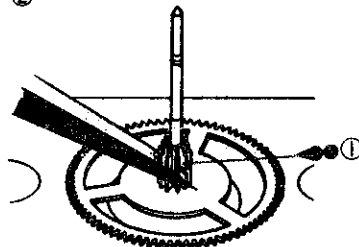
Lubrication of Second Chronograph Wheel

① 4th Wheel & Pinion

Place second chronograph wheel on staking stool as shown in sketch and lubricate 4th wheel & pinion while pressing it downward with tweezers. Excessive oil moving to pinion is eliminated by rinsing the second chronograph wheel with benzine and then dried.

Lubricate contact surface of clutch ring and spring ... 3 portions ②

- ③ Upper stem
- ④ Center wheel Arbor
- ⑤ Half-circumference of heart

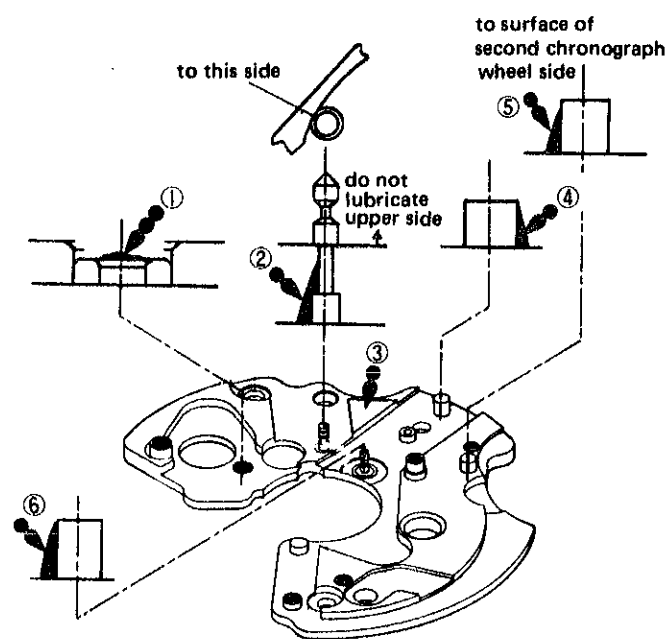


7016A Chronograph Mechanism

Assembly and Disassembly Precautions

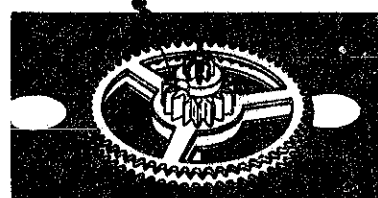
Lubrication of Chronograph Bridge

1. lower hole jewel for 1st reduction wheel
2. hammer spring screw
3. contact surface with hammer
4. hammer pin
5. operating lever pin
6. tube for pillar wheel screw



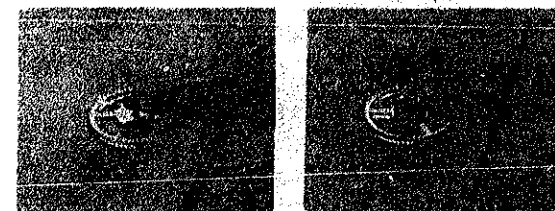
Lubrication of 3rd Wheel & Pinion

Place 3rd wheel and pinion on staking stool as shown in sketch and lubricate from lubrication-notch side.



Be careful in holding 3rd wheel and pinion. Pinch arbor or pinion gently.

As horizontal inclination may result, gear section should never be pinched when lubricating wheel.



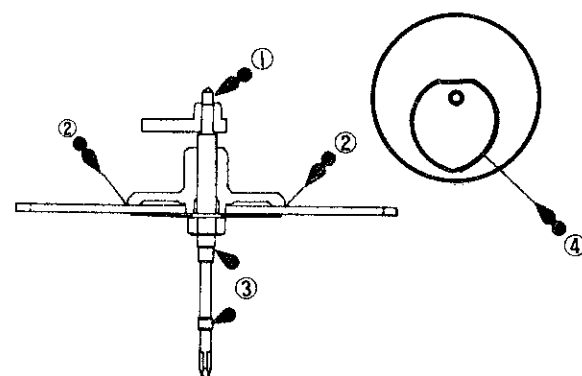
Minute Recording Wheel

Attachment

Be sure that minute heart tip faces balance cock. This is essential to ensure proper setting of chronograph bridge.

