

TECH & TUNING TIPS

2.6L / 2.3L Lightning / Harley Supercharger Upgrade

"You can grow old waiting for those who claim that they're going to have one too - only "better" or "bigger." Jim Bell

- NEVER exceed 18,000 supercharger rpm (see "Pulley Size/Boost/Ratio Chart").
- NEVER overfill supercharger with oil. It's better to be "under" the fill level mark. For racing, O.K. to run 1/4" below bottom mark on dipstick.
- See Article Reprints on Kenne Bell website for HP potential and dyno tests.
- O.K. to re-use stock gaskets.
- Dayco or Kenne Bell belts work best.
- Denso T20 EPR-U plugs recommended. Gap at .035".
- Use Kenne Bell BOOST-A-SPARK™ after 10 psi to insure adequate spark. Note: You may get by with just Iridium plugs for a while.
- Stock pump O.K. If looking for insurance, use the Kenne Bell BOOST-A-PUMP™. DO NOT replace or upgrade in tank pumps. It's a total waste of money and will increase fuel temperature.
- NEVER, NEVER run an underhood exposed "hot air" filter.
- Oil build up on intercooler is from PCV valve.
- Never over tighten spark plugs. Use anti seize on threads.

TUNING WITH OCTANE

There are variables and trade offs in tuning that should be considered and understood.

- Best air fuel ratio is 11:1 for street supercharging. 12.5 will make the best power but requires 4.5 more octane.
Octane: See "Jim Bell's Supercharged/Turbocharged Performance Guide." This is the result of tens of thousands of dyno runs and years of experience.
- 1 psi boost requires +1.5 octane.
- 1 air fuel ratio = +2 octane. 1° spark advance = +.5 octane.
- 20° ambient temp = +1 octane.
- 1 can NOS Octane Booster = +1.5 - 3.5 octane (see table).
- 1000' altitude = .5 octane.
- Best ignition timing is 21° but requires increased octane (3/4 octane per 1°).
- 4° retard to 17° is - 16HP (1° = 4HP).
- So if 1 psi = 1.5 octane = 30° ambient = 3° spark. Get the picture? Study this. So when someone says their Lightning is running 15 psi or ?, it's recommended one ask about ① octane ② spark advance ③ ambient temp ④ air fuel ratio ⑤ engine coolant temp . . . and who's chip. And keep this in mind if using one of those "hot air" exposed underhood filters.
- Using one of those ridiculous "hot air" underhood filters can be the same as lowering fuel octane from 91-86. You've got to love those people who sell these things. They, of course, are always willing to warranty your supercharger or engine.

"One good dyno test is worth a thousand opinions."

- Don't be afraid of 100-105 octane unleaded "racing fuel." A Kenne Bell pulley can be changed in 4 minutes and boost varied from 10-26 psi with pulley changes (see chart).
- There is 100 (Union) and 105 (VP) unleaded. Add a can of NOS #12007 Off Road Octane Booster to 8 gallons and it's another 2.5 octane (102.5 or 105.5). For % 100 octane mixed with 92 octane. 75% = 98. 50% = 96. 25% = 94.

DETONATION

- There is no "fuse" (head gasket that blows out under boost) so the pistons take the brunt of the excess pressure and heat created by detonation.
- Avoid detonation / knock / ping at all costs.
- To suppress engine knock ① add octane ② reduce spark advance ③ lower boost or change the chip.
- The Lightning has no built in knock protection, so if it knocks, get off the gas.

"ONLY with sufficient fuel octane can spark and boost be optimized." There is no exception to this Kenne Bell rule.