TECHNICAL BULLETIN # SRF 11-01

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: Caution :

Do Not attempt to tune A/F ratio without a full understanding and use of proper tools and equipment! Major engine failure can result!

Tools needed:

- Accurate fuel pressure gauge.
- ¼ drive T25 torx bit or 4MM Allen socket to remove the regulator from the fuel rail.
- ¼ drive 10mm socket to remove the entire fuel rail from the intake manifold(if you are uncomfortable reaching through the intake manifold to R&R the regulator fasteners.)
- Spring fitting fuel line release tools to remove the fuel lines from the rail, if you choose to remove the rail from the manifold to do the work.
- High quality trusted Wideband O2 meter.
- Engine or Chassis dyno to verify engine performance.

OK let's get started,
Working in a safe ventilated area on a "room temp" race car: we need to verify the current fuel PSI.

1. Remove the port cap and attach the fuel pressure gauge to the test port.

2. Remove the vacuum reference line or hose from the Stock Regulator. Start the car briefly to take a fuel pressure reading, record for the starting point of the adjustable regulator.

3. Remove the Stock Regulator: First bleed the residual fuel pressure from the system. Carefully remove the fasteners from the regulator.

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4. Remove the grommet from the old regulator, look closely to make sure it is not damaged, cut or nicked…very important!, as it is not available from Ford.



Note: it's very helpful to use some sort of lubricant. Like WD 40 Carefully to install the New Regulator onto the fuel rail.

5. Carefully install the regulator on the fuel rail, make sure not to cut or nick the O-ring. Use care not to cross thread the mounting fasteners… start all before tightening them.
6. Start the car briefly to check for leaks and set the fuel pressure. You can also cycle the fuel pump several times for the leak check, but not for setting the pressure. Make sure you have at least the same pressure as your old regulator.

To adjust: Loosen the jam nut, turn the center vacuum port in and out to set the pressure. When you are in the range…turning small amounts ¼ or ½ a turn at a time.

You are ready for some tuning…it is of the greatest importance to tune with the **same** fuel you plan to race with. When finished or before going on track…remove the Fuel Pressure gauge and replace the port cap. Check for leaks.

Fuel type and the condition of your Mass Air Sensor are the greatest variables.
My thoughts on Fuel pressure …I have never made safe power with less than 39 PSI.
The Fuel Pump may not provide sufficient volume at more than about 45 PSI. It also tends to aerate the fuel. Very Bad. It is of the greatest importance to verify your O2 reading with a trusted O2 sensor. The engine will make the most reliable power in the .86 to .89 lambda(12.6 to 13.0 A/F range).
I like the "Motec PLM", they are pricy, but considered a lab level instrument. Over the years I have used lots of different brands, most do not operate with the accuracy needed to just call out a tune number or setting. I have had pretty good luck with the inexpensive unit from Daytona Sensors.

I place the sensor in about the middle of the 1 – 4 collector pipe tube @ about 45 deg angle leaning to the center of the car. It is only reading # 1 and # 4 cylinders but it's pretty far away from the tail pipe exit as well.

When using a Engine or Chassis dyno to "tune" it is very important to warm the engine to "on track internal temperature"…water 190, oil 200 + and the piston dome. (not sure what temp that is? But you need to run the engine loaded to achieve it) If you just want to compare numbers car to car or engine to engine… it's more important to be consistent with how and when you test.
If you have never monitored A/F on track, it is normal to see very ***Lean*** readings in braking, deceleration or light off idle throttle.
We could get into a 10 page discussion…on all the variables, but in general that is where you want to be.
Good Luck and remember we all do this for **FUN……!**