



FAST

If your clock is running fast then it is most likely the mechanism in the clock. When the ratchet mechanism is stepping, it is gathering more than one tooth and so stepping on (eg. 2 mins instead of 1min). It takes a bit of experience to judge the stepping quality of a mechanism and with some patience it can be made correct or a local clock maker can test it and set it right.

Slightly fast

A slow clock is very annoying so I do my best to set the electronics to run slightly fast about 0.4 secs per day. To me this is the best compromise slightly fast to okay rather than okay to slightly slow. Allowing for environmental temperature as below.

There is no user adjustment in the driver and generally there doesn't need to be.

The driver can be returned to me to change it's speed if it definitely has varied widely.

Testing

Use the Green DST button to test the action of the mechanism stepping on.

You can also then use the Red DST button to delay the clock to get back to time.

As you get to know your slave mechanism you will see that you can manually adjust if you are careful. Don't force anything. You can also manually test it by pressing the armature and carefully watching the stepping action.



SLOW

There are a few things that could be causing this.

1. Incorrect Link setting in the driver
2. Batteries
3. Mechanism
4. Temperature
5. High power levels that have caused a relay fault

1. Use the Quicky Guide to make sure you have the 30/60 sec pulsing JP1 link set correctly.

2. If you are using a battery solution then as the 4 x AA batteries (in the switched battery box) age (about a year or so with fresh batteries) they reduce in voltage meaning that the crystal and so the clock will start to run slow. Maybe a couple of seconds per day.

3. It is possible that the mechanism is not stepping properly and so missing a tooth and causing the clock to be slow. This can be from an incorrectly adjusted mechanism. When the ratchet mechanism is stepping, it is failing to gather a tooth and so not stepping on, so losing a minute. It takes a bit of experience to judge the stepping quality of a mechanism and with some patience it can be made correct or a local clock maker can test it and set it right.

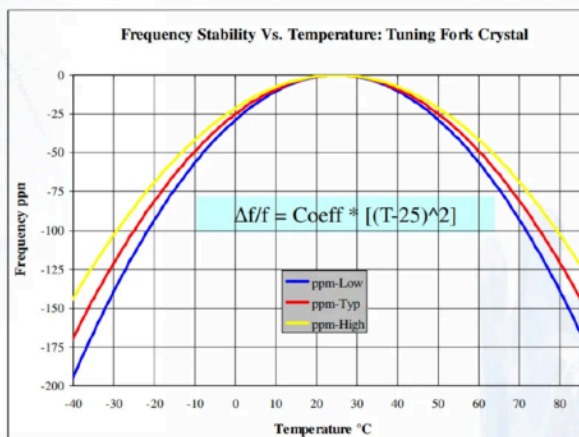
Or

As the clock power batteries age and reduce in power they don't have the correct power to step the mechanism on properly so causing the clock to be slow.

4. The below chart shows the accuracy of the crystals generally used in clocks and watches.

The EC4A and EC5AP is fitted with a 5ppm crystal and is estimated to be accurate between around about 18°C - 28°C. Outside of that temperature range the crystal will run slow and clock time will run slow, for example 5 secs per day slow outside in the UK winter. Extreme heat will also cause it to run slow while it is above about 30°C

Temperature Stability Characteristic of a Tuning Fork Crystal



Mark Lines t/a electric-clocks.co.uk



From Page 2 - **Over Power** - fault makes the clock run slow

5. It is possible that the mechanism is not stepping properly because the relay contacts in the Impulse driver are damaged. The contacts may stick together permanently or for a few seconds or minutes and then release. The mechanism will just not step on even if the pulse is sent from the electronics. Sometimes you may hear the driver relay click but the clock not step and sometimes the relay won't click either.

This often happens where a coil is rated at 4Ω and JP5 has been fitted.

Other reasons may be:

The big coil or coils are producing a lot of back EMF and there is no Resistor fitted on the mechanism. (This is a legacy way of absorbing back EMF on coils)

If the power supply to the EC4A is too high the power produced through the relay contacts causes failure. Generally 12v is about right.

Double Sided clocks.

Double sided clocks work best when they are wired in series (ie one after the other). If they are wired in parallel they may cause failure of the driver really contacts. Sometimes JP5 is fitted for double sided clocks if there isn't enough power to run both mechanisms.

Checking-Testing

The best way to test for this scenario is to use the Green advance button a few times and watch what the clock does.

If it does fail, the driver will need repairing a what causes the fault needs correcting.

Key Factors when setting up

Is the mechanism stepping correctly - this can be checked just by pressing the armature to check.

What is the resistance of the coil(s). In Ohms Ω

History

Remember when these clocks were made there was usually an engineer on site to check, adjust and maintain the Master Clock that used to run the slave clocks, and check the Slave clocks run correctly too. He or she would be skilled in fettling these clocks to perform extremely accurately. These clocks will last hundreds of years but need looking after. They are not modern throw away items.