

# EBAUCHES S. A.

## NEUCHÂTEL

SWITZERLAND

Edited and published by Ebauches S. A.

(French, English, German, Italian, Spanish)

Copyright 1951 by Ebauches S. A.



**LE LANDERON**  
BRANCH OF FONTAINEMELON WATCH FACTORY  
LE LANDERON

$13\frac{3}{4}''$	<b>48</b>
31 mm	

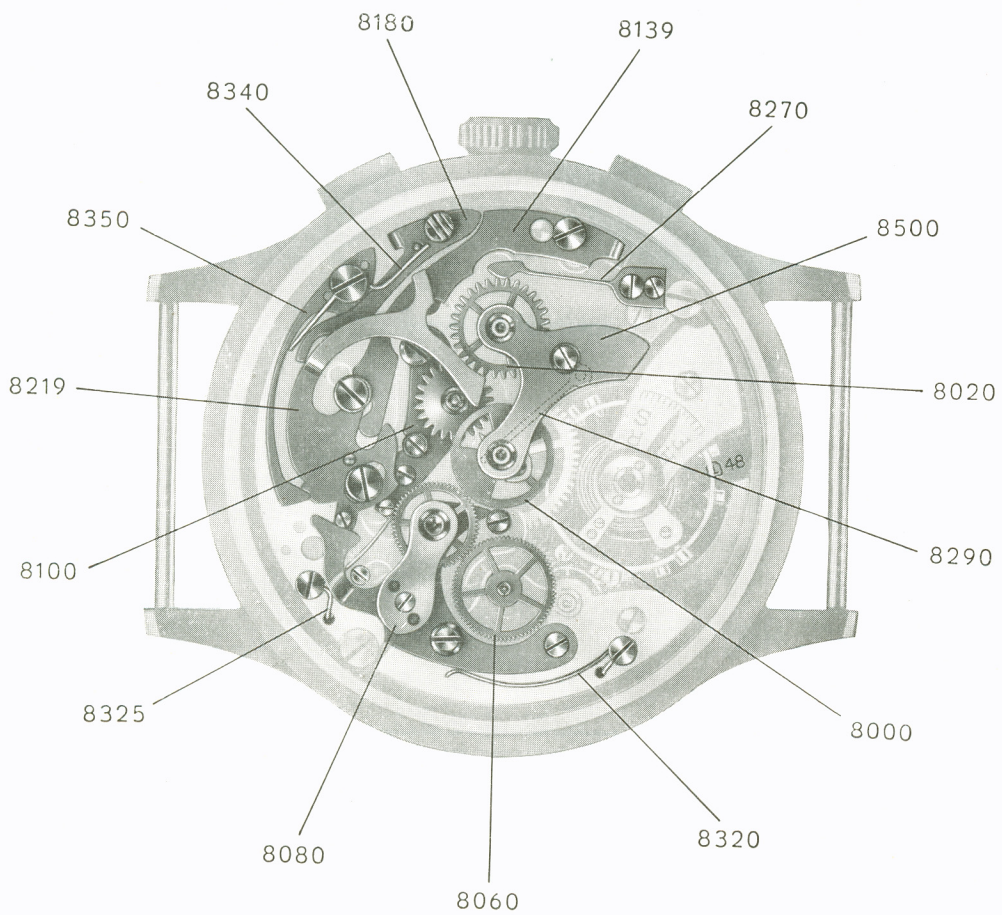
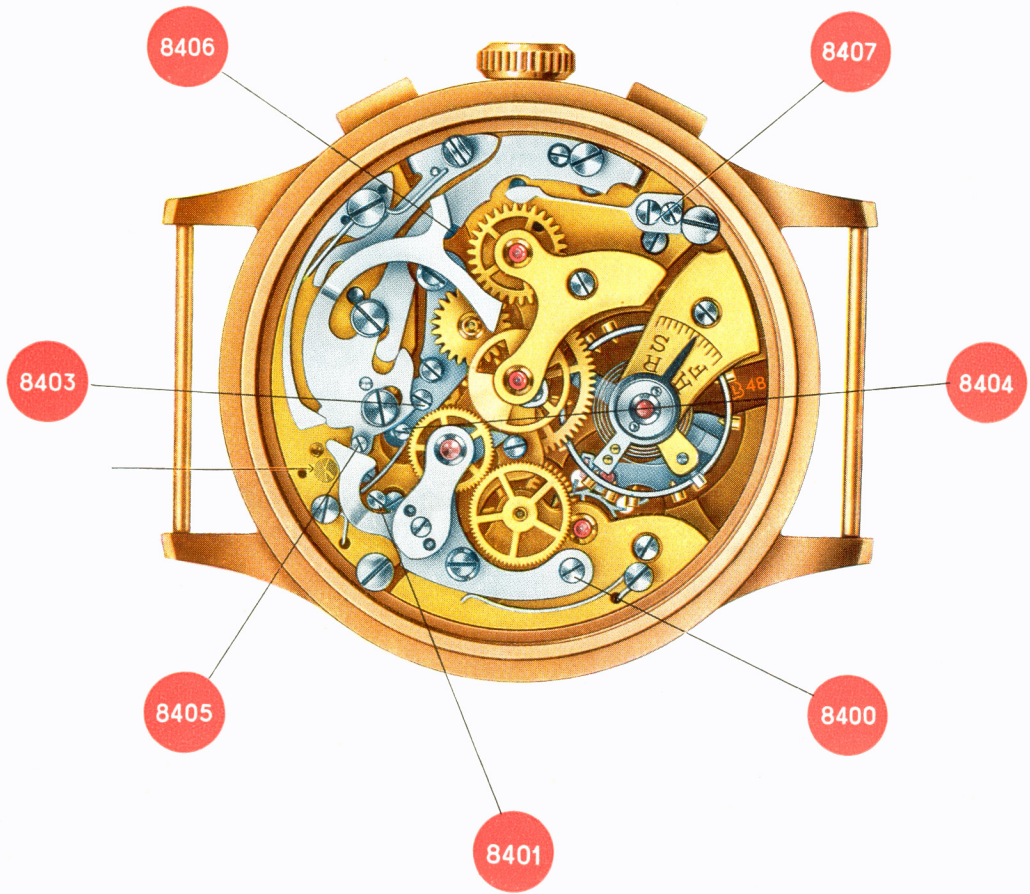
Recording chronograph with 2 pushers, without pillar wheel



