

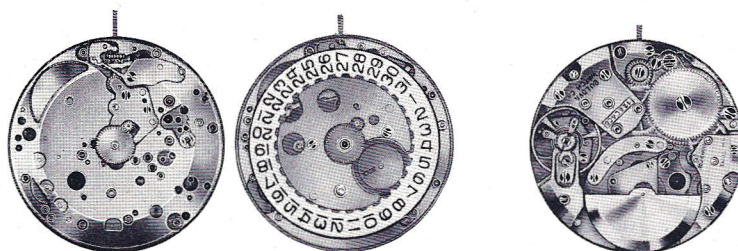
BULOVA WATCH COMPANY, Inc.

TECHNICAL BULLETIN



DIAL SIDE

TRAIN SIDE



Scale 1:1

BULOVA MODELS

12 EBA - 12 EBAC
 12 EBAD - 12 EBACD
 12 ECAD - 12 ECACD

Selfwinding
 and
 Selfwinding Date
 Watches

Specifications

Movement:

12 $\frac{1}{2}$ " lever escapement.
 Diameter of plate: 28.10 mm.
 Unbreakable mainspring.
 Beryllium balance.
 Self-compensating hairspring.
 19 800 beats per hour.
 Incabloc.
 Angle of lift: 48°.

Self-winding mechanism

Oscillating weight set in the movement. No additional height taken up by the self-winding mechanism. Oscillating weight made of heavy antimagnetic alloy. Mechanical inverter on roller bearings: no wear. Automatic engaging and disengaging of manual and automatic winding. Thus only the operating gear turns, performance is improved and there is no wear. Sliding pinion set between large jewels.

Designation of Types

Caliber	Characteristics	Total height of movement
12 EBA	Self-winding (without sweep second)	2.85 mm
12 EBAD	Self-winding, Calendar (without sweep second)	3.30 mm
12 ECAD	Self-winding, Calendar (without sweep second), for flat dial	3.30 mm
12 EBAC	Self-winding, with sweep second	3.15 mm
12 EBACD	Self-winding, Calendar, Sweep second	3.60 mm
12 ECACD	Self-winding, Calendar, Sweep second, for flat dial	3.60 mm

Dismantling the watch

1

Removing the dial

After removing the screws at the side, the dial can be lifted easily. We recommend removing all hands in order to engage the cannon pinion (11 B) correctly, when re-assembling. A dial washer must be inserted between the hour wheel (7) and the dial, otherwise the hands will have too much play.

Checking the automatic gear

By moving the oscillating weight in both directions, make sure that the energy is being transmitted from the oscillating weight (344) to the ratchet wheel (13). Should there be any irregularity, first examine the coupling wheel (313) and then the operation of the wig-wag pinion (312).

Releasing the mainspring

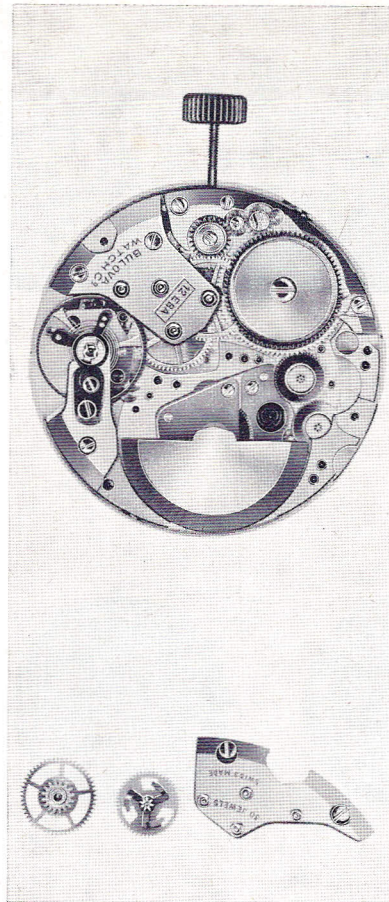
Remove the upper bridge of automatic device (341) and both wheels (309) and (313) as in fig. 1. By unscrewing the click (32) and the rear screws of the winding crown, you will be able to release the mainspring.

