



## Technical information

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CALIBRE 2030

CALIBRE 2035



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**In order to improve the functional reliability of this calibre, we have made the following alterations to the movement in the course of the last few years:**

- Narrowed the angle between the hairspring holder and the regulator from 85 to 45°, see page 10, fig. 10.
- Shortened the radius of the hairspring from 2.30 to 2.10 – 2.17 mm.
- Narrowed the space between the regulator pins from 0.06 to 0.04 mm, tolerance  $\pm 0.01$  mm.
- Replaced the durochron pallet fork by a steel one with shorter horns and 0.01 mm narrower pallets.



## CALIBRE 2030 - Basic calibre

Automatic	Shock-absorber	Centre second
Magnetic breaking of the sweep second pinion		Stop-second device
Clinergic escapement with 21 teeth wheel		Adjustable hairspring holder
Spirofin regulator with 2 adjustable ruby pins		Annular balance
Fine rating by means of Microstella key		Flat hairspring

- External diameter	20.00 mm
- Case-fitting diameter	19.70 mm
- Overall height including automatic winding device	5.40 mm
- Number of jewels	28
- Frequency 4 Hz, i.e. vibrations per hour	28'800
- Box of spare parts	No. 50

Movement seen from above, with automatic winding device (Fig. 1) and without it (Fig. 2).

*on wig wig pinion  
Bridge use punch  
To DISTORT round shape  
of that opposite crown  
wheel so wig wig will  
not stick*

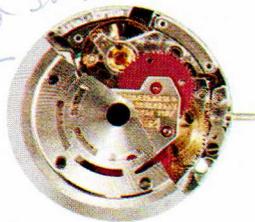
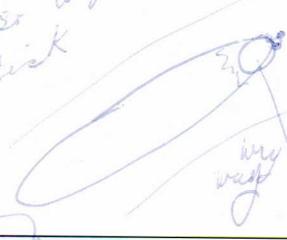


Fig. 1

Scale:  
1,5 : 1

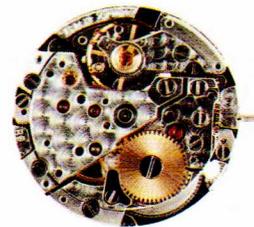


Fig. 2



## DISMANTLING THE MOVEMENT \*

The use of non-magnetic tweezers is recommended.

1. Take out the two low-headed screws (No. 54471) and the high-headed screw (No. 54471-1), and remove the complete rotor (No. 4475).
2. Press the stud of the setting lever (No. 4448) and pull out the winding stem; push the casing clamps in their recess and take the movement out of the case. Remove the hands and the dial, then refit the winding stem.
3. Slowly let down the mainspring. If necessary, finish letting it down by giving the ratchet-wheel 1/8 of a turn with a screwdriver in order to release the wig-wag pinion. Then hold back the click and, with the screwdriver still in the slot of the screw, unwind the spring completely.
4. Check the balance and the hairspring. If it has not been done already, bend the end of the hairspring which projects beyond the hairspring holder (Fig. 3), so that its initial length can easily be found again when the movement is reassembled. Untighten the screw (No. 54435) of the hairspring holder (No. 4435). Remove the balance cock and the balance.
5. Check the endshake of the wheels and dismantle the movement.



Fig. 3

6. Take the barrel (No. 4422) to pieces. Do not hesitate to change the mainspring (No. 4419 or 4420) if it is no longer in good condition.

The stop-spring plate (No. 4459) and its screw (No. 54459) may be left in position, as well as the setting lever and its pressure spring.

\* It is advisable to give the movement a preliminary washing before taking it to pieces. This first washing can be done with the sprung balance, the barrel and even the automatic winding device left in place. This procedure makes it easier for the watchmaker to judge the condition of the components of the movement. After the movement has been completely taken to pieces and the parts needing replacement have been changed, a second washing is necessary before the movement is reassembled.



