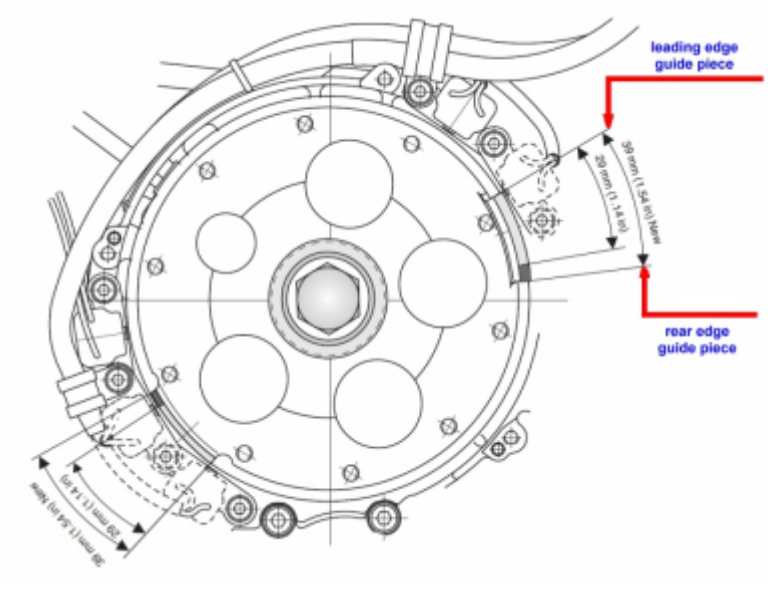
Function of the softstart modules

Many people are not fully aware of how the soft start modules for the ignition system introduced at the end of 2014 work. For a better understanding, here is a brief explanation:

In normal engine operation, we have a fixed ignition timing of 26° before TDC on all 912s. This is triggered by the leading edge of the guide pieces on the magneto hub via the pickups.



When the engine is started at a starting speed of approx. 350 rpm by the starter motor, this pulse is triggered at the trailing edge of the guide pieces. This was 4° before TDC on the older version of the solenoid hub and is 3° after TDC on the solenoid hub for the soft start modules.

However, when the engine starts, we should have an idling speed of over 1500 rpm and it then runs with the operating ignition timing of 26° before TDC. Depending on the pickup distance, the ignition module switches from the rear edge of the guide piece to the front edge between 600 rpm and 1000 rpm - i.e. (with the old solenoid hub) from 4° before TDC to 26° before TDC.

With the new solenoid hub, it is now 3° after TDC, which means that the engine no longer knocks back when starting if it does not start immediately. So much for the one change to the soft-start system.

The second modification concerns the ignition modules: an additional cable connected to the starter relay allows the ignition module to know when the engine has been started.

The ignition box now delays the switchover from the trailing edge of the guide pieces (3° after TDC) to the leading edge by 3 to 8 seconds.
This initially leads to a significantly lower idling speed, which suddenly increases after the 3 to 8 seconds. At that moment, the time delay switches the ignition timing from 3° after TDC to 26° before TDC.

That's all and is of course noticed by the pilot....

Finally, here is the corresponding excerpt from SI-912-020 R8 / SI-914-022 R8, Ongoing modifications for ROTAX engine type 912 and 914 (series), in German:

softstart-system.pdf

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Last update: **11.02. 2025 09:32**