Cleaning and lubricating escape and balance

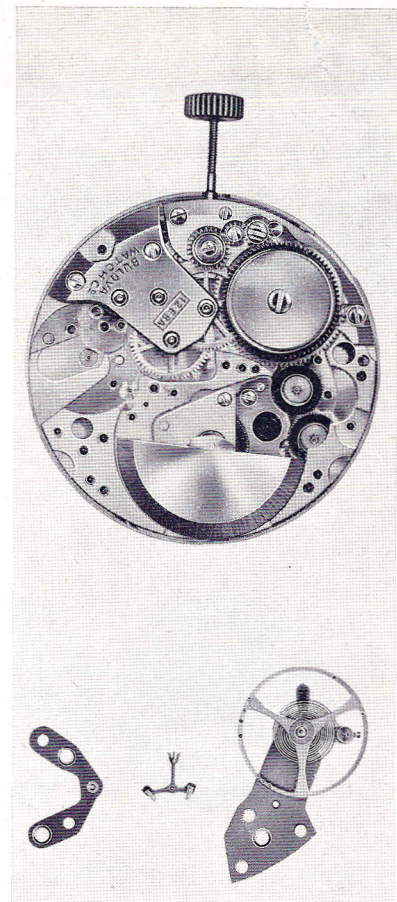
As shown in fig. 2, the balance and pallet can be easily dismantled without having to disturb other parts of the watch. The screws (39) of the pallet bridge (216) and the minute work bridge (44 A) are identical and coloured blue so that when dismantling the movement entirely, the correct screws for replacement can be easily identified.

The barrel

Fig. 3 shows how easily the barrel is dismantled. The mainspring must develop at least seven coils before the brake spring slides off. It should be remembered that we use an unbreakable spring, and that the mainspring and brake spring are linked tightly together. Factory lubrication is made in such a way that periodical cleaning of the barrel and mainspring is unnecessary. Bulova recommends not to dismantle the barrel and in case of difficulty, replace the barrel complete (No. 1S).



2



Removing the oscillating weight

By taking out the two screws (302) as in fig. 4 the bridge (301) of the oscillating weight (344) can be separated from the plate. These components (301 and 344) remain together since the oscillating weight is linked to the axle by a tight fit. The complete assembly may be put into the machine for cleaning and, after careful drying, the upper bearing of the oscillating weight should be oiled afresh.

If, for some reason it is necessary to separate the oscillating weight from the axle and bridge, an auxiliary tool must be made as in fig. 5. With a 0.45 mm diameter punch, pressure is exerted on the axle and the tight fit loosened. Re-assembling may be carried out on a staking tool, but the oscillating weight must be replaced exactly at right angles to the axle.

Dial side of the movement

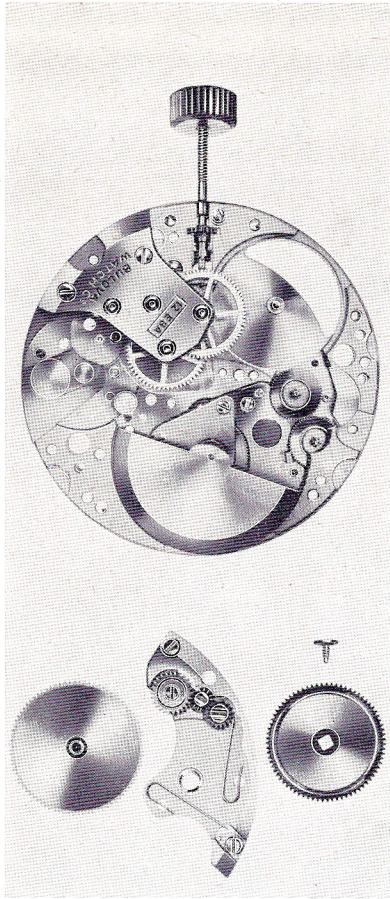
In this watch, the large driving wheel with cannon pinion (4 F) is placed off-center. The cannon pinion is clamped

onto the large driving wheel and holds the dial train, while the cannon pinion (11 B) in the centre of the watch has a smooth bore and turns freely on the center pipe (106). A patented minute-wheel (8) fitted with a spring, ensures that there is no play in the movement of the hands, see fig. 6.