### Magnetic braking of the sweep-second pinion

A magnetized ring is driven onto the sweep-second pinion (No. 4427) and causes it to be attracted by the jewelled bush of pure iron which is driven into the train-wheel bridge (Fig. 4).

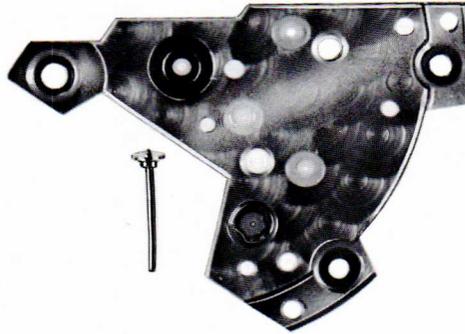


Fig. 4

In spite of the presence of this little permanent magnet, the watch can be demagnetized without any special precautions. Nevertheless, the apparatus used for checking magnetism will always indicate a slight magnetic field, but this will not affect the working of the watch.

### Minute pinion

The minute pinion (No. 4423) is braked by the friction spring (No. 4428) in order to suppress the free play of the minute hand (Fig. 5).

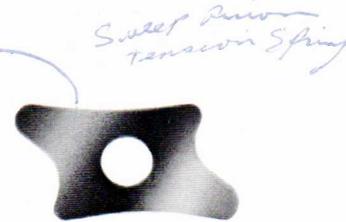
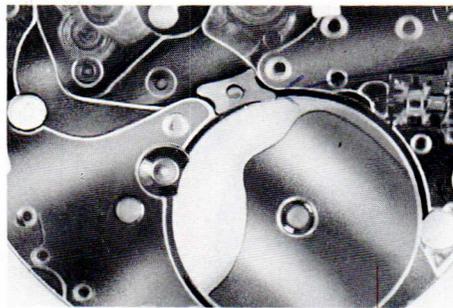


Fig. 5

### Escapement

The clinergic escapement (Fig. 6), which is used for high frequencies has very slight clearances. The escapement functions must be set very accurately.



Fig. 6

A few series of watches are equipped with durochron pallet forks which, in certain conditions, may cause binding. In these cases, steel pallet forks give better results. The two executions of pallet forks are alike in appearance; those which are made of durochron are non-magnetic, this characteristic can be used for distinguishing them. If the pallet fork is replaced, verify the functions of the escapement and, if necessary, adjust them very carefully; the use of a binocular magnifier is strongly recommended.

### **Sprung balance**

The balance is fitted with a Greiner collet (Fig. 7); consequently, the hairspring cannot be removed but in the factory.

For this reason, any damaged sprung balance must be replaced completely.

Sprung balances where only the pivots are damaged can be exchanged at a special price at our Spare Parts Division.

