2016+ Toyota Tacoma 3.5L Automatic Transmission VF TUNER EROM Patch

Version 2

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INTRODUCTION

VF Tuner is proud to release Exclusive 8 Way (7+ stock) Map switching and transmission custom controls for the 2016+ Toyota Tacoma 3.5L 2GR-FKS.

These exclusive features by VF Tuner allow a user to create up to 8 different driving modes for various driving scenarios. By using **S Mode**, **ECT**, and **4 Low**, the VF Tuner Software can calibrate the truck for a variety of conditions with a nearly endless customization. In addition, Gear locking can be enabled or disabled by tuning the S Mode Expanded Shift control tables.

1.0. MAP SWITCHING CONTROLS

Through extensive testing and code work we are happy to announce that this patch includes 7+1, or 8 variations / map switches that can be accessed **ON THE FLY. NO FLASHING**.

Maps that switch depending on mode include:

- Intake Valve Timing
- Target AFR (Close Loop AFR Target Control)
- Ignition Retard Base (ignition trim)
- Throttle Request to Airload control (Throttle limitation to torque)
- Shift Tables (1 through 6 up and 1 through 6 down)

2.0. MAP SWITCHING MODES

Map Switching modes include

- Mode 1: Stock , all off
- Mode 2: ECT Button ON, Shifter is in S MODE, and truck is in 4-Low
- Mode 3: ECT Button is ON and Shifter is in S Mode (truck is not in 4-Low)
- Mode 4: ECT Button is ON and Truck is in 4-Low (truck is not in S Mode)
- Mode 5: Shifter is in S MODE and Truck is in 4-Low (ECT button is not active)
- Mode 6: ECT button is ON (Truck is not in S mode or 4-Low)
- Mode 7: Shifter is in S Mode (ECT / 4-Low are both off)
- Mode 8: Truck is in 4-Low (ECT/ S mode not active)

2.1. Intake Valve Timing

Fig 2.1 showing VF Tuner EROM 8 Way VVT

The truck will switch VVT maps on the fly, depending on what mode the truck is in.
While changing the table without flashing, the Load and Engine axis are both customizable, as shown in the table below.

Fig 2.1 showing map to intake valve angle target for Load and Engine axis

Some of the possible tuning scenarios include:-

- 4 Low No Atkinson mode
- S mode / ECT - No Atkinson - Tow mode, and
- 4 Low Max retard (very low engine power for very precise RPM control)

Other map switch tables include

2.2. Target AFR (Close Loop AFR Target Control)

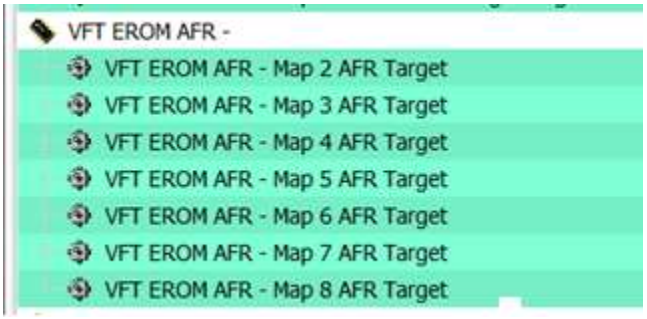

Fig 2.2 Showing VFR EROM AFR switching tables

2.3. Ignition Retard Base (ignition trim)

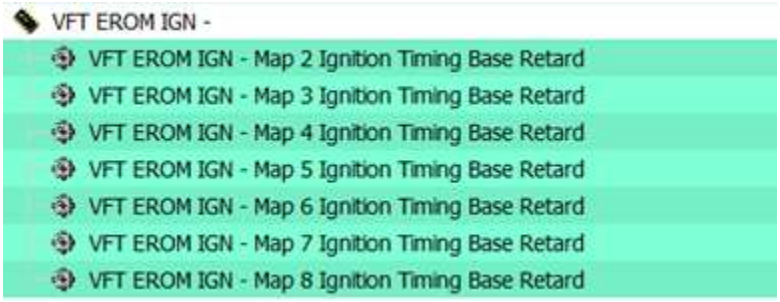

Fig 2.3.1 showing VFT EROM IGN switching tables

With 8 ways AFR tuning, you can seamlessly set whichever AFR that you want depending on the switching mode.