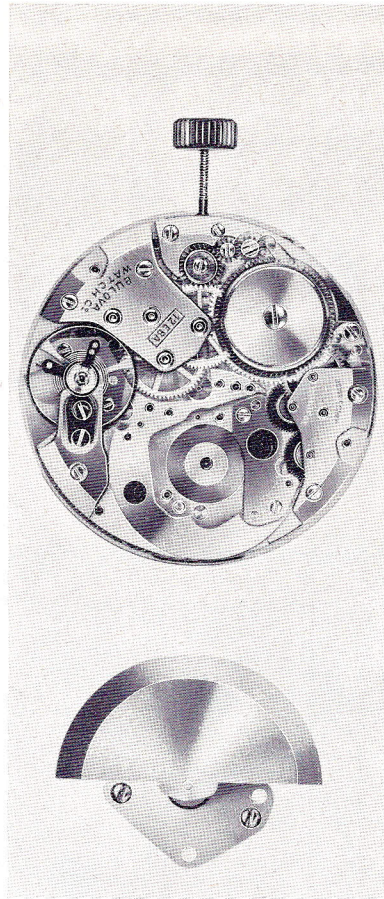
Re-assembling and oiling the watch

It will be best to commence on the dial side with wheels 8, 29 and 30 A, lubricating the pivots (Cuypers BOZ). The minute work bridge (9) is then replaced. The cannon pinion on the large driving wheel (4 F) must also be lubricated. On the bridge side the train, the barrel bridge, the self-winding device, as well as the escapement and the balance are now replaced. Train, balance and self-winding device are then oiled (Synt-a-Lube). In doing so, see that the wig-wag pinion (312) and the nose of the stop-click (303) are not overlooked. The pivots of the stop-click (303) and the pallet (57) require no oil. Lubricate the pallet stones (Moebius 941).

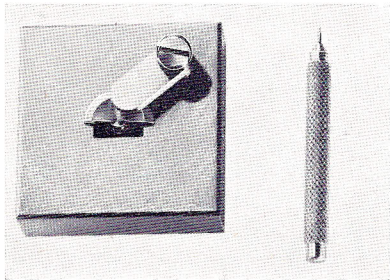
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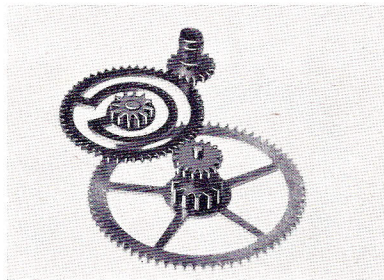
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5



6



Oil the barrel arbor (2) in the barrel, the plate and the barrel bridge (special Moebius lubricant). The components of the manual winding device must also be oiled. The sliding face of the spring on the coupling wheel (313) must be lubricated (Glissalube red).

Note: the name of oils and lubricants given above are merely suggestions. Other brands of similar quality may also be used.

Checking the winding performance

Wind up the mainspring six turns. Hold the watch as shown in fig. 7 and

turn it around the axis of the hands in a vertical plane. The oscillating weight will now wind up the mainspring, and it should drop under its own weight. Malfunction may be caused by excessive tension of the stop-click (303) or by other friction.