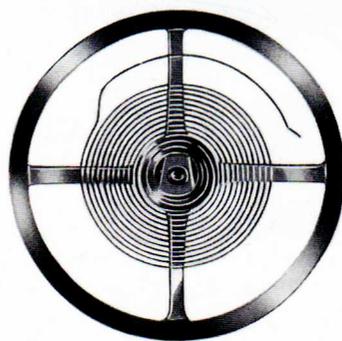
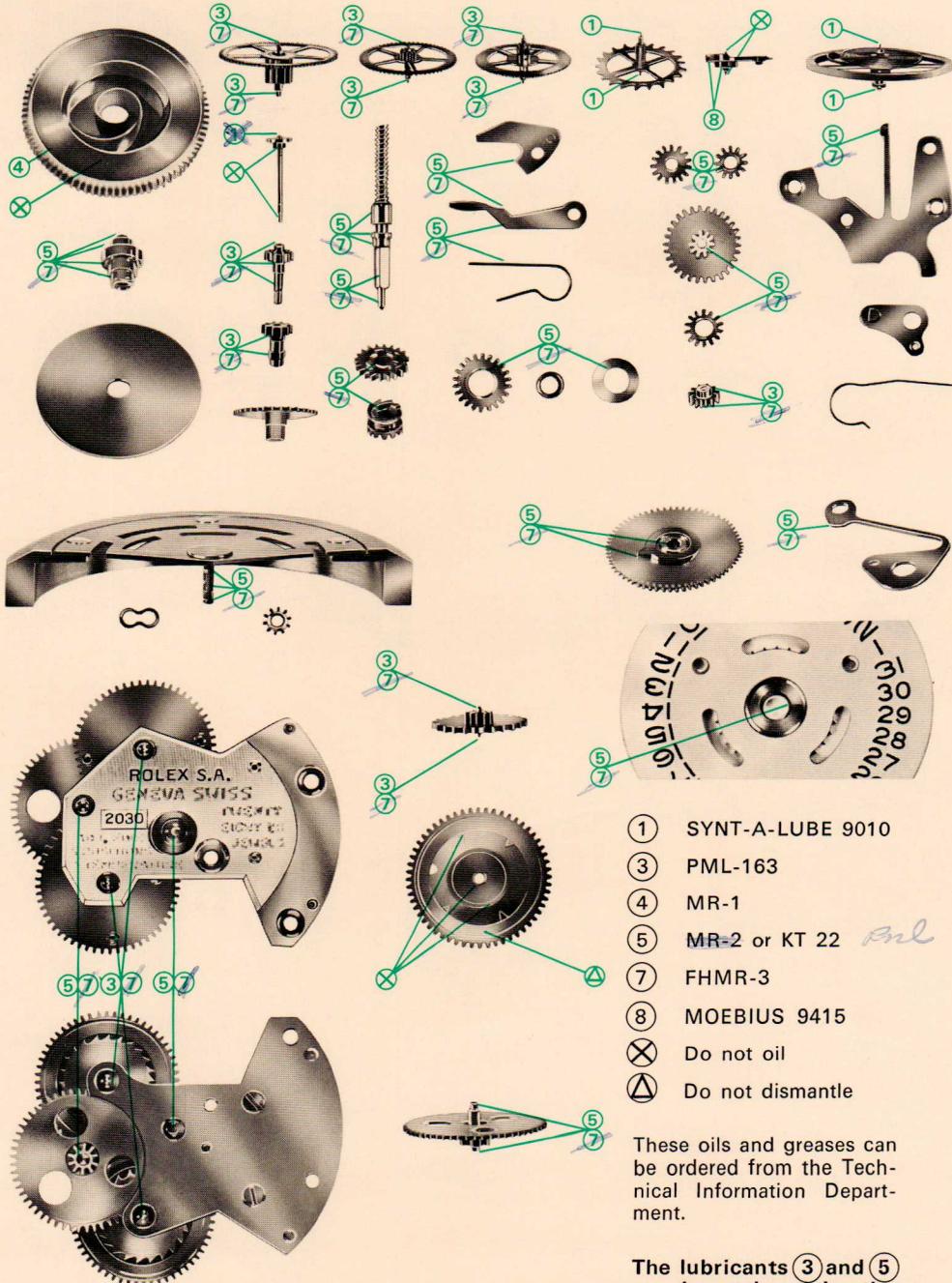


Fig. 7

The radius of the hairspring should not exceed 2.17 mm. There are however a few series of balances whose hairsprings have a radius of 2.30 mm or more. If the amplitude is great, these springs may foul the hairspring holder; the result of this is an irregular daily rate, the sprung balance has then to be changed.



### OILING CHART



- ① SYNT-A-LUBE 9010
- ③ PML-163
- ④ MR-1
- ⑤ MR-2 or KT 22 *Ant*
- ⑦ FHMR-3
- ⑧ MOEBIUS 9415
- ⊗ Do not oil
- △ Do not dismantle

These oils and greases can be ordered from the Technical Information Department.

The lubricants ③ and ⑤ can be replaced by the oil ⑦.



