GAS EN MASSE!

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We fit and test two of the best kits from the UK and the USA in a definitive head-to-head tech feature like never before!

Since way before the infamous *Fast and Furious* movie hit the streets glamourising nitrous, those in the know were using its natural abilities to increase power outputs of combustion engines worldwide with great effect. Two such companies harnessing its capabilities are Nytrex, based in America, and The Wizards of NOS who are the UK's only manufacturer of nitrous components.

Both companies were confident that their kits were far superior than any other and it was our job to see which of the two, if either, was the better kit.

We're assuming if you're reading this you have a basic idea of how nitrous works, but fear not if you're unsure, as next month's Jargon section will tell you everything you could ever want to know about the hows and whys of N2O.

The Test:

Like most companies, and in life in general, everyone makes claims about themselves and their products being best. Our job was to separate the fact from fiction in a shoot-out involving the Wizards of NOS and Nytrex. Both kits were fitted to the same car at the same time and assessed on a component level; the power output of both kits was measured against their claimed jetted values, and we then used our GPS timing gear to measure what the real world gains were in performance times, and in gear times!

The Kits:

Nytrex – £546.38 inc VAT:
Representing the US of A is Nytrex and their 10010 4,6 EFI wet kit. These guys have been making a name for themselves drag-racing across the pond and were actually the instigators of this feature. The kit comes with the necessary electrical connectors, braided lines, a single injector, and some seriously-bright green components. The 10lb bottle is standard but the BOV and bottle pressure gauge (page right) are additional extras.

The Wizards of NOS – £575 inc VAT:
Representing good old Blighty is Wizards of NOS and its Streetblaster 100i kit. The system comes with a single injector all the necessary nylon pipes and electrical connections, a 5lb bottle complete with Blow of valve (BOV) (which we have upgraded to 11lb for the feature) and a lovely quick-release billet alloy bottle bracket which is now supplied as standard even in the cheapest kit.

The Car:

As this is as real-world as we could get, we used a real-world Ford; a Fiesta Zetec-S. This particular one belongs to Andy who has kept engine mods to a minimum – a Pipercross filter and stainless exhaust to be precise, and it's just ripe for some nitrous. The Zetec-S is a nippy hot hatch and a firm favourite in the *Performance Ford* camp as standard, so to coin a phrase, "things can only get better!"

The Fitters:

For the fitting and setting up of the kits we needed someone experienced in nitrous and also in both UK and American kits. Challis performance centre's Active Nitrous division – based in Braintree, Essex – have over seven years experience with nitrous, and, as they supply and fit both manufacturers kits we knew they'd be well clued up on the product, and that there wouldn't be any undue bias toward either kit. Active nitrous can fit a kit to your car from just £200 and can fill your nitrous bottles for £5 per lb, including the dreaded VAT.

Kit Comparison:

Although the key aspects of any nitrous kit are similar there can be quite a large differentiation between the individual components. We take an up-close look at the key parts in both Nytrex and Wizards kits.

THE BOTTLES:

The Nytrex system comes complete with a 10lb nitrous bottle that is painted in a rather bright shade of green (it's also available in black). A BOV and bottle pressure gauge are available but at an additional cost. The bottle bracket does the job although a trick alloy bracket is available for an extra £199. The Wizards kit comes with a Gunmetal grey-coloured 5lb bottle which we upgraded to 11lb to prevent more frequent re-fills during the test. All their bottles come with a BOV included in the price while a Glycerine-filled pressure gauge is available at a cost of £35. The Wizards bottle bracket has recently been upgraded to a well-thought-out CNC alloy quick-release mount. This design, as well as being light, means removing the bottle from the bracket requires no tools: a big plus.

THE LINES:

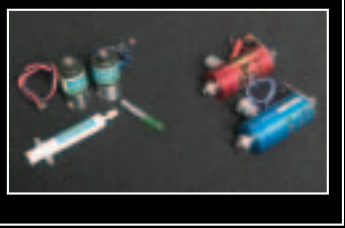
Nytrex uses braided-style lines with screw-on fittings to get the majority of the nitrous and the fuel into the engine. We love braided lines in general, especially the look of them – and if fitted correctly, the reliable seal too. The one bad thing that struck us was the lack of flexibility when mounting the solenoids and the injector because of the lines. You also need to run the braided line from the nitrous bottle underneath the car as there simply isn't room in UK cars to fit the diameter pipe neatly inside.
The Wizards use a nylon pipe which admittedly doesn't look as good as the braided gear from Nytrex. It can however be run inside the car neatly through gaps and is easy to get through the bulkhead. It is also cut to the required length with a knife and secured using the supplied olives, so installation is that little bit easier and tailored to the vehicle.