Position to Lubricate

1. upper stem
2. contact surfaces of minute wheel and minute wheel bush . . . 2 positions
3. minute-hand axle . . . 2 positions
4. half-circumference of heart



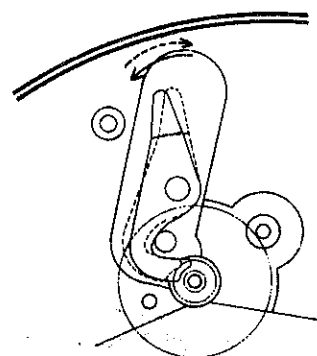
Detachment and Attachment of Intermediate Hour Recording Wheel

Detachment

Detach after turning bridge for intermediate hour recording wheel which is inclined toward plate, in the ---> direction.

Attachment

Set intermediate hour recording in position after confirming that wheel bridge is in ---> direction. Then turn intermediate hour recording wheel bridge to the <--- direction.



5) Power Transmission of Train wheel

The barrel power is transmitted in sequence shown in Fig. 1

- power transmission when chronograph mechanism is stopped.
- power transmission when chronograph mechanism is operating.

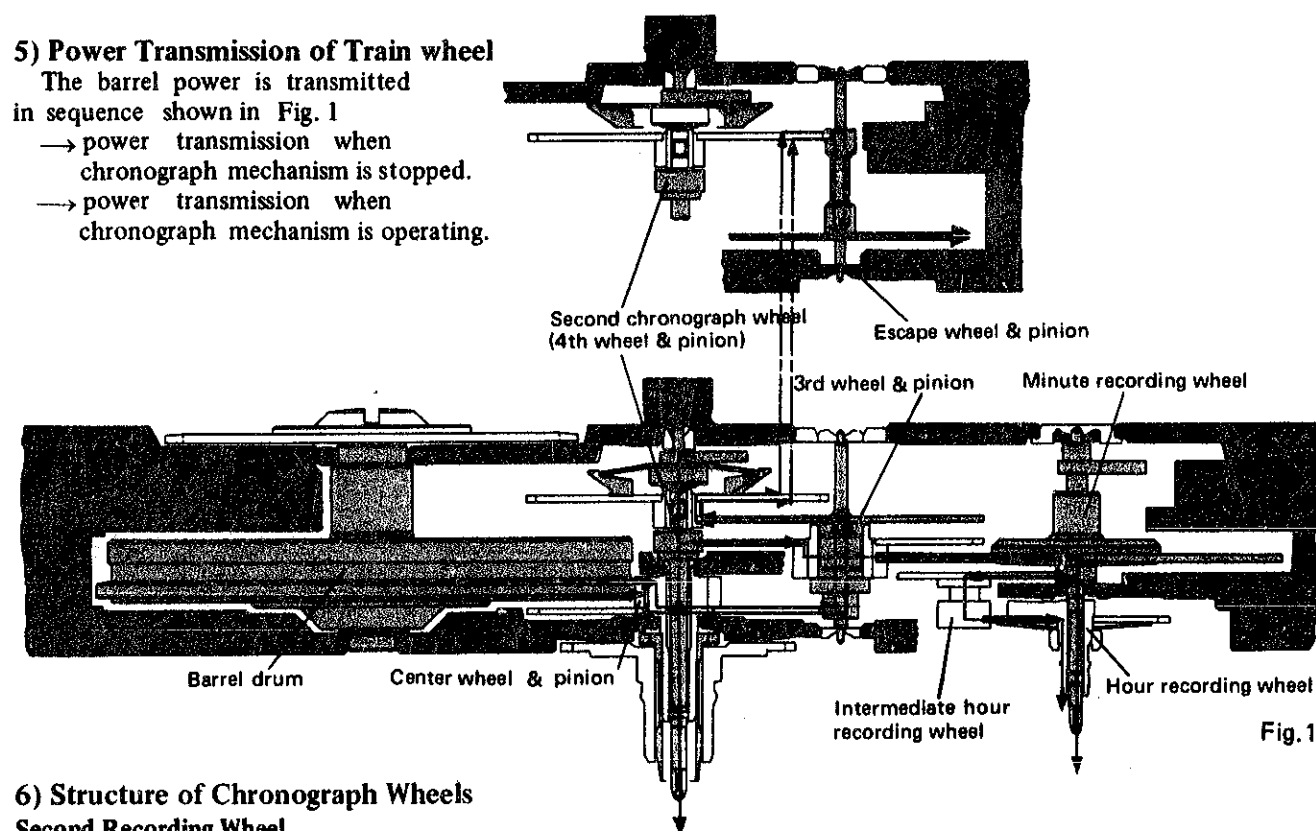


Fig. 1

6) Structure of Chronograph Wheels

Second Recording Wheel

The second recording wheel consists of 4th wheel (sweep second wheel and pinion) and second-hand axle which includes clutch ring, clutch spring, second-heart and second-heart bush.

The 4th wheel and second-hand axle rotate as a single unit when clutch ring is pressed to 4th wheel by the clutch spring.