## ASSEMBLING THE MOVEMENT

If it is to give entire satisfaction, this movement must be overhauled with the greatest care; it is necessary, in particular, to see that the train, the jewels and the escapement are perfectly clean.

For lubrication, see the diagram on page 7.

1. Fit the escape-wheel endstones (Duofix); the size of the oil drop should be equal to  $\frac{2}{3}$  of the endstone diameter.
2. Fit the friction spring (No. 4428), which is located by the two edges of the central recess in the main plate. Fit the minute pinion (No. 4423) after having greased its two pivots, and then fit the minute-pinion cock (No. 4413).
3. Lubricate the escape wheel, preferably by the "Lubrifar" method.  
The escape wheels are treated with "Lubrifar" (a mixture of oil and molybdenum bisulfide) in the factory \*. This lubricant is dissolved by cleaning baths; for the time being, it can be applied only with a special apparatus.  
Failing this apparatus, grease Moebius 9415 should be applied sparingly to the pallet stones.
4. Assemble the train, the last element to be fitted being the sweep-second pinion.  
Minute particles of metal attracted by the magnet may remain between the leaves of the sweep-second pinion. They must be carefully removed. This can be easily done with a cleaning paste, such as Rodico-one-touch.
5. Lubricate the wall of the barrel drum with Olyt grease (ROLEX MR-1).
  - Place the mainspring inside the barrel.
  - Grease slightly the mainspring if it has been washed in cleaning baths.
  - Oil the barrel-arbor pivots, then fit the barrel and its bridge.
6. Assemble the hand-setting mechanism.
7. Fit the crown wheel seat (No. 4442) with its convex side facing upwards (Fig. 8).
  - Oil the crown wheel seat, the stud of the intermediate pinion and the pivots of the wig-wag pinion.

\* The escape wheels supplied by our Spare Parts Division are also pregreased. This pregreasing appears in the form of a blackish deposit on the tips of the teeth (impulse faces).

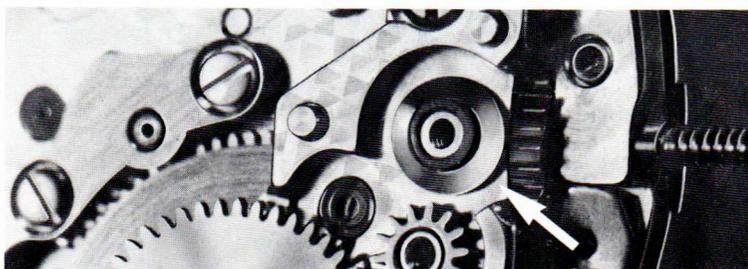


Fig. 8

8. Fit the crown wheel (No. 4441), the intermediate pinion (No. 4443), the wig-wag pinion (No. 4444) and the winding mechanism bridge (No. 4416).
  - The friction of the crown wheel should be strong enough to maintain the wig-wag pinion in the winding position when the clutch wheel (No. 4440) comes out of gear.
9. Fit the pallet fork and the pallet cock.
10. Turn the balance cock over, put the balance and insert the hairspring between the pins and into the plate of the hairspring holder (No. 4435). Push the bend of the hairspring against the hairspring holder and screw the plate tight.
11. Fit the balance cock and verify the centring of the hairspring and its truth in the flat. To correct the latter, slightly loosen the screw of the hairspring holder.
12. Oil the shock-absorbers.

**The movement must not run without oil on the balance.**

#### TIMING

1. Centre the hairspring between the pins; it should have little side-play. The two ruby pins are adjustable (Fig. 9): to reduce the play of the hairspring, turn the pin-holder clockwise with the ROLEX tool Ref. 2031 \* or with tweezers.