Fig 2.3.2 showing X/Y axis tunable data

In addition, with 8 Way VFT Ignition trim, you can also modify your ignition depending on switching mode. These tables are ADDED to the BASE ignition tables (trimmed from if negative).

NOTE: These tables are added before additional trimming for VVT / Knock / etc and are used as a BASE TRIM to the BASE IGNITION TABLE.

Fig 2.3.3 showing Ignition Timing Base table

The table (fully customizable, like all others) is ADDED to the Base table (as shown below) to create your BASE IGNITION TRIM.

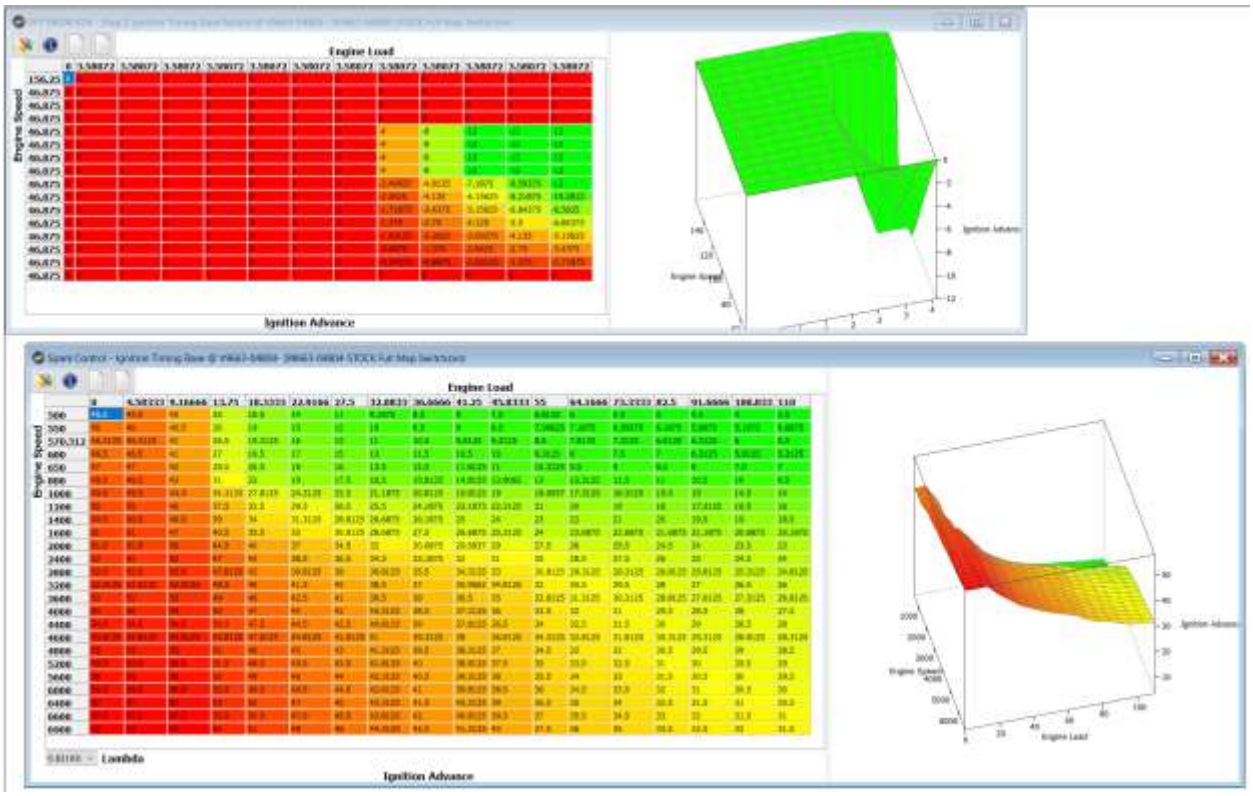

Fig 2.3.4 showing fully customized ignition timing table added to the Ignition Base Table to create custom Base Ignition trim

8 ways mode allows you to set your ignition however you would like. For **example,**

- Need aggressive ignition only during ECT?
- Need a "limp mode" with very low ignition during S Mode?

