



# Boost your towing performance

By Godfrey Castle

## *Looking for more vooma? Better performance from your fuel rand?*

There are times when you feel the need for more engine torque and power to overtake a slower vehicle or when towing into a headwind; you might even feel that you would like to prove a point to your friends that your car and caravan combination is a better towing combination than theirs. One-upmanship comes at a price, but it can also take away a lot of towing-generated stress.

Steve's Auto Clinic (SAC), specialists in engine tuning, supplied us with two of the previous shaped Toyota Hiluxes - a 2.7i petrol single cab and a 3.0 KZTE turbo-diesel double cab, which they modified for us to do a comparative tow test.

Arguably, there is the question of

warranty and reliability and why the motor manufacturer did not engineer the car to these performance levels in the first place. There are some trade offs, such as increased noise levels noticeable on the 3.0 KZTE but, BUT, the increase in performance is impressive.

While on the subject of warranty, Toyota, in this case, has reserved the right to withdraw its warranty after having the conversion done, but SAC are so confident that they offer their own six months or 20 000 km "why worry warranty" to provide peace of mind.

### **Modifications**

What is gas flowing a cylinder head? Put simply, the bigger the explosion in the combustion chamber, the greater the downforce of the piston with the end result of increased engine torque and power. After the combustion stroke

has taken place, the burnt gas must exit the chamber past the exhaust valve and flow as efficiently as possible into the exhaust system. Gas flowing the head is one of the primary modifications on a racing car's engine, so enhancing your vehicle's cylinder head in this way will unleash more power. In mass production there is simply not enough time to polish inlet manifolds and fine tune other components so as to allow as much air/fuel mixture into the chamber in order to maximise the explosion that takes place.

Some of the benefits that can be obtained from a gas flowed engine include: maximised engine power and torque; improved fuel consumption (due to efficiency); a cleaner burning engine and quicker throttle response. This process can also include fitting bigger inlet and exhaust valves where necessary.

## So what difference do these engine modifications make to towing?

We pitted these two vehicles up against our own Toyota 3.0KZTE and used the same caravan, a Jurgens Xcape.

Acceleration 0 to 100 km/h

Standard 3.0 KZTE 21.42 sec

Modified 3.0 KZTE 13.42 sec.

Modified petrol 2.7i 14.58 sec.

Hill climb

Standard 3.0 KZTE 1 min 55 sec

Modified 3.0 KZTE 1 min 37 sec

Modified petrol 2.7i 1min 44 sec

A big notable difference on the hill climb was the fact that the standard diesel used third gear all the way versus the modified version, which used fourth gear.

Overtaking performance 80 - 100 km/h

Standard 3.0 KZTE 11.49 sec.

Modified 3.0 KZTE 7.06 sec

Modified petrol 2.7i 14.58 sec

Fuel consumption

Standard 3.0 KZTE 14.6 l/100 km

Modified 3.0 KZTE 14.2 l/100 km

Modified petrol 2.7i 16.4 l/100 km



We tested three Toyota Hiluxes: a 2.7i petrol, a modified 3.0 KZTE and a standard 3.0 KZTE.

### Unichip

Gone are the days of a timing light and a gas analyser, a computer has taken over and tuning the modern day fuel injected engine is a highly specialised procedure.

The onboard computer makes it very difficult to make adjustments to engine performance, but with the locally developed and manufactured Unichip piggyback computer certain optimisation functions that improve performance for our type of motoring can be achieved.

### A word on the Unichip

This optimises the fuel/air mixture ratio and the timing of the vehicle under load conditions. An example of tuning with a unichip is the ability to tune any vehicle to achieve the best possible fuel consumption while driving with a light throttle and being able to obtain maximum performance under full throttle conditions.

### Air-filter

The quickest way to lose engine performance and increase fuel consumption is to starve it of air. Steve's Auto Clinic favour their Sportflo performance air filters, which are

available for most popular vehicles and are designed to progressively filter air down to arresting dust particles as fine as eight microns.

### Exhaust

As important as it is for an engine to breathe freely, so too is its ability to rid itself of hot exhaust gases. Free flow exhausts are custom built using the same fitment points as the standard system, the difference being in the diameter of the exhaust pipe and the construction of the silencers.

### Intercooling

An intercooler is an important accessory to a turbo-charged engine.

The intercooler is a heat exchanger positioned between the turbo-charger and the intake manifold and its sole purpose is to take out the heat from the air thereby providing more dense air for improved fuel combustion.

So what was done to our two test vehicles?

The KZTE had a gas-flowed cylinder head with standard cam and valves, a custom made intercooler, a plug and play Unichip, a free flow exhaust system, engine settings and optimisation with

the aid of a Unichip and Sportflo foam air filter. According to Steve's Auto Clinic they claim the power has gone from 85 kW to 105 kW on the fly wheel. This full-house conversion costs (all done at the same time rather than in stages) about R14 000.

The 2.7i had a gas-flowed head with larger intake valves, stage two cam on the inlet side only, a Wildcat exhaust branch, a free flow exhaust system, plug and play Unichip, Sportflo foam air filter, air induction system and optimisation.

The power on this engine has gone from 108 kW to 140 kW on the fly wheel.

The cost of this full-house conversion is also around R14 000.

According to Steve, these conversions can be done to a wide variety of vehicles and can also be done in menu-style, that is you can order a stage one or stage two conversion depending on what you want to achieve or spend.

Conversions can also be performed in anything from one to five days depending on what you decide to have done.

Steve's Auto Clinic has a number of branches countrywide, but for more details visit [www.steves.co.za](http://www.steves.co.za). ●