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The **Perfect** **Power** Times



The story of a 1.8, 20v Turbo in a VW Caddy.

I am the owner of a 2001 year model VW caddy. I use this vehicle to tow a mk2 golf circuit racing car around. Originally it came with a 1.6 carb motor and that just simply frustrated me during towing. I fell across a 1.8 carb motor and then it went a bit better. Soon enough that was also not good enough and I came across a 1.8 16v. This had to go onto management and the choice there fell onto a PRS2. This went well for a while and it made a decent 115hp on the wheels although the torque was not fantastic at around 135 nm at a highish 5200 rpm. Then about a year later it started smoking and was quite embarrassing to drive around – turned out to be a broken ring.



I could not let it stand for long so I looked around for an alternative drive source. I came across an Audi 1.8 turbo 20v motor. The price was acceptable and I bought it – besides I was looking for anything with a turbo on it – was getting boost withdrawal after selling my previous turbo car. The motor went into the engine bay quite easily and then the fun started.

Outright I decided that I needed something more than the PRS2 as I had hassles with 60-2 tooth triggers and PRS before. Peter suggested I use a PRS4. The coils on those motors are individual coil on spark and they draw big current to fire. Megaspark was obviously a requirement. Then before I could start the installation I had a look at the manual of the new XMS system. It looked fantastic so I decided to rather go with that and it came bundled with a megaspark. Installation was straight forward – trigger mechanism being a 60-2 toothed wheel with magnetic pickup. I had an original engine bay harness for the motor so all the plugs were there. I wired the injectors sequential which would later prove to be a problem. After connecting up all the plumbing it was time to see if it would all work.

The motor started first time around but had a bit of a clatter – sounded like a valve lifter – 2 minutes later it dropped a valve. The motor was supposed to be run ready and a new cambelt was installed. Turns out the shop that did it got the valve timing out by 1 tooth and that was enough to let the valve touch a piston – guess I should have checked but I didn't. Oh well – I had a spare head, had to get another piston and after a few days we were ready to go again. This time it started clean with no noises and we were good to go.

Being a very small factory standard turbo it comes on boost amazingly early and it's set at about 0.3 bar on the standard canister. The stock boost controller was left in place and the XMS connected to handle it. I have a lambda sensor connected and a bit of road tuning got it drivable. After a day or three and sorting out some minor issues with fanbelts and water it was time for the dyno.

As soon as I had it under load and the boost coming up it was obvious something was not right. It would stutter cough and simply not run cleanly. I played with dwell time as those single coils are very finicky but it made no difference. I came across this same scenario before on one of my race cars on a PRS2 and thought to myself – I wonder about the sequential injection setup. Because I am running the 60 tooth pickup but no cam angle sensor the injector firing might be out of phase. So I wired the injectors batch – 1,4 and 2,3 together. Immediately it went smooth when I loaded it on the dyno and the idle also improved in smoothness.

After that the tuning was a breeze. The boost controller works like it should and so did everything else. It is a fantastic system and the software layout makes it easy to work with. The parameters are where they are needed and all very logically laid out. It made a decent 120hp @ 5000 rpm and 173nm of torque all the way from 2600 rpm to 5000rpm(measured on the wheels).

Because of the variable boost you can start off low at the bottom of the rpm range where they are prone to detonation and let the boost build as the rpm climbs. These motors run a pretty high 9.5:1 compression ratio and our low octane rating 95 unleaded isn't the best thing. Despite that I am running 26 degrees timing advance and it is very clean and smooth.

An absolute pleasure to drive everyday and a very nice tow vehicle. I am running it on closed loop lambda (except for the full throttle column) and it is pretty decent on fuel consumption. I can HIGHLY recommend the XMS management to anyone – I really like it. It does what it is supposed to and everything that is advertised works like it should. The soft limiter is really nice and you won't break something when you hit the limiter. Thanks PP – you guys built one heck of a system.

By **Stephan van Tonder**
From **Thunder Turbo**
(South Africa Dealer)



THE ULTIMATE STREET CAR CHALLENGE

Perfect Power sponsored the Ultimate Street Car Challenge, which was held at the Westbank raceway.

The aim of this event was to find the best/fastest all round car and driver. With four different timed events ranging from the standard quarter mile to a special rally stage, some very interesting and hair raising racing was seen!!!!

A total of 64 cars entered this unique event.

Cars such as the Ultima GTR from Stuart Kidgell and the 1000hp Porsche of Willie de Beer plus the new Ford Noble that came through on day to show off it's stuff!

This event will be held twice a year for those wishing to compete and once again Perfect Power will be there!!

Hats off to Sav from Savspeed (a Perfect Power dealer of course) who organized and competed in this Ultimate event!



PERFECT POWER'S OWN INSTALLATION CENTRE!!!

Perfect Power has now completed construction of its very own **installation centre**.

This factory fitment centre will give technical support, product development, training and do installations for dealers and end customers.

With a 4x4 dyno soon to be installed, engine mapping and problem solving can now be done at the factory with all the specialized equipment close at hand.



Contact Peter at:
(011) 792-9805 for more information

Whats new ??

Have you had a look at our new website? It has undergone a makeover! So log on and tell us what you think about the new look, www.perfectpower.com.

The SMT7 software and 370 wiring diagrams are now available for download on our website. This is our latest piggy-back unit and finally the software is now available for all you enthusiasts out there to go have a look at this great new product!

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Please feel free to contact us with any comments, suggestions, etc that you may have!