

# EBAUCHES S. A.

## NEUCHÂTEL

SWITZERLAND

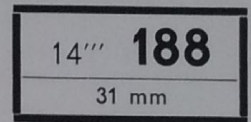
Edited and published by Ebauches S. A.

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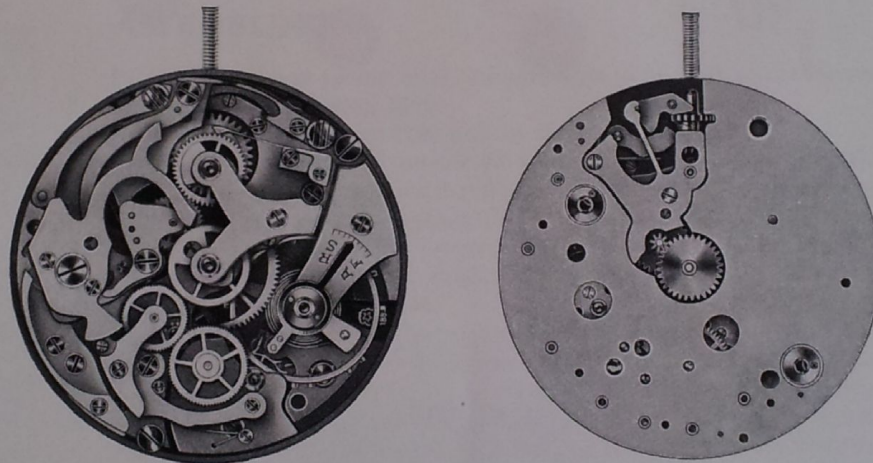
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FABRIQUE D'EBAUCHES  
**VENUS S. A., MOUTIER**