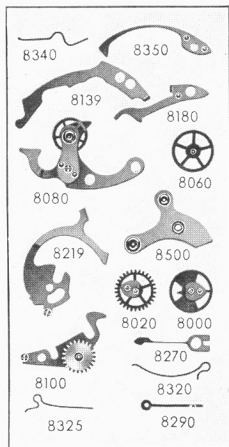
Enlarged movement

TECHNICAL AND PRACTICAL COMMUNICATION FOR THE GUIDANCE OF WATCH REPAIRERS

CAUTION : The 7 points marked in red below indicate eccentrics. These parts are not screws ; therefore they should not be turned when disassembling.



## DISASSEMBLING :



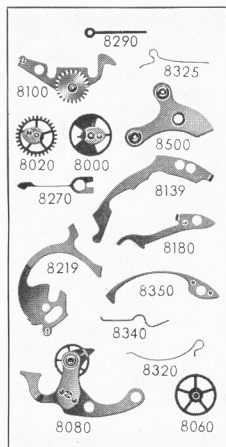
1. Release mainspring by pressing on click indicated by arrow.
2. Remove balance wheel and pallet fork.
3. Remove fly-back lever spring 8340, holding it to prevent it from flying off, and hammer spring 8350.
4. Remove operating lever 8139 and fly-back lever 8180 (the latter has a left-hand thread).
5. Remove winding stem.
6. 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.
7. Remove mounted coupling clutch 8080 and, by means of a fork-shaped lever, driving wheel 8060.
8. Remove hammer 8219.
9. Remove chronograph bridge 8500, minute-recording runner 8020 and chronograph runner 8000.
10. Remove mounted sliding gear 8100.
11. Remove minute-recording jumper 8270.
12. Remove coupling clutch spring 8320, sliding gear spring 8325 and friction spring 8290.
13. 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 both coupling and sliding gear wheels run freely. 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. Screw on friction spring 8290.
2. Fit mounted sliding gear 8100, with its 2 screws and its spring 8325 (the sliding gear should move freely).
3. 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.
4. Screw on minute-recording jumper 8270; see that it is under slight tension.
5. Fit operating lever 8139, which should move freely.
6. Fit hammer 8219, which should move freely under its 2 safety screws.
7. Fit fly-back lever 8180, which should move freely under its screw (left-hand thread).
8. Fit hammer spring 8350 and fly-back lever spring 8340, which are both held by the same screw.
9. Oil short pivot of chronograph runner 8000 and both pivots of coupling wheel; then fit mounted coupling clutch 8080, which should move freely under its 2 screws, 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 (sliding gear wheel — minute-recording wheel; driving wheel — coupling wheel; coupling wheel — chronograph wheel) and penetration of finger into sliding gear tothing.

