

The chronograph calibres

860 27 CHRO PC 17 jewels

861 27 CHRO C12 PC 17 jewels

910 27 CHRO C12 PC AMPM GMT 17 jewels

930 27 CHRO PC CAL 17 jewels

<p>ø 27.00 mm</p>	
<p>Power-reserve Jewel number Frequency Angle of lift</p>	<p>50 h 17 21'600 A/h 50°</p>



Cal. 860



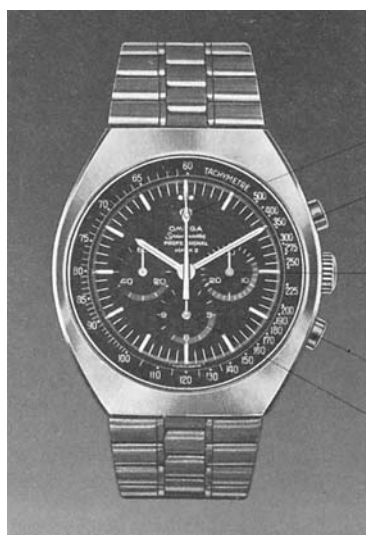
Cal. 910



Cal. 861



Cal. 930



Specifications

Casing-diameter 27 mm
 Number of vibrations: 21600 per hour
 Lifting angle of balance 50°
 Running time 50 hours
 Diameter of screw pitch of winding stem 1.00 mm

Mechanism

All elements of new design, are simple, robust, interchangeable and create no difficulty in the after sales service.

Operating the push-pieces

To start the hands, depress and release the push-piece A. C center second hand, D minute recorder, E hour recorder. Stop the hands by depressing once more push-piece A. For zero action depress push-piece B.

**Description and numbering of parts for
the chrono-mechanism cal. 860 - 861 - 910 - 930**

Important : For the number of the basic
calibre of the parts mentioned in this guide,
refer to spare parts catalogue GF 620-4.