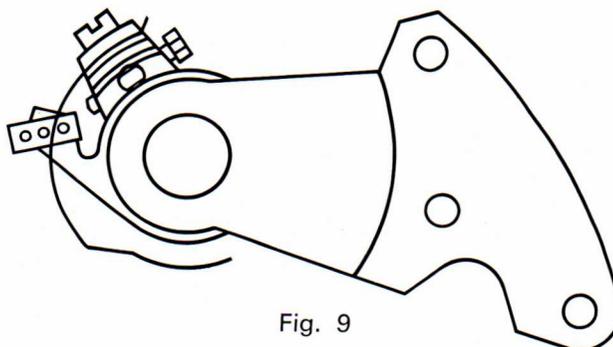


Fig. 9

\* Obtainable from the Technical Information Department.



The angle between the hairspring holder and the pins must not be greater than  $45^\circ$  (Fig. 10).

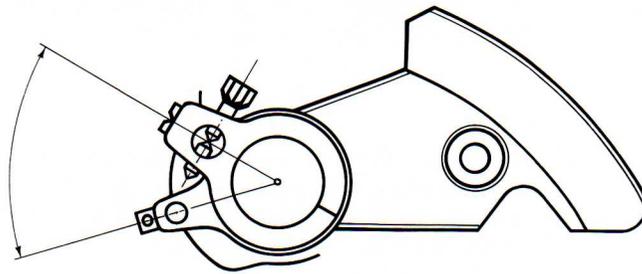


Fig. 10

2. If necessary, correct the beat by means of the adjustable hairspring holder.
3. Set the rate as close to zero as possible by means of the regulator, then finish the timing correction by turning the hairspring holder screw with the Microstella key.
4. Then check the rate and amplitude on a watch-timer and an amplitude meter, in the following positions:

9 H vertical, crown down  
6 H vertical, crown left  
3 H vertical, crown up  
C H horizontal, dial up  
F H horizontal, dial down

5. When the watch has been cased up and the complete rotor fitted, verifications should be made over 24 hours in different positions and on a wear-simulator. At this stage, it is always possible to make a further correction if necessary.



## AUTOMATIC WINDING DEVICE

Seen from above (Fig. 11)

Seen from below (Fig. 12)



Scale:  
1,5 : 1



Fig. 11

Fig. 12

### Checking the endshake of the reversing wheels

The endshake of the driver of the reversing wheel (No. 4479) should be very slight (0.01 mm). To check it, lift the pinion of the driver with a pair of tweezers and observe the movement of the pivots in the jewel holes. If a correction is necessary, make it by shifting the jewels in the sole (N° 4472) of the automatic winding device.

### Dismantling the automatic winding device

- Remove the gib (No. 4478) and the rotor (No. 4474).
- Take out the two screws (No. 54472) of the sole (No. 4472).
- Remove the reversing wheels and the intermediate wheel.

### Assembling the automatic winding device

- Fit the bridge of the automatic winding device upon the rotor axle, which should have been greased beforehand.
- Fit the winding wheel (No. 4477).
- Fit the two reversing wheels mounted (No. 4479).
- Fit the sole (No. 4472).
- Fit the gib into the groove of the rotor axle and by lifting the rotor, make sure that it is correctly positioned.



### **Fitting the dial and hands**

1. Fit the hour wheel and the dial.
  - Make sure the hour wheel is free.
  
2. Drive on the hour, minute and second hands without supporting either the pivot of the sweep second pinion or the jewelled bush (No. 6191) of the sweep second pinion.

The movement can be supported by its rim on a movement holder for instance ROLEX Ref. 2076 \* or placed flat on a plate.

### **CASING UP**

1. Place the movement inside the case, which should have been reconditioned beforehand (polishing and brushing of the case and bracelet, water-resistance test).
  - Press the setting lever stud and insert the winding stem; screw the winding crown onto its tube in order to centre the stem.
  - Take the casing clamps (No. 4498) out of their recess and drive their screws (No. 54498) tight.
  - Some models have an enlargement ring (No. 4481) and long casing clamps (No. 4499) with screws (No. 54498).
  