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 (disconnection should occur when the stop pusher is pressed for the first time). Slightly grease the hammer where it comes into contact with the hearts, hammer spring, uncoupling eccentric of sliding gear, fly-back lever and uncoupling eccentric of coupling clutch.

## CASING :

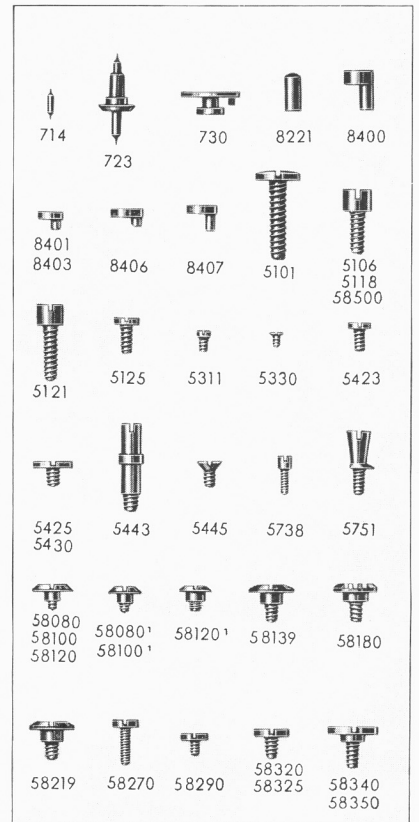
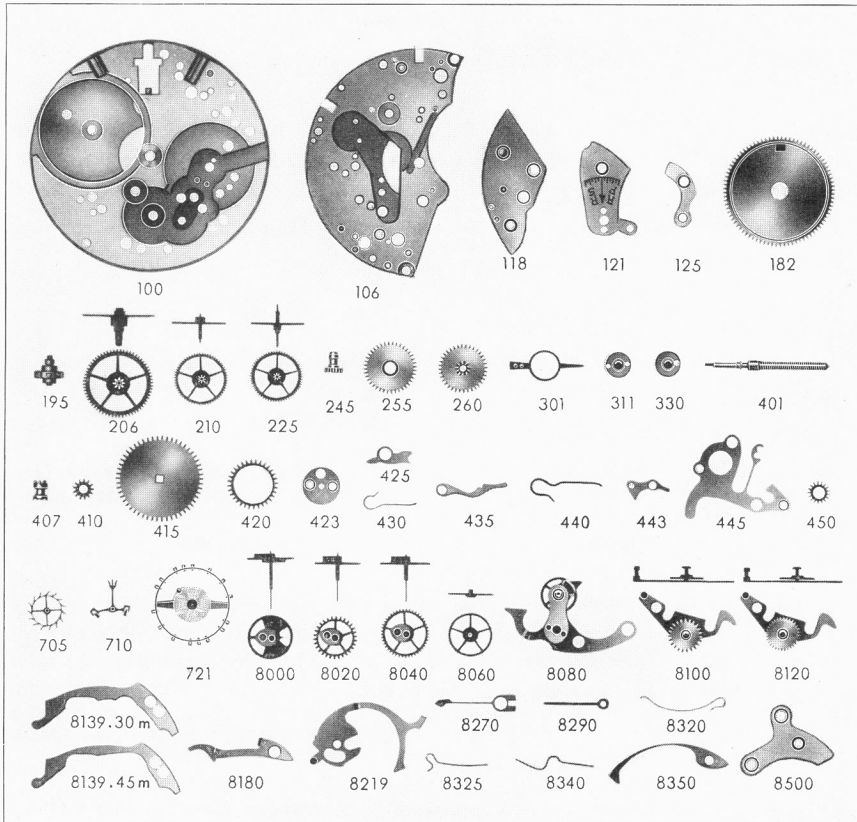
Spring or lug pushers should be placed in position before casing the movement, but grooved pushers should be placed in position after casing, the operating lever and, if necessary, the fly-back lever having been unscrewed. Then, in either case, replace the winding stem, fit the 2 case screws and check 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.