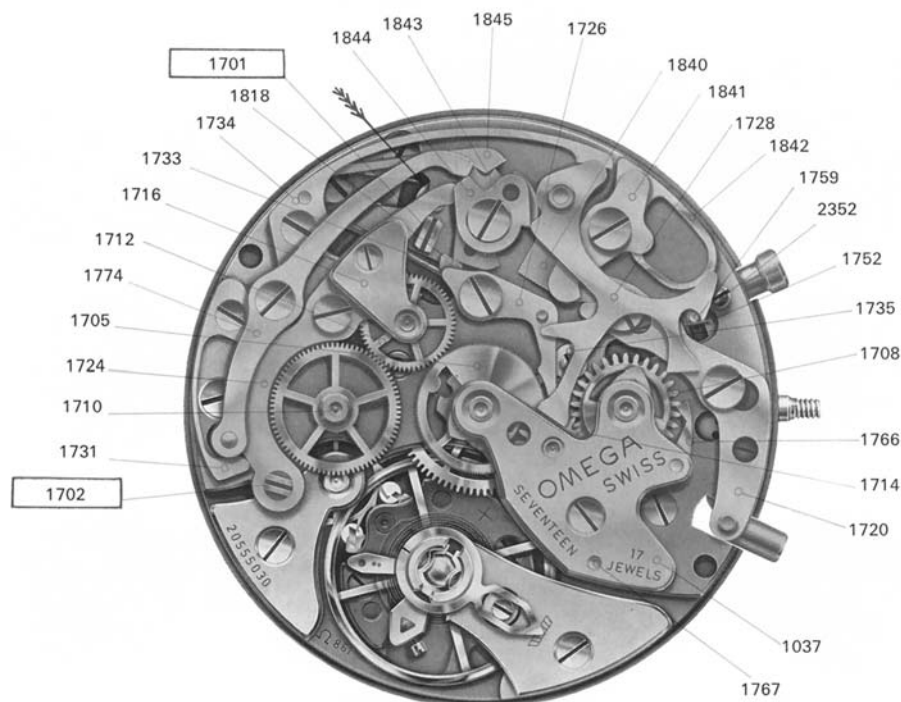


Fig. 1

- | | |
|---|---|
| 1037 Chronograph bridge | 1734 Hammer spring |
| 1701 Banking eccentric for coupling clutch | 1735 Friction spring for chronograph runner |
| 1702 Eccentric for pivoting of coupling clutch | 1752 Stem-bolt spring for hammer |
| 1705 Chronograph runner mounted | 1759 Stem-bolt for hammer |
| 1708 Minute-recording runner mounted | 1766 Minute-recording jumper |
| 1710 Driving wheel for chronograph | 1767 Spring for minute recording-jumper |
| 1712 Coupling wheel | 1774 Hour recorder yoke |
| 1714 Intermediate wheel for minute-recording runner | 1818 Blocking lever yoke |
| 1716 Coupling wheel bridge | 1840 Connecting lever |
| 1720 Operating lever | 1841 Operating lever yoke |
| 1724 Coupling yoke | 1842 Operating lever spring |
| 1726 Blocking lever | 1843 Lower cam for coupling clutch |
| 1728 Hammer mounted | 1844 Upper cam for hammer |
| 1731 Coupling clutch spring | 1845 Cam jumper |
| 1733 Blocking lever spring | 2352 Screw for pusher stem for zero action |

Dismantling the chrono-mechanism of calibres 860 - 861 - 910 - 930

Caution : When dismantling, do not disturb the elastic force of the different springs. Also do not turn the eccentrics No. 1701 and 1702 (see fig. 1, page 2).

With calibres 861 and 910 remove the hour recorder yoke 1774 first. Unwind the mainspring by retaining the click, indicated by a red arrow (see fig. 1, page 2) and proceed to dismantle as follows:

Hammer spring 1734 (lift off by its heel)
Hammer 1728
Coupling clutch spring 1731
Coupling yoke 1724 (grasp eccentric).
Remove coupling wheel bridge 1716 and coupling wheel 1712
Blocking lever 1726
Blocking lever yoke 1818
Cam jumper 1845
Chronograph bridge 1037 (withdraw minute recording jumper 1766, leave spring for minute recording jumper 1767)
Chronograph runner 1705
Minute-recording runner 1708
Intermediate wheel for minute recording runner 1714

Operating lever 1841
Operating lever spring 1842
Connecting lever 1840
Operating lever 1720
Upper cam for hammer 1844
Lower cam for coupling clutch 1843
Stem for pusher for zero action (loosen screw 2352)
Stem-bolt spring for hammer 1752
Stem-bolt for hammer 1759
Friction spring for chronograph runner 1735
Blocking lever spring 1733
Driving wheel for chronograph 1710 (see fig. 2)

Dismantle the movement and clean all components, except chronograph runner 1705, in the usual manner.

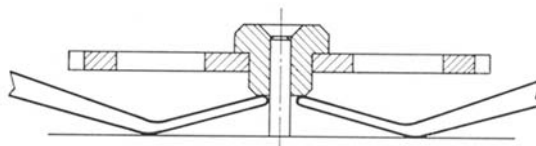


Fig. 2

Chronograph runner 1705

Do not remove the support for the finger of the chronograph runner. Merely clean the complete unit with benzine and dry thoroughly. Do not use sawdust.

Examine :

The condition of the teflon on the surface of the friction spring for chronograph runner 1735
The condition and cleanliness of the support for the finger
The cleanliness of the pivoting-points for chronograph runner 1705 and minute-recording runner 1708

Reassembling and adjusting the chrono-mechanism of calibres 860 - 861 - 910 - 930

After assembling the basic movement (without escapement) and having oiled all the components as per description on page 10, proceed as follows:

Assemble coupling clutch 1724 and verify freedom of wheel 1712
Oil upper and lower pivoting-point of coupling wheel 1712 (for oiling instructions refer to page 12)
Lubricate and place stem-bolt for hammer 1759 and bolt-spring 1752
Oil, place and screw on lower cam for coupling clutch 1843 and upper cam for hammer 1844
Locate operating lever spring 1842 and lubricate its notch
Place connecting lever 1840