THE INJECTORS:

The Nytrex injector is quite big compared to the Wizards', and this is partly due to the fact that the jets are part of it, as opposed to at the end of the pulsoid. Apart from the size difference both injectors are self-explanatory. Both also use the nitrous feed behind the fuel feed to improve atomisation.

THE SOLENOIDS/PULSOIDS:

You will hear these referred to as separate components although we are still referring to the same part of the kit. Nytrex's solenoids are small and compact, and come with some thread sealer and a suitable mounting bracket to make installation easy for anyone with an ounce of mechanical sense. Having the input and outputs on opposite sides makes mounting them a little more tricky. Active Nitrous advise that the Nytrex solenoids are serviced to replace worn internals annually at a cost starting from £30. The Wizards pulsoids (called so due to the way in which they uniquely pulse), are slightly larger than Nytrex's offerings but not too big that they become a problem to fit. Having the input and output at right angles means the options for where they can be mounted are almost endless, ensuring short pipe runs and a cold mounting location (which is optimal for WON pulsoids) can be adhered too. The pulsoids come with a lifetime guarantee and due to their unique design will never wear, meaning you don't need to factor in rebuild costs.

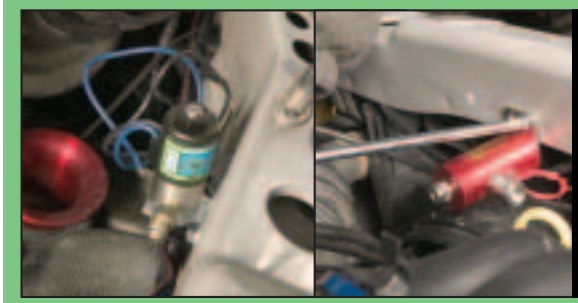


Fitting guide:

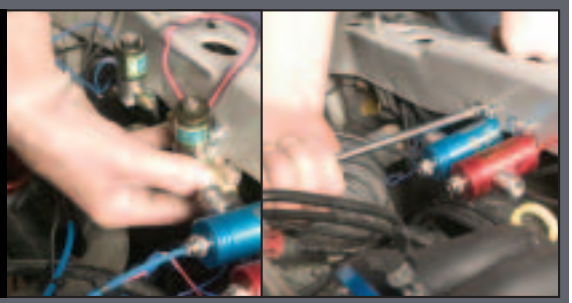
1) Mount the bottle to the boot floor, mark up the holes using a Tipex tip or something similar, then drill and mount the bottles using the supplied screws. (Make sure the bottle is mounted at an angle)

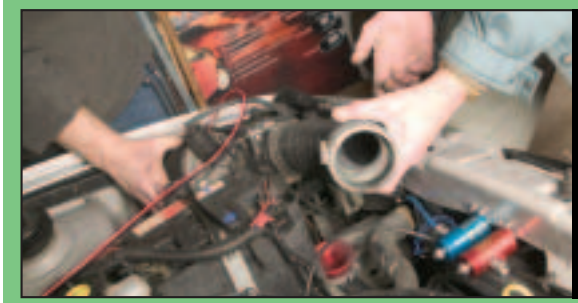
2) Connect the lines to the bottle using the swaged fitting or nuts and olives, and run them through, or under, the car avoiding any sharp turns, securing the pipe using zip-ties where necessary to prevent snagging.

3) Feed the lines up and along the bulkhead to where the solenoids/pulsoids will be mounted. (It's a good idea to feed the electrical cable through at the same time if you're using a Wizards kit, to save time later).

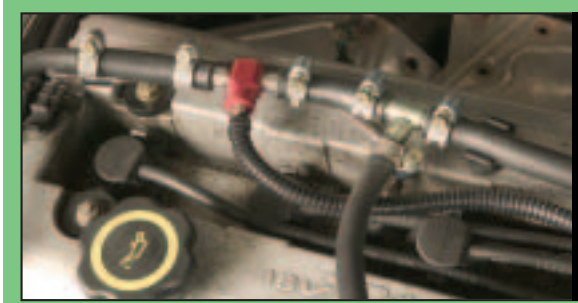


4) Find suitable cold locations for the solenoids/pulsoids and mark and drill the required holes before securing them with the supplied screws. Offer up the injector to ensure the braided lines will reach.