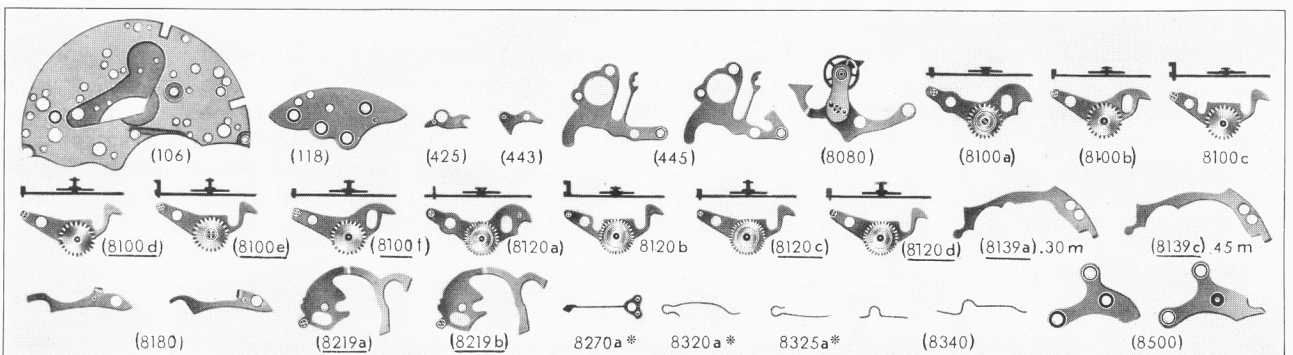
100 Plate	410 Winding pinion	8060 Driving wheel
106 Barrel and train wheel bridge	415 Ratchet wheel	8080 Coupling clutch, mounted
118 Combined bridge	420 Crown wheel	8100 Sliding gear, mounted, 30 m
121 Balance cock for flat hairspring	423 Crown wheel core	8120 Sliding gear, mounted, 45 m.
125 Pallet cock	425 Click	8139 Operating lever
182 Barrel and cover	430 Click spring	8180 Fly-back lever
195 Barrel arbor	435 Yoke	8219 Hammer
206 Center wheel and pinion	440 Yoke spring	8221 Hammer stud
210 Third wheel and pinion	443 Setting lever	8270 Minute-recording jumper
225 Fourth wheel and pinion	445 Setting lever spring	8290 Friction spring for chronograph runner
245 Cannon pinion	450 Setting wheel	8320 Coupling clutch spring
255 Hour wheel	705 Escape wheel and pinion	8325 Sliding gear spring
260 Minute wheel	710 Jewelled pallet fork and staff	8340 Fly-back lever spring
301 Regulator for flat hairspring	714 Pallet staff	8350 Hammer spring
311 Upper cap jewel with end-piece, for balance	721 Balance with flat hairspring	8400 Pivoting eccentric for coupling clutch
330 Lower cap jewel with end-piece, for balance	723 Balance staff	8401 Banking eccentric for coupling clutch
401 Winding stem	730 Roller	8403 Pivoting eccentric for sliding gear
407 Clutch wheel	8000 Chronograph runner, mounted	8406 Finger-depth eccentric
	8020 Minute-recording runner, mounted, 30 m.	8407 Eccentric for minute-recording jumper
	8040 Minute-recording runner, mounted, 45 m.	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 - 5423 Crown wheel core screw - 5425 Click screw - 5430 Screw for click spring - 5443 Setting lever screw - 5445 Screw for setting lever spring - 5738 Hairspring stud screw - 5751 Dial key - 58080 Coupling clutch screw - 58080<sup>1</sup> Safety screw for coupling clutch - 58100 Sliding gear screw - 58100<sup>1</sup> Safety screw for sliding gear - 58120 Sliding gear screw - 58120<sup>1</sup> Safety screw for sliding gear - 58139 Operating lever screw - 58180 Fly-back lever screw - 58219 Hammer screw - 58270 Minute-recording jumper screw - 58290 Screw for friction spring - 58320 Screw for coupling clutch spring - 58325 Screw for sliding gear spring - 58340 Screw for fly-back lever spring - 58350 Screw for hammer spring - 58500 Chronograph bridge screw.

**Note:** In the first edition of this leaflet, operating lever 8139 (30 m.) was shown as No. 8139b.



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 those that are not interchangeable, 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 there is no \*, the types are completely interchangeable; if the number is followed by \*, they are not interchangeable. If the number is underlined, the types are partly interchangeable; if it is between brackets, the part in question is no longer manufactured.



Hammer 8219 may be used with all types of sliding gears 8100 and 8120; on the other hand, sliding gears with high pipes fitted to their wheels (numbers underlined) cannot be used with hammers (8219a) or (8219b). Operating lever (8139a) has been replaced by operating lever 8139-30 m., and operating lever (8139c) has been replaced by operating lever 8139-45 m.

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.