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The Hermle Floating Balance – Adjusting the Beat & Increasing or Decreasing the Speed

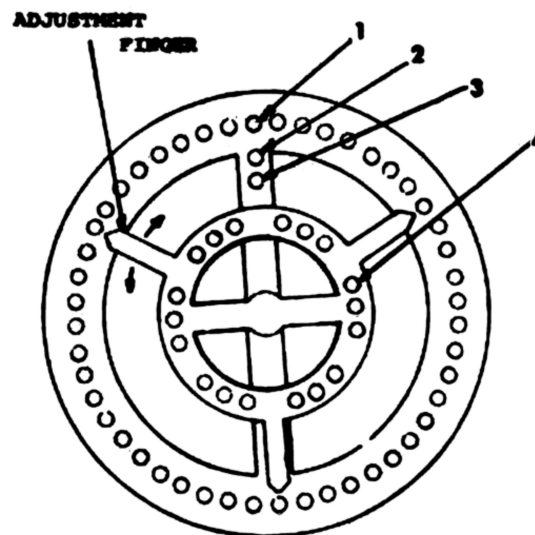
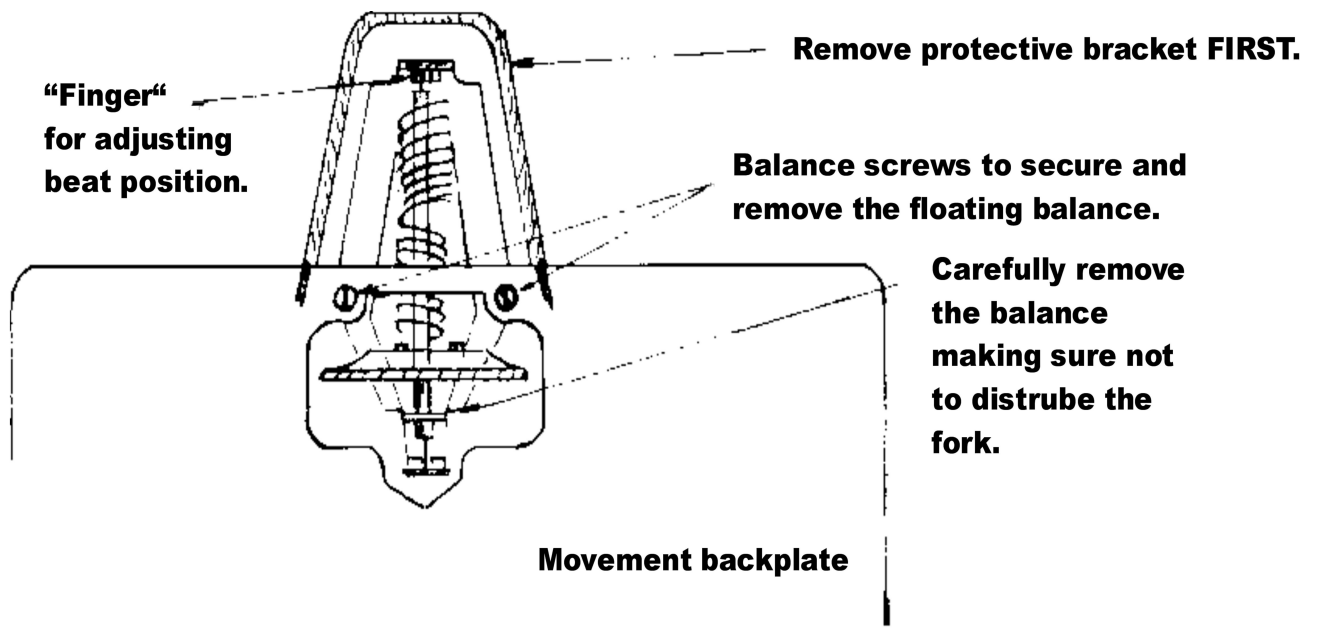