When clutch ring separates from 4th wheel the second-hand axle stops and 4th wheel rotates independently (Fig. 2)

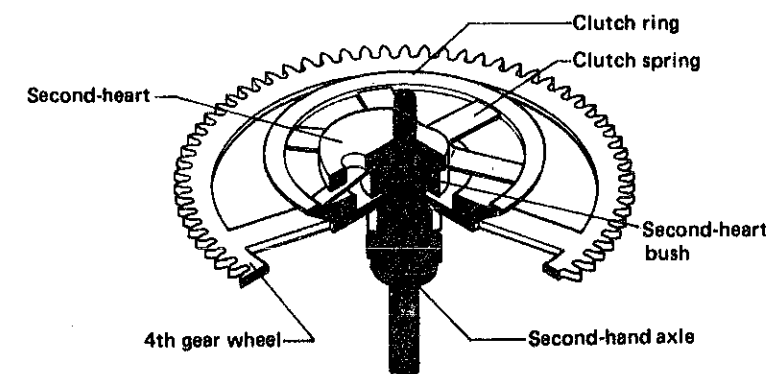


Fig. 2

Minute Recording Wheel

The minute recording wheel consists of minute gear and minute hand axle which includes minute friction spring, minute gear bush and minute heart.

The minute friction spring presses the minute gear against minute gear bush causing minute gear and minute chronograph hand axle to rotate as a single unit. (Fig. 3)

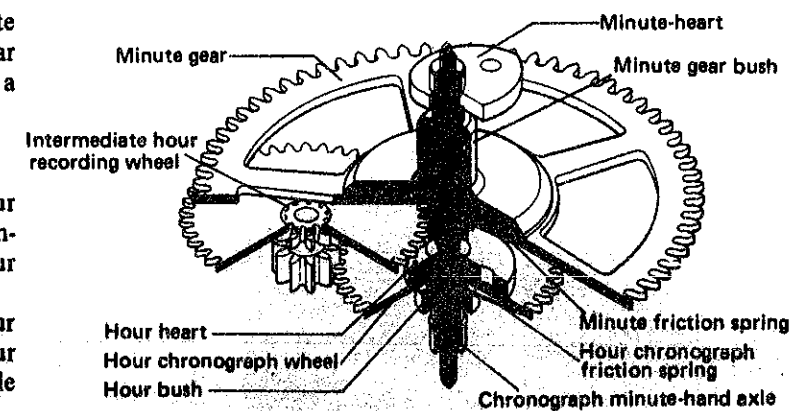


Fig. 3

Hour Recording Wheel

The hour recording wheel consists of hour chronograph wheel and hour heart which includes hour chronograph friction spring and hour bush.

The chronograph friction spring presses hour chronograph gear to hour heart causing hour chronograph gear and hour heart rotate single unit. (Fig. 3)

7016A Chronograph Mechanism

7) Operation of Chronograph Mechanism

Operation Stop

The chronograph mechanism is started by pressing the 1st button (at the 2 o'clock position) which activates the operating lever ① and moves a tooth of the pillar wheel ratchet gear ②. The pillar wheel in the meantime moves the balance stop lever with its arm to activate the second recording wheel ③.

(a) Second Recording Wheel

The clutch ring, after separating from the balance stop lever due to the movement above, is pressed to the 4th wheel by the clutch spring and activates the second-hand axle (second-hand).

(b) Minute Recording Wheel, Hour Recording Wheel

The rotary movement of the second-hand axle is transmitted to the minute gear through the coupling wheel to activate the chronograph minute hand axle (chronograph minute hand) the rotary action of which is transmitted to the hour recording wheel via the hour chronograph transmission wheel and eventually activates the hour heart (chronograph hour hand). (Refer to Fig. 1).

Operation Stop

When the 1st button is pressed the operating lever moves a tooth of the pillar wheel ratchet gear to drop the balance stop lever into hollow part of pillar wheel which leads to movements described below.

(a) Second Recording Wheel

The clutch ring is lifted by the balance stop lever and separates from the 4th wheel, thus stopping the action of the second-hand axle (second-hand).

(b) Minute Recording Wheel, Hour Recording Wheel

The entire chronograph mechanism cease to operate simultaneously with the stop of the second-hand axle. (Refer to Fig. 2.)

Accumulations

The chronograph mechanism returns the condition shown in Fig. 1 when the 1st button is depressed again in the stopped state, at which moment the second-hand, chronograph minute-hand and chronograph hour-hand start to function again to record the accumulated time.

Hammering

The hammer ④ starts operating when the 2nd button (the one in the 4 o'clock position) is depressed. It activates the second-heart ② and minute-heart ③ and turns back the second-hand and chronograph minute-hand to zero.