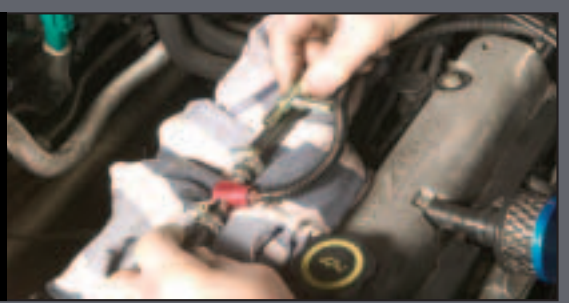


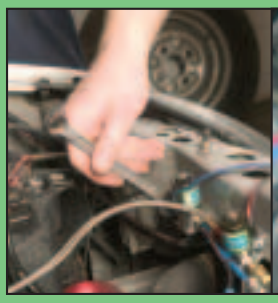
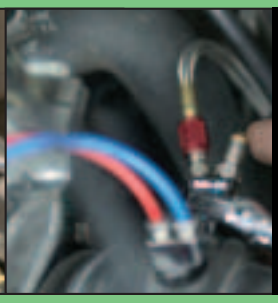


5) Remove the intake pipe to mount the injector. Ensure the manufacturers fitting guidelines are adhered to respectively, which normally includes the injector end protruding by a fixed amount.

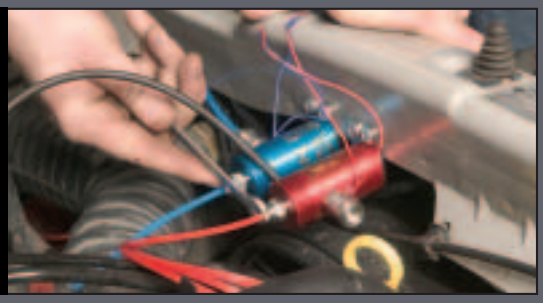


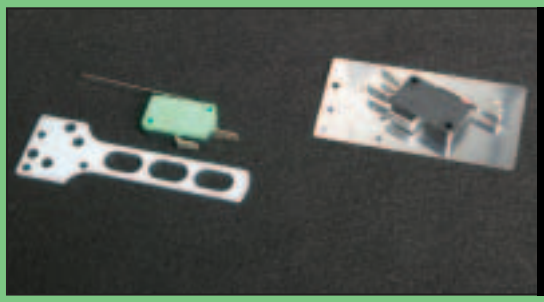
6) Find the fuel feed to the injectors and T into it with the supplied fuel connector. You may need to sleeve this tough plastic pipe as it's usually a pain to manipulate over the union ends.



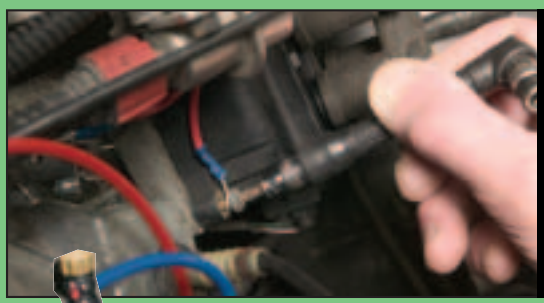
7) Join the solenoids/pulsoids to the fuel T's and the injectors with the supplied nuts and olives/threaded fixings respectively. Ensure neat, short runs when using a WON kit and make sure the nitrous feed is behind the fuel feed (for both kits) for the injector.



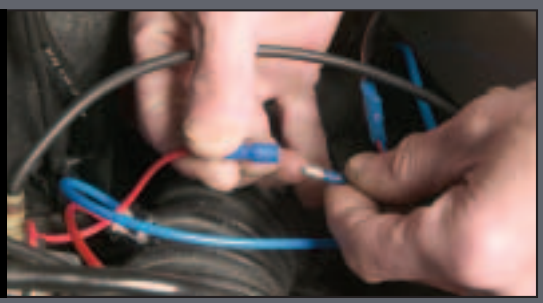


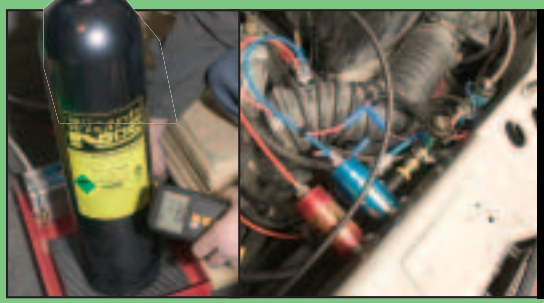
8) Both kits come supplied with an almost identical micro switch and bracket. You will need to manipulate this to ensure a good fit either on the throttle cable bracket or under the pedal in the car. Activation should occur at full throttle.