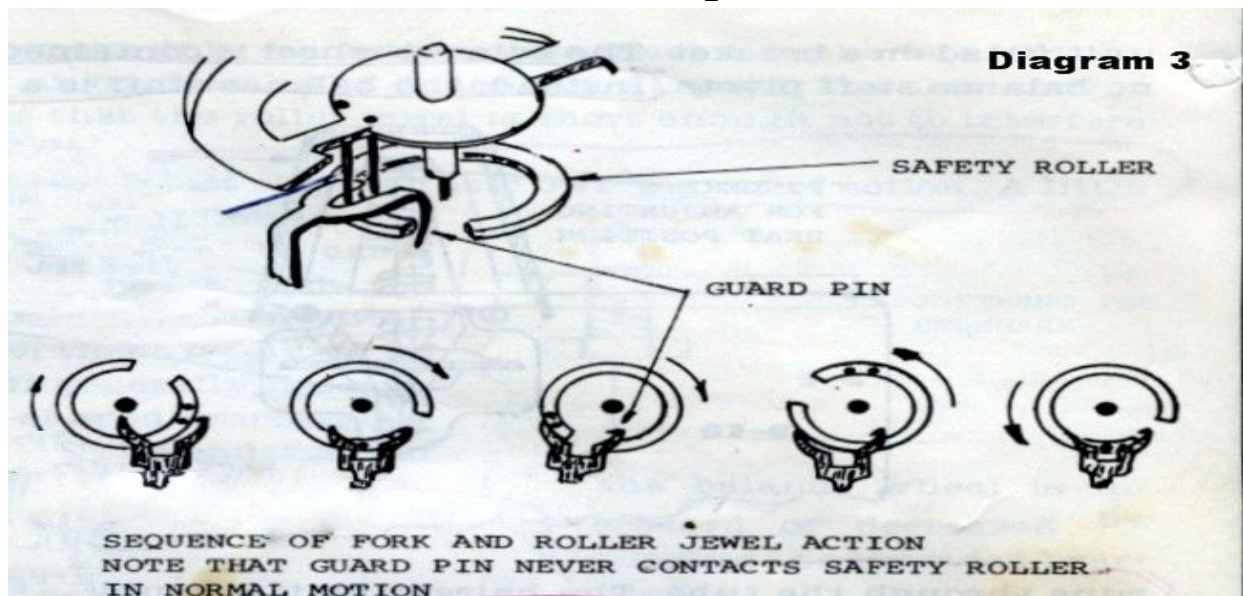
Diagram 2

WHEN REGULATOR FINGERS ARE AT MAXIMUM FAST
AND CLOCK CONTINUES TO RUN TOO SLOW.....

carefully punch out opposite pairs of
points as follows:

1. PAIR OF POINTS ON THE RIM
WILL: CLOCK TO RUN 3 1/2 to
4 MINUTES FAST IN 24 HOURS.
2. PAIR AT THIS POSITION
+ 2 MINUTES PER DAY
3. PAIR AT THIS POSITION
+ 80 SECONDS PER DAY
4. PAIR AT THIS POSITION
+ 30 SECONDS PER DAY

The removal of weights is a last resort and the floating balance must be clean and the position of the fork is critical. Best to take it to a professional before making a critical mistake. These are no longer made.



The balance wheel is contained within the bracket. This bracket is sometimes referred to as the floating balance unit. There are no balance staff pivots. Instead, the balance staff is a hollow tube. A taut steel wire runs through the tube. The hairspring is a double helical or cylindrical spring. One end is attached to a stud at the top of the bracket. The other end is colleted and attached normally at a point above the balance staff. The length of the spring is adjusted to make the balance wheel float suspended above the bottom of the bracket. This suspension of the wheel eliminates a great deal of friction as well as providing for shock-proofing. To run properly, the balance wheel must be kept close to a horizontal position.

This self-contained balance unit needs no lubricating. It can be cleaned by rinsing in a good quality solvent (99% isopropyl alcohol or one dip hairspring cleaner) and blown dry. The thin wire is fragile, always handle the unit with care.