Lubricate and screw on operating lever yoke 1841 and operating lever 1720
 Place cam jumper 1845
 Check the functions of this part of the mechanism
 Place and screw on friction spring for chronograph runner 1735. The spring must have a slight tension, so that the seconds hand does not float
 Place successively: minute recording runner 1708-intermediate wheel for minute recording runner 1714 chronograph runner 1705
 Check the tension of the spring for minute recording jumper 1767 (see fig. 3)

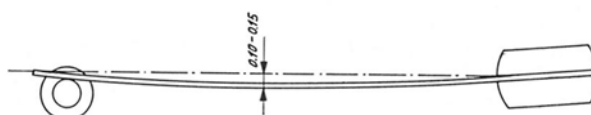


Fig. 3

Locate minute recording jumper 1766 underneath the chronograph bridge 1037 and screw on the latter
 Check the freedom of the minute recording wheel while disengaging minute recording jumper 1766 and by directing a jet of air on to the minute recording runner 1708
 Place blocking lever yoke 1818 and blocking lever spring 1733 (lubricate the blocking lever spring on the blocking lever yoke)
 Place, oil and screw on blocking lever 1726
 Press on, in two stages, driving wheel for chronograph 1710 while supporting the lower pivot of the fourth wheel:

1. Slightly engage the driving wheel on its axle
2. After placing and tightening the coupling clutch 1724 press the driving wheel down to the same height as the coupling wheel 1712

Verify that the driving wheel for chronograph 1710 runs truly flat
 Place successively: coupling clutch spring 1731 - hammer 1728 - hammer spring 1734
 Lubricate, insert and screw on pusher stem for zero action (flat part dial-side)

On calibres 861 and 910, place and screw on hour recorder yoke 1774 Place lever and balance

Checking the chrono-mechanism of calibres 860 - 861 - 910 - 930

Checking the gears:

one complete revolution

The penetration of the teeth of the coupling wheel 1712 and the driving wheel for chronograph 1710 can be adjusted by turning the clutch eccentric 1702.

Penetration should be limited to $\frac{2}{3}$ of the height of the coupling wheel teeth 1712 with a backlash of 0.02 to 0.04 mm.

The coupling wheel 1712 should penetrate $\frac{1}{3}$ of the height of the chronograph runner teeth 1705. Adjust penetration by means of eccentric 1701.

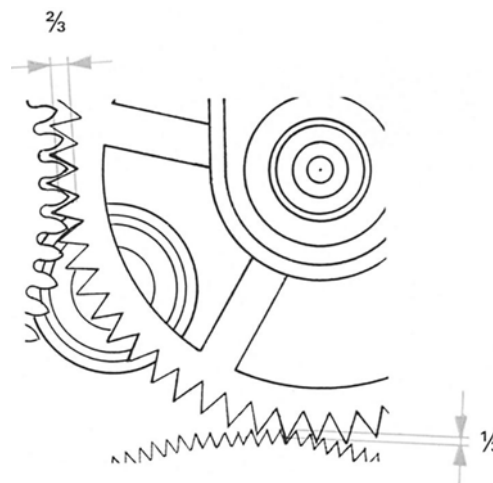


Fig. 4

Checking the accordment : Fig. 5

At zero position the hammer presses against the chrono heart-piece, thus blocking the chronograph runner. Contrarily, a slight clearance between the hammer and the heart-piece of the minute runner must exist. This clearance has to be checked in two stages:

1. The minute jumper must rest on two teeth of the minute runner.
2. To check the regularity of the clearance, slightly move the minute runner in both directions, until the resistance of the hammer is felt. The displacement of the jumper should be equal on each tooth, but engage not less than 0.10 mm of the height of the tooth.

Verify that the hammer is neither fouling the wheels nor the chronograph bridge.

