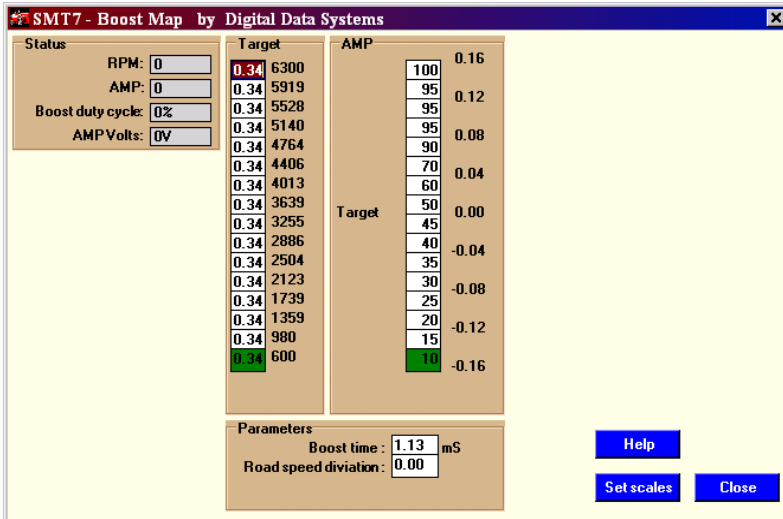


Inside this Issue!

- Smt7 Boost Control
- Tuning Tips
- Fuel injected Raptor

The recently revised Smt7 boost control screen was fully tested for 100% functionality. The results were as expected in every respect.

The SMT7 was released with a boost control feature that allowed the tuner to set a number of boost targets on a single map. This allowed the tuner to control the pulse width sent to a bleed solenoid via the AMP map, depending on how close the boost pressure got to the target.



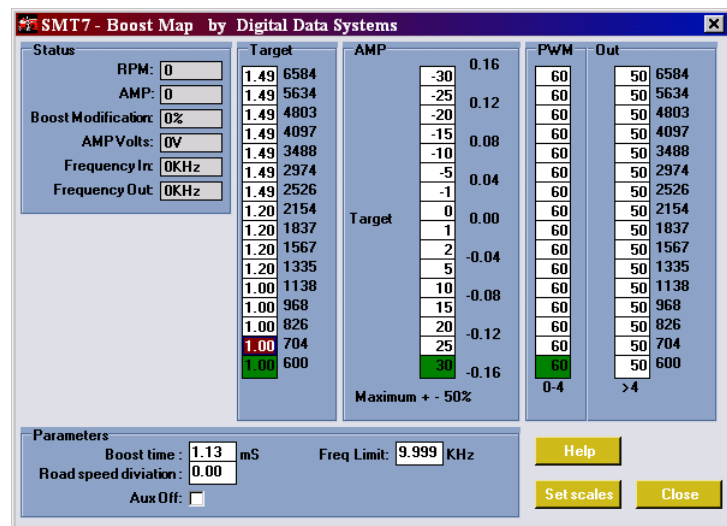
The idea is that you pulse the solenoid more (or keep it completely on) to allow boost to reach maximum. When values are above the target, the solenoid needs to be pulsed less (or not at all) to correct for the high pressure.

This idea worked very well but it was better suited for fine-tuning. A coarse tune map was required to get the boost map close to the fine control region. This coupled with the request by SMT6 users to create a similar setup to the SMT6's method of boost control, (which tuned pulse width for RPM rather than Boost).

This resulted in the latest SMT7's now having 4 maps that can tune boost. The last two maps or columns on the right tune PWM according to RPM, the second last one is for TPS value less than column 4 on the main maps and the last one is for greater than column 4. These rows can be seen as coarse adjustment.

The first two maps work similarly to the concept used in the older SMT7 units except the PWM maps now trim the left two map values allowing for more refined control based on pressure values.

The test was done on an Opel Astra Coupe. Using the dual map feature we were able to create two driving profiles. One for 0.6 bar and a second for 0.8 bar. A detailed article about this car will be released in a future newsletter.



Tuning Tips!

Remember when tuning a standalone engine management system, always check what rpm limit it has been set to before you strip the car down trying to figure out why it won't rev past a certain RPM.

FUEL INJECTION SPECIALISTS

February 2006 Volume 1

CONVERTING A STANDARD RAPTOR 660 YR INTO A PERFECT POWER FUEL INJECTED RACING QUAD!

It started off as a brand new 2005 Raptor 660R bought in August 2005. After racing for only 1 month the modifications started. First it was stripped, chromed, plastics custom painted with special paint that allows flexibility and adheres very well to plastic. DOXO Racing custom graphics gives a great effect to the bike. Chrome plating and polishing from top to bottom keeps everything clean and shiny. The handlebars have been replaced with ultra strong and lightweight Pro-Taper units, including new grips and handlebar raisers. Wheelie-bars at the back have prevented a few unforeseen accidents while doing wheelies.

Even after giving it a spanking brand new bling look, the Raptor needed more power. And another major problem was over/under floating by the carburettors when attempting a long wheelie or steep climb. After doing research and carefully selecting the right components for the necessary upgrades to get more power it could still be kept smooth for dune-climbing and outrides.

I soon discovered that no modifications are worthwhile without being able to tune it to perfection. The PRS2 complete engine management system was selected from Perfect Power. The carburettors were stripped and machined to fit and host the injectors. One injector per carburettor. The fuel is supplied by an external fuel injection pump via 10mm Festo hosing which also acts as a fuel rail. The fuel pressure regulator is sourced from a normally aspirated engine. Large feed lines were fitted to the fuel injection pump to prevent cavitations. The individual long rubber intakes were kept to create maximum torque at low RPM. A custom camshaft with ultra high lift degree and duration has been fitted to highly ported and polished cylinder head including the carburettor adaptors. Swirl polished valves and three-angle valve job completes the cylinder head.

Doing the installation of the PRS was simple but also done in a professional manner. The unit is very small and fitted snug under the seat, kept away from water and dust. This even though the unit is water and dustproof because of encapsulation of all components. The original magnetic sensor on the magneto supplies engine reference. The original charging and fan (cooling) wiring circuits were left in place with no changes. The whole CDI unit and all wiring has been removed to make place for the new PRS.

The polarity and filter values were checked on an oscilloscope. A map sensor was also fitted to give extra response to the engine. Load is being sensed by a TPS (Throttle Position Sensor). The PRS allows for a lot of torque through the entire rev range because of a complete ignition map.

After a professional and thorough dyno by Peter Ludwig, the quad was very strong and after a test run Peter came back with a moer (hell) of a smile on his face. This meant the bike was absolutely brilliant and exceeded all of our expectations.

Since then the exhaust pipe was changed to a full Belcherbuilt system and then to a custom designed system by Pento performance exhaust systems. The exhaust system is a work of art. The bike was now much more rev willing and had a lot more power at the top RPM Range.

The fuel map on the PRS has been remapped and smoothed out for great smoothness and the timing has been altered for better power with the second dyno session.

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