The calendar mechanism

Its function

The components of the calendar mechanism are secured to the bridge

by stop-plate. With the dial removed, the operating may be observed without difficulty. The date-indicator driving wheel (574) fig. 9 is made up of several parts riveted together. They must not be separated or lubricated. The date finger fitted on this wheel revolves six times a day. Moving eccentrically, this finger engages the cog on the date-indicator only once each day. Thanks, however, to this accelerated rotating speed, it has been possible to reduce the date changing time to some ten minutes. Moreover, the finger is fitted to the date wheel in such a way that the date correction operates in one direction only. In reverse the finger passes the cog without engagement. This arrangement allows the date to be set manually

by simply moving the hands to and fro between 11.20 p. m. and midnight.

Setting the date

When it is necessary to change the date manually, simply turn the hands forward until the date changes, at about 12 o'clock (midnight). If further correction is necessary, turn the hands backward to about 11.20 p. m. and then forward until the date again changes. Repeat this procedure until the desired date is reached. If time of day is before noon, continue to turn hands forward until correct time is reached. If time of day is after noon, turn hands forward 12 additional hours before stopping at correct time.

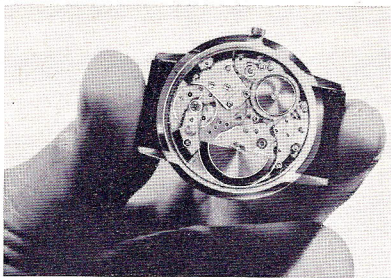
Disassembly

1. Remove all hands, including hour hand, since in some models the hour wheel is locked to the movement.
2. Remove dial and dial washer.
3. Remove the two screws holding the date indicator guard. Lift off guard, being careful not to let the date jumper spring snap out of the recess and get lost.
4. Remove date jumper spring, date indicator, date jumper, hour wheel locking plate (not used in all models), double hour wheel, date indicator drive wheel assembly, and small date setting wheel.
5. Remove large date setting wheel screw and wheel.

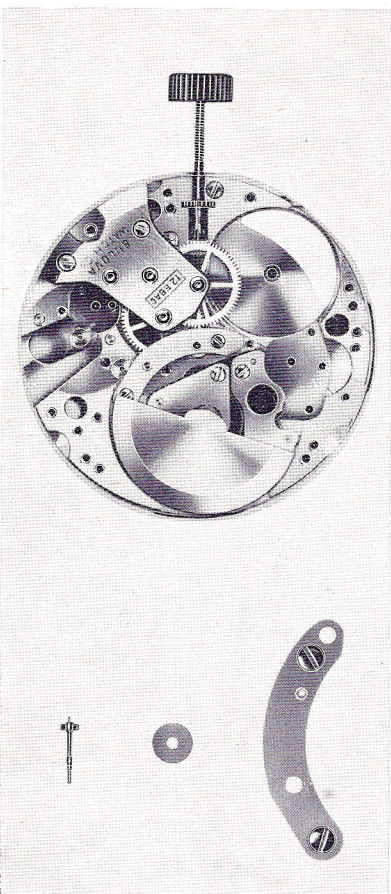
Assembly

Mount the intermediate date setting wheel and the setting wheel for date indicator driving wheel (581 and 604). The latter is secured by the screw (601). Next, mount the date indicator driving wheel (574). This must be done so that the eccentric bore in the large brass wheel corresponds to the slot in the upper brass plate, see fig. 10. When mounting the wheel, it should be positioned so that the bore and slot mentioned above are opposite the bore provided in the plate. To do this, you can use the method shown in fig. 11. When setting the double-toothed hour wheel (599) be careful not to alter the direction of the date indicator driving wheel. Finally, insert the date-indicator (576-1) the date jumper (596) and its spring (578) as well as the hour wheel guard. Then fasten the date indicator guard (571) by means of the two screws (577).