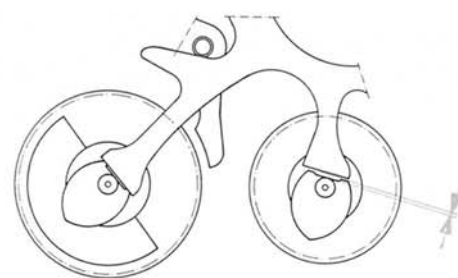


Fig. 5

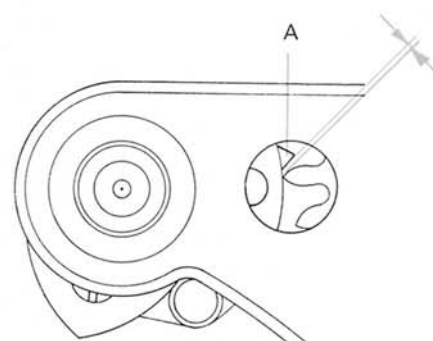


Fig. 6

Checking the position of the finger-piece : Fig. 6

At zero position, a slight clearance between the teeth of the intermediate wheel for the minute runner and the flat part of the finger A must be visible (seen through the hole of the chronograph bridge). After fitting the hands, check that the minute recorder hand jumps when the chronograph hand passes over midday. The tolerable limit for the jump is: $0 + 2/5$ of a second.

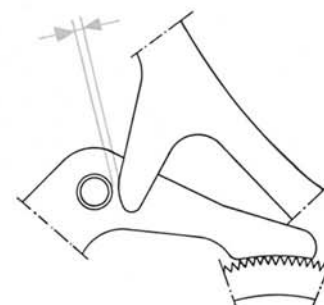


Fig. 7

Checking the isolator of the blocking lever : Fig. 7

Stop the chronograph and check the clearance between the isolator (hammer) and the stud of the blocking lever (see fig. 7).

Checking the lifting of the hammer : Fig. 8

With the chronograph engaged, a slight side-play must be noticeable between the rack-hook of the hammer and the stud (see fig. 8).

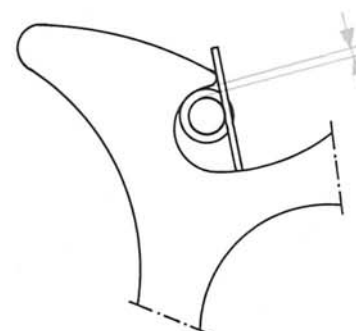


Fig. 8

Description and numbering of parts for the hour recording mechanism calibre 861 - 910

