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Escapements

I realize there are more but I'm going to take into account the recoil, the 1/2 deadbeat and the deadbeat escapements. My guess is these are 99% of what you will see. If you don't understand how to adjust for locks and drops, then please don't start learning until you have illustrations and explanations for escapements in general. There are many books and I'll not give a specific recommendation. This is a file that assumes you know these basics and I can all but guarantee if you don't, you will mess things up and perhaps make the clock unrepairable by anyone.

I suggest you start with the 400-day clock AKA the anniversary clock. There are 4 reasons. These are simple time only clocks with deadbeat escapements, they are plentiful and inexpensive, we have a nearly perfect reference guide called the "Horolovar 400-Day Clock Repair Guide" by Charles Terwilliger for most of your questions and illustrations and lastly we have a dedicated clock supply house that sells just about everything when it comes to the 400-day, including this book and about every part you'll need. They are The Horolovar Company at: http://www.thehorolovarcompany.com/

Lastly, I have a free on-line article on how to overhaul/repair the 400-day at: http://www.atmosman.com/pdf/400-day.pdf

I really can't stress this enough and that is any adjustment of or to the escapement other than placing it in-beat, should be avoided and at the very least, it should be the last thing you do after good clock repairing techniques fails to produce a running clock. The exception is the placement of the verge (anchor) bridge and most often it is in the rear and the suspension spring most always attaches to this bridge and this bridge usually screws into place with 2 screws and has lots of leeway. Some of these techniques are polished pivots, polished pivot shoulders, close fitting bearings and what was drilled into me was "tight yet free". Friction has to be minimized, yet the arbor (wheel) has to turn easily and freely. I mention this because most beginners and a few professionals have a tendency to use bushings without making sure the wheel turns easily. There are many others but I believe these are the big 3. And my goal is not to teach the basics. Plenty of books for that as well.

When I taught clock repair in adult ed. I used "Clock Repair Basics" by Steven G. Conover (1996, Spiral) and it is cheap and excellent. If your a beginner or even an intermediate, it is a must have.

There are basics that everyone should understand about the escapement but so many authors seem to concentrate on degrees of angles for this and that and that is off putting. Once I gave up trying to understand the geometry and concentrated on the actual application and interaction, it all became much clearer and fast. Both locks and drops became clearer and how to adjust them for the changes you are after.

I got most of my knowledge from the Henry Fried's section in the Horolovar 400-day repair guide. Once I threw out all the math and used the chart he provided, it clicked for me. I went back into other literature I'd seen or perused and they clicked as well. Think of escapement adjustments as variations of the same theme.

All escapements adjust the same, except with the 1/2 and full deadbeat, one side's adjustment affects the other side as well. So I started with the recoil and kept in mind that with the other 2, one "side's" adjustments affect the other "side" as well. If you adjust the recoil's drop, either inside or outside, it will not affect the other drop. It may very well affect it but it is so minute that it has virtually has no practical affect. It's the same with locks and again with the 1/2 deadbeat and with the deadbeat, one adjustment will affect the other. That is the practical difference in their adjustments.

A practice I employed was to place a beat amplifier as close to the verge as possible and cranked it up full. You can actually hear the interaction of the escape tooth and the sliding surface on the pallet. Since I have long abandoned any mechanical clocks except for torsion pendulums, it does not come up very often for me. I don't put a lot of importance on a verge sliding surfaces but they can be critical and you should be aware. This amplification also helped me with understanding and recognizing the condition of being in-beat.

A recoil escapement is by far the easiest to make the proper adjustments too. Start with the obvious, locks and drops and polishing the sliding surfaces of the verge to reduce this as a source for friction.

No real golden bullet and mostly observations. Yes, if I were going to design an escapement I would try and understand the geometry but I only needed a basic understanding to adjust what needs to be adjusted and how I can fix what another had messed up.

This is not meant to be a repair guide but a telling of how I came to understand various escapements. Remember, everything else must be address before you dive into escapement adjustments.

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Last updated 06/12/2025