Adjustments

Normally all adjustments are made at the factory. Do not make any alterations unless malfunctioning clearly indicates a specific problem.

1. Banking pins are formed from the bottom of the steel bracket. These are to be open only enough to allow proper drop at entrance and exit pins.
2. These pins should "rest" about $\frac{3}{4}$ of the way down the locking surface of the escape wheel. For practicality sake anywhere from $\frac{1}{2}$ the way down to almost the bottom of the locking surface will suffice.

3. The roller jewel consists of two polished pins. These must not rub the side of the fork excessively. Nor can they have too much shake in the fork slot.
4. The head of the fork has been tipped at right angles to the fork stem. The right side or horn of the fork is elongated to form a guard pin. This pin works in conjunction with the "C" shaped safety roller. Interaction of the vertical guard pin and the C roller prevents the escapement from rebanking. When the balance wheel is in a counterclockwise swing, the pin rides just clear of the outside of the C safety roller. A clockwise swing brings the guard pin inside the C where it rides just clear again. If sluggish balance wheel action is present, check to see that the guard pin is not dragging inside or outside the C roller. During this check, the fork is against the banking pin. Diagram (3).
5. Regulating for fast and slow consists of sliding the two-small weights attached to the center of the balance wheel. Inwards for fast and outwards for slow. Hold the wheel and push the small adjustment "finger" (any one of the three will work, see Diagram 2). Moving the finger toward your right will be faster and visa versa. Moving the finger one dot represents a change of 10 seconds per day. Occasionally a balance unit will continue to run slow at maximum fast adjustment. Diagram (2) shows to adjust the balance to run faster if you have maxed out the adjustment finger. Small dots on the wheel are easily punched out and be sure to properly secure the balance on a hole stake or "holed" anvil for support before you remove any of these dots.

Punch out dots only in pairs, one on each side of the balance wheel, exactly opposite each other. Dots (weights) are always removed equally from each side of the balance wheel.

To slow, do the exact opposite by added equal weight to opposite ends of the balance wheel. Slowness usually indicates that the balance is not turning as freely as it should and you should have at least 180 degrees of motion in each direction.

It is critical that all other adjustments and set-ups must be correct before you start removing or adding weight to adjust the speed and this includes making sure that the movement has been properly serviced.
6. The cylindrical hairspring used in this escapement serves a practical purpose. Note that the spring reverses spiral direction at its halfway point.

A single spiral spring would cause the balance wheel to move up and down as the spring coiled and uncoiled. The opposing spirals keep the wheel moving in the same plane.

As with the flat hairspring, the balance is put into beat by turning the hairspring collet, in this case the finger. Diagram (1) shows the small finger attached to the upper collet at the top of the bracket. This finger is moved clockwise or counterclockwise as required to bring the roller jewel into alignment with the pallet arbor.

Repairing a broken balance wheel wire is fairly simple. Do not distort or otherwise damage the hairspring when handling. Select a wire about .25mm in diameter. Crimp it in the wire slot at the bottom of the bracket. Thread it through the balance tube, pull taut and crimp at the bracket top. Adjust the tension by gently bending up the top of the bracket overhang. Check to see that the whole unit truly floats on the spring. Neither the top nor the bottom of the balance tube should touch the bracket.

You should have 180 degrees rotation each direction.

One of the "tricks" I perform is to place a beat amplifier near the balance and then spin it very wide and fast.

This way you will hear if anything is rubbing. Usually the fork's position has been incorrectly adjusted after it leaves the factory by an end user. By spinning the balance wide you should only hear the ticking of the pallet pins as they contact the escape wheel. Any other noise will indicate that something is amiss and that most always is the fork position.

As stated earlier, make sure that the balance tube is truly "floating" and not rubbing on the bottom of the bracket. The length of the spring is adjusted to make the balance wheel float suspended above the bottom of the bracket.

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