

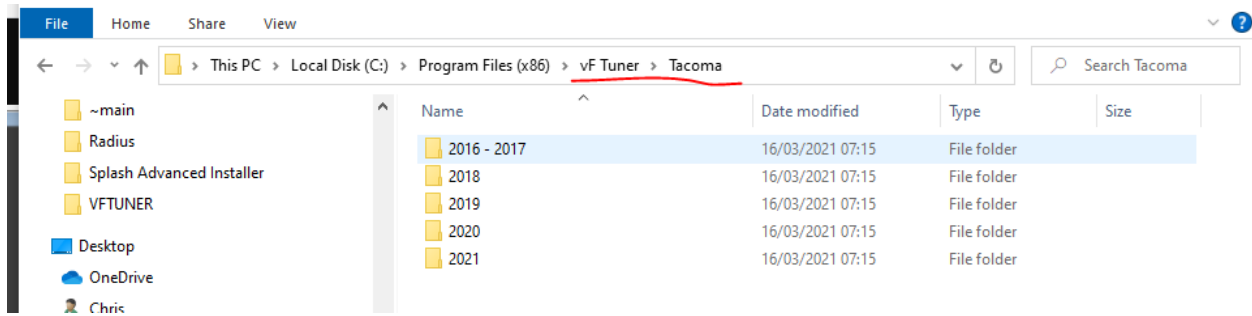


VF Tuner Tacoma 2GR-FKS Forced Induction Patch Guide 1.10

Table of Contents

1.0. Fueling Basics - Target AFR.....	3
1.1 Protection Maps	4
1.2 Additional maps	4
2. Torque Limitation Patch - Temperature control	4
2.1 VFT EROM - Cold Engine Torque Limiter Patch.....	5
3. Torque and Airflow Tuning Basics.....	5
GLOSSARY	6

VF Tuner is proud to release Exclusive Forced Induction (EFI) specific patched calibration files for the 2016+ Toyota Tacoma 3.5L 2GR-FKS vehicles. We have designed a specific expanded Target AFR table, Cold start torque performance table and limitation control table. These files can be found in the VF Tuner installation folder under the Tacoma Folder.



1.0. Fueling Basics - Target AFR

VF Tuner has created an easy way to tune Target AFR for boost fueling. Using this table, you can target the enrichment that you require for the RPM and Engine Load that you are seeing as shown below.

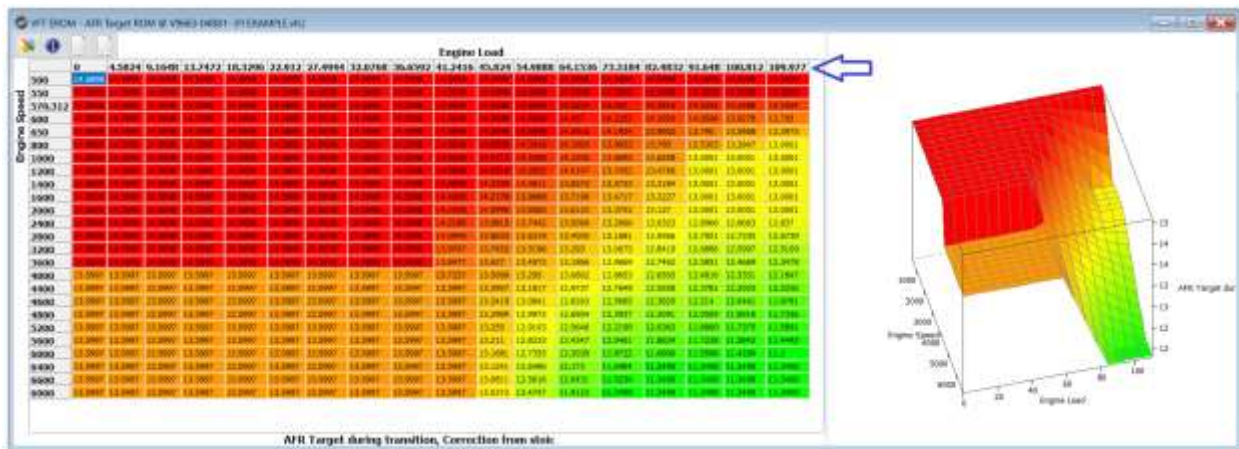


Fig 1.0.1 showing Target AFR table

NOTE:

- Do not forget to calibrate the LOAD Axis to match the load (absolute load) values that you are logging so that you do not get excessive enrichment before going into boost (as shown by the blue arrow above)

- Target AFR tuning should reflect experience with AFR/Lambda for various boost levels.

