Hi Beagle,

You can broadcast this to the Franklin group if you like.

The timing called for by Franklin is an unusually large amount of advance for the high CR engines.

I think I know why: First, the spark plug is located in the worst possible place so there is a long flame path requiring an earlier timing. (Long flame path promotes preignition).

Second, the mags are driven via rubber couplings. They do deflect under torsion so the static setting needs to take that into account. (Same on the P51 engine!)

Third, the cam in the Franklin engine has an unusual amout of valve overlap. Due to both valves being open longer at TDC, the idle manifold pressure goes down to only about 15”. Continental and Lycoming engines idle at around 10” MAP.

The timing advance of the electronic ignitions is largely driven by the manifold pressure. Therefore the idle ignition timing has less advance on a Franklin compared to an idle on Lycoming/Continental engines.

It is most important to have the correct timing at higher power outputs (MAP). This is why the plasma CDI instructions say this:

**\* The low number (MAP hose disconnected) is the most important! When the hose is connected the timing depends on the MAP. Smoother running engines have more vacuum and that yields more timing advance.**

Since the Plasma CDI is not engaged with the engine via rubber couplings (no delay) and since it’s much hotter spark speeds up the flame travel in the cylinder, it is probably best to use a lower ignition timing at high power (high map) than what Franklin recommends for magnetos. My guess is 4-5 degrees less.

This means that if the magneto on a given Franklin engine is to be set at 28 degrees, the Plasma CDI should be set to deliver 23-24 degrees at WOT and max MAP (usually 30”). We simulate WOT by removing the MAP line all together. Since this test is done at idle, you need to expect to see an additional 4 degrees of retard (this is our timing advance due to rpm alone), when using a strobe light or when reading the timing with a mV meter at idle.

The Plasma CDI also has the ability to vary the timing in the cockpit via a pot. This gives another method to optimize the timing.

Be aware that peak power timing is immediately adjacent to preignition timing!

Best Regards,

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