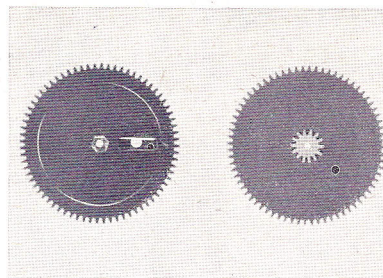
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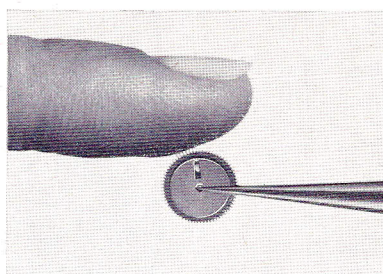
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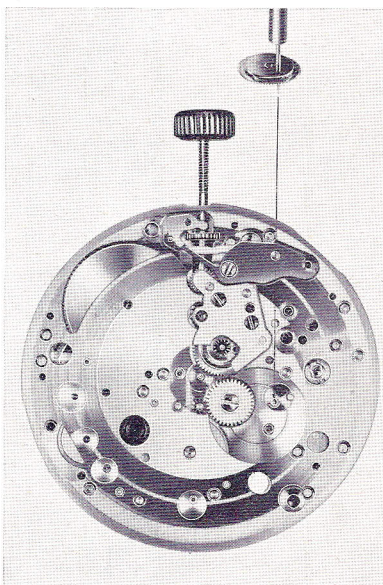
9



10



11



Final check

Make sure that the bores in the bridge and the date-indicator driving wheel are superimposed. Check also the forward and reserve movement of this wheel. It must engage the date indicator (576-1) to move the numbers progressively. See that the date jumper (596) and its spring (578) move freely.

Replacing the hands

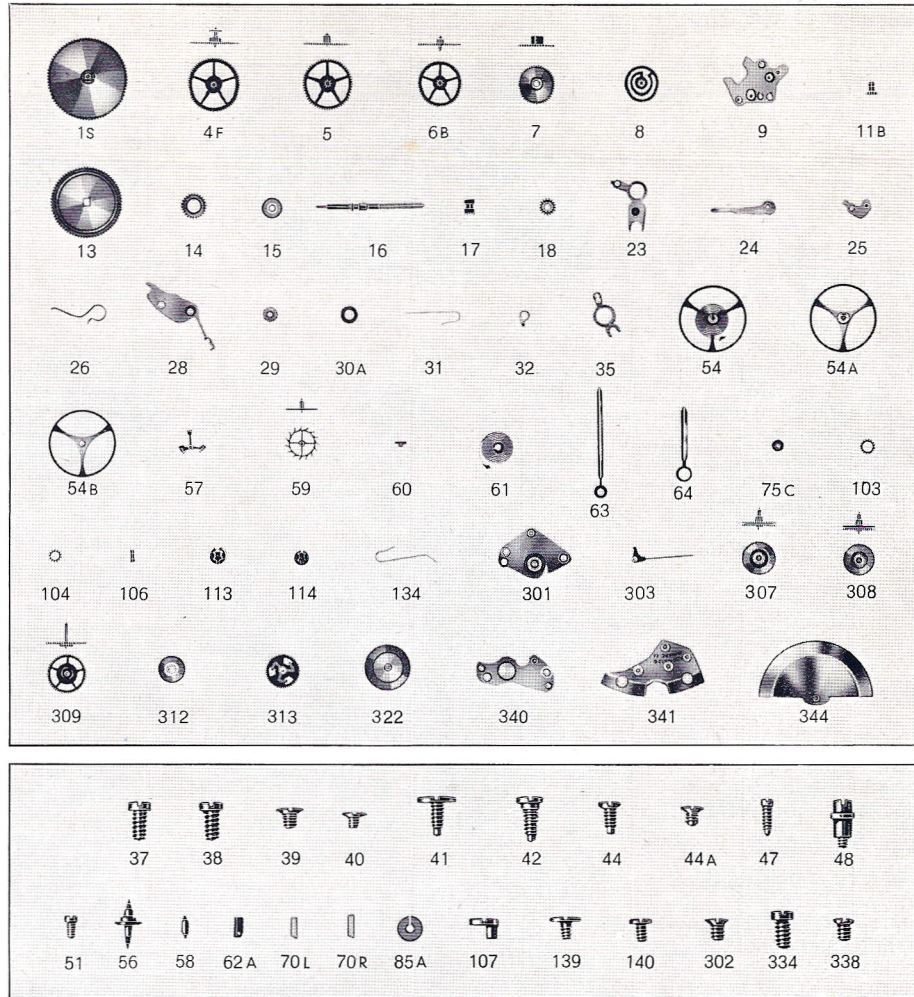
Having replaced the dial, turn the winding stem until the date "jumps". Then set the hands to midnight.