NOTE:

VF Tuner does not provide target AFR examples. Professional Dyno Tuning is recommended

General "Rules" for AFR:

- Natural aspiration tuning:
Full Load 13.5-12.5 AFR depending on octane
- Forced Induction tuning:
12.3 - 10.5 AFR depending on octane, boost levels, compression ratio, etc.

1.1 Protection Maps

The Tacoma 3.5L Calibration file includes additional enrichments based on catalyst temperature, RPM, and load. These tables are **STILL IN EFFECT** when using the Target AFR Map.

Therefore, in some cases; where additional heat is occurring, you can get richer AFR than your target AFR.

NOTE:

- If you are seeing lean spikes, leaner than normal AFR, **REMEMBER YOU MUST TUNE** Fuel pressures for the **DI** and **PI** system and all other fuel tables.
Pressure Limit on the DI side is 20 MPA.

1.2 Additional maps

You must tune all other fuel tables in accordance with forced induction tuning.

- Fuel pressure targets
- Open loop / low load AFR tables etc.

2. Torque Limitation Patch - Temperature control

VF Tuner has designed a Torque and Airflow limitation patch for the 2GR-FKS Calibration. This ensures that when the ECU is using it's cold fueling strategy, where it can, under some conditions, and target is leaner than stoic AFR or rely on the port injectors for homogeneous air-

fuel mixture inside the cylinder, you can maintain safety and not avoid resulting into lean out conditions (and misfires).

2.1. VFT EROM - Cold Engine Torque Limiter Patch

This is a global torque and airflow limiting patch that is designed to limit the total throttle –by torque calculations. The ECM can request depending on temperature and load.

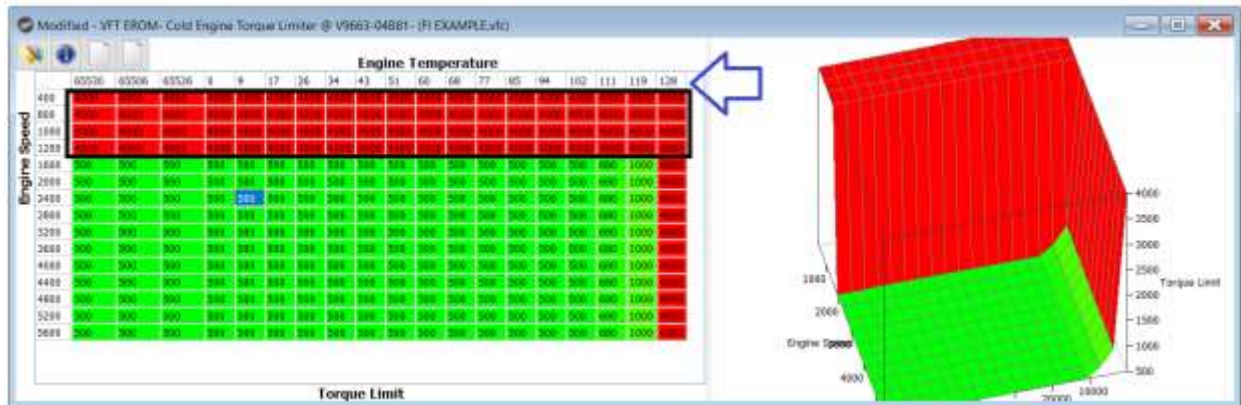


Fig 2.1 Showing VFT EROM Cold Engine Torque Limiter engine temperature table

You can modify the axis to meet any desired temperature on the axis as shown by the blue arrow above.

NOTE:

- **IMPORTANT:** At very low RPM (idle) and to about 1600 RPM, **YOU SHOULD NOT** limit the torque. This can cause you to have extremely slow throttle response from a stop. If too low, you can cause loss of throttle or stalling. VF Tuner recommends you leave this set to the default value (4000).
- **IMPORTANT:** This table **MUST** be tuned. The example provided by VF Tuner is not ideal for all forced induction situations. This table must also be tuned to ensure your engine is safe during driving while the engine is cold. (**below 130* F**)

3. Torque and Airflow Tuning Basics

You may notice that during tuning there are times, especially during low RPM and high load; that you have limited throttle. This limit is around 38-42% (while fuel is not stoic). VF Tuner has found a quick and simple solution to fix this. Using VF Tuner Software, tables Airload

Efficiency and Ignition Efficiency need to be slightly modified (smoothed). During this time, ensure **YOU ARE NOT ON** the stoic lambda target as show by the blue arrow as seen below.