And the possibilities are near endless.

2.4. VFT THX Throttle Request to Air load Tables

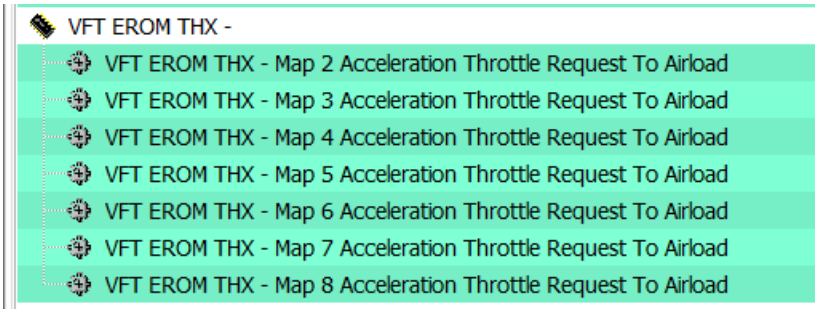

Fig 2.4.1 showing VFT EROM VFT switching tables

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These tables control maximum throttle request % to air load x torque calculations.

These requests allow you to set throttle sensitivity for every mode.

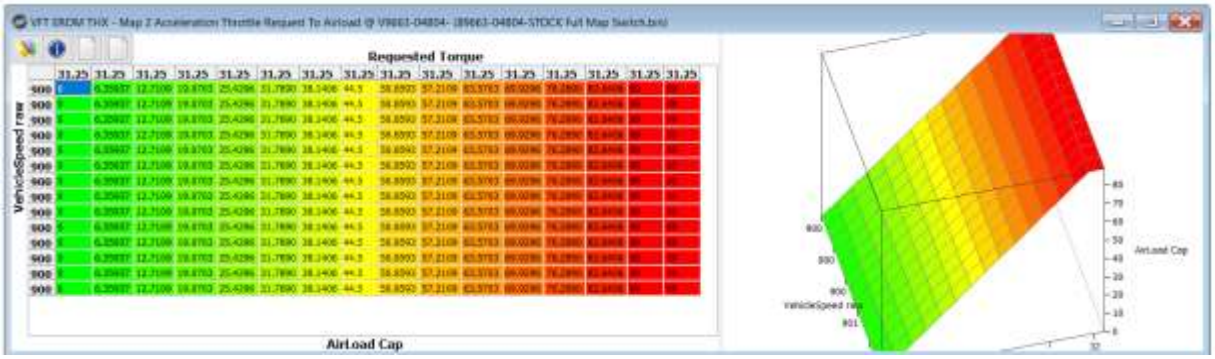

Fig 2.4.2 showing acceleration throttle to Air load request table

3.0. SHIFT MODES

3.1. Shift Tables (1 through 6 up and 1 through 6 down)

With EROM Shift control, not only do you fully control the shift tables depending on the switching mode, but you can also setup Gear lock in S mode without relying on ECT, and get our EXPANDED shift tables. This allows for more precise shift control

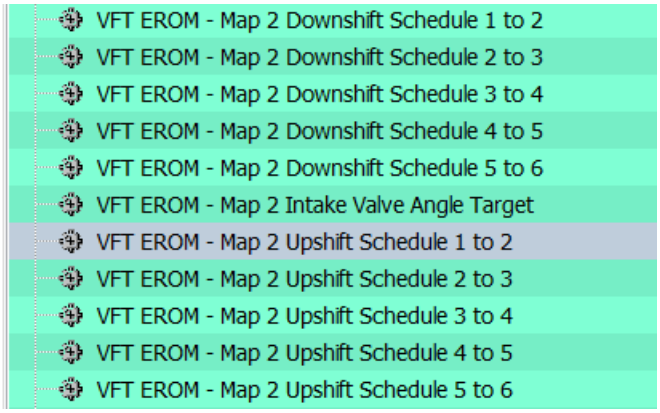

Fig 3.1 showing shift control map tables

Normal stock Shift tables are 12x1; while VF Tuner software expanded shift tables are 18x1 which provides you with 30+% more tuning capability.