9) Decide on a suitable location for the arming switch and drill a hole to suit. We used the Wizards switch here for both kits, as it doesn't require a relay, meaning less wiring dilemmas for us – but the same applies for the Nytrex switch.



10) Connect the microswitch to a suitable earth and from the other connector to the solenoid/pulsoid. Connect one end of the cable to the arming switch and then to an ignition activated live, and connect the other to the solenoids/pulsoids.

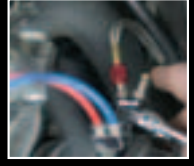


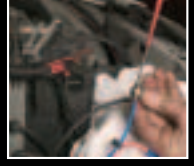


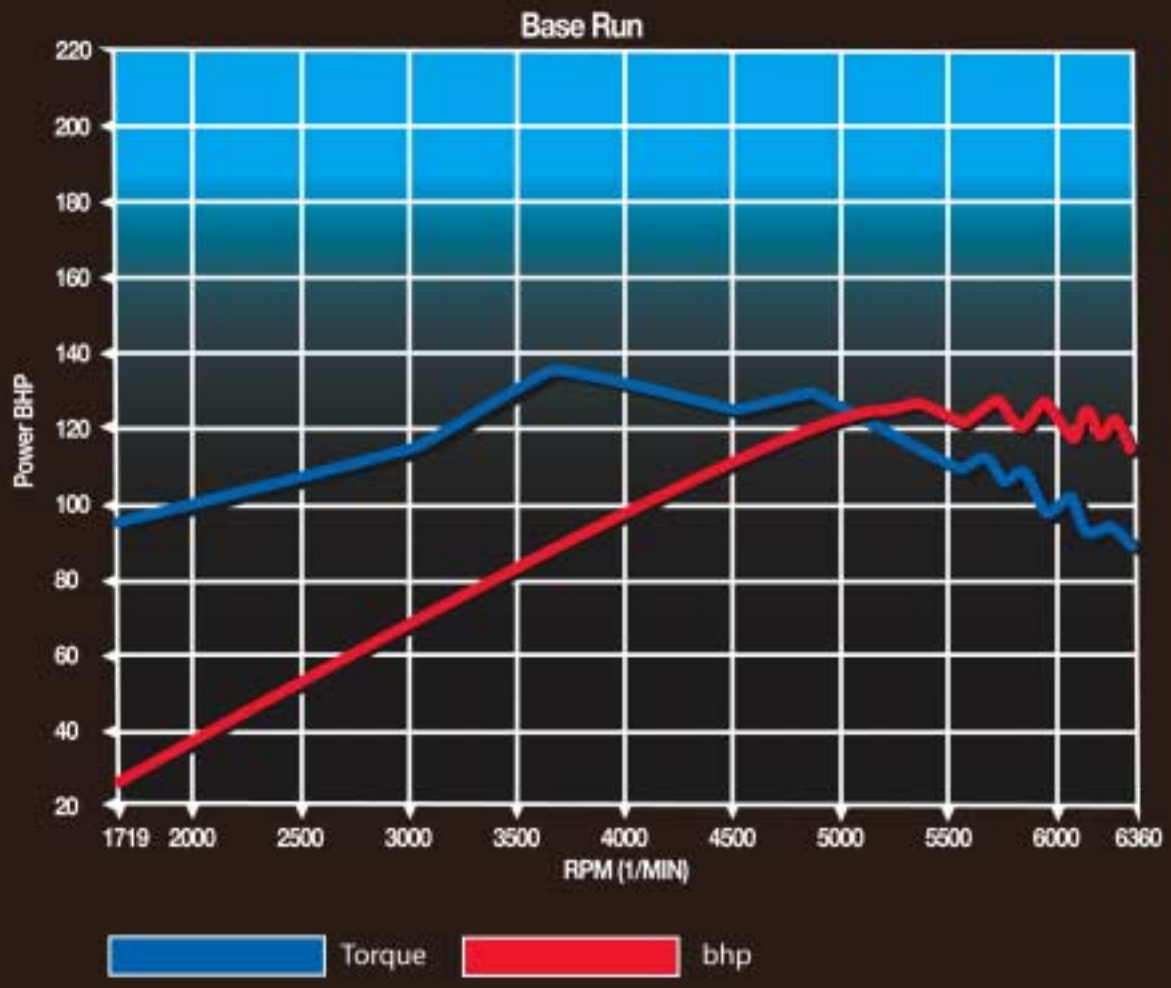
11) Fill both bottles from an authorised nitrous agent. Around 3/4 of the fill can be gravity fed but it's essential to use a pump to ensure a complete fill. That's it, you're ready to test your kit for leaks and to jet it for your desired power output!