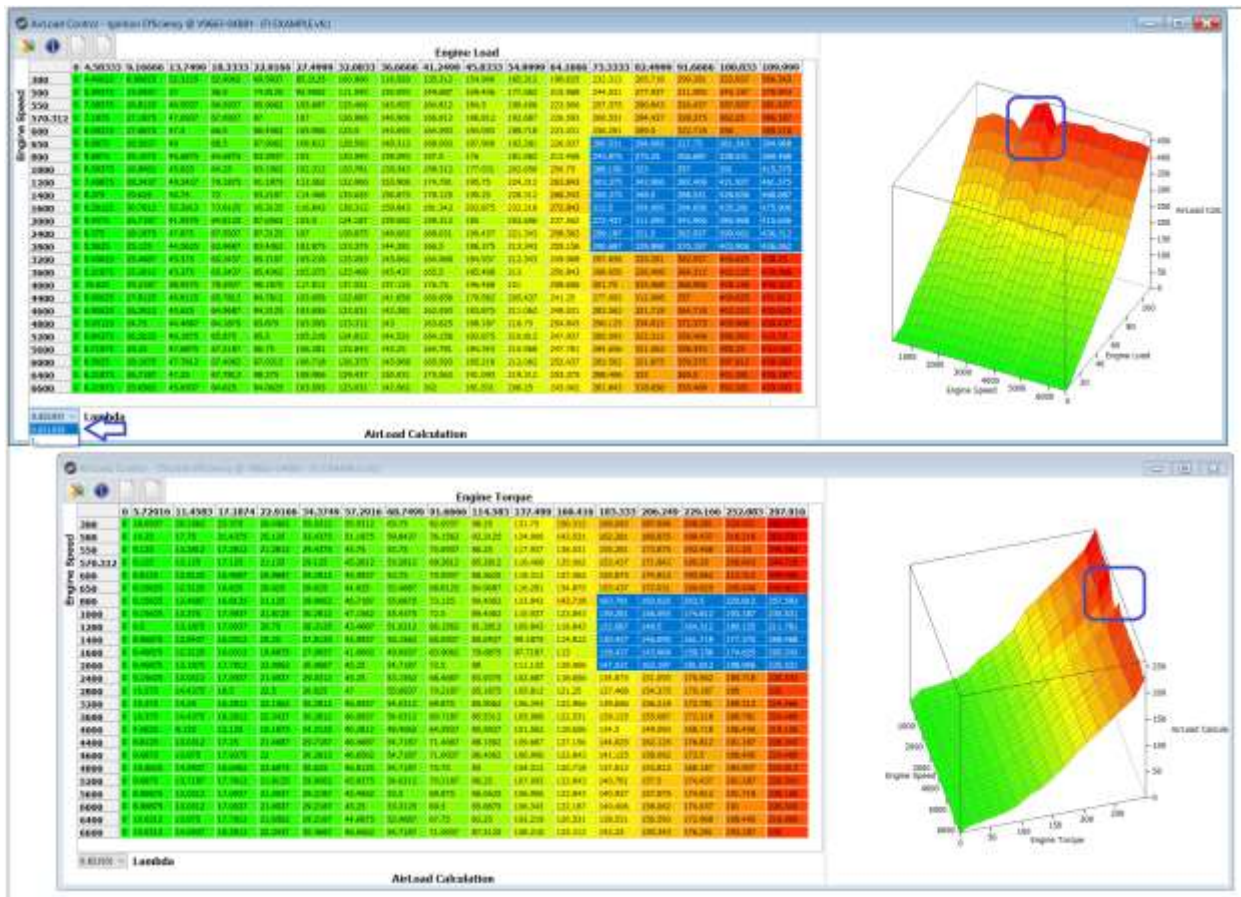


Fig 3.0 showing tables Airload Efficiency and Ignition Efficiency

Use **CRTL + I** to smooth the selected ranges on both tables, eliminating the hump and dips. This should eliminate throttle related limitations while fuel is richer than stoic and engine loads exceed 90% (**Absolute load**).

GLOSSARY

- ECU → Engine Control Unit
- DI → Direct Injectors
- PI → Port Injectors
- MPA → Megapascal

[Back to the top](#)