Sweep second

Assembly of the sweep second mechanism

Fig. 8 shows the four additional parts for this feature. Make sure that the tension of the friction spring for sweep second pinion (93) is exactly right. The sweep second pinion must be lubricated in the center pipe (106) and in the sweep second bridge (218) with Synt-a-Lube.

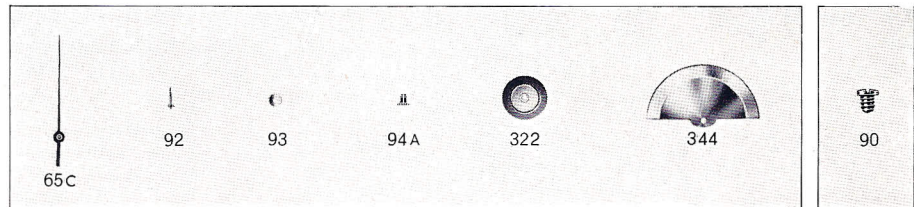
12 EBA



Scale 3:1

12 EBAC

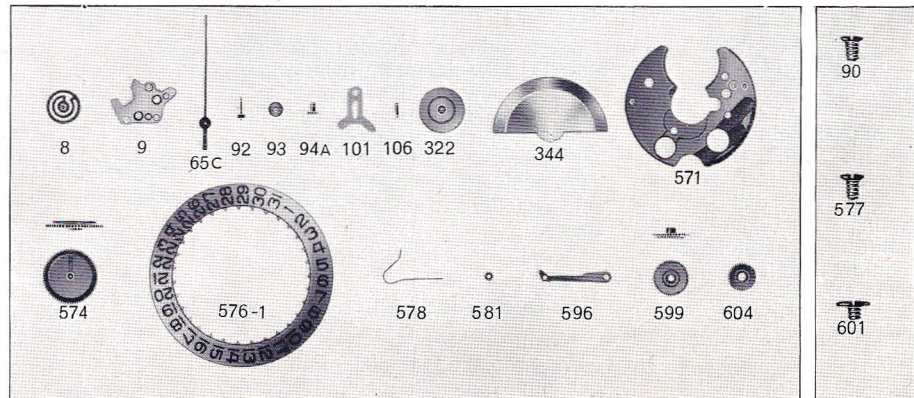
Additional parts or parts varying from cal. 12 EBA