TESTING AND JETTING:

The Nytrex kit uses a jet measurement based on a standard equation used in the US to work out nitrous flow. There are no test procedures other than to start at 25bhp and check for leaks, before test-driving on the road and listening for signs of det before doubling up to 50bhp jets. On the rolling road Paul checked this and confirmed neither kit was on the lean side, and with a knock sensor fitted there was an additional layer of safety. The Wizards kit has several tests to ensure accurate jetting. The first, which also helps identify potential leaks, is a static test. The car is held at 2000rpm and the kit activated. From the amount the Revs rise, you can work out the mixture and adjust jetting. After the checks, a road test revealed smooth delivery with no problems. With 25bhp performing as it should we doubled both jets to a 50bhp dose.



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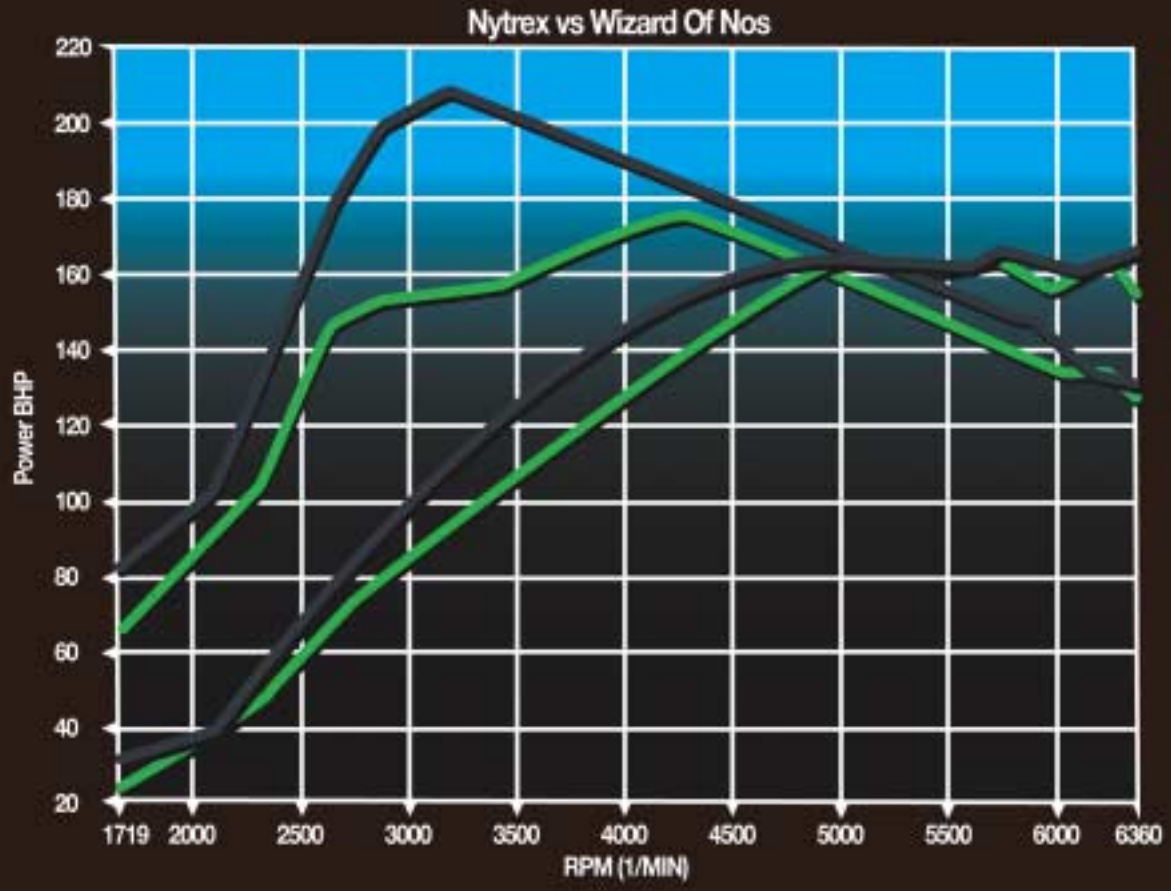
Nytrex vs Wizard Of Nos
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Wizards Of Nos
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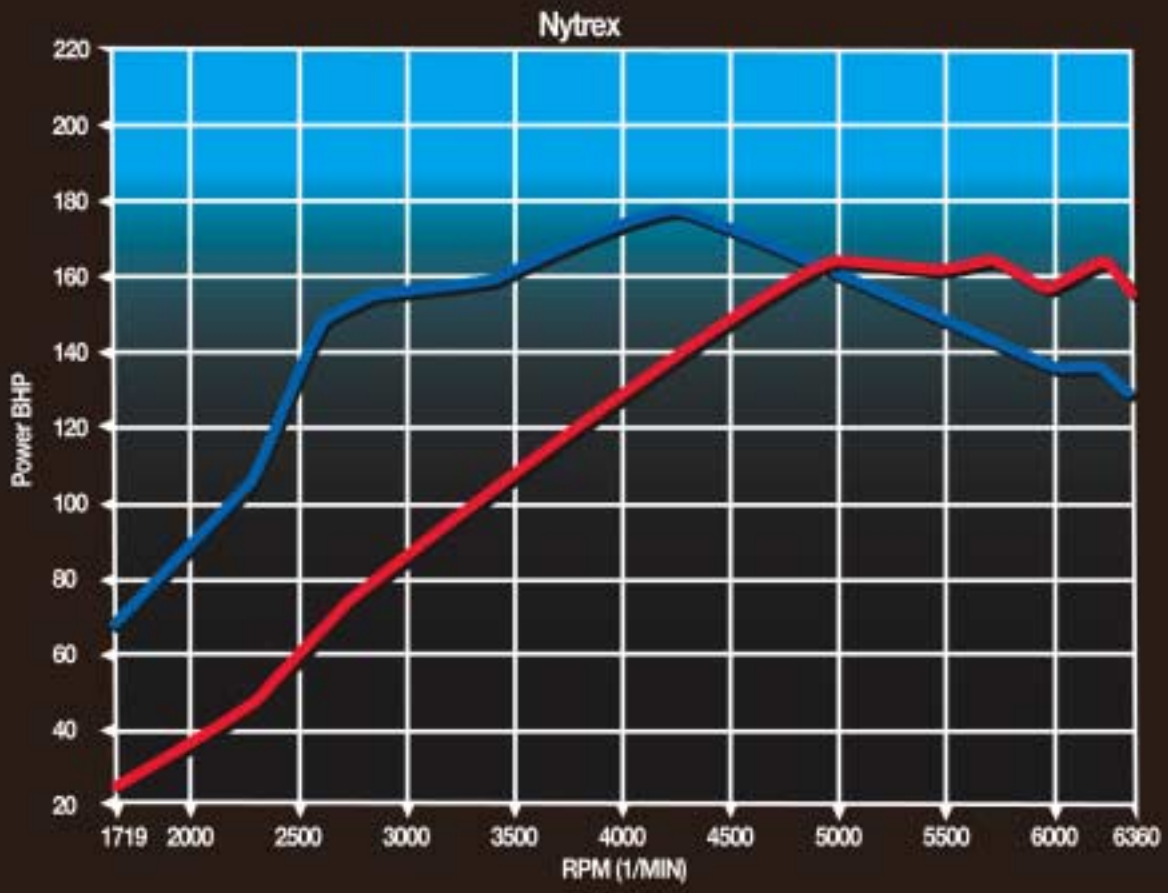
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Performance Test:

For the final part of our test we headed over to a local airfield armed with our Racelogic V-Box GPS timing gear to assess what the nitrous was doing for the Fiesta's performance times. Being front-wheel drive we were expecting a lot of wheelspin and because of this as well as attempting some sprint times, we also added another test into the equation. We recorded the time it took to get between 30mph and 80mph in 4th gear from 2000rpm, which eliminated any driver input through gear changes or trying to control wheelspin.