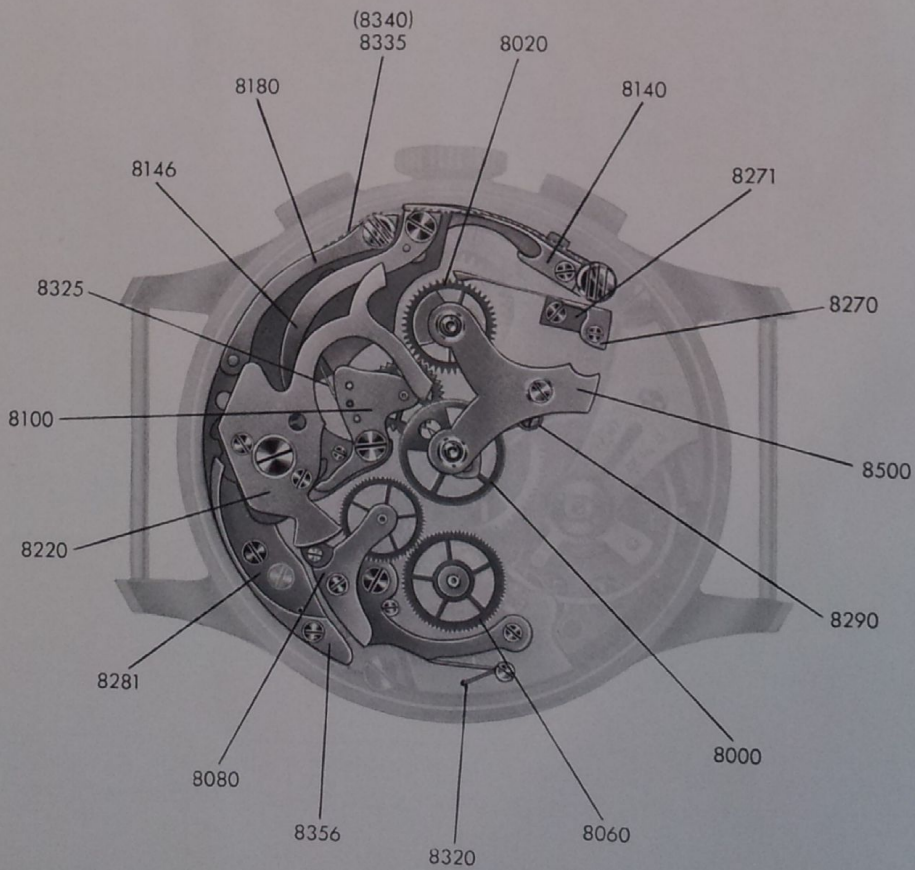
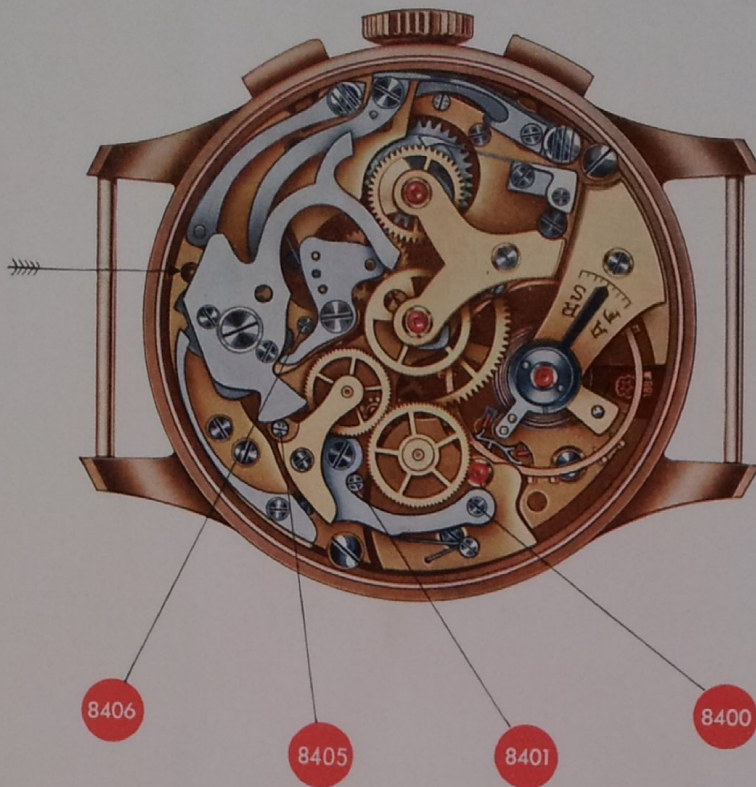
Recording chronograph with 2 pushers, without pillar wheel



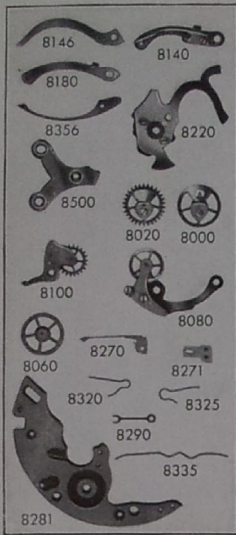
Enlarged movement

TECHNICAL AND PRACTICAL COMMUNICATION FOR THE GUIDANCE OF WATCH REPAIRERS

CAUTION: The 4 points marked in red below indicate eccentrics. These parts are not screws; therefore they should not be turned when disassembling.



**Note:** The eccentric 8405 was shown in the first edition of this Technical Communication under number 8411.



## DISASSEMBLING :

1. Release mainspring by pressing on click indicated by arrow.
2. Remove balance wheel and pallet fork.
3. Remove reverser 8146, then mounted operating lever 8140 and fly-back lever 8180 (the screws of both of these have left-hand threads).
4. Remove winding stem.
5. If the pushers are grooved, remove them before taking the movement out of the case; if the pushers are of the spring or lug type, remove the movement first and the pushers afterwards. Then, in either case, remove hands and dial.
6. Remove mounted hammer 8220 by unscrewing the large screw and cam jumper 8356.
7. Remove chronograph bridge 8500, minute-recording runner 8020 and chronograph runner 8000.
8. Remove mounted sliding gear 8100, mounted coupling clutch 8080 and, by means of a fork-shaped lever, driving wheel 8060.
9. Remove minute-recording jumper 8270, leaving its rest 8271 on the barrel bridge.
10. Remove coupling clutch spring 8320, sliding gear spring 8325 and friction spring 8290.
11. Remove plate 8281 of chronograph mechanism and operating lever spring 8335.
12. Disassemble the movement and clean all its parts in the ordinary way.