The chronograph hour-hand also is returned to zero when the hour hammer ④ linked with the hammer strikes the hour heart ⑤ (Refer to Fig.3.)

At the aberrations between assembly parts are fully absorbed by the hour hammer spring ⑥ and hammer's minute spring section ⑦, adjustment of the hammer which is inevitable in assembly and repair of conventional stop-watches and chronographs are entirely eliminated in the 7016A chronographs. (Refer to Fig. 3.)

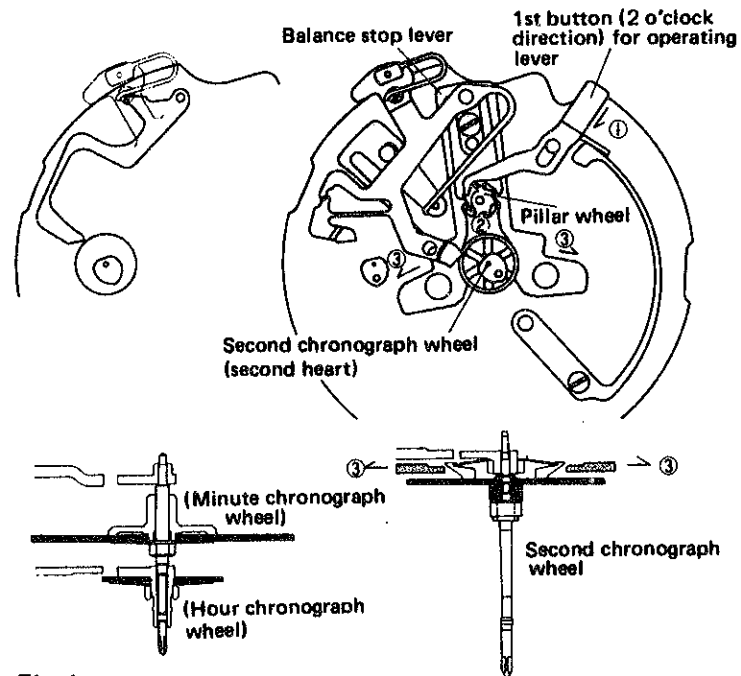


Fig. 1

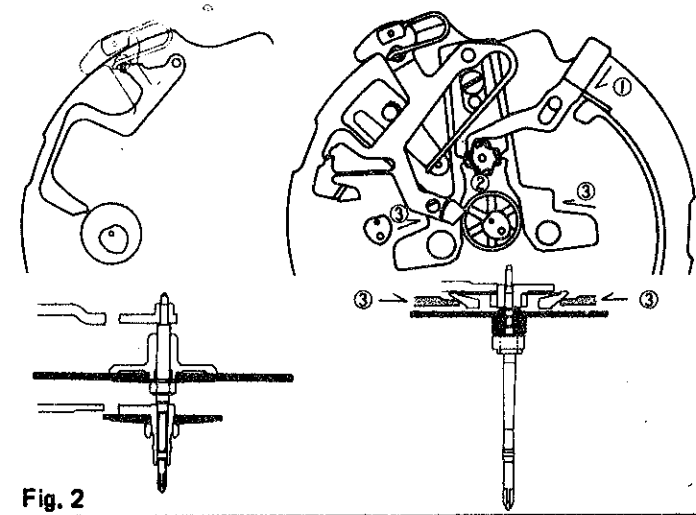


Fig. 2

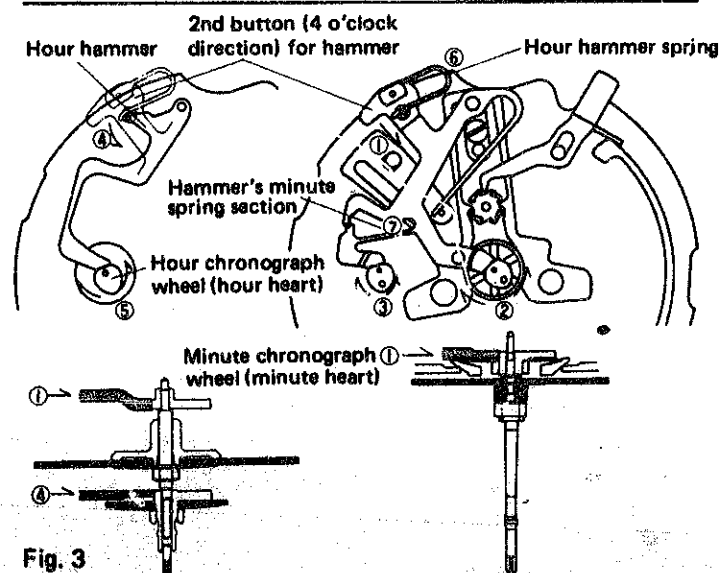


Fig. 3