

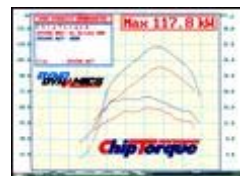


Turbo Diesel Hilux Power!

This current model diesel Hilux power-up from Queensland's Taipan XP is damned impressive.

By Julian Edgar

Advertisement Advertisement



Say the words 'diesel Hilux' and 'power' in the one sentence and you're sure to raise eyebrows, if not cause a smirk of disbelief. Even with 120kW and 343Nm of torque, the sheer size of the new Hilux is sure to mitigate against anything likely to be faster than a snail. Isn't it? Well we can't talk for the standard car, but we can say that a diesel Hilux running a power-up kit from Queensland's Taipan XP is sure to put the cat amongst the pigeons.

The kit – which comprises a 3-inch exhaust, Xede electronic engine management interceptor, Safari intake snorkel and K&N filter – gives an amazing increase in performance, without any of the normally associated downsides like exhaust

drone or engine stutters.

But before we get into the detail on the kit, let's take a look at the engine - it's one of the most sophisticated diesels on the local market.

The Engine

Sweeping 3 litres, the all-new four-cylinder 1KD-FTV engine uses twin balance shafts and a four-valves-per-cylinder head design with centrally located injectors and in-piston combustion chambers. To maximise swirl, the two intake ports for each cylinder have different profiles. One intake port in each pair is also fitted with a vacuum-actuated swirl control valve. Valve actuation is by twin overhead camshafts acting directly on the valves via shim-less lifters.

Engine management uses a 32-bit engine control computer with on-board diagnostics and a limp home system. The systems features electronic throttle, a water-cooled variable-vane turbocharger and common rail fuel injection. The engine management system uses an atmospheric pressure sensor, intake air temperature sensor and a hot-wire air-flow meter. Idle speed control and high-load air-conditioner cut-off functions are included.

The turbo vanes are adjusted by a DC motor, acting under the control of the ECU. In addition, the turbo has an intake shutter to improve exhaust gas recirculation performance and reduce NVH during idling, deceleration and engine shut down. The variable vane turbo is said to reduce turbo backpressure at medium to high rpm, to improve output and fuel efficiency, and reduce emissions.

The electronic injection system has multi-pilot injection control, to determine the volume, timing and time interval between pilot injections and main injection. Pilot injection comprises a series of small injection phases before the main injection phase. It smoothes the start of the combustion pressure curve, so reducing combustion noise. (See [Common Rail Diesel Engine Management, Part 1](#) for more on electronic diesel engine management systems.) The fuel system also includes a fuel cooler to maintain fuel viscosity.

Exhaust

The Taipan XP kit exhaust uses 3 inch pipe diameter. The mild steel system has a ceramic coated dump-pipe that is complete with a threaded bung to allow the fitment of an Exhaust Gas Temperature (EGT) probe during tuning.

Following the dump pipe is a 200-cell aftermarket cat converter...

...and a braided flex-joint.

A Taipan 'vortex' muffler follows. Taipan didn't want to divulge the internal details of this design but suggested that the company's testing had shown this muffler to work very well.

After that there's a small resonator and then the tailpipe.

The exhaust costs AUD\$1350 supplied and AUD\$1450 supplied and fitted. The company makes the point that all the nuts, bolts and gaskets are included and that the exhaust can be fitted with the vehicle on the ground.

Intake

Supplied as part of the power-up kit is a Safari snorkel and a K&N filter.

The filter fits in the standard airbox and costs AUD\$165.

The snorkel costs AUD\$600 fitted.

The Xede

The Xede electronic interceptor is produced by ChipTorque. It is used to lift the boost pressure from 16 psi to 18 psi (both max figures) and to alter the diesel fuelling. Interestingly, ChipTorque chief Lachlan Riddel suggested that while changes in injection timing were trialled, the increase in engine noise and harshness and a lack of decent torque improvement meant there was little point in pursuing this approach. However, judicious increases in fuelling and the small boost lift were very successful. (Incidentally, as far as we know, this is the first aftermarket diesel modification in Australia to electronically increase turbo boost pressure on a variable vane turbo.)

The cost of the Xede, fitted and dyno tuned, is AUD\$1490.

The Results

We were able to drive the car with the complete kit in place, and then with the Xede engine management interceptor

bypassed.

With the full kit in place, the Hilux was an impressive truck. There was absolutely no exhaust or intake noise (yes, even with the 3-inch exhaust!) and the car drove with superb docility in 5th gear at 1000 rpm. But then, when you dropped back a few gears and nailed it, the turbo noticeably came on boost around 2500 rpm and the engine pulled strongly to 4000 rpm (redline is 4500 rpm).

Apart from the urgency with which boost arrives, the car feels absolutely factory to drive – and that’s a huge compliment! In fact, so strong was it that we stepped out of the machine looking for ‘4 litre’ badges, to be stunned to see the ‘3.0’ written on the side.

With a gentle launch, air-con running, a full fuel tank (but no load in the tray) and a hot day, the Hilux did the 0-100 km/h sprint in about 12 seconds flat.

ChipTorque then bypassed the Xede and we took the Hilux for another drive. Performance was noticeably duller, especially in the mid-range and top-end. In fact, in this form there wasn’t much point in taking the engine past 3500 rpm. A 0-100 km/h in the same conditions revealed that the time had stretched to 14.0 seconds...

Dyno curves were available to show the power-at-the-rear-wheels with and without the Xede. (So the red line on the graph already includes the exhaust, K&N and snorkel.) With the fitting of the Xede, peak power went from 99kW to 117kW – an amazing 18 per cent gain. However, the improvement is anything but peaky, extending right across the rev range. Incidentally, Lachlan Riddel said that he’d pulled back the tune a fraction (say 1-2kW) from the figures shown in this graph in order that the system was further from its in-built limp-home mode.

Taipain XP suggest that with the modifications, fuel consumption has actually improved. Kerry Haines, Taipain XP Managing Director, says that around-town fuel consumption has gone from about 550km per tank to 650 km per tank and as much as 700km on the highway.

Conclusion

We can’t vouch for the fuel consumption figures but we can say that the performance of the Hilux in kitted form is excellent. And the icing on the cake is that the modifications retain all the refinement and driveability of a factory car.

Bring on more powered-up diesels!

Contacts:

www.chiptorque.com.au

www.taipanxp.com.au


Rate this article (5 = excellent): 1 2 3 4 5

Share this Article:

 [Digg this story](#)

 [Seed Newsvine](#)

 [Post to Reddit](#)

 [Save on del.icio.us](#)

 [Email](#)

Copyright © 1996-2007 Web Publications Pty Limited. All Rights Reserved