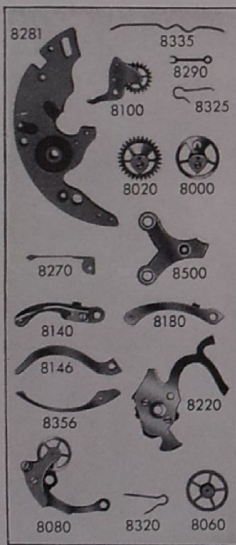
## CHECKING A :

Check condition of finger and teeth of chronograph runner, coupling wheel and driving wheel. Remove bridge of coupling wheel, clean the bushings of the latter and see that it runs freely. Do the same for the sliding gear wheel, if necessary. Also clean center wheel tube and see that the inner bushing is in position.

Reassemble the watch movement proper, oil all runners and wind mainspring one turn and a half to check the running.

It is advisable to remove the balance wheel and pallet fork before reassembling the chronograph mechanism.

## ASSEMBLING :



1. Fit operating lever spring 8335 and screw on plate 8281 of chronograph mechanism.
2. Screw on friction spring 8290.
3. Fit mounted sliding gear 8100 and its spring 8325.
4. Replace minute-recording runner 8020 and chronograph runner 8000, after oiling the long pivot of the latter (make sure that friction spring 8290 exerts normal pressure under runner 8000), then replace chronograph bridge 8500.
5. Screw on minute-recording jumper 8270; see that it is under slight tension.
6. Fit mounted operating lever 8140 and fly-back lever 8180 (screws with left-hand threads), then screw on reverser 8146.
7. Fit mounted hammer 8220, remembering to grease the tube, then screw on cam jumper 8356.
8. Check position of the end of reverser 8146 by looking through the hole in hammer 8220. Each time operating lever 8140 is pressed, the rotary motion of hammer 8220 is reversed.
9. Oil short pivot of chronograph runner 8000 and both pivots of coupling wheel; then fit mounted coupling clutch 8080, with its screw, and screw on coupling clutch spring 8320. (Never oil pivots of minute-recording runner or of sliding gear wheel.)
10. Fit driving wheel 8060, which should be flush with the coupling wheel.
11. Make sure that all runners are perfectly free-acting, then replace pallet fork and balance wheel.

## CHECKING B :

Check depth of gears (driving wheel - coupling wheel; coupling wheel - chronograph wheel) and penetration of finger into sliding gear toothing.

When operating the fly-back action through pressure of the hammer on the hearts, see that the chronograph runner is blocked; on the other hand, the minute-recording runner should have slight side-shake (the hammer is not pressing on the heart). Also make sure that the sliding gear wheel is away from the finger, that the hammer arms do not foul the wheels or the bridge, and that the uncoupling eccentric of the coupling clutch keeps the coupling wheel disconnected from the chronograph wheel. Slightly grease the hammer where it comes into contact with the fly-back lever pin, with the uncoupling eccentric of the coupling clutch and with the cam at its point of contact with the sliding gear and cam jumper.