Scale 1:1 Scale 3:1

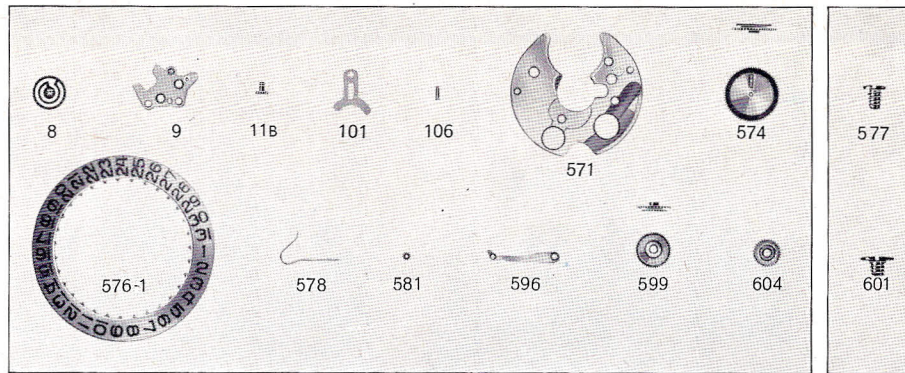
12 EBACD

Additional parts or parts varying from cal. 12 EBA



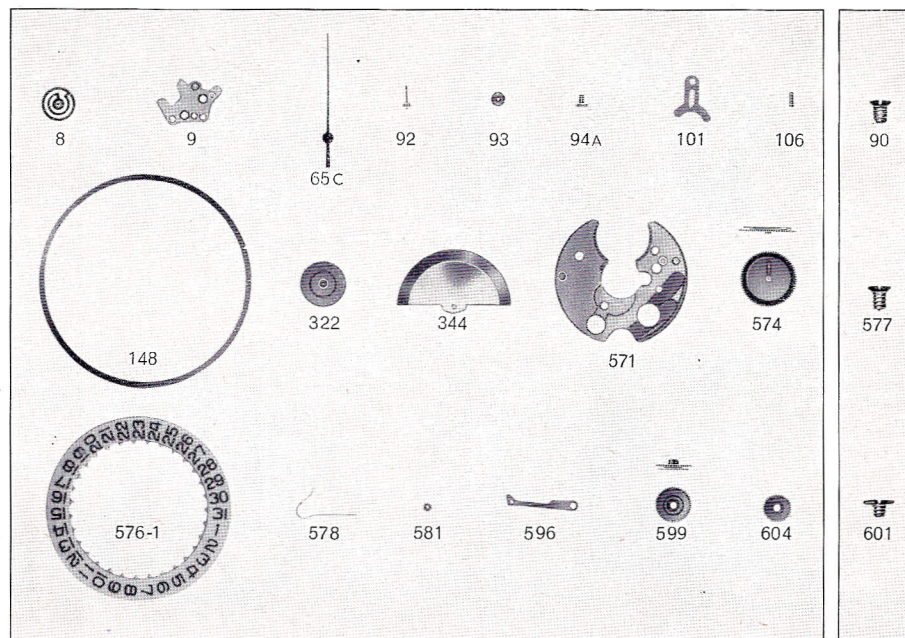
Scale 1:1 Scale 3:1

12 EBAD Additional parts or parts varying from cal. 12 EBA



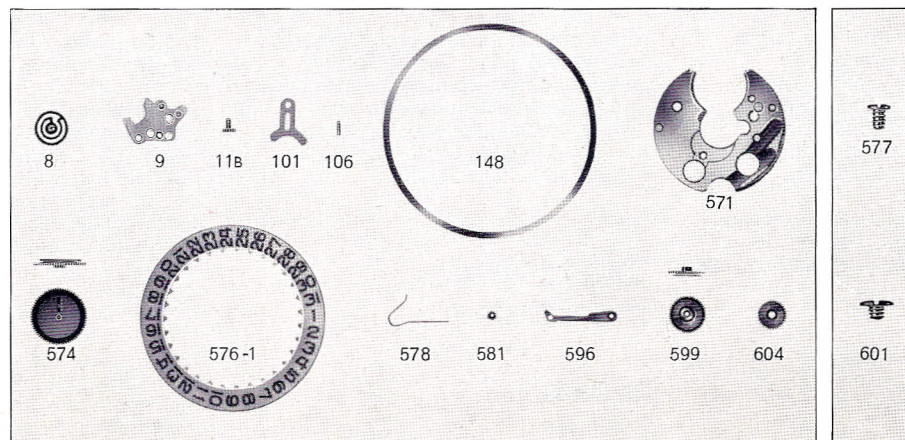
Scale 1:1 Scale 3:1

12 ECACD Additional parts or parts varying from cal. 12 EBA



Scale 1:1 Scale 3:1

12 ECAD Additional parts or parts varying from cal. 12 EBA



Scale 1:1 Scale 3:1