2. Fit the automatic winding device, making sure that the gearing between the intermediate wheel and the ratchet wheel is correct, and drive the screws tight.
  
3. Check the rotor to make sure that it turns perfectly freely and, by moving the oscillating weight in both directions, see whether the ratchet wheel moves forward.
  
4. Check the rate on a watch-timer.
  
5. Lightly grease the thread of the case back, tighten the back and carry out the final water-resistance test.
  
6. Check the working of the automatic winding device on a wear-simulator.

\* Obtainable from the Technical Information Department.



## CALIBRE 2035 - derived from calibre 2030

Automatic	Date	Shock-absorber
Magnetic breaking of the sweep second pinion		Centre second
Clinergic escapement with 21 teeth wheel		Stop second device
Annular balance	Flat hairspring	Adjustable hairspring holder
Spirofin regulator with 2 adjustable ruby pins	Fine rating by means of Microstella key	

- External diameter	20.00 mm
- Case-fitting diameter	19.70 mm
- Overall height including automatic winding device	5.90 mm
- Number of jewels	28
- Frequency 4 Hz, i.e. vibrations per hour	28'800
- Box of spare parts	No. 50

Movement seen from below, with date disc (Fig. 13) and without it (Fig. 14).

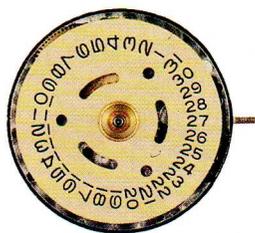


Fig. 13

Scale:  
1,5 : 1

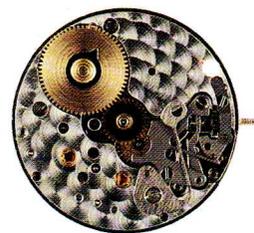


Fig. 14



## DISMANTLING THE CALENDAR MECHANISM

Remove the date disc (No. 4520), unscrew the date jumper (No. 4516) and take out the calendar wheel (No. 4514). Some models have an enlargement ring (No. 4522) and a larger date disc (No. 4521), Fig. 15 and Fig. 16.



Fig. 15

Scale  
1:1



Fig. 16

## ASSEMBLING THE CALENDAR MECHANISM

1. Lightly lubricate the calendar-wheel stud and fit the wheel and the date jumper.
2. The beak of the date jumper should be parallel to the main plate, and the clearance between the plate and the beak 0.25 mm.
3. Make sure that the tension of the date jumper is as indicated in Fig. 17.

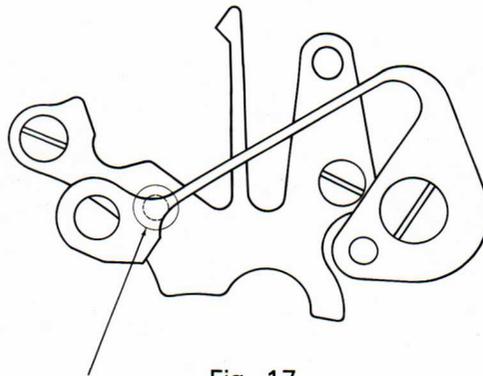


Fig. 17



4. Lubricate the beak of the jumper and fit the date disc.

The enlargement rings with which some models are fitted are fixed to the movement with the casing clamps (No. 4498) and their screws (No. 54498).

The casing bridles must then be fitted with the convex side facing upwards, so as to press on the enlargement ring.

5. Fit the hour wheel and the dial.

– Check the free action and the endshake of the hour wheel, as well as the changing of the date.

6. Drive on the hands so as to ensure that the date changes at midnight.

– Tolerance 1 + 3 min.

### CASING UP

See page 12, paragraph 1, bearing in mind the following special points:

- The movement with enlargement rings (No. 4522) are held in position by case screws (No. 54522); for locking, these must be unscrewed (Fig. 18).
- Verify the changing of the date before and after the case back is screwed tight.



Scale  
1:1

Fig. 18