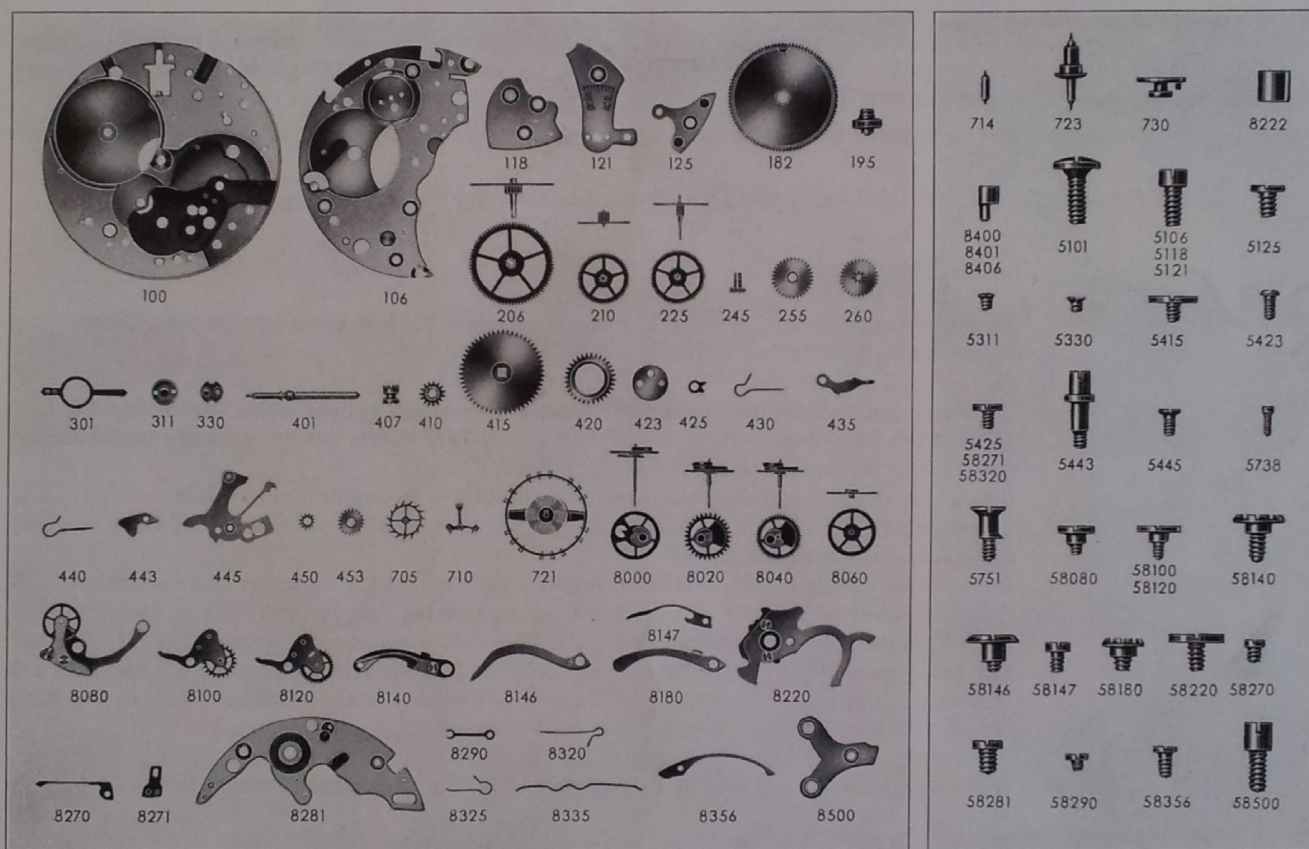
## CASING :

Spring or lug pushers should be placed in position before casing the movement, but grooved pushers should be placed in position after casing, the operating lever and, if necessary, the fly-back lever having been unscrewed. Then, in either case, replace the winding stem, fit the 2 case screws and check the working by means of the pushers. Fit the dial and the hour, minute and second hands, then, with the hammer pressed against the hearts by the zero-action pusher, fit the sweep second and minute-recording hands.

