

Things that control ignition timing settings

- Compression Ratio
- Squish Velocity
- Octane of Fuel
- Pipe Design
- Porting (RPM)
- Type of Riding (Road, MX, Short Track, etc.)

Detonation is the Problem

Detonation is more of a problem with lower octane fuel & lean jetting. Pioneers were made to use 98 octane fuel back in 1971. Higher HP engines needed even higher octane.

More advanced timing in a 2-stroke is not really a good thing.

Too much advance in the timing settings causes the engine to run against itself at higher RPM. It can also make it harder to control detonation (PINGING)

Effects of Changes in Timing

Earlier timing will build more cylinder pressure at a lower RPM range which will make the powerband hit harder, but will chop off the top end.

Less timing advance will soften the midrange hit but can add more High RPM power. It can also extend the RPM range another 500-800 RPM on the top.

Example:

Dirt Track engines set up for Quarter-mile short track, the timing may be 3.0mm BTDC. However, the same engine on a half-mile track would detonate unless we back down the timing to 2.0mm BTDC.

Power is better at extended high RPM of the straights on a half-mile with 2.0 timing.

Power is better out of the corners on Quarter-mile with 3.0 timing.

Squish Velocity Speed Controls the Combustion Burn Rate

Combustion chamber design has to work towards a suitable velocity speed for the application. Slower squish speed equals less chance of detonation. Faster squish speed could cause detonation

Squish velocity in the combustion chamber, IF IT IS TOO FAST, will always be a problem. Squish velocity speed will have to be adjusted for changes in C/R, pipe, fuel octane, porting (RPM Range) & type of riding. Those changes are made in the head chamber design.