Piloting the cars on all the sprint runs was co-owner of Challis and all-round nice guy, Julian who was consistent in his driving on all runs, while piloting the car on the in-gear times was owner Andy, as apart from putting his foot flat to the floor and stopping us from heading off into a field there was no other input required.

My considerable bulk was in the car on all runs, working the timing gear through our laptop.

All in-gear runs were recorded both ways on the runway giving us a best time and average time.

It's also worth noting that before runs, both nitrous kits were activated to bleed the liquid nitrous along the line. The Wizards of NOS claim their kits do not need this as they have good self purge properties built in, whereas all american kits do in fact recommend it, so if anything, this would be causing an advantage to the Nytrex system.

In gear test, 4th gear 2000rpm, start speed 30mph, end speed 80mph

	Average (secs)	Best (secs)
No Nitrous	24.26	23.44
Nytrex	12.64	12.34
WON	11.62	11.33

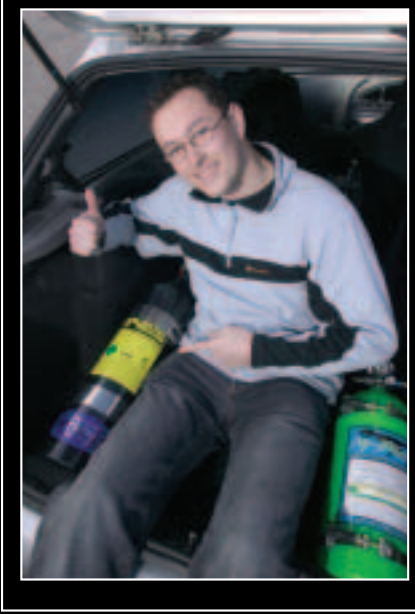
	0-60mph (secs)	1/4 mile (secs)	0-100m (secs)	0-200m (secs)	0-400m (secs)	0-500m (secs)	10m time (secs)
No Nitrous	11.23	18.19 @ 77.97mph	7.84	11.83	18.12	20.91	2.20
Nytrex	8.00	16.17 @ 89.35 mph	7.08	10.58	16.12	18.55	2.14
WON	7.92	15.99 @ 90.04 mph	6.95	10.46	15.94	18.35	2.05

Conclusion:

To be honest, when we first started this test the thinking was 50bhp-worth of nitrous induced with some extra fuel should give almost identical results – our findings were in fact very different!

The Nytrex kit certainly catches your eye, and with the better looking braided lines is certainly as good as the Wizards kit aesthetically. For the enthusiast wishing to stand out, it may in fact prove to be the favoured kit. Unfortunately for Nytrex though, that's pretty much where the similarities end.

The Wizards kit comes with more equipment as standard in the basic kit, such as the BOV on the bottle and the alloy quick-release bottle bracket, meaning they win in the value-for-money stakes. With regards to fitting the kits, the fact that the lines can be cut to suit mean that installation can be tailored to the car, and the use of high quality switches means less wiring and no relays are required (although Nytrex do supply them in the kit), so again the Wizards win on this point.



In terms of power produced, the WON kit was the closest to make the claimed 50bhp with 42.9bhp but the staggering thing was the huge gain in torque, even over the Nytrex kit and from low revs, making for a more driveable and quicker car. It's worth noting that with more time both kits could be fine-tuned to produce more power, but as this is a real-world test, these results are what you can realistically expect if you were to fit either kit to a Fiesta Zetec-S today.

As for performance, the purging of the kits was potentially hindering the Wizards kit, and despite this possibly bridging the gap a little, the car still performed better at all acceleration and in-gear tests that we carried out over the Nytrex kit. For us, with so many conclusive factors pointing us towards one kit being that much better than the other, we know where our money would go – and indeed the same was true for the owner of the Fiesta we used.

After a handful of minutes using each kit, Andy made up his mind instantly and told us he preferred the Wizards of NOS kit, and for us that brought the test to an agreeable conclusion. Any nitrous kit can potentially improve your car's performance and even driveability, but if you're after the most power, best performance and best value for money kit out there, we'd wholeheartedly recommend a Wizards of NOS kit from Highpower!

Thanks:

This test couldn't of been possible without the help of the following people:

Julian and Sean – Challis performance centre/ Active Nitrous (01376) 550155
Paul Hills – Engine Advantages (01376) 502522
For Nytrex enquiries call (01376) 550155
For WON enquiries call (01302 834343) or (01376) 550155