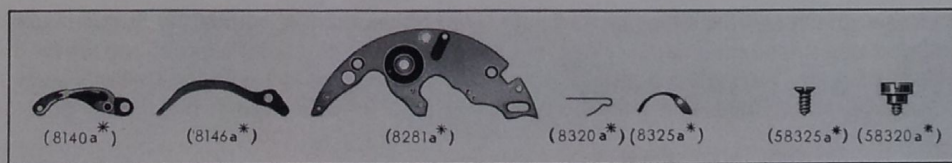
Description and numbering of spare parts according to the "Technological Dictionary of Watch Parts", 2nd edition.

100 Plate	415 Ratchet wheel	8080 Coupling clutch, mounted
106 Barrel and train wheel bridge	420 Crown wheel	8100 Sliding gear, mounted, 30 m.
118 Combined bridge	423 Crown wheel core	8120 Sliding gear, mounted, 45 m.
121 Balance cock for flat hairspring	425 Click	8140 Operating lever, mounted
125 Pallet cock	430 Click spring	8146 Reverser
182 Barrel and cover	435 Yoke	8147 Reverser spring
195 Barrel arbor	440 Yoke spring	8180 Fly-back lever
206 Center wheel and pinion	443 Setting lever	8220 Hammer, mounted
210 Third wheel and pinion	445 Setting lever spring	8222 Hammer tube
225 Fourth wheel and pinion	450 Setting wheel	8270 Minute-recording jumper
245 Cannon pinion	453 Additional setting wheel	8271 Minute-recording jumper rest
255 Hour wheel for sweep second	705 Escape wheel and pinion	8281 Plate for chronograph mechanism
260 Minute wheel	710 Jewelled pallet fork and staff	8290 Friction spring for chronograph runner
301 Regulator for flat hairspring	714 Pallet staff	8320 Coupling clutch spring
311 Upper cap jewel with end-piece, for balance	721 Balance with flat hairspring	8325 Sliding gear spring
330 Lower cap jewel with end-piece, for balance	723 Balance staff	8335 Operating lever spring
401 Winding stem	730 Roller	8356 Hammer cam jumper
407 Clutch wheel	8000 Chronograph runner, mounted	8400 Pivoting eccentric for coupling clutch
410 Winding pinion	8020 Minute-recording runner, mounted, 30 m.	8401 Banking eccentric for coupling clutch
	8040 Minute-recording runner, mounted, 45 m.	8406 Finger-depth eccentric
	8060 Driving wheel	8500 Chronograph bridge

5101 Case screw - 5106 Screw for barrel and train wheel bridge - 5118 Screw for combined bridge - 5121 Balance cock screw - 5125 Pallet cock screw - 5311 Upper end-piece screw - 5330 Lower end-piece screw - 5415 Ratchet wheel screw - 5423 Crown wheel core screw - 5425 Click screw - 5443 Setting lever screw - 5445 Screw for setting lever spring - 5738 Hairspring stud screw - 5751 Dial key - 58080 Coupling clutch screw - 58100 Screw for sliding gear, 30 m. - 58120 Screw for sliding gear, 45 m. - 58140 Operating lever screw - 58146 Reverser screw - 58147 Screw for reverser spring - 58180 Fly-back lever screw - 58220 Hammer screw - 58270 Minute-recording jumper screw - 58271 Screw for minute-recording jumper rest - 58281 Screw for plate of chronograph mechanism - 58290 Screw for friction spring - 58320 Screw for coupling clutch spring - 58356 Hammer cam jumper screw - 58500 Chronograph bridge screw.



As a result of technical improvements, certain parts of this caliber have been modified in the successive series manufactured. There are therefore several different types; to distinguish between them, letters have been added to the basic numbers of the parts in question. Special signs used in conjunction with the numbers give the necessary explanations. If the number is followed by \*, the types are not interchangeable. If the number is between brackets, the part in question is no longer manufactured.



When ordering parts for a shock-protecting device, make certain to specify its exact type. For further details of the description and numbering of spare parts, see the "Technological Dictionary of Watch Parts", 2nd edition, published by Ebauches S. A.

Order repair parts through your jobber, giving the numbers and designations, thus insuring prompt and efficient deliveries.