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4.0. EXPANDED SHIFT TABLES

No more guess work. We have rewritten the entire shift pattern algorithm, and shift table selection algorithm to provide you the exact tables you need.

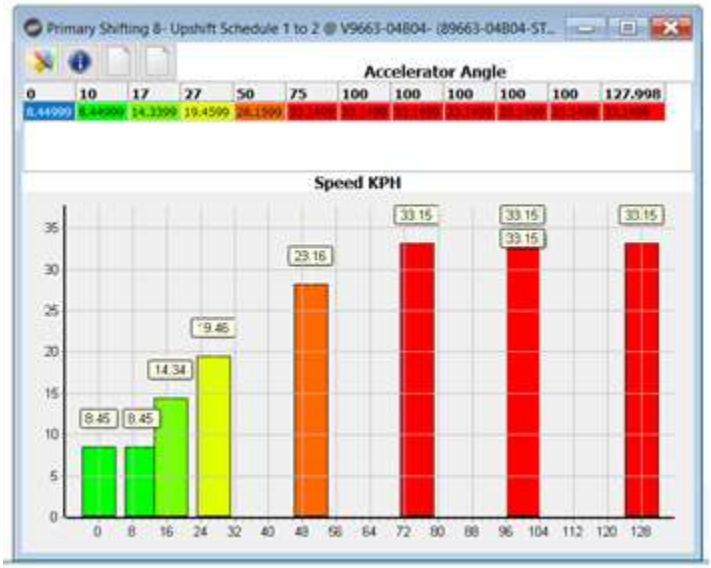

Fig 4.1 Showing stock tables

Fig 4.2 Showing Expanded EROM table

FAQ

1. Can I apply these features to a tune I have already created?
    - **No**. You must open the modified / patched file and copy your tune onto it.
2. Can I active these without flashing the ECU?
    - Once you have flashed the map-switch file to your ECU, all modes are activated, and you can switch them in accordance to the mode control outlined above
3. Can I shut off maps?
    - **No**, but you can set them to stock, or your stock tune setup, and they will work identically to stock, eliminating that map from switching if need be.
4. Does this work for Manual transmission Tacomas?
    - **No**. We have a different version of map switching coming to the MT Tacomas, which will use the cruise control stalk to select tables.
5. Do I need to still tune the stock Shift tables with this file?
    - **No**. Our EROM code over-writes and eliminates the need to modify any of the OEM shift tables. These tables are no longer used once you flash the EROM file. The only "stock" shift table still used is when in MODE 1.
6. Do I need to tune the stock VVT, AFR and Ignition maps?
    - **Yes**, if you want it to be a "default" tune in mode 1. Otherwise you could leave it stock, and when in mode 1 you would be "stock". THIS INCLUDES SHIFT TABLES FOR MODE 1. Mode 1 still uses STOCK shift tables.
7. What happens if I leave the Ignition Retard Trims at zero?
    - Then no timing will be reduced from your base tables and you may target too much ignition. Remember, these tables are ADDED to the base tables. (base + -Trim) (example: 25 + - 5 = 20)
8. How does the AFR Tables work?
    - Through extensive code work and disassembly we have provided you a method for tuning the AFR in closed loop. The AFR you put in these tables are the AFR the ECU will target, so long as there is a transition in load. This is to ensure that during no / minimal load transition states (steady state, cruising on the highway) the ECU will still target 14.6.

Supported ECU

NOTICE:

These features are only available for the latest ECU versions. Some trucks may require having their ECU Updated (Techstream OEM Toyota Tool). The ECUS that are supported are:

- ✓ 04B04
- ✓ 04A61
- ✓ 04B50
- ✓ 04B33
- ✓ 04B80
- ✓ 04B81
- ✓ 04C01
- ✓ 04C20