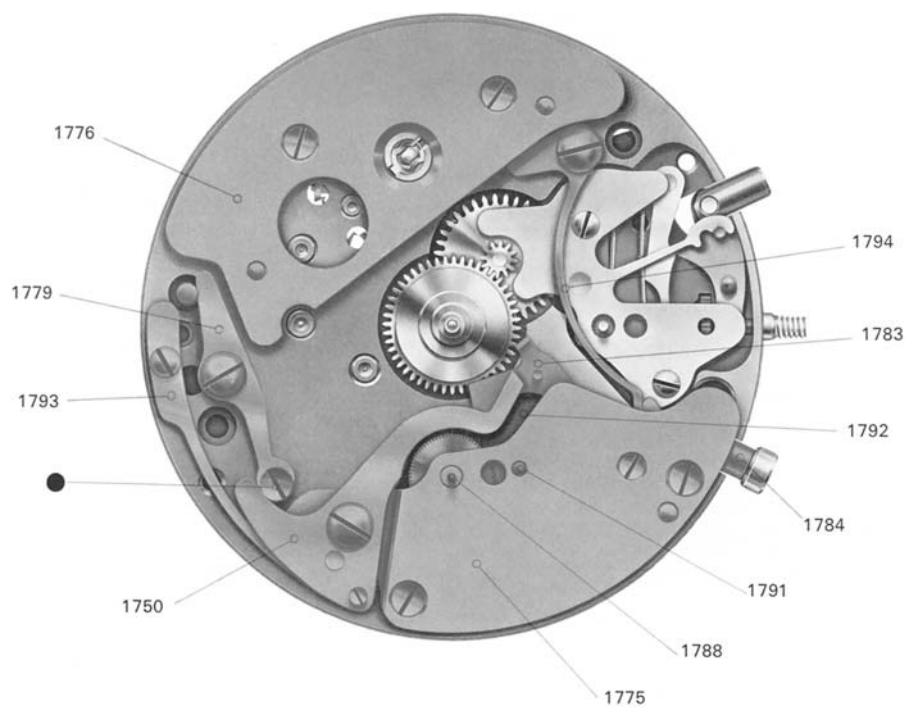


Fig. 9

- 1750 Hour recorder stop lever
- 1775 Hour recorder bridge
- 1776 Supporting bridge for dial
- 1779 Switch mounted
- 1783 Hour hammer
- 1784 Operating lever for hour hammer
- 1788 Hour recording runner
- 1791 Driving pinion (hour recorder)
- 1792 Friction spring for driving pinion (hour recorder)
- 1793 Spring for hour recorder stop lever
- 1794 Hour hammer spring
- Adjustable eccentric mounted on 1779

Dismantling the hour recorder mechanism of calibres 861 - 910

Caution: Do not turn the eccentric indicated by a black dot; this is not a screw (see fig. 9, page 6).

Dismantle as follows:

Operating lever for hour hammer 1784
Hour hammer spring 1794
Hour recorder stop lever 1750
Spring for stop lever 1793
Switch mounted 1779
Hour recorder bridge 1775

Hour hammer 1783
Hour recording runner 1788
Friction spring for driving pinion for hour recorder 1792
Driving pinion for hour recorder 1791
Supporting bridge for dial 1776 (cal. 861 only)

Clean all the components in the usual manner.

Examine:

Condition of friction spring 1792
Toothing of hour recording runner 1788
Toothing of driving pinion 1791
Condition of hour hammer 1783 and stop lever 1750
Cleanliness of pivoting-points for hour recording runner 1788

Reassembling and adjusting the hour recorder mechanism cal. 861 - 910

Locate driving pinion for hour recorder 1791 and screw friction spring 1792 on to the barrel
Verify that the resistance of the driving pinion is very light
Lubricate pivoting of driving pinion 1791 on barrel arbor (grease 2.01)
Lubricate contact of friction spring 1792 on driving pinion 1791 (grease 2.03)
Oil lower pivot and place hour recording runner 1788
Place successively: hour hammer 1783 - hour recorder bridge 1775 - supporting bridge for dial 1776 - switch 1779 - spring for stop lever 1793
Place stop lever 1750 while pushing stop lever spring 1793 towards the hour recorder bridge 1775
Lubricate and place operating lever for hour hammer 1784 and bolt-stem for zero action (flat part dial side - tighten screw 2352 on movement side)
Fit hour wheel 1231, after depressing stem-bolt for zero action

Checking the functions after assembling the chronomechanism

Start the chronograph and adjust eccentric for switch 1779, so that the point of the hour hammer 1783 strikes on to the extremity of the hour recorder stop lever 1750 when depressing push-piece B for zero action (see fig. 10).
Stop the chronograph and check that there is a slight play between switch 1779 and stop lever 1750.
Depress the push-piece for zero action and check that the hour recording runner 1788 is properly blocked.

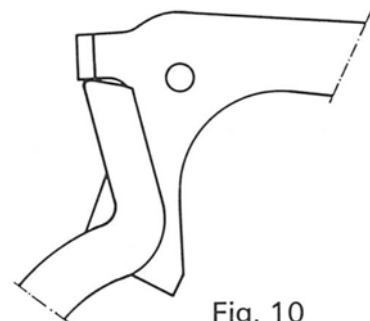


Fig. 10

**Description and numbering of parts for the
AM PM and GMT mechanism calibre 910**

The AM PM mechanism divides the day into Ante and Post Meridiem time. The GMT mechanism indicates the hour of another time-zone.

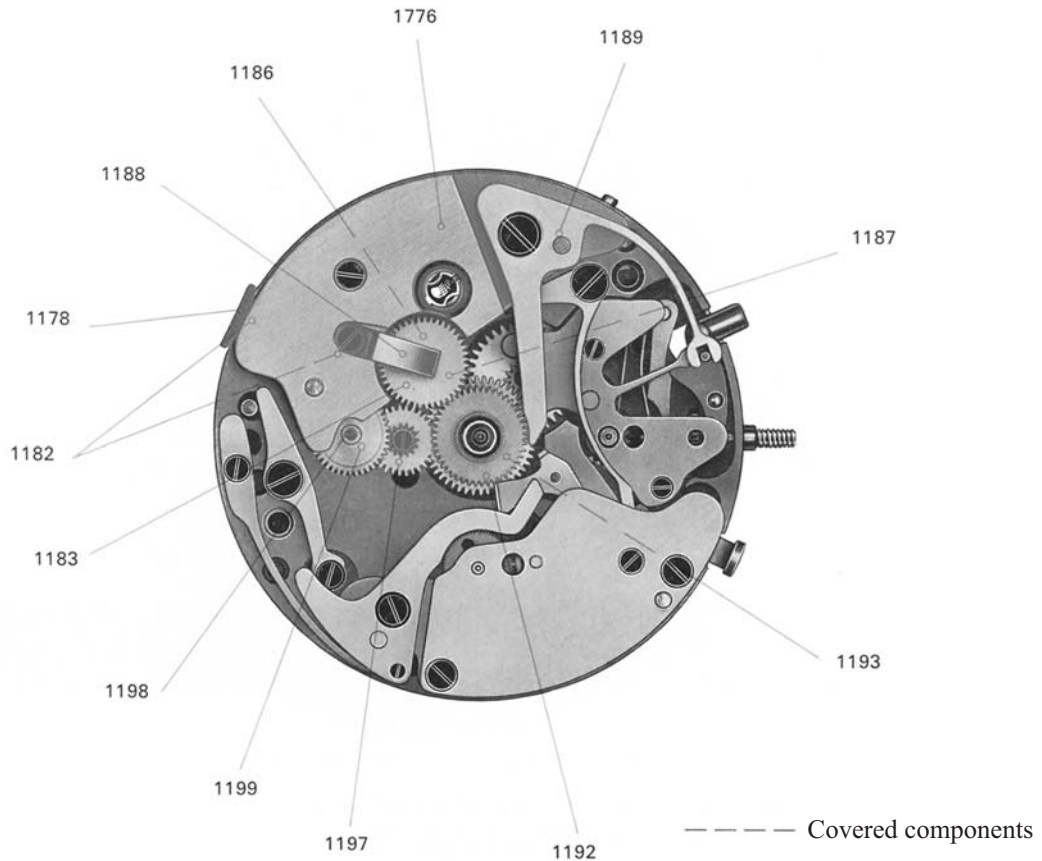


Fig. 11

- 1178 Setting pinion GMT
- 1182 Setting wheel I and II GMT (2 pcs)
- 1183 Setting wheel III GMT
- 1186 Trigger wheel GMT
- 1187 Trigger wheel spring GMT
- 1188 Clamp for setting wheel III GMT
- 1189 Blocking lever GMT
- 1192 Indicator wheel GMT
- 1193 Friction spring for indicator wheel GMT
- 1197 Intermediate wheel AMPM
- 1198 Trunnion of indicator wheel AM PM
- 1199 Indicator wheel AMPM
- 1776 Supporting bridge for dial

Dismantling the AM PM and GMT mechanism cal. 910

Dismantle as follows:

Blocking lever GMT 1189
Indicator wheel GMT 1192 (do not remove friction spring 1193)
Clamp for setting wheel III GMT 1188
Setting wheel III GMT 1183 (disassemble trigger wheel GMT 1186)
Trigger wheel spring GMT 1187
Supporting bridge for dial 1776 (remove setting wheel I and II GMT 1182)
Indicator driving wheel AMPM 1199
Intermediate wheel AMPM 1197
Trunnion of indicator wheel AMPM 1198

Clean all components in the usual manner.

Reassembling the AM PM and GMT mechanism cal. 910

Remark: Assemble the AMPM-GMT mechanism before fitting the hour hammer spring 1794 and adjusting the functions of the hour recording mechanism.
The setting pinion GMT 1178 is fitted into the casing ring.

Caution: To avoid damage to the teeth by the stop lever, do not manipulate the hand setting before fitting the casing ring and clamps.

Proceed as follows:

Oil and place setting wheel I and II GMT 1182 on to supporting bridge for dial 1776
Place and screw on trunnion of indicator wheel AMPM 1198
Oil and screw on intermediate wheel AMPM 1197
Place successively: indicator wheel AMPM 1199 - supporting bridge for dial 1776 - trigger wheel spring GMT 1187 (rounded part upside)
Oil assemble and locate trigger wheel GMT 1186 and setting wheel III GMT 1183
Place and screw on clamp for setting wheel III GMT 1188
Oil surface of hour wheel and place indicator wheel GMT 1192. Pay attention not to deform the friction spring 1193 in the indicator wheel GMT, when fitting the latter on to the hour wheel
Place and screw on hour hammer spring 1794
Locate and screw on blocking lever GMT 1189
Examine the tension of the blocking lever GMT

With the winding stem in winding position, a clearance of 0.10 mm must exist between the blocking lever GMT and the teeth of the indicator wheel GMT 1192.

Dismantling the date mechanism cal. 930

Remove successively: date jumper spring 1529 - date jumper 1503 - date indicator guard 1554 - date indicator 1595 - date indicator driving wheel 1560

Clean the components in the usual manner.

Remounting the date mechanism cal. 930

Place and screw on date indicator driving wheel 1560 (oil and check before placing date finger 1511)
Locate date indicator 1595 and screw on date indicator guard 1554
Check freedom of date indicator 1595
Place date jumper 1503 and its spring 1529

**Description and numbering of parts
for the date mechanism cal. 930**

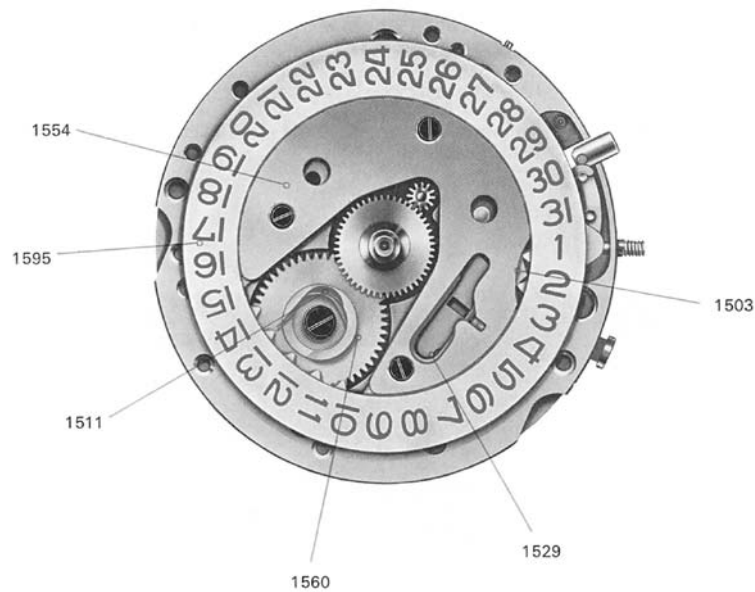


Fig. 12

1503 Date jumper
1511 Date finger
1529 Date jumper spring

1554 Date indicator guard
1560 Date indicator driving wheel
1595 Date indicator

Oiling the movement cal. 860 - 861 - 910 - 930

Grease 2.01

Winding stem
Winding pinion (Breguet)
Clutch wheel
Stud of setting lever

Point of setting lever
Yoke spring on yoke
Pivoting points of barrel on arbor
Pivoting points of barrel arbor in bridge and plate

For cal. 861 and 910

Friction spring for hour recorder
Pivoting of driving pinion for recorder on barrel arbor

Grease 2.03

Setting wheel studs (2)
Minute wheel stud
Crown wheel core
Centre wheel, plate and pivot-shank

Oil 1.02

Pivoting points of:
Centre wheel, upper
Third wheel, upper and lower
Fourth wheel, upper and lower
Escape wheel, upper and lower
Incablocs, upper and lower

Oil 1.06

Pallet jewels (stones)

Pallet staff pivots are not oiled

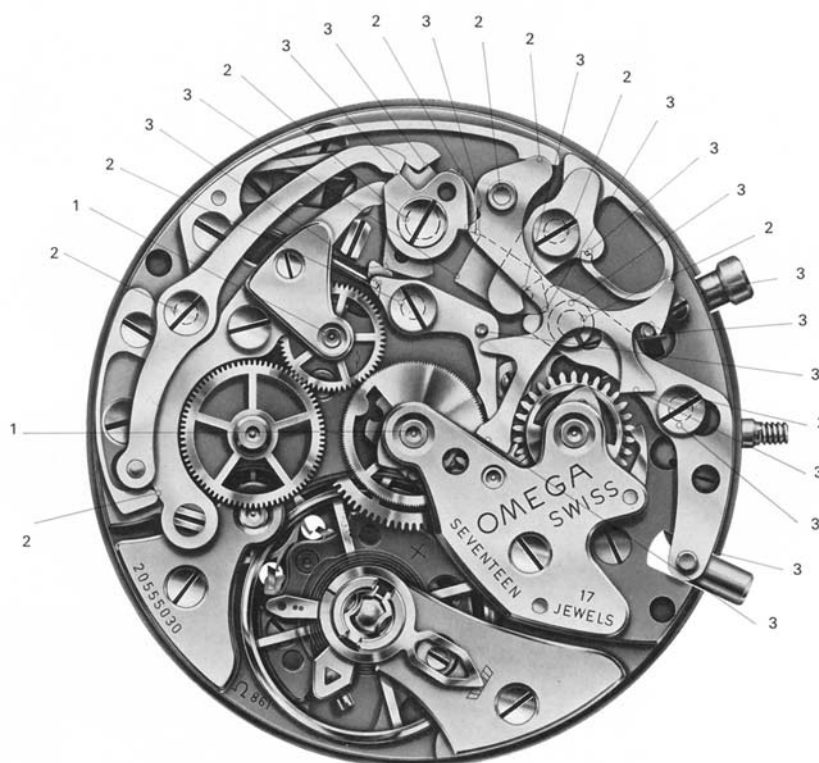
Oiling the chrono-mechanism calibres 860 - 861 - 910 - 930

The sealing rings of the crown and the push-pieces are lubricated with grease 2.01

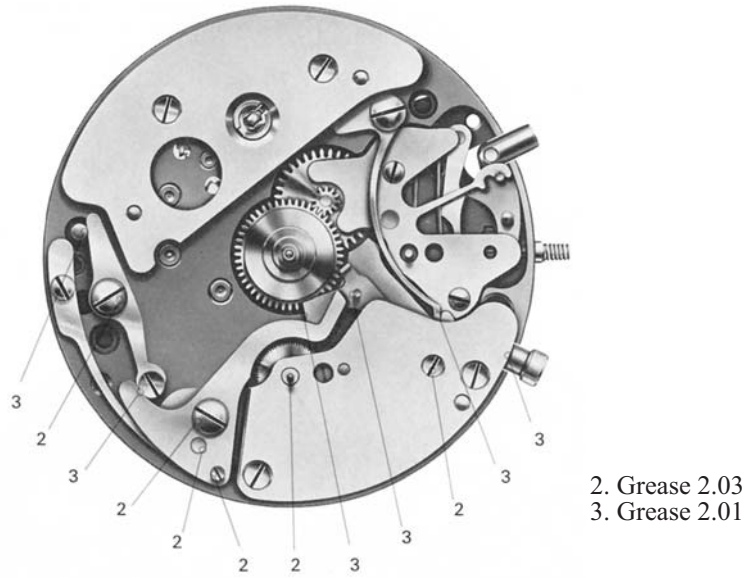
1. Oil 1.02
2. Grease 2.03
3. Grease 2.01

The following pivoting-points are not oiled :

Intermediate wheel for minute recording runner 1714, upper and lower
Minute recording runner 1708, upper and lower
Chronograph runner 1705, lower
Minute recording jumper 1766
Friction spring for chronograph runner 1735



Lubricating the hour recorder mechanism cal. 861



Lubricating the